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BARDIN, I.P., akademik, glavnyy red. [deceased]; NEKRASOV, N.N., otv. red.toma; SLAVIN, S.V., doktor ekon.nauk, red.toma; SHKOL'NIKOV, M.G., kand.ekon.nauk, red.toma; LAVRENT'YEV, M.A., akademik, red.; VOL'FKOVICH, S.I., akademik, red.; DIKUSHIN, V.I., akademik, red.; NEMCHINOV, V.S., akademik, red.; VEYTS, V.I., red.; LEVITSKIY, O.D., red.; PUSTOVALOV, L.V., red.; KHACHATUROV, T.S., red.; ROSTOVTSEV, N.F., akademik, red.; POPOV, A.N., red.; GRAFOV, L.Ye., red.; GASHEV, A.D., red.; PROBST, A.Ye., prof., red.; VASYUTIN, V.F., prof., red.; KROTOV, V.A., prof., red.; VASIL'YEV, P.V., doktor ekon.nauk, red.; LYUDOGOVSKIY, G.I., kand.tekhn.nauk, red.; LETUNOV, P.A., kand.geol.-mineral.nauk, red.; MAZOVER, Ya.A., red. izd-va; KASHINA, P.S., tekhn.red.

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GASHEV, A.M.

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SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1508
AUTHOR VEKSLER,V.I., EFREMOV,D.V., MINC,A.L., WEJSBEJN,M.M., BODOP'JANOV,F.A., GAŠEV,M.A., ZEJDLIC,A.L., IVANOV,P.P., KOLOMENSKIJ,A.A., KOMAR,E.G., MALYŠEV,L.F., MONOSZON,N.A., NEVAZŠKIJ,I.CH., PETUCHOV,V.A., RABINOVIC,M.S., RUBČINSKIJ,S.M., SINEL'NIKOV,K.D., STOLOV,A.M.
TITLE The 10 BeV Synchrophasotron of the Academy of Science in the USSR
PERIODICAL Atomnaja Energija, 1, fasc.4,22-30 (1956)
Issued: 10 / 1956

A short survey of the most important parameters and components of this accelerator is given. At first the share taken by various institutes in the development and construction of the accelerator is dealt with. The equipment of the accelerator is ready, and final work is in the act of being performed. The frequency of the accelerating voltage is modified in a manner that is proportional to the velocity of the protons (autophasing). The annular magnet consists of 4 quadrants separated by straight intervals of 8 m length (with an average diameter of 28 m). One of these intervals contains a device for the introduction of the particles, two others contain the accelerating electrodes. One of the intervals serves as an outlet for the particles. The photons are previously accelerated by means of a linear accelerator of from 8,5 to 9 MeV, after which they pass through a straight stretch of 10 m length and are then introduced into the chamber of the synchrophasotron after a revolution of 75°. The orbit fluctuates slowly round the respective immobile equilibrium orbit passing

through the center of the accelerating chamber and the particles perform rapid fluctuations round the respective orbit. In the case of a relative error of the frequency of ± 0,1% the radial shifts of the particles can attain $\Delta r = \pm 6$ cm. The amplitude of the radial phase oscillations was damped from 50 cm at the beginning to 1 cm at the end. A domain which is free from resonance was acertained. On the other hand the resonances with free oscillations, which are extremely dangerous in connection with the process of acceleration may in some cases be used for the improvement of the effect produced by the injection. Several problems connected with the construction of the accelerator are mentioned.
The electromagnet and its feed system. A system based upon the accumulation of energy in working loads serves the purpose of feeding the electromagnet. After the maximum field strength of 13.000 Örstedt is attained, the energy accumulated in the electromagnet is now transformed back into kinetic energy of working loads by the synchron machines which now act as motors. The main parameters of the system are: Maximum capacity 140.000 kVa, maximum amperage 12.800 a, maximum energy 11.000 V, four aggregates with parallel operation, 96 valve ignitors.
The vacuum system is based upon the two-vacuum system with an inside high vacuum chamber and exterior pre-vacuum chamber. In conclusion the high frequency system as well as the control of the injection processes and of the acceleration of the particles are discussed.

INSTITUTION:

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[redacted]

ARKHANGEL'SKIY, F.K.; GASHEV, M.A.; KOMAR, Ye.G.; MALYSHEV, I.F.; MONOSZON, N.A.; STOLOV, A.M.; STREL'TSOV, N.S.

Electric engineering and design problems in constructing large cyclic accelerators. Elektrichestvo no.11:25-34 N '57. (MIRA 10:10)

(Cyclotron)

21(9)

SOV/89-7-2-8/24

AUTHORS: Alekseyev, A. G., Gashev, M. A., Dondysh, D. L., Malyshev, I. F., Matora, I. M., Mironov, Ye. S., Monoszon, N. A., Nemenov, L. M., Pirogovskiy, V. V., Romanov, N. A., Strel'tsov, N. S., Fedorov, N. D.

TITLE: A 1.20-Meter Cyclotron With a Magnetic Pole Diameter (Tsiklotron s diametrom polyusov magnita 120 cm)

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 2, pp 148 - 158 (USSR)

ABSTRACT: The device was developed in the Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury (Scientific Research Institute for Electro-physical Apparatus) in collaboration with the Institut atomnoy energii AN SSSR (Institute for Atomic Energy of the AS USSR). The electro-magnet was designed by N. N. Indyukov, Ye. A. Bezgachev, A. V. Klimov under the guidance of B. V. Rozhdestvenskiy and B. Ye. Gritskov (Figs 1 and 2 are cross sections of the electro-magnet). The radial field force was measured in such a way that the error in the center of the field was less than 0.01% of the force of the field. The error at the measurement of the azimuthal inhomogeneity of the field was less than 0.007% of the field force

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in the center of the field. The position of the magnetic plane was determined by the magnetic scale developed by V. V. Pirogovskiy. For the correction of the magnetic field inside rings and discs were used, which are installed between the poles of the magnet and the lids of the vacuum chambers (sectional views are given). The measurements, the construction method and the assembly of the resonance conductor and of the duants are described in detail (there are sectional views). The acceleration chamber and the resonance conductor (there is a detailed sketch) were constructed by A. I. Alyab'yev, I. F. Zhukov, N. N. Rumyantsev under the supervision of B. I. Produvnov. The whole high-frequency installation is shown in a block diagram and there is a short description of part of it. The high-frequency section was developed by G. M. Drabkin, R. V. Vanatovskiy and R. Yu. Protasovskiy under the supervision of A. S. Temkin. The vacuum systems were computed by Ya. L. Mikhelis and N. M. Karpenko. The movement of ions in the ion source and in the central part of the cyclotron is of special importance at the acceleration. This movement was thoroughly studied by I. M. Matora. He developed a special deflector system. The focusing system was computed by Yu. G.

