SVIDERSKIY, M.L., tekhnik

Automatic signaling system of an electric power plant. Energetik 10 no.3:17-18 Mr '62. (MIRA 15:2)

(Electric power plants—Electric equipment)

SVIDERSKIY N.I.

KHARITONOV, B.K.; SVIDERSKIY, N.I.

New agricultural machinery at the All-union Agricultural Exhibition. Sel'khozmashina no.9:3-7 S '54. (MLRA 7:9)
(Agricultural machinery)

SVIDERSKIY, N.I.

The G-1, 5 all-purpose hillside tractor chassis. Avt. i trakt. prom. no.9:45 S '56. (MLRA 9:11)

1. Ministerstvo traktornogo i sel'skokhozyaystvennogo mashinostroyeniya. (Tractors)

SVIDERSKIY, N.I.

The TDT-60 tree skidding tractor. Zvt.i trakt.prom. no.11:45-46 N '56. (MLRA 10:1)

(Caterpillars (Vehicles))

SVIDERSKIY, N.I., inzh.

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(Agricultural machinery--Exhibitions) (Tractors--Exhibitions)

SVIDERSKIY, N.I.

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(Agricultural machinery industry)
(Brussels—Fairs)

SVIDERSKIY, P. A.

Nasosy dlia rybnoi i konservnoi promyshlennosti. Utverzhdena v kachestve uchebn. posobiia dlia rybopromyshl. vtuzvov. Moskva, Pishchepromizdat, 1943. 305 p. diagrs.

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Pumps for the fishing and canning industries.

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SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

SVIDERSKIY, Pavel Aleksandrovich, professor; LYAKHNITSKIY, V.Ye., doktor tekhnicheskikh nauk, professor, retsenzent; KUNITSKIY, I.A., retsenzent; GERSHKOVICH, M.T., retsenzent; SHAPIROVSKIY, D.B., redaktor; MOROZOVA, I.I., redaktor; GOTLIB, E.M., tekhnicheskiy redaktor.

[Layout and operation of fishing ports and bases] Ustroistvo i ekspluatatsiia rybopromyslovykh portov i baz. Moskva, Pishcheprom-izdat, Pt. 1. 1955. 370 p. (MLRA 9:6)
(Fisheries) (Harbors)

LIPINSKIY, B.; SVIDERSKIY, S.

Automatic line for machining cylinder blocks. Trudy Stud. nauch. ob-va LIEI no.3:97-101 '59. (MIRA 16:10)

SVIDERSKIY, V., kand.arkhitektury (Kiyev)

Using ceramic materials in improving cities of the Ukraine. Zhil.-kom.khoz. 10 no.3:7-9 '60. (MIRA 13:7)
(Ukraine--Ceramics)

SVIDERSKIY, V.I., otv. red.

[Some problems of the methodology of research] Nekotorye voprosy metodologii nauchnogo issledovaniia. Leningrad, 1965. 1 v (MIRA 18:9)

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Generalization on the contradiction of motion. Nauch. biul. Len. un. no.21:47-49 '48. (MIRA 10:3)

1. Filosofskiy fakul'tet.
(Matter) (Motion)

1. SVIDERSKIY, V. I.

2. USSR (600)

4. Physics - Philosophy

7. Struggle of materialistic and idealistic trends with space-time representations in classical physics. Vest. Len. un 7 No. 6, 1952.

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251T104

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SO: Byulleten' Ministerstva Vysshego Obrazovaniya SSSR, List No. 6, 17 March 1956, Decision of Higher Certification Commission Concerning Academic Degrees and Titles.

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[Dialectical materialism on space and time] Dialekticheskii materializm o prostranstve i vremeni. Leningrad, Ob-vo po rasprostraneniiu polit. i nauchnykh znanii RSFSR, Leningradskoe otd-nie, 1956. 38 p. (Space and time) (MLRA 10:3)

SVIDERSKIY, V 1 N/5
613.052
.S9

Filosofskoye znacheniye prostranstvenno-vremennykh predstavleniy v fizike
(Philosophical significance of spatiotemporal notions in physics)
Leningrad, Izd-vo Leningradskogo Universiteta, 1956.
307 p.
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(MYONEURAL JUNCTION, physiology)
(CRUSTACEA)

VOSKRESENSKAYA, A.K. ; SVIDERSKIY, V.L.

Analysis of the nature of rhythmical trace reactions in the neuromoscular apparatus of insect wing (Locusta migratoria). Fiziol. zhur. SSSR 46 no. 9:1050-1055 S '60. (MIRA 13:10)

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(INSECTS—PHYSIOLOGY) (WINGS—INNERVATION)

SVIDERSKIY, V.L.

Peripheral inhibition in insects (Locusta migratoria L.).
Dokl. AN SSSR 141 no.5:1260-1263 D '61. (MIRA 14:12)

1. Institut evolyutsionnoy fiziologii im. I.M. Sechenova AN SSSR. Predstavleno akademikom Ye.N. Pavlovskim.
(NERVOUS SYSTEM—INSECTS)
(INHIBITION)

SVIDERSKIY, V.I., doktor fil. nauk; SHTOFF, V.A., kand. fil. nauk; IZMAYLOV, S.V., kand. fiz.-mat. nauk; BRANSKIY, V.P., kand. fil. nauk; MOSTEPANENKO, M.V., kand. fil. nauk; MELYUKHIN, S.T., kand. fil. nauk; MIKHLIN, Ye.I., red.; YELIZAROVA, N.A., tekhn. red.

[Philosophical problems in the present-day theory of motion in nature] Filosofskie voprosy sovremennogo ucheniia o dvizhenii v prirode. Leningrad, 1962. 198 p. (MIRA 15:10)

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SVIDERSKIY, V.L.

Nervous regulation of the function of the wing system in insects. Fiziol. zhur. 49 no.1:66-74 Ja '63.
(MIRA 17:2)

1. From the I.M. Sechenov Institute of Evolutionary Physiology, Leningrad.

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(MIRA 17:12)

SVIDERSKIY, V.L.

Activity of single neurons in the thoracic ganglion in Locusta migratoria. Dokl. AN SSSR 164 no.5:1204-1207 O '65. (MIRA 18:10)

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[redacted], V.[redacted], kandidat arkhitektury.

[redacted]einforced concrete for street light poles. Svetotekhnika 3 no.8:28-30 Ag '57. (MLRA 10:8)

1.Institut gradostroitel'stva Akademii stroitel'stva i arkhitektury [redacted].

(Street lighting)

GUZENKO, T.G. [Huzenko, T.H.], kand. arkhitektury; LARKINA, O.M., arkh.; RODICHKIN, O.M.[Rodychkin, O.M.], kand. arkh.; SALATICH, A.K.[Salatych, A.K.], kand. arkh.; SVIDERSKIY, V.M.[Sviders'kyi, V.M.], kand. arkh.; SEVERIN, S.I., arkh.; RUBTSOV, L.I., doktor biol. nauk, prof.; PLOTNIKOVA, T.V., kand. biol. nauk; KATONINA, Ye.I., doktor arkh., prof., red.; ZASLAVSKAYA, T.M.[Zaslavs'ka, T.M.], red.; KIYANICHENKO, N.S. [Kyianychenko, N.S.], red.; USHCHENKO, N.S., red.; ZELENKOVA, Ye.Yu., tekhn. red.; BABIL'CHANOVA, G.O.[Babil'chanova, H.O.], tekhn. red.

