Basic Problems (Cont.)

Basic Problems (Cont.

chips, and the occurrence of intensive oxidation are discussed. The relationships between temperature during grinding, pressure between wheel and work, speed, and productivity are outlined. The author suggests increasing productivity through higher speeds and more intensive oxidation.

Sil'vestrov, V. D. [Candidate of Technical Sciences] Characteristic Features of the Grinding of Titanium Alloys 153

The author indicates the basic cause of low productivity in the grinding of titanium alloys. He attributes low productivity to the chemical affinity of titanium alloys to the materials of the grinding wheel and the resulting excessive wear of the wheel. To increase productivity [20-25 times], he recommends the use of special grinding coolants. The compositions of the coolants proposed are presented.

Bagdasaryan Zh. A. [Candidate of Technical Sciences]. Cutting Action of Grinding Wheels and [Mechanical] Work in Grinding 161

The results of experimental work by the author are presented. The work is based on a study of metal and abrasive waste products in grinding. The effect of truing and dressing on wheel wear is determined, and the coefficient ξ is derived. This coefficient characterizes the reduction of average grain dimensions in waste as

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compared with original grain dimensions. An analysis of mechanical work (force × relative displacement of work and wheel surface) during grinding is also presented.

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VK/gw/ec
8-26-60

Card 6/6

NIKOL'SKIY A. Yu.

14(10) SOV/98-59-2-8/22

AUTHORS: Mineyeva, I.A., Candiate of Technical Sciences; ~~Nikol'skiy, A.Yu.~~, Engineer

TITLE: The Influence of the Heating up of Reinforcements on the Strength of Reinforced Concrete Structures (Vliyaniye nagreva armatury na prochnost' zhelezobetonnykh konstruktsiy)

PERIODICAL: Gidrotekhnicheskoye stroitel'stvo, 1959, Nr 2, p 33-35 (USSR)

ABSTRACT: Research on the influence of heating up of reinforcements on the strength and hardness of reinforced concrete structures was conducted at the Moskovskiy energeticheskiy institut (the Moscow Institute of Energetics). It was found that the heating up of reinforcements (due to local induction currents) causes a considerable lessening of the

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14(10) SOV/98-59-2-8/22

The Influence of the Heating up of Reinforcements on the Strength of Reinforced Concrete Structures

hardness of reinforced concrete beams (figure 3). The amount of breaking load for beams with periodic profile reinforcements depends little on the temperature of the heating up of the beam (figure 4). There are 3 graphs, 2 diagrams, 7 references, 4 of which are Soviet and 3 American.

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SOV/98-59-8-11/33

15(6)

AUTHORS: Nikol'skiy, A.Yu., Engineer, and Mineyeva, I.A., Candidate of Technical Sciences

TITLE: The Effect of Heat on the Hardness and Durability of Ferro-Concrete Beams

PERIODICAL: Gidrotekhnicheskoye stroitel'stvo, 1959, Nr 8. pp 45-46 (USSR)

ABSTRACT: The article describes tests carried out by the Chair of Hydraulic Construction Work in the MEI (Moscow Power Institute) on the causes and effect on ferro-concrete of heat (up to 250°C) generated from high-power electric cables (up to 11,000 amps) installed in the steel framework of the concrete; they showed that the hardness of ferro-concrete exposed to such heat was considerably lowered. The experiment was conducted on ferro-concrete beams measuring 150x 200x1, 300mm, reinforced with, in one case, Mark 5 steel, and in the other, of round rods of Mark 3 steel, of the same dimensions. The assembly equipment was also made of the same material, consisting of 2 6mm diameter rods and a hoop 4mm in diameter and 100mm long. The compression of the concrete, which was in all cases iden-

Card 1/3

The Effect of Heat on the Hardness and Durability of Ferro-Concrete Beams

tical, was carried out by an I-21 vibrator, while the durability varied between 150-200 kgs/cm^2. Conditions of hardening varied, one group of test beams having been treated in a steam chamber at temperatures of 70-80°C for 48 hours, the other having been hardened under normal conditions at 15-20°C for 28 days. The beams were subjected to heat in the form of electric currents of 800-1,000 amps, the heat being maintained at the required temperatures for 3 hours. Temperatures varied, the beams reinforced with Mark 5 steel being heated up to 80°C and 230°C, while those with round Mark 3 steel rods were subjected to temperatures of 80°C, 160°C and 230°C. The tests were carried out on a 50 ton universal hydraulic UIM-50 machine, made by the Khar'kov works. Pressure, in the form of 2 concentrated weights graded up to 500 kgs, was applied to beams and continued until they snapped; the results of the tests on beams reinforced with Mark 5 steel are given in table 1 and fig.1, and show that the breaking pressure varied only slightly when applied to the 2 differently treated beams. Fig.1 compares the graphs of the relative pressure of the 2 kinds of beams (steamed and cold-treated), showing that the variation in the degree of

The Effect of Heat on the Hardness and Durability of Ferro-Concrete Beams

sag, which was greater in the former type than in the latter, particularly at low pressure, decreased as pressure increased. A comparison of figs.1a and 1b shows that the method of hardening has little effect on the degree of sag of beams tested when cold. The graph of the tests on beams reinforced with Mark 3 steel is given in fig.2 and table 2, which data shows that the durability of the beams was considerably lowered even at 160°C, and that this decrease rose even more steeply above this temperature; fig.2 shows the relation between sag and pressure and temperature. Conclusions drawn from the experiments are that the shape of the steel reinforcement affects the hardness of concrete; angular steel is more resistant to pressure when heated, but is unaffected by the method of hardening and testing. There are 2 diagrams and 2 tables.

Card 3/3

NIKOL'SKIY, A.Yu., insh.

Determining the footing size of eccentrically loaded foundations from charts. Mekh.sap. MIIVKH 21:341-347 '59. (MIRA 13:8)

(Foundations)

IVYANSKIY, A.M., kand. tekhn. nauk; NIKOL'SKIY, A.Yu., inzh.

[Materials for the calculation of precast prestressed elements for reclamation construction] Materialy po raschetu sbornykh predvaritel'no napriazhennykh konstruktsiy dlia meliorativnogo stroitel'stva. Moskva, Giprovodkhoz, 1964. 86 p. (MIRA 18:3)

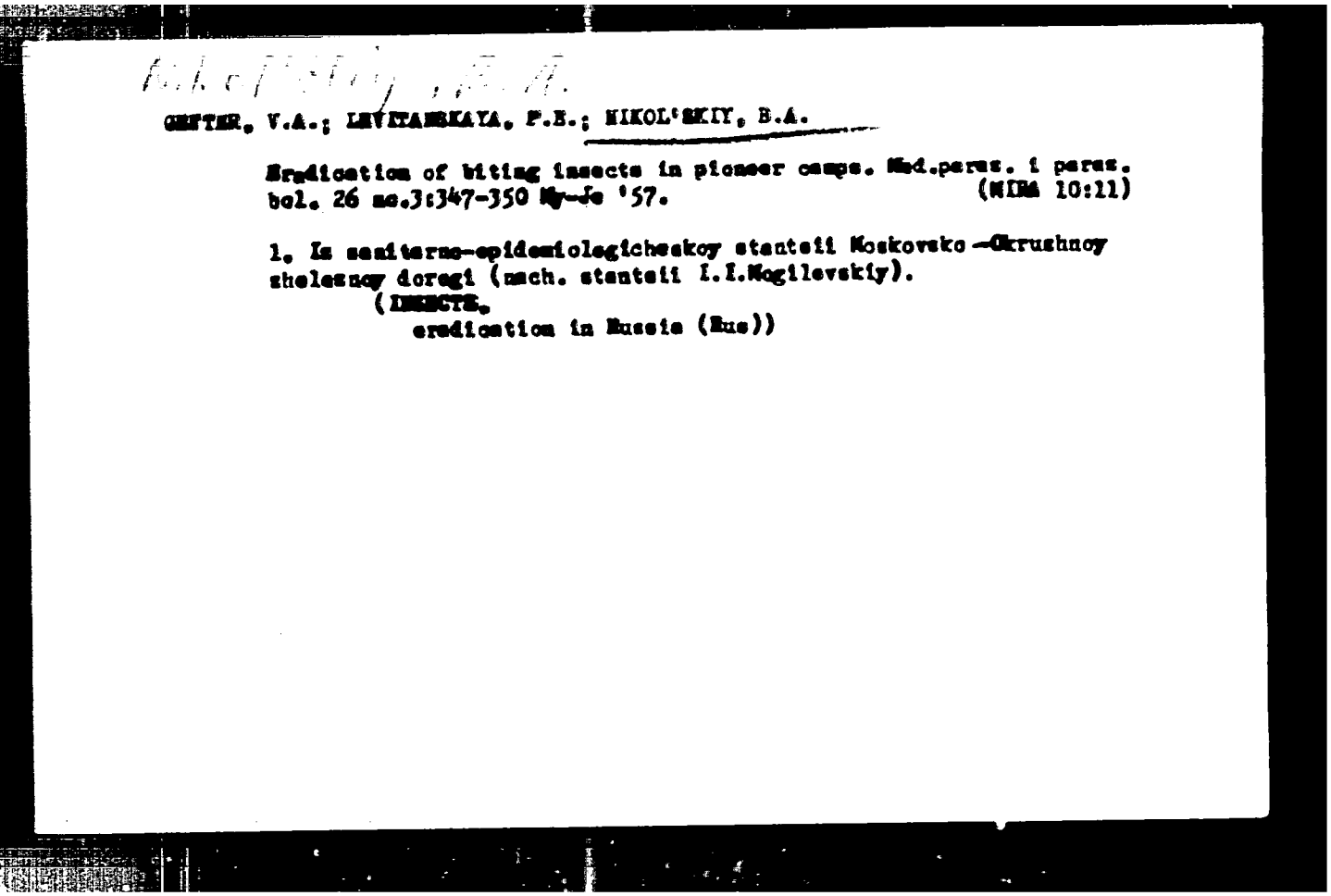
1. Moscow. Vsesoyuznyy proyektno-izyskatel'skiy i nauchno-issledovatel'skiy institut.

LYUTIKOV, A.P., inzh.; NIKOL'SKIY, A.Yu., inzh.; SHAMRAY, V.M., inzh.; SHUGAYEV, V.V., inzh.

Mesh-reinforced concrete on building sites of water development projects. Trudy Giprovodkhoza no.26:73-123 '64. (MIRA 15:6)

NIKOL'SKIY, B.A.; DUBNYKOVSKIY, Ya.N.

Production of dietetic milk. Izobr. v SSSR 3 no.2:12-14 D '58.
(Milk supply) (MIRA 11:3)



Nikol'skiy, B.A.

GEFTER, V.A.; LEVITANSKAYA, F.E.; NIKOL'SKIY, B.A.

Eradication of biting insects in pioneer camps. Med.paras. i paras. bol. 26 no.3:347-350 My-Je '57. (MIRA 10:11)

1. Iz sanitarno-epidemiologicheskoy stantsii Moskovsko-Okruzhnoy zheleznoy dorogi (nach. stantsii I.I.Mogilevskiy).
(INSECTS,
eradication in Russia (Rus))

NIKOL'SKIY, B.A.; DUBNYKOVSKIY, Ye.I.

Universal "sanitary combine". Izobr.i rats. no.8:33 Ag '58.
(MIRA 11:9)

1. Sotrudniki Vsesoyuznogo nauchno-issledovatel'skogo instituta elektrifikatsii sel'skogo khozyaystva.
(Farm equipment)

NIKOL'SKIY, B.A.

DAK-UI mobile disinfecting apparatus. Veterinariia 37 no.1:68-70 Ja '60. (MIRA 16:6)

1. Starshiy veterinarnyy vrach Gosudarstvennogo nauchno-kontrol'nogo instituta veterinarnykh preparatov.
(Disinfection and disinfectants—Equipment and supplies)

NIKOL'SKIY, B.A.

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

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3130

Author : Alpers, V. V., Barkov, L. M., Gerasimova, R. I., Gurevich, I. I., Mukhin, K. N., Nikol'skiy, B. A., Topor kova, E. P.

Title : Production of Slow π^--mesons in the Nuclei of Photographic Emulsion by 460 Mev Protons and Neutrons of 400 Mev Effective Energy.

