

I. V. ANOV, V. V.

OVC INNIKOV, A.M.; IVANOV, V.V.; YAROTSKIY, L.A.

Origin of carbonated mineral waters. Sov. geol. 1 no.1:145-149
Ja '58. (MIRA 11:4)

1. Moskovskiy geologorazvedochnyy institut im. S. Ordzhonikidze i
"Sentral'nyy nauchno-issledovatel'skiy institut karortologii.
(Mineral waters) (Carbon dioxide)

IVANOV, Valeriy Vladimirovich; OVCHINNIKOV, Aleksandr Mikhaylovich;
YAROTSKIY, Leonid Aleksandrovich: Prinimala uchastiye TIKHONOVA,
N.V. NEVRAYEV, G.A., red.; IVANOVA, A.G., tekhn.red.

[Map of underground mineral waters of the U.S.S.R. with a scale
of 1:7,500,000; explanatory notes] Karta podzemnykh mineral'nykh
vod SSSR mashtaba 1:7,500,000; poiasnitel'naya zapiska. Moskva,
Gos.nauchno-tekhn.izd-vo lit-ry po geol. i okhrane neдр, 1960.
59 p. (MIRA 13:12)

1. Gidrogeologicheskoye otdeleniye Gosudarstvennogo nauchno-issle-
dovatel'skogo instituta kurortologii i fizioterapii Ministerstva
zdravookhraneniya SSSR (for Ivanov, Ovchinnikov, Yarotskiy).
(Mineral waters--Maps)

AUTHOR: Ivanov, V. V.

SO7/7-58-5-9/15

TITLE: The Chief Stages of the Hydrothermal Action of the Volcanoes of the Kamchatka and Kurile Islands and the Types of Thermal Waters Connected With Them (Osnovnyye stadii gidrotermal'noy deyatel'nosti vulkanov Kamchatki i Kuril'skikh ostrovov i svyazannyye s nimi tipy termal'nykh vod)

PERIODICAL: Geokhimiya, 1958, Nr 5, pp 473 - 485 (USSR)

ABSTRACT: The type and the intensity of the hydrothermal activity of active volcanoes is not only determined by the activity of the deep magma centers but just as well by the thermodynamic and hydrogeological conditions prevailing in the upper horizons of volcanic massifs. The volcanic gases may well be separated into the two groups known: fumarolic gases are exhalations of high temperature, solfataric gases have a comparatively low temperature and have been "filtered" by subterranean waters. Table 1 gives the division and the qualitative investigation of these. In table 2 the measuring results obtained are given. In the Kuril-Kamchatka volcanic zone there are four stages of hydrothermal activity to be distinguished: 1) The strong

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exhalation of chloric, sulfuric and carboxylic acid gases of high temperature, and the formation of ultra acid thermal springs containing free sulfuric and hydrochloric acid. 2) The hydrogen sulfide carboxylic acid gases of only low temperature come to the surface; acid sulfate thermal springs are formed in the near-the-surface zones. 3) Only hydrogen sulfide carboxylic acid gases are separated and only acid sulfate thermal springs are formed. 4) An exhalation of steam without any considerable admixtures of gases; this is produced by highly overheated underground waters. The different types of thermal springs are dealt with and explained by means of analyses: acid sulfate thermal springs (Table 3), acid chloride or sulfate chloric thermal springs (Table 4), alkali chloride thermal springs (Table 6). In table 5 the acid thermal springs are compared to one another, in table 7 the alkali chloride thermal springs are compared with those of similar areas. The alkali chloride springs were formed by the thermal action of the active volcanic centers; they are highly overheated, and they usually have a low mineralization and a low gas factor (CO_2 , N_2). The boric

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and silicic acid content are considerably increased. These thermal
springs may be used for the production of power. The following
scientists assisted by carrying out analyses: I.S. Krasnikova,
S.S. Krapivina, Ye.F. Prokof'yeva, Ya.P. Ryabichkina. There are 7
tables and 19 references, 14 of which are Soviet.

ASSOCIATION: Laboratoriya vulkanologii AN SSSR, Moskva (Moscow, Laboratory
for Volcanology, AS USSR)

SUBMITTED: March 27, 1958

Card 3/3

IVANOV, V.V.

Formation and distribution of thermal waters in Kamchatka. Trudy.
Lab.vulk. no.13:186-211 '58. (MIRA 12:3)
(Kamchatka--Springs)

VLODAVETS, V.I., red.; DERGUNOV, I.D., red. [deceased]; IVANOV, V.V., red.; MAKARENKO, F.A., red.; KHITAROV, N.I., red.; ~~GUSEVA, I.N., red.~~
L.V., red. izd-va; GUSEVA, I.N., tekhn. red.

[Problems in geothermy and practical utilization of the earth's heat; transactions of the First All-Union Conference on Geothermic Research, March 1956] Problemy geotermii i prakticheskogo ispol'zovaniia tepla zemli; trudy Pervogo Vsesoiuznogo soveshchaniia po geotermicheskim issledovaniiam, mart 1956 g. Moskva, Izd-vo Akad.nauk SSSR. Vol.1. 1959. 254 p. (MIRA 12:10)

1. Laboratoriya vulkanologii AN SSSR (for Vladavets). 2. Institut fiziki Zemli AN SSSR im. O.Yu.Shmidta (for Dergunov [deceased]).
(Earth temperature--Congresses)

IVANOV, V.V.

Origin and classification of thermal waters of the present. *Geokhimiya*
no.5:443-450 '60. (MIRA 13:8)

1. Laboratory of Volcanology, Academy of Sciences, U.S.S.R., Moscow.
(Water, Underground)

VLODAVETS, V.I., red.; DERGUNOV, I.D., red. [deceased]; IVANOV, V.V., red.;
MAKARENKO, F.A., red.; KHITAROV, N.I., red.; BARABANOV, L.N., red.;
SHEYNMAN, V.S., red. izd-va; YEGOROVA, N.F., tekhn. red.

[Problems in geothermy and the practical utilization of the
earth's heat; transactions] Problemy geotermii i prakticheskogo is-
pol'zovaniia tepla Zemli; trudy. Moskva, Izd-vo Akad. nauk SSSR.
Vol.2. 1961. 304 p. (MIRA 14:8)

1. Vsesoyuznoye soveshchaniye po geotermicheskim issledovaniyam.
(Heating) (Water, Underground)

IVANOV, V.V.

Geochemistry of cadmium in deposits of the Deputatskoye group.
Geokhimiia no.2:150-155 '61. (MIRA 14:3)

1. Institut mineralogii, geokhimi i kristalloghimi redkikh
elementov AN SSSR, Moskva.
(Yakutia--Cadmium) (Isomorphism)

IVANOV, V.V.

Basic geological conditions and geochemical processes of the
formation of thermal waters in the regions of recent volcanism.
Trudy Lab.vulk. no.19:53-68 '61. (MIRA 14:9)
(Volcanoes) (Geysers)

IVANOV, V.V.

Light scattering in a plane layer, Astron.zhur. 41 no.1-44-53
Ja-F '64. (MIRA 17:4)

1. Astronomicheskaya observatoriya Leningradskogo gosudarstvennogo
universiteta.

GIZHITSKIY, Aleksandr Marianovich; SHIBANOV, F.A., redaktor; PORUNKOVA, G.G.,
redaktor; IVANOV, V.V., tekhnicheskiiy redaktor

[Manual for the determination of astronomical points] Posobie
po opredeleniiu astronomicheskikh punktov. [Leningrad] Izd-vo
Leningradskogo univ., 1955. 165 p. (MLRA 9:3)
(Astronomy, Spherical and practical) (Geographical
positions)

S/019/60/000/023/098/116
A154/A027

AUTHORS: Maksimov, N.I., Leleykin, M.N., Ivanov, V.V.

TITLE: A Stand for the Group Machining and Testing for Curvature and Twisting of Long Aircraft Stringers

PERIODICAL: Byulleten' izobreteniy, 1960, No. 23, p. 62

TEXT: Class 62b, 5⁰⁶. No. 134139 (640360/27 of September 28, 1959). This stand for the group machining and testing for curvature and twisting of long aircraft stringers is distinguished by the fact that, in order to make it versatile and reduce labor consumption and production costs, it is made in the form of a sectional girder, mounted on a concrete base and having horizontally installed guide bars along which a carriage moves horizontally. This carriage bears a vertically fixed sleeve along which it is moved vertically and fixed at a given height on a column which has brackets for the attachment of lofting boards (plazovyye shablony) in its upper part. The column is also provided with transverse base holes so that it can be mounted

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S/019/60/000/023/098/116
A154/A027

A Stand for the Group Machining and Testing for Curvature and Twisting of
Long Aircraft Stringers



at various heights.

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18.1240

88139
S/019/60/0007023/077/116
A154/A027

AUTHORS: Ivanov, V.V., Ignat'yev, K.S., Senatorov, V.A.

