30583
S/128/62/000/004/003/010
A004/A127

9,7000

AUTHOR: Loskutov, V.I.

TITLE: New Soviet computers

PERIODICAL: Liteynoye proizvodstvo, no. 4, 1962, 8 - 10

TEXT: The author describes a number of new Soviet small-sized computers - three small-size digital and 2 original electrical analog computers - exhibited at the Moscow Exhibition of Achievements of the USSR National Economy (VDNKh). The "Razdan-2" model is the first small-size transistorized Soviet computer. The useful average time of the "Razdan-2" computer amounts to 18 h within 24 h. The number structure consists of 29 mantissa digits, two digits for the number sign, five digits for order determination and two digits for the sign order. The number range (decimal) of the computer extends from $\pm 10^{9}$ to $\pm 10^{-8}$; it has 36 order code digits. The average capacity per second of this computer is 4,000 - - 5,000 arithmetic operations. The author presents some technical details of the "Razdan-2" computer. The second computer being shown at the exhibition was the "Setun'" model, which is intended for small computing centers and offices. The computer uses the ternary computing system which, form the capacity view-

Card 1/2

point, is the most efficient. The calculations are carried out by 18-digit ternary numbers with fixed points, which corresponds to some eight decimal digits. The command system is of the one-address type. The average computing rate depending on the conversion frequency on the magnetic drum amounts to 1,000 - 4,000 one--address operations per second. The number and command input is effected in series. The electronic and switching circuits of the "Setun'" computer consists of ferrodiode cells. The third digital computer exhibited was the "Minsk 1" model, an improved and modified design of the "M-3" computer. The arithmetic system of the "Minsk 1" computer operates according to the multiple series principle. The computing process is carried out with 30 binary digits, presented in the natural form with fixed point, the command system is of the two-address type. The capacity of the "Minsk 1" computer amounts to 2,000 - 3,000 arithmetic operations per second. The author then presents a description of the "УСМ" (USM) grid electric integrator, intended for the solution of some equations of mathematical physics. It is used in the investigation of processes described by equations in partial derivations of the elliptic and parabolic type. Also the МН-11 (MN-11) analog computer shows great prospects in the practice of laboratory work. It has been developed for automatic searching of optimum solutions of preset criteria by the minimization and scanning methods. A brief description of this computer design is given by the author. There are 5 figures.

Card 2/2

42664

S/119/62/000/011/002/002
D201/D308

9.7000

AUTHOR: Loskutov, V.I.

TITLE: New facilities of computing technique

PERIODICAL: Priborostroyeniye, no. 11, 1962, 29-31

TEXT: This is a survey and short description of the following Soviet-developed digital and analog computers: 1) Universal computer "Раздан" (Razdan). Operational speed 4000-5000 arithmetical operations per second, floating decimal point, external magnetic tape storage of 120,000 numbers or commands, with registration or read-out speed of 2,000 words per minute. Coding: binary-decimal system for output, eight-digit for commands. Max. ambient temperature not greater than 25°C at air rel. hum. of 70%. Power consumption 2.5 to 3.0 kw. 2) Small, single address, digital computer "Сетунь" (Setun'). First in the world to use ternary system. Speed: 1,000 to 4,000 operations/sec. Series operation, ferrite and diode switching circuits. Stabilized 3-phase supply, power consumption less than 2.5 kw. 3) Series produced vacuum-valve computer

Card 1/2

New facilities of computing technique

S/119/62/000/011/002/002
D201/D308

"Минск-1" (Minsk-1). Parallel-series operation, binary system. Speed 2,000-3,000 operations/sec, external storage of about 66,000 numbers. Supply: 3-phase, 200 c/s, stabilized, consumption less than 14 kw. 4) A unique specialized grid-integrator type analog computer "УСМ" (USM) for solving problems described by partial-derivative equations of elliptical and parabolic types in heat physics, theory of elasticity, subterranean hydraulics, aero- and hydrodynamics, radio and electrical engineering, geophysics, nuclear power, electron optics, etc. The grid has 2916 nodes. Two more may be connected in parallel. Boundary conditions are set either by inductance potential dividers or by resolver transformers. The transients are taken from a CRT. 5) The series produced analog computer МН-11 (MN-11) with automatic search of the solution satisfying certain preset criteria realises many solutions for different values of the variables and automatically finds the optimal one. The computer can be used for solving systems of differential equations of up to the 9th order. Speed: 50-100 full solutions/sec; the computer has a few electromechanical components. Standard 3-phase 380/220 v supply, consumption about 10 kw. The mechanical presentation of every computer is described. There are 5 figures.

Card 2/2

LOSKUTOV, V.I., kand.tekhn.nauk

Automatic laying-out of rolled stock. Mekh.i avtom.proizv. 16 no.9:13-17 S '62. (MIRA 15:9)
(Rolling (Metalwork)) (Automation)

S/121/62/000/006/001/011
D040/D113

AUTHOR: Loskutov, V.I.

TITLE: New electronic computers

PERIODICAL: Stanki i instrument, 33, no. 6, 1962, 1-3

TEXT: A brief general description is given of the design features of 4 small computers destined for local computing centers, scientific and industrial organizations, etc. (1) The "Раздан-2" ("Razdan-2"), a universal digital computer with semiconductor elements and ferrites, has a binary system with a floating comma, and performs 5,000 operations/sec. The input is automated by means of a punched tape reader, and the output by means of printing wheels. (2) The "Сетунь" ("Setun'"), a ternary digital computer easily rearrangeable for controlling production processes, has a sequential one-address system with fixed comma; the basic element of the logic and switching circuits is a simple small ferrodiode; 24 different commands are possible; the mean speed is approximately 1,000 arithmetical operations/sec, and the accuracy equivalent to 8-figure-decimal numbers. The memory system has ferrite cores and a magnetic storage

Card 1/3

New electronic computers

drum. The interpreting program system permits using the drum as an operator memory and conducting special operations, such as automatic conversion of numbers into semilogarithmic form with floating comma, conversion of numbers from the decimal system into ternary and vice versa, and computation of functions such as sin x, lg x, e^x. The data input is carried out by a photoelectric reader from a five-position punched tape, the output by a printer, printing 7 digits/sec. The computer occupies 20-25 m^2 floor space, and is controlled from a special panel. (3) The " Минск -1" ("Minsk-1") with tube circuitry consists of an arithmetic system, operative ferrite-core storage, external magnetic tape storage, input and output units, a feed unit, and a unit for preparing input data. The basic units operate on the series-parallel principle; the computing system is binary with fixed comma and a two-address command circuit producing 23 basic commands and 101 modifications.. The mean computing speed is 2,000-3,000 arithmetical operations/sec, and the output data are printed by a БПМ-20 (BPM-20) high-speed printer on paper tape in one column, in decimal or in octal system, with a maximum of 20 numbers/sec. Controls are provided on the main control board for switching the computer over to different work, adding information and commands, reading the contents of any

New electronic computers

of the memory cells, and starting and stopping separate units. All equipment is placed inside five cabinets. (4) The MH-11 (MN-11), an analog computer with automatic scanning for optimum process data, will be used for automatic control of industrial processes. It automatically selects solutions according to preset conditions, modulates nonlinear conventional differential equation systems up to the 6-9th order, and also permits manual selection of parameters. The main components are an electric model, memory and computing units, and a special control unit for logical operations. The scanning process is observed by an electron beam indicator with a screen showing up to four variables. The MN-11 performs 50-100 complete solutions/sec. There are 4 figures.

Card 3/3

LOSKUTOV, V.I., kand.tekhn.nauk

Automatic control of subway trains. Mekh.i avtom. proizv. 17 no.2: 13-15 F '63. (MIRA 16:2)
(Moscow—Subways—Automatic train control)

LOSKUTOV, V.I.

Programmed control of the sand-slinger molding process. Lit. proizv. no.2:11-12 F '63. (MIRA 16:3)
(Molding (Founding)) (Programming (Electronic computers))

LOSKUTOV, V.I.

Measuring the temperature of liquid metals with a time-impulse pyrometer. Lit. proizv. no.6:26-27 Je '63. (MIRA 16:7)

(Liquid metals) (Pyrometry)

LOSKUTOV, V.I., kand.tekhn.nauk

New fields in the automation of processes of mental work. Mekh. i avtom. proizv. 17 no.10:40-43 O '63. (MIRA 17:1)

LOSKUTOV, V.I., kand.tekhn.nauk

Computers in automatic control systems. Mekh.i avtom.proizv. 18 no.3:44-47 Mr '64. (MIRA 17:4)

LOSKUTOV, V.I., kand.tekhn.nauk

Computer control machine "Stal'-1" for waste-free laying out.
Stal' 23 no.6:533-536 Je '63. (MIRA 16:10)

LOSKUTOV, V.I.

