"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B.

PA - 2005

AUTHOR: BIRGER,N.G., RIGOROV,N.L.G., GUSEVA,V.V., ŽDANOV,G.B.
SLAVATINSKIJ,S.A., STAŠKOV,G.M.

TITLE: Interaction between Particles of the Cosmic Radiation of the Energy 5.10^9-5.10^{10} eV and the Nuclei of Be-Atoms.

PERIODICAL: Zhurnal Eksperimental'noi i Teoret.Fiziki,1956, Vol 31, Nr 6, pp 971-981 (U.S.S.R.)
Reviewed: 3 / 1957
Received: 1 / 1957

ABSTRACT: This paper studies the production of mesons by particles of the cosmic radiation of more than 5.10^9 eV under conditions which resemble nucleon-nucleon collision as much as possible. For this purpose the authors arranged a WILSON chamber with a Be-plate of 9,8 g/cm^2 thickness in the magnetic field of an electro-magnet of the mean field strength 8500 Ørsted. This WILSON chamber was controlled by a system of counters. These measurements (Scientific Station PAMIR, height 3860 m) lasted a total of 950 hours and furnished about 5300 photographs. 31 photographs show electron nuclear showers with four and more particles and about 10 showers with less (2 or 3) secondary particles were observed. As the events detected by the measuring device amount to about 10% of all interaction acts between nucleons of $\geqslant 5.10^9$ eV and atomic nuclei, showers with few particles are likely to be formed in the case of many interaction acts in the case of the energies mentioned. In this case only the characteristics of those interaction acts are considered on the occasion of which at least four secondary particles are emitted. The corresponding data for these showers are

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Interaction between Particles of the Cosmic Radiation of the Energy 5.10^9-5.10^{10} eV and the Nuclei of Be-Atoms. PA - 2005

shown in a table. The energy of shower-forming particles is then discussed. In the present case interaction cannot be a nucleon-nucleon interaction; the reasons herefore are shown. Next, a condition for the interaction between two nucleons with the production of pions is indicated and specialized for particles with more than 5.10^9 eV. A method for the evaluation of the energy of the primary particle is described. Finally, the distribution of energy over the secondary particles and the angular distribution of particles in the center of mass system is investigated.

Conclusions: The angular distribution of the shower particles in the center of mass system of the two colliding nucleons is almost isotropic. The nucleons flying apart in the center of mass system are anisotropic and that above all in the direction of motion of the primary nucleon. At most 60% of the energy remains for the fastest nucleon. These conclusions can by no means be applied to all cases of interaction acts between nucleons of $E_0 \geqslant 5.10^9$ eV and Be-nuclei since the cases analyzed here are only an insignificant part of all interaction acts. Comparison between the energy share found in connection with the cases analyzed here and which is transferred to the pions, and other results indicates considerable fluctuations in the characteristics of interaction.

ASSOCIATION: Physical Institute "P.N.LEBEDEV" of the Academy of Sciences, USSR.

PRESENTED BY:

SUBMITTED:

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PHASE I BOOK EXPLOITATION 720

Zhdanov, Georgiy Borisovich

Luchi-razvedchiki (Explorer Rays) Moscow, Izd-vo TSK VLKSM "Molodaya gvardiya", 1957. 206 p. 50,000 copies printed.

Ed.: Aydinov, G.; Tech. Ed.: Yegorova, I.

PURPOSE: This book is intended for the young reader interested in nuclear science.

COVERAGE: The author gives a popular presentation of cosmic radiation and covers such fields as the composition of matter, the chemistry of the universe, radioactivity, and the atomic nucleus. There are no references and no personalities are mentioned.

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ZHDANOV, G.B.

USSR/Nuclear Physics - Cosmic Rays C-7

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 578

Author : Zhdanov, G.B., Khaydarov, A.A.

Inst : Scientific Research Institute "Nigrozoloto" of the Ministry of Nonferrous Metallurgy, USSR.

Title : Investigation of the Penetrating Component of Electron-Nuclear Showers by the Method of Delayed Coincidences with Hodoscope.

Orig Pub : Zh eksperim. i teor. fiziki, 1957, 32, No 4, 706-713

Abstract : Using a procedure described previously (Referat Zhur Fizika, 1957, 646), a study was made of the distribution by ranges of slow mesons produced by cosmic rays on nuclei of lead and carbon at effective energies on the order of 5 Bev and above. The authors consider certain peculiarities of the secondary interactions of the penetrating particles of electron-nuclear showers at the same energy values.

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B.

56-4-43/52

AUTHOR: GRAMENITSKIY, I.M., ZHDANOV, G.B., ZAMCHALOVA, E.A., SHCHERBAKOVA, M.N.

TITLE: Nuclear Interaction in a Photoemulsion at an Energy of 8.10^{13} eV. (Yaderneye vzaimodeystviye v fotoemulsii pri energii 8.10^{13} eV. Russian).

PERIODICAL: Zhurnal Eksperim. i Teoret. fiziki, 1957, Vol 32, Nr 4, pp 936-938 (U.S.S.R.)

ABSTRACT: In a stack of baseless 600 μ thick photoemulsion of the type ILFORD G5 (which in 1955 was exposed to light for 6 hours in the Po Valley (?) at a height of 25,5 km) a nuclear interaction of the type 1 + 37 α was discovered. The angular distribution of secondary charged particles was measured, on which occasion the small angles θ were calculated from the center of the axial symmetry of the narrow cone of the particle. In order to be able to obtain the angular distribution of the penetrating particles immediately in the center of mass system of the colliding particles, the order ln tg θ was chosen as the angular variable. The differential angular distribution obtained after averaging over three independent measurements is represented in a diagram. The necessary condition for the determinability of the primary energy (resulting) from the angular distribution is the symmetry of this distribution in the center of mass system with respect to the angle $\theta_0 = \pi/2$. An examination of the angular distribution found here by means of the so-called χ^2-test confirms the symmetry of this

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Nuclear Interaction in a Photoemulsion at an Energy of 8.10^{13} eV.

distribution with 90% accuracy.

Starting from the symmetry of the angular distribution, the authors obtained some, partly independent, possibilities of determination of the energy E_0 from the values of ln tg Θ for each pair of particles which are symmetric with respect to the angle $\Theta_{1/2}$.

Thus, they obtained for the energy of the primary particle in the center of mass system (E_0) and in the laboratory system the following values:

$$E_0 = (200^{+50}_{-40})Mc^2, \quad E_0 = (8^{+4}_{-3} \cdot 10^{13} \text{ eV per nucleon.}$$

With a total length of path of 110 cm of the secondary particles in the photoemulsion three cases of secondary interactions were observed; their characteristics are shown together in a table. A further indirect method for the approximation-like measurement of the transversal momenta of the shower particles is the determination of the energies and the directions of flight of those photons which occur on the occasion of the decay of the neutral pions. The values of the transversal momenta measured by means of two independent methods sufficiently agree with one another and furnish

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B.

