TYUTNEV, S.A.; FOMIN, N.I.

Our experience in the technical operation of vessels of the "Bor" type. Rech.transp.14 no.12:8-9 Je '55. (MLRA 9:9)

1.Kapitan parokhoda "Altay" (for Tyutnev). 2.Mekhanik parokhoda "Altay" (for Fomin).

TKALICH, S.M.; MINEYEV, I.K., glavnyy red.; RYABENKO, V.Ye., zam. glavnogo red.; TUMOL'SKIY, L.M., zam. glavnogo red.; KUR'YANOV, F.K., otv. zav vypusk; BASSOLITSYN, Ye.P., red.; BLINNIKOV, I.I., red.; DAUKSHO, Yu.Ye., red.; DZINKAS, Yu.K., red.; ZHARKOV, M.A., red.; ZAVALISHIN, M.A., red.; MANDEL'BAUM, M.M., red.; MATS, V.D., red.; MALETOV, P.I. red.; NOMOKONOVA, N., red.; NOSEK, A.V., red.; SERD, A.I., red.; SEMENYUK, V.D., red.; TAYEVSKIY, V.M., red.; TIKHONOV, V.L., red.; TROFIMUK, I.N., red.; TOMILOVSKAYA, M.V., red.; FOMIN, N.I., red.; SHAMES, P.I., red.; TROSHANIN, Ye.I., tekhn. red.

[Biogeochemical anomalies and their interpretation.] Biogeokhimicheskie anomalii i ikh interpretatsiia. Irkutsk, 1961. 39 p. (Materialy po geologii i poleznym iskopaemym Irkutskoi oblasti no.3). (MIRA 17:1)

BELYAYEV, A.P., red.; BESSOLITSYN, Yo.V., red.; BLINNIKOV, I.I., red.; DZINKAS, Yu.K., red.; ZHARKOV, M.A., red.; KOROVIN, A.V., red.; KUR'YANOV, F.K., red.; MANDEL'BAUM, M.M., red.; NALETOV, P.I., red.; RYABENKO, V.Ye., red.; SAVINSKIY, K.A., red.; SERD, A.I., red.; SEMENYUK, V.D., red.; TUMOL'SKIY, L.M., red.; TIKHONOV, V.L., red.; TROFIMUK, P.I., red.; TOMILOVSKAYA, M.V., red.; FOMIN, N.I., red.BEKMAN, Yu.K., ved. red.

[Recent data on the geology, petroleum potentials, and mineral resources of Irkutsk Province] Novye dannye po geologii, neftenosnosti i poleznym iskopaemym Irkutskoi oblasti. Moskva, Nedra, 1964. 278 p. (MIRA 17:3)

1. Russia (1917- R.S.F.S.R.) Glavnoye upravleniye geologii i okhrany nedr. Irkutskoye geologicheskoye upravleniye.

VOROPINOV, V.S.; KENZINA, V.L.; ODINTSOV, M.M., otv. red.; KARASEV, I.P., red.; KUZNETSOV, M.P., red.; MANDEL'BAUM, M.M., red.; NEZABYTOVSKAYA, I.A., red.; NOSEK, A.V., red.; FOMIN, N.I., red.

[Geological studies of the U.S.S.R.] Geologicheskaia izuchennost' SSSR. Moskva, Nauka. Vol.24. No.1. 1965. 177 p. (MIRA 18:9)

L 01805-67 EWT(m)/T DJ

ACC NR: AP6030592 (AN) SOURCE CODE: UR/0413/66/000/016/0074/0074

61
60
3

INVENTOR: Garzanov, G. Ye.; Petyakina, Ye. I.; Bagryantseva, P. P.; Shames, F. Ya.; Ravikovich, A. M.; Boshchevskiy, S. B.; Maloletkov, Ye. K.; Selivanchik, Ya. V.; Gusman, M. Ye.; Skvirskiy, P. A.; Aver'yanov, V. A.; Uzunkoyan, P. N.; Pisarchik, A. N.; Mikhaylov, Yu. A.; Belogradskiy, A. P.; Bayevskiy, F. S.; Fomin, N. I.

ORG: none

TITLE: Method of obtaining a hydraulic lubricant. Class 23, No. 185000. [Announced by the Scientific Research Institute for Organization, Mechanization, and Technical Assistance to Construction (Nauchno-issledovatel'skiy institut organizatsii, mekhanizatsii i tekhnicheskov pomoshchi stroitel'stvu)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 16, 1966, 74

TOPIC TAGS: lubricant, lubricant additive, antioxidant additive, polymethacrylate, hydraulic lubricant

ABSTRACT: An Author Certificate has been issued for a method of obtaining a hydraulic lubricant by means of additives with an oil base. To expand the operat-

Card 1/2 UDC: 621.892.8:621.226

L 01805-67

ACC NR: AP6030592

ing temperature range of oil a mixture of commerical oil and diesel-oil residue are taken as the oil base to which a multifunctional additive is added, such as EFO, an antioxidant agent, such as octadecylamine, and a depressing agent, such as a polymethacrylate. [Translation] [NT]

SUB CODE: 11/ SUBM DATE: 25May65/.

Card 2/2

FOMIN, N. M., Cand Tech Sci -- "Certain problems of the hydromechanical calculation of [redacted] filtration through earth dams on permeable foundations." Kiev, 1960. (Min of Higher and Secondary Specialized Education UkSSR. Kiev Order of Lenin Polytechnic Inst). (KL, 1-61, 198)

FOMIN, N.M.

Shoemakers are studying. Kozh.-obuv.prom. 4 no.4:39 Ap '62.
(MIRA 15:5)
(Shoe manufacture) (Leningrad--Technical education)

FOMIN, N.M.

Workers of the shoe and leather industry are studying. Kozh.-obuv. prom. 5 no.5:39 My '63. (MIRA 16:5)
(Employees, Training of) (Shoe industry) (Leather industry)

MARKOV, V.I., Polkovnik meditsinskoy sluzhby; FOMIN, N.N., podpolkovnik meditsinskoy sluzhby, kand.med.nauk

Organizing the treatment of burn cases. Voen.-med.zhur. no.8: 16-18 Ag'58. (MIRA 16:7)
(BURNS AND SCALDS)

FOMIN, N.N., mayor meditsinskoy sluzhby

Inhibition of the abdominal reflex as a symptom in acute appendicitis. Voen.-med. zhur. no.6:79 Je '51. (MLRA 9:9)
(APPENDICITIS) (REFLEXES)

FOMIN, N.N., kandidat meditsinskikh nauk

Saving gauze in plaster splinting. Khirurgiia no.2:71-72 F '55.
(BANDAGING AND DRESSING, (MLRA 8:5)
saving of gauze in plaster splinting)

FOMIN, N.N., kand. med. nauk

Intermedullar migration of a nail. Khirurgiia, Moskva 32 no.9: 82 S '56. (MIRA 12:7)

1. Iz khirurgicheskogo otdeleniya rayonnoy bol'nitsy.
(FRACTURES)

FOMIN, N.N., kandidat meditsinskikh nauk

Lung resection for gunshot wounds. Vest.khir. 77 no.3:89-90 Mr '56.
(CHEST--WOUNDS AND INJURIES) (MLRA 9:7)
(LUNGS--SURGERY)

FOMIN, N.N.

"Harpooning" foreign bodies with diathermocoagulation. Khirurgiia Supplement:52-53 '57. (MIRA 11:4)
(FOREIGN BODIES (SURGERY))
(DIATHERMY)

VILYAVIN, G.D., professor; FOMIN, N.N., podpolkovnik med.sluzhby, kand.med.nauk

Analysis of postoperative complications in acute appendicitis. Voen.-med.zhur. no.2:23-27 F '60. (MIRA 13:5)
(APPENDECTOMY compl.)

GULYAKIN, M.F.; FOMIN, N.N.; SHAPOSHNIKOV, Yu.G. (Moskva)

Some aspects of the use of oxygen under increased pressure in an experiment and in a clinic. Eksper. khir. i anest. 9 no.3: 8-13 My-Je '64. (MIRA 18:3)

FOMIN, N.N.

A.A. Vishnevskii's operation performed in the study of the physiology and pathology of the vermiform appendix in animals. Eksper. khir. i anest. 9 no.4:46-48 Jl-Ag '64.

(MIRA 18:3)

1. Institut khirurgii imeni Vishnevskogo (dir. - deystvitel'nyy chlen AMN SSSR prof. Vishnevskiy) AMN SSSR i Glavnyy voyennyy gospital imeni Burdenko (nachal'nik M.M. Gilenko).

L 26739-66 EWT(m) JD

ACC NR: AP6007081 (A,N) SOURCE CODE: UR/0177/66/000/002/0030/0032

AUTHOR: Shaposhnikov, Yu. G. (Major in medical service, Candidate of medical sciences); Gulyakin, M. F. (Colonel in medical service); Fomin, N. N. (Lieutenant colonel in medical service, Candidate of medical sciences)

ORG: none

TITLE: Use of oxygen under high pressure in certain pathological states. (Experimental investigation)

SOURCE: Voyenno-meditsinskiy zhurnal, no. 2, 1966, 30-32

TOPIC TAGS: blood circulation, high pressure chamber, experiment animal, rabbit

ABSTRACT: The effect of oxygen under pressure on sluggish peripheral blood circulation in animals was studied. The decrease in peripheral blood circulation was brought about by clamping the abdominal aortas immediately, above the bifurcation or by tying both outer long arteries. The operations were performed on 12 rabbits under local anesthesia. Marked muscular paralysis of the hind extremities, followed by adynamia ensued. All six animals used as controls died: five, one day after the operation and one on the sixth day. Of the experimental animals (kept in oxygen tank under 2 atm pressure), one died one day following the operation, two on the fourth day and three on the fifth day. During this period, the experimental animals showed activity,

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26739-66

ACC NR: AP6007881

took food and liquid. In another experiment, 30 rabbits were used (15-15). Their outer long arteries were tied and cut. The experimental animals were kept 2 hours daily in an oxygen chamber for 5-8 days. They showed activity, good orientation, ate and drank and the signs of the paralysis disappeared. After removal from the chamber, the paralysis reappeared after 10-15 min. After each treatment the symptoms of paralysis diminished and in some cases disappeared completely. Chronaxia increased after the operation in all animals by some 1½-2 times. After oxygen treatment it was lowered by some 200 times. Tissue oxygen saturation was tested and shown to be ten times as high for the oxygen-treated animals as for the controls. Clamping of abdominal aorta and ligatures of long arteries without oxygen therapy produced necrosis of the hip muscles, a phenomenon absent in the treated group.

SUB CODE: 06/ SUBM DATE: 00/ ORIG REF: 000/ OTH REF: 000

Card 2/2

FOMIN, N.P.

BELENKIN, IA. I., A. P. GAL'TSOV, N. P. FOMIN, A. KH. KHRGIAN.

Obledenenie vozdushnykh sudov. Moskva, Izd-vo GVF, 1938.
Title tr.: Airship icing.

NCF

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

FOMIN - N. P.

5

3.6-180 551.586:628.8

Bastamov, S. L., Topol'nitskii, N. M. and Fomin, N. P., O laboratoriiakh iskusstvennogo klimata. [Artificial climate laboratories.] Meteorologiia i Gidrologiia, No. 12:35-39, Dec. 1950. equations. DLC—In connection with the recent construction of two new stations of artificial climate for the development of frost and drought resistant fruit and citrus trees and berry plants, the authors describe laboratories already existing in the U.S.S.R. and analyze the results obtained. Specific investigations on snow drifting and temperatures and evaporation from the soil are outlined. *Subject Headings:* 1. Climatic laboratories 2. Artificial climates 3. Snow surveys 4. U.S.S.R.—*I.M.P.*

FOMIN, N.P.

What the factory "Tashtekstil'mash" is now working on. Tekst. prom. 18 no.2:25-28 F '58. (MIRA 13:3)
(Tashkent--Cotton machinery)

FOMIN, N. R. and PROTASOV, A. I.

Alcohol-streptocide therapy of strangles in horses in combination with waterless toilet of wounds.

SO: TABCON Veterinariya; 23; (12); December 1946; Unclassified.

Leningrad Veterinary Institute, and the Veterinary Department, Executive Committee, Leningrad City Soviet.

FOMIN, N.S.

Case of posterior tuberculous spondylitis with cerebrospinal disorders. Probl. tub. 42 no.12:60-61 '64. (MIRA 18:8)

1. Kafedra nervnykh bolezney (nachal'nik - prof. A.G.Panov) Voyenno-meditsinskoy ordena Lenina akademii imeni S.M.Kirova, Leningrad.

FOMIN, N.V.

BAKHVALOV, Grigoriy Tikhonovich; BIRKGAN, Leopol'd Nikolayevich; LABUTIN, Valentin Petrovich; FOMIN, N.V., redaktor; KAMAYEVA, O.M., redaktor; LAYNER, V.I., professor, doktor, retsenzent; KUPTSOV, I.I., inzhener, retsenzent; VAYNSHTEYN, Ye.B., tekhnicheskiy redaktor.

[Handbook of an electroplater] Spravochnik gal'vanostega. Izd. 2-e, perer. i dop. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1954. 650 p. (MLRA 8:4)
(Electroplating)

POPILOV, Lev Yakovlevich; ZAYTSEVA, Lidiya Pavlovna; FOMIN,N.V., redaktor; GOLYATKINA,A.G., redaktor; EVENSON,I.M., tekhnicheskiy redaktor

[Electrolytic polishing and etching of metallographic sections] Elektropolirovanie i elektrotravlenie metallograficheskikh sblifov. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1955. 310 p. (MLRA 9:2)

(Metallography) (Polishing, Electrolytic)

Fomin, N.V.

VYSOTSKAYA, Veronika Nikolayevna; CHIPIZHENKO, Andrey Ivanovich; MAL'TSEV, M.V., kandidat tekhnicheskikh nauk, retsenzent; SHPICHINETSKIY, Ye.S., kandidat tekhnicheskikh nauk, retsenzent; KHEYNES, S.A., inzhener, retsenzent; FOMIN, N.V., redaktor; KAMAYEVA, O.M., redaktor izdatel'stva; KARASEV, A.I., tekhnicheskiy redaktor

[Physical metallurgy] Metallovedenie. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 360 p.
(Physical metallurgy) (MLRA 10:1)

VYAZNIKOV, Nikolay Filippovich; FOMIN, N.V., red.; BERLIN, Ye.N., red. izdatel'stva; EVENSON, I.M., tekhn.red.

[Termist, uchebnik dlia proizvodstvenno-tekhnicheskogo obucheniia rabochikh. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1957. 264 p. (MIRA 10:12)
(Steel--Heat treatment)

FOMIN, N.V.

Strong fields in the theory of electric conductivity of semiconductors. Zhur. tekh. fiz. 28 no.4:783-786 Ap '58. (MIRA 11:4)

1. Leningradskiy politekhnicheskiy institut im. M.I. Kalinina.
(Semiconductors)

57-28-4-18/39

AUTHOR: Fomin, N. V.

TITLE: Strong Fields in the Theory of Electric Conductivity of Semiconductors (Sil'nyye polya v teorii elektroprovodnosti poluprovodnikov)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 4, pp.783-786 (USSR)

ABSTRACT: The domains of application for standard formulae of the mobility of current-carriers in nondegenerate semiconductors were investigated here in the example of silicon with hole-conductivity. The dependence of the parameter α_L on the field and on temperature is given in the form of a table and it is shown that in the range of low temperature deviations from the Bardeen-Schockley formula (Ref 1) are already to be expected at 10 V/cm. The dependence of the parameter α_n on the concentration N_n, the temperature and on the field, as well as the dependence of the parameter α_i on the concentration of ionized admixture N_i, on temperature and on the field are given. In the latter it is

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Strong Fields in the Theory of Electric Conductivity of Semiconductors

shown that the Conwell-Weisskopf formula (Ref 3) is more reliable in the case of higher concentration of admixture. There are 3 tables and 3 references, 0 of which are Soviet.

