GVOZDKOVA, Ye.M., Cand Med Sci -- (diss) "Effect of brucellosis
infection/on the female reproductive system." Kuybyshev, 195 ,

17 pp including cover (Kuybyshev State Med Inst) 250 copies

(KL, 35-59, 116)

- 59 -

Gvozdova, L. G.

Determination of vitamin B$_2$ (riboflavine) in urine. E. M. Maslenikova and L. G. Gvozdova (Nutrition Inst., Acad. Med. Sci. U.S.S.R., Moscow). *Voprosy Pitaniya* 15, No. 2, 25-7(1956).—A simple method is presented for the detn. of riboflavine (I) in urine under clinical lab. conditions: collect the urine excreted during 24 hrs. in a dark bottle contg. 100 ml. of 50% AcOH soln.; take 20-25 ml. of the urine for the immediate use, dilg. it 5-10 times if the I concn. is expected to be too high (after I administration). To 5 ml. urine sample add 1 ml. 30% NaOH and 5 ml. distd. water, boil the mixt. for 10 min. to destroy I, chill, neutralize with 20% H$_2$SO$_4$ (litmus paper), filter if necessary, and bring to proper vol. Take 3 flat-bottom, nonfluorescing test tubes, add to one 1 ml. of the heat-treated urine soln. (control), to another 1 ml. of the correspondingly dild. original urine, and to the third one 1 ml. of a standard I soln. (10 γ/ml.). To each tube add 5 ml. distd. water, 0.5 ml. glacial AcOH, 1.5 ml. 4% KMnO$_4$, mix well, and to the second tube add then drop-by-drop H$_2$O$_2$ until full clarity; to the other 2 tubes add the same amt. of H$_2$O as to the exptl. sample and let the tubes stand for 10-15 min. Dil. the tube contg. standard I soln. with distd. water to 20 ml. (final concn. of I = 0.5 γ/ml.) and pour into a microburet. Titrate the heat-treated urine sample with the I soln. until the fluorescence will be of the same intensity as in the normal urine contg. I (2nd tube). The comparison of the fluorescence intensity is made under the illumination of a Hg-quartz lamp and a light filter OS-12 of 550 mμ. The amt. of I excreted/day (X) is then calcd. by the formula: $X = (a.b.c.d)/e$, where a = ml. of the standard I soln. used up; b = the amt. of I/ml. of the standard soln.; c = diln. factor; d = vol. (ml.) of the daily urine; and e = the amt. (ml.) of the dild. urine sample taken for the detn. The sensitivity of the method is 0.1 γ I/ml. urine and the exptl. error found was ±2-10%. R. W.

MASLENIKOVA, Ye.M.; AKSENOVA, N.N.; GVOZDOVA, L.G. (Moskva)

Studying vitamin B2 (riboflavin) metabolism in nonhealing wounds
[with summary in English]. Vop. pit. 16 no.3:10-15 My-Je '57.
(MLRA 10:10)

1. Iz laboratorii izucheniya vitaminov (zav. - prof. V.V.Yefremov)
Instituta pitaniya AMN SSSR i Instituta khirurgii imeni A.V.Vishnev-
skogo AMN SSSR, Moskva.
        (VITAMIN B2 metabolism,
            in burns & ulcers (Rus))
        (BURNS, metabolism,
            vitamin B2 (Rus))
        (ULCER, metabolism,
            same)

MASLENIKOVA, Ye.M.; TIKHOMIROVA, A.N.; KHAYKO, Ye.A.; PENAR, O.I.; GVOZDOVA,
   L.G.; SOLOV'YEVA, L.Ya.; KULICHENKO, Ye.V.; GEL'FEMBEYN, A.Sh.

   Study of the metabolism of vitamins in workers in the hot shop of a
   metallurgical factory. Vop. pit. 19 no.2:3-9 Mr-Ap '60.
                                           (MIRA 14:7)
   1. Iz laboratorii izucheniya vitaminov (zav. - prof. V.V.Yefremov)
   Instituta pitaniya AMN SSSR, Moskva.
            (VITAMINS)   (HEAT--PHYSIOLOGICAL EFFECT)

MASLENIKOVA, Ye.M.; GVOZDOVA, L.G.; LEVCHENKO, Ye.A.; MOIN, M.L.

Studies on the metabolism of vitamin B2 (riboflavin) and its
therapeutic use in protracted nonhealing wounds. Khirurgiia
36 no.11:86-91 N '60.   (MIRA 13:12)

1. Iz laboratorii izucheniya vitaminov (zav. - prof. V.V.
Yefremov) Instituta pitaniya (dir. - chlen-korrespondent AMN
SSSR prof. O.P. Molchanova) AMN SSSR i Moskovskogo ortopedi-
cheskogo gospitalya (nach. - doktor med.nauk S.N. Voskresenskiy)
Ministerstva zdravookhraneniya SSSR.
        (ULCER)   (WOUNDS)   (RIBOFLAVIN)

GVOZDOVA, L. G.,

"Adequate Vitamin B6 Intake in Patients Suffering from Atherosclerosis"

Report to be presented at Medical Society of J. E. PURKYNE, Czech, Vitaminological Cong., Prague, Czech., 3-6 Jun 63

Influence of long-term introduction of vitamins into the ration on white rats, general condition and longevity. V. V. EFREMOV, A. N. PROKHOROVA, E. M. MASLENIKOVA, N. A. KRAPKO, O. I. PENAR and L. G. GVOZDOVA, *Institute of Nutrition, A.M.S., Moscow, U.S.S.R.*

In our observations, made on 400 white rats for about four years, we studied the influence of a complex of thirteen vitamins added to the ration of the animals since their weaning from females to their death. The rats were divided into groups which received additionally (a) vitamin complex (VC), (b) vitamin complex without vitamin E, (c) only vitamin B_1, (d) only vitamin B_2. We studied the influence of these additions on (1) the weight of body and its length. Animals receiving VC increased them faster. (2) The consumption of feed per 100 g. of body-weight by the rats receiving VC was, on the contrary, less. (3) Excretion of eight vitamins with urine and their content in organs. In urine the rats of the VC group of all ages had these indices higher than control animals. (4) Working capacity; the VC rats gnawed several times as much wood a day as animals of other groups. (5) Fertility and weight of litter; the number of litters from VC females, number of young rats in them, and their weight were greater than those from control rats. (6) The content of cholesterol in blood at the age of 1 year increased in all groups, but most of all in control group of rats. (7) The VC animals had a much lower morbidity and death-rates than control rats; the VC rats had the greatest duration of life of individual animals, that of animals which received B_1 and B_2 vitamins only was less, and rats of control group had the least longevity.

6th International Congress on Nutrition, Edinburg
9-15 August 1963

KOROBKINA, G.S.; NEMENOVA, Yu.M.: PARAMONOVA, E.G.; GVOZDOVA, L.G.
        GLUSHNEVA, Z. Ya.

        Effect of diets of different qualitative composition on the
        clinical course of disease and lipid metabolism in patients
        with coronary atherosclerosis. Vop.pit. 22 no.1:17-22 Ja-F'63
                                        (MIRA 16:11)

        1. Iz Instituta pitaniya AMN SSSR, Moskva.

KOROBKINA, G.S.; NEMENOVA, Yu.M.; PARAMONOVA, E.G.; GVOZDOVA, L.G.;
KALININA, N.N.; GLUSHNEVA, Z.Ya.; TUMARKINA, T.I.; MIRER, M.L.

Effect of a phosphatide-enriched diet on cholesterol metabolism in
patients with a history of myocardial infarct. Vop. pit. 23 no.2:
49-53 Mr-Ap '64.

(MIRA 17:10)

1. Iz serdechno-sosudistogo otdeleniya kliniki lechebnogo pitaniya
(zav. - doktor med. nauk V.P. Sokolovskiy), otdela tekhnologii
(zav. - prof. D.I. Lobanov) i otdela fiziologii (zav. - chlen-korres-
pondent AMN SSSR prof. O.P. Molchanova) Instituta pitaniya AMN SSSR,
Moskva.

GVOZDOVA, L.G.

Excretion of 4-pyridoxic acid with urine in practically healthy persons. Vop. pit. 24 no.2:37-40 Mr-Ap '65.
(MIRA 18:8)

1. Otdel vitaminologii (zav. - prof. V.V.Yefremov) Instituta pitaniya AMN SSSR, Moskva.

GVOZDOVA, L.G.

Excretion of 4-pyridoxic acid with the urine in patients with
coronary atherosclerosis. Vop.pit. 24 no.3:86 My-Je '65.
(MIRA 18:12)

1. Otdel vitaminologii (zav. - prof. V.V.Yefremov) Instituta
pitaniya AMN SSSR, Moskva. Submitted May 7, 1964.

GVOZDEVA, L. G.

Ukrayins'kyy fizichnyy zhurnal, v. 8, no, 4, Apr 1963,

A scientific conference devoted to problems of evaporation, combustion and gas dynamics of dispersed systems was held at Odessa State University, I. I. Mechinikov from 1 to 6 October 1962.

