GOLOMSHTOK, I.S.; GELLER, Z.I.; KUZNETSOV, [redacted]; MINASYAN, T.S.

Effectiveness of using the "Bakinskii operation" heat exchanger in petroleum refineries. Azerb.neft.khoz. 35 no.5:27-28 My '56. (MLRA 9:10)

(Heat exchangers) (Petroleum--Refining)

KUZNETSOV, Andrey Alekseyevich; CHERVOVA, M.S., red.; SHERMUSHENKO, T.A., tekhn.red.

[New machinery and instruments] Novye mashiny i pribory. Leningrad, Lenizdat, 1960. 58 p. (MIRA 13:11)

1. Zamestitel' predsedatelya Leningradskogo sovnarkhoza (for Kuznetsov).
(Machinery) (Instruments)

STEPANENKO, B.N., otv. red.; KOCHETKOV, N.K., red.; KUDRYASHOV, L.I., red.; KUZNETSOV, A.A., red.; ROZENFEL'D, Ye.L., red.; VASIL'YEVA, L.N., red.

[Chemistry and metabolism of carbohydrates; materials] Khimiia i obmen uglevodov; materialy. Moskva, Nauka, 1965. 351 p. (MIRA 19:1)

1. Vsesoyuznaya konferentsiya po probleme "Khimiya i obmen uglevodov." 3d, 1963. 2. Institut khimii prirodnykh soyedineniy AN SSSR (for Kochetkov). 3. Institut biokhimii im. A.N.Bakha AN SSSR (for Stepanenko). 4. Institut biologicheskoy i meditsinskoy khimii AMN SSSR (for Rozenfel'd).

KUZNETSOV, A.A.; SUDAKOV, Ye.N.

Horizontal alkylation reactor design. Khim.i tekh.topl. i masel 10 no.1:40-45 Ja '65. (MIRA 18:4)

1. Groznenskiy ordena Trudovogo Krasnogo Znameni neftyanoy institut.

GENADINNIK, I.S., kand.med.nauk; TANANYKIN, N.I.; KUZNETSOV, A.A.

Significance of one-stage multilayer tomosplenoportography in the diagnosis of tumors of the organs of the epigastric region. Vest.rent.i rad. 40 no.5:30-34 S-O '65.

(MIRA 18:12)

1. Kafedra obshchey khirurgii (zav. - dotsent P.M.Tarasov) i kafedra rentgeno-radiologii (zav. - dotsent A.G.Suntsov) Chelyabinskogo meditsinskogo instituta.

KOROTKOV, A.G., inzh.; KUZNETSOV, A.A., inzh.

Using castings from light nonferrous alloys. Trakt. i sel'khozmash. 33 no.10:41-43 O.'63. (MIRA 17:1)

1. Nauchno-issledovatel'skiy institut tekhnologii traktornogo i sel'skokhozyaystvennogo mashinostroyeniya.

S/874/62/000/002/019/019
D218/D308

AUTHORS: Aleynikov, A.L. and Kuznetsov, A.A.

TITLE: Solution of the converse problem in the case of a gravitational step

SOURCE: Akademiya nauk SSSR. Ural'skiy filial. Institut geofiziki. Trudy. no. 2, 1962. Geofizicheskiy sbornik, no. 3, 333-339

TEXT: This paper is concerned with the analysis of anomalies in the gravitational acceleration with the view to obtaining information about the presence and nature of semi-infinite prisms below the surface. It is suggested that the position of the upper and lower faces of the prism (h_1 and h_2) may be determined from the ratio of the maximum values of the horizontal gradient, V_{xz}^{max}, and the extremal value of the anomaly, which is given by (in units of H)

$$K = \frac{V_{xz}^{max}}{\Delta g^{max} - \Delta g_o} = \frac{2 \ln \frac{h_2}{h_1}}{\pi(h_2 - h_1)} \qquad (5)$$

Card 1/3

Solution of the converse ...

where Δg_o is the value of the anomaly at the point taken as the origin at which $V_{xz} = V_{xz}^{max}$. Fig. 1 shows a nomogram which may be used to determine h_1 and h_2 in units of H (the mean depth of the prism below the surface). The excess density can be determined from the formulas

$$\sigma = \frac{|\Delta g^{max}| + |\Delta g^{min}|}{2\pi k(h_2 - h_1)} \qquad (6)$$

$$\sigma = \frac{V_{xz}^{max}}{2k \ln \frac{h_2}{h_1}} \qquad (6')$$

where k is the gravitational constant. Examples of the applications of this method to field observations are given. There are 3 figures and 1 table.

Card 2/3

KUZNETSOV, A.A.

Role of partial hydrogen pressure in the genesis of traps.
Dokl. AN SSSR 158 no.1:123-125 S-O '64 (MIRA 17:8)

1. Nauchno-issledovatel'skiy institut geologii Arktiki.
Predstavleno akademikom V.S. Sobolevym.

VODOP'YANOV, V.L.; GABDRAKHIMOV, I.Kh.; KUZNETSOV, A.A.

Readers' r ponse to the article by S.G.Borisenko, V.M.Tubol'tsev, and P.IA.Galushko "Comparison of results of studying stresses surrounding workings by means of photoelasticity and in nature"; "Ugol'", 1964, No.2. Ugol' 39 no.11:65 N '64.

(MIRA 18:2)

1. Permskiy nauchno-issledovatel'skiy ugol'nyy institut (for Vodop'yanov, Gabdrakhimov). 2. Permskiy politekhnicheskiy institut (for Kuznetsov).

KUZNETSOV, A.A.

Comparison of factors affecting the cristallization of effusive and intrusive traps. Dokl. AN SSSR 165 no.3: 666-669 N '65. (MIRA 18:11)

1. Nauchno-issledovatel'skiy institut geologii Arktiki. Submitted June 18, 1965.

L 42061-66 EWT(d)/EWP(1) IJP(c) BB/GG SOURCE CODE: UR/0413/66/000/001/0094/0094
ACC NR: AP6005353

AUTHORS: Sobolev, A. F.; Kuznetsov, A. A.; Yefremov, A. A.

48
B

ORG: none

TITLE: Electronic integrator. 16 Class 42, No. 177646

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1966, 94

TOPIC TAGS: electronic circuit, pulse integrator

ABSTRACT: This Author Certificate presents an electronic continuous signal integrator containing an integrating capacitor. To increase the integration accuracy and the response rate, the signal is fed to the input of the pulse-amplitude converter. The output signals are fed to the input of a pulse-width converter at whose output the integrating storage capacitor is connected (see Fig. 1).

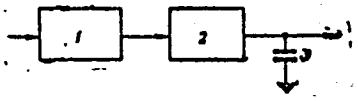

Fig. 1. 1 - pulse-amplitude converter; 2 - pulse-width converter; 3 - capacitor

Orig. art. has: 1 diagram.

SUB CODE: 09/ SUBM DATE: 14Aug64

UDC: 681.142.334

Card 1/1

KUZNETSOV, A.A., inzh.

Use of firmness values in the determination of the unit resistance of soil. Trakt. i sel'khozmash. 32 no.2:27-29 F '62. (MIRA 15:2)

1. Kuybyshevskiy sel'skokhozyaystvennyy institut.
(Soil physics)

KUZNETSOV, A. A.

"Zootechnical Bases for Covering Nursing Sows." Cand Agr Sci, Khar'kov Zootechnical Inst, Min Agriculture USSR, Khar'kov, 1954. (KL, No 9, Feb 55)

SO: Sum. No. 631, 26 Aug 55-Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (14)

KUZNETSOV, A. A.

"Preventative Infection of Living Ampule-Packaged Cultures of Leishmania tropica for the Purpose of Prophylaxis Against Spontaneous Infection With Borovskiy Disease (Dermal Leishmaniasis)." Cand Biol Sci, Turkmen Inst of Epidemiology, Microbiology, and Hygiene, Ashkhabad, 10 Dec. 54. (TI, 30 Nov 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (11)

SO: Sum. No. 521, 2 Jun 55

ROZENFEL'D, Ye.L.; SHUBINA, A.I.; KUZNETSOV, A.A.

Splitting of dextran by spleen extract. Dokl.AN SSSR 104 no.1: 113-117 S '55. (MLRA 9:2)

1.Laboratoriya fiziologicheskoy khimii Akademii nauk SSSR. Predstavlena akademikom V.A.Engel'gardtom.
(DEXTRAN)

88046

S/139/60/000/006/010/032
E201/E491

9.2000 (1001, 1155, 1024)

AUTHOR: Kuznetsov, A.A.

TITLE: Dielectric Properties and Structure of Polycrystalline Samples of the $ZnO-TiO_2$ System

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1960, No.6, pp.71-7

TEXT: On Professor G.I.Skanavi's recommendation, the author investigated the permittivity and the loss-angle tangent of the $ZnO-TiO_2$ system as a function of its composition and crystal structure. Samples with the following molar compositions were used:

$1ZnO - 9TiO_2$; $1ZnO - 4TiO_2$; $3ZnO - 7TiO_2$;
$2ZnO - 3TiO_2$; $1ZnO - 1TiO_2$; $5.3ZnO - 4.7TiO_2$;
$3ZnO - 2TiO_2$; $2ZnO - 1TiO_2$; $7ZnO - 3TiO_2$.

The samples were in the form of disks and plates. They were prepared by pressing and subsequent firing in a Silit ' rnace at 1250 to 1350°C using standard ceramic techniques. Measurements were carried out at frequencies of 400 to 10^8 c/s

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88046

S/139/60/000/006/010/032
E201/E491

Dielectric Properties and Structure of Polycrystalline Samples of the $ZnO-TiO_2$ System

and at 10^{10} c/s, at temperatures of 200 to 300°C. At 3×10^7 to 10^8 c/s and at 10^{10} c/s, measurements were carried only at 20°C. The following apparatus was used: an MLE-1 bridge at audio frequencies, Q-meters КВ-1 (KV-1) and УК-1 (UK-1) at radio frequencies, a waveguide line 33-И (33-I) and an instrument 36-И (36-I) at the highest frequencies. The temperature coefficient of permittivity was measured with apparatus ТКЭ-1М (TKYe-1M). The values of the permittivity (ε), the loss-angle tangent (tan δ) and the temperature coefficient of permittivity (TKε) of the nine samples are listed in Table 1 on p.72; all these quantities were obtained at 5 Mc/s and 20°C. Fig.1 gives the concentration dependences of the permittivity and tan δ of the $ZnO-TiO_2$ system. The permittivity fell linearly with increase of the ZnO content between 10 and 66.7 mol.% ZnO; beginning from 66.7 mol.% ZnO, the permittivity rose sharply. This rise was due to elastic electronic and ionic polarizations as well as due to superimposed relaxation polarization. The loss-

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Dielectric Properties and Structure of Polycrystalline Samples of the $ZnO-TiO_2$ System

angle tangent rose linearly with increase of the ZnO content and the rise became much more rapid at ZnO Concentrations greater than 66.7 mol.%. Analysis of the Debye X-ray diffraction patterns showed that in the $ZnO-TiO_2$ system only one compound (zinc orthotitanate, $2ZnO \cdot TiO_2$) was formed; this compound had spinel structure. Measurements of the frequency dependence of ε and tan δ (Fig.2 to 4) showed that ε was practically constant within a wide range of frequencies (a small reduction of ε at low frequencies may have been due to relaxation processes with long relaxation times). The loss-angle tangent fell with increase of frequency and was low and frequency-independent at 10^5 to 10^7 c/s. The value of tan δ did not rise in the centimetre region. The temperature dependence of ε and tan δ (Fig.5 to 7) indicated that the temperature coefficient of the permittivity of $ZnO-TiO_2$ samples can be controlled by a suitable selection of composition. It was concluded that some of the $ZnO-TiO_2$ materials may be used in temperature-compensating

88045

S/139/60/000/006/010/032
E201/E491

Dielectric Properties and Structure of Polycrystalline Samples of the $ZnO-TiO_2$ System

and stabilizing capacitors. There are 7 figures, 1 table and 18 references: 16 Soviet and 2 non-Soviet.