[Flowers in city landscaping] Kvitkove oformlennia mist'; al'bom. Kyiv, Derzhbudvydav URSR, 1962. 158 p. (MIRA 17:1)

1. Akademiya budivnytstva i arkhitektury URSR. Instytut misto-budivnytstva. 2. Sotrudnik sadovo-parkovogo khozyaystva No.3 goroda Kiyeva (for Plotnikova). 3. Zaveduyushchiy dendrologichnym otdelom TSentral'nogo respublikanskogo botanicheskogo sada AN Ukr.SSR (for Rubtsov).

SVIDERSKIY, YA.

Organizatsiia raboty inspektora gosu-
darstvennykh dokhodov (Organization of work of the
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120 p.

SO: Monthly List of Russian Accessions, Vol. 7, No. 5, August 1954

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[Collection of problems for the course "State revenue in the U.S.S.R."] Sbornik zadach po kursu "Gosudarstvennye dokhody SSSR." Moskva, Gosfinizdat, 1954. 141 p. (MLRA 8:6)
(Revenue) (Finance--Study and teaching)

SVIDERSKIY, Ya.

KONSTANTINOPOL'SKIY, I.; SVIDERSKIY, Ya., redaktor; USHERENKO, N., redaktor; LEBEDEV, A., tekhnicheskiy redaktor.

[Our practice in handling government revenue] Nash opyt po gosudarstvennym dokhodam. Moskva, Gosfinizdat, 1955. 81 p. (MLRA 9:5)

1.Nachal'nik sektora gosdokhodov Sokol'nicheskogo rayfinotdela g. Moskvy (for Konstantinopol'skiy).
(Revenue)

SVIDERSKIY, Ya.

Auditing turnover tax returns. Fin.SSSR 16 no.12:63-72 D '55. (MLRA 9:2)
(Auditing) (Sales tax)

SUCHKOV, Aleksandr Konstantinovich, dotsent; SVIDERSKIY, Yaroslav Mikhaylovich; PAYEVSKIY, Vladimir Artem'yevich; SAMOYLOV, V., otv.red.; YEREMEYEVA, G., red.izd-va; TELEGINA, T., tekhn.red.

[Government revenue of the U.S.S.R.] Gosudarstvennye dokhody SSSR. Moskva, Gosfinizdat, 1958. 295 p. (MIRA 12:2)
(Revenue) (Taxation) (Budget)

TRANOVICH, Vikentiy Valerianovich; SVIDERSKIY, Ya., otv.red.; MAZURKEVICH, M., red.izd-va; LEBEDEV, A., tekhn.red.

[Audit of turnover tax reports] Proverka otchetov po nalogu s oborota. Moskva, Gosfinizdat, 1960. 126 p. (MIRA 14:4)

(Sales tax) (Auditing)

SVIDERSKIY, Ya.

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295 p. tables.
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SVIDINA-BALARYCH, T.M.

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1. Pedagogicheskiy institut im. K.D.Ushinskogo, Odessa.
(Perception) (Nervous system)

SMOLYAK, L.G. (Stalino, ul. Shchorsa, d.23, kv.36); SVIDLER, A.Yu.

Potentiated anesthesia in pediatric surgery. Nov. khir. arkh. no.5: 44-48 S-O '60. (MIRA 14:12)

1. Kafedra fakul'tetskoy khirurgii i kafedra khirurgii detskogo vozrasta (zav. - doktor med.nauk L.G.Smolyak) Stalinskogo meditsinskogo instituta.

(PEDIATRIC ANESTHESIA)

SVIDLER, A.Yu.

Spasmolytic action of dioquine. Khim. i med. no.15:113-117 '60.
(MIRA 15:1)

1. Iz gospital'noy khirurgicheskoy kliniki imeni V.M.Bogoslavskogo (zav. - prof. R.V.Bogoslavskiy) Stalinskogo meditsinskogo instituta.
(DIOQUINE) (ANTISPASMODICS)

SVIDLER, A. Yu.; SNESHKO, L. I.

Transcutaneous antegrade pyelography in children. Urologiia no.6: 12-14 '61. (MIRA 15:4)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (zav. - prof. L. G. Smolyak) i kliniki khirurgii detskogo vozrasta Stalinskogo meditsinskogo instituta.

(KIDNEYS—RADIOGRAPHY)

OL'SHANETSKIY, A.A.; SVIDLER, A.Yu.

Use of soft tissue alloplasty in infected wounds. Khirurgiia no.8:75-79 Ag '61. (MIRA 15:5)

1. Iz kafedry 2-y fakul'tetskoy khirurgicheskoy kliniki (zav. - doktor med.nauk L.G. Smolyak) Stalinskogo meditsinskogo instituta na baze 1-y gorodskoy klinicheskoy bol'nitsy (glavnyy vrach M.M. Khanovich).
(WOUNDS AND INJURIES) (SURGERY, PLASTIC)

SMOLYAK, L.G., prof.; SVIDLER, A.Yu.

Use of the "lytic cocktail" in the urological examination of patients. Urologiia no.5:6-8 '62. (MIRA 15:12)

1. Iz fakul'tetskoy khirurgicheskoy kliniki No.2 i kliniki khirurgii detskogo vozrasta (zav. - prof. L.G. Smolyak) Donetskogo meditsinskogo instituta.
(ARTIFICIAL HIBERNATION) (UROLOGY)

OL'SHANETSKIY, A.A.; SVIDLER, A.Yu.

Use of elastic plastics in closing cranial defects in a growing organism. Eksper. khir. i anest. 7 no.4:6-10 Jl-Ag '62. (MIRA 17:5)

1. Iz kafedry fakul'tetskoy khirurgii No.2 (zav. - prof. L.G.Smolyak) Donetskogo meditsinskogo instituta na baze 1-y Gorodskoy bol'nitsy (glavnyy vrach M.M.Khanovich).

SNESHKO, L.I., kand. med. nauk; KUSHCH, N.L.; SVIDLER, A.Yu.

Malignant tumors of the testis in children. Urologiia 29 no.1: 60-61 '64. (MIRA 17:8)

1. Fakul'tetskaya khirurgicheskaya klinika, klinika detskoy khirurgii (zav. - prof. L.G. Smolyak) na base 1-y Gorodskoy bol'nitsy Donetskogo meditsinskogo instituta imeni A.M. Gor'kogo.

KOGON, M.G., inzh.; SVIDLER, K.N., inzh.

Control computer for conveyers with automatic addressing of freight. Mekh.i avtom.proizv. 16 no.4:53-56 Ap '62. (MIRA 15:4)
(Conveying machinery) (Electronic digital computers)

KOGON, M.G.; SVIDLER, K.N.; PARYLIS, M.E.

Control recorder of the length of the rubberized fabric strip. Kauch. i rez. 23 no.2:49-51 F '64. (MIRA 17:3)

1. Promenergoavtomatika, g.Sverdlovsk.

[illegible] M.G., [illegible]; [illegible], M.E., SVIDLER, K.N., inzh.

Electronic digital computer for sorting sheets. Mekh. i avtom. proizv. 18 no.1:41-42 Ja '64. (MIRA 17:2)

L 44287-65 EWT(d)/EWP(v)/T/EWP(k)/EWP(h)/EED-2/EWP(1) Po-4/Pf-4/Pg-4/Pk-4 IJP(c)
BB/GG/GS

ACCESSION NR: AT5011614 UR/0000/64/000/000/0414/0420 55 B+1

AUTHOR: Kogon, M. G., Parylis, M. E., Svidler, K. N.

