GRINBERG, I.N., gornyy inzhener; PERMYAKOV, R.S., gornyy inzhener; CHEREPANOV, G.S., gornyy inzhener

Improving blasting operations in pits of the Olenegorsk Mining Administration. Vzryv. delo no.47/4:84-89 '61. (MIRA 15:2)

1. Olenegorskoye rudoupravleniye (for Grinberg, Permyakov).
2. Institut gornogo dela imeni A.A.Skochinskogo AN SSSR (for Cherepanov).
(Olenegorsk region--Blasting) (Boring)

CHEREPANOV, G.S., gornyy inzhener

Analysis of the conditions for feasibly increasing the finished fraction size in open pits. Vzryv. delo no.50/7:121-131 '62. (MIRA 15:9)

1. Institut gornogo dela imeni A.A. Skochinskogo.
(Blasting--Costs) (Strip mining--Costs)

KUSHNAREV, D.M., kand.tekhn.nauk; PAVLOV, V.P., insh.; ZEL'TSER, Yu.I.; CHEREPANOV, G.S.

Industrial testing of a machine for charging a hole with "igdanit." Gor. zhur. no.9:46-47 S '62. (MIRA 15:9)

1. Gosudarstvennyy institut gornokhimicheskogo syr'ya (for Kushnarev, Pavlov). 2. Gosudarstvennyy proyektno-konstruktorskiy institut avtomatizatsii rabot v ugol'noy promyshlennosti (for Zel'tser). 3. Institut gornogo dela im. Skochinskogo (for Cherepanov).
(Explosives) (Blasting--Equipment and supplies)

BARON, L.I.; CHEREPANOV, G.S.

Cost analysis of secondary crushing of various sizes of oversize rocks by blasting. Fiz.-mekh.svois.,dav.i razr.gor.porod no.1: 253-259 '62. (MIRA 16:3)
(Blasting) (Coal mines and mining--Cost)

CHEREPANOV, G.S., gornyy inzhener

Increasing the conditioned lump size in stone and cement plant quarries. Nauch. soob. IGD 21:22-32 '63. (MIRA 17:2)

CHEREPANOV, I. M

"Feeding the Boiler of the Mobile Electric Power Plant PPES-40 with Snow Water," Les. Prom., 12, No.2, 1952

CHERNOVA, L.I.

621.365.5 : 621.311.21

2867. HEATING OF INLET SCREENS OF WATER POWER STATIONS (TO PREVENT ICE FORMATION). E.A.Sarkisov and I.M.Cherepanov. 25
Gidrotekh. Stroit., 1955, No. 9, 36-40. In Russian.

Describes arrangement and results of experiments with induction heating in order to prevent ice formation during cold weather. Gives data on heat requirements and other factors including surface area of the rods and water velocity.

P.Busemann

CHEREPANOV, I.M.

Characteristics of the stress of some muscles of the speech apparatus and their correlation with changes in the EEG in logoneurosis. Zhur. nevr. i psikh. 65 no.11:1721-1727 '65.
(MIRA 18:11)

1. Laboratoriya eksperimental'noy patologii nervnoy sistemy (zaveduyushchiy - doktor biolog. nauk I.V.Danilov) Instituta eksperimental'noy meditsiny AMN SSSR, Leningrad.

SARKISOV, E.A., insh.; CHEREPANOV, I.M., insh.

Induction heating of trash racks. Trudy Gidroproekta no.1:77-82 '58. (MIRA 11:9)
(Induction heating) (Hydroelectric power stations)

CHEREPANOV, K.A.; MAKSIMOV, P.G.

Modeling the temperature field of the hearth bottom of an open-hearth furnace by means of an EI-12 electric integrator. Izv. vys. ucheb. zav.; chern. met. 7 no.2:173-177 '64. (MIRA 17:3)

1. Sibirskiy metallurgicheskiy institut i Kuznetskiy metallurgicheskiy kombinat.

CHEREPANOV, K.A.

Modeling the crystallization of an ingot by means of an EI-12 electrointegrator. Izv. vys. ucheb. zav.; chern. met. 7 no.8:171-177 '64. (MIRA 17:9)

1. Sibirskiy metallurgicheskiy institut.

DANILOV, V.I.; CHEREPANOV, K. Ye.; ANTROPOV, K.V., osmotrshchik-avtomatichik; KHRIPUNOV, V.S., osmotrshchik-avtomatchik; SHASHMURIN, A. Ye., osmotrshchik-avtomatchik

Are emergency brake accelerators necessary on freight trains? (MIRA 14:6)
Elek. i tepl. tiaga 5 no.3:43 Mr '61.

1. Master avtokontrol'nogo stantsii Sverdlovsk-Sortirovochanay (for Danilov). 2. Starshiy master punkta tekhnicheskogo osmotra stantsii Sverdlovsk-Sortirovochnaya (for Cherepanov) 3. Stantsiya Sverdlovsk—Sortirovochnaya (for Antropov, Khripunov, Shashmurin).
(Railroads—Brakes)

BOGUSLAVSKIY, M.A., dotsent, kand. voyennykh nauk, podpolkovnik; CHEREPANOV, L.M., podpolkovnik

Estimating the tactical radius of airplanes during flight with a varying profile and conditions. Mor. sbor. 48 no.11:51-53 N '64. (MIRA 18:1)

CHEREPANOV, M., methodist, zasluzhennyy uchitel' shkoly RSFSR

Teachers study industrial chemistry in factories. Khim.v shkole 14 no.4:92 Jl-Ag '59. (MIRA 12:11)
(Chemistry, Technical--Study and teaching)

BARBAKOV, A.D., mashinist elektrovoza; KURBATOV, N.I., mashinist elektrovoza; CHEREPANOV, M.Kh., mashinst

Mechanics who have become engineers. Elek.i tepl.tiaga 5 no.9:30-32 S '61. (MIRA 14:10)

1. Lokomotivnoye depo Barabinsk Zapadno-Sibirskoy dorogi (for Barbakov). 2. Depo Perm' II (for Kurbatov). 3. Depo Vereshchagino Sverdlovskoy dorogi (for Cherepanov).
(Railroads—Employees education and training)

CHEREPANOV, N., polkovnik

International significance of the 22d Congress of the CPSU.
Komm.Vooruzh.Sil 2 no.1:10-17 Ja '62. (MIRA 14:12)
(Communism)

CHEREPANOV, N., polkovnik

Leninist course of foreign policy of the CPSU. Komm. Vooruzh. Sil 46 no.10:63-69 My '65. (MIRA 18:6)

CHEREPANOV, N.I.

Automation of the sulfite alcohol production. Gidroliz. i lesokhim.prom. 14 no.2:14-16 '61. (MIRA 14:3)

1. Kamenskiy tsellyulozno-bumazhnyy kombinat.
(Kamensk(Rostov Province)—Alcohol)
(Automatic control)

AYZENSHTADT, G.Ye.-A.; TRIFONOV, N.K.; CHEREPANOV, N.N.

Basic problems relative to oil and gas potentials of western Kazakhstan. Sov.geol. 2 no.9:56-69 S '59. (MIRA 13:2)

1. Vsesoyuznyy neftyanoy nauchno-issledovatel'skiy geologorazvedochnyy institut (VNIGRI).
(Kazakhstan--Petroleum geology)
(Kazakhstan--Gas, Natural--Geology)

TRIFONOV, N.K.; CHEREPANOV, N.N.

