A STUDY OF INVENTORY MANAGEMENT

submitted to the Department of Industrial and Production Engineering, Bangladesh University of Engineering and Technology, in partial fulfillment of the requirement for the degree of

MASTER OF ENGINEERING(IP)

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CERTIFICATE

This is to certify that this work has been done by me and it has not been submitted elsewhere for the award of any degree or diploma.

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ABSTRACT

Inventory management is a very important area in industrial management. To dampen the unsteadying effects of external and internal phenomena on the operation of production systems or service systems, a certain amount of inventory of raw materials, semi-finished and finished products and machinery spares must be kept. But inventory requires capital investment and may necessarily be viewed as capital tie-up. Unplanned inventory may cost huge amount of capital either in terms of lost production/lost sales or over investment. In this thesis, a study of inventory management policies has been undertaken. Different inventory situations have been discussed and related classical models like purchase and production models centered on economic order quantity and order cycle have been examined. Spares provisioning models for constant and non-constant failure rate with repairing and non-repairing possibilities have been discussed in detail. For constant failure rate repairable case, optimal spares provisioning policy has been formulated considering parameters like number of operational units, operational unit failure rate, storage failure rate and repair rate. A set of tables and graphs has been produced to determine spares requirement either for certain allowable unavailability of production system or for minimum cost.

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Notations

B - Buffer stock

C - Total Incremental cost

C_p - item cost per unit

D - Meantime spent by the unit out-of-service owing to lack of spares or the downtime due to stock exhaustion.

D_1 - Total demand for a certain time period (e.g. a year)

h - Holding cost per item.

i_c - Holding cost as percentage of item value.

k - Procurement cost or the set-up cost.

L - lead time

m - Number of operational unit served by an on-site store.

N - Number of spares carried by the store.

$P_{ij}(t)$ - Probability of system being in (ij) state.

$P^*_{ij}(t)$ - Rate of change of $P_{ij}(t)$.

P_N - Probability of stock exhaustion while all the units are in operation.

P_{N+m} - Probability of 'm' operational units not working due to spare part stock exhaustion. operation.

Q - Actual quantity held in stock.

Q^* - Optimum quantity (for stock).

q - The lot size

q_p - The lot size for prescribe scheduling period.

q^* - The optimum lot size

R - The relative cost of lost production to item holding cost together with its value.

S - Order level.

S_p - prescribed level of order.

S^* - optimum order level.

T_{cs} - Scaled total cost in multiples of $(1+i_c)$

t - scheduling period or the cycle time.

t_p - prescribed scheduling period .

t^* - Optimum scheduling period .

U - Unavailability of a particular working unit owing to lack of spares.

x - Demand during prescribe time t_p with probability p_x.

y - Demand during Lead time 'L' with probability p_y.

z - Cost for incurring shortage.

λ - Operational unit failure rate.

λ_s - Failure rate of unit in store.

α - The rate of production.

β - The rate of consumption.

μ - Repair rate in the workshop.

ϕ - The meantime between unsatisfied demand for spares as applied to a particular unit.

CHAPTER 1

INTRODUCTION

1.1 General Setting of Inventory Management

To support any on going scheduled or unscheduled activities of goods and service producing systems, logistic or system support elements are always present. These are the elements which keep the system or product in proper operating condition. It is the prime objective of the management to use all the system support resources effectively and efficiently so that the right amount of support can be provided at the right location timely.A major requirement in this regard is the storage of materials which may be visualized as idle for sometime, but have definite economic values in business transactions. These are the inventories at various stages of production-distribution system which comprises not only of stocks of raw materials, sub-assemblies, semi-finished or finished goods but also includes the stock of fuels, tools, handling and testing equipments, metrology and calibration equipments, special supplies, levels of cash, spare parts etc.

1.1.1 Planning and Control

In Inventory, planning determines the material requirements necessary to sales by the operational plan while control determines the proper levels of stock reorder point, safety stock and the like. Its purpose is to determine appropriate inventory policies and to keep all associated costs at a minimum.

Inventory ties up capital but again is a boost for production, sales etc. It is a cushion between production and consumption of goods in various forms present in a production-inventory system. It prevents production from responding directly to sales and disengages various manufacturing operations having different production rates. It makes possible in some cases, fewer machine set-up and also high machine utilization.It regularizes the flow of goods in accordance to demand and its decoupling permits each operation to work economically.

1.1.2 Situations in Inventory

Inventory situations exist at various stages of production-distribution system.The raw materials are found awaiting processing. The semi-finished items initiate queue in-between operations inside a factory.The finished goods are stored at the factory despatch sections, in transit, in warehouse distributing points and in retrail outlets etc. All these comprise of features of inventory situations.

When inventories are purchased and resold without further working, ignoring their interaction with overall system, pure inventory control situation arises.Conditions in retailing, wholesaling operations and in many military supplies are akin to pure inventory situations.

Inventories maintain a smooth flow of goods between various stages of a system, though not always through labelled stations.The following schematic diagram (Fig 1.1) depicts a multi-stage inventory system for high volume standardized products where the system volume averages 2500 units per week.

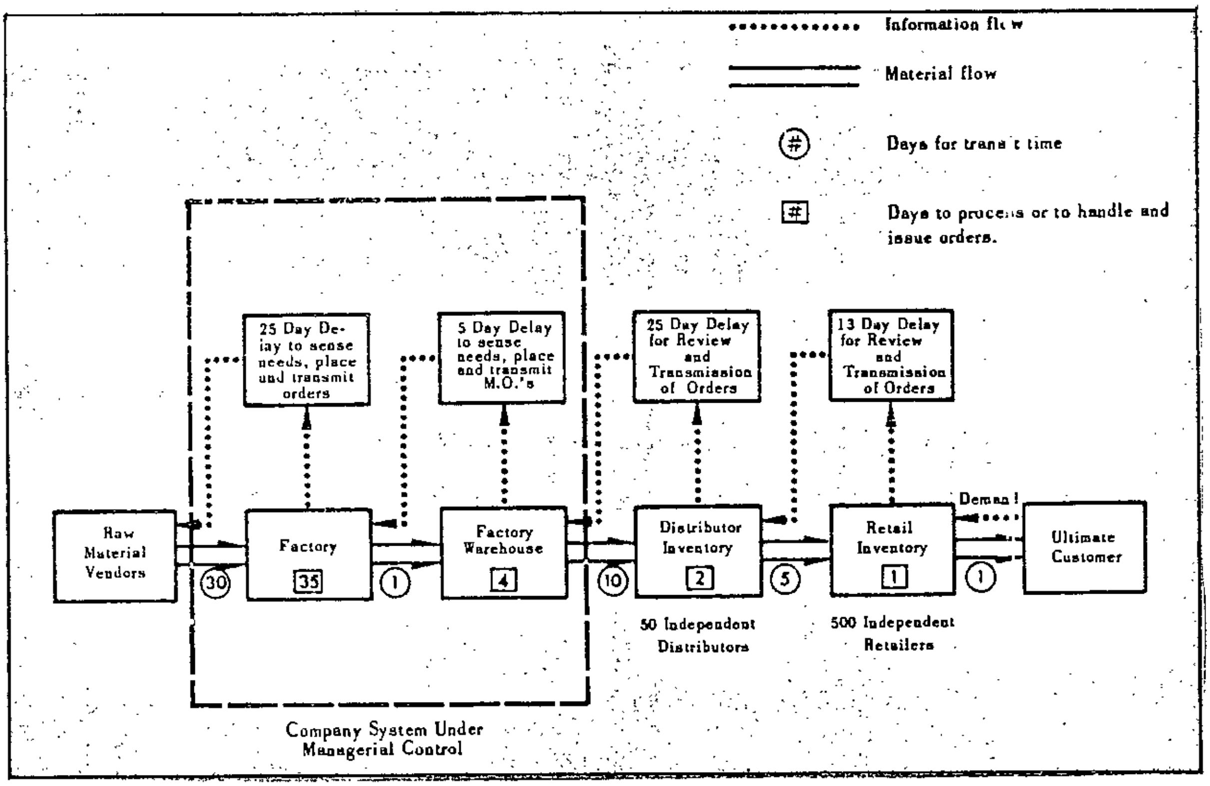

Fig 1.1 Material Flow in a Multistage Inventory System

The figure (Fig 1.1) shows that inventory exists in transit pipelines, a raw material supplies, and as in-process inventories in factories. At each main stages inventories are present because it is economical to order them in lots and to be able to give quick services.

An inventory has an input and an output stock. The output stock follows some function, dictated by demand, and passes on to consumer. These future demand functions, in case of inventory situations, may be either deterministic or probabilistic in nature.It is deterministic when the demand is known with certainty, though its pattern may be of constant or of variable type. It is probabilistic when the future demand can be ascertained by forecasting previous records or can be modified from some partial informations. The input stock, on the otherhand, are the items which would be converted, turned or moved by the function or would be utilized in the performance of the function.

Another important feature of inventory system situation is the presence of buffer or safety stock. When unpredictable variations in demand pattern or delays in order delivery (i.e. lead time) occurs, risk of stock exhaustion with associated cost appears. Consequently this buffer or safety stock is designed considering a balance between holding cost and shortage cost due to stock-out.

When the demand is for customed items and for large volumes of standard items, production lines are carefully designed to stock items with continuous replenishments. These are the situations where continuous-type of inventory system prevails. The storage facilities in production lines of mass producing factories such as of automobile companies are typical examples of this system. On the otherhand, when the production system is flexible and the capacity is large accommodating variety of items, systems thus developed are commonly called as intermittent system. Jobbing machine shops which produce custom items like metal components of variety of styles, sizes or item designs, falls in this category. Here the production is either for custom orders when demand is met from already existing inventory or for specific jobs. This gives rise to situations named as open job shops or closed job shops respectively.

Situations also occur where input is unpredictable and inventory is in effect managed through control of output or depletions. Such input queues are present in transport, water tank storages, service system etc. Fig 1.2 summarizes some of the common aspects of inventory situations.

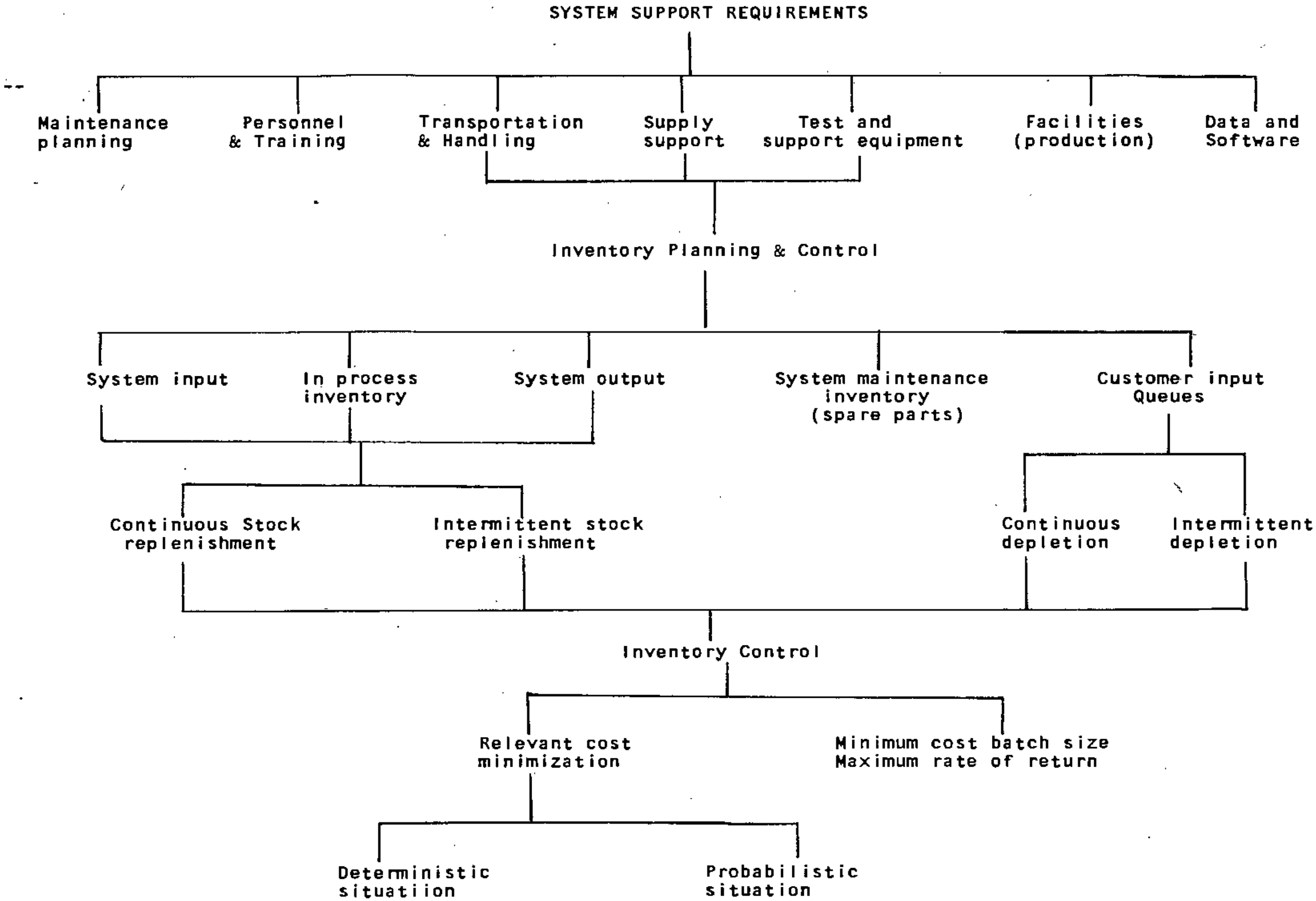

Fig 1.2 Inventory control situations.

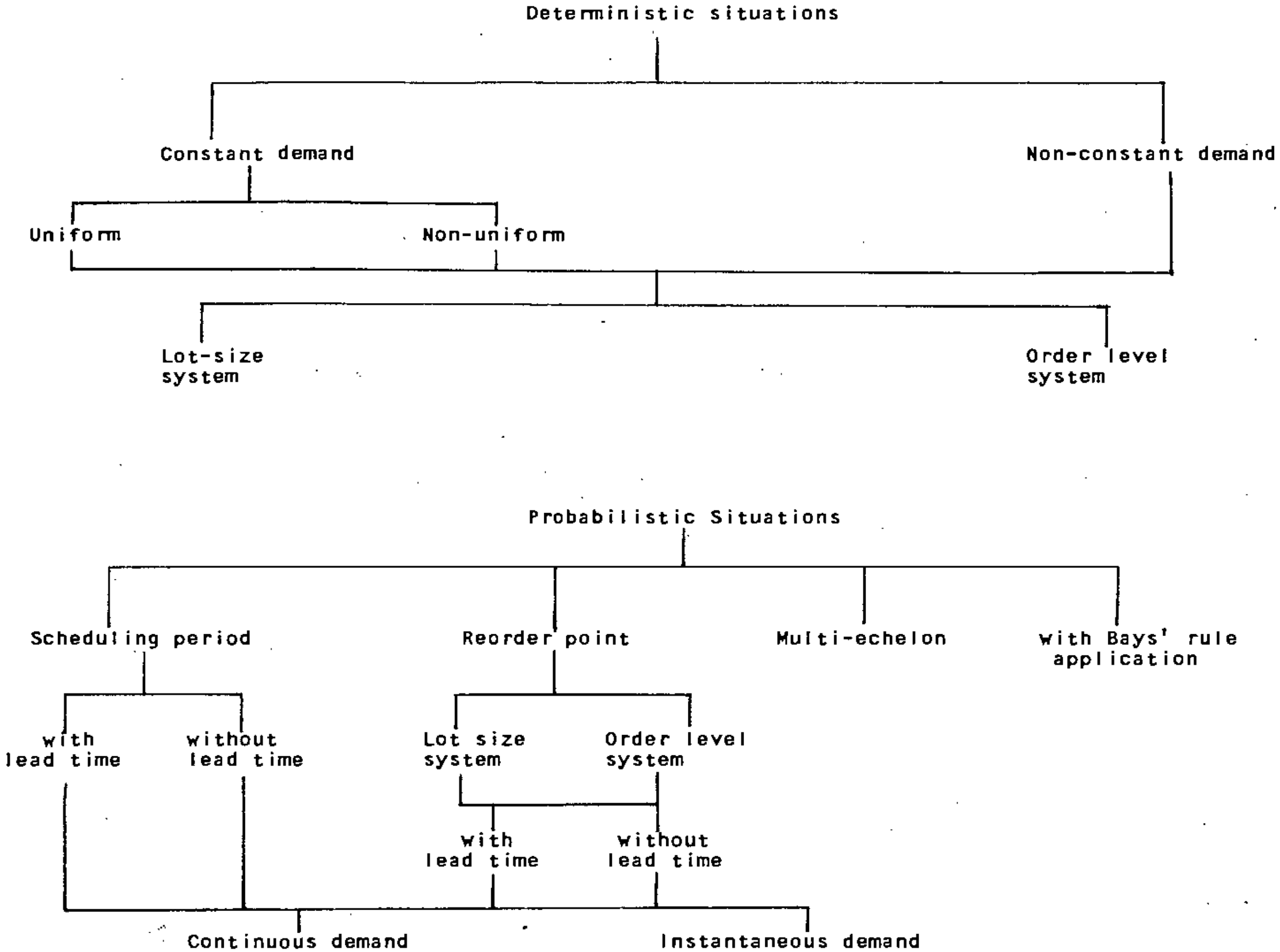

Fig 1.2(continued)

1.1.3 Spares inventory problem

Interest has also grown in the development and implementation of maintenance policies of stochastically failing equipments.This interest has been provoked mainly because of high cost and extraordinary demand of spares maintained to operate modern equipments like jet liners,electronic computers,ballistic missiles etc. Sophisticated maintenance policies have been developed which are economically justifiable. Cases are there when the failure rate is constant and also when it is non-constant.But the costs are always calculated to measure the total cost of each maintenance action including the stock holding cost as well as downtime cost associated with each operational unit. The parts that go into an operational set replaces a failed or a 'going to fail' part.These parts in turn, may be repairable or non-repairable.The later being the case of pure replacement.

In the repair parts supply system (RPSS) optimum level of stock is determined such that unavailability due to occasional stock-out situations is minimum. This in effect reduces loss due to operating machine downtime. Again the repairable items while in the process of undergoing maintenance,may form back-up (lengthy queue) at repairing workshops. This results in further depletion of inventory because of delay of repaired parts returning to the on-site stores.Under such conditions stock-out situation may easily result affecting the reliability of a system.

1.1.4 Aggregate Inventory Management

Inventories purchased or produced, are maintained to support production or are themselves the result of production. It provides the means which absorb disrupting events like random price variations, demand variations, flow-line variations in supply, manufacturing and distribution. It fills the transit pipe lines and thus caters the seasonal and cyclic demand. It keeps the stock in anticipation of change, etc. So management's interest,today, is focussed on the aggregate inventories dealing with not only the procedures and policies of individual items but with large varieties of items at a time. Modern data processing techniques have also made it convenient to handle large number of of aggregate items at the same time.

It has been observed that complete optimization and control in a logistic system as a whole require combination of inventory-allocation and queueing problem. Moreover production and inventory costs are interrelated. The larger the production lot is, the less is the unit production cost and the larger is the unit holding cost.Thus planning is needed at various stages, as regard to the lot sizes, the facilities, sequencing and timing of productions, etc. The material and information needs flow through a system with typical time delays which is a concern to overall management.

The crux of a stable inventory system design problem lies in the decision making and information flow system of the management as regard to the levels of inventory. At a most basic level, the relationship with the outcome of decisions is visualized as is shown in the following schematic diagram.

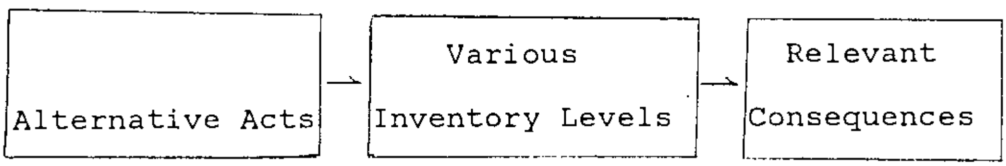

Fig 1.3 Relationship in an Inventory Decision Problem.

Alternative Acts are the decisions that determine the level of inventory which is responsible for the consequences like customer services, production levels,inventory related costs,community relations public images etc. In general the decision model may be expressed as $C = f(q,t)$ i.e. in decision models it is required to find the values of decision variables -

the quantity replenished q and its timing t, which minimize the total related cost C.

Aggregate planning raises the range of alternatives for the use of capacity for managements' consideration. Aggregate control by management develops sub-optimal lot quantities from policies which are individually not optimal. A Prominent approach for management control is to adjust the present context with broader objectives of large number of items, records, requirements, reviews and forecasts. The choice might involve different degree of control for different items and basically different control methods at different stages in a multi-stage production-distribution system.

1.2 Characterestic of Inventory Control

1.2.1 Item Classification

While controlling stocks a balance is to be maintained between inventory investments (operating expenses) against other demands for the capital. To exercise same type of control to all stocks, irrespective of their values, usage or quantity is not a worthful activity. It has been observed that fast moving items are likely to incur most of the storage costs. Consequently concentrated control procedures are being directed towards these items.On the otherhand, least value items are given ordinary control procedures which may not be directly linked with corporate goals.The plan of segregating items into classes is known as ABC plan or Control by Importance or Exception (CIE). Here supplies are divided into 3(three) categories and the plan effectively buys time for control of 'A' items by overstocking 'C' items.

1.2.2 Relevant Costs

Items held in stock incur cost. Specific inventory problems have their own type of cost. While making decisions, relevant costs are studied with a view to reducing them in their respective stocking situations. Following classes of costs are visualized in various inventory situations.

Class of Cost	Description/Examples
1. Procurement costs:	It includes the ordering cost in purchase situations and machine set-up cost in productions situations on a job order basis.

2. Inventory carrying costs : It includes expenses for the volume of inventory carried. Some of these are:

1. Capital cost or opportunity cost
2. Shortage or handling cost
3. Deterioration, obsolescence or even pilferage costs.
4. Insurance Cost
5. Capacity associated cost.
6. Taxes

3. Shortage costs : It is the cost of not carrying the inventory with the lost sales or the extra cost that may be incurred when a back order occurs. These may include:

1. Lost of customer goodwill
2. Additional cost for expediting special handlings
3. High freight premium etc.

4. Overstock costs : It is the cost associated with the carrying or disposing inventories when the demand of an item is terminated.

5. Systematic costs : It usually exists when there are several control systems in case of dynamic inventory problems. These occur

when systems differ in amount of inspection, data processing etc. Here large differences in cost occur during implementation and installation, during amalgamation of several orders into a central one etc. Systematic costs are intended to cover such situations.

1.2.3 Objectives of Control

Various elementary models have been developed to determine the Total Incremental Cost (C) by summing up various relevant costs under different inventory situations. It is the objective of the models to minimize this incremental cost which varies with the amount held in stock. Hence balance is achieved among various increasing and decreasing costs with respect to the amount required to be held in stock. Economic Ordering Quantity (EOQ) which is the optimum lot size of the ordering quantity is thus determined. This corresponds to minimum incremental cost. In a similar way Economic Production Quantity (EPQ) and Economic Ordering Interval (EOI) are determined.

In production situations where items are produced in batches, stock levels are sometimes controlled keeping also other objectives in view. These may include:

1. Profit maximization - Here the objective is to yield maximum profit per batch and is of larger size than that required for minimum cost batch.

2. Maximum rate of return - Here the objective is to yield an economic batch size which maximizes the the rate of return.Its size is smaller than the minimum cost batch.

3. Minimum cost (Cost minimization) - Here minimum production cost per piece is ensured. It is preferred during keen competition.

The classical inventory control is that of establishing a policy based upon some control of stock inputs to satisfy deterministic or probabilistic demand situations.It is conventional to balance the various prices in order to achieve a definite average stock level or a definite review period. In case of uncertain demand situations consideration is given to lead time and its distribution. Designing of safety stock level which is an important parameter to check against stock-out situations, depend mostly on lead time pattern.When the problem is of system maintenance, inventory of spares become important. Then the objectives of decision maker is to choose such maintenance actions that minimizes the cost per unit time for the equipments in operation. Here a balance is achieved between the loss incurred from downtime of operational unit due to spares unavailability against the cost of spares piling up in the inventory.

1.3 Objectives of the present study.

The present work comprises of a study of inventory management policies. Various models, which are now well developed, have been studied highlighting their assumptions and areas of application. Particular emphasis has been given to spares provisioning models for both repairable and nonrepairable situations with constant failure rates of the operating parts. A nomograph developed by NAVORD(Naval Air System Command and Naval Ordinance Systems Command) for situations where operating units failure rates are constant and spares are non-repairable, has been reproduced and discussed. The constant failure repairable case has been discussed in much greater details, where the the objectives have been the followings:

1. To determine specified values of unavailability of production units for a certain number of production units, failure rate of operational units, storage failure rate and repair rate.
2. To determine the cost-optimal policy for spares provisioning for some variational of different parameters.
3. In some specific cases, the behavior of stock exhaustion probabilities has also been studied.

CHAPTER 2

LITERATURE SURVEY

Interest in the field of inventory system is constantly increasing. People have viewed it from different angles. Some have merely seen it as of keeping stock records only, while others have termed it as of concerning specific commodities alongwith some investments being tied up in the stock. Still others have taken it as of problems regarding the type of item to stock, when to stock, how much to stock etc. Recent developments have seen it as a part of logistic system support where the technique and tools from operation research can be profitably used, as mentioned in reference [1]. Thus becoming an important field of design, study of inventory has drawn people from different disciplines. All the subsequent models that have since been developed go to solve for varied problems of industrial and business situations and have added the subject with much novelty and grandeur.

Inventories are being maintained under different environments. Policies differ when the situation is one of estimated future demand than the one where the future demand is known. Again the design of safety stock and consideration for lead time (time elapsed between placing the order and actually receiving stock) have an immense effect on management decision making. Moreover, there are instances of one time decision static-model and repetitive process dynamic-model. Star & Miller [2] have discussed in detail the static and dynamic inventory problems under conditions of certain, risky and uncertain demands.

Turner,Mize,Case[3], Naddor[4], Geisler[5], Plossl & Wight[6] and Tersine[7] have discussed the Economic Order Quantity (EOQ). Wild[8] has deduced the formula for Economic Batch Quantity which determines the minimum cost batch size after considering costs associated with stock holding, processing and set-up of machines and equipments.

2.1 Deterministic Situations

Assuming deterministic situation i.e. situations with known demand, various models have been developed. Many of the relevant literatures have discussed the simpler models which are of known constant demand.

2.1.1 Models with Infinite Replenishing Rates

The models under this category are those where the replenishments in inventory are instantaneous. Fig 2.1 represents the graphical structure of models with instantaneous replenishments.

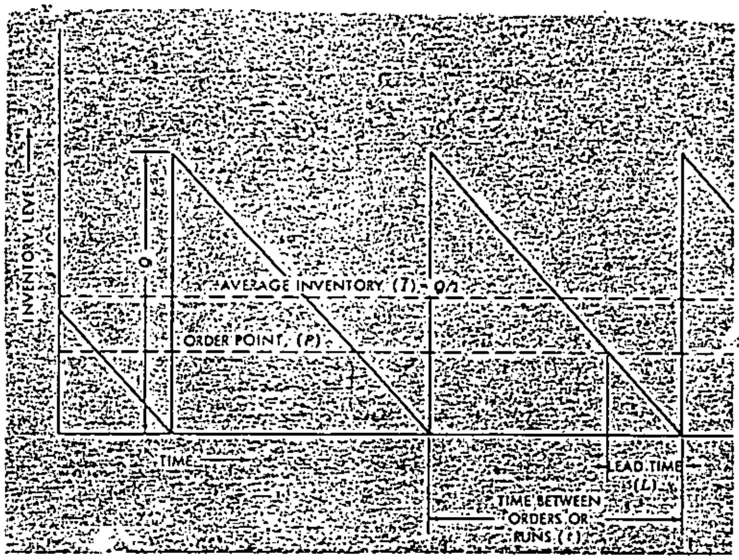

Fig 2.1 Inventory model with instantaneous replenishments.

2.1.1.1 Single Items

Considering only one item in inventory the nature of cost curve is as shown in Fig 2.2.

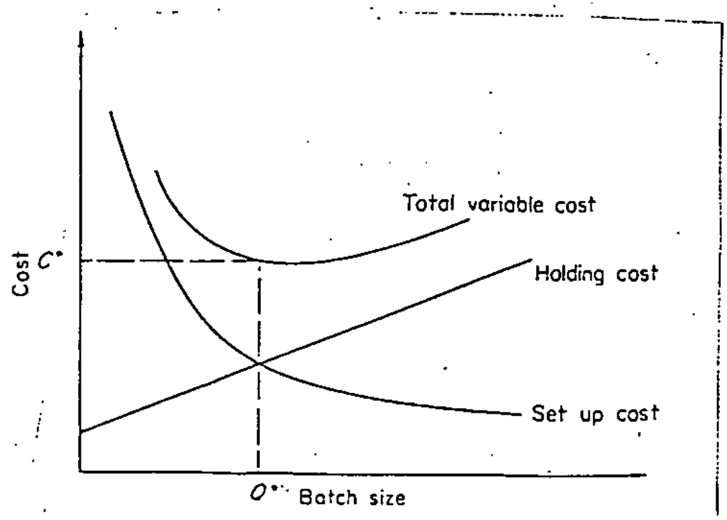

Fig 2.2 Inventory cost versus quantity ordered.

Here the assumptions are :

1. Constant demand rate over the time
2. Infinite time horizon(Cycles are repeated)
3. Ordering cost is constant for every order(includes set-up cost)
4. Instantaneous replenishment.
5. Lead time is constant.

The Incremental cost, for this case, is given by

$$C = h\frac{Q}{2} + k\frac{\beta}{Q} \tag{2.1}$$

Order quantity to minimize C, is

$$Q^* = \sqrt{\frac{2k\beta}{h}} \tag{2.2}$$

and corresponding cycle time,

$$t^* = \sqrt{\frac{2k}{h\beta}} \tag{2.3}$$

where h is the holding cost per item

k is the procurement , and

β is the consumption rate

Geisler has further extended the formula to allow for an interest rate per unit time 'i' on the capital employed. The adjusted formula is then given by ,

$$Q^* = \sqrt{\frac{2k\beta}{h+iCp}} \qquad (2.4)$$

where Cp is item cost per unit (or unit price).

Wild and Buffa[9] have incorporated the buffer stock to obtain the same value of Q^* but then C changes and is given by

$$C = \sqrt{2k\beta h} + h\beta \qquad (2.5)$$

where B is the designated buffer stock and the average stock level is given by $B+Q^*/2$.

Buffa[9], Gupta & Hira[10] have modified the model with the inclusion of shortage cost. Fig 2.3 displays the graphical structure of the model.

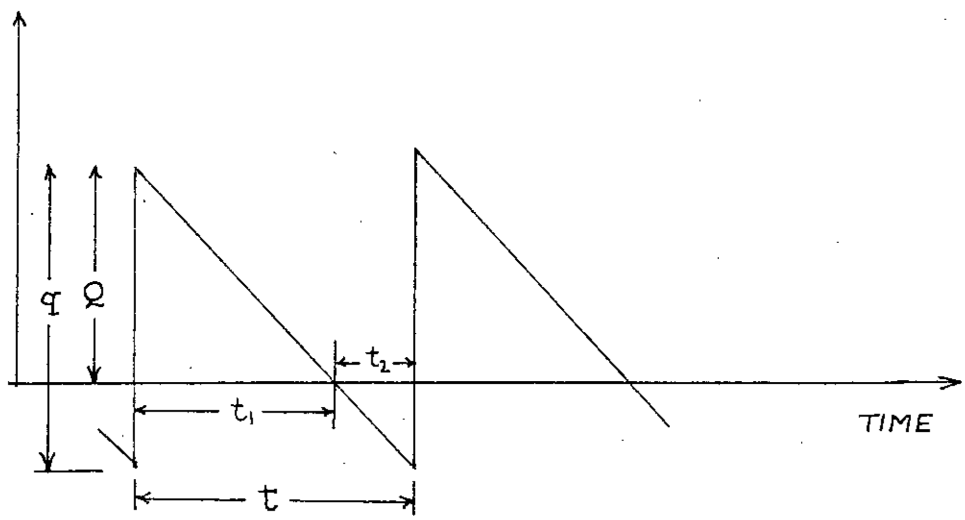

Fig 2.3 Inventory model with shortage and uniform usage.

Here the total average inventory cost during the time 't' is given by

$$C = \frac{1}{t}\left[\frac{1}{2} hQt_1 + \frac{1}{2} z(q-Q)t_2\right] + \frac{k}{t} \qquad (2.6)$$

where 'q' is the lot size of purchased items and

'Q' is the quantity of items held in stock or the level of stock.

The receipt of inventory raises the order level to only Q because the difference q- Q is assumed to meet the back orders instantaneously.

The optimum value of q is given by

$$q^* = \sqrt{\frac{h+z}{z}} \sqrt{\frac{2k\beta}{h}} \qquad (2.7)$$

and cycle time

$$t_o = \sqrt{\frac{h+z}{z}} \sqrt{\frac{2k}{h\beta}} - \frac{q^*}{\beta} \qquad (2.8)$$

2.1.1.2 Several Items

Naddor and Wild have discussed the situations of multi-item ordering and replenishment. Here the scheduling period 't' is same for all the items and is taken to be the least of scheduling periods of item under considerations. The cost

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equation then is given by

$$C(t) = \frac{\sum_{i=1}^{m} h_i \beta_i t}{2} + k/t \qquad (2.9)$$

when m is the number of items.

The optimum lot size for the ith item is,

$$q_i^* = \beta_i * \sqrt{\frac{2k}{h_i \beta_i}} \qquad (2.10)$$

It is assumed that ordering cost k remains constant

Gupta & Hira have cited two corollaries to this simple model.The first corollary undertakes linear function for set-up cost which is given by $k=k1+bQ$. k1 being the arbitrary constant and b the set up cost per unit item. It has also been proved that there is no change in optimum order quantity produced as a result of change in the set up cost. pp;The second corollary determines the Reorder point given by $P=B+L\beta$ where B stands for buffer stock and L for lead time. As soon as the level of inventory reaches the point P, fresh order is issued for replenishment. The level of inventory, here, is continuously observed until the reorder point is reached. Hence this economic lot size model is also called continuous review model.

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2.1.2 Models with Uniform Replenishment Rates

Buffa, Gupta & Hira and Naddor have discussed the optimum lot size problems when items for production are delivered to the stock continuously till the optimum batch size is achieved. These are the models with uniform replenishing rates (Fig 2.4).

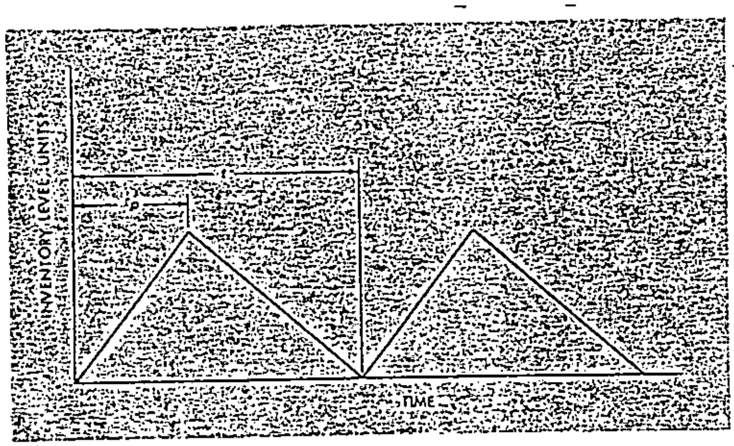

Fig 2.4 Inventory models with uniform replenishing and usage rates.

Here the Optimal Quantity,

$$q^* = \sqrt{\frac{2k\beta\ \alpha}{h(\alpha-\beta)}} \qquad (2.11)$$

α being the production rate and β the consumption rate.

The assumptions for this model are:

1. Constant demand
2. Constant cycle time
3. Constant production rate.
4. Greater production rate than the consumption rate
5. Constant holding and set-up cost.
6. No shortage.

Gupta & Hira have extended the formulation by considering the cases where $\alpha=\beta$ and $\alpha=\infty$. It has been added that there is no holding when $\alpha=\beta$ and ultimately total incremental cost equals zero. The model reduces to elementary EOQ purchase model when $\alpha=\infty$.This is the condition when the second term under the square root in equation 2.11 becomes unity. Gupta & Hira have gone further to include shortage cost in these production run models.

Wild has included buffer stock 'B' while discussing lot size for production runs. Under this condition optimum quantity in stock Q^* remains the same while total cost per unit of time is given by

$$C = \sqrt{2k\beta h(1-\beta/\alpha)} + h\beta \qquad (2.12)$$

Buffa has further discussed the case of multi-item production runs when they are manufactured on the same equipment. The constraint is then the availability of time-shared equipment. Here a cycle length (the inverse of optimum number of production runs N^*) is determined.The criterion for optimality is the minimum total cost. The cost C for m products is then the sum of machine set-up costs and holding costs in the same time period (e.g. year etc.)

$$C = N \sum_{i=1}^{m} k_i + \frac{1}{2N} \sum_{i=1}^{m} h_i D_i (1-\beta_i/\alpha_i) \qquad (2.13)$$

D_i is the total demand of each item 'i' for the fixed time period (e.g. annual etc.). 'N' designates the number of runs. The optimum number of production run is thus obtained for minimum C and is given by,

$$N^* = \sqrt{\frac{\sum_{i=1}^{m} h_i D_i (1-\beta_i/\alpha_i)}{2 \sum_{i=1}^{m} k_i}} \qquad (2.14)$$

and number of each item produced per run $Q_i = D_i/N^*$

Hence substituting N^* from equation 2.14 to equation 2.13, Total cost, which is the optimum, is given by:

$$C = \sqrt{2 \sum_{i=1}^{m} k_i \sum_{i=1}^{m} h_i D_i (1-\beta_i/\alpha_i)} \qquad (2.15)$$

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2.1.3 *Periodic Inventory System*

Naddor has analysed various inventory situations with single and several items. Here a prescribed scheduling period (t_p) is taken to determine the order level by balancing shortage and holding costs.

2.1.3.1 *Single Item*

The following two figures, Fig 2.5 and Fig 2.6, describes the cases of single item system when the order level is greater than the prescribed order quantity and when it is less than the quantity respectively.

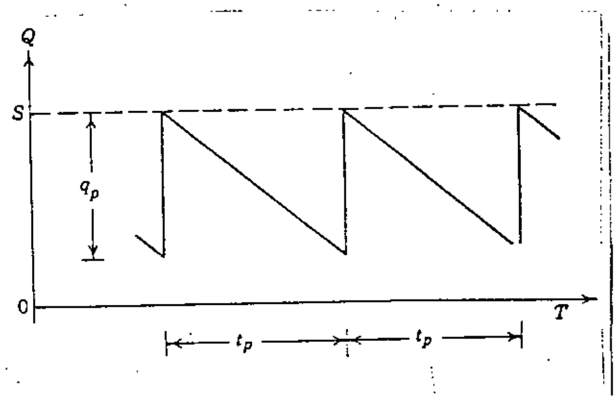

Fig 2.5 System with prescribed scheduling period, $S>q_p$.

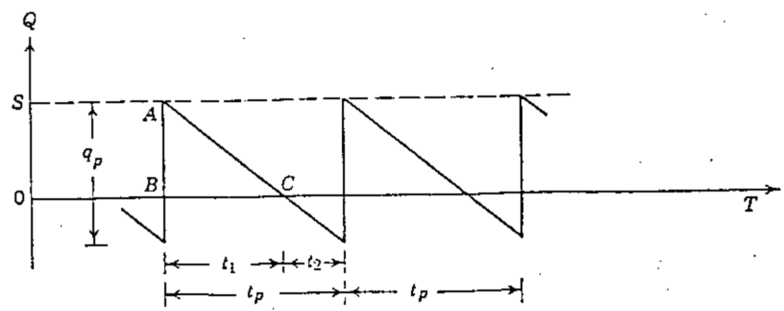

Fig 2.6 system with prescribed scheduling period, $0<S<q_p$.

The assumptions that have been taken here are:

1. Constant rate of demand (β)
2. Prescribed scheduling period (t_p)
3. Replenishment rate is infinite
4. No lead time considerations
5. Unit shortage and carrying costs are constant.
6. Shortage is in time and item quantity units.

In this case the total cost is given by :

$$C = \begin{cases} \dfrac{hS^2}{2q_p} + \dfrac{z(q_p - S)^2}{2q_p} & ; \quad 0<S<q_p \\[2ex] h\left(S - \dfrac{q_p}{2}\right) & ; \quad S>q_p \end{cases} \tag{2.16}$$

where q_p is the lot size for prescribed scheduling period,

S is the maximum order level of the stock and

h is the item holding cost.

The variable subject to control, i.e. the optimal order level S, for minimum cost is

$$S^* = q_p \frac{z}{h+z} \tag{2.17}$$

and the minimum cost is given by

$$C = \frac{1}{2} q_p \frac{hz}{h+z} \tag{2.18}$$

z is the cost for incurring shortage.

Naddor extended the result to include those shortage costs which depend upon the item shortage quantity and not on the duration of shortage period only. That is, if y quantity of units fall short at the end of the prescribed scheduling period, this would cost an amount zy. Here the optimal level has been given as

$$S_o^* = \frac{\beta z}{h}, \text{only when } S_o^* < q_p$$

$$\text{or if } \frac{\beta z}{h} < q_p$$

$$= q_p \quad \text{otherwise} \tag{2.19}$$

Here it is interesting to compare equation (2.19) with the corresponding solution of order-level system given by equation (2.17) This literature has not elaborated the production run

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models for order level systems, but has suggested similar kind of treatment as that for lot-size system of production runs.

Gupta and Hira have also determined the optimum order quantity for a fixed review period 't'. Here set-up cost per unit time k/t is constant and hence is not to be considered in the incremental cost equation. Fig 2.7 shows graphically the structure of a fixed review period system.

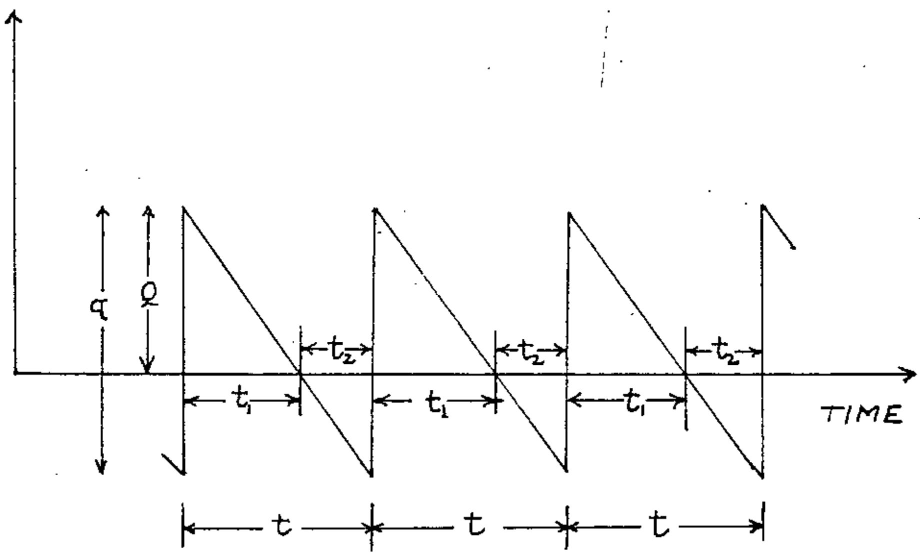

Fig 2.7 Fixed review period and order quantity.

In this model total average cost per unit time is given by

$$C = \frac{1}{t}\left[\frac{1}{2}hQt_1 + \frac{1}{2}z(q-Q)t_2\right] \qquad (2.20)$$

when optimum quantity

$$Q^* = \frac{z}{h+z}\ \beta t$$

The literature [4] has extended the model for the case where production runs are present.

2.1.3.2 Several Items and Limited Storage Facilities.

The cost equation for 'm' items , in order level systems with fixed review period and prescribed lot size has been given by Naddor.

$$C(S_1, S_2, S_3, \ldots\ldots. S_m) = \frac{\sum_{n=1}^{m} h_n S_n^2 + z_n (q_n - S_n)^2}{2q_{pn}} \tag{2.21}$$

$S_1, S_2, \ldots\ldots. S_m$ are stock levels of item 1,2,.......m and q_{pn}, h_n, z_n, S_n, b_n designates respectively the prescribed lot size, unit carrying cost, unit shortage cost, order level, unit space occupied by the nth item.

The total available space for all 'm' items is H. Hence S_n are constrained by

$$\sum_{n=1}^{m} b_n S_n \leqslant H \tag{2.22}$$

If the stock level S_n^* obtained from equation(2.17) without considering space constraint, H do not satisfy equation(2.22), Lagrangian Multiplier technique has been used to find the following expression for optimal order levels, given by

$$S_{no}^* = q_{pn} \frac{z_n - g_o b_n}{h_n + z_n}$$

$$\text{where } g_o = \frac{\displaystyle\sum_{n=1}^{m} \frac{z_n b_n q_{pn}}{h_n + z_n} - H}{\displaystyle\sum_{n=1}^{m} \frac{b_n q_{pn}}{h_n + z_n}} \qquad (2.23)$$

2.1.4 Models with Price Breaks

The previous models deal with policies where the cost properties remain fixed. But Naddor, Wild, Buffa[11], Eilon[12] have discussed the effect of price break on lot size for replenishment of inventories. Here the classical model is modified so as to include the price or value of an item which changes with the increase of stock. Fig 2.8 shows the typical nature of this kind of models.

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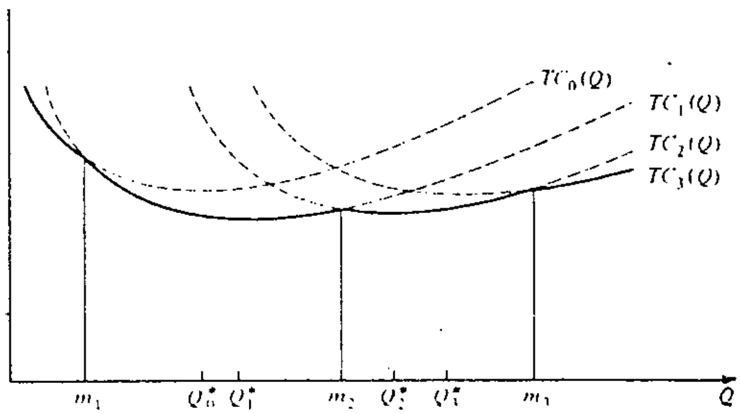

Fig 2.8. Total cost of a system with discrete quantity discount

.pp; For these models with price breaks the total incremental cost is given as:

C = (Annual cost of placing order + annual purchase cost of items + annual holding cost of inventory)

$$C \quad = k \frac{D_1}{Q} + CpD_1 + Cp \frac{Q}{2} F_H \qquad (2.24)$$

where F_H is the fraction of inventory value and is equal to h/C_p.

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The optimum lot size is given by

$$Q^* = \sqrt{\frac{2kD_1}{CpF_H}} \tag{2.25}$$

and minimum Cost

$$C = \sqrt{2kCpF_H D_1} + CpD_1 \tag{2.26}$$

All these equations (2.24),(2.25),(2.26) can be employed in a sequential decision system to determine the economical quantity to be produced involving price breaks. Buffa[9] has drawn a decision flow chart for the models with 3(three) price breaks and has suggested that it can be extended to more price break situations.

2.1.5 Multi-item Ordering System

Naddor has considered a system in which ordering cost depends on the number of item on the order.The case considered takes the ordering cost

$$k = k_1 + k_2 m$$

where k_1, k_2 are the constants and m is the number of different items under consideration.

If t is the length of time between consecutive order, and t_j is the length of the time elapsed between orders for item j.

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Then the ratio $t_j/t=R_j$ remains a positive integer where $R_j=1,2,3,\ldots\ldots$ is in accordance to each item considered in the model. As for example, if item 'j' is ordered every $t_j=tR_j$ units of time, its lot size would be

$$q_j = t_j\beta = tR_j\beta$$

Here the assumptions are:

(i) Constant demand rate

(ii) Constant carrying cost

(iii) R_j is an integral value.

Two cases arise:

1) <u>When scheduling period is prescribed(t_p)</u>

The total cost of the inventory system here is given by

$$C(R_j) = \frac{1}{2} t_p \sum_{j=1}^{m} k_j \beta_j h_j + \left(k_1 + k_2 \sum_{j=1}^{m} \frac{1}{R_j}\right)/t_p \tag{2.27}$$

$$R_j = 1,2 \ldots\ldots\ldots\ldots$$

The function $C(R_j)$ is solved by taking R_j as continuous variable. This gives the approximate solution:

$$R_{jo} \approx \frac{\sqrt{2k_2 / t_p}}{\sqrt{\beta_j b_j}}, \quad R_{jo}=1,2 \ldots\ldots\ldots \tag{2.28}$$

and the corresponding minimum cost is then approximately,

$$\text{Minimum } C \approx \sqrt{2k_2}\ \sum_{j=1}^{m}\sqrt{b_j h_j} \ + \ \frac{k_1}{t_p} \qquad (2.29)$$

2) <u>When the ratio K_j is prescribed</u>

The optimal scheduling period t^* is given by

$$t^* = \sqrt{\frac{2(k_1 + k_2 \sum_{j=1}^{m} (1/R_j)}{\sum_{j=1}^{m} \beta_j b_j R_j}} \qquad (2.30)$$

While the corresponding minimum cost is

$$\text{Minimum } C = \sqrt{2(k_1 + k_2 \sum_{j=1}^{m} (1/R_j) \sum_{j=1}^{m} \beta_j b_j R_j} \qquad (2.31)$$

The other factors like price change anticipation, various carrying costs, systems for perishable goods, expensive item storage etc. have also been discussed.

2.1.6 Cases of Non-Uniform Demand

The demand pattern affects the inventory policy decisions. There are demands which are non-uniform. Various demand features can be exhibited by power demand pattern as in Fig 2.9 and has been illustrated in literature [4].

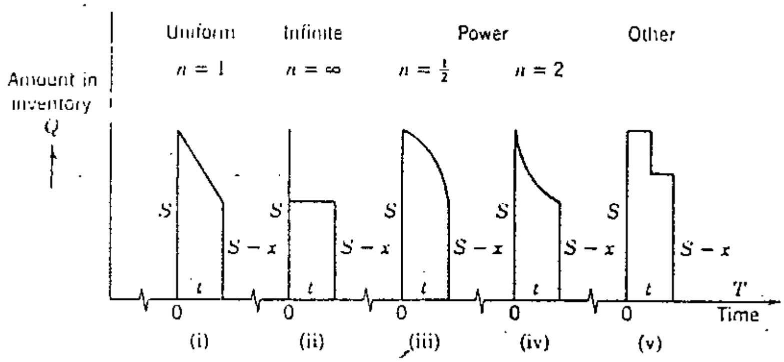

Fig.2.9 Various demand patterns

Here, the inventory at the beginning is S, the length of period is t units of time when the demand size is x'. This general class of the pattern can be represented by the amount of inventory at T, given by:

$$Q(T) = Q_o - x' \sqrt[n]{T/t} \qquad (2.32)$$

where n is the demand-pattern index, Q_o is the amount of inventory at the beginning of the period.

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Naddor has examined both lot size system and order level system with demand being non-uniform.

i) In the lot size system, there is a basic prescribed period v during which a power demand patterns with index n exists. Fig 2.10 and Fig 2.11 illustrates the situation.

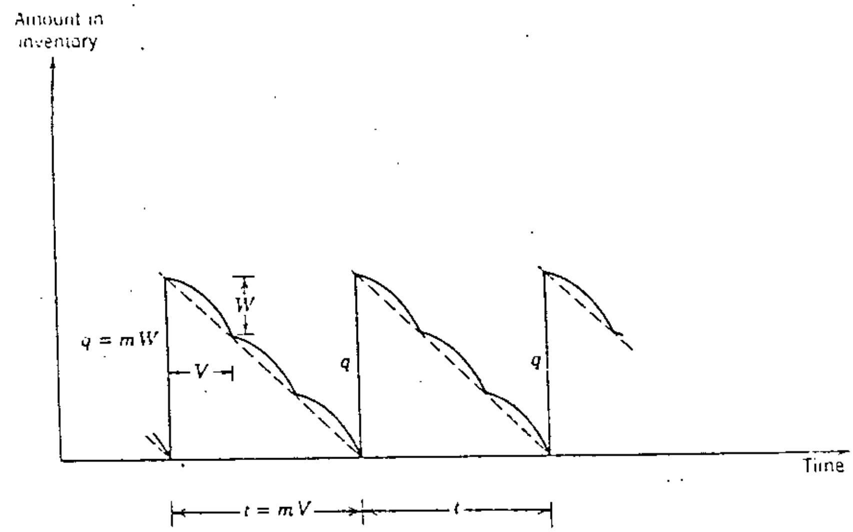

Fig 2.10 System with power demand patterns

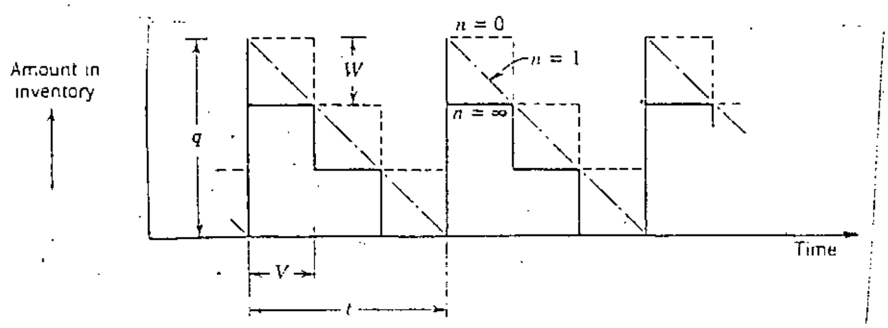

Fig 2.11 System with specific power indices.

If W be the known demand during the period v, and m be a number such that

$$q = mV$$

$$\text{and } \beta = W/V$$

then the total cost is given by

$$C(Q) = \frac{hq}{2} + \frac{h(W\ 2)(1-n)}{1+n} + \frac{k\beta}{q} \qquad (2.33)$$

where Q = W,2W,3W....................

If the lot size is for discrete units, the optimal values of lot size q^* is given

$$q^*(q^*-W) < \frac{2\beta k}{h} < q^*(q^*+W) \qquad (2.34)$$

ii) In order level system, where the replenishments maintain a certain

level of inventory;

optimal level

$$s^* = q_p \sqrt[n]{\frac{z}{h+z}} \qquad (2.35)$$

and the minimum cost

$$C = z\, q_p \left(1 - \sqrt[n]{\frac{z}{h+z}}\right) \frac{n}{n+1} \tag{2.36}$$

where q_p is the prescribed lot size.

2.1.7 Non-uniform Demand Rate

Deterministic system with non-constant demand rate also exists.

In this case the demand varies and the variability is known. The demand rate may be $\beta = aT$, where 'a' is a known constant, T is a period in time units. The planning horizon P may be divided into equal sub-periods , where x_i may be demand at the beginning of each sub-period. The x_i's may not be equal. There can be many other systems where a non-constant demand situation exists.

Gupta & Hira have designed an optimum lot size for a non-constant demand situation, where total demand is D_1 for a planning horizon P. Fig 2.12 shows the inventory system where demand does not remain constant in the planning horizon.

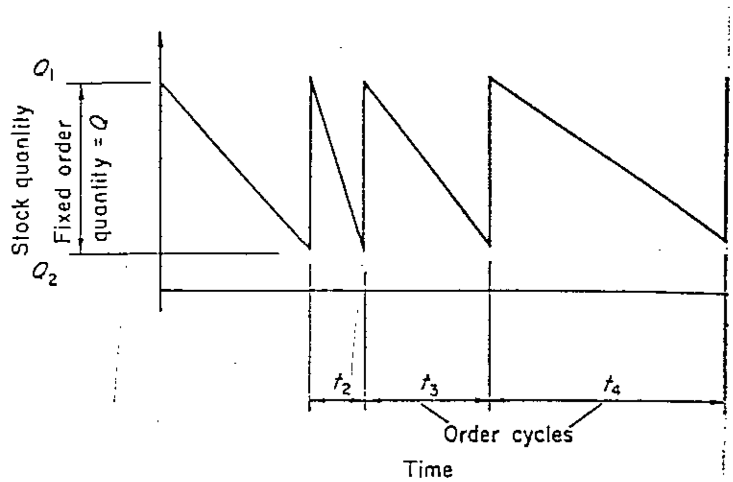

Fig 2.12 System with non-uniform demand rate.

Here the optimum lot size

$$q^* = \sqrt{\frac{2k(D_1\ P)}{h}} \tag{2.37}$$

where K is the set-up cost, and number of runs N=P/Q

Minimum total cost

$$C(Q) = \sqrt{2hk(D_1/T)} \tag{2.38}$$

2.2 Probabilistic Situations

Most of the inventory situations have demands which are not known with certainty, but can be estimated . Thus various probabilistic models have been developed. Here the consideration of lead puts a considerable effect on the system.

2.2.1 Scheduling Period System.

Constant scheduling period system reviews stock at a predetermined time interval. Either the interval is prescribed or its optimum value is deduced. In the literature[4] Naddor has described the process for finding optimum scheduling period for a prescribed order level and vice versa. Fig 2.13 gives a system with prescribed order level.

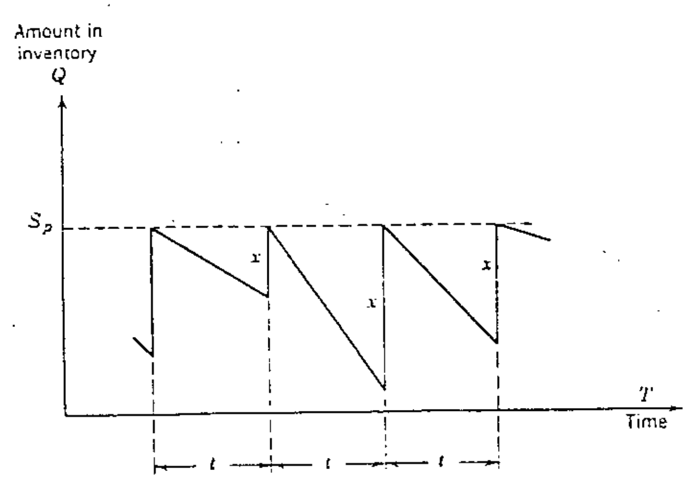

Fig 2.13 The Probabilistic Scheduling period system.

For a certain period, if $A(t)$ is the ratio of the rates of maximum demand $x_{max}(t)$ to average demand $x(t)$, (i.e. $A(t)=x_{max}(t)/x(t)$); two cases may be analysed within the system when lead time is insignificant.

1. When $A(t)= G$ (a constant)

In this case the ratio of maximum demand to average demand during any period t is assumed to be constant.

Solutions are;

$$t^* = \sqrt{\frac{2k}{h\beta(2G-1)}} \tag{2.39}$$

$$S_p = G\sqrt{\frac{2k\beta}{h(2G-1)}} \tag{2.40}$$

$$\text{Minimum } C = \sqrt{2hk\beta(2G-1)} \tag{2.41}$$

Here $\beta = x(t)/t$

When $G=1$ the case become that of deterministic demand situation.

2. When $A(t)=1+b/t$

In reality $A(t)$ would generally depend upon 't' and larger the 't' is, the smaller is the ratio.

The solutions given for this case are;

$$t^* = \sqrt{\frac{2k}{\beta h}} \qquad (2.42)$$

prescribed order level

$$S_p = \sqrt{\frac{2k\beta}{h}} + b\beta \qquad (2.43)$$

and optimal cost

$$C = \sqrt{2hk\beta} + hb\beta \qquad (2.44)$$

The quantity b may be regarded as buffer stock.

The other procedure to determine optimal level S^*, when scheduling period t_p is prescribed. It is given that for

minimum cost S^* can be obtained from the equation,,

$$\int_0^{S^*} f(x)dx + \int_{S^*}^{\infty} \frac{S^*}{x} f(x)dx = \frac{z}{h+z} \tag{2.45}$$

where f(x) is the probability distribution of demand.

In scheduling period system with significant lead time the quantity ordered brings the total amount on hand and on order to S_p. This quantity arrives at the store after a passage of lead time of L time units. Fig 2.14 shows graphically the system where the lead time is significant and the replenishments are scheduled every 't' units of time.

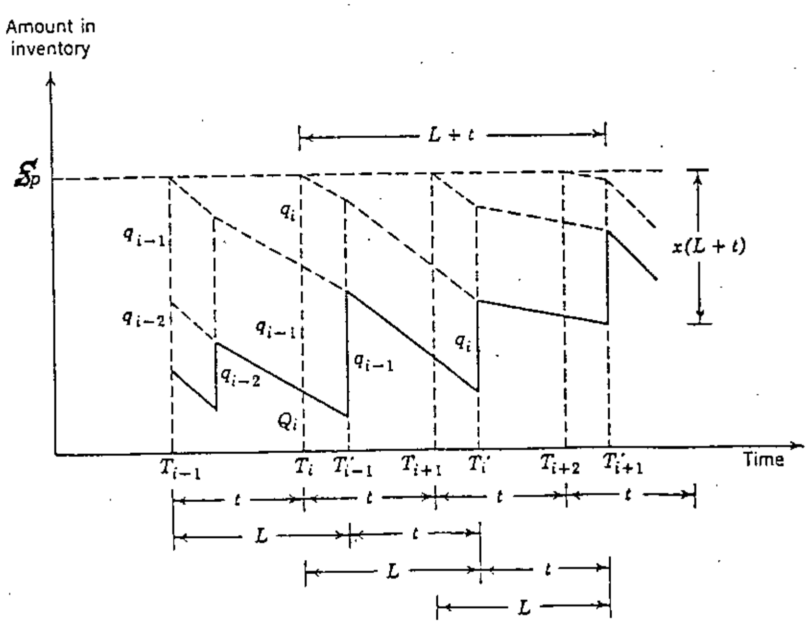

Fig 2.14 Probabilistic system with lead time.

Considering the two cases of A(T) as before (from eqn. 2.39 to eqn.2.44),it is found:

1) when A(T)=G, solutions are;

Optimum

$$t_o = \sqrt{\frac{2k}{\beta h(2G-1)}} \tag{2.46}$$

for prescribed level of stock

$$S_p = \beta LG + G\sqrt{\frac{2k\beta}{h(2G-1)}} \tag{2.47}$$

and the corresponding optimum cost is

$$C = hL(G-1)\beta + \sqrt{2hk\beta(2G-1)} \tag{2.48}$$

2) When A(T)=1+b/T, solutions are ;

Optimum

$$t^* = \sqrt{\frac{2k}{\beta h}} \tag{2.49}$$

prescribed stock level

$$S_p = (b+L)\beta + \sqrt{\frac{2k\beta}{h}} \tag{2.50}$$

and minimum

$$C = \sqrt{2hk\beta} + b\beta \tag{2.51}$$

Here it is to be noted that the cost of the system does not depend on the lead time.

In another procedure the order level S is determined for a prescribed time interval t_p. The optimum S^*, in this case, can be obtained from the equation:

$$\int_0^{S^*} \left[\int_0^{S^*-v} f(x)dx + \int_{S^*-v}^{\infty} \frac{S-v}{x} f(x)dx \right] h'(v)\, dv = \frac{z}{h+z} \qquad (2.52)$$

Where v and x denote the demand sizes during the lead time and scheduling period respectively, $h'(v)$ is the probability density of demand during the lead time, $f(x)$ is the probability density of demand during the scheduling period.

2.2.2 Reorder Point Systems

While discussing probabilistic situation, the other main division that is being frequently encountered is the reorder point situation. The inventories are replenished whenever the amount on hand and on order are equal to or below the reorder point. Here the decision variable is the Reorder Point i.e. when to place an order. Lot size and order levels may be considered separately under this system. Considering lead time playing significant role in the analysis, both discrete and continuous cases of stock levels are included under such conditions. Detailed analysis of this kind of systems have been covered in the literatures [4]&[13].

Wild has considered the use of buffer stock in situations of uncertainty in usage rate. Here determination of reorder level under various conditions has been discussed elaborately.

2.2.3 Significance of Lead Time

The lead time is the time interval between placing a order for inventory and arrival of goods for the same. The following analysis of total holding cost considering lead time gives an insight into the typical probabilistic inventory problems where it has a significant contribution. It shows how the length of lead time affects the inventory cost.

2.2.3.1 Discrete Stock level and continuous demand

It has been noted that the quantity in stock at any time depends upon the inventory order level S, demand x during time t_p and demand y during the lead time L. Here 3(three) different cases may occur depending upon the relative magnitudes of S, x and y. The period t_p starts after the lead time L has elapsed. Decision taken in the beginning i.e. before the elapse of lead time L, affects the situation during time t_p. Here the objective remains as to minimize the expected total cost during t_p. The 3(three) different cases are:

i) The prescribed time t_p starting with an inventory S-y and ending with an inventory S-y-x. Fig 2.15 depicts the model.

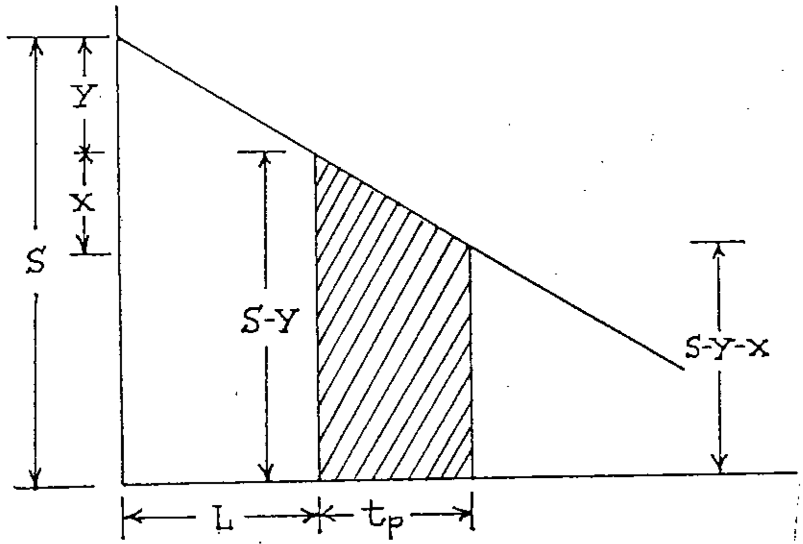

Fig 2.15 Replenishment at no shortage.

$$\text{Total holding cost} = h \times \text{hatched area}$$

$$= h(((S-y)+(S-y-x))/2)*t_p$$

$$= h((S-y-x)/2)*t_p \qquad (2.53)$$

S is the discrete stock level and

h is the holding cost per item per unit time.

x is the demand during prescribed time t_p with probability p_x.

y is the demand during lead time L with probability p_y.

ii) The prescribed time t_p starting with inventory S-y and ending with a shortage x+y-S. The situation is represented graphically in Fig 2.16.

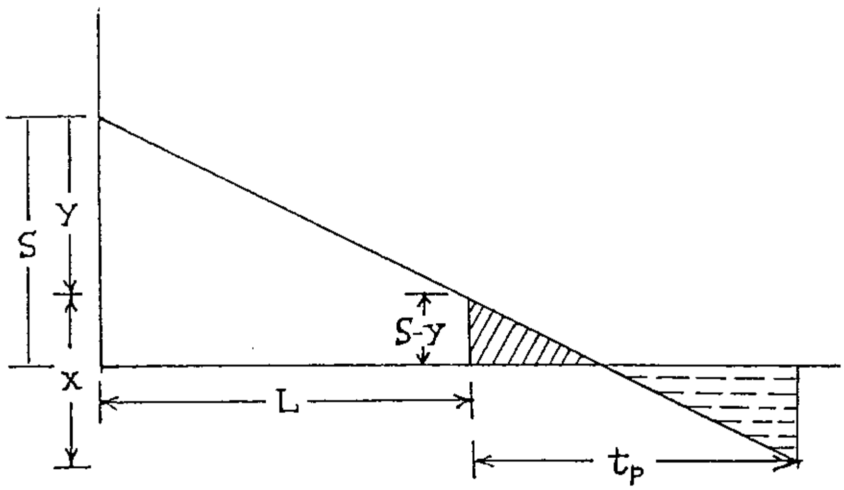

Fig 2.16 Replenishment occuring before shortage.

Total cost = h x hatched area

$$=h((s-y)^2/2x)t_p+(z(x+y-S)^2/2x)t_p$$

$$= (1/2x)[h(S-y)^2 +z(x+y-S)^2]t_p \qquad (2.54)$$

iii) Time t_p starting with a shortage y-S and ending with a shortage x+y-S. Fig 2.17 shows the model.

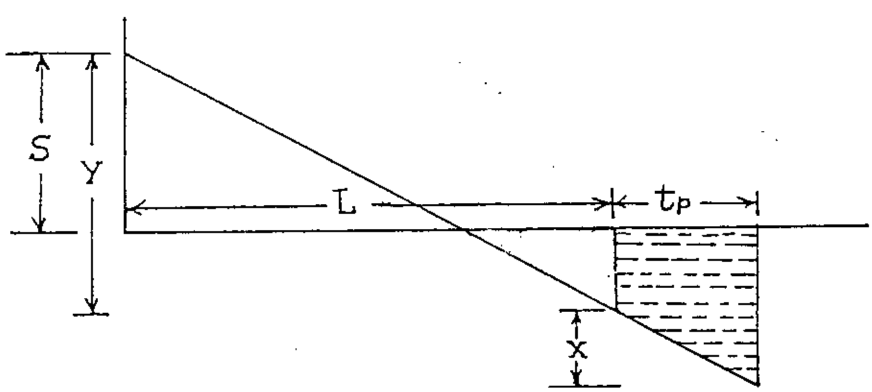

Fig 2.17 Replenishment occuring after the beginning of shortage

The total cost in this case is given by

$$\text{Total Cost} = z\,\frac{(y-S)+(x+y-S)}{2}\,t_p$$

$$= z(x/2+y-S)\ t_p \tag{2.55}$$

2.2.3.2 Continuous Stock Level and Continuous Demand

The model, in this case, is similar to that of the previous one with the difference that p_x is replaced by $f(x)dx$ and p_y is replaced by $g(y)dy$. Also the double integrals replaces the summation symbols of the previous model of discrete stock level case. The general expected cost equation for order level, in this case, is given by,

$$\begin{aligned} C(S) = & \int_0^S g(y)d(y) \int_0^{X-Y} h(S-y-\frac{x}{2})f(x)dx \\ & + \int_0^S g(y)d(y) \int_{S-Y}^{\infty} \left[\frac{h(S-y)^2}{2x} + Z\,\frac{(x+y-S)^2}{2x} \right] f(x)dx \\ & + \int_0^S g(y)d(y) \int_0^{\infty} z\ (y-S+\frac{x}{2})f(x)dx \end{aligned} \quad \text{........}(2.56)$$

Where $f(x)$ and $g(y)$ are the probability functions of demand during prescribed time t_p and lead time respectively. The optimum order level can then be obtained from following equation :

$$\int_0^{S^*} g(y)d(y) \int_0^{S^*-y} \left[1 + \frac{S-y}{x}\right] f(x)dx = \frac{z}{h+z} \tag{2.57}$$

2.3. Multi-Echelon Model:

Some work has also been done on multi-echelon system in which certain places serve as stockage points(upper echelon) for resupplying other points acting as demand points(lower echelon). An optimal solution for two-echelon system is fixed with the following assumptions:

a) Demand is random as characterized by the density function f(x) and demand only occuring at the lower-echelon points, which has only one outlet.

b) There is a general ordering cost function.

c) The cost of transportation is C.q, where q is the amount shipped from upper echelon to lower echelon.

d) Back logging of excess demand is done at each echelon.

if Q_1 = stock at the lower echelon

Q_2 = stock at the upper echelon (defined as stock at lower and upper echelons plus stock in transit to the lower echelon).

Then the system shortage and holding costs is $C_1(Q_1)+C_2(Q_2)$, when $C_1(Q_1)$ and $C_2(Q_2)$ can be determined from

$$C(Q) = h\int_0^Q (Q-x)f(x)dx + z\int_Q^\infty (x-Q)f(x)dx \qquad (2.58)$$

The assumptions mentioned above permits the formulation of dynamic model. If set-up cost in ordering is allowed to be considered, stock level-reorder point policy is obtained as an optimal rule.

2.4 *N-Period problem*

Problem arises when inventory levels are adjusted for each of the N-periods into the future. This problem leads to the dynamic programming formulation. When the mean demand changes over time, ordering lot size or production rate is also changed. Dynamic programming takes a planning horizon of N-periods and determines the value of ordering quantity or the production rate. The key of the solution of such dynamic programming problems is what Bellman calls "The principle of optimality", which is stated as "a policy which is optimal over its entire time horizon period is optimal starting at any intermediate point and operating to the end of the problem[14]. An optimal policy must have the property that regardless of the route taken to enter a particular state, the remaining decision must constitute an optimal policy for the leaving that state.

The computation method is to start from the end. Here, the policy variables are x_t and i_t.The production or order quantity in period 't' is denoted by x_t and inventory at the end of period 't' is denoted by i_t. The objective function is to minimize the total cost

$$C_t\ (x_t, i_t)$$

when the inventory at the end of period t is equal to inventory entering the period plus the production in that period less the demand in period 't' or symbolically

$$i_t = i_{t-1} + x_t - D_t$$

While characterizing dynamic phenomenon of inventory model, Wagner[15] has used an indexing system where subscript '1' denotes the end of the horizon while the subscript 'n' denotes the beginning. The other notations are as follows.

d_n= The demand requirement in that period when there are 'n' more period to go.

$C_n(x,j)$= Cost of producing or purchasing 'x' items and having 'j' items of ending inventory in that period when there are 'n' more periods to go.

$f_n(i)$= Minimum policy cost when entering inventory is at level L with 'n' more periods to go.

$x_n(i)$= Production or stock level yielding $f_n(i)$

Fig 2.18 is a network structure resulting from system where periods n is equal to 4(four). This particular system yields four equations of $i_{t-1}-i_t+x_t=D_t$ for each of the period t=1,2,3 and 4

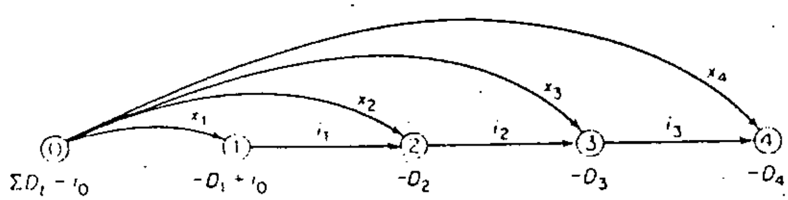

Fig 2.18 Inventory and Production Network

The recursive algorithm can easily be developed after knowing the minimum policy costs for n= 0,1 & 2 and assuming inventory at the end of the horizon to be equal to zero. The period starts to be counted from the end.

i) when $n=0$, $f_o(0)= 0$; inventory at the end of the horizon is zero.

ii) $n=1$, $f_1(i)= C(d_1-i,0)$ for $x=d-i$

Here regardlesss of the specific level of entering inventory i, which is lying between 0 and d_i, the production amount must be d_1-i so that all of the final periods demand is met.

iii) when $n=2$, $f_2(i)=\text{minimum } (C_2(x,i+x-d_2)+f_1(i+x-d2)$

In this case the inventory entering is designated by i, production level by x and the optimal action has already been taken for n=1.

