The Metallographical Investigation of the Carbide Phases in Rapid Cutting Steels. 32-7-15/49

of carbide, in 13- 5 steel there are two types of carbides: Fe_3W_3C and VC; in 3-5 steel the VC type of carbide predominates; in boron steel there are $Cr_{32}C_6$- and Fe_3W_3C-carbide types.
There are 4 figures and 1 table.

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Card 2/2

CHAADAYEVA, M.S.

129-3-10/14

AUTHOR: Chaadayeva, M. S., Candidate of Technical Sciences

TITLE: Cobalt Containing Medium and Low Tungsten High Speed Steels. (Sredne- i nizkovol'framovyye bystrorezhushchiye stali s kobal'tom).

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1958, No.3, pp 48-53 (USSR)

ABSTRACT: Due to the fact that the permissible cutting speed and stability of the standard P-18 Soviet high speed steel are low, experiments have been carried out the aim of which was to find new composition of high speed steels. Medium (11.5%) and low (3.58%) tungsten steels with about 5.5% Co were used in the experiments; the compositions of the three experimental steels are entered in Table 1, p.48. The blanks are easy to forge and to machine; the forging was effected using the same regime as that used for the standard Soviet high speed steel P-18. The heat treatment of the ingots consisted of slow heating to 900°C, holding at that temperature for three hours, cooling to 740°C and holding for ten hours, followed by slow cooling in the furnace to 500°C and further cooling in air. During annealing, the blanks were packed into boxes containing spent carburising agents since steels

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Cobalt Containing Medium and Low Tungsten High Speed Steels.

with cobalt have a strong tendency to become decarburised. The heat treatment regimes of the cutting tools and of the experimental steels are entered in Table 2. Table 3 contains data on the influence of the hardening temperature and the effect of repetitive tempering at 500°C on the hardness of the experimental steels. It was found that treble tempering after hardening ensures a high stable hardness; the obtained results for one of the steels (containing 0.97% Nb) contradicts literary data according to which Nb reduces the hardness of high speed steels. The results of measuring the quantity of austenite in the experimental steels after hardening and tempering at 560°C are entered in the graphs, Figs.1-4. For determining the red shortness, the steels were subjected three times to annealing at 600°C for one hour and after each of these cycles the hardness was measured; the results are graphed in Figs.5-7. As can be seen from the results graphed in Fig.8, sub-zero treatment at -78°C brings about a considerable reduction of the quantity of the residual austenite and a sharp increase in the

Card 2/4 hardness. Table 4 gives the bending strength of the

Cobalt Containing Medium and Low Tungsten High Speed Steels.

experimental steels after various heat treatment regimes. Table 5 gives the chemical composition of the carbide phase of these steels, whilst Table 6 gives the hardness values after various heat treatment regimes. The cutting properties of these steels for discontinuous machining were investigated for a machining speed of 6 m/min, a feed rate of 0.6 mm/rev and a depth of cut of 1 mm. The graph, Fig.9, shows a comparison of the service life of the experimental steels (in the case of machining a specific high temperature steel) treated according to the regimes enumerated in Table 6. Under similar conditions, the service life of cutting tools made of the steel P-18 averaged 17 mins as compared to a maximum of about 75 mins in the case of the experimental steels. The results have shown that cutting tools made of one of the tested steels (hardened at 1230 and 1250°C followed by tempering three times at 560°C) had a service life two to three times as high as cutting tools made of the standard Soviet high speed steel P-18, which proves that cobalt containing low and medium tungsten high speed steels have properties which are favourable in machining high temperature alloys.

129-3-10/14

Cobalt Containing Medium and Low Tungsten High Speed Steels.

Z. A. Krayneva participated in the experiments and A. N. Guseva participated in the machining experiments. There are 9 figures and 6 tables.

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Card 4/4

Chab, J.

AGRICULTURE

Introducing standard technical processes in factories for agricultural machinery. p. 166.

Vol. 3, no. 7, July 1958

Monthly Index of East European Accessions (EEAI) LC, Vol. 8, No. 4, April 1959

CHABA, Imre [Csaba, I.]

Primary fluorescence of sclerocystic ovaries. Akush. i gin. 42.2:116-119 '65. (MIRA 18:10)

1. Patomorfologicheskaya laboratoriya (zav. - kand.med.nauk B.I. Zheleznov) Nauchno-issledovatel'skogo instituta akusherstva i ginekologii (direktor - prof. O.V.Makeyeva) Ministerstva zdravookhraneniya SSSR, Moskva.

CHABAN, A. A.

56-2-42/47

AUTHORS: Davydov, A.S., Chaban, A.A.

TITLE: The Rotation Bands of Even-Even Axially-Symmetric Nuclei. (Vrashchatel'nyye polosy chetno-chetnykh aksial'no simmetrichnykh yader.)

PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol. 33, Nr 2(8), pp. 547-549 (USSR)

ABSTRACT: According to A.S. Davydov and G.F. Filippov (Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol.33, Nr 3(9), p. 723) it is possible to reduce the equation for the collective motion of the axially-symmetric even-even nuclei with the total momentum $\hbar J$ to the form

$$d^2U_\nu/d\xi^2 - 2\xi\, dU_\nu/d\xi + 2\nu U_\nu = 0,$$ in which case the boundary conditions

$$U_\nu(-\delta\xi) = 0, U_\nu(\xi)e^{-\xi^2/2} \to 0$$

at $\xi \to \infty$ apply.
The eigennumber ν of this equation is, in general, not a whole number, and it determines the energy $\varepsilon_\nu(J)$ of the collective motions of the nucleus by means of the

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The Rotation Bands of Even-Even Axially-Symmetric Nuclei.

the relations $\xi^2(\xi-1) = J(J+1)/3\delta^4$

$\varepsilon_\nu(J)\hbar\omega_0 = (\nu+(1/2))\sqrt{1+J(J+1)/\delta^4\xi^4} + J(J+1)/6\delta^2\xi^2 + +(1/2)\delta^2(\xi-1)^2$. The present statement gives the results of the solution of this system of equations for the case $\delta > 1$. A diagram illustrates the dependence of $\varepsilon_\nu(J)/\hbar\omega_0$ upon the parameter δ. At $\delta > 2{,}5$ the collective spectrum of the collective excitations of the even-even nuclei decomposes into a system of rotation-vibration bands. A table compares the theoretical values of the excitation energy of the first and second rotation band of the excited states of some nuclei with the experimental values. The same table contains the values of the parameters $\hbar\omega_0$ and δ which were used in the course of these computations. A second table contains the ratios of the energies of the first and second rotation state.

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The Rotation Bands of Even-Even Axially-Symmetric Nuclei.

The nuclear moment (I) is in the second rotation band smaller than in the first one. This reduction of I is of all the more importance the smaller δ is. There are 2 tables and 2 Slavic references.

ASSOCIATION: Moscow State University.
(Moskovskiy gosudarstvennyy universitet.)

SUBMITTED: May 23, 1957.

AVAILABLE: Library of Congress.

CARD 3/3

83607

S/056/60/038/005/040/050
B006/B063

24.4500

AUTHOR: Chaban, A. A.

TITLE: Collective Excitation of Non-axial Even-even Nuclei

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 5, pp. 1630-1636

TEXT: A. S. Davydov and G. F. Filippov calculated the collective energy levels of axisymmetric even-even nuclei, taking the interaction between rotational and vibrational states into account, and determined the rotational levels and the transition probabilities between them for non-axial nuclei, without considering the vibration-rotation coupling. These investigations are complemented by the present paper which describes an investigation of the vibrational-rotational collective excitations for non-axial even-even nuclei. The vibration energy is assumed to be much higher with respect to the non-axiality parameter γ than the energy of collective rotations and vibrations with respect to β, so that γ may be considered to be constant. An expression (1) for the nuclear energy is formulated according to the generalized Bohr model. From (1) the author proceeds to the

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Collective Excitation of Non-axial Even-even Nuclei

S/056/60/038/005/040/050
B006/B063

quantum equation of the form (2): $\hat{H}\Psi = E_0\Psi$, where $\hat{H}$ is defined by (3). (2) is solved in the form of the product of the wave functions of the β-vibrations (Ψ_β) and the collective rotation (Ψ_{curl}). The rotation-vibration energy is determined from equation (9), and relation (11) is derived for Ψ_β (without normalization). The author determined the ratios $R_\lambda(J) = E_{J\lambda}/E_1(2^+)$, studied their dependence on $R_2(2)=E_2(2^+)/E_1(2^+)$, and considered the two low levels 4^+, the first level (6^+) and the level 3^+ of the first band and the level 0^+ of the second band. The results obtained are partly given in the diagrams of Figs. 1 and 2. The second part of the present paper deals with the calculation of quadrupole transitions. Relations are given for the reduced transition probabilities of the states $J\lambda$ and $J'\lambda'$. The energies of the excited rotational-vibrational states are given for Fe^{56} and 15 heavy nuclei (Table 1). The data were taken from Refs. 4-10. A comparison between the theoretical and experimental data of the reduced quadrupole transition probabilities (from the second 2^+ to the first 2^+ level, and from the second 2^+ level to the ground state) is given in Table 2. The results obtained are finally discussed. Professor

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Collective Excitation of Non-axial Even-even Nuclei

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B006/B063

A. S. Davydov is thanked for discussions and the interest he displayed in this work. V. S. Rostovskiy is mentioned. There are 2 figures, 2 tables, and 11 references: 6 Soviet, 3 US, and 2 Dutch.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: December 30, 1959

Card 3/3

83741

S/056/60/038/004/034/048
B006/B056

24.6520

AUTHORS: Davydov, A. S., Rabotnov, N. S., Chaban, A. A.