Estimation of prospects for finding oil and gas in the Mangyshlak Peninsula and the prospective plan of further works. Trudy VNIGRI no.132:59-71 '59. (MIRA 17:1)

AYZENSHTADT, G.Ye.-A.; GRINBERG, I.G.; D'YAKOV, B.F.; NEVOLIN, N.V.; TROFIMOV, N.K.; CHEREPANOV, N.N.; EVENTOV, Ya.S.

Outlook for petroleum and gas in western Kazakhstan and basic trends in regional prospecting. Geol. nefti i gaza 4 no.2:10-15 F '60. (MIRA 13:10)

1. Vsesoyuznyy neftyanoy nauchno-issledovatel'skiy institut, Vsesoyuznyy nauchno-issledovatel'skiy institut geofizicheskikh metodov razvedki i Vsesoyuznyy nauchno-issledovatel'skiy geologorazvedochnyy institut.
(Kazakhstan--Petroleum geology)
(Kazakhstan--Gas, Natural--Geology)

VYALOVA, R.I.; D'YAKOV, B.F.; IMASHEV, N.U.; KOZ'MODEM'YANSKIY, V.V.; KRAYEV, P.I.; KRUCHININ, K.V.; TOKAREV, V.P.; TRIFONOV, N.K.; CHEREPANOV, N.N.

Southern-Mangyshlak oil- and gas-bearing region. Trudy VNIGRI no.218:7-50 '63. (MIRA 17:3)

CHEREPANOV, N.N.; SLEPAKOVA, G.I.

Structure of the southwestern part of the southern Mangyshlak Peninsula (in the area of the Cape Peschanyy-Kaundy Depression). Trudy VNIGRI no.218:74-76 '63. (MIRA 17:3)

CHEREPANOV, N.N.

Future trends in prospecting in the Mangyshlak Peninsula.
Trudy VNIGRI no.218:185-208 '63. (MIRA 17:3)

POPOV, A.A., insh.; FAYZULIN, A.M., insh.; MALININ, V.A., insh.; CHERKASOV, N.R., insh.; SHALAYEV, V.V., insh.

Improving boring and blasting operations in open pits. Vzryv. delo no.51/8:143-149 '63. (MIRA 16:6)

(Boring) (Blasting)

CHEREPANOV, N.V.

Establishing the age of drift ice by crystallographic investigations. Probl. Arkt. no.2:179-184 '57. (MIRA 11:12)
(Ice crystals)

MOLOCHNOV, G.V.; CHEREPANOV, N.V.

Use of the electromagnetic dipole method in determining the thickness of sea ice. Probl.Arkt.i Antarkt. no.3:77-83 '60. (MIRA 13:9)

(Sea ice--Measurement)
(Electromagnetic prospecting)

CHEREPANOV, N.V.

PHASE I BOOK EXPLOITATION SOV/4610

Leningrad. Arkticheskiy i Antarkticheskiy nauchno-issledovatel'skiy institut

Problemy Arktiki i Antarktiki; sbornik statey, vyp. 3 (Problems of the Arctic and Antarctic; Collection of Articles, No. 3) Leningrad, Izd-vo "Morskoy transport," 1960. 119 p. 500 copies printed. [Xerox copy]

Sponsoring Agencies: Arkticheskiy i Antarkticheskiy nauchno-issledovatel'skiy institut Glavnogo upravleniya Severnogo morskogo puti Ministerstva morskogo flota SSSR.

Resp. Ed.: V.V. Frolov; Editorial Board: L.L. Balakshin, A.A. Gira, P.A. Gordiyenko (Deputy Resp. Ed.), I.M. Dolgin, L.G. Kaplinskaya, A.A. Kirillov, Ye.S. Korotkevich, V.V. Lavrov, I.V. Maksimov, A.I. Ol', I.I. Poznyak, and B.V. Fedorov; Tech. Ed.: L.P. Droshkina.

PURPOSE: This collection of articles is intended for geographers and geophysicists, particularly those interested in the problems of the Arctic and Antarctic.

COVERAGE: This publication of the Arctic and Antarctic Scientific Research Institute contains articles on the water temperature in the Arctic Basin, the tides of Arctic seas, the structure of Arctic cyclones and anticyclones, radiosonde measurements of temperature, the determination of ice thickness by dipole electromagnetic methods, and magnetic activity in relation to geographical longitude and latitude. No personalities are mentioned. References follow each article.

AVAILABLE: Library of Congress

Card 1/4

JA/dwm/mfm
1/4/61

CHEREPANOV, N.V.

Structure of sea ice of great thickness. Trudy AANII 267: 13-18 '64 (MIRA 18:1)

Determining the periods of movements of ice fields according to the formation of their crystalline structure. Ibid.:48-53

DMITRIYEVA, S.A.; ZHILINSKAYA, M.A.; PETRUN'KINA, A.M.; CHEREPANOV, P.P.; CHISTOVICH, A.S.; SHERYBER, Ya.L.

Effect of nicotinic acid intake on the codehydrogenase content of the blood in neuroses and some psychoses. Trudy Inst.fiziol. 5: 449-457 '56. (MIRA 10:1)

1. Laboratoriya biokhimii pitaniya i pishchevareniya, zaveduyushchaya - A.M.Petrun'kina. Nervnaya klinika, zaveduyushchaya - N.A.Krushova, Psikhiatricheskaya klinika, ispolnyayushchiy obyazannosti zaveduyushchego - N.N.Traugott. Psikhiatricheskaya klinika Voyenno-morskoy meditsinskoy akademii, zaveduyushchiy - A.S.Chistovich. Klinicheskaya nervno-psikhiatricheskaya bol'nitsa Sverdlovskogo rayona, glavnyy vrach - L.I.Marichova.

(NICOTINIC ACID) (CODEHYDROGENASES)
(PSYCHOLOGY, PATHOLOGICAL)

CHEREPANOV, P.S.

Using aerial photographic pictures for determining the coordinate points of geophysical observations. Razved. i prom. geofiz. no.20: 74-84 '57. (MIRA 11:4)
(Photography, Aerial)
(Prospecting--Geophysical methods)

CHEREPANOV, S.

Prize-winning plans for the K.E. Tsiolkovskii State Museum in Kaluga. Na stroi. Ros. no.5:12a-12b My '61. (MIRA 14:7)
(Kaluga—Aeronautical museums)

CHEREPANOV, S.K.

System of the genus Alnus Mill.s.str. and its related genera.
Bot.mat.Gerb. 17:90-105 '55. (MLRA 9:5)
(Alder)

CHERMPANOV, S.K.

Survey of the species of the genera Zelkova Spach and Hemiptelea Planchon. Bot. mat. Gerb. 18:58-72 '57. (MLRA 10:6)
(Kim)

CHERNYANOV, S.K.

Materials on the systematics of Centaureinae. Pt.1. Bot. mat.Gerb. 19:442-457 '59. (MIRA 12:8)
(Centaureinae)

CHEREPANOV, S.K.

New species of the genus Centaurea L. s. str. Bot.mat. Gerb. 20:392-398 '60. (MIRA 13:7)
(Iran--Centaurea) (Oman--Centaurea)

CHERNYAKOV, S.K.

Materials on the systematics of Centaureinae. Report No.2.
Bot.mat.Gerb. 20:457-489 '60. (MIRA 13:7)
(Centaurea)

CHEREPANOV, S.K.

A new Centaurea species from Ciscaucasia. Bot. mat. Gerb. 21:394-396 '61. (MIRA 14:10)
(Caucasus, Northern--Centaurea)

BOBROV, Ye.G., doktor biolog.nauk, pro.; BOCHANTSEV, V.P.;
IL'IN, M.M; LINCHEVSKIY, I.A.; LIPSHITS, S.Yu.;
SERGIYEVSKAYA, Ye.V.; CHERNEVA, O.V.; CHEREPANOV, S.K.;
YUZEPCHUK, S.V.; SHISHKIN, B.K., red.toma; SMIRNOVA, A.V., tekhn. red.

