BELOZJOROVA, A.; DANILOV, V.; HANIKAT, E.; KAHU, M.; MAIOROVA, T. [Mayorova, T.]; SOKOLOV, A.; SUROV, A.[Shurov, A.]; [illegible], H.; TUISK, A.; UNB, E.; VEERSALU, E.; TIMAKOV, S.; JUHANI, I., red.; EINBERG, K., tekhn. red.

[Achievements of Soviet Estonia in 20 years; statistical survey] Noukogude Eesti saavutusi 20 aasta jooksul; statistiline kogumik. Tallinn, Eesti riiklