"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

BAZHANOVA, A.Ye.; SHAFRANOV, V.D.

Radiation from a charge moving in a plasma close to the cyclotron resonance. Dokl. AN SSSR 149 no.5:1049-1051 Ap '63. (MIRA 16:5)

1. Predstavleno akademikom M.A.Leontovichem.
(Plasma (Ionized gases)) (Cyclotron resonance)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOV, V.D.

Equilibrium state of a plasma ring. Zhur.tekh.fiz. 33 no.2: 137-144 F '63. (MIRA 16:5)

(Plasma (Ionized gases))

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

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L 16984-63 EWT(1)/EWG(k)/ES(w)-2/BDS AFFTC/ASD/ESD-3/AFWL/IJP(C)/SSD
Pz-4/Pi-4/Po-4/Pat-4 AT

S/020/63/149/005/006/018

AUTHOR: Bazhanova, A. Ye. and Shafranov, V. D.

TITLE: Radiation of a charge moving in a plasma close to cyclotron resonance

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 149, no. 5, 1963, 1049-1051

TEXT: The authors consider the question whether the radiation of a charge moving in a plasma can be utilized to measure the density of the plasma n_0. To answer this question, they undertook the numerical calculation of the radiation intensity of the electron and ion close to corresponding cyclotron frequencies. The calculation, performed on a computer, showed that the bulk of the radiation is accounted for by a comparatively narrow frequency range close to certain optimal frequency $\omega = \omega_{opt}$. The frequency ω_{opt} depends quite strongly on plasma density A^2. The results obtained show that the radiation of fast electrons and ions, especially passed through a plasma, can be a means of obtaining certain information about plasma. There are 2 tables.

SUBMITTED: November 15, 1962

Card 1/1

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOV, V.D.

Electromagnetic waves in a plasma. Vop. teor. plaz. no.3:3-140 '63. (MIRA 17:4)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOV, V.D.

Equilibrium of a plasma in a magnetic field. Vop. teor. plaz. no.2:92-131 '63. (MIRA 17:2)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

LARIONTSEV, Ye.G.; SHAFRANOV, V.D.

Deceleration by radiation damping of a charge moving in a plasma situated in a magnetic field. Izv. vys. ucheb. zav.; radiofiz. 6 no.4:850-852 '63. (MIRA 16:12)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

L 40996-65 EWT(m)/EWT(m)/EPF(n)-2/EWG(m)/EPA(w)-2/EWA(m)-2 Pc-4/Pz-6/Pab-10/
[illegible]

ACCESSION NR: AP5014017 UR/0089/65/018/003/0255/0256

47
B

AUTHOR: Shafranov, V. D.

TITLE: Influence of conducting diaphragm on the plasma equilibrium in "Tokamak" installation

21 19

SOURCE: Atomnaya energiya, v. 18, no. 3, 1965, 255-256

TOPIC TAGS: plasma control, plasma device, longitudinal magnetic field, transverse magnetic field, plasma electromagnetics

ABSTRACT: The equilibrium of plasma containment by interactions between a longitudinal magnetic field and the transverse component of the current in a thin plasma cylinder shell was investigated. Such current component appears in an ideal plasma cylinder when the current circuit lines lock on a diaphragm outside the plasma forming a plasma cylinder. Formulas were developed for plasma cylinder shift binding the azimuthal field and the current on the diaphragm along the length of the shift. An approximation was developed for plasma cylinder shift contained at equilibrium in a purely toroidal magnetic field by the current on the diaphragm. Orig. art. has 1 figure and 5 formulas.

Card 1/2

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

L 48996-65

ACCESSION NR: AP5014017

ASSOCIATION: none

SUBMITTED: 23Oct64 ENCL: 00 SUB CODE: EM

NO REF SOV: 002 OTHER: 001 NA

Card 2/2

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

L 55116-65 EWT(1)/EPF(n)-2/EPA(w)-2/EWG(m) Po-4/Pz-6/Pab-10/Pi-4 IJP(c) WW/
DM/AT

ACCESSION NR: AP5014531 UR/0089/65/018/005/0443/0446

47
B

AUTHOR: Shafranov, V. D. 21

TITLE: Equilibrium of three-dimensional plasma pinch in a longitudinal magnetic field under stationary conditions

SOURCE: Atomnaya energiya, v. 18, no. 5, 1965, 443-446

TOPIC TAGS: plasma pinch, stellarator, plasma confinement, plasma equilibrium

ABSTRACT: The plasma equilibrium in toroidal chambers of the stellarator type are considered for the case when the plasma confinement duration exceeds the time of penetration of the magnetic field through the solenoid winding, so that the configuration of the magnetic field is determined not by the position of the conducting surfaces but by the current distribution on these surfaces. The calculation method was described in an earlier paper by the author (Yadernyy sintez v. 4, 114 and 232, 1964). It is shown that in the case considered in this article part of the flux lines of the magnetic field link with the solenoid winding and are closed in the outer region. The radius of the outermost toroidal magnetic surface contained

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ACCESSION NR: AP5014531

wholly in the chamber is therefore always smaller than the radius of the solenoid itself. The contraction due to the plasma pressure is independent of the radius of the plasma pinch. At some critical plasma pressure, the contraction of the plasma becomes comparable with the radius of the solenoid, so that the confinement of the plasma becomes impossible in principle. Orig. art. has: 31 formulas. [02]

ASSOCIATION: none

SUBMITTED 05Sep64 ENCL: 00 SUB CODE: ME,EM

NO REF SOV: 003 OTHER: 002 ATD PRESS: 4025

Card 2/2

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

L 9304-66 EWT(1)/ETC/EPF(n)-2/EWG(m)/EWA(1) IJP(c) WW/DM/AT
ACC NR: AP5022628 UR/0039/65/019/002/0120/0125
533.9

55 44 45 B

AUTHOR: Shafranov, V.D.

TITLE: Classical approach to the study of thermal conduction in a toroidal plasma pinch

SOURCE: Atomnaya energiya, v. 19, no. 2, 1965, 120-125

TOPIC TAGS: plasma pinch, plasma heating 21,44,55

ABSTRACT: The problem of thermal conduction 21,44,55 is considered by the author for toroidal configurations and classical equations are derived. The drift of a heat flux causes a redistribution of plasma temperatures along the magnetic surfaces. The flattening of temperature gradients by a longitudinal non-magnetic heat flux induces a certain heat transfer across the magnetic surfaces. This additional toroidal heat flux is greater than the magnetized flow which determines the heat losses from the plasma in cylindrical geometric configurations. The author presents the calculation of the coefficient of thermal conduction for "smooth" toroidal configurations of tokamak and stellerator types. The equation for the distribution of electric potential are also given in connection with the temperature redistribution. The author wishes to acknowledge with gratitude the advice given to him by L.A. Artsimovich 44,55 in regard to the importance of this subject. Orig. art. has: 1 diagram and 45 formulas.

Card 1/2

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ACC NR: AP5022628 0

ASSOCIATION: none

SUBMITTED: 23Jan65 ENCL: 00 SUB CODE: 20

NO REF SOV: 004 OTHER: 001

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

L 9421-66 EPF(n)-2/EWT(1)/ETC/EWG(m) IJP(c) DM/AT

ACC NR: AP5022635 UR/0089/65/019/002/0175/0175

533.9

33

B

AUTHOR: Shafranov, V.D.

TITLE: Balance of pressures in toroidal plasma pinch

SOURCE: Atomnaya energiya, v. 19, no. 2, 1965, 175

TOPIC TAGS: plasma electromagnetics, plasma pinch

21,44,55

ABSTRACT: The author presents in his abbreviated article a general equation where the quadratic effect of the toroidal pinch curvature was taken into account. After expressing the equation in its general form and upon introducing an equation for the longitudinal toroidal field the author concludes that even in the case of a steep shaped torus with a radius ratio of R/a 4, the correction is needed only at a very low plasma pressure. Therefore, for all toroidal installations of a "Tokamak" type, the pressure can be determined by using the following simplified formula:

$$\frac{8\pi\langle p\rangle_a}{B_a^2} = 1 - \frac{c^2 B_0 \delta\Phi}{2\pi J^2}.$$

where $\langle p\rangle_a$-average pressure, J-longitudinal pinch current, $\delta\Phi$ excess flux of longitudinal field, B_0-exterior field along the axis $\omega = \pm\pi/2$ passingthrough the pinch center of gravity, a - small radius of toroidal pinch and $B_a = 2J/ca$.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

L 9421-66

ACC NR: AP5022635

ASSOCIATION: none

SUBMITTED: 23Jan65 ENCL: 00 SUB CODE: 20

NO REF SOV: 000 OTHER: 000

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

L 22411-66 EWT(1)/EPF(n)-2/EWG(m) IJP(c) AT

ACC NR: AP6007952 SOURCE CODE: UR/0089/66/020/002/0146/0148

AUTHORS: Bazhanova, A. Ye.; Strelkov, V. S.; Shafranov, V. D. 66 B

ORG: none

21,44,55

TITLE: Effect of the finite electric conductivity of the jacket on the equilibrium of the plasma pinch in the 'Tokamak' installation

21,44,55

SOURCE: Atomnaya energiya, v. 20, no. 2, 1966, 146-148

TOPIC TAGS: electric conductivity, plasma generator, plasma pinch, plasma temperature, magnetic trap, plasma diffusion/ [redacted]

ABSTRACT: The authors refine the previously derived formulas (Voprosy teorii plazmy [Problems in Plasma Theory], No. 2, 1963, page 92) for the radius and the temperature of the plasma pinch produced in the Tokamak system, by taking into account the finite electric conductivity of the jacket, which in the earlier calculations was assumed to be infinite. The calculations show that allowance for the finite conductivity does not change the form of the equation for the displacement of the plasma pinch inside the conducting jacket,

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L 22411-66

ACC NR: AP6007952

but changes the value of the perpendicular component of the magnetic field, which must now be determined from the diffusion equation for the dipole component of the magnetic field on the walls of the jacket. The effect of the finite conductivity on the equilibrium of the plasma is evaluated and it is shown that in the case of plasmas of approximately 20 msec duration the correction necessitated by its inclusion is small and increases with increasing plasma confinement time. Orig. art. has: 3 figures and 19 formulas.

