S/186/62/004/003/022/022
E075/E436

AUTHORS: Abel'skaya, N.B., Gracheva, Ye.G., Yershova, Z.V., Zverev, V.S., Maslovskaya, V.V., Rudaya, L.Ya.

TITLE: Preparation of long-lived Bi^{210}

PERIODICAL: Radiokhimiya, v.4, no.3, 1962, 377-378

TEXT: To confirm the investigations with isomer Bi^{210}, reported by L.I.Rusinov, it was essential to obtain a sample of Bi containing a large quantity of the isomer and a minimum quantity of other radioactive admixtures. The metallic Bi subjected to irradiation was thoroughly purified from Po and the elements activated by neutrons Zn, Ag, Cd, Co, Sr, Sb, Se, Te. A sample of Bi enriched in Bi^{210} was obtained from the purified Bi.

SUBMITTED: May 29, 1961

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ABEL'SKAYA, N. B.; GRACHEVA, Ye. G.; YERSHOVA, Z. V.; ZVEREV, V. S.; MASLOVSKAYA, V. V.; RUDAYA, L. Ya.

Preparation of long-lived Bi^{210}. Radiokhimiia 4 no.3:377-378 '62. (MIRA 15:10)

(Bismuth--Isotopes)

ABEL'SKAYA, R.S.

Relations between word and image in the appraisal of a game situation. Vop. psikhol. 3 no.4:80-89 Jl-Ag '57. (MLRA 10:9)

1. Kafedra psikhologii Instituta fizicheskoy kul'tury imeni P.F. Lesgafta, Leningrad.
(Speech) (Sports)

KLEBANOV, G. Ya.; ABEL'SKIY, A. M.; BEYDER, A. V.; VAYNER, S. V.; VLASIK, V. S.; GOL'DFEDER, Ya. M.; DUDKINA, D. F.; ZHURAVLEVA, L. D.; KANE, D. B.; KUBALNOV, M. L.; KOLODEZNAYA, T. B.; KUTASNIKOV, V. Ya.; SOLODOVNIKOV, B. M.; STROYMAN, L. A.; SHUMKOVA, N. S.

Results of dispensary treatment of occupational dermatoses in the clinics of Leningrad. Vest. derm. i ven. 36 no.6:58-62 Je '62. (MIRA 15:6)

1. Iz kozhno-venerologicheskikh dispanserov No. 1, 2, 3, 5, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 22 (nauchnyy rukovoditel' - chlen-korrespondent AMN SSSR prof. P. V. Kozhevnikov)

(LENINGRAD—OCCUPATIONAL DISEASES)
(SKIN—DISEASES)

ABEL'SKIY, M. YE.

Abelskii, M. E. Finding the Optimum-zone in Gravitational Variometers "Z-40" and "S-20." Problemy Arktiki, Leningrad, No. 6, 1940, pp. 72-79.

APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R000100120017-9"

ABEL'SKIY, M.Ye.; ANDREYEV, B.A.; GOLOMB, V.E.; SAMSONOV, N.N.; PAVLUTSKAYA, Ye.I., redaktor; POPOV, N.D., tekhnicheskiy redaktor.

[Course in the gravitational method of prospecting for technical schools of geological surveying] Kurs gravirazvedki dlia geologorazvedochnykh tekhnikumov. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po geologii i okhrane nedr, 1954. 357 p. [Microfilm]
(Prospecting--Geophysical methods) (MLRA 7:11)

AF L'SKIY, [illegible] Ye.

"Results of Gravimetric Prospecting Operations with Variometers on a Deposit of Polymetals," Razvedka i Okhrana [illegible], No. [illegible], pp [illegible]-[illegible], 1954

SO: W-31[illegible]9, 2 Sep 55

ABEL'SKIY, M.Ye.

Circulation technique for pouring over the compensating fluid in the SN-3 gravimeter. Razved.i okh.nedr 22 no.7:60-62 Jl '56. (MLRA 9:11)

1. Leningradskiy gornyy institut.
(Gravimeter)

ABEL'SKIY, M.Ye.

Results of using gravimetric surveying methods for geological mapping in eastern Transbaikalia. Razved.i okh.nedr 23 no.3: 40-44 Mr '57. (MLRA 10:5)

(Transbaikalia--Geological surveys)

AUTHOR: Abel'skiy, M.Ye. SOV/49-58-7-11/16

TITLE: Determination of the Moment of Inertia and Moment of Rotation of the Gravitational Variometer (Type S-20) (Opredeleniye momenta inertsii i tsentrobezhnogo momenta krutil'nykh vesov gravitatsionnogo variometra S-20)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, Nr 7, pp 921 - 922 + 1 plate (USSR)

ABSTRACT: Numerical values for the above coefficients appear in calculations for the second differentials of the gravitational potential. They can be determined from measurements of the beam, etc. before assemblage. The present article describes a method which does not necessitate such measurements and enables the apparatus constants to be measured directly.

K, the moment of inertia, is obtained from visual observations on the period of the beam, and M, the rotational moment, is obtained from K using transition coefficients. These coefficients are obtained from the basic integral equations for K and M:

$$K = \int (x^2 - y^2)dm, \quad M = \int xz\,dm \qquad (1).$$

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SOV/49-58-7-11/16

Determination of the Moment of Inertia and Moment of Rotation of the Gravitational Variometer (Type S-20)

The x-axis lies horizontally in the plane of the beam, the z-axis points vertically downwards and the y-axis is perpendicular to x and z (Figure 1). A new co-ordinate system (x, y, z) is now introduced, making an angle α with the previous system. Eq.(1) is now transcribed into the new co-ordinates. It is assumed that the mass of the rotating system in S-20 is situated along the axis, K and M are obtained in the form (3). The relation between K_0 and M is given by (4) which, on substituting $\alpha = 56^{\circ}\ 18.5'$, gives the numerical relationship. To determine K, the period T' and the amplitude ω of damped oscillation is observed. T' is observed visually by a mirror which reflects light from the oscillating beam into a telescope - the time being measured on a stop-watch. ω is determined from the oscillation amplitude of the beam (Figure 2). A continuous, photographic record is obtained by the method described in Ref 1 (para.38). The fibre used had a torsion coefficient τ = 50-90 gcm^2/sec^{-2}.

