

ACCESSION NR: AT4019036

S/0000/63/000/000/0099/0102

AUTHOR: Marchuk, G. I.; Bel'skaya, Zh. N.

TITLE: The application of conjugate equations to the computation of radiation shielding

SOURCE: Voprosy* fiziki zashchity* reaktorov; sbornik statey (Problems in physics of reactor shielding; collection of articles). Moscow, Gosatomizdat, 1963, 99-102

TOPIC TAGS: nuclear reactor, reactor shielding, radiation shielding, conjugate equation, diffusion approximation, neutron transmission

ABSTRACT: In the work of B. B. Kadomtsev (Dokl. AN SSSR, 113, 541 (1957)), a conjugate equation was constructed with respect to any linear functional of the radiation transfer problem. Later on, the results of this work were generalized by G. I. Marchuk and V. V. Orlov (K teorii sopryazhenny*kh uravneniy. V sb.: "Neytronnaya fizika". M., Gosatomizdat, 1961). A method was advanced in their paper for the construction of conjugate equations for a large class of linear heterogeneous equations, and a theory of perturbations was developed. In the present article, the authors attempt to apply the results of the above-mentioned two works to the problem of radiation shielding computations. In order that the essential

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aspect of the matter not be obscured by insignificant interpolations, the solution of the problem is given in the simplest diffusion approximation. The extension of the results to instances of non-diffusion approximation which are of a practical interest (for example, within the framework of the P_N -approximation) involves no difficulty and is effected by the methods described in Marchuk's paper (G. I. Marchuk. *Metody* rascheta yaderny*kh reaktorov*. M., Gosatomizdat, 1961). A multi-layer system is considered, occupying a volume G , limited by surfaces S_1 and S_2 . The physical characteristics of the medium, which determine the interaction of the neutrons and the substance, are constant within each layer. The group values f^i are given for the neutron current incident to surface S_1 . The problem is to compute the total stream and dose of neutrons leaving the shielding. The solution is given in the P_1 -approximation by the multi-group method, using the fundamental and conjugate equations of the reactor. A formulation of the theory of small perturbations is given which, although it cannot be applied to problems of shielding theory for determining the absolute magnitude of the change in the dosage of the exciting radiation as the physical properties of the system are varied, still indicates the tendency of the dosage change. The authors note that among the most important applications of the perturbation formula, derived in this article, is the computation of neutron transmission experiments, in which case it is possible, on the basis of the formula for small perturbations, to make an estimation of

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ACCESSION NR: AT4019036

many factors, including the various inherent errors of the experiment. Orig. art.
has: 16 formulas.

ASSOCIATION: none

SUBMITTED: 14Aug63

DATE ACQ: 27Feb64

ENCL.: 00

SUB CODE: NP

: NO REF SOV: 003

OTHER: 000

Card 3/3

MARCHUK, G. I.

"An equation for importance of information and inverse problems in case of meteorological satellites."

report submitted for 15th Intl Astronautical Cong, Warsaw, 7-12 Sep 64.

Computing Center, Novosibirsk

MAKONEN, G. I. et al.

"Calculation of low energy neutron spectra."

report presented at the 3rd Intl Conf, Peaceful Uses of Atomic Energy, Geneva,
31 Aug-9 Sep 64.

ACCESSION NR: AP4038991

S/0050/64/000/005/0003/0009

AUTHOR: Marchuk, G. I. (Corresponding member)

TITLE: A new approach to a numerical solution of the problem of forecasting weather

SOURCE: Meteorologiya i gidrologiya, no. 5, 1964, 3-9

TOPIC TAGS: weather forecasting, programming, computer, algorithm

ABSTRACT: The author sets out to show how the general problem of weather forecasting may be represented by a finite number of elementary algorithms which permit solution of the total problem. The possibility of a purely mechanical approach to different kinds of varying mathematical expressions is very important. It means that complication of the problem must not be associated with any fundamental reconstitution of the primary algorithms but must be accounted for by addition of new series, splitting off within the framework of the general computing program. The basic weather parameters are considered, neglecting at first such factors as adiabatic or turbulent exchange. Series of equations are set up to handle the basic problem, then it is shown how the secondary factors can be accounted for by addition of new series of equations to the system of split equations. It is concluded that it appears possible to make a complete split of the basic equations for weather

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ACCESSION NR: AP4038991

forecasting, casting each into a sequence of simplified problems, defined by standard algorithms. The author admits, however, that his paper merely points out the basic possibility of setting up an economical and, hopefully, an all-purpose program for weather forecasting to serve as a basis for more advanced approximation. But much more fundamental research is needed. Orig. art. has: 23 formulas.

ASSOCIATION: Vy*chislitel'ny*y tsentr Sibirskogo otdeleniya AN SSSR (Computing Center, Siberian Division, AN SSSR)

SUBMITTED: 00

DATE ACQ: 09Jun64

ENCL: 00

SUB CODE: DP, ES

NO REF SOV: 003

OTHER: 002

Card 2/2

MARCHUK, G.I.

Theoretical model of short-term weather forecasting. Izv.
AN SSSR. Ser. geofiz. no.5:754-764. My '64. (MIRA 17:6)

1. Vychislitel'nyy tsentr Sibirskogo otdeleniya AN SSSR.

L 25028-65 EWT(1)/FCC GW
ACCESSION NR: AP5001953

S/0049/64/000/012/1849/1858

AUTHOR: Marchuk, G. I.; Kurbatkin, G. P.; Kalenkovich, Ye. Ye.; Panchuk, V. I.;
Rivin, G. S.; Romanov, L. N.

TITLE: Solving the system of equations for short-term weather forecasts

SOURCE: AN SSSR. Izvestiya. Seriya geofizicheskaya, no. 12, 1964, 1849-1858

TOPIC TAGS: atmospheric process, wind velocity, adiabatic approximation, quasistatic condition, geopotential, Euler equation, isobaric surface, interpolation, quasigeostrophy, linear factorization, weather forecasting

ABSTRACT: This study deals with the solution of a complete system of equations for short-range weather forecasting in an adiabatic approximation, taking the quasi-static conditions of motion into account. Under consideration is a 10-level model of a baroclinic atmosphere based on the utilization of the main differences between all the geometrical variables. This problem is solved in two successive stages. In the first stage, the geopotential in the period of time under consideration is determined by the vector of the wind velocity and the geopotential; in the second stage the geopotential found in the first stage is used for determining the vector component of the wind velocity by means of Euler equations.

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ACCESSION NR: AP5001953

An essential feature of the newly developed algorithm is that the solution to the equation for the geopotential is found by a method consisting of a combination of linear factorization and relaxation. The construction of the mentioned baroclinic model of the atmosphere is based on the assumption that the atmospheric processes in it are both adiabatic and quasi-static. Orig. art. has: 16 formulas and 3 figures.