TITLE: Rotational Energy and Moments of Inertia of Nonaxial Nuclei

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 4, pp. 1311 - 1315

TEXT: A. S. Davydov, G. F. Filippov, and Y. S. Rostovskiy developed a theory of the rotational states of nonaxial nuclei (Refs. 1,2). They showed that the ratios of the energies of all rotational levels to the energy of the first excited spin-2 level can be uniquely determined if the corresponding ratios for the second excited spin-2 level are known from the experiment. It was further found that the relative probabilities of electric quadrupole transitions between rotational levels may also be determined from these ratios. These results were obtained on the assumptions that a) the inner state of the nucleus does not change during its rotation (adiabatic approximation), and b) the main moments of inertia of the nucleus can be expressed by the parameters A and γ:

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$I_i = A\sin^2(\gamma - 2\pi i/3)$, $i = 1,2,3$. This formula corresponds to the hydrodynamic nuclear model. The authors therefore described this approximation as hydrodynamic. The authors now investigate the question as to the manner in which these results change if the simplifying assumptions are abandoned. The rotational states of nonaxial nuclei with arbitrary (three) main moments of inertia are investigated in adiabatic approximation. It is shown that in general the rotational energy ratio may be expressed by two parameters: by ξ, the energy ratio of two spin-2 levels, and by η, a parameter depending on the character of the collective motions causing nuclear rotation; $\xi = E_2(2)/E_1(2) > 1$, $\eta = a_1a_2a_3/E_1^3(2)$. In the following, the energies of all rotational states are expressed by the dimensionless ε: $\varepsilon = E/E_1(2)$. Thus, the following relations hold for the spin-2 and spin-3 states as, e.g., $\varepsilon(3) = 1 + \xi$, $\varepsilon_1(5) = 4 + \xi$, $\varepsilon_2(5) = 1 + 4\xi$. The energies of other rotational levels cannot be given as functions of ξ alone, but they are functions of ξ and η. For the spin-4 and spin-6 states, the corresponding formulas are given. With

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Rotational Energy and Moments of Inertia of Nonaxial Nuclei

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B006/B056

formula (5) the following inequalities are given for ξ and η: $\xi^2(3-\xi) \leq 54\eta \leq 3\xi - 1$, $(1 < \xi \leq 3)$ and $0 \leq 54\eta \leq 3\xi - 1$, $(\xi \geq 3)$; these inequalities result from the demand that the roots of the equation $x^3 - \frac{1}{2}(1+\xi)x^2 + \frac{1}{3}\xi x - \eta = 0$ be positive and real. Fig. 1 shows the possible values of the ratios $\varepsilon_1(4)$ and $\varepsilon_2(4)$ for different values of the parameters ξ and η, which are defined by (5); Fig. 2 shows the same for $\varepsilon_1(6)$. The experimental points are plotted in each case for a number of heavy nuclei. The numerical experimental data taken from Refs. 4-8 are given in a table. There are 2 figures, 1 table, and 9 references: 5 Soviet, 3 Dutch, and 1 US.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: November 19, 1959

Card 3/3

CHABAN, A. A., Cand. Phys-Math. Sci. (diss) "Rotating-Vibrational Excitations in Even-Even Atomic Nuclei." Moscow, 1961, 7 pp (Physics Instit. Acad. of Sci. USSR im Lebedev) 175 pp (KL Supp 12-61, 254).

CHABAN, A. A.

Dissertation defended for the degree of Candidate of Physicomathematical Sciences at the Physics imeni P. N. Lebedev in 1962:

"Rotational-Vibrational Excitation in Even-Even Atomic Nuclei."

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

DAVYDOV, A.S.; ROSTOVSKIY, V.S.; CHABAN, A.A.

Form of atomic nuclei and excited states of zero spin levels.
Vest. Mosk. un. Ser. 3: Fiz., astron. 16 no.3:66-74 My-Je '61.
(MIRA 14:7)

1. Kafedra elektrodinamiki i kvantovoy teorii Moskovskogo gosudarstvennogo universiteta.
(Nuclei, Atomic)

CHABAN, A.A.

Amplification of elastic oscillations and the nonohmicity of resistance. Fiz. tver. tela 6 no.7:2217-2219 Jl '64. (MIRA 17:10)

1. Akusticheskiy institut AN SSSR, Moskva.

ACCESSION NR: AP4043362 S/0181/64/006/008/2411/2414

AUTHORS: Chaban, I. A.; Chaban, A. A.

TITLE: Amplification of optical lattice vibrations by carrier drift

SOURCE: Fizika tverdogo tela, v. 6, no. 8, 1964, 2411-2414

TOPIC TAGS: carrier mobility, carrier drift, polar crystal, Brillouin zone, crystal lattice vibration, semiconductor

ABSTRACT: The conditions for amplification and generation of optical lattice vibrations by carrier drift in polar and covalent monoatomic semiconductors is analyzed for the case when the carriers have high mobility and for large values of the wave vector (q). Calculation based on the conservation laws and on the conditions for kinetic equilibrium show that at drift velocities $\sim 1.3 \times 10^7$ cm/sec optical phonons can, in principle, be amplified and generated by carrier drift in polar crystals if $q \sim 10^7$ cm^{-1} and the carrier

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ACCESSION NR: AP4043362

concentration is high (~10^{18} cm^{-3}). The observation of the effect at the edge of the Brillouin zone is very unlikely, and in the case of covalent monoatomic semiconductors the possibility of amplification of optical vibrations is doubtful. "The authors thank Professor V. L. Ginzburg and the members of his seminar for a discussion of the work." Orig. art. has: 12 formulas.

ASSOCIATION: Akusticheskiy institut, Moscow (Acoustic Institute).

SUBMITTED: 27Feb64 ENCL: 00

SUB CODE: SS NR REF SOV: 002 OTHER: 012

Card 2/2

ACCESSION NR: AP4039278 S/0046/64/010/002/0137/0146

AUTHOR: Chaban, A. A.

TITLE: Amplification of ultrasonic and hypersonic waves in crystals (A review)

SOURCE: Akusticheskiy zhurnal, v. 10, no. 2, 1964, 137-146

TOPIC TAGS: ultrasonic vibration, elastic traveling wave, paramagnetic phonon-maser, electron drift, electric field, sound energy absorption, diffusion coefficient, wave amplification, depletion layer, semiconductor

ABSTRACT: Existing work performed with high-frequency ultrasonic vibrations ($10^8 - 10^{10}$ cycle/sec) to induce amplification by energy loss in the form of elastic traveling waves was reviewed and the literature was brought up to date. In part one, amplification by electron drift faster than the speed of sound is discussed and all pertinent literature quoted. In the absence of electric fields, the sound energy absorption coefficient by electrons is given:

$$\alpha = \frac{K^2}{2}\cdot\frac{\omega_c}{s\gamma}\left[1+\frac{\omega_c^2}{\gamma^2\omega^2}\left(1+\frac{\omega^2}{\omega_c\omega_D}\right)^2\right]^{-1},$$

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ACCESSION NR: AP4039278

where, $\gamma = 1 - V_d/S$, $\omega_0 = \sigma/\epsilon$, ($\omega_D = S^2/D$, σ - conductivity, ϵ - dielectric constant, D-diffusion coefficient. For CdS, K~0.2, determined experimentally. Data are quoted and the experimental procedure is described for measuring transverse wave amplification in CdS crystals. The use of the Vlasov equation in establishing a relationship between elastic waves and electron conductivity is mentioned. The large increase in conductivity caused by increasing thermal elastic oscillations in a crystal is discussed in some detail and analytical expressions obtained. Part two deals with high-frequency transformers with barrier layers (thin films). High-frequency ultrasonic oscillation obtained in depletion layers of piezoelectric semiconductors is shown to have the capacity of producing frequency changes (by factors of 2 or 3) by changing the film thickness but maintaining a constant applied potential. The last part deals with paramagnetic phonon masers. Experimental and analytical works are quoted dealing with the amplification and generation of ultrasonic waves by induced phonon radiation in paramagnetic crystals. The difference in ion concentration between states |a> and |b> is expressed by

$$n_b - n_a > \frac{Ch \cdot \Delta\omega}{4\pi |G|^2 Q}$$

where C - absorption energy, G - magnetoelastic constant and ω - ultrasonic

ACCESSION NR: AP4039278

frequency, and population inversions as high as 5×10^{17} cm^{-3} are given. Orig. art. has: 10 formulas and 7 figures.

ASSOCIATION: Akusticheskiy institut AN SSSR, Moscow (Acoustics Institute AN SSSR)

SUBMITTED: 27Jan64 ENCL: 00

SUB CODE: GP NO REF SOV: 015 OTHER: 038

3/3

L 9227-66 EWT(l)/T/EWA(h)/ETC(m) IJP(c) AT

ACC NR: AP5026102 SOURCE CODE: UR/0386/65/002/005/0234/0238

44, 55

AUTHOR: Chaban, A. A.

44, 55

ORG: Acoustics Institute, Moscow (Akusticheskiy institut)

TITLE: On the question of "second sound" in semiconductors

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 2, no. 5, 1965, 234-238

21, 44, 55 21, 44, 55

TOPIC TAGS: semiconductor theory, ultrasonic wave propagation, semiconductor carrier

ABSTRACT: The author shows that the reported observation of an additional ultrasonic signal (H. Kroger et al., Phys. Rev. Lett. v. 11, 246, 1963) following amplification of 10^7 cps transverse oscillations by carrier drift in a CdS crystal can be interpreted as some diffraction effect, caused by the anisotropy of the amplification coefficient. This phenomenon is similar to birefringence, where a wave with anomalously low front-propagation velocity likewise exists; in this case, however, the anisotropy of importance is not that of the real but of the imaginary part of the wave number. A concrete calculation for the simplest case of a cubic crystal, assuming that the amplification is at the expense of the deformation potential, shows that, under the assumptions made, the anomalous wave can have a larger amplitude than the ordinary wave. The velocity of the anomalous wave observed experimentally agrees qualitatively with the presented theory. It is noted in conclusion that a perfectly analogous phenomenon, the reception of two signals, will occur also if the damping

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L 9227-66
ACC NR: AP5026102

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coefficient has a suitable anisotropy and there is no amplification. This establishes the existence of two waves, ordinary and anomalous, for the case when the imaginary part of the wave vector is anisotropic, both when the waves are amplified and when they are attenuated. Analogous phenomena should be expected also when waves of arbitrary type propagate in a medium in which the properties that govern the propagation of waves of this type exhibit anisotropy. Author is grateful to Yu. L. Gazaryan, M. A. Isakovich, and I. A. Urusovskiy for valuable advice and for a discussion of the results. Orig. art. has: 3 formulas.

