"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHEV, B. M.

Distr: 4[illegible]3d

3140 AEC-tr-3009

STATISTICAL WEIGHT OF A SYSTEM OF PARTICLES WITH ARBITRARY SPINS. V. S. Barashenkov and B. M. Barbashev. Translated from a publication of the Joint Inst. for Nuclear Research, U.S.S.R. Sept. 1957. 17p.

The use of recurrent relations instead of closed formulas simplifies the drawing up of tables of statistical weights of systems of particles with a given spin. Tables are drawn up for cases which are important to calculations in the multiple production theory for the energy range 10 to 15 Bev. (auth)

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BARBASHEV, B. N. , BARASHENKOV, V. S., BUBELOV, E. G., and V. M. MAKSIMENKO,

"Multiple Production of Heavy Particles in Two Nucleon Collisions," Nuclear Physics, Vol. 5, No. 1, Jan '58 (No. Holland Publ. Co, Amsterdam)

BARBASHEV, B. N. BARASHENKOV, V. S., BUBELOV, E. G. - Joint Inst. of Nuclear Research, Theoretical Physics Lab., Dubna, USSR

Abst. - The probabilities of particle production in nucleon-nucleon collisions at an energy of E = 5 GeV have been calculated using Fermi's statistical theory and by taking into account the conservation of baryon number, strangeness, isobaric spin as well as strong resonance pion-nucleon interaction in the T = 3/2, P = 3/2 state. Various effective space volumes in which secondary particles are produced are considered.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARMASHNOV, O. N. and POPOV, A. M.

"Elimination of Vibration of the Armature of the Relay EN-524," Elek. sta., 23, No.2, 1952

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BAKHAGHINOVA, V. K., and PIGULEVSKIY, N. A.

"Pollen of Southern Flora in the Tertiary Deposits in the Northern T'ien Shan" (Stratigraphy and Paleontology, Neogene) Izv. AN Kaz. SSR, ser. geol. 124, NO 17, 1953, pp 131-143 (Kazakhstani resume)

Abs

W-31146, 1 Feb 55

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHINOVA, V.N.

Stratigraphy of Mesozoic deposits of the Turgay lowland according to a study of the spore and pollen complex. Trudy Lab.geol.ugl. no.2:204-209 '54. (Turgay gates--Geology, Stratigraphic) (MLRA 8:7)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHINOVA, V.N.

Spore and pollen complexes of Mesozoic deposits in the northern part of the Turgay Gates. Trudy Inst.geol.nauk AN Kazakh.SSR no.1: 143-273 '56. (MLRA 10:5)

(Turgay Gates--Spores (Botany), Fossil)
(Turgay Gates--Pollen, Fossil)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHINOVA, V.N.

Petrographic characteristics of coals in the Millerovo geological region of the Donets Basin. Izv.AN SSSR.Ser.geol. 25 no.1: 98-101 Ja '60. (MIRA 13:8)

1. Volgo-Donskoye geol.upravleniye, g. Rostov-na-Donu.
(Donets Basin--Coal)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHINOVA, V. N.

Character of coals and the tectonic position of the Miller coal-bearing area in the Greater Donets Basin. Izv. AN SSSR Ser. geol. 27 no.10:74-83 O '62. (MIRA 15:10)

1. Dal'nevostochnyy geologicheskiy institut Sibirskogo otdeleniya AN SSSR.

(Donets Basin--Coal geology)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHINOVA, V.N.

Pollen of ancient Neogene coniferae in the northwestern Sakhalin. Dokl. AN SSSR [illegible] (MIRA 17:8)

1. Novosibirskiy gosudarstvennyy universitet imeni S. Ordzhonikidze. Predstavlena akademikom V.N. Sukachevym.

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHINOVA, V.I.

Petrographic studies of anthracites in the southern sector of the Sula syncline. Izv. vys. ucheb. zav.: geol. i razv. 1 no.8:84-91 Ag '58. (MIRA 12:9)

1.Rostovskiy gosudarstvennyy universitet. Kafedra istoricheskoy geologii.

(Donets Basin--Anthracite coal)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHOV, B.M.

21(1,8); 24(5) PHASE I BOOK EXPLOITATION SOV/3369

Vsesoyuznaya nauchnaya konferentsiya po kvantovoy teorii poley i teorii elementarnykh chastits. Ungorod, 1958

Problemy sovremennoy teorii elementarnykh chastits. No. 2: Trudy konferentsii... (Problems in the Modern Theory of Elementary Particles. Nr. 2: Transactions of the All-Union Inter-Vuz Conference on the Quantum Field Theory and the Theory of Elementary Particles) Ungorod, Zakarpatskoye oblastnoye izd-vo, 1959. 214 p. 5,000 copies printed.

Ed.: Yu. Lomsadze, Docent; Tech. Ed.: M. Belous.

PURPOSE: This book is intended for physicists, particularly those concerned with problems in the field of elementary particles and the quantum theory.

COVERAGE: This book contains articles on elementary particles originally read at the All-Union Inter-Vuz Conference held at Uzhgorod State University on October 20, 1958. Among the topics discussed are: the spinor field theory, the fusion theory, Lorentz contractions, parity studies, nucleon-nucleon scattering, etc. English abstracts accompany each article. References follow each article.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHOV, B. M.

V. S. Barashenkov and B. M. Barbashov

"The Electrical Polarizability of the Meson Cloud in the Nucleon"
Nuclear Physics, 9, No. 3, Jan. 1959, 426-428 (North Holland Publishing Co., Amsterdam)

Joint Institute of Nuclear Research, Laboratory of Theoretical Physics, Dubna, USSR

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

21(1)

AUTHORS: Blokhintsev, D. I., Barashenkov, V. S., Barbashov, B. M. SOV/56-36-5-73/76

TITLE: The Electromagnetic Structure of the Proton and of the Neutron (Elektromagnitnaya struktura protona i neytrona)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 5, pp 1611-1612 (USSR)

ABSTRACT: The experimental results of the distribution of charge and magnetic moment in the nucleon are known to be in sharp contradiction to meson-theoretical calculations. The authors of the present "Letter to the Editor" are, however, of the opinion that the difficulties are mainly due to an inaccurate interpretation of the fact that the usual interpretation of Hofstadter's experiments is actually neither unique nor accurate, but only possible. The discrepancy said to exist between the distribution law of meson charge density according to Yukawa ($\sim e^{-\alpha r}/r^2$) and the experimental one ($\sim e^{-\beta r}$) is of no real importance

Card 1/3

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because the ranges of applicability of these expressions are quite different. Proceeding from the expressions found by Salzman (Ref 1) for the total charge density $\rho(r) = \rho_\pi(r) + \rho_k(r)$ and from the magnetic moment of the meson cloud $m(r) = m_\pi(r) + m_k(r)$ (one-pion state), the cutoff method is briefly investigated, and for the electric radius of the pion cloud $\langle r_e^2 \rangle_\pi = 0.19(\hbar/\mu_\pi c)^2$, and for the magnetic radius $\langle r_m^2 \rangle = 0.40(\hbar/\mu_\pi c)^2$ is obtained; for the charge of the pion cloud $Q_\pi = 0.76$ e and for the magnetic moment $m_\pi = 1.25\ e\hbar/2Mc$ is obtained. The distribution of charge and magnetic moment in the core amounts to $\rho_k(r) = (Q_k/8\pi a^3)e^{-r/a}$ and $m_k(r) = (m_k/8\pi a^3)e^{-r/a}$; Q_k denotes the charge of the core, and m_k - its magnetic moment. It is known from experiments that for the neutron

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The Electromagnetic Structure of the Proton and of the Neutron SOV/56-36-5-73/76

$\langle r_e^2 \rangle_n \approx 0$; the anomalous magnetic moment of the nucleon was experimentally determined as being $m_N = \tau_3 \cdot 1.85 e\hbar/2Mc$, $Q_k = (1 + \tau_3)/2 - Q_\pi$. Thus $\langle r_e^2 \rangle_p = \langle r_m^2 \rangle_n = \langle r_m^2 \rangle_p = (0.7f)^2$ is obtained, which agrees well with the experiment. A figure shows the charge distribution d(r) for proton and neutron and their cores. The statement made by the authors shows that the result obtained by Hofstadter may be considered to agree very satisfactorily with the results of the meson theory. There are 1 figure and 4 references.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: March 5, 1959

Card 3/3

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

21 (1)

AUTHORS: Blokhintsev, D. I., Barashenkov, V. S., Barbashov, B. M. SOV/53-68-3-5/11

TITLE: The Structure of Nucleons (Struktura nuklonov)

PERIODICAL: Uspekhi fizicheskikh nauk, 1959, Vol 68, Nr 3, pp 417-447 (USSR)

ABSTRACT: In chapter 1 (introduction) the authors discuss Yukawa's Theory of nucleon interaction by means of a meson field as well as the physical model of a nucleon represented by figure 1 with core, pion, and K-meson shell; the core dimension is given as amounting to $\sim\hbar/Mc = 2.1 \cdot 10^{-14}$ cm. In the following chapter 2 the methods of investigating particle structure are dealt with. Besides the recoil effect the inelastic interaction processes are discussed in detail. Table 1 shows the statistical errors of cross section measurements of inelastic collisions of p and n with Fe-nuclei at high energies for four energy intervals. The "gray" and "black" domains in the nucleon are dealt with (Fig 2). Some other methods are mentioned and a table shows the wave lengths of various rays. In chapter 3 the electromagnetic structure of the nucleon is theoretically dealt with, and the theory developed by Chew and Low is especially taken into account. Table 3