A 1.20-Meter Cyclotron With a Magnetic Pole Diameter - SOV/89-7-2-8/23

Basargin. The magnetic quadrupole lenses of N. A. Ostrovskiy and N. I. Konovalova were used in this system. The cyclotron produces 13.7 mev of deuterons while the extreme route of the particle flux can be up to 1 ma. There is a guided beam of 100-200 μa at disposal for normal work and the beam is focussed to a plane of 15.20 mm^2. The control desk, signal equipment and the special electrical installations were designed by V. S. Lyublin, N. B. Nevrov, P. S. Gornikel' working under the guidance of G. S. Gordeychik. Similar cyclotrons, constructed in the USSR, are in operation in Romania, China, Poland and GDR. In the near future a cyclotron of a similar type will be completed in the CSR. The first cyclotron of this type was tested in 1956 by L. N. Baulin, R. N. Letunovskiy, Yu. G. Basargin, A. V. Stepanov, G. A. Nalivayko, M. D. Veselov, V. A. Suslov and A. I. Antonov from the Scientific Research Institute for Electrophysical Apparatus and I. I. Afanas'yev, A. A. Arzumanov and R. A. Meshcherov from the Institute for Atomic Energy of the AS USSR. The magnetic quadrupole lenses were tested at the cyclotron of the AN USSR (AS UkrSSR) with the participation of V. A. Kovtun. The fabrication of the cyclotron was supervised by A. V. Nozalevskiy,

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A 1.20-Meter Cyclotron With a Magnetic Pole Diameter SOV/89-7-2-8/24

L. N. Fedulov, V. V. Romanov and K. A. Asriyev . Ye. G. Komar gave valuable advice. F. K. Arkhangel'skiy aided the testing of the first cyclotron. Problems concerning the planning of the cyclotron were discussed with D. G. Alkhazov. There are 10 figures and 5 Soviet references.

SUBMITTED: March 12, 1959

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SOV/105-60-1-2/25

8(5),8(1)
AUTHORS: Gashev, M. A., Komar, Ye. G., Monoszon, N. A., Spevakova, F. M., Stolov, A. M.

TITLE: The Supply System of the Electromagnet for the Proton-synchrotron at the Consolidated Nuclear Research Institute

PERIODICAL: Elektrichestvo, 1960, Nr 1, pp 6-10 (USSR)

ABSTRACT: The biggest particle accelerator is at present the proton-synchrotron of the Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research). Protons with energies of up to 10 billions ev are obtained here. The supply system of the electromagnet is used for the production of a periodically alternating magnetic field with a repetition frequency of 5 per minute in the acceleration chamber of the proton-synchrotron. The main rated data of the supply system are: peak output 140 Mw, peak amperage 12.8 ka, peak voltage 11 kv, the energy stored in the magnetic field of the electro-magnet 148.10^6 joule and the losses in the coil of the electro-magnet 4 Mw. While connecting the coil of the electromagnet to the direct voltage, the current increases in accordance with an

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exponential curve with a time constant of T = 25 seconds. When the current has reached 12.8 ka, the voltage changes its sign and the current drops. The source for the direct voltage is a system of synchronous generators driven by induction motors and of converters. The latter operate as rectifiers during the increase of the current and as inverters during the drop of the current. The schematic circuit diagram of the supply system of the electromagnet is shown in figures 1 and 2 and explained. The reduction of the output impulses in the supply system of the aggregate motors is obtained with the help of fluid slip controllers. The sealed pentode-ignitrons of type IVU 100/1500 with a mean rated current of 100 a and a return voltage of 15 kv, specially developed at the Vsesoyuznyy elektrotekhnicheskiy institut (All-Union Electrotechnical Institute) are used as valves for the converter installation. The method of operation of the valves is explained in detail and the influence of distributed capacitances on the operation of the valves is pointed out. These capacitances cause strong high-frequency oscillations with frequencies of dozens of kilocycles. The measures taken for eliminating these influences are mentioned

in brief. The control system of the converter is supplied by an auxiliary generator (on the shaft of the main generator). The firing of the ignitrons is controlled with the help of a customary thyratron-condenser-circuit. This produces an impulse at the igniter lasting from 200 to 250 milliseconds at peak amperages of from 40 to 60 a. The phase shift between the controller impulses corresponding to the rectifier- and the inverter method of operation, amounts to approximately 140 degrees. The moment of the beginning of the method of operation as rectifier (of the converters) is controlled by a pickup with a contact system which conveys the signal to the trigger. In order to warrant the homogeneity of the magnetic field and to reduce the influence of residual magnetism on the magnetic field, the magnetic system is demagnetized during the interval of the main cycle. This is done with the help of impulses of the current of different polarity with an amplitude decreasing in accordance with a certain law. These demagnetizing impulses are produced by 2 converters with ignitrons of type IVU 100/1500. During backfiring, the converter is protected by back current quick-break switches. Each of the converters is protected against

short circuit currents by peak-current quickbreak switches. The windings of the electromagnet are protected against excess voltages by dischargers. The specific feature of the supply system investigated here is the circumstance that, during abnormal methods of operation the amperage in the converter (where the normal method of working was disrupted) is increased and the amperages in the other converters decrease, when the converters operate as inverters. To prevent this, a grid protection system is provided. Endurance tests showed that the supply system operates in a stable manner and warrants all methods of operation. There are 5 figures.

SUBMITTED: July 27, 1959

40739

S/120/62/000/004/004/047
E194/E420

AUTHORS: Monoszon, N.A., Stolov, A.M., Gashev, M.A., Spevakova, F.M., Yavno, A.Kh., Kornakov, Ye.V., Kulakov, F.M., Nadgornyy, V.P., Gorshkova, Ye.G.

TITLE: The supply system for the electromagnet of a proton-synchrotron of 7 Gev

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 27-33

TEXT: The article describes the supply system for an electromagnet, the field of which increases at the steady rate of 6.7×10^3 Oe/sec to reach a maximum value of 9300 Oe in 1.55 sec and then falls off exponentially in 0.8 sec, the repetition frequency is 10 to 12 cycles per minutes. The voltage on the electromagnet is increased from 5000 to 10250 V with a maximum current of 2500 A. An induction motor of 3500 kW, 6 kV, 740 rpm drives through a fluid coupling a 6 phase alternator of peak output 37500 kW, 8.2 kV, and an auxiliary generator of 250 kW, 380 V for auxiliary supply to the 12-phase ignitron rectifier. During the current decrement period the rectifier operates as an inverter. A description of the smoothing circuit

Card 1/2

The supply system for the electro-...

is given. Particular fault conditions of the circuit are analysed and the protective devices fully described. The performance is illustrated by oscillograms. Schematic and block circuit diagrams are given and an outline drawing of the ignitrons. There are 8 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury GKAE (Scientific Research Institute for Electrophysical Apparatus GKAE)

SUBMITTED: April 10, 1962

Card 2/2

L 13221-65 EWT(l)/EWG(k)/EWT(m)/EPA(sp)-2/EPA(w)-2/EEC(t)/T/EEC(b)-2/EWA(m)-2
Pz-6/Po-4/Pab-10/Pi-4 IJP(c)/SSD(b)/ASD(p)-3/BSD/AEDC(b)/RAEM(a)/ESD(gs)/ESD(t)
DM/AT
ACCESSION NR: AP4047415 S/0089/64/017/004/0287/0294

AUTHORS: Gashev, M. A.; Gustov, G. K.; D'yachenko, K. K.; Komar, Ye. G.; Maly*shev, I. F.; Monoszon, N. A.; Popkovich, A. V.; Ratnikov, B. K.; Rozhdestvenskiy, B. V.; Rumyantsev, N. N.; Saksaganskiy, G. L.; Spevakova, F. M.; Stolov, A. M.; Strel'tsov, N. S.; Yavno, A. Kh.

