21355

S/126/61/011/004/002/023
E032/E314

24.2200 (1137, 1147, 1158)

AUTHORS: Volkov, D.I. and Pshenichkin, P.A.

TITLE: Paramagnetism of Manganese-Antimony at High Temperatures

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol. 11, No. 4, pp. 513 - 518

TEXT: The present authors report experimental data on the susceptibility of MnSb alloys in the paramagnetic region. In distinction to earlier work, the susceptibility is measured not only near the melting point but well above this point as well. The susceptibility was measured with the aid of the Faraday-Sucksmith method, using argon as the inert medium. The specimens were obtained in a high-frequency vacuum furnace. Fig. 1 shows the reciprocal of the susceptibility as a function of temperature for MnSb (Curve 1), alloys with 25% Mn (Curve 2), 20% Mn (Curve 3), 15% Mn (Curve 4) and 35% Mn (Curve 5). It follows that below the melting point the paramagnetism of MnSb obeys the Curie-Weiss

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law (melting point approximately 700 - 750 °C). The MnSb alloys represented by Curves 2-4 also obey this law. This is due to the fact that the ferromagnetic compound MnSb is always present in those alloys in which there is less than 31% Mn (by weight). A different dependence is found in the case of Mn_2Sb (Fig. 2: Curve 1 - Mn_2Sb; Curve 2 - 40.7% Mn). Analysis of the data showed that the paramagnetic susceptibility of Mn_2Sb can be described by the Neel laws with Neel constants $1/\chi_o = 270$, $\sigma = 6\ 200$ and $\Theta = 553$ °K. The MnSb alloys can be divided into two groups; namely - those containing MnSb and obeying the Curie-Weiss law and those near the Mn_2Sb composition, which are described by the hyperbolic Neel law

$$\left(\frac{1}{\chi} = \frac{1}{\chi_o} + \frac{T}{C} - \frac{\sigma}{T - \Theta}\right).$$

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001860520012-6"

S/126/61/011/004/002/023
E032/E314

Paramagnetism of ....

Fig. 4 shows $1/\varkappa$ as a function of temperature above the melting point (Curve 1 - 15% Mn; Curve 2 - 25% Mn). Fig. 5 shows the same relationship for alloys with 20% Mn (Curve 1) and 29% Mn (Curve 2). Fig. 6 shows the Curie-Weiss constant, C , as a function of concentration of Mn. The upper curve refers to solids and the lower to liquids. The numerical data are summarised in Table 1.
There are 6 figures, 1 table and 8 references: 6 Soviet and 2 non-Soviet.

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

SUBMITTED: July 8, 1960

21395

S/126/61/011/004/002/023
E032/E314

Paramagnetism of ....

Fig. 1:

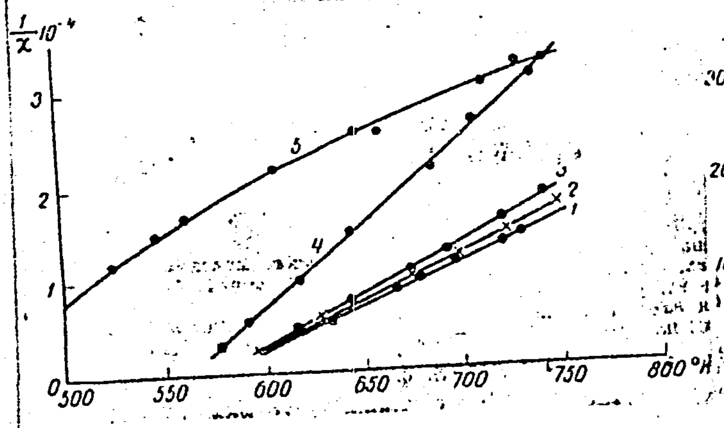
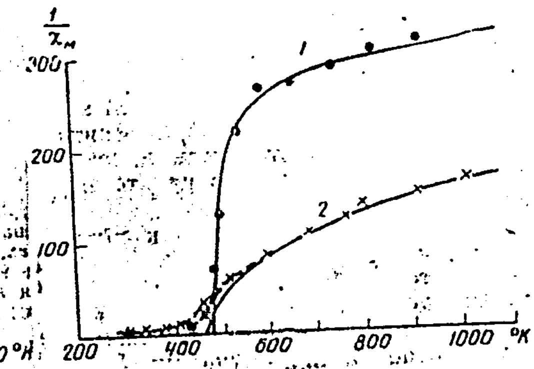


Fig. 2:



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S/126/61/011/004/002/023
E032/E314

Paramagnetism of ....

Fig. 3:

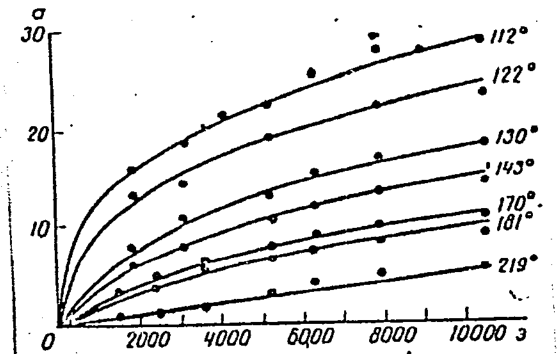
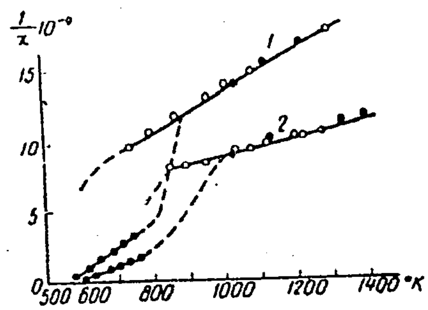


Fig. 4:



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21355

S/126/61/011/004/002/023
E032/E314

Paramagnetism of ....

Fig. 5:

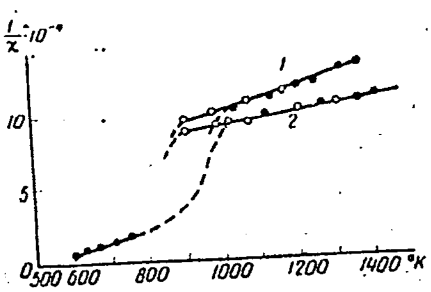
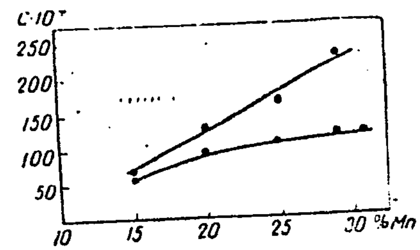


Fig. 6:



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21355

S/126/61/011/004/002/023
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Paramagnetism of ....

Table:

Manganese Content, weight %	Θ	Θ_{liquid}	$C \cdot 10^4$	$C_{liquid} \cdot 10^4$
15	288	-224	57	70
20	303	-600	94	139
25	298	-920	108	162
29	299	-1390	116	230

Card 7/7

VOLKOV, D.I.; PSHENICHKIN, P.A.; BUBLIK, N.I.

Anomalous temperature dependence of the paramagnetic susceptibility of certain manganese alloys. Fiz. met. i metalloved. 17 no.5:698-702 My '64. (MIRA 17:9)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

VOLKOV, D.M.

16(1) PHASE I BOOK EXPLOITATION SOV/2660

Vsesoyuznyy matematicheskiy s"yezd. 3rd, Moscow, 1956

Trudy. t. 4: Kratkoye soderzhaniye sektsionnykh dokladov. Doklady inostrannykh uchenykh (Transactions of the 3rd All-Union Mathematical Conference in Moscow. vol. 4: Summary of Sectional Reports. Reports of Foreign Scientists) Moscow, Izd-vo AN SSSR, 1959. 247 p. 2,200 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Matematicheskiy institut.

Tech. Ed.: G.N. Shevchenko; Editorial Board: A.A. Abramov, V.G. Boltyanskiy, A.M. Vasil'yev, B.V. Medvedev, A.D. Myshkis, S.M. Nikol'skiy (Resp. Ed.), A.G. Postnikov, Yu. V. Prokhorov, K.A. Rybnikov, P. L. Ul'yanov, V.A. Uspenskiy, N.G. Chetayev, G. Ye. Shilov, and A.I. Shirshov.