ASSOCIATION: Saratovskiy pedinstitut
(Saratov Pedagogical Institute)

SUBMITTED: December 31, 1959

X

Card 4/4

84449

S/057/60/030/009/015/021
B019/B054

9.2110 (1145, 1153, 1331)

AUTHOR: Kuznetsov, A. A.

TITLE: The Character of the Frequency and Temperature Dependence of ε and $\tan\delta$ of Polycrystalline Samples in the System ZnO-TiO_2

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 9, pp. 1087-1094

TEXT: The author studied the dependence of ε and $\tan\delta$ on samples of the system ZnO-TiO_2 (Ref. 12), and in the present paper describes the temperature dependence of these two parameters. The samples were composed as follows: 1ZnO-1TiO_2, 5.3ZnO-4.7TiO_2, 3ZnO-2TiO_2, 2ZnO-1TiO_2, and 7ZnO-3TiO_2. The mixtures of the two oxides were pressed into disks, and then annealed at 1250 - 1350°C. Table 1 indicates ε, $\tan\delta$, and the temperature coefficient of the dielectric constants of the five compositions investigated, at a frequency of $5 \cdot 10^6$ cycles and a

Card 1/3

The Character of the Frequency and Temperature Dependence of ε and tanδ of Polycrystalline Samples in the System $ZnO-TiO_2$

temperature of 20°C. The diagrams of Figs. 1-4 show the dielectric constants and the tangents of the loss angles as functions of the frequencies. In this connection, it is particularly pointed out that $3ZnO-2TiO_2$ and $2ZnO-TiO_2$ show the same dependence. In the diagrams of Figs. 5-8, these parameters are represented as temperature functions. Table 2 indicates the volume resistivity of the samples. As can be seen, the composition $3ZnO-2TiO_2$ has the highest value, its structure belonging to the spinel type. The author concludes from these results that the augmented dielectric constant is not only conditioned by elastic electron- and ion polarizations but also by superposed relaxation polarizations. The spinel structure makes an increase in the dielectric constant possible. It appeared to be possible to regulate the temperature coefficient of the dielectric constant by varying the concentration. The author supposes that the dielectric losses are caused by the motion of weakly bound ions. An estimation of the activation energy of the ions which participate in the conductance and in the relaxation processes

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The Character of the Frequency and Temperature Dependence of ε and tan δ of Polycrystalline Samples in the System $ZnO-TiO_2$

S/057/60/030/009/015/021
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yielded a value of about 0.1 ev. An electrochemical aging was not found in investigations in the range between 150 and 200°C, which fact convinced the author that the n-type conductivity was small in the samples investigated. N. A. Bogoroditskiy and I. D. Fridberg (Ref. 1), G. I. Skanavi and G. A. Lipayeva (Ref. 2), Professor N. P. Bogoroditskiy, Yu. M. Volokobinskiy et al. (Ref. 15), I. Ye. Balygin and K. S. Porovskiy (Ref. 16) are mentioned. There are 8 figures, 2 tables, and 18 references: 16 Soviet, 1 Japanese, and 1 US.

ASSOCIATION: Saratovskiy pedagogicheskiy institut (Saratov Pedagogical Institute)

SUBMITTED: March 28, 1960

Card 3/3

S/196/62/000/018/009/017
E194/E155

AUTHOR: Kuznetsov, A.A.

TITLE: Calculation of the permittivity of ceramic radio dielectrics of the system $ZnO-TiO_2$

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.18, 1962, 9, abstract 18 B 45. (In the collection: "Materialy XXII Nauchn. konferentsii. Saratovsk. gos. ped. in-t. Fak. yestestvozn., fiz., matem., 1961" ('Materials of the 22nd Scientific Conference, Saratov State Pedagogical Institute. Division of Natural Sciences, Physics, Mathematics, 1961'; Saratov, 1961, 125-131).

TEXT: Ceramic specimens prepared by sintering mixtures of oxides are a two-phase system consisting partly of zinc orthotitanate $2ZnO \cdot TiO_2$, which has a structure of the type of spinel, and partly of rutile or zincite depending upon which of the oxides was present in excess. If the mixture composition corresponds to the simple formula $2ZnO \cdot TiO_2$ then a single-phase system is formed consisting of $Zn_2 \cdot TiO_4$. A series of specimens was prepared in

Card 1/2

Calculation of the permittivity ...

the system ZnO–TiO_2 (the ZnO content ranged from 10 to 70% mole) and ε of the specimen was calculated by the formula of Likhtenekker and V.I. Odelevskiy on the basis of ε components, which were taken as follows: for ZnO 12, for TiO_2 112, and for Zn_2TiO_4 19. The measured and experimental values of ε were compared at a frequency of 5 Mc/s and a temperature of 20 °C; for specimens containing up to 50% mole ZnO agreement is good. In the range of 50 - 70% mole ZnO the graph relating the measured ε to the composition displays a clearly expressed minimum. For a specimen of 70% mole ZnO the calculated value of ε is low by a factor of 1.5.
7 references.

[Abstractor's note: Complete translation.]

Card 2/2

USSR/Radio - Education Jul 51
Visual Aids

"An Educational Film 'The Diode,'" A. A. Kuznetsov, Engr

"Radio" No 7, p 64

Recommends use of a silent film on the diode, intended for intermediate schools, in radio amateur clubs, technical schools, etc. Main defect of the film is that different types of diodes produced by Soviet industry were not shown. Similar films are needed for other radio equipment.

195T84

KUZNETSOV, A.

USSR/Radio - Television Receivers Oct 51

"Replacement of the Decoupling Bars in the KVN-49 Television Receiver," A. Kuznetsov

"Radio" No 10, pp 44, 45

Suggests improved design of decoupling device for KVN-49 television receiver, which simplifies replacement of burned-out capacitors used for decoupling. In this method, the chassis does not have to be removed from the cabinet.

208T57

MEYEROVICH, E. A.; KUZNETSOV, A. A.

Dynamos

Electrostatic generator with belt conveyer. Elektrichestvo no. 1, 1952. Doktor Tekhn. Nauk, Prof. Energeticheskiy Institut im. Krzhizhanovskogo AN SSSR.

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

235T59

KUZNETSOV, A.

USSR/Electronics - Radar
Educational Films

Oct 52

"A Film on Radar," A. Kuznetsov

"Radio" No 10, p 59

The motion-picture industry has put out a number of short educational films on elec and radio engineering subjects. This film on radar, produced by the Sverdlovsk Studio of Popular Sci Films, demonstrates the operating principles of radar. Film illustrates the role played by radar in World War II and its role today in sea and air navigation.

235T59

KUZNETSOV, A.

Conference on radiolocation. Mor.flot.15 no.11:30-31 N '55.
(Radar)
(MLRA 9:2)

KUZNETSOV, A.A.; KAZANTSEV, V.A.

Work on the optional subject "Directing a radio club in a school."
Politekh.obuch. no.2:55-59 F '59. (MIRA 12:3)

1. Pedagogicheskiy institut, g. Saratov.
(Radio clubs)

APRAKSIN, L.; KUZNETSOV, A.; YUDOVICH, Yu., prepodavatel' fiziki (Moskva)

A radio engineering institute helps the school. Radio no.12:10 D '60. (MIRA 14:1)

1. Institut radiotekhniki i elektroniki AN SSSR.
(Radio—Education and training)

KUZNETSOV, A., starshina 1 stat'i

Struggle in silence. Starsh.-serezh. no.12:13 D '61.
(MIRA 15:3)

1. Komandir otdeleniya gidroakustikov, Tikhookeanskiy flot.
(Sonar)

TSIVLIN, Il'ya Petrovich. Prinimal uchastiye K[illegible]SOV, A.A.; VOLKOVA, I.M., red.

[Electronic distance measuring system with two integrators] Elektronnyi dal'nomer s dvumia integratorami. Moskva, Izd-vo "Sovetskoe radio," 1964. 183 p. (MIRA 18:1)

ACC NR: AR6015870 SOURCE CODE: UR/0275/65/000/012/B007/B008

AUTHOR: Kamilov, I. K.; Kuznetsov, A. A.; Valiyev, A. A.

TITLE: On the investigation of thermoelectric properties of ferromagnetic semiconductors

SOURCE: Ref. zh. Elektronika i yeye primeneniye, Abs. 12B59

REF SOURCE: Sb. aspirantsk. rabot. Dagestansk. un-t. Yestestv. i fiz.-matem. n. Makhachkala, 1964, 135-146

TOPIC TAGS: ferromagnetic material, nickel base alloy, zinc base alloy, semiconducting material, thermal EMF, resistivity, thermoelectric property

ABSTRACT: Results of measurements of thermal emf and resistance ρ of nickel-zinc ferromagnetic semiconductors of the $Ni_{(x)}ZnO_{(y)}Fe_2O_3(50)$ type of various composition, are given. An investigation is made of specimens the composition of which is determined by the following values of x and y (in mole %): x = 0—50, y = 50—7.5. In the transition from a zinc ferrite to a nickel ferrite, the values of α increase linearly by a factor of ~ 2 (the measurement temperature is 300K). In the region of 300—600 K, the Kelvin temperature α for all ferrites, except pure nickel ferrites, is negative. The dependence α (T) for the majority of the specimens is weak. In the case when individual ferrites reach the region of magnetic transforma-

Card 1/2 UDC: 539.293:537.32

ACC NR: AR6015870

tion a sharp change in the fluctuation of (T) is observed, which is related to the increasing participation of conductivity electrons in the transitory processes, and also in the change in distances between atoms. The activation energy determined according to $\rho(T)$ increases as ρ increases and is equal to 0.21—0.3 ev for different ferrites. The mobility of the electrons $u = 1/ne\rho$, where the electron concentration n is estimated from α, is equal to 10^{-4}—10^{-3} $cm^2/v \cdot sec$. The effective mass of carriers is estimated to be equal to 2—7. The methodology of the measurements is described. [Translation of abstract] V. K.

SUB CODE: 09,20

Card 2/2

L 44784-66 EWT(d)/EWT(m)/EWP(w)/EWP(v)/T-2/EWP(k) IJP(c) EM

ACC NR: AP6030254 SOURCE CODE: UR/0147/66/000/003/0076/0084

AUTHOR: Kuznetsov, A. A.

65
B

ORG: none

TITLE: Dependence between weight, drag and cost of a one-time aircraft

SOURCE: IVUZ. Aviatsionnaya tekhnika, no. 3, 1966, 76-84

TOPIC TAGS: aerodynamics, aerodynamic drag, cost estimate, aircraft performance

ABSTRACT: An economic criterion for evaluating the optimum construction design of an aircraft is considered according to which the cost and performance of the aircraft are compared. Two problems concerned with the relationship between weight, drag, and cost of a one-time, single-stage aircraft with a given tactical load (useful + equipment weights) and an invariable predetermined flight program are solved. The first consists in determining the variation of the weight and cost of every separate system of the glider, engine, fuel, and the whole aircraft with changes in the tactical weight, without taking into account the cost of tactical load. The second consists in determining the variation of weight and cost with changes in the aerodynamic drag. Formulas are derived for two coefficients C_G and C_A called "the equivalent cost of weight" and "the equivalent cost of drag," respectively, which may be used for optimization of flight parameters in the process of designing an aircraft. Orig. art. has: 58 formulas. [AB]

SUB CODE: 01/ SUBM DATE: 27Nov65/ ORIG REF: 004/ OTH REF: 001/ ATD PRESS: 5079

Card 1/1 UDC: 533.6.013.12

L 16901-66 ARG/EWT(d)/FBD/EWT(1)/FBO/EWP(m)/EWP(c)/EWA(d)/EWP(h)/FBA/ETC(m)-6/

ACC NR: AT6003576 EWA(1) WW/GS SOURCE CODE: UR/0000/65/000/000/0257/0282

AUTHOR: Kuznetsov, A. A.