TITLE: Main technical characteristics of the "Tokamak-3" experimental thermonuclear installation

SOURCE: Atomnaya energiya, v. 17, no. 4, 1964, 287-294

TOPIC TAGS: thermonuclear pinch, thermonuclear fusion, plasma research, plasma pinch / Tokomak-3

ABSTRACT: The "Tokamak-3" is intended for the investigation of a toroidal quasi-stationary discharge in the strong longitudinal magnetic field. The toroidal discharge is produced in the vacuum cham-

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L 13221-65
ACCESSION NR: AP4047415

ber by a vortical electric field, and acts as an equivalent secondary turn of a pulse transformer. The produced plasma pinch is stabilized with a longitudinal magnetic field of a toroidal solenoid, inside which the vacuum chamber is located. The magnetic core of the pulse transformer carries the primary vortical-field winding, the demagnetization winding, and the winding for induction heating. The setup is fed from special power systems. The electromagnetic system, the power supply, and the vacuum system are described in some detail. The longitudinal field intensity reaches 40 kG. The vortical field values are 250 and 50 V per turn with pulse durations 10 and 50 milliseconds, and with programming of the waveform such as to maintain a constant current in the plasma pinch. The power supply delivers a peak power of 77,000 kW, maximum 7000 A, no-load voltage 11 kV, and stored energy 180 million Joules. The vortical field is fed from four capacitor banks rated 1000 μF at 20 kV, 11,000 μF at 10 kV, 78,000 μF at 5 kV, and 30,000 μF at 5 kV. The capacitor-bank parameters can be varied over a wide range. The vacuum in the liner does

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L 13221-65
ACCESSION NR: AP4047415

not exceed 1--2 x 10^{-7} mm Hg during the interval between gas admission, with the pressure in the outside chamber being 1--2 x 10^{-6} mm Hg. Orig. art. has: 8 figures.

ASSOCIATION: None

SUBMITTED: 23Nov63 ENCL: 00

SUB CODE: NP, ME NR REF SOV: 000 OTHER: 000

Card 3/3

8

L 58913-65 EWT(m)/EPA(w)-2/EWA(m)-2 Pt-7 IJP(c) GS

ACCESSION NR: AT5007938 S/0000/64/000/000/0547/0555

AUTHOR: Glazov, A. A.; Denisov, Yu. N.; Dmitriyevskiy, V. P.; Zamolodchikov, B.I.; Zaplatin, N.L.; Kol'ga, V. V.; Komochkov, M. M.; Kropin, A. A.; Dzhelepov, V. P.; Gashev, M. A.; Malyshev, I. F.; Monoszon, N. A.; Popkevich, A. V. 40 38 B+1

TITLE: Relativistic 700-Mev proton cyclotron 19

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy Moscow, Atomizdat, 1964, 547-555

TOPIC TAGS: proton accelerator, relativistic particle

ABSTRACT: Current theoretical concepts and experimental data conclusively show that to understand the microcosm further it is necessary to increase the beam intensity of accelerators by a factor of 10^3 and produce accelerators with energies up to thousands of Bev's. For the past 5-6 years constant gradient accelerators (500-900 Mev cyclotrons) have appeared to be the best way to produce particles with energies up to 1 Bev (1 Gev) with beam currents of the order of 1 milliampere instead of 1 microampere (as found in synchrocyclotrons). The present report describes the design for a 700-Mev proton cyclotron developed by the Laboratory of Nuclear Prob-

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L 58913-65

ACCESSION NR: AT5007938 0

blems of the OIYaI jointly with the NIIEFA GKAE SSSR and other scientific research institutes with rated current proton beam up to 500 microamperes. The choice of energy was made on the basis of the fact that at 700 Mev the cross-sections for formation of pions in nucleon-nucleon and nucleon-nuclei collisions are close to maximum, and also because of the possibility of utilizing the electromagnet of the 680-Mev synchrocyclotron of the OIYaI for the new accelerator. The following new problems were considered in the design because there is now no similar operational high-energy accelerator: (a) verification of the linear theory and development of the nonlinear theory of spatial stability and of the phase motion of particles in the accelerator; (b) creation in a large space of a magnetic field with complex configuration and its stabilization with an unusually high degree of accuracy; (c) production of apparatus for the measurement of strongly nonhomogeneous magnetic fields (gradients up to 4000 oe/cm) with an accuracy better than 10^4; (d) production of high-frequency oscillators with power up to 2 MW at a frequency of 12 megacycles per second (12 Mc), with frequency stability of the order of 10^{-5}, which operate with a resonance system with amplitude of the accelerating high-frequency voltage of up to 100 kilovolts; (e) design of an accelerator and its auxiliary systems which ensure effective operation and maintenance under conditions of high levels of activity; (f) development of a highly effective system for the channeling of proton beams from the accelerator, and also solution of the problems connected with-

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L 58913-65

ACCESSION NR: AT5007938 2

producing beams of secondary particles and their channeling and focusing; (g) development of plans for the protection of personnel and instruments from radiation. The paper concludes that the relativistic cyclotron offers wide new possibilities for nuclear research in radiobiology, solid state physics, etc. Orig. art. has: 7 figures, 3 tables.

ASSOCIATION: (I) Ob"yedinennyy institut yadernykh issledovanniy, Dubna (Joint Institute of Nuclear Research, Dubna); (II) Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific Research Institute of Electrophysical Equipment, GKAE SSSR)

SUBMITTED: 25May64 ENCL: 00 SUB CODE: NP

NO REF SOV: 009 OTHER: 002

Card 3/3

KHMELEVSKIY, V.I.; KOZELLO, I.A.; GASHEVA, A.Ya.

Synthesis of 2-aminopyrimidine. Report no.1: Condensation of propargyl aldehyde with dicyandiamide. Med.prom. 13 no.12:18-20 D '59. (MIRA 13:4)

1. Ural'skiy filial Vsesoyuznogo nauchno-issledovatel'skogo khimiko-farmatsevticheskogo instituta imeni S. Ordzhonikidze.
(GUANIDINE) (PYRIMIDINE) (PROPIOLALDEHYDE)

KHMELEVSKIY, V.I.; KOZELLO, I.A.; GASHEVA, A.Ya.

Synthesis of 2-aminopyrimidine. Report No.2: Condensation of guanidine with propargyl alcohol in the presence of oxidants. Med.prom. 14 no.1:46-48 Ja '60. (MIRA 13:5)

1. Ural'skiy filial Vsesoyuznogo nauchno-issledovatel'skogo khimiko-farmatsevticheskogo instituta imeni S. Ordzhonikidze.
(PYRAMIDINE)

KOZELLO, I.A.; KHMELEVSKIY, V.I.; GASHEVA, A.Ya.

Synthesis of 2-aminopyrimidine. Report No.2: Use of dicyandiamide for condensation with propargyl alcohol in the presence of oxidants. Med. prom. 14 no.9:42-43 S '60. (MIRA 13:9)

1. Ural'skiy filial Vsesoyuznogo nauchno-issledovatel'skogo khimiko-farmatsevticheskogo instituta im. S. Ordzhonikidze.
(PYRIMIDINE)

GASHEVSKAYA, A. I.

USSR/Chemistry - Palladium, Oximes

FD-678

Card 1/1 : Pub. 129 - 13/25

Author : Peshkova, V. M.; Shlenskaya, V. I.; and Gashevskaya, A. I.

Title : Problem of the determination of palladium by oximes

Periodical : Vest. Mosk. un., Ser. fizikomat. i yest. nauk, Vol. 9, No. 3, 83-90, May 1954

Abstract : Study the use of methyl and dimethylglyoxime and salicylaldoxime for the colorimetric determination of palladium in nonaqueous solvents. Find that methylgloxime and salicylaldoxime can be used for the above determinations in the presence of other elements, but nonsymmetrical methyldioxime is the most sensitive reagent for the colorimetric determination of palladium.

Institution : Chair of Analytical Chemistry

Submitted : June 25, 1953

SOV/124-58-5-5996

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 5, p 146 (USSR)

AUTHOR: Gashibayazov, A.A.