AUTHOR: GRAMENITSKIY, I.M., ZHDANOV, G.B., TRET'YAKOVA, M.I. SHCHERBAKOVA, M.N. 56-7-50/66

TITLE: The Soft Component of an Electron Nuclear Shower at an Energy of $\sim 10^{14}$ eV. (Myagkaya komponenta elektronno - yadernogo livnya pri energii poryadka $\sim 10^{14}$ eV)

PERIODICAL: Zhurnal Eksperim. i Teoret.Fiziki, 1957, Vol 33, Nr 7, pp 282-283 (U.S.S.R.)

ABSTRACT: The spatial and energy distribution of electron pairs and the spatial distribution of electrons are shown in form of tables. The spatial distribution of the particles of the soft components in the direction which is vertical to the axis of the shower in a distance of $t = 2$ can be represented by the function: $f(r) \sim r^{-1,62 \pm 0,05}$, $r = t\vartheta$. (With 2 Tables, 1 Illustration and 2 Slavic References).

ASSOCIATION: Physical Institute "P.N.LEBEDEV" of the Academy of Sciences of the U.S.S.R.) (Fizicheskiy institut im. P.N.Lebedeva Akademii nauk SSSR)

PRESENTED BY:

SUBMITTED: 2.4.1957

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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

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Zhdanov, Georgiy Borisovich

Rays from the depth of space. Moscow, Foreign Languages Publishing House, 1958.

146 p. illus., diagrs.

Translation from the Russian: Luchi iz mirovykh glubin.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

21(7), 21(9)

AUTHOR: Zhdanov, G. B., Doctor of Physical and Mathematical Sciences

SOV/30-58-12-13/46

TITLE: Conferences on the Physics of High-Energy Processes (Soveshchaniya po fizike protsessov vysokoy energii)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, Nr 12, pp 57 - 58 (USSR)

ABSTRACT: The first of the two conferences was held in Liblice, near Prague, from June 2 to 6, 1958. It was called by the Czechoslovakian Academy of Sciences. It dealt primarily with the investigation of high-energy processes in cosmic rays and in accelerator processes. Apart from the Czechoslovakian scientists, 23 physicists from Hungary, the German Democratic Republic, Poland and the USSR took part. The second conference was held in the spa Balaton Vil'agos from September 17 to 20, 1958. It was convened by the Hungarian Physical Society and dealt primarily with the physics of elementary particles. At this conference reports were presented concerning scientific results obtained with a great synchrophasotron of the Ob"yedinennyy institut yadernykh issledovaniy (United Institute of Nuclear Research). At this conference a great number of lectures were held dealing with the theory of elementary

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particles. The author states, however, that the reports lacked a definite trend. An exception was the report by L. Janossy and assistants, dealing with research in the field of light emission fluctuations.

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

56-34-4-9/60

AUTHORS: Zhdanov, G. B., Zamchalova, Ye. A., Tret'yakova, M. I., Shcherbakova, M. N.

TITLE: The Nuclear Interaction in a Photoemulsion Accompanied by a High Energy Transfer to the Electron-Photon Component (Yadernoye vzaimodeystviye v fotoemul'sii, soprovozhdayushcheyesya vysokim vydeleniyem energii v elektronno-fotonnuyu komponentu)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34, Nr 4, pp. 843 - 848 (USSR)

ABSTRACT: This work exactly investigates a case of a nuclear interaction in which at a primary energy of 250 ± 250 BeV one of the neutral pions carries off an energy of ~ 200 BeV. The authors developed a nuclear interaction of the type 1 + 12 n with a very high proportion of the energy transferred to the electron-photon component in a stack of supportless photoemulsions Ilford G-5 which was exposed at a height of 25,5 km during the Italian expedition by S. F. Powell (1955). The microprojection of the shower and of the subsequent electron cascade are illustrated in a diagram. The angular distribution

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of the penetrating particles is almost isotropic in a system with the Lorentz factor $\gamma_c = 7$. An estimate of the primary energy gives the value

$$E_0 = 250 \begin{smallmatrix} +250 \\ -125 \end{smallmatrix} \text{ BeV.}$$

This value, however, could be much lower, if the true angular distribution of the particles (in the center of mass system) differs fundamentally from a symmetrical distribution. The true value of E_0 seems to be hardly higher than 800 BeV. A table illustrates the distributions of the particles in the plane vertical to the cascade axis, found by the authors at three depths of the cascade shower (t = 1,6; 3,1 and 4,5 avalanche units). The spatial and energetic distributions of the electrons and of the pairs illustrated in 2 tables, allow an estimate of the total energy of the soft component, for which 4 methods can be used. The values thus obtained are composed in a table. Into the soft component at least 30 % of the total interaction energy are transferred. Also of interest is the considerably sharper concentration of the photons with high energy near the shower axis compared with the angular distribution of the penetrating particles.

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The Nuclear Interaction in a Photoemulsion Accompanied by a High Energy Transfer to the Electron-Photon Component 56-34-4-9/60

The authors thank R. M. Grysunov, L. V. Kruglov, M. N. Pachkov and Yu. F. Sharapov for their participation in the evaluation of the experimental data, and Professor N. A. Dobrotin and I. L. Rozental' for the discussion of the obtained results. There are 2 figures, 4 tables, and 6 references, 4 of which are Soviet.

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

SUBMITTED: November 26, 1957

1. Nuclear reactions--Analysis

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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

AUTHOR: Zhdanov, G. B. 56-34-4-11/60

TITLE: On the Connection Between the Angular and Energy Distributions of the Particles in High-Energy Nuclear Interactions (O svyazi mezhdu uglovymi i energeticheskimi raspredeleniyami chastits pri yadernykh vzaimodeystviyakh vysokoy energii)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34, Nr 4, pp. 856 - 861 (USSR)

ABSTRACT: G. A. Milekhin and I. L. Rozental' (Ref 1) [illegible] first directed attention to the experimental data and theoretical considerations which speak in favor of a certain interaction between the flying-off-angle Θ of the particle and its energy E. This connection is based upon the fact that the projections of the momenta $p_\perp$ upon the plane vertical to the direction of motion of the primary particle vary little in a relatively wide interval of the angles Θ. For the particles which at the temperature μc^2 (μ - mass of the pion) are in a thermal motion these projections correspond approximately to the values of $p_\perp$. This paper now intends to investigate a much