Sixty-five papers were presented. The conference dealt with the theory and practice of production and stability of fuels and the effect on these processes of various physicochemical factors on the working processes in combustion chambers of various power plants. Some of the titles were "Investigating oxidation process of hydrogen-air mixtures by oxygen from compressed air," S. S. Kremenevskiy; "Burning of a suspension in hydrocarbon fuels," D. I. Polishchuk, L. P. Latonina, and G. L. Yankevich; and "Experimental investigation of two-phase flow in axially-symmetrical nozzles," G. A. Komov. Included also were discussions of the methods of solving equations of dissociating gas flow in ducts and gas dynamic calculations for jet engines, G. A. Varshavskiy, E. Ya. Gerber, and A. P. Kisel'ov; the formation of plane shock waves in shock tubes and passage of shock waves through a flame front, D. V. Fedoseyev, G. D. Sadamandr, and I. K. Sevast'yanova; experimental results on the flow of combustion products of a methane-oxygen mixture around cambered surfaces with diffraction of detonation waves, L. G. Gvozd'ova; the stability of a steady-state flame front S. K. Aslanov; the relationship between the flame and the diameter of a burning drop, V. O. Fedoseyev; and theoretical and experimental investigation of burning of spherical metal particles, by L. A. Klyachko.   [AS]

Card 2/2

GVOZDOVER,M.D.

Composite tip from the paleolithic site of Talitskiy. Uch.zap.
Mosk.um. no.158:207-210 '52.   (MLRA 8:8)
        (Stone implements) (Bone implements)

GVOZDOVER,M.D.

Sculpture of a mammoth from the Avdeyevo paleolithic site
near Kursk. Uch.zap.Mosk.un. no.158:211-215 '52.
    (Andeyevo --Ivory carving)   (MLRA 8:8)

GVOZDOVER, M.D.; NEVESSKIY, Ye.N.

Find of Mousterian sharp stone implements on the southern coast of
the Crimea. Trudy Kom.chetv.per. no.26:149-152 '61. (MIRA 15:3)
(Crimea--Stone implements)

Emission of secondary electrons from electrodes placed in an electric discharge in mercury vapor. S. D. Gvozdover. *J. Tech. Phys.* (U.S.S.R.) 3, 587-95(1933).
P. H. Rathmann

METALLURGICAL LITERATURE CLASSIFICATION

GVOSDOVER, S.

2078. Effect of a Stream of Slow Electrons on the Plasma of a Mercury Vapour Arc. S. Gvosdover and F. Konovalov. *Comptes Rendus de l'Acad. des Sciences, U.R.S.S.* 1, 9, pp. 555-557, 1934. In German.—The parts of a gas discharge in which the space charges are compensated are now generally referred to under the term plasma. A spherical discharge tube of about 12 cm. dia. was fitted with an incandescent tungsten kathode, a molybdenum anode and two probes, and contained a drop of Hg. One probe consisted of an equipotential incandescent oxide-kathode with independent heating, while the control probe was a molybdenum disc, 2 cm. dia. The discharge tube was maintained in connection with a pump during observations. With a suitable potential between the anode and the oxide-probe, a potential lower than the ionisation potential, a stream of slow electrons is emitted from the probe, but these electrons cannot ionise by direct impact the unexcited Hg atoms. The condition of the plasma is therefore determined principally by the discharge ratios between the tungsten kathode and the anode. But for the production of the current between the oxide-probe and the anode the plasma generated by the current between tungsten kathode and anode must change its stationary state, and the temperature distribution of the electrons must alter correspondingly. These conclusions were established experimentally.   A. W.

AKHMANOV, S.A.; GVOZDOVER, S.D.; KONSTANTINOV, Yu.S.; TROFIMENKO, I.T.

Using TW-tube oscillators in studying electron paramagnetic
resonance. Prib. i tekh. eksp. no.3:109 My-Je '58.   (MIRA 11:6)

1.Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta.
(Oscillators, Electron-tube)

AUTHORS: Gvozdover, S. D., Lopukhin, V. M.   SOV/53-66-4-9/10

TITLE: Bibliography (Bibliografiya)

PERIODICAL   Uspekhi fizicheskikh nauk, 1958, Vol 66, Nr 4, pp 700-702
              (USSR)

ABSTRACT: This is a detailed review of the book "Introduction to Radio-
              physics" (Vvedeniye v radiofiziku) by V. I. Kalinin and G. M.
              Gershteyn. It was published in 1957 by "Gostekhizdat" in
              Moscow. The book has 660 pages. Price: 12.65 Rubles. The size
              of the edition is not mentioned.

PROCESSES AND PROPERTIES INDEX

930. Liberation of Electrons from a Molybdenum Surface by Positive Mercury Ions. B. D. Gvosdover. *Phys. Zeits. d. Sowjetunion* **6. 3.** *pp.* 415–423, 1934. *In German.*—An experiment is described in which it is found that mercury ions are only capable of freeing electrons from a molybdenum surface at about 1/6th the rate that they are freed by neon-ions, when the conditions are the same. The velocities of the ions of mercury vapour are for potentials of 0 to 600 V. This result is to be expected since the striking potential for mercury vapour requires a much higher voltage than is necessary for the inert gases.   H. M. B.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

3

Relation between the electron and ion currents from a hot cathode placed in a mercury-vapor discharge. S. Gvozdover. *Physik. Z. Sowjetunion* **7**, 274 (1935); cf. C. A. **29**, 3070. If conditions are such that the field strength around the cathode is zero, the total effect of the ions is to destroy the neg. space charge. The ratio of electron current to ion current in this case is between 435 and 305. Under other conditions the electron current depends not only on the neutralization of the space charge by pos. ions, but on the field strength around the cathode. This changes with changes in surface structure of the cathode. The ratio of electron current to ion current is smaller in this case.   A. B. F. Duncan

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

811. Characteristics of Probe Electrodes in a Contracted Discharge. S. Gvosdover. *Techn. Phys., U.S.S.R.* 4, 9, pp. 717-731, 1937. *In English.*—Experimental determinations were made of probe electrode characteristics in a contracted discharge. The results obtained indicate a Maxwellian distribution of the electrons in such discharges. It is shown that by the use of probes in contracted discharges it is possible to determine the magnitude of the electron current, the temperature and to estimate the order of magnitude of the ionic current. The results obtained confirm those of Elenbaas. [See also Abstract 313 (1937).]

A. W.

Mobility and mean free path of electrons in the positive
column. S. D. Gvozdover Fiz. Z. Sovjetunion 11.
164-81 (1937) (in English).— Formulas are derived for the
relationships between drift velocity and potential gradient,
the mean free path in the plasma, and the time of relaxa-
tion. S. Bradford Stone

METALLURGICAL LITERATURE CLASSIFICATION

Mobility of electrons in a gas during elastic scattering. S. D. Gvusdover. *J. Expl. Theoret. Phys.* (U. S. S. R.) 8, 108 76(1938); cf. *C. A.* 33, 33⁰.—Equations for electron motion with and without diffusion are derived. Taking into account electron scattering by neutral particles the equation contains the mean free path of impulse transfer rather than the mean free path of absorption.

F. H. Rathmann

3

PROCESSES AND PROPERTIES INDEX

Investigation of a directed beam of high-speed electrons through mercury vapors in a heated cathode discharge tube. V. Polin and S. Gvozdover. *J. Expil. Theoret. Phys.* (U. S. S. R.) 8, 438-43(1938). The election velocity distribution function in a directed beam is strictly true only near the cathode. Around the cylindrical probe in a discharge ⊥ to the axis a variable non-symmetric ionic layer forms. Electron reflection is better from a poorly degassed probe than from a completely degassed one.   F. H. Rathmann

METALLURGICAL LITERATURE CLASSIFICATION

Dependence of the average values characterizing elastic scattering of electrons in gases on the effective cross section for transmission of momentum. I. I. Gokk and S. D. Gvozdover. *J. Expl. Theoret. Phys.* (U. S. S. R.) 8, 1151 S. (1938). G. and G. first discuss the relation between the effective cross section for transmission of momentum Q_{tr} and the degree of scattering S r related to the differential cross section $\sigma(v, \theta)$, for calcg. the diffraction of electrons in gases, and then tabulate in 3 tables and 6 figs. functions of Q_{tr} and S_{tr} for He, Ne and A on the basis of the exptl. data of Ramsauer and Kollath (C. A. 26, 904, 2643, 2920). From these data it is possible to calc. the coeff. of diffusion, mobility, av. diams., etc. — F. H. Rathmann

GVOZDOVER,   S. D.

LC

34T69

PA 34T69

USSR/Physics   Jul 1947
    Vacuum Tubes, Magnetron
    Oscillators, Magnetron

"Self-oscillations in Double Segment Magnetrons Loaded
by a Lecher System," S. D. Gvozdover, Ye. M. Moroz,
Physics Faculty, Moscow State University, 10 pp

"Zhur Tekh Fiz"   Vol XVII, No 7

A report of studies conducted on a magnetron oscilla-
tor with a split anode, and loaded by a Lecher system.
It was shown that the zero approximation of the fre-
quency is the frequency of the fluctuating distrib-
uting system, which can be determined by Kirchhoff's
and Abraham's formulas. The results of these experi-

LC   Jul 1947
USSR/Physics   (Contd)   34T69

ments can be applied to all types of oscillators. The
calculations were conducted on the assumption that the
dynamic characteristics of the magnetron are not de-
pendent on the frequency.