It is to be noted that $i=0,1,2 \ldots\ldots d_1,d_2$ and minimization is over only non-negative integer values of 'x' in the range $d_2-i < x <d_1 + d_2 - i$ and analysis of n=2 may be summarized as

$$f_2(i) = \underset{x}{\text{minimum}} \; [C_2(x, i+x-d_2) + (f_1(i+x-d_2))]$$

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Hence the general recursion formula is given by

$$f_n(i) = \underset{x}{\text{minimum}}\ [C_n(x, i+x-d_n)+f_{n-1}(i+x-d_n)]$$

for, $n = 1,2,3 \ldots\ldots\ldots N$ where $i=0,1,2,3\ldots\ldots\ldots,(d_1+d_2+\ldots.d_n)$, and the minimization is over only non-negative integer values of x in the range

$$d_n-i < x < d_1+d_2+\ldots\ldots.d_n-i.$$

Here the only independent decision variable in the recursion is x , since the entering inventory 'i_n' is taken to be a state variable and ending inventory is merely $i+x-d_n$. It is to be noted that $f_o(0)$ and $f_1(i)$ can easily be computed, as has been shown above. It is then straightforward to calculate $f_2(0)$, $f_2(1),\ldots f_2(d_1)$, then $f_3(0), f_3(1),\ldots.f_3(d_1+d_2)$ and continuing successively for larger values of n, eventually to $f_{n-1}(0), f_{n-1}(1),\ldots\ldots.f_{n-1}\ (d_1+d_2+d_3+\ \ldots\ \ldots\ \ldots\ +d_{n-1})$ and finally to $f_{n(i_o)}$. Now, to determine the optimal schedule, it is required to check what production level $x_n(i_o)$ yielded the minimum value $f_n(i_o)$; this is an optimal decision at the start of the horizon. At the next stage the entering inventory level would be $i_o+x_n(i_o)-d_n$. It is then required to find a production level that yields the value for $f_{n-1}(i_o+x_N(i_o)-d_n)$ and so on.

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2.5 Demand Fluctuations in Multi Stage System

Eilon has argued that inventories dampens the effect of demand fluctuation through stages. It has been shown that depending on the level of buffer stock with respect to output, a slight change in demand of final product has a marked effect in the demand of raw material for a multi-stage manufacturing system. An equation has been deduced , where the output at the nth stage is,

$$Q_n = Q\,[1 + x''(1+r)^n] \qquad (2.59)$$

Q being the output at the first stage, r the proportion of reserve stock necessary and x'' is the impulse of demand. Readjusting the equation, policy reserve stock can be calculated as

$$r = \sqrt[n]{\frac{1}{x}\left(\frac{Q_n}{Q} - 1\right)} - 1 \qquad (2.60)$$

It has been observed further that the smaller the reserve stock is, smaller is the effect of fluctuation caused by the chain reaction along the production lines.

Churchman[16] has referred to restrictions of production facilities, storage facilities, time, or money in situations involving more than one product. The literature has termed such inventory models, where restrictions has been introduced, as 'mixed', since they involve allocation(or programming) as well as planning decisions.

chapter 3

MODELS FOR SPARES PROVISIONING

Spare parts requirement are primarily based on system maintenance concept and inventories for it are kept to accomplish unscheduled and scheduled maintenance actions. At each maintenance level, for a particular type of part, quantity of spare items to be purchased and stocked are determined. It is also required to know how often the items are ordered and how much in a particular purchasing transaction. Various models have been developed keeping in consideration the failure rates of the operating unit and repairing characteristics of the spares. Here the case of non-repairable spares with constant and non-constant failure rates are discussed in the following paragraphs. The one particular case of repairable spares provisioning in a constant failure rate condition has been specifically elaborated.

3.1 Constant Failure, Non-repairable Cases.

Considering constant failure rates a model for spare-part quantity determination has been given in reference [1]. Here the expression has been derived from poisson distribution. In finding value for the number of spares, consideration has been given to the desired level of protection(safety factor). This protection level P is the probability of having a spare available when required. The expression is given as

$$P = \Sigma \ R[-K(\ln R)^{n}]/n!$$

where S - number of spares required to be carried in stock

R - the composite reliability

K - quantity of parts of a particular type that has been used.

This protection level P is a hedge against stock-outs. While determining the spare part quantities, importance is given to operational requirements and to the appropriate level of corrective maintenance. High value or high cost items supporting prime equipment components may be handled differently than the low cost ones.Finally a cost optimal policy is required for balance between stock level and cost.

The book by Blanchard & Fabrycky (reference[1]) presents a nomograph, illustrated in Fig 3.1, which simplifies the determination of spare part quantities using the above mentioned model. The nomograph not only simplifies the determination of spare parts requirement, but also provide information that can aid in the evaluation of alternative design approaches in terms of spares, and in the determination of provisioning cycles.

There are two portions of the nomograph. The first one determines the total number of failed parts $K\lambda T$ in a cycle of period T. The second portion determines the number of spares required from the previously determined value of $K\lambda T$ and for the given protection

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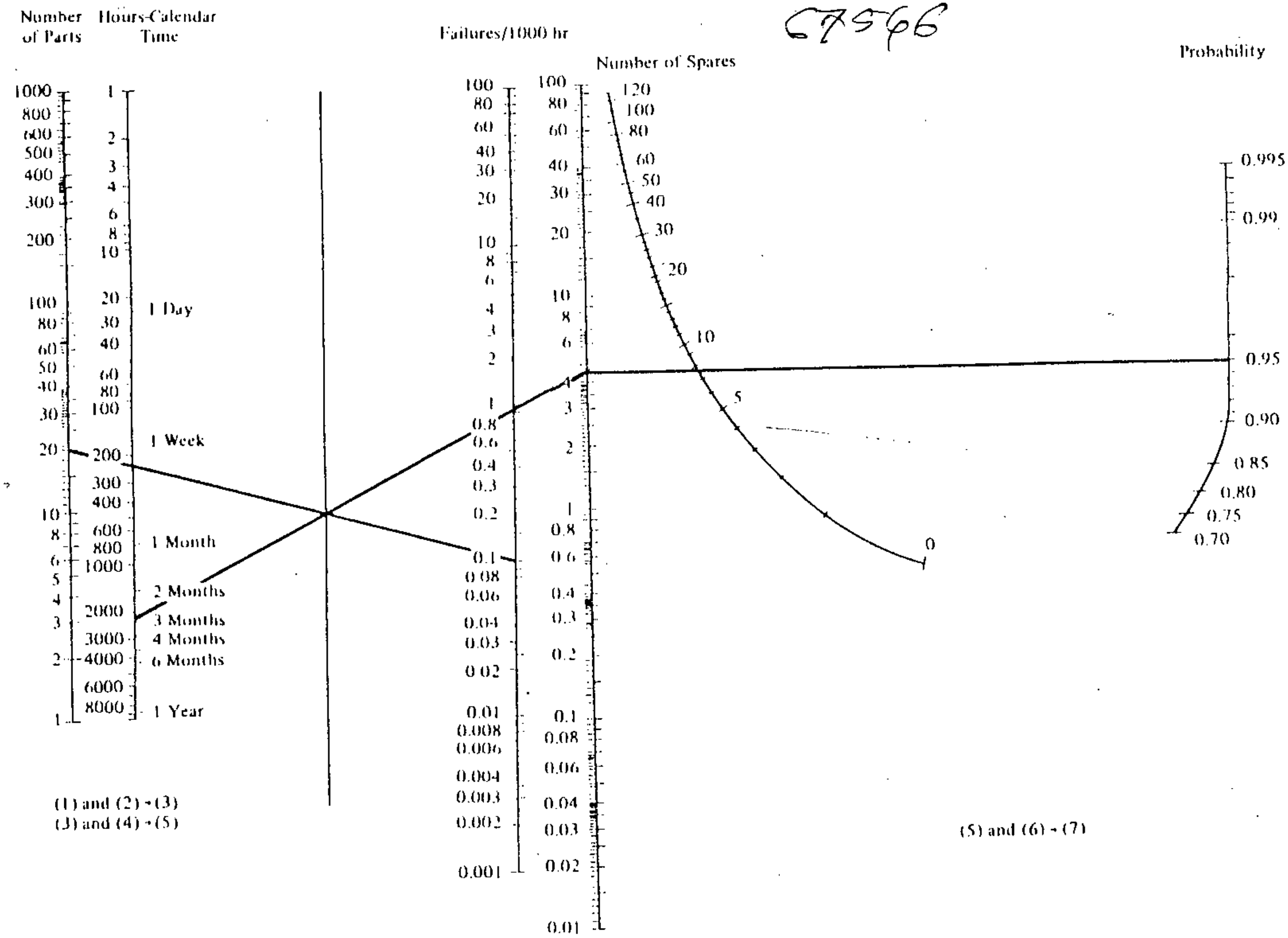

Fig 3.1.1 Spare part requirement NOMOGRAPH. source: Navair 00-65-502/ NAVORD OD 41146, Reliability Engineering Handbook, Naval Air System Command and Naval Ordinance Systems Command, Revised March 1968.

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level P.

3.2 Constant Failure Repairable Case.

The inventory spares which can replace a "failed" or "going to fail" parts in a multi-machine situation is an important aspect of inventory system. A general model in this regard, has been developed in reference [17]. This repairable spare parts provisioning model considers a group of m identical units in operation served by an on-site store containing N spares. Upon failure of a unit, a spare which is in good condition is taken from the store and replaces the machine unit. The possibility of failure of a good spares in the store has also been taken into account. The failed units are sent away to a repair depot and then returned to the store. Should the units failed in quick successsion , the stock of spares may be exhausted causing certain amount of delay. In the long-run each of the 'm' units would experience an unavailability 'U' due to occasional stock-outs.

This model for repairable spare parts derives a mathematical relationship between m,N,U, unit failure rate in operation (λ_1), unit failure rate in storage λ_s, and repair rate μ, which is taken to be 1/T; T being the transit time of spare spent away from the site. A state transition diagram has been used to describe the behavior of a system as failure occurs and subsequent repair is carried out.

3.2.1 Principles of Transition Rate Diagram

The transition rate diagram has been illustrated in Fig 3.2.1. Various states of a system, such as constant failure and repair rates have been presented in the diagram. Upon failure of a unit either in operation or in store, the system moves from its present state to an appropriate one in the next column (level) on the right. But the movement is opposite i.e. from right to left when an item arrives at store from the repair depot.

In the diagram 't' denotes the unit on transition and 'u' denotes the unknown failure. The transition shown by dashed line indicates that a unit when selected at random from store is found 'failed' and hence sent to the repair depot. At the beginning, a state is considered where all 'm' units and all 'N' spares are in a non-failed condition. This is denoted by (00) in the diagram. In these notations, the first digit denotes the total number of failures and also the 'level' number, and the second digit denotes the number of spares failed in store unknowingly. A unit failed in state (00) may enter any one of the two states (10) and (11).

When one of the 'm' operational unit fails, state (10) is reached. The failure unit is replaced by a good spare from the store and the unit itself is placed on transit for repair. Since the failure rate is 'λ' and there are in total m operational units , the transition rate from state (00) to (10) is '$m\lambda$'. In this situation (N-1) good spares remain in store without being failed. On the

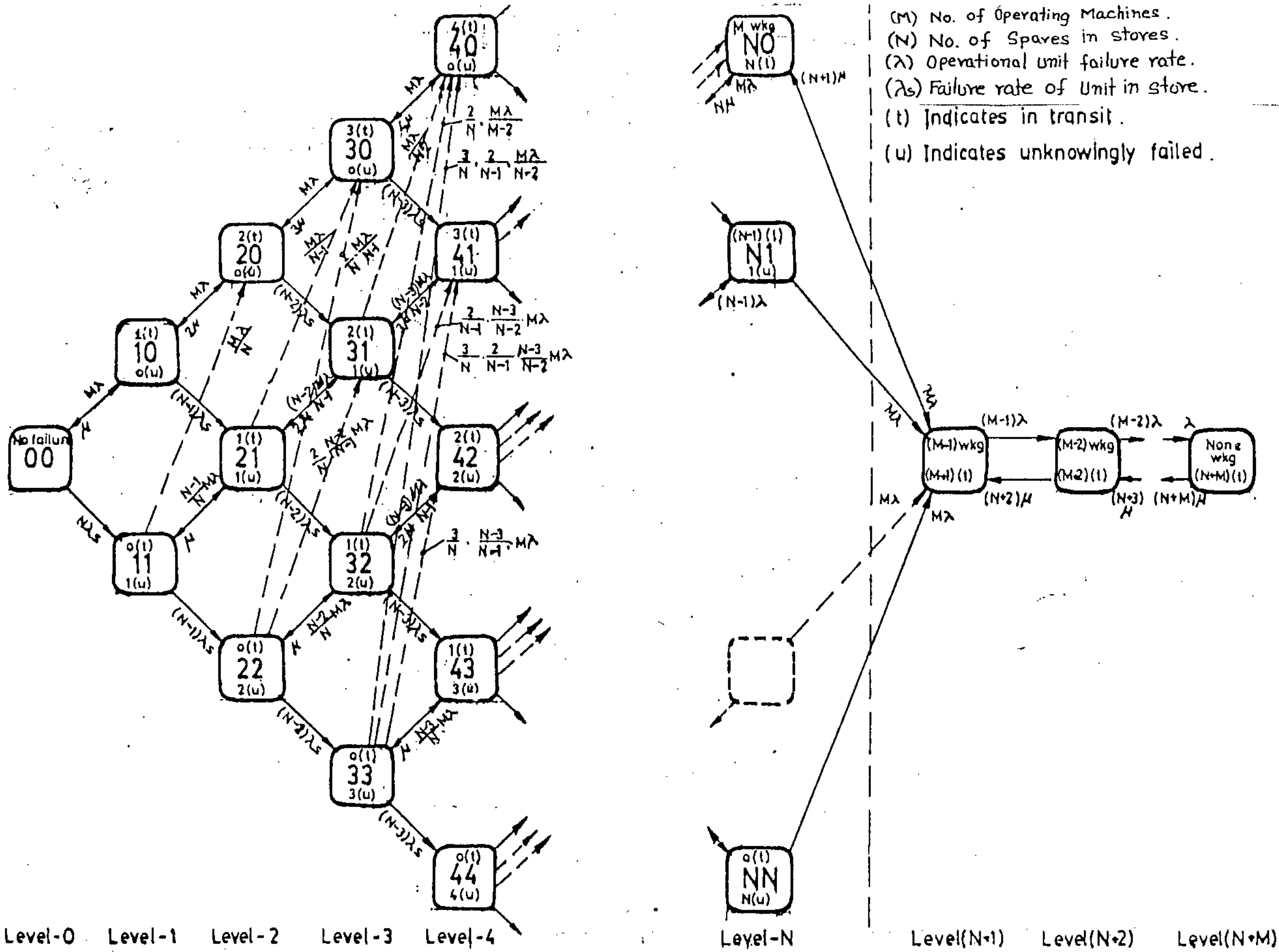

Fig 3-2.1, Transition rate diagram

other hand, state (11) is reached when one of the 'N' spares fails unknowingly in store. The transition rate from the state (00) to the state (11) is $N\lambda_s$, λ_s being the failure rate of spare in store. In this situation there are (N-1) good spare remains in the store and '1' being failed unknowingly. In a similar way, the system can move from (11) to (20),(21) or (22) and so forth. The associated probability of the transition has been shown along with arrows in the Rate Diagram. It 'collapses' to a series of single state when an operational unit fails at any state of level 'N'. Then there remains no more spare available to keep 'm' units operational and so the number of units in operation would be (m-1) while the system crosses the dotted line in the transition rate diagram to enter the (N+1) level.At the level (N+m) the limit of the transition rate diagram would be reached and no other states are assumed to be possible.

In repair transition the movement of states is from right to left, instead of left to right, as repair is carried out. As for example at state (20) the system would return to (10) as soon as the repaired unit is received. The repair transition, in this case, is given by 2μ, μ being the repair rate of each item. Again the repair transition rate from state (N+1) to state (N0) is $(N+1)\mu$. Similarly the other repair transition rates could be established.

The following assumptions have been made in the model;

i) Various parameters λ, λ_s, μ are constants with respect to time.

ii) Defective items are despatched for repair and repaired items are returned to the store as soon as they become ready for purpose.

iii) Repair men are always available for units needing repair.

iv) Units on transit and units discovered as failed are repaired only.

3.2.2 Mathematical Formulation

The transition rates from various states of one level to those of succeeding ones could be established. Some of its value has been shown in Fig(3.2.1). Sets of simultaneous differential equations easily describe the movement between states of the transition state diagram. If $P_{ij}(t)$ denotes the probability of the system to be in state (ij) then $P^*_{ij(t)}$ gives the rate of change of $P_{ij(t)}$, i varying from '0' to 'N+m' and j varying from '0' to 'N'. Hence

$P^*_{ij(t)}=$ Σ [(Probability of possible entering states)*(associated transition rates)]
- Σ [(Probability of possible leaving states)*(associated transition rates)]

Hence the following set of differential equations describes the movement between adjacent states in the transition rate diagram (at any instant)

$$P^*_{00}(t) = \mu P_{10}(t) - (m\lambda+N\lambda_s)P_{00}(t)$$

$$P^*_{10}(t) = 2\mu P_{20}(t)+m\lambda P_{00}(t)-[(m\lambda+(N-1)\lambda_s+\mu]P_{10}(t\ )$$

. . . .

. . . .

$$P^{*}_{N0}(t) = m\lambda P_{(N-1)0}(t) + (1/2)m\lambda P_{(N-1)1}(t)$$
$$+ (1/3)m\lambda P_{(N-1)2}(t)\ldots\ldots\ldots + (1/N)m\lambda P_{(N-1)(N-1)}(t)$$
$$+ (N+1)\mu P_{(N+1)}(t) - (N\mu+m\lambda)P_{N0}(t)$$

$$\vdots$$

$$P^{*}_{NN}(t) = \lambda_s P_{(N-1)(N-1)}(t) - m\lambda P_{NN}(t) \tag{3.3}$$

$$P^{*}_{N+1}(t) = m\lambda[P_{N0}(t)+P_{n1}+\ldots\ldots+P_{NN}(t)]$$
$$+ (N+2)\mu P_{N+2}(t)-[(N+1)\mu+(m-1)\lambda]P_{N+1}(t) \tag{3.4}$$

$$P^{*}_{N+2}(t) = (m-1)\lambda P_{N+1}(t) + (N+3)\mu P_{N+3}(t)$$
$$- [(N+2)\mu+(m-2)\lambda]P_{N+2}(t)$$

$$\vdots$$

$$P^{*}_{N+m-1}(t) = 2\lambda P_{N+m-2}(t) + (N+m)\mu P_{N+m}(t)$$
$$- [(N+m-1)\mu+\lambda]P_{N+m-1}(t)$$

$$P^{*}_{N+m}(t) = \lambda P_{N+m-1}(t)+(N+m)\mu P_{N+m}(t) \tag{3.5}$$

At statistical equilibrium the left hand side of the above equation become constant with respect to time and so may be written as P_{00}, P_{10}------,P_{N+m}.

The unavailability of any particular working unit is given by,

$$U= (1/m)\ (P_{N+1}+2P_{N+2}+\ \ldots\ \ldots+mP_{N+m}) \tag{3.6}$$

where $P_{N+1}, P_{N+2}, \ldots\ldots\ldots P_{N+m}$ are properties at level N+1,N+2, N+3,..............N+m respectively. These probabilities have been solved by recursive formula where each succeeding probabilities can be expressed in terms of the previous one. The probability of the stock exhaustion P_N, under this situation, has also been given. Average downtime due to exhaustion of spare inventory 'D' and average time between such downtime 'ϕ' is given by

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$$D=U/[(\Sigma P_N-U)\lambda$$

$$\text{or } D=1/((n+1)\mu); \quad \text{for } \mu>>>\lambda \tag{3.7}$$

and

$$\phi=(1-U)/(\Sigma P_N-U)\lambda \tag{3.8}$$

where ΣP_N is the probability of stock exhaustion regardless of the number working.

In this present work tables have been prepared to visualize the situation by varying different parameters of this model. The objective has been to determine the minimum number of spare needed to keep the unavailability within certain range. Cost optimal inventory policy has also been taken into account: which includes (i) the expected cost due to production loss (ii) expected variable cost due to holding of spares inventory and (iii) individual item cost. For this a ratio 'R' has been used which is the cost for the loss of production to that of holding and item costs. The value of optimum number of spares has been calculated which is required to minimize T_{cs} -- the scaled total cost in multiples of combined sum of item holding costs and items value.

In the model the expected total variable cost is given by the sum of expected cost due to production loss per unit time, expected inventory holding cost of 'N' spares and total item cost,

$$\text{i.e. } T_c = mVU + i_c bN + bN \tag{3.9}$$

V = production loss of a single operational unit per unit time.

i_c = holding cost as percentage of item value.

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b = item value. The equation (3.9) can be rearranged to give

$$T_c = (mRU + N)\ (1+i_c)b \qquad (3.10)$$

R= denotes the relative cost of lost production to holding and item costs. Dividing equation (3.10) throughout by $(1+i_c)b$, the scaled expected total variable cost in multiples of $(1+i_c)$ is given by

$$T_{cs} = mRU + N \qquad (3.11)$$

The case of no-failure in storage has also been considered. Finally, a separate sensitivity analysis has been done to determine the effect of change in operating failure rate and repair rate on the unavailability, downtime and mean time between stock outs.

3.2.3 Solution Procedure for Individual Probabilities

A coefficient matrix of rate diagram is generated using the equation formed by summing up the probabilities of all states which amounts to unity. The flow chart in Appendix I shows the algorithm that has been used.

3.2.3.1 Matrix solution upto level 'N'.

The equations (3.3) to (3.5) are such that any one variable(individual probability) could be obtained from the remainder in terms of another . To solve for various values of P_{ij}'s another equation is added. The equation is

$$P_{00}+P_{10}+\ldots\ldots.P_{N0}+P_{N1}+\ldots\ldots.P_{NN}+P_{N+1}+\ldots.+P_{N+m}= 1$$

Dividing this equation by P_{N+1}

$$\frac{P_{00}}{P_{N+1}}\,\frac{P_{10}}{P_{N+1}} \quad \frac{P_{N0}}{P_{N+1}}\frac{P_{N1}}{P_{N+1}} \quad \frac{P_{NN}}{P_{N+1}}\,\frac{P_{N+1}}{P_{N+1}} \quad \frac{P_{N+m}}{P_{N+1}}\,\frac{1}{P_{N+1}} \tag{3.12}$$

these new variables are denoted by $X_{00}, X_{10}, \ldots . X_{NN}$ for values upto P_{NN}/P_{N+1} and let

$$X_{00} + X_{10} + \ \ldots \ \ldots + X_{NN} = X$$

Gauss-Jordan Elimination Method" has been used to obtain the values of the variables involved (i.e. $X_{00}, X_{10}, \ldots$upto X_{NN}). To obtain the value of X from the set of transformed differential equations a generalized procedure has been developed which is graphically represented in Fig 3.2.2 Here the 'blocks' are shown for various types of states in relation to a state (LP). 'L' is the total number of failures of unit and 'P' is the number of unknowingly failed spare parts. The figure also gives the transition probabilities for different blocks, in general. It has been shown, how an element of the coefficient matrix is formed from the diagram. For the present problem,

Number of variables = Number of equations = (N+1)(N+2)/2 = NO(say)

Hence the dimension of augmented matrix becomes NOx(NO+1). The elements in the last column of this matrix become zero except the one in the row [N(N+1)/2]+1 which is equal to $-(N+1)\mu$, from the equation.

The equation (3.12) can be rewritten as

$$X + \frac{\Sigma P_{N+1}}{P_{N+1}} = \frac{1}{P_{N+1}} \tag{3.13}$$

where $\Sigma P_{N+1} = P_{N+1} + P_{N+2} + \ldots \ldots + P_{N+m}$

Now P_N(the probability of stock exhaustion) while 'm' units are still working, is given by the solution as

$$P_N = X * P_{N+1} \tag{3.14}$$

3.2.3.2 Solution beyond level 'N' by Recursive Formulation

The transition rate equations of equation(3.5) at steady state condition gives

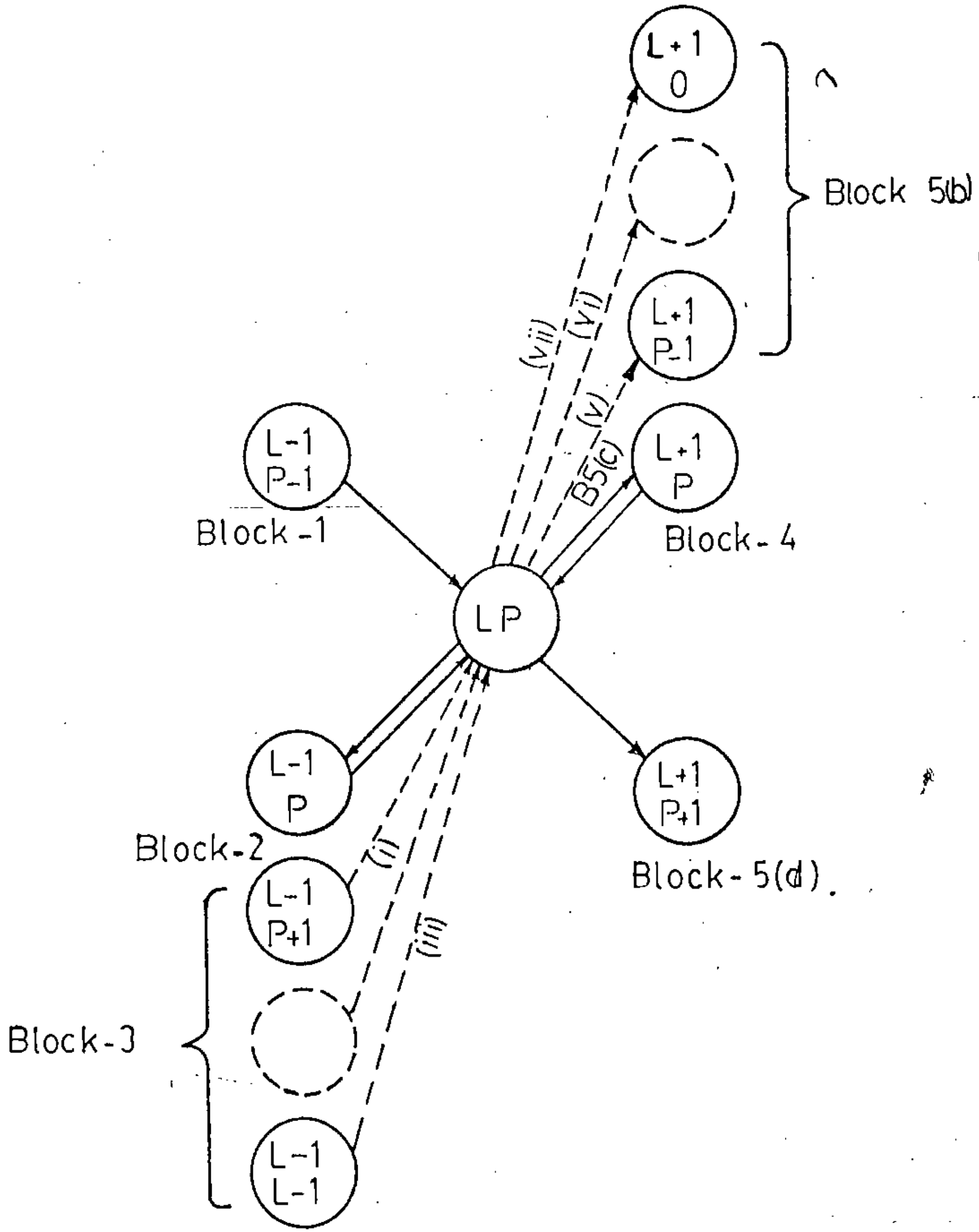
$$\begin{aligned}
P_{N+m} &= (\lambda/\mu)[1/(N+m)]P_{N+m-1} \\
P_{N+m-1} &= (\lambda/\mu)[2/(N+m)]P_{N+m-2} \\
&\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \\
&\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \\
P_{N+m} &= (\lambda/\mu)[(m-2)/(N+3)]P_{N+2} \\
P_{N+m} &= (\lambda/\mu)[(m-1)/(N+2)]P_{N+1}
\end{aligned} \tag{3.15}$$

The above equation(3.15) shows that there exists relation between adjacent probabilities of the equation. Putting $\lambda/\mu = \lambda T$, the equation obtained is

$$\frac{\Sigma P_{N+1}}{P_{N+1}} = 1 + \frac{(\lambda T)(m-1)}{(N+2)} + \ldots \ldots + \frac{\lambda T(m-1)}{(N+2)} \frac{(\lambda T)(m-2)}{(N+3)} \ldots \frac{(\lambda T)}{(N+m)} = z \tag{3.16}$$

(L) Indicates total failure number

(P) Indicates failure number in storage



Block-1 (N-L-1) S, but not valid when p=0

$$\left.\begin{array}{l} \text{Block-2}\quad \frac{N-L+1}{N-L+1+P}M\lambda = \frac{X}{Y}M\lambda \quad \text{where } X = N-L+1,\ Y = N-L+1+P \\ \text{Block-3 (i)}\quad \frac{X}{Y}\cdot\frac{P+1}{Y+1}M\lambda \\ \text{(iii)}\quad \frac{X}{Y}\,\frac{P+1}{Y+1}\cdots\cdots\frac{L-1}{Y+L-P-1}M\lambda \end{array}\right\}\text{Not valid when } P=L$$

Block-4 (L-P+1)

Block-5(a)(L-P), Not valid when P=L

(b) $\frac{P}{Q}(1\ \frac{P-1}{Q-1})M\lambda+\cdots+\frac{P}{Q}\cdot\frac{P-1}{Q-1}\cdots\frac{1}{Q-P+1}M\lambda$

when $Q=N-L+P$

(c) $(1-\frac{P}{Q})M\lambda$

(d) $(N-L)\lambda S$

$A(I,J)=[(B-1)+(B-2)+(B-3)+(B-4)$

$A(I,I)=-[5(a)+5(b)+5(c)+5(d)]$

Fig 3.22 A Generalized procedure to generate coeffecient matrix upto leveln N

Hence equation (3.13) becomes

$$X + Z = 1/(P_{N+1})$$

$$\text{or, } P_{N+1} = 1/(X+Z) \qquad (3.17)$$

Putting equation (3.17) into (3.15), the values of each probabilities $P_{N+2}, P_{N+3}, \ldots \ldots$ upto P_{N+m} are found. Again equation (3.16) gives

$$\Sigma P_{N+1} = Z * P_{N+1} \qquad (3.18)$$

which is the probability of failing to meet the request for spares. Putting the values of 'P_N' and 'ΣP_{N+1}' from equations (3.14) and (3.18) respectively into

$$\Sigma P_N = P_N + \Sigma P_{N+1}$$

the value of ΣP_N is obtained, which gives the probability of stock exhaustion regardless of the number working.

The program, in the appendix II, generates the coefficient matrix from the input variables m, N, λ, λ_s, and μ. After calculating the individual probabilities using Gauss-Jordan Elimination procedure, the equations are solved for ΣP_N, ΣP_{N+1}, D, ϕ and μ. For determining cost-optimal spares level the cost equations are solved.

Though this model assumes a constant failure rate λ and constant break down replacement rate it invites a wide application because of generality of these assumptions in many situations. These policies for spare provisioning could be near-optimal and hence is better than that of a mere thumb rule. It facilitates the easy production of tables for evaluation of spare parts provisioning parameters and system availability parameters.

3.3 Non-constant failure rate, Non-Reparable Case

In previous two sections 3.1 and 3.2, spares provisioning models for constant failure case have been discussed. In practice there are many items, the failures of which do not exhibit constant failure rates. The non-constant failure rate cases may again be divided into two categories; decreasing and increasing failure rate cases. With regard to maintenance policy, the production units which have increasing failure rates can be replaced on the preventive replacement basis. This means that replacement occuring before failure is cost advantageous. However, there would of course be some failure replacements as well. McCall[18] has given formulations for determining operating characterestics, that is, the expected number of preventive replacements $R_p(t)$ and the expected number of failure replacements $R_f(t)$ in a specified time interval(0,t), for a maintenance policy termed as "Individual" maintenance. Here the units are assumed to be identical and have common replacement interval. These characteristics can be used conveniently to predict supply and maintenance requirements in a particular chosen policy. Flehinger[19] has shown that the operating characterestics satisfy the following renewal equations:

$$R_p(t) = G(t) + \int_0^t R_p(t-\tau)\, dG(\tau) \qquad (3.19)$$

and

$$R_f(t) = \beta(t) + \int_0^t (t-\tau)\, dR_p(\tau) \qquad (3.20)$$

where $\beta(t)$ and $G(t)$ represent, respectively, the expected number of failures in $(0,t)$ prior to a preventive replacement action and the probability distribution of the time between successive preventive replacements.

Again, the formulation for $\beta(t)$ and $G(t)$ are given as,

$$\beta(t) = Q(t) + \int_0^t Q(t-y)\,d\beta(y)$$

and

$$G(t) = D(t) + \int_0^t 1-D(t-y)\, d\beta(y)$$

where $D(x:y)$ is the probability that the unit is replaced by the 'x', given a renewal at 'y'. Furthermore $D(x:y)$ can be expressed as,

$$D(x:y) = S(x:y)+Q(x:y)$$

where

$$S(x:y)= S(x-y)= \begin{cases} 0 & ; \quad x-y<N \\ 1-F(N) & ; \quad x-y>N \end{cases}$$

and,

$$Q(x:y)= Q(x-y)= \begin{cases} F(x-y) & ; \quad x-y<N \\ F(N) & ; \quad x-y>N \end{cases}$$

$S(x:y)$ denotes the probability of a preventive replacement at time x given that unit was new at y. $Q(x:y)$ denotes the probability that the unit fails at 'x' given that the unit was new at 'y'. $F(N)$

denotes the probability that the unit fails by age 'N'. Here it should be mentioned that periodic preventive policy replaces the unit at failure or at age 'N', whichever occurs first. From equations [3.19] and [3.20], following asymptotic relationships can be derived.

Expected rate of preventive removal,

$$r_p = \lim_{t\to\infty} R_p(t)/t = \mu_1^{-1} \tag{3.21}$$

Expected rate of failure,

$$r_f = \lim_{t\to\infty} R_p(t)/t = v_1\mu_1^{-1} \tag{3.22}$$

where μ_1 is the mean of G(t) and $v_1=\beta(\infty)$. In other words, the expected rate of preventive removal is simply the reciprocal of the mean time between preventive removals and the expected rate of failure is simply the same reciprocal multiplied by the expected number of failure prior to a preventive removal.

Chapter 4
RESULTS

The computer program generating the coefficient matrix (mentioned in section 3.2.4 and given in appendix) for the case of constant failure repairable spares model determines the following quantities with the change in the numerical values of parameters m,N, λ, λ_s and μ.

i) the steady state unavailability of a unit, (U)

ii) the probability of stock exhaustion while 'm' units are still working, (P_N)

iii) the probability of stock exhaustion regardless of number of units working (ΣP_N)

iv) the probability of failing to meet requests for spares (ΣP_{N+1})

v) Downtime due to stock exhaustion (D)

vi) Meantime between such stock-out situations (ϕ)

The program has been further adjusted to give the minimum cost, with the corresponding optimum number of spares. The probable unavailabilities, downtime and meantime between stock-out situations have also been listed in the output tables.

The results have been prepared in both tabular (Tables 4.1 - 4.50) and graphical (Figs. 4.1 - 4.42) forms. Sets of tables, that follows the chapter, have been generated with a particular number of machines 'm' and repair rate 'μ' Cases have been taken when 'm' varies from 1 to 10(i.e. m=1,10) and repair rates 0.0625, 0.125 and 0.25 per hour (i.e. spares arriving after 16,8, and 4 hours respectively from the repairing shops). The number of spares in store has been varied from 1 to 5 (i.e. N=1,5) in each table and figure.

The rate of operational unit failure (λ) has been taken as the basis for the construction of tables. Twelve intermediate values of λ have been considered within a range of 0.5×10^{-4}/hour and 0.3×10^{-1}/ hour. The parameters $U, P_N, \Sigma P_N, \Sigma P_{N+1}$,D, ϕ, have been calculated with each of the failure rates, varying only the number of available spares N.

Log-Log graph paper has been utilized so as to incorporate such a large variation of λ in the limited size of the paper. The curves have been extrapolated to observe the behavior at higher and lower failure rates. These curves mainly show the change of unavailability with failure rates with different operational units(m). and repair rates (μ). Finally a set of curves for probability of stock exhaustion (P_N) under some particular situation has also been shown.

Table 4.1 to 4.10 and Fig 4.1 to 4.10 have been prepared for the case when there is no storage failure (i.e. λ_s=0). In a more general setting, λ_s may have some positive value. Only a single case when $\lambda_s=\lambda/10$ has been considered. Corresponding results have

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been given in Tables 4.11-4.40 and Fig 4.11 - 4.40. Finally tables (Table 4.41-4.50) have been prepared for cost optimal policy. Here only the cost ratio(R) varies for each λ considered. Values of m = 1 to 5, μ=0.125/hour and 0.250/hour and $\lambda_s=0$ have been considered. Figures 4.41 and 4.42 have been added to the list of figures to depict the situations of probability of stock exhaustion in the presence of all 'm' working units (P_N), under certain specified conditions. Here the curves have been drawn respectively for different repair rates (μ) and for some particular number of spares in store (N). The failure rates of spares in the stores, like the previous cases, have been taken to be one-tenth of the failure rates of operating units.

TABLE --4.1
****

M= 1 MEO= 0.1250

LEMDA = 0.300E-01 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.227E-01	0.189	0.212	0.227E-01	4.000	172.
2	0.181E-02	0.227E-01	0.245E-01	0.181E-02	2.667	0.147E+04
3	0.109E-03	0.181E-02	0.192E-02	0.109E-03	2.000	0.184E+05
4	0.523E-05	0.109E-03	0.114E-03	0.523E-05	1.600	0.306E+06
5	0.217E-06	0.523E-05	0.545E-05	0.217E-06	1.333	0.637E+07

LEMDA = 0.800E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.192E-02	0.600E-01	0.620E-01	0.192E-02	4.000	0.208E+04
2	0.410E-04	0.192E-02	0.196E-02	0.410E-04	2.667	0.651E+05
3	0.658E-06	0.410E-04	0.416E-04	0.658E-06	2.000	0.305E+07
4	0.101E-07	0.658E-06	0.668E-06	0.101E-07	1.600	0.190E+09
5	0.153E-08	0.101E-07	0.116E-07	0.153E-08	1.333	0.123E+11

LEMDA = 0.400E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.496E-03	0.310E-01	0.315E-01	0.496E-03	4.000	0.806E+04
2	0.529E-05	0.496E-03	0.501E-03	0.529E-05	2.667	0.504E+06
3	0.428E-07	0.529E-05	0.533E-05	0.428E-07	2.000	0.473E+08
4	0.658E-09	0.428E-07	0.435E-07	0.658E-09	1.600	0.584E+10
5	0.323E-09	0.658E-09	0.981E-09	0.323E-09	1.333	0.380E+12

LEMDA = 0.250E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.196E-03	0.196E-01	0.198E-01	0.196E-03	4.000	0.204E+05
2	0.131E-05	0.196E-03	0.197E-03	0.131E-05	2.667	0.204E+07
3	0.882E-08	0.131E-05	0.132E-05	0.882E-08	2.000	0.305E+09
4	0.185E-08	0.882E-08	0.107E-07	0.185E-08	1.600	0.454E+11
5	0.152E-08	0.185E-08	0.336E-08	0.152E-08	1.333	0.216E+12

123C

LEMDA = 0.200E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.126E-03	0.157E-01	0.159E-01	0.126E-03	4.000	0.317E+05
2	0.673E-06	0.126E-03	0.127E-03	0.673E-06	2.667	0.397E+07
3	0.375E-08	0.673E-06	0.677E-06	0.375E-08	2.000	0.743E+09
4	0.860E-09	0.375E-08	0.461E-08	0.860E-09	1.600	0.133E+12
5	0.709E-09	0.860E-09	0.157E-08	0.709E-09	1.333	0.582E+12

LEMDA = 0.160E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.809E-04	0.126E-01	0.127E-01	0.809E-04	4.000	0.495E+05
2	0.346E-06	0.809E-04	0.812E-04	0.346E-06	2.667	0.773E+07
3	0.180E-08	0.346E-06	0.348E-06	0.180E-08	2.000	0.181E+10
4	0.556E-09	0.180E-08	0.235E-08	0.556E-09	1.600	0.348E+12
5	0.460E-09	0.556E-09	0.102E-08	0.460E-09	1.333	0.112E+13

LEMDA = 0.100E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.317E-04	0.794E-02	0.797E-02	0.317E-04	4.000	0.126E+06
2	0.857E-07	0.317E-04	0.318E-04	0.857E-07	2.667	0.315E+08
3	0.916E-09	0.857E-07	0.866E-07	0.916E-09	2.000	0.117E+11
4	0.597E-09	0.916E-09	0.151E-08	0.597E-09	1.600	0.109E+13
5	0.497E-09	0.597E-09	0.109E-08	0.497E-09	1.333	0.167E+13

LEMDA = 0.500E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.797E-05	0.398E-02	0.399E-02	0.797E-05	4.000	0.502E+06
2	0.109E-07	0.797E-05	0.798E-05	0.109E-07	2.667	0.251E+09
3	0.196E-09	0.109E-07	0.111E-07	0.196E-09	2.000	0.184E+12
4	0.149E-09	0.196E-09	0.345E-09	0.149E-09	1.600	0.102E+14
5	0.124E-09	0.149E-09	0.272E-09	0.124E-09	1.333	0.135E+14

LEMDA = 0.250E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.200E-05	0.200E-02	0.200E-02	0.200E-05	4.000	0.200E+07
2	0.155E-08	0.200E-05	0.200E-05	0.155E-08	2.667	0.200E+10
3	0.166E-09	0.155E-08	0.172E-08	0.166E-09	2.000	0.258E+13
4	0.133E-09	0.166E-09	0.299E-09	0.133E-09	1.600	0.240E+14
5	0.110E-09	0.133E-09	0.243E-09	0.110E-09	1.333	0.302E+14

LEMDA = 0.200E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.128E-05	0.160E-02	0.160E-02	0.128E-05	4.000	0.313E+07
2	0.823E-09	0.128E-05	0.128E-05	0.823E-09	2.667	0.391E+10
3	0.106E-09	0.823E-09	0.930E-09	0.106E-09	2.000	0.607E+13
4	0.849E-10	0.106E-09	0.191E-09	0.849E-10	1.600	0.470E+14
5	0.708E-10	0.849E-10	0.156E-09	0.708E-10	1.333	0.589E+14

LEMDA = 0.160E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.818E-06	0.128E-02	0.128E-02	0.818E-06	4.000	0.489E+07
2	0.480E-09	0.818E-06	0.819E-06	0.480E-09	2.667	0.764E+10
3	0.986E-10	0.480E-09	0.579E-09	0.986E-10	2.000	0.130E+14
4	0.787E-10	0.986E-10	0.177E-09	0.787E-10	1.600	0.634E+14
5	0.656E-10	0.787E-10	0.144E-09	0.656E-10	1.333	0.794E+14

LEMDA = 0.500E-04 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.800E-07	0.400E-03	0.400E-03	0.800E-07	4.000	0.500E+08
2	0.195E-10	0.800E-07	0.800E-07	0.195E-10	2.667	0.250E+12
3	0.665E-11	0.195E-10	0.262E-10	0.665E-11	2.000	0.102E+16
4	0.532E-11	0.665E-11	0.120E-10	0.532E-11	1.600	0.301E+16
5	0.443E-11	0.532E-11	0.975E-11	0.443E-11	1.333	0.376E+16

TABLE --4.2
****

M= 2 MEO= 0.1250

LEMDA = 0.300E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.416E-01	0.299	0.377	0.775E-01	4.000	95.3
2	0.639E-02	0.713E-01	0.834E-01	0.121E-01	2.667	430.
3	0.750E-03	0.114E-01	0.128E-01	0.143E-02	2.000	0.275E+04
4	0.710E-04	0.137E-02	0.151E-02	0.137E-03	1.600	0.232E+05
5	0.563E-05	0.131E-03	0.142E-03	0.109E-04	1.333	0.244E+06

LEMDA = 0.800E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.376E-02	0.113	0.120	0.736E-02	4.000	0.107E+04
2	0.159E-03	0.721E-02	0.752E-02	0.312E-03	2.667	0.170E+05
3	0.505E-05	0.308E-03	0.318E-03	0.997E-05	2.000	0.400E+06
4	0.132E-06	0.985E-05	0.101E-04	0.261E-06	1.600	0.125E+08
5	0.529E-08	0.258E-06	0.268E-06	0.105E-07	1.333	0.475E+09

LEMDA = 0.400E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.981E-03	0.600E-01	0.620E-01	0.194E-02	4.000	0.409E+04
2	0.208E-04	0.192E-02	0.196E-02	0.413E-04	2.667	0.129E+06
3	0.333E-06	0.410E-04	0.416E-04	0.662E-06	2.000	0.605E+07
4	0.512E-08	0.658E-06	0.668E-06	0.102E-07	1.600	0.377E+09
5	0.770E-09	0.101E-07	0.117E-07	0.153E-08	1.333	0.230E+11

LEMDA = 0.250E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.389E-03	0.384E-01	0.392E-01	0.774E-03	4.000	0.103E+05
2	0.518E-05	0.769E-03	0.779E-03	0.103E-04	2.667	0.517E+06
3	0.538E-07	0.103E-04	0.104E-04	0.107E-06	2.000	0.388E+08
4	0.216E-08	0.107E-06	0.111E-06	0.431E-08	1.600	0.367E+10
5	0.146E-08	0.430E-08	0.720E-08	0.290E-08	1.333	0.696E+11

123C

LEMDA = 0.200E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.251E-03	0.310E-01	0.315E-01	0.499E-03	4.000	0.160E+05
2	0.267E-05	0.496E-03	0.501E-03	0.531E-05	2.667	0.100E+07
3	0.217E-07	0.529E-05	0.533E-05	0.432E-07	2.000	0.941E+08
4	0.428E-09	0.430E-07	0.439E-07	0.854E-09	1.600	0.115E+11
5	0.243E-09	0.852E-09	0.134E-08	0.486E-09	1.333	0.457E+12

LEMDA = 0.160E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.161E-03	0.250E-01	0.253E-01	0.321E-03	4.000	0.249E+05
2	0.137E-05	0.319E-03	0.322E-03	0.274E-05	2.667	0.195E+07
3	0.102E-07	0.273E-05	0.275E-05	0.203E-07	2.000	0.228E+09
4	0.115E-08	0.202E-07	0.225E-07	0.230E-08	1.600	0.293E+11
5	0.921E-09	0.229E-08	0.413E-08	0.184E-08	1.333	0.195E+12

LEMDA = 0.100E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.633E-04	0.157E-01	0.159E-01	0.126E-03	4.000	0.633E+05
2	0.338E-06	0.126E-03	0.127E-03	0.675E-06	2.667	0.792E+07
3	0.189E-08	0.673E-06	0.677E-06	0.377E-08	2.000	0.148E+10
4	0.437E-09	0.377E-08	0.464E-08	0.873E-09	1.600	0.238E+12
5	0.360E-09	0.872E-09	0.159E-08	0.720E-09	1.333	0.812E+12

LEMDA = 0.500E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.159E-04	0.794E-02	0.797E-02	0.318E-04	4.000	0.252E+06
2	0.429E-07	0.317E-04	0.318E-04	0.857E-07	2.667	0.629E+08
3	0.457E-09	0.856E-07	0.866E-07	0.913E-09	2.000	0.232E+11
4	0.298E-09	0.912E-09	0.151E-08	0.595E-09	1.600	0.165E+13
5	0.248E-09	0.594E-09	0.109E-08	0.495E-09	1.333	0.238E+13

123C

LEMDA = 0.250E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.399E-05	0.398E-02	0.399E-02	0.797E-05	4.000	0.100E+07
2	0.544E-08	0.797E-05	0.798E-05	0.109E-07	2.667	0.502E+09
3	0.983E-10	0.109E-07	0.111E-07	0.197E-09	2.000	0.365E+12
4	0.744E-10	0.196E-09	0.345E-09	0.149E-09	1.600	0.148E+14
5	0.620E-10	0.149E-09	0.273E-09	0.124E-09	1.333	0.190E+14

LEMDA = 0.200E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.255E-05	0.319E-02	0.319E-02	0.511E-05	4.000	0.157E+07
2	0.301E-08	0.510E-05	0.511E-05	0.601E-08	2.667	0.979E+09
3	0.215E-09	0.601E-08	0.644E-08	0.430E-09	2.000	0.803E+12
4	0.170E-09	0.430E-09	0.770E-09	0.340E-09	1.600	0.834E+13
5	0.142E-09	0.340E-09	0.624E-09	0.283E-09	1.333	0.104E+14

LEMDA = 0.160E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.164E-05	0.255E-02	0.256E-02	0.327E-05	4.000	0.245E+07
2	0.146E-08	0.327E-05	0.327E-05	0.291E-08	2.667	0.191E+10
3	0.456E-10	0.291E-08	0.300E-08	0.912E-10	2.000	0.212E+13
4	0.358E-10	0.912E-10	0.163E-09	0.715E-10	1.600	0.492E+14
5	0.298E-10	0.715E-10	0.131E-09	0.596E-10	1.333	0.617E+14

LEMDA = 0.500E-04 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.160E-06	0.799E-03	0.800E-03	0.320E-06	4.000	0.250E+08
2	0.603E-10	0.320E-06	0.320E-06	0.121E-09	2.667	0.625E+11
3	0.133E-10	0.121E-09	0.147E-09	0.265E-10	2.000	0.149E+15
4	0.106E-10	0.265E-10	0.477E-10	0.212E-10	1.600	0.539E+15
5	0.884E-11	0.212E-10	0.389E-10	0.177E-10	1.333	0.666E+15

123c

TABLE --4.3
****

M= 3 MEO= 0.1250

LEMDA = 0.300E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.576E-01	0.356	0.506	0.150	4.000	70.1
2	0.127E-01	0.126	0.161	0.342E-01	2.667	222.
3	0.219E-02	0.303E-01	0.363E-01	0.600E-02	2.000	975.
4	0.306E-03	0.545E-02	0.630E-02	0.850E-03	1.600	0.556E+04
5	0.359E-04	0.785E-03	0.886E-03	0.101E-03	1.333	0.392E+05

LEMDA = 0.800E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.552E-02	0.159	0.174	0.159E-01	4.000	736.
2	0.346E-03	0.152E-01	0.162E-01	0.101E-02	2.667	0.787E+04
3	0.164E-04	0.974E-03	0.102E-02	0.480E-04	2.000	0.124E+06
4	0.629E-06	0.467E-04	0.486E-04	0.185E-05	1.600	0.261E+07
5	0.237E-07	0.181E-05	0.188E-05	0.697E-07	1.333	0.674E+08

LEMDA = 0.400E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.146E-02	0.872E-01	0.915E-01	0.428E-02	4.000	0.277E+04
2	0.461E-04	0.419E-02	0.432E-02	0.136E-03	2.667	0.585E+05
3	0.110E-05	0.134E-03	0.137E-03	0.326E-05	2.000	0.184E+07
4	0.223E-07	0.322E-05	0.329E-05	0.663E-07	1.600	0.766E+08
5	0.142E-08	0.656E-07	0.698E-07	0.421E-08	1.333	0.366E+10

LEMDA = 0.250E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.580E-03	0.565E-01	0.582E-01	0.172E-02	4.000	0.694E+04
2	0.115E-04	0.170E-02	0.173E-02	0.343E-04	2.667	0.233E+06
3	0.174E-06	0.339E-04	0.344E-04	0.519E-06	2.000	0.117E+08
4	0.383E-08	0.515E-06	0.527E-06	0.114E-07	1.600	0.765E+09
5	0.149E-08	0.113E-07	0.158E-07	0.444E-08	1.333	0.280E+11

LEMDA = 0.200E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.374E-03	0.458E-01	0.469E-01	0.111E-02	4.000	0.108E+05
2	0.595E-05	0.110E-02	0.112E-02	0.177E-04	2.667	0.451E+06
3	0.745E-07	0.176E-04	0.178E-04	0.222E-06	2.000	0.282E+08
4	0.332E-08	0.221E-06	0.231E-06	0.989E-08	1.600	0.220E+10
5	0.219E-08	0.984E-08	0.164E-07	0.655E-08	1.333	0.352E+11

LEMDA = 0.160E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.241E-03	0.370E-01	0.377E-01	0.716E-03	4.000	0.167E+05
2	0.307E-05	0.710E-03	0.719E-03	0.915E-05	2.667	0.873E+06
3	0.314E-07	0.909E-05	0.918E-05	0.939E-07	2.000	0.683E+08
4	0.189E-08	0.934E-07	0.990E-07	0.564E-08	1.600	0.643E+10
5	0.138E-08	0.561E-08	0.975E-08	0.413E-08	1.333	0.747E+11

LEMDA = 0.100E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.947E-04	0.234E-01	0.237E-01	0.283E-03	4.000	0.423E+05
2	0.756E-06	0.281E-03	0.283E-03	0.226E-05	2.667	0.354E+07
3	0.486E-08	0.225E-05	0.227E-05	0.145E-07	2.000	0.442E+09
4	0.287E-09	0.145E-07	0.153E-07	0.859E-09	1.600	0.664E+11
5	0.221E-09	0.857E-09	0.152E-08	0.661E-09	1.333	0.771E+12

LEMDA = 0.500E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.238E-04	0.119E-01	0.119E-01	0.713E-04	4.000	0.168E+06
2	0.953E-07	0.711E-04	0.714E-04	0.285E-06	2.667	0.280E+08
3	0.366E-09	0.285E-06	0.286E-06	0.110E-08	2.000	0.700E+10
4	0.648E-10	0.109E-08	0.129E-08	0.194E-09	1.600	0.164E+13
5	0.533E-10	0.194E-09	0.354E-09	0.160E-09	1.333	0.666E+13

123C

LEMDA = 0.250E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.598E-05	0.596E-02	0.598E-02	0.179E-04	4.000	0.669E+06
2	0.120E-07	0.179E-04	0.179E-04	0.359E-07	2.667	0.223E+09
3	0.401E-10	0.359E-07	0.360E-07	0.120E-09	2.000	0.111E+12
4	0.178E-10	0.120E-09	0.173E-09	0.532E-10	1.600	0.257E+14
5	0.148E-10	0.532E-10	0.975E-10	0.443E-10	1.333	0.484E+14

LEMDA = 0.200E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.383E-05	0.478E-02	0.479E-02	0.115E-04	4.000	0.105E+07
2	0.629E-08	0.115E-04	0.115E-04	0.189E-07	2.667	0.436E+09
3	0.135E-09	0.189E-07	0.193E-07	0.405E-09	2.000	0.261E+12
4	0.102E-09	0.405E-09	0.711E-09	0.306E-09	1.600	0.821E+13
5	0.851E-10	0.306E-09	0.561E-09	0.255E-09	1.333	0.105E+14

LEMDA = 0.160E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.245E-05	0.383E-02	0.383E-02	0.735E-05	4.000	0.163E+07
2	0.353E-08	0.735E-05	0.736E-05	0.106E-07	2.667	0.850E+09
3	0.299E-09	0.106E-07	0.115E-07	0.895E-09	2.000	0.559E+12
4	0.236E-09	0.895E-09	0.160E-08	0.709E-09	1.600	0.457E+13
5	0.197E-09	0.708E-09	0.130E-08	0.590E-09	1.333	0.567E+13

LEMDA = 0.500E-04 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.240E-06	0.120E-02	0.120E-02	0.719E-06	4.000	0.167E+08
2	0.122E-09	0.719E-06	0.720E-06	0.367E-09	2.667	0.278E+11
3	0.199E-10	0.367E-09	0.427E-09	0.597E-10	2.000	0.491E+14
4	0.159E-10	0.597E-10	0.107E-09	0.477E-10	1.600	0.218E+15
5	0.133E-10	0.477E-10	0.875E-10	0.398E-10	1.333	0.269E+15

TABLE -- 4.4
****

M= 4   MEO= 0.1250

LEMDA = 0.300E-01   LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.711E-01	0.377	0.607	0.230	4.000	57.8
2	0.201E-01	0.177	0.245	0.680E-01	2.667	145.
3	0.449E-02	0.565E-01	0.722E-01	0.157E-01	2.000	490.
4	0.823E-03	0.136E-01	0.165E-01	0.294E-02	1.600	0.213E+04
5	0.128E-03	0.260E-02	0.306E-02	0.462E-03	1.333	0.114E+05

LEMDA = 0.800E-02   LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.720E-02	0.198	0.225	0.271E-01	4.000	569.
2	0.595E-03	0.254E-01	0.276E-01	0.227E-02	2.667	0.462E+04
3	0.374E-04	0.216E-02	0.231E-02	0.144E-03	2.000	0.550E+05
4	0.190E-05	0.139E-03	0.146E-03	0.735E-05	1.600	0.868E+06
5	0.850E-07	0.712E-05	0.745E-05	0.331E-06	1.333	0.170E+08

LEMDA = 0.400E-02   LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.192E-02	0.113	0.120	0.744E-02	4.000	0.211E+04
2	0.806E-04	0.721E-02	0.752E-02	0.315E-03	2.667	0.336E+05
3	0.256E-05	0.308E-03	0.318E-03	0.100E-04	2.000	0.794E+06
4	0.666E-07	0.985E-05	0.101E-04	0.262E-06	1.600	0.249E+08
5	0.267E-08	0.258E-06	0.269E-06	0.105E-07	1.333	0.940E+09

LEMDA = 0.250E-02   LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.768E-03	0.739E-01	0.769E-01	0.301E-02	4.000	0.525E+04
2	0.203E-04	0.295E-02	0.303E-02	0.800E-04	2.667	0.133E+06
3	0.406E-06	0.788E-04	0.804E-04	0.160E-05	2.000	0.500E+07
4	0.818E-08	0.158E-05	0.162E-05	0.324E-07	1.600	0.249E+09
5	0.154E-08	0.321E-07	0.382E-07	0.610E-08	1.333	0.109E+11

123C

LEMDA = 0.200E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.496E-03	0.600E-01	0.620E-01	0.195E-02	4.000	0.813E+04
2	0.105E-04	0.192E-02	0.196E-02	0.415E-04	2.667	0.256E+06
3	0.168E-06	0.410E-04	0.417E-04	0.665E-06	2.000	0.121E+08
4	0.267E-08	0.658E-06	0.669E-06	0.106E-07	1.600	0.750E+09
5	0.466E-09	0.105E-07	0.124E-07	0.185E-08	1.333	0.421E+11

LEMDA = 0.160E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.319E-03	0.486E-01	0.499E-01	0.126E-02	4.000	0.126E+05
2	0.542E-05	0.125E-02	0.127E-02	0.215E-04	2.667	0.495E+06
3	0.718E-07	0.213E-04	0.216E-04	0.285E-06	2.000	0.291E+08
4	0.289E-08	0.283E-06	0.294E-06	0.115E-07	1.600	0.214E+10
5	0.182E-08	0.114E-07	0.187E-07	0.725E-08	1.333	0.371E+11

LEMDA = 0.100E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.126E-03	0.310E-01	0.315E-01	0.500E-03	4.000	0.319E+05
2	0.134E-05	0.496E-03	0.501E-03	0.532E-05	2.667	0.200E+07
3	0.109E-07	0.529E-05	0.533E-05	0.432E-07	2.000	0.188E+09
4	0.215E-09	0.430E-07	0.439E-07	0.855E-09	1.600	0.229E+11
5	0.122E-09	0.852E-09	0.134E-08	0.486E-09	1.333	0.822E+12

LEMDA = 0.500E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.317E-04	0.157E-01	0.159E-01	0.126E-03	4.000	0.126E+06
2	0.169E-06	0.126E-03	0.127E-03	0.675E-06	2.667	0.158E+08
3	0.943E-09	0.673E-06	0.677E-06	0.376E-08	2.000	0.296E+10
4	0.216E-09	0.375E-08	0.461E-08	0.861E-09	1.600	0.455E+12
5	0.178E-09	0.860E-09	0.157E-08	0.710E-09	1.333	0.144E+13

LEMDA = 0.250E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.797E-05	0.794E-02	0.797E-02	0.318E-04	4.000	0.503E+06
2	0.215E-07	0.317E-04	0.318E-04	0.858E-07	2.667	0.126E+09
3	0.229E-09	0.856E-07	0.866E-07	0.913E-09	2.000	0.463E+11
4	0.149E-09	0.912E-09	0.151E-08	0.595E-09	1.600	0.295E+13
5	0.124E-09	0.594E-09	0.109E-08	0.495E-09	1.333	0.414E+13

LEMDA = 0.200E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.510E-05	0.636E-02	0.638E-02	0.204E-04	4.000	0.784E+06
2	0.109E-07	0.203E-04	0.204E-04	0.437E-07	2.667	0.245E+09
3	0.620E-10	0.436E-07	0.439E-07	0.248E-09	2.000	0.114E+12
4	0.357E-10	0.247E-09	0.390E-09	0.143E-09	1.600	0.141E+14
5	0.297E-10	0.142E-09	0.261E-09	0.119E-09	1.333	0.216E+14

LEMDA = 0.160E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.327E-05	0.509E-02	0.511E-02	0.131E-04	4.000	0.122E+07
2	0.569E-08	0.130E-04	0.131E-04	0.228E-07	2.667	0.479E+09
3	0.963E-10	0.227E-07	0.231E-07	0.385E-09	2.000	0.272E+12
4	0.713E-10	0.384E-09	0.669E-09	0.285E-09	1.600	0.105E+14
5	0.594E-10	0.285E-09	0.522E-09	0.237E-09	1.333	0.135E+14

LEMDA = 0.500E-04 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.320E-06	0.160E-02	0.160E-02	0.128E-05	4.000	0.125E+08
2	0.206E-09	0.128E-05	0.128E-05	0.823E-09	2.667	0.156E+11
3	0.266E-10	0.823E-09	0.930E-09	0.106E-09	2.000	0.221E+14
4	0.212E-10	0.106E-09	0.191E-09	0.850E-10	1.600	0.118E+15
5	0.177E-10	0.849E-10	0.156E-09	0.708E-10	1.333	0.145E+15

TABLE -- 4.5
****

M= 5   MEO= 0.1250

LEMDA = 0.300E-01   LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.827E-01	0.375	0.687	0.312	4.000	50.6
2	0.279E-01	0.219	0.331	0.112	2.667	107.
3	0.761E-02	0.869E-01	0.119	0.317E-01	2.000	298.
4	0.172E-02	0.260E-01	0.334E-01	0.736E-02	1.600	0.105E+04
5	0.328E-03	0.625E-02	0.768E-02	0.144E-02	1.333	0.453E+04

LEMDA = 0.800E-02   LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.881E-02	0.233	0.273	0.405E-01	4.000	469.
2	0.901E-03	0.372E-01	0.414E-01	0.423E-02	2.667	0.308E+04
3	0.703E-04	0.397E-02	0.430E-02	0.334E-03	2.000	0.296E+05
4	0.442E-05	0.317E-03	0.338E-03	0.212E-04	1.600	0.374E+06
5	0.234E-06	0.203E-04	0.214E-04	0.113E-05	1.333	0.590E+07

LEMDA = 0.400E-02   LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.237E-02	0.136	0.148	0.114E-01	4.000	0.172E+04
2	0.124E-03	0.109E-01	0.115E-01	0.601E-03	2.667	0.220E+05
3	0.490E-05	0.582E-03	0.606E-03	0.239E-04	2.000	0.416E+06
4	0.157E-06	0.233E-04	0.240E-04	0.769E-06	1.600	0.105E+08
5	0.558E-08	0.753E-06	0.781E-06	0.274E-07	1.333	0.323E+09

LEMDA = 0.250E-02   LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.954E-03	0.905E-01	0.951E-01	0.465E-02	4.000	0.424E+04
2	0.314E-04	0.452E-02	0.468E-02	0.154E-03	2.667	0.861E+05
3	0.780E-06	0.151E-03	0.155E-03	0.384E-05	2.000	0.260E+07
4	0.170E-07	0.378E-05	0.386E-05	0.840E-07	1.600	0.104E+09
5	0.152E-08	0.829E-07	0.904E-07	0.753E-08	1.333	0.450E+10

123C

LEMDA = 0.200E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.616E-03	0.739E-01	0.769E-01	0.302E-02	4.000	0.655E+04
2	0.163E-04	0.295E-02	0.303E-02	0.801E-04	2.667	0.166E+06
3	0.325E-06	0.788E-04	0.804E-04	0.160E-05	2.000	0.625E+07
4	0.656E-08	0.158E-05	0.162E-05	0.324E-07	1.600	0.311E+09
5	0.123E-08	0.321E-07	0.382E-07	0.611E-08	1.333	0.135E+11

LEMDA = 0.160E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.398E-03	0.600E-01	0.620E-01	0.195E-02	4.000	0.101E+05
2	0.841E-05	0.192E-02	0.196E-02	0.415E-04	2.667	0.320E+06
3	0.134E-06	0.410E-04	0.417E-04	0.665E-06	2.000	0.151E+08
4	0.214E-08	0.658E-06	0.669E-06	0.106E-07	1.600	0.937E+09
5	0.373E-09	0.105E-07	0.124E-07	0.185E-08	1.333	0.522E+11

LEMDA = 0.100E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.157E-03	0.384E-01	0.392E-01	0.777E-03	4.000	0.256E+05
2	0.208E-05	0.769E-03	0.779E-03	0.103E-04	2.667	0.129E+07
3	0.216E-07	0.103E-04	0.104E-04	0.108E-06	2.000	0.967E+08
4	0.868E-09	0.107E-06	0.111E-06	0.432E-08	1.600	0.907E+10
5	0.585E-09	0.430E-08	0.721E-08	0.291E-08	1.333	0.151E+12

LEMDA = 0.500E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.396E-04	0.196E-01	0.198E-01	0.197E-03	4.000	0.101E+06
2	0.264E-06	0.196E-03	0.197E-03	0.132E-05	2.667	0.101E+08
3	0.177E-08	0.131E-05	0.132E-05	0.882E-08	2.000	0.152E+10
4	0.368E-09	0.879E-08	0.106E-07	0.183E-08	1.600	0.195E+12
5	0.302E-09	0.183E-08	0.333E-08	0.150E-08	1.333	0.660E+12

123c

LEMDA = 0.250E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.995E-05	0.990E-02	0.995E-02	0.496E-04	4.000	0.402E+06
2	0.333E-07	0.495E-04	0.497E-04	0.166E-06	2.667	0.806E+08
3	0.196E-09	0.166E-06	0.167E-06	0.979E-09	2.000	0.240E+11
4	0.908E-10	0.978E-09	0.143E-08	0.453E-09	1.600	0.298E+13
5	0.755E-10	0.453E-09	0.830E-09	0.377E-09	1.333	0.530E+13

LEMDA = 0.200E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.638E-05	0.794E-02	0.797E-02	0.318E-04	4.000	0.628E+06
2	0.172E-07	0.317E-04	0.318E-04	0.858E-07	2.667	0.157E+09
3	0.184E-09	0.857E-07	0.866E-07	0.917E-09	2.000	0.579E+11
4	0.120E-09	0.916E-09	0.151E-08	0.598E-09	1.600	0.359E+13
5	0.996E-10	0.597E-09	0.110E-08	0.498E-09	1.333	0.502E+13

LEMDA = 0.160E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.408E-05	0.636E-02	0.638E-02	0.204E-04	4.000	0.980E+06
2	0.875E-08	0.203E-04	0.204E-04	0.437E-07	2.667	0.307E+09
3	0.496E-10	0.436E-07	0.439E-07	0.248E-09	2.000	0.143E+12
4	0.285E-10	0.247E-09	0.390E-09	0.143E-09	1.600	0.173E+14
5	0.238E-10	0.142E-09	0.261E-09	0.119E-09	1.333	0.263E+14

LEMDA = 0.500E-04 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.400E-06	0.200E-02	0.200E-02	0.200E-05	4.000	0.100E+08
2	0.311E-09	0.200E-05	0.200E-05	0.155E-08	2.667	0.100E+11
3	0.335E-10	0.155E-08	0.172E-08	0.167E-09	2.000	0.119E+14
4	0.267E-10	0.167E-09	0.301E-09	0.133E-09	1.600	0.730E+14
5	0.222E-10	0.133E-09	0.244E-09	0.111E-09	1.333	0.900E+14

123C

Table -- 4.6
****

M= 1 MEO= 0.2500

LEMDA = 0.300E-01 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.639E-02	0.106	0.113	0.639E-02	2.000	311.
2	0.255E-03	0.639E-02	0.664E-02	0.255E-03	1.333	0.522E+04
3	0.767E-05	0.255E-03	0.263E-03	0.767E-05	1.000	0.130E+06
4	0.188E-06	0.767E-05	0.786E-05	0.188E-06	0.800	0.435E+07
5	0.695E-08	0.188E-06	0.195E-06	0.695E-08	0.667	0.177E+09

LEMDA = 0.800E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.496E-03	0.310E-01	0.315E-01	0.496E-03	2.000	0.403E+04
2	0.529E-05	0.496E-03	0.501E-03	0.529E-05	1.333	0.252E+06
3	0.447E-07	0.529E-05	0.534E-05	0.447E-07	1.000	0.236E+08
4	0.214E-08	0.447E-07	0.468E-07	0.214E-08	0.800	0.280E+10
5	0.155E-08	0.214E-08	0.369E-08	0.155E-08	0.667	0.585E+11

LEMDA = 0.400E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.126E-03	0.157E-01	0.159E-01	0.126E-03	2.000	0.159E+05
2	0.672E-06	0.126E-03	0.127E-03	0.672E-06	1.333	0.198E+07
3	0.281E-08	0.672E-06	0.675E-06	0.281E-08	1.000	0.372E+09
4	0.106E-09	0.281E-08	0.291E-08	0.106E-09	0.800	0.890E+11
5	0.810E-10	0.106E-09	0.187E-09	0.810E-10	0.667	0.236E+13

LEMDA = 0.250E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.495E-04	0.990E-02	0.995E-02	0.495E-04	2.000	0.404E+05
2	0.166E-06	0.495E-04	0.497E-04	0.166E-06	1.333	0.808E+07
3	0.984E-09	0.166E-06	0.167E-06	0.984E-09	1.000	0.241E+10
4	0.458E-09	0.984E-09	0.144E-08	0.458E-09	0.800	0.407E+12
5	0.380E-09	0.458E-09	0.838E-09	0.380E-09	0.667	0.874E+12

123C

LEMDA = 0.200E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.317E-04	0.794E-02	0.797E-02	0.317E-04	2.000	0.630E+05
2	0.850E-07	0.317E-04	0.318E-04	0.850E-07	1.333	0.158E+08
3	0.438E-09	0.850E-07	0.854E-07	0.438E-09	1.000	0.588E+10
4	0.215E-09	0.438E-09	0.653E-09	0.215E-09	0.800	0.114E+13
5	0.179E-09	0.215E-09	0.394E-09	0.179E-09	0.667	0.233E+13

LEMDA = 0.160E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.203E-04	0.636E-02	0.638E-02	0.203E-04	2.000	0.983E+05
2	0.436E-07	0.203E-04	0.204E-04	0.436E-07	1.333	0.307E+08
3	0.244E-09	0.436E-07	0.439E-07	0.244E-09	1.000	0.143E+11
4	0.140E-09	0.244E-09	0.383E-09	0.140E-09	0.800	0.256E+13
5	0.116E-09	0.140E-09	0.256E-09	0.116E-09	0.667	0.448E+13

LEMDA = 0.100E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.797E-05	0.398E-02	0.399E-02	0.797E-05	2.000	0.251E+06
2	0.109E-07	0.797E-05	0.798E-05	0.109E-07	1.333	0.125E+09
3	0.198E-09	0.109E-07	0.111E-07	0.198E-09	1.000	0.920E+11
4	0.150E-09	0.198E-09	0.348E-09	0.150E-09	0.800	0.505E+13
5	0.125E-09	0.150E-09	0.275E-09	0.125E-09	0.667	0.668E+13

LEMDA = 0.500E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.200E-05	0.200E-02	0.200E-02	0.200E-05	2.000	0.100E+07
2	0.155E-08	0.200E-05	0.200E-05	0.155E-08	1.333	0.100E+10
3	0.166E-09	0.155E-08	0.172E-08	0.166E-09	1.000	0.129E+13
4	0.133E-09	0.166E-09	0.299E-09	0.133E-09	0.800	0.120E+14
5	0.110E-09	0.133E-09	0.243E-09	0.110E-09	0.667	0.151E+14

LEMDA = 0.250E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.500E-06	0.999E-03	0.100E-02	0.500E-06	2.000	0.400E+07
2	0.222E-09	0.500E-06	0.500E-06	0.222E-09	1.333	0.801E+10
3	0.415E-10	0.222E-09	0.263E-09	0.415E-10	1.000	0.180E+14
4	0.332E-10	0.415E-10	0.747E-10	0.332E-10	0.800	0.964E+14
5	0.276E-10	0.332E-10	0.608E-10	0.276E-10	0.667	0.121E+15

LEMDA = 0.200E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.320E-06	0.799E-03	0.800E-03	0.320E-06	2.000	0.626E+07
2	0.121E-09	0.320E-06	0.320E-06	0.121E-09	1.333	0.156E+11
3	0.266E-10	0.121E-09	0.147E-09	0.266E-10	1.000	0.414E+14
4	0.212E-10	0.266E-10	0.478E-10	0.212E-10	0.800	0.188E+15
5	0.177E-10	0.212E-10	0.389E-10	0.177E-10	0.667	0.235E+15

LEMDA = 0.160E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.205E-06	0.640E-03	0.640E-03	0.205E-06	2.000	0.977E+07
2	0.765E-10	0.205E-06	0.205E-06	0.765E-10	1.333	0.305E+11
3	0.246E-10	0.765E-10	0.101E-09	0.246E-10	1.000	0.817E+14
4	0.197E-10	0.246E-10	0.443E-10	0.197E-10	0.800	0.254E+15
5	0.164E-10	0.197E-10	0.361E-10	0.164E-10	0.667	0.317E+15

LEMDA = 0.500E-04 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.201E-07	0.200E-03	0.200E-03	0.201E-07	2.000	0.100E+09
2	0.512E-10	0.201E-07	0.201E-07	0.512E-10	1.333	0.996E+12
3	0.374E-10	0.512E-10	0.886E-10	0.374E-10	1.000	0.390E+15
4	0.299E-10	0.374E-10	0.674E-10	0.299E-10	0.800	0.534E+15
5	0.249E-10	0.299E-10	0.549E-10	0.249E-10	0.667	0.668E+15

123C

TABLE -- 4.7
****

M= 2 MEO= 0.2500

LEMDA = 0.300E-01 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.122E-01	0.189	0.213	0.236E-01	2.000	164.
2	0.961E-03	0.227E-01	0.245E-01	0.187E-02	1.333	0.141E+04
3	0.570E-04	0.181E-02	0.192E-02	0.111E-03	1.000	0.179E+05
4	0.272E-05	0.109E-03	0.114E-03	0.533E-05	0.800	0.299E+06
5	0.112E-06	0.523E-05	0.545E-05	0.221E-06	0.667	0.624E+07

LEMDA = 0.800E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.981E-03	0.600E-01	0.620E-01	0.194E-02	2.000	0.205E+04
2	0.208E-04	0.192E-02	0.196E-02	0.413E-04	1.333	0.644E+05
3	0.333E-06	0.410E-04	0.416E-04	0.662E-06	1.000	0.303E+07
4	0.516E-08	0.658E-06	0.668E-06	0.103E-07	0.800	0.189E+09
5	0.807E-09	0.102E-07	0.118E-07	0.161E-08	0.667	0.114E+11

LEMDA = 0.400E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.251E-03	0.310E-01	0.315E-01	0.499E-03	2.000	0.800E+04
2	0.267E-05	0.496E-03	0.501E-03	0.531E-05	1.333	0.501E+06
3	0.225E-07	0.529E-05	0.534E-05	0.448E-07	1.000	0.470E+08
4	0.107E-08	0.447E-07	0.468E-07	0.214E-08	0.800	0.547E+10
5	0.780E-09	0.214E-08	0.369E-08	0.156E-08	0.667	0.858E+11

LEMDA = 0.250E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.987E-04	0.196E-01	0.198E-01	0.197E-03	2.000	0.203E+05
2	0.657E-06	0.196E-03	0.197E-03	0.131E-05	1.333	0.203E+07
3	0.384E-08	0.131E-05	0.132E-05	0.765E-08	1.000	0.305E+09
4	0.456E-09	0.764E-08	0.855E-08	0.910E-09	0.800	0.494E+11
5	0.368E-09	0.909E-09	0.164E-08	0.736E-09	0.667	0.313E+12

LEMDA = 0.200E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.633E-04	0.157E-01	0.159E-01	0.126E-03	2.000	0.316E+05
2	0.337E-06	0.126E-03	0.127E-03	0.673E-06	1.333	0.396E+07
3	0.144E-08	0.672E-06	0.675E-06	0.287E-08	1.000	0.742E+09
4	0.744E-10	0.286E-08	0.301E-08	0.149E-09	0.800	0.170E+12
5	0.584E-10	0.148E-09	0.265E-09	0.117E-09	0.667	0.242E+13