Orig Pub : Zh. eksperim. i teor fiziki, 1956, 30, No 6, 1025-1033

Abstract : The emulsion-camera procedure was used to study the production of charged π^--mesons by 460 Mev protons and by neutrons of 400 Mev effective energy.

Card : 1/1

AL'PERS, V.V.[deceased]; BARKOV, L.M.; GERASIMOVA, R.I.; GURVICH, I.I.; MISHAKOVA, A.P.; MUKHIN, K.M.; NIKOL'SKIY, B.A.

Production of slow π^+-mesons in photographic emulsion nuclei by 660 Mev protons. Zhur.eksp. i teor.fiz. 30 no.6:1034-1039 Je '56. (MLRA 9:10)

(Mesons) (Nuclear reactions)

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1935
AUTHOR KUDRIN, L.P., NIKOLSKIY, B.A.
TITLE The Interaction between Fast Pions and Nuclei.
PERIODICAL Dokl.Akad.Nauk 111, fasc.4, 795-798 (1956)
Issued: 1 / 1957

In the course of this work the results obtained by computing the nonelactic scattering of negative 160 MeV-pions by the nuclei of the photoemulsion are compared with the experiment. On this occasion the assumption concerning individual meson-nucleon collisions within the nucleus is accepted as being correct, which is also indicated by the experimental data available concerning the nonelastic scattering of pions by nuclei.
Experimental data: The authors used the bundle of negative pions with the energy E_π = 188 ± 6 MeV emerging from the chamber of the synchrocyclotron of the Institute for Nuclear Problems of the Academy of Science in the USSR. This bundle, after passing through a deflecting magnet and a collimator incided upon an emulsion chamber consisting of layers of 395 µ thickness. There are 30 of these layers. The stars found in the emulsion chamber were selected so that the experimental results obtained relate to E_π = 160 MeV. Together, a total of 1185 acts of interaction between such negative pions and the nuclei of the photoemulsion, among them 323 nonelastic acts of scattering of a charged pion, were found. The acts of scattering of pions were identified by the determination of grain density along the trace. For the 323 nonelastic acts of scattering the energy- and angular distribution of the scattered negative pions

were determined. For the further interpretation of the experimental material obtained a graph shows the energy spectrum of the pions scattered in the angular range from $\Theta = 90$ to 180^0; this spectrum has the average energy of 64 ± 3 MeV and the half width $(30,9 \pm 3)$ MeV.

Computation of the interaction between negative 160 MeV pions and the nuclei of the photoemulsion was carried out on the assumption that meson-nucleon collisions in the nucleus develop in a way similar to that of the free nucleons. The results obtained on the basis of the scattering of pions by the nucleons of the nucleus by the computation of the energy- and angular distributions of meson-nucleon collisions within the nucleus do not depend on the particular features of the cross section of the interaction between a pion and the nucleons of the nucleus. Therefore the potential of interaction between the pion and the nucleus can be evaluated with sufficient accuracy on the basis of the results obtained by the aforementioned nonelastic scattering tests. The conditions upon which such an evaluation is based are enumerated. For the average interaction potential of negative 160 MeV-pions the value $V = E_{exp} - E_{theor} = -(24 \pm 6)$ MeV was found. This value agrees with the average potentials of the interaction between pions and nuclei which were obtained by experiments concerning the elastic scattering of pions by nuclei.

INSTITUTION:

NIKOL'SKIY, B. A. Cand Phys-Math Sci -- (diss) "The Non-Elastic Scattering of π (Pi)-Mesons on Nuclei." Mos, 1957. 11 pp 20 cm. (Academy of Sciences USSR), 100 copies (KL, 27-57, 104)

π = Pi

$\xi = \pi^{-}$

AUTHOR: Barkov, L. M., and Nikol'skiy, B. A. 120-2-11/37

TITLE: Graphical Method of Determining the Energy and Angles of Dispersion of Two moving Relativistic Particles. (Graficheskiy Sposob Opredeleniya Energii i Uglov pri Rasseyanii dvukh Dvizhushchikhsya Relyativistskikh Chastits.)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.2, pp. 40 - 43 (USSR).

ABSTRACT: The interaction between high energy nucleons or mesons with nuclei may be regarded as a result of their interaction with separate nucleons in the nucleus (Ref. 1). The relevant computations are usually carried out using the Monte Carlo method. In the present article a graphical method is given for a rapid determination of the energy and of the scattering angles of two moving particles for the case when the characteristics of their interaction are known in the centre of the mass system. The velocity in the centre of mass system of two colliding particles is determined from equation 1. The magnitude of the resulting momentum and its angle with direction of motion of the incident particle are determined graphically using the instrument shown schematically in figure 1. It

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Graphical method of Determining the Energy and Angles of Dispersion of Two Moving Relativistic Particles.

consists of a rule OA used as an indicator for a protractor. The momentum of the nuclear nucleon is produced along the rule, while the angle α corresponds to the angle between the direction of motion of this nucleon and the incident particle. BC is parallel to OO' and its length represents the momentum of the incident nucleon. The rule OA is then moved so as to coincide with point C (position OA') and the total momentum and the angle χ are thus found. After determining this angle the parallel and the perpendicular components of the momentum of the impinging particle are found using a set-square in the manner shown in Figure 2. The complete vector diagram of the transformation is shown in Figure 5. The method of determining the energy and the scattering angle of particles in the laboratory system of co-ordinates is given next; schematic illustrations are shown in Figures 6 and 7. The procedure of finding the magnitude and direction of the momentum of the scattered particle is again discussed in detail, the magnitude of the momentum of the scattered particle is eventually determined by the distance OK' Figure 8. The above instrument has been used to evaluate the interaction of 160 MeV

Card 2/3 π-mesons with nuclei of photo-emulsions assuming the

NIKOL'SKIY, B.A.

AUTHOR: NIKOL'SKIJ,B.A., KUDRIN,L.P., ALI-ZADE,S.A. PA - 2058

TITLE: Inelastic Scattering of 160 MeV π^--Mesons on Photographic Emulsion Nuclei. (Neuprugoe rassejanie 160 MeV π^--mezonov na jadrach fotoemulsii, Russian).

PERIODICAL: Zhurnal Eksperimental'noi i Teoret.Fiziki, 1957, Vol 32, Nr 1, pp 48-58 (U.S.S.R.)

Received: 3 / 1957 Reviewed: 4 / 1957

ABSTRACT: This work compares the computation of the inelastic scattering of negative pions of 160 MeV by the nuclei of photographic emulsion with the experiment. Computation of the interaction between fast pions and the nucleus, contrary to analogous computations of the interaction of fast nucleons, offers the advantage that in this case the nucleon part of the inner nuclear cascade has not to be taken into account.

Experimental results: The authors used a bundle of negative (160 ± 5 MeV)-pions emitted by the chamber of the synchrocyclotron of the IJAP AN SSSR (= Institute for Nuclear Problems of the Academy of Sciences of the USSR) and NIKFI emulsions of the type P. The experimental results obtained refer to a proton energy of E_π = 162 MeV of the pions. A total of 1185 cases of interaction between pions of this energy and

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Inelastic Scattering of 160 MeV π^--Mesons on Photographic Emulsion Nuclei.

assumptions are discussed in detail. Furthermore, the following facts are investigated more accurately: The range of a pion in the nucleus, the calculation of the scattering of pions by the nucleons of a nucleus, the effects connected with the modification of the potential on the occasion of the passage of a pion through the boundary of a nucleus, the absorption of the pions in the nucleus.
The good agreement of the theoretical with the experimental energy spectrum of the pions scattered by the nuclei of the photographic emulsion proves that the here assumed model describes the interaction between the pions and the nucleus satisfactorily.

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED:
AVAILABLE: Library of Congress

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PA - 2898

AUTHOR BARKOV L.M., NIKOL'SKIY B.A.

TITLE Pions. (Survey of experimental Data)
(π-mezony Obzor eksperimental'nykh dannykh.-Russian)

PERIODICAL Uspekhi Fiz. Nauk 1957, Vol 61, Nr 3, pp 341-398 (USSR)

Received: 5/1957 Reviewed: 6/1957

ABSTRACT The present survey systematizes the most important experimental data on the properties of pions and their interaction with nucleons and nuclei.

The first part deals with the interaction of pions with nucleons and is divided into the following sections: the properties of pions, the scattering of pions by nucleons (phase analysis of this scattering, dependence of the total cross section of this scattering on energy), the creation of pions on the occasion of nucleon-nucleon-collisions, the creation of pions under the influence exercised by γ -quanta.

Summary of first part: The energy dependence of the cross sections of photoproduction and the scattering of pions by nucleons have many features in common. The cross sections of both processes attain their maximum at the energy E_π = 110 - 120 MeV of the pions in the

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PA - 2898

Pions. (Survey of experimental Data)

mesons with different charges the effects connected with the action at the COULOMB field of the nuclei, the mechanism of the production of pions on nuclei.
(39 Illustrations and 25 Tables)

ASSOCIATION: not given.
PRESENTED BY: -
SUBMITTED: -
AVAILABLE: Library of Congress.

CARD 3/3

NIKOL'SKIY, B.A.

"A study of Explosion Showers Caused by High-Energy Cosmic Ray Particles," by V. V. Alpers, I. I. Gurevich, V. M. Kutukova, A. P. Mishakova, B. A. Nikol'skiy, and L. V. Surkova, Doklady Akademii Nauk SSSR, Vol 112, No 1, Jan 57, pp 33-36

Results are given of a study of explosion showers caused by high-energy cosmic ray particles. An emulsion chamber, containing "NIKFI Type P" emulsion, was exposed for 7 hours in May 1955 at an altitude of 27 kilometers.

The 29 explosion showers observed are analyzed. The primary particle causing each shower, the number of relativistic particles per shower, and the angular distribution of shower particles relative to the shower axis are determined. (U)

SUM 13 60

AIAC SA I/X, 57.

GUREVICH, I.I.; MISHAKOVA, A.P.; NIKOL'SKIY, B.A.; SURKOVA, L.V.

Explosion showers produced by high energy cosmic ray particles. Zhur. eksp. i teor. fiz. 34 no.2:265-280 F '58. (MIRA 11:4)

1. Akademiya nauk SSSR.
(Cosmic rays)

Nikol'skiy B. A.

AUTHORS: Gurevich, I. I., Kutukova, V. M., Mishakova, A. P., Nikol'skiy, B. A., Surkova, L. V. 56-2-2/51

TITLE: The Asymmetry in the Angular Distribution of $\mu^+ \rightarrow e^+$ Decay Electrons Observed in Photographic Emulsions (Asimmetriya uglovogo raspredeleniya elektronov $\mu^+ \rightarrow e^+$ -raspada po nablyudeniyam v fotoemul'sii)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol 34, Nr 2, pp 280-285 (USSR)

ABSTRACT: An emulsion chamber of 7 x 4 x 1 cm consisting of 25 layers of an НИКФИ photographic emulsion from the P type was irradiated with slow positive pions of the ОИЯИ (Ob"yedinennyy institut yadernykh issledovaniy - United Institute for Nuclear Research) synchrocyclotron. The chamber was mounted in a double magnetic screen in order to make sure that the scattered magnetic field of the synchrotron did not lead to a precession of the spin of the myon. In looking through the emulsions after developing those cases were selected where the whole myon track of the $\pi \rightarrow \mu$-decay is situated in a single layer of the emulsion. In this the

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The Asymmetry in the Angular Distribution of $\mu^+ \rightarrow e^+$ Decay 56-2-2/51
Electrons Observed in Photographic Emulsions

myon is supposed to come to a standstill after the passage through at least 50μ of the surface of the non-developed layer of emulsion. The authors determined the angle α between the direction of emission of the myon in the $\pi \rightarrow \mu$--decay and that of the electron of the $\mu \rightarrow$ e-decay by determining the angle α between these directions on the emulsion level and the angle of sitribution β_1, β_2 resp. of the traces of the myon, the electron towards the level of emulsion resp.. Furthermore an emulsion chamber of the same dimensions was irradiated with slow positive pions. The results of measurements are collected in a table. The angular distributions determined this way are shown by a diagram; they do not contradict the theoretical dependence $1 + a\cos\theta$, $a = (\lambda/3)(1 - \gamma)$, where γ denotes the depolarization coefficient of myons. A relation for the determination of the optimum value of a is given. The magnetic field ($H \sim 1100$ G) increases a little the asymmetry, i.e. it decreases the depolarization of the myons in the emulsion. But this effect is not regarded as strictly proved. The mean value of the parameter a calculated from the results of this work is $a = -(0,108 \pm 0,0094)$. The angular distribution for 13770μ

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The Asymmetry in the Angular Distribution of $\mu^+ \rightarrow e^+$ Decay 56-2-2/51
Electrons Observed in Photographic Emulsions

→ decay processes proceeding from the results of various previous works and from those of the present investigation is also shown in a diagram. Within the error limits the angular distribution of the electrons of the relation 1 + + a cosϑ,is sufficient, where a = -(0,111 ± 0,015). There are 2 figures, 2 tables, and 13 references, 1 of which is Slavic.