ORG: None

TITLE: Determination of initial conditions in the launching of a flying craft from a moving platform

SOURCE: Issledovaniya po dinamike poleta (Research on flight dynamics), no. 1. Moscow, Izd-vo Mashinostroyeniye, 1965, 257-282

TOPIC TAGS: missile launching, mobile missile site, missile trajectory, trajectory determination

ABSTRACT: The author notes that the flight of a craft (for example, a rocket or missile) begins at the moment its final support section leaves the guide rails of the launching ramp. Normally, it is from this instant on that there is a solution of the differential equations for the motion of the center of gravity and of the differential equations for the motion about the center of gravity in the determination of the trajectory parameters of the apparatus. The solution of the equations requires a knowledge of the initial conditions; that is, the conditions under which the apparatus leaves the guide rails of the ramp. The complexity of the

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determination of these initial conditions when the launch takes place from a moving platform (as in the case of a launch from a vessel at sea) derives from the fact that the vessel is subject to roll and has its own speed of movement, so that the guide rails will be arbitrarily oriented with respect to the basic planes of the vessel. In addition, the apparatus may be affected by wind of arbitrary direction. The present author makes use of a wide range of constant and variable values to determine the initial conditions of interest in such cases. It is assumed that the speed of the vessel as well as wind direction and velocity remain constant while the craft travels along the launch ramp guide rails. The relative speed of emergence (the speed of the center of gravity of the craft with respect to the rails at the moment the craft leaves the rails), the absolute (course) speed of the craft at the same instant, the air speed, the angular velocities of the craft when leaving the guide rails due to the roll of the platform-bearing vessel, and several critical angular values which have a decisive influence on initial trajectory conditions are determined. Orig. art. has: 8 tables, 9 figures, and 109 formulas.

SUB CODE: 16/ SUBM DATE: 02Aug65 / ORIG REF: 003 / OTH REF: 001

Card 2/2 SM

ACC NR: AP7002677 SOURCE CODE: UR/0109/67/012/001/0150/0153

AUTHOR: Kuznetsov, A.A.; Mash, D.I.; Skuratova, N.V.

ORG: none

TITLE: Effect of an axial magnetic field on the output power of a neon-helium laser simultaneously generating the 3.39 and 0.6328 μ lines

SOURCE: Radiotekhnika i elektronika, v. 12, no. 1, 1967, 150-153

TOPIC TAGS: gas laser, laser energy, neon, helium, laser pumping, axial magnetic field

ABSTRACT:

The effects of an axial d-c magnetic field on the power output of helium-neon lasers operating at λ = 6328 and 33,900 Å were examined. The laser used a 160-cm-long quartz tube (inside diameter, 8 mm) filled with a helium-neon mixture and terminating in quartz windows placed at the Brewster angle with respect to the tube axis. Excitation was established with a high-frequency generator. The longitudinal d-c magnetic field was generated by four 23-cm-long coils (18,900 turns in each coil) spaced regularly along the laser tube. Output power of the λ = 6328 Å radiation was determined by measuring the current generated in an FSK-1 photocell, and the power of the λ = 33,900 Å

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ACC NR: AP7002677

radiation was established with a PbS detector. The dependence of the output power on the pressure of the λ = 6328 Å radiation was found, and for each value of pressure the optimal pumping power was determined. The above procedure was repeated in the presence of a magnetic field; the pumping power and the coil current, for all pressures, were chosen to give maximum radiated power for λ = 6328 Å. The maximum radiated power for λ = 6328 Å increased by a factor of 1.5 after the magnetic field was applied. The optimal pressure (for peak output power) in the presence of the magnetic field was somewhat greater than the pressure with no magnetic field, and the working pressure range is somewhat greater in the presence of the magnetic field. Changes in output power caused by variations in the magnetic field were studied for both wavelengths, and at optimal pressures for the λ = 6328 Å radiation. The output power for λ = 6328 Å increases and then decreases, whereas that for λ = 33,900 Å decreases as the magnetic field increases until oscillation ceases. [IV]

SUB CODE: 20/ SUBM DATE: 06May66/ OTH REF: 003/ ATD PRESS: 5114

Card 2/2

S/057/60/030/05/14/014
B012/B056

AUTHOR: Kuznetsov, A. A.

TITLE: Mechanical Stresses in an Immobile and in a Rotating Cylinder Loaded With a Homogeneous Electric Current

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 5, pp. 589 - 591

TEXT: For the purpose of determining mechanical stresses in electric lines, differential equations of the elasticity theory may be used. These equations contain the electromagnetic force of volume. The electromagnetic force in the line may easily be represented by such a form of equation. It is pointed out that this advantage has hitherto not been utilized by anybody (Refs. 1 - 3), and that therefore also the elasticity theory could not be applied. Here, the mechanical stresses in an immobile and in a rotating cylinder loaded with a homogeneous current are investigated by means of the equations of the elasticity theory in consideration of the electromagnetic force of volume. The solution of the problem is given. There are 4 references: 2 Soviet and 2 English.

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✓B

Mechanical Stresses in an Immobile and in a Rotating Cylinder Loaded With a Homogeneous Electric Current

S/057/60/030/05/14/014
B012/B056

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR Moskva (Physics Institute imeni P. N. Lebedev of the AS USSR, Moscow)

SUBMITTED: August 29, 1959

VB

Card 2/2

KUZNETSOV, A.A.

Mechanical stresses caused by a radial electromagnetic force in a multilayer coil with a homogeneous current load and rectangular winding. Zhur. tekh. fiz. 30 no.5:592-597 My '60. (MIRA 13:8)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR, Moskva.
(Strain and stresses)

KUZNETSOV, A.A.

Mechanical stresses in the loops of the central protion of a single-layer plane-spiral coil caused by radial electromagnetic force. Zhur.tekh.fiz. 31 no.8:944-947 Ag '61. (MIRA 14:8)

1. Fizicheskiy institut imeni P.N.Lebedeva AN SSSR, Moskva.
(Strains and stresses) (Electric coil)

used. The experiments were conducted in a tube placed in a confocal system of two mirrors (W. W. Rigrod, et al., J. Appl. Phys., 1962, 33, 2, 743) and pumped by an UVCh-4, 18-Mc, 60-w oscillator. The

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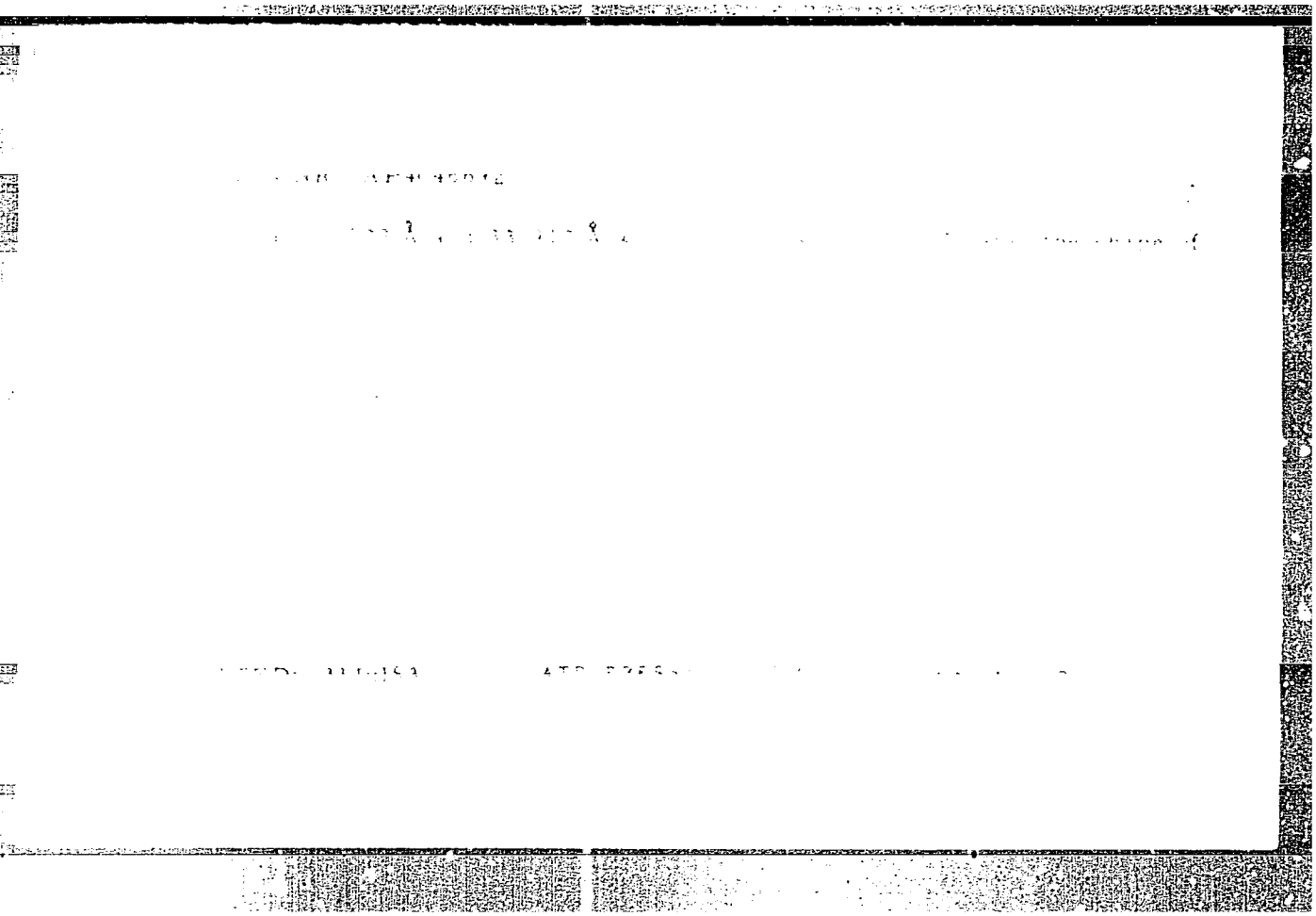