SUB CODE: 20/ SUBM DATE: 15Jul65/ ORIG REF: 001/ OTH REF: 010

Card 2/2

L 23765-66 EWT(1)

ACC NR: AP6006803 SOURCE CODE: UR/0386/66/003/001/0052/0054

AUTHOR: Chaban, A. A.

56
53
B

ORG: Acoustics Institute, Moscow (Akusticheskiy institut)

TITLE: Amplification of anomalous elastic wave [21] in a transverse electric field [21]

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 1, 1966, 52-54

TOPIC TAGS: acoustic wave, ultrasonic wave propagation, carrier scattering, ultrasonic amplification, electric field

ABSTRACT: This is a continuation of earlier work by the author (Pis'ma ZhETF v. 2, 234, 1965) where the appearance of an anomalously slow elastic wave was considered under the conditions when the ultrasonic oscillations are amplified by carrier drift. In the present note it is shown that a similar effect should be observed also in the case when the carrier drift is perpendicular to the wave front, so that no amplification of the ordinary wave can occur. Radiation is

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investigated in an infinite uniform plate placed in the plane z = 0, in which carrier drift with supersonic speed in the layer along the x axis. The material of the layer is assumed isotropic and the reflected signals are neglected. The oscillations received by a plate located on the surface of this layer are determined and the calculations show that a plane anomalously slow sound wave, with an amplitude that can be quite large, arrives at the receiving plate. This wave is analogous to that considered in the earlier paper. It also includes components constituting a complicated set of waves propagating along the z axis and connected with radiation from the boundaries of the plates. The latter components are much smaller than the anomalous wave. The anomalous signal can be quite large whereas the usual ultrasonic waves cannot be amplified at all. The author thanks Yu. L. Gazaryan, M. A. Isakovich, and I. A. Chaban for an interesting discussion. Orig. art. has: 4 formulas.

SUB CODE: 20/ SUBM DATE: 22Nov65/ ORIG REF: 001/ OTH REF: 001

ACC NR: AP7007679 SOURCE CODE: UR/0386/66/003/002/0073/0076

AUTHOR: Chaban, A. A.

ORG: Institute of Acoustics, Moscow (Akusticheskiy institut)

TITLE: Concerning induced Mandel'shtam-Brillouin scattering

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu, v. 3, no. 2, 1966, 73-76

TOPIC TAGS: elastic oscillation, shock wave front, Mandel'shtam Brillouin scattering, acoustic speed

ABSTRACT: The author demonstrates that the elastic oscillations generated in induced Mandel'shtam-Brillouin scattering (IMBS) are not ordinary sound waves, but anomalous waves of reduced propagation velocity and with beam velocity making a certain angle with the front. Let a plane light wave with constant energy flux density I_0 be incident along the z axis on a lens of a focal distance f. The energy flux dI which travels towards the focus from a solid angle element $d\Omega$ is equal to

$$dI(p) = I_0 f^2 p^3 d\Omega, \quad (1)$$

where $p = \cos^{-1}\theta$ and θ is the angle between the direction of the light ray and the z axis.

The wavelength of the hypersound responsible for the IMBS is smaller by many orders of magnitude than the dimensions of the focal spot. Therefore in the first approximation it is sufficient to consider the propagation of elastic oscillations in an infinite homogeneous

Card 1/3 UDC: none

medium with amplification coefficient

$$\alpha(p) = D\frac{dI(p)}{d\Omega} = D\,I^2\,I_0\,p^3 \quad \text{for} \quad p \le p_0. \qquad (2)$$

Here D is a constant, $p_0 = \cos^2\theta_0$, and θ_0 is the maximum angle between the light rays and the z axis. When $p > p_0$ the amplification due to the DMS decreases rapidly. In the derivation of (2) it has been assumed that the amplification coefficient of the hypersound propagating at an angle θ to the z axis is proportional to the value of $dI/d\Omega$ for this angle, with the angular dependence of the latter taken from (1). In this problem a plane wave will be amplified in the course of time with the initial wave number, but with an altered frequency

$$\omega' = \omega\cos^2\theta_0. \qquad (3)$$

The speed of sound will be $v\cos^2\theta_0$, and the amplification $\exp[\alpha(\cos^2\theta_0)vt]$.

In the case of DMS with a scattering angle 180°, the first Stokes component will be characterized by precisely this modified speed of sound. For Stokes components of higher order, the picture becomes extremely complicated. That the speed of sound determined from the induced scattering is lower than the speed obtained from scattering by thermal oscillation had been noted in, where this phenomenon was regarded as a consequence of heating under the influence of a powerful light beam. Thus, in calculating the induced scattering it is necessary to take account of the fact that the waves generated

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ACC NR: AP7007679

are not ordinary elastic waves, but waves with an anomalous propagation velocity and with a ray velocity directed at an angle to the wave front. It is of interest to trace experimentally the variation of the effective velocity obtained from IMBS as a function of the angle given by the experimental geometry. The author is grateful to Yu. L. Gazaryan, M. A. Isakovich, and I. A. Chabah for an interesting discussion. Orig. art. has: 5 formulas.

SUB CODE: 20 / SUBM DATE: 22Nov65 / ORIG REF: 002 /
OTH REF: 003

ACC NR: AP7003536 SOURCE CODE: UR/0386/67/005/001/0020/0023

AUTHOR: Chaban, A. A.

ORG: Acoustics Institute, Moscow (Akusticheskiy institut)

TITLE: Photoelectric effect in a laser beam

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 5, no. 1, 1967, 20-23

TOPIC TAGS: photoelectricity, laser beam, piezoelectric property, electric polarization, laser effect, laser optic material

ABSTRACT: The author analyzed the effects produced in a piezoelectric crystal uniformly illuminated by a linearly polarized laser beam. First, electrostriction gives rise to a deformation. Then the piezoelectric properties lead to polarization of the crystal. An estimate shows that at a power $W \sim 10^8$ w/cm^2, a potential difference of ~100 v will appear on a layer 1 cm wide. An investigation of the potential difference induced by light in piezoelectric crystals can identify experimentally the deformations actually produced by the light field. The intensity E^0 of the constant electric field may become particularly large when the laser beam is focused or self-focused in the piezoelectric crystal. When $W = 10^{12}$ w/cm^2, corresponding to a light beam with electric field amplitude $E \approx 10^7$ v/cm, the constant field is $E^0 \sim 10^6$ v/cm. Thus, at high light-beam power, electric breakdown under the influence of E^0, and consequently damage to the crystal, can be expected. It is suggested that under definite

Card 1/2 UDC: none

ACC NR: AP7003536

conditions this ionization mechanism may be stronger than multiphoton ionization under the influence of light. Since the free electrons produced when the atoms are ionized weaken the field E^0, the crystal may at first glace not become demaged during the time of action of the light pulse, even at so high a beam intensity. However, for an effective compensation of E^0, the concentration of the electrons should amount to $n \sim 10^{14}$ cm^{-3}. At such conduction-electron concentrations, if their mobility is not too high, the light can be completely absorbed over a distance smaller than 1 cm. Then simple estimates show that heating during the time of action of the light pulse amounts to thousands of degrees, and will damage the crystal. Upon focusing or self-focusing of the light beam, an electric field that is constant in time will appear in crystals with symmetry centers because of the inhomogeneity of the deformation over the cross section of the beam or of the focal spot. An estimate shows that in this case $E^0 \sim 10^3$ v/cm when $W \sim 10^{12}$ w/cm^2 and that in very narrow self-focused beams in a non-piezoelectric crystal the intensity of the constant electric field can exert a most appreciable influence on the properties of the medium. Orig. art. has: 6 formulas.

SUB CODE: 20/ SUBM DATE: 18Oct66/ ORIG REF: 005/ OTH REF: 002
ATD PRESS: 5112

Card 2/2

ACC NR: AP7004944 SOURCE CODE: UR/0386/67/005/002/0061/0064

AUTHOR: Chaban, A. A.

ORG: Acoustics Institute, Moscow (Akusticheskiy institut)

TITLE: Self-focusing of light in the Kerr effect

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 5, no. 2, 1967, 61-64

TOPIC TAGS: light polarization, laser beam, Kerr effect, electrostriction

ABSTRACT: The author discusses the self-focusing of elliptically polarized light (and of circularly-polarized light as a particular case), and the differences in the self-focusing thresholds for linear, circular, and elliptical polarization. This question has a direct bearing on leaser-beam stratification in the case of elliptic polarization of light in liquids, as well as in solids, where electrostriction is the stronger self-focusing mechanism. It is shown that if the polarization ellipse is prolate (ratio of axes > $\sqrt{2}$) only a self-focusing channel with linear polarization of the light can be produced in the liquid. Two geometrically independent channels with linear polarization are formed in the case of circular polarization for which the light intensity is smaller than threshold for formation of a circular polarization self-focusing channel, but higher than that for linear polarization. Linear-polarization channels can likewise be produced if the intensity of the circularly-polarized light exceeds the threshold for formation of a circular-polarization chan-

Card 1/2 UDC: none

ACC NR: AP7004944

nel. It is thus demonstrated that in many cases elliptically polarized light is more likely to form channels with linear polarization. Although in solids the predominant self-focusing mechanism is electrostriction, nevertheless the Kerr effect can still cause striations in a laser beam, but in this case the polarization in the channels will be elliptical and not linear. Orig. art. has: 3 formulas. [02]

SUB CODE: 20/ SUBM DATE: 29Oct66/ ORIG REF: 009/ OTH REF: 001
ATD PRESS: 5114

Card 2/2

CHABAN, A.P.

