S/080/60/033/011/001/014
A003/A001

AUTHOR: Akimov, V. V.

TITLE: The Hardening Number and Density of Sodium-Boron-Silicate Glasses. Communication II.

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol. 33, No. 11, pp. 2404-2412

TEXT: The optical constants of glasses of the system Na_2O-B_2O_3-SiO_2 had been investigated earlier (Ref. 1). The hardening number and the density of these glasses was studied here. The content (molar %) of Na_2O varied from 5 to 40, B_2O_3 from 0 to 50 and SiO_2 from 33 to 85. The hardening number of sodium-boron-silicate glasses is 10 - 30 $\cdot 10^{-4}$ and rises to 70 - 73 $\cdot 10^{-4}$ for glasses containing simultaneously 17 - 25% Na_2O and B_2O_3. A temperature increase beyond the burning temperature causes a decrease of the refractive properties of the glasses. The peaks on the refractive index curves are smoothed and their maxima are shifted to the side of the glasses of the Na_2O-B_2O_3 system which have higher refractive indices compared to glasses of the Na_2O-SiO_2 system. The density of the glasses studied varies from 2.1457 to 2.5497. The shape of the density curves is similar to that of the refractive index curves. Bends are observed with the transition to

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S/080/60/033/011/001/014
A003/A001

The Hardening Number and Density of Sodium-Boron-Silicate Glasses. Communication II.

glasses of the leached region. The peaks and bends are clearly visible in compositions with the following ratios: $Na_2O : B_2O_3 = 1 : 1$; $Na_2O : SiO_2 = 1 : 2$; $Na_2O : B_2O_3 : SiO_2 = 1 : 1 : 2$. This fact confirms the presence of certain compounds in the glasses which determine the properties and their changes. The smoothing of the peaks and bends corresponding to certain compounds is explained by the dissociation of the latter, and the shift of the extrema by the inequality of the absolute values of the properties of the extreme components. The investigation showed that sodium-boron-silicate glass has a complex molecular composition. Besides the mentioned compounds it contains the products of their dissociation. The author expresses its gratitude to L. I. Demkin, Doctor of Technical Sciences who guided the present work. There are 2 tables, 6 figures and 12 references: 7 Soviet, 4 English, 1 American.

SUBMITTED: October 15, 1959

Card 2/2

RUMYANTSEVA, N.P.; AKIMOV, V.V.

Some materials for the study of the poliomyelitis outbreak in Nakhodka in 1960. Trudy VladIEMG no.23150-156 '62.
(MIRA 18:3)

1. Iz Primorskoy krayevoy sanitarno-epidemiologicheskoy stantsii.

SLONOV, M.N.; AKIMOV, V.V.; DOROKHOVA, V.S.

Epidemiologic characteristics of tick-borne encephalitis in Maritime Territory. Med. paraz. i paraz. bol. 33 no.2: 169-177 Mr - Ap '64 (MIRA 18:1)

1. Otdel entomologii (zav. - prof. V.N. Beklemishev [deceased]) Instituta meditsinskoy parazitologii i tropicheskoy meditsiny imeni Ye.I. Martsinovskogo (direktor - prof. P.G. Sergiyev) Ministerstva zdravookhraneniya SSSR, Moskva, i Primorskaya krayevaya sanitarno-epidemiologicheskaya stantsiya (glavnyy vrach V.V. Akimov).

PROKOSHKIN, D.A.; VASIL'YEVA, A.G.; AKIMOV, V.V.

Strength and plasticity of alloyed steels following a low-temperature thermomechanical treatment. Metalloved. i term. obr. met. no.11:31-33 N '65. (MIRA 18:12)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche im. Baumana.

L 02983-67 EWT(m)/EWP(w)/T/EWP(t)/ETI/EWP(k) IJP(c) JD/HW

ACC NR: AP6032461 SOURCE CODE: UR/0129/66/000/009/0051/0054

AUTHOR: Prokoshkin, D. A.; Vasil'yeva, A. G.; Akimov, V. V.; Shinkarevich, Yu. B. 52 B

ORG: none

TITLE: Effect of deformation temperature in thermomechanical treatment on mechanical properties and nil-ductility transition temperature of alloyed structural steel

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 9, 1966, 51-54

TOPIC TAGS: structural steel, alloy steel thermomechanical property, steel, cryogenic metalworking temperature thermomechanical treatment, ~~nil~~ metal heat treatment, steel, solid mechanical property/40Kh5NSMF steel

ABSTRACT: Several series of specimens of 40Kh5NSMF (0.46% C, 5.2% Cr, 1.6% Ni, 1.5% Mo, 0.55% Mn, 1.32% Si, 0.2% V) steel were austenitized at 1050C and subjected to thermomechanical treatment (TMT), rolled at 550—1050C with 50% reduction, quenched and then tempered at 200—300C. The tensile strength and yield strength were found to increase and ductility to decrease with decreasing deformation temperature (see Fig. 1). The NDT temperature dropped with increasing deformation temperature from -20C for steel rolled at 550C to -50C for steel rolled at 800—1050C. The strengthening effect of thermomechanical treatment was not eliminated by repeated hardening. However, the higher the temperature of TMT, the more stable the effect. Repeated hardening with short 5-min austenitizing at 1050C lowered the tensile

Card 1/2 UDC: 621.789:669.14.29

L 02983-67

ACC NR: AP6032461

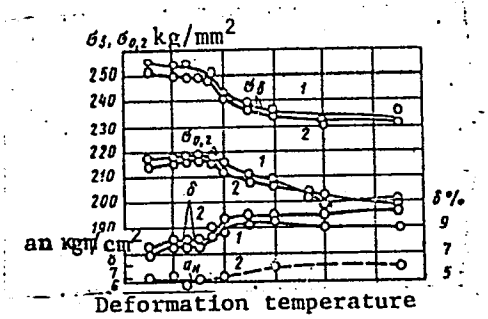

Fig. 1. Effect of deformation temperature on tensile strength (σ_b), yield strength ($\sigma_{0.2}$), elongation (δ), and notch toughness (α_n) of 40Kh5NSMF steel tempered at 200C (1) or 300C (2) after thermomechanical treatment.

strength of steel rolled at 550 and 1050C from 250 and 232 kg/mm^2 to 215 and 227 kg/mm^2, respectively. Orig. art. has: 3 figures and 2 tables.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 005/ OTH REF: 001/ ATD PRESS: 5099

MOISEYCHIK, A.N.; DOVGAL', V.I.; AKIMOV, V.V.

Heater for preheating the cooling system liquids of tractor engines. Trakt. i sel'khozmash. 32 no.5:13-15 My '62. (MIRA 15:5)

1. Gosudarstvennyy soyuznyy ordena Trudovogo Krasnogo Znameni nauchno-issledovatel'skiy avtomobil'nyy i institut (for Moiseychik). 2. Onezhskiy traktornyy zavod (for Dovgal', Akimov).
(Tractors--Cold weather operation)

AKIMOV, V.V.

Let's protect the rivers of the Maritime Territory from pollution. Okhr. prir. na Dal'. Vost. no.1:141-146 '63. (MIRA 18:7)

1. Primorskaya krayevaya sanitarno-epidemiologicheskaya stantsiya.

PSHENICHNYY, A.Ya.; KALININ, M.N.; SMIRNOV, V.G.; AKIMOV, Ye.T.; SEMENYUTA, N.N.

Shaft sinking with the use of a shaft lining formwork. Gor.zhur. no.4:32-36 Ap '64. (MIRA 17:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy gornometallurgicheskiy institut tsvetnykh metallov (for Pshenichnyy, Kalinin, Smirnov). 2. Trest Svinetsshakhtostroy (for Akimov). 3. Glubochanskoye shakhtostroyupravleniye (for Semenyuta).

18 SOV/127-59-4-6/27

AUTHORS: Akimov, Ye. T. and Lisovskiy, G.D., Mining Engineers

TITLE: A Comparison of the Exploitation Qualities of a Sifting Grate With a Reinforced Concrete Slab With a Slot. (Sravneniye ekspluatatsionnykh kachestv grokhotnoy reshetki i zhelezobetonnoy plity s propusknoy shchel'yu.)