SUB CODE: 20/ SUBM DATE: 17Aug65/ ORIG REF: 004/

Card 2/2

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

L 05704-67 EWT(1) IJP(c) AT

ACC NR: AP6013897 SOURCE CODE: UR/0020/66/167/006/1273/1275

AUTHOR: Kadomtsev, B. B. (Corresponding member AN SSSR); Shafranov, V. D.

ORG: none

TITLE: Diffusion in a toroidal discharge plasma

SOURCE: AN SSSR. Doklady, v. 167, no. 6, 1966, 1273-1275

TOPIC TAGS: plasma diffusion, plasma pinch, plasma discharge / Tokamak plasma device, stellarator plasma device

ABSTRACT: A formula is derived for the diffusion current of a plasma in a toroidal axiosymmetric discharge, assuming an external vortex electric field. The equations of V. D. Shafranov (*Voprosy teorii plazmy*, v. 1, M., 1963) are used to describe a system with this particular geometry. The average expansion rate of the plasma cord is given as the sum of terms representing the anomalous diffusion rate, the rate of pinch and two types of drift associated with the vortex field and the toroidal geometry. This expression is discussed in terms of experiments on Tokamak and stellarators. Orig. art. has: 15 formulas.

SUB CODE: 20/ SUBM DATE: 20Jan66/ ORIG REF: 004/ OTH REF: 002

UDC: 533.932

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

L 09348-67 EWT(1) IJP(c) AT SOURCE CODE: UR/0020/66/170/001/0075/0078

ACC NR: AP6031645

AUTHOR: Solov'yev, L. S.; Shafranov, V. D.

ORG: none

TITLE: Contribution to the theory of equilibrium of a plasma in a toroidal magnetic trap

SOURCE: AN SSSR. Doklady, v. 170, no. 1, 1966, 75-78

TOPIC TAGS: magnetic trap, plasma stability, thermodynamic equilibrium, plasma magnetic field, perturbation theory

ABSTRACT: The purpose of the study was to ascertain the applicability of the boundary conditions (the Kruskal and Kulsrud conditions and the Newcomb condition) to the magnetic differential equation of a toroidal equilibrium plasma configuration. Solution of the differential equation for the toroidal magnetic surfaces in the linear approximation shows that the presence of resonant harmonics can either destroy the magnetic surfaces completely, or else under certain conditions lead only to a splitting of the resonant magnetic surfaces into a filamentary structure. Near resonance, only one harmonic of the perturbing field affects the stability of the surface. A method for solving the problem of plasma equilibrium in toroidal magnetic traps, based on the determination of the currents in the plasma and the associated disturbances of

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the magnetic surfaces, is outlined. It is concluded that the formal solution of the perturbation-theory problem of equilibrium toroidal magnetic configurations contains small denominators analogous to the solutions of perturbation-theory equations in classical mechanics. The difficulties connected with the presence of the small denominators can be circumvented by normalizing (suitably choosing) the unperturbed solution on which the source function of the perturbation-theory equation depends. A concrete method of renormalization is proposed. This report was presented by Academician M. A. Leontovich 8 December 1965. Orig. art. has: 21 formulas.

SUB CODE: 20/ SUBM DATE: 29Oct65/ ORIG REF: 005/ OTH REF: 005

Card 2/2

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

L 11415-67 EWT(1) IJP(c)

ACC NR: AP6031261 SOURCE CODE: UR/0057/66/036/009/1575/1584

AUTHOR: Bazhanova, A.Ye.; Glagolev, V.M.; Shafranov, V.D.

ORG: None

54

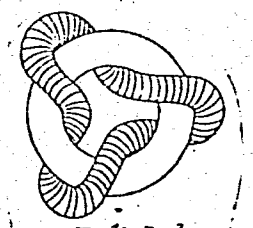
53

TITLE: Toroidal plasma traps with spatial magnetic axes

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 9, 1966, 1575-1584

TOPIC TAGS: plasma confinement, magnetic field, magnetic surface, stellarator field, mathematic physics

ABSTRACT: The authors discuss the confinement of plasma in magnetic fields of the type that can be produced by an endless solenoid wound through and about a circular torus as exemplified by the figure. These fields can be regarded as generalizations of the figure-eight type stellarator field proposed by L.Spitzer (Phys. Fluids, 1, 253, 1958), which the include as a special case. V.D.Shafranov (Yadernyy sintez, 4, 114, 1964) has previously shown that the displacement of the magnetic surfaces of the field of a solenoid in the presence of plasma is determined by the curvature and torsion of the axis of the solenoid. In the present paper formulas are derived for the curvature and torsion of solenoids of the considered type, and the distortion of their magnetic surfaces in the presence of plasma is discussed. Topo-



$m=1;\ n=3$

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L 11415-67
ACC NR: AP6031261

logically equivalent torus-solenoid configurations in which the solenoid axis consists of line segments and circle arcs are also treated. It is concluded that the distortion of the magnetic surfaces is minimum when the solenoid axis makes an angle of about 45° with the torus axis, and that a suitable value of the ratio of the gas pressure to the magnetic pressure for optimal conditions is 0.1. The authors thank Ye.G.Lariontsev for his participation in the preliminary calculation work. Orig. art. has: 40 formulas and 7 figures.

SUB CODE: 20/ SUBM DATE: 31Aug65/ ORIG REF: 005/ OTH REF: 001

Card 2/2 bab

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOV, VITALIY PAVLOVICH

KUVAYEV, Nikolay Yefremovich, dots.; MAYMIN, Semen Rafailovich, dots.; SHAFRANOV, Vitaliy Pavlovich, kand.tekhn.nauk; MIROSHNIK, Aleksandr Mikhaylovich, kand.tekhn.nauk; BUN'KO, Viktor Aleksandrovich, dots.; LEVITSKIY, D.A., otvetstvennyy red.; LIBERMAN, S.S., red.izd-va; ANDREYEV, S.P., tekhn.red.

[Electric drive for mining machinery and the principles of automatic operation] Elektroprivod gornykh mashin i osnovy avtomatiki. Khar'kov, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1957. 320 p. (MIRA 11:2)

(Mining machinery--Electric driving)
(Automatic control)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

127-58-4-20/31

AUTHOR: Shafranov, V.P., Candidate of Technical Sciences

TITLE: Effective Loads of the ESH-4/40 Walking Excavator (Deystvitel'nyye nagruzki pri shaganii ekskavatora ESH-4/40)

PERIODICAL: Gornyy Zhurnal, 1958, Nr 4, pp 65-66 (USSR)

ABSTRACT: Excavators of the ESH-4/40 type are mainly used in open cast mining and at hydraulic works. During the exploitation of these excavators it often happens that the loading power of the excavators is insufficient. The author describes an inspection conducted at the Chasov-Yar Mining direction under the supervision of Dotsent N.Ye. Kuvayev to find the causes of such stoppage. It was found that the motor of the main winch of the excavator had reached the limit of its loading power and could not overcome the additional load caused by the walking of the excavator. Therefore it is necessary to increase either the initial loading power of the motor or the gear ratio of the reducer.

ASSOCIATION: Dnepropetrovskiy Gornyy Institut (The Dnepropetrovsk Mining Institute)

Card 1/1 1. Earth moving equipment 2. Mines - Equipment

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SOV/110-58-8-16/26

AUTHOR: Shafranov, V.P. (Candidate of Technical Science)

TITLE: The Torque in the Shaft of an Induction Motor on Starting (Moment vrashcheniya na valu asinkhronnogo dvigatelya pri vklyuchenii)

PERIODICAL: Vestnik Elektropromyshlennosti, 1958, Nr 8, pp 58-60 (USSR)

ABSTRACT: When induction motors are started against a heavy static load, the shafts sometimes break. It was decided to investigate this circumstance and the present article gives the results. The occurrence in the shaft of a torque much greater than the normal starting torque is associated with electromagnetic transient processes that occur when the machine is connected to a supply. This article uses the procedure of calculation recommended by E.Ye. Kazovskiy (Vestnik Elektropromyshlennosti, 1949, Nr 2). The electrical drive laboratory of the DGI, under the guidance of Docent N.Ye. Kuvayev, determined the parameters of the torque and made calculations of it when supply is switched on to three synchronous motors. The motor parameters and the design coefficients are tabulated. The curve of torque as a function of time calculated by equation (2) is given

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

AUTHORS: ~~Shafranov, V. P.,~~ Shishkov, A. I., Fursov, V. D., Petrenko, G. P.