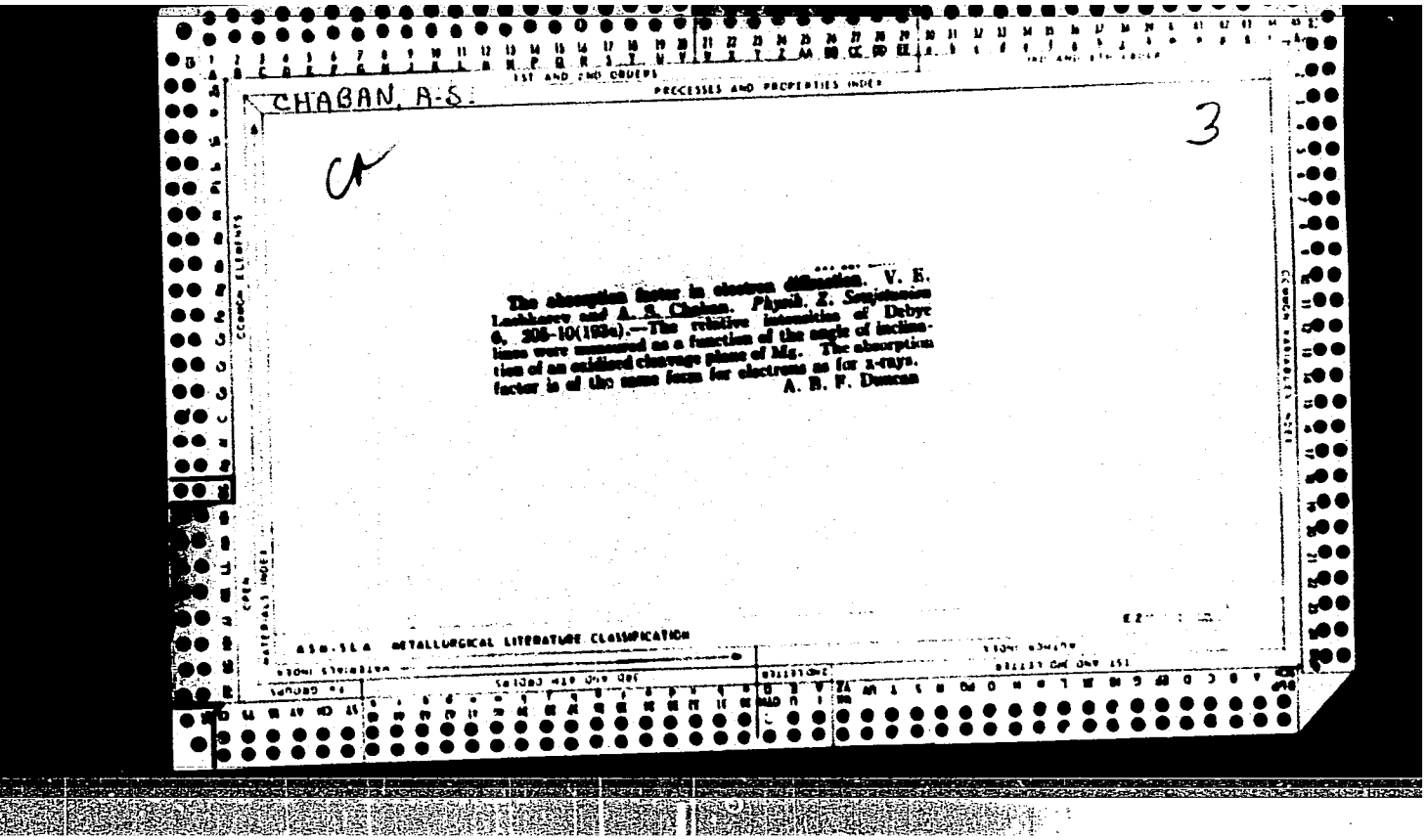
Biology of some species of undesirable and inferior fishes in Ust'-Kamenogorsk Reservoir. Sbor.rab. po ikht. i gidrobiol. no.2:245-255 '59. (MIRA 12:11)

(Ust'-Kamenogorsk Reservoir--Fishes)

CHABAN, A.P.; BOGDANOV, G.A.

Find of the common bullhead (Cottus gobio Linne) in the Irtysh Basin. Zool.zhur. 39 no.7:1102 Jl '60. (MIRA 13:7)

1. Altai Ichthyological Station of the Institute of Zoology, Academy of Sciences of the Kazakh S.S.R.
(Irtysh River--Sculpin)



ACCESSION NR: AR4023757 S/0274/64/000/001/A060/A060

SOURCE: RZh. Radiotekhnika i elektrosvyaz', Abs. 1A384

AUTHORS: Dmitriyev, V. M.; Lyapunov, N. V.; Tereshchenko, A. I.; Chaban', A. Ya.

TITLE: Experimental investigation of electronic tuning of an irregular cutoff resonator

CITED SOURCE: Uch. zap. Khar'kovsk. un-t, v. 132, 1962, Tr. Radiofiz. fak., v. 7, 75-77

TOPIC TAGS: cutoff resonator, cutoff cavity, irregular cutoff resonator, resonator tuning range, electronic tuning

TRANSLATION: The dependence of the tuning of a rectangular cutoff resonator on the electron beam current passing through the critical section of the resonator was investigated experimentally. The reso-

Card 1/2

ACCESSION NR: AR4023757

nator dimensions were: a = 26 mm, a_1 = 12 mm, d = 86 mm, b = 10 mm, where a and a_1 -- lengths of the resonator broad wall, b -- length of the narrow wall, and d -- length of the resonator. The resonant wavelength for the H_{101} mode was 35.5 mm. A thin tungsten cathode 0.45 mm in diameter was placed in the critical section of the resonator, and the anode was the resonator itself, excited through a diaphragm. The emission current was varied by varying the filament current and the potential difference between the cathode and the resonator over a range at which there was no space charge. Experiments showed a linear connection between the relative tuning $\Delta\lambda/\lambda$ and the beam current I; the tuning range was 2%. An irregular cutoff resonator by an electron beam has a tuning range several times that of an ordinary resonator. Bibliography, 3 titles. O. N.

DATE ACQ: 03Mar64 SUB CODE: GE, SD ENCL: 00

Card 2/2

L 12628-65 EWT(d)/EWT(l)/EEC(b)-2/EWA(h) Pn-4/Pac-4/Peb/Pi-4/Pj-4
ACCESSION NR: AR4044066 S/0058/63/000/011/H023/H023

SOURCE: Ref. zh. Fizika, Abs. 11Zh183

AUTHOR: Dmitriyev, V. M.; Lyapunov, N. V.; Tereshchenko, A. I.; Chaban', A. Ya.

TITLE: Experimental study of electronic tuning of an irregular cutoff resonator

CITED SOURCE: Uch. zap. Khar'kovsk. un-t, v. 132, 1962, Tr. Radiofiz. fak., v. 7, 75-77

TOPIC TAGS: electronic tuning, cutoff resonator, resonator

TRANSLATION: There is shown the possiblity of using irregular cutoff resonators as systems with noninertia tuning. Tuning is accomplished by changing the electron-beam current in the critical cross section of the resonator. From experimental data, at a frequency of 8500 Mc tuning reaches 2% and is a linear function of the beam current. There are given a block diagram of the experimental apparatus and dimensions of the investigated resonator. The vacuum in the resonator during the experiment

Card 1/2

L 12628-65
ACCESSION NR: AR4044066

was ~10^{-5} mm. There is noted the possibility of expanding the limits of electronic tuning by using a focusing magnetic field or a gas-filled resonator.

SUB CODE: EC ENCL: 00

Card 2/2

L 1439-66 EWT(m)/EPF(c)/EWP(w)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b)/ETC(m) MJW/JD/WW/WB

ACCESSION NR: AP5022405 UR/0369/65/000/004/0477/0480

AUTHOR: Yefimenko, Yu. M.; Kuslitskiy, A. B.; Chaban, D. V.; Karpenko, G. V.; Movchan, B. A.

TITLE: Effect of the electron beam smelting on properties of the ShKh15 ball bearing steel

SOURCE: Fiziko-khimicheskaya mekhanika materialov, no. 4, 1965, 477-480

TOPIC TAGS: electron beam, ball bearing, smelting furnace

ABSTRACT: The effect of electron beam smelting on mechanical properties of the ShKh15 ball bearing steel was studied in order to compare the effectiveness of this technique with the effectiveness of the vacuum and slag smelting techniques. The electron beam smelting was conducted in a U-143 unit under $5 \cdot 10^{-4}$-$5 \cdot 10^{-3}$ mm Hg. As a result of this smelting treatment the oxygen content dropped from 0.0040 to 0.0007%, nitrogen from 0.007 to 0.0013%, hydrogen from 0.0001 to 0.00004%, SiO_2 from 0.0008 to 0.0004%, Al_2O_3 from 0.0270 to 0.0018%, FeO from 0.0007 to 0.0001%, and CaO from 0.0005 to 0.0001%. Electron beam smelted steel improved: resistance to cyclic deformation, corrosion resistance, and fatigue limit (33% increase).

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L 1439-66

ACCESSION NR: AP5022405

7

The mechanical strength of ShKh15 steel (σ in kg/mm^2) as a function of frequency of cyclic deformation (in millions of cycles) N, is shown in fig. 1 of the Enclosure. The corrosion resistance of ShKh15 steel in 53% H_2SO_4 solution is shown in fig. 2 of the Enclosure. Orig. art. has: 3 figures, 5 tables.

ASSOCIATION: Institut electrosvarki im. Ye. O. Patona, AN UkrSSR, Kiev (Institute of Electric Welding, AN UkrSSR); Fiziko-mekhanicheskiy institut, AN UkrSSR, L'vov (Physico-Mechanical Institute, AN UkrSSR)

14,55

SUBMITTED: 24Mar65 ENCL: 02 SUB CODE: MM

NO REF SOV: 004 OTHER: 000

Card 2/4

L 1439-66

ACCESSION NR: AP5022405

ENCLOSURE: 01

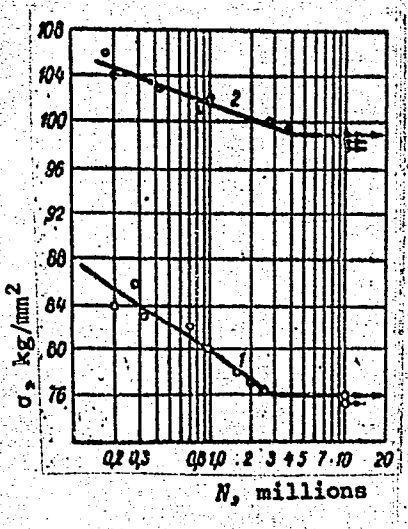

Fig. 1. 1--initial ShKh15 steel; 2--electron beam smelted ShKh15 steel.

Card 3/4

L 1439-66

ACCESSION NR: AP5022405

ENCLOSURE: 02

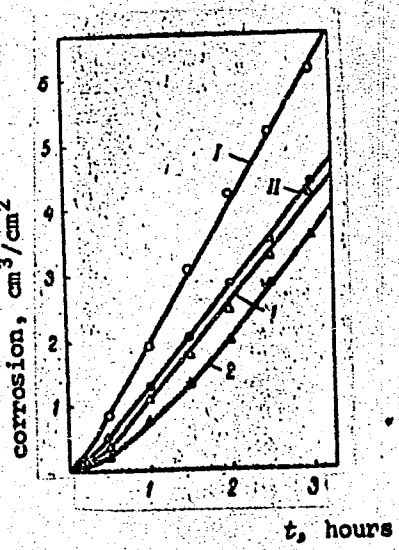

Fig. 2. 1--annealed steel; 2--tempered steel; I, 1--untreated steel; II, 2--electron beam smelted steel.

Card 4/4

(11) L 12183-66 EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b) MJW/JD

ACC NR: AP5028376 SOURCE CODE: UR/0369/65/001/005/0583/0587

AUTHOR: Kuslitskiy, A. B.; Kachmar, B. F.; Yefimenko, Yu. M.; Chaban, D. V.

ORG: Physics-engineering Institute, AN UkrSSR, L'vov (Fiziko-mekhanicheskiy institut AN UkrSSR); Electric Welding Institute im. Ye. O. Paton, AN UkrSSR, Kiev (Institut elektrosvarki AN UkrSSR)

TITLE: The effect of nonmetallic inclusions on the strength of hardened ShKh15 steel during hydrogenation

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 1, no. 5, 1965, 583-587

TOPIC TAGS: steel property, hydrogenation, metal strength, nonmetallic inclusion, martensite steel, ball bearing steel, SOLID MECHANICAL PROPERTY

ABSTRACT: The authors determined the effect of impurities in martensite (HRC = 61—63) ball bearing steel on its mechanical properties during hydrogenation. The hydrogenation process sharply reduces the strength of steel of all methods of preparation, depending on the impurity content in the steel. An increase in the quantity of nonmetallic inclusions decreases the strength of the steel. The existing methods of qualitative and quantitative analyses of the content of nonmetallic inclusions (metallographic and electrolytic separation) do not provide

Card 1/2

L 12183-66
ACC NR: AP5028376

sufficient reliability in the investigation of the higher grades of steel made by vacuum, molten slag electric process, and the electron-beam remelting methods. The most unfavorable nonmetallic inclusions are brittle particles, such as minute titanium inclusions and silica particles, which are not detectable by metallographic analysis. The most effective method of removing the nonmetallic inclusions and gases from the steel is the electron-beam remelting process. Orig. art. has: 2 figures and 3 tables.

SUB CODE: 11 / SUBM DATE: 11Apr65 / ORIG REF: 009 / OTH REF: 004

Card 2/2

CHABAN, G.F., dorozhnyy master

Section with an excellent track. Put' i put.khoz. 7 no.8:35-37 '63.
(MIRA 16:9)

1. Tatarskaya distantsiya Zapadno-Sibirskoy dorogi.
(Siberia, Western--Railroads--Maintenance and repair)

STRIZHENOVA, Marina Sergeyevna, zhurnalistka; CHABAN, F., red.;
TROYANOVSKAYA, N., tekhn. red.

[At the expense of the working class. The "Common Market" is a threat to workers' interests] Za schet rabochego klassa; "Obshchii rynok - ugroza interesam trudiashchikhsia. Moskva, Gospolitizdat, 1962. 47 p. (MIRA 16:7)
(European Economic Community)

ISAKOVICH, M.A.; CHABAN, I.A.

Acoustic behavior of highly viscous fluids and the theory of fluids. Dokl. AN SSSR 165 no.2:299-302 N '65.
(MIRA 18:11)

1. Submitted March 23, 1965.

43209
S/046/62/008/004/015/017
B108/B186

24.1900

AUTHOR: Chaban, I. A.

TITLE: Scattering of sound on bodies with small shear modulus in a liquid

PERIODICAL: Akusticheskiy zhurnal, v. 8, no. 4, 1962, 483-484

TEXT: Living objects in water have almost the same compressibility and density as the water itself, but they also have a shear modulus although a small one. This shear modulus is useful in calculating the scattering of sound from objects in water assuming the length of the shear waves to be small as compared with the size of the object. As the attenuation of the shear waves in living objects is great, the boundary conditions for the shear waves can be written as if the surface of the object were plane. Under these assumption, the pressure due to the scattered wave field is

$$p_1(x_0y_0z_0) = \frac{ik_0^3}{4\pi}\frac{\lambda+2\mu-\lambda_0}{\lambda_0}\iiint_V p_0(z)\cdot h_0(k_0R)\,dxdydz - \\ - \frac{k_3^0}{4\pi}\frac{\rho-\rho_0}{\rho_0}\iiint_V p_0(z)\,h_1(k_0R)\,P_1(\cos\theta)\,dxdydz - \qquad (9)$$

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$$\dots = \frac{1}{2\pi}\frac{\mu}{\lambda_0}\left\{\iint_S P_0(z)(1-n_z^2)\frac{\partial}{\partial n}\left(\frac{e^{-ik_0R}}{R}\right)dS - ik_0\iint_S P_0(z)\,n_z(1-n_z^2)\frac{e^{-ik_0R}}{R}dS\right\} \quad (9)$$

where $h_n(k_0R)$ are spherical Hankel functions, $P_n(\cos\theta)$ are Legendre polynomials, λ is the compressibility, μ is the shear modulus, $\vec{R} = \vec{r}_0 - \vec{r}$, k is the wave number. The subscript o refers to the liquid, quantities without any subscript refer to the biological object. There is 1 figure.

ASSOCIATION: Akusticheskiy institut AN SSSR, Moskva (Institute of Acoustics AS USSR, Moscow)

SUBMITTED: January 22, 1962

Card 2/2

CHABAN, I.A.

On semicommutative and verbal products of groups. Usp.mat.nauk 17 no.5:153-155 S-O '62. (MIRA 15:12)
(Groups, Theory of)

S/046/63/009/001/016/026
B104/B186

AUTHOR: Chaban, I. A.

TITLE: Scattering of sound produced by small spatial variations of the parameters in an elastic medium

PERIODICAL: Akusticheskiy zhurnal, v. 9, no. 1, 1963, 94 - 100

TEXT: The scattering of sound in an isotropic elastic medium from non-uniformities produced by small deviations of the parameters from their mean values is investigated by means of perturbation theory. The variational parameters are the Lamé coefficients and the density. In the investigation of the equation of elasticity it is shown that the scattered field may be represented in the form of integrals over three sources: spherical-symmetric, dipole and quadrupole type sources. The axes of the dipoles and quadrupoles are oriented along the displacements in the incident wave.

ASSOCIATION: Akusticheskiy institut AN SSSR, Moskva (Institute of Acoustics, AS USSR, Moscow)

SUBMITTED: May 13, 1962

Card 1/1

ACCESSION NR: AP4043362 S/0181/64/006/008/2411/2414

AUTHORS: Chaban, I. A.; Chaban, A. A. BR

TITLE: Amplification of optical lattice vibrations by carrier drift

SOURCE: Fizika tverdogo tela, v. 6, no. 8, 1964, 2411-2414

TOPIC TAGS: carrier mobility, carrier drift, polar crystal, Brillouin zone, crystal lattice vibration, semiconductor

ABSTRACT: The conditions for amplification and generation of optical lattice vibrations by carrier drift in polar and covalent monoatomic semiconductors is analyzed for the case when the carriers have high mobility and for large values of the wave vector (q). Calculation based on the conservation laws and on the conditions for kinetic equilibrium show that at drift velocities $\sim 1.3 \times 10^7$ cm/sec optical phonons can, in principle, be amplified and generated by carrier drift in polar crystals if $q \sim 10^7$ cm^{-1} and the carrier

Card 1/2

ACCESSION NR: AP4043362

concentration is high ($\sim 10^{18}$ cm^{-3}). The observation of the effect at the edge of the Brillouin zone is very unlikely, and in the case of covalent monoatomic semiconductors the possibility of amplification of optical vibrations is doubtful. "The authors thank Professor V. L. Ginzburg and the members of his seminar for a discussion of the work." Orig. art. has: 12 formulas.

ASSOCIATION: Akusticheskiy institut, Moscow (Acoustic Institute)

SUBMITTED: 27Feb64 ENCL: 00

SUB CODE: SS NR REF SOV: 002 OTHER: 012

Card 2/2

L 6886-65 AS(mp)-2/AFETR/ESD/AFWL/SSD/ASD(a)-5/ESD(ga)/ESD(t)

ACCESSION NR: AP4044619 S/0046/64/010/003/0351/0358

46

AUTHOR: Chaban, I. A.

TITLE: The self consistent field method as applied to the calculation of the effective parameters of microinhomogeneous media

SOURCE: Akusticheskiy zhurnal, v. 10, no. 3, 1964, 351-358

TOPIC TAGS: acoustic propagation, acoustic property, acoustic scattering, inhomogeneous medium

ABSTRACT: The inclusions constituting the microinhomogeneity of the medium are assumed to be randomly distributed, although the method developed in the article can be readily applied also to the case when the inclusions have a regular distribution. The relative volume occupied by the inclusions is assumed small compared with unity, and the deviation of the parameters of the microinhomogeneous medium from the parameters of the host medium is treated as a result

Card 1/2

L 6865-65
ACCESSION NR: AP4044619

of wave scattering by the inclusions. It is pointed out that some of the earlier papers involving the use of the self-consistent field contain fundamental errors. General formulas are derived relating the values of the effective parameters with the coefficients of the field scattered by a single inclusion following the incidence of a plane wave. The coefficients involved in the resultant wave equation can be evaluated only for spherical inclusions, to which most of the results apply. However, the effective parameters for non-spherical inclusions can be obtained if experimental data are available on the scattering from a single inclusion. Orig. art. has: 12 formulas.

ASSOCIATION: Akusticheskiy institut AN SSSR Moscow (Acoustic Institute AN SSSR)

SUBMITTED: 06Jan64 ENCL: 00

SUB CODE: GP NR REF SOV: 010 OTHER: 006

Card 2/2

CHABAN, I.A.

Calculation of the effective parameters of microinhomogeneous media using the self-consistent field method. Akust. zhur. 11 no.1:102-109 '65. (MIRA 18:4)

1. Akusticheskiy institut AN SSSR, Moskva.

L 01214-66 EPA(s)-2/EPA(w)-2/EWT(m)/EWP(i)/EWP(b)/EWP(e) WH

ACCESSION NR: AP5021485 UR/0046/65/011/003/0407/0409
534.232

AUTHOR: Chaban, I. A.

TITLE: Calculation of the sensitivity of a spherical piezoelectric-ceramic pickup embedded in a solid medium

SOURCE: Akusticheskiy zhurnal, v. 11, no. 3, 1965, 407-409

TOPIC TAGS: electroacoustics, piezoelectric ceramic, piezoelectric transducer, acoustic transducer, acoustic measurement

ABSTRACT: The pickup described constitutes a relatively thin spherical shell made of radially polarized ceramic, with metallized coatings on the inside and outside serving as electrodes. The author calculates the electroacoustic sensitivity of such devices, defined as the ratio of the voltage induced across the electrodes to the measured pressure. The calculations are made under no-load conditions for an arbitrary solid medium in which the pickup is imbedded. The only limitation imposed on the pickup dimensions (inside and outside diameters) is that it be small compared with the sound wavelength. The formula for the sensitivity is derived from the relation between the mechanical stresses, the electric field intensity in the piezoelectric medium, and the piezoelectric-constant tensor. An

Card 1/2

L 01214-66
ACCESSION NR: AP5021485

expression is also derived for the ratio of the sensitivity of the same pickup in a solid and in a liquid. It is shown by way of an example that, assuming the ratio of outside to inside diameters is 1:14, the ratio of the sensitivity of a barium titanate pickup in ice and in water is 1.92, while that of a zirconate-lead titanate pickup is 2.03, so that the pickup sensitivity in ice is approximately double the sensitivity in water. Orig. art. has: 9 formulas. [02]

ASSOCIATION: Akusticheskiy institut AN SSSR, Moscow (Acoustics Institute, AN SSSR)

SUBMITTED: 26Jun64 ENCL: 00 SUB CODE: NT,GP

NO REF SOV: 001 OTHER: 001 ATD PRESS: 4098

Card 2/2

L 31105-66 EWT(1)/EPF(n)-2/ETC(m) IJP(c) WW/GG

ACC NR: AP5028274 SOURCE CODE: UR/0020/65/165/002/0299/0302

AUTHORS: Isakovich, M. A.; Chaban, I. A.

ORG: None

TITLE: Acoustic behavior of strongly viscous liquids

SOURCE: AN SSSR. Doklady, v. 165, no. 2, 1965, 299-302

TOPIC TAGS: viscous fluid, emulsion, acoustic property, relaxation process, sound propagation

ABSTRACT: In view of the discrepancies between experimental results and various relaxation theories aimed at explaining the acoustic behavior of highly viscous liquids, the authors make use of the theory of media with microscopic inhomogeneities, developed by one of them (Isakovich, ZhETF v. 18, No. 4, 386, 1948 and No. 10, 907, 1948). From the analogy between the acoustic behavior of media with microscopic inhomogeneities and high viscous liquids, the authors present a phenomenological theory of such liquids, based on the statement that they are media with microscopic inhomogeneities, in which diffusion exchange takes place between the components. In particular, it is assumed that the liquid is a two-phase emulsion-like medium whose components are charac-

Card 1/2 UDC: 532.790

L 31105-66
ACC NR: AP5028274

terized, besides pressure and temperature, also by some quantity (ξ) whose equilibrium value varies in different fashion with changing pressure. Under this assumption, the calculation of the complex velocity of sound in the medium is carried out formally by the same method as the corresponding calculation for an emulsion, with certain substitution of the quantities characterizing the components. The proposed theory has no free parameters and all the quantities involved in the calculations are obtained directly from experiment. It is shown that this theory agrees well with experiment and makes it possible to interpret in natural fashion several phenomena hitherto unexplained (the experimentally observed linear variation of the elastic moduli at limiting frequencies with changing temperature, the dispersion of the dielectric constant and the frequency dependence of dielectric loss when samples of this type are placed in an alternating electric field, etc.). This report was presented by N. N. Andreyev. Authors are grateful to V. P. Bazhnichkina for help with the calculations. Orig. art. has: 3 figures and 1 formula.

SUB CODE: 20/ SUBM DATE: 13Mar65/ NR REF SOV: 010/ OTH REF: 010

Card 2/2

L 00631-67 EWT(1)/T/EWP(k) IJP(c) WG

ACC NR: AP6018814 SOURCE CODE: UR/0056/66/050/005/1343/1363

AUTHOR: Isakovich, M.A.; Chaban, I.A.

ORG: none

TITLE: Propagation of waves in highly viscous fluids

SOURCE: Zh eksper i teor fiz, v. 50, no. 5, 1966, 1343-1363

TOPIC TAGS: electromagnetic wave, phase shift, absorption, viscous fluid, temperature dependence, wave propagation, electromagnetic wave dispersion, electromagnetic wave absorption

ABSTRACT: The experimental data on anomalous absorption and dispersion of sonic, shear, and electromagnetic waves in highly viscous liquids indicate that the relaxation theory of wave propagation is not applicable to these liquids. It is assumed that in a wave, the ordered regions undergo a rearrangement, and the equilibrium number of holes is changed with respect to the second disordered component. The disturbed equilibrium with respect to the number of surplus holes is restored by the diffusion between the components. The phase shift of this process in respect to the incident wave results in anomalous absorption and dispersion. It is assumed that the static displacement viscosity of the medium is due to the mechanism of the Maxwellian

Card 1/2

L 00631-67

ACC NR: AP6018814

relation. In the analysis of the electromagnetic waves it is assumed that the mechanism related to microinhomogeneity of the medium is superimposed on the Debye relaxation mechanism. No free parameters have been used in the calculations. Specific calculations of the wave velocity and absorption have been carried out for a number of highly viscous liquids (glycerine, butandiol, hexatriol, 2-methylpenthadiol-2.4). The ordered inclusions have been assumed to be spherical in shape. Good agreement between theory and experimental data has been obtained for these liquids throughout the dispersion region. The characteristic temperature for appearance of ordered regions has been indicated. Certain possible ways have been indicated for determining the sizes of ordered regions at various temperatures. According to a preliminary estimation, six glycerine molecules fit into the linear dimension of the ordered region at 22C. The authors thank V.P.Bazhnichkina for preparing a number of calculations and diagrams. [Based on authors' abstract] [NT]

SUB CODE: 20/ SUBM DATE: 01Dec65/ ORIG REF: 012/ OTH REF: 010

Card 2/2 pb

CHABAN, I. K., Cand. Tech. Sci. (diss) "Investigation of Centrifugal Ventilators for Cleaning Farm Machinery," Minsk, 1961, 16 pp. (Belorussian Sci. Res. Inst. Crop Raising) 120 copies (KL Supp 12-61, 276).

