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USSR

UDC: 621.385.633.1.001.5

YUR'YEV, V. I., DOBRYNCHENKO, V. N., SHESTIPEROV, V. A., NIGMATULLIN, U. A.

"Experimental Study of the Interaction Between Synchronous Waves of an Electron Stream and the Traveling Wave of an Electrodynamic Structure"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 4, Apr 72, pp 830-834

Abstract: The paper presents the results of an experimental study of O-type interaction between the synchronous waves of an electron stream and the field of a special electrodynamic structure. An actual gain of 13 dB is attained as well as an electron amplification factor of more than 20 dB. Quantitative agreement is established between the experimental and theoretical curves for linear gain as a function of beam current and magnetic field strength.

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USSR

UDC: 621.375.826

ANAN'YEV, Yu. A., GRISHMANOVA, N. I., KOVAL'CHUK, L. V., SVENTSITSKAYA, N. A., SHESTOBITOV, V. Ye.

"On the Feasibility of Controlling the Emission From Lasers With Telescopic Cavities"

Moscow, Kvantovaya Elektronika, Sbornik Statey, No 2(8), 1972, pp 85-88

Abstract: An experimental study is made of the possibility of controlling emission from a laser with a telescopic cavity by injecting a signal from an external source into the central zone of the cavity. The necessary average power of the external signal is determined for the case where it is comprised of "spikes" of emission randomly distributed in time. Four illustrations, bibliography of nine titles.

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USSR

UDC 539.3

ABOVSKIY, N. P., SHESTOPAL, B. M.

"Calculation of the Pliability of Tie-Beams of Hollow Shells by the Discrete Displacement Method"

V sb. Prostranstv. konstruktsii v Krasnoyarsk. kraye (Three-Dimensional Structures in the Krasnoyarsk Region -- Collection of Works), Krasnoyarsk, 1972, pp 67-79 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V135)

Translation: The pliability of tie-bars for hollow shells is calculated on the basis of a combination of classical methods of structural mechanics and a finite difference method which was used for the solution of the basic system. Sample calculations are given which utilize particularly the displacement method. Authors' abstract.

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ABOVSKIY, N. P., SHESTOPAL, B. M. UDC 539.3

"On the Convergence of the Finite Difference Method for Ribbed Shells"

V sb. Prostranstv. konstruktsii v Krasnoyarsk. kraye (Three-Dimensional Structures in the Krasnoyarsk Region -- Collection of Works), Krasnoyarsk, 1972, pp 101-112 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V121)

Translation: Internal convergence of the finite difference method for ribbed shells by consecutive tightening of the grid is analyzed in specific examples. Particularly shown is the effect of the width of a rib equal to the step of the grid on the convergence of transverse bending moments. 6 ref. Authors' abstract.

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USSR

UDC 577.4

SHESTOPAL, G. A.

"Simple Bases in All Closed Classes of the Algebra of Logic"

Uch. zap. Mosk. god. ped. in-ta im. V. I. Lenina (Scientific Notes of Moscow State Pedagogical Institute imeni V. I. Lenin), 1971, 375, pp 156-178 (from RZh-Matematika, No 5, May 72, Abstract No 5V356 by G. GAVRILOV)

Translation: The article describes in detail all simple bases in all closed classes of the algebra of logic. A brief exposition of these results was given in works by the author (RZh-Matematika, 1962, Abstract No 2A75; and 1966, Abstract No 11V183). In describing the simple bases of closed classes, the author uses essentially the following definitions and theorem: The function $f(x_1, \ldots, x_n)$ is said to be simple with respect to a certain property if it possesses the given property but none of the functions obtained from it, with all possible identifications of variables, possesses this property. A function from the given closed class is said to be a simple class function if it is a simple function with respect to the property of not belonging to at least one of the precomplete (for this closed class) classes. The simple basis of a closed class contains only simple functions of this class. The article makes wide use (as the author notes) of symbols and methods from the book of S. V. YABLONSKIY, G. P. GAVRILOV and V. B. KUDRYAVTSEV (RZh-Matematika, 1968,

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SHESTOPAL, G. A., Uch. zap. Mosk. god. ped. in-ta im. V. I. Lenina, 1971, 375, pp 156-178

Abstract No 1V315K). In order to keep the exposition of the results obtained sufficiently concise, the author has had to surmount a whole series of significant technical difficulties: for example, in studying classes of autoduality functions and classes of functions possessing the properties

$\langle a^{\mu} \rangle$ or $\langle A^{\mu} \rangle$, $\mu \geq 2$.

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USSR UDC: 577.4

SHESTOPAL, G. A.

"Simple Bases in All Closed Classes of Logic Algebra"

Uch. zap. Mosk. gos. ped. in-ta im. V. I. Lenin (Scientific Notes of the Moscow State Pedagogical Institute imeni V. I. Lenin), 1971, 375, pp 156-178 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V356)

Translation: The article gives a detailed description of all simple bases in all closed classes of the algebra of logic. These results have been given in brief form in papers by the author (RZh-Mat 1962, 2A75; 1966, 11V183). In describing the simple bases of closed classes, the author makes extensive use of the following definitions and theorem. The function $f(x_1, \ldots, x_n)$ is called simple with respect to some property if the function itself has the given property, and all functions derived from it with all possible identities of variables do not have this property. A function from a given closed class is called a simple function of the class if it is a simple function with respect to the property of non-membership in at least one of the precomplete (for this closed class) classes. A simple basis of a closed class contains only simple functions of this class. The article makes extensive use (as the author notes) of notation and methods

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SHESTOPAL, G. A., Uch. zap. Mosk. gos. ped. in-ta im. V. I. Lenin, 1971, 375, pp 156-178

from a book by S. V. Yablonskiy, G. P. Gavrilov and V. B. Kudryavtsev (RZh--Mat, 1968, 1V315K). In order to keep the exposition of the results sufficiently compact, the author has had to overcome a number of technical difficulties, as for instance in investigating classes of self-dual functions and classes of functions having the properties $\langle a^{\mu} \rangle$ or $\langle A^{\mu} \rangle$, $\mu \geqslant 2$. G. Gavrilov.

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USSR

UDC 539.385

TROSHCHENKO, V.T., KHAMAZA, L.A. and SHESTOPAL, L.F., Institute of Metallurgy imeni A.A. Baykov, Academy of Sciences USSR

"Study of Deformation Criteria for Fatigue Failures of Metals in Extension-Compression and Torsion Tests"

Moscow, Sb. "Ustalost' metallov i splavov", "Nauka" Press, 1971, pp 31-41

Translation: Described is a method of studying inelastic deformations and the irreversibly dispersed energy in fatigue tests using extension-compression and torsion. The data on fatigue and inelasticity of EI612 and EI437 alloys are presented in the form of cyclic deformation diagrams and fatigue curves based on various strength theories. It is shown that the cyclic deformation diagrams obtained by extension-compression and torsion in the low elastic-plastic deformation region show best agreement in octahedral stresses-octahedral coordinates. (6 illustrations, 2 tables; summary).

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USSR

UDC 539.385

TROSHCHENKO, V. T., KHAMAZA, L. A., SHESTOPAL, L. F.

"Investigation of Deformation Criteria for the Fatigue Fracture of Metals Under Tension-Compression and Twisting"

V sb. Ustalost' met. i splavov (Fatigue of Metals and Alloys -- Collection of Works), Moscow, "Nauka", 1971, pp 31-41 (from RZh-Mekhanika, No 12, Dec 71, Abstract No 12V1459)

Translation: A technique is described for investigating inelastic deformations and irreversibly scattered energy in metals during tests for fatigue under tension-compression and twisting. Results of a study of fatigue and inelasticity of EI612 and EI437B alloys are given which are represented in the form of diagrams of the cyclic deformation and fatigue curves in accordance with various strength theories. It is shown that cyclic deformation diagrams for tension-compression and twisting in the region of small elastic-plastic deformations are closer to the coordinates of octahedral stresses-octahedral shift. Authors' abstract.