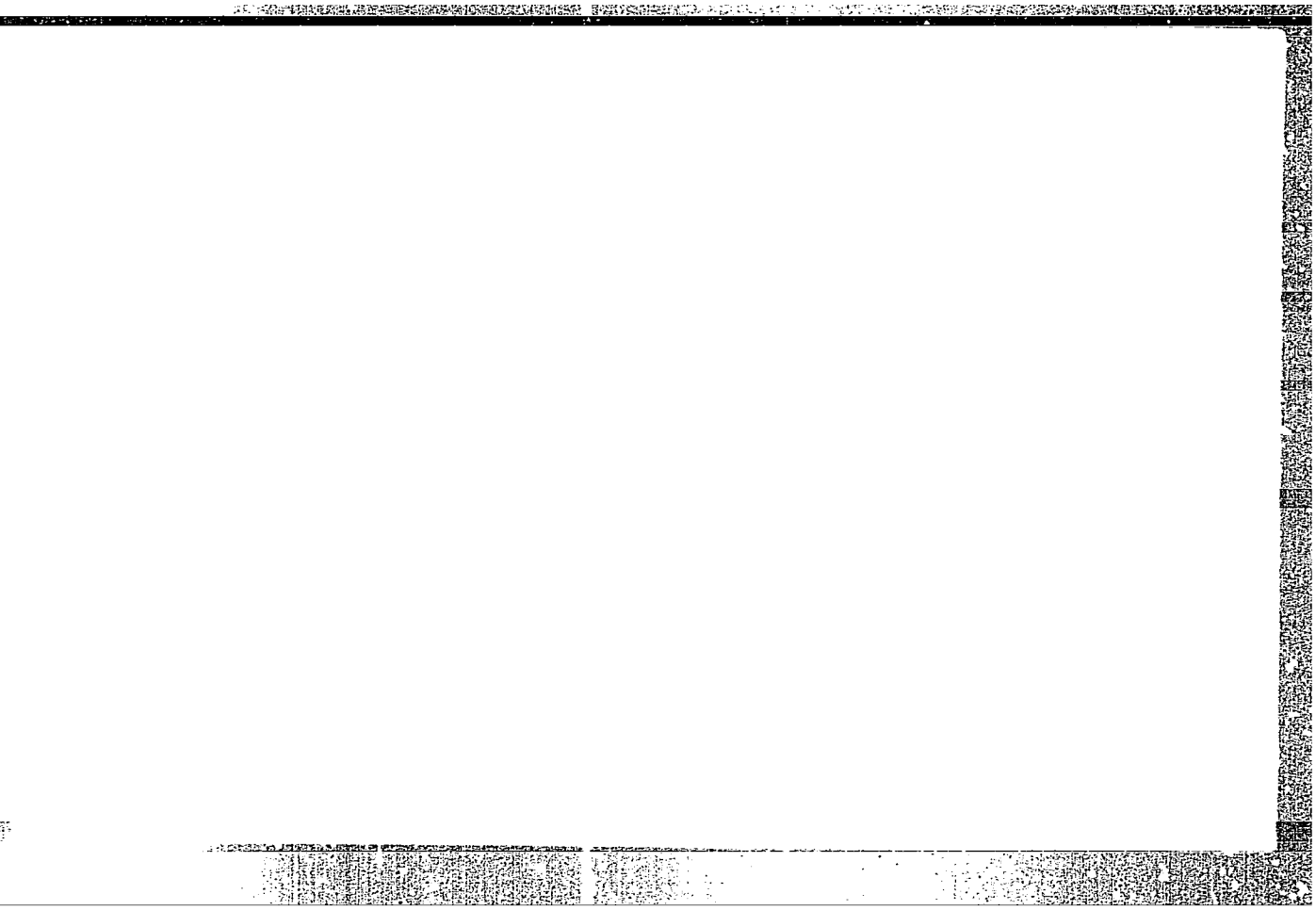

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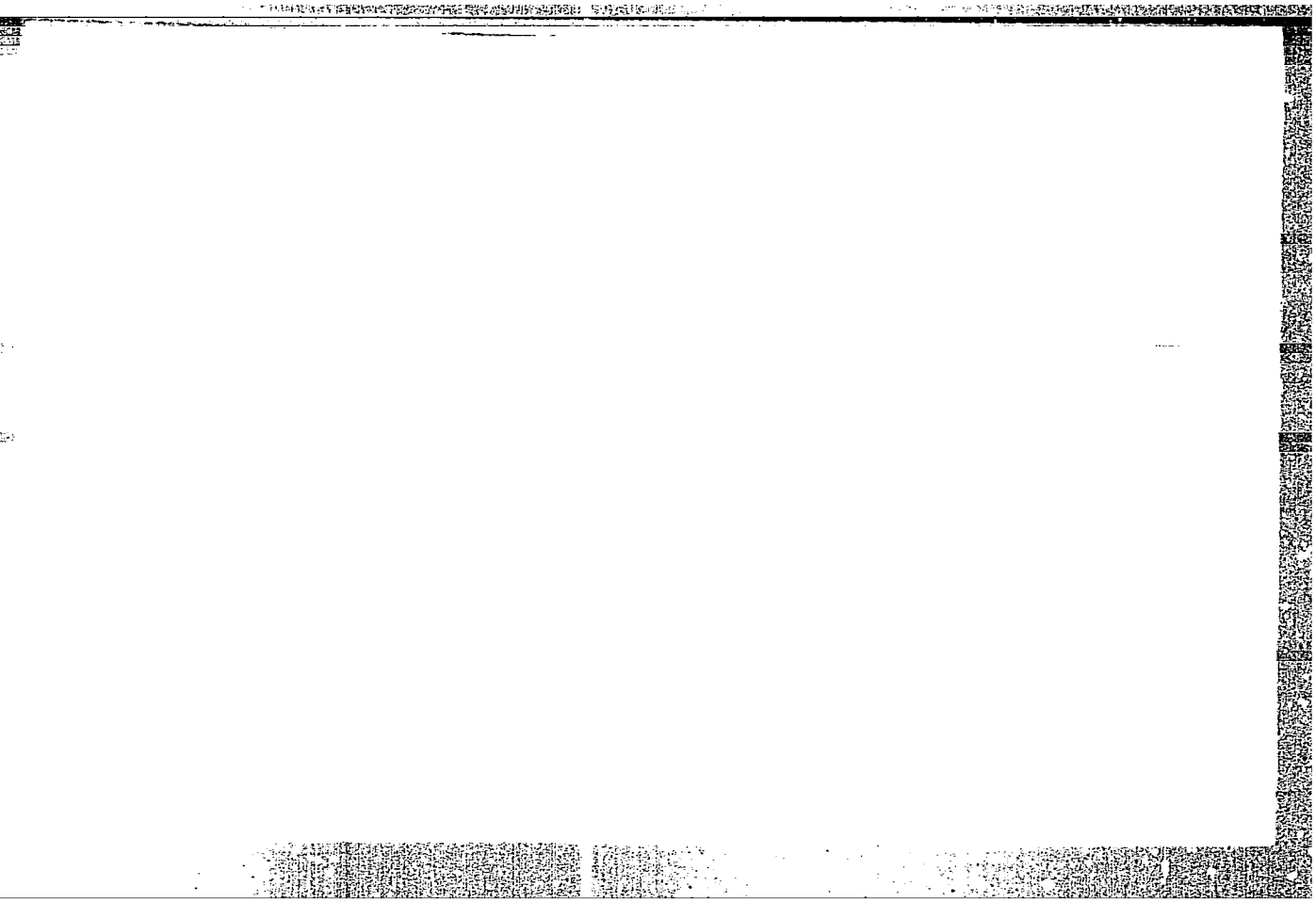

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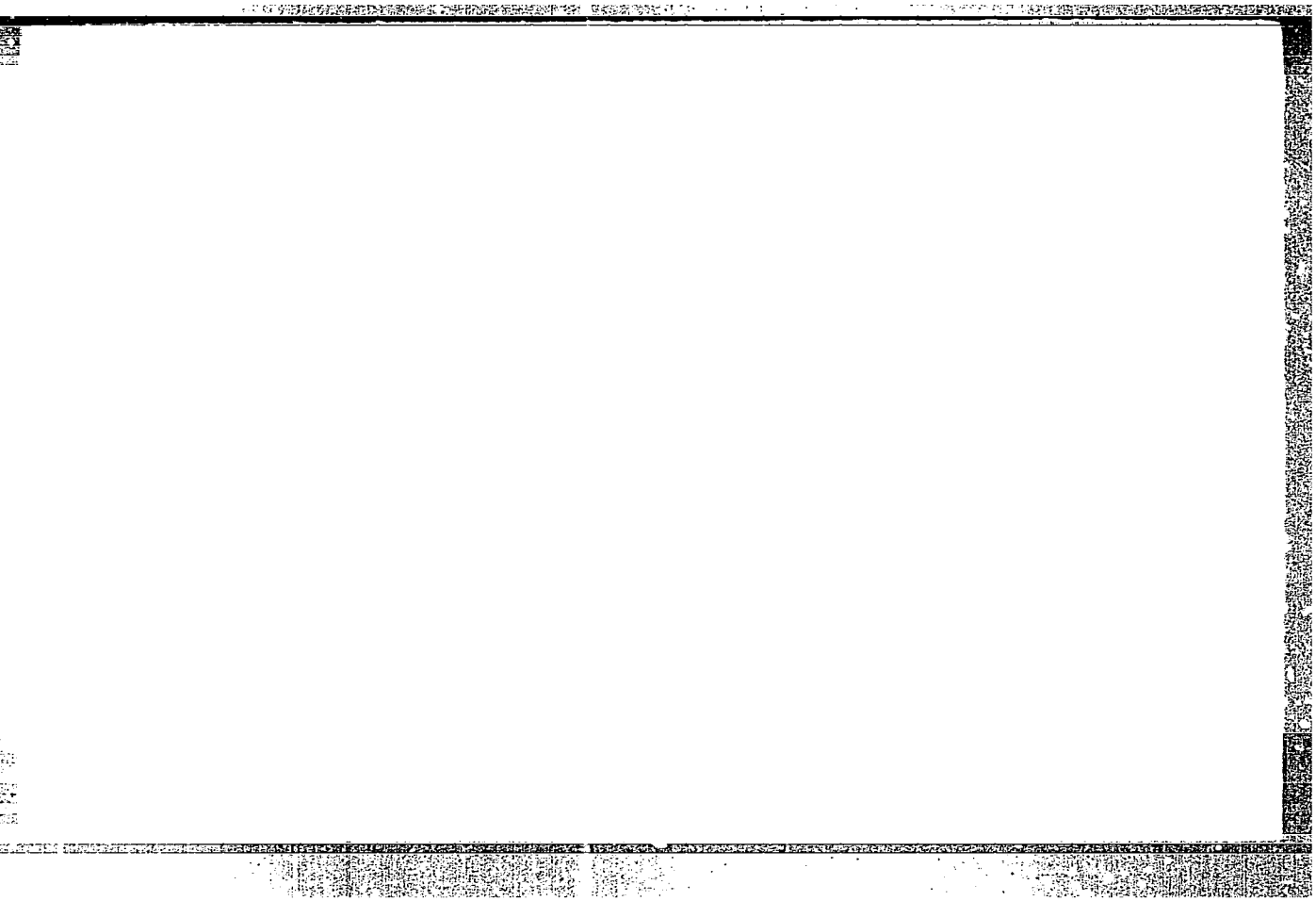

VAN GAN-CHAN [Wang Kang-ch'ang]; VAN TSU-TSZEN [Wang TS'u-TSeng]; DIN DA-TSAO [Ting Ta-ts'ao]; IVANOV, V.G.; KLADNITSKAYA, Ye.N.; KUZNETSOV, A.A.; NGUYEN DIN-TY; NIKITIN, A.V.; OTVINOVSKIY, S.Z.; SOLOV'YEV, M.I.

Creation of antiprotons in the interaction of π^--mesons with nucleons. Zhur.eksp.i teor.fiz 38 no.3:1010-1011 (MIRA 13:7)

1. Ob"yedinennyy institut yadernykh issledovaniy.
(Protons) (Mesons) (Nucleons)

83755

S/056/60/038/004/048/048
B006/B056

24.6900

AUTHORS: Van Gan-chan, Van Tsu-tszen, Veksler, V. I., Viryasov, N.M., Vrana, I., Din Da-tsao, Kim Khi In, Kladnitskaya, Ye. N., Kuznetsov, A. A., Mikhul, A., Nguyen Din Ty, Nikitin, A. V., Solov'yev, M. I.

TITLE: Production of a $\bar{\Sigma}^-$-Hyperon by Negative π^--Mesons With a Momentum of 8.3 Bev/c

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 4, pp. 1356 - 1359

TEXT: In the present "Letter to the Editor", the authors give a detailed report on the case of a $\bar{\Sigma}^-$-production and decay discovered by them for the first time among 40,000 bubble-chamber photographs. The chamber happened to be in a 13,700-oe magnetic field. The photograph concerned is represented as well as the track scheme. The tracks are numbered, and the individual stars are denoted as "point A, B, 0, ..". The exact data of the tracks and stars, respectively, are given in tables (Table 1: "Kinematics at point A"; Table 2: "Kinematics at point B"; Table 3:

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Production of a $\bar{\Sigma}^-$-Hyperon by Negative π^--Mesons With a Momentum of 8.3 Bev/c

S/056/60/038/004/048/048
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"Kinematics at point O"; and Table 4: "Kinematics at points O' and O" "). The individual tracks are identified, and the charges and momenta (measured and calculated) of the particles, the kinetic and mass energies, and the total energy are given. For the stars B and O also the energy balance is given. For B, the following is considered to be the most probable reaction: $\bar{n} + C \rightarrow He_2^4 + 4p + 3n + \pi^+ + \pi^- + n\pi^o$. For the primary star (Tables 3 and 4) the following reaction is assumed: $\pi^- + C \rightarrow \bar{\Sigma}^- + K^o + \bar{K}^o + K^- + p + \pi^+ + \pi^- +$ recoil nucleus. The lifetime of the $\bar{\Sigma}^-$-hyperon was calculated to be $(1.18 \pm 0.07).10^{-10}$ sec. G.A. Blinov and S. Z. Otvinovskiy are mentioned. There are 2 figures, 4 tables, and 4 references: 3 Soviet and 1 US.

