

I 34714-65

ACCESSION NR: AP4049587

calculated values of σ are in good agreement with the power function $\sigma = \sigma_0 A^{3/4}$.
 Further, there were calculated the values of the mean fraction $\bar{\Delta}$ of the energy re-
 tained by the nucleon after interaction with a complex nucleus. The results of
 these calculations are compared with some experimental data in Fig.1 of the Enclo-
 sure. The agreement is not far from perfect) on the assumption of an inelas-
 tic collision with $\beta = 0.35$ and values of the anisotropy parameter (pro-
 portional to the square of the ratio of the total multiplicity m_2 (which may be
 calculated from the concept of the number of nucleons) to the number of nucleons
 of the incident particle) $\beta = 0.35$. The results of interpolation of the experi-
 mental data are compared in Fig.2 of the Enclosure with the functional dependence
 calculated on the basis of hydrodynamic theory. Here the disagreement is substan-
 tial. This is interpreted as an argument in favor of the assumption of successive
 collisions of the incident nucleon with the nuclear nucleons. The authors are
 V.I. Ponomarev, G.R. Zadachny and G.B. Chelnyavskiy for dis-

L 34714-65

ACCESSION NR: AP4049587

ASSOCIATION: Fizicheskiy institut im.P.N.Lebedeva Akademii nauk SSSR (Physics Institute, Academy of Sciences, SSSR)

SUBMITTED: 00

INCL: 01

SUB CODE: AA, NP

NR REF SOV: 007

OTHER: 002

3/4

L 40706-65 EWG(j)/EWT(m)/FCC/T IJP(c)

ACCESSION NR: AP5012315

UH/0048/64/028/011/1767/1769

AUTHOR: Takibayev, Zh. S.; San'ko, L. A.; Usik, P. A.

23
B

TITLE: Curves for 10^{11} - 10^{14} eV shower / Report of All-Union Meeting on Cosmic Rays Physics, held in Moscow from October 4 to 10, 1963 /

SOURCE: AN SSSR. Izvestiya fizicheskaya, v.29, no. 11, 1964, 1767-1769

TOPIC TAGS: ¹⁹ cosmic ray shower, nuclear particle, particle interaction

ABSTRACT: Analysis of contradictions arising from a model for excited nucleons and a fire-ball model with experimental data on jets resulted in a model for intermediate resonant and baryon pairs. Certain characteristics of jets are discussed from the aspect of the formation of shower particles principally from intermediate pi-pi-interaction with single pion exchange. The experimental data considered covers a wide range of primary energies. Orig.art. has: 6 formulas and 3 graphs.

ASSOCIATION: Institut yadernoy fiziki Akademii nauk KazSSR (Institute of Nuclear Physics, Academy of Sciences KazSSR)

SUBMITTED: 00
NO REF SOV: 006

ENCL: 00
OTHER: 001

SUB CODE: AA, NP
JPRS

Card 1/1 MB

L 2085-65 EWT(m) DIAAP

ACCESSION NR: AP4042204

S/0020/64/157/002/0328/0330 8
7

AUTHORS: Takibayev, Zh.S. (Academician AN KazSSR); Usik, P.A.; San'ko,
L.A.

TITLE: Generation of heavy particles and their role in the explanation of the experimental results in the region of ultrahigh energies

SOURCE: AN SSSR. Doklady*, v. 157, no. 2, 1964, 328-330

TOPIC TAGS: heavy particle generation, ultrahigh energy, two maxima, nucleon nucleon collision, nucleon nucleus collision

ABSTRACT: In the nucleon-nucleon, or nucleon-nucleus collisions at ultrahigh energy (10^{12} ev) recorded in nuclear photoemulsions which were exposed to cosmic rays at high altitudes, sometimes two maxima are observed in the angular distribution of the showers. The present paper points out the shortcomings of the fire-ball model (the formation of two centers of generation. (See G.Coconi, Phys, Rev. 111, 1699 (1958)). This opinion is supported by the analysis of a large number of showers. It is suggested that as a result of nucleon-nucleon collision, an excited system is produced which disintegrates

Card 1/2

L 2085-65

ACCESSION NR: AP4042204

into pions, K-mesons, resonance particles, and Gargon pairs. Orig.
art. has: 4 figures

ASSOCIATION: Institut idernoy fiziki Akademii nauk, SSSR (Institute
of Theoretical Physics, Academy of Sciences SSSR)

SUBMITTED: 22Oct63

DATE ACQ

ENCL: 00

SUB CODE: NP

NR REF SOV: 008

OTHER: 009

Card 2/2

1. SAN'KO, L. YA. : Inzh.
2. USSR (600)
4. Kilns, Rotary ; Cement Kilns
7. Raising the productive capacity of old type rotary kilns. TSeiment, 18, No. 1. 1952
9. Monthly List of Russian Accessions, Library of Congress, June 1952. Unclassified.

ANDROSCV, A. A., BANIT, F. G., RUDENKO, G. I., SAN'KO, L. YA. ENGS.

Kilns, Rotary

Performance of a reconstructed rotary kiln. Tsement 18, no. 3, 1952.

Monthly List of Russian Accessions, Library of Congress, October 1952. Unclassified.

Ya.
SAN'KO, L., inzhener, laureat Stalinskoy premii

In Czechoslovakia's cement plants. Stroi.mat.izdel i konstr.
1 no.3:35-36 Mr'55. (MLRA 8:10)
(Czechoslovakia--Cement industries)

GRIZAK, Yu.S., inzh.; SAN'KO, L.Ya., inzh.

Automation of production processes at cement plants. Mskh. 1
avtom. proizv. 17 no.4:16-19 Ap '63. (MIRA 17:9)

SAN'KO, L.Ya.

Institutes and plants. Stroi. mat. 11 no.1:2-4 Ja '65.
(MIRA 18:6)

1. Nachal'nik tekhnicheskogo upravleniya Gosudarstvennogo
komiteta po promyshlennosti stroitel'nykh materialov.

SAN'KO, L.Ya.; GRIZAK, Yu.S.

New types of grate coolers. TSeiment 29 no.1:12-13 Ja-F 63.
(MIRA 16:2)

1. Gosudarstvennyy komitet Soveta Ministrov SSSR po avtomatizatsii i mashinostroyeniyu.
(Cement plants—Equipment and supplies)

SAN'KO, L.Ya., inzh.

From the pages of the plan for introducing new building practices. Stroi. mat. 10 no.1:10-12 Ja'64. (MIRA 17:5)

1. Nachal'nik tekhnicheskogo upravleniya Gosudarstvennogo komiteta po promyshlennosti stroitel'nykh materialov.

SAN'KO, N.M., kand.tekhn.nauk

Determining the gripping angle in rolling wedge-shaped specimens.
Izv.vys.ucheb.zav.; chern.met. no.9:157-160 S '58.
(MIRA 11:11)

1. Dnepropetrovskiy metallurgicheskiy institut.
(Rolling (Metalwork))

SAN'KO, N.M., kand. tekhn. nauk

Investigating the flow of metal and determining the friction factor in upsetting wedge-shaped specimens. Izv. vya. ucheb. zav.; chern. met. 2 no. 10:57-62 O '59. (MIRA 13:3)

1. Dnepropetrovskiy metallurgicheskiy institut. Rekomendovano nauchnym seminarom kafedry obrabotki metallov davleniyem Dnepropetrovskogo metallurgicheskogo instituta i prokatnym otdelom Instituta chernoy metallurgii AN USSR.
(Forging) (Deformations (Mechanics))

SANKO, N. M.

10

PHASE I BOOK EXPLOITATION SOV/3611

Dnepropetrovsk. Metallurgicheskii Institut

Obrabotka metallov davleniyem (Metal Forming) Khar'kov, Metallurg-izdat, 1960, 326 p. (Series: Ita: Nauchnyye trudy, vyp. 39) 2,100 copies printed.

Ed.: A. P. Chekmarov; Ed. of Publishing House: N. A. Malina; Tech. Ed.: S. P. Andryayev.

PURPOSE: This collection of articles is intended for technical and scientific personnel in metallurgy and in mechanical engineering. It will also be of interest to designers of rolling equipment.

COVERAGE: This collection of articles treats the theory of rolling. It discusses such factors as the total and the unit pressures of the work on rolls, moments of rolling, forward slip, spread, etc. The book includes results obtained from investigation of steel quality rolling of cast iron sheets, and other problems. No personalities are mentioned. References follow each article.

Chekmarov, A. P. [Academician of the Ukr-SSR], L. Ye. Kapurov, and E. I. Klizmenko [Engineers]. Experimental Investigation of Distribution of Unit Pressures on a Contact Surface in Rolling in Plain Rolls 5

The investigation was carried out to develop a reliable method of measuring unit pressure on the contact surface and to obtain, by measurement, data on distribution of unit pressure during rolling with various drafts of strips having various initial thicknesses and widths.

Chekmarov, A. P., and E. I. Klizmenko. Experimental Investigation of Distribution of Unit Pressures on the Contact Surface During Rolling in Grooved Rolls 30

Chekmarov, A. P., and Rudyk, V. S. [Candidate of Technical Sciences, Institut Chernoy Metallurgii N. D. Drenin, and Vsesoyuzny Nauchno-Issledovatel'skiy Trubnyy Institut - Institute of Iron and Steel Industry of the Academy of Sciences of the Ukrainian SSR and the All-Union Scientific-Research Institute for Pipelines, Rolling Millon Scientific-Research Institute for Pipelines]. Rolling Face, and Pressure on Rolls in Pilger [Rolling] Rolling 53

The authors present new methods for determining pressure on rolls in a Pilger mill, for rolling pipe with 219, 273 and 225 mm diameters, and for determining the instant area of contact.

Vatkin, Ya. Ya. [Candidate of Technical Sciences]. Pressure on Rolls in Cold Rolling of Tubes on a Short Mandrel 73

The author compares experimental data on the total and unit pressures with the results obtained through using formulas the author derived.

Chekmarov, A. P., V. M. Klizmenko, V. I. Meleshko, M. M. Saf'yan, V. D. Chekranov, and S. M. Rabinovich [Engineers]. Pressure on Rolls in Slabbing Mill 93

The authors describe the methods, instruments, and results of an investigation carried out at the "Zaporozhstal" mill on horizontal and vertical rolls at slab rolling.

Saf'yan, M. M. [Candidate of Technical Sciences]. Experimental Investigation on the Lever-Arm of Moments in Cold Rolling 104

The author describes investigation on the above subject, and the total pressure on rolls in cold rolling of steel sheets 1, 2, 3, and 4 mm thick at various drafts.

Chekmarov, A. P., and N. M. Sanko. [Candidate of Technical Sciences]. Forward Slip in Slab Rolling 127

The author describes methods of designing shaped rolls in respect to forward slip; the method is based on experiments with right-angular, square, rhombic, oval, and circular grooves.

Mut'yev, M. M. [Candidate of Technical Sciences]. Derivation of a Formula for Spread of Rolling on Plain Rolls 152

The author presents a method of calculation of stresses in the contact area in transverse and longitudinal directions.

SAN'KO, N.M.

Studying the characteristics of metal flow during rolling. Izv.
vys.ucheb.zav.; chern.met. no.4:113-120 '60.
(MIRA 13:4)

1. Dnepropetrovskiy metallurgicheskiy institut.
(Rolling (Metalwork)) (Deformations (Mechanics))

CHEKMAREV, A.P., akademik; SAN'KO, N.M., kand. tekhn. nauk

Leading during the rolling in grooved rolls. Nauch. trudy DMI
no.39:127-151 '60. (MIRA 13:10)

1. AN USSR (for Chekmarev).
(Rolling (Metalwork))

S/137/61/000/007/037/072
A060/A101AUTHOR: San'ko, N. M.

TITLE: Determination of reduction for rolling in simple-shaped passes

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 7, 1961, 18, abstract 7D141
{ "Tr. Konferentsii: Tekhn. progress v tekhnol. prokatn. proiz-va":
Sverdlovsk, Metallurgizdat, 1960, 178-185 }

TEXT: For a correct determination of forward flow for rolling in passes it is necessary to compute the mean-geometrical or mean effective radius of rolling, the amount of reduction, spread, and specific pressure distribution along the gripping arc. The mean effective radius in the passes is determined according to the formula $R_c = S_F/F$, where S_F is the static moment of the area of the contact surface relative to the roll axis, F is the area of the contact surface. To compute the mean effective radius of box, square, rhombic, and oval passes, the respective modified formulae are proposed. Formulae are also given for calculating the mean gripping angle and strip height after rolling.

A. Bulanov

[Abstracter's note: Complete translation]

Card 1/1

S/137/61/000/006/029/092
A006/A101

AUTHORS: Chekmarev, A.F., San'ko, N.M.

TITLE: Forward flow in groove rolling

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 6, 1961, 2, abstract 6D10
("Nauchn. tr. Dnepropetr. metallurg. inst", 1960, no. 39, 127-151)

TEXT: A method is presented of determining the forward flow during rolling in grooves. A formula is derived for the angle of neutral section with allowance for the effect of the lateral walls of the groove. The mean rolling radius is calculated for rectangular, square, rhombic, oval, and round grooves. The authors describe the design of a precision differential device for the recording of the forward flow on a tape. It is concluded that: 1) the experimental and calculated data are in a satisfactory agreement; 2) the neutral angle in respect to the bottom of the groove may, under certain conditions, be greater than the half or even the whole grip angle; 3) the forward flow in the grooves, in respect to the groove bottom, is always higher than the forward flow during rolling with smooth rolls.

V. Pospelkhov

[Abstracter's note: Complete translation]

Card 1/1

S/137/61/000/012/079/149
A006/A101

AUTHORS: Grudev, A. P., San'ko, N. M., Zil'berg, Yu. V., Zhuk, V. G.

TITLE: Hot rolling of white iron sheets and its effect on the structure and properties of the metal

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 12, 1961, 7, abstract 12D44 (V sb. "Polucheniye izdeliy iz zhidk. met. s uskoren. kristallizatsiyey", Moscow-Kiyev, Mashgiz, 1961, 224-235)

TEXT: Experimental hot rolling was carried out with conventional, low-silicon and low-carbon white iron sheets, and specimens with an S content raised to 0.14%. The initial thickness was 0.6 - 2 mm; width 100 mm, and length 200 - 300 mm. The specimens were cut with the aid of a fine emery wheel out of full-dimensional white iron sheets selected immediately after forming. Hot rolling was performed on a two-high mill with polished quenched steel rolls of 185-200mm in diameter, 180 mm barrel length and 0.3 m/sec rolling speed. Independent of the chemical composition the white iron sheets possessed considerable ductility at 750 - 1,050°C. δ per pass was 1 - 10% and more. When rolling the specimens individually at 950 - 1,000°C, δ as high as 15 - 34% was attained. Industrial

Card 1/2

Hot rolling of white iron sheets ...

S/137/61/000/012/079/0149
A006/A101

tests confirmed the possibility of hot rolling of white cast-iron sheets. Rolling affects considerably the structure of white iron sheets; the amount of graphite impurities is sharply raised; their size is reduced; the graphitization rate is raised and a number of other structural changes take place. It is recommended to design a mill for the hot rolling of white iron sheets as a four-high type with roll diameters of 250 - 300 mm (working rolls) and 600 - 800 mm (backing rolls), and a barrel length $L_{max} = b_{max} + 100$ mm, where b_{max} is the greatest width of the white iron sheets to be rolled. The possibility of regulating the revolution of the rolls must be provided for. Maximum rolling speed can be assumed to be about 3 m/sec. Gas torches should be mounted along the barrel of the rolls to heat the rolls and to regulate their profile. ✓

V. D'yakov

[Abstracter's note: Complete translation]

Card 2/2

SAN'KO, N. M., kand. tekhn. nauk

Effect of the deformation center parameters on the arm of
torque during upsetting with a half-segment die. Nauch. trudy
DMI no.48:342-349 '62. (MIRA 15:10)

(Forging) (Deformations(Mechanics))

SAN'KO, N. M., kand. tekhn. nauk

Relation of the average specific pressure to the geometrical parameters of the deformation center during upsetting with half-segment dies. Nauch. trudy DMI no.48:350-355 '62.
(MIRA 15:10)

(Forging) (Deformations(Mechanics))

SAN'KO, N. M., kand. tekhn. nauk

Speed of rolling in grooves. Nauch. trudy DMI no. 48:330-334
'62. (MIRA 15:10)

(Rolling(Metalwork))

SAN'KO, P.M.

Fine-shrub-sphagnum formation in Polesye. Bot.; issl. Bel.
otd. VBO no.5:113-120 '63. (MIRA 17:5)

MYSHLYAYEVA, V.V., kand. tekhn. nauk; OSOKINA, T.A., kand. tekhn. nauk; LUKINA, M.
N. inzh.; SAN'KO, T.M., inzh.