TITLE: A Bearing Alloy

PERIODICAL: Byulleten' izobreteniy, 1960, No. 23, p. 52

TEXT: Class 47b, 9. No. 134086 (655778/25 of February 23, 1960). This bearing alloy is distinguished by the fact that, in order to ensure efficient operation of sliding bearings lubricated with low-concentration sulfuric or phosphoric acid at a specific pressure of 3-4 kg/cm², the alloy consists of 30% bismuth and 70% lead. X

Card 1/1

AUTHOR: Ivanov, V.V. SOV/19-58-6-581/685

TITLE: A Centrifugal Self-Suction Pump
(Samovsasyvayushchiy tsentrobezhnyy nabos)

PERIODICAL: Byulleten' izobreteniy, 1958, Nr 6, p 128 (USSR)

ABSTRACT: Class 59b, 2. Nr 113936 (579084 of 17 Jun 57). Submitted to the Committee for Inventions and Discoveries at the Ministers Council of USSR. A centrifugal self-suction pump with an annular ejector, switching off automatically, for removing air from the suction pipe during starting; the ejector is formed by the bevelled mouthpiece of the suction pipe and the neck of the work wheel which moves in an axial direction together with the shaft against the pressure of a spring after the pump housing fills with liquid and the liquid pressure rises; the design includes seal packing on the bevelled shaft portion.

Card 1/1

AUTHORS: Ivanov, V.V. and Formskiy, S.A. SOV/19-58-6-21/685

TITLE: A Turbo-Vibrator for Core Drilling (Turbovibrator dlya kolonkovogo bureniya)

PERIODICAL: Byulleten' izobreteniy, 1958, Nr 6, p 9 (USSR)

ABSTRACT: Class 5a, 19. Nr 113501 (575523/443-55 of 29 June 1955). Submitted to the Ministry of Coal Industry of the USSR. A turbo-vibrator for drilling in cleft rocks. The vibrator is placed in the drilling column on a shaft coaxial with the column, and connected through an elastic coupling to a hydraulic turbine. The design gives transverse vibrations to the drilling tool.

Card 1/1

Aerionization

IVANOV, V.V.

[Handwritten signature]
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was established on the basis of many years of study that by means of aerions of negative polarity it is possible to raise the resistance of the organism to the effect of such pathogenic factors as oxygen deficiency, acute loss of blood, bacterial toxins, and allergic responses for anaphylactic shock. Negative aerions increase the resistance of the organism to cooling and to the effect of adrenalin. The author thinks that this effect is accomplished via the neutralization of the action of aerions.

G.S. Popyanov (Kiev) in his report "On the Pathogenesis of the Action of Aerionization" advanced his idea that aerions represent a subgenetic physiological stimulator which exerts its effect via skin receptors. The regular mechanism of the action of ions is demonstrated by different responses upon stimulation of various skin receptors. The author also showed that under the effect of ions a combination current originates in the tissues; the author succeeded in effecting electrotherapy by means of aerions. A.M. Skopovskaya (Leningrad) reported on the effect of aerions on the metabolism of the blood only after a prolonged course of action (after 40 sessions); the principal changes take place in the beta-globulin fraction and there is a distinct difference in the effect of positive and negative ions.

R.A. Katsenrich (Frankfurt) reported on the effect of hydroaerionization on the oxidation-reduction processes. On the basis of experimental investigations of the gas content in the blood and the residual amount of oxygen in the blood and urine, the speaker arrived at the conclusion that hydroaerionization in a definite dosage increases the oxidation-reduction processes. In another report Katsenrich showed that under the effect of hydroaerionization there is a change taking place in the phagocytary activity of the leucocytes and the indexes of the cutaneous allergic test with the streptococcus allergen. I.N. Yuravova (Leningrad) established that negative ions retard the process of drying from an acute hemorrhage and have an effect on the subsequent rehydration of the animal. Ya.S. Kayli and V.V. Ivanov (Leningrad) reported on the positive effect on the metabolism of the unipolar or bipolar ionized air. In the opinion of these authors, positive and negative ions may exert a favorable effect on various functional systems.

The experimental studies of O.P. Shlemberg showed the effect of hydroaerionization on gastric secretion and the presence of reflex mechanism of this action. A.Ye. Sigal and I.S. Demikhina allotted by means of experimental in-

In All-Union Conference on Aero- and Hydro-aerionization took place in Leningrad 25-28 May 1950.

Sol. Tsvetkov, Kuznetsov, P. V. (Leningrad) for the Department of Aerionization, 1950/Jan 1951
 SPSS 10011, 31 August 1961, Unclassified

IVANOV, V.V.; SHAGINYAN, A.A.; YERIKOLOPYAN, N.S.

Molecular weight distribution of polymers in the case of the
chain transfer and termination. Dokl. AN SSSR 161 no.1:154-155
Mr '65. (MIRA 18:3)

1. Institut khimicheskoy fiziki AN SSSR. Submitted August 17, 1964.

IVANOV, V.V.; MEDVEDEV, Yu.A.

Electric effect of large meteoric bodies. Geomag. i aer. 5 no.2:286-
288 Mr-Apr '65. (MIRA 18:7)

IVANOV, V. V.

(Viktor Vladimirovich)

260T71

USSR/Mathematics - Approximations 21 May 53

"Approximation of Functions by Partial Sums of a Series in Faber Polynomials," S. Ya. Al'per and V. V. Ivanov

DAN SSSR, Vol 90, No 3, pp 325-328

Shows that polynomials of a perfectly definite type, namely, partial sums of a series in Faber polynomials, give in certain cases approximate functions close to the optimum approximation, the upper bounds of both approximations turning

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out under certain conditions to be simply quantities of a single order. Presented by Acad M. V. Keldysh 19 Mar 53.

IVANOV, V.V. (Moskva)

(Viktor Vladimirovich)

Graphic method for solving certain nonlinear differential equations
of the second order. Inzh.sbor. 24:183-189 '56. (MLRA 10:5)
(Differential equations--Graphic methods)

IVANOV, V.V. (Viktor Vladimirovich)

SUBJECT USSR/MATHEMATICS/Integral equations CARD 1/2 PG -530
 AUTHOR IVANOV V.V.
 TITLE Approximative solutions of singular integral equations.
 PERIODICAL Doklady Akad.Nauk 110, 15-18 (1956)
 reviewed 1/1957

Let X and Y be two Hilbert spaces. Let $x_0, x_1, \dots, x_n, \dots$ be a completely normalized orthogonal system of elements of X . The author considers the equation

$$(1) \quad Kx = Gx + \lambda Tx = y,$$

where λ is a complex parameter, G and T are linear operators which transform the elements of X into elements of Y . Let T be complete and let exist G^{-1} . Beside of (1) the algebraic system

$$(2) \quad \sum_{k=0}^n (Kx_k, Gx_j) \beta_k = (y, Gx_j) \quad j=0, 1, \dots, n$$

is considered. The following theorem is proved: If the operator K has an inverse, then (2) possesses a unique solution for all $n \geq n_0$. For the solutions of (1) and (2) holds

$$\left\| x - \sum_{k=0}^n \beta_k x_k \right\| \rightarrow 0 \quad \text{if } n \rightarrow \infty.$$

Doklady Akad.Nauk 110, 15-18 (1956)

CARD 2/2

PG - 530

This theorem is applied for the consideration of the singular integral

$$\text{equation } Kx = A(t_0)x(t_0) + \frac{B(t_0)}{\pi i} \int_{\gamma} \frac{x(t)dt}{t-t_0} + \lambda \int_{\gamma} T(t,t_0)x(t)dt = y(t_0).$$

Here γ is the unit circle; y, A, B, T satisfy on γ in all variables the Hölder condition with the exponents μ ($0 < \mu < 1$); on γ holds $A^2 - B^2 \neq 0$.

INSTITUTION: Novosibirsk.

IVANOV, V.V.

(Viktor Vladimirovich)

An approximate solution of singular integral equations when
the integral is taken along an open curve. Dokl. AN SSSR 111
no.5:933-936 D '56. (MLRA 10:2)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
Predstavleno akademikom M.A. Lavrent'evym.
(Integral equations)

So: Knizhnaya Leptopis', No. 48, 1956

IVANOV, V.V. (Viktor Vladimirovich)

AUTHOR
TITLE

20-5-8/69
IVANOV, V.V.

The Use of the Method of Moments and the "Mixed" Method for an Approximate Solution of Singular Integral Equations.