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

SUBMITTED: March 24, 1960

Card 2/2

Kuznetsov, A. A.

88469

S/056/60/039/006/062/063
B006/B063

24.6900

AUTHORS: Van Gan-chan, Van Tsu-tszen, Vekaler, V. I., Vrana, I., Din Da-tsao, Ivanov, V. G., Kim Khi In, Kladnitskaya, Ye. N., Kuznetsov, A. A., Nguyen Din Ty, Nikitin, A. V., Solov'yev, M. I., Khofmokl', T., Chen Lin-yan'

TITLE: Non-conservation of Parity in Strong Interaction Involving Strange Particles

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 6(12), pp. 1854-1856

TEXT: The authors wanted to obtain an experimental proof for the non-conservation of parity in strong interaction. The proof suggested by Solov'yev for the longitudinal polarization of a Λ^0 hyperon produced in nuclear collisions served as experimentum crucis. A number of experiments at low and medium energies failed. This "Letter to the Editor" presents the preliminary results of experiments with nuclear collisions and high energies. An analysis has been made of the angular asymmetries in decays of Λ^0 hyperons produced in $\pi^- p$ collisions at 7-8 Bev. A total of

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34,000 photographs were taken, 14,000 at 6.8 Bev/c and 20,000 at ~8 Bev/c. Altogether, 175 Λ^0 and 33 Λ^0 or K^0 particles were detected; the systematic error in the 208 events was ± 6 particles. The asymmetry in the Λ^0 decay was studied in the coordinate system shown in the accompanying figure. The asymmetry in the ξ^* angular distribution is the up-down asymmetry $(a\bar{P}_3)$, that of θ^* is the forward-backward asymmetry $(a\bar{P}_1)$, and that of φ^* is the right-left asymmetry $(a\bar{P}_2)$. $a\bar{P}_1$ was calculated from the formula $a\bar{P}_1 = \frac{3}{N}\sum_{i=1}^{N} \cos\theta_i^* \pm \sqrt{3\left[1 - (a\bar{P})^2\right]/N}$, where a is the asymmetry factor of the Λ^0 hyperons in the case of total polarization $(\bar{P} = 1)$; $\bar{P}_1$ is the mean polarization of Λ^0; θ^* is the angle between the Λ^0 decay proton and the direction of motion of the Λ^0 particle. The other asymmetries were calculated analogously. Results are collected in Table 2. Right-left and up-down asymmetries were not observed. The forward-backward asymmetry obtained may indicate the non-conservation of parity in strong interaction for strange particle production; however, the present stage of investigation does not exclude all errors. The investigations

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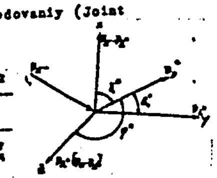
are being continued. There are 1 figure, 2 tables, and 8 references: 5 Soviet and 3 US.

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

SUBMITTED: September 1, 1960

Таблица 2

p_{Λ}	N	$a\bar{P}_1$	$a\bar{P}_2$	$a\bar{P}_3$
$400 < p_{\Lambda} < 1200$	104	−0,38 ± 0,15	0,00 ± 0,17	0,03 ± 0,17
	104 + (4)	−0,30 ± 0,15	0,06 ± 0,16	0,07 ± 0,14
	104 + (4) + (4)	−0,37 ± 0,15		
$p_{\Lambda} > 1200$	68	−0,46 ± 0,18	0,14 ± 0,22	0,24 ± 0,21
	68 + (28)	−0,08 ± 0,17	0,06 ± 0,17	0,21 ± 0,17
Все p_{Λ}	172	−0,41 ± 0,12	0,06 ± 0,13	0,11 ± 0,13
	172 + (33)	−0,31 ± 0,12	0,00 ± 0,12	0,12 ± 0,12
	172 + (33) + (4)	−0,34 ± 0,12		



Card 3/3

VEKSLER, V.I.; VRANA, I.; KLADNITSKAYA, Ye.N.; KUZNETSOV, A.A.; MIHUL, A.K.; MIHUL, Ye.K.; NGUYEN DINH TU; PENEV, V.N.; SOLOV'YEV, M.I.; HOFMOKI, T.; CHEN-LING-YEN.

On strange particle production in π^- p interaction. Dubna, Izdatel'skii otdel Ob"edinennogo in-ta iadernykh issledovanii, 1961. 9 p.

(No subject heading)

C/026/61/017/005/001/006
F050/F004

AUTHOR: Wang, Kang-ch'ang (3769/3227/2490); Wang, Chu-hsiang (3769/4376/5046); Viryasov, N. M.; Ting, Ta-chao (0002/1129/6856); Kim, Hi-in (6855/5593/0088); Kladnitskaya, Ye. N., Kuznetsov, A. A.; Mikhul, A.; Nguyen, Din-ti (7086/0002/6337); Nikitin, A. V.; and Solov'yev, M. I.

TITLE: Production of Ξ^- hyperons by the use of π^- mesons with a momentum of 7000 Mev/c and 8000 Mev/c

PERIODICAL: Wu Li Hsüeh Pao, v. 17, no. 5, 1961, 205-213

TEXT: The productive cross section σ ($\sigma = 3.6 \pm \frac{2.5}{2.1} \mu\delta$/N at 6800 Mev/c, $\sigma = 10.6 \pm \frac{4.4}{3.2} \mu\delta$/N at 8000 Mev/c), mass M_{Ξ^-} ($M_{\Xi^-} = 1317.0 \pm 2.2$ Mev), and lifetime τ_0 ($\tau_0 = 3.5 \pm \frac{3.4}{1.2} \times 10^{-10}$ sec) of Ξ^- hyperon were determined by the use of π^- mesons having momentums of 6800 Mev/c and 8000 Mev/c. In early investigations Ξ^- hyperons

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C/026/61/017/005/001/006
F050/F004

Production of Ξ^- hyperons by ...

were found by experiments with cosmic rays. A butane bubble chamber 24 liters in volume in a permanent magnetic field of 13700 gauss was used. The chamber was irradiated by a bundle of mesons with momentums of 7,00 Mev/c and 8000 Mev/c. The result was 27,000 and 75,000 negatives obtained recording momentums of 6800 $\pm$ 600 Mev/c and 8000 Mev/c of π^- mesons. A three-dimensions amplifier and projector were used to trace the negatives twice and some negatives were traced three times. In the tracing process those events which could be classified with Ξ^- hyperon decay scheme $A \longrightarrow V^0 + B$, $V^0 \longrightarrow C + D$, by appearance were selected. The following standards were applied in the determination of Ξ hyperons: (1) V^0 must coincide with kinematics of the decay scheme $\Lambda^0 \longrightarrow p + \pi^-$. (2) The refraction point must be within the Λ^0 decay plane. The vertical momentum of π^- meson and proton p, which came from Λ^0 decay relative to the projecting direction of Λ^0, must be in equilibrium. (3) The Λ^0 decay particles should lie on the plane formed by particles A and B. (4) At the refraction point, the vertical momentum of particles Λ^0 and B particle must be in equilibrium. (5) The events must satisfy kinematics of Ξ^- hyperon decay scheme

$$\Xi^- \longrightarrow \Lambda^0 + \pi^- + 65 \text{ bev}$$

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Production of Ξ^- hyperons by ...

Among all the events there were 11 events which satisfied all 5 standards. Three events coincided well with the kinematics of Ξ^- decay and have been classified with Ξ^- hyperon. Of all Ξ^- hyperons, one was obtained by the bundle of π^- mesons with 6800 Mev/c and then were obtained by the bundle of π^- mesons with 8000 Mev/c. The results of this experiment are listed in four tables: (1) Table 1 lists data of defined Ξ^-. All these data were average values which were obtained by using a microscope to measure two — four times independently. It also lists the decay energy Q and lifetime of all Ξ^- hyperons found in their own coordinate system. (2) Table 2 lists all data concerning the primary stars. These stars have been analyzed as the source of Ξ^- hyperons. (3) Table 3 lists the momentum p^* in a π^- N mass center system, vertical momentum $p^\perp$, and projecting angle θ^* of Ξ^- hyperons (suppose Ξ^- hyperons were produced by the impact of π^- mesons to free nuclei). The average vertical momentum ($p^\perp_{\Xi^-}$) of Ξ^- hyperon is equal to 318 ± 35 Bev. This value is approximate to the vertical momentum of proton and Λ hyperon. This table also lists the characteristics of the following angles: (a) θ^*_Λ is the projecting angle of Λ^0 which is projected out from Ξ^- hyperon decay process under its equilibrium

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system. (b) θ_p^* is the projecting angle of p which was projected out from the decay process in its equilibirum system. (c) $\omega_{\Xi^-\Lambda^0}$ is the intersection angle between Ξ and Λ^0 decay planes. In the distribution of θ_Λ^* and $\omega_{\Xi^-\Lambda^0}$, no asymmetry was observed. (4) Table 4 lists the events which seems to be Ξ^-. Among these events, four were in the same plane and fourteen were in different planes. Most of these events in the same plane were induced by $\pi^+\pi$ mesons; the others in different plane events may have been induced by π^+, π^- or K^- mesons. Thanks are extended to V. I. (Wei Ke Shih Lai Erh), I. V. (Chi Wei Lo), L. P. (Chi Lo Wei Yeh Fu), N. I. (Pa Pu La Fe), K. V. (Chi Ho Lo Fu), and L. N. (Chü Lao Yeh Fu). There are 3 figures and 4 tables. The English-language references read as follows: C. Franzinetti and G. Morpurgo. Suppl. Nuovo Cim. 6 (1957), 565; W. B. Fowler et al. Nuovo Cim. 11 (1959), 428.

SUBMITTED: March 20, 1961

KUZNETSOV, A. A.

S/056/61/040/002/012/047
B102/B202

AUTHORS: Wang Kang-ch'ang, Wang Ts'u-tseng, Veksler, V. I., Vrana, I., Ting Ta-ts'ao, Ivanov, V. G., Kladnitskaya, Ye. N., Kuznetsov, A. A., Nguyen Din Ty, Nikitin, A. V., Solov'yev, M. I., Ch'eng Ling-yen

TITLE: Production of $\Lambda^0(\Sigma^0)$ hyperons and K^0 mesons in π^-p interactions with a π^- meson momentum of 6.8 ±0.6 Bev/c

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 2, 1961, 464-474

TEXT: The $\Lambda^0(\Sigma^0)$ and K^0 production in π^-p collisions has hitherto been studied only for threshold momenta of (0.9 - 1.4) Bev/c; to explain the nucleon structure and the interaction, studies must be made at higher energies. The studies described were made with a 24-liter propane bubble chamber and a constant magnetic field of 13,700 oe. The experiment is described in Ref. 2 (ZhETF, 38, 476, 1960). The pictures were taken with a stereophotocamera with "Russarplazmat" objectives (focal length 67 mm). The pictures were evaluated 2 or 3 times with stereo-magnifiers and reprojectors.

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In this case, efficiency was 91 and 96%. Λ^0 and K^0 particles were selected according to rigorous rules. Altogether, 233 events conforming to these criteria were observed: space coordinates, angles, and momenta of these events were calculated by the electronic computer "Ural". The values obtained were geometrically corrected (consideration of the observation probabilities for Λ^0 and K^0 decays in the chamber volume as well as for Λ^0 and K^0 production). The number of events, in which 0, 2, 4, or 6 charged particles were observed besides K^0 and/or Λ^0 particles are given in Table 1. The mean number of charged particles accompanying a Λ^0 or K^0 production was 2.5 ± 0.1; also K^- mesons were observed among these charged particles. The neutral particles recorded were produced in the reactions

$$\pi^- + p \rightarrow \Lambda^0 + K^0 + n\pi$$
$$\pi^- + p \rightarrow \Sigma^0 + K^0 + n\pi$$
$$\pi^- + p \rightarrow \Lambda^0 + K^0 + n\pi$$
$$\pi^- + p \rightarrow \Sigma^0 + K^0 + n\pi$$
$$\pi^- + p \rightarrow K^0 + \bar{K}^0 + N + n\pi$$
$$\pi^- + p \rightarrow K^0 + K^- + N + n\pi$$
$$\pi^- + p \rightarrow \bar{K}^0 + K^0 + N + n\pi$$

Production of ...