PERIODICAL: Gornyy zhurnal, 1959, Nr 4, pp 35-37 (USSR)

ABSTRACT: Sifting grates installed on ore-chutes in underground galleries were usually put out of order after a short time by falling pieces of ore. Their repair caused serious losses of working time. VNIItsvetmet proposed to cover these ore-chutes with slotted reinforced concrete slabs which permit only pieces of ore of the prescribed size to pass. Their installation was more expensive than that of sifting grates, but on

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A Comparison of the Exploitation Qualities of a Swifting Grate With a Reinforced Concrete Slab With a Slot.

the whole they proved to be more economical, as no repairs were required for a long time. This method is used in many mines abroad. Different types of sifting grates were proposed by: M.I. Agoshkov, M.Ye. Mukhin and G.G.Petrenko. There is 1 photo, 1 set of diagrams and 2 Soviet references.

ASSOCATION: VNIItsvetmet, Ust'-Kamenogorsk.

AKIMOV, Ye.T., inzh.

Lining rectangular shafts with sectional reinforced concrete, and upraises with betonite. Shakht.stroi. no.1:29-31 Ja '60. (MIRA 13:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut tsvetnykh metallov.
(Czechoslovakia--Shaft sinking)

AKIMOV, Ye.T.; KUDINOV, A.A.

New technology for shaft sinking. Sbor. trud. VNIITSVETMET no.4:66-81 '59. (MIRA 16:8)

(Shaft sinking--Equipment and supplies)

AKIMOV, Ye.T., inzh.; LISOVSKIY, G.D., inzh.

New methods for roofing ore chutes. Bezop. truda v prom. 4 no. 5:22 My '60. (MIRA 14:5)
(Mining engineering)

AKIMOV, Yu.A. (poselok Neftyanikov Kok-Tah)

Using Dufeaux needle for an ether drip. Fel'd. i akush. 23 no.8:48 Ag '58 (MIRA 11:8)

(SYRINGES)

44440
S/120/62/000/005/021/036
E192/E382

9.4150

AUTHOR: Akimov, Yu.A. and Stepanov, B.M.

TITLE: A wideband oscillographic cathode-ray tube

PERIODICAL: Pribory i tekhnika eksperimenta, no. 5, 1962, 128 - 130

TEXT: The tube employs a deflection system based on a line with distributed parameters. The deflection plates are in the form of a section of a strip line having a wave impedance of 75 Ω; these are gradually tapered and matched with coaxial lines which are led out through the glass envelope by means of coaxial outlets (Fig. 1). The investigations showed that provided this deflection system was properly constructed it did not show any resonance effects or produce reflections of the signal from the tapered sections of the line. The actual tube has two electron guns with two identical deflection systems. The guns operate at accelerating voltages of 20 kV and produce a trace 0.2 - 0.5 mm thick at the screen; the writing speed can be as high as 50 000 km/sec. The diameter of the screen is 170 mm. The system does not use a post-deflection acceleration

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stage in order to reduce the distortion of the signal image at the screen. The transit time of the electrons through the deflection system is 3×10^{-10} sec. The upper frequency limit for the signals displayed by the tube is therefore approximately equal to 1 500 Mc/s. The sensitivity with respect to the signal plates is 0.045 mm/V, so that signals having an amplitude of 1 000 V can be observed. The tube is provided with an additional pair of deflection plates which are used for calibration by shifting the level of the investigated signal or by using a sinusoidal waveform for producing time-markers. There are 4 figures.

SUBMITTED: November 5, 1961

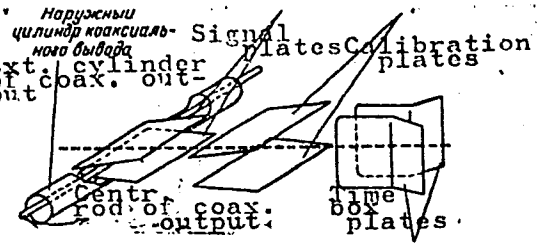

Fig. 1

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AKIMOV, Yu.A.

Case of congenital elephantiasis of the fingers in a child. Ortop., travm. i protez. no.1:73-74'63. (MIRA 16:10)

1. Iz khirurgicheskogo otdeleniya kafedry detskikh bolezney (zav. - prof. A.I.Perevoshchikova) Izhevskogo meditsinskogo instituta (rektor - kand.med.nauk A.M.Zagrebin).

AKIMOV, Yu. A.

Differential diagnosis of congenital pyloric stenosis in infants. Khirurgiia no.6:124-125 Je '62. (MIRA 15:7)

1. Iz detskogo khirurgicheskogo otdeleniya Izhevskoy gorodskoy detskoy klinicheskoy bol'nitsy No. 4 (glavnyy vrach P. I. Maslova) i kliniki detskikh bolezney (zav. kafedroy - prof. A. I. Perevoshchikova)

(PYLORIC STENOSIS) (DIAGNOSIS, DIFFERENTIAL)

AKIMOV, Yu.I.

Treatment of hypertension with dicoline. Sov. med. 24 no.6:128-134 Je '60. (MIRA 13:9)

1. Iz gospital'noy terapevticheskoy kliniki (dir. - prof. P.Ye. Lukomskiy) II Moskovskogo meditsinskogo instituta imeni N.I. Pirogova.

(HYPERTENSION) (AUTONOMIC DRUGS)

AKIMOV, Yu.I.; ORLOV, L.L. (Moskva)

Clinical significance of electrokymography in the diagnosis of tricuspid stenosis. Klin.med. no.7:110-116 '61. (MIRA 14:8)

1. Iz gospital'noy terapevticheskoy kliniki (dir. - prof. P.Ye. Lukomskiy) II Moskovskogo meditsinskogo instituta imeni N.I. Pirogova.
(HEART--VALVES--DISEASES) (ELECTROKYMOGRAPHY)

AKIMOV, Yu.I.; ORLOV, L.L.

Electrokymography in the healthy subject. Terap.arkh. 33 no.2: 58-72 F '61. (MIRA 14:3)

1. Iz gospital'noy terapevticheskoy kliniki (dir. - prof. P.Ye. Lukomskiy) II Moskovskogo meditsinskogo instituta imeni N.I. Pirogova.

(ELECTROKYMOGRAPHY)

AKIMOV, Yu. I.

The diagnostic value of the systolic plateau on the oeft auricular electrokymogram. Cor vasa 4 no.2:85-93 '62.

1. Internal Clinic, 2nd Medical Institute N. I. Pirogov, Moscow.

(KYMOGRAPHY)

AKIMOV, Yu.I.; ORLOV, L.L.

Elektrokymography; survey of the literature and analysis of our data. Sov. med. 25 no.7:8-19 Jl '61. (MIRA 15:1)

1. Iz gospital'noy terapevticheskoy kliniki (dir. - chlen-korrespondent AMN SSSR, prof. P.Ye.Lukomskiy) II Moskovskogo meditsinskogo instituta imeni N.I.Pirogova.
(ELEKTROKYMOGRAPHY)

AKIMOV, Yu.I.

Electrokymograms of patients with rheumatic nitral and aortic lesions. Kardiologia 1 no.3:58-72 My-Je '61. (MIRA 15:3)

1. Iz gospital'noy terapevticheskoy kliniki (dir. - prof. P.Ye. Lukomskiy) II Moskovskogo meditsinskogo instituta imeni N.I. Pirogova.

(ELECTROKYMOGRAPHY)
(MITRAL VALVE--DISEASES) (AORTA--DISEASES)

AKIMOV, Yu.I.; ORLOV, L.L.; BULYCHEV, V.V.

Normal electrokymogram and its characteristics in athletes.
Vop.kard. 2-go MGMI no.2:19-51 '62. (MIRA 16:1)
(ELECTROKYMOGRAPHY) (ATHLETES)

AKIMOV, Yu.I.

Electrokymogram of patients suffering from rheumatic heart disease. Vop.kard. 2-go MGMI no.2:53-99 '62. (MIRA 16:1)
(ELECTROKYMOGRAPHY) (RHEUMATIC HEART DISEASE)

AKIMOV, Yu.I.; MALOVA, M.N.; ORLOV, L.L.

Electrokymogram of patients suffering from chronic pulmonary and cardiopulmonary insufficiency. Vop.kard. 2-go MGMI no.2: 129-138 '62. (MIRA 16:1)
(ELECTROKYMOGRAPHY) (HEART--DISEASES) (LUNGS--DISEASES)

ORLOV, L.L.; BULYCHEV, V.V.; AKIMOV, Yu.I.

Ballistocardiogram of a healthy person and its characteristics in athletes. Vop.kard. 2-go MGMI no.2:139-154 '62. (MIRA 16:1)

(BALLISTOCARDIOGRAPHY) (ATHLETES)

ORLOV, L.L.; AKIMOV, Yu.I.; SOLOV'YEV, V.V.; FEDOROV, V.D.