PERIODICAL

(O primenenií metoda momentov i "smeshennogo" metoda k priblizhennomu resheniyu singulyarnykh integral'nykh uravneniy.- Russian)
Doklady Akademii Nauk SSSR 1957, Vol 114, Nr 5, pp 945-948 (USSR)

ABSTRACT

The author here describes the bases of these two methods. Only the so-called "characteristic" equation is accurately investigated here. It is possible to go over to the case of the general singular equation without any special difficulties by means of a scheme worked out by L.V. KANTOROVICH (Usp. matem. nauk, Vol 3, 6(29) (1948)).
The equation

$$G\varphi = A(t_0)\varphi(t_0) + \frac{B(t_0)}{\pi i} \int_{\gamma} \frac{\varphi(t)dt}{t-t_0} = f(t_0), t_0 \in \gamma \quad (1)$$

is assumed as given. Here γ denotes the circle of unit radius with the center in the coordinate source. Further $A, B, f \in H$, is true, i.e. they are steady on γ in the

CARD 1/3

20-5-8/60

The Use of the Method of Moments and the "Mixed" Method for an Approximate Solution of Singular Integral Equations.

sense of GEL'DER: $A^2 - B^2 \neq 0$ on γ ; for the index \mathcal{H} ,

$\mathcal{H} = (1/2\pi) [\arg((A-B)/(A+B))]_a \geq 0$ applies. Further, $A + B = 1$ is assumed here, which does not restrict the general character of the investigations. The method of Moments: The equation (1) is investigated here as a linear equation in HILBERT'S space L_2 . The approximate solution φ_x is here set up in the form

$$\varphi^{(1)} = \sum_0^n \alpha_k t^k - \sum_{-n}^{-1} \alpha_k t^{k-\mathcal{H}}$$

At certain assumptions an algebraic system of equations with respect to the unknown $\{\alpha_k\}$ is obtained. Next, two lemmata are given and proved. A theorem is given for the general singular equation

$$K\varphi = G\varphi + \lambda \int_{\gamma} T(t, t_0) \varphi(t) dt = f(t_0), \quad t_0 \in \gamma$$

CARD 2/3

The mixed method: On the amount of the functions $\varphi \in H$

20-5-8/60

The Use of the Method of Moments and the "Mixed" Method
for an Approximate Solution of Singular Integral
Equations.

a norm according to the rule $\| \varphi \| = \max_{t \in J} | \varphi^+ | + \max | \varphi^- |$

is here introduced. The closed character of H in the
sense of the introduced metric is denoted here as W^* .
Here too a theorem on the uniqueness of the solution is
given.

(No Illustrations)

ASSOCIATION: Moscow State University "M.V. LOMONOSOV"
(Moskovskiy gosudarstvennyy universitet im. M.V.
Lomonosova.- Russian)

PRESENTED BY: LAVRENT'YEV M.A., member of the Academy, 29.12.1956

SUBMITTED: 28.12.1956

AVAILABLE: Library of Congress.

CARD 3/3

88849

№. 4100
16.2600S/044/60/000/007/003/058
C111/C222AUTHOR: Ivanov, V.V.

TITLE: Approximate calculation of Singular Integrals

PERIODICAL: Referativnyy zhurnal. Matematika, no.7, 1960, 57.
Abstract no.7461. Nauchn.tr.Novoherk.politekn.in-t, 1958,
67 (81), 75-86

TEXT: The author investigates two methods for the approximate calculation of singular integrals. In the first method the author applies the development in a uniformly convergent series in terms of Faber polynomials corresponding to the continuum L, of the integral

$$\frac{1}{\pi i} \int_L \frac{f(t)dt}{t-t_0} \quad (1)$$

taken along a smooth closed curve L and understood as a function of the point $t_0 \in L$. The series coefficients are expressed by integrals over L which contain the functions $f(t)$ and $\phi(t)$. Here $W = \phi(z)$ is a function which conformally maps the simply connected region D containing the infinitely far point and being bounded by L, onto the circle $|w| > \rho$;

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Approximate calculation...

$\lim_{z \rightarrow \infty} \frac{\phi(z)}{z} = 1$. (As it is well-known, the Faber polynomials are also defined by $\phi(z)$). In the theorems 1.1 and 2.1 it is assumed that the p-th derivative $f^{(p)}(t)$ satisfies the Hölder condition, $f^{(p)}(t) \in H(\lambda)$, $0 < \lambda < 1$, and it is stated that the n-th remainder of the mentioned series is not greater than $\frac{\text{const}}{n^{p+\lambda-\xi}}$, where $\xi > 0$ is arbitrarily small (in theorem 1.1 it holds $p = 0$, i.e. the function $f(t) \in H(\lambda)$). No explicit expression for const. is given in this estimation. Furthermore the author considers integrals over a smooth arc L with the ends a and b

$$\frac{1}{\pi i} \int_{ab} \frac{f(t)dt}{(t-c)^\alpha(t-t_0)^\beta}, \quad \begin{matrix} \gamma = \alpha + i\beta, & \alpha < 1, \\ c = a & \text{or} & c = b. \end{matrix} \quad (2)$$

Developments of this integral in more complicated series are given with the aid of Faber polynomials. It is remarked that special cases of the proved theorems are of practical interest (L-circles; ab-interval of the real axis, then the Faber polynomials are identical with the Chebyshev
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Approximate calculation...

polynomials which deviate least from zero). The second method of the approximate calculation consists in the following: in a special manner the arc L is subdivided into n partial arcs. For a separation of the singularity the integral (1) is transformed (result: in the numerator of the integrand there appears $f(t)-f(t_0)$ instead of $f(t)$) and approximately replaced by an integral sum (as in the quadrature formula of rectangles) in which those terms are omitted which correspond to the arcs neighboring to the point t_0 . The error - under the assumption $f(t) \in H(\lambda)$ - is not greater than $8H_f(\ln n + \frac{1}{\lambda})M(\frac{L}{n})^\lambda$, where H_f is the Hölder constant, L is the length of the arc, the constant M is determined by the form of the arc. In the case where $f^{(p)}(t) \in H(\lambda)$, the author proposes another more exact and more complicated formula (the values of the derivatives up to the order p of the function $f(t)$ in the intermediate points are used). Finally, by a transformation of variables, the integral (2) is reduced to the case where ab is identical with the interval $(-1,+1)$ of the real axis. The author investigates (under the assumption that $f(x) \in H(\lambda)$) an analogous quadrature formula the error of which naturally increases for an approximation of x_0 to the endpoint C of the interval ($C=-1$ or $C=+1$).

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Approximate calculation...

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It is remarked that the formulas contained in the paper permit to solve numerically the Riemannian boundary value problem and some inverse boundary value problems. There are misprints: on p.77 (line 2) an inexact series development, on p.82 in the definition of the function $Q_p(t, t_0)$ the factor $t-t_0$ is missing in one of the terms, on p.83, line 4 the factor H_p is missing.

[Abstracter's note: The above text is a full translation of the original Soviet abstract.]

Card 4/4

AUTHOR: Ivanov, V.V. (*Viktor Vladimirovich*) SOV/140-58-4-10/30
 TITLE: Some Properties of Singular Integrals (Nekotoryye svoystva osobnykh integralov)
 PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1958, Nr 4, pp 89-95 (USSR)

ABSTRACT: Let L be a closed Lyapunov curve in the complex plane, where the origin lies in the interior of L . Let $H(p+\alpha, L)$ be the class of functions defined on L , the p -th derivative of which satisfies the Hölder condition with the exponent α . Let H_n be the set of polynomials $\sum_{-n}^n \alpha_k t^k$ and

$$\xi_n(f, L) = \inf_{P_n \in H_n} \sup_{t \in L} |f(t) - P_n(t)|.$$

As it is well-known, the singular integral $sf = \frac{1}{\pi i} \int_L \frac{f(t) dt}{t-t_0}$,

$t_0 \in L$, comprehended in the sense of the Cauchy principal value,

for $0 < \alpha < 1$ belongs to $H(p+\alpha, L)$ together with f .

Let $f(t) \in Z(p)$, $t \in L$ denote that

$$\Delta_2 f^{(p)} = f^{(p)}[t(s+h)] + f^{(p)}[t(s-h)] - 2f^{(p)}[t(s)] = o(h).$$

Card 1/2

Some Properties of Singular Integrals

SOV/140-58-4-10/30

Theorem: $f \in Z(p)$ on L together with sf .

Theorem: From $f \in Z(p)$ on L there follows: $\xi_n(f, L) = O(n^{-p-1})$.

Theorem: If for every $n > 0$, $\xi_n(f, L) = O(n^{-p-1})$, then $f \in Z(p)$ on L .

Theorem: If for every integral $n > 0$ holds $\xi_n(f, L) = O(n^{-p-1})$, then $\xi_n(sf, L) = O(n^{-p-1})$ and reversely: $\xi_n(sf, L) = O(n^{-p-1})$ implies $\xi_n(f, L) = O(n^{-p-1})$.

There are 8 references, 7 of which are Soviet, and 1 American.

ASSOCIATION: Rostovskiy institut sel'skokhozyaystvennogo mashinostroyeniya
(Rostov Institute for Agricultural Machine Construction)

SUBMITTED: January 27, 1958

Card 2/2

AUTHOR: Ivanov, V.V. (*Viktor Vladimirovich*) SOV/20-121-5-6/50

TITLE: Some Properties of Singular Integrals of the Cauchy Type and Their Applications (Nekotoryye svoystva obykh integralov tipa Koshi i ikh prilozheniya)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol121, Nr 5, pp 793-794 (USSR)

ABSTRACT: Let L be a closed simple Lyapunov curve. Let the origin of the complex plane lie in L . Let the function $f(t)$ be defined on L , let $Sf = \frac{1}{\pi i} \int_L \frac{f(t)dt}{t-t_0}$, $t_0 \in L$, be improper in the sense of the Cauchy principal value. Let $Z(p, L)$ denote the class of those functions defined on L for which $f^{(p)}[t(s+h)] + f^{(p)}[t(s-h)] - 2f^{(p)}[t(s)] = O(h)$, where s means the abscissa of arc of the point $t(s) \in L$. Let $\zeta_n(f, L) = \sup_{P_n \in H_n} \inf_{t \in L} |f(t) - P_n(t)|$, where H_n is the set of all polynomials $\sum_{-n}^n a_k t^k$.

