"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A.G.; KURUCHKIN, B.M.; KHABIBULLIN, R.A.

Well drilling with water flushing to a predetermined depth in Romashkino oil field. Burenie no.11:3-6 '64. (MIRA 18:5)

1. Kontora bureniya No.2 tresta "Tatburneft'".

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

BRENNER, V.A., kand. tekhn. nauk; KULAKOV, N.P., inzh.; LYUBOSHCHYNSKIY, I.N., kand. tekhn. nauk; SAFRONOV, A.G., inzh.

Investigation of the performance of drum-type actuating mechanisms with chain drive. Izv. vys. ucheb. zav.; gor. zhur. 7 no.11:79-86 '64. (MIRA 18:3)

1. Institut Giprouglegormash. Rekomendovana kafedroy gornykh mashin Sverdlovskogo gornogo instituta.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A I

GETSKIN, L.S.; PETROV, I.K.; SAFRONOV, A.I.

Automatic control in the production of zinc. TSvet.met. 27 no.4:16-19 Jl-Ag '54. (MIRA 10:10)
(Automatic control) (Zinc--Metallurgy)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

137-58-4-6543

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 4, p 32 (USSR)

AUTHORS: Petrov, I.K., Safronov, ~~A.I.~~

TITLE: Automatic Control of Various Process Parameters in Zinc and Lead Production (Avtomaticheskiy kontrol' otdel'nykh tekhnologicheskikh parametrov v proizvodstve tsinka i svintsa)

PERIODICAL: Sb. tr. Vses. n.-i. in-t tsvetn. met., 1956, Nr 1, pp 140-158

ABSTRACT: A description is presented of special instruments and methods of measurement. In automatic control of the pH of solutions and pulps at 55-60°C, the special problems to be dealt with are high temperature, vibration, high specifications as to insulation and shielding of the conduit and the circuit of the instrument. Changes in electrode design to improve stability to vibration and insulation were introduced, as were changes in the design of electronic potentiometers. A special feature of the conditions of measurement in a floating piezometric apparatus to measure the density of solutions in equipments with varying surface levels is the change in the density of the solutions with depth; a constant depth of immersion of the piezometric tubes

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137-58-4-6543

Automatic Control of Various (cont.)

is attained by mounting them on floats. A floating relay reporting extremes in level employs a vinyl plastic float with a head of Pb and an Hg switch. When the level rises, the float tips, the contact is closed, and a signal is given. This relay may also be used to signal the absence of pulp or solution in a container. In measuring the temperature of solutions in agitators in stirring tanks, the rigid container of an ordinary electric resistance thermometer is replaced by a flexible Pb hood with a thick-walled rubber tube for added protection. In an instrument for the automatic measurement of the thickness of the layer of charge on the pallets of sintering machines, an ordinary 3-wire induction bridge is used (alternating current), the plunger of the pick-up being rigidly connected with the knife that smooths the layer of charge. In measuring the temperature of Pb in fining kettles, a thermocouple is welded to the outside of the kettle on the furnace side with shielding against the furnace gases. In measuring the temperature of Pb smelting products with immersed thermocouples, the working tip is placed in a thin-walled replaceable case of ordinary carbon steel in order to reduce lag. The temperature lag is 25-30 sec, while the service life of the case is 4-6 measurements in the case of the furnace product and matte, and 30 in the case of slag and raw Pb. For single measurements of temperature in the sublimation zone of a rotary tubular furnace, Seger cones are used (or a ceramic

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137-58-4-6543

Automatic Control of Various (cont.)

powder) placed in segments of a tube (each segment having a cone softening at a different temperature). The segments are separated by partitions, and rolled into a single tube that passes through the entire furnace along with the clinker, and the appearance of the cones is used to judge the maximum temperature. In an apparatus for remote control of the level to which a bin is filled with free-flowing material, the determination is made by lowering a weight periodically to contact with the charge. Then, after reducing the tension on the cable, it is raised by an actuating mechanism. A dc current-ratio meter, working from a rheostat pick-up built into the actuating mechanism, does the measurement.

M. L.

1. Zinc--Production--Automation 2. Lead--Production--Automation

Card 3/3

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

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SOV/81-59-13-45192

24.1800

Translation from: Referativnyy zhurnal, Khimiya, 1959, Nr 13, p 67 (USSR)

AUTHORS: Levin, P.I., Safronov, A.I., Pronina, Ye.S.

TITLE: The Action of Ultrasound on the Oxidation Rate of Ferrous Oxide

PERIODICAL: Sb. nauchn. tr. Vses. n.-i. gorno-metallurg. in-t tsvetn. met., 1958, Nr 3, pp 111 - 117

ABSTRACT: The action of ultrasound (frequency 500 kc, power 25 w) on the oxidation of Fe(2+) in aqueous solutions by oxygen of the air at various temperatures and also at the addition of Zn^{2+} ions has been investigated. In the sound-treatment, oxidation has not been detected due to the formation of H_2O_2. The rate ofthe oxidation of iron in $ZnSO_4$ solutions at pH 5.0 increases 1.6 - 1.8 times, in solutions containing only Fe(2+) sulfate, 1.3 - 1.4 times. The reduction of the solubility of O_2 in the sound-treatment decreases the oxidation rate under the action of ultrasound. The practical application of ultrasound in the hydrometallurgy of Zn for intensifying the oxidation of iron is not expedient at the present time.

B. Kudryavtsev

Card 1/1

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A. I., Engineer

"Investigation of the Dynamic and Economic Possibilities of the Engine of a 'Kirovets-D-35' Tractor." Sub 27 Apr 51, Moscow Inst for the Mechanization and Electrification of Agriculture imeni V. M. Molotov

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 440, 9 May 55

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A. I.,

7854. SAFRONOV, A. I., Klyuchnik, E. A. I Alik, A. Ya. traktor Khtz-7. pod obshch. ped. e. klyuchnik. riga, latgosizdat, 1954. 204 S. Sill.; 40 td. 1. chert. 23 sm. 8.000 ekz. 7r. 5k. vper.--na latysh. yaz.-- (55-2868)

629.114.2

SO: Knizhnaya Letopis', Vol. 7, 1955

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A. I.

AID P - 3212

Subject : USSR/Hydraulic Engineering

Card 1/1 Pub. 35 - 16/19

Authors : Krivskiy, M. N. and A. I. Safronov, Engs.

Title : Some types of scrapers

Periodical : Gidr. stroi., 5, 43-45, 1955

Abstract : The article discusses certain types of scrapers used in the USA. Six photos and 3 tables with data. Five English references, 1953-1955.

Institution : None

Submitted : No date

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A I

AID P - 3955

Subject : USSR/Hydr. Eng.

Card 1/1 Pub. 35 - 19/19

Authors : Krivskiy, M. N. and A. I. Safronov, Engs.

Title : Earth bulldozer.

Periodical : Gidr. stroi., 7, 47-48, 1955

Abstract : A report on earth-working equipment manufactured in Euclid and used in the USA. A detail description of the machine is given. Three photos. One Russian reference (no date) 2 US. 1951-1953.

Institution : None

Submitted : No date

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A.I.

The ZFM-3000 excavating and cutting machine. Biul.tekh.-ekon. inform. no.10:50-52 '61. (MIRA 14:10)
(Excavating machinery)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A.I.

Mobile high voltage laboratories. Prom. energ. 17 no.9:53 S '62. (MIRA 15:8)

1. Zhirnovskoye kar'yeroupravleniye Volgogradskogo sovnarkhoza. (Electric laboratories)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A.I.

Earthmoving machinery (scraper conveyors and bulldozers). Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch i tekh.inform. no.8: 36-43 '62. (MIRA 15:7)

(Earthmoving machinery)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A.I.

Scrapers and dump semitrailers used in earth and rock excavation. Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.i tekh.inform. no.1:91-96 '63. (MIRA 16:2)

(Earthmoving machinery)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A.I.

Soviet-made excavators. Biul.tekh.-ekon.inform.Gos.nauch.-issl. inst.nauch.i tekh.inform. no.2:51-58 '63. (MIRA 16:2)
(Excavating machinery)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A.N.

Time variation in the motion of an electron in an electric field with allowance for damping. Izv. vys. ucheb. zav.; fiz. 8 no.2: 78-81 '65. (MIRA 18:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

ACC NR: AP6021947 (A) SOURCE CODE: UR/0188/66/000/002/0077/0082

AUTHOR: Lysov, B. A.; Safronov, A. N.

