"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

MUZYCHENKO, Nina Mikhaylovna; YURKEVICH, Tat'yana Yakovlevna; BAKIROV, A.A., prof., glav.red.; RYABUKHIN, G.Ye., prof., red.; USPENSKAYA, N.Yu.,prof.,red.; ZHDANOV,M.A., prof., red.; DOLITSKIY, V.A., dots., red.; SPIKHINA, A.N., kand. geol. nauk, red.; YUDIN, G.T., kand. geol.-min. nauk, red.; TABASARANSKIY, Z.A., dots., red.; BAKIROV, E.A., dots., red.; BYKOV, R.I., dots., red.; FOMKIN, K.V., kand. geol.-min. nauk, red.; KNYAZEV, V.S., dots., red.; SHIROKOV, V.Ya., st. nauchn. sotr., red.; YUNGAS, S.N., ved. red.; NEVEL'SHTEYN, V.I., ved. red.

[Geological conditions and fundamental characteristics of oil and gas accumulations in the limits of the Epi-Hercynian platform in the south of the U.S.S.R.) Geologicheskie usloviia i osnovnye zakonomernosti razmeshcheniia skoplenii nefti i gaza v predelakh epigertsinskoi platformy iuga SSSR. Pod red. A.A.Bakirova. Moskva, Gostoptekhizdat. Vol.1. [Central Asia] Sredniaia Aziia. 1963. 442 p. Vol.3. [Volga Valley portion of Saratov and Volgograd Provinces] Saratovsko-Volgogradskoe Povolzh'e. 1963. 153 p. (MIRA 17:4)

1. Moscow. Institut neftekhimicheskoy i gazovoy promyshlennosti.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

BAKIROV, A.A.; SHIROKOV, V.Ya.

Prospects for finding large oil and gas accumulations in the Tajik S.S.R. Sov. geol. 6 no.5:51-62 My '63. (MIRA 16:6)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni I.M. Gubkina.
(Tajikistan—Petroleum geology)
(Tajikistan—Gas, Natural—Geology)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

TALIPOV, S.; SHIROKOV, V.Ya.

Waters and brines of the Mesozoi[illegible] [illegible] sediments of the Tajik Depression in connection w[illegible] [illegible] oil and gas potential. Neftegaz.geol. i geofiz. no.12:1[illegible] [illegible]. (MIRA 18:3)

1. Moskovskiy ordena Trudovogo Krasn[illegible] Neftyanoi institut neftekhimicheskoy i gazovoy promysh[illegible] im. akad. Gubk[illegible]ne.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIRKOV, V.Ya.

Basic features of the history of the geological development of the Tajik Depression and the adjacent regions of the Turan Plateau. Trudy VNIGNI no.42:150-165 '64.

(MIRA 18:3)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, Ye.G.

Field emission of a system of tungsten wedges. Radiotekh. i elektron. 9 no.7:1320-1321 Jl '64 (MIRA 17:8)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

S. 22[illegible] 4 000 003 0168 0171

AUTHOR: Pirogov, V. K., Shirokov, Ye. G.

TITLE: X ray study of tungsten sheets

SOURCE: AN SSSR Sibirskoye otdeleniye Izvestiya. Seriya tekhnicheskikh nauk no. [illegible] 1964, 168-171

TOPIC TAGS: tungsten sheet, tungsten crystal face, recrystallized tungsten, recrystall- [illegible] xray diffraction pattern

ABSTRACT: Recently various branches of electronics have begun to utilize edge shaped [illegible] tungsten strips (W. P. Dyke, IRE [illegible]) [illegible]

[illegible] taken from the face of the untreated sample. Comparative X-ray patterns are shown. Orig. art. has: 3 figures.

Card 1/2

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

L 35491-65

ACCESSION NR: AP5007842

ASSOCIATION: Institut radiofiziki i elektroniki Sibirskogo otdeleniya AN SSSR, Novosibirsk (Institute for Radiophysics and Electronics, Siberian Section, AN SSSR)

NO REF SOV: 002 OTHER: 001

Card 2/2

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

L 2473-66 EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(c) LJP(c) HJW/JD/JG
ACCESSION NR: AP5021080 UR/0288/65/000/002/0145/0147
537.533.621.3.032.21

AUTHOR: Shirokov, Ye. G.

TITLE: Method of preparing and checking the emission surface of a tungsten disk edge

SOURCE: AN SSSR. Sibirskoye otdeleniye. Izvestiya. Seriya tekhnicheskikh nauk, no. 2, 1965, 145-147

TOPIC TAGS: surface emission, tungsten, tungsten cathode

ABSTRACT: Disks of 8 and 16-mm diameters were cut from the 50-μ-thick VA-3 tungsten sheets and polished. They then were rotated for 35 sec at 1600 rpm in a bath of 20% NaOH solution to form an edge. To obtain an atomically smooth edge, the disks were then tempered at 1800C in hydrogen or vacuum. The emission surface of the edge was checked by rotating it in a special mounting under an electron microscope. By investigating the edge's profile, surface irregularities could be observed and the radius of curvature and taper angle determined. Orig. art. has: 5 figures. [WC]

ASSOCIATION: Institut fiziki poluprovodnikov Sibirskogo otdeleniya AN SSSR, Novosibirsk (Institute of Semiconductor Physics, Siberian Branch, AN SSSR)

Card 1/2

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

L 2473-66

ACCESSION NR: AP5021080

SUBMITTED: 08May64

ENCL: 00

SUB CODE: EC,SS

NO REF SOV: 001

OTHER: 001

ATD PRESS: 4405

BVK

Card 2/2

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

L 2465-66 EWT(1)/EWT(m)/ETC/EPF(n)-2/EWG(m)/EPA(w)-2/T/EWP(t)/EWP(b)/EWA(c)
ACCESSION NR: AP5021081 LJP(c) DS/JD/JG/ UR/0288/65/000/002/0147/0151
AT 537.533.621.032.21

AUTHOR: Krivoshchekov, G. V.; Shirokov, Ye. G.

TITLE: Field emission from a tungsten disk cathode

SOURCE: AN SSSR. Sibirskoye otdeleniye. Izvestiya. Seriya tekhnicheskikh nauk, no. 2, 1965, 147-151

TOPIC TAGS: field emission, tungsten disk cathode, cathode emission

ABSTRACT: The cathode had a disk-shaped edge with a large emission surface in comparison with a point, the emission edge being examined with a BS-242 electron microscope. A description is given of the instruments used to study the field emission current and the emission pattern of the tungsten edge. The results showed that under continuous and pulsed conditions, the current from the cold edge was 50 mamp (v = 13 kv) and 2 amp (v = 20 kv), respectively. Volt-ampere characteristics for two values of edge curvature radii, and curves of current distribution along the edge under various anode voltages, indicated that emission was stable under small voltages, while higher

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L 2465-66

ACCESSION NR: AP5021081

voltages resulted in a local increase of current. This was due to the spread of the curvature radius in various sections of the edge and to the different work function of crystal faces on the edge. To obtain substantial field emission currents, a suggestion was made to minimize the spread in curvature radius and to prepare the edge from single-crystal material. Orig. art. has: 5 figures. [WC]

ASSOCIATION: Institut fiziki poluprovodnikov Sibirskogo otdeleniya AN SSSR, Novosibirsk (Institute of Semiconductor Physics, Siberian Branch, AN SSSR)

SUBMITTED: 12Oct64 ENCL: 00 SUB CODE: EC

NO REF SOV: 003 OTHER: 001 ATD PRESS: 4106

Card 2/2

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, Ye.G.

Preparing and controlling the emission surface of a disk-shaped tungsten edge. Izv. SO AN SSSR no.6. Ser. tekh. nauk no.2:145-147 '65. (MIRA 18:11)

1. Institut fiziki poluprovodnikov Sibirskogo otdeleniya AN SSSR, Novosibirsk.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, Ye. P. Cand Agr Sci -- (diss) "Influence of ~~xxxxx~~ micro-elements on the productivity, ~~dates~~ periods of maturity and chemical composition of cabbage." Mos, 1957. 14 pp 19 cm. (Mos Order of Lenin Agr Acad im K.A. Timiryazev). 110 copies. (KL, 23-57, 115)

~~-106-~~
98

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, Ye. P.

Regulating the ripening of some vegetables with the help of molybdenum and iodine. Dokl. Akad. sel'khoz. 22 no.2:26-28 '57. (MLRA 10:5)

1. Moskovskaya ordena Lenina sel'skokhozyaystvennaya akademiya imeni K. A. Timiryazeva. Predstavlena akademikom V. M. Klechkovskim.
(Trace elements) (Vegetables)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

M

USSR/Cultivated Plants. Potatoes. Vegetables. Melons.

Abs Jour: Ref Zhur-Biol., No 5, 1958, 20342.