Card2/5 Approximate calculations of K and M are made from average values of T' and of ω (using the interpolation ratio:

$$\frac{\omega_i + \omega_{i+1}}{\omega_{i+1} + \omega_{i+2}}\Bigg)$$

obtained in experiments on variometers type Nr 835 ((τ = 89.314 gcm^2/sec^{-2}). These values are approximately equal - 62.80 and 1.35 sec for beam I and 62.40 and 1.34 sec for beam II - so that the period of free oscillations can be calculated. From the formula:

$$K = \tau \frac{T^2}{4\pi^2}$$

is obtained: K_I = 8 850 gcm^2, K_{II} = 8 730 gcm^2

and from (5), M_I = 13 250 gcm^2, M_{II} = 13 080 gcm^2 .

Formulae for calculating K and M from measurements are weighing have not previously been published. They can be obtained from Eq.(2). Polar co-ordinates (r, φ, l) are introduced with centre O (Figure 1). The l-axis lies along the beam in the direction of the lower weight; r lies in a plane passing through O and perpendicular to l and the xOz plane; φ is calculated from the perpendicular to the xOz plane. These transformations give:

$$x_1 = l, \quad y_1 = r\cos\varphi, \quad z = r\sin\varphi, \quad dm = \sigma r\, dr\, dl\, d\varphi .$$

Formula (2) then transforms into (6) (where r is the inner diameter of the tube and weight; r_1 is the outer diameter of the beam tube; l_1 and l_2 are the distances from O corresponding to the upper and lower bases of the weights.

Denoting by m_T the mass of the tube, m_B the mass of the upper weight and [illegible] the mass of the lower weight, Eq.(7)

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SOV/49-58-7-11/16

Determination of the Moment of Inertia and Moment of Rotation of the Gravitational Variometer (Type S-20)

is obtained for the tube (K_1) and Eq.(8) for the weights (K_2). Similarly, Eqs.(9) and (10) give M_1 and M_2. The summation of K_i and M_i obviously gives K and M. There are 2 figures and 1 Soviet reference.

SUBMITTED: January 7, 1957

Card 5/5

1. Variometers--Performance 2. Variometers--Mathematical analysis 3. Bodies of revolution--Moments 4. Terrestrial magnetism--Measurement

41194
S/169/62/000/009/040/120
D228/D307

9.4 10

AUTHOR: Abel'skiy, M. Ya.

TITLE: Some improvements of the ГАК-3М (GAK-ZM) gravimeter

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 9, 1962, 35, abstract 9A234 (In collection: Razved. i promysl. geofiz., no. 42, M., 1961, 72-76)

TEXT: The following improvements were introduced into GAK-ZM gravimeters in order to increase their quality: 1) Careful temperature calibration of the quartz system, which allowed the temperature coefficient to be reduced to 0.3 - 0.5 milligal/degree; 2) increasing the system's heat protection and the frame's heat capacity; and 3) increasing the strength of the gravimeter's design and decreasing its weight. The improvements fulfilled allowed a surveying accuracy of ±0.06 milligal to be obtained under complex conditions on traverses with an average duration of 5 hrs. [Abstracter's note: Complete translation.]

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ABEL'SKIY, M.Ye.

Some improvements of the GAK-ZM gravimeter. Razved. i prom. geofiz. no.42:72-76 '61. (MIRA 16:11)

L 45811-65 EWT(1)/EWG(v) Po-4/Pe-5/Pq-4/Pg-4 GW
ACCESSION NR AM4047285 BOOK EXPLOITATION S/ 36 B+1

Vasil'yeva, Inna Leonidovna; Vereda, Sergey Vasil'yevich; Orachova, N. P.; Lyubimov, L. M.; Naumenko-Bondarenko, I. I.; Poddubnyy, S. A.; Abel'skiy, M. Ye.

Devices, repair, maintenance and operation of gravimetric apparatus (Ustroystvo, naladka, remont i ekspluatatsiya gravimetricheskoy apparatury), Moscow, Izd-vo "Nedra", 1964, 223 p. illus., biblio.

TOPIC TAGS: gravimetric equipment, geophysics, gravimetry

PURPOSE AND COVERAGE: This book describes the principles of tuning, regulation and error elimination of gravimetric equipment used in gravimetric exploration and other gravimetric work in the Soviet Union: quartz ground and bottom gravimeters, gradientometers, variometers, and densitometers. In addition, it describes the equipment of a quartz shop and methods of making and repairing the quartz system of quartz astatic gravimeters. The book is intended for engineers and technicians concerned with field gravimetry. It will be useful to students studying geophysics.

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ACCESSION NR AM4047285

SUBMITTED: 09Mar64 SUB CODE: ES, EC

NO REF SOV: 019 OTHER: 001

Card 2/2

ABEL'SKIY,Sh.Sh.; YAKOVLEV,V.A.

Additional resistance of ferromagnets in a magnetic field. AN URSR no.2:143-145 '55. (MIRA 8:11)

1. Chernivets'kiy derzhavniy universitet. Predstaviv diysniy chlen Akademii nauk URSR V.E.Lashkar'ov.
(Ferromagnetism)

9.4300 (3203, 1043, 1137, 1035)

S/126/60/010/006/001/022
E032/E414

AUTHORS: Abel'skiy, Sh.Sh. and Turov, Ye.A.

TITLE: On the Theory of the Temperature Dependence of Electrical and Thermal Conductivity of Ferromagnetics at Low Temperatures

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol.10, No.6, pp.801-806

TEXT: The scattering of conduction electrons on spin waves ("ferromagnons") is a contributing factor to the electrical and thermal conductivity of ferromagnetic metals. Owing to its specific temperature dependence, this part of the conductivity may, under certain conditions, exceed the conductivity associated with scattering on phonons. This problem was considered by the second of the present authors in Ref.3, where it was shown that the temperature dependence of the ferromagnon part of electrical resistivity ρ_T can be written down in the form of two terms, namely:

$$\rho_T = a_1 T + a_2 T^2 \qquad (1)$$

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On the Theory of the Temperature Dependence of Electrical and Thermal Conductivity of Ferromagnetics at Low Temperatures

where a_1 and a_2 are constants independent of the temperature T. The first term in Eq.(1) takes into account electromagnetic interactions between conduction electrons and the magnetic field produced by spin waves ("spin-orbit interaction"); the second term is due to exchange interaction between conduction electrons and electrons responsible for the ferromagnetism (the "s-d exchange interaction"). Experimental studies of the temperature dependence of ρ_T have shown that Eq.(1) is in qualitative agreement with the experimental data for ferromagnetic metals at helium temperature. However, further development of the theory (Ref.5) has shown that the linear term in Eq.(1), i.e. the term due to the spin-orbit interaction, is lower than the experimental result by two or three orders of magnitude. In the present paper, the temperature dependence of ρ_T is re-examined in detail, with special reference to the s-d exchange interaction effects. The dispersion relation for the conduction electrons is