PURPOSE: This book is intended for mathematicians and physicists.

COVERAGE: The book is Volume IV of the Transactions of the Third All-Union Mathematical Conference, held in June and July 1956. The book is divided into two main parts. The first part contains summaries of the papers presented by Soviet scientists at the Conference that were not included in the first two volumes. The second part contains the text of reports submitted to the editor by non-Soviet scientists. In those cases when the non-Soviet scientist did not submit a copy of his paper to the editor, the title of the paper is cited and, if the paper was printed in a previous volume, reference is made to the appropriate volume. The papers, both Soviet and non-Soviet, cover various topics in number theory, algebra, differential and integral equations, function theory, functional analysis, probability theory, topology, mathematical problems of mechanics and physics, computational mathematics, mathematical logic and the foundations of mathematics, and the history of mathematics.

Card 5/34

SAKHARNIKOV, N.A.; VOLKOV, D.M.

Means of calculating the field of a point source when there is a vertical layer. Uch.zap.LGU no.303:193-202 '62. (MIRA 15:11)
(Electric prospecting)

10 9100 also 1103, 1109

22583
S/044/60/000/010/006/021
C111/C333

AUTHOR: Volkov, D.M.

TITLE: On the solution of static problems of elasticity theory and of other polyharmonic problems with the method of infinite algebraic systems

PERIODICAL: Referativnyy zhurnal, Matematika, no. 10, 1960, 76, abstract 11563. (Tr.Leningr.tekhnol.in-ta im. Lensoveta, 1959, vyp. 50, 6-10)

TEXT: By the example of the static problem of elasticity theory it is shown that, if the coordinates of the contour (considered as functions of the polar angle θ under a mapping of the domain onto a circle) possess continuous derivatives of the four first orders, the problem can be reduced to the solution of a quasi-regular infinite system of linear algebraic equations; the unknowns are the coefficients of the Taylor expansion of $\varphi[z(\zeta)]$, where φ occurs in the boundary conditions

$$\varkappa \varphi(\zeta) - z(\zeta)\left[\frac{\overline{\varphi'(\zeta)}}{z'(\zeta)}\right] - \overline{\psi(\zeta)} = f_1 + if_2,$$ where $\varkappa$ = const,

f_1 and f_2 are given continuous functions, and $z(\zeta)$ maps the circle

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001860520012-6"

22583

$|\zeta| < 1$ onto that domain for which the problem is being solved.

[Abstracter's note: Complete translation.]

Electrons in a field of plane nonpolarized electromag-
netic waves from the point of view of the Dirac equation.
D. M. Volkov. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 7, 1286 9(1937). **The limiting transition of quantum into**
classical mechanics. Ya. P. Terletskii. *Ibid.* 1290 8.
The change of width of a wave packet with time and the transition of the quantum mechanics of a particle with a density probability function to the classical gas kinetic equation are discussed. F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

USSR / Farm Animals. Poultry. Q

Abs Jour : Ref Zhur - Biologiya, No 5, 1959, No. 21309

Author : Volkov, D. T.
Inst : Scientific Research Institute of Poultry Farming
Title : Breeding Work in Denmark's Poultry Farming

Orig Pub : Byul. nauchno-tekhn. inform. N.-i. in-ta ptitsevodstva, 1957, No 2, 47-49

Abstract : No abstract given

Card 1/1

24(3)

AUTHORS: Volkov, D.I., and Chechernikov, V.I. SOV/155-58-2-44/47

TITLE: The Temperature Dependence of the Paramagnetic Receptivity of Some Ferrites (Temperaturnaya zavisimost' paramagnitnoy vospriimchivosti nekotorykh ferritov)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki, 1958, Nr 2, pp 208-213 (USSR)

ABSTRACT: The present paper is a report on the experimental investigation of the temperature dependence of the paramagnetic receptivity of several ferrites (nickel-, cobalt-, manganese-, magnesium-, lithium ferrites). It was stated: in the immediate neighborhood of the ferromagnetic Curie-point the receptivity is a function of the temperature and the field. For higher temperatures the depedence on the field suspends, but not always it follows the law of Neel [Ref 1]; e.g. the behavior of the manganese ferrite in the interval from 673°K to 900°K deviates essentially from Neel without depending on the field. For 1360°K the receptivity of the lithium ferrite changes desultorily.
There are 5 figures, and 4 references, 2 of which are Soviet, and 2 American.

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The Temperature Dependence of the Paramagnetic Receptivity of Some Ferrites SOV/155-58-2-44/47

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

SUBMITTED: January 17, 1958

VOLKOV, D.M.

Uniqueness of the classical energy integral. Vest. LGU 8 no.5:3-13 My '53. (MIRA 12:7)
(Integrals)

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001860520012-6"

PA 160T88

VOLKOV, D. M.

USSR/Physics - Electromagnetism 11 May 50
Waves, Electromagnetic

"Second Integral of the Conservation-Law Type for Electromagnetic Fields," D. M. Volkov, 2 pp

"Dok Ak Nauk SSSR" Vol LXXII, No 2

Considers case where electromagnetic waves are completely reflected, and are propagated in empty finite region D of arbitrary form from metallic surface S bounding a given region. The fields E, H in D are assumed to satisfy classical Maxwell's equations. Submitted 14 Mar 50 by Acad S. L. Sobolev.

160T88

Source: Mathematical Reviews, Vol 13 No. 1

Volkov, D. M. Bilinear integrals of linear hyperbolic problems. Izvestiya Akad. Nauk SSSR. Ser. Mat. 15, 75–90 (1951). (Russian)

Let D be a domain in the Euclidean m-space bounded by a sufficiently smooth surface S. On S there is given a linear homogeneous boundary condition $\sigma u=0$ independent of time. Let u and v be solutions of the wave equation, $u=u(x_1, \cdots, x_m, t)$, $v=v(x_1, \cdots, x_m, t)$, defined and of class C^{N+1} for $(x_1, \cdots, x_m)\varepsilon D+S$, and for some given time interval, and satisfying the boundary condition. Let $\omega_N(u, v)$ be a bilinear homogeneous differential expression involving derivatives of u and v with respect to $x_1, \cdots, x_m, t$ up to the order N, with sufficiently smooth coefficients which are functions of $x_1, \cdots, x_m$ only. Let $\omega_{N-1}(u, v)$ be [illegible] of the same form defined on S. If

$$(1)\qquad I_N(u, v) = \int_D \omega_N(u, v)dx_1 \cdots dx_m + \int_S \omega_{N-1}(u, v)dS$$

vanishes identically for all pairs u, v satisfying the conditions stated above, [illegible] I_N is called a bilinear integral of finite order (and of class 0) of the boundary value problem considered. Answering a question posed by Sobolev [C. R. (Doklady) Acad. Sci. URSS (N.S.) 48, 542–545 (1945); these Rev. 8, 78] the author derives conditions which permit one to decide by a finite number of differentiations, eliminations, etc., whether or not a given expr[illegible]on (1) is a bilinear integral.

L. Bers (Los Angeles, Calif.).

VOLKOV, D. M.

USSR/Mathematics - Integrals May/Jun 51

"Higher-Order Integrals of the Conservation-Laws
Type For Linear Hyperbolic Problems," D. M. Volkov

"Iz Ak Nauk SSSR, Ser Matemat" Vol XV, No 3,
pp 255-278

Seeks integrals similar to classical integral of
energy not contg higher derivs of unknown func-
tions of the hyperbolic linear boundary-value
problem. Writes out integrals of the 2d order in
3 classical boundary-value problems for wave eq
which contains frequently encountered boundary
conditions. Gives method for constructing pos

186T52

USSR/Mathematics - Integrals (Contd) May/Jun 51

definite integral of the Nth order. Writes indi-
vidual higher-order integrals for certain hyper-
bolic systems, particularly Maxwell's eqs in the
case of complete reflexion of electromagnetic
waves from metal surface limiting region of propa-
gation. Describes integral E_2 which is independent
const of the electromagnetic fld relative to
classical integral of energy E_1. Cf. Courant and
Hilbert, "Methods of Mathematical Physics," 1945;
Frank and Mises, "Differential and Integral Equa-
tions of Mathematical Physics," 1937. Submitted
by Acad S. L. Sobolev 16 Nov 49.