ASSOCIATION: Vychislitel'nyy tsentr, Sibirskoye Otdeleniye, Akademiya Nauk SSSR
(Computer center, Siberian branch, Academy of sciences, SSSR)

SUBMITTED: 04Jul64

ENCL: 00

SUB CODE: ES, DF

NO REF SOV: 006

OTHER: 003

Card 2/2

ACCESSION NR: AP4041569

S/0293/64/002/003/0462/0477

AUTHOR: Marchuk, G.I.

TITLE: Equation for the evaluation of information from meteorological satellites and formulation of inverse problems

SOURCE: Kosmicheskiye issledovaniya, v. 2, no. 3, 1964, 462-477

TOPIC TAGS: meteorology, meteorological satellite, long-wave atmospheric radiation, atmospheric optics

ABSTRACT: The author has formulated an equation for evaluation of information obtained from meteorological satellites. It is assumed that the satellite carries an instrument package recording definite characteristics of the radiation field. The instrument readings are functionals of the corresponding problems. The radiation transport process at particular frequencies is considered in the range from ultraviolet to long-wave radiation. The concept of a standard atmosphere is introduced. This characterizes the given distribution of meteorological elements: temperature, humidity, density, aerosols, etc. By use of the transport equations for a standard atmosphere it is possible to formulate the problem of radiation

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ACCESSION NR: AP4041569

transport, a problem which is called the "unperturbed problem". The instruments carried on the meteorological satellite will record the true functionals of the problems, which differ from the functionals of unperturbed problems by a definite value which will be called a variation of the functional. The basic problem is determination of variations of atmospheric characteristics on the basis of given variations of the functionals. The author then discusses application to inverse problems associated with interpretation of data from meteorological satellites and gives algorithms for the solution of certain inverse problems. Orig. art. has: 104 formulas.

ASSOCIATION: none

SUBMITTED: 28Feb64

ENCL: 00

SUB CODE: AS

NO REF SOV: 009

OTHER: 000

Card 2/2

L 23044-65 EWA(h)/EWT(m)

ACCESSION NR: AP4047419

S/0089/64/017/004/0304/0307

AUTHOR: Marchuk, G. I.; Kolesov, V. Ye.; Dovbenko, A. G.

TITLE: Computation of the neutron cross sections for the U²³⁸ and Th²³² Nuclei

SOURCE: Atomnaya energiya, v. 17, no. 4, 1964, 304-307

TOPIC TAGS: total neutron cross section, inelastic scattering cross section, nuclear reaction, U sup 238, Th sup 232

ABSTRACT: The theory of W. Hauser and H. Feshbach (Phys. Rev. 87, 366 (1952)) is used for the determination of the neutron cross sections for the U²³⁸ and Th²³² nuclei. The latter are similar in several respects. They are both even-even, and have similar thresholds. Therefore, their cross sections can be computed with the same parameters of the optical potential. The theoretical and experimental values for the total (transfer) cross sections agree in a wide energy range, discrepancies being noticeable only at very low energy values. The computed cross sections for inelastic scattering agree qualitatively with the experi-

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L 23044-65

ACCESSION NR: AP4047419

mental values. Some observed deviations might be caused by the lack of spherical symmetry of the nuclei. Orig. art. has: 3 figures

ASSOCIATION: None

SUBMITTED: 18Dec63

ENCL: 00

SUB CODE: NP

NO REF SOV: 008

OTHER: 006

Card 2/2

ACCESSION NR: AP4034539

S/0020/64/155/005/1062/1065

AUTHOR: Marchuk, G. I. (Corresponding member)

TITLE: Theoretical Scheme for Weather Forecasting

SOURCE: AN SSSR. Doklady*, v. 155, no. 5, 1964, 1062-1065

TOPIC TAGS: weather forecast, theoretical weather scheme, atmospheric process, meteorological calculation, weather, weather element

ABSTRACT: The paper considers a theoretical scheme of atmospheric processes which accounts for a large number of physical factors instrumental in weather formation. The variables are connected by several partial differential equations, the independent variables being cartesian coordinates and time; the dependent variables are the components of velocity vectors, the height of isobaric surfaces, temperature, specific moistures of the gaseous, liquid, and solid phases, and the intensity of radiation. The equations contain constants such as latent heats of phase transitions, coefficients characteristic of precipitation of rain or snow, and of phase transitions. The equations are solved numerically by substitution of differentials by finite differences and by separation of variables. Orig. art.

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ACCESSION NR: AP4034539

has: no figures, 14 equations.

ASSOCIATION: Vy*chislitel'ny*y tsenter sibirskogo otdeleniya Akademii nauk SSSR
(Computer Center of the Siberian Division AN SSSR)

SUBMITTED: 03Feb64

DATE ACQ: 13May64

ENCL: 00

SUB CODE: ES

NO REF SOV: 013

OTHER: 004

Card 2/2

MARCHUK, G.I.

Numerical algorithm for the solution of weather forecasting
equations. Dokl. AN SSSR 1974 no. 23:308-311 My '64.
(PIRA 17:7)

1. Chlen-korrespondent' ad' 1974.

L 24248-65 EWT(d) IJP(c)

ACCESSION NR: AP4038513

S/0020/64/156/003/0503/0506

AUTHOR: Marchuk, G.I. (Corresponding member AN SSSR)

TITLE: Statement of certain inverse problems 16 β

SOURCE: AN SSSR. Doklady*, v. 156, no. 3, 1964, 503-506

TOPIC TAGS: inverse problem, Lagrange adjoint

ABSTRACT: Solution of different scientific problems frequently raises the necessity of restoring fundamental quantitative characteristics of a phenomenon in a process under study when complete mathematical statement of the problem is known, and, consequently, the description of the operator L , the coefficients of the equation, and the class of functions to which the solution belongs are also known. Assuming the existence and uniqueness of the solution to the inverse problems under study, the author uses Lagrange adjoints (The Lagrange adjoint L^* is related to L by the equation $(h, Lg) = (g, L^*h)$, where (g, h) is a scalar product defined on real-valued g and h .) and Newton's method to establish an algorithm for the case of a linear relationship between the operator L and the parameters of the problem. The method is particularly effective when it is

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ACCESSION NR: AP4038513

required to determine the deviation of the parameters from the norm
and the normal value of the set of parameters is known.

ASSOCIATION: Vychislitel'nyy tsentr Sibirskogo otdeleniya Akademii nauk SSSR
(Computer Center, Siberian Department, Academy of Sciences, SSSR)

SUBMITTED: 24Feb64

ENCL: 00

SUB CODE: MA

NR REF SOV: 010

OTHER: 000

Card 2/2

MARCHUK, G.I.

