LEVANTOVSKIY, M.I., professor; KOLESNIKOV, N.N.

Experimental justification for myoplasty in surgery for hematogenic osteomyelitis. Ortop., travm. i protez. 17 no.1:24-26 Ja-F '56. (MLRA 9:12)

1. Iz kafedry Fakul'tetskoy khirurgii (zav. - prof. M.I.Levantovskiy) i kafedry operativnoy khirurgii (zav. - dots. A.K.Silant'yev) Chkalovskogo meditsinskogo instituta (dir. - prof. I.I.Kositsyn)

(OSTEOMYELITIS
hematogenic, exper., musc. plastics in)
(MUSCLES, surg.
exper., in hematogenic osteomyelitis)

KOLESNIKOV, N.N.

Modifications in the nervous system of the respiratory tract in whooping cough. Pediatriia 39 no.2:58-63 Mr-Ap '56. (MLRA 9:8)

1. Iz kafedry patologicheskoy anatomii (zav. chlen-korrespondent AMN SSSR prof. A.I.Strukov) I Moskovskogo ordena Lenina meditsinskogo instituta.

(WHOOPING COUGH, pathology,
nerves of resp. tract (Rus))
(RESPIRATORY TRACT, innarvation,
pathol. in whooping cough (Rus))

PUTINTSEV, A. K.; KOLESNIKOV, N. F.

Tobacco fermentation in the bulk state and the increase of labor productivity. Izv. vys. ucheb. zav.; pishch. tekh. no.5: 12-15 '62. (MIRA 15:10)

1. Krasnodarskiy institut pishchevoy promyshlennosti, kafedra ekonomiki i organizatsii proizvodstva.

(Tobacco curing)

KOLESNIKOV, N. [N.]

USSR/Nuclear Physics - Beta Decay 11 Dec 51

"Twin Beta Decay," D. Ivanenko, N. Kolesnikov, Phys Faculty, Moscow State U imeni M. V. Lomonosov

"Dok Ak Nauk SSSR" Vol LXXXI, No 5, pp 771-773

Makes the assumption that there can be one more variant of neutrino-less $\beta\beta$-decay by reviving the notion concerning the existence of an immediate direct interaction of the nucleon pair (in one way or another sufficiently closely connected together) with the 2-electron field (the field of the pairs of electrons-positrons) which are independent of the neutrino. Submitted by Acad D.V. Skobel'tsyn 10 Oct 51.

210T77

PA 240T90

KOLESNIKOV, N. [N.]

21 Dec 52

USSR/Nuclear Physics - Electrino

"Hypothesis of New Particles Called Electrino,"
D. Ivanenko and N. Kolesnikov

"DAN SSSR" Vol 87, No 6, pp 923-925

Assumes existence of electrino, consisting of fused electrons with mass equal to 2 to 4 electrons. Analyzing the decay of electrino in system of center of inertia authors obtain an expression of spectrum of electrino decay quite different from usual beta-spectra. Presented by Acad D. V. Skobeltsyn 20 Oct 52.

240T90

1. IVANENKO, D., KOLESNIKOV, N.

2. USSR (600)

4. Isotopes

7. Theory of isotopic displacement. Dokl. AN SSSR Otd. tekh. nauk no.1, 1953

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

KOLESNIKOV, N. N.
USSR/Nuclear Physics - Double decay

FD-500

Card 1/1 : Pub. 146-17/18

Author : Kolesnikov, N. N.

Title : Mixed double decay-capture processes

Periodical : Zhur. eksp. i teor. fiz., 24, 246-247, Feb 1953

Abstract : Letter to the editor. Computes probability of double beta-decay without neutrino interference. Finds probable life for Z = 50 about 10^{19} years. Indebted to Prof. D. D. Ivanenko. 9 references, including 6 foreign.

Institution : Moscow State University

Submitted : October 4, 1952

KOLESNIKOV, N.

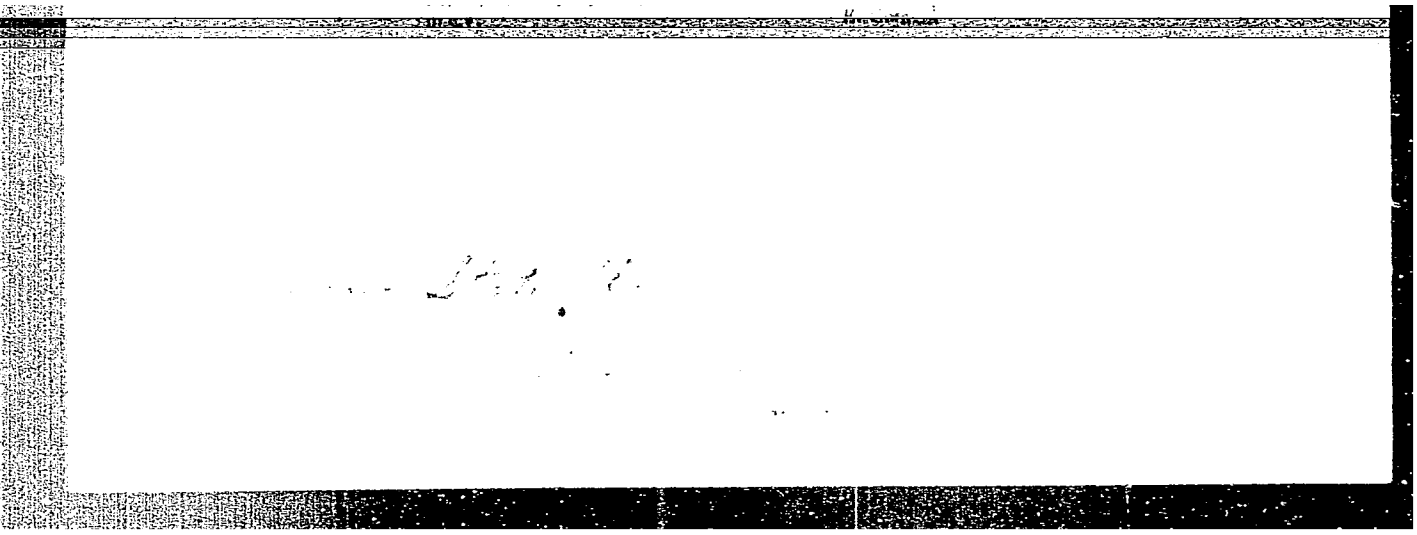
USSR/Nuclear Physics - Isotopes 11 Mar 53

"Theory of Isotopic Displacement," D. Ivanenko and N. Kolesnikov

DAN SSSR, Vol 89, No 2, pp 253-256

Note that jumps of curve of isotopic displacements should be related to behavior of nuclear volumes and radii, which do not vary monotonously as expected. Presented by Acad A. A. Lebedev. Recd 11 Oct 52.

264T92



APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000723810012-7"

KOLESNIKOV, N. N.

- [illegible] analysis

[illegible] Pub. 43 - 88/97

[illegible]ov, N. N.

"Spectral analysis of Sr in apatites

Periodical : Izv. AN SSSR. Ser. fiz. 18/2, 295-296, Mar-Apr 1954

[illegible] developed for spectral [illegible] determination in apatites [illegible] sample into a state of [illegible]. Numerous analyses [illegible] average relative error of the method does not exceed [illegible].

[illegible]

.....

KOLESNIKOV, N. N.

USSR, Nuclear Physics

Author : Kolesnikov, N. N.

Title : Analysis of nuclear periodicities with the aid of stability curves

Periodical : Dokl. AN SSSR, 97, Ed. 2, 233 - 236, July 1954

Abstract : Nuclear periodicity is analyzed. The analysis was made by studying stability curves of the Z and I. The curves were constructed on the base of known data concerning the energy level, differences and coupling energies. Fourteen references. Graphs, Diagrams

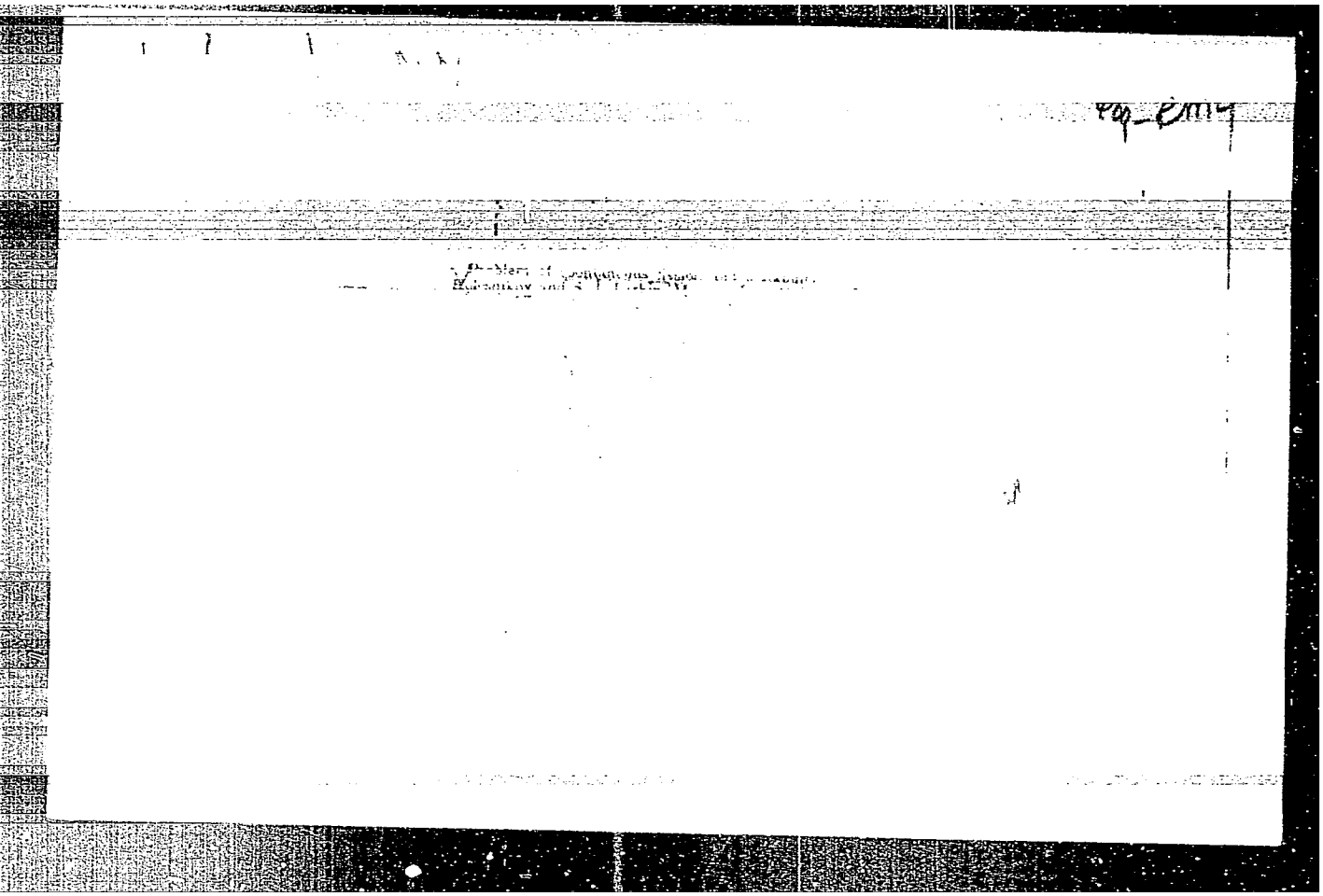
Institution : The M. V. Lomonosov State University, Moscow.