ASSOCIATION: Leningradskiy politekhnicheskiy institut im. M. I. Kalinina (Leningrad Polytechnical Institute imeni M. I. Kalinin)

SUBMITTED: September 26, 1957

VITKIN, Aleksandr Isaakovich. Prinimali uchastiye: KADANER, L.I.; OLEFIR, F.F.; SELIVANOV, A.D.. FOMIN, N.V., red.; OZERETSKAYA, A.L., red.izd-va; VAYNSHTEYN, Ye.D., tekhn.red.

[Manufacture of electrolitically tinned plate] Proizvodstvo elektroliticheski luzhenoi zhesti. Moskva, Gos.nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1959. 309 p. (MIRA 12:11)

(Tin plating) (Electroforming)

33674
S/058/61/000/012/042/083
A058/A101

24,7700 (1035, 1043, 1137)

AUTHOR: Fomin, N. V.

TITLE: Quantum corrections to Debye-Khyukkel' potential

PERIODICAL: Referativnyy zhurnal, Fizika, no. 12, 1961, 337, abstract 12E287 ("Nauchno-tekhn. inform. byul. Leningr. politekhn. in-t", 1960, no. 7, 14-18)

TEXT: The screening of the potential of ionized impurity centers by free electrons is examined. It is assumed that the change in electron density $\delta n(r)$ that is due to field $V(r)$ is small, and the perturbation theory is used in operator form. For the Fourier component of the potential near an ionized scattering center there was obtained the expression

$$V_q = \frac{4\pi Ze^2}{\varkappa} \cdot \frac{1}{q^2 + q_0^2 f(x)},$$

$$x = \frac{q\lambda}{2}, \quad \lambda = \frac{h}{(2 mk T)^{1/2}},$$

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33674
S/058/61/000/012/042/083
A058/A101

Quantum corrections of Debye-Khyukkel' potential

where q_o^2 is the square of the inverse Debye-Khyukkel' radius. In contrast to the Takimoto formula (RZhFiz, 1960, no. 10, 2735), which was derived in the same approximation by another method, f(x) is here obtained in analytic form. By way of supplement the effect of these corrections on the electric conductivity of semiconductors is examined for the case when carrier scattering by ionized impurities predominates. It is shown that the effect in question is tantamount to partial decrease of carrier mobility, inasmuch as the f(x) factor somewhat reduces the screening action of the free carriers.

S. Pavlov

[Abstracter's note: Complete translation]

Card 2/2

14,7000

S/058/61/000/009/032/050
A001/A101

AUTHOR: Fomin, N.V.

TITLE: On the applicability of the effective mass method

PERIODICAL: Referativnyy zhurnal. Fizika no.9, 1961, 213-214, abstract 9E26 ("Nauchno-tekhn. inform. byul. Leningr. politekhn. in-t", 1960, no. 7, 19 - 22)

TEXT: The author considers the crystal of a semiconductor to which a strong external electric field is applied. He studies the problem, up to which fields the method of effective mass is applicable, i.e., up to which fields interzonal interaction is inessential. It turned out that these fields are usually by far stronger than spark-over ones. However, in semiconductors with the small width of forbidden zone ($\sim$0.1 ev) the criterion of applicability of the effective mass method may be violated already in the range of sub-spark-over fields.

Sh. Kogan

[Abstracter's note: Complete translation]

Card 1/1

Fomin, N. V.

S/181/60/002/04/07/034
B002/B063

24.2600

AUTHOR: Fomin, N. V.

TITLE: Absorption of Infrared Radiation by Semiconductors in an Electric Field

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 4, pp. 605-607

TEXT: The present paper describes a theoretical calculation of the effect of an electric field upon the absorption of quanta. The author calculated the mean value of $\cos^2(\vec{e},\vec{k})$; $\vec{e}$ is the polarization vector of the quantum, and $\vec{k}$ the wave vector of the electron. The following relations were obtained:

$$\overline{\cos^2(e,k)} = \frac{1}{3} + \frac{\alpha_L^2}{15}\left[3\cos^2(e,E) - 1\right], \quad \alpha = \frac{eE\tau_1 v}{\varkappa T},$$

and $P_a^{(E)} = P_a\left[1 + \frac{\alpha_L^2}{5}\left[3\cos^2(e,E) - 1\right]\right]$. P_a is the absorption probability averaged over the energies in the absence of a field. The following relation holds for unpolarized radiation:

$\cos^2(e,E) = \frac{1}{3}\sin^2(n,E)$. The absorption probability depends on the angle

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Absorption of Infrared Radiation by Semiconductors in an Electric Field

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B002/B063

between the propagation vector of the wave n and the field E: $P_a^{(E)} = P_a\left[1 - \frac{\alpha_L^2}{5}\cos^2(n,E)\right]$. If the beam is perpendicularly incident on the field (E ⊥ n), absorption attains a maximum. A minimum is to be expected for n ∥ E. The author thanks Professor L. E. Gurevich for his discussion. There are 3 references: 2 Soviet and 1 British.

ASSOCIATION: Leningradskiy politekhnicheskiy institut (Leningrad Polytechnic Institute)

SUBMITTED: June 26, 1959

Card 2/2

FOMIN, N.V.

Theory of screening in the case of a many-valley electronic energy spectrum. Fiz. tver. tela 3 no.6:1883-1886 Je '61. (MIRA 14:7)

1. Leningradskiy politechnicheskiy institut im. M.I.Kalinina.
(Crystal lattices) (Spectrum, Atomic)

CHERVYAKOV, Aleksandr Nikolayevich; KISELEVA, Sof'ya Aleksandrovna; RYL'NIKOVA, Alla Grigor'yevna; FOMIN, N.V., red.; BERLIN, Ye.N., red. izd-va; VAYNSHTEYN, Ye.B., tekhn. red.

[Metallographic determination of inclusions in steel] Metallograficheskoe opredelenie vkliuchenii v stali. Izd.2., perer. i dop. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1962. 248 p. (MIRA 15:2)
(Steel--Defects) (Metallography)

POPILOV, Lev Yakovlevich; ZAYTSEVA, Lidiya Pavlovna; VINOGRAD, M.I., doktor tekhn. nauk, retsenzent; SMIRNOVA, A.V., kand. tekhn. nauk, retsenzent; FOMIN, N.V., red.; GORDON, L.M., red.izd-va; ISLENT'YEVA, P.G., tekhn. red.

[Electrolytic polishing and pickling of metallographic sections] Elektropolirovanie i elektrotravlenie metallograficheskikh shlifov. 2., perer. izd. Moskva, Metallurgizdat, 1963. 410 p. (MIRA 16:5)

(Metallography--Equipment and supplies)
(Electrolytic polishing)
(Metals--Pickling)

FOMIN, N.V.

Ultrasound propagation in n-germanium. Fiz. tver. tela 6 no.11: 3469-3471 N '64. (MIRA 18:1)

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

ZAYTSEVA, Lidiya Pavlovna; LOKHOVA, Tat'yana Grigor'yevna; FOMIN, N.V., red.

[Nonferrous metallography in visible and ultraviolet rays] TSvetnaia metallografiia v vidimykh i ul'trafioletovykh luchakh. Moskva, Izd-vo Metallurgiia, 1964. 142 p. (MIRA 17:7)

L 11992-65 EWT(l)/EWT(m)/T/EWP(t)/EWP(k)/EWP(b) Pf-4/Pi-4 IJP(c)/AFWL/
SSD/AS(mp)-2/ESD(gs)/ESD(t) JD

ACCESSION NR: AP4048432 S/0181/64/006/011/3469/3471

AUTHOR: Fomin, N. V.

TITLE: The propagation of ultrasound in n-type germanium

SOURCE: Fizika tverdogo tela, v. 6, no. 11, 1964, 3469-3471

TOPIC TAGS: germanium, ultrasound propagation, sound absorption, low temperature research, sound velocity, conduction electron

ABSTRACT: Expressions are derived for the acoustic power absorption coefficients in n-type Ge along the directions [100] and [110]. These coefficients are plotted as a function of the frequency in the 10^{10} rad/sec region for 1.5, 2, 4.2 and 10K. On increase of temperature the absorption coefficient increases and the absorption maximum shifts toward higher frequencies. The ratio of absorption coefficients for the [110] and [100] directions can be used to calculate E_1/E_3, where E_1 and E_3 are the deformation potential constants.

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ACCESSION NR: AP4048432

These constants can be also found from the relative change in the velocity of sound due to the interaction with the conduction electrons, which is calculated for the [100] and [110] directions in the nondegenerate case. The use of the theoretical formulas in several experimental situations is discussed. Orig. art. has: 10 formulas.

ASSOCIATION: Leningradskiy politekhnicheskiy institut im. M. I. Kalinina (Leningrad Politechnic Institute)

SUBMITTED: 12Mar64 ENCL: 00

SUB CODE: GP, IC NR REF SOV: 003 OTHER: 005

Card 2/2

L 31170-66 EWT(l)/EWT(m)/T/EWP(t)/EWA(h) IJP(c) JD/AT
ACC NR: AP6006822 SOURCE CODE: UR/0181/66/008/002/0409/0415

AUTHOR: Fomin, N. V. 54 B

ORG: Leningrad Polytechnical Institute im. M. I. Kalinin (Leningradskiy politekhnicheskiy institut)

TITLE: Thermal expansion of semimetals

SOURCE: Fizika tverdogo tela, v. 8, no. 2, 1966, 409-415

TOPIC TAGS: semiconductor theory, thermal expansion, electron gas

21.44.75

ABSTRACT: The author studies the effect of a degenerate electron gas on the thermal expansion of semimetals and degenerate semiconductors with a cubic lattice structure where there are no dislocations and the concentration of free electrons may be varied within certain limits by doping. It is assumed that the electron ratio is small enough to disregard elasticity of the electron gas. The calculations in this paper are based on the further assumptions that: 1. the elastic continuum model is applicable for the crystal where acoustic waves with longitudinal and transverse polarization exist separately; 2. the cubic approximation is sufficient to account

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L 31170-66

ACC NR: AP6006822

for anharmonicity of the vibrations; 3. electron-phonon coupling is linear with respect to normal lattice coordinates. It is found that there may be a reduction in the temperature coefficient of thermal expansion with an increase in electron concentration at low temperatures. This effect may be disregarded at high temperatures. Expressions are derived for calculating localized deformations (e. g. close to individual impurity ions) and the limits of applicability for these formulas are discussed. Orig. art. has: 35 formulas.

SUB CODE: 20/ SUBM DATE: 10Jul65/ ORIG REF: 002/ OTH REF: 010

Card 2/2 LC

ACC NR: AP7005852 SOURCE CODE: UR/0181/66/008/012/3613/3616

AUTHOR: Fomin, N. V.

ORG: Leningrad Polytechnic Institute im. M. I. Kalinin (Leningradskiy politekhnicheskiy institut)

TITLE: Contribution to the theory of the electron effect in thermal expansion

SOURCE: Fizika tverdogo tela, v. 8, no. 12, 1966, 3613-3616

TOPIC TAGS: thermal expansion, elastic deformation, electron interaction, phonon interaction

ABSTRACT: This is a continuation of earlier work (FTT v. 8, 409, 1966) on the thermal expansion of solids and is devoted to a derivation of an explicit expression for the Gruneisen coefficients and for the nonlinear correction to Hooke's law in terms of the third order anharmonicity parameters. It is shown that the rapid increase in the Gruneisen coefficient, which is observed in metals with decreasing temperature in the region close to the Debye temperature and below, can be explained if the presence of an electron-phonon coupling is taken into account. In the case of metals the Gruneisen coefficient can be assumed to become infinite at zero temperature. In the case of semiconductors the electron-phonon effect reduces to small corrections. It is pointed out in conclusion that the calculations of the present article are valid at constant pressure and the influence of external hydrostatic pressure at a temperature coefficient of expansion reduces in the lowest approximation only to a change in the

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ACC NR: AP7005852

compressibility. Orig. art. has: 21 formulas.

SUB CODE: 20/ SUBM DATE: 20Jun66/ ORIG REF: 001/ OTH REF: 008

Card 2/2

ROZENBERGER, B.F.; FOMIN, N.V.

Use of command electropneumatic instruments for the automation of operations of intensified ice makers. Izv.vys.ucheb.zav.; pishch.tekh. 2:109-113 '62. (MIRA 15:5)

1. Leningradskiy tekhnologicheskiy institut kholodil'noy promyshlennosti, kafedra elektrotekhniki.
(Ice--Manufacture) (Automatic control)

FOMIN, O.B.

Some problems of the geochemistry of the ancient weathering surface of alkali rocks in the October Massif. Geol. zhur. 24 no.1:63-67 '64. (MIRA 18:7)

1. Institut geologicheskikh nauk AN UkrSSR.

S/032/60/026/06/09/044
B010/B126

3.5500

AUTHORS: Bel'skiy, V. Ye., Fomin, O. K.

TITLE: The Radiometric Determination of Potassium

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 6, pp. 707 - 709

TEXT: I. M. Korenman and Ye. I. Zorin have established (Ref. 5) that with the use of samples, whose thickness is greater than that necessary for the complete absorption of the β-rays of K^{40}, the number of impulses per minute per percent of potassium remains constant, that is, independent of the thickness of the sample. This assumption is incorrect, since the self-absorption of the various potassium salts is varied. On this basis the value $(Z/A)_{effective}$ (Z = ordinal number, A = atomic weight) of different potassium compound and mixtures was determined, and it was established that (Table, influence of the type of sample on the activity measured) the number of impulses is inversely proportional to the value $(Z/A)_{eff.}$. The influence of the type of sample on the activity measured is small, but

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special corrections are only necessary when the values $(Z/A)_{eff.}$ for the standard sample, and for the sample to be examined are different. When potassium chloride or heavier elements are used as standards on the analysis of samples with higher hydrogen content, a correction must definitely be made. A corresponding equation which contains the number of pulses of the sample and of the standard, and both corresponding values of $(Z/A)_{eff.}$ is used for this. There are 1 figure, 1 table, and 6 references: 5 Soviet and 1 American.

ASSOCIATION: Lisichanskiy filial Gosudarstvennogo nauchno-issledovatel'skogo i proyektnogo instituta azotnoy promyshlennosti i produktov organicheskogo sinteza (Lisichansk Branch of the State Scientific Research and Project Institute of the Nitrogen Industry and of the Products of Organic Synthesis)

STROYEVA, S.S.; RUDNITSKIY, L.A.; FOMIN, O.K.; KUL'KOVA, N.V.; GEL'BSHTEYN, A.I.

Surface properties of a catalyst for oxidizing ammonolysis of propylene. Kin. i kat. 5 no.2:355-356 Mr-Ap '64.
(MIRA 17:8)

1. Fiziko-khimicheskiy institut imeni Karpova.

ACCESSION NR: AP4042932 S/0057/64/034/008/1441/1443

AUTHOR: Fomin, O.K.; Tikhomirov, M.V.; Tunitskiy, N.N.