Numerical weather forecasting on the spherical earth. boki.
AN SSSR 156 no. 4:810-813 Je '64. (MIRA 17:6)

1. Vychislitel'nyy tsentr Sibirskogo otdeleniya AN SSSR;
chlen-korrespondent AN SSSR.

L 6794-65 EWT(I) ASD(d)/AEWL/SSD/ESD(dp)/RAEM(t)

ACCESSION NR: AP4044870

S/0020/64/157/006/1291/1292

AUTHORS: Marchuk, G. I. (Corresponding member AN SSSR); Yanenko, N. N. 42

TITLE: Solution of multidimensional kinetic equation by the splitting method 2

SOURCE: AN SSSR. Doklady*, v. 157, no. 6, 1964, 1291-1292

TOPIC TAGS: neutron transport, transport theory, neutron scattering, Cauchy problem, partial differential equation, difference equation, convergence test, kinetic equation

ABSTRACT: The equation in question, describing a neutron transport in a medium with isotropic scattering, is

$$\frac{1}{v} \frac{\partial \varphi}{\partial t} + \vec{\Omega} \nabla \varphi + \sigma \varphi = \frac{\sigma_s}{4\pi} \int d\vec{\Omega}' \varphi(r, \vec{\Omega}', t) + S(r, \vec{\Omega}, t) \quad (1)$$

For which a mixed Cauchy problem is set up in a cylindrical region.

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ACCESSION NR: AP4044870

having a base D and a height T . An approximate method for integrating the nonstationary equation (1) along with a corresponding stationary equation is obtained by first partially and then completely splitting up the equation into finite-difference approximations and testing the resultant computational scheme for convergence. Such schemes are also applicable in the one-dimensional case. Orig. art. has: 1 figure and 8 formulas.

ASSOCIATION: None

SUBMITTED: 27May64

ENCL: 00

SUB CODE: MA, NP

NR REF SOV: 002

OTHER: 000

Card 2/2

MARCHUK, G.I.; KOCHERGIN, V.P.; NEVINITSA, A.I.; UZNADZE, O.P.;
MALYAVINA, O.M., red.

[Critical parameters of homogeneous breeder systems] Kri-
ticheskie parametry gomogennykh raznozhaiushchikh sistem. ✓
Moskva, Atomizdat, 1965. 142 p. (MIRA 18:12)

MARCHUK, G.I.

Role of research in the physics of the atmosphere and the
ocean for weather forecasting. Izv. AN SSSR. Fiz. atm. i
okeana 1 no.1:5-7 Ja '65. (MIRA 18:5)

L 52557-65 EWT(1)/FCO GW

ACCESSION NR: APE009231

UR/0362/65/001/002/0129/0135

AUTHOR: Marchuk, G. I., Kirbatkin, G. P., But, I. V., Panchuk, V. I., Kalenkovich, Ye. Ye.

TITLE: An operative, quasi-geostrophic, five-level, short-range weather forecasting scheme

SOURCE: AN SSSR. Izvestiya. Fizika atmosfery i okeana, v. 1, no. 2, 1965, 129-135

TOPIC TAGS: short range weather forecasting, quasigeostrophic weather forecasting, weather forecasting algorithm, multilevel forecasting, numerical forecasting

ABSTRACT: The development of nongeostrophic weather forecasting schemes based on the solution of the complete set of hydrodynamic equations seems to offer the most promising approach for the improvement of short-range numerical forecasting models. It is expedient also to develop in parallel analogous quasi-geostrophic schemes which, except for the quasi-geostrophicity hypothesis, retain all the properties, parameters, and numerical solution algorithms designed for nongeostrophic work. A comparison of forecasts obtained by means of these two approaches can lead to clear-cut estimates of the efficiency of a particular numerical realization of additional physical factors introduced into the nongeostrophic procedures whenever the quasi-geostrophic hypothesis is not

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L 52557-65

ACCESSION NR: AP5009231

materialized. Consequently, a quasi-geostrophic scheme for short-range forecasting was developed at the Vychislitel'nyy tsentr SO AN SSSR (Computer Center SO AN SSSR) simultaneously with the nongeostrophic scheme described earlier (G. I. Marchuk et. al., Izv. AN SSSR, ser. geofiz., no. 12, 1964). The present article discusses the numerical algorithm of this five-level short-range weather forecasting scheme using the 1000, 850, 700, 500, and 300 mb levels. Comparisons of the calculated and actual weather charts showed that, in spite of the cases with low numerical correlation coefficients (0.51), the compared charts were quite analogous and the forecasts should be considered successful. Orig. art. has: 15 formulas, 3 figures, and 2 tables.

ASSOCIATION: Vychislitel'nyy tsentr, Sibirskoye otdeleniye Akademii nauk SSSR
(Computer Center, Siberian Division, Academy of Sciences, SSSR)

SUBMITTED: 04Aug64

ENCL: 00

SUB CODE: ES

NO REF SOV: 009

OTHER: 000

2/2

Card

L 16111-66 EWT(d)/EWT(1) LJP(c)

ACC NR: AP5025112

SOURCE CODE: UR/0208/65/005/005/0852/0863

AUTHOR: Marchuk, G. I. (Novosibirsk); Sultangazin, U. M. (Novosibirsk)

ORG: none

TITLE: Application of the decomposition method to radiation transfer equations

SOURCE: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 5, no. 5, 1965, 852-863

TOPIC TAGS: kinetic equation, radiation, integral operator, differential operator

ABSTRACT: The recent literature contains many works devoted to the algorithm of solutions of radiation-transfer equations. In the main the method of interaction schemes and the method of spherical harmonics are used. However, both of these methods have shortcomings. In many cases the former yields a very slow convergence and the latter obvious complications when the number of Fourier coefficients involved is large. In dealing with the problem of radiation transfer equations, it was found advisable to formulate the algorithm of decomposition of the integro-differential operator involved in the problem in terms of the simplest

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UDC: 517.9:533.9

2

L 16111-66

ACC NR: AP5025112

integral and differential operators. The method described by G. I. Marchuk and N. N. Yamanko (Solution of multidimensional kinetic equations by the decomposition method, Dokl.AN SSSR, 1964, 157, No. 6, 1291-1292) was very effective for the case of one-dimensional problems of the transfer theory. It yielded fast convergence. A detailed study was given of a simple case of the problems involved in transfer theory, namely the problem of isotropic dispersion of radiation in a plane-parallel medium. Orig. art. has: 1 figure and 6 formulas.

SUB CODE: 12/ SUBM DATE: 25Dec64/ ORIG REF: 006/ OTH REF: 005

net
Card 2/2

L 20987-66

ACCESSION NR: AP5022493

UR/0089/65/018/006/0638/0640

AUTHOR: Marchuk, G. I.; Kochergin, V. P.