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On the Theory of the Temperature Dependence of Electrical and Thermal Conductivity of Ferromagnetics at Low Temperatures

taken in the form

$$E_{k\sigma} = E(k) + 2\sigma I(k) \qquad (4)$$

where $E(k)$ and $I(k)$ are arbitrary functions of the modulus of the quasi-momentum $\vec{k}$ and $\sigma = \pm 1/2$ (spin quantum number of the electron). In addition, the part of the thermal resistivity of the ferromagnetic metal which is due to the scattering of conduction electrons by spin waves is also computed. The electrical resistivity is calculated using the method developed by Kubo in Ref.11 and applied to the calculation of resistivities by Nakano (Ref.12). In this way, it is shown that the electrical resistivity is given by

Eq.(9) p.503

$$\rho_T = c_1\left(T_0 \ln\frac{e^{T_0/T}+1}{e^{T_0/T}-1}\right)T + c_2\left(\int\limits_{T_0/T}^{\infty}\frac{y e^y\,dy}{e^{2y}-1}\right)T^2. \qquad (9)$$

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On the Theory of the Temperature Dependence of Electrical and Thermal Conductivity of Ferromagnetics at Low Temperatures

This formula includes three parameters, namely T_o, c_1 and c_2. T_o is the critical temperature below which exchange effects can be neglected; c_1 and c_2 can be obtained from the dispersion relation given by Eq.(4). When $T \gg T_o$, Eq.(9) reduces to

$$\rho_T = c_1 (T_o \ln \frac{2T}{T_o}) T - \frac{1}{2} c_2 T_o T + \frac{\pi^2}{8} c_2 T^2 \qquad (11)$$

whilst for $T \ll T_o$, $\rho_T \sim \exp(-T/T_o)$. When T is of the order of T_o, the general formula given by Eq.(9) must be employed. In order to explain the experimental data reported by Kondorskiy et al (Ref.6) and Sudovtsev et al (Ref.7), who found that in addition to the quadratic term a linear term was also present, it is necessary to assume that the coefficient c_1 is large. This, in turn, indicates that the energy spectrum of the conduction electrons cannot be described in these particular cases on the basis of a quadratic dispersion law. The paper is concluded by a

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calculation of the thermal resistivity. It is shown that the thermal resistivity W is given by the approximate formula:

$$W \approx \frac{e^2 \Theta_c (ak_0)^2 c_2}{\varkappa^2} \qquad (14)$$

Thus, W is independent of temperature, in agreement with the work of Kasuya (Ref.15). Moreover, the actual magnitude of the thermal resistivity depends on the same coefficient c_2 which determines the quadratic term in the electrical resistivity. When c_2 is determined from experimental data on electrical resistivity (Ref.7), then it is found that W lies between 10^{-6} and 10^{-7} deg cm sec/erg. This is in agreement (to within an order of magnitude) with the value obtained by Rosenberg (Ref.16) for iron in the helium temperature region. Rosenberg's work shows that the thermal resistivity of many metals can be represented by the formula

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$$W = \alpha_1 T^2 + \alpha_2 / T \qquad (15)$$

in which the first term is expressed by the scattering of electrons by phonons and the second by scattering on impurities. At low temperatures, the second term predominates. According to the present theory, Eq.(15) must be supplemented by the further term given by Eq.(14). It is expected that for sufficiently pure specimens this component will be comparable with that due to the scattering of electrons on impurities. It follows that the thermal resistivity due to scattering of electrons on spin waves may be detected in very pure specimens of ferromagnetic metals at sufficiently low temperatures. Acknowledgments are expressed to Yu.A.Isyumov and S.V.Vonsovskiy for valuable advice. There are 16 references: 12 Soviet and 4 non-Soviet.

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E032/E414

On the Theory of the Temperature Dependence of Electrical and Thermal Conductivity of Ferromagnetics at Low Temperatures

ASSOCIATIONS: Ural'skiy gosudarstvennyy Universitet im. A.M.Gor'kogo (Ural State University imeni A.M.Gor'kiy)
Institut fiziki metallov AN SSSR (Institute of Physics of Metals AS USSR)

SUBMITTED: June 26, 1960

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43550
S/126/62/014/005/001/015
E032/E514

AUTHORS: Abel'skiy, Sh.Sh. and Irkhin, Yu.P.

TITLE: Scattering on spin irregularities and the spontaneous Hall effect in ferromagnetics

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.5, 1962, 641-645

TEXT: A system of interacting electrons and spins is considered. The total Hamiltonian in the presence of an electric field and including spin-orbit interactions is taken to be of the form

$$\underline{H}^{T} = \underline{H} + \underline{H}^{sc} + \underline{H}^{F} \qquad (1)$$

where

$$\underline{H} = \sum_{\lambda} \varepsilon_{\lambda} a_{\lambda}^{+} a_{\lambda} - \sum_{\nu} g\underline{I}_{o} S_{\nu}^{z}; \qquad (2)$$

$$\underline{H}^{sc} = \sum_{\nu, \ell \neq \ell'} e^{i(k-k')\nu} \{ K_{\ell\ell'}^{+} S_{\nu}^{z} a_{\ell'+}^{+} a_{\ell'+} - K_{\ell\ell'}^{-} S_{\nu}^{z} a_{\ell-}^{+} a_{\ell'-} + \underline{I}_{\ell\ell'} (S_{\nu}^{-} a_{\ell+}^{+} a_{\ell'-} + S_{\nu}^{+} a_{\ell-}^{+} a_{\ell'+}) + (L_{\ell\ell'}^{+} S_{\nu}^{-} + L_{\ell\ell}^{-} S_{\nu}^{+}) \times$$

$$\times (a_{\ell+}^{+} a_{\ell'+} + a_{\ell-}^{+} a_{\ell'-}) \}; \quad \underline{K}_{\ell\ell'}^{\pm} = \underline{I}_{\ell\ell'} \pm L_{\ell\ell'}^{z}; \qquad (3)$$

$$H^F = eF'_\alpha \sum_{\lambda\lambda'} r^\alpha_{\ell\ell'} a^+_\lambda a_{\lambda'} , \qquad (4)$$