TITLE: Magnetic elements in digital computers used for the control of continuous transportation systems with automatic load directing

SOURCE: Vsesoyuznoye soveshchaniye po magnitnym elementam avtomatiki, telemekhaniki, izmeritel'noy i vychislitel'noy tekhniki, Lvov, 1962. Magnitnyye elementy avtomatiki, telemekhaniki, izmeritel'noy i vychislitel'noy tekhniki (Magnetic elements of automatic control, remote control, measurement and control engineering); trudy soveshchaniya. Kiev, Naukova dumka, 1964, 414-420

TOPIC TAGS: automatic control system, digital computer, automatic transportation system, automated sheet sorting, automated log classification, magnetic element, control computer

ABSTRACT: From the very beginning of the work on the automation of continuous transportation systems with automatic addressing of loads, the construction bureau "Promenergoavtomatika" avoided the use of relays and concentrated rather on the use of reliable magnetic elements. At the same time, the goal extended far beyond the simple substitution of relays and the related investigations resulted in new automation principles based on the

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L 44287-65

ACCESSION NR: AT5011614

use of the principles of computer technology. The paper describes two new digital computers (using ferrite-diode elements) for: 1) the control of the unit for the sorting of sheets, and 2) the semiautomatic lines for the classification and sorting of logs. Special emphasis was placed on the reliability of operation because the control computers are earmarked for industrial use. Orig. art. has: 3 formulas and 6 figures.

ASSOCIATION: None

SUBMITTED: 29Sep64 ENCL: 00 SUB CODE: DP, IE

NO REF SOV: 002 OTHER: 000

Card 2/2

L 39486-66 EWT(d)/EEC(k)-2 GD/GS

ACC NR: AT6002937 SOURCE CODE: UR/0000/65/000/000/0196/0200

AUTHOR: Kogon, M. G.; Parylis, M. E.; Svidler, K. N.

ORG: none

TITLE: Magnetic-element digital measuring instruments

SOURCE: Vsesoyuznoye soveshchaniye po magnitnym elementam avtomatiki i vychislitel'noy tekhniki. 9th, Yerevan, 1963. Magnitnyye tsifrovyye elementy (Magnetic digital elements); doklady soveshchaniya. Moscow, Izd-vo Nauka, 1965, 196-200

TOPIC TAGS: digital measuring instrument, magnetic element, industrial automatic control

ABSTRACT: Two applications of ferrite-diode logical systems to industrial automatic controls are described. A control counter intended for regulating the process of vulcanization of rubberized fabric consists of a fabric-strap-travel sensor, a photo transducer, a signal shaper, a switch, a travel counter, a programing unit, amplifiers, etc. This data of an experimental hookup is reported: maximum travel,

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12 m; error of travel measurement, ± 5 cm; maximum total length, 1000 m; error of total-length measurement, ± 10 cm; maximum frequency of counting pulses, 200 cps; the overall error is claimed to be 0.005%. A digital gauge for measuring diameters intended for heavy-machine building application operates on the roller principle and consists of a roller, a transducer, a computing device, a pulse generator, a storage-and-correction unit, and an rpm sensor. "Laboratory tests" of the gauge are mentioned. "Besides the authors, Yu. M. Pavlov, V. A. Bragin, M. V. Busygina, I. V. Zhukova, and D. A. Korol'kov took part in the work." Orig. art. has: 5 figures and 1 formula.

SUB CODE: 09 / SUBM DATE: 23Apr65

Card 2/2 MLP

L 38780-66

ACC NR: AP6027204

telegraph code. The unit (see Fig. 1) is based on core-diode building blocks and uses the 50 cps line frequency for synchronization. The 6.3 v 50 cps voltage derived from the power line is shaped by two delay elements and an inhibitor gate which gives out 20 msec system clock pulses. The flip-flops are arranged into a shift register circuit in which upon command the T3 flip-flop generates a start pulse and succeeding flip-flops (T_8, T_4, T_9, T_5, T_{10}), actuated for every 20 msec, open the corresponding gates between the accumulator output of computer D and a single output telegraph line C. The stop pulse is generated when T_6, T_{11} are active, after which an end of message may be sent. The unit may accomodate other codes if its shift register is expanded accordingly. Orig. art. has: 1 figure. [BD]

SUB CODE: 09/ SUBM DATE: none/ ATD PRESS: 5051

17/

Card 2/2

SVIDLER, R.S.

Blood transfusion in thoracic surgery. Klin. med., Moskva 30 no. 6:56-60 June 1952. (CLML 22:5)

1. Odessa.

SVIDLER, R.S., kand.med.nauk (Odessa, ul. Shchepkina, d.1, kv.6);
GESHELIN, B.A.

Electrostimulation of the diaphragmatic nerves in apnoea.
Vest.khir. 89 no.11:75-80 N '62. (MIRA 16:2)

1. Iz khirurgicheskogo otdeleniya (zav. - prof. B.Ye. Frankenberg) Odesskoy gorodskoy klinicheskoy bol'nitsy No.1 (glavnyy vrach - A.S. Teslik).
(APNOEA) (ELECTROTHERAPEUTICS)

SVIDLER, R.S.; GESHELIN, S.A.

Clinical trials of the ESD-1 apparatus for electrical stimulation of respiration. Nov. med. tekh. no.1:57-62 '62. (MIRA 19:1)

1. Odesskaya gorodskaya klinicheskaya bol'nitsa No.1.

SVIDLER, S.M.

Treatment of obliterating endarteritis with hydrogen sulfide and carbon dioxide baths prepared from waste products of the coke industry. Vop. kur., fizioter. i lech. fiz. kul't. 25 no. 6:532-536 N-D '60. (MIRA 14:2)

1. Iz fakul'tetskoy terapevticheskoy kliniki (zav. - prof. I.B. Shulutko) Stalinskogo meditsinskogo instituta (dir. - dots. A.M. Ganichkin).
(ARTERIES—DISEASES) (MINERAL WATERS, ARTIFICIAL)

SVIDLER, S.M.; ZAKHAROV, I.Ya.

Prevention of furunculosis in coal miners by ultraviolet irradiation. Vrach.delo no.2:116-118 F '63. (MIRA 16:5)

1. Kafedra fakul'tetskoy terapii, kurs fizioterapii (zaveduyushchiy kursom - dotsent S.M. Svidler) i kafedra kozhno-venericheskikh zabolevaniy (zav. - prof. A.A. Kroychik) Donetskogo meditsinskogo instituta.
(FURUNCULOSIS) (MINERS—DISEASES AND HYGIENE)
(ULTRAVIOLET RAYS—PHYSIOLOGICAL EFFECT)

SVIDLER, Yu.

New efficient machinery. NTO no.3:28-30 Mr '59. (MIRA 12:6)

(Building machinery)

ZAPUSKALOV, V.I.; KASPAROVA, S.A.; KONOROVA, Ye.V.; KOPSHITSER, I.Z.; LARIONOV, V.P.; SVIDLO, V.M.; FOL'TS, K.K.; ZOTOV, V.A., red.

[Exercise therapy in the psychiatric hospital] Lechebnaia fizicheskaia kul'tura v psikhiatricheskoi bol'nitse. Moskva, Meditsina, 1965. 235 p. (MIRA 18:8)

SVIDNITSKIY, T.V.

BERKMAN, I.L., inzhener; LOBANOVSKIY, M.G., inzhener; SVIDNITSKIY, T.V., inzhener.

Universal devices used for controlling the load-lifting capacity of jib cranes. Bezop. truda v prom. 1 no.2:18-21 F '57. (MLRA 10:4)
(Cranes, Derricks, etc.) (Servomechanisms)

TATARINOVA, L.G.; SVIDOVSKAYA, R.P.