New developments in research. Stal' 23 no.9:830 S '63.
(MIRA 16:10)

LOSKUTOV, V.I., kand.tekhn.nauk

Automation of engineering and economic calculations by new means of calculating techniques. Trakt. i sel'khozmash. no.2:21-23 F '64. (MIRA 17:3)

ACCESSION NR: AP4040463 S/0128/64/000/006/0019/0022

AUTHOR: Loskutov, V. I. (Candidate of technical sciences)

TITLE: New computers

SOURCE: Liteynoye proizvodstvo, no. 6, 1964, 19-22

TOPIC TAGS: computer, electronic computer, universal computer, specialized computer, digital computer, electronic digital computer, transistorized computer, integrator, ferrite core memory, complex mathematical problem, engineering problem, planning economic problem, business calculation

ABSTRACT: Five new types of electronic universal and specialized computers are described. The "Minsk-2," a medium-class digital electronic computer, consists of several separate units combined according to the user's requirements. It can be used for payroll disbursements, inventories, interplant planning, statistics, and other business and economic problems. It is also capable of solving

Card 1/4

ACCESSION NR: AP4040463

all types of complex mathematical problems. The operational memory of the "Minsk-2" is equipped with ferrite cores and has a capacity of 4096 thirty-seven-bit numbers; the external storage uses a magnetic tape with a 400,000 number capacity. Four such storages may be connected simultaneously to the computer. The computer performs 5000—6000 operations per second, at the rate of 12 μsec for summations with fixed points and 72 μsec for those with floating points; multiplications and divisions require 200 and 624 μsec, respectively. A special "program-interruption" unit makes it possible to bring large amounts of information into the printing unit simultaneously with the computations going on, which greatly increases the speed of operations. The "Minsk-22," which is under development, is a modification of the "Minsk-2" and is for use in planning, statistical calculations, and accounting. It can be fed from perforated cards at the rate of 250 cards per minute, and can use cards prepared for processing on "Strela" and "Ural" computers. The internal memory is the same as in the "Minsk-2"; the external storage has a capacity of up to 5 million numbers. The "Promin'," a recently developed small-size electronic digital computer for industrial use, is said to be easy and economical to operate. Its

Card 2/4

ACCESSION NR: AP4040463

electronic switching and calculating circuits are transistorized. The "Promin'" is used for the automation of engineering computations of average complexity. It can perform summations in 1 μsec and multiplications in 10 μsec. The EGDA-9/60 is an experimental integrator for the solution of two-dimensional and symmetrical problems described by Laplace equations. Its range of specialized operations is very wide, and includes stresses, hydraulics, potential fields, conformal mapping, and new problems of mathematical physics. The EASP-S is a specialized computer for investigating and designing various objects operating under the effect of random actions. The EASP-S uses correlation and spectral analysis of data recorded and fed in the form of curves or of voltages. It is used to calculate correlation and mutual correlation functions, functions of spectral and mutual-spectral density, Fourier series coefficients, etc. Separate units of the EASP-S can be used independently as data units and transmitters, as a two-channel magnetic recording device, or as a delay line and a generator of sine and cosine infralow-frequency voltages. The frequency range in the real-time scale lies between 0 and 1000 cps, and in the computer scale, between 0 and 50 cps. Orig. art. has: 4 figures.

Card 3/4

ACCESSION NR: AP4040463

ASSOCIATION: none

SUBMITTED: 00	DATE ACQ: 06Jul64	ENCL: 00
SUB CODE: DP	NO REF SOV: 000	OTHER: 000

Card 4/4

LOSKUTOV, V.I.

Automatic control systems using computers. Priborostroenie no.7: 12-14 Jl '64. (MIRA 17:11)

LOSKUTOV, V.I., kand. tekhn. nauk

Automation of type-setting in the printing industry. Mekh. i avt. proizv. 18 no.8:45-47 Ag '64. (MIRA 17:10)

ACCESSION NR: AP4009591 S/0121/64/000/001/0026/0028

AUTHOR: Loskutov, V. I.

TITLE: New electronic calculating machines for engineering and industrial uses

SOURCE: Stanki i instrument, 35, no. 1, 1964, 26-28

TOPIC TAGS: digital computer, transistor, input tape, memory core storage, single address

ABSTRACT: The range and operational features of two digital computers have been described. The first, called the "Minsk 2", is constructed on the block principle and fully transistorized. It has a double nomenclature, a dual-address control system, and a computation speed of around 5000-6000 operations per second. It consists of a central control panel, input tapes, central calculator, magnetic memory core, magnetic storage, high-speed digital print-out type BPM-20, and two output punching machines of the type PL-20. The ferrite core storage capacity is composed of 4096 37-digit numbers in the limits $1 \times 10^{\pm 19}$. Information transfer speed from the storage element is 2500 words per second. The second computer is called the "Promin'" and is capable of solving ordinary differential equations

Card 1/2

ACCESSION NR: AP4009591

of the third order and algebraic equations of the seventh order. It has a single address system and is fully transistorized. A five double-digit system allows 31 operations. Addition takes 1 sec, multiplication, 10 sec. The machine covers a number range from 10^{-10} to 10^{9}. Orig. art. has: 2 figures.

ASSOCIATION: none

SUBMITTED: 00	DATE ACQ: 14Feb64	ENCL: 00
SUB CODE: CP	NO REF SOV: 000	OTHER: 000

Card 2/2

LOSKUTOV, V.I.

New management processes in the machinery industry. Stan. i instr. 36 no.11:3-6 N '65. (MIRA 18:11)

LOSKUTOV, V.I.

Automatic control systems with the use of computers. Lit. proizv. no.8:23-26 Ag '64. (MIRA 18:10)

L 57855-65 EWT(d)/EED-2/EWP(1) Pc-4/Pg-4/Pk-4 IJP(c) BB/GS
ACCESSION NR: AP5011638 UR/0118/65/00 004/0044/0048

AUTHOR: Loskutov, V. I. (Candidate of technical scienc[illegible])

TITLE: New computing means for engineering calculations

SOURCE: Mekhanizatsiya i avtomatizatsiya proizvodstva, no. 4, 1965, 44-48

TOPIC TAGS: computer, special purpose computer / Promin digital computer, EGDA-0/60 integrator, EMSS-7 quasianalog simulator, EASP-S analyzer, iterator-1 mathematical device

ABSTRACT: Soviet-made special-purpose computers and simplified mathematical machines for use in local laboratories, etc., are briefly described. A semiconductor-element digital computer "Promin'" is intended for ordinary engineering calculations in the 10^{-10}—10^{9} range (differential equations up to the 3rd order, algebraic equations up to the 7th order). An electro-hydraulic EGDA-9/60 integrator is intended for solving 2-variable symmetrical problems describable by Laplace's equations. The processes simulation involves a special electro-conducting paper with bridge-method-measured equipotential lines. An electric quasi-analog simulator EMSS-7 is intended for calculating beam-type systems

Card 1/2

L 57855-65
ACCESSION NR: AP5011638

(bending moments, torques, torsional angles, etc.). A later modification of this simulator also permits designing variable-stiffness bars, constrained-end frames, etc. An electronic analyzer EASP-S serves for calculating correlation and crosscorrelation functions, spectral- and cross-spectral-density functions, Fourier-series coefficients, etc. Electrical simulators MPT-9, MN-7, IPT-5 are intended for investigating the processes describable by ordinary differential equations. An "Iterator-1" device, operating in conjunction with an analog machine, computes the values of unknown quantities by the method of successive approximations. Orig. art. has: 6 figures and 6 formulas.

ASSOCIATION: none

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NO REF SOV: 000 OTHER: 000

Card 2/2

L 24459-66 EWT(d)/EWP(c)/EWP(v)/EWP(k)/EWP(h)/EWP(l)/ETC(m)-6 DRJ
ACC NR: AP6008987 SOURCE CODE: UR/0121/65/000/011/0003/0006

AUTHOR: Loskutov, V. I. 62 B

ORG: none

TITLE: New control processes in the machine building industry 14 14

SOURCE: Stanki i instrument, no. 11, 1965, 3-6

TOPIC TAGS: industrial automation, machine industry, automatic control system, computer application

ABSTRACT: The author considers computer systems for controlling complex production units in large plants and factories. Three types of systems are discussed: 1. controlling computers for localized technological units; 2. centralized systems for automated control of production subunits; 3. centralized systems for automatic accounting and dispatching in industrial enterprises. The controlling computers for localized technological units are designed for reception of initial information on the state of the unit and for converting this information into control signals. Centralized systems for automated control of individual shops and the plant as a whole are more complicated with respect to the controlling algorithms and engineering problems. Each of the three categories of control systems is illustrated by a block diagram with

UDC: 681.14

Card 1/2

L 24459-66
ACC NR: AP6008987

accompanying explanation. Specific examples of industrial applications of each type of system are given. Orig. art. has: 5 figures.

