24.1900 (1137)

31647
S/032/62/028/001/005/017
B108/B138

AUTHORS: Yermolov, I. N., and Grebennik, V. S.

TITLE: Dependence of the ultrasonic signal amplitude on the size and depth of a defect in immersion flaw detecting

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 1, 1962, 56 - 60

TEXT: The authors calculated the ultrasonic amplitude received through an immersion flaw detector. Unlike the calculation made by A. G. Gorokhovyy, interference of the ultrasonic waves is taken into account. The problem is solved in cylindrical ccordinates with the detector perpendicular to the surface of the piece to be tested. It can be reduced to a homogeneous medium problem since incident and reflected waves are in the same phase. In this case the actual detector must be replaced by a virtual one n times nearer to the test object ($n = \frac{c}{c_L}$ relative refractive index of the immersion liquid). The general results have been adopted from a previous paper (I. N. Yermolov. Akusticheskiy zhurnal, v. 6, no. 2, 198 (1960)). The formula for the sound pressure is

Card 1/2

Dependence of the...

written in the approximate form

$$p=2P_0\frac{4\rho c\rho' c_L}{(\rho c+\rho' c_L)^2}\pi\frac{\beta}{a}\sin\frac{a}{2}\sqrt{4\sin^2\frac{a}{2}\cdot\left(1-a\beta+\frac{a^2\beta^2}{2}\right)-\frac{a\beta^2}{3}(2\sin a-a)}. \quad (16)$$

ρ = density of liquid, ρ' = density of test body, c = velocity of sound in liquid, c_L = velocity of longitudinal sound wave in test body,

$$a=\frac{k'a^2}{2(zn+|z'|)};\quad \beta=\frac{k'b^2}{2(zn+|z'|)}. \quad (A),$$

$k=\frac{\omega}{c}$; z and z' are the true distances of detector and flaw, respectively, from the surface of the test body, a = radius of detector, b = radius of flaw. The error is estimated for the case water-steel. It is shown that the problem of an immersion flaw detector can be reduced to that of a contact flaw detector if the parameters of the homogeneous medium (as indicated above) are properly chosen. There are 3 figures and 3 Soviet references.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya (Central Scientific Research Institute of Technology and Machine Building)

Card 2/2

GREBENNIK, V.S.; GREBENNIK, I.L.; YERMOLOV, I.N.

Determination of the dimensions of defects by ultrasonic testing without standard samples. Zav. lab. 29 no.10:1181-1186 '63. (MIRA 16:12)

1. TSentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya.

ACCESSION NR: AP4013305 S/0032/64/030/002/0193/0197

AUTHOR: Yermolov, I. N.

TITLE: Adjusting the sensitivity of an ultrasonic defectoscope

SOURCE: Zavodskaya laboratoriya, v. 30, no. 2, 1964, 193-197

TOPIC TAGS: acoustics, defectoscope, ultrasonic defectoscope, defectoscope tuning, base signal, signal attenuation, defectoscope sensitivity, base signal amplitude, defect signal amplitude, signal detection, sensitivity amplification, sound filtration, sound amplification

ABSTRACT: Experiments were conducted on the tuning of ultrasonic defectoscopes. The instrument sensitivity was evaluated from its ability to detect small defects. These defects were introduced artificially into the material to be tested and had the form of openings with flat bottoms capable of reflecting ultrasonic waves. The method for defectoscope tuning described in this article is based on calculating the ratio of the base signal amplitude to the artificial defect signal. The instrument should be adjusted for a clear reception of the base signal. The entire formula for calculating the minimal defects registered (U_{min}) is derived in three

Card 1/3

ACCESSION NR: AP4013305

steps: 1) the formula for the amplitude (U) of the signal reflected from the defect is determined; 2) the formula for the base signal amplitude (U_1) is derived; 3) the formula for the minimum signal (U_{min}) is written. The values for U_{min} and U_1 are determined by pressing the scanner to the surface of the object being examined. The defectoscope is so adjusted that the height of the base signal on the screen is 10-15 mm. Subsequently, the sensitivity is increased until the structural interference signals (height 10-15 mm) appear between the initial and the base signals. The amplitude (U_n) of these signals is also measured. For best results the defect signal should exceed the interference level by a factor of 1.5 and the formula should be: $U_{min} = U_n + 3.5$ decibels. Orig. art. has: 2 figures and 4 formulas.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya (Central Scientific Research Institute of Technology and Mechanical Engineering)

Card 2/3

ACCESSION NR: AP4013305

SUBMITTED: 00 DATE ACQ: 26Feb64 ENCL: 00

SUB CODE: PH, ML NO REF SOV: 003 OTHER: 000

Card 3/3

YARKOV, I.N.

"Ultrasonic control of welded joints" by A.K. Garvish, Zav. lab. 30 no.5:640 '64. (MIRA 17:5)

SOURCE CODE:

JD/WW/HM

AUTHOR: Paykhman, A. Z.; Yermolov, I. N.

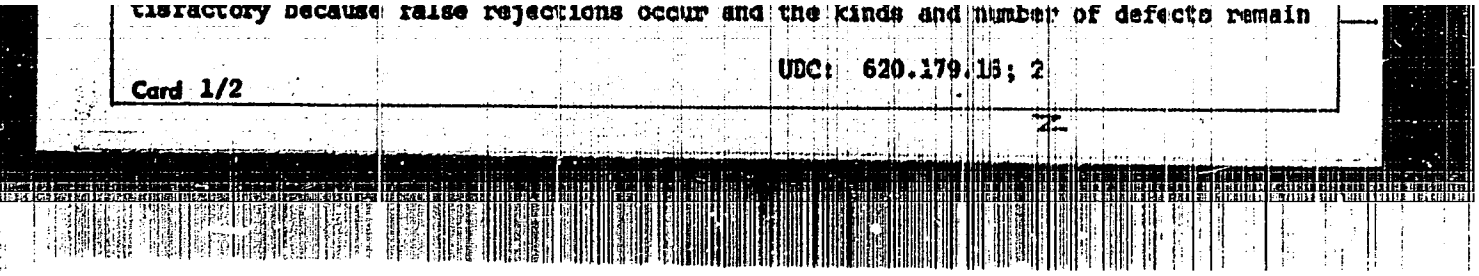
ORG: Ural Branch, ORGRES (Ural'skoye otdeleniye ORGRES); TsNIITMASh

TITLE: Determination of the optimum sensitivity of the ultrasonic defectoscope and the norm governing the evaluation of the quality of welded joints

SOURCE: Defektoskopiya, no. 4, 1965, 65-77

TOPIC TAGS: weld defect, ultrasonic inspection, weld evaluation, microwave spectroscopy, statistical process, probability, game theory, decision theory, quality control, signal processing

ABSTRACT: The authors discuss a method for processing experimental data, in the form of ultrasonic defectoscopic information, which can be used to determine the sensitivity best for the defectoscope and the norms for evaluating the quality, or states, of welded joints. They experimentally confirm the possibility of applying the theory of statistical decisions to the ultrasonic inspection of welded seams of steam pipes. The current method for determining defectoscope sensitivity, which is based on the comparison of the data of ultrasonic inspection with the results of large-scale gross examinations of the portions where defects have been ultrasonically observed, is unsu-



forces subsequent lowering of the sensitivity or control. The authors discuss another approach to the choice of sensitivity, namely as a problem of selecting the optimum system for processing input signals from the viewpoint of statistical decision theory. The operator, who in viewing the signals on the indicator screen tries to ascertain whether they were caused by the action of noise (reflections from admissible interruptions in the continuity, structural obstacles) or contain a useful signal from intolerable defects, must either make a decision or not make one regarding the presence of a defect. The authors make a thorough logical analysis of all the possible states of the tested object, the possible output signals, the possible decisions based on them, and the corresponding probability densities of these various states. The risks, payoffs, tradeoffs, and other value functions are computed in terms of these probabili-

las.