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USSR UDC 620.178.322.4

TROSHCHENKO, V. T., SHESTOPAL, L. F., Institute of Problems of Strength of the Academy of Sciences UkrSSR, Kiev

"Study of the Laws of Fatigue Breakdown and Inelastic Deformation of Metals Under Twisting"

Kiev, Problemy prochnosti, No. 5, May 72, pp 15-23

Abstract: An installation was developed at the Institute of Problems of Strength of the Academy of Sciences UkrSSR for studying fatigue and energy dispersion in metals under alternating twisting. It is noted that the majority of studies of deformation and energy criteria for fatigue breakdown of metals had been made under conditions of a linear stress state, but that such conditions do not always correspond to the operating conditions of parts breaking down from fatigue, the majority of which operate under a two- or three-dimensional stress state. The installation described here was therefore developed and research was conducted under a two- and three-dimensional stress state. Twisting, the simplest form of a two-dimensional stress state, is discussed here. The machine achieved a smooth change in the twisting moment, which is measured with an elastic dynamometer in a

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TROSHCHENKO, V. T., SHESTOPAL, L. F., Problemy prochnosti, No. 5, May 72, pp 15-23

microscope. The studies were conducted under conditions close to resonance and the accuracy of maintaining the load was within ±1%. Tests were conducted on EI612 and 1Kh17N2Sh steels and EI437B and EI826 alloys. It was found that there is a considerable difference between the proportionality limits observed for static and cyclic loads and that the fatigue limits do not at all correspond to the proportionality limits determined under static deformation. It is concluded that the magnitude of the inelastic deformation is very small under stresses equal to the fatigue limit on the basis of 10^7 cycles and that this quantity does not lead to a considerable difference between the real and rated stresses.

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09 MAY 1972

AUTOMATIC CONTROL SYSTEMS FOR THE CONSTRUCTION ORGANIZATIONS AND HOUSE BUILDING COMBINES

(Article by N. Shestopal, TsNIIOMTP; Moscow, Na Stroykakh Rossii, Russian, No 3, 1972, pp 12-14)

The discussion during the course of the work of the section encompassed the experience in building ASUS [automatic construction control systems] of a significant number of construction organizations on all organizational levels. Among them are the ASUS of the union construction ministries (the USSR Ministry of Construction and the USSR Ministry of Farm Construction) and also the republic construction administrations (Estonian, Lithuanian, Georgian, Latvian, Uzbek and Moldavian SSR). The experience in creating the branch automatic control systems was investigated for a number of main administrations (municipal and territorial) and companies — Glavmosstroy [Moscow Main Construction Administration], Glavleningradstroy [Leningrad Main Construction Administration], Glavtashkentstroy [Tashkent Main Construction Administration], Glavmosoblastroy [Moscow Oblast Main Construction Administration], Glavbashstroy [Bashkiria Main Construction Administration], Glavkuzbasstroy [Kuznetsk Basin Main Construction Administration], Glavnizhnevolzhskstroy [Lower Volga Main Construction Administration], Dneprometallurgstroy [Dnepr Metallurgical Construction Administration], Glavkiyevgorstroy [Kiev Main Municipal Construction Administration], Glavelevatorspetsstroy [Main Elevator and Specialized Construction Administration], and so on. The automatic enterprise control system encompasses many trusts of industrial and residential construction (in Donetsk, Kishinev, Alitus, Yalta, Glavzapstroy Western Construction Trust), the trusts under the Glavgorstroy [Main Municipal Construction Administration] specialized trusts with respect to motor vehicle transportation, and so on, the house-building combines in Khar'kov, Kiev, Leningrad, Tashkent, and so on.

The experience in the development and application of automatic control systems — branch and enterprise — investigated in the reports at the conference permits summing up the operations with respect to creation of automatic control systems in accordance with various levels of organizational and production control structures, the goals and composition of the automatic control systems, software, normative and material supply.

SHESTOPAL, N.

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Acc. Nr. AP0048300 Abstracting Service: CHEMICAL ABST. 5-7c

Ref. Code UR0181

93546g Diffusion of vacancies and rheological properties of metals at high temperatures. Shestopal, V. O. (Inst. Neorg. Khim., Novosibirsk, USSR). *Fiz. Tverd. Tela* 1970, 12(1), 291–4 (Russ). A model is considered based on the mechanism of diffusion of vacancies as a result of normal stresses acting on the boundaries of grains and a 1-dimensional scheme is taken. Then when a periodic rotating moment is acting on specimen an excess concn. of vacancies is formed on the grain boundaries given by $q\sigma \cos \omega t$, where σ is stress and q is proportionality const. The equation for diffusion is then solved with this condition and the soln. obtained is that of a model of a generalized Maxwell body. A. Libackyj

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USSR UDC: 681.3

SHESTOPALOV, A. M.

"Realization of Logic Algebra Functions on the TKh8G Thyratron for the Circuits of Electronic Devices in Telegraph Equipment"

Tr. nauch.-tekhn. konferentsiy. Kaluzh. obl. sovet nauch.-tekhn. o-v (Works of Scientific and Technical Conferences. Kaluga Regional Council of Scientific and Technical Societies), Kaluga, 1970, pp 85-87 (from RZh-Kibernetika, No 9, Sep 71, Abstract No 9V558)

[No abstract]

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USSR

UDC: 621.316.56

KORDOBOVSKIY, A. I., SHESTOPALOV, A. M.

"A Keyboard Device"

USSR Author's Certificate No 308466, filed 16 Dec 69, published 3 Sep 71 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 7, Jul 72, Abstract No 7A25 P)

Translation: A keyboard device is proposed which contains single-armed L-shaped levers with keys. On the lever arms on the side opposite the keys are permanent magnets under which are hermetically sealed, magnetically controlled contacts. Also incorporated in the keyboard device is an interlock which is connected to the levers. To reduce the key-depression effort, the interlock is made in the form of an elastic closed reservoir which is located beneath the row of key levers and is filled with a fluid in such a way that there is a space free of fluid and equal to the volume of fluid displaced by depression of a single key to a depth equal to at least half its travel. Two illustrations.

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USSR

UDC 518.1

SHESTOPALOV, V. P., Corresponding Member of the Academy of Sciences Ukrainian SSR, LYTVYNENKO, L. M., and PROSVIRNIN, S. L., Khar'kov State University

"Method of Successive Approximations for Numerical Solution of Fredholm's Integral Equations of Second Kind"

Kiev, Dopovidi Akademii Nauk Ukrains'koi RSR -- Seriya A. Fizyko-Tekhnichni ta Matematychni Nauky, No 4, Apr 73, pp 353-357

Abstract: A previous article by L. M. LYTVYNENKO described a method for the solution of an infinite system of algebraic equations of the second kind, in which preliminary inversion of part of the operator is used to construct a convergent iterative process. In the present article a similar method of successive approximations proves effective for the numerical solution of Fredholm's integral equations of the second kind, especially with an infinite interval of integration. The method is substantiated and tested for the integral equation in the problem of electromagnetic wave diffraction by a slit in a metal screen. The method makes it possible to obtain a numerical evaluation of the error of solution and a substantial decrease in the interval of integration by replacing the original integral equation at each approximation stage with an equation with some new free term, whose value at each point of the domain of definition of the sought function can be found by numerical

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USSR

SHESTOPALOV, V. P., et al., Dopovidi Akademii Nauk Ukrains'koi RSR -- Seriya A. Fizyko-Tekhnichni ta Matematychni Nauky, No 4, Apr 73, pp 353-357

integration. The possibility of narrowing the interval of integration is especially important in the case of infinite intervals, making it possible to use the degenerate kernel method to construct the resolvent of the integral equation and evaluate the error of solution of the integral equation at each approximation stage. If the integral equation is replaced by a finite system of linear algebraic equations for computer-aided realization of the method, the order of this system can be considerably lowered by reducing the interval of integration and performing only one inversion of the matrix, since the same inverted matrix is used in all subsequent iterations.

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USSR

UDC 621.372.8:538.577

TRET'YAKOVA, S.S., TRET'YAKOV, O.A., SHESTOPALOV, V.P.

"Diffraction Of Wave Beams At Plane Periodic Structures"

Radiotekhnika i elektronika, Vol XVII, No 7, July 1972, pp 1366-1373

Abstract: The paper studies the diffraction at plane periodic structures and dielectric plates of paraxial wave beams, i.e., complex waves with nonuniform amplitudes and phase characteristics in the transverse direction of propagation of the plane which change as transmission of the beam proceeds. It is shown that with fixed conditions a wave beam passing through a diffraction structure has the same transverse distribution of the field as in the primary beam incident at an obstacle. Only its characteristics undergo a change -- the beam width and radius of curvature of the phase front. Analytical expressions are derived for the diffracted field, and simple explicit formulas are derived for the beam width and radius of curvature. 1 fig. 11 ref. Received by editors, 27 May 1971.

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USSR

UDC 621.317.7.029.65/66-5

VERTIN, A. A., PETRUSHIN, A. A., SUSLOV, N. N., SHESTOPALOV, V. P., KOLOSOV, S. S., LEONOV, Yu. I., and LITVINENKO, L. N.

"Automation of Experimental Research in the Millimeter and Submillimeter Wavelength Ranges"

Novosibirsk, V sb. Konf. po avtomatiz. nauch. issled. na osnove primeneniya ETsVM, 1972 (Conference on Automation of Scientific Research Using the Electronic Digital Computer, 1972--collection of works) 1972, pp 100-101 (from RZh--Radiotekhnika, No 10, 1972. Abstract No 10A515)

Translation: The proposed research method is based on the visualization of the field distribution in open structures (resonators, for example) by introducing into their space a test body which, entering a region of greater or lesser intensity in its motion along a specified trajectory, varies to some extent the parameters of the structures. The trajectory of the test body is traced by a beam on the screen of a cathode-ray tube. The brightness of the beam is proportional to the signal taken from the open structure.
A. K.