SOV/105-58-9-9/34

TITLE: Large-Scale Testing of an Overburden Stripping Dragline Excavator Having a New Electric Drive System (Promyshlennyye ispytaniya vskryshnogo kanatno-kovshovogo ekskavatora s novoy sistemoy elektroprivoda)

PERIODICAL: Elektrichestvo, 1958, Nr 9, pp 43 - 46 (USSR)

ABSTRACT: Since 1946, dragline excavators of type ESh-4/40 (boom length 40 m, bucket capacity 4 cu.m) which are used in open pit coal and ore mining have been produced by the Soviet industry. Up to 1955, induction motors with phase rotors were used as a drive. However, a smooth starting or braking, and the flexibility required for changing load, could not be achieved with them. Therefore, production of an excavator of the same type but with a generator-motor drive, the generator being provided with three windings was taken up by the Novokramatorskiy mashinostroitel'nyy zavod (Novokramatorskiy factory for machine construction). This, however, involved substantially higher costs of electric equipment, and made an increase of the output of the power transformer

Card 1/3

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Large-Scale Testing of an Overburden Stripping Dragline Excavator Having a New Electric Drive System SOV/105-58-9-9/34

necessary. Since 1957, these excavators have been manufactured with a new type of drive using induction motors. At the above-mentioned factory five of these excavators were produced in 1957, and in the same year one of these, viz., the excavator Nr 153, was tested under the direction of N.Ye.Kuvayev, university teacher at the department for mining electrical engineering of the association given below, in the Razdolskiy sernyy kombinat (Razdol sulphur trust). The main results of these tests are given here. As they show, the technical and operating data have been substantially improved by the new technical solutions found. New features were: Use of saturated reactors in the stator circuit of the reversible motor, inductive reactances in the rotor circuit of the main winch drive motor, and singlephase braking of that motor. There are 6 figures.

ASSOCIATION: Dnepropetrovskiy gornyy institut (Dnepropetrovsk Mining Institute)

SUBMITTED: January 22, 1958

Card 2/3

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SOV/110-58-9-16/20

AUTHOR: Shafranov, V.P. (Candidate of Technical Science)

TITLE: The System of Electric Drive for the Main Winch of Excavator Type ESh-4/40 (O sisteme elektroprivoda glavnoy lebedki ekskavatora tipa ESh-4/40)

PERIODICAL: Vestnik Elektropromyshlennosti, 1958, Nr 9, pp 64-69 (USSR)

ABSTRACT: Excavator type ESh-4/40, widely employed in open-cast workings, used to have a wound-rotor induction motor to drive the main winch and another to operate the turning mechanism. Since 1955 a generator-motor system embodying a three-winding generator has been used to drive these mechanisms. The kinematics of the excavator mechanisms and the operating characteristics of the machines remained unaltered. The main data of the two types of drive are compared in a table. The new drive is much more complicated and expensive than the old and investigations have been made to see whether its use is justified. The drive of the main winch should not be damaged if the motor is stalled when the bucket enters the ground. The circuit and characteristic curves for induction motor drive of a winch are shown in Fig 1. Fig 2 plots the dynamic characteristic when the motor is retarded from no-load to short circuit in 0.1 seconds; it will be seen that the electro-magnetic torque is not excessive. Oscillographic

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SOV/110-58-9-16/20

The System of Electric Drive for the Main Winch of Excavator Type ESh-4/40

records of operating conditions on an induction motor winch drive fulfilling the main working operations are reproduced in Figs 3 - 5. The process of digging the bucket into the ground is represented on Fig 3a, and another oscillogram taken during digging is given in Fig 3b. Oscillograms of raising and unloading the scoop appear in Fig 4. Oscillograms of the normal process of digging, in which the scoop is not stalled, followed by lifting and unloading, are seen in Fig 5. These oscillograms are analysed to show that there are considerable dynamic load variations on the shaft of the motor driving the main winch. Short-term oscillations arise from the application of friction brakes, and longer oscillations are associated with the motor and reduction gear. It is considered that the application of the friction brakes at high motor speeds is the main cause of the unreliability of excavator type ESh-4/40. The need to apply the brakes at high motor speeds is due to the kinematics of the main winch system which in effect combines two operating mechanisms. Braking cannot be restricted to moderate motor speeds because this gives longer operating

Card 2/4

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SOV/110-58-9-16/20

The System of Electric Drive for the Main Winch of Excavator type ESh-4/40

times and higher power consumptions. The best solution would be to provide individual drives for the traction and lifting mechanisms. The second class of oscillations consist of a fundamental frequency with harmonics and is physically explained by reference to Fig 6. The fundamental is the frequency of rotation of the shaft of the main motor and probably results from inaccurate alignment and centring of the motor and gear shafts. The high-frequency oscillations originate in the gearing. It is concluded that individual induction motor drives should be provided for traction and lifting, and that the smoothness and accuracy of control of alternating current excavator drives should be improved, probably by the use

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SOV/110-58-9-16/20

The System of Electric Drive for the Main Winch of Excavator Type ESh-4/40

of saturating chokes. This type of drive has been installed on five excavators and preliminary tests have already been made. The excavator drive reconstruction carried out in 1955 is complicated, expensive and unnecessary.

There are 1 table, 7 figures and 2 Soviet references.

SUBMITTED: May 5, 1958

1. Construction--Equipment 2. Induction motors--Circuits
3. Induction motors--Performance

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

VOLOTKOVSKIY, Sergey Andronikovich, doktor tekhn. nauk, prof.; SHAFRANOV, Vitaliy Pavlovich, kand. tekhn. nauk, dotsent; SHISHKOV, Aleksey Ivanovich, kand. tekhn. nauk, dotsent

Calculation of the static characteristics of the drive system of an excavator in a generator-motor system with three generator excitation windings. Izv. vys. ucheb. zav.; elektromekh. 6 no.9:1113-1114 '63. (MIRA 16:12)

1. Zaveduyushchiy kafedroy gornoy elektrotekhniki Dnepropetrovskogo gornogo instituta (for Volotkovskiy). 2. Dnepropetrovskiy sel'skokhozyaystvennyy institut (for Shafranov). 3. Dnepropetrovskiy gornyy institut (for Shishkov).

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOV, V.P., kand. tekhn. nauk

Use of asynchronous electric motors. Energetik 12 no.6:16-17 Je '64. (MIRA 17:9)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVA, A.N.

Machine for covering screens with mesh. Obm.tekh.opyt. [MLP] no.16:7-8 '56. (MIRA 11:11)
(Cotton machinery--Maintenance and repair)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

Tekstovinyl material [synthetic resins] for footwear and its hygienic aspect. A. S. Shafranova, P. F. Abramovich, and S. L. Liberer. *Gigiena i Sanit.* 12, No. 7, 18-22(1947).—Polyvinyl chloride is obtained by polymerization of vinyl chloride ($CH_2=CHCl$). It can also be obtained by interaction of acetylene and HCl. Polyvinyl chloride in combination with fabric forms a water- and airproof material which has been successfully used for open types of footwear. The possible adaptation of it for other closed types of footwear necessitated making it permeable to air. Incorporation into the polyvinyl chloride mass of crystals of KCl in a ratio of 1:1 makes the product permeable to air and makes it more closely resemble natural chrome leather. It is plastic, waterproof, heavier than leather, but lighter than rubber. On being tested in a footwear the material proved to be undesirable from a hygienic point of view, but it can be successfully used for soles. Because the material holds other possibilities it is under further experimentation. A. J. R.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

1. SHAFRANOVA, A.S., RAYEVA, M.S.

2. USSR (600)

4. Industrial Hygiene

7. Quality of glass used for protective and corrective eye glasses in industry. (Abstract) Gig. i san No. 1 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVA, A. S.
V.13, [illegible]
Natural solid fuels; winning

3

SHAFRANOVA, A. S.

91. SIGNIFICANCE OF BREATHING RESISTANCE IN DUST MASKS. Shafranova, A.S. and Shakhnazaryan, T.S. (Gig. & Sanit. (Hyg. & Sanit., Moscow), 1953, (6), 21-25). An account of some experiments undertaken to measure the breathing resistances encountered with and without the use of dust masks. Three sets of barographs are reproduced and comparative results are tabulated. S.M.R.

8-12-[illegible]

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVA, A.S.