LEMDA = 0.160E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.406E-04	0.126E-01	0.127E-01	0.811E-04	2.000	0.493E+05
2	0.174E-06	0.809E-04	0.812E-04	0.347E-06	1.333	0.771E+07
3	0.900E-09	0.346E-06	0.348E-06	0.180E-08	1.000	0.180E+10
4	0.278E-09	0.180E-08	0.235E-08	0.556E-09	0.800	0.301E+12
5	0.231E-09	0.556E-09	0.102E-08	0.461E-09	0.667	0.795E+12

LEMDA = 0.100E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.159E-04	0.794E-02	0.797E-02	0.318E-04	2.000	0.126E+06
2	0.426E-07	0.317E-04	0.318E-04	0.851E-07	1.333	0.315E+08
3	0.220E-09	0.850E-07	0.855E-07	0.440E-09	1.000	0.117E+11
4	0.108E-09	0.440E-09	0.656E-09	0.217E-09	0.800	0.182E+13
5	0.902E-10	0.217E-09	0.397E-09	0.180E-09	0.667	0.326E+13

LEMDA = 0.500E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.399E-05	0.398E-02	0.399E-02	0.797E-05	2.000	0.502E+06
2	0.544E-08	0.797E-05	0.798E-05	0.109E-07	1.333	0.251E+09
3	0.986E-10	0.109E-07	0.111E-07	0.197E-09	1.000	0.182E+12
4	0.746E-10	0.197E-09	0.346E-09	0.149E-09	0.800	0.737E+13
5	0.621E-10	0.149E-09	0.273E-09	0.124E-09	0.667	0.947E+13

123C

LEMDA = 0.250E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.999E-06	0.200E-02	0.200E-02	0.200E-05	2.000	0.200E+07
2	0.776E-09	0.200E-05	0.200E-05	0.155E-08	1.333	0.200E+10
3	0.832E-10	0.155E-08	0.172E-08	0.166E-09	1.000	0.245E+13
4	0.663E-10	0.166E-09	0.299E-09	0.133E-09	0.800	0.172E+14
5	0.552E-10	0.133E-09	0.243E-09	0.110E-09	0.667	0.213E+14

LEMDA = 0.200E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.639E-06	0.160E-02	0.160E-02	0.128E-05	2.000	0.313E+07
2	0.348E-09	0.128E-05	0.128E-05	0.697E-09	1.333	0.391E+10
3	0.574E-11	0.697E-09	0.708E-09	0.115E-10	1.000	0.712E+13
4	0.449E-11	0.115E-10	0.205E-10	0.897E-11	0.800	0.313E+15
5	0.374E-11	0.897E-11	0.164E-10	0.747E-11	0.667	0.394E+15

LEMDA = 0.160E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.409E-06	0.128E-02	0.128E-02	0.818E-06	2.000	0.489E+07
2	0.190E-09	0.818E-06	0.819E-06	0.379E-09	1.333	0.764E+10
3	0.112E-10	0.379E-09	0.401E-09	0.225E-10	1.000	0.160E+14
4	0.894E-11	0.225E-10	0.404E-10	0.179E-10	0.800	0.199E+15
5	0.745E-11	0.179E-10	0.328E-10	0.149E-10	0.667	0.247E+15

LEMDA = 0.500E-04 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.400E-07	0.400E-03	0.400E-03	0.800E-07	2.000	0.500E+08
2	0.977E-11	0.800E-07	0.800E-07	0.195E-10	1.333	0.250E+12
3	0.333E-11	0.195E-10	0.262E-10	0.665E-11	1.000	0.875E+15
4	0.266E-11	0.665E-11	0.120E-10	0.532E-11	0.800	0.215E+16
5	0.222E-11	0.532E-11	0.976E-11	0.443E-11	0.667	0.265E+16

123c

TABLE -- 4.8
****

M= 3 MEO= 0.2500

LEMDA = 0.300E-01 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.176E-01	0.252	0.301	0.490E-01	2.000	116.
2	0.203E-02	0.452E-01	0.510E-01	0.576E-02	1.333	680.
3	0.179E-03	0.543E-02	0.594E-02	0.512E-03	1.000	0.579E+04
4	0.127E-04	0.488E-03	0.525E-03	0.366E-04	0.800	0.651E+05
5	0.761E-06	0.352E-04	0.374E-04	0.221E-05	0.667	0.910E+06

LEMDA = 0.800E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.146E-02	0.872E-01	0.915E-01	0.428E-02	2.000	0.139E+04
2	0.461E-04	0.419E-02	0.432E-02	0.136E-03	1.333	0.292E+05
3	0.110E-05	0.134E-03	0.137E-03	0.326E-05	1.000	0.918E+06
4	0.224E-07	0.322E-05	0.329E-05	0.665E-07	0.800	0.383E+08
5	0.147E-08	0.658E-07	0.702E-07	0.438E-08	0.667	0.182E+10

LEMDA = 0.400E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.374E-03	0.458E-01	0.469E-01	0.111E-02	2.000	0.538E+04
2	0.595E-05	0.110E-02	0.112E-02	0.177E-04	1.333	0.225E+06
3	0.715E-07	0.176E-04	0.178E-04	0.213E-06	1.000	0.141E+08
4	0.974E-09	0.212E-06	0.215E-06	0.291E-08	0.800	0.117E+10
5	0.248E-09	0.289E-08	0.363E-08	0.741E-09	0.667	0.739E+11

LEMDA = 0.250E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.148E-03	0.291E-01	0.296E-01	0.440E-03	2.000	0.136E+05
2	0.147E-05	0.437E-03	0.441E-03	0.439E-05	1.333	0.910E+06
3	0.116E-07	0.437E-05	0.440E-05	0.345E-07	1.000	0.911E+08
4	0.509E-09	0.344E-07	0.359E-07	0.152E-08	0.800	0.113E+11
5	0.369E-09	0.152E-08	0.262E-08	0.110E-08	0.667	0.178E+12

123C

LEMDA = 0.200E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.947E-04	0.234E-01	0.237E-01	0.283E-03	2.000	0.212E+05
2	0.757E-06	0.281E-03	0.283E-03	0.226E-05	1.333	0.177E+07
3	0.537E-08	0.225E-05	0.227E-05	0.160E-07	1.000	0.221E+09
4	0.690E-09	0.160E-07	0.181E-07	0.206E-08	0.800	0.288E+11
5	0.556E-09	0.206E-08	0.372E-08	0.166E-08	0.667	0.158E+12

LEMDA = 0.160E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.608E-04	0.188E-01	0.190E-01	0.182E-03	2.000	0.330E+05
2	0.389E-06	0.181E-03	0.182E-03	0.116E-05	1.333	0.344E+07
3	0.238E-08	0.116E-05	0.117E-05	0.713E-08	1.000	0.537E+09
4	0.423E-09	0.711E-08	0.838E-08	0.127E-08	0.800	0.786E+11
5	0.346E-09	0.126E-08	0.230E-08	0.104E-08	0.667	0.320E+12

LEMDA = 0.100E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.238E-04	0.119E-01	0.119E-01	0.713E-04	2.000	0.840E+05
2	0.953E-07	0.711E-04	0.714E-04	0.285E-06	1.333	0.140E+08
3	0.370E-09	0.285E-06	0.286E-06	0.111E-08	1.000	0.350E+10
4	0.682E-10	0.111E-08	0.131E-08	0.204E-09	0.800	0.805E+12
5	0.562E-10	0.204E-09	0.372E-09	0.168E-09	0.667	0.316E+13

LEMDA = 0.500E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.598E-05	0.596E-02	0.598E-02	0.179E-04	2.000	0.335E+06
2	0.120E-07	0.179E-04	0.179E-04	0.359E-07	1.333	0.112E+09
3	0.401E-10	0.359E-07	0.360E-07	0.120E-09	1.000	0.556E+11
4	0.178E-10	0.120E-09	0.173E-09	0.532E-10	0.800	0.129E+14
5	0.148E-10	0.532E-10	0.975E-10	0.443E-10	0.667	0.242E+14

123C

LEMDA = 0.250E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.150E-05	0.299E-02	0.300E-02	0.449E-05	2.000	0.134E+07
2	0.150E-08	0.449E-05	0.449E-05	0.451E-08	1.333	0.891E+09
3	0.640E-11	0.451E-08	0.453E-08	0.192E-10	1.000	0.885E+12
4	0.422E-11	0.192E-10	0.318E-10	0.127E-10	0.800	0.145E+15
5	0.352E-11	0.127E-10	0.232E-10	0.105E-10	0.667	0.203E+15

LEMDA = 0.200E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.959E-06	0.239E-02	0.240E-02	0.288E-05	2.000	0.209E+07
2	0.937E-09	0.287E-05	0.288E-05	0.281E-08	1.333	0.174E+10
3	0.128E-09	0.281E-08	0.319E-08	0.383E-09	1.000	0.163E+13
4	0.102E-09	0.383E-09	0.689E-09	0.305E-09	0.800	0.852E+13
5	0.848E-10	0.305E-09	0.560E-09	0.254E-09	0.667	0.105E+14

LEMDA = 0.160E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.614E-06	0.192E-02	0.192E-02	0.184E-05	2.000	0.326E+07
2	0.491E-09	0.184E-05	0.184E-05	0.147E-08	1.333	0.339E+10
3	0.740E-10	0.147E-08	0.169E-08	0.222E-09	1.000	0.386E+13
4	0.591E-10	0.222E-09	0.399E-09	0.177E-09	0.800	0.184E+14
5	0.492E-10	0.177E-09	0.325E-09	0.148E-09	0.667	0.227E+14

LEMDA = 0.500E-04 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.600E-07	0.600E-03	0.600E-03	0.180E-06	2.000	0.333E+08
2	0.186E-10	0.180E-06	0.180E-06	0.559E-10	1.333	0.111E+12
3	0.498E-11	0.559E-10	0.708E-10	0.149E-10	1.000	0.304E+15
4	0.398E-11	0.149E-10	0.269E-10	0.119E-10	0.800	0.874E+15
5	0.332E-11	0.119E-10	0.219E-10	0.995E-11	0.667	0.108E+16

123c

TABLE -- 4.9
****

MEO= 0.2500

0.300E-01 LEMDAS= 0.000

U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
6E-01	0.298	0.379	0.807E-01	2.000	91.5
0E-02	0.713E-01	0.838E-01	0.125E-01	1.333	413.
4E-03	0.114E-01	0.129E-01	0.147E-02	1.000	0.267E+04
0E-04	0.137E-02	0.151E-02	0.140E-03	0.800	0.227E+05
2E-05	0.131E-03	0.142E-03	0.111E-04	0.667	0.239E+06

0.800E-02 LEMDAS= 0.000

U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
2E-02	0.113	0.120	0.744E-02	2.000	0.106E+04
6E-04	0.721E-02	0.752E-02	0.315E-03	1.333	0.168E+05
6E-05	0.308E-03	0.318E-03	0.100E-04	1.000	0.397E+06
6E-07	0.985E-05	0.101E-04	0.262E-06	0.800	0.124E+08
7E-08	0.258E-06	0.269E-06	0.105E-07	0.667	0.470E+09

0.400E-02 LEMDAS= 0.000

U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
6E-03	0.600E-01	0.620E-01	0.195E-02	2.000	0.406E+04
5E-04	0.192E-02	0.196E-02	0.415E-04	1.333	0.128E+06
8E-06	0.410E-04	0.416E-04	0.664E-06	1.000	0.603E+07
9E-08	0.658E-06	0.668E-06	0.103E-07	0.800	0.376E+09
5E-09	0.102E-07	0.118E-07	0.161E-08	0.667	0.219E+11

0.250E-02 LEMDAS= 0.000

U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
6E-03	0.384E-01	0.392E-01	0.776E-03	2.000	0.103E+05
0E-05	0.769E-03	0.779E-03	0.103E-04	1.333	0.515E+06
5E-07	0.103E-04	0.104E-04	0.105E-06	1.000	0.387E+08
6E-09	0.105E-06	0.107E-06	0.253E-08	0.800	0.376E+10
8E-09	0.252E-08	0.394E-08	0.142E-08	0.667	0.112E+12

LEMDA = 0.200E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.126E-03	0.310E-01	0.315E-01	0.500E-03	2.000	0.159E+05
2	0.134E-05	0.496E-03	0.501E-03	0.532E-05	1.333	0.100E+07
3	0.113E-07	0.529E-05	0.534E-05	0.450E-07	1.000	0.939E+08
4	0.563E-09	0.448E-07	0.470E-07	0.224E-08	0.800	0.108E+11
5	0.411E-09	0.223E-08	0.387E-08	0.164E-08	0.667	0.144E+12

LEMDA = 0.160E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.809E-04	0.250E-01	0.253E-01	0.321E-03	2.000	0.248E+05
2	0.689E-06	0.319E-03	0.322E-03	0.274E-05	1.333	0.194E+07
3	0.509E-08	0.273E-05	0.275E-05	0.203E-07	1.000	0.228E+09
4	0.573E-09	0.202E-07	0.225E-07	0.229E-08	0.800	0.285E+11
5	0.458E-09	0.228E-08	0.411E-08	0.183E-08	0.667	0.171E+12

LEMDA = 0.100E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.317E-04	0.157E-01	0.159E-01	0.126E-03	2.000	0.631E+05
2	0.169E-06	0.126E-03	0.127E-03	0.674E-06	1.333	0.791E+07
3	0.719E-09	0.672E-06	0.675E-06	0.287E-08	1.000	0.148E+10
4	0.373E-10	0.286E-08	0.301E-08	0.149E-09	0.800	0.336E+12
5	0.292E-10	0.148E-09	0.265E-09	0.117E-09	0.667	0.424E+13

LEMDA = 0.500E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.797E-05	0.794E-02	0.797E-02	0.318E-04	2.000	0.251E+06
2	0.213E-07	0.317E-04	0.318E-04	0.851E-07	1.333	0.629E+08
3	0.109E-09	0.850E-07	0.854E-07	0.437E-09	1.000	0.234E+11
4	0.535E-10	0.436E-09	0.650E-09	0.214E-09	0.800	0.335E+13
5	0.445E-10	0.213E-09	0.391E-09	0.178E-09	0.667	0.577E+13

LEMDA = 0.250E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.200E-05	0.398E-02	0.399E-02	0.798E-05	2.000	0.100E+07
2	0.272E-08	0.797E-05	0.798E-05	0.109E-07	1.333	0.501E+09
3	0.493E-10	0.109E-07	0.111E-07	0.197E-09	1.000	0.363E+12
4	0.373E-10	0.197E-09	0.346E-09	0.149E-09	0.800	0.130E+14
5	0.311E-10	0.149E-09	0.273E-09	0.124E-09	0.667	0.165E+14

LEMDA = 0.200E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.128E-05	0.319E-02	0.319E-02	0.511E-05	2.000	0.157E+07
2	0.144E-08	0.510E-05	0.511E-05	0.576E-08	1.333	0.979E+09
3	0.599E-10	0.576E-08	0.600E-08	0.240E-09	1.000	0.842E+12
4	0.471E-10	0.240E-09	0.428E-09	0.188E-09	0.800	0.131E+14
5	0.392E-10	0.188E-09	0.345E-09	0.157E-09	0.667	0.164E+14

LEMDA = 0.160E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.818E-06	0.255E-02	0.256E-02	0.327E-05	2.000	0.245E+07
2	0.728E-09	0.327E-05	0.327E-05	0.291E-08	1.333	0.191E+10
3	0.227E-10	0.291E-08	0.300E-08	0.908E-10	1.000	0.210E+13
4	0.178E-10	0.908E-10	0.162E-09	0.712E-10	0.800	0.433E+14
5	0.148E-10	0.712E-10	0.131E-09	0.593E-10	0.667	0.540E+14

LEMDA = 0.500E-04 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.800E-07	0.799E-03	0.800E-03	0.320E-06	2.000	0.250E+08
2	0.302E-10	0.320E-06	0.320E-06	0.121E-09	1.333	0.625E+11
3	0.664E-11	0.121E-09	0.147E-09	0.266E-10	1.000	0.142E+15
4	0.531E-11	0.265E-10	0.478E-10	0.212E-10	0.800	0.471E+15
5	0.442E-11	0.212E-10	0.389E-10	0.177E-10	0.667	0.580E+15

123C

TABLE -- 4.10
****

M= 5 MEO= 0.2500

LEMDA = 0.300E-01 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.271E-01	0.331	0.448	0.117	2.000	77.1
2	0.501E-02	0.989E-01	0.121	0.223E-01	1.333	285.
3	0.717E-03	0.198E-01	0.230E-01	0.327E-02	1.000	0.149E+04
4	0.834E-04	0.296E-02	0.335E-02	0.386E-03	0.800	0.102E+05
5	0.817E-05	0.356E-03	0.394E-03	0.382E-04	0.667	0.864E+05

LEMDA = 0.800E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.237E-02	0.136	0.148	0.114E-01	2.000	858.
2	0.124E-03	0.109E-01	0.115E-01	0.601E-03	1.333	0.110E+05
3	0.490E-05	0.582E-03	0.606E-03	0.239E-04	1.000	0.208E+06
4	0.156E-06	0.233E-04	0.240E-04	0.763E-06	0.800	0.523E+07
5	0.446E-08	0.747E-06	0.769E-06	0.219E-07	0.667	0.164E+09

LEMDA = 0.400E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.616E-03	0.739E-01	0.769E-01	0.302E-02	2.000	0.328E+04
2	0.163E-04	0.295E-02	0.303E-02	0.801E-04	1.333	0.828E+05
3	0.324E-06	0.788E-04	0.804E-04	0.160E-05	1.000	0.312E+07
4	0.573E-08	0.158E-05	0.161E-05	0.283E-07	0.800	0.156E+09
5	0.548E-09	0.280E-07	0.308E-07	0.272E-08	0.667	0.827E+10

LEMDA = 0.250E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.244E-03	0.476E-01	0.488E-01	0.121E-02	2.000	0.824E+04
2	0.404E-05	0.119E-02	0.121E-02	0.200E-04	1.333	0.332E+06
3	0.508E-07	0.198E-04	0.201E-04	0.252E-06	1.000	0.200E+08
4	0.884E-09	0.250E-06	0.254E-06	0.439E-08	0.800	0.158E+10
5	0.321E-09	0.436E-08	0.596E-08	0.160E-08	0.667	0.710E+11

123C

LEMDA = 0.200E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.157E-03	0.384E-01	0.392E-01	0.777E-03	2.000	0.128E+05
2	0.208E-05	0.769E-03	0.779E-03	0.103E-04	1.333	0.644E+06
3	0.212E-07	0.103E-04	0.104E-04	0.105E-06	1.000	0.484E+08
4	0.509E-09	0.105E-06	0.107E-06	0.253E-08	0.800	0.469E+10
5	0.286E-09	0.252E-08	0.394E-08	0.142E-08	0.667	0.137E+12

LEMDA = 0.160E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.101E-03	0.310E-01	0.315E-01	0.500E-03	2.000	0.199E+05
2	0.107E-05	0.496E-03	0.501E-03	0.533E-05	1.333	0.125E+07
3	0.905E-08	0.529E-05	0.534E-05	0.450E-07	1.000	0.117E+09
4	0.450E-09	0.448E-07	0.470E-07	0.224E-08	0.800	0.134E+11
5	0.329E-09	0.223E-08	0.387E-08	0.164E-08	0.667	0.176E+12

LEMDA = 0.100E-02 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.396E-04	0.196E-01	0.198E-01	0.197E-03	2.000	0.506E+05
2	0.264E-06	0.196E-03	0.197E-03	0.131E-05	1.333	0.507E+07
3	0.154E-08	0.131E-05	0.132E-05	0.766E-08	1.000	0.761E+09
4	0.183E-09	0.764E-08	0.855E-08	0.911E-09	0.800	0.120E+12
5	0.148E-09	0.909E-09	0.165E-08	0.736E-09	0.667	0.668E+12

LEMDA = 0.500E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.995E-05	0.990E-02	0.995E-02	0.496E-04	2.000	0.201E+06
2	0.333E-07	0.495E-04	0.497E-04	0.166E-06	1.333	0.403E+08
3	0.196E-09	0.166E-06	0.167E-06	0.979E-09	1.000	0.120E+11
4	0.908E-10	0.978E-09	0.143E-08	0.453E-09	0.800	0.149E+13
5	0.755E-10	0.453E-09	0.830E-09	0.377E-09	0.667	0.265E+13

123c

LEMDA = 0.250E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.249E-05	0.498E-02	0.499E-02	0.125E-04	2.000	0.802E+06
2	0.419E-08	0.124E-04	0.125E-04	0.209E-07	1.333	0.321E+09
3	0.340E-10	0.209E-07	0.211E-07	0.170E-09	1.000	0.190E+12
4	0.230E-10	0.170E-09	0.285E-09	0.115E-09	0.800	0.153E+14
5	0.192E-10	0.115E-09	0.211E-09	0.958E-10	0.667	0.209E+14

LEMDA = 0.200E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.160E-05	0.398E-02	0.399E-02	0.798E-05	2.000	0.125E+07
2	0.218E-08	0.797E-05	0.798E-05	0.109E-07	1.333	0.627E+09
3	0.396E-10	0.109E-07	0.111E-07	0.198E-09	1.000	0.453E+12
4	0.300E-10	0.198E-09	0.348E-09	0.150E-09	0.800	0.157E+14
5	0.250E-10	0.150E-09	0.275E-09	0.125E-09	0.667	0.200E+14

LEMDA = 0.160E-03 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.102E-05	0.319E-02	0.319E-02	0.511E-05	2.000	0.196E+07
2	0.115E-08	0.510E-05	0.511E-05	0.576E-08	1.333	0.122E+10
3	0.480E-10	0.576E-08	0.600E-08	0.240E-09	1.000	0.105E+13
4	0.377E-10	0.240E-09	0.428E-09	0.188E-09	0.800	0.160E+14
5	0.314E-10	0.188E-09	0.345E-09	0.157E-09	0.667	0.199E+14

LEMDA = 0.500E-04 LEMDAS= 0.000

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.100E-06	0.999E-03	0.999E-03	0.500E-06	2.000	0.200E+08
2	0.444E-10	0.500E-06	0.500E-06	0.222E-09	1.333	0.400E+11
3	0.835E-11	0.222E-09	0.264E-09	0.417E-10	1.000	0.783E+14
4	0.667E-11	0.417E-10	0.751E-10	0.334E-10	0.800	0.292E+15
5	0.556E-11	0.334E-10	0.611E-10	0.278E-10	0.667	0.360E+15

TABLE--- 4.11
****

M= 1 MED=0.0625

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.847E-01	0.353	0.438	0.847E-01	8.000	86.4
2	0.215E-01	0.134	0.156	0.215E-01	5.333	243.
3	0.611E-02	0.509E-01	0.570E-01	0.611E-02	4.000	651.
4	0.203E-02	0.211E-01	0.231E-01	0.203E-02	3.200	0.158E 04
5	0.778E-03	0.973E-02	0.105E-01	0.778E-03	2.667	0.342E 04

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.123E-01	0.192	0.204	0.123E-01	8.000	644.
2	0.209E-02	0.490E-01	0.511E-01	0.209E-02	5.333	0.255E 04
3	0.542E-03	0.170E-01	0.175E-01	0.542E-03	4.000	0.737E 04
4	0.186E-03	0.725E-02	0.744E-02	0.186E-03	3.200	0.172E 05
5	0.763E-04	0.358E-02	0.366E-02	0.763E-04	2.666	0.349E 05

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.464E-02	0.145	0.150	0.464E-02	8.000	0.172E 04
2	0.765E-03	0.359E-01	0.366E-01	0.765E-03	5.333	0.696E 04
3	0.205E-03	0.128E-01	0.130E-01	0.205E-03	4.000	0.195E 05
4	0.729E-04	0.570E-02	0.577E-02	0.729E-04	3.200	0.439E 05
5	0.309E-04	0.290E-02	0.293E-02	0.309E-04	2.666	0.863E 05

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.251E-02	0.126	0.128	0.251E-02	8.000	0.318E 04
2	0.418E-03	0.314E-01	0.318E-01	0.418E-03	5.333	0.128E 05
3	0.115E-03	0.115E-01	0.116E-01	0.115E-03	4.000	0.349E 05
4	0.414E-04	0.518E-02	0.522E-02	0.414E-04	3.200	0.772E 05
5	0.178E-04	0.267E-02	0.269E-02	0.178E-04	2.667	0.150E 06

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.190E-02	0.119	0.121	0.190E-02	8.000	0.420E 04
2	0.319E-03	0.299E-01	0.302E-01	0.319E-03	5.333	0.167E 05
3	0.883E-04	0.110E-01	0.111E-01	0.883E-04	4.000	0.453E 05
4	0.321E-04	0.501E-02	0.505E-02	0.321E-04	3.200	0.997E 05
5	0.139E-04	0.260E-02	0.261E-02	0.139E-04	2.667	0.192E 06

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.145E-02	0.113	0.115	0.145E-02	8.000	0.550E 04
2	0.245E-03	0.288E-01	0.290E-01	0.245E-03	5.333	0.217E 05
3	0.685E-04	0.107E-01	0.108E-01	0.685E-04	4.000	0.584E 05
4	0.250E-04	0.489E-02	0.491E-02	0.250E-04	3.200	0.128E 06
5	0.108E-04	0.254E-02	0.255E-02	0.108E-04	2.667	0.246E 06

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.841E-03	0.105	0.106	0.841E-03	8.000	0.950E 04
2	0.144E-03	0.271E-01	0.272E-01	0.144E-03	5.333	0.369E 05
3	0.408E-04	0.102E-01	0.102E-01	0.408E-04	4.000	0.980E 05
4	0.150E-04	0.470E-02	0.471E-02	0.150E-04	3.200	0.213E 06
5	0.655E-05	0.246E-02	0.246E-02	0.655E-05	2.667	0.407E 06

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.392E-03	0.981E-01	0.985E-01	0.392E-03	8.000	0.204E 05
2	0.686E-04	0.257E-01	0.258E-01	0.686E-04	5.333	0.777E 05
3	0.196E-04	0.980E-02	0.981E-02	0.196E-04	4.000	0.204E 06
4	0.727E-05	0.454E-02	0.455E-02	0.727E-05	3.200	0.440E 06
5	0.319E-05	0.239E-02	0.239E-02	0.319E-05	2.667	0.837E 06

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LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.189E-03	0.945E-01	0.947E-01	0.189E-03	8.000	0.423E 05
2	0.334E-04	0.251E-01	0.251E-01	0.334E-04	5.333	0.160E 06
3	0.960E-05	0.960E-02	0.961E-02	0.960E-05	4.000	0.417E 06
4	0.357E-05	0.447E-02	0.447E-02	0.357E-05	3.200	0.895E 06
5	0.157E-05	0.236E-02	0.236E-02	0.157E-05	2.666	0.170E 07

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.150E-03	0.938E-01	0.939E-01	0.150E-03	8.000	0.533E 05
2	0.266E-04	0.249E-01	0.249E-01	0.266E-04	5.333	0.201E 06
3	0.765E-05	0.956E-02	0.957E-02	0.765E-05	4.000	0.523E 06
4	0.285E-05	0.445E-02	0.446E-02	0.285E-05	3.200	0.112E 07
5	0.125E-05	0.235E-02	0.235E-02	0.125E-05	2.666	0.213E 07

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.119E-03	0.932E-01	0.933E-01	0.119E-03	8.000	0.670E 05
2	0.212E-04	0.248E-01	0.248E-01	0.212E-04	5.333	0.252E 06
3	0.610E-05	0.953E-02	0.953E-02	0.610E-05	4.000	0.656E 06
4	0.227E-05	0.444E-02	0.444E-02	0.227E-05	3.200	0.141E 07
5	0.100E-05	0.234E-02	0.235E-02	0.100E-05	2.667	0.267E 07

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.367E-04	0.916E-01	0.917E-01	0.367E-04	8.000	0.218E 06
2	0.654E-05	0.245E-01	0.245E-01	0.654E-05	5.333	0.816E 06
3	0.189E-05	0.944E-02	0.944E-02	0.189E-05	4.000	0.212E 07
4	0.705E-06	0.441E-02	0.441E-02	0.705E-06	3.200	0.454E 07
5	0.311E-06	0.233E-02	0.233E-02	0.311E-06	2.667	0.858E 07

TABLE--- 4.12
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M= 2 MEO=0.0625

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.127	0.400	0.622	0.223	8.516	58.7
2	0.418E-01	0.211	0.286	0.754E-01	5.701	131.
3	0.126E-01	0.881E-01	0.111	0.232E-01	4.257	334.
4	0.374E-02	0.336E-01	0.406E-01	0.697E-02	3.387	902.
5	0.115E-02	0.126E-01	0.148E-01	0.216E-02	2.808	0.244E 04

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.163E-01	0.234	0.265	0.313E-01	8.160	494.
2	0.234E-02	0.516E-01	0.562E-01	0.455E-02	5.442	0.232E 04
3	0.412E-03	0.123E-01	0.131E-01	0.804E-03	4.074	0.988E 04
4	0.907E-04	0.340E-02	0.358E-02	0.178E-03	3.253	0.358E 05
5	0.242E-04	0.109E-02	0.114E-02	0.475E-04	2.706	0.112E 06

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.514E-02	0.154	0.164	0.101E-01	8.083	0.156E 04
2	0.575E-03	0.261E-01	0.273E-01	0.113E-02	5.389	0.936E 04
3	0.945E-04	0.576E-02	0.594E-02	0.187E-03	4.038	0.427E 05
4	0.209E-04	0.160E-02	0.164E-02	0.414E-04	3.227	0.154E 06
5	0.576E-05	0.530E-03	0.542E-03	0.114E-04	2.687	0.467E 06

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.241E-02	0.118	0.122	0.477E-02	8.052	0.333E 04
2	0.247E-03	0.182E-01	0.187E-01	0.490E-03	5.368	0.217E 05
3	0.407E-04	0.401E-02	0.409E-02	0.808E-04	4.023	0.988E 05
4	0.923E-05	0.114E-02	0.116E-02	0.183E-04	3.214	0.348E 06
5	0.261E-05	0.388E-03	0.393E-03	0.519E-05	2.676	0.103E 07

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.171E-02	0.105	0.108	0.338E-02	8.042	0.470E 04
2	0.171E-03	0.158E-01	0.161E-01	0.340E-03	5.361	0.313E 05
3	0.284E-04	0.350E-02	0.356E-02	0.564E-04	4.018	0.142E 06
4	0.652E-05	0.101E-02	0.102E-02	0.130E-04	3.211	0.493E 06
5	0.186E-05	0.347E-03	0.351E-03	0.371E-05	2.672	0.143E 07

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.122E-02	0.938E-01	0.962E-01	0.242E-02	8.034	0.657E 04
2	0.121E-03	0.140E-01	0.142E-01	0.240E-03	5.356	0.444E 05
3	0.202E-04	0.313E-02	0.317E-02	0.403E-04	4.015	0.198E 06
4	0.471E-05	0.911E-03	0.920E-03	0.937E-05	3.212	0.683E 06
5	0.136E-05	0.317E-03	0.320E-03	0.271E-05	2.675	0.196E 07

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.623E-03	0.771E-01	0.783E-01	0.124E-02	8.021	0.129E 05
2	0.613E-04	0.114E-01	0.115E-01	0.122E-03	5.347	0.872E 05
3	0.105E-04	0.261E-02	0.264E-02	0.210E-04	4.009	0.381E 06
4	0.250E-05	0.777E-03	0.782E-03	0.499E-05	3.207	0.128E 07
5	0.738E-06	0.275E-03	0.277E-03	0.147E-05	2.673	0.362E 07

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.252E-03	0.626E-01	0.631E-01	0.502E-03	8.011	0.318E 05
2	0.253E-04	0.944E-02	0.949E-02	0.505E-04	5.341	0.211E 06
3	0.446E-05	0.223E-02	0.223E-02	0.892E-05	4.004	0.897E 06
4	0.108E-05	0.677E-03	0.679E-03	0.217E-05	3.201	0.295E 07
5	0.325E-06	0.244E-03	0.244E-03	0.650E-06	2.665	0.819E 07

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.111E-03	0.552E-01	0.554E-01	0.221E-03	8.005	0.724E 05
2	0.114E-04	0.852E-02	0.854E-02	0.227E-04	5.337	0.469E 06
3	0.205E-05	0.204E-02	0.205E-02	0.409E-05	4.002	0.195E 07
4	0.504E-06	0.630E-03	0.631E-03	0.101E-05	3.199	0.635E 07
5	0.153E-06	0.229E-03	0.229E-03	0.305E-06	2.667	0.175E 08

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.860E-04	0.537E-01	0.538E-01	0.172E-03	8.004	0.930E 05
2	0.891E-05	0.834E-02	0.836E-02	0.178E-04	5.336	0.599E 06
3	0.161E-05	0.201E-02	0.201E-02	0.322E-05	4.000	0.249E 07
4	0.397E-06	0.621E-03	0.621E-03	0.794E-06	3.197	0.805E 07
5	0.120E-06	0.226E-03	0.226E-03	0.241E-06	2.662	0.221E 08

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.673E-04	0.525E-01	0.526E-01	0.134E-03	8.003	0.119E 06
2	0.700E-05	0.820E-02	0.821E-02	0.140E-04	5.335	0.762E 06
3	0.127E-05	0.198E-02	0.198E-02	0.254E-05	4.000	0.315E 07
4	0.314E-06	0.613E-03	0.614E-03	0.628E-06	3.198	0.102E 08
5	0.954E-07	0.224E-03	0.224E-03	0.191E-06	2.663	0.279E 08

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.197E-04	0.491E-01	0.492E-01	0.393E-04	8.001	0.407E 06
2	0.208E-05	0.781E-02	0.781E-02	0.416E-05	5.334	0.256E 07
3	0.381E-06	0.191E-02	0.191E-02	0.763E-06	4.000	0.105E 08
4	0.951E-07	0.594E-03	0.594E-03	0.190E-06	3.201	0.337E 08
5	0.291E-07	0.218E-03	0.218E-03	0.581E-07	2.671	0.919E 08

TABLE---4.13
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M= 3 MED=0.0625

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.160	0.379	0.751	0.371	9.020	47.4
2	0.668E-01	0.270	0.433	0.163	6.082	85.0
3	0.245E-01	0.143	0.205	0.620E-01	4.529	181.
4	0.821E-02	0.632E-01	0.845E-01	0.213E-01	3.586	433.
5	0.264E-02	0.254E-01	0.323E-01	0.697E-02	2.958	0.112E 04

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.214E-01	0.283	0.342	0.591E-01	8.320	381.
2	0.343E-02	0.709E-01	0.805E-01	0.967E-02	5.553	0.162E 04
3	0.563E-03	0.159E-01	0.175E-01	0.161E-02	4.150	0.737E 04
4	0.104E-03	0.372E-02	0.402E-02	0.298E-03	3.308	0.319E 05
5	0.218E-04	0.951E-03	0.101E-02	0.632E-04	2.747	0.126E 06

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.643E-02	0.185	0.203	0.185E-01	8.165	0.126E 04
2	0.686E-03	0.302E-01	0.322E-01	0.199E-02	5.445	0.793E 04
3	0.903E-04	0.537E-02	0.563E-02	0.264E-03	4.076	0.451E 05
4	0.151E-04	0.113E-02	0.117E-02	0.443E-04	3.255	0.216E 06
5	0.308E-05	0.279E-03	0.288E-03	0.907E-05	2.705	0.878E 06

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.284E-02	0.135	0.143	0.831E-02	8.105	0.284E 04
2	0.249E-03	0.179E-01	0.187E-01	0.732E-03	5.404	0.217E 05
3	0.306E-04	0.297E-02	0.306E-02	0.905E-04	4.047	0.132E 06
4	0.506E-05	0.617E-03	0.632E-03	0.150E-04	3.230	0.638E 06
5	0.105E-05	0.154E-03	0.158E-03	0.311E-05	2.683	0.256E 07

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.194E-02	0.116	0.122	0.571E-02	8.084	0.415E 04
2	0.159E-03	0.144E-01	0.149E-01	0.469E-03	5.390	0.339E 05
3	0.193E-04	0.235E-02	0.240E-02	0.571E-04	4.038	0.210E 06
4	0.320E-05	0.490E-03	0.499E-03	0.950E-05	3.224	0.101E 07
5	0.673E-06	0.124E-03	0.126E-03	0.200E-05	2.685	0.399E 07

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.134E-02	0.101	0.105	0.394E-02	8.067	0.603E 04
2	0.103E-03	0.118E-01	0.121E-01	0.306E-03	5.378	0.520E 05
3	0.125E-04	0.191E-02	0.195E-02	0.371E-04	4.030	0.323E 06
4	0.209E-05	0.402E-03	0.408E-03	0.622E-05	3.215	0.154E 07
5	0.444E-06	0.103E-03	0.104E-03	0.132E-05	2.672	0.601E 07

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.625E-03	0.764E-01	0.783E-01	0.185E-02	8.042	0.129E 05
2	0.451E-04	0.832E-02	0.846E-02	0.134E-03	5.362	0.119E 06
3	0.549E-05	0.135E-02	0.137E-02	0.164E-04	4.020	0.733E 06
4	0.941E-06	0.291E-03	0.294E-03	0.281E-05	3.209	0.341E 07
5	0.207E-06	0.766E-04	0.772E-04	0.617E-06	2.684	0.130E 08

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.222E-03	0.549E-01	0.556E-01	0.662E-03	8.021	0.361E 05
2	0.156E-04	0.581E-02	0.586E-02	0.467E-04	5.347	0.342E 06
3	0.196E-05	0.973E-03	0.979E-03	0.586E-05	4.008	0.205E 07
4	0.348E-06	0.217E-03	0.218E-03	0.104E-05	3.206	0.921E 07
5	0.787E-07	0.586E-04	0.589E-04	0.236E-06	2.678	0.340E 08

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.879E-04	0.437E-01	0.440E-01	0.263E-03	8.011	0.911E 05
2	0.629E-05	0.470E-02	0.472E-02	0.188E-04	5.340	0.849E 06
3	0.812E-06	0.810E-03	0.812E-03	0.243E-05	4.004	0.493E 07
4	0.148E-06	0.185E-03	0.185E-03	0.443E-06	3.201	0.216E 08
5	0.339E-07	0.509E-04	0.510E-04	0.102E-06	2.661	0.785E 08

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.656E-04	0.415E-01	0.417E-01	0.199E-03	8.008	0.120E 06
2	0.480E-05	0.449E-02	0.450E-02	0.144E-04	5.338	0.111E 07
3	0.625E-06	0.779E-03	0.781E-03	0.187E-05	4.001	0.641E 07
4	0.114E-06	0.179E-03	0.179E-03	0.342E-06	3.189	0.280E 08
5	0.262E-07	0.495E-04	0.495E-04	0.787E-07	2.650	0.101E 09

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.509E-04	0.396E-01	0.398E-01	0.152E-03	8.007	0.157E 06
2	0.370E-05	0.432E-02	0.433E-02	0.111E-04	5.337	0.144E 07
3	0.484E-06	0.755E-03	0.757E-03	0.145E-05	3.999	0.826E 07
4	0.886E-07	0.174E-03	0.174E-03	0.266E-06	3.190	0.359E 08
5	0.204E-07	0.483E-04	0.484E-04	0.611E-07	2.635	0.129E 09

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.138E-04	0.346E-01	0.346E-01	0.415E-04	8.002	0.578E 06
2	0.104E-05	0.388E-02	0.389E-02	0.311E-05	5.334	0.515E 07
3	0.138E-06	0.692E-03	0.692E-03	0.415E-06	4.002	0.289E 08
4	0.259E-07	0.161E-03	0.161E-03	0.777E-07	3.210	0.124E 09
5	0.611E-08	0.453E-04	0.453E-04	0.183E-07	2.699	0.442E 09

Table0- 4.14

M= 4 MED=0.0625

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.185	0.329	0.835	0.507	9.504	41.8
2	0.918E-01	0.294	0.565	0.270	6.473	64.0
3	0.399E-01	0.193	0.316	0.124	4.815	116.
4	0.155E-01	0.102	0.152	0.500E-01	3.797	240.
5	0.559E-02	0.469E-01	0.654E-01	0.185E-01	3.118	554.

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.264E-01	0.322	0.415	0.935E-01	8.480	313.
2	0.492E-02	0.956E-01	0.114	0.180E-01	5.665	0.115E 04
3	0.852E-03	0.229E-01	0.260E-01	0.316E-02	4.228	0.496E 04
4	0.151E-03	0.519E-02	0.576E-02	0.567E-03	3.363	0.223E 05
5	0.288E-04	0.121E-02	0.132E-02	0.109E-03	2.789	0.970E 05

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.786E-02	0.217	0.246	0.296E-01	8.248	0.104E 04
2	0.899E-03	0.383E-01	0.417E-01	0.343E-02	5.502	0.612E 04
3	0.111E-03	0.641E-02	0.683E-02	0.426E-03	4.115	0.372E 05
4	0.159E-04	0.116E-02	0.123E-02	0.616E-04	3.281	0.207E 06
5	0.268E-05	0.239E-03	0.249E-03	0.104E-04	2.723	0.101E 07

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.340E-02	0.157	0.170	0.131E-01	8.157	0.239E 04
2	0.295E-03	0.209E-01	0.220E-01	0.115E-02	5.439	0.184E 05
3	0.315E-04	0.300E-02	0.312E-02	0.123E-03	4.071	0.129E 06
4	0.424E-05	0.510E-03	0.526E-03	0.166E-04	3.251	0.766E 06
5	0.706E-06	0.102E-03	0.105E-03	0.277E-05	2.705	0.383E 07

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.228E-02	0.134	0.143	0.885E-02	8.126	0.355E 04
2	0.178E-03	0.159E-01	0.166E-01	0.696E-03	5.418	0.304E 05
3	0.181E-04	0.218E-02	0.225E-02	0.712E-04	4.057	0.224E 06
4	0.242E-05	0.366E-03	0.375E-03	0.952E-05	3.241	0.134E 07
5	0.402E-06	0.736E-04	0.751E-04	0.159E-05	2.691	0.669E 07

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.154E-02	0.114	0.120	0.601E-02	8.101	0.525E 04
2	0.110E-03	0.124E-01	0.128E-01	0.430E-03	5.401	0.493E 05
3	0.108E-04	0.164E-02	0.168E-02	0.426E-04	4.045	0.374E 06
4	0.143E-05	0.273E-03	0.279E-03	0.566E-05	3.227	0.225E 07
5	0.238E-06	0.553E-04	0.562E-04	0.942E-06	2.660	0.112E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.684E-03	0.828E-01	0.855E-01	0.269E-02	8.063	0.118E 05
2	0.421E-04	0.772E-02	0.788E-02	0.167E-03	5.375	0.128E 06
3	0.403E-05	0.990E-03	0.101E-02	0.160E-04	4.026	0.998E 06
4	0.537E-06	0.166E-03	0.168E-03	0.213E-05	3.200	0.596E 07
5	0.898E-07	0.344E-04	0.348E-04	0.357E-06	2.590	0.288E 08

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.222E-03	0.546E-01	0.555E-01	0.881E-03	8.032	0.362E 05
2	0.124E-04	0.458E-02	0.463E-02	0.491E-04	5.355	0.433E 06
3	0.119E-05	0.591E-03	0.596E-03	0.475E-05	4.015	0.336E 07
4	0.166E-06	0.103E-03	0.103E-03	0.663E-06	3.224	0.194E 08
5	0.294E-07	0.220E-04	0.222E-04	0.117E-06	2.655	0.904E 08

LEMDA= 0.250E-03 LEMDAS= 0.250E-04 123

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.801E-04	0.397E-01	0.401E-01	0.319E-03	8.016	0.100E 06
2	0.440E-05	0.328E-02	0.329E-02	0.175E-04	5.343	0.122E 07
3	0.438E-06	0.436E-03	0.438E-03	0.175E-05	4.009	0.914E 07
4	0.627E-07	0.782E-04	0.784E-04	0.250E-06	3.200	0.510E 08
5	0.112E-07	0.173E-04	0.173E-04	0.447E-07	2.592	0.231E 09

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.591E-04	0.367E-01	0.369E-01	0.236E-03	8.013	0.136E 06
2	0.326E-05	0.304E-02	0.305E-02	0.130E-04	5.341	0.164E 07
3	0.327E-06	0.408E-03	0.410E-03	0.131E-05	3.998	0.122E 08
4	0.472E-07	0.738E-04	0.740E-04	0.188E-06	3.189	0.676E 08
5	0.848E-08	0.164E-04	0.164E-04	0.339E-07	2.582	0.304E 09

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.441E-04	0.343E-01	0.344E-01	0.176E-03	8.010	0.182E 06
2	0.245E-05	0.286E-02	0.287E-02	0.976E-05	5.338	0.218E 07
3	0.248E-06	0.387E-03	0.388E-03	0.992E-06	4.003	0.161E 08
4	0.359E-07	0.704E-04	0.706E-04	0.143E-06	3.179	0.886E 08
5	0.666E-08	0.157E-04	0.158E-04	0.266E-07	2.644	0.397E 09

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.110E-04	0.275E-01	0.275E-01	0.440E-04	8.003	0.726E 06
2	0.634E-06	0.238E-02	0.238E-02	0.254E-05	5.337	0.841E 07
3	0.664E-07	0.332E-03	0.332E-03	0.266E-06	4.002	0.603E 08
4	0.995E-08	0.617E-04	0.617E-04	0.398E-07	3.225	0.324E 09
5	0.184E-08	0.140E-04	0.140E-04	0.737E-08	2.630	0.143E 10

TABLE--- 4.15
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M= 5 MEO=0.0625

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.205	0.270	0.891	0.621	9.963	38.6
2	0.115	0.291	0.673	0.382	6.870	52.9
3	0.572E-01	0.227	0.430	0.203	5.113	84.3
4	0.255E-01	0.142	0.237	0.950E-01	4.020	154.
5	0.104E-01	0.754E-01	0.115	0.401E-01	3.288	314.

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.311E-01	0.349	0.481	0.133	8.638	269.
2	0.671E-02	0.122	0.152	0.297E-01	5.779	855.
3	0.127E-02	0.325E-01	0.382E-01	0.576E-02	4.306	0.338E 04
4	0.232E-03	0.766E-02	0.873E-02	0.107E-02	3.420	0.147E 05
5	0.432E-04	0.175E-02	0.195E-02	0.201E-03	2.831	0.655E 05

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.932E-02	0.246	0.289	0.429E-01	8.330	885.
2	0.118E-02	0.487E-01	0.542E-01	0.554E-02	5.559	0.471E 04
3	0.147E-03	0.827E-02	0.897E-02	0.697E-03	4.153	0.283E 05
4	0.197E-04	0.142E-02	0.151E-02	0.946E-04	3.309	0.168E 06
5	0.299E-05	0.261E-03	0.275E-03	0.144E-04	2.748	0.919E 06

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.399E-02	0.180	0.198	0.189E-01	8.209	0.205E 04
2	0.366E-03	0.254E-01	0.271E-01	0.176E-02	5.475	0.150E 05
3	0.369E-04	0.346E-02	0.364E-02	0.179E-03	4.095	0.111E 06
4	0.441E-05	0.522E-03	0.544E-03	0.215E-04	3.268	0.742E 06
5	0.627E-06	0.899E-04	0.930E-04	0.307E-05	2.717	0.433E 07

125

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.266E-02	0.153	0.166	0.128E-01	8.168	0.306E 04
2	0.213E-03	0.188E-01	0.198E-01	0.103E-02	5.446	0.255E 05
3	0.200E-04	0.237E-02	0.247E-02	0.973E-04	4.077	0.204E 06
4	0.230E-05	0.345E-03	0.356E-03	0.113E-04	3.253	0.141E 07
5	0.321E-06	0.585E-04	0.601E-04	0.158E-05	2.685	0.837E 07

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.178E-02	0.130	0.138	0.859E-02	8.135	0.457E 04
2	0.126E-03	0.140E-01	0.147E-01	0.614E-03	5.424	0.430E 05
3	0.111E-04	0.167E-02	0.172E-02	0.545E-04	4.061	0.365E 06
4	0.125E-05	0.237E-03	0.243E-03	0.615E-05	3.237	0.259E 07
5	0.175E-06	0.400E-04	0.408E-04	0.864E-06	2.694	0.154E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.767E-03	0.919E-01	0.956E-01	0.375E-02	8.085	0.105E 05
2	0.442E-04	0.803E-02	0.825E-02	0.218E-03	5.39[illegible]	0.122E 06
3	0.360E-05	0.878E-03	0.896E-03	0.178E-04	4.035	0.112E 07
4	0.398E-06	0.122E-03	0.124E-03	0.197E-05	3.219	0.808E 07
5	0.545E-07	0.208E-04	0.211E-04	0.270E-06	2.590	0.475E 08

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.234E-03	0.572E-01	0.584E-01	0.116E-02	8.042	0.344E 05
2	0.112E-04	0.414E-02	0.420E-02	0.557E-04	5.361	0.478E 06
3	0.888E-06	0.438E-03	0.443E-03	0.441E-05	4.018	0.453E 07
4	0.100E-06	0.621E-04	0.626E-04	0.499E-06	3.206	0.320E 08
5	0.146E-07	0.110E-04	0.111E-04	0.725E-07	2.639	0.181E 09

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.785E-04	0.388E-01	0.392E-01	0.390E-03	8.021	0.102E 06
2	0.353E-05	0.263E-02	0.265E-02	0.176E-04	5.346	0.151E 07
3	0.285E-06	0.284E-03	0.285E-03	0.142E-05	4.007	0.140E 08
4	0.332E-07	0.416E-04	0.418E-04	0.165E-06	3.177	0.958E 08
5	0.521E-08	0.761E-05	0.764E-05	0.260E-07	2.731	0.524E 09

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.565E-04	0.350E-01	0.353E-01	0.281E-03	8.017	0.142E 06
2	0.254E-05	0.236E-02	0.238E-02	0.126E-04	5.343	0.211E 07
3	0.207E-06	0.258E-03	0.259E-03	0.103E-05	4.001	0.194E 08
4	0.241E-07	0.382E-04	0.383E-04	0.120E-06	3.154	0.131E 09
5	0.360E-08	0.704E-05	0.706E-05	0.180E-07	2.551	0.709E 09

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.412E-04	0.320E-01	0.322E-01	0.205E-03	8.013	0.194E 06
2	0.185E-05	0.216E-02	0.217E-02	0.924E-05	5.342	0.288E 07
3	0.152E-06	0.238E-03	0.238E-03	0.761E-06	3.998	0.262E 08
4	0.182E-07	0.356E-04	0.356E-04	0.908E-07	3.191	0.175E 09
5	0.276E-08	0.661E-05	0.662E-05	0.138E-07	2.611	0.945E 09

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.942E-05	0.235E-01	0.236E-01	0.471E-04	8.004	0.849E 06
2	0.438E-06	0.164E-02	0.164E-02	0.219E-05	5.334	0.122E 08
3	0.375E-07	0.188E-03	0.188E-03	0.187E-06	3.992	0.106E 09
4	0.448E-08	0.290E-04	0.290E-04	0.224E-07	3.089	0.690E 09
5	0.620E-09	0.551E-05	0.552E-05	0.310E-08	2.249	0.363E 10

TABLE 4.16

M= 6 MEO=0.0625

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.220	0.214	0.927	0.713	10.395	36.8
2	0.136	0.269	0.757	0.489	7.269	40.3
3	0.791E-01	0.244	0.537	0.293	5.423	66.8
4	0.375E-01	0.176	0.331	0.155	4.255	109.
5	0.170E-01	0.107	0.181	0.739E-01	3.468	200.

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.356E-01	0.366	0.541	0.175	8.796	239.
2	0.872E-02	0.149	0.194	0.449E-01	5.894	670.
3	0.183E-02	0.443E-01	0.540E-01	0.968E-02	4.387	0.239E 04
4	0.354E-03	0.112E-01	0.131E-01	0.191E-02	3.477	0.981E 04
5	0.672E-04	0.262E-02	0.299E-02	0.368E-03	2.874	0.428E 05

LEMDA= 0.4[illegible]E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	[illegible]	[illegible].272	[illegible].331	0.5[illegible]E-01	[illegible]	773.
2	[illegible].152E-[illegible]	[illegible].5[illegible]E-01	[illegible].69[illegible]E-01	[illegible].641E-02	[illegible]	[illegible]
3	[illegible].197E-02	[illegible].1[illegible]3E-01	[illegible].12[illegible]E-01	[illegible].111E-02	4.1[illegible]	[illegible].213E 05
4	[illegible]	[illegible].184E-02	[illegible].19[illegible]E-02	[illegible].14[illegible]E-03	3.[illegible]7	[illegible].127E [illegible]
5	[illegible]	[illegible].321E-03	[illegible].342E-03	[illegible].21[illegible]E-04	2.77[illegible]	[illegible].735E [illegible]

LEMDA= [illegible].25[illegible]E-02 LEMDAS= [illegible].25[illegible]E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	[illegible]	[illegible].2[illegible]	[illegible].227	[illegible].23[illegible]E-0[illegible]	[illegible]	0.179[illegible] 04
2	[illegible]	[illegible]	[illegible].335E-01	[illegible].26[illegible]E-02	5.[illegible]	[illegible].121E [illegible]
3	[illegible]	[illegible].422E-02	[illegible].44[illegible]E-02	[illegible].264E-0[illegible]	4.1[illegible]	[illegible]
4	[illegible]	[illegible].59[illegible]E-03	[illegible].628E-03	[illegible].297E-04	3.2[illegible]	[illegible].642[illegible]
5	0.657E-06	0.931E-04	0.970E-04	0.383E-05	2.730	0.415E 07

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.306E-02	0.172	0.189	0.174E-01	8.210	0.268E 04
2	0.260E-03	0.225E-01	0.248E-01	0.150E-02	5.475	0.211E 05
3	0.230E-04	0.276E-02	0.299E-02	0.137E-03	4.096	0.174E 06
4	0.249E-05	0.369E-03	0.383E-03	0.145E-04	3.264	0.131E 07
5	0.319E-06	0.556E-04	0.574E-04	0.181E-05	2.704	0.876E 07

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.203E-02	0.146	0.157	0.117E-01	8.168	0.402E 04
2	0.149E-03	0.164E-01	0.173E-01	0.868E-03	5.447	0.364E 05
3	0.125E-04	0.185E-02	0.193E-02	0.730E-04	4.076	0.327E 06
4	0.126E-05	0.236E-03	0.244E-03	0.740E-05	3.249	0.258E 07
5	0.153E-06	0.349E-04	0.358E-04	0.899E-06	2.676	0.175E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	[illegible]	[illegible]	[illegible]	0.503E-02	[illegible]	0.941E 04
2	0.49[illegible]E-04	[illegible]	0.911E-02	0.298E-03	[illegible]	0.110E 06
3	0.300E-05	0.872E-03	0.894E-03	0.213E-04	[illegible]	0.112E 07
4	0.345E-06	[illegible]	[illegible]	[illegible]	[illegible]	0.934E 07
5	0.413E-07	0.154E-04	0.156E-04	0.245E-06	2.651	0.641E 08

LEMDA= [illegible] LEMDAS= [illegible]

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.252E-03	0.614E-01	0.628E-01	0.149E-02	[illegible]	0.319E 05
2	0.111E-04	0.407E-02	0.414E-02	0.658E-04	5.369	0.495E 06
3	0.753E-06	[illegible]	0.374E-03	0.448E-05	4.028	0.535E 07
4	[illegible]	[illegible]	0.448E-04	0.432E-06	3.235	0.447E 08
5	[illegible]	0.615E-05	[illegible]	0.549E-07	2.752	0.299E 09

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.799E-04	0.394E-01	0.399E-01	0.476E-03	8.027	0.100E 06
2	0.312E-05	0.231E-02	0.233E-02	0.186E-04	5.351	0.172E 07
3	0.211E-06	0.210E-03	0.211E-03	0.126E-05	4.005	0.190E 08
4	0.208E-07	0.260E-04	0.261E-04	0.125E-06	3.196	0.154E 09
5	0.272E-08	0.403E-05	0.405E-05	0.163E-07	2.695	0.989E 09

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.565E-04	0.349E-01	0.352E-01	0.337E-03	8.021	0.142E 06
2	0.217E-05	0.202E-02	0.203E-02	0.129E-04	5.347	0.247E 07
3	0.148E-06	0.184E-03	0.185E-03	0.885E-06	3.999	0.270E 08
4	0.147E-07	0.230E-04	0.231E-04	0.880E-07	3.181	0.216E 09
5	0.169E-08	0.361E-05	0.362E-05	0.101E-07	2.331	0.138E 10

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.404E-04	0.313E-01	0.315E-01	0.241E-03	8.017	0.199E 06
2	0.154E-05	0.179E-02	0.180E-02	0.919E-05	5.343	0.348E 07
3	0.106E-06	0.165E-03	0.166E-03	0.632E-06	3.986	0.377E 08
4	0.105E-07	0.209E-04	0.209E-04	0.626E-07	3.125	0.299E 09
5	0.118E-08	0.330E-05	0.331E-05	0.708E-08	2.233	0.189E 10

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.646E-05	0.211E-01	0.211E-01	0.597E-04	8.005	0.946E 06
2	0.329E-06	0.123E-02	0.123E-02	0.197E-05	5.335	0.162E 08
3	0.236E-07	0.119E-03	0.119E-03	0.142E-06	3.966	0.168E 09
4	[illegible]	0.156E-04	0.157E-04	0.140E-07	2.984	0.128E 10
5	[illegible]	0.256E-05	0.256E-05	[illegible]	1.825	0.782E 10

TABLE--- 4.17
****

M= 7 MED=0.0625

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.233	0.166	0.952	0.786	10.795	35.6
2	0.154	0.237	0.822	0.585	7.666	42.2
3	0.926E-01	0.244	0.630	0.386	5.742	56.3
4	0.508E-01	0.200	0.427	0.227	4.500	84.1
5	0.255E-01	0.137	0.257	0.120	3.658	140.

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.397E-01	0.375	0.594	0.219	8.952	217.
2	0.109E-01	0.174	0.238	0.634E-01	6.011	546.
3	0.252E-02	0.579E-01	0.730E-01	0.152E-01	4.468	0.177E 04
4	0.525E-03	0.158E-01	0.191E-01	0.324E-02	3.536	0.673E 04
5	0.104E-03	0.390E-02	0.455E-02	0.651E-03	2.918	0.281E 05

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.122E-01	0.295	0.370	0.753E-01	8.495	689.
2	0.190E-02	0.736E-01	0.857E-01	0.121E-01	5.674	0.298E 04
3	0.263E-03	0.141E-01	0.158E-01	0.171E-02	4.233	0.161E 05
4	0.356E-04	0.245E-02	0.268E-02	0.234E-03	3.366	0.945E 05
5	0.499E-05	0.419E-03	0.452E-03	0.331E-04	2.792	0.560E 06

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.521E-02	0.222	0.256	0.337E-01	8.313	0.159E 04
2	0.561E-03	0.373E-01	0.410E-01	0.370E-02	5.546	0.988E 04
3	0.577E-04	0.525E-02	0.563E-02	0.385E-03	4.145	0.718E 05
4	0.629E-05	0.726E-03	0.768E-03	0.423E-04	3.303	0.525E 06
5	0.758E-06	0.106E-03	0.111E-03	0.513E-05	2.744	0.362E 07

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LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.346E-02	0.190	0.213	0.227E-01	8.252	0.238E 04
2	0.315E-03	0.268E-01	0.289E-01	0.210E-02	5.504	0.175E 05
3	0.288E-04	0.333E-02	0.352E-02	0.194E-03	4.115	0.143E 06
4	0.290E-05	0.424E-03	0.444E-03	0.196E-04	3.282	0.113E 07
5	0.330E-06	0.590E-04	0.612E-04	0.225E-05	2.713	0.821E 07

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.229E-02	0.151	0.177	0.152E-01	8.202	0.358E 04
2	0.178E-03	0.193E-01	0.205E-01	0.120E-02	5.470	0.307E 05
3	0.146E-04	0.215E-02	0.225E-02	0.994E-04	4.092	0.279E 06
4	0.138E-05	0.257E-03	0.266E-03	0.941E-05	3.258	0.236E 07
5	0.153E-06	0.344E-04	0.354E-04	0.105E-05	2.705	0.177E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.961E-03	0.113	0.119	0.651E-02	8.127	0.845E 04
2	0.557E-04	0.995E-02	0.103E-01	0.381E-03	5.419	0.973E 05
3	0.385E-05	0.927E-03	0.953E-03	0.264E-04	4.054	0.105E 07
4	0.332E-06	0.101E-03	0.103E-03	0.228E-05	3.222	0.972E 07
5	0.344E-07	0.130E-04	0.133E-04	0.238E-06	2.603	0.756E 08

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.274E-03	0.662E-01	0.681E-01	0.188E-02	8.064	0.295E 05
2	0.115E-04	0.420E-02	0.428E-02	0.794E-04	5.376	0.468E 06
3	0.694E-06	0.341E-03	0.346E-03	0.481E-05	4.022	0.580E 07
4	0.574E-07	0.357E-04	0.361E-04	0.398E-06	3.188	0.556E 08
5	0.569E-08	0.463E-05	0.467E-05	0.395E-07	2.441	0.429E 09

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LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.831E-04	0.409E-01	0.415E-01	0.577E-03	8.032	0.966E 05
2	0.292E-05	0.217E-02	0.219E-02	0.203E-04	5.354	0.183E 07
3	0.171E-06	0.170E-03	0.171E-03	0.119E-05	3.999	0.234E 08
4	0.145E-07	0.182E-04	0.183E-04	0.101E-06	3.188	0.219E 09
5	0.145E-08	0.244E-05	0.245E-05	0.101E-07	2.371	0.163E 10

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.578E-04	0.357E-01	0.361E-01	0.402E-03	8.026	0.139E 06
2	0.197E-05	0.183E-02	0.184E-02	0.137E-04	5.349	0.271E 07
3	0.116E-06	0.144E-03	0.145E-03	0.811E-06	4.006	0.345E 08
4	0.986E-08	0.156E-04	0.156E-04	0.688E-07	3.155	0.320E 09
5	0.109E-08	0.212E-05	0.213E-05	0.761E-08	2.565	0.235E 10

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.406E-04	0.314E-01	0.317E-01	0.283E-03	8.020	0.197E 06
2	0.136E-05	0.158E-02	0.159E-02	0.948E-05	5.344	0.393E 07
3	0.808E-07	0.126E-03	0.126E-03	0.564E-06	4.005	0.496E 08
4	0.672E-08	0.137E-04	0.137E-04	0.469E-07	3.060	0.455E 09
5	0.794E-09	0.188E-05	0.189E-05	0.555E-08	2.629	0.331E 10

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.785E-05	0.196E-01	0.196E-01	0.549E-04	8.006	0.102E 07
2	0.262E-06	0.982E-03	0.984E-03	0.183E-05	5.331	0.203E 08
3	0.162E-07	0.818E-04	0.819E-04	0.113E-06	3.955	0.244E 09
4	0.138E-08	0.934E-05	0.935E-05	0.967E-08	2.958	0.214E 10
5	0.122E-09	0.133E-05	0.134E-05	0.856E-09	1.833	0.150E 11

TABLE---4.18
****

M= 8 MEO=0.0625

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.243	0.126	0.968	0.841	11.164	34.8
2	0.169	0.202	0.870	0.668	8.057	39.5
3	0.109	0.233	0.709	0.477	6.068	49.5
4	0.648E-01	0.212	0.519	0.306	4.756	68.7
5	0.353E-01	0.162	0.340	0.178	3.857	105.

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.435E-01	0.377	0.641	0.263	9.107	200.
2	0.132E-01	0.197	0.282	0.850E-01	6.128	459.
3	0.334E-02	0.728E-01	0.952E-01	0.224E-01	4.551	0.136E 04
4	0.751E-03	0.217E-01	0.268E-01	0.518E-02	3.596	0.479E 04
5	0.157E-03	0.566E-02	0.676E-02	0.110E-02	2.962	0.189E 05

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.135E-01	0.314	0.408	0.937E-01	8.577	625.
2	0.233E-02	0.872E-01	0.104	0.167E-01	5.732	0.246E 04
3	0.345E-03	0.180E-01	0.205E-01	0.253E-02	4.273	0.124E 05
4	0.484E-04	0.325E-02	0.361E-02	0.359E-03	3.395	0.702E 05
5	0.679E-05	0.559E-03	0.610E-03	0.510E-04	2.814	0.414E 06

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.581E-02	0.241	0.284	0.424E-01	8.365	0.143E 04
2	0.681E-03	0.444E-01	0.495E-01	0.508E-02	5.583	0.820E 04
3	0.730E-04	0.652E-02	0.708E-02	0.552E-03	4.169	0.571E 05
4	[illegible]	[illegible]	[illegible]	[illegible]	3.321	0.418E 06

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LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.385E-02	0.208	0.236	0.286E-01	8.294	0.214E 04
2	0.379E-03	0.318E-01	0.346E-01	0.287E-02	5.533	0.146E 05
3	0.355E-04	0.405E-02	0.432E-02	0.271E-03	4.135	0.117E 06
4	0.350E-05	0.507E-03	0.534E-03	0.270E-04	3.295	0.942E 06
5	0.380E-06	0.669E-04	0.699E-04	0.294E-05	2.734	0.720E 07

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.255E-02	0.177	0.196	0.192E-01	8.236	0.322E 04
2	0.212E-03	0.227E-01	0.243E-01	0.162E-02	5.493	0.259E 05
3	0.175E-04	0.255E-02	0.269E-02	0.135E-03	4.109	0.234E 06
4	0.159E-05	0.293E-03	0.306E-03	0.124E-04	3.275	0.206E 07
5	0.163E-06	0.367E-04	0.379E-04	0.127E-05	2.693	0.165E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.106E-02	0.123	0.132	0.820E-02	8.148	0.765E 04
2	0.639E-04	0.113E-01	0.118E-01	0.497E-03	5.433	0.850E 05
3	0.429E-05	0.102E-02	0.105E-02	0.335E-04	4.066	0.949E 06
4	0.343E-06	0.104E-03	0.106E-03	0.269E-05	3.231	0.943E 07
5	0.317E-07	0.121E-04	0.124E-04	0.250E-06	2.570	0.810E 08

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.297E-03	0.716E-01	0.739E-01	0.233E-02	8.074	0.272E 05
2	0.123E-04	0.447E-02	0.457E-02	0.967E-04	5.382	0.439E 06
3	0.680E-06	0.333E-03	0.339E-03	0.538E-05	4.025	0.592E 07
4	0.502E-07	0.312E-04	0.316E-04	0.398E-06	3.181	0.634E 08
5	0.371E-08	0.358E-05	0.361E-05	0.294E-07	2.058	0.555E 09

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.875E-04	0.429E-01	0.436E-01	0.694E-03	8.037	0.918E 05
2	0.286E-05	0.212E-02	0.214E-02	0.227E-04	5.357	0.187E 07
3	0.149E-06	0.148E-03	0.149E-03	0.119E-05	4.017	0.269E 08
4	0.111E-07	0.139E-04	0.140E-04	0.880E-07	3.172	0.287E 09
5	0.139E-08	0.164E-05	0.166E-05	0.111E-07	3.364	0.242E 10

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.601E-04	0.370E-01	0.375E-01	0.477E-03	8.030	0.134E 06
2	0.188E-05	0.174E-02	0.176E-02	0.149E-04	5.353	0.285E 07
3	0.975E-07	0.121E-03	0.122E-03	0.776E-06	3.999	0.410E 08
4	0.742E-08	0.115E-04	0.115E-04	0.591E-07	3.215	0.434E 09
5	0.539E-09	0.137E-05	0.138E-05	0.429E-08	1.955	0.363E 10

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.417E-04	0.322E-01	0.325E-01	0.331E-03	8.024	0.193E 06
2	0.126E-05	0.146E-02	0.147E-02	0.100E-04	5.349	0.424E 07
3	0.656E-07	0.102E-03	0.103E-03	0.523E-06	3.995	0.609E 08
4	0.502E-08	0.979E-05	0.983E-05	0.400E-07	3.193	0.636E 09
5	0.467E-09	0.119E-05	0.119E-05	0.372E-08	2.452	0.526E 10

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.748E-05	0.186E-01	0.187E-01	0.597E-04	8.007	0.107E 07
2	0.219E-06	0.819E-03	0.820E-03	0.175E-05	5.332	0.244E 08
3	0.118E-07	0.598E-04	0.599E-04	0.944E-07	3.947	0.334E 09
4	0.878E-09	0.602E-05	0.603E-05	0.701E-08	2.911	0.332E 10
5	0.525E-10	0.764E-06	0.764E-06	0.419E-09	1.373	0.262E 11

TABLE---4.19
** **********

M= 9 MED=0.0625

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.251	0.950E-01	0.978	0.883	11.502	34.3
2	0.183	0.158	0.906	0.738	8.438	37.7
3	0.125	0.213	0.774	0.561	6.398	44.9
4	0.788E-01	0.214	0.602	0.388	5.022	58.7
5	0.461E-01	0.181	0.424	0.244	4.067	84.1

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.470E-01	0.374	0.682	0.308	9.260	188.
2	0.156E-01	0.218	0.327	0.109	6.247	395.
3	0.429E-02	0.885E-01	0.120	0.316E-01	4.636	0.107E 04
4	0.104E-02	0.286E-01	0.365E-01	0.788E-02	3.657	0.352E 04
5	0.230E-03	0.798E-02	0.977E-02	0.178E-02	3.008	0.131E 05

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.148E-01	0.330	0.444	0.113	8.658	574.
2	0.279E-02	0.101	0.123	0.221E-01	5.791	0.207E 04
3	0.444E-03	0.226E-01	0.262E-01	0.361E-02	4.313	0.971E 04
4	0.650E-04	0.427E-02	0.481E-02	0.537E-03	3.424	0.527E 05
5	0.929E-05	0.751E-03	0.829E-03	0.777E-04	2.833	0.305E 06

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.640E-02	0.259	0.311	0.519E-01	8.417	0.131E 04
2	0.813E-03	0.520E-01	0.587E-01	0.676E-02	5.619	0.690E 04
3	0.917E-04	0.806E-02	0.883E-02	0.774E-03	4.194	0.457E 05
4	0.101E-04	0.114E-02	0.122E-02	0.863E-04	3.338	0.330E 06
5	0.116E-05	0.158E-03	0.168E-03	0.996E-05	2.771	0.239E 07

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LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.425E-02	0.224	0.259	0.352E-01	8.336	0.195E 04
2	0.451E-03	0.372E-01	0.410E-01	0.381E-02	5.562	0.123E 05
3	0.438E-04	0.493E-02	0.531E-02	0.374E-03	4.155	0.950E 05
4	0.431E-05	0.618E-03	0.656E-03	0.372E-04	3.311	0.768E 06
5	0.453E-06	0.792E-04	0.831E-04	0.393E-05	2.744	0.605E 07

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.281E-02	0.192	0.215	0.236E-01	8.269	0.293E 04
2	0.250E-03	0.264E-01	0.286E-01	0.214E-02	5.516	0.221E 05
3	0.212E-04	0.305E-02	0.323E-02	0.183E-03	4.124	0.195E 06
4	0.189E-05	0.345E-03	0.361E-03	0.164E-04	3.283	0.174E 07
5	0.185E-06	0.412E-04	0.428E-04	0.162E-05	2.720	0.147E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.117E-02	0.134	0.144	0.101E-01	8.169	0.698E 04
2	0.735E-04	0.129E-01	0.136E-01	0.641E-03	5.447	0.741E 05
3	0.488E-05	0.116E-02	0.120E-02	0.428E-04	4.076	0.836E 06
4	0.373E-06	0.112E-03	0.115E-03	0.328E-05	3.254	0.873E 07
5	0.318E-07	0.121E-04	0.124E-04	0.281E-06	2.573	0.810E 08

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.322E-03	0.772E-01	0.800E-01	0.284E-02	8.085	0.251E 05
2	0.133E-04	0.483E-02	0.495E-02	0.118E-03	5.390	0.405E 06
3	0.697E-06	0.340E-03	0.346E-03	0.619E-05	4.035	0.579E 07
4	0.476E-07	0.291E-04	0.295E-04	0.424E-06	3.234	0.679E 08
5	0.277E-08	0.300E-05	0.303E-05	0.247E-07	1.830	0.662E 09

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LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.926E-04	0.453E-01	0.461E-01	0.824E-03	8.043	0.869E 05
2	0.288E-05	0.213E-02	0.215E-02	0.258E-04	5.363	0.186E 07
3	0.137E-06	0.135E-03	0.136E-03	0.122E-05	4.020	0.294E 08
4	0.860E-08	0.113E-04	0.114E-04	0.770E-07	3.018	0.351E 09
5	0.849E-09	0.120E-05	0.121E-05	0.760E-08	2.817	0.332E 10

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.629E-04	0.387E-01	0.392E-01	0.561E-03	8.034	0.128E 06
2	0.185E-05	0.171E-02	0.173E-02	0.165E-04	5.355	0.290E 07
3	0.866E-07	0.107E-03	0.108E-03	0.776E-06	4.014	0.463E 08
4	0.573E-08	0.906E-05	0.911E-05	0.514E-07	3.148	0.549E 09
5	0.662E-09	0.970E-06	0.976E-06	0.594E-08	3.397	0.513E 10

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.431E-04	0.332E-01	0.336E-01	0.386E-03	8.027	0.186E 06
2	0.121E-05	0.140E-02	0.141E-02	0.108E-04	5.350	0.442E 07
3	0.567E-07	0.878E-04	0.883E-04	0.509E-06	4.021	0.709E 08
4	0.365E-08	0.748E-05	0.751E-05	0.327E-07	3.036	0.833E 09
5	0.869E-10	0.806E-06	0.807E-06	0.780E-09	0.673	0.775E 10

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.725E-05	0.181E-01	0.181E-01	0.651E-04	8.008	0.110E 07
2	0.189E-06	0.707E-03	0.709E-03	0.170E-05	5.332	0.282E 08
3	0.907E-08	0.459E-04	0.460E-04	0.815E-07	3.944	0.435E 09
4	0.581E-09	0.413E-05	0.414E-05	0.522E-08	2.808	0.484E 10
5	0.255E-10	0.470E-06	0.470E-06	0.229E-09	1.086	0.425E 11

TABLE--4.20

M=10   MEO=0.0625

LEMDA= 0.300E-01   LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.258	0.707E-01	0.985	0.915	11.809	34.0
2	0.195	0.137	0.932	0.796	8.808	36.4
3	0.139	0.189	0.826	0.637	6.731	41.7
4	0.926E-01	0.208	0.676	0.468	5.295	51.9
5	0.576E-01	0.191	0.506	0.315	4.285	70.1

LEMDA= 0.800E-02   LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.503E-01	0.366	0.719	0.352	9.411	178.
2	0.180E-01	0.235	0.371	0.136	6.367	348.
3	0.536E-02	0.105	0.147	0.427E-01	4.721	875.
4	0.139E-02	0.367E-01	0.482E-01	0.115E-01	3.719	0.267E 04
5	0.327E-03	0.109E-01	0.137E-01	0.277E-02	3.055	0.934E 04

LEMDA= 0.400E-02   LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.161E-01	0.343	0.477	0.134	8.740	534.
2	0.329E-02	0.115	0.144	0.285E-01	5.850	0.177E 04
3	0.560E-03	0.277E-01	0.327E-01	0.499E-02	4.354	0.777E 04
4	0.861E-04	0.554E-02	0.632E-02	0.782E-03	3.453	0.401E 05
5	0.127E-04	0.100E-02	0.112E-02	0.117E-03	2.855	0.226E 06

LEMDA= 0.250E-02   LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.698E-02	0.275	0.337	0.621E-01	8.469	0.120E 04
2	0.958E-03	0.600E-01	0.687E-01	0.877E-02	5.655	0.590E 04
3	0.114E-03	0.985E-02	0.109E-01	0.106E-02	4.219	0.370E 05
4	0.129E-04	0.143E-02	0.155E-02	0.121E-03	3.356	0.260E 06
5	0.148E-05	0.199E-03	0.213E-03	0.140E-04	2.784	0.189E 07

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.464E-02	0.239	0.282	0.422E-01	8.377	0.180E 04
2	0.529E-03	0.429E-01	0.479E-01	0.493E-02	5.591	0.106E 05
3	0.537E-04	0.598E-02	0.648E-02	0.507E-03	4.175	0.778E 05
4	0.535E-05	0.760E-03	0.811E-03	0.510E-04	3.324	0.621E 06
5	0.557E-06	0.960E-04	0.101E-03	0.534E-05	2.763	0.496E 07