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represents the distribution of the electric charge in the pion cloud of the nucleon. The most important experimental results are given separately for proton and neutron. Chapter 4 is entitled "Critical Remarks and an Analysis of the Experiments Carried out by Hofstadter"; in the individual parts the limits of electrodynamics, the part played by inelastic processes, and the analysis of the scattering of electrons on protons and neutrons is discussed. Figure 6 shows the electromagnetic structure of protons and neutrons in form of diagrams. The curves $d_p(r)$ and $d_n(r)$ were taken from papers by Hofstadter. Chapter 5 deals with some structural effects of nucleons. Two problems connected with the electromagnetic structure of nucleons are discussed: the electric polarizability of the electron cloud in the nucleon according to Chew; the factor α of $\vec{p} = \alpha\vec{E}$ is given as amounting to $4 \cdot 10^{-43}$ cm$^3 \leq \alpha \leq 1.4 \cdot 10^{-42}$ cm^3, which is lower than the value given by Yu. A. Aleksandrov. In the second part of this chapter the electromagnetic mass of the nucleons and the stability of protons (according to reference 59) are investigated. Chapter 6 deals with theoretical experiments

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carried out for the purpose of interpreting the electromagnetic structure of the central nucleon ranges. Whereas in the preceding chapters the peripheral ranges of nucleons were dealt with, the following chapters deal with the theory of central parts. Individually, the influence of strange particles, the contribution of nucleon-antinucleon pairs (according to I. Ye. Tamm, figure 8), and some details of the theory of the form factors and dispersion relations are dealt with. Chapter 7 deals with the nuclear structure of nucleons. Several problems connected with the electromagnetic interaction of nucleons in the nucleus (nucleons among themselves, nucleons with pions, K-mesons, and antinucleons) are investigated. The cores of the nucleons are briefly dealt with (several experimental results obtained at the OIYaI (Joint Institute of Nuclear Research) are given. - Figure 10: Histograms of pp- and pn-collisions at 9 Bev (proton synchrotron) are given. The optical model of the nucleon is discussed in detail and so is pion-pion interaction. In chapter 8 the authors deal with the theory of the optical nucleon model: the equation for pion-nucleon scattering is given and discussed, and so are the conditions for the occurrence of a complex potential. Chapter 9 finally gives quite a short

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summary. The material of this survey is mainly of Western origin. There are 12 figures, 5 tables, and 60 references, 27 of which are Soviet.

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MOROZOV, I.N., inzh.; BARBASHEV, G.K.

Electromagnetic circuit breaker of a piston expander. Kislorod 12 no.5:40-41 '59. (MIRA 13:2)
(Refrigeration and refrigerating machinery)
(Circuit breakers)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

SHENKER, S.I., inzh.; BARBASHEV, G.K., inzh.; SHEVELEVA, G.P., inzh.; USTINOV, A.A., inzh.

Operation of automatic shaft furnaces. TSement 31 no.1:16-18 Ja-F '65. (MIRA 18:4)

1. Slantsevskiy tsementnyy zavod.

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHEV, N., doktor pedagogicheskikh nauk.

"Lower vocational education in the R.S.F.S.R." A.N. Veselov. Reviewed by N. Barbashev. Prof.-tekh.obr.13 no.9:30-31 S'56. (MLRA 9:10)
(Vocational education)
(Veselov, A.N.)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHEV, NIKOLAY ILLARIONOVICH DECEASED

C. '63

1964

Naval Architecture

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHEV, N. I.

PA 12/49T44

USSR/Engineering Jul 48
Hydroelectric Plants
Rain

"Determining the Maximum Rainfall When Making Computations on Hydrotechnical Installations," N. I. Barbashev, 1 3/4 pp

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 7

Report of a discussion on this subject in the Sec on Sci Res on Hydraul Problems.

12/49T44

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHEV, N. I.

PA 33/49T45

USSR/Engineering
Hydraulics
Potamology

Feb 49

"Discussion of the Method of Utilizing River Flow," N. I. Barbashev, 1 p

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 2

The report, "Bases of the Theory of Regulation and Utilization of River Flow," by S. N. Kritskiy and M. F. Menkel, was discussed at a session of Acad Sci USSR for scientific development of hydroeconomic problems on 11 Nov 48.

33/49T45

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHEV, N. I.

PA 162T3

USSR/Academy of Sciences - Hydrology Jul 50

"Chronicle: In the Section on the Scientific Solution of Problems of Water Resources Academy of Sciences USSR," N. I. Barbashev

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 7, pp 1102-1104

During Feb-Apr 50, subject section held number of seminars with lectures by scientists: N. V. Mastitskiy's "The Significance of a Variable Hydraulic Regime in the Water-Power Regulation of the Capacity of Hydroelectric Plants," and M. P. Fel'dman's "Report on Experiences Gained in the Planning and Utilization of Regulating Hydroelectric Plants."

162T3

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

USSR/Hydrology
Water Purification

Jun 49

"Report on Scientific Principles in Regulating the Quality of Ordinary and Drainage Waters," N. I. Barbashev, 2 pp

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 6

In a recent report, V. T. Turchinovich pointed out the necessity for protecting water reservoirs and rivers from pollution by residential and industrial drainage waters. While much has been done to solve this problem, it is still far from solved due to lack of a single approach to the

52/49T48

USSR/Hydrology (Contd)

Jun 49

complex use of reservoirs and drains. Proposes that a single standard for regulation of water quality be established to unite all disciplines now concerned with this subject.

52/49T48

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

VORONTSOV, N.M., nauchnyy sotrudnik; BARBASHIN, B.M., starshiy master blyuminga

Cold working blooming mill rolls. Metallurg 4 no.2:27-28 F '59.
(MIRA 12:1)

1. Ukrainskiy institut metallov (for Vorontsov). 2. Alchevskiy metallurgicheskiy zavod (for Barabashin).
(Rolls (Iron mills) (Steel--Cold working)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

YAKIMENKO, G.S.; BARBASHIN, B.M., starshiy master blyuminga

Metal marking in the production line. Metallurg 6 no.7:23-25 Jl '61. (MIRA 14:6)

1. Alchevskiy metallurgicheskiy zavod. 2. Zamestitel' nachal'nika obzhimnogo tsekha Alchevskogo metallurgicheskogo zavoda (for Yakimenko).

(Rolling (Metalwork))

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

GORODETSKIY, L.N.; CHIGIRINSKIY, V.M.; NAFTULOVICH, S.M.; DANCHENKO, N.F.; YEMEL'YANOV, V.P.; BARBASHIN, B.M.

In rolling mills all over the country. Metallurg 6 no.8:25-28 Ag '61. (MIRA 14:8)

1. Rel'sobalochnyy tsekh zavoda im. Petrovskogo (for Gorodetskiy, Chigirinskiy). 2. TSentral'naya zavodskaya laboratoriya zavoda im. Petrovskogo (for Naftulovich, Danchenko). 3. Magnitogorskiy metallurgicheskiy kombinat (for Yemel'yanov). 4. Starshiy master blyuminga zavoda im. Voroshilova (for Barbashin).
(Rolling mills)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHIN, B.M.; YAKIMENKO, G.S.

Improving the method of removing trimmings from the 1,150 slabbing mill shears. Met.i gornorud. prom. no.6:76-77 N-D '63.

(MIRA 18:1)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

YERCHENKOV, G.; BARBASHIN, M.

Ways of a further expansion of the resources of raw materials for the meat industry. Mias.ind.SSSR 33 no.5:42-44 '62. (MIRA 15:12)

1. Gosudarstvennyy komitet zagotovok Soveta Ministrov SSSR (for Yerchenkov). 2. Gosplan SSSR (for Barbashin).
(Meat industry)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

SOROCHKIN, Igor' Mikhaylovich; GRISHIN, Leonid Ivanovich; ZINOVKIN, G.S., retsenzent; BARBASHIN, M.K., retsenzent; KORBUT, L.V., red.; SATAROVA, A.M., tekhn. red.

[Organization of work and wages in meat combines] Organizatsiia truda i zarabotnoi platy na miasokombinatakh. Moskva, Pishchepromizdat, 1963. 202 p. (MIRA 16:6)
(Meat industry--Management)
(Wages--Meat industry)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHIN, M.M.; FALEYEV, G.

Let us catch up with the United States in the per capita production of meat, milk and butter. Miasn.Ind.SSSR 28 no.4:1-5 '57. (MIRA 10:7)

1. Gosudarstvennaya planovaya komissiya po vosstanovleniyu khozyaystva i promyshlennosti pri Sovete narodnykh ministrov SSSR. (Meat industry)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHIN, N.N.

CAND TECH SCI

Dissertation: "Investigation of the Method for Manufacturing Cast Iron Crankshafts for Compressors and their Substitution for Forged Steel Shafts."

23 May 49

Moscow Order of the Labor Red Bauner Higher Technical School imeni Bauman.

SO Vecheryaya Moskva
Sum 71

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

MYSHKINA, M.I., bibliograf; LOBANOVA, K.N., bibliograf; RUDAKOVA, V.I., bibliograf; GORDON, L.L., bibliograf; SOKOLOV, N.V., prof., nauchnyy red. [deceased]; BARBASHIN, N.N., dotsent, kand.tekhn. nauk, red.; MODEL', B.I., tekhn.red.

[Founding; a bibliography of the literature published before 1955] Liteinoe proizvodstvo; bibliograficheskii ukazatel' literatury po 1955 g. Red.N.V.Sokolova. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 687 p. (MIRA 12:7)
(Bibliography--Founding)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

MYSHKINA, M.I., bibliograf; LOBANOVA, K.N., bibliograf; RUDAKOVA, V.I., bibliograf; GORDON, L.L., bibliograf; SOKOLOV, N.V., prof., nauchnyy red. [deceased]; BARBASHIN, N.N., kand.tekhn.nauk, red.; MODEL', B.I., tekhn.red.

[Founding; a bibliography of the literature published before 1955] Liteinoe proizvodstvo; bibliograficheskii ukazatel' literatury po 1955 g. Red. N.V.Sokolova. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit.lit-ry, 1959. 687 p. (MIRA 12:7)
(Bibliography--Founding)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

KASENKOV, Mikhail Aleksandrovich; BARBASHIN, N.N., kand.tekhn.nauk, retsenzent; TEBEN'KOV, B.P., kand.tekhn.nauk, red.; SOBOLEVA, G.N., red.izd-va; TIKHANOV, A.Ya., tekhn.red.