TITLE: Mass spectra of organic ions formed on a heated oxidized molybdenum surface in the residual gas atmoshpere within a mass spectrometer

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.8, 1964, 1441-1443

TOPIC TAGS: ion source, ionization, catalytic activity, mass spectrum, molybdenum compound

ABSTRACT: The mass spectrum was recorded of the heavy ions formed on the heated surface of a 10 x 10 x 0.05 mm^3 99.9% pure molybdenum strip which had been oxidized by heating in air for 20 hours at 450 to 500°C, and which occupied the source position in a type MI-1305 mass spectrometer. The temperature of the molybdenum strip was monitored with a thermocouple; the spectrometer was exhausted to 7 x 10^{-6} mm Hg with a mercury diffusion pump; and ions originating elsewhere than on the molybdenum strip were prevented from reaching the spectrometer proper by platinum shields. When the Mo strip temperature was 400°C, ion currents of the order of 10^{-12} A/cm^2 were observed at mass numbers 58, 72, 84 and 86; currents of the order of 10^{-3} A/cm^2

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were observed at mass numbers 99, 95, 101, 110 and 114; and smaller ion currents were observed at mass numbers 59, 96, 111 and 112. All these ion currents behaved in the same way when the Mo strip temperature was varied. The maximum current occurred at 400°C. At lower temperatures the ion currents were smaller but stable, but at higher temperatures the currents decreased exponentially with time. At 415°C the time constants for the decrease of the most intense of the ion currents were in the vicinity of 2 hours. When the strip was heated to 500°C the currents ceased within a second and could be restored only by reheating the Mo strip in air. The results are compared with those obtained by E.Ya.Zandberg and N.I.Ionov (DAN SSSR 141, 139, 1961) with oxidized tungsten, and obvious explanations are suggested for such differences as exist. From the findings of J.W.Hickman and E.A.Gulbransen (Metals Tech. AIME,T.P.2144,April,1947) concerning the formation of oxides on molybdenum surfaces and the behavior of the ion currents with varying emitter temperature, it is concluded that the active catalyst is MoO_3 and that the heavy ions probably contain oxygen. It is suggested that the ions of mass number 58 and 72 may be $C_3H_6O^+$ and $C_4H_8O^+$. Air containing 1% ethanol, propanol or toluol was admitted to the source chamber at a pressure of 10^{-3} mm Hg. No increase in any of the ion currents was thereby produced. Orig.art.has: 1 figure.

ACCESSION NR: AP4042932

ASSOCIATION: none

SUBMITTED: 10Nov63

ENCL: 00

SUB CODE: NP,GP

NR REF SOV: 006

OTHER: 003

3/3

FOMIN, O.K.; TIKHOMIROV, M.V.

Surface ionization of organic molecules on platinum. Zhur. fiz. khim. 38 no.3:725-728 Mr '64. (MIRA 17:7)

1. Fiziko-khimicheskiy institut imeni L.Ya. Karpova.

FOMIN, O.K.; TIKHOMIROV, M.V.

Surface ionization of organic molecules on molybdenum and nickel. Zhur. fiz. khim. 38 no.3:813-814 Mr '64.
(MIRA 17:7)

1. Fiziko-khimicheskiy institut imeni L.Ya. Karpova.

FOMIN, O.S.; TIKHOMIROV, M.V.; TOMITSKIY, N.N.

Surface ionization of toluene on oxidized molybdenum. Kin. i kat. 6 no.4:634-640 Jl-Ag '65. (MIRA 18:9)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova, Moskva.

FOMIN, O.K.; TIKHOMIROV, M.V.

Nature of oxides responsible for the ionization of organic vapors on oxidized molybdenum. Kin. i kat. 6 no.4:764 Jl-Ag '65. (MIRA 18:9)

1. Fiziko-khimicheskiy institut imeni L.Ya. Karpova, Moskva.

L 11422-66 EWA(k)/FBD/EWT(1)/EEC(k)-2/T/EWP(k)/EWA(m)-2/EWA(h) SCTB/IJP(c) WG

ACCESSION NR: AP5021376 UR/0120/65/000/004/0239/0241
621.378.325

AUTHOR: Sokolov, A. K.; Fomin, O. P. 44

TITLE: Demountable pulse lamp for a laser 25,44

SOURCE: Pribory i tekhnika eksperimenta, no. 4, 1965, 239-241

TOPIC TAGS: laser pumping, laser lamp

ABSTRACT: The design characteristics of a pulsed laser lamp consisting of four individual cylindrical lamps mounted around the glass tube containing the active medium are described. The block diagram of the cylindrical lamp is shown in Fig. 1 of the Enclosure and the circuit diagram, in Fig. 2. The lamp has the following characteristics: capacitance of power supply capacitors, 4 x 600 μf; maximum voltage across a capacitor, 2.5 kv; minimum firing voltage, 0.6 kv; maximum flash energy, 7.5 kj; firing-electrode a-c voltage, 30 kv; flash duration, 100 μsec. [JR]
Orig. art. has: 5 figures.

ASSOCIATION: Institut atomnoy energii GKAE, Moscow (Institute of Atomic Energy, GKAE) 44

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L 1422-66

ACCESSION NR: AP5021376

SUBMITTED: 14Feb64 ENCL: 02 SUB CODE: EC

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4097

Card 2/4

L 1422-66

ACCESSION NR: AP5021376

ENCLOSURE: 01

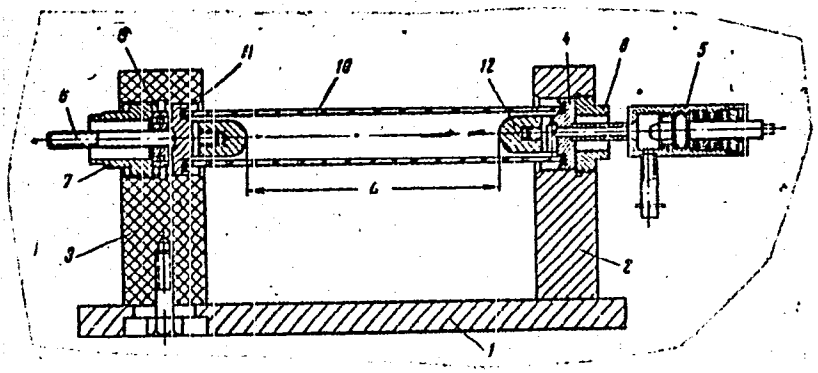

Fig. 1. Structure of the demountable cylindrical lamp

1 - Metal base; 2 - metal electrode holder; 3 - insulating electrode holder; 4 - stainless steel electrode; 5 - xenon pumping valve; 6 - high-voltage electrodes; 7, 8 - lugs; 9 - bearing for vacuum seal between the quartz tube and electrodes; 10 - quartz tube.

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L 1422-66

ACCESSION NR: AP5021376 ENCLOSURE: 02

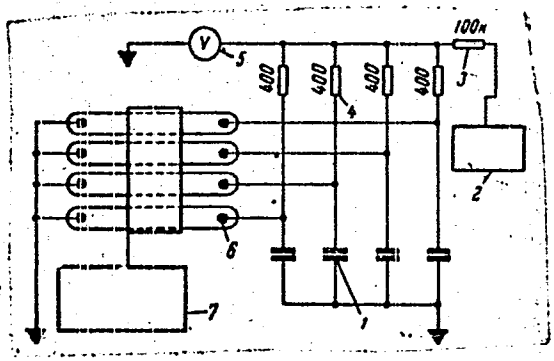

Fig. 2. Circuit diagram of the lamp

1 - Power-supply capacitors; 2 - high-voltage rectifier; 3 - resistor for limiting charging current; 4 - resistors; 5 - volt meter; 6 - tubes; 7 - inductive firing unit.

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FOMIN, P., rektor

A university in Zaporozh'ye. Sov.profsoiuzy 18 no.12:42-44 Je '62. (MIRA 15:6)

1. Obshchestvennyy universitet okhrany truda i tekhniki bezopasnosti, zaveduyushchiy otdelom okhrany truda oblastnogo soveta profesional'nykh soyuzov.
(Industrial hygiene--Study and teaching)

Country : USSR
Category: Forestry Forest Cultures. K

Abs Jour: RZhBiol., No 12, 1958, No 53500

Author : Fomin, P.
Inst : Krasnoyarsk Sci- Res Inst. of Agriculture
Title : On the Problem of Resistance in the Arboreal and Shrub Species in the Minusinsk-Khakassk Depression

Orig Pub: Byul. nauchn.-tekhn. inform. Krasnoyarsk. n-i in-ta s.kh., 1957, No 1-2, 87-89.

Abstract: The experiments at the Khakassk Agricultural Experimental Station on the introduction of arboreal and shrub species, started in 1949, have established that, when sowing seeds from Khabarovsk, Birobidzhan and Blagoveshchensk, the following varieties of 1-6 years of age are distinguished by their resistance to the low

Card : 1/3

Country : USSR K
Category: Forestry. Forest Cultures.