ORG: Department of Theoretical Physics (Kafedera teoreticheskoy fiziki)

TITLE: Interaction between a quantized electromagnetic field and a three-dimensional oscillator

SOURCE: Moscow. Universitet. Vestnik. Seriya III. Fizika, astronomiya, no. 2, 1966, 77-82

TOPIC TAGS: quantum oscillator, quantum field theory, relativistic electron, Hilbert space, photon, operator equation

ABSTRACT: The interaction between a classical system and a quantized magnetic field is treated in the article in analogy with the motion of a relativistic electron in a magnetic field. The equation of motion of a three-dimensional harmonic oscillator in a photon field is written out in operator form, and the physical quantities characterizing this system are set in correspondence with operators acting on the state vector in Hilbert space. A set of commuting operators is defined such that combinations of these operators can express the operators of the physical quantities of interest. The operators corresponding to observable quantities are expressed in the form of a sum of two terms, one independent of the time and consisting of a bilinear combination of

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ACC NR: AP6021947

annihilation and creation operators, and a fluctuating part, whose terms are characterized by the presence of a time-oscillating factor. The latter is made to vanish by averaging over the time. The results show that the interaction with the field leads to quantization of all the dynamic variables characterizing the motion of the oscillator, in analogy with the case of the one-dimensional oscillator. The authors thank Professor A. A. Sokolov for interest in the work. Orig. art. has: 25 formulas.

SUB CODE: 20/ SUBM DATE: 11Nov64/ ORIG REF: 006/ OTH REF: 002

Card 2/2

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A. P. and YUSHCHENKO, A. I.

"II-TR and Yu-10 Electric Contact Locomotives for Mines", Ugletekhizdat, Moscow, 1949, 107 pp.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

AUTHOR: Safronov, A. P. 75-13-3-20/27

TITLE: A New Method for Determining Microquantities of Citric Acid (Novyy sposob opredeleniya mikrokolichestv limonnoy kisloty)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 3, pp 360 - 364 (USSR)

ABSTRACT: A number of photometric methods for the determination of microgram-quantities of citric acid exist. Among them those based on color reactions of pentabromoacetone are most sensitive and specific (References 1-5). The latter forms in the oxidation of citric acid with potassium permanganate in a mineral acid solution in the presence of bromine (Reference 6). The author of the present paper found that pentabromoacetone forms in a high yield in the electrolysis of citric acid at a lead-anode in a sulfuric acid solution and in the presence of bromine ions. A maximum and virtually constant yield of pentabromoacetone is on this occasion obtained at a certain acidity of the solution in a corresponding volt-ampere domain. Changes of temperature between 20 and 40°C exert no marked influence upon the electrochemical process. In the electrolysis in an acetic, phosphoric or nitric acid solution no pentabromoacetone is formed. In these media the electrodes

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do not cover with lead dioxide which probably is of importance for the formation of pentabromoacetone. The highest yield of pentabromoacetone was obtained in 2n sulfuric acid solution in the presence of 11 mg potassium bromide and at 0,2 A and 3,0 V. The average density of the current was ~ 1,8 A/dm^2. The duration of the electrolysis was 45 minutes. The resulting pentabromoacetone was determined by means of the highly sensitive reaction according to Fudzhivara (with pyridine in a strongly alkaline solution) (References 2,7,10,18). The mechanism of this reaction and the composition of the cherry-red dye produced in this connection have not yet been determined. On the basis of the author's investigations the following reaction mechanism is suggested:

$$CBr_3 \cdot CO \cdot CHBr_2 + NaOH \longrightarrow CHBr_3 + CHBr_2 \cdot COONa$$

$$CHBr_3 + NaOH \longrightarrow \rangle CBr_2 + NaBr + H_2O$$

$$\rangle CBr_2 + 2\ C_5H_5N \xrightarrow{NaOH} \text{colored compound.}$$

Card 2/4 The structure of the formed dye very probably is that of a

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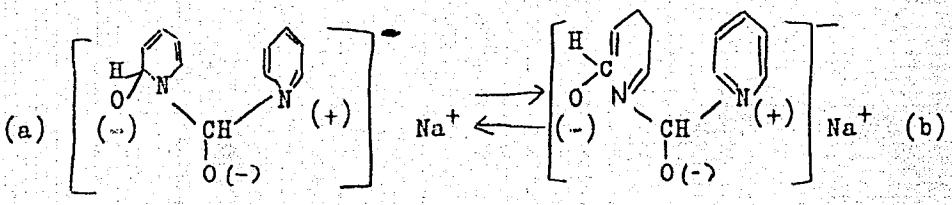
sodium salt of the aci-form of betaine (a) or the acyclic form tautomeric to it (b):



The optical density of the solutions was measured on a photometer of the type FM by green-filter S-53. For removing turbidities the solutions were diluted with an acetone-ammonia mixture; the color was stabilized with a drop of concentrated lye. The optical density of the solutions gradually decreases (mainly by the influence of atmospheric CO_2). Photographs are therefore taken at the latest 15 minutes after the formation of the color. The optical densities of the solutions obtained in the electrolysis of 10-100 γ citric acid are proportional to the concen-

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

A New Method for Determining Microquantities of Citric Acid 75-13-3-20/27

tration of citric acid in the anode solution. This new method permits a fast and selective determination of citric acid in vegetables, fruits, berries, bones, saliva, milk and also in medical preparations. An apparatus applicable to the determination, as well as the establishment of calibration degrees are described in detail. The performance of the determination of citric acid in all above-mentioned objects is also described in detail. There are 3 figures, 3 tables and 19 references, 6 of which are Soviet.

ASSOCIATION: Akademiya meditsinskikh nauk SSSR, Moskva (Moscow, Academy of Medical Sciences, USSR)

SUBMITTED: December 24, 1956

1. Citric acid--Determination

Card 4/4

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A.P.

Sensitive method for fast determination of citrates in biological material [with summary in English]. Biokhimiia 24 no.1:123-126 Ja-F '59. (MIRA 12:4)

(CITRATES, determ.
sensitive & rapid method (Rus))

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A.P.

Role of endogenous citrates in the excretion of polonium from the organism. Biokhimiia 24 no.3:421-424 My-Je '59. (MIRA 12:9)

(POLONIUM, in urine,
eff. of citrates in animals (Rus))
(CITRATES, eff.
on urinary polonium in animals (Rus))

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A. P., CAND CHEM SCI, "NEW METHOD FOR DETERMINING MICROQUANTITIES OF CITRIC ACID." MOSCOW, 1961. (INST OF GEOCHEM AND ANALYTICAL CHEM IM V. I. VERNADSKIY ACAD SCI USSR). (KL, 3-61, 201).

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A.P.

New method for detecting organic sulfoxides. Zhur.anal.khim. 18 no.4:548-550 Ap '63. (MIRA 16:6)

1. Institute of Biophysics, Academy of Medical Sciences, U.S.S.R., Moscow.

(Sulfoxides)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A.P.; PROTASOVA, T.N.

Decomposition of histidine in the liver of rats exposed to ionizing radiations. Radiobiologiia 4 no.3:375-377 '64.

(MIRA 17:11)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A. V.

AID P - 3411

Subject : USSR/Electricity

Card 1/2 Pub. 29 - 26/30

Author : Safronov, A. V., Eng.

Title : Determining damages in squirrel-cage rotors of induction motors

Periodical : Energetik, 10, 34-36, O 1955

Abstract : The author describes a few methods of determining flows in the squirrel-cage rotors of induction motors: 1) method of three ampermeters; 2) method of a three-winding transformer, introduced by G. N. Voyevodin improved and developed by Yu. M. Odintsov and P. M. Yemel'yanov; 3) method of the bridge, introduced by the author and developed by A. V. Bryukhanov and A. I. Ogarkov. The author describes the measuring instruments and methods of testing. Seven connection diagrams.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

Energetik, 10, 34-36, O 1955 AID P - 3411

Card 2/2 Pub. 29 - 26/30

Institution : None

Submitted : No date

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

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S/057/60/030/05/10/014
B012/B056

24.2120
10.2000(A)

AUTHORS: Andryukhina, E. D., Grebenshchikov, S. Ye., Rabinovich, M.S., Rayzer, M. D., Safronov, A. Ya., Shpigel', I. S.