GVOZDOVER, S. D.

USSR/Electronics
Oscillators, Electric
Vacuum Tubes, Triode

Sep 48

"Self-Excitation of a Triode Oscillator with Feedback in the Decimeter Band," S. D. Gvozdover, V. A. Zore, 12 pp

"Zhur Tekh Fiz" Vol XVIII, No 9

Examines self-excitation of a triode oscillator taking account of time of electron flow between cathode and grid of the tube. Gives general formulas for the wave length of the oscillator, conditions of self-excitation, and frequency correction determined

32/49T17

USSR/Electronics (Contd)   Sep 48

by the triode. Illustrates general theory by analysis of self-excitation in the Esau circuit. Submitted 1 Apr 48.

32/49T17

BC

Ion layer around a probe in a low-pressure
discharge.   V. POLIN and S. GVOZDOVER. (Physikal.
Z. Sovietunion, 1936, 12, 47—54).—The density
distribution of primary high-velocity electrons around
an incandescent W filament acting as probe electrode
in a Hg-vapour discharge has been studied.   An
increase in the ionic current to the probe renders its
ionic layer more symmetrical.   J. W. S.

SA

H530

2976. Potential Gradient in Positive Column. S. Gvosdover. *Phys. Zeits. d. Sowjetunion,* 13. 2. *pp.* 133-140, 1938. *In English.*—A formula for the longitudinal gradient of the positive column is derived taking into account the influence of the walls of the discharge tube. [See Abstract 5430 (1937).] A—

ASM—ILA METALLURGICAL LITERATURE CLASSIFICATION

GVOZDOVER, S.

621.385.1   597
   The Theory of a Reflex Klystron. S. Gvozdover.
(Zh. eksp. teor. Fiz. 1913. Vol. 13. No. 5, pp. 577-591.
In Russian.) The resonant frequencies of a reflex
klystron are calculated as a function of its dimen-
sions and the applied voltages. Graphs and
formulae for comparison are given.

Self-excitation of an "endovibrator" penetrated by an electron current. GVOZDOVER, S., AND LOPUKHIN, V. M. *Bull. Acad. Sci. URSS, Sér. Phys.*, 10 (*No. 1*) 29-36 (1946) *In Russian.*—The "endovibrator" is any device converting the kinetic energy of entering electrons into h.f. energy of electromagnetic waves. Stationary conditions only are considered, and possible regions of self-oscillations and their amplitude and frequency are calculated. Two cases are treated in detail: the straightforward capacitor and a "monotron" (single cavity klystron). [See Abstr. 2701 (1946)]. A. L.

3740

The Self-Excitation of a Reflex Klystron, S. D.
Gvozdover. [Doll. Acad. Sci. U.R.S.S., oi 1945,
Vol. 50, No. 1, pp 75-78. In Russian.]
The theory of the reflex klystron is discussed and
the condition (5) necessary for self-excitation
is established for the case when the potential of
the reflecting electrode is equal to that of the
cathode. Equation (6) determining the frequency
of self-oscillations is also obtained.

SA

B 66
f

621.396.615.142.2 : 621.385.1.029.6 - 82   2917

Theory of the single cavity transverse klystron. Loshakov, L. M., and
Gvozdover, S. D. Bull. Acad. Sci. URSS, Ser. Phys., 10 (No. 1) 79-86
(1946) In Russian. - The type of valve suggested avoids the inefficiency
of the reflex klystron where the beam modulating voltage is simultaneously
applied to the conversion space. The proposed klystron consists of a
cathode and two coaxial cylinders joined to a single cavity in such
a way as to produce a modulator, an inductor and a convertor space.
General equations are postulated, and the output current equation is
derived, solved to a first approximation and interpreted physically.
Though control experiments do not agree closely with theory, they indicate
the feasibility of the proposed construction.   A. L.

A S M S L A METALLURGICAL LITERATURE CLASSIFICATION

... and Logukhin V. Theory of single-circuit
clystrons. Acad. Sci. USSR. J. Phys. 10, 273–334 (1946).

A plane parallel diode is assumed with a sinusoidal voltage applied between anode and cathode. From the differential equation of motion of a single representative electron, the integral equation for the total current density on the anode is deduced in terms of the applied voltage. For negligible space charge, this diode is now considered as the cavity with total electron stream I. Cathode and anode are then externally connected through inductance L and resistance R, so that a nonlinear oscillatory circuit is created with the equation

(1) $$(\omega^2/\omega_0^2) V_{xx} + \epsilon f(x, V, \epsilon) + V(x) = 0,$$

where $x = \omega t$, ω is the free angular velocity, $\omega_0^2 = 1/LC$ and $\epsilon = R/\omega_0 L$. The voltage $V(x)$ is the diode voltage, for which an integral equation in terms of the electron stream exists. The solution of (1) is attacked in accordance with the method of successive approximations of M. Lindstedt and A. Liapounoff [see N. Kryloff and N. Bogoliuboff, Introduction to Non-Linear Mechanics, Ann. of Math. Studies, no. 11, Princeton University Press, 1943; these Rev. 4, 152]. Only the first correction term to the free frequency is derived in general form.

Application is made to the monotron, i.e., a single cavity klystron with impressed constant current density. The condition for self-excitation is established and both the free frequency and the amplitude of the voltage oscillation are computed. The maximum of power interaction between electron stream and cavity is also deduced. E. Weber.

Source: Mathematical Reviews,
Vol 8, No. 5

On Self-Excitation of Electric Systems with Distributed Parameters. ...

The Theory of the Monotron. S. Gvozdover and V. Lopukhin. (Zh. eksp. teor. Fiz. 1946, Vol. 16, No. 6, pp. 518-516. In Russian, with English summary.) Resonant frequencies, the amplitude of stationary vibrations, the efficiency, and the minimum current required for excitation are determined for the monotron. The monotron is a single circuit klystron whose operation is based on the fact that negative impedance can be produced by passing an electron discharge between two parallel planes. The original theory of J. J. Muller (1936 and 1010 of 1942) and F. B. Llewellyn (1938 of 1936) is elaborated.

GVOSDOVER, S. D.

USSR/Exciters   Nov 1946
       Systems, Electric

"The Self-Excitation of Electric Systems With Dis-
tributed Parameters," S. D. Gvosdover, 10 pp

"Zhur Eksp i Teor Fiz" Vol XVI, No 11

Published in English in the Journal of Physics of
the USSR, 10, 481, 1946.

13T71

*1007. **Theory of Low-Pressure Discharge from an Incandescent Cathode Under Conditions of a Free System.** (In Russian.) V. Bulat and S. Gvozdover. *Journal of Technical Physics* (U.S.S.R.), V. 17, June 1947, p. 661-668.

Gives results of a theoretical study of low-pressure discharge from a cathode heated to incandescence, in the special case when the discharge current is lower than the electron-emission capacity of the cathode at the incandescent temperature. The formulas and graphs derived from this analysis permit solutions of the problem of determining the voltage of the tube and the cathode drop when the gas pressure, discharge current, voltage, and dimensions of the tube are known.

GVOZDOVER, S. D.

PA 165T53

USSR/Nuclear Physics - Paramagnetism   Aug 50
                                 Nucleus
                                 Resonance

"Studying the Paramagnetism of Atomic Nuclei by
the Method of Magnetospin Resonance," S. D.
Gvozdover, A. A. Mugazanik, Moscow State U

"Zhur Eksper i Teoret Fiz" Vol XX, No 8, pp 705-
721

Solves problem of nuclear induction in form of
Volterra integral equation and obtains relations
that permit one, in terms of parameters of radio
signals arising during magnetospin resonance, to
determine how the vector of magnetization due to

USSR/Nuclear Physics - Paramagnetism   Aug 50
                          (Contd)

165T53

magnetism of nuclei varies with time. Establishes
equivalence of form of radio signals to amplitude
of high-frequency magnetic field and works out
new method for measuring time of prolonged relax-
ation. Details case of periodic modulation of
constant magnetic field. Compares results of
experiments with theory favorably. Submitted
26 Jan 50.

165T53

W.E.

PROCESSES AND PROPERTIES INDEX

Valves and Thermionics

Cat 51

621.396.615.141.2   2368

On the Theory of the Anode Block of a Plane Magnetron.

S. D. Gvozdover, A. V. M. Lopukhin. (Zh. tekh. fiz.,
Aug. 1950, Vol. 20, No. 8, pp. 955-960.) A mathematical
discussion is presented of magnetrons with anode blocks
of the hole-and-slot (Fig. 1) and slot (Fig. 2) types. To
simplify the discussion, the space occupied by the anode
block is divided into the interaction space, which does
not include the anode resonators, and the space which
includes these resonators. Equations for the electro-
magnetic fields in the interaction space are derived and
solved, and the natural frequencies of oscillation are
determined by an approximate method in which the
complex impedances of the interaction space are matched
to those of the resonators. The discussion is limited to
the case of two-dimensional (plane) magnetrons, and the
end effects as well as the effects of couplings are neglected.

METALLURGICAL LITERATURE CLASSIFICATION

Gvozdover, S.D.