[Individual protection against occupational eye injuries] Individual'naia profilaktika professional'nykh porazhenii glaz. Moskva, Medgiz, 1954. 146 p. (MLRA 8:9)

(EYE--CARE AND HYGIENE)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

LETAVET, A.A.; RYAZANOV, V.A.; KHOTSYANOV, L.K.; MOROZOV, A.L.; MARTSINKOVSKIY, B.I.; MITEREV, G.A.; IVANOV, V.A.; IZRAEL'SON, Z.I.; ORLOV, N.I.; CHERKINSKIY, S.N.; BERYUSHOV, K.G.; KIBAL'CHICH, I.A.; TARASENKO, N.Yu.; DRAGICHINA, Ye.A.; VORONTSOVA, Ye.I.; SANINA, Yu.P.; KREMNEVA, S.N.; KULAGINA, N.K.; SHAFRANOVA, A.S.; TIKHAYA, M.G.; MOLOKANOV, K.P.; RAZUMOV, N.P.; KURLYANDSKAYA, E.B.; KHALIZOVA, O.D.

In memory of Professor N.S.Pravdin. Gig.i san. no.4:61 Ap '54. (MLRA 7:4)

(Pravdin, Nikolai Sergeevich,)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRONOVA, A.S.

USSR/Medicine - Clothing hygiene

Card 1/1 Pub. 77 - 8/20

Authors : Shafronova, A. S., Dr. Med. Sci., Prof.

Title : The hygiene of clothing and footwear

Periodical : Nauka i zhizn' 21/12, 20-22, Dec 1954

Abstract : The function of clothing is stated as a means for adapting one's body to the surrounding medium and the necessity of its being porous and light weight is stressed. The parts of clothing are taken up separately, such as underwear, dresses, outer garments and shoes. Illustrations.

Institution : ...

Submitted : ...

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVA, A.S.

AID P - 1503

Subject : USSR/Medicine

Card 1/1 Pub. 37 - 18/19

Author : Prikhod'ko, P. T.

Title : Prof. A. S. Shafranova. Individual Prophylaxis of Professional Eye Diseases. Moscow, Medgiz, 1954. 147 pp. Series: Library of the Sanitary Inspector (Book Review)

Periodical : Gig. i san., 2, 60-61, F 1955

Abstract : A review of the above book

Institution: None

Submitted : No date

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

In memory of Anna Semenovna Shafranova, d. 1963. Gig. i san. 28 no.6:
122 Je'63 (MIRA 17:4)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVA, L.D.

Operation of the soda recovery system. Bum.prom. 37 no.3:24-25 Mr '62. (MIRA 15:3)

1. Segezhskiy kombinat.
(Segezha—Woodpulp)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVA, M. G.

USSR/Nuclear Physics - Elementary Particles C-3

Abst Journal: Referat Zhur-Fizika, No. 12, 1956, 33920

Author : Dul'kova, L. S., Romanova, T. A., Sokolova, I. B., Sukhov, L. V., Tolstov, K. D., Shafranova, M. G.

Institution : None

Title: Interaction of 300-Mev π^--Mesons with Protons, Deuterons, and Nuclei of a Photographic Emulsion

Original Periodical : Dokl. AN SSSR, 1956, 107, No.1, 43-46

Abstract : AIKFI plates of the "p" type, enriched with H or loaded with D by impregnating in a 30% water solution of lithium acetate, were radiated in the phasotron of the Institute for Nuclear Problems, Academy of Sciences USSr by π^--messons of 225 ± 8 Mev. The ^{11} content reached $6 - 10^{22}$, and the D content reached 3.10^{22} per cm^3. The presence of Li made it possible to control the evenness of the loading. The increased value of

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

Abst Journal: Referat Zhur-Fizika, No. 12, 1956, 33920

pH of the lithium acetate contributed to a reduction in regression. The radiation was carried out up to a density of 10^4 to 10^5 tracks per cm^2. The examination was made by areas and along the track. The average free path for all the processes, including scattering by an angle greater than 20^0 was $88 \pm 5\%$ of the geometric. The principal contributions are made by processes of inelastic scattering and absorption with star formation.

The area inspection method was used to trace 1,240 stars. A Distribution was made by the number of rays. Fifty cases of scattering by H and 11 cases of scattering by D were found ; the elastic-scattering sections were respectively $\sigma_H = 14 \pm 3.6$ millibarn and $\sigma_D = 15 \pm 5.5$ millibarns. The scattering by D is strongly anisotropic. A histogram is given for the differential scattering of π^--mesons by H in a center of gravity system. A discrepancy is noticed from the theoretical curve for small scattering angles.

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

"Scattering of 300 Mev Positive and Negative π-Mesons by Hydrogen," by L. S. Dul'kova, I. B. Sokolova, and M. G. Shafranova, Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR, Doklady Akademii Nauk SSSR, Vol 111, No 5, 1956, pp 992-995

This article describes the results of a study of the scattering of positive and negative pions by hydrogen. Measurements were made on the synchrocyclotron of the Institute of Nuclear Problems, Academy of Sciences USSR.

The integral cross sections found were 11 $\pm$ 2 mb for π^--mesons and 63 $\pm$ 10 mb for π^+-mesons. On the basis of the angular distribution found for the scattered π-mesons, the parameters a, b, c are computed for the angular distribution function

$$f(\theta) = a + b \cos(\theta) + c \cos^2(\theta).$$

The values for the scattering phases were calculated and are plotted against meson momentum.

SUM. 1305

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

AUTHORS: Bogachev, N. P., Van Shu-Fen', Gromenitskiy, I. M., Kirelleva, L. F., Lebedev, R. M., Lyubimov, V. B., Markov, P. K., Merekov, Yu. P., Podgoretskiy, M. I., Sidorov, V. M., Tolstov, K. D., Shafranova, M. G.

TITLE: The Interaction of 9 Bev Protons With Nuclei in Photo-Emulsion (Vzaimodeystviye protonov s energiyey 9 Bev s yadrami foto-emul'sii)

PERIODICAL: Atomnaya Energiya, 1958, Vol. 4, Nr 3, pp. 281 - 284 (USSR,)

ABSTRACT : The photoemulsion НИКФИ-Р with a layer of about 450 μ was irradiated with protons within and out of the vacuum chamber of the 9 Bev synchrophasotron. The mean range of 9 Bev protons for an interaction is 34, 7 ± 1,5 cm. (The scattering for angles below 5° was not taken into account).
258 cases of a nuclear interaction were observed. The mean number of fast particles n generated in a process of interaction amounts to 3,4 ± 0,7. The angular distribution of these particles shows a clearly prefered forward motion. The mean number of black and grey traces Nn - the recoil nuclei not being considered - is 8,3 ± 0,5.
From 249 found stars 18 can be considered to constitute an interaction of the initial protons with "frees" or "quasi-free" protons.
13 stars can be considered to represented an interaction between protons and "quasifree" neutrons. All of them have an odd number of traces, and in the point of formations of the

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

star p-traces can be observed. The mean number of fast particles in these 13 star traces is 3,1 $\pm$ 0,3. There are 5 figures, 1 table, and 7 references, 1 of which is Slavic.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

21 (0)

AUTHORS: Dul'kova, L. S., Sokolova, I. B., Shafranova, M. G.

SOV/56-35-2-1/60

TITLE: The Elastic Scattering of π-Mesons With Energies of 300 MeV on Deuterons (Uprugoye rasseyaniye π-mezonov s energiyey 300 MeV na deytrone)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 2, pp 313-315 (USSR)

ABSTRACT: In the present paper investigations of the elastic scattering of π^+- and π^--mesons on deuterium carried out by means of photographic plates are described. Very little information concerning these scattering experiments has hitherto been published; all there is are the papers mentioned in references 1 and 2 (meson energies of 85 and 145 MeV). The authoresses operated with the following energies: π^+: (300 ± 15) MeV π^-: (295 ± 10) MeV. The investigations were carried out with nuclear emulsion plates NIKFI, type "P". The deuterons were brought on to the plate in form of $CH_3COOLi \cdot 2H_2O$, where 97% of the H-atoms were replaced by D.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

Density: $2,2 \cdot 10^{22}$ D-nuclei/cm^3.
Results obtained by analysis:
286 cases of $\pi^+ - p$ scattering
104 " " $\pi^+ - d$ "
203 " " $\pi^- - p$ "
105 " " $\pi^- - d$ "
Integral scattering cross section in the interval of 15 - 170°:
$\sigma(\pi^+ + d \rightarrow \pi^+ + d) = (21 \pm 6)$mb; $\sigma(\pi^- + d \rightarrow \pi^- + d) = (14 \pm 4)$mb
In 12 cases an absorption of π^+-mesons took place in the deuterium;
cross section:

$$\sigma(\pi^+ + d \rightarrow p + p) = (2,4 \pm 0,9)\text{mb}$$

In conclusion, Professor I. M. Frank and I. Ya. Barit are thanked for their assistance, and G. M. Bagradov for discussing the problem. There are 2 figures and 8 references, 3 of which are Soviet.