TITLE: Some Characteristic Features of Inductive Gas Discharges

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 5, pp. 529 - 538

TEXT: The present paper was read at the 4th International Conference on ionization processes held at Upsala in 1959. The authors carried out experiments for the purpose of explaining the influence exerted by some phenomena upon the dynamics of the plasma, which are described. The experiments were carried out in axially symmetric homogeneous and non-homogeneous magnetic fields within a wide frequency range under various ratios between the inductive resistance and the effective resistance of the plasma. The following of the phenomena mentioned were investigated: the "capture" of the magnetic field by the moving plasma, the skin effect, and the shock waves. Fig. 1 shows the oscillogram of the complete current in a discharge in hydrogen, and Fig. 2 shows a slow-motion picture of the

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Some Characteristic Features of Inductive Gas Discharges — S/057/60/030/05/10/014 B012/B056

discharge. Measurements of current distribution showed that during the first half-period of the field variation a re-distribution of the current according to the vacuum chamber radius takes place. In Fig. 3a the device for investigating the discharge in an axially symmetric field, the so-called "magnetic mirror" is shown schematically. Fig. 3b shows the dependence of the current generated by special windings upon radius R and distance z. From the oscillograms in Fig. 4 it may be seen that the current in the gas during the first half-period of the field change is due only to the effective resistance of the plasma. The current polarity reversal shown on the oscillograms and the instantaneous current distribution in Fig. 6a indicating the existence of a considerable return current prove the "capture" of part of the magnetic flux by the plasma. The investigations of the skin effect and of the shock waves described showed that in the here investigated configurations of magnetic systems and vacuum chambers a cylindrical shock wave is formed in the breakdown in the range of $5 \cdot 10^{-1} \div 10^{-2}$ torr. During its motion it heats the gas and partly ionizes it. With propagation of the wave the conductivity range increases, and the currents generated within this range may, in the case of a skin effect, compensate the entire exterior magnetic field in the larger part

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Some Characteristic Features of Inductive Gas Discharges — S/057/60/030/05/10/014 B012/B056

of the chamber. At high discharge frequencies (300 ÷ 700 kc/s) a sufficiently high conductivity of the plasma is necessary in order that a skin layer having a thickness that is smaller than the height of the chamber, may occur. Such a conductivity is attained after the passage of 2 to 3 shock waves through the vacuum. At frequencies of 60-100 kc/s the thickness of the skin layer is greater than the height of the vacuum chambers used in the present investigation and some other papers (Refs. 4 and 5), and no effects were observed in the distribution of the current on the walls and also no screening of the outer field. Evaluations show that in the here described experiments a qualitative relation

$\delta \sim \omega^{-1/2}$ is observed. No more accurate data could be found. δ is the thickness of the skin layer, ω - the frequency of the external field. Academician V. I. Veksler is thanked for discussing the paper with the authors. There are 13 figures and 8 references: 5 Soviet and 3 English.

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

SUBMITTED: December 4, 1959

Card 3/3

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A. YA.

Tractors

Stand for testing oil pumps of tractors model STZNATI. Torf. prom. 29 no. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1952, Uncl.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, A. YA; YAROVITSIN, V. I.

Peat Industry

Unit method of tractor maintenance., Torf. prom., 29, no. 3, 1952.

9. MONTHLY LIST OF RUSSIAN ACCESSIONS, Library of Congress, May 1952. Uncl.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

YAROVITSIN, V.I.; SAFRONOV, A.Ya.

Reconditioning crankshafts by the electric metal build-up process. Torf.prom. 32 no.7:11-12 '55. (MLRA 9:1)

1.Ivgostorf (for Yarovitsin) 2.Komsomol'skoye transportnoye upravleniye (for Safronov).
(Cranks and crankshafts) (Peat machinery)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

ANDRYUKHINA, E.D.; GREBENSHCHIKOV, S.Ye.; RABINOVICH, M.S.; RAYZER, M.D.; SAFRONOV, A.Ya.; SHPIGEL', I.S.

Some special characteristics of induction gas discharges. Zhur. tekh. fiz. 30 no.5:529-538 My '60. (MIRA 13:8)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR, Moskva.
(Electric discharges in gases)

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20711
S/120/61/000/001/053/062
E032/E114

26.2358

AUTHORS: Andryukhina, E.D., Safronov, A.Ya., and Shpigel', I.S.

TITLE: Characteristics of a Fast Vacuum Valve

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No.1, pp.174-177

TEXT: The last of the present authors has described an electrodynamic vacuum valve in Ref.1. This valve is illustrated schematically in Fig.1. In this figure the disc 2 is brought into motion by the forces F_i due to the interaction between a current pulse in the coil 3 and the current induced in the disc. As soon as the disc rises, gas passes from the region 5 into the high vacuum region 1 and the disc returns under the action of the force F_p which is due to the pressure of the gas. In this way an adjustable gas "pulse" can be produced. The present paper reports a simple theory of the valve and some of its experimentally determined characteristics. The pressure distribution on the high vacuum side was measured with the aid of a miniature ionization gauge, having a working volume of 0.2 cm^3. It was found that a directed motion of the gas can be obtained with sufficiently long channels, the gas velocity being higher than the velocity of sound.

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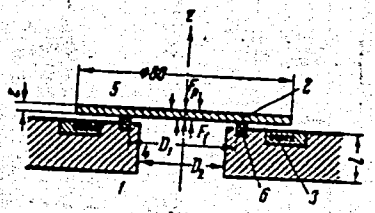
20711

S/120/61/000/001/053/062
E032/E114

Characteristics of a Fast Vacuum Valve.

Space and time gas pressure distributions are given.
There are 9 figures and 5 references: 4 Soviet and 1 non-Soviet.
SUBMITTED: December 14, 1959

Fig. 1



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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, B.G.

USSR/Physics - Electron capture FD-2205

Card 1/2 Pub 146-10/25

Author : Fogel', Ya. M.; Krupnik, L. I.; Safronov, B. G.

Title : Capture of electrons and ionization of protons in hydrogen

Periodical : Zhur. eksp. i teor. fiz. 28, 589-602, May 1955

Abstract : By means of a perfected method of collecting slow particles onto a measuring electrode of a flat condenser the authors measure in the energy interval 12.3 to 36.7 keV the effective cross-sections of capture of one electron and ionization by protons in hydrogen. They compare the obtained results with the data of other works and with the data theoretical calculations. In the passage of protons through hydrogen they observe negative ions of hydrogen in the beam past. They show that for small pressures of the gas in the chamber of collisions the appearnace of negative ions of hydrogen in the past beam is connected with the process of capture by a proton of two electrons in the hydrogen molecule. The oriented measurement of the effective cross-section of this process for protons with energy 13, 21, and 31.4 keV indicates that the presence of this process cannot essentially alter the results of the measurement

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Card 2/2 FD-2205

of the effective cross-section of capture of a single electron by the method of collecting slow particles. The authors thank Professor A. K. Val'ter. Eleven references, including one USSR (M. M. Bredov and N. V. Fedorenko, Zhur. tekhn. fiz. 20, 1950).

Insitution : Physicotechnical Institute, Academy of Sciences Ukrainian SSR

Submitted : April 3, 1954

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, B.G.

USSR/Physics - Proton passage through foil FD-2345

Card 1/1 Pub. 146 - 10/34

Author : Fogel', Ya. M.; Safronov, B. G.; and Krupnik, L. I.

Title : Formation of hydrogen negative ions in the passage of protons through thin metal foils

Periodical : Zhur. eksp. i teor. fiz. 28, 711-718, Jun 1955

Abstract : By means of a double mass-spectrometric arrangement the authors determined the ratios of the number of negative hydrogen ions to the number of protons in the beam formed after the passage of protons with energies in the interval 11.5 to 28 kev through thin foils of Be, Al, and Cu. They show that about 10% of the protons incident upon a thin foil of Be can be transformed into negative hydrogen ions. They thank Professor A. K. Val'ter. Five references including one USSR: Ya. M. Fogel' et alii, ibid. 28, 1955.

Institution : Physicotechnical Institute, Academy of Sciences Ukrainian SSR

Submitted : April 3, 1954

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, B.G.

120-6-19/36

AUTHORS: Safronov, B.G., Azovskiy, Yu.B., and Aseyev, G.G.

TITLE: A Mass Spectrometric Ion Source with Surface Ionization. (Mass-spektrometricheskiy istochnik ionov s poverkhnostnoy ionizatsiyey)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.6, pp. 80 - 82 (USSR).

ABSTRACT: Ion sources using the phenomenon of surface ionisation have a number of advantages over thermionic sources. One of the major disadvantages of the surface ionisation type of source is the loss of matter by evaporation since the surfaces lose not only ions but also neutral molecules in consequence of which the isotopic composition is affected (Ref.10). A source employing two filaments was described in Ref.1 in 1953. On one of the filaments was deposited a substance under investigation (this filament acted as a molecular beam source) while the other filament could be heated up to 2 000 °C and served as an ioniser. This system was more effective than the one-filament system, but the matter loss was still considerable. The latter disadvantage is removed in the new source now described. In the present source, the ionising filament is surrounded by a cylindrical tube emitting vapour of the substance. The tube had a slit on it through which the ions can be emitted. The substance under

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120-6-19/20

A Mass Spectrometric Ion Source with Surface Ionization.

investigation is deposited on the inner surface of the tube. When the central filament is heated (by a current produced by an accumulator) the tube surrounding it becomes hot, the coating slowly evaporates, and its molecules dissociate into atoms on the hot filament. The atoms are, in turn, ionised and then drawn out through the slit by an accelerating field. The emitted ion beam can then be analysed according to particle mass. Substances of the order of 5×10^{-7} g have been detected, using such a source. A similar device has been described by Hintenberger and Lang (Ref.9).
There are 2 diagrams, 1 table and 10 references, 2 of which are Slavic.