$\sigma(Y^+K^0) = \sigma(1) + \sigma(2)$. $\sigma(Y^0K^+) = \sigma(3) + \sigma(4)$, also the reactions

$\sigma(K^+K^0) = \sigma(5)$. $\sigma(K^0K^-) = \sigma(6)$. $\sigma(\bar{K}^0K^+) = \sigma(7)$

$\sigma(Y^0K^{0,-}) = \sigma(Y^-K^+) + \sigma(Y^+K^-)$.

$\sigma(K^0, \bar{K}) = \sigma(K^0\bar{K}^0) + \sigma(K^0K^+) + \sigma(\bar{K}^0K^+)$.

$$\pi^- + p \to \Xi^- + K^0 + n\pi \quad (8,9)$$

$$\pi^- + p \to \Xi^- + K^+ + K^- + n\pi \quad (10)$$

$$\pi^- + p \to \Xi^- + K^0 + K^0 + n\pi \quad (11)$$

were possible. In the following, the reactions are referred to only by these figures; the cross sections are indicated by (i). The total cross section of $\Lambda^0(\Sigma^0)$ and K^0 production on free protons was found to be 2.0 ± 0.35 mb taking account of all corrections, including the Σ^- admixture and the efficiency of observation. In this case, $\sigma(Y^0K^{0,+}) = 0.8 \pm 0.25$ mb, $\sigma(\Sigma^0\Lambda) = 1.2 \pm 0.3$ mb, $R = \sigma(Y^0K^{0,+})/\sigma(\Sigma^0\Lambda) \approx 0.7 \pm 0.2$. Momentum and angular distributions are illustrated in several diagrams. The mean transverse momenta of Λ^0 and K^0 particles, 388 ± 35 and 393 ± 35 Mev/c, respectively, were equal within the limits of measurement errors. $Y^0K^{0,+}$ - and $K^0\Lambda$ pair production cross sections: The experimental results indicate that at π^- energies of 9 Bev, the $K^0\Lambda$ pair production cross section is higher than that of $Y^0K^{0,+}$. The ratio reads

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$$R = \frac{\sigma(Y^0K^0) + \sigma(Y^0K^+)}{\sigma(K^0\bar{K}^0) + \sigma(K^0K^-) + \sigma(\bar{K}^0K^+)} = 0.7\pm0.2.$$

The authors only studied $K^0\bar{K}^0$, K^0K^-, and $\bar{K}^0K^+$, and obtained

$$R = \frac{\sigma(Y^0K^0) + \sigma(Y^0K^+)}{\sigma(K^0\bar{K}^0) + \sigma(K^0K^-) + \sigma(\bar{K}^0K^+) + \sigma(K^+K^-)} = 0.5\pm0.15.$$

Near the production threshold (0.96 Bev), $\sigma(Y^0K^0) = 1.1$ mb; it drops to 0.4 mb at 1.2 Bev, and increases again to 0.6 mb at 1.3 Bev. The ratio $\sigma(Y^0K)/\sigma(K^0\bar{K})$ was experimentally determined to be 0.7; the theoretically obtained value (statistical theory) was 7.5. Mean multiplicity of charged particles: At 6.8 Bev, not only strange particles but also charged and uncharged particles were produced. In the case of multiple pion production, the mean number of charged particles was $\bar{n}_s = 3.2\pm0.2$, and in strange-particle production, $\bar{n}_s = 2.5\pm0.1$. Pions constitute the main part of charged particles. It can be concluded from the energy balance in a production event that the number of pions produced together with a strange particle is lower than in the case of ordinary multiple pion production. This is in

Card 4/4

agreement with the experimental results. The number of neutral pions accompanying strange-particle and normal multiple production is 2:3. 0.5 ± 0.12 was obtained for n_K. Angular and momentum distributions: The experimental results are illustrated in diagrams. In the center-of-mass system, the Λ^0 hyperons show a strong tendency to depart in backward direction ($n_{forw.}/n_{backw.} = 1:5$). This asymmetry was also observed in $\Lambda^0 K^0$ pair-production events. Table 4 gives numerical data concerning the angular distribution of Λ^0 and K^0 pairs in the c. m. s. Mesons produced together with Λ^0 hyperons show a forward anisotropy at $n_\pi = 2$ ($n_{\pi\text{-forw.}}/n_{\pi\text{-backw.}} = 1.7 \pm 0.5$). At higher values of n_π this anisotropy is less distinct. Transverse momenta: One of the most interesting results was that Λ^0 hyperons and nucleons produced in inelastic collisions without strange-particle production had the same distribution and the same mean transverse momenta which are independent of multiplicity. The interaction radius in strange-particle production can be estimated from the root-mean-square transverse momenta. The authors obtained $4 \cdot 10^{-14}$ cm. They thank D. I. Blokhintsev, M. A. Markov, V. I. Ogiyevetskiy, Chou Kuang-chao, I. V. Chuvilo, V. S. Barashenkov, V. G. Solov'yev for discussion, L. P. Zinov'yev, N. I. Pavlov, K. B. Chekhlov.

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S/056/61/040/002/012/047
B102/B202

Production of

L. N. Belyayev for help in the experimental work and T. Khofmokl' and Kim Khi Inu for assistance in the verification of the results. K. G. Birger and V. Belyakov are mentioned. There are 5 figures, 4 tables, and 9 references: 4 Soviet-bloc and 5 non-Soviet-bloc. The two references to English-language publications read as follows: Ref 5: D. Glaser, Ann. Intern. Conf. on High Energy Physics at CERN, Geneva 1958; Ref 6: O. Maenchen, W. Fowler, W. Powell, R. Wright. Phys. Rev. 106, 810 1957.

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

SUBMITTED: September 1, 1960

Fig. 1: Momentum distributions of Λ^0 hyperons in the c. m. s.: a) total spectrum, b) that of backward (solid line) and forward (dashed line) emitted Λ^0 hyperons.
Fig. 2: Λ^0 angular distribution in the c. m. s.; number of events given in parentheses.

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S/057/61/031/006/003/019
B109/B207

9,2120 (1147)
24,2300 (1068,1482,1538)

AUTHOR: Kuznetsov, A. A.

TITLE: Force-free magnetic field coils of infinite length

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 6, 1961, 650-656

TEXT: The author presents a method of computing the mechanical stresses in coils of infinite length, possessing axial and circular magnetic fields. 1) Mechanical stresses in a coil: If a and b denote the outer and the inner radius of the coil, j_{1r} and j_{2r} the (variable) circular and (constant) axial current density, μ the transverse Poisson ratio, the following relations are obtained for radial mechanical stress:

$$\sigma_r = \frac{\pi}{1-\mu}\left\{ j_{1a}^2 a^2 \left(\frac{1}{a^2-b^2}\left[a^2 \ln^2\frac{a}{b}\left(1-\frac{b^2}{r^2}\right)-(1-2\mu)\,b^2 \ln\frac{a}{b}\left(1-\frac{a^2}{r^2}\right)\right]-\right.\right.$$

$$\left. -2\ln\frac{a}{\sqrt{br}}\ln\frac{r}{b}-(1-2\mu)\ln\frac{a}{r}\right)-\frac{3-2\mu}{4}j_{2a}^2 \times$$

$$\left.\times\left(\left[a^2-r^2-\frac{4a^2b^2\ln\frac{a}{b}}{(3-2\mu)(a^2-b^2)}\right]\left(1-\frac{b^2}{r^2}\right)+\frac{4b^2}{3-2\mu}\ln\frac{r}{b}\right)\right\}, \qquad (8)$$

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for the peripheral stress:

$$\sigma_t = \frac{\pi}{1-\mu}\left\{ j_{1a}^2 a^2 \left(\frac{1}{a^2-b^2}\left[a^2 \ln^2 \frac{a}{b}\left(1+\frac{b^2}{r^2}\right) - (1-2\mu)\times \right.\right.\right.$$

$$\left.\left.\left. \times b^2 \ln \frac{a}{b}\left(1+\frac{a^2}{r^2}\right)\right] - 2 \ln \frac{a}{\sqrt{br}} \ln \frac{r}{b} + (1-2\mu)\left(\ln \frac{a}{r}+1\right)\right) -\right.$$

$$\left. - \frac{3-2\mu}{4} j_{2a}^2 \left(\left[a^2 + r^2 - \frac{4a^2b^2 \ln \frac{a}{b}}{(3-2\mu)(a^2-b^2)} \right]\left(1+\frac{b^2}{r^2}\right) + \right.\right.$$

$$\left.\left. + \frac{4}{3-2\mu}\left[b^2\left(\ln \frac{r}{b} - 1 + 2\mu\right) - r^2 \right]\right)\right\}, \qquad (9)$$

and for $(\sigma_t)_b = \sigma_t$ at $r = b$

$$(\sigma_t)_b = \frac{\pi}{1-\mu}\left\{ j_{1a}^2 a^2 \left(1 - 2\mu + 2\frac{\left[a^2 \ln \frac{a}{b} - (1+2\mu) b^2 \right] \ln \frac{a}{b}}{a^2-b^2} \right) - \right.$$

$$\left. - \frac{3-2\mu}{2} j_{2a}^2 \left(a^2 - \frac{b^2}{3-2\mu}\left[1 - 2\mu + \frac{4a^2 \ln \frac{a}{b}}{a^2-b^2} \right]\right)\right\}. \qquad (10)$$

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Force-free magnetic field coils of infinite...

From (10) it may be seen that $(\sigma_t)_b = 0$ when $\alpha_a = \arctan \frac{j_{1a}}{j_{2c}}$, where α_a denotes the angle between the current-density vector for $r \to a$ and the coil axis (Table 1). 2) Force-free magnetic coil: If R_1 is the expanding force, and R_2 the compressing radial volume force, the conditions for the vanishing of all mechanical stresses read $R_p = R_1 + R_2 = 0$ and $R_1 = -R_2 = R$. Since $R_1 = 4\pi j_{1_r} \int_r^a j_{1_r} dr$ and $R_2 = -4\pi \frac{j_{2_r}}{r} \int_b^r j_{2_r} r dr$ this condition is fulfilled if

$$j_{1r} = \frac{R}{2\sqrt{2\pi \int_r^a R dr}}, \quad (17)$$

$$j_{2r} = \begin{cases} \dfrac{rR}{2\sqrt{2\pi \int_b^r r^2 R dr}}, \\ \dfrac{R}{2\sqrt{2\pi \int_b^r R dr}} \text{ при } (a-b) \ll a, \end{cases} \quad (18)$$

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Force-free magnetic field coils of infinite...

$$\alpha_r = \arctan \frac{j_{1r}}{j_{2r}} \qquad (19)$$

(α_r - angle between the resulting current-density vector and the coil axis).

$$\left.\begin{aligned} \lim_{r \to a} \frac{R}{a - r} &= C_1, \\ \lim_{r \to b} \frac{R}{r - b} &= C_2, \end{aligned}\right\} \qquad (20)$$

(C_1, C_2 - arbitrary constants). With a finite expansion of the coil, the forces R_1 and R_2 are not only functions of r but also of z, so that the above conditions are only approximately valid. There are 1 table and 3 references: 1 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR Moskva)
(Institute of Physics imeni P. N. Lebedev, AS USSR, Moscow)

SUBMITTED: June 27, 1960

KUZNETSOV, A.A

22124

S/056/61/040/003/004/031
B102/B202

24.6900 (1138, 1191, 1559)

AUTHORS: Wang Kang-ch'ang, Wang Ts'u-tseng, Viryasov, N.M., Ting Ta-ts'ao, Kim Khi In, Kladnitskaya, Ye.N., Kuznetsov, A.A., Mikhul, A., Nguyen Din Ty, Nikitin, A.V., Solov'yev, M.I.