Clinical aspects of tick-borne encephalitis in the Maritime Territory. Trudy VladIEMG no.2:17-21 '62. (MIRA 18:3)

1. Iz Vladivostokskogo nauchno-issledovatel'skogo instituta epidemiologii, mikrobiologii i gigiyeny i kliniki nervnykh bolezney Vladivostokskogo meditsinskogo instituta.

SVIDOVSKIY, YE.

Wrote about salvage and usage of irrepairable automobile parts at the First Moskva Automobile Repair Plant. Moskovskaya O., RSFSR Soviet Source: P: Avtomobil, No. 5, Moscow, May 1950.

Abstracted in USAF "Treasure Island" on file in Library of Congress, Air Information Division, Report No. TI 102026. UNCLASSIFIED.

SVIDCV:HIY, YE. M.

No. 37351--Sostavnoy tsentr k tokarnym i shlifoval'nym stankam. Stanki i instrument, 1949, No. 12, p. 19.

So: Letopis' Zhurnel'nykk Statey, Vol. 7, 1949.

L 38866-66 EWP(t)/ETI IJP(c) JD

ACC NR: AP6029559 SOURCE CODE: CZ/0057/65/000/011/0486/0487

28

B

AUTHOR: Svidrnoch, Ladislav

ORG: Klement Gottwald Vitkovice Iron Works, Ostrava (VZKG)

TITLE: Production experience with a vacuum system on a 5 ton electric arc furnace at Klement Gottwald Vitkovice Iron Works

SOURCE: Hutnik, no. 11, 1965, 486-487

TOPIC TAGS: arc furnace, air purification, vacuum technique, industrial blower

ABSTRACT: Because the amount of dust at the plant where the author is active reached the values of 30 - 60 mg per cubic meter, and under certain conditions was as high as 100, a vacuum system was installed at the 5 ton arc furnace. The capacity of the furnace is 10 tons, and produces mainly alloy steel. The suction is provided by a centrifugal blower witha capacity of 34,200 CMH driven by a 58 KW motor. The installation did not show any unfavorable influence upon the operation of the furnace. The dust removed is not recoveredat present. Orig. art. has: 2 figures and 5 tables. [JPRS: 34, 519]

SUB CODE: 13 / SUBM DATE: 00

Card 1/1

0917 2652

L 3233-66 FSS-2/EWT(l)/FS(v)-3/FCC/EWA(d)/EWA(h) TT/GS/GW
ACCESSION NR: AT5023630 UR/0000/65/000/000/0505/0510

AUTHORS: Avdyushin, S. I.; Kogan, R. M.; Nazarova, M. N.; Pereyaslova, N. K.; Petrenko, I. Ye.; Svidskiy, P. M.

TITLE: Recording of cosmic rays on the satellite Kosmos-17

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 510

TOPIC TAGS: artificial earth satellite, cosmic ray, scintillation counter, Geiger counter/Kosmos 17 satellite, Kosmos 7 satellite, Explorer 7 satellite

ABSTRACT: In May 1963 scintillation and Geiger counters were used to measure the intensity of cosmic radiation outside the Van Allen belt at altitudes of 260–780 km. The dependence of radiation intensity on the invariant coordinate L was determined. The flux of charged particles was observed to change from 0.5 particles per cm^2 per sec in the equatorial region to 3.0 particles per cm^2 per sec in high latitudes. The gamma-quanta flux in the energy range from 0.1 to 3 Mev was found to range from 9 to 22 quanta per cm^2 per sec. The edge of the high-latitude plateau of cosmic ray intensity lies at L = 3.0. Results were compared with data from other

Card 1/2

L 3095-66 FSS-2/EWT(l)/EWT(m)/FS(v)-3/FCC/EWA(d)/EWA(h) TT/GS/GW
ACCESSION NR: AT5023620 UR/0000/65/000/000/0464/0465

72
8+1

AUTHORS: Kidrina, G. A.; Kulagin, Yu. M.; Malyshev, A. B.; Nazarova, M. N.; Svidskiy, P. M.; Yudkevich, I. S.

TITLE: Investigation of the radiation intensity in Van Allen belts by the Kosmos-17 satellite

12

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 464-465

TOPIC TAGS: satellite, satellite data analysis, radiation intensity, Van Allen belt, charged particle, Geiger counter, scintillator, nuclear explosion, electron, proton, solar cycle, solar activity, magnetic activity, geomagnetism

12 19

ABSTRACT: Data on the streams of charged particles registered by Geiger counters and scintillators at the elevation of 260-780 km for May 22-30, 1963 are presented. Results obtained with Geiger counters in the inner Van Allen belt are plotted in B, L-coordinates. Simultaneous determinations obtained with scintillators and with variously screened Geiger counters showed that in the interval of $1.15 \leq L \leq 1.6$ the major part of the registered intensity was related to the electrons from the high-altitude nuclear explosion of July 9, 1962. The 1-order increase of protons with

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L 3095-66
ACCESSION NR: AT5023620

0

energy of $E_p \gtrsim 30$ Mev since 1958 is explained by the lowering of the solar activity in the 11-year solar cycle. During magnetically quiet days the maximum of intensity in the outer belt was recorded at L = 4.7—4.8; during increased magnetic activity the maximum was transposed toward lower valued of L. In the inter-belt space a narrow zone was discovered in which electrons with energy $0.1 \leq 1.5$ mev were recorded. Here, the radiation intensity and the maximum location are related directly to the magnetic activity. Stable corpuscular streams, apparently of electrons with energies of 50-100 kev, were registered below the inner belt. Their global distribution indicates that the corpuscles are trapped by the earth's geomagnetic forces. These streams reach a magnitude of 10^5—10^6 $cm^{-2} \cdot sec^{-1}$.

/047

ASSOCIATION: none

SUBMITTED: 02Sep65 ENCL: 00 SUB CODE: ES, SV

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4106

Card 2/2

L 23431-66 FSS-2/EWT(1)/FCC/EWA(d)/EWA(h) TT/GW

ACC NR: AP6012831 SOURCE CODE: UR/0293/66/004/002/0257/0267

AUTHOR: Kirdina, G. A.; Kulagin, Yu. M.; Malyshev, A. B.; Nazarova, M. N.; Svidskiy, P. M.; Yudkevich, I. S.

ORG: none

TITLE: Study of the emission intensity in the Earth's radiation belts by the Cosmos-17 satellite

SOURCE: Kosmicheskiye issledovaniya, v. 4, no. 2, 1966, 257-267

TOPIC TAGS: cosmic radiation, radiation belt, corpuscular radiation, radiation intensity measurement, spaceborne measurement/Cosmos-17

ABSTRACT: Four independently operating Geiger and scintillation counters were used on Cosmos-17 to record charged-particle fluxes in the Earth's radiation belts at altitudes of 260—780 km from 22 to 30 May 1963. The counters differed only in their shielding and radiation detectors. Simultaneous measurements of the counting rates made it possible not only to determine the level of the fluxes but also to reach certain conclusions on the composition of the trapped radiation and to establish the hardness of the energy spectrum of the penetrating particles. Based on the composition of particles penetrating a shielding of 1 g/cm^2, it was found that the inner radiation belt can be divided into two regions. At L = 1.15—1.6, the main portion of the fluxes is produced by electrons from nuclear explosions, at L = 1.6—2.5, it