ASSOCIATION: Physico-technical Institute Ac.Sc. USSR. (Fiziko-tekhnicheskiy Institut AN SSSR)

SUBMITTED: April 5, 1957.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, B.G.

20-1-21/54

AUTHOR: Sinel'nikov, K.D., Academician, Ukrainian SSR Academy of Sciences, Safronov, B.G., Akovskiy, Yu. S.

TITLE: Separation of Isotopes When an Atomic Beam Passes Through Ionization Space
(Razdeleniye izotopov pri prokhozhdenii atomnogo puchka cherez prostranstvo ionizatsii)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 115, Nr 1, pp. 80 - 83 (USSR)

ABSTRACT: Simple theoretic considerations speak in favour of the possibility of the separation of isotopes on the occasion of the passage of an atomic beam consisting of an isotopic mixture through a space in which this beam is bombarded with electrons. The atomic beam is said to consist of the masses m_1 and m_2 ($m_1 < m_2$) and to have the temperature T at its leaving. Then the particles have the mean kinetic energy (3/2)kT and $v_1/v_2 = \sqrt{m_2/m_1}$, where v_1^2 and v_2^2 are the mean quadratic velocities of the corresponding isotopes. Through such a beam the electrons are said to pass with a temperature sufficient for the ionization of the beam and the ions developing on this occasion are to be transported out of the beam. A formula is deduced for the decrease of the beam in the ionization space.

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Separation of Isotopes When an Atomic Beam Passes Through Ionization Space

For the determination of this effect, a system had to be used which would make possible the ionization of the atomic beam as well as the transport of the ions and their absorption. The demands are satisfied by the LM-2 triode-pressure-gauge-tube. The atomic beams are ionized by the electrons emitted by the cathode and accelerated by the grid potential when passing LM-2. The boundaries of the ionization space and the distribution of the potentials in LM-2 are shortly described. The system used by the authors, consisting of 5 LM-2 valves arranged in series, is shortly described. Mercury served as material. The ion fluxes corresponding to the isotopes 198 and 204 were measured one after another and then their ratio was calculated. The results of the measurements as well as of the calculations are represented in a diagram. The experimental data coincide well within the measuring fault limits, but all magnitudes measured are greater than those calculated. With this system of valves also measurements for the determination of the duration of saturation were carried out. There are 3 figures and 1 table.

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20-1-21/54

Separation of Isotopes When an Atomic Beam Passes Through Ionization Space

ASSOCIATION: Physico-Technical Institute, Ukrainian SSR Academy of Sciences (Fiziko-tekhnicheskiy institut Akademii nauk Ukr. SSR)

PRESENTED BY:

SUBMITTED: February 25, 1957

AVAILABLE: Library of Congress

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, B.G.

SINELNIKOV, K. D., ZEYDLIK, P. M., FAYNBERG, Ya. G., NERKASHEVICH, A. M., ZAVGORODNOV, O..G, SAFRONOV, B. G., DUBOVOY, L. V. and LUTSENKO, E. I.

"Experimental Research of High Frequency Properties of Plasma and Magnetohydrodynamic Shock Waves."

paper to be presented at 2nd UN Intl. Conf. on the peaceful uses of Atomic Energy, Geneva, 1 - 13 Sep 58.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

Safronov B. G.

56-2-9/51

AUTHORS: Sinel'nikov, K. D., Ivanov, V. Ye., Safronov, B. G., Azovskiy, Yu. S., Aseyev, G. G.

TITLE: The Separation of Isotopes in a Non-Steady Molecular Flow (Razdeleniye izotopov pri nestatsionarnom molekulyarnom techenii)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol 34, Nr 2, pp 327-330 (USSR)

ABSTRACT: In the non-steady molecular flow of mercury vapor a change of the content of isotopes in the flow is observed. The scheme of the measuring arrangement is shown by a diagram. As material served mercury which was in a steel ampoule and could be separated from the system by means of a valve. The content of mercury isotopes was measured by means of the one-jet method for the lightest and for the heaviest isotope, and from these measurements $\beta = I_{198}/I_{204}$ was calculated. The standard ratio β_0 does not change within 2 days. The just discussed measurements were carried out by means of an iron tube and analogous measurements were then carried out by means of a glass tube and a copper tube. The results

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obtained by the glass-and the iron tube are shown in a diagram. The mercury flow is enriched with the lighter isotope immediately after its appearance and it takes about 8 hours to return again to the standard composition. The desorbed mercury is enriched with the heavy isotope. The time necessary for the formation of the steady flow as well as for the standard-like isotope composition decreases at T = 290°C. For a glass tube at T = 20°C this time is one tenth of that of an iron tube. Another diagram shows the results of measurements of the flow as well as of the isotope composition in a copper tube at T = 20°C. The course of the curves coincides qualitatively for copper and iron. The solution of the absorption problem found by P. Clausing (reference 1) coincides well with the experimental curve, which speaks in favor of the applicability of such calculations for the flow of mercury vapors through a glass tube. The analogous calculations for a copper tube proved the impossibility of the description of the change of flow and of the composition of isotopes by means of Clausing's equation. The difference of curves for the flows through an iron and through a copper tube are probably based on the solution of the diffusion of mercury into the depth of the

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The Separation of Isotopes in a Non-Steady Molecular Flow 56-2-9/51

walls of the copper tube. Thus it was shown that the different sorption times lead to a separation of isotopes. This phenomenon must be considered a source of error in exact mass-spectroscopic measurements. There are 3 figures and 2 references, 1 of which is Slavic.

SUBMITTED: August 3o, 1957

AVAILABLE: Library of Congress

1. Isotopes-Separation 2. Mercury vapor-Molecular flow-Applications 3. Mercury isotopes-Measurement

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, B. G., FEDORCHENKO, V.D., RUTKEVICH, B.N., CHERNY, B.N., [illegible]

"Investigations of Magnetic Traps with a Space - Charge."

paper presented at the Fourth International Conference on Ionization Phenomena in Gases, 17-21 Aug 59, Uppsala, Sweden.

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21(0) PHASE I BOOK EXPLOITATION SOV/2081

International Conference on the Peaceful Uses of Atomic Energy, 2d., Geneva, 1958

Doklady sovetskikh uchenykh; yadernaya fizika (Reports of Soviet Scientists; Nuclear Physics) Moscow, Atomizdat, 1959. 552 p. (Series: Its: Trudy, Vol. 1) 8,000 copies printed.

Eds. (Title page): A.I. Alikhanov, Academician; V.I. Veksler, Academician; and N.A. Vlasov, Candidate of Physical and Mathematical Sciences; Ed. of this volume: S.I. Brozdov and D.F. Zaretskiy, Candidates of Physical and Mathematical Sciences; Ed. (Inside book): G.L. Smolyan; Tech. Ed.: Ye.I. Mazel'.

PURPOSE: This collection of articles is intended for scientific research workers and other persons interested in nuclear physics. The volume contains 43 papers presented by Soviet Scientists at the Second Conference on Peaceful Uses of Atomic Energy, held in Geneva in September 1958.

COVERAGE: It is divided into two parts. Part I contains 17 papers dealing with plasma physics and controlled thermonuclear reactions, and Part II contains 26 papers on nuclear physics, including problems of particle acceleration and of cosmic ray physics. The first paper by L.A. Artsimovich presents a review of Soviet work on controlled thermonuclear reactions. The remaining papers in Part I deal with particular problems in this field.

papers in Part II deal in detail with various problems in nuclear physics, such as the fission of heavy atoms and their isotopes, and with the study of cosmic radiation by means of artificial earth satellites and rockets, described in a paper by S.N. Vernov. The Russian-language edition of the proceedings of the conference is published in 16 volumes. The first 6 volumes contain all the papers presented by Soviet scientists as follows: Volume (1), Yadernoya fizika (Nuclear Physics); Volume (2), Yadernyye reaktory i yadernaya energetika (Nuclear Reactor and Nuclear Power); Volume (3), Yadernoye goryuchoye metally (Nuclear Fuel and Reactor Metals), Volume (4), Khimiya radioelementov i radiatsionnykh prevrashcheniy (Chemistry of Radioelements and of Radiation Transformations); Volume 5, Radiobiologiya i radiatsionnaya meditsina (Radiobiology and Radiation Medicine); Volume (6) Polucheniye i primeneniye izotopov (Production and Use of Isotopes). The other 10 volumes contain selected papers presented at the Conference by non-Soviet scientists. In the present volume discrepancies between the English and Russian language edition of the proceedings have been noted in three articles where the texts are not identical; viz; Andrianov, et al, "High Current Pulsed Discharge"; Akhiyezer, et al, "High Frequency Plasma Oscillation"; and Bogolyubov, "Investigations of the Many-body Problem". The serial numbers of reports 2302 and 2504 are reversed in the English edition. Report 2211, by Simelnikov, et al, is numbered 2536 in the English edition.

