ZYRIN, N.G.; BELITSYNA, G.D.; OBUKHOV, A.I.

Effect of the current strength of a carbon arc on the evaporation and the radiation intensity of microelements in a spectrum analysis of soils. Pochvovedenie no.5:123-127 My '62. (MIRA 15:6)

1. Moskovskiy gosudarstvennyy universitet.
(Soils--Analysis) (Trace elements)

ZYRIN, N.G.; ORLOV, D.S.

Training soil chemists. Pochvovedenie no.8:108-112 Ag '61.
(MIRA 14:11)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Soil chemistry--Study and teaching)

ZYRIN, N.G.; PATSUKEVICH, Z.V.

Variability in the content of trace elements in soils of the Crimea. Pochvovedenie no.11:88-92 N '64 (MIRA 18:1)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.

ZYRIN, N.G.; BELITSYNA, G.D.; OBUKHOV, A.I.

Characteristics and succession of the intake of elements in the flame of electric arc in spectral soil analysis. Pochvovedenie no.10:88-92 O '61. (MIRA 14:9)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.
(Spectrum analysis) (Soils--Analysis)

ZYRIN, N.G.; BELITSINA, G.D.; BRYSOVA, N.P.

Concentration of trace elements of the iron family in some soils of the U.S.S.R. Vest. Mosk. un. Ser. 6: Biol., pochv. 16 no.5: 59-71 S-O '61. (MIRA 14:10)

1. Kafedra pochvovedeniya Moskovskogo gosudarstvennogo universiteta.
(TRACE ELEMENTS) (MINERALS IN SOIL)

ZYRIN, S.F.

Concerning the assortment and quality of linen fabrics.
Tekst. prom. 24 no.9:6-9 S '64.

(MIRA 17:11)

1. Nachal'nik upravleniya l'nyanoy promyshlennosti Gosudarstvennogo komiteta po legkoy promyshlennosti pri Gosplane SSSR.

ZYRIN, N.G.; BELITSINA, G.D.; OBUKHOV, A.I.

Possibilities for using absolute blackenings in the quantitative spectral analysis of soils for microelements. Nauch. dokl. vys. shkoly; biol. nauki no.2:185-187 '62. (MIRA 15:5)

1. Rekomendovana kafedroy pochvovedeniya Moskovskogo gosudarstvennogo universiteta im. M.V.Lomonosova.
(SOILS--ANALYSIS) (TRACE ELEMENTS)
(SPECTRUM ANALYSIS)

ZYRIN, N.G.; KORNBLYUM, E.A.

Characteristics of the behavior of iron in soils of the Amur flood plain. Dokl. AN SSSR 142 no.1:200-203 Ja '62. (MIRA 14:12)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova i Pochvennyy institut im. V.V. Dokuchayeva AN SSSR. Predstavleno akademikom I.V. Tyurinym.
(Kumara region--Soils--Iron content)

ZYRIN, N.G.; GRINDEL, N.M.

Seasonal dynamics of active acidity in low-fertility turf-Podzolic soils. Nauch. dokl. vys. shkoly; biol. nauki no.4: 203-207 '61. (MIRA 14:11)

1. Rekomendovana kafedroy pochvovedeniya Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova.
(PODZOL) (SOIL ACIDITY)

ZYRIN, Nikolay Georgiyevich; ORLOV, Dmitriy Sergeyevich; KOROBTSOVA, N.A., red.

[Physicochemical methods of studying soils] Fiziko-khimicheskie metody issledovaniia pochv. Moskva, Izd-vo Mosk. univ., 1964. 347 p. (MIRA 17:12)

KOVDA, V.A.; ZIMOVETS, B.A.; ZYRIN, N.G.; KORNBLYUM, B.A.; VASIL'YEVSKAYA, V.D.

Soils and processes of soil formation in the floodland of the upper and central Amur. Pochvovedenie no.11:10-23 N '60.
(MIRA 13:11)

1. Pochvennyy institut im. V.V.Dokuchayeva Akademii nauk SSSR.
(Amur Valley--Soils)

BYKOVA, L.N.; ZYRIN, N.G.

Role of the roots of herbaceous vegetation in the nitrogen and mineral cycle. Vest.Mosk.un.Ser 6: Biol., pochv. 15 no.3: 67-75 My-Je '60. (MIRA 13:7)

1. Kafedra pochvovedeniya Moskovskogo universiteta.
(Roots (Botany))
(Soils--Composition)

DOBROVOL'SKIY, G.V.; ZYRIN, N.G.

Some features in the geography and chemistry of bottom-land soils. Vest. Mosk. un. Ser. biol., pochv., geol., geog. 12 no.3:129-135 '57.
(MIRA 10:12)

1. Kafedra pochvovedeniya Moskovskogo gosudarstvennogo universiteta.
(Alluvial lands)

ZYRIN, N.G.; OVCHINNIKOVA, M.F.; ORLOV, D.S.

Amino acid composition of humic acids and fulvic acids in some soil types. Agrokhmiia no.4:108-120 Ag '64. (MIRA 17:10)

Country : USSR
Category : Soil Science. Physical and Chemical Properties of Soils. J

Abs Jour : RZhBiol., No 6, 1959, No 24606

Author : Zyrin, N. G.; Orlov, D. S.
Inst : Moscow University.
Title : Determination Methods of the Activity of Sodium Ions in Soils and Soil Solutions.
Orig Pub : Vest. Mosk. un-ta, Ser. biol. pochvoved., geol., geogr., 1958, No. 1, 71-80

Abstract : The activity of sodium ions in soils and soil solutions may be determined by a special glass electrode with Na-function with the aid of a lamp potentiometer. The magnitude of activity is closely connected with the genetic peculiarities of certain soils and may serve as a method for an approximate diagnosis of solonetz and saline soils. For these purposes, it

Card : 1/2

ANDREYEV, I.S.; ARZUMANYAN, G.B.; ZYRINA, L.V.

Possibilities for stimulating electroluminescence in crystals. Izv. AN SSSR. Ser. fiz. 25 no.4:520-522 Ap '61. (MIRA 14:4)

1. Kafedra obshchey fiziki Sredneaziatskogo gosudarstvennogo universiteta imeni V. I. Lenina.
(Luminescent substances)

ZYRO, K.; WOJCIEKIAN, E.

Stamping and extrusion of sockets from polygonal blanks. p. 143. (Mechanik, Vol. 30, No. 4, Apr 1957, Warsaw, Poland)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 8, Aug 1957. Uncl.

LASS, Hanna; ZYROMSKA, Monika

"Spontaneous" intracerebral hematomas. Neur.&c.polska 10 no.6: 741-747 '60.

1. Z Kliniki Neurologicznej AMG, Kierownik: prof. dr Z.Majewska.
(CEREBRAL HEMORRHAGE case reports)

WISNIEWSKI, Henryk; WRZOLKOW, Teresa; ZYROMSKA, Monika

2 cases of cerebellar myeloma in adults. Neurol. neurochir. psychiat. pol. 12 no.4:501-508 '62.

1. Z Zakladu Neuropatologii PAN. Kierownik: prof. dr A. Kunicki. Z Zakladu Anatomii Patologicznej AM w Gdansku. Kierownik: prof. dr W. Czarnocki. Z Kliniki Neurologicznej AM w Gdansku. Kierownik: prof. dr Z. Majewska.

(MYELOBLASTOMA) (CEREBELLAR NEOPLASMS)

WISNIEWSKI, Henryk; WRZOLKOWA, Teresa; ZYROMSKA, Monika

Two cases of medulloblastoma of the cerebellum in adults.
Neurol neurochir psych 12 no.4:501-508 Jl-Ag '62.

1. Zaklad Neuropatologii, Polska Akademia Nauk, Warszawa. Kierownik: prof. dr A.Kunicki; Zaklad Anatomii Patologicznej, Akademia Medyczna, Gdansk; Kierownik: prof. dr W. Czarnocki; i Klinika Neurologiczna, Akademia Medyczna, Gdansk; Kierownik: prof. dr Z.Majewska.

POPIELARSKA, Aniela; LESKIEWICZ, Wanda; BOROWSKA-LEHMAN, Jolanta; ŻYROMSKA-FRYDRYCH, Monika

A case of angioneurotic inflammatory reaction of the central nervous system in a 3-year-old girl. Pediat. Pol. 39 no.7: 831-834 Je '64.

1. Z II Kliniki Pediatrycznej Akademii Medycznej w Warszawie (Kierownik: prof. dr med. T. Lewenfisz-Wojnarowska) i z Kliniki Neurologicznej Akademii Medycznej w Gdansku (Kierownik: prof. dr med. Z. Majewska); i z Zakładu Anatomii Patologicznej Akademii Medycznej w Gdansku (Kierownik: prof. dr med. W. Czarnocki).

ZYROMSKA-FRYDRYCH, Monika

Thrombo-embolic complications in acute vascular diseases of the brain. Pol. tyg. lek. 19 no.40:1533-1535 5 O '64

1. Z Kliniki Chorob Nerwowych Akademii Medycznej w Gdansku (Kierownik: prof. dr. Z.Majewska).

ZYRYANOV, A.

About the supplement to the "Sailing regulations." Rech. transp. 22 no.9:55 S '63. (MIRA 16:10)

1. Kapitan parokhoda "Cherembass" Vostochno-Sibirskogo parokhodstva.

ZYRYANOV, A.A., master

Device for checking the springs of the socket contact of a VMG-133 switch. Energetik 12 no.8:20-21 Ag '64. (MIRA 17:9)

ZYRYANOV, A. I.: Master Med Sci (diss) -- "Problems of active immunization against dysentery under experimental conditions". Krasnoyarsk, 1959. 14 pp (Tomsk State Med Inst), 200 copies (KL,No 12, 1959, 132)

RUNAK, Ye.G., gornyy inzhener; MERZLYAKOV, V.I., gornyy tekhnik; ZYRYANOV, A.I., gornyy tekhnik; MINEYEV, B.V., gornyy tekhnik.

Comparison of CM-506, PR-30K, TP-4 and KTsK-4 rock drill performance. Gor.shur.no.9:72 S '57. (MIRA 10:9)

1. Degtyarskoye rudoupravleniye.
(Rock drills)

BOBYLEV, I.P. (st.Aduy, Sverdlovskoy dorogi); ZYRYANOV, A.Ye. (st.Aduy, Sverdlovskoy dorogi); MELUZOV, V.G. (st.Aduy, Sverdlovskoy dorogi); SINTYURIN, F.T. (st.Aduy, Sverdlovskoy dorogi); TALIBULINA, R.G. (st.Aduy, Sverdlovskoy dorogi); FATKHALISLAMOV, G. (st.Aduy, Sverdlovskoy dorogi)

Inadmissible procedures. Put' put.khoz. 8 no.2:41 '64. (MIRA 17:3)

FEDYUKIN, D.L.; ZYRYANOV, B.A.; KOROTKOVA, A.A.

Instrument and method for hardness tests on sponge rubber.
Kauch. i rez. 17 no.11:36-37 N '58. (MIRA 11:12)

1. Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy.
(Rubber--Testing)

SOV/138-58-11-12/14

AUTHORS: Fedyukin, D.L., Zyryanov, B.A. and Korotkova, A.A.

TITLE: Apparatus and Method for Testing Foam Rubber Products as to Hardness (Pribor i metod dlya ispytaniya gubchatykh izdeliy na tverdost')

PERIODICAL: Kauchuk i Rezina, 1958, Nr 11, pp 36 - 37 (USSR)

ABSTRACT: Hardness is measured by the apparatus shown in the illustration by penetration of a steel cylinder 59 mm dia under a load of 1415 g. This gives a specific pressure on the sample of 50 g/cm^2 which is the average pressure on the seat of a man sitting down. The hardness tester is mounted on a disc 280 mm dia, and the whole unit weights 2.3 kg. The cylinder is held before measurement by the detents so that it is just level with the surface of the foam article. Hardness is expressed as the deflection measured 30 sec after release of the cylinder. Measurement should be made at controlled temperature between 15 and 25 °C. The hardness indicated varies according to the thickness of the specimen and for control testing standard thickness specimens must be used.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy (Research Institute for Rubber and Latex Products)

Card 1/1

DRABKINA, I.Ye.; ZYRYANOV, B.F.; ORECHKIN, D.B.; Prinimala uchastiye: POPOVA, T.S., inzh.

Color stability of the illuminating kerosene produced by the hydrogenation of crude oil. Khim. i tekh. topl. i masel. 6 no.10:12-16 O '61. (MIRA 14:11)

(Kerosene)

PODKLETNOV, N.Ye.; ZYRYANOV, B.F.

Catalytic reforming of Sakhalin gasoline. Khim.i tekh.topl. i masel 10 no.1:26-27 Ja '65. (MIRA 18:4)

1. Sakhalinskiy kompleksnyy nauchno-issledovatel'skiy institut Sibirskogo otdeleniya AN SSSR.

L 22113-66 EWT(m)/T WE

ACC NR: AP6012993 SOURCE CODE: UR/0065/65/000/001/0026/0027

AUTHOR: Podkletnov, N. Ye.; Zyryanov, B. F. 46 13

ORG: Sakhalinskiy KNII SO AN SSSR

TITLE: Catalytic reforming of Sakhalin gasoline

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 1, 1965, 26-27

TOPIC TAGS: catalytic reforming, gasoline, aromatic hydrocarbon, catalytic cracking, alumina, platinum, catalysis, xylene, benzene, nonmetallic organic derivative

ABSTRACT: In order to determine the possibility of using the light portion of Sakhalin stocks as petrochemical crude, the B-70 gasoline obtained by straight run distillation of Ekhabinskaya crude underwent catalytic reforming over a platinum catalyst. The B-70 gasoline fraction boiling at 97-150°C underwent catalytic reforming on an experimental apparatus with circulating hydrogen-containing gas at a pressure P_{exc} = 40 kg/cm², a bulk flow rate of 2.0 hour^{-1}, and a temperature of 505°C. Forty ml of AP-56 alumina-platina catalyst was placed in the reactor enclosed in an aluminum block. Temperature measurement in the catalyst layer was made at three points. The experiment lasted 48 hours. The resulting catalyst had a density ρ_4^{20} = 0.8158, refraction index n_D^{20} = 1.4740, a 72.2% by weight aromatic hydrocarbon content. The catalysate yield was 84% by weight with respect to gasoline. Toluene predo-

Card 1/2 UDC: 665.534: 665.521.2(571.64)

L 22113-66

ACC NR: AP6012993

minated in the catalysate, at a content of 19.7%; the C_8 hydrocarbon in the initial gasoline and in the catalysate, it can be seen that B-70 gasoline differs from the catalysate in higher gasoline content and in lower xylene content. In addition to C_6-C_8 hydrocarbons, the following derivatives of benzene of the C_9-C_{10} composition were detected in the catalysate: with one substituent -- n-propylbenzene, isopropylbenzene, sec-butylbenzene, with two substituents -- 1, 2-, 1, 3-, and 1, 4-methylethylbenzene, 1-methyl-4-isopropylbenzene, with three substituents -- 1, 2, 3-, 1, 2, 4-, and 1, 3, 5-trimethylbenzene. The negligible sulfur content in Sakhalin gasoline and the high aromatic hydrocarbon yield upon its catalytic reforming makes this gasoline a promising crude for catalytic cracking. Orig. art. has: 1 table. [JPRS]

SUB CODE: 11, 07 / SUBM DATE: none

Card 2/2 BK

ZYRYANOV, B.F.; KALASHNIKOVA, N.I.; ORECHKIN, D.B.

Hydrofining of the "galosha" gasoline distillate. Trudy Vost.-Sib.fil.AN SSSR no.26:141-146 '59. (MIRA 13:6)
(Gasoline) (Hydrogenation)

ZYRYANOV, E. YE.

ZYRYANOV, E. YE.--"Study of the Mechanical Efficiency of a Steam Engine on Redistribution of the Power on the Cylinders."* (Dissertations For Degrees In Science and Engineering Defended at USSR Higher Educational Institutions)(29) Odessa Inst of Engineers of the Maritime Fleet, Odessa, 1955

SO: Knizhnaya Letopis' No 29, 16 July 1955

* For the Degree of Candidate in Technical Sciences

ZYRYANOV, F.

Grab buckets for tower cranes. Stroitel' no.5:20 My '59.
(MIRA 12:8)

1. Starshiy instruktor peredovykh metodov truda instituta Orgstroy.
(Hoisting machinery)

ZYRYANOV, G.A.

National and provincial parks of Canada. Izv. AN SSSR. Ser. geog. no. 4:137-139 Jl-Ag '61. (MIRA 14:7)
(Canada--Parks)

ZYRYANOV, G.A.

Fate of the caribou. Priroda 50 no.5:110-111 My '61.
(MIRA 14:5)

1. Sovet po izucheniyu proizvoditel'nykh sil Gosekonomsoveta SSSR (Moskva).

(Canada--Caribou)

ZYRYANOV, G.A.

Developing productive forces in the northwestern part of British Columbia. Prob. Sev. no.5:130-145 '63. (MIRA 16:11)

1. Sovet po izucheniyu proizvoditel'nykh sil pri Gosplane SSSR.

ZIRYANOV, G.A.

Plant for the direct reduction of iron in Canada. Metallurg 5 no.3:38 Mr '60. (MIRA 13:7)

1. Sovet po izucheniyu proizvoditel'nykh sil AN SSSR.
(Canada--Metallurgical plants)

0.0000

78053
SOV/130-60-3-22/23

AUTHOR: Zyryanov, G. A.

TITLE: Metallurgy Abroad. The Plant for Iron Production by Direct Process

PERIODICAL: Metallurg, 1960, Nr 3, p 38 (USSR)

ABSTRACT: This article describes the new metallurgical plant to be built by the "Quebec South Steel Corporation" in the vicinity of Montreal, Quebec, Canada.

ASSOCIATION: Council for Study of Productive Forces, Academy of Sciences of the USSR (Soviet po izucheniyu proizvoditel'nykh sil AN SSSR)

Card 1/1

SMOLIN, R.P.; DROKIN, A.I.; ZYRYANOV, G.I.

Thermal magnetic hysteresis in polycrystalline monoferrates. Izv. AN SSSR. Ser. fiz. 28 no.1:178-181 Ja '64. (MIRA 17:1)

1. Institut fiziki Sibirskogo otdeleniya AN SSSR.

SMOLIN, R.P.; DROKIN, A.I.; ZYRYANOV, G.I.; RYKOV, A.S.

Thermal magnetic hysteresis in magnesium manganese ferrates. Izv. AN SSSR. Ser. fiz. 28 no.1:182-186 Ja '64. (MIRA 17:1)

1. Institut fiziki Sibirskogo otdeleniya AN SSSR.

SMOLIN, R.P.; DROKIN, A.I.; RYKOV, A.S.; SALANSKIY, N.M.; ZYRYANOV, G.I.

Temperature hysteresis of the magnetic permeability of magnesium-manganese and nickel-zinc ferrites. Izv. vys. ucheb. zav.; fiz. no.4:34-39 '63. (MIRA 16:9)

1. Institut fiziki Sibirskogo otdeleniya AN SSSR.
(Ferrites (Magnetic materials))

24(6)

AUTHOR: Zyryanov, G. K.

SOV/57-58-12-2/15

TITLE: Variation of the Contact Potential of Cadmium Sulfide When Illuminated (Izmeneniye kontaktnogo potentsiala sernistogo kadmiya pri osveshchenii)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1958, Nr 12, pp 2657-2668 (USSR)

ABSTRACT: The aim of the present work was to explain the nature of the photosignal obtained from a cadmium sulfide layer lacking activating admixtures according to the method of the displacement of characteristics. It was found that the reflection of slow electrons with an energy from 1 to 10 eV from the semiconductive layer does not take place monotonously but that at certain electron velocities maxima and minima exist. A comparison between the reflection coefficients of the slow electrons with 1 to 10 eV on Pt, Ni, and CdS shows that the reflection coefficient of the semiconductor is somewhat higher than that of the metals. The existence of reflection minima at 2.5 and at 5.0 eV permits to assume that when an electron is transferred to the zone of conductivity an inelastic collision takes place. This provides an opportunity of determining the width of the forbidden zone according to

the reflection curve of slow electrons on semiconductors. The time- and spectral-characteristics and the infrared attenuation of the photo-displacement show that the kinetics of formation and of the decrease of the photo-displacement (shift of the current-voltage characteristic in volts) is the same with photoconductivity and that the emission of electrons takes place at the same levels. A general formula is presented for the increase of the photosignal when the illumination is switched on and for its decrease after the removal of the illumination. From this formula exponential and hyperbolic relations are obtained for specialized cases. The dependence of the photo-displacement on the intensity of illumination is logarithmic, i.e. an analogy with the Dember effect exists. It is shown that the experimental data may be expressed by the known formula for the photo-e.m.f., and this without the assumption made by G. Wlerick (Vlerik)(Ref 1) that on the surface of the cadmium sulfide layer a film of adsorbed gases is found. The estimation of the coefficients from the experimental formula for the photo-displacement by means of comparison with the theoretical formula leads to a "quantum

yield" of the order of 10^3. The investigation of the dependence of the photo-displacement on the thickness of the CdS layer shows that the phenomenon takes place in a thin (10^{-5} cm) layer on the surface of the semiconductor. The possibility of employing the diffusion theory for the explanation of the results is investigated.
A. A. Lebedev, Academician, suggested the theme.
R. Ya. Berlage supervised the work.
There are 12 figures and 16 references, 6 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet Kafedra elektrofiziki (Leningrad State University Chair of Electrophysics)

SUBMITTED: December 12, 1957

ZYRYANOV, G.K.

Taking the diffraction image as a basis in determining the energy of slow primary electrons by which a dielectric is being bombarded. Vest.LGU 20 no.22:166-169 '65.

(MIRA 18:12)

ZYRYANOV, K.V.; POPOV, F.S.; PYATKIN, V.Ye.; STANKEVICH, V.V.

Work practices of I.P.Kanavin's brigade at the "Komsomolets" mine of the Kuzbassugol' Combine. Ugol' 40 no.6:15-17 Je '65. (MIRA 18:7)

ZYRYANOV, M.N.; SINAKEVICH, A.S.; NADOL'SKIY, A.P.

Investigations on the recovery of molybdenum from low-grade ferrimolybdite ores and concentrates. Trudy IPI no.18:123-129 '63. (MIRA 17:6)

ZYRYANOV, Mikhail Nikolayevich; SINAKEVICH, A.S., red.; BOKMEL'DER, E.Ya., red.; KARAS', V.D., tekhn. red.

[Dispersed rare elements; properties, areas of use, production dynamics, prices, raw material sources, technology of preparation] Rasseiannye redkie elementy; svoistva, oblasti primeneniia, dinamika proizvodstva, tseny, syr'evye istochniki proizvodstva, tekhnologiia polucheniia. Pod red. A.S.Sinakevicha. Irkutsk, Irkutskoe knizhnoe izd-vo, 1960. 204 p. (MIRA 15:4)
(Trace elements)

S/137/62/000/006/059/163
A052/A101

AUTHOR: Zyryanov, M. N.

TITLE: Thermodynamic analysis of sulfating reactions of some oxides, sulfides and metals by means of bivalent iron sulfate

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 6, 1962, 19, abstract 6G147 ("Sb. nauchn. tr. Irkutskiy n.-i. in-t redk. met.", no. 9, 1961, 165 - 171)

TEXT: The results of thermodynamic calculations of sulfating Pb, Zn, Cd, In and Tl compounds by means of $FeSO_4$ are reported. These results substantiate the necessity of investigating the sulfating of Pb-powders. There are 8 references.

A. Tseydler

[Abstracter's note: Complete translation]

Card 1/1

ZYRYANOV, M. N.; NADOL'SKIY, A. P.

Complex treatment of dusts from the lead industry with a high selenium content. Trudy Vost. Sib. fil. AN SSSR no.41:128-131 '62. (MIRA 15:10)

1. Irkutskiy nauchno-issledovatel'skiy institut redkikh metallov.

(Lead industry—By-products) (Fly ash)

ZYRYANOV, Mikhail Nikolayevich; SUMKIN, A.N., red.; BATOTSYRENOVA, D.B., tekhn. red.

[Rare metals, their discovery and use] Redkie metally, ikh otkrytie i primenenie. Ulan-Ude, Buriatskoe knizhnoe izd-vo, 1962. 50 p. (MIRA 16:6)
(Metals, Rare and minor) (Rare earth metals)

PLAKSIN, Igor' Nikolayevich; ZYRYANOV, Mikhail Nikolayevich; CHERNOV, A.N., red.izd-va; LAUT, V.G., tekhn. red.