[Forging and small casting furnaces] Kuznechnye i malye plavil'nye pechi. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1961. 186 p. (MIRA 14:6)
(Metallurgical furnaces)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

ALEKSEYEV, S.A.; BALABIN, V.V.; BARBASHIN, N.N.; GORSHKOV, A.A.; ZHAROV, N.T.; MARIYENBAKH, L.M.; RUBTSOV, N.N., doktor tekhn. nauk, prof.[deceased]; SERGEYEV, V.S.; SOSNENKO, M.N.; FROLOV, V.V.; KONSTANTINOV, L.S., kand. tekhn. nauk, red.; CHERNYAK, O.V., red. izd-va; UVAROVA, A.F., tekhn. red.; TIKHANOV, A.Ya., tekhn. red.

[Fondryman's handbook; general information on founding]Spravochnik liteishchika; obshchie svedeniia po lit'iu. [By]S.A.Alekseyev i dr. Pod obshchei red. N.N.Rubtsova. Moskva, Mashgiz, 1962. 524 p. (MIRA 16:1)
(Founding--Handbooks, manuals, etc.)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

RUBTSOV, Nikolay Nikolayevich, zasl. deyatel' nauki i tekhniki, Laureat Gosudatstvennoy premii, doktor tekhn. nauk, prof. [deceased]; BARBASHIN, N.N., kand. tekhn. nauk, red.; STEPANENKO, N.S., red. izd-va; SOKOLOVA, T.F., tekhn. red.

[History of founding in the U.S.S.R.] Istoriia liteinogo proizvodstva v SSSR. Izd.2., dop. i pererabotannoe. Moskva, Mashgiz, Pt.1. 1962. 287 p. (MIRA 16:3)

1. Zaveduyushchiy kafedroy mashin i avtomatizatsii liteynogo proizvodstva Moskovskogo vysshego tekhnicheskogo uchilishcha im. Baumana (for Rubtsov).

(Founding)

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MARIYENBAKH, L.M.; BARBASHIN, N.N., kand. tekhn. nauk, dots.; retsenzent: TALANOV, P.I., prof., red.

[Foundry furnaces] Pechi v liteinom proizvodstve. Izd.2., dop. i perer. Moskva, Mashinostroenie, 1964. 355 p. (MIRA 17:12)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

ACC NR: AP7002565 SOURCE CODE: UR/0413/66/000/023/0053/0053

INVENTOR: Suminov, V.M.; Promyslov, Ye.V.; Kuzin, B.C.; Skvorchevskiy, A.K.; Barbashin, N.N.

ORG: none

TITLE: Pneumatic sizing of microholes. Class 21, No. 189083. [Announced by the Moscow Aircraft Technological Institute (Moskovskiy aviatsionnyy tekhnologicheskiy institut)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 23, 1966, 53

TOPIC TAGS: microhole drilling, laser drilling, laser machining, microhole sizing, LASER APPLICATION, DRILLING MACHINE

ABSTRACT: This Author Certificate introduces a method of sizing microholes made with a laser beam. To improve the precision of the microhole, the material melted or vaporized by a laser beam is removed from the hole with a compressed air jet. [ND]

SUB CODE: 13/ SUBM DATE: 10Nov65/ ATD PRESS: 5113

Card 1/1 UDC: 621.375.8:621.735.6

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

OYKS, G.N., doktor tekhn.nauk; BARBASHIN, O.A., inzh.; KALTYGIN, V.P., inzh.

Changes in steel composition in the process of pouring. Sbor. Inst.stali no.39:40-46 '60. (MIRA 13:7)

1. Kafedra metallurgii stali Moskovskogo ordena Trudovogo Krasnogo Znameni instituta stali im. I.V.Stalina.
(Steel--Metallurgy)

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Moscow. Institut stali

Proizvodstvo i obrabotka stali i splavov (Production and Treatment of Steel and Alloys) Moscow, Metallurgizdat, 1960. 462 p. (Series: Its: Sbornik, 39) 2,100 copies printed.

Ed.: Ye. A. Borko; Ed. of Publishing House: S. L. Zenger; Tech. Ed.: M. R. Kleymann; Editorial Council of the Institute: M. A. Glinkov, Professor, Doctor of Technical Sciences; R. M. Grigorash, Docent, Candidate of Technical Sciences; V. P. Yelyutin, Professor, Doctor of Technical Sciences; A. A. Zhukhovitskiy, Professor, Doctor of Chemical Sciences; I. N. Kidin, Professor, Doctor of Technical Sciences; B. G. Livshits, Professor, Doctor of Technical Sciences; A. P. Lyublinov, Professor, Doctor of Technical Sciences; I. M. Pavlov, Corresponding Member, Academy of Sciences USSR; and A. N. Pokhvisnev, Professor, Doctor of Technical Sciences.

PURPOSE: This book is intended for technical personnel in industry, scientific institutions and schools of higher education, dealing with open-hearth and electric-furnace steelmaking, metal rolling, physical metallurgy, and heat treatment. It may also be used by students specializing in these fields.

Card 1/10

COVERAGE: The book contains results of theoretical and experimental investigations of metallurgical and heat-engineering processes in open-hearth and electric furnaces. Data are included on the following: desulfurizing of pig iron outside the blast furnace, interaction of oxides of the carbide-forming metals with solid carbon, the change of content of gases in the bath of the open-hearth furnace in various periods of melting, intensification of the electric melting of steel, etc. Other articles deal with the nonuniformity of deformation in rolling, the study of the continuous rolling process, the dependence of the friction - slippage coefficients in rolling on a number of factors, and other problems in the pressworking of metals. Articles on physical metallurgy and the theoretical principles and techniques of the heat treatment of steel are also included. No personalities are mentioned. References accompany most of the articles. There are 207 references, both Soviet and non-Soviet.

Card 2/10

Card 3/10

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

CHERNYAK, Ya.N., kandidat tekhnicheskikh nauk; BARBASHINA, L.I., inzhener.

Semi-dry pressed facing slabs made from light clays. Gor.khoz.Mosk. 29 no.3:15-16 Mr '55. (MIRA 8:5)
(Walls) (Clay industries)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHINA, Yelizaveta Georgiyevna; FOKIN, Gavril Fedorovich; KRYLOV, V.I., nauchnyy red.; ROGACHEV, F.V., red.; RAKOV, S.I., tekhn.red.

[Handbook for the young founder] Spravochnik molodogo liteishchika. Moskva, Vses. uchebno-pedagog. izd-vo Trudrezervizdat, 1953. 347 p. (Founding) (MIRA 12:1)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

ALEKSANDROV, R.G.; BARBASHINA, Ye.G.; BAS'KO, K.P.; VARTAN'YAN, A.S.; VASILEVSKIY, P.F.; GLAGOLEVA, L.A.; DUBININ, N.P., prof., doktor tekhn. nauk; KONSTANTINOV, L.S.; KOROTKOV, A.I.; LESNICHENKO, V.L.; PANFILOV, Ye.A.; TRUBITSYN, N.A.; TUCHKEVICH, N.M.; FADEYEV, A.D.; FOKIN, G.F.; MARTENS, S.L., inzh., red.; SOKOLOVA, T.F., tekhn. red.

[Steel casting; foundrymen's handbook] Stal'noe lit'e; spravochnik dlia masterov liteinogo proizvodstva. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. 887 p. (MIRA 14:8)
(Founding)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHINOVA, V.N.

Sapropelites in the northeastern part of the Greater Donets Basin. Izv.vys.ucheb.zav.; geol. i razv. 5 no.5:59-66 My '62. (MIRA 15:6)

1. Novocherkasskiy politekhnicheskiy institut.
(Donets Basin--Sapropelites)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHOV, A., zasl. zootekhnik RSFSR; KATS, G., otv. za vypusk; GORYACHENKO, F., tekhn. red.

[Increasing production in swine breeding] Bol'shoi rezerv svinovodstva. Kishinev, Izd-vo Sel'khoz. lit-ry MSKh MSSR, 1962. 13 p. (MIRA 15:6)

1. Direktor eksperimental'nogo khozyaystva Vsesoyuznogo nauchno-issledovatel'skogo instituta zhivotnovodstva, sovkhoza "Klenovo-Chegodayevo" Podol'skogo rayona Moskovskoy oblasti (for Barbashov).

(Moldavia--Swine)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHOV, B.M.; YEFIMOV, G.V.

Green's function in the model of scalar charged mesons with a fixed source. Zhur. eksp. i teor. fiz. 38 no.1:198-200 Jan '60. (MIRA 14:9)

1. Ob"edinennyy institut yadernykh issledovaniy.
(Nuclear models) (Potential, Theory of) (Mesons)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHOV, B.M.; YEFIMOV, G.V.

[Properties of the solution to Low's equation for a model in the local field theory] Svoistva resheniia uravneniia Lou dlia odnoi modeli lokal'noi teorii polia. Dubna, Ob"edinennyy in-t iadernykh issl., 1961. 14 p. (MIRA 14:11)
(Nuclear models) (Field theory)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHOV, V.M.; YEFIMOV, G.V.; SARANTSEVA, V.R., tekhn. red.

[Remark on unrenormalized theories] Zamechanie o neperenormiruemykh teoriiakh. Dubna, Ob"edinennyi in-t iadernykh issl., 1962. 5 p. (MIRA 15:6)

(Quantum field theory)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHOV, B.M., YEFIMOV, G.V.

Properties of a solution to Low's equation for a local field theory model [with summary in English]. Zhur. eksp. i teor. fiz. 42 no.2:520-525 F '62. (MIRA 15:2)

1. Ob"yedinennyy institut yedernykh issledovaniy.
(Field theory)(Nuclear models)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

83195

S/056/60/039/002/032/044
B006/B070

24.4500

AUTHORS: Barbashov, B. M., Yefimov, G. V.