ASSOCIATION: AS USSR (Akademiya nauk SSSR)

SUBMITTED: August 14, 1957

AVAILABLE: Library of Congress

1. Photographic emulsions-Irradiation 2. Electrons-Distribution

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Nikol'skiy B.A.

56-2-35/51

AUTHORS: Dobretsov, Yu. P., Nikol'skiy, B. A.

TITLE: The Formation of Positive Pions by Negative Pions (Rozhdeniye π^+-mezonov π^--mezonami)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 2, pp. 510 - 511 (USSR)

ABSTRACT: The present work investigated the production of positive pions on the nuclei of a photo-emulsion under the action of negative pions of an energy of from 340 ± 30 MeV. The emulsion chamber consisting of 60 emulsion layers of a total thickness of 23 mm and of a diameter of 100 mm was arranged in a beam of negative 370 MeV pions of the synchrocyclotron of the ОИЯИ (= United Institute for Nuclear Research, Ob"yedinennyy institut yadernykh issledovaniy). The chamber consisted of an НИКФИ-emulsion of the P type. On observing the emulsion layers the $\pi^+ \rightarrow \mu^+ \rightarrow e^+$ decays were recorded. Then the found positive pions were traced to the place of their production. When tracing their path 56 stars caused by negative pions were found. In the case of 21 stars

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The Formation of Positive Pions by Negative Pions

the emission of a positive pion is accompanied by the emission of a second pion, which is identified from the gradient of granular density along its path. Such cases obviously belong to the production of positive pions. In the remaining number of the cases no emission of second pion was noticed but these cases can also be related to the production of a positive pion with subsequent absorption of a negative pion in the nucleus (or with emission of a neutral pion). The energy of the such produced positive pions was determined from their range within the emulsion. The energy of the negative pions (in the stars with 2 pions) was determined from the density of the grain. The taking into account of the edge effect is shortly discussed. Two diagrams show the energy spectrum and the angular spectrum of the produced positive pions. The spectra of the positive pions with and without emission of a second pion from the nucleus are similar to each other. In determining the relative momenta of two pions emitted from the same star no noticeable correlation of the two pions of the final state was found. This is, however, only a qualitative final conclusion. The cross section of the production

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56-2-55/51

The Formation of Positive Pions by Negative Pions

of slow positive pions (E_{π^+} = 0 to 60 MeV) by negative pions of an energy of from 340 ± 30 MeV on a nucleus of the photo-emulsion is equal to $\sigma = (2,1 \pm 0,8).10^{-27}$ cm^2. There are 2 figures, and 8 references, 4 of which are Slavic.

ASSOCIATION: AS USSR (Akademiya nauk SSSR)

SUBMITTED: October 29, 1957

AVAILABLE: Library of Congress

1. Pions-Formation-Positive 2. Pions-Negative-Applications
3. Pions-Energy spectrum 4. Pions-Angular spectrum

Card 3/3

NIOLSKIY, B. A.

ANGULAR DISTRIBUTION OF PARTICLES IN HIGH-ENERGY EXPLOSIVE SHOWERS

A.P. Mishakova, B.A. Nikolskiy, V.B. Fedorov

The paper covers a study of 39 burst showers generated by high-energy cosmic particles ($\geq 10^{10}$ ev) in nuclear emulsion. The main part of these explosive showers had already been investigated by the authors in an earlier work.

The aim of this paper is to consider all errors (fluctuational and caused by measurements) that influenced the angular distribution of shower particles. This was necessary to verify the earlier conclusion that the angular distribution of shower particles in the centre-of-inertia system is asymmetric backwards (in the direction of angles 150-180°). This conclusion did not agree with the predictions of various theories of shower production. The main effort in this study was to determine the errors that are possible in determining the true direction of the shower axis. The direction of the primary particle may be taken as the direction of the shower axis; if this is impossible, then the direction of "the centre of gravity" of the shower is considered to be the direction of the shower axis.

A study has been made (experimentally and by the Monte Carlo method) of the deviation of the direction of the "centre of gravity" of the shower from that of the primary particle. It has been found that the amount of fluctuation in determining shower axis is $0.17\sqrt{\frac{1}{n}}$, which corresponds to an error of 20° in determining the direction of the shower axis in the center-of-inertia system. An evaluation of widening due to this effect shows that the number of particles in the interval 0°-30°

in the center-of-inertia system will diminish by ~22%. The total systematic error in the experimentally observed number of shower particles in the interval 0° -30° in the center-of-inertial system amounts to~25%.

The angular distributions of shower particles in the centre-of-inertial system have been obtained for 39 showers from 0° to 180°. The distributions indicate an essential anisotropy of shower particles moving rather uniformly forwards and backwards with respect to the direction of motion of the primary particle.

Thus, account of this error leads to a symmetrization of angular distribution in the centre-of-inertia system relative to the angle $\theta = \pi/2$. This conclusion is in agreement with the data of all other laboratories that were analysed in the paper.

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

SOV/56-36-4-65/70

24(3), 21(7)

AUTHORS: Ali-Zade, S. A., Gurevich, I. I., Dobretsov, Yu. P., Nikol'skiy, B. A., Surkova, L. V.

TITLE: The Asymmetry of Electron Angular Distribution in $\mu^+ \rightarrow e^+$-Decay in a Magnetic Field of 27000 G (Asimmetriya uglovogo raspredeleniya elektronov $\mu^+ \rightarrow e^+$-raspada v magnitnom pole 27000 G)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 4, pp 1327-1329 (USSR)

ABSTRACT: If angular distribution is described by the expression $4\pi dN/d\omega = 1 - a\cos\theta$ ($a = \lambda P/3 = a_0 P$; $\lambda = 3a_0 = -\cos(V,A)$ characterizes the ratio of the vectorial and pseudovectorial share of interaction in $\mu \rightarrow e$-decay; P denotes muon polarization), it is found that the quantity a depends both on the measuring method and on the nature of the depolarized matter. It attains a maximum value of $a = 1/3$ at $\cos(A,V) = -1$. For NIKFI-R emulsions a was determined as amounting to 0.092 ± 0.018, for Ilford G-5 it was 0.14. The maximum value attained by a for graphite is 0.303 ± 0.048. The depolarizing property of matter may be reduced by applying strong magnetic fields, the direction of which coincides with muon polarization. The increase of a brought about

Card 1/3

SOV/56-36-4-65/70

The Asymmetry of Electron Angular Distribution in $\mu^+ \rightarrow e^+$-Decay in a Magnetic Field of 27000 G

by magnetic field can be described by $a = a_0\left[1 - \frac{0.5}{1+(\mu H/\Delta E)^2}\right]$; a_0 denotes the a-value if no depolarization takes place, ΔE - the energy of fine-structure splitting of the μ-mesic atom in the ^1S-state. An experimental checking of this formula in fields of up to 14000 G showed that by it the dependence a(H) is qualitatively described. The authors determined a in the $\pi \rightarrow \mu \rightarrow e$-decay in photoemulsions at H = 27000 G. a was determined from the ratio $a = 2(N_{backward} - N_{forward})/(N_{backward} + N_{forward})$. Results:

For $\theta = 0 - 30^\circ$ $a_1 = 0.315 \pm 0.026$

$\theta = 150 - 180^\circ$ $a_2 = 0.295 \pm 0.027$.

Mean value formation averaged over the directions in which muons fly off gives: $a_3 = 0.305 \pm 0.019$. If $a_{real} = a_3/\cos\theta$, one obtains $a_{real} = a_3/0.940 = 0.324 \pm 0.020$. Herefrom it follows that $|\lambda|P = 0.972 \pm 0.06$, i.e. $|\lambda|$ with an accuracy of up to a

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SOV/56-36-4-65/70

The Asymmetry of Electron Angular Distribution in $\mu^+ \rightarrow e^+$-Decay in a Magnetic Field of 27000 G

statistical error of $\pm$ 6% attains its maximum value and $P \approx 1$. This indicates a considerable degree of inaccuracy of the formula describing a(H). The authors finally thank B. S. Neganov and B. V. Sokolov for their help in irradiating the photoemulsions, D. M. Samoylovich for developing the emulsion, and further also V. M. Kutukova, A. M. Alpers, and G. V. Pleshivtseva for their assistance. There are 8 references, 2 of which are Soviet.

SUBMITTED: February 1, 1959

Card 3/3

2† (7)
AUTHORS: Gurevich, I. I., Nikol'skiy, B. A., Surkova, L. V. SOV/56-37-1-58/64

TITLE: Three-Electron Decay of the μ-Meson (Trekhelektronnyy raspad μ-mezona)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 1, pp 318 - 319 (USSR)

ABSTRACT: The authors of the present "Letter to the Editor", when investigating the asymmetry of the angular electron distribution of $\pi \rightarrow \mu \rightarrow e$-decay, observed that in one case three relativistic electrons depart from the stopping point of the μ-meson (cf. figure). All three electrons have large inclination angles with respect to the emulsion plane, and therefore exact measurement of grain density was impossible; it was, however, near that for relativistic particles (energy 1 Mev). The recorded part of the electron path length: $L_{e_1} = 455\ \mu$, $L_{e_2} = 562\ \mu$, $L_{e_3} = 455\ \mu$.

The muon range amounts to $R_\mu = 598\ \mu$ in the case of an average path length of the muon of the $\pi \rightarrow \mu$-decay in a R-NIKFI-emulsion of 602 μ. The angles between the electrons: $\theta_{12} = 8.6^\circ$, $\theta_{13} =$

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Three-Electron Decay of the μ-Meson

= 10.6°, Θ_{23} = 10.5°. The case observed cannot be interpreted as a muon decay in electron + γ with a transformation of the quantum into electron + positron at the place of decay, because in this case the direction of the departure of the particle pairs would have had to be opposite to the observed direction of flight of the decay electrons. The explanations $\mu^+ \rightarrow e^+ + e^+ + e^- + \nu + \tilde{\nu}$ or $\mu^+ \rightarrow e^+ + \nu + \tilde{\nu} + \gamma$ with following transformation of the quantum into a pair would be possible. The case described here was observed in connection with the evaluation of about 50,000 muon decays. Thus, the "three-electron" decay probability of the muon may be estimated at $p(3e)/p(e) \leq 2.10^{-5}$. If the results obtained by other authors are taken into account, a probability of 10^{-6} is obtained. This order of magnitude is obtained also if a radiation process of second order is assumed; emission of a virtual γ-quantum accompanying the departure of the electron with following transformation into an electron-positron pair, the pair energy of which may be estimated as amount-

ing to 15 Mev. The authors finally thank I. S. Shapiro for discussions. There is 1 figure.

SUBMITTED: April 17, 1959

76974
SOV/56-37-6-14/55

24.6900,24.6200,
24.6600,24.6510,
16.8100

AUTHORS: Mishakova, A. P., Nikol'skiy, B. A.

TITLE: Angular Distribution of Shower Particles in Explosive Showers Produced by High-Energy Cosmic Ray Particles

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 6, pp 1594-1603 (USSR)

ABSTRACT: An investigation was made of the angular distribution of cosmic particles in showers with an energy of $10^{10} - 10^{13}$ ev in the center mass system. The data were obtained on the basis of an analysis of 39 cosmic showers recorded in 1956-1957 at the height of 23-27 km. The method of the analysis was described in the first part of this study (cf. I. I. Gurevich, A. P. Mishakova, B. A. Nikol'skiy, L. V. Surkova, Zhur. eksp. i teoret. fiz., 34, 265, 1958). The main features of the radiation are summarized in Table 1.