/Flora of the U.S.S.R./ Flora SSSR. Moskva, Izd-vo.
Akad.nauk SSSR, 1962. 757 p. (Flora SSSR, vol.27).(MIRA 15:11)

1. Chlen-korrespondent AN SSSR (for Shishkin).
(DICOTYLEDONS)

BORISOVA, A.G.; IL'IN, M.M.; KLOKOV, M.V.; LINCHEVSKIY, I.A.; POBEDIMOVA, Ye.G.; SEMIDEL, G.L.; SOSKOV, Yu.D.; SOSNOVSKIY, D.I.; TAMAMSHYAN, S.G.; KHARADZE, A.L.; TSVELEV, N.N.; CHEREPANOV, S.K.; SHOSTAKOVSKIY, S.A.; BOBROV, Ye.G., doktor biol. nauk, prof., red. toma; SHISHKIN, B.K., red. izd. [deceased]; SMIRNOVA, A.V., tekhn. red.

[Tribes Cynareae and Mutisieae.] Kolena Cynareae i Mutisieae. Moskva, 1963. 653 p. (Akademiia nauk SSSR. Botanicheskii institut. Flora SSSR, vol.28). (MIRA 16:12)

BORISOVA, A.G.; VASIL'YEV, V.N.; VASIL'CHENKO, I.T.; KIRPICHNIKOV, M.E.; LEONOVA, T.G.; LIPSHITS, S.Yu.; TSVELEV, N.N.; CHEREPANOV, S.K.; SMISHKIN, B.K. [deceased]; BOBROV, Ye.G., prof. doktor biol.nauk, red. toma.

[Cichorioideae.] Cichorioideae. Moskva, Izd-vo Nauka, 1964. 796 p. (Flora SSSR, vol.29) (MIRA 18:2)

CHEREPANOV, V., dotsent, kand.tekhn.nauk

Invisible cement factory. Tekh. mol. 29 no.12:7-8 '61.
(MIRA 15:1)
(Cement)

CHEREPANOV, V. A., Engineer

"Method of Time in Planning Transportation Networks." Sub 29 May 51, Academy of Communal Economy imeni K. D. Pamfilov

Dissertations presented for science and engineering degrees* in Moscow during 1951.

SO: Sum. No. 480, 9 May 55

* Cand. Technical Sci.

CHEREPANOV, V. A.

CHEREPANOV, V. A. -- "Objective Methods of Controlling the Quality of Phonograph Recordings in Mass Copying." Min Higher Education Ukrainian SSR. Kiev Order of Lenin Polytechnic Inst. Chair of Acoustics and Sound Engineering. Kiev, 1955. (Dissertation for the Degree of Candidate in Technical Sciences).

So.: Knizhnaya Letopis', No. 2, 1956.

GOR'KOV,A.M.; SOKOLOV,L.S.; CHEREPANOV,V.A.

On the problem of a radical improvement in Moscow's municipal and suburban transportation system. Gor.khoz. Mosk. 29 no.6: 3-7 Je '55. (MLRA 8:8)

1. Metrogiprotrans (for Gor'kov). 2. Moskovskiy metropoliten (for Sokolov) 3. Institut general'nogo plana g. Moskvy (for Cherepanov)

(Moscow--Rapid transit)

CHEREPANOV, V.A.

Proposed plans for the development of the public transportation in Moscow. Gor.khoz.Mosk.30 no.12:11-15 D '56. (MLRA 10:2)

1. Rukovoditel' transportnoy masterskoy Instituta general'nogo plana g.Moskvy.
(Moscow--Traffic engineering)

CHEREPANOV, V.; STEPANENKO, G.; KARPOV, S.

Experience in copper casting. Izobr.i rats. no.8:39 Ag '58.
(MIRA 11:9)

1. Sotrudniki Karagandskogo nauchno-issledovatel'skogo ugol'nogo instituta.

(Suggestion systems)

SOV/58-59-5-11178

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 5, p 179 (USSR)

AUTHOR: Cherepanov, V.A.

TITLE: Frequency Properties of the Method of Photoelectric Analysis

PERIODICAL: Tr. Taganrogsk. radiotekhn. in-ta, 1957, Vol 3, Nr 2, pp 15 - 19

ABSTRACT: The photoelectric method of analysis is based on the optical multiplication of a given function f(x) and sine-wave oscillation. In the simplest case the multiplication is obtained by superposing a photographic film on the silhouette of the given function (cut out of opaque paper). The blackening gradations of this film vary according to a harmonic law. This film generally forms a sinusoidal raster, perpendicular to the abscissa axis, in the plane of the function being analyzed. The author examines the errors arising in the case where the raster is not perpendicular to the abscissa axis, and consisting in a diminution of the upper frequency boundary and in an irreversible distortion of the spectrum under analysis.

Card 1/1

N.O. Chechik

CHEREPANOV, V.A.

Immediate objectives in reconstructing freeways. Gor.khoz.Mosk. 34 no.3:12-15 Mr '60. (MIRA 13:8)

1. Direktor Instituta general'nogo plana g. Moskvy.
(Moscow--City planning)

CHEREPANOV, V.A.

Immediate objectives in reconstructing freeways. Gor.khoz.Mosk. 34 no.3:16-20 Mr '60. (MIRA 13:8)

1. Rukovoditel' inzhenerno-transportnoy masterskoy Instituta general'nogo plana g. Moskvy.
(Moscow--Traffic engineering)

CHEREPANOV, V.A., kand.tekhn.nauk

Reconstruction of the Sadovoye Loop. Gor.khoz.Mosk. 34 no.7: 3-7 Jl '60. (MIRA 13:7)

1. Rukovoditel' inshenerno-transportnoy masterskoy Instituta general'nogo plana g. Moskvy.
(Moscow--Traffic engineering)

CHEREPANOV, V.A., kand.tekhn.nauk

Transportation and main arteries in Moscow. Gor. khoz. Mosk. 35 no. 3:10-13 Mr '61. (MIRA 14:5)
(Moscow--Transportation)

STRAMENTOV, A.Ye., prof., doktor tekhn. nauk; CHEREPANOV, V.A., dotsent, kand. tekhn. nauk

Organization of urban traffic. Gor. khoz. Mosk. 35 no.10: 40-44 O '61. (MIRA 16:7)

(City traffic—Congresses)

CHEREPANOV, V.A.

Photoelectric analysis. Izv. vys. uchəb. zav.; radiotekh. 5 no.3:409-411 My-Je '62. (MIRA 15:9)

1. Rekomendovano kafedroy radiotekhniki Kiyevskogo instituta inzhenerov Grazhdanskogo vozdushnogo flota.
(Spectrophotometry) (Photoelectric measurements)

CHEREPANOV, V.A.

Danburite diagenetic concretions in the Devonian persalt formation in the northern part of Siberia. Dokl. AN SSSR 163 no.4:974-975 Ag '65. (MIRA 18:8)

1. Nauchno-issledovatel'skiy institut geologii Arktiki. Submitted April 27, 1965.

KAMENSKIY, A.V., red.; SOROKIN, P.V., red.; CHEREPANOV, V.A., red.; VERSHININ, T.I., red.izd-va; PASTUKHOV, M.A., tekhn. red.