Author : Ye. P. Shirokov
Inst : Not given
Title : The Effect of Several Microelements and Their Combinations on the Cabbage Yield, Ripening Times and Chemical Composition. (Vliyaniye nekotorykh mikroelementov i ikh sochetaniy na urozhay, sroki sozrevaniya i khimicheskiy sostav kapusty.)

Orig Pub: Dokl. Mosk. s.-kh. akad. im. K.A. Timiryazeva, 1957, vyp. 28, 373-379.

Abstract: The effect was studied which is exerted by Mn, Mo and Fe salt solutions on the yield of red cabbage (Brassica capitata f. rubra var. Gako), savoy cabbage (var. Vertyu) and cauliflower (var. Early Gribovskaya). The following

Card : 1/3

[illegible] of Mn
[illegible] of respiration (by 30-40%)
[illegible] through the application of Mn. The
[illegible]orophyll content was increased most by the effect of
Fe and Mn + Fe in red cabbage, and in savoy cabbage through
[illegible] cabbage varieties showed
in different years accelerated rates of individual development through the effect of Mo, Mn + Fe and Mn + Mo, expressed in the aging of the leaves and the pH factor drop

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-

Card : 2/3

[illegible] No 5, 1958, 20342. [illegible]ies. Melons.

M

in the juice of the heads. The vitamin C content increased by 15-18%, the sum of sugars by 15%. Side dressing increased the microelement content in the plants. The joint application of Mn and Mo, as well as Mn and Fe helped to amplify the intake of these elements into the plants.

rd : 3/3

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIRCKOV, Ye., kandidat sel'skokhozyaystvennykh nauk.

Preserving for winter. Rabotnitsa 35 no.8:29-30 Ag '57.
(MLRA 10:9)

(Vegetables--Preservation) (Fruits--Preservation)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, Ye.P.

Increase in the iodine content of certain vegetables. Vopr.pit. 17 no.1:91 Ja-F '58. (MIRA 11:4)

1. Iz kafedry khraneniya i pererabotki plodov i ovoshchey (zav. - prof. N.V.Saburov) Moskovskoy sel'skokhozyaystvennoy akademii imeni K.A.Timiryazeva.
(IODINE) (VEGETABLES--ANALYSIS)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

TURKIN, Vladimir Aleksandrovich [deceased]; SHIROKOV, Ye.P.; SABUROV, N.V., prof., red.; OZEROV, V.N., red.; PROKOF'YEVA, L.N., tekhn.red.

[Storing and processing of fruits and vegetables; practical studies] Khranenie i pererabotka plodov i ovoshchei; prakticheskie zaniatiia. Pod red. N.V.Saburova. Moskva, Gos.izd-vo sel'khoz.lit-ry, 1960. 229 p. (MIRA 13:12)

(Fruit--Storage) (Vegetables--Storage)
(Canning and preserving)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

BELOUSOV, D.P., inzh.; SABUROV, N.V., prof.; SHIROKOV, Ye.P., kand. sel'khoz. nauk; MOSHKOVICH, I.K., agronom; UL'YANOV, A.P., agronom; KRASNOKUTSKAYA, S.V., kand. sel'khoz. nauk; ZOLOTOVA, A.I.; KALININA, N.N.; DAVIDOVA, R.E., prof.; KURKO, V.I., kand. tekhn. nauk; KLEYMENOV, I.Ya.; VOROB'YEVA, A.A.; DEMEZER, A.A.; ROSSOSHANSKAYA, V.A., red.; BALLOD, A.I., tekhn. red.

[Home canning and processing of agricultural products] Konserivirovanie i pererabotka sel'skokhoziaistvennykh produktov v domashnikh usloviiakh. [By] D.P. Belousov. Moskva, Sel'khozizdat, 1963. 406 p. (MIRA 16:10)
(Canning and preserving) (Cookery)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SABUROV, N.V., prof.; ANTONOV, M.V., dots.; SHIROKOV, Ye.P., assistent; CHELYSHKIN, Yu.G., red.; GINZBURG, A.S., tekhn. red.

[Storage and processing of fruit and vegetables] Khranenie i pererabotka plodov i ovoshchei. Izd.2., ispr., i dop. Moskva, Sel'khozizdat, 1963. 463 p. (MIRA 17:3)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SABUROV, N.V., prof., doktor tekhn. nauk; SHIROKOV, Ye.P., kand. [illegible] nauk; BODIN, M.N., aspirant

Organization of prolonged storage of cabbage. Izv. TSKHA no.4: 74-87 '64. (MIRA 17:11)

1. Kafedra khraneniya i pererabotki plodov i ovoshchey Sel'skokhozyaystvennoy akademii imeni Timiryazeva.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, Yevgeniy Petrovich

[Practical study on the storage and processing of fruit and vegetables] Praktikum po khraneniiu i pererabotke plodov i ovoshchei. Moskva, Kolos, 1964. 246 p. (MIRA 18:8)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

KRIVOSHCHEKOV, G.V.; SHIROKOV, Ye.G.

Autoelectronic emission from a disk-shaped tungsten cathode. Izv. SO AN SSSR no.6, Ser. tekh. nauk no.2:147-151 '65. (MIRA 18:11)

1. Institut fiziki poluprovodnikov Sibirskogo otdeleniya AN SSSR, Novosibirsk.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, Yu.G. (Moskva)

Hygienic evaluation of a series of new accelerators of plastication and regeneration. Gig.truda i prof.zab. 3 no.3:3-10 My-Je '59. (MIRA 12:10)

1. Institut gigiyeny truda i profzabolevaniy AMN SSSR.
(RUBBER INDUSTRY AND TRADE--HYGIENIC ASPECTS)
(PHENOLS--TOXICOLOGY)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

S/153/60/003/004/005/006
B004/B058

AUTHORS: Shirokov, Yu. G., Kirillov, I. P.

TITLE: A Semiautomatic Apparatus for Thermographic Studies

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1960, Vol. 3, No. 4, pp. 740 - 742

TEXT: The authors describe a circuit used by them for regulating the temperature in the metal block of a thermographic apparatus (Fig. 1). The linear temperature rise is warranted by an electronic ЭПВ-01 (EPV-01)[2,3] potentiometer, an РНО 250-5 (RNO 250-5)[1] autotransformer, and a 2АСМ-400 (2 ASM-400)[3] reversible motor. The control apparatus of the potentiometer switches the motor into forward or reverse motion; the motor displaces a contact of the transformer, thus altering the voltage in a compensating winding of the heater. Fig. 2 shows the (nonlinear) rise of temperature without regulation, and the linear rise by means of the regulating circuit described. The thermographic curve was recorded by an ЭПП-09 (EPP-09) potentiometer. The cooling of the block can also be linearly controlled. There are 2 figures and 5 references: 4 Soviet and 1 German.

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A Semiautomatic Apparatus for Thermographic Studies

S/153/60/003/004/005/006
B004/B058

ASSOCIATION: Ivanovskiy khimiko-tekhnologicheskiy institut Kafedra tekhnologii neorganicheskikh veshchestv (Ivanovo Institute of Chemical Technology, Chair of Technology of Inorganic Substances)

SUBMITTED: October 2, 1958

Card 2/2

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, Yu.G.; FEDOSEYEV, V.M. (Moskva)

Some problems concerning the distribution and excretion of trichlor-benzenethiol. Gig. truda i prof. zab. 4 no.12:31-35 D '60. (MIRA 15:3)

1. Institut gigiyeny truda i professional'nykh zabolevaniy AMN SSSR i Moskovskiy gosudarstvennyy universitet.
(BENZENETHIOL--TOXICOLOGY)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIRKOV, Yu. G.

Cand Med Sci - (diss) "Problem of the hygienic evaluation of new plastication activators of caoutchouc -- renacytes and peptones." Moscow, 1961. 14 pp; (Academy of Medical Sciences USSR);250 copies; price not given; (KL, 10-61 sup, 227)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

20444

S/153/61/004/004/008/013
E194/E135

15.2660

AUTHORS: Shirokov, Yu.G., and Kirillov, I.P.