14
B

TITLE: Effect method for resolving two-dimensional diffusion equation for tetragonal and hexagonal shape cells

SOURCE: Atomnaya energiya, v. 18, no. 6, 1965, 638-640

TOPIC TAGS: neutron absorption, neutron cross section, neutron diffusion, dimension analysis

ABSTRACT: A method is suggested for resolving a two-dimensional diffusion equation for tetragonal and hexagonal shaped cells described by the two-dimensional one-group diffusion equation with a constant moderating source in a polar coordinate system. Considering only real shape cells (with intrinsic circular symmetry) the two-dimensional equation was reduced to a series of one-dimensional diffusion equations and resolved by a finite-difference formula. The results of calculations were verified by successful interchange of real shape cells by Wigner-Seitz equivalent cells. However, it was also shown that the use of the Wigner-Seitz equivalent cell may result in some errors. This is illustrated in a table exhibiting the mean (according to the cell) neutron absorption cross sections in various

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ACCESSION NR: AP5022493

approximations when the shielding blocks are close to each other (the maximum cell shape effect). The table shows that the consideration of cell geometry and kinetic effects result in reduced mean neutron absorption cross sections. For the hexagonal shape cells these effects are identical but for the tetragonal cell the shape effect becomes even larger than the kinetic effect. Orig. art. has 12 formulas and 2 graphs.

ASSOCIATION: none

SUBMITTED: 17Jul64

ENCL: 00

SUB CODE: NP, MA

NO REF SOV: 004

OTHER: 000

NA

Card 2/2 B/C

MARCHUK, G.I.; SULTANGAZIN, U.M.

Convergence of the fractional step method for the equation of
radiation transport. Dokl. AN SSSR 161 no.1:66-69 Mr '65.
(MIRA 18:3)

1. Vychislitel'nyy tsentr Sibirskogo otdeleniya AN SSSR.
2. Chlen-korrespondent AN SSSR (for Marchuk).

MARCHUK, G.I.; SULTANGAEIN, H.M.

Use of the splitting method in solving the kinetic transfer equation.
Dokl. AN SSSR 163 no.4:857-860 Ag '65.

(MIRA 18:8)

1. Vychislitel'nyy tsentr Sibirskogo otdeleniya AN SSSR. 2. Chlen-korrespondent AN SSSR (for Marchuk).

L 44450-66 EWT(1) GW

ACC NR: AP6019727

SOURCE CODE: UR/0050/66/000/006/0012/0020

AUTHOR: Marchuk, G. I. (Corresponding member AN SSSR)

29

ORG: Computer Center, Siberian Division, AN SSSR (Vychislitel'nyy tsentr Sibirskogo otdeleniya AN SSSR)

B

TITLE: The present state of numerical methods for weather forecasting

SOURCE: Meteorologiya i gidrologiya, no. 6, 1966, 12-20

TOPIC TAGS: weather forecasting, long range weather forecasting, atmospheric physics, synoptic meteorology, climate, air mass, atmospheric circulation, computer calculation

ABSTRACT: The present state and problems of numerical methods for weather forecasting are surveyed. Two principal trends have been formulated in the theory of short-range weather forecasting: the improvement of barotropic models by the inclusion of a balance equation and the creation of baroclinic models for forecasting in a quasi-geostrophic approximation. It is expected that, with the introduction of more complete numerical schemes of forecasting, the average error will be reduced by 5--10%. Relatively untimely weather forecasting is not seen as a central scientific problem of forecasting. Of great value in this connection is the problem of the evolution of water vapor in the atmosphere in interaction with a radiation field. In recent years a new direction has been formulated in the theory of long-range

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UDC: 551.509.313

L 44450-66

ACC NR: AP6019727

weather forecasting, based on dynamic-statistical approaches to the solution of the hydrothermodynamics equations of atmospheric processes. A great deal of attention has been devoted to the development of theoretical models of the total circulation of the atmosphere and to mathematical experiments with computers. Former methods were insufficient for the effective realization of computer algorithms. The Computer Center has developed a set of algorithms for numerical solution of problems of meteorology based on disintegration of the equations of the dynamics of atmospheric processes. One algorithm is absolutely stable for any time steps, has second-order accuracy for all variables, and satisfies the laws of preservation of vector momentum, energy, and mass. Objective analysis of meteorologic fields and atmospheric physics research in connection with weather forecasting are also treated briefly.

SUB CODE: 04/ SUBM DATE: 15Mar66

Card 2/2 *JD*

I. 05678-67 EWT(1) GW

ACC NR: AR6023243

SOURCE CODE: UR/0044/66/000/003/B106/B106

AUTHOR: Marchuk, G. I.

18
B

REF SOURCE: Chislennyye metody resheniya zadach prognoza pogody i teorii klimata. Ch. 1. Novosibirsk, SO AN SSSR, 1965, 101 str.

TITLE: Numerical methods for the solution of weather forecasting problems and the theory of climate. Part 1

SOURCE: Ref. zh. Matematika, Abs. 3B558K

TOPIC TAGS: weather forecasting, numerical method, climatology, algorithm

TRANSLATION: For a system of differential equations of the dynamics of atmospheric processes, the author has developed basic principles for the construction of complex computation algorithms on the basis of the simplest of elementary algorithms which are effectively handled by a computer. It is shown how the problem of weather prediction may, with the use of the method of decomposition, be represented in the form of a finite number of simple algorithms. Here the author considers that his results may be used for organizing a system of automatic algorithm construction for the solution of meteorological problems.

SUB CODE: 04 2/ SUBM DATE: none

me
Card 1/1

UDC: 518:517.944/.947

L 05643-67 EWT(d)/EWT(m) IJP(c) JR

ACC NR: AP6021627

SOURCE CODE: UR/0089/66/020/003/0264/0264

AUTHOR: Marchuk, G. I.; Penenko, V. V.

ORG: none

TITLE: ¹⁶ Numerical methods for calculating two dimensional nuclear reactors

SOURCE: Atomnaya energiya, v. 20, no. 3, 1966, 264

TOPIC TAGS: nuclear reactor technology, numeric solution, iteration, finite difference

ABSTRACT: This is an abstract of paper no. 69/3435, submitted to the editor and filed, but not published. The article deals with the solution of the problem, in two-dimensional geometry, of physical design of a nuclear reactor of specified volume. The calculation is based on the determination of the largest positive eigenvalue and corresponding non-negative eigenfunction of the system of many-group diffusion equations, using the Perron - Frobenius nonnegative matrix theory. The solution is obtained by a numerical finite-difference iteration technique. The programming of the computer and the solution of the conjugate problem are included. Orig. art. has: 2 formulas

SUB CODE: 18/ SUBM DATE: 25Aug65

Card 1/1 *eh*

UDC: 621.039.51.12.134

ACC NR: AM6006274

Monograph

UR/

Marchuk, G. I.; Kochergin, V. P.; Nevinitza, A. I.; Uznadze, O. P.

Critical parameters of homogeneous breeder systems (Kriticheskiye parametry gomogennykh razmnozhayushchikh sistem) Moscow, Atomizdat, 65. 0142 p. illus., biblio., tables. 1,970 copies printed.

