KALMYKOV, V.A.; SVESHKOV, Yu.V.

Dielectric constant and the specific resistance of certain slag systems in steel smelting. Trudy LPI no.253:41-48 '65.
(MIRA 18:8)

KALMYKOV, V.A.; AGEYEV, P.Ya.; SVESHKOV, Yu.V.

Methods for measuring the dielectric properties of slag systems. Zav.lab. 31 no.4:460-461 '65.

(MIRA 18:12)

1. Leningradskiy politekhnicheskiy institut im. M.I.Kalinina.

ALEKSANDROV, P.;SAMARSKIY, A.;SVESHNIKOV, A.

Andrei Nikolaevich Tikhonov; on the occasion of the 50th anniversary of his birth. Usp. mat. nauk 11 no.6:235-245 N-D '56. (MLRA 10:3)
(Tikhonov, Andrei Nikolaevich, 1906)

SOV/179-59-3-5/45

AUTHOR: Sveshnikov, A. A. (Leningrad)

TITLE: Determination of the Probability Characteristics of Three-dimensional Sea Waves (Opredeleniye veroyatnostnykh kharakteristik trekhmernogo volneniya morya)

PERIODICAL: Izvestiya Akademii nauk, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 3, pp 32-41 (USSR)

ABSTRACT: It is assumed that the waving is ideal, i.e. the sea is infinitely deep and the amplitude is sufficiently small. In these circumstances the motion is of eddyless character and the velocity of water particles at a given point V can be defined as a function of its coordinates, x, y, z and time t at the potential u (Eq 1.1). For the vertical z, the deviation $\zeta(x,y,t)$ of the sea waves from its static level is related to the potential u as shown in Eq (1.2). Therefore, the potential u (x,y,z,t) fully defines the state of water particles in relation to the depth and the type of surface waving. In order to find this potential, the Laplace formula (1.3) for the conditions (1.4) can be employed. After the transformation, Eqs (1.6) to (1.14), the formula

Card 1/4

Determination of the Probability Characteristics of Three-dimensional Sea Waves

(1.15) is obtained which describes the waving in the form of superposition of plane waves propagated in various directions with the velocity expressed by Eq (1.16). It can be seen from Eqs (1.17) (which is based on Eq 1.12) and (1.18) that the spectral density $S_o(\nu,\psi)$, characterizing the distribution of the energy of plane waves of various lengths $\lambda = 2\pi/\nu$, can also be expressed as the spectral density $\varphi_o(p,q)$. Therefore, both the densities can be employed for defining the probability characteristics of waving. The latter can be defined as the mathematical expectation of the wave profiles for various points in the sea at various times. In general, their ordinates can be taken as $A(x,y)$ and $B(x+\xi, y+\eta)$ for times t and $t+\tau$ respectively. The mathematical expectation will depend only on ξ, η, τ. Denoting these three-dimensional correlation functions as $K(\xi, \eta, \tau)$, the expression (2.1) is thus obtained. If the ordinate ζ is expressed as the potential velocity u (Eqs 1.2, 1.11 and 1.12), the differential equation (2.2) can be obtained, which can be written also as Eq (2.4). For a definite point in the sea, i.e. for $\xi = \eta = 0$, the

Determination of the Probability Characteristics of Three-dimensional Sea Waves

coordinates of the points A and B can be statistically determined.
There are 1 figure and 5 references, 4 of which are Soviet, 1 English.

SUBMITTED: August 1, 1958

PHASE I BOOK EXPLOITATION SOV/5755

Sveshnikov, Aram Arutyunovich

Prikladnyye metody teorii sluchaynykh funktsiy (Applied Methods of the Theory of Random Functions) Leningrad, Sudpromgiz, 1961. 251 p. Errata slip inserted. 10,000 copies printed.

Scientific Ed.: I. Ya. Diner; Ed.: M. A. Aptekman; Tech. Ed.: L. M. Shishkova.

PURPOSE : This book is intended for engineers and scientists using methods of the theory of probability in various fields of engineering.

COVERAGE: The book presents methods for investigating random functions applicable to various fields of engineering, such as those used in the theory of ship design, in automatic-control theory, and in radio engineering. Since the book is primarily intended to describe the applications of the theory, many theoretical problems have been neglected and mathematics is considered

Card 1/6

29642
S/14[illegible]/61/004/004/006/015
D201/D306

AUTHOR: Sveshnikov, A.A.

TITLE: Applying probability methods to solving certain non-linear problems of the applied gyroscope theory

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priboro-stroyeniye, v. 4, no. 4, 1961, 39 - 47

TEXT: In many problems of the theory of gyroscopes, random functions have to be included in a non-linear manner into the equation of the system movement. These are all the problems in which Coulomb friction must be taken into account and those where random functions are applied to the input of the non-linear element of control. In the present article the author gives a method of analyzing dynamic systems with non-linear elements. The method is based on the solution of

$$\mathring{\alpha} = m + nf[X(t)], \qquad (3)$$

in which f[X(t)] are non-linear functions of type "yes-no", or a

Card 1/5

Applying probability methods ...

lied to analyzing the deviation of a gyroscope due to the Coulomb friction in the horizontal grimbal. The analyzed kinetic moment to gyroscope H is taken as 2,000 g cm sec, the constant (insign) component of the friction moment M_T equals 0.1 g cm, the modulus of the sign changing component of the friction moment k = 0.5 g cm and the angle of heeling $\theta(t)$ is assumed to be a stationary time function with zero mathematical expectation, and the correlation function

$$K_\theta(\tau) = \sigma_\theta^2 e^{-\mu/\tau/}(\cos \lambda\tau + \frac{\mu}{\lambda} \sin \lambda/\tau/), \quad (26)$$

where $\sigma_\theta = 6^o$; $\mu = 0.042$ 1/sec; $\lambda = 0.42$ 1/sec.

Kazakov's statistical method of linearization (Ref. 1: Avtomatika i telemekhanika, 1956, v. 17, no. 5) is found to give not only quantitatively but qualitatively false results and cannot, therefore, be applied. A more complicated problem is the analysis of Coulomb friction on the true vertical reference line of the gyro. The exact solution of the non-linear equations may be obtained by introducing

Card 3/5

29642
S/146/61/004/004/006/015
D201/D306

Applying probability methods ...

ASSOCIATION: Voyenno-morskaya ordena Lenina akademiya (Naval Order of Lenin Academy)

SUBMITTED: December 26, 1960

Card 5/5

Investigation of the behavior ...

Y(t) is an unknown function characterizing the state of the system, $a_i(t)$ ($i = 1, \ldots, n$) are given functions of time, and the non-linear function $F_j(X)$, ($j = 1, 2, 3$) is assumed to be 1 of the 3 following types

$$f_1(X) = \operatorname{sign} X \qquad (1.2)$$

$$f_2(X) = \tfrac{1}{2}[\operatorname{sign}(X-a) + \operatorname{sign}(X+a)] \qquad (1.3)$$

$$f_3(X) = \tfrac{1}{2}[(X+a)\operatorname{sign}(X+a) - (X-a)\operatorname{sign}(X-a)] \qquad (1.4)$$

Here the first type corresponds to a non-linear "yes-no" type, the second to a "yes-no" type with an insensitive zone and the third to an element with a linear part and a "saturated" part. The solution of (1.1) is of the form

$$Y(t) = \int_0^t p(t, t_1) f_j[X(t_1)]\, dt_1 \qquad (1.5)$$

Card 2/4

Investigation of the behavior ...

where $p(t, t_1)$ is a weighted function of the system, evaluated by means of the system of independent integrals of the homogeneous equations corresponding to (1.1). For mathematical expectancy and scatter, this method gives, after some simplification

$$y(t) = M\{f_j(X(t))\}\int_0^t p(t, t_1)\,dt_1 \tag{1.7}$$

$$\sigma_y^2 = \int_0^t \left\{ \int_{\tau}^{2t-\tau} p(t, \xi-\tau)\, p(t, \xi+\tau)\, d\xi \right\} M\{f_j[X(t)]\, f_j[X(t+\tau)]\}\, d\tau \tag{1.8}$$

If the expectance is known, the first and second moments may be calculated. The formulae are solved by means of Fourrier integrals or by the method of A.A. Markov (Ref. 2: Ischisleniye veroyanostey (Calculation of Probability), Gosizdat, M., 1924). Calculation moments: The formulae for the non-linear moments are, in the case of X(t) with characteristic function E(u)

$$\mu_1 = \frac{1}{\pi i}\int_{-\infty}^{\infty} M[e^{iuX(t)}]\,\frac{du}{u} = \frac{1}{\pi i}\int_{-\infty}^{\infty} E(u)\,\frac{du}{u} \tag{2.2}$$

Card 3/4

CHERNYY, F.B.; BASS, F.G., retsenzent; MISYURE, V.A., retsenzent;
MASHAROVA, V.G., red.; SVESHNIKOV, A.A., tekhn. red.

[Propagation of radio waves] Rasprostranenie radiovoln.
Moskva, Izd-vo "Sovetskoe radio," 1962. 479 p.
(MIRA 15:3)

(Radio waves)

VOLGIN, Lev Nikolayevich; IVANUSHKO, N.D., red.; SVESHNIKOV, A.A., tekhn. red.

[Elements of the theory of computer control; polynomial equations in problems of the synthesis of automatic control systems with digital computers]Elementy teorii upravliaiushchikh sistem avtomaticheskogo upravleniia s tsifrovymi vychislitel'nymi mashinami; metod polinomial'nykh uravnenii v zadachakh sinteza mashin. Moskva, Sovetskoe radio, 1962. 163 p. (MIRA 15:11)

(Electronic computers) (Automatic control)

SVESHNIKOV, A. A.

PHASE I BOOK EXPLOITATION SOV/6203

Volodin, Boris Grigor'yevich, Mikhail Pavlovich Ganin, Isay Yakovlevich Diner, Lazar' Borisovich Komarov, Aram Arutyunovich Sveshnikov, Doctor of Technical Sciences, Professor, and Kalman Berkovich Starobin

Rukovodstvo dlya inzhenerov po resheniyu zadach teorii veroyatnostey; sbornik osnovnykh formul, tipovykh resheniy i zadach dlya uprazheniy (Handbook for Engineers on the Solution of Problems in the Theory of Probability; Collection of Basic Formulas, Typical Solutions, and Practice Problems) Leningrad, Sudpromgiz, 1962. 422 p. Errata slip inserted. 14,300 copies printed.

Ed. (Title page): A. A. Sveshnikov; Reviewers: R. I. Ginzburg, Candidate of Technical Sciences, and N. Ya. Cherednichenko, Candidate of Technical Sciences; Ed.: I. A. Shaykevich; Tech. Ed.: A. I. Kontorovich.

PURPOSE: This handbook is intended for engineers, scientific workers, and students at schools of higher education interested in applying formulas of

Card 1/[illegible] 2

SVESHNIKOV, A. A.

Transactions of the Sixth Conference (Cont.) SOV/6371

Transactions of the 6th Conf. on Probability Theory and Mathematical Statistics and of the Symposium on Distributions in Infinite-Dimensional Spaces held in Vil'nyus, 5-10 Sep '60. Vil'nyus: Gospolitizdat Lit SSR, 1962. 493 p. 2500 copies printed.

MITYASHEV, Boris Nikolayevich; IVANUSHKO, N.D., red.; SVESHNIKOV, A.A., tekhn. red.

[Determination of the position of pulses with respect to time in the presence of interference]Opredelenie vremennogo polozheniia impul'sov pri nalichii pomekh. Moskva, Sovetskoe radio, 1962. 198 p. (MIRA 15:12)
(Pulse techniques (Electronics)) (Radar)

S/024/62/000/005/005/012
E140/E135

16.4000

AUTHOR: Sveshnikov, A.A. (Leningrad)

TITLE: The behaviour of undamped second-order dynamic systems in the presence of random processes

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Energetika i avtomatika, no.5, 1962, 96-98

TEXT: The problem studied has application to gyrostabilisers in inertial guidance. In the absence of damping, the application to the input of such a system of a continuous random process leads to the linear growth of the dispersion of the output process. In a numerical example, it is shown that in a certain system for which the Schouler period is realised the error reaches 4.8 km per hour.

SUBMITTED: April 24, 1962

Card 1/1

On the motion of a gyroscopic ...

where A_ξ, A_η, and A_ζ are random functions of time; α and β are the angular deviations. In the presence of damping (due to friction or drag), system (1.2) is replaced by

$$\dot{\alpha} - kg(1 + \frac{1}{g} A_\zeta)\beta - n\dot{\beta} = -kA_\eta, \quad \dot{\beta} + kg(1 + \frac{1}{g} A_\zeta)\alpha + n\dot{\alpha} = kA_\xi, \quad (1.3)$$

where n is the ratio of the damping factor to the kinetic moment H of the rotor. By introducing, instead of the real functions $\alpha(t)$ and $\beta(t)$, the complex function $\gamma(t)$, system (1.3) reduces to the single equation

$$\dot{\gamma}(t) + ik_1 g[1 + Y(t)]\gamma(t) = V_1(t) + iW_1(t) \quad (1.4)$$
$$(\gamma = \alpha + i\beta),$$

where V_1 and W_1 are related to A_η and A_ζ, and Y is related to A_ζ. In general, the solution of Eq. (1.4) is very cumbersome. In practice however, it is sufficient to determine the mean M and dispersion D of the angular deviations $\alpha(t)$ and $\beta(t)$. Formulas are derived for the moments of the functions $\alpha(t)$ and $\beta(t)$ for any system of random functions Y, V and W. If the latter are normal functions, it is

SEVAN'KAYEV, A.V.; SVESHNIKOV, A.A.

Effect of ionizing radiation on the function of the vestibular analyzer. Med. rad. 8 no.7:82-87 Jl '63. (MIRA 17:1)

ACCESSION NR: AP4041959 S/0280/64/000/003/0058/0061

AUTHOR: Sveshnikov, A.A. (Leningrad)

TITLE: One problem of the reliability theory

SOURCE: AN SSSR. Izv. Tekhnicheskaya kibernetika, no. 3, 1964, 58-61

TOPIC TAGS: automation, automatic control system, reliability, control system reliability, reliability theory, Markov process, autocorrelation function, Weber function

ABSTRACT: The probability, W(T), that the system parameter u(t), which is a random function of time, does not exceed limits required for satisfactory performance of the system during the time interval T is derived for the special case when u(t) is a linear, one-dimensional Markov process. The autocorrelation function of u(t) is assumed to be exponential, $\sigma^2 e^{-a|\tau|}$ and u(t) is assumed to satisfy a differential equation

$$\frac{dU}{dt} + aU = \sigma\sqrt{2a}\,\xi(t), \qquad (1)$$

where $\xi(t)$ is a white noise function whose autocorrelation is $\delta(t)$. The probability density function, $w(\tau, y)$, which expresses the fact that during the time interval τ the

Card 1/3

ACCESSION NR: AP4041959

ASSOCIATION: none

SUBMITTED: 21Dec63 ENCL: 00 SUB CODE: IE, MA

NO REF SOV: 005 OTHER: 001

Card 3/3

ACCESSION NR: AT4037705

considerable inhibition of the function of the vestibular mechanism.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: PH, LS

NO REF SOV: 005 OTHER: 004

Card 2/2

VOLODIN, B.G.; GANIN, M.P.; DINER, I.Ya.; KOMAROV, L.B.; SVESHNIKOV, A.A., zasl. deyatel' nauki i tekhniki RSFSR, doktor tekhn. nauk, prof.; STAROBIN, K.B.; DONCHENKO, V.V., red.; BLAGOVESHCHENSKIY, Yu.N., red.

[Problems in probability theory, mathematical statistics, and theory of functions of random variables] Sbornik zadach po teorii veroiatnostei, matematicheskoi statistike i teorii sluchainykh funktsii. Moskva, Nauka, 1965. 632 p. (MIRA 18:10)

OYVIN, I.A.; KIR'YAKOV, M.A.; KOROLEVA, L.V.; ROMANOVSKAYA, L.L.; SVESHNIKOV, A.A.; TOKAREV, O.Yu.; UKLONSKAYA, L.I.

Radiometric study of problems of the pathogenesis and experimental therapy of inflammatory edemas. Vest. AMN SSSR 20 no.9:87-93 '65. (MIRA 18:11)

1. Institut meditsinskoy radiologii AMN SSSR, Obninsk.

SVESHNIKOV, A. G.

Sveshnikov, A. G. The principle of radiation. Doklady Akad. Nauk SSSR (N.S.) 73, 917–920 (1950). (Russian)

Various conditions are discussed which serve to make unique the solution of the wave equation for an infinite region, the condition of finiteness being insufficient when k is real. Ignatowsky [Ann. Physik (4) 18(323), 495–522, 1078 (1905)] proposed, in a particular problem, to make k tend to the real value through complex values; this the author terms the "principle of limiting absorption." Secondly, there is Sommerfeld's "radiation condition" [Jber. Deutsch. Math. Ver. 21, 309–353 (1912)]. Thirdly, Tihonov and Samarskiĭ [Akad. Nauk SSSR. Žurnal Eksper. Teoret. Fiz. 18, 243–248 (1948)] have suggested a "principle of limiting amplitude," recommending the limit as $t\to\infty$ of the amplitude of a certain solution of the time-dependent wave equation.

For wave propagation in an infinite slab ($0\leq z\leq l$), with $\Delta v+k^2v=0$ in the slab, v vanishing on the upper and lower faces of the slab, the author derives the following modified radiation conditions: $\rho^{\frac{1}{2}}v_m$ finite as $\rho\to\infty$, $\rho^{\frac{1}{2}}(\partial v_m/\partial\rho-ik_mv_m)\to 0$ as $\rho\to\infty$, where the v_m, k_m are given by $v=\sum_m^\infty v_m\sin m\pi z/l$, $k_m=k[1-(\pi/lk)^2m^2]^{\frac{1}{2}}$. Passing to general diffraction problems, the author gives integral representations by means of which, he states, the "principle of limiting absorption" may be justified. Similar considerations are stated to hold for Maxwell's equations.

F. V. Atkinson (Ibadan).

Source: Mathematical Reviews, Vol 12, No. 3

SVESHNIKOV, A. G.

USSR/Mathematics - Wave Guide Equation 21 Sep 51

"Principle of Limiting Absorption for the Wave Guide," A. G. Sveshnikov

"Dok Ak Nauk SSSR" Vol LXXX, No 3, pp 345-347

Demonstrates the theorem that the homogeneous wave eq $\Delta u+k^2u=0$ inside a wave guide possesses only the trivial soln $u=0$ when satisfying boundary conditions $u/_S=0$ or $\frac{du}{dn}/_S=0$ (where S is the lateral surface of the wave guide and certain Sommerfield radiational conditions at infinity. Work was directed by Prof A. N. Tikhonov. Submitted 10 Jul 51 by Acad I. G. Petrovskiy.

210T64

SVESHNIKOV, A. G.

Mathematical Reviews
Vol. 14 No. 9
October 1953
History

Svešnikov, A. G. On a work of M. V. Ostrogradskiĭ. Uspehi Matem. Nauk (N.S.) 8, no. 1(53), 101–102 (1953). (Russian)

The author states that a work of Ostrogradskiĭ dating from 1828 [Note sur la théorie de la chaleur, Mém. Acad. Sci. St. Pétersbourg. Sci. Math. Phys. Nat. (6) 1, 129–138 (1831)] demonstrates his prior discovery of several mathematical theorems and developments usually credited to other mathematicians. There follows (pp. 102–103) an extract relating to this paper taken from a speech of Steklov given at a celebration of the 100th anniversary of Ostrogradskiĭ's birth and a Russian translation of the paper in question (pp. 103–110).

SVESHNIKOV, A. G.