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Angular Distribution of Shower Particles in Explosive Showers Produced by High-Energy Cosmic Ray Particles

76974
SOV/56-37-6-14/55

Table 1

No Shower	Initial Particle	$n_h + n_g$*	n_s	$\theta_{1/2}$ (rad)	$\gamma_c(\theta_{1/2})$	$\gamma_c(\bar{\lambda})$	$\bar{\gamma}_c$	E, eV
1	n	5+8	35	1,05	54,5	25,1	39,8	$3,16 \cdot 10^{10}$
2	p	2+3	27	2,18	23,2	32,6	28,8	$1,65 \cdot 10^{10}$
3	α	1+2	35	10,7	5,3	4,73	5,01	$5,0 \cdot 10^{10}$
4	p	5+2	23	3,23	17,7	13,0	15,35	$4,7 \cdot 10^{11}$
5	p	0+0	10	1,03	55,5	48,3	51,9	$5,35 \cdot 10^{10}$
6	α	1+1	20	8,80	6,97	7,4	7,18	$1,04 \cdot 10^{11}$
7	p	3+4	15	3,28	17,9	14,1	16,0	$5,1 \cdot 10^{11}$
8	p	5+3	13	5,17	11,1	10,23	10,66	$2,26 \cdot 10^{11}$
9	p	3+2	17	5,92	9,68	13,95	11,81	$2,78 \cdot 10^{11}$
10	n	5+3	15	9,63	5,9	6,05	5,98	$7,12 \cdot 10^{10}$
11	p	12+7	24	8,26	6,97	6,41	6,69	$8,93 \cdot 10^{10}$
12	p	11+13	15	0,57	98,0	74,0	86,0	$1,47 \cdot 10^{10}$
13	p	5+3	27	2,37	25,0	16,6	20,3	$8,2 \cdot 10^{11}$
14	p	9+7	14	4,4	13,0	10,80	11,94	$2,82 \cdot 10^{11}$
15	α	12+3	42	8,95	6,35	6,41	6,38	$8,1 \cdot 10^{10}$
16	p	13+10	19	4,03	14,2	13,7	13,95	$3,88 \cdot 10^{11}$
17	p	1+2	29	7,45	7,67	6,19	6,93	$9,6 \cdot 10^{10}$
18	n	1+1	12	9,82	5,82	5,85	5,83	$6,77 \cdot 10^{10}$
19	p	2+2	27	1,42	40,5	41,6	41,05	$3,44 \cdot 10^{11}$
20	p	10+6	35	6,07	9,53	9,45	9,69	$1,8 \cdot 10^{11}$

* $n_h + n_g$ — number black and grey tracks in shower

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Angular Distribution of Shower Particles in Explosive Showers Produced by High-Energy Cosmic Ray Particles

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Table 1 (cont'd)

No. Shower	Central Particle	$n_s + n_g^*$	n_s	$\theta_{1/2}$ (rad)	r_c ($\theta_{1/2}$)	r_c (1)	$\bar{r}_c$	ν, eV
21	π	7+3	33	2,33	24,0	20,9	22,45	$1,0 \cdot 10^{10}$
22	π	7+5	32	5,50	9,80	9,05	9,32	$1,74 \cdot 10^{11}$
23	p	1+1	20	2,09	28,2	20,4	24,3	$1,18 \cdot 10^{10}$
24	p	5+4	9	0,316	180	109,8	144,8	$4,18 \cdot 10^{10}$
25	p	6+4	20	1,92	30,0	17,6	23,8	$1,13 \cdot 10^{10}$
26	p	1+0	10	2,82	20,3	13,5	16,9	$5,7 \cdot 10^{11}$
27	p	1+2	19	5,44	10,5	8,27	9,88	$1,9 \cdot 10^{11}$
28	p	8+26	87	12,2	4,6	3,94	4,27	$3,64 \cdot 10^{10}$
29	p	14+6	23	11,5	4,9	4,77	4,83	$4,65 \cdot 10^{10}$
30	p	10+1	29	5,9	9,7	10,05	9,87	$1,84 \cdot 10^{11}$
31	p	1+2	45	1,37	42,0	38,4	40,2	$3,22 \cdot 10^{10}$
32	p	4+0	53	3,90	19,4	15,85	17,62	$8,2 \cdot 10^{11}$
33	p	7+3	37	13,0	4,37	6,25	5,31	$5,6 \cdot 10^{10}$
34	p	15+7	74	6,93	8,24	7,75	8,0	$1,27 \cdot 10^{11}$
35	p	13+6	29	4,08	12,2	9,15	10,62	$2,24 \cdot 10^{11}$
36	p	6+1	17	2,01	28,4	28,2	28,3	$1,6 \cdot 10^{10}$
37	p	6+8	31	4,74	12,0	10,1	11,05	$2,44 \cdot 10^{11}$
38	p	21+7	40	8,53	6,85	5,50	11,2	$2,5 \cdot 10^{11}$
39	p	1+2	70	5,55	10,3	10,24	10,27	$2,09 \cdot 10^{11}$

* $n_s + n_g$ — number black and gray tracks in shower

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Angular Distribution of Shower Particles in Explosive Showers Produced by High-Energy Cosmic Ray Particles

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SOV/56-37-6-14/55

The magnitude of the energy was obtained on the assumption of the symmetry in the angular distribution of cosmic particles relative angle $\pi/2$ according to the relations:

$$\gamma_c(\vartheta_{1/2}) = \operatorname{ctg}\vartheta_{1/2} \qquad \ln\gamma_c(\bar{\lambda}) = -\ln\operatorname{tg}\vartheta = \bar{\lambda}. \tag{1}$$

The direction of the particle motion in the laboratory system ϑ was found to be related with the direction of motion in the center of inertia system θ by the following relation:

$$\operatorname{ctg}\vartheta_i = \gamma_c \frac{\cos\theta + \beta_{i\,\mathrm{cm}}}{\sin\theta}. \tag{3}$$

(where β is the velocity of the particle in the center of inertia system). The analysis of the data showed that a collision of the primary particle and nucleus leads to a symmetrical angular distribution of the cosmic particles in the center mass system, and that there is no correlation between the angles of the particle pairs in the shower. I. I. Gurevich, L. M. Barkov, V. G. Vaks, O. V. Ryzhova, and

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Angular Distribution of Shower Particles in Explosive Showers Produced by High-Energy Cosmic Ray Particles

76974
SOV/56-37-6-14/55

V. B. Fedorova made various contributions in the course of this work. The text contains 3 tables; 4 graphs; and 2 Soviet references.

SUBMITTED: July 10, 1959

Card 5/5

83587

S/056/60/038/005/020/050
B006/B070

24.6900
AUTHORS: Nikol'skiy, B. A., Mishakova, A. P.

TITLE: Fluctuations in the Angular Distribution of Seconiary Particles of Explosive Showers 19

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 5, pp. 1507-1511

X

TEXT: Assuming the "two-center" model of the production of shower particles in high-energy explosive showers, the authors have calculated the fluctuations of the angular distribution of shower particles by the Monte-Carlo method. In the present work, the authors only give the results of these calculations and a comparison of the theoretical results with the abundant experimental material. Fig. 1 shows characteristic examples of "two-center" angular distributions of cosmic shower particles observed in the laboratories of Chicago, Bristol, and Warsaw. Fig. 2 shows the angular distribution of two particles each of these showers, which correspond partly to narrow and partly to wide cones in the laboratory syatem. The distributions are given by the functions $\log[F/(1-F)] =$

Card 1/2

B/056/61/040/002/009/047
B113/B214

AUTHORS: Ali-Zade, S. A., Gurevich, I. I., Nikol'skiy, B. A.

TITLE: Asymmetry of the angular distribution of electrons of μ-e decay in magnetic fields of strengths up to 35,000 oe

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 2, 1961, 452-456

TEXT: Taking into account the multiple exchange of electrons in muonium production, the mechanism of muon depolarisation has been studied in earlier papers and the equation $a^x = a\left[1-0.5/(1+x^2+\tau^{-2})\right]^n$ (3) obtained. Here, n denotes the number of exchanges with electrons, τ the mean life-time of a muonium atom in the units $\hbar/\Delta E = 5.58\cdot10^{-11}$ sec, $a^x = Pa$, where P is the degree of residual polarisation of the muon on stopping in the moderator, and a is the asymmetry parameter. The present paper is concerned with the investigation of the asymmetry of angular distribution of electrons of μ-e decay in magnetic fields up to 35,000 oe, and with the explanation of the function $a^x(H)$ in a wide range of H. For carrying out

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S/056/61/040/002/009/047
B113/B214

Asymmetry of the angular...

the experiment, the photoemulsion chambers were bombarded with slow π^+ mesons so that the muons were stopped in the chamber. From the events of π-μ-e decay such were selected, in which the direction of emission of the muon formed angles of β = 0-30° and β = 180-150° with the direction of the magnetic field. Only those events of π-μ decay were considered, in which the muon range was greater than or equal to λ = 15μ measured from the surface of the emulsion. In all, a total of 177,850 events of π-μ decay were recorded in accordance with these selection rules. The angle between the direction of emission of the electron and the direction of the magnetic field was projected onto the surface of the emulsion and the projected angle measured. The value of the coefficient a^* was determined from the equations: $a_1 = 2[N(\alpha > 90^0) - N(\alpha < 90^0)]/[N(\alpha > 90^0) + N(\alpha < 90^0)]$ (4). The corrected value of a^* was obtained from the equation $a^* = a_1/\cos\beta$ (5). No abnormal muon decays were found in the π-μ-e decay. Table 1 gives the values of a^* obtained from Eq. (4) and (5) for emulsions with normal gelatin content. The values of a^* are given also for the muons in the direction (↑) ($\beta < 30^0$) and in the direction (↓) ($\beta > 150^0$) of the magnetic field. δa^* denote the standard

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S/056/61/040/002/009/047
B113/B214

errors ($\delta a = 2/\sqrt{N}$). The values obtained for higher gelatin content are: $a^{\pi}(\uparrow) = 0.297 \pm 0.015$ and $a^{\mu}(\downarrow) = 0.305 \pm 0.015$. The following conclusions are drawn from the data obtained here: 1) When muons are slowed down in a medium situated in a longitudinal magnetic field having a strength of 20,000 ÷ 30,000 oe, a^{μ} does not reach the maximum theoretical value of 1/3. 2) a^{μ} increases with increasing strength of the field from 10,000 to 35,000 oe even on diluting the emulsion. This result is, however, statistically not so reliable as the first. With the data obtained it is possible to check the correctness of the function $a^{\mu}(H)$. A comparison of the theoretical and experimental functions shows that in Eq. (3) the function $P_{exp}(x)$ is not adequately taken into account.

V. P. Dzhelepov is thanked for according the possibility of bombarding the photoemulsions on the synchrocyclotron of OIYaI; D. M. Samoylovich for developing the photoemulsions, and M. M. Kutukov, A. M. Alpers, G. V. Pleshivtsev, S. A. Chuyev, B. V. Sokolov, and L. V. Surkov for assistance. There are 1 figure, 2 tables, and 8 references: 3 Soviet-bloc and 5 non-Soviet-bloc.

SUBMITTED: August 24, 1960

Asymmetry of the angular...

Table 1

	H, Oe								
	605	805	1610	2370	16 000	20 000	27 000	26 000	16 000–25 000
a^2	0,115	0,115	0,170	0,165	0,262	0,277	0,226	0,317	0,284
δa^2	0,030	0,027	0,023	0,030	0,017	0,032	0,023	0,023	0,011
a_1^2	0,114	0,077	0,165	0,202	0,264	0,266	0,273	0,309	0,277
δa_1^2	0,030	0,027	0,028	0,030	0,017	0,032	0,023	0,023	0,011
a^0	0,114	0,096	0,178	0,184	0,263	0,272	0,264	0,313	0,281
δa^0	0,021	0,020	0,020	0,020	0,012	0,023	0,016	0,016	0,006

Table 1

Card 4/4

MIKHAILOVA, A. P., and NIKOLSKIY, B. A.

"Azimuthal angular distributions of secondary particles created on high energy collisions"

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

GUREVICH, I. I. and NIKOLSKIY, B. A.