Using the FET-UNIIZ for determining calcium oxide and magnesium in materials
for cement production by phototrilonometric titration. Trudy MIITs cement no.
19:107-112 '63. (MIRA 17:11)

PUCHKOV, N.G.; TRAKTOVENKO, I.A.; BELYANCHIKOV, G.P.; GAVRYUKHIN,
V.M.; SAN'KO, Z.A.

Performance characteristics of winter diesel oil from eastern
sulfur-bearing crudes. Khim.i tekhn.topl.i masel 8 no.1:58-63
Ja '63. (MIRA 16:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke
nefti i gazov i polucheniyu iskusstvennogo zhidkogo topliva.
(Diesel fuels)

SAN'KO, V.N.

NZh-1 automatic feeder. Kons.i ov.prom. 16 no.3:11-12 Mr '61.
(MIRA 14:3)

1. Konservnyy kombinat v Krymske.
(Canning industry—Equipment and supplies)

L 36269-66

ACC NR: AP6017285

SOURCE CODE: UR/0201/65/000/004/0039/0046

AUTHOR: Rutskiy, I. N.; San'ko, Yu. P.; Shashkov, A. G.

39
B

ORG: none

TITLE: Thermistor thermoanemometer 10

SOURCE: AN BSSR. Vestsi. Seryya fizika-tekhnichnykh navuk, no. 4, 1965, 39-46

TOPIC TAGS: thermistor, anemometer, resistance bridge, flow measurement, temperature measurement

ABSTRACT: The authors describe a semiconductor instrument (Fig. 1) in which thermistors are used to measure currents of air having a relatively small slowly-varying velocity. The instrument is based on the use of a bridge circuit with feedback which automatically compensates for the change of the resistance of a thermistor connected in one of the arms. The instrument can be used to measure temperature between 0 and 50C and to measure air stream velocity in two ranges, 0 - 4 and 0 - 20 m/sec. The theory of the instrument is described in detail and the electrical and air dynamic formulas involved in the theory are derived. The measurement error does not exceed 5% of the air stream velocity and 0.5C. Orig. art. has: 4 figures and 12 formulas.

9M

Card 1/2

69792

5.3300

S/055/59/000/06/22/027
B004/B002AUTHORS: Khromov, S. I., Balenkova, Ye. S., Sankov, B. G.TITLE: Synthesis and Catalytic Conversions of 1,1'-Diethyldicyclohexyl¹
and 1-Methyl-1-tertiary-butylcyclohexane Under the Conditions of
Dehydrogenation Catalysis ¶PERIODICAL: Vestnik Moskovskogo universiteta. Seriya matematiki, mekhaniki,
astronomii, fiziki, khimii, 1959, No. 6, pp. 180 - 185

TEXT: The authors describe the synthesis of 1,1'-diethyl-dicyclohexyl produced for the first time: Cyclohexanone and ethyl magnesium bromide yielded 1-ethyl-cyclohexanol-1. This was dissolved in ether and caused to react with its organo-magnesium compound. Copper chips and CuCl were used as catalyst. Pure preparation was made chromatographically. 1-methyl-1-tert-butyl-cyclohexane was for the first time produced by the reaction of dimethylzinc and 1-Cl-1-tert-butylcyclohexane. The latter was obtained by dehydration of cyclohexanol into cyclohexene via Al_2O_3 at 380° , and by condensation with tert-butylchloride in the presence of BF_3 . Both compounds whose physical constants are given in table 1, were de-

Card 1/2

Synthesis and Catalytic Conversions of
1,1'-Diethyldicyclohexyl and 1-Methyl-1-tertiary-
butylcyclohexane Under the Conditions of Dehydro-
genation Catalysis

69792
S/O55/59/000/06/22/027
B004/B002

hydrogenated on platinized coal at 320°. The following results were obtained:
1,1'-diethyldicyclohexyl mainly develops ethylbenzene, 1-ethyl-1-phenylcyclo-
hexane, 2-ethyldiphenyl, and low amounts of phenanthrene (Scheme and Tables 3,4).
From 1-methyl-1-tert-butylcyclohexane 70% of toluene and 25% of tertiary butyl-
benzene were produced (Scheme and Tables 1,2). These reactions indicated a
weakening of the C-C bond of the two neighboring tetrasubstituted carbon atoms.
There are 4 tables and 10 references, 5 of which are Soviet.

ASSOCIATION: Kafedra khimii nefiti (Chair of Petroleum Chemistry)

SUBMITTED: March 30, 1959

Card 2/2

KHROMOV, S.I.; BALENKOVA, Ye.S.; SANKOV, B.G.

Synthesis and catalytic transformations of 1,1'-diethyldicyclohexyl and 1-methyl-1-tert-butylcyclohexane under conditions of dehydration catalysis. Vest.Mosk.un.Ser.mat.,mekh.,astron.,fiz., khim. no.6:180-185 '59. (MIRA 13:10)

1. Kafedra khimii nefi Moskovskogo universiteta.
(Cyclohexyl) (Cyclohexane)

SANKOV, I. I. --

Jun 51

USSR/Metals- Castings, Grinding

"Complex Mechanization and Automatization of Castings Trimming," M.I. Borisov,
E. G. Rätter, I. I. Sankov, Engineers

"Litey Proizvod" No 6, pp 4-7

Describes methods used at Gor'kiy Automobile Plant for trimming cast -iron castings. All castings are divided into 9 groups by shape and sizes, and location of spots to be ground. Ten various types of automatic and semi-automatic grinders were designed for abrasive trimming of castings in all groups. Construction of these grinders provides for replaceable fixtures, which secure quick and reliable fastening of castings, automatic forced feed, feeding rates and cutting depths. Brief description and schematic drawings of three grinders.

PA 196T90

PA 197T60

SANKOV, I. I.

USSR/Engineering - Foundry, Equipment Aug 51

"Investigation of the Operation of Settling Bunker and Elevators of a Central Sand-Processing System," I. I. Sankov, Engg, Gor'kiy Automobile Plant Imeni V. M. Molotov

"Liter. Proiz" No 8, pp 8-10

Describes prepn of molding sand and its distribution in foundries of automobile and tractor plants. Disagrees with attempted simplifying of central systems by elimination of settling tank. Proves its pos role in obtaining proper quality and uniformity in physicomach properties of molding sand.

197T60

USSR/Engineering - Foundry, Equipment Aug 51
(contd)

Discusses operation of elevators and suggests belt conveyer as substitute for elevator delivering sand from settling bunker to aerator.

197T60

SANKOV, I. I.

USSR/Engineering - Foundry, Equipment Oct 51

"Complex Mechanization and Automatization of
Cleaning Castings," I. I. Sankov, Engr, Gor'-
kiy Automobile Plant imeni Molotov

"Litey Proizvod" No 10, pp 13-17

Describes several semiautomatic and automatic
grinders designed for finishing end faces of
cylindrical castings, such as valve tappets
and valve guides. Only mechanization of feed-
ing was realized for tappets, but entire grind-
ing process for valve guides was automatized.

198114

SANKOV, I. I.

USSR/Engineering - Foundry, Equipment

Mar 52

"Grinding the Flanges of Castings," M. I. Borisov, E. G. Rutter, I. I. Sankov, Engineers

"Litey Proizvod" No 3, pp 16-19

Describes 2 types of semiautomatic grinders, for small castings up to 5 kg in wt and for larger castings, such as brake drums and the like. Gives and discusses kinematic diagrams of both grinders and diagrams fo their elec systems.

PA 212T73

SANKOV, I. I.

PA 233T74

USSR/Metallurgy - Foundry Practice Sep 52

"Making Cores by Sandblasting Method," I. I. Sankov, Engr

"Litey Proizvod" No 9, pp 8-10, 23

Describes method and machine developed at Gor'kiy Automobile Plant for filling out core boxes and for compacting core mixt using compressed air. Discusses technological, constructional, and operational factors specific to method, such as area of inlet and outlet holes, pressure and moisture content of compressed air, and compn of core mixts. Method secures high gas permeability of cores and considerably promotes mechanization of coremaking process.

233T74

SANKOV, I.I.

New type of pouring ladle. Lit.proizv. no.6:10-13 Je '53.

(MLRA 6:7)
(Founding)

BORISOV, M.I.; RUTTER, E.G.; SANKOV, I.I.

Abrasive finishing of castings. Lit.proizv. no.8:12-15 Ag '53. (MLRA 6:8)
(Grinding and polishing)

SANKOV, I. I.

112-1-1396

Translation from: Referativnyy Zhurnal, Elektrotehnika, 1957,
Nr 1, p. 214 (USSR)

AUTHOR: Sankov, I.I.