TITLE: Design Calculation of Piping Supported by Strip Footings (Raschet truboprovoda na lentochnykh oporakh)

PERIODICAL: Tr. Leningr. tekhnol. in-ta pishch. prom-sti, 1955, Vol 12, pp 283-289

ABSTRACT: A design calculation for strength is presented for a fluid-filled piping lying on two strip-footing supports oriented along the generatrices. It is assumed that the axis of the pipe remains undeformed after loading, and that the stresses in the cross sections perpendicular to the axis of the pipe are equal to zero. This assumption permits the author to reduce the calculation to the solution of the statically indeterminate plane problem of a ring cut out of the pipe and loaded by hydrostatic pressure. The friction of the pipe walls against the supports is taken into consideration. A numerical example is provided.

1. Hydraulic systems--Design 2. Pipes-- Mechanical properties 3. Mathematics

T.N. Vasitsyna

Card 1/1

GASHICHEV, Vasiliy Ivanovich, aspirant

Series switching-in of asynchronous motors in two-motor drives of mine hoisting machinery. Izv. vys. ucheb. zav.; elektromekh. 3 no.4:111-119 '60. (MIRA 13:9)

1. Kafedra gornoy elektrotekhniki Leningradskogo gornogo instituta.
(Mine hoisting--Electric driving)

GASHICHEV, V. I.

Cand Tech Sci - (diss) "Study of the motor asynchronous drive of mine elevator." Leningrad, 1961. 15 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Sverdlovsk Mining Inst imeni V. V. Vakhrushev); 200 copies; price not given; (KL, 5-61 sup, 188)

GASHICHEV, V.I., inzh.

Automation of a multirope mine hoist with a two-motor, asynchronous drive. Izv. vys. ucheb. zav.; gor.zhur. no.2:125-132 '61. (MIRA 14:3)

1. Leningradskiy ordena Lenina i ordena Trudovogo Krasnogo Znameni gornyy institut imeni G.V. Plekhanova. Rekomendovana kafedroy gornoy elektrotekhniki Leningradskogo instituta.
(Mine hoisting) (Hoisting machinery)

GASHICHEV, V.I., inzh.

Analysis of the performance of a two-motor asychronous drive in the final period of travel of a hoist on the dump tracks. Izv. vys.ucheb. zav.; gor. zhur. no.5:108-114 1960. (MIRA 14:3)

1. Leningradskiy ordena Lenina i ordena Trudovogo Krasnogo Znameni gornyy institut imeni G. V. Plekhanova. Rekomendovana kedefroy gornoy elektrotekhniki.
(Mine hoisting—Electric driving)
(Electric motors, Induction)

AFANAS'YEV, T.P.; GASHICHEV, V.I.; YELIN, S.N.; KAPLYANSKIY, B.A.; LAVROVA, G.I.

Automation of crushing and grinding processes at the No.1 Apatite-Nephelite Ore Dressing Plant. Obog. rud 9 no.4: 36-41 '64. (MIRA 18:5)

ALEKSEYEVA, O.N., red.; GASHEVA, V.F., red.; MOISEYEV, I.N., red.

[Hydrologic yearbook] Gidrologicheskii ezhegodnik. Leningrad, Gidrometeoizdat. 1962. Vol.0. No.0.1. 1964. 163 p. (MIRA 17:10)

GASHIMI, A.; SHAKURI, B.

Supplying soils of the Shemakha agricultural administration with volatile forms of microelements. Dokl. AN Azerb. SSR 21 no.6:68-71 '65. (MIRA 18:12)

1. Institut pochvovedeniya i agrokhimii AN AzSSR.

GASHILOV, A. A.

"Metabolism and Energy Exchange in the Bodies of the Kholmogorsky Breed when Various Types of Rations are Utilized by Them." Min Higher Education USSR, Yerevan Zootechnological-Veterinary Inst, Baku, SSR, 1955
(Dissertation for the Degree of Candidate of Agricultural Sciences)

SO: Knizhnaya Letopis', No. 32, 6 Aug 55

GASHIMOV, A.A.

Substance and energy metabolism in Kholmogory heifers fed diferent types of rations. Trudy VNIIK 3 198-212 '56. (MLRA 10:4)
(Cows--Feeding and feeding stuffs) (Metabolism)

Gashimov, A.

USSR / Farm Animals. Small Horned Stock. Q-2

Abs Jour: Ref Zhur-Biol., No 23, 1958, 105711.

Author : Gashimov, A.
Inst : Not given.
Title : Utilization of Corn Silage in Fattening Sheep.

Orig Pub: Azerbaydzhan sosyalist kend teserrufaty, 1958, No 2, 31-34; Sots. s.-kh. Azerbaydzhana, 1958, No 2, 30-33.

Abstract: The fattening of hybrid wethers (Dozakh x Merino) by utilizing corn silage in conjunction with pasture has increased their live weight by 21-23%. Expenditure of feeds per 1 kg. of weight gain constituted 7.9 - 9.14 food units. The wethers were consuming 3.4 kg. of silage daily. With the appearance on pastures of green grass in the spring, the amount of consumed silage dropped markedly.

Card 1/1

AKHUNDOV, M.A.; GASHIMOV, A.A.; GASHIMOVA, L.G.

Effect of a growth substance derived from petroleum in increasing live weight in rabbits and sheep. Uch.zap.AGU.Biol.ser. no.2: 17-22 '59. (MIRA 13:6)

(GROWTH PROMOTING SUBSTANCES)
(RABBITS) (SHEEP)

MAMEDALIYEV, Yu.G.; GASHIMOV, A.A.; AKHUNDOV, M.A.; MUSTAFAYEV, L.S.; GASHIMOVA, L.G.

Increase in the live weight of merinos as an effect of surface-active petroleum derivatives. Uch. zap. AGU. Fiz.-mat. i khim. ser. no.3:65-66 '59. (MIRA 14:3)

(Surface-active agents)
(Merino sheep)

GAMZAYEV, M.A. (Baku); GASHIMOV, A.Sh. (Baku); ALI-ZADE, A.A. (Baku)

"Psychological essays" by M.Magerramov. Reviewed by M.A. Gamzaev, A.Sh.Gashimov, A.A.Ali-Zade. Vop.psikhol. no.6: 155-156 N-D '62. (MIRA 16:2)
(Psychology) (Magerramov, M.)

GASHIMOV, G.M.

Uniqueness theorem for Dirichlet series. Dokl. AN SSSR 150 no.4:722-725 Je '63. (MIRA 16:6)

1. Institut matematiki i mekhaniki AN Azerbaydzhanskoy SSR. Predstavleno akademikom M.V. Keldyshem.
(Series, Dirichlet's)

GASHIMOV, G.M.

Uniqueness theorem for Dirichlet series. Izv. AN Azerb. SSR. Ser. fiz.-mat. i tekh. nauk no.5:25-36 '63. (MIRA 17:3)

L 19588-65 EWT(d)/T IJP(c)/ASD(s)

ACCESSION NR: AP5002057 S/0020/63/150/004/0722/0725

AUTHORS: Gashimov, G. M.