The shape of magnetic resonance signals of atomic nuclei.
S. D. Gvozdover and N. M. Pomerantsev. Vestnik Moskov.
Univ. 8, No. 9, Ser. Fiz.-Mat. i Estestven. Nauk, No. 6,
79-91(1953); cf. C.A. 48, 9189e.—The signal shape in nu-
clear magnetic resonance expts. is represented by the solu-
tion of an integral equation. A method of solving this
equation is developed which is suitable for the treatment of
most of the cases encountered in practice. For several cases
which have not been considered previously, the signal shapes
are represented graphically.   E. Gora

GVOZDOVER, S.D.; POMERANTSEV, N.M.

Form of signals in magnetic resonance in the case of non-interacting, spinning particles. Vest.Mosk.un. 8 no.6:85-94 Je '53. (MLRA 6:10)

1. Fizicheskiy fakul'tet. (Electromagnetism) (Nuclear physics)

GVOZDOVER, S. D.

USSR

449. On a universal scheme for the observation of the magnetic resonance of atomic nuclei. S. D. GVOZDOVER AND B. M. ILYSKAYA. Zh. eksper. teor. Fiz. 25, No. 4(10), 435-40 (1953) In Russian.

In order to combine the advantages of the bridge-type and the 2-coil type magnetic resonance circuits (in which the final adjustment is achieved by balancing the bridge and by mechanical methods, respectively) a simple circuit was devised, consisting of a resistance, 1 fixed and 1 variable condensers, connected to the two coils surrounding the sample. The final balancing is achieved by tuning the circuit. The theory of the methods is given. Tests showed the method to work both for weak and strong high frequency fields, which makes possible the observation of the "inversion" of the vector of magnetization. [See Abstr. 7335 (1950)].   W. J. SWIATECKI

Guozdoter, S. A.

397   AERE-Lib/Trans-680

A UNIVERSAL SCHEME FOR THE OBSERVATION OF
MAGNETIC RESONANCE IN ATOMIC NUCLEI, D
Gvozdover and N. M. Joyzhaya. Translated by V. Bask
from Zhapti i Tworet. Fi: 26 436-40(1956) 4p

An abstract of this paper appears in Nuclear Science
Abstracts as NSA 9-3012

LFH

GVOZDOVERA, S. D. Prof.

"Development of Radiophysics and Electronics at the Physics Faculty," a paper delivered at the plenary meeting of the Jubilee Session of the Conference on Radiophysics held at Moscow State U. 10-14 May 55, Vest. Mosk. U., Ser. Fiz-Mat. i Yest. Nauk, No.6, 1955.

Sum. 900, 26 Apr 56

GVOZDOVER, S. D.

USSR/ Physical Chemistry - Molecule, Chemical bond   B-4

Abs Jour : Referat Zhur - Knimiya, No 4, 1957, 10884

Author   : Gvozdover S.D., Pomerantsev N.M., Polyakova A.L.
Title   : Determination of Time of Transversal Relaxation of Nuclear Magnetic Moments

Orig Pub : Zh. eksperim. i teor. fiziki, 1955, 28, No 5, 584-588

Abstract : A theoretical determination is made of the correlation between the quantity
            $\alpha = (2/aT_2^2)^{1/2}$, which includes the time of transversal relaxation of the nu-
            clei T_2, and the ratio Z of amplitudes of first and second extremes of dis-
            persion signal arising on non-adiabatic passage of magnetic field through
            resonance; herein a is a quantity proportional to the rate of modulation of
            the magnetic field. Correlation between alpha and Z is presented in the
            form of a table and graph. By the described method, a determination was
            made of time T_2 for spins of F^{19} nuclei in the compound $BF_3 \cdot 2H_2O$: $T_2 =$
            $0.9 \cdot 10^{-3}$ second.

Card 1/1

GVOZDOVER, S. D.

USSR/Nuclear Physics - Magnetic resonance of nuclei   FD-2876

Card 1/1   Pub. 146 - 13/26

Author   : Gvozdover, S. D.; Iyevskaya, N. M.

Title   : Determining the time of transverse relaxation during magnetic
                resonance of atomic nuclei in weak high-frequency magnetic field

Periodical   : Zhur. eksp. i teor. fiz., 29, August 1955, 227-236

Abstract   : The authors develop a procedure for measuring the time of trans-
                verse relaxation which is based on a determination of the time
                interval between extrema of dispersion signal in a weak high-
                frequency magnetic field in the case of non-adiabatic transition
                through resonance. They obtain relations and construct graphs
                which permit one to determine the time of transverse relaxation.
                For an experimental verification of the procedure they measure the
                dependence of time of transverse relaxation upon the concentration
                of paramagnetic ions in aqueous solutions of copper sulfate and
                iron nitrate. Seven references: e.g. S. D. Gvozdover and A. A.
                Magazanik, ibid., 20, 705, 1950; S. D. Gvozdover and N. M. Iyevskaya,
                ibid., 25, 435, 1953; N. Bloembergen, Nuclear Magnetic Relaxation,
                Hague, 1948.

Institution : Moscow State University

Submitted   : May 22, 1954

USSR/Nuclear Physics - Nuclear Relaxation   FD-3339

Card 1/1   Pub. 146 - 11/28

Author   : Gvozdover, S. D. and Iyevskaya, N. M.

Title   : Determination of longitudinal relaxation time at magnetic
                 resonance of atomic nuclei in a strong high frequency magnetic
                 field

Periodical   : Zhur. Eksp. i Teor. Fiz., 29, No 5, 637-644, 1955

Abstract   : Two methods of longitudinal relaxation time determination are
                 devised, by using the envelop of dispersion signals observed in
                 a strong high frequency magnetic field during the variation of a
                 constant magnetic field, and by measuring the distance in time to
                 the inversion point. Correlations allowing the determination of
                 longitudinal relaxation time are derived. As experimental tests
                 of the method, measurements are carried out of the relation of the
                 longitudinal relaxation time to the concentration of paramagnetic
                 ions in aqueous solutions of copper sulfate and of iron nitrate.
                 Eight references, including 4 foreign.

Institution   : Moscow State University

Submitted   : June 18, 1954

PHASE I BOOK EXPLOITATION   530

Gvozdover, Samson Davidovich

Teoriya elektronnykh priborov sverkhvysokikh chastot (Theory of
    Super-High Frequency Electronic Instruments) Moscow, Gostekhizdat,
    1956. 527 p. 25,000 copies printed. Ed.: Kostiyenko, A.I.; Tech.
    Ed.: Tumarkina, N.A.
PURPOSE: This monograph is approved as a textbook by the Ministry
    of Higher Education for students familiar with the subject of
    general electrodynamics as presented in university courses.

COVERAGE: The monograph exposes the theory of only those electron
    h - f devices which are firmly established in practice and
    whose functioning can be understood through the concept of a
    single type of oscillation or wave. An exception is made in
    favor of the multicavity magnetron which is reviewed in
    Chapter 10. Problems of technical design are not covered in
    the monograph. The author thanks Docent M.D Karasev for his

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Theory of Super-High Frequency (Cont.)   530

help. V.M. Lopukhin is mentioned as the author of the work on
"Excitation of Electromagnetic Oscillation by Electron Flows."
Soviet scientists M.S. Neyman and V.I. Bunimovich are credited
as the first to introduce cavity resonators into radio engineering;
D.A. Rozhanskiy, as the first to suggest the creation of electron
flows variable in density based on the principle of the rapid
electrons "catching-up" the slow ones; and A.Arsen'yeva and O.
Khaylem of the Leningradskiy fiziko-tekhnicheskiy institut
(Leningrad Physical-Technical Institute), as the first to describe
a tube functioning on the basis of this principle. V.F.
Kovalenko's book giving the fundamentals of the design and
functioning of certain superhigh frequency devices is praised.
There are 131 references, 94 of which are Soviet (including 13
translations), 22 English, and 5 German.

TABLE OF
CONTENTS:

Card 2/12

USSR/Electronics – Vacuum Technique, H-9

Abst Journal: Referat Zhur – Fizika, No 12, 1956, 35227

Abstract: virtual cathode occurs as a result of the compensation of the negative space charge by positive ions, formed as the result of ionization of the remnants of the gas. An experimental verification of the theoretical deductions is given and a qualitative agreement is shown. The authors assume that the above phenomenon can be used to construct a manometer for pressures below 10^{-6} mm mercury.

Card 2/2

Determination of the time of longitudinal relaxation for magnetic resonance of an atomic nucleus in a strong high-frequency alternate field. S. D. Gvozdover and N. M. Ievskaya. *Soviet Phys., JETP* 2, 450–02(1956)(Engl. translation).—See C.A. 50, 11105h. B. M. R.

AUTHORS: Braginskiy, V.B.. Gvozd̶̶̶̶̶ S,D ̶ ̶ ̶ ̶ ̶ ̶
Trofimenko, I.T.