186T52

VOLKOV, D.M.

Mathematical Reviews
Vol. 14 No. 11
Dec. 1953
Mathematical Physics

Volkov, D. M. A second integral giving a new conservation law for electromagnetic fields. Vestnik Leningrad. Univ. 1952, no. 2, 42–43 (1952). (Russian)

For a field active inside an empty finite region D, bounded by a metallic surface S, the author gives the time-constancy of

$$\mathbf{E}_2=\iiint_D \sum_{k,l=1}^{3}(|H_l^k|^2+|E_l^k|^2)\,dx_1dx_2dx_3$$

$$-\iint_S\left(|E|^2\sum_{j=1}^{2}P_{jj}+\sum_{j=1}^{2}{}^*H^j\sum_{k=1}^{2}P_{kj}\,{}^*H^k\right)dS.$$

Here, in the space-integral, H_l^k, E_l^k are the space-derivatives of the field components; in the surface-integral the x_r^* are local coordinates with x_3^* the normal, $x_3^*=P(x_1^*, x_2^*)$ the local equation of S, and ${}^*H^k$ the corresponding field components. A proof is sketched. $\mathbf{E}_2$ is stated to be independent of the energy, and to measure the excitation of the field. There are said to be other such results involving higher derivatives. *F. V. Atkinson* (Ibadan).

1. VOLKOV, D. M., GINZBURG, I. P.

2. USSR (600)

4. Hydraulics

7. Calculating the hydraulic impact in pipes of varying cross sections, Vest. Len. un. 7 No. 6, 1952.

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

VOLKOV, D. M.

Mathematical Reviews
Vol. 15 No. 1
Jan. 1954
Analysis

(1) mau

LL

Volkov, D. M. On exact solutions of a class of hyperbolic equations having application in the theory of hydraulic shock. Doklady Akad. Nauk SSSR (N.S.) 90, 49–50 (1953). (Russian)

Certain problems of hydraulic shock in tubes of variable cross-section lead to the equation

$$\frac{\partial^2 u}{\partial\xi\partial\eta}=B(\xi+\eta)\left(\frac{\partial u}{\partial\xi}+\frac{\partial u}{\partial\eta}\right).$$

By a separation of variables of the type $\sum_\nu g_\nu(\xi+\eta)d^\nu\varphi(\xi)/d\xi^\nu$ certain exact solutions of the above equation can be obtained. *M. H. Protter* (Berkeley, Calif.).

VOLKOV, Daniil Makar'yevich; TSAR'KOVA, Z.I., red.

[Differential equations and their application in natural science] Differentsial'nye uravneniia i ikh prilozheniia v estestvoznanii. Leningrad, Izd-vo Leningr. univ. Pt.2. 1964. 155 p. (MIRA 18:2)

VOLKOV, Daniil Makar'yevich; TSAR'KOVA, Z.I., red.; ZHUKOVA, Ye.G., tekhn. red.

[Differential equations and their application in natural science] Differentsial'nye uravneniia i ikh prilozheniia v estestvoznanii. Leningrad, Izd-vo Leningr. univ., 1961. 132 p. (MIRA 15:3)

(Differential equations)

VOLKOV, D.M.

Solving static problems in the theory of elasticity and other polyharmonic problems by the method of infinite algebraic systems. Trudy LTI no. 50:6-10 '59. (MIRA 14:3)
(Elasticity) (Harmonic analysis)

VOLKOV, Dmitriy Pavlovich, doktor tekhn. nauk, prof.; RYAKHIN, V.A., kand. tekhn. nauk, retsenzent

[Dynamics and strength of bucket excavators] Dinamika i prochnost' odnokovshovykh ekskavatorov. Moskva, Mashinostroenie, 1965. 462 p. (MIRA 18:11)

VOLKOV, D.P., doktor tekhn.nauk

Outlcod for the development of earthmoving machinery. Stroi. i dor. mashinstr. 5 no.8:5-8 Ag '60. (MIRA 13:8)
(Earthmoving machinery)

VOLKOV, D.P.; CHANGLI, I.I., inzh., kand.ekonom.nauk, red.; IVANOV, V.S., inzh., retsenzent; DANILOV, L.N., red.izd-va; SMIRNOVA, G.V., tekhn.red.

[Earthmoving machinery] Mashiny dlia zemlianykh rabot. Red.I.I. Changli. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 111 p. (MIRA 13:7)
(Earthmoving machinery)

PHASE I BOOK EXPLOITATION SOV/4167

Volkov, D. P.

Mashiny dlya zemlyanykh rabot (Earthwork Machinery) Moscow, Mashgiz, 1960. 111 p. (Series: Sovetskoye mashinostroyeniye v 1959-1965 g.g.) 2,000 copies printed.

Ed. of Series: I. I. Changli, Candidate of Economics, Engineer; Reviewer: V. S. Ivanov; Ed. of Publishing House: L. N. Danilov; Tech. Ed.: G. V. Smirnova; Managing Ed. for Literature on General Technical and Transport Machine Building: A. P. Kozlov, Engineer.

PURPOSE: This booklet is intended for technical personnel engaged in designing, building and operating machinery for mechanized earthwork.

COVERAGE: The author discusses the present state of basic types of machinery for mechanized earthwork and the prospects for the development of this machinery during the current seven-year plan. He describes the single-bucket general purpose excavator-cranes, multibucket

Card 1/2

trench-excavators, special shovels for stripping and quarrying and walking dragline excavators. The author also considers rotary-type excavators, continuous-action automated equipment for open pit mining, scrapers, bulldozers and ground-compacting machinery. There are no personalities mentioned. No bibliography or references are attached.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress
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VK/wrc/ec
10-17-60

VASIL'YEV, V.G., kand.tekhn.nauk; VOLKOV, D.P., doktor tekhn.nauk

Using electronic models in investigating excavators. Stroi. i dor. mashinostr. 4 no.3:6-9 Mr '59. (MIRA 12:4)
(Excavating machinery--Testing)
(Engineering models)

VOLKOV, D.P., doktor tekhn. nauk.

Some results and prospects for the development of the excavator industry. Stroi. i dor. mashinostr. 4 no.1:10-15 Ja '59.
(MIRA 12:1)

(Excavating machinery)

VOLKOV, Dmitriy Pavlovich,; POLKOVNIKOV, V.S., kand. tekhn. nauk, retsenzent,; MELEYEV, A.S., inzh., red.; SOKOLOVA, T.F., tekhn. red.

[Dynamic loads in universal excavating cranes; testing and principles of designing] Dinamicheskie nagruzki v universal'nykh ekskavatorakh-kranakh; issledovaniia i osnovy rascheta. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1958. 267 p. (MIRA 11:11)

(Excavating machinery)

Name	:	VOLKOV, D. P.
Dissertation	:	Dynamic loads of basic units of single-motor excavators; investigations and principles of design
Degree	:	Doc Tech Sci
Defended At	:	Min Higher Education USSR, Moscow Order of Labor Red Banner Construction Engineering Inst imeni V. V. Kuybyshev
Publication Date, Place	:	1956, Moscow
Source	:	Knizhnaya Letopis' No 5, 1957

VOLKOV, D.P., kand. tekhn. nauk.

Basic results of studying dynamic loads in universal excavating cranes. [Izd.] LONITOMASH 43:5-11 '57. (MIRA 11:6)
(Excavating machinery)

VOLKOV, D.P., kandidat tekhnicheskikh nauk; VASIL'CHENKO, V.A., inzhener.

Investigating disk friction flywheel clutches. [Trudy] VNIIStroidormash no.15:42-62 '57. (MLRA 10:6)
(Clutches (Machinery))

VOLKOV, D.P., kandidat tekhnicheskikh nauk; BULANOV, A.A., inzhener.