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USSR

UDC 621.317.75.029.64(088.8)

PETRUSHIN, A.A., BALAKLITSKIY, I.M., SHESTOPALOV, V.P.

"Device For Visual Representation Of The Electromagnetic Field In Open Resonators"

USSR Author's Certificate No 286004, filed 6 Jan 69, published 4 June 71 (from RZh:Radiotekhnika, No 2, Feb 72, Abstract No 2A285P)

Translation: The patented device for visual representation of the electromagnetic fields in open resonators contains a microwave generator, a detector, amplifier, oscilloscope, and a mechanism for movement of the test body provided with potentiometric pickups for movement in two mutually perpendicular directions. With the object of decreasing the time for visual representation, the output of the amplifier is connected to the brightness modulator of the oscilloscope and the potentiometric pickups are connected to the deflecting system of the oscilloscope. The device makes it possible to obtain an actual visual pattern of the distribution of the fields in open resonators, and precisely to distinguish the type of oscillations and to perceive the arrangement and form of the field spot. It is possible to conduct observations in resonators with mirrors of an arbitrary geometrical configuration with the presence in the cavity of any nonuniformities. It is also possible to determine the effect of methods of excitation of the resonators on the pattern of the field. A.K.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

UDC 535.4:621.371

SHESTOPALOV, VICTOR PETROVICH

"Riemann-Gilbert Problem Method In The Theory Of Diffraction And Propagation Of Electromagnetic Waves"

Metod zadachi Rimana-Gil'berta v teorii difraktsii i rasprostraneniya elektromagnitnykh voln (cf English above), Izd. "Kar'kovskogo universiteta," Kar'kov, 1971. 400 pp. ill. 272 ref. 3 r 42 k.

Abstract: The monograph is devoted to the rigorous methods of diffraction theory. Using as an example the diffraction of a plane wave at an ordinary periodic array, the Riemann-Gilbert Problem method is examined, which is used subsequently during study of the diffraction of waves at multielement and multilayer arrays, scattering of waves at various strip obstacles in rectangular waveguides, propagation of waves in circular and helix waveguides and waveguides with longitudinal slots. The natural oscillations of some open resonators are considered, the diffraction at the slot in flat screens, and others. The book is intended for scientific workers and engineers engaged in various fields of radiophysics and electronics (especially those specializing in millimeter and submillimeter waves), and also for students of advanced courses and graduate students interested in various problems and methods of the theory of diffraction.

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SHESTOPALOV, VICTOR PETROVICH, Metod zadachi Rimana-Gil'berta v teorii difraktsii i rasprostraneniya elektromagnitnykh voln, Izd. "Kar'kovskogo universiteta," Kar'kov, 1971. 400 pp. ill. 272 ref. 3 r 42 k.

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USSR

SHESTOPALOV, VICTOR PETROVICH, Metod zadachi Rimana-Gil'berta v teorii difraktsii i rasprostraneniya elektromagnitnykh voln, Izd. "Kar'kovskogo universiteta," Kar'kov, 1971, 400 pp. ill. 272 ref. 3 r 42 k.

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SHESTOPALOV, VICTOR PETROVICH, Metod zadachi Rimana-Gil'berta v teorii difraktsii i rasprostrananiya elektromagnitnykh voln, Izd. "Kar'kovskogo universiteta," Kar'kov, 1971, 400 pp. ill. 272 ref. 3 r 42 k.

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SHESTOPALOV, VICTOR PETROVICH, Metod zadachi Rimana-Gil'berta v teorii difraktsii i rasprostraneniya elektromagnitnykh voln, Izd. "Kar'kovskogo universiteta," Kar'kov, 1971, 400 pp. ill. 272 ref. 3 r 42 k.

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

SHESTOPALOV, VICTOR PETROVICH, Metod zadachi Rimana-Gil'berta v teorii difraktsii i rasprostrananiya elektromagnitnykh voln, Izd. "Kar'kovskogo universiteta," Kar'kov, 1971, 400 pp. ill. 272 ref. 3 r 42 k.

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

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SHESTOPALOV, VICTOR PETROVICH, Metod zadachi Rimana-Gil'berta v teorii difraktsii i rasprostraneniya elektromagnitnykh voln, Izd. "Kar'kovskogo universiteta," Kar'kov, 1971, 400 pp. ill. 272 ref. 3 r 42 k.

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

SHESTOPALOV, VICTOR PETROVICH, Metod zadachi Rimana-Gil'berta v teorii difraktsii i rasprostraneniya elektromagnitnykh voln, Izd. "Kar'kovskogo universiteta," Kar'kov, 1971, 400 pp. ill. 272 ref. 3 r 42 k.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

SHESTOPAPOV, VICTOR PETROVICH, Metod zadachi Rimana-Gil'berta v teorii difraktsii i rasprostraneniya elektromagnitnykh voln, Izd. "Kar'kovskogo universiteta," Kar'kov, 1971, 400 pp. ill. 272 ref. 3 r 42 k.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

UDC 621.372.826

KAZANSKIY, V. B., LITVINENKO, L. N., SHESTOPALOV, V. P.

"Equivalent Dielectric Properties of an Infinite Two-Dimensional Periodic Strip Structure"

Gor'kiy, Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, Vol XIV, No 10, 1971, pp 1554-1569

Abstract: In connection with using artificial media in the shortwave supra-high frequency band, it has become necessary to study the electrodynamic properties of these dielectric structures under the condition that their characteristic dimensions are comparable to the wavelength. In view of the large volume of calculations required by previous methods of solving this problem, a study was made of the natural operating conditions of unlimited media comprising ideally conducting, regularly arranged metal strips with different directions of electromagnetic wave propagation. The problem is solved without restrictions on the relation between the wavelength and the characteristic dimensions of the structure, but the basic analysis is performed for the single-mode case where the medium can be considered a homogeneous dielectric with an equivalent index of refraction. Either explicit formulas or expressions which are usually subjected to numerical and qualitative analysis are obtained for

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USSR

KAZANSKIY, V. B., et al., Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, Vol XIV, No 10, 1971, pp 1554-1569

the index of refraction of the anisotropic medium. An analysis of the dispersion equations is performed for strip structures with propagation of the electromagnetic waves in various directions. Curves are presented for the region of transparency of the structure during propagation of waves with E-polarization and H-polarization, the dispersion of the effective index of refraction during propagation of H-polarized and E-polarized waves with different values of the filling parameter and the roots of the derived dispersion equations.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR UDC: 621.317.799

PETRUSHIN, A. A., BALAKLITSKIY, I. M., SHESTOPALOV, V. P.

"A Device for Visualizing an Electromagnetic Field in Open Resonators"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 34, 1970, Soviet Patent No 286004, Class 21, filed 6 Jan 69, p 43

Abstract: This Author's Certificate introduces a device for visualizing the electromagnetic field in open resonators. The device contains an SHF oscillator, detector, amplifier, oscillograph and probe-manipulating mechanism equipped with potentiometric displacement indicators for two mutually perpendicular directions. As a distinguishing feature of the patent, the time for visualization is reduced by connecting the output of the amplifier to the brightness modulator of the oscillograph, and connecting the potentiometric indicators to the deflecting system of the oscillograph.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

UDC: 538.574.6

YENA, A. I., LITVINENKO, L. N., and SHESTOPALOV, V. P., Khar'kov Institute of Radio-electronics

"Diffraction of Electromagnetic Waves by Multi-element Arrays"

Gor'kiy, Izvestiya Vysshikh Uchebnykh Zavedeniy: Radiofizika, Vol 13, No 6, 1970, pp 913-924

Abstract: The authors study the diffraction of a plane electromagnetic wave by a multi-element array. The structure of the array consists of an infinite sequence of periodically spaced groups of strips, with n number of strips in each group. It is shown that these arrays have important characteristics with respect to practical application. These characteristics consist of the array's transparency to H-polarized waves in a broad range of frequencies, while being analogous to a single element array with the same period in the case of E-polarization. An approximate method is proposed for calculating array diffraction fields using equivalent boundary conditions. The results of these calculations are compared to a precise solution obtained for a case involving an array with a five element period. Original article: five figures, one table, 19 formulas, and 13 bibliographic entries.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

1/2 031 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--ASSEMBLY FOR STUDYING ELECTROMAGNETIC FIELDS IN OPEN RESONATORS IN THE MILLIMETER RANGE -U-

AUTHOR-(03)-PETRUSHIN, A.A., BALAKLITSKIY, I.M., SHESTOPALOV, V.P.