TITLE: A Method for Field-theoretical Problems Involving a Stationary Nucleon /9

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960. Vol. 39, No. 2(8), pp. 450 - 460

TEXT: In the present paper the authors consider the example of an interaction between charged scalar mesons and stationary source and develop a new method for the solution of mesodynamical equations of this class of models. The applied formalism is not related to the coupling constant. It is based on the matrix method of solution of differential equations given by I. A. Lappo-Danilevskiy. The new formalism is equivalent to the perturbation theory, if the Hamiltonian of the system of neutral mesons and a stationary nucleon is taken to be the unperturbed Hamiltonian. While in the perturbation theory the approximation can be made only by taking an arbitrary number of terms of the series, the new method gives in a closed form the value of the n-th term of the

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A Method for Field-theoretical Problems Involving a Stationary Nucleon

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B006/B070

approximation. This fact also allows, in principle, the test of the convergence of the series. Thus, the field-theoretical problem is solved in the form of a series whose n-th term is known. Since the coupling constant does not act as the parameter for the expansion of the series, no assumption need be made about its smallness. The advantages of these facts are discussed. An investigation of the renormalized coupling constant leads to the conclusion that, in the exact solutions for some models, there exist poles at the point g=0. This fact makes all the methods doubtful when they are based on an expansion in terms of g. The renormalization constant is calculated according to the proposed method. It is found that the renormalized charge g_r has no logarithmic singularity in this model when a transition is made to the point interaction. Finally, it is shown that the method of functional integration, still only imperfectly worked out, leads to correct results in the given case. The authors hope that after further development, the method would lead still more efficiently to exact solutions of the field-theoretical problems. The authors thank Professor D. I. Blokhintsev and Academician N. N. Bogolyubov for stimulating discussions. Tamm, Dankov, and

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A Method for Field-theoretical Problems Involving a Stationary Nucleon

83195
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B006/B070

D. V. Shirkov are mentioned. There are 9 references: 4 Soviet, 4 US, and 1 British.

4

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: March 18, 1960

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

22137
S/056/61/040/003/017/031
B102/B205

24,4500

AUTHORS: Barbashov, B. M., Yefimov, G. V.

TITLE: Model of local field theory with finite charge renormalization

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 3, 1961, 848-859

TEXT: A method previously developed by the present authors (cf. ZhETF, 38, 198, 1960 and 39, 450, 1960) has now been used to treat the modified Lee model of local field theory (T. D. Lee, Phys. Rev. 95, 1329, 1954) proposed by I. Bialnicki-Birula (Nucl. Phys. 12, 309, 1959), in which the condition of cross symmetry is satisfied. For this model in which the fixed nucleon appears in two states of different masses, the S-matrix and the renormalization constants are determined first. The solutions are obtained in the form of expansions in series of the renormalization constants Δm (Δm is a physical parameter corresponding to the difference in mass between the two fermion states in the model); these series converge in the ultraviolet ($E \gg \Delta m$). The principal feature of the model is its

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Model of local field theory...

finite charge renormalization in all orders with respect to Δm for point interaction (unlike the Lee model where the problem of zero charge arises). On the strength of the Hamiltonian

$$H = m_0(\psi^+\psi) + \frac{1}{2}\int dx :[\pi^2(x) + (\nabla\varphi(x))^2 + \mu^2\varphi^2(x)]: + \\ + g(\psi^+\tau_1\psi)\int dx\,\varphi(x)\,\delta(x) + \Delta m_0(\psi^+\tau_3\psi), \qquad (1)$$

the adiabatic S-matrix, S^α, was found to be

$$S^\alpha(t, t_0) = 1 - [2(\psi^+\psi) - (\psi^+\psi)^2] + \sum_{q=0}^{\infty} \frac{[-i(\psi^+\tau_3\psi)\,\Delta m_0]^q}{q!}\int_{t_0}^{t} d\xi_1 \ldots \int_{t_0}^{t} d\xi_q \times \\ \times :\exp\left\{-i(\psi^+\tau_1\psi)\,g\int_{t_0}^{t} ds \prod_{j=1}^{q} e(\xi_j - s)\,\hat{\varphi}(s)\,e^{-\alpha|s|}\right\}: \times \\ \times \exp\left\{-\frac{ig^2}{2}\int_{t_0}^{t}\int_{t_0}^{t} ds_1\,ds_2 e^{-\alpha(|s_1|+|s_2|)} \prod_{j=1}^{q} e(\xi_j - s_1)\,\Delta(s_1 - s_2)\,e(\xi_j - s_2)\right\} \times \\ \times \exp\left\{-\alpha\sum_{j=1}^{q}|\xi_j|\right\}. \qquad (3)$$

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Model of local field theory...

This expression is exact up to a phase constant. The matrix elements of the S-matrix were investigated, and

$$E_N = \lim_{a\to 0} \frac{\langle N \mid HS^2(0, -\infty) \mid N\rangle}{\langle N \mid S^2(0, -\infty) \mid N\rangle} =$$

$$= m + \delta_N \Delta m \sum_{q=0}^{\infty} (-\delta_N \Delta m)^q \int_0^{\infty} dx_1 \ldots \int_0^{\infty} dx_q x_1 \ldots x_q \times$$

$$\times \frac{\partial^q}{\partial x_1 \ldots \partial x_q} \exp\left\{2g^2 \sum_k \frac{1}{\omega^3} \sum_{l=1}^{q} \sum_{m=1}^{l} (-1)^{l+m} \exp\left(-\omega \sum_{j=m}^{l} x_j\right)\right\}, \qquad (6)$$

$$\delta_N = \begin{cases} +1 \text{ для протона } (N = p) \text{ (proton)} \\ -1 \text{ для нейтрона } (N = n). \text{ (neutron)} \end{cases}$$

Далее

$$m = m_0 - \frac{1}{2} g^2 \sum_k \omega^{-2}, \qquad (6')$$

$$\Delta m = \Delta m_0 \exp\left\{-g^2 \sum_k \omega^{-3}\right\}. \qquad (6'')$$

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was obtained for the eigenvalue of the energy of the single-fermion state. The renormalization constant of the fermion field is determined by the square of the matrix element:

$$Z_2^N = |\langle N|N\rangle|^2 = |\langle N|S^a(0,-\infty)|N\rangle|^2 =$$
$$= Z_2^{ск}\left[\sum_{q=0}^{\infty}(\delta_N\Delta m)^q\int_0^\infty dx_1\ldots\int_0^\infty dx_q x_1\ldots x_q\times\right.$$
$$\times\frac{\partial^q}{\partial x_1\ldots\partial x_q}\exp\left\{g^2\sum_k\frac{1}{\omega^3}\left[-\sum_{l=1}^{q}(-1)^l\exp\left(-\omega\sum_{j=1}^{l}x_j\right)+\right.\right.$$
$$\left.\left.\left.+2\sum_{l=2}^{q}\sum_{m=2}^{l}(-1)^{l+m}\exp\left(-\omega\sum_{j=m}^{l}x_j\right)\right]\right\}\Bigg]^2. \qquad (7)$$

Здесь

$$Z_2^{ск} = \exp\left\{-\frac{1}{2}g^2\sum_k\omega^{-3}\right\}$$

where Z_2 holds for scalar mesons, and $|\vec{N}\rangle$ denotes the single-nucleon state of the total Hamiltonian. As usual, the coupling renormalization constant is given by

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Model of local field theory...

$$\frac{g_r}{g} = \langle p | \psi^+ \tau_1 \psi | n \rangle = \lim_{\alpha \to 0} \frac{\langle p | S^\alpha(\infty, 0)\, \psi^+ \tau_1 \psi S^\alpha(0, -\infty) | n \rangle}{[\langle p | S^\alpha(\infty, -\infty) | p \rangle \langle n | S^\alpha(\infty, -\infty) | n \rangle]^{1/2}} =$$

$$= 1 + \sum_{q=1}^{\infty} (\Delta m)^{2q} \int_0^\infty dx_1 \ldots \int_0^\infty dx_{2q-1} x_1 \ldots x_{2q-1} \sum_{j=1}^{q} x_{2j-1} \times$$

$$\times \frac{\partial^{2q-1}}{\partial x_1 \ldots \partial x_{2q-1}} \exp\left\{2g^2 \sum_k \frac{1}{\omega^3} \sum_{l=1}^{2q-1} \sum_{m=1}^{l} (-1)^{l+m} \exp\left(-\omega \sum_{j=m}^{l} x_j\right)\right\}. \quad (8)$$

The renormalization constant of the vertex part is obtained in the form $Z_1 = Z_2^{cK} \sigma(g^2, \Delta m)$, where $\sigma(g^2, \Delta m)$ is a series of Δm, the terms of which are all finite for $g^2/\pi^2 < 1$. The matrix element of elastic scattering of a meson from a nucleon is written as

$$S_{f \leftarrow i} = \lim_{\alpha \to 0} \frac{\langle N | a_{p_f} S^\alpha(\infty, -\infty)\, a^+_{p_i} | N \rangle}{\langle N | S^\alpha(\infty, -\infty) | N \rangle} = \delta(p_i - p_f) - 2\pi i \delta(\omega_i - \omega_f)\, M_{f \leftarrow i}(\omega_f); \quad (10)$$

$$M_{f \leftarrow i}(\omega_f) = -\frac{2\delta_N g^2}{\omega_f^2} \frac{\Delta m}{\omega_f} \sum_{q=0}^{\infty} (-i\delta_N \Delta m)^q \int_0^\infty dx_1 \ldots \int_0^\infty dx_q \times$$

$$\times \left[q + 1 - \sum_{l=1}^{q} \sum_{m=1}^{l} (-1)^{l+m} \left\{\exp\left(i\omega_f \sum_{j=m}^{l} x_j\right) + \exp\left(-i\omega_f \sum_{j=m}^{l} x_j\right)\right\}\right] \times$$

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$$\times(-1)^q\int_{x_1}^{\infty} dy_1 \ldots \int_{x_q}^{\infty} dy_q \frac{\partial^q}{\partial y_1 \ldots \partial y_q} \times$$

$$\times \exp\left\{2g^2 \sum_k \frac{1}{\omega^3} \sum_{l=1}^{q} \sum_{m=1}^{l} (-1)^{l+m} \exp\left(-i\omega \sum_{j=m}^{l} y_j\right)\right\}.$$

Next, it is proved that the series are convergent for E_p, Z_2^n, and g_r.