Ballistocardiogram of patients suffering from rheumatic heart disease. Vop.kard. 2-go MGMI no.2:155-176 '62. (MIRA 16:1)
(BALLISTOCARDIOGRAPHY) (RHEUMATIC HEART DISEASE)

AKIMOV, Yu.I. (Moskva, G-165, Kutuzovskiy prosp., d. 39/30 kv.337); FEDOROV, V.D.

Comparison of the electrokymographic changes with the anatomical and with the pressure in the left auricle and pulmonary artery in mitral stenosis. Grud.khir. no.4:51-58 Jl-Ag '62. (MIRA 15:10)

1. Iz gospital'noy terapevticheskoy kliniki (dir. - chlen-korr. AMN SSSR prof. P.Ye.Lukomskiy) i gospital'noy khirurgicheskoy kliniki (dir. - prof. V.S.Mayat) II Moskovskogo meditsinskogo instituta imeni N.I.Pirogova.

(ELECTROKYMOGRAPHY)
(BLOOD PRESSURE)
(PULMONARY ARTERY)
(MITRAL VALVE—DISEASES)

AKIMOV, Yu.I.; ORLOV, L.L. (Moskva)

Electrokymography in the diagnosis of diseases of the cardiovascular system. Vrach. delo no. 1:33-37 Ja '64. (MIRA 17:3

1. Gospital'naya terapevticheskaya klinika (zav. - chlen-korrespondent AMN SSSR prof. P.Ye. Lukomskiy) II Moskovskogo meditsinskogo instituta imeni N.I.Pirogova.

SOLOV'YEV, V.V.; AKIMOV, Yu.I.; ORLOV, L.L.; YURASOV, V.S.

Diagnosis of tricuspid stenosis. Kardiologiia 5 no.2:35-43 '63 (MIRA 17:2)

1. Iz gospital'noy terapevticheskoy kliniki (dir. - chlen-korrespondent AMN SSSR prof. P.Ye. Lukomskiy) II Moskovskogo meditsinskogo instituta imeni N.I.Pirogova.

AKIMOV, Y[illegible] I., POLOZIN, N.I.

Clinical aspects and intravital diagnosis of allergic myocarditis. Zav.med. 28 no.11:33-36 N '65. (MIRA 18:12)

1. Kafedra gospital'noy terapii (zav. - deystvitel'nyy chlen AMN SSSR prof. P.Ye.Lukomskiy) II Moskovskogo meditsinskogo instituta imeni N.I.Pirogova.

1. AKIMOV, YU.

2. USSR (600)

4. Kochetov, Vsevolod

7. "The Zhurbins." Vsevolod Kochetov. Reviewed by Yu. Akimov. Rabotnitsa No. 12 1952

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

Akimov, Yu. K.

INSTRUMENTATION: SCINTILLATORS

"Effective Detector for Fast Neutrons", by Yu.K. Akimov, A.S. Kuznetsov, and G.A. Leksin, Institute of Nuclear Problems, Academy of Sciences USSR, Pribory i Tekhnika Eksperimenta, No 2, September-October 1956, pp 70-71.

This detector was developed at the Institute of Nuclear Problems in 1952 and has an efficiency of 20%. It consists of a long (approximately 70 cm) liquid scintillator-converter and a photomultiplier. It records both charge-exchange protons and charged particles from "stars" formed by neutrons in the large convertor volume. This detector had certain shortcomings, which were eliminated as described in this article.

Card 1/1

AKIMOV, Yu.K.

Multichannel coincidence systems. Prib. i tekh. eksp. no.1:95-96 Ja-F '57. (MLRA 10:6)

1. Ob'yedinennyy institut yadernykh issledovaniy.
(Electron-tube circuits)

AKimov, Yu.K.

USSR/Nuclear Physics - Instruments and Installations C-2
Methods of Measurement and Investigation.

Abs Jour : Referat Zhur - Fizika, No 1, 1958, 299

Author : Akimov, Yu.K.

Inst : Joint Institute for Nuclear Research.

Title : High Speed Transmitting Circuit for an Amplitude Analyzer.

Orig Pub : Pribory i tekhn. eksperimenta, 1957, No 2, 116

Abstract : A block diagram is given for a device with a resolution time of 10^{-7} seconds. Pulses from the spectrometer arrive simultaneously at two anti-coincidence circuits, the output of the first being connected with one of the inputs of the second; if the first anti-coincidence circuit does not receive at the very same instant a pulse from the telescope of the counters that separate the investigated particles, then the signals from the spectrometric counter

Card 1/2

Akimov, Yu. K.

AUTHOR: Akimov, Yu.K. 120-4-30/35

TITLE: A Fast-acting Differential Coincidence Circuit (Bystrodeystvuyushchaya differentsial'naya skhema sovpadeniy)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.4, pp. 98-99 (USSR).

ABSTRACT: The principle of the action of the circuit is similar to that proposed by Bay (Refs. 1, 2). The input elements of the apparatus are two coincidence circuits. Each of these is connected to two pulse detectors, one directly and the other via a delay cable (Fig.1). The result of such connections is that the output pulses of both circuits will be equal in amplitude at coincidence but different at non-coincidence (Fig.2). The difference in the pulses is obtained by the differential stage. After amplification, the difference pulse, which is the anti-coincidence signal, suppresses the pulse which is being transferred from one of the coincidence circuits to the counting apparatus. The result is that only coincidence pulses which are not accompanied by difference pulses are recorded. The circuit diagram is given in Fig. 3.

The circuit recorded the self-coincidence of pulses from a counter, which consisted of a photo-multiplier B-1 and a solution of terphenyl in phenylcyclohexane, scintillating under

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the action of irradiation from Co^{60}. The photo-multiplier was loaded by a 75 Ω cable. The amplitude of the pulses was $\leq$ 0.5 V. The self-coincidences were broken by cables of different lengths l (Fig.3). The count rate of the pulses in relative units consisted: with l = 0, -1, with l = 5 cm - 0.3, with l = 10 cm - 0.02 and with l = 10 cm tended to zero, which corresponded to a time resolution $\sim 2 \times 10^{-10}$ sec.

For recording coincidences from two scintillation counters, it is necessary to consider not only the time variation but also the amplitude variation of the coincident pulses. If this difference is not very great, then it can be limited to some value of the resolving time due to amplification of the discrimination of the difference signal. With large variation, it is necessary to make the signal symmetrical by using forming lines and to move these pulses relative to each other as measured on their half-widths (Fig.2). The circuit is primarily useful for analysis of fast particles with time-spans differing by $\Delta t \leq 10^{-9}$ sec. There are 3 figures and 2 non-Slavic references.

A Fast-acting Differential Coincidence Circuit. 120-4-30/35

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

SUBMITTED: February 27, 1957.

AVAILABLE: Library of Congress.

Card 3/3

AKIMOV, Yu, K., SAVCHENKO, O. V., and SOROKO, L. M.

"Investigation of the Reaction $p+p \rightarrow d+\pi^+$ With Polarized Protons of High Energy," Nuclear Physics, Vol. 8, No 6, November 1958, pp 637.

Joint Institute of Nuclear Research, Lab of Nuclear Problems.

Abstract: The angular dependence of the asymmetry in the emission of π^+-mesons in the reaction $p+p \rightarrow \pi^+ + d$ was measured on a polarized proton beam at energies 536, 616 and 654 MeV. Direct proof of the existence of the d-state of the mesons in the reaction $p+p \rightarrow \pi^+ + d$ has been obtained. The results of the experiment are in agreement with the assumption that the amplitudes of the s- and d-transitions are considerably less than the amplitude of the transition $^1D_2 \rightarrow (^3S_1, p)2$. The limiting values of some partial cross sections have been estimated.