TOPIC TAGS: breeder reactor, homogeneous nuclear reactor, nuclear reactor technology

PURPOSE AND COVERAGE: Critical parameter data for nuclear reactors of various ranges, which were obtained as a result of an extensive set of calculations of homogeneous systems, are presented. The presently established principles of neutron physics calculations and the corresponding methods of calculation on contemporary electronic computers were taken as a basis. The basic theoretical schemes for physical calculation of nuclear reactors are described and the results are compared with experimental data. Tables of the critical masses and other physical parameters of homogeneous breeder systems are presented. Although the calculations were carried out for uniform spherically symmetric reactors, the well known conversion formulas can be used for reactors of other geometrical forms. New ideas and cooperative work were contributed by B. G. Dubovskiy and his group.

Card 1/3

UDC: 621.039.513:621.039.520.22

ACC NR: AM6006274

Development of the multigroup constants by I. I. Bondarenko (deceased) and his group was a great help to the authors. Valuable comments and constructive suggestions were made by the theoretical and experimental physicists: L. N. Usachev, S. B. Shikhov, V. A. Kuznetsov, V. Ya. Pupko, V. V. Orlov, G. I. Toshinskiy and others. Continued support and help were contributed by the mathematicians: Ye. I. Lyashenko, I. P. Markelov, L. I. Kuznetsova, G. A. Ilyasova, V. V. Smelov, T. I. Zhuravleva and others. The authors also acknowledge the valuable advice and comments of A. I. Leypunskiy, academician, AN UkrSSR, M. P. Rodionov, and M. N. Nikolayev. The book is intended for engineers and graduate and other students specializing in the field of nuclear power engineering.

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ACC NR: AM6006274

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SUB CODE: 18/ SUBM DATE: 01Oct65/ ORIG REF: 021/ OTH REF: 017

Card 3/3

ACC NR: AP6034749

SOURCE CODE: UR/0020/66/170/005/1006/1008

AUTHOR: Demidov, G. V.; Marchuk, G. I. (Corresponding member AN SSSR)

ORG: Computing Center, Siberian Branch, Academy of Sciences SSSR (Vychislitel'nyy tsentr Sibirskogo otdeleniya Akademii nauk SSSR)

TITLE: A theorem on the existence of a solution for the problem of short-term weather forecasting

SOURCE: AN SSSR. Doklady, v. 170, no. 5, 1966, 1006-1008

TOPIC TAGS: differential equation solution, weather forecasting, mathematical model, ~~short-term-weather-forecasting~~

ABSTRACT: The existence of a smooth solution for a mixed problem consisting of a quasilinear system of differential equations is proven. The problem, in a certain sense, is a mathematical model used for short-term weather forecasting in the x-y region. The existence of a smooth solution for the problem discussed has been previously proven by the use of an analytical approximation method. In this paper, the problem is solved by use of a method previously proposed for numerical solution of short-term weather forecasting problems. The problem is reduced to a sequential solution of two relatively simple problems that can be solved by use of Fourier methods; these two solutions can be shown to be equally correct by using the S. L. Sobolev enclosure theorem. The uniqueness of the solution is proven by its convergence. Orig. art. has: 2 formulas.

Card 1/2

UDC: 517.946

ACC NR: AP6034749

SUB CODE: 04, 12/ SUBM DATE: 27Jun66/ ORIG REF: 007/ OTH REF: 001

Card 2/2

MARCHUK, I.D., inzh.

Take into account the work of railroad subdivisions. Part 1 part.
khoz. 9 no.9:21 '65. 18:00

MARCHUK, I.D.

Work and skill. Put' i put. khoz. 9 no.11:31 '65.
(MIRA 18:11)

1. Stantsiya Brest, Belorusskoy dorogi.

MARCHUK, K.M.

Increasing the operational reliability of tractor
shovels. Sakh.prom. 34 no.8:32-34 Ag '60.
(MIRA 13:8)

1. Verkhnyachskiy sakharnyy zavod.
(Loading and unloading)

MARCHUK, L. I

Methods of processing whale meat. Mias.ind. SSSR 33 no.3:12-13 '62.
(MIRA 15:7)

1. Ukrainstkiy nauchno-issledovatel'skiy institut konservnoy
promyshlennosti.

(Whales) (Canning and preserving)

MARCHUK, L.I.; BOL'SHAYA, M.L.; GANDZYA, S.M. [Handzia, S.M.]

Use of sodium glutamate for improving the taste of canned whale
meat. Khar.prom. no.3:30 JI-S '62. (MIRA 15:8)

1. Ukrainskiy nauchno-issledovatel'skiy institut konservnoy
promyshlennosti.

(Whale meat, Canned)

KAGAN, I.S.; MARCHUK, L.I.

Canning unblanched peppers. Kons.i ov.prom. 17 no.6:17-19
Je '62. (MIRA 15:5)

1. Ukrainskiy nauchno-issledovatel'skiy institut konservnoy
promyshlennosti.

(Canning and preserving)
(Peppers)

GUSAROVA, Nadezhda Aleksandrovna; KAGAN, Isaak Samoylovich; KAMNEVA, Zoya Petrovna; MARCHUK, Lyubov' Ivanovna; MARKH, Zoya Aleksandrovna; SIZOVA, Aleksandra Grigor'yevna; SOLOV'YEVA, Yevgeniya Ivanovna; STEPANOVA, E.A., inzh., red.izd-va; STARODUB, T.A., tekhn. red.

[Home canning] Domashnee konservirovanie. 4., ispr. i dop. izd. Kiev, Gostekhizdat USSR, 1963. 207 p. (MIRA 16:7)

1. Ukrainskiy nauchno-issledovatel'skiy institut konservnoy promyshlennosti.

(Canning and preserving)

MARCHUK, O.Ya.

Use of the luminescent method for studying defects of the placenta.
Ped., akush. i gin. 23 no.4:42-44 '61. (MIRA 17:1)

1. Akushersko-ginekologicheskaya klinika (zav. - prof.A.V.Anisimov)
Stanislavskogo meditsinskogo inatituta (direktor - dotsent G.A.
Babenko [Babenko, H.A.]).

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

TEST AND THE CAPERS PROCESSER AND PROPERTIES AREA

Ca

Skin tests, and their connection with serological phenomena. P. D. Marchuk and L. M. Vaisberg. *J. med., Ukraine* 8, 1115-22(1938).--Of 84 scarlet fever patients only 4 gave a pos. reaction with horse serum, while 14 developed serum sickness after prophylactic antidiphtheritic serum injections; of these only one had given a pos. horse-serum reaction. It is concluded that serum sickness is not due to sensitivity to horse serum. B. C. P. A.