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On the Connection Between the Angular and Energy Distributions of the Particles in High-Energy Nuclear Interactions 56-34-4-11/60

more far reaching circle of experimental data which speak for this aspect, that is to say, data on the transversal momenta of the secondary particles in the energy range of from $10^9 - 10^{13}$ eV. By means of a Wilson chamber in a magnetic field the momenta and the flying-off-angles of the secondary particles with energies up to 10^{11} eV were measured. On this occasion the distribution of the values $p_\perp$ is represented in logarithmic scale, using in the variables $X = \lg 10(p_\perp/\mu c)$. Such a distribution for those data is composed which were determined by the method of photoemulsions. By this method the following problems were investigated: The multiple scattering of secondary particles, the secondary interactions, the angular distribution and the energy distribution of the particles of the soft component. At the end the author gives some data on extensive atmospheric showers. In the case of a primary energy of from $10^{12} - 10^{14}$ eV the distribution of the secondary particles upon the transversal momenta agrees well with the one-dimensional hydrodynamic theory of the multiple production, which regards the transversal deviations

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On the Connection Between the Angular and Energy Distribution of the Particles in High-Energy Nuclear Interactions 56-34-4-11/60

of the produced particles to be only results of their heat motion at a flying-off-temperature of $\sim \mu c^2/k$. There are 6 figures, 1 table, and 16 references, 7 of which are Soviet.

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

SUBMITTED: November 29, 1957

1. Nuclear reactions--Analysis

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29(2) PHASE I BOOK EXPLOITATION SOV/3234

Zhdanov, Georgiy Borisovich, and Igor' Pavlovich Tindo

Laboratorii v kosmose (Laboratories in Space) [Moscow] Izd-vo TsK VLKSM "Molodaya gvardiya," 1959. 191 p. 150,000 copies printed.

Ed.: G. Aydinov; Tech. Ed.: L. Kurlykova.

PURPOSE: The book is intended for the general reader interested in space exploration.

COVERAGE: The book reports on some of the major findings made with the help of artificial earth satellites. It discusses the radiation zone surrounding the Earth and evaluates other dangers to be considered in a man-in-space project. Vertical temperature distribution is also discussed. The book emphasizes Soviet contributions to the study of outer space. No personalities are mentioned. No references are given.

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ZHDANOV, Georgiy Borisovich

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Cosmic Rays. London, Lawrence & Wishart, 1959.
146 P. Illus., Diagrs.

Translated from the original Russian: Luchi Iz Mirovykh Glubin.

Bibliographical Footnotes.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

21(7)

SOV/56-37-3-4/62

AUTHORS: Zhdanov, G. B., Markov, P. K., Strel'tsov, V. N., Tret'yakova, M. I., Cheng Pu-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 $(40\pm20)\%$. 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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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

Secondary Stars Occurring in the Interaction of Protons SOV/56-37-3-4/62
With Energies of 8.7 Bev With Photographic Emulsion Nuclei

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 3.8±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 $\leqslant 10°$ (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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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

Secondary Stars Occurring in the Interaction of Protons SOV/56-37-3-4/62
With Energies of 8.7 Bev With Photographic Emulsion Nuclei

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: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

21(7)

SOV/56-37-3-6/62

AUTHORS: Zhdanov, G. B., Maksimenko, V. M., Tret'yakova, M. I., Shcherbakova, M. N.

TITLE: Nuclear Interactions of Protons With Energies of 8.7 Bev in Photographic Emulsions

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 3(9), pp 620 - 633 (USSR)

ABSTRACT: The authors investigated an emulsion pile, which had been irradiated with 8.7 Bev protons at the synchrophasotron of the OIYaI (United Institute of Nuclear Research). The photographic emulsions concerned were of the NIKFI-R type, which had a thickness of 450 μ (27-30 grains/100μ). For the purpose of the present very detailed paper, about 25000 tracks with a total length of ∿ 300 m were evaluated. In chapter 1 the investigation results which make an evaluation of the inelastic interaction cross section possible are discussed and some of them are given by two tables. Table 1 contains the ranges λ for two forms of interaction: for star formation (λ = 35.0±1.3cm) and for "pure" scattering (1750±500 cm) if the scattering angle

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$>5^{\circ}$, and 750±150 cm if it is between 1 and 5°. In consideration of the degree of efficiency of recording, 500±100 cm is obtained. If in the former case all error sources are taken into account, $\lambda_{inelast} = 34 \pm 2$ cm is obtained, and the geometric total cross section of all photographic emulsion nuclei may be estimated at $\sigma_{geom} = \pi.(1.38 \cdot 10^{-13} cm)^2 A^{2/3}$. The second part of the paper deals with the distribution of stars according to the number of fast and slow particles. The number of "pure" charge exchange interactions (proton-neutron) without any considerable energy loss was low (3%, i.e. 17 among 520 stars). The distribution of stars over various kinds is shown by the diagram of figures 1-3. Chapter 3 describes results concerning the angular distribution of fast and slow particles (Figs 4-8), and the following chapter deals with the results of the analysis of angular distribution curves of the various types of stars. Several conclusions are drawn after comparing the results obtained with calculations based upon the statistical theory. Thus, conclusions are drawn as to the existence of interactions of the peripheral kind (nucleon-nucleon), as about 25% of the

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interactions with emulsion nuclei with respect to angular distribution and to the average multiplicity of the production of fast particles corresponds to the nucleon-nucleon interaction (according to the statistical theory). The angular distribution of the "gray" tracks depends very weakly on the angular distribution of the fast particles and deviates somewhat from the distribution prevailing in the case of pion interaction with emulsion nuclei (E_π= 1.5 Bev). It may be assumed in this case that the occurrence of "gray" particles is due to a considerable extent to the secondary interaction of 1 Bev pions. From the monotonous broadening of angular distributions with growing multiplicity of fast particle production it is possible to draw conclusions as to the nature of the interaction between the primary nucleon and the nucleons in a composite nucleus. The authors finally thank Academician V. I. Veksler for making irradiation on the synchrophasotron possible and they further thank the collaborators of the OIYaI M. I. Podgoretskiy, I. M. Gramenitskiy, K. D. Tolstov, and R. M. Lebedev for discussions, the younger scientifical collaborator of the FIAN (Institute

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Nuclear Interactions of Protons With Energies of 8.7 Bev in Photographic Emulsions SOV/56-37-3-6/62

of Physics AS USSR) Ye. A. Zamchalova for her assistance, and further also Professor N. A. Dobrotin, I. L. Rozental', D. S. Chernavskiy, and N. G. Birger for their advice and discussions. There are 10 figures, 8 tables, and 11 references, 5 of which are Soviet.

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

SUBMITTED: April 4, 1959

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

Zhdanov, G. B.

ANGULAR DISTRIBUTIONS OF SECONDARY PARTICLES
AT HIGH ENERGY NUCLEAR INTERACTIONS WITH HEAVY
NUCLEI OF EMULSION

Jen Phyong Soo, Zhdanov G. B., Tretyakova M. I.