[Twenty-fifth anniversary of the Kama Woodpulp and Paper Combine] Kamskii tsellyulozno-bumazhnyi kombinat; 25 let. Perm', Permskoe knizhnoe izd-vo, 1962. 119 p.
(MIRA 16:4)
(Krasnokamsk--Woodpulp industry)

CHEREPANOV, Vladimir Aleksandrovich; YASTRZHEMBSKIY, L.A., red.; KREKSHINA, L., red.; KUZNETSOVA, A., tekhn.red.

[Sadovoe Ring] Sadovoe kol'tso. Moskva, Moskovskii rabochii, 1963. 157 p. (MIRA 17:2)

NESTEROVSKIY, V.S.; SEDYKH, Yu.N.; CHEREPANOV, V.A.

Mechanism of the formation of the Talnakh ore-bearing intrusion. Uch. zap. NIIGA. Reg. geol. no.2:188-192 '64.
(MIRA 19:1)

CHEREPANOV, V.B., starshiy inzh.; VYZHIGIN, G.B., starshiy geolog

Fishing without shutting in the flow. Neftianik 5 no.3:12-13 Mr '60. (MIRA 14:9)

1. Promysel No.1 neftepromyslovogo upravleniya Kinel'neft.'
(Oil fields--Production methods)

VYZHIGIN, G.B.; CHEREPANOV, V.B.

Results of intensive flooding of the Kalinovka oil and gas field. Geol. nefti i gaza 5 no. 2:20-24 F '61. (MIRA 14:2)

1. Neftepromysel No. 1 Neftepromyslovogo upravleniya Kinel'-nefti'.
(Kuybyshev Province--Oil field flooding)

CHERNANOV, V.G.

Tests for long-period strength employing ring samples.
Zav.lab. 26 no.7:852-854 '60. (MIRA 13:7)
(Strength of materials)

CHEREPANOV, V.I.

USSR/Physics - Quantum optics FD-1650

Card 1/1 Pub. 146-10/25

Author : Sokolov, A. V.; Cherepanov, V. I.; Shteynberg, I. B.

Title : Dispersive formulas of quantum optics of metals in the poly-electron theroy taking into account of electron damping

Periodical : Zhur. eksp. i teor. fiz. 28, 330-334, March 1955

Abstract : For an aggregate of interacting electrons described by the general wave functions the authors derive the dispersive formulas of quantum optics of metals taking into account electron damping. One reference; namely, A. V. Sokolov, ibid., 25, 341, 1953.

Institution: Institute of Physics of Metals of Ural Affiliate, Academy of Sciences USSR

Submitted : March 12, 1954

CHEREPANOV, V. I.

B. T. R.
Vol. 3 No. 4
Apr. 1954
Metals-Mechanical and Physical Properties

(2) 211

5347* Heat Conductivity of Ferromagnetic Metals at Low Temperatures. (Russian.) A. I. Rezanov and V. I. Cherepanov. *Doklady Akademii Nauk SSSR*, v. 93, no. 4, Dec. 1, 1953, p. 641-644.

Calculations were made of thermal resistance at low temperatures. Comparisons were made with thermal resistance of the ionic lattice. 3 ref.

AFANAS'YEVA, L.A.; MOSKOV, M.M.; CHEREPANOV, V.I.

A new method, "peripheral intersecting", for optical constant determination in metals. Fiz.met. i metalloved. 1 no.3:566 '55. (MLRA 9:6)

1.Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo.
(Metals--Optical properties) (Optical measurements)

CHEREPANOV, V.I.

USSR/Metals - Infrared optics Apr 52

"Optical Properties of Metallic Alloys in Infrared Region of the Spectrum," A. V. Sokolov, V. I. Cherepanov, Inst of Phys of Metals, Acad Sci Ural SSR, and Sverdlovsk State U

"Zhur Eksper i Teoret Fiz" Vol XXII, No 4, pp 493-498

Studies optical properties of partially ordered metallic alloys in the long-wave band of spectrum. The optical characteristics of the specified alloys such as refraction and absorption indices, reflect-

215T54

ing and radiative properties, are functions of not only concn, but also deg of distant ordering, thus causing anomalies of optical properties. Received 22 Jul 51.

215T54

CHEREPANOV, V. I.

Cherepanov, V. I.: "Investigation of the multielectron theory of the optical properties of atomic semiconductors." Min Higher Education USSR. Chernovtsy State U. Chernovtsy, 1956. (Dissertation for the Degree of Candidate in Physicomathematical Science)

So: Knizhnaya letopis' No 27, 1956. Moscow. Pages 94-109; 111

CHEREPANOV, V. I.

Category : USSR/Optics - Physical optics

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 2303

Author : Afanas'yeva, L.A., Noskov, M.M., Cherepanov, V.I.
Inst : Ural' State University, USSR
Title : New "intersecting-Circle" Method for the Determination of the Optical Constants of Metals

Orig Pub : Fiz. metallov i metallovedeniye, 1956, 1, No 3, 566

Abstract : Description of a variant of a method of measuring the optical constants of metals using the reflection of polarized infrared light. A recording monochromator is used to determine the value of ρ (the ratio of the ability of the specimen to reflect light parallel to the plane of incidence to the reflecting ability for the perpendicularly-polarized light), at least for two angles of incidence. To find the optical constants, the authors propose an approximate method based on a graphic solution of the system $(x - x_i)^2 + y^2 = R_i^2$, which results from the Fresnel equations for metal. Here

$$\alpha_i = \alpha_i \left[(1+\rho_i) / (1-\rho_i) \right], \quad R_i = (x_i^2 - \alpha_i^2)^{1/2}, \quad \alpha_i = \tan \varphi_i \sin \varphi_i$$

and φ_i is the angle of incidence ($i = 1, 2$). The abscissas of the intersection points of two circles with radii R_1 and R_2 yield the values of the index of refraction n, and the ordinates yield the absorption coefficient k. The method was tested with Bi, Sb, and their alloys in the range of λ from 2 μ to 12 μ.

CHEREPANOV, V.I.