Presented by : Academician A. A. Lebedev, March 29, 1954

KOLESNIKOV, N. N.

Kolesnikov, N. N. -- "The Influence of the Density of Distribution of Nucleons on Certain Nuclear and Atomic Effects." Moscow Order of Lenin State U imeni M. V. Lomonosov, Moscow, 1955. (Dissertation for the Degree of Candidate in Physico-mathematical Sciences.)

SO: Knizhnaya Letopis', No. 23, Moscow, June 1955, pp. 87-104



KOLESNIKOV, N.N.

USSR/Nuclear Physics - Transuranic

FD-1831

Card 1/1 Pub 146-16/25

Author : Larin, S. I., and Kolesnikov, N. N.

Title : Neutron sub-shell in the region of the transuranic elements

Periodical : Zhur. eksp. i teor. fiz. 28, 243, February 1955

Abstract : The authors remark that at the present time the existence of neutron or proton shells or sub-shells have not been established in the region of neutron numbers N greater than 126 and atomic numbers greater than 82. Only individual indications as to the possible existence of weak subshells have been made in the case of N=148 (N. Kolesnikov, DAN SSSR, 97, 233, 1954) and Z=92 (V. A. Kravtsov, DAN SSSR, 78, 43, 1951). They state that new data on the properties of the isotopes of the transuranic elements, including 99 and 100, permit one to discuss again this problem. Thirteen references.

Institution: Moscow State University

Submitted : September 30, 1954

KOLESNIKOV, N.N.

USSR/Nuclear Physics - Spontaneous fission FD-1832

Card 1/1 Pub 146-17/25

Author : Kolesnikov, N. N., and Larin, S. I.

Title : Probability of spontaneous fission and beta-stability

Periodical : Zhur. eksp. i teor. fiz. 28, 244-245, February 1955

Abstract : The probability of nuclear fission depends upon the effective height of the potential barrier (i.e. upon the critical energy of fission), and also upon its width. Here the authors wish to call attention to the fact that the maximum stability relative spontaneous fission coincides sufficiently accurately with the maximum of beta-stability in isotopes of one and the same element, as shown e.g. from a consideration of the graph of the dependence of log tau (logarithm of probability of spontaneous fission) upon Z^2/A. They thank Prof. D. D. Ivanenko. Eight references, only 1 USSR (N. N. Kolesnikov, DAN SSSR, 97, 233, 1954).

Institution: Moscow State University

Submitted : September 30, 1954

- Nuclear Structures

: Ivanenko, D., and Kolesnikov, N.

: Remarks regarding a nuclear model

Periodical : DGK. AN SSSR 100/1, 37-40, Jan. 1, 1955

Abstract : Nuclear models (shell, liquid-drop) are discussed. A modified model of the nuclear structure is suggested in order to overcome some difficulties in the interpretation of observed nuclear phenomena. These modifications (mostly concerning weakly excited states of atomic nuclei) are as follows: 1. nucleons are moving independently (the filling of energy levels and shells is determined through a self adjusted potential of the field and of the nucleons); 2. the considerations of the liquid-drop-collective movements, mainly, connected distortions of the wave function; and 3. existence of of a certain number of nuclear groups of the α- and α-particle types. Seventeen references: 7 USSR, 8 USA, 1 French and 1 German (1932-1953).

Institution : The M. V. Lomonosov Moscow State University

Presented by: Academician A. A. Lebedev, September 27, 1954

. . . 15/46

Kolesnikov, N. N.

... on the statistical theor...

... AN SSSR 103/1, 57-60, Jul 1, 1955

... which are necessary ... nucleus are considered. ... model is based on the statistical theory of a nucleus. However, the theory is ... for nuclei with filled ... (1924-1955). Graphs; ...

. . . . .

... N. N. Bogolyubov, ...

Kolesnikov, N.

Category : USSR/Nuclear Physics - Elementary Particles C-3

Abs Jour : Ref Zhur - Fizika, No 3, 1957, No 5897

Author : Ivenenko, D., Kolesnikov, N.
Inst : Moscow State University
Title : Binding Energy of Hypernuclei.

Orig Pub : Zh. eksperim. i teor. fiziki, 1956, 30, No 4, 800-801

Abstract : The binding energy and the stability of hypernuclei is investigated. An analysis of the experimental data available at present time leads to the conclusion that: (a) the binding energy B_Λ of a Λ^0 particle in hypernuclei does not depend noticeably on the spin and on the isotopic spin of the core comprising the nucleus minus the Λ^0 particle, and increase approximately linearly with increasing mass number A; (b) the interaction between the Λ^0 particle and the nucleon N is somewhat weaker than the NN interaction.

Based on the assumption that adding the Λ^0 particle changes little the core potential in that the radii of the Λ^0-N forces are not greater than that of the NN forces, the authors explain

Card : 1/2

KOLESNIKOV, N. N.

Category : USSR/Nuclear Physics - Structure and Properties of Nuclei C-4

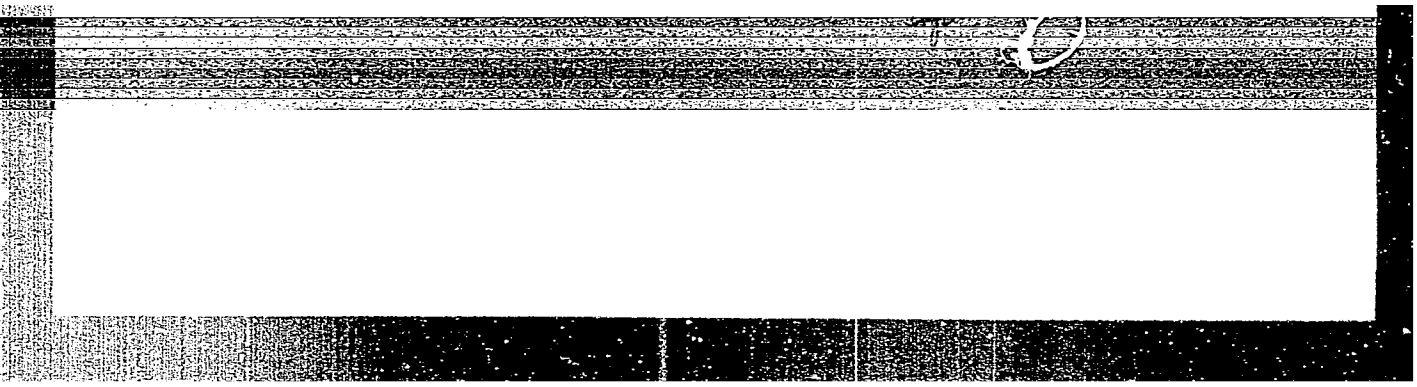
Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 489

Author : Kolesnikov, N.N.
Inst : Moscow State University, USSR
Title : Properties of the Energy Surface of Heavy Nuclei.

Orig Pub : Zh. eksperim. i teor. fiziki, 1956, 30, No 5, 889-899

Abstract : A detailed study is made of the properties of the energy surface of heavy nuclei, separately for each of the four types of parity of the nuclei. Along with refining the known empirical laws and the parameters of the energy surfaces, it is shown that under the same values of mass numbers A, the masses of the nuclei reach minimum values at different values of Z, depending on whether Z is odd or even, and that the curvature of the isobar parabolas is independent of whether Z is odd or even, and is apparently somewhat greater in the case of nuclei with even A. The character of the shells N = 126 and Z = 82 is explained. The results are compared with the usual equations for the binding energy.

Card : 1/1



APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000723810012-7"

Kolesnikov, N.N.

AUTHOR TEODOROVICH E.V., KOLESNIKOV N.N. PA - 2704

TITLE The Part Played By the Three-Particle Forces in the Three-Body Problem (Pol'trekhchastichnikh sil v zadache trekh sil, -Russian)

PERIODICAL Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 2, pp 392-393, (U.S.S.R.)

Received 5/1957 Reviewed 6/1957

ABSTRACT Indications exist for the fact that taking account of the three-particle forces emproves the agreement between theoretically computed energy values of light nuclei and the experiment. On the occasion of the computation of the distribution of the three-particle forces the authors confined themselves to the three-body-problems: a) to the computation of the binding energy of H^3 and He^3, b) to the computation of the cross section of the scattering of neutrons by a deuteron.

For reasons of simplicity the non-centrality and the dependence on spin of the two-particle nuclear forces are not taken into consideration. The authors chose the following sum as an operator of the total energy of tritium:

$$H = -\sum_{i<j} V_0 \frac{\exp\{-\varkappa r_{ij}\}}{\mu r_{ij}} + f \frac{K_1(\mu(r_{12}+r_{23}+r_{31}))}{\mu^3 r_{12} r_{23} r_{31}} + \frac{\hbar^2}{2M}(\nabla_1^2+\nabla_2^2+\nabla_3^2).$$

Here the first term denotes the usual two-particle interaction and the term of the three-particle interaction was chosen in the same manner as in the work by S.DRELL, K.HUANG, Phys.Rev., 91, 1527 (1953) and A.KLEIN, Phys. Rev. 89, 1158 (1953). The constant f was not fixed and determined in such a manner that the exact binding energy of H^3 resulted. The choi-

Card 1/2

The Part Played By the Three-Particle Forces in the Three-Body Problem PA - 2704

ce of the trial function takes the slight probability of the simultaneous exterior approximation of three particles into account. In this manner the authors found f = 153 MeV which agrees with respect to orders of magnitude with the works by S.DRELL and K.HUANG. At He^3 the numerical value of the COULOMB energy was very near the experimental value, while poorer results were obtained if the three-particle forces were not taken into consideration. The phases of the scattered waves were determined by SCHWINGER's variation method with a trial function of the form (a + br) sin kr + (c + dr) cos dr. Here a,b,c, denote variation parameters. The total effictive cross sections are given in a table. The following variations are here distinguished: a) If only interaction in pairs is taken into account. b) If only interaction in pair and three-particle interaction with f = 153 MeV is taken into account. Considering the three-particle forces somewhat improves agreement with the experiment. The part played by three-particle interaction in the nuclei, however, is comparatively small and is not the main reason for the saturation of the nuclear forces. (1 Table).

ASSOCIATION Moscow State University
PRESENTED BY
SUBMITTED 10.11.1956
AVAILABLE Library of Congress
Card 2/2

56-3-52/59

The Influence Exercised by the Volume of the Proton on the Location of the Electron Levels in Hydrogen and Deuterium

ASSOCIATION: Moscow State University
(Moskovskiy gosudarstvennyy universitet)

SUBMITTED: June 2o, 1957

AVAILABLE: Library of Congress

Card 3/3

KOLESNIKOV, N. N.

56-7-46/66

AUTHOR KOLESNIKOV, N.N., KRYLOVA, A.P.

TITLE The Nuclear Subshells and the Deformations behind the Lead. (Yadernyye podobolochki i deformatsii v oblasti za svintsom.- Russian)

PERIODICAL Zhurnal Eksperim. i Teoret. Fiziki 1957, Vol 33, Nr 7, pp 274-277 (USSR)

ABSTRACT First, reference is made to some previous works on the same subject and to the results obtained. The authors endeavor to find out

a) with what numbers N and Z is the change of deformation connected?

b) are not the subshells filled somewhere within range of the heavy nuclei?

c) Determination of the energy of the closure of the subshells and the effect produced by deformation.

For this purpose the authors investigated the problem from an energetical point of view. The binding energies of neutrons and protons were compared. Here not the absolute values of the binding energies of the neutrons, but their differences ate of importance. The curve of "reduced" binding energies of the neutrons has several curvatures which are found at the same points in the

CARD 1/2

MAYER, Maria (Goeppert); KOLESNIKOV, N.N. [translator]; IVANENKO, D.D., red.

[Elementary theory of nuclear shell structure] Elementarnaia teoriia iadernykh obolochek. Moskva, Izd-vo inostr.lit-ry, 1958. 318 p. (MIRA 13:8)
(Nuclear shell theory)

24 (5) SOV/56-35-2-11/60

AUTHORS: Kolesnikov, N. N., Zhakobi, Zh. A.

TITLE: On the Interaction of Electrons With Other Particles at Short Distances (O vzaimodeystvii elektrona s drugimi chastitsami na malykh rasstoyaniyakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 2, pp 381-391 (USSR)

ABSTRACT: The present paper theoretically investigates the possibility of the existence of an electron structure. The authors first deal with the interaction between electron and proton on the basis of the linear theory of extended particles, and, following this, the interaction between protons and other particles. Also the self-energy and the dimensions of the electron are dealt with in accordance of the linear theory; the results are compared with those obtained by Hofstadter (Khafstadter). In the second chapter the authors deal with the nonlinear theory (Refs 6, 13 - 16), first of all with the general properties of the nonlinear field. The equivalent charge distribution, the effective radius, and, finally, the interaction of particles is dealt with in accordance with the nonlinear theory. The results obtained according to the

Card 1/2

On the Interaction of Electrons With Other Particles at Short Distances

SOV/56-35-2-11/60

linear and nonlinear theories lead to close results with respect to the interaction of electrons with protons, neutrons, and light nuclei; however, the interaction between two electrons at short distances is, according to the nonlinear theory, different from the interaction between electron and positron. The authors thank Louis de Broglie (Broyl') and D. D. Ivanenko for the interest they displayed, and Zh. P. Vizh'ye (Vigier ?), D. Bom (Bohm ?), and T. Takebayazi for their comments. There are 20 references, 5 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: February 13, 1958

Card 2/2

KoLesnikov, N.N.

24(2)/20 66702

SOV/109-4-8-22/35

AUTHORS: Granovskiy, V.L., Luk'yanov, S.Yu., Spivak, G.V. and Sirotenko, I.G.

TITLE: Report on the Second All-Union Conference on Gas Electronics

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 8, pp 1339 - 1358 (USSR)

ABSTRACT: The conference was organised by the Ac.Sc.USSR, the Ministry of Higher Education and Moscow State University.

A.A. Timofeyev - "Measurement of the Gas Density During the Dynamic Operation of a Discharge" (see p 1306 of the journal).A.V. Nedospasov - The Nature of a Striated Positive Column".

V.L. Paral' and Yu.M. Kagan - "The Theory of Probes for Arbitrary Pressures".

Yu.M. Kagan et al. - "The Positive Column of a Discharge in a Diffusion Regime".

M.V. Konyukov - "Influence of the Processes of the Annihilation of the Negative Ions on Their Concentration in the Column".

M.D. Gaborich and L.L. Pasachnik - "Anomalous Scattering. Excitation of Plasma Oscillations and Plasma Resonance"

Yu.L. Klimantovich - "Energy Lost by Charged Particles for the Excitation of the Oscillations in Plasma (the Langmuir paradox)" and "The Theory of Non-linear Plasma Oscillations".

Ye.G. Martinkov and I.G. Nekrashevich - "Dependence of the Temperature in the Near-electrode Region of a Pulse Discharge on the Material of the Electrodes".

N.A. Karatina and B.N. Klyarfel'd - "Formation of Light Spots on the Anode of a Gas Discharge (see p 1301 of the journal).

N.A. Matveyeva -"Distribution of Binary Mixtures of Inert Gases in a d.c. Discharge".

V.G. Stepanov and V.P. Zakharchenko - "Some Phenomena in Rarified Plasma".

V.G. Stepanov and V.S. Bagel' - "The Possibility of Obtaining Highly Concentrated Plasmas".

G.V. Smirnitskaya and E.M. Reykhrudel' - "Some Characteristics of the Discharge in an Ion Pump and in a Magnetic Ionisation Vacuum Gauge".

Ye.T. Kucherenko and O.K. Nazarenko - "Properties of a Discharge with Electron Oscillations in a Magnetic Field" (see p 1253 of the journal).

The paper by L.M. Biberman and B.A. Veklenko considered the approximate methods for determining the concentration of atoms at the radiation levels.

I.I. Sobel'man and L.A. Vaynshteyn read a paper on "A Non-stationary Theory of the Stark Broadening of the Spectral Lines in Plasma".

M.A. Mazing and S.L. Mandel'shtam - "The Broadening and the Shift of Spectral Lines in a Gas-discharge Plasma".

F.P. Lunt (England) - "The Kinetics of Electron Collisions Leading to the Excitation of the Molecular Hydrogen in a Hydrogen Discharge".

V.N. Kolesnikov et al. - "Some Properties of the Arc Discharge in an Atmosphere of Inert Gases".

A.A. Mak and M.P. Vanyukov - "Production of High Temperatures By Means of Spark Discharges".

Card 1/7

Kolesnikov, N. N.

BINDING ENERGIES OF HYPER-NUCLEI AND INTERACTIONS OF TYPE ΛN AND Λ-Λ

D.D.Ivanenko, N.N. Kolesnikov, V.A. Lyul'ka, V.A.Philimonov

Hypernuclei systems containing Λ or Σ - hyperons in addition to protons and neutrons, are of great interest both for the understanding of cosmic ray processes and for research into ordinary nuclear forces, By making use of the binding constants known from scattering theory, and having carried out the "out off" as in the Chou-Hartenhaus method in the theory of ordinary nuclei, we obtained values for hyper-nuclei binding energies in satisfactory agreement with experimental results.

An evaluation made on the basis of field theory revealed the existence of weak forces of Λ-Λ attraction in addition to the stronger ΛN interaction, which, in turn, is noticeably weaker than the N-N forces. In this connection, the binding energies of the normal and the excited states of a series of light nuclei containing one or two Λ- particles were calculated using the approximation of a short range of action and a phenomenological potential depending on the spin, whose parameters were selected so as to ensure the necessary binding energy of the Λ- particle in $H\,\Lambda$ and $He\,\Lambda$

The data on Λ-N forces proceeding from hyper-nuclei were employed to calculate the cross sections of scattering and capture of slow Λ particles by nuclei.

Report presented at the International Cosmic Ray Conference, Moscow, 6-11 July 1959.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000723810012-7"

21(1)

AUTHORS: Kolesnikov, N. N., Krylova, A. P.

SOV/56-37-2-34/56

TITLE: The Proton Subshell of Z = 100

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 2(8), pp 550-553 (USSR)

ABSTRACT: In the USSR, Flerov and his collaborators (in the USA Seaborg and Giorso) synthetized the short-lived isotopes 102^{253} and 102^{254}. These isotopes were found to decay under α-emission (8.8 Mev - half life 2-30 sec; 8.3 Mev - 3 sec), as well as by way of a fission (30%); thus, the activity with a half life of 10 min, which was found by Swedish scientists, has probably nothing to do with the element 102. The authors of the present "Letter to the Editor" investigated the anomalous properties of the two isotopes of the element 102 and discovered several interesting facts. If, in a diagram, the reduced energy of the α-decay Q^*_α is plotted against the number of neutrons N in the nucleus (here in figure 1 of N = 144 - 155) it is found that these two isotopes are above the general curve, and that there-

Card 1/3

fore the Q_α^* of these two isotopes are anomalously great. For nuclei with the same N but with different Z $Q_\alpha^*(N,Z) = Q_\alpha(N) - 0.8(Z - Z^*)$ holds; Z* is that Z-value which corresponds to the more β-stable nucleus with given A, $Q_\alpha^*(N,Z)$ is the energy of the α-decay of the nucleus (N,Z*) in Mev. Thus $Z^* = 0.356\ A + 9.1$ is obtained. It follows from these relations that the $Q_\alpha^*(N)$ obtained from the experimentally found Q_α-values may coincide at any N-value, even in the presence of neutron shells and -subshells; only in the case of the existence of proton subshells do the corresponding points cancel out of the $Q_\alpha^*(N)$-curve. Within the entire domain represented by this diagram this is the case only for the two isotopes of the element 102, which indicates that they both have proton subshells. The fact that the nuclear properties vary after Z = 100 is proved also by the sharp decrease of the half life of the spontaneous fission of 102^{254}; figure 2 shows the curve $\lg \tau_\alpha = f(E_\alpha)$ - both isotopes of the element 102 show increased forbiddance in α-de-

The Proton Subshell of Z = 100

SOV/56-37-2-34/56

cay (cf. also the curve $\lg \alpha_f = f(Z^2/A)$ in reference 4). In connection with the anomalous increase of the spontaneous fission probability, i.e. of the decrease of the stability of the nuclei after N = 152 and Z = 100, the possibility of evaluating an upper limit of the Z-value is finally discussed. The authors thank Professors D. D. Ivanenko, A. Giorso and S. Tompson as well as G. N. Flerov for discussions, and S. I. Larin for valuable advice. There are 2 figures and 12 references, 7 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: April 1, 1959

Card 3/3

KOLESNIKOV, N.N.; KOLESNIKOVA, M.M.

Beta stability limits and beta decay periods. Izv.vys.ucheb.zav.; fiz. no.2:48-56 '60. (MIRA 13:8)

1. Moskovskiy gosuniversitet im. M.V. Lomonosova.
(Beta rays)

83351

S/139/60/000/004/008/033
E032/E514

24.4500

AUTHORS: Kol'chuzhkin, A.M. and Kolesnikov, N.N.