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SINEL'NIKOV, K.D.; SAFRONOV, B.G.; AZOVSKIY, Yu.S.; ASEYEV, G.G.; VOYTSENYA, V.S.

[Magnetic properties of a plasma behind the front of a strong shock wave] Izuchenie magnitnykh svoistv plazmy za frontom sil'noi udarnoi volny. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 89-105 p. (MIRA 17:1)

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SAFRONOV, B.G.; CHURAYEV, V.A.; AZOVSKIY, Yu.S.; ASEYEV, G.G.; VOYTSENYA, V.S.

[Distribution of a variable magnetic field in solid single-loop coils] Raspredelenie peremennogo magnitnogo polia v massivnykh odnovitkovykh katushkakh. Khar'kov, Fiziko-tekhn. in-t, 1960. 106-133 p. (MIRA 17:1)

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SINEL'NIKOV, K.D.; SAFRONOV, B.G.; TOPOLIA, N.V.

[Magnetic moment of plasma clots] O magnitnom momente plazmennykh sgustkov. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 134-144 p. (MIRA 17:2)

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SAFRONOV, B.G.; GONCHARENKO, V.P.; GONCHARENKO, D.K.

[Propagation of a plasma clot in a magnetic field] K voprosu o rasprostranenii plazmennogo sgustka v magnitnom pole. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 201-98 p. (MIRA 17:1)
(Plasma (Ionized gases)) (Magnetic fields)

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SAFRONOV, B.G.; ASEYEV, G.G.; AZOVSKIY, Yu.S.

[Propagation of successive shock waves] Rasprostranenie posledovatel'nykh udarnykh voln. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 64-88 p. (MIRA 17:3)

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[Propagation of plasma clots in a space devoid of fields] Rasprostranenie plazmennykh sgustkov v svobodnom ot polei prostranstve. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 158-181 p. (MIRA 17:3)

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[Motion of plasma clots across a magnetic field] Dvizhenie plazmennykh sgustkov poperek magnitnogo polia. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 183-200 p. (MIRA 17:3)

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Visual study of plasma clots. Zhur. tekh. fiz. 33 no.9: 1055-1058 S '63. (MIRA 16:11)

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SINEL'NIKOV, K.D.; KHIZHNYAK, N.A.; SAFRONOV, B.G.

[Motion of a flexible current-carrying coil in a non-uniform magnetic field] O dvizhenii gibkogo tokovogo vitka v neodnorodnom magnitnom pole. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 145-157 p. (MIRA 17:2)

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SINEL'NIKOV, K.D.; SAFRONOV, B.G.; FEDORCHENKO, V.D.; RUTKEVICH, B.N.; CHERNYY, B.M.

[Study of a magnetic trap with a volume charge] Issledovanie magnitnoi lovushki s ob"emnym zariadom. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 243-254 p. (MIRA 17:5)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SINEL'NIKOV, K.D.; RUTKEVICH, B.N.; SAFRONOV, B.G.; SELIVANOV, N.P., otv.za vyp.

[Nonadiabatic traps for charged particles] Neadiabaticheskie lovushki zariazhennykh chastits. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 479-494 p. (MIRA 17:2)

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[Interaction between ions and electrons in an accelerated ion beam] Izuchenie vzaimodeistviia mezhdu ionami i elektronami v uskorennom puchke ionov. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 209-214 p. (MIRA 17:1)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, B.G.; MITIN, R.V.; KALMYKOV, A.A.; KONOVALOV, V.G.

[High-frequency oscillations of a plasma filament generated in a vacuum arc] Issledovanie vysokochastotnykh kolebanii plazmennogo shnura vakuumnoi dugi. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 215-226 p. (MIRA 17:1)

(Plasma (Ionized gases)) (Electric arc)

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SAFRONOV, B. G.

9.3150, 24.2120

77836
SOV/7-30-3-3/15

AUTHORS: Sinel'nikov, K. D., Fedorchenko, V. D., Rutkevich, B. N., Chernyy, B. M., and Safronov, B. G.

TITLE: Investigations of a Magnetic Trap

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol 30, Nr 3, pp 256-260 (USSR)

ABSTRACT: The authors investigated accumulation of charged particles in a magnetic trap with a space-periodic magnetic field. In general, a particle stays inside the trap if the angle φ between velocity vector and axis of the trap satisfies the inequality:

$$\sin^2\varphi > \frac{H_0}{H_n}, \qquad (1)$$

where H_0/H_n is the stopper ratio. To get a particle into the trap, one applies a space-periodic modulation

Card 1/11

ASSOCIATION: Physico-Technical Institut AS UkrSSR, Khar'kov (Fiziko-tekhnicheskiy institut AN USSR, Khar'kov)

SUBMITTED: October 27, 1959

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SINEL'NIKOV, K.D.; SAFRONOV, B.G.; AZOVSKIY, Yu.S.; ASEYEV, G.G.; VOYTSENYA, V.S.

Studying the magnetic properties of a plasma behind a strong shock wave front. Zhur.tekh.fiz. 31 no.8:893-898 Ag '61. (MIRA 14:8)

1. Fiziko-tekhnicheskiy institut AN USSR, Khar'kov.
(Plasma (Ionized gases)--Magnetic properties)
(Shock waves)

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10.1410
24.6711

27169
S/057/61/031/009/009/019
B104/B102

AUTHORS: Safronov, B. G., Aseyev, G. G., and Azovskiy, Yu. S.

TITLE: Propagation of shock-wave series

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 9, 1961, 1066-1072

TEXT: The authors studied the propagation of shock waves in hydrogen, air, and argon, which were produced in highly ionized discharges performing attenuated oscillations. The semiperiods of the shock-wave series were found to be equal to those of the discharge current. For generating shock waves, they used T sources (R. G. Fowler et al., Phys. Rev., 82, 879, 1951; A. C. Kolb, Phys. Rev., 107, 345, 1957; A. C. Kolb, Phys. Rev., 107, 1197, 1957) and K sources (V. Josephson, J. Appl. Phys., 29, 30, 1958). The parameters of the discharge circuits were:

T source	2.0 microfarads	4.9 μsec	0.30 microhenries	6-12 kv
K source	2.0 "	2.0 "	0.05 "	20 kv

The shock waves were recorded with an ФЭУ-19 (FEU-19) photomultiplier whose signal was amplified and fed to an ОК-17 (OK-17) oscilloscope.

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Propagation of shock-wave series

With a small distance of the multiplier from the source, 5-7 light maxima could be found. The time interval between these peaks was equal to the semiperiod of the discharge. Measurements showed that the initial velocity of the shock-wave series was equal to that of the discharge current; the initial velocity of the first shock wave was higher than that of the second one, and so forth. The first shock waves from T and K sources satisfy Kolb's relations up to a distance of $l \leqslant 40$ cm of the wave front from the source. At $l > 40$ cm the shock-wave retardation increases due to the effect of the walls. Starting from a certain distance from the source, the second and following shock waves propagate faster than the first one. This is explained by the fact that the following shock waves may propagate through a heated and ionized gas. Measurements showed that shock waves propagated faster in an ionized gas than in a neutral one. Mach numbers up to 80 were attained; ionization was estimated to be some 10 %, temperature $\sim 10^4$ °K. The authors thank K. D. Sinel'nikov for a discussion of results. There are 7 figures, 2 tables, and 6 references: 1 Soviet and 5 non-Soviet.

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27169

Propagation of shock-wave series

S/057/61/031/009/009/019
B104/B102

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR Khar'kov (Physicotechnical Institute AS UkrSSR, Khar'kov)

SUBMITTED: August 11, 1960

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10.2000
26.2311

28779
S/057/61/031/010/012/015
B109/B102

AUTHORS: Safronov, B. G., Mitin, R. V., Kalmykov, A. A., and Konovalov, V. G.