TITLE: Uniqueness theorem for Dirichlet series

SOURCE: AN SSSR. Doklady, v. 150, no. 4, 1963, 722-725

TOPIC TAGS: convergent series

ABSTRACT: Let

$$M_F(x) = \sum_{n=1}^{\infty} |a_n| e^{\lambda_n x} \qquad (1)$$

where the entire function F is represented by the following absolutely convergent Dirichlet series.

$$F(z) = \sum_{n=1}^{\infty} a_n e^{\lambda_n z}, \quad 0 < \lambda_1 < \lambda_2 < \ldots \qquad (2)$$

Conditions on the growth of $M_F(x)$ are sought guaranteeing existence of a nonzero Dirichlet series for which

$$|F(x)| < C, \quad -\infty < x < \infty \qquad (3)$$

Card 1/3

The author proves: Theorem 1. Consider a Dirichlet series of the form (2) which is absolutely convergent in the entire complex plane. Assume that

$$\lim_{n\to\infty} \lambda_n n^{-1/q} = c, \quad 0 < c < \infty, \quad 1 < q < 2. \tag{4}$$

If $M_F(x) \leqslant C_\varepsilon e^{(\alpha+\varepsilon)x^\rho}$, $\varepsilon > 0$ arbitrary, where $1/p + 1/q = 1$,

$$\alpha = c^\rho (q-1) q^{-1} \left(\pi \lg \frac{\pi q}{2}\right)^{1-\rho}, \tag{5}$$

then it follows from the boundedness of the Dirichlet series on the real axis that this series is identically equal to zero. Theorem 2. Let λ_n be an increasing series of positive numbers, $\lambda_n \sim cn^{1/q}$, $0 < c < \infty$, $1 < q < 2$. Further, suppose this sequence satisfies

$$|\lambda_n^q - \lambda_k^q| \geqslant h|n-k|, \quad h > 0. \tag{6}$$

Then the function

$$Q(z) = \frac{1}{2\pi i} \int_{-i\infty}^{i\infty} \prod_{n=1}^{\infty} \frac{\lambda_n + \zeta}{\lambda_n - \zeta} e^{-z\frac{\zeta}{\lambda_n}} e^{z\zeta} \frac{d\zeta}{(\zeta+1)^2} \tag{7}$$

L 19588-65
ACCESSION NR: AP5002057

is a nonzero Dirichlet series of form (2), bounded on the real axis, and satisfies

$$M_Q(x) \leqslant C_\varepsilon e^{(\alpha+\varepsilon)x^\beta}, \quad \varepsilon > 0 - \text{arbitrary} \qquad (8)$$

Orig. art. has: 5 formulas.

ASSOCIATION: Institut matematiki i mekhaniki, Akademii nauk AzerbSSR (Institute of Mathematics and Mechanics, Academy of Sciences, Azerbaijan SSR)

SUBMITTED: 30Dec62 ENCL: 00

SUB CODE: MA NR REF SOV: 004 OTHER: 000

Card 3/3

GASHIMOV, G.M.

Theorem of uniqueness of Dirichlet series for the case of more general behavior of the exponents. Dokl. AN SSSR 153 no.3:510-511 N '63. (MIRA 17:1)

1. Predstavleno akademikom I.M. Vinogradovym.

BOLDYREV, A.S.; GASHIMOV, M.A.

Introduce cementless structural elements into large-panel construction. Stroi. mat. 7 no.10:18-23 O '61. (MIRA 14:10)

1. Zamestitel' predsedatelya Gosstroya RSFSR (for Boldyrev).
2. Glavnyy spetsialist Gosstroya RSFSR (for Gashimov).
(Lightweight concrete)

[redacted], M.n.; [redacted], Ye.M.

[redacted] the building materials industry work for agriculture.
Stroi. mat. 10 no.9:1-3 S '64 (MIRA 18:2)

BAGIROV, A.Yu.; VEYSOV, G.M.; BAGIROV, M.D.; GASHIMOV, M.N.; MAKHMUDOV, K.I.

Results of the introduction of a new technology in the manufacture of black loose leaf tea in the factories of the Azerbaijan S.S.R. in 1961. Biokhim. chain. proizv. no.9:103-108 '62. (MIRA 16:4)
(Azerbaijan—Tea)

[illegible]

Reducing the cost of tractor [illegible] one of the principal [illegible] for increasing the returns of [illegible] tractor stations (in [illegible] with summary in Russian). [illegible] SSR [illegible] 221-226 [illegible]

[illegible]

(Azerbaijan--Machine-tractor [illegible]--Accounting) [illegible]

FEYZYLLAYEV, A.V.; GASHIMOVA, A.I.

Effectiveness in treating neuritis of a facial nerve with saline-alkaline mineral water from the Lenin petroleum region of Baku (by cross section galvano-ionization diathermy). Dokl. AN Azerb.SSR 12 no.7:491-497 '56. (MLRA 9:10)

1. Predstavleno akademikom Akademii nauk Azerbaydzhanskoy SSR A.I. Karayevym.

(NEURITIS) (BAKU REGION—MINERAL WATERS) (DIATHERMY)

MEKHTIYEV, S.D.; PISHNAMAZZADE, B.F.; KOSHKINA, L.M.; MYRATOVA, Sh.M.; GASHIMOVA, F.A.

Separation of individual hydrocarbons from petroleum. Report no.1: Separation of cyclohexane [in Azerbaijani with summary in Russian]. Izv. AN Azerb. SSR. Ser. fiz.-tekh. i khim. nauk no.5:53-65 '58. (MIRA 12:1)

(Cyclohexane)

GASHIMOVA, F. A.

ВЫДЕЛЕНИЕ ЦИКЛОГЕКСАНА И ЕГО БЛИЖАЙШИХ ГОМОЛОГОВ ИЗ БЕНЗИНА БАКИНСКОЙ НЕФТИ

[illegible]

VIII Mendeleyev Congress for General and Applied Chemistry in Section of Chemistry and Chemical Technology of Fuels, publ. by Acad. Sci. USSR, Moscow 1959

Abstracts of reports scheduled to be presented at above mentioned congress, Moscow, 15 March 1959.

GASHIMOVA, K. A.

GASHIMOVA, K. A.: "On methods of establishing norms for the requirement of polyclinic aid among children". Baku, 1955. Acad-Med Sci USSR. (Dissertations for the Degree of Candidate of Medical Sciences)

SO: Knizhnaya letopis', No. 52, 24 December, 1955. Moscow.

GASHIMOVA, L.G.

Interoceptive influences of the stomach on the biochemical and histochemical glycogen picture of the liver. Izv. AN Azerb. SSR. Ser. biol. nauk no.3:117-120 '65. (MIRA 18:10)

MAMEDALIYEV, Yu.G.; GASHIMOV, A.A.; AKHUNDOV, M.A.; MUSTAFAYEV, L.S.; GASHIMOVA, L.G.

Increase in the live weight of merinos as an effect of surface-active petroleum derivatives. Uch. zap. AGU. Fiz.-mat. i khim. ser. no.3:69-66 '59. (MIRA 14:3)

(Surface-active agents)
(Merino sheep)

KARAYEV, A.I.; GASHIMOVA, L.A.

Interoceptive effects from the gallbladder on the electrical and histochemical picture of glycogen in the liver and heart muscles. Izv. AN Azerb. SSR. Ser. biol. nauk no.2:89-93 '65.
(MIRA 18:7)

GASHIMOVA, L. G.

Cand Biol Sci - (diss) "Physiological processes of nutrition in sheep when fed with various kinds of fodder and rations." Baku, 1961. 28 pp; (Committee of Higher and Secondary Specialist Education of the Council of Ministers Azerbaydzhan SSR, Azerbaydzhan State Univ imeni S. M. Kirov); 100 copies; price not given; (KL, 6-61 sup, 206)

AKHUNDOV, M.A.; GASHIMOV, A.A.; GASHIMOVA, L.G.