ASSOCIATED METALLURGICAL LITERATURE CLASSIFICATION

GROUPS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Preparation, application and preservation of cytotoxic, antitreticular serum. P. D. Marchuk. *J. med. Ukraine* 9, 1175-85 (in Russian, 1185-8; in French, 1184-91) (1940).—Cytotoxic, antitreticular serum is prepd. by immunizing horses, asses, goats or sheep to the spleen and marrow obtained from human beings 0-10 hrs. after death from a noninfectious cause. One to 2 parts of marrow is used to 8 to 9 parts of spleen. A quantity of 5-15 g. is comminuted in a Koch cup, washed with physiol soln. and crushed with sand in a porcelain mortar. After adding 3-5 vols. by wt. of 0.85% NaCl soln., half of the suspension is centrifuged 2-4 min. at 1 million revolutions per min., the clear portion poured off and injected intravenously. The noncentrifuged but clarified half is injected intraperitoneally. The animals are immunized 5-6 times with increasing doses of antigen at 4-5-day intervals. On the 8-9th day after the last injection, the cytotoxic titer is detd. by means of the complement-fixation reaction. The serum is good if its titer is not below 1:100 and the hemolytic titer not above 1:10. The animal is then bled and the serum is placed in ampoules or placed in test tubes and then verified for sterility and toxicity (survival of rabbits or guinea pigs after injection of 10 cc. of serum). A serum for animals is prepd. in the same manner. The cytotoxic titer of the serum remains unchanged for 4-6 months, but then begins to drop; some serums have remained unchanged for 1-2 yrs. The serum should be kept at 4° in the dark. In this way it remains stable for about 6 months. If kept at lab. temp. in the open, the

serum begins to decomp. in about 2 months even if solidified or preserved with CHCl₃. The cytotoxic titer of dil. serum (1:10) is stable for 10 days. A stimulating dose of the serum for an adult is 0.1-0.25 cc. and may be raised to 0.3 cc. Only the 1:10 soln. in physiol. soln. is used, 1-2.5 cc. being injected intravenously or subcutaneously. Three doses may be given at 2-3-day intervals, the last on the 10th day or much later. The serum is diid. 2 days before use, placed in ampoules, put on ice and verified for sterility. It should be heated to 37° before injection and if found cloudy or contg. a sediment, discarded.

J. Pinchack

11C

MARCHUK, P.D.
MARCHUK, P.D., prof.

Some results of the works on antireticular cytotoxic serum. Medych.
zhur. 19 no.2:85-89 '49. (MIRA 10:12)

1. Za materialami laboratorii antiretikulyarnoi tsitotoksichnoi
sirovatki Institutu eksperimental'noi biologii i patologii im. akad.
O.O.Bogomol'tsya Ministerstva okhoroni zdorov'ya, direktor - prof.
Oleg O.Bogomolets'.
(SERUM)

MARCHUK, P. D., Prof.

Antireticular Cytotoxic Serum

Results of studying and using antireticular cytotoxic serum (ACS) in the last three years. Visnyk AN URSR 21, No. 7, 1949.

9. Monthly List of Russian Accessions, Library of Congress, June 1953, Uncl.

MARCHUK, P.D.

MARCHUK, P.D., prof.

Using antitreticular cytotoxic serum in veterinary practice and
stockbreeding. Medych.zhur. 20 no.3:107-110 '50. (MIRA 11:1)
(ANTIRETICULAR CYTOPOXIC SERUM)
(VETERINARY MEDICINE) (STOCK AND STOCKBRENDING)

Marchuk, P. D.

MARCHUK, P.D., prof.; GRAGEROVA, R.B., kand.med.nauk; KOROL', S.A.,
kand.biol.nauk

Interspecies specificity of antireticular cytotoxic serum. Medych.
zhur. 20 no.5:94-98 '50. (MIRA 11:1)

1. Z laboratorii Antiretikulyarnoi tsitotoksichnoi sirovatki
(zav. - prof. P.D.Marchuk) Institutu eksperimental'noi biologii i
patologii im. akad. O.O.Bogomol'tsya Ministerstva okhoroni
zdorov'ya URSS (direktor - prof. O.O.Bogomolets')
(ANTIRETICULAR CYTOTOXIC SERUM)

MARCHUK, P. D.

Pavlov, Ivan Petrovich, 1849-1936

Session of the Academy of Science of the Ukrainian S.S.R. devoted to the problems of developing Pavlov's theory of physiology in the Ukraine.
Medych. zhur. 20, No. 6, 1951.

9. Monthly List of Russian Accessions, Library of Congress, August 1952. UNCLASSIFIED.

MARCHUK, P.D., prof.

On the 15th anniversary of the death of I.P.Pavlov. Medych.zhur.
21 no.3:94-95 '51. (MIRA 11:1)
(UKRAINE--PHYSIOLOGY)

MARCHUK, P.D., professor, saviduvach; BOHOMOLETS', O.O., professor, dyrektor.

New aspects of the study and application of the antireticular cytotoxic serum. Medych.shur. 21 no.4:75-80 '51. (MLBA 6:10)

1. Laboratoriya ATsS Instytutu eksperymental'noyi biolohiyi i patolohiyi im. akad. O.O.Bohomol'tsya MOZ UESR (for Marchuk). 2. Instytut eksperymental'noyi biolohiyi i patolohiyi im. akad. O.O.Bohomol'tsya MOZ UESR (for Bohomolets'). (Serum)

MARCHUK, P. D.

MARCHUK, P. D.

False concepts of the mechanism of the (AFsS) antireticular cytotoxic serum effect. Medych. zhnr. 23 no.2:81-86 '53. (MIRA 8:2)

1. Institut eksperimental'noi biologii i patologii im. akad. O.O. Bogomol'tsya.
(SERUM THERAPY)

MARCHUK, PROF. P. D.

Pavlov, Ivan Petrovich, 1849-1936

For the further development of the physiological teachings of I. P. Pavlov.
Visnyk AN URSR 23 no. 3, 1951

9. Monthly List of Russian Accessions, Library of Congress, May 1953, Uncl.

MARCHUK, P. D.

In memory of Ivan Petrovich Pavlov; 17th anniversary of his death.
Medych. zhur. 23 no.3:95-97 '53. (MLRA 8:2)
(PAVLOV, IVAN PETROVICH, 1849-1936)

MARCHUK, P. D.

7992. MARCHUK, P. D. Sanitarno-gigiyenicheskiy rezhim v pokhode. Kiyev, "Rad. Shkola", 1954. 20s. s ill. 20 sm. (m-vo osvveshcheniya ukr. SSR. Resp. ekskursionno-turistskaya stantsiya. V omoshch' yunomu puteshestvenniku). 10.000 EKZ. Bespl.-- NA ukr. yaz.--(55-2894)

371.233+087.1:796.5

SO: Knizhuaya Letopis', Vol. 7, 1955

MARCHUK, P.D.

Experimental studies and clinical observation on the preparation
plasmol. Medych.zhur.24 no.4:75-80 '54. (MLRA 8:10)

1. Ukrainskiy naukovo-doslidniy institut epidemiologii, mikrobiologii i gigiyeny.
(SERUM THERAPY,
with plasmol)

MARCHUK, P.D.

In memory of Academician D.K.Zabolotnyi; 25th anniversary of his death.
Visnyk AN URSR 25 no.12:38-41 D '54. (MIRA 8:4)
(Zabolotnyi, Daniil Kirillovich, 1866-1929)

MARCHUK, P.D.