SUB CODE: 13,11/ SUBM DATE: 20Apr65/ ORIG REF: 010/ OTH REF: 000

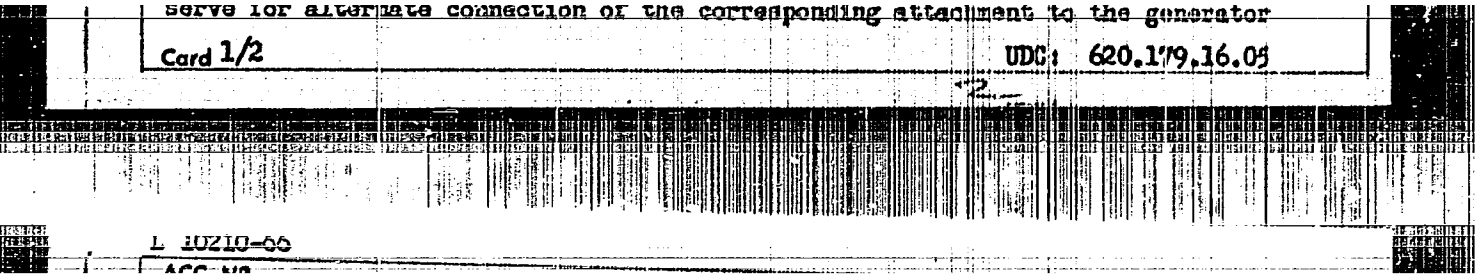
Card 2/2

ACC NR: AP5028505 SOURCE CODE: UR/0286/65/000/020/0082/0082

AUTHORS: Krakovyak, M. F.; Matveyev, A. S.; Yermolov, I. N.

ORG: none

TITLE: A multichannel ultrasonic pulse flaw detector. Class 42, No. 175701 [announced by Central Scientific Research Institute of Technology and Machine Building (Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya)]



serve for alternate connection of the corresponding attachment to the generator

Card 1/2 UDC: 620.179.16.05

L 10210-66

and receiver is reached.

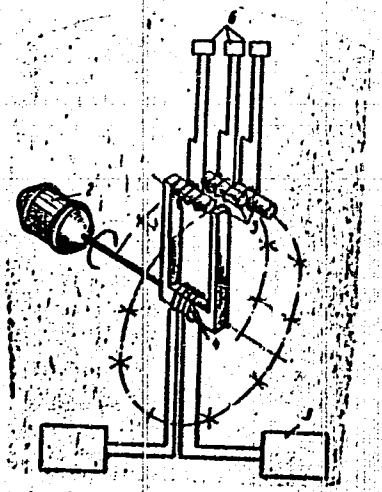


Fig. 1. 1 - Core; 2 - generator; 3 - receiver; 4 - windings; 5 - core with windings; 6 - search attachments.

Orig. art. has: 1 figure.
SUB CODE: 09/14 SUBM DATE: 05Oct64

Card 2/2

L 10209-66 EWT(d)/EWP(e)/EWP(v)/T/EWP(k)/EWP(l)/ETC(m) WW

ACC NR: AP5028548 SOURCE CODE: UR/0286/65/000/020/0162/0162

AUTHORS: Yermolov, I. N.; Krakovyak, M. F.; Vyatskov, L. A. 44 55 44 55 44 55 10 B

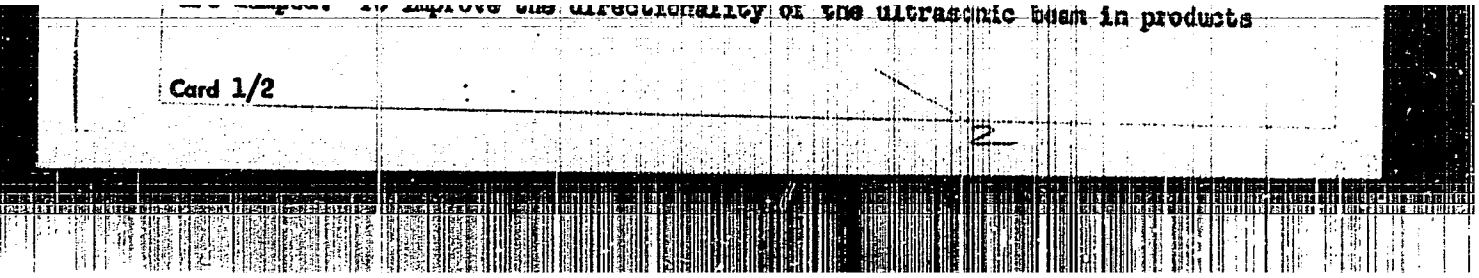
ORG: none 44 55

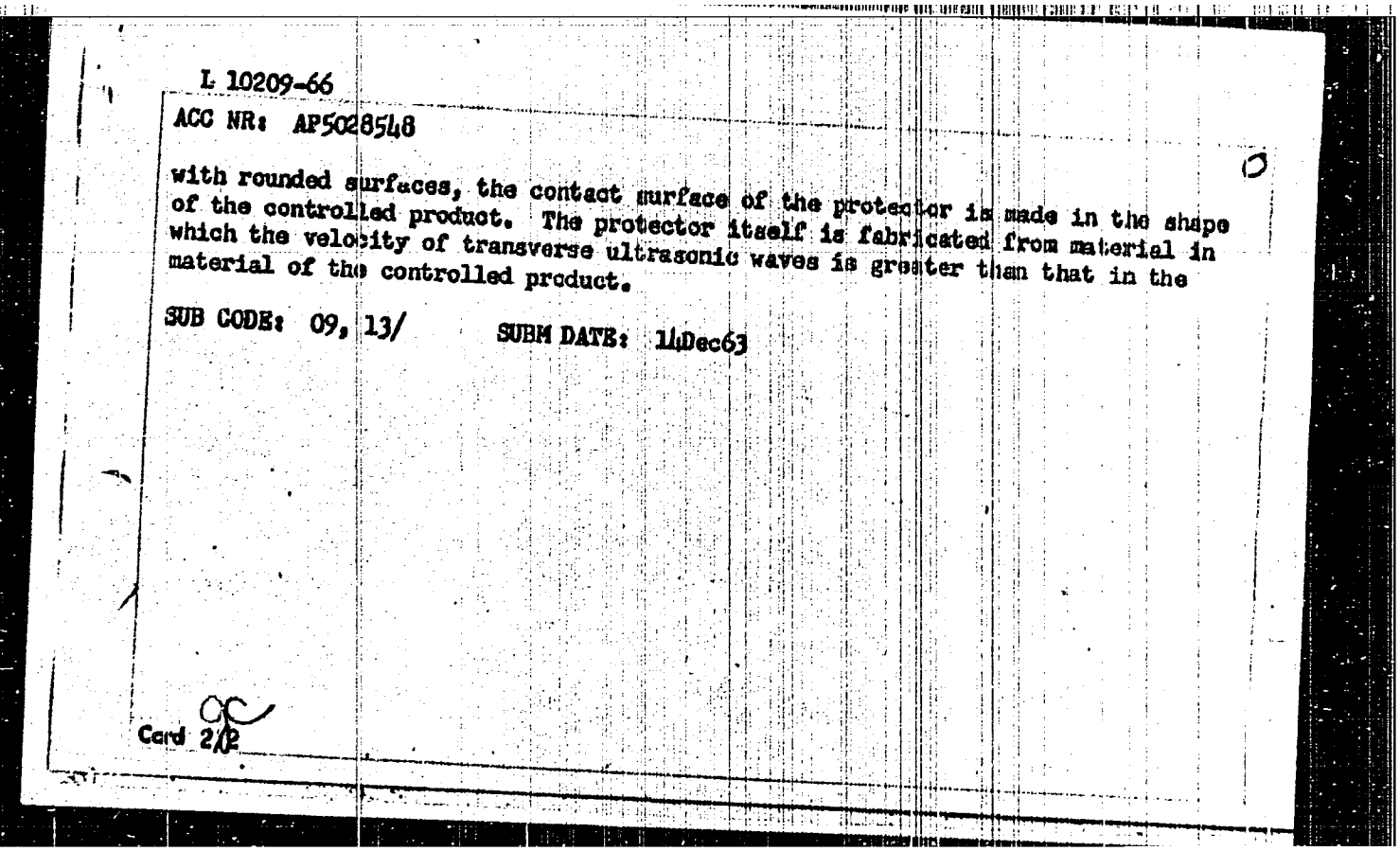
TITLE: Ultrasonic flaw detector probe. Class 42, No. 176664 /announced by Central Scientific Research Institute of Technology and Machine Construction (Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya)/

Byulleten' izobreteniy i tovarnykh znakov, no. 20, 1965, 162

TOPIC TAGS: ultrasonic flaw detector, ultrasonic inspection

ABSTRACT: This Author Certificate presents an ultrasonic flaw detector probe containing a piezoelement, a prism with a catcher, and a protector protecting the prism from wear. To decrease the noise resulting from reflections of ultrasound from the front edge of the protector, the protector is provided with a flange (catcher). The flange covers, for example, the front and top face of the prism and is fabricated as a unit with the protector. The ultrasonic beams originating in the protector and not penetrating the product pass into the prism catcher and





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ACC NR: AP5028548

with rounded surfaces, the contact surface of the protector is made in the shape of the controlled product. The protector itself is fabricated from material in which the velocity of transverse ultrasonic waves is greater than that in the material of the controlled product.