COUNTRY OF INFO--USSR

SOURCE--PRIBORY I TEKHNIKA EKSPERIMENTA, MAR.-APR. 1970, P. 147-149

DATE PUBLISHED----APR70

SUBJECT AREAS--PHYSICS, METHODS AND EQUIPMENT

TOPIC TAGS--QUARTZ, TEST METHOD, ELECTROMAGNETIC FIELD, MAGNETIC RESONANCE, GRAPHITE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/1418 STEP NO--UR/0120/70/000/000/1047/0149

CIRC ACCESSION NO--AP0133370

UNCLASSIFIED

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

2/2 031 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0133370

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF AN ASSEMBLY FOR OBTAINING A VISIBLE IMAGE OF THE FIELD DISTRIBUTION IN OPEN RESONATORS IN THE MILLIMETER AND SUBMILLIMETER WAVELENGTH RANGE. ESSENTIAL IN THIS ASSEMBLY IN THE Q FACTOR MODIFICATION CAUSED BY DIFFRACTION EFFECTS WHEN A 0.3 TO 0.6 MM POROUS GRAPHITE SPHERE FIXED ON A QUARTZ THREAD IS MOVED IN A PLANE PERPENDICULAR TO THE RESONATOR AXIS. THE DETERMINATION OF THE OSCILLATION MODES AND FIELD DISTRIBTUION IN OPEN RESONATORS WITH ANY MIRROR GEOMETRY IS FACILITATED BY THIS TECHNIQUE. FACILITY: AKADEMIIA NAUK UKRAINSKOI SSR, INSTITUT RADIOFIZIKI I ELEKTRONIKI, KHARKOV, UKRAINIAN SSR.

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

1/2 021 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--EXPERIMENTAL STUDY OF OPEN RESONATORS WITH REFLECTIVE DIFFRACTION GRATES. I -U-

AUTHOR-(04)-BALAKLITSKIY, I.M., PETRUSHIN, A.A., TRETYAKOV, O.A., SHESTOPALOV, V.P.

COUNTRY OF INFO--USSR

S

SOURCE--UKRAYIN. FIZ. ZH. (USSR), VOL. 15, NO. 5, P. 724-38 (MAY 1970)

DATE PUBLISHED----MAY70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--OPEN RESONATOR, OPTIC MIRROR, DIFFRACTION GRATING, HARMONIC OSCILLATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/1808 STEP NO--UR/0185/70/015/005/0724/0738

CIRC ACCESSION NO--AP0133713

UNCLASSIFIED

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

2/2 021 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0133713

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HEMI SPHERIC OPEN RESONATORS (OR) WITH A FLAT MIRROR COVERED PARTIALLY BY A REFLECTIVE DIFFRACTION GRATE WERE STUDIED EXPERIMENTALLY. SPECTRA AND FIELD DISTRIBUTIONS OF NATURAL OSCILLATIONS WERE EXAMINED IN DEPENDENCE ON THE DISTANCE BETWEEN THE MIRRORS FOR VARIOUS GRATE PARAMETERS. SIMILAR DEPENDENCES OBTAINED WHEN INVESTIGATING BOTH A CONVENTIONAL HEMI SPHERIC OR AND THAT WITH A FLAT MIRROR COMPLETELY COVERED BY A REFLECTIVE DIFFRACTION GRATE ARE PRESENTED FOR COMPARISON. THE SPECTRUM AND FIELD DISTRIBUTIONS OF NATURAL OSCILLATIONS OF OR WITH A TROUGH SHAPED ROUND APERTURE MIRROR INSTEAD OF A SPHERIC ONE ARE CONSIDERED.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR UDC 621.039.512.4

BRODER, D. L., ZHILKIN, A. S., KUTUZOV, A. A., POPKOV, K. K., SHESTOPALOV, Ye. V.

"Reactor Neutron Spectra in Water and Iron"

V sb. Vopr. fiz. zashchity reaktorov (Problems in Reactor Safety Physics -- Collection of Works), No. 5, Moscow, Atomizdat, 1972, pp 79-90 (from RZh-50. Yadernyye reaktory, No 5, May 72, Abstract No 5.50.59)

Translation: The change in the spectrum of the scalar flux of neutrons with energies above 0.1 Mev in water and iron shields is of interest from the viewpoint of establishing quantitative characteristics of the attenuation of the flux by the shielding substance and determining the accuracy of certain methods for calculating the passage of neutrons, particularly the semi-empirical method based on calculations of fluxes of intermediate neutrons in lower approximations of the spherical harmonics method and the assignment of a group of fast neutrons in accordance with experimental data. 12 ill., 11 ref.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

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UDC 621.039.512.45

BASS, L. P., BRODER, D. L., ZHILKIN, A. S., KUTUZOV, A. A., SMETANIN, A. A., SUVOROV, A. P., SHESTOPALOV, Ye. V., SHIPILOV, A. Ye.

"Reactor Neutron Spectra in a Cylindrical Neutron Duct Surrounded by Water"

V sb. Vopr. fiz. zashchity reaktorov (Problems in Reactor Safety Physics -- Collection of Works), No. 5, Moscow, Atomizdat, 1972, pp 123-129 (from RZh-50. Yadernyye reaktory, No 5, May 72, Abstract No 5.50.61)

Translation: The energy and spatial distributions of neutrons with energies above 200 kev in an iron cylindrical neutron duct at distances up to 66 cm from its origin are discussed. The experimental data are compared with computational results made by two-dimensional programs using the P_1-approximation of the spherical harmonics method and the $2D_{10\times5}$-approximation of the characteristic method. The presence of experimental data on the neutron energy spectra makes possible a corrective check on the methods for calculating the parameters of shields of limited transverse dimensions.

7 ill., 8 ref.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

UNCLASSIFIED PROCESSING DATE--20NOV70

1/2 018

TITLE--A DIGITAL MEASURING SYSTEM FOR AUTOMATIC INTERFEROMETRES -U-

AUTHOR-(05)-GRAPKIN, M.YA., ZORIN, D.I., KAYEKIN, V.V., SVERDLICHENKO, V.D., SHESTOPALOV, YU.N.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, IZMERITEL'NAYA TEKHNIKA, NO 2, 1970,PP 35-37

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--DIGITAL SYSTEM, INTERFEROMETER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED STEP NO--UR/0115/70/000/002/0035/0037

PROXY REEL/FRAME--1994/1463

CIRC ACCESSION NO--AP0115393

UNCLASSIFIED

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

2/2 018 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0115393

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DIGITAL MEASURING SYSTEM (DMS) IS INTENDED FOR CHECKING HATCHED MEASURES OF LENGTH UNDER DYNAMIC CONDITIONS. THE ESSENCE OF THE METHOD OF MEASUREMENTS OF THE LENGTH OF THE SUBDIVISIONS OF HATCHED MEASURES CONSISTS IN THE FACT THAT REGISTRATION OF THE ORDER OF INTERFERENCE AND FIXATION OF THE MEASUREMENT RESULTS (AT THEMOMENT THAT THE CENTER OF THE HATCH PASSES UNDER THE AXIS OF THE SLIT OF A PHOTOELECTRIC MICROSCOPE) TAKES PLACE DURING A CONSTANT CHANGE OF THE OPTICAL DIFFERENCE OF THE COURSE OF RAYS IN THE INTERFEROMETER. IN ACCORDANCE WITH THIS, THE FUNCTIONAL LAYOUT OF THE DMA CONSISTS OF A PHOTOELECTRIC DEVICE FOR MEASURING THE ORDER OF INTERFERENCE AND A DEVICE FOR REGISTERING THE MOMENT THAT THE CENTER OF THE HATCH PASSES UNDER THE AXIS OF THE SLIT OF THE PHOTOELECTIC MICROSCOPE FOR OUTPUT OF THE SIGNAL OF RECORDING OF THE MEASUREMENT RESULT. THE BASIC METROLOGICAL AND TECHNICAL PARAMETERS OF THE DMS ARE PRESENTED.

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

UDC 539.163

DZHELEPOV, B. S., and SHESTOPALOVA, S. A.

Izobarnyye Yadra s Massovym Chislom A=170 (Isobaric Nuclei with Mass Number A=170), Leningrad, "Nauka," (Science) Leningrad Division, 1972, 332 pp, Annotation p 2, Table of Contents pp 327-332

Translation of Annotation: This monograph is devoted to the properties of the isotopes ^{170}Ho, ^{170}Er, ^{170}Tm, ^{170}Yb, ^{170}Lu, ^{170}Hf, ^{170}Ta, ^{170}W, and ^{170}Os. All the experimental data characterizing the properties of stable and radioactive isotopes are compared: data on nuclear masses, magnetic and electric moments, lifetimes of nuclear states, spectra of gamma rays and conversion electrons, $\gamma-\gamma$ and γ-e coincidences, and nuclear reactions resulting in excited states of the above-enumerated nuclei.