Card 1/2 UDC: 537.591

L 23431-66
ACC NR: AP6012831

is produced by protons. The flux of protons with energies greater than 30 Mev has increased since 1958. A third narrow region was detected between the inner and outer radiation belts in which electrons with energies of 0.1--1.5 Mev were recorded. Below the lower boundary of the inner belt, stable streams of soft corpuscules, i.e., electrons with energies between 50 and 100 kev, were detected. Orig. art. has: 1 table and 7 figures. [JR]

SUB CODE: 04/ SUBM DATE: 19Apr65/ ORIG REF: 003/ OTH REF: 008/ ATD PRESS: 4235

Card 2/2

MOROZOV, N.G.; uchitel' (selo Klyuchevki, Chelyabinskoy oblasti); PRUDNIKOV, S., uchitel'; GORB, Ye.V.; SIDORENKO, B.P., uchitel'; LAZAREV, V.; SVIDUNOVICH, A., uchitel'; RUBIN, M., metodist; VASIL'YEV, Ye.T., uchitel'

Letters to the editors. Geog. v shkole 23 no. 6:67-69 N-D '60. (MIRA 13:11)

1. 4-ya shkola shkoly g.Nevelya (for Prudnikov). 2. Direktor 16-y shkoly g. Vinnitsy (for Gorb). 3. 81-ya shkola g.Baku (for Sidorenko). 4. 11-ya shkola g.Tyumeni (for Lazarev). 5. Velemichskaya shkola Brestskoy oblasti (for Svidunovich). 6. Vinnitskiy oblastnoy institut usovershenstvovaniya vrachey (for Rubin). 7. Sanitorno-lesnaya shkola poselka Klyuchi, Kamchatskoy oblasti (for Vasil'yev).

(Geography)

L 08399-67 EWP(e)/EWT(m)/EWP(t)/ETI IJP(c) JD/WW/JG/WH
ACC NR: AP6031745 SOURCE CODE: UR/0072/66/000/007/0011/0014

AUTHOR: Shumitskaya, L. F.; Gegelashvili, V. K.; Zhukovskiy, V. V.; Svidzinskaya, I.V.

ORG: Ordzhonikidze Plant of Container Glassware and Glass Insulators (Ordzhonikidzevskiy steklotarno-izolyatornyy zavod)

TITLE: Production of glasses stable to the action of alkali metal vapors

SOURCE: Steklo i keramika, no. 7, 1966, 11-14

TOPIC TAGS: borate glass, aluminophosphate glass, sodium, cesium

ABSTRACT: As a result of studies of aluminoborate and aluminoborophosphate glass systems, carried out at NIIES, S50-1 glasses stable to the action of cesium vapor and S50-2 glasses stable to the action of sodium vapor were developed. The founding and processing technology worked out by NIIES has been used at the Ordzhonikidze Plant since 1963. Physicochemical and other properties of S50-1 and S50-2 glasses are reviewed. The furnaces used for founding the glasses and the schedules employed are described. The adoption of production of glasses resistant to alkali metal vapors has permitted the Moscow Electric Lamp Plant (Moskovskiy elektrolampovyy zavod) to manufacture highly economical sodium vapor illumination lamps and sodium and cesium vapor spectral lamps. Orig. art. has: 4 figures and 2 tables.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 001

Card 1/1 afs UDC: 666.117.4

EWT(1) IJP(c) GG

ACC NR: AR6031895 SOURCE CODE: UR/0058/66/000/006/E129/E130

AUTHOR: Svidzinskiy, A. V.; Slyusarev, V. A. 34

TITLE: The theory of tunnelling in superconductors

SOURCE: Ref. zh. Fizika, Abs. 6E1010

REF SOURCE: Fiz.-tekhn. in-t nizk temperatur AN USSR. Khar'kov, 1965, 15 str.

TOPIC TAGS: tunnel current, superconductor, kinetic equation, phase partial differential equation, boundary condition, tunnelling, superconductor tunnelling

ABSTRACT: The value of a tunnel current in a system of two superconductors separated by an insulating layer is calculated. The calculation is carried out within the framework of a model described by a tunnel Hamiltonian. The new results of the work are as follows: 1) clarification of the occurrence of a coherent phase shift in tunnelling in a system of coupled superconductors; 2) the application to the tunnelling problem of the method of kinetic equations, which makes it possible to give a general calculation of the tunnel current which is valid also for the case of a variable shift at the barrier; 3) the need to correct the computa-

Card 1/2

L 08172-67 EWT(1) IJP(c) GG

ACC NR: AP6024878 SOURCE CODE: UR/0056/66/051/001/0177/0182

AUTHOR: Svidzinskiy, A. V.; Slyusarev, V. A. 55 B

ORG: Physicotechnical Institute of Low Temperatures, Academy of Sciences, Ukrainian SSR (Fiziko-tekhnicheskiy institut nizkikh temperatur Akademii nauk Ukrainskoy SSR)

TITLE: Contribution to the theory of tunneling in superconductors

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 1, 1966, 177-182

TOPIC TAGS: superconductivity, tunnel effect, phase transition, perturbation theory, Hamiltonian, kinetic equation, superconductor

ABSTRACT: The purpose of the article is to construct a new theoretical scheme based on the use of an equivalent circuit and a kinetic approach which would permit a general analysis of the tunnel effect in superconductors and its physical interpretation. Principal attention is paid to the occurrence of coherent phase differences. The kinetic approach employed makes it possible to develop the theory of the nonstationary Josephson current. It is assumed that the tunneling Hamiltonian contains an operator describing the transitions of the electrons through the dielectric layer separating the superconductors, and that the influence of the tunneling operator can be taken into account by perturbation theory. The difficulties normally connected with the secular terms of the perturbation theory are overcome by constructing kinetic equations in which the characteristic time scales of the problem are taken separately into account. Three such scales are involved in the present analysis - the relaxation time in each

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ACC NR: AP6024878

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superconductor, the tunneling time, and the time of variation of the barrier voltage. Arguments are presented to show that the premise that the nonlinear Josephson effect occurs at constant voltage on the barrier is incorrect. In fact, the analysis shows that the occurrence of the alternating current is a consequence of a nonlinear element in the electric circuit. The difference between the dc and ac Josephson currents is shown to be due to the fact that the dc is in equilibrium and the ac is not. It is concluded that to construct a complete theory of the phenomena occurring during tunneling it is necessary to take into consideration the existence in the circuit of reactive elements and of the magnetic field, including the self field of the current flowing through the junctions. This will be treated in a separate paper. Orig. art. has: 20 formulas.

SUB CODE: 20/ SUBM DATE: 04Jan66/ ORIG REF: 003/ OTH REF: 009

Card 2/2 nst

L 08173-67 EWT(1) IJP(c)

ACC NR: AP6024880 SOURCE CODE: UR/0056/66/051/001/0194/0200

AUTHOR: Ivanchenko, Yu. M.; Svidzinskiy, A. V.; Slyusarev, V. A. 51 B

ORG: Physicotechnical Institute of Low Temperatures, Academy of Sciences, Ukrainian SSR (Fiziko-tekhnicheskiy institut nizkikh temperatur Akademii nauk Ukrainskoy SSR)

TITLE: Electrodynamics of the Josephson effect

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 1, 1966, 194-200

TOPIC TAGS: superconductivity, tunnel effect, phase transition

ABSTRACT: This is a companion to a paper in the same source (p. 177, Acc. Nr. AP6024878) where a physical interpretation was presented of the effect, based on the analysis of the entire electric circuit in which the tunnel junction is connected. It is shown that the equivalent circuit considered in that paper is idealized and consists of a source of voltage with internal resistance, whereas the actual situation is more complicated. In the present article the authors calculate the magnitude and position of the resonant maxima on the curve for the dc component of the Josephson tunnel current, using a theory based on allowance for the electromagnetic field produced by the Josephson current itself, and the conditions under which the tunnel junction is connected in the external electric circuit. It is shown that the results of the theory can be used to explain the experimental data obtained by I. K. Yanson et al. (ZhETF v. 48, 976, 1965) when the nonlinear equation for the current is solved approximately for several limiting cases. The authors thank I. K. Yanson for useful discussions. Orig.

Card 1/2

L 08173-67

ACC NR: AP6024880

art. has: 37 formulas.

SUB CODE: 20/ SUBM DATE: 06Jan66/ ORIG REF: 004/ OTH REF: 007

Card 2/2 nst

SVIDZINSKIY, A. V.

SVIDZINSKIY, A. V. -- "On the Method of Functional Integration in Green's Theory of Functions." Min Higher Education Ukrainian SSR. L'vov State U imeni Ivan Franko. L'vov, 1955. (Dissertation for the Degree of Candidate of Physicomathematical Sciences.)

SO: Knizhnaya Letopis', No 5, Moscow, Feb 1956

SVIDZINSKIY, A.V.

CARD 1 / 2 PA - 1538

SUBJECT USSR / PHYSICS
AUTHOR SVIDZINSKIJ, A.V.
TITLE The Determination of GREEN'S Functions in the Model by BLOCH-NORDSIECK by the Method of Functional Integration.
PERIODICAL Žurn.eksp.i teor.fis, 31, fasc.2, 324-329 (1956)
Issued: 5.10.1956

In the here investigated model of electrodynamics the γ^α-matrices by DIRAC are replaced by constant c-numbers u_α: $u^2 = g^{\alpha\alpha} u_\alpha^2 - u_o^2 - \vec{u}^2 = 1$. Here $g^{\alpha\alpha} = 1$ at $\alpha = 0$ and $g^{\alpha\alpha} = -1$ at $\alpha = 1,2,3$. The model is here studied from the point of view of the theory of GREEN'S functions basing upon the representation of GREEN'S function of the electron in form of a functional integral of GREEN'S function of the electron in a "classical" exterior field. This integral is here computed and renormalized. In the case of the model investigated on this occasion the polarization of the vacuum is, by the way, lacking. The lacking of the second pole of GREEN'S function from a physical point of view means the lack of antiparticles in this theory, and, consequently, the impossibility of a production in pairs. The GREEN'S function of the photon in the given model is identical with the zero-th perturbational value.

THe GREEN'S function of the electron in the exterior field is defined in the given model by the equation: $\left[iu_\alpha(\partial/\partial x_\alpha) - \sqrt{4\pi e g^{\alpha\alpha}} u_\alpha A_\alpha(x) - m\right] G(x,x'|A) = -\delta(x-x')$. This equation can be solved by quadratures by means of FOK'S method of eigentime. One finally finds: $G(x,x'|A) = i\int_0^\infty d\nu \exp\left\{-ip(x-x') - i(m - up - i\varepsilon)\nu + R(\nu|A)\right\}$.

16(1),24(5) SOV/140-59-1-20/25

AUTHOR: Svidzinskiy, A.V.

TITLE: Line Integral in the Function Space (Krivolineynyy integral v funktsional'nom prostranstve)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1959, Nr 1, pp 199-203 (USSR)

ABSTRACT: The derivative of a functional $F[\varphi]$ is defined by

$$(1) \qquad \frac{\delta F[\varphi]}{\delta \varphi(x)} = \lim_{\delta\varphi \to 0} \frac{F[\varphi+\delta\varphi] - F[\varphi]}{\int \delta\varphi(y)dy} .$$

For the construction of the reversion operation the equation

$$(2) \qquad \frac{\delta F[\varphi]}{\delta \varphi(x)} = \phi[\varphi|x]$$

has to be solved. For this aim the author considers the discrete and finite x-space with n points and with the cell magnitude ω. Here (2) is changed in

$$\frac{\partial F}{\partial \varphi_k} = \omega \phi_k(\varphi_1, \ldots, \varphi_k, \ldots, \varphi_n) \qquad k = 1,2,\ldots,n .$$

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Line Integral in the Function Space

Herefrom F results as a line integral over a polygon in the φ-space; it combines the point $a(a_1,..,a_n)$ with the point $\varphi(\varphi_1,\ldots,\varphi_n)$:

$$F = \omega \sum_{k=1}^{n} \int_{\alpha}^{\varphi} \phi_k(\varphi_1,\ldots,\varphi_k,\ldots\varphi_n)\,d\varphi_k + C .$$

By limit passage to the continuous space $\omega \to 0$, $n \to \infty$:

$$F[\varphi] = \int dx \int_{\alpha(x)}^{\varphi(x)} \Phi\,[\varphi|x]\,d\varphi(x) + C .$$

Here $C = F[a(x)]$ and out of the discrete condition $\frac{\partial \phi_k}{\partial \varphi_i} = \frac{\partial \phi_i}{\partial \varphi_k}$ there follows $\frac{\delta \Phi[\varphi|x]}{\delta \varphi(y)} = \frac{\delta \Phi[\varphi|y]}{\delta \varphi(x)}$. Thus as an integration way a straight line through φ_1 and φ_2 in the φ-space can be

Card 2/3

chosen. Then finally it holds

$$\int dx \int_{\varphi_1}^{\varphi_2} \phi\,[\varphi|x]\,d\,\varphi(x) = \int dx \int_0^1 \phi\left[(\varphi_2-\varphi_1)t + \varphi_1|x\right](\varphi_2-\varphi_1)dt\ .$$

As an application of this method the author derives some formulas of the quantum field theory.
There are 2 Soviet references.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut imeni V.I.Lenina (Khar'kov Polytechnical Institute imeni V.I.Lenin)

SUBMITTED: March 21, 1958

SVIDZINSKIY, A. V.

Model of a superconductor with pairs in the p-state. Dokl. AN SSSR 153 no. 5:1044-1047 D '63. (MIRA 17:1)

1. Predstavleno akademikom N.N. Bogolyubovym.

L 25633-65 EWT(1)/EEC(f)/EWA(d) IJP(c) GG
ACCESSION NR: AP4043515 S/0041/64/016/004/0544/0550

AUTHOR: Svidzinskiy, A. V. (Khar'kov)

TITLE: Investigation of the equation for the slit in the energy spectrum of a superconductor

SOURCE: Ukrainskiy matematicheskiy zhurnal, v. 16, no. 4, 1964, 544-550

TOPIC TAGS: energy spectrum, superconductor, monochromatic superconductor excitation, electron pair interaction, Fermi level

ABSTRACT: The author investigates the Bogolyubov equation (New Method in the Theory of Superconductivity AN SSSR, Moscow, 1958) for a slit in the spectrum of monochromatic excitation of a superconductor. In the integral equation, the kernel describes the interaction of pairs of electrons with opposite momenta, the electron energy being measured from the Fermi level. In this paper, a simpler method is used. The model is somewhat more general, as the dependence of the kernel on the energy variables is also taken into consideration. It is found that the kernel for the Frohlich's model changes by an order of magnitude when one of

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L 25633-65
ACCESSION NR: AP4043515

the energy variables changes from zero to the Debye energy. Orig. art. has: 24 equations.