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

The Elastic Scattering of π-Mesons With Energies of 300 MeV on Deuterons SOV/56-35-2-1/60

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

SUBMITTED: February 8, 1958

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVA, M.G.

21 (8)

AUTHORS: Barashenkov, V. S., Belyakov, V. A., SOV/89-7-4-12/28
Van Shu-fen', Glagolev, V. V., Dolkhazhav, N., Kirillova, L. F., Lebedev, R. M., Mal'tsev, V. M., Markov, P. K., Tolstov, K. D., Tsyganov, E. N., Shafranova, M. G., Yao Ch'ing-hsieh

TITLE: The Interaction of Fast Nucleons with Nuclei of the Photoemulsion NIKFI-R

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 4, pp 376-377 (USSR)

ABSTRACT: The present paper deals with the interaction between 9 Bev-protons, which were accelerated in the beam of the synchrophasotron of the Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research), and the nuclei of a photoemulsion of the NIKFI-R type. The results of these measurements are shown by a table. On the basis of the data thus found it is possible to draw several conclusions as to the mechanism of the interaction between a fast proton and a nucleus. If the primary nucleon-nucleus collision is an interaction between nucleon and channel, the velocity of the center of mass in an interaction of silver and bromine with the channel will be considerably less than in an interaction with light nuclei. Therefore, also the number of s-particles

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must be considerably greater. In the experiment, the numbers of s-particles for light and heavy nuclei are, however, nearly the same. This is explainable on the basis of the cascade mechanism of interaction, in which the energy of the s-particles decreases rapidly in cascade collisions. The multiplicity of the particles produced decreases simultaneously. In the case of the greater number of g-particles, nucleons are concerned, which may be explained by the cascade mechanism of nucleon - nucleus interaction. Also the agreement between the transversal momentum p_{g+p} for g-protons originating from interactions with light and heavy nuclei points in the direction of the interaction cascade mechanism. Besides, a search was made for strange particles by employing the method of investigating according to areas. The cross section of the production of k^+-particles with an energy of $E \leqslant 140$ Mev in a medium-weight nucleus of the photoemulsion amounts to $(5 \pm 2)10^{-27}$ cm^2. Besides, the amount of the production cross section, the wide angular distribution of the k-mesons, as well as other facts indicate that a noticeable fraction of

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slow strange particles is produced in an intranuclear cascade process. Furthermore, the medium-weight energy losses of a fast nucleon are evaluated in the case of a single nucleon-nucleon collision. A 9Bev-proton gives up an average of (5.1 ± 0.8) Bev to a medium-weight nucleus of the photoemulsion, which amounts to (60 ± 10) % of its initial energy. 4.05 Bev are used for the production of pions, and 1.05 Bev are transferred to the nucleons of the nucleus. As a proton in an medium-weight nucleus undergoes approximately 2 collisions, the proton, in one single nucleon-nucleon collision, loses $\Delta E = 35 \pm 10$ % of its initial energy. By means of other measurements of the pion energy spectrum carried out independently of the present paper in a nucleon-nucleus collision $\Delta E = 40 \pm 10$ % is obtained. The statistical theory of multiple production furnishes $\Delta E = (40 - 50)$ %. The authors thank G. Beznogikh, V. Vaksina, Z. Kuznetsova, and N. Metkina for their help in the measurements, and L. Popova for his assistance in analyzing measuring results. There are 1 table and 1 reference.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVA, M.G.

21(7) SOV/56-37-3-4/62

AUTHORS: Zhdanov, G. B., Markov, P. K., Strel'tsov, V. N., Tret'yakova, M. I., Chang F'u-ying, Shafranova, M. G.

TITLE: Secondary Stars Occurring in the Interaction of Protons With Energies of 8.7 Bev With Photographic Emulsion Nuclei

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 3(9), pp 611 - 615 (USSR)

ABSTRACT: In collisions between high energy nucleons and nucleons or nuclei the investigation of the energy distribution between the secondary nucleons and the pions is of special interest. Grigorov (Ref 1) found that at primary energies of between 3 and 40 Bev up to 70% of this energy is transferred. Belyakov et al (Ref 2) and Bayatyan et al (Ref 3) investigated the interaction between 9 Bev protons and photoemulsion nuclei, and determined the energy carried away by fast pions as amounting to 20-40% and those carried away by a fast nucleon as (40±20)%. It was the aim of the present paper to evaluate the energy of the fast nucleons and pions produced by the interaction of 8.7 Bev protons with photographic emulsion nuclei. An emulsion

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pile (NIKFI-R) consisting of 100 layers was irradiated on the synchrocyclotron with 8.7 Bev protons. Such stars are described as secondary, as show no track of a fast particle with an angle between 178 and 180° (with respect to the track of the primary protons) in the emulsion plane. The following results were obtained by these investigations: 1) 0.68±0.07 fast neutrons ($E_n > 500$ Mev) were found per star; their average energy was about (3.5±0.5)Bev. 2) On the assumption that the numbers of fast protons and neutrons (referred to a star) and their average energy are equal, (55±9)% of the energy of primary particles is carried away by fast nucleons. 3) The average number of fast pions ($E_\pi > 80$ Mev), including the neutral pions, amounts per interaction to 3.6±0.3. Their average total energy is (0.8±0.2)Bev. 4) An analysis of the angular distributions of the tertiary charged particles in secondary stars indicates that among the secondary particles flying away under an angle $\leq 10°$ (to the direction of the primary protons) there are about 80% nucleons. The angular distribution for neutrons and fast particles is shown by figure 3. The authors thank M. Ya. Danysh,

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M. I. Podgoretskiy and I. L. Rozental' for discussions. There are 3 figures, 1 table, and 5 references, 3 of which are Soviet.

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

SUBMITTED: March 23, 1959

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

LYUBIMOV, V.B.; MARKOV, P.K.; TSYGANOV, E.N.; CHZHEN PU-IN [Cheng P'u-ying]
SHAFRANOVA, M.G.

Elastic scattering of a proton on a proton at an energy of 8.5 BeV. Zhur.eksp.i teor.fiz. 37 no.4:910-916 O '59. (MIRA 13:5)

1. Ob"yedinennyy institut yadernykh issledovaniy.
(Protons--Scattering)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

83583
S/056/60/038/005/016/050
B006/B070

24.6600

AUTHORS: Markov, P. K., Tsyganov, E. N., Shafranova, M. G., Shakhbazyan, B. A.

TITLE: Investigation of Elastic Proton-Proton Scattering for an Energy of 8.5 Bev

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 5, pp. 1471-1475

TEXT: The authors studied elastic proton-proton scattering by means of a chamber ($10 \cdot 10 \cdot 2$ cm^3) consisting of emulsion layers of the type НИКФИ -БР (NIKFI-BR) (400μ). The 8.5 Bev protons were obtained from the proton synchrotron of the OIYaI. The proton beam was incident on the emulsion surface perpendicularly. The emulsion contained $(2.90 \pm 0.06) \cdot 10^{22}$ hydrogen atoms per cm^3. An immersion objective of magnifying power 630 was used for evaluation. In the central part of the layer ($2 \cdot 2$ cm^2), the flux density was $(1.97 \pm 0.05) \cdot 10^5$ particles/cm^2. 3.35 cm^3 of the emulsion were studied in all. For the (double) evaluation, those two-pronged stars were selected which indicated elastic pp-scattering. Their

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

83583

Investigation of Elastic Proton-Proton Scattering for an Energy of 8.5 Bev

S/056/60/038/005/016/050
B006/B070

number was 799. According to the range of the slow proton, they were divided into three groups : 1) $10\mu \leq R < 100\mu$; 2) $100\mu \leq R < 20{,}000\mu$; and 3) $R \geq 20{,}000\mu$. The tracks of the first two groups were practically black on account of the high sensitivity of the emulsion. The efficiency of twofold evaluation for the different groups was (85±3)%, (92.5±0.8)%, and (78±5)%. 145 events of elastic proton scattering on free hydrogen were selected according to criteria discussed here. The results of the analyses of these stars are shown in Figs. 1-3. Fig. 1 shows the number N of observed events as a function of $|\Delta\psi|$. $\Delta\psi$ is the difference between the measured emission angle of the recoil proton and the angle that would correspond to its path according to the kinematics of elastic scattering. Fig. 2 shows N as a function of $\Gamma = |\gamma / \Delta\gamma|$, where γ is the non-coplanarity angle, and $\Delta\gamma$ the error in its measurement. Fig. 3 shows N as a function of $|\Delta\psi|$. Here, N denotes those cases which were selected according to the first two criteria ($R - \psi$ relation and coplanarity); $\Delta\psi$ is the difference between the angle of the scattered proton and the angle of the path of the recoil proton according to the kinematics of elastic scattering. The elastic scattering cross section was found to be $\sigma_{el} = (8.6 \pm 0.8)$ mb after various corrections had been made. Fig. 4 shows the histograms of

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83583

Investigation of Elastic Proton-Proton Scattering for an Energy of 8.5 Bev

S/056/60/038/005/016/050
B006/B070

the reduced differential pp-scattering cross sections in the center-of-mass system. The theoretical function $d\sigma/d\Omega = f(\psi)$ obtained according to the model of a purely absorbing disk (radius of the disk: $0.94 \cdot 10^{-13}$cm), does not represent the experimental results. Nor can this be achieved with other models of purely absorbing protons. The model of a homogeneous, semi-permeable sphere (Curves 2 and 3) is best suited for the description of the experimental results if the refractive index is assumed to be different from unity. The model parameters that appear to be most suitable are given. The authors thank D. I. Blokhintsev, V. I. Veksler, M. Danysh, M. I. Podgoretskiy, I. Ya. Pomeranchuk, Ya. A. Smorodinskiy, and K. D. Tolstov for discussions; the assistants of the LVE (High-energy Laboratory) of the OIYaI for the evaluation of the emulsion; L. G. Popova, V. A. Nikitin, and V. A. Sviridov for their help and the operation of the electronic computer "Ural" ("Ural") of the LTF OIYaI; and T.F.Grabovskaya and O. A. Ignatenko for evaluations and measurements. B. A. Shakhbazyan is mentioned. There are 4 figures and 9 references: 4 Soviet and 5 US.