TITLE: Certain magnetic properties of nickel oxide (NiO)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Khimiya i khimicheskaya tekhnologiya, vol.4, no.4, 1961, 599-603

TEXT: Nickel compounds are widely used as catalysts and as there is a general relationship between the catalytic and magnetic properties of solids it was decided to measure the magnetic properties of nickel oxide (NiO) produced by thermal decomposition of the salt $2NiCO_3 \cdot 3Ni(OH)_2 \cdot 4H_2O$ and of $Ni(NO_3)_2 \cdot 6H_2O$. The following magnetic properties were measured or calculated: the specific magnetic susceptibility χ, the magnetisation at saturation σ_s, the paramagnetic susceptibility χ_o, as a function of the temperature at which the oxide was produced. NiO is not a stoichiometric oxide but contains excess oxygen at temperatures below about 700 °C. There is no general agreement about the composition of the nickel oxide produced by the method adopted. However, the stoichiometric oxide is an antiferromagnetic compound. According to a number of investigators non-stoichiometric NiO has

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28444

Certain magnetic properties of nickel... S/153/61/004/004/008/013
E194/E135

ferromagnetic properties. The salts were decomposed in an open crucible furnace at constant temperatures for periods of 5-7 hours. All the specimens were vacuum dried before testing. For testing, the samples were contained in ampules 15 mm long and 1.5 mm in diameter held vertically in a frame and suspended horizontally on threads of capron . The attractive force of the magnet was balanced by a compensating magnet and solenoid. The field intensity was determined using Mohr's salt. Graphs of H(dH/dS) as function of S were plotted for five different fields and the best position of the ampule was determined from the maxima on the graphs. The field intensity was then directly measured. The maximum error was about 1% in the determination of H(dH/dS), ±3.5% in that of the field H, and in determination of χ, ±3.72%. The tests were made at 25 °C. Measurements were made, at field strengths ranging from 6800 to 10 000 oe, of the specific susceptibility of each specimen. All the specimens of NiO were found to have weakly ferromagnetic properties. The specific magnetic susceptibility of NiO was found to change quite sharply as a function of the temperature at which the salt was formed. Thus, a sample of NiO produced from nickel carbonate at 300 °C has a

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magnetic properties of nickel... S/153/61/004/004/008/013
E194/E135

specific susceptibility of about 36 x 10^{-6} whilst the susceptibility of that produced at 800 °C and above is only about a third of this value. NiO produced from nickel nitrate had substantially lower susceptibility when produced at temperatures below 800 °C but at higher temperatures the susceptibility of the NiO produced from the two salts was about the same. The test results indicate that, as the temperature at which it is formed is raised, the NiO loses more and more oxygen and tends to the stoichiometric composition. Results are also given for the paramagnetic susceptibility of NiO produced from basic carbonate and nitrate of nickel and here at temperatures of formation below 500 °C the basic carbonate gives substantially higher paramagnetic susceptibility of NiO than does the nitrate but, at temperatures above 600 °C they are approximately the same. Curves of spontaneous magnetisation as function of temperature of production of NiO display a maximum for both basic carbonate and nitrate of nickel at a temperature near 400 °C though the value for salt produced from the nitrate is only about 70 as against 120 for that from carbonate. The anomalous shapes of the curves of spontaneous magnetisation and paramagnetic susceptibility point to changes in

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

25144

Certain magnetic properties of nickel... S/153/61/004/004/008/013
E194/E135

the crystal lattice at certain temperature regions. The presence of maxima on the curves has previously been attributed to formation of a metallic phase but it is considered here that this is unlikely because there is no maximum on the curve of specific susceptibility and, therefore, the anomalous shape of the curves must be due to changes in the crystal lattice in which the number and type of defects alter with variation of the amount of oxygen in the lattice. There are 4 figures, 2 tables and 7 references: 2 Soviet-bloc and 5 non-Soviet-bloc. The 3 English language references read:

Ref. 4: J.Shimomura, J.Tsubokawa, M.Kojima. J.Phys.Soc.Japan, Vol.9, 521 (1954).

Ref. 5: J.Shimomura, M.Kojima, S.Saito. J.Phys.Soc.Japan, Vol.11, 1136 (1956).

Ref. 7: P.Jacobson, P.Selwood. J.Amer.Chem.Soc., Vol.76, 2641 (1954).

ASSOCIATION: Kafedra tekhnologii neorganicheskikh veshchestv, Ivanovskiy khimiko-tekhnologicheskiy institut (Department of Technology of Inorganic Substances, Ivanovo Chemico-technical Institute)

Card 4/4

SUBMITTED: October 27, 1959

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

KIRILLOV, I.P., SHIROKOV, Yu.G.

Ferromagnetic properties and structure of nickel catalysts for methane conversion. Izv.vys.ucheb.zav.;khim.i khim.tekh. 6 no.4:617-624 '63. (MIRA 17:2)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, Kafedra tekhnologii neorganicheskikh veshchestv.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, Yu.G.; KIRILLOV, I.P.; KOROCHKIN, V.M.

Effect of the conditions of reduction, passivation, and sintering on the ferromagnetic properties of a deposited nickel catalyst. Izv.vys.ucheb.zav.;khim. i khim. tekh. 7 no. 1:41-45 '64. (MIRA 17:5)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, kafedra tekhnologii neorganicheskikh veshchestv.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

[illegible], Ye.I.; [illegible], Yu.G.

Some aspects and principal tasks of industrial hygiene in relation to the development of heavy chemical industry. Vest. AMN SSSR 19 no.7:3-8 '64. (MIRA 18:3)

1. Institut [illegible] Moskva.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

V. N. Kirillov, I. P. 32

oxide aluminum system, dielectric permeabili-

dependent of frequency from 10^4-10^7 cycles/sec with deviation from stoichiometry the number of holes in the ionic crystal decreased and ε increased

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tables, and equations.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

VAYZEL', L.Ye., inzh.; SHIROKOV, Yu.G., inzh.

Burning of sulfur-bearing mazut with small excess of air.
Prom. energ. 20 no.11:25-27 N '65.
(MIRA 18:11)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

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[illegible]

S[illegible], [illegible].

"[illegible] of [illegible]." [illegible] 10 Oct [illegible], Moscow Order of Lenin [illegible] Lomonosov.

[illegible] for science and engineering degrees in Moscow during 1951.

SO: [illegible]

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

N

RELATIVISTIC THEORY OF SPIN. Yu. M. Shirokov. Zhur. Eksptl'. i Teoret. Fiz. 21, No. 6, 748-60(1951) June. (In Russian)

Certain relativistic invariant calculations of spin and center of inertia of point particles are discussed. A covariant separation of spin moment from orbital moments is derived, and evidence is presented for the possibility of a relativistic classification of states of an arbitrary particle. A relativistic theory of the mass center is applied to the oscillation of the Dirac electron. It appears possible to obtain the increase (with increase of spin) of the mass spectrum of particles with continuous internal degrees of freedom.

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, YU. M.

USSR/Mathematics - Relativity May 52

"Relativistic Theory of Free Particles Spread, Three-Dimensionally " Yu. M. Shirokov, Moscow State U

"Zhur Eksper i Teoret Fiz" Vol XXII, No 5, pp 539-543

Shows that, despite the widespread opinion, requirements of invariance do not introduce basic difficulties into the theory of free particles 3-dimensionally spread. Presents a general method of modeling such particles. Indebted to Prof D. I. Blokhintsev. Received 26 Dec 50.

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APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

Quantum Theory.

Spin of particles with a static mass equal zero. Zhur. eksp. i teor. fiz., 23, No. 1, 1952.

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

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

Shirokov, Yu. M.

USSR.

530.T43

9931. On a theory of interaction of a three-dimensional extended particle with an external field. Yu. M. Shirokov. *Zh. eksper. teor. Fiz.*, 24, No. 1, 47-55 (1953) in Russian.

Equations of motion and invariants are formulated in four dimensions, but the particle has only a three-dimensional extension. In the non-relativistic limit the theory is connected with the Lorentz theory of extended charged spheres. O. E. Brown

8B

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

USSR/Nuclear Physics - Quantum electrodynamics FD-484

Card 1/1 : Pub. 146-1/18

Author : Shirokov, Yu. M.

Title : Quantum electrodynamics in configurative representation. II. Theory of electron-positron in configurative representation

Periodical : Zhur. eksp. i teor. fiz., 24, 129-134, Feb 1953

Abstract : Constructs a configurative theory of electron-positron with positive masses and energies. Considers the electron and the positron as different states of the same particle. Indebted to Prof. D. I. Blokhintsev. 7 references, including 2 foreign.

Institution : Moscow State University

Submitted : August 8, 1952

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

USSR/Nuclear Physics - Quantum electrodynamics FD-485

Card 1/1 : Pub. 146-2/18

Author : Shirokov, Yu. M.

Title : Quantum electrodynamics in configurative representation. III. Interaction of electrons-positrons with the electromagnetic field

Periodical : Zhur. eksp. i teor. fiz., 24, 135-148, Feb 1953

Abstract : Configurative theory of electron-positron interaction is constructed using usual representations of quantum electrodynamics. In contrast with other writers (W. Pauli: "General Principles of Wave Mechanics, 1947 [a transl. into Russian from German]) the author takes the basic states of electron and positron mass and energy as positive, which facilitates computations of various processes, including annihilation. Indebted to Prof. D. I. Blokhintsev. 6 references, 2 foreign.

Institution : Moscow State University

Submitted : August 8, 1952

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, Yu. M.