SUB CODE: 13,09/ SUBM DATE: 00/ ORIG REF: 003/ OTH REF: 000

Card 2/2

ACCESSION NR: AP5014206 UR/0122/65/000/005/0028/0030
621.642:546.821

AUTHOR: Khorev, A. I. (Engineer); Gruzdeva, L. A. (Engineer); Manuylov, N. N. (Engineer); Loskutov, V. M. (Engineer); Vikhrov, G. S.

TITLE: High-strength welded cylindrical shells of VT14 alloy

SOURCE: Vestnik mashinostroyeniya, no. 5, 1965, 28-30

TOPIC TAGS: VT14 alloy, titanium alloy, titanium alloy welding, titanium alloy heat treatment, titanium alloy property

ABSTRACT: The effect of heat treatment on the mechanical properties of welded joints in VT14 alloy sheets (4% Al, 3% Mo, 1% V, bal. Ti) has been studied. Test plates 2.5 mm thick were milled to a thickness of 1.5 mm, except for a narrow strip along the edges to be welded. The plates were welded, annealed at 870C for 15 min, aged for 16 hr either at 480 or 520C, and then h-f annealed at 750C or 850C for 5 min. Tensile and bend tests showed that welded joints in the as-aged condition (without h-f annealing) failed at a strength of 94.9—[illegible] kg/mm^2 in either the weld (in a brittle manner) or the base metal. H-F annealed specimens always failed in the base metal at a strength of 107—125 kg/mm^2. The bend duc-

Card 1/2

L 55955-65
ACCESSION NR: AP5014206

tility of h-f annealed specimens was almost twice as high as that of as-aged specimens. The experience gained in these experiments was used in fabrication of shells 197 mm in diameter from sheet 2 or 2.5 mm thick. The sheets were rolled, welded, annealed at 850C for 15 min, and machined to 1.15 or 1.5 mm thickness (except for the weld and weld-adjoining area). Then the shells were aged at 480, 500, or 520C for 16 hr after which the weld and weld-adjoining zones were h-f annealed at 750C for 5 min. Shells aged at 480C had the highest burst strength, 145.5—154 kg/mm^2, compared to 130—141 kg/mm^2 for shells aged at 500 or 520C. However, all the shells failed in a ductile manner in the base metal far off the weld. Orig. art. has: 3 figures and 2 tables. [AZ]

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MM

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4035

Card 2/2

LOSKUTOV, V.P.

Dissipation of potential from the shaft of an operating turbogenerator. Energetik 4 no.9:15 S '56. (MLRA 9:10)
(Electric generators)

LOSKUTOV, V.P., starshiy elektromonter (Debal'tsevo Donetskoy obl.)

Locating short-circuited turns in generator rotor windings.
Energetik 13 no.11:30-31 N '65. (MIRA 18:11)

DEMIDCHIK, V.P.; LOSKUTOV, V.V.; CHEDIYA, O.K.

Time of the formations of the Yashil'-Kul' Lake in the Pamirs.
Sbor. trud. Tadzh. fil. Geog. ob-va SSSR no.2:9-18 '61.
(MIRA 14:11)

(Yashil'-Kul' Lake)

LOSKUTOV, V.V.

Useful book on the automation of technological processes. Mashinostroitel' no.11:43-44 N '63. (MIRA 16:11)

LOSKUTOV, V. V.

Shlifoval'noe delo. Odobreno...v kachestve uchebn. posobiia dlia remesl. uchilishch. Pod red. A. I. Kiseleva. Sverdlovsk, Mashgiz, 1948. 287 p. diagrs.

Grinding and polishing.

CtY DLC: TJ1280.L6

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

LOSKUTOV V.V.

ZALESOV, A.A.; KOSTENKO, M.I.; MARGULIS, D.K.; DEM'YANOVICH, A.N., inzhener, redaktor; LOSKUTOV, V.V., kandidat tekhnicheskikh nauk, retsenzent; DUGINA, N.K., tekhnicheskiy redaktor.

[Diamondless dressing of grinding wheels] Bezalmaznaia pravka shlifoval'nykh krugov. Pod red. A.N.Dem'ianovicha. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1952. 77 p. [Microfilm] (MLRA 7:10)
(Grinding wheels)

LOSKUTOV, V. V.

YASHCHERITSYN, P.I.; LOSKUTOV, V.V., kandidat tekhnicheskikh nauk, retsenzent; BUKHVALOVA, K.I., inzhener, redaktor; DUGINA, N.A., tekhnicheskiy redaktor

[High-speed grinding] Skorostnoe shlifovanie. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1953. 110 p. [Microfilm] (MLRA 7:10)

(Grinding and polishing)

LOSKUTOV, V. V.

LOSKUTOV, V.V., LEBEDEV, M.S., inzhener, retsenzent; SHCHERBAKOV, S.N., inzhener, redaktor.

[Grinding] Shlifoval'noe delo. Izd.2., ispr. i dop. Sverdlovsk, Gos. nauchno-tekhn. izd-vo mashinostroit. i sudostroit. lit-ry. [Uralo-Sibirskoe otd-nie] 1953. 319 p. (MLRA 7:7)
(Grinding and polishing)

NIKITIN, N.T.; CHEPURNYKH, A.K.; POKHILOV, I.D.; LOSKUTOV, V.V., kandidat tekhnicheskikh nauk, redaktor; DUGINA, N.A., tekhnicheskiy redaktor.

[Automatic control of dimensions during grinding] Avtomaticheskii kontrol' razmerov pri shlifovanii. Moskva, Gos. nauchno-tekhn. izd-vo Mashinostroit. lit-ry, 1954. 23 p. (MLRA 8:1)
(Grinding and polishing)

Loskutov, V.V.

ALEKSANDROV, A.V.; LOSKUTOV, V.V., retsenzent; MANUKHOV, V.V., nauchnyy redaktor; PETERSON, M.M., tekhnicheskiy redaktor

[Marine pipe systems] Sudovye sistemy. Leningrad, Gos. soiuznoe izd-vo sudostroit. promyshl., 1954. 376 p. [Microfilm] (MLRA 8:3)
(Marine pipe fitting)

POMOMAREV, Viktor Terent'yevich; LOSKUTOV, V.V., kandidat tekhnicheskikh nauk, redaktor; DUGINA, N.A., tekhnicheskiy redaktor.

[Highly productive methods of gear-cutting] Vysokoproizvoditel'nye metody zubofrezerovaniia. Izd.2-oe, perer. Pod red. V.V.Loskutova. Moskva, Ges.nauchno-tekhn.izd-vo machinostroit.lit-ry, 1955. 110:p. (Gear-cutting machines) (MLRA 9:6)

KUVSHINSKIY, Vladimir Vladimirovich; LOSKUTOV, V.V., kandidat tekhnicheskikh nauk, retsenzent; BLANKMAN, M.A., inzhener, redaktor; DUGINA, N.A., tekhnicheskiy redaktor.

[Milling] Frezerovanie. Moskva, Gos. nauchno-tekhnicheskoe izd-vo mashinostroitel'noi lit-ry, 1955. 298 p. (MLRA 9:5)
(Milling machinery)

LOSKUTOV, V.V., kandidat tekhnichicheskikh nauk.

Calculation of threaded feed boxes. Trudy Ural.politekh.inst. no.42:5-21 '55. (MLRA 9:8)
(Screw--Cutting machines--Design)

LOSKUTOV, Vasiliy Vasil'yevich; GLEYZER, L.A., kandidat tekhnicheskikh nauk, retsenzent; KOZIN, A.I., inzhener, redaktor; KITAYEV, V.I., inzhener, redaktor; YERMAKOV, N.A., tekhnicheskiy redaktor; DUGINA, N.A., tekhnicheskiy redaktor

[Polishing of metals] Shlifovanie metallov. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956. 351 p. (MLRA 10:4)

(Grinding and polishing)

Loskutov, Vasiliy V.

Call Nr: None given

AUTHOR: Loskutov, Vasiliy V.

