VOROB'YEV, A.A.; MOSKALEV, V.A.

Investigation and development of cyclic electron accelerators at the Tomsk Polytechnical Institute. Atom. energ. 4 no.3:229-237 Mr '58. (MIRA 12:3)

(Tomsk--Particle accelerators)

137/144-58-9-1/18

AUTHORS: Vorob'yev, A. A. Doctor of Physico-Mathematical Sciences, Professor, Director, and Moskalev, V. A. Candidate of Technical Sciences Docent.

TITLE: Formation of a Beam of Rays from a Betatron (Formirovaniye puchka luchey betatrona)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy Elektromekhanika, 1958, Nr 9, pp 3-5 (USSR)

ABSTRACT: Using the available data on the distribution of γ-radiation from a 10 MeV betatron the authors constructed a collimator which had to satisfy certain requirements. Distribution of radiation in the γ-ray beam from the 10 MeV betatron is shown in Fig 1, where 1 is the theoretical curve and 2 is the curve obtained experimentally. The authors calculated the thickness of a lead collimator which was necessary to limit the radiation intensity outside the beam to 0.05% of the intensity on the beam axis. This calculated thickness was found to be 15,5 cm and the actual collimator made by the authors had a thickness of 17 cm. The construction of the collimator is shown in Fig 2. The collimator was placed between the coils of the accelerator electro-

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Formation of a Beam of Rays from a Betatron [illegible]

magnet. The collimator could be adjusted to make the beam and the collimator axes coincide. The cross-section of the collimated beam could be altered by using interchangeable collars (bushings) shown in Fig 2. A copper filter of conical form was used to make the intensity of γ-radiation uniform across the collimated beam. Fig 4 shows the calculated (curve 1) and experimentally adjusted (curves 2 3) profiles of the copper filter used. Fig 4 shows the distribution of radiation across the collimated beam obtained both without (curve 1) and with the copper filter (curve 2). A small displacement (3-4 mm) of the collimator axis with respect to the beam axis causes a considerable change in the distribution of radiation across the beam (curve 3, Fig 4). The authors used the collimated beam to measure the distribution of isodoses in water. They used a special dosimeter with a thimble-type ionisation chamber whose working volume was 1 cm^3 and which had a thin graphite wall. The results of the dosimeter measurements are shown in Fig 5. The maximum dose was obtained at 20 mm below the water

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Formation of a Beam of Rays from a Betatron SOV/144-58-9-1/18

surface. Fig 6 gives a schematic representation of the betatron and the collimator assemblies.
There are 6 figures and 2 references, one of which is Soviet, one English.

ASSOCIATION: Tomskiy politekhnicheskiy institut
(Tomsk Polytechnical Institute)

SUBMITTED: September 25, 1958

Card 3/3

SOV/144-58-12-17/19

AUTHOR: Moskalev, V.A., Cand.Tech.Sci., Docent

TITLE: The Second Inter- vuz Conference on Electron Accelerators

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika, 1958, Nr 12, pp 142-143 (USSR)

ABSTRACT: The second inter- vuz conference on electron accelerators was held at the Tomsk Polytechnical Institute in the early part of 1958. There were 146 reports, presented to four sections. The conference was attended by more than 700 representatives of 51 organisations including scientific organisations, vuzes, and industrial undertakings from various parts of the Soviet Union. Fifty-six reports were presented to the 'Low-energy electron accelerator' section, most of them being devoted to the development of industrial types of betatrons. The reports of several institutes that have several years' experience of the use of betatrons were of particular interest. A number of reports were concerned with improving the electronic circuits and stabilising the power and intensity of radiation of betatrons. Other reports dealt with linear accelerators and the develop-

The Second Inter-vuz Conference on Electron Accelerators

of new types of betatrons for use in industry. The section on 'the application of electronic accelerators in the national economy' heard with great interest reports of the Tomsk Medical Institute on the treatment of cancer and on radiation diseases. A number of reports were presented on the procedure for locating defects in steel products. Reports were read on the use of accelerators to solve problems of geophysics. A new method of accelerating electrons to very high energies is based on the use of travelling waves in a closed wave-guide. Staff of the Moscow State University and of the Physical Institute of the Ac.Sc. USSR read a number of reports about the influence of quantum fluctuations of radiation on the motion of electrons in very high energy accelerators. The fourth section considered the development of electron accelerators of very high energy. The reports were concerned with the theory and practical design of several types of accelerator. The closing session indicated the development programme for new types of electron accelerator and their practical application in the national economy.

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SOV/144-58-12-17/19

From Sovetskaya Inter ← vuz Conference on Electron Accelerators

ASSOCIATION: Tomskiy politekhnicheskiy institut
(Tomsk Polytechnical Institute)

MOSKALEV, V.A.

Detector of betatron irradiations. Vest. rent. i rad. 33 no.6:63-64 N-D '58. (MIRA 12:1)
(RADIOTHERAPY, appar. & instruments
betatron detector (Rus))
(NUCLEAR PHYSICS,
same)

21(7)

AUTHORS: Vorob'yev A.A., Moskalev V.A. SOV/139-59-1-17/34

TITLE: Some Characteristics of Betatron Target Radiation at 10-25 MeV (Nekotoryye kharakteristiki luchey betatronov na 10-25 Mev)

PERIIDICAL: Izvestiya Vysshikh Uchernykh Zavedeniy, Fizika, 1959, Nr 1, pp 102-106 (USSR)

ABSTRACT: Results of experiments on the spatial distribution of betatron target radiation are reported. It is shown that the experimental data are in good agreement with the theory given by Lowson (Ref 2). The measurements were carried out using a special detector (Ref 3). The detector includes a thimble ionisation chamber with a working volume of 1 cm^2 and a graphite wall whose thickness may be varied from 3 mm to the equilibrium value. The detector could be continuously moved over a 1 m radius circle, the rotation axis of the detector passing through the target. Fig 1 shows the spatial distribution in the plane of the orbit of the radiation in the main beam at 10 MeV. Curve 2 is theoretical (Lowson) and Curve 1 was obtained from experiments. The discrepancy between the theoretical graph and the experimental one (on the right hand side) is due to target edge effects

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Some Characteristics of Betatron Target Radiation at 10 [illegible] MeV

described in Ref 4. The full width at half height of the intensity curve is 24°. The distribution in the vertical direction (Fig 2) is the more symmetrical and its full width at half height is 17°. Fig 3 gives the spatial distribution of betatron radiation at 10 MeV [illegible] of the equilibrium orbit. The curve has a well [illegible] maximum. The spatial distribution at 21 MeV is also in good agreement with the theory. The "effective energy" was determined experimentally by absorbing the [illegible] in copper and lead. This energy was found to be [illegible] 4 MeV in the case of 10 MeV betatron.

Card 2/2 There are 5 figures and 10 references, of which [illegible] are English and 6 Soviet.

ASSOCIATION: Tomskiy Politekhnicheskiy Institut imeni S.M. Kirova (Tomsk Polytechnical Institute imeni S.M. Kirov)

SUBMITTED: July 16, 1958

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

A Double Chamber 10 MeV Stereobetatron

systems. At the point of intersection of the two γ ray beams the dose rate can be up to 7 r/min. The angular half width of each beam is 25° which is in good agreement with the theory. The stereobetatron is designed mainly for use in medicine and metallurgy. It is also intended to extract the electrons and to obtain crossed electron beams.
There are 4 figures and 2 Soviet references.

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ASSOCIATION: NII Tomskogo politekhnicheskogo instituta imeni S.M. Kirova
(Scientific Research Institute of the Tomsk Polytechnical Institute imeni S.M. Kirov)

SUBMITTED: December 27, 1958

S/139/59/000/05/007/026
E032/E114

AUTHORS: Moskalev, V.A., Filippov, M.F., Skorikov, A.G., and Skvortsov, Yu.M.

TITLE: A High Pulsed Current Stereobetatron /

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1959, Nr 5, pp 35-44 (USSR)

ABSTRACT: The Tomsk Polytechnical Institute has designed a 25 MeV stereobetatron such that the beam current at the target is of the order of a few amps during a fraction of a microsecond. The shape of the magnetic field was based on the theoretical studies reported in Refs 3-7. The present paper gives a general description of the various features of the betatron including the construction of the electromagnet, the supplies, the injection scheme, the extraction scheme, and the design of the two independent vacuum systems. The machine is now being built. It will be used to study electron interactions in the two crossed beams. There are 10 figures and 14 references, of which 12 are Soviet and 2 English.

ASSOCIATION: Tomskiy politekhnicheskiy institut im. S.M. Kirova

SUBMITTED: December 27, 1958

2, [illegible]
[illegible]/59/000/06/002/034
E032/E114

AUTHOR: Moskalev, V.A.

TITLE: Construction and Magnetic Characteristics of a 10 MeV Double Chamber Stereobetatron

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1959, Nr 6, pp 5-9 (USSR)

ABSTRACT: Fig 1 shows a drawing of the electromagnet of the stereobetatron but no description of this magnet is given. It is stated that the distances between the sources oi radiation is considerably greater than in an "ordinary" two beam betatron but the cost of the machine is only 15-20% higher than the cost of an ordinary betatron. The stereobetatron was brought into operation in December 1957 and can be used for both medical and industrial purposes. It can also be used to study electron-electron interactions. The static magnetic field of the betatron is illustrated in Fig 2, in which a refers to the left pair of poles and b to the right pair. The field is set up by a special magnet construction which was described by Rodimov in Ref 5. Fig 3 shows the azimuthal phase nonuniformity of the

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S/139/59/000/06/002/034
E032/E114

Construction and Magnetic Characteristics of a 10 MeV Double Chamber Stereobetatron

magnetic field. Curves 1 represent the "natural" phase nonuniformity for the two pairs of poles, and curves 2 show the "natural" phase nonuniformity in the case of poles of the special design described in Ref 5. Fig 4 shows the position of correcting coils for the two pairs of poles and the resulting corrected azimuthal nonuniformity of the field. This nonuniformity does not change by more than 0.7 oersted. It is suggested that by placing two targets in each of the chambers and using the two half periods of the magnetic flux it is possible to obtain four beams so that it may be possible to irradiate two objects simultaneously by the stereo beam. This paper was presented at the Inter-Collegiate Conference on Accelerators (Tomsk, February 1958). There are 4 figures and 10 references, of which 3 are English and 7 are Soviet.