TITLE: Investigation of high-frequency oscillations of the plasma column of a vacuum arc

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 10, 1961, 1248-1252

TEXT: A vacuum arc is used for the experimental investigation of natural oscillations of a plasma in the range of a few Mc/sec. Test arrangement (Fig. 1): Two graphite electrodes (10 cm long and 50 and 5 mm, respectively, in diameter) are placed in a water-cooled vacuum chamber (20 cm in diameter, 60 cm long) which is enclosed by a solenoid. Maximum magnetic field strength is 5000 oersteds. Electrode 4 is used for the priming (1500 v). Operating parameters: pressure about $5 \cdot 10^{-6}$ mm Hg; arc amperage 100 - 300 a; arc length L 2 - 50 cm; arc voltage V(volt) = 47 + 0.6 L(cm). The high-frequency oscillations are picked up by the magnetic probes 1, 2, 3 (Fig. 1) and are recorded with an OK-17M (OK-17M) oscilloscope. Measuring results: (A) The frequency increases linearly

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with the magnetic field strength. (B) The frequency decreases with increasing arc length L, remains, however, practically constant above L≈30. (C) The rotatable probe 1 (Fig. 1) is used to investigate the spatial distribution of the high-frequency field near the arc. Results are shown in Fig. 5. (D) The strength of the h_φ - component of the alternating field was measured at different distances from the arc; it decreases like $1/r^{3/2}$, and is greater when the magnetic field strength is low. Conclusion: The frequencies of the oscillations investigated range within $\sqrt{\omega_{H_i}\,\omega_{H_e}}$, i. e., within hydromagnetic waves. The linear dependence of the frequency on the magnetic field strength also fully agrees with the well-known expression for hydromagnetic waves $v = H/\sqrt{4\pi\varrho}$. The authors thank K. D. Sinel'nikov for advice. There are 7 figures and 3 references: 1 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: I. S. Luce, Geneva conference, 1958; I. A. Sower, D. L. Scott, T. F. Stratton, Phys. of Fluids, 2, 47, 1959.

SUBMITTED: September 10, 1960

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Fig. 5. (a) Dependence of the signal strength on the angle of rotation of the probe in the plane parallel to the arc axis. The solid lines indicate a magnetic field direction anode-cathode, whereas the broken lines indicate the reverse direction. (б) The same in the plane perpendicular to the arc axis.

Fig. 1

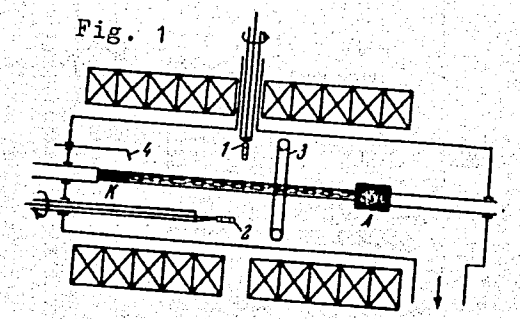
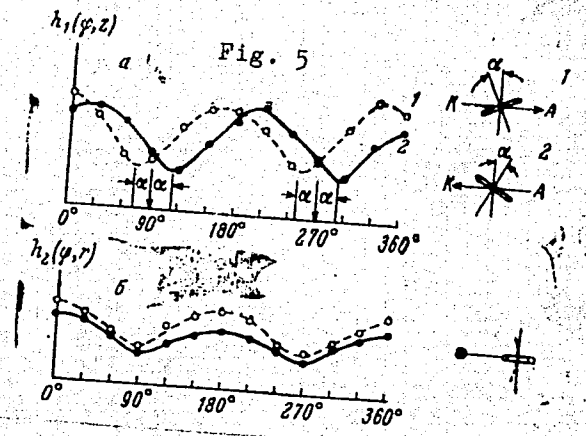


Fig. 5



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S/057/62/032/005/010/022
B163/B102

26.2212

AUTHORS: Kalmykov, A. A., Tereshin, V. I., Trubchaninov, S. A., and Safronov, B. G.

TITLE: Interaction of plasma clusters with a spatially periodic magnetic field

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 5, 1962, 579-583

TEXT: The parametric resonance of the ions in a plasma cluster moving along the axis of an axially symmetric magnetic field whose strength is a periodic function of the axial coordinate is studied experimentally. If the cyclotron frequency is nearly equal to the product of axial velocity and spatial periodicity, an increase of the velocity components perpendicular to the axis is expected, on the basis of theoretical considerations. The plasma cluster moves inside a copper cylinder of 8 cm diameter and 120 cm length. The magnetic field is formed by one external long coil, giving a homogeneous field H, and 17 equidistant internal coils of alternating polarity, producing a superimposed

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26.2212
24.6740

AUTHORS: Safronov, B. G., Voytsenya, V. S., and Konovalov, I. I.

TITLE: Production of pure hydrogen plasma

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 6, 1962, 678 - 681

TEXT: The purification of hydrogen plasma by removing the heavy contaminating ions when the plasma cluster travels through the curved magnetic field of a toroidal coil is investigated. The idea is that the non-uniformity of the field will cause charged particles of different sign to drift in opposite directions perpendicular to the tore through which the plasma moves. The drift velocity is proportional to the mass of the particles and this makes it possible to eliminate the heavy ions which will drift faster than the protons. If the velocity of the plasma is properly chosen, the heavy ions will recombine at the tore walls whereas the light protons can be drawn off at the tore end. In the authors' experiments, the magnetic field in the tore was variable (0 - 500 oe). The method proposed makes it possible to get a hydrogen plasma of spectral purity. At densities of $\sim 10^{10}$ cm^{-3}, the process of purification can

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41321

S/057/62/032/009/004/014
B125/B186

AUTHORS: Azovskiy, Yu. S., Guzhovskiy, I. T., Safronov, B. G., Churayev, V. A.

TITLE: Conical source of plasma clouds

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 9, 1962, 1050 - 1054

TEXT: Two conical plasma sources are studied comparatively in a glass-enclosed vacuum chamber. One of the sources was provided with a spiral (Fig. 1), the other was not. The plasma in the sources was produced by discharging a condenser bank, the breakdown was initiated by injecting the plasma from a "spark source". This design permits of using of the source within the vacuum system without an additional discharge exciter. The plasma consisted of decomposition products from the organic glass of which the tube was produced such as H, O, C ions. The parameters of the plasma bunches were measured with a magnetic probe and an ФЭУ-19М (FEU-19M) photomultiplier, and by using the microwave signal "cut-off" method (ZhETF, 36, 411, 1959). Fig. 3 shows the typical time dependence $l = f(t)$ for the plasma cloud position in the tube. The plasma clouds ejected by

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electromagnetic forces from a source with a spiral in the first and second half-cycles of the discharge are highly ionized. The density of the charged particles in the first cloud is $>10^{12}$ cm^{-3}, in the second one it is greater by one order of magnitude. In the third and subsequent half-cycles, the source with a spiral emits a weakly ionized ($>10^{12}$ cm^{-3}) gas jet. The magnetic flux of the induced current is proportional to the initial voltage of the condenser bank. The source without spiral emits a high-density cloud in the first half-cycle without induction of currents in the cloud. A weakly ionized gas jet is emitted in the second and subsequent half-cycles. Conclusion: The efficiency of a conical source is much increased by a spiral inverse current conductor. The pulsed input of gas to the source with spiral may permit the production of relatively dense and pure plasma clouds with velocities above $1 \cdot 10^7$ cm/sec. There are 5 figures and 1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR, Khar'kov (Physico-technical Institute AS UkrSSR, Khar'kov)

SUBMITTED: June 17, 1961 (initially)
February 6, 1962 (after revision)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

S/781/62/000/000/019/036

AUTHORS: Sinel'nikov, K. D., Safronov B. G., Azovskiy Yu. S., Aseyev, G. G., Voytsenya V. S.

TITLE: Study of magnetic properties of a plasma behind the front of a strong shock wave

SOURCE: Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza; doklady I konferentsii po fizike plazmy i probleme upravlyayemykh termoyadernykh reaktsiy. Fiz.-tekh. inst. AN Ukr. SSR. Kiev, Izd-vo AN Ukr. SSR, 1962. 86-92

TEXT: The scope of the investigation is similar to that of Shao, Resler, and Kantorowitz (ref. 3: J. Appl. Phys. 26, 95 (1955), except that the shock waves under consideration are stronger (with Mach number closto 50 rather than the upper limit of 17 in the cited paper). The experimental setup consisted of a shock tube with conical shock-wave source made of organic glass, placed in a solenoid which could be so set as to make the shock wave travel in a homogeneous or inhomogeneous magnetic field. The change in magnetic field connected with the passage of the shock wave was registered with a magnetic probe, and the velocity of the shock

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wave in the probe region was registered with two photomultipliers whose entrance slits were spaced 5-6 cm apart. The principal measurements were made in air at an initial pressure 0.2 mm Hg. It was found during the course of the experiments that the magnetic probes had a higher resolution than the photomultipliers.