SUB CODE: 09, 13/ SUBM DATE: 14Dec63

Card 2/2

YERMOLOV, I.N., kand.tekhn.nauk; RAYKHMAN, A.Z., inzh.; GREBENNIK, V.S., inzh.

Standardizing the sensitivity of ultrasonic flaw detectors in the control of welded joints. Svar.proizv. no.12:28-30 D '65. (MIRA 18:12)

RAYKHMAN, A.Z.; YERMOLOV, I.N.

Determining the optimum sensitivity of an ultrasonic flaw detector and standards for the evaluation of the quality of welded joints. Defektoskopiia 1 no.4:65-77 '65.

(MIRA 18:12)

1. Ural'skoye otdeleniye Gosudarstvennogo tresta po organizatsii i ratsionalizatsii rayonnykh elektrostantsiy i setey i TSentral'nyy nauchno-issledovatel'skiy institut tekhnologii mashinostroyeniya.

NAZAROV, S.T.; PENKEVICH, Ye.B.; IL'YUSHCHENKO, L.F.; YERMOLOV, I.N.; DEMIN, M.P.; KRUPIN, A.K.; KRYGOV, B.S.; SERGEYEV, A.S., dotsent

Survey of dissertations on the problems of flaw detection. Defektoskopiia no.1:94-96 '65. (MIRA 18:6)

1. Moskovskoye vysshaya tekhnicheskoye uchilishche imeni Baumana (for Nazarov, Penkevich). 2. Moskovskiy oblastnoy pedagogicheskiy institut (for Il'yushchenko). 3. TSentral'nyy nauchno-issledovatel'skiy institut tekhnologii mashinostroyeniya (for Yermolov, Demin). 4. Moskovskiy institut stali i splavov (for Krupin).

ACC NR: AP7002715 (N) SOURCE CODE: UR/0381/66/000/006/0010/0015

AUTHOR: Nechayev, Yu. A.; Yermolov, I. N.

ORG: Volgograd Scientific Research Institute for the Technology of Machine Building (Volgogradskiy NII tekhnologii mashinostroyeniya)

TITLE: Portable ultrasonic pulsed semiconductor thickness gage

SOURCE: Defektoskopiya, no. 6, 1966, 10-15

TOPIC TAGS: ultrasonic inspection, ultrasonic sensor, piezoelectric transducer, pulse signal, transistorized amplifier/ UIT-4 thickness gage

ABSTRACT: The authors describe in detail a pulsed ultrasonic transistorized thickness gage (UIT-4) in which the thickness can be read directly on a galvanometer scale. Unlike resonant gages, it can be used to measure thicknesses of material which is not uniform in thickness, such as pipes with strongly corroded inside surfaces. It consists of a type RS piezoelectric pickup operating at 2.5 MHz, a transistorized amplifier made up of standard blocks, and a glavanometer. The measured thickness range is 3 - 25 mm with accuracy better than ±5%. The thickness is determined from the time elapsed between the application of the pulse and the first received echo. The accuracy can be improved to 1 - 1.5%. Tests were made of the characteristics of the probes at frequencies 1.8, 2.5, 4.0, 5.0, and 6.0 MHz and the 2.5 MHz frequency was found to be most suitable. The thickness gage passed various tests at the Volgograd refinery and was adopted for use there. Orig. art. has: 4 figures.

SUB CODE: 14/ SUBM DATE: 10May66/ ORIG REF: 006/ OTH REF: 004

Card 1/1 UDC: 620.179.16

ACC NR: AP6035504 (N) SOURCE CODE: UR/0135/66/000/011/0031/0033

AUTHOR: Yermolov, I. N. (Candidate of technical sciences); Krakovyak, M. F. (Engineer); Vyatskov, I. A. (Engineer); Rakhmanov, V. V. (Engineer)

ORG: TsNIITMASh

TITLE: Ultrasonic inspection of butt-welded boiler pipe joints

SOURCE: Svarochnoye proizvodstvo, no. 11, 1966, 31-33

TOPIC TAGS: ultrasonic inspection, welding inspection, pipe

ABSTRACT: The authors describe specialized inspection probes developed at the Central Scientific Research Institute of Technology and Machine Building in 1962 for checking welded joints in thin boiler tubes. The improved directivity of ultrasonic waves in these units gives a higher signal-to-noise ratio. The surface of the probe which contacts the tube has a radius of curvature equal to that of the tube. The plexiglass prism used for refracting the ultrasonic oscillations into the welded joint has an angle of incidence of 53-55° so that the angle of refraction of the rays in the metal is 74-80°. Rays propagating at this angle are not extremely sensitive to surface irregularities although they show up welding defects quite well. The two types of probes developed are the ITs-2 and ITs-3. The ITs-3 has somewhat poorer ultrasonic directivity but is small in size so that it may be used for inspection when the distance be-

Card 1/2

UDC: 621.791.762.052:620.179.16:621.181.021

ACC NR: AP6035504

tween pipes is 15-20 mm. The ITs-2 is now being produced by the "Elektrotochpribor" Plant. A special method for calibration of the instruments is described. Tests of the ultrasonic welding inspection method show coincidence with data obtained from cutting the welded seams in 85% of the cases. Flaws are rarely missed. The productivity of the method is 70-150 joints per shift depending on inspection conditions. Thus the method is an improvement over x-ray inspection. Studies show that ultrasonic inspection may be used in quality control of thin pipe joints made by high-frequency welding and also for inspecting joints in pipe made from aluminum and other alloys. Orig. art. has: 3 figures, 1 table.

SUB CODE: 13/ SUBM DATE: None

Card 2/2

YERMOLOV, I.N.; GREBENNIK, V.S.; RAYKHMAN, A.Z.

Reflection of the ultrasound from an angle defect. Zav. lab. 30 no.11:1351-1355 '64 (MIRA 18:1)

1. TSentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya.

L 08947-67 EWT(m)/EWP(t)/ETI/EWP(k) IJP(c) JD/HM

ACC NR: AP6031515 SOURCE CODE: UR/0383/66/000/004/0035/0036

AUTHOR: Rudoy, V. S. (Candidate of technical sciences); Chekmarev, I. A. (Candidate of technical sciences); Sukonnik, I. M.; Geppa, S. A.; Serbin, I. V.; Yermolov, I. V.; Chizh, V. A.; Derbasov, V. I.; Kurilenko, V. Kh.; Kirvalidze, N. S.; Pasternak, N. M.

ORG: none

TITLE: Improving the plasticity of Kh18N10T tube steel by vacuum-arc melting

SOURCE: Metallurgicheskaya i gornorudnaya promyshlennost', no. 4, 1966, 35-36

TOPIC TAGS: austenitic steel, plasticity, ~~steel plasticity improvement~~, vacuum arc, ~~steel~~, VACUUM MELTING, METAL TUBE / Kh18N10T STEEL

ABSTRACT: The plasticity of conventionally arc melted and vacuum arc melted Kh18N10T steel was tested by rolling conical specimens in a piercing mill and by torsion tests, both at 1000—1300C. It was found that in piercing, the critical reduction depends primarily upon the α-phase content. Metal with a high α-phase content cannot be easily pierced at a temperature of 1200C or higher regardless of the melting method. The content of impurities and gases is of secondary importance. In torsion tests, plasticity was found to depend mainly upon the metal purity. Inasmuch as vacuum arc melting yields steel of a higher purity, its plasticity is also higher than that of conventionally melted steel. The increase of α-phase con-

Card 1/2 UDC: 669.15—194.621.774.35

L 08947-67

ACC NR: AP6031515 O

tent up to a certain limit does not substantially affect the plasticity of Kh18N10T steel, but an increase over this limit lowers the steel plasticity. Orig. art. has: 2 figures. [ND]

SUB CODE: 11,13 / SUBM DATE: none/ ORIG REF: 002/

Card 2/2 nst

L 9874-66 EWT(d)/EWT(m)/EWA(d)/EWP(v)/EWP(t)/EWP(k)/EWP(l)/EWP(z)/EWP(b)/EWP(l)

ACC NR: AT5022779 EWA(c) JD/HW SOURCE CODE: UR/3144/64/000/014/0005/0010

AUTHOR: Ostrenko, V. Ya. (Candidate of technical sciences); Yarmolov, I. V. (Engr.) 44,55