Theorem: From $f \in Z(p, L)$ there follows $Sf \in Z(p, L)$ and conversely.

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Some Properties of Singular Integrals of the Cauchy Type and Their Applications SOV/20-121-5-6/50

Theorem: From $f \in Z(p, L)$ there follows $\mathcal{S}_n(f, L) = O(n^{-p-1})$ and conversely.

Theorem: If f is continuous on L , then $\exp(Sf) \in L_p$, $p > 0$.

Theorem: From $\mathcal{S}_n(f, L) = O(n^{-p-\alpha})$ there follows $\mathcal{S}_n(Sf, L) = O(n^{-p-\alpha})$, $0 < \alpha \leq 1$, and conversely.

The application to the Riemannian boundary value problem is pointed out.

There are 7 references, 5 of which are Soviet, 1 Polish, and 1 German.

ASSOCIATION: Rostovskiy-na-Donu institut sel'skokhozyaystvennogo mashinostro-yeniya (Institute for Construction of Agricultural Machinery, Rostov/Don)

PRESENTED: April 14, 1958, by I.N. Vekua, Academician

SUBMITTED: April 14, 1958

Card 2/2

16(1)

(Viktor Vladimirovich)

AUTHORS: Ivanov, V.V., Simonenko, I.B. SOV/20-126-6-5/67

TITLE: Approximate Search of all Solutions of a Given Linear Equation in a Banach Space

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 6, pp 1172 - 1175 (USSR)

ABSTRACT: Let E_1 and E_2 be complex Banach spaces with basis. The equation
 (1) $Kx = y$,

where K is a linear operator on E_1 with range in E_2 is assumed to have α linearly independent solutions $x_1, x_2, \dots, x_\alpha$ for $y = 0$. Let $\bar{x}_1, \bar{x}_2, \dots, \bar{x}_\alpha$ be a system of functionals from \bar{E}_1 , whereby it is $\det \{ \bar{x}_j(x_k) \} \neq 0$. Let the subspace E_1^0 consist of those \bar{x} for which $\bar{x}_j(\bar{x}) = 0, j = 1, 2, \dots, \alpha$. Let $\tilde{x}_1, \tilde{x}_2, \dots, \tilde{x}_\alpha$ be an arbitrary linearly independent system of elements with $\det \{ \bar{x}_j(\tilde{x}_k) \} \neq 0$. The equation

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Approximate Search of all Solutions of a Given
Linear Equation in a Banach Space

SOV/20-126-6-5/67

$K^* \bar{u} = 0$ where K^* is adjoint to K is assumed to have B linearly independent solutions $\bar{u}_1, \bar{u}_2, \dots, \bar{u}_B$. Let u_1, u_2, \dots, u_B be an arbitrary system of elements from E_2 for which it is $\det \{ \bar{u}_k(u_j) \} \neq 0$. Assume that the condition $\bar{u}_k(y) = 0, k = 1, 2, \dots, B$, is necessary and sufficient for the solvability of (1).

Theorem: With respect to the unknown $x \in E_1^0$ and the complex constant c_1, c_2, \dots, c_B the equation

$$(2) \quad Kx + \sum_{j=1}^B c_j u_j = y$$

has one unique solution for every $y \in E_2$.

Let the left side of (2) be understood as an operator \tilde{K} ,

Card 2/4

Approximate Search of all Solutions of a Given Linear Equation in a Banach Space 30V/20-126-6-5/67

which transforms the elements $\chi \left\{ \overset{0}{x}, c_1, \dots, c_B \right\}$,

$$\|\chi\| = \|\overset{0}{x}\|_{E_1} + \left\| \sum_1^B c_j u_j \right\|_{E_2} \text{ of the Banach space } \tilde{E}$$

into elements of E_2 . Let P_N ($P_N^2 = P_N$) be a projection operator of E_2 into a subspace M_N which contains the elements u_1, u_2, \dots, u_B starting from a certain N .

Starting from the condition $P_N \tilde{K} \chi_n = P_N y$ ($N = n + B$) the authors seek an approximative solution of (2) in the form

$$\chi_n \left\{ \varphi_n, c_1, c_2, \dots, c_B \right\}, \text{ where } \varphi_n \in L_n \subset E_1^0.$$

If it is

$$\|P_N K \varphi_n - K \varphi_n\| \leq \varepsilon_N \|\varphi_n\|, \quad \varepsilon_N \rightarrow 0, \quad N \rightarrow \infty$$

then beginning with a certain N it holds :

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Approximate Search of all Solutions of a Given
Linear Equation in a Banach Space

SOV/20-126-6-5/67

$$\|P_N \tilde{K} x_n\| \geq c \| \tilde{K}' x_n \|, \quad c > 0.$$

There are 6 references, 4 of which are Soviet, 1 Polish,
and 1 American.

ASSOCIATION: Vychislitel'nyy tsentr AN USSR (Computing Center AS Ukrain.
SSR)

PRESENTED: February 16, 1959, by N.N. Bogolyubov, Academician

SUBMITTED: February 12, 1959

Card 4/4

16.3000 (Viktor Vladimirovich)

AUTHOR: Ivanov, V. V.

001/00-109-1-2/60

TITLE: Approximate Solution of Riemann's Boundary Value Problem for Systems of n Functions

PERIODICAL: Doklady Akademii Nauk SSSR, 1959, Vol. 129, No. 1, pp. 21-23 (USSR)

ABSTRACT: Let the closed smooth curve L divide the complex plane into the regions D^+ and D^- , let the origin lie in the inner region D^+ . The author seeks the piecewise analytic vector $\Phi = (\phi_1, \phi_2, \dots, \phi_n)$ of finite order in infinity which on L satisfies the condition

$$\Phi^+(z) = G(z)\Phi^-(z) + f(z)$$

where $f = (f_1, f_2, \dots, f_n)$ is given on L , $\|G\| = \left[\int_L \int_L |G_{jk}|^2 |dz| \right]^{1/2} < \infty$,

and $G = \|G_{jk}\|_{j,k=1}^n$, $B = \|B_{jk}\|_{j,k=1}^n$ is a non-singular matrix function continuous on L according to Helber.

The author considers the Fredholm equation

✓

Card 1/2

Approximate Solution of Resonance Boundary Value Problem for Systems of n - Functions. SCV/20-139-1-6/68

$$(4) \quad x(t_0) = \frac{G'(t_0)}{2\pi i} \int_L \frac{G(t) - G(t_0)}{t - t_0} x(t) dt + r(t_0) + G^{-1} \left(-\frac{1}{2} f + \frac{1}{2\pi i} \int_L \frac{f(t)}{t - t_0} \right)$$

as a linear equation in the Hilbert space L_2 , he shows how all solutions of (4) can be determined approximately and that among these solutions there are all solutions of a problem equivalent to the initial problem. The mentioned equivalent problem was given by N. P. Vekua [Ref. 7]. The method demands extended calculations but it is effective. There are 6 Soviet references.

ASSOCIATION: Vychislitel'nyy tsentr Akademii nauk USSR (Calculating Center AS Ukr.SSR)

PRESENTED June 29, 1959, by N. I. Muskhelishvili, Academician

SUBMITTED May 27, 1959

Card 1/2

41453

S/044/62/000/009/043/069
A060/A000

16.6500

AUTHOR: Ivanov, V.V.

TITLE: Approximate solution of singular integral equations

PERIODICAL: Referativnyy zhurnal, Matematika, no. 9, 1962, 26, abstract 9V130
(In collection "Issled. po sovrem. probl: teorii funktsii kompleksn. peremennogo", Moscow, Fizmatgiz, 1961, 439 - 450)

TEXT: The paper sets forth the so-called mixed method of approximate solution of singular equations (without regularizing them) of the form

$$K \psi = A(t_0)\psi(t_0) + \frac{B(t_0)}{\pi i} \int_{\gamma} \frac{\psi(t) dt}{t - t_0} + \lambda \int_{\gamma} T(t, t_0)\psi(t) dt = f(t_0), \quad t_0 \in \gamma_{(1)}$$

where γ is the unit circle centered at the origin, the functions $T(t, t_0)$ (with respect to both arguments), $A(t_0)$, $B(t_0)$, and $f(t_0)$ are Hoelder-continuous, and $A(t_0) + B(t_0) \equiv 1$, $A(t_0) - B(t_0) \neq 0$ on γ , λ is a complex parameter. The approximate solution is required in the form

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Approximate solution of singular integral equations

S/044/62/000/009/043/069
A060/A000

$$\varphi' = \sum_{k=0}^{n-1} \alpha_k t^k + \sum_{k=-n}^{-1} \alpha_k t^{k-\chi},$$

where χ is the index of equation (1), $\chi = \frac{1}{2\pi} [\arg (A(t_0) - B(t_0))] \gamma$.