Figures are presented showing oscillograms of the probe and photomultiplier signals, the dependence of the probe signal amplitude on the magnetic wave and on the velocity of the shock wave, and the emf induced in the probe when a plasma disc moves in a magnetic field relative to the probe.

The principal conclusions are that in the case of strong shock waves the distribution of the conductivity behind the front of the shock wave cannot be determined with the aid of this procedure, inasmuch as the half-width of the conductivity zone behind the front of the shock wave greatly decreases with increasing Mach number. In the case of the work of Shao et al, this procedure can be used, but the results must be approached with caution, since only the eddy currents were taken into account and thermal diamagnetism was completely ignored. Certain preliminary experiments were also made to determine the polarization of the plasma behind the front of the shock wave, showing that when a shock wave

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moves in a homogeneous transverse field it becomes polarized in a plane perpendicular to the magnetic field. Attempts to measure the polarization voltage as a function of the magnetic field intensity have led to values only half as large as the theoretical voltage, and the reason for this is not yet clear. There are seven figures and four references, all to Western literature.

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SAFRONOV, B.G.

AID Nr. 993-9 19 June

ENERGY AND DENSITY OF IONS IN AN ELECTROMAGNETIC TRAP (USSR)

Lavrent'yev, O. O., L. I. Ovcharenko, B. G. Safronov, V. O. Sidorkin, and B. A. Nemashkalo. Ukrayins'kyy fizichnyy zhurnal, v. 8, no. 4, Apr 1963, 452-459. S/185/63/008/004/006/015

The conditions for the confinement of low-density plasma in an electromagnetic trap have been investigated. The density and lifetime of electrons, the density and energy of ions, and the magnitude of the potential well were measured. The density of electrons in the trap at the moment of space-charge formation was determined by the injection current of electrons. The density of electrons after termination of the injection was determined from the electron emission occurring while the electrostatic trap was open, and the mean energy of the emerging ions, by the retarded-potential method. The energy of the potential well was determined by the passage time of krypton ions through the inner region of the trap. The actual ion energy is the sum

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AID Nr. 993-9 19 June

ENERGY AND DENSITY OF IONS [Cont'd] S/185/63/008/004/006/015

of the mean energy of the ions and the energy of the potential well. The ionic density was determined by the total number of ions emerging from all magnetic gaps and was of the order of $10^{10}/cm^3$. The results of the analysis are shown in graphs of the following: electron injection current versus time, electron density in the trap versus magnetic-field intensity, ion density versus injection-pulse duration, ion density versus magnetic field intensity, and mean energy of ions emerging from the trap versus 1) the energy of electrons and 2) the energy distribution of ions emerging from the trap. [JA]

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

S/781/62/000/000/020/036

AUTHORS: Sinel'nikov K. D., Khizhnyak, N. A. Safronov B. G.

TITLE: Motion of flexible current loop in inhomogeneous magnetic field

SOURCE: Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza; doklady I konferentsii po fizike plazmy i probleme upravlyayemykh termoyadernykh reaktsiy. Fiz.-Tekh. inst. AN Ukr. SSR. Kiev, Izd-vo AN Ukr. SSR, 1962, 93-101

TEXT: The motion of a flexible current loop, the radius of which can vary under the influence of electrodynamic forces, is of practical interest because it simulates the motion of plasmoids in external fields, and is furthermore of interest in itself. Previous work in this field by Osovets (refs. 2 and 3: Fizika plazmy i problem upravlyayemykh termoyadernykh reaktsiy [Plasma physics and the problem of controllable thermonuclear reactions], v. 2 and 3, Academy of Sciences USSR, 1958) have dealt with motions of a loop in external magnetic fields of definite geometry, but the present work is devoted to a study of unstable motion of current loops, both purely inductive and with account of ohmic

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losses. The equations of motion of the loop are formulated in Lagrangian form and solutions are obtained for a lossless loop, and for a loop in a linearly increasing matnetic field (in which the field actually slows down the loop and can even reflect it. Solution of the equations shows that the radius of the loop varies little with the dimensionless time, but the dimensionless axial distance covered by the loop increases in proportion to the time, which is an unexpected result.

The radial and axial stability of the loop are investigated also in the case of active resistance. The conditions for axial stability contain nothing new, but from the conditions obtained for the radial stability it follows that the loop can have a stable position in the presence of active resistance only when the average magnetic field and the magnetic field on the loop have different time dependences. The results are found to be in agreement with those obtained in refs. 2 and 3. There is one figure.

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S/781/62/000/000/021/036

AUTHORS: Sinel'nikov K. D., Safronov B. G., Guzhovskiy I.T., Yaremenko Yu.G.

TITLE: Propagation of plasmoids in a field-free space

PERIODICAL: Fizika plazmy i problemy uprvlyayemogo termoyadernogo sinteza; doklady konferentsii po fizike plazmy i probleme upravlyayemykh termoyadernykh reaktsiy. Fiz.-tekhn. inst. AN Ukr.SSR. Kiev, Izd-vo AN Ukr. SSR, 1962, 102-107.

TEXT: The parameters of a plasmoid in a space free of electric or magnetic fields, namely the propagation velocity, density, temperature, and total number of particles was investigated by the electric-probe method. The nature of fast and slow plasmoids was also studied. The equipment employed was a modification of the apparatus used by Bostick (ref. 1: Phys. Rev. 104, 2, 292, 1956). The discharge current could reach 10^4 amperes and the discharge capacitor was 0.1 microfarad in most experiments. Two probes placed a fixed distance apart were situated along the plasmoid propagation path; passage of the plasmoid caused a sharp dip in the potential of the probe, which was measured and recorded by an oscilloscope. This made it possible to determine the plasmoid velocity.

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Propagation of plasmoids in a field free space S/781/62/000/000/021/036

The conditions under which this method gives correct results are discussed. It was found that the plasmoid velocity is independent of the material of the source housing and the material of the electrodes in the accuracy obtained (about 8%), but is strongly dependent on the geometrical dimensions of the nozzle. It was also found that a fast plasmoid consists of fully ionized gas and has a velocity of 100 km/sec, while a slow one is partly ionized and moves at 20 km/sec. The plasma propagating in the vacuum interacts with the residual gas. The plasmoid configuration is such that ions predominate in the centre and electrons on the periphery. There are nine figures. The only references are to work by the Bostick group.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

S/781/62/000/000/022/036

AUTHORS: Sinel'nikov K. D., Safronov B. G., Sidorkin V. A. Trubchaninov, S. A.

TITLE: Motion of plasmoids transversely to a magnetic field

SOURCE: Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza; doklady I konferentsii po fizike plazmy i probleme upravlyayemykh termoyadernykh reaktsiy. Fiz.-tekhn. inst. AN Ukr.SSR. Kiev, Izd-vo AN Ukr. SSR, 1962. 108-111

TEXT: A separate study was made of plasma polarization and drift of plasmoids in a magnetic field. The polarization of the plasma was investigated in a homogeneous magnetic field by means of the usual Langmuir probes. This was followed by a study of the plasma behavior in inhomogeneous magnetic fields with different gradient directions. The plasmoids were injected from a space in which the magnetic field was close to zero. A magnetic field configuration of the ordinary trap type and of the picket-fence type could be produced by means of a system of coils. The plasma distribution was measured with screened probes. The measurements have shown that the ionic component of the plasma concentrates near regions where the magnetic field is close to zero, where the maximum particle numbers are

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likewise concentrated. The magnetic traps were also studied with respect to their plasma-retention ability. It was found that a picket-fence type of trap retains plasma five times longer than an ordinary one. There are six figures. Three out of the four references are in English and deal with the work done by Bostick et al.

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S/781/62/000/000/023/036
H

AUTHOR: Safranov, V. G., Goncharenko, V. P., Goncharenko, D. K.

TITLE: On the propagation of a plasmoid in a magnetic field

PERIODICAL: Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza; doklady I konferentsii po fizike plazmy i probleme upravlyayemykh termoyadernykh reaktsiy. Fiz.-tech. inst. AN Ukr. SSR. Kiev, Izd-vo AN Ukr. SSR, 1962, 111-112.

TEXT: The purpose of this work is a qualitative clarification of the behavior of plasmoids in a plane coinciding with the direction of the initial velocity and the direction of the magnetic field.

In connection with an investigation of toroidal magnetic traps we have noted that a plasmoid injected tangentially in the field of a toroidal solenoid propagates not only in the direction of its initial velocity, making a 360° revolution along the toroid, but also in an opposite direction. The magnetic field was constant in time.

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This phenomenon could not be explained from the point of view of elementary theory of the leading center, since all the plasmoid particles had on entering the magnetic field a velocity in one (right-hand) direction, and had no velocity component in the opposite direction, and should therefore move along a certain helical trajectory in one direction only. The propagation of a part of the plasmoid along the magnetic force lines in the opposite direction indicates that when the plasmoid enters into the magnetic field, processes occur which lead to the appearance of particles with velocities of arbitrary direction.