[Hardening the organism by air, sun and water] Zagartovuvannia
organizmu povitriam, sontsem i vodoiu. Kyiv, Derzh. med. vyd-vo
URSR, 1956. 30 p. (MLRA 10:5)
(Hygiene) (Naturopathy)

MARCHUK, P.D., otvetstvennyy redaktor; BOGOMOLET'S, O.A., redaktor; KAVETSKIY, P.Ye., redaktor; KOROL', S.A., redaktor; LEVCHUK, G.A., redaktor; MEDVEDEVA, N.B., redaktor; GITSEYIN, A.D., tekhnicheskiy redaktor

[Cytotoxins in modern medicine; a collection of works commemorating the 75th birthday of Academician A.A.Bogomolets] TSitotoksiny v sovremennoi meditsine; sbornik rabot, posviashchennyi 75-letiiu so dnia rozhdeniia akademika A.A.Bogomol'tsa. Kiev, Gos. med. izd-vo USSR, 1956. 329 p. (MLRA 9:11)

1. Ukraine. Ministerstvo zdravookhraneniya.
(SERUM)

MARCHUK, P.D.

Some physiological mechanisms of hardening. *Fiziol.zhur.(Ukr.)* 2 no.3:
131-136 My-Je '56. (MLRA 9:10)

1. Kiivs'kiy institut fizichnoi kul'turi.
(CONDITIONED RESPONSE) (PHYSICAL FITNESS)

MARCHUK, P. D.

Med The distribution of radiiodine-labeled cytotoxins in the rat. P. D. Marchuk, S. A. Korol, and Yu. A. Umanski. *Vopr. Onkol. i Rad. Biol.* 1957, No. 7, 726-8; *Referat. Zhur., Khim. i Biol. Khim.* 1957, No. 2323. Iodized globulin (I) of cytotoxic and of normal serum was used. The globulin was dissolved so that 2-3 ml. of the soln. contained an amt. of globulin equiv. to 0.1 mg. of the native serum. Two-three ml. of this globulin soln. was injected intravenously into rats and the rats were killed at intervals of 15, 30, 60, 120, 240, and 1440 min. after the injection. The radioactive iodine accumulated in the liver, lungs and spleen in greater concns. in the case of I of cytotoxic serum. Thirty min. after injection of the labeled I of cytotoxic serum the greatest concns. of radioiodine were found in the liver, lungs, and bone marrow. After the injection of labeled I of normal serum greatest concns. appeared in the liver, bone marrow, and to a considerably lesser degree in the lungs. Sixty min. after the injection of the labeled I of cytotoxic or of normal serum the liver, lungs, and bone marrow of the rats retained the radioactivity; the radioactivity of the spleen at that time was higher and 30 min. after the injection of the labeled I of normal serum the greatest concn. of the radioiodine was found in the brain and in the liver.
B. S. Levine

MARCHUK, P.D.

Academician D.K. Zabolotnyi; on the 90th anniversary of his
birth. Visnyk AN URSR 27 no.12:59-63 D'56. (MLRA 10:1)
(Zabolotnyi, Danil Kirillovich, 1657-1929)

MARCHUK, P.D., professor

Using "plasmol" in some diseases in athletes. Vrach.delo no.2:199
F '57. (MLRA 10:6)

1. Kiyevskiy institut fizicheskoy kul'tury.
(BLOOD AS FOOD OR MEDICINE)
(ATHLETES--DISEASES AND HYGIENE)

MARCHUK, P.D., professor (Kiyev)

Second All-Union conference of pathophysiologists. Klin. med.
35 no.1:149-152 Ja '57 (MLRA 10:4)
(PHYSIOLOGY, PATHOLOGICAL)

Marchuk, P. D. and Sereshnaya, M. M.

Neurohumoral relationship of the blood serum, the administration of
ACS*. *for test*

Materialy nauchnykh konferentsii, Kiev, 1959. 20 pp
(Kievskiy Nauchno-issledovatel'skiy Institut Zoologii i Mikrobiologii)

Translator's note: *Antitreticular cytotoxic serum

MARCHUK, P. D.

~~Marchuk, P. D.~~

Obtaining the dry ACS*, and determining action.

Materialy nauchnykh konferentsii, Kiev, 1979. 2 tom
(Kievskiy nauchno-issledovatel'skiy Institut epidemiologii i mikrobiologii)

Translator's note: *Antitubercular cytotoxic serum

MARCHUK, P.D., prof. (Kiyev)

Therapeutic effect of antireticular cytotoxic serum (ACS). Vrach.delo
no.7:683-685 JI '59. (MIRA 12:12)

1. Kiyevskiy institut epidemiologii i mikrobiologii Miniseterstva
zdravookhraneniya USSR.
(ANTIREPICULAR CYTOTOSIC SERUM)

MARCHUK, P.D.; KOROL', S.A.

Conference on the physiology and pathology of the connective tissue
system and antireticular cytotoxic serum, in Kiev, December 8-11, 1958.
Pat.fiziol. i eksp.terap. 3 no.6:84-85 N-D '59. (MIRA 13:3)
(CONNECTIVE TISSUE)
(ANTIRETICULAR CYTOTOXIC SERUM)

MARCHUK, P.D., otv. red. (Kiyev); BOGOMOLETS, O.A., red. (Kiyev);
KAVETSKIY, R.Ye., red. (Kiyev); KOROL', S.A., red. (Kiyev);
LEVCHUK, G.A., red.; MEDVEDEVA, N.B., red.; GITSHEYN, A.D.,
tekh. red.

[Cytotoxins in present day medicine] TSitotoksiny v sovremen-
noi meditsine. Kiev. Gos. med. izd-vo USSR. Vol.2. 1960. 332 p.
(MIRA 15:3)

1. Ukraine. Ministerstvo zdravookhraneniya.
(SERUM)

MARCHUK, P.D., doktor med.nauk, prof.

To 100 and more. Nauka i zhyttia 10 no.7:37-40
Jl '60. (MIRA 13:7)
(LONGEVITY)

MARCHUK, P.D.

Current problems in gerontology; main trends in the work of the
Institute of Gerontology and Experimental Pathology of the Soviet
Academy of Medical Sciences. Vest. AMN SSSR 15 no. 10:55-59 '60.
(MIRA 14:4)

(OLD AGE)

MARCHUK, P.D., prof.

Man will live longer. Znan. ta pratsia no. 1:13-15 Ja '61.
(MIRA 14:4)

1. Zamestitel' direktora Instituta gerontologii i eksperimental'noy
patologii Akademii meditsinskikh nauk SSSR.
(OLD AGE)

MARCHUK, P.D., prof.; SVECHNIKOVA, N.V., dotsent (Kiyev)

Fifth International Congress of Gerontologists. Vrach. delo no.2:
144-146 F '61. (MIRA 14:3)

(OLD AGE—CONGRESSES)

MARCHUK, P.D., prof.