Friction and wear tests of friction linings in excavator clutches. [Trudy] VNIIStroidormash no.15:63-72 '57. (MIRA 10:6)
(Clutches (Machinery)--Testing)

VOLKOV, D. P. (DOCENT)

VOLKOV, D. P. (DOCENT) -- "Outline of the History of the Development in the 19th Century of the Course of Complex Projections in Russia." Sub 11 Mar 52, Moscow Order of Labor Red Banner Engineering Construction Inst imeni V. V. Kuybyshev (Dissertation for the Degree of Candidate in Technical Sciences.)

SO: VECHERNAYA MOSKVA, January-December 1952

VOLKOV, D.P., doktor tekhn. nauk; NIKOLAYEV, S.N., inzh.

Dynamic loads and the longevity of rotary trench excavators. Stroi. i dor. mash. 9 no.4:33-36 Ap '64. (MIRA 18:1)

VOLKOV, D. P.

"Study of Dynamic Phenomena During the Turning of Excavating Cranes." Sub 6 Mar 51, Moscow Order of the Labor Red Banner Construction Engineering Inst imeni V. V. Kuybyshev

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55

REBROV, A.S., inzhener, laureat Stalinskoy premii; VOLKOV, D.P., kandidat tekhnicheskikh nauk.

New type friction clutch for excavators. Mekh.stroi. 11 no.5:16-20 My '54. (MLRA 7:5)

(Excavators) (Clutches (Machinery))

VOLKOV, D.P.

USSR/Miscellaneous - Excavators, Design

Card 1/1 : Pub. 70 - 3/9

Authors : Volkov, D. P., Cand. of Techn. Sc.

Title : Problems of reducing the weight and improving the quality of excavators

Periodical : Mekh. stroi. 3, 11-16, March 1954

Abstract : The problems involved in reducing the frame and chassis weights of E-505 and E-255 single-bucket crane-excavator combinations are discussed. In order to obtain conclusive data regarding the proper weight reduction of excavators and improvement of their quality, special dynamic and static load tests were conducted by the Engineering-Construction Institute in Moscow, and the results are described. Tables; graph; drawings; illustrations.

Institution : .....

Submitted : .....

VOLKOV, D.P., RANNEV, A.V.

Strains and Stresses

Experimental testing of actual stresses and strains in structural components of excavators. Mekh. stroi. 9 no. 4, 1952.

9. Monthly List of Russian Accessions, Library of Congress, July 1952, Uncl.

VOLKOV, D. P., RANNEV, A. V.

Excavating Machinery

Experimental testing of actual stresses and strains in structural components of excavators. Mekh. stroi. 9 no. 4 '52.

9. Monthly List of Russian Accessions, Library of Congress, July 1952, Uncl.

VOLKOV, D.P., prof. doktor tekhn.nauk; CHERKASOV, V.A., inzh.

Study of the dynamics of waste stackers. Gor.zhur. no.4:53-54 Ap '64. (MIRA 17:4)

1. Moskovskiy inzhenerno-stroitel'nyy institut imeni Kuybysheva.

VOLKOV, D.P., doktor tekhn.nauk

Construction of excavators in the capitalistist countries. Stroi. i dor. mash. 7 no.7:36-39 Jl '62. (MIRA 15:7)
(Excavating machinery)

1. VOLKOV, D. P.; RANNEV, A. V., Eng.

2. USSR (600)

4. Excavating Machinery

7. Study of the work of an excavator equipped with a reversible shovel.
Mekh. stroi. 9 No. 9, 1952.

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

VOLKOV, D.P., kandidat tekhnicheskikh nauk; BORISOV, S.M., inzhener.

Directives of the 20th congress of the Communist Party of the Soviet Union concerning the sixth five-year plan of economic development of the U.S.S.R. and the tasks it assigns to us. Stroi. i dor.mashinost. 1 no.3 Mr '56. (MLRA 10:1)

(Clutches (Machinery))

VOLKOV, D.P., kandidat tekhnicheskikh nauk.

Effect of drive design on dynamic loads in universal excavators. Stroi. i dor. mashinostr. 2 no.5:4-8 My '57. (MLRA 10:6)
(Excavating machinery)

VOLKOV, D.P., kandidat tekhnicheskikh nauk.

Potentials for reducing the weight and improving the quality of excavators. Mekh.stroi.11 no.3:11-15 Mr '54. (MLRA 7:2)
(Excavating machinery)

VOLKOV, D. P., doktor tekhn. nauk

Study of the operation of an EVG-15 stripping excavator without a reducing gear on the drive of the hoisting mechanism. Sbor. trud. MISI no.39:364-365 '61. (MIRA 16:4)

1. Moskovskiy inzhenerno-stroitel'nyy institut imeni V. V. Kuybysheva.

(Excavating machinery—Electric driving)

RANNEV, A.V., kand. tekhn. nauk; PANKRASHKIN, P.V., kand. tekhn. nauk; VASIL'CHENKO, V.A., inzh.; VOLKOV, D.P., doktor tekhn. nauk, prof., retsenzent

[Drive mechanisms for all-purpose excavators and their testing] Privody universal'nykh ekskavatorov i ikh ispytaniia. Moskva, Mashinostroenie, 1964. 291 p. (MIRA 18:1)

VOLKOV, D.S., kand.tekhn.nauk

Investigating Morgan's floor-type charging machine. Stal' 21 no.8:700-701 Ag '61. (MIRA 14:9)

1. Zaporozhskiy mashinostroitel'nyy institut.
(Open-hearth furnaces—Equipment and supplies)

VOLKOV, D.S., kand.tekhn.nauk

Improving the performance of belt conveyers in sintering plants. (MIRA 14:1)
Stal' 21 no. 1:20 Ja '61.

1. Zaporozhskiy mashinostroitel'nyy institut.
(Conveying machinery) (Sintering)

[illegible], D. [illegible]

"Contents and Forms of Calcium and Phosphorus Compounds in the Blood of Chickens at Various Periods of Ovulation." Cand Biol Sci, Moscow Veterinary Academy, Moscow, 1953. Dissertation (Referativnyy Zhurnal--Khimiya Moscow, No 2, Jan 54.)

SO: SUM 186, 19 Aug 1954

Volkov, D.V.

56-4-33/54

AUTHORS: Aleksin, V.F., Volkov, D.V.,

TITLE: Radiation Correction to the Scattering of Particles in the External Magnetic Field and to the Compton Effect in the Scalar Quantum Electrodynamics (Radiatsionnyye popravki k rasseyaniyu chastitsy vo vneshnem pole i k Kompton - effektu v skalyarnoy kvantovoy elektrodinamike) (Letter to the Editor)

PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol. 33, Nr 4, pp. 1044 - 1045 (USSR)

ABSTRACT: The expression for the one-photon mass operator of a scalar particle is used to calculate as well the radiation correction to the scattering of scalar particles in the external magnetic field as to calculate the Compton effect. 1.) The differential scattering cross section in Born's approximation has the form:

$$d\sigma/d\Omega = (d\sigma/d\Omega)_o + (d\sigma/d\Omega)_{\Delta M} + (d\sigma/d\Omega)_{A'},$$

where $d\sigma/d\Omega)_o$ is the differential scattering cross section without the taking into account of the radiation correction. Δ M, A' are the radiation corrections which belong to the

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001860520012-6"

56-4-33/54

Radiation Correction to the Scattering of Particles in the External Magnetic Field and tot the Compton Effect in the Scalar Quantum Electrodynamics

mass operator and the polarization of the vacuum respectively. The corresponding expressions for these two corrections are derived. 2.) For the Compton effect $d\sigma/d\Omega$ has the form:

$d\sigma/d\Omega = (\alpha/m)^2 (q20/q10)^2 U$, where

d/Ω - is the solid angle element in the direction of photon scattering and $q10/q20$ - the energy of the inciding and the scattered photons. For U the corresponding equations are derived. There is 1 Slavic reference.

ASSOCIATION: Physico-Technical Institute AN Ukrainian SSR (Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR)

SUBMITTED: May 19, 1957

AVAILABLE: Library of Congress

Card 2/2

VOLKOV, D.V., Cand Phys-Math Sci--(diss) "The use of mass operator in scalar quantum electrodynamics." Khar'kov, 1958. 7 pp (Min of Higher Education UkSSR. Khar'kov Order of Labor Red Banner State U im A.M. Gor'kiy), 100 copies. Bibliography at end of text (10 titles) (KL,22-58, 101)

VOLKOV, D.V.; ORAYEVSKIY, V.M. [Oraievs'kyi, V.M.]