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

Card 3/4

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

83583

Investigation of Elastic Proton-Proton Scattering for an Energy of 8.5 Bev

S/056/60/038/005/016/050
B006/B070

SUBMITTED: December 31, 1959

Card 4/4

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

DO IN SEB; KIRILLOVA, L.F.; MARKOV, P.K.; POPOVA, L.G.; SILIN, I.N.; TSYGANOV, E.N.; SHAFRANOVA, M.G.; SHAKHBAZYAN, B.A.; YULDASHEV, A.A.

Proton-proton scattering at an energy of 8.5 Bev. Zhur. eksp. i teor. fiz. 41 no.6:1748-1756 D '61. (MIRA 15:1)

1. Ob"yedinennyy institut yadernykh issledovaniy. 2. Sotrudnik Fiziko-tekhnicheskogo instituta AN Uzbekskoy SSR (for Yuldashev).
(Protons--Scattering)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

AZIMOV, S.A.; DO IN SEB; KIRILLOVA, L.F.; KHABIBULLINA, E.M.; TSYGANOV, E.N.; SHAFRANOVA, M.G.; SHAKHBAZYAN, B.A.; YULDASHEV, A.A.

[Eleastic p-p scattering at an energy of 2.8 Bev] Uprugoe rasseianie protona na protone pri energii 2,8 Bev. Dubna, Ob"edinennyi institut iadernykh issledovanii, 1961. 11 p. (MIRA 14:11)

1. Fiziko-tekhnicheskiy institut AN Uzbekskoy SSR (for Azimov, Khabibullina).

(Protons--Scattering)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

DO IN SEB; KIRILLOVA, L.F.; MARKOV, P.K.; POPOVA, L.G.; SILIN, I.N.; TSYGANOV, E.N.; SHAFRANOVA, M.G.; SHAKHBAZYAN, B.A.; YULDASHEV, A.A.

[Proton-proton scattering at an energy of 8.5 Bev] Rasseyaniye protona na protone pri energii 8,5 Bev. Dubna, Ob"edinennyi in-t iadernykh issledovanii, 1961. 17 p. (MIRA 14:12)

1. Fiziko-tekhnicheskiy institut AN Uzbekskoy SSR (for Yuldashev).
(Protons—Scattering)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVA, M.G.

S/056/61/041/006/010/054
B108/B138

AUTHORS: To Ying Hsieh, Kirillova, L. F., Markov, P. K., Popova, L. G., Silin, I. N., Tsyganov, E. N., Shafranova, M. G., Shakhbazyan, B. A., Yuldashev, A. A.

TITLE: 8.5-Bev proton-proton scattering

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 6(12), 1961, 1748-1756

TEXT: Continuing previous work (V. B. Lyubimov et al. ZhETF, 37, 910, 1959; P. K. Markov et al. ZhETF, 38, 1471, 1960) the authors studied elastic proton-proton scattering at energies of 8.5 Bev, using photographic emulsions of the НИКФИ-БР (NIKFI-BR) type. The primary proton beam of $(2.01 \pm 0.05)\cdot 10^5$ particles/cm^2 (from the proton synchrotron of the Joint Institute of Nuclear Research) struck the emulsion perpendicularly. The emulsion contained $(2.90 \pm 0.06)\cdot 10^{22}$ hydrogen atoms per cm^3. 354 elastic scattering events (plus 145 of previous work) were found. The elastic scattering cross section was 8.74 ± 0.40 millibarns. Conclusions: (1) The mean square p-p interaction radius is

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S/056/61/041/006/010/054
B108/B138

8.5-Bev proton-proton scattering

$(1.15 \pm 0.05)\cdot 10^{-13}$ cm. (2) The departure of experimental from calculated results is three times the overall error. This is due to neglect of the dependence of scattering amplitude on proton spin states, and to neglect of its real part, both of which were confirmed by experiment. However, the real part does not exceed half of the imaginary part. The authors thank V. I. Veksler for his interest, and K. D. Tolstov for collaboration. There are 4 figures, 2 tables, and 11 references: 6 Soviet and 5 non-Soviet. The three most recent references to English-language publications read as follows: G. Von Dardel et al. Phys. Rev. Lett., 5, 333, 1960; A. Ashmore et al. Phys. Rev. Lett., 5, 576, 1960; Y. K. Lim et al. Suppl. Nuovo Cim., 15, 382, 1960.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research). Fiziko-tekhnicheskiy institut AN Uzbekskoy SSR (Physicotechnical Institute AS Uzbekskaya SSR) (A. A. Yuldashev)

SUBMITTED: June 21, 1961

Card 2/2

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVA, M.G.

4

S/056/62/042/002/020/055
B108/B104

AUTHORS: Azimov, S. A., To Ying Hsiehb, Kirillova, L. F., Khabibullina, E. M., Tsyganov, E. N., Shafranova, M. G., Shakhbazyan, B. A., Yuldashev, A. A.

TITLE: Elastic proton-proton scattering at 2.8 Bev

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 2, 1962, 430 - 434

TEXT: Elastic scattering of 2.8-Bev protons from the OIYal (see Association entry) proton synchrotron from protons was studied with the aid of 400μ thick НИКФИ-БР (NIKFI-BR) photoemulsions. 492 elastic scattering events were recorded. The differential cross section for elastic scattering in the range between 2.5 and 20.5° was 10 - 10.2 mb. The experimental data do not agree with the assumption on small spin interaction and small real part of the phase shifts. It was assumed that the singlet and the triplet nuclear force potentials are different: $V_s = -(u + iw)e^{-\gamma^2 r^2}$, $V_t = \kappa V_s$. The calculations made with both the M matrix and the optical model considering

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Coulomb interaction showed that different total cross sections have to be allowed for in the singlet and triplet states. The mean square proton-proton interaction radius is 1.06 ± 0.10 f. With $\kappa < 1$, the following results for the potential were found to satisfy the experimental data: κ = 0.18 ± 0.04, u = 4.1 ± 42.8 Mev, w = 333.4 ± 112.8 Mev. The authors thank V. I. Veksler for discussions and I. N. Silin for his work at the M-20(M-20) electronic computer. There are 2 figures, 1 table, and 8 references: 3 Soviet and 5 non-Soviet. The four most recent references to English-language publications read as follows: M. J. Longo et al. Phys. Rev. Lett., 3, 568, 1959; W. M. Preston et al. Phys. Rev., 118, 579, 1960; G. Smith et al. Proc. 1960 Ann. Intern. conf. of high energy physics at Rochester, Publ. Univ. Rochester, 1961, p. 203; B. Cork et al. Phys. Rev., 107, 856, 1957.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research). Fiziko-tekhnicheskiy institut Akademii nauk Uzbekskoy SSR (Physicotechnical Institute of the Academy of Sciences Uzbekskaya SSR)

SUBMITTED: September 26, 1961

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVA, M.G.

KIRILLOVA, L.F., NIKITIN, V.A., NOMOFILOV, A.A., SVIRIDOV, V.A., STRUNOV, L.N., TSIGANOV, Ye. N., and SHAFRANOVA, M.G.

"Elastic Proton-Proton Scattering at 6 and 10 Gev"

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

Joint Inst. for Nuclear Research
Laboratory of High Energies, Dubna, 1962

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

KORBEL, Z.F.; SHAFRANOVA, M.G.; ZLATEVA, A.I.; MARKOV, P.K.; TODOROV, T.S.; CHERNEV, Kh.M.; DALKHAZHAV, N.; TUVDENDORZH,D.; ZRELOVA, N.N., tekhn. red.

[Elastic scattering of π^--mesons on protons at a momentum of 4 Gev./c] Uprugoe rasseianie π^--mezonov na protonakh pri impul'se 4 Gev/s. Dubna, Ob"edinennyi in-t iadernykh issledovanii, 1963. 7 p. (MIRA 17:1)

1. Institut fiziki i khimii Mongol'skoy Akademii nauk, Ulan-Bator (for Dalkhazhav, Tuvdendorzh).

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

NIKITIN, V.A.; NOMOFILOV, A.A.; SVIRIDOV, V.A.; STRUNOV, L.N.; SHAFRANOVA, M.G.