TITLE: Electromagnetic Interaction Between Finite Non-relativistic Particles

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1960, No.4, pp.87-97

TEXT: Recent experimental and theoretical studies of the structure of nucleons have produced much valuable information. Among these are the electron scattering experiments of Hofstadter (Ref.1). However, structural effects become appreciable only for electron energies of the order of 150 MeV or more, in which case radiational corrections have to be introduced and various competing processes take place, for example π-meson production. This complicates the analysis of experimental data. The theoretical formula obtained by Rosenbluth (Ref.6) was derived for the effective scattering cross-section using the first approximation of the perturbation theory. This formula applies to relativistic point electrons scattered from nucleons having spatially distributed charge and magnetic moment. However, nucleon recoils were not taken into account and the use of phenomenological

Card 1/4

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E032/E514

Electromagnetic Interaction Between Finite Non-relativistic Particles

form factors was not fully justified. In the case of heavy particles the internal structure already becomes important at non-relativistic energies. Hiida and Sawamura (Ref.8) and Nikishov (Ref.9) have also used the first approximation of the perturbation theory to obtain an expression for the differential cross-section for a finite electron characterized by electric and magnetic form factors and scattered by a heavy and finite target particle. In the present paper the scattering of two non-relativistic particles with spatially extended electric charges is solved using the Schwinger variational method so that the solution obtained is more accurate. The scattering of finite (i.e. spatially extended charges and magnetic moments) particles is treated on the Born approximation but the structure of the particles is taken into account. The charge distributions are assumed to be spherically symmetric and the magnetic interaction energy is taken to be of the form

Card 2/4

83351
S/139/60/000/004/008/033
E032/E514

Electromagnetic Interaction Between Finite Non-relativistic Particles

$$V_m = -\mu_1\mu_2\left(\underline{\sigma}_2\left[\underline{\nabla}\left[\underline{\nabla}\underline{\sigma}_1\right]\right]\right)\int\int \frac{\rho_{\mu_1}[r_1]\ \rho_{\mu_2}[r_2]}{r_{12}}\, dv_1 dv_2. \quad (26)$$

where μ is the magnetic moment and σ the Pauli spin matrix. The final formula obtained for the differential scattering cross-section is of the form

$$\frac{d\sigma}{d\Omega} = \sigma_o(x)\left\{1 + \frac{2}{3!}\left[\langle r_1^2\rangle_e + \langle r_2^2\rangle_e\right] + \right.$$

$$\left. + \alpha^4\left(\frac{m_1 m_2}{z_1 z_2}\right)^2 \frac{x^4}{3!}\left[\langle r_1^2\rangle_\mu + \langle r_2^2\rangle_\mu\right]\right\}. \quad (45)$$

This formula is identical with Rosenbluth's formula when

Card 3/4

83351

S/139/60/000/004/008/033
E032/E514

Electromagnetic Interaction Between Finite Non-relativistic Particles

$\langle r_2^2 \rangle_e = \langle r_2^2 \rangle_\mu = 0$ provided one of the particles has a very much smaller mass than the other. Acknowledgments are expressed to A. A. Sokolov for valuable suggestions and discussions and to Professor D. D. Ivanenko for his interest in the present work. There are 14 references: 6 Soviet and 8 English.

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

SUBMITTED: November 23, 1959

Card 4/4

KOL'CHUZHKIN, A.M.; KOLESNIKOV, N.N.

Scattering and radiative capture of particles. Zhur.eksp.i teor.fiz. 38 no.3:996-997 Mr '60. (MIRA 13:7)

1. Moskovskiy gosudarstvennyy universitet.
(Particles(Nuclear physics))

KOLESNIKOV, N.N.

S/056/60/039/01/23/029
B006/B063

AUTHORS: Voronkov, V. V., Kolesnikov, N. N.

TITLE: Electron Levels of Atoms of Superheavy Elements

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 1(7), pp. 189-191

TEXT: In the present paper, the authors first carry out a general investigation of the position and behavior of electron ns levels for a nucleus of the charge Ze, making the following ansatzes for the nuclear potential: $V = -Z/r$ for $r > r_0$, and $V = -Z/r_0$ for $r < r_0$ (r_0 - nuclear radius). Moreover, it is assumed that $Z > 137$ and $mr_0 \ll 1$ (m - electron mass).

With the help of the Dirac equation the authors derive an equation for the determination of the level energy (1), which agrees with the one obtained by I. M. Pomeranchuk and Ya. A. Smorodinskiy (Ref. 1). A second equation is given for the determination of the critical number Z_{cr}: Z_{cr} depends only slightly on r_0: for $r_0 = 12.10^{-13}$cm it is 178, for $r_0 = 8.10^{-13}$ it is

Card 1/2

Electron Levels of Atoms of Superheavy Elements S/056/60/039/01/23/029
B006/B063

172. Furthermore, they study the nature of the discrete levels near the edge of the continuous spectrum $\varepsilon = m$ ($Z > 137$) (when $\varepsilon \to +m$, λ tends to zero). When $\varepsilon < -m$ and $Z > Z_{or}$, there exist quasi-levels, the occurrence of which is explained by the example of a potential well of the radius r_o and the depth U. An expression is also given for the level width. Finally, the authors thank Professor D. D. Ivanenko for his discussion of the results of this work. There are 3 Soviet references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: February 28, 1960

Card 2/2

38877

S/188/62/000/003/002/012
B111/B112

AUTHORS: Linkin, V. M., Kolesnikov, N. N.

TITLE: Particle interaction in nonlinear electrodynamics

PERIODICAL: Moscow. Universitet. Vestnik. Seriya III. Fizika, astronomiya, no. 3, 1962, 17-26

TEXT: It is shown that the interaction, in nonlinear theory, of a point-like particle with an extended one, approximately coincides with the interaction in linear theory between two particles having distributed charges and magnetic moments. Proceeding from the invariant $I = \frac{1}{16\pi} f_{\mu\nu} f_{\mu\nu}$, where $f_{\mu\nu}$ is an antisymmetric tensor of the electromagnetic field, the Lagrange function $L(I) = \frac{-1}{16\pi} \varepsilon(I) f_{\mu\nu} f_{\mu\nu}$ is set up, where $\varepsilon(I) = \frac{\partial L}{\partial I}$. The Maxwell equations then are $\frac{\partial f_{\mu\nu}}{\partial x_\nu} = 0$; $f_{\mu\nu} = \varepsilon_{\mu\nu\lambda\varrho} f_{\lambda\varrho}$; $\frac{\partial P_{\mu\nu}}{\partial x_\nu} = 0$ where $P_{\mu\nu} = \varepsilon(L) f_{\mu\nu}$. The energy momentum tensor $H_{\mu\nu}$ is

Card 1/4

determined in the same way as in the linear theory. $H_{44} = (1/8\pi)(\vec{DE} + \vec{HB})$. If, in the linear theory $\vec{E}_1 = \vec{D}_1$ is written for the electrostatic field, then $\vec{E} = \frac{\vec{D}}{\varepsilon(D^2)} = \vec{D} \int_0^{\sqrt{e/D}} \varrho' dv'$ in the nonlinear theory. Since

$\vec{E}_e = \vec{D}_e = \frac{e\vec{r}}{r^3}$, it follows that

$$\vec{E} = \vec{D} \int_0^r \rho' dv' = \frac{e\vec{r}}{r^3} \int_0^r \rho' dv' = e - \nabla \int \frac{\rho'(r')\, dv'}{|\vec{R} - \vec{r}'|}.$$

holds for sufficiently large r. In the linear theory, $\varrho'(\underrightarrow{r'})$ is that charge distribution which produces exactly the same field $\vec{E}$, as is produced by the charge e in the nonlinear theory. For the dipole field an asymptotic representation is given in large distances, a concrete solution of which is possible only by successive approximations. For the nonlinear

Particle interaction in...

interaction between a point-like and an extended electric charge, the following is derived:

$$W_{12} \approx H_{12} = \frac{1}{4\pi} \int \left(e_1 \nabla_1 \int \frac{\rho_1 (\vec{r}_1)\, dv_1}{|\vec{R}_1 - \vec{r}_1|} \right) \left(e \nabla_2 \int \frac{\rho' (r')\, dv'}{|\vec{R}_2 - \vec{r}'|} \right). \qquad (31)$$

The interaction of two dipole moments is subject to considerations similar to those which hold for the electric charges. When the simultaneous electric and magnetic interactions are taken into consideration, a linear theory is obtained only in those ranges where

$$|I_1| = \frac{1}{8\pi} |D^2 - H^2| < |I_1^0|.$$

Fig. 1 shows the curve of $|I_1|$ for $D = e/r^2$ and $H = \mu/r^3$. If the experimental values of e and μ for the electron and proton are used, $r_1^{(e)} \sim 2.3 \cdot 10^{-11}$ cm and $r_1^{(p)} \sim 3 \cdot 10^{-14}$ cm are obtained. Hence it follows that $|I_1^0|$ is larger than the maximum of $|I_1|$. Therefore, the proton like

Card 3/4

the electron can be calculated linearly if it is point-like, e.g. if it does not interact with a meson field. For the energy H_{12} we have

$$H_{12} \approx \frac{1}{4\pi}\int \vec{D}_1\vec{D}''_2\,dv + \frac{1}{4\pi}\int \vec{H}_1\vec{H}''_2\,dv$$

which corresponds to the interaction of two particles with distributed charges and magnetic moments in the linear theory. There is 1 figure.

ASSOCIATION: Kafedra elektrodinamiki i kvantovoy teorii (Department of Electrodynamics and Quantum Theory)

SUBMITTED: June 6, 1961

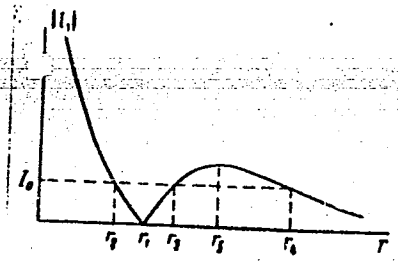

Fig. 1

Card 4/4

40108

S/040/62/026/004/002/013
D409/D301

(1302)
26.2145 (4023)

AUTHOR: Kolesnikov, N.N. (Moscow)

TITLE: On the stability of a free rigid body with a cavity filled by an incompressible viscous fluid

PERIODICAL: Prikladnaya matematika i mekhanika, v. 26, no. 4, 1962, 606 - 612

TEXT: The sufficient conditions are obtained for the stability of the circular motion of the center of mass, and of the relative equilibrium of a rigid body with a cavity, containing a liquid. The stability problem is solved by V.V. Rumyantsev's method. The rigid body and the liquid are considered as a single mechanical system. The problem is considered in the following approximation: the force function U is expanded in series in x/R, y/R, z/R and only the first two terms of the expansion are retained, (R is the radius vector of the fixed system of coordinates ξ, η, ζ). The equations of motion are set up, as well as Poisson's equations for the direction cosines. The stability of the undisturbed motion of the system is investigated with respect to the variables

Card 1/3

$$p,\ q,\ r;\ \beta,\ \beta',\ \beta'';\ \gamma_1,\ \gamma_2,\ \gamma_3;\ K_{2x},\ K_{2y},\ K_{2z};\ R,\ \dot{R},\ \psi,\ \dot{\psi},\ \dot{\varphi} \qquad (3.2)$$

where p, q and K are related to the moment of momentum of the system, β and γ are direction cosines of the coordinate axes, ψ and φ are related to the spherical coordinates ξ, η, ζ of the center of mass. The equations of motion admit a particular solution which corresponds to motion of the system along the circular orbit $R = R_0$ with constant angular velocity ω, so that the principal central axes of the system are located along the tangent, the radius-vector and the binormal of the undisturbed system. Thereby the liquid is at rest with respect to the body, i.e. the system moves like a single body. The function W of the variables of the problem, is considered; this function is constructed by Chetayev's method, as the sum of the first integrals of the equations of motion. By Sylvester's criterion of positive-definiteness for the function W, one obtains the sufficient stability-conditions

$$C > A > B \qquad (3.11)$$

where A, B, C are the principal moments of inertia of the system.