[Complete treatment of lead-zinc ores] Kompleksnaia pererabotka svintsovo-tsinkovogo syr'ia. Moskva, Izd-vo Akad. nauk SSSR, 1963. 151 p. (MIRA 16:5)
(Nonferrous metals) (Ore dressing)

B/137/62/000/006/049/163
A006/A101

AUTHORS: Sinakevich, A. S., Zyryanov, M. N.

TITLE: Application of the continuous chlorination method to lean oxidized molybdenum raw material

PERIODICAL: Referativnyy zhurnal Metallurgiya, no. 6, 1962, 17, abstract 60131 ("Sb. nauchn. tr. Irkutskiy n.-i. in-t redk. met.", 1961, no. 9, 184 - 192)

TEXT: The practical possibility is shown of applying the method of continuous chlorination with gaseous Cl_2 to lean, oxidized Mo-raw material. The optimum dimensions of granules for continuous chlorination are 2 - 3 mm; chlorination time is 1.5 hours at 430°C, with addition of 8% pyrite concentrate and 560 - 620 kg/ton Cl_2 consumption. Conditions are given for the selective condensation of sublimates and their processing to commercial products. Mo extraction was 80%.

G. Svodtseva

[Abstracter's note: Complete translation]

Card 1/1

24570 S/137/61/000/005/009/060
A006/A106

18 3100

AUTHORS: Sinakevich, A.S., Zyryanov, M.N.

TITLE: Chlorination of oxidized molybdenum compounds with vaporous chlorides

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 5, 1961, 18-19, abstract 5G145 ("Sb. nauchn. tr. Irkutskiy n.-i. in-t redk. met"), 1959, no. 8, 220 - 229)

TEXT: The authors studied the interaction of molybdates of Fe, Ca, Pb and Cu oxides with CCl_4 and S_2Cl_2. During chlorination of CCl_4 the temperature should exceed by 50 - 100°C chlorination temperatures of S_2Cl_2 in order to attain an equal degree of decomposition of the salt; or the Cl_2 consumption at the same temperature must be increased. Chlorination of CCl_4, S_2Cl_2 or Cl_2 with addition of pyrite and solid coal makes full extraction possible at 350 - 400°C. Chlorination of Cl_2 in the presence of pyrite and chlorination of CCl_4 should be preferably performed. The reaction products are Mo oxychlorides, mainly MoO_2Cl_2, $MoOCl_4$ and chloride metals contained in the composition of the compounds.
[Abstracter's note: Complete translation] G.S.

Card 1/1

ZYRYANOV, M.N.

Studying the reaction of cadmium oxide and ferric and ferrous sulfates. Izv.Sib.otd.AN SSSR no.12:96-100 '60. (MIRA 14:2)

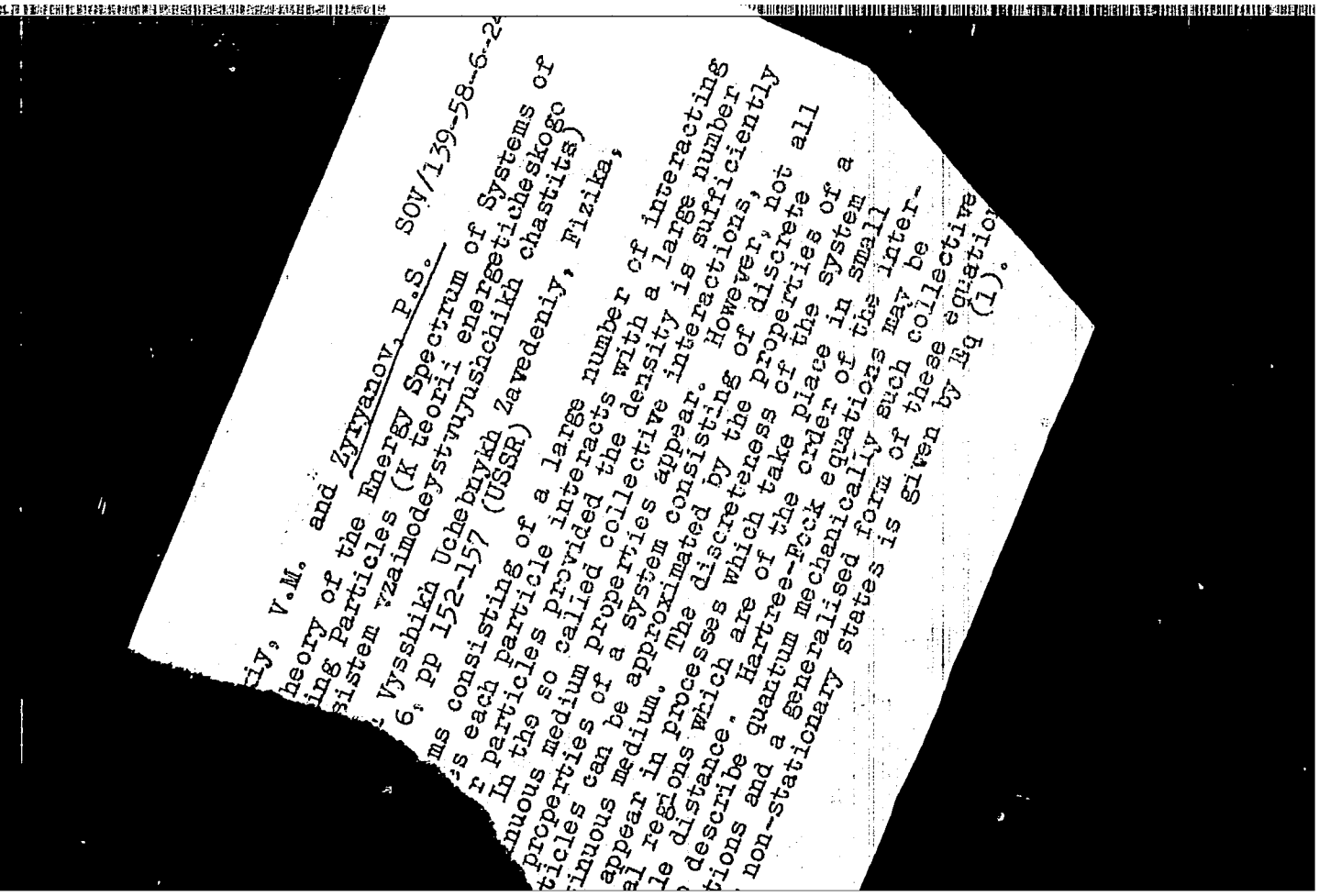
1. Irkutskiy sovnarkhoz.
(Iron sulfates) (Cadmium oxide)

SHAVKUNOV, N.D.; ZYRYANOV, M.P.; KOROSTELEV, P.V.; GORIN, V.N.

Production of cast, pipe-rolling equipment. Lit.proizv. no.10:39-40 O '64. (MIRA 18:4)

IKHNO, Nikolay Petrovich; ZYRYANOV, Mikhail Yegorovich; TSYRKUNOV, Grigoriy Artem'yevich; KASHTANOV, F., red.; YERMOLENKO, V., tekhn. red.

[Conveying system for the transportation of pece freight] Konveiernaia ustanovka dlia transportirovaniia shtuchnykh gruzov. Minsk, Gos. izd-vo BSSR. Red. proizvodstvennoi litry, 1961. 52 p. (MIRA 15:2)
(Railroads--Freight) (Conveying machinery)



SOV/139-58-6-24/29

AUTHORS: Yeleonskiy, V.M. and Zyryanov, P.S.

TITLE: On the Theory of the Energy Spectrum of Systems of Interacting Particles (K teorii energeticheskogo spektra sistem vzaimodeystvuyushchikh chastits)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, 1958, Nr 6, pp 152-157 (USSR)

ABSTRACT: In systems consisting of a large number of interacting particles each particle interacts with a large number of other particles provided the density is sufficiently high. In the so called collective interactions, continuous medium properties appear. However, not all the properties of a system consisting of discrete particles can be approximated by the properties of a continuous medium. The discreteness of the system will appear in processes which take place in small spatial regions which are of the order of the inter-particle distance. Hartree-Fock equations may be used to describe quantum mechanically such collective interactions and a generalised form of these equations covering non-stationary states is given by Eq (1).