The authors carried out measurements of angular distributions of relativistic particles for 11 high energy "jets" ($\gamma c > 10$) having $N_h > 8$ when a neutral or singly charged primary particle was available. The results were compared with predictions of the hydrodynamical theory.

In 10 cases the angular distribution agrees with the theory (criterion gives probability of agreement $P(\chi^2)$ not less than 30%) and in one case a noticable divergence ($P(\chi^2) < 1,5\%$) takes place with two peaks available. In no case an azimuthal anisotropy was found out.

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

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S/058/61/000/010/014/100
A001/A101

AUTHORS: Den Pkhen-su, Zhdanov, G.B.

TITLE: Angular distributions of secondary particles in nuclear interactions with heavy nuclei of photoemulsion

PERIODICAL: Referativnyy zhurnal. Fizika, no.10, 1961, 96, abstract 10B496 ("Tr. Mezhdunar. konferentsii po kosmich. lucham, 1959, v. 1", Moscow, AN SSSR, 1960, 111 - 113)

TEXT: The authors propose to select jets in photoemulsion using as criterion the large number of slow particles N_h (in particular, $N_h > 8$). The materials from 3 piles of photoemulsion were used for analysis of angular distributions of secondary particles in nuclear interactions with heavy nuclei of photoemulsion. The photoemulsions studied were exposed during English-Italian expeditions. The results obtained are discussed on the basis of the hydrodynamical theory of multiple production.

L. D.

[Abstracter's note: Complete translation]

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ZHDANOV, G.B., glavnyy red.; IVANENKO, I.P., zam.glavnogo red.; SYROVATSKIY, S.I., otv.red.toma; KHREHOV, B.A., zam.red.toma; GERASIMOVA, N.M., red.; NIKISHOV, A.I., red.; ZATSEPIN, V.I., red.; DORMAN, L.I., red.; TULINOV, V.F., red.; FEDOROV, V.M.; VAVILOV, Yu.N., red.; ABRASIMOV, A.T., red.; FRADKIN, M.I., red.izd-va; BRUZGUL', V.V., tekhn.red.

[Radiation belts of the earth. Primary cosmic radiation and its properties and origin] Radiatsionnyi poias Zemli. Pervichnoe kosmicheskoe izluchenie, ego svoistva i proiskhozhdenie. Moskva, Izd-vo Akad.nauk SSSR, 1960. 258 p. (Trudy Mezhdunarodnoi konferentsii po kosmicheskim lucham, no.3)

(MIRA 14:2)

1. International Conference of Cosmic Radiation.
(Cosmic rays)

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

GERASIMOVA, N.M., otv.red.toma; NIKISHOV, A.I., zamestitel' red.toma; ZHDANOV, G.B., glavnyy red.; IVANENKO, I.P., zamestitel' glavnogo red.; ZATSEPIN, V.I., red.; KHRENOV, B.A., red.; DORMAN, L.I., red.; TULINOV, V.F., red.; SYROVATSKIY, S.I., red.; FEDOROV, V.M., red.; VAVILOV, Yu.N., red.; ABROSIMOV, A.T., red.; GUROV, K.P., red.izd-va; BRUZGUL', V.V., tekhn.red.

[Transactions of the International Conference on Cosmic Rays] Trudy Mezhdunarodnoi konferentsii po kosmicheskim lucham. Moskva, Izd-vo Akad.nauk SSSR. Vol.1. [Nuclear interactions at energies of 10^{11}-10^{14} ev.] Iadernye vzaimodeistviia pri energiiakh 10^{11}-10^{14} ev. 1960. 335 p. (MIRA 13:9)

1. Mezhdunarodnaya konferentsiya po kosmicheskim lucham. Moscow, 1959. (Nuclear reactions)

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B., glavnyy red.; IVANENKO, I.P., zam.glavnogo red.; ZATSEPIN, V.I., otv.red.toma; KHRENOV, B.A., zam.red.toma; GERASIMOVA, N.M., red.; NIKISHOV, A.I., red.; DORMAN, L.I., red.; TULINOV, V.F., red.; SYROVATSKIY, S.I., red.; FEDOROV, V.M., red.; VAVILOV, Yu.N., red.; ABROSIMOV, A.T., red.; GUROV, K.P., red.izd-va; BERKGAUT, V.G., red.izd-va; BRUZGUL', V.V., tekhn.red.

[Extensive air showers and cascade processes] Shirokie atmosfernye livni i kaskadnye protsessy. Moskva, Izd-vo Akad.nauk SSSR, 1960. 351 p. (Trudy mezhdunarodnoy konferentsii po kosmicheskim lucham, no.2). (MIRA 13:12)

1. International Conference of Cosmic Radiation.
(Cosmic rays)

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ZHDANOV, G.B.

PHASE I BOOK EXPLOITATION SOV/4943

International Conference of Cosmic Radiation, Moscow, 1959

Variatsii intensivnosti kosmicheskikh luchey (Variations of the Cosmic Rays Intensity) Moscow, Izd-vo AN SSSR, 1960. 362 p. Errata slip inserted. 2,800 copies printed. (Series: Its Trudy, t. 4)

Sponsoring Agency: Mezhdunarodnyy soyuz chistoy i prikladnoy fiziki.

Editorial Board: Chief Ed.: G. B. Zhdanov; Deputy Resp. Ed.: I. P. Ivanenko; N. M. Gerasimova, A. I. Nikishev, V. I. Zatsepin, B. A. Khrenov, L. I. Dorman, V. F. Tulinov, S. I. Syrovatskiy, V. M. Fedorov, Yu. N. Vavilov, and A. T. Abrosimov; Resp. Ed. for this volume: L. I. Dorman; Deputy Ed. for this volume: V. F. Tulinov; Ed. of Publishing House: G. G. Gus'kov; Tech. Ed.: V. V. Bruzgul'.

PURPOSE: This book is intended for physicists and other scientists engaged in cosmic-ray research.

COVERAGE: This is the Russian edition of the last volume of a 4-volume work containing reports delivered at the International

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Variations of the Cosmic Rays Intensity SOV/4943

Cosmic Ray Conference held in Moscow, July 6-11, 1959. The English and Russian editions are not identical, inasmuch as some of the Soviet papers had to be abbreviated for the English version of the book, and some of the non-Soviet papers had to be abridged for the Russian-language version. The papers of Soviet, Polish, Czech, and Hungarian scientists published in the fourth volume of the English edition have been abstracted in Phase I Book Exploitation SOV/4152.