TITLE: Mechanization and Automation of Cleaning and Trimming
Castings at the Automobile Plant imeni Molotov.
(Mekhanizatsiya i avtomatizatsiya ochistki i obrabki
otlivok na avtozavode imeni Molotova)

PERIODICAL: Sbornik: Avtomatizatsiya tekhnol. protsessov v mashinostr.
Goryachaya obrabotka metallov, Moscow, AN SSSR, 1955,
pp. 371-385.

ABSTRACT: Bibliographic entry.

Card 1/1

AUTHOR: Sankov, I.I., Engineer SOV-128-58-8-2/21

TITLE: On the "GOST"-Standard Project for Coke Pig Iron (O projekte GOSTa na liteyny, koksovy, chushkovyy chugun)

PERIODICAL: Liteynoye proizvodstvo, 1958, Nr 8, pp 4-6 (USSR)

ABSTRACT: The project of the "GOST"-standard to replace the "GOST" 4832-49 for coke pig iron, set up by Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii (Central Scientific Research Institute for Ferrous Metallurgy) is considered, and a different variation of the standard is suggested (table, page 6). There are 6 sets of graphs, 1 diagram, and 2 tables.

1. Iron--USSR 2. Iron--Specifications

Card 1/1

18(5)
AUTHORS:

SOV/128-59-4-18/27
San'kov, I. I. and Venevskiy, Ye. M., Engineers

TITLE:

Overheating Cupola Iron for Side-Blown Bessemer Converter

PERIODICAL:

Liteynoye Proizvodstvo, 1959, Nr 4, p 38 (USSR)

ABSTRACT:

When converting physically or chemically cold cast iron by the Bessemer process, the oxydation of the admixture may be hampered or even prevented entirely. Therefore, ferro-silicon was added in the converter to heat the cast iron. The authors of the article carried out tests, in which they used super-heated cast iron with a low percentage of silicon to activate the Bessemer process. The iron was melted in a cupola with a diameter of 1,000 mm. The cupola had three rows of tuyeres, an air consumption of 140 m³ per minute, and the pressure in the twyer box was equivalent to a water column 750 mm high. The chemical and physical heat of a portion of the waste gases was utilized for the super-heating. The gases were returned in the transition channel and in the fore-

Card 1/2

SOV/128-59-4-18/27

Overheating Cupola Iron for Side-Blown Bessemer Converter

hearth and left the cupola through the slag hole, which remained open during the melting. The diameter of the transition channel was enlarged. In addition, compressed air was brought into the channel. Most of the waste gases were burned in the forehearth, which lifted the requirements in regard to the quality of the fireproof casing in forehearth and tap hole. For melting the pigiron the charge had the following composition: 27% cast iron, 67% steel scrap, and 6% ferrosilicon. As a result of the physical preheating of the cast iron, the oxydation of the admixtures and especially of the carbon began 2 or 3 minutes after the blast was admitted into the converter. The oxydation could be recognized by a bright blue flame. During the converting process no additions of iron alloys were made. The duration of the process was reduced to 10-12 minutes. There is 1 diagram.

Card 2/2

TITOV, Nikolay Dmitriyevich; SANKOV, I.I., inzh., retsenzent; CHERNYAK,
O.V., inzh., red.; TIKHANOV, A.Ya., tekhn.red.

[Continuous flow system for the mass production of castings]
Potochno-massovoe proizvodstvo otlivok. Moskva, Gos.nauchno-tekhn.
izd-vo mashinostroit.lit-ry, 1960. 527 p. (MIRA 13:10)
(Founding) (Assembly-line methods)

RYZHIKOV, A.A., doktor tekhn. nauk, red.; SANKOV, I.I., inzh., red.; KNYAZEV, V.V., red.; ZAKHAROV, K.A., tekhn. red.

[Automatic control and mechanization in casting] Avtomatizatsiia i mekhanizatsiia liteinogo proizvodstva; sbornik statei. Gor'kii, Gor'kovskoe knizhnoe izd-vo, 1960. 187 p. (MIRA 14:7)
(Founding) (Automatic control)

SANKOV, I.I.; ZINBERG, A.I.

Automatization of flask shakeout. Lit. proizv. no. 8:22-25
Ag '60. (MIRA 14:2)
(Molding (Founding))

S/128/60/000/010/011/016/XX
A033/A133

AUTHORS: Sankov, I. I.; Zibenberg, A. I., and Zhukov, V. S.
TITLE: Overall mechanization and automation of the cleaning of castings
PERIODICAL: Liteynoye proizvodstvo, no. 10, 1960, 23 - 26

TEXT: The authors describe a number of semi-automatic cleaning machines developed and put in operation at the Gor'kovskiy avtomobil'nyy zavod (Gor'kiy Automobile Plant) for the mechanized cleaning of castings. All these machines are the result of systematic research work which has been carried out at the Plant since 1948. The semi-automatic for the emery-grinding of valve seats fitted in the cylinder blocks of the $\mathcal{A}M\mathcal{Z}$ (YAMZ), GAZ-21 (GAZ-21), GAZ-69, GAZ-51 and "Moskvich 407" engines does away with the overheating of these valve seats (weighing 46, 28 and 18 grams) which occurred formerly during manual grinding. The semi-automatic has a capacity of 1,450 pieces/hour. The abrasive wheel has a speed of 136 rpm. The semi-automatic for the emery-grinding of the inner periphery of piston rings for deburring consists of the grinding head, bed with drive and swivel mechan-

Card 1/2

S/128/60/000/010/011/016/XX

AO33/A133

Overall mechanization and automation of the...

ism. The authors describe the design and operation of this machine and point out that for gang operation all parts are classified in nine groups, the characteristic feature of each group being its surface to be emery-ground. The specific amount of labor consumption of emery-grinding of these groups is 65 - 75% of the total labor consumption of machining the castings after cleaning them in drums and shotblast installations. The semi-automatic for the emery-grinding of the lower and upper cylinder block surfaces, i.e. cylinder faces, valve apertures, gear box surfaces and crank bearings, possesses two 37 kw motors of 1,500 rpm. The grinding wheels have a speed of 950 rpm. The authors give a brief description of the machine operation. The semi-automatic for the emery-grinding of three transmission case surfaces is intended for the removing of foundry gates and deburring. The casting is set by hand in the fixture on the machine carriage, automatically clamped and, together with the carriage, carries out reciprocating movements. The semi-automatic has three motors of 28 kw, 1,500 rpm, for the grinding heads and one 2.8 kw motor of 1,000 rpm for the feed. The feed speed during the machining is 4.3 m/min. The capacity of this semi-automatic is 120 pieces/hour, the overall dimensions 2,160 x 2,565 x 2,275 mm. There are 7 figures.

Card 2/2

SANKOV, I.I.; KISELEVA, M.S.

New core binder. Lit. proizv. no. 2:40-41 P '61.
(Coremaking) (Binding materials)

(MIRA 14:4)

SANKOV, I.I.

Conveyer for an automatic continuous molding line. Lit. proizv.
no.9:26-29 S '61. (MIRA 14:9)
(Foundries--Equipment and supplies)

SANKOV, I.I.

Loam preparation system for the automatic molding line. Lit.
proizv. no.3:19-23 M 162. (MIRA 15:3)
(Sand, Foundry) (Molding (Founding))

SANKOV, I.I.; POLYAKOV, Ya.G., inzh., retsenzent

[Mechanizing and automating the abrasive finishing of castings; practices of the Gorkiy Automobile Plant] Mekhanizatsiia i avtomatizatsiia abrazivnoi obrabotki otlivok; opyt Gor'kovskogo avtomobil'nogo zavoda. Moskva, Izd-vo "Mashinostroenie," 1964. 175 p.

(MIRA 17:5)

SANKOV, I.I.

Automation of the abrasive treatment of castings. Lit.proizv.
no.10:18-23 0 '64. (MIRA 18:4)

SAN'KOV, I.N., inzh.

New paint for preventing shrinkage cavities and sand burning
in cast-iron founding. Mashinostroenie no.3:41 My-Je '64.
(MIRA 17:11)

САНКОВ, И.И., инж.

Optimum gaging systems for cast-iron founding. Mashinostroenie
no. 489 11-89 '89. (MIRA 17:10)

SAN'KOV, V. M. (Engr)

SAN'KOV, V. M. (Engr) -- "Investigation of the Process of Machining Worn-Out Bronze Bushings in a Rigid Chuck With One Abrasive Bar." Sub 20 Jun 52, Moscow Inst of Mechanisation and Electrification of Agriculture, V. M. Molotov (Dissertation for the Degree of Candidate in Technical Sciences)

SO: Vechernaya Moskva, January-December 1952

SAN'KOV V.M.
DOLZHENKOV, Andrey Timofeyevich, kandidat tekhnicheskikh nauk; ZOLOTAROV,
G.A., kandidat tekhnicheskikh nauk; LEVITSKIY, I.S., kandidat
tekhnicheskikh nauk; SAN'KOV, V.M., kandidat tekhnicheskikh nauk;
PESTRYAKOVA, S.V., redaktor; PUDOTOVA, A.F., tekhnicheskiy redaktor

[Repair work] Remontnoe delo. Moskva, Gos. izd-vo selkhoz. lit-ry.
1956. 559 p. (MLRA 9:9)
(Machinery--Maintenance and repairs)

SAN'KOV V.M.

DOLZHENKOV, Andrey Timofeyevich, dots., kand.tekhn.nauk; ZOLOTAREV, G.A., dots., kand.tekhn.nauk; LEVIKOV, A.A., dots.kand.tekhn.nauk; LEVITSKIY, I.S., dots., kand.tekhn.nauk; SAN'KOV, V.M., dots., kand.tekhn.nauk; ROZIN, M.A., red.; SMIRNOV, A.G., red.; SOKOLOVA, N.N., tekhn.red.

[Metal technology and repair work] Tekhnologiya metallov i remontnoe delo. Moskva, Gos. izd-vo sel'khoz. lit-ry, 1957. 542 p.
(Metals) (MIRA 11:4)
(Agricultural machinery--Maintenance and repair)

SANKOV, Ye. A.

Effect of micro-organisms on the strength of cotton fibers and
fabrics made from them. Izv. vys. uchob. zav.; tekhn. tekst. prom.
no. 3:20-25 '58. (MIRA 11:7)

1. Leningradskiy tekstil'nyy institut.
(Cotton fabrics--Preservation)
(Micro-organisms)

~~SANKOV, Y.~~

Effect of micro-organisms on the strength of cotton fibers and finished cotton fiber products. Izv.vys.ucheb.zav.; tekhn.tekst. prom. no.2:37-45 '59. (MIRA 12:6)

1. Leningradskiy tekstil'nyy institut im. S.M.Kirova.
(Cotton--Testing) (Micro-organisms)

SANKOV, Ye.A.

Effect of microorganism on the strength of cotton fibers and products made of them (continuation). Izv.vys.ucheb.zav.; tekhn.tekhn.prom. no.4:23-31 '59. (MIRA 12:11)

1. Leningradskiy tekstil'nyy institut im. S.M.Kirova. (Cotton fibers) (Textile chemistry)

POTAPOVA, K.K.; SANKOV, Ye.A.; YANOVSKAYA, N.B.

Investigating the destruction of cotton fibers by various micro-organisms. Izv. vys. ucheb. zav.; tekhn. tekst. prom. no.5:23-25 '59 (MIRA 13:3)

1. Leningradskiy tekstil'nyy institut im. S.M. Kirova.
(Cotton)

POLYAKOV, I.M.; KULIKOV, A.I.; SANKOV, Ye.A.; SIYANITSKIY, F.M.; VOLOKHOVA,
Ye.S.

Experience in the use of fumigation for the disinfection of waste
cottons. Izv.vys.ucheb.zav.; tekhn.tekst.prom. no.1:167-168 '62.
(MIRA 15:3)

1. Leningradskiy tekstil'nyy institut im. S.M.Kirova.
(Cotton waste--Disinfection)

ACC NR: AP7005682

SOURCE CODE: UR/0413/67/000/002/0156/0156

INVENTOR: Saksonov, Z. A.; Bankov, Ye. I.; Skopinov, A. P.; Shushpanov, Ye. A.

ORG: None

TITLE: An airtight hatch. Class 62, No. 190785

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 2, 1967, 156

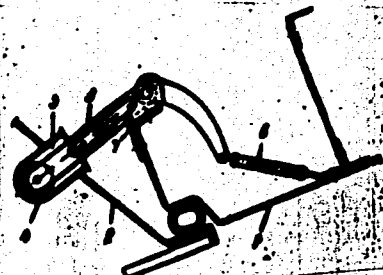
TOPIC TAGS: mechanical fastener, hermetic seal, auxiliary aircraft equipment, aircraft cargo handling

ABSTRACT: This Author's Certificate introduces: 1. An airtight hatch with possible application in an aircraft luggage carrier. The installation contains a frame with a cover which is opened by sliding it into the compartment and upward along its inner surface. The design also incorporates an elastic hermetic sealing element, guide rails and guide rollers fastened to the cover. Guide support pins are hinged to the lower edge of the cover to facilitate sliding into and out of the frame opening without bending and jamming. The free end of each pin is equipped with a roller which slides into a matching socket installed in the frame. 2. A modification of this hatch in which the guide support pins are spring loaded in the direction of motion of the hatch cover during closing. The pins come up against stops mounted in the cover when they reach the position at which the roller will slide into the socket.

Card 1/2

UDC: 629.13.012.21

ACC NR: APT005682



1—hatch cover; 2—hatch frame; 3—pin; 4—roller; 5—socket; 6—spring; 7—stop

SUB CODE: 13/ SUBM DATE: 158ep65

Card 2/2

SANKOVA, L.I.; KURGUZOVA, F.I.; GOROBINSKAYA, V.D.; MEL'VILENKO, D.T.

Optical method of determining the chemical homogeneity of glass.
Stekl. i ker. 20 no.5:30-31 My '63. (MIRA 16:7)

1. Saratovskiy zavod tekhnicheskogo stekla.
(Glass--Testing)

SANKOVA, L.I., inzh.; IVANOVA, R.V., inzh.

Electron microscopy study of polishing powders. Stek. 1 ker.
21 no.1:34-37 Ja '64. (MIRA 17:8)

ACCESSION NR: AP4039020

S/0072/64/000/005/0035/0037

AUTHORS: Sankova, L.I.; Kukoleva, L.A.; Gorobinskaya, V.D.

TITLE: Rapid analysis of sodium carbonate batch containing a datolite concentrate

SOURCE: Steklo i keramika, no. 5, 1964, 35-37

TOPIC TAGS: industrial analysis, sodium carbonate, barium oxide, calcium carbonate, magnesium carbonate, datolite concentrate

ABSTRACT: Tests have shown that a datolite concentrate is well soluble in hot HCl. Ions of boric acid, calcium and magnesium are completely soluble, while silicic acid is partially soluble (50%). These, however, do not interfere with the determination of boron, calcium and magnesium. . Consequently, the factory laboratory developed a method of chemical analysis of the charge containing sand, dolomite, pegmatite, sulfate, sodium carbonate and datolite concentrate for its content of Na_2CO_3 , B_2O_3 , CaCO_3 and MgCO_3 . The duration of analysis according to this method is 2 - 2.5 hours. The sample of the batch is quartered, dried to constant weight and ground in a porcelain mortar. Two gram samples are titrated with 0.5 N HCl to determine

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ACCESSION NR: AP4039020

the amount of Na_2CO_3 . The titrated solution is treated with 5 - 6 ml of HCl to eliminate CO_2 and to decompose the dolomite and the datolite concentrate. The solution is brought to 250 ml in a volumetric flask and 100 ml are removed for determination of B_2O_3 and 50 ml for determination of CaCO_3 . B_2O_3 is determined by titration of boric acid with NaOH in the presence of glycerin. CaCO_3 is determined by titration with trilon B (0.2 N solution) in an alkaline solution. $\text{CaCO}_3 + \text{MgCO}_3$ is also determined by titration with trilon B in an ammonia buffer. Orig. art. has: 2 tables and 5 equations

ASSOCIATION: Saratovskiy zavod tekhnicheskogo stekla (Saratov Technical Glass Plant)

SUBMITTED: 00

DATE ACQ: 10Jun64

ENCL: 00

SUB CODE: IC, MT

NR REF SOV: 000

OTHER: 000

Card

2/2

SAN'KOVA, O.I.; GREBENEVA, A.D.

Using new technology for manufacturing ~~snapped shoe~~ leather substitutes.
Kozh.-obuv.prom. 3 no.11:30-31 N '61. (MIRA 15:1)
(Leather substitutes)

YUGOSLAVIA

K. CERMAK, F. SANKOVIC and N. ANRASIC (Affiliation not stated).

"Umbilical Hernia in Colts."

Belgrade, Veterinarski Glasnik, Vol 16, No 12, 1962; pp 1183-1186.

Abstract *[German summary modified]*: Of 4266 horses seen 1956-1961, 92 had umbilical hernia; 52 were operated upon, with 44 successes and 8 recurrences. Comprehensive clinical and surgical data; 3 illustrations of technique; 6 Western and 1 Czech reference.

1/1

SANKOVICH, N.N., kandidat tekhnicheskikh nauk; FRYKIN, S.S., gosudarstvennyy sanitarnyy inspektor

Standardization of a forced-air heating system with a concentrated air outlet. Gig. i san. 21 no.10:20-25 O '56. (MLRA 9:11)

1. Iz Vsesoyuznogo nauchno-issledovatel'skogo instituta gidrotekhnicheskikh i sanitarno-tekhnicheskikh rabot i Gosudarstvennoy sanitarnoy inspeksii Leningrada.

(INDUSTRIAL HYGIENE

forced air heating system with concentrated air outlet in factories in Russia)

(HEATING
same)

L 35537-65 EWT(d)/EWT(l)/EWT(m)/EWT(e)/EWT(v)/EWT(c)/EWT(y)/EWT(r)/EWT(t)/EWT(u)/EWT(w)
EPA(bb)-2/EWP(b)/EWP(l) Pe-5/Pf-4/Pr-4/Ps-4 IJP(c) JD/WW

S/0286/65/000/005/0085/0085

ACCESSION NR: AP5008221

AUTHORS: Tret'yakov, V. M.; Korolev, F. F.; Yevteyev, B. I.; Sankovskiy, A. A. 50

TITLE: A method of testing products for hermetic seal. Class 42, No. 158925 K

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 5, 1965, 85

TOPIC TAGS: sealing, hermetic sealing, leak detector, helium, glow discharge

ABSTRACT: This Author Certificate presents a method of testing products for hermetic seal with helium under high pressure. For more accurate determination of leakage in a product, a glow discharge is produced in the helium molecules leaking through the openings in the product with the help of an electric field. The glow discharge produces a luminescence which indicates the presence of leaks

ASSOCIATION: Organizatsiya gosudarstvennogo komiteta po aviatsionnoy tekhnike SSSR (Enterprise of the State Committee for Aviation Technology, SSSR)

SUBMITTED: 14Jun63

ENCL: 00

SUB CODE: IE

NO REF SOV: 000

OTHER: 000

Card 1/1

ACC NR: AP7004266

(A)

SOURCE CODE: UR/0432/66/000/003/0031/0033

AUTHOR: Sankovskiy, Ye. A. (Candidate of technical sciences); Kruglikov, V. V.

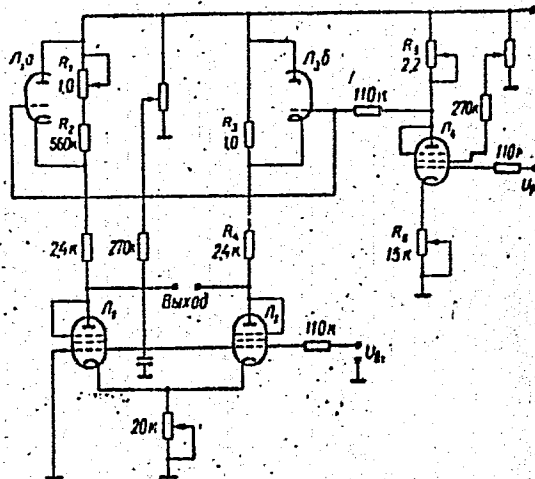
ORG: none

TITLE: Inertialess electronic device with controlled gain

SOURCE: Mekhanizatsiya i avtomatizatsiya upravleniya, no. 3, 1966, 31-33

TOPIC TAGS: electronic amplifier, controlled gain amplifier, automatic control system

ABSTRACT: Intended for use in adaptive control systems, an electron-tube amplifier (see figure) is proposed which consists of a balanced amplifier (two upper tubes) whose anode loads are shunted by internal resistances of two other (lower) tubes. The latter are controlled by a separate (right) tube whose grid circuit receives the control voltage from the automatic system in question. Typical controlled-gain curves are shown. Orig. art. has: 2 figures and 1 formula.



Card 1/1 SUB CODE: 09 / SUBM DATE: none

UDC: 621.375

SAMNA, L.A.

Change in the bioelectric potentials of plants under the influence
of external conditions. Trudy MOIP. Otd. biol. 9:165-168 '64.
(MIRA 18:1)

1. Institut mikrobiologii, Riga.

SANNIKOV, A.I.

Development of the railroad network of the U.S.S.R. during the
Soviet years. Geog.v shkole no.4:27-32 JI-Ag '47. (MLBA 9:6)
(Railroads)

SANNIKOV, A. I.,

Transcaucasia - Economic Conditions

Distribution flow of the principal products among major industrial centers of Transcaucasia. Geog. v shkole no. 1, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 195~~8~~², Uncl.

SANNIKOV, A. [

Series of school wall maps on industry and agriculture. Geog. v shko-
le no. 4:75-77 JI-Ag '54. (MLRA 7:8)
(Agriculture--Maps) (Industry--Maps)

SANNIKOV, A.I.

"Transportation of the U.S.S.R., " a school map in the scale of
1:5,000,000. Reviewed by A.I., Sannikov. Geog.v shkole 19 no.6:73
N-D '56. (MIRA 10:1)

(Transportation) (Maps)

SANNIKOV, A.M.

Seminars on standardization in enterprises of the Volga-Vyatka
Economic Council. Standartizatsiia 28 no.7:48 J1 '64. (MIRA 17:11)

NIKOLAYEVA, N.V.; SANNIKOV, A.P.

The SMU-4m electrolysis unit for producing hydrogen. Biul.tekh.-
ekon.inform. no.11:10-12 '59. (MIRA 13:4)
(Water--Electrolysis) (Hydrogen)

SHATENSHEYN, A.I.; SANNIKOV, A.P.; ALIKHANOV, P.P.

Deuterium exchange method for studying the catalytic activity of systems consisting of hydrogen acid and aprotic acid-like substance. Acetic acid stannicchloride-system. Zhur. ob. khim. 35 no.3:419-425 Mr '65. (MIRA 18:4)

1. Fiziko-khimicheskiy institut imeni L. Ya. Karpova.

GIL'MANOV, G.R.; YURCHENKO, V.I.; SANNIKOV, A.V.

Determining the pressure on the intake of an electric centrifugal
sinking pump by means of a frequency transducer. Nefteprom. delo
no.9:26-29 '65. (MIRA 18:10)

1. Nauchno-issledovatel'skaya laboratoriya po avtomatike i
telemekhanike neftepromyslovogo upravleniya "Oktjabr'skneft'".

SANNIKOV, D. G.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1457
 AUTHOR ŠIROKOV, JU.M., SANNIKOV, D.G.
 TITLE On the Problem of Non-Quantized Relativistic Invariant Renormalized
 Equations of a Threedimensional Extended Particle.
 PERIODICAL Žurn.eksp. i teor. fis, 31, fasc.1, 113-120 (1956)
 Issued: 9 / 1956 reviewed: 11 / 1956

By means of the method developed by JU.M.ŠIROKOV, Žurn.eksp.i teor.fis, 24, 47 (1953) for the construction of a threedimensional extended particle a system of relativistically invariant equations for a spatially smeared-out particle which is in interaction with a field is obtained. However, in contrast to this previous work, not the charge, but interaction is actually smeared out, so that the particle remains stable without the introduction of POINCARÉ'S pressures. At first the case of an electron that is in interaction with an electromagnetic field is investigated. The effective function S is, like in ordinary electrodynamics, set up as the sum of part-functions which correspond to the free particle, the field, and the interaction. By the variation of S according to the coordinates of the particle or the field, the equation of motion or the field equation respectively are obtained. In the case of a highly relativistic particle in a field, an additional degree of freedom may be said to occur, for for the initial moment the angular velocity of the THOMAS precession of the particle must yet be assumed.

The four-momentum P_i which is conserved is determined by the method developed by W.FAULI, Nuovo Cimento, 10, 5, 648 (1953).

Žurn.eksp.i teor.fis, 31, fasc.1,113-120 (1956) CARD 2 / 2 PA - 1457

With the help of the expression for $P_i(t)$ thus found the total renormalized mass M of the particle is then determined.¹ For this purpose the equations for an electron at rest is solved for the case in which the exterior field is lacking, after which it is inserted into the equation $-iP_4=M$. In contrast to quantum

mechanics renormalization is accurate in this case, and the electron becomes stable without the introduction of any additional forces of the POINCARÉ pressure type. The equation of motion with renormalized mass is given. However, also the field is to be renormalized. The equation system obtained here is the complete system of renormalized equations describing the extended electron in interaction with the electromagnetic field.

The modification of the energy (or the momentum) on the stretch r_0 must not exceed the corresponding energy of the particle. The renormalized equation of motion reminds us of the LORENTZ equation, but it is relativistically invariant. It is compared with DIRAC'S equation by transition to a punctiform particle.

There follows, in exactly the same manner as on the occasion of the computation of the electromagnetic field, the investigation of a nucleon which is in interaction with a scalar meson field. What has been said before holds good also in this case. The present work is the first step in the following direction: first renormalization of the classical equations, to be followed by their quantization.

INSTITUTION: Moscow State University.

Sannikov, D.G.

6
-rmp

✓ 4760
ON THE PROBLEM OF UNQUANTIZED RELATIVISTICALLY INVARIANT RENORMALIZED EQUATIONS FOR A THREE-DIMENSIONAL EXTENDED PARTICLE ^{2/} M. Starokov and D. G. Sannikov (Moscow State Univ.). Soviet Phys. JETP 4, 1967, Feb.

A system of relativistically invariant equations for a smeared-out particle interacting with a field has been obtained by using a method for constructing a three-dimensional extended particle. The conservation laws for the total energy-momentum four-vector are formulated. The particle is stable without the necessity for introducing additional forces (of the Poincare pressure type). An exact mass renormalization is carried out. For comparison with earlier equations, a rigorous limiting transition to the case of a point particle is made. Interaction with the electro-magnetic field and with a scalar meson field are considered.

(auth)

21

19

rmp [signature]

AUTHOR: Sannikov, D. G.

SOV/56-34-6-44/51

TITLE: On the Approximation of the Thomas-Fermi-Function (Ob ap-
proksimatsii funktsii Tomasa-Fermi)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,
Vol. 34, Nr 6, pp. 1650-1651 (USSR)

ABSTRACT: Recently many papers on the approximation of the solution
of the Thomas (Tomas)-Fermi equation of a free neutral atom
 $\varphi'' = \varphi^{3/2}/\xi^{1/2}$ were published. r denotes the distance from
the center of the atom, a_0 - the Bohr radius, and there is
 $\xi = r/\mu$ and $\mu = \nu a_0/Z^{1/3}$. K. Umeda (Ref 3) proposed to use
the numerical value of the integral

$$I(\varphi) = \int_0^{\infty} \left[\varphi'^2 + \left(\frac{4}{5}\right) \varphi^{3/2} \xi^{-1/2} \right] d\xi \quad \text{as a measure of the}$$

Card 1/2

exactness of the approximation of the solution. The variation
of this integral must give the above mentioned equation. The

On the Approximation of the Thomas-Fermi-Function

SOV/56-34-6-44/51

author proposes for φ the new formula $\varphi(\xi) = e^{-x^{1/2}} (1 + \frac{1}{2}x^{1/2})^2$ for which I lies considerably nearer to the minimum value. In the above expression and in all further ones there is $x = \lambda \xi$ where λ may be determined in different ways. The above given formula for $\varphi(\xi)$ may be obtained by transition from the approximated Lenz(Lents)-Jensen (Iyensen) expression for the density of the electron density $q(r)$ in the atom to the function $\varphi(\xi)$. Too careful searches for the exact approximation of the Thomas (Tomas)-Fermi functions for small and great distances from the nucleus are useless, as the equation $\varphi'' = \varphi^{3/2}/\xi^{1/2}$ does not describe correctly the potential within the atom. The author thanks D. A. Kirzhnits for his advice and discussions. There are 9 references, 1 of which is Soviet.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR
(Physics Institute imeni P. N. Lebedev, AS USSR)

SUBMITTED: March 13, 1958

Card 2/2

24.2200 (1137, 1147, 1158)
24.7900 1160, 1395, 1144, also 1454

20454

S/056/61/040/002/007/047
B113/B214

AUTHORS: Perekalina, T. M., Askochinskiy, A. A., Sannikov, D. G.

TITLE: Resonance of domain boundaries in cobalt ferrite

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40,
no. 2, 1961, 441-447

TEXT: The resonance dispersion of magnetic permeability in cobalt ferrite, which is caused by the displacement of domain boundaries, has been investigated experimentally. It was necessary to have a dispersion-free coaxial line with a square cross section, in which TEM-type waves appear and in which the form of the magnetic lines of force is almost quadratic. Quadratic frames were cut from a single crystal, whose sides coincide with the axes of easiest magnetization. Four quadratic frames of equal size were prepared from single crystals of cobalt ferrite (outer dimensions: 10 x 10 mm; inner dimensions: 6 x 6 mm); two of them were heated for 6 hr, and the other two for 7 days in order to reduce the conductivity due to crystals of divalent iron. In the first case ($\text{Co}_{0.94}\text{Fe}_{0.12}^{2+}\text{Fe}_{1.96}^{3+}\text{O}_4$) conductivity was
Card 1/5

20u5h

S/O56/61/040/002/007/047
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Resonance of domain...

10^3 ohm-cm, and in the second case ($\text{Co}_{0.94}\text{Fe}_{0.06}^{2+}\text{Fe}_{2.00}^{3+}\text{O}_4$) it was 10^4 ohm-cm. To determine the direction of magnetization and the domain width, powder patterns on the frames were microscopically examined and photographed. The pictures showed that in all frames, the variable magnetic field was parallel to the direction of domain magnetization. The domain boundaries were parallel to the boundary of the frames. The domain width on 6-hr heating was $3.7 \cdot 10^{-3}$ to $6.4 \cdot 10^{-3}$ cm, and on 7-day heating $3 \cdot 4 \cdot 10^{-4}$ cm. Measurements in the range of 250 - 450 Mc/sec showed for the first two frames a maximum magnetic loss at 360 Mc/sec, while for the other two frames no absorption was observed in the range of 200 - 300 Mc/sec. The course of the real and imaginary parts μ' and μ'' of the magnetic permeability of the ferrite as a function of the frequency of the magnetic field shows a resonance character. A comparison of this resonance curve with that obtained from the resonance formula

$$\chi(\omega) = \chi_0 \frac{1}{1 - \omega^2 / \omega_0^2 + i\omega / \omega_1}$$

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shows that the two curves are the same. This is surprising, for one would expect a much broader curve experimentally. In the calculation of the effective mass of the boundary, the special case of the 180° boundary was considered, whose mass is twice that of the 90° boundary. From the equation for the energy of the boundary layer of a cubic crystal

$$W = \int_{-\infty}^{\infty} d\xi \delta \left\{ \frac{Aa^2 n}{4} \left[\frac{1}{1-\alpha^2} \left(\frac{\partial x}{\partial \xi} \right)^2 \frac{1}{\delta^2} + (1-\alpha^2) \left(\frac{\partial \varphi}{\partial \xi} \right)^2 \frac{1}{\delta^2} \right] + \right. \\ \left. + K [(1-\alpha^2)\alpha^2 + (1-\alpha^2)^2 \cos^2 \varphi \sin^2 \varphi] + \right. \\ \left. + [2\pi I_s^2 (\alpha - \alpha_{\infty})^2 + I_s H_0 e^{i\omega t} (1-x^2)^{1/2} 2^{-1/2} (\sin \varphi - \cos \varphi)] \right\}, \quad (5)$$

a solution is sought for α and φ

$$\alpha(\xi, t) = \alpha_0(\xi) + \alpha_1(\xi) p e^{i\omega t}, \\ \varphi(\xi, t) = \varphi_0(\xi) + \varphi_1(\xi) p q e^{i\omega t}, \quad (6) \\ v(t) = 4\pi I_s \gamma \delta V_0 p e^{i\omega t}.$$

and also for α_0 and φ_0 : $\alpha_0(\xi) = 0$, $\varphi_0(\xi) = \arctan e^{\xi}$ (7). If Eq. (6) is substituted in (5) and if (7) is used, one obtains the equation:

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$$m = \frac{1}{8\pi\gamma^2\delta} \frac{2\lambda}{V_0} \int_0^\pi d(2\varphi_0) \left\{ \left(\frac{d\alpha_1}{d\varphi_0} \right)^2 \sin 2\varphi_0 + \alpha_1^2 \left(\frac{1 + 1/\lambda}{\sin 2\varphi_0} - \frac{3}{4} \sin 2\varphi_0 \right) \right\} \quad (10).$$

In order to calculate m from this formula, it is necessary to find a solution for α_1 from the equation:

$$\left(\frac{d\alpha_1}{d\varphi_0} \right)^2 - \alpha_1 \left(1 + \frac{1}{\lambda} - 3 \sin^2 \varphi_0 + 3 \sin^4 \varphi_0 \right) = \frac{V_0}{\lambda} \sin \varphi_0 \cos \varphi_0 \quad (8);$$

this is done by a variational method. This results finally in the equation for m_{90° : $m_{90^\circ} = 0.24/8\pi\gamma^2\delta$ (13), from which it follows that $m_{180^\circ} = 0.48/8\pi\gamma^2\delta = 1.7 \cdot 10^{-10} \text{ g/cm}^2$. From $\chi_0 = 4I_s^2/\alpha_1$ (3) it results that $\alpha_{180^\circ} = 4I_s^2/\chi_0 \cdot 1 = 1.6 \cdot 10^9 \text{ g/cm}^2 \text{ sec}^2$ and $\omega_0 = \sqrt{\alpha/m} = 2\pi \cdot 500 \text{ Mc/sec}$. K. V. Vladimirovskiy is thanked for advice and a discussion. There are 1 figure and 4 non-Soviet-bloc references.

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ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk
SSSR (Institute of Physics imeni P. N. Lebedev, Academy of
Sciences USSR)

SUBMITTED: August 8, 1960

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AUTHOR: Sannikov, D. G.

TITLE: Dispersion in ferroelectric materials

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41,
no. 1(7), 1961, 133-138

TEXT: This paper presents the study of the dependence of the dielectric constant on the frequency of the electric field which is caused by the displacement of the domain boundaries in ferroelectric materials. The displacements of domain boundaries in ferromagnetic materials caused by external magnetic fields have been studied several times before, and the resulting dispersion of the magnetic permeability has been experimentally observed in ferrites. The author of this paper has carried out an analogous (theoretical) study for ϵ and for ferroelectric materials. The free boundaries of two ferroelectric domains is considered, one polarized parallel and the other anti-parallel to the boundary (180° boundary). An external homogeneous electric field displaces this boundary. The x -axis coincides with the direction of spontaneous polarization in the interior

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of the domains; the x-axis is perpendicular to the boundary. The steady state solution (boundary at rest; no field) was obtained by V.A. Zhirnov (ZhETF, 35, 1175, 1958). The E field lies in the z direction so that only the component P_z of the polarization vector differs from zero. P_z is put equal to P. Thus, one obtains for the thermodynamic potential per unit volume (cubic symmetry)

$$F = F_0 + \frac{1}{2} \kappa (\partial P / \partial x)^2 + \alpha P^2 + \frac{1}{2} \beta P^4 + \frac{1}{2} c_1 (u_{xx}^2 + u_{yy}^2 + u_{zz}^2) + c_2 (u_{xx} u_{yy} + u_{xx} u_{zz} + u_{yy} u_{zz}) + \frac{1}{2} c_3 (u_{xy}^2 + u_{xz}^2 + u_{yz}^2) + q_1 u_{xz} P^2 + (1), + q_2 (u_{xx} + u_{yy}) P^2 - PE,$$

where u_{ij} is the deformation tensor. The density of the kinetic energy

is given by $T = \frac{\rho}{2} \left(\frac{\partial u_i}{\partial t} \right)^2 + \frac{m}{2ne^2} \left(\frac{\partial P}{\partial t} \right)^2$; the first term represents the energy of elastic oscillations (ρ density, u_i displacement vector); the second represents the energy of the oscillations of the ions ($P = ne\bar{z}$, z displacement of the ion, e the effective charge, m effective mass,

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E_0 is assumed to be sufficiently small so that perturbation theory may be applied to p and u_1 . For $q_2=0$ (this, for example, is the case for $BaTiO_3$), and $\omega^2 \ll \omega_q^2$, $\omega\omega_r \ll \omega_q^2$ (7), one obtains the solution

$$V = \frac{dX}{dt} = \frac{3}{2} \delta \frac{\omega_p^2}{\omega^2} \frac{1}{1 - i\omega_r/\omega} i\omega e^{i\omega t}. \quad (9)$$

The conditions corresponding to this expression are further studied in the following. The condition for using an approximation linear in p and u_1 is $\omega^2 \ll \omega_p^2$ or $\omega^2 \ll \omega_r^2$ (10), that is, the form of the moving boundary is only slightly distorted, and so V is small and proportional to E_0 . The following expression is established for the energy W of the boundary layer

(per cm^2): $W = \int_{-\infty}^{+\infty} dx(T+F) - \int_{-\infty}^{+\infty} dx(T+F)_{homog}$. If conditions (7) and (10) are satisfied and $q_2=0$, then $W=W_0 + \frac{1}{2}MV^2 - FX + \dots$, where $W_0 = \frac{4}{3}P_0^2 \pi/\delta$ is the energy of unit surface of a stationary boundary. In the second term -

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the kinetic energy of the boundary - $M = 4W_0/\delta^2 \omega_q^2 = mW_0/ne^2 \kappa$ is the effective mass of the boundary. In the third term $F = -2P_0 E$. The motion of the boundary is given by the equation $MdV/dt + M\omega_r V = F$. In the case when one is not dealing with a free boundary the last equation is to be replaced by

$$Md^2X/dt^2 + M(\omega_r + \omega_r')dX/dt + M\omega_0^2 X = F, \quad (16),$$

where $M\omega_r'$ is an additional coefficient of friction, and $M\omega_0^2$ is the constant of elastic binding. From (16) there results for the electric susceptibility of the ferroelectric material due to the displacement of the domain boundary:

$$\chi(\omega) = \frac{\Delta P}{E} = \frac{\chi_0 \omega_0^2}{\omega_0^2 - \omega^2 + i(\omega_r + \omega_r')\omega} \quad (17),$$

where χ_0 is the susceptibility for $\omega = 0$, i.e. $\chi_0 = 4P_0^2/1M\omega_0^2$. Using these relations for $BaTiO_3$, some numerical estimates are given. With

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$m = 10^{-22} \text{ g}$, $e = 4.4.8 \cdot 10^{-10}$, $n = (4 \cdot 10^{-8})^{-3} \text{ cm}^{-3}$, one finds $\omega/2\pi$
 $= 1.2 \cdot 10^{12} \text{ sec}^{-1}$, $\chi = 3 \cdot 10^{-16} \text{ cm}^2$, $\int = 1.3 \cdot 10^{-7} \text{ cm}$, $W_0 = 8 \text{ erg/cm}^2$,
 $M = 0.4 \cdot 10^{-10} \text{ g/cm}^2$, $\lambda_0 = 1300/4\pi$, ($\epsilon = \epsilon_\infty + 4\pi\lambda$); if the domain thickness
 $l = 10^{-3} \text{ cm}$ then $\omega_0/2\pi = 0.8 \cdot 10^{10} \text{ sec}^{-1}$ (experimental: $3 \cdot 10^{10} \text{ sec}^{-1}$). Thus

one can explain the observed dispersion in BaTiO_3 as due to the displacement of the domain boundaries. All the regularities mentioned here remain true if a phase transition of the second kind (not first) is realized. The author thanks V. L. Ginzburg and A. P. Levanyuk for discussions. There are 12 references: 5 Soviet-bloc and 7 non-Soviet-bloc. The most important references to English-language publications read as follows:
A. Hippel. Rev. Mod. Phys., 22, 221, 1950; C. Kittel. Phys. Rev., 83, 458, 1951.

ASSOCIATION: Fizicheskiy institut im. P.N. Lebedeva Akademii nauk SSSR
(Institute of Physics imeni P. N. Lebedev of the Academy of Sciences USSR)

SUBMITTED: December 23, 1960

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AUTHOR:

Sannikov, D. G.

TITLE: Electromagnetic and sonic waves in ferroelectrics

PERIODICAL: Fizika tverdogo tela, v. 4, no. 6, 1962, 1619-1626

TEXT: The propagation and interconnection of electromagnetic and sonic waves in an arbitrary ferroelectric crystal are considered. Owing to electrostriction and spontaneous polarization, the interconnection is a linear relation, which gives insight into some interesting effects. An external sonic or electromagnetic field produces polarized sonic waves with an abnormal absorption near the Curie point in the crystal. In particular, the dispersion relations of such waves propagating along the crystallographic axes in rhombohedral and cubic ferroelectrics are established. The damping of the polarized sonic waves in Rochelle salt is examined. Comparison with experimental data shows that the relations obtained can be applied everywhere except in a very narrow band around the Curie point (some hundredths of one degree centigrade).

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Electromagnetic and sonic waves ...

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ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR, Moskva
(Physics Institute imeni P. N. Lebedev AS USSR, Moscow)

SUBMITTED: February 19, 1962

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