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.307E-02	0.206	0.234	0.285E-01	8.303	0.270E 04
2	0.292E-03	0.305E-01	0.332E-01	0.276E-02	5.539	0.190E 05
3	0.255E-04	0.364E-02	0.388E-02	0.244E-03	4.140	0.162E 06
4	0.227E-05	0.412E-03	0.433E-03	0.219E-04	3.297	0.145E 07
5	0.216E-06	0.478E-04	0.499E-04	0.209E-05	2.722	0.126E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.127E-02	0.145	0.157	0.121E-01	8.190	0.642E 04
2	0.843E-04	0.147E-01	0.155E-01	0.813E-03	5.462	0.648E 05
3	0.562E-05	0.133E-02	0.138E-02	0.546E-04	4.085	0.727E 06
4	0.415E-06	0.124E-03	0.128E-03	0.405E-05	3.255	0.785E 07
5	0.351E-07	0.127E-04	0.130E-04	0.343E-06	2.697	0.769E 08

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.348E-03	0.830E-01	0.864E-01	0.340E-02	8.096	0.232E 05
2	0.146E-04	0.528E-02	0.542E-02	0.143E-03	5.396	0.370E 06
3	0.733E-06	0.357E-03	0.364E-03	0.722E-05	4.035	0.551E 07
4	0.456E-07	0.284E-04	0.288E-04	0.450E-06	3.166	0.695E 08
5	0.251E-08	0.268E-05	0.271E-05	0.248E-07	1.855	0.739E 09

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.982E-04	0.479E-01	0.489E-01	0.970E-03	8.048	0.819E 05
2	0.297E-05	0.219E-02	0.222E-02	0.294E-04	5.366	0.181E 07
3	0.130E-06	0.128E-03	0.130E-03	0.129E-05	4.016	0.309E 08
4	0.813E-08	0.979E-05	0.987E-05	0.808E-07	3.299	0.406E 09
5	0.430E-09	0.932E-06	0.936E-06	0.428E-08	1.838	0.428E 10

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.662E-04	0.406E-01	0.412E-01	0.655E-03	8.038	0.121E 06
2	0.186E-05	0.172E-02	0.174E-02	0.184E-04	5.357	0.288E 07
3	0.799E-07	0.988E-04	0.996E-04	0.794E-06	4.013	0.503E 08
4	0.512E-08	0.755E-05	0.760E-05	0.510E-07	3.372	0.658E 09
5	0.296E-09	0.727E-06	0.729E-06	0.295E-08	2.033	0.686E 10

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U.	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.450E-04	0.346E-01	0.350E-01	0.446E-03	8.031	0.179E 06
2	0.119E-05	0.138E-02	0.139E-02	0.118E-04	5.351	0.449E 07
3	0.505E-07	0.785E-04	0.790E-04	0.503E-06	3.998	0.791E 08
4	0.272E-08	0.603E-05	0.606E-05	0.271E-07	2.807	0.103E 10
5	0.220E-09	0.588E-06	0.591E-06	0.219E-08	2.330	0.106E 11

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.714E-05	0.178E-01	0.178E-01	0.712E-04	8.009	0.112E 07
2	0.158E-06	0.629E-03	0.631E-03	0.168E-05	5.334	0.317E 08
3	0.726E-08	0.367E-04	0.368E-04	0.725E-07	3.948	0.544E 09
4	0.436E-09	0.298E-05	0.298E-05	0.435E-08	2.923	0.671E 10
5	0.387E-10	0.307E-06	0.307E-06	0.386E-09	2.517	0.651E 11

M= 1 MEO=0.1250

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.310E-01	0.259	0.290	0.310E-01	4.000	125.
2	0.597E-02	0.747E-01	0.806E-01	0.597E-02	2.667	444.
3	0.155E-02	0.258E-01	0.273E-01	0.155E-02	2.000	0.129E 04
4	0.511E-03	0.107E-01	0.112E-01	0.511E-03	1.600	0.313E 04
5	0.203E-03	0.506E-02	0.527E-02	0.203E-03	1.333	0.658E 04

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.464E-02	0.145	0.150	0.464E-02	4.000	859.
2	0.765E-03	0.359E-01	0.366E-01	0.765E-03	2.667	0.348E 04
3	0.205E-03	0.128E-01	0.130E-01	0.205E-03	2.000	0.973E 04
4	0.729E-04	0.570E-02	0.577E-02	0.729E-04	1.600	0.219E 05
5	0.309E-04	0.290E-02	0.293E-02	0.309E-04	1.333	0.431E 05

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.190E-02	0.119	0.121	0.190E-02	4.000	0.210E 04
2	0.319E-03	0.299E-01	0.302E-01	0.319E-03	2.667	0.836E 04
3	0.883E-04	0.110E-01	0.111E-01	0.883E-04	2.000	0.226E 05
4	0.321E-04	0.501E-02	0.505E-02	0.321E-04	1.600	0.499E 05
5	0.139E-04	0.260E-02	0.261E-02	0.139E-04	1.333	0.962E 05

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.109E-02	0.109	0.110	0.109E-02	4.000	0.368E 04
2	0.185E-03	0.278E-01	0.280E-01	0.185E-03	2.667	0.144E 05
3	0.520E-04	0.104E-01	0.105E-01	0.520E-04	2.000	0.384E 05
4	0.191E-04	0.477E-02	0.479E-02	0.191E-04	1.600	0.838E 05
5	0.831E-05	0.249E-02	0.250E-02	0.831E-05	1.334	0.161E 06

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LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.841E-03	0.105	0.106	0.841E-03	4.000	0.475E 04
2	0.144E-03	0.271E-01	0.272E-01	0.144E-03	2.667	0.185E 05
3	0.408E-04	0.102E-01	0.102E-01	0.408E-04	2.000	0.490E 05
4	0.150E-04	0.470E-02	0.471E-02	0.150E-04	1.600	0.106E 06
5	0.655E-05	0.246E-02	0.246E-02	0.655E-05	1.334	0.203E 06

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.655E-03	0.102	0.103	0.655E-03	4.000	0.610E 04
2	0.113E-03	0.265E-01	0.267E-01	0.113E-03	2.667	0.235E 05
3	0.321E-04	0.100E-01	0.101E-01	0.321E-04	2.000	0.623E 05
4	0.119E-04	0.464E-02	0.465E-02	0.119E-04	1.600	0.135E 06
5	0.518E-05	0.243E-02	0.244E-02	0.518E-05	1.333	0.257E 06

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.392E-03	0.981E-01	0.985E-01	0.392E-03	4.000	0.102E 05
2	0.686E-04	0.257E-01	0.258E-01	0.686E-04	2.667	0.389E 05
3	0.196E-04	0.980E-02	0.981E-02	0.196E-04	2.000	0.102E 06
4	0.727E-05	0.454E-02	0.455E-02	0.727E-05	1.600	0.220E 06
5	0.319E-05	0.239E-02	0.239E-02	0.319E-05	1.333	0.418E 06

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.189E-03	0.945E-01	0.947E-01	0.189E-03	4.000	0.212E 05
2	0.334E-04	0.251E-01	0.251E-01	0.334E-04	2.667	0.798E 05
3	0.960E-05	0.960E-02	0.961E-02	0.960E-05	2.000	0.208E 06
4	0.358E-05	0.447E-02	0.447E-02	0.358E-05	1.600	0.448E 06
5	0.157E-05	0.236E-02	0.236E-02	0.157E-05	1.333	0.849E 06

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.927E-04	0.927E-01	0.928E-01	0.927E-04	4.000	0.431E 05
2	0.165E-04	0.247E-01	0.247E-01	0.165E-04	2.667	0.162E 06
3	0.475E-05	0.950E-02	0.950E-02	0.475E-05	2.000	0.421E 06
4	0.177E-05	0.443E-02	0.443E-02	0.177E-05	1.600	0.903E 06
5	0.780E-06	0.234E-02	0.234E-02	0.780E-06	1.333	0.171E 07

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.739E-04	0.924E-01	0.924E-01	0.739E-04	4.000	0.541E 05
2	0.131E-04	0.247E-01	0.247E-01	0.131E-04	2.667	0.203E 06
3	0.379E-05	0.948E-02	0.948E-02	0.379E-05	2.000	0.527E 06
4	0.142E-05	0.442E-02	0.443E-02	0.142E-05	1.600	0.113E 07
5	0.623E-06	0.234E-02	0.234E-02	0.623E-06	1.334	0.214E 07

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.589E-04	0.921E-01	0.921E-01	0.589E-04	4.000	0.679E 05
2	0.105E-04	0.246E-01	0.246E-01	0.105E-04	2.667	0.254E 06
3	0.303E-05	0.946E-02	0.947E-02	0.303E-05	2.000	0.660E 06
4	0.113E-05	0.442E-02	0.442E-02	0.113E-05	1.600	0.141E 07
5	0.498E-06	0.233E-02	0.233E-02	0.498E-06	1.334	0.268E 07

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+I)	D	PHAI
1	0.183E-04	0.913E-01	0.913E-01	0.183E-04	4.000	0.219E 06
2	0.326E-05	0.245E-01	0.245E-01	0.326E-05	2.667	0.818E 06
3	0.942E-06	0.942E-02	0.942E-02	0.942E-06	2.000	0.212E 07
4	0.352E-06	0.440E-02	0.440E-02	0.352E-06	1.600	0.454E 07
5	0.155E-06	0.233E-02	0.233E-02	0.155E-06	1.333	0.860E 07

TABLE--4.22

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M= 2 MEO=0.1250

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.454E-01	0.326	0.411	0.846E-01	4.143	87.1
2	0.933E-02	0.104	0.122	0.177E-01	2.765	294.
3	0.197E-02	0.300E-01	0.338E-01	0.377E-02	2.068	0.105E 04
4	0.467E-03	0.901E-02	0.991E-02	0.900E-03	1.649	0.353E 04
5	0.126E-03	0.295E-02	0.320E-02	0.244E-03	1.370	0.108E 05

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.514E-02	0.154	0.164	0.101E-01	4.041	782.
2	0.575E-03	0.261E-01	0.273E-01	0.113E-02	2.695	0.468E 04
3	0.945E-04	0.576E-02	0.594E-02	0.187E-03	2.019	0.214E 05
4	0.209E-04	0.160E-02	0.164E-02	0.414E-04	1.614	0.771E 05
5	0.576E-05	0.530E-03	0.542E-03	0.114E-04	1.344	0.233E 06

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.171E-02	0.105	0.108	0.338E-02	4.021	0.235E 04
2	0.171E-03	0.158E-01	0.161E-01	0.340E-03	2.681	0.157E 05
3	0.284E-04	0.350E-02	0.356E-02	0.564E-04	2.010	0.708E 05
4	0.652E-05	0.101E-02	0.102E-02	0.130E-04	1.607	0.246E 06
5	0.187E-05	0.347E-03	0.351E-03	0.372E-05	1.340	0.717E 06

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.852E-03	0.841E-01	0.858E-01	0.169E-02	4.013	0.470E 04
2	0.838E-04	0.125E-01	0.126E-01	0.167E-03	2.675	0.319E 05
3	0.142E-04	0.282E-02	0.285E-02	0.283E-04	2.006	0.141E 06
4	0.335E-05	0.831E-03	0.838E-03	0.667E-05	1.604	0.479E 06
5	0.980E-06	0.292E-03	0.294E-03	0.196E-05	1.339	0.137E 07

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.623E-03	0.771E-01	0.783E-01	0.124E-02	4.011	0.643E 04
2	0.613E-04	0.114E-01	0.115E-01	0.122E-03	2.674	0.436E 05
3	0.105E-04	0.261E-02	0.264E-02	0.210E-04	2.005	0.190E 06
4	0.250E-05	0.777E-03	0.782E-03	0.499E-05	1.603	0.641E 06
5	0.737E-06	0.275E-03	0.277E-03	0.147E-05	1.336	0.181E 07

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.460E-03	0.713E-01	0.722E-01	0.917E-03	4.009	0.870E 04
2	0.455E-04	0.106E-01	0.107E-01	0.908E-04	2.672	0.587E 05
3	0.790E-05	0.245E-02	0.247E-02	0.158E-04	2.004	0.254E 06
4	0.189E-05	0.736E-03	0.740E-03	0.378E-05	1.603	0.847E 06
5	0.562E-06	0.262E-03	0.263E-03	0.112E-05	1.336	0.238E 07

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.252E-03	0.626E-01	0.631E-01	0.502E-03	4.005	0.159E 05
2	0.253E-04	0.944E-02	0.949E-02	0.505E-04	2.670	0.106E 06
3	0.447E-05	0.223E-02	0.223E-02	0.892E-05	2.002	0.448E 06
4	0.109E-05	0.677E-03	0.679E-03	0.217E-05	1.602	0.148E 07
5	0.326E-06	0.244E-03	0.244E-03	0.652E-06	1.337	0.410E 07

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.111E-03	0.552E-01	0.554E-01	0.221E-03	4.003	0.362E 05
2	0.114E-04	0.852E-02	0.854E-02	0.227E-04	2.669	0.234E 06
3	0.205E-05	0.204E-02	0.205E-02	0.409E-05	2.001	0.977E 06
4	0.504E-06	0.630E-03	0.631E-03	0.101E-05	1.601	0.317E 07
5	0.153E-06	0.229E-03	0.229E-03	0.306E-06	1.335	0.873E 07

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.515E-04	0.514E-01	0.515E-01	0.103E-03	4.001	0.777E 05
2	0.539E-05	0.807E-02	0.808E-02	0.108E-04	2.668	0.495E 06
3	0.980E-06	0.196E-02	0.196E-02	0.196E-05	2.001	0.204E 07
4	0.243E-06	0.607E-03	0.608E-03	0.486E-06	1.601	0.659E 07
5	0.741E-07	0.222E-03	0.222E-03	0.148E-06	1.336	0.180E 08

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.406E-04	0.507E-01	0.507E-01	0.811E-04	4.001	0.986E 05
2	0.426E-05	0.798E-02	0.799E-02	0.852E-05	2.667	0.626E 06
3	0.777E-06	0.194E-02	0.194E-02	0.155E-05	2.000	0.258E 07
4	0.193E-06	0.603E-03	0.603E-03	0.386E-06	1.600	0.829E 07
5	0.588E-07	0.220E-03	0.221E-03	0.118E-06	1.334	0.227E 08

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.321E-04	0.500E-01	0.501E-01	0.641E-04	4.001	0.125E 06
2	0.338E-05	0.791E-02	0.792E-02	0.675E-05	2.667	0.790E 06
3	0.617E-06	0.193E-02	0.193E-02	0.123E-05	2.000	0.324E 07
4	0.153E-06	0.599E-03	0.599E-03	0.307E-06	1.600	0.104E 08
5	0.469E-07	0.219E-03	0.219E-03	0.938E-07	1.335	0.285E 08

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.968E-05	0.484E-01	0.484E-01	0.194E-04	4.000	0.413E 06
2	0.103E-05	0.772E-02	0.772E-02	0.206E-05	2.667	0.259E 07
3	0.189E-06	0.189E-02	0.189E-02	0.378E-06	2.000	0.106E 08
4	0.472E-07	0.589E-03	0.589E-03	0.943E-07	1.601	0.339E 08
5	0.145E-07	0.216E-03	0.216E-03	0.289E-07	1.336	0.924E 08

TABLE---4.12[illegible]
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M= 3 MEO=0.1250

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.598E-01	0.369	0.525	0.156	4.285	67.4
2	0.151E-01	0.150	0.190	0.404E-01	2.867	188.
3	0.345E-02	0.478E-01	0.573E-01	0.946E-02	2.138	617.
4	0.788E-03	0.141E-01	0.162E-01	0.219E-02	1.699	0.216E 04
5	0.189E-03	0.413E-02	0.466E-02	0.530E-03	1.408	0.746E 04

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.643E-02	0.185	0.203	0.185E-01	4.083	631.
2	0.686E-03	0.302E-01	0.322E-01	0.199E-02	2.723	0.397E 04
3	0.903E-04	0.537E-02	0.563E-02	0.264E-03	2.038	0.226E 05
4	0.151E-04	0.113E-02	0.117E-02	0.443E-04	1.627	0.108E 06
5	0.309E-05	0.279E-03	0.288E-03	0.910E-05	1.356	0.439E 06

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.194E-02	0.116	0.122	0.571E-02	4.042	0.208E 04
2	0.159E-03	0.144E-01	0.149E-01	0.469E-03	2.695	0.170E 05
3	0.193E-04	0.235E-02	0.240E-02	0.571E-04	2.020	0.105E 06
4	0.320E-05	0.490E-03	0.499E-03	0.951E-05	1.614	0.504E 06
5	0.675E-06	0.124E-03	0.126E-03	0.201E-05	1.346	0.199E 07

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.891E-03	0.868E-01	0.894E-01	0.264E-02	4.026	0.451E 04
2	0.661E-04	0.972E-02	0.991E-02	0.196E-03	2.684	0.406E 05
3	0.799E-05	0.157E-02	0.160E-02	0.238E-04	2.012	0.252E 06
4	0.136E-05	0.335E-03	0.339E-03	0.404E-05	1.607	0.119E 07
5	0.294E-06	0.869E-04	0.878E-04	0.876E-06	1.342	0.457E 07

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	[illegible]	PHAI
1	0.625E-03	0.764E-01	0.783E-01	0.185E-02	[illegible]	0.64[illegible]E 04
2	0.451E-04	0.832E-02	0.846E-02	0.134E-03	[illegible]	0.59[illegible]E 05
3	0.549E-05	0.135E-02	0.137E-02	0.164E-04	[illegible]	0.36[illegible]E 06
4	0.944E-06	0.291E-03	0.294E-03	0.282E-05	[illegible]	0.17[illegible]E 07
5	0.208E-06	0.766E-04	0.772E-04	0.620E-06	[illegible]	0.649E 07

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	[illegible]	PHAI
1	0.442E-03	0.680E-01	0.693E-01	0.132E-02	[illegible]	0.908E 04
2	0.314E-04	0.727E-02	0.736E-02	0.937E-04	[illegible]	0.852E 05
3	0.386E-05	0.119E-02	0.120E-02	0.115E-04	[illegible]	0.521E 06
4	0.670E-06	0.260E-03	0.262E-03	0.20[illegible]E-05	[illegible]	0.239E 07
5	0.149E-06	0.690E-04	0.694E-04	0.445E-[illegible]5	[illegible]	0.902E 07

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	[illegible]	PHAI
1	0.222E-03	0.549E-01	0.556E-01	0.662E-03	[illegible]	0.181E 05
2	0.156E-04	0.581E-02	0.586E-02	0.467E-04	2.[illegible]	0.171E 06
3	0.196E-05	0.973E-03	0.979E-03	0.586E-05	2.[illegible]	0.102E 07
4	0.348E-06	0.217E-03	0.218E-03	0.104E-05	1.[illegible]	0.460E 07
5	0.789E-07	0.586E-04	0.589E-04	0.236E-[illegible]	1.343	0.170E 08

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	[illegible]	PHAI
1	0.879E-04	0.437E-01	0.440E-01	0.263E-[illegible]	4.[illegible]	0.456E 05
2	0.629E-05	0.470E-02	0.472E-02	0.188E-[illegible]	2.[illegible]	0.424E 06
3	0.813E-06	0.810E-03	0.812E-03	0.243E-[illegible]	2.[illegible]	0.246E 07
4	0.148E-06	0.185E-03	0.185E-03	0.444E-[illegible]	1.[illegible]	0.108E 08
5	0.343E-07	0.509E-04	0.510E-04	0.103E-[illegible]	1.34[illegible]	0.392E 08

LEMDA= 0.250E-03 LEMDAS= 0.250E-04 150

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.381E-04	0.380E-01	0.381E-01	0.114E-03	4.003	0.105E 06
2	0.279E-05	0.418E-02	0.419E-02	0.837E-05	2.668	0.955E 06
3	0.368E-06	0.735E-03	0.736E-03	0.110E-05	2.002	0.544E 07
4	0.681E-07	0.170E-03	0.170E-03	0.204E-06	1.602	0.235E 08
5	0.159E-07	0.473E-04	0.474E-04	0.476E-07	1.341	0.844E 08

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.296E-04	0.369E-01	0.370E-01	0.886E-04	4.002	0.135E 06
2	0.218E-05	0.408E-02	0.409E-02	0.653E-05	2.668	0.122E 07
3	0.288E-06	0.720E-03	0.721E-03	0.865E-06	2.001	0.694E 07
4	0.534E-07	0.167E-03	0.167E-03	0.160E-06	1.599	0.299E 08
5	0.124E-07	0.467E-04	0.467E-04	0.373E-07	1.333	0.107E 09

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.231E-04	0.360E-01	0.360E-01	0.691E-04	4.002	0.174E 06
2	0.171E-05	0.400E-02	0.401E-02	0.513E-05	2.668	0.156E 07
3	0.227E-06	0.709E-03	0.710E-03	0.681E-06	2.000	0.881E 07
4	0.422E-07	0.165E-03	0.165E-03	0.127E-06	1.601	0.379E 08
5	0.979E-08	0.461E-04	0.461E-04	0.294E-07	1.327	0.136E 09

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.669E-05	0.334E-01	0.334E-01	0.201E-04	4.001	0.598E 06
2	0.505E-06	0.379E-02	0.379E-02	0.151E-05	2.667	0.528E 07
3	0.679E-07	0.678E-03	0.678E-03	0.204E-06	2.002	0.295E 08
4	0.127E-07	0.159E-03	0.159E-03	0.382E-07	1.606	0.126E 09
5	0.302E-08	0.446E-04	0.446E-04	0.906E-08	1.353	0.448E 09

TABLE---4.24
****

M= 4 MEO=0.1250

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.725E-01	0.385	0.619	0.234	4.425	56.6
2	0.220E-01	0.194	0.268	0.744E-01	2.970	132.
3	0.577E-02	0.726E-01	0.928E-01	0.201E-01	2.211	381.
4	0.141E-02	0.232E-01	0.283E-01	0.504E-02	1.752	0.124E 04
5	0.340E-03	0.694E-02	0.817E-02	0.123E-02	1.447	0.425E 04

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.786E-02	0.217	0.246	0.296E-01	4.124	520.
2	0.899E-03	0.383E-01	0.417E-01	0.343E-02	2.751	0.306E 04
3	0.111E-03	0.641E-02	0.683E-02	0.426E-03	2.057	0.186E 05
4	0.159E-04	0.116E-02	0.123E-02	0.616E-04	1.641	0.103E 06
5	0.269E-05	0.239E-03	0.249E-03	0.105E-04	1.364	0.507E 06

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.228E-02	0.134	0.143	0.885E-02	4.063	0.178E 04
2	0.178E-03	0.159E-01	0.166E-01	0.696E-03	2.709	0.152E 05
3	0.182E-04	0.218E-02	0.225E-02	0.712E-04	2.029	0.112E 06
4	0.242E-05	0.366E-03	0.375E-03	0.952E-05	1.621	0.670E 06
5	0.403E-06	0.736E-04	0.751E-04	0.159E-05	1.347	0.334E 07

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.100E-02	0.963E-01	0.100	0.393E-02	4.040	0.403E 04
2	0.655E-04	0.954E-02	0.980E-02	0.258E-03	2.693	0.411E 05
3	0.633E-05	0.124E-02	0.126E-02	0.250E-04	2.018	0.319E 06
4	0.842E-06	0.206E-03	0.210E-03	0.334E-05	1.613	0.191E 07
5	0.144E-06	0.422E-04	0.428E-04	0.570E-06	1.347	0.937E 07

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LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.684E-03	0.828E-01	0.855E-01	0.269E-02	4.032	0.589E 04
2	0.422E-04	0.772E-02	0.788E-02	0.167E-03	2.688	0.638E 05
3	0.404E-05	0.990E-03	0.101E-02	0.160E-04	2.014	0.499E 06
4	0.542E-06	0.166E-03	0.168E-03	0.215E-05	1.614	0.298E 07
5	0.934E-07	0.344E-04	0.348E-04	0.371E-06	1.345	0.144E 08

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.471E-03	0.718E-01	0.736E-01	0.186E-02	4.025	0.854E 04
2	0.277E-04	0.638E-02	0.649E-02	0.110E-03	2.684	0.968E 05
3	0.265E-05	0.816E-03	0.826E-03	0.105E-04	2.012	0.759E 06
4	0.359E-06	0.138E-03	0.140E-03	0.143E-05	1.611	0.448E 07
5	0.631E-07	0.290E-04	0.292E-04	0.251E-06	1.352	0.214E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.222E-03	0.546E-01	0.555E-01	0.881E-03	4.016	0.181E 05
2	0.124E-04	0.458E-02	0.463E-02	0.491E-04	2.678	0.217E 06
3	0.119E-05	0.591E-03	0.596E-03	0.475E-05	2.007	0.168E 07
4	0.165E-06	0.103E-03	0.103E-03	0.658E-06	1.602	0.969E 07
5	0.292E-07	0.220E-04	0.222E-04	0.116E-06	1.317	0.452E 08

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.801E-04	0.397E-01	0.401E-01	0.319E-03	4.008	0.500E 05
2	0.440E-05	0.328E-02	0.329E-02	0.175E-04	2.672	0.608E 06
3	0.438E-06	0.436E-03	0.438E-03	0.175E-05	2.004	0.457E 07
4	0.632E-07	0.782E-04	0.784E-04	0.252E-06	1.612	0.255E 08
5	0.116E-07	0.173E-04	0.173E-04	0.461E-07	1.336	0.116E 09

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LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.323E-04	0.321E-01	0.323E-01	0.129E-03	4.004	0.124E 06
2	0.180E-05	0.270E-02	0.271E-02	0.721E-05	2.669	0.148E 07
3	0.185E-06	0.369E-03	0.370E-03	0.739E-06	2.003	0.198E 08
4	0.272E-07	0.676E-04	0.677E-04	0.109E-06	1.607	0.591E 08
5	0.506E-08	0.152E-04	0.152E-04	0.202E-07	1.333	0.263E 09

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.246E-04	0.306E-01	0.307E-01	0.980E-04	4.003	0.163E 06
2	0.138E-05	0.259E-02	0.259E-02	0.553E-05	2.669	0.193E 07
3	0.143E-06	0.356E-03	0.357E-03	0.570E-06	2.000	0.140E 08
4	0.211E-07	0.656E-04	0.657E-04	0.842E-07	1.604	0.762E 08
5	0.391E-08	0.148E-04	0.148E-04	0.156E-07	1.323	0.338E 09

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.188E-04	0.294E-01	0.294E-01	0.753E-04	4.003	0.212E 06
2	0.107E-05	0.250E-02	0.251E-02	0.427E-05	2.668	0.249E 07
3	0.111E-06	0.346E-03	0.347E-03	0.444E-06	2.001	0.180E 08
4	0.164E-07	0.640E-04	0.641E-04	0.654E-07	1.596	0.976E 08
5	0.313E-08	0.145E-04	0.145E-04	0.125E-07	1.351	0.432E 09

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.519E-05	0.259E-01	0.260E-01	0.208E-04	4.001	0.770E 06
2	0.303E-06	0.227E-02	0.227E-02	0.121E-05	2.668	0.880E 07
3	0.320E-07	0.320E-03	0.320E-03	0.128E-06	2.001	0.625E 08
4	0.482E-08	0.598E-04	0.598E-04	0.193E-07	1.611	0.334E 09
5	0.908E-09	0.136E-04	0.136E-04	0.363E-08	1.331	0.147E 10

TABLE--4.25
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M= 5 MEO=0.1250

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.836E-01	0.380	0.695	0.315	4.562	50.0
2	0.295E-01	0.231	0.349	0.118	3.075	101.
3	0.886E-02	0.101	0.138	0.369E-01	2.285	256.
4	0.240E-02	0.364E-01	0.467E-01	0.103E-01	1.806	751.
5	0.613E-03	0.117E-01	0.143E-01	0.268E-02	1.488	0.243E 04

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.932E-02	0.246	0.289	0.429E-01	4.165	443.
2	0.118E-02	0.487E-01	0.542E-01	0.554E-02	2.779	0.235E 04
3	0.147E-03	0.827E-02	0.897E-02	0.697E-03	2.077	0.142E 05
4	0.197E-04	0.142E-02	0.151E-02	0.946E-04	1.655	0.838E 05
5	0.299E-05	0.261E-03	0.275E-03	0.144E-04	1.375	0.460E 06

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.266E-02	0.153	0.166	0.128E-01	4.084	0.153E 04
2	0.213E-03	0.188E-01	0.198E-01	0.103E-02	2.723	0.128E 05
3	0.200E-04	0.237E-02	0.247E-02	0.972E-04	2.038	0.102E 06
4	0.230E-05	0.345E-03	0.356E-03	0.113E-04	1.628	0.707E 06
5	0.325E-06	0.585E-04	0.601E-04	0.160E-05	1.361	0.418E 07

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.114E-02	0.108	0.114	0.555E-02	4.053	0.355E 04
2	0.719E-04	0.104E-01	0.107E-01	0.352E-03	2.702	0.376E 05
3	0.604E-05	0.117E-02	0.120E-02	0.297E-04	2.024	0.335E 06
4	0.673E-06	0.164E-03	0.167E-03	0.332E-05	1.619	0.241E 07
5	0.959E-07	0.277E-04	0.282E-04	0.474E-06	1.366	0.142E 08

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LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.767E-03	0.919E-01	0.956E-01	0.375E-02	4.042	0.527E 04
2	0.442E-04	0.803E-02	0.825E-02	0.218E-03	2.695	0.610E 05
3	0.360E-05	0.878E-03	0.896E-03	0.178E-04	2.020	0.560E 06
4	0.400E-06	0.122E-03	0.124E-03	0.198E-05	1.616	0.404E 07
5	0.562E-07	0.208E-04	0.211E-04	0.278E-06	1.333	0.237E 08

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.519E-03	0.784E-01	0.809E-01	0.255E-02	4.034	0.777E 04
2	0.278E-04	0.634E-02	0.648E-02	0.137E-03	2.689	0.969E 05
3	0.222E-05	0.680E-03	0.691E-03	0.110E-04	2.016	0.907E 06
4	0.247E-06	0.948E-04	0.960E-04	0.122E-05	1.611	0.652E 07
5	0.362E-07	0.163E-04	0.165E-04	0.180E-06	1.372	0.379E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.234E-03	0.572E-01	0.584E-01	0.116E-02	4.021	0.172E 05
2	0.112E-04	0.414E-02	0.420E-02	0.557E-04	2.681	0.239E 06
3	0.888E-06	0.438E-03	0.443E-03	0.441E-05	2.010	0.226E 07
4	0.101E-06	0.622E-04	0.627E-04	0.504E-06	1.620	0.160E 08
5	0.147E-07	0.110E-04	0.111E-04	0.732E-07	1.332	0.906E 08

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.785E-04	0.388E-01	0.392E-01	0.390E-03	4.011	0.511E 05
2	0.354E-05	0.263E-02	0.265E-02	0.176E-04	2.674	0.756E 06
3	0.286E-06	0.284E-03	0.285E-03	0.143E-05	2.007	0.702E 07
4	0.335E-07	0.416E-04	0.418E-04	0.167E-06	1.605	0.479E 08
5	0.533E-08	0.761E-05	0.764E-05	0.266E-07	1.398	0.262E 09

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.295E-04	0.293E-01	0.295E-01	0.147E-03	4.005	0.136E 06
2	0.133E-05	0.199E-02	0.200E-02	0.664E-05	2.670	0.201E 07
3	0.111E-06	0.221E-03	0.222E-03	0.554E-06	2.003	0.181E 08
4	0.134E-07	0.334E-04	0.334E-04	0.669E-07	1.603	0.120E 09
5	0.224E-08	0.624E-05	0.625E-05	0.112E-07	1.434	0.640E 09

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.220E-04	0.274E-01	0.275E-01	0.110E-03	4.004	0.182E 06
2	0.100E-05	0.187E-02	0.187E-02	0.499E-05	2.669	0.267E 07
3	0.841E-07	0.210E-03	0.210E-03	0.420E-06	2.002	0.238E 08
4	0.102E-07	0.319E-04	0.319E-04	0.509E-07	1.598	0.157E 09
5	0.159E-08	0.599E-05	0.600E-05	0.794E-08	1.324	0.834E 09

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.166E-04	0.258E-01	0.259E-01	0.828E-04	4.003	0.241E 06
2	0.760E-06	0.178E-02	0.178E-02	0.380E-05	2.669	0.351E 07
3	0.644E-07	0.201E-03	0.201E-03	0.321E-06	2.001	0.311E 08
4	0.792E-08	0.307E-04	0.307E-04	0.396E-07	1.612	0.204E 09
5	0.131E-08	0.580E-05	0.580E-05	0.654E-08	1.410	0.108E 10

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.432E-05	0.216E-01	0.216E-01	0.216E-04	4.001	0.927E 06
2	0.204E-06	0.153E-02	0.153E-02	0.102E-05	2.667	0.130E 08
3	0.178E-07	0.177E-03	0.178E-03	0.888E-07	2.001	0.113E 09
4	0.219E-08	0.276E-04	0.276E-04	0.109E-07	1.585	0.724E 09
5	0.347E-09	0.528E-05	0.529E-05	0.173E-08	1.313	0.378E 10

TABLE---4.26
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M= 6 MEO=0.1250

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.933E-01	0.362	0.756	0.394	4.697	45.6
2	0.372E-01	0.258	0.427	0.169	3.182	82.3
3	0.126E-01	0.131	0.191	0.603E-01	2.362	185.
4	0.380E-02	0.530E-01	0.717E-01	0.188E-01	1.862	489.
5	0.105E-02	0.186E-01	0.239E-01	0.533E-02	1.530	0.146E 04

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.108E-01	0.272	0.331	0.583E-01	4.206	386.
2	0.152E-02	0.606E-01	0.690E-01	0.841E-02	2.808	0.185E 04
3	0.197E-03	0.108E-01	0.120E-01	0.111E-02	2.096	0.106E 05
4	0.262E-04	0.184E-02	0.199E-02	0.149E-03	1.669	0.636E 05
5	0.375E-05	0.321E-03	0.342E-03	0.215E-04	1.386	0.369E 06

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.306E-02	0.172	0.189	0.174E-01	4.105	0.134E 04
2	0.260E-03	0.225E-01	0.240E-01	0.150E-02	2.738	0.105E 05
3	0.236E-04	0.276E-02	0.290E-02	0.137E-03	2.048	0.869E 05
4	0.249E-05	0.369E-03	0.384E-03	0.146E-04	1.634	0.656E 06
5	0.312E-06	0.556E-04	0.575E-04	0.183E-05	1.367	0.438E 07

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.129E-02	0.121	0.128	0.750E-02	4.066	0.314E 04
2	0.824E-04	0.118E-01	0.122E-01	0.482E-03	2.711	0.329E 05
3	0.639E-05	0.123E-02	0.126E-02	0.376E-04	2.030	0.318E 06
4	0.625E-06	0.151E-03	0.155E-03	0.369E-05	1.622	0.259E 07
5	0.770E-07	0.221E-04	0.226E-04	0.455E-06	1.375	0.178E 08

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.861E-03	0.102	0.107	0.503E-02	4.053	0.470E 04
2	0.490E-04	0.883E-02	0.911E-02	0.288E-03	2.702	0.552E 05
3	0.360E-05	0.872E-03	0.894E-03	0.213E-04	2.024	0.562E 06
4	0.346E-06	0.105E-03	0.107E-03	0.205E-05	1.614	0.467E 07
5	0.425E-07	0.154E-04	0.157E-04	0.252E-06	1.363	0.320E 08

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.576E-03	0.863E-01	0.896E-01	0.338E-02	4.042	0.701E 04
2	0.297E-04	0.674E-02	0.691E-02	0.175E-03	2.695	0.908E 05
3	0.210E-05	0.640E-03	0.652E-03	0.124E-04	2.019	0.961E 06
4	0.200E-06	0.766E-04	0.778E-04	0.119E-05	1.612	0.806E 07
5	0.247E-07	0.112E-04	0.114E-04	0.147E-06	1.361	0.550E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.252E-03	0.614E-01	0.628E-01	0.149E-02	4.027	0.160E 05
2	0.111E-04	0.407E-02	0.414E-02	0.658E-04	2.685	0.242E 06
3	0.752E-06	0.370E-03	0.374E-03	0.448E-05	2.013	0.268E 07
4	0.726E-07	0.444E-04	0.448E-04	0.433E-06	1.622	0.223E 08
5	0.960E-08	0.665E-05	0.671E-05	0.573E-07	1.434	0.149E 09

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.799E-04	0.394E-01	0.399E-01	0.476E-03	4.013	0.502E 05
2	0.312E-05	0.231E-02	0.233E-02	0.186E-04	2.676	0.859E 06
3	0.212E-06	0.210E-03	0.211E-03	0.127E-05	2.009	0.948E 07
4	0.213E-07	0.260E-04	0.261E-04	0.127E-06	1.632	0.767E 08
5	0.301E-08	0.403E-05	0.405E-05	0.180E-07	1.487	0.494E 09

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.282E-04	0.281E-01	0.282E-01	0.169E-03	4.007	0.142E 06
2	0.107E-05	0.160E-02	0.161E-02	0.643E-05	2.672	0.249E 07
3	0.751E-07	0.149E-03	0.150E-03	0.450E-06	2.005	0.267E 08
4	0.769E-08	0.191E-04	0.191E-04	0.461E-07	1.608	0.209E 09
5	0.114E-08	0.305E-05	0.306E-05	0.683E-08	1.490	0.131E 10

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.207E-04	0.257E-01	0.259E-01	0.124E-03	4.005	0.193E 06
2	0.789E-06	0.147E-02	0.148E-02	0.473E-05	2.670	0.338E 07
3	0.558E-07	0.139E-03	0.139E-03	0.334E-06	2.004	0.359E 08
4	0.572E-08	0.179E-04	0.179E-04	0.343E-07	1.596	0.279E 09
5	0.803E-09	0.288E-05	0.288E-05	0.481E-08	1.391	0.173E 10

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.154E-04	0.239E-01	0.240E-01	0.919E-04	4.004	0.261E 06
2	0.589E-06	0.138E-02	0.138E-02	0.353E-05	2.669	0.454E 07
3	0.419E-07	0.131E-03	0.131E-03	0.251E-06	2.001	0.477E 08
4	0.432E-08	0.170E-04	0.170E-04	0.259E-07	1.588	0.368E 09
5	0.609E-09	0.275E-05	0.275E-05	0.365E-08	1.384	0.227E 10

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.375E-05	0.187E-01	0.188E-01	0.225E-04	4.001	0.107E 07
2	0.149E-06	0.112E-02	0.112E-02	0.895E-06	2.667	0.179E 08
3	0.110E-07	0.110E-03	0.110E-03	0.658E-07	1.998	0.182E 09
4	0.116E-08	0.146E-04	0.146E-04	0.698E-08	1.595	0.137E 10
5	0.151E-09	0.240E-05	0.241E-05	0.904E-09	1.253	0.832E 10

TABLE---4.27

M= 7 MED=0.1250

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.102	0.336	0.804	0.468	4.829	42.6
2	0.449E-01	0.275	0.500	0.225	3.290	69.9
3	0.170E-01	0.158	0.249	0.901E-01	2.441	141.
4	0.563E-02	0.721E-01	0.103	0.312E-01	1.920	339.
5	0.169E-02	0.279E-01	0.376E-01	0.968E-02	1.574	927.

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.122E-01	0.295	0.370	0.753E-01	4.247	345.
2	0.190E-02	0.736E-01	0.857E-01	0.121E-01	2.837	0.149E 04
3	0.263E-03	0.141E-01	0.158E-01	0.171E-02	2.116	0.804E 04
4	0.356E-04	0.245E-02	0.268E-02	0.234E-03	1.683	0.473E 05
5	0.499E-05	0.419E-03	0.452E-03	0.330E-04	1.396	0.280E 06

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.346E-02	0.190	0.213	0.227E-01	4.126	0.119E 04
2	0.315E-03	0.268E-01	0.289E-01	0.210E-02	2.752	0.873E 04
3	0.288E-04	0.333E-02	0.352E-02	0.194E-03	2.058	0.715E 05
4	0.290E-05	0.424E-03	0.444E-03	0.196E-04	1.642	0.567E 06
5	0.335E-06	0.590E-04	0.613E-04	0.228E-05	1.373	0.410E 07

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.145E-02	0.134	0.144	0.975E-02	4.079	0.281E 04
2	0.960E-04	0.136E-01	0.142E-01	0.652E-03	2.720	0.283E 05
3	0.715E-05	0.136E-02	0.141E-02	0.488E-04	2.036	0.235E 06
4	0.641E-06	0.154E-03	0.158E-03	0.440E-05	1.627	0.254E 07
5	0.705E-07	0.201E-04	0.206E-04	0.485E-06	1.376	0.195E 08

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.961E-03	0.113	0.119	0.651E-02	4.063	0.423E 04
2	0.557E-04	0.995E-02	0.103E-01	0.381E-03	2.709	0.486E 05
3	0.385E-05	0.927E-03	0.953E-03	0.265E-04	2.029	0.527E 06
4	0.334E-06	0.101E-03	0.103E-03	0.230E-05	1.622	0.486E 07
5	0.354E-07	0.130E-04	0.133E-04	0.244E-06	1.336	0.378E 08

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.638E-03	0.947E-01	0.991E-01	0.435E-02	4.051	0.634E 04
2	0.328E-04	0.740E-02	0.763E-02	0.225E-03	2.701	0.823E 05
3	0.214E-05	0.650E-03	0.664E-03	0.148E-04	2.023	0.944E 06
4	0.182E-06	0.692E-04	0.704E-04	0.125E-05	1.616	0.890E 07
5	0.198E-07	0.889E-05	0.903E-05	0.137E-06	1.376	0.694E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.274E-03	0.662E-01	0.681E-01	0.188E-02	4.032	0.147E 05
2	0.115E-04	0.420E-02	0.428E-02	0.794E-04	2.688	0.234E 06
3	0.695E-06	0.341E-03	0.346E-03	0.482E-05	2.015	0.290E 07
4	0.580E-07	0.357E-04	0.361E-04	0.403E-06	1.610	0.278E 08
5	0.618E-08	0.463E-05	0.467E-05	0.430E-07	1.324	0.214E 09

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.831E-04	0.409E-01	0.415E-01	0.577E-03	4.016	0.483E 05
2	0.292E-05	0.217E-02	0.219E-02	0.203E-04	2.678	0.916E 06
3	0.172E-06	0.170E-03	0.171E-03	0.120E-05	2.008	0.117E 08
4	0.149E-07	0.182E-04	0.183E-04	0.104E-06	1.634	0.110E 09
5	0.178E-08	0.244E-05	0.246E-05	0.125E-07	1.455	0.815E 09

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.279E-04	0.277E-01	0.279E-01	0.195E-03	4.008	0.144E 06
2	0.924E-06	0.138E-02	0.138E-02	0.645E-05	2.672	0.289E 07
3	0.555E-07	0.110E-03	0.111E-03	0.387E-06	2.004	0.361E 08
4	0.492E-08	0.122E-04	0.122E-04	0.344E-07	1.612	0.327E 09
5	0.643E-09	0.169E-05	0.170E-05	0.449E-08	1.513	0.235E 10

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.201E-04	0.250E-01	0.251E-01	0.140E-03	4.006	0.199E 06
2	0.664E-06	0.124E-02	0.124E-02	0.464E-05	2.671	0.402E 07
3	0.404E-07	0.100E-03	0.101E-03	0.282E-06	2.010	0.497E 08
4	0.359E-08	0.112E-04	0.112E-04	0.251E-07	1.603	0.446E 09
5	0.421E-09	0.157E-05	0.157E-05	0.295E-08	1.342	0.318E 10

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.147E-04	0.228E-01	0.229E-01	0.103E-03	4.005	0.273E 06
2	0.485E-06	0.113E-02	0.114E-02	0.339E-05	2.669	0.550E 07
3	0.298E-07	0.926E-04	0.928E-04	0.208E-06	2.006	0.674E 08
4	0.267E-08	0.104E-04	0.104E-04	0.186E-07	1.597	0.599E 09
5	0.396E-09	0.147E-05	0.147E-05	0.277E-08	1.677	0.424E 10

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.337E-05	0.168E-01	0.169E-01	0.236E-04	4.002	0.119E 07
2	0.115E-06	0.863E-03	0.864E-03	0.806E-06	2.666	0.232E 08
3	0.734E-08	0.733E-04	0.734E-04	0.513E-07	2.000	0.273E 09
4	0.681E-09	0.850E-05	0.850E-05	0.477E-08	1.602	0.235E 10
5	0.122E-09	0.123E-05	0.123E-05	0.851E-09	1.978	0.163E 11

TABLE---4.28

M= 8 MEU=0.1250

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.109	0.307	0.843	0.536	4.957	40.5
2	0.525E-01	0.283	0.567	0.284	3.399	61.4
3	0.217E-01	0.183	0.309	0.126	2.522	114.
4	0.789E-02	0.928E-01	0.141	0.480E-01	1.980	249.
5	0.258E-02	0.394E-01	0.557E-01	0.163E-01	1.619	626.

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.135E-01	0.314	0.408	0.937E-01	4.288	313.
2	0.233E-02	0.872E-01	0.104	0.167E-01	2.866	0.123E 04
3	0.345E-03	0.180E-01	0.205E-01	0.253E-02	2.136	0.619E 04
4	0.484E-04	0.325E-02	0.361E-02	0.359E-03	1.698	0.351E 05
5	0.678E-05	0.559E-03	0.610E-03	0.509E-04	1.406	0.207E 06

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.385E-02	0.208	0.236	0.286E-01	4.147	0.107E 04
2	0.379E-03	0.318E-01	0.346E-01	0.287E-02	2.766	0.730E 04
3	0.355E-04	0.405E-02	0.433E-02	0.271E-03	2.068	0.583E 05
4	0.350E-05	0.507E-03	0.534E-03	0.270E-04	1.649	0.471E 06
5	0.384E-06	0.570E-04	0.699E-04	0.298E-05	1.381	0.359E 07

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.161E-02	0.147	0.159	0.123E-01	4.092	0.254E 04
2	0.112E-03	0.157E-01	0.166E-01	0.867E-03	2.729	0.243E 05
3	0.825E-05	0.156E-02	0.162E-02	0.642E-04	2.042	0.248E 06
4	0.698E-06	0.166E-03	0.172E-03	0.546E-05	1.632	0.234E 07
5	0.696E-07	0.200E-04	0.205E-04	0.546E-06	1.362	0.196E 08

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.106E-02	0.123	0.132	0.820E-02	4.074	0.383E 04
2	0.639E-04	0.113E-01	0.118E-01	0.497E-03	2.717	0.425E 05
3	0.429E-05	0.102E-02	0.106E-02	0.335E-04	2.034	0.474E 06
4	0.345E-06	0.104E-03	0.106E-03	0.271E-05	1.625	0.471E 07
5	0.336E-07	0.121E-04	0.124E-04	0.265E-06	1.358	0.404E 08

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.703E-03	0.104	0.109	0.546E-02	4.059	0.577E 04
2	0.369E-04	0.827E-02	0.856E-02	0.289E-03	2.706	0.734E 05
3	0.229E-05	0.691E-03	0.709E-03	0.180E-04	2.028	0.884E 06
4	0.178E-06	0.674E-04	0.688E-04	0.140E-05	1.623	0.911E 07
5	0.167E-07	0.778E-05	0.791E-05	0.132E-06	1.326	0.792E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.297E-03	0.716E-01	0.739E-01	0.233E-02	4.037	0.136E 05
2	0.123E-04	0.447E-02	0.457E-02	0.967E-04	2.692	0.220E 06
3	0.682E-06	0.333E-03	0.339E-03	0.540E-05	2.018	0.296E 07
4	0.509E-07	0.312E-04	0.316E-04	0.404E-06	1.614	0.317E 08
5	0.475E-08	0.359E-05	0.363E-05	0.377E-07	1.313	0.276E 09

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.875E-04	0.429E-01	0.436E-01	0.693E-03	4.019	0.459E 05
2	0.286E-05	0.212E-02	0.214E-02	0.227E-04	2.679	0.937E 06
3	0.150E-06	0.148E-03	0.149E-03	0.119E-05	2.013	0.134E 08
4	0.116E-07	0.139E-04	0.140E-04	0.926E-07	1.668	0.143E 09
5	0.848E-09	0.164E-05	0.165E-05	0.676E-08	1.031	0.122E 10

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.282E-04	0.279E-01	0.281E-01	0.224E-03	4.009	0.142E 06
2	0.833E-06	0.124E-02	0.125E-02	0.664E-05	2.673	0.321E 07
3	0.441E-07	0.872E-04	0.876E-04	0.352E-06	2.017	0.457E 08
4	0.343E-08	0.845E-05	0.848E-05	0.273E-07	1.617	0.472E 09
5	0.535E-09	0.104E-05	0.104E-05	0.427E-08	2.054	0.384E 10

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.200E-04	0.248E-01	0.250E-01	0.159E-03	4.008	0.200E 06
2	0.586E-06	0.109E-02	0.110E-02	0.467E-05	2.673	0.456E 07
3	0.311E-07	0.774E-04	0.776E-04	0.248E-06	2.002	0.644E 08
4	0.252E-08	0.758E-05	0.760E-05	0.201E-07	1.659	0.658E 09
5	0.242E-09	0.939E-06	0.941E-06	0.193E-08	1.285	0.531E 10

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.144E-04	0.224E-01	0.225E-01	0.115E-03	4.006	0.278E 06
2	0.419E-06	0.978E-03	0.981E-03	0.335E-05	2.670	0.637E 07
3	0.225E-07	0.700E-04	0.702E-04	0.179E-06	2.000	0.891E 08
4	0.184E-08	0.693E-05	0.694E-05	0.147E-07	1.660	0.900E 09
5	0.251E-09	0.867E-06	0.869E-06	0.201E-08	1.809	0.720E 10

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.310E-05	0.155E-01	0.155E-01	0.248E-04	4.002	0.129E 07
2	0.928E-07	0.695E-03	0.696E-03	0.742E-06	2.668	0.287E 08
3	0.524E-08	0.520E-04	0.520E-04	0.419E-07	2.014	0.384E 09
4	0.440E-09	0.533E-05	0.534E-05	0.352E-08	1.647	0.375E 10
5	0.750E-10	0.686E-06	0.687E-06	0.600E-09	2.184	0.291E 11

TABLE--- 4.29
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M= 9 MEO=0.1250

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.116	0.276	0.874	0.598	5.081	38.9
2	0.597E-01	0.283	0.627	0.344	3.509	55.2
3	0.268E-01	0.203	0.370	0.166	2.605	94.6
4	0.106E-01	0.114	0.183	0.694E-01	2.042	191.
5	0.374E-02	0.529E-01	0.785E-01	0.256E-01	1.665	444.

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.148E-01	0.330	0.444	0.113	4.329	287.
2	0.279E-02	0.101	0.123	0.221E-01	2.895	0.103E 04
3	0.444E-03	0.226E-01	0.262E-01	0.361E-02	2.157	0.486E 04
4	0.650E-04	0.427E-02	0.481E-02	0.537E-03	1.712	0.263E 05
5	0.929E-05	0.751E-03	0.829E-03	0.777E-04	1.417	0.153E 06

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.425E-02	0.224	0.259	0.352E-01	4.168	977.
2	0.451E-03	0.372E-01	0.410E-01	0.381E-02	2.781	0.617E 04
3	0.438E-04	0.494E-02	0.531E-02	0.374E-03	2.078	0.475E 05
4	0.431E-05	0.618E-03	0.656E-03	0.372E-04	1.655	0.384E 06
5	0.455E-06	0.792E-04	0.831E-04	0.395E-05	1.376	0.302E 07

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.177E-02	0.159	0.175	0.151E-01	4.106	0.231E 04
2	0.131E-03	0.181E-01	0.192E-01	0.113E-02	2.738	0.209E 05
3	0.967E-05	0.181E-02	0.190E-02	0.843E-04	2.048	0.212E 06
4	0.790E-06	0.187E-03	0.194E-03	0.692E-05	1.635	0.207E 07
5	0.744E-07	0.211E-04	0.217E-04	0.654E-06	1.373	0.185E 08

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LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.117E-02	0.134	0.144	0.101E-01	4.085	0.349E 04
2	0.735E-04	0.129E-01	0.136E-01	0.641E-03	2.724	0.371E 05
3	0.488E-05	0.116E-02	0.120E-02	0.428E-04	2.039	0.418E 06
4	0.373E-06	0.112E-03	0.115E-03	0.329E-05	1.630	0.437E 07
5	0.338E-07	0.121E-04	0.124E-04	0.299E-06	1.365	0.404E 08

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.770E-03	0.112	0.119	0.670E-02	4.068	0.528E 04
2	0.418E-04	0.930E-02	0.966E-02	0.366E-03	2.712	0.650E 05
3	0.253E-05	0.758E-03	0.780E-03	0.223E-04	2.031	0.804E 06
4	0.183E-06	0.693E-04	0.709E-04	0.162E-05	1.619	0.884E 07
5	0.166E-07	0.734E-05	0.748E-05	0.147E-06	1.389	0.837E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.322E-03	0.772E-01	0.800E-01	0.284E-02	4.042	0.125E 05
2	0.133E-04	0.483E-02	0.495E-02	0.118E-03	2.695	0.203E 06
3	0.697E-06	0.340E-03	0.346E-03	0.620E-05	2.019	0.289E 07
4	0.478E-07	0.291E-04	0.295E-04	0.426E-06	1.623	0.339E 08
5	0.369E-08	0.301E-05	0.304E-05	0.329E-07	1.213	0.329E 09

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.926E-04	0.453E-01	0.461E-01	0.824E-03	4.021	0.434E 05
2	0.288E-05	0.213E-02	0.215E-02	0.257E-04	2.681	0.930E 06
3	0.137E-06	0.135E-03	0.136E-03	0.123E-05	2.015	0.147E 08
4	0.973E-08	0.113E-04	0.114E-04	0.871E-07	1.704	0.175E 09
5	0.615E-09	0.120E-05	0.120E-05	0.551E-08	1.025	0.167E 10

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.288E-04	0.285E-01	0.287E-01	0.258E-03	4.011	0.139E 06
2	0.779E-06	0.116E-02	0.117E-02	0.698E-05	2.675	0.343E 07
3	0.367E-07	0.726E-04	0.730E-04	0.329E-06	2.012	0.548E 08
4	0.247E-08	0.627E-05	0.629E-05	0.222E-07	1.574	0.636E 09
5	0.298E-09	0.687E-06	0.690E-06	0.268E-08	1.729	0.580E 10

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.202E-04	0.250E-01	0.252E-01	0.181E-03	4.008	0.199E 06
2	0.535E-06	0.997E-03	0.100E-02	0.480E-05	2.673	0.499E 07
3	0.253E-07	0.629E-04	0.631E-04	0.227E-06	2.004	0.792E 08
4	0.177E-08	0.549E-05	0.550E-05	0.159E-07	1.609	0.909E 09
5	0.246E-09	0.609E-06	0.611E-06	0.221E-08	2.015	0.819E 10

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.143E-04	0.222E-01	0.224E-01	0.129E-03	4.007	0.279E 06
2	0.375E-06	0.876E-03	0.879E-03	0.337E-05	2.670	0.711E 07
3	0.181E-07	0.557E-04	0.559E-04	0.162E-06	2.020	0.112E 09
4	0.129E-08	0.491E-05	0.492E-05	0.116E-07	1.632	0.127E 10
5	0.107E-09	0.550E-06	0.551E-06	0.966E-09	1.220	0.114E 11

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.291E-05	0.145E-01	0.146E-01	0.262E-04	4.002	0.137E 07
2	0.774E-07	0.579E-03	0.580E-03	0.696E-06	2.668	0.345E 08
3	0.389E-08	0.386E-04	0.386E-04	0.350E-07	2.013	0.518E 09
4	0.321E-09	0.355E-05	0.355E-05	0.289E-08	1.808	0.563E 10
5	0.767E-10	0.411E-06	0.412E-06	0.636E-09	3.435	0.486E 11

TABLE--- 4.30
****

M=10 MEO=0.1250

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.121	0.246	0.899	0.653	5.200	37.7
2	0.667E-01	0.277	0.681	0.403	3.619	50.7
3	0.321E-01	0.218	0.430	0.211	2.690	81.2
4	0.136E-01	0.134	0.229	0.953E-01	2.105	152.
5	0.518E-02	0.679E-01	0.106	0.380E-01	1.713	329.

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.161E-01	0.343	0.477	0.134	4.370	267.
2	0.329E-02	0.115	0.144	0.285E-01	2.925	887.
3	0.560E-03	0.277E-01	0.327E-01	0.499E-02	2.177	0.389E 04
4	0.861E-04	0.554E-02	0.632E-02	0.782E-03	1.727	0.200E 05
5	0.127E-04	0.100E-02	0.112E-02	0.117E-03	1.427	0.113E 06

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.464E-02	0.239	0.282	0.422E-01	4.189	898.
2	0.529E-03	0.429E-01	0.479E-01	0.493E-02	2.795	0.526E 04
3	0.537E-04	0.598E-02	0.648E-02	0.507E-03	2.088	0.389E 05
4	0.536E-05	0.760E-03	0.811E-03	0.511E-04	1.663	0.310E 06
5	0.557E-06	0.960E-04	0.101E-03	0.534E-05	1.381	0.248E 07

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.194E-02	0.172	0.190	0.182E-01	4.119	0.212E 04
2	0.152E-03	0.208E-01	0.222E-01	0.145E-02	2.747	0.181E 05
3	0.114E-04	0.212E-02	0.223E-02	0.110E-03	2.054	0.180E 06
4	0.915E-06	0.215E-03	0.224E-03	0.888E-05	1.639	0.179E 07
5	0.821E-07	0.232E-04	0.240E-04	0.801E-06	1.373	0.167E 08

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.127E-02	0.145	0.157	0.121E-01	4.095	0.321E 04
2	0.843E-04	0.147E-01	0.155E-01	0.813E-03	2.731	0.324E 05
3	0.562E-05	0.133E-02	0.138E-02	0.546E-04	2.044	0.363E 06
4	0.416E-06	0.124E-03	0.128E-03	0.406E-05	1.631	0.392E 07
5	0.361E-07	0.127E-04	0.131E-04	0.354E-06	1.388	0.384E 08

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.838E-03	0.121	0.129	0.807E-02	4.076	0.486E 04
2	0.473E-04	0.105E-01	0.109E-01	0.460E-03	2.718	0.574E 05
3	0.284E-05	0.846E-03	0.874E-03	0.277E-04	2.036	0.718E 06
4	0.197E-06	0.738E-04	0.758E-04	0.193E-05	1.625	0.827E 07
5	0.160E-07	0.729E-05	0.745E-05	0.158E-06	1.346	0.841E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.348E-03	0.830E-01	0.864E-01	0.340E-02	4.048	0.116E 05
2	0.146E-04	0.528E-02	0.542E-02	0.143E-03	2.699	0.185E 06
3	0.734E-06	0.357E-03	0.364E-03	0.723E-05	2.020	0.275E 07
4	0.467E-07	0.284E-04	0.289E-04	0.462E-06	1.621	0.347E 08
5	0.360E-08	0.270E-05	0.273E-05	0.356E-07	1.320	0.367E 09

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.982E-04	0.479E-01	0.489E-01	0.970E-03	4.024	0.410E 05
2	0.297E-05	0.219E-02	0.222E-02	0.294E-04	2.682	0.903E 06
3	0.130E-06	0.128E-03	0.130E-03	0.129E-05	2.012	0.154E 08
4	0.780E-08	0.978E-05	0.986E-05	0.775E-07	1.582	0.203E 09
5	0.416E-09	0.932E-06	0.936E-06	0.414E-08	0.889	0.214E 10

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.297E-04	0.293E-01	0.296E-01	0.295E-03	4.012	0.135E 06
2	0.748E-06	0.111E-02	0.112E-02	0.745E-05	2.675	0.357E 07
3	0.318E-07	0.631E-04	0.634E-04	0.317E-06	2.008	0.631E 08
4	0.216E-08	0.490E-05	0.492E-05	0.215E-07	1.754	0.813E 09
5	0.207E-09	0.485E-06	0.487E-06	0.206E-08	1.700	0.822E 10

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.206E-04	0.255E-01	0.257E-01	0.205E-03	4.010	0.195E 06
2	0.503E-06	0.938E-03	0.943E-03	0.502E-05	2.672	0.531E 07
3	0.215E-07	0.533E-04	0.536E-04	0.215E-06	2.012	0.934E 08
4	0.153E-08	0.419E-05	0.420E-05	0.153E-07	1.824	0.119E 10
5	0.162E-09	0.419E-06	0.421E-06	0.162E-08	1.932	0.119E 11

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.145E-04	0.224E-01	0.226E-01	0.144E-03	4.008	0.277E 06
2	0.346E-06	0.808E-03	0.811E-03	0.345E-05	2.671	0.771E 07
3	0.149E-07	0.462E-04	0.464E-04	0.149E-06	2.014	0.135E 09
4	0.895E-09	0.367E-05	0.368E-05	0.893E-08	1.521	0.170E 10
5	0.128E-09	0.371E-06	0.373E-06	0.127E-08	2.141	0.168E 11

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.278E-05	0.138E-01	0.139E-01	0.277E-04	4.002	0.144E 07
2	0.663E-07	0.496E-03	0.497E-03	0.662E-06	2.668	0.403E 08
3	0.296E-08	0.298E-04	0.298E-04	0.296E-07	1.988	0.671E 09
4	0.201E-09	0.248E-05	0.248E-05	0.201E-08	1.624	0.807E 10
5	0.387E-10	0.260E-06	0.261E-06	0.386E-09	2.965	0.767E 11

TABLE---4.31
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M= 1 MEO=0.2500

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.112E-01	0.186	0.197	0.112E-01	2.000	177.
2	0.189E-02	0.473E-01	0.492E-01	0.189E-02	1.333	704.
3	0.492E-03	0.164E-01	0.169E-01	0.492E-03	1.000	0.203E 04
4	0.169E-03	0.704E-02	0.721E-02	0.169E-03	0.800	0.473E 04
5	0.698E-04	0.349E-02	0.356E-02	0.698E-04	0.667	0.956E 04

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.190E-02	0.119	0.121	0.190E-02	2.000	0.105E 04
2	0.319E-03	0.299E-01	0.302E-01	0.319E-03	1.333	0.418E 04
3	0.883E-04	0.110E-01	0.111E-01	0.883E-04	1.000	0.113E 05
4	0.321E-04	0.501E-02	0.505E-02	0.321E-04	0.800	0.249E 05
5	0.139E-04	0.260E-02	0.261E-02	0.139E-04	0.667	0.481E 05

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.841E-03	0.105	0.106	0.841E-03	2.000	0.238E 04
2	0.144E-03	0.271E-01	0.272E-01	0.144E-03	1.333	0.923E 04
3	0.408E-04	0.102E-01	0.102E-01	0.408E-04	1.000	0.245E 05
4	0.150E-04	0.470E-02	0.471E-02	0.150E-04	0.800	0.532E 05
5	0.655E-05	0.246E-02	0.246E-02	0.655E-05	0.667	0.102E 06

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.499E-03	0.999E-01	0.100	0.499E-03	2.000	0.400E 04
2	0.869E-04	0.261E-01	0.261E-01	0.869E-04	1.333	0.153E 05
3	0.247E-04	0.990E-02	0.992E-02	0.247E-04	1.000	0.404E 05
4	0.916E-05	0.458E-02	0.459E-02	0.916E-05	0.800	0.873E 05
5	0.401E-05	0.241E-02	0.241E-02	0.401E-05	0.667	0.166E 06

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.392E-03	0.981E-01	0.985E-01	0.392E-03	2.000	0.510E 04
2	0.686E-04	0.257E-01	0.258E-01	0.686E-04	1.333	0.194E 05
3	0.196E-04	0.980E-02	0.981E-02	0.196E-04	1.000	0.510E 05
4	0.727E-05	0.454E-02	0.455E-02	0.727E-05	0.800	0.110E 06
5	0.319E-05	0.239E-02	0.239E-02	0.319E-05	0.667	0.209E 06

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.309E-03	0.967E-01	0.970E-01	0.309E-03	2.000	0.646E 04
2	0.543E-04	0.255E-01	0.255E-01	0.543E-04	1.333	0.246E 05
3	0.155E-04	0.972E-02	0.973E-02	0.155E-04	1.000	0.643E 05
4	0.578E-05	0.451E-02	0.452E-02	0.578E-05	0.800	0.138E 06
5	0.254E-05	0.238E-02	0.238E-02	0.254E-05	0.667	0.263E 06

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.189E-03	0.945E-01	0.947E-01	0.189E-03	2.000	0.106E 05
2	0.334E-04	0.251E-01	0.251E-01	0.334E-04	1.333	0.399E 05
3	0.960E-05	0.960E-02	0.961E-02	0.960E-05	1.000	0.194E 06
4	0.358E-05	0.447E-02	0.447E-02	0.358E-05	0.800	0.224E 06
5	0.157E-05	0.236E-02	0.236E-02	0.157E-05	0.667	0.424E 06

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.927E-04	0.927E-01	0.928E-01	0.927E-04	2.000	0.216E 05
2	0.165E-04	0.247E-01	0.247E-01	0.165E-04	1.333	0.809E 05
3	0.475E-05	0.950E-02	0.950E-02	0.475E-05	1.000	0.211E 06
4	0.177E-05	0.443E-02	0.443E-02	0.177E-05	0.800	0.451E 06
5	0.780E-06	0.234E-02	0.234E-02	0.780E-06	0.667	0.855E 06

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.459E-04	0.918E-01	0.919E-01	0.459E-04	2.000	0.436E 05
2	0.819E-05	0.246E-01	0.246E-01	0.819E-05	1.333	0.163E 06
3	0.236E-05	0.945E-02	0.945E-02	0.236E-05	1.000	0.423E 06
4	0.883E-06	0.441E-02	0.441E-02	0.883E-06	0.800	0.906E 06
5	0.389E-06	0.233E-02	0.233E-02	0.389E-06	0.667	0.172E 07

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.367E-04	0.916E-01	0.917E-01	0.367E-04	2.000	0.546E 05
2	0.654E-05	0.245E-01	0.245E-01	0.654E-05	1.333	0.204E 06
3	0.189E-05	0.944E-02	0.944E-02	0.189E-05	1.000	0.530E 06
4	0.705E-06	0.441E-02	0.441E-02	0.705E-06	0.800	0.113E 07
5	0.311E-06	0.233E-02	0.233E-02	0.311E-06	0.667	0.215E 07

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.293E-04	0.915E-01	0.915E-01	0.293E-04	2.000	0.683E 05
2	0.523E-05	0.245E-01	0.245E-01	0.523E-05	1.333	0.255E 06
3	0.151E-05	0.943E-02	0.943E-02	0.151E-05	1.000	0.663E 06
4	0.564E-06	0.441E-02	0.441E-02	0.564E-06	0.800	0.142E 07
5	0.248E-06	0.233E-02	0.233E-02	0.248E-06	0.667	0.268E 07

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.911E-05	0.911E-01	0.911E-01	0.911E-05	2.000	0.220E 06
2	0.163E-05	0.244E-01	0.244E-01	0.163E-05	1.333	0.819E 06
3	0.471E-06	0.941E-02	0.941E-02	0.471E-06	1.000	0.213E 07
4	0.176E-06	0.440E-02	0.440E-02	0.176E-06	0.800	0.455E 07
5	0.775E-07	0.232E-02	0.233E-02	0.775E-07	0.667	0.860E 07

TABLE---4.32
****

M= 2 MEO=0.2500

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.146E-01	0.225	0.254	0.281E-01	2.038	137.
2	0.204E-02	0.482E-01	0.521E-01	0.397E-02	1.359	664.
3	0.355E-03	0.113E-01	0.120E-01	0.694E-03	1.017	0.286E 04
4	0.780E-04	0.312E-02	0.328E-02	0.153E-03	0.812	0.104E 05
5	0.208E-04	0.101E-02	0.105E-02	0.419E-04	0.676	0.325E 05

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.171E-02	0.105	0.108	0.338E-02	2.011	0.117E 04
2	0.171E-03	0.158E-01	0.161E-01	0.340E-03	1.340	0.783E 04
3	0.284E-04	0.350E-02	0.356E-02	0.564E-04	1.005	0.354E 05
4	0.652E-05	0.101E-02	0.102E-02	0.130E-04	0.804	0.123E 06
5	0.187E-05	0.347E-03	0.351E-03	0.372E-05	0.670	0.358E 06

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.623E-03	0.771E-01	0.783E-01	0.124E-02	2.005	0.322E 04
2	0.613E-04	0.114E-01	0.115E-01	0.122E-03	1.337	0.219E 05
3	0.105E-04	0.261E-02	0.264E-02	0.210E-04	1.002	0.952E 05
4	0.250E-05	0.777E-03	0.782E-03	0.499E-05	0.802	0.321E 06
5	0.739E-06	0.275E-03	0.277E-03	0.147E-05	0.670	0.906E 06

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.333E-03	0.662E-01	0.669E-01	0.665E-03	2.003	0.601E 04
2	0.332E-04	0.992E-02	0.999E-02	0.663E-04	1.336	0.402E 05
3	0.582E-05	0.232E-02	0.233E-02	0.116E-04	1.002	0.172E 06
4	0.141E-05	0.701E-03	0.704E-03	0.281E-05	0.801	0.570E 06
5	0.421E-06	0.251E-03	0.252E-03	0.840E-06	0.668	0.159E 07

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.252E-03	0.626E-01	0.631E-01	0.502E-03	2.003	0.796E 04
2	0.253E-04	0.944E-02	0.949E-02	0.505E-04	1.335	0.528E 05
3	0.447E-05	0.223E-02	0.223E-02	0.892E-05	1.001	0.224E 06
4	0.108E-05	0.677E-03	0.679E-03	0.217E-05	0.800	0.738E 06
5	0.325E-06	0.244E-03	0.244E-03	0.650E-06	0.667	0.205E 07

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.192E-03	0.596E-01	0.600E-01	0.382E-03	2.002	0.104E 05
2	0.194E-04	0.907E-02	0.911E-02	0.388E-04	1.335	0.688E 05
3	0.345E-05	0.215E-02	0.216E-02	0.690E-05	1.001	0.290E 06
4	0.844E-06	0.658E-03	0.659E-03	0.169E-05	0.801	0.949E 06
5	0.254E-06	0.238E-03	0.238E-03	0.508E-06	0.667	0.263E 07

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.111E-03	0.552E-01	0.554E-01	0.221E-03	2.001	0.181E 05
2	0.114E-04	0.852E-02	0.854E-02	0.227E-04	1.334	0.117E 06
3	0.205E-05	0.204E-02	0.205E-02	0.409E-05	1.001	0.489E 06
4	0.504E-06	0.630E-03	0.631E-03	0.101E-05	0.801	0.159E 07
5	0.153E-06	0.229E-03	0.229E-03	0.306E-06	0.668	0.436E 07

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.515E-04	0.514E-01	0.515E-01	0.103E-03	2.001	0.389E 05
2	0.539E-05	0.807E-02	0.808E-02	0.108E-04	1.334	0.248E 06
3	0.980E-06	0.196E-02	0.196E-02	0.196E-05	1.000	0.102E 07
4	0.243E-06	0.607E-03	0.608E-03	0.486E-06	0.800	0.329E 07
5	0.741E-07	0.222E-03	0.222E-03	0.148E-06	0.667	0.901E 07

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.248E-04	0.495E-01	0.496E-01	0.495E-04	2.000	0.807E 05
2	0.262E-05	0.785E-02	0.786E-02	0.524E-05	1.334	0.509E 06
3	0.479E-06	0.191E-02	0.192E-02	0.958E-06	1.000	0.209E 07
4	0.119E-06	0.596E-03	0.596E-03	0.238E-06	0.800	0.671E 07
5	0.365E-07	0.218E-03	0.218E-03	0.730E-07	0.668	0.183E 08

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.197E-04	0.491E-01	0.492E-01	0.393E-04	2.000	0.102E 06
2	0.208E-05	0.781E-02	0.781E-02	0.416E-05	1.334	0.640E 06
3	0.381E-06	0.191E-02	0.191E-02	0.763E-06	1.000	0.262E 07
4	0.950E-07	0.594E-03	0.594E-03	0.190E-06	0.800	0.842E 07
5	0.290E-07	0.218E-03	0.218E-03	0.581E-07	0.667	0.230E 08

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.156E-04	0.488E-01	0.489E-01	0.313E-04	2.000	0.128E 06
2	0.166E-05	0.777E-02	0.778E-02	0.332E-05	1.333	0.804E 06
3	0.304E-06	0.190E-02	0.190E-02	0.608E-06	1.000	0.329E 07
4	0.758E-07	0.592E-03	0.592E-03	0.152E-06	0.800	0.106E 08
5	0.232E-07	0.217E-03	0.217E-03	0.463E-07	0.666	0.288E 08

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.480E-05	0.480E-01	0.480E-01	0.960E-05	2.000	0.417E 06
2	0.512E-06	0.768E-02	0.768E-02	0.102E-05	1.333	0.261E 07
3	0.941E-07	0.188E-02	0.188E-02	0.188E-06	1.000	0.106E 08
4	0.235E-07	0.587E-03	0.587E-03	0.470E-07	0.800	0.341E 08
5	0.720E-08	0.216E-03	0.216E-03	0.144E-07	0.668	0.927E 08

TABLE---4.33

M=.3 MED=0.2500

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.191E-01	0.273	0.326	0.532E-01	2.075	106.
2	0.294E-02	0.654E-01	0.737E-01	0.833E-02	1.385	470.
3	0.470E-03	0.143E-01	0.156E-01	0.135E-02	1.035	0.220E 04
4	0.852E-04	0.328E-02	0.353E-02	0.246E-03	0.825	0.969E 04
5	0.178E-04	0.833E-03	0.885E-03	0.517E-04	0.686	0.384E 05

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.194E-02	0.116	0.122	0.571E-02	2.021	0.104E 04
2	0.159E-03	0.144E-01	0.149E-01	0.469E-03	1.347	0.849E 04
3	0.193E-04	0.235E-02	0.240E-02	0.571E-04	1.010	0.524E 05
4	0.320E-05	0.490E-03	0.499E-03	0.951E-05	0.807	0.252E 06
5	0.675E-06	0.124E-03	0.126E-03	0.201E-05	0.673	0.997E 06

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.625E-03	0.764E-01	0.783E-01	0.185E-02	2.011	0.322E 04
2	0.451E-04	0.832E-02	0.846E-02	0.134E-03	1.340	0.297E 05
3	0.549E-05	0.135E-02	0.137E-02	0.164E-04	1.005	0.183E 06
4	0.945E-06	0.291E-03	0.294E-03	0.282E-05	0.806	0.853E 06
5	0.209E-06	0.766E-04	0.772E-04	0.623E-06	0.677	0.325E 07

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.306E-03	0.604E-01	0.613E-01	0.912E-03	2.007	0.656E 04
2	0.216E-04	0.640E-02	0.647E-02	0.643E-04	1.338	0.621E 05
3	0.268E-05	0.106E-02	0.107E-02	0.799E-05	1.003	0.375E 06
4	0.471E-06	0.234E-03	0.235E-03	0.141E-05	0.803	0.170E 07
5	0.106E-06	0.628E-04	0.631E-04	0.316E-06	0.671	0.635E 07

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.222E-03	0.549E-01	0.556E-01	0.662E-03	2.005	0.903E 04
2	0.156E-04	0.581E-02	0.586E-02	0.467E-04	1.337	0.856E 05
3	0.196E-05	0.973E-03	0.979E-03	0.586E-05	1.003	0.512E 06
4	0.346E-06	0.217E-03	0.218E-03	0.104E-05	0.802	0.230E 07
5	0.792E-07	0.586E-04	0.589E-04	0.237E-06	0.673	0.850E 07

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.163E-03	0.505E-01	0.510E-01	0.487E-03	2.004	0.123E 05
2	0.115E-04	0.535E-02	0.539E-02	0.344E-04	1.336	0.116E 06
3	0.146E-05	0.906E-03	0.910E-03	0.436E-05	1.002	0.698E 06
4	0.261E-06	0.203E-03	0.204E-03	0.782E-06	0.801	0.307E 07
5	0.593E-07	0.555E-04	0.556E-04	0.178E-06	0.667	0.112E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.879E-04	0.437E-01	0.440E-01	0.263E-03	2.003	0.228E 05
2	0.629E-05	0.470E-02	0.472E-02	0.188E-04	1.335	0.212E 06
3	0.813E-06	0.810E-03	0.812E-03	0.243E-05	1.002	0.123E 07
4	0.148E-06	0.185E-03	0.185E-03	0.444E-06	0.801	0.541E 07
5	0.342E-07	0.509E-04	0.510E-04	0.102E-06	0.671	0.196E 08