ORG: VNKITP

TITLE: Causes of formation of scales on the outer surface of stainless steel hot-rolled pipes

SOURCE: Dnepropetrovsk. Vsesoyuznyy nauchno-issledovatel'skiy i konstruktorsko-tekhnologicheskiy institut trubnoy promyshlennosti. Proizvodstvo trub,

(Collection of articles on the theory and practice of pipe production), 5-10

TOPIC TAGS: pipe, stainless steel, hot rolling, corrosion

ABSTRACT: Difficulties which developed on a 350 pipe rolling mill producing stainless pipes having a diameter up to 325 mm are described. The inner surface of these pipes met the necessary technical requirements, but the outer surface had

Card 1/3

ACC NR: AT5022779

serious defects in the form of scales, made up of thin, 0.5 to 1 mm films. They could be removed only by mechanical processing on special machines and by changing the size of the outer-wall diameter. In order to establish the cause of scale formation under industrial conditions, an experimental investigation of the influence of basic technological factors on the quality of pipes was carried out. The investigation consisted of increasing the content of harmful admixtures - arsenic, lead, tin and copper; increasing the content in the metal of free and combined oxygen, hydrogen, and nitrogen; and increasing the content of sulfur in the fuel used in the continuous furnaces for preheating ingots. The temperature schedule of furnaces, the cooling of working rollers of broaching machines, and the wear of rolling tools were also investigated. The analyses of three leading types of steel were made and no trace of arsenic, lead, or tin were found. The copper content was about 0.2% within the limit of requirements and did not influence the formation of scales. The presence of gases (oxygen, hydrogen, nitrogen) in steel sharply decreased the plasticity of the metal and caused destruction in

compared with the initial ingots. Hydrogen and nitrogen were within the limits of

Card 2/3

L 9874-66

ACC NR: AT5022779

technical requirements. The furnaces operating on natural gas fuel with no sulfite admixture thus had no influence on the scale formation. The furnaces were fired previously with fuel oil. When gas was substituted for oil the furnaces were not reconditioned for the use of gas and the temperature schedule deteriorated. The metal remained for long periods in high-temperature zones with a considerable excess of air, which caused overheating and burning of the outer surface and the scaling of pipes. The cooling of broaching-machine rollers with cold water did not seem to influence the formation of scales nor did the wear of rolling tools. The following measures were recommended: Decrease the total time of preheating the ingots to 10 - 12 min per cm of the ingot diameter. Decrease the temperatures in the first zone to 1000 C, in the second zone to 1180-1190 C; in the third zone to 1190-1200 C. Decrease the temperature of the ingot center when preheating. Explore the possibilities of conducting the preheating process in a neutral or lightly oxidizing atmosphere. Orig. art. has: 3 figures.

SUB CODE: 11 SUBM DATE: none/ NR REF SOV: 002/ OTHER: 000

13

Card 3/3

ROSHDESTVENSKIY, G.N.; MINCHENKO, B.G.; YERMOLOV, K.M.

Automatic frequency meter with digital reading. Izm.tekh. no.10:15-17 O '65. (MIRA 18:12)

YERMOLOV, K.V., starshiy nauchnyy sotrudnik

Effectiveness of rolling bare fallows in summer. Zemledelie 7 no.6:80-81 Je '59. (MIRA 12:8)

1. Chelyabinskaya gosudarstvennaya sel'skokhozyaystvennaya opytnaya stantsiya.

(Fallowing) (Tillage)

YERMOLOV, L.N.

538

AUTHOR: Ermolov, L.N. (G'ostekhnika S.S.S.R.) and Chistyakov, A.N., Candidate of Technical Sciences (Lensovet Technological Institute in Leningrad).

TITLE: On the application of a pipe furnace in a benzole plant, and on the utilisation of heat of debenzolised oil. (O primenenii trubchatoy pechi v benzol'nom otdelenii i ispol'zovanii tepla obezbenzolennogo masla.)

PERIODICAL: "Koks i Khimiya" (Coke and Chemistry), 1957, No. 4, p. 62, (U.S.S.R.)

ABSTRACT: Extract from Gas Journal, 1956, v.287, No.4858, p. 466.

Lensovet Technol. Inst.
Leningrad

YERMOLOV, L.S.; ISICHENKO, I.A.; POLISSKIY, A.Ya.; TROFIMOV, V.L.; LAZARENKO, A.I., red.

[Repairing parts of SMD engines] Vosstanovlenie detalei dvigatelei SMD. [By] L.S.Ermolov i dr. Kiev, Urozhai, 1965. 377 p. (MIRA 18:8)

YERMOLOV, L.S., insh.-mekhanik

Determining the measurable wear of plowshares. Mekh.sil'. hosp. 10 no.12:29 D '59. (MIRA 13:3)
(Plows--Wear)

YERMOLOV, L. S., Cand Tech Sci -- (diss) "Research into the wear and tear of cutting implements of soil-treating machines used on various soils." Khar'kov, 1960. 20 pp; (Ministry of Higher and Secondary Specialist Education Ukrainian SSR, Khar'kov Motor Vehicle and Road Inst); 150 copies; free; (KL, 28-60, 160)

YERMOLOV, Nikolay Aleksandrovich; ROSHCHINA, L., red.; SOLOV'YEVA, L., mlad. red.; MOSKVINA, R., tekhn. red.

[The "Trojan Horse" of neocolonialism; United States policy in training specialists for underdeveloped states] "Troianskii kon'" neokolonializma; politika SSHA v oblasti podgotovki kadrov dlia razvivaiushchikhsia gosudarstv. Moskva, Sotsekgiz, 1963. 69 p. (MIRA 17:1)

BOIROV, V.I., inzhener; YERMOLOV, M.G., inzhener; BOGACHEKV, V.I., inzhener.

General overhaul of a large capacity tilting open hearth furnace.
Stal' 16 no.3:266-268 Mr '56. (MLRA 9:7)

1.Zhdanovskoye stroitel'noye upravleniye tresta YUzhdomnaremont.
(Open hearth furnace)

TERMOLOV, M. G.

PA - 2425

AUTHOR: BEDROV,V.I., YERMOLOV,M.G., ROGACHEV,V.I., VINOGRADOV,V.M., ALEXNIKOV,A.I., BOYARINOVA,A.P., MALOV,S.I.

TITLE: General Overhauling of a Blast Furnace with Keeping Part of the Brick Lining Intact. (Kapital'nyy remont domennoy pechi s sokhraneyem chasti kladki, Russian) (1 Illustration)

Non-Uniformity of Metal Heating in the Electric Arc Steel Furnace. (Neravnomernost' nagreva metalla v dugovoy staleplavil'noy pechi, Russian) (2 Tables, 2 Illustrations and 2 Citations from Slav Publications)

Mechanisation of Burden Charging at Smelting High Silicon Ferro-alloys. (Mekhanizatsiya zagruzki shikhty pri vyplavke vysokokremnistykh ferrosplavov, Russian) (7 Illustrations)

The Reasons for Insufficient Ductility of Ferrochromealuminum Resistance Alloys.(Prichiny neudovletvoritel'noy plastichnosti zheleznokhromoalyminiyevykh splavov soprotivleniya, Russian) (2 Tables and 3 Illustrations)

PERIODICAL: Stal', 1957, Vol 17, Nr 3, pp 274-280 (U.S.S.R.)

Received: 5 / 1957 Reviewed: 5 / 1957

ASSOCIATION: The Administration of the "Yushdonmaremont" Trust of Zhdanov. Central Laboratory for Automatics. Ferroalloys Plant of Kuznetsk. "Elektrostal'"-Works.

PRESENTED BY:

SUBMITTED:

AVAILABLE: Library of Congress

Card 1/1

AFANAS'YEVA, L.M.; YERMOLOV, N.I., direktor.

"Pelenten" therapy of thrombophlebitis. Sov.med. 17 no.7: 19-20 Jl '53. (MLRA 6:8)

1. TSentral'naya poliklinika Ministerstva zdravookhraneniya SSSR.
(Dicumarol) (Phlebitis) (Thrombosis)

YEROFALOV, N.L.

Honorable title. Put' i put.khoz. 8 no.3:33 '64. (MIRA 17:3)

1. Glavnyy insh. distantsii, stantsiya Perm' II, Sverdlovskoy dorogi.

YERMOLOV, O.R.; KUZNETSOV, N.P., otvetstvennyy red.