where $\epsilon_\lambda \equiv \epsilon_{\ell\sigma} \equiv \epsilon_{nk\sigma}$ is the electron energy corresponding to band n, wave vector k and spin σ, $g\mu_B^{-1}I_o$ is the molecular Weiss field, g is the Lande factor, μ_B is the Bohr magneton, I_o is the Heisenberg exchange integral, S_ν is the spin operator for the site ν with components S^z_ν, $S^\pm_\nu = S^x_\nu \pm iS^y_\nu$, a^+_λ, a_λ are the second quantization operators for electrons and F'_α is the α-component of the external electric field. The quantities $r^\alpha_{\ell\ell'}$ and $I_{\ell\ell'}$, $L^{z,\pm}_{\ell\ell'}$ are the matrix elements for the coordinate and the exchange and spin orbital interaction, respectively, on the representation $\ell = n,k$ on which the operator $\bar{H}^1$ is diagonal. The density matrix method is then used to derive the kinetic equation for the scattering of electrons on the spin irregularities. However, it is found that, as in the case of scattering on phonons (Yu.P. Irkhin, V. G. Shavrov, ZhETF, 1962, 42, No.5), the scattering terms do not contribute to the spontaneous Hall effect. As before, the anomalous Hall coefficient R_s is proportional to the square of the electrical resistivity at temperatures much greater than the Debye temperature. Impurity scattering does not contribute significantly at these temperatures. It is noted that the recent work of J. M. Lavine (Phys. Rev., 1961, 123, 1273) has shown that for very pure nickel at temperatures in excess of the Debye temperature $R_s \sim \rho^{1.97}$, which is in agreement with the present theory. However, even a small amount of impurities having practically no effect on the resistivity do have an appreciable effect on the Hall constant, leading to a considerable departure from the above quadratic equation. The reason for this is said to be completely obscure at present.

ASSOCIATIONS: Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo (Ural State University imeni A.M.Gor'kiy)
Institute fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

SUBMITTED: June 12, 1962

ABEL'SKIY, Sh.Sh.; IRKHIN, Yu.P.

Scattering in spin heterogeneities and the spontaneous Hall effect in ferromagnetic materials. Fiz.met.i metalloved. 14 no.5:641-645 N '62. (MIRA 15:12)

1. Ural'skiy gosudarstvennyy universitet im. A.M.Gor'kogo i Institut fiziki metallov AN SSSR.
(Electrons—Scattering) (Hall effect)

45373
S/056/63/044/001/039/067
B102/B186

24.7600

AUTHORS: Abel'skiy, Sh. Sh., Irkhin, Yu. P.

TITLE: Theory of the spontaneous Hall effect in ferromagnetic semiconductors

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 1, 1963, 230 - 234

TEXT: This theory as previously developed for metals (cf., eg., Luttinger Phys. Rev. 112, 739, 1958) is now applied to ferromagnetic semiconductors in order to check the validity of the relations $R_s(T) \sim \varrho^n(T)$ and $R_s(T) \sim M_s^2(T)$. The temperature dependence of the spontaneous Hall constant, $R_s(T)$, is calculated assuming carrier scattering from impurities and phonons. The mean free path of the carriers is assumed to be large enough so that the usual transport theory can be applied. The results obtained by Luttinger on solving the kinetic equations obtained from the density matrices are used by the authors taking account only of the difference in carrier statistics. Thus, in the case of a nondegenerate semiconductor;

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for the Hall coefficient $R_s = -\sigma_{yx}/4\pi M_s \sigma^2$ the relation

$$R_s = -\frac{E_{s0}}{4\pi\Delta^2}\frac{\mu_B \sigma^{-1} c}{1 \mp {}^3/_5 \bar{\varphi}/\varkappa T}\left|\frac{m}{m^*}\right|\frac{\rho}{M_s^0}. \qquad (12)$$

is obtained; $u = KR_0 \sigma c$, where R_0 is the common Hall coefficient, $K \sim 1$, M_s^0 is the spontaneous magnetization at $T = 0$, $E_{s0} = \mu_B H^{s0} < 0$ is the spin-orbital interaction, and the components of the conductivity tensor are $\sigma_{xy} = \sigma_{xy}^{phon.}(1 + \frac{3}{5}\bar{\varphi}/\kappa T)^{-1}$; Δ is the energy gap. (12) proves to be very suitable for comparisons with experiment. Such a comparison is made under the assumptions that the carrier mean free paths are large, that only one type of carriers exists and that the semiconductor is nondegenerate. (12) is found to be in qualitative agreement with experimental data.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of the Physics of Metals of the Academy of Sciences USSR)

SUBMITTED: July 12, 1962

ACCESSION NR: AP4039646 S/0181/64/006/006/1635/1644

AUTHORS: Irkhin, Yu. P.; Abel'skiy, Sh. Sh.

TITLE: Scattering at spin discontinuities and the spontaneous Hall effect in ferromagnetics

SOURCE: Fizika tverdogo tela, v. 6, no. 6, 1964, 1635-1644

TOPIC TAGS: ferromagnetic material, Hall effect, Hall coefficient, temperature dependence, electron scattering, spin orbit coupling

ABSTRACT: The spontaneous Hall effect in ferromagnetics of the iron group (caused by scattering of conduction electrons at spin discontinuities) was investigated, taking into account both the inherent spin-orbit interaction of the magnetic electrons and the interaction of the conduction electron orbital angular momentum and the magnetic electron spins. The kinetic equation is derived by writing the equation of motion for the second-quantized density matrix in which the Hamiltonian is of the form: $\mathcal{H}^{r} = \mathcal{H}_{0}^{s} + \mathcal{H}_{0}^{d} + \mathcal{H}_{0}^{sd} + \mathcal{H}_{1}^{sd} + \mathcal{H}^{r}$.