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.381E-04	0.380E-01	0.381E-01	0.114E-03	2.001	0.525E 05
2	0.279E-05	0.418E-02	0.419E-02	0.837E-05	1.334	0.478E 06
3	0.368E-06	0.735E-03	0.736E-03	0.110E-05	1.001	0.272E 07
4	0.681E-07	0.170E-03	0.170E-03	0.204E-06	0.801	0.118E 08
5	0.159E-07	0.473E-04	0.474E-04	0.477E-07	0.672	0.422E 08

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.176E-04	0.352E-01	0.352E-01	0.528E-04	2.001	0.114E 06
2	0.131E-05	0.393E-02	0.394E-02	0.393E-05	1.334	0.102E 07
3	0.175E-06	0.699E-03	0.699E-03	0.525E-06	1.001	0.572E 07
4	0.327E-07	0.163E-03	0.163E-03	0.982E-07	0.804	0.246E 08
5	0.777E-08	0.456E-04	0.456E-04	0.233E-07	0.681	0.876E 08

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.138E-04	0.346E-01	0.346E-01	0.415E-04	2.001	0.145E 06
2	0.104E-05	0.388E-02	0.389E-02	0.311E-05	1.334	0.129E 07
3	0.139E-06	0.692E-03	0.692E-03	0.416E-06	1.001	0.722E 07
4	0.259E-07	0.161E-03	0.161E-03	0.776E-07	0.802	0.310E 08
5	0.612E-08	0.452E-04	0.453E-04	0.184E-07	0.675	0.110E 09

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.109E-04	0.341E-01	0.341E-01	0.328E-04	2.000	0.183E 06
2	0.821E-06	0.384E-02	0.385E-02	0.246E-05	1.334	0.163E 07
3	0.110E-06	0.686E-03	0.687E-03	0.330E-06	1.000	0.910E 07
4	0.205E-07	0.160E-03	0.160E-03	0.616E-07	0.801	0.390E 08
5	0.484E-08	0.450E-04	0.450E-04	0.145E-07	0.672	0.139E 09

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.328E-05	0.328E-01	0.328E-01	0.985E-05	2.000	0.609E 06
2	0.249E-06	0.374E-02	0.374E-02	0.748E-05	1.333	0.535E 07
3	0.336E-07	0.671E-03	0.671E-03	0.101E-06	1.001	0.298E 08
4	0.631E-08	0.157E-03	0.157E-03	0.189E-07	0.802	0.127E 09
5	0.149E-08	0.443E-04	0.443E-04	0.447E-08	0.673	0.452E 09

TABLE--- 4.34
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M= 4 MEO=0.2500

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.236E-01	0.312	0.396	0.844E-01	2.113	87.3
2	0.420E-02	0.880E-01	0.103	0.154E-01	1.411	335.
3	0.700E-03	0.202E-01	0.229E-01	0.261E-02	1.053	0.150E 04
4	0.121E-03	0.447E-02	0.493E-02	0.456E-03	0.838	0.693E 04
5	0.226E-04	0.102E-02	0.111E-02	0.861E-04	0.695	0.307E 05

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.228E-02	0.134	0.143	0.885E-02	2.031	888.
2	0.178E-03	0.159E-01	0.166E-01	0.696E-03	1.355	0.760E 04
3	0.181E-04	0.218E-02	0.225E-02	0.712E-04	1.014	0.559E 05
4	0.242E-05	0.366E-03	0.375E-03	0.952E-05	0.811	0.335E 06
5	0.404E-06	0.736E-04	0.752E-04	0.159E-05	0.675	0.167E 07

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.684E-03	0.828E-01	.855E-01	0.269E-02	2.016	0.294E 04
2	0.422E-04	0.772E-02	0.788E-02	0.167E-03	1.344	0.319E 05
3	0.404E-05	0.990E-03	0.101E-02	0.160E-04	1.007	0.250E 06
4	0.541E-06	0.166E-03	0.168E-03	0.215E-05	0.806	0.149E 07
5	0.934E-07	0.344E-04	0.348E-04	0.371E-06	0.673	0.720E 07

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.315E-03	0.618E-01	0.631E-01	0.125E-02	2.010	0.637E 04
2	0.179E-04	0.530E-02	0.537E-02	0.711E-04	1.340	0.748E 05
3	0.172E-05	0.679E-03	0.686E-03	0.684E-05	1.005	0.584E 06
4	0.236E-06	0.117E-03	0.118E-03	0.939E-06	0.804	0.341E 07
5	0.426E-07	0.248E-04	0.249E-04	0.169E-06	0.683	0.161E 08

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.222E-03	0.546E-01	0.555E-01	0.881E-03	2.008	0.905E 04
2	0.124E-04	0.458E-02	0.463E-02	0.491E-04	1.339	0.108E 06
3	0.119E-05	0.591E-03	0.596E-03	0.475E-05	1.004	0.841E 06
4	0.166E-06	0.103E-03	0.103E-03	0.662E-06	0.806	0.495E 07
5	0.300E-07	0.220E-04	0.222E-04	0.120E-06	0.677	0.226E 08

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.158E-03	0.487E-01	0.493E-01	0.628E-03	2.006	0.127E 05
2	0.869E-05	0.403E-02	0.407E-02	0.346E-04	1.338	0.154E 06
3	0.848E-06	0.526E-03	0.529E-03	0.338E-05	1.003	0.118E 07
4	0.119E-06	0.923E-04	0.928E-04	0.475E-06	0.803	0.674E 07
5	0.214E-07	0.200E-04	0.201E-04	0.855E-07	0.667	0.311E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.801E-04	0.397E-01	0.401E-01	0.319E-03	2.004	0.250E 05
2	0.440E-05	0.328E-02	0.329E-02	0.175E-04	1.336	0.304E 06
3	0.438E-06	0.436E-03	0.438E-03	0.175E-05	1.001	0.229E 07
4	0.626E-07	0.782E-04	0.784E-04	0.250E-06	0.798	0.128E 08
5	0.112E-07	0.173E-04	0.173E-04	0.448E-07	0.648	0.578E 08

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.323E-04	0.321E-01	0.323E-01	0.129E-03	2.002	0.621E 05
2	0.180E-05	0.270E-02	0.271E-02	0.721E-05	1.335	0.740E 06
3	0.185E-06	0.369E-03	0.370E-03	0.739E-06	1.001	0.541E 07
4	0.272E-07	0.676E-04	0.677E-04	0.109E-06	0.803	0.296E 08
5	0.512E-08	0.152E-04	0.152E-04	0.205E-07	0.675	0.132E 09

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.142E-04	0.283E-01	0.283E-01	0.566E-04	2.001	0.141E 06
2	0.810E-06	0.243E-02	0.243E-02	0.324E-05	1.334	0.165E 07
3	0.846E-07	0.338E-03	0.338E-03	0.338E-06	1.001	0.118E 08
4	0.126E-07	0.626E-04	0.627E-04	0.503E-07	0.803	0.638E 08
5	0.239E-08	0.142E-04	0.142E-04	0.955E-08	0.673	0.282E 09

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.110E-04	0.275E-01	0.275E-01	0.440E-04	2.001	0.182E 06
2	0.634E-06	0.238E-02	0.238E-02	0.254E-05	1.334	0.210E 07
3	0.664E-07	0.332E-03	0.332E-03	0.266E-06	1.000	0.151E 08
4	0.997E-08	0.617E-04	0.617E-04	0.398E-07	0.807	0.810E 08
5	0.190E-08	0.140E-04	0.140E-04	0.759E-08	0.677	0.357E 09

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.861E-05	0.269E-01	0.269E-01	0.344E-04	2.001	0.232E 06
2	0.498E-06	0.233E-02	0.234E-02	0.199E-05	1.334	0.268E 07
3	0.524E-07	0.327E-03	0.327E-03	0.210E-06	1.001	0.191E 08
4	0.785E-08	0.609E-04	0.610E-04	0.314E-07	0.805	0.103E 09
5	0.153E-08	0.139E-04	0.139E-04	0.611E-08	0.689	0.451E 09

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.252E-05	0.252E-01	0.252E-01	0.101E-04	2.000	0.794E 06
2	0.148E-06	0.222E-02	0.222E-02	0.592E-06	1.334	0.901E 07
3	0.157E-07	0.314E-03	0.314E-03	0.628E-07	1.001	0.637E 08
4	0.236E-08	0.589E-04	0.589E-04	0.946E-08	0.803	0.340E 09
5	0.453E-09	0.134E-04	0.135E-04	0.181E-08	0.674	0.149E 10

M= 5 MEU=0.2500

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.279E-01	0.341	0.461	0.120	2.150	74.8
2	0.572E-02	0.113	0.138	0.255E-01	1.438	25[illegible].
3	0.104E-02	0.286E-01	0.333E-01	0.473E-02	1.[illegible]72	0.173E 04
4	0.183E-03	0.651E-02	0.735E-02	0.847E-03	0.851	0.465E 04
5	0.332E-04	0.145E-02	0.160E-02	0.155E-03	0.705	0.212E 05

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.266E-02	0.153	0.166	0.128E-01	2.042	765.
2	0.213E-03	0.188E-01	0.198E-01	0.103E-02	1.362	0.638E 04
3	0.200E-04	0.237E-02	0.247E-02	0.973E-04	1.019	0.511E 05
4	0.230E-05	0.345E-03	0.356E-03	0.113E-04	0.814	0.354E 06
5	0.325E-06	0.585E-04	0.601E-04	0.160E-05	0.680	0.209E 07

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.767E-03	0.919E-01	0.956E-01	0.375E-02	2.021	0.263E 04
2	0.442E-04	0.803E-02	0.825E-02	0.218E-03	1.348	0.395E 05
3	0.360E-05	0.878E-03	0.896E-03	0.178E-04	1.[illegible]	0.28[illegible]E 06
4	0.400E-06	0.122E-03	0.124E-03	0.199E-05	0.8[illegible]8	0.2[illegible]2E 07
5	0.574E-07	0.209E-04	0.211E-04	0.284E-06	0.681	0.119E 08

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.340E-03	0.662E-01	0.679E-01	0.168E-02	2.013	0.592E 04
2	0.170E-04	0.501E-02	0.509E-02	0.843E-04	1.342	0.789E 05
3	0.135E-05	0.531E-03	0.538E-03	0.670E-05	1.0[illegible]7	0.745E 06
4	0.153E-06	0.746E-04	0.754E-04	0.758E-06	0.812	0.532E 07
5	0.234E-07	0.130E-04	0.132E-04	0.116E-06	0.714	0.305E 08

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.234E-03	0.572E-01	0.584E-01	0.116E-02	2.011	0.859E 04
2	0.112E-04	0.414E-02	0.420E-02	0.557E-04	1.340	0.119E 06
3	0.890E-06	0.438E-03	0.443E-03	0.442E-05	1.006	0.113E 07
4	0.101E-06	0.622E-04	0.627E-04	0.504E-06	0.811	0.799E 07
5	0.149E-07	0.110E-04	0.111E-04	0.740E-07	0.673	0.453E 08

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.163E-03	0.500E-01	0.508E-01	0.806E-03	2.008	0.123E 05
2	0.757E-05	0.350E-02	0.354E-02	0.376E-04	1.339	0.177E 06
3	0.601E-06	0.372E-03	0.375E-03	0.299E-05	1.004	0.167E 07
4	0.688E-07	0.533E-04	0.536E-04	0.342E-06	0.803	0.117E 08
5	0.107E-07	0.953E-05	0.958E-05	0.531E-07	0.697	0.653E 08

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.785E-04	0.388E-01	0.392E-01	0.390E-03	2.005	0.256E 05
2	0.354E-05	0.263E-02	0.265E-02	0.176E-04	1.337	0.378E 06
3	0.285E-06	0.284E-03	0.285E-03	0.142E-05	1.002	0.351E 07
4	0.335E-07	0.416E-04	0.418E-04	0.167E-06	0.801	0.239E 08
5	0.496E-08	0.761E-05	0.763E-05	0.247E-07	0.650	0.131E 09

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.295E-04	0.293E-01	0.295E-01	0.147E-03	2.003	0.680E 05
2	0.133E-05	0.199E-02	0.200E-02	0.664E-05	1.335	0.100E 07
3	0.111E-06	0.221E-03	0.222E-03	0.554E-06	1.002	0.903E 07
4	0.134E-07	0.334E-04	0.334E-04	0.671E-07	0.804	0.599E 08
5	0.218E-08	0.624E-05	0.625E-05	0.109E-07	0.698	0.320E 09

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.123E-04	0.245E-01	0.245E-01	0.613E-04	2.001	0.163E 06
2	0.567E-06	0.170E-02	0.170E-02	0.283E-05	1.334	0.235E 07
3	0.484E-07	0.193E-03	0.193E-03	0.242E-06	1.001	0.207E 08
4	0.597E-08	0.297E-04	0.297E-04	0.298E-07	0.804	0.135E 09
5	0.100E-08	0.563E-05	0.564E-05	0.500E-08	0.710	0.710E 09

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.943E-05	0.235E-01	0.236E-01	0.471E-04	2.001	0.212E 06
2	0.438E-06	0.164E-02	0.164E-02	0.219E-05	1.334	0.304E 07
3	0.376E-07	0.188E-03	0.188E-03	0.188E-06	1.000	0.266E 08
4	0.466E-08	0.290E-04	0.290E-04	0.233E-07	0.803	0.172E 09
5	0.748E-09	0.551E-05	0.552E-05	0.374E-08	0.678	0.906E 09

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.729E-05	0.227E-01	0.228E-01	0.364E-04	2.001	0.275E 06
2	0.341E-06	0.160E-02	0.160E-02	0.171E-05	1.334	0.391E 07
3	0.295E-07	0.184E-03	0.184E-03	0.147E-06	1.002	0.340E 08
4	0.370E-08	0.284E-04	0.284E-04	0.185E-07	0.813	0.220E 09
5	0.652E-09	0.542E-05	0.542E-05	0.326E-08	0.752	0.115E 10

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.206E-05	0.206E-01	0.206E-01	0.103E-04	2.000	0.971E 06
2	0.986E-07	0.148E-02	0.148E-02	0.493E-06	1.333	0.135E 08
3	0.861E-08	0.172E-03	0.172E-03	0.431E-07	0.999	0.116E 09
4	0.106E-08	0.269E-04	0.269E-04	0.531E-08	0.789	0.742E 09
5	0.169E-09	0.517E-05	0.517E-05	0.846E-09	0.654	0.387E 10

TABLE---4.36
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M= 6 MEO=0.2500

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.320E-01	0.360	0.519	0.159	2.187	66.3
2	0.744E-02	0.138	0.177	0.386E-01	1.465	195.
3	0.149E-02	0.390E-01	0.470E-01	0.794E-02	1.091	732.
4	0.277E-03	0.944E-02	0.109E-01	0.151E-02	0.865	0.312E 04
5	0.508E-04	0.214E-02	0.242E-02	0.280E-03	0.715	0.141E 05

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.306E-02	0.172	0.189	0.174E-01	2.052	670.
2	0.260E-03	0.225E-01	0.249E-01	0.150E-02	1.369	0.527E 04
3	0.236E-04	0.276E-02	0.290E-02	0.137E-03	1.024	0.434E 05
4	0.249E-05	0.369E-03	0.384E-03	0.146E-04	0.818	0.328E 06
5	0.312E-06	0.556E-04	0.574E-04	0.183E-05	0.682	0.219E 07

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.861E-03	0.102	0.107	0.503E-02	2.026	0.235E 04
2	0.490E-04	0.883E-02	0.911E-02	0.288E-03	1.351	0.276E 05
3	0.360E-05	0.872E-03	0.894E-03	0.213E-04	1.012	0.281E 06
4	0.346E-06	0.105E-03	0.107E-03	0.205E-05	0.809	0.233E 07
5	0.426E-07	0.154E-04	0.157E-04	0.253E-06	0.682	0.160E 08

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.372E-03	0.719E-01	0.741E-01	0.219E-02	2.017	0.542E 04
2	0.175E-04	0.511E-02	0.522E-02	0.104E-03	1.345	0.770E 05
3	0.120E-05	0.472E-03	0.479E-03	0.715E-05	1.008	0.838E 06
4	0.115E-06	0.563E-04	0.570E-04	0.683E-06	0.806	0.793E 07
5	0.144E-07	0.834E-05	0.843E-05	0.857E-07	0.683	0.475E 08

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.252E-03	0.614E-01	0.628E-01	0.149E-02	2.013	0.799E 04
2	0.111E-04	0.407E-02	0.414E-02	0.658E-04	1.342	0.121E 06
3	0.753E-06	0.370E-03	0.375E-03	0.448E-05	1.008	0.134E 07
4	0.725E-07	0.444E-04	0.448E-04	0.432E-06	0.810	0.112E 08
5	0.917E-08	0.665E-05	0.670E-05	0.547E-07	0.686	0.747E 08

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.172E-03	0.527E-01	0.537E-01	0.102E-02	2.011	0.117E 05
2	0.719E-05	0.332E-02	0.336E-02	0.428E-04	1.340	0.186E 06
3	0.485E-06	0.299E-03	0.302E-03	0.289E-05	1.005	0.207E 07
4	0.471E-07	0.362E-04	0.365E-04	0.281E-06	0.809	0.172E 08
5	0.608E-08	0.548E-05	0.552E-05	0.363E-07	0.690	0.113E 09

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.799E-04	0.394E-01	0.399E-01	0.476E-03	2.007	0.251E 05
2	0.312E-05	0.231E-02	0.233E-02	0.186E-04	1.338	0.429E 06
3	0.211E-06	0.210E-03	0.211E-03	0.126E-05	1.002	0.474E 07
4	0.210E-07	0.260E-04	0.261E-04	0.125E-06	0.805	0.384E 08
5	0.281E-08	0.403E-05	0.405E-05	0.168E-07	0.695	0.247E 09

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.282E-04	0.281E-01	0.282E-01	0.169E-03	2.003	0.709E 05
2	0.107E-05	0.160E-02	0.161E-02	0.643E-05	1.336	0.124E 07
3	0.752E-07	0.149E-03	0.150E-03	0.450E-06	1.004	0.133E 08
4	0.776E-08	0.191E-04	0.191E-04	0.465E-07	0.811	0.105E 09
5	0.113E-08	0.305E-05	0.306E-05	0.675E-08	0.737	0.654E 09

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.112E-04	0.223E-01	0.223E-01	0.669E-04	2.002	0.179E 06
2	0.431E-06	0.129E-02	0.129E-02	0.259E-05	1.335	0.309E 07
3	0.310E-07	0.124E-03	0.124E-03	0.186E-06	1.001	0.323E 08
4	0.326E-08	0.162E-04	0.162E-04	0.195E-07	0.804	0.247E 09
5	0.479E-09	0.263E-05	0.264E-05	0.287E-08	0.727	0.152E 10

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.846E-05	0.211E-01	0.211E-01	0.507E-04	2.001	0.237E 06
2	0.329E-06	0.123E-02	0.123E-02	0.197E-05	1.334	0.405E 07
3	0.238E-07	0.119E-03	0.119E-03	0.143E-06	1.001	0.420E 08
4	0.250E-08	0.156E-04	0.157E-04	0.150E-07	0.798	0.319E 09
5	0.349E-09	0.256E-05	0.256E-05	0.209E-08	0.682	0.195E 10

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.646E-05	0.202E-01	0.202E-01	0.387E-04	2.001	0.310E 06
2	0.253E-06	0.119E-02	0.119E-02	0.152E-05	1.334	0.526E 07
3	0.185E-07	0.115E-03	0.115E-03	0.111E-06	1.000	0.542E 08
4	0.194E-08	0.152E-04	0.152E-04	0.117E-07	0.798	0.411E 09
5	0.265E-09	0.249E-05	0.250E-05	0.159E-08	0.664	0.25[illegible]E 1[illegible]

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.176E-05	0.176E-01	0.176E-01	0.105E-04	2.000	0.114E 07
2	0.709E-07	0.106E-02	0.106E-02	0.425E-06	1.333	0.188E [illegible]
3	0.526E-08	0.105E-03	0.105E-03	0.315E-07	0.998	0.190E [illegible]
4	0.550E-09	0.141E-04	0.141E-04	0.330E-08	0.782	0.142E 10
5	0.701E-10	0.233E-05	0.233E-05	0.420E-09	0.601	0.858E 10

TABLE---4.37
** *********

M= 7 MEO=0.2500

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.357E-01	0.371	0.571	0.200	2.224	60.0
2	0.932E-02	0.163	0.217	0.548E-01	1.492	159.
3	0.205E-02	0.512E-01	0.636E-01	0.125E-01	1.110	540.
4	0.408E-03	0.133E-01	0.159E-01	0.254E-02	0.879	0.215E 04
5	0.777E-04	0.316E-02	0.365E-02	0.491E-03	0.725	0.934E 04

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.346E-02	0.190	0.213	0.227E-01	2.063	595.
2	0.315E-03	0.268E-01	0.289E-01	0.210E-02	1.376	0.436E 04
3	0.288E-04	0.333E-02	0.352E-02	0.194E-03	1.029	0.358E 05
4	0.290E-05	0.424E-03	0.444E-03	0.196E-04	0.821	0.283E 06
5	0.333E-06	0.590E-04	0.613E-04	0.227E-05	0.684	0.205E 07

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.961E-03	0.113	0.119	0.651E-02	2.032	0.211E 04
2	0.557E-04	0.995E-02	0.103E-01	0.381E-03	1.355	0.243E 05
3	0.385E-05	0.927E-03	0.953E-03	0.265E-04	1.014	0.263E 06
4	0.334E-06	0.101E-03	0.103E-03	0.230E-05	0.812	0.243E 07
5	0.365E-07	0.130E-04	0.133E-04	0.252E-06	0.688	0.189E 08

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.408E-03	0.784E-01	0.812E-01	0.280E-02	2.020	0.495E 04
2	0.187E-04	0.544E-02	0.557E-02	0.129E-03	1.347	0.721E 05
3	0.116E-05	0.455E-03	0.463E-03	0.805E-05	1.009	0.867E 06
4	0.975E-07	0.478E-04	0.484E-04	0.676E-06	0.807	0.828E 07
5	0.108E-07	0.616E-05	0.623E-05	0.750E-07	0.695	0.643E 08

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.274E-03	0.662E-01	0.681E-01	0.188E-02	2.016	0.737E 04
2	0.115E-04	0.420E-02	0.428E-02	0.794E-04	1.344	0.117E 06
3	0.696E-06	0.341E-03	0.346E-03	0.483E-05	1.009	0.145E 07
4	0.584E-07	0.357E-04	0.361E-04	0.406E-06	0.811	0.139E 08
5	0.730E-08	0.464E-05	0.469E-05	0.507E-07	0.779	0.107E 09

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.185E-03	0.563E-01	0.576E-01	0.128E-02	2.013	0.109E 05
2	0.721E-05	0.332E-02	0.337E-02	0.500E-04	1.342	0.186E 06
3	0.429E-06	0.264E-03	0.267E-03	0.298E-05	1.007	0.235E 07
4	0.361E-07	0.277E-04	0.279E-04	0.251E-06	0.808	0.224E 08
5	0.460E-08	0.364E-05	0.367E-05	0.320E-07	0.785	0.171E 09

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.831E-04	0.409E-01	0.415E-01	0.577E-03	2.008	0.241E 05
2	0.292E-05	0.217E-02	0.219E-02	0.203E-04	1.339	0.458E 06
3	0.172E-06	0.170E-03	0.171E-03	0.120E-05	1.004	0.584E 07
4	0.147E-07	0.182E-04	0.183E-04	0.103E-06	0.808	0.548E 08
5	0.169E-08	0.244E-05	0.245E-05	0.118E-07	0.688	0.408E 09

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.279E-04	0.277E-01	0.279E-01	0.195E-03	2.004	0.718E 05
2	0.924E-06	0.138E-02	0.138E-02	0.645E-05	1.336	0.145E 07
3	0.556E-07	0.110E-03	0.111E-03	0.388E-06	1.004	0.181E 08
4	0.493E-08	0.122E-04	0.122E-04	0.344E-07	0.807	0.164E 09
5	0.614E-09	0.159E-05	0.170E-05	0.429E-08	0.723	0.118E 10

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.105E-04	0.209E-01	0.210E-01	0.734E-04	2.002	0.190E 06
2	0.349E-06	0.104E-02	0.105E-02	0.244E-05	1.335	0.383E 07
3	0.216E-07	0.862E-04	0.863E-04	0.151E-06	1.001	0.463E 08
4	0.199E-08	0.978E-05	0.979E-05	0.139E-07	0.813	0.409E 09
5	0.260E-09	0.139E-05	0.139E-05	0.182E-08	0.747	0.287E 10

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.785E-05	0.196E-01	0.196E-01	0.549E-04	2.002	0.255E 06
2	0.262E-06	0.982E-03	0.984E-03	0.183E-05	1.334	0.509E 07
3	0.164E-07	0.818E-04	0.819E-04	0.115E-06	1.003	0.611E 08
4	0.152E-08	0.934E-05	0.935E-05	0.106E-07	0.812	0.535E 09
5	0.184E-09	0.134E-05	0.134E-05	0.129E-08	0.687	0.374E 10

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.593E-05	0.185E-01	0.185E-01	0.415E-04	2.001	0.338E 06
2	0.199E-06	0.933E-03	0.935E-03	0.139E-05	1.334	0.669E 07
3	0.126E-07	0.783E-04	0.784E-04	0.878E-07	1.001	0.797E 08
4	0.114E-08	0.900E-05	0.900E-05	0.799E-06	0.793	0.694E 09
5	0.155E-09	0.129E-05	0.129E-05	0.108E-08	0.747	0.483E 10

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.155E-05	0.155E-01	0.155E-01	0.108E-04	2.000	0.129E 07
2	0.538E-07	0.806E-03	0.807E-03	0.376E-06	1.333	0.248E 08
3	0.345E-08	0.693E-04	0.693E-04	0.242E-07	0.996	0.288E 09
4	0.319E-09	0.810E-05	0.810E-05	0.223E-08	0.787	0.247E 10
5	0.483E-10	0.118E-05	0.118E-05	0.338E-09	0.819	0.170E 11

TABLE---4.38
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M= 8 MEO=0.2500

LEMDA=

1	0.392E-01	0.376	0.618	0.241	2.261	55.4
2	0.113E-01	0.185	0.259	0.738E-01	1.520	133.
3	0.272E-02	0.646E-01	0.831E-01	0.185E-01	1.129	414.
4	0.583E-03	0.183E-01	0.223E-01	0.406E-02	0.893	0.153E 04
5	0.116E-03	0.457E-02	0.539E-02	0.827E-03	0.736	0.632E 04

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.385E-02	0.208	0.236	0.286E-01	2.073	536.
2	0.379E-03	0.318E-01	0.346E-01	0.287E-02	1.383	0.365E 04
3	0.355E-04	0.405E-02	0.432E-02	0.271E-03	1.034	0.291E 05
4	0.350E-05	0.507E-03	0.534E-03	0.270E-04	0.824	0.235E 06
5	0.379E-06	0.669E-04	0.699E-04	0.294E-05	0.682	0.180E 07

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.106E-02	0.123	0.132	0.820E-02	2.037	0.191E 04
2	0.639E-04	0.113E-01	0.118E-01	0.497E-03	1.358	0.212E 05
3	0.429E-05	0.102E-02	0.106E-02	0.335E-04	1.017	0.237E 06
4	0.345E-06	0.104E-03	0.106E-03	0.271E-05	0.813	0.236E 07
5	0.344E-07	0.122E-04	0.124E-04	0.271E-06	0.695	0.202E 08

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.446E-03	0.852E-01	0.887E-01	0.349E-02	2.023	0.453E 04
2	0.205E-04	0.593E-02	0.609E-02	0.161E-03	1.349	0.659E 05
3	0.119E-05	0.463E-03	0.473E-03	0.940E-05	1.011	0.849E 06
4	0.901E-07	0.439E-04	0.447E-04	0.713E-06	0.809	0.898E 07
5	0.879E-08	0.505E-05	0.512E-05	0.696E-07	0.688	0.783E 08

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.297E-03	0.716E-01	0.739E-01	0.233E-02	2.019	0.679E 04
2	0.123E-04	0.447E-02	0.457E-02	0.967E-04	1.346	0.110E 06
3	0.682E-06	0.333E-03	0.339E-03	0.540E-05	1.009	0.148E 07
4	0.510E-07	0.312E-04	0.316E-04	0.404E-06	0.807	0.158E 08
5	0.501E-08	0.359E-05	0.363E-05	0.398E-07	0.691	0.138E 09

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.199E-03	0.604E-01	0.619E-01	0.157E-02	2.015	0.101E 05
2	0.749E-05	0.343E-02	0.349E-02	0.593E-04	1.344	0.179E 06
3	0.405E-06	0.248E-03	0.251E-03	0.321E-05	1.009	0.249E 07
4	0.301E-07	0.231E-04	0.233E-04	0.239E-06	0.809	0.268E 08
5	0.324E-08	0.268E-05	0.270E-05	0.257E-07	0.750	0.232E 09

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.875E-04	0.429E-01	0.436E-01	0.693E-03	2.009	0.230E 05
2	0.286E-05	0.212E-02	0.214E-02	0.227E-04	1.340	0.468E 06
3	0.149E-06	0.148E-03	0.149E-03	0.119E-05	1.004	0.672E 07
4	0.115E-07	0.139E-04	0.140E-04	0.914E-07	0.823	0.717E 08
5	0.118E-08	0.164E-05	0.165E-05	0.939E-08	0.714	0.606E 09

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.282E-04	0.279E-01	0.281E-01	0.224E-03	2.005	0.712E 05
2	0.833E-06	0.124E-02	0.125E-02	0.664E-05	1.336	0.160E 07
3	0.439E-07	0.872E-04	0.876E-04	0.350E-06	1.002	0.228E 08
4	0.345E-08	0.845E-05	0.848E-05	0.275E-07	0.814	0.236E 09
5	0.206E-09	0.104E-05	0.104E-05	0.164E-08	0.397	0.193E 10

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.101E-04	0.202E-01	0.203E-01	0.809E-04	2.002	0.197E 06
2	0.296E-06	0.883E-03	0.886E-03	0.236E-05	1.335	0.452E 07
3	0.161E-07	0.639E-04	0.641E-04	0.128E-06	1.004	0.625E 08
4	0.128E-08	0.639E-05	0.640E-05	0.102E-07	0.799	0.625E 09
5	0.194E-09	0.806E-06	0.808E-06	0.155E-08	0.962	0.495E 10

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.748E-05	0.186E-01	0.187E-01	0.597E-04	2.002	0.268E 06
2	0.219E-06	0.819E-03	0.820E-03	0.175E-05	1.335	0.610E 07
3	0.120E-07	0.598E-04	0.599E-04	0.959E-07	1.002	0.835E 08
4	0.983E-09	0.602E-05	0.603E-05	0.786E-08	0.815	0.829E 09
5	0.110E-09	0.764E-06	0.765E-06	0.881E-09	0.720	0.653E 10

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.558E-05	0.174E-01	0.174E-01	0.445E-04	2.001	0.359E 06
2	0.164E-06	0.768E-03	0.769E-03	0.131E-05	1.334	0.812E 07
3	0.908E-08	0.566E-04	0.567E-04	0.726E-07	1.002	0.110E 09
4	0.751E-09	0.574E-05	0.575E-05	0.601E-08	0.817	0.109E 10
5	0.829E-10	0.732E-06	0.733E-06	0.663E-09	0.707	0.853E 10

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.139E-05	0.139E-01	0.139E-01	0.111E-04	2.000	0.144E 07
2	0.425E-07	0.637E-03	0.637E-03	0.340E-06	1.333	0.314E 08
3	0.242E-08	0.483E-04	0.483E-04	0.193E-07	1.000	0.414E 09
4	0.209E-09	0.501E-05	0.501E-05	0.167E-08	0.835	0.399E 10
5	0.232E-10	0.649E-06	0.650E-06	0.186E-09	0.715	0.308E 11

TABLE--- 4.39
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M= 9 MED=0.2500

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.425E-01	0.376	0.659	0.284	2.297	51.7
2	0.134E-01	0.206	0.301	0.953E-01	1.548	114.
3	0.350E-02	0.791E-01	0.105	0.261E-01	1.149	327.
4	0.806E-03	0.242E-01	0.304E-01	0.618E-02	0.907	0.112E 04
5	0.170E-03	0.644E-02	0.777E-02	0.134E-02	0.746	0.438E 04

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.425E-02	0.224	0.259	0.352E-01	2.084	488.
2	0.451E-03	0.372E-01	0.410E-01	0.381E-02	1.390	0.308E 04
3	0.438E-04	0.493E-02	0.531E-02	0.374E-03	1.039	0.237E 05
4	0.431E-05	0.618E-03	0.656E-03	0.372E-04	0.828	0.192E 06
5	0.454E-06	0.792E-04	0.831E-04	0.394E-05	0.687	0.151E 07

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.117E-02	0.134	0.144	0.101E-01	2.042	0.175E 04
2	0.735E-04	0.129E-01	0.136E-01	0.641E-03	1.362	0.185E 05
3	0.488E-05	0.116E-02	0.120E-02	0.428E-04	1.019	0.209E 06
4	0.373E-06	0.112E-03	0.115E-03	0.329E-05	0.814	0.218E 07
5	0.340E-07	0.121E-04	0.124E-04	0.301E-06	0.687	0.202E 08

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.487E-03	0.923E-01	0.965E-01	0.426E-02	2.027	0.416E 04
2	0.227E-04	0.654E-02	0.674E-02	0.200E-03	1.351	0.595E 05
3	0.126E-05	0.489E-03	0.500E-03	0.112E-04	1.012	0.801E 06
4	0.884E-07	0.429E-04	0.437E-04	0.785E-06	0.812	0.918E 07
5	0.809E-08	0.447E-05	0.455E-05	0.720E-07	0.713	0.882E 08

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.322E-03	0.772E-01	0.800E-01	0.284E-02	2.021	0.627E 04
2	0.133E-04	0.483E-02	0.495E-02	0.118E-03	1.348	0.101E 06
3	0.698E-06	0.340E-03	0.346E-03	0.620E-05	1.010	0.145E 07
4	0.476E-07	0.291E-04	0.295E-04	0.424E-06	0.808	0.170E 08
5	0.410E-08	0.302E-05	0.305E-05	0.366E-07	0.673	0.164E 09

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.214E-03	0.647E-01	0.666E-01	0.190E-02	2.017	0.941E 04
2	0.795E-05	0.363E-02	0.370E-02	0.707E-04	1.345	0.169E 06
3	0.399E-06	0.244E-03	0.247E-03	0.356E-05	1.010	0.253E 07
4	0.267E-07	0.206E-04	0.208E-04	0.238E-06	0.802	0.301E 08
5	0.324E-08	0.215E-05	0.218E-05	0.290E-07	0.933	0.288E 09

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.926E-04	0.453E-01	0.461E-01	0.825E-03	2.011	0.217E 05
2	0.288E-05	0.213E-02	0.215E-02	0.258E-04	1.341	0.465E 06
3	0.137E-06	0.135E-03	0.136E-03	0.122E-05	1.006	0.735E 07
4	0.951E-08	0.113E-04	0.114E-04	0.852E-07	0.833	0.876E 08
5	0.995E-09	0.120E-05	0.121E-05	0.891E-08	0.824	0.828E 09

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.288E-04	0.285E-01	0.287E-01	0.258E-03	2.005	0.697E 05
2	0.779E-06	0.116E-02	0.117E-02	0.698E-05	1.337	0.172E 07
3	0.365E-07	0.726E-04	0.730E-04	0.328E-06	1.002	0.274E 08
4	0.262E-08	0.627E-05	0.629E-05	0.235E-07	0.832	0.318E 09
5	0.154E-09	0.686E-06	0.687E-06	0.138E-08	0.447	0.291E 10

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.996E-05	0.198E-01	0.199E-01	0.894E-04	2.003	0.201E 06
2	0.260E-06	0.776E-03	0.778E-03	0.233E-05	1.335	0.514E 07
3	0.126E-07	0.499E-04	0.500E-04	0.113E-06	1.005	0.801E 08
4	0.904E-09	0.445E-05	0.445E-05	0.813E-08	0.812	0.898E 09
5	0.131E-09	0.503E-06	0.504E-06	0.117E-08	1.038	0.794E 10

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.725E-05	0.181E-01	0.181E-01	0.651E-04	2.002	0.276E 06
2	0.189E-06	0.707E-03	0.709E-03	0.170E-05	1.335	0.705E 07
3	0.921E-08	0.459E-04	0.460E-04	0.828E-07	1.002	0.109E 09
4	0.648E-09	0.413E-05	0.414E-05	0.582E-08	0.783	0.121E 10
5	0.808E-10	0.470E-06	0.471E-06	0.727E-09	0.858	0.106E 11

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.535E-05	0.167E-01	0.167E-01	0.480E-04	2.002	0.374E 06
2	0.140E-06	0.655E-03	0.656E-03	0.126E-05	1.334	0.953E 07
3	0.692E-08	0.429E-04	0.430E-04	0.622E-07	1.007	0.145E 09
4	0.496E-09	0.389E-05	0.390E-05	0.446E-08	0.796	0.160E 10
5	0.416E-10	0.446E-06	0.446E-06	0.374E-09	0.583	0.140E 11

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.128E-05	0.128E-01	0.128E-01	0.115E-04	2.001	0.157E 07
2	0.346E-07	0.520E-03	0.520E-03	0.312E-06	1.333	0.385E 08
3	0.177E-08	0.352E-04	0.352E-04	0.159E-07	1.003	0.567E 09
4	0.126E-09	0.328E-05	0.328E-05	0.113E-08	0.768	0.610E 10
5	0.132E-10	0.383E-06	0.383E-06	0.119E-09	0.690	0.522E 11

TABLE-- 4.40
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M=10 MEO=0.2500

LEMDA= 0.300E-01 LEMDAS= 0.300E-02

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.456E-01	0.371	0.696	0.326	2.333	48.9
2	0.155E-01	0.224	0.343	0.119	1.576	100.
3	0.439E-02	0.941E-01	0.129	0.354E-01	1.169	265.
4	0.108E-02	0.312E-01	0.402E-01	0.904E-02	0.921	851.
5	0.242E-03	0.883E-02	0.109E-01	0.207E-02	0.757	0.313E 04

LEMDA= 0.800E-02 LEMDAS= 0.800E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.464E-02	0.239	0.282	0.422E-01	2.094	449.
2	0.529E-03	0.429E-01	0.479E-01	0.493E-02	1.398	0.264E 04
3	0.537E-04	0.598E-02	0.648E-02	0.507E-03	1.044	0.194E 05
4	0.536E-05	0.760E-03	0.811E-03	0.510E-04	0.831	0.155E 06
5	0.555E-06	0.960E-04	0.101E-03	0.533E-05	0.689	0.124E 07

LEMDA= 0.400E-02 LEMDAS= 0.400E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.127E-02	0.145	0.157	0.121E-01	2.048	0.161E 04
2	0.843E-04	0.147E-01	0.155E-01	0.813E-03	1.365	0.162E 05
3	0.562E-05	0.133E-02	0.138E-02	0.546E-04	1.022	0.182E 06
4	0.416E-06	0.124E-03	0.128E-03	0.406E-05	0.816	0.196E 07
5	0.360E-07	0.127E-04	0.131E-04	0.352E-06	0.691	0.192E 08

LEMDA= 0.250E-02 LEMDAS= 0.250E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.528E-03	0.994E-01	0.105	0.512E-02	2.030	0.384E 04
2	0.253E-04	0.726E-02	0.750E-02	0.247E-03	1.353	0.535E 05
3	0.137E-05	0.529E-03	0.543E-03	0.135E-04	1.014	0.739E 06
4	0.903E-07	0.437E-04	0.446E-04	0.889E-06	0.812	0.899E 07
5	0.730E-08	0.420E-05	0.428E-05	0.721E-07	0.684	0.937E 08

LEMDA= 0.200E-02 LEMDAS= 0.200E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.348E-03	0.830E-01	0.864E-01	0.340E-02	2.024	0.581E 04
2	0.146E-04	0.528E-02	0.542E-02	0.143E-03	1.349	0.925E 05
3	0.735E-06	0.357E-03	0.364E-03	0.724E-05	1.011	0.138E 07
4	0.467E-07	0.284E-04	0.289E-04	0.462E-06	0.811	0.174E 08
5	0.384E-08	0.270E-05	0.274E-05	0.380E-07	0.702	0.183E 09

LEMDA= 0.160E-02 LEMDAS= 0.160E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.230E-03	0.693E-01	0.716E-01	0.226E-02	2.019	0.876E 04
2	0.856E-05	0.390E-02	0.398E-02	0.844E-04	1.346	0.157E 06
3	0.406E-06	0.248E-03	0.252E-03	0.402E-05	1.010	0.248E 07
4	0.250E-07	0.193E-04	0.195E-04	0.248E-06	0.803	0.321E 08
5	0.196E-08	0.182E-05	0.184E-05	0.195E-07	0.667	0.340E 09

LEMDA= 0.100E-02 LEMDAS= 0.100E-03

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.982E-04	0.479E-01	0.489E-01	0.970E-03	2.012	0.205E 05
2	0.297E-05	0.219E-02	0.222E-02	0.294E-04	1.342	0.452E 06
3	0.130E-06	0.128E-03	0.130E-03	0.129E-05	1.007	0.772E 07
4	0.805E-08	0.979E-05	0.987E-05	0.800E-07	0.816	0.101E 09
5	0.873E-09	0.937E-06	0.946E-06	0.869E-08	0.924	0.106E 10

LEMDA= 0.500E-03 LEMDAS= 0.500E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.297E-04	0.293E-01	0.296E-01	0.295E-03	2.006	0.676E 05
2	0.748E-06	0.111E-02	0.112E-02	0.745E-05	1.337	0.179E 07
3	0.318E-07	0.631E-04	0.634E-04	0.317E-06	1.003	0.316E 08
4	0.195E-08	0.490E-05	0.492E-05	0.194E-07	0.792	0.407E 09
5	0.797E-10	0.483E-06	0.484E-06	0.795E-09	0.329	0.413E 10

LEMDA= 0.250E-03 LEMDAS= 0.250E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.991E-05	0.197E-01	0.198E-01	0.988E-04	2.003	0.202E 06
2	0.235E-06	0.701E-03	0.703E-03	0.234E-05	1.336	0.569E 07
3	0.102E-07	0.405E-04	0.406E-04	0.102E-06	1.003	0.985E 08
4	0.678E-09	0.326E-05	0.326E-05	0.677E-08	0.832	0.123E 10
5	0.101E-09	0.333E-06	0.334E-06	0.101E-08	1.208	0.120E 11

LEMDA= 0.200E-03 LEMDAS= 0.200E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.714E-05	0.178E-01	0.178E-01	0.712E-04	2.002	0.281E 06
2	0.168E-06	0.629E-03	0.631E-03	0.168E-05	1.335	0.793E 07
3	0.734E-08	0.367E-04	0.368E-04	0.733E-07	0.998	0.136E 09
4	0.506E-09	0.298E-05	0.298E-05	0.506E-08	0.848	0.168E 10
5	0.518E-10	0.307E-06	0.308E-06	0.518E-09	0.843	0.163E 11

LEMDA= 0.160E-03 LEMDAS= 0.160E-04

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.520E-05	0.162E-01	0.162E-01	0.519E-04	2.002	0.385E 06
2	0.123E-06	0.574E-03	0.576E-03	0.123E-05	1.334	0.109E 08
3	0.545E-08	0.338E-04	0.339E-04	0.544E-07	1.005	0.184E 09
4	0.333E-09	0.277E-05	0.277E-05	0.332E-08	0.750	0.225E 10
5	0.425E-10	0.288E-06	0.288E-06	0.425E-09	0.922	0.217E 11

LEMDA= 0.500E-04 LEMDAS= 0.500E-05

N	U	PN	SUMP(N)	SUMP(N+1)	D	PHAI
1	0.119E-05	0.119E-01	0.119E-01	0.119E-04	2.001	0.168E 07
2	0.290E-07	0.435E-03	0.435E-03	0.290E-06	1.333	0.460E 08
3	0.134E-08	0.266E-04	0.266E-04	0.134E-07	1.005	0.751E 09
4	0.103E-09	0.225E-05	0.225E-05	0.103E-08	0.921	0.890E 10
5	0.270E-10	0.239E-06	0.239E-06	0.270E-09	2.258	0.836E 11

TABLE --- 4.41

M= 1 MEO=0.1250

LEMDA= 0.300E-01 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	3	3.109	0.109E-03	2.00	0.184E 05
2	3	3.218	0.109E-03	2.00	0.184E 05
3	3	3.326	0.109E-03	2.00	0.184E 05
4	3	3.435	0.109E-03	2.00	0.184E 05
5	3	3.544	0.109E-03	2.00	0.184E 05
6	3	3.653	0.109E-03	2.00	0.184E 05

LEMDA= 0.800E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.041	0.410E-04	2.67	0.651E 05
2	2	2.082	0.410E-04	2.67	0.651E 05
3	2	2.123	0.410E-04	2.67	0.651E 05
4	2	2.164	0.410E-04	2.67	0.651E 05
5	2	2.205	0.410E-04	2.67	0.651E 05
6	2	2.246	0.410E-04	2.67	0.651E 05

LEMDA= 0.400E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.496	0.496E-03	4.00	0.806E 04
2	1	1.992	0.496E-03	4.00	0.806E 04
3	2	2.016	0.529E-05	2.67	0.504E 06
4	2	2.021	0.529E-05	2.67	0.504E 06
5	2	2.026	0.529E-05	2.67	0.504E 06
6	2	2.032	0.529E-05	2.67	0.504E 06

LEMDA= 0.250E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.196	0.196E-03	4.00	0.204E 05
2	1	1.392	0.196E-03	4.00	0.204E 05
3	1	1.588	0.196E-03	4.00	0.204E 05
4	1	1.784	0.196E-03	4.00	0.204E 05
5	1	1.980	0.196E-03	4.00	0.204E 05
6	2	2.008	0.131E-05	2.67	0.204E 07

LEMDA= 0.200E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.126	0.126E-03	4.00	0.318E 05
2	1	1.252	0.126E-03	4.00	0.318E 05
3	1	1.378	0.126E-03	4.00	0.318E 05
4	1	1.504	0.126E-03	4.00	0.318E 05
5	1	1.630	0.126E-03	4.00	0.318E 05
6	1	1.756	0.126E-03	4.00	0.318E 05

LEMDA= 0.160E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.081	0.809E-04	4.00	0.495E 05
2	1	1.162	0.809E-04	4.00	0.495E 05
3	1	1.243	0.809E-04	4.00	0.495E 05
4	1	1.324	0.809E-04	4.00	0.495E 05
5	1	1.404	0.809E-04	4.00	0.495E 05
6	1	1.485	0.809E-04	4.00	0.495E 05

LEMDA= 0.100E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.032	0.317E-04	4.00	0.126E 06
2	1	1.063	0.317E-04	4.00	0.126E 06
3	1	1.095	0.317E-04	4.00	0.126E 06
4	1	1.127	0.317E-04	4.00	0.126E 06
5	1	1.159	0.317E-04	4.00	0.126E 06
6	1	1.190	0.317E-04	4.00	0.126E 06

LEMDA= 0.500E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.008	0.797E-05	4.00	0.502E 06
2	1	1.016	0.797E-05	4.00	0.502E 06
3	1	1.024	0.797E-05	4.00	0.502E 06
4	1	1.032	0.797E-05	4.00	0.502E 06
5	1	1.040	0.797E-05	4.00	0.502E 06
6	1	1.049	0.797E-05	4.00	0.502E 06

LEMDA= 0.250E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.002	0.200E-05	4.00	0.200E 07
2	1	1.004	0.200E-05	4.00	0.200E 07
3	1	1.006	0.200E-05	4.00	0.200E 07
4	1	1.008	0.200E-05	4.00	0.200E 07
5	1	1.010	0.200E-05	4.00	0.200E 07
6	1	1.012	0.200E-05	4.00	0.200E 07

LEMDA= 0.200E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.001	0.128E-05	4.00	0.313E 07
2	1	1.003	0.128E-05	4.00	0.313E 07
3	1	1.004	0.128E-05	4.00	0.313E 07
4	1	1.005	0.128E-05	4.00	0.313E 07
5	1	1.006	0.128E-05	4.00	0.313E 07
6	1	1.008	0.128E-05	4.00	0.313E 07

LEMDA= 0.160E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.001	0.819E-06	4.00	0.489E 07
2	1	1.002	0.819E-06	4.00	0.489E 07
3	1	1.002	0.819E-06	4.00	0.489E 07
4	1	1.003	0.819E-06	4.00	0.489E 07
5	1	1.004	0.819E-06	4.00	0.489E 07
6	1	1.005	0.819E-06	4.00	0.489E 07

LEMDA= 0.500E-04 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.000	0.800E-07	4.00	0.500E 09
2	1	1.000	0.800E-07	4.00	0.500E 09
3	1	1.000	0.800E-07	4.00	0.500E 09
4	1	1.000	0.800E-07	4.00	0.500E 09
5	1	1.000	0.800E-07	4.00	0.500E 09
6	1	1.000	0.800E-07	4.00	0.500E 09

TABLE---- 4.42
****

M= 2 MEO=0.1250

LEMDA= 0.300E-01 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	4	4.142	0.710E-04	1.65	0.232E 05
2	4	4.284	0.710E-04	1.65	0.232E 05
3	4	4.426	0.710E-04	1.65	0.232E 05
4	4	4.568	0.710E-04	1.65	0.232E 05
5	4	4.710	0.710E-04	1.65	0.232E 05
6	4	4.851	0.710E-04	1.65	0.232E 05

LEMDA= 0.800E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.317	0.159E-03	2.69	0.170E 05
2	2	2.635	0.159E-03	2.69	0.170E 05
3	2	2.952	0.159E-03	2.69	0.170E 05
4	3	3.040	0.505E-05	2.02	0.400E 06
5	3	3.051	0.505E-05	2.02	0.400E 06
6	3	3.061	0.505E-05	2.02	0.400E 06

LEMDA= 0.400E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.042	0.208E-04	2.68	0.129E 06
2	2	2.083	0.208E-04	2.68	0.129E 06
3	2	2.125	0.208E-04	2.68	0.129E 06
4	2	2.167	0.208E-04	2.68	0.129E 06
5	2	2.208	0.208E-04	2.68	0.129E 06
6	2	2.250	0.208E-04	2.68	0.129E 06

LEMDA= 0.250E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.779	0.389E-03	4.01	0.103E 05
2	2	2.021	0.518E-05	2.68	0.517E 06
3	2	2.031	0.518E-05	2.68	0.517E 06
4	2	2.041	0.518E-05	2.68	0.517E 06
5	2	2.052	0.518E-05	2.68	0.517E 06
6	2	2.062	0.518E-05	2.68	0.517E 06

LEMDA= 0.200E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.501	0.251E-03	4.01	0.160E 05
2	1	2.002	0.251E-03	4.01	0.160E 05
3	2	2.016	0.267E-05	2.67	0.100E 07
4	2	2.021	0.267E-05	2.67	0.100E 07
5	2	2.027	0.267E-05	2.67	0.100E 07
6	2	2.032	0.267E-05	2.67	0.100E 07

LEMDA= 0.160E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.322	0.161E-03	4.01	0.249E 05
2	1	1.644	0.161E-03	4.01	0.249E 05
3	1	1.966	0.161E-03	4.01	0.249E 05
4	2	2.011	0.137E-05	2.68	0.195E 07
5	2	2.014	0.137E-05	2.68	0.195E 07
6	2	2.016	0.137E-05	2.68	0.195E 07

LEMDA= 0.100E-02   LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.127	0.633E-04	4.01	0.633E 05
2	1	1.253	0.633E-04	4.01	0.633E 05
3	1	1.380	0.633E-04	4.01	0.633E 05
4	1	1.507	0.633E-04	4.01	0.633E 05
5	1	1.633	0.633E-04	4.01	0.633E 05
6	1	1.760	0.633E-04	4.01	0.633E 05

LEMDA= 0.500E-03   LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.032	0.159E-04	4.00	0.252E 06
2	1	1.064	0.159E-04	4.00	0.252E 06
3	1	1.095	0.159E-04	4.00	0.252E 06
4	1	1.127	0.159E-04	4.00	0.252E 06
5	1	1.159	0.159E-04	4.00	0.252E 06
6	1	1.191	0.159E-04	4.00	0.252E 06

LEMDA= 0.250E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.008	0.399E-05	4.00	0.100E 07
2	1	1.016	0.399E-05	4.00	0.100E 07
3	1	1.024	0.399E-05	4.00	0.100E 07
4	1	1.032	0.399E-05	4.00	0.100E 07
5	1	1.040	0.399E-05	4.00	0.100E 07
6	1	1.048	0.399E-05	4.00	0.100E 07

LEMDA= 0.200E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.005	0.255E-05	4.00	0.157E 07
2	1	1.010	0.255E-05	4.00	0.157E 07
3	1	1.015	0.255E-05	4.00	0.157E 07
4	1	1.020	0.255E-05	4.00	0.157E 07
5	1	1.026	0.255E-05	4.00	0.157E 07
6	1	1.031	0.255E-05	4.00	0.157E 07

LEMDA= 0.160E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.003	0.164E-05	4.00	0.245E 07
2	1	1.007	0.164E-05	4.00	0.245E 07
3	1	1.010	0.164E-05	4.00	0.245E 07
4	1	1.013	0.164E-05	4.00	0.245E 07
5	1	1.016	0.164E-05	4.00	0.245E 07
6	1	1.020	0.164E-05	4.00	0.245E 07

LEMDA= 0.500E-04 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.000	0.160E-06	4.00	0.250E 08
2	1	1.001	0.160E-06	4.00	0.250E 08
3	1	1.001	0.160E-06	4.00	0.250E 08
4	1	1.001	0.160E-06	4.00	0.250E 08
5	1	1.002	0.160E-06	4.00	0.250E 08
6	1	1.002	0.160E-06	4.00	0.250E 08

TABLE--- 4.43
****

M= 3 MED=0.1250

LEMDA= 0.300E-01 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	4	4.917	0.306E-03	1.70	0.556E 04
2	5	5.216	0.359E-04	1.41	0.392E 05
3	5	5.323	0.359E-04	1.41	0.392E 05
4	5	5.431	0.359E-04	1.41	0.392E 05
5	5	5.539	0.359E-04	1.41	0.392E 05
6	5	5.647	0.359E-04	1.41	0.392E 05

LEMDA= 0.800E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	3.037	0.346E-03	2.72	0.787E 04
2	3	3.098	0.164E-04	2.04	0.124E 06
3	3	3.148	0.164E-04	2.04	0.124E 06
4	3	3.197	0.164E-04	2.04	0.124E 06
5	3	3.246	0.164E-04	2.04	0.124E 06
6	3	3.295	0.164E-04	2.04	0.124E 06

LEMDA= 0.400E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.138	0.461E-04	2.70	0.585E 05
2	2	2.277	0.461E-04	2.70	0.585E 05
3	2	2.415	0.461E-04	2.70	0.585E 05
4	2	2.553	0.461E-04	2.70	0.585E 05
5	2	2.691	0.461E-04	2.70	0.585E 05
6	2	2.830	0.461E-04	2.70	0.585E 05

LEMDA= 0.250E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.035	0.115E-04	2.69	0.233E 06
2	2	2.069	0.115E-04	2.69	0.233E 06
3	2	2.104	0.115E-04	2.69	0.233E 06
4	2	2.138	0.115E-04	2.69	0.233E 06
5	2	2.173	0.115E-04	2.69	0.233E 06
6	2	2.208	0.115E-04	2.69	0.233E 06

LEMDA= 0.200E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.018	0.595E-05	2.68	0.451E 06
2	2	2.036	0.595E-05	2.68	0.451E 06
3	2	2.054	0.595E-05	2.68	0.451E 06
4	2	2.071	0.595E-05	2.68	0.451E 06
5	2	2.089	0.595E-05	2.68	0.451E 06
6	2	2.107	0.595E-05	2.68	0.451E 06

LEMDA= 0.160E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.722	0.241E-03	4.02	0.167E 05
2	2	2.018	0.307E-05	2.68	0.873E 06
3	2	2.028	0.307E-05	2.68	0.873E 06
4	2	2.037	0.307E-05	2.68	0.873E 06
5	2	2.046	0.307E-05	2.68	0.873E 06
6	2	2.055	0.307E-05	2.68	0.873E 06

LEMDA= 0.100E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.284	0.947E-04	4.01	0.423E 05
2	1	1.568	0.947E-04	4.01	0.423E 05
3	1	1.853	0.947E-04	4.01	0.423E 05
4	2	2.009	0.756E-06	2.68	0.354E 07
5	2	2.011	0.756E-06	2.68	0.354E 07
6	2	2.014	0.756E-06	2.68	0.354E 07

LEMDA= 0.500E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.072	0.238E-04	4.01	0.168E 06
2	1	1.143	0.238E-04	4.01	0.168E 06
3	1	1.215	0.238E-04	4.01	0.168E 06
4	1	1.286	0.238E-04	4.01	0.168E 06
5	1	1.358	0.238E-04	4.01	0.168E 06
6	1	1.429	0.238E-04	4.01	0.168E 06

LEMDA= 0.250E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.018	0.598E-05	4.00	0.669E 06
2	1	1.036	0.598E-05	4.00	0.669E 06
3	1	1.054	0.598E-05	4.00	0.669E 06
4	1	1.072	0.598E-05	4.00	0.669E 06
5	1	1.090	0.598E-05	4.00	0.669E 06
6	1	1.108	0.598E-05	4.00	0.669E 06

LEMDA= 0.200E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.011	0.383E-05	4.00	0.105E 07
2	1	1.023	0.383E-05	4.00	0.105E 07
3	1	1.034	0.383E-05	4.00	0.105E 07
4	1	1.046	0.383E-05	4.00	0.105E 07
5	1	1.057	0.383E-05	4.00	0.105E 07
6	1	1.069	0.383E-05	4.00	0.105E 07

LEMDA= 0.160E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.007	0.245E-05	4.00	0.163E 07
2	1	1.015	0.245E-05	4.00	0.163E 07
3	1	1.022	0.245E-05	4.00	0.163E 07
4	1	1.029	0.245E-05	4.00	0.163E 07
5	1	1.037	0.245E-05	4.00	0.163E 07
6	1	1.044	0.245E-05	4.00	0.163E 07

LEMDA= 0.500E-04 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.001	0.240E-06	4.00	0.167E 08
2	1	1.001	0.240E-06	4.00	0.167E 08
3	1	1.002	0.240E-06	4.00	0.167E 08
4	1	1.003	0.240E-06	4.00	0.167E 08
5	1	1.004	0.240E-06	4.00	0.167E 08
6	1	1.004	0.240E-06	4.00	0.167E 08

TABLE --- 4.44

M= 4 MEO=0.1250

LEMDA= 0.300E-01 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	5	5.510	0.127E-03	1.45	0.114E 05
2	5	6.020	0.127E-03	1.45	0.114E 05
3	5	6.530	0.127E-03	1.45	0.114E 05
4	5	7.040	0.127E-03	1.45	0.114E 05
5	5	7.550	0.127E-03	1.45	0.114E 05
6	5	8.060	0.127E-03	1.45	0.114E 05

LEMDA= 0.800E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	3	3.150	0.374E-04	2.06	0.550E 05
2	3	3.299	0.374E-04	2.06	0.550E 05
3	3	3.449	0.374E-04	2.06	0.550E 05
4	3	3.598	0.374E-04	2.06	0.550E 05
5	3	3.748	0.374E-04	2.06	0.550E 05
6	3	3.897	0.374E-04	2.06	0.550E 05

LEMDA= 0.400E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.323	0.806E-04	2.71	0.336E 05
2	2	2.645	0.906E-04	2.71	0.336E 05
3	2	2.968	0.806E-04	2.71	0.336E 05
4	3	3.041	0.256E-05	2.03	0.794E 06
5	3	3.051	0.256E-05	2.03	0.794E 06
6	3	3.061	0.256E-05	2.03	0.794E 06

LEMDA= 0.250E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.081	0.203E-04	2.69	0.133E 06
2	2	2.162	0.203E-04	2.69	0.133E 06
3	2	2.244	0.203E-04	2.69	0.133E 06
4	2	2.325	0.203E-04	2.69	0.133E 06
5	2	2.406	0.203E-04	2.69	0.133E 06
6	2	2.487	0.203E-04	2.69	0.133E 06

LEMDA= 0.200E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.042	0.105E-04	2.69	0.256E 06
2	2	2.084	0.105E-04	2.69	0.256E 06
3	2	2.126	0.105E-04	2.69	0.256E 06
4	2	2.168	0.105E-04	2.69	0.256E 06
5	2	2.210	0.105E-04	2.69	0.256E 06
6	2	2.252	0.105E-04	2.69	0.256E 06

LEMDA= 0.160E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.022	0.542E-05	2.69	0.495E 06
2	2	2.043	0.542E-05	2.69	0.495E 06
3	2	2.065	0.542E-05	2.69	0.495E 06
4	2	2.087	0.542E-05	2.69	0.495E 06
5	2	2.108	0.542E-05	2.69	0.495E 06
6	2	2.130	0.542E-05	2.69	0.495E 06

LEMDA= 0.100E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.504	0.126E-03	4.02	0.319E 05
2	1	2.008	0.126E-03	4.02	0.319E 05
3	2	2.016	0.134E-05	2.68	0.200E 07
4	2	2.021	0.134E-05	2.69	0.200E 07
5	2	2.027	0.134E-05	2.69	0.200E 07
6	2	2.032	0.134E-05	2.69	0.200E 07

LEMDA= 0.500E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.127	0.317E-04	4.01	0.126E 06
2	1	1.254	0.317E-04	4.01	0.126E 06
3	1	1.381	0.317E-04	4.01	0.126E 06
4	1	1.509	0.317E-04	4.01	0.126E 06
5	1	1.635	0.317E-04	4.01	0.126E 06
6	1	1.762	0.317E-04	4.01	0.126E 06

LEMDA= 0.250E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.032	0.797E-05	4.00	0.503E 06
2	1	1.064	0.797E-05	4.00	0.503E 06
3	1	1.096	0.797E-05	4.00	0.503E 06
4	1	1.127	0.797E-05	4.00	0.503E 06
5	1	1.159	0.797E-05	4.00	0.503E 06
6	1	1.191	0.797E-05	4.00	0.503E 06

LEMDA= 0.200E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.020	0.510E-05	4.00	0.784E 06
2	1	1.041	0.510E-05	4.00	0.784E 06
3	1	1.061	0.510E-05	4.00	0.784E 06
4	1	1.082	0.510E-05	4.00	0.784E 06
5	1	1.102	0.510E-05	4.00	0.784E 06
6	1	1.122	0.510E-05	4.00	0.784E 06

LEMDA= 0.160E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.013	0.327E-05	4.00	0.122E 07
2	1	1.026	0.327E-05	4.00	0.122E 07
3	1	1.039	0.327E-05	4.00	0.122E 07
4	1	1.052	0.327E-05	4.00	0.122E 07
5	1	1.065	0.327E-05	4.00	0.122E 07
6	1	1.078	0.327E-05	4.00	0.122E 07

LEMDA= 0.500E-04 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.001	0.320E-06	4.00	0.125E 08
2	1	1.003	0.320E-06	4.00	0.125E 08
3	1	1.004	0.320E-06	4.00	0.125E 08
4	1	1.005	0.320E-06	4.00	0.125E 08
5	1	1.006	0.320E-06	4.00	0.125E 08
6	1	1.008	0.320E-06	4.00	0.125E 08

TABLE --- 4.45

M = 5

MEO = 0.1250

LEMDA= 0.300E-01 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	5	6.642	0.328E-03	1.49	0.453E 04
2	5	8.283	0.328E-03	1.49	0.453E 04
3	5	9.925	0.328E-03	1.49	0.453E 04
4	5	11.566	0.328E-03	1.49	0.453E 04
5	5	13.208	0.328E-03	1.49	0.453E 04
6	5	14.850	0.328E-03	1.49	0.453E 04

LEMDA= 0.800E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	3	3.351	0.703E-04	2.08	0.296E 05
2	3	3.703	0.703E-04	2.08	0.296E 05
3	3	4.054	0.703E-04	2.08	0.296E 05
4	4	4.089	0.443E-05	1.66	0.374E 06
5	4	4.111	0.443E-05	1.66	0.374E 06
6	4	4.133	0.443E-05	1.66	0.374E 06

LEMDA= 0.400E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.620	0.124E-03	2.72	0.220E 05
2	3	3.049	0.490E-05	2.04	0.416E 06
3	3	3.074	0.490E-05	2.04	0.416E 06
4	3	3.098	0.490E-05	2.04	0.416E 06
5	3	3.123	0.490E-05	2.04	0.416E 06
6	3	3.147	0.490E-05	2.04	0.416E 06

LEMDA= 0.250E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.157	0.314E-04	2.70	0.861E 05
2	2	2.314	0.314E-04	2.70	0.861E 05
3	2	2.471	0.314E-04	2.70	0.861E 05
4	2	2.628	0.314E-04	2.70	0.861E 05
5	2	2.785	0.314E-04	2.70	0.861E 05
6	2	2.942	0.314E-04	2.70	0.861E 05

LEMDA= 0.200E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.081	0.163E-04	2.70	0.166E 06
2	2	2.163	0.163E-04	2.70	0.166E 06
3	2	2.244	0.163E-04	2.70	0.166E 06
4	2	2.325	0.163E-04	2.70	0.166E 06
5	2	2.407	0.163E-04	2.70	0.166E 06
6	2	2.488	0.163E-04	2.70	0.166E 06

LEMDA= 0.160E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.042	0.841E-05	2.69	0.320E 06
2	2	2.084	0.841E-05	2.69	0.320E 06
3	2	2.126	0.841E-05	2.69	0.320E 06
4	2	2.168	0.841E-05	2.69	0.320E 06
5	2	2.210	0.841E-05	2.69	0.320E 06
6	2	2.252	0.841E-05	2.69	0.320E 06

LEMDA= 0.100E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.785	0.157E-03	4.02	0.256E 05
2	2	2.021	0.208E-05	2.68	0.129E 07
3	2	2.031	0.208E-05	2.68	0.129E 07
4	2	2.042	0.208E-05	2.68	0.129E 07
5	2	2.052	0.208E-05	2.68	0.129E 07
6	2	2.063	0.208E-05	2.68	0.129E 07

LEMDA= 0.500E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.198	0.396E-04	4.01	0.101E 06
2	1	1.396	0.396E-04	4.01	0.101E 06
3	1	1.594	0.396E-04	4.01	0.101E 06
4	1	1.793	0.396E-04	4.01	0.101E 06
5	1	1.991	0.396E-04	4.01	0.101E 06
6	2	2.008	0.264E-06	2.68	0.101E 08

LEMDA= 0.250E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.050	0.995E-05	4.01	0.402E 06
2	1	1.100	0.995E-05	4.01	0.402E 06
3	1	1.149	0.995E-05	4.01	0.402E 06
4	1	1.199	0.995E-05	4.01	0.402E 06
5	1	1.249	0.995E-05	4.01	0.402E 06
6	1	1.299	0.995E-05	4.01	0.402E 06

LEMDA= 0.200E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.032	0.638E-05	4.00	0.628E 06
2	1	1.064	0.638E-05	4.00	0.628E 06
3	1	1.096	0.638E-05	4.00	0.628E 06
4	1	1.128	0.638E-05	4.00	0.628E 06
5	1	1.159	0.638E-05	4.00	0.628E 06
6	1	1.191	0.638E-05	4.00	0.628E 06

LEMDA= 0.160E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.020	0.408E-05	4.00	0.980E 06
2	1	1.041	0.408E-05	4.00	0.980E 06
3	1	1.061	0.408E-05	4.00	0.980E 06
4	1	1.082	0.408E-05	4.00	0.980E 06
5	1	1.102	0.408E-05	4.00	0.980E 06
6	1	1.123	0.408E-05	4.00	0.980E 06

LEMDA= 0.500E-04 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.002	0.400E-06	4.00	0.100E 08
2	1	1.004	0.400E-06	4.00	0.100E 08
3	1	1.006	0.400E-06	4.00	0.100E 08
4	1	1.008	0.400E-06	4.00	0.100E 08
5	1	1.010	0.400E-06	4.00	0.100E 08
6	1	1.012	0.400E-06	4.00	0.100E 08

TABLE--- 4.46
****

M= 1 MEO=0.2500

LEMDA= 0.300E-01 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.255	0.255E-03	1.33	0.522E 04
2	2	2.511	0.255E-03	1.33	0.522E 04
3	2	2.766	0.255E-03	1.33	0.522E 04
4	2	3.022	0.255E-03	1.33	0.522E 04
5	3	3.038	0.767E-05	1.00	0.130E 06
6	3	3.046	0.767E-05	1.00	0.130E 06

LEMDA= 0.800E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.496	0.496E-03	2.00	0.403E 04
2	1	1.992	0.496E-03	2.00	0.403E 04
3	2	2.016	0.529E-05	1.33	0.252E 06
4	2	2.021	0.529E-05	1.33	0.252E 06
5	2	2.026	0.529E-05	1.33	0.252E 06
6	2	2.032	0.529E-05	1.33	0.252E 06

LEMDA= 0.400E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.126	0.126E-03	2.00	0.159E 05
2	1	1.252	0.126E-03	2.00	0.159E 05
3	1	1.378	0.126E-03	2.00	0.159E 05
4	1	1.504	0.126E-03	2.00	0.159E 05
5	1	1.630	0.126E-03	2.00	0.159E 05
6	1	1.756	0.126E-03	2.00	0.159E 05

LEMDA= 0.250E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.050	0.495E-04	2.00	0.404E 05
2	1	1.099	0.495E-04	2.00	0.404E 05
3	1	1.149	0.495E-04	2.00	0.404E 05
4	1	1.198	0.495E-04	2.00	0.404E 05
5	1	1.248	0.495E-04	2.00	0.404E 05
6	1	1.297	0.495E-04	2.00	0.404E 05

LEMDA= 0.200E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.032	0.317E-04	2.00	0.630E 05
2	1	1.063	0.317E-04	2.00	0.630E 05
3	1	1.095	0.317E-04	2.00	0.630E 05
4	1	1.127	0.317E-04	2.00	0.630E 05
5	1	1.159	0.317E-04	2.00	0.630E 05
6	1	1.190	0.317E-04	2.00	0.630E 05

LEMDA= 0.160E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.020	0.203E-04	2.00	0.983E 05
2	1	1.041	0.203E-04	2.00	0.983E 05
3	1	1.061	0.203E-04	2.00	0.983E 05
4	1	1.081	0.203E-04	2.00	0.983E 05
5	1	1.102	0.203E-04	2.00	0.983E 05
6	1	1.122	0.203E-04	2.00	0.983E 05

LEMDA= 0.100E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.008	0.797E-05	2.00	0.251E 06
2	1	1.016	0.797E-05	2.00	0.251E 06
3	1	1.024	0.797E-05	2.00	0.251E 06
4	1	1.032	0.797E-05	2.00	0.251E 06
5	1	1.040	0.797E-05	2.00	0.251E 06
6	1	1.048	0.797E-05	2.00	0.251E 06

LEMDA= 0.500E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.002	0.200E-05	2.00	0.100E 07
2	1	1.004	0.200E-05	2.00	0.100E 07
3	1	1.006	0.200E-05	2.00	0.100E 07
4	1	1.008	0.200E-05	2.00	0.100E 07
5	1	1.010	0.200E-05	2.00	0.100E 07
6	1	1.012	0.200E-05	2.00	0.100E 07

LEMDA= 0.250E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.000	0.500E-06	2.00	0.400E 07
2	1	1.001	0.500E-06	2.00	0.400E 07
3	1	1.001	0.500E-06	2.00	0.400E 07
4	1	1.002	0.500E-06	2.00	0.400E 07
5	1	1.002	0.500E-06	2.00	0.400E 07
6	1	1.003	0.500E-06	2.00	0.400E 07

LEMDA= 0.200E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.000	0.320E-06	2.00	0.626E 07
2	1	1.001	0.320E-06	2.00	0.626E 07
3	1	1.001	0.320E-06	2.00	0.626E 07
4	1	1.001	0.320E-06	2.00	0.626E 07
5	1	1.002	0.320E-06	2.00	0.626E 07
6	1	1.002	0.320E-06	2.00	0.626E 07

LEMDA= 0.160E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.000	0.205E-06	2.00	0.977E 07
2	1	1.000	0.205E-06	2.00	0.977E 07
3	1	1.001	0.205E-06	2.00	0.977E 07
4	1	1.001	0.205E-06	2.00	0.977E 07
5	1	1.001	0.205E-06	2.00	0.977E 07
6	1	1.001	0.205E-06	2.00	0.977E 07

LEMDA= 0.500E-04 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.000	0.200E-07	2.00	0.100E 09
2	1	1.000	0.200E-07	2.00	0.100E 09
3	1	1.000	0.200E-07	2.00	0.100E 09
4	1	1.000	0.200E-07	2.00	0.100E 09
5	1	1.000	0.200E-07	2.00	0.100E 09
6	1	1.000	0.200E-07	2.00	0.100E 09

TABLE--- 4.47
****

M= 2 MEO=0.2500

LEMDA= 0.300E-01 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	3	3.119	0.596E-04	1.06	0.179E 05
2	3	3.238	0.596E-04	1.06	0.179E 05
3	3	3.358	0.596E-04	1.06	0.179E 05
4	3	3.477	0.596E-04	1.06	0.179E 05
5	3	3.596	0.596E-04	1.06	0.179E 05
6	3	3.715	0.596E-04	1.06	0.179E 05

LEMDA= 0.800E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.042	0.211E-04	1.36	0.644E 05
2	2	2.085	0.211E-04	1.36	0.644E 05
3	2	2.127	0.211E-04	1.36	0.644E 05
4	2	2.169	0.211E-04	1.36	0.644E 05
5	2	2.211	0.211E-04	1.36	0.644E 05
6	2	2.254	0.211E-04	1.36	0.644E 05

LEMDA= 0.400E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.506	0.253E-03	2.03	0.800E 04
2	2	2.011	0.269E-05	1.35	0.501E 06
3	2	2.016	0.269E-05	1.35	0.501E 06
4	2	2.022	0.269E-05	1.35	0.501E 06
5	2	2.027	0.269E-05	1.35	0.501E 06
6	2	2.032	0.269E-05	1.35	0.501E 06

LEMDA= 0.250E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.199	0.993E-04	2.02	0.203E 05
2	1	1.397	0.993E-04	2.02	0.203E 05
3	1	1.596	0.993E-04	2.02	0.203E 05
4	1	1.795	0.993E-04	2.02	0.203E 05
5	1	1.993	0.993E-04	2.02	0.203E 05
6	2	2.008	0.661E-06	1.34	0.203E 07

LEMDA= 0.200E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.127	0.637E-04	2.01	0.316E 05
2	1	1.255	0.637E-04	2.01	0.316E 05
3	1	1.382	0.637E-04	2.01	0.316E 05
4	1	1.509	0.637E-04	2.01	0.316E 05
5	1	1.637	0.637E-04	2.01	0.316E 05
6	1	1.764	0.637E-04	2.01	0.316E 05

LEMDA= 0.160E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.082	0.408E-04	2.01	0.493E 05
2	1	1.163	0.408E-04	2.01	0.493E 05
3	1	1.245	0.408E-04	2.01	0.493E 05
4	1	1.326	0.408E-04	2.01	0.493E 05
5	1	1.408	0.408E-04	2.01	0.493E 05
6	1	1.489	0.408E-04	2.01	0.493E 05

LEMDA= 0.100E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.032	0.160E-04	2.01	0.126E 06
2	1	1.064	0.160E-04	2.01	0.126E 06
3	1	1.096	0.160E-04	2.01	0.126E 06
4	1	1.128	0.160E-04	2.01	0.126E 06
5	1	1.160	0.160E-04	2.01	0.126E 06
6	1	1.191	0.160E-04	2.01	0.126E 06

LEMDA= 0.500E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.008	0.399E-05	2.00	0.502E 06
2	1	1.016	0.399E-05	2.00	0.502E 06
3	1	1.024	0.399E-05	2.00	0.502E 06
4	1	1.032	0.399E-05	2.00	0.502E 06
5	1	1.040	0.399E-05	2.00	0.502E 06
6	1	1.048	0.399E-05	2.00	0.502E 06

LEMDA= 0.250E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.002	0.999E-06	2.00	0.200E 07
2	1	1.004	0.999E-06	2.00	0.200E 07
3	1	1.006	0.999E-06	2.00	0.200E 07
4	1	1.008	0.999E-06	2.00	0.200E 07
5	1	1.010	0.999E-06	2.00	0.200E 07
6	1	1.012	0.999E-06	2.00	0.200E 07