"Angular distribution of $\pi^+ \to e$ electrons."

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

37542
S/048/62/026/005/005/022
B108/B104

24 6700

AUTHORS: Mishakova, A. P., and Nikol'skiy, B. A.

TITLE: Angular pair correlation of secondary particles from 9-Bev proton interaction with emulsion nuclei

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 5, 1962, 585-591

TEXT: The angular distribution of secondary particles from 9-Bev protons in an НИКФИ-Р (NIKFI-R) emulsion, 10 by 10 by 5 cm, was measured. These data were used to calculate the distribution $\omega(\eta)$ of the angles η between two secondary particles. Direct measurements of $\omega(\eta)$ agreed with calculated data within the limits of statistical error. Such a comparison may bear evidence to a systematic angular correlation between the angles of emission of the secondary particles. This correlation may be due to: (1) the interaction between secondary particles (π-π interaction), (2) the existence of short-lived particles which decay into charged particles within $\sim 10^{-15}$-10^{-16} sec, or to (3) azimuthal anisotropy in the angular distribu-

Card 1/2

S/056/62/042/003/048/049
B108/B102

AUTHORS: Nikol'skiy, B. A., Surkova, L. V., Varfolomeyev, A. A., Sulkovskaya, M. M.

TITLE: Search for the D^+ meson

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 3, 1962, 915-916

TEXT: Owing to its short lifetime (10^{-10} sec) it was hitherto not possible to observe D mesons in K-meson beams. The authors made an attempt to find this strangeness-2 particle near its place of production. An emulsion stack irradiated by 9-Bev protons from the OIYaI synchrotron was investigated for K^+ decays from $D^+ \longrightarrow K^+ + \pi^0$ or similar processes. In such a reaction, a path of the K^+ particle of up to 15 mm would correspond to a mass of the D^+ meson of from M_D = 1230 to 1580 electron masses. 98 events with the K^+ path ≤ 15 mm were detected. It is concluded that the production probability of slow D^+ particles which decay to form a K^+ meson is less than the 500-th part of the production probability for slow K^+ mesons. The authors thank I. I. Gurevich for his

Card 1/2

S/056/62/043/001/048/056
B102/B104

AUTHORS: Ivanov, Yu. M., Nikol'skiy, B. A., Smirnov, B. M., Surkova, L. V.

TITLE: μ^+-meson depolarization in an electric field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 1(7), 1962, 337-339

TEXT: The authors studied the effect which a strong electric field ($E \sim 10^5$ v/cm) exerts on the depolarization of μ^+ mesons resulting from π-μ decays in photoemulsions. Depolarization of stopped muons is attributed mainly to production of muonium (μ^+e^-); it has, however, also been observed (Swanson, Phys. Rev. 112, 580, 1958) that the "stopped" μ^+ meson precessed in a transverse magnetic field and showed no further depolarization. Thus, muonium must be produced within a very short time immediately after the stoppage. It has not yet been verified by experiment whether the μ^+ meson in condensed matter decays as a free

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24.6700

S/056/62/043/002/049/053
B108/B102

AUTHORS: Gurevich, I. I., Nikol'skiy, B. A.

TITLE: Angular distribution of decay electrons from $\pi^+ \rightarrow \mu^+ \rightarrow e^+$

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 2(8), 1962, 724-725

TEXT: The theory of V-A interaction predicts an angular distribution of electrons from a $\pi \rightarrow \mu \rightarrow e$ decay event of the form $dN/d\Omega \sim (1 - a\cos\vartheta)$. This law was checked on by experiments (photoemulsion). The experimental results showed that the above law with $a = 0.270 \pm 0.006$ is a good rendering of what actually happens. There is 1 figure.

JA

ASSOCIATION: Institut atomnoy energii Akademii nauk SSSR (Institute of Atomic Energy of the Academy of Sciences USSR)

SUBMITTED: May 17, 1962

Card 1/1

24.6700

AUTHORS: Mishnkova, A. P., Nikol'skiy, B. A.

TITLE: Azimuthal angular distribution of secondary particles produced in high-energy interactions

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no.4(10), 1962, 1213 - 1222

TEXT: As the shape of $F(\varphi)$ the azimuthal angular distribution of secondary particles cannot be determined directly, the authors used angular pair correlation, finding $F(\varphi)$ from $W(\varepsilon)$ the distribution of ε the azimuthal angles between secondary-particle pairs in a geometry shown in Fig. 1. The

ε-angles lie in the Q-plane so that $\varepsilon_{ik} = \varphi_i - \varphi_k$ and $W(\varepsilon)$

$= \int_0^{2\pi} F(\varphi)\left[F(\varphi+\varepsilon)+F(\varphi-\varepsilon)\right]d\varphi$. Using the series representations $F(\varphi)$

$= (1/2\pi)(1+\sum_{k=1}^{\infty} a_k \cos k\varphi)$ and $W(\varepsilon) = (1/\pi)(1+\sum_{k=1}^{\infty} a_k^2 \cos k\varepsilon/2$ with $F(\varphi\pm\pi) = F(\varphi)$

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S/056/62/043/004/015/061
B102/B180

Azimuthal angular distribution ...

the first approximations (k=2) are given by $f(\varphi) = (1/2\pi)(1+a\cos 2\varphi)$ and $\omega(\varepsilon) = (1/\pi)(1+a^2\cos 2\varepsilon/2)$ a characterizes the azimuthal anisotropy of $F(\varphi)$ and is determined experimentally from the ratio of numbers of pairs recorded under certain angles. Measurements were made with 1) 9-Bev protons interacting with emulsion nuclei, 2) 9-Bev protons interacting with protons and 3) $10^{10} - 10^{13}$ ev cosmic protons interacting with emulsion nuclei. In 1) an emulsion pile was irradiated at the synchrocyclotron of the OIYaI and $R=a^2/\pi$ was calculated. For 2) experimental data by I. M. Gramenitskiy (OIYaI) and for 3) own data and that of Chudakov (ZhETF, 40, 156, 1961) were used to determine R and a. The errors were calculated by the Monte-Carlo method. Of 78 showers with the exception of one with a=1(R=0.31), $w(\varepsilon)$ was almost isotropic for all types of interactions; the greatest deviation was exhibited by double-centered showers with less than ten secondary particles (R=0.18). The average a value was $0.25^{+0.10}_{-0.25}$. As $w(\varepsilon)$ is isotropic, so also is $f(\varphi)$. This is in disagreement with the model of the formation of an intermediate excited state with large angular momentum, but is consistent with the "fire-ball model" (e. g. Phys. Rev. 93, 526, 1954; 111, 1699, 1959),

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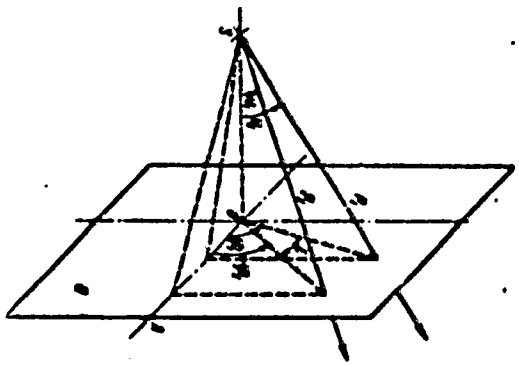
Azimuthal angular distribution ... S/056/62/043/004/015/061
B102/B180

when the direction of motion of the fire ball coincides with that of the colliding particles. There are 6 figures and 5 tables.

SUBMITTED: May 17, 1962 (initially)
June 13, 1962 (after revision)

Fig. 1.



Card 3/3

ACCESSION NR: AP4017154 S/0053/64/082/002/0177/0199

AUTHORS: Gurevich, I. I.; Nikol'skiy, B. A.

TITLE: Neutral K mesons

SOURCE: Uspekhi fizicheskikh nauk, v. 82, no. 2, 1964, 177-199

TOPIC TAGS: kaon, K meson, neutral K meson, antikaon, kaon mass difference, kaon lifetime, kaon lepton decay, kaon isotopic properties, charge invariance, strangeness conservation, coherent K_1^0 meson generation, incoherent K_1^0 meson generation

ABSTRACT: This is a brief summary of the most recent literature. Some of the unusual properties that differentiate neutral kaons from genuinely neutral particles are reviewed, particularly with respect to charge invariance. The properties of the two different neutral kaons K_1^0 and K_2^0 are reviewed and recent experimental data are report-

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ACCESSION NR: AP4017154

ed on the differences in their lifetimes and masses. Coherent and incoherent generation of K_1^0 mesons by passage of a K_2^0 beam through matter, and a related method of determining the mass difference between the two, are discussed. Experiments proposed to establish the sign of the mass difference are described. Other neutral kaon properties are also reviewed. The section headings are: 1. Two types of neutral K mesons. 2. Lifetimes of K_1^0 and K_2^0 mesons. 3. Mass difference of K_1^0 and K_2^0 mesons. 4. Generation of K_1^0 mesons in K_2^0 beam. 5. Which is heavier, K_1^0 or K_2^0? 6. Wave properties of systems of neutral kaons. 7. Lepton decays of neutral K mesons. The $\Delta S = \Delta Q$ rule. 8. Isotopic properties of neutral K mesons. Orig. art. has: 2 figures, 30 formulas, and 2 tables.

ASSOCIATION: None

Card 2/3

L 1994-65 EWG(j)/EWT(m)/FCC/T IJP(c)/ASD/ESD-t
ACCESSION NR: AP4047886 S/0056/64/047/004/1214/1220

AUTHORS: Mishakova, A. P.; Nikol'skiy, B. A. 8

TITLE: Pair correlation of the angles of secondary particles in cosmic ray showers with energy larger than 10^{15} eV

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 4, 1964, 1214-1220

TOPIC TAGS: cosmic ray shower, secondary particle angle, pair correlation, angular correlation

ABSTRACT: This is a continuation of earlier work by the authors (ZhETF v. 43, 1213, 1962; Izv. AN SSSR ser. fiz. v. 26, 585, 1962). Unlike in the earlier papers, the authors discuss the pair correlation of the secondary-particle polar angles instead of the azimuthal angles, and compare the result with the theoretical deductions obtained under the assumption that there is no systematic angular

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ACCESSION NR: AP4047886

correlation of the shower particles. The agreement between the calculation and the experimental data is satisfactory. The results are analyzed from the point of view of existence of unstable particles in the showers, which decay into charged particles with a low lifetime. This agreement establishes that within the experimental errors there is no specific angular correlation between the shower particles. "The authors are grateful to Professor I. I. Gurevich for helpful discussions of the results." Orig. art. has: 6 figures and 4 formulas.

ASSOCIATION: None

SUBMITTED: 20Apr64 ENCL: 00

SUB CODE: NP, AA NR REF SOV: 00 OTHER: 003

2/2

L 5087-66 EWT(m)/FCC/T IJP(c)
ACCESSION NR: AT5024116 UR/3136/65/000/176/0001/0020

33
26
B+1

AUTHOR: Mishakova, A. P.; Nikol'skiy, B. A.

TITLE: Azimuthal angular distributions of secondary particles in cosmic showers

SOURCE: Moskva. Institut atomnoy energii. Doklady, IAE-176, 1965. Azimutal'nyye uglovyye raspredeleniya vtorichnykh chastits v kosmicheskikh livnyakh, 1-20

TOPIC TAGS: secondary cosmic ray, cosmic ray particle, cosmic ray shower, cosmic radiation composition, angular distribution

ABSTRACT: The method of pair angular correlations was employed to study the azimuthal angular distributions of secondary particles in 169 cosmic showers with energies of 10^{10} to 10^{14} ev. An isotropic azimuthal angular distribution was observed for primary showers due to nucleons, and an anisotropic distribution for secondary showers due to pi-mesons. These data indicate a difference in the mechanisms of the n-n and pi-n interactions. The data on the angular correlation of the secondary shower particles are discussed from the viewpoint of the fireball model. It is noted in conclusion that despite the relatively large number of showers investigated, the question of the nature of the azimuthal distribution of secondary particles is still unclear. Further accumulation of experimental data is deemed necessary, particularly on the interactions due to the secondary shower

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particle. "The authors express their gratitude to L. I. Gurevich for a discussion of the results and constant interest in the work, K. Niu for graciously presenting the IEFC data on the angular distribution of shower particles, and A. Bazhanov, L. A. Chernyshov, and L. A. Makar'in for assistance in the work." Orig. art. has: 6 figures, 8 formulas, and 8 tables.