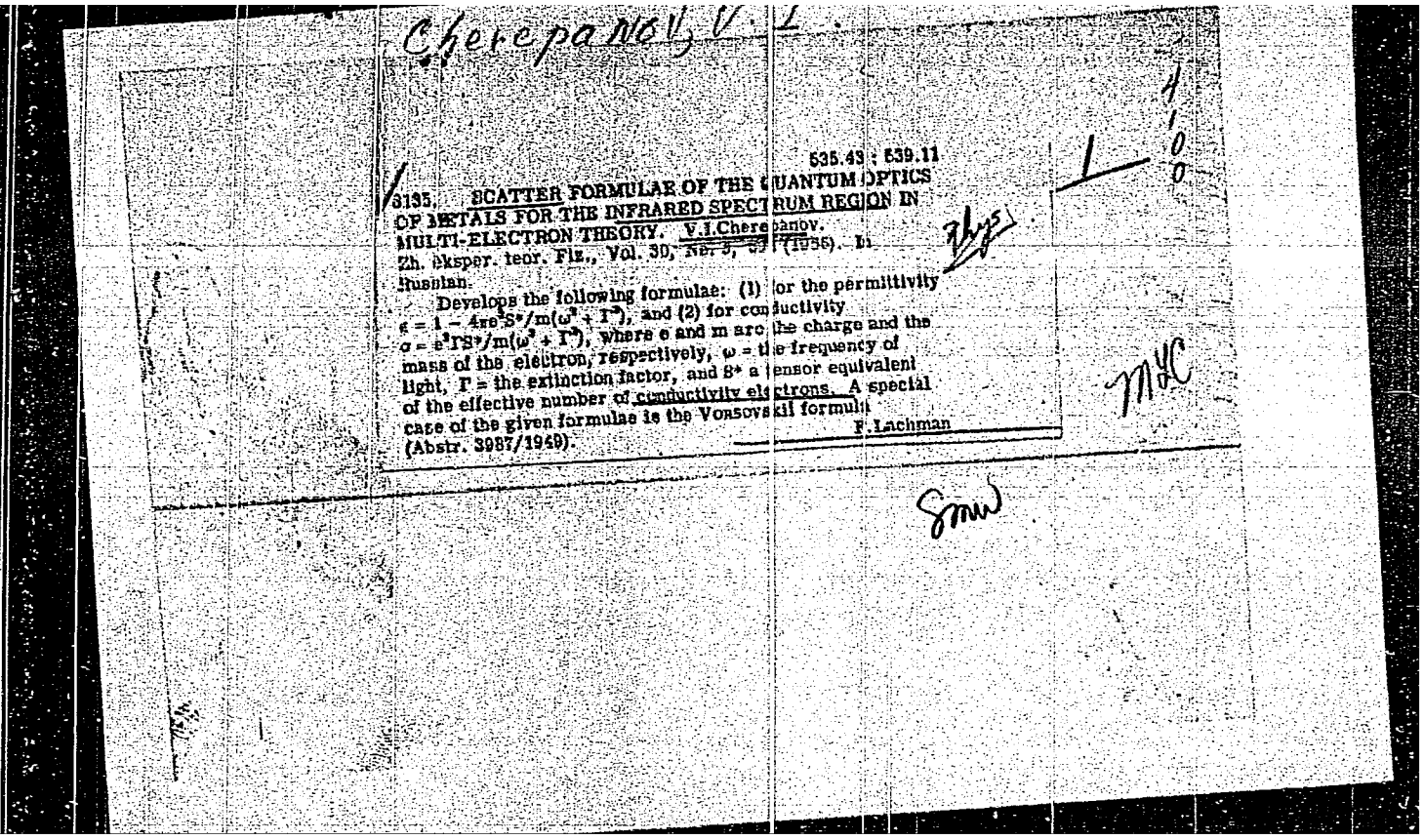
4

21

Dispersion Formulae of Quantum Optics of Solids Using the Tight-Binding Approximation. [Case of One-Dimensional Crystal.] V. I. Cherepanov and T. G. Pervushina (Uralskiy Gosudarstvennyy Universitet, 1956, 8, (1), 180-190). [In Russian]. A letter. Calculations of opt. dispersion show that, in the one-dimensional case, the tight-binding approximation leads to results more in accord with observation than does the free-electron model. It is not known if the two models give different results for three-dimensional crystals. A. P. K.

Map

Ural State Univ in A. M. Gorkiy



Cherepanov V.

535.43 : 539.11

8135. SCATTER FORMULAE OF THE QUANTUM OPTICS OF METALS FOR THE INFRARED SPECTRUM REGION IN MULTI-ELECTRON THEORY. V.I.Cherepanov. Zh. eksper. teor. Fiz., Vol. 30, No. 3, 63 (1956). In Russian.

Develops the following formulae: (1) for the permittivity $\epsilon = 1 - 4\pi e^2 S^*/m(\omega^2 + \Gamma^2)$, and (2) for conductivity $\sigma = e^2\Gamma S^*/m(\omega^2 + \Gamma^2)$, where e and m are the charge and the mass of the electron, respectively, ω = the frequency of light, Γ = the extinction factor, and S^* a tensor equivalent of the effective number of conductivity electrons. A special case of the given formulae is the Vorsovskii formula.

F.Lachman

(Abstr. 3987/1956).

CHEREPANOV, V. I.

AUTHORS: Vonsovskiy, S.V., Cherepanov, V.I. and Galishev, V.S. 126-2-3/30

TITLE: On the theory of exciton absorption of light. (K teorii eksitonnogo pogloshcheniya sveta).

PERIODICAL: "Fizika Metallov i Metallovedeniye" (Physics of Metals and Metallurgy), Vol.IV, No.2, 1957, pp.205-211 (U.S.S.R.)

ABSTRACT: The theory of Frenkel as generalised by Galishev and Vonsovskiy (1) is applied to the investigation of the mechanism of the absorption of light in crystals. The probability is calculated of a quantum transition of a system of electrons from a ground state to an excited state under the action of light. It is shown that the optical properties of such a system at absolute zero of temperature are not fully analogous to the properties of a system of isolated atoms. In the cases where exchange effects and pair processes of excitation can be neglected, the present theory reduces to Frenkel's theory. In accordance with refs. 1 and 6, a crystal lattice with "frozen" positive ions is considered in which non-uniformities in electron density are absent, and each crystal node has a valency electron over the closed shells. It is assumed that each such electron can be either in a ground state or in an excited state. Spin characteristics

Card 1/3

On the theory of exciton absorption of light. (Cont.) 126-2-3/30

of electrons are not considered and the excited states under consideration are taken to be non-degenerate. The probability of transition of the system from a normal to an excited state is shown to be given by

$$P_\nu(t) = \left|\frac{2\pi W_o}{h}\right|^2 . t \cdot \delta(\nu_1 - \nu)$$

where $P_\nu(t)$ is the probability of absorption of a quantum $h\nu$ in time t, $\nu_1 = (E_1 - E_o)/h$ is the transition of frequency, and W_o is given by (cf. Frenkel: Wave Mechanics, Pt.II)^o :-

$$W_o = \frac{\sqrt{N}\, ei}{\mu c} (\vec{A}_o \cdot \vec{I}_{o,1}) \cdot a(0)$$

Card 2/3 The spectral coefficient of absorption of light is shown to be given by (cf. Seitz, E, Ref.2):

$$\eta(\nu) = \frac{4\pi\sigma(\nu)}{c} = \frac{2\pi e^2 n}{\mu^2 ch\nu} (\vec{n}_o \vec{I}_{o1})\, a(0)^2 \cdot \delta(\nu_1 - \nu).$$

There are 8 references, 6 of which are Slavic.

On the theory of exciton absorption of light. (Cont.)
126-2-3/30

SUBMITTED: October 30, 1956.

ASSOCIATION: Ural State University imeni A. M. Gorky; Institute of Metal Physics, Ural Branch Ac.Sc., U.S.S.R. (Ural'skiy Gosudarstvennyy Universitet imeni A. M. Gor'kogo; Institut Fiziki Metallov Ural'skogo Filiala AN SSSR).

AVAILABLE:

Card 3/3

126-2-4/30

AUTHOR: Cherepanov, V. I.

TITLE: On a possibility in principle of an "intrazonal" mechanism of absorption of light in solid bodies. (O printsipial'noy vozmozhnosti "vnutrizonnogo" mekhanizma pogloshcheniya sveta v tverdykh telakh)

PERIODICAL: "Fizika Metallov i Metallovedeniye" (Physics of Metals and Metallurgy), Vol.IV, No.2, 1957, pp.212-215.