TITLE: Production of Ξ^- hyperons by π^- mesons with the momenta 7 and 8 Bev/c

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 3, 1961, 734 - 740

TEXT: The authors present comprehensive material concerning the production of Ξ^--hyperons by negative high-energy pions in a 24-l propane bubble chamber which was in a constant field of 13,700 oe. These experiments have already been described in an earlier paper (ZhETF, 38, 426, 1960). 27,000 photographs were evaluated 2 - 3 times for pions with 6.8±0.6 Bev/c and 75,000 for pions with ≈ 8Bev/c. The authors chose those events which corresponded to a decay of cascade particles according to the mode

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Production of Ξ^- hyperons by ...

$A \rightarrow V^0 + B$, $V^0 \rightarrow C + D$ as well as all singly-pronged stars from the vertex of which a V^0 particle departed. Altogether, 90 events were chosen; they were measured by means of УИМ-21 (UIM-21) microscopes, and the results were evaluated by means of an electronic computer of the type "Ural"; 11 events of a Ξ^- -decay ($\Xi^- \rightarrow \Lambda^0 + \pi^- + 65$ Mev) were identified according to rigorous criteria. The angular and momentum characteristics of the identified Ξ^- hyperons are given in Table 1. The events nos. 171-218 and nos. 19-179 are schematically shown in Figs. 1 and 2, respectively. The Table gives the data concerning the decay energy Q and the lifetime (until the decay) of the Ξ^- hyperons. The mean value of Q from the 11 Ξ^- decay events was $Q = 61.9 \pm 2.2$Mev from which the hyperon mass $M_{\Xi^-} = 1317.0 \pm 2.2$ Mev was calculated. The mean lifetime was $\tau_0 = (3.5^{+3.4}_{-1.2}) \cdot 10^{-10}$ sec. The mean free path of the π^- mesons in Ξ^--hyperon formation in propane was $l = (2.02^{+2.86}_{-0.84})$ cm for a momentum of 6.8 Bev/c and $l = (0.68^{+0.29}_{-0.20})$ cm for ~ 8Bev/c. Assuming that the Ξ^--hyperon production cross section in nu-

Production of Ξ^- hyperons by ...

clei is $\sim A^{2/3}$, $\sigma = 3.6^{+2.5}_{-2.1}$ μb is obtained with 6.8 Bev/c and $\sigma = 10.6^{+4.4}_{-3.2}$ μb with ~8 Bev/c. Table 2 gives data on the primary stars with Ξ^- hyperon production. Table 3 shows the momentum (p*), transverse momentum (p^*_1), angle of departure (Θ*) of the various particles as well as the angle between the decay planes (ω^0). Table 4 presents data on the "background"events (4 complanar and 4 noncomplanar ones) where V^0 particles were identified as Λ particles. Finally, the authors thank V.I. Veksler and I.V. Chuvilo for discussion, L.P. Zinov'yev, N.I. Pavlov, K.V. Chekhlov, L.N. Belyayev and various teams of technicians for their assistance. There are 3 figures, 4 tables,and 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc.

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

SUBMITTED: September 30, 1960

Card 3/11 3

BELYAKOV, V.A.; VAN YUN-CHAN [Wang Yung-chang]; VIRYASOV, N.M.; DU YUAN'-TSAY [Du Yuan-cai]; KIM KHI IN; KLADNITSKAYA, Ye.N.; KUZNETSOV, A.A.; NGUYEN, DIN TY [Nguyen Dinh Tu]; PENEV, V.N.; SOKOLOVA, Ye.S.; SOLOV'YEV, M.I.

[Properties of π^0-mesons produced together with strange particles in π^--p and π^--c-interactions] Izuchenie svoistv π^0-mezonov, rozhdaiushchikhsia so strannymi chastitsami v π^--p i π^--c vzaimodeistviiakh. Dubna, Ob"edenennyi in-t iadernykh issledovanii, 1962. 10 p.
(MIRA 16:10)

(Mesons)

WAN YUNG-CHANG; VEKSLER, V.I.; DU YUAN-CAI; KLADNITSKAYA, Ye.N.; KUZNETSOV, A.A.; NGUYEN DINH-TU; SOKOLOVA, Ye.S.; SOLOV'YEV, M.I.; PENEV, V.N.; MIHUL, A.; SMIRNOVA, L.A.[translator]; SARANTSEVA, V.R., tekhn. red.

A study of ΛK^0 and $K^0\bar{K}^0$ pair production in π^-P interactions at the π^--meson momentum of 7-8 BeV/c. Dubna, Ob"edinennyi in-t iadernykh issledovanii, 1962. 15 p.

1. On leave from the Institute of Atomic Physics, Bucharest(for Mihul).
(No subject heading)

VAN YU-CHAN [Wang Yung-ch'ang]; VEKSLER, V.I.; DU YUAN'-TSAY [Tu Yuan-ts'ai]; KLADNITSKAYA, Ye.N.; KUZNETSOV, A.A.; MIKHUL, A.; NGUYEN DIN TY; PENEV, V.N.; SOKOLOVA, Ye.S.; SOLOV'YEV, M.I.; SARANTSEVA, V.R., tekhn. red.

[Generation of ΛK^0 and K^0K^0 pairs in π^-P interactions at π^--meson energies of 7-8 Bev/c.] Izuchenie rozhdeniia ΛK^0 i K^0K^0-par v π^-P - vzaimodeistviiakh pri impul'se π^--mezona 7-8 Bev/s. Dubna, Ob"edinennyi in-t iadernykh issledovanii, 1962. 15 p. (MIRA 15:6)

1. Institut Atomnoy fiziki, Bukharest (for Mikhul).
(Mesons) (Nuclear reactions)

VEKSLER, V.I.; VIRYASOV, N.M.; VRANA, I.; KIM KH IN; KLADNITSKAYA, Ye.N.; KUZNETSOV, A.A.; NGUYEN DIN TY; SOLOV'YEV, M.I.; KHOFMOKL', T.; CHEN LIN-YAN'; SARANTSEVA, V.R., tekhn. red.

[Polarization of Λ-hyperons produced in π^--p-interactions at an energy of 7-8 Bev]Izuchenie poliarizatsii Λ-giperonov pri rozhdenii v π^--p-vzaimodeistviiakh s energiei 7-8 Bev. Dubna, Ob"edinennyi in-t iadernykh issl., 1962. 23 p. (MIRA 15:10)

(Hyperons—Decay) (Masons—Decay) (Protons)

BELYAKOV, V.A.; BOYADZHIYEV, A.V.; VAN YUN-CHAN[Wang Yung-ch'ang]; VEKSLER, V.I.; VIRYASOV, N.M.; KIM KHI IN; KLADNITSKAYA, Ye.N.; KUZNETSOV, A.A.; MAL'TSEV, V.M.; NGUYEN, DIN TY; PENEV, V.N.; SOLOV'YEV, M.I.; ZRELOVA, N.N., tekhn. red.

[Production of $\Lambda(\Sigma^0)$-hyperons and K^0-mesons in the interaction of 7 Gev. π^--mesons with carbon] Rozhdenie $\Lambda(\Sigma^0)$-giperonov i K^0-mezonov pri vzaimodeistvii π^--mezonov s energiei 7 Gev s uglerodom. Dubna, Ob"edinennyi in-t iadernykh issledovanii, 1963. 18 p. (MIRA 17:2)

BELYAKOV, V.A.; VAN YUN-CHAN [Wang Yung ch'ang]; VEKSLER, V.I.: VIRYASOV, N.M.; VRANA, I.; DU YUAN'-TSAY [Tu Yuan ts'ai]; KIM KHI IN; KLADNITSKAYA, Ye.N.; KUZNETSOV, A.A.; MIKHUL, E.; NGUYEN, DIN TY; PATERA, I.; PENEV, V.N.; SOKOLOVA, Ye.S.; SOLOV'YEV, M.I.; KHOFMOKL', T.; MIKHUL, A.

[Production of Λ-hyperons and K^0-mesons in π^-p-interactions at an energy of 7-8 Bev] Issledovanie protsessov rozhdeniia Λ-giperonov i K^0-mezonov v π^-p- vzaimodeistviiakh pri energii 7-8 Bev. [n.p. n.d.] 26 p. (MIRA 16:10)

(Mesons) (Hyperons)

KUZNETSOV, A.A.

(6)

BELYAKOV, V.A., WANG YUNG-CHANG, VEKSLER, V.I., VIRYASOV, N.M., VRANA, I., DU IKAN-TSAI, KIM HI IN, KLADNITSKAYA, Ye. N., KUZNETSOV, A.A., MIHUL, A. NGUYEN DING TI, I. PATERA, V. PENEV, SOKOLOVA, Ye. S., SOLOVIEV, M.I., HOMADKL, T., and TSEN LIN-IAN

"The Investigation of Λ-Hyperon and K^0-Meson Production in $\bar{u}C$ and Interactions at 7-8 Gev"

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

Joint Institute for Nuclear Research
Laboratory of High Energies

KUZNETSOV, A.A

BOLYAKOV, V.A., WANG YUNG-CHANG, VEKSLER, V.I., VIRYASOV, N.M., DU IUAN-TSAI, KIM HI IN, KLADNITSKAYA, Ye. N., KUZNETSOV, A.A., MIHUL, A., NGUYEN, DIN TI, PENEV, V.N., SOKOLOVA, Ye. S., SOLOVYEV, M. I.

"Study of ΛK and $K^{\circ}_{1} K^{\circ}_{1}$ Pair Production if $\pi^{-} p$ and πC Interactions at the 7-8 Gev/C Momentum of π^{-} Mesons"

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

Joint Institute for Nuclear Research
Laboratory of High Energy Physics

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928110011-8"

S/056/62/043/003/013/063
B102/B104

AUTHORS: Wang Yung-chang, Veksler, V. I., Tu Yüan-ts'ai, Kladnitskaya, Ye. N., Kuznetsov, A. A., Mikhul, A., Nguyen Din Ty, Penev, V. N., Sokolova, Ye. S. Soloy'yev, M. I.

TITLE: Investigation of ΛK^0 and $K^0\bar{K}^0$ pair production in π^-p interactions with π^- meson momentum of 7-8 Bev/c

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 3(9), 1962, 815-82?

TEXT: Pair production events, including 52 ($\Lambda+K^0$), 37 ($K^0+\bar{K}^0$), 16 either ($\Lambda+K^0$) or ($\bar{K}^0+K^0$) and two ($\Lambda+K^0+\bar{K}^0$) were observed among 60,000 photographs made with a 24-liter propane bubble chamber. The momentum and angular distributions of the π^+, Λ and K^0 particles were determined. Also the distribution of

$$Q = [2(E_{\Lambda(K)}E_K - P_{\Lambda(K)}P_K\cos\vartheta_{\Lambda(K),K}) + m^2_{\Lambda(K)} + m^2_K]^{1/2} - m_{\Lambda(K)} - m_K \quad (1)$$

(P - momenta)

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was studied and the results obtained were confronted with the theoretical curves (Monte Carlo method). Results: The mean K^o momentum from ΛK^o pairs was 702 ± 54 Mev/c, from $K^o\overline{K^o}$ pairs 604 ± 55 Mev/c. In the $\pi^- p$ c.m.s. in $(55 \pm 9)\%$ of the events the Λ particles from ΛK^o pairs flew backward and those from the K^o forward. In $(33 \pm 7)\%$ they both flew backward. In $(12 \pm 4)\%$ they both flew forward or the Λ forward and the K^o backward (this distribution indicates a contribution of peripheral interaction). The Λ-hyperon distribution has a peak at $-1 \leqslant \cos\theta_\Lambda \leqslant -0.8$. For the $K^o\overline{K^o}$ pairs a maximum in the K^o distribution was observed at $+0.6 \leqslant \cos\theta_{K^o} \leqslant +1$. In $(47 \pm 12)\%$ of the cases the both K^o mesons flew in opposite directions, in $(25 \pm 7)\%$ both flew backward and in $(28 \pm 8)\%$ both forward. From the angular distribution it can be concluded that in $K^o\overline{K^o}$ pair production besides the S-wave states with higher l will exist. The Q-distribution for these pairs has a maximum in the range 50-150 Mev/c. There are 14 figures.