The terms in the Hamiltonian are as follows: $\mathcal{H}^{s} = \sum_{i} \varepsilon_{i} a_{i}^{+} a_{i}$, $\mathcal{H}^{d} = \sum \varepsilon_{n} a_{n}^{+} a_{n}$; where $\varepsilon_{i} \equiv \varepsilon_{k\sigma}$

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and $\mathcal{E}_n$ are the energies of the conduction electrons and the magnetic electrons in the k-representation (k is the quasimomentum, σ is the eigenvalue of the spin operator $\hat{s}^z$), and a^+ and a are the creation and annihilation operators. The spin-orbit interaction

$$\mathcal{H}_0^{sd} = \sum L(l_f^z, s_f^0, \mathbf{k}, \mathbf{k}', \sigma, \sigma') a_{\mathbf{k}'\sigma}^+ a_{\mathbf{k}\sigma'} e^{i(\mathbf{k}-\mathbf{k}')\mathbf{R}_f} - \sum l(l_f^z, k_z k_z') e^{-i(\mathbf{k}'-\mathbf{k})\mathbf{R}_f} [s_f^z (a_{\mathbf{k}'+}^+ a_{\mathbf{k}+} - a_{\mathbf{k}'-}^+ a_{\mathbf{k}-}) + s_f^+ a_{\mathbf{k}'-}^+ a_{\mathbf{k}+} + s_f^- a_{\mathbf{k}'+}^+ a_{\mathbf{k}-}],$$

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$$\mathcal{H}_1^{sl} = \frac{\lambda}{\Delta\varepsilon} \sum L'(l_f^{\alpha}, s_f^{\beta}, \mathbf{k}, \mathbf{k}', \sigma, \sigma') e^{i(\mathbf{k}-\mathbf{k}')\mathbf{R}_f} a_{\mathbf{k}'\sigma}^{+} a_{\mathbf{k}\sigma'} -$$

$$- i\frac{\lambda}{\Delta\varepsilon} \sum I'(l_f^{z}, k_\beta k_\beta')(k_y k_x' - k_x k_y')(a_{\mathbf{k}'+}^{+} a_{\mathbf{k}+} + a_{\mathbf{k}'-}^{+} a_{\mathbf{k}-}) e^{i(\mathbf{k}-\mathbf{k}')\mathbf{R}_f} s_f^{z},$$

$$I(l_f^{z}, k_\alpha k_\alpha') = \frac{4\pi e^2}{5V}\left\{\left[\frac{1}{12} l_f^{z}(l_f^{z} - 1) + \frac{2}{3} l_f^{z}(4 - l_f^{z})\right] R_2^{ex}(00) + \right.$$

$$+ \frac{3}{2} R_1^{ex}(11)\left\{\frac{1}{12} l_f^{z}(l_f^{z} - 1)[(\mathbf{k}\mathbf{k}') - k_z k_z'] + \right.$$

$$\left. + \frac{1}{3} l_f^{z}(4 - l_f^{z})[(\mathbf{k}\mathbf{k}') + k_z k_z']\right\},$$

$$I'(l_f^{z}, kk') = \frac{2\pi e^2}{5V} R_1^{ex}(11) l_f^{z}(4 - l_f^{z}), \quad \alpha, \ \beta = z, \pm,$$

where R_f is the radius vector of the f-th lattice point, λ is the constant of the spin-orbit interaction, $\varepsilon_{mk\sigma} - \varepsilon_{m'k\sigma'} = \Delta\varepsilon$ = const, $s^{\pm} = s_x \pm i s_y$, $l^{\pm} = l_x \pm i l_y$

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ACCESSION NR: AP4039646

and the radial parts of the exchange integrals R^{ex} were found by J. Kondo. (Progr. Theor. Phys., 27, 772, 1962). The interaction with the external field

$\mathcal{H}^{F} = eF_{\alpha} \sum r_{ll'}^{\alpha} a_l^{+} a_{l'}$ where $F_{\alpha} = F_{\alpha} e^{\eta t}$ is the adiabatically applied

external electric field. The spontaneous Hall coefficient can be written in the form: $R_s = \pm \frac{3}{16} \frac{\lambda_{eff}}{\varepsilon_F} \frac{\rho_{mag}}{M_s(0)}$, (+ for electrons, - for holes), where ε_F is the Fermi energy. The magnetic part of the resistivity $\rho_{mag} = \frac{9\pi}{2} \frac{|m| J^2}{ne^2\hbar\varepsilon_F} (\sigma^2 - \delta^2)$,

where $\delta = \frac{M_s(T)}{M_s(0)} s_p$ and M_s is the spontaneous magnetization. Here

$\lambda^{eff} = \lambda \frac{I}{\Delta\varepsilon} \frac{2}{3} I_1 + \lambda'_p$ where $I_1 = \left[\frac{1}{12} l_z^2 (l_z^2 - 1) + \frac{2}{3} l_z^2 (4 - l_z^2) \right]^2 l_z^2 (4 - l_z^2)$.

In the plane wave approximation for the conduction electrons $\lambda' \sim 10^{-16}$ erg, roughly an order of magnitude smaller than the first term. A rough estimate of the magnitude of R_s gives 10^{-11}-10^{-12} ohm cm/gauss, which corresponds to

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experimental data for Ni. For spin $s=\frac{1}{2}$ the temperature dependence of R_s can be expressed in the form: $R_s = A[M_s^2(0) - M_s^2(T)]$, in agreement with experimental data of several works. The authors thank Ye. A. Turov for valuable critical remarks and S. V. Vonsovskiy for interest in the work. Orig. art. has: 50 equations.

ASSOCIATION: Institut fiziki metallov AN SSSR Sverdlovsk (Institute of Physics of Metals, AN SSSR)

SUBMITTED: 03Dec63 ENCL: 00

SUB CODE: SS NO REF SOV: 012 OTHER: 012

Card 5/5

APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R000100120017-9"

Card 2/2

L 41754-65

SUBMITTED: 27Mar64 ENCL: 00 SUB CODE: MM, GP

ABEL'SON, F.

PA 253T93

USSR/Electronics - Television — Feb 53
Long-Distance Reception

"Long Distance Television Reception," G. Makhov, Dyagileva, Ryazan' Oblast, and F. Abel'son, Skomorokhi, Zhitomir Oblast

Radio, No 2, pp 47-48

Makhov describes reception obtained with a T-1 Moskvich receiver located in Dyagilevo 172 km from Moscow. A 2-level antenna was used in conjunction with a 3-stage amplifier. Abel'son obtained good results with a T-2 Leningrad receiver in Skomorokhi, 140 km from Kiev.

253T93

ABEL'SON, R. TS.

USSR.

The determination of carotene. R. Ts. Abel'son. *Trudy Vsesoyuz. Nauch.-Issledovatel. Vitamin. Inst.* 4, 137-42 (1953).—Practically no difference was observed between 3-hr. and 30-min. sapon. of the benzene exts. of the materials used. Direct sapon. of the plant material resulted in a more complete carotene ext. However, carotene can be detd. in plant tissue and without sapon. The use of Al_2O_3 purified by boiling for 30 min. in distd. H_2O and dried to const. wt. is recommended for chromatographic sepn. of carotene. B. S. Levine

Effect of soil moisture and light on the crop and accumulat...