Card 2/3

LINKIN, V.M.; KOLESNIKOV, N.N.

Particle interaction in nonlinear electrodynamics. Vest. Mosk. un. Ser. 3: Fiz., astron. 17 no.3:17-26 My-Je '62. (MIRA 15:6)

1. Kafedra elektrodinamiki i kvantovoy teorii Moskovskogo universiteta.

(Nuclear reactions) (Electrodynamics)

4951

24,6410

S/048/63/027/001/041/043
B108/B180

AUTHORS: Kolesnikov, N. N., Krylova, A. P., and Kandybarov, V. K.

TITLE: Beta-stability of heavy elements

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27, no. 1, 1963, 132-136

TEXT: This paper aims to show that the overall beta-decay time, $\tau_{\beta-}$, varies regularly within limited regions of a nuclear system. Heavy nuclei ($Z > 87$, $N > 133$) with about the same deformation are the examples. Except for very low $(Z - Z_{\beta-})$, $\log \tau_{\beta-}$ for a nucleus (A,Z) decreases roughly linearly with increasing $\log(Z - Z_{\beta-})$. $Z_{\beta-}$ is the atomic number of a fictitious isobaric nucleus $(A,Z_{\beta-})$ which is at the energy threshold of beta-decay where $Q_{\beta-} = 0$. A similar law was also found for electron capture. These results can be explained if the following is assumed: (1) the major contribution comes from a (or a few) transition to the ground or a slightly excited level of the final nucleus, having (among

Card 1/2

S/048/63/027/001/041/043
B108/B180

the other single-particle levels) the lowest forbiddenness, (2) the reduced probabilities of beta transitions in the region considered vary within narrow limits. These assumptions are confirmed by comparing estimates with experimental results for nuclei of all four types of parity. This paper was read at the 12. Annual Conference on Nuclear Spectroscopy, Leningrad, January 26 - February 2, 1962. There are 3 figures. The most important English-language references are:
R. L. Lessler, M. Michel. Phys. Rev., 118, 263 (1960); K. Way, M. Wood. Phys. Rev., 92, 120 (1954).

KOL'CHUZHKIN, A.M.; KOLESNIKOV, N.N.

Phenomenological analysis of the binding energy of hypernuclei.
Izv. vys. ucheb. zav.; fiz. no.4:19-25 '63. (MIRA 16:9)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Nuclear forces)

EWT(d)/BDS AEDC/AFFTC/ASD/AFMDC/APGC/SSD Pg-4/Pk-4/Pl-4/
Pe-4/Pq-4 BG

ACCESSION NR: AP3004116 S/0040/63/027/004/0699/0702

AUTHOR: Kolesnikov, N. N. (Moscow) 47

Stability of a free gyroscope

Prikladnaya matematika i mekhanika, v. 27, no. 4, 1963, 699-702

gyroscope, Newtonian field, nonmoving rotor

[illegible] of solving problems of stability of motion of a gyroscope with a [illegible] which is given as a rigid body filled with fluid, can be extended to [illegible] moving in a Newtonian field of forces. The author considers a [illegible] for a gyroscope consisting of a rigid body T_1 and rotors T_2 whose [illegible] with respect to T_1. He obtains sufficient conditions for the sta- [illegible] particular solution of equations of motion of a free gyroscope in a Newtonian field of forces. Orig. art. has: 18 formulas.

ASSOCIATION: none

SUBMITTED: 09Feb63 DATE ACQ: 15Aug63 ENCL: 00

SUB CODE: MA, PH NO REF SOV: 005 OTHER: 000

ACCESSION NR: AP3001770 S/0188/63/000/003/0032/0043

AUTHOR: Kolesnikov, N. N.; Grigor'yev, Yu. P.

TITLE: On the theory of isotope shifts.

SOURCE: Moscow. Universitet. Vestnik. Seriya 3. Fizika, astronomiya, no. 3, 1963, 32-43

TOPIC TAGS: isotope shift, nuclear volume effect, band spectrum

ABSTRACT: A new relativistic formula for the nuclear volume effect to be used for investigations based on the isotope shift in line spectra has been derived on the basis of a rewritten solution of the Dirac X_1 and X_2 radial function equation. The treatment made possible the replacement of the Wilets formula with a more accurate one which takes into account the alterations of the electron wave function. The results obtained may be generalized to cases of nuclear densities which are neither restricted to finite distances nor spherically symmetrical. Orig. art. has: 1 table and 4 figures.

Card 1/2

ACCESSION NR: AP3001770

ASSOCIATION: Kafedra elektrodinamiki i kvantovoy teorii (Department of Electrodynamics and Quantum Theory)

SUBMITTED: 04Jun62	DATE ACQ: 09Jul63	ENCL: 00
SUB CODE: PH	NO REF SOV: 005	OTHER: 021

Card 2/2

KOLESNIKOV, N.N.; KRYLOVA, A.P.; KANDYBAROV, V.K.

Beta-stability of heavy elements. Izv. vys. ucheb. zav.; fiz. no.5: 151-155 '63. (MIRA 16:12)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

ACCESSION NR: AP4037578 S/0056/64/046/005/1648/1652

AUTHORS: Kolesnikov, N. N.; Vedrinskiy, R. V.

TITLE: Hypernuclei with two particles and their decay

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 5, 1964, 1648-1652

TOPIC TAGS: Λ particle, hypernucleus decay, ΛΛ interaction, global symmetry, two particle decay, three particle decay

ABSTRACT: Theoretical arguments are presented in favor of the existence of bound states of two Λ particles with nucleons, assuming no repulsion center in ΛΛ interactions. A condition is derived for the energetic impossibility of the decay of a hypernucleus with emission of a Λ particle, and the order of magnitude of the binding energy is estimated on the basis of global symmetry. It is shown that a correlation should exist between the directions of emission of the pions produced in the decay of such systems. The successive

Card 1/2

ACCESSION NR: AP4037578

meson decay of light hypernuclei with two particles is considered for the case when the first decay is either two-particle or three-particle, and the cross sections are evaluated for each case. Angular and energy distributions are estimated for some of the latest published data. Orig. art. has: 9 formulas.

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

SUBMITTED: 10Jul63 DATE ACQ: 09Jun64 ENCL: 00

SUB CODE: GP, NP NR REF SOV: 003 OTHER: 010

Card 2/2

EWT(m) DIAAP/SSD/AFWL/ESD(t)

ACCESSION NR: AP5000324 S/0056/64/047/005/1740/1741

AUTHOR: Kolesnikov, N. N.; Vedrinskiy, R. V. 8

TITLE: Disintegration of $_{\Lambda}H^{3}$ in Coulomb field and pickup of Λ particles by heavy nuclei 19

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 5, 1964, 1740-1741

TOPIC TAGS: tritium, lambda particle, particle disintegration, Coulomb field, pickup reaction

ABSTRACT: A preliminary study was made of the disintegration of $_{\Lambda}H^{3}$ in the Coulomb field of heavy nuclei. In view of the small binding energy of $_{\Lambda}H^{3}$, it is assumed that its Coulomb disintegration occurs principally when it is located at large distances from the nucleus (deuteron), so that the two-body approximation can be used and

Card 1/2

-65

SSION NR: AP5000324

the deuteron can be assumed to be pointlike. The calculated value cross section is found to be quite large and to increase at ergies, decrease at high energies, and thus have a maximum. e estimate yields a maximum cross section of 150 barns for at an energy of 4.5 MeV. It is shown further that the hyper- eased can be captured by the nuclei with appreciable proba- For silver at primary H^3 energy of 15 MeV the correspond- ss section is ~1.5 barn.[A] Orig. art. has: 2 formulas.

ATION: Moskovskiy gosudarstvenny*y universitet (Moscow iversity)

TED: 14Feb64 ENCL: 00

E: NP NR REF SOV: 003 OTHER: 005

VEDRINSKIY, R.V.; KOLESNIKOV, E.N.

Splitting of hypernuclei in a Coulomb field. Vest.Mosk. un. Ser. 3: Fiz., astron. 20 no.2:71-80 Mr-Ap '65.

(MIRA 18:5)

1. Kafedra kvantovoy teorii Moskovskogo universiteta.

L 44043-66 EWT(m)/T

ACC NR: AP6032235 SOURCE CODE: UR/0367/66/003/005/0946/0950

49
B

AUTHOR: Kolesnikov, N. N.; Vedrinskiy, R. V.

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

TITLE: Interactions of light hypernuclei and lambda-particles with nuclei

SOURCE: Yadernaya fizika, v. 3, no. 5, 1966, 946-950

TOPIC TAGS: nuclear emulsion, particle interaction, Coulomb field

ABSTRACT: The disintegration of light hypernuclei in the Coulomb field of heavy nuclei is investigated in the low and high energy approximations and also in the quasiclassical case. The cross-section of the process is sensitive to the value of the hypernuclear binding energy B_Λ. For ${}_\Lambda H^3$, where B_Λ is anomally small, the cross-section can become very large, so that the Coulomb disintegration must be taken into account when analyzing ${}_\Lambda H^3$ tracks in photoemulsion and in the production of hypertritium. The probability of Λ-particle capture by heavy nuclei, with the formation of heavy hypernuclei and emission of nucleons, is estimated. Orig. art. has: 14 formulas. [JPRS: 36,712]

SUB CODE: 20 / SUBM DATE: 13Jul65 / ORIG REF: 007 / OTH REF: 003

Card 1/1 BLG

0919 1260

L 04555-67 EWT(d)/FSS-2/EEC(k)-2

ACC NR: AP6022528 SOURCE CODE: UR/0040/66/030/003/0589/0593

AUTHOR: Kolesnikov, N. N. (Moscow) 49 B

ORG: none

TITLE: Regular precession of a free gyrostat

SOURCE: Prikladnaya matematika i mekhanika, v. 30, no. 3, 1966, 589-593

TOPIC TAGS: missile guidance equipment, inertial guidance system, gyroscope component

ABSTRACT: The regular precession of a free gyrostat is considered in the presence of a central Newtonian force field. A fixed Cartesian coordinate system with the origin at the source of the gravitational field and a coordinate system with axes coinciding with the principal axes of the gyro are selected. Given the three principal moments of the gyro, equations with forcing terms from the gravitational potential are derived to give the motion of the gyro. The equations thus obtained are specialized to the case where two of the principal moments are identical. The equations are simplified and written in terms of Euler angles. Three different possible regimes of regular precession are identified. These regimes are discussed separately and it is observed that the conditions necessary for the existence of regular precession of the gyrostat coincide with those necessary for the regular precession of one rigid body. Orig. art. has: 10 figures.