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

SUBMITTED: December 27, 1958

S/139/60/000/006/026/032
E032/E414

AUTHORS Sokolov A A Professor of Moscow State University, Stalin Prizewinner Doctor of Physico-Mathematical Sciences, Vorob'yev, G A , Docent and Moskalev, V A , Docent

TITLE On the 50th Anniversary of the Birthday of Aleksandr Akimovich Vorob yev

PERIODICAL Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1960, No 6, pp 161-164

TEXT A A Vorob'yev was born in 1909 He attended the Tomsk State University between 1927 and 1931 In 1931, he graduated from the Division of Physics and Mechanics In 1935 he produced a "brilliant dissertation" and became a senior scientific worker and Docent of the Tomsk State University in the Department of Experimental Physics In 1936, A A Vorob yev organized the High-Voltage Laboratory at the Siberian Physicotechnical Institute and became its head In 1939 he successfully completed a dissertation submitted for the degree

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S/139/60/000/006/026/032
E032/E414

On the 50th Anniversary of the Birthday of Aleksandr Akimovich Vorob yev

of Doctor of Physico Mathematical Sciences This dissertation was based on experiments carried out at the High-Voltage Laboratory and was concerned with the electron theory of the breakdown of dielectrics On completing his doctoral dissertation, A A Vorob yev began work at the Tomsk Polytechnical Institute as the Head of the Department of High Voltage Technology In that post he showed great scientific and administrative ability, and soon after was appointed the Dean of the Power Engineering Division and later Deputy Scientific Director Since 1944, A A Vorob'yev has been Director of the Tomsk Polytechnical Institute In the forties A A Vorob'yev devoted his attention to the development of charged particle accelerators and the physics of dielectrics In 1947, a small group of scientists working at the Tomsk Polytechnical Institute, and headed by Professor Vorob'yev began work on the design and manufacture of betatrons The first betatron produced in the Soviet Union was designed and

S/139/60/000/006/026/032
E032/E414

On the 50th Anniversary of the Birthday of Aleksandr Akimovich Vorob'yev

made by this group in 1948. A series of 15 MeV betatrons was produced soon after and the accelerators designed at the Tomsk Polytechnical Institute began to appear in the scientific establishments of the Soviet Union. Over 50 electron accelerators have been produced up to the present time and 5, 15 and 25 MeV betatrons from the Tomsk Polytechnical Institute are working at Moscow, Leningrad, Kivev, Dnepropetrovsk, Kazan etc. Two 15 MeV betatrons have been set up at Peking University and the Chin-Khua Polytechnical Institute. On Professor Vorob'yev's initiative, the Tomsk Polytechnical Institute has now a large team of specialists in accelerator technology. In 1958, an Institute of Nuclear Physics, Electronics and Automation was opened at the Tomsk Polytechnical Institute and its activities are concerned with the development of low, medium and high energy electron accelerators. At the present time A. A. Vorob'yev directs the Laboratory of Electronics and Automation which is concerned with the

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S/139/60/000/006/026/032
E032/E414

On the 50th Anniversary of the Birthday of Aleksandr Akimovich Vorob yev

development of new accelerator installations including a new waveguide accelerator suggested by Vorob yev which will be capable of producing very high energy electrons although the overall dimensions of the installation and the high-frequency power consumption will be small Results obtained in this direction were reported by Vorob yev at the International Conference on High Energy Accelerators which was held in Geneva in 1959 In the fifties, Professor Vorob yev also directed the research in the physics of solid dielectrics Among Professor Vorob yev s publications are "Charged particle accelerators" "Electrical strength of solid dielectrics" "High-voltage technology", "Ultra-high voltages" and other monographs Professor Vorob yev is the author of some 200 scientific papers and 7 monographs and textbooks He is a member of the Communist Party of the Soviet Union (since 1940) and has frequently been elected as a member of the local committees of the KPSU In 1959, the citizens of Tomsk unanimously elected him as their

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S/139/60/000/006/026/032
E032/E414

On the 50th Anniversary of the Birthday of
Aleksandr Akimovich Vorob'yev

Deputy to the Supreme Soviet of the Russian Federal Republic Professor Vorob'yev is the holder of many Soviet awards including the Order of Lenin In 1960, he was awarded the honorary title of Honoured Scientist and Technologist of the Russian Federal Republic

Card 5/5

MOSKALEV, V.A.; SKVORTSOV, Yu.M.

Two-chamber betatron for medicinal use. Med. rad. 6 no.1:62-64 '61. (MIRA 14:3)

(BETATRON)

MOSKALEV, V.A.; KHESIN, G.L.; NAGIBINA, I.M.

Interferometer for studying stress fields in transparent models. Izv.vys.ucheb.zav.; prib. 5 no.4:80-84 '62. (MIRA 15:9)

1. Leningradskiy institut tochnoy mekhaniki i optiki. Rekomendovana kafedroy spektral'nykh i optiko-fizicheskikh priborov.
(Strains and stresses) (Interferometer)

42319

S/057/62/032/009/002/014
B125/B186

AUTHORS: Moskalev, V. A., and Okulov, B. V.

TITLE: Intensity of betatron radiation as a function of injection voltage

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 9, 1962, 1040 - 1041

TEXT: The relative dependence of betatron radiation intensity on the injection voltage is derived from the equation $Q_m = (E_i/2eR_o)[(E_i/E_o)^2-1]s$ by B. N. Rodimov, P. A. Cherdantsev, and T. A. Medvedeva (Izv. vuzov, Fizika, no. 5, 6 - 13, 1959). $E_o = m_o c^2$ is the electron rest energy, $E_i = U_i + m_o c^2$ is the electron injection energy, U_i the injection voltage, e the electron charge, R_o the radius of the equilibrium orbit, s the cross-sectional area of the region of the focusing forces. The dependence of the charge Q_m entrapped into the acceleration cycle - and, therefore, also of the intensity of radiation - on the injection voltage is linear up to ~100 kv, but becomes nonlinear above 100 kv owing to relativistic effects.

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S/057/62/032/009/002/014
B125/B186

Intensity of betatron...

This dependence is approximately quadratic at ~1000 kv and becomes cubic at still higher voltages. The dependence of the radiation yield on the injection voltage was experimentally checked at a 25-Mev stereobetatron (injection voltage 350 kv) of the Nauchno-issledovatel'skiy institut yadernoy fiziki, elektroniki i avtomatiki (Scientific Research Institute of Nuclear Physics, Electronics and Automation). The injection voltage was measured using a 5000-ohm divider between 50 and 250 kv at intervals of 20 - 30 kv. The dose rate was measured using an ionization chamber and a "Kaktus"-type standard dosimeter. Up to 250 kv the increase of the betatron radiation intensity with increasing injection voltage corresponds to the theory (Fig. 2). The desired considerable increase of radiation intensity requires injection voltages of 1000 kv and more. There are 2 figures.

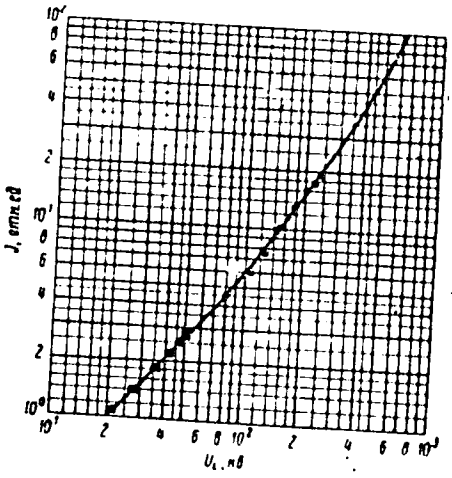
SUBMITTED: September 23, 1961

Card 2/3

Intensity of stat... ...

S/057/62/032/00 /002/014
B125/B186

Fig. 1. Dependence of static ... intensity on injection voltage.



Card 3/3

MOSKALEV, V.A., kand.tekhn.nauk

Local stresses in the Diaphragms of compressors. Vest.mash. 42 no.3:29-33 Mr '62. (MIRA 15:3)
(Diaphragms(Mechanical devices))

MOSKALEV, V.A.; OTRUBYANNIKOV, Yu.A.

Generation of short radiation pulses in a betatron with a wide gap. Prib. i tekh. eksp. 8 no.5:26-29 S-O '63. (MIRA 16:12)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki, elektroniki i avtomatiki Tomskogo politekhnicheskogo instituta.

MOSKALEV, V.A.; OKULOV, B.V.; OTRUBENNIKOV, Yu.A.; SKVORTSOV, Yu.M.; SKORIKOV, A.G.; SHESTAKOV, V.G.

Results of the operation of a 25 Mev. pulsed two-chamber stereobetatron. Izv. TPI 122:50-53 '62. (MIRA 17:9)

ACCESSION NR: AP4041009 S/0120/64/000/003/0032/0033

AUTHOR: Moskalev, V. A.; Shestakov, V. G.; Okulov, B. V.; Skvortsov, Yu. M.

TITLE: Method for measuring accelerated charge in a betatron

SOURCE: Pribory* i tekhnika eksperimenta, no. 3, 1964, 32-33

TOPIC TAGS: betatron, betatron measurements, betatron accelerated charge

ABSTRACT: A combined — direct and indirect -- method for measuring a charge developed by the authors (registration no. 34311, priority of 01Feb63) is briefly described. The target current pulse is recorded simultaneously with a signal induced in a special "indicating electrode." At an energy under 1 Mev, the electrode signal is calibrated directly and then the calibration is used for measuring the charge with any energy. Two oscillograms taken at 0.5 and 25 Mev illustrate the method. Orig. art. has: 2 figures.

ASSOCIATION: none

SUBMITTED: 07Jun63

SUB CODE: NP

NO REF SOV: 005 ENCL: 00

Card 1/1 OTHER: 002

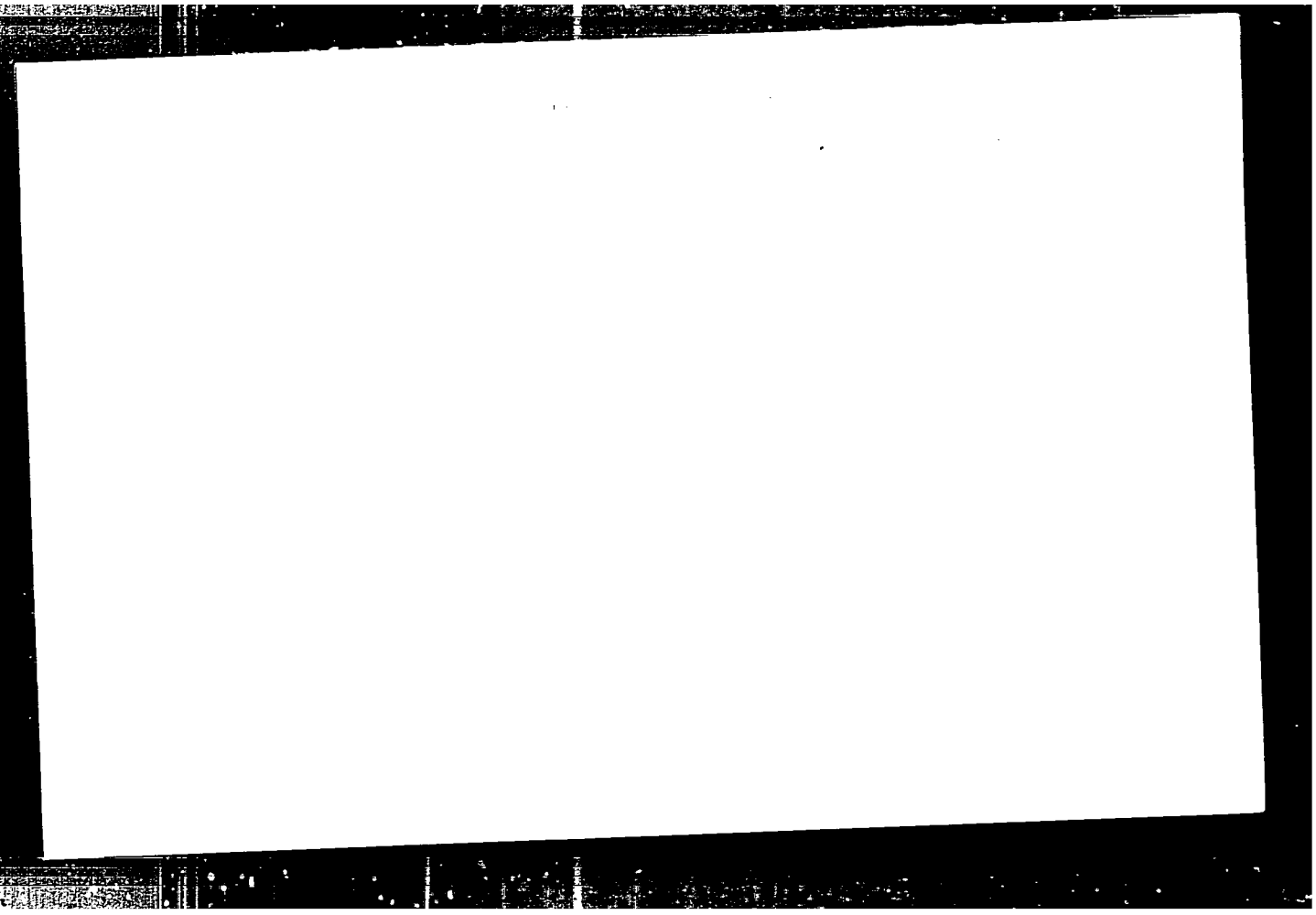
V ROB'YEV, Aleksandr Akimovich, doktor fiziko-matematicheskikh nauk;
MOSKALEV, Vladilen Aleksandrovich, prof. kand. tekhn. nauk, dotsent

Development and use of betatrons in socialist countries. Izv. vys. ucheb. zav.; elektromekh. 8 no.4:480-481 '65. (MIRA 18:6

1. Tomskiy politekhnicheskiy institut.

VOROB'YEV, A.A.; MOSKALEV, V.A.