Role of the form factor in $\pi^0 \rightarrow \gamma + e^+ + e^-$ decay. Ukr.fiz. zhur. 4 no.6:804-806 N-D '59. (MIRA 14:10)

1. Fiziko-tekhnicheskiy institut AN USSR.
(Mesons--Decay)

24(5)
AUTHOR: Volkov, D. V. SOV/56-36-5-42/76

TITLE: On the Quantization of Fields With Half-integral Spin Fields (O kvantovanii poley s polutselym spinom)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 5, pp 1560-1566 (USSR)

ABSTRACT: In the present paper the author, on the basis of the simple example of the Dirac equation, investigates the possibility of constructing an algebra of operator wave functions which leads to an unusual statistics with maximum occupation number (two for each individual state), and, connected herewith, to a statistics with relativistic causality principle, positiveness of energy (for the free non-interacting field), and with Lagrangian formalism. For the purpose of formulating the latter, the author operated with Schwinger's principle (Ref 1). It is shown that the quantization scheme concerned is a consequence of Schwinger's variation principle. First, the conditions of relativistic causality are discussed and formulated mathematically. In the following, a formulation of the field operator algebra is given in momentum representation and the properties and mutual relations of the introduced operators are discussed. As a concrete example, the expressions for the energy-,

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On the Quantization of Fields With Half-integral Spin Fields SOV/56-36-5-42/76

momentum-, and charge operators of a free Dirac field, which are antisymmetric with respect to the operators of the wave function, are written down; the latter are also explicitly written down in momentum representation; for the commutators of these operators $(E,\vec{P},Q)$ the relations are also given. In the following it is further shown that the half-integral spin wave field quantization scheme investigated by the author is not only consistent with the principle of relativistic causality, the positiveness of energy, and with the Lagrangian formalism in Schwinger's formulation, but that it is also invariant with respect to CPT transformations. This invariance in the case of fields with half-integral spin is a consequence of the antisymmetrization of the equations of motion with respect to the operator wave function. The author finally thanks A. I. Akhiyezer, Ye. V. Inopin, I. M. Lifshits, S. V. Peletminskiy and P. I. Fomin for discussing the results obtained by this investigation. There are 5 references, 4 of which are Soviet.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physico-technical Institute of the Academy of Sciences, Ukrainskaya SSR)

24(5) SOV/56-37-1-27/64

AUTHORS: Volkov, D. V., Peletminskiy, S. V.

TITLE: On the Lagrangian Formalism for Spin Variables (O lagranzhevom formalizme dlya spinovykh peremennykh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 1(7), pp 170-178 (USSR)

ABSTRACT: In the present paper, it is shown that the class limitations of admissible variations postulated by I. Schwinger (Ref 1) are not necessary. A change of the class of admissible variations permits the introduction of spin variables (for any spin value) into the general scheme of Schwinger's variation principle, both in the non-relativistic and in the relativistic case. The Lagrangian formalism for the spin variables leads in the relativistic case to a natural introduction of the proper time into theory. In the non-relativistic case, the spin variables are described by the vector $\vec{s}$. The equations of motion and the operator properties of the vector $\vec{s}$ are determined on the basis of the application of the action principle written in operator form to the Lagrangian function $L = \frac{1}{2} i \left[\vec{s}, \dot{\vec{s}}\right] - H(\vec{s})$. $H(\vec{s})$ denotes any function

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of $\vec{s}$ which agrees with the Hamiltonian function of the system, $\dot{\vec{s}}$ the derivation of the operator $\vec{s}$ with respect to time in Heisenberg's representation. The square brackets denote the commutator. The first summand in the above formula corresponds to the kinematic part of the Lagrangian function. The course of the calculation is followed step by step. The vector $\vec{s}$ really describes, according to these calculations, the spin degrees of freedom of the particle. The authors then show that the principle of steady action

$$\int_{t_s}^{t_2} \left\{ i \left[\delta \vec{s}, \dot{\vec{s}} \right] - \delta H \right\} dt = 0$$ is really satisfied in the class

of admissible variations discussed here. The results of the first part show the following: The data on the equations of motion and on the operator properties of the vector $\vec{s}$, which were determined on the basis of application of the operator-like action principle to the above-mentioned Lagrangian function are in internal agreement and describe correctly the properties of the spin variables. The second part describes the introduction of spin variables into the scheme of the

Lagrangian formalism in the relativistic case. The four-dimensional vector Γ_μ is investigated as a natural relativistic generalization of the spin vector $\vec{s}$. The four-dimensional vectors of the coordinate and of the momentum are denoted x_μ and p_μ. The Lagrangian function is written down in the form $\mathcal{L} = \frac{1}{8} i \left[\Gamma_\mu, \dot{\Gamma}_\mu\right] - \frac{1}{4} \left(\left\{x_\mu, \dot{p}_\mu\right\} - \left\{\dot{x}_\mu, p_\mu\right\}\right) - \mathcal{H}$, $\mathcal{H}$ denoting a certain function of Γ_μ, x_μ, p_μ. Finally, the equations of motion and the exchange relations are written down. The authors thank A. I. Akhiyezer and P. I. Fomin for useful discussions. There are 11 references, 9 of which are Soviet.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physical-technical Institute of the Academy of Sciences of the Ukrainskaya SSR)

SUBMITTED: January 29, 1959

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Volkov, D. V.

S/056/60/038/02/30/061
B006/B011

24.4500

AUTHOR: Volkov, D. V.

TITLE: S-Matrix in the Generalized Quantization Method

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 2, pp. 518 - 523

TEXT: Green (Ref. 1) and later the author of the present paper (Ref. 2) had already carried out a generalization of the wave field quantization methods, at the same time taking into account symmetric and antisymmetric wave functions within the framework of the relativistic quantum theory. These investigations, however, did not consider problems related with interaction. This very interaction between the fields might help to solve the problem as to which of the existing quantization methods is to be preferred. In the paper under review the author investigates the formalism of scattering matrix for interactions between an electromagnetic field and the field of charged spin-1/2 particles; the S-matrix is set up in the form $S = T(\exp(-i\int H(x)d^4x))$, where $H(x)$ denotes the density Hamiltonian in interaction representation $H(x) = ie[\bar{\psi}(x), \gamma_\mu \psi(x)] A_\mu(x)$,

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S-Matrix in the Generalized Quantization Method

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$\psi(x)$, and $\bar{\psi}(x) = \psi^{+}(x)\gamma_4$ are the operators of the particle field obeying the Dirac equation (without interaction). Particle field quantization occurs on the basis of modified commutation relations given by formula (3). $A_\mu(x)$ are the operators of the electromagnetic field, subjected to the common commutation laws. It is shown that in spite of the change in quantization rules, there exists a clear procedure of series expansion of the S-matrix with respect to normal derivatives (similar to the ordinary technique by Wick, Ref. 8), which permits the separation of vacuum effects in the S-matrix. The basic concepts of the conventional S-matrix theory (N-product, Wick's theorem, Feynman graphs) permit a simple generalization within the framework of the quantization scheme considered. The results obtained can be applied without major changes to other local variants of field interaction as well. They are applied, for example, to the process of the scattering of two particles characterized by spin and momentum. The author finally thanks A. I. Akhiyezer, S. V. Peletminskiy, and P. I. Fomin for their discussions. There are 8 references: 4 Soviet, 3 American, and 1 German.

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S-Matrix in the Generalized Quantization Method

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B006/B011

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Institute of Physics and Technology of the Academy of Sciences of the Ukrainskaya SSR)

SUBMITTED: August 10, 1959

Card 3/3

85684

S/056/60/038/006/026/049/XX
B006/B070

24.4500

AUTHORS: Volkov, D. V., Inopin, Ye. V.