AUTHORS: Akimov, Yu. K., Savchenko, O. V., Soroko, L. M. SOV/56-35-1-12/59

TITLE: Investigation of the Reaction $p+p \rightarrow d+\pi^+$ in a Polarized Proton Beam (Issledovaniye reaktsii $p+p \rightarrow d+\pi^+$ na polyarizovannom puchke protonov)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 1, pp 89 - 96 (USSR)

ABSTRACT: The authors first discuss various earlier papers dealing with the reaction $p+p \rightarrow d+\pi^+$(1), as e.g. the investigation of (1) at E_p = 460 to 660 MeV (Ref 1), of $\pi^+ + d \rightarrow p+p$ at $E_{\pi+}$ =174 - 307 MeV (Ref 2); investigation of (1) at E_p = 314 MeV with a polarized proton beam, observation of asymmetry as a result of interference between s- and p-state (Ref 3), analogous investigations at 415 MeV (Ref 4), π^+-scattering on protons in the d-state (Refs 5,6) etc. The present paper contains a report on the investigation of the angular dependence of the asymmetry of the π^+ of (1), viz. for E_p = 536, 616 and 654 MeV; the primarily un-

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polarized proton beam of 637 MeV was supplied by the synchro-cyclotron of the Ob"yedinennyy institut yadernykh issledovaniy (United Institute of Nuclear Research). The experimental arrangement is given in figure 1; the manner in which experiments are carried out is described. The polarized proton beam had the following intensities: 536 MeV : $0,9.10^5$, 616 MeV: $5,5.10^5$, 654 MeV: $2,8.10^5$ protons /cm^2sec. For the two first energies the graphite scatterer had 22,9 g/cm^2, and for 654 MeV 7,3 g/cm^2. The results obtained by measuring asymmetry are represented by figure 3. For the 3 E_p-values the following cross sections were obtained:

$d\sigma/d\Omega \sim 0,24 + \cos^2\theta; \sim 0,22 + \cos^2\theta; \sim 0,27 + \cos^2\theta;$

$\sigma_{total} = 2,42.10^{-27} cm^2$, $3,14.10^{-27} cm^2$ and $3,1.10^{-27} cm^2$;

(θ is given in c.m.s.). The results obtained by these experiments prove the existence of a d-state of the π^+ from reaction (1) and agree with the assumption that the amplitudes of s- and d-transitions are considerably smaller than those of the $(^1D_2 \rightarrow {}^2S_1\, p_2)$-transition. For

the differential cross sections the following limiting values were obtained:

$$\sigma(^1S_0 \rightarrow {}^3S_1p_0) \geqslant 10^{-3}.\sigma_t(pp \rightarrow d\pi^+)$$

$$\sigma(s + d) \geqslant 5{,}4.10^{-2}.\sigma_t(pp \rightarrow d\pi^+)$$

$$\sigma(^1D_2 \rightarrow {}^3S_1p_2) \leqslant 0{,}945.\sigma_t(pp \rightarrow d\pi^+)$$

In conclusion, the authors thank M.G.Meshcheryakov, V.S. Neganov, and L.I.Lapidus for discussing the problem and N.P.Klepikov and S.N.Sokolov for working out experimental results. There are 5 figures, 3 tables, and 16 references, 10 of which are Soviet.

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

AUTHOR: Akimov, Yu.K. SOV/120-59-2-31/50

TITLE: The Registration of Counting Errors in Scaler Circuits (Registratsiya proschetov v pereschetnykh skhemakh)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 2, pp 113-114 (USSR)

ABSTRACT: The use of a coincidence circuit (c.c.) in a counter increases the order of accuracy when counting pulses randomly distributed in time. Pulses may be lost if they follow one another within an interval less than the resolution time of the counter. In Fig 1 the input pulse train is applied in two ways to a c.c., directly and also after stretching and shaping. The output of the c.c. gives the second of two adjacent pulses; the first is obtained as the output of an anti-coincidence circuit (a.c.c.) whose inputs are the stretched pulse and the resolved second pulse. Pulses will only be lost now if more than one occurs during a "stretched" interval, T. The relation between the number of pulses registered by the first counter (a.c.c. output) and the total registered is given by Eq (1). Assuming a Poisson distribution the number registered of the second counter

Card 1/2

The Registration of Counting Errors in Scaler Circuits

should be as Eq (2). The way in which the counter outputs and loss rate vary with the product of countered total and delay time is shown in Figs 2a, 2b. When counting 150 000 pulses per sec the proposed scheme, with a delay time of 1 μ , gives a performance equal to that of a single power counter having a resolving time of 0.7 times 10-7 sec (accuracy in each case is 1%). The conclusions have been verified using a 6AZP valve as c.c. and a PS-10 000 as a counter. There are 2 figures.

Card 2/2

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

SUBMITTED: March 28, 1958

05462
SOV/120-59-3-33/46

AUTHOR: Akimov, Yu. K

TITLE: A Coincidence Circuit for Small-amplitude Pulses (Skhema sovpadeniy dlya impul'sov maloy amplitudy)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 3, p 134 (USSR)

ABSTRACT: Two models of the circuit are described. Fig 1 shows the first, in which the anode of one photomultiplier (A^1) is joined to the last dynode of the other photomultiplier; the output pulse is taken from the last dynode of the first photomultiplier. There is only a very small output unless the two photomultipliers give coincident pulses. This simple circuit has disadvantages, and the one actually used is seen in Fig 2. Here the output from single pulses is very much smaller (0.01 - 0.02 V) for single-phase heights up to 8 V. If the single pulses have a height of only 0.03 V (minimum) the output coincident pulses have a height of 0.025 V. There are 2 figures and 2 references, 1 of which is Soviet and 1 English.

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

SUBMITTED: March 28, 1958

21(7)

AUTHORS: Akimov, Yu. K., Marish, K. S., Savchenko, O. V., Soroko, L. M.

SOV/56-37-1-8/64

TITLE: Measurement of Deuteron Polarization in the Reaction $p + p \rightarrow d + \pi^+$ at a Proton Energy of 670 Mev (Izmereniye polyarizatsii deytronov v reaktsii $p + p \rightarrow d + \pi^+$ pri energii protonov 670 MeV)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 1, pp 46-53 (USSR)

ABSTRACT: The authors give a report about results obtained by measurements of the vector polarization of deuterons originating from the reaction $p + p \rightarrow d + \pi^+$ carried out at angles of 121°, $140^\circ 30'$, and 162° in the cms. In the introduction some theoretical discussions, basing upon the approximation method by Tripp (Ref 1) are given. The experimental device is shown by figure 1 and is, like the measuring apparatus (block scheme) (Fig 2) discussed in the following. The proton beam used had an average energy of 670 Mev and an intensity of 5.10^{10}/seconds. Figures 3 and 4 show the measuring results; figure 3: $i\langle T_{11}\rangle_{d\pi^+}$ figure 4: $N(\theta_d^*)$. Measurements of the vector polarization of deuterons, and the data on the angular

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distribution of the reaction in the case of a non-polarized proton beam make it possible to determine the amplitude of the nonresonance p-transition $^1S_0 \rightarrow {}^3S_1p_0$. The contribution of this transition to the total reaction cross section is about 1 %, exactly: $(1.0^{+0.6}_{-0.45}) \cdot 10^{-2}\ \sigma_{tot}$. The transition amplitude $^1S_0 \rightarrow {}^3S_1p_0$ grows somewhat (~ 1.7) if E_p increases from 340 to 670 Mev, but its complex phase varies with respect to the amplitude of the transition $^1D_2 \rightarrow {}^3S_1p_2$ by 20°. The measured angular dependence of the deuteron vector polarization is not in contradiction to the assumption that the amplitudes of the transitions $^3F_2 \rightarrow {}^3S_1d_2$ and $^3F_3 \rightarrow {}^3S_1d_3$ are equal to zero. The authors finally thank V. I. Komarov for his assistance in carrying out measurements, and L. I. Lapidus, M. G. Meshcheryakov, and R. M. Ryndin for discussions. There are 5 figures and 15 references, 8 of which are Soviet.

Measurement of Deuteron Polarization in the Reaction $p + p \rightarrow d + \pi^+$ at a Proton Energy of 670 Mev SOV/56-37-1-8/64

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

SUBMITTED: February 17, 1959

Card 3/3

AKIMOV, Yu.K.; SAVCHENKO, O.V.; SOROKO, L.M.

$d + d \rightarrow \pi^0 + He_4$ Reaction at a deuteron energy of 400 Mev. Zhur. eksp. i teor. fiz. 38 no.1:304-306 Jan '60. (MIRA 14:9)

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

Akimov, Yu. K.

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S/056/60/038/02/48/061
B006/B014

24.6600

AUTHORS: Akimov, Yu. K., Savchenko, O. V., Soroko, L. M.