Source of X-ray radiation for high-speed photography of some processes. Usp.nauch.fot. 9:171-172 '64.
(MIRA 18:11)



L 49257-65 EWT(m)/EPA(w)-2/EWA(m)-2 Pab-10/Pt-7 IJP(c)

ACCESSION NR: AP5010800 UR/0057/65/035/004/0630/0634

27
B

AUTHOR: Moskalev, V.A.

TITLE: The torotron, an induction electron accelerator 19

SOURCE: Zhurnal tekhnicheskoy fiziki, v.35, no.4, 1965, 630-634

TOPIC TAGS: particle accelerator, betatron, torotron, indicator electron accelerator

ABSTRACT: An induction electron accelerator is proposed, the construction of which is shown in Fig. 1 of the Enclosure. A rising current in the winding 1 produces a toroidal magnetic field within the toroidal enclosure 2 containing a toroidal ferromagnetic core 3. Electrons injected around the periphery at 4 are accelerated by betatron action and execute toroidal orbits in region 5. Drift of the electrons in the toroidal magnetic field is suppressed by applying an appropriate potential difference between the core 3 and the wall 2 of the chamber. At the end of the acceleration period the electrons strike the ring-shaped target 6, producing bremss rahlung which is focused on a point on the axis, where materials to be investigated or patients to be treated may be placed. The theory of the accelerator and the feasibility of its construction are discussed briefly. It is concluded that much greater

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L 49257-65

ACCESSION NR: AP5010800

currents can be obtained with a torotron than with a betatron, that the torotron is much simpler than a linear accelerator, and that the torotron is much smaller and lighter than the high current induction accelerator of N.C.Christofilos et al. (High current linear induction accelerator for electrons. Doklad. na Mezhdunarodnoy konferentsii po uskoritelyam zaryazhennykh chastits [Report to the International Conference on Charged Particle Accelerators] Dubna, Aug.1963). Orig.art. has: 11 formulas and 2 figures. [02]

ASSOCIATION: none

SUBMITTED: 05Mar64 ENCL: 01 SUB CODE: NP

NR REF SOV: 002 OTHER: 001 ATD PRESS: 3245

Card 2/3

L 49257-65

ENCLOSURE: 01

ACCESSION NR: AP5010800

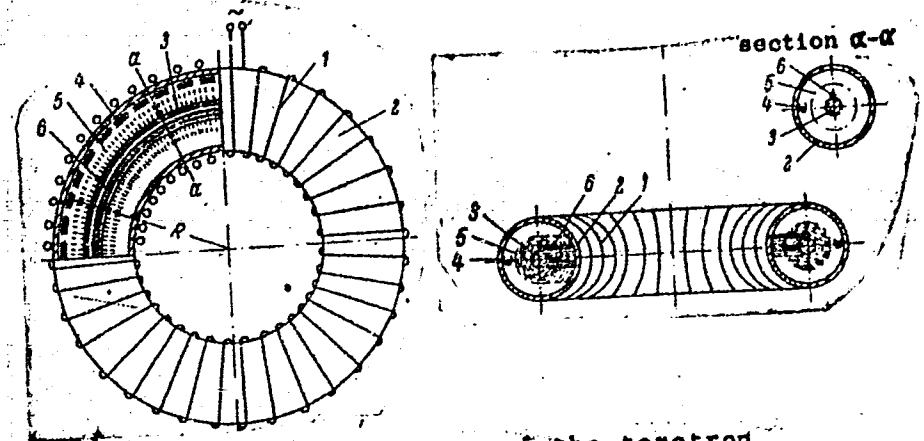

Fig. 1. Schematic diagram of the torotron

1 - magnet winding; 2 - toroidal chamber;
3 - ferromagnetic core; 4 - electron injectors;
5 - electron acceleration region; 6 - ring target.

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ACC NR: AT7003998 SOURCE CODE: UR/0000/66/000/000/0123/0131

AUTHOR: Goncharov, V. Ya.; Moskalev, V. A.; Okulov, B. V.; Ponomarev, V. P.; Skvortsov, Yu. M.; Slupskiy, A. M.; Shashov, V. V.; Shestakov, V. G.

ORG: none

TITLE: Stereobetatron for 15 Mev

SOURCE: Mezhvuzovskaya konferentsiya po elektronnym uskoritelyam. 5th, Tomsk, 1964. Elektronnyye uskoriteli (Electron accelerators); trudy konferentsii. Moscow, Atomizdat, 1966, 123-131

TOPIC TAGS: stereobetatron, betatron, mev accelerator

ABSTRACT: A two-chamber 15-Mev stereobetatron was built in the Tomsk Polytechnic Institute; it is designed for two cross bremsstrahlung beams with a dose rate of 1000 r/min·m in each beam. The electromagnet and pulsed-supply system of the accelerator are briefly described. Designed along conventional

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ACC NR: [illegible]

[illegible] electromagnet has [illegible] interpole space, a maximum flux density of 16000 g in the yoke, and a flux den[illegible] g in the pole shoes. Resonance-circuit current, 300 amp; capacitor bank, [illegible] farads. At 15 Mev, the excitation voltage is 345 v, magnetizing voltage, 6000 [illegible]. Electrons are injected at a voltage up to 200 kv. The electron gun has stainless-steel electrodes and is kept under a "floating" potential. A two-tantalum-plate inflector receives 3-microsec 30-kv pulses. A beam-extraction winding carries 15-microsec current pulses up to 2000 amp. The accelerator chambers are exhausted (down to 8×10^{-8} torr) by titanium pumps. Orig. art. has: 8 figures and 2 tables.

SUB CODE: 09, 20 / SUBM DATE: 06Mar66 / ORIG REF: 006

Card 2/2

ACC NR: AT7002129 (A) SOURCE CODE: UR/0000/66/000/000/0521/0528

AUTHOR: Vorontsov, V. L.; Moskalev, V. A.; Nagibina, I. M.; [illegible]; Khasin, G. L.

ORG: none

TITLE: Determining the sum of principal stresses with the aid of interferometers

SOURCE: Vsesoyuznaya konferentsiya po polyarizatsionno-opticheskomu metodu issledovaniya napryazheniy. 5th, Leningrad, 1964. Polyarizatsionno-opticheskiy metod issledovaniya napryazheniy (Polarizing-optical method of investigating stresses); trudy konferentsii. Leningrad, Izd-vo Leningr. univ., 1966, 521-528

TOPIC TAGS: stress analysis, optics, optic measurement, optic method, light interference, interferometer, multibeam interferometer

ABSTRACT: The construction and performance of a device used for the measurement of principal stresses in materials are described. The work was done at the Leningrad Institute of Precise Mechanics (Leningradskiy institut tochnoy mekhaniki) and the Moscow Structural Engineering Institute (Moskovskiy inzhenerno-stroitel'nyy institut). The device is the triple-plate interferometer IT (see Fig. 1). The interferometer consists of three light-separating covers A, B, and C set on glass plates. The light paths are shown in Fig. 1: rays 1 and 2 form the interference pattern of greatest intensity, and all calculations are referenced to these two. The variation of the

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ACC NR: AT7002129

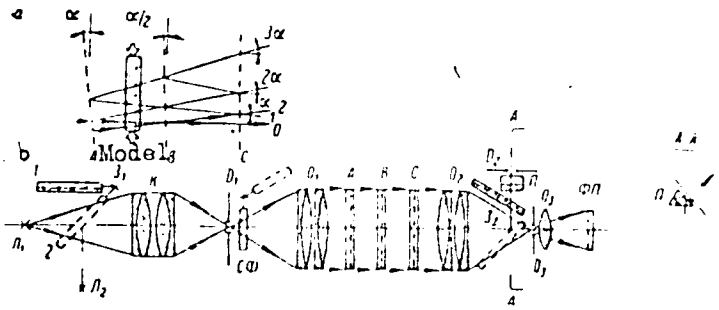

Fig. 1. Triple-plate interferometer: a - principal diagram of the device; b - optical diagram of the interferometer; $Л_1$ - DRSh-250 lamp; $Л_2$ - SM-76 lamp; $З_1$ - rotating mirror for source shift; K - condenser; D_1 - input diaphragm; СФ - light filter; $О_1$ - collimator objective; $О_2$ - camera objective; A,B,C - interferometer plates; $З_2$ - rotating "ocular-photo" mirror; D_2 and D_3 - output diaphragms; П - rotating ocular prism; $О_3$, ФП - photo attachment

distance between the light-separating covers may be equated with the length of the optical paths of the first and second beams. The path difference between paths 1 and 2 is given by

$$\Delta = N\lambda = 2\delta t(n-1);$$

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where N is the order of interference; λ - the wavelength of the light; δt - the variation of thickness of the model; n - the refraction index of the material of the model. Also, from Hooke's Law

$$\varepsilon_z = \frac{\delta t}{t} = \frac{1}{E}[\sigma_z + \mu(\sigma_x + \sigma_y)],$$

and for $\sigma_z = 0$, it follows that

$$\delta t = \frac{t\mu}{E}(\sigma_x + \sigma_y).$$

where E and μ are the modulus of elasticity and Poisson's coefficient, respectively. Principal stresses are then related to the order of interference by the equation

$$N = \frac{2t\mu(n-1)}{E\lambda}(\sigma_x + \sigma_y) = K(\sigma_1 + \sigma_2).$$

The authors illustrate by example how the device may be used to determine the sum of principal stresses and each principal stress individually. The device itself is noted as being simple in construction and in use, compact, and stable with respect to vibration and temperature variation. Orig. art. has: 5 figures and 5 equations.

[W4.101]

SUB CODE: 20, 13/ SUBM DATE: 14Jun66/ ORIG REF: 004/ OTH REF: 007

Card 3/3

L 13040-66

ACC NR: AT6001403 SOURCE CODE: UR/3180/64/009/000/0171/0172

AUTHOR: Vorob'yev, A. A.; Moskalev, V. A.

ORG: None

30
12+1

TITLE: An x-ray source for high-speed photography of various processes

SOURCE: AN SSSR. Komissiya po nauchnoy fotografii i kinematografii. Uspekhi nauchnoy fotografii, v. 9, 1964. Vysokoskorostnaya fotografiya i kinematografiya (High-speed photography and cinematography), 171-172

TOPIC TAGS: x ray photography, high speed photography, stereoscopic photography

ABSTRACT: The authors describe a 25-Mev high-current stereobetatron for studying high-speed processes. The device produces two bremsstrahlung beams which intersect at a given point. The beams may be emitted simultaneously or with a time spacing of up to 50 μsec. Pulse duration ≤0.2 μsec. The betatron accelerates an electron charge of 10^{-7} coulomb, which is $(5-6)\cdot 10^{11}$ electrons per cycle. A 0.2 μsec pulse penetrates 140 mm of lead. The size of the focal spot is 1 x 3 mm. Preliminary studies show possibilities for an increase in the accelerated charge and a reduction in the dimensions of the focal spot. The unit may be used for stereo x-ray photography of processes lasting less than 10^{-6} second. Non-simultaneous beam generation may be used for photographing a process from two points of view with various time lapses between frames. There are possibilities for developing

Card 1/2

L 13040-66

ACC NR: AT6001403

a stereobetatron for operation at 1000 cycles per second. Orig. art. has: 1 figure. [08]

SUB CODE: 14/ SUBM DATE: none/ ORIG REF: 001/ ATD PRESS: 4181

Card 2/2

MASKALOV, V.D.

LEBEDEVA, Yu.A.; MASKALOV, V.D.; CHUKOV, S.V.; CHUMAKOV, V.I.; KAPLANAS, O.[translator]; MEDONIS, A., red.