TITLE: Gear-cutting Machines (Zuboreznyye stanki)

PUB. DATA: Gosudarstvennoye nauchno-tekhnicheskoye izdatel'stvo mashinostroitel'noy literatury, Moscow-Sverdlovsk, 1957, 75 pp., 15,000 copies

ORIG. AGENCY: Nauchno-populyarnaya biblioteka rabochego stanochnika, Nr 26

EDITORS: Editor-in-Chief: Bezukladnikov, M.A.; Editor: Il'nitskiy, I.I., Candidate of Technical Sciences; Reviewers: Kuvshinskiy, V.V., Candidate of Technical Sciences; Reviewers: Kuvshinskiy, V.V., Candidate of Technical Sciences, and Vitenberg, Yu.R., Eng.; Tech. Ed.: Sarafannikova, G.A.; Corrector: Voronova, S.S.

PURPOSE: This book is designed to promote the technological level of tool machine operators and to develop their theoretical and practical skills.

Card 1/4

Call Nr: None given

Gear-cutting Machines

COVERAGE: The book covers construction features, kinematics and settings of various types of generating gearcutting machines. Basic formulae are derived and methods of precision setting are described and substantiated. The author outlines the history and development of gear-cutting techniques and stresses the importance of the hobbing process in the modern gear-cutting industry where rapid production and great accuracy are required. No personalities are mentioned, and there are no references.

TABLE OF CONTENTS

Card 2/4

Call Nr: None given

Gear-cutting Machines

Card 3/4

Call Nr: None given

Gear-cutting Machines

AVAILABLE: Library of Congress

Card 4/4

LOSKUTOV, Vladimir Vasil'yevich; KHORDAS, Georgiy Saulovich. Prinimal uchastiye: LAZAREV, P.L., inzh.. YANOVSKIY, V.Ya., nauchnyy red.; NIKITINA, R.D., red.; TSAL, R.K., tekhn.red.

[Thermal calculations of ship systems] Teplovye raschety sudovykh sistem. Leningrad, Gos.soiuznoe izd-vo sudostroit.promyshl., 1958. 199 p. (MIRA 12:4)

(Ships--Heating and ventilation)

PHASE I BOOK EXPLOITATION SOV/4007

Loskutov, V. V.

Shlifoval'nyye avtomaty i poluavtomaty (Automatic and Semiautomatic Grinding Machines) Moscow, Mashgiz, 1959. 292 p. 14,000 copies printed.

Reviewers: B. G. Breyev, Candidate of Technical Sciences, and V. I. Kitayev, Engineer; Ed.: M. A. Tolstov, Engineer; Exec. Ed. (Ural-Siberian Division, Mashgiz): L. A. Kon'shina, Engineer; Tech. Ed.: B. I. Model'.

PURPOSE: This is a textbook for personnel at plant trade schools specializing in grinding.

COVERAGE: General information on the grinding of metals and grinding machines and tools is presented. A description is given of the setup and operation of special-purpose (such as thread, gear, and crankshaft grinders), automatic, and semiautomatic grinders. No personalities are mentioned. There are 23 references, all Soviet.

~~Card 1/8~~

BOYARSKIY, Lazar' Tadrisovich; KORSHIKOV, Nikolay Petrovich; LIBERMAN, B.S., inzh., retsenzent; YEGOROV, I.S., inzh., retsenzent; SHUMAYEV, B.K., kand.tekhn.nauk, retsenzent; LOSKUTOV, V.V., kand.tekhn.nauk, retsenzent; SHARIN, Yu.S., kand.tekhn.nauk, red.; DUGINA, N.A., tekhn.red.; EL'KIND, V.D., tekhn.red.

[Technology of the manufacture of machine tools] Tekhnologiia stankostroeniia. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1959. 371 p. (MIRA 13:2)
(Machine-tool industry)

Loskutov, V. V.

SCIENTIFIC-TECHNICAL CONFERENCE ON SHIPBOARD AIR-CONDITIONING -- Leningrad, Sudostroyeniye, No 9, Sep 59, (pp 66-67)

In June 1959, a scientific-technical conference concerned with shipboard air conditioning was held in Nikolayevsk. It was organized by the Nikolayevskiy Sovnarkhoz, the Nikolayevskaya Oblast Scientific and Technical Society [NTO] of the Shipbuilding [sudostroyitel'naya] Industry, and the Council of the Scientific and Technical Society [NTO] of the Nikolayevsk Shipbuilding [korablestroyitel'nyy] Institute.

Representatives of 138 plants, designing bureaus, and educational institutions took part in the conference.

In the opening address, "The Present Situation and Development Plans of Shipboard Air Conditioning," Docent V. M. Burnik delineated the main tasks of the conference as follows: the exchange of information about and the solutions to the problems in the field of planning, testing, and operating air-conditioning systems on maritime and river ships; the critical evaluation of existing norm formulation; the problems of operating noises; research into the problem of the rational use of air; and the automatization of air-conditioning systems.

Papers read and discussed at the conference included: "Modern Techniques in Shipboard Air Conditioning" by Docent I. V. Tarabrin, Cand. Tech. Sci.; "Problems of Processing the Hold Air on Maritime Fruit Carriers" by V. F. Trius, Eng.; "The Present Situation of and Development Plans for Air Conditioning in India" by Professor V. S. Martynovskiy, Dr. Tech. Sci.; "Present Shipboard Air-Conditioning Techniques in Finland" by A. Ya. Matveyev, Eng.; "Refrigerating Machinery for Shipboard Air-Conditioning Systems" by Ye. Kh. Busov, Eng.; "Using High-Pressure Systems for Shipboard Air Conditioning" by V. V. Loskutov, Cand. Tech. Sci.; "Long-Range Development Plans for Shipboard Refrigerating Machinery in the USSR During the 1959-1965 Seven-Year Plan" by R. V. Pavlov, Eng.; "The Production of Shipboard Refrigeration Equipment at the Kompressor Plant" by M. G. Smmilishskiy, Eng.; "Planning and Operating the First Domestically Produced Air-Conditioning Equipment on River Ships" by V. G. Semnin, Eng.; "The Air-Conditioning System on board the Sea-going MV Feliks Dzerzhinskiy" by V. V. Dragunov, Eng.; and "The High-Pressure System of Comfortable Air-Conditioning on board the Maritime Dry-Cargo Vessel Leninogorsk" by B. T. Ryboshapka, Eng.

LOSKUTOV, V.V., kand. tekhn. nauk

Improvements in marine systems. Sudostroenie 25 no.4:16-17 Ap '59. (MIRA 12:6)

(Marine engineering)

LOSKUTOV, V.V., dotsent, kand. tekhn. nauk; SAGALOV, V.I., dotsent, kand. tekhn. nauk

High-speed grinding of barrel-shaped rollers. Trudy Ural. politekh. inst. no.112:34-41 '61. (MIRA 16:7)

(Grinding and polishing)

ALEKSANDROV, Aleksandr Vasil'yevich; BOGACHEV, A.I., kand.tekhn. nauk, retsenaent; LOSKUTOV, V.V., kand.tekhn.nauk, retsenzent; EYKHGORN, L.G., nauchnyy red.; OSVENSKAYA, A.A., red. ERASTOVA, N.V., tekhn. red.

[Ship systems]Sudovye sistemy. Leningrad, Sudpromgiz, 1962. 428 p. (MIRA 15:8)
(Marine engineering)

LOSKUTOV, Vasiliy Vasil'yevich; TRUSOV, A.A., inzh., retsenzent; DUGINA, N.A., tekhn. red.

[Polishing of metals]Shlifovanie metallov. Izd.4., perer. Moskva, Mashgiz, 1962. 279 p. (MIRA 15:12)
(Grinding and polishing) (Metals—Finishing)

LOSKUTOV, Vladimir Vasil'yevich; KHORDAS, Georgiy Saulovich. Prinimal uchastiye LAZAREV, I.L., inzh.; ALEKSANDROV, A.V., dots., kand. tekhn. nauk, retsenzent; MOCHUL'SKIY, A.A., inzh.; GUS'KOV, M.G., nauchn. red.; OZEROVA, Z.V., red.; SHISHKOVA, L.M., tekhn. red.

[Hydraulic calculations of ship systems] Gidravlicheskie raschety sudovykh sistem. Leningrad, Sudpromgiz, 1963. 311 p. (MIRA 17:3)

LOSKUTOV, V.V.

Machine for milling herring-bone gears with end cutters. Mashinostroitel' no.12:30-31 D '63. (MIRA 17:1)

VOTYAKOV, L.D.; IL'NITSKIY, I.I.; LOSKUTOV, V.V.; SHALIN, G.M.

[Machine tools; a methodological manual] Metallorezhushchie stanki; uchebno-metodicheskoe posobie. Sverdlovsk, Ural'skii politekhn. in-t, 1963. 72 p. (MIRA 17:9)

LOSKUTOV, V.V., kand. tekhn. nauk, dotsent

Using hobbing cutters. Izv. vys. ucheb. zav.; mashinostr. no.11:156-161 '63. (MIRA 17:10)

1. Ural'skiy politekhnicheskiy institut.

LOSKUTOV, V.V., kand. tekhn. nauk

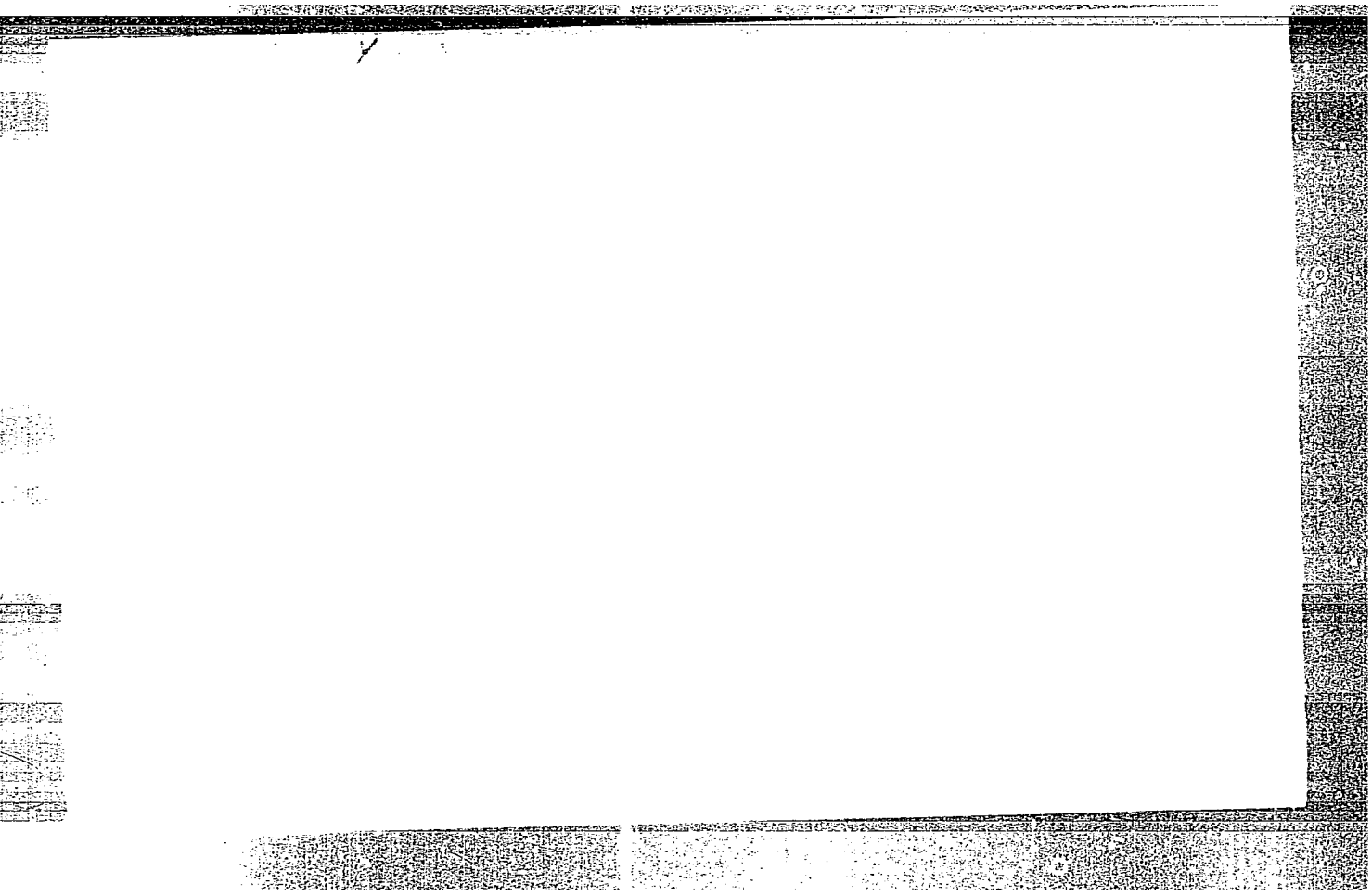
Diagnoal milling of barrel-shaped teeth. Mashinostroitel' no.4: 25-26 Ap '65. (MIRA 18:5)

LOSKUTOV, V.V., kand. tekhn. nauk; KALAMINEN, N.N., inzh.; KAMORNOV, V.A.,

Determining the thermal characteristics of the living quarters of ships. Sudostroenie 30 no.12:11-12 D '64. (MIRA 18:6)

1. LOSKUTOV, YU.
2. USSR (600)
4. Electric Motors, Synchronous
7. Elimination of huming from a synchronous electric motor. Radio no. 12, 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.



APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000930610014-7"

LOSKUTOV, Yu.M.

Polarizing properties of Cherenkov radiation. Vest. Mosk. un. Ser. mat., mekh., astron., fiz. khim., 12 no.5:101-104 '57. (MIRA 11:9)

1.Kafedra statisticheskoy fiziki i mekhaniki Moskovskogo gosudarstvennogo universiteta.

(Polarization (Light)) (Cherenkov radiation)

LOSKUTOV, YU. M.

PA - 3000

AUTHOR SOKOLOV A.A., LOSKUTOV YU.M.

TITLE On the Polarization Properties of Cherenkov Radiation. (O polyarisatsionnykh svoystvakh izlucheniya Cherenkova.- Russian)

PERIODICAL Zhurnal Eksperim. i Teoret. Fiziki 1957, Vol 32, Nr 3, pp 630-632 (USSR).

Received: 6/1957 Reviewed: 7/1957

ABSTRACT For the investigation of these polarization properties in dependence on the spin of the charged particles the authors here make use of the methods developed in the paper by A.A. SOKOLOV and I.M. TERNOV (Zhurn.eksp. i teor. fiz Vol 31, p 473 (1956)).

When computing linear polarization it is necessary to split up the amplitude of the vector potential of the secondary quantized photon field into two componets which are vertical to each other;

$$\vec{a} = \vec{a}_2 + \vec{a}_3 = \vec{\beta}_2 q_2 + \vec{\beta}_3 q_3 \cdot \vec{\beta}_2 = [\vec{\varkappa}^0 \vec{k}^0] / \sqrt{1 - (\vec{\varkappa}^0 \vec{k}^0)}, \quad \vec{\beta}_3 = [\vec{\varkappa}^0 \vec{\beta}_2]$$

Here $\vec{\varkappa}^0 = \vec{\varkappa} / \varkappa$ denotes the unit vector characterising the motion of the photon. When investigating the circular polarization the vector potential must be divided into two components i a

CARD 1/3

On the Polarization Properties of Cherenkov Radiation.

different manner:

$$\vec{a} = \vec{\alpha}_1 + \vec{\alpha}_{-1} = \vec{\beta}_1 q_1 + \vec{\beta}_{-1} q_{-1}, \quad \sqrt{2}\vec{\beta}_\lambda = \vec{\beta}_2 + i\lambda\beta_3, \lambda = 1, -1$$

Also the wave function which describes the motion of a free electron is explicitly written down.
When the problem is solved according to Dirac's theory (i.e. by taking electron spin into account), the aforementioned wave function ψ will represent a four row matrix. However, when solving the problem of KLEIN-GORDON (i.e. in the case of spinless particles) it is necessary to confine oneself to two wave functions:
The expressions for the intensity of the particles with and without spin are explicitly written down. It is also shown how the polaritation effects are taken into account.
In the case of spinless particles radiation within the entire frequency interval is strictly linearly polarized. In the classical approximation ($\hbar = 0$) radiation in the case of

On the Polarization Properties of Cherenkov Radiation.

particles with semi-whole spin is linearly polarised exactly as in the case of spinless particles. Consideration leads to a nonpolarised addition to the radiation, which does not vanish at the threshold value of the radiation. However, the linearly polarised part of the radiation vanishes at the threshold value and increases with increasing energy of the electron proportionally with respect to $(E-E_0)$. Here E denotes the energy of the electron and E_0 the aforementioned threshold value.

(No illustrations.)

ASSOCIATION: Moscow State University.
PRESENTED BY: -
SUBMITTED: 3. 1. 1957
AVAILABLE: Library of Congress.

CARD 3/3

~~21(1)~~ 24,6000

AUTHOR: Loskutov, Yu.M. SOV/155-58-4-17/34

TITLE: On the Cherenkov Electron Radiation With Oriented Spin (O Cherenkovskom izluchenii elektronami s oriyentirovannymi spinami)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki, 1958, Nr 4, pp 103 - 108 (USSR)

ABSTRACT: The author investigates the linear and circular polarization of the Cherenkov electron radiation with oriented spin. As starting point the author uses the formulas of Sokolov and others [Ref 6 - 9]. The value of the intensity of radiation per unit of length is explicitly calculated in both cases. The obtained formulas together with an expression for the phase displacement of two electric vectors characterizing two linear polarizations render possible a complete description of the radiation polarization. The behavior on the threshold (characterized by the minimum energy quantity of the electron under which the considered radiation starts) is analyzed.

Card 1/2

On the Cherenkov Electron Radiation With Oriented Spin SOV/155-58-4-17/34

The author thanks Professor A.A. Sokolov for advices.
There are 10 references, 8 of which are Soviet, and
2 American.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova
(Moscow State University imeni M.V. Lomonosov)

SUBMITTED: April 14, 1958

Card 2/2

AUTHORS: Loskutov, Yu. M., Kukanov, A. B. 56-2-27/51

TITLE: On the Polarization of the Radiation Emitted by a "Superlight"-Magnetic Moment (O polyarizatsii izlucheniya "sverkhsvetovym" magnitnym momentom)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol 34, Nr 2, pp 477-482 (USSR)

ABSTRACT: By means of the method of quantum electro-dynamics the authors investigate the problem of the polarization of the irradiation emitted by a "superlight" magnetic moment, which moves in a ferro-dielectric. Expressions are given for the intensity of radiation per unit length. The taking into account of the magnetic permeability of the medium does not change the character of the polarization of the radiation in the dielectric. The first chapter deals with the polarization of the radiation emitted by the magnetic moment. An expression is put down for the vector potential $\vec{A}$ of the quantized electromagnetic field in a medium with the characteristics $\varepsilon(\omega)$ and $\mu(\omega)$. The amplitude A of the vector potential is decomposed to components which characterize

Card 1/3

On the Polarization of the Radiation Emitted by a "Superlight"- Magnetic Moment 56-2-27/51

certain polarization states. Also for the operator of the interaction energy as well as for the probability of the radiation emitted by the magnetic moment expressions are put down. Then the intensity of the radiation per unit length is calculated by averaging over the spin states. An expression is also put down for the threshold radiation. The radiation is partly polarized and different from zero also at the threshold value. The latter circumstance is caused by the spin-flip and is a pure quantum effect. The polarized as well as the unpolarized part are of the same order of magnitude. The second chapter investigates the energy losses in motion in a ferro-dielectric. Here it is made a condition that the direction of the magnetic moment coincides with its direction of motion. The equations of the field potentials are put down in detail for this case. Finally the expressions for the energy losses are deduced and divided into Cherenkov- and ionization parts. There are 8 references, all of which are Slavic.

ASSOCIATION: **Moscow State University** (Moskovskiy gosudarstvennyy universitet)

Card 2/3

On the Polarization of the Radiation Emitted by a "Superlight"- 56-2-27/51
Magnetic Moment

SUBMITTED: August 21, 1957

AVAILABLE: Library of Congress

1. Dielectric radiation-Polarization 2. Mathematics-Theory

Card 3/3

AUTHORS: Sokolov, A. A., Loskutov, ~~Yu. M.~~ 56-34-4-47/60

TITLE: On the Cherenkov Radiation of Longitudinal Polarized Electrons (O cherenkovskom izluchenii prodol'no poliarizovannykh elektronov)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34, Nr 4, pp. 1022-1023 (USSR)

ABSTRACT: The present paper generalizes the results of a previous paper by the same author (Ref 3) dealing with the polarization properties of Cherenkov radiation for the case of longitudinal polarized electrons. For their calculations the authors used various formulae given in the book by A. A. Sokolov and D. D. Ivanenko (Ref 1).
Cherenkov radiation will consist of three parts:

$$W_{s\lambda} = (e^2/2c^2) \int_0^{\omega_{max}} w_{s\lambda}(\omega)d\omega = (e^2/2c^2) \int_0^{\omega_{max}} (w_{kl}(\omega) +$$

$$+ w_{quantized}(\omega) + s\lambda w_{longitudinal}(\omega))d\omega$$

~~Card 1/3~~

On the Cherenkov Radiation of Longitudinal Polarized Electrons 56-34-4-47/60

where $w_{kl}(\omega) = \omega(1 - \cos^2\theta)$ denotes the (completely linearly polarized) classical part of the radiation; $w_{quantumlike}(\omega) = \hbar^2(n^2\omega^3/2c^2p^2)(1 - n^{-2})$ - the completely unpolarized quantumlike additional term; $w_{longitudinal}(\omega) = \hbar(n\omega^2/cp)(1 - (1/\beta n)\cos\theta)$ characterizes the longitudinal polarization of the photons. It is interesting that this part of the radiation is proportional not to $\hbar$ but to $\hbar^2$. The following formula holds for the degree of circular polarization: $P = (w_1(\omega) - w_{-1}(\omega))/(w_1(\omega) + w_{-1}(\omega)) \cong s(\hbar n\omega/cp)$. There are 4 references, 4 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: January 18, 1958

~~Card 3/3~~

LOSKUTOV, Yu.M., Cand Phys Math Sci -- (diss) "Polarization and spin effects of bozons and fermions." Mos, 1959, 8 pp Mos State Univ im M.V. Lomonosov. Physics Faculty) 150 copies. Bibliography at end of text (15 titles) (KL, 35-59, 111)

24.6520

66603
SOV/139-59-3-20/29

AUTHORS: Sokolov, A.A., and Loskutov, Yu.M.

TITLE: On the Theory of Bosons and Fermions with Oriented Spin

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1959, Nr 3, pp 132-142 (USSR)

ABSTRACT: Lee and Yang (Ref 1) have predicted that in the case of weak interactions parity is not conserved. In phenomena involving the neutrino (fermions with zero rest mass) the nonconservation of parity may be explained with the aid of the two-component theory, or with the aid of the theory of Dirac particles with oriented spin (Refs 2, 3). In the latter case, and for positive energies ($\varepsilon = 1$, neutrino), it is necessary to retain the solution with one spin direction ($S_1 = S$), and for negative energies ($\varepsilon = -1$, antineutrino) with the other ($S_{-1} = -S$). This may be achieved if the wave function ψ satisfies both the Dirac equation and the additional condition given by Eq (1) (Ref 4), or $(\lambda - \rho_1)\psi = 0$ where $\lambda = \varepsilon$, $S_\varepsilon = 1$ (or -1) both for $\varepsilon = 1$ and $\varepsilon = -1$. The quantity $S_\varepsilon = S_{-\varepsilon}$ is proportional to the projection of spin onto the direction of the momentum p. In the present paper an attempt is made to generalize this result to particles

Card 1/2

4

On the Theory of Bosons and Fermions with Oriented Spin

with spin 1 (bosons, vector field) and zero rest mass. The theory describes charged bosons and fermions whose spin has opposite directions (relative to the momentum) for positive and negative energies. A discussion is given of the invariance of vector equations with respect to C, P and I transformations. It is shown that in the theory of vector particles with oriented spin the result TCI = const holds. It is also shown that the helicity is not conserved under charge conjugation but it is conserved under space inversion so that I = const both for particles with positive and with negative energy. Moreover, $T \neq$ const and CT = const. There are 4 figures and 11 references, of which 4 are Soviet, 2 German and 5 English.

Card 2/2

ASSOCIATION: Moskovskiy gosuniversitet imeni M.V. Lomonosova (Moscow State University imeni M.V. Lomonosov)

SUBMITTED: April 4, 1959

68870
S/139/59/000/05/012/026
E032/E114

24.4500

AUTHORS: Sokolov, A.A., Ternov, I.M., and Loskutov, Yu.M.