Effect of a growth substance derived from petroleum in increasing live weight in rabbits and sheep. Uch.zap.AGU.Biol.ser. no.2: 17-22 '59. (MIRA 13:6)

(GROWTH PROMOTING SUBSTANCES)
(RABBITS) (SHEEP)

AKHMEDLI, M.K.; GASHIMOVA, T.E ; ZHIROVA, L.F.

Color reactions for qualitative detection of nickel and cobalt by grinding and determination of the sensitivity of the reactions. Uch.zap.AGU no.3:17-26 '56. (MLRA 10:4)
(Colorimetry) (Nickel) (Cobalt)

SOV/181-1-9-15/31

24(2), 24(3)

AUTHORS: Gubanov, A. I., Gashimzade, F. M.

TITLE: Investigation of the Symmetry of the Energy Bands of Electrons in the Type Crystals $CdIn_2Se_4$

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 9, pp 1411 - 1416 (USSR)

ABSTRACT: The purpose of the present paper is that of investigating the energy spectrum of the electrons in semiconductors of the $CdIn_2Se_4$ type by means of a group-theoretical method; this compound crystallizes in tetragonal syngony in the D^1_{2d} space group, while most other such compounds exhibit a S^2_4 structure. First, the symmetric properties of these structural groups investigated here (D^1_{2d} - $P\bar{4}2m$) are carefully analyzed in order to obtain provisional data of the type of energy bands. For the symmetric points of the Brillouin zone given in a figure, table 1 shows the characteristic values for single space groups, and table 2 for double ones. Table 3 likewise offers representations of single and double groups. The conditions

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Investigation of the Symmetry of the Energy Bands of Electrons in the Type Crystals $CdIn_2Se_4$ SOV/181-1-9-15/31

of consistency for single and double groups are compiled in table 4 and 5, respectively. The band structure is investigated by means of these data and those given in tables 6 and 7. It is shown that without considering the spin, the energy limit is in the center of the Brillouin zone. On principle, the limits can be situated in the points (000), $(\frac{\pi}{a}\ \frac{\pi}{a}\ 0)$, $(00\ \frac{\pi}{b})$, $(\frac{\pi}{a}\ \frac{\pi}{a}\ \frac{\pi}{b})$, $(0\ \frac{\pi}{a}\ 0)$, and $(0\ \frac{\pi}{a}\ \frac{\pi}{b})$. Theoretical considerations (Ref 7) and experiments with the cyclotron resonance showed the edge valence band to be situated in the point K = (000) and to be triply degenerated. All this holds without consideration of the spin. It is shown that the group theory may not be employed to determine, which of the bands (T_2) lie higher than others. Yu. Firsov is mentioned in the text.There are 1 figure, 7 tables, and 7 references, 2 of which are Soviet.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut AN SSSR (Leningrad Institute of Physics and Technology of the AS USSR)

SUBMITTED: January 19, 1959

Card 2/2

S/181/60/002/02/11/033
B006/B067

AUTHORS: Gubanov, A. I., Gashimzade, F. M.

TITLE: The Structure of the Energy Bands in Semiconductors of the $CdIn_2Se_4$-Type

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 2, pp. 255-260

TEXT: In continuation of a previous paper (Ref. 1) the authors investigate the energy spectrum of $CdIn_2Se_4$ crystals by means of the method of localized valences. $E(\vec{k})$ in the range of the energy extremes at $\vec{k} = 0$ was obtained by a perturbation-theoretical method developed by Shockley and Dresselhaus; spin-orbit interaction was taken into account in first approximation. The possible forms of the equipotential surfaces near the extremes were investigated by taking the spin into account. The possible positions of the energy extremes of the electrons in $CdIn_2Se_4$ had been investigated in the paper of Ref. 1. In the method of localized valences molecular functions composed of hybridized atomic functions were used as zero approximation. It can be well applied to $CdIn_2Se_4$ which shows mainly

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The Structure of the Energy Bands in Semiconductors of the $CdIn_2Se_4$-Type

S/181/60/002/02/11/033
B006/B067

a covalent bond, and has 8 atoms and 16 valence lines per unit cell. The 16th order secular equation for the energy was obtained in the approximation of the second neighbors. The equations were treated by the group theory, and the 16 solutions were classified into four subgroups each of which is transformed according to one of the irreducible representations Γ_1, Γ_4, and Γ_5 of the point-symmetry groups of the crystal. It was found that, as in the case of diamond and sphalerite, roots exist in the approximation of the first neighbors which are independent of k and are transformed according to the irreducible representation of Γ_5 with $\vec{k}=0$. In this approximation, Γ_4 and Γ_5 appear degenerate. The band edge is found at $\vec{k} = 0$, and is triply degenerate as is the case with sphalerite. Fig. 1 shows the approximate structure of the valence band. The effective hole mass in this doubly degenerate band is determined by the interaction integral of the second neighbors. There are 4 figures and 13 references; 6 Soviet, 3 American, 2 British, 1 German, and 1 Japanese.

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The Structure of the Energy Bands in Semiconductors of the $CdIn_2Se_4$-Type

S/181/60/002/02/11/033
B006/B067

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR Leningrad
(Physicotechnical Institute of the AS USSR, Leningrad)

SUBMITTED: May 11, 1959

Card 3/3

9.4300 (1137, 1138, 1143)

S/181/60/002/009/039/047/XX
B004/B070

AUTHOR: Gashimzade, F. M.

TITLE: A Study of the Symmetry Properties of the Energy Bands of Crystals of Type SnSe and Sb_2S_3

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 9, pp. 2070-2076

TEXT: A group-theoretical study is made of the energy spectra of electrons in semiconductors which crystallize in a lattice of the space group D_{2h}^{16}. Fig. 1 shows the elementary cell of SnSe, and Fig. 2 that of Sb_2S_3. Fig. 3 shows the Brillouin zone for the simple orthorhombic lattice. The symmetry elements of the group D_{2h}^{16} are analyzed, and the products of the fundamental elements of the space group D_{2h}^{16} are given in Table 1. The characters of minor representations in the symmetry points of the Brillouin zone are found by introducing new group elements corresponding to the translations T_1, T_2, and T_3 (Tables 2, 3). The effect of spin is also taken into account in Table 3. The consistency conditions for the

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simple and binary groups are given in Tables 4, 5. The extreme points of the energy were obtained by studying the energy gradient in the neighborhood of the symmetry points. If the spin is not taken into account, extrema are to be expected at the points Γ, U, S, and R of the line B' and at a point in each of the lines A, C, C', F, Δ, Λ, and V. If the spin is taken into account, extrema can appear in the points F, U, R, T, X, Y, Z and a point of each of the lines A', B, D and E. A. I. Gubanov is thanked for his interest in the work. There are 3 figures, 5 tables, and 6 references: 3 Soviet, 1 US, and 2 Japanese.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut (Leningrad Institute of Physics and Technology) AN USSR

SUBMITTED: February 22, 1960

A Study of the Symmetry Properties of the Energy Bands of Crystals of Type SnTe and Sb_2S_3

S/181/60/002/009/039/047/XX
B004/B070

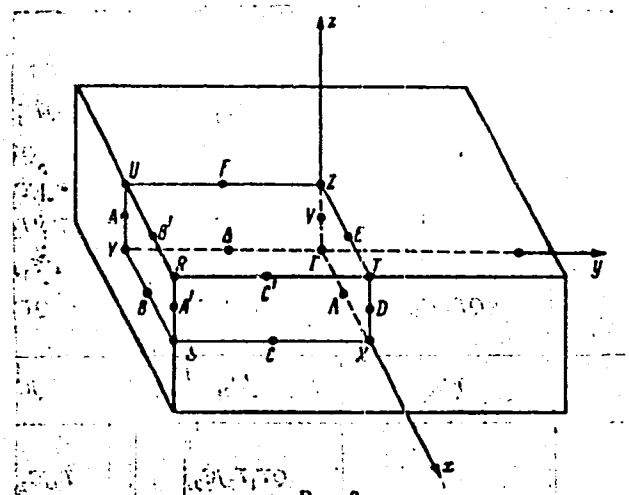

Рис. 3.