[Sh.S.Aksel'rod, the constructor; the "Leninskaia iskra" factory] Konstruktor Sh.S.Aksel'rod; zavod "Leninskaia iskra." Moskva, TSentr. biuro tekhnicheskoi informatsii, 1957. 18 p. (MIRA 11:4) (Machinery)

YERMOLOV, P F

48-22-2-15/17

AUTHORS: Gustova, L. V., Dzhelepov, B. S., Yermolov, P. F., Chubinskiy, O. V.

TITLE: Hard γ-Radiation From Na^{24} (Zhestkoye γ-izlucheniye Na^{24})

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1958, Vol. 22, Nr 2, pp. 211 - 215 (USSR)

ABSTRACT: As an introduction it is referred to already known investigation results (Refs 1 - 15). In this paper the γ-radiation from Na^{24} in the range of energies above 3 MeV with the application of a γ-hodoscope was investigated. Methods of measurement and experimental equipment were used according to data from references 16 and 17. The basic results from Soviet research data from the years 1955 and 1956. In the chapter: The description of experiments it is stated that here a series of experiments was conducted with various sources and with varying magnetic fields. The preparations NaCl and Na_2CO_3 served as sources, being irradiated with slow neutrons. The experiments were divided into two groups. 1) The γ-radiation of Na^{24} was subjected to a thorough investigation with respect to its energetical composition at from 3 + 5,6 MeV. The

Card 1/3

Hard γ-Radiation From Na^{24}

magnetic field was selected in such a way, that the intensity line at $h\nu$ = 2,75 MeV could not be recorded by the apparatus. The measurements were conducted at H = 1360, 1500 and 1675 with a cylindrical counter and at H = 1520 Oe with a rectangular counter. The results from the first group: a) The line $h\nu$ = 3,85 $\pm$ 0,04 MeV was established in the γ-spectrum of Na^{24}. b) The upper limit of the relative intensities of the γ-transitions are compiled in the given table. In the chapter: Evaluation of results: the special characteristics of the β-decay are given, which, in an indirect way substantiates the hypothesis by J. Newton on the possibility of a β-decay of Na^{24} on the level 5,22 MeV of Mg^{24} with a subsequent emission of γ-quanta ($h\nu$ = 3,85 MeV). The final conclusions lead to the assumption that the intensity of the soft β-spectrum with a limit energy of $\sim$ 300 keV is the same as the intensity of the γ-transition, that is to say, 4.10^{-2} % because the other γ-transitions from the level 5,22 MeV cannot be observed here. Therefore the value lg ft = 6,9 was assumed for the soft β-transition. This resutl is given here to represent a permitted β-transition, which is somewhat slowed down by a K-prohibition. The probable value for K = 2 (Ref 21) at the level 5,22 MeV of

Mg^{24}. From this the probable values of the spins 3, 4 and 5 were taken. If I = 4 or 5 the γ-transition from the level 5,22 must pass through the level 4,12 MeV (4^+). Because, however, γ-rays (hν = 1,10 MeV) are unknown, it was assumed here that I = 3 is in accordance with the considerations by Newton. There are 5 figures, 1 table, and 21 references, 5 of which are Soviet.

AVAILABLE: Library of Congress

1. Sodium-Gamma radiation

Card 3/3

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

Card 1/3

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 $\varphi(\alpha) \sim$ 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

21(8) SOV/56-36-4-17/70

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

TITLE: On the Observation of a $\pi^0 \rightarrow e^- + e^+ + e^- + e^+$-Decay (O nablyudenii raspada $\pi^0 \rightarrow e^- + e^+ + e^- + e^+$)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 4, pp 1080-1084 (USSR)

ABSTRACT: In the present paper the authors give a very detailed report on the observation of a charge exchange scattering $\pi^- + p \rightarrow \pi^0 + n$ followed by the decay of the π^0-meson into 2 electron pairs. Traces indicating such reactions were found on a stereoscopic photograph, which had been taken in a hydrogen diffusion chamber (hydrogen pressure 25 atm) in the course of $(\pi^- p)$-scattering investigations. The chamber had an outer diameter of 380 mm and a sensitive volume of 6-7 cm at a temperature gradient of 7°C/cm. The chamber was located in a constant magnetic field of 9000 G, the inhomogeneity of which amounted to not more than $\pm 3.5\%$. The photographs were taken by means of a stereoscopic photographic camera with two GOI Gelios-37 object lenses (f = 62 mm); the 35 mm film Pankhrom-Kh had a sensitivity

Card 1/3

On the Observation of a $\pi^0 \rightarrow e^- + e^+ + e^- + e^+$-Decay

of 1000 GOST-units. The pictures were taken through the external glass wall of 25 mm thickness; the object lenses had a resolving power of 50 lines/mm in the visual field center. The π^--meson beam had a mean energy of 160 Mev. Irradiation was carried out on the synchrocyclotron of the United Institute for Nuclear Research. Among 90,000 stereophotographs 1400 cases of elastic $(\pi^- p)$-scattering were found, and 26 cases of charge exchange scattering followed by $\pi^0 \rightarrow e + e + \gamma$-decay were discovered. (Ref 6). Among 25,000 π^0-decays of the usual type $\pi^0 \rightarrow 2\gamma$, one case of a $\pi^0 \rightarrow e^- + e^+ + e^- + e^+$-decay was found. By means of momentum- and angular measurements an estimate of the π^0-mass was given as amounting to (141 ± 8)Mev, which may be in agreement, within the limits of measuring errors, with that of 135 Mev which is today generally assumed. Angular determination in the rest system of the π^0-particle gave the following results for double pair production: Angle between e^- and e^+: $(7 \pm 2)^\circ$ at momenta of 56.1 and 11.9 Mev/c, and $(12 \pm 4)^\circ$ at 9.0 and 58.7 Mev/c. The angle between the planes in which the pair tracks were located, is given as $< 37^\circ$. Finally, other possibilities of interpreting the results obtained are discussed,

On the Observation of a $\pi^0 \rightarrow e^- + e^+ + e^- + e^+$-Decay

they need, however, not to be considered as very probable. The authors in conclusion thank D. W. Joseph (Ref 3) for placing a preprint at their disposal, D. V. Shirkov for discussions, and L. I. Krasnoslobodtseva, T. S. Sazhneva and Yu. L. Saykina for evaluating the films. There are 2 figures, 3 tables, and 10 references, 3 of which are Soviet.

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

SUBMITTED: December 25, 1958

Card 3/3

21 (7)

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

SOV/56-37-3-54/62

TITLE: The β-Decay of the Negative π-Meson

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 3(9), pp 878 - 880 (USSR)

ABSTRACT: Hitherto only the β-decay of stopped positive mesons has been investigated (Refs 1-6); in references 5 and 6 the relative probability of two such processes was determined as amounting to $(\pi^+ \to e^+ + \nu)/(\pi^+ \to \mu^+ + \nu) \approx 1 \cdot 10^{-4} \pm (20\text{-}40\%)$, which agrees with the theoretically calculated value for V-A interaction. Theoretically, the same value would have to be obtained for the analogous ratio of negative meson decays. On the search for $\pi^- \to e^-$-decays, the authors of the present "Letter to the Editor" systematically investigated the material of 130- and 160 Mev π^--meson scatterings on protons. A triple evaluation of 100,000 stereophotographs yielded as a result 29 decays in which the secondary particles deviated by $\theta > 20^0$; (the maximum angle of deviation in π - μ-decay at 130 Mev was 10^0). Of these,

Card 1/3

26 cases were identified as $\mu^- \rightarrow e^-$ and 3 as $\pi^- \rightarrow e^-$ decays. Figure 1 shows the momentum distribution of the electrons of the two decay forms in the rest system of the respective primary particle. A photograph of a $\pi^- - e^-$ + ν-decay (found in a diffusion chamber at 9,000 G) is shown by figure 2. The results obtained by the three $\pi^- - e^-$-decays found are given in a table:

	Laboratory system			Rest system of the π^--meson	
	π^- momentum (Mev/c)	e^- momentum (Mev/c)	θ(°)	e^- momentum (Mev/c)	θ (in degrees)
1.	228 ± 10	104 ± 8	42.5 ± 0.5	74 ± 7	108 ± 2
2.	207 ± 11	103 ± 3	42 ± 0.5	71 ± 4	102 ± 2
3.	266 ± 6	156 ± 26	26 ± 0.5	68 ± 11	86 ± 1

It is found that the identification of these processes is most probably correct, because the maximum electron momentum in the μ^--rest system amounts to only 52.9 Mev/c, whereas that measured in this case is considerably higher. Therefore, it is not possible that $\mu^- \rightarrow e^-$-decays are concerned. Also other processes of this kind, as e.g. $\pi^- \rightarrow \mu^- \rightarrow e^-$-decay during flight, with a

short μ^--track are improbable. The relative probability of these processes was determined as amounting to $(\pi^- \to e^- + \bar{\nu})/(\pi^- \to \mu^- + \bar{\nu}) = (1.2 \pm 0.7) \cdot 10^{-4}$, a value which actually, within the error limits agrees with the values calculated on the basis of V-A interaction for the corresponding positive decay. The authors finally thank T. S. Sazhneva, L. I. Krasnoslobodtseva, and Yu. L. Saykina for their assistance in evaluating the plates. There are 2 figures, 1 table, and 11 references, 3 of which are Soviet.