LEMDA= 0.200E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.001	0.640E-06	2.00	0.313E 07
2	1	1.003	0.640E-06	2.00	0.313E 07
3	1	1.004	0:640E-06	2.00	0.313E 07
4	1	1.005	0.640E-06	2.00	0.313E 07
5	1	1.006	0.640E-06	2.00	0.313E 07
6	1	1.008	0.640E-06	2.00	0.313E 07

LEMDA= 0.160E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.001	0.409E-06	2.00	0.489E 07
2	1	1.002	0.409E-06	2.00	0.489E 07
3	1	1.002	0.409E-06	2.00	0.489E 07
4	1	1.003	0.409E-06	2.00	0.489E 07
5	1	1.004	0.409E-06	2.00	0.489E 07
6	1	1.005	0.409E-06	2.00	0.489E 07

LEMDA= 0.500E-04 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.000	0.400E-07	2.00	0.500E 09
2	1	1.000	0.400E-07	2.00	0.500E 09
3	1	1.000	0.400E-07	2.00	0.500E 09
4	1	1.000	0.400E-07	2.00	0.500E 09
5	1	1.000	0.400E-07	2.00	0.500E 09
6	1	1.000	0.400E-07	2.00	0.500E 09

TABLE---- 4.48
****

M= 3 MEO=0.2500

LEMDA= 0.300E-01 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	3	3.588	0.196E-03	1.13	0.578E 04
2	4	4.082	0.137E-04	0.891	0.650E 05
3	4	4.123	0.137E-04	0.891	0.650E 05
4	4	4.164	0.137E-04	0.891	0.650E 05
5	4	4.206	0.137E-04	0.891	0.650E 05
6	4	4.247	0.137E-04	0.891	0.650E 05

LEMDA= 0.800E-02 LEMDAS= 0.0

P	N(OPT)	TCS	U	D	PHAI
1	2	2.143	0.476E-04	1.39	0.292E 05
2	2	2.285	0.476E-04	1.39	0.292E 05
3	2	2.428	0.476E-04	1.39	0.292E 05
4	2	2.571	0.476E-04	1.39	0.292E 05
5	2	2.714	0.476E-04	1.39	0.292E 05
6	2	2.856	0.476E-04	1.39	0.292E 05

LEMDA= 0.100E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.072	0.240E-04	2.01	0.840E 05
2	1	1.144	0.240E-04	2.01	0.840E 05
3	1	1.216	0.240E-04	2.01	0.840E 05
4	1	1.288	0.240E-04	2.01	0.840E 05
5	1	1.360	0.240E-04	2.01	0.840E 05
6	1	1.431	0.240E-04	2.01	0.840E 05

LEMDA= 0.500E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.018	0.600E-05	2.01	0.335E 06
2	1	1.036	0.600E-05	2.01	0.335E 06
3	1	1.054	0.600E-05	2.01	0.335E 06
4	1	1.072	0.600E-05	2.01	0.335E 06
5	1	1.090	0.600E-05	2.01	0.335E 06
6	1	1.108	0.600E-05	2.01	0.335E 06

LEMDA= 0.250E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.004	0.150E-05	2.00	0.134E 07
2	1	1.009	0.150E-05	2.00	0.134E 07
3	1	1.013	0.150E-05	2.00	0.134E 07
4	1	1.018	0.150E-05	2.00	0.134E 07
5	1	1.022	0.150E-05	2.00	0.134E 07
6	1	1.027	0.150E-05	2.00	0.134E 07

LEMDA= 0.200E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.003	0.960E-06	2.00	0.209E 07
2	1	1.006	0.960E-06	2.00	0.209E 07
3	1	1.009	0.960E-06	2.00	0.209E 07
4	1	1.012	0.960E-06	2.00	0.209E 07
5	1	1.014	0.960E-06	2.00	0.209E 07
6	1	1.017	0.960E-06	2.00	0.209E 07

LEMDA= 0.160E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.002	0.614E-06	2.00	0.326E 07
2	1	1.004	0.614E-06	2.00	0.326E 07
3	1	1.006	0.614E-06	2.00	0.326E 07
4	1	1.007	0.614E-06	2.00	0.326E 07
5	1	1.009	0.614E-06	2.00	0.326E 07
6	1	1.011	0.614E-06	2.00	0.326E 07

LEMDA= 0.500E-04 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.000	0.600E-07	2.00	0.333E 08
2	1	1.000	0.600E-07	2.00	0.333E 08
3	1	1.001	0.600E-07	2.00	0.333E 08
4	1	1.001	0.600E-07	2.00	0.333E 08
5	1	1.001	0.600E-07	2.00	0.333E 08
6	1	1.001	0.600E-07	2.00	0.333E 08

TABLE --- 4.49

M= 4 MEO=0.2500

LEMDA= 0.300E-01 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	4	4.166	0.416E-04	0.939	0.226E 05
2	4	4.333	0.416E-04	0.939	0.226E 05
3	4	4.499	0.416E-04	0.939	0.226E 05
4	4	4.665	0.416E-04	0.939	0.226E 05
5	4	4.832	0.416E-04	0.939	0.226E 05
6	4	4.998	0.416E-04	0.939	0.226E 05

LEMDA= 0.800E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.338	0.846E-04	1.42	0.168E 05
2	2	2.676	0.846E-04	1.42	0.168E 05
3	2	3.015	0.846E-04	1.42	0.168E 05
4	3	3.042	0.266E-05	1.05	0.397E 06
5	3	3.053	0.266E-05	1.05	0.397E 06
6	3	3.064	0.266E-05	1.05	0.397E 06

LEMDA= 0.400E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.043	0.107E-04	1.38	0.128E 06
2	2	2.086	0.107E-04	1.38	0.128E 06
3	2	2.129	0.107E-04	1.38	0.128E 06
4	2	2.172	0.107E-04	1.38	0.128E 06
5	2	2.215	0.107E-04	1.38	0.128E 06
6	2	2.258	0.107E-04	1.38	0.128E 06

LEMDA= 0.250E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.800	0.200E-03	2.05	0.103E 05
2	2	2.021	0.264E-05	1.36	0.515E 06
3	2	2.032	0.264E-05	1.36	0.515E 06
4	2	2.042	0.264E-05	1.36	0.515E 06
5	2	2.053	0.264E-05	1.36	0.515E 06
6	2	2.063	0.264E-05	1.36	0.515E 06

LEMDA= 0.200E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.512	0.128E-03	2.04	0.159E 05
2	2	2.011	0.136E-05	1.36	0.100E 07
3	2	2.016	0.136E-05	1.36	0.100E 07
4	2	2.022	0.136E-05	1.36	0.100E 07
5	2	2.027	0.136E-05	1.36	0.100E 07
6	2	2.033	0.136E-05	1.36	0.100E 07

LEMDA= 0.160E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.328	0.819E-04	2.03	0.248E 05
2	1	1.655	0.819E-04	2.03	0.248E 05
3	1	1.983	0.819E-04	2.03	0.248E 05
4	2	2.011	0.695E-06	1.35	0.194E 07
5	2	2.014	0.695E-06	1.35	0.194E 07
6	2	2.017	0.695E-06	1.35	0.194E 07

LEMDA= 0.100E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.128	0.320E-04	2.02	0.631E 05
2	1	1.256	0.320E-04	2.02	0.631E 05
3	1	1.384	0.320E-04	2.02	0.631E 05
4	1	1.512	0.320E-04	2.02	0.631E 05
5	1	1.640	0.320E-04	2.02	0.631E 05
6	1	1.769	0.320E-04	2.02	0.631E 05

LEMDA= 0.500E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.032	0.800E-05	2.01	0.251E 06
2	1	1.064	0.800E-05	2.01	0.251E 06
3	1	1.096	0.800E-05	2.01	0.251E 06
4	1	1.128	0.800E-05	2.01	0.251E 06
5	1	1.160	0.800E-05	2.01	0.251E 06
6	1	1.192	0.800E-05	2.01	0.251E 06

LEMDA= 0.250E-03   LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.008	0.200E-05	2.01	0.100E 07
2	1	1.016	0.200E-05	2.01	0.100E 07
3	1	1.024	0.200E-05	2.01	0.100E 07
4	1	1.032	0.200E-05	2.01	0.100E 07
5	1	1.040	0.200E-05	2.01	0.100E 07
6	1	1.048	0.200E-05	2.01	0.100E 07

LEMDA= 0.200E-03   LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.005	0.128E-05	2.00	0.157E 07
2	1	1.010	0.128E-05	2.00	0.157E 07
3	1	1.015	0.128E-05	2.00	0.157E 07
4	1	1.020	0.128E-05	2.00	0.157E 07
5	1	1.026	0.128E-05	2.00	0.157E 07
6	1	1.031	0.128E-05	2.00	0.157E 07

LEMDA= 0.160E-03   LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.003	0.819E-06	2.00	0.245E 07
2	1	1.007	0.819E-06	2.00	0.245E 07
3	1	1.010	0.819E-06	2.00	0.245E 07
4	1	1.013	0.819E-06	2.00	0.245E 07
5	1	1.016	0.819E-06	2.00	0.245E 07
6	1	1.020	0.819E-06	2.00	0.245E 07

LEMDA= 0.500E-04   LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.000	0.800E-07	2.00	0.250E 08
2	1	1.001	0.800E-07	2.00	0.250E 08
3	1	1.001	0.800E-07	2.00	0.250E 08
4	1	1.001	0.800E-07	2.00	0.250E 08
5	1	1.002	0.800E-07	2.00	0.250E 08
6	1	1.002	0.800E-07	2.00	0.250E 08

TABLE----4.50-
****

M= 5 MEO=0.2500

LEMDA= 0.300E-01 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	4	4.489	0.977E-04	0.992	0.101E 05
2	4	4.977	0.977E-04	0.992	0.101E 05
3	5	5.140	0.936E-05	0.806	0.861E 05
4	5	5.187	0.936E-05	0.806	0.861E 05
5	5	5.234	0.936E-05	0.806	0.861E 05
6	5	5.281	0.936E-05	0.806	0.861E 05

LEMDA= 0.800E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.661	0.132E-03	1.45	0.110E 05
2	3	3.052	0.516E-05	1.07	0.208E 06
3	3	3.077	0.516E-05	1.07	0.208E 06
4	3	3.103	0.516E-05	1.07	0.208E 06
5	3	3.129	0.516E-05	1.07	0.208E 06
6	3	3.155	0.516E-05	1.07	0.208E 06

LEMDA= 0.400E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.084	0.168E-04	1.39	0.828E 05
2	2	2.168	0.168E-04	1.39	0.828E 05
3	2	2.252	0.168E-04	1.39	0.828E 05
4	2	2.336	0.168E-04	1.39	0.828E 05
5	2	2.420	0.168E-04	1.39	0.828E 05
6	2	2.504	0.168E-04	1.39	0.828E 05

LEMDA= 0.250E-02 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	2	2.021	0.413E-05	1.37	0.332E 06
2	2	2.041	0.413E-05	1.37	0.332E 06
3	2	2.062	0.413E-05	1.37	0.332E 06
4	2	2.083	0.413E-05	1.37	0.332E 06
5	2	2.103	0.413E-05	1.37	0.332E 06
6	2	2.124	0.413E-05	1.37	0.332E 06

LEMDA= 0.200E-02   LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.802	0.160E-03	2.05	0.128E 05
2	2	2.021	0.212E-05	1.36	0.644E 06
3	2	2.032	0.212E-05	1.36	0.644E 06
4	2	2.042	0.212E-05	1.36	0.644E 06
5	2	2.053	0.212E-05	1.36	0.644E 06
6	2	2.064	0.212E-05	1.36	0.644E 06

LEMDA= 0.160E-02   LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.513	0.103E-03	2.04	0.199E 05
2	2	2.011	0.109E-05	1.36	0.125E 07
3	2	2.016	0.109E-05	1.36	0.125E 07
4	2	2.022	0.109E-05	1.36	0.125E 07
5	2	2.027	0.109E-05	1.36	0.125E 07
6	2	2.033	0.109E-05	1.36	0.125E 07

LEMDA= 0.100E-02   LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.200	0.401E-04	2.03	0.506E 05
2	1	1.401	0.401E-04	2.03	0.506E 05
3	1	1.601	0.401E-04	2.03	0.506E 05
4	1	1.801	0.401E-04	2.03	0.506E 05
5	1	2.001	0.401E-04	2.03	0.506E 05
6	2	2.008	0.266E-06	1.35	0.507E 07

LEMDA= 0.500E-03   LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.050	0.100E-04	2.01	0.201E 06
2	1	1.100	0.100E-04	2.01	0.201E 06
3	1	1.150	0.100E-04	2.01	0.201E 06
4	1	1.200	0.100E-04	2.01	0.201E 06
5	1	1.250	0.100E-04	2.01	0.201E 06
6	1	1.300	0.100E-04	2.01	0.201E 06

LEMDA= 0.250E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.013	0.250E-05	2.01	0.802E 06
2	1	1.025	0.250E-05	2.01	0.802E 06
3	1	1.038	0.250E-05	2.01	0.802E 06
4	1	1.050	0.250E-05	2.01	0.802E 06
5	1	1.063	0.250E-05	2.01	0.802E 06
6	1	1.075	0.250E-05	2.01	0.802E 06

LEMDA= 0.200E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.008	0.160E-05	2.01	0.125E 07
2	1	1.016	0.160E-05	2.01	0.125E 07
3	1	1.024	0.160E-05	2.01	0.125E 07
4	1	1.032	0.160E-05	2.01	0.125E 07
5	1	1.040	0.160E-05	2.01	0.125E 07
6	1	1.048	0.160E-05	2.01	0.125E 07

LEMDA= 0.160E-03 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.005	0.102E-05	2.00	0.196E 07
2	1	1.010	0.102E-05	2.00	0.196E 07
3	1	1.015	0.102E-05	2.00	0.196E 07
4	1	1.020	0.102E-05	2.00	0.196E 07
5	1	1.026	0.102E-05	2.00	0.196E 07
6	1	1.031	0.102E-05	2.00	0.196E 07

LEMDA= 0.500E-04 LEMDAS= 0.0

R	N(OPT)	TCS	U	D	PHAI
1	1	1.000	0.100E-06	2.00	0.200E 08
2	1	1.001	0.100E-06	2.00	0.200E 08
3	1	1.002	0.100E-06	2.00	0.200E 08
4	1	1.002	0.100E-06	2.00	0.200E 08
5	1	1.003	0.100E-06	2.00	0.200E 08
6	1	1.003	0.100E-06	2.00	0.200E 08

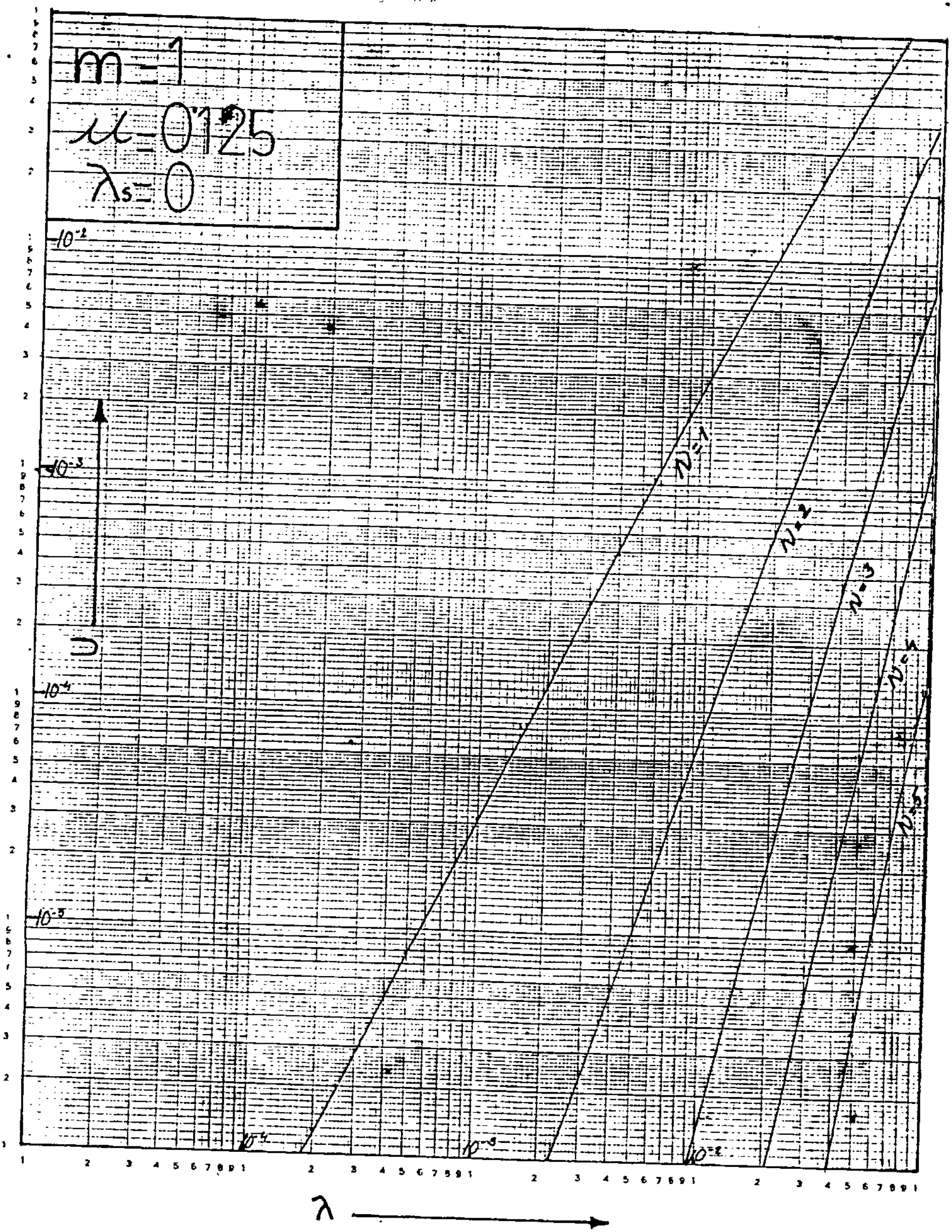


FIG 41

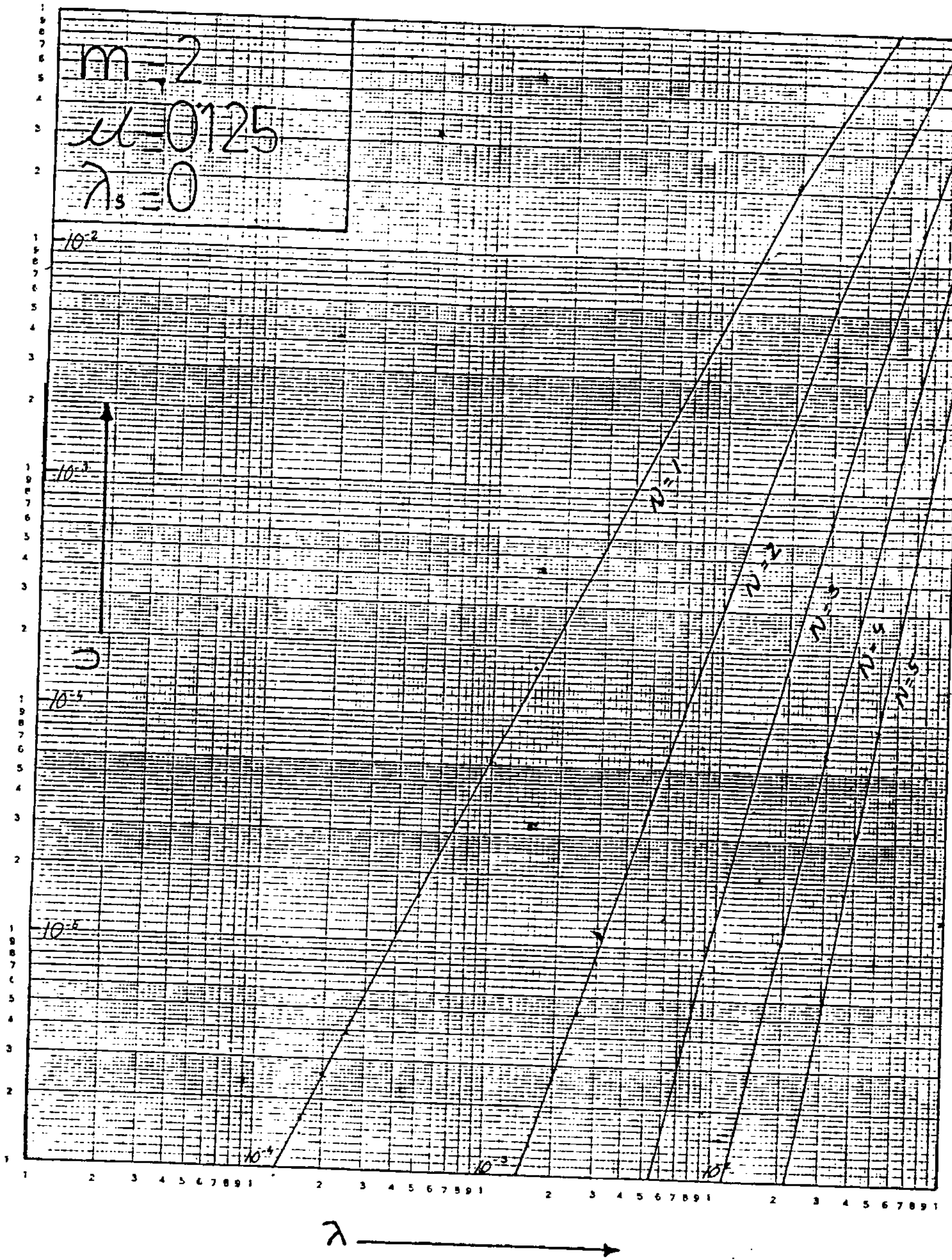


FIG 4.2

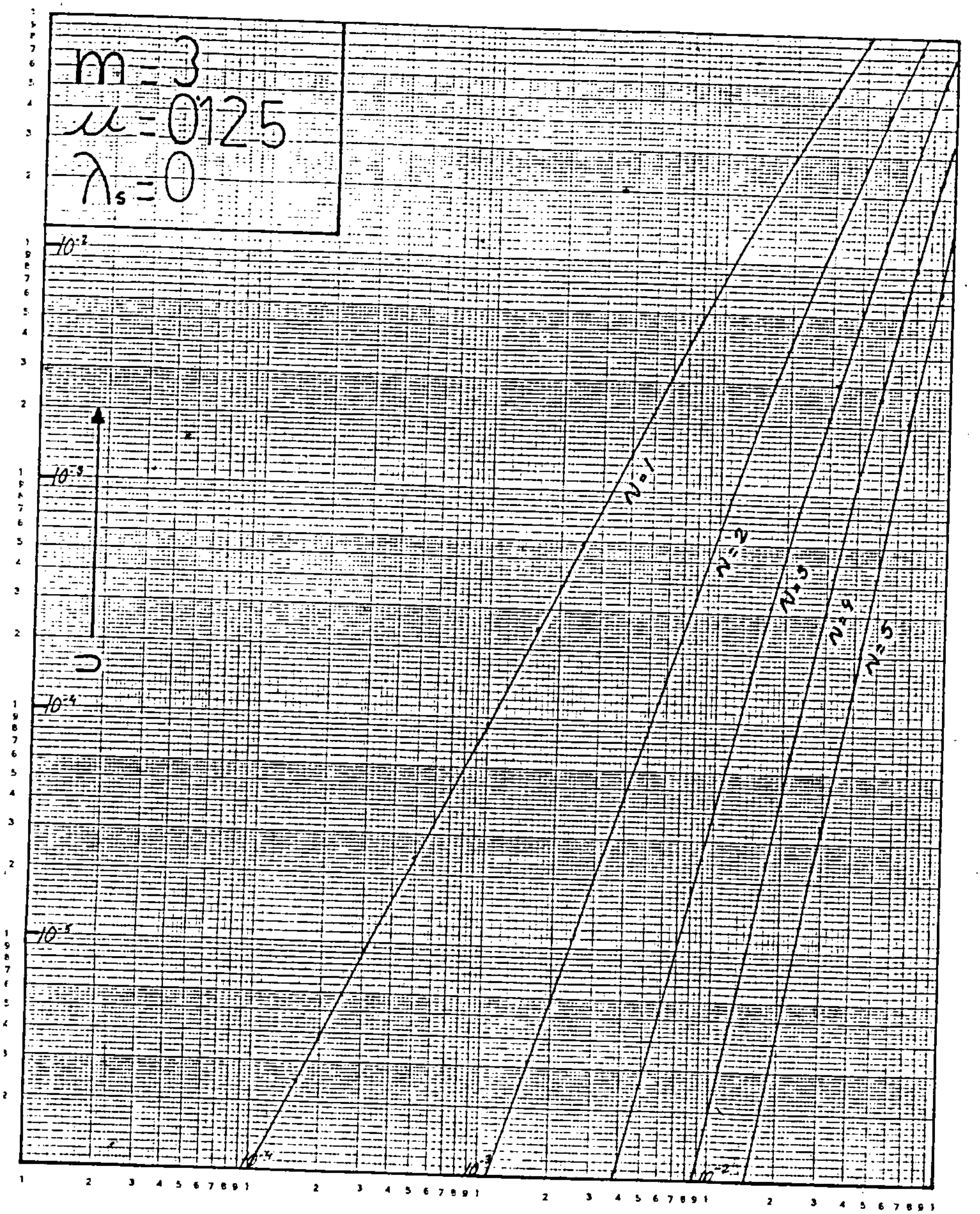


FIG 4.3

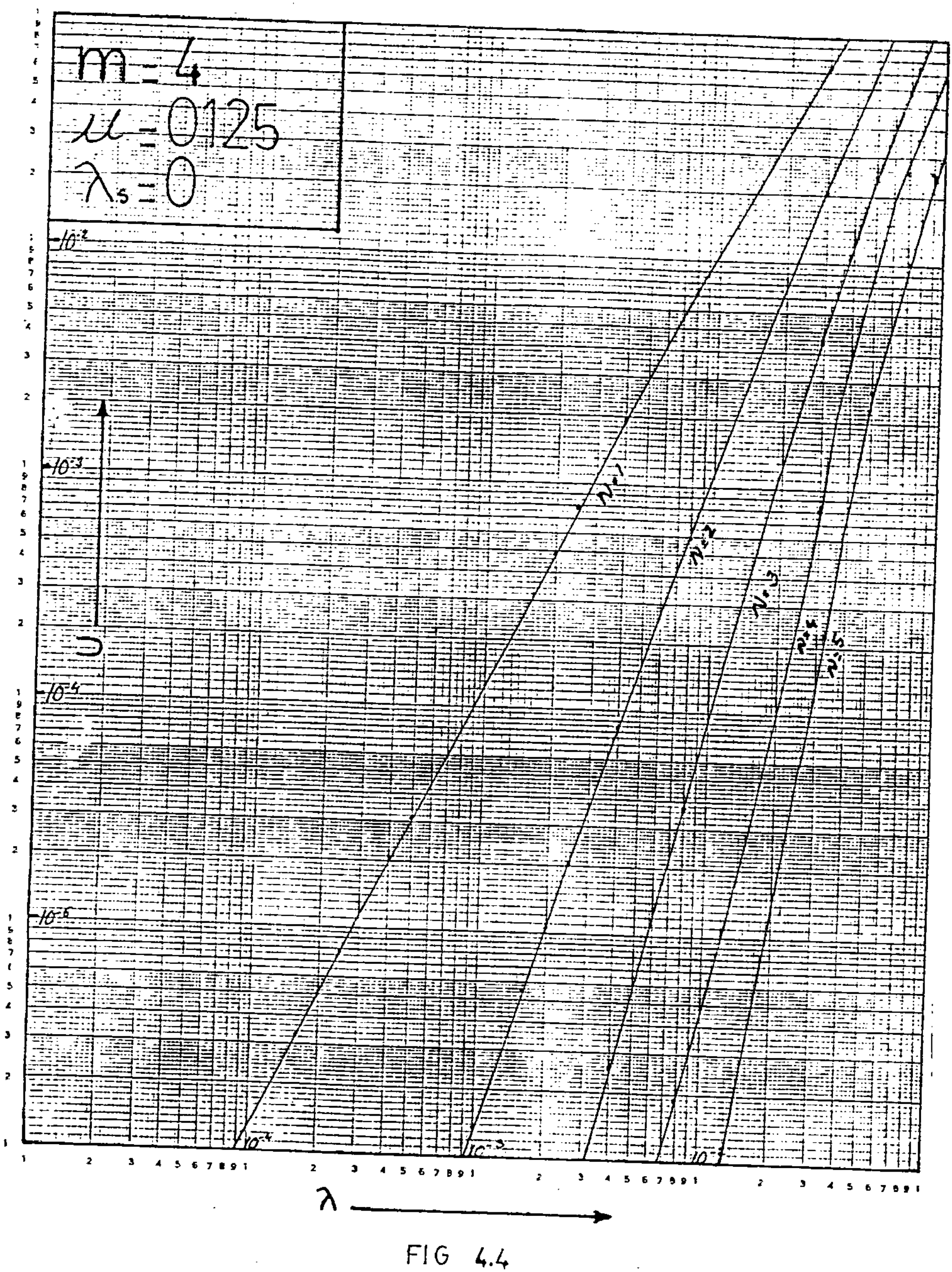


FIG 4.4

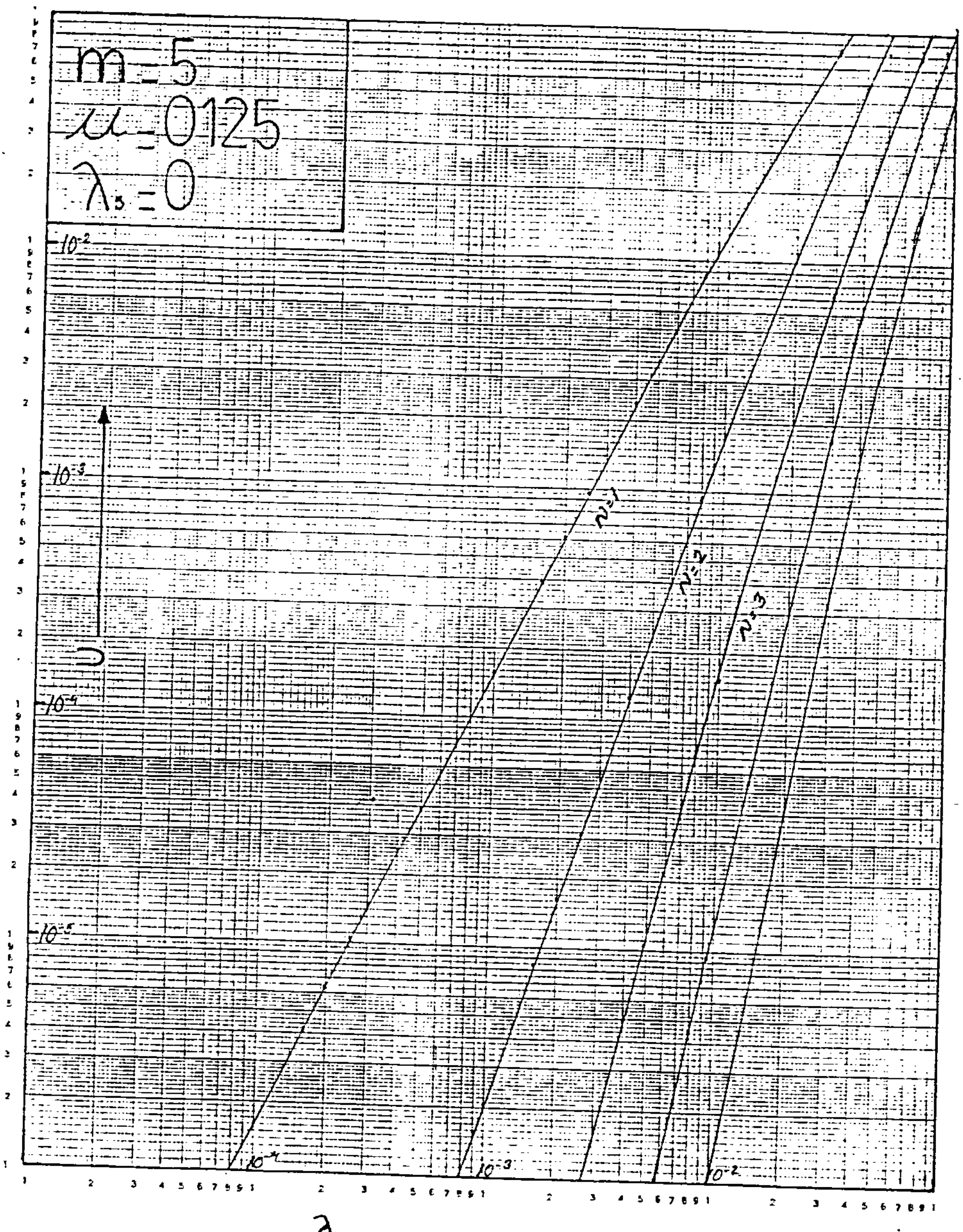


FIG 4.5

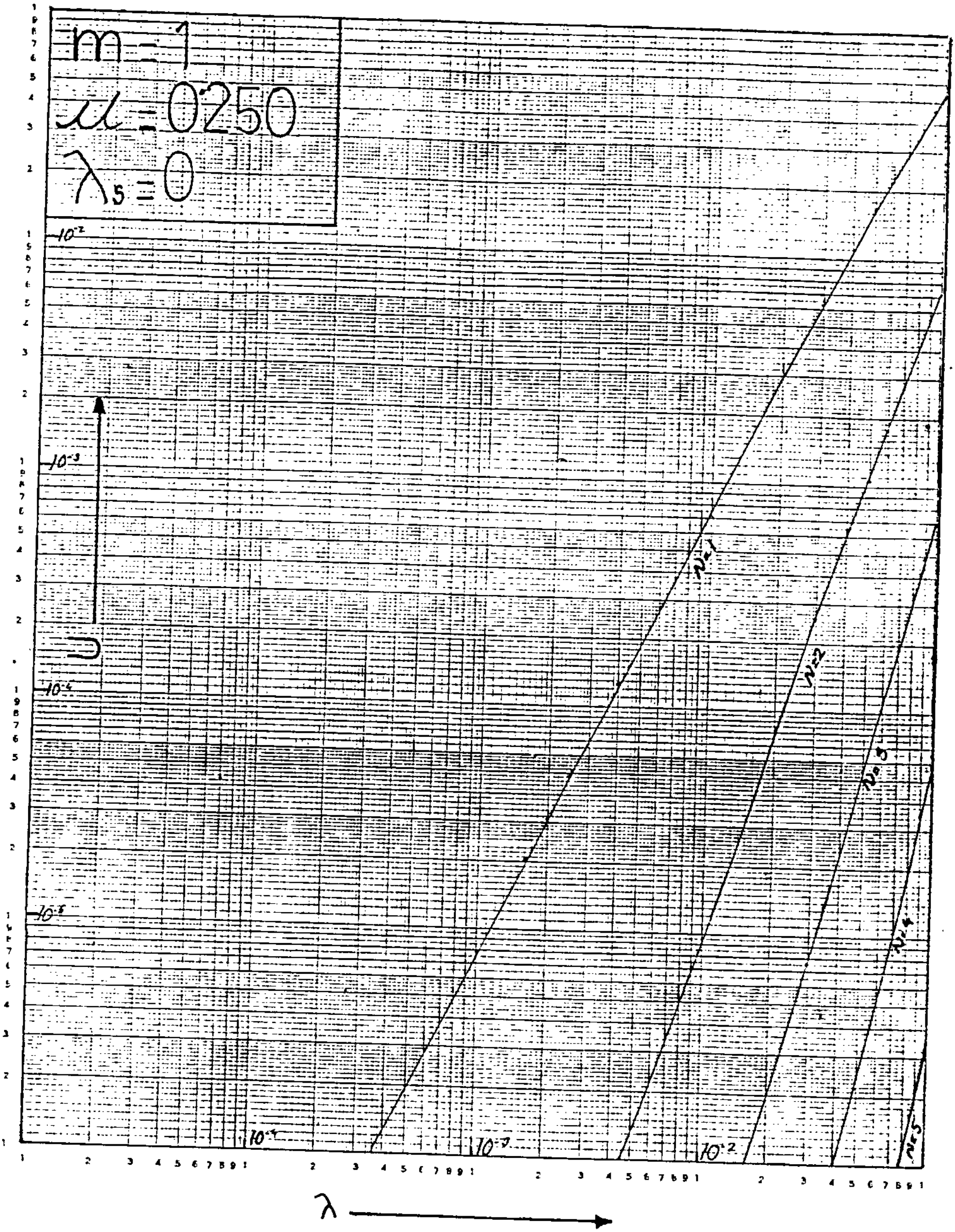
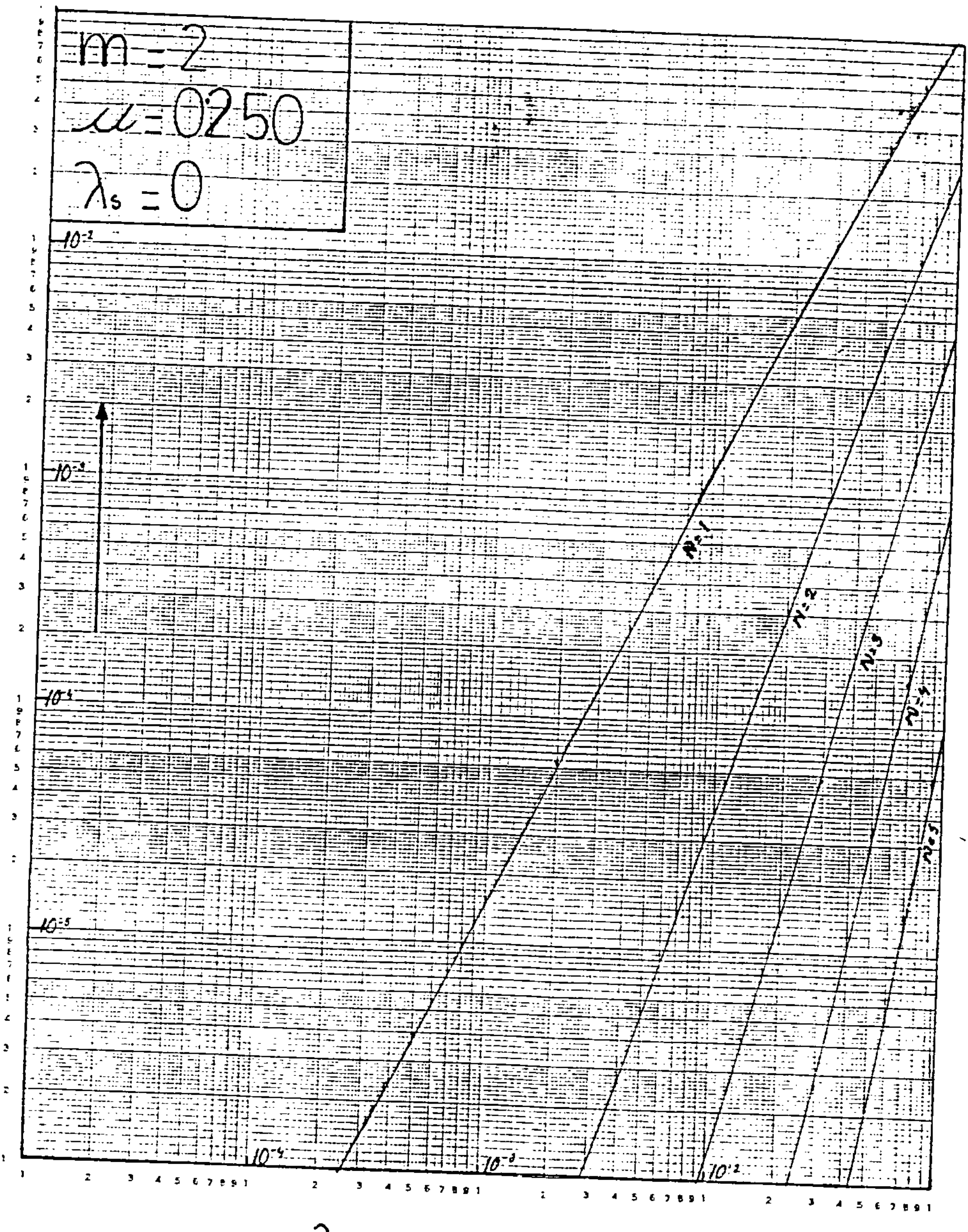


FIG 4.6



m = 2
u = 0250
$\lambda_s = 0$
10^{-2}
10^{-3}
10^{-4}
10^{-5}
N = 1
N = 2
N = 3
N = 4
N = 5
10^{-4}
10^{-3}
10^{-2}
λ

FIG 4.7

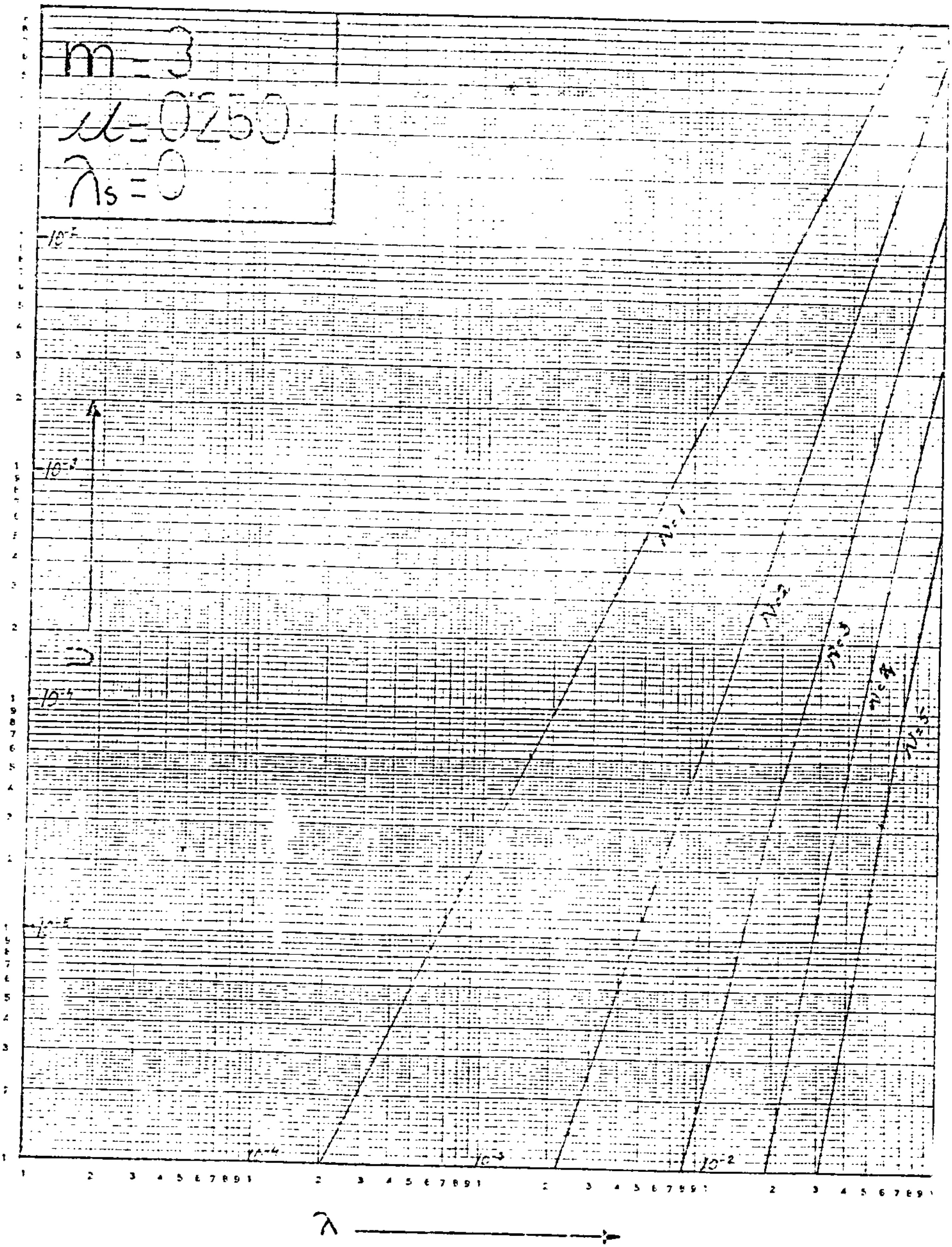


FIG 4.8

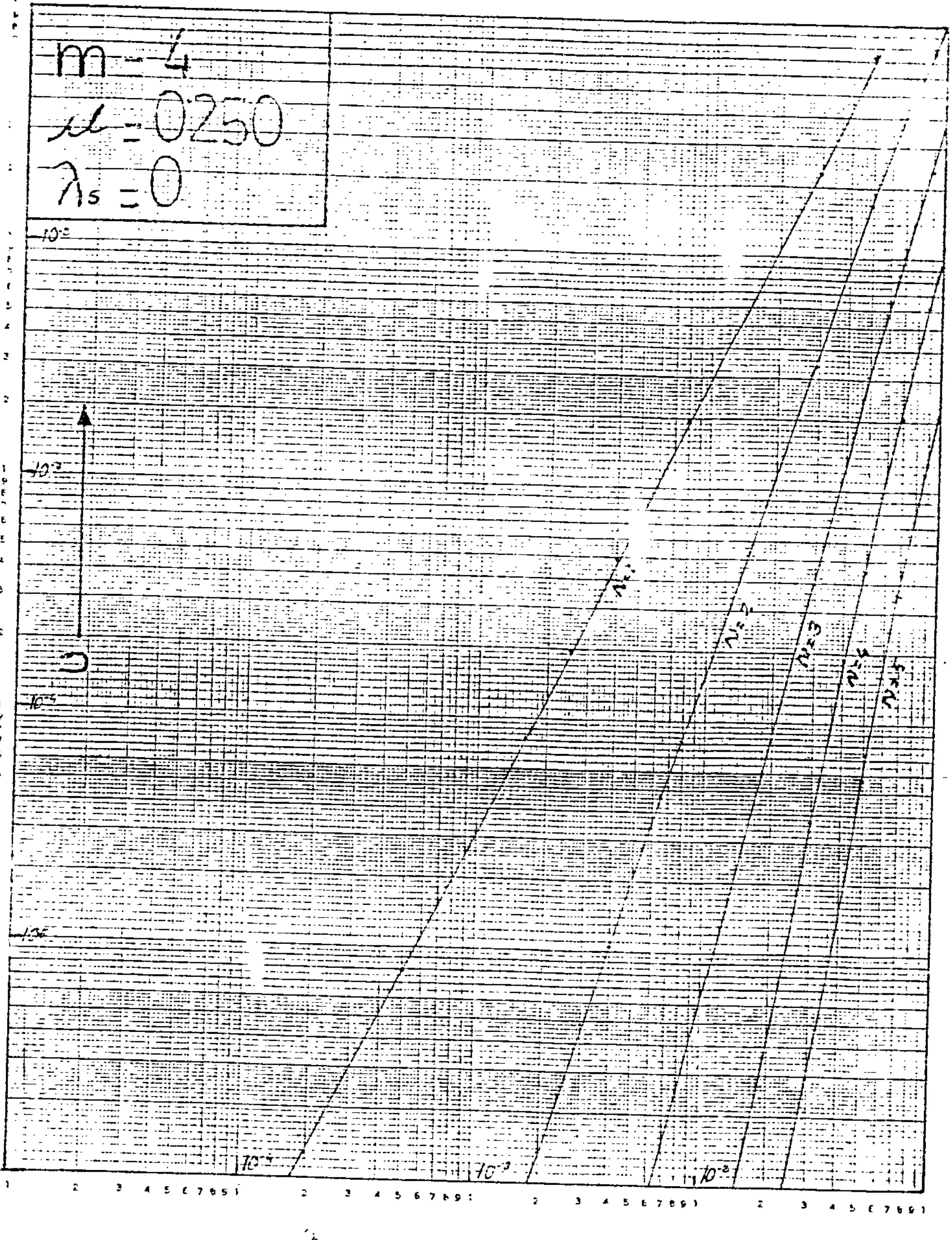


FIG 4.9

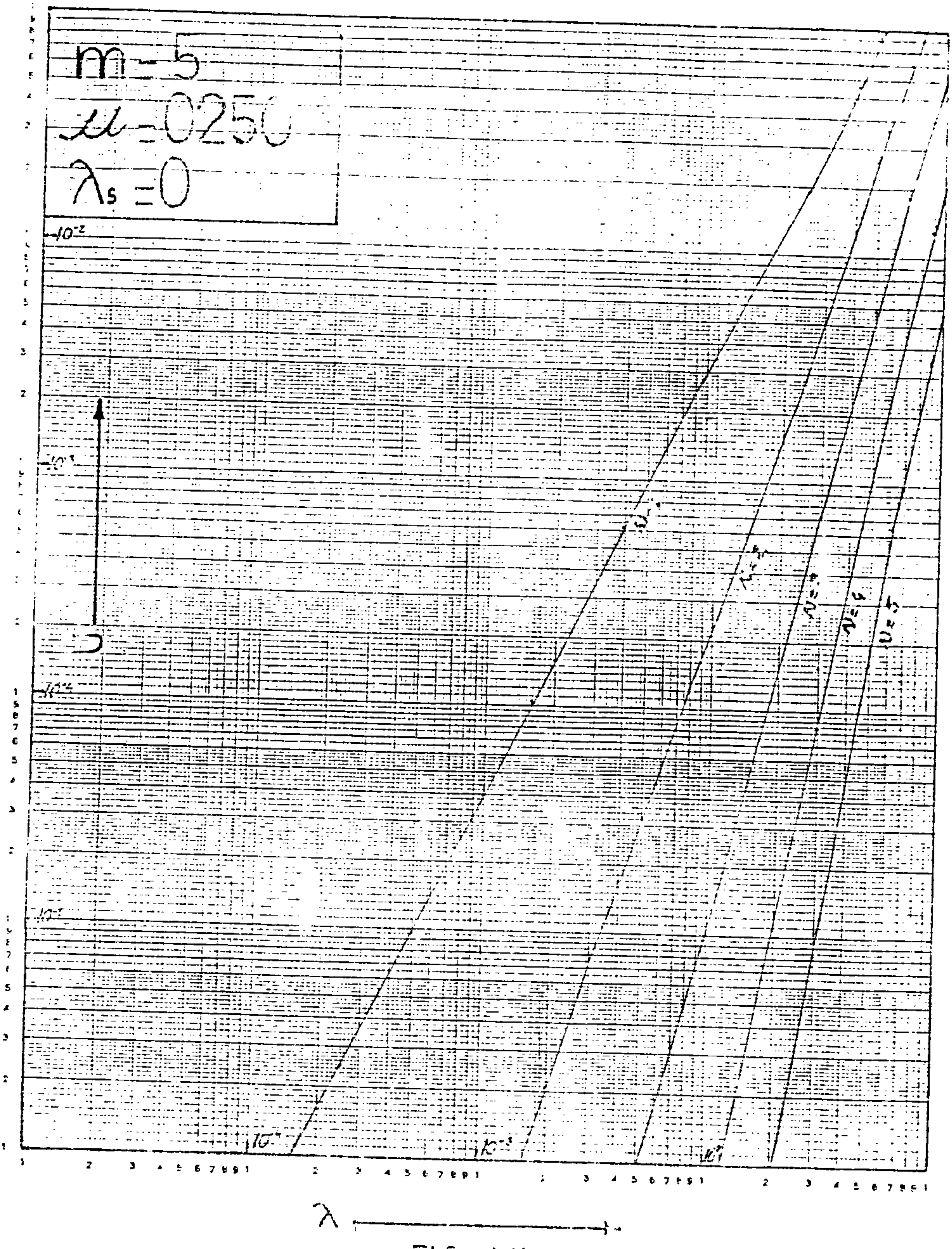


FIG 4.10

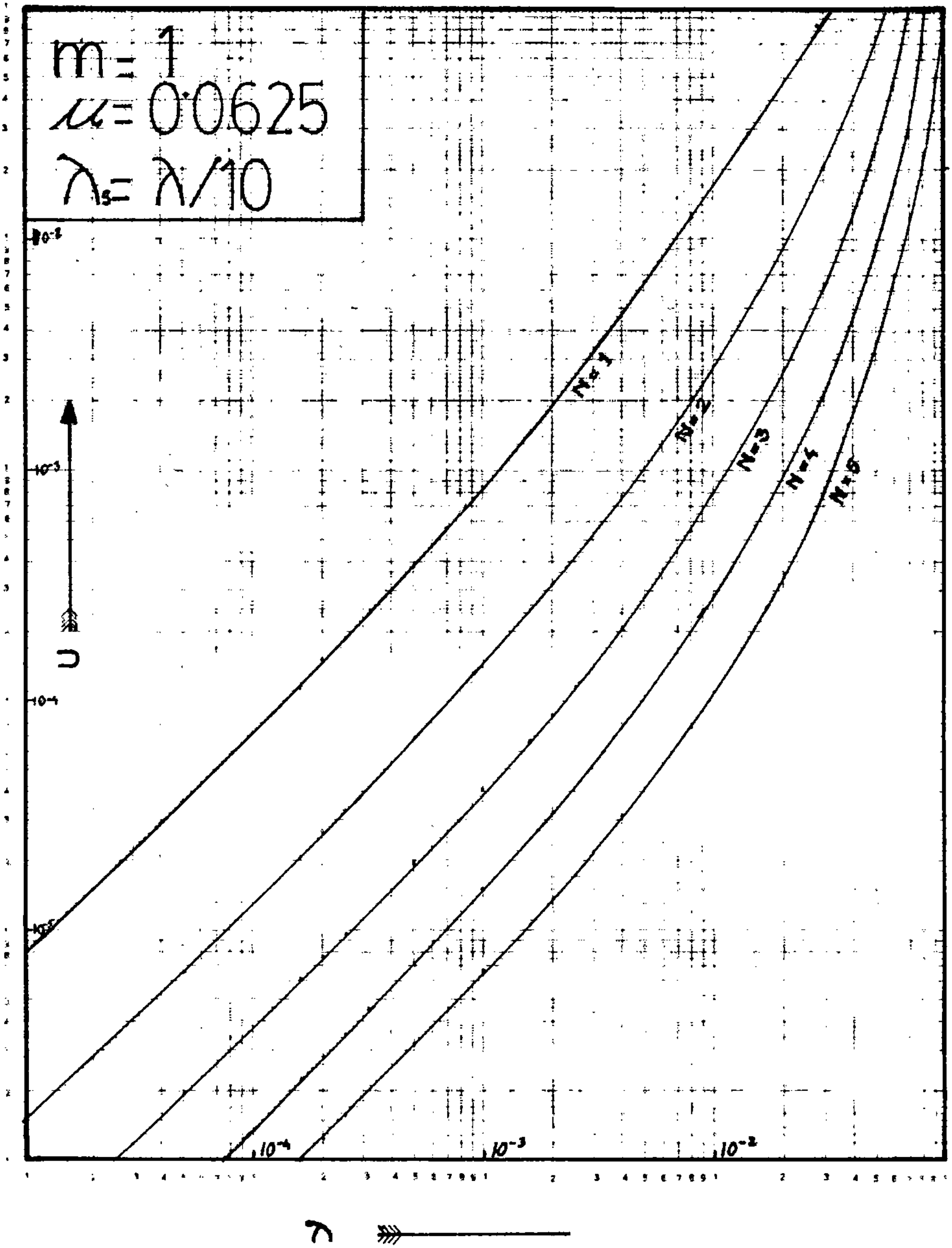


FIG 4.11

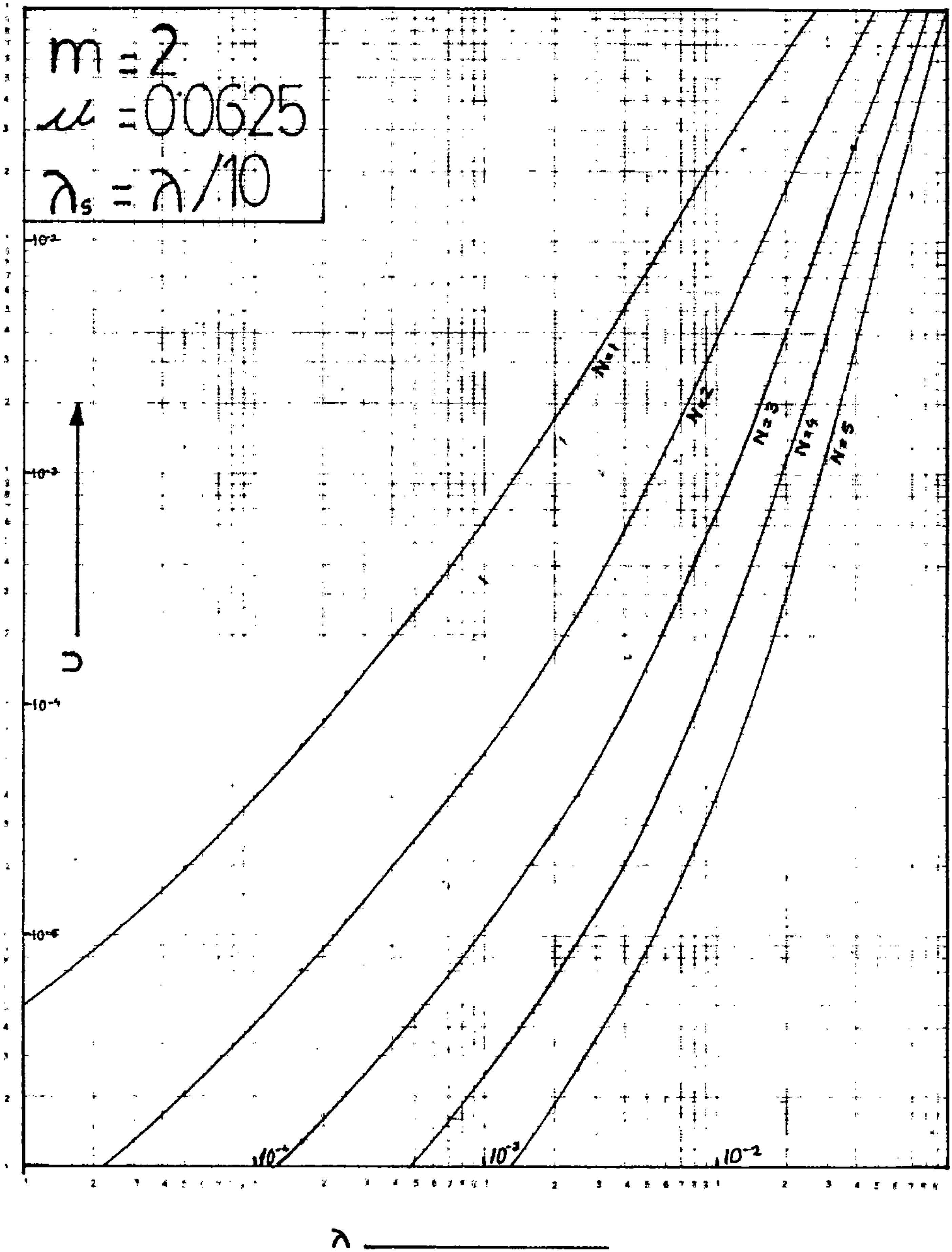

m = 2
μ = 0.0625
$\lambda_s = \lambda/10$
N=1
N=2
N=3
N=4
N=5
10^{-3}
10^{-4}
10^{-5}
10^{-4}
10^{-3}
10^{-2}
U
λ

FIG 4.12

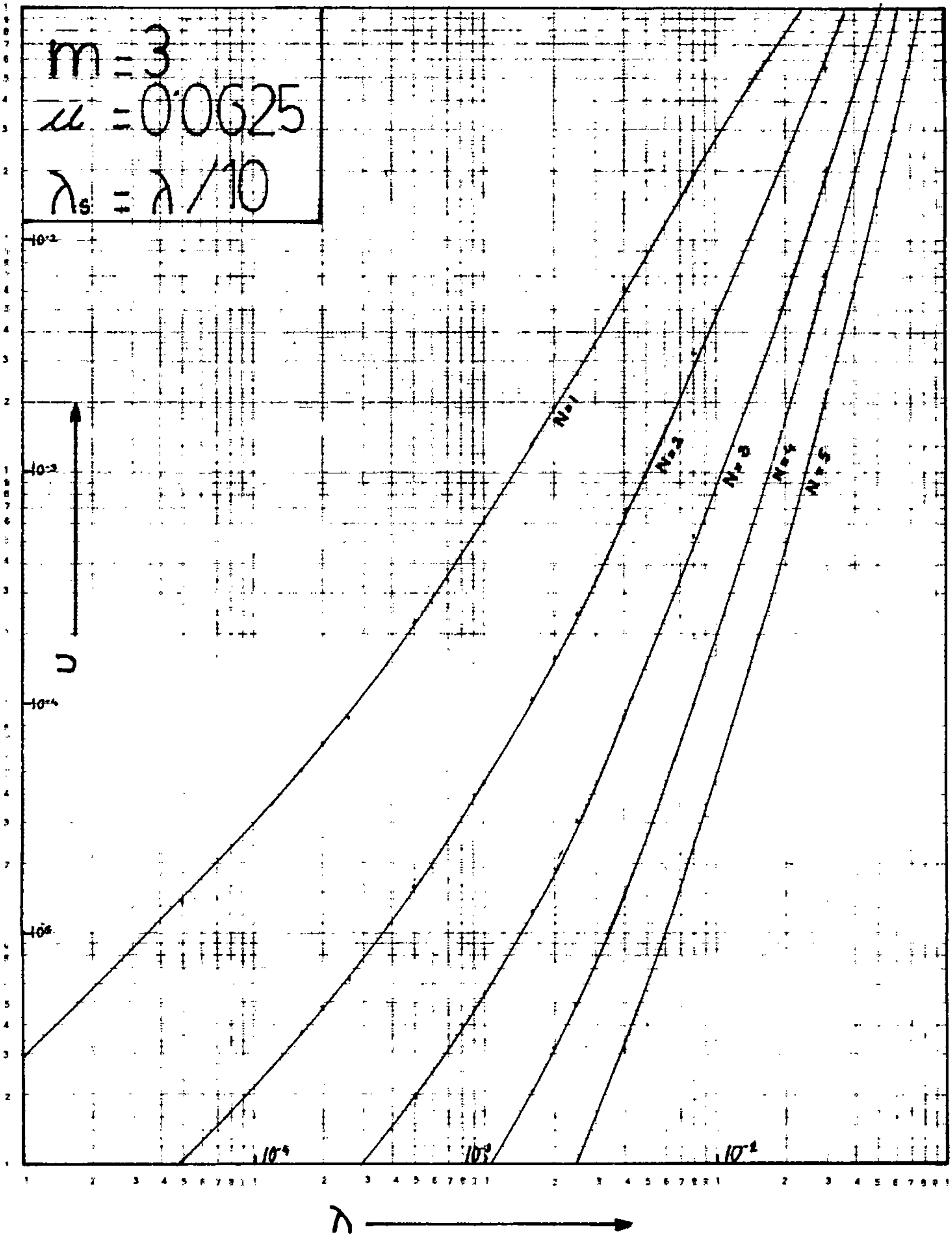


FIG 4.13

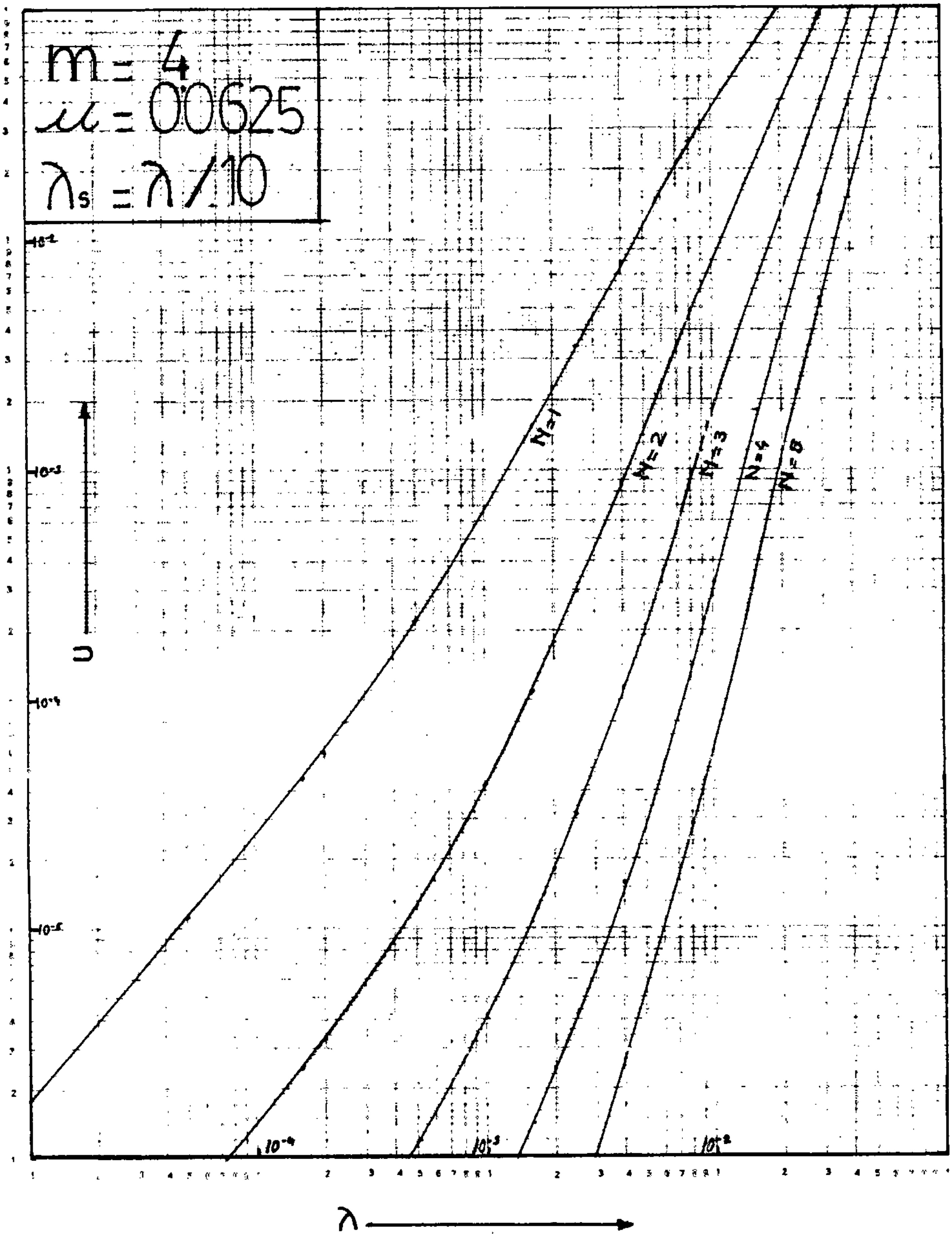


FIG 4.14

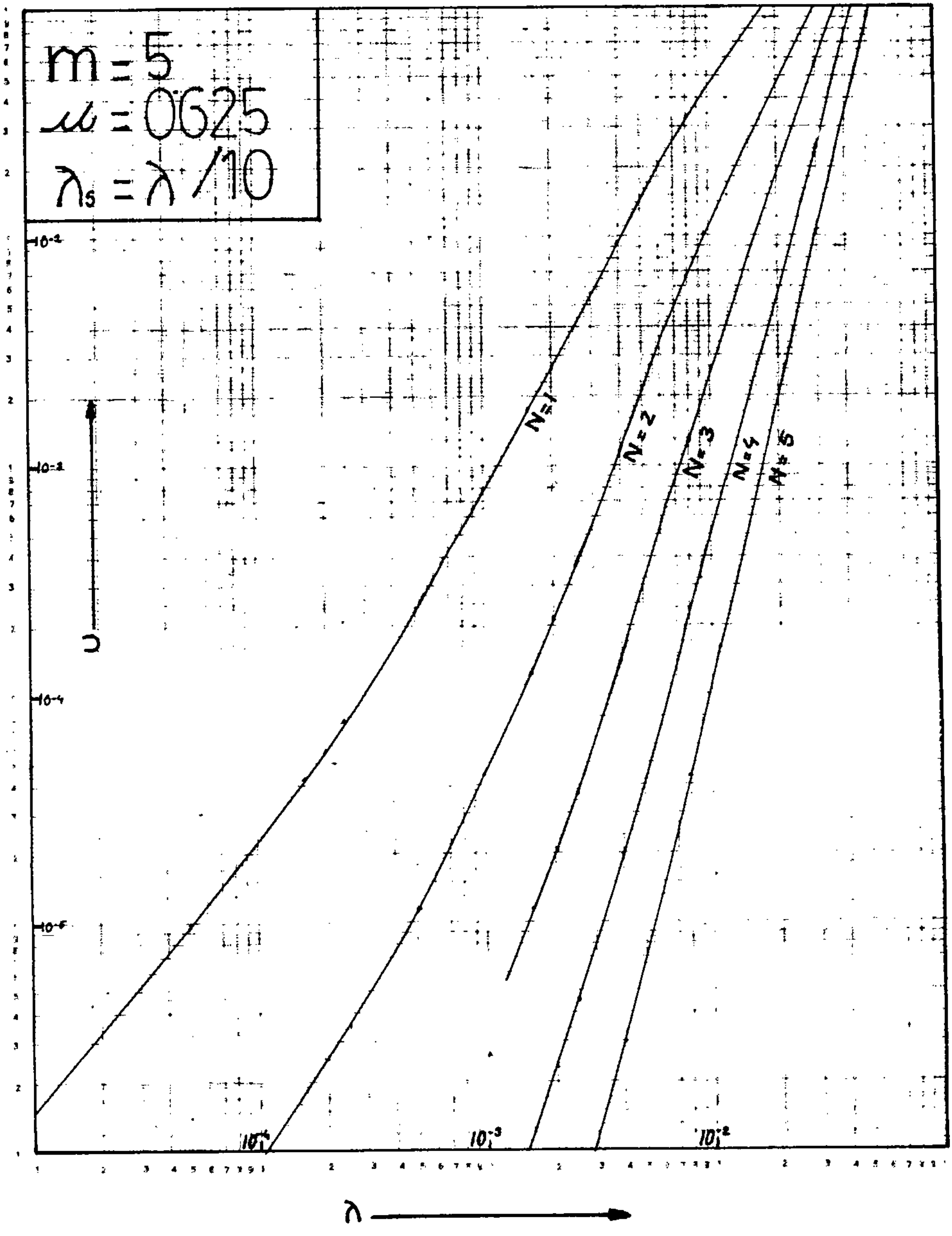


FIG 4.15

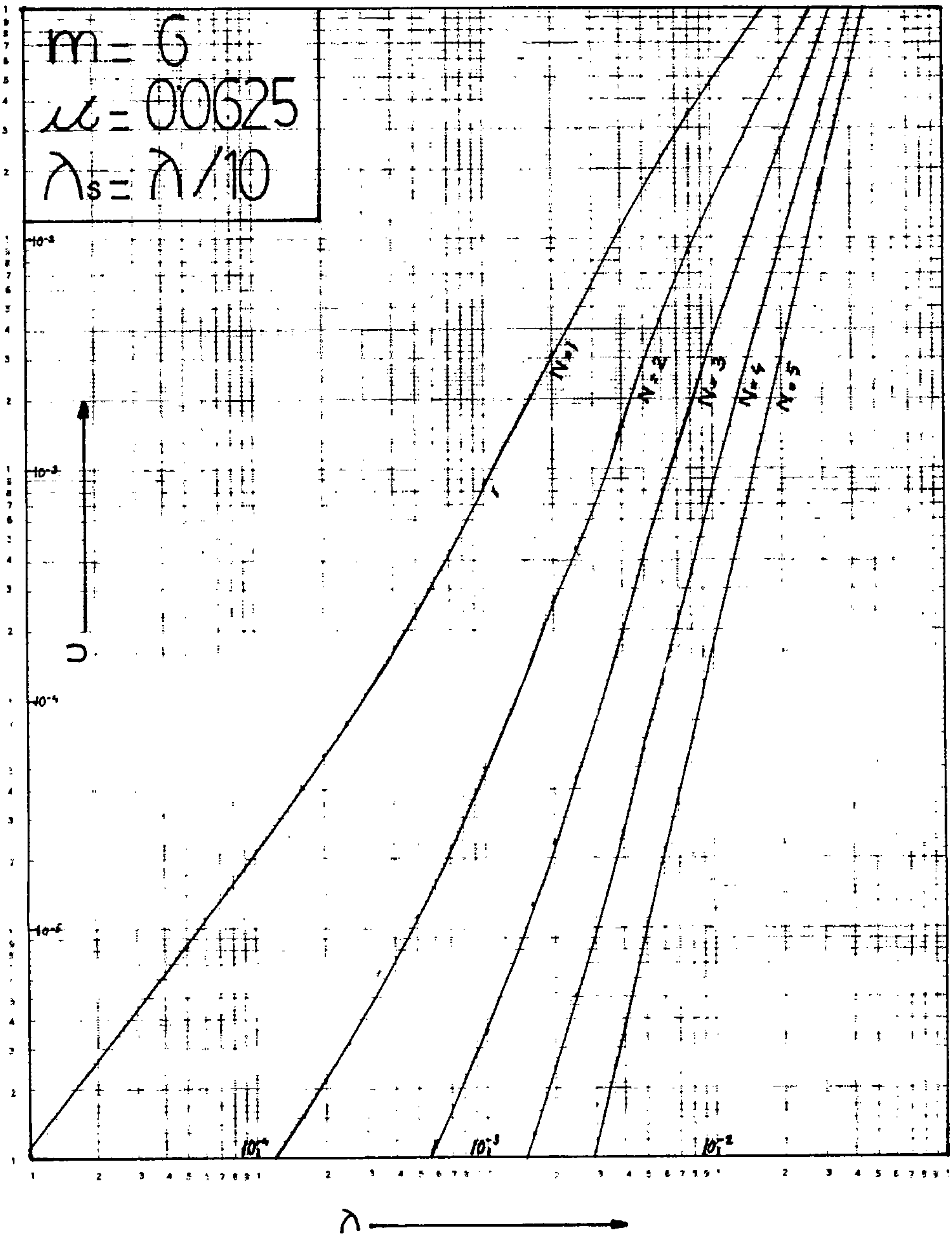


FIG 4.16

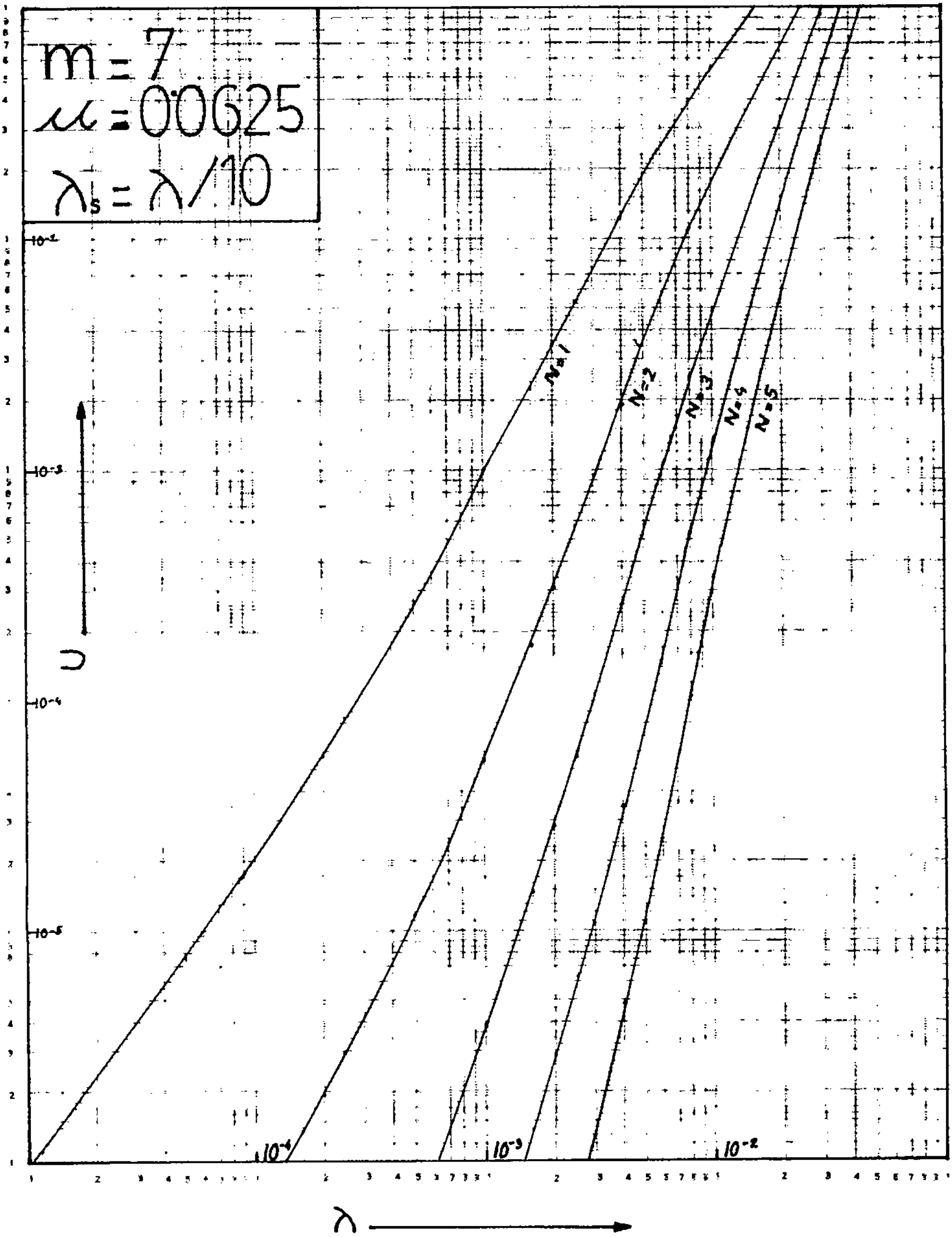
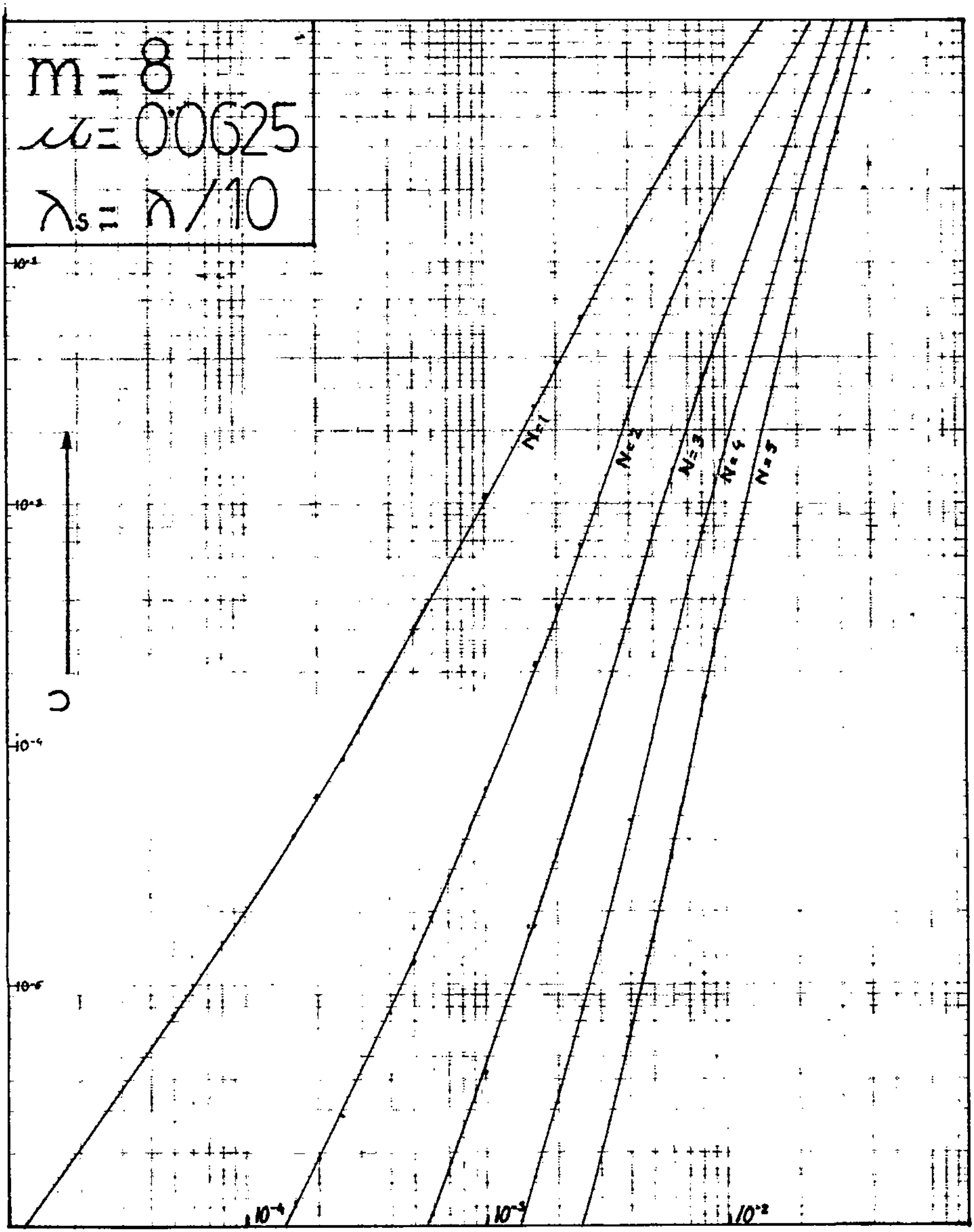