Card 1/3

On the Theory of the Energy Spectrum of Systems of Interacting Particles

The plus sign applies to bosons and the minus sign to fermions. Recently, these equations have been used both in nuclear theory and the theory of metals (Ref 3). It follows from Eq (1) that the density matrix is given by Eq (2). The discrete properties of the system can be described in terms of the scattering problem formalism. One of the properties of the non-linear Eq (1) is that they have solutions in the form of plane waves, i.e. they have a solution corresponding to a constant density of particles in the system. It follows that states of the system in which the density is almost constant may be described by means of linearised equations of the form (1) in the neighbourhood of solutions with constant density. The present paper is concerned with setting up the dispersion equations for a system of interacting particles having small density fluctuations. For this purpose instead of the complex functions $\psi_j(xt)$ real functions are introduced by putting $\psi_j = \rho_j^{1/2}(xt)e^{iS_j(xt)h^{-1}}$. The functions

On the Theory of the Energy Spectrum of Systems of Interacting Particles

ρ_j and S_j are then found to be given by Eq (3). Linearisation of the equations in the neighbourhood of exact solutions:

$$S_j = S_{oj} = -E_{oj}t + p_j x, \quad \nabla S_{oj} = p_{oj} = mV_{oj},$$

$$\rho_j = \rho_{oj} = \text{const} = \frac{1}{V} = 1$$

leads to the system of Eq (4). These relations are then used to obtain dispersion equations for boson and fermion systems (Eq 6 and 12 respectively). There are 7 references of which 5 are Soviet and 2 English.

ASSOCIATION: Ural'skiy Politekhnicheskiy Institut imeni S.M.Kirova (Ural Polytechnical Institute imeni S.M.Kirov)

SUBMITTED: 20th January 1958

ACCESSION NR: AP4043435

AUTHOR: Zy*ryanov, P. S.

G/0030/64/006/002/0401/0408

TITLE: Quantum theory of thermogalvanomagnetic phenomena in metals and semiconductors

SOURCE: Physica status solidi, v. 6, no. 2, 1964, 401-408

TOPIC TAGS: quantum theory, quantized magnetic field, thermogalvanomagnetism, semiconductor, semiconductor thermogalvanomagnetism, electric energy spectrum, relaxation mechanism, molecular current, conduction electron, conduction current, nondissipative density, dissipation density

ABSTRACT: Inasmuch as recent attempts to construct a quantum theory of thermomagnetic phenomena contradict either the classical theory or the basic laws of thermodynamics, the author offers an explanation of inherent difficulties through a calculation which shows that in a quantizing magnetic field the volumetric current density of the j charge, calculated with the aid of the density matrix, does not coincide with the density of the conduction current j_{np}, owing to the appearance of Landau diamagnetism, which causes a "molecular" current c

Card 1/2

ACCESSION NR: AP4043435

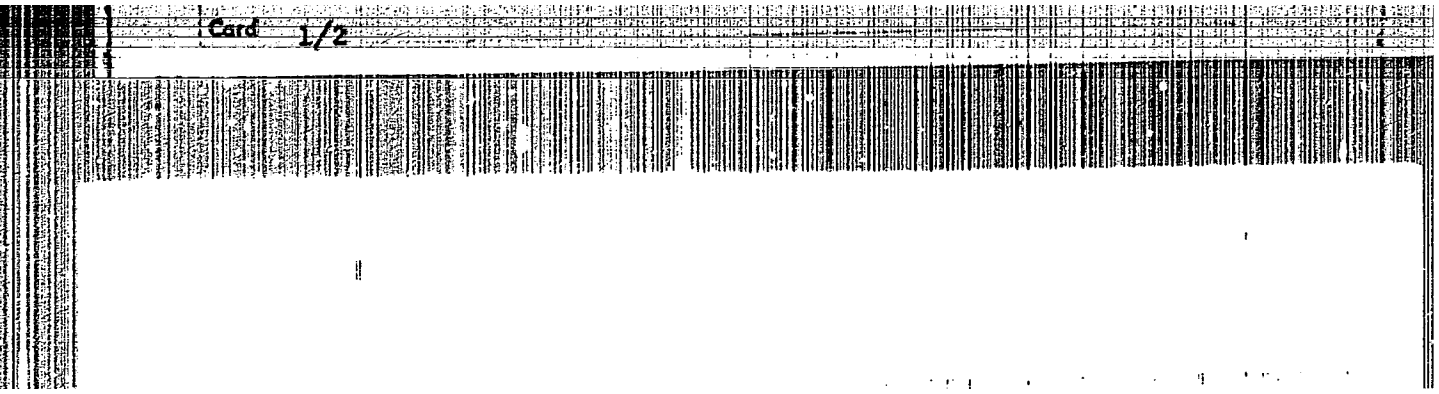
rot M (M is the magnetization of the conduction electrons) along with the conduction current in steric nonuniform systems, but rather is defined by $j_{np} + c$ rot M. Similarly, $Q - \zeta/e\ j_{np} = Q_T + Q_M$ rather than Q_T alone (Q is the volume density of the energy current, T is temperature in energy units, Q_T is the thermal current, Q_M is the magnetic energy current, and ζ is the chemical potential). On this basis the author derives formulas for the nondissipative density of thermal and electric currents in a quantizing magnetic field with electron spin taken into account. He also derives expressions for the dissipation density of these currents on the basis of the elastic scattering approximation. The results permit calculation of any thermogalvanomagnetic effect under conditions of a strong quantizing magnetic field $\Omega\tau \gg 1$ (Ω is the cyclotron resonance frequency, and τ is the relaxation time). Orig. art. has: 24 formulas.

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

SUBMITTED: 11May64 ENCL: 00

SUB CODE: EM, SS NO REF SOV: 005 OTHER: 001

Card 2/2



APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810013-5"

Card 1/2

L 18951-63 EWT(1)/EPF(n)-2/EWG(k)/EWP(q)/EWT(m)/BDS AFFTC/ASD/ESD-3/
IJP(C)/SSD Pu-4/Pz-4 JD/AT

ACCESSION NR: AP3007497 S/0181/63/005/009/2576/2579

AUTHOR: Zy*ryanov, P. S.

TITLE: The influence of phonon drag on the longitudinal thermoelectromotive force of semiconductors and semimetals in longitudinal magnetic fields

SOURCE: Fizika tverdogo tela, v. 5, no. 9, 1963, 2576-2579

TOPIC TAGS: phonon drag effect, phonon drag, thermoelectromotive force, thermoelectric power, Seebeck electromotive force, longitudinal effect, semiconductor theory

ABSTRACT: The part played by phonon drag in the longitudinal thermomagnetic effect is theoretically investigated by the use of an approximate solution of the problem for the inverse square law electron dispersion. Formulas for the effect of the phonon drag on the thermoelectromotive force are worked out for both semiconductors and degenerate semiconductors, and the case of vanishing magnetic field intensity is considered. The substantial part played by phonon drag at very low temperatures is indicated. Orig.

Card 1/2

L 18951-63
ACCESSION NR: AP3007497

art. has: 18 formulas.

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

SUBMITTED: 16Apr63 DATE ACQ: 14Oct63 ENCL: 00

SUB CODE: PH NO REF SOV: 001 OTHER: 001

Card 2/2

SOV/126-7-1-24/28

AUTHORS: Zyryanov, P.S., Borisov, B.S. and Taluts, G.G.

TITLE: Singularities of Sound Propagation in a Metal (Osobennosti rasprostraneniya zvuka v metalle)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1959, Vol.7, Nr.1, pp 153-154 (USSR)

ABSTRACT: For describing the propagation of sound waves of sufficiently high energy-density (e.g. ultrasonic waves) the lattice binding energies in a metal may be ignored and the metal treated as an ionic plasma. The following relation will then hold:

$$\Phi = \frac{M}{\sqrt{2e}} \left[1 + \frac{\omega^2}{\omega_0^2} \right]^{-1} \frac{\omega^2}{q} X,$$

Here X is the amplitude of the ultrasonic wave and Φ the associated electric field potential; M, e are respectively the ionic mass and charge; ω, q are respectively the ultrasonic angular frequency and wave-number; finally ω_0 is a characteristic angular frequency of the plasma,

Card 1/4

Singularities of Sound Propagation in a Metal

given by:

$$\omega_o^2 = \frac{4\pi ne^2}{M}$$

where n is the ionic density. Furthermore the acoustic energy flux S in the z-direction may be written as:

$$S = c\varepsilon$$

where c is the sound velocity and

$$\varepsilon = \frac{Mn\omega^2}{2} |x|^2 \exp(-2\alpha z)$$

with α denoting the sound absorption coefficient. A relation between the acoustic and electric energy fluxes which follows from the above is:

Card 2/4

Singularities of Sound Propagation in a Metal

$$-\frac{\partial \varepsilon}{\partial t} = -\frac{\sigma m}{M} |\nabla \Phi|^2$$

where t is time and σ is the electrical conductivity. Now the left-hand side of this last equation must clearly equal div S, and from this follows immediately the relation between α and σ :

$$\alpha = \frac{\omega^2 m}{e^2 n \sigma} \cdot \sigma$$

This shows that "anomalous" acoustic propagation (acoustic absorption bands) will occur under conditions favouring high electrical conductivity: energy removed from the sound waves appears as electric current. Such a current will produce heating of the metal and the magnitude of this effect is discussed for some typical cases. There are

Card 3/4 3 references, of which 2 are Soviet and 1 English.