The quantities $\{\alpha_k\}$ are found from the system

$$\sum_{k=0}^{n-1} \alpha_k t_j^k + (A - B)_j t_j^{-\chi} \sum_{k=-n}^{-1} \alpha_k t_j^k + \lambda \int_{\gamma} T(t, t_j) \sum_{k=-n}^{n-1} \alpha_k t^k dt + f_j,$$

where $\{t_j\}$ divide the circle γ into $2n$ equal parts $(A - B)_j = A(t_j) - B(t_j)$, $f_j = f(t_j)$. Moreover, the background of this method is given (equation (1) is investigated for stability, the convergence of the approximate solution of equation (1) to the exact solution is demonstrated, the rate of convergence and its improvement are investigated, the efficiency of the method from the viewpoint of computer mathematics is analyzed). A separate section is devoted to the approxi-

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Approximate solution of singular integral equations

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A060/A000

mate solution of singular integral equations in the case of open contours of integration. The conclusion contains a brief survey of results by other methods of the approximate solution of singular integral equations.

N.Ya. Lyashchenko

[Abstracter's note: Complete translation]

Card 3/3

S/044/62/000/004/093/099
C111/C222

AUTHORS: Kulagina, O.S., Kaluzhnin, L.A., Ivanov, V.V.

TITLE: On the cultural significance of mechanical translation

PERIODICAL: Referativnyy zhurnal, Matematika, no. 4, 1962, 59-60,
abstract 4V402. ("Vestn. istorii mirovoy kul'tury", 1961,
No. 3, 22-36)

TEXT: A short survey of the stages of scientific and cultural development of mankind is given from the standpoint of the means of communication and information storage. Emphasized is the significance of fast working computers in breaking down the language barriers which are considerable obstacles to scientific and technical development. The structure of an electronic computer and its application to mechanical translations from French into Russian are described. The influence of mechanical translation on linguistics is mentioned. It is pointed out that the problem of meaning is the basic problem, because the meaning does not change in translating from one language into the other. ✓

[Abstracter's note: Complete translation.]

Card 1/1

IVANOV, V.V. (Kiyev); KARAGODOVA, Ye.A. (Kiyev); YADRENKO, E.K. (Kiyev)

Approximation method for determining the dynamic characteristics
of controlled members. Zhur. vych. mat. i mat. fiz. 1 no.3:523-541
My-Je '61. (MIRA 14:8)

(Electronic digital computers)

31106

S/208/61/001/006/002/013
B112/B138

16.6.60

AUTHOR: Ivanov, V. V. (Kiyev)

TITLE: Convergence of certain computation algorithms of the method of least squares

PERIODICAL: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 1, no. 6, 1961, 963-971

TEXT: The author investigates the convergence of certain algorithms which are used to construct a sequence $x_n \in G$ with the property

$$\lim_{n \rightarrow \infty} \|Ax_n - y\| = \inf_{x \in G} \|Ax - y\|.$$

If $e_1, e_2, \dots, e_n, \dots$ constitute a complete system in G with respect to the operator A , then the sequence x_n can be represented in the form

$x_n = \sum_{k=1}^n a_k e_k$ The author shows that the iteration process

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31106S/208/61/001/006/002/013
B112/B138

Convergence of certain computation...

$$\alpha_k^{(j)} = \sum_{r=1}^j \alpha_k^{(r)} + \alpha_k^{(0)}, \text{ where } \alpha_s^{(j)} \text{ fulfill the conditions}$$

$$\alpha_s^{(j)} \cdot \|u_s^{(j)} - \alpha_s^{(j)} y_s\| = \min_{\{a\}} \|u_s^{(j)} - a y_s\| \quad (s = 1, 2, \dots, n; j = 1, 2, 3, \dots),$$

$$\alpha_s^{(j)} = (u_s^{(j)}, y_s) / (y_s, y_s), \quad u_s^{(j)} = y - \sum_{k=1}^{s-1} \alpha_k^{(j)} y_k - \sum_{k=s}^n \alpha_k^{(j-1)} y_k, \quad y_k = A e_k,$$

converges in the following sense: $\lim_{j \rightarrow \infty} \alpha_s^{(j)} = \min_{\{a\}} \|y - \sum_{k=1}^n a_k y_k\|$.

$\lim_{j \rightarrow \infty} \alpha_k^{(j)} = \alpha_k^0 \quad (k = 1, 2, \dots, n)$. For an algorithm due to L. V. Kantorovich, a similar result is obtained. There are 4 Soviet references.

SUBMITTED: December 9, 1960

Card 2/2

X

22763

S/041/61/013/001/002/008
B112/B202

16.4500

AUTHORS: Ivanov, V. V., Karagodova, Ye. A.

TITLE: Approximate solution of integral equations of the convolution type by the Galerkin method

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, v. 13, no. 1, 1961, 28-38

TEXT: The authors consider the singular integral equation:

$$k\varphi \equiv \varphi(x) + \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} a_1(x-t)\varphi(t)dt + \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} a_2(x-t)\operatorname{sgn}t\varphi(t)dt + \\ + \lambda \int_{-\infty}^{\infty} n(x,t)\varphi(t)dt = f(x), \quad (-\infty < x < \infty).$$

with the conditions: 1) $a_1, a_2 \in L_1(-\infty, \infty)$; 2) $(1 + A_1)^2 - A_2^2 \neq 0$ (A_1, A_2 are the Fourier transforms of a_1, a_2); 3) $f(x) \in L_2(-\infty, \infty)$;

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B112/B202

Approximate solution of...

4) $\int_{-\infty}^{\infty} \int_{-\infty}^{\infty} |n(x,t)| dx dt < \infty$; 5) $1 + A_1 - A_2$ or $1 + A_1 + A_2$ on the axis of numbers is identically equal to 1; 6) the complex parameter λ is no eigenvalue. The ansatz of the solution has the following form:

$$\varphi(x) = \sum_0^{n-1} \alpha_k \psi_k(x) - \sum_{k=-n}^{-1} \alpha_k \psi_{k-n}(x), \quad x \geq 0$$

$$\text{with } \psi_k(x) = \begin{cases} e^{-x} P_k(x), & x > 0, \quad k \geq 0; \\ 0, & x < 0 \end{cases}$$

$$\psi_k(x) = \begin{cases} 0, & x > 0 \\ e^x P_{-k-1}(-x), & x < 0, \quad k < 0 \end{cases}$$

and polynomials P_k , satisfying the condition: $\int_0^{\infty} e^{-2x} P_k P_j dx = \delta_{kj}$. The undetermined coefficients α_k are obtained from the set of algebraic equations: $(k\varphi', \psi_j) = (f, \psi_j)$, $j = -n, \dots, n-1$. The authors prove the

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following theorem: If the conditions 1) - 6) are fulfilled, the set $(k\varphi', \psi_j) = (f, \psi_j)$ has a unique solution φ_n and it holds that

$\|\varphi_n - \varphi\| \leq c_1 \|\varphi_n - p_n \varphi\|$, where c_1 is a positive constant independent of n and

$p_n \varphi = \sum_{k=-n}^{n-1} a_k \varphi_k$, $a_k = \int_{-\infty}^{\infty} \varphi \bar{\psi}_k dx$. The same holds for the set:

$p_n k\varphi' + \sum_{k=1}^n c_k \varphi_k = p_n f$ with undetermined coefficient c_k . As an example

the authors consider the equation: $k_1 \varphi_1 \equiv \varphi_1(x) - \frac{a}{\pi} \int_0^{\infty} k_0(|x-t|) \varphi_1(t) dt = e^{-x}$, $x > 0$,

$$a \in (1, \infty), \quad k_0(x) = \int_0^{\infty} \frac{\cos \lambda x}{\sqrt{1+\lambda^2}} d\lambda, \quad x > 0.$$

They present two numerical tables which were calculated by means of the electronic computer BESM (SESM). Plemel, Sokhotskiy, N. I. Pol'skiy, I. M. Rapoport, M. A. Leontovich, and G. A. Grinberg are mentioned. There

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S/041/61/013/001/002/008
B112/B202

Approximate solution of...

are 2 tables and 11 Soviet-bloc references.

SUBMITTED: June 18, 1959

X

Card 4/4

L 18804-63

EWT(d)/FCC(w)/BDS AFFTC/IJP(C)

ACCESSION NR: AP3000281

S/0021/63/000/005/0580/0583

AUTHOR: Berezovs'ky'y, A. I., Ivanov, V. V.

TITLE: Some algorithms^{le} of optimal quick response controls (Presented by Yu. O. My*tropol's'ky*y, member, AN URSR)

SOURCE: AN UkrSSR Dopovid, no. 5, 1963, 580-583

TOPIC TAGS: variable coefficient, constant coefficient, algorithm, quadratic programming, variable input, variable output, constant input, constant output

ABSTRACT: The authors analyze their problem for two cases. For the first case they take a linear system with variable parameters, with n number of inputs and m number of outputs. An approach different from the Pontryagin and Boltyanskiy method is proposed in the solution of optimum quick response control. By means of a number of mathematical algorithms the problem was reduced to quadratic programming. In the second case analyzed, the linear system has constant coefficients, with one input and one output. Again the problem is reduced to quadratic programming, but in a simpler fashion.

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L 18804-63

ACCESSION NR: AP3000281

A problem with n number of inputs and only one output can be solved in a similar manner. Orig. art. has: 11 equations.