FIG 4.17



m = 8
μ = 0.0625
$\lambda_s = \lambda/10$
N=1
N=2
N=3
N=4
N=5
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-4}
10^{-3}
10^{-2}
υ
λ

FIG 4.18

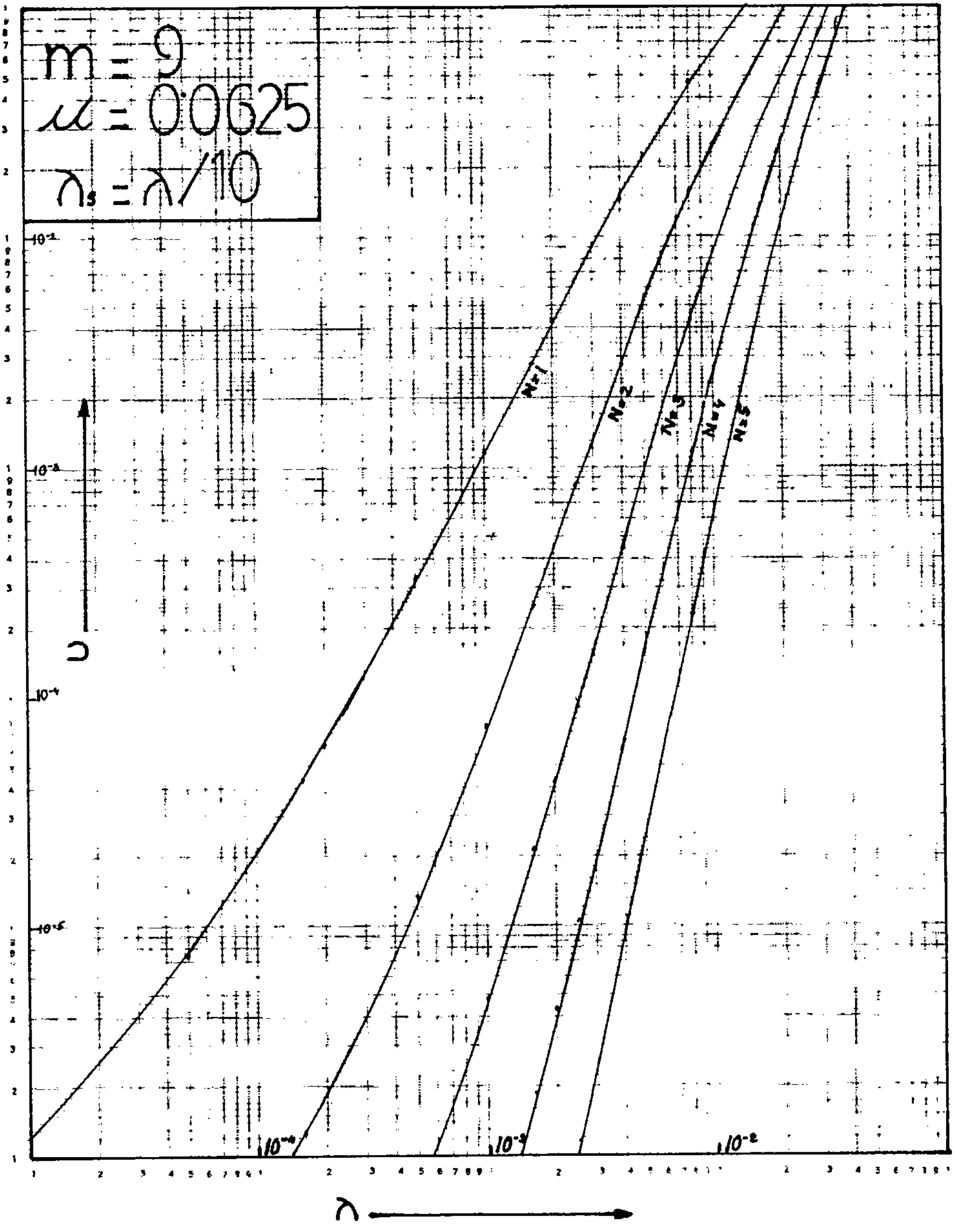


FIG 4.19

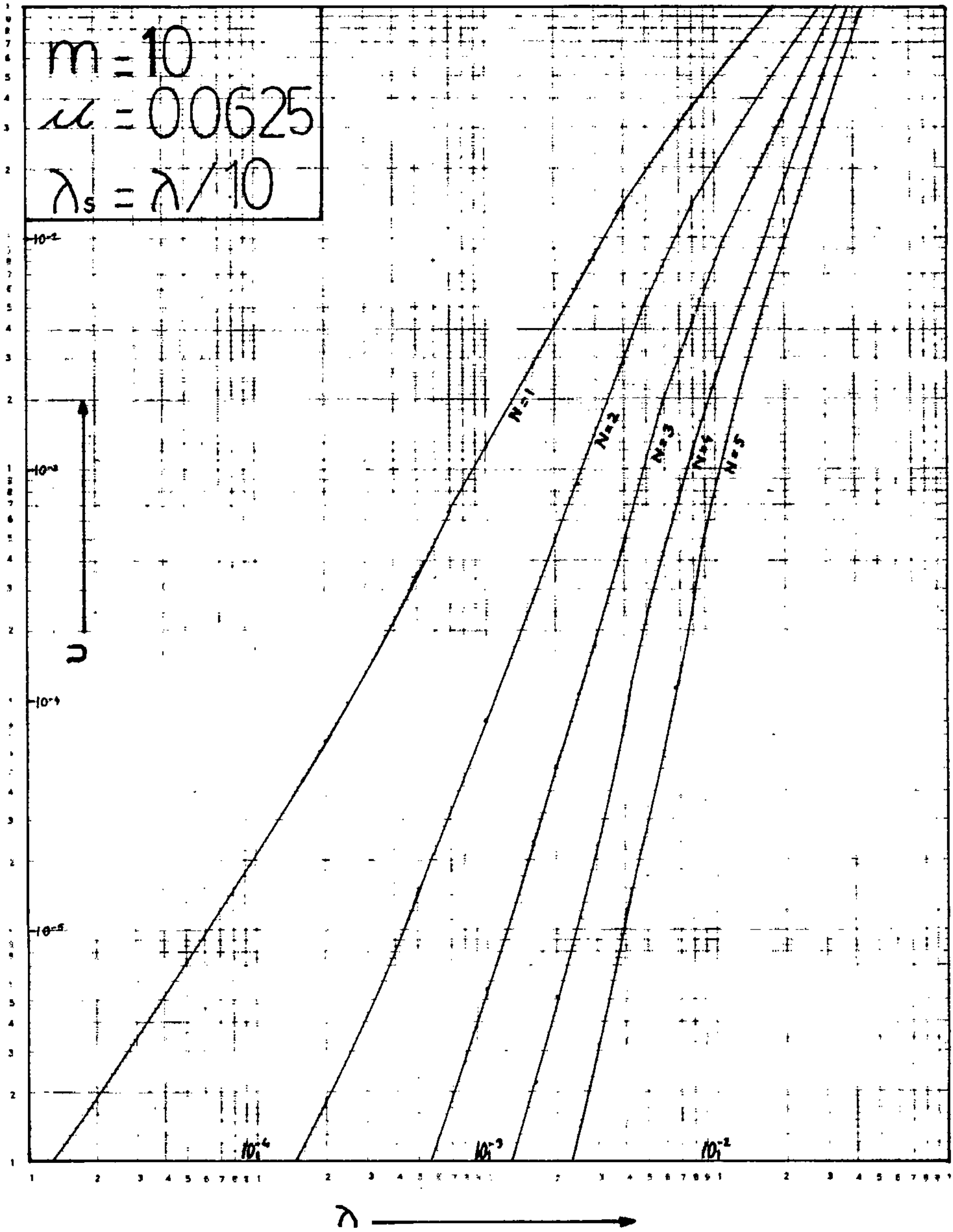


FIG 4.20

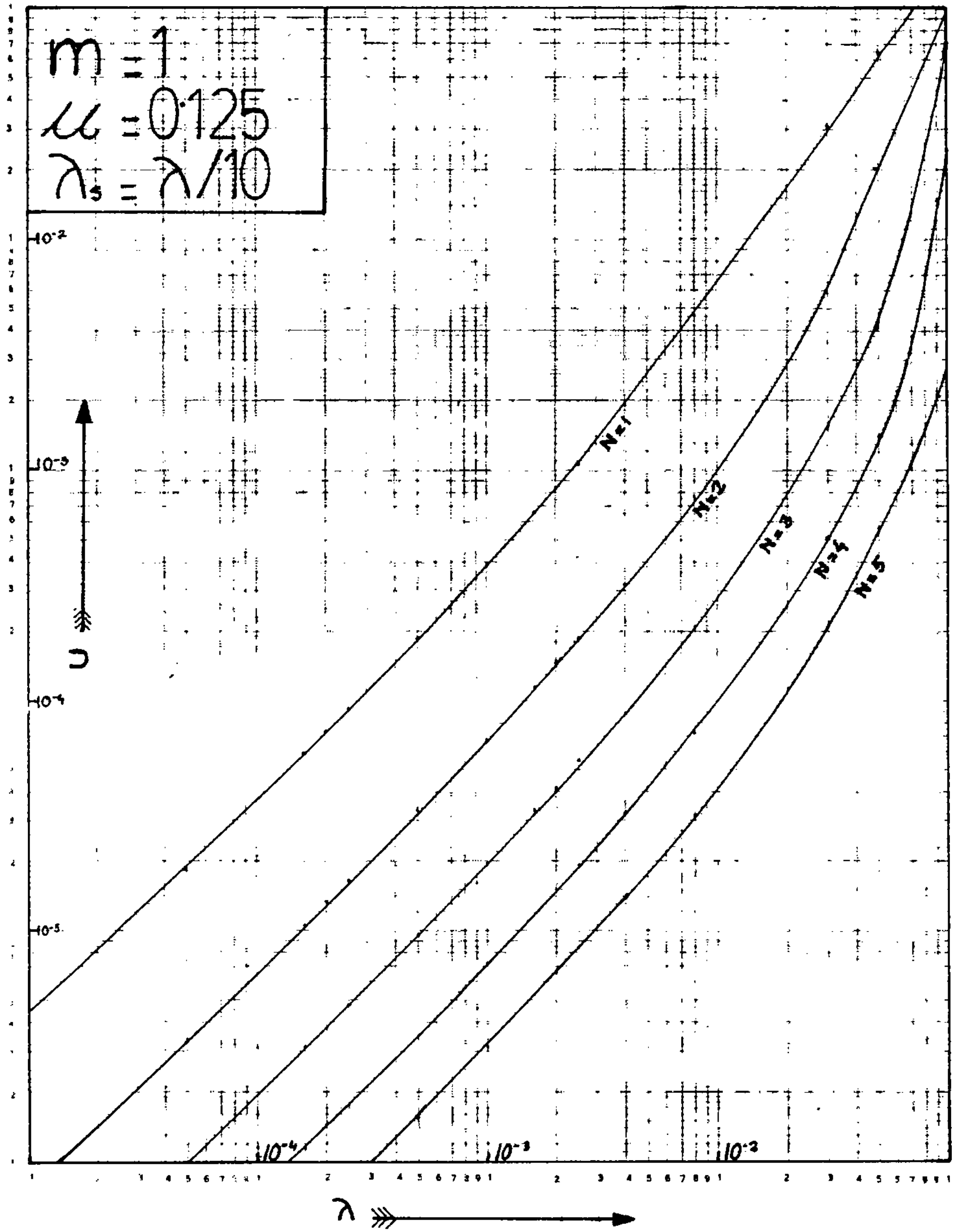


FIG 4.21

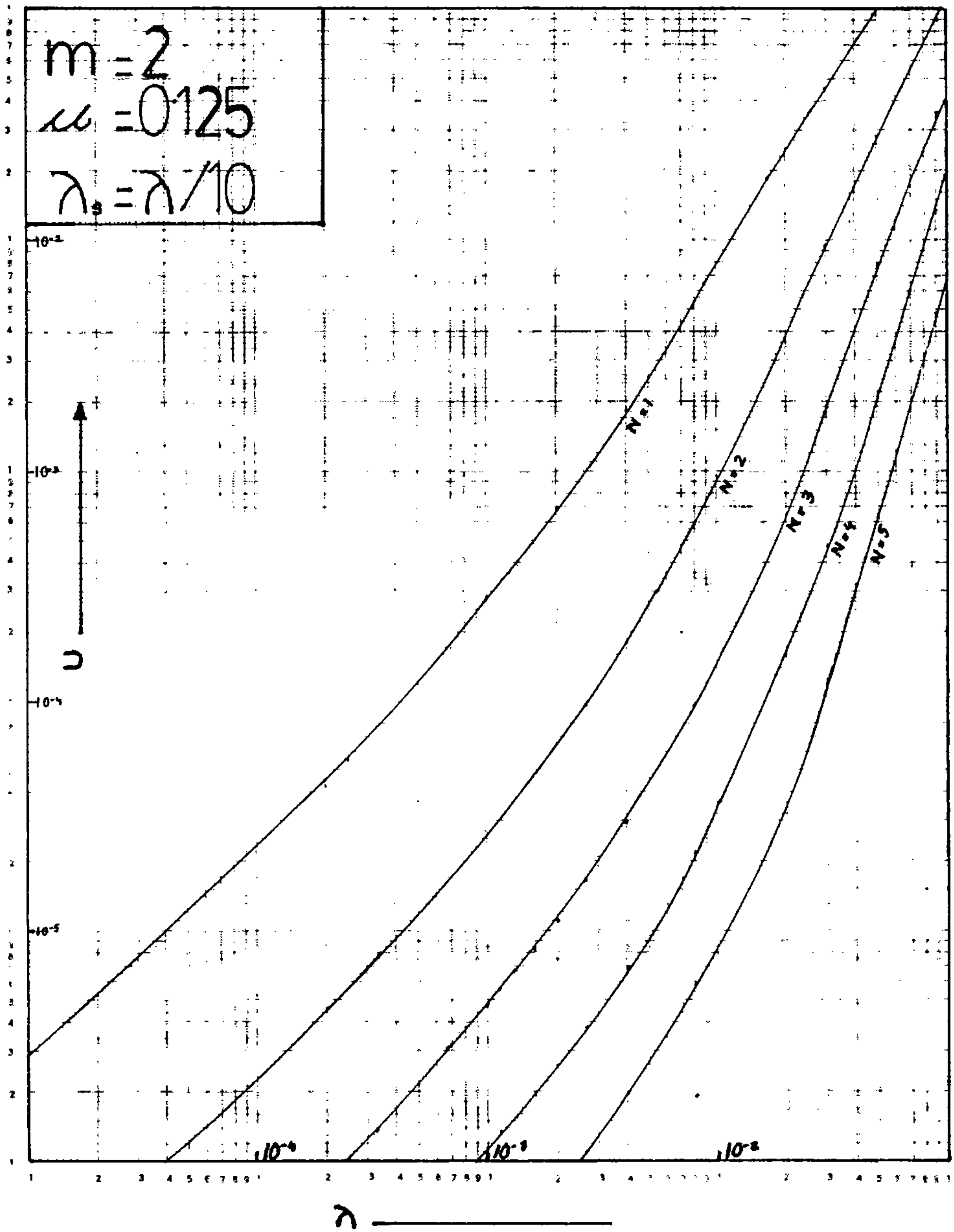


FIG 4.22

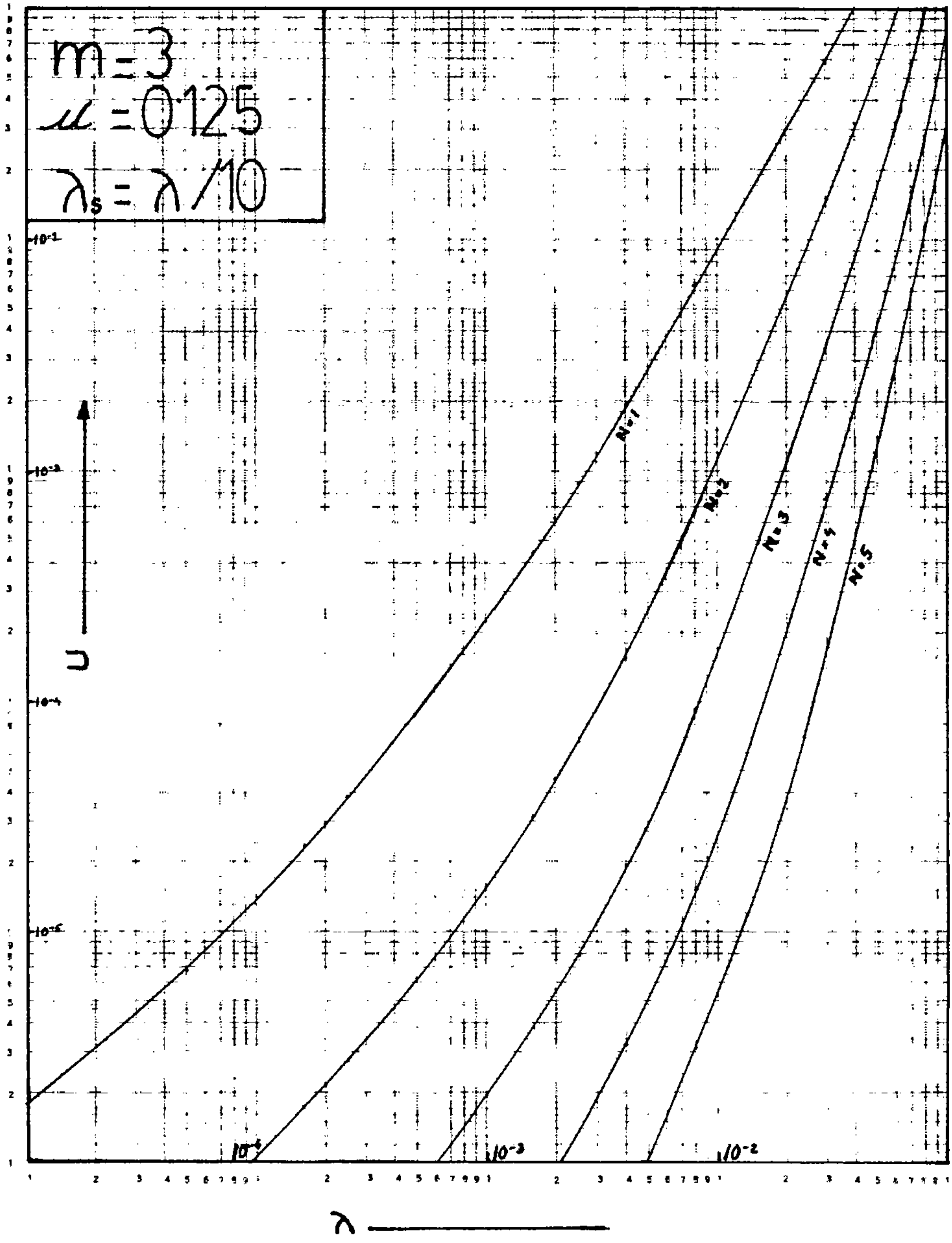


FIG 4.23

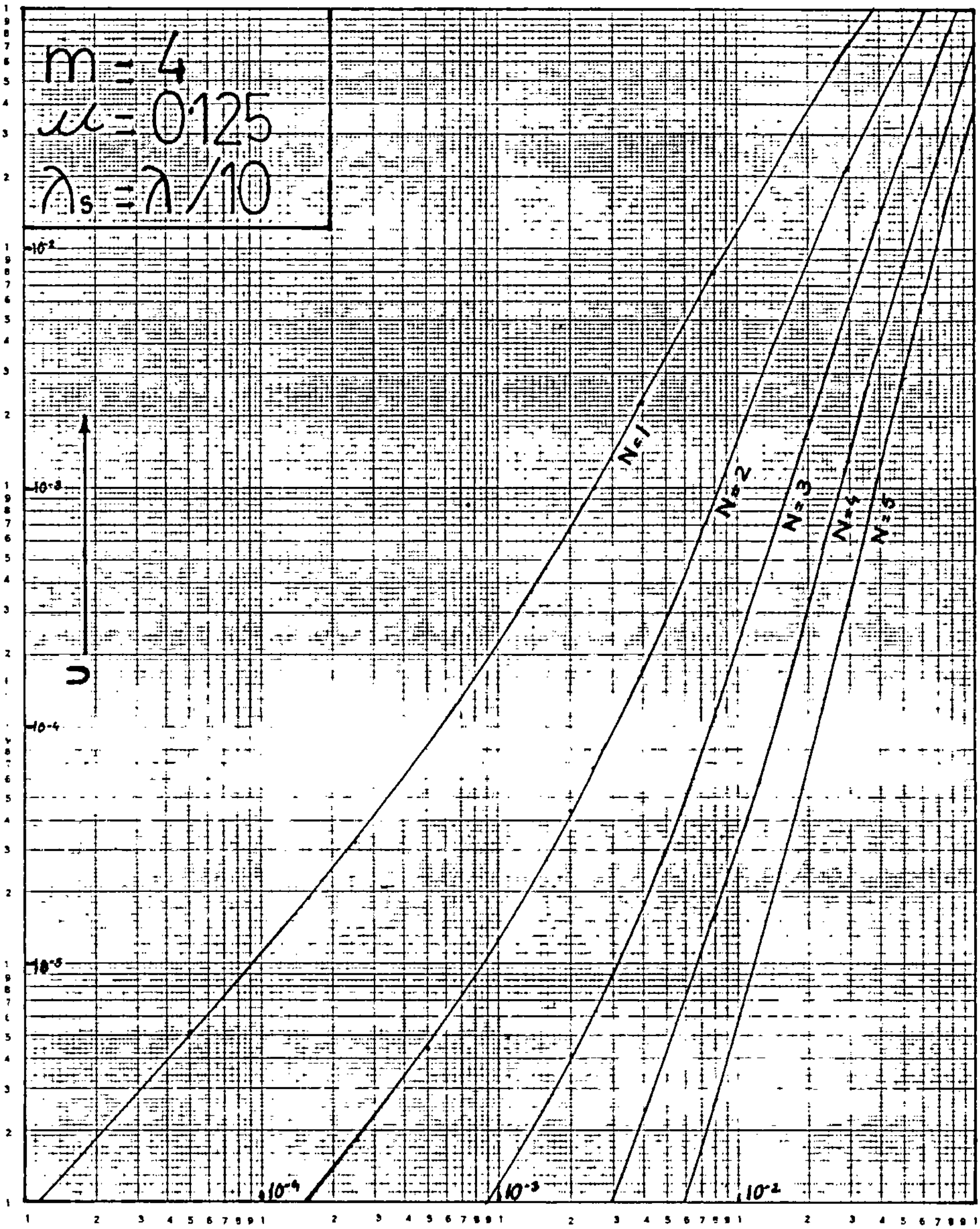


FIG 4.24

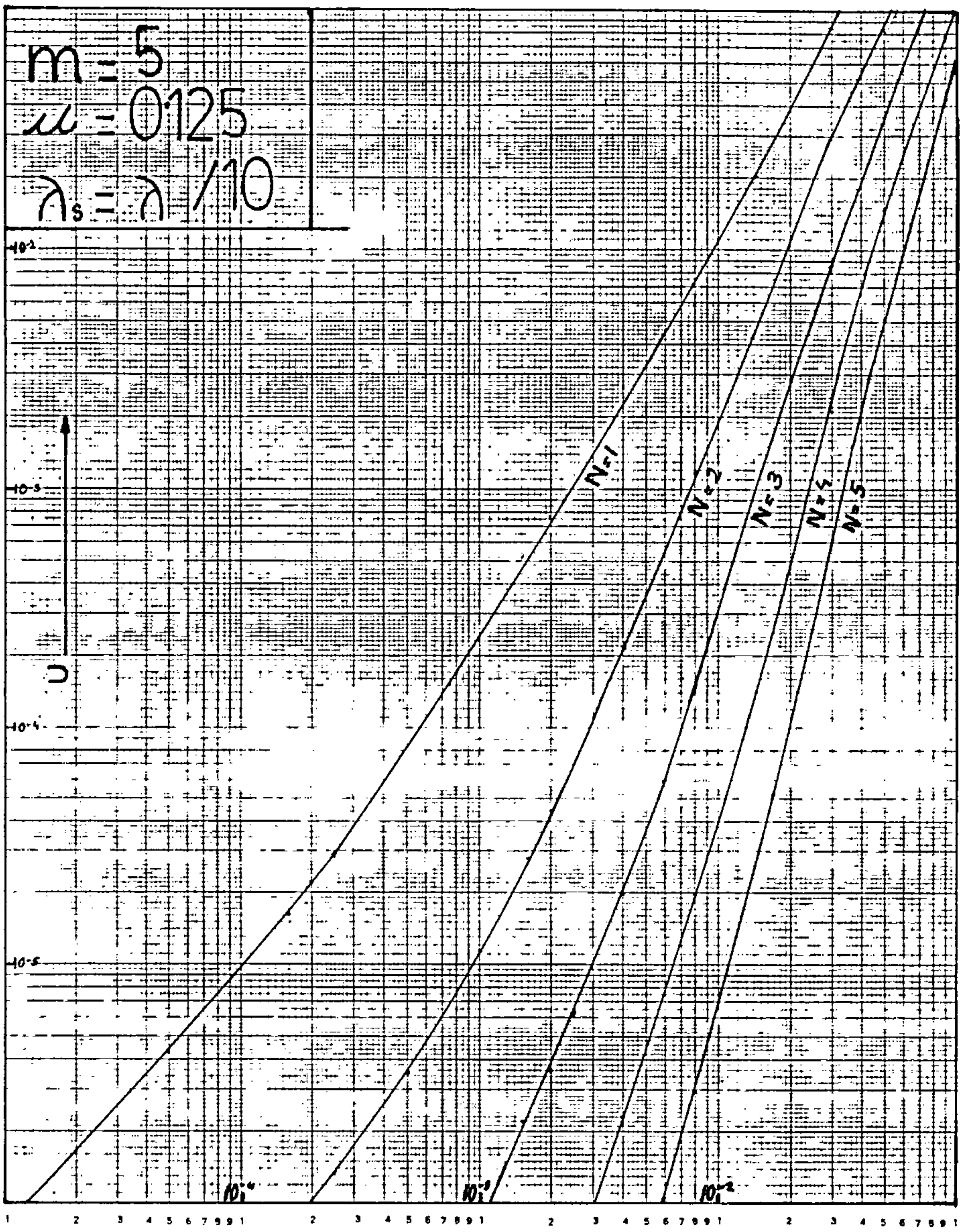


FIG 4.25

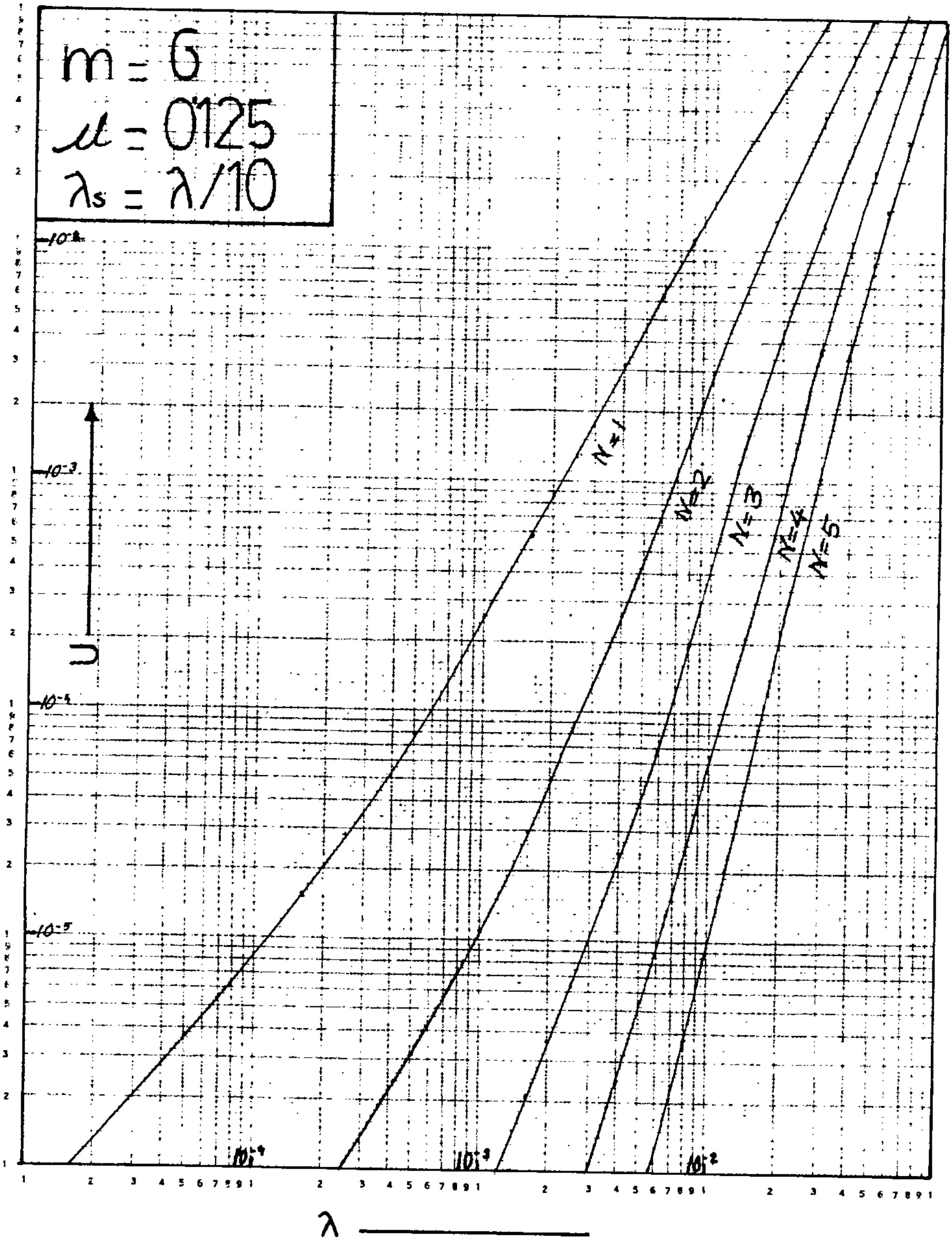


FIG 4.26

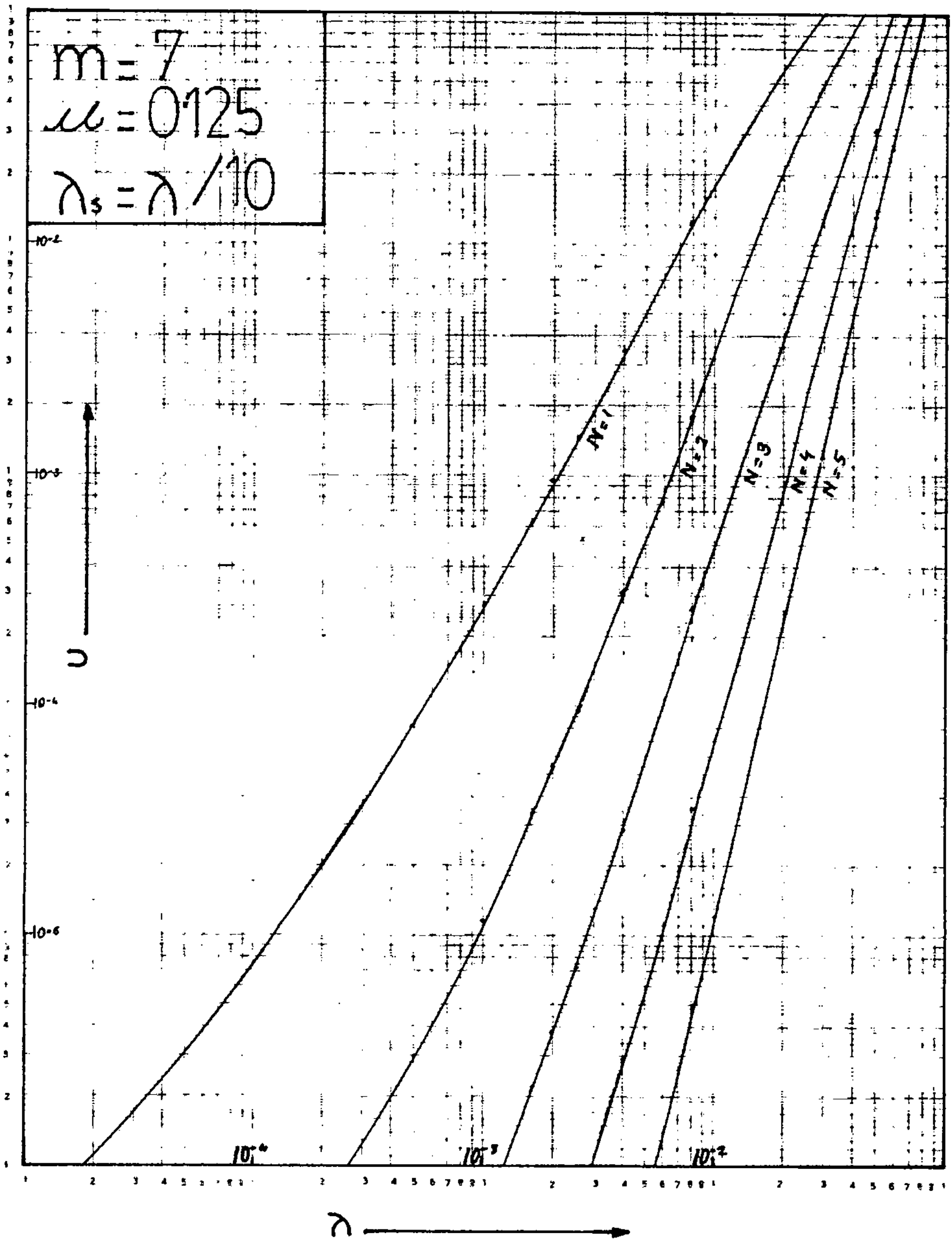

m = 7
μ = 0125
$\lambda_s = \lambda/10$
10^{-2}
10^{-3}
10^{-4}
10^{-6}
N=1
N=2
N=3
N=4
N=5
U
10^{-4}
10^{-3}
10^{-2}
λ

FIG 4.27

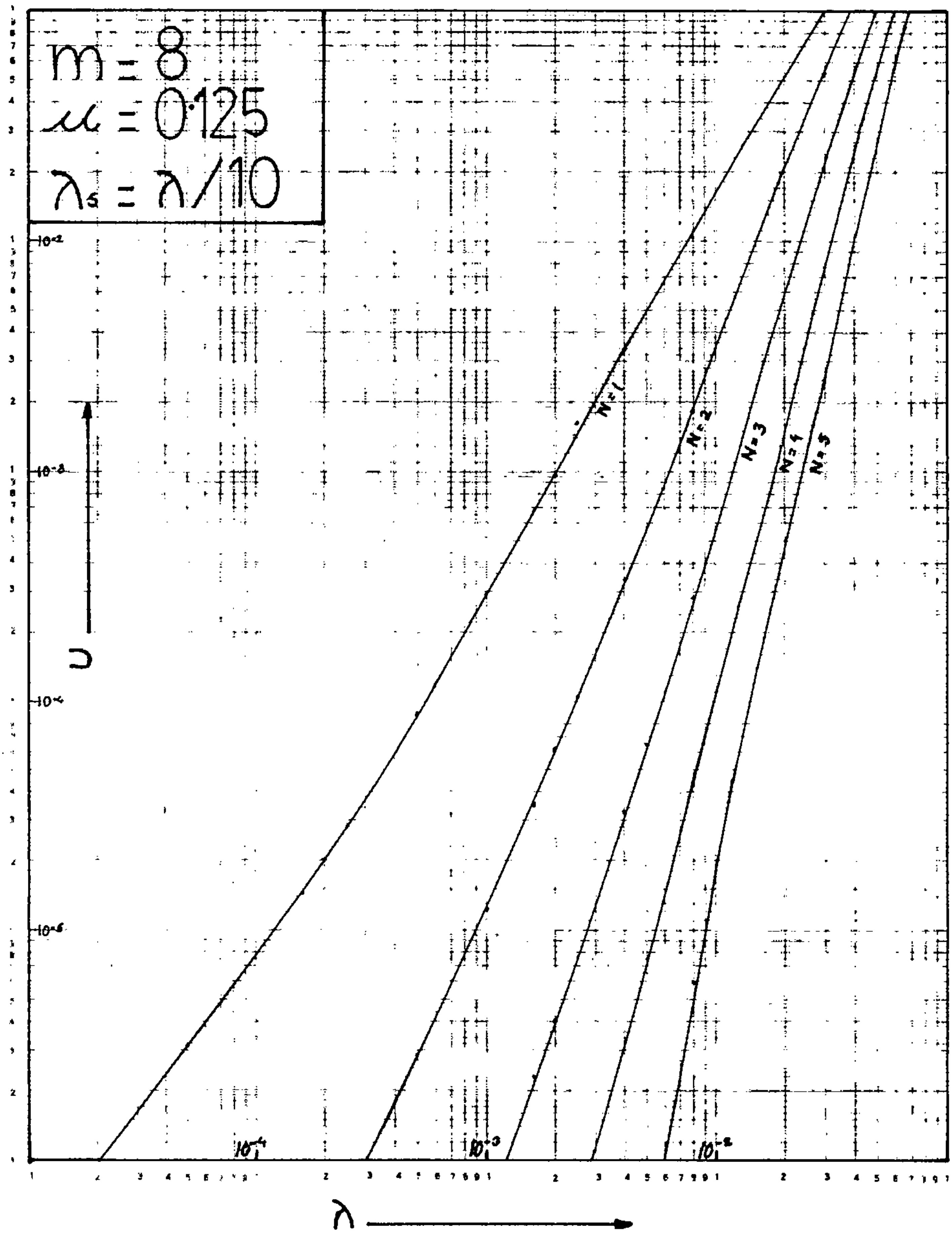


FIG 4.28

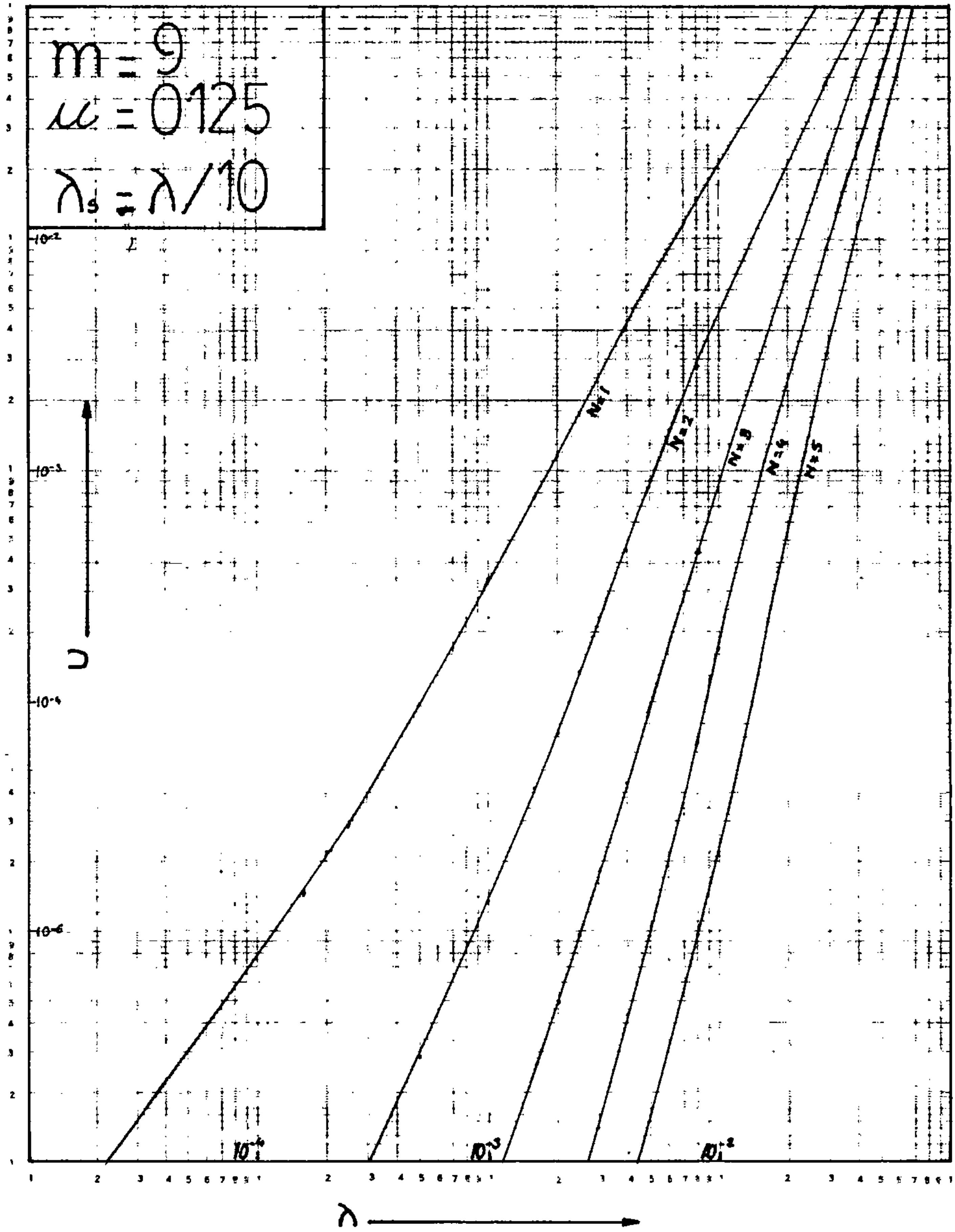


FIG 4.29

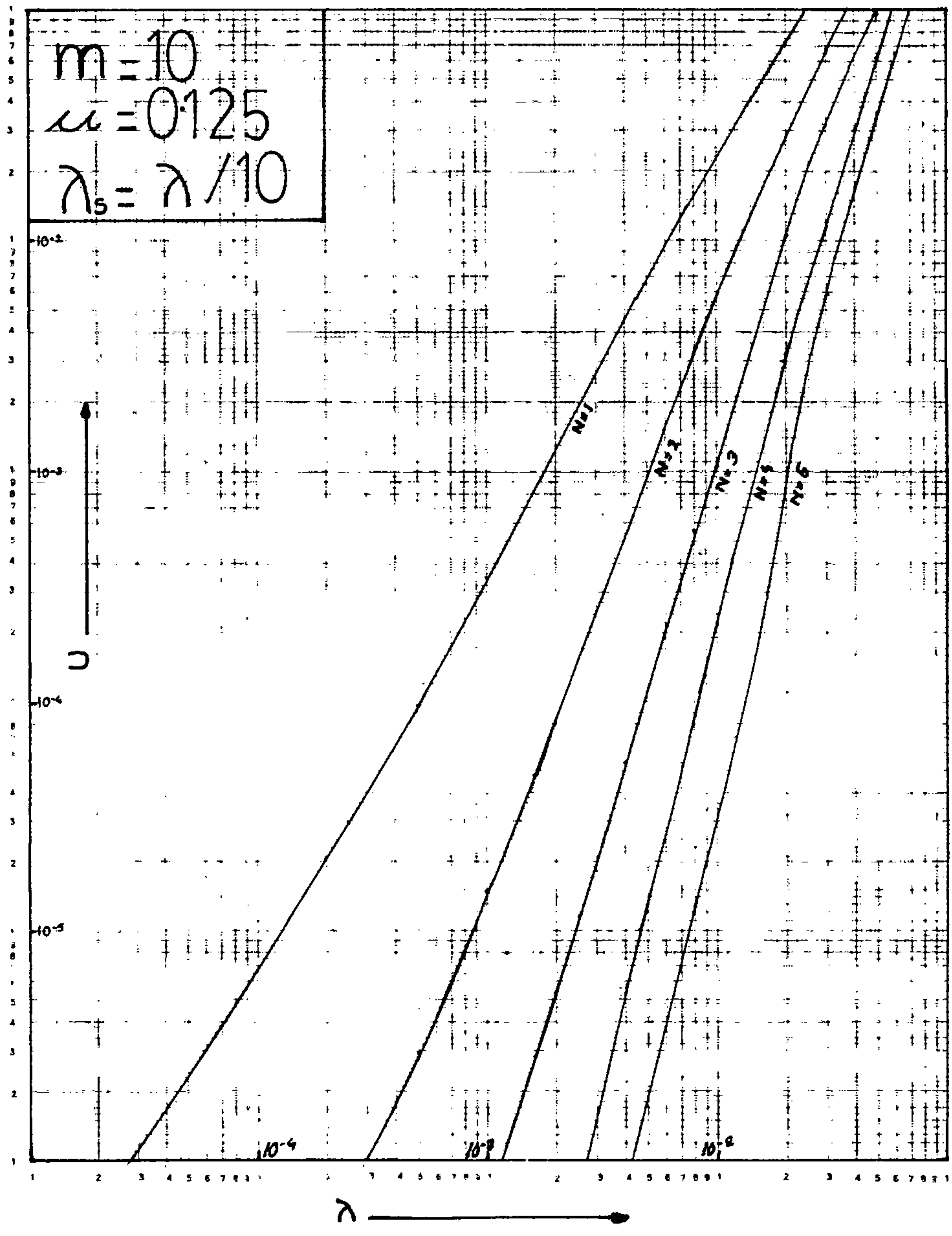


FIG 4.30

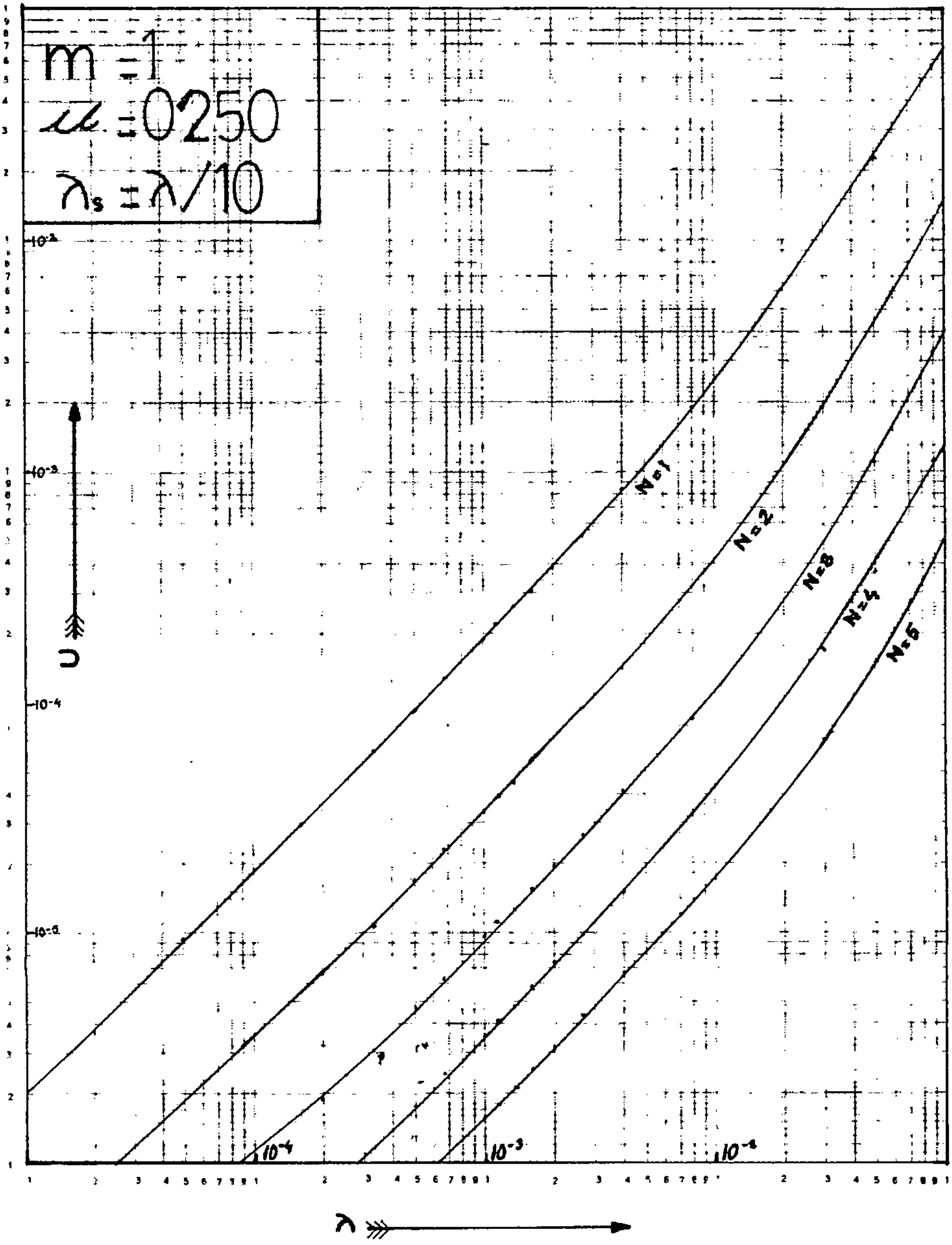

m = 1
u = 0250
$\lambda_s = \lambda/10$
U
λ
N=1
N=2
N=8
N=4
N=6
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-4}
10^{-3}
10^{-2}

FIG 4.31

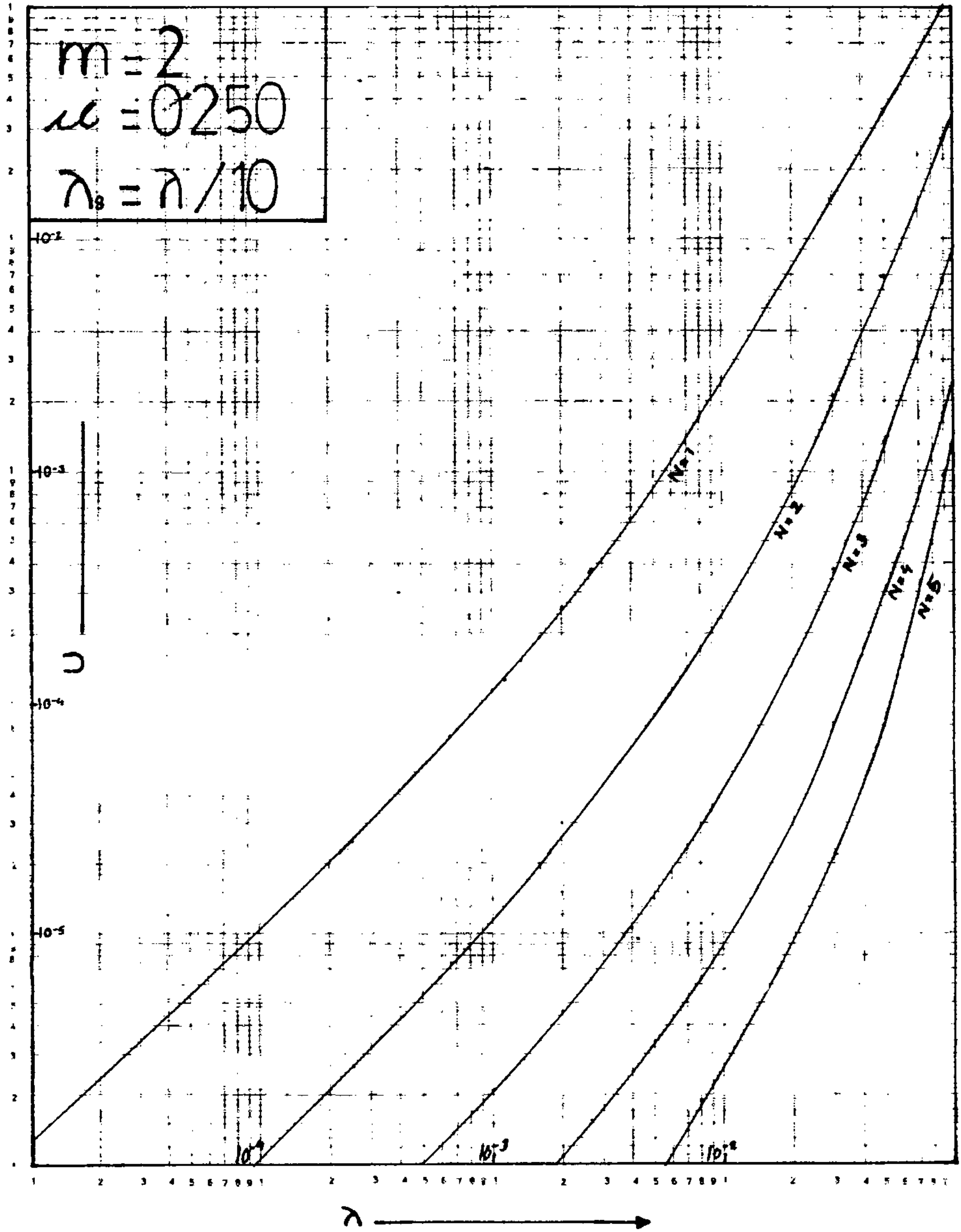


FIG 4.32

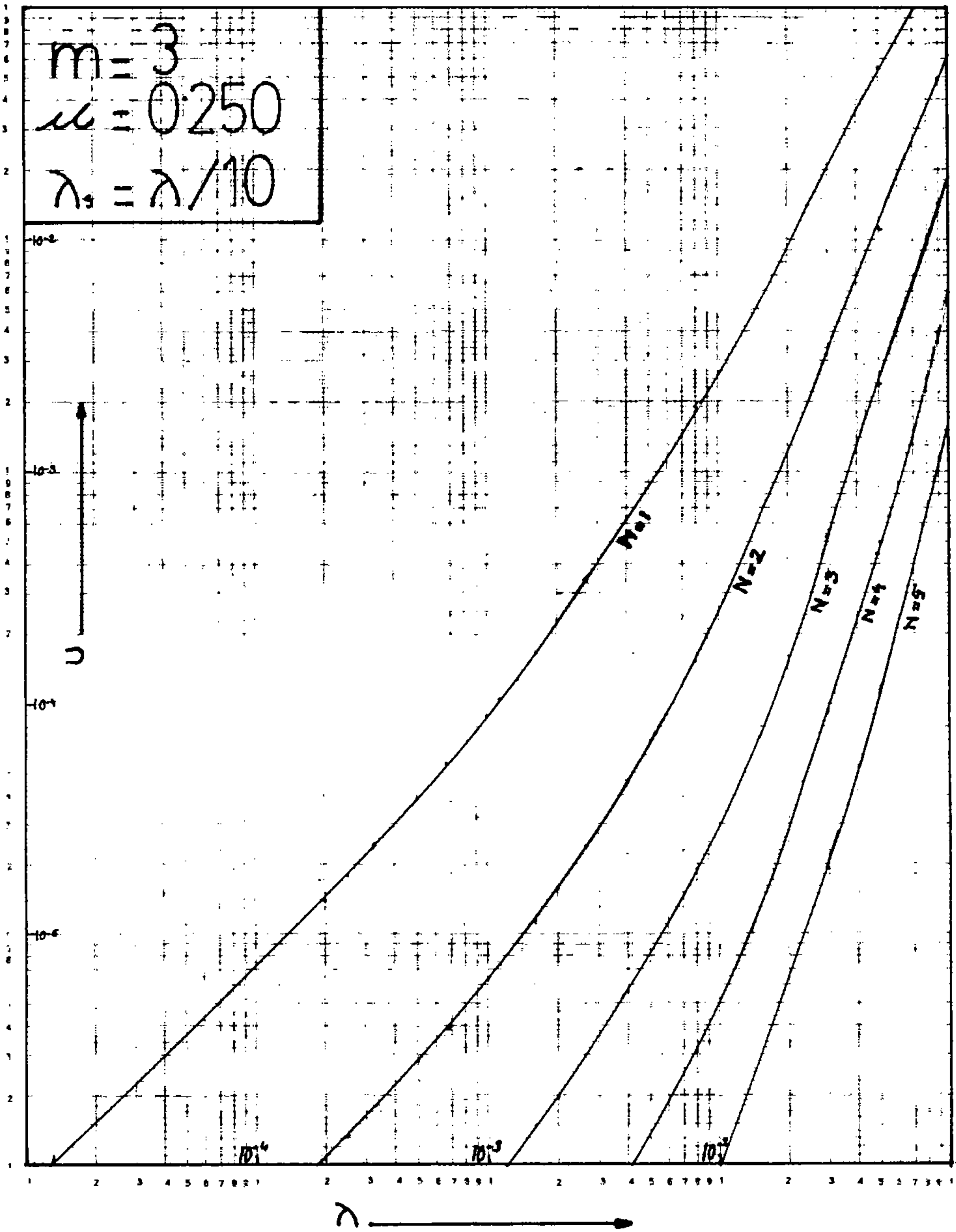

m = 3
μ = 0.250
$\lambda_s = \lambda/10$
U
λ
N=1
N=2
N=3
N=4
N=5
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-4}
10^{-3}
10^{-2}

FIG 4.33

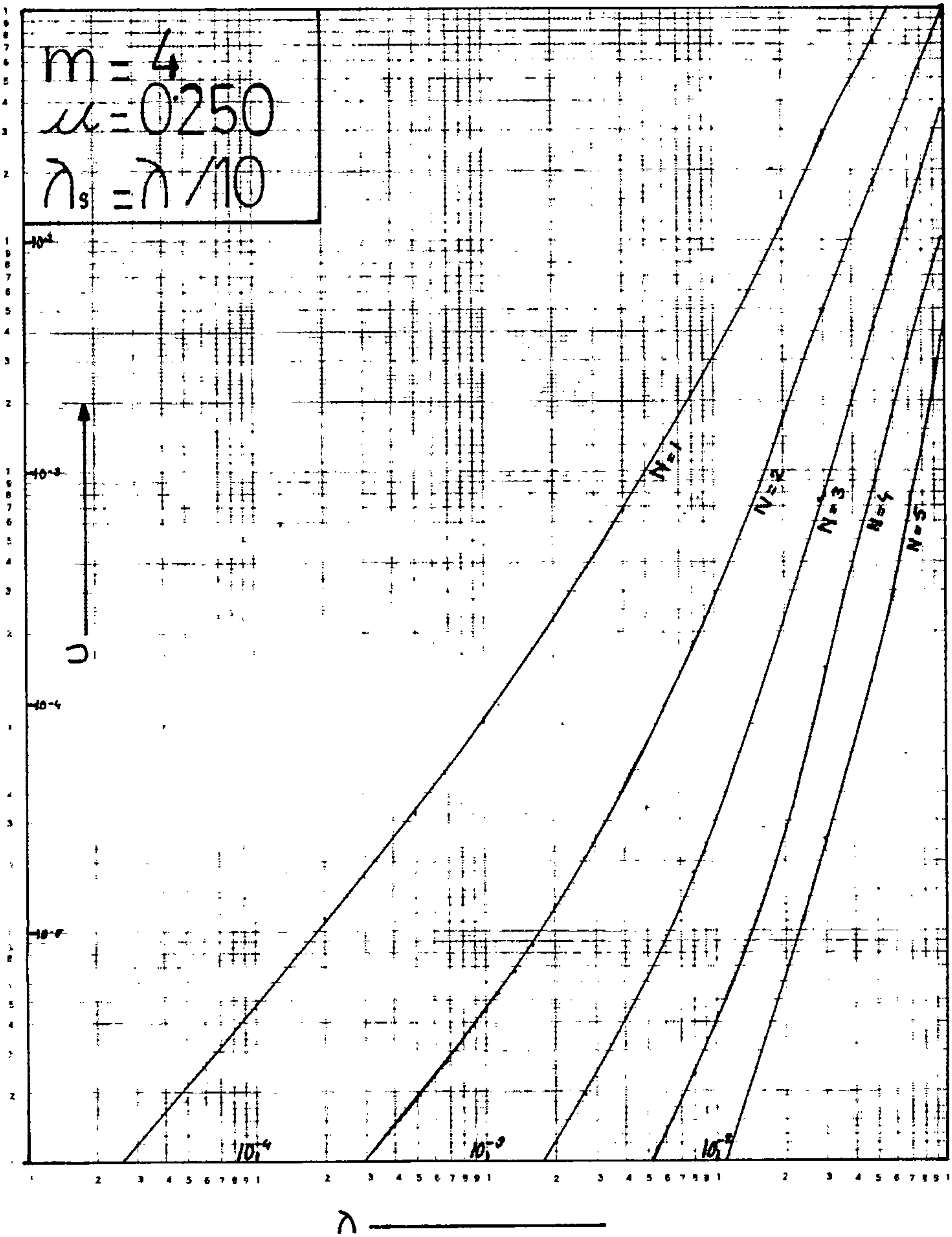


FIG 4.34

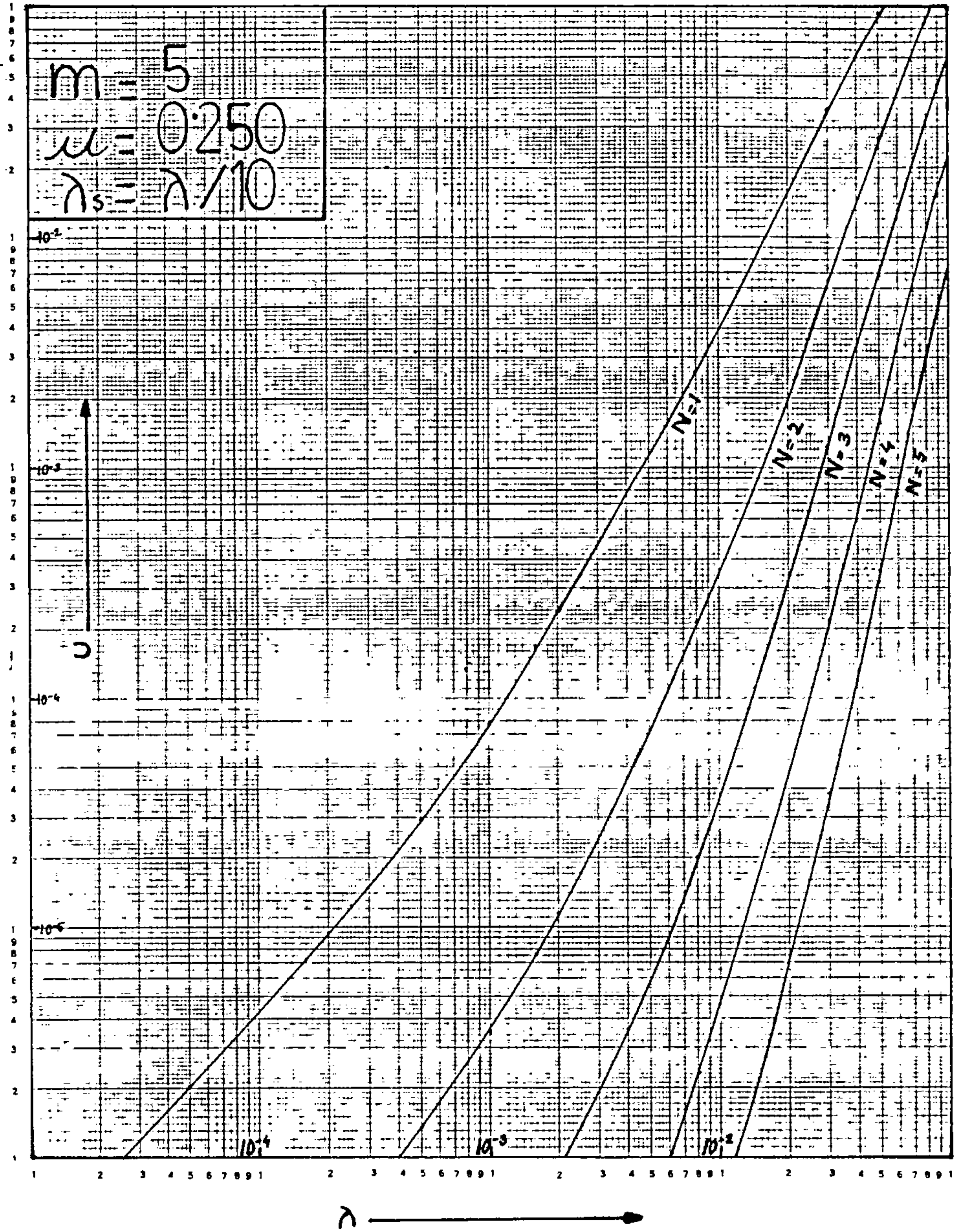

m = 5
μ = 0·250
$\lambda_s = \lambda/10$
N=1
N=2
N=3
N=4
N=5
C
λ
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-4}
10^{-3}
10^{-2}