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

SUBMITTED: June 13, 1959

YERMOLOV, P.F.

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

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

TITLE: Elastic Scattering of 128- and 162-Mev π^--Mesons by Protons

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 3, pp. 734-746

TEXT: The article under review was read at the Sixth Meeting of the Scientific 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, 1959. This article contains the results of studies of the elastic scattering of negative 128- 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 670-Mev proton beam of the synchrocyclotron of OIYaI. About 90,000 stereophotographs were taken. The diffusion chamber is schematically shown in Fig. 2. The chamber operated at pressures of up to 25 atm and had an inside temperature gradient of 7 deg/cm. The sensitive layer was 6 - 7 cm high. A solenoid magnet of the

Card 1/4

Elastic Scattering of 128- and 162-Mev π^--Mesons by Protons

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type MS-4A was used to generate a constant magnetic field (9,000 gauss). This electromagnet was produced at NII EFA by N. E. Strel'tsov, A. V. Ugamm, N. N. Indyukov, Yu. P. Semenov, V. I. Sergeyeva, and A. G. Studennikova. D. P. Vasilevskaya and Yu. N. Denisov supplied a magnetometer based on the Hall effect. The negative pion beams had an energy of 128±8 and 162±10 Mev, the sum of the μ^--meson and electron admixture amounted to (16±2)%. The pictures were evaluated twice. The efficiency of this stereoscopic evaluation was 97 per cent. 379 cases of scattering at 128 Mev and 1,113 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 $L = 15.36\ T\delta/\cos\alpha_m$ (T - total number of tracks, 15.36 is the width of the area S (Fig. 4), α_m the mean angle of slope of the tracks with respect to the edge of S, $\delta = 1$). Thus it holds that $\sigma_{exp} = N\beta/Ln_{eff}(1-q)r$ (N - number of scattering events, n_{eff} - effective

Card 2/4

Elastic Scattering of 128- and 162-Mev π^--Mesons by Protons.

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number of hydrogen nuclei per cm^3, β - a coefficient, q - the μ^-- and electron admixtures in the beam, r - the efficiency of evaluation of the pictures). For the two energies at which measurements were made, Table 1 lists all the quantities appearing in these formulas, as well as the root-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 $d\sigma/d\Omega$ for 128 and/or 162 Mev. In the following, the authors discuss numerous details concerning the calculation and application of the necessary corrections. For both energies the total elastic scattering cross sections amounted to $(12.8\pm1.0).10^{-27}cm^2$ and $(21.4\pm1.2).10^{-27}cm^2$. Here, the angular-distribution formula $d\sigma/d\Omega = a + b\cos\Theta + c\cos^2\Theta$ holds, and the coefficients a,b,c for both energies are given on p. 743. Fig. 8 shows the two curves of angular distribution. The following relation holds for the differential forward scattering cross sections: $d\sigma(0)/d\Omega = a + b + c = (2.20 \pm 0.32).10^{-27}cm^2/steradian$ (for 128 Mev) and $(3.73 \pm 0.32).10^{-27}cm^2/steradian$ (for 162 Mev). At these

Elastic Scattering of 128- and 162-Mev π^--Mesons by Protons

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

energies the real parts of the forward scattering amplitudes (in the center-of-mass system) in $\hbar/m_\pi c$ units amount to 0.261 ± 0.031 and 0.216 ± 0.038, 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. Meshcheryakov for their discussions, L. I. Krasnoslobodtseva, T. S. Sazhneva, and Yu. L. Saykina for their assistance, as well as A. A. Andrianova and G. D. Malysheva for their calculations. Further, N. P. Klepikov, V. G. Zinov, A. D. Konin, S. M. 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 18, 1959

Card 4/4

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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 $\pi^0 \longrightarrow e^- + e^+ + \gamma$ are discussed. These events were detected in a diffusion chamber exposed to π^- meson beams with energies 128 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 $2\rho_0 = w(\pi^0 \longrightarrow e^- + e^+ + \gamma)/w(\pi^0 \longrightarrow 2\gamma) = 0.0118$. In this connection they discuss

Card 1/3

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

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 $\pi^0 \longrightarrow e^- + e^+ + e^- + e^+$. 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.

Card 2/3

83713

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

S/056/60/038/004/006/048
B013/B070

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

SUBMITTED: September 18, 1959

X

Card 3/3

BUDAGOV, Yu.A.; YERMOLOV, P.F.; KUSHNIRENKO, Ye.A.; MOSHALEV, 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)

YERMOLOV, P.F.

(4)

DZHELEPOV, V.P. FRIDL, M., GERSHTEYN, S.S., KATYSHEV, Yu. V., MIKAELEV, V.I., YERMOLOV, P. F.

"Experimental Investigation of Mu^- Mesonic Atomic Processes in Gaseous Hydrogen"

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

Joint Inst. for Nuclear Research
Lab. of Nuclear Problems
Lab. of Theoretical Physics

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

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

3h640
S/056/62/042/002/022/055
B108/B104

26.2212
24.6200

AUTHORS: Dzhelepov, V. P., Yermolov, P. F., Kushnirenko, Ye. A., Moskalev, V. I., Gershteyn, S. S.

TITLE: Experimental study of μ^--mesatomic processes in hydrogen gas

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 2, 1962, 439 - 449

TEXT: The experimental study of the capture of a negative meson by a proton $\mu^- + p \rightarrow n + \bar{\nu}$ can give important information on weak interactions. The probability of this process depends on the spin state of the hyperfine structure of the hydrogen muomic atom as well as on the mesomolecule production probability $\lambda_{pp\mu}$. The authors give results of experiments conducted at the OIYaI (see Association entry) synchrocyclotron with a diffusion chamber containing technically pure hydrogen and placed in a constant magnetic field of 7200 oe. The method of investigation is based on the fact that the neutral $p\mu$ mesic atom after its formation covers a certain distance

Card 1/3

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Experimental study of ...

before the decay of the μ-meson. The principal difficulty is the presence of O and C nuclei the protons of which may transfer μ-mesons. At a hydrogen pressure of 22.7 at, the cross section σ_{pp} of elastic scattering of $p\mu$ mesic atoms from protons is $(1.7^{+0.4}_{-0.5}).10^{-19}$ cm^2. The probabilities of μ-meson transfer from protons to deuterons, λ_d, and to complex nuclei (C and O), λ_Z, as extrapolated to the density of liquid hydrogen are $(0.95^{+0.54}_{-0.2?}).10^{10}$ sec^{-1} and $(1.2^{+0.8}_{-0.5}).10^{10}$ sec^{-1}, respectively. The production probability $\lambda_{pp\mu}$ in liquid hydrogen is $(0.6^{+0.8}_{-0.5}).10^{6}$ sec^{-1}. The λ values agree well with theory. σ_{pp} is near the theoretical value calculated without considering the hyperfine structure of the $p\mu$ mesic atom. At present experiments are carried on in order to improve the experimental values of the above quantities, in particular of $\lambda_{pp\mu}$. The authors thank Ya. B. Zel'dovich for discussions as well as T. N. Tomilina, Ye. I. Rozanov, Ye. M. Kuchinskiy, A. V. Brzhestovskaya, N. P. Vasilistov, Ye. A. Kurchevskaya, L. Krasnoslobodtseva, T. Sazhneva, and Yu. Saykina for help. There are 4

Card 2/3

S/056/62/042/002/022/055
B108/B104

Experimental study of ...

figures, 1 table, and 18 references: 9 Soviet and 9 non-Soviet. The four most recent references to English-language publications read as follows: H. Primakoff. Rev. Mod. Phys., 31, 802, 1959. S. Weinberg. Phys. Rev. Lett., 4, 575, 1960. L. Wolfenstein, V. L. Telegdi. Proc. of the 1960 Ann. Intern. Conf. on High Energy Physics at Rochester, Publ. Univ. Rochester, 1961, pp. 529, 713; Ta-Yon Wu et al. Nucl. Phys., 16, 432, 1960; J. G. Fetkovich et al. Phys. Rev. Lett., 4, 570, 1960; M. Shiff. Preprint EFINS - 61-33. Report 351, June, 1961.