TITLE: The Reaction $p + d \rightarrow t + \pi^+$ at a Proton Energy of 670 Mev

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 2, pp. 643-644

TEXT: The cross sections of the reactions $p + d \rightarrow t + \pi^+$ (1) and $p + d \rightarrow He^3 + \pi^0$ (2) have been compared earlier, and a ratio of 2:1 has been obtained. The cross sections were measured at 340, 450, and 600 Mev (Refs. 1-6). In the present "Letter to the Editor" the writers report on a comparison of these two reaction modes at E_p = 670 Mev. The proton beam used had an intensity of 10^{11} protons/sec. The secondaries produced in targets of heavy polyethylene and carbon were identified with regard to momentum, specific ionization, and range. The yield of low-energy tritium nuclei was measured in the laboratory system under the angles 5.4^0 and 11^0. The absolute cross sections were calibrated according to the deuteron yield of the reaction $p + p \rightarrow d + \pi^+$ whose angular

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The Reaction $p + d \rightarrow t + \pi^+$ at a Proton Energy of 670 Mev

distribution is well known at E_p = 660 Mev. The following was obtained: $d\sigma(12^0)/d\Omega = (9.3 \pm 1.5).10^{-30}$ cm^2/steradian and $d\sigma(25^0)/d\Omega = (3.1 \pm 0.5).10^{-30}$ cm^2/steradian. These data and those obtained at other energies are illustrated in a Fig. With increasing E_p the fraction of forward emitted protons rises. If the cross sections for E_p = 670 Mev are calculated according to the theory of momentum approximation, $d\sigma(12^0)/d\Omega = 3.1.10^{-30}$ and $d\sigma(25^0)/d\Omega = 2.4.10^{-30}$ cm^2/steradian are obtained. The difference between theory and experiment is ascribed to the fact that the contribution of the meson-producing reaction $p + p \rightarrow n + p + \pi^+$ proceeding besides the reaction $p + p \rightarrow d + \pi^+$ was neglected. There are 1 figure and 9 references: 4 Soviet and 5 American.

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

SUBMITTED: October 15, 1959

Card 2/2

AKIMOV, Yu.K.; KOMAROV, V.I.; SAVCHENKO, O.V.; SOROKO, L.M.

Separation of particles according to the ionization value in some scintillation counters. Prib.i tekh.eksp. no.4:71-77 Jl-Ag '60. (MIRA 13:8)

1. Ob"yedinennyy institut yadernykh issledovaniy.
(Scintillation counters)

AKIMOV, Yu. K.

Cand Phys-Math Sci - (diss) "Methods of time and amplitude selection of scintillation counter impulses in experiments with the synchro-cyclotron." /Dubna, 1961/ 12 pp; with diagrams; (Inst of Theoretical and Experimental Physics of the Academy of Sciences USSR); 160 copies; price not given; bibliography at end of text (28 entries); (KL, 5-61 sup, 171)

S/120/61/000/001/028/062
E194/E184

9.7500

AUTHORS: Akimov, Yu.K., and Kuznetsov, A.S.

TITLE: A 20-Channel Amplitude Analyser

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No.1, pp.92-95

TEXT: This article describes an impulse amplitude analyser based on scintillating counters using organic scintillators. The operating principles and preliminary developments were described at the Third Scientific-Technical Conference on Nuclear Electronics in Moscow, March 1957. The particles to be recorded pass through a number of scintillation counters, one of which is a spectrometric counter. The impulses from this counter pass through a preliminary amplifier to a transmission circuit controlled by signals from a coincidence circuit to which the outputs from the other scintillating counters are applied. After linear amplification the impulses pass to a threshold device which acts as follows. If the amplitude of the impulses is below the threshold the impulses pass through it as through an ordinary amplifier; when they exceed the threshold amplitude the impulses are reduced by a constant amount. As a result of this the

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A 20-Channel Amplitude Analyser

amplitude of impulses for the 11th channel is equal to that of impulses for the first; for the 12th the amplitude is equal to that for the 2nd, and so on. Simultaneously, by means of an additional signal the distribution device is reconnected from the first to the second decade of channels of the counter. An impulse generator whose output alters linearly with time is provided for adjustment of the instrument. The spectrometric counter consists of a plastic scintillator, a light guide of transparent plastic and a photomultiplier type ФЭУ-11 (FEU-11). The shape of the scintillator was such as to compensate the difference between the amount of light reaching the photo-cathode from the lower and upper parts of the scintillator because of increased light flashing in the upper parts. The pre-amplifier is based on a double triode 6Н6П (6N6P) and is intended to transmit impulses from the photomultiplier to a cable through which the impulses are delivered to the transmission circuit. The threshold device is described. Impulses of positive polarity are applied to two inputs; to a discriminator and through a

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A 20-Channel Amplitude Analyser

delay line of 0.5 μsec to a valve which is normally shut to a current of 50 μamps. If the amplitude of the impulse is below the threshold of the discriminator the valve acts as an ordinary amplifier. If the discriminator operates, the valve is additionally blocked by the amount of impulse voltage reaching its cathode from the discriminator. The amplitude of the impulse from the discriminator is formed by a diode giving an impulse of rectangular wave-shape equal in amplitude to the initial current. The resultant impulse that acts on the valve at the end of the delay line is the difference between the amplitude of the input and the formed impulses. The value of this difference is such that impulses of amplitude somewhat greater than the threshold value pass through the first channel of the distributor device. An anti-coincidence and a coincidence circuit are used to convert the first channel to the 11th, the second to the 12th and so on. These circuits are briefly described. In the distribution device the input impulses pass through a delay line consisting of 11 elements, connected by tappings to dividers which reduce the

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A 20-Channel Amplitude Analyser

amplitude of the impulses according to a pre-determined law. The impulses are connected to a common mixer on the output of which there appear a series of impulses at regular time intervals diminishing in amplitude. The discriminator passes only those impulses of amplitude above the threshold value. The impulses that pass the discriminator follow two paths, one direct and the other with the delay to the anti-coincidence circuit, the undelayed impulses being restrictive. Thus there appears on the output of the anti-coincidence circuit only one last impulse which is passed further to the special device. From the output of the threshold device signals are applied to one of the inputs of the coincidence circuit; the other inputs of this circuit receive signals from tappings from the delay line. As a result coincidence occurs in only one of the circuits 1-20. Consequently the number of the channel corresponds to a definite range of amplitude of input impulses. The bandwidth of these channels is the same. The last, 20th, channel records all impulses with amplitude greater than that of the 19th channel. Tests were made with a proton beam with a

A 20-Channel Amplitude Analyser

mean energy of 670 MeV. A polyethylene target was irradiated. The deutrons and protons with an impulse of 900 MeV6s leaving the target at an angle of 10° pass through a system of collimators and magnetic field and were recorded by the scintillation counters. Under these conditions the specific ionisation loss of deutrons is 2.2 times greater than that of protons. The resultant characteristic is given in Fig.7, in which the count is plotted against the channel number. The first peak corresponds to protons and the second to deutrons. The somewhat high count in the tenth channel occurs because the threshold of the first discriminator was set somewhat higher than necessary. Both peaks occur against a certain background of particles. The relative half-width of the experimental curve for deutrons is 20%. The relative half-width of the calculated curve of ionisation losses in a scintillator for deutrons with an impulse of 900 MeV/s is about 10% and the scatter of the actual mean loss (that result from the deutrons not being monochromatic) can also be about 10%.

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A 20-Channel Amplitude Analyser

Recently, a group of Italian authors have described a single channel analyser with logarithmic scale constructed on a similar principle to that described here (A. Alberigi et al. Ref.5).
The author thanks O.V. Savchenko for assistance and A.N. Sinayev for useful comments.
There are 7 figures and 5 references: 3 Soviet and 2 non-Soviet.

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

SUBMITTED: December 12, 1959

Card 6/6

AKIMOV, Yu.K.; SAVCHENKO, O.V.; SOROKO, L.M.

Search for anomalies in the energy dependance of the cross section of the reaction $p + p \rightarrow d + \pi^+$ in the threshold region of the formation of π-meson pairs. Zhur. eksp. i teor. fiz. 40 no.5:1530-1532 My '61. (MIRA 14:7)

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

AKIMOV, Yu.K.; KOMAROV, V.I.; MARISH, K.S.; SAVCHENKO, O.V.; SOROKO, L.M.

Search for anomalies in the spectrum of H^3 nuclei emitted in the reaction $p+d \rightarrow H^3 + \pi^+ + \pi^0$ at a proton energy of 670 Mev. Zhur. eksp. i teor. fiz. 40 no.5:1532-1535 My '61. (MIRA 14:7)

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

28752
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B125/B102

24.6600

AUTHORS: Akimov, Yu. K., Savchenko, O. V., Soroko, L. M.