Abs Jour: RZhBiol., No 12, 1958, No 53500

temperatures of the winter and to the atmospheric dryness in the winter to spring period: Manchurian ash, Maak amurensis, Siberian filbert (Corylus heterophylla), Amur hazelnut, Manchu walnut, Amur maple (Acer ginnala) and other varieties (a total of 13). Also resistant are two races of Amur marigold and some types of Amur poplar. In the propagation by seeding, the following varieties stand out in the areas of secondary origin: littleleaf linden, common elm, garden serviceberry (Amelanchier ovalis), etc. With vegetative propagation the following stand out: white willow, Ural false spirea (Sorbaria sorbifolia), white poplar and balsam poplar, garden serviceberry, and a few other species. The majority

Card : 2/3

FOMIN, P.

Walls and roofing made of reedwork panels. Sel'.stroi. 12 no.5:9 My '57. (MLRA 10:7)

1. Glavnyy inzhener Upravleniya po stroitel'stvy v kolkhozakh pri Sovete Ministrof Chechena-Ingushskoy ASSR.
(Reed (Botany)) (Chechen-Ingush A.S.S.R.--Farm buildings)

FOMIN, P.

The metallurgical workers of the Soviet Union approve the development indices of the national economy of the U.S.S.R. for the years 1959-1960. Wiad hut 15 no.2:59-61 F '59.

1. Czlonek prezydium Komitetu Centralnego Zwiazku Zawodowego Robotnikow Przemyslu Hutniczego ZSRR, Moskwa.

FOMIN, P. D.

6847. Fomin, P. D. MTS v bor'be za razvitiye zhivotnovodstva. Opyt Aksayskoy mashinno-trakt. stantsii. Rostov n/D, Kn. izd., 1954. 48 s. s. ill. 20 sm. 3.000 ekz. 65 k. - (55-2948) P 636&338.1 mts) (47.892)

SO: Knizhnaya Letopis' No. 6, 1955

KURENYSHEV, Yu., inzh. (g.Orsk); MASAGUTOV, M.F.; POPOV, S.; BUKHANTSEV, N.; UGNIVENKO, P.N.; UBIYKO, F.F., master-vzryvnik; PROZOROVSKIY, V.I., master-vzryvnik; FOMIN, P.F., master-vzryvnik; DROZDOV, P.I., master-vzryvnik

Readers' letters. Bezop.truda v prom. 5 no.12:33 D '61. (MIRA 15:1)

1. Nachal'nik burovzryvnykh rabot Solikanskogo kaliynogo kombinata (for Masagutov). 2. Upravlyayushchiy trestom "Soyuzvzryvprom" (for Popov). 3. Nachal'nik proizvodstvennogo otdela tresta "Soyuzvzryvprom" (for Bukhantsev). 4. Nachal'nik burovzryvnykh rabot shakhtoupravleniya 1-5 tresta Kirovugol' Luganskogo sovnarkhoza (for Ugnivenko). 5. Shakhtoupravleniye 1-5 tresta Kirovugol' Luganskogo sovnarkhoza (for Ubiyko, Prozorovskiy, Fomin, Drozdov). (Industrial safety)

FOMIN, P. F.

Opyt polezashchitnogo lesorazvedeniia v Khakassii [Experience of shelterbelt aforestation in the Khakass A. S. S. R.]. Abakan, Khakgiz, 1952. 72 p.

SO: Monthly List of Russian Accessions, Vol 6 No 6 September 1953

YAKOVLEV, Yuriy Sergeyevich; FOMIN, P.F., inzh.-vitse-admiral, retsenzent; CHUVIKOVSKIY, V.S., kand. tekhn. nauk, retsenzent; PATRASHEV, A.N., doktor tekhn. nauk, prof., zasl. deyatel' nauki i tekhniki RSFSR, nauchnyy red.; FOMICHEV, A.G., red.; KOROVENKO, Yu.N., tekhn. red.

[Hydrodynamics of explosions] Gidrodinamika vzryva. Leningrad, Sudpromgiz, 1961. 312 p. (MIRA 15:4)
(Shock waves) (Explosions)

ORLOVSKIY, I.V.; KRUPKIN, P.I.; POL'SKIY, M.N.; FOMIN, P.F.; SHAKIROV, F.Kh.; P'YAVCHENKO, N.I., prof., doktor biol. nauk, otv. red.

[Soil erosion in the area of the Minusinsk Lowland and its control; advice to agricultural workers] Eroziia pochv v raionakh Minusinskoi vpadiny i bor'ba s neiu; sovety rabotnikam sel'skogo khoziaistva. Krasnoiarsk, AN SSSR, In-t lesa i drevesiny, 1963. 69 p. (MIRA 18:3)

FOMIN P. I.

AUTHOR: Fomin, P. I. 56-1-34/56

TITLE: The Radiative Corrections of Bremsstrahlung
(Radiatsionnyye popravki k tormoznomu izlucheniyu)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 1, pp. 227-228 (USSR)

ABSTRACT: The method of Feynman (reference 1) usually employed for the derivation of the radiation corrections can practically not be applied to the bremsstrahlung due to the difficulty of the calculations. The present paper employs the so-called method of the mass-operator which offers a number of advantages over Feynman's method. An expression for the regularized mass-operator in the order needed here with reference to e^2 was derived by R. G. Newton (reference 4). Beside the mass-operator the polarization of the vacuum also furnishes a contribution to the radiation corrections of bremsstrahlung. For the purpose of removing the infrared divergence a fictive mass λ of the photon is as usual introduced. In order to eliminate λ from the final expression, the cross section of the double bremsstrahlung must be added to the cross section of the usual bremsstrahlung. In this

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connection 2 photons are simultaneously emitted, and the energy of one of them is not higher than a certain value ΔE given by the accuracy of measurement. The total cross section can expediently be represented in the form $d\sigma = d\sigma_0[1 - (e^2/\pi)(\delta_R + \delta_D)]$, $e^2 = 1/137$. $d\sigma_0$ signifies the cross section of the main process, δ_R determines the radiation correction and δ_D - the double bremsstrahlung. The accurate expressions for δ_R and δ_D and the demonstration of the method of calculation will be given in a more accurate paper. Only some limiting values for δ_R and δ_D are given here, namely the limit of low frequencies, the relativistic case with a low loss of energy, the ultra-relativistic limit and the nonrelativistic limit. There are 7 references, 1 of which is Slavic.

ASSOCIATION: Khar'kov State University (Khar'kovskiy gosudarstvennyy universitet)

SUBMITTED: October 11, 1957

AVAILABLE: Library of Congress

24(5)

AUTHOR: Fomin, P. I. SOV/56-35-3-22/61

TITLE: Radiative Corrections to Bremsstrahlung (Radiatsionnyye popravki k tormoznomu izlucheniyu)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 3, pp 707-718 (USSR)

ABSTRACT: When calculating radiative corrections to cross sections the Feynman method is usually employed (as e.g. in reference 1, Compton (Kompton) effect). In connection with bremsstrahlung, compared with the Compton effect, an additional parameter occurs. In the present paper the radiative correction to the differential cross section for bremsstrahlung was calculated according to the mass operator method (Refs 2,3). The main advantage offered by this method is the fact that Newton's (N'yuton) expression (Ref 3) can be used for the mass operator, in which general integration with respect to the momenta of virtual particles is possible. The chapters of the present paper deal with the following subjects: 1) General formulae and cross sections of the basic process; the electron process in consideration of radiative correction is (like in references

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2,3) dealt with by means of the modified Dirac (Dirak) equation $(\gamma p+m+V)\psi = 0$, $V = -e\gamma A + \Delta M$; ΔM - regularized mass operator, A describes the radiation field. 2) General expressions for the radiative corrections (according to reference 4). 3) Treatment of limiting cases: a) low frequencies ($\omega\varepsilon_1 \ll 1$); b) the relativistic case ($\varepsilon_1, \varepsilon_2 \gg 1$); c) the ultrarelativistic case (with not too small angles), and d) the nonrelativistic case ($p_1 \ll 1$) at low energies. An appendix explains the calculation of the integrals occurring in this work. In conclusion, the author thanks Professor A. I. Akhiyezer, V. G. Bar'yakhtar, S. V. Peletminskiy, V. F. Aleksin, and D. V. Volkov for their assistance and advice. There are 9 references, 2 of which are Soviet.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet (Khar'kov State University)

SUBMITTED: April 2, 1958

FOMIN, P. I.: Master Phys-Math Sci (diss) -- "Radiation corrections to damping irradiation". Khar'kov, 1959. 6 pp (Min Higher Educ Ukr SSR, Khar'kov Order of Labor Red Banner State U im A. M. Gor'kiy), 150 copies (KL, No 11, 1959, 115)

GUZENKO, S.Ya.; FOMIN, P.I.