Let a plasmoid having a certain translational motion v_0, density n, and conductivity σ enter through a magnetic field gradient into a homogeneous field of the solenoid H_0. This case is analogous to the motion of a piece of conducting metal through a transverse magnetic field. The plasmoid forces out the magnetic field from a certain volume of the solenoid and is under a magnetic pressure $H^2/8\pi$ on all sides, except the directions that are parallel to the magnetic force lines. Such anisotropy of the magnetic pressure should lead to a splashing of plasma along the force lines of the magnetic field.

There are no references.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

S/781/62/000/000/024/036

AUTHORS: Sinel'nikov K. D., Rutkevich B. N., Safronov B. G.

TITLE: Nonadiabatic traps for charged particles

SOURCE: Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza; doklady I konferentsii po fizike plazmy i probleme upravlyayemykh termoyadernykh reaktsiy. Fiz.-tekhn. inst. AN Ukr. SSR. Kiev, Izd-vo AN Ukr. SSR, 1962, 113-123

TEXT: Nonideal traps, which do not retain the plasma over an infinitely long time, are discussed from the point of view of the extent to which they can be made close to ideal in the limit. Different analogies with optical multiple-reflection systems are pointed out, along with their analogues in plasma geometry. It is shown that it is possible to construct a nonadiabatic trap, the "idealness" of which is completely determined by the degree to which the particles entering the trap are parallel to one another. The effect of the magnetic smoothness of the channel and trap walls is discussed, with particular attention to the "picket-fence" configuration as one special type of roughness. Another type of trap is also discussed, in which deviation from ideal behavior is determined entirely by

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Nonadiabatic traps for charged particles. S/781/62/000/000/024/036

the deviation from monochromaticity of the beam of injected particles. Only very general assumptions are made with respect to the traps, and it is pointed out that neglect of the space charge may lead to other conclusions. There are six figures. The only reference is to work by Christofilos (cited in Russian translation), and it is pointed that his parametric-resonance method for particle injection into a trap can also lead to a nonideal trap that approaches ideal as heat is released in the additional loops located inside the trap.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

SAFRONOV, B. G., KALMYKOV, A. A., TIMOFEYEV, A. D., PANKRAT'YEV, YU. I., TERESHIN, V. I., TRUBCHANINOV, S. A., NOXDRACHEV, M. G., NABOKA, V. A.,

"Plasma Guns Investigation,"

report presented at the 6th Intl. Conf. on Ionization Phenomena in Gases, Paris, France, 8-13 Jul 63

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446720007-0

ACCESSION NR: AT4036065 S/2781/63/000/003/0232/0236

AUTHORS: Sinel'nikov, K. D.; Safronov, B. G.; Padalka, V. G.; Demidenko, I. I.

TITLE: Visual study of plasmoids

SOURCE: Konferentsiya po fizike plazmy* i problemam upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy* i problemy* upravlyayemogo termoyadernogo sinteza (Plasma physics and problems of controlled thermonuclear synthesis); doklady* konferentsii, no. 3, Kiev, Izd-vo AN UkrSSR, 1963, 232-236

TOPIC TAGS: plasmoid, plasmoid acceleration, toroidal drift instability, plasma research, plasma magnetic field interaction, plasma diffusion

ABSTRACT: Apparatus is described for visual observation of the shape of a plasmoid moving in electric and magnetic fields. The apparatus

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ACCESSION NR: AT4036065

described can be used successfully even for plasmoids with relatively low ion concentration (10^8--10^9 cm^{-3}) which are difficult to investigate by their waves (for example, high speed photography and spectroscopy). The instrument (called "plasmoscope" by A. V. Zharinov) is based on accelerating the plasma electrons between grids and causing them to induce glow of a luminor on a flat glass. The techniques required for the preparation of the plasmoscopes are described. The apparatus was used to investigate the entry and passage of a plasmoid in a longitudinal homogeneous magnetic field and in a field of toroidal configuration, using a source of the Bostick type and a discharge from 1 microfarad capacitor at 4 kV. The plasmoid velocity was (7--8) x 10^4 m/sec. The broadening of the plasmoid in the homogeneous-field region may be due to differences in the angle at which the plasmoid enters the gradient field near the solenoid. In the case of toroidal configuration, it is assumed that the magnetic field compensates for the plasma polarization. The length of the toroidal part of the field must not exceed

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the length of the plasmoid for such a model, and as the plasma moves along the helical solenoid the plasmoid passes through it only so long as its length exceeds the length of the helix. Otherwise a strong drift of the plasmoid is observed and the plasma does not get through. An experiment was performed to ascertain the effect to which the toroidal configuration can clear the plasmoid of the "tail" of heavy ions. The results indicate the feasibility of such a cleaning method. Orig. art. has: 6 figures.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 21May64 ENCL: 01

SUB CODE: ME NR REF SOV: 001 OTHER: 001

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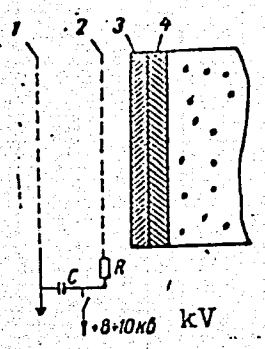
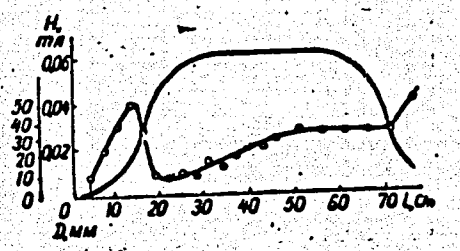
ENCLOSURE: 01

ACCESSION NR: AT4036065



kV

Tesla



Left - diagram of plasmoscope. 1 - grounded dense copper grid, 2 - accelerating grid, 3 - aluminum layer, 4 - luminor

Right - variation of plasmoid diameter with distance from source (lower curve) and magnetic field distribution (upper curve)

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ACCESSION NR: AT4025313 S/0000/63/000/000/0233/0236

AUTHORS: Lavrent'yev, O. A.; Nemashkalo, B. A.; Ovcharenko, L. I.; Safronov, B. G.; Sidorkin, V. A.

TITLE: Measurement of potential well in a plasma by means of the time of flight of charged particles

SOURCE: Diagnostika plazmy* (Plasma diagnostics); sb. statey. Moscow, Gosatomizdat, 1963, 233-236

TOPIC TAGS: plasma research, ionized plasma, plasma source, plasma injection, plasma confinement

ABSTRACT: A method is proposed for measuring the potential of a plasma during the time of flight of a beam of charged particles through the plasma. In the case of a dense plasma, when the Debye-screening radius is small and the electric fields in the plasma are concentrated in a narrow boundary layer, methods using beams of

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charge particles entail experimental difficulties. The operation of the experimental setup is such that after the injection pulse is completed, the potential of the grid of the plasma gun becomes lower than the cathode potential, and the electrons are locked in a trap. The plasma is produced as a result of ionization of the residual gas by the electrons. The potential well is measured by passing a modulated beam of krypton ions through the plasma. The time dependence of the plasma potential is determined from oscillograms which slow the phase shift of the ions in the beam. Orig. art. has: 4 figures and 6 formulas.

ASSOCIATION: None

SUBMITTED: 19Oct63 DATE ACQ: 16Apr64 ENCL: 02

SUB CODE: ME NR REF SOV: 001 OTHER: 001

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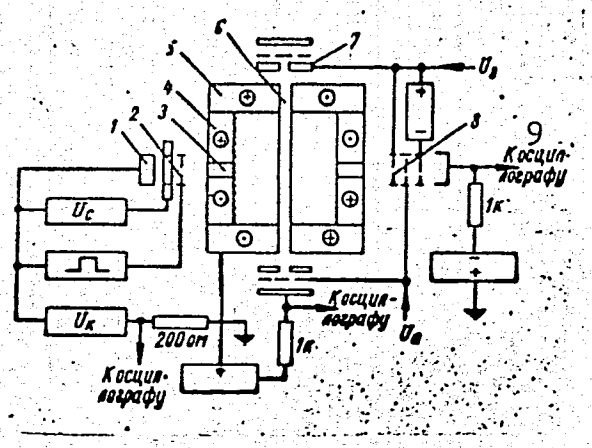
ACCESSION NR: AT4025313 ENCLOSURE: 01

Diagram of experimental set-up:



1 - cathode, 2 - grid,
3 - axial openings,
4 - solenoid, 5 - solenoid,
6 - annular slots
7 - electrostatic mirror
8 - grid

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