TITLE: Experimental verification of the principle of charge invariance in the reaction $d + d \rightarrow He^4 + \pi^0$ at a deuteron energy of 400 Mev

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 3(9), 1961, 708-724

TEXT: The reaction $d + d \rightarrow He^4 + \pi^0$ (11), which is forbidden according to the law of invariance of the total isotopic spin, has been studied on a 400-Mev deuteron beam. L. I. Lapidus (ZhETF, 31, 865, 1956) suggested this reaction for verifying the charge invariance. This reaction is only associated with one charge state of particles so that the perturbation due to the difference between neighboring charge states is automatically excluded. This reaction has already been dealt with in the proceedings of the Kiyev and Rochester Conferences on High-energy Physics in 1959 and 1960. This article presents new results on the reaction (11) and on the

Experimental verification of the...

cross sections of the reactions $d + d \rightarrow He^4 + \gamma$ ($E_d = 400$ Mev) (12) and $p + He^3 \rightarrow He^4 + \pi^+$ (13) at $E_d = 670$ Mev. The authors restrict themselves to a class of phenomena, for which the principle of charge invariance leads to the production of pions by nucleons and light nuclei. A two-section magnetic quadrupole lens with an aperture of 80 mm focused the deuteron or proton beam to the target. The secondary charged particles produced in the target were sorted out by a brass collimator, were magnetically deflected, passed through a steel collimator, and were finally recorded in the concrete shield by scintillation counters. The deuteron beam emerging from the synchrocyclotron had an average energy of 405.3 ± 0.5 Mev. The charged particles were sorted out according to their effective momentum, their specific ionization, their range, and their time of flight. They were recorded by scintillators, a six-counter telescope, etc.
A. N. Gorbunov and V. N. Spirodonov analyzed the energy dependence of the electric quadrupole transition in the reaction $\gamma + He^4 \rightarrow H^3 + p$.

Conclusions: 1) The total cross section of the reaction $d + d \rightarrow He^4 + \pi^0$ at $E_{\pi^0} \sim 80$ Mev in the center-of-mass system does not exceed the cross section

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Experimental verification of the...

of the electromagnetic process $d + d \rightarrow He^4 + \gamma$, whereas the expected ratio between the cross sections of these processes must be about 10^2 if they are not forbidden. 2) The total cross section of the reaction $p + He^3 \rightarrow He^4 + \pi^+$ at the same pion energy in the center-of-mass system is $7 \cdot 10^3$ times greater than the upper limit of the cross section of the reaction $d + d \rightarrow He^4 + \pi^o$. This difference cannot be explained only by the structure of the colliding nuclei. 3) The upper limit of the total cross section of the reaction $d + d \rightarrow He^4 + \pi^o$ amounts to ~3% of the cross section calculated for the "allowed" process. 4) All the facts discussed here are indicative of a rigorous forbiddenness in the reaction $d + d \rightarrow He^4 + \pi^o$, and, thus, confirms the law of invariance of the total isotopic spin in the production of pions by nucleons and light nuclei. 5) There exists no isotopically scalar π^o_o meson with a rest mass of 100-150 Mev. The authors thank L. I. Lapidus for discussing the experimental program, V. P. Dzhelepov for interest and assistance, R. M. Sulyayev and B. S. Neganov for assistance in experiments with

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Experimental verification of the...

gaseous He^3, and also Kim Ze Pkhe and I. V. Puzynin, co-workers of the OIYaI computer center, for computations. There are 11 figures, 1 table, and 26 references: 12 Soviet and 13 non-Soviet. The three most recent references to English-language publications read as follows:
H. S. Köhler, Phys. Rev., 118, 1345, 1960; A. V. Creve, B. Ledley, E. Lillethan, S. M. Marcowitz, C. Rey. Phys. Rev., 118, 1091, 1960; D. Harting, J. C. Kluyver, A. Kusumegi, R. Rigopoulos, A. M. Sacks, G. Tibell, G. Vanderhaeghe, G. Weber. Phys. Rev., 119, 1716, 1960.

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

SUBMITTED: April 21, 1961

Card 4/4

AKIMOV, Yu. K., KOMAROV, V. I., KSMARISH, SAVCHENKO, O. V., SOROKO, L. M.

"$\pi\pi$-Anomalies of the H^3 -Spectrum in the Reaction p + d $\rightarrow H^3 + \pi^+ + \pi^-$ at the Proton Energy of 670 Mev*)"

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

Lab. of Nuclear Problems, Joint Inst. Nuclear Research

AKIMOV, Yu. K., SAVCHENKO, O. V., SOROKO, L. M.

"Experimental Verification of the Charge Invariance Principle in the $d + d \rightarrow \pi^0 + He^4$ Reaction for 400 Mev Deuterons"

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

Joint Institute for Nuclear Research
Laboratory of Nuclear Problems

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000100630002-9"

AKIMOV, Yu. K., SAVCHENKO, O. V. and SOROKO, L. M.

"Search for Anomalies in the Energy Dependence of the Cross Section of the $p + p \rightarrow d + \pi^+$ Reaction Near the Theshold of Two Pion Production[x)]

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

Joint Inst. for Nuclear Research
Lab. of Nuclear Problems

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S/089/62/012/005/009/014
B102/B104

24.6800

AUTHORS: Akimov, Yu. K., Butslov, M. M., Savchenko, O. V., Soroko, L. M.

TITLE: Controllable luminescence chamber with a scintillator of a working volume of 2500 cm^3

PERIODICAL: Atomnaya energiya, v. 12, no. 5, 1962, 413-415

TEXT: An apparatus working with a controllable scintillation chamber (Fig. 1) which can be used to photograph charged cosmic particles is described. The scintillator measures 130·150·150 mm and is composed of 20,000 filaments, packed in layers as ABAB.. with A⊥B. The layers are separated by black paper sheets to absorb scattered light. The filaments, ~1 mm in diameter, are made of a polymer on basis of polystyrene + 1% tetraphenyl butadiene or 2% terphenyl and 0.02% ROROR. Since the de-excitation times are $(3-5)\cdot10^{-9}$ sec and the delay times in the control circuits are less than 0.1 μsec, the chamber can be controlled by an image memory with a very short storage time.. The image from any

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Controllable luminescence chamber with ...

S/089/62/012/005/009/014
B102/B104

(3) coincidence circuit, (4) block for control pulse delay, (5) pulse generator, (6) high-voltage pulse generator, (7) EOP, (8) objective, (9) deflecting plate of electron-optical shutter, (10), multi-stage EOP, (11) coil, (12) photographic apparatus.

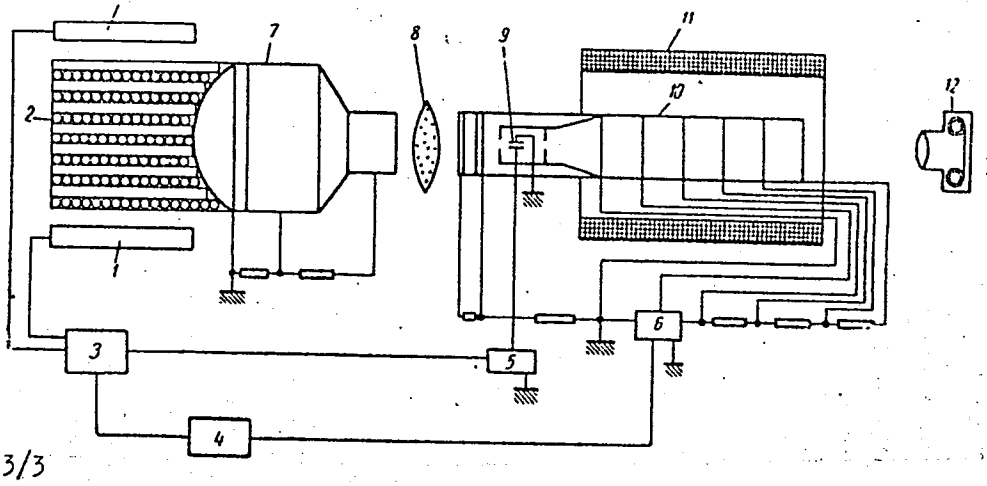

FIG. 1

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AKIMOV, Yuriy Konstantinovich; TROSHKIN, Yu.S., red.; CHISTYAKOVA, K.S., tekhn. red.

[Scintillation methods for high-energy particle recording] Stsintilliatsionnye metody registratsii chastits bol'shikh energii. Moskva, Izd-vo Mosk. univ., 1963. 170 p. (MIRA 17:2)

TITLE: A method for studying elastic pp-scattering in the high energy region

[illegible] proton scattering, high energy [illegible], proton semiconductor

[illegible] for any reaction of the type [illegible] (case a), a sharp peak is seen for protons transmitted with an energy of [illegible] MeV.