[Protection against mass destruction weapons] Kaip saugotis nuo masinio naikinimo ginklo. Vilnius, Valstybine politines ir mokslines literaturos leidykla, 1962. 31 p. (MIRA 16:5)
(Civil defense)

MOSKALEV, V D

Vsesoyuznoye Dbrovol'noye Obschchestvo Sodeystviya Armii, Aviatsii I Flotu. Uchebnoye Posobiye Po MPVO (Manual for Regional Anti-Aircraft Defense) Pod Red. V. D. Moskaleva (1 Dr.) Moskva, Izd-Vo DOSAAF, 1956- v. Illus., Diagrs., Tables. Lib. has: 1956, 1957.

GORBUNOV, Ivan Petrovich; KOTLUKOV, Konstantin Grigor'yevich; MOSKALEV, Vladimir Dem'yanovich; KAMENSKAYA, M.D., red.; ANDRIANOV, B.I., tekhn.red.

[Civil defense groups and their training] Deistviia grupp samozashchity i ikh podgotovka. Moskva, Izd-vo DOSAAF, 1957. 92 p. (MIRA 11:2)
(Civil defense)

GORBUNOV, I.P.; GLUKHOV, V.P.; KOTLUKOV, K.G.; KOSKALEV, V.D.; SIPAYLOV, Yu.A.; SMOYAN, N.K.; SHUTOV, M.I.; BYKOV, S.G., red.; KANEVSKAYA, M.D., red.; BLAZHENKOVA, G.I., tekhn.red.

[Training methods for members of civil air defense groups] Metodika podgotovki lichnogo sostava grupp samozashchity. Moskva, Izd-vo DOSAAF, 1959. 165 p. (MIRA 13:3)

1. Vsesoyuznoye dobrovol'noye obshchestvo sodeystviya armii, aviatsii i flotu.
(Air defenses)

L 10343-63 EWA(b)/EPF(n)-2/EWT(m)/BDS/ES(b) AFFTC/APGC/ASD/SSD Pu-4/
Pa-4 K PHASE I BOOK EXPLOITATION SOV/6423

Lebedev, Yu. A., V. D. Moskalev, S. V. Chukov, and V. I. Chumakov 70

Kak zashchishchat'sya ot oruzhiya massovogo porazheniya (How to Protect Yourself From Weapons of Mass Contamination) Moscow, Izd-vo DOSAAF, 1962. 30 p. No. of copies printed not given.

Sponsoring Agency: Shtab grazhdanskoy oborony.

Ed.: A. A. Vasil'yev; Tech. Ed.: G. I. Blazhenkova.

PURPOSE: This booklet is intended to acquaint the general reader with basic civil defense procedures, and is recommended for "thorough study."

COVERAGE: This booklet briefly describes the effect of mass destruction weapons, i.e., nuclear, chemical, and bacteriological, and lists measures for protecting the population against their effects.

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L 10343-63
How to Protect Yourself From Weapons (Cont.) SOV/6423

TABLE OF CONTENTS:

AVAILABLE: Library of Congress (UA926.R8, 1962a)

SUBJECT: Civil Defense

ch/dk
Card 2/2

AD/dk/tem
8-1-63

KOTLUKOV, Konstantin Grigor'yevich; MOSKALEV, Vladimir Dem'yanovich; GODINER, F.Ye., red.; SORKIN, M.Z., tekhn. red.

[Responsibilities of the population concerning civil defense and rules of conduct under conditions of enemy attack] Obiazannosti naseleniia po grazhqanskoi oborone i pravila povedeniia v usloviiakh napadeniia protivnika. Moskva, Izd-vo DOSAAF, 1964. 45 p. (MIRA 17:2)

85893

9.2181 (2303, 3203)
24.7800 (1144, 1162)

S/048/60/024/011/029/035
B006/B060

AUTHORS: Moskalev, V. I. and Ordan'yan, S. S.

TITLE: Study of the Effect of Small Chromium- and Bismuth Oxide Additions Upon the Dielectric and Piezoelectric Properties of Polycrystalline Barium Titanate

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960. Vol. 24, No. 11, pp. 1412-1415

TEXT: This is the reproduction of a lecture delivered at the Third Conference on Ferroelectricity which took place in Moscow from January 25 to 30, 1960. With a view to finding novel piezoelectric materials with parameters stable also at higher temperatures, the authors studied the effect of smaller chromium- and bismuth oxide additions to $BaTiO_3$.

Commercially pure substances were used for preparing the specimens; bismuth- and chromium oxide were chemically and analytically pure, respectively. The mixtures were preheated at 1220 - 1340°C (2 hours) and

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Study of the Effect of Small Chromium- and Bismuth Oxide Additions Upon the Dielectric and Piezoelectric Properties of Polycrystalline Barium Titanate

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the final heating temperature range was 1280-1340°C (2-3 hours) All specimens had practically zero porosity at the beginning; they were "hot" polarized in the air, at temperatures near the Curie point The electric fields applied ranged, depending on the composition of the specimen between 8 and 15 kv/cm (15-60 min). ε and tan δ were measured on a Tesla bridge at 1 kc/sec and $E_{\sim}$ = 40 v/cm, the piezoelectric moduli being determined by the resonance - antiresonance method. All measurements were made under air cooling. Some of the measurement results are tabulated; the data obtained are in agreement with thos applied by other authors. A study of the solid solutions of the $BaTiO_3$ - $Bi_2O_3 \cdot 3TiO_2$ systems (designated as A - B in the following) and $BaTiO_3$ - $Bi_2O_3 \cdot 3TiO_2$ - $Cr_2O_3 \cdot 3TiO_2$ (A-B-C) showed that the introduction of bismuth ions or bismuth ions + chromium ions in $BaTiO_3$ considerably reduces the temperature stability of the $BaTiO_3$ parameters. In the compounds I: 95% A - 5% B; II: 96.4% A - 0.6% C - 3% B, and III: 94.4% A - 0.6% C - 5% B (all values in % by weight)

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Study of the Effect of Small Chromium- and Bismuth Oxide Additions Upon the Dielectric and Piezoelectric Properties of Polycrystalline Barium Titanate

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the second phase transition was not to be found in the $\varepsilon(t)$ curve as far down as -80°C; varied only inconsiderably in the range -80 - +50°C ($\varepsilon \sim 900$); $\tan\delta = f(t)$ in weak fields remains practically constant in the range -80 - +100°C ($\tan\delta \sim 3\%$). In Figs. 1,2 the temperature dependence of piezoelectric parameters is illustrated for compounds I, II, III, $BaTiO_3$ and 94%$BaTiO_3$ - 6%$CaTiO_3$. The additions were all found to have a flattening effect upon the curves, the least to do so being the calcium titanate addition. The other additions not only have a flattening effect but also cause the curves to run nearly parallel to the temperature axis. Fig. 3 shows $\tan\delta = f(E)$; here as well, the additions have a flattening effect, the most favorable being found to be I (the losses increase slowly and linearly with E). The best effects were found to be given by additions on f_{res}, ε and $(d_{31} \cdot E_{Young})^2$. The latter parameter (which characterizes the specific acoustic power) is for II and III two to three times as large as

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Study of the Effect of Small Chromium- and Bismuth Oxide Additions Upon the Dielectric and Piezoelectric Properties of Polycrystalline Barium Titanate

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for ceramics with 6%$CaTiO_3$, despite a reduction of the piezoelectric modulus. There are 3 figures, 1 table, and 2 references: 1 Soviet and 1 US.

Состав, вес. % 1	T_K, °C 2	ε в T_K 3	ε при 20 °C 4	Температура второго фазового перехода, °C 5	$d_{31} \cdot 10^6$ при 20 °C, ед. CGSE 6
$BaTiO_3$	120	[illegible]	1550	15	1,9
99,4% $BaTiO_3$—0,6% $Cr_2O_3 \cdot 3TiO_2$	120	80[illegible]	1100	10	1,3
98,3% $BaTiO_3$—1,7% $Cr_2O_3 \cdot 3TiO_2$	125	6000	800	0	0,9
96,5% $BaTiO_3$—3,5% $Cr_2O_3 \cdot 3TiO_2$	125	2200	450	—30	—

Legend to the Table:

1) Composition, % by weight
2) Curie temperature °C
3) ε at the Curie point
4) ε at 20°C
5) Temperature of the second phase transition, °C
6) $d_{31} \cdot 10^6$ at 20°C, CGSE

Card 4/4

MOSKALEV, Vladimir Iosifovich; GERMANOV, Aleksandr Aleksandrovich; SHATSILLO, O.I., red.; FOMICHEV, A.G., red. izd-va; BELOGUROVA, I.A., tekhn. red.

[Description of systems using three-phase magnetic amplifiers for controlling the power supply of electric furnaces] Opisanie ustanovok s ispol'zovaniem trekhfaznykh magnitnykh usilitelei (TMU) dlia reguliruemogo pitaniia elektricheskikh pechei. Leningrad, 1961. 20 p. (Leningradskii Dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Promyshlennaia energetika i gazifikatsiia prompredpriiatii, no.3) (MIRA 14:10)

(Electric furnaces) (Magnetic amplifiers)
(Electric power supply to apparatus)

MOSKALEV, V.I.

19

6540. TOTAL CROSS-SECTION FOR THE p—p INTERACTION IN THE ENERGY INTERVAL OF 410-660 MeV.
V.P.Dzhelepov, V.I.Moskalev and S.V.Medved',
Dokl. Akad. Nauk SSSR, VOL104, No. 3, 350-3 (1955). In Russian.

The total cross-section increases monotonically from $(26.9 \pm 0.7) \times 10^{-27}$ cm^2 at 410 MeV to $(41.4 \pm 0.6) \times 10^{-27}$ cm^2 at 660 MeV. The cross-section for the reaction $p + p \rightarrow \pi^+ + p + n$ increases monotonically from $(2.6 \mp 3.0) \times 10^{-27}$ cm^2 at 450 MeV to $(11.9 \pm 2.3) \times 10^{-27}$ cm^2 at 660 MeV; the threshold energy for this reaction lies between 410 MeV and 450 MeV, which accounts for the large uncertainties in the lower-energy cross-sections.

J.W.Gardner

MIT

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1655
AUTHOR DZELEPOV,V.P., MOSKALEV,V.I.
TITLE The Total Cross Section of pd-Interaction in the Energy Interval 390-650 MeV.
PERIODICAL Dokl.Akad.Nauk, 110, fasc.4, 539-541 (1956)
Issued: 12 / 1956

The present work discusses the determination of this cross section on the synchrocyclotron of the Institute for Nuclear Problems of the Academy of Science in the USSR by measuring the reduction of the intensity of the collimated proton bundle by samples of ordinary and heavy water at "good" geometrical conditions. Arrangement and method of the experiment were similar as with V.P.DŽELEPOV et al, Dokl.Akad.Nauk, 104, 360 (1955). A scintillation counter registered all protons deflected from the original direction of the bundle up to 3°. Triple and quadruple coincidences as well as retarded quadruple coincidences were measured, and results were shown together in a table.
The scattering cross sections $\sigma_{p(p-d)} = \sigma(D_2O) - \sigma(H_2O)$ remain constant within the energy interval of from 390 to 650 MeV and within the limits of measuring errors. At an energy of 390 MeV, $\sigma_{p(d-p)}$ agrees practically with the value of $\sigma_{p(p-d)} = (31,6 \pm 2).10^{-27} cm^2$ obtained at a proton energy of 408 MeV. The total cross sections of pd-interaction were computed on the basis

Dokl.Akad.Nauk, 110, fasc.4, 539-541 (1956) CARD 2 / 2 PA - 1635

of the total cross sections of pp-interaction found by the authors and by S.V.MEDVED'. σ_{pd} increases by about 25% if proton energy increases from 390 to 650 MeV, which is apparently due to the increase of the cross sections of meson production on the occasion of elementary nucleon-nucleon collisions. A comparison of these results with the total cross sections of nd-interaction provides an argument in favor of the charge symmetry of nuclear forces at high energies.