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

SUBMITTED: October 26, 1961

Card 3/3

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27865
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

Card 1/2

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 $V_R = -18 \pm 7$ 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, 1958). 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 8 figures and 4 tables.

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

SUBMITTED: December 29, 1961

Card 2/2

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.; [redacted].

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

Card 1/3

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

Card 2/3

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 5332-66 EWT(m)/T/EWA(m)-2

ACCESSION NR: AP5021098 UR/0056/65/049/002/0393/0405

AUTHORS: Dzhelepov, V. P.; Yermolov, P. F.; Fil'chenkov, V. V.

TITLE: Scattering of pμ atoms by protons

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 2, 1965, 393-405

TOPIC TAGS: mu meson, meson interaction, proton interaction, elastic scattering, scattering cross section, proton scattering

ABSTRACT: This is a continuation of an earlier investigation (ZhETF v. 42, 439, 1962) of the reaction pμ + p → pμ + p. In the present work this process was investigated in greater detail for the purpose of determining the spin state of the pμ atom prior to muon decay or muon capture by the proton. The experimental equipment and procedure were similar to that used previously, and the statistics accumulated were increased by one order of magnitude. The cross sections were determined from the analysis of the distributions of the number of

Card 1/3

0901/1080

L 5332-66
ACCESSION NR: AP5021098

events of a function of the pμ-atom mean free path under different operating conditions. The mean free path distributions of the pμ atoms were obtained with the aid of a diffusion chamber at various hydrogen densities and impurity (carbon, oxygen) concentrations. An analysis shows that the pμ atom lifetime can be reconciled with theory by assuming for the pμ + p system an effective cross section $1.73 \pm 0.19 \times 10^{-19}$ cm^2. The cross section for the elastic scattering of pμ atoms by protons is found to be $1.67 \pm 0.30 \times 10^{-19}$ cm^2 for the singlet spin state of the pμ atom. This is larger than predicted by the theory, and may be due to the existence of a low energy virtual level in the pμp system. The most probable transition rate from the triplet state of the pμ atom to the singlet state is $\sim 10^{10}$ sec^{-1}, with complete depolarization except when the pressure reaches the order of an atmosphere. The rate of formation of ppμ-mesic molecules in the para state is negligibly small compared with the ortho state. It is also shown that the transition of the muon from the proton to the carbon and oxygen nuclei occurs predominately on the high Qμ and Qμ

Card 2/3

L 5332-66

ACCESSION NR: AP5021098

4

atomic orbitals, and the probability for direct transition to the 1s level is less than 3 per cent. [The authors thank S. S. Gershteyn for interest and valuable discussions, and F. L. Shapiro and K. Parlinskiy for a discussion of problems connected with the Krieger-Nelkin method.] Orig. art. has: 7 figures, 15 formulas, and 4 tables

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

SUBMITTED: 03Mar65 ENCL: 00 SUB CODE: NP

NR REF SOV: 009 OTHER: 008

Card 3/3 mk

L 11964-66 EWT(m)/T/EWA(m)-2

ACC NR: AP5026592 SOURCE CODE: UR/0056/65/049/004/1042/1048

AUTHORS: Basiladze, S. G.; Yermolov, P. F.; Oganesyan, K. O.

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

TITLE: Measurement of the rate of transfer of a muon from a pμ atom to nuclei of other elements

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 4, 1965, 1042-1048

TOPIC TAGS: muon, meson interaction, nuclear interaction, carbon, argon, xenon

ABSTRACT: The purpose of the investigation was to measure the absolute muon transfer rate as a function of the nuclear charge (Z) for a wide range of Z. The transfer rate of a negative muon from a pμ atom to the nuclei of carbon, argon, and xenon was measured with a gas target filled with hydrogen to a pressure of 45 atm and with scintillation counters. The measurement was based on determining the counting rate of the decay electrons produced in the decay $\mu^- \rightarrow e^- + \nu + \nu$ as a function of the concentration of the atoms. The apparatus and the steps taken to

Card 1/2

eliminate the background are described. The transfer rates obtained (referred to the density of normal liquid hydrogen) were 5.1 ± 1.0, 12.0 ± 1.9, and 44.6 ± 3.6 x 10^{10} sec^{-1} for carbon, argon, and xenon, respectively, and were found to be proportional to the charge Z. The results are compared with those by others and are found to be in satisfactory agreement with theory. Deviations from results by others are briefly discussed. Authors thank V. P. Dzhelepov [12,55] for assistance and interest in the work, and S. S. Gershtein for valuable discussions.

Orig. art. has: 5 figures, 6 formulas, and 1 table.

SUB CODE: 20/ SUBM DATE: 12May65/ NR REF SOV: 008/ OTH REF: 004

Card 2/2

L 22977-66 EWT(m)/T

ACC NR: AP6009713 SOURCE CODE: UR/0386/66/003/004/0153/0166

AUTHORS: Basiladze, S. G.; Yermolov, P. F.; Oganesyan, K. O.

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

TITLE: Cross section for the production of charged pions in (n-p) collisions at a neutron effective energy 585 kev

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 4, 1966, 153-166

TOPIC TAGS: particle collision, neutron scattering, proton scattering, scattering cross section, pi meson

ABSTRACT: The authors determined the cross sections for the production of charged pions in the reactions

$$n + p \rightarrow \pi^+ + n + n,$$
$$n + p \rightarrow \pi^- + p + p$$

Card 1/4

L 22977-66
ACC NR: AP6009713

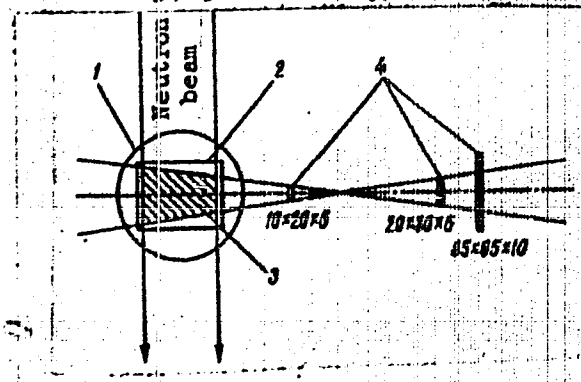

Fig. 1. Diagram of the experiment. 1 - Dewar, 2 - appendix, 3 - effective volume of hydrogen, 4 - telescope crystals.

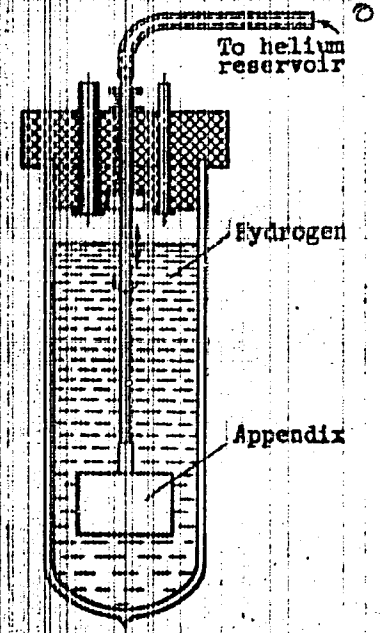

Fig. 2. Diagram of liquid-hydrogen target.