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ACCESSION NR: AP5006536

The peak width at the semi-peak points, covering about 330Kev or 15%, was determined basically by Coulomb scattering of protons transmitted to the target and by test geometry. For comparison (case b), the distribution of particles emitted

[illegible] Physics Institute
Nuclear Investigations

SUBMITTED: 03Dec64 ENCL: 01 SUB CODE: NP, EC

NO REF SOV: 001 OTHER:

Card 2/3

L 42988-65

ACCESSION NR: AP5006536

ENCLOSURE: 01

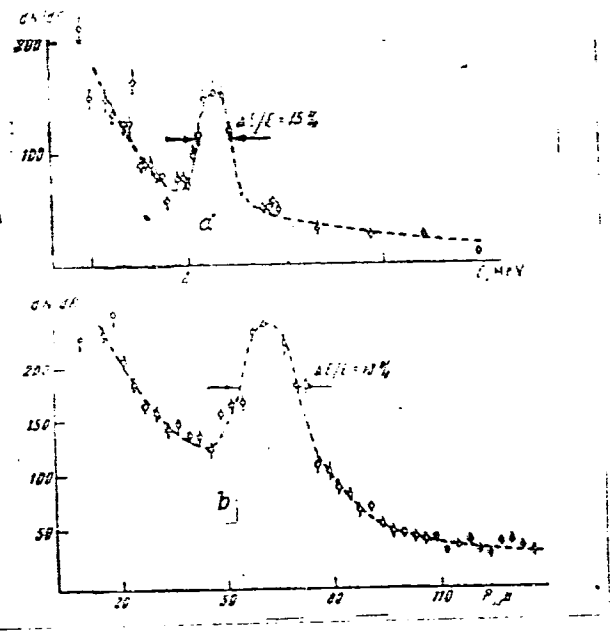

Fig. 1. Spectra of particles emitted at an angle of 87.7° from a target $(CH_2)_n$ bombarded by a beam of 10Gev protons: *a*--energy distribution measured with a semiconductor counter; *b*--distribution by mean free paths in a 25% diluted gelatin photoemulsion

Card 3/3

ACC NR: AP6013494 UR/0120/66/000/002/0060/0063

AUTHOR: Akimov, Yu.K.; Van Tszhen'-va, Sidorov, A.I.; Epshteyn, M.I.

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

TITLE: Optical characteristics of semiconductor detectors of nuclear particles and their relation to surface phenomena

SOURCE: Pribory i tekhnika experimenta, no. 2, 1966, 60-63

TOPIC TAGS: semiconductor device, optical detector, photodiode, alpha particle detector, photodiode quantum output

ABSTRACT: This is a study of spectral characteristics and effective quantum output, η, of thick sensitive layer light detectors, ordinarily used as nuclear particle detectors and made from p -type silicone doped with lithium. The detectors, with sensitive layer thickness between 1 and 6 mm, were irradiated by light at the butt. Relative spectral sensitivities and quantum output η were measured using current Hilger and Zeiss optical instrumentation. The results were presented in graphs. A decrease of η in the short wave region was observed, which is considered related to surface phenomena. This fall of quantum output in the short wave region is stronly influenced by the details of the etching process. Between 800 - 1000 nm (nanometers) η was close to unity. It is concluded that the devices can be used in the spectral region of bet-

 UDC: 539.1.074.5

ACC NR: AP6013494

ween λ=800 - 1100 nm (and in some cases in the region λ=400 - 1150 nm) as efficient low inertia light receivers, detectors and counters of the number of arriving quanta, linear over a wide range of light signal intensities. Authors thank A.I.Kalinin, L.F. Svyatova and L.P. Sidorova for discussions and aid in measurements. Orig. art. has 3 figures, 4 formulas and 1 table.

SUB CODE: 09, 18, 20 SUBM DATE: 09Nov65 ORIG REF: 006 OTH REF: 004

S/139/59/000/05/005/026
E032/E114

AUTHORS: Moskalev, V.A., and Akimov, Yu.M.

TITLE: A Double Chamber 10 MeV Stereobetatron

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1959, Nr 5, pp 26-30 (USSR)

ABSTRACT: A brief description is given of a betatron which was brought into operation towards the end of 1957. Details are given of the electromagnet, the electromagnet supplies, the control circuitry, the vacuum system and some preliminary results obtained with the machine. A photograph of the stereobetatron is shown in Fig 1. The magnetic characteristics have been described in an earlier paper (Ref 2). The radius of the equilibrium orbit in both of the accelerating systems is 13 cm and the maximum induction on the orbit is 2700 gauss. The accelerator control circuitry is shown in Fig 3. The vacuum system consists of two independent chambers made of molybdenum glass. The pressure is (2 to 5) x 10^{-6} mm Hg. The angular distribution of the intensity in the horizontal plane is shown in Fig 4. The dose rate at the distance of 1 m is 3-3.5 r/min for each of the accelerating

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S/139/59/000/05/006/026
E032/E114

AUTHORS: Akimov, Yu.M., Kononov, B.A., and Sokolov, L.S.

TITLE: On the Extraction of the Electron Beam from a Betatron Chamber

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1959, Nr 5, pp 31-34 (USSR)

ABSTRACT: The Tomsk Polytechnical Institute has been studying methods for the extraction of the electron beam from the betatron chamber. Three of these methods, which have been found to be the most satisfactory, are described in the present paper.
1) The electrostatic method is based on the extraction with the aid of a special capacitor. The construction of the capacitor, the vacuum chamber etc. have been described in the literature (Refs 1 and 2). In this method it is possible to obtain the following beam parameters (15 MeV betatron): beam current 4×10^{-9} amp, cross-section of the beam at a distance of 2 cm from the exit window 6 x 10 mm, divergence in air 5° in the vertical plane and 8° in the horizontal plane. The electron beam extracted into the atmosphere contains up to 60% of electrons which have reached the end of the

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68868

S/139/59/000/05/006/026
E032/E114

On the Extraction of the Electron Beam from a Betatron Chamber

extractor gives a well-focussed beam and a good extraction efficiency. Its properties are still being investigated.
There are 5 figures and 3 references, of which 2 are Soviet and 1 is English.

ASSOCIATION: Tomskiy politekhnicheskiy institut imeni S.M. Kirova
(Tomsk Polytechnical Institute imeni S.M. Kirov)

SUBMITTED: December 27, 1959 (1958?)

Card 3/3

69115

21,22.00

S/139/59/000/06/001/034
E032/E114

AUTHOR: Akimov, Yu.M.

TITLE: On the Extraction of Electrons from the Betatron Chamber by the Nonsymmetric Displacement Method

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1959, Nr 6, pp 3-4 (USSR)

ABSTRACT: A description is given of a vacuum chamber for the extraction of 100% of electrons accelerated in a betatron. The vacuum chamber is shown in Fig 1, in which 1 is the wall of the chamber, 2 is the injector, 3 is the displacing coil, 4 is the electron beam extracted from the chamber, 5 is the exit window, and 6 is an attachment for setting up a torroidal extractor. The nonsymmetric displacement of the electron orbit at the end of the accelerating cycle is carried out with the aid of a special coil consisting of four turns. A current of 400 amps is passed through this coil and the azimuthal dimension of it is 100°. It was found that in all cases the azimuthal position of the deflecting coil is not critical. The author considers that this method may be used to obtain 100% extraction, provided the form of

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69145
S/139/59/000/06/001/034
E032/E114

On the Extraction of Electrons from the Betatron Chamber by the Nonsymmetric displacement method.

the beam is not a primary consideration. The beam is in fact very divergent in the horizontal plane.
This paper was presented at the Inter-Collegiate Conference on Accelerators, held in Tomsk (February, 1958).
There are 2 figures and 1 Soviet reference.

Card
2/2

ASSOCIATION: Tomskiy politekynicheskiy institut imeni S.M. Kirova (Tomsk Polytechnical Institute imeni S.M. Kirov)

SUBMITTED: December 27, 1958

4

21.2200

69147
S/139/59/000/06/003/034
E032/E114

AUTHOR: Akimov, Yu.M.