ASSOCIATION: Gosudarstvennyy komitet po ispol'zovaniyu atomnoy energii SSSR (State Committee for Utilization of Atomic Energy, SSSR); Institut atomnoy energii im. I. V. Kurchatova (Institute of Atomic Energy)

SUBMITTED: 00 ENCL: 00 SUB CODE: AA, NP

NO REF SOV: 004 OTHER: 003

L 2535-66 EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b) JD UR/0120/65/000/004/0182/0187
ACCESSION NR: AP5021359 621.318.3:621.384.634

50
30
B...

AUTHOR: Akhmanov, V. V.; Barkov, L. M.; Nikol'skiy, B. A.; Sokolov, E. V.; Khakimov, S. Kh.; Shestakov, V. D.; Bobovikov, R. S.; Dobretsov, Yu. P.; Zamoloddchikov, B. I.

TITLE: An arrangement for producing pulsed magnetic fields of strengths up to 150 kilogauss

SOURCE: Pribory i tekhnika eksperimenta, no. 4, 1965, 182-187

TOPIC TAGS: pulsed magnetic field, thyratron, synchrocyclotron

ABSTRACT: The units of an apparatus for producing a pulsed magnetic field of 146 kilogauss in a space of about 600 cm^3 are described. Pulsed magnets of beryllium bronze are powered by a capacitor bank of 0.1 farad capacitance. The capacitors are charged through limit resistances to 2 kv from a thyratron rectifier, and a I-100/5 ignitron is used as the switching element. Synchronization and control for operation with a synchrocyclotron are obtained by a special circuit. This arrangement for obtaining the pulsed field operates reliably. In the tests two separate magnets were used, each producing a field of 146 kilogauss. The use of the I-100/5

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ACCESSION NR: AP5021359

ignitron when proper heating and cooling were maintained prior to switching in the field secured operation without breakdown for 20—40 hr at a switching rate of 10/min. The joint operation of the pulsed magnet with the synchrocyclotron required some rearrangement of the control system to guarantee that no particle was emitted without accompaniment of a pulsed magnetic field. "The authors express their thanks to V. I. Danilov, T. N. Tomilina, and I. B. Yanchevich for carrying on the work. The authors are grateful to I. I. Gurevich and V. P. Dzhelepov for their constant interest and help in the work. The authors express their thanks to V. I. Smirnov, F. Ye. Gugnin, I. F. Lavrushkin, Yu. V. Maksimov, A. V. Shestov, V. I. Ivanov, I. M. Markachev, A. F. Burtsev, B. V. Degtyarev, N. P. Chistyakov, and M. T. Berezov for their aid in maintaining and operating the equipment." Orig. art. has: 11 figures and 1 table. [04]

ASSOCIATION: Institut atomnoy energii GKAE, Moscow (Institute of Atomic Energy GKAE); [illegible]; NII EFA; MIFI

SUBMITTED: 17Jun64 ENCL: 00 SUB CODE: EM,NP

NO REF SOV: 001 OTHER: 003 ATD PRESS: 4110

Card 2/2

L 45464-66 EWT(m)/T LIP(c)

ACC NR: AP6023084 (A,N) SOURCE CODE: UR/0367/66/003/004/0703/0710

AUTHOR: Mishakova, A. P.; Nikol'skiy, B. A.

ORG: none

TITLE: Azimuthal angular distributions of secondary particles in cosmic-ray showers

SOURCE: Yadernaya fizika, v. 3, no. 4, 1966, 703-710

TOPIC TAGS: particle distribution, cosmic ray shower, nuclear energy, nucleon interaction, FIREBALL MODEL, ANGULAR DISTRIBUTION

ABSTRACT: The azimuthal angular distributions of secondary particles in 169 showers with energies of 10^{10}--10^{14} ev have been investigated by the method of pair angular correlation. An isotropical azimuthal angular distribution was observed for primary showers due to nucleons and an anisotropical one for secondary showers due to π-mesons. This indicates the different nature of NN-interaction and πN-interaction at very high energies. The data on the angular correlations of

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L 45464-66

ACC NR: AP6023084

secondary shower particles have been discussed from the point of view of the fireball model. The authors' thank I. I. Gurevich for discussing the results and for constant interest in this study, and A. Bazhanov, L. A. Chernishov, and L. A. Makar' in for assistance. Orig. art. has: 4 figures, 8 formulas, and 5 tables. [Based on authors' abstract] [NT]

SUB CODE: 04,20/ SUBM DATE: 19May65/ ORIG REF: 003/ OTH REF: 007/

Card 2/2 fv

ACC NR: AP7012414 SOURCE CODE: UR/0367/67/005/001/0150/0152

AUTHOR: Mishakova, A. P. Nikol'skiy, B. A. -- Nikolsky, B. A.

ORG: none

TITLE: Azimuthal angular distributions of secondary particles in cosmic showers

SOURCE: Yadernaya fizika, v. 5, no. 1, 1967, 150-152

TOPIC TAGS: angular distribution, cosmic ray shower

SUB CODE: 20

ABSTRACT: It is shown that the azimuthal angular distribution of particles in secondary jets produced by neutral shower particles is anisotropical. The authors thank I. I. Gurevich for discussion of the results, Yu. A. Smorodin for making available information from JCEF, L. A. Makar'in and L. A. Chernyshov for help in the work, and G. B. Zhdanov for valuable advice. Orig. art. has: 2 figures, 2 formulas and 3 tables. [Based on authors' Eng. Abst.] [JPRS: 40,397]

Card 1/1

L 43647-65 EWA(b)-2/EWA(1)/EWT(1) Pe-4 JK

ACCESSION NR: AP5010906 UR/0286/65/000/007/0095/0095

AUTHORS: Kal'nov, L. A.; Chernetskiy, Yu. P.; Moroz, P. I.; Nikol'skiy, B. A.

TITLE: Aerosol apparatus for aerogenic immunization of livestock. Class 30, No. 169759

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965, 95

TOPIC TAGS: immunization, aerosol, livestock

ABSTRACT: This Author Certificate presents an aerosol apparatus for aerogenic immunization of livestock. The apparatus includes an aerosol chamber and a compressor with atomizing nozzles (see Fig. 1 on the Enclosure). To increase the efficiency of livestock immunization and for economical utilization of biological preparations, the aerosol chamber forms a compartmented feed box and is provided

curtains with chains for grasping the heads of the livestock. Orig. art. has:

Figure.

Card 1/3

[redacted]

[redacted]

ACCESSION NR: AP5010906

ASSOCIATION: Spetsial'noye konstruktorskoye byuro zooveterinarnogo priborostroyeniya MSKh SSSR (Special Construction Bureau of the Zoo-Veterinary [illegible] MSKh SSSR)

L 43887-65
ACCESSION NR: AP5010906 ENCLOSURE: 01

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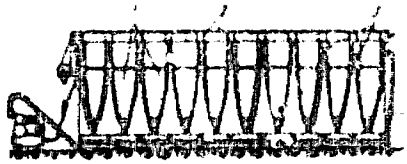
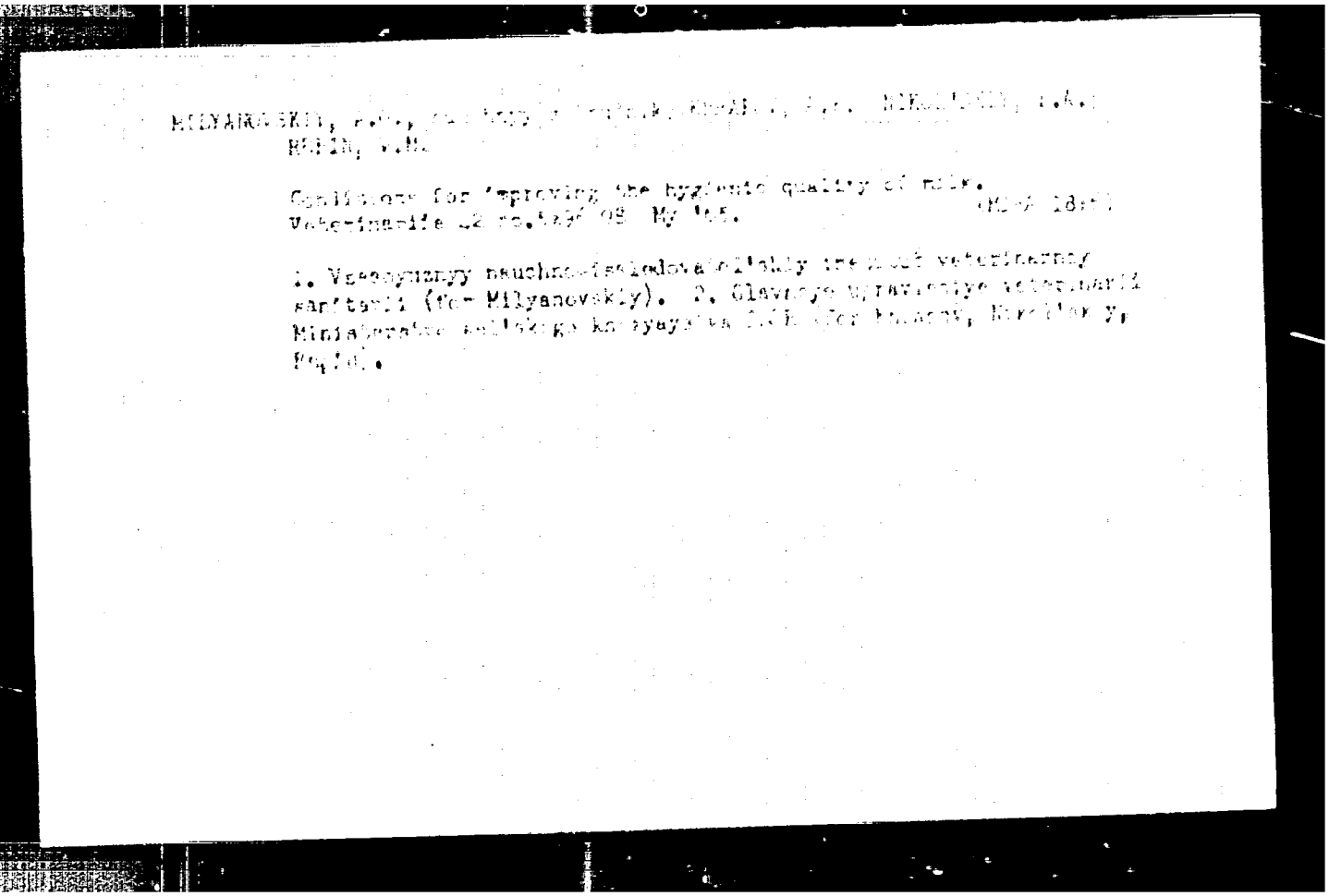


Fig. 1. 1- compartmented feed box; 2- chains; 3- curtains

Card 3/3



MILYANOVSKIY, [illegible]
[illegible]

Conditions for improving the hygienic quality of milk.
Veterinariia 42 no.5:28-29 My '65. (MIRA 18:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut veterinarnoy sanitarii (for Milyanovskiy). 2. Glavnoye upravleniye veterinarii Ministerstva sel'skogo khozyaystva SSSR (for Kuznetsov, Morozov, Pugin).

L 8202-66 JXT(C2)
ACC NR: AT5022299 SOURCE CODE: UR/3136/64/000/620/0001/0011

AUTHOR: Gurevich, I. I.; Makar'ina, L. A.; Nikol'skiy, B. A.; Sokolov, B. V.; Surkova, L. V.; Khakimov, S. Kh.; Shestakov, V. D.; Dobretsov, Yu. P.; Akhmanov, V. V.

ORG: [Gurevich, Makar'ina, Nikol'skiy, Sokolov, Surkova, Khakimov, Shestakov] IAE; [Dobretsov] MIFI; [Akhmanov] LYaP OIYaI

TITLE: Asymmetry of the angular distribution of electrons in the decay $\pi^+ \to \mu^+ \to e^+$ in a magnetic field of 140,000 gauss

SOURCE: Moscow. Institut atomnoy energii. Doklady, IAE-620, 1964, Asimmetriya uglovogo raspredeleniya elektronov pi plus → mu plus → e plus raspada v magnitnom pole napryazhennost'yu 140 000 gauss, 1-11

TOPIC TAGS: mu meson, pi meson, positron, bubble chamber, radioactive decay

ABSTRACT: The universal V-A coupling theory applied to the determination of the angular distribution of electrons in the reaction $\pi^+ \to \mu^+ \to e^+$ is given by

$$\frac{dN}{d\theta} \sim 1 - a \cos \theta_e$$

in terms of the parameter a. In order to obtain a value of a which depends on the polarization state of the meson, an experiment was performed showing the effect countering the depolarization of the dense medium through which the meson is moving.

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L 8202-66
ACC NR: AT5022299

Critical magnetic fields needed to oppose the depolarizing effect, which in turn allows more accurate determination of the parameter a, were found. Only 8800 gauss were required in the hydrogen bubble chamber to counter the effect of hydrogen depolarization. However, the scatter in the value is quite large. The photographic emulsion yielded much smaller scatter but required an application of a very large magnetic field of 140,000 gauss. The value of a found in the experiment is 0.325 ± .010 (as compared to the theoretical value of 0.333). This value was obtained by analyzing over 66,000 events. A brief discussion is given of the effect of the magnetic field on the motion of the electron. It is shown that the electron direction must be measured with respect to the magnetic field direction after setting certain constraints on the selection of the angular range. Orig. art. has: 3 figures, 1 table, 5 formulas.

SUB CODE: 18/ SUBM DATE: 00/ ORIG REF: 005/ OTH REF: 007

nw
Card 2/2

NIKOLSKIY, B. D.

Agriculture-Experimentation

Experimentation on the collective farm. Dost. sel'khoz. no. 7, 1952

9. Monthly List of Russian Accessions, Library of Congress, December 1952. Unclassified.

NIKOL'SKIY, B. D.

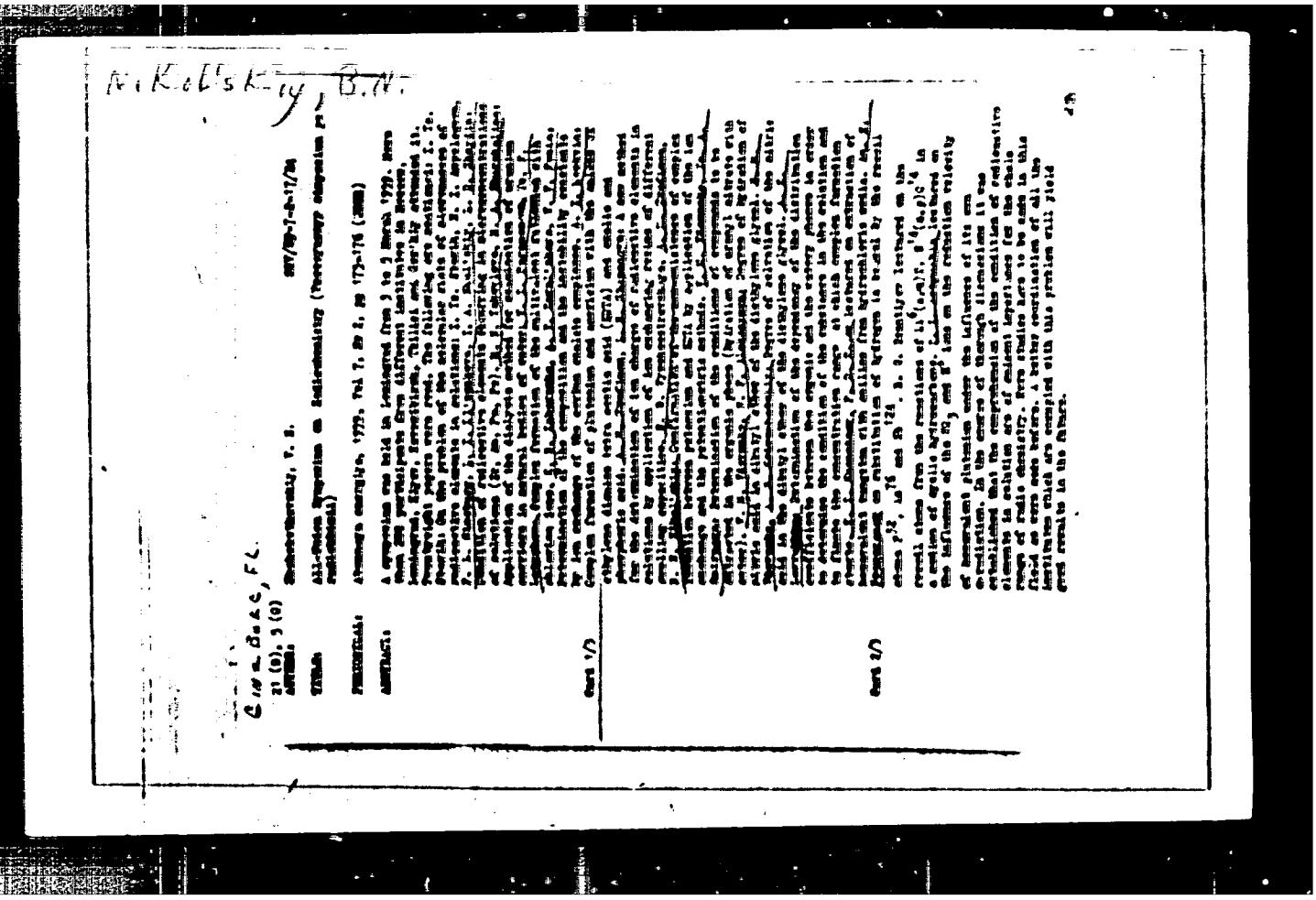
"Work experience in zoohygiene of the summer stall maintenance of dairy cows."

SO: Veterinariya 30 (10), October 1953

Ul'yanovo Oblast Administration of Agriculture and Procurement.

NIKOL'SKIY, B.I.

Effect of the engine room location on the basic characteristics of the stowage space in dry cargo merchant ships. Trudy TSNIIMF 54:89-97 '64 (MIRA 18:1)



NIKOL'SKIY, B.N.

The I-2 Oxygen Inhaler
VOYENNO-MEDITSINSKIY ZHURNAL (Military Medical Journal), no. 2, February 1955, p. 73

NIKOL'SKIY, B. N.

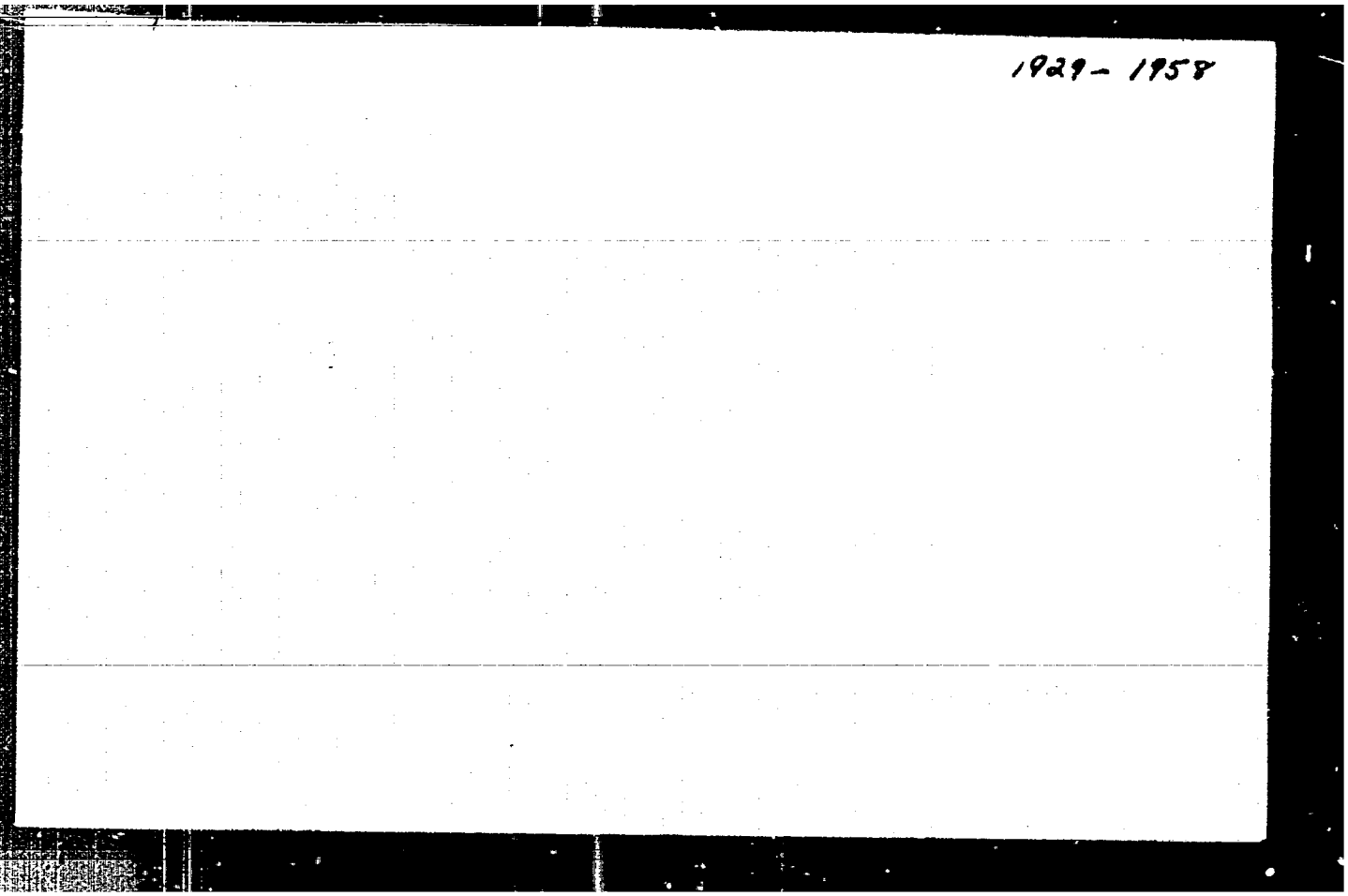
"The KM-200 Oxygen Pump," Voyenno-med. zhur., No.7, pp. 75-77, 1955