USSR/Mathematics - Elastic Oscillations Jul/Aug 53

"Uniqueness of the Solution of the External Problems in the Theory of Elastic Oscillations," A. G. Sveshnikov, Moscow

Priklad Matem i Mekhan, Vol 17, No 4, pp 443-454

Acknowledges the guidance of A. N. Tikhanov and suggestions of I. N. Vekua. Demonstrates that the principle of limiting absorption (A. G. Sveshnikov,

276T82

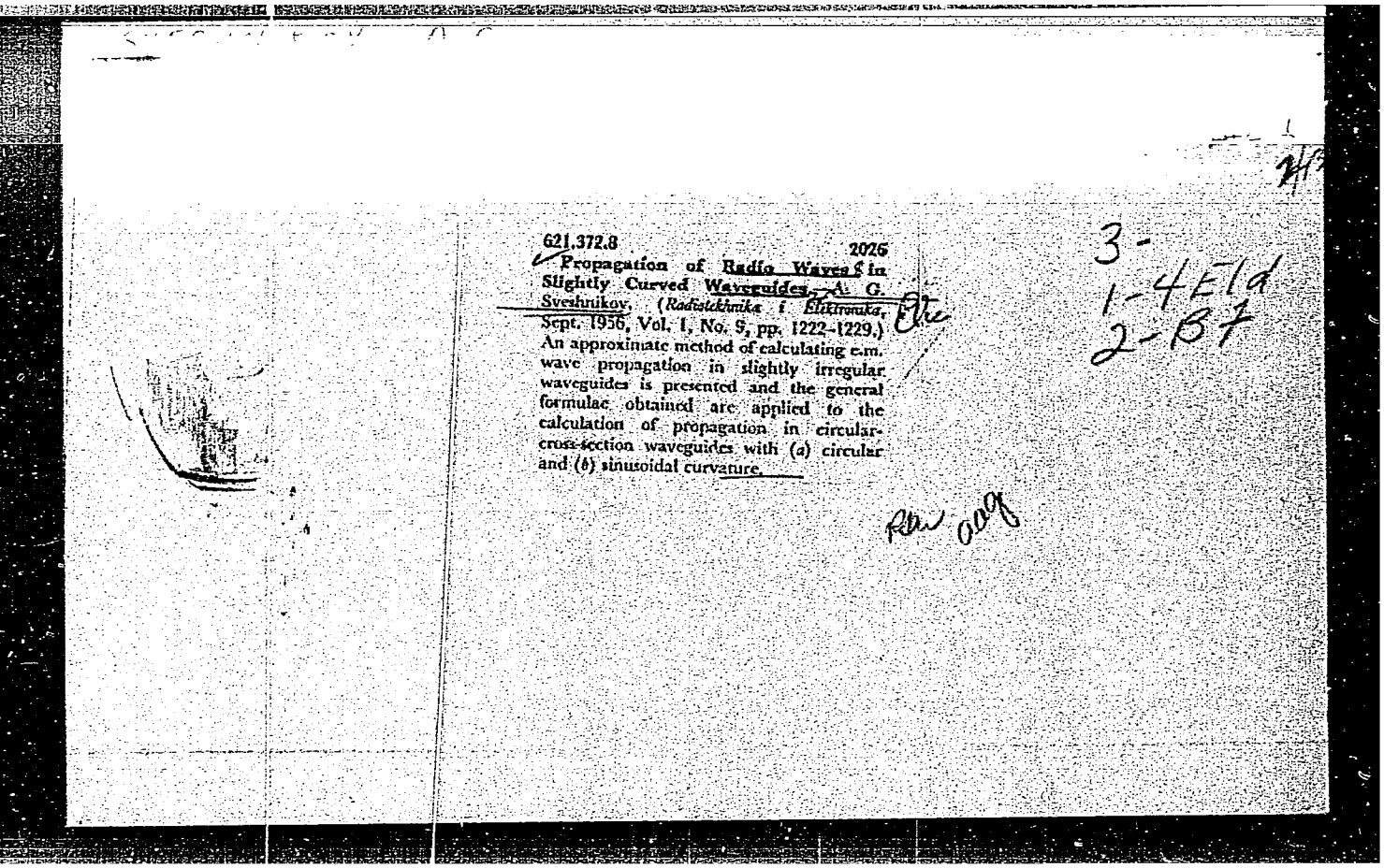
"Principle of Radiation," DAN SSSR, Vol 73, No 5, 1950) can be utilized also for the unique determination of the soln of external boundary-value problems of stationary elastic oscillations represented by diverging waves.

Sveshnikov, A.G.

CHERPAKOV, P.V., prof.; ROGOZHIN, V.S., dots.; SVESHNIKOV, A.G., assistent

[Program in methods of mathematical physics for physics and physicomathematics faculties of state universities] Programma po metodam matematicheskoi fiziki dlia fizicheskikh i fiziko-matematicheskikh fakul'tetov gosudarstvennykh universitetov. [Kiev] Izd-vo Kievskogo gos. univ., 1956. 1 p. (MIRA 11:3)

1. Russia (1923- U.S.S.R.) Ministerstvo vysshego obrazovaniya. (Mathematical physics--Study and teaching)



621.372.8 2025

Propagation of Radio Waves in Slightly Curved Waveguides. A. G. Sveshnikov. (*Radiotekhnika i Elektronika*, Sept. 1956, Vol. 1, No. 9, pp. 1222-1229.)

An approximate method of calculating e.m. wave propagation in slightly irregular waveguides is presented and the general formulae obtained are applied to the calculation of propagation in circular-cross-section waveguides with (*a*) circular and (*b*) sinusoidal curvature.

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1-4E1d
2-B7

SVESHNIKOV, A.G.

CARD 1 / 2 PA - 1544

SUBJECT USSR / PHYSICS
AUTHOR SVEŠNIKOV, A.G.
TITLE An Approximation Method for the Computation of a Slightly Non-Regular Wave Guide.
PERIODICAL Dokl.Akad.Nauk, 110, fasc.2, 197-199 (1956)
Issued: 11 / 1956

Here the propagation of radio waves in a wave guide which differs but little from a regular cylindrical wave guide is investigated. The shape of such a wave guide is discussed and the corresponding parameters are given. The position of any point within the wave guide is determined by the following 3 coordinates: by the wave length of the arc s on the guiding curve and by the polar coordinates r and φ on the plane S which is always vertical to the guide curve.
The MAXWELL equations describing this problem and the secondary condition for the vanishing of the tangential component of electric field strength on the wall of the wave guide are explicitly given. The approximation solution of this problem can, in the case of small ε_0, be set up in the form $\vec{E} = \vec{E}^0 + \varepsilon_0 \vec{E}' + \ldots$, $\vec{H} = \vec{H}^0 + \varepsilon_0 \vec{H}' + \ldots$ Here $\varepsilon_0 = \max\{\mathcal{H}(s), \Upsilon(s)\}$, $\mathcal{H}$ and Υ - curvatures and winding respectively of the guide curve, $\{\vec{E}^0 \vec{H}^0\}$ - the field in the equivalent cylindrical wave guide (s,r,φ). Next, the system of the MAXWELL equations for the determination of the field $\{\vec{E}', \vec{H}'\}$ is given, which is obtained by confining oneself to the terms containing the first powers of $\mathcal{H}(s)$ and $\Upsilon(s)$. The boundary condition is simplified in a similar manner.

Besides, $\{\vec{E}' \vec{H}'\}$ must satisfy the "radiation conditions" in infinity. The solution of this approximated system of equations with the approximated additional condition thendetermines the distortion of the field in case of a alight disturbance of the regularity of the cylindrical wave guide.
By the introduction of an auxiliary field H" (ikH" = ikH' + M) the determination of the field $\{\vec{E}' \vec{H}'\}$ may be reduced to determination of the field $\{\vec{E}' \vec{E}''\}$. This field $\{\vec{E}' \vec{H}''\}$ is the solution of an inhomogeneous MAXWELL system of equations for a cylindrical system of coordinates. The determination of this auxiliary field may be considered to be a problem of the excitation of the equivalent cylindrical wave guide by an assumed spatial current distribution in the case of an assumed value of the tangential component of electric field strength on the boundary of the wave guide. The solution of the first part of this problem is mentioned in the works by A.N.TICHONOV and A.A.SAMARSKIJ, Zurn.techn. fis, 17, fasc.11 and 12 (1947).

INSTITUTION: Moscow State University "M.V.LOMONOSOV".

into the wave E_{11} can be avoided almost entirely. In the plane special case one obtains the well-known result of M.Gouguet [Ref 1,2]. The solution obtained by the authors is an approximation, based on several simplifying assumptions, and is obtained with the aid of a method of B.Z.Katsenelenbaum [Ref 5].
There are 7 references, 4 of which are Soviet, 2 French, and 1 American.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova (Moscow State University imeni M.V.Lomonosov)

SUBMITTED: February 5, 1958

co-ordinates in the S plane) and s , which is the length of the arc of the generating curve L . First, an acoustic waveguide is considered and it is pointed out that this should satisfy the equation:

$$\Delta u + k^2 u = 0 \qquad (1)$$

and the boundary conditions expressed by:

$$\frac{\partial u}{\partial n} = 0 \qquad (2) .$$

If the notation defined by Eqs.(4) is adopted, Eq.(1) can be written as Eq.(5) or (6). On the other hand, if the lateral surface of the waveguide is described by the function defined by Eq.(8), the boundary condition can be expressed either by Eq.(9) or by Eq.(10), where $\bar{n}_1$ is a normal to the contour C in the plane S . If the irregularities in the waveguide are comparatively small, the solution of Eq.(1) can be in the form:

Card2/4 $$u = u^0 + \varepsilon_0 u^{(1)} + \ldots \qquad (13)$$

it is shown that in a curvilinear co-ordinate system, x, y, z, the Maxwell equations and the boundary conditions can be written as Eqs.(32) and (33). The electric and magnetic fields are given by Eqs.(35).
There are 8 references, 6 of which are Soviet, 1 French and 1 English.

SUBMITTED: April 9, 1957

AVAILABLE: Library of Congress

Card 4/4 1. Waveguides-Theory

On the Slow Motion of a Conducting Medium in a Stationary Magnetic Field

velocity (ϑ_o = const.) in a constant magnetic field (H_o = const.), then the induced electric field E (only the horizontal x-component is not equal to zero) is given by

$$E_x = -\frac{\vartheta_o}{c} H_z^o \qquad (13)$$

where c is velocity of sound and
H_z^o is the vertical component of the Earth's magnetic field.