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ZHDANOV, G.B., doktor fiziko-matematicheskikh nauk

In the stream of Lenin's ideas. Nauka i zhizn' 27 no. 4:17-21 Ap '60. (MIRA 14:5)

(Dialectical materialism) (Physics)

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

GOL'DANSKIY, V.I., prof., doktor fiz.-matem.nauk; ZHDANOV, G.B., doktor fiz.-matem.nauk (g.Moskva)

Sample of scientific foresight. Fiz. v. shkole 20 no.3:5-11 My-Je '60. (MIRA 13:11)

(Particles (Nuclear physics))

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ZHDANOV, G.B., glav. red.; IVANENKO, I.P., pom. glav. red.; ZATSEPIN, V.I., red. toma; KHRENOV, V.A., pom. red. toma; GERASIMOVA, N.M., red.; NIKISHOV, A.I., red.; DORMAN, L.I., red.; TULINOV, V.F., red.; SYROVATSKIY, S.I., red.; FEDOROV, V.M., red.; VAVILOV, Yu.N., red.; ABROSIMOV, A.T., red.

Proceedings of the Moscow Cosmic Ray Conference, July 6-11, 1959. Moscow. Vol.2. Extensive air showers and cascades process. 1960. 331 p.
(No subject heading)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B., glav. red.; IVANENKO, I.P., pom. glav. red.; SYROVATSKIY, S.I., red. toma; GERASIMOVA, N.M., red.; NIKISHOV, A.I., red.p ZATSEPIN, V.I., red.; KHRENOV, V.A., red.; DORMAN, L.I., red.; TULINOV, V.F., red.; FEDOROV, V.M., red.; VAVILOV, Yu.N., red.; ABROSIMOV, A.T., red.

Proceedings of the Moscow Cosmic Ray Conference, July 6-11, 1959. Moscow. Vol.3. 1960. 253 p.

(No subject heading)

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Proceedings of the Moscow Cosmic Ray Conference. July 6-11, 1959. Moscow. Vol.1. 1960. 333 p.
(No subject heading)

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Proceedings of the Moscow Cosmic Ray Conference, July 6-11, 1959. Moscow. Vol.14. Variations of cosmic-ray intensity. 1960. 365 p.

(No subject heading)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B., ZAMCHALOVA, E.V., SHCHERBAKOVA, M.I., TRETYAKOVA, M.I., ALEKSEEVA, L.L., and GABUNIYA, L.L.,

"Study of Composition of Primary Cosmic Radiation at an Altitude of 320 Kilometers,"

report presented at the Intl. Conference on Cosmic Rays and Earth Storms, Kyoto, Japan, 4-15 Sept 1961.

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B., TRETYAKOVA, M.I., ALEKSEYEVA, K.I., GA'UNIA, L.L.,

"High Energy Nuclear Interaction with Isoptopic Distribution of Generated Particles,"

report presented at the Intl. Conference on Cosmic Rays and Earth Storms, Kyoto, Japan, 4-15 Sept 1961.

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ALEKSEYEVA, K.I.; ZHDANOV, G.B.; ZAMCHALOVA, Ye.A.; TRET'YAKOVA, M.I.; SHCHERBAKOVA, M.N.

Study by the photographic emulsion method of the interaction between 8.7 Bev protons and quasi-free nucleons. Zhur. eksp. i teor. fiz. 40 no.6:1625-1637 Je '61. (MIRA 14:8)

1. Fizicheskiy institut im. P.N. Lebedeva AN SSSR.
(Photography, Particle track)
(Protons)
(Nucleons)

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ALEKSEYEVA, K. I., ZHDANOV, G. B., TRETYAKOVA, M. I., TSYTOVICH, V. N., and SHCHERBAKOVA, M. N.

"Ionization momentum dependence for electrons in the ultra-relativistic region"

Fourth International Colloquium on Photography (Corpuscular) - Munich, West Germany, 3-8 Sep 62

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BELEN'KIY, S.Z. [deceased]; VUL, B.M.; ZHARKOV, G.F.; ZHDANOV, G.B.; SILIN, V.P.; FAYNBERG, V.Ya.; FEYNBERG, Ye.L.; LARIN, S.I., red.; UL'YANOVA, O.G., tekhn. red.

[From classical to quantum physics; fundamental representations in the theory of the constitution of matter]Ot klassicheskoi fiziki k kvantovoi; osnovnye predstavleniia ucheniia o stroenii materii. Moskva, Izd-vo Akad. nauk SSSR, 1962. 69 p. (MIRA 16:3)

(Physics) (Quantum theory) (Matter--Constitution)

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

BOGOMOLOV, K.S., red.; PERFILOV, N.A., red.; BELOVITSKIY, G.Ye., red.; DOBROSERDOVA, Ye.P., red.; ZHDANOV, G.B., red.; KARTUZHANSKIY, A.L., red.; LYUBOMILOV, S.I., red.; MINERVINA, Z.V., red.; RAZORENOVA, I.F., red.; ROMANOVSKAYA, K.M., red.; SAMOYLOVICH, D.M., red.; STARININ, K.V., red.; TRET'YAKOVA, M.I., red.; UVAROVA, V.M., red.; SHUR, L.I., red.; POPOVA, A.K., red.; VEPRIK, Ya.M., red.; VERES, L.F., red. izd-va; KUZNETSOVA, Ye.B., red. izd-va; POLYAKOVA, T.V., tekhn. red.

[Nuclear photography; transactions] IAdernaia fotografiia; trudy tret'ego Mezhdunarodnogo soveshchaniia. Moskva, Izd-vo Akad. nauk SSSR, 1962. 474 p. (MIRA 15:6)

1. Colloque International de Photographie Corpusculaire. 3d, Moscow, 1960. 2. Nauchno-issledovatel'skiy kinofotoinstitut, Moskva (for Bogomolov, Uvarova, Romanovskaya, Starinin). 3. Predsedatel' Organizatsionnogo komiteta Tret'yego Mezhdunarodnogo soveshchaniya po yadernoy fotografii. 1960, Moskva (for Bogomolov). 4. Zamestitel' predsedatelya Organizatsionnogo komiteta Tre'yego Mezhdunarodnogo soveshchaniya po yadernoy fotografii. 1960, Moskva (for Perfilov). 5. Radiyevyy institut im. V.G.Khlopina Akademii nauk, Leningrad (for Shur, Perfilov). 6. Institut sovetskoy torgovli im. F.Engel'sa (for Kartuzhanskiy). 7. Ob"yedinennyy institut yadernykh issledovaniy, Dubna (for Lyubomilov). 8. Institut atomnoy energii im. I.V.Kurchatova Akademii nauk SSSR, Moskva (for Samoylovich).

(Photography, Particle track)

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G. B., SUKHOV, L. V. and VORONKOV, A. Ye.