On the basis of critical analysis of the entire aggregate of data the decay schemes of the radioactive nuclei of ^{170}Ho, ^{170}Tm, ^{170}Lu, and ^{170}Hf are derived, as well as sequences of excited states in ^{170}Er, ^{170}Tm, ^{170}Yb, and ^{170}Lu. Substantiations are given for the selection of quantum characteristics for each nuclear state. After the experimental facts are sampled, they are compared with modern theories and nuclear models -- the models of Bohr and Mottelson, Davydov et al., and Solov'yev et al. Anomalies of various kinds are revealed which must be studied for a better understanding of nuclear structure.

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USSR

DZHELEPOV, B. S., and SHESTOPALOVA, S. A., Izobarnyye Yadra s Massovym Chislom A=170, Leningrad, "Nauka," Leningrad Division, 1972, 332 pp

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

DZHELEPOV, B. S., and SHESTOPALOVA, S. A., Izobarnyye Yadra s Massovym Chislom A=170, Leningrad, "Nauka" Leningrad Division, 1972, 332 pp

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DZHELEPOV, B. S., and SHESTOPALOVA, S. A., Izobarnyye Yadra s Massovym Chislom A=170, Leningrad, "Nauka" Leningrad Division, 1972, 332 pp

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

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DZHELEPOV, B. S., and SHESTOPALOVA, S. A., Izobarnyye Yadra s Massovym Chislom A=170, Leningrad, "Nauka" Leningrad Division, 1972, 332 pp

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

UDC: 539.163.546.668

DZHELEPOV, B. S., SHESTOPALOVA, S. A., All-Union Scientific Research Institute of Metrology imeni D. I. Mendeleyev

"Properties of Excited 0^+ States of ^{170}Yb"

Moscow, Izvestiya Akademii Nauk SSSR: Seriya Fizicheskaya, Vol 37, No 1, Jan 73, pp 2-18

Abstract: The authors discuss the properties of four excited states of ^{170}Yb type 0^+ obtained by decay of ^{170}Lu with energies of 1069.36, 1228.91, 1479.91, and 1566.38 keV. The conclusions drawn from the research are as follows: The levels 1228.91 keV, 0^+ and 1306.23 keV, 2^+ should be considered levels of the β-band of ^{170}Yb. The levels 1479.91 keV, 0^+ and 1534.52 keV, 2^+ form a rotational pair of the two-frequency state $0^+ n\,5/2^-[512]-n\,5/2^-[523]$. The level 1069.36 keV, 0^+ has a rare singularity: its rotational level 2^+0 is one of the terms of the doublet 1138.56 keV, 2^+ and 1145.65 keV, 2^+, but it is not known just which term it is. The properties of the terms of the doublet are very close; only weak arguments favor a function with $K = 0$ for describing the level 1138.56 keV, 2^+. The levels 1566.38 keV, 0^+ and 1634.80 keV, 2^+ are apparently rotational companions of the two-frequency state 0^+, $n\,1/2^-[510]-n\,1/2^-[521]$.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

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USSR

BALALAYEV, V. A., DZHELEPOV, B. S., MEDVEDEV, A. I., TER-NERSESYANTS, V. YE., UCHEVATKIN, I. F., and SHESTOPALOVA, S. A., All-Union Scientific Research Institute of Metrology imeni D. I. Mendeleyev

"On Lu^{169} Decay"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol. 34, No. 1, Jan 70, pp 2-11

Abstract: The conversion electron spectrum of Lu^{169} was measured on the $\pi\sqrt{2}$ β-spectrometer of the Institute in the energy ranges 460-900 kev and 1000-1500 kev. Several tens of new lines were observed. A table of transitions in Yb^{169} occurring in the decay of Lu^{169} is compiled on the basis of these measurements and the data of other authors and covers transition energies from 24 kev to 2300 kev. The transition energies are given together with the mean-square error, and also the intensities of K-conversion electrons, data on the intensities of γ-transitions, calculated conversion coefficients, and the multipolarity. A decay scheme for Lu^{169} is given based on all the available data on Yb^{169} levels.

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

1/2 032 UNCLASSIFIED PROCESSING DATE--11DEC70

TITLE--APPROXIMATE COMPUTATION OF THE EFFICIENCY OF BUNCHERS OF HYBRID TYPE C DEVICES -U-

AUTHOR-(02)-SHESTOPEROV, A.N., SNOPKO, K.N.

5

COUNTRY OF INFO--USSR

SOURCE--V SB. VOPR. ELEKTRON. TEKHNIKI (PROBLEMS OF ELECTRONICS

REFERENCE--RZH-ELEKTRONIKA I YEYE PRIMENENIYE, NO 6, JUNE 1970, ABSTRACT

DATE PUBLISHED--------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--TRAVELEING WAVE TUBE, KLYSTRON, DRIFT CURRENT, HARMONIC ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605023/303 STEP NO--UR/0000/70/000/000/0007/0013

CIRC ACCESSION NO--AR0141239

UNCLASSIFIED

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

2/2 032 UNCLASSIFIED PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AR0141239

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY THE APPROXIMATE INTEGRATION OF A SYSTEM OF EQUATIONS FOR A TRAVELING WAVE TUBE AS APPLIED TO A KLYSTRON, EXPRESSIONS ARE OBTAINED FOR THE PHASE AND VELOCITY OF ELECTRONS IN PARTS OF THE DRIFT. THE CURRENT OF THE FIRST HARMONIC IS COMPUTED FOR A 3 CAVITY BUNCHER. AN APPROXIMATE FORMULA IS OBTAINED FOR THE INDICATOR QUALITY OF AN N RESONATOR BUNCHER.

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UDC 621.385.623

USSR

SOVETOV, N.M., ZAKHAROV, A.A., SHESTOPEROV, A.N.

"On The Effect Of The Location Of The Energy Outlet On The Efficiency Of A Klystron With Distributed Interaction"

V sb. Vopr. elektron. tekhniki (Problems Of Electronics Technology-- Collection Of Works), Saratov, 1970, pp 37-44 (from RZh--Elektronika i yeye primeneniye, No 6, June 1970, Abstract No 6A127)

Translation: The process is considered of the establishment of high-frequency amplitude in the extended section of a klystron with distributed interaction, allowing for the spatial effect of the energy outlet expressed in terms of the attenuation introduced and varying with the length of the section. Equations for the excitation are formulated. The results are presented of computations with two arrangements of the energy outlet: at the end of the section and its beginning for two different lengths of the output resonator. Summary.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR UDC 621.385.6

SHESTOPEROV, A.N., SNOPKO, V.N.

"Approximate Computation Of The Efficiency Of Bunchers Of Hybrid Type O Devices"

V sb. Vopr. elektron. tekhniki (Problems Of Electronics Technology -- Collection Of Works), Saratov, 1970, pp 7-13 (from RZh--Elektronika i yeye primeneniye, No 6, June 1970, Abstract No 6A131)

Translation: By the approximate integration of a system of equations for a traveling-wave tube as applied to a klystron, expressions are obtained for the phase and velocity of electrons in parts of the drift. The current of the first harmonic is computed for a 3-cavity buncher. An approximate formula is obtained for the "indicator quality" of an n-resonator buncher. Summary.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

1/3 011 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--DENITRATION OF SULFURIC ACID IN THE PRODUCTION OF AMMONIUM SULFATE -U-

AUTHOR-(05)-ZLATIN, L.YE., TRONDINA, G.I., ARTAMONOV, YU.P., SHETEYN, A.L., YUKHNOVETS, YU.D.