If H_z^o = 0.2 gauss and seawater moves at 10 km/hr, the induced electric field is of the order of 6×10^{-7} V/cm. Eq.(13) may also be used to find the speed of an ocean current ϑ_o from known values of H_z^o and E_x. This simple formula is, however, only a first approximation and more complicated expressions are derived by the author. These expressions allow for the finite conductivity of the ocean floor and for the width of

S/155/59/000/02/032/036

AUTHOR: Sveshnikov, A.G.

TITLE: Excitation of Irregular Wave Guides

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki, 1959, No. 2, pp. 162-165

TEXT: The author considers the excitation of a homogeneously filled irregular wave guide whose lateral face is no cylinder jacket, but which is of ideal conductance. For the equations of the considered wave guide the author proposes a form which is especially suitable for programming purposes. The method can be extended to inhomogeneous wave guides and to such ones with absorbing walls.
There are 8 references : 6 Soviet, 1 American and 1 German.

ASSOCIATION: Moskovskiy gosudarstvennyy univeristet imeni M.V. Lomonosova (Moscow State University imeni M.V. Lomonosov)

SUBMITTED: February 11, 1959

Card 1/1

Irregular Waveguides

the surface S can be written in polar coordinates. The equation is:

$$r = r_o(\varphi, s) \qquad (1)$$

where s is a parameter. In curvilinear coordinates the system is defined by Eq (2). The surface Σ of the waveguide coincides with the coordinate surface $\rho = 1$ and the boundary condition is:

$$E_\tau \Big|_{\rho=1} = 0 \ .$$

where E_τ is the tangent component of the vector $\bar{E}$ on the coordinate surface $\rho = 1$. The Maxwell equations in this coordinate system can be written as Eqs (3), where (e_ρ, e_φ, e_s) , (h_ρ, h_φ, h_s) and $(j_\rho^{CT}, j_\varphi^{CT}, j_s^{CT})$ are covariant components of the

Card2/4

Irregular Waveguides

$\bar{E}$, $\bar{H}$ and $\bar{j}^{CT}$ in the system having the principal coordinate vectors $\bar{a}_\rho$, $\bar{a}_\varphi$, $\bar{a}_s$. On the basis of orthogonality of the principal and reciprocal vectors the Maxwell equations can be written in the coordinate form by multiplying Eqs (3) by the principal or the reciprocal vectors. It is possible to find the metric coefficients g_{ij}. The method of doing this is indicated in Eqs (4). However, the evaluation of the field inside the waveguide presents considerable difficulties since the equations are quite complex. However, the results of the above analysis can comparatively easily be applied to specially important cases, in particular, the calculation of "weakly" irregular waveguides, i.e. waveguides which differ slightly from the regular ones. This type of problem is usually solved by expanding the field into a number of components (see Eq 6) and evaluating the required corrections. In this way, it is possible to investigate the following problems: circular bends in circular

Card3/4

SVESHNIKOV, A.G.; KHAPAYEV, M.M.

A problem in aerial electric prospecting. Vest Mosk. un. Ser. mat., mekh., astron., fiz., khim. 14 no.2:113-120 '59 (MIRA 13:3)

1. Kafedra matematiki Moskovskogo gosuniversiteta.
(Electric prospecting) (Aeronautics in geology)

GLASKO, V.B.; SVESHNIKOV, A.G.

Electric fields of ocean currents produced by the earth's magnetic field. Geomag. i aer. 1 no.1:73-81 Ja-F '61. (MIRA 14:7)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova, fizicheskiy fakul'tet.
(Ocean currents) (Electric fields) (Magnetism, Terrestrial)

S/194/61/000/008/081/092
D201/D304

AUTHORS: Moiseyev, N.N. and Sveshnikov, A.G.

TITLE: Symposium on wave diffraction. Odessa September 26 - October 1, 1960

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 8, 1961, 68, abstract 8 I468 (Zh. vychisl. matem. i matem. fiz., 1961, 1, no. 1, 181-182)

TEXT: The symposium on the theory of diffraction has been organized by the Commission on Acoustics of the AS USSR, in conjunction with the Institute of Acoustics of the AS USSR and the Odessa Electrotechnical Institute of Communications. Investigations into the following were discussed: Theory of diffraction in radio engineering, acoustics, theory of elasticity and hydrodynamics. 7 papers were read at the general session and 80 at committee sessions. There was a wide interchange of ideas on the methods used in the diffraction theory. [Abstracter's note: Complete translation]

Card 1/1

Waveguide bends

S/194/62/000/001/043/066
D201/D305

guide may be used as a filter for parasitic modes. [Abstracter's note: Complete translation.]

Card 2/2

L 19897-63 EWT(1)/BDS/EEC(b)-2 AFFTC/ASD/ESD-3/APGC Pi-4/Pj-4/Pm-4

ACCESSION NR: AR3004393 S/0274/63/000/005/A054/A054

SOURCE: RZh. Radiotekhnika i elektrosvyaz', Abs. 5A319

AUTHOR: Sveshnikov, A.G., Kotik, I.P., Cherny*shev, Yu.S.

TITLE: A method of computing plane waveguide matchings

CITED SOURCE: Sb. rabot Vy*chisl. tsentra Mosk. un-ta, v. 1, 1962, 234-245

TOPIC TAGS: waveguide, waveguide matching, Maxwell equation, wave equation, wave propagation, electromagnetic wave propagation

TRANSLATION: The authors derive formulas and construct a program for the numerical solution of the problem of electromagnetic wave propagation in an irregular plane waveguide with a variable transverse cross section on high-speed electronic computers. For the transition from Maxwell's equations for wave equations for the amplitudes of independent waves, the authors suggest a method consisting in the reduction of the problem to an equivalent waveguide of given cross-section with a nonhomogeneous core. A curvilinear coordinate system is introduced which makes it possible to write the equation of the side surface of

Card 1/2

L 19897-63

ACCESSION NR: AR3004393 0

the waveguide in such a way that it coincides with one of the surface coordinates. The resulting program makes it possible to study the effect of the geometry of the intermediate device, the mutual orientation and distance between the waveguides to be joined, the wave number, and the number of the basic exciting wave on the reflection coefficient. The form of the side surface is given in terms of a polynomial of not higher than the 10-th degree. The results of computations carried out for the frequencies of the incident wave, which is considerably longer than the distance between waveguides, showed that with a constant distance between the waveguides, the least reflection coefficient is obtained in the case of rectilinear matching. Due to the cutting of corners at the end points, the reflection factor is reduced by about 10-15%. Using the constructed program it is also possible to solve the problem of the reflection coefficient for round waveguides, when the field is homogensous with respect to the φ coordinate. Bibliography with five titles. N.B.

DATE ACQ: 25Jun63 SUB CODE: GE ENCL: 00

Card 2/2

S/208/62/002/001/014/016
D299/D303

9.1300 (also 1127)

AUTHOR: Sveshnikov, A.G. (Moscow)

TITLE: On calculating rectangular-waveguide matching

PERIODICAL: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 2, no. 1, 1962, 175 - 179

TEXT: The convergence is investigated of solving a system of waveguide equations. The method of solution, proposed by the author in an earlier work, involves replacement of the solution of the infinite system, by solving the corresponding truncated system. Propagation of electromagnetic waves in a rectangular waveguide is considered. It is required to solve the wave equation in the region D, bounded by the curves C_1 and C_2. In new variables, the wave equation is written

$$\left[\frac{1}{a^2(\eta)}+\xi^2 b^2(\eta)\right]\frac{\partial^2 u}{\partial \xi^2}-2\xi b(\eta)\frac{\partial^2 u}{\partial \xi \partial \eta}+\frac{\partial^2 u}{\partial \eta^2}+\xi\cdot c(\eta)\frac{\partial u}{\partial \xi}+k^2 u=0, \qquad (9)$$

where

$$b(\eta)=\frac{a'(\eta)}{a(\eta)}, \quad c(\eta)=-b'(\eta)+b^2(\eta); \qquad (10)$$

Card 1/4

On calculating rectangular- ...

the boundary conditions are

$$u|_{\xi=0,1} = 0. \tag{11}$$

The solution to the problem is sought in the form of series, for whose coefficients one obtains the infinite system of equations

$$(aA_n')' - p_n A_n + \sum_{\substack{m=1 \\ m\neq n}}^{\infty} (L_{nm}A_m' + K_{nm}A_m) = 0, \tag{13}$$

where L, K, and P are given by expressions. The functions $A_n(\eta)$ should satisfy the boundary conditions

$$A_n' + i\gamma_n A_n|_{\eta=0} = 2i\gamma_{n_0}\delta_{nn_0}, \tag{18}$$

$$A_n' - i\gamma_n A_n|_{\eta=d} = 0, \tag{19}$$

It is shown that for any complex k^2, the problem (13) (18) (19) has a unique solution. For this purpose, the boundary-value problem for the system

$$(aZ_n')' - p_n Z_n + \sum_{\substack{m=1 \\ m\neq n}}^{\infty} (L_{nm}Z_m' + K_{nm}Z_m) = 0, \tag{20}$$

Card 2/4

On calculating rectangular- ...

$$Z_n' + i\gamma_n Z_n\big|_{\eta=0} = 0, \quad Z_n' - i\Gamma_n Z_n\big|_{\eta=d} = 0 \qquad (20)$$

is considered. In practice, it is convenient to replace the solution of the infinite system by the solution of the truncated system obtained by setting $A_{N+1} \equiv A_{N+2} \equiv \ldots \equiv 0$. The solution of the truncated system is also unique. Further, it is shown that the solution of the truncated system converges to that of the infinite system. If k^2 is real, then problem (13), (18), (19) has in general no unique sclution. But even in this case it can be shown that the coefficients of reflection R_n and of transmission T_n, corresponding to real values of γ_n and Γ_n, are uniquely determined. Finally, if an approximate solution

$$u_N(\xi, \eta) = \sum_{n=1}^{N} A_n^{(N)}(\eta)\sin n\pi\xi$$

is sought among uniformly bounded functions, the convergence of $A_n^{(N)}(0)$ and $A_n(N)(d)$, corresponding to real γ_n and Γ_n, to $A_n(0)$ and

Card 3/4

33300
S/208/62/002/001/014/016
D299/D303

On calculating rectangular- ...