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GASHIMZADE, F.M.; KESAMANLY, F.P.

Investigating the dependence of the electronic effective mass in n-InAs on the concentration of current carriers. Fiz.tver.tela 3 no.4:1255-1257 Ap '61. (MIRA 14:4)

1. Fiziko-tekhnicheskiy institut imeni akademika A.F.Ioffe AN SSSR, Leningrad i Institut fiziki AN Azerbaydzhanskoy SSR, Baku.
(Indium arsenide--Electric properties)

23112
S/181/61/003/005/017/042
B136/B201

9,4300(1143,1150,1151)

AUTHORS: Gashimzade, F. M. and Khartsiyev, V. E.

TITLE: Energetic structure of complex semiconductors. Calculation of the band structure of Si, Ge, and GaAs by the simplified OPW method

PERIODICAL: Fizika tverdogo tela, v. 3, no. 5, 1961, 1453 -1457

TEXT: Besides the Hall method of equivalent orbits, the method of orthogonalized plane waves (OPW) is a procedure of setting up semiquantitative patterns of the energy band structure of complex semiconductor compounds. Although the good results achieved therewith for semiconductors of the A^{IV} type allowed one to expect this method to be also applicable to A^{III} B^{V} semiconductors, difficulties arise in this case, one of which has been overcome by Antonchik (Ref. 1: E. Antonchik, J. Phys. chem. Sol., 10, 314, 1959), who has replaced the orthogonalization conditions for plane waves with respect to the ion core by the effective repulsion potential (Ref. 9: P. Gombash, Handb.d. Phys., 36, no. 2, 1956). The second difficulty, i.e.

23112

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000514410004-2"

Energetic structure of ...

the solution of the Hartree-Fok equation for the wave functions of the lattice atoms, can be overcome by way of approximations only. If the repulsion potentials are used, it is no more necessary accurately to determine energy states of the atoms, and one may therefore use less precise wave functions. Slater functions (Ref. 2: P. Gombash, Problema mnogikh chastits, M., 198, 1953) have been used as approximations in the present investigation. As the calculation remains otherwise the same, only the calculation of the potentials is dealt with. The total potential consists of the Coulomb potential, the exchange and repulsion potentials. In this connection, the values of covalent radii by Pauling (Ref. 13: Pauling. Priroda khimich. svyazi, str. 71, 1947) have been adopted. For checking the approximation and for choosing the Slater functions, also the energy band of Si and Ge was dealt with besides GaAs. Methods and results by Antonchik are discussed for comparison (Ref. 10: E. Antonchik. Chechosl. Fiz. Zhurn., 9, 291, 1959). As opposed to the OPW method, the Hall interpolation method requires considerably larger distances between the energy levels and, therefore, gives inaccurate values for some constants, as, e.g., the cyclotron constant. A. I. Gubanov is thanked for his interest in the work, as well as E. Antonchik and F. Herman for having sent preprints. There

Energetic structure of ...

are 1 figure, 4 tables, and 20 references: 5 Soviet-bloc and 15 non-Soviet-bloc. The three most recent references to English-language publications read as follows: L. Kleinman, J. Phillips Rev. lett., no. 1, 41, 1960; F. Bassani, J. Phys. Chem. Sol., 8, 375, 1959; H. Hagstrum, J. Phys. Chem. Sol., 8, 211, 1959.

ASSOCIATION: Fiziko-tekhnicheskiy institut imeni A. F. Ioffe AN SSSR Leningrad. (Institute of Physics and Technology imeni A. F. Ioffe, AS USSR, Leningrad). Institut fiziki AN Az. SSR Baku. (Institute of Physics AS Azerbaydzhanskaya SSR, Baku)

SUBMITTED: August 25, 1960

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S/181/61/003/005/017/042
B136/B201

Energetic structure of ...

	1) Кремний					2) Германий				3) Арсенид галлия		
	4) наши результаты	5) Вудруфф, Бассани [7]	6) Антончик [8]	7) Нран'ян [4]	8) эксперимент	9) наши результаты	10) Германн [9]	11) Нран'ян [4]	12) эксперимент	13) наши результаты	14) Нран'ян [4]	15) эксперимент
ΔE_0	9.6	8.46	9.56	36.6	14—16 [14,15]	13.2	11.6	33.1	7 [16]	17.5	20.6	—
ΔE_1	4.7	4.5	—	18.9	—	5.6	8.05	17.5	—	5.31	7.19	—
ΔE_2	4.9	3.96	—	17.7	—	7.6	3.55	15.6	—	1.79	9.38	—
ΔE_4	—	—	—	—	—	—	—	—	—	10.4	3.32	—
E_g	3.5	3.6	3.27	—	2.5 [16]	2.05	1.5	—	0.83	4.3	—	1.5 [17]
ΔE_3	1.8	1.37	—	12.46	—	0.55	1.77	11.87	—	2.05	3.87	—

Legend to Table 4. Results of calculation of the parameters of the energetic structure of Si, Ge, and GaAs. 1) silicon; 2) germanium; 3) gallium arsenide; 4) results of present work; 5) Woodruff, Bassani; 6) Antonchik; 7) Nran'yan (Ref.4: A. I. Gubanov, A. A. Nran'yan. FTT, I, 1044, 1959); 8) experiment; 9) results of present work; 10) Herman; 11) Nran'yan; 12) experiment; 13) results of present work; 14) Nran'yan; 15) experiment. Note: Data in ev. ΔE_v - width of valence band; ΔE_1 - width of upper part of valence band; ΔE_2 - width of lower part of valence band; ΔE_3 - distance between upper edges of valence band at points $k = 0$ and $k = (\frac{\pi}{a},0,0)$; ΔE_g - width of additional forbidden band within valence band; E_g - width of forbidden band.

Card 4/4

S/181/62/004/002/021/051
B101/B102

AUTHORS: Gashimzade, F. M., and Khartsiyev, V. Ye.

TITLE: Energy structure of composite semiconductors. Valence band spectra of anisotropic SnS-type compounds

PERIODICAL: Fizika tverdogo tela, v. 4, no. 2, 1962, 434 - 442

TEXT: On the basis of the unit cell of SnS, a general calculation of the valence band for SnS-type compounds (SnS, SnSe, GeS, GeSe, $PbSnS_2$, and $A^{III}B^{V}$ semiconductors) is performed by the method of localized orbits. As the secular determinant (12th order) obtained for the energy cannot be solved, a solution is sought in the symmetric points of the Brillouin zone. Using results of a previous group-theoretical analysis (FTT, 2, 2070, 1960), eight symmetric combinations of localized orbits at $\vec{k} = 0$ are written down. An estimate of the relative magnitude of the interaction integrals furnishes the levels Γ_2 and Γ_7 as the uppermost valence-band levels in $\vec{k} = 0$. A local maximum of $E(\vec{k})$ is found in $\vec{k} = 0$. The effective mass ratios of holes are: $m_y^* : m_x^* : m_z^* \simeq 4 : 1 : 1$, or

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Energy structure of composite ...