ASSOCIATION: Insty*tut kiberneti*ky* AN UkrSSR (Cybernetics Institute of AN UkrSSR)

SUBMITTED: 29Jun62

DATE ACQ: 17Jun63

ENCL: 00

SUB CODE: MM

NO REF SOV: 004

OTHER: 000

Card 2/2

S/O 208/6 3/003/004, 0664/0682

52

AUTHOR: Iverov, V. V. (Kiev)

TITLE: Methods for the approximate solution of systems of singular integral equations *

SOURCE: Zhurnal vychisl. matematiki i matematich. fiziki, v. 3, no. 4, 1963, 664-682

TOPIC TAGS: approximate solution, integral equation, singular integral equation, Fredholm equation, steepest descent, least squares

ABSTRACT: The author shows that the given singular integral equation \int_L

$$K\varphi \equiv A(t_0)\varphi(t_0) + \frac{B(t_0)}{\pi i} \int_L \frac{\varphi(t)dt}{t-t_0} = f(t_0), \quad t_0 \in L.$$

can be solved by converting it to a system of Fredholm equations

$$G\varphi_1 = \frac{1}{2\pi i} \int_L \frac{G(t)-G(t_0)}{t-t_0} \varphi_1(t)dt + g^-,$$

$$\varphi_2 = G\varphi_1 + g^+.$$

* equations

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U. S. S. R. A-4455

Various methods of approximate solution of these latter with reference to computing feasibility are discussed. He concludes that the least squares method is the most suitable but also favors the steepest descent method. Other standard methods are found suitable. He gives an example of an approximate solution of a particular system related to quantum physics. Orig. art. has 84 formulas.

ASSOCIATION: none

SUBMITTED: 31Jul62

DATE ACQ: 30Aug63

ENCL: 00

SUB CODE: MM, PH

NO REF SOV: 019

OTHER: 002

Card 2/2

L 14365-63 ENT(6/FCC(W)/EDS AFYTC LJP(C)

ACCESSION NR: AP3003838

S/0020/63/151/003/0489/0492

AUTHOR: Ivanov, V. V.

TITLE: Wiener-Hopf equation of the first kind

52
51

SOURCE: AN SSSR. Doklady*, v. 151, no. 3, 1963, 489-492

TOPIC TAGS: Wiener-Hopf equation

ABSTRACT: Author states that the solvability of the Wiener-Hopf equation of the first kind can be done away with at the expense of extending the class of admissible solutions to the class of generalized functions of the form

$$\varphi(x) = \sum_{l=0}^r \sum_{v=0}^s d_{lv} \delta^{(v)}(x - x_{lv}) + \varphi_1(x) \equiv \varphi(\varphi_1(x); d_{20}, d_{10}, \dots, d_{rs}) \quad (1)$$

The efficacy of the class (1) is shown by applying it to the problem of determining the impulse transfer function $k(t)$ which minimizes the mathematical expectation

ASSOCIATION: Inst. of Cybernetics, Academy of Sciences, SSSR

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S/020/62/143/004/002/027
B112/B102

166800

AUTHOR: Ivanov, V. V.

TITLE: Algorithms of quick descent

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 4, 1962, 775-778

TEXT: The author describes a method of quick descent in order to determine the smallest value of a function $Q(P)$ within a domain D . Starting from the initial point $P_1 \in D$, a sequence of approximation points $P_s \in D$ is obtained in the following way: If the point P_{s-1} is known, a direction can be determined, for which Q decreases in the neighborhood of P_{s-1} . Then, P_s is the point with minimal Q in this direction. The convergence of the method is demonstrated. The most important English-language reference reads as follows: J. B. Rosen, J. Soc. Ind. and Appl. Mat., 8, March, No. 1 (1960).

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Algorithms of quick descent

S/020/62/143/004/002/027
B112/B102

ASSOCIATION: Vychislitel'nyy tsentr Akademii nauk USSR
(Computer Center of the Academy of Sciences UkrSSR)

PRESENTED: November 3, 1961, by I. N. Vekua, Academician

SUBMITTED: October 3, 1961

Card 2/2

16.6500

S/020/62/143/003/003/029
B112/B102AUTHOR: Ivanov, V. V.

TITLE: A general method of the approximate solution of linear problems

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 3, 1962, 514-517

TEXT: The problem $\lim_{n \rightarrow \infty} \|y - Ax_n\| = \inf_x \|y - Ax\|$ is solved by linear combina-tions $x_n = \sum_1^n \alpha_k e_k$. $\Delta(P) = \Delta(\alpha_1, \alpha_2, \dots, \alpha_n) = \|y - \sum_1^n \alpha_k A e_k\|$ is aconvex function. Within a given interval $[P', P'']$, $\inf \Delta(P)$ is determinedby the following method: $P = P' + t(P'' - P')$, $\Delta(t) = \Delta(P)$,
 $\Delta(t^{(k)}) = \min \{ \Delta(t^{(k-1)} - 1/2), \Delta(t^{(k-1)}), \Delta(t^{(k-1)} + 1/2) \}$, $t^{(1)} = 1/2$.

The convergence of this process is shown. There are 3 Soviet references.

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A general method of the approximate ...

S/020/62/143/003/003/029
B112/B102

ASSOCIATION: Vychislitel'nyy tsentr Akademii nauk SSSR
(Computer Center of the Academy of Sciences USSR)

PRESENTED: November 3, 1961, by I. N. Vekua, Academician

SUBMITTED: October 30, 1961

Card 2/2

IVANOV, V.V. (Kiyev)

Convergence of some calculation algorithms by the method of
least squares. Zhur. vych. mat. i mat. fiz. 1 no.6:963-971
N-D '61. (MIRA 16:7)

IVANOV, V.V. (Kiyev)

Methods of approximate solution of systems of singular integral
equations. Zhur. vych. mat. i mat. fiz. 3 no.4:664-682
Jl-Ag '63. (MIRA 16:7)

IVANOV, V.V.

Wiener-Hopf's equation of the first kind. Dokl. AN SSSR 151
no.3:489-492 JI '63. (MIRA 16:9)

1. Institut kibernetiki AN UkrSSR. Predstavleno akademikom
I.N.Vekua.

(Integral equations) (Automatic control)

KULIK, Valeriy Timofeyevich; IVAKHNENKO, A.G., prof., ~~retsenzent~~;
IVANOV, V.V., kand. fiz.-matem. nauk, red.; NAVROTSKAYA,
L.B., inzh., red.; STARODUB, T.A., tekhn. red.; MATUSEVICH,
S.M., tekhn. red.

[Principles of algorithmation and construction of control
machines] Printsipy algoritimizatsii i postroeniia uprav-
liaiushchikh mashin. Kiev, Gostekhizdat USSR, 1963. 309 p.
(MIRA 17:2)

1. Chlen-korrespondent AN Ukr.SSR (for Ivakhnenko)

28(2)

PHASE I BOOK EXPLOITATION

SOV/2146

Leningrad. Universitet

Materialy po mashinnomu perevodu; sbornik 1 (Materials on Machine Translation; Collection of Articles Nr 1) Leningrad, Izd-vo Leningn univ., 1958. 228 p. 1,000 copies printed.

No contributors mentioned.

PURPOSE: The book is for students, scientists, and engineers interested in machine translation.

COVERAGE: This collection of 15 articles is published as volume I of the Materials on Machine Translation. It represents the work of 25 Soviet scientists at the Leningrad University Experimental Laboratory for Machine Translation which was created in March 1958 to continue research on translating with the aid of electronic machines. Although the present volume deals with both the theoretical and the practical aspect of machine translating, the emphasis is on the compilation of algorithms for a number of lan-

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Materials on Machine Translation (Cont.)

SOV/2146

guages, many of them Asiatic. There are no references.

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AVAILABLE: Library of Congress

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9-15-59

IVANOV, V. V. (Moscow) (*Vyacheslav Vsevolodovich*)

"Linguistic Questions of Poetry Translation."

"The Theorem of Gyodel' and Linguistic Paradoxes."

Theses - Conference on Machine Translations, 15 - 21 May 1958, Moscow.

IVANOV, V. V. (Moscow) (*Vyacheslav Vsevolodovich*)

"The Transformation of Communications and the Transformation of Codes."

Theses - Conference on Machine Translations, 15 - 21 May 1958, Moscow.

IVANOV, V. V.

15

PHASE I BOOK EXPLOITATION

007/6100

Akademiya nauk SSSR. Institut tochnoy mekhaniki i vychislitel'noy tekhniki.

Trudy (Academy of Sciences of the USSR, Institute of Precision Mechanics and Computer Technology. Transactions) no. 2. Moscow, 1961. 447 p. 1000 copies printed. Contributors not mentioned.

PURPOSE: This collection of articles is intended for scientific and technical personnel concerned with machine translation and computer technology.

COVERAGE: This collection of articles of the Institute of Precision Mechanics and Computer Technology, Academy of Sciences USSR, is the second in a series concerned with machine translation and mathematical linguistics. The collection contains reports written by members of the Machine-Translation Group of the Institute as well as reports by researchers from other organizations. The articles deal with various problems in machine translation, such as the possibility of an intermediate language, relationships between various languages, systems of recording, structure of

Card 1/6

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Academy of Sciences (Cont.)