ASSOCIATION: None

SUBMITTED: 25Jun62 ENCL: 00 SUB CODE: GP, MA

NR REF SOV: 004 OTHER: 00

Card 2/2

L 16448-65 EWT(1) IJP(c)/AFWL/ASD(a)-5/AFETR

ACCESSION NR: AP4042036 S/0126/64/017/006/0801/0808

AUTHOR: Svidzinskiy, A. V.; Slyusarev, V. A. B

TITLE: Method of quasiaverages in the theory of Fermi systems with a nonzero orbital pair momentum

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 6, 1964, 801-808

TOPIC TAGS: Fermi system, pair condensation, orbital pair momentum, quasi-average, statistical mechanics, theory

ABSTRACT: The authors show that on the basis of the principle of reduced correlation it is possible to obtain information about the structure of the condensate in the superconducting Fermi surfaces. By using the method of quasiaverages (N. N. Bogolyubov, Quasi-averages in statistical mechanics, preprint OIYaI, D-781, Dubna, 1961) an assymptotically rigorous solution is given for a model Fermi system by considering the possibility of pair formation with a definite, different from zero, orbital momentum. Both the singlet and the triplet

Card 1/2

L 16448-65

ACCESSION NR: AP4042036

pair states are considered. Orig. art. has: 33 equations

ASSOCIATION: Fiziko-tekhnicheskiy institut nizhikh temperatur AN UkrSSR (Physical-Technical Institute of Low temperatures AN UkrSSR)

SUBMITTED: 12Aug63 ENCL: 00

SUB CODE: NP NO REF SOV: 011 OTHER: 006

Card 2/2

L 04230-67 EWT(1) IJP(c)

ACC NR: AR6031896 SOURCE CODE: UR/0058/66/000/006/E130/E130

34

AUTHOR: Ivanchenko, Yu. M.[2]; Svidzinskiy, A. V.[2]; Slyusarev, V. A.

TITLE: Electrodynamics of the Josephson effect

SOURCE: Ref. zh. Fizika, Abs. 6E1011

REF SOURCE: Fiz.-tekhn. in-t nizk. temperatur, Donetskiy fiz.-tekhn. in-t AN USSR. Khar'kov-Donetsk, 1966, 14 str.

TOPIC TAGS: electrodynamics, superconductive tunnelling, tunnel effect, Josephson effect

ABSTRACT: The electrodynamics of superconductive tunnelling at small voltages and during slowly varying processes is investigated. A theory on the voltampere characteristics of such tunnelling is evolved. The experimental data are in good agreement with the theoretical results. [Translation of abstract]

SUB CODE: 11, 09/

Card 1/1 pla

ACC NR: AP7005503 SOURCE CODE: UR/0020/67/172/002/0322/0325

AUTHOR: Svidzinskiy, A. V.; Slyusarev, V. A.

ORG: Physicotechnical Institute of Low Temperatures, Academy of Sciences, UkrSSR (Fiziko-tekhnicheskiy institut nizkikh temperatur Akademii nauk UkrSSR)

TITLE: Hydrodynamic equations in the theory of superconductivity

SOURCE: AN SSSR. Doklady, v. 172, no. 2, 1967, 322-325

TOPIC TAGS: superconductivity, hydrodynamic theory, fluid kinetic equation, correlation function

ABSTRACT: The purpose of the article was to derive equations of two-fluid hydrodynamics for London-type superconductors from the equations of the microscopic theory of superconductivity. The derivation is based on separating the gauge-noninvariant factors of the correlation functions of a nonequilibrium superconductor, and transition to a mixed representation of the correlation functions. This is followed by derivation of equations for the superfluid velocity and for the time evolution of other hydrodynamic quantities in the superconductor. These, together with the continuity equation, and the equations for the energy flux, the current density, the momentum flux density tensor constitute a complete system of equations of two-fluid hydrodynamics as derived by L. D. Landau, generalized to the case of charged particles. The results agree with those of M. J. Stephen (Phys. Rev. v. 139, A197, 1965), except that Stephen's intermediate expressions are considered to be incon-

UDC: 537.312.62

Card 1/2

ACC NR: AP7005583

sistent. This report was presented by Academician N. N. Bogolyubov 23 March 1966. Orig. art. has: 29 formulas.

SUB CODE: 20/ SUBM DATE: 20Mar66/ ORIG REF: 006/ OTH REF: 001

Card 2/2

GEGELASHVILI, V.K.; GORCHAKOV, M.M.; FEDORYUK, G.M.; SVIDZINSKAYA, I.V.

Tank furnace for continuous operation direct heating in the manufacture of S-87-1 glass products. Stek. i ker. 20 no.12: 27-29 D '63. (MIRA 17:1)

USSR/Physical Chemistry - Molecule. Chemical Bond. B-4

Abs Jour : Referat Zhur - Khimiya, No 6, 25 March 1957, 18180

Author : Basov, N.G., Oraevskiy, A.N., and Syidzinskiy, K.K.
Title : Theory of Superfine Structure of Rotational Spectra of Molecules Conditioned by the Electrical 2^4-pole Moment of Nucleus.

Orig Pub : Optika i spectroskopiya, 1956, 1, No 3, 285-289

Abstract : The value of energy of 2^4-pole interaction of nucleus with the field of a molecule can have the order of 1khc which makes it possible to measure 2^4-pole moment of nucleus by radiospectroscopic method. In this work the theory of superfine structure of rotational spectra of linear molecules and molecules of the type of symmetrical top is developed. The structure is conditioned by the electrical 2^4-pole moment of nucleus. By resolving into a series, by powers of r_a (r_a is a coordinate of the charge), the potential energy of a system of charges, which

Card 1/3

BASOV, N.G.; SVIDZINSKIY, K.K.

Designing a molecular oscillator based on a ND_3 molecular beam. Izv.vys.ucheb.zav.; radiofiz. 1 no.2:89-94 '58. (MIRA 11:11)

1. Fizicheskiy institut AN SSSR.
(Microwaves)

AUTHOR: Svidzinskiy, K.K. SOV/51-6-2-28/39

TITLE: On the Theory of Hyperfine Structure of Rotational Spectra of Symmetrical-Top Type Molecules (K teorii sverkhtonkoy struktury vrashchatel'nykh spektrov molekul tipa simmetrichnogo volchka)

PERIODICAL: Optika i Spektroskopiya, 1959, Vol 6, Nr 2, pp 254-256 (USSR)

ABSTRACT: The author calculated the hyperfine structure of symmetrical-top type molecules. The energy of interaction of nuclei with electrical and mechanical fields of a molecule was represented by means of a scalar product of irreducible tensor operators. The calculations allowed for electric multipols, magnetic multipole, magnetic dipole, spin-spin and spin-orbit interactions. The paper is entirely theoretical. There are 7 references, 6 of which are English and 1 translation from English into Russian.

SUBMITTED: July 28, 1958

Card 1/1

S/051/61/011/006/003/012
E032/E114

AUTHOR: Svidzinskiy, K.K.