FIG 4.35

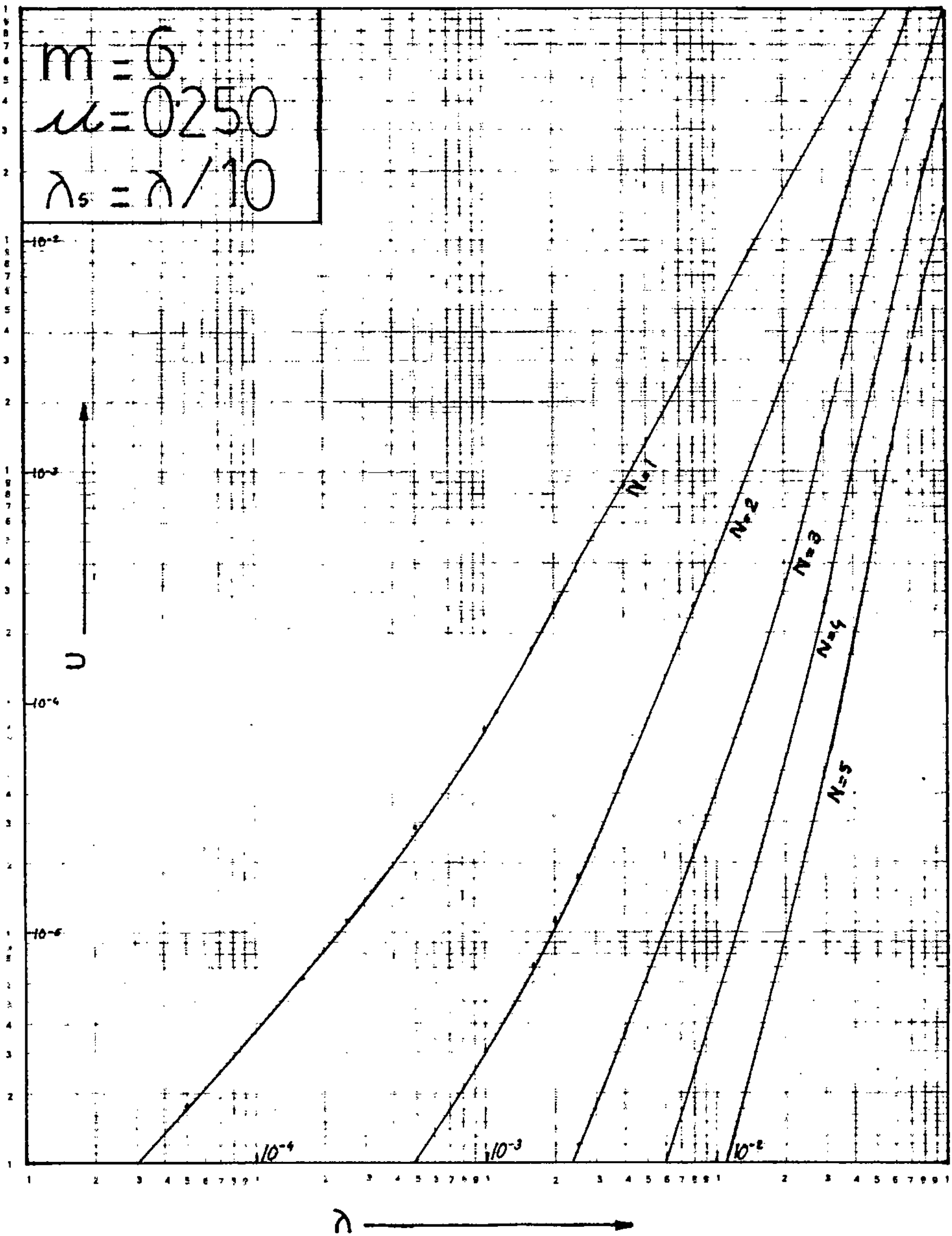


FIG 4.36

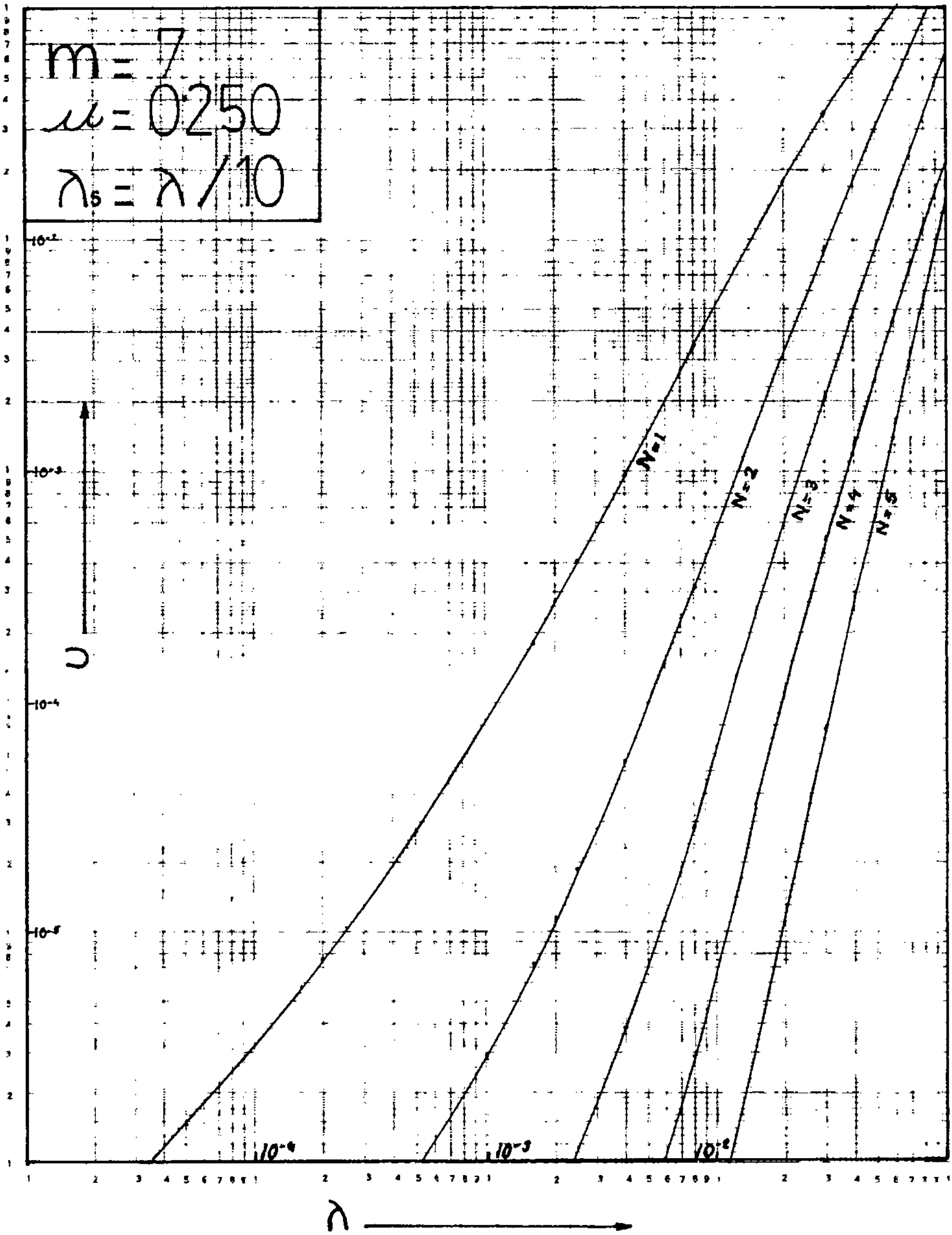


FIG 4.37

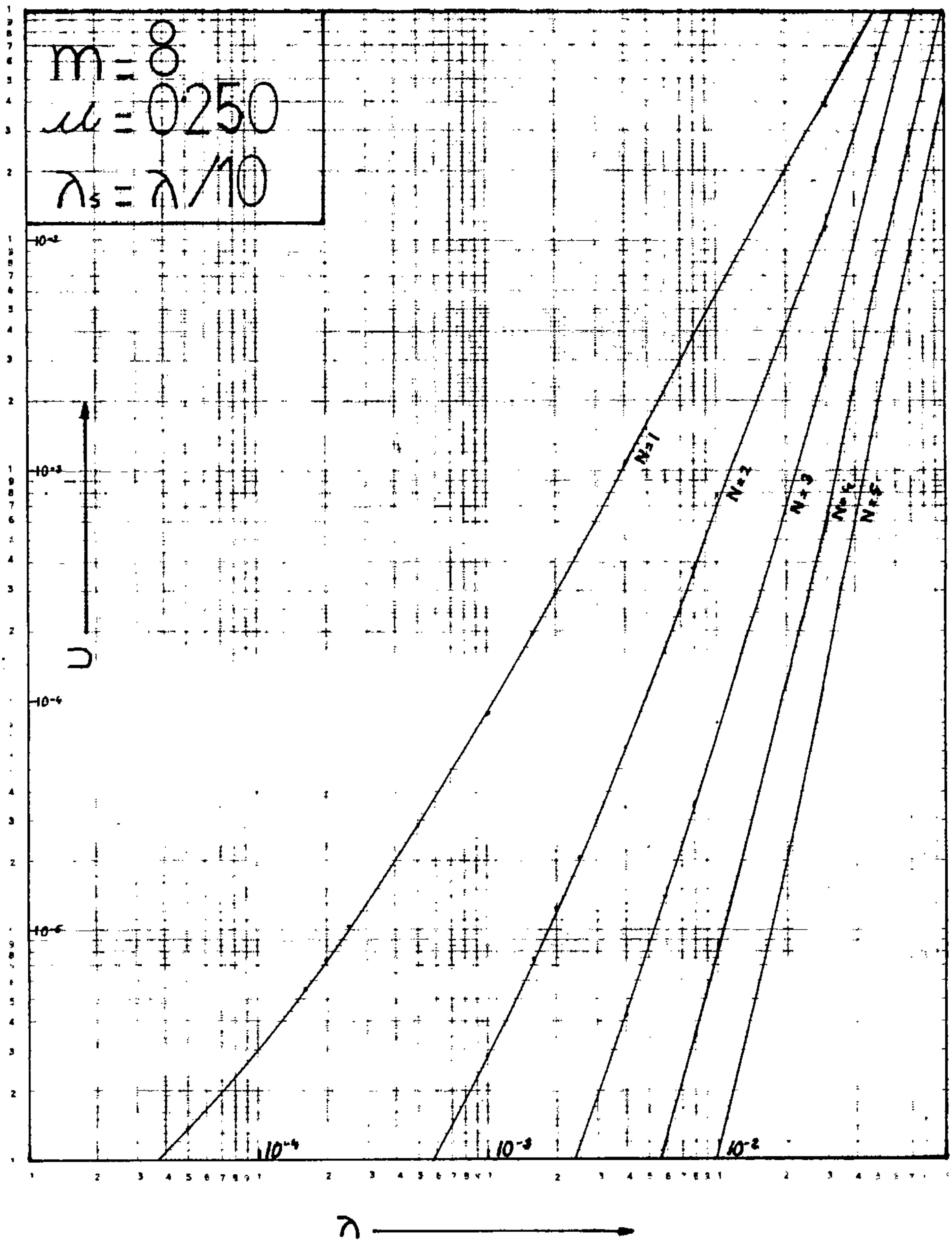


FIG 4.38

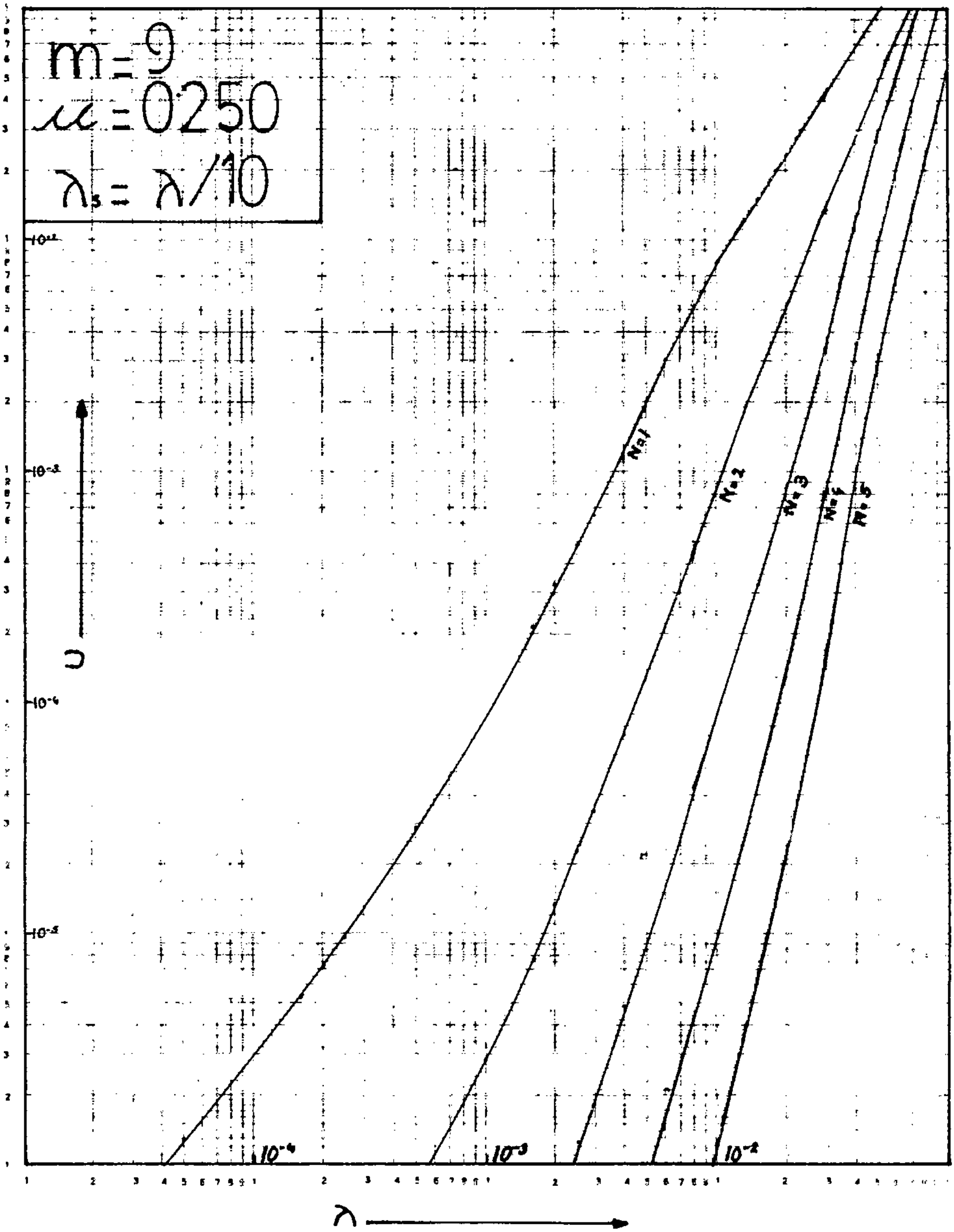


FIG 4.39

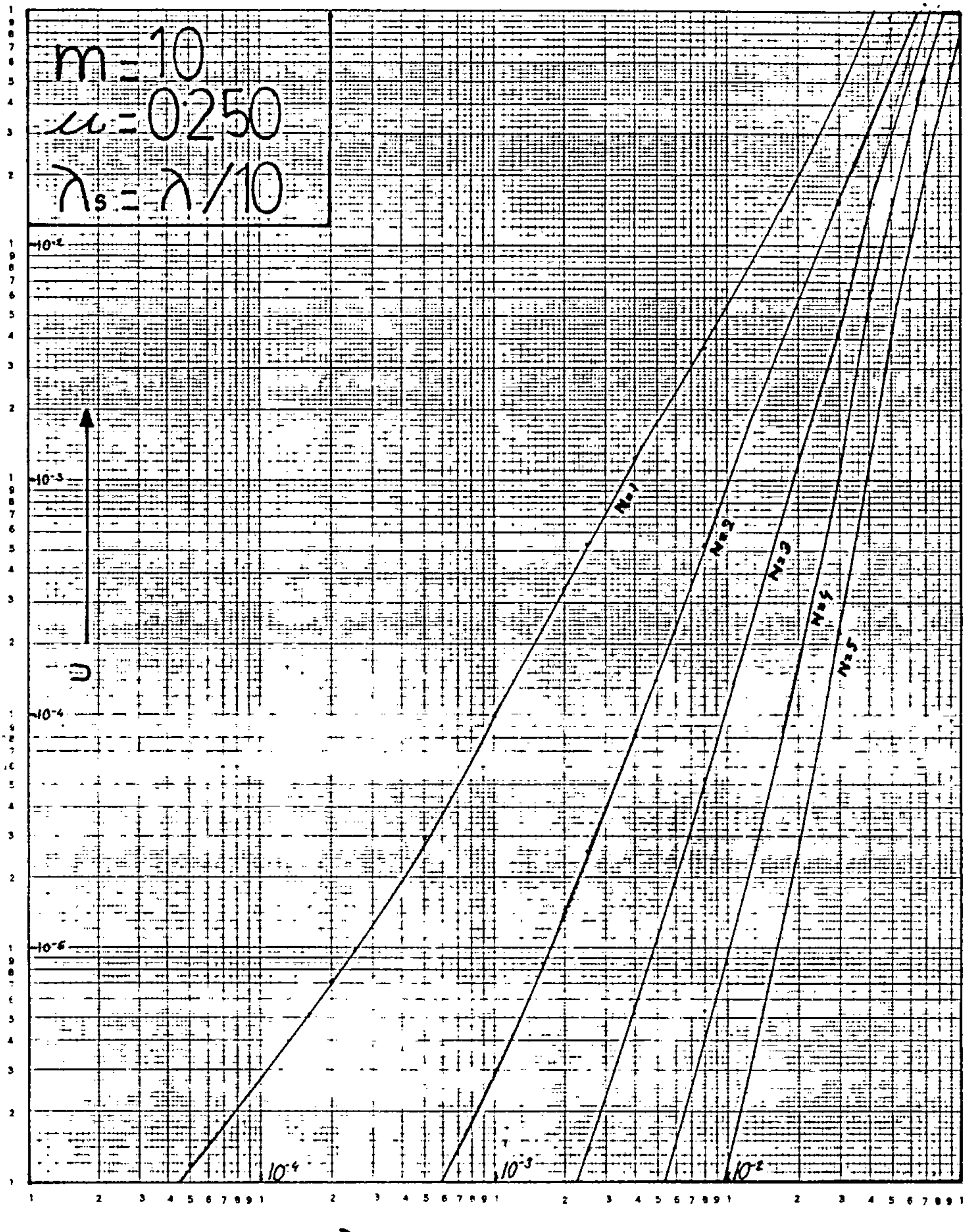

m = 10
u = 0250
$\lambda_s = \lambda/10$
U
λ
N=1
N=2
N=3
N=4
N=5
10^{-2}
10^{-3}
10^{-4}
10^{-5}

FIG 4.40

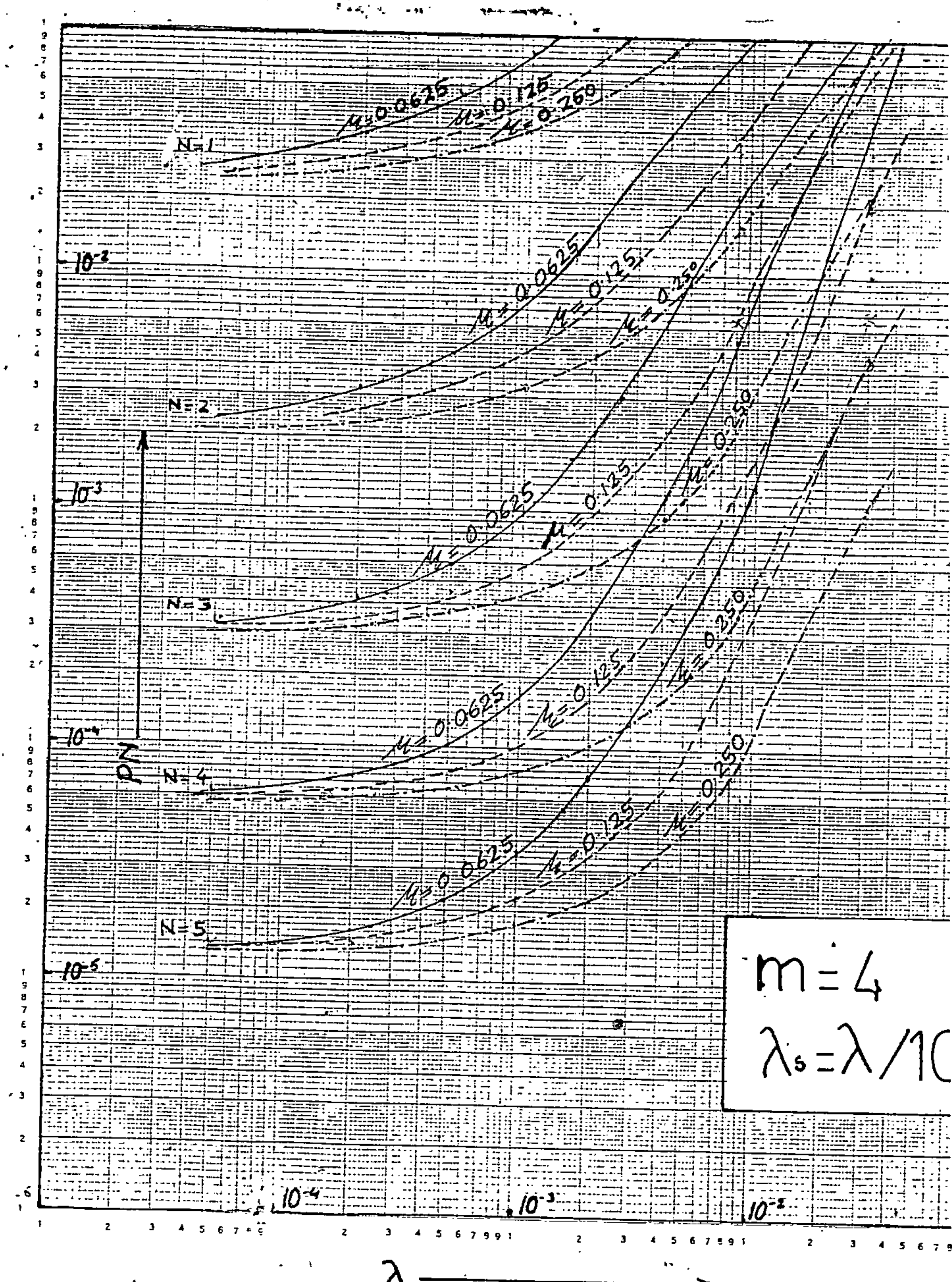
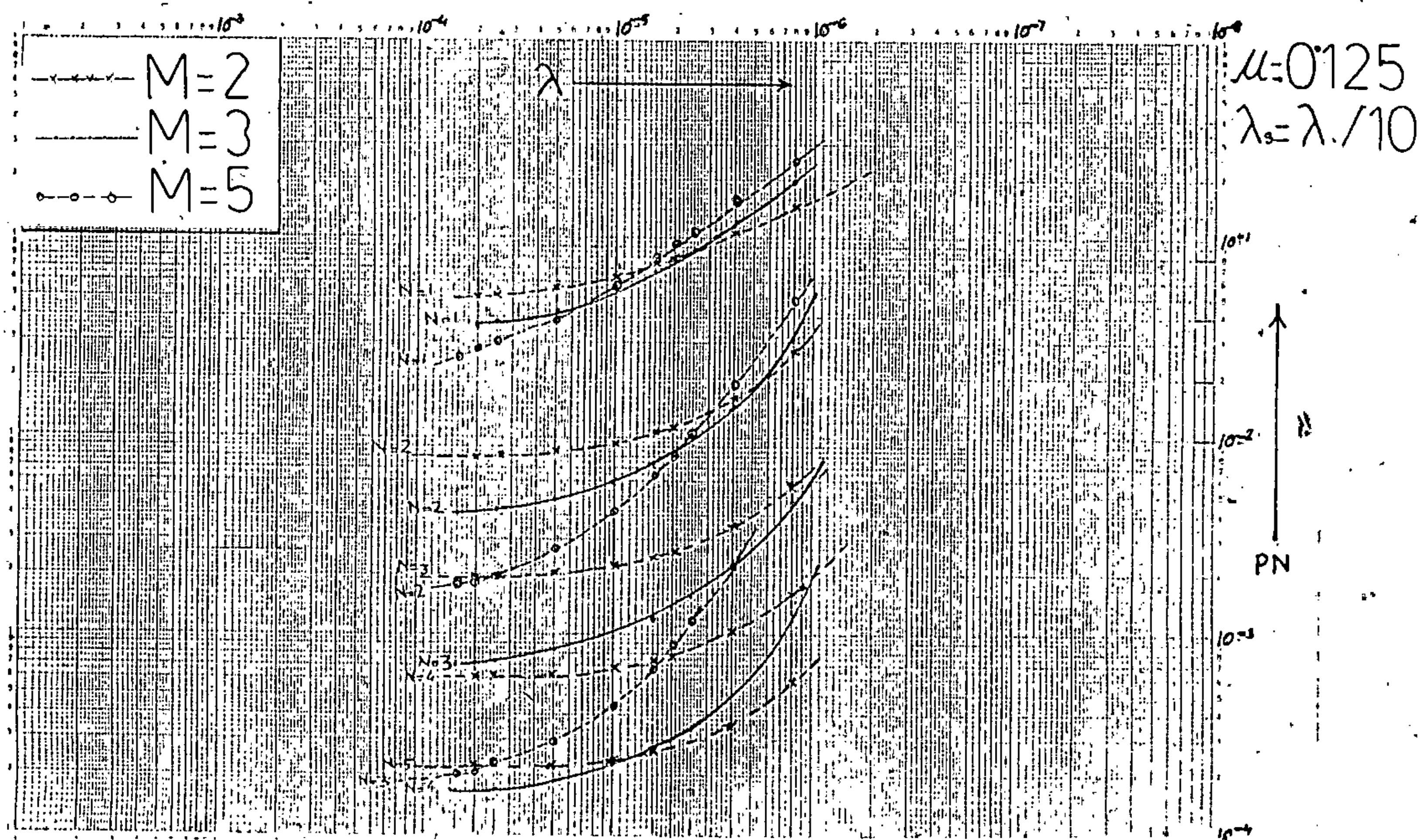

μ=0.0625
μ=0.125
μ=0.250
N=1
N=2
N=3
N=4
N=5
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-4}
10^{-3}
10^{-2}
P_N
λ
m=4
λs=λ/10
CHARTWELL GRAPH SHEET No 5534
LOG 5 CYCLES X 4 CYCLES

FIG 4.41


M=2
M=3
M=5
μ=0·125
λs=λ/10
λ
PN
N=1
N=2
N=3
N=4
N=5
10^-3
10^-4
10^-5
10^-6
10^-7
10^-8
10^-1
10^-2
10^-3
10^-4
Graph Data Ref. 5318
Log 4 Cycles × 6 Cycles

chapter 5
DISCUSSIONS

The behaviour of the reparable spares provisioning model has been observed at various constant failure rates with particular number of spares in storage. Different values of U,D,ϕ. etc have been obtained in both situations of storage failure and no-storage failure. It has been observed in general, that unavailability (U) decreases and cycle time (ϕ) increases with the increased number of spares for any specified number of operational units (m) and with specified repair rates(μ) For cost optimal policy optimum number of spares obtained is that number of spare which gives least T_{cs}, that is the scaled total variable cost. This cost includes production loss, item value and item holding costs. The following different aspects that have been studied may be discussed separately.

5.1 No Storage Failure Case

From the results of no storage failure case (Tables 4.1-4.10 and Fig 4.1 - 4.10) it can be observed that for any specified values of m and N, unavailability increases with the increase of failure rate of operational unit. In the log-log plotting, the unavailability curves are fairly straight. This is quite compatible with the expectation. But, interestingly, it has been observed that the downtime D is almost insensitive to changes of failure rates and number of operational units m. This is due to the approximate equation for downtime i.e. $D=1/(N+1)\mu$. It is further observed that downtime and unavailability decreases when repair rate μ increases for any particular value of N. It should also be mentioned that whenever unavailability is decreasing, probability of stock exhaustion is also decreasing.

5.2 Storage Failure Case

In line with general modeling, cases have been considered where there are storage failures. Many electrical and mechanical components do fail in store. It is also true that except for a few perishable items, storage failure rate will be much less than the operational failure rate. Results have been produced for cases where storage failure rate has been taken as one tenth of operational unit failure rate. (Tables 4.11 - 4.40 and Figures 4.11-4.40) Now, with regard to the variation of unavailability in relation to a λ keeping all other parameters (m,N,ϕ) constant, it is observed that unavailability increases with the increase in failure rate. But unlike no-storage failure case, the curves in log-log plotting are not linear. For lower value of m, the curves are fairly concave. The behaviors of downtime and probability of stock exhaustion are similar as in the case of no-storage failure from the curve showing the variation of P_N with (Fig 4.41) it is evident that probability of stock exhaustion, with definite number of spares in store, become independent of μ at lower values of λ. Again it become steeper for higher values of m,(e.g. for m=5, Fig 4.42) when plotted for a particular μ.

5.3 Cost Optimal Policy

Tables (4.41-4.50) give optimal quantity of spares N_{opt} and associated minimum cost which is scaled by a certain factor for a number of specified failure rates. Tabulated values shows that for any particular failure rate optimal number of spares required do not vary for a wide range of cost ratio(R). When the failure rate decreases, then for the same number of operating units(m), N_{opt} decreases. It is further observed that all other parameters μ, λ and λ_s remaining constant,if m increase then in general N_{opt} increases. Analyzing the effects of repair rates, it can also be inferred (from the tables) that when μ increases the value of N_{opt} becomes less with the corresponding fall of scaled total variable cost.

chapter 6

CONCLUSIONS

From the study of inventory systems and spares provisioning models, following conclusions can be made.

(1) From Fig 1.2 it is apparent that a wide variety of inventory situations can be contemplated and faced in real situations. On the other hand, inventory management is only a part of the overall logistic problems, dealing only with materials and machineries.

(2) A wide variety of models exists under the name 'purchase models' and 'production models' for dealing with both - deterministic and probabilistic situations, but very few models exist for determining optimal spares requirement.

(3) The determination of optimal quantity of spares to be kept in stock is very much related to the life pattern of the spares and the number of production units to be served. This leads to the consideration of parameters like m, λ, λ_s, U, D and ϕ.

(4) Spares provisioning models vary from the situation when the failure of operational units are constant to that when it is not constant.

(5) The results show that unavailability and downtime decreases while meantime between stock-out situation increases with

more number of spares in store and when the operational unit and its failure rate are specified.

(6) The results also show that probability of stock exhaustion, keeping all operational units working, increases rapidly at higher operational unit failure rates.

(7) A particular number of spares can serve the situation optimally for a wide range of cost ratio(R).

chapter 7

SCOPE FOR FURTHER WORK

Following are some of the recommendations suggested for further work, the need of which has become apparent during the course of this study.

1. Presentation of results in a more concise form. Development of Nomograph, in this regard may be suggested.
2. The parameters for non-constant failure rate spares provisioning system may be fitted with some general type failure distribution and the results may presented in a convenient form, either graphical or tabular.
3. Waiting line queues may be considered while discussing the repair rates of failed components. This situation may be faced in case of capacity limitations in workshops.
4. Batch repair situations can also be incorporated.
5. Effect of various storage failure rates may be studied to see the changes in requirements of spare.

References

1. Blanchard,B.S and Fabrycky,.W.J, 'Engineering and Analysis' Prentice Hall Inc., New Jersey, U.S.A. 1981

2. Starr M.K. and Miller,D.W., 'Inventory Control, theory and practice' , Prentice Hall Inc., N.J., U.S.A. 1962

3. Turner, W.C., Mize, J.H. and Case, K.E.,'Introduction to Industrial and Systems Engineering" Prentice Hall Inc., New Jersey, U.S.A.,1978

4. Naddor,E.,'Inventory Systems',John Wiley and Sons.Inc., New York, U.S.A., 1966

5. Geisler,M.A. 'A study of Inventory Theory', journal of Management Science, April 1963, Vol.9.

6. Plossl,G.W. and Wight,O.W., ' Production and Inventory Control, principles and techniques ', Prentice Hall Inc. New Jersey, USA, 1967.

7. Tersine, R.J., 'Production/ Operation Management', Elsevier North Holland Inc., New York, USA, 1980.

8. Wild R., 'Production and Operation Management, principles and techniques', Halt, Rinchart and Wenston Ltd., east Essex, England, 1979.

9. Buffa, E.S., 'Production-Inventory Systems, planning and control, Richard D. Ireing. Inc. Homewood, Illionis, USA, 1968.

10. Gupta,P.K. and Hira,D.S., 'Operation Research', S.Chand and Company Ltd., New Delhi, 1983.

11. Buffa,E.S., 'Readings in Productiuon and Operation Management', John Wiley and Sons. Inc., New York, USA, 1966.

12. Eilon, ' A book on Elements of Production Planning and Control '

13. Paik C.M., 'Quantitve methods for Managerial Decisions', McGraw-Hill Book Company, New York, USA, 1973.

14. Bellman, R., 'Dynamic programming', Princeton University Press, Princeton NJ, USA,1957.

15. Wagner, H.M., "principles of Operation Research with Application to managerial decisions', printice-Hall, Inc., Englewood Cliffs, New Jersey USA, 1969.

16. Churchman,C.W.,Russel,R.A.and Arnoff,E.L.,'Introduction to Operation Research', John Wiley & Sons, Inc., New York, USA, 1957.

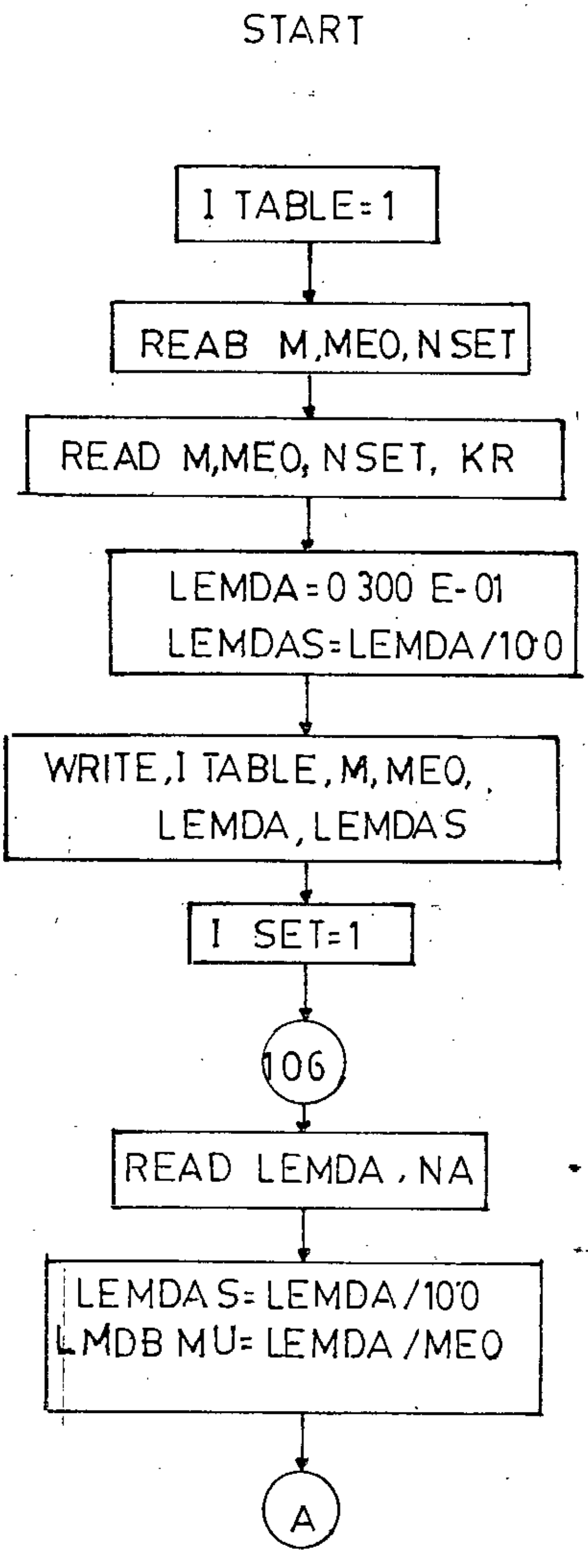
17. Jamaluddin,M., 'Development of A Model for Repairable Spare Parts provisioning', Unpublished M.Sc. Engg. thesis, BUET, September 1983.

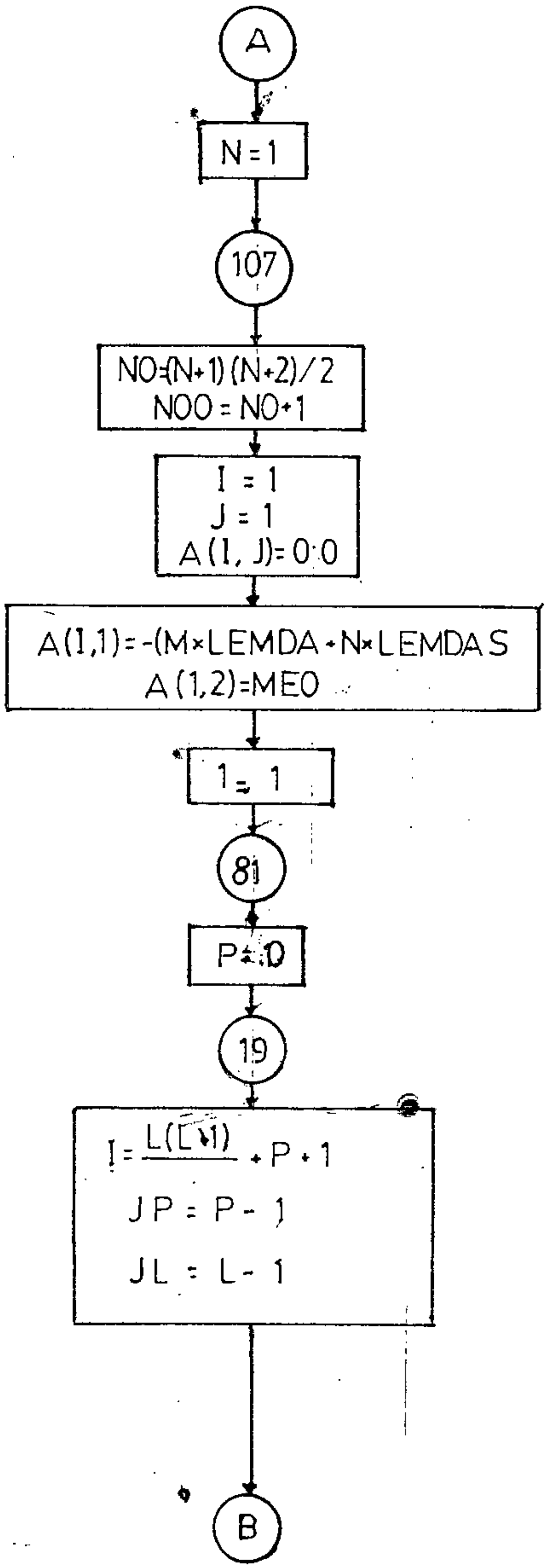
18. Mc Call,J.J., 'Maintenance policies for Stochastically failing equipments; A survey', Management Science, March 1965, No.5, Vol.11, printed in USA.

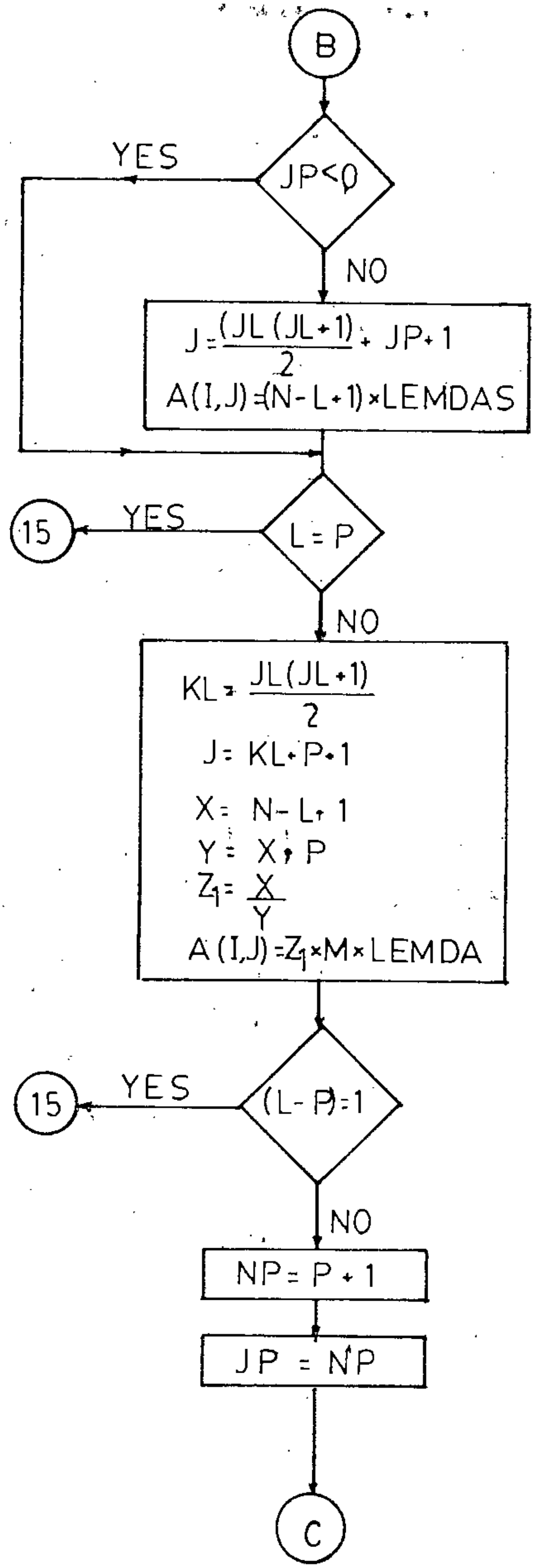
19. Flehinger,B.J., 'A General Model for the Reliability of Systems under various preventive maintenance policies', The Annals of Statistics, March 1982, No.1,Vol 33.

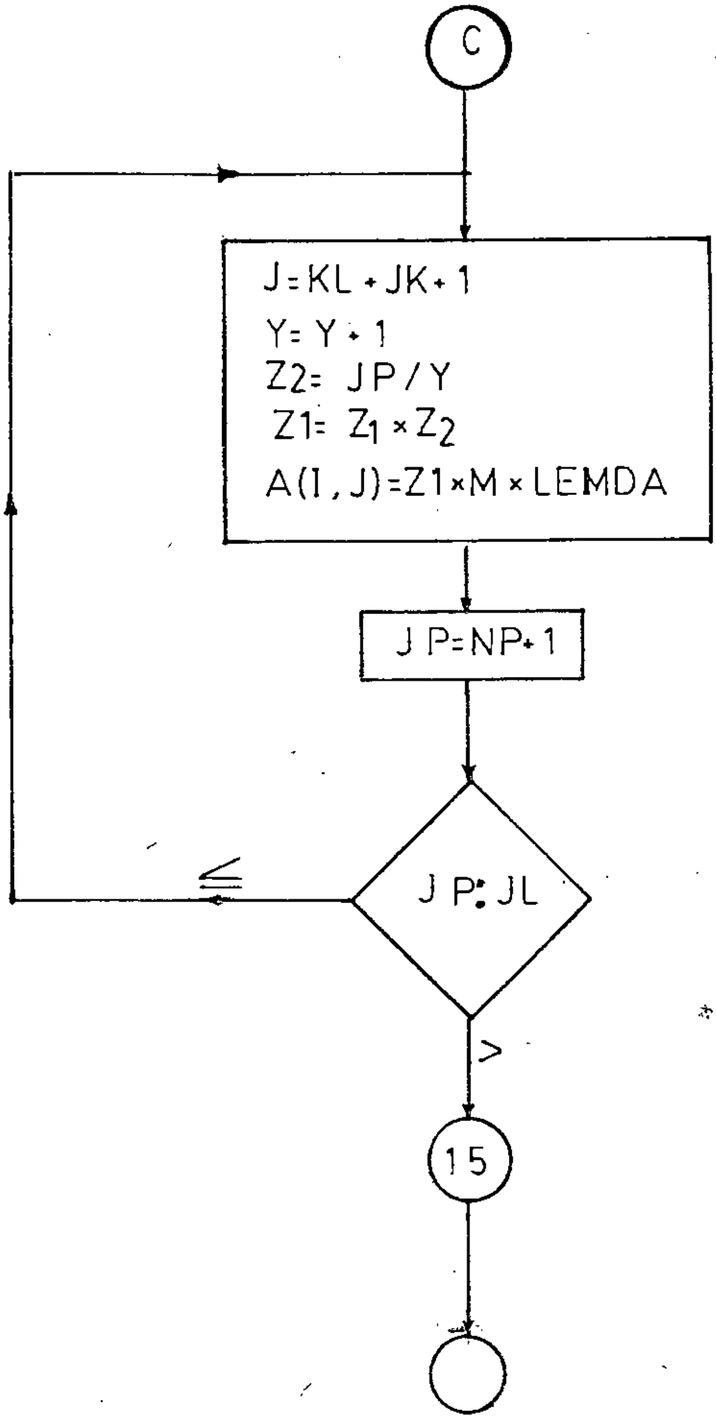
APPENDIX A

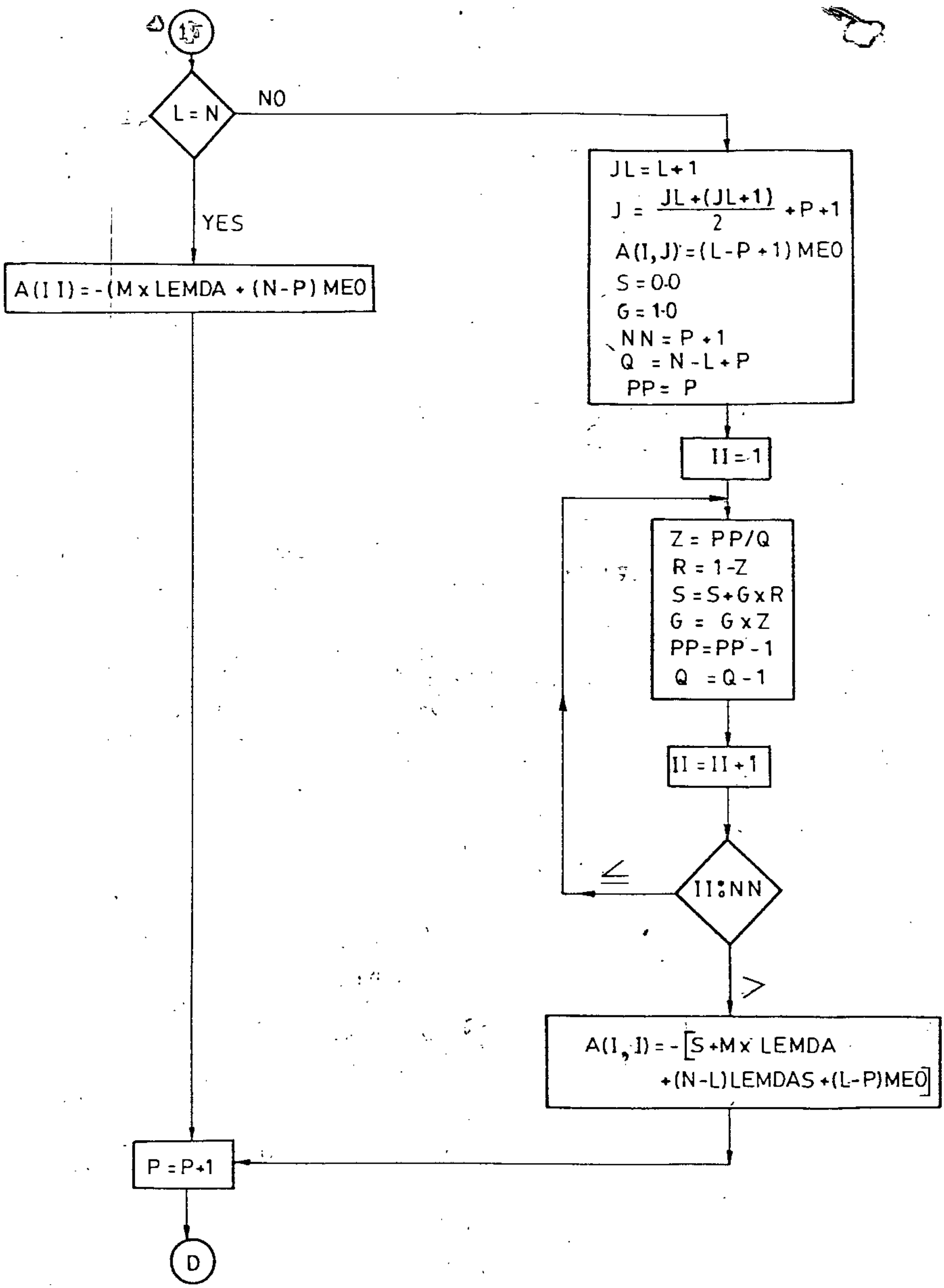
FLOW CHART FOR THE PROGRAMME

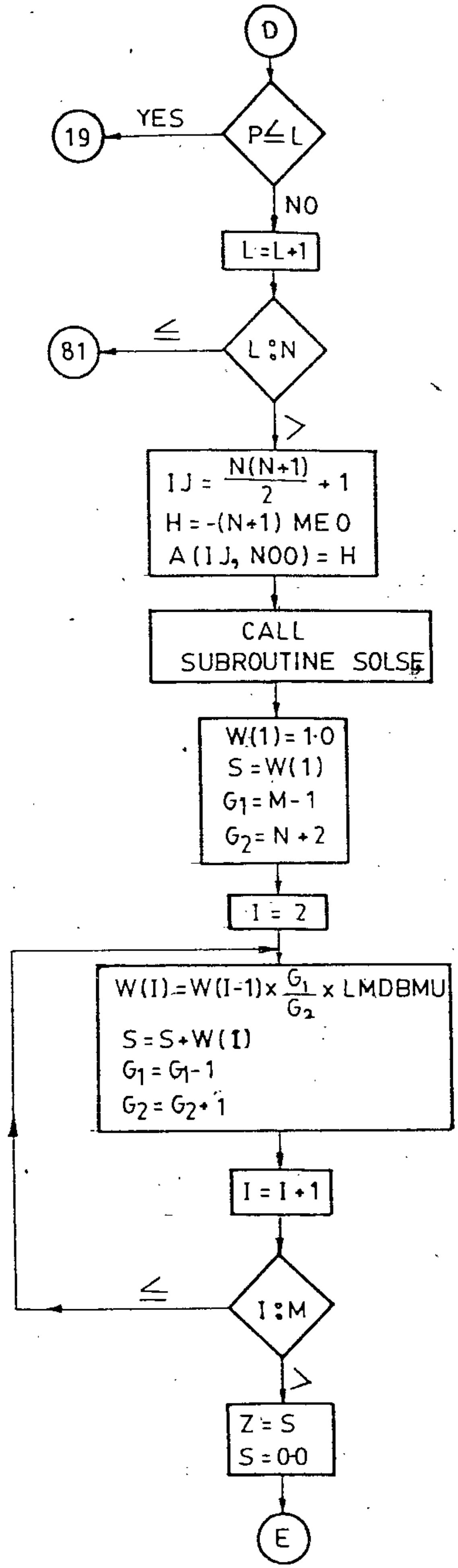


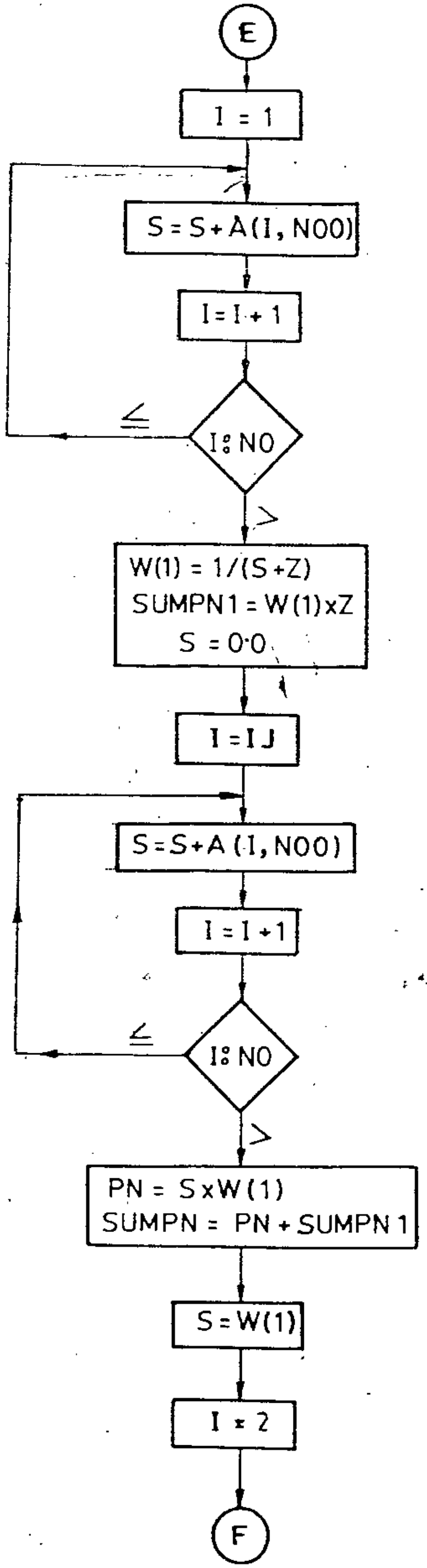

A
N = 1
107
NO=(N+1) (N+2)/2
NOO = NO+1
I = 1
J = 1
A (I, J)= 0·0
A(I,1)=-(M×LEMDA+N×LEMDAS
A (1,2)=MEO
1 = 1
81
P = 0
19
I = L(L+1) + P + 1
JP = P - 1
JL = L - 1
B

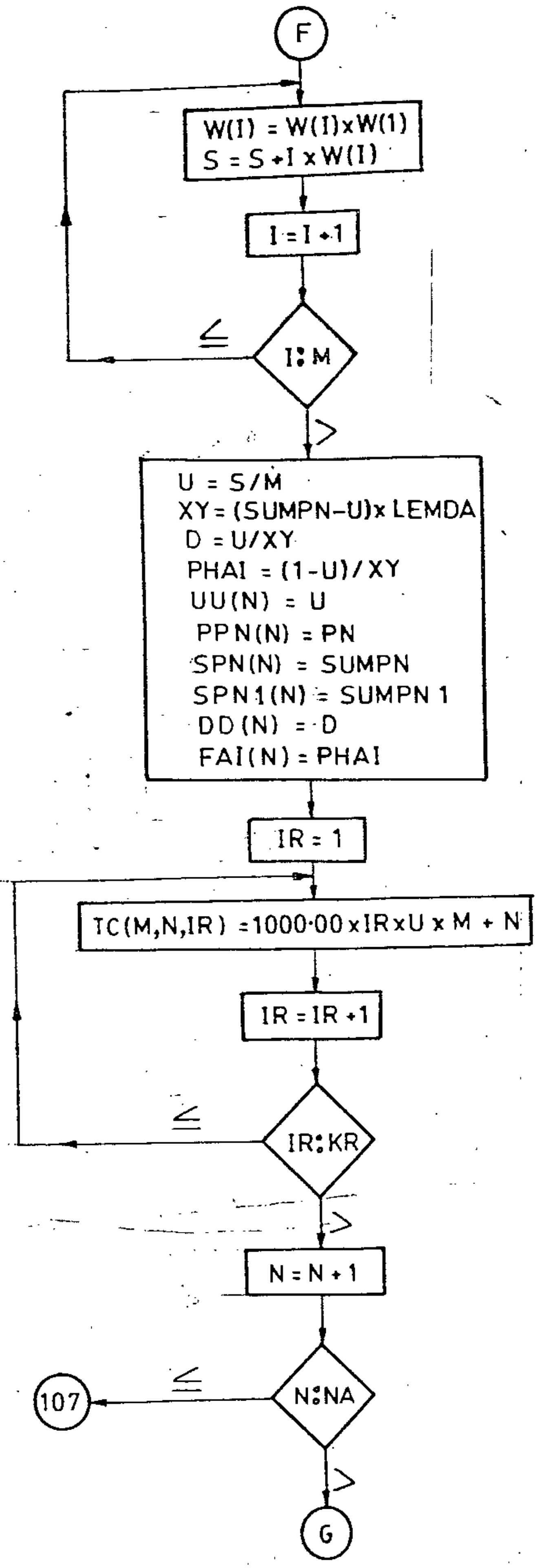

B
JP<0
YES
NO
J = (JL (JL+1))/2 + JP+1
A(I,J) = (N-L+1) × LEMDAS
L = P
YES
15
NO
KL = JL(JL+1)/2
J = KL+P+1
X = N-L+1
Y = X+P
Z1 = X/Y
A(I,J) = Z1×M×LEMDA
(L-P)=1
YES
15
NO
NP = P + 1
JP = NP
C

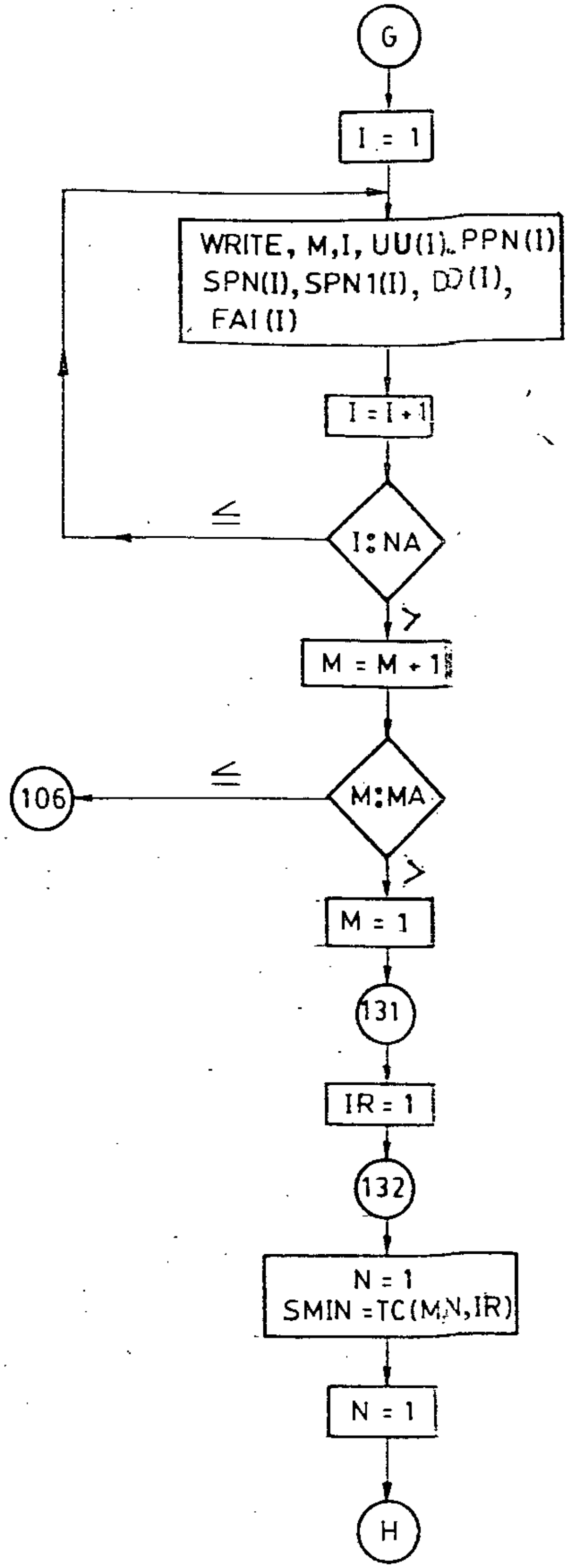

C
J=KL+JK+1
Y=Y+1
Z2= JP/Y
Z1= Z1×Z2
A(I,J)=Z1×M×LEMDA
JP=NP+1
JP: JL
≤
>
15

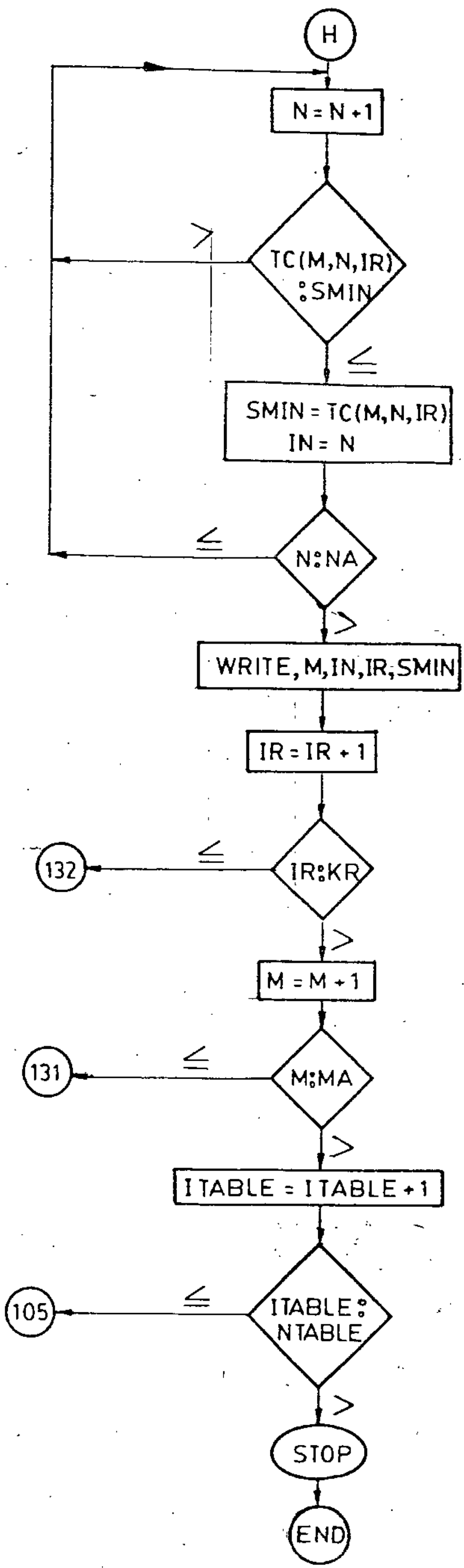

15
L = N
NO
YES
A(I I) = -(M x LEMDA + (N-P) MEO
JL = L+1
J = (JL+(JL+1))/2 +P+1
A(I,J) = (L-P+1) MEO
S = 0.0
G = 1.0
NN = P+1
Q = N-L+P
PP = P
II = 1
Z = PP/Q
R = 1-Z
S = S+G x R
G = G x Z
PP = PP-1
Q = Q-1
II = II+1
II : NN
≤
>
A(I, I) = -[S+M x LEMDA
+(N-L)LEMDAS +(L-P)MEO]
P = P+1
D


D
P ≤ L
YES
19
NO
L = L+1
L : N
≤
81
>
IJ = N(N+1)/2 + 1
H = -(N+1) ME 0
A (IJ, N00) = H
CALL
SUBROUTINE SOLSE
W(1) = 1·0
S = W(1)
G1 = M - 1
G2 = N + 2
I = 2
W(I) = W(I-1) x G1/G2 x LMDBMU
S = S + W(I)
G1 = G1 - 1
G2 = G2 + 1
I = I + 1
I : M
≤
>
Z = S
S = 0·0
E


E
I = 1
S = S + A(I, N00)
I = I + 1
I : NO
≤
>
W(1) = 1/(S + Z)
SUMPN1 = W(1)xZ
S = 0·0
I = IJ
S = S + A(I, N00)
I = I + 1
I : NO
≤
>
PN = SxW(1)
SUMPN = PN + SUMPN1
S = W(1)
I = 2
F

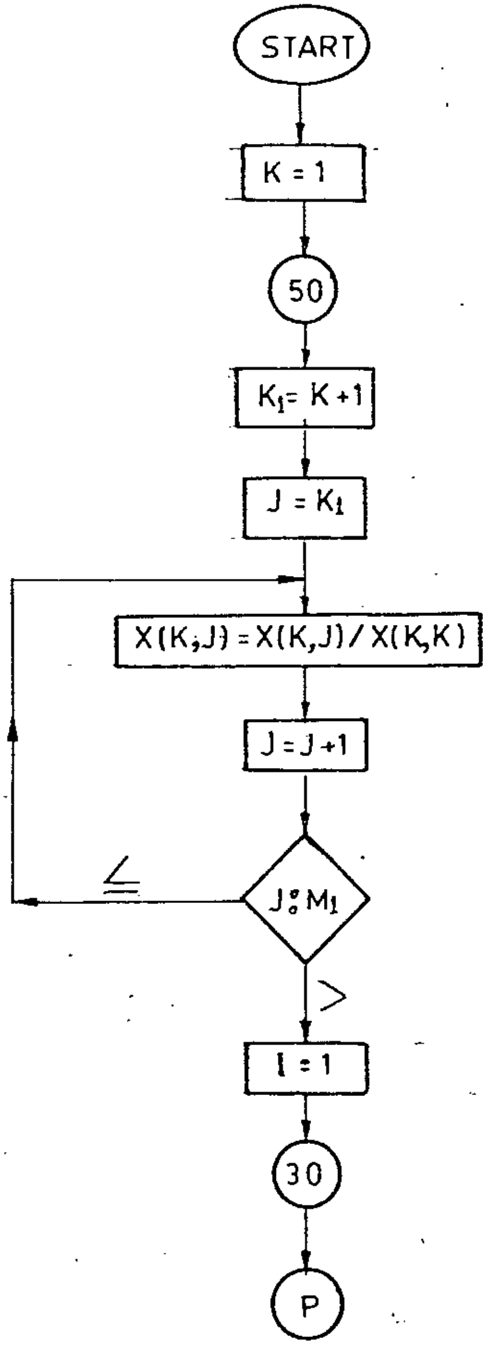

F
W(I) = W(I)xW(1)
S = S+I x W(I)
I = I + 1
≤
I : M
>
U = S/M
XY = (SUMPN−U)x LEMDA
D = U/XY
PHAI = (1−U)/XY
UU(N) = U
PPN(N) = PN
SPN(N) = SUMPN
SPN1(N) = SUMPN1
DD(N) = D
FAI(N) = PHAI
IR = 1
TC(M,N,IR) = 1000·00 x IR x U x M + N
IR = IR + 1
≤
IR : KR
>
N = N + 1
≤
107
N : NA
>
G

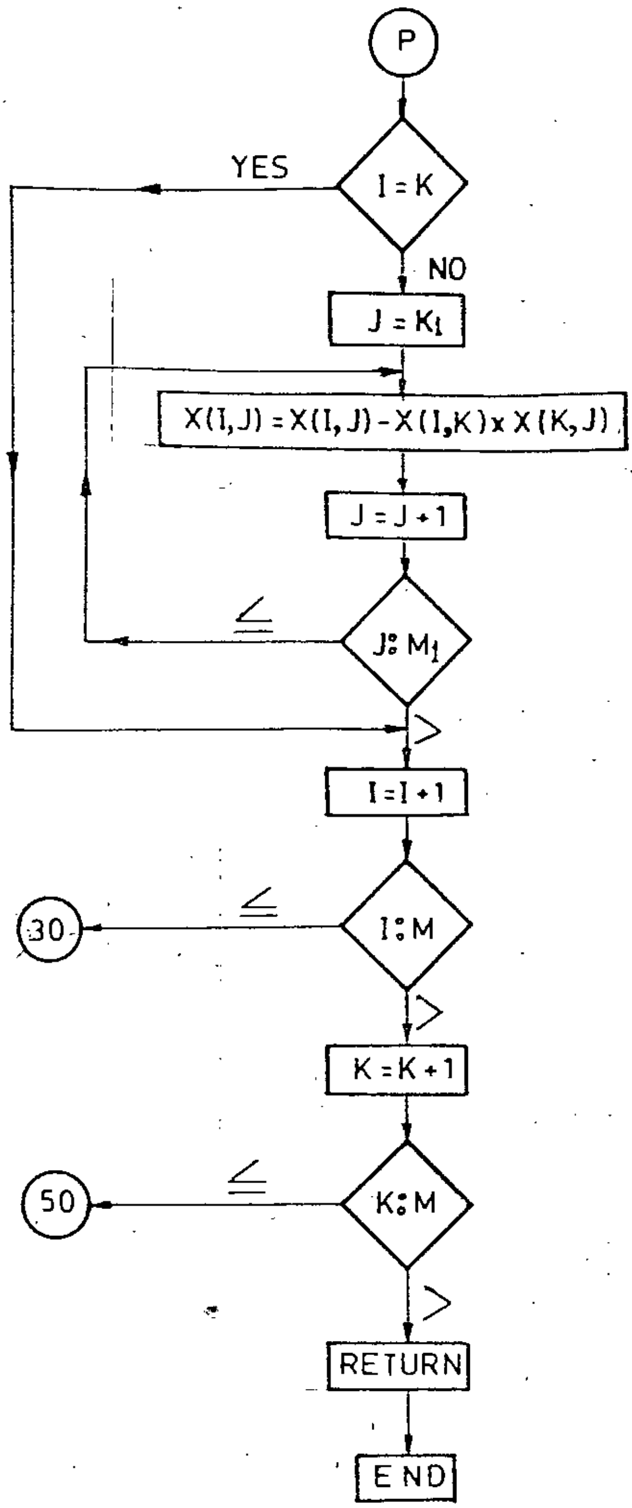

G
I = 1
WRITE, M, I, UU(I), PPN(I)
SPN(I), SPN1(I), DD(I),
FAI(I)
I = I + 1
≤
I : NA
>
M = M + 1
106
≤
M : MA
>
M = 1
131
IR = 1
132
N = 1
SMIN = TC(M,N,IR)
N = 1
H



H
N = N + 1
TC(M,N,IR) : SMIN
>
≤
SMIN = TC(M,N,IR)
IN = N
N : NA
≤
>
WRITE, M, IN, IR, SMIN
IR = IR + 1
IR : KR
≤
132
>
M = M + 1
M : MA
≤
131
>
ITABLE = ITABLE + 1
ITABLE : NTABLE
≤
105
>
STOP
END

FLOW CHART FOR SUBROUTINE




P
I = K
YES
NO
J = K1
X(I,J) = X(I,J) - X(I,K) x X(K,J)
J = J + 1
J : M1
≦
>
I = I + 1
I : M
≦
30
>
K = K + 1
K : M
≦
50
>
RETURN
END

APPENDIX B

```
C                   S T E P  (1)
C         TO FIND THE COEFFICIENTS OF THE MATRIX D   OF ORDER 7   7
          DIMENSION A(74,7 ),W(1 ),DJ(1 ),PPN(1 ),S N(1 ),
         1SPN1( ),DD(1 ),FAI(1 )
          INTEGER P,COUNTR
          REAL LEMDA,LEMDAS,MED,LMDBMU
          COUNTR=0
          ITABLE=1
       75 READ(1,103)M,MED,NSET
      103 FORMAT(I2,E10.3,I2)
          LEMDA=0.300E-01
          LEMDAS=LEMDA/10.0
       76 WRITE(3,94)ITABLE,M,MED,LEMDA,LEMDAS
      150 DO 106 ISET=1,NSET
          READ(1,104)LEMDA,NA
      104 FORMAT(E10.3,I2)
          LEMDAS=LEMDA/10.0
          LMDBMU=LEMDA/MED
      130 DO 107 N=1,NA
       11 NO=(N+1)*(N+2)/2
          NOO=NO+1
          DO 80 I=1,NO
          DO 80 J=1,NOO
       80 A(I,J)=0.0
C                FOR L E V E L  (0)
          A(1,1)=-(M*LEMDA+N*LEMDAS)
          A(1,2)=MED
          DO 81 L=1,N
C                   FROM B L O C K (1)
          P=0
       19 I=L*(L+1)/2+P+1
          JP=P-1
          JL=L-1
          IF(JP.LT.0)GO TO 14
C                   COEFFICIENTS OF BLOCK (1)
          J=JL*(JL+1)/2+JP+1
          A(I,J)=(N-L+1)*LEMDAS
C                      B L O C K  (2)
       14 IF(L.EQ.P)GO TO 15
          KL=JL*(JL+1)/2
          J=KL+P+1
          X=N-L+1
          Y=X+P
          Z1=X/Y
          A(I,J)=Z1*M*LEMDA
          IF((L-P).EQ.1)GO TO 15
C                   B L O C K  (3)
          NP=P+1
          DO 82 JP=NP,JL
          J=KL+JP+1
          Y=Y+1
          Z2=JP/Y
          Z1=Z1*Z2
       82 A(I,J)=Z1*M*LEMDA
       15 IF(L.EQ.N)GO TO 17
C                B L O C K (4)
          JL=L+1
          J=JL*(JL+1)/2+P+1
          A(I,J)=(L-P+1)*MED
C                       B L O C K  (5)
          S=0.0
          G=1.0
          NN=P+1
          Q=N-L+P
          PP=P
          DO 83 II=1,NN
          Z=PP/Q
          R=1-Z
          S=S+G*R
          G=G*Z
          PP=PP-1
       83 Q=Q-1
          A(I,I)=-(S*M*LEMDA+(N-L)*LEMDAS +(L-P)*MED)
          GO TO 84
       17 A(I,I)=-(M*LEMDA+(N-P)*MED)
       84 P=P+1
          IF(P.LE.L)GO TO 19
       81 CONTINUE
```

```
C        JJ INDICATES EQUATION/  ROW THE RIGHT HAND SIDE
C        OF WHICH IS THE COEFFICIENT OF  P(N+1)
C        H IS THE COEFFICIENT OF P(N+1) WITH NEGATIVE SIGN.
         IJ=N*(N+1)/2+1
         H=-(N+1)*MEO
         A(IJ,NOO)=H
         CALL SULSE(A,NO,NOO)
C                  S T E P  (2)-
C       (TO FIND THE VALUE OF--Z--)
         W(1)=1.0
         S=W(1)
         G1=M-1
         G2=N+2
         DO 30 I=2,M
         W(I)=W(I-1)*G1/G2*LMDBMU
         S=S+W(I)
         G1=G1-1
         G2=G2+1
      30 CONTINUE
         Z=S
C                  S T E P  (3)
C        (SUMMATION OF THE MATRIX SOLUTION)
         S=0.0
         DO 33 I=1,NO
         S=S+A(I,NOO)
      33 CONTINUE
C                  S T E P  (4)
C        (TO FIND THE VALUE OF --PN+1--)
         W(1)=1/(S+Z)
C                  S T E P  (5)
C        (TO FIND THE VALUE OF--SUMPN+1--)
         SUMPN1=W(1)*Z
C                    S T E P  (6)
         S=0.0
         DO 35 I=IJ,NO
         S=S+A(I,NOO)
      35 CONTINUE
         PN=S*W(1)
C                  S T E P  (7)
C        (TO FIND THE VALUE OF--SUMPN--)
         SUMPN=PN+SUMPN1
C                   S T E P  (8)
C        (TO FIND THE VALUE OF--U--)
         S=W(1)
         DO 37 I=2,M
         W(I)=W(I)*W(1)
         S=S+I*W(I)
      37 CONTINUE
C         S T E P  (9)
         U=S/M
         XY=(SUMPN-U)*LEMDA
         D=U/XY
         PHAI=(1-U)/XY
         UU(N)=U
         PPN(N)=PN
         SPN(N)=SUMPN
         SPN1(N)=SUMPN1
         DD(N)=D
         FAI(N)=PHAI
     107 CONTINUE
      94 FORMAT(1H1////30X,'   TABLE--',I2/30X,12('*')/////
        16X,'M=',I2,4X,'  MEO=',F6.4,4X,
        2///// 6X,'LEMDA=',E10.3,4X,'LEMDAS=',E10.3,4X,
        3 //6X,'N',6X,'U',9X,'PN',7X,'SUMP(N)',4X,'SUMP(N+1)',
        45X,'D',5X,'PHAI'//)
         IF (ISET.EQ.1)GO TO 200
         WRITE(3,98)LEMDA,LEMDAS
      98 FORMAT(///6X,'LEMDA=',E10.3,6X,'LEMDAS=',E10.3,4X,
        3///6X,'N',6X,'U',9X,' PN',6X,'SUMP(N)',4X,'SUMP(N+1)',
        44X,'D',5X,'PHAI'//)
     200 DO 79 I=1,NA
         WRITE(3,110) I,UU(I),PPN(I),SPN(I),SPN1(I),DD(I),FAI(I)
     110 FORMAT(5X,I2,4(1X,G10.3),1X,F6.3,1X,G10.3/)
      79 CONTINUE
         COUNTR=COUNTR+1
         IF(COUNTR.EQ.4)GO TO 510
         GO TO 106
     510 COUNTR=0
```

```
          WRITE(3,100)
      100 FORMAT(///)
      106 CONTINUE
          STOP
          END
```

Program for Cost Optimal Policy

```
// EXEC FFORTRAN
CS T E P(1)
C       TO FIND THE COEFFICIENTS OF THE MATRIX OF ORDER 70*70
        DIMENSION A(70,70),W(10),UU(10),PPN(10),SPN(10),
       1SPN1(10),DD(10),FAI(10),TC(10,10,10)
        INTEGER P,COUNTR
        REAL LEMDA,LEMDAS ,MEO,LMDBMU
        COUNTR=0
        ITABLE=1
   75   READ(1,103)M,MEO,NSET,KR
  103   FORMAT(I2,E10.3,I2,I2)
        LEMDA=0.300E-01
        LEMDAS=0.0
   76   WRITE(3,94)ITABLE,M,MEO,LEMDA,LEMDAS
  150   DO 106 ISET=1,NSET
        READ(1,104)LEMDA,NA
  104   FORMAT(E10.3,I2)
        LEMDAS=0.0
        LMDBMU=LEMDA/MEO
  130   DO 107 N=1,NA
   11   NO=(N+1)*(N+2)/2
        NOO=NO+1
        DO 80 I=1,NO
        DO 80 J=1,NOO
   80   A(I,J)=0.0
C              FOR L E V E L  (0)
        A(1,1)=-(M*LEMDA+N*LEMDAS)
        A(1,2)=MEO
        DO 81 L=1,N
C                 FROM B L O C K (1)
        P=0
   19   I=L*(L+1)/2+P+1
        JP=P-1
        JL=L-1
        IF(JP.LT.0)GO TO 14
C                 COEFFICIENTS OF BLOCK (1)
        J=JL*(JL+1)/2+JP+1
        A(I,J)=(N-L+1)*LEMDAS
C                   B L O C K  (2)
   14   IF(L.EQ.P)GO TO 15
        KL=JL*(JL+1)/2
        J=KL+P+1
        X=N-L+1
        Y=X+P
        Z1=X/Y
        A(I,J)=Z1*M*LEMDA
        IF((L-P).EQ.1)GO TO 15
C                 B L O C K  (3)
        NP=P+1
        DO 82 JP=NP,JL
        J=KL+JP+1
        Y=Y+1
        Z2=JP/Y
        Z1=Z1*Z2
   82   A(I,J)=Z1*M*LEMDA
   15   IF(L.EQ.N)GO TO 17
C            B L O C K (4)
        JL=L+1
        J=JL*(JL+1)/2+P+1
        A(I,J)=(L-P+1)*MEO
```

```
C                    B L O C K   (5)
      S=0.0
      G=1.0
      NN=P+1
      Q=N-L+P
      PP=P
      DO 83 II=1,NN
      Z=PP/Q
      R=1-Z
      S=S+G*R
      G=G*Z
      PP=PP-1
   83 Q=Q-1
      A(I,I)=-(S*M*LEMDA+(N-L)*LEMDAS +(L-P)*MEO)
      GO TO 84
   17 A(I,I)=-(M*LEMDA+(N-P)*MEO)
   84 P=P+1
      IF(P.LE.L)GO TO 19
   81 CONTINUE
C     JJ INDICATES EQUATION/  ROW THE RIGHT HAND SIDE
C     OF WHICH IS THE COEFFICIENT OF  P(N+1)
C     H IS THE COEFFICIENT OF P(N+1) WITH NEGATIVE SIGN.
      IJ=N*(N+1)/2+1
      H=-(N+1)*MEO
      A(IJ,NOO)=H
      CALL SOLSE(A,NO,NOO)
C                      S T E P  (2)-
C    (TO FIND THE VALUE OF--Z--)
      W(1)=1.0
      S=W(1)
      G1=M-1
      G2=N+2
      DO 30 I=2,M
      LMDBMU=LEMDA/0.0125E 01
      W(I)=W(I-1)*G1/G2*LMDBMU
      S=S+W(I)
      G1=G1-1
      G2=G2+1
   30 CONTINUE
      Z=S
C                 S T E P  (3)
C     (SUMMATION OF THE MATRIX SOLUTION)
      S=0.0
      DO 33 I=1,NO
      S=S+A(I,NOO)
   33 CONTINUE
C                 S T E P  (4)
C     (TO FIND THE VALUE OF --PN+1--)
      W(1)=1/(S+Z)
C                 S T E P  (5)
C     (TO FIND THE VALUE OF--SUMPN+1--)
      SUMPN1=W(1)*Z
C                   S T E P  (6)
      S=0.0
      DO 35 I=IJ,NO
      S=S+A(I,NOO)
   35 CONTINUE
      PN=S*W(1)
C                 S T E P   (7)
C     (TO FIND THE VALUE OF--SUMPN--)
      SUMPN=PN+SUMPN1
```

```
C             S T E P   (8)
C     (TO FIND THE VALUE OF--U--)
      S=W(1)
      DO 37 I=2,M
      W(I)=W(I)*W(1)
      S=S+I*W(I)
   37 CONTINUE
C       S T E P  (9)
      U=S/M
      XY=(SUMPN-U)*LEMDA
      D=U/XY
      PHAI=(1-U)/XY
      UU(N)=U
      PPN(N)=PN
      SPN(N)=SUMPN
      SPN1(N)=SUMPN1
      DD(N)=D
      FAI(N)=PHAI
      DO 120 IR=1,KR
      TC(M,N,IR)=1000*IR*M*U+N
  120 CONTINUE
  107 CONTINUE
   94 FORMAT(1H1/////30X,'TABLE---',I2/30X,12('*')/////
     16X,'M=',I2,4X,'  MEO=',F6.4,4X,
     2/////6X,'LEMDA=',E10.3,4X,'LEMDAS=',E10.3,4X,
     3///7X,'R',2X,'N(OPT)',7X,'TCS',10X,'U',7X,' D',9X,'PHAI'///)
      IF(ISET.EQ.1)GO TO 200
      WRITE (3,98)LEMDA,LEMDAS
   98 FORMAT(///6X,'LEMDA=',E10.3,6X,'LEMDAS=',E10.3,4X,
     3///7X,'R',2X,'N(OPT)',7X,'TCS',10X,'U',7X,'D',9X,'PHAI'///)
  200 DO 79 IR=1,KR
      N=1
      SMIN=TC(M,N,IR)
      DO 77 N=1,NA
      IF (TC(M,N,IR).GT.SMIN) GO TO 77
      SMIN=TC(M,N,IR)
      IN=N
   77 CONTINUE
      WRITE(3,110)IR,IN,SMIN,UU(IN),DD(IN),FAI(IN)
  110 FORMAT(6X,I2,3X,I2,4X,F10.3,3X,3(1X,G10.3)/)
   79 CONTINUE
      COUNTR=COUNTR+1
      IF(COUNTR.EQ.4)GO TO 510
      GO TO 106
  510 COUNTR=0
      WRITE(3,100)
  100 FORMAT(///////)
  106 CONTINUE
      STOP
      END
```