Conference on the subject "Gerontology and Geriatrics." Vrach! delo
no.9:149-152 S '61. (MIRA 14:12)

1. Zamestitel' direktora po nauchnoy chasti instituta gerontologii
i eksperimental'noy patologii AMN SSSR.
(OLD AGE--CONGRESSES) (GERIATRICS--CONGRESSES)

MARCHUK, P.D.

ACS serum and other cytotoxic serums and their significance in medicine.
Fiziol. zhur. [Ukr.] 7 no.3:371-375 My-Je '61. (MIRA 1':5)

1. Institut gerontologii i eksperimental'noy patologii AMN USSR,
Kiyev.

(SERUM)

MARCHUK, P.D.

Scientific conference on the problem "Gerontology and geriatrics."
Fiziol. zhur. [Ukr.] 7 no.4:571-572 JI-Ag '61. (MIRA 14:7)
(AGING)

MARCHUK, P.D.; KOROL', S.A.; BEREZHNA, N.M. [Berezhnaya, N.M.]

Antigenic properties of some tissues. Fiziol. zhur. [Ukr.] 7 no.5:
636-643 S-0 '61. (MIRA 14:9)

1. Institute of Gerontology and Experimental Pathology of the Academy
of Medical Sciences of the U.S.S.R., Kiev.
(ANTIGENS AND ANTIBODIES) (TISSUES)

MARCHUK, P.D.

At the Fifth International Congress of Gerontologists. Vest. AMN
SSSR 16 no.6:68-74 '61. (MIRA 15:1)
(GERIATRICS...CONGRESSES)

GOREV, Nikolay Nikolayevich, red.; MAN'KOVSKIY, B.N., red.; MARCHUK, P.D.,
red.; SACHUK, N.N., red.; FROL'KIS, D.F., red.; CHEBOTAREV, D.F.,
red.; SHURUPOVA, Ye.A., red.; GOL'SHTEYN, N.I., red.; LEBEDEVA,
Z.V., tekhn. red.

[Problems of gerontology and geriatrics] Voprosy gerontologii i
geriatrii. Leningrad, Medgiz, 1962. 279 p. (MIRA 15:9)

1. Akademiya meditsinskikh nauk SSSR, Moscow. 2. Deystvitel'nyy chlen
Akademii meditsinskikh nauk SSSR (for Gorev).
(GERIATRICS) (OLD AGE)

MARCHUK, P. D.,

"Immunological Changes Following Vitamin Therapy in the Elderly"

Report to be presented at Medical Society of J. E. PURKYNE, Czech,
Vitaminological Cong., Prague, Czech., 3-6 Jun 63

MARCHUK, P.D. ---

On the All-Union conference on the problems of gerontology and geriatrics "Functional and morphological indices of aging." Fiziol. zhur. [Ukr] 9 no.3:416-420 My-Je '63. (MIRA 18:1)

MARCHUK, P.D., prof. (Kiyev)

All-Union conference of gerontologists. Vrach. delo no.10:
154-155 0 '63. (MIRA 17:2)

MARCHUK, P.D., prof.

Conference of gerontologists in Budapest. Pat. fiziol. 1
eksp. terap. 7 no.4:90-91 J1-Ag '63. (MIRA 17:9)

MARCHUK, P.D., prof. (Kiyev)

Hungarian Conference of Gerontologists. Klin. med. 41 no.7:
153-155 JI'63 (MIRA 16:12)

MARCHUK, I. I.

European symposium on the health of the elderly and
senile people and the prevention of their premature aging. Field
work. [Ukr.] 9 no. 5870-11. (1984)

At the conference on the health of the elderly and
the aging of the population. The program of research and

MARCHUK, P.D. (Kiyev)

All-Union conference of gerontologists. Vest. VNI VSR 19 no.1:
85-89 '64. (MIR: 1717)

MARCHUK, P.D., prof.

European symposium on the health protection of middle-aged and
old persons and prevention of senescence. Sov. med. 28 no. 4:147-151
Ap '64. (MIRA 17:12)

MARCHUK, P.D.

Use of biologically active substances in geriatrics. *Fiziol.zhur.*
[Ukr.] 11 no.4:564 J1-Ag '65. (MIRA 18:10)

MARCHUK, P.D., prof.

Mode of life and aging. Sov. med. 28 no.9:139-141 S '65.
(MIRA 18:9)

1. Institut gerontologii AMN SSSR, Kiyev.

MARCHUK, P.M.

Category : USSR/Electronics - Gas Discharge and Gas-discharge Instruments H-7

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4243

Author : Morgulis, N.D., Marchuk, P.M.

Inst : Institute of Physics, Academy of Sciences, Ukrainian SSR Kiev.

Title : Physical Phenomena Occurring when the Cathode of an Arc Discharge Works in Caesium Vapors.

Orig Pub : Ukr. fiz. zh., 1956, 1, No 1, 59-72

Abstract : An experimental investigation was made of the processes that determine the high emission activity of a thermal cathode of an arc discharge in caesium vapors at increased (approximately 0.5 mm mercury) pressure, when the emission density under continuous operation may reach tens of amperes per square centimeter. The high emission density is explained by the region where an active film of caesium can exist and have an optimum density for thermal emission shifts towards the higher cathode temperatures. The total cathode current is separated into an ionic and an electronic components. The peculiarities characterizing the basic thermal electronic portion of the discharge current are explained, as is the relative influence of the evaporation and

Card : 1/2

Category : USSR/Electronics - Gas Discharge and Gas-discharge Instruments H-7

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4243

vaporization of the active caesium film on the cathode on the establishment of dynamic equilibrium in the cathode. The problem of the distribution of the energy in different parts of the gas discharge is considered briefly. Bibliography, 22 titles.

Card : 2/2

Marchuk, P.M.

AUTHOR: Marchuk, P.M.

109-12-2/15

TITLE: Evaporation of Barium from the Surface of Certain Metals
(Ispareniye bariya s poverkhnosti nekotorykh metallov)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol. II, No.12,
pp. 1479 - 1490 (USSR)

ABSTRACT: A detailed investigation of the processes of the evaporation of barium from polycrystalline surfaces of several metals was carried out. The method of measurement was similar to that employed by L.N. Dobretsov (Ref.2), and it was as follows. The surface of a cold metal filament is coated with a layer of barium and the temperature of the filament is then rapidly raised to the required value and the electron emission of the filament is measured as a function of the evaporation time of the barium. By plotting a number of such curves for various temperatures of the filament, it is possible to calculate the characteristic parameters for the process of the evaporation. It is shown that the process can be described by the following equation:

$$\lg\left(-\frac{dx}{dt}\right) - \lg \arcsin \frac{x}{b} - \lg \sqrt{b^2 - x^2} = -\frac{5040\lambda}{T} - \lg \tau_0 = \lg \frac{1}{\tau} \quad (3)$$

Card 1/3