ABEL'SON, R.TS.

Stability of carotene in plants. Trudy VNIVI 6:176-180 '59.
(MIRA 13:7)

1. TSentral'naya biologicheskaya stantsiya Vsesoyuznogo nauchno-issledovatel'skogo vitaminnogo instituta.
(CAROTENE)

ABEL'SON, Yu.O.; LEYBSON, N.L.; TSERINGER, T.B.

Effect of the functional state of the higher segments of the central nervous system on the development of micturition following a heavy water intake. Fiziol.zhur. 45 no.4:476-482 Ap '59. (MIRA 12:6)

1. From the department of physiology, I.P.Pavlov Medical Institute, Leningrad.
(DIURESIS, physiol.
water diuresis, eff. of CNS funct. (Rus))
(CENTRAL NERVOUS SYSTEM, physiol.
eff. on water diuresis (Rus))

VOZNESENSKIY, Yevgeniy Pavlovich; BROVCHENKO, Ignatiy Savel'yevich; Prinimal uchastiye TIMONIN, M.G.; MARDER, I.M., retsenzent; RYZHOV, A.D., retsenzent; ABELTIN'SH, A.Ya., retsenzent; AKIMOVA, L.D., red.; PECHENKINA, O.P., tekhn. red.

[Accounting in food industry enterprises] Bukhgalterskii uchet na predpriiatiiakh pishchevoi promyshlennosti. Moskva, Pishchepromizdat, 1963. 342 p. (MIRA 17:2)

L 39918-66 EWT(1)/T JK

ACC NR: AP6029376 SOURCE CODE: UR/0427/66/019/002/0065/0070

AUTHOR: Ayrapetyan, V. G.; Abelyan, K. Ye.; Karapetyan, D. K.

ORG: Armenian Scientific Research Institute of Animal Husbandry and Veterinary Medicine (Armyanskiy nauchno-issledovatel'skiy institut zhivotnovodstva i veterinarii)

TITLE: Electron microscope study of the virus of Aujeszky's disease in tissue culture

SOURCE: Biologicheskiy zhurnal Armenii, v. 19, no. 2, 1966, 65-70

TOPIC TAGS: electron microscopy, virus, rabbit, histology, cytoplasm, virology, animal disease

ABSTRACT: The authors present data on the ontogenesis of the virus of Aujeszky's disease in a tissue culture of newborn rabbit kidney. The investigation showed that the virus of Aujeszky's disease was not observed in the course of the first 8-9 hours. Then in the nucleus of the cell the first stages of formation of viroplasts or virus "matrix" appear, and immature virus particles in their "crystalline" package form from them. The virus acquires an external lining as it passes through the nuclear membrane. In the cytoplasm mature virus particles are formed which soon leave the cell, destroying it in many places. This entire process lasts 16-18 h. Size of mature virus particles: 1500-1800 Å. Orig. art. has: 8 figures. [JPRS: 36,932]

SUB CODE: 06 / SUBM DATE: 29Oct65 / ORIG REF: 003 / OTH REF: 004

Card 1/1

ACCESSION NR: AP5017614 UR/2582/65/000/014/0245/0266

AUTHOR: Abelyan, N. G. (Yerevan); Bazmadzhyan, R. A. (Yerevan); Gabriyelyan,

... is the second part of a paper describing an algorithm for ... translation developed ...

... followed by a description of the scheme of the algorithm ...

Card 1/2

ASSOCIATION: None

Card 2/2

ABEN, Kh. [Aben, H.], kand.tekhn.nauk

Experimental determination of the parameters of complex optical systems. Izv. AN Est. SSR. Ser. fiz.-mat. i tekh.nauk no.4:329-343 '64. (MIRA 18:4)

1. Academy of Sciences of the Estonian S.S.R., Institute of Cybernetics.

Country : USSR

Category : Farm Animals. Q-1
General Problems.

Abs. Jour : Ref Zhur-Biol., No 16, 1958, 72967

Author : Abel'yants, G. S.

Institut. : Kiev Veterinary Institute.

Title : Meniscus-Connective Apparatus of the Knee in Pigs, Horses and Cattle and Its Role in the Functioning of the Joint.

Orig Pub. : Tr. Kiyevsk. vet. in-ta, 1957, 13, 269-277

Abstract : No abstract.

Card: 1/1

ABEN, Kh. [Aben, H.]

Use of the photoelasticity method in determining an axisymmetrical state of stress by direct illumination of the model. Izv. AN Est. SSR. Ser. fiz.-mat. i tekh. nauk 14 no.3:428-434 '65. (MIRA 18:11)

1. Institut kibernetiki AN Estonskoy SSR.

ABEN, Kh. K.

AUTHOR: Aben, Kh. K. 23-58-1-1/10

TITLE: The Elastic Stability and Post-Buckling Behaviour of a Long Cylindrical Panel Under Shearing (Ustoychivost' i zakriticheskiye deformatsii dlinnoy tsilindricheskoy paneli pri sdvige)

PERIODICAL: Izvestiya Akademii nauk Estonskoy SSR, Seriya tekhnicheskikh i fiziko-matematicheskikh nauk, 1958, Nr 1, pp 3-6 (USSR)

ABSTRACT: The article deals with the problem of a long cylindrical panel which is being subjected to longitudinal shearing. In order to determine the maximum load, the author derives a system of linear equations, and the results of computations are presented graphically in curves of post-buckling behaviour. There are 2 figures and 1 table.

Card 1/2

23-58-1-1/10

The Elastic Stability and Post-Buckling Behaviour of a Long Cylindrical Panel Under Shearing.

ASSOCIATION: Institut energetiki Akademii nauk Estonskoy SSR (Institute of Power Engineering of the Estonian SSR Academy of Sciences)

SUBMITTED: August 31, 1957

1. Cylindrical surfaces—Stability Theory

Card 2/2

Aben, Kh. K.

PHASE I BOOK EXPLOITATION SOV/4042

Leningrad. Universitet

Polyarizatsionno-opticheskiy metod issledovaniya napryazheniy; trudy konferentsii 13-21 fevralya 1958 goda (Optical Polarization Method for Stress Analysis; Transactions of the Conference of February 13-21, 1958). [Leningrad] Izd-vo Leningradskogo univ., 1960. 451 p. Errata slip inserted. 2,400 copies printed.