TITLE: On the Transformation Properties of the Spin of the Pseudovector

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1959, Nr 5, pp 72-80 (USSR)

ABSTRACT: Problems connected with the spin properties of particles have recently become more important in view of the discovery of the non-conservation of parity (Ref 1). The present paper introduces the 4-vector of polarisation of Dirac particles by a covariant method and investigates its transformation properties. The transformation law is shown to be of the form given by Eqs (14a-2). The results obtained from an analysis of the transformation properties are used in connection with phenomena in which parity is not conserved. In particular the $\pi\mu e$ decay is discussed and it is shown that in the laboratory system, the spin of the μ meson makes an angle α with the direction of its momentum which is given by Eq (21), where θ_μ is the angle of emission of the μ meson. The appearance of a transverse component of the μ meson spin in the laboratory system has also been considered by

Card 1/3

68870
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E032/E114

On the Transformation Properties of the Spin Pseudovector

Ascoli (Ref 9) but differs from Eq (21) by the factor given by Eq (23), which takes into account relativistic contraction of the transverse components of the spin. In fact, the axial spin vector characterises the circular polarisation in the plane perpendicular to its direction. For the longitudinal spin component this plane is perpendicular to the velocity of the particle and hence the polarisation remains unaltered. In the case of the transverse component, on the other hand, the velocity vector will lie in this plane and hence the polarisation will change. For particles with zero rest mass, the angle α vanishes, i.e. if the axial vector $\underline{s}$ is parallel to the momentum vector $\underline{k}$ in the given inertial frame, they will remain parallel in all other inertial frames. This can be used to characterise the neutrino and the anti-neutrino by different values of s, namely $s = -1$ and $s = +1$. If the polarisation of the neutrino is characterised by its helicity, i.e. by the rotation of the component of the vector $\underline{g}\psi$ which is perpendicular to the momentum, then in transforming

Card 2/3

4

68870

S/139/59/000/05/012/026
E032/E114

On the Transformation Properties of the Spin Pseudovector

from a left-handed system to a right-handed system this rotation is conserved, i.e. a left-handed neutrino will not transform into a right-handed neutrino. In fact, in such a transition the momentum (polar vector) changes sign while the axial spin vector remains unaltered. However, the same direction of the axial vector in the left-handed and right-handed coordinate systems correspond to opposite rotation (circular polarisation). It follows that space inversion conserves helicity. There are 12 references, of which 7 are Soviet and 5 English.

Card 3/3

ASSOCIATION: Moskovskiy gosuniversitet imeni M.V. Lomonosova (Moscow State University imeni M.V. Lomonosov)

SUBMITTED: May 4, 1959

Loskutov, Yu. M.

24(5) SOV/56-36-3-48/71

AUTHORS: Sokolov, A. A., Ternov, I. M., Loskutov, Yu. M.

TITLE: On the Problem of the Covariant Determination of the Spin-Pseudovector (K voprosu o kovariantnom opredelenii psevdovektora spina)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 3, pp 930-932 (USSR)

ABSTRACT: The present paper ("Letter to the Editor") is based upon an earlier paper by Sokolov (Refs 1-3). It has already been shown that the longitudinal polarization of free Dirac particles can be described by the operator $(\vec{\sigma}\vec{k})/k$. This operator occurs as integral of motion with the eigen value "s". The authors endeavor to connect with the value "s" not only longitudinal polarization but also transversal polarization as well as the time component of the spin vector. Proceeding from the wave function for positive energy in consideration of the spin state equations are derived for the components of the spin vector. The transversal and the time component, which do not occur as integrals of motion, can be represented as mean value

Card 1/2 $\zeta_\mu = K\int\psi^+\sigma_\mu\psi\, d^3x$, $K = k_0/\sqrt{1-\beta^2}$

SOV/56-36-3-48/71

On the Problem of the Covariant Determination of the Spin-pseudovector

It further holds that

$\zeta_1 = k_0\sqrt{1-s^2}\cos\delta$, $\zeta_2 = k_0\sqrt{1-s^2}\sin\delta$,

$\zeta_3 = ks$, $\zeta_4 = iks$; several special cases are investigated.

There are 7 references, 6 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: October 27, 1958

POPOV, Yu.A.; LOSKUTOV, Yu.M.

Theory of unit-spin polarized particles. Izv.vys.ucheb.zav.; fiz. no.3:20-27 '61. (MIRA 14:8)

1. Moskovskiy gosuniversitet im. M.V.Lomonosova.
(Nuclear spin)

TERNOV, I.M.; LOSKUTOV, Yu.M.; KOROVINA, L.I.

Possibility of polarization of an electron beam due to reativistic radiation in a magnetic field. Zhur.eksp.i teor.fiz. 41 no.4:1294-1295 O '61. (MIRA 14:10)

1. Moskovskiy gosudarstvennyy universitet.
(Electron beams) (Magnetic fields)

SOKOLOV, Arseniy Aleksandrovich, prof.; LOSKUTOV, Yuriy Mikhaylovich; TERNOV, Igor' Mikhaylovich; LARIN, S.I., red.; SMIRNOVA, M.I., tekhn. red.

[Quantum mechanics] Kvantovaia mekhanika. Pod obshchei red. A.A. Sokolova. Moskva, Gos. uchebno-pedagog. izd-vo M-va prosv. RSFSR, 1962. 591 p. (MIRA 15:3)

(Quantum theory)

S/188/62/000/002/004/013
B125/B102

AUTHORS: Kerimov, B. K., Popov, Yu. A., Loskutov, Yu. M., Galkina, L. P.

TITLE: Polarization properties of $\mu^{\mp}$-meson decay electrons

PERIODICAL: Moscow. Universitet. Vestnik. Seriya III. Fizika, astronomiya, no. 2, 1962, 29-35

TEXT: The polarization properties of electrons from the $\mu^{\mp} \to e^{\mp} + \nu + \nu'$ decay of a longitudinally polarized charged muon at rest were investigated with two variants of weak four-fermion V-A interactions. In the Lee-Yang version of the interaction Hamiltonian, the transverse polarization of electrons polarized in the plane perpendicular to that of decay is sensitive to a possible non-conservation of time parity; in the Feynman-Gell-Mann version, however, there is no polarization. If the state of polarization of decay electrons is described by $\psi_e = \sum_{s_e} g_{s_e} \psi_{s_e}$, the probability of electron production is given by

Polarization properties of ...

$$dW = \frac{\vec{dk}_e}{(2\pi)^4 c\hbar^2 24}\,\xi\left\{\sum_{s_e} g_{s_e}^{+} g_{s_e} W_{s_e} + (g_1^{+} g_{-1} + g_1 g_{-1}^{+})\,\frac{1}{2}W_3 + \right.$$
$$\left. + i\,(g_1 g_{-1}^{+} - g_{-1} g_1^{+})\,\frac{1}{2}W_2\right\}, \qquad (8) \text{ with}$$

$$W_{s_e} = \frac{1}{2}(1-\eta_1)(1 \mp s_e\beta_e)\,\{(q^2 - 3k_e^2 \pm 2s_e q k_e)(3 - s_e\cos\theta) +$$
$$+ 8k_e(k_e \mp s_e q)\}, \quad (\text{см. } [5]),$$
$$W_3 = \pm(1-\eta)(q^2 - k_e^2)\,\frac{k_{oc}}{K_e}\sin\theta, \qquad (9),$$
$$W_2 = 0.$$

in the Feynman-Gell-Mann version, and with

Card 2/6

Polarization properties of ...

$$W_{s_e} = [(1 \pm s_e\beta_e\tau_1)[(q^2 - 3k_e^2)(3 - s_e\cos\theta) + 8k_e^2] +$$

$$+ 2(1 + s_e\cos\theta)qk_e(\beta_e \pm s_e\tau_1) + \tau_{11}\frac{k_{0e}}{K_e}(k_e^2 - q^2)(3 - s_e\cos\theta)\Big\}, \qquad (10),$$

$$W_3 = \pm 2\sin\theta\left[\frac{k_{0e}}{K_e}(q^2 - k_e^2) - \eta_1(2\beta_e k_e q + k_e^2 + q^2)\right],$$

$$W_2 = 2\sin\theta(\tau_{12}\beta_e)(k_{0\mu}^2 - k_{0e}^2),$$

in the Lee-Yang version.

$$\xi = G_A^+ G_A + G_V^+ G_V, \quad \tau_1 = \frac{1}{\xi}(G_A^+ G_V + G_V^+ G_A),$$

$$\eta_{11} = \frac{1}{\xi}(G_V^+ G_V - G_A^+ G_A), \quad \tau_{12} = \frac{i}{\xi}(G_V^+ G_A - G_A^+ G_V), \qquad (11).$$

$$q = k_{0\mu} - K_e, \ \beta_e = \frac{k_e}{K_e} = \frac{v_e}{c}, \ \cos\theta = (\vec{s}_\mu \vec{k}_e^0), \quad \frac{k_{0e}}{K_e} = \frac{m_0c^2}{E_e},$$

The square of the modulus of the constant g_{s_e} yields the probability of the electron being in the ψ_{s_e} state ($s_e = \pm 1$). $\vec{s}_\mu = s_\mu \vec{k}^0_\mu$ is the spin vector

Card 3/6

Polarization properties of ...