$A_n(d)$, can be proved. There are 2 Soviet-bloc references.

SUBMITTED: June 28, 1961

Card 4/4

SVESHNIKOV, A. G., SEMASHKO, N. N., BALEBANOV, V. M., B. I., GLASKO, V. B., KHOSHEV, A. L., KUZNETSOV, V. V.,

"Motion of Individual Charged Particles in Helical-Symmetry Magnetic Field,"

report presented at the 6th Intl. Conf. on Ionization Phenomena in Gases, Paris, France, 8-13 Jul 63

SVESHNIKOV, A. G., SEMASHKO, N. N., BALEBANOV, V. M., GLASKO, V. B., GROSHEV, A. L., KUZNETSOV, V. V.,

"Study of Individual Charged Particle Motion in "fluted" Magnetic Fields,"

report presented at the 6th Intl. Conf. on Ionization Phenomena in Gases, Paris, France, 8-13 Jul 63

S/208/63/003/001/010/013
B112/B102

16.3400

AUTHOR: Sveshnikov, A. G. (Moscow)

TITLE: Foundation of a calculation method for irregular wave guides

PERIODICAL: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 3, no. 1, 1963, 170-179

TEXT: The following boundary value problem is considered:

$$\Delta u + k^2 u = 0, \quad u|_{\Sigma} = 0,$$

$$u(M_1, z_1) = Pe^{i\gamma_{n_0} z_1}\varphi_{n_0}(M_1) + \sum_n R_n e^{-i\gamma_n z_1}\varphi_n(M_1), \qquad (3)$$

$$z_1 < 0$$

$$u(M_2, z_2) = \sum_n T_n e^{i\Gamma_n z_2}\Phi_n(M_2), \qquad (4)$$

$$z_2 > 0$$

Card 1/2

$$\Delta\varphi_n + \lambda_n\varphi_n = 0, \quad \varphi_n|_{c_1} = 0, \tag{5}$$

$$\Delta\Phi_n + \Lambda_n\Phi_n = 0, \quad \Phi_n|_{c_2} = 0; \tag{6}$$

M and z are cylindrical coordinates. This problem is reduced to an abbreviated one, the solution of which is shown to converge towards the solution of the infinite original system.

SUBMITTED: April 3, 1962

L 13560-63 EDS

ACCESSION NR: AP3001101 S/0208/63/003/003/0478/0488

AUTHOR: Sveshnikov, A. G.; Il'inskiy, A. S. (Moscow) 4/6

TITLE: Computation of waveguide transfer of complex form

SOURCE: Zhurnal vy*chislitel'noy matematiki i matematicheskoy fiziki, v. 3, no. 3, 1963, 478-488

TOPIC TAGS: waveguide, propagation, parasitic wave, approximation

ABSTRACT: The authors correct the defect of neglecting the effect of parasitic waves on the amplitude of the basic propagating wave. They consider the accoustical problem where the wall of the waveguide is completely flexible. Outside a segment of length d the surface SIGMA of an irregular cylindrical coincides with the surface of the corresponding regular waveguides with two distinct cross sections. The source of oscillations is assumed to be in one of the regular waveguides. Then the mathematical problem reduces to the determination of the solution of the equation (enclosure 1, equation 1) in the region D bounded by SIGMA, with homogeneous condition (equation 2) and the conditions on the infinite regular parts (equation 3). Here (M_1, s_1) and (M_2, s_2) are the cylindrical coordinates of the corresponding regular parts, Phi_n and PHI_m are the eigenfunctions of the two cross

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L 13560-63
ACCESSION NR: AP3001101

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sections (equation 4); $Gamma_m$ and $GAMMA_m$ are the constants of propagation in the regular waveguides, and R_m and T_m are the unknown amplitudes of reflected and previous waves. Solution is accomplished by a change of coordinates and a sequence of approximations. Finally, these results are compared with the asymptotic theory. It is shown that under certain circumstances, short-wave approximation gives sufficiently accurate results. Orig. art. has: 85 formulas, 3 figures, and 2 tables.

ASSOCIATION: none

SUBMITTED: 18Jul62 DATE ACQ: 10Jun63 ENCL: 01

SUB CODE: 00 NO REF SOV: 005 OTHER: 002

Card 2/2

SVESHNIKOV, A.G. (Moskva)

Methods for studying the propagation of electromagnetic oscillations in wave guides with anisotropic filler. Zhur. vych. mat. i mat. fiz. 3 no.5:953-95[illegible] '63. (MIRA 16:11)

L 10263-63 EWT(1)/BDS--AFFTC/ASD
ACCESSION NR: AP3000558 S/0109/63/008/005/0772/0779

AUTHOR: Sveshnikov, A. G.; Sekerzh-Zen'kovich, S. Ya. 52

TITLE: Waves in a bent waveguide 15

SOURCE: Radiotekhnika i elektronika, v. 8, no. 5, 1963, 772-779

TOPIC TAGS: bent waveguides, mode degeneration in waveguides

ABSTRACT: A mathematical investigation is presented of the propagation of electromagnetic waves in a gradually bent circular metal waveguide with a deformed surface of the bend. A set of differential equations describes the propagation, including the degeneration of the mode H sub 01 into the mode E sub 11 within the bent section. A correction for this degeneration is determined and interpreted in terms of additional deformations that must be introduced in the waveguide in order to prevent the mode degeneration. The resulting formulae have been verified, with a numerical example, on a "high-speed computer". Orig. art. has: 46 equations.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova (Physics Department, Moscow State University)

Card 1/2

SVESHNIKOV, A.G.; MODENOV, V.P.

Propagation of an H_{11} wave in a round waveguide filled with gyrotropic plasma in the finite section of its length. Radiotekh. i elektron. 8 no.12:1998-2005 D '63. (MIRA 16:12)

BALEBANOV, V.M.; GLASKO, V.B.; GROSHEV, A.L.; KUZNETSOV, V.V.; SVESHNIKOV, A.G.; SEMASHKO, N.N.

Motion of single charged particles in undulating magnetic fields. Atom. energ. 15 no.4:318-319 O '63. (MIRA 16:10)

BALEBANOV, V.M.; VOLKOV, B.I.; GLASKO, V.B.; GROSHEV, A.L.; KUZNETSOV, V.V.; SVESHNIKOV, A.G.; SEMASHKO, N.N.

Motion of isolated charged particles in a magnetic field with helical symmetry. Atom. energ. 15 no.5:409-410 N '63. (MIRA 16:12)

IL'IN, Vladimir Aleksandrovich; POZNYAK, Eduard Genrikhovich; TIKHONOV, A.N., red.; SVESHNIKOV, A.G., red.; SHISHMAREV, I.A., red.

Fundamentals of mathematical analysis] Osnovy matematicheskogo analiza. Moskva, Nauka, 1965. 571 p. (Kurs vysshei matematiki i matematicheskoi fiziki, no.1)
(MIRA 18:9)

L 53041-65 ENT(d)/ENT(l)/EEC-4/EEC(t)/ENA(h) Py-4/Pn-4/Pac-4/Pg-4/Pt-7/
Peb/P1-4/Pj-4/P1-4 IJP(c) #S-4

ACCESSION NR: AT5010214 UR/3043/65/000/003/0329/0363

AUTHOR: Sveshnikov, A. G.; Il'inskiy, A. S.; Kotik, I. P.

TITLE: Propagation of oscillation in irregular waveguides with irregularly shaped side surfaces

SOURCE: Moscow. Universitet. Vychislitel'nyy tsentr. Sbornik rabot, no. 3, 1965. Vychislitel'nyye metody i programmirovaniye (Computing methods and programming), 329-363

TOPIC TAGS: waveguide propagation, waveguide junction, electromagnetic wave propagation, partial differential equation, Helmholtz equation

ABSTRACT: Principal attention is paid to junctions between two regular waveguides of different cross sections, and the main purpose of the investigation is to develop a computer algorithm which admits of variation of many parameters and yields inexpensively a rapid solution of the problem. Two variants of Helmholtz problem are solved. One involves the determination of the wave scattering produced by the junction and calls for determining the amplitudes of the transmitted and reflected waves. The solution of this problem is based on a procedure presented by one of

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L 53041-65

ACCESSION NR: AT5010214

the authors earlier (Sveshnikov, Zhurn. vychisl. matem. i matem. fiz. v. 3, no. 1 and no. 2, 1963), and shows how to determine the reflected and transmitted waves with a prescribed degree of accuracy. The second problem involves the reduction of a boundary-value partial differential equation to a system of ordinary differential equations, using a method similar to that of Galerkin. The uniqueness of the second variant of the problem is proved and it is shown that its solution converges to that of the first variant in the limit. As an application of the general method, the authors calculate the junctions necessary to match a round waveguide to a square one, to match two rectangular waveguides, and to match strip waveguides. Orig. art. has: 3 figures, 153 formulas, and 3 tables.

ASSOCIATION: Vychislitel'nyy tsentr Moskovskogo universiteta (Computation Center, Moscow University)

SUBMITTED: 00 ENCL: 00 SUB CODE: EC, DP

NR REF SOV: 010 OTHER: 000

Card 2/2

L [illegible] EWT(1)/EEC(k)-2/EEC-4/EEC(t) Pn-4/Pr-4/Pt-7/Pl-4 WS-4

ACCESSION NR: AT5013215 UR/3043/65/000/003/0364/0385

AUTHOR: Sveshnikov, A. G.; Modenov, V. P.

TITLE: Propagation of electromagnetic waves in waveguides with local gyrotropic inclusion

SOURCE: Moscow. Universitet. Vychislitel'nyy tsentr. Sbornik rabot, no. 3, 1965. Vychislitel'nyye metody i programmirovaniye (Computing methods and programming), 364-385

TOPIC TAGS: waveguide propagation, gyrotropic inclusion, gyrotropic medium, wave scattering

ABSTRACT: In view of the fact that electrodynamic problems involving gyrotropic media have as a rule no simple analytic solutions, the authors propose a numerical [illegible] for examining the propagation of radio waves in waveguides containing gyrotropic inclusions and demonstrate the convergence of this method. In one variant of the solution, the electric and magnetic field vectors are resolved into [illegible] in terms of the [illegible] of the [illegible] related to ordinary

Card 1/2

L 13042-65

ACCESSION NR: AT5010215

differential equations by a method similar to that of Galerkin. A second variant, [illegible] the determination of the fields from the solutions of this variant of the [illegible] variant [illegible] is predicated on [illegible] and 103 formulas.