Professor D. I. Blokhintsev is thanked for his interest in the work and for a discussion, and also L. G. Zastavenko for a discussion of mathematical problems. Several mathematical problems are dealt with in appendages. There are 11 references: 4 Soviet-bloc and 7 non-Soviet-bloc. The three references to English language publications read as follows: R. Arnowitt, S. Deser, Phys. Rev. 100, 349, 1955; L. N. Cooper, Phys. Rev. 100, 362, 1955; S. F. Edwards, R. E. Peierls, Proc. Roy. Soc. A224, 24, 1954.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: September 30, 1960

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHOV, B.M.

[Dynamic resonances in solutions to Low's equation for certain models in the field theory] O dinamicheskikh rezonansakh v resheniiakh uravneniia Lou dlia nekotorykh modelei teorii polia. Dubna, Ob"edinennyi in-t iadernykh issl., 1961. 19 p.
(MIRA 15:1)

(Quantum field theory)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHOV, B.M.; YEFIMOV, G.V.

Model of local field theory with finite charge renormalization.
Zhur.eksp.i teor.fiz. 40 no.3:848-859 Mr '61. (MIRA 14:8)

1. Ob"yedinennyy institut yadernykh issledovaniy.
(Quantum field theory) (Nuclear models)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

S/056/62/043/001/016/056
B102/B108

AUTHOR: Barbashov, B. M.

TITLE: Dynamic resonances in the solutions of the Low equation for some field theory models

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 1(7), 1962, 105 - 111

TEXT: The resonance arising in the scattering of particles may be caused by new unstable particles (kinematic resonances) or by dynamic processes (dynamic resonances). The possible existence of the latter in solutions of the Low equation is studied for some renormalized and non-renormalized field-theoretical models (charged-meson interaction). It is shown that, owing to the constraints imposed on the coupling constant by the amplitude analyticity condition, resonances may arise for certain values of the coupling constant and cut-off parameter only in non-renormalized models. Since in the non-renormalized scalar charged and symmetrical theories only the S-phase appears in the scattering amplitude, the resonances cannot be considered as an effect of a centrifugal barrier; the behavior of the

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Dynamic resonances in ...

S-phase shift in the non-renormalized scalar charged meson interaction is similar to that of the P-phase shift in the Chew-Low model (Phys. Rev., 101, 1971, 1956). There are 3 figures.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: December 9, 1961

Card 2/2

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

S/056/62/042/002/033/055
B108/B104

AUTHORS: Barbashov, B. M., Yefimov, G. V.

TITLE: Properties of a solution of the Low equation for a local field theory model

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 2, 1962, 520 - 525

TEXT: The Low equation is solved for a simple model of elastic scattering of a meson from a stationary nucleon. The latter may exist in two states whose difference Δ in mass is less than the mass of the meson. The amplitude of S scattering of a meson with energy $\omega = \sqrt{k^2 + \mu^2}$ is

$$M_N(\omega) = \frac{2\delta_N g_r^2}{(2\pi)^3} \frac{\Delta}{\omega(\omega^2 - \Delta^2)} \left\{ 1 - \frac{g_r^2 \delta_N \Delta}{4\pi \sqrt{\mu^2 - \Delta^2}} \frac{\sqrt{\mu^2 - \Delta^2} - \sqrt{\mu^2 - \omega^2}}{\sqrt{\mu^2 - \Delta^2} + \sqrt{\mu^2 - \omega^2}} \right\}^{-1}.$$

This solution has poles at the points $\pm\Delta$. The additional pole in the interval $[-\mu,\mu]$ which would contradict to the assumed analytical properties of $M_N(\omega)$ can be eliminated by imposing restrictions on the coupling constant g_r which are due to the single-particle unitarity relation:

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$$\sqrt{\mu^2-\omega^2} = -\sqrt{\mu^2-\Delta^2}\left[1-\delta_N\frac{g_r^2\Delta}{4\pi\sqrt{\mu^2-\Delta^2}}\right]\Big/\left[1+\delta_N\frac{g_r^2\Delta}{4\pi\sqrt{\mu^2-\Delta^2}}\right].$$

$$g^2/4\pi < \sqrt{\mu^2-\Delta^2}/\Delta,$$

In an earlier paper (ZhETF, 40, 848, 1961) the authors have obtained the scattering amplitude in the form of a power series which they derived on the basis of the Hamiltonian formalism from the Schrödinger equation. Comparison between the two solutions showed that at energies $\omega<2\mu$ the contribution of many-particle states to the scattering amplitude is not greater than 15%. The restriction relating g_r and Δ with each other is valid in first-order approximation also for the power series solution. Professor D. I. Blokhintsev is thanked for discussions. Mention is made of L. A. Khalfin (ZhETF, 41, 1233, 1961) and V. N. Gribov, Ya. B. Zel'dovich, A. M. Perelomov (ZhETF, 40, 1190, 1961). There are 9 references: 4 Soviet and 5 non-Soviet. The four most recent references to English-language publications read as follows: R. Norton, A. Klein.

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B108/B104

Properties of a solution. .

Phys. Rev., 109, 991, 1958; F. J. Dyson Phys. Rev., 106, 157, 1957; F. Zachariasen, Phys. Rev., 121, 1851, 1961; G. F. Chew, F. E. Low, Phys. Rev., 101, 1570, 1956.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: August 12, 1961

Card 3/3

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

S/056/62/043/003/048/063
B108/B102

AUTHORS: Barbashov, B. M., Yefimov, G. V.

TITLE: A note on nonrenormalized theories

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 3(9), 1962, 1057 - 1059

TEXT: R. Arnowitt, S. Deser (Phys. Rev., 100, 349, 1955) and L. Cooper (Phys. Rev., 100, 362, 1955) have tried to eliminate the ultraviolet divergence in some nonrenormalized models of field theory by analytical continuation in terms of the coupling constant g^2. It was concluded that the nonrenormalized interaction is related to the expansion in respect of g^2 in perturbation theory. It is shown here that this conclusion is incorrect, since analytical continuation in terms of g^2 leads to a complex eigenvalue of the single-nucleon state energy and to a complex renormalized coupling constant. This would be inconsistent with the hermiticity of the Hamiltonian (cf. also ZhETF, 40, 848, 1961)

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A note on nonrenormalized theories

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$$H_I(t) = g(\psi^+\tau_1\psi)\hat{\pi}(t) + \Delta m_0(\psi^+\tau_3\psi); \qquad (1),$$

$$\hat{\pi}(t) = \int dx\rho(x)\frac{\partial}{\partial t}\varphi(x, t) = \sum_k \frac{v(k)}{\sqrt{2\omega}}(-i\omega)(a_k e^{-i\omega t} - a_k^+ e^{i\omega t}), \qquad (2).$$

$$\rho(x) = \sum_k v(k)\, e^{ikx}, \quad v(k) = \exp\left\{-\frac{\omega-\mu}{2L}\right\}^{\infty}.$$

This Hamiltonian is nonrenormalized since analytical continuation in terms of g^2 leads to results that are finite but have no physical sense. There is 1 figure.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: April 11, 1962

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHOV, B.M.; YEFIMOV, G.V.

Note on nonrenormalized theories. Zhur. eksp. i teor. fiz. 43 no.3: 1057-1059 '62. (MIRA 15:10)

1. Ob"yedinennyy institut yadernykh issledovaniy.
(Field theory—Models)

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L 39452-65 EWT(d) /EWT(1)/T IJP(c) GG

ACCESSION NR: AP5006510 S/0056/65/048/002/0607/0621

AUTHOR: Barbashov, B. M. 16 13 B

TITLE: Functional integrals in quantum electrodynamics and the infrared asymptotic limit of Green's functions 21 14

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 2, 1965, 607-621

TOPIC TAGS: Green function, quantum electrodynamics, infrared asymptotic limit, functional integral, quantum field theory

ABSTRACT: A method is proposed for formally solving the equations of field theory in the form of a functional integral. Unlike in similar earlier derivations of such solutions, a different approach is proposed, based on the use of a Weierstrass transformation in function space. The method is used to obtain the Green's function for the Klein-Gordon and Dirac equations in an external field. It is shown that functional

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... the solution of the Dirac equation

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ACCESSION NR: AP5006510

in constant and plane-wave fields. The form of the solutions obtained allows the construction of quantum-mechanical Green's functions by the method of functional averaging over the external fields. Their asymptotic forms in the infrared region

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ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: 31Jul64 ENCL: 00 SUB CODE: GP

NR REF SOV: 007 OTHER: 010

Card 2/2 1/3

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

L 22230-66 EWT(1)/EWT(m)/T

ACC NR: AP6010987 SOURCE CODE: UR/0056/66/050/003/0660/0671

AUTHOR: Barbashov, B. M.; Volkov, M. K. 35 B

ORG: Joint Institute of Nuclear Studies (Ob" yedinennyy institut yadernykh issledovaniy) 21

TITLE: Investigation of infrared singularities of the scattering cross section by the functional integration method

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 3, 1966, 660-671

TOPIC TAGS: photon, virtual photon, Fermi particle, scattering cross section, functional integration, photon emission 19

ABSTRACT: Mutual scattering of high-energy scalar particles of mass m is studied by the functional integration method. The process is treated on the basis of the scalar particle model with a Lagrangian $L = g:\psi^2(x)\phi(x):$ where the field $\psi(x)$ has a mass m and $\phi(x)$ has a zero mass. The contribution of virtual photons of field $\phi(x)$ with $k^2 = 0$, which leads to infrared divergence in the amplitude of the elastic process, is taken into account. A procedure for compensating infrared divergences is developed outside the framework of perturbation theory by taking into account in the cross section processes which involve the emission of an infinite number of real photons from field $\phi(x)$ with a total energy of photons not exceeding a certain quantity Δ. [CS]

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

L 34804-66 EWT(1)

ACC NR: AP6018809 SOURCE CODE: UR/0056/66/050/005/1296/1308

AUTHOR: Barbashov, B. M.; Chernikov, N. A.