TITLE: Calculation of the hyperfine structure of the rotational spectra of molecules

PERIODICAL: Optika i spektroskopiya, v.11, no.6, 1961, 713-723

TEXT: Irreducible tensor operators are used to develop a theory of the hyperfine structure of the rotational spectra of molecules which are in the ground nondegenerate electronic state. The author shows that calculation of the hyperfine structure can be considerably simplified by the use of the mathematical apparatus of the theory of angular momentum. The use of irreducible tensorial sets ensures that all the matrix elements for the hyperfine interactions can be expressed in terms of combinations of the Wigner (3n - j)- symbols. The relation of these symbols to the Klebsch-Gordon coefficients and the Racah coefficients and the choice of the phases of the irreducible tensor operators are elucidated in an appendix. It is pointed out that extensive tables of the (3n - j) symbols are available in the literature. A comprehensive bibliography is said to be

given by A.P. Yutsic, I.B. Levinson and V.V. Vanagas (Ref.6: "Mathematical apparatus of the theory of angular momentum", GI PNL Litovsk. SSR, Vil'nyus, 1960). The present author starts with a general multipole expansion of the Hamiltonian representing the energy of the hyperfine interaction of the nucleus with the molecular field:

$$\mathcal{H} = \sum_{\lambda} (m^{(\lambda)} \cdot M^{(\lambda)}) = \sum_{\lambda} \sum_{\mu=-\lambda}^{\lambda} (-1)^{\lambda-\mu} m_{\mu}^{(\lambda)} M_{-\mu}^{(\lambda)} \qquad (1.1)$$

Molecular multipoles are then averaged over the ground electronic and the vibrational states with allowance for the perturbation of the electronic angular momentum in the rotating molecule as described by J.H. van Vleck (Ref.10: Rev. Mod. Phys., v.23, 213, 1951). Second order perturbation theory calculations then show that the average values of the electric multipoles are independent of the rotational state, while the average magnetic multipoles can be represented as the sum of two terms the first of which represents the contribution due to convection currents.

and the second the contribution due to nuclear "spin" currents. Electron spin currents do not contribute to the magnetic multipole if the effect of excited non singlet electronic states is neglected (this is in fact done in the present paper). Penetration of electrons into the nucleus is also neglected. The discussion is then specialised to molecules of the symmetric top type. The Eckart--Wigner theorem is used to derive expressions for the matrix elements of the operator $m_{\mu}^{(\lambda)}$. The electric interactions are then considered, and expressions are derived for the multipole corrections both on the second and third order perturbation theory (quadrupole and hexadecapole).

It is shown that in the case of magnetic interactions, first order perturbation theory is sufficient, and expressions are derived for the dipole and spin-spin interactions. The paper is concluded with a discussion of identical nuclei in the special case of 3 nuclei. The paper is entirely theoretical. No numerical computations are reported.

Acknowledgments are expressed to N.G. Basov, A.M. Baldin and A.M. Prokhorov for discussions and suggestions.

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There are 17 references: 5 Soviet-bloc including 2 translations into Russian from non-Soviet authors, and 12 non-Soviet-bloc. The four most recent English language references read as follows:

Ref. 7: A.R. Edmonds. Angular momentum in quantum mechanics. Princeton, 1957.
Ref. 8: U. Fano, G. Racah. Irreducible tensorial sets. N.Y., 1959.
Ref. 9: N.F. Ramsey. Molecular beams. Oxford, 1956.
Ref. 16: G. Herrman. J.Chem.Phys., v.29, 875, 1959.

SUBMITTED: January 7, 1961

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ACCESSION NR: AT3012117 S/2504/63/021/000/0107/0175

AUTHOR: Svidzinskiy, K. K.

TITLE: Theory of hyperfine structure of rotational spectra of molecules

SOURCE: AN SSSR. Fizicheskiy institut. Trudy*, v. 21, 1963, 107-175

TOPIC TAGS: molecular spectra, rotational molecular spectra, hyperfine structure, hyperfine structure theory, irreducible tensorial operators, fractional parentage coefficients, heavy ammonia maser

ABSTRACT: In order to simplify the hyperfine structure calculation to the utmost by maximum utilization of symmetry a hyperfine structure theory is developed, capable of taking into account hyperfine effects in rotational molecular spectra (in their nondegenerate ground electronic state) with the accuracy attainable by modern experimental techniques. The theory is based on the use of irre-

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ducible tensorial operators and Wigner 3nj symbols, and parallels the exposition given by Fano and Racah (Irreducible Tensorial Sets, Academic Press, 1949) and by A. R. Edmonds (Angular Momentum in Quantum Mechanics, Princeton, 1957). Principal attention is paid in this theory to the connection between the symmetrical-top wave functions and the Wigner final-rotation matrices. This is followed by calculation of the matrix element in the case of a large number of interacting nuclei, with emphasis on the use of fractional parentage coefficients to greatly simplify the hyperfine interaction operator matrix for several identical nuclei. Symmetrized state vectors and reduction coefficients are calculated for the case of three identical nuclei. The symmetry properties of the wave functions of the molecule are then analyzed and the matrix elements of different operators of intramolecular fields calculated from the rotational wave functions. Selection rules that follow from the symmetry properties of the Hamiltonian are considered for the hyperfine splitting constants. The hyperfine structure of the rotational

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spectra molecules are then calculated. To ensure the required accuracy (not lower than 10 cps) the expansion of the energy of the hyperfine interaction in the multipole moments includes not only the usual dipole and quadrupole, but also the octopole and hexadecapole interactions. The influence of the excitation of the electronic state by the rotational-electron perturbation is calculated by setting up a so-called effective Hamiltonian, which then serves as the initial energy operator for the hyperfine interaction. By way of an application, the theory is used to calculate the hyperfine structure of the inversion transition $J = K = 6$ of the ND_3 molecule, in view of research being carried out at FIAN (Physics Institute, Academy of Sciences) on the feasibility of an ND_3 maser as a frequency standard with an absolute stability (theoretical) of 2.5×10^{-10}.

"In conclusion the author is pleased to express deep gratitude to N. G. Basov, A. M. Prokhorov and A. M. Baldin for many valuable and useful discussions, and also to A. N. Orayevskiy for useful advice and remarks and to A. A. Pimenov for help with the computations.

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ACCESSION NR: AT3012117

Orig. art. has: 3 figures, 321 formulas, and 5 tables.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR)

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ACCESSION NR: AT3012118 S/2504/63/021/000/0176/0199

AUTHORS: Basov, N. G.; Zuyev, V. S.; Svidzinskiy, K. K.

TITLE: Maser using a beam of ND_3 molecules

SOURCE: AN SSSR. Fizicheskiy institut. Trudy*, v. 21, 1963, 176-199

TOPIC TAGS: ND_3 maser, maser power output, maser frequency stability, maser absolute stability, microwave band maser, signal to noise ratio

ABSTRACT: The purpose of the investigation was to ascertain the feasibility of a maser using the inversion transitions in a beam of heavy-hydrogen ammonia ND_3, and resulted in the construction of an operating model of such a maser generating approximately 10^{-11} W at 1656.18 Mc (line J = 6, K = 6 of the ND_3 inversion spectrum). The absolute frequency stability is of the order of 10^{-9}. The calcula-

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tions proving the feasibility of the maser are presented and include proof that self-excitation can be attained with sensible maser parameters and a calculation of the hyperfine structure of the inversion spectrum of ND_3. In addition to estimating the absolute stability for the (6, 6) line, the possibilities of increasing the absolute stability of the maser by choosing other lines (3, 2 and 5,5) or by replacing N^{14} with N^{15} are also considered. The measurement results agree well with the calculated data. The power yield of the ND_3 maser is approximately one-hundredth that of the NH_3 maser, but the sensitivity of microwave receivers at 1600 Mc is much higher than that at 24,000 Mc, so that detection of an ND_3 maser signal entails no more difficulty than that of an NH_3 maser. The signal/noise ratio exceeded 100 at 10^{-12} W. The resonator used had a diameter of 14 cm and a beam length 1.2--1.5 meters, compared with 1 and 20--30 cm

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