COUNTRY OF INFO--USSR

SOURCE--KOKS KHIM. 1970. (3), 45-7

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--INDUSTRIAL PRODUCTION, AMMONIUM SULFATE, NITROBENZENE, COKE, GAS, UREA, SULFURIC ACID, DENITRATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/1386 STEP NO--UR/0068/70/000/003/0045/0047

CIRC ACCESSION NO--AP0109455

UNCLASSIFIED

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

2/3 011 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109455

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WHEN THE SPENT H SUB2 SO SUB4, TAKEN FROM PHNO SUB2 PRODUCTION FOR (NH SUB4) SUB2 SO SUB4 MANUF. IN COKE-CHEM. PLANTS, IS CONTAMINATED WITH N OXIDES, IT CONTAMINATES THE COKE GAS AND THE USE OF THIS GAS FOR NH SUB3 SYNTHESIS IS PREVENTED. THE N OXIDES IN THE COKE GAS FOR THIS SYNTHESIS SHOULD BE SMALLER THAN 8 CM PRIME3-M PRIME3, AND THE GAS CANNOT BE USED IF IT CONTAINS LARGER THAN OR EQUAL TO 10-12 CM PRIME 3 OXIDES-M PRIME3. LAB. DENITRATION OF THE ACID WITH UREA REDUCED THE N OXIDES HARPLY BY THE REACTION: 2HNO SUB2 PLUS (NH SUB2) SUB2 CO YIELDS 3H SUB2 O PLUS CO SUB2 PLUS 2N SUB2. IN PHNO SUB2 PLANTS, THIS REACTION WAS SLOW. SINCE THE SPENT H SUB2 SO SUB4, OF 72PERCENT STRENGTH, CONTAINED OTHER KNOWN COMPDS., SYNTHETIC SOLNS. WERE PREPD. TO DET. THE EFFECT OF EACH OF THESE ON DENITRATION. DURING A 17 HR PERIOD AND IN 72.4-2.6PERCENT H SUB2 SO SUB4, THE DENITRATION WAS SATISFACTORY IN THE PRESENCE OF THE H SUB2 SO SUB4, HNO SUB3, AND THE N OXIDES. THE PHNO SUB2 CONTENT WAS 0.3PERCENT OF THE H SUB2 SO SUB4 AND THE PROCESS WAS COMPLETE EVEN AT HIGHER HNO SUB3 AND THE H SUB2 SO SUB4 CONCNS. IN THE PHNO SUB2 PLANT, THE SPENT H SUB2 SO SUB4 AND THE UREA WERE INTRODUCED SIMULTANEOUSLY AND COMPRESSED AIR WAS USED FOR MIXING. THE FORCED AIR ALSO REMOVED THE N FORMED FROM THE H SUB2 SO SUB4 TREATMENT, THUS ACCELERATING THE REACTION. SULFATE SEPN. FROM THE DENITRATED ACID DID NOT INCREASE THE N OXIDES IN THE COKE GAS. THE UREA WHICH DID NOT REACT WITH THE OXIDES BUT ENTERED THE MOTHER LIQUOR WITH THE ACID WAS BENEFICIAL, SINCE IT IMPROVED THE PARTICLE SIZE COMPN. OF THE (NH SUB4) SUB2 SO SUB4.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

3/3 011 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109455

ABSTRACT/EXTRACT--FACILITY: KEMEROV, KOKSOKHIM. ZAVOD., KEMEROVO, USSR.

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR UDC 669.76:79

SOKOLOV, L. D. (Editor), SKUDNOV, V. A., SOLENOV, V. M., GLADKIKH, A. N., SHETULOV, D. I., SHNEYBERG, A. M., GUSLYAKOVA, G. P., and DMITRIYEV, N. P.

Mekhanicheskiye Svoystva Redkikh Metallov (Mechanical Properties of Rare Metals), Moscow, Izdatel'stvo Metallurgiya, 1972, 288 pp

Translation of Annotation: A study is made of the mechanical properties (deformation resistance, plasticity, fatigue, creep, and stress-rupture strength) of rare and other metals, and their dependence on temperature and deformation rate. Characteristics of strain hardening, the stress and plasticity dependencies on temperature and deformation rate parameters, and other experimental data are discussed on the basis of the theory of defects and other contemporary concepts regarding the type of bonds in crystals.

The book is intended for scientists, engineers, and technicians at institutes, design institutions, nonferrous metallurgy plants, machinebuilding plants, and power engineering stations. It can also be useful to aspirants and students in higher educational institutions.

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USSR

SOKOLOV, L. D. (Editor), et al., Mekhanicheskiye Svoystva Redkikh Metallov (Mechanical Properties of Rare Metals), Moscow, Izdatel'stvo Metallurgiya, 1972, 288 pp

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

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UDC: 539.434:669.29/73

MAGIDOV, M. B., SHETULOV, D. I., and SOKOLOV, L. D., Dzerzhinsk Branch, All-Union Scientific Research and Design Institute of Chemical Machinery (NIIKhIMMASh)

"Feasibility of a Correlation Between the Slopes of Fatigue and Strengthening Curves as Exemplified by Titanium, Zinc, and Cadmium"

Minsk, Izvestiya Akademii nauk BSSR, Seriya fiziko-tekhnicheskikh nauk, No 1, 1972, pp 38-42

Abstract: The feasibility of an inverse correlation between the coefficients of strengthening during static strain and the slope of fatigue strength manifest in metals with a body-centered cubic lattice has been studied on Ti, Cd, and Zn. The imperfect packing energies of the test metals are given as 10, 150, and 270 erg/cm^2, respectively. The tests included rotary bending, tensile to rupture, and microstructural changes with fatigue. Use was made of the method of least squares to plot fatigue and strengthening curves. It is demonstrated that the slopes of the fatigue curves are steeper the higher the imperfect packing energies, i.e., in the sequence: Ti, Cd, and Zn. The slopes of the strengthening curves of these metals are in the reverse order: Zn, Cd, Ti. The data indicate that metals with good

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

MAGIDOV, M. B., et al, Izvestiya Akademii nauk BSSR, Seriya fiziko-tekhnicheskikh nauk, No 1, 1972, pp 38-42

performance for fatigue (namely Ti) show a flat fatigue curve, a steep strengthening curve, and inhibited lateral slip. On the other hand, metals with poor fatigue properties (Cd, Zn) have a steep fatigue curve, a flat strengthening curve, and well-developed lateral slip. The properties of Cd and Zn are additionally analyzed relative to their imperfect packing energies. (5 illustrations, 9 bibliographic references).

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

UDC: 539.43

SHETULOV, D. I., MACIDOV, M. B., MYASNIKOV, A. M., SHIBAKOV, V. V., and SOKOLOV, L. D. , Gor'kiy

"Study of Hardening in the Process of Fatigue in Some Pure Metals"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, no 6, Nov-Dec 70, pp 165-169

Abstract: Earlier research has shown that the capacity of metals to resist varying stresses is inversely related to their capacity to harden under static stress. The coefficient of hardening is determined by the slope of the stress-strain curve (hardening curve). The slope of the fatigue curve demonstrates the capacity of materials to resist varying stresses "better" or "worse". The value of the slope of the hardening curve varies inversely with the packing defect energy (γ), while the slope of the fatigue curve is a direct function of γ. Described here is an attempt to correlate both of these characteristics. The metals involved in the study were Al, Cd, Zn, Cu, Fe, and Ti. The experimental results indicate that the inclinations of the fatigue curves to the X-axis correlate with the packing defect energy (γ), i.e., the higher the γ, the steeper the slope. The slope of the fatigue curves is related to the slope of the hardening curves, i.e., the flatter the slope of the fatigue curve, the steeper the hardening curve.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

1/2 017 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--ULTRASONIC METHOD FOR STUDYING THE RATE OF CORROSION OF INDUSTRIAL CHEMICAL EQUIPMENT -U-

AUTHOR-(03)-MAGIDOV, M.B., MVASNIKOV, A.M., SHETULOV, D.I.

COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB. 1970, 36(1), 39-40

DATE PUBLISHED--------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS

TOPIC TAGS--CORROSION TEST, PIPELINE, ULTRASONIC TEST APPARATUS, THICKNESS GAGE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1930 STEP NO--UR/0032/70/036/001/0039/0040

CIRC ACCESSION NO--AP0108259

UNCLASSIFIED

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

2/2 017 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0108259

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A TYPE UDM-1M ULTRASONIC TRANSDUCER, FITTED WITH A REMOTE SENSING PROBE, WAS SUED TO MEASURE THE WALL THICKNESS OF A PIPELINE OF DIAM., D, AND WALL THICKNESS, DELTA, AT A FREQUENCY OF 5 MHZ. WITH D EQUALS 35-216 MM. AND DELTA EQUALS 3-15 MM, THE MEASUREMENT ERROR WAS PLUS OR MINUS 3PERCENT. THE AREA TO BE MEASURED WAS 1ST CLEANED BY FILING AND THEN BY USING AN EMERY CLOTH FOLLOWED BY WIPING WITH A CLOTH SATD. WITH SPINDLE OIL AS THE CONTACT FLUID. FOR THICKNESS SMALLER THAN 5 MM, THE UDM-1M GAVE RESULTS EQUAL TO THOSE OBTAINED WITH THE TUK-3 ULTRASONIC RESONANCE THICKNESS GAGE, IF BOTH INSTRUMENTS WERE CALIBRATED WITH THE SAME SAMPLE. TO MEASURE THE THICKNESS OF THE LINING IN A TOWER, THE UDM-1M WAS MODIFIED TO USE A LONGER SHIELDED CABLE TO CARRY THE SENSING PROBE. EXPTL. WORK IN THE LAB. SHOWED THAT EQUIV. RESULTS WERE OBTAINED WITH BOTH CABLE LENGTHS USED. TO KEEP THE MEASUREMENT ERROR TO A MIN., THE SYSTEM WAS FREQUENTLY CALIBRATED WITH A KNOWN SAMPLE BETWEEN DETNS. TEMP. VARIATION HAD THE GREATEST EFFECT ON THE RESULTS FOR ALL THE PARAMETERS STUDIED.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

LAYNER, D. I., TSYPIN, M. I., NOVIKOV, A. V., SHEVAKIN, Yu. F., SOLLERTINSKAYA, Ye. S., AFONIN, M. P.