TITLE: Motion of Nucleons in an Anisotropic Oscillator Potential Taking Into Account Spin-Orbit Interaction

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 6, pp. 1765-1770

TEXT: A method is proposed for the calculation of the wave functions and level energies of nucleons moving in an oscillator potential. This problem appears in treating the bound state of individual nucleons according to the generalized model (where it was solved by Nilsson), and is of particular interest for deformed nuclei, as was shown by A. S. Davydov et al. and B. T. Geylikman. The method proposed in the present paper is suitable for calculating the wave functions and eigenvalues of nucleon energies in non-axial nuclei. It is mentioned in the introduction that this method differs from that of Nilsson in important respects, and this difference is discussed. The present method is based on the smallness of

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Motion of Nucleons in an Anisotropic Oscillator Potential Taking Into Account Spin-Orbit Interaction

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the spin-orbit coupling constant ($\varkappa \approx 0.05$). In the representation of the anisotropic oscillator, the spin-orbit coupling is diagonalized when terms only up to the order of $\varkappa^2$ are considered. Taking into account the spin-orbit coupling, the Hamiltonian describing the motion of the nucleons in the nuclear field has the form:

$H = H_o + \lambda \vec{s}\,\mathrm{grad}\left[V(\vec{r}), \vec{p}\right]$; $H_o = \vec{p}^2/2 + V(\vec{r})$; ($\lambda$ - coupling constant; $M = \hbar = 1$; M - nucleon mass); $V(\vec{r}) = \frac{1}{2}\sum_i \omega_i^2 x_i^2$. Taking $x_k = \frac{1}{\sqrt{2\omega_k}}(a_k^+ + a_k)$, and

$p_k = i\sqrt{\frac{\omega_k}{2}}(a_k^+ - a_k)$, where $\left[a_k, a_l^+\right] = \delta_{kl}$, $\left[a_k, a_l\right] = \left[a_k^+, a_l^+\right] = 0$ holds for the operators a_k and a_k^+, the Hamiltonian takes the form

$H = \frac{1}{2}\sum_i \omega_i(a_i a_i^+ + a_i^+ a_i) + i\varkappa\sum_{ikl}\varepsilon_{ikl}\sigma_i f_{kl} a_k^+ a_l$; ($\varkappa = -\lambda\omega_o/2$; σ_i are Pauli matrices) in the approximation made here; addends containing terms of the

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Motion of Nucleons in an Anisotropic Oscillator Potential Taking Into Account Spin-Orbit Interaction

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type $a_1 a_k - a_1^+ a_k^+$ can be neglected. It is shown in the following that the problem can be reduced to a simple analytical solution in the limiting case of a strong deformation of the nucleus. Since the spin-orbit coupling makes a contribution of the order of $\varkappa^2$, the case of a strongly non-spherical nucleus with large non-axiality cannot be considered. In the case of a strongly non-spherical nucleus with arbitrary non-axiality, the terms which are non-diagonal with respect to n_z are negligible, and after a canonical transformation, the Hamiltonian takes the form:

$H = A(N, n_z) + \frac{1}{2}\omega_o \sqrt{\Delta^2 + (2\varkappa')^2}\,(a_x^{+\prime} a_x^{\prime} - a_y^{+\prime} a_y^{\prime})$. Fig. 1 shows the nuclear energy as a function of non-axiality: a - oscillator without spin-orbit coupling; b - real oscillator. The non-physical region is shaded. Broken lines show the case when a small perturbation of the nucleus displaces the energy minimum. From the curves it can be concluded that the spin-orbit coupling stabilizes the axial nuclear form against the influence of small perturbations. G. Ya. Lyubarskiy is thanked for discussions. There

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Motion of Nucleons in an Anisotropic Oscillator Potential Taking Into Account Spin-Orbit Interaction

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B006/B070

are 2 figures and 3 references: 2 Soviet and 1 Danish.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Institute of Physics and Technology of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: December 21, 1959

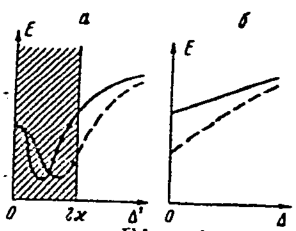

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Fig. 1

S/056/62/043/003/056/063
B104/B102

AUTHOR: Volkov, D. V.

TITLE: Coulomb excitation of Λ particles

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 3(9), 1962, 1112-1113

TEXT: It has been shown before that at high energies and sufficiently small scattering angles the contribution of the Coulomb poles to the amplitude of the reaction $\Lambda + X \longrightarrow \Sigma^0 + X$ exceeds the contribution of strong interaction (B. N. Baluyev, ZhETF, 40, 1844, 1961; I.Ya.Pomeranchuk, I. M. Shmushkevich, Nucl. Phys., 23, 452, 1961). The lifetime of the Σ^0-hyperons can therefore be measured from Coulomb interaction. At low energies, the most significant contribution to the amplitude of this reaction will be from strong interactions and from interference of the strong interactions with the electromagnetic interactions. These two mechanisms can be separated because of the characteristic dependence of strong interaction on the variables of isotopic spin. Where two nuclei belong to one isotopic doublet, the matrix elements of strong interaction

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Coulomb excitation of...

differ only in sign. The matrix element of Coulomb excitation is independent of the isotopic spin. These properties lead to the estimate

$$d\sigma_{K\gamma\pi} > \frac{4}{9}\frac{(d\sigma_{H^3} - d\sigma_{He^3})^2}{d\sigma_{H^3} + d\sigma_{He^3}}, \qquad (2)$$

for the lower limit of Coulomb excitation cross section. With the ai. of this relation and of the equations derived in the two papers mentioned above the upper limit of Σ^0-hyperon lifetime is found to be

$$d\sigma_{K\gamma\pi} = \frac{8\alpha m_\Sigma^2}{(m_\Sigma^2 - m_\Lambda^2)^2 \tau}\frac{\theta^2 + \theta_1^2}{(\theta^2 + \theta_2^2)^2}\, d\Omega$$

From the matrix element of strong interaction when nuclear isotopic spin is 1/2 it follows that the contributions of strong interactions cancel each other out if the respective particles are in equal states.

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Coulomb excitation of... S/056/62/043/003/056/063
B104/B102

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk SSSR (Physico-technical Institute of the Academy of Sciences USSR)

SUBMITTED: June 18, 1962

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L 17622-63 EWT(1)/EWT(m)/BDS AFFTC/ASD/IJP(C) JFW

S/056/63/044/003/040/053

57
56

AUTHOR: Volkov, D. V. and Gribov, V. N.

TITLE: Regge poles in nucleon-nucleon and nucleon-antinucleon scattering amplitudes 19

PERIODICAL: Zhurnal eksperimental'noy i tekhnicheskoy fiziki, v. 44, no. 3, 1963, 1068-1077

TEXT: The letter by V. N. Gribov and I. Ya. Pomeranchuk (Ref. 8: Phys. Rev. Lett., 8, 412, 1962) discussed in detail the spin structure of the nucleon-nucleon scattering amplitude due to the main (Pomeranchuk) vacuum pole. The present paper investigates the spin structure and the character of the kinematic features of the contributions to the nucleon-nucleon and nucleon-antinucleon scattering amplitude from Regge poles with various quantum numbers. The authors study the classification of poles, the partial waves amplitude decomposition, and the contributions to the amplitude by the scattering from poles of different quantum number. It is shown that the presence of kinematic singularities at $t = 0$ in the

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Regge poles...

contributions from certain Regge poles together with the requirement of analyticity of the whole amplitude leads to the appearance at t = 0 of simple relations between the positions of the Regge poles belonging to different trajectories. The dependence of the forward scattering amplitude on the character of the relations thus obtained is discussed. There is 1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physico-Technical Institute im. A. F. Ioffe of the AS USSR)

SUBMITTED: October 24, 1962

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VOLKOV, D.V.

Factorization of scattering amplitudes of particles with spins in a Regge pole. Zhur. eksp. i teor. fiz. 45 no.3:742-745 S '63. (MIRA 16:10)

(Scattering (Physics)) (Nuclear spin)

L 58520-65 EWT(m)/T/EWA(m)-2

ACCESSION NR: AP5016277 UR/0386/65/001/005/0009/0012

AUTHOR: Volkov, D. V.