Card 2/4

L 22977-66
ACC NR: AP6009713

with an aim at improving the accuracy of the results obtained in earlier work by one of the authors (Oganesyan, with V. P. Dzhelepov et al. Proc. 1960 Ann. Intern. Conf. on High Energy Physics, Rochester, 1960). The new measurements were made with the aid of a scintillation telescope (Fig. 1) and a liquid-hydrogen target in the form of a Dewar of special construction (Fig. 2). The pions of both polarities produced in the n-p collisions were detected with a scintillation telescope placed at 90° to the neutron beam. The difficulty of these measurements lies in the smallness of the pion yield and accordingly in the large corrections necessitated by the various backgrounds, the values of which were determined in supplementary tests. The calculated cross sections were corrected for the electron admixture, for pions with energy below the registration threshold, and for the difference between the effective volume of the hydrogen at 90° and 60°. The differential cross section was found to be $(1.34 \pm 0.16) \times 10^{-28}$ and the total cross section $(2.70 \pm 0.35) \times 10^{-27}$ cm^2/sr for the summary production of $\pi^{\pm}$ mesons at 90° (l.s.). The results agree with the earlier measurements. The authors thank V. P. Dzhelepov for collaboration and discussions, and V. S. Kiselev,

Card 3/4

L 22977-66
ACC NR: AP6009713

V. B. Flyagin, Yu. M. Kazarinov, and Yu. N. Simonov for discussions.
Orig. art. has: 2 figures and 3 formulas.

SUB CODE: 20/ SUBM DATE: 02Jan66/ ORIG REF: 002/ OTH REF: 001

Card 2/2 4/4

L 29617-66 EWT(m)/T

ACC NR: AT6013375 SOURCE CODE: UR/3202/65/000/508/0001/0007

AUTHOR: Basiladze, S. G.; Yermolov, P. F.; Oganesyan, K. O. 48 43 B+1

ORG: none 19

TITLE: Cross section for production of charged pi-mesons in (n-p)-collisions at an effective neutron energy of 585 Mev

SOURCE: Dubna. Ob"yedinennyy institut yadernykh issledovaniy. Doklady, R-2508, 1965. Secheniye obrazovaniya zaryazhennykh Pi-mezonov v (n-p)-soudareniyakh pri effektivnoy energii neytronov 585 Mev, 1-7

TOPIC TAGS: scintillation detector, pi meson, particle production, collision cross section

ABSTRACT: A scintillation telescope and a liquid hydrogen target in a specially designed Dewar flask were used in measuring the cross section for production of charged pions in the reactions:

$$n + p \rightarrow \pi^{+} + n + n \,, \quad n + p \rightarrow \pi^{-} + p + p$$

Diagrams are given showing the experimental setup and the liquid hydrogen target. The neutron energy was 585 Mev. The problem of background interference is discussed. The

Card 1/2

L 29617-66
ACC NR: AT6013375

differential cross section for total production of π^2-mesons at an angle of 90° in the laboratory system is $(1.34 \pm 0.16) \cdot 10^{-28}$ cm^2/sterad, and the corresponding full cross section is $(2.70 \pm 0.35) \cdot 10^{-27}$ cm^2/sterad after all necessary corrections to the measurements have been made. The indicated errors are due to absolute normalization of the cross section and uncertainity in the calculated corrections. The cross section as determined in this paper agrees with the data in the literature. The authors take this opportunity to thank V. P. Dzhelepov for cooperation, constant interest and discussions during completion of this work. The authors thank V. S. Kiselev, V. B. Flyagin, Yu. M. Kazarinov and Yu. N. Semonov for consultation. Orig. art. has: 2 figures, 3 formulas.

SUB CODE: 18/ SUBM DATE: 22Dec65/ ORIG REF: 002/ OTH REF: 001

Card 2/2

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 $d\mu + p \rightarrow He^3 + \mu^-$ and $d\mu + d \rightarrow t + p + \mu^-$ 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 $d\mu + p \rightarrow pd\mu \rightarrow He^3 + \mu^-$, and $d\mu + d \rightarrow dd\mu \rightarrow p + t + \mu^-$ 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

2

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 $\lambda_{pd\mu} = (1.8 \pm 0.5) \cdot 10^8$ sec^{-1}, $\lambda_{dd\mu} = (0.75 \pm 0.11) \cdot 10^8$ 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

2

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 pb

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.4:1242-1256 O '64. (MIRA 18:1)

1. Ob"yedinennyy institut yadernykh issledovaniy.

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[Production norms for design, planning and surveying work paid according to piece rate wage system] Normy vyrabotki na proektnye i izyskatel'nye raboty, oplachivaemye sdel'no. Moskva, Transzheldorizdat. Pt.18.[Railroads, bridges, tunnels. Sec.3. Tunnels] Zheleznye dorogi, mosty, tonneli. Sec.3. Tonneli. 1954. 74 p. Pt.19[Automobile roads; city transportation] Avtomobil'nye dorogi, gorodskoi transport. 1954. 31 p. (MIRA 16:10)

1. Russia (1923- U.S.S.R.) Ministerstvo putey sobshchcheniya. (Road construction) (Local transit) (Tunnels--Design and construction)

YERMOLOV, V.G.

Siberian millet, a valuable plant. Zemledelie 6 no.11:52-53 N '58. (MIRA 11:11)

1. Balashovskaya sel'skokhozyaystvennaya opytnaya stantsiya.
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YERMOLOV, V. I.

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Simple method for concentrating a light beam in fluorescene microscopy.
Lab.delo 4 no.5:50-51 S-O '58 (MIRA 11:11)

1. Iz Rostovskogo-na-Donu nauchno-issledovatel'skogo instituta akusherstva i pediatrii (dir. - kand.med.nauk F.S. Baranovskaya)
(FLUORESCENCE MICROSCOPY)

YEMOLOV, V.I.

Comparative evaluation of perianal scrapings and washings in the diagnosis of enterobiosis. Med.paras. i paras.bolezn. 23 no.1:99 Ja-F '59. (MIRA 12:3)

1. Iz Novocherkasskoy sanitarno-epidemiologicheskoy stantsii (glavnyy vrach Ye.O. Monchenko).
(OXYURIASIS, diagnosis,
enterobiosis, perianal washing & scraping, comparison (Rus))

YERMOLOV, V.I.

Modification of the color of the luminescence of Mycobacterium tuberculosis. Probl.tub. 38 no.7:84-89 '60. (MIRA 14:1)

1. Iz Rostovskogo-na-Donu nauchno-issledovatel'skogo instituta akusherstva i pediatrii (dir. - kand.med.nauk P.S. Baranovskaya, nauchnyy rukovoditel' - prof. I.Ya. Serebriyskiy) i kafedry mikrobiologii (zav. - prof. A.A. Kashayeva) Rostovskogo meditsinskogo instituta.

(MYCOBACTERIUM TUBERCULOSIS)

YERMOLOV, V.I.

Comparative evaluation of bacterioscopic and bacteriological methods for the detection of Mycobacterium tuberculosis in the cerebrospinal fluid of patients treated for tuberculous meningitis. Lab. delo [7] no.4:32-34 Ap '61. (MIRA 14:3)

1. Rostovskiy-na-Donu nauchno-issledovatel'skiy institut akusherstva i pediatrii (dir. F.S.Baranovskaya) i kafedra mikrobiologii Rostovskogo-na-Donu meditsinskogo instituta (zav. - prof. A.A.Kashayeva).
(MYCOBACTERIUM TUBERCULOSIS)
(MENINGES--TUBERCULOSIS) (FLUORESCENCE MICROSCOPY)

YERMOLOV, V.I.

Luminescent microscopy of the cerebrospinal fluid as a method for early laboratory diagnosis in tuberculous meningitis. Sov. med. 25 no.5:148-149 My '61. (MIRA 14:6)

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(MENINGES—TUBERCULOSIS)

YERMOLOV, V. I.

Bacteriological studies of the cerebrospinal fluid during the combined treatment of tuberculous meningitis in children. Probl. tub. no.3:86-93 '62. (MIRA 15:4)

1. Iz Rostovskogo-na-Donu nauchno-issledovatel'skogo instituta akusherstva i pediatrii (dir. - kandidat meditsinskikh nauk F. S. Baranovskaya, nauchnyy rukovoditel' - doktor meditsinskikh nauk T. V. Loverdo) i kafedry mikrobiologii Rostovskogo meditsinskogo instituta (zav. - prof. A. A. Kashayeva)

(MENINGES--TUBERCULOSIS)
(CEREBROSPINAL FLUID--MICROBIOLOGY)

YERMOLOV, V.I.; BATYREVA, A.A.; VOLCHENKO, K.L.

Effect of cortisone on the course of experimental tuberculous meningitis in puppies. Probl. tub. no.8:95-98 '62. (MIRA 16:9)

1. Iz Rostovskogo-na-Donu nauchno-issledovatel'skogo instituta akusherstva i pediatrii (dir. - kand.med.nauk F.S. Baranovskaya, nauchnyy rukovoditel' - doktor med.nauk T.V. Lovendo) i kafedry mikrobiologii (zav. - prof. A.A.Kashayeva), kafedry patologicheskoy anatomii Rostovskogo meditsinskogo instituta (zav. - prof. Sh.I.Krinitskiy [deceased]).