"Ductility, Brittleness and Superplasticity of Copper"

Doklady Akademii Nauk SSSR, Vol 209, No 1, 1973, pp 80-82.

Abstract: This work studies the peculiarities of the behavior of specimens (gage section 6 x 30 mm) cut from copper ingots and deformed by extension over a broad range of temperatures (from -196 to +1000°C, tests at 100°C and over conducted in a vacuum) and deformation rate (10^{-5}-10^{-2} sec^{-1}). Deformation curves were processes on a Minsk-32 computer. Three types of copper were tested: M1, containing 99.95% Cu, 0.02% O_2; MOB, containing 99.99% Cu and $(5-10)\cdot10^{-4}$% O_2; and MVCh, containing 99.994% Cu and $(5-10)\cdot10^{-4}$% O_2. The work establishes the existence of two mechanisms for plastic deformation of copper at high temperatures. One exhibits superplasticity by periodic recrystalization of the metal in the deformation center. The existence of this superplasticity mechanism can be considered experimentally proven at least for pure metals.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

UDC 669.3:539.214:539.377

LAYNER, D. I., TSYPIN, M. I., NOVIKOV, A. V., SHEVAKIN, Yu. F., SOLLERTINSKAYA, Ye. S., AFONIN, M. P., State Scientific Research and Design Institute of Alloys and Nonferrous Metalworking, Moscow

"Ductility, Brittleness and Superplasticity of Copper"

Moscow, Doklady Akademii Nauk SSSR, Vol 209, No 1, Mar/Apr 73, pp 80-82

Abstract: The authors investigate the particulars of behavior of specimens cut from copper ingots and deformed by tension over a broad temperature range (from -196 to 1000°C, tests at 100°C and higher being done in vacuum) at strain rates from 10^{-5} to 10^{-2} s^{-1}. The deformation curves were processed on the "Minsk-32" digital computer. The results show the existence of two fundamentally different mechanisms of high-temperature plastic deformation of copper, in one of which superplasticity is observed due to periodic recrystallization of the metal at the focus of deformations. The existence of such a mechanism of superplasticity may be considered proved, at least for pure metals.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

UDC: 539.411

VDOVYKIN, G. P., DREMIN, A. N., PERSHIN, S. V., and SHEVALEYEVSKIY, I. D., Moscow

"Transformation of Meteorite Materials in Shock Compression Experiments at Pressures of 500 and 1000 kbar Set Up by Explosions"

Novosibirsk, Fizika Goreniya i Vzryva, Vol 9, No 4, Jul-Aug 73, pp 535-541

Abstract: The authors conducted experiments on the shock compression (non-destructive) of Migeya carbonaceous chondrite at p = 500 kbar and of the graphite of the Yardymlinskiy iron meteorite at p = 1000 kbar. This was done in order to explain the transformations of meteorite substances under the effect of strong shock waves. Diamonds and microcrystals (less than one micron) were synthesized which are found in concretions with graphite. The diamonds and microcrystals were synthesized from Mineya carbonaceous chondrite and the graphite of the Yardymlinskiy iron meteorite. The synthetic diamond-graphite concretions are similar to those of meteorities with respect to morphology and phase composition. The results show that ureilites are secondary meteorites with respect to their origin which were formed from carbonaceous chondrites under the effect of strong shock waves in space.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

1/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--USE OF AN INDICATOR METHOD FOR DETERMINING THE DEPTH OF DIFFUSION OF INORGANIC ACIDS IN POLYMER FILMS -U-

AUTHOR-(03)-MUROV, V.A., SHEVCHENKO, A.A., KLINOV, I.YA.

COUNTRY OF INFO--USSR

SOURCE--LAKOKRASOCH. MATER. IKH PRIMEN. 1970, (2), 62-4

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--PLASTIC FILM, DYE, CHEMICAL INDICATOR, EPOXY RESIN, FLUID DIFFUSION, SULFURIC ACID, NITRIC ACID, HYDROCHLORIC ACID/(U)ED5 EPOXY RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605012/B07 STEP NO--UR/0303/70/000/002/0062/0064

CIRC ACCESSION NO--AP0140246

UNCLASSIFIED

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

2/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140246

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TROPEOLIN OO OR METHYL RED DYES WERE ADDED TO LIQ. EPOXY RESIN ED-5 IN ALC. OR ACETONE SOLN. THE ADDN. OF POLYETHYLENE POLYAMINE (A AHRDENER) TO THE SOLN. AND DRYING ON GALSS SLIDES GAVE FILMS. THE DIFFUSION RATES OF HCL, NHO SUB3, OR H SUB2 SO SUB4 SOLNS. INTO THE FILMS WERE DETD. IN 20-70DEGREES INTERVAL BY THE IMMERSION OF THE FILMS IN SOLNS. OF VARIOUS CONCNS. FOR A KNOWN TIME, MAKING MICROTOME SLICES PARALLEL TO THE SURFACE, AND DETG. THEIR COLOR UNDER A MICROSCOPE. THE DIFFUSION OF H SUB2 SO SUB4 AND HCL SOLNS. INTO ED 5 IS LINEAR, BUT THE DIFFUSION OF HNO SUB3 IS NOT DUE TO THE DEGRADATION OF THE POLYMER.

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

UDC:620.197.3

OLESHCHENKO, V. I. and SHEVCHENKO, A. F.

"Inhibited Polymer-Based Protective Coatings"

Moscow, Stanki i Instrument, No 9, Sep 73, p 36

Abstract: Coating with inhibited polymer-base compositions is considered to be the most promising method for protection of metal products from corrosion during shipping and storage. Compositions and methods used abroad are briefly described. Tests performed in the USSR are reported. The tests indicated that compositions VAP-1 and VAP-2 are suitable for long-term storage of metal-cutting and wood-cutting tools.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR UDC 621.792:658.562

MARKON, L. O., SHEVCHENKO, A. F., Engineers, Ukrainian Planning, Technological and Experimental Institute for the Organization of the Machine Tool and Tool Industry

"Raising the Impact Resistance of Steel-Hard Alloy Glued Joints"

Kiev, Tekhnologiya i organizatsiya proizvodstva, No. 1, Jan/Feb 72, pp 20-21

Abstract: A nonstandard method for dynamic testing of a glued steel-hard alloy joint that was developed at the Institute with which the authors are affiliated is described. Results of the construction of samples of steel-20 with a glued plate of VK-8 hard alloy showed a spread of ±35% in the value of the impact viscosity. The magnitude of the spread depends not only on the thickness of the glued seam but also on the nature of the distribution of the glue film on the glued surfaces. After breakdown the glue film remains preferentially on the steel surface. The spread of the indices reduce to ±20% with a more uniform coating of the hard alloy with the glue film. The authors note that the absence of a glue film on the surface of the hard alloy shows the stronger adhesive bond of the glue with the steel

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

MARKON, L. O., SHEVCHENKO, A. F., Tekhnologiya i organizatsiya proizvodstva, No. 1, Jan/Feb 72, pp 20-21

surface. Balancing of the adhesive forces is achieved by a combination of two glues, each of which has good adhesive properties with the corresponding materials and with one another. In addition, the application of a combination of a more elastic glue and a rigid, so-called two-stage method of gluing, raises the dynamic strength. GEN-150V glue was used as a sublayer. Gluing of the samples was carried out in the following manner: GEN-150V glue was applied to elements of the hard alloy prepared for gluing. The samples were placed in a thermostat and the glue sublayer was hardened for 2 hours at 145 ± 1°C. The basic glue was then applied and the hard alloy was glued to the steel. Polymerization of the basic glue was carried out for 6 hours at 170°C at a pressure of 4 kG/cm^2. Dynamic tests established that the application of the sublayer raises the strength of a glued joint by a factor of 1.5-2. Samples subjected to destructive testing had a more uniform distribution of the glue film over the connected surfaces. The spread in the magnitude and the shock viscosity did not exceed ±15%.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

1/2 016 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--COMPOSITION FOR PREPARING INVESTMENT CASTING PATTERNS -U-

AUTHOR-(03)-MARKON, L.O., SHEVCHENKO, A.F., PETRENKO, V.A.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 263,816
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--10FEB70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHEMICAL PATENT, CHEMICAL COMPOSITION, WAX, METAL CASTING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/0845 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0131438

UNCLASSIFIED

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

2/2 016 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0131438

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE COMPD. HAS THE FOLLOWING PERCENT COMPN.: MONTAN WAX 9-11, ROSIN 9-11, POLYETHYLENE WAX 19-21, AND PARAFFIN THE REMAINDER. FACILITY: UKRORGSTANKINPROM UKRAINIAN STATE DESIGN TECHNOLOGICAL AND EXPERIMENTAL INSTITUTE.