TITLE: SU(3) x SU(3) symmetry and the baryon-meson coupling constants

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 1, no. 1, 1965, 9-12

TOPIC TAGS: symmetry property, baryon meson coupling, coupling constants, broken symmetry, invariance

ABSTRACT: The author considers the relation between the coupling constants of a unitary octet of baryons with octets of pseudoscalar and singlet vector mesons. The analysis is based on the assumption that the breaking of the SU(6) symmetry for a vertex function with three external lines has a kinematic nature and is due to the presence of two independent four-dimensional energy-momentum vectors in lieu of one, as is the case for the self-energy of the particles when SU(6) symmetry is satisfied. The requirement that the configuration of the system 4-momenta be invariant leads to the reduction of the SU(6) group to the group SU(3) x SU(3) x U, where the two SU(3) groups correspond to unitary transformations of quarks with different polarization directions along a preferred axis, while the group U corresponds to the usual spatial rotations about this axis. The 35- and 56-plet representations of the group SU(6), corresponding to meson and baryon supermultiplets, contains the following irreducible representations of the group SU(3) x SU(3):

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$$(35) \rightarrow (3, 3^*);\ (3^*, 3);\ (8, 1);\ (1, 8);\ (1, 1) \tag{1}$$

$$(56) \rightarrow (1, 10);\ (10, 1);\ (6, 3);\ (3, 6).$$

It follows from (1) that the vertex (56*) (56) (35), which is invariant against SU(3) x SU(3) transformations, contains in the general case eight independent parity-conserving interaction constants. For vertices which do not contain the (10, 1) (1, 10), (10, 1), and (10, 1) multiplets, which are classified as baryon resonances because the spin projection in these states is equal to 3/2, the vertices of the interaction between the baryons proper and the mesons is characterized by four independent coupling constants ... of the eight constants in the case of SU(3) invariance. The following relations, which are valid for arbitrary values of the meson mass and off the mass shell, are obtained for the coupling constants:

$$G_C^D = \frac{\mu}{2m}\left(\frac{2}{3} G^D - G^F\right), \tag{2}$$

$$G_C^F = -\frac{\mu}{2m}\left(\frac{5}{9} G^D + \frac{2}{3} G^F\right), \tag{3}$$

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$$G_M^D : G_M^F : G_M = 3 : 2 : 1 \quad (4)$$

The upper index refers here to the type of coupling (F or D) of the meson octet, while the lower index determines the character of the interaction of the vector mesons with the baryons (C--electric charge, M--magnetic moment). These relations are compatible with the relations obtained by Gursey, Pais, and Radicati (Phys. Rev. Lett. v. 13, 299, 1964) for the coupling constants only when the coupling constant G_C^D coincides with the analogous constant in the Dirac variant, i.e., when the meson mass or all the constants of the M-interaction are equal to zero. When μ = 0 there is no C-interaction of the vector meson octed with baryons at all. As a result, some variants of the dynamic theory of strong interactions, are not SU(3) x SU(3)-invariant. An analogous paradox concerning the incompatibility of the minimal electromagnetic interaction and SU(6) invariance was noted by Beg, Lee, and Pais (Phys. Rev. Lett. v. 13, 514, 1964). Orig. art. has: 5 formulas.

ASSOCIATION: None

SUBMITTED: 20Apr65 ENCL: 00 SUB CODE: GP, NP

NR REF SOV: 000 OTHER: 003

Card 3/3

L 53623-65 EWT(m)/T/EWA(m)-2
ACCESSION NR: AP5013674 UR/0386/65/001/001/0051/0053 //

9

6

AUTHOR: Volkov, D. V.

TITLE: SU(6) symmetry and electromagnetic baryon mass splitting

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 1, no. 1, 1965, 51-53

TOPIC TAGS: SU(6) symmetry, baryon mass, mass difference, electromagnetic interaction, elementary particle interaction

ABSTRACT: After pointing out that the structure of the electromagnetic interaction was considered by B. Sakita (Phys. Rev. Lett. v. 13, 643, 1964) and Chan and Sarker (Phys. Rev. Lett. v. 13, 731, 1964) under more stringent limitations than are actually needed, the author proposes the following structure of electromagnetic interactions leading to the splitting of the masses of particles within baryon multiplets:

$$B_{ABC}[3m_1\delta^A_{A'}\delta^B_{B'}C^C_{C'} + 9m_2\delta^A_{A'}C^B_{B'}C^C_{C'} + 9m_3\delta^A_{A'}(C)^B_{B'}(C)^C_{C'}]B^{A'B'C'} \quad (1)$$

where B^{ABC} is a symmetrical tensor corresponding to the baryon octet and decuplet,

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(α, a, and A are the indices of two-, three-, and six-component spinors, respectively), and

$$Q = \frac{1}{3}\begin{pmatrix} 2 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & -1 \end{pmatrix}$$

is the charge operator in SU(3) space. Expression (1) leads to the following relations for the electromagnetic mass difference of the particles of the baryon octet:

$$p - n = m_1 + m_2 + m_3, \qquad \Sigma^+ - \Sigma^- = m_1 + m_2 + 4m_3$$
$$\Xi^0 - \Xi^- = m_1 - 2m_2 + 4m_3, \qquad \Sigma^0 - \Sigma^- = m_1 - 2m_2 + m_3 \qquad (2)$$

and for the baryon decuplet

$$N^{*++} - N^{*+} = m_1 + 4m_2 + 4m_3, \qquad Y_1^{*+} - Y_1^{*0} = m_1 + m_2 + m_3,$$
$$N^{*+} - N^{*0} = m_1 + m_2 + m_3, \qquad Y_1^{*0} - Y_1^{*0} = m_1 - 2m_2 - 2m_3, \qquad (3)$$
$$N^{*0} - N^{*-} = m_1 - 2m_2 - 2m_3, \qquad \Xi^{*0} - \Xi^{*-} = m_1 - 2m_2 - 2m_3$$

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From (2) and (3) follow all the realtions for the mass differences obtained in SU(3) symmetry. In addition, the following relations hold between the octet and decuplet particle masses

$$N^{*+} - N^{*0} = Y_1^{*+} - Y_1^{*0} = p - n$$
$$N^{*0} - N^{*-} = Y_1^{*0} - Y_1^{*-} = \Xi^{*0} - \Xi^{*-} = p - n - \Sigma^+ - \Sigma^- + 2 \quad (4)$$
$$N^{*++} - N^{*+} = p - n + \Sigma^+ + \Sigma^- - 2$$

Comparison of (4) with the experimental mass values is impossible at present owing to the large errors in the determination of the resonance masses. "In conclusion the author thanks A. I. Akhiyezer for discussing the present results." Orig. art. has: 4 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physico-technical Institute, Academy of Sciences, UkrSSR)

SUBMITTED: 25Feb65 ENCL: 00 SUB CODE: NP, GP

NR REF SOV: 000 OTHER: 003

Card 3/3

VOLKOV, D.V.

SU(3) x SU(3)-symmetry and the baryon - meson coupling constant. Pis!. v red. Zhur. eksper. i teor. fiz. 1 no.5: 9-12 Je '65. (MIRA 18:11)

1. Submitted April 20, 1965.

L 2756-66 EWT(m)/T/EWA(m)-2
ACCESSION NR: AP5024341 UR/0367/65/002/002/0272/0276

AUTHOR: Volkov, D. V.; Kurayev, E. A. 44,55 44,55

21
B

TITLE: $K \to 2\pi$ decays and $SU(3)$ symmetry

SOURCE: Yadernaya fizika, v. 2, no. 2, 1965, 272-276

TOPIC TAGS: unitary symmetry, particle symmetry, 19,44,55 tadpole model, meson, radioactive decay

ABSTRACT: $K \to 2\pi$ decay is analyzed on the basis of the Coleman-Glashow dynamic model (the "tadpole model"). Two versions of this model are considered. The weaker version considers only the transitions into vacuum of scalar particles which belong to the unitary octet. In the strong version, diagrams are considered in which the octet of scalar particles also acts as intermediate resonances with the lowest energies. Since scalar particles are the virtual states with lowest energy for the $K \to 2\pi$ process, the second version of this model is of greatest interest for this type of decay. A general expression is derived for the amplitude of decay in the first version with regard to moderately strong and electromagnetic interactions. It is shown that the second version of the tadpole model results in suppression of

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L 2756-66
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electromagnetic transitions in the tadpole diagrams for masses of the scalar octet particles considered by Coleman and Glashow (S. Coleman, S. L. Glashow, *Phys. Rev.*, 134, 671, 1964). $K^+ \rightarrow \pi^+\pi^0$ decay takes place through tadpole-less diagrams, which are difficult to evaluate because of their complexity. Orig. art. has: 2 figures, 10 formulas.