Resp. Ed.: S.P. Shikhobalov; Ed.: Ye.V. Shchemeleva; Tech. Ed.: S.D. Vodolagina; Editorial Board: S.G. Gutman, L.M. Kachanov, V.M. Krasnov, T.D. Maksutova, N.I. Prigorovskiy, V.M. Proshko, N.S. Rezanov, and Ye.I. Ekel'shteyn.

PURPOSE: This collection of 58 articles is intended for scientists and engineers concerned with experimental stress analysis of machine parts and structural components.

COVERAGE: The collection contains reports presented at the conference on optical polarization methods in stress analysis held February 13 - 21, 1958, in Leningrad and attended by 324 delegates including representatives of the People's Republic of China, the Polish People's Republic, the German Democratic Republic, and the Republic of Czechoslovakia. The reports discuss general theoretical problems and new methods of investigation and describe apparatus and materials used in the optical method. Solutions of specific two-dimensional and three-dimensional problems occurring in shipbuilding, aircraft design, engine construction, in various branches of heavy and precision machine design, in mining, metallurgy, hydraulic structures, railroad transport, in structural mechanics, geodynamics, in the control of stresses in products of the glass and electronic industry, etc., are given. Solution of the three-dimensional problem by means of the method of photoelasticity is introduced and the use of this method for the solution of problems associated with plasticity, creep, dynamics, hydrodynamics, etc., is demonstrated. Reports previously published elsewhere are printed here in abbreviated form. No personalities are mentioned. References are found at the end of 47 of the reports.

Optical Polarization Method (Cont.) SOV/4042

Card 6/12

S/023/60/000/002/001/003
C 111/ C 333

AUTHOR: Aben, Kh., Candidate of Technical Sciences

TITLE: On the Complete Determination of the Three-dimensional State of Stress by Photoelastic Methods

PERIODICAL: Izvestiya Akademii nauk Estonskoy SSR. Seriya tekhnicheskikh i fiziko-matematicheskikh nauk, 1960, No. 2, pp. 134-144

TEXT: The author proposes a new method for the complete determination of the three-dimensional state of stress in frozen slices of a photoelastic model. In his preceding paper (Ref.7) the author has shown that a normal and two oblique transilluminations of a slice with simultaneous determination of the phase difference are sufficient to determine five independent components of the stress. Now he uses the formulas obtained in (Ref.7) for the complete determination of the state of stress. Besides the application of the usual polariscope the author considers the application of the general method of Ye. S. Fedorov. By an example the accuracy of the method proposed is verified. The author thinks that he can conclude that his method be very effective for the complete determination of the state of stress.

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S/023/60/000/002/001/003
C 111/ C 333

On the Complete Determination of the Three-dimensional State of Stress by Photoelastic Methods

An advantage of the method is the possibility of an independent determination of the state of stress in every point. For the determination of the stresses in a plane only one slice must be investigated. The absolut phase differences need only be measured for a normal transillumination of the slice.

The proposal of measuring the phase differences is due to B. M. Zuyev (Ref.11) who constructed a special interferometer for this purpose.

The author mentions V. M. Krasnov and Ye. S. Fedorov. There are 11 references: 3 Soviet, 2 American, 2 German, 1 French, 1 English, 1 Swiss and 1 Czech.

ASSOCIATION: Institut energetiki Akademii nauk Estonskoy SSR (Institute of Power Engineering of the Academy of Sciences Estonskaya SSR)

SUBMITTED: June 10, 1959

67967

24.3300

S/023/60/009/01/004/011
D031/D003

AUTHOR: Aben, Kh., Candidate of Technical Sciences

TITLE: The Application of the Method of Oblique Incidence in Photoelasticity

PERIODICAL: Izvestiya Akademii nauk Estonskoy SSR, Seriya tekhnicheskikh i fiziko-matematicheskikh nauk, 1960, Volume IX, Nr 1, pp 33 - 46 (USSR)

ABSTRACT: The method of oblique incidence represents one of the most effective means of separation of principal stresses when examining the state of plane stresses by the method of photoelasticity. In case of a three-dimensional stress this method permits to determine the tangential stresses and differences in the normal stresses. The article systematically expounds the method of oblique incidence. Formulas for general and some specific states of stress have been derived. It

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S/023/60/009/01/004/011
D031/D003

The Application of the Method of Oblique Incidence in Photoelasticity

is assumed that by oblique incidence retardation values as well as parameters of isoclinics are determined. In addition to the use of common polariscope the application of the universal method of Fedorov is examined. The author also deals with the problem of determining data for the numerical integration of equilibrium equations. For the plane state of stress an analysis of the errors of various oblique incidence methods is presented (Table 2). It is shown that in this case the formulas derived (42) are the most effective. There are 2 tables and 20 references, of which 9 are Soviet, 8 English, 2 French and 1 German.

ASSOCIATION: Institut energetiki Akademii nauk Estonskoy SSR

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67967

S/023/60/009/01/004/011
D031/D003

The Application of the Method of Oblique Incidence in Photoelasticity

(Institute of Power Engineering of the Academy of Sciences of the Estonskaya SSR)

SUBMITTED: May 6, 1959

4

Card 3/3

ABEN, Kh.K. (Tallin)

Optical phenomena in laminar photoelastic models. Izv.AN SSSR.Otd. tekh.nauk.Mekh.i mashinostr. no.5:108-111 S-O '61. (MIRA 14:9)
(Photoelasticity)

ABEN, Kh. [Aben, H.], kand.tekhn.nauk

Optical phenomena arising in the passage of light through a pile of birefringent plates. Eesti tead.akad.tehn.füüs. no.1:16-23 '62.

1. Academy of Sciences of the Estonian S.S.R., Institue of Cybernetics.

ABEN, Kh.K.

Theory of the nonideal circular polariscope. Opt.i spektr. 13 no.2:256-258 Ag '62. (MIRA 15:11)
(Polariscope)

ABEN, Kh.K.

Theory of a composite quarter-wave plate. Opt.i spektr. 13 no.5:746-750 N '62. (MIRA 15:12)
(Polariscope)

ABEN, Kh. [Aben, H.], kand.tekhn.nauk

Method for measuring phase differences by means of a synchronous polariscope. Eesti tead akad tehn fuus 11 no.3:167-171 '62.