TITLE: Increasing the Efficiency of Capture of Electrons into the Acceleration Process in a Betatron /9

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1959, Nr 6, pp 10-13 (USSR)

ABSTRACT: The efficiency can be increased with the aid of a contractor and the problem has been considered by a number of workers (Refs 1, 2 and 3). Experiments were begun in 1956 in order to increase the intensity with the aid of a magnetic contractor. The method is based on the expansion and subsequent rapid contraction of the equilibrium orbit in the betatron at the instant when the electrons are captured into the acceleration process. The orbit was expanded by passing a current pulse through a coil placed at the centre of the betatron pole pieces as shown in Fig 1. The experiments confirmed the results reported by Logunov et al (Ref 3). For low emission currents the intensity increases by a factor of 20 or more, while for large emission currents the factor is 2-3. Using this contractor, an intensity of 32-36 roentgen/min at one meter from the target has been

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69147

S/139/59/000/06/003/034
E032/E114

Increasing the Efficiency of Capture of Electrons into the Acceleration Process in a Betatron

obtained with the 15 MeV betatron of the Tomsk Polytechnical Institute. Without the contractor, the intensity was 12-15 roentgen/min at one meter from the target. Fig 5 shows the dependence of the intensity on the time of injection. In this figure the intensity (vertical axis) is plotted as a function of time in microseconds (horizontal axis). Curve 1 was obtained with a contractor, and curve 2 without it.
This paper was presented at the Inter-Collegiate Conference on Accelerators (Tomsk, February 1958).
There are 7 figures and 3 references, of which 2 are English and 1 is Soviet.

Card 2/2

ASSOCIATION: Tomskiy politekhnicheskiy institut imeni S.M. Kirova (Tomsk Polytechnical Institute imeni S.M. Kirov)

SUBMITTED: December 27, 1958

L 57820-65 EPA(w)-2/EWT(m)/EWA(m)-2 Pt-7/Pab-10 IJP(c)

ACCESSION NR: AR4049416 S/0275/64/000/009/A060/A060

621.384.6

34
12

SOURCE: Ref. zh. Elektronika i yeye primeneniye. Svodnyy tom, Abs. 9A407

AUTHOR: A[illegible]mov, Yu. M.; Gorbunov, V. I.

TITLE: Major trends in the development of induction accelerators 19

CITED SOURCE: Sb. Elektron. uskoriteli. M., Vyssh. shkola, 1964, 166-171

TOPIC TAGS: accelerator, induction accelerator, betatron

TRANSLATION: It is reported that the Tomsk Polytechnic Institute completed a [illegible] induction accelerators. Industrial applications of such accelerators [illegible] maximum enhancement of [illegible] the highest possible intensity of [illegible] with [illegible] size and weight, [illegible] maneuverability under industrial operation conditions, and simple maintenance. In addition, there are specific requirements which depend on a particular application of the accelerator (an electron beam is often needed for medical purposes). According to the above requirements, the selection of design and the

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ACCESSION NR: AR4049416

substantiation of some fundamental parameters of the betatron parts are considered: betatron electromagnet, control circuit, electron-beam exit, vacuum system. Basic technical data of the betatrons [illegible] Institute is tabulated.

SUB CODE: NP ENCL: 00

Card 2/2

AKIMOV, Yu.O.

Arc welders must have special installation belts. Bezop. trudа v prom. 2 no. 6:37 Je '58. (MIRA 11:7)

1. Glavnyy inzhener stroitel'no-montazhnogo upravleniya No. 1 tresta Karagandashakhtostroymontazh.
(Electric welding--Safety measures)

AKIMOV, Yu.O., inzh.

Erecting rope-haulage supports by adding bottom sections. Mov. tekh.mont.i spets.rab.v stroi. 21 no.7:9-11 Jl '59.
(MIRA 12:10)

1. Trest Karagandashkhtostroymontazh.
(Mine haulage) (Building, Iron and steel)

HAKIMOV, Z. V.

"Mechanism of Adsorption of Silver Sulphate upon Soles of Ferric Hydroxide."
Krestinskaya, V. N. and Hakimov, Z. V. (p. 70)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1944, Volume 14, no. 1-2.

HAKIMOV, Z. V.

"The Mechanism of the Adsorption of Silver Sulphate on Sols of Silicia and Acid of Aluminium Hydroxide." Krestinskaya, V. N., and Hakimov, Z. V. (p. 129)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1944, Volume 14, no. 3.

AKIMOVA, A.A.

Structure of silk fibroil. Zhur.VKHO 10 no.4:471-472 '65. (MIRA 18:11)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.

AKIMOVA, A.A.

AKIMOVA, A.A.: "The hydrophilization of rubber for use in the production of artificial leather". Moscow, 1955. Min Higher Education USSR. Moscow Technological Inst of Light Industry imeni L.M. Kaganovich. (Dissertations for the Degree of Candidate of Technical Sciences).

SO: Knizhnaya letopis' No 45, 5 November 1955. Moscow.

AKIMOVA, A.A.

AKIMOVA, L.N.; GAVRILOV, N.I.; AKIMOVA, A.A.

On some properties of N-benzylated peptides. Part 2. Zhur. ob. khim. 27 no.8:2268-2273 Ag '57. (MLRA 10:9)

1. Moskovskiy gosudarstvennyy universitet.
(Peptides)

Akimova A. A.

AUTHORS: Kuznetsov, V. I., Akimova, A. A. 75-1-12/26

TITLE: Organic Coprecipitants (Organicheskiye soosaditeli) Communication 8. Th. Coprecipitation of Uranium during its Determination in Sea Water (Soobshcheniye 8. Soosazhdeniye urana pri yego opredelenii v morskoy vode)

PERIODICAL: Zhurnal Analiticheskoy Khimii, 1958, Vol. 13, Nr 1, pp. 79-82 (USSR)

ABSTRACT: The present paper describes the elimination of uranium from sea water with simultaneous separation from the salts dissolved in sea water. A number of elements which are present in sea water in very low concentrations is precipitated together with uranium. The uranium content of sea water is so low that its direct determination is neither possible in water nor in a dry state after the evaporation of the water. There are different methods for previously enriching uranium. Besides several anorganic precipitants (references 1-4) organic co-precipitants are especially suitable for the enrichment of uranium. At an excess of thiocyanate ions uranium in acid solutions forms a weakly dissociated complex anion

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Organic Coprecipitants.
Communication 8. Th Coprecipitation of Uranium during its Determination in Sea Water

$UO_2(SCN)_3^-$ and can therefore be precipitated together with the precipitates of not easily soluble thiocyanates of heavy organic cations. Such organic cations are, for example, the dyes methyl violet, crystal violet, methylene blue, rhodamines, saffranines and many others (refs. 5-8). The precipitation of uranium as a complex thiocyanate anion even takes place quantitatively from very much diluted uranium solutions. This fact was proved by radiometric measurements with the aid of the uranium isotope U^{233} (α-emitter, half-life period $1{,}6.10^5$ years). The α-counter used permitted the investigation of the precipitation of uranium up to uranium solutions with a dilution of $1:10^{10}$. In the case of this dilution the precipitation was still quantitative. The decomposition of the organic precipitates took place in a muffle furnace at 500--600°C. The uranium is then determined in the residues. The precipitate of methyl-violet thiocyanate so effectively co-precipitates uranium that this method was employed for the purification of the reagents used for determination from uranium-traces. In sea water which usually has a p_H-value of

Organic Coprecipitants.
Communication 8. The Coprecipitation of Uranium during its Determination in Sea Water

7 to 8 uranium mainly occurs in form of colloidal solutions. However, for the elimination as complex thiocyanate anion it must be ionized. The formation of a true solution can simply be attained by acidification with hydrochloric acid. The determination of the enriched uranium takes place radiometrically or by means of the fluorescence method in a sodium-fluoride pearl. Together with uranium all elements are eliminated which can form complex thiocyanate-anions or insoluble thiocyanates, as for example mercury, silver, bismuth, zinc, cadmium, molybdenum, iron(III) and some other elements. As the content of sea water in these elements is extremely low, their co-precipitation does not render the subsequent uranium determination difficult. The co-precipitation of a number of other elements can be effectively prevented by performing the precipitation in the presence of complexone III. Pollutions by iron can be prevented by the use of purer methyl violet or by conversion of iron into the second stage (e. g. by means of ascorbic acid). The experimental conditions of the elaborated method are described in detail. There are

75-1-12/26

Organic Coprecipitants.
Communication 8. The Coprecipitation of Uranium during its Determination in Sea Water

2 tables and 1o references, 3 of which are Slavic.

ASSOCIATION: Moscow Institute for Geochemistry and Analytical Chemistry imeni V.I. Vernadskiy AS USSR Moscow (Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moskva)

SUBMITTED: January 2, 1957

AVAILABLE: Library of Congress

1. Uranium - Determination 2. Uranium - Precipitation

Card 4/4