ORG: Joint Institute of Nuclear Research (Ob"yedinennyy institut yadernykh issledovaniy)

TITLE: Solution and quantization of a nonlinear two-dimensional model for a Born-Infeld type field

SOURCE: Zh eksper i teor fiz, v. 50, no. 5, 1966, 1296-1308

TOPIC TAGS: quantum electrodynamics, Cauchy problem, field theory, space time, HYPERBOLIC EQUATION, EUCLIDEAN SPACE

ABSTRACT: The authors solve the Cauchy problem for the hyperbolic equation

$$(1-\varphi_t^2)\varphi_{x,x}+2\varphi_x\varphi_t\varphi_{x,t}-(1+\varphi_x^2)\varphi_{t,t}=0,$$

which is a two-dimensional scalar analog of the equations of the Born-Infeld nonlinear electrodynamics of the free field. By regarding this equation as the equation for the extremal surfaces in pseudo-euclidean space, it becomes possible to generalize the problem to a case which is easier to solve, that of a two-dimensional extremal surface in N-dimensional pseudo-euclidian space. From the physical point of view this is equivalent to generalizing the nonlinear Born-Infeld field to the case of fields interacting in some prescribed manner. In the obtained solution the time and the coordinate, together with the field functions, are interpreted as components of a new multi-component field. This interpretation leads to a procedure for quantizing

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L 34304-66

ACC NR: AP6018809

such linear systems without recourse to perturbation theory. As a result of the quantization, the time and the coordinate turn out to be operators along with the field functions. The result is a theory in quantized space-time. The authors thank D. I. Blokhintsev and N. N. Bogolyubov for interesting discussions. Orig. art. has: 59 formulas. [02]

SUB CODE: 20,12/ SUBM DATE: 12Nov65/ ORIG REF: 007/ OTH REF: 001
ATD PRESS: 5130

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PA 37/49T46

USSR/Engineering Aug 48
Machines, Metal-Cutting
Tools, Cutting

"The Priority of Russian Scientists in the Field of the Mechanics of Metal-Cutting Processes," Prof A. I. Kashirin, Dr Tech Sci, F. A. Barbashov, Engr, 5 3/4 pp

"Stanki i Instrument" No 8, pp. 1-6.

Authors conclude from study of Russian works on theory of metal cutting, that much material now printed abroad as latest discovery was published long ago in articles by Russian scientists.

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USSR/Engineering (Contd) Aug 48

Discusses, in particular, the work of Briks, Russian scientist, on mechanics of metal cutting. It is clear that Merchant has done nothing new in this field, and priority indisputably belongs to Russian scientists K. A. Zvorykin and A. A. Briks.

37/49T46

Translation B-7911

BARBASHOV, F. A.

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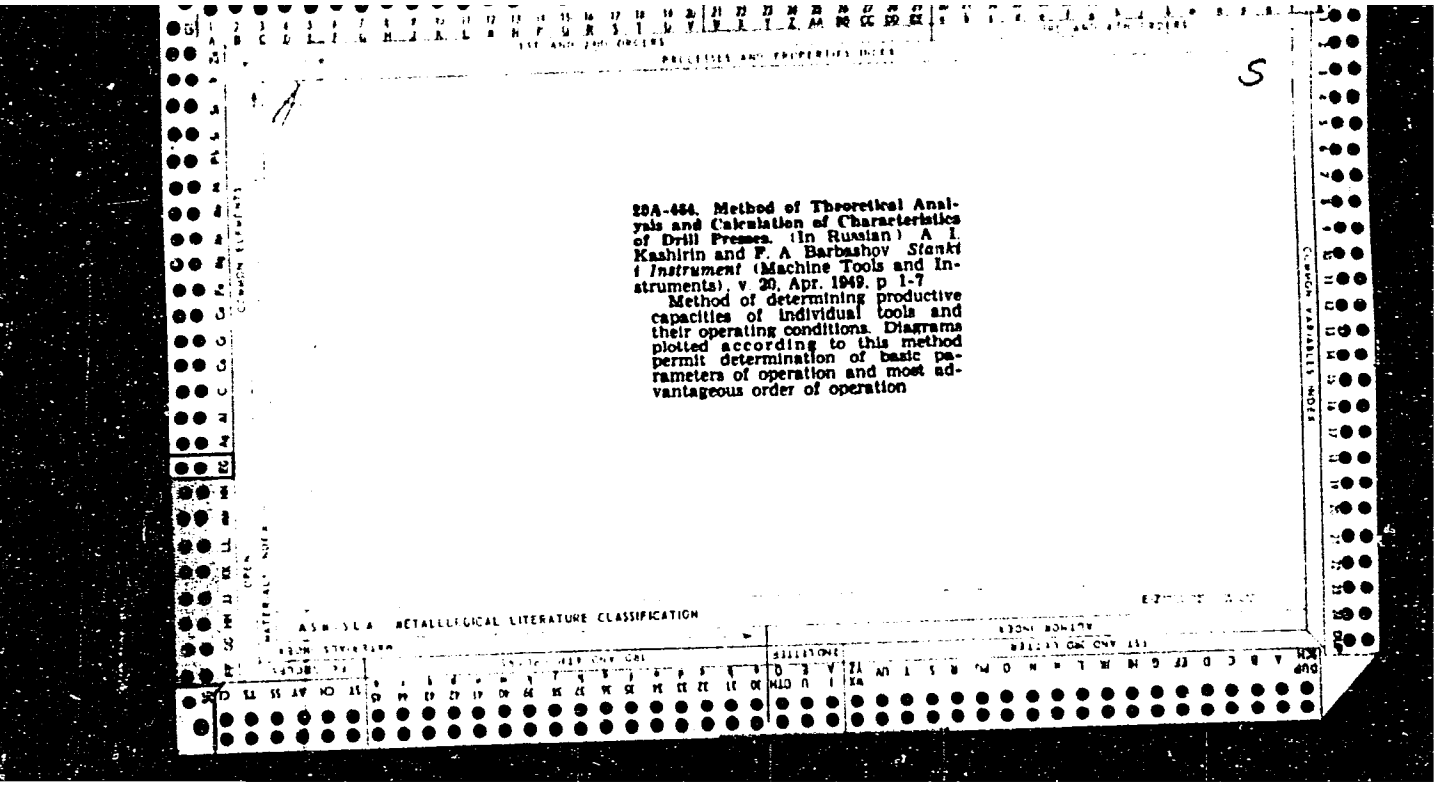

28A-484. Method of Theoretical Analysis and Calculation of Characteristics of Drill Presses. (In Russian.) A. I. Kashirin and F. A. Barbashov. *Stanki i Instrument* (Machine Tools and Instruments), v. 20, Apr. 1949. p. 1-7

Method of determining productive capacities of individual tools and their operating conditions. Diagrams plotted according to this method permit determination of basic parameters of operation and most advantageous order of operation

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[illegible], V. A., engineer Gen Tech Dir

Dissertation: "[illegible]"

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Lomonosov Moscow State Technological Inst.

SO Vecheryaya Moskva
Sum 71

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHOV, F. A.; KASHIRIN, A. I.

"On a Single Relation Betwen Cutting Force and Speed for Different Types of Machining," Stanki i Instrument (1950) No 12, pp 7/11.

Comments and Evaluation B-78524, 8 Sep 54

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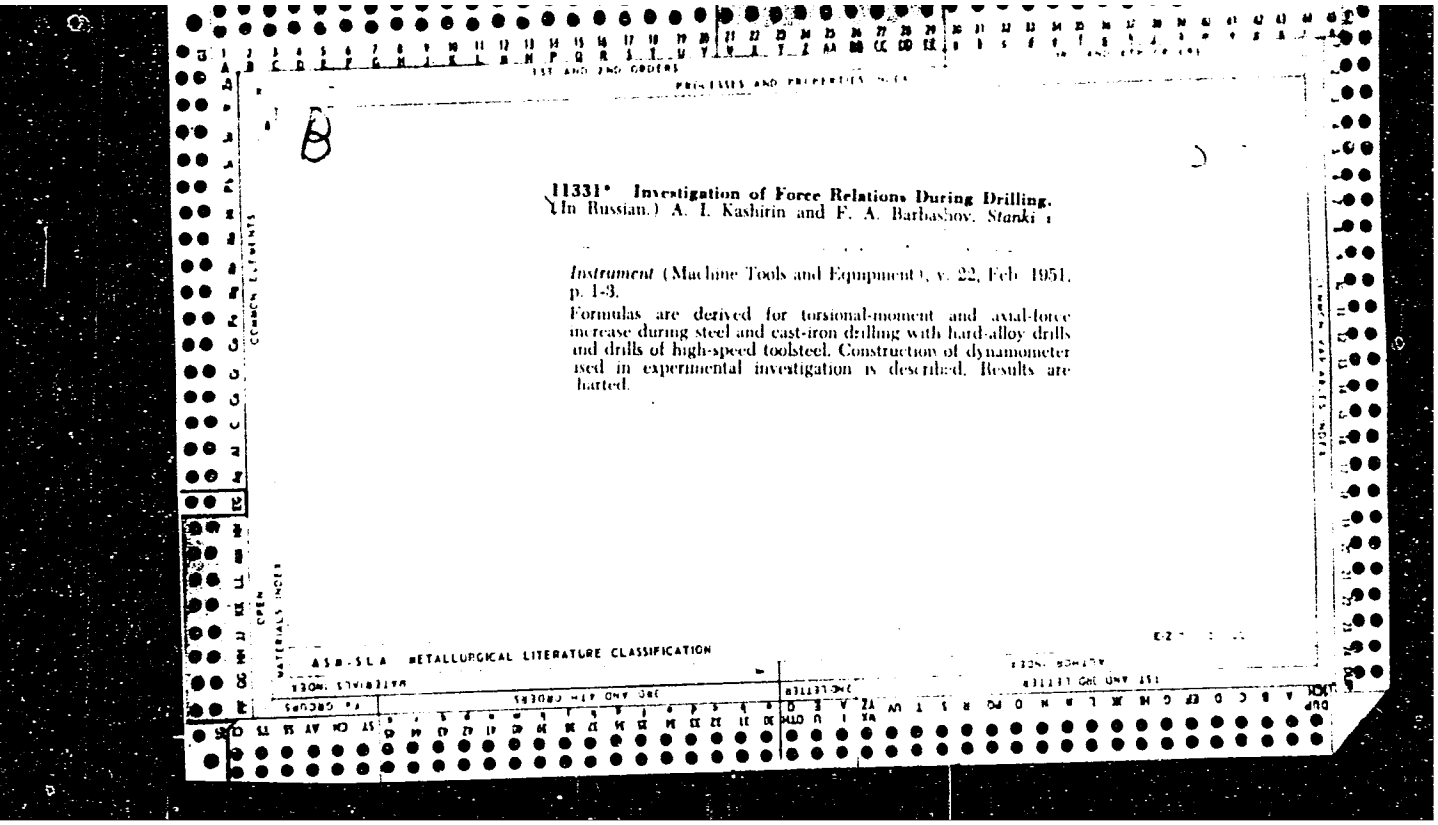

11331* **Investigation of Force Relations During Drilling.** (In Russian.) A. I. Kashirin and F. A. Barbashov. *Stanki i*

Instrument (Machine Tools and Equipment), v. 22, Feb. 1951, p. 1-3.