Radiative corrections to photoproduction and single photon annihilation of pairs. Zhur.eksp.i teor.fiz. 38 no.2:513-517 F '60. (MIRA 14:5)

1. Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR.
(Bremsstrahlung)

ГОМИН, П. І.

GUZENKO, G. Ya. and ГОМИН, П. І.

"Asymptotic of the Vertex Function in "One-Logarithmic" Approximation"

report presented at the Intl. Conference on High Energy Physics, Geneva, 4-11 July 1962

S/056/62/043/005/047/058
B125/B104

AUTHOR: Fomin, P. I.

TITLE: On the asymptotic representation of Green's functions and of the vertex function in quantum electrodynamics

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 5(11), 1962, 1934 - 1939

TEXT: The asymptotic representations

$$s(p, m, \lambda_0, e^2) = r\left(\frac{\lambda_0^2}{m^2}, e^2\right) H\left(\psi(e^2)\frac{p^2}{m^2}\right). \qquad (3)$$

for the Green's electron functions and

$$\Gamma(p, q, m, \lambda_0, e^2) = r^{-1}\left(\frac{\lambda_0^2}{m^2}, e^2\right) B\left(\psi(e^2)\frac{pq}{m^2}, \psi(e^2)\frac{p^2}{m^2}, \psi(e^2)\frac{q^2}{m^2}\right), \qquad (4)$$

for the vertex functions are derived in a somewhat more general way than was done by M. Gell-Mann and F. Low (Phys. Rev., 95, 1300, 1954). The Dyson relations

$$d_0(k, m, \Lambda, e_0^2) = Z_3(m, \Lambda, e^2)\, d(k^2/m^2, e^2), \quad (5)$$

$$s_0(p, m, \lambda_0, \Lambda, e_0^2) = Z(m, \lambda_0, \Lambda, e^2)\, s(p, m, \lambda_0, e^2) \quad (6)$$

$$\Gamma_0(p, q, m, \lambda_0, \Lambda, e_0^2) = Z^{-1}(m, \lambda_0, \Lambda, e^2)\, \Gamma(p, q, m, \lambda_0, e^2), \quad (7)$$

$$e_0^2 = e^2 Z_3^{-1}(m, \Lambda, e^2). \quad (8)$$

for the renormalizability of quantum electrodynamics and the existence of finite limits of the renormalized functions for $m \to 0$ and $\lambda_0 \to 0$ are taken as a basis. F, ψ, A, H, and B are unknown functions. λ is the photon mass, ψ is related to the Green function d of the photon through the equations

$$d(k^2/m^2, e^2) = e^{-2} F(\psi(e^2)\, k^2/m^2), \quad |k^2| \gg m^2, \quad (1)$$

$$s(p^2/m^2, e^2) = A(e^2)\, H(\psi(e^2)\, p^2/m^2), \quad |p^2| \gg m^2, \quad (2).$$

e is the charge to be renormalized, e_0 is the "bare" charge, d, s, and

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Γ are the regularized functions, d_0, s_0, and Γ_0 are the non-regularized functions. The regularized functions that do not contain the invariant cutoff momentum Λ stay finite with $\Lambda \longrightarrow \infty$. The equations (5), (6), (7), (8) lead to the relations

$$s(p, m, \lambda_0, e^2) = r(\lambda_0^2/m^2, e^2)\, t(p^2/m^2, e^2), \qquad (14),$$

$$\Gamma(p, q, m, \lambda_0, e^2) = \alpha\left(\frac{\lambda_0^2}{m^2}, e^2\right)\beta\left(\frac{pq}{m^2}, \frac{p^2}{m^2}, \frac{q^2}{m^2}, e^2\right) \qquad (15)$$

$$(|p^2 - m^2|, \quad |q^2 - m^2| \gg \lambda_0^2),$$

for the dependences of s and Γ on λ_0, where $r(\lambda_0^2/m^2, e^2)\alpha(\lambda_0^2/m^2, e^2) = 1$. The solutions

$$e^2 d(k^2/m^2, e^2) = F(\psi(e^2)\, k^2/m^2), \qquad (22),$$

$$t(p^2/m^2, e^2) = A(e^2)\, H(\psi(e^2)\, p^2/m^2), \qquad (23)$$

of the asymptotic functional equations for high momenta follow from (14) and (15). All the scalars k^2, p^2, pq, etc. are assumed to be great as compared with m. Perturbation theory is consulted only in proving (5) - (8). If renormalizability is not associated with the applicability of perturbation theory, this will hold also for (22), (3), and (4). (22), (3), and (4) give additional information on the functions d, s, and Γ if the latter are expanded into powers of e^2. Confining the consideration to the highest powers of $\ln(p^2/m^2)$ leads to a representation which is equivalent to (3). The substitution

$$\Gamma = r^{-1}(\lambda_0^2/m^2, e^2)\, b(\varphi + x, \varphi + y, \varphi + z), \qquad \varphi = -3\pi/e^2, \quad x = \ln(pq/m^2),\ y = \ln(p^2/m^2),\ z = \ln(q^2/m^2). \tag{36}$$

leads to the formula

$$\Gamma_0 = \gamma_0 \exp\left\{\frac{3}{2}\frac{(x-y)(x-z)}{\alpha(\varphi+x)+\beta(2\varphi+y+z)}\right\}, \tag{38}$$

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On the asymptotic representation...

in the place of the formula of V. V. Sudakov (ZhETF, 30, 87, 1956). This leads to

$$\Gamma_0 = \gamma_0 \left\{1 - \frac{e^4}{6\pi^2} \ln\left|\frac{pq}{p^2}\right| \ln\left|\frac{pq}{q^2}\right| \left(\alpha \ln\left|\frac{pq}{m^2}\right| + \beta \ln\left|\frac{p^2 \cdot q^2}{m^4}\right|\right)\right\} \times \times \exp\left(-\frac{e^2}{2\pi} \ln\left|\frac{pq}{p^2}\right| \ln\left|\frac{pq}{q^2}\right|\right). \quad (39)$$

only terms of the types $(e^2L^2)^2$ and $e^2L(e^2L^2)^n$ are considered.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physicotechnical Institute of the Academy of Sciences of the Ukrainskaya SSR)

SUBMITTED: June 19, 1962

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S/185/62/007/012/019/021
D234/D308

AUTHOR: Fomin, P.I.

TITLE: The field mass of an electron in classical electrodynamics

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 7, no. 12, 1962, 1366 - 1367

TEXT: The author represents the retarded potentials of an electron as the limit of

$$A_\mu(x) = 2e\int \theta(x_0 - \xi_0)\,\delta\{(x-\xi)^2 - \varepsilon^2\}\,\dot{\xi}_\mu\,ds, \quad \theta(x_0) = \begin{cases} 1, & x_0 > 0 \\ 0, & x_0 < 0 \end{cases} \qquad (3)$$

for $\varepsilon \to +0$. The field is then

$$F_{\mu\nu}(\xi) = -\frac{e}{2\varepsilon}\left(\ddot{\xi}_\mu \dot{\xi}_\nu - \ddot{\xi}_\nu \dot{\xi}_\mu\right) + \frac{2e}{3}\left(\dddot{\xi}_\mu \dot{\xi}_\nu - \dddot{\xi}_\nu \dot{\xi}_\mu\right) + O(\varepsilon), \qquad (4)$$

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The field mass of an electron ...

and the equation of motion is

$$m_0 c \ddot{\xi}_\mu = -\frac{e^2}{2\epsilon c}\ddot{\xi}_\mu + \frac{2e^2}{3c}\left[\dddot{\xi}_\mu - \dot{\xi}_\mu(\dot{\xi}\ddot{\xi})\right] + \frac{e}{c} F^e_{\mu\nu}\cdot\dot{\xi}_\nu . \qquad (5)$$

F^e being the external field, and m_0 the mechanical mass.

$$m_e = \frac{e^2}{2\epsilon c^2} , \qquad (6)$$

is regarded as the electromagnetic mass. The energy calculated from

$$V = \frac{e}{2} A_0 (\vec{\xi}, t). \qquad (7)$$

becomes

$$V = \frac{e2}{2\epsilon} = m_e c^2 . \qquad (8)$$

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which eliminates the factor 4/3 occurring in the mass energy relation of the electron.