TITLE: Mutual synchronization of reflex klystrons without producing
amplitude and frequency discontinuities. (Vzaimnaya
sinkhronizatsiya otrazhatel'nykh klistronov bez skachkov
amplitudy i chastoty.)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol.II Nr 9,
pp.1048--1052 + 1 plate (USSR)

ABSTRACT: One of the shortcomings of reflex klystrons is their
comparatively narrow tuning range. It has been found,
however (Ref.1) that it is possible to operate these
klystrons in parallel, thus widening their operating range.
In the following it is proposed to carry out a more de-
tailed investigation. The experimental system, shown in
Fig.1, consists of two reflex klystrons having operating
frequencies f_1 and f_2 and operating voltages u_1 and
u_2 such that $f_2 - f_1 = \Delta f$ and $u_2 - u_1$ where Δf
and Δu are comparatively small quantities, the klystrons
have a coupling coefficient k . For a given pair of
klystrons, Δf Δu and k are well defined quantities.
The process of synchronization can be represented as a wave

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Mutual Synchronization of Reflex Klystrons Without Produc ing
Amplitude and Frequency Discontinuities.

diagrammatically in Fig.2. Experimental investigation was
carried out on two klystrons operating on wavelengths in
the vicinity of 10 cm and their resonant
factors of the order of 200. It was found that suitable
the permitted values of $\Delta 1$, Δf and k
of the klystrons is accompanied by the alternation of
amplitude and frequency, such as shown in Fig.3b, while
within the range of the permissible values their operation
proceeds smoothly (see Fig.3a). The results may be rep-
resented as shown in Fig.4, where the synchronous operat-
ion of klystrons is represented in the $\Delta \omega$ plane. It is seen that for very low coupling coefficients,
such as $Qk < 0.014$ where Q is the quality factor of a
klystron, the synchronization is almost impossible. An
increase in k leads to a continuous synchronization but
only over a certain range of the values of ω and ω.
For values of $Qk > 3$ the coupling becomes irreversible
and amplitude and frequency jumps occur. The output power
as a function of output frequency for a pair of klystrons
Card 2/3   is shown by two experimental graphs given in Fig.5. It is

Mutual Synchronization of Reflex Klystrons Without Producing
Amplitude and Frequency Discontinuities.

seen that it is possible to obtain an almost constant
output power over detuning ranges of about 40 Mc/s.
There are 5 figures and 4 references, of which 2 are
Slavic.

ASSOCIATION: Department of Physics of the Moscow State University imeni
M.N.Lomonosov. (Fizicheskiy Fakul'tet Moskovskogo
Gosudarstvennogo Universiteta im. M.V. Lomonosova)

SUBMITTED: November 29, 1956.

AVAILABLE:

Card 3/3

GVOZDOVER, S.D.,doktor tekhn.nauk

Gifted inventor and scientist V.F.Kovalenko. Izobr.v SSSR 2
no.10:35-36 O '57.   (MIRA 10:11)
(Kovalenko, Vadim Fedorovich, 1907-)

AKHMANOV, S. A., GVOZDOVER, S. D., [illegible]

"An Autodyne Radiospectroscope in the 3-cm Wave Range".

report presented at the All-Union Conference on Statistical Radio
Physics, Gor'kiy, 13-18 October 1958. (Izv. vyssh uchev zaved-Radiotekh.,
vol. 2, No. 1, pp 121-127)   COMPLETE card under SIFOROV, V. I.)

Gvozdover K. (handwritten)

S3-1-12/18

AUTHORS: Gvozdover, S.D., Kostiyenko, A.I., Lyubimov, G.I.

TITLE: Experimental Study of the Mutual-Synchronous Operation of the Reflex Klystrons of the 3-cm Waveband (Eksperimental'noye izucheniye vzaimno-sinkhronnoy raboty otrazhatel'nykh klistronov trekhsantimetrovogo diapazona)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol.III, Nr 1, pp.105-111 (USSR)

ABSTRACT: Mutual synchronisation of the reflex klystrons can be explained with reference to Fig.1, which represents the output power p and the frequency f of two klystrons as a function of the voltage applied to the reflector. One of the klystrons operates at a frequency somewhat lower than the other, but the difference is such that while the output power of one of the klystrons decreases, that of the other increases. Consequently, it is possible to obtain an almost constant output power over the whole range between the two "steady state" klystron frequencies. Furthermore, the resulting output frequency can be made a linear function of the reflector voltage. The phenomenon was investigated experimentally by means of the equipment shown in the block schematic of Fig.2. The equipment consisted of:

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Experimental Study of the Mutual-Synchronous Operation of the Reflex
Klystrons of the 3-cm Waveband

 (1) klystron outputs, (2) attenuators, (3) waveguide
junctions, (4) a T-junction, (5) an impedance transformer,
(6) a waveguide-cable transformer, (7) a detector head,
(8) a load, (9) 2 klystrons, (10) a wavemeter, (11) a spec-
trum analyser, (12) an amplifier, (13) an oscillograph,
(14) a sawtooth voltage generator, (15) a switch and,
(16) klystron power supply. The experimental output power
and frequency curves as a function of the reflector voltage
are shown in Figs.3a and 3b. It was found that the kly-
strons can be operated under several different modes; some
of these are characterised by the absence of mutual syn-
chronisation while others may lead to the appearance of
beats. It was found, for example, that the synchronous
regime could be obtained if the reflector voltage was var-
ied by ±5 V. Some experimental work was carried out on 3
and 5 klystrons operating with a common load. The power
and frequency response of the 3-klystron system are shown
in Fig.7 while the power response of the 5-klystron system

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109-1-12/18

Experimental Study of the Mutual-Synchronous Operation of the Reflex
Klystrons of the 3-cm Waveband

is illustrated in Fig.3. From the above it is concluded
that the 3-klystron system can be used in practical appli-
cations, whereas the systems employing a larger number of
klystrons appear impractical. There are 3 figures and 2
Russian references.

ASSOCIATION: Physics Faculty of the Moscow State University, im.
M. V. Lomonosov (Fizicheskiy fakul'tet Moskovskogo gosu-
darstvennogo universiteta im. M. V. Lomonosova)

SUBMITTED: December 7, 1956

AVAILABLE: Library of Congress

Card 3/3

SOV-120-58-3-32/33

AUTHORS: Akhmanov, S. A., Gvozdover, S. D., Konstantinov, Yu. S., and Trofimenko, I. T.

TITLE: Application of a TWT-Generator and the Observation of Electron Paramagnetic Resonance (Ispol'zovaniye LBV-generatora dlya nablyudeniya elektronnogo paramagnitnogo rezonansa)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1958, Nr 3, p 109 (USSR)

ABSTRACT: A travelling wave tube (TWT) connected across an external feedback circuit may be used as a generator of u.h.f. vibrations (Refs.1 and 2). The frequency of the vibrations is determined by a resonator in the feedback circuit. Such a generator has been used by the authors in the 3 cm region in the observation of electron paramagnetic resonance. The specimen under investigation (diphenylpicrylhydrazyl) was placed directly in the generator circuit and in the electromagnet gap. The uniformity of the external magnetic field was sufficiently high and had no effect on the form of absorption lines. The absorption signal was detected by a crystal detector placed in the feedback channel. As the feedback is reduced and the oscillation threshold is approached the sensitivity of the TWT

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SOV-120-58-3-32/33

Application of a TWT-Generator and the Observation of Electron
Paramagnetic Resonance

generator increases. In the observation of an absorption
signal recorded on the screen of an oscilloscope, the
signal-to-noise ratio for a specimen containing 2×10^{-3}
moles of diphenylpicrylhydrazyl was not less than 4:1
(bandwidth of the low frequency oscillator was 2 kc/s).
There are no figures or tables. Of the two references,
1 is Soviet and 1 is English.

ASSOCIATION: Fizicheskiy fakul'tet MGU (Department of Physics of
the Moscow State University)

SUBMITTED: March 11, 1958.

1. Vibration---Propagation   2. Traveling wave tubes---
Applications   3. Resonance---Magnetic factors

Card 2/2

GVOZDOVER, S.D.; LOPUKHIN, V.M.

"Introduction to nuclear physics" by V.I. Kalinin, G.M. Gershtein.
Reviewed by S.D. Gvozdover, V.M. Lopukhin, V.M. Usp. fiz. nauk 66
no.4:700-702 D '58.   (MIRA 12:1)
               (Nuclear physics)

SOV/120-59-2-11/50

AUTHORS: Akhmanov, S.A., Gvozdover, S.D., Konstantinov, Yu.S., and Trofimenko, I.T.

TITLE: An Autodyne 3 cm Radiospectroscope for Electron Paramagnetic Resonance Studies (Avtodinnyy radiospektroskop 3-santimetrovogo diapazona dlya nablyudeniya elektronnogo paramagnitnogo rezonansa)

ABSTRACT: A travelling-wave tube is fitted with variable phase-shifters and a ferrite isolator and is used in a regenerative (or super-regenerative) mode. The oscillation frequency is that of the cavity containing the specimen. The system is tested on DPPH; 2×10^{-8} mole is readily detected in the autodyne mode. The magnet is normal; a simple crystal-video detection system is used. The quenching frequency (20-30 kc/s) used in the super-regenerative mode is applied to the spiral on the travelling-wave tube. The sensitivity can, in favourable cases, be increased by a factor of 2-3, but

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An Autodyne 3 cm Radiospectroscope for Electron Paramagnetic Resonance Studies

superheterodyne or other methods are needed to give any further improvement.

Card 2/2   There are 2 figures and 4 references, of which 2 are Soviet and 2 English.

ASSOCIATION: Fizicheskiy fakul'tet MGU
            (Physics Department, Moscow State University)

SUBMITTED: January 14, 1958

AUTHORS: Gvozdover, S. D. and Solodar', G. G.