Also the difference between the sum of total cross sections for free pp- and np-collisions and the total cross section of pd-interaction is given. At a proton energy of from 580 to 650 MeV this difference is somewhat greater than measuring errors and amounts to about 8% of the deuteron cross section. For the observed reduction of the deuteron cross section the following reasons are given: screening of one nucleon of the deuteron by the other, interference effects, forbidding of some final states of nucleons by the PAULI principle, and the simultaneous interaction of all three particles participating in the collisions. By the methods of the diffraction theory,

$\sigma_d = \sigma_1 + \sigma_2 - (\sigma_1\sigma_2/4\pi)(1/r^2)_d$ is obtained for the total cross section of the deuteron. Here σ_1 and σ_2 denote the cross sections for the free nucleons, and $r_d = 1{,}7 \cdot 10^{-13}$ cm is the radius of the deuteron in the triplet state. The satisfactory agreement between computed and experimental data seems to confirm R.J.GLAUBER'S explanation of the deviation from additivity of the nucleon cross sections of the deuteron.

INSTITUTION: Institute for Nuclear Problems of the Academy of Science in the USSR

DZHELEPOV, V.P.; MOSKALEV, V.I.

Total cross section of pd-interactions in the 390-650 Mev energy range. Dokl. AN SSSr 110 no.4:539-541 O '56. (MLRA 10:1)

1. Institutut yadernykh problem Akademii nauk SSSR. Predstavleno akademikom L.A. Artsimovichem.
(Nuclear reactions)

MOSKALEV, V.I.

3528
TOTAL CROSS SECTIONS FOR [illegible] MEV PHOTONS WITH NUCLEI. V. I. Moskalev and S. V. Gavrilovskii. (Inst. of Nuclear Problems). Doklady Akad. Nauk S.S.S.R. 110, 972-4(1956) Oct. 21. (In Russian)

Total cross sections for the interactions of 650-Mev protons with Be, C, O, Al, Cu, Sn, Pb, and U nuclei were measured with a synchrocyclotron using the methods previously used by V. P. Dzhelepov et al, (Doklady Akad. Nauk S.S.S.R. 104, 380(1955)) for total cross sections of (p,p) and (p,d) interactions. The table is given showing the values of the total cross sections. σ_t and cross sections of inelastic interaction σ_a. Interpolations of the values obtained for σ_t from the available values for protons with 215 to 408 Mev showed that the cross sections for light nuclei increase about 10 to 25% with proton energies up to 653 Mev. The cross sections of inelastic interactions measured for 134-Mev protons coincide within limits of error with cross sections at 650 Mev. The cross sections for the inelastic interaction of 860-Mev protons with Be, C, and Al, also coincide, with the obtained data, while for the heavy nuclei of 860 Mev the cross section is diminished about 10%. The radii for nuclei R were determined on the basis of the σ_a values. R values for all nuclei from Be to U lay on the straight line $R = r_0 A^{1/3}$ where $r_0 = (1.37 \pm 0.03) \times 10^{-13}$ cm. From the relation $\sigma_a / \pi R^2$, it is seen that the heavy nuclei are almost non-transparent for protons of the above energies, while the light nuclei show a considerable transparency (~25%). (R.V.J.)

21(8) SOV/56-35-6-38/44

AUTHORS: Budagov, Yu. A., Viktor, S., Dzhelepov, V. P., Yermolov, P. F., Moskalev, V. I.

TITLE: The Electron-Positron Pairs Which Are Formed in the Decay $\pi^0 \longrightarrow e^- + e^+ + \gamma$ (Elektronno-pozitronnyye pary, obrazovannyye pri raspade $\pi^0 \longrightarrow e^- + e^+ + \gamma$)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 6, pp 1575-1577 (USSR)

ABSTRACT: In a diffusion chamber, which was filled with hydrogen (up to 25 atm) and was irradiated with a 150 MeV negative pion beam of the synchrocyclotron of the Ob"yedinennyy institut yadernykh issledovaniy (United Institute for Nuclear Research), 14 cases of a charge exchange scattering of negative pions by hydrogen with following $\pi^0 \longrightarrow e^- + e^+ + \gamma$ decay of the π^0-meson were recorded according to the Dalitz (Dalits) scheme. This chamber had a sensitive range of 380 mm diameter and operated in a 9000 Oe constant magnetic field. These 14 cases were found when looking over 45000 stereoscopic photographs. Two of these

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The Electron-Positron Pairs Which Are Formed in the Decay $\pi^0 \longrightarrow e^- + e^+ + \gamma$

photos are attached. The results obtained by the evaluation of plates with electron-positron pairs are given by a table. The electron energies E^- and the positron energies E^+ could be determined from the curvature radii of the traces with an inaccuracy of not more than 10-15%. The total energies $E = E^- + E^+$ of all pairs are within the interval of 17-270 MeV, which corresponds to the energy spectrum of the γ-quanta formed by the decay of neutral pions (produced by re-charging). The table also contains the correlation angles α (in the laboratory system) between the electrons and positrons of the pairs and the angles Θ between the direction of motion of the center of mass of the pair and the inciding negative pion. For the general form of angular distribution it holds that $\mathcal{P}(\alpha) \sim$ const $d\alpha/\alpha$ (R. H. Dalitz) (Ref 2). Because of the good correlation between the electrons and positrons produced by the decay $\pi^0 \longrightarrow e^- + e^+ + \gamma$ the angular distribution of pairs must be in very good agreement with that of the γ-quanta originating from the decay $\pi^0 \longrightarrow 2\gamma$. The kinematics of none of the 7 pairs with exactly determined

The Electron-Positron Pairs Which Are Formed in the Decay $\pi^0 \longrightarrow e^- + e^+ + \gamma$

total energy corresponds to the decay $\pi^0 \longrightarrow e^- + e^+$. Besides, not a single decay $\pi^0 \longrightarrow e^- + e^+ + e^- + e^+$ was found. Investigations are still being continued. The author thanks L. I. Krasnoslobodtseva for her help in looking through the photographs. There are 2 figures, 1 table, and 11 references, 2 of which are Soviet.

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

SUBMITTED: August 26, 1958

MOSKALEV, V. I., FLYAGIN, V. B., SHATET, T., BUDAGOV, YU. A., DZHELEPOV, V. P.,
DZHAKOV, N. I., IVANOV, N. I., LEPILOV, V. I.,

"The One-Meter Propane Bubble Chamber in Magnetic Field"

paper presented at the Intl Conference on High Energy Physics, Rochester, N. Y.
and/or Berkly California, 25 Aug - 16 Sep 1960.

81417

S/056/60/038/03/10/033
B006/B014

24.6100

AUTHORS: Budagov, Yu. A., Viktor, S., Dzhelepov, V. P., Yermolov, P. F., Moskalev, V. I.

TITLE: Elastic Scattering of 120- and 162-Mev π⁻-Mesons by Protons

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 3, pp. 734-74[illegible]

TEXT: The article under review was read at the Sixth Meeting of the [illegible] Council of OIYaI held in May, 1959, and at the Conference on the Physics of High-energy Particles which took place in Kiyev in July [illegible]. This article contains the results of studies of the elastic scattering of negative 120- and 162-Mev pions by protons in a hydrogen diffusion chamber. The experimental arrangement is schematically represented in Fig. 1. The π⁻-mesons were produced by bombarding a 40 mm thick beryllium target with the [illegible]-Mev proton beam of the synchrocyclotron of OIYaI. About 90,000 stereophotographs were taken. The diffusion chamber is schematically shown in Fig. [illegible]. The chamber operated at pressures of up to 25 atm and had an inside temperature gradient of 1 deg/cm. The sensitive layer was [illegible] cm high. A solenoid magnet of the

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type [illegible] was used to generate a constant magnetic field [illegible] gauss. This electromagnet was produced at NII EFA by N. S. Strel'tsov, A. V. [illegible], and A. [illegible]. Stolov[illegible] B. N. In[illegible]kov, Yu. P. Semenov, V. I. Sergeyeva, and [illegible] supplied a magnetometer based on the D. P. Vasilevskaya and Yu. N. Denisov Hall effect. The negative pion beams had an energy of [illegible] and [illegible] Mev. The sum of the μ meson and electron admixture amounted to [illegible]%. The pictures were evaluated twice. The efficiency of this stereoscopic evaluation was 97 per cent. 37[illegible] cases of scattering at 120 Mev and 1,[illegible] cases at 162 Mev were found. Fig. 3 shows the distribution of the number of elastic scattering events with respect to the height of the sensitive layer. At both energies the distributions reached peaks at about 40 mm. The criteria for the selection of scattering events are compiled. The total elastic π⁻p scattering cross section was calculated from the total track length L of the π⁻ mesons. L was determined by means of the formula L = 15.36 [illegible] (N - total number of tracks, 15.36 is the width of the area S (Fig. 4), [illegible] the mean angle of slope of the tracks with respect to the edge of S, [illegible]). Thus it holds that $\sigma_{exp} = N_s/Ln_{eff}(1-q)r$ (N_s - number of scattering events, n_{eff} effective

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number of hydrogen nuclei per cm³ [illegible] a coefficient [illegible] the μ and electron admixtures in the beam, r [illegible] the efficiency of evaluation of the pictures). For the two energies [illegible] which [illegible] were [illegible]. Table [illegible] lists all the quantities appearing in these formulas, as well as the [illegible] mean square errors. Table 2 contains the values obtained for the total elastic scattering cross sections in the energy range 100 - 200 Mev. Tables 3 and 4 list the differential elastic scattering cross sections [illegible] and [illegible] Mev. In the following, [illegible] numerous details concerning the calculation and [illegible] for [illegible] energies the total elastic scattering [illegible] and [illegible] 10⁻²⁷ [illegible]. Here the angular distribution [illegible] [illegible] energies are given on p. 74[illegible]. [illegible] distribution. The following result [illegible] scattering cross section: dσ(0°)/dΩ [illegible] 10⁻²⁷ cm²/steradian for [illegible] Mev. At [illegible] (for 120 Mev) and (3.75 ± 0.3[illegible])·10⁻²⁷ cm²/steradian [illegible]

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energies the real parts of the forward scattering amplitudes (in the center of-mass system) in [illegible] units amount to [illegible] and [illegible], respectively. These values agree with those calculated from dispersion relations if the coupling constant f^2 = 0.08 is used. The authors finally thank L. I. Lapidus, S. N. Sokolov, and V. A. [illegible] for their discussions, L. I. Krasnoslobodtseva, [illegible], and Yu. [illegible] for their assistance, as well as A. A. [illegible] and G. D. Malyarova for their calculations. Further, B. P. Klepikov, V. G. Zinov, A. D. [illegible], [illegible] Korenchenko, and B. M. Pontekorvo are mentioned in this article. There are 9 figures, 4 tables, and 34 references, 10 of which are Soviet.

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

SUBMITTED: September 10, 1959

83733

S/056/60/038/004/006/048
B019/B070

24.6900

AUTHORS: Budagov, Yu. A., Viktor, S., Dzhelepov, V. P., Yermolov, P. F., Moskalev, V. I.