ASSOCIATION: none

SUBMITTED: 15Mar65 ENCL: 00 SUB CODE: NP

NO REF SOV: 001 OTHER: 006

Card 2/2

L 9296-66 EWT(1)/EWT(m)/T/EWA(m)-2 GG

ACC NR: AP5026409 SOURCE CODE: UR/0386/65/002/006/0284/0286

AUTHOR: Volkov, D. V.

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

TITLE: Electromagnetic form factors of baryons and SU(6) symmetry

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 2, no. 6, 1965, 284-286

TOPIC TAGS: baryon, strong nuclear interaction, elementary particle, wave function, electromagnetic interaction

ABSTRACT: Assuming that the relative weight of the different SU(6)-symmetry variants is determined by kinematic factors of the type $[q^2 - (m_1 + m_2)^2]^{1/2}$ for the unit matrix and $[q^2 - (m_1 - m_2)^2]^{1/2}$ for the γ_5 matrix, where m_1 and m_2 are the masses of the baryons whose wave functions frame the matrices I and γ_5, the author has obtained by means of the standard procedure the following expression for the vertex describing the interaction of the baryon octet b with the electromagnetic field:

$$W = a\{[-q^2(1 + 3q^2)D + (1 + \frac{4}{3}q^2 - q^4)F]C + 2(1 + 2q^2)(D + \frac{2}{3}F)M\} \quad (1)$$

where F and D are the types of coupling between the baryon octet and the electromagnetic field, Q is the charge matrix, C and M are the usual matrix variants of the

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L 9296-66

ACC NR: AP5026409

charge and magnetic-moment type, respectively, and q^2 is the square of the momentum transfer in units of $4m^2$ (average mass of the baryon 56-plet). The following consequences of formula (1) are noted: 1. Formula (1) duplicates the well known relations for form factors when $q^2 = 0$ and $q^2 = -1$. 2. The magnetic moment of the proton is equal to two nuclear magnetons. 3. The ratio of the charge form factor of the proton to its magnetic form factor (with both form factors normalized to unity at $q^2 = 0$) is equal to $1 - q^2$. 4. The ratio of the charge form factor of the neutron to its magnetic form factor is small for small q^2, and increases slowly with increasing q^2. When $q^2 = 1$ the form factors become comparable in absolute magnitude. 5. The ratio of the magnetic form factors of the proton and of the neutron is independent of q^2. Author is grateful to A. I. Akhiyezer for a discussion of the results. Orig. art. has: 4 formulas.

SUB CODE: 18/ SUBM DATE: 23Jul65/ ORIG REF: 000/ OTH REF: 002

Card 2/2

VOLKOV, D.V.; CHERNYSHEV, Yu.K. [Chernyshov, IU.K.]

Propagators and vertex operators for particles with arbitrary spin. Ukr. fiz. zhur. 10 no.7:721-725 Jl '65. (MIRA 18:8)

1. Fiziko-tekhnicheskiy institut, Khar'kov.

AKIMOV, A.A., dotsent; VOLKOV, E.A.; SATSUNKEVICH, N.K.

Materials on the problem of treating chronic inflammations of the mucosa of the upper respiratory tracts under conditions of the Gelendzhik Health Resort. Zhur. ush., nos. i gorl. bol. 20 no.4: 48-53 Jl-Ag '60. (MIRA 14:6)

1. Iz kafedry bolezney ukha, gorla i nosa (zav. - prof. V.K.Saprunov) Kubanskogo meditsinskogo instituta imeni Krasnoy Armii i sanatoriyev "Gelendzhik" (glavnyy vrach - P.N.Denisov), "Solntse" (glavnyy vrach - Yu.A.Lozhkin), "Druzhba" (glavnyy vrach - V.V.Kozitsin) i sanatoriy imeni Lomonosova (glavnyy vrach - M.S.Andreyev).
(GELENDZHIK—HEALTH RESORTS, WATERING PLACES, ETC.)
(RESPIRATORY ORGANS—DISEASES)

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Study of a feed pump drive for a condensing turbine system. Izv. vys. ucheb. zav.; energ. 6 no.12:45-54 D '63. (MIRA 17:1)

1. Moskovskiy ordena Lenina energeticheskiy institut. Predstavlena kafedroy teplovykh elektricheskikh stantsiy.

RYZHKIN, V.Ya., kand.tekhn.nauk; VOLKOV, E.P., inzh.

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General study of the power efficiency of feed pump drives of large electric power plants. Teploenergetika 10 no.10:30-35 0'63 (MIRA 17:7)

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Finishing furniture panels with fabrics. Der. prom. 13 no.12: 21 D '64. (MIRA 18:1)

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Criticism of present-day bourgeois reformist and revisionist economic theories. Vop.ekon. no.3:113-125 Mr '59.
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Commodity production and the operation of the law of value under socialism. Vop. ekon. no.4:109-122 Ap '58. (MIRA 11:5)
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Academic work and the education of future economists. Vop. ekon. no.7:35-41 Jl '63. (MIRA 16:8)

1. Zamestitel' dekana ekonomicheskogo fakul'teta Moskovskogo gosudarstvennogo universiteta.
(Economics--Study and teaching) (Communist education)

VOLKOV, F. G.

ISAKOV, I.S., prof., admiral flota, otv.red.; PETROVSKIY, V.A., dotsent, kand.voyenno-morskikh nauk, kontr-admiral, red. [deceased]; DEMIN, L.A., dotsent, kand.geograf.nauk, inzh.-kapitan 1 ranga, glavnyy red.; BARANOV, A.N., red.; BERG, L.S., akademik, inzh.-mayor, red.; BOLOGOV, N.A., dotsent, kontr-admiral v otstavke, red.; VITVER, I.A., professor, doktor geograf.nauk, red.; GRIGOR'YEV, A.A., akademik; YEGOR'YEV, V.Ye., zasluzhennyy deyatel' nauki, prof., doktor voyenno-morskikh nauk, kontr-admiral v otstavke, red.; ZIMAN, L.Ya., prof., red.; ZUBOV, N.N., prof., doktor geograf. nauk, inzh.-kontr-admiral v otstavke, red.; KAVRAYSKIY, V.V., prof., doktor fiziko-mat.nauk, inzh.-kontr-admiral v otstavke, red.; KALESNIK, S.V., prof., doktor geograf.nauk, red.; KUDRYAVTSEV, M.K., general-leytenant tekhn.voysk, red.; LAMYKIN, S.M., kapitan 1 ranga, red.; MATUSEVICH, N.N., zasluzhennyy deyatel' nauki i tekhniki, prof., doktor fiziko-mat.nauk, inzh.-vitse-admiral v otstavke, red.; [deceased]; MESHCHANINOV, I.I., akademik, red.; MILENKI, S.G., red.; ORLOV, B.P., prof., doktor geograf.nauk, red.; PANTELEYEV, Yu.A., vitse-admiral, red.; SNEZHINSKIY, V.A., dotsent, kand.voyenno-morskikh nauk, inzh.-kapitan 1 ranga, red.; SALISHCHEV, K.A., prof., doktor tekhn.nauk, red.; TRIBUTS, V.F., admiral, red.; FOKIN, V.A., vitse-admiral, red.; SHVEDE, Ye.Ye., prof., doktor voyenno-morskikh nauk, kontr-admiral, red.; SHULEYKIN, V.V., akademik, inzh.-kapitan 1 ranga, red.; PAVLOV, V.V., inzh.-polkovnik, red.; VOLKOV, F.G.,

(Continued on next card)