TITLE: Characteristic Equation of the Travelling-wave Tubes for
             Medium Currents

ABSTRACT: A problem similar to that presented in this article has
             been dealt with earlier by S. Olving (Ref 2). A more
             general approach to the problem is attempted here, it being
             assumed that the geometrical parameters of the tubes are
             arbitrary. The notation adopted is similar to that of
             earlier work (Ref 1). Also, a new function, defined by
             Eq (1), is introduced; this is plotted in Figure 1. The
             basic linearised equations of the system, derived under
             the assumption that the alternating components are
             appreciably smaller than the direct ones, are similar to
             those of Ref 1:

$$M(\text{s}T, a\tau) = N(a\tau, b\gamma) \qquad (2) \; ,$$

Card1/4   where M, N and T are defined by Eqs (3), (4) and (5).

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Currents

The right-hand side term of Eq (2) can be represented
in the form of Eqs (11). These can be expanded into the
Taylor series so that N can be approximately represented
by Eq (15). M of Eq (2) can be represented by Eqs (17).
This can also be expanded into the Taylor series as is
shown in Eq (19). The final expression for M is given
by Eq (24). By substituting Eqs (15) and (24) into
Eq (2), an approximate algebraic equation, with X as
the unknown, is obtained. The resulting expression is
in the form of Eq (24) or, finally:

$$X(1 + QBX)(X + L)^2 = - (1 - QX)^2 \qquad (26a)$$

where B is defined by Eq (26B). If the tube is such
that it fulfils the conditions defined by Eqs (28), the
characteristic equation is simplified and can be written
as Eq (29a). The function M can also be expanded by
means of the asymptotic formulae provided the conditions
Card2/4   of Eq (30) are fulfilled; in this case, the characteristic

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Currents

equation is given by Eq (29b) which coincides with Eq (29a).
Similarly, it is possible to expand the function N by
means of the asymptotic formulae and the characteristic
equation is then in the form of Eq (30B). First, Eq (29a)
is investigated for L = 0 , which represents the condition
of complete synchronism. The equation is now written as
Eq (36a), which is a standard cubic equation; the complex
roots of the equation are plotted in Figure 2 (solid curves).
In the case of narrow beams, the conditions of Eq (28a)
are not fulfilled and it is necessary to solve the complete
fourth-degree characteristic equation (see Eq 26a). The
equation was solved for $L \neq 0$ for various values of B .
Graphs illustrating the dependence of the roots of Eq (26a)
on Q for B = 0.25 and B = - 0.0635 are shown in Figure 7.
It is seen that the equation always has a pair of complex
conjugate roots having a positive real component. At small
Q and B > 0 , the equation has a pair of negative real
roots which, for $Q = Q^{*}$, coincide and become a pair of

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Characteristic Equation of the Travelling-wave Tubes for Medium
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complex conjugate roots. The paper contains an appendix
which gives expressions for the roots of Eq (36a) (see
Eqs 1-6A) and an asymptotic expression for the gain factor
of the tube (see the Eq 6"A). From the analysis, it is
concluded that the complete fourth-degree equation has
complex roots (in the region which is of most practical
interest) which do not differ appreciably from those of
Eq (29a). The coefficient of depression derived on the
basis of Eq (26a) is twice lower than that of the "small-
current theory".
There are 7 figures and 7 references, of which 6 are
Soviet and 1 English.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State
University)
SUBMITTED: July 18, 1958

Card 4/4

GVOZDOVER, S.D.

p r

PHASE I BOOK EXPLOITATION   SOV/4705

Radiofizicheskaya elektronika (Radiophysical Electronics)[Moscow]Izd-vo Mosk.
univ., 1960.   561 p. Errata slip inserted.   15,000 copies printed.

Ed.: N. A. Kaptsov, Professor; Tech. Ed.: M. S. Yermakov.

PURPOSE: This book has been approved by the Ministry of Higher and Secondary
    Special Education, USSR, as a textbook for schools of higher education.
    It can be also used by scientific personnel working in the fields of radio
    engineering and electronics.

COVERAGE: The book presents problems of vacuum, cathode, semiconductor, and gas
    electronics, on which is based the operation of vacuum-tube and gas-filled
    devices, including microwave devices and also apparatus and instruments used
    in electron optics. It is assumed that the readers of this book have a pre-
    liminary preparation in the fundamentals of nuclear physics, quantum
    mechanics, statistical physics and electrodynamics. The book was written by
    a group of lecturers of the Physics Division of Moscow State University.

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Radiophysical Electronics   SOV/4705

Chapters I, II, and III were written by Professor N. A. Kaptsov; Ch. IV. by
Professor S. D. Gvozdover and Docent V. M. Lopukhin; Ch. V. by Professor
G. V. Spivak and Assistant Ye. M. Dubinina; Ch. VII. by Docent A. A. Zaytsev
and Professor N. A. Kaptsov; Ch. VIII. by Professor N. A. Kaptsov and Assist-
ant G. S. Solntsev. The authors thank Professor S. Yu. Luk'yanov and Docent M.D.
Karasev, who reviewed the book. There are 76 references: 68 Soviet (in-
cluding 14 translations), 6 English, and 2 German.

TABLE OF CONTENTS:

Foreword

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Radiophysical Electronics

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Radiophysical Electronics   SOV/4705

Card 6/10

9.4231

AUTHORS: Akulina, D.K., Akhmanov, S.A., Gvozdover, S.D.,
Gorshkov, A.S. and Trofimenko, I.T.

TITLE: Parametric Phenomena in Wave Systems With Long Electron
Beams

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.10,
pp.1736-1739

TEXT: The phenomenon of parametric regeneration which was first
investigated by L.I.Mandel'shtam and his associates (Ref.1) in
systems with lumped constants may also occur in wave systems
(Ref.2).   The considerable interest in wave systems with
modulated parameters is due to the prospects of building stable
amplifiers and frequency converters with a very wide band which are
simple to tune and are unidirectional.   In principle, it is
possible to obtain in the wave systems noise characteristics which
are the same as those obtained in parametric circuit amplifiers.
One of the possible variants of wave systems with modulated
parameters are wave systems with long electron streams.   First, a
freely drifting beam of electrons represents a form of transmission
line;   modulation of the current density by a strong pump signal is
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Parametric Phenomena ...   E073/E482

analogous to some extent to the modulation of the distributed
parameters of a transmission line (Ref.3 and 4).   Another
example of a waveguide system in which the modulation of the
density of the electron beam can lead to parametric effects is a
system consisting of a beam of electrons linked with a delay
system.   Wave systems with long electron beams are at present one
of the most suitable fields for studying parametric phenomena in
wave systems, since it is difficult to produce purely
distributed wave systems with semiconductors and ferrites.   In
this paper the results are briefly described of experiments on
parametric amplification and transformation of the frequency in
wave systems with long electron beams in which the interaction
of the electrons with the high frequency field in the
longitudinal direction is utilized (see also earlier work of
the authors, Ref.5 and 6).   The experiments were made in the
centimetre ($f_c \cong 3000 - 3500$ Mc/s, frequency of $f_H \cong 6000$ Mc/s)
and the decimetre ($f_c \cong 1000 - 1800$ Mc/s, $f_H \cong 3000 - 3500$ Mc/s)
ranges.   In the experimental set-up both the pump source and the
signal were introduced into the electron beam by means of sections
of helical lines.   The main beam of the electrons first passed
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through the first helix in which it was modulated by the pump
signal and then into the second part of the tube where it
interacted with the signal.   The interaction was realized either
in a drift tube (for feeding in and for extracting the signal,
small sections of helical lines were used) or in the helical line.
The power of the pump signal at the input and the output of the
first helix was monitored; measures were provided for filtering
the pump signal on the indicating apparatus.   The block
schematic is given.   The parametric amplification was clearly
observed in systems of both types for powers of the pump source
varying between 200 µW and 1W.   A common feature was the very
wide band of the parametric amplification.   Thus, in the
decimetre range, the amplification was in a band of about 500 to
600 Mc/s with very little change in the gain for the band of the
pump source of 200 to 300 Mc/s.   In conclusion, the following is
stated.   Parametric amplification in wave systems with electron
beams extends over a very wide band; for pump signal powers of
10 to 100 mW in systems with lengths not exceeding the dimensions
of ordinary TWT, a real gain of about 20 db and more can be
achieved.   Comparison of the experimental data with results of
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Parametric Phenomena ...

calculations by W.Loisell and C.Quate (Ref.3 and 8) shows that the
theory does not adequately explain the observed phenomenon.
Firstly, disregarding of the combination frequencies is not
justified and, secondly, various phenomena, as for instance the
non-monotonic relationship between the coefficient of parametric
amplification and the power of the pump source etc, are not
explained by the work of Loisell.   On the other hand, a number of
experimental facts are in qualitative agreement with the theory;
for instance, the selective properties of the investigated systems,
the dependence of the coefficient of parametric amplification on
the voltage of the beam for systems with a beam and a delay line.
In the investigations described, no special measures were taken
for picking up the noise energy;   the minimum noise coefficient
of the systems investigated was at the level of the noise of the
appropriate travelling wave tubes.   Even in their present state
electron wave parametric systems may be of interest from the point
of view of wide band mixing and division of frequencies.
Acknowledgments are expressed to A.S.Tager for his comments on the
results and to V.G.Dmitriyev and A.A.Ovsyannikov for their

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21602

S/109/60/005/010/025/031

Parametric Phenomena ...   E073/E482

assistance with the measurements.   There are 2 figures and
8 references: 4 Soviet and 4 non-Soviet.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo
             universiteta im. M.V.Lomonosova Kafedra radiotekhniki
             (Physics Department, Moscow State University imeni
             M.V.Lomonosov, Radioengineering Chair)

SUBMITTED: October 30, 1959 (initially)
             May 5, 1960 (after revision)

Card 5/5

GVOZDOVER, Samson Davidovich

    Theory of microwave valves. New York, London,
Pergamon Press, 1961.
      xiii, 486 p. diagrs., graphs, tables. (Internatio-
nal series of monographs on electronics and instrumen-
tation, v. 12)
    Translated from the original Russian: Teriya elek-
tronnykh priborov sverkhvysokikh chastot, Moscow, 1956.
    Bibliography: p. 476-481.