TITLE: Internal Conversion Pairs in the Decay of a Neutral π-Meson

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 4, pp. 1047-1052

TEXT: This work was communicated to the sixth session of the Uchenyy sovet OIYaI (Scientific Council of the Joint Institute of Nuclear Research) in May, 1959, and the Conference on the High Energy Particles in Kiyev in July, 1959. Here, data obtained from 27 events of the decay $\pi^0 \rightarrow e^- + e^+ + \gamma$ are discussed. These events were detected in a diffusion chamber exposed to π^- meson beams with energies 125 and 162 Mev. The chamber was filled with hydrogen at a pressure of 25 atm and was placed in a magnetic field of 9000 gauss. The π^0-mesons were produced as a result of a charge exchange scattering. The determination of the relative π^0-decay probability is treated in great detail; its theoretical value is $2\rho_0 = w(\pi^0 \rightarrow e^- + e^+ + \gamma)/w(\pi^0 \rightarrow 2\gamma) = 0.0116$. In this connection they discuss

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some American results. The value $2\rho_0 = 0.0117 \pm 0.0015$ was experimentally obtained by the authors. The angle and energy characteristic of the pairs has been studied from the data for all the 27 events given in Table 2. The angular distribution of the pairs according to the correlation angles agrees well with the data obtained theoretically by Dalitz (Fig. 2). Also the distribution of the pairs according to the parameters $y = |p_{e^-} - p_{e^+}| / |\vec{p}_{e^-} + \vec{p}_{e^+}|$ and $x = (E^- + E^+)^2 - (\vec{p}_{e^-} + \vec{p}_{e^+})^2$ (Figs. 3 and 4) agree with the theoretical curves. Here p_{e^-} and p_{e^+} are the momenta of the electrons and the positrons, respectively and E^+ and E^- the total energies. The same is true for the angular distribution of the pairs relative to the direction of π^- mesons in the (π^- - p) center of mass system (Fig. 5). Among the cases studied here, there was found one event with the mode of decay $\pi^0 \rightarrow e^- + e^+ + e^- + e^+$. The authors thank Professor R. Dalitz for making available some of the unpublished theoretical calculations. There are 5 figures, 2 tables, and 14 references: 5 Soviet, 8 US, and 1 Italian.

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

SUBMITTED: September 18, 1959

Card 3/3

MOSKALEV, V.I.

BUDAGOV, Yu.A.; YERMOLOV, P.F.; KUSHNIRENKO, Ye.A.; MOSKALEV, V.I.

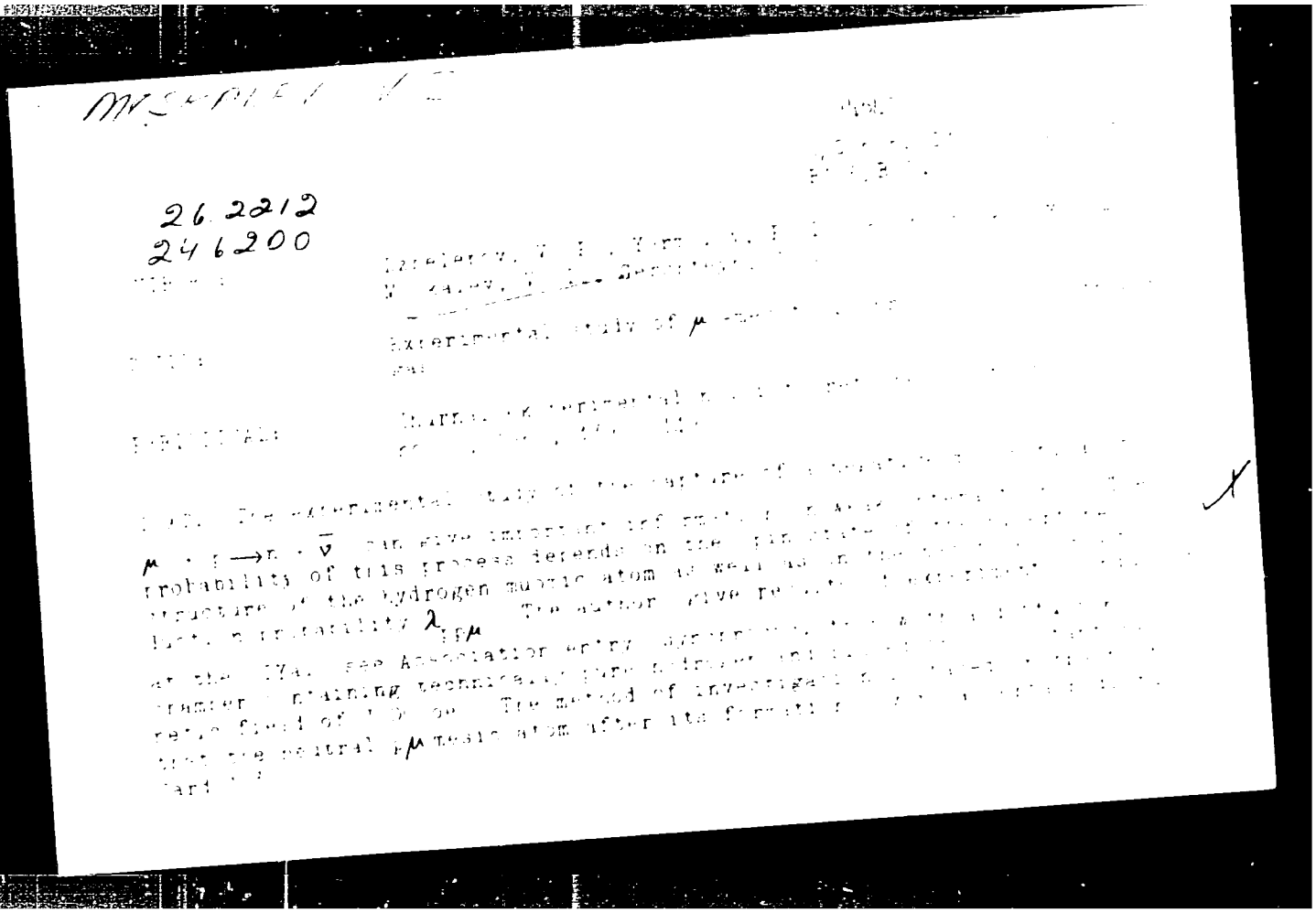
Excitation of the He^4 nucleus by 150 Mev. π^--mesons. Zhur. eksp. i teor. fiz. 40 no.6:1615-1617 Je '61. (MIRA 14:8)

1. Ob"yedinennyy institut yadernykh issledovaniy.
(Mesons) (Helium)

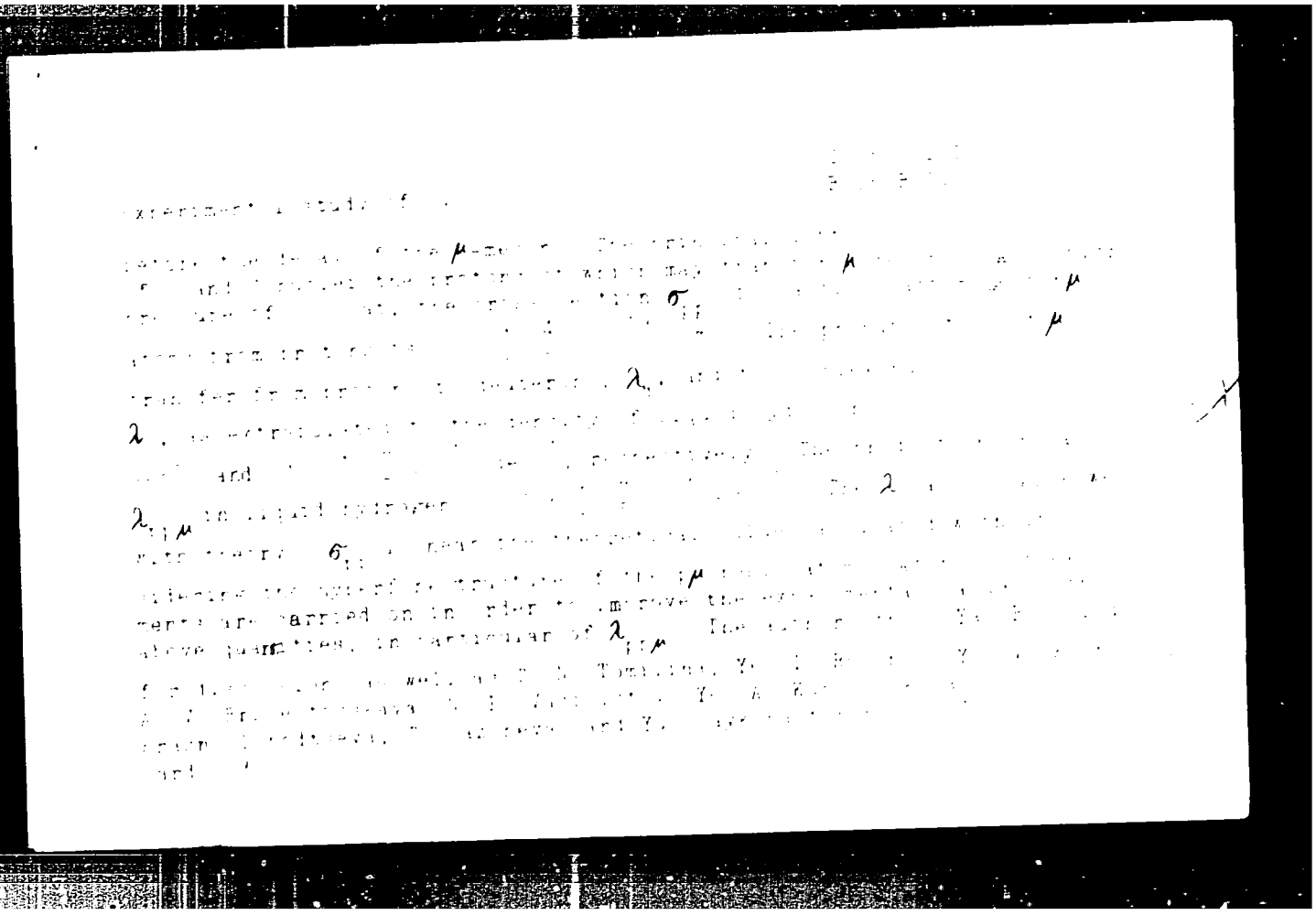
MOSKALEV, V.I.

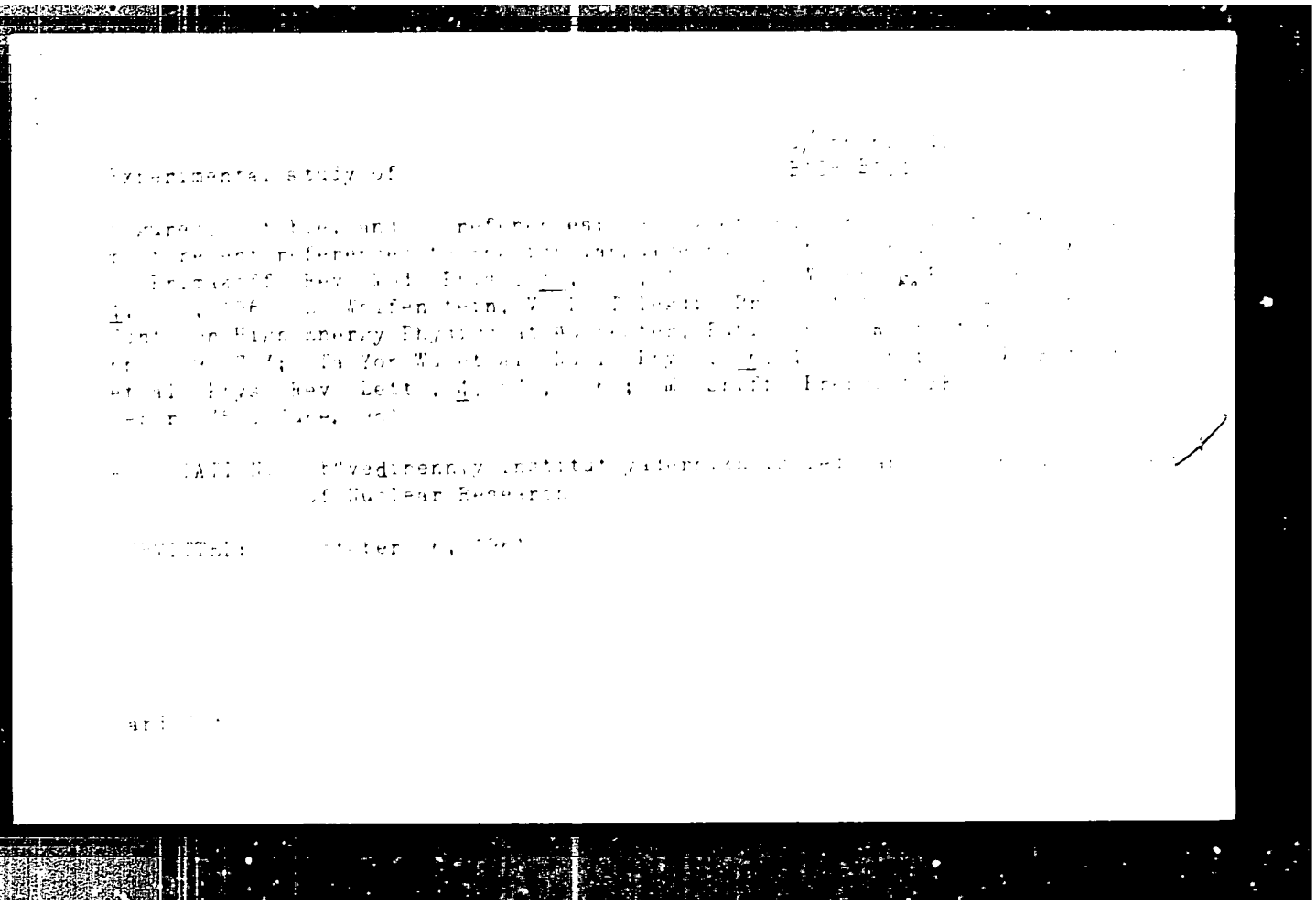
BUDAGOV, Yu.A.; YERMOLOV, P.F.; KUSHNIRENKO, Ye.A.; MOSKALEV, V.I.; SARANTSEVA, V.R., tekhn. red.