ASSOCIATION: Vychislitel'nyy tsentr Moskovskogo universiteta (Computation Center, Moscow University)

SUBMITTED: 00 ENCL: 00 SUB CODE: EM, DP

NR REF SOV: 00 OTHER: 001

PAB

Card 2/2

L 3613-66 EWT(1)/ETC/EPF(n)-2/EWG(m)/EPA(w)-2 IJP(c) AT

ACCESSION NR: AP5024034 UR/0057/65/035/009/1590/1593 59 56 B

533.9

AUTHOR: Volkov, B. I.; Glasko, V. B.; Sveshnikov, A. G.; Semashko, N. N.

TITLE: On "intermingling" of particles in a composite magnetic field trap

SOURCE: Zhurnal teknicheskoy fiziki, v. 35, no. 9, 1965, 1590-1593

TOPIC TAGS: magnetic mirror, combined magnetic field, plasma injection, particle trajectory, plasma confinement, plasma instability, mathematic physics

ABSTRACT: Trajectories of charged particles in a magnetic mirror system with an auxiliary transverse magnetic field were calculated with the aid of a computer. The auxiliary field was that produced by six current-carrying rods parallel to the axis of the system and symmetrically disposed about it. The calculations were undertaken to determine whether the complex magnetic field would cause sufficient intermingling of particles with different velocities significantly to reduce the anisotropy of the ion velocity distribution of a plasma injected into the system. This question is important because the anisotropic velocity distribution of plasmas in magnetic mirror systems gives rise to cyclotron instability and greatly reduces the confinement time. The charged particles were assumed to be produced within the field by ionization of atoms of a monoenergetic beam moving in the median plane through the center of the system. The ions were accordingly injected at different

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L 3613-66 3

ACCESSION NAR: AP5024034

radii and with different longitudinal velocities. There were calculated the positions of the successive intersections of the ion trajectories with the median plane and with two other planes normal to the axis. It was found that ions injected at small radii move in nonintersecting regions, and that intermingling of such ions, therefore, does not occur. Ions injected at large radii, however, penetrate into regions of smaller radius, so that on the whole there is intermingling. It was also found that this intermingling would significantly reduce the anisotropy of the velocity distribution of a rarefied injected plasma. Orig. art. has: 5 formulas, 1 figure, and 1 table.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova, Fizicheskiy fakul'tet (Physics Department, Moscow State University) 44,55

SUBMITTED: 22Jan65 ENCL: 00 SUB CODE: ME

NO REF SOV: 003 OTHER: 001

Card 2/2

L 10673-66 EWT(1)/ETC/EWG(m) IJP(c) AT

ACC NR: AP5028325 SOURCE CODE: UR/0057/65/035/011/2083/2091

AUTHOR: Glasko, V.B.; Sveshnikov, A.G.; Semashko, N.N.; Timofeyev, A.V.

ORG: Physics Department, Moscow State University im. M.V.Lomonosov (Moskovskiy gosudarstvennyy universitet, Fizicheskiy fakul'tet)

TITLE: On the deceleration of ions in an arc discharge in a magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki v. 35, no. 11, 1965, 2083-2091

TOPIC TAGS: plasma injection, magnetic mirror machine, gas discharge plasma, plasma beam interaction, ion beam, ion energy, charge exchange

ABSTRACT: The authors calculate the rate of deceleration of high energy ions owing to their passage through, and interaction with, an arc discharge plasma in a longitudinal magnetic field. The calculations were undertaken because of the practical use of an arc discharge to accelerate the dissociation of molecular ion beams employed for injecting plasma into adiabatic plasma-confining systems. The interaction of a high energy ion with the arc plasma is described by an equivalent viscosity, and the rate of energy loss is calculated for an ion whose Larmor orbit intersects the arc column. With the aid of this result and the one-dimensional Fokker-Planck equation, the energy distribution of the ions is calculated both for the steady state that is established during the injection pulse and for the nonsteady state between pulses. A numerical solution for ion energies between 15 and 62.5 keV is presented graphically.

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ACC NR: AP5028325

3

For the conditions obtaining in the "Ogra" installation (Soviet thermonuclear mirror machine), the relaxation time for deceleration of the ions by their interaction with the arc plasma is 0.3 msec, and it is concluded that the density of high energy ions is determined mainly by this interaction and not by loss of high energy ions due to charge exchange collisions with neutral atoms. The authors thank L. I. Artemenkov for valuable discussions. Orig. art. has: 33 formulas and 4 figures.

44,55

SUB CODE: 20 SUBM DATE: 12Mar65/ ORIG REF: 003 OTH REF: 002

Card 2/2

17(1)

AUTHORS: Polunina, N. N., Sveshnikov, A. I. SOV/20-127-1-60/65

TITLE: Microfilming in the Investigation of the Pollen and Pollen Tubes of Certain Amaryllidaceae (Mikrokinos" yemka pri izuchenii pyl'tsy i pyl'tsevykh trubok nekotorykh amarillisovykh)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 1, pp 217-219 (USSR)

ABSTRACT: At the Laboratoriya fiziologii razvitiya rasteniy (Laboratory of the Physiology of Plant Development) of the gardens mentioned in the Association, a time-lapse device is used for microfilming. The work is carried out under the supervision of Professor V. A. Poddubnaya-Arnol'di (Mrs.) in cooperation with the cinematographical laboratory of the studio Mosnauchfil'm . This new and extremely important method of investigating the course of vital functions in living material yields sometimes a very convincing solution of some controversial biological problems. The debate carried on in the publications since a long time concerning the character of the movements of the masculine sexcells in higher plants, whether passive or active, could be definitely decided by the photographing methods mentioned.

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Microfilming in the Investigation of the Pollen and Pollen Tubes of Certain Amaryllidaceae

SOV/20-127-1-60/65

Pollen of a hybrid amaryllis species (cultivated by V.N. Shmygun) furthermore of Clivia miniata and Crinum abyssinicum were chosen for this purpose. The pollen was caused to germinated on a synthetic culture medium at 25°, and sawn on a culture medium layer on an object carrier. After cutting furrows into the culture medium for air supply all was covered by glass and sealed with paraffin to prevent desiccation. Best results were obtained with a 24-120-fold exposure-acceleration, i.e. 1 - 5 exposures per second. The entire photographed process, beginning with the germination of the pollen nucleus up to the division of the generative cells and the spermatozoa formation (18-24 hours) is observed within 15-20 minutes. It is described in detail and illustrated (Figs 1-3). It is obviously demonstrated that the generative cell and the spermatozoa do not move passively with the plasma current, but move independently actively. They overcome, sometimes with difficulty, such obstacles as counter currents of the plasma or a bottle-neck in the pollen tube. The deceleration and even the stoppage of the movements of the generative cell during division when the

Card 2/3

Microfilming in the Investigation of the Pollen and Pollen Tubes of Certain Amaryllidaceae SOV/20-127-1-60/65

plasma moves with equal velocity, are also an obvious proof of the independent activity of the generative cell. There are 3 figures and 8 references, 5 of which are Soviet.

ASSOCIATION: Glavnyy botanicheskiy sad Akademii nauk SSSR (Main Botanic Garden of the Academy of Sciences, USSR)

PRESENTED: January 21, 1959, by N. V. Tsitsin, Academician

SUBMITTED: January 2, 1959

Card 3/3

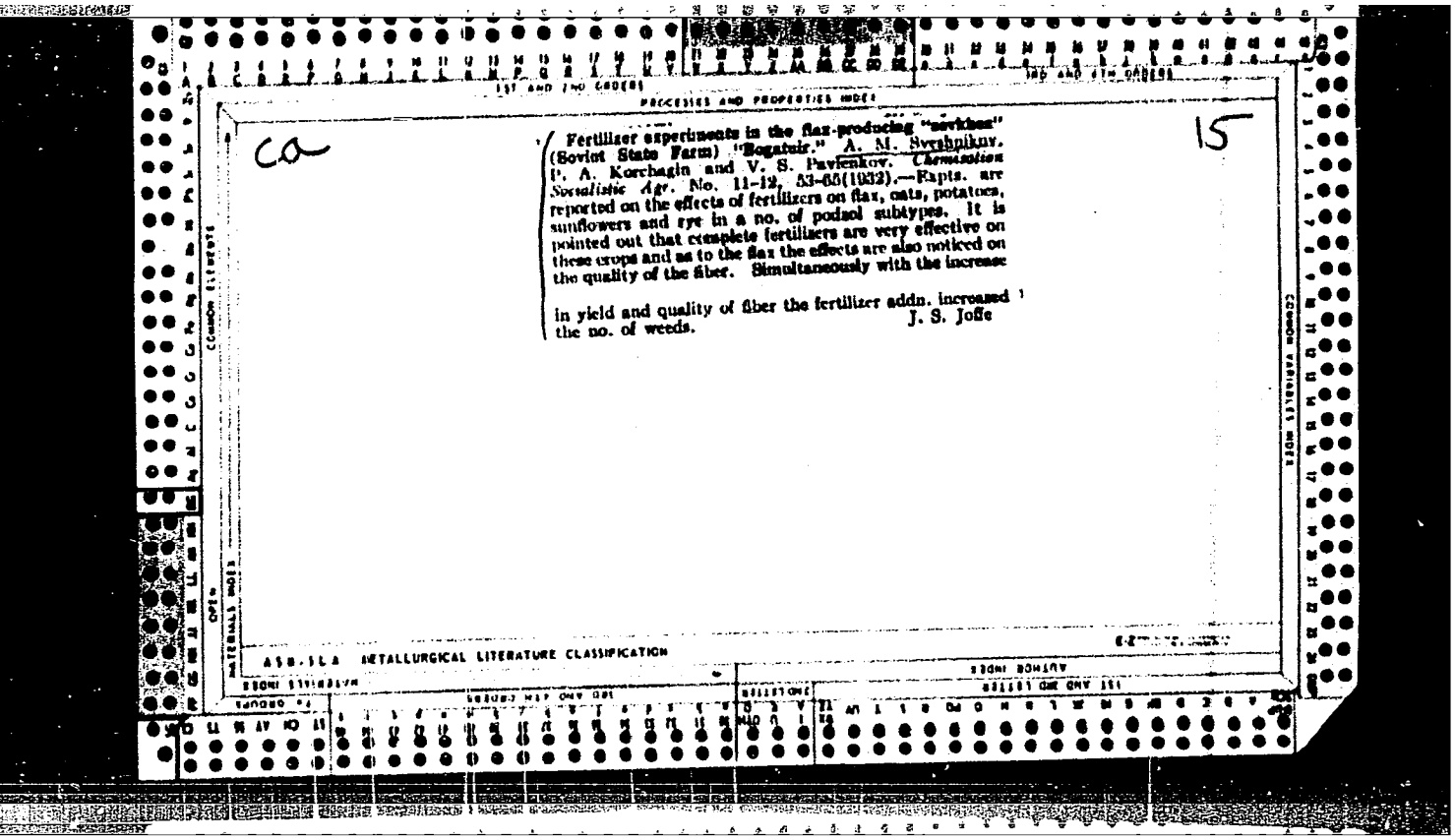
MAKARENKO, T.P., prof.; SVESHNIKOV, A.I.