GVOZDOVER, S.D.

Development of radio physics and electronics at the faculty of
physics of Moscow University. Ist. i metod. est. nauk 2:247-
263 '63.   (MIRA 16:11)

S/141/63/006/001/013/018
E192/E382

AUTHORS: Gvozdover, S.D., Gorshkov, A.S. and Marchenko, V.F.

TITLE: Investigation of travelling-wave amplifiers based
                on semiconductor diodes

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika,
                v. 6, no. 1, 1963, 126 - 136

TEXT: The amplifiers are based on a coaxial or symmetrical
strip line with a TEM-wave. The lines are provided with para-
metric diodes which either shunt the line or are connected into the
center conductor (see Fig. 1, where $Z_s = jZ_o \sin(\beta\ell_o)$,

$Y_p = j(2/Z_o)tg(\beta\ell_o/2)$ and ℓ_o is the length of a section of the
line; $_1$ for the series-connected diodes $Z_s = -2jZ_o tg(\beta\ell_o/2)$,

$Y_p = j\frac{1}{Z_o} \sin(\beta\ell_o)$, where Z is the wave impedance of the line;

Fig. 1B represents the equivalent circuit of a parametric diode).
The parameters of the amplifier are chosen in such a way that
$\omega_H = \omega_c + \omega_p$, where ω_H is the pump frequency, ω_c the signal
Card 1/5

Investigation of ....

frequency and ω_p the difference frequency; also, the phase synchronism should be maintained:

$$B_c + B_p = B_H \qquad (1)$$

where B_c, B_H and B_p are the phase shifts per dioded segment for the signal, pump and difference frequencies, respectively. The gain factor of the amplifier with parallel diodes is given by:

$$\alpha = \frac{m\, y(\omega_c) y(\omega_p)}{2Z_o\, C_\Delta} \sqrt{\frac{\sin(\beta_p \ell_o)\sin(\beta_c \ell_o)}{\omega_c \omega_p \sin B_p \, \sin B_c}} \qquad (2a)$$

and for the series diodes it is:

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Investigation of ....

$$\alpha = \frac{m}{2Z_o C_\Delta} \sqrt{\frac{\sin(\beta_o \ell_o)\sin(\beta_c \ell_o)}{\omega_c \omega_p \sin B_p \sin B_c}} \qquad (3a)$$

where $m = \zeta V_{HO}$ is the capacitance-modulation coefficient, $\beta\ell_o$ is the wave-shift in the line segment without diodes, $y(\omega) = Z_o \omega C_\Delta [1 - (\omega/\omega_\Delta)^2]^{-1}$, $\omega_\Delta = 1/\sqrt{L_\Delta C_\Delta}$ is the resonance frequency of the diode and C_n is the capacitance of a diode-holder. By taking into account the losses in the line which are assumed to be entirely due to the resistance R_s of the diodes, it is found that the gain of the amplifier is:

$$G_p = e^{-2\alpha_n N} ch^2(\alpha N) \qquad (4a)$$

where N is the number of the diodes and α_n is the attenuation coefficient of a segment of a cold line. Two experimental amplifiers were constructed. The system with parallel diodes

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was built in such a way that the signal and pump frequency waves propagated along two symmetrical strip lines having the same external plates. The amplifier consisted of 10 sections in which the diodes had a capacitance of 0.27 - 0.3 pF, the equivalent inductance was 1.5×10^{-9} H and R_s = 5 - 7 ohm. With optimum value biasing voltages of the diodes, an operating bandwidth of 12% was obtained and the maximum gain was 13 db. The calculated value of gain by using Eq. (2a) was 12 db. The amplifier with series-connected diodes also consisted of two symmetrical strip lines and the decoupling between the signal and pump lines was about 12 db. A bandwidth of about 10% and gain of 7 db were obtained with this amplifier. The noise factor was about 4 to 5 db. The formulas for calculating the gain are reasonably accurate, in particular, for amplifiers operating over the frequency range in the vicinity of the resonance frequency of the diodes. However, the experiments and theory seem to diverge at cm waves, which can be explained by the presence of additional losses caused by the contact of the diodes with the conductors of the line.

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S/141/63/006/001/013/018
E192/E382

Investigation of ....

There are 6 figures.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet
(Moscow State University)

SUBMITTED: May 15, 1962

Fig. 1:
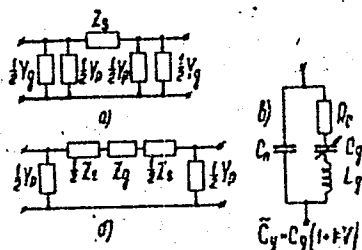
Card 5/5

L4752

S/057/63/033/001/011/017
B125/B186

9,2572

AUTHORS: Akhmanov, S. A., Gvozdover, S. D., Gorshkov, A. S., and
Dmitriyev, V. G.

TITLE: The nonlinear effects and the parametric regeneration in the
interaction of waves in wave guide systems with long electron
currents

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 33, no. 1, 1963, 90 - 99

TEXT: Experiments were conducted in the centimeter and decimeter wave
range of this wave guide system with freely drifting electron currents
and an electron beam of a slow-down system. The effective parametric
regeneration was studied over a wide range of signal-to-pump frequency
ratios of traveling waves. Thereby, a great number of combination fre-
quencies were observed, considerably influencing the non-linear and para-
metric processes. The accelerating potential of the drifting section has
an important effect on the character of the space charge waves in the free-
ly drifting electron current. The parametric regeneration is possible in
a very wide frequency band and shows no qualitative difference for the
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The nonlinear effects ...   S/057/63/033/001/011/017
                                             B125/B186

cases $f_{pump} > f_{sign}$ and $f_{pump} < f_{sign}$. Nonlinear effects such as para-
metric amplification for $f_{pump} > f_{sign}$ and $f_{pump} < f_{sign}$, suppression, cross
modulation, clipping, etc., are possible in wave guide systems with long
electron currents. A spectrum of Raman frequencies, particularly the sum
and difference of f_{pump} and f_{sign}, occurs in spiral systems. The inter-
action of these two frequencies leads in the general case to the spectrum
$f_{mn} = mf_{pump} + nf_{sign}$ of the Raman frequencies. Some of the nonlinear
effects mentioned above follow from the dispersion properties of the sys-
tem and the theory of interactions in nonlinear wave systems by taking
into account numerous Raman frequencies. There are 9 figures.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet, Fizicheskiy fakul'tet
              (Moscow State University, Division of Physics)

SUBMITTED: December 3, 1961

Card 2/2

L 61925-65   EWT(1)/EPF(n)-2/EWG(m)/EPA(w)-2/   UR/0141/65/008/002/0308/0318
T   Pz-6   IJP(c)   AT   537.12: 537.228

ACCESSION NR: AP5014506

AUTHOR: Gvozdover, S. D.

TITLE: Effect of weak high frequency field on an electron current that produces a
virtual cathode

SOURCE: IVUZ. Radiofizika, v. 8, no. 2, 1965, 308-318

TOPIC TAGS: electron emission, electron current, virtual cathode, external field
effect

ABSTRACT: The author investigates the dynamic behavior of a virtual cathode pro-
duced between "cold" electrodes which do not emit any electrons. These electrodes
constitute part of a larger system, in which current flows at appreciable density.
The conditions under which a stable virtual cathode is produced between, say, the
grid and the anode of a vacuum tube, were derived by the author earlier in his
book Teoriya elektronnykh priborov sverkhvysokikh chastot (Theory of Electron Tubes
for Microwave frequencies, Gostekhizdat, M. 1956, Chapter II). The analysis is
based on an asymptotic solution of the equation of motion of the electron, neglect-

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ACCESSION NR: AP5014506

ing the influence of the repulsion forces between them. Formulas are obtained show-
ing how a weak alternating field can change the direct current in the circuit of
the gathering electrode (the anode in this example). The sign of this change in
current depends on the ratio of the current from the cathode to the current flowing
into the anode under static conditions. The regions of parameters in which positive
and negative current increments are obtained are evaluated. Orig. art. has: 1 fig-
ure and 54 formulas.