Singularities of Sound Propagation in a Metal

ASSOCIATION: Ural'skiy politekhnicheskiy institut imeni S.M. Kirova (Ural Polytechnical Institute imeni S.M. Kirov); Institut fiziki metallov AN SSSR (Metal Physics Institute, Ac. Sc., USSR)

Eyinyanov, F.S.

PHASE I BOOK EXPLOITATION SOV/4893

Vsesoyuznoye soveshchaniye po fizike, fiziko-khimicheskim svoystvam ferritov i fizicheskim osnovam ikh primeneniya. 3d, Minsk, 1959

Ferrity; fizicheskiye i fiziko-khimicheskiye svoystva. Doklady (Ferrites; Physical and Physicochemical Properties. Reports) Minsk, Izd-vo AN BSSR, 1960. 655 p. Errata slip inserted. 4,000 copies printed.

Sponsoring Agencies: Nauchnyy sovet po magnetizmu AN SSSR. Otdel fiziki tverdogo tela i poluprovodnikov AN BSSR.

Editorial Board: Resp. Ed.: N. N. Sirota, Academician of the Academy of Sciences BSSR; K. P. Belov, Professor; Ye. I. Kondorskiy, Professor; K. M. Polivanov, Professor; R. V. Telesnin, Professor; G. A. Smolenskiy, Professor; N. N. Sholʻta, Candidate of Physical and Mathematical Sciences; E. M. Zolyarenko; and L. A. Bashkirov; Ed. of Publishing House: S. Kholyavskiy; Tech. Ed.: I. Volokhanovich.

PURPOSE: This book is intended for physicists, physical chemists, radio electronics engineers, and technical personnel engaged in the production and use of ferromagnetic materials. It may also be used by students in advanced courses in radio electronics, physics, and physical chemistry.

COVERAGE: The book contains reports presented at the Third All-Union Conference on Ferrites held in Minsk, Belorussian SSR. The reports deal with magnetic transformations, electrical and ferromagnetic properties of ferrites, studies of the growth of ferrite single crystals, problems in the chemical and physicochemical analysis of ferrites, studies of ferrites having rectangular hysteresis loops and multicomponent ferrite systems exhibiting spontaneous rectangularity, problems in magnetic attraction, highly coercive ferrites, magnetic spectroscopy, ferromagnetic resonance, magneto-optics, physical principles of using ferrite components in electrical circuits, anisotropy of electrical and magnetic properties, etc. The Committee on Reference, References accompany individual articles.

Card 1/18

ZYRYANOV, P.S.

Quantum theory of the excitation spectrum of an electron gas in a magnetic field. Zhur. eksp. i teor. fiz. 40 no.4:1065-1071 Ap '61. (MIRA 14:7)

1. Ural'skiy politekhnicheskiy institut.
(Electron gas) (Magnetic fields)

ZYRYANOV, P.S.

Quantum theory of acoustic oscillations of an electron-ion plasma in a magnetic field. Zhur. eksp. i teor. fiz. 40 no.5: 1353-1359 My '61. (MIRA 14:7)

1. Ural'skiy politekhnicheskiy institut.
(Plasma (Ionized gases))
(Magnetic fields)

YELEONSKIY, V.M.; ZYRYANOV, P.S.; SILIN, V.P.

Integral of charged particle collisions in a magnetic field. Fiz. met. i metalloved. 11 no.6:955-957 Je '61. (MIRA 14:6)

1. Ural'skiy politekhnicheskiy institut i Fizicheskiy institut imeni P. N. Lebedeva.

(Collisions(Nuclear physics))

ZYRYANOV, P. S.

Zyryanov, P. S. -- "Some Applications of the Method of Collective Interactions to the Theory of Metals." Cand Phys-Math Sci, Moscow Order of Lenin State U imeni M. V. Lomonosov, 27 Jan 54. (Vechernyaya Moskva, 14 Jan 54)

So: SUM 168, 22 July 1954

USSR/Physics - Conductivity

Card 1/1 Pub. 146 - 9/26 FD-2872

Author : Zyryanov, P. S.

Title : Theory of the electrical conductivity of metals

Periodical : Zhur. eksp. i teor. fiz., 29, August 1955, 193-200

Abstract : The author calculates the fluctuations executed by the potential of the internal electrical field in the electron-ion plasma of a metal and also determines the electrical resistance which is due to the scattering of the electrons during these fluctuations. Quantitative comparison of theory with experiments indicates the extent to which one can approximate the properties of alkali metals by the properties of an electron-ion plasma. He cites his earlier work: ibid., 25, 441, 1953. Thirteen references: e.g. Yu. L. Klimontovich, V. P. Silin, ibid., 23, 151, 1952.

Institution : Ural Polytechnic Institute, Sverdlovsk

Submitted : May 21, 1954

USSR/Physics - Relaxation fluctuations

FD-2969

Card 1/1 Pub. 146 - 10/28

Author : Zyryanov, P. S.

Title : Relaxational fluctuations in condensed systems

Periodical : Zhur. eksp. i teor. fiz., 29, September 1955, 334-338

Abstract : The author discusses the problem of the separation of fluctuations into "small-scale" (relaxational) and "large-scale" (vibrational). He evaluates the role of relaxational fluctuations in electrical conductivity of metals. He thanks Professor V. L. Ginzburg for his advice. Eight references: P. S. Zyryanov, ibid., 29, 193, 1955.

Institution : Ural Polytechnic Institute, Sverdlovsk

Submitted : May 21, 1954

ZYRYANOV, P.S.

F-4

Category : USSR/Magnetism - Diamagnetism. Paramagnetism

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4026

Author : Zyryanov, P.S., Yeleonskiy, V.M.
Inst : Ural' Polytechnic Institute, imeni S.M. Kirov, Sverdlovsk, USSR
Title : Collective Description of Magnetic Interactions.

Orig Pub : Fiz. metallov i metallovedeniye, 1956, 2, No 2, 206-214

Abstract : Discussion of the problem of separating the magnetic interactions into collective ones and individual ones ("far" and "near"). A method is described for introducing the collective operator of spin density and is ellustrated with an example in which the Coulomb and dipole-dipole interactions are calculated.

Card : 1/1

Zyryanov, P.S.

B-4

USSR/Theoretical Physics

Abs Jour : Referat Zhur - Fizika, No 5, 1957, No 10858

Author : Yeleonskiiy, V.M., Zyryanov, P.S.
Inst : Ural' Polytechnic Institute
Title : Contribution to the Theory of Collective Motions of Particles in Quantum-Mechanical Systems.

Orig Pub : Fiz. matallon i matallovedeniize, 1956, 2, No 3, 562-563

Abstract : A general method is proposed for separating out the collective motions in a system of many particles by introducing additional variables in the wave function of the system. Upon suitable choice of the variables, one obtains the same Hamiltonians of the collective motion, as obtained by D.N. Zubarev (Referat Zhur Fizika, 1955, 2627), Bohm and Pines (Referat Zhur Fizika, 1955, 7156), and Tomonaga (Referat Zhur Fizika, 1956, 27839, 27840). A method is proposed for separating the collective motion in a system bounded by a surface, for example, volume and surface vibrations in the nucleus.

Card 1/1

ZYRYZNOV, P.S.; TALUTS, G.G.