"Experiments on automatic measurements of scattering and ionization on the tracks of fast single charged particles in photoemulsion"

Fourth International Colloquium on Photography (Corpuscular) - Munich, West Germany, 3-8 Sep 62

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S/030/62/000/002/004/008
B101/B110

AUTHOR: Zhdanov, G. B., Doctor of Physics and Mathematics

TITLE: News in the field of physics of cosmic rays

PERIODICAL: Akademiya nauk SSSR. Vestnik, no. 2, 1962, 69 - 75

TEXT: This is a report on the International Conference on Cosmic Rays held in Kyoto on September 4 - 15, 1961. The following papers of Soviet and Soviet-bloc scientists are mentioned: A survey of Soviet research work on the outer belt of radiation by S. N. Vernov, papers by A. Ye. Chudakov et al. concerning the energy spectrum of electrons and gamma radiation excited by them in the shell of the satellite as well as the asymmetry of the outer belt of radiation. L. V. Kurnosova et al. on the common origin of the two belts of radiation and their branches at an altitude of ~300 km above the South Atlantic; on the observation of a relationship between radiation of heavy nuclei and explosions in the solar chromosphere. Study of the proton component of radiation by A. N. Charakhch'yan et al. An ionization calorimeter was designed by N. L. Grigor'yev for the direct measurement of energies in the range of 10^{11} - 10^{13} ev. It was used by

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News in the field of physics of... S/030/62/000/002/004/008
B101/B110

N. A. Dobrotin and S. A. Slavatinskiy to investigate the interaction of nucleons and the angular distribution of particles. M. Miezovicz and J. Gerula (Poland) reported on the angular distribution of particles formed. The data were obtained from large emulsion piles. G. T. Zatsepin analyzed the "fire balls model" qualitatively. Together with M. A. Markov, he reported on planned measurements of the interaction between neutrinos and nuclei with formation of muons in a subterranean test plant. There are 6 figures.

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

S/560/62/000/012/001/014
I046/I246

AUTHORS: Alekseyeva, A.I., Gabuniya, L.L., Zhdanov, G.B., Zamchalova, Ye.A., Shcherbakova, M.M. and Tret'yakova, K.I.

TITLE: Investigation of the primary cosmic radiation composition at an altitude of 320 km

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli, no. 12, Moscow, 1962, 6-15

TEXT: The automatic apparatus whose design was reported at the International Conference on Nuclear Photography (1960) is applied to impulse and ionization measurements of middle-weight cosmic nuclei. In multiple scattering measurements, the time required to measure one 10 mm trail is 7 minutes; in ionization measurements, 30 minutes per trail are required. This is at least 5 times as fast as in visual measurements. The resolution of the apparatus in ordinary circumstances is sufficient to separate between the Li, Be, B and C, N, O groups. Instrumental errors, however, reduce the accuracy of measuring trail discontinuities by up to 30-40% as compared with visual measurements for a given

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S/048/62/026/005/003/022
B102/B104

AUTHORS: Alekseyeva, K. I., Gabuniya, L. L., Den Pkhen Su, Zhdanov, G. B., and Tret'yakova, M. I.

TITLE: High-energy nuclear interaction events with isotropic angular distribution

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 5, 1962, 572 - 574

TEXT: A 2+3+40p-type nuclear interaction was observed with an НИКФИ-Р (NIKFI-R) photoemulsion (1 liter) which had been exposed for ~150 hrs at an altitude of ~10 km. The angular distributions were determined in plane and spatial geometry. As functions of log tan θ, they were S-curves, somewhat steeper than the calculated isotropic distribution but fitting the curve calculated on the assumption of an energy spectrum of the form $p^2(1+p^2)^{-2}$. Agreement is best if the shower axis is assumed to coincide with the primary-particle direction. The tail of 2-3 particles is attributed to secondary nuclear processes. The isotropy of the angular distribution is indicative of an interaction of the incoming nucleon with

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several nucleons of the hit nucleus. The total amount of released energy was calculated from the mean transverse particle momentum (0.4 Bev/c) and from the ratio of neutral to charged particles (1.5), and was found to be $2 \cdot 10^{12}$ ev in the laboratory system, and not less than 25 Bev in the system of the "excited nucleus". If the latter coincides with the c.m.s. of the colliding nucleons, inelasticity in the l.s. equals K = 25%. There are 3 figures.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B., doktor fiz.-matem.nauk

New in the physics of cosmic rays. Vest. AN SSSR 32 no.2:69-75 F '62. (MIRA 15:2)

(Cosmic rays)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B., doktor fiziko-matem.nauk

Philosophic aspects of the physics of nuclear particles. Vest.AN SSSR 32 no.7:97-99 Jl '62. (MIRA 15:7)
(Particles (Nuclear physics)) (Physics--Philosophy)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

S/056/62/043/001/051/056
B102/B104

AUTHORS: Zhdanov, G. B., Tret'yakova, M. I., Tsytovich, V. N., Shcherbakova, M. N.

TITLE: The ionization losses of ultrarelativistic electrons

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 1(7), 1962, 342-345

TEXT: Up to now the ionization losses of fast charged particles have been considered in first perturbation-theoretical approximation only. The contribution of the next order, i. e. that of the radiation corrections, is comparable with the effect of a relativistic increase of the ionization losses. Theoretical estimates of these corrections are here compared with experimental results. It is shown that in real cases, if $1 \ll \Delta^{1/2} \ll (\pi\hbar c/e^2)^{1/2}$, the correction may be given approximately by $\Delta_\infty = 2 \ln^2 \zeta$, where ζ is a function of the total electron concentration in the medium and the corresponding frequencies; $\Delta = \Delta_\infty$. For a photo-

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emulsion (AgBr) ξ^{-1} is between 100 and 200 and the radiation correction reaches 8-10%. The relative track densities, measured in НИКФИ - Р (NIKFI-R) emulsions and for 8.7-Bev protons (OIYaI) and Ilford G-5 and 19-Bev protons (CERN) as dependent on $\varepsilon_p/mc^2 \gg 1/\xi$, are compared with theoretical curves both with and without radiation correction. The uncorrected agrees satisfactorily with the experimental data. There are 2 figures.

SUBMITTED: May 12, 1962

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

S/056/62/043/003/008/063
B125/B102

AUTHORS: Alekseyeva, K. I., Gabuniya, L. L., Den Pkhen Su, Zhdanov, G. B., Tret'yakova, M. I.