Dumping syndrome and preoperative detection of factors predisposing its development following resection of the stomach. Khirurgiia 40 no.2:98-103 F '64. (MIRA 17:7)

1. 3-ya kafedra khirurgii (zav. - prof. V.I. Kazanskiy) TSentral'nogo instituta usovershenstvovaniya vrachey na baze TSentral'noy klinicheskoy bol'nitsy Ministerstva putey soobshcheniya, Moskva.

SVESHNIKOV, A.M., inzh.

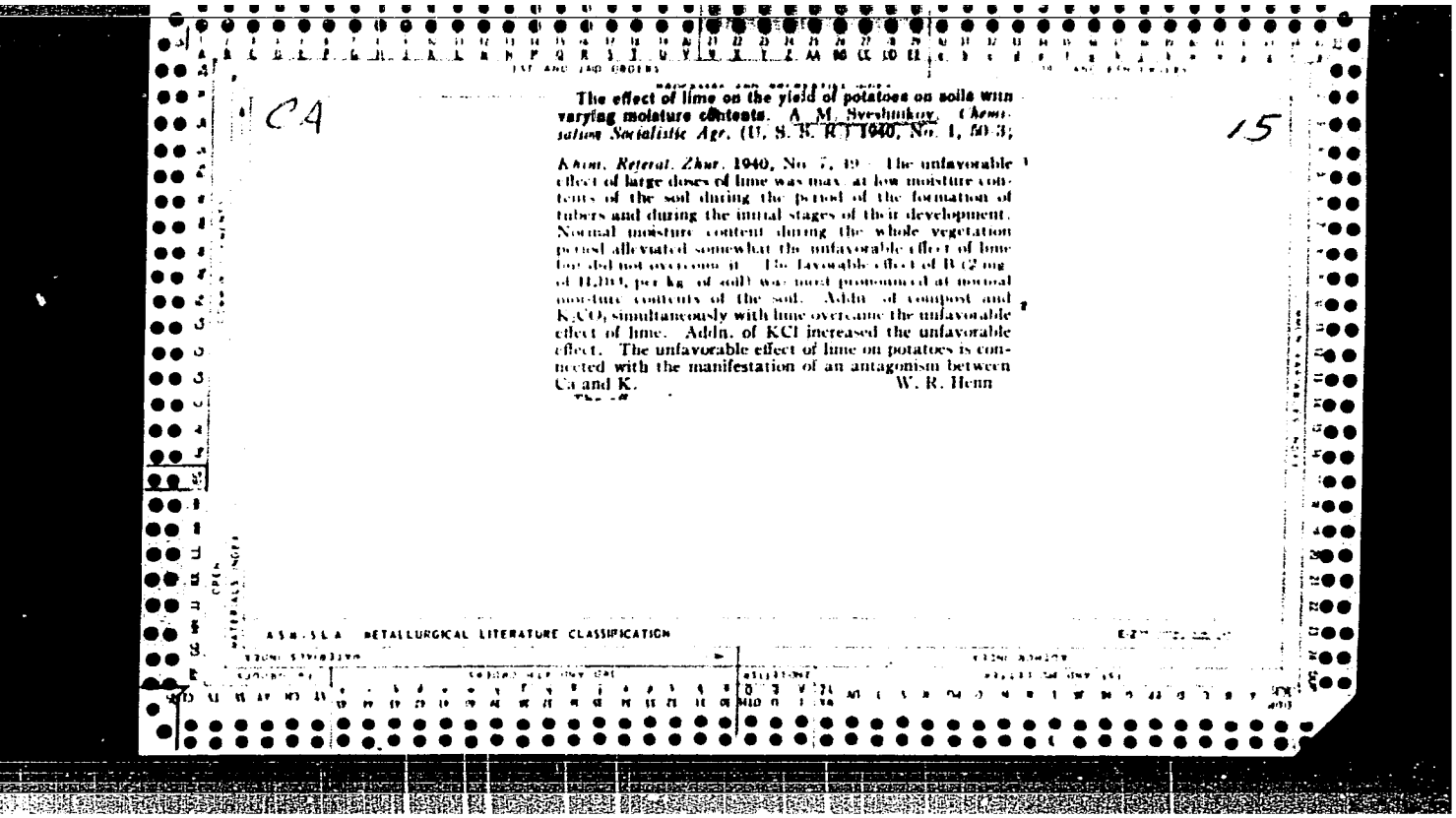
Wire bundles with shingling sleeve anchors. Transp. stroi. 10 no.8:48-50 Ag '60. (MIRA 13:8)
(Prestressed concrete)



CA 15

Fertilizer experiments in the flax-producing "sovkhoz" (Soviet State Farm) "Bogatsir." A. M. Svyshnikov, P. A. Korchagin and V. S. Pavlenkov. *Chemization Socialistic Agr.* No. 11-12, 53-65(1932).—Expts. are reported on the effects of fertilizers on flax, oats, potatoes, sunflowers and rye in a no. of podsol subtypes. It is pointed out that complete fertilizers are very effective on these crops and as to the flax the effects are also noticed on the quality of the fiber. Simultaneously with the increase in yield and quality of fiber the fertilizer addn. increased the no. of weeds.

J. S. Joffe



CA

15

The effect of lime on the yield of potatoes on soils with varying moisture contents. A. M. Svechnikov. *Chemisation Socialistic Agr.* (U. S. S. R.) 1940, No. 1, 50-3;

Agrim. Referat. Zhur. 1940, No. 7, 19.—The unfavorable effect of large doses of lime was max. at low moisture contents of the soil during the period of the formation of tubers and during the initial stages of their development. Normal moisture content during the whole vegetation period alleviated somewhat the unfavorable effect of lime but did not overcome it. The favorable effect of P_2O_5 (as H_3PO_4), per kg. of soil) was most pronounced at normal moisture contents of the soil. Addn. of compost and K_2CO_3 simultaneously with lime overcame the unfavorable effect of lime. Addn. of KCl increased the unfavorable effect. The unfavorable effect of lime on potatoes is connected with the manifestation of an antagonism between Ca and K.

W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SVESHNIKOV, A.M.

Lime

Role of lime fertilizers in a system of grassland crop rotation.
Agrobiologiia No. 3, 1952.
Sel'skokhozyaystvennyy insititut, G. Ivanova

Monthly List of Russian Accessions, Library of Congress Sept, 1952, UNCLASSIFIED.

SVESHNIKOV, A. M.

The physiological role of calcium in the life of red clover. A. M. Sveshnikov. *Agrokhimiya* 1953, No. 5, 124–39.—Soln. cultures show that leaves of clover contain the highest amount of Ca, followed by stems, with lowest in roots. With a deficiency of Ca in the culture the roots may contain as much as the leaves, the stems containing the lowest amount. The Ca in leaves is replaceable up to 80% by Na. In the stems there is also a considerable amount of this type of Ca, but appreciable amts. of it is extractable with AcOH. In the roots the NaCl ext. accounts for 40% of the Ca. It appears that there is no stable org. complexes of Ca, since all of it may be extd. with H_2O, NaCl, AcOH, and HCl soln. (*N* concns.). I. S. Joffe

SVESHNIKOV, A.V. (Leningrad)

Medical and sanitary service for the evacuated population of Leningrad during the Great Patriotic War. Sov. zdravookhr. 22 no.3:66-71 '63 (MIRA 17:1)

1. Iz kafedry organizatsii zdravookhraneniya (zav - zasluzhennyy deyatel' nauki prof.Yu.A. Dobrovol'skiy, rukovoditel' raboty - prof. B.M.Khromov) Leningradskogo gosudarstvennogo ordena Lenina instituta usovershenstvovaniya vrachey imeni S.M.Kirova.

SVESHNIKOV, B. YA.