ABSTRACT: Absorption of visible and ultra-violet light in solids is due mainly to quantum transitions which take place in the electron system of the crystal under the effect of illumination disturbances. In the one electron zonal theory these transitions are considered as transitions of individual electrons from one energy band into another one without taking into account interaction between the electrons, or such interaction is taken into consideration by introducing a "self-coordinated" field. Ginzburg, V.L. (1) justifies the application of the single electron zonal theory of metals by the assumption that in metals the electron gas is highly degenerated and, therefore, a slight external effect could not change the state of the major part of the electrons. Considering the interaction between the

Card 1/4

electrons of the metal as a collision of the individual particles, Ginzburg and Silin (2) have stated that consideration of these collisions is not important. It is stated in this paper that this is correct only if there is weak interaction between the electrons; if there is strong interaction between the electrons it cannot be claimed a priori that the electron gas in the metal will be degenerated. In addition, non-metallic substances, for instance, in semi-conductors, the electron gas may not be degenerated at all. Even Ginzburg admits that his conclusions relate only to the range of low energies of the light quanta (long wave infra-red part of the spectrum). Therefore, in the general case the inter-electron interaction cannot be disregarded in considering the optical properties of solids and it is necessary to apply the multi-electron theory which in this case has certain interesting features. All quantum transitions in a system can be sub-divided into the following two types: transition not related to a change in the quantum number and transition involving a change in the quantum number. Transitions of the first type

are analogous to those considered in the single electron zonal theory and the success of the single electron theory of optical properties of solids are apparently due to the fact that the probability of transitions of the second type is low compared with the probability of transitions of the first type. Although in the general case it is difficult to anticipate the considerable influence of the transitions of the second type (since these are masked by the much more likely transitions of the first type), in certain cases their influence must be taken into consideration. This is particularly the case in the long wave range of the spectrum in which the energy of the light quanta is inadequate for throwing over of electrons from one energy band to the next. According to the single electron zonal theory, no light absorption should occur in this range of the spectrum, however, according to the multi-electron theory, absorption of light in this range of the spectrum is possible due to "intrazonal" transitions. It is known that in metals and semi-conductors, for instance, Si and Ge, a certain increase in

On a possibility in principle of an "intrazonal" mechanism of absorption of light in solid bodies. (Cont.)

126-2-4/30

the light absorption can be observed for this range above the value determined by the single electron theory. Samoylovich, A. G. has shown that "intrazonal" transitions need not involve occurrence of photo-conductivity since in such transitions the number of free chage carriers does not change in the semi-conductor and only a re-distribution of the quasi-impulses of the carriers takes place; this feature may help to elucidate the photo-electrically inactive absorption of light in semi-conductors which is not adequately explained by the exciton theory. F. V. Vonsovskiy contributed valuable advice relating to the here described work. There are nine references, seven of which are Slavic.

Card 4/4

SUBMITTED: June 28, 1956.

ASSOCIATION: Ural State University imeni A. M. Gorky. (Ural'skiy Gosudarstvennyy Universitet imeni A. M. Gor'kogo).

AVAILABLE:

AUTHORS: Cherepanov, V. I. and Galishev, V. S. 126-5-3-21/31

TITLE: The Exciton Theory of Light Absorption and Dispersion (K teorii eksitonnoy dispersii i pogloshcheniya sveta)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol 5, Nr 3, pp 547-8 (USSR)

ABSTRACT: A short note extending some calculations using Frenkel excitons; instead of perturbation theory plus second quantization, density matrices are used. Light scattering and dielectric permittivities ε can then be calculated at the same time. Eq.(1) gives the dispersion formula for the conductivity σ, eq.(2) the same for ε (symbolism not explained; see previous paper (Ref.1)). The formulae differ from Seitz's only in a frequency-independent factor.
There are 5 references, all of which are Soviet.

Card 1/1

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A. M. Gor'kogo (Ural State University imeni A. M. Gor'kiy)

SUBMITTED: March 11, 1957

1. Light--Theory 2. Light--Absorption 3. Light--Scattering

CHEREPANOV V.I.

56-4-52/52

AUTHOR SOKOLOV, A.V., CHEREPANOV, V.I.

TITLE A Correction Submitted to the Papers on 'The Dispersion Formulae of Quantum Optics of Metals in the Plural Electron Theory' (Ispravleniye k rabotam 'Dispersionnyye formuly kvantovoy optiki metallov v mnogoeletronnoy teorii. Russian)

PERIODICAL Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 4, pp 949 - 950 (U.S.S.R.)

ABSTRACT In some preliminary papers, the authors of the paper under review determined the dispersion formulae of quantum optics of metals with and without taking into account electron damping for the infrared, the visible, and the ultraviolet regions of the spectrum. The paper under review aims at correcting inaccuracies contained in these previous papers, and at determining the final and correct dispersion formulae for ε and σ. Thus, for instance, a certain wave function is incensequent for the system of interacting electrons in a crystal, because in this context the total quasi-impulse of the system (a magnitude which is preserved) equals the sum of the quasi-impulses of the different electrons. This, however, is only valid in rigid computation for a system of electrons that are not in interaction with each other. Then the paper under review gives an improved formulae for the wave function for the system of electrons which are in interaction with each other. This formula is more accurate insofar as here the common quasi-impulse of the

Card 1/2

56-4-32/52

A Correction Submitted to the Papers on 'The Dispersion Formulae of Quantum Optics of Metals in the Plural Electron Theory'

total system appears as a uniform characteristic of the system as a whole. Finally, the paper under review lists the dispersion formulae for ε and σ which are obtained by using the correct wave functions. (No reproduction).

ASSOCIATION Institute for Physics of Metals, Ural Branch, Academy of Science of the USSR

PRESENTED BY

SUBMITTED 3 December 1956

AVAILABLE Library of Congress

Card 2/2

CHEREPANOV, V. I.

56-1-15/56

AUTHORS: Vonsovskiy, S. V. , Cherepanov, V. I.

TITLE: Extension of the Bogolyubov-Tyablikov Perturbational Method to the Non-Steady Case (Obobshcheniye metoda teorii vozmushcheniy Bogolyubova-Tyablikova na nestatsionarnyy sluchay)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 1, pp. 97 - 105 (USSR)

ABSTRACT: In the present work the method by Bogolyubov-Tyablikov is extended to the non-steady case of the alternating electromagnetic field of a light wave propagated in a crystal. The authors first investigated a simple atomic cubic crystal with an s-electron in the s-state in each node of the lattice. The thermal oscillations of the ions of the lattice are neglected. On this occasion the Hamiltonian of the system of the electrons of the crystal in an electromagnetic field in the representation of the second quantization are given and discussed. In the following chapter the definition and the properties of the operator of the projection on the L-space are discuss-

Card 1/3

Extension of the Bogolyubov-Tyablikov Perturbational Method to the Non--Steady Case

ed. Then, the perturbational method by Bogolyubov-Tyablikov is extended to the non-steady case. The computations given here hold for such light frequencies which disagree with the fundamental frequencies of the system. The consideration of damping makes possible the investigation of the general case with any frequency of the incident light which will be demonstrated more precisely in a later paper. In the case of the approximation investigated here the spectrum of absorption of light through the system of electrons of the crystal is a discrete spectrum. This means from the physical point of view that the "pairs" and "holes" occurring due to the action of light remain in the bound states and the absorption of light by the crystal is not photo-electrically active. The last chapter treates the determination of the "deformed" current operator. There are 5 references, all of which are Slavic.

ASSOCIATION: Ural State University, Sverdlovsk (Ural'skiy gosudarstvennyy universitet Sverdlovsk)

SUBMITTED: June 26, 1957

56-1-15/56

Extension of the Bogolyubov-Tyablikov Perturbational Method to the Non--Steady Case

AVAILABLE: Library of Congress

Card 3/3

~~24(6)~~ 24.7700

66249

AUTHOR: Cherepanov, V. I.