ASSOCIATION: Fizicheskiy fakul'tet MGU (Physics Department, MGU)

SUBMITTED: 02Jul64   ENCL: 00   SUB CODE: EC, EM

NR REF SOV: 009   OTHER: 004

Card 2/2

GVOZDOVER, S.D.

Detection using a virtual cathode. Radiotekh. i elektron. 10
no.10:1824-1828 O '65.   (MIRA 18:10)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta
im. M.V.Lomonosova, kafedra radiotekhniki.

GVOZDOVE , S. O.

GVOZDOVER, S. O.

Tyagunov, G. A. defended his Doctor's dissertation in the Moscow Power Engineering Institute im Molotov, USSR, on 26 December 1947, for the academic degree of Doctor of Technical Sciences.

Dissertation: "Fundamentals for the Calculations of Vacuum Systems".

Official Opponents: Profs. A. K. Timiryazev and S. O. Gvozdover (Doctors of Physicomathematical Sciences); I. L. Kaganov (Doctor of Technical Sciences).

SO: Elektrichestvo, No. 7, Moscow, August 1953, pp 87-92 (W/29344, 16 Apr 54)

Gvoz Dovich, A.M.

PHASE I BOOK EXPLOITATION   SOV/2831

28(1)(25(1)

Mekhanizatsiya i avtomatizatsiya trudoyemkikh protsessov v liteynom proizvodstve (Mechanization and Automation of Labor-consuming Processes in Foundry Practice) Moscow, Mashgiz, 1959. 226 p. Errata slip inserted. 4,000 copies printed.

Reviewer: I. M. Skobelkov, Candidate of Technical Sciences: Ed. (Title page): G. I. Kobylyanskiy (Deceased); Ed. (Inside book): A. M. Sokolov, Candidate of Technical Sciences: Tech. Ed.: O. V. Speranskaya; Managing Ed. for Literature on the Technology of Machinery Manufacture (Leningrad Division, Mashgiz): Ye. P. Naumov, Engineer.

PURPOSE: The book is intended for technical personnel in foundries and engineers engaged in the mechanization and automation of industrial processes. It may also be used by students of institutions of higher technical education.

COVERAGE: The book deals with recent achievements in the mechanization and automation of time-and labor-consuming operations in foundries. Specific instances of mechanization and automation of foundry processes are described. The material presented in this book is divided into six parts, dealing with the following subjects: molding materials, mold and coremaking, casting, shakeout of molds, finishing of castings, and special casting methods. Each part consists of a number of technical papers presented by several authors. The application of automation ranges from the preparation of molds and cores to the mechanization and streamlining of specialized casting methods, such as investment casting and the use of shell molds. There are numerous diagrams showing automatized and mechanized installations in foundries. Most of the material is based on experiments and work done at the "Krasnyy Axnay" Plant. Some of the methods described appear to be in the experimental stage at that plant. The technical papers published in this book were originally presented at a technical conference of the Soviet machine industry in October 1957. No personalities are mentioned.

Kril'shteyn, L. M. Production of Sand Molds by Hydraulic Pressure   78

Kiselev, V. A. Mold Making With a Sand Slinger in Steel Foundries 79

Veselova, A. I. Transport and Distribution of Rapid-drying Waterglass Compounds to Tanks   33

Smirnov, P. I. Mechanization of Shell-mold Casting   212

Spermakin, G. N. Use of High-frequency Electric Heating for Bonding Shell Mold Halves   216

Mysovskiy, V. S. Overall Automation of Mixing Systems in Foundry Shops   40

Zaygerov, I. B., A. M. Gvozdovich, and I. S. Gandelevich. Mechanization of Casting and Extraction Operations to Remove Cores From Flasks in Pneumatic Ramming   97

Kramer, R. A. and E. L. A. Bukhrsneyer. Quick-change Equipment for Coremaking on Vibrating Molding Machines in Small-lot Production 101

Kril'shteyn, L. M. Mechanization of Mold Transfer From Assembly Line to Conveyor Belt   104

Zelichenko, G. J. Automated Lines for Molding and Shakeout in Foundry Shops   47

Porechikov, Yu. P. Some Problems in the Automation of Charge Composing and Cupola Charging   106

5(3)   SOV/54-59-1 8/25

AUTHORS: Susarev, M. P., Gvozdovskiy, G. N.

TITLE: Investigation of the Vapor Pressure of Saturated Solutions
              of Hydrochloric Aniline in Hydrochloric Acid at 25°C (Issle-
              dovaniye davleniya para nasyshchennykh rastvorov solyanokislogo
              anilina v solyanoy kislote pri 25°C)

PERIODICAL: Vestnik Leningradskogo universiteta. Seriya fiziki i khimii
              1959, Nr 1, pp 67-72 (USSR)

ABSTRACT: In this paper the authors investigated the solubility and
              partial pressure of saturated solutions within the system
              hydrochloric aniline - water-hydrochloric acid. The methods
              of determination applied were similar to those already des-
              cribed in reference 4. For the solubility of hydrochloric
              aniline in water the value 52.05 wt% was found (in good agree-
              ment with data available in publications), the value 19.74 torr
              for the steam pressure of water over the saturated solution
              (value of reference 1: 19.79 torr). All experimental data on
              the partial pressure and composition of vapor for solutions
              of $C_6H_7N.HCl$ saturated at 25° in the binary solvent H_2O-HCl with
              various percentages of the molar composition of the latter
              are listed in a table. On the isothermal line of solubility
Card 1/2   (Fig 1) a maximum of one of both components of the binary

Investigation of the Vapor Pressure of Saturated Solutions of Hydrochloric
Aniline in Hydrochloric Acid at 25°C

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system, i.e. of water was distinctly marked. Further the
authors observed a continuous drop of the partial steam pres-
sure with simultaneous increase of the partial vapor pressure
of HCl dependent on the composition of the binary solvent
(Fig 2). This agrees with the thermodynamic law since the par-
tial vapor pressures of the components of a binary solvent
change always in a monotonous manner and in opposite direction.
On the basis of these investigations the authors further dealt
with the problem of the mutual positions of the composition
of a ternary saturated and binary solution which correspond
to turning points of pressure. It was stated herein that the
ratio HCl/H_2O equal to 0.57 of the concentration of the com-
ponents of the binary solvent corresponds to the pressure
minimum in the ternary saturated solution. This value is
smaller than that corresponding to a binary azeotropic solu-
tion (0.61). There are 3 figures, 1 table, and 9 references,
7 of which are Soviet.

SUBMITTED: June 10, 1958

Card 2/2

SUSAREV, M.P.; GVOZDOVSKIY, G.N.

Investigation of vapor pressure of saturated solutions of
aniline hydrochloride in hydrochloric acid at 25°C. Vest.
LGU 14 no.4:67-72   '59.   (MIRA 12:5)
          (Aniline) (Vapor pressure)

GVOZDOVSKIY, G.N.

Effect of isopropanol and ethyl acetate additives on the oxidation
of the straight-run distillation gasoline fraction boiling between
35°C and 62°C. Khim. i tekh. topl. i masel 10 no.9:12-14 S '65.
(MIRA 18:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhimicheskikh
protsessov.

MISHENKO, D.V.; GVOZDOVSKIY, G.N.; SEMENOVA, V.V.

Liquid-;hase oxidation of the pentane-hexane fraction of
straight-run gasoline with recycling of the intermediate
oxidation products. Khim.i tekh.topl. i masel 10 no.ll:
12-15 N '65.

(MIRA 19:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhimi-
cheskikh protsessov.

$24,7700$

S/058/61/000/010/079/100
A001/A101

AUTHORS: Tovstyuk, K.D., Gvozdovskiy, I.V.

TITLE: On the problem of hole scattering in germanium

PERIODICAL: Referativnyy zhurnal. Fizika, no. 10, 1961, 262, abstract 10E270
             ("Nauchn. yezhegodnik za 1957. Chernovitsk. un-t", Chernovtsy, 1958,
             475 - 476)

TEXT: A relation has been found between the relaxation time for hole scat-
tering by phonons and the quasi-momentum of the holes on the basis of the model
proposed earlier (RZhFiz, 1958, no. 4, 8575). Calculations are performed using
the method of approximate second quantization, taking into account interaction of
only adjacent elements. Relaxation time proved to be inversely proportional to
the square root from energy. It is also shown that holes interact with both
longitudinal and transverse phonons, and these interactions are of the same order
of magnitude.

                                                          Yu. Gulyayev
[Abstracter's note: Complete translation]

Card 1/1

ACCESSION NR: AP4043544   S/0020/64/157/004/0841/0844

AUTHORS: Samoylovich, A. G.; Gvozdovskiy, I. V.

TITLE: On the scattering of carriers by optical vibrations

SOURCE: AN SSSR. Doklady*, v. 157, no. 4, 1964, 841-844

TOPIC TAGS: crystal lattice vibration, scattering cross section, kinetic equation, electric conductivity, thermal emf, distribution function

ABSTRACT: Earlier investigations of the interaction between current carriers and optical vibrations at low temperatures was connected either with insufficiently founded assumptions or with numerical methods of solving the kinetic equation. The authors propose to calculate the electric conductivity and thermal emf at low temperatures by a regular method free of any special assumptions, which makes use of some elementary procedures employed in the solution of

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