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR UDC: 681.3.06:51

RYABININ, A. D., SHKVAR, A. M., SHEVCHENKO, A. I.

"Some Singularities of Difference Processing of Information in Neural Networks"

V sb. Biol., med. kibernet. i bionika (Biology, Medical Cybernetics and Bionics--collection of works), vyp. 2, Kiev, 1970, pp 4-12 (from RZh--Kibernetika, No 7, Jul 71, Abstract No 7V718)

Translation: The authors consider problems in evaluating the convergence of adaptation processes which arise in systems of scientific-information servicing. The control of adaptation processes is conditionally divided into two subsystems: the subsystem of control of data accumulation processes, and the subsystem of adaptation to ambient conditions. The nature of the functioning of each subsystem is analyzed in detail and convergence of the learning process is evaluated for the resolving algorithm proposed in the paper by Ye. A. Yeltarenko, A. G. Romanenko, V. P. Rumyantsev and A. N. Sumarokov (RZhMat, 1969, 12V538). V. Mikheyev.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

1/2 023 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--PHARMACOTHERAPY OF EXPERIMENTAL ANAPHYLACTIC BRONCHOSPASM -U-

AUTHOR--SHEVCHENKO, A.I.

S

COUNTRY OF INFO--USSR

SOURCE--FARMAKOL. TOKSIKOL. (MOSCOW) 1970, 33(1), 64-5

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DRUG EFFECT, RESPIRATORY SYSTEM, DIURETIC, ANALGESIC DRUG, ANTIHISTAMINIC DRUG

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/1670 STEP NO--UR/0390/70/033/001/0064/0065

CIRC ACCESSION NO--AP0103436

UNCLASSIFIED

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

2/2 023 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0103436

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EUPHYLLIN (AMINOPHYLLINE) (24 MG-KG, I.V.) DECREASED BY 75PERCENT AND AMINOPYRINE (40 MG-KG, I.V.) COMPLETELY PREVENTED THE BRONCHOCONSTRICTIVE REACTION IN CATS WITH ANAPHYLACTIC BRONCHOSPASM. DIMEDROL, ISOPROTERENOL, AND ACETYLSALICYLATE, SIMILARLY ADMINISTERED AT 2-4 MG-KG, 10 MUG-KG, AND 40-80 MG-KG, RESP., HAD NO BRONCHOLYTIC ACTION. ATROPINE SULFATE AT 1 MG-KG, I.V., SOMEWHAT DECREASED THE DEGREE OF BRONCHOSPASM.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

SHEVCHENKO, A. K. (Moscow State University)

"Spin-Lattice Relaxation in Ruby in Strong Magnetic Fields"

Leningrad, Fizika Tverdogo Tela; December, 1970; pp 3537-42

ABSTRACT: By a method described earlier by the author (Pribory i Tekhnika Eksperimenta; No. 3, 1970; p 266) relaxation curves for ruby in magnetic fields of up to ~ 90 koe at temperatures of 4.20 and 2.33°K were obtained. Curves for Cr^{3+} concentrations of 0.01% at a temperature of 4.2°K are susceptible of interpretation within the framework of a hypothesis concerning the superheating of resonant phonons and confirm the theory of single-phonon relaxation. In a magnetic field of ~ 90 koe the factor of superheating of phonons $\sigma = 3$, and the time of spin-lattice relaxation $T_1 = 0.83$ msec (the first line in parallel orientation). Relaxation curves obtained for other values of temperature and concentration are not susceptible of such an interpretation. The causes of this phenomenon were analyzed.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

1/2 040 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--MODULATION METHOD FOR MEASURING THE SPEED OF LIGHT -U-

AUTHOR-(02)-KRAVTSOV, N.V., SHEVCHENKO, A.K.

COUNTRY OF INFO--USSR

SOURCE--MINSK, ZHURNAL PRIKLADNOY SPEKTROSKOPII (JOURNAL OF APPLIED SPECTROSCOPY), VOL 12, NO 2, FEB. 1970, PP 339-340

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LIGHT VELOCITY, OPTIC MEASUREMENT, LASER MODULATION, FABRY PEROT INTERFEROMETER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1407 STEP NO--UR/0368/70/012/002/0339/0340

CIRC ACCESSION NO--AP0125048

UNCLASSIFIED

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

2/2 040 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125048

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A LASER METHOD IS PROPOSED FOR MORE EXACT MEASUREMENT OF THE SPEED OF LIGHT. THE APPARATUS CONSISTS OF A LASER, OPTICAL MODULATOR, FABRY PEROT INTERFEROMETER, AN OPTICAL SYSTEM WITH A DIAPHRAGM, PHOTODETECTOR, MEASURING CIRCUIT, AND AN OSCILLATOR. THE LASER BEAM PASSES THROUGH THE OPTICAL MODULATOR AND INTERFEROMETER, WHICH PRODUCES INTERFERENCE RINGS THAT ARE RECORDED BY THE PHOTODETECTOR. THE SIDE FREQUENCIES OF THE MAIN BEAM ARE SHIFTED BY THE FREQUENCY OF THE OPTICAL MODULATOR, AND THESE FREQUENCIES PRODUCE ADDITIONAL INTERFERENCE RINGS AT THE OUTPUT OF THE INTERFEROMETER. BY ADJUSTMENT OF THE MODULATION FREQUENCY, THE INTERFEROMETER BECOMES TRANSPARENT IN A GIVEN DIRECTION FOR TWO FREQUENCIES, AND TWO ORDERS OF FREQUENCY CAN THEN BE SUPERIMPOSED. AN EQUATION IS GIVEN FOR CALCULATING THE SPEED OF LIGHT TO WITHIN AN ERROR OF 10 NEGATIVE PRIME7.

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

1/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--BLOOD SUCKING MIDGES, DIPTERA, CERATOPOGONIDAE, OF UKRAINIAN SSR -U-

AUTHOR--SHEVCHENKO, A.K.

COUNTRY OF INFO--USSR

SOURCE--MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLENZI, 1970, VOL 39, NR 3, PP 324-329

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--INSECTA, PARASITOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0226 STEP NO--UR/0358/70/039/003/0324/0329

CIRC ACCESSION NO--AP0123988

UNCLASSIFIED

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

2/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123988

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF THE FAUNA OF BLOODSUCKING MIDGES (DIPTERA, CERATOPOGONIDAE) IN ALL LANDSCAPE CLIMATIC ZONES OF THE UKRAINE DETECTED 63 SPECIES OF 3 GENERA. CULICOIDES LATR., LEPCCONOPS SKUSE AND LASIOHELEA KIEFF. THE GENUS CULICOIDES IS MOST PREVALENT, REPRESENTED BY 58 SPECIES AND HAS THE GREATEST DENSITY. THE LIST OF SPECIES AND THEIR RELATIVE ABUNDANCE IN DIFFERENT ZONES IS PRESENTED. FOR MAIN BIOCENOSES THE PERCENT OF DOMINANT SPECIES HAS BEEN DETERMINED. FACILITY: KAFEDRA ENTOMOLOGII, KHAR'KOVSKOGO UNIVERSITETA.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR UDC 535.24

KRAVTSOV, N. V., SHEVCHENKO, A. K.

"Modulation Method for Measuring the Speed of Light"

Minsk, Zhurnal Prikladnoy Spektroskopii (Journal of Applied Spectroscopy), Vol 12, No 2, Feb 1970, pp 339-340

Abstract: A laser method is proposed for more exact measurement of the speed of light. The apparatus consists of a laser, optical modulator, Fabry-Perot interferometer, an optical system with a diaphragm, photodetector, measuring circuit, and an oscillator.

The laser beam passes through the optical modulator and interferometer, which produces interference rings that are recorded by the photodetector. The side frequencies of the main beam are shifted by the frequency of the optical modulator, and these frequencies produce additional interference rings at the output of the interferometer.

By adjustment of the modulation frequency, the interferometer becomes transparent in a given direction for two frequencies, and two orders of

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202920009-5

USSR

KRAVTSOV, N. V., SHEVCHENKO, A. K., Zhurnal Prikladnoy Spektroskopii (Journal of Applied Spectroscopy), Vol 12, No 2, Feb 1970, pp 339-340

frequency can then be superimposed. An equation is given for calculating the speed of light to within an error of 10^{-7}.

Orig. art. has 1 fig. and 2 refs.

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