VOLKOV, Yu.I., inzh.; GAFANOVICH, A.A., kand.tekhn.nauk; GLADKOV, N.G., kand.sel'skokhoz.nauk; GORKUSHA, A.Ye., agr.; ZHITNEV, N.F., inzh.; ZANIN, A.V., kand.tekhn.nauk; ZAUSHITSYN, V.Ye., kand.tekhn.nauk; ZVOLINSKIY, N.P.; ZEL'TSERMAN, I.M., kand.tekhn.nauk; KAIPOV, A.N., kand.tekhn.nauk; KASPAROVA, S.A., kand.sel'skokhoz.nauk; KOLOTUSHKINA, A.P., kand.ekon.nauk; KRUGLYAKOV, A.M., inzh.; KURNIKOV, I.I., inzh.; LAVRENT'YEV, L.N., inzh.; LEBEDEV, B.M., kand.tekhn.nauk; LEVITIN, Yu.I., inzh.; MAKHLIN, Ye.A., inzh.; NIKOLAYEV, G.S., inzh.; POLESHCHENKO, P.V., kand.tekhn.nauk; POLUNOCHEV, I.M., agr.; P'YANKOV, I.P., kand.sel'skokhoz.nauk; RABINOVICH, I.P., kand.tekhn.nauk; SOKOLOV, A.F., kand.sel'skokhoz.nauk; STISHKOVSKIY, A.A., inzh.; TURBIN, B.G., kand.tekhn.nauk; CHABAN, I.V., inzh.; CHAPKEVICH, A.A., kand.tekhn.nauk; CHERNOV, G.G., kand.tekhn.nauk; SHMELEV, B.M., kand. tekhn.nauk; KRASNICHENKO, A.V., inzh., red.; KLETSKIN, M.I., inzh., red.; MOLYUKOV, G.A., inzh., red.; BLAGOSKLONOVA, N.Yu., inzh., red.; UVAROVA, A.F., tekhn.red.

[Reference book for the designer of agricultural machinery in two volumes] Spravochnik konstruktora sel'skokhoziaistvennykh mashin v dvukh tomakh. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry. Vol.1. 1960. 655 p. (MIRA 13:11)
(Agricultural machinery--Design and construction)

CHABAN, M.K.

Some ornamental bulb plants of the native flora. Trudy Alma-At. bot.sada 5:110-117 '60. (MIRA 13:6)
(Alma-Ata--Bulbs)

CHABAN, M.K.

Cultivation of hyacinths in Alma-Ata. Trudy Alma-At. bot. sada 7:69-75 '63. (MIRA 16:10)

Chaban, M. M.

USSR / Electricity G

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9727

Author : Klinger, M.I., Chaban, M.M.
Inst : Not given
Title : Concerning the Problem of the Faraday Effect in Semiconductors

Orig Pub : Zh. tekh. fiziki, 1956, 26, No 5, 938-940

Abstract : When electromagnetic waves pass through a semiconductor placed in a magnetic field (H), the plane of polarization is rotated. The angle of rotation θ, called the Faraday angle, is $\theta = VlH$, where l is the thickness of the specimen and V is the Verdet constant. $V = \frac{4\pi R\sigma^2}{\eta c}$

Here R is the Hall constant, σ is the electric conductivity, and η the index of refraction. This formula takes into account only the rotation of the plane of polarization by free carriers. The rotation of the lattice itself is appa-

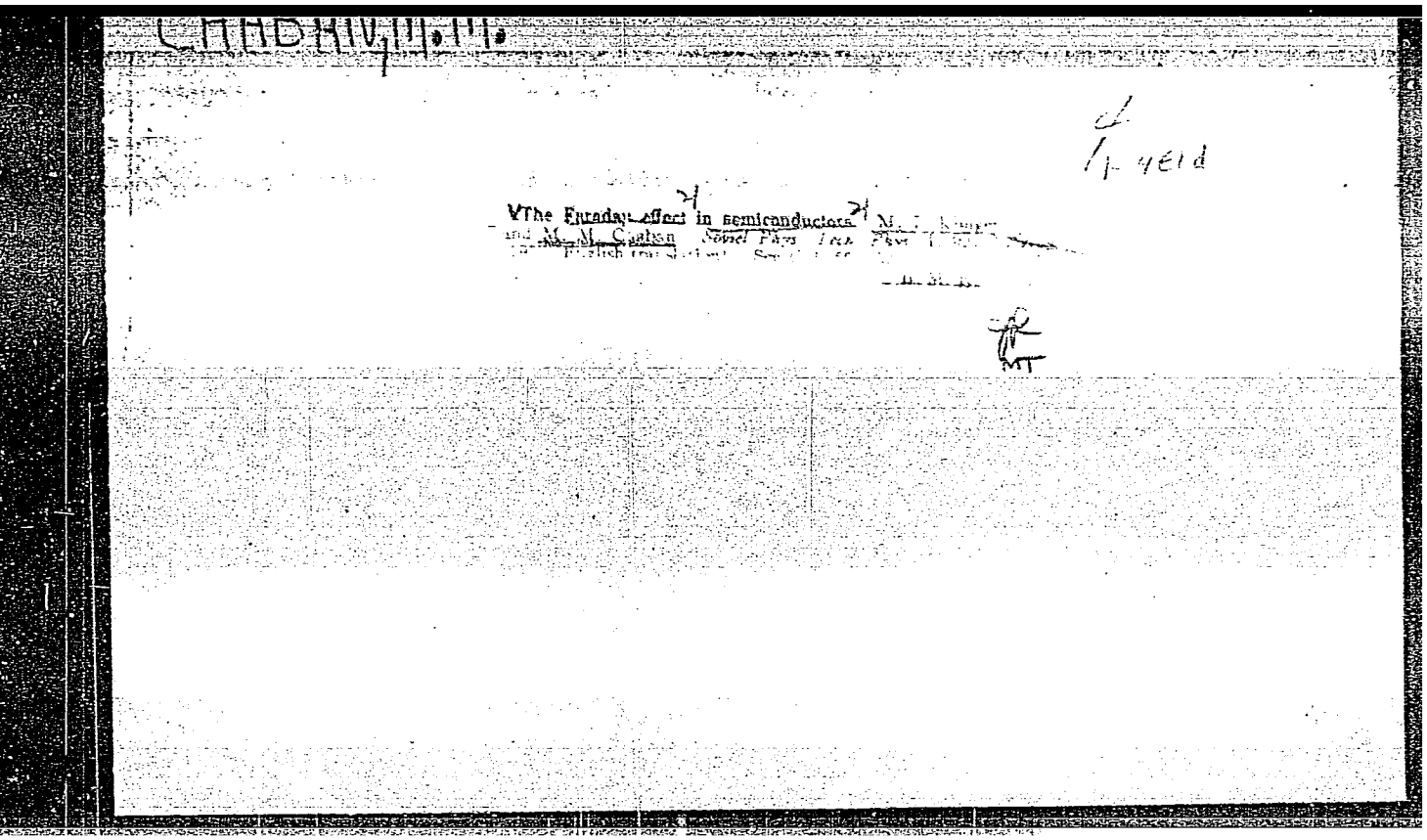
Card : 1/2

USSR / Electricity G

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 0727

Abstract : rently much weaker. An estimate of the value of V shows that, for example, for n-Ge in the case of carrier concentration n 10^{16} cm^3 V = 2 x 10^{-2}, i.e., at H = 10^4 gauss and l = 10^{-4} cm we get θ = approximately 1^o, i.e., this effect can be measured, It is proposed to employ the Faraday effect for the determination of the temperature dependence of the mobility and to calculate the effective mass of the carriers.

CArd : 2/2



CHABAN, M.N.; KHAVICH, M.I.

Improving the technology of producing wrought iron. Prom.energ. 12 no.6:15-16 Je '57. (MLRA 10:7)
(Wrought iron)

KAL'CHENKO, Vladimir Nikiforovich; CHABAN, O., red.; SHAFETA, S., tekhn.red.

[Natural gas in the national economy of the Ukrainian S.S.R.] Prirodnyi gaz v narodnom khoziaistve USSR. Kiev, Gos.izd-vo tekhn.lit-ry USSR, 1961. 117 p. (MIRA 14:4)
(Ukraine--Gas, Natural)

DOROKHOV, Ivan Petrovich; LUTOV, Aleksey Antonovich; PAVLENKO, Dmitriy Vasil'yevich; CHABAN, O.I., red.; GORKAVENKO, L.I.Horkavenko, L.I., tekhn. red.; LAGUTIN, I.T.[Lahutin, I.T.], tekhn. red.

[Manual on the calculation of timber and forest production]Dovidnyk z obliku lisomaterialiv i lisovoi produktsii. [By] I.P. Dorokhov ta inshi. Kyiv, Derzh.vyd-vo tekhn.lit-ry URSR, 1961. 587 p. (MIRA 16:2)

(Lumbering--Tables and ready-reckoners)

CHABAN O. I.

96-4-24/24

AUTHORS: Vnukov, A.K., Cand.Tech.Sc., Sinyakevich, B.G., Engineer and Chaban, O. I., Engineer.

TITLE: Thermal-losses resulting from external cooling of sets working at high and super-high steam conditions. (Teplovyye poteri ot naruzhnogo okhlazhdeniya blokov vysokikh i sverkhvysokikh parametrov).

PERIODICAL: Teploenergetika, 1958, 5 No.4,pp.94-95. (USSR).

ABSTRACT: In 1957 the Southern Division of ORGRES tested the thermal insulation of a high-pressure set in the Pridneprovsk regional power station and of a super-high-pressure set in the Cherepetsk Power Station. Measurements were made of the thermal losses through the insulation and of the distribution of the losses between sets and equipment. Thermal losses from particular parts of the sets are tabulated. In the high-pressure unit, 1.26% of the total heat was passing through the insulation, and in the super-high-pressure sets 1.48%. Not all this heat is wasted because some returns to the boiler with the air blast. About 80% of the losses occur in the boiler-house. The losses are greater in the super-high-pressure set because the temperature is higher and the piping is longer. Considerable thermal losses occur through uninsulated

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96-4-24/24

Thermal-losses resulting from external cooling of sets working at high and super-high steam conditions.

parts of fittings. These form about a quarter of all the thermal losses. Shrouding the insulation with aluminium sheet gives a small reduction in the heat loss. There is 1 table.

AVAILABLE: Library of Congress.