Use of a thin $(CH_2)_n$ film as an internal proton-synchrotron target in studying elastic p - p-scattering. Prib. i tekh. eksp. 8 no.6:18-22 N-D '63. (MIRA 17:6)

1. Ob"yedinennyy institut yadernykh issledovaniy.

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

NIKITIN, V.A.; SVIRIDOV, V.A.; STRUNOV, L.N.; SHAFRANOVA, M.G.

Possibility for studying interference between Coulomb scattering and nuclear scattering in elastic collisions of particles with energies above 10^{10} ev. Zhur. eksp. i teor. fiz. 46 no.5: 1608-1611 My '64. (MIRA 17:6)

1. Ob"yedinennyy institut yadernykh issledovaniy.

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

L 10234-63 BDS/EWT(m)--AFFTC/ASD--IJP(C)

ACCESSION NR: AP3000039 S/0056/63/044/005/1487/1492

54
52

AUTHOR: Do In Seb; Kirillova, L. F.; Shafranova, M. G.

TITLE: Elastic scattering of 8.35 BeV protons on protons.

19

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 44, no. 5, 1963, 1487-1492

TOPIC TAGS: proton-proton elastic scattering, large angles, high energy, water-emulsion techniques, scanning efficiency

ABSTRACT: Using a water-loaded emulsion chamber and a scanning method that permits the accumulation of reliable data at large scattering angles, more exact differential cross sections are obtained for elastic pp scattering at 8.35 BeV. This work is a continuation of earlier experiments aimed at increasing the statistical accuracy in the region of small scattering angles (less than 8.5° in the center of mass) and at obtaining more reliable data at large angles (more than 8.5° in the c.m.s.). It is found that the cross section is larger in the large-angle region than had been previously thought. The data are analyzed on the basis of the Regge-pole ideas and are compared with

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ACCESSION NR: AP3000039

other experiments. The total cross section for elastic pp scattering is found to be 10.8 plus or minus 0.8 millibarns, and the rms interaction radius is 1.07 plus or minus 0.08 Fermi. It is pointed out that in view of the observed systematic undervaluation of the differential cross section in the region of large scattering angles, connected with the overvaluation of the scanning efficiency, the experimental data obtained with emulsions should be approached with caution. Orig. art. has: 4 formulas, 2 figures, and 1 table.

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

SUBMITTED: 11Dec62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: PH NR REF SOV: 007 OTHER: 011

Card 2/2

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

KIRILLOVA, L.F.; NIKITIN, V.A.; NOMOFILOV, A.A.; SVIRIDOV, V.A.; STRUNOV, L.N.; SHAFRANOVA, M.G.

Elastic scattering of protons at small angles at energies of 6 and 10 Gev. Zhur. eksp. i teor. fiz. 45 no.4:1261-1266 O '63. (MIRA 16:11)

1. Ob"yedinennyy institut yadernykh issledovaniy.

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

ACCESSION NR: AP4037572 S/0056/64/046/005/1608/1611

AUTHORS: Nikitin, V. A.; Sviridov, V. A.; Strunov, L. N.; Shafranova, M. G.

TITLE: On the possibility of studying interference between Coulomb and nuclear scattering during the collisions of particles with energies above 10 GeV

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 5, 1964, 1608-1611

TOPIC TAGS: particle scattering, proton scattering, elastic scattering, elastic recoil angle, cloud chamber, nuclear cross section, Coulomb scattering, nuclear scattering

ABSTRACT: It is shown first that at high energies the elastic scattering of particles by protons cannot be investigated by recording the scattered particle, and that the recoil proton must be recorded. Two ways are proposed for eliminating the difficulties connected with the

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ACCESSION NR: AP4037572

fact that at small angles the recoil proton has a low energy, and that scattering by the target material distorts strongly the value of its velocity and direction, so that the elastic cases cannot be discriminated by their kinematics. The two methods are: 1. Use of multiple passages of particles through a thin target. 2. Investigation of elastic scattering at small angles by means of extracted beams. The experiments and methodological results involved with the first method have been described elsewhere (International Conference on High Energy Physics at CERN, 1962, p. 582; preprint OIYaI, No. 1084 and O-1329, Dubna, 1962 and 1963). The second method consists of passing a well-shaped beam of pions (10^4 per pulse) through a cloud chamber filled with hydrogen. The chamber operates in a mode not sensitive to relativistic pions but to recoil protons with momenta 30--150 MeV/c. Both methods have no upper energy limit, and can be used to investigate elastic scattering in the region of low momentum transfer in which the Coulomb scattering cross section is comparable with the nuclear cross section. In particular, to make

Card 2/3

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ACCESSION NR: AP4037572

it possible to obtain information on the real part of the elastic scattering cross section by investigating the interference between Coulomb and nuclear scattering. "We are pleased to thank V. I. Veksler and I. V. Chuvilo for continuous interest in the experiments." Orig. art. has: 1 figure and 4 formulas.

ASSOCIATION: Ob"yedinenny*y institut yaderny*kh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: 13Dec63 DATE ACQ: 09Jun64 ENCL: 00

SUB CODE: NP NR REF SOV: 003 OTHER: 001

Card 3/3

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

DALKHAZHAV, N.; ZLATEVA, A.Y.; KORBEL, Z.F.; MARKOV, P.K.; TODOROV, T.S.; TUVDENDORZH, D.; CHERNEV, Kh.M.; SHAFRANOVA, M.G.

Elastic scattering of 4Gev./c mesons by protons. Zhur. eksp. i teor. fiz. 47 no.1:12-15 Jl '64. (MIRA 17:9)

1. Ob"yedinennyy institut yadernykh issledovaniy. 2. Sotrudniki Instituta fiziki i khimii Mongol'skoy Akademii nauk, Ulan-Bator (for Dalkhazhav, Tuvdendorzh). 3. Sotrudniki Fizicheskogo instituta i atomnoy nauchno-issledovatel'skoy laboratorii Bolgarskoy Akademii nauk, Sofiya. (for Zlateva, Markov, Todorov, Chernev).

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

KIRILLOVA, L.F.; NIKITIN, V.A.; PANTUYEV, V.S.; SVIRIDOV, V.A.; STRUNOV, L.N.; KHACHATURYAN, M.N.; KHRISTOV, L.G.; SHAFRANOVA, M.G.; KORBEL, Z.; ROB, L.; DAMYANOV, S.; ZLATEVA, A.; ZLATANOV, Z.; YORDANOV, V. [Iordanov, V.]; KANAZIRSKI, M.; MARKOV, P.; TODOROV, T.; CHERNEV, Kh.; DALKHAZHAV, N.; TUVDENDORZH, D.

Elastic pp and pd-scattering at small angles in the energy range 2 - 10 Bev. IAd. fiz. 1 no.3:533-539 Mr '65. (MIRA 18:5)

1. Ob"yedinennyy institut yadernykh issledovaniy. 2. Vyssheye tekhnicheskoye uchilishche, Praga (for Korbel, Rob). 3. Fizicheskiy institut Bolgarskoy Akademii nauk, Sofiya (for Damyanov, Zlateva, Zlatanov, Yordanov, Kanazirski, Markov, Todorov, Chernev). 4. Institut khimii i fiziki, Ulan-Bator, Mongol'skaya Narodnaya Respublika (for Dalkhazhav, Tuvdendorzh).

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

(10)

L 22122-66 EWT(1)

ACC NR: AP6004922 SOURCE CODE: UR/0056/66/050/001/0076/0077

38
B

AUTHOR: Kirillova, L. F.; Nikitin, V. A.; Sviridov, V. A.; Strunov, L. N.; Shafranova, M. G.; Korbel, Z.; Rob, L.; Zlateva, A.; Markov, P. K.; Todorov, T.; Khristov, L.; Chernev, Kh.; Dalkhazhav, N.; Tuvdendorzh, D.