1963/3

DECEASED

c ' 1963

PHYSICS -
optics & luminescence

see ILC

PAVLOV, Todor D., akademik (Sofiya); SVESHNIKOV, B.Ya. [translator]

Retreat or advance along the entire front of Michurin theory and practice. Agrobiologiia no.4:3-10 Jl-Ag '58. (MIRA 11:9)

1. Prezident Bolgarskoy akademii nauk.
(Biology--Philosophy)

PEYU TANEV; MAMAROV, kand. sel'skokhoz. nauk (Bolgariya); SVESHNIKOV, B.Ye., [translator]

Physiological changes in grape scion under the influence of root stock. Agrobiologiia no.4:527-532 Jl-Ag '59. (MIRA 12:11)

1. Nauchno-issledovatel'skiy institut vinogradarstva i vinodeliya, g. Pleven.

(Viticulture) (Grafting)

GEORGIYEVA-TODOROVA, Iordanka (Bolgariya); SVESHNIKOV, B.Ye. (translator)

Remote hybridization of various species of Helianthus.
Agrobiologiia no.6:861-866 N-D '59. (MIRA 13:4)

1. Bolgarskaya akademiya nauk, Institut rasteniyevodstva, Sofiya.
(Sunflowers)

IVANOV, Iordan K. (Bolgariya); SVESHNIKOV, B.Ye. [translator]

Characteristics of seeds and seedlings of grape vines obtained from self-rooted and grafted plants. Agrobiologiia no.6:814-820 N-D '61. (MIRA 15:2)

1. Nauchno-issledovatel'skiy institut vinogradarstva i vinodeliya, Pleven.
(Grapes)

SAVOV, Petr G.; SVESHNIKOV, B.Ye. [translator]

Some results of intervarietal crossing of cotton. Agrobiologiia no.6:928-930 N-D '62. (MIRA 16:1)

1. Gidromeliorativnaya opytnaya stantsiya, Pavlikeni, Narodnaya Respublika Bolgariya.
(Bulgaria--Cotton breeding)

TODOROV, Khr.; SVESHNIKOV, B.Ye. [translator]

Formation of dormant buds in grapevines and their state in the tissues of many-year-old wood. Agrobiologiia no.5:784-786 S-O'63. (MIRA 17:5)

1. Vysshiy sel'skokhozyaystvennyy institut imeni G. Dimitrova, Sofiya, Narodnaya Respublika Bolgarii.

IVANOV, Iordan, K. (Narodnaya Respublika Bolgarii); SVESHNIKOV, B.Ye. [translator]

Controlled nutrition of grapevine ovaries for the development of new forms. Agrobiologiia no.1:69-76 Ja-F '64 (MIRA 17:8)

1. Nauchno-issledovatel'skiy institut vinogradarstva i vinodeliya, Pleven, Narodnaya Respublika Bolgarii.

TARASOV, A. M., SVESHNIKOV, D. A., KEMAYEV, P. G.

Shot peening

Assembly for testing shot for fragility and evaluating the quality of the shot. Vest. mash. 31, No. 10, 1951.

9. Monthly List of Russian Accessions, Library of Congress, September, 1952 1953. Unclassified.

SVESHNIKOV, D. A., PARKHILOVSKIY, I. G.

Metals - Finishing

The effect of shot blasting on the change in the curvature of spring leafs. Avt. trakt. prom., No. 2, 1952.

Monthly List of Russian Accessions, Library of Congress, June 1952, Unclassified.

TARASOV, A. M., SVESHNIKOV, D. A.

Metals - Finishing

Use of cast iron shot to increase the fatigue resistance of automobile parts by means of shot blasting. Avt. trakt. prom., No. 2, 1952.

Monthly List of Russian Accessions, Library of Congress, June 1952. Unclassified.

1. TARASOV, A. M., Engr., SVESHNIKOV, D. A., Engr.

2. SSSR (600)

4. Metals-Finishing

7. Use of steel pellets for surface hardening of machine parts. Vest. mash. 32 No. 8, 1952

9. Monthly List of Russian Accessions, Library of Congress, February 1953, Unclassified.

SVESHNIKOV, D. A.

B. T. R.
V.3 No. 3
Mar. 1954
Metals- Heat
Treatment

3776. **Cold Hardening of Metal in a Static-Stressed State.** (Russian.) D. A. Sveshnikov and A. M. Tarasov. *Vestnik Mashinostroeniia*, v. 33, no. 8, Aug. 1953, p. 67-70.

Studies were made of residual stresses from compression and direct hardening of surface layers. Discusses importance of each. Graphs, photographs, 5 ref.

BUYNOV, A.F., inzhener; BRAYCHEV, V.P., inzhener; PARKHILOVSKIY, I.G., inzhener; SVESHNIKOV, D.A., inzhener.

Determining the endurance limits of spring steel in the presence of contact stresses. Vest.mash. 35 no.12:51-55 '55. (MLRA 9:5)

1. Gor'kovskiy avtomobil'nyy zavod imeni Molotova.
(Springs (Mechanism))

SVESHNIKOV, D.A.; MASLENNIKOV, G.P.

[redacted] fatigue testing of spiral cylindrical springs and wires. Zav.lab. 22 no.10:1245-1247 '56. (MLRA 10:5)

1.Gor'kovskiy avtozavod im. V.M.Molotova.
(Metals--Fatigue)
(Testing machines)

SVESHNIKOV, D. A.

SOV/137-58-10-21256

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 116 (USSR)

AUTHORS: Shaganova, K. N., Sveshnikov, D. A.

TITLE: Surface Hardening of Crankshafts of Cast Iron With Spheroidal Graphite (Poverkhnostnaya zakalka kolenchatykh valov iz chuguna s sharovidnym grafitom)

PERIODICAL: V sb.: Prom. primeneniye tokov vysokoy chastoty. Riga, 1957, pp 175-183

ABSTRACT: In order to develop a technique of surface hardening of crankshafts of magnesium iron of the following composition (in %): C 3.5 - 3.7, Si 2.5 - 2.8, Mn 0.6 - 0.8, S $\leqslant$ 0.01, P $\leqslant$ 0.12, Mg 0.03 - 0.06, for the "Volga" automobile, experiments were carried out on the hardening of specimens having the dimensions of the crankpins of the crankshaft (diam. 64 mm, width 40 mm). Heating was done by a single coil detachable inductor-sprayer a 100-kw power generator with a frequency of 2500 cps. To evaluate the effect of the surface hardening of the crankpin bearing area on the fatigue resistance of the shafts, specimens 64 mm in diameter were prepared for fatigue tests. A portion of the specimens was hardened with heating by high-frequency

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SOV-113-58-9-14/19

AUTHOR: Sveshnikov, D.A.

TITLE: The Surface Hardening of Springs of Automobile Engines by Hydroabrasive Treatment (Poverkhnostnoye uprochneniye pruzhin avtomobil'nykh dvigateley gidroabrazivnoy obrabotkoy)

PERIODICAL: Avtomobil'naya promyshlennost', 1958, Nr 9, pp 36-38 (USSR)

ABSTRACT: In the Gor'kiy Motor Vehicle Plant a new technological process described in the domestic and foreign special press - surface hardening of springs of automobile engines by hydroabrasive treatment - was tested. N.A. Bakayev designed a device, 22-M-2302, for this purpose. The liquid - 98% water, 0.5% sodium nitrite, 1.5% soda ash; granularity 240 at a ratio of 1 : 2.5 - is pumped to nozzles and directed from there by compressed air onto the surface of the working piece. Although fatigue resistance is improved by this process, the method cannot be recommended for mass application since it is too difficult to control the degree of removal of the defect layer on the individual springs and the danger of injuring the surface-hardened layer at exploitation.

Card 1/2

SOV-113-58-9-14/19

The Surface Hardening of Springs of Automobile Engines by Hydroabrasive Treatment

There is 1 diagram, 5 graphs and 11 Soviet references.

ASSOCIATION: Gor'kovskiy avtozavod (The Gor'kiy Motor Vehicle Plant)

1. Automobile industry--USSR 2. Springs--Hardening

Card 2/2

SOV/113-58-12-11/17

AUTHORS: Kurtov, I.F., Candidate of Technical Sciences, Ponomarev, A.V., Zakharov, V.A., Chichagova, N.P., Sveshnikov, D.A.

TITLE: Experience in Manufacturing Cast Crankshafts (Opyt izgotovleniya litykh kolenchatykh valov)

PERIODICAL: Avtomobil'naya promyshlennost', 1958, Nr 12, pp 33 - 37 (USSR)

ABSTRACT: At the Gor'kiy Automobile Plant, the casting of crankshafts for the engine of the "Volga" automobile has been developed. The casting of crankshafts reduces the consumption of metal. A comparison of a forged and a cast shaft is given in Table 1. The chemical composition of the metal and the thermal processing are very important for the casting. The cast iron should contain a high percentage of manganese and chromium and a low percentage of sulfur (Table 2). The iron is prepared in the basic furnace DSN-3. As a furnace charge, cast iron types LK-4, LK-3, LK-2, ferro-chromium Khr6, etc, are used. The cast iron is modified by metallic magnesium in the autoclave under a pressure of 5.0-5.5 atm. The casting molds are made of a mixture of 92% quartz sand, type K-70/140, and 8 % powderized bakelite. The molds are manufactured on an automatic two-position machine AKF-2

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(Figure 3). The hot molds are taken from the conveyer and put into special adjusting devices for cooling (Figure 4). After this they are fastened with cramps on a conveyer (Figure 6). The casting is done in a horizontal position (Figure 7). Table 3 shows the mechanical properties of samples taken out of crankshafts. It has been shown that the wear-resistance is adequate. There are 8 photos, 3 tables, and 4 references, 3 of which are Soviet and 1 English.

ASSOCIATION: Gor'kovskiy avtozavod (Gor'kiy Automobile Plant)

SOV/122-58-12-10/32

AUTHORS: Sveshnikov, D.A., and Golubovskaya, L.D.

TITLE: Improving Forging Hammer Rods by Roller Working their Surface (Uprochneniye shtokov shtampovochnykh molotov obkatkoy rolikami)

PERIODICAL: Vestnik Mashinoctroyeniya, 1958, Nr 12, pp 30-31 (USSR)

ABSTRACT: Rods weighing from 1000-1100 kg for heavy forging hammers are subject to fatigue cracks and frequently have comparatively short life. The service life can be improved by putting the working surface of the rod into an initial state of compression. This is done most effectively by rolling with a roller about 80 mm diameter made from steel 60 - 62 Rockwell C hardness. Fig 1 shows a tool where the roller is spring loaded by Belville type spring washers, giving pressure up to 1200 kg, against the rotating hammer rod. The first pass is usually made with a roller with a spherical profile about 8 mm radius. The tool is mounted so that the axis of the roller 'trails' at 4 - 5° (Fig 2). The hammer rod is rotated at 50 to 80 r p m, and the roller is traversed with a feed of 2 mm per rev., and is kept under about 1000 kg pressure. This first pass produces considerable plastic deformation and

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