TITLE: A rare case of high-energy nuclear interaction with isotropic angular distribution of the secondary particles

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 3(9), 1962, 783 - 789

TEXT: A nuclear interaction of the type 2+3+40 p with an emission angle of the secondary particles $\simeq 0.8^{\circ}$ was observed in a small pile of photographic emulsions, type НИКФИ-Р (NIKFI-R). In 1959 this pile had been irradiated for about 150 hrs at a height of ~ 10 km. In a coordinate system with the Lorentz factor $\gamma_c = 65$, the angular distribution of the secondary particles was isotropic (c.m.s.). The coefficient of inelasticity is $\sim 20\%$ referred to the coordinate system moving along with the primary particles. This event can be explained as follows: (1) the primary particle, which is a proton of $\sim 10^{12}$ ev, interacts as a whole with a virtual meson of one of the nucleons in the target nucleus. The coefficient

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of inelasticity in the laboratory system is $K_{lab} = 1$. (2) The primary particle, a pion of $\sim 10^{12}$ ev, enters into peripheral interaction with a target nucleon, for which $K_{lab} = 1$. (3) The primary particle, a proton of $\sim 10^{13}$ ev, collides with $K_{lab} \sim 0.2$. In order to separate high-energy nucleon-nucleon interactions in a photographic emulsion, events of low multiplicity and low coefficients of inelasticity are preferably chosen. For this reason, the conclusions drawn from photographic emulsions as to energy dependence of multiplicity and anisotropy in NN-interactions are not reliable. There are 3 figures and 2 tables.

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

SUBMITTED: March 31, 1962

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

G. B. ZHDANOV

Analysis of Angular Distribution in High Energy Nuclear Interactions

report submitted for the 8th Intl. Conf. on Cosmic Rays (IUPAP), Jaipur India, 2-14 Dec 1963

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

JDANOV, G.B. [Zhdanov, G.B.]

Philosophical problems of the physics of the elementary particles. Analele mat 17 no.1:190-193 Ja-Mr '63.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G. B., doktor fiz.-matem. nauk

Colloquium on particle track photography. Vest. AN SSSR 33 no.1:79-80 Ja '63. (MIRA 16:1)

(Photography, Particle track)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B., doktor fiz.-matem.nauk

Experimental research on high-energy physics at the European Center of Nuclear Research (CERN). Vest. AN SSSR 33 no.7: 90-93 Jl '63. (MIRA 16:8)

(Physics--Research)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

TITLE: Ionization-momentum relation for various particles [illegible] region

SOURCE: Zhurnal eksper. i teor. fiziki [illegible]

[illegible] ionization-momentum relat[illegible]

Card [illegible]

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ASSOCIATION: Fizicheskiy institut im. [illegible] Institute Academy of Sciences, SSSR,

SUBMITTED: 26Jan63 DATE ACQ: 23[illegible] [illegible]

SUB CODE: OO NO REF SOV: 00[illegible] OTHER: [illegible]

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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B., doktor fiz.-matem. nauk

Physics and philosophy. Priroda 52 no.11:3-9 '63.
(MIRA 17:1)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B., dokt. po fiz.-matemat. nauki

Physics and philosophy. Mat i fiz Bulg 7 no. 2:12-19 My-Je '64.

1. P.N.Lebedev Institute of Physics, Academy of Sciences of the U.S.S.R., Moscow.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ACCESSION NR: AP4041167

S/0030/64/000/005/0137/0139

AUTHOR: Zhdanov, G. B. (Doctor of physico-mathematical sciences)

TITLE: Physics of elementary particles (Division of Nuclear Physics)

SOURCE: AN SSSR. Vestnik, no. 5, 1964, 137-139

TOPIC TAGS: scientific session, elementary particle physics, nuclear research, high energy interaction, mutual scattering, unstable particle, nucleon electromagnetic structure, photoproduction, accelerator, strange particle, weak interaction, survey article, neutrino

ABSTRACT: A scientific session was held on elementary particle physics in the Ob"edinenny"y institut yaderny"kh issledovaniy (United Institute of Nuclear Research) (Dubna) during January 28-30. There were representatives from all scientific institutes of the Soviet Union. Eight survey papers and 70 original contributions were presented in this session, discussing experimental and theoretical aspects of elementary particle physics. High energy interactions were reviewed in papers by A. A. Logunov, V. N. Gribov, and A. M. Baldin. Isotopic and CP-invariance laws during particle interactions were touched on by V. G. Grishin and others. Mutual scattering of unstable particles was discussed

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ACCESSION NR: AP4041167

theoretically by B. N. Valuyev and experimentally by V. G. Grishin and M. I. Podgoretskiy. Ye. L. Feynberg critically analyzed existing theoretical methods in the analysis of elastic and inelastic strong interactions. A. M. Baldin discussed the status of nucleon electromagnetic structures in connection with π-meson photoproduction. Numerous experimental results on strong particle interactions, investigated in various accelerators, were presented in the form of short papers. New results on the formation of strange particles were reported by Ye. I. Kladnitskaya, N. M. Viryasov, A. A. Kuznetsov and others. An important part of the discussion centered around weak interactions. L. B. Okunya presented a survey article on the state-of-art of weak interactions. New ideas were reported on recent discoveries of muon-type neutrinos and results were reported on slow μ-meson reactions (V. P. Dzhelepov and others). Interest was stimulated in the production of ultrahigh electromagnetic fields and new types of electromagnetic interaction of particles (A. I. Nikishov and V. I. Ritus). New types of spark chambers were reported on by A. A. Tyapkin, showing a great improvement in their designs. The session demonstrated the importance and fruitfulness of a close relationship between theoretical and experimental efforts for a better understanding of elementary particle physics.

ASSOCIATION: none

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ACCESSION NR: AP4041167

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ACCESSION NR: AP4017168 S/0026/64/000/002/0082/0087

AUTHOR: Zhdanov, G.B. (Doctor of physico-mathematical sciences)

TITLE: Physics of cosmic rays

SOURCE: Priroda, no. 2, 1964, 82-87

TOPIC TAGS: congress, Soviet congress, cosmic ray, cosmic ray physics, Cosmos program, Mars-1, rocket, cosmic radiation

ABSTRACT: The article reports on the All-Union Conference on cosmic rays which took place October 4-10, 1963, in Moscow; the author evaluates the chief points of the 130 papers presented, and outlines the future paths of cosmic physics. Among the latest achievements of Soviet science are: (1) the intensive construction of new cosmic laboratories at high altitude stations in Armenia, Georgia, Kazakhstan and Uzbekistan; (2) wide use of aircraft and balloons and systematic research by means of the Kosmos program, sputniks and cosmic rockets (of which the latest is Mars-1); (3) the introduction, as substitutes for ionization chambers, of Cerenkov counters or controlled nuclear photoemulsions; (4) the development of spark chambers whose exactness in tracking particles is believed to surpass that of the classical Wilson chamber; (5) the perfection of devices for complex studies of atmospheric showers, exemplified by the Moscow Univertity unit which

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ACCESSION NR: AP4017168

covers an area of about 4 lectures; (6) new approaches to explain both the origin of "fire balls" and the anomalies in the intensity of γ-quantum formation and the charged π-meson proportion in the nucleoactive component of space radiation; (7) the latest theories on the radiation belts; and (8) the nature of the primal sources of cosmic radiation. Orig. art. has: 4 figures.