SUB CODE: ~~19,20~~ 16,17/ SUBM DATE: 17May65/ ORIG REF: 006

Card 1/1

1.1350 1454

32058
S/182/62/000/001/004/004
D038/D113

AUTHOR: Kolesnikov, N.P.

TITLE: On the assessment of the drawability of thin-sheet metal according to mechanical test results

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no. 1, 1962, 16-17

TEXT: The article deals with the behavior of a metal possessing a maximum modulus of strengthening and great plasticity in deep drawing of automobile chassis parts. To assess the deep drawing and stretch forming properties of metal, it is advisable to consider uniform elongation, sometimes referred to as critical, homogeneous or stable, and not total elongation. The ASM uses the uniform elongation for the classification of parts produced by deep drawing, and ГОСТ 9045-59 (GOST 9045-59) is used for the optional specification of the uniform elongation. The following standards are mentioned: ГОСТ 1497-42 (GOST 1497-42), ГОСТ 4986-54 (GOST 4986-54) and ГОСТ 914-56 (GOST 914-56). It is stated that there is no standard method for this assessment. The author concludes that (1) the existent choice of the calculated length of thin-sheet specimens for tensile tests is not sufficiently substantiated; (2) the calculated length of the thin-sheet specimens should

Card 1/2

On the assessment of .....

be a multiple of the width of the working piece; (3) the determination of the uniform elongation on the existing equipment by a calculating method should be based on the tensile test results of the same specimen; (4) a multiple of 8 ÷ 10 for directly measuring the absolutely uniform elongation of a ruptured specimen is recommended by the author; (5) the multiple chosen for a specimen similar to that suggested by the author, was recommended by J.C. Wright (Ref. 4: Quantitative Assessment of Deep Drawing and Stretch-Forming Qualities, Sheet Metal Industries, September, 1961) and by G.A. Smirnov-Alyayev and V.M. Rozenberg (Ref. 5: Teoriya plasticheskikh deformatsiy metallov (Theory of Plastic Deformation of Metals), Mashgiz, 1956). 08кп (08kp) steel specimens 0.83 mm in thickness were used during tests. There are 5 references: 3 Soviet-bloc and 2 non Soviet-bloc. The English-language references are: The Selection of Sheet Steel for Formability, "Metal Progress", August 15, 1955, and J.C. Wright, Quantitative Assessment of Deep Drawing and Stretch-Forming Qualities, "Sheet Metal Industries", September, 1961.

Card 2/2

S/182/62/000/008/002/003
D040/D113

AUTHOR: Kolesnikov, N.P.

TITLE: The effect of anisotropy on the drawability of steel when extruding parts of complex shape

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no. 8, 1962, 18-19

TEXT: Experiments with longitudinal and transverse specimens cut from 6 different grades of rolled sheet steel were conducted to study the effect of plastic anisotropy on drawability during extrusion. The study was conducted because there are many rejects when extruding elements, such as transmission casings. Uniform deformations in length, width and depth were found according to a method developed by IMASh. Formulas showing the stress-strain relations were derived in accordance with theories developed by R.Hill (The Mathematical Theory of Elasticity, 1950) and A.D. Tomlenov ("Kuznechno-shtampovochnoye proizvodstvo", no. 4, 1962). The experimental data, including the strains and stresses measured in 1.0 and 1.5 mm thick steel and the stress-strain relations, are tabulated. The drawability greatly depends on the anisotropy,

Card 1/2

The effect of anisotropy .....

S/182/62/000/008/002/003
D040/D113

and a mean anisotropy factor should not be used in calculations. Generally, the results confirm Hill's and Tomlenov's data. There are 2 tables.

Card 2/2

KOLESNIKOV, N.P.

Strained state caused by deep extrusion. Avt.prom. 28 no.8:34-36 Ag '62. (MIRA 16:3)

1. Institut mashinovedeniya AN SSSR.
(Strains and stresses) (Extrusion (Metals))

KOLESNIKOV, N.P.

Calculating the stress-deformation state in drawing considering the effect of anisotropy. Kuz.-shtam. proizv. 5 no.9:15-19 S '63. (MIRA 16:11)

S/182/63/000/002/006/007
A004/A126

AUTHOR: Kolesnikov, N. P.

TITLE: Evaluation of the tendency of sheet steel to form slip bands based on test results

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no. 2, 1963, 19 - 20

TEXT: Investigations carried out by the author of the stressed deformed state of the metal during drawing proved that slip bands are formed on the surface of the drawn parts at a deformation intensity of $\varepsilon_i < 0.03 \div 0.15$; they disappeared if the deformation stress increased. The tendency of steel to form slip bands is connected with the presence of a large yield platform in the tension diagram. The author presents a formula for determining the degree of reduction necessary to eliminate this yield platform. The absence or presence of such a yield platform in the tension diagram obtained as a result of testing longitudinal and transverse specimens respectively can be explained by the nature of distribution of residual stresses over the sheet thickness after dressing. The magnitude of residual stresses in transverse direction is lower by a

Card 1/2

factor of 2 compared to that in longitudinal direction. Therefore, for finding out the tendency of the metal to form slip bands, it is expedient to use specimens that have been cut across the rolling direction. There are 2 figures.

S/136/63/000/003/002/004
E193/E383

AUTHORS: Kirpa, I.G., Kolesnikov, N.P., Pankin, V.A. and Shishkin, Yu.A.

TITLE: Investigation of the energy and force parameters in the rolling of aluminum-clad copper

PERIODICAL: Tsvetnyye metally, no. 3, 1963, 60 - 65

TEXT: The experimental specimens consisted of copper plates, 320 - 570 mm wide and 414 - 560 mm long, enclosed between two slightly larger aluminum plates, the whole assembly being held together by two rivets. Four types of the sandwich were used in the tests with an Al-Cu-Al thickness ratio of 2.56:9.7:2.56 mm, 1.4:9.7:1.4 mm, 2.56:5.75:2.56 mm and 1.4:5.75:1.4 mm. The cold-rolling experimnents were conducted on a four-high reversible stand 2840 with working and backing rolls of 620 and 1 370 mm in diameter, respectively. Formation of bond between the sandwich components was ensured by giving it a reduction of 65 - 75% in one pass. In a few cases the same reduction was attained in two passes. The following parameters were determined in each experiment: roll pressure; current in the main motor; voltage in the main motor;

Card 1/2

Investigation of ....

driving current; main motor speed; temperature of the metal after rolling. The strength of the bond between the Cu core and Al cladding was determined by bending tests; in addition, tensile tests were conducted on test pieces cut from each specimen. Conclusions: 1) the maximum roll force recorded was 1 140 tons, i.e. 33% of the force permissible for the stand 2840. 2) The roll force under conditions of steady rolling was 950 tons. 3) The average roll pressure varied between 25.4 and 48.1 kg/mm^2. 4) Comparison of the experimental data with values calculated from several known formulas showed that the formula due to Rokotyan gave results in closest agreement with the experiment. 5) The strength of bond and the mechanical properties of the final product were not significantly changed by effecting the required reduction in thickness in two instead of in one pass. This means that a wider range of the existing rolling equipment can be used for the fabrication of Al-clad Cu. There are 3 figures and 4 tables.

Card 2/2

KOLESNIKOV, N.P.

Method for determining the uniform elongation of sheet metal.
Zav. lab. 31 no.9:1127-1129 '65. (MIRA 18:10)

AUTHOR: Itskovich, G. M.; Kolesnikov, N. P.; Miranskaya, Ye. D.; Ostreyko, I.A.; Sautkin, N. I.; Tkachev, P. N.

ORG: none

TITLE: Deep-drawability of sheet steel produced by continuous casting

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 11, 1965, 19-24

TOPIC TAGS: continuous casting, cast steel, metal stamping, metal drawing, ~~automobile industry~~, sheet metal, metal casting

ABSTRACT: The article presents the results of an investigation of the properties and stampability of cold-rolled sheet steels 08kp, 10kp, 08fkp and 08ps, produced by the continuous casting method as compared with steel obtained from conventionally cast ingots. Stampability was investigated at the pressforging shop of the Minsk Low-Displacement Motor Vehicle Plant. Prior to the deep drawing of intricately shaped automotive body parts the specimens were subjected to mechanical tests and metallographic examinations which showed that sheet steel produced by continuous casting meets the requirements of the standards for quality structural sheet steel and that its ferrite grains are of a sufficiently small size to favorably affect the quality of the surface of elements during their deep drawing. Stampability under production

Card 1/2 UDC: 621.933.3

ACC NR. A26009169

conditions was determined during the drawing of a number of components of the Moskvich car: an analysis of the stress-strain diagram during drawing established that the plasticity margin of the metal is comparatively high during the embossing of most of the components investigated. An exception is the stress-strain diagram during the die-stamping of lower crankcases. The deep drawing of the crankcase involves limiting values of the plasticity margin in a number of sectors of the component and in some cases the embossing culminates in total exhaustion of the metal's plasticity. Compared with steel deriving from conventionally cast ingots, the proportion of defective components fabricated from steel produced by continuous casting was appreciably lower. These findings point to a satisfactory stampability of steel produced by continuous casting and the possibility of using this steel for the deep drawing of elements fabricated from metal meeting the (lower) requirements of the All-Union State Standard GOST 914-56. Orig. art. has: 5 figures, 3 tables.

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 005/ OTH REF: 000

Card 2/2

ACC NR: AP7001701 SOURCE CODE: UR/0032/66/032/012/1502/1505

AUTHOR: Kolesnikov, N. P.

ORG: none

TITLE: Method for evaluating the anisotropy of sheet-metal ductility

SOURCE: Zavodskaya laboratoriya, v. 32, no. 12, 1966, 1502-1505

TOPIC TAGS: sheet metal, ductility, anisotropic medium

ABSTRACT: A simplified method for a quantitative evaluation of the anisotropy of ductility in metal sheets has been developed. As in earlier methods, the evaluation of anisotropy is based on the coefficients of anisotropy calculated from the reduction of width and thickness in longitudinal specimens resulting from uniaxial stretching. Because a precise determination of the thickness reduction with the new method is difficult, the coefficients of anisotropy are calculated from the elongation and reduction of width occuring in the zone of uniform deformation. A simple monogram can be used for further simplification of the anisotropy evaluation. The method was used on production scale in plant laboratories and proved to be simple and reliable. Orig. art. has: 2 figures and 1 table.