[Interaction of 153 Mev. negative π-mesons and helium] Vzaimodeistvie otritsatel'nykh π-mezonov s geliem pri energii 153 Mev. Dubna, Ob"edinennyi in-t iadernykh issl., 1962. 32 p. (MIRA 15:3)
(Nuclear reactions) (Mesons) (Helium)



26 2212
24 6200





S/056/62/042/005/009/050
B104/B102

AUTHORS: Budagov, Yu. A., Yermolov, P. F., Kushnirenko, Ye. A., Moskalev, V. I.

TITLE: Interaction between 153-Mev π^--mesons and helium

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 5, 1962, 1191-1208

TEXT: The interaction between 153-Mev π^--mesons and He^4 at 17.6 atm helium pressure and a magnetic field strength of 12,000 oersteds was studied in a diffusion chamber. The maximum drop of the magnetic field strength in the central range of the operating volume was 3%, the maximum nonuniformity of the magnetic field was $\pm 4\%$. The mean meson energy was determined from the curvature of the meson tracks. The half-width of the meson energy distribution in the chamber was 9 Mev. The μ^- and electron admixture was $(16 \pm 2)\%$. The total π^- He interaction cross section, the elastic scattering cross section, and the cross sections for a number of inelastic processes were determined by measuring the total length of π^--meson tracks in the chamber. The angular distribution of elastic π^- He

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S/056/62/042/005/009/050
B104/B102

Interaction between 153-Mev ...

Interaction is of diffractional nature with a distinct first minimum (at 80°) and a second maximum (at 100°). Calculations of elastic scattering on the basis of an optical model with square complex potential, $V = V_R + iV_I$, showed that best agreement with experimental data was obtained with $V_R = -16 \pm 7$ Mev, $V_I = -63 \pm 6$ Mev, $r_o = 1.5 \cdot 10^{-13}$ cm. These values agree with those found by R. M. Frank et al. (Phys. Rev., 101, 891, 1956). The angular distribution of π^--mesons quasi-elastically scattered from intranuclear nucleons is compared with theoretical results of K. M. Watson et al. (Nuovo Cim., 10, 453, 1956). The probability of multiple pion scattering from nuclei and the charge exchange scattering cross section are estimated. The cross section of inelastic scattering with charge exchange is about 10% of the cross section of inelastic interaction. There are 6 figures and 4 tables.

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

SUBMITTED: December 29, 1961

Card 2/2

DZHELE[illegible], [illegible]; YER[illegible], [illegible]; [illegible]
F[illegible]L'CHENK[illegible], V.V.; FR[illegible], M.

Catalysis by negative mesons of [illegible] Zhur.eksp.i [illegible].fiz. [illegible]
$d + d \rightarrow He^3 + n$.
Je '64.

1. Ob"yedinennyy ins[illegible]

DZHELEPOV, V.P.; YERMOLOV, P.F.; MOSKALEV, V.I.; FIL'CHENKOV, V.V.; FRIML, M.

Elastic scattering of dμ-mesic atoms by protons, deuterons, and compound nuclei. Zhur. eksp. i teor. fiz. 47 no.4:1247-1256 O '64. (MIRA 18:1)

1. Ob"yedinennyy institut yadernykh issledovaniy.

L 36462-66 EWT(m)

ACC NR: AP6018802 SOURCE CODE: UR/0056/66/050/005/1235/1251

AUTHOR: Dzhelepov, V. P.; Yermolov, P. F.; Moskalev, V. I.; Fil'chenkov, V. V.

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

TITLE: Negative muon catalysis of nuclear reactions of $d\mu + p \to He^3 + \mu^-$ and $d\mu + d \to t + p + \mu^-$ and the formation of $pd\mu$ and $dd\mu$ molecules in gaseous hydrogen

SOURCE: Zh eksper i teor fiz, v. 50, no. 5, 1966, 1235-1251

TOPIC TAGS: muon, hydrogen, deuterium, nuclear reaction, catalysis

ABSTRACT: The yield of nuclear reaction of $d\mu + p \to pd\mu \to He^3 + \mu^-$ and $d\mu + d \to dd\mu \to p + t + \mu^-$ have been measured in a diffusion cloud chamber filled with hydrogen and deuterium at pressures ranging from 7 to 23 atm.

Card 1/3

ACC NR: AP6018802

The muon transition rate from the deuteron muon atom to carbon and oxygen has been found from experimental deuteron muon ranges and Auger electron yields. The formation rates of proton deuteron muon and deuteron deuteron muon molecules (reduced to the density of liquid hydrogen and deuterium) have been found to be $\lambda_{pd\mu} = (1.8 \pm 0.8) \cdot 10^6$ sec^{-1}, $\lambda_{dd\mu} = (0.75 \pm 0.11) \cdot 10^6$ sec^{-1}. Estimate of the relative yield of the reaction $d\mu + d \rightarrow dd\mu \rightarrow t\mu + p$ shows that the relation of the yield of $d\mu + d \rightarrow dd\mu \rightarrow t\mu + p$ to the yield of $d\mu + d \rightarrow dd\mu \rightarrow p + t + \mu^-$ is less than 0.14 with a 90% probability. Analysis of experimental data on the reactions $d\mu + p \rightarrow pd\mu \rightarrow He^3 + \mu^-$ and $d\mu + p \rightarrow pd\mu \rightarrow He^3\mu + \gamma$ leads to the conclusion that the resonance mechanism of the formation of deuteron deuteron muon molecules is likely to be the reason for the large yield of the two deuteron fusion reactions under conditions of experiments conducted by the authors. The authors thank Yu. V. Katyshev, M. Friml,

L 36462-66

ACC NR: AP6018802

and Ye. D. Shcherbakov for their participation in the initial stage of this work, and S. S. Gershteyn for his valuable discussions. Orig. art. has: 9 figures, 19 formulas, and 5 tables. [Based on authors' abstract] [NT]

SUB CODE: 20/ SUBM DATE: 23Dec65/ ORIG REF: 012/ OTH REF: 010/

Card 3/3

ACCESSION NR: AP4042565 S/0056/64/046/006/2042/2045

AUTHORS: Dzhelepov, V. P.; Yermolov, P. F.; Katy*shev, Yu. V.; Moskalev, V. I.; Fil'chenkov, V. V.; Friml, M.

TITLE: Catalysis of the nuclear $d + d \rightarrow He^3 + n$ fusion reaction by negative muons

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 6, 1964, 2042-2045

TOPIC TAGS: nuclear fusion, muon, mu meson catalysis, negative mu meson, hydrogen, deuterium

ABSTRACT: This is a continuation of earlier research on mesic-atom processes in gaseous hydrogen (V. P. Dzhelepov et al., Proc. 1962 Intern. Conf. on High Energy Physics at CERN, Geneva, 1962, p. 484. V. P. Dzhelepov, At. energiya v. 14, 27, 1963. V. P. Dzhelepov et al., ZhETF v. 42, 439, 1962), and is aimed at observation of the previously unobserved reaction $d\mu + d \rightarrow dd\mu \rightarrow He^3 + n + \mu^-$. This

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ACCESSION NR: AP4042565

reaction is one of the fusion reactions

$$d\mu + d \rightarrow dd\mu \rightarrow \begin{cases} t + p + \mu^- \\ He^3 + n + \mu^- \\ p\mu + t \\ He^3\mu + n \\ t\mu + p \end{cases}$$

which were investigated earlier. The experimental conditions made it also possible to register reaction (1) and obtain some estimates of the yields of reactions (3) and (4). The tests were made with a diffusion chamber filled with deuterium to a pressure of 7.2 atm, where 20 events of the hitherto unobserved reaction (2) were detected. The ratio of the yields of reactions (2) and (1) is 1.20 ± 0.37. Estimates of the relative yields of reactions (3) and (4) give, with a probability of 90%, $w(3)/w(1) < 0.13$ and $w(4)/w(2) < 0.13$. The yield of the reaction (1) agrees with the data obtained by the authors earlier, but the yields of reactions (1) and (2) measured in

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ACCESSION NR: AP4042565

the experiments exceed by one order of magnitude those that can be expected on the basis of the data on reaction (1) obtained in liquid deuterium by several authors. Estimates of the yield of reaction (5) call for additional data reduction and will be published later. Orig. art. has: 2 figures and 5 formulas.

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

SUBMITTED: 10Feb64 DATE ACQ: ENCL: 00

SUB CODE: NP NR REF SOV: 003 OTHER: 005

Card 3/3

L 13487-65 EWT(m) DIAAP/AFWL/SSD/ESD(t)

ACCESSION NR: AP4047891 S/0056/64/047/004/1243/1256

AUTHORS: Dzhelepov, V. P.; Yermolov, P. F.; Moskalev, V. I.; Fil'-chenkov, V. V.; Friml, M.

TITLE: Elastic scattering of dMu mesic atoms by protons, deuterons, and complex nuclei

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 4, 1964, 1243-1256

TOPIC TAGS: elastic scattering, mu mesic atom, proton scattering, deuteron scattering, complex nucleus scattering, scattering cross section

ABSTRACT: This is a continuation of earlier experiments by the authors (ZhETF v. 42, 439, 1962; Proc. of 1962 Intern. Conf. on High-Energy Physics at CERN, p. 484; Atom. energ. v. 14, 27, 1963) and describes further experiments on the kinetics of dμ atomic pro-

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L 13487-65
ACCESSION NR: AP4047891

cesses. The range distribution of dμ atoms in hydrogen containing various concentrations of deuterium and of Z-impurities (C, O) and the hitherto unknown cross sections for elastic scattering of dμ atoms were measured, using a diffusion chamber in a magnetic field. The diffusion chamber has a diameter 380 mm, the magnetic field was 7000 Oe, and the negative mesons were obtained from the OIYaI synchrocyclotron, slowed by a filter, and stopped in the gas of the chamber. A detailed description of the experimental setup and conditions was given in the cited earlier papers. The data reduction procedure and program are described. The cross sections were determined by a χ^2 comparison of the experimental distribution with those calculated by the Monte Carlo method. The values obtained for the elastic scattering cross sections agree well with the theory. The lifetime of the dμ atom in hydrogen gas containing Z-impurity concentrations of 1/4000 and 1/800 is 1.25 ± 0.16 and 0.42 ± 0.05 μsec, respectively. The cross sections for the elastic scattering of dμ atoms in the various processes, obtained experimentally and the-

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oretically, are:

Process	Experiment	Theory
$d\mu + d \to d\mu + d$	$(4,15 \pm 0,29) \cdot 10^{-19}$	$3,3 \cdot 10^{-19}$ [3] $3,5 \cdot 10^{-19}$ [2]
$d\mu + p \to d\mu + p$	$\left(0,8^{+0,8}_{-0,4}\right) \cdot 10^{-21}$	$\sim 10^{-21}$ [2]
$d\mu + Z \to d\mu + Z$	$(1,2 \pm 0,3) \cdot 10^{-18}$	$\sim 10^{-18}$

An analysis analogous to that described in the article is in progress for the scattering of $p\mu$ atoms by protons and the results of the present work are being applied to an interpretation of the yields of the nuclear reactions $p + d\mu \to He^3 + \mu^-$ and $d\mu + d \to t + p + \mu^-$, which will be reported later. "The authors are grateful to S. S. Gershteyn, Yu. M. Kazarinov, I. N. Silin, R. M. Sulyayev, and V. M. Tsupko-Sitnikov for useful discussions and valuable remarks, and to L. I. Krasnolobodtseva, Yu. L. Saykina, and T. S. Ob"yezdnova for help with the measurements." Orig. art. has: 10 figures, 9 formulas, and 4 tables.