Weak excitation spectrum of electron systems in an intermittent field. Fiz.met. i metalloved 3 no.3:547-548 '56. (MLRA 10:3)

1. Ural'skiy politekhnicheskiy institut imeni S.M. Kirova i Institut fiziki metallov Ural'skogo filiala AN SSSR.
(Electrons) (Field theory)

ZYRYANOV, P.S.

Category : USSR/Theoretical Physics - Quantum Mechanics B-4

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 2936

Author : Zyryanov, P.S., Yeleonskiy, V.M.
Inst : Ural Polytechnic Institute
Title : On the Linearization of the Hartree Equations

Orig Pub : Zh. eksperim. i teor. fiziki, 1956, 30, No 3, 592

Abstract : Explanation of a method for describing the collective interactions, based on the linearization of the Hartree equations about solutions with constant density. The corresponding system of equations and the dispersion relationships resulting from them are written down.

Card : 1/1

AUTHOR: Zyryanov, P. S. 126-5-3-20/31

TITLE: The Theory of the Surface Tensions of Liquid Metals (K teorii poverkhnostnogo natyazheniya zhidkikh metallov)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol 5, Nr 3, pp 545-547 (USSR)

ABSTRACT: The earlier calculations of Frenkel, in which the surface is considered to consist of a doubly charged layer, are extended by allowing for the thermal oscillations of the ions. These thermal oscillations are shown to fall off exponentially with depth, and to have the effect of reducing the thickness of the double layer. The initial equations used are the equations of continuity, Poisson's equation and the Bernouilli-Euler equation; E_0 is the limiting Fermi energy of the degenerate electron gas. The final formula agrees satisfactorily with experiment, as is shown by the table, which lists the standard parameters of some metals; the last two columns are the theoretical and experimental values of the temperature coefficient of surface tension, respectively. There are 1 table and 8 references, 6 of which are Soviet, 2 English.

Card 1/1

ASSOCIATION: Ural'skiy Politekhnicheskiy institut imeni S.M.Kirova (Ural Polytechnical Institute imeni S.M. Kirov)

SUBMITTED: March 26, 1957 1. Liquid metals--Surface tension

ZYRYANOV, P.S.

Pa - 2964

AUTHOR ELEONSKIY, V.M., ZYRYANOV, P.S.

TITLE On the Theory of the Collective Motions of Particles in Quantummechanical Systems.
(K teorii kollektivnykh dvizheniy chastits v kvantomekhanicheskikh sistemakh -Russian)

PERIODICAL Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 3, pp 515-519, (U.S.S.R.)
Received 6/1957 Reviewed 7/1957

ABSTRACT The method of the separating the collective motions in a system discussed in the present paper is simple in-as-much as voluminous apparatus of second-quantization and of unitary transformation are not required. This method is based upon the transformation of the HAMILTONIAN by the introduction of a system of additional variables into the wave functions of the system. Into the wave function $\psi(r_1 \ldots r_N, t)$ describing the state of a system with the HAMILTONIAN $H = \sum_j p_j^2/2M + (1/2)\sum_{ij} G(\vec{r}_i, \vec{r}_j)$, the authors introduce additional ("surplus") variable functions $\varphi_j(r_j)$ $(j = 1,2 \ldots N)$, which, for the time being remain arbitrary. Instead of ψ, the authors investigate the new wave function (functional of φ_i) $\Phi(r_1 \ldots r_N, \varphi_1(r_1) \ldots \varphi_N(r_N), t)$. The operator $\vec{p}_j$ is to be replaced by the operator $-i\hbar[\nabla_j + (\nabla_j \varphi_i)\partial/\partial\varphi_i]$. Also the share the potential energy can be expressed by the functions $\varphi_j(r_j)$. Next, the functions $\varphi_j(r_j)$ are discussed. By φ_i the coordinates of collective motion can be expressed. The describtion of the collective motions within the system

Card 1/2

On the Theory of the Collective Motions of Particles in Quanummechanical systems. PA - 2964

will be better, the better the one-particle functions φ_i are selected. Next, several special cases of the selection of φ_i are discussed. The interpretation of $\varphi_j(r_j)$ (wave function of the steady state of the j-th particle in zero-th approximation) used here renders the determination of previously derived HAMILTONIANS possible and shows possible ways for the solution of the boundary problems. The authors first put $\varphi_j(r_j) = N^{-1/2}\exp\{-i\vec{k}\vec{r}_j\}$. This wave function describes the steady state of a free particle with the momentum $\vec{p} = \hbar\vec{k}$. Next, another example for the solution of the boundary problem is dealt with. The special cases of the selection of the functions $\varphi_j(r_j)$ dealt with here permit the generalization of this method for other problems. (No illustrations).

ASSOCIATION Ural Polytechnical Institue
PRESENTED BY
SUBMITTED 21.1.1956,
AVAILABLE Library of Congress.
Card 2/2

ZYRYANOV, P.S.

56-7-54/66

AUTHOR: YELEONSKIY, V.M., ZYRYANOV, P.S.

TITLE: On the Application of the Hartree-Fok Equations to a System of Quasiparticles.
(O primenenii uravneniy Khartri-Foka k sisteme kvazichastits-Russian)

PERIODICAL: Zhurnal Eksperim. i Teoret.Fiziki,1957, Vol 33, Nr 7,pp 289-291 (USSR)

ABSTRACT: The states of a system with many particles which are in strong interaction and are near a certain ground state can be described by an assembly of quasiparticles near the ground state may be looked upon as insignificant and interaction among them may be disregarded.However, in systems with strong "non-ideality" the number of quasiparticles can be rather high, and their mutual interaction must then not be neglected. The present paper describes an attempt made to take interaction among quasiparticles into account within the framework of the self-consisting field. For a system, which has an average of N quasiparticles per volume unit, the system of Hartree equations can be written down as follows in dependence of time:

$$i\hbar \Psi_j = -\frac{\hbar^2}{2m}\Delta \Psi_j + \int G(|\vec{r} - \vec{r}'|)\sum_i |\Psi_i(\vec{r}')|^2 dr' \Psi_j .$$ Here $G(|\vec{r} - \vec{r}'|)$ denotes the kernel of interaction among the particles. By the substitution $\Psi_j = \varrho_j^{1/2} \exp\{ i S_j/\hbar \}$ these equations can be written down in hydrocynamical from:

$$S_j + \frac{1}{2m}(\nabla S_j)^2 + \int G(|\vec{r} - \vec{r}'|) \sum_i \varrho_i(\vec{r}')\, d\vec{r}' = \frac{\hbar^2}{4m}$$

Card 1/2

On the Application of the Hartree-Fok Equations to a System of Quasiparticles. 56-7-54/66

$\frac{\Delta\sqrt{\varrho_j}}{\varrho_j} = 0$, $\varrho_j + \mathrm{div}(\varrho_j \nabla S_j) = 0$. This system permits accurate solution with $\varrho_j^0 = \mathrm{const} = 1/V$ and with $S_j^0 = m(\nabla_r \varepsilon_j^0)\,\vec{r} - \varepsilon_j^0 t + \mathrm{const}$. (Here V denotes the volume of the system which is here assumed to be equal to 1). The energy spectrum of a system which is nearly in a state with constant density can be determined from the just written down linearized system of equations. A dispersion equation is given, and also the equation resulting from taking the exchange interaction into account. A generalization of the here discussed method consists in the development of a general process for the determination of the quantity $(\nabla_p \varepsilon)^2$ which occurs in the aforementioned dispersion equation.

(No illustrations)

ASSOCIATION Ural Polytechnical Institute (Ural'skiy politekhnicheskiy institut)
PRESENTED BY
SUBMITTED
AVAILABLE Library of Congress
Card 2/2

AUTHORS: Yeleonskiy, V. M. and Zyryanov, P. S. SOV/126-6-1-24/33

TITLE: On the Possible Effect of Electromagnetic Radiation on Electrical Conductivity of Electron Conductors (O vozmozhnom vliyanii elektromagnitnogo izlucheniya na elektroprovodnost' elektronnykh provodnikov)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 1, pp 171-172 (USSR)

ABSTRACT: The interaction of longitudinal and transverse vibrations in spatially homogeneous electron plasma in conductors is absent in the linear approximation only in the case of spherical symmetry in the electron velocity distribution. If, however, an electric current flows through the conductor, the electron velocity distribution will not be spherically symmetric and this will lead to an interaction between the transverse and longitudinal vibrations of the plasma. In metals, electron vibrations cannot be excited by thermal motion since the energy of a quantum of such vibrations $\hbar w_o$ is large compared with the energy of thermal motion (kT). However, if the metallic specimen is irradiated with light whose frequency w is greater than w_o then the

Card 1/2

On the Possible Effect of Electromagnetic Radiation on Electrical Conductivity of Electron Conductors

transverse field in the specimen will excite longitudinal vibrations of the plasma. The scattering of conduction electrons on these longitudinal vibrations will lead to an increase in the electrical resistance. The calculations reported in the present paper are concerned with the existence of such an effect. It is shown that in some cases the interaction between the longitudinal and transverse fields does take place. A quantitative estimate of the effect of electromagnetic radiation upon the electrical conductivity of a conductor will be given in a future publication.