ORG: /Kirillova; Nikitin; Sviridov; Strunov; Shafranova/ Joint Institute of Nuclear Research, Dubna (Ob"yedinennyy institut yadernykh issledovaniy); /Korbel; Rob/ Czechoslovakian Higher Technical School, Prague (Chekhoslovatskoye Vyssheye tekhnicheskoye uchilishche); /Zlateva; Markov; Todorov; Khristov; Chernev/ Physics Institute, Bulgarian Academy of Sciences, Sofia (Fizicheskiy institut Bolgarskoy Akademii nauk); /Dalkhazhav; Tuvdendorzh/ Institute of Chemistry and Physics, Mongolian Academy of Sciences, Ulan-Bator (Institut khimii i fiziki Mongol'skoy Akademii nauk)

TITLE: Real part of the pp elastic scattering amplitude at 2, 4, 6, 8, and 10 Gev

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 1, 1966, 76-77

TOPIC TAGS: proton scattering, elastic scattering, scattering amplitude, differential cross section, nuclear scattering

Card 1/2

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

L 22122-66

ACC NR: AP6004922

ABSTRACT: This is a continuation of earlier work by the authors (Phys. Lett. v. 13, 93, 1964) in which they present results of the measurements of the real part of the nuclear elastic scattering amplitude for an energy of 4 Gev, and more precise data for energies 2, 6, 8, and 10 Gev, taking into account the relativistic corrections. The experimental technique was described elsewhere (PTE no. 6, 18, 1963). The differential cross section was measured in the interval $0.003 < |t| < 0.2$ $(Gev/c)^2$ (t = momentum transfer squared). The analysis of the obtained data as well as those reported by others was based on the Bethe formula (Ann. of Phys. v. 3, 190, 1958) with allowance for radiative corrections. The results agree well with the theoretical curve proposed by Soding (Phys. Lett. v. 8, 286, 1963), up to an energy of 20 Gev, above which some discrepancy appears. Orig. art. has: 1 figure and 2 formulas.

SUB CODE: 20/ SUBM DATE: 25Aug65/ ORIG REF: 001/ OTH REF: 008

Card 2/2

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

GOL'DENBERG, M.A., professor; SHAFRANOVA, M.S.

Addiction to promedol. Sov.med. 20 no.11:75-77 N '56. (MLRA 10:1)

1. Iz kafedry psikhiatrii (zav. - prof. M.A.Gol'denberg) Novosibirskogo meditsinskogo inst. (dir. - prof. G.D.Zalesskiy) i 14-y psikhonevrologicheskoy bol'nitsy (glavnyy vrach Ye.A.Beresneva)

(ANALGESICS, addction
4-phenyl-4-propoxy-1,2,5-trimethylpiperidine HCl, habit-forming eff.
(DRUG ADDICTION
same)

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVA, M. S., vrach

Functional state of the liver in acrichine "psychosis" in animals. Trudy Novosib. gos. med. inst. 37:184-188 '61. (MIRA 15:6)

1. 14-ya psikhonevrologicheskaya bol'nitsa (glavnyy vrach Odoyevskaya, N. K.) Novosibirskogo gosudarstvennogo meditsinskogo instituta.

(LIVER) (QUINACRINE—TOXICOLOGY) (PSYCHOSES)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVA, M.S. (Novosibirsk)

Psychopathology of recurrent delirium tremens. Trudy Gos. nauch. issl. inst. psikh. 38:152-157 '63. (MIRA 16:11)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

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SHAFRANOVA, V. P.: Master Biol Sci (diss) -- "The blood supply and the angio-architectonics of striopallidum (Experimental-morphological data)". Moscow, 1958. 13 pp (Inst of Neurology Acad Med Sci USSR), 200 copies (KL, No 4, 1959, 125)

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9"

"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

KLOSOVSKIY, B. N.; SHAFRANOVA, V. P.

Reaction of the arteries and veins of the surface of the brain to experimental embolism. Nauch. trudy Inst. nevr. AMN SSSR no.1: 413-421 '60. (MIRA 15:7)

1. Institut nevrologii AMN SSSR.

(EMBOLISM) (BRAIN--BLOOD SUPPLY)

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

KLOSOVSKIY, B.N.; SHAFRANOVA, V.P. (Moskva)

Characteristics of th- capillary blood supply of the brain in man. Vop.neirokhir. no.4:54-56 '62. (MIRA 15:9)
(BRAIN--BLOOD SUPPLY) (CAPILLARIES)

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

GANNUSHKINA, I.V., kand. med. nauk; SHAFRANOVA, V.P., kand. biolog. nauk
M skva)

Experimental dai on the collateral circulation in the surface vessels of the b ain. Vop. neirokhir. 27 no.5:13-18 S-O '63. (MIRA 17:5)

1. Laboratoriya eksperimental'noy patofiziologii mozga (zav. - prof. B.N. Klosovskiy) Instituta nevrologii (dir. - prof. N.V. Konovalov) AMN SSSR.

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SHAFRANOVA, V. P.; PALENOVA, N. G.

Some data obtained through a new method of injection into the arteries and veins of animal brains. Nauch. trudy Inst. nevr. AMN SSSR no.1:395-400 '60. (MIRA 15:7)

1. Institut nevrologii AMN SSSR i Institut pediatrii AMN SSSR.

(BRAIN--BLOOD SUPPLY)
(INJECTIONS, ANATOMICAL)

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KLOSOVSKIY, B.N.; SHAFRANOVA, V.P.

Blood circulation of the brain following asphyxia in adult animals. Nauch. inform. Otd. nauch. med. inform. AMN SSSR no.1:60 '61 (MIRA 16:11)

1. Institut nevrologii (direktor - deystvitel'nyy chlen AMN SSSR prof. n.v. Konovalov)AMN SSSR, Moskva.

*

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1. SHAFRANOVICH, V. M.

2. USSR (600)

4. Tumors

7. Symptoms of damage of the optic nerves in fronto-basal arachnoid endotheliomas. Vop. klin. i eksp. oft. no. 1, 1952.

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

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

ROMANOV, A.V.; SHAFRANOVSKAYA, I.N.

Lightweight chafer. Tekst.prom. 19 no.1:95 Ja '59. (MIRA 12:1)

(Textile fabrics)

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVSKAYA, I.N., inzh.

New fabric "velotred". Tekst.prom. 20 no.10:91 O'60.
(Tire fabrics) (MIRA 13:11)

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVSKAYA, T.K.

From the history of the compass in China. Iz ist. nauki i tekh. v stran. Vost. no.1:56-63 '60. (MIRA 14:8)
(China--Compass)

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVSKAYA, T.K.

Trip to Peking of the physician Frants Elachich in 1753-1756 for the purpose of making additions to the Chinese collections of the "Kunstkamera" Museum. Iz ist.nauki i tekh.v stran.Vost. no.2: 126-131 '61. (MIRA 14:9)

(Leningrad--Art, Chinese)
(Russia--Relations (General) with China)
(China--Relations (General) with Russia)

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVSKAYA, Z. M.

Z. M. Shafranovskaya will defend her thesis "Analysis of Error in Telemetric Installations" for a degree of candidate of technical sciences on 20 June 1953; at the Institute of Automatics and Telemechanics., USSR ACAdemy of Sciences.

Vechernyaya Moskva No. 143, 20 June 1953, p.4

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

USSR/Processes and Equipment for Chemical Industries - Control and Measuring Devices. Automatic Regulation, K-2

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 63987

Author: Shafranovskaya, Z. M.

Institution: Scientific Research Institute of Thermal Instruments

Title: None

Original Periodical: Priborostroyeniye, 1956, No 4, 12-14

Abstract: Description of the underlying principles and the scope of application of ultrasonic instruments (I) for the out-of-contact measurement of various thermotechnical parameters (level, consumption, viscosity, density and temperature), which is of special importance under conditions of corrosive and explosive media. Depending on the properties of ultrasound utilized therein the thermomeasuring I are divided into the following groups: (1) I based upon the principle of ultrasound reflection; (2) I based on measurement of rate of propagation of sound depending on physical parameters of the medium; (3) I based on shifting

Card 1/2

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

USSR/Processes and Equipment for Chemical Industries - Control and Measuring Devices. Automatic Regulation, K-2

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 63987

Abstract: of sound oscillation by the moving medium. A detailed description of the scheme and the principal characteristics are presented of the ultrasonic discharge meter developed by NIITeplopribor which is based on the principle of phase alteration of ultrasonic oscillation by a moving medium. A block diagram of the I is shown. Range of discharge measurement is of 7,000 l/hour with a 3.75 cm diameter pipeline. Laboratory tests of the meter have shown that its error is within ±2% of the maximum reading value over the entire range. The meter can be used also for a determination of the density of the liquid flowing through the pipe.

Card 2/2

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVSKIY, A.K., kandidat tekhnicheskikh nauk; SHEMYAKIN, V.N., inzhener.

The fill-in method of straightening tracks. Vest.TSNII MPS 15 no.2:43-46 S '56. (MLRA 9:12)
(Railroads--Track)

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVSKIY, A.K., kand. tekhn. nauk

Mechanics of uneven settling of track. Vest. TSNII MPS no. 5:34-37 Jl '58. (MIRA 11:8)

(Railroads--Track)

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVSKIY, A.K., kand.tekhn.nauk

Using underpinnings for straightening track. Put' i put.khoz. no.1:31-32 Ja '59. (MIRA 12:2)
(Railroads--Track)

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVSKIY, A.K., kand.tekhn.nauk

Soil cement track substructure. Put' put.khoz. no.9:38-39 S '59. (MIRA 12:12)
(Ballast(Railroads)) (Soil cement)

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R001548520007-9

SHAFRANOVSKIY, A.K., kand. tekhn. nauk

Necessary degree of packing of the ballast layer in laying the track on a broken stone foundation. Vest. TSNII MPS 18 no.5:42-46 Ag '59. (MIRA 13:1)
(Ballast (Railroads))

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