Card 2/2

VNUKOV, A.K., kand.tekhn.nauk; SINYAKEVICH, B.G., inzh.; CHARAN, O.I., inzh.

Investigating heat losses to neighboring media in electric power plants equipped with high- and superhigh-pressure units. Elek. sta. 29 no.11:19-22 N '58. (MIRA 11:12)
(Electric power plants)

CHABAN, O.I., inzh.

Review of V.V.Meikliar's book "Contemporary steam boiler."
Energetik 8 no.2:37-38 F '60. (MIRA 13:6)
(Boilers) (Meikliar, V.V.)

PALIYCHUK, A.S., inzh.; CHABAN, O.I., inzh.; SHVETS, V.N., inzh.; GUSEYNOV, M.Kh., inzh.; SLUCHISHKIN, M.Ya., inzh.; BOBKOV, V.S., inzh.; KURTSEV, P.A., inzh.

Starting a 150 Mw boiler after installation. Teploenergetika 8 no.7:8-12 Jl '61. (MIRA 14:9)

1. Yuzhnoye otdeleniya Gosudarstvennogo tresta po organizatsii i ratsionalizatsii elektrostantsiy i Gosudarstvennaya rayonnaya elektricheskaya stantsiya "Severnaya".
(Boilers)

CHABAN, O.I., inzh.; VIZIR, B.S., inzh.; SLUCHISHKIN, M.Ya., inzh.; GUSEYNOV, M.Kh., inzh.

Special operating features of the steam and water circuit of the TGM-94 boiler. Teploenergetika 10 no.6:21-25 Je '63. (MIRA 16:7)

1. Yuzhnoye otdeleniye Gosudarstvennogo tresta po organizatsii i ratsionalizatsii rayonnykh elektrostantsiy i setey i Gosudarstvennaya rayonnaya elektrostantsiya "Severnaya". (Boilers)

ACCESSION NR: AP5002646 S/0096/64/000/010/0024/0030

AUTHOR: Chaban, O. I. (Engineer); Dmitriyev, V. Ye. (Engineer); Futorskiy, B. M. (Engineer); Guseynov, M. Kh. (Engineer); Bobkov, V. S. (Engineer)

TITLE: A study of the 150 megawatt block under variable and constant steam pressures

B

SOURCE: Teploenergetika, no. 10, 1964, 24-30

TOPIC TAGS: steam turbine, steam boiler, steam auxiliary equipment / TGM-94 boiler, K-160-130 turbine

Abstract: The article compares the operation of a boiler-turbine block for the case of conventional control by the turbine valves and for the case of control by varying steam pressure. On the basis of numerous diagrams the authors discuss the resistance to flow in the steam ducts, the steam temperatures, the steam consumption, and the efficiency of the TGM-94 boiler and K-160-130 turbine operating as a 150-Mwatt block. The constant pressure operation is always advantageous at loads above 125 Mwatt, while the variable pressure operation is more economical at loads below 85 Mwatt.

Card 1/2

ACCESSION NR: AP5002646

The steam condensers used in variable pressure operation must have a 40% larger capacity than in the case of constant pressure operation. Further studies should be conducted with other units placing special emphasis on below 90-Mwatt operation. Orig. art. has 11 formulas, 7 graphs

ASSOCIATION: Yuzhnoye otdeleniye ORGRES (South Division of the ORGRES); GRES "Severnaya"

SUBMITTED: 00 ENCL: 00 SUB CODE: PR, IE

NO REF SOV: 002 OTHER: 000 JPRS

Card 2/2

MEL'NIK, P.M., kand. tekhn. nauk, red.; [illegible], P.I., red.

[Automation in power engineering] /Vtomatizatsiia energetiki. Kiev, In-t tekhn. informatsii, 1964. 252 p.
(MIRA 18:3)

CHABAN, P.S.

SKUPCHENKO, V.K.; CHABAN, P.S., red.

[New species of tree for establishing oases in the desert] Novaia drevesnaia poroda dlia sozdaniia oazisov v pustyne. Alma-Ata, Akademiia nauk Kazakhskoi SSSR, 1954. 42 p. (MIRA 11:4)
(Poplar) (Oases)

CHABAN, P.S.

Landscaping prospects in the Dzhezkazgan industrial region. Izv. AN Kazakh. SSR. Ser. biol. no.9:32-48 '55. (MLRA 9:4)

(DZHEZKAZGAN DISTRICT--LANDSCAPE GARDENING)

GUDOCHKIN, Mikhail Vasil'yevich; CHABAN, Pavel Sergeyevich; SHERMAN, R., red.; ZLOBIN, M.V., tekhn.red.

[Forests of Kazakhstan] Lesa Kazakhstana. Alma-Ata, Kazakhskoe gos. izd-vo, 1958. 322 p. (MIRA 12:1)
(Kazakhstan--Forests and forestry)

CHABAN, S.

Mechanization is increasing. Mias. ind. SSSR no.3:11-12 '61.
(MIRA 14:7)

1. Konotopskiy myasokombinat Khar'kovskogo sovnarkhoza.
(Konotop—Meat industry—Equipment and supplies)

CHABAN, Ya.S.

Formation of superdifferential income on collective farms of the Moldavian S. S. R. Izv. AN Mold. SSR no.2:62-74 '62.
(MIRA 15:12)
(Moldavia—Collective farms—Finance)

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SOV/130-59-10-13/20

AUTHORS: Konovalov, I. M., Chaban, Z. K.

TITLE: Design of Round-Finishing Roll Pass

PERIODICAL: Metallurg, 1959, Nr 10, pp 26-27 (USSR)

ABSTRACT: The authors believe that the maximum wear which occurs in the part of the roll pass, under an angle of 45° to the horizontal, is caused by maximum reduction in this part of the roll pass. In order to make the roll pass approach a round shape after wear, the authors suggest designing a roll pass with a minimum diameter under a 45° angle in relation to the horizontal. For the design of a round-finishing roll pass, horizontal and vertical axes AD and BC (see Fig. 2)and lines Ne and Mk under an angle of 45° to AD and BC are drawn. Arches with radius $R = R_{max}+x$ forming the roll pass profile are drawn as follows: De from point O_1, MA from point O_2, AN from point O_3, and DK from point O_4. Assuming

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that the maximum radius of the circle equals

$$R_{max} = \frac{d + \Delta m}{2} \cdot 1.013,$$

where + Δm = plus tolerance. The minimum radius of the circle would then be

$$R_{min} = \frac{d - \Delta m'}{2} 1.013,$$

where $\Delta m'$ = minus tolerance, d = nominal diameter of the circle. Coordinates x and y of points O_1, O_2, O_3, and O_4 are equal. They are determined on the assumption that Ne and MK equal minimum diameter of the circle in the hot state. From Fig. 2, $R_{min} = \sqrt{y^2 + x^2} = R_{max} + x$ or $R_{min} + 1.41x = R_{max} +$ + x. Denote $R_{max} - R_{min} = \Delta s$, then $x = y = 2.43\Delta s$. Arches Me and Nk are drawn with radius R from points n and n_1, respectively. In accordance

with the above, the authors deduce value R (see Fig. 2 attached) from equation $(R - b)^2 = R^2$,

$b = R_{min} - R_{min} \cdot 0.7071 + 0.2924 \Delta s = R_{max} \cdot$

$\cdot 0.2929$, $a = 0.7071 \cdot R_{min}$. In solving equation $(R-b)^2 = R^2$, value $\frac{0.8535 \Delta s^2}{R^2}$ is too small to be considered so that $R = R_{max} - 1.7 \Delta s$. The authors assume that the height of the roll pass is $h_k = D_{max} - 1.4142 \Delta s$. Experimental rolling of round shapes at Stalino Metallurgical Plant (Stalinskiy metallurgicheskiy zavod) showed the expediency of the new design, dimensional accuracy improved and roll pass life increased. There are 2 figures.

CHABANENKO, A., admiral

We struggle for military preparedness and strict discipline.
Komm.Vooruzh.Sil 2 no.1:26-32 Ja '62. (MIRA 14:12)

1. Komanduyushchiy Severnym flotom.
(Russia--Navy)

CHABANENKO, I.L., aspirant

Sow and till at increased speeds. Mekh. sil'.hosp. 11 no.8:9-10 Ag '60. (MIRA 13:9)

1. Ukrainskaya sel'skokhozyaystvennaya akademiya nauk.
(Agricultural machinery)

CHABANENKO, I.L., inzh.

Methods of compiling technological charts. Mekh. sil'. hosp. 11 no.11:8-10 N '60. (MIRA 13:11)
(Farm mechanization)

CHABANENKO, I.L., inzh.

Cultivating corn at increased speeds. Mekh. sil'. hosp. 12 no. 4:7-9 Ap '61. (MIRA 14:4)
(Corn (Maize))

CHABANENKO, I.L., inzh.; PRIKHOD'KO, P.I. [Prykhod'ko, P.I.], inzh.

Harvesting corn with large combine units. Mekh. sil'. hosp. 14 no.8:14-15 Ag '63. (MIRA 17:1)

SKRYL'NIKOV, G. (Kuybyshev); KONOVALOV, V. (Gor'kiy); KUPRIYANOV, N., inzh. (Tuapse); YAKOVLEV, V., inzh. (Tuapse); CHABANENKO, A. (Kemerovo); STRUL', B. (Voronezh); BOGDANOV, L. (Barnaul); CHEREMNYKH, M., tekh-informator (Krasnyy Sulin Rostovskoy obl.); SEREGINA, Yu. (Orel); TOKAR', S.; TISHCHENKO, A. (Kiyev); CHAYKA, D. (Kiyev)

Advertisement board. Izobr. i rats. no.10:10-11 '63. (MIRA 17:2)

1. Rabotnik kabel'nogo zavoda, g. Saransk, Mordovskoy ASSR (for Tokar').