1. Academy of Sciences of the Estonian S.S.R., Institute of Cybernetics.

ABEN, Kh.K. (Tallin)

Nomogram for the interpretation of photoelastic phenomena in case of a uniform rotation of quasi major directions. Izv. AN SSSR. Mekh. i mashinostr. no.6:174-175 N-D '63. (MIRA 17:1)

ABEN, Kh. [Aben, H.], kand. tekhn. nauk

Complete determination of stresses in layered photoelastic models [with summary in English]. Izv. AN Est. SSR, Ser. fiz.-mat. i tekh. nauk 12 no.1:38-43 '63. (MIRA 16:5)

1. Academy of Sciences of the Estonian S.S.R., Institute of Cybernetics.
(Photoelasticity) (Strains and stresses)

ABEN, Kh. [Aben, H.], kand. tekhn. nauk

Use of the generalized Senarmont method in measuring double refraction in a flow. Izv. AN Est. SSR. Ser. fiz.-mat. i tekh. nauk 12 no.4:369-375 '63. (MIRA 17:1)

1. Academy of Sciences of the Estonian S.S.R., Institute of Cybernetics.

S/051/63/014/002/009/026
E032/E114

AUTHOR: Aben, Kh.K.

TITLE: An approach to the determination of phase differences with the aid of phase plates

PERIODICAL: Optika i spektroskopiya, v.14, no.2, 1963, 240-246

TEXT: Various methods for the determination of phase differences with the aid of phase plates are reviewed from the point of view of the theory of characteristic directions as given by the author in a previous paper (Izv. AN ESSR, ser.fiz.-mat. i tekhn.nauk,11,1962, 16). The following methods are considered: 1) the method of H.de Sénarmont (Ann.chim.phys.,v.73,1840,337), 2) H.L.Tardy's method (Rev.Opt.,v.8,1929,59), and 3) the synchronous polariscope method in which the crossed polarizer and analyzer rotate in synchronism. A new generalization of de Sénarmont's method is given. It involves the determination of the polarizer orientation for which the light leaving the phase plate is linearly polarized. The method is similar to that given by H.T.Jessop (Brit.J.Appl.Phys.,v.4,1953, 138). Some useful practical formulas are also given for the synchronous polariscope method. There is 1 figure.

SUBMITTED: April 17, 1962

Card 1/1

ABEN, Kh.K.

Some problems of superposition of two birefringent plates. Opt. i spektr. 15 no.5:682-689 N '63. (MIRA 16:12)

ACCESSION NR: AP4043888 S/0179/64/000/004/0040/0046

AUTHOR: Aben, Kh. K.

TITLE: Investigation of three-dimensional photoelastic models

SOURCE: AN SSSR. Izvestiya. Mekhanika i mashinostroyeniye, no. 4, 1964, 40-46

TOPIC TAGS: elastron spectroscopy, stress measurement, photoelastic stress measurement, photoelastic model, light transmission, light refraction, birefringence

ABSTRACT: General equations for the photoelastic method are evolved which are not as complicated as those in the literature. For example, in publications by V. L. Ginzburg, the passage of light through an anisotropic nonhomogeneous medium is described by

$$\frac{d^2E_1}{dz^2}+\frac{\omega^2}{c^2}D_1=0, \quad \frac{d^2E_2}{dz^2}+\frac{\omega^2}{c^2}D_2=0 \qquad (1)$$

where E and D are the vector components of voltage and inductance, ω is the angular velocity and z is the direction of light transmission. By transformations:

$$\frac{dB_1}{dz}=-iC\sigma_{11}B_1-iC\sigma_{12}B_2, \quad \frac{dB_2}{dz}=-iC\sigma_{21}B_1-iC\sigma_{22}B_2 \qquad (2)$$

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ACCESSION NR: AP4043888

These equations are the general ones for the photoelastic method when light oscillations are described in fixed coordinates. If we now consider that the quasi-predominant directions form an angle $\varphi(z)$ with the fixed coordinates:

$$B_1 = B_1' \cos\varphi - B_2' \sin\varphi, \qquad B_2 = B_1' \sin\varphi + B_2' \cos\varphi \tag{3}$$

Substituting relationship (3) in equation (s)

$$\frac{dB_1'}{dz}\sin\varphi + B_1'\frac{d\varphi}{dz}\cos\varphi + \frac{dB_2'}{dz}\cos\varphi - B_2'\frac{d\varphi}{dz}\sin\varphi + \tag{4}$$
$$+ iC\sigma_{21}(B_1'\cos\varphi - B_2'\sin\varphi) + iC\sigma_2(B_1'\sin\varphi + B_2'\cos\varphi) = 0$$

Multiplying the first equation by the sine of the angle and the second equation by the cosine of the angle, and then subtracting:

$$\frac{dB_1'}{dz} = -iC\sigma_1 B_1' + \frac{d\varphi}{dz}B_2', \qquad \frac{dB_2'}{dz} = -\frac{d\varphi}{dz}B_1' - iC\sigma_2 B_2'. \tag{5}$$

This equation is close to the ones published by R. D. Mindlin and L. E. Goodman, but differs significantly from those evolved by R. O'Rourke and V. M. Proshko. The author then proves the equivalence of this equation to the Neumann equations, which are the classical approximations in the photoelastic theory. Soving equation (5) in a different

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ACCESSION NR: AP4043888

way, the Neumann equations are obtained. Several individual cases are considered in the paper. First, a uniform stressed condition is transformed and solved. Then, quasi-predominant stresses are allowed to change arbitrarily with a fixed direction. Finally, the uniform rotation of quasi-predominant stresses at a constant value is considered and solved. According to R. C. Jones, when polarized light is passed through photoelastic models, the components of the light oscillations at the exit point are linear functions of the components at the input point. The characteristic direction method for optical systems includes integration of a matrix between the stress components and certain parameters. For uniform rotation of quasi-predominant directions, numerical solution of the differential equations yields:

$$U = \begin{Vmatrix} \cos\psi + iS^{-1}\sin\psi & RS^{-1}\sin\psi \\ -RS^{-1}\sin\psi & \cos\psi - iS^{-1}\sin\psi \end{Vmatrix} \quad (6)$$

$$(R = 2\varphi_0\Delta^{-1},\ S = \sqrt{1+R^2},\ \psi = {}^1/_2 S\Delta)$$

Orig. art. has: 36 equations.

ASSOCIATION: none

ACCESSION NR: AP4043888

SUBMITTED: 15Jan64

ENCL: 00

SUB CODE: OP, ME

NO REF SOV: 011

OTHER: 011

Card 4/4