ASSOCIATION: Fizicheskiy institut im. P.N. Lebedeva AN SSSR, Moscow (Institute of Physics AN SSSR)

SUBMITTED: 00 DATE ACQ: 12Mar64 ENCL: 00

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B.; CHEREMISKINA, A.V.

Analysis of the energy characteristics of high-energy nuclear interactions in a photographic emulsion. Izv. AN SSSR.Ser.fiz. 29 no.10:1938-1941 O '65. (MIRA 18:10)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B., doktor fiz.-matem.nauk

Physics of elementary particles and high-energy processes; session of the Department of Nuclear Physics. Vest. AN SSSR 35 no.10:125-127 O '65. (MIRA 18:10)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ACC NR: AP6031435 SOURCE CODE: UR/0056/66/051/002/0417/0427

70
61

AUTHOR: Galstyan, D. A.; Zhdanov, G. B.; Tret'yakova, M. I.; Shcherbakova, M. N.; Chernyavskiy, M. M.

ORG: Physics Institut, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Quasi-nucleon interactions between 24 Bev/sec protons and nuclei of a photographic emulsion in a strong magnetic field

SOURCE: Zh eksper i teor fiz, v. 51, no. 2, 1966, 417-427

TOPIC TAGS: nucleon interaction, proton, magnetic field, photographic emulsion, meson, angular distribution, spectral energy distribution

ABSTRACT: Quasi-nucleon interactions of 24 Bev/sec protons have been investigated by the method of photographic emulsion in a pulsed 180-oe magnetic field. In addition to complete information relating to all charged secondary particles (emission angle, momentum, and nature of particle), the total energy of neutral mesons was determined. The separation of peripheral and nonperipheral interactions was carried out with the aid of various criteria. The multiplicity distributions, inelasticity

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coefficients, and angular distribution of particles have been determined for both types of interactions. Extensive fluctuations have been found in the distribution of energy between the charged and neutral mesons. An appreciable difference between the energy spectra of π^{+-} and π^{-} mesons has been determined. The results obtained indicate a large excitation probability for various nucleon isobars. The authors thank E. Dal'-Iensen [European Committee for Nuclear Research (CERN)] and E. Skzhipchak [Warsaw University] for their cooperation in obtaining samples of the photographic emulsions irradiated in a magnetic field, and V. M. Maksimenko, Yu. A. Smorodin, Ye. L. Feynberg, D. S. Chernavskiy, and I. M. Dremin for discussing the results. Orig. art. has: 8 figures and 2 tables. [Based on authors' abstract]

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ACC NR: AP7003019 SOURCE CODE: UR/0030/66/000/004/0130/0137

AUTHOR: Zhdanov, G. B. (Doctor of physicomathematical sciences)

ORG: none

TITLE: Cosmic rays--new results and perspectives in research

SOURCE: AN SSSR. Vestnik, no. 4, 1966, 130-137

TOPIC TAGS: particle interaction, photographic emulsion, ionization calorimeter, neutrino, penetrating power, chromosphere, solar flare, magnetic storm, sunspot, cosmic ray

ABSTRACT: Cosmic ray investigations are carried out in two ways: by study of the nuclear physical interactions of elementary particles and of the distribution of particles of very high energies in the universe. Investigation methods include atmospheric shower observations and recording the fluorescence of molecular nitrogen in the optical spectral range (0.3—0.4μ) caused by excitation of air atoms by high-energy particles.

Experimental investigations of nuclear interactions use piles of photographic emulsion plates raised to the stratosphere by aerostats. Soviet scientists developed an instrument for measuring the nuclear interaction of particles. This instrument, called an ionization calorimeter, measures the total energy of the components of nuclear interaction using

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thick strata of heavy matter. An ionization calorimeter has been installed at the Tien Shan Station of the Institute of Physics of the Academy of Sciences.

When μ-mesons were separated from high-energy neutrinos, experiments were performed to study the μ-meson and neutrino components of secondary cosmic rays. Deep underground measurements were made at Moscow University to investigate the formation of μ-meson pairs. These experiments were associated with new processes of meson generation by active nuclear particles with high penetrating power. The first hypothesis on the nature of cosmic rays was the photon hypothesis, which replaced the electron hypothesis after the latitudinal effect of cosmic rays in the geomagnetic field was detected. Now that proton-nuclear compounds are known to exist in cosmic rays, investigations of photon and electron-positron components are being made. The photon component of primary cosmic rays has less energy than the primary electrons.

In the quiet sun period (1963—1965), sunspots, chromospheric flares, and magnetic storms seldom appeared and study of the solar component of cosmic rays decreased. Instead of solar phenomena, the spectra of galactic cosmic rays were investigated, especially by the Soviet physicist A. N. Charakhchyan and his coworkers. Seven thousand stratospheric flights with the same instruments were made at Murmansk, Moscow, and Dimeiz during the period from 1957 to 1964. Supplementary flights were made at

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Mirnyy in Antarctica and at Alma-Ata. Results obtained showed parallel rates for sunspots and cosmic ray intensity, with slight deviations associated with the Forbush effect. A. N. Charakhchyan attributed the relationship of the two phenomena to the solar wind. This coincidence is considered to be associated with magnetic fields, plasma flows, solar activity, and physical phenomena in the universe. Orig. art. has: 8 figures. [ATD PRESS: 4261-F]

SUB CODE: 03, 20 / SUBM DATE: none

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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B., doktor fiz.-matem.nauk

Radiation belts and cosmic rays; joint session of three departments. Vest.AN SSSR 35 no.6:103-105 Je '65. (MIRA 18:8)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, G.B.; TRET'YAKOVA, M.I.; SHCHERBAKOVA, M.N.

Fine structure of the energy spectrum of γ-quanta generated by 18.7 Gev. protons on photoemulsion nuclei. Zhur. eksp. i teor. fiz. 47 no.5:1664-1667 N '64.

(MIRA 18:2)

1. Fizicheskiy institut imeni P.I. Lebedeva AN SSSR.

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the radial drift, and the potential acceleration of the particles were analyzed by

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ZHDANOV, G.B.

Analysis of angular distributions of secondary particles in nuclear interactions at high energies in photographic emulsions. Izv. AN SSSR. Ser. Fiz. 28 no.11:1764-1766 N '64. (MIRA 17:12)

1. Fizicheskiy institut im. P.N. Lebedeva AN SSSR.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8

ZHDANOV, Georgiy Borisovich

[High-energy particles; high energies in space and in the laboratory] Chastitsy vysokikh energii; vysokie energii v kosmose i v laboratorii. Moskva, Nauka, 1965. 198 p. (MIRA 18:3)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"

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ZHDANOV, G.F., inzh.; UYMANOV, S.D., inzh.

Mechanization of the loading and unloading of silica bricks. Mekh. i avtom. proizv. 19 no.5:14-15 My '65. (MIRA 18:11)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064620003-8"