Investigation of ΛK^{o} and... S/056/62/043/003/013/063
B102/B104

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research). Institute of Atomic Physics, Bucharest (A. Mikhul)

SUBMITTED: April 11, 1962

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S/056/63/044/001/017/067
B108/B180

AUTHORS: Veksler, V. I., Viryasov, N. M., Vrana, I., Kim Khi In, Klodnitskaya, Ye. N., Khanniazov, A. A., Nguyen Din Sy, Solov'yev, M. I., Khozaki', T., Chen Liang-yen

TITLE: The polarization of Λ-hyperons produced in π⁻p-interactions at an energy of 7 - 8 Bev

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 1, 1963, 84 - 99

TEXT: 60000 photographs were examined of the interaction of π⁻-mesons of 7 - 8 Bev/c with protons in a 24-liter propane bubble chamber in a permanent magnetic field of 15,700 oe. Method and apparatus have already been described (Wang Kang-ch'ang, M. I. Solov'yev, Yu. N. Shkobin. PTE, 1, 41, 1959; M. I. Solov'yev, Proc. of the 1960 Ann. Int. Conf. on High Energy Physics at Rochester, p. 388; Wang Kang-ch'ang et al. ZhETF, 39, 1854, 1960). The Λ-hyperons were unpolarized during their production. This follows from the fact that there is no asymmetry in the angular distributions of the protons from the decay of the Λ-hyperons relative to the hyperon momentum. The angular distributions of the Λ-hyperon produc-

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The polarization of Λ -hyperons ... S/056/63/044/001/017/067
B108/B180

tion planes relative to the production planes of the K-mesons and pions are nearly isotropic. The results agree with the law of conservation of parity in strong interactions involving strange particles. There are 13 figures and 4 tables.

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

SUBMITTED: July 31, 1962

Card 2/2

BELYKOV, V.A.; VAN YUN-CHAN [Wang Yung-ch'ang]; VEKSLER, V.I.; VIRYASOV, N.M.; DU YUAN'-TSAY [Tu Yüan-ts'ai]; KIM KHI IN; KLADNITSKAYA, Ye.N.; KUZNETSOV, A.A.; NGUYEN DIN TY; PENEV, V.N.; SOLOV'YEV, M.I.

Polarization of Λ-hperons produced in π^-C-interactions at 7 Bev. Zhur. eksp. i teor. fiz. 45 no.2:90-92 Ag '63. (MIRA 16:9)

1. Ob"yedinennyy institut yadernykh issledovaniy.
(Nuclear reactions) (Hyperons)

KUZNETSOV, A. A.

8

S/056/63/044/002/007/065
B102/B186

AUTHORS: Belyakov, V. A., Wang Yung Ch'ang, Vekslер, V. I., Viryasov, N. M., Vrana, I., Tu Yüan-ts'ai, Kim Khi Ying, Kladnitskaya, Ye. N., Kuznetsov, A. A., Mikhul, E. Nguyen Din Ty, Patera, I., Penev, V. N., Sokolova, Ye. S., Solov'yev, M. I., Khofmokl', T., Cheng Ling-yen, Mikhul, A.

TITLE: Investigation of Λ-hyperon and K^0-meson production processes in $\pi^- p$ interactions at 7-8 Bev

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 2, 1963, 431-443

TEXT: The c.m.s. momentum and angular distributions determined for the Λ and K^0 particles produced in πp interactions are given and discussed. The measurements were made using a 24-liter propane bubble chamber in a field of 13,700 oe. The total momentum spectrum of the Λ-hyperons produced in the reactions

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$$\pi^- + p \to \Lambda(\Sigma^0) + K^0 + n\pi, \quad (1)$$
$$\pi^- + p \to \Lambda(\Sigma^0) + K^0 + n\pi \quad (2)$$

S/056/63/044/002/007/065
B102/B106

Investigation of Λ-hyperon ...

are shown in Fig. 1, compared with theoretical results. As it may be seen the statistical theory describes the experimental curve very well if the isobars and the cases with p_p-p = Δ<700 Mev are neglected.

Δ < 700 Mev corresponds to ~30% of all Λ, these being produced in peripheral interactions. The Λ angular distribution has a distinct backward peak ($\bar{n}_\Lambda/\bar{n}_\Lambda$ = 0.18 ± 0.02). With increasing multiplicity n_s the agreement between experiment and statistical theory improves. The Λ angular distribution and the distribution with respect to $p_\perp$ is virtually independent of n_s. The overall mean of the transverse momentum is 385 ± 12 Mev/c; for Δ < 700 Mev, $\bar{p}_{\Lambda_\perp}$ = 295 ± 14 Mev/c and for Δ > 700 Mev, $\bar{p}_{\Lambda_\perp}$ = 432 ± 18 Mev/c. For the $K^0(\bar{K}^0)$ mesons produced in the reactions

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$$\pi^- + p \rightarrow \begin{cases} K^0 + \Lambda(\Sigma^0) + n\pi, & (1) \\ K^0 + \bar{K}^0 + N + n\pi, & (3) \\ K^0 + K^- + N + n\pi, & (4) \\ \bar{K}^0 + K^+ + N + n\pi, & (5) \\ K^0 + \Sigma^\pm + n\pi. & (6) \end{cases}$$

the total momentum spectrum measured (Fig. 4) is weaker than that calculated according to the statistical theory. The angular distribution (Fig. 5) has, besides the isotropic part, a forward peak ($\bar{n}_{K^0}/\bar{n}_{K^0} = 1.61 \pm 0.15$). The forward-backward ratio decreases with increasing n_s. For the charged pions arising in Λ-production events the momentum distributions are, for $p_\pi^* \geq 400$ Mev/c, well described by the statistical theory without taking the isobars into account; for $p_\pi^* < 400$ Mev/c it is higher than that obtained from theory. The angular distributions for $n_s = 2, 4, 6$ are characterized by

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B102/B186

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$\bar{n}_{\pi^+}/\bar{n}_{\pi^+} = 1.10 \pm 0.12$, $\bar{n}_{\pi^-}/\bar{n}_{\pi^-} = 1.40 \pm 0.13$.

The mean number of π^0 mesons produced per π^-p interaction with Λ production is 1.23 ± 0.14. The angular distribution of π^- arising in stars with K^0 production has a flat forward maximum ($\bar{n}_{\pi^-}/\bar{n}_{\pi^-} = 1.10 \pm 0.10$). The mean number of charged particles produced together with Λ is $n_s = 2.22 \pm 0.13$ which agrees closely with the statistical theory without the isobars. The main part of Λ and K^0 is produced in two-pronged stars. The admixture of $K^0\Sigma^\pm$ pairs amounts to less than 20% of the number of K^0K^- + K^0K^+ pairs. The momentum distribution of charged pions from π^-p interactions with Λ-hyperon production are characterised by $\bar{p}^*_{\pi^+} = 425 \pm 16$ Mev/c and $\bar{p}^*_{\pi^-} = 444 \pm 15$ Mev/c. From a comparison of these angular distributions it is concluded that processes involving ΛK or $K\bar{K}$ pair production are more central than the usual processes of multiple pion production. If one divides the π^-p interactions with strange particle production into head-on

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S/056/63/044/002/007/065
B102/B186

Investigation of Λ-hyperon ...

and peripheral collisions one can say that those involving $K\bar{K}$ pair production are rather of the head-on type than those with ΛK pair production. There are 15 figures and 2 tables.

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

SUBMITTED: July 31, 1962

Fig. 1. Total momentum spectrum of hyperons; dashed line: without correction for recording probability; shaded area: events with $\Delta < 700$ Mev; curves obtained from statistical theory with (I) and without (II) isobars, and without the events with $\Delta < 700$ Mev (II').

Fig. 4. K^0 total momentum spectrum.

Fig. 5. K^0 total angular distribution.

Card 5/7

L 10238-63 FCS(f)/EWT(m)/BDS—AFFTC/ASD

ACCESSION NR: AP3000037 S/0056/63/044/005/1474/1480

AUTHOR: Belyakov, V. A.; Wang Yung-ch'ang; Viryasov, N. M.; Tu Yuan-ts'ai; Kim Khi In; Kladnitskaya, Ye. N.; Kuznetsov, A. A.; Nguyen Din Ty; Penev, V. N.; Sokolova, Ye. S.; Solov'yev, M. I.

TITLE: A study of the properties of neutral pions produced with strange particles in negative pion proton and negative pion carbon interactions.

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 44, no. 5, 1963, 1474-1480

TOPIC TAGS: Neutral pions, strange particle interactions

ABSTRACT: An earlier investigation on the production of strange particles by 7-8 Bev negative pions on hydrogen and carbon was continued with a 24 - liter propane bubble chamber. The properties of the neutral pions inferred from the photons accompanying the LAMBDA hyperon and neutral kaon production are given and are compared with the properties of the pions (positive and negative) emitted in LAMBDA and neutral-kaon production processes. In calculating the total number of photons, corrections were introduced for the loss of photons

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ACCESSION NR: AP3000037 8

emitted at large azimuthal angles and for the asymmetry of the incident beam relative to the longitudinal axis of the chamber. The possibility of a resonance with radiative decay is noted. "In conclusion, the authors wish to thank Academician V. I. Veksler, Professor Chang Weng-yu, M. I. Podgoretskiy, A. M. Baldin, A. V. Nikitin, V. B. Lyubimov and Yen Wu-kuang for useful discussions and many valuable remarks, the staff of the computation center for the calculations, and the laboratory assistants for the measurements. Orig. art. has: 4 figures, 9 formulas, and 4 tables.

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

SUBMITTED: 07Dec62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: PH NR REF SOV: 008 OTHER: 004

Card 2/2

L 15462-63 FCS(f)/EWT(m)/BDS AFFTC/ASD

ACCESSION NR: AP3005248 S/0056/63/045/002/0088/0089 64 63

AUTHORS: Belyakov, V. A.; Veksler, V. I.; Virnasov, N. M.; Vrana, I.; Kim Khi In; Kladnitskaya, Ye. N.; Kuznetsov, A. A.; Mikhul, A.; Nguyen Din Ty*; Solov'yev, M. I.; Hofmokl, T.; Ch'eng Ling-yen 19

TITLE: Antilambda hyperon production by 7-8 GeV negative pions on hydrogen

SOURCE: Zhur. eksper. i teoret. fiz., v. 45, no. 2, 1963, 88-89

TOPIC TAGS: hyperon production, antilambda, negative pion decay, cross section

ABSTRACT: The production and decay of $\bar{\Lambda}$ hyperons by 7--8 BeV negative pions are reported, on the basis of 42 V^0 events in which the momentum of the negative particle from the decay was greater than the momentum of the positive particle and the transverse momentum of the decay products was less than or equal to 100 MeV. Selection of the $\bar{\Lambda}$ hyperons was by kenemativ criteria, measurement of ionization, and determination of the δ-electron energy. The cross section for the production of Λ hyperons is found not to differ much from the cross section of NN production, or about 3 μb. Orig. art. has 1 figure and 1 table.

Card 1/2

L 13462-63

ACCESSION NR: AP3005248

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

SUBMITTED: 13Mar63	DATE ACQ: 06Sep63	ENCL: 00
SUB CODE: PH	NO REF SOV: 003	OTHER: 002

Card 2/2

VAN YU-CHAN [Wang Yung-ch'ang]; KIM KHI IN; KLADNITSKAYA, Ye.N.; KOPYLOV, G.I.; KUZNETSOV, A.A.; MEL'NIKOVA, N.N.; NGUYEN DIN TY; SOKOLOVA, Ye.S.

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