801/6100

algorithms, methods of independent analysis of a number of languages (Chinese, German, English, Russian, Rumanian, Swedish, Tartar, etc.), independent synthesis of the Russian language, some problems of binary Japanese-Russian and Chinese-Russian translation, theoretical translation problems, and problems associated with automatic recognition of speech elements and the introduction of written texts. No personalities are mentioned. There are 11 references: 2 Soviet and 9 English.

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AVAILABLE: Library of Congress

SUBJECT: Automation and Computer Engineering

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IS/wrc/eb
11/30/62

IVANOV, V. V., MEL'CHUK, I. A., and ANDREYEV, N. D.

"Linguistic Problems of Machine Translation"

presented at the All-Union Conference on Computational Mathematics and
Computational Techniques, Moscow, 16-28 November 1961

So: Problemy kibernetiki, Issue 5, 1961, pp 289-294

6.9900
9.7000

S/044/62/000/006/125/127
B160/B102

AUTHORS: Ivanov, V. V., Shaumyan, S. K.

TITLE: Linguistic problems of cybernetics and structural linguistics

PERIODICAL: Referativnyy zhurnal. Matematika, no. 6, 1962, 84-85,
abstract 6V463 (Sb. "Kibernetiku - na sluzhbu kommunizmu."
v. 1". M.-L., Gosenergoizdat, 1961, 218-234)

TEXT: In the first part of the article, which was written by S. K. Shaumyan, structural linguistics is defined as the study of natural languages from the point of view of their conversion into abstract codes, which serve as formal models of the natural languages. The author considers the basic types of linguistic structures to be binary structures of differential signs, distributive structures, and transformation structures. These structures should be studied from models obtained from mathematical methods (probability, information theory, logic, plurality theory, etc.). Structural linguistics as the abstract theory of language is the nucleus in the system of disciplines forming modern linguistics. In the second part, which was written jointly by the two authors, the

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Linguistic problems of cybernetics and ... B160/B102

theoretical and applied significance of structural linguistics is discussed. The abstract codes of natural languages which structural linguistics deals with are basic codes with which codes in all other branches of science can be correlated. Structural linguistics therefore plays a leading part in relation to the other branches of semiotics. Structural linguistics serves as a theoretical basis for the development of methods for automating translation of scientific and technical literature (creation of an intermediate language, formalization of meanings by the methods of transformation analysis, etc.). The complete formalization of the meanings of units of natural language is the central problem of precise linguistics. This problem is also closely linked with the problem of creating information retrieval machines and information and logic languages in which information is coded by a small number of basic conceptions - differential elements of a kind (this is the connexion with structural linguistics). The problem of conversion from natural to information languages also arises. The part played by structural linguistics in the creation of "speaking" and "listening" machines is also noted as considerably easing communication between man and machine. At the present time, machines are capable of accepting, analysing, and

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Linguistic problems of cybernetics and ...

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B160/B102

translating only a specially prepared text and not any text. Further standardization in the language of scientific and technical literature will be of help in this. The authors consider that in the future a machine will also reduce the text to a standard form (i. e. edit it). The contact of structural linguistics with neurology (study of aphasiae) and defectology (use of machines to ease linguistic communication with people deprived of sight or hearing) will be of importance. Structural linguistics combines games theory with communicative models. The connexion of structural linguistics problems with problems of cryptography and cryptoanalysis, i. e. the encipherment and decipherment of codes, for example ancient scripts, is indicated. The ideas of structural linguistics are important also for studying the language of artistic literature and poetic language in particular (the problem of precise description of meanings once again arises). In conclusion it is pointed out that the appearance of structural linguistics means a revolution in linguistics, as a result of which linguistics will be turned from an empirical and descriptive branch of science into a precise branch of knowledge. [Tracter's note: Complete translation.]

Card 3/3

IVANOV, V.V.

Relationships between codes of different rank. Soob. Otd.mekh.
i avtom.inform.rab. no.2:29-39 '61. (MIRA 15:2)
(Information theory)

BREZOVSKIY, A.I. [Berezova'kyi, A.I.], IVANOV, V.V.

Some algorithms of optimal quick-response controls. *Dop. AN URSS*
no.5:580-583 '63. (MIRA 17:9)

1. Institut kibernetiki AN UkrSSR. Predstavleno akademikom AN
UkrSSR Yu.A.Mitropol'skim [Mytropol's'kyi, Yu.A.].

IVANOV, Y. V.

Fluctuations in the number of stars [with summary in English].
Vest. LGU 12 no.13:169-178 '57. (MIRA 10:11)
(Stars)

81902

9,9000 (also 1041, 1050)

S/043/60/019/004/005/015
C 111/ C 333AUTHOR: Ivanov, V. V.TITLE: On the Diffusion of Radiation With Redistribution in
Frequency in a One-Dimensional MediumPERIODICAL: Vestnik Leningradskogo universiteta, Seriya matematiki,
mekhaniki i astronomii, 1960, Vol.19, No.4, pp.117-123

TEXT: The author considers the diffusion of radiation with complete redistribution in frequency in a one-dimensional semiinfinite medium. He assumes that the diffusion is isotropic and the optical thickness of the medium is infinite. The calculation of the radiation fields leads to an equation of convolution type. With the aid of the method of V. V. Sobolev (Ref.6) the author states that the simple relation

$$(8) \quad \phi(\tau) = \int p(\tau, x') \omega(x') dx' \quad ,$$

where $\omega(x)$ is the ratio of the absorption coefficients for the frequency x and for the center of the line, consists between $\phi(\tau) = \Gamma(0, \tau)$, where $\Gamma(\tau, \tau')$ is the resolvent of the mentioned convolution equation, and between the probability

Card 1/2

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S/043/60/019/004/005/015
C 111/ C 333

On the Diffusion of Radiation With Redistribution in Frequency
in a One-Dimensional Medium

$p(\tau, x)$ that a quantum absorbed in the depth τ leaves the medium
with frequency x . (8) together with considerations from (Ref.6)
leads to the statement that the Laplace transform is

$$(17) \quad \overline{\Phi}(s) = H_1(s) - 1$$

where

$$(18) \quad H_1(\alpha(x)) = H(x) .$$

The investigation of the asymptotic behavior of the auxiliary
function $H(x)$ renders possible under additional assumptions (ab-
sorption coefficient due to damping only and absorption coeffi-
cient a purely Doppler one) to give asymptotic formulas for the
probability of escape of a quantum absorbed at a large depth. ✓

There are 12 references: 6 Soviet, 2 Dutch, 2 German, 1 American
and 1 Japanese.

Card 2/2

87253

S/033/60/037/006/012/022

E032/E514

3,1540 (1062, 1128, 1168)

AUTHOR: Ivanov, V. V.

TITLE: Chromospheric Line Profiles

PERIODICAL: Astronomicheskii zhurnal, 1960, Vol. 37, No. 6,
pp. 1021-1027

TEXT: Chromospheric line profiles are calculated for a set of altitudes in the chromosphere, assuming that scattering takes place with complete redistribution in frequency. This approach differs from that of Wooley (Ref.1), Kawaguchi (Ref.2) and Hattori (Ref.3) who assumed that no change of frequency occurs. Comparison of line profiles obtained on these two different theories shows that they do not, in fact, differ from each other to any great extent. It is stated that the theory is too approximate to permit detailed comparison with observational data. Nevertheless, profiles obtained are in qualitative agreement with H_α, H and K profiles as obtained by Krat (Ref.5) and Smith (Ref.6). Moreover, it is estimated that the optical depth of the chromosphere along a radius $\tau_0(0)$ equals 6-20. This value of $\tau_0(0)$ is in general agreement with the estimate of McMath et al. (Ref.7). Among the approximations made in the present paper are: exponential decrease of density with

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J

S/O33/60/0377⁸⁷²⁵¹006/012/022
E032/E514

Chromospheric Line Profiles

altitude, $\eta_0 = \text{const}$, where η_0 is the ratio of the absorption coefficient in the line to that in the continuum at $x = 0$ (x is the distance from the centre of the line in Doppler widths) and $B = \text{const}$ (B is the Planck function). Of these the assumed independence of η_0 of the altitude is the most serious. However, if this approximation were removed, the problem would become very complicated, although the final results would not be very different. This approximation was in fact removed in the case of coherent scattering by Wooley (Ref.1). Acknowledgment is expressed to V. V. Sobolev for a number of suggestions. There are 4 figures and 7 references: 1 Soviet, 6 non-Soviet.

ASSOCIATION: Astronomicheskaya observatoriya Leningradskogo gosudarstvennogo universiteta
(Astronomical Observatory, Leningrad State University)

SUBMITTED: April 6, 1960

Card 2/2

IVANOV, V. V.

Dissertation defended for the degree of Candidate of Physicomathematical Sciences at the Main Astronomical Observatory in 1962:

"Diffusion of Resonance Radiation in the Atmospheres of Stars and Nebulae."

Vest. Akad. Nauk SSSR. No. 4, Moscow, 1963, pages 119-145

SOBOLEV, V.V.; IVANOV, V.V.

Intensity of hydrogen emission lines in stellar spectra.

Uch.zap.LGU no.307:3-17 '62.