$m^*_\perp : m^*_\parallel \simeq 4 : 1$. From experimental data on the anisotropy in the conductivity of SnS single crystals it follows that $m^*_\parallel = 0.5m_0$, and for polycrystalline specimens one obtains $m^*_{mean} = 1.4m_0$. Assuming $m^*_{mean} = \sqrt{m^*_\perp m^*_\parallel}$ one finds $m^*_\perp \simeq 3.9m_0$ and $m^*_\perp : m^*_\parallel = 8 : 1$. In addition, $E^{\Gamma_2} - E^{\Gamma_7}$ was calculated to be 0.1 ev. The Γ_7 band probably manifests itself in optical effects, e.g., in the spectral distribution of photoconductivity and perhaps also in galvanomagnetic effects in the relevant temperature ranges. The spectrum remains qualitatively unchanged by allowing for spin-orbital interaction. A paper of A. A. Nran'yan (FTT, 2, 474, 1960) is referred to. A. I. Gubanov is thanked for a discussion. There are 2 figures and 15 references: 5 Soviet and 10 non-Soviet. The four most recent references to English-language publications read as follows: W. Albers, C. Haas, F. Maesen, J. Phys. Chem. Soc., 15, 306, 1960; S. Asanabe, A. Okazaki, J. Phys. Soc. Jap., 15, 989, 1960; B. Umeda, J. Phys. Soc. Jap., 16, 124, 1961; C Haas, Corbie, J. Phys. Chem. Sol., 20, 197, 1961.

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S/181/62/004/002/021/05
B101/B102

Energy structure of composite ...

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR. Leningrad (Physicotechnical Institute imeni A. F. Ioffe, AS USSR, Leningrad); Institut fiziki AN AzSSR, Baku (Physics Institute, AS Azerbaydzhanskaya SSR, Baku)

SUBMITTED: September 6, 1961

Card 3/3

39966
S/181/62/004/008/009/041
B125/B104

AUTHOR: Gashimzade, F. M.

TITLE: The energy structure of compound semiconductors. The hole spectrum in compounds with wurtzite structure

PERIODICAL: Fizika tverdogo tela, v. 4, no. 8, 1962, 2059-2064

TEXT: The energy spectrum of electrons in the valency band of binary semiconducting compounds with wurtzite structure (CdS, CdSe, ZnO, ZnS, etc.) is calculated by the method of localized (equivalent) orbits. The secular determinant for the particular case which is in general very complex (of eighth-order in the case of wurtzite structures) is derived in approximation to the next nearest neighbors. Its elements are determined by the interaction integrals of the wave functions of the valency lines. The solution of the secular determinant which can be obtained only for points of high symmetry in the Brillouin zone, indicates the presence of a non-degenerate band near the doubly degenerate maximum in the center of the Brillouin zone. The edge of the valency band may pass through the intermediate points on the symmetry lines of the Brillouin zone. The

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The energy structure of compound...

effective mass is determined by the integrals of interaction between the next nearest valency lines. Neglecting spin there are two types of holes with different effective masses in the plane $k_z = 0$, but only "heavy" holes correspond to the maximum of the valency band. The dispersion law for the representation Γ_6 in the neighborhood of $\vec{k} = 0$ results from the general secular determinant. The quadruply degenerate band of Γ_6, obtained by allowing for spin, splits into two doubly degenerate bands when spin-orbit interaction is allowed for. There are 5 figures.

ASSOCIATION: Institut fiziki AN Az.SSR Baku (Institute of Physics AS AzSSR, Baku). Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR Leningrad (Physicotechnical Institute imeni A. F. Ioffe AS USSR, Leningrad)

SUBMITTED: March 8, 1962 (initially).
May 3, 1962 (after revision)

Card 2/2

S/181/62/004/008/040/041
B108/B102

AUTHOR: Gashimzade, F. M.

TITLE: Correction to the paper "Symmetry of the energy bands in TlSe-type crystals" (FTT, 2, 3040, 1960)

PERIODICAL: Fizika tverdogo tela, v. 4, no. 8, 1962, 2282 - 2283

TEXT: In the above paper the author has given tables of the characters of the irreducible representations of the space groups D_{4h}^{18}. The symmetry elements to this group were incorrect and should read: E, C_{2z}, C_{4z}^{1}, C_{4z}^{3}, S_{4z}^{1}, S_{4z}^{3}, I, IC_{2z}, $t_{\alpha}IC_{2x}$, $t_{\alpha}IC_{2y}$, $t_{\alpha}\sigma_{xy}$, $t_{\alpha}\sigma_{\bar{x}y}$, $t_{\alpha}^{-1}I\sigma_{xy}$, $t_{\alpha}^{-1}I\sigma_{\bar{x}y}$, $t_{\alpha}^{-1}C_{2x}$, $t_{\alpha}^{-1}C_{2y}$. Moreover, the space group was erroneously denoted by I4/mcm instead of by I4/mcc. Also the dispersion relation Eq. (1) in the above mentioned paper should be the same as Eq. (2). There is 1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR Leningrad (Physico-technical Institute AS USSR Leningrad)

Card 1/1

GASHIMZADE, F. M.

Dissertation defended for the degree of Candidate of Physicomathematical Sciences at the Technical Physics Institute imeni A. F. Ioffe in 1962:

"Investigation of the Electronic Specturn in Complex Semiconductors."

Vest. Akad. Nauk SSSR. No. 4, Moscow, 1963, pages 119-145

S/233/62/000/006/007/008
E010/E420

AUTHOR: Gashimzade, F.M.

TITLE: Galvanomagnetic phenomena and the structure of energy zones in TlSe-type semiconductor crystals

PERIODICAL: Akademiya nauk Azerbaydzhanskoy SSR. Seriya fiziko-matematicheskikh i tekhnicheskikh nauk, no.6, 1962, 83-91

TEXT: In his previous studies the author showed that isoenergetic surfaces in TlSe near extrema represent triaxial ellipsoids. In the present paper he develops the theory of galvanomagnetic phenomena for the purpose of the experimental determination of equivalent extrema location in the Brillouin zone. In his dissertation (FTI imeni A.F.Ioffe, 1962) the author established that energy extrema can be located at points Γ, T, N (see figure) as well as on lines Λ, Δ, Σ, D, G and in plane Λ of the Brillouin zone of TlSe lattice shown in the figure. There are various cases of possible positions of equipotential surfaces: 1) at points Γ, T and A - one of two ellipsoids of revolution with the axis oriented along the tetragonal axis; 2) at points Σ, D, G and N -

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Galvanomagnetic phenomena ...

four or two ellipsoids of general type with main axes oriented along the tetragonal axis and along diagonals of two other coordinate axes; 3) at point Δ - triaxial ellipsoids with main axes oriented along three coordinate axes; 4) at point Λ - eight triaxial ellipsoids with main axes located in diagonal symmetry planes; 5) eight triaxial ellipsoids whose two axes lie in the symmetry plane and the third one is perpendicular to it. Two cases are considered: weak and arbitrary magnetic fields, assuming a particular law of dispersion and isotropic relaxation time. In the case of weak magnetic fields, the vector of current density can be expanded in powers of $\vec{H}$ and presented, in tensor form, as follows

$$j_i = \sigma_{ik}E_k + \sigma_{ikl}E_kH_l + \sigma_{iklm}E_kH_lH_m \qquad (3)$$

To obtain galvanomagnetic coefficients, Eq.(3) should be solved with respect to $\vec{E}$

$$E_i = \Lambda_{ik}I_k + \Lambda_{ikl}I_kH_l + \Lambda_{iklm}I_kH_lH_m \qquad (8)$$

Formulas are given for presenting Λ_{ik}, Λ_{ikl} and Λ_{iklm} in terms