of a muon at rest. The transverse polarizations P_3 and P_2 of electrons polarized in the decay plane ($\varphi=0$) and perpendicularly thereto ($\varphi=\pi/2$), respectively, are given by $P_{3,2} = W_{3,2}/(W_1+W_{-1})$. $W_o = W_1+W_{-1}$ is the total electron-decay probability, and $P_1 = (W_1-W_{-1})/W_o$ is the longitudinal electron polarization. The relation $\sqrt{P_1^2+P_2^2+P_3^2} = 1$ is valid for a completely polarized electron beam. If the beam is partly formed by unpolarized electrons, the fraction P_o of the unpolarized state is given by $P_o = 1-\sqrt{P_1^2+P_2^2+P_3^2}$. The polarization of the decay electrons is closely related to the ratio between the constants G_A and G_V. As a phase shift ($G_A = G_V e^{-i\delta}$) exists between constants with equal modulus, $\eta = \cos\vartheta$, $\eta_1 = 0$, and $\eta_2 = \sin\vartheta$. If $\delta = \pi$ ($G_A = -G_V$) (V-A interaction), the Feynman-Gell-Mann and the Lee-Yang versions are equivalent. If $\delta \neq \pi$, the following is found: In the Lee-Yang version, part of the high-energy

Card 4/6

Polarization properties of ...

electrons ($K_e \gg k_{oe}$) are polarized transversely to the plane perpe[illegible]ular to that of decay. The existence of transversely polarized high-e[illegible] electrons characterizes the degree of violation of the time parity [illegible]n (10). In the Lee-Yang version,

$$P_0 = 1 - \frac{2k_{0e}^2}{W_0}\sqrt{[(3-2x)\cos\delta \pm (2x-1)\cos\theta]^2 + \sin^2\theta\sin^2\delta}. \qquad (22)$$

for $K_e \gg k_{oe}$, and in the Feynman-Gell-Mann version, $P_o = 0$. If G_A and G_V are not equivalent regarding their modulus, and if $k_{oe}/K_e \to 0$, the Lee-Yang version contains transversely polarized electrons both in the decay plane and in the plane perpendicular thereto, while the Feynman-Gell-Mann version has none. If $\beta_e \to 1$, the fraction of unpolarized electrons is zero in the Feynman-Gell-Mann version, but tends toward $(1-|\eta|)$ in the Lee-Yang version. The lifetime τ of the muon at rest in versions (2) and (3) is $((4.3/(1-\cos\delta)\pm 0.02)\cdot 10^{-6}$ and $(2.15\pm 0.02)\cdot 10^{-6}$ sec,

Card 5/6

Polarization properties of ...

respectively. If $\delta = \pi$, τ is the same in both versions. P_2 is very sensitive to phase shifts. It is noted that the investigation of transverse polarization is an appropriate means for choosing the interaction Hamiltonian. A. A. Sokolov is thanked for discussions and advice. The English-language reference is: Sokolov A. A. Nucl. Phys., 9, 420, 1959.

ASSOCIATION: Kafedra statisticheskoy fiziki i mekhaniki (Department of Statistical Physics and Mechanics)

SUBMITTED: May 5, 1961

Card 6/6

LOSKUTOV, Yu.M.; POPOV, Yu.A.

Theory of vector particles with oriented spin. Zhur. eskp. i teor. fiz. 43 no.1:126-13) Jl '62. (MIRA 15:9)

1. Moskovskiy gosudarstvennyy universitet.
(Nuclear spin) (Wave mechanics)

S/188/63/000/001/010/014
B164/B102

AUTHORS: Kerimov, B. K., Popov, Yu. A., Loskutov, Yu. M.

TITLE: Electron polarization on $\mu^{\pm}$ meson decay (II)

PERIODICAL: Moscow. Universitet. Vestnik. Seriya III. Fizika, astronomiya, no. 1, 1963, 62-65

TEXT: In continuation of their study of the decay probability of resting longitudinally polarized $\mu^{\pm}$ mesons ($\mu^{\pm} \rightarrow e^{\pm} + \nu + \tilde{\nu}$) (VMF no. 2, 29, 1962) the authors calculate the decay probability of moved longitudinally polarized $\mu^{\pm}$ mesons and the degree of longitudinal (P_1) and transverse (P_2 and P_3) polarization of the electrons produced. The calculations were made on the basis of the Hamilton operator for V-A interaction given by Yang and Lee (Phys. Rev. 105, 1671, 1957) and by Feynman and Gell-Mann (Phys. Rev. 109, 193, 1958). The proportion of the non-polarized electrons in the beam is calculated from

$$P_0 = 1 - \sqrt{P_1^2 + P_2^2 + P_3^2}$$

Card 1/2

Electron polarization on ...

The expressions obtained are equivalent for the coupling constants $G_A = -G_V$ (V-A interaction). In this case (Feynman-Gell-Mann) $P_o = 0$. For $G_A = G_V e^{-i\delta}$, $\delta \neq \pi$, different expressions are obtained. It is shown that the measurement of the transverse polarization P_2 and P_3 of the electrons and of P_o gives indications of the interrelation between the coupling constants and, therefore, of the time reversal invariance of the weak interaction.

ASSOCIATION: Kafedra statisticheskoy fiziki i mekhaniki (Department of Statistical Physics and Mechanics)

SUBMITTED: June 23, 1962

Card 2/2

ACCESSION NR: AP4041444 S/0188/64/000/003/0101/0103

AUTHOR: Sokolov, A. A.; Ternov, I. M.; Loskutov, Yu. M.

TITLE: The problem of radiation damping of betatronic oscillations

SOURCE: Moscow. Universitet. Vestnik. Seriya 3. Fizika, astronomiya, no. 3, 1964, 101-103

TOPIC TAGS: betatron, betatronic oscillation, cyclic accelerator, radiation damping, quantum theory, cyclic electron accelerator, electron accelerator, electron radiation, electron oscillation, electron motion, parabolization

ABSTRACT: After the demonstration of the influence of quantum fluctuations of radiation on the movement of electrons in a cyclic accelerator, the development of the quantum theory of electron movement acquired theoretical and practical significance. Recently, in a paper by S. A. Kheyfets and Yu. F. Orlov (ZhETF, 45, 1225, 1963), an attempt was made to obtain not only fluctuation activation of betatronic oscillations, but also classical damping using a nonrelativistic approximation in addition to the quantum method. These authors feel that one cannot obtain radiation damping in either the classical case or the quantum case because quadratic terms in r and $\frac{dr}{dt}$ are neglected in the equations of movement, i.e. "paraboliza-

Card 1/3

ACCESSION NR: AP4041444

tion" of the potential energy describing the betatronic oscillations is carried out. The present authors then point out that "parabolization" of the potential energy actually takes place in both the classical and quantum calculations. Nevertheless, in spite of the assertions of S. A. Kheyfets and Yu. F. Orlov, with the help of the classical theory the authors at once found an expression for radiation damping:

$$\ddot{x} + \gamma\dot{x} + \omega_r^2 x = -\frac{q}{1-q}\frac{\overline{W}^{kl}}{E}\dot{x} \qquad (1)$$

They then review their previous work on the application of quantum theory to the excitation of betatronic oscillations, and show that the criticism of Kheyfets and Orlov concerning the origin of classical damping cannot be applied to the ultrarelativistic case of "free" betatronic oscillations. Attention is drawn, in this connection, to the work of Gutbrod (Zs. f. Phys., 168, 177, 1962). Taking into account all the terms of the analysis, one can obtain the following expression for the change in the quantum number s:

$$\frac{ds}{dt} = \frac{55}{48\sqrt{3}}\frac{e^2c}{R^2 m_0c^2(1-q)^{3/2}}\left(\frac{E}{m_0c^2}\right)^6 - \frac{q}{1-q}s\frac{\overline{W}^{kl}}{E} \qquad (2)$$

where W^{kl} is the classical expression for the energy being radiated in a unit of

Card 2/3

ACCESSION NR: AP4041444

time. In conclusion, the authors remark that the quantum fluctuations of the radius have great practical significance. In this regard, if the first quantum term in the right hand side of equation (2), corresponding to the quantum fluctuations, is neglected, then the square of the amplitude of the radial fluctuations rapidly vanishes in the presence of relatively large energies. Acutally, however, the amplitude of the vertical or axial oscillations tends toward a small positive limit. It also follows that the effect of classical damping begins to decrease at energies on the order of 400-600 Mev. The article is followed by a brief rebuttal by S. A. Kheyfets. Orig. art. has: 9 formulas.

ASSOCIATION: Kafedra teoreticheskoy fiziki Moskovskogo universiteta (Department of Theoretical Physics, Moscow University)

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Card 3/3

LOSKUTOV, Yu.M.; L. DE LA PEN'YA AUERBAKH

Dynamic model of elementary particles. Izv. vys. ucheb. zav.; fiz. 7 no.6:140-149 '64. (MIRA 18:2)

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