(MIRA 15:9)

(Stars--Spectra)

IVANOV, V.V.

Diffusion of radiation with redistribution in frequency in
a semi-infinite medium. Uch.zap.LGU no.307:52-66 '62.

(MIRA 15:9)

(Astrophysics)

IVANOV, V.V.

Comments on I.M.Gordon and L.D.Pichakhchi's article "Emission of hydrogen atoms excited by synchrotron emission of relativistic electrons." Astron.zhur. 39 no.4:767-768 J1-Ag '62.

(MIRA 15:7)

1. Astronomicheskaya observatoriya Leningradskogo gosudarstvennogo universiteta.

(Hydrogen) (Nuclear physics) (Gordon, I.M.) (Pichakhchi, L.D.)

S/033/62/039/006/012/024 .
E032/E114

AUTHOR: Ivanov, V.V.

TITLE: Diffusion of resonance radiation in stellar
atmospheres and nebulae. I. Semi-infinite medium

PERIODICAL: Astronomicheskii zhurnal, v.39, no.6, 1962, 1020-1032

TEXT: This is the first of a series of papers which will report a systematic application of modern methods of the theory of multiple scattering of radiation to the study of the transport of resonance radiation. The present paper is concerned with the simple case of a semi-infinite medium; the next paper will report the results for a medium of finite optical thickness. The first part of the present paper reviews the formulation of the problem and the basic equations. Much of the material was reported in previous papers (Vestn. LGU, no.19, 1960, 117; and Uch. zap. LGU, no.307 (Tr. Astron. observ. LGU, v.19), 1962, 52). The scattering is assumed to be incoherent throughout the analysis. An expression is derived for the function $H(z)$ which was introduced in the above two papers. Computed values of $H(z)$ are tabulated in the case of $\lambda = 1$ (Doppler absorption coefficient). Detailed Card 1/2

Diffusion of resonance radiation ... S/033/62/039/006/012/024
E032/E114

numerical tables of $H(z)$ will be reported in a future paper. Next, Milne's problem is considered, i.e. it is required to determine the radiation field in a semi-infinite medium in the absence of sources and for a given flux of radiation leaving the medium. A solution of this problem is derived in the case of purely incoherent scattering, and an expression is obtained for the frequency and angular distribution of radiation leaving the medium with the sources located at an infinite depth within it. The analysis is then repeated for an exponential distribution of sources in the medium and it is shown that the resulting line profiles have a minimum at the centre and are similar to the L_{α} and K_2-K_3 lines in the solar spectrum. There are 4 figures and 1 table.

ASSOCIATION: Astronomicheskaya observatoriya Leningradskogo universiteta
(Astronomical Observatory, Leningrad University)

SUBMITTED: April 2, 1962

Card 2/2

LEONT'YEV, V.N.; KOVRIZHIN, A.K.; TSAY, T.N.; MURASHEV, V.I.; KUKSOV, N.I.;
IVANUSHKIN, V.G.; IVANOV, V.V.; KOVACHEVICH, P.M.

Information of completed research and statements made by participants in
the conference. Vop. gor. davl. no.18:114-120 '63. (MIRA 18:7)

1. Institut gornogo dela Sibirskogo otdeleniya AN SSSR (for Leont'yev).
2. Kuznetskiy nauchno-issledovatel'skiy ugol'nyy institut (for Kovrizhin).
3. Nauchno-issledovatel'skiy institut stroitel'stva ugol'nykh i gornorudnykh predpriyatiy, Kemerovo (for TSay).
4. Vostochnyy nauchno-issledovatel'skiy institut po bezopasnosti rabot v gornoy promyshlennosti (for Murashev).
5. Sibirskiy filial Vsesoyuznogo nauchno-issledovatel'skogo marksheyderskogo instituta (for Kuksov).
6. Vsesoyuznyy nauchno-issledovatel'skiy i proyektno-konstruktorskiy institut dobychi uglia gidravlicheskim sposobom (for Ivanushkin).
7. Kuzbasskiy sovet narodnogo khozyaystva (for Ivanov).
8. Kemerovskiy gornyy institut (for Kovachevich).

S/033/63/040/008/007/021
E001/E120

AUTHOR: Ivanov, V.V.

TITLE: The diffusion of resonance radiation in stellar atmospheres and nebulae. II. Layer of finite thickness

PERIODICAL: *Astronomicheskii zhurnal*, v.40, no.2, 1963, 257-267

TEXT: This is a continuation of the first part of this study (same journal, v.39, 1962, 1020), in which the problem of radiation diffusion was considered for the case of a semi-infinite medium. The present paper represents a generalization for the case of a finite optical thickness. Assuming completely incoherent isotropic scattering and absence of absorption in continuous spectrum, the calculation of radiation field in a plane-parallel layer is reduced to the solution of the following transport equation:

$$z \frac{dI(\tau, z)}{dz} = I(\tau, z) - \frac{\lambda}{2} \int_{-\infty}^{\infty} I(\tau, z') G(z') dz' - Ag(\tau) \quad (1)$$

Card 1/4

The diffusion of resonance radiation... S/033/63/040/002/007/011
EO01/E120

where

$$z = \frac{\nu}{\alpha(x)} \quad (2)$$

and

$$G(t) = 2A \int_{x(t)}^{\infty} \alpha^2(y) dy, \quad (3)$$

$x(t) = 0$ at $t \leq 1$, $x(t) = 1/t$ at $t \geq 1$.

Here, μ is cosine of the angle of incidence; ν is dimensionless frequency, in Doppler widths; τ is the optical depth at the line center (at frequency $x = 0$); $\alpha(x)$ is the ratio of absorption coefficient at frequency x to that at the line center; A is a normalizing constant; $\lambda \leq 1$; $I(\nu, z)$ = intensity of radiation of frequency ν ; $g(\tau)$ is power of radiation source. The boundary conditions are:

$$I(0, z) = 0 \text{ at } z < 0; \quad I(\tau_0, z) = 0 \text{ at } z < 0 \quad (4)$$

where τ_0 is optical thickness of the layer. The author formulates an equation for the function of a source, whose

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The diffusion of resonance radiation.. S/O35/63/040/002/007/021
E001/E120

solution is equivalent to solution of Eq.(1), and introduces new functions X and Y for which he derives three systems of equations; these functions are analogous to Ambartsumian's functions $\varphi(\eta; \tau_0)$ and $\Psi(\eta; \tau_0)$. Since the general solution of these equations is extremely difficult, certain simplifications are introduced and the optical thickness is assumed to be very large, $\tau_0 \gg 1$. For this asymptotic case and for $x \ll \tau_0$ the following expressions are found for these functions:

$$X(z; \tau_0) \approx H(z) - zH(z) \frac{\lambda^2}{48 \pi (1 - \lambda)^2 \tau_0^3 \ln \tau_0} \quad (55)$$

$$Y(z; \tau_0) \approx zH(z) \frac{\lambda}{4 \sqrt{\pi} (1 - \lambda) \tau_0^2 \sqrt{\ln \tau_0}}$$

at the Doppler absorption coefficient and $\lambda < 1$, and

$$X(z; \tau_0) \approx H(z) - \frac{zH(z)}{4\tau_0}; \quad Y(z; \tau_0) \approx \frac{zH(z)}{2\tau_0} \quad (56)$$

Card 3/4 in the case of pure scattering.

The diffusion of resonance radiation ... S/033/63/040/002/007/021
E001/E120

The problem of the average number of scatterings suffered by a quantum is then treated. In case of the Doppler absorption coefficient and $\tau_0 \gg 1$, the expression of the average number of scatterings looks as follows:

$$N_{av.} \approx 2\tau^{-3/2} \tau_0 \sqrt{\ln \tau_0} \quad (71)$$

The slow growth of $N_{av.}$ with τ_0 leads to comparatively small numbers of scatterings at large τ_0 . This estimation of $N_{av.}$ is of interest in astrophysical problems, such as diffusion of L_{α} radiation in nebulae, etc.

ASSOCIATION: Astronomicheskaya observatoriya, Leningradskogo universiteta
(Astronomical Observatory of the Leningrad University)

SUBMITTED: April 2, 1962

Card 4/4

IVANOV, V.V.

Third plenum of the Committee on the Physics of Stars and Nebulae.
Astron.zhur. 40 no.2:396-398 Mr-Apr '63. (MIRA 16:3)
(Astrophysics) (Nebulae)

L 47020-66 EWP(m)/BEC(k)-2/EWT(1) GW

ACC NR: AR6021902 SOURCE CODE: UR/0313/66/000/003/0015/0015

AUTHOR: Ivanov, V. V.

63
B

TITLE: Automatic device for forecasting artificial satellite passage over a given point

SOURCE: Ref. zh. Issl kosm prostr, Abs. 3.62.148

REF SOURCE: Byul. st. optich. nablyudeniya iskusstv. sputnikov Zemli, no. 41, 1964, 22-23

TOPIC TAGS: artificial satellite, automatic forecast, artificial satellite forecast device

ABSTRACT: A description is given of the "Prognoz" ("Forecast"), a device for modeling the motions of the Earth and an artificial satellite. The design of the device is based on a mechanical and electrical modeling of all stages of computation of conditions surrounding the passage of an artificial earth satellite over a

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