ASSOCIATION: Fizyko-tekhnichnyy instytut AN URSR, Kharkiv
(Physicotechnical Institute AS UkrSSR, Kharkov)

SUBMITTED: September 10, 1962

S/185/63/008/001/004/024
D234/D308

AUTHORS: Rozkhov, V. V. and Fomin, P. I.

TITLE: Renormalization group method in quantum electrodynamics

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 8, no. 1, 1963, 26-29

TEXT: The authors refer to two papers of M. M. Bogolyubov and D. V. Shirkov where it was assumed without proof that the corresponding functions do not depend on the electron mass for large moments. This assumption is proved by the authors.

ASSOCIATION: Fizyko-tekhnichnyy instytut AN URSR (Physicotechnical Institute of the AS UkrSSR)

SUBMITTED: June 21, 1962

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L 10290-63 EWT(1)/BDS--AFFTC/ASD/ESD-3--Pi-4--IJP(C)

ACCESSION NR: AP3000069 S/0056/63/044/005/1687/1694

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69

AUTHOR: Guzenko, S. Ya.; Fomin, P. I.

TITLE: Asymptotic behavior of the vertex function in the "singly-logarithmic" approximation

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 44, no. 5, 1963, 1687-1694

TOPIC TAGS: Quantum electrodynamics, vertex function, asymptotic ultrarelativistic expression

ABSTRACT: The ultrarelativistic asymptotic behavior of the vertex function in quantum electrodynamics is evaluated for the limiting case represented by Eq. (1) (see Encl. 1) with allowance for both doubly-logarithmic and singly-logarithmic terms. The procedure used in the calculations is a generalization of the "doubly-logarithmic" procedure developed by Sudakov (Zhurnal eksper. i teoret. fiziki v. 30, 87, 1956), and can also be used for the calculation of the cross sections. The final result is represented by Eq. (20) (see Encl. 1). "The authors are deeply grateful to A. I. Akhiezer for his continued interest in this

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ACCESSION NR: AP4031162 S/0056/64/046/004/1392/1394

AUTHORS: Zazunov, L. G.; Fomin, P. I.

TITLE: Double bremsstrahlung in the case of almost collinear momenta

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 4, 1964, 1392-1394

TOPIC TAGS: bremsstrahlung, double bremsstrahlung, collinear momenta, Coulomb field, electron scattering, two photon emission, nonrelativistic approximation, ultrarelativistic approximation, parallel momenta, antiparallel momenta, Feynman diagram

ABSTRACT: The cross section for double bremsstrahlung (simultaneous emission of two photons when an electron is scattered in a Coulomb field) is calculated in the case when the energy of both emitted photons are not small and the mutual direction of the momenta of all particles is nearly colinear. This region is of interest because

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the cross section is finite for double bremsstrahlung but approaches zero for single bremsstrahlung. Furthermore, in this angle region the calculations become simpler because of the transversality of the photons and their zero mass. Expressions are obtained for the limiting cases of low and high energies which are considerably simpler than the general expression. The expression obtained for the cross section is

$$d\sigma = Z^2\alpha^4 \frac{p_2}{p_1} \frac{\omega_1\omega_2 d\omega_1 d\omega_2}{q^4} \frac{d\Omega_1 d\Omega_2}{4\pi^2} U, \qquad (1)$$

where

$$U \equiv U_0 = a^2 (m^2 + p_1 p_2 + e_1 e_2) + \frac{2(1 + m^2 a)}{(p_1 a)(p_2 a)} + 2a \qquad (2)$$

in the case of parallel k_1 and k_2, and

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$$U \equiv U_0 = \alpha^3 (\varepsilon^2 + p_1 p_2 + \varepsilon_1 \varepsilon_2 - 2\omega_1\omega_2) + \\ + \alpha \left\{ 2 + \omega_1 \left[\frac{p_2 n_2}{(1)} + \frac{p_1 n_2}{(2)} \right] + \omega_2 \left[\frac{p_2 n_1}{(1)} + \frac{p_1 n_1}{(2)} \right] \right\} + \\ + \frac{p_2 n_1}{p_1 n_1} \left[\frac{\omega_1}{(1)} + \frac{\omega_1}{(2)} \right]^2 + \frac{p_1 n_1}{p_2 n_1} \left[\frac{\omega_1}{(1)} + \frac{\omega_2}{(2)} \right]^2 \qquad (3)$$

in the case of antiparallel k_1 and k_2. The following symbols are used:

$$n_1 = k_1/\omega_1, \quad n_2 = k_2/\omega_2, \quad \alpha = (1)^{-1} - (2)^{-1};$$

$$(1) = p_1 k_1 + p_1 k_2 - k_1 k_2, \quad (2) = p_2 k_1 + p_2 k_2 + k_1 k_2;$$

the remaining symbols being standard. The Feynman diagrams corresponding to double bremsstrahlung describe also other processes such as photoproduction of a pair with emission of a photon, two-photon annihilation of a pair in a Coulomb field, Compton scattering in the

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presence of a Coulomb field, etc., so that the double-bremsstrahlung formulas can be modified also for these processes. Orig. art. has: 11 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UkrSSR (Physico-technical Institute, AN UkrSSR)

SUBMITTED: 09Oct63 DATE ACQ: 07May64 ENCL: 00

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Card 4/4

L 22147-65 EEC(b)-2/EWT(1)/EEC(t) Pi-4 AFWL LJP(c)

ACCESSION NR: AP5001852 S/0056/64/047/006/2276/2278

AUTHOR: Gurenko, S. Ya.; Fomin, P. I.

TITLE: Resonance scattering of photons by photons via intermediate bound states

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 6, 1964, 2276-2278

TOPIC TAGS: resonance scattering, bound state, photon photon scattering, scattering cross section

ABSTRACT: It is first pointed out that the scattering of light by light, which is a phenomenon predicted by quantum electrodynamics, should take on resonance character whenever the c.m.s. energy of the colliding photons is close to the energy of any discrete state of interacting fields which has the same quantum numbers as the two-photon systems. The discrete intermediate states chosen in the article are the bound states of e^+e^- (positronium) and $\mu^+\mu^-$. Although a value of 10^{-20} cm^2 is obtained for the resonance scattering cross section, in the case of positronium, experimental observation of resonance scattering is made

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difficult by the small width of the resonance. In the case of scattering via $\mu^+\mu^-$, the cross section is 2.5×10^{-25} cm^2. "The authors are deeply grateful to A. I. Akhiyezer for interest in the work and for a discussion of the results." Orig. art. has: 16 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physicotechnical Institute, Academy of Sciences UkrSSR)

SUBMITTED: 24Jun64 ENCL: 00

SUB CODE: NP NR REF SOV: 003 OTHER: 000

Card 2/2

L 45794-65 EWT(m)/EWP(1)

ACCESSION NR: AP5008767 S/0056/65/048/003/0992/0994

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B

AUTHOR: Fomin, P. I. 19

TITLE: Radiative corrections to pair photoproduction

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 3, 1965, 992-994

TOPIC TAGS: photoproduction, radiative correction, energy dependence, relativistic correction

ABSTRACT: It is shown that the deductions of Ye. G. Vekshteyn (ZhETF v. 47, 678, 1964) concerning an anomalously strong energy dependence of relativistic radiative corrections to the cross section for pair photoproduction, are in error. The source of the error lies in the fact that not all the diagrams describing the radiative corrections to the photoproduction were taken into account in the article. The correct contributions from the diagrams are evaluated. Orig. art. has: 10 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk UkrSSR

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L 45794-65
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