SOV/181-1-7-5/21

TITLE: On the Theory of Optic Properties of Electronic Semiconductors in the Infra-Red Region of the Spectrum

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 7, pp 1035-1043 (USSR)

ABSTRACT: The interaction of electromagnetic waves in the infra-red region of a spectrum and the conduction electrons of an electronic semiconductor is theoretically investigated on the basis of the classic model of free electrons. The fundamental differential equation for the electric field strength of an electromagnetic wave is deduced for the case, that the skin effect in the semiconductor has a normal character. A solution is given for this equation as well as for the surface impedance. The common dispersion formulas for the optical parameters of a non-degenerate electronic semiconductor with arbitrary time dependence of the free path τ on the electronic velocity v are deduced. The formulas for the homopolar semiconductors are represented in explicit form with $\tau = l_v^{-1}$. The results are compared with the classic theory for metals (Drude-Einer-Kronig) and satis-

Card 1/2

66249

On the Theory of Optic Properties of Electronic Semiconductors in the Infra-Red Region of the Spectrum

SOV/181-1-7-5/21

factory agreement is found. The study by Tolpygo is especially mentioned. There are 20 references, 9 of which are Soviet.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet im. A. M. Gor'kogo (Urals State University imeni A. M. Gor'kiy)

SUBMITTED: January 14, 1959

4

Card 2/2

GALISHEV, V.S.; CHEREPANOV, V.I.; RADCHENKO, R.V.

Rules of selection for quadrupole exiton light absorption in cubic crystals. Fiz. tver. tela 3 no.2:484-491 F '61.
(MIRA 14:6)

1. Ural'skiy gosudarstvenny universitet im. A. M. Gor'kogo i Institut fiziki metallov AN SSSR.
(Exitons)
(Absorption of light)

CHEREPANOV, V.I.; GALISHEV, V.S.

Anisotropy of quadrupole exciton absorption of light in cubic crystals. Fiz.tver.tela 3 no.4:1085-1093 Ap '61. (MIRA 14:4)

1. Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo i Institut fiziki metallov AN SSSR.
(Excitons) (Crystals—Optical properties)

CHEREPANOV, V.I.

Effect of unilateral directed deformation of a cubic crystal on quadrupole exciton absorption of light. Fiz.tver.tela 3 no.5: 1493-1500 My '61. (MIRA 14:6)

1. Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo.
(Absorption of light) (Dislocations in crystals)
(Excitons)

24.7700 (1137, 1138, 1160, 1442)

24934

S/181/61/003/006/021/031
B102/B214

AUTHORS: Zhilich, A. G., Cherepanov, V. I., and Kargapolov, Yu. A.

TITLE: Possible existence of magnetic dipole lines in the exciton absorption spectrum

PERIODICAL: Fizika tverdogo tela, v. 3, no. 6, 1961, 1812 - 1814

TEXT: The present paper gives a theoretical investigation of the possibility of magnetic dipole exciton transitions in cubic crystals. It can be shown that such transitions may appear on excitation of exciton levels by light if these levels show a pseudovectorial symmetry. An investigation is also made of the dependence of the intensity of absorption on the direction of propagation, on the polarization of light in magnetic dipole transitions in deformed crystals in the presence of an external magnetic field. V. I. Cherepanov and V. S. Galishev (Ref. 1: FTT, III, 4, 1961) have shown before that by using the equation of motion $\dot{\vec{p}}_j = \frac{m}{i\hbar}[\vec{r}_j, \hat{H}]$ the equation for the matrix element of the exciton quadrupole transition:

$$\langle \eta, S|\hat{W}|0\rangle = \frac{ie}{m}\left\langle 0, S\left|\sum_{j=1}^{N}(\eta r_j)(\xi \hat{p}_j)\right|0\right\rangle, \qquad (1)$$

Card 1/6

Possible existence of...

can be brought in the form

$$\langle \vec{\eta}, S|\hat{W}|0\rangle = -\frac{e\omega^2}{2c}\left\langle 0, S\left|\sum_{\alpha,\beta} q_\alpha \xi_\beta T_{\alpha\beta}\right|0\right\rangle + \frac{i\omega}{2mc}\langle 0, S|([q\xi]\hat{\vec{M}})|0\rangle. \quad (2)$$

Here $\vec{\eta}$ is the propagation vector of the exciton (same as that of light), S is a set of discrete quantum numbers characterizing the exciton state, $\vec{\xi}$ is a unit vector in the direction of the polarization of light, $\vec{r}_j$ and $\vec{p}_j$ radius vector and momentum operator of the j-th electron, $\hat{H}$ the Hamiltonian operator for a system consisting of n interacting electrons in the crystal, $\vec{q}$ the unit vector in the direction of propagation of the light, $T_{\alpha\beta}$ a symmetric quadrupole tensor, and $\hat{\vec{M}}$ the operator of the total angular momentum of the electron system. The first term of (2) can be considered to represent the electric quadrupole and the second the magnetic dipole. The selection rules for the first term for a cubic crystal (symmetry group O_h) are established in Ref. 1 where it is shown that two types of electric quadrupole exciton absorption lines may exist: $A(\Gamma_1 \to \Gamma_{25}')$ and $B(\Gamma_1 \to \Gamma_{12})$. To the type A belongs, for example, the 6125-A line in the yellow series of the exciton absorption spectrum of Cu_2O.

Card 2/6

S/181/61/003/006/021/031
B102/B214

The second term of (2) was not dealt with in Ref. 1. This term signifies, however, that one more type of weak exciton absorption lines - the magnetic dipole lines can exist. This term is different from zero only for transitions of the type $(\Gamma_1 \to \Gamma'_{15})$, where Γ'_{15} is an irreducible representation of the O_h group according to which the components of the pseudovector $\vec{M}$ are transformed. Both terms of (2) can not vanish simultaneously. Analogously to Ref. 1 one obtains

$$|\langle \eta, \Gamma'_{15}| \hat{W}^s |0\rangle|^2 = |\langle \eta \Gamma'_{15}| \hat{W}^p |0\rangle|^2 = g' |M|^2, \quad (3)$$

for the square matrix element where $g' = e^2\omega^2/4m^2c^2$; M the matrix element of the components of $\vec{M}$; s and p are indices describing the state of polarization of the light wave. According to this, there is complete isotropy for this line in a cubic crystal with respect to the direction of propagation as well as to the state of polarization. From this point of view the magnetic dipole lines are analogous to the electric ones, but their intensity is smaller than that of the latter by a factor $(a/\lambda)^2 \sim 10^{-6}$. The effect of uniform directed compression on the magnetic dipole lines is now studied.

Card 3/6

1) Compression along a symmetry axis of 4th order: the line splits into two components $\Gamma'_{15} = E + A$.

$$\left.\begin{aligned} |\langle \eta, E|\hat{W}^{\sigma}|0\rangle|^2 &= g'|\Delta|^2\cos^2\theta, & |\langle \eta, A|\hat{W}^{\sigma}|0\rangle|^2 &= g'|\Delta|^2\sin^2\theta,\\ |\langle \eta, E|\hat{W}^{\pi}|0\rangle|^2 &= g'|\Delta|^2, & |\langle \eta, A|\hat{W}^{\pi}|0\rangle|^2 &= 0. \end{aligned}\right\} \quad (4)$$

2) Compression along a symmetry axis of 2nd order ($\Gamma'_{15} = B_1 + B_2 + B_3$):

$$|\langle \eta, B_1|\hat{W}^{\sigma}|0\rangle|^2 = g'|\Delta|^2\sin^2\theta,$$

$$\left.\begin{aligned} |\langle \eta, B_2|\hat{W}^{\sigma}|0\rangle|^2 &= \\ &= g'|\Delta|^2\sin^2\left(\varphi-\frac{\pi}{4}\right)\cos^2\theta, \\ |\langle \eta, B_1|\hat{W}^{\pi}|0\rangle|^2 &= 0, \quad |\langle \eta, B_2|\hat{W}^{\pi}|0\rangle|^2 = g'|\Delta|^2\cos^2\left(\varphi-\frac{\pi}{4}\right), \end{aligned}\right\} \quad (5)$$

$$\left.\begin{aligned} |\langle \eta, B_3|\hat{W}^{\sigma}|0\rangle|^2 &= g'|\Delta|^2\cos^2\left(\varphi-\frac{\pi}{4}\right)\cos^2\theta, \\ |\langle \eta, B_3|\hat{W}^{\pi}|0\rangle|^2 &= g'|\Delta|^2\sin^2\left(\varphi-\frac{\pi}{4}\right). \end{aligned}\right\} \quad (6)$$