L 13487-65

ACCESSION NR: AP4047891

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

SUBMITTED: 13May64 ENCL: 00

SUB CODE: NP NR REF SOV: 006 OTHER: 007

Card 4/4

KOSKALEV, V.M.; KHASKIN, L.S., redaktor; KORNEYEVA, V.I., tekhnicheskiy redaktor.

[Textile materials used in the chemical industry] Tekstil'nye materialy, primeniaemye v khimicheskoi promyshlennosti. Moskva, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1954. 116 p. (MLRA 8:1)
(Chemical industries) (Textile fibers)

PALATNIK, L.S.; KOSEVICH, V.M.; MOSKALEV, V.M.

Growing single crystal layers on bismuth by the vacuum condensation method. Fiz. met. i metalloved. 16 no.3:403-408 S '63. (MIRA 16:11)

1. Khar'kovskiy politekhnicheskiy institut imeni V.I.Lenina.

L 06437-67 EWT(m)/EWP(t)/ETI IJP(c) JD
ACC NR: AP6026714 SOURCE CODE: UR/0181/66/008/008/2484/2486

AUTHOR: Kosevich, V. M.; Palatnik, L. S.; Moskalev, V. K.

ORG: Kharkov Polytechnic Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: Distribution of growth microsteps on faces of NaCl crystals

SOURCE: Fizika tverdogo tela, v. 8, no. 8, 1966, 2484-2486

TOPIC TAGS: sodium chloride, single crystal growth

ABSTRACT: The distribution of microsteps on (001) faces of NaCl crystals was studied on single-crystal layers grown by vacuum condensation on NaCl single crystals. The temperature T_s of the single-crystal substrates was varied between 150 and 450°C. Growth microsteps of unimolecular height were revealed with an electron microscope by using decoration with gold particles. The maximum area of a smooth surface (free of microsteps) S_m was used for a description of the distribution of the microsteps. The experimental dependence of S_m on T_s for a condensation rate $\omega = 30$ Å/sec was determined, and S_m was evaluated theoretically. The experimental data show that the growth of NaCl crystals in the 150-450°C range is controlled primarily by processes of surface migration of molecules. The remaining quantitative characteristics of the distribution of microsteps are directly related to S_m: thus, the mean distance between the microsteps $\bar{l} \sim 0.3\sqrt{S_m}$, and the area of the growth microfigure $\Sigma \sim 15\ S_m$. The

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L 06437-67

ACC NR: AP6026714

critical condition determining the size of a growth microfigure is that the free area between the microsteps be close to S_m. Orig. art. has: 2 figures and 2 formulas.

SUB CODE: 20/ SUBM DATE: 11Feb66/ ORIG REF: 002/ OTH REF: 002

Card 2/2

MOSKALEV, V.N.

Using the track of the AO-4 lint blower for the travel of the AO-6 lint blower. Tekst.prom. 23 no.1:46-47 Ja '63
(MIRA 16:2)

1. Nachal'nik remontno-mekhanicheskogo otdela Latviyskoy kamvol'noy fabriki.
(Spinning machinery--Maintenance and repair)

S/113/60/000/002/009/009
D207/D306

AUTHORS: Reznikov, A. S. and Moskalev, V. N.

TITLE: Powder electromagnetic automobile clutch couplings

PERIODICAL: Avtomobil'naya promyshlennost', no. 2, 1960, 42-45

TEXT: The article describes the principle of the powder electromagnetic clutch, discusses some western clutches of this type and proceeds to describe the Soviet НАМИ (NAMI) cylindrical powder electromagnetic clutch (Fig. 5). The magnetic system is situated directly in the flywheel and the whole clutch weighs 22 kg. The excitation winding is fed from the armature of the engine generator but draws its current from the battery until sufficient revolutions have been developed for the generator to proceed to self-excitation. The control system is so regulated that at 1,600-1,800 rpm the generator develops maximum voltage, corresponding to the maximum transmissible moment. The clutch is set to begin engaging at 500-600 rpm, i.e. at minimum steady engine revolutions. The moment transmitted by the clutch thus increases proportionally to the

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Powder electromagnetic...

engine revolutions. To prevent the engine from stalling due to a too sudden start or during acceleration on uphill grades the system provides for some shift in the characteristics so that the power supply gives a decrease in the clutch moment in relation to the moment of the engine. The baffle plate pedal is connected to a switch which breaks the excitation winding circuit. The clutch can, therefore, be disengaged independently of the engine revolutions. Stand and road tests of the NAMI clutch have shown that the mechanical and electrical parts function reliably. After 10,000-15,000 km, however, the ferromagnetic mixture gradually loses its properties and must be replaced. The clutch engages smoothly and gently, makes driving easier and reduces driver fatigue. Comparative tests of the NAMI clutch and a normal friction clutch installed in a "Pobeda" car were made. With the friction clutch it was found that torsional moments exceeding the maximum engine torque developed in the power transmission (40% in excess during a smooth and 85% during a rapid start). With the powder clutch dynamic loading of the transmission was low and smooth. During a rapid start the torsional moment exceeded the maximum engine torque by only 20% and built up to its

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Powder electromagnetic...

maximum over a period of 1 second compared to 0.18 second in the case of the friction clutch. There are 7 figures, 1 table and 6 references: 4 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: "Autocar", No. 3076, 12/XI 1954, pp 778-780; No 3245, 28/II, 1958, p 303; "Autocar", No 3225, 11/X, 1957, p 535.

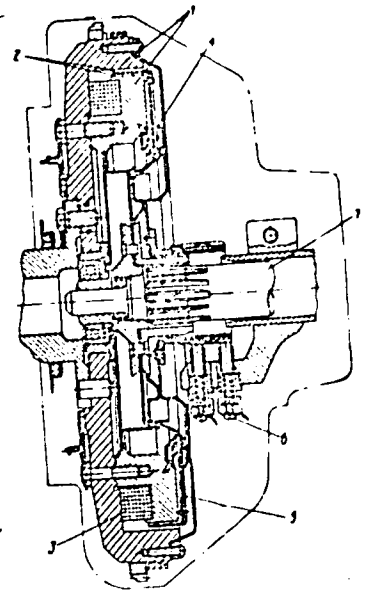

Fig. 5. The NAMI clutch: 1 - magnetic conductors; 2 - operating gaps; 3 - excitation winding; 4 - labyrinthal ring packing; 5 - driven element; 6 - current-carrying assembly (rings, brushes); 7 - primary gear-box shaft.

Рис. 5 Сцепление НАМИ:
1 — магнитопроводы; 2 — рабочие зазоры; 3 — обмотка возбуждения; 4 — лабиринтное кольцевое уплотнение; 5 — ведомый элемент; 6 — токоподводящее устройство (кольца, щетки); 7 — первичный вал коробки передач

Card 3/3

STEFANOVICH, Yu.G., kand.tekhn.nauk; MOSKALEV, V.N.; LUKEV, I.S., kand.tekhn. nauk.

Determining torsional vibrations in the transmission of the GAZ-51 motortruck. Avt.prom. no.10:10-12 O '60. (MIRA 13:11)

1. Gosudarstvennyy soyuznyy ordena Trudovogo Krasnogo Znameni nauchno-issledovatel'skiy avtomobil'nyy i avtomotornyy institut.
(Motortrucks--Transmission devices--Vibration)

MOSKALEV, V.N.

Designing a torsional vibration damper. Avt.prom. 28 no.4:19-20 Ap '62. (MIRA 15:4)

1. Gosudarstvennyy soyuznyy ordena Trudovogo Krasnogo Znameni nauchno-issledovatel'skiy avtomobil'nyy i avtomotornyy institut.
(Damping (Mechanics))

MOSKALEV, V.S.; FEDOGEROV, I.V.; VASIL'YEV, B.D.

Frost action under foundation during the construction of buildings. Osn., fund.i mekh.grun. no.6:20-22 '59. (MIRA 13:4)

(Foundations) (Frozen ground)

MOSKALEV, V.S., inzh.; FEDOGEMOV, I.V., inzh.

Prevent soil freezing in foundation beds of buildings. Rech. transp. 18 no.6:43-45 Je '59. (MIRA 12:9)
(Soil freezing) (Foundations)

[illegible], M. M., [illegible], P. M., MOSKALEV, I. I., SKRIPOV, F. I. (LGU, Leningrad)

"The Development of Equipment for Investigating Molecular and Crystal Structures by Nuclear Magnetic Resonance".

report presented at the All-Union Conference on Statistical Radio Physics, Gor'kiy, 13-18 October 1958. (Izv. vyssh uchev zaved-Radiotekh., vol. 2, No. 1, pp 121-127) COMPLETE card under SIFOROV, V. I.)

AUTHORS: Aleksandrov, N.M., Moskalev, V.V. SOV/54-58-3-4/19

TITLE: Radiofrequency Spectrograph for the Quantitative Investigation of the Lines of Nuclear Magnetic Resonance in Crystals (Radiochastotnyy spektrograf dlya kolichestvennogo issledovaniya konturov liniy yadernogo magnitnogo rezonansa v kristallakh)

PERIODICAL: Vestnik Leningradskogo universiteta. Seriya fiziki i khimii, 1958, Nr 3, pp 14 - 20 (USSR)

ABSTRACT: The experimental investigation of the nuclear magnetic resonance lines in crystals is impeded by the fact that these lines exhibit a considerable width and a low intensity. The spectrograph described in the present paper (its block scheme is represented in figure 1) makes possible the investigation of the line contours. The electromagnet yoke (Fig 2) is made of soft magnet steel St-3. After the regulation the relative homogeneity of the magnetic field was $10^{-6}/cm^3$. By this fact the device together with corresponding electronic equipment becomes universal. It can be used in the investigation of chemically caused displacements in liquids and crystal samples of large volume. The receiver of a superheterodyne type (Fig 3) guarantees the observation of the frequency shift as

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well as of the modification of the amplitude when the magnetic resonance line passes through. In the former case, taking no account of the generator conditions, a good qualitative representation of the results is guaranteed. In the case of a carrier frequency of $1.1 \cdot 10^7$ the circuit can fix the frequency shift of 0.01 cycles. The generator is built according to a diagram due to Paund (Ref 7) with some modifications (Fig 4). The diagram of the frequency detector (Fig 5) is analogous to the diagram from reference 8. By means of the described device a deduction of the dispersion signal in a gypsum mono-crystal ($CaSO_4 \cdot 2H_2O$) was obtained (Fig 6). The curve exhibits a double fine structure which is not at variance with the data presented in the well-known paper by Pake (Peyk) (Ref 3). Besides preliminary data on line contours of some crystals that until now have not been examined were obtained. The authors express their gratitude to F.I.Skripov, Docent, Head of the Laboratoriya magnitnoy radiospektroskopii (Laboratory of Magnetic Radiospectroscopy) for valuable suggestions. There are 6 figures and 9 references, 2 of which are Soviet.