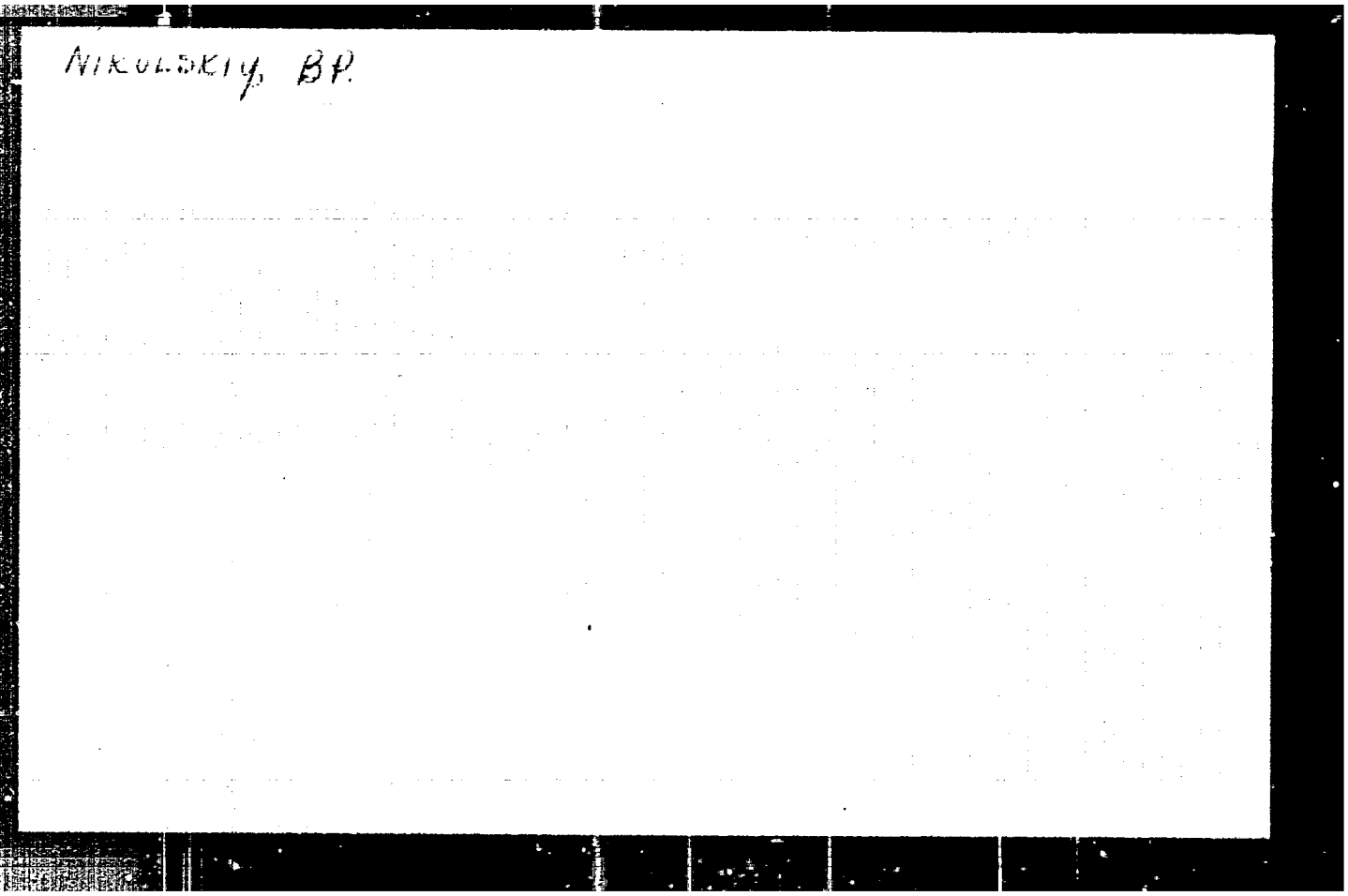
NIKOL'SKIY, B.N., inzh.-podpolkovnik

Prepared surgical dressing material. Voen.-med.zhur. no.10:78-80 O '59. (MIRA 13:3)
(BANDAGES)
(MILITARY MEDICINE, equip. & supplies)

NIKOL'SKIY, B.N., inzhener-podpolkovnik

Exhibition of the results of the work of the All-Union Research Institute on Medical Instruments and Equipment. Voen.-med. zhur. no.5:95-96 My '60. (MIRA 13:8)
(MEDICAL INSTRUMENTS AND APPARATUS)





NIKURASHIN, A.I.; NIKOL'SKIY, B.P.

Reaction of zinc salts with acids and alkalies. Part 1. Reaction with alkalis in aqueous solutions. Uch.zap.Len.un. no.108:33-59 '49. (MLRA 10:3)

(Zinc salts) (Alkalies)

NIKOL'SKIY, B.P.; BITEPAZH, Yu.A.; MATEROVA, Ye.A.

Physical and chemical study of ion exchange in glauconite.Part 1. Glauconite exchange capacity. Uch.zap.Len.un. no.106:136-143 '49. (MLRA 10:3)

(Glauconite) (Ion exchange)

NIKOL'SKIY, B.P.; CHULKOV, P.M.

Physical and chemical study of ion exchange in glauconite. Part 2. Ion exchange of sodium and calcium. Uch.zap.Len.un. no.108:144-149 '49. (MLRA 10:3)

(Sodium) (Calcium) (Ion exchange)

NIKOL'SKIY, B.P.

Adsorption isotherm and the law of mass action. Uch.zap.Len.un. no.131:3-5 '49. (MLRA 9:6)

1.Kafedra fizicheskoy khimii.
(Adsorption) (Atomic mass)

USSR/Chemistry - Glass Electrodes Nov 51

"Theory of the Glass Electrode, IV. Experimental Verification of the Exchange Nature of the Glass Electrode Potential," B. P. Nikol'skiy, Ye. A. Materova, Leningrad State U imeni A. A. Zhdanov

"Zhur Fiz Khim" Vol XXV, No 11, pp 1335-1346

Investigated interaction of glass powders of electrode glass (No 1), boron glass (No 2), and glass No 23 "Druzhnaya Gorka" (contg small amts of Al, Fe, Mg, K oxides) with alk solns contg Na K, Ba ions by potentiometric method. By analytical method investigated absorption of Li, K, Ba

196T18

USSR/Chemistry - Glass Electrodes (Contd) Nov 51

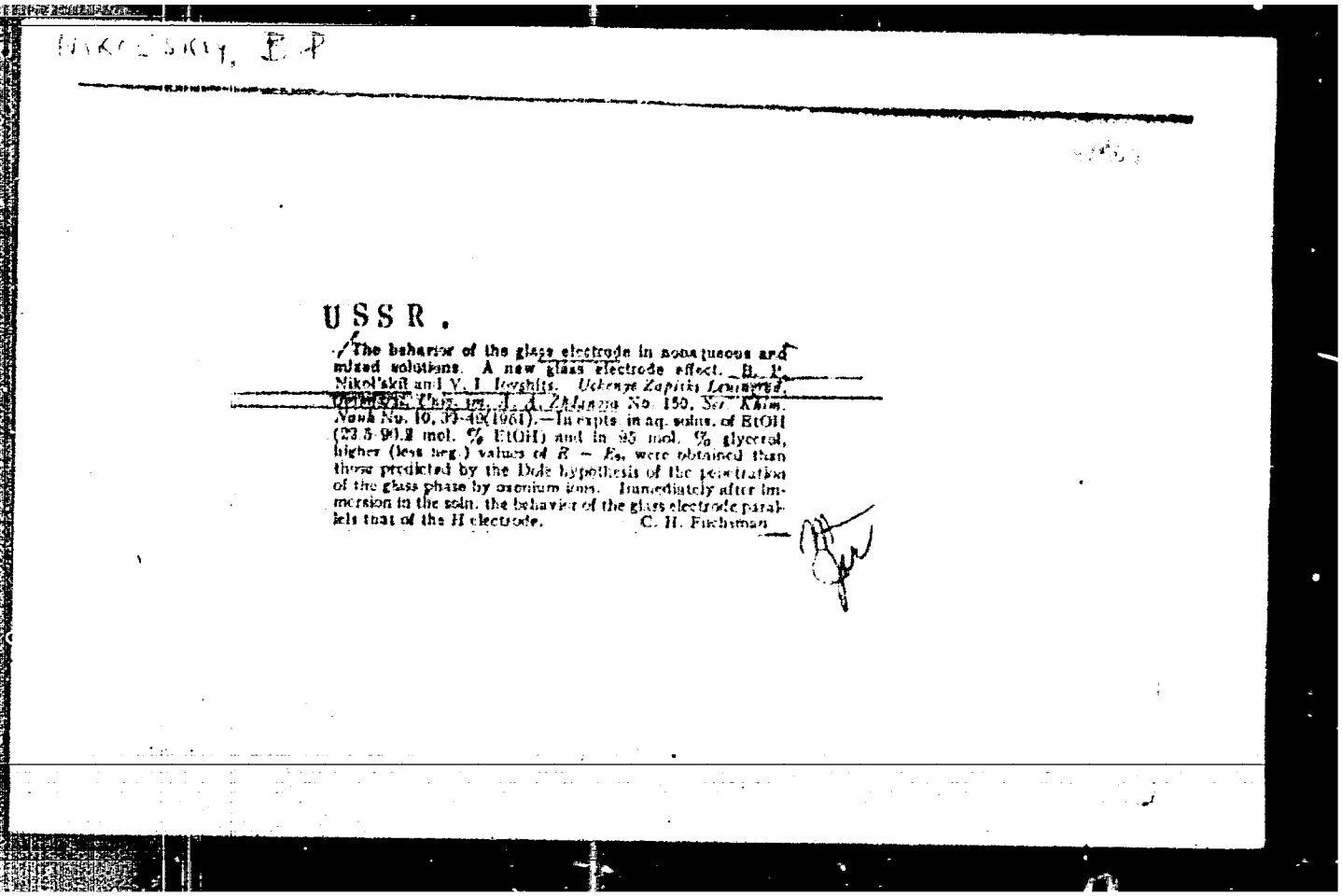
ions in dependence on pH of soln by glasses Nos 1 and 2. Compared properties of different glasses. Found analytical method more reliable than potentiometric. Results verify exchange of cations between glass and soln and are in full agreement with theory of glass electrode based on exchange concept.

196T18

NIKOLSKIY, B.P.

USSR

A new method for determining the activity coefficients in solid solutions. B. P. Nikol'skii and [illegible] [illegible] (A. A. Zhdanov State Univ., Leningrad). Doklady Akad. Nauk S.S.S.R. [illegible] — [illegible] were developed that make possible the [illegible] of the activity of the components of a AgBr-AgCl solid soln. [illegible] the e.m.f. of the [illegible] cell [illegible] and AgBr-AgCl [illegible] Ag, providing the activities of HCl and HBr in the liquid phase are known. The activity coeffs. were detd. at 25° over a concn. range of [illegible] 0-0.1 and 0.85-1.0. This method can be applied to solid solns. having a common anion also. [illegible]



NIKOL'SKII, B.P.

USSR.

The behavior of the glass electrode in nonaqueous and mixed solutions. A new glass electrode effect. B. P. Nikol'skii and I. Y. Ivoshlis. *Uchenye Zapiski Leningrad. Gosudarst. Univ. im. A. A. Zhdanova* No. 150, *Ser. Khim. Nauk* No. 10, 39-48(1951).—In expts. in aq. solns. of EtOH (23.5-99.8 mol. % EtOH) and in 95 mol. % glycerol, higher (less neg.) values of $E - E_0$ were obtained than those predicted by the Dole hypothesis of the penetration of the glass phase by ammonium ions. Immediately after immersion in the soln. the behavior of the glass electrode parallels that of the H electrode. C. H. Fischman

NIKOL'SKIY, B.P., redaktor; DOLGOV, B.N., redaktor; ZAL'KIND, Yu.S. [deceased] redaktor; MORACHEVSKIY, Yu.V., redaktor; POZIN, M.Ye., redaktor; PTITSYN, B.V., redaktor; SMIRNOV, N.I., redaktor.

[The chemist's handbook] Spravochnik khimika. Vol. 3. [Chemical equilibrium and kinetics. Solutions. Electrochemistry. Analytical and technical chemistry] Khimicheskoe ravnovesie i kinetika. Rastvory. Elektrokhimiia. Analiticheskaia i tekhnicheskaia khimiia. Leningrad, Gos.nauchno-tekhn. izd-vo khim. lit-ry. 1952. 1190 p. [Microfilm] (Chemistry--Handbooks, manuals, etc.) (MLRA 7:10)

NIKOL'SKII, B. P.

Chemical Abstracts
May 25, 1954
Electrochemistry

Oxidation potentials of hypochlorite solutions.

VREVSKIY, Mikhail Stepanovich; MISHCHENKO, K.P., professor, redaktor; NIKOL'SKIY, B.P., professor, redaktor.

[Studies in the theory of solutions] Raboty po teorii rastvorov. Moskva, 1953. 334 p. (MLRA 6:12)
(Solution (Chemistry))

NIKOLSKIY, B. P.

Chem

Theory of the glass electrode. V. Generalized theory of the glass electrode. B. P. Nikol'skii (A. A. Zhdanov [illegible]). *Zhur. Fiz. Khim.* 27, [illegible] [illegible] 47 [illegible]. A math. theory is developed which permits [illegible] of the potential of the glass electrode when the pH of the soln. is known, both in those regions where its behavior is that of a H or a Na electrode and in the intermediate region. This theory is based on exchange of Na and H ions between glass and aq. phases and on the no. of different bond energies of H ions coordinately bound to various atoms in the glass. Exptl. data (C. A. 32, [illegible]) support the theory. J. W. Loveland, Jr.

NIKOL'SKII, B.P.

Theory of the glass electrode. Part 5. Generalized theory of the glass electrode. Zhur.fiz.khim. 27 no.5:724-743 My '53. (MLRA 6:7)

1. Leningradskiy gosudarstvennyy universitet imeni A.A.Zhdanova.
(Electrodes, Glass)