Formulas are derived for torsional-moment and axial-force increase during steel and cast-iron drilling with hard-alloy drills and drills of high-speed toolsteel. Construction of dynamometer used in experimental investigation is described. Results are charted.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHOV, Fedor Alekseyevich, kandidat tekhnicheskikh nauk; SHVETSOV, I.B., redaktor; DMITRIYEVA, R.V., tekhnicheskiy redaktor.

[Rapid metal cutting by large feed] Skorostnoe rezanie metallov s bol'shimi podachami. Moskva, Izd-vo "Znanie," 1955. 31 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii. Ser.4, no.27) (MLRA 8:9)
(Metal cutting)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHOV, Fedor Alekseyevich, dots., kand.tekhn.nauk; BRUSHTEYN, B.Ye., kand.tekhn.nauk, retsenzent; ARSHINOV, V.A., kand.tekhn.nauk, red.; KL'KIND, V.D., tekhn.red.

[Strength and force relations in the cutting of metals] Stoikostnye i silovye zavisimosti pri rezanii metallov. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1958. 43 p. (MIRA 11:5)
(Metal cutting)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARANCHEV, F. P.

[illegible] BOOK EXPLOITATION [illegible]

[illegible]ranchev, Fedor Alekseyevich, Candidate of Technical Sciences, Docent

Stoykostnyye i silovyye zavisimosti pri rezanii metallov (Tool Life and Force Relations in Metal Cutting) Moscow, Mashgiz, 1958. 43 p. 6,500 copies printed.

Reviewer: Krushteyn, B. Ye.; Editor: Arshinov, V. A., Candidate of Technical Sciences; Tech. Ed.: El'kind, V. D.; Managing Editor for Literature on Metal Working and Tool Making (Mashgiz): Beysel'man, R. D., Engineer.

PURPOSE: The booklet is intended for technical and engineering personnel of machine-building plants and scientific research institutions.

COVERAGE: This booklet covers the basic factors governing cutting processes in turning with the use of large feeds. The author states that during the last few years the method of metal cutting using large feeds has found wide acceptance in the industry, and is the subject of many papers in the professional literature. In most cases, however, the articles have been limited to practical aspects and methods developed by innovators in various plants. Only a few articles dealt with the theoretical and the experimental side of this method.

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Tool Life and Force Relations in Metal Cutting 700

An attempt is made here to determine the laws governing changes in physical cutting parameters, in particular, the thickness of cut, width of cut, and the cutting speeds as related to the depth of cut and the rate of feed, and, utilizing the data thus obtained, to determine the theoretical tool life and the forces involved in turning with large feeds using conventional as well as special cutting tools. The experiments also helped to establish a number of general rules pertaining to the process of turning with large feeds, and these may serve as a basis for the establishment of new standards for cutting regimes. The author makes a reference to the scientific work of A.I. Kashirin, Doctor of Technical Science, on the problems of cutting force and tool-life relationships in the machining of metals. There are 14 Soviet references.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

KUKLIN, Leonid Grigor'yevich; SAGALOV, Vasiliy Ivanovich; SEREBROVSKIY, Valeriy Borisovich; SHABASHOV, Semen Pavlovich, kand.tekhn. nauk; BARBASHOV, F.A., dotsent, kand.tekhn.nauk, retsenzent; DUGINA, N.A., tekhn.red.

[Increasing the strength and wear resistance of hard-alloy metal-cutting tools] Povyshenie prochnosti i iznosostoikosti tverdosplavnogo instrumenta. Pod red. S.P.Shabashova. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 182 p. (MIRA 13:7)

(Metal-cutting tools--Maintenance and repair)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

L 11367-67 EWT(1) SCTB DD/GD

ACC NR: AT6036490 SOURCE CODE: UR/0000/66/000/000/0054/0055

AUTHOR: Barbashova, Z. I. 14

ORG: none

TITLE: Analysis of the relationship between the general resistance of the organism and tissue resistance [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24 to 27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 54-55

TOPIC TAGS: hypoxia, blood chemistry, hypoxia tolerance, tissue physiology

ABSTRACT: The role in the formation of increased general resistance of the shifts in functional system performance and in cell chemistry which constitute adaptation of hypoxia was studied. The experiments were designed to yield direct comparisons between the general resistance of the organism and the resistance of individual tissues, as well as between tissue resistance and biochemical processes within tissues. These comparisons were made both under conditions of experimentally increased general resistance of the organism and under conditions of decreased resistance.

The general resistance of rats was increased by a month's exposure

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to a simulated pressure chamber altitude of 7000 m. General resistance was lowered by adrenalectomy.

In rats with increased general resistance, tissue resistance of the myocardium and skeletal muscles (electrophysiologically determined in vitro) was higher, as was the resistance of brain tissues, particularly cells from the respiratory and vascular motor centers (determined in vivo). Biochemical studies showed that these tissues are capable of more active utilization of oxygen from an extremely oxygen-poor atmosphere, due to their higher cytochromoxidase activity and greater oxygen capacity. These tissues showed enhanced ATP-ase activity. Anaerobic glycolysis increased significantly. These are all changes increasing the resistance of muscle and nerve tissue to the effect of agents which disrupt cellular energy metabolism.

In the animals with general resistance weakened by adrenalectomy, myocardium preparations had lowered resistance. This was correlated with decreased oxygen capacity of cardiac muscle due to a lowered myoglobin content. Myocardium preparations from rats which were

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adrenalectomized and then exposed for a month to hypoxia showed increased resistance, which was correlated with increased myoglobin content and ATP-ase activity in the cardiac muscle.

It is concluded that these direct correlations between the general resistance of the organism and tissue resistance reflect a definite interdependence of phenomena. Tissue resistance depends on metabolism characteristics, enzyme activity, and content of other biologically active components. Biochemical changes on the cellular level are the basis of the process by which cell (including nerve cell) function shifts to new levels appropriate to new environmental conditions. Biochemical changes at the cellular level are thus the basis not only of tissue resistance, but of systemic resistance and the general resistance of the organism. [W.A. No. 22: ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHIN, YE. A.

O nekotorykh osobe nostyakh osobennostyakh, voznikayushchikh v dinamicheskoy sisteme pri narusheniyakh edinstvennosti. DAN, 41 (1943), 145-147.
Lokal'nyye osobennosti obyknovennykh tochek dlya sistemy differentsial'nykh uravneniy. DAN, 41 (1943), 193-196.
O povedenii tochek pri gomeomorfnykh preobrazovaniyakh prostranstva. DAN, 51 (1946), 3-6.
O [illegible]-pokrytiyakh prostranstva. Matem. sb., 18 (6), (1946), 423-428.

SO: Mathematics in the USSR, 1917-1947
edited by Kurosh, A.G.,
Markushevich, A.I.,
Rashevskiy, P.K.
Moscow-Leningrad, 1948

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHIN, YE. A.

Barbachine, E. Sur la classification des multiplicités intégrales d'un système d'équations en différentielles totales. C. R. (Doklady) Acad. Sci. URSS (N.S.) 55, 279–282 (1947).

Beginning with a system of total differential equations, the author indicates how one is led to consideration of a transformation group acting on a compact subset X of n-dimensional Euclidean space, where the group itself is the group R_n of vectors in n-dimensional space. If x_0 is a point of X and W denotes the subgroup of R_n which leaves x_0 invariant, the factor group R_n/W is the direct sum of r groups each of which is isomorphic to the additive group of reals and k groups each of which is isomorphic to the multiplicative group of complex numbers with modulus 1. The orbit of x_0 is then denoted by $Z_{r,k}$ and the group W by $W_{r,k}$. If $\mathbf{A}$ denotes a unit vector of R_n, an ordering is defined in R_n by the assertion that $\mathbf{B}<\mathbf{C}$ provided $\mathbf{B}\cdot\mathbf{A}<\mathbf{C}\cdot\mathbf{A}$. This establishes a connection with an earlier paper by the author [same C. R. (N.S.) 51, 3–5 (1946); these Rev. 8, 34] and enables him to define orbits which are recurrent, totally stable, etc., with respect to the direction $\mathbf{A}$. The analysis of an orbit is particularly simple if it is such that $Z_{r,k}$ is the topological image of $W_{r,k}$, in which case it is said to be normal. It is asserted that the following orbits are normal: (a) all orbits of type $Z_{n,0}$; (b) the n-dimensional orbits; (c) $(n-1)$-dimensional orbits which are of type $Z_{1,n-2}$.

G. A. Hedlund (Charlottesville, Va.).

Source: Mathematical Reviews, Vol. 8 No. 10

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHIN, YE.A.