SUB CODE: 14/ SUBM DATE: none/ ORIG REF: 004/ OTH REF: 001

Card 1/1 UDC: 620.172.2

KOLESNIKOV, N.S.; POGOSYAN, G.M.

Carbon chain polymers and copolymers. Report No.1: Synthesis and polymerization of 4-alkoxystyrenes. Izv.AN SSSR. Otd. khim. nauk. no.2:227-231 F '58. (MIRA 11:4)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Styrene) (Polymers and polymerization)

KOLESNIKOV, N.S.; SOBOLEVA, T.A.

Synthesis of ethylene copolymers. Izv.AN SSSR. Otd. khim. nauk. no.2:242-243 F '58. (MIRA 11:4)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Ethylene) (Polymers and polymerization)

KOLESNIKOV, N.S.; KORSHAK, V.V.; SUPRUN, A.P.

Synthesis of polyarylenalkyls. Report No.6: Effect of the ratio of the initial components on the development of copolycondensation process of benzene and chlorobenzene with 1,2-dichloroethane. Izv. AN SSSR Otd. khim. nauk no.5:605-613 My '58. (MIRA 11:6)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Benzene) (Ethane) (Condensation products (Chemistry))

KOLESNIKOV, N.S.; KORSHAK, V.V.; SHIRNOVA, T.V.

Synthesis ofpolyarylenalkyls. Report No.9: Synthesis and rearylation of fluoro- and chlorodiphenylmethanes. AN SSSR. Otd. khim. nauk no.9:1123-1126 S '58. (MIRA 11:10)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Methane) (Arylation)

SOV-3-58-10-4/23

AUTHOR: Kolesnikov, N.S., Chief of TsK VLKSM Section Controlling Work Among the Academic Youth

TITLE: An Active Participant in the Creative Work of the People (Aktivnyy uchastnik sozidatel'nogo truda naroda)

PERIODICAL: Vestnik vysshey shkoly, 1958, Nr 10, pp 26 - 32 (USSR)

ABSTRACT: On the occasion of the Komsomol's 40th Anniversary the author gives a description of the Komsomol's history, its aims and activities. It enumerates the obligations placed on the Komsomol by its 13th Congress in respect to its educational work among students, assistance to be given to the working and village youth in entering higher schools, etc. There are 3 Soviet references.

ASSOCIATION: Otdel po rabote sredi studencheskoy molodezhi TsK VLKSM (Tsk VLKSM Section for Controlling the Komsomol Work Among the Academic Youth).

Card 1/1

KOLESNIKOV, N. T.

USSR / Soil Science. Cultivation. Improvement. Erosion. J-5

Abs Jour : Ref. Zhur - Biologiya, No 17, 1958, No. 77461

Author : Kolesnikov, N. T.
Inst : Not given
Title : Basic Requirements of Irrigation Systems with Watering by Sprinkling

Orig Pub : Materialy po proizvodit. silam Uzbekistana, 1956, vyp. 5, 106-109

Abstract : No abstract given

Card 1/1

41128

S/056/62/043/004/011/061
B102/B180

AUTHORS: Zhitnikov, R. A., Kolesnikov, N. V., Kosyakov, V. I.

TITLE: Paramagnetic resonance in free silver atoms trapped in non-polar media at 77°K

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 4(10), 1962, 1186 - 1196

TEXT: The method of paramagnetic resonance has hitherto been used only for trapped hydrogen or nitrogen atoms. The measurements were made with a 3-cm band radiospectroscope with rf modulation (975 kc) of the permanent magnetic field, a cylindrical H_{011} resonator and an automatic recording device. The specimens were prepared in the radiospectroscope cavity by vacuum evaporation of the silver from a molybdenum coil and a paraffin from a glass heater with condensation on the bottom of a 77°K quartz Dewar flask. The $Ag^{107}:Ag^{109}$ ratio was 51.9:48.1. The experimental results are given in Table 1. H_1 and H_2 are the magnetic field strengths for the first and sec-

Card 1/#3

ond transition. These values were used to calculate $\Delta\nu$ and the Landé factor g_J by

$$\nu = -\Delta\nu\left\{\frac{1}{2}(1+x_1^2)^{1/2}+\frac{1}{2}(1-x_1)-\frac{g_I\beta H_1}{h\Delta\nu}\right\},$$
$$\nu = -\Delta\nu\left\{\frac{1}{2}(1+x_2^2)^{1/2}-\frac{1}{2}(1+x_2)-\frac{g_I\beta H_2}{h\Delta\nu}\right\}; \quad (3).$$
$$x_1 = (g_J-g_I)\beta H_1/h\Delta\nu, \quad x_2 = (g_J-g_I)\beta H_2/h\Delta\nu,$$

$x = (g_J-g_I)\beta H/\Delta W$ is a dimensionless quantity proportional to the magnetic field, $g_I = -\mu_I/\beta I$, the nuclear gyromagnetic ratio, A is the hyperfine interaction constant, μ_I the nuclear magnetic moment, and $\Delta W = Y_2(2I+1)A$, the hyperfine splitting of the atomic ground state energy level for H=0, β is Bohr's magneton. As there is little difference between the $\Delta\nu$ and g_J values for trapped and free silver atoms, the trapped atoms can be treated as free ones with slightly perturbed electron shells. The die material has little effect on the spectrum. The two different types of spectra of the trapped silver atoms show that at 77°K they are in two different places in the paraffin structure. At room temperature they withdraw and the paramagnetic resonance vanishes completely and irreversibly. There are 4 figures and 2 tables.

Card 2/3

USSR

ACCESSION NR: AP4002933 S/0286/63/000/018/0015/0015

AUTHOR: Zhitnikov, R. A.; Kolesnikov, N. V.

TITLE: Production process for metals in finely divided colloidal form. Class 12, No. 157336

SOURCE: Byul. izobret. i tovarn. znakov, no. 18, 1963, 15

TOPIC TAGS: colloid metal dispersion, high melting metal, organosol, paraffin, colloidal metal

ABSTRACT: An Author Certificate has been issued for a process for producing metals in finely divided colloidal form by vacuum vaporization and settling into an organic solvent (paraffin). In order to produce stable organosols of high-melting metals, the metal-vaporizing device is placed above the organic-solvent surface.

ASSOCIATION: none

SUBMITTED: 18Dec61 DATE ACQ: 13Dec63 ENCL: 00

SUB CODE: CH NO REF SOV: 000 OTHER: 000

Card 1/1

[illegible] 63), 044.004/016/044
B102 B186

AUTHORS: Zhitnikov, R. A., Kolesnikov, N. V., Kosyakov, V. I.

TITLE: Paramagnetic resonance of silver atoms trapped in polar media at 77°K

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 4, 1963, 1208 - 1210

ABSTRACT: Previous investigations (ZhETF, 43, 1156, 1962) on the paramagnetic [illegible] of silver atoms trapped in non-polar [illegible] were continued; the [illegible] measurement was the same. The [illegible] were used and then [illegible] nonpolar media (solid at [illegible] were used, and then [illegible] liquids at room temperature, [illegible] water and absolute ethyl [illegible]. The measurements were made with [illegible] (3-cm band) [illegible] modulation of the magnetic [illegible] maximum field was [illegible] with an accuracy of 10^{-4} by the [illegible] resonance method. [illegible] of the silver isotopes Ag[illegible] there are four Zeeman structure levels between which the [illegible] are possible [illegible] fields: $(F=1, m=1) \rightarrow (F=0, m=0)$ and $(F=1, m=0) \rightarrow (F=1, m=1)$. For both

Card 1/2

Paramagnetic resonance of silver... [illegible] 044

[illegible] and g_J (Landé factor) were measured [illegible] being the energy [illegible] The results [illegible] state [illegible] substance. There are [illegible] 1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut [illegible] SSSR (Physicotechnical Institute [illegible] Academy of Sciences [illegible] of the

[illegible]ecember 1, 1962

Atom	matrix	Δν, Mc	Δν/Δν, %	g_J
Ag^{107}	free atom	[illegible]	[illegible]	[illegible]
Ag^{109}	free atom	[illegible]2,56±0,04	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]±0,04	[illegible]	2,0026±0,000[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

L 4701-65 EWT(m)/EWP(k)/EWP(q)/EWP(b) Pf-4

ACCESSION NR: AP4044692 S/0120/64/000/004/0180/0181

AUTHOR: Zhitnikov, R. A.; Kolesnikov, N. V.

TITLE: Method for preparing finely dispersed colloidal metals

SOURCE: Pribory* i tekhnika eksperimenta no. 4, 1964, 180-181

TOPIC TAGS: colloidal metal, colloidal high melt metal

ABSTRACT: A method is reported of preparing preparations of high-melt (copper, manganese) metals by evaporating the metal in a vacuum (10^{-4} — 10^{-6} torr) and condensating the vapor on the surface of fused commercial paraffin. Glass crucible (see Enclosure 1) containing paraffin 2 is mounted on electrically-heated bar 3. Tubular furnace 4 contains molten metal 5 whose vapor condenses on the paraffin. A modification of the crucible is used to prepare colloidal solutions for magnetic-resonance experiments. Orig. art. has: 2 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR (Physico-Technical Institute AN SSSR)

SUBMITTED: 18Jul63

ENCL: 01

SUB CODE: IE

NO REF SOV: 002

OTHER: 002

ZHITNIKOV, R.A.; KOLESNIKOV, N.V.

Methods of trapping free atoms in various media at the temperature of liquid nitrogen for conducting studies with the aid of paramagnetic resonance. Prib. i tekh. eksp. 9 no.3:189-192 My-Je '64 (MIRA 18:1)

1. Fiziko-tekhnicheskiy institut AN SSSR.

ZHITNIKOV, R.A.; KOLESNIKOV, N.V.

Method for obtaining finely dispersed colloidal metals. Prib. i tekh. eksp. 9 no.4:180-181 Jl-Ag '64. (MIRA 17:12)

1. Fiziko-tekhnicheskiy institut AN SSSR.

/EWT(m)/EPF(c)/EWT(j) Pc-4/Pr-4 AFWL/SSD/AFETR/RAEM(i)/ESD(gs)/
ACCESSION NR: AP4048405 ESD(t) RM S/0181/64/006/011/3307/3316

Lukhnikov, R. A.; Kolesnikov, N. V.