2

Quantum electrodynamics in representations of configuration. IV. Relativity equations for the system electron-positron. K. A. Tumanov and Yu. M. Shirokov (State Univ., Moscow). Zhur. Eksper. i Teoret. Fiz. 24, 309-74 (1953); cf. C.A. 49, 8089c.—Math. J. P. Danehy

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIRKOV, Yu. M. Sep 53

USSR/Nuclear Physics - Deuterium Lamb-Shift

"The Lamb-Shift for Hydrogen and Deuterium" (translation into Russian with comments by Yu. M. Shirokov)

Usp Fiz Nauk, Vol 51, pp 115-129

Translation of E. Salpeter's article in Phys Rev 89, 92 (1953). Translator appends 6 supplementary Russian-language references on the Lamb-shift and other radiative corrections: 1. V.F. Vayskopf, Usp Fiz Nauk, 41, 165 (1950). 2. Ya. A. Smorodinskiy, Usp Fiz Nauk, 39, 325 (1949). 3. Scientific abstract symposium 'Problemy Sovremennoy Fiziki', No 6, 1948; No 1, 1950; No 11, 1951. 4. Sdvig Urovney Atomnykh Elektronov (Shift of Levels of Atomic Electrons), a symposium, Foreign Literature Press, Moscow, 1950. 5. A.A. Sokolov and D.D. Ivanenko, Kvantovaya Teoriya Polya (Quantum Theory of the Field), Gostekhizdat (State Tech Press), Moscow, 1952. 6. W. Lamb, "Fine Structure of the Hydrogen Atom" (translated from English into Russian), Usp Fiz Nauk 45, 553 (1951).

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APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

1/2

Širokov, Yu. M. On a new class of relativistic equations for elementary particles. Doklady Akad. Nauk SSSR (N.S.) 94, 857-859 (1954). (Russian)

The author claims to have discovered a new class of relativistic wave equations, having the property that the wave-function for a particle of spin s has exactly $2s+1$ components. The claim, if valid, would be of great importance, for it would imply the possibility of describing the proton by a relativistic equation without requiring the existence of negative-energy solutions or of anti-particles.

The construction is as follows. Let S_1, S_2, S_3 be square matrices of $2s+1$ rows and columns, representing the infinitesimal generators of the 3-dimensional rotation group. Let $\Psi(p)$ be a $(2s+1)$ component function of the momentum-vector p, belonging to the same representation of the rotation-group. We extend this representation of the 3-dimensional group to a representation of the Lorentz group, by postulating that under the infinitesimal Lorentz transformation,

$$x_\mu \to x_\mu - \epsilon_{\mu\nu} x_\nu, \quad \epsilon_{\mu\nu} = -\epsilon_{\nu\mu}, \tag{1}$$

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[illegible]

[illegible] because the [illegible] for 4 [illegible]

[illegible]

[illegible] give [illegible] correctly in Eq. (4) of this review. The author further [illegible] equation

[illegible]

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

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APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

USSR/ Physics

Card 1/1 Pub. 22 - 19/56

Authors : Shirokov, Yu. M.

Title : Regarding the question on the interaction of new types of particles, namely particles with ½ spin, and an outer field.

Periodical : Dok. AN SSSR 99/5, 737-740, Dec. 11, 1954

Abstract : An interaction between an outer field and a particle with a half-spin (as a nuclon without an anti-nuclon), is considered in the light of quantum mechanics with respect to the relativistic invariance of the equation describing the particle. Questions dealing with the Lorentz finite transformation, the bilinear invariance and the introduction of the interaction between a particle with a half-spin and an outer field are analyzed. Four USSR references (1951-1954)

Institution: The Moscow State University im. M.V. Lomonosov

Presented by: Academician D.V. Skobel'tsin, July 28, 1954

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, Yu.M.

On the existence of antinucleons. Izv.AN SSSR.Ser.fiz.19 no.6:664 N-D '55. (MLRA 9:4)

1.Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Cosmic rays) (Nuclear physics)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, YU. M.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, YU.M.

CARD 1 / 2 PA - 1457

SUBJECT USSR / PHYSICS
AUTHOR ŠIROKOV, JU.M., SANNIKOV, D.G.
TITLE On the Problem of Nonequantized Relativistic Invariant Renormalized Equations of Threedimensional Extended Particle.
PERIODICAL Žurn. eksp. i teor. fiz, 31, fasc.1, 115-120 (1956)
Issued: 9 / 1956 reviewed: 11 / 1956

By means of the method developed by JU.M.ŠIROKOV, Žurn.eksp.i teor.fiz, 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, not 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 pression of the particle must yet be assumed.
The four-momentum P_i which is conserved is determined by the method developed by W.PAULI, Nuovo Cimento, 10, 5, 648 (1953).

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

Zurn.eksp.i teor.fiz, 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 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.

1901

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

[illegible], V.V., [illegible], O.V., KALITKIN, N.N., KAMINSKIY, A.K.
[illegible], Yu.M., [illegible], Yu.N., and TUMANOV, K.A.

"Method of the Light Nuclei Levels Calculation,"

Paper submitted at the All-Union Conf. on Nuclear Reactions in Medium and Low [illegible], Moscow, 16-27 Nov 57.

Moscow State Univ. and Lebedev Physics Inst. Acad. Sci. USSR

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

[illegible], Yu. M., and [illegible], V. V.

"On the Mechanism of Giant Resonance,"

Lebedev Physics Inst, Acad. Sci. USSR

Paper submitted at the A-U Conf. on Nuclear Reactions in Medium and Low Energy Physics, Moscow, 19-27 Nov 57.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

[illegible], V.V., [illegible], Yu.M and /[illegible], K.A./

"Application of the Second Quantisation Methods to the Nulear Shell Theory,"

Paper included in the program of the All-Union Conf. on Nuclear Reactions in Medium and Low Energy Physics, Moscow, 19-27 Nov 1957.

Moscow State University and Lebedev Physics Inst. Acad. Sci. USSR

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

Shirokov, Yu.M.

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Yu M

Distr: LE3d

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1 RML

1847

ON A METHOD OF DIRECT COMPUTATION OF THE NUCLEON NUCLEON INTERACTION ON THE BASIS OF EXPERIMENTAL VALUES FOR THE LEVELS OF LIGHT NUCLEI. [illegible] V. V. Balashov and K. A. Tumanov. Moscow State Univ. Soviet Phys JETP 5, 138 8 1957 Aug

A method is given for the study of the nucleon nucleon interaction in nuclei based on the assumptions that the forces in the nucleus act between pairs of nucleons and the mean velocity of a nucleon in the nucleus is of the order of 0.1c or less. [illegible]

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SIROKOV, YU. M.

PA - 2064

AUTHOR: FILIMONOV, G.F., ŠIROKOV, JU.M.

TITLE: Plural Interaction Hamiltonians in Quantum Electrodynamics (Gamiltoniany množestvennych vzaimodejstvii v kvantovoj elektrodinamike, Russian)

PERIODICAL: Zhurnal Eksperimental'noi i Teoret.Fiziki, 1957, Vol 32, Nr 1, pp 99-104 (U.S.S.R.)
Received: 3 / 1957 Reviewed: 4 / 1957

ABSTRACT: By the research work carried out by SCHWINGER we know how to determine GREEN'S function and how to set up and to solve the corresponding equation. The present paper discusses another method for the description of elementary interactions of which a complicated motion of a system on N particles is composed. Instead of a set of particles a set of Hamiltonians of plural interactions is coordinated to the system of N particles. Each of these Hamiltonians corresponds to a process with a strictly determined number of real and virtual particles. This method is suited for the simpler calculation of the relativistic- and field corrections to the optical spectra of those atoms which are produced by the plural interaction of particles.
An explicit expression for the Hamiltonians of N-th order, which also contains the term of the N-fold interaction, can

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

Plural Interaction Hamiltonians in Quantum Electrodynamics.

be obtained from the usual equation of electrodynamics:

$(\hat{E} - \hat{\mathcal{H}})\,\Psi(x) = 0;\ \hat{\mathcal{H}} = \sum_{j=0}^{\infty} \hat{H}_j$. The writing down of the Hamiltonian of n-th order by summating the processes with all possible intermediary conditions offers a number of advantages which make this method suited for the solution of concrete problems: 1.) In each approximation (in each H_N) the relativistic invariance of the method is warranted because terms are only classified according to the number of particles described by them. 2.) The "provisional" summation of the intermediary conditions in the Hamiltonian of interaction makes the perturbational calculation of higher approximations of interactions unnecessary and does therefore not require a knowledge of the complete sets of the eigenfunctions of the system in question in zero-th approximation. The kinetic corrections of the orders required for the terms of atoms are simply determined by the matrix elements of the corresponding Hamiltonians.

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PA - 2064

Plural Interaction Hamiltonians in Quantum Electrodynamics.

3.) Here, like in the case of the development of the S-matrix, in a power series a regulation "by terms" is possible, in which case the removal of field divergences of each Hamiltonian of N-th order also means its removal from the corresponding approximations of the theory.

The determination of the Hamiltonians of N-th order is discussed step by step. By means of certain transformations all effects (apart from the truly energetic parts) can be excluded from the equation of motion. As an example the interaction in pairs of the spinorial particles is dealt with in detail.

ASSOCIATION: Moscow State University
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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, YU M.

PA - 2081

AUTHOR ŠIROKOV, JU.M., BALAŠOV, V.V., TUMANOV, K.A.

TITLE On a Method of Direct Computation of the Nucleon-Nucleon Interaction Hamiltonian on Basis of Experimental Values for the Levels of Light Nuclei (O metode neposredsvennogo vyčislenija gamil'toniana nuklon-nuklonnogo vzaimodejstvija po eksperimental'nym značenijam urovnej lechkich jader).

PERIODICAL Zhurnal Eksperimental'noi i Teoret. Fiziki, 1957, Vol 32, Nr 1, pp 167-168 (U.S.S.R.)

Received 3/1957 Reviewed 4/1957

ABSTRACT The here discussed method for the investigation of data concerning the nucleon-nucleon interaction of nuclei is based on the following conditions. A)Forces in the nuclei are pair-like. B) The average velocity of the nucleon in the nucleus has the order of magnitude of 0,1 c or less. Besides, the isotopic invariance of the actual nuclear interaction is assumed and the difference of the proton and neutron mass is neglected. The wave function of the nucleus of the atomic weight A is divided into products of A self-functions each, belonging to a frequency of the nucleon in a threedimensional oscillator well. Into this oscillator representation of the different nuclei only the SCHROEDINGER-equations are set up in which not only matrix elements of nuclear interaction but also development coefficients of wave functions are known. The coefficients can be eliminated by putting up the secular equations for the different levels. In these secular equations only the matrix elements of the pair-like nuclear interaction are unknown, because self-values of the energy are known from the experiment. If the development of the wave function con-

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

PA - 2081

On a Method of Direct Computation of the Nucleon-Nucleon Interaction Hamiltonian on Basis of Experimental Values for the Levels of Light Nuclei.

verges rapidly, secular equations can be cut off. The system of cut off secular equations obtained in this way is solved with respect to these matrix elements.

The fast convergence of the wave functions of the nucleus according to the oscillator functions guarantees the satisfaction of the condition B. The oscillator problem is the problem of the determination of $W = \langle \Delta p^2 \rangle r_0^2/\hbar^2 + \langle \Delta x^2 \rangle r_0^{-2}$. Here $\langle \ldots \rangle$ denote the average values in the given state, $r_0 = (\hbar/m\omega)^{1/2}$, ω the basic frequency of the oscillator. Computations for He^4 with $\Delta x = 1{,}2.10^{-13}$ cm lead to the value $W \sim 1$. For heavier nuclei up to oxygen analogous computations furnish the value $W \sim 3$. In the analysis of wave functions of the nuclei H^3, He^3, He^4, only the original state of the oscillator with $n = 0$ plays an important part, in the case of heavier nuclei up to oxygen only the first two states with $n = 0$ and $n = 1$ are important. The contribution of other states excited is insignificant. The kinetic energy of the nucleon is computed as a whole from the complete Hamiltonian. The Hamiltonian in the center of mass system is then obtained and the self values of the Hamiltonian are then the energy levels of the nucleus. This Hamilton-operator $\hat{H}$ is given explicitly and is discussed. Finally, numerical results are given in the roughest approximation ($n = 0$).

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

PA - 2081

On a Method of Direct Computation of the Nucleon-Nucleon Interaction Hamiltonian on Basis of Experimental Values for the Levels of Light Nuclei.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

Shirokov, Yu. M.

AUTHOR: Shirokov, Yu.M. 56-5-20/46

TITLE: A Group-Theoretical Investigation of the First Principles of Relativistic Quantum Mechanics II. A Classification of Irreducible Representations of an Inhomogeneous Lorentz Group (Teoretiko-gruppovoye rassmotreniye osnov relyativistskoy kvantovoy mekhaniki II. Klassifikatsiya neprivodimykh predstavleniy neodnorodnoy gruppy Lorentsa)

PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol. 33, Nr 5, pp. 1196-1207 (USSR)

ABSTRACT: The classification of the states of a relativistic quantum system is derived theoretically. The irreducible representation of an inhomogeneous Lorentz group is arranged in 4 basic classes P_m, P_Π, P_o and O_o. For the classes P_m and P_Π the unitary and nonunitary representations are derived and are shown in the following two tables:

For P_m: Representation:	Unitarity; measurements of representation according to spin-variables	Main invariants $m^2=-p^2\mu > 0$ $\Gamma_\sigma^2 2/m^2=S(S+1)$	Additional invariants S_H
P^s_{+m}	unitary, finite	0, 1, 2, ...	1

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A Group-Theoretical Investigation of the First Principles of Relativistic Quantum Mechanics II. A Classification of Irreducible Representations of an Inhomogeneous Lorentz Group

56-5-20/46

P'^{s}_{+m}	unitary, finite	1/2, 3/2, ...	1
P^{s}_{-m}	unitary, finite	0, 1, 2, ...	-1
P'^{s}_{-m}	unitary, finite	1/2, 3/2, ...	-1

For P_{Π}; Representation	Unitarity; measurements of representation according to spin-variables	Main invariants $\Pi^2 = p^2_{\mu} > 0$ $\alpha = -s(s+1) = \Gamma^2_{\sigma}/\Pi^2$	Additional invariants
P^{a}_{Π}	unitary. infinite	$\alpha = \alpha > 0$	—
P'^{a}_{Π}	unitary, infinite	$\alpha = \alpha > 1/4$	--
$P^{+}_{\Pi}\ell$	unitary, infinite	$s = \ell = 0,1,2,..$	$s\Gamma_0 = 1$

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A Group-Theoretical Investigation of the First Principles of Relativistic Quantum Mechanics II. A Classification of Irreducible Representations of an Inhomogeneous Lorentz Group 56-5-20/46

which are Slavic.

ASSOCIATION: Moscow State University (Moskovskiy gosudarstvennyy universitet)

SUBMITTED: December 11, 1956

AVAILABLE: Library of Congress

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APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

AUTHOR: Shirokov, Yu.M.

TITLE: A Group Theoretical Investigation of the First Principles of Relativistic Quantum Mechanics III. Irreducible Representations of Classes P_0 and O_0 and Not Fully Reducible Representations of an Inhomogeneous Lorentz Group (Teoretiko-gruppovoye rassmotreniye osnov relyativistskoy kvantovoy mekhaniki III. Neprivodimyye predstavleniya klassov P_0 i O_0 i ne vpolne privodimyye predstavleniya neodnorodnoy gruppy Lorentsa)

56-5-21/46

PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol. 33, Nr 5, pp. 1208-1214 (USSR)

ABSTRACT: The classification of the states of a relativistic quantum system is derived theoretically. The unitary and nonunitary characteristics for the classes P_0 and O_0 are shown in the following table:

Representation	Unitarity, measurements according to spin variables	Main invariants $p^2_\mu = 0$, $\Gamma^2_\sigma = \alpha$	Additional invariants
$P^{\pm\Sigma}_{\pm 0}$	unitary, simple	$\alpha = 0$	$S_H = \pm 1$, $S_{\Gamma_0} = \pm 1$, $\Sigma = 0, 1, 2..$

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

A Group Theoretical Investigation of the First Principles of Relativistic Quantum Mechanics III. Irreducible Representations of Classes P_o and O_o and Not Fully Reducible Representations of an Inhomogeneous Lorentz Group

56-5-21/46

$P'^{\pm\Sigma}_{\pm o}$	unitary, simple	$\alpha = 0$	$S_H = \pm 1$, $S_{\Gamma_o} = \pm 1, \Sigma \frac{1}{2}, \frac{3}{2}, \ldots$
$P^{c}_{\pm o}$	unitary, infinite	$\alpha = c > 0$	$S_H = \pm 1$
$P'^{c}_{\pm o}$	unitary, infinite	$\alpha = c > 0$	$S_H = \pm 1$
$P^{-c}_{\pm o}$	nonunitary, infinite	$\alpha = c < 0$	$S_H = \pm 1$
$P'^{-c}_{\pm o}$	nonunitary, infinite	$\alpha = c < 0$	$S_H = \pm 1$
$P^{\alpha}_{\pm o}$	nonunitary, infinite	$\alpha =$ complex	$S_H = \pm 1$
$P^{\alpha}_{\pm o}$	nonunitary, infinite	$\alpha =$ complex	$S_H = \pm 1$

An isomorphism is given for class O_o and the homogeneous Lorentz group. For the values for the classes P_m, P_Π see: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol. 33, Nr 5, pp. 1196-1207. There are 1 table and 7 references, 6 of which are Slavic.

ASSOCIATION: Moscow State University (Moskovskiy gosudarstvennyy universitet)
SUBMITTED: December 11, 1956
AVAILABLE: Library of Congress
Card 2/2

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

AUTHORS: Maslov, V.P., Samarskiy, A.A., Fomin, S.V., and Shirokov, Yu.M.

SOV/42-13-6-31/33

TITLE: I.I.Gol'dman and V.D.Krivchenkov, Collection of Problems for Quantum Mechanics, Moscow, Gostekhizdat, 1957, 275 Pages, 15000 Copies, 5 Rub. 15 Kop. (I.I.Gol'dman i V.D.Krivchenkov, Sbornik zadach po kvantovoy mekhanike, M., Gostekhizdat, 1957, str. 275, tirazh 15000 ekz., tsena 5 r. 15 kop)

PERIODICAL: Uspekhi matematicheskikh nauk, 1958, Vol 13, Nr 6, pp 234-237 (USSR)

ABSTRACT: This is a very appreciating review of the above book. For the further editions it is commended to consider the group-theoretical methods of quantum mechanics and to give instructions for some difficult problems.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SOV/ 56-34-3-28/55

AUTHOR: Shirokov, Yu. M.

TITLE: Group Theoretical Investigation of the Foundations of Relativistic Quantum Mechanics (Teoretiko-gruppovoye rassmotreniye osnov relyativistskoy kvantovoy mekhaniki) Spatial Reflections in Quantum Theory (Prostranstvennyye otrazheniya v kvantovoy teorii)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 3, pp. 717-724 (USSR)

ABSTRACT: In chapters I to II all irreducible representations of the inhomogeneous Lorentz-group are determined, i.e. all possible transformation rules for the four dimensional rotations and displacements for the wave functions of relativistic quantum theory. The aim of the present work is the determination of all irreducible representations of the imaginary group comprising also spatial reflections. The transition to the imaginary inhomogenous Lorentz-group G_s is realized by adding the inversion operation I to the elements of the real group. The second chapter deals

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Group Theoretical Investigation of the Foundations of SOV/56-34-3-28/55
Relativistic Quantum Mechanics.
Spatial Reflections in Quantum Theory

with the invariants of the inhomogenous Lorentz-group. Then the author reports on the structure of the irreducible representations of the imaginary inhomogenous Lorentz-group. The fourth chapter then deals more detailed with the bivalent representations as well as with the universal coincidence group. The fifth chapter supplies a classification of the unreducible representations of the imaginary groups $\tilde{G}_s$ and $\tilde{G}'_s$. The bivalent representations of these two groups are different, in their case we can speak only of a mutual and relative parity. The sixth chapter shortly reports on the inner parity of elementary particles which represents an inherent characteristic of the particle. This inherent parity λ_s of the particle can be introduced by means of the relation $\lambda_s = I_s I_{so}$, where I_s denotes the usual (external) parity and I_{so} the operator of that Lorentz-transformation which transforms the fourmomentum $(\vec{p}, ip_o)$ into $(-\vec{p}, ip_o)$. The particles with disappearing rest mass, according to the

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Group Theoretical Investigation of the Foundations of SOV/56-34-3-28/55
Relativistic Quantum Mechanics.
Spatial Reflections in Quantum Theory

considerations discussed here, have no inherent parity, and according to this it would be, for instance, senseless to discuss, whether the photon is a vectorial or pseudo-vectorial particle. The last chapter deals more detailed with the maintainance of the parity in weak interactions. Here the author also reports on the experiments concerning the β-decay of polarized nuclei proposed by Lee (Li) and Yang (Ref 4) and carried out by Wu (Vu). The considerations discussed in this work are of widely methodic character. However, according to the author's opinion certain conceptions of parity must be cleared in connection with the widely spread expression "Non-Maintenance of the Parity in Weak Interactions" which, according to the author is unhappily selected. According to the author this is in reality the non-maintenance of the chargeconjugatedness and the correct selection of the inversion operation for actual equations of motions.
There are 9 references, 6 of which are Slavic.

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Group Theoretical Investigation of the Foundations of SOV/56-34-3 -23/55
Relativistic Quantum Mechanics.
Spatial Reflections in Quantum Theory

ASSOCIATION: Moskovskiy gosudarstvennyy universitet
(Moscow State University)

SUBMITTED: October 22, 1957

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

24(5) SOV/56-35-4-36/52

AUTHOR: Shirokov, Yu. M.

TITLE: Relativistic Theory of Polarization Effects (Relyativistskaya teoriya polyarizatsionnykh effektov)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 4, pp 1005 - 1012 (USSR)

ABSTRACT: In a number of papers of recent years general formulae were derived for cross section, polarization, and other quantities, in which the scattering of particles with spin by S-matrix elements was described (cf. Refs 2,3). Analogous formulae apply also to correlation effects. The present paper aims at generalizing these results relativistically for the case of an arbitrary spin of colliding (correlating) particles. First, two colliding particles are investigated and an ansatz is made for the four-moments and four-momenta similar to a Clebsch-Gordan (Klebsh-Zhordan) expansion. The author proceeds from the wave function of a nonrelativistic particle of the mass and the spin i:

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$\varphi^{Ki\alpha}_{m_i}(p)$, $(-\infty < p_1 p_2 p_3 < \infty,\ m_1 = -i, -i+1, \ldots i)$

and derived a relation which connects the product of the wave functions of two free relativistic particles of given K and i with the wave function describing the free motion of the system as a whole. The relation obtained is similar to the Clebsch-Gordan relation for the summation of the angular momenta. It makes it possible to derive formulae for the polarization and relativistic correlation effects. For any arbitrary moments Lorentz transformations are given. The formula for the relativistic polarization effects was found independently by Chou Kuang-chao and M.I.Shirokov in the OIYaI (United Institute for Nuclear Research). In conclusion, the author thanks these two scientists for discussing the problem. There are 11 references, 5 of which are Soviet.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

Relativistic Theory of Polarization Effects SOV/56-35-4-3[illegible]

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

SUBMITTED: May 21, 1958

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APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SHIROKOV, Yu M

~~INOPIN, Ye V~~

AUTHOR: Varshalovich, D. SOV/53-65-4-7/13

TITLE: The VIII Annual Congress of Nuclear Spectroscopy (VIII yezhegodnoye soveshchaniye po yadernoy spektroskopii). I

PERIODICAL: Uspekhi fizicheskikh nauk, 1958, Vol 65, Nr 4, pp 721 - 722 (USSR)

ABSTRACT: The 8th Congress of Nuclear Spectroscopy took place in Leningrad from January 27 to February 3, 1958. It was attended by 300 scientists from the USSR, further by scientists from China, France, Poland, Czechoslovakia, Hungary, Eastern Germany, Yugoslavia, and the Mongol Democratic Republic. 4 main lectures and about 90 reports were heard. The main lectures dealt with problems concerning nuclear models, the α- and β-decay, γ-radiation, internal conversion, and nuclear isomerism. B.S.Dzhelepov, Corresponding Member, Academy of Sciences, USSR, opened the conference. Lectures were held by: V.Yu. Gonchar, Ye. V. Inopin, S.P.Roytko (FTI,AS UkrSSR) on light nuclei and generalized nuclei models; L.K. Peker (BAN SSSR-Library AS USSR), Yu.M.Shirokov (MGU-Moscow State University), L.A.Sliv (LPTI-Leningrad Physical-Technical Institute) et al. on levels in Mg^{24}, Mg^{25} and Al^{25}; D.G. Alkhazov, A.P.Grinberg, G.M.Gusinskiy, K.I.Yerokhina and I.Kh.Lemberg (LPTI) on having found no rotational levels at E<1 MeV in Cr, In, and Mn nuclei. The same research workers also reported on the discovery of vibrational γ-levels in W^{182}, W^{184}, W^{186}- nuclei by means of the method of the Coulomb (Kulon) excitation at $E_{exc} \sim 1$ MeV. L.K.Peker (BAN SSSR) gave a survey report: "Concerning Some Particulars in Vibrational Levels of Deformed Nuclei". Lectures were held also by: D.F.Zaretskiy (AS SSSR - AS USSR) on radiation transitions in deformed nuclei with the spin = 1/2; V.S. Shpinel' 2 NIFI MGU (2nd Scientific Research Institute of Physics, Moscow State University) on the level displacement and the probability of corresponding β - and γ - transitions in odd nuclei; D.F.Zaretskiy (AS SSSR - AS USSR) on the influence of the spin-orbital coupling upon the magnetic moments of the nuclei, A.I.Baz' (AS SSSR -AS USSR) on the existence of light nuclei with high neutron or proton excess; V.A.Kravtsov (LPI-Leningrad Polytechnic Institute) on the formation of nucleon pairs in nuclei; L.L. Gol'din, A. D. Pilipe, G.N.Novikova, K.A.Ter-Martirosyan (FTI AS SSSR) on alpha decay on rotational levels of odd nuclei; V.G. Nosov (AS SSSR - AS USSR) on alpha decay of nonspherical nuclei (survey); A.I.Alikhanov, G.P.Yeliseyev, V.A.Lyubimov, V.V.Erehler (TTL AS SSSR) on polarization measurements at electrons emitted in the β-decay of Tm^{170}, Lu^{177}, Ag^{198}, Ba^{133}, Rb^{86} (ΔI= 0,1, Δπ= -1) as well as in that of Sr^{90} and Y^{90} (ΔI= 2, Δπ= -1); V.P.Rudakov (AS SSSR - AS USSR) on measurements of the (β-γ) angular correlations in Ba^{139}-decay; N.A.Burgov and Yu.V.Terekhov (TTL AS SSSR) on investigations of the electron-neutron correlations and the resonance scattering of γ-radiation; B.K.Kerimov and I.M.Nadzhafov (MGU-Moscow State University) on the bremsstrahlung of longitudinally polarized electrons; A.I.Mukhtarov and Yu.S. Perov (MGU) on the effective cross section of the scattering of polarized electrons and positrons at polarized electrons; Ya.E.Chudars and I.Ya.Taurs (Riga) on the determination of the intensity of the components of the complex β-spectrum according to the Fermi diagram; I.M.Band, L.N.Zyryanova, and Yu.P.Suslov, LGU (Leningrad State University) on the computation of the probability of the permitted and of the forbidden capture of electrons by a nucleus.

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24(5)

AUTHOR: Shirokov, Yu. M. SOV/56-36-2-18/63

TITLE: Relativistic Corrections to the Phenomenological Hamiltonians (Relyativistskiye popravki k fenomenologicheskim gamil'tonianam)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 2, pp 474-477 (USSR)

ABSTRACT: The frequent use of the phenomenological Hamiltonian of nucleon-nucleon and meson-nucleon interaction renders an investigation of the relativistic corrections to the phenomenological potential necessary which is the aim to be attained by the present paper. Proceeding from the Hamiltonian $H = \vec{p}_1^2/2\varkappa_1 + \vec{p}_2^2/2\varkappa_2 + H_{12}$ describing the two-body system (with the arbitrary masses $\varkappa_1$ and $\varkappa_2$ and the arbitrary spins i and I)(H_{12} = nonrelativistic interaction Hamiltonian), the author investigates the influence exercised by the relativistic effects upon the momentum terms of this expression. The following is obtained for the two-body problem Hamiltonian which is relativistically corrected and exact up to the terms of second order (v/c):

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Relativistic Corrections to the Phenomenological Hamiltonians SOV/56-36-2-18/63

$$H = \vec{p}_1^{\,2}/2\varkappa_1 + \vec{p}_2^{\,2}/2\varkappa_2 - \vec{p}_1^{\,4}/8\varkappa_1^3 - \vec{p}_2^{\,4}/8\varkappa_2^3 + H_{12} + H'_{12}$$

This Hamiltonian makes it possible to deal with the interaction of high-energy mesons and nucleons with nuclei as well as to estimate the influence exercised by relativistic corrections on nuclear structure. There are 3 references, 2 of which are Soviet.

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

SUBMITTED: June 14, 1958

Card 2/2

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

24(5) SOV/56-36-2-19/63

AUTHORS: Zhivopistsev, F. A., Perelomov, A. M., Shirokov, Yu. M.

TITLE: On Relativistic Corrections to the Phenomenological Theory of the Levels of Light Nuclei (O relyativistskikh popravkakh v fenomenologicheskoy teorii urovney legkikh yader)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 2, pp 478-480 (USSR)

ABSTRACT: Blatt and Weisskopf (Veyskopf)(Ref 1) estimated the contribution made by consideration of relativistic effects to the theory of the levels of light nuclei as amounting to 10-20%. At its present stage, the meson theory offers no possibility of satisfactorily solving this problem. A phenomenological treatment of the problem must therefore be attempted by basing on the general group properties of the relativistic invariance of the quantum theory (Ref 2). The authors of the present paper proceed from the nonrelativistic Hamiltonian

$H = \sum_n T_n + \sum_{m>n} H_{mn}$ ($T_n = p_n/"L$, the kinetic energy of the n-th nucleon). H_{mn} describes interaction between the nucleons m and n. According to reference 2 consideration of

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SOV/56-36-2-19/63

On Relativistic Corrections to the Phenomenological Theory of the Levels of Light Nuclei

relativistic effects (with an accuracy extending to terms of 2nd order of v/c) leads to the form $H = \sum_n T_n + \sum_{m>n} H_{mn} + \sum_n T'_n + \sum_{m>n} H'_{mn}$ ($T'_n = - p_n/8M^3$, the correction to the kinetic energy of the n-th nucleon). Further, the correction term to the interaction Hamiltonian H'_{mn} is investigated. This interaction correction formula is written down for 2 particles in the states

$|0s^2_{1/2}\ 01\rangle$, $|0s^2_{1/2}\ 10\rangle$, $|1p^2_{3/2}\ 01\rangle$, $|1p^2_{1/2}\ 01\rangle$

with $r_o = 1.65.10^{-13}$cm($h\omega$ = 15 Mev), the potential is written down in the form $V=V_o(0.317 + 0.500\ P + 0.183\ PQ)\ f(r/a)$

and for the Gaussian potential course (Ref 3)

$V_o = -51.9$ Mev, $a = 1.73.10^{-13}$cm, $f(x) = e^{-x^2}$

Yukawa potential (Ref 1)

$V_o = -68$ Mev, $a = 1.17.10^{-13}$cm, $f(x) = e^{-x}/x$

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On Relativistic Corrections to the Phenomenological Theory of the Levels of Light Nuclei SOV/56-36-2-19/63

and for the square potential well (Ref 1) $V_o = -33.6$ Mev, $A = 2.1.10^{-13}$cm . V(in kev) is calculated and compiled in a table. The correction was found to depend to a high degree on the shape of the potential and is of the order of magnitude 0.02 - 0.2 Mev for a pair of nucleons, 0.2-2 Mev for light nuclei, and 2-20 Mev for heavy nuclei. For nuclear levels it is of the same order as for nucleon pairs. There are 1 table and 3 references, 2 of which are Soviet.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute for Nuclear Physics of Moscow State University)

SUBMITTED: June 16, 1958

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APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

SOV/56-36-3-35/71

21(1)

AUTHORS: Kaminskiy, A. K., Shirokov, Yu. M.

TITLE: On the Electromagnetic Radii of the Lightest Nuclei in the Ground and in the Lowest Excitation States (Ob elektromagnitnykh radiusakh legchayshikh yader v osnovnykh i nizshikh vozbuzhdennykh sostoyaniyakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 3, pp 874 - 878 (USSR)

ABSTRACT: In the present paper the authors calculate the radii of nuclei with mass numbers 5 - 8 for the ground- and the first excited states on the basis of experimental data on isotopic multiplets and scattering of high energy electrons on nuclei, and they especially investigate the dependence of the radius on the excited state. In a figure, 4 diagrams show the dependence of r_o on excitation energy: Figure a) for He^5 - Li^5, b) for He^6 - Li^6 - Be^6 (in dependence on E_{exc} of Li^6) c) for Li^8 - Be^8 - B^8 (in dependence on E_{exc} of Be^8) and d) for Li^7 - Be^7. It was found that the nuclear radius of He^5 and Li^5, as an exception, shows no monotonous increase with

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SOV/56-36-3-35/71

On the Electromagnetic Radii of the Lightest Nuclei in the Ground and in the Lowest Excitation States

energy. For the 2. excited level with E = 16.69 Mev the nuclear radius is smaller than for the first and also smaller than for the ground state. For Li^7 - Be^7 the nuclear radius increases rapidly with energy, for Li^7 - Be^7 there is a weak dependence, and the same is the case for the nuclear radius with A = 8. In general it may be said that, with the exception of the He^5-Li^5 doublet, the nuclear radii for all nuclei increase monotonously with energy. It was found that agreement between experimental data from the scattering of fast neutrons on nuclei and those calculated from the Coulomb (Kulon) energy difference can be improved by assuming a different value for r_0 for s- and p-shells. For Li^7, for example, one obtains $r_s = 2.42.10^{-13}$cm and $r_p = 1.32.10^{-13}$cm and for Li^6 $r_s = 2.65.10^{-13}$cm and $r_p = 1.07.10^{-13}$cm is obtained. There are 1 figure and 8 references, 3 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)
SUBMITTED: September 16, 1958

Card 2/2

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

24(5)

AUTHOR: Shirokov, Yu. M. SOV/56-36-3-36/71

TITLE: The Group-Theoretical Treatment of the Bases of Relativistic Quantum Mechanics. V. (Teoretiko-gruppovoye rassmotreniye osnov relyativistskoy kvantovoy mekhaniki. V.). Irreducible Representations of the Inhomogeneous Lorentz Group Including Spatial and Time Reflections (Neprivodimyye predstavleniya neodnorodnoy gruppy Lorentsa, vklyuchayushchey otrazheniya v prostranstve i vo vremeni)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 3, pp 879-888 (USSR)

ABSTRACT: The present paper is intended to carry out a systematic investigation of the time reflection law within the framework of the ordinary theory of the representation of the inhomogeneous Lorentz group without using a certain definite form of equation of motion. The Wigner-formulation of the time reflection law is dealt with by a separate paper, and the same is the case with the problems connected with the CPT theorem. In the present paper the author, by utilizing the results obtained by papers I - IV, gives a complete classification of all irreducible representations of the inhomogeneous

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549530002-2

The Group-Theoretical Treatment of the Bases of Relativistic Quantum Mechanics. V. Irreducible Representations of the Inhomogeneous Lorentz Group Including Spatial and Time Reflections SOV/56-36-3-16/71

Lorentz group including space and time reflections. It is shown that the concept of time parity cannot be introduced for particles with a nonvanishing rest mass. For such particles two unequivalent concepts, which differ in respect to space-time parity properties, exist for a given spin. With the aid of the concept of a universal covering group it is shown that for particles with half-integer spins the number of possible representations with various reflection laws is larger than hitherto assumed. There are 4 tables and 9 references, 6 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: September 16, 1958

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SHIROKOV, Yu. M., Doc Phys-Math Sci -- (diss) "Theoretico-group methods in relativistic quantum theory." Moscow, 1960. 12 pp; (Academy of Sciences USSR, Physics Inst im P. N. Lebedev); 150 copies; price not given; bibliography on pp 11-12 (30 entries); (KL, 25-60, 125)

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SHIROKOV, Yu.M.

Spatial and time reflections in the relativistic theory. Zhur. eksp. i teor. fiz. 38 no.1:140-150 Jan '60. (MIRA 14:9)

1. Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.

(Relativity (Physics)) (Particles (Nuclear physics))

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31790
S/056/61/041/006/040/054
B109/B102

24.9200 (1144, 1158)

AUTHORS: Zelenskaya, N. S., Shirokov, Yu. M.

TITLE: Relativistic corrections to the magnetic moments of H^3 and He^3

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 6(12), 1961, 1934-1937

TEXT: A general expression is derived for the relativistic corrections to the nuclear magnetic moments arising as a result of non-Galilean relativistic corrections to the Hamiltonian of nucleon-nucleon interaction. According to F. A. Zhivopistsev, A. I. Perelomov, and Yu. M. Shirokov (ZhETF, 36, 478, 1959), the non-Galilean correction to nucleon-nucleon interaction has the form

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$$H'_{mn} = \frac{1}{8M^2}\Big\{-H_{mn}\mathbf{P}^2 + i\Big(\mathbf{P}\frac{\partial H_{mn}}{\partial \mathbf{x}}\Big)\Big(\mathbf{P}\frac{\partial}{\partial \mathbf{p}}\Big) - (\sigma_m - \sigma_n)\Big[\mathbf{P}\frac{\partial H_{mn}}{\partial \mathbf{x}}\Big] - i(\sigma_m - \sigma_n)H_{mn}[\mathbf{pP}] + iH_{mn}(\sigma_m - \sigma_n)[\mathbf{pP}] - \Big(\mathbf{P}\frac{\partial H_{mn}}{\partial \mathbf{p}}\Big)(\mathbf{pP}) + iP_iP_j\frac{\partial^2 H_{mn}}{\partial x_i \partial p_j}\Big\} \quad (2),$$

$$\mathbf{P} = \mathbf{p}_m + \mathbf{p}_n, \quad \mathbf{p} = \tfrac{1}{2}(\mathbf{p}_m - \mathbf{p}_n), \quad \mathbf{x} = \mathbf{x}_m - \mathbf{x}_n.$$

[illegible] denotes the interaction energy of the m-th and n-th nucleons.

[illegible]r of the non-Galilean relativistic correction to the nuclear [illegible]ent is obtained from (2) as

$$\Delta\mu = \frac{1}{16M^2}\Big\{2H_{mn}(e_m + e_n)[\mathbf{n}(\mathbf{r} - \mathbf{R})]\mathbf{P} - (e_m + e_n)(\sigma_m - \sigma_n)\Big[\mathbf{n}\Big((\mathbf{r} - \mathbf{R})\frac{\partial H_{mn}}{\partial \mathbf{r}}\Big) - (\mathbf{r} - \mathbf{R})\Big(\mathbf{n}\frac{\partial H_{mn}}{\partial \mathbf{r}}\Big)\Big]\Big\} \quad (3).$$

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(3) has been calculated for the $^2S_{1/2}$ state of mirror nuclei by using the wave function of the harmonic oscillator and the expression $H_{mn} = (W + MP_x + BP_\sigma + \mathcal{M}P_xP_\sigma)\ V(r)$ (V(r) - Gauss or Yukawa potential). The results are shown in a table. Conclusions: A) The relativistic non-Galilean correction exceeds considerably the correction of the spin-orbital interaction; B) the correction terms have the correct sign; the maximum value of 0.086 explains only 30% of the discrepancy between theoretical and experimental values. The difference is attributed to the effect of exchange mesons, which has been discussed by S. D. Drell and J. D. Walecka (Phys. Rev., 120, 1069, 1960). There are 1 table and 13 references: 4 Soviet and 9 non-Soviet. The four most recent references to English-language publications read as follows: L. D. Rearlstein, J. C. Tang, K. Wildermuth. Nucl. Phys., 18, 23, 1960; A. C. Butcher, J. M. Mc Namee. Proc. Phys. Soc., 74, 529, 1959; R. A. Ferrel, W. M. Visscher, Phys. Rev., 102, 450, 1956; J. M. Berger. Phys. Rev., 115, 223, 1959.

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Relativistic corrections to the... S/056/61/041/006/040/054
B109/B102

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: July 12, 1961

Legend to the Table: (1) shape and parameter of V(r) (V_0 is given in Mev and a in 10^{-13} cm); (2) Gauss potential; (3) Yukawa potential.

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Форма и параметры $V(r)$ (V_0 в MeV, a в 10^{-13} см) (1)	$W=M=0,5$, $B=\varkappa=0$		$W=0,222$, $M=0,58$, $B=0,222$, $\varkappa=-0,022$ [9]	
	$\Delta\mu(H^3)$	$\Delta\mu(He^3)$	$\Delta\mu(H^3)$	$\Delta\mu(He^3)$
[illegible]ский потенциал (2)				
[illegible]51,9, $a=1,73$ [8]	0	−0,048	0,014	−0,014
[illegible]5, $a=1,94$ [9]	0	−0,032	0,009	−0,009
[illegible]68,8, $a=1,55$ [10]	0	−0,018	0,005	−0,005
Потенциал Юкава (3)				
$V_0=68$, $a=1,17$ [11]	0	−0,086	0,026	−0,026
$V_0=46,48$, $a=1,184$ [12]	0	−0,056	0,017	−0,017

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SHIROKOV, Yu. M.

"On the Conditions of the Mikrocovariance and Mikrocausality without any References to the Postulates of the Quantum Field Theory"

report presented at the Intl. Conference on High Energy Physics, Geneva, 4-11 July 1962

Inst. for Nuclear Research of the Moscow State University

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S/056/62/042/001/023/048
B104/B102

AUTHORS: Cheshkov, A. A., Shirokov, Yu. M.

TITLE: Invariant parametrization of the relativistic scattering matrix

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no 1, 1962, 144-151

TEXT: The parametrization is first performed in the center-of-mass system A number of versions, all of them relativistically noninvariant, are tested. In so doing, the authors base on M. Yacob, G. C. Wick (Ann of Phys 7, 404, 1959), L. Wolfenstein, J. Ashkin (Phys. Rev., 85, 947, 1952), V. I. Ritus (ZhETF, 33, 1264, 1957); S. M. Bilen'kiy, L. I. Lapidus, L. D. Puzikov, R. M. Ryndin (ZhETF, 35, 959, 1958); and Ya. Fisher, S. Chulli (ZhETF, 38, 1740, 1960; 39, 1349, 1960). The scattering matrix S_{cms} parametrized in the c.m.s. does not essentially differ from other parametrized matrices. However, the invariantly parametrized elements of the S matrix are written in matrix form, in which no nonphysical parameters appear, and the particle chiralities are used to describe the initial and

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