ASSOCIATION: Ural'skiy politekhnicheskiy institut imeni S.M.Kirova (Ural Polytechnical Institute imeni S. M. Kirov.

SUBMITTED: March 26, 1957

1. Conductors--Electrical properties 2. Light--Electrical effects 3. Electrons--Vibration

AUTHORS: Yeleonskiy, V. M. and Zyryanov, P. S. SOV/126-6-3-31/32

TITLE: On Fluctuations in Spin Density in an Electron Plasma (O fluktuatsiyakh spinovoy plotnosti v elektronnoy plazme)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 3, pp 573-575 (USSR)

ABSTRACT: Fluctuations in the spin density in a system of interacting electrons are due to magnetic (spin-spin and spin-orbital) as well as exchange Coulomb interactions. The presence of these fluctuations leads to the appearance of electromagnetic fluctuation fields which have an effect upon the physical properties of the system (electrical conductivity, specific heat, etc.) These interactions may be taken into account by a method analogous to that given in (Ref.1), using Pauli's equations. It is shown that interactions associated with spin have only an effect upon the spectrum of transverse vibrations. From the dispersion equations for fluctuations in the spin density, Eqs.(2) and (3), it follows that fluctuations of spin density cannot have a very great effect on physical properties of metals, since these fluctuations are not excitable by thermal motion or are small compared with the usual elastic vibrations. There are

Card 1/2

On Fluctuations in Spin Density in an Electron Plasma SOV/126-6-3-31/32

2 Soviet and 1 English references.

ASSOCIATION: Ural'skiy politekhnicheskiy institut imeni S. M. Kirova (Ural Polytechnical Institute, im. S. M. Kirov)

SUBMITTED: March 25, 1957.

1. Metals--Physical properties 2. Electron gas--Density
3. Nuclear spins 4. Mathematics--Applications

Card 2/2

ZYRYANOV, P. S.

AUTHORS: Zyryanov, P. S., Skrotskiy, G. V. 56-1-32/56

TITLE: On the Influence Exerted by the Electric Polarization Upon the Magnetic Properties of Ferrites (O vliyanii elektricheskoy polyarizatsii na magnitnyye svoystva ferritov)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 1, pp. 222-223 (USSR)

ABSTRACT: The taking into account of the spin-orbit-interaction of the d-electrons in ferrites leads to the fact that the effective magnetic permeability depends on the electrical polarization of the electron shells of the atoms (i. e. on the dielectric constant). In the ferromagnetic metals this dependence is not observed in the measurements on the radio frequencies due to the high polarizability of the conduction electrons. The following may be expected: In some types of ferrites the electric properties not only manifest themselves in the nature of the frequency-dependence of the effective permeability as well as in the width, shape and position of the lines of the resonance absorption, but also in the dependence of these effects on the dimensions and the shape of the sample (which are not taken into account in the

Card 1/2

On the Influence Exerted by the Electric Polarization Upon the Magnetic Properties of Ferrites 56-1-32/56

method of demagnetizing factors). The spin-orbit interactions can be taken into account within the frame of the macroscopic theory when starting from a closed set of the modification of this polarization of the totality of the interacting atoms with an internal electromagnetic field. The authors then calculate the impedance Z by calculating by means of the original set of equations the problem for the semi-infinite body filled with a ferrite for the case of a wave normally inciding upon the boundary. The taking into account of the electric polarization of the ferrite leads to a shift of the resonance-frequency and to a widening of the resonance line of the absorption. There is 1 reference which is Slavic.

ASSOCIATION: Ural Polytechnic Institute (Ural'skiy politekhnicheskiy institut)

SUBMITTED: August 2, 1957

AVAILABLE: Library of Congress

Card 2/2

ZYRYANOV. P.S

AUTHOR: Zyryanov, P. S.

56-1-37/56

TITLE: On the Influence Exerted by Coulomb's Correlations Upon the Oscillation Spectrum of an Electron Plasma (O vliyanii kulonovykh korrelyatsiy na spektr kolebaniy elektronnoy plazmy)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 1, pp. 232 - 233 (USSR)

ABSTRACT: By the author's opinion the problem of the influence of the Coulomb correlations has not yet been determined in many papers on the collective oscillations of a plasma. The solution of this problem may be attacked in different ways. E. G. the kinetic equation can be set up with the taking into account of the correlation and with this equation the dispersion equation for the small oscillations of the density can then be determined. The dispersion equation obtained in this manner will then express the frequency $\omega(k)$ by parameters which characterized the spatial distribution. The main characteristic of this state is the average energy of a particle with the

Card 1/3

On the Influence Exerted by Coulomb's Correlations Upon the Oscillation Spectrum of an Electron Plasma

taking into account of all interactions (kinetic energy, exchange interaction and Coulomb correlations). A second way for the solution of this problem was investigated by V. M. Yeleonskiy and P. S. Zyryanov (reference 1). The small deviations of the density from the homogeneous density are described by linearized Hartree (Khartri)-equations with a time dependence represented in a hydrodynamic form. In this connection the coefficients of the linearized equations are expressed by the energy of the particles in the ground state. The dispersion equation for the case of weak perturbations is explicitly written down. Especially the expression occurring in this equation for the average energy for the case of the electron gas is specialized. Then the author gives an expression for the frequency of the natural oscillations. In metals the exchange effects play a more important part than the Coulomb correlations. There are 3 references, 1 of which is Slavic.

ASSOCIATION: Ural Polytechnic Institute (Ural'skiy politekhnicheskiy institut)

On the Influence Exerted by Coulomb's Correlations Upon the Oscillation Spectrum of an Electron Plasma

56-1-37/56

SUBMITTED: September 27, 1957

AVAILABLE: Library of Congress

Card 3/3

56-2-34/51

AUTHOR: Zyryanov, P. S.

TITLE: Collective Motion in a System of Quasiparticles (Kollektivnyye dvizheniya v sisteme kvazichastits)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 2, pp. 508 - 509 (USSR)

ABSTRACT: In the approximation of the selfconsisting field the taking into account of the strong interaction leads to a dependence of the energy of a single particle (considered here as quasiparticle) on the state of motion of the rest of the particles of the system. Even with spatial homogeneous distribution of the particles of the system the taking into account of the interaction leads to a complicated dependence of the energy of the particle on its momentum. First an expression for the Hamiltonian of the quasiparticles is given for the case of a spatially inhomogeneous distribution. The first term here takes into account the correlation at a small distance and the kinetic energy, and the second term takes into ac-

Card 1/3

count the distant interactions(Hartree field). Then the equations of motion for ψ_j are mentioned. The author restricts himself to the investigation of those states of the system which come close to the spatially homogeneous distribution of the quasiparticles on the coordinates as well as of the undirectional distribution of velocity. These states are close to the ground state. In this case the momenta of the collective motions will be small and the operator $(\varepsilon_j(\hat{\vec{p}}))$ occurring in the initially mentioned Hamiltonian can be represented in the form $\varepsilon_j(\hat{\vec{p}}_0 + \hat{\vec{p}})$. Here $\hat{\vec{p}}$ denotes the momentum operator of collective motion (a small quantity) and $\hat{\vec{p}}_0$ denotes the operator of the momentum of undirectional motion. ε_j is expanded into a series to $\hat{\vec{p}}$, the author restricting himself to the squared terms in relation to $\hat{\vec{p}}$. Then a new variable $\hat{\vec{r}}_0$ canonically conjugated to $\hat{\vec{p}}_0$ is introduced into the wave function. An equation obtained this way only describes the collective motion in the system of the quasiparticles and the coefficients of this equation depend on the characteristics of the undirectional motion of quasiparticles in the ground state. The disperse equation result-