Barbašin, E. A. On dynamical systems with a velocity potential. Doklady Akad. Nauk SSSR (N.S.) 61, 185–187 (1948). (Russian)

Let M be a locally Euclidean manifold with local coordinates $x_1, \cdots, x_n$ and let $f(p, t)$ ($p \in M$, $-\infty < t < \infty$, $f(p, t) \in M$) be the dynamical system (one-parameter transformation group) defined on M by a system of differential equations $dx_i/dt = X_i(x_1, \cdots, x_n)$ ($i = 1, \cdots, n$). The dynamical system is called linear when it is topologically equivalent to the translation group of a family of parallel straight lines in some Euclidean space. A point p of M is called wandering in case there exist a neighborhood S of p and a number N such that $f(S, t) \cap S = 0$ for all $t > N$. The following theorems are stated and briefly discussed: (1) if there exists a point-function u of class C^1 on M such that $\sum_{i=1}^{n} (\partial u/\partial x_i) X_i \geqq k > 0$ for some constant k, then the dynamical system is linear; (2) if there exists a velocity potential (a point-function u of class C^1 on M such that $X_i = \partial u/\partial x_i$ ($i = 1, \cdots, n$)), then each point of M is either wandering or fixed.

W. H. Gottschalk (Philadelphia, Pa.).

Source: Mathematical Reviews, Vol 10, No.1

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

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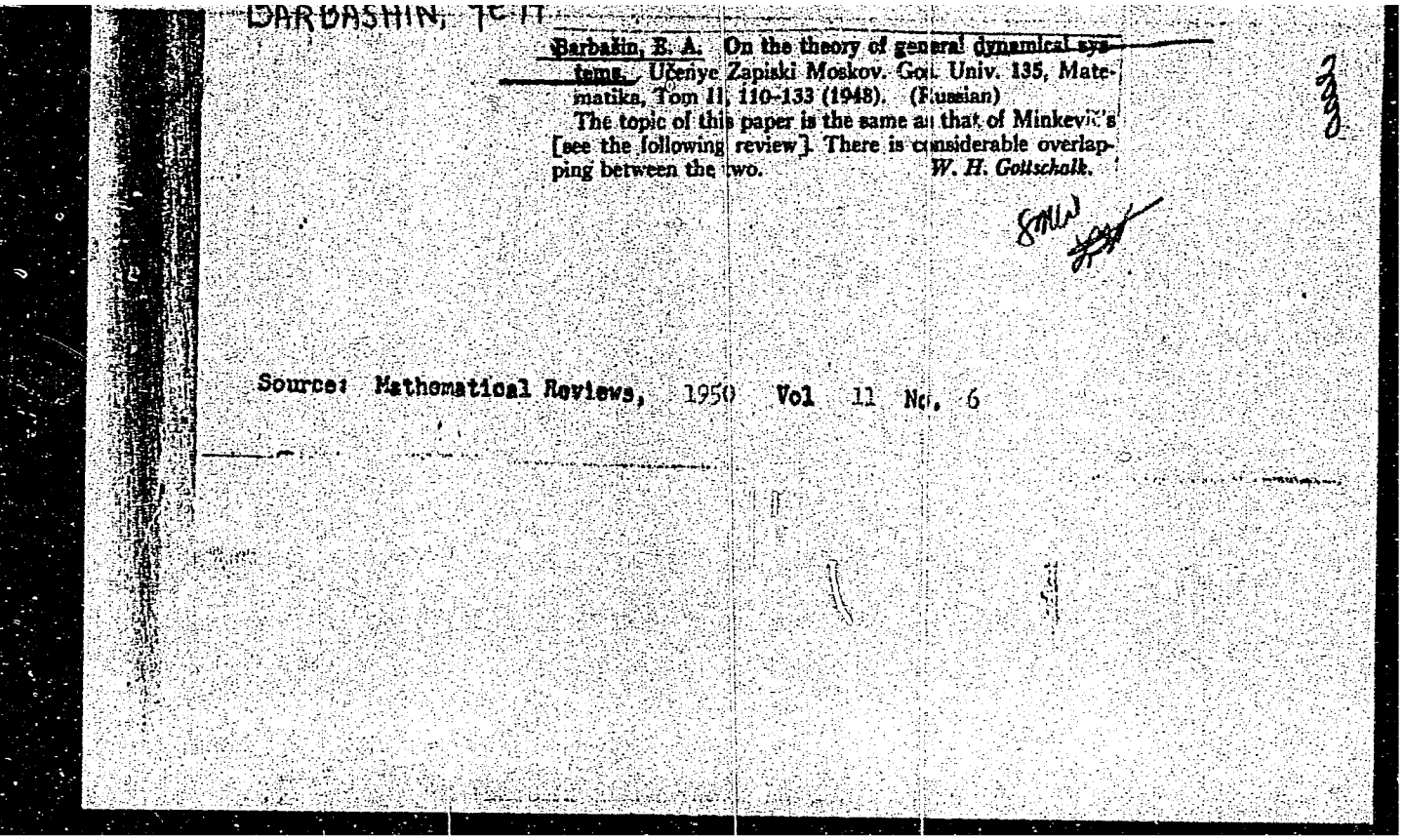

BARBASHIN, Ye. A.

Barbašin, E. A. On the theory of general dynamical systems. Učenye Zapiski Moskov. Gos. Univ. 135, Matematika, Tom II, 110–133 (1948). (Russian)

The topic of this paper is the same as that of Minkevič's [see the following review]. There is considerable overlapping between the two. *W. H. Gottschalk.*

Source: Mathematical Reviews, 1950 Vol 11 No. 6

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHIN, Ye-A.

Barbašin, E. A. On homomorphisms of dynamical systems. Doklady Akad. Nauk SSSR (N.S.) 61, 429–432 (1948). (Russian)

Let R be a locally compact metric space, let G be an Abelian topological group, both satisfying the second axiom of countability, and let $f: R \times G \to R$ define a transformation group, denoted by (R, G). A point $x \in R$ is called stable in case its orbit $f(x, G)$ has compact closure. It is assumed that at least one point of R is stable. Let K denote the circle group. A homomorphism of (R, G) is defined to be a mapping $\alpha: R \to K$ such that $\alpha(f(x, G)) = \alpha(x) + \alpha^*(g)$ $(x \in R, g \in G)$ for some character α^* of G; in case $\alpha^* = 0$ the homomorphism α is called invariant. Let L be the topological group of all homomorphisms of (R, G) with the obvious operation of addition and the compact-open topology and let H be the subgroup of all invariant homomorphisms; H is open and closed in L. The quotient group $\Delta = L/H$ is called the character group of (R, G); Δ is discrete and countable. The system (R, G) is called indecomposable in case each element of H is constant on R. Let A be the [illegible]

The following theorems are stated. (1) If (R, G) is indecomposable, then L is the direct sum of K and Δ. (2) The group Δ, the character group of (A, A_0) and the character group of A are all isomorphic. (3) For each stable point $x_0 \in R$ there exists a mapping ψ of R onto A such that: (a) $\psi(f(x, g)) = a_g + \psi(x)$ $(x \in R, g \in G)$; (b) $\psi(f(x_0, G)^-) = A$; (c) if R is indecomposable and if L separates $x_1, x_2 \in R$, then

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Source: Mathematical Reviews, Vol 10, No.1

BARBASHIN, Ye.A.

Barbašin, E. A. Dispersive dynamical systems. *Uspehi Matem. Nauk (N.S.)* 4, no. 2(30), 131–139 (1950). (Russian)

In this paper several theorems on regular families of curves filling an open subregion G of an n-dimensional manifold M and on first order partial differential equations are stated without proof. The curves are assumed defined by differential equations $x_i' = X_i(x_1, \cdots, x_n)$, $i = 1, \cdots, n$, and are said to form a dispersive system if they are homeomorphic to a family of parallel lines. Theorem 1. The system is dispersive if and only if there exists a function u such that $\sum(X_i \partial u/\partial x_i)$ is positive and bounded away from 0. The system is called unstable if every curve has no α or ω limit points in G; it is said to have no improper saddle point if, whenever a sequence of arcs $p_n q_n$ of the curves are such that p_n converges to p in G, q_n converges to q in G, then every sequence formed of points r_n between p_n and q_n on $p_n q_n$ has a limit point in G. Theorem 2. If the system of curves is unstable and has no improper saddle point, then there exists a solution v of the differential equation $\sum(X_i \partial v/\partial x_i) + \phi = 0$ for given $\phi(x_1, \cdots, x_n)$ in G. Other theorems concern the invariance of dispersiveness under small deformations of the vectors X_i. — *W. Kaplan.*

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BARBASHIN, Ye.A.

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Barbašin, E. A. On homomorphisms of dynamical systems. Mat. Sbornik N.S. 27(69). 455–470 (1950). (Russian)
This paper contains proofs and several applications of theorems previously announced by the author [Doklady Akad. Nauk SSSR (N.S.) 61, 429–432 (1948); these Rev. 10, 49]. *W. H. Gottschalk* (Philadelphia, Pa.).

Source: Mathematical Reviews, Vol 12 No.6

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103530010-8

BARBASHIN, Ye.A.

Barbašin, E. A. On a condition for the existence of a secant surface. Doklady Akad. Nauk SSSR (N.S.) 70, 565–568 (1950). (Russian)

In a manifold M, consider a flow, given by $dx_i/dt = X_i$, where the X_i are the components of a vector field over M. A secant surface or cross section is a surface F such that, after multiplying the vector field by a suitable positive function, every point passes periodically through F, with a fixed period. A differential $\omega = \sum P_i dx_i$ is admissible if $\sum P_i X_i > 0$ everywhere. According to a remark of G. D. Birkhoff, a cross section clearly exists if there exists on M an angular coordinate φ (i.e., a multiple-valued function, whose values differ by multiples of 2π), with an admissible differential $d\varphi$. Theorem: if M possesses an admissible closed differential, then there exists a cross-section. For the proof one shows that the (classical) existence of a Poisson-stable trajectory implies that the given differential is not homologous to zero; and then, by using de Rham's theorems, one constructs a differential, all of whose periods (with respect to a base for the 1-cycles) are rational and positive; the integral of this differential is then an angular coordinate with admissible differential. A second theorem is stated: the existence of a (not necessarily smooth) cross section implies the existence of an admissible differential. It follows, via the proof of the first theorem, that there exists an angular coordinate (of class C^1); this replaces an argument of Birkhoff's [Dynamical Systems, Amer. Math. Soc. Colloquium Publ., v. 9, New York, 1927, p. 144] which is apparently incomplete.

H. Samelson (Ann Arbor, Mich.).

Source: Mathematical Reviews, 1950 Vol 11 No. 8

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