In a magnetic field, the exciton level of Γ'_{15} is split into three levels

Card 4/6

Possible existence of...

which are displaced from the field-free level by $\Delta\varepsilon_1 = 0$ and $\Delta\varepsilon_{2,3} = \pm\gamma' H$, where

$$i\gamma' = \frac{e}{2mc}\langle 1|M_y|3\rangle = \frac{e}{2mc}\langle 2|M_x|3\rangle = \frac{e}{2mc}\langle 1|M_x|2\rangle. \quad A$$

The intensity of the magnetic dipole transitions from the ground state of Γ_{15}^{1} in the magnetic field are described by

$$|\langle \eta, 1|\hat{W}^x|0\rangle|^2 = g'|\Delta|^2|\cos\vartheta\cos\varphi H_x + H_y\cos\vartheta\sin\varphi - H_z\sin\vartheta|^2,$$

$$|\langle \eta, 1|\hat{W}^y|0\rangle|^2 = g'|\Delta|^2|H_x\sin\varphi - H_y\cos\varphi|^2,$$

$$|\langle \eta, 2|\hat{W}^z|0\rangle|^2 = |\langle \eta, 3|\hat{W}^z|0\rangle|^2 = g'|\Delta|^2\left|\frac{H^2 - H_z}{2H^2}\right| - \sin\vartheta + \quad B$$

$$+ \frac{H_xH_z + iHH_y}{H^2 - H_z^2}\cos\vartheta\sin\varphi + \frac{H_yH_z - iHH_x}{H^2 - H_z^2}\cos\vartheta\cos\varphi|^2,$$

$$|\langle \eta, 2|\hat{W}^y|0\rangle|^2 = |\langle \eta, 3|\hat{W}^y|0\rangle|^2 =$$

$$= g'|\Delta|^2\frac{1}{2H^2}\left|\frac{H_xH_z + iHH_y}{\sqrt{H^2 - H_z^2}}\cos\varphi - \frac{H_yH_z - iHH_x}{\sqrt{H^2 - H_z^2}}\sin\varphi\right|^2.$$

Card 5/6

$$\Delta \equiv \langle 1|\hat{M}_x|0\rangle.$$

Possible existence of...

S/181/61/003/006/021/031
B102/B214

There are 5 Soviet-bloc references.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova (Leningrad State University imeni A. A. Zhdanov), Ural'skiy gosudarstvennyy universitet im. A. M. Gor'kogo Sverdlovsk (Ural State University imeni A. M. Gor'kiy, Sverdlovsk)

SUBMITTED: December 7, 1960 (initially),
January 20, 1961 (after revision)

Card 6/6

CHEREPANOV, V.I.

Effect of directed deformations of a cubic crystal on quadrupole exciton absorption of light. Part 2. Fiz. tver. tela 3 no.9: 2604-2609 S '61. (MIRA 14:9)

1. Ural'skiy gosudarstvennyy universitet imeni A.M. Gor'kogo, Sverdlovsk.
(Excitons) (Crystals) (Deformations (Mechanics))

CHEREPANOV, V.I.; DRUZHININ, V.V.; KARGAPOLOV, Yu.A.; NIKIFOROV, A.Ye.

Effect of an electric field on the quadrupole lines in the spectrum of exciton absorption of light. Fiz.tver.tela 3 no.10:2987-2995 O '61. (MIRA 14:10)

1. Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo.
(Crystals—Spectra) (Excitons) (Electric fields)

CHEREPANOV, V.I.

Possibility of the "flaring up" of quadrupole exciton absorption lines in an electric field. Fiz.tver.tela 3 no.7:2183-2185 Jl '61. (MIRA 14:8)

1. Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo.
(Excitons—Spectra) (Electric fields)

MEN', A.N.; CHEREPANOV, V.I.

Allowing for island symmetry in calculating the energy spectrum of impurity ions in crystals. Fiz. tver. tela 5 no.6:1630-1639 Je '63. (MIRA 16:7)

1. Institut metallurgii Ural'skogo filiala AN SSSR, Sverdlovsk.

L 16151-65 EWP(e)/EWT(m) ESD(gs)/ESD(t)/RAEM(c)/SSD/BSD/AFWL/ASD(a)-5
WH

ACCESSION NR: AP4048402 S/0181/64/006/011/3288/3293

AUTHOR: Nikiforov, A. Ye.; Men', A. N.; Cherepanov, V. I. B

TITLE: Contribution to the theory of the optical spectrum of bound pairs of impurity ions in a crystal

SOURCE: Fizika tverdogo tela, v. 6, no. 11, 1964, 3288-3293

TOPIC TAGS: Crystal impurity, impurity content, spectrum line, line shift, ion pair, ruby, spinel, energy spectrum

ABSTRACT: A group theory is used to calculate the energy spectrum of a pair of ions interacting by excitation exchange. The analysis shows that additional lines should appear near the line of each individual impurity ion with increasing impurity-ion concentration in the crystal. Specific calculations are made for a pair of Cr^{3+} ions in ruby and in spinel, for which experimental data are available. The estimates for ruby show that the shift of

Card 1/2

L 16151-65
ACCESSION NR: AP4048402

the additional lines relative to the R-line is on the order of 10^2--10^3 cm^{-1}, which agrees with the experimental data of A. L. Schawlow (J. Appl. Phys. v. 33, 395, 1962) for the N-lines in ruby. The sign of the displacement depends on the sign and direction of the difference of the dipole moments in the excited and ground states of the individual ion, and the sign of its charge. Since pairs with both directions are present in ruby, additional lines are to be expected within 10^2--10^3 cm^{-1} of both the short-wave and long-wave sides of the R-lines. The need for additional theoretical calculations is indicated, especially in view of symmetry distortions that can be produced by thermal vibrations, higher-order neighbors, or various defects. Orig. art. has: 3 figures and 15 formulas.

ASSOCIATION: Ural'skiy gosudarstvenny*y universitet im. A. M. Gor'kogo, Sverdlovsk (Ural State University)

SUBMITTED: 28Jan64 ENCL: 00 SUB CODE: SS, OP
NO REF SOV: 006 OTHER: 008 ATD PRESS: 3146

Card 2/2

ACCESSION NR: AP4043396 S/0181/64/006/008/2547/2549

AUTHORS: Druzhinin, V. V.; Cherepanov, V. I.

TITLE: Use of the method of irreducible tensor operators and fractional parentage coefficients for the calculation of the energy spectrum of an ion in a crystal.

SOURCE: Fizika tverdogo tela, v. 6, no. 8, 1964, 2547-2549

TOPIC TAGS: crystal structure, irreducible tensor operator, Clebsch Gordan coefficient, fractional parentage coefficient, atomic spectrum, ionization spectrum

ABSTRACT: The ion is assumed to have a configuration $n\ell^N$ and the approximation of a medium crystalline field (with account of interaction between terms) is employed. By expanding the energy of the ion in the crystalline field in spherical harmonics and by starting from the initial wave functions of the terms of the isolated ion,

Card 1/2