Paramagnetic resonance of free copper atoms in various matrices at nitrogen temperatures

Fizika tverdogo tela, v. 6, no. 11, 1964, 3307-3316

copper, paramagnetic resonance, polar molecular matrix, low temperature research

This is a continuation of earlier work by the authors on resonance of gold and silver atoms in molecular media at liquid nitrogen temperature (v. 86, 1962; v. 44, 1204, 1963). The atoms were captured and stabilized by the same method as in the earlier work. The paramagnetic resonance spectra were obtained with the aid of a radiospectrometer operating in

AP 048405

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... in the places where ... the
... differences are ... Orig.
... and 2 tables.

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... NR REF SOV: ... ...: 004

KOLESNIKOV, N.V., inzh.; PERCHUK, V.Z., kand. tekhn. nauk

Methods of evaluating the reliability of marine automatic control equipment. Sudostroenie 30 no.9:47-49 S '64.
(MIRA 17:11)

ACCESSION NR: AP4012527 S/0056/64/046/001/0089/0098

AUTHORS: Zhitnikov, R. A.; Kolesnikov, N. V.

TITLE: Paramagnetic resonance of free gold and silver atoms trapped in different media at liquid nitrogen temperatures

SOURCE: Zhurnal eksper. i teoret. fiz., v. 46, no. 1, 1964, 89-98

TOPIC TAGS: gold, silver, free atom, free gold atom, free silver atom, trapped gold atom, trapped silver atom, paramagnetic resonance, trapping in polar medium, trapping in nonpolar medium, polar matrix, nonpolar matrix, undecane, water, heavy water, ethyl alcohol, spin lattice relaxation, saturation, hyperfine interaction, paramagnetic resonance line width, anisotropy of interaction, atomic shell distortion

ABSTRACT: This is a continuation of studies of the trapping and stabilization of silver atoms at liquid-nitrogen temperatures in non-

Card 1/2

ACCESSION NR: AP4012527

polar and polar matrices (ZhETF v. 42, 1186, 1962 and v. 44, 1204, 1963). The paramagnetic resonance of gold atoms trapped by condensation at liquid nitrogen temperatures in polar media (ordinary and heavy water, ethyl alcohol) and in a nonpolar one (undecane) is investigated. Paramagnetic resonance of silver in undecane is also investigated for comparison. It is concluded that neither saturation, spin-lattice relaxation, replacement of protons by deuterons, nor hyperfine interaction of the trapped atoms with the nuclear moments of the matrix make a considerable contribution to the line widths, which are determined in practice by the inhomogeneity and anisotropy of the interaction forces. It is also concluded that, of all the matrices investigated, water produces the smallest disturbance of the shells of the trapped atoms and ethyl alcohol the largest. Orig. art. has: 3 figures, 2 formulas, and 2 tables.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR (Physicotechnical Institute AN SSSR)

Card 2/5

ACCESSION NR: AP4041050 S/0120/64/000/003/0189/0192

AUTHOR: Zhitnikov, R. A.; Kolesnikov, N. V.

TITLE: Methods for capturing free atoms by various media at the liquid-nitrogen temperature in paramagnetic-resonance studies

SOURCE: Pribory* i tekhnika eksperimenta, no. 3, 1964, 189-192

TOPIC TAGS: paramagnetic resonance, atom capture, radiospectroscope, atom capture by condensation

ABSTRACT: The capture and stabilization of free Ag atoms in both nonpolar (paraffins) and polar (water and ethyl alcohol) matrices, at the liquid-nitrogen temperature, were studied. Also, the paramagnetic-resonance spectra of these captured atoms were investigated. The condensation method was used for the capture, and the specimens were produced directly in the resonator of a radio-spectroscope. Two outfits (sketches supplied) are described: with heating and

Card 1/2

ACCESSION NR: AP4041050

with cooling the capture medium, depending on the vapor pressure of the medium at room temperature. For low vapor-pressure substances, the best results were obtained with thin (0.1—0.3-mm) specimens condensed within 2—3 minutes. Orig. art. has: 2 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR (Physico-Technical Institute, AN SSSR)

SUBMITTED: 17Dec62 ENCL: 00

SUB CODE: NP NO REF SOV: 002 OTHER: 004

Card 2/2

L 8622-66 EWT(l)/EWT(m)/EWP(b)/EWP(t) IJP(c) GG/WW/JD
ACC NR: AP5027044 SOURCE CODE: UR/0120/65/000/005/0236/0237

AUTHOR: Zhitnikov, R. A.; Kolesnikov, N. V.

ORG: Physics-Engineering Institute, AN SSSR, Leningrad (Fiziko-tekhnicheskiy institut AN SSSR)

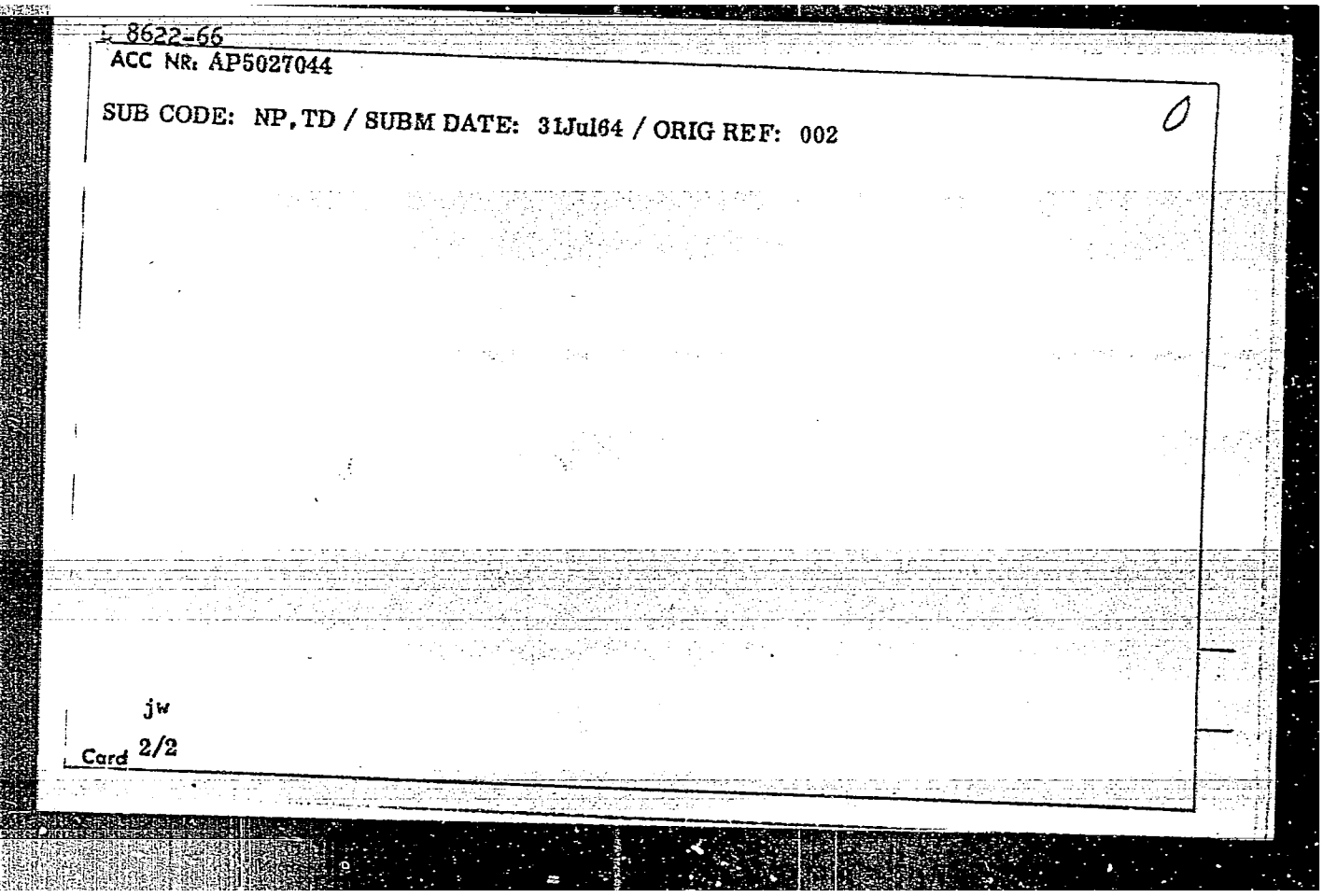
TITLE: A method for temperature investigations during the study of the paramagnetic resonance of free atoms stabilized in various media

SOURCE: Pribory i tekhnika eksperimenta, no. 5, 1965, 236-237

TOPIC TAGS: low temperature phenomenon, paramagnetic resonance, atom, atomic physics

ABSTRACT: An earlier study of free atoms stabilized at liquid nitrogen temperature was [illegible] utilizing a specially designed and constructed device (PTE, 1964, No 3, 189). [illegible] increase in temperature above a certain value, the stabilized atoms begin to disappear as a result of diffusion and reaction with the substance of the matrix. To study such maximum temperatures at which the stabilized atoms are still able to exist, the study of paramagnetic resonance spectra must be carried out in a wide range of temperatures. The [illegible] note describes a method for the cooling and smooth temperature control in a device for the paramagnetic resonance investigation of stabilized atoms. The cooling in the 20 to 100K region is carried out by helium vapors, and in the 95-300K region by nitrogen vapors. The device is capable of maintaining these temperatures within ±2K. Orig. art. has: 2 figures.

Card 1/2 UDC: 536.48



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SUB CODE: NP, TD / SUBM DATE: 31Jul64 / ORIG REF: 002

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Card 2/2

L 5512-65 EWT(d)/EWT(l)/EWT(m)/EPF(c)/EEC(k)-2/EPF(n)-2/EPR/T/EWP(t)/
EWP(z)/EWP(b) Pr-4/Pu-4 IJP(c) JD/AW/JG

ACCESSION NR: AP5010727 UR/0181/65/007/004/1157/1161

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41
B

AUTHOR: Zhitnikov, R. A.; Kolesnikov, N. V.

TITLE: Paramagnetic resonance of free atoms of the alkali metals Na, K, and Rb, stabilized in a molecular matrix at liquid-nitrogen temperatures

21

SOURCE: Fizika tverdogo tela, v. 7, no. 4, 1965, 1157-1161

SOURCE: Fizika tverdogo tela, v. 7, no. 4, 1965, 1127-1131

TOPIC TAGS: paramagnetic resonance, free atom, alkali metal, stabilized atom, molecular matrix, hyperfine splitting

ABSTRACT: The authors had previously investigated the free atoms of Au, Ag, and Cu stabilized in different molecular matrices at liquid-nitrogen temperature (ZhETF v. 43, 1186, 1962; v. 44, 1204, 1963; and v. 46, 89, 1964; FTT v. 6, 3307, 1964). In the present article they report a similar study of alkali-metal atoms stabilized in molecular matrices at liquid-nitrogen temperature. The samples with stabilized atoms of the alkali-metals were prepared directly in the cavity of the EPR-spectroscope by simultaneously condensing a beam of atoms and benzene vapor on a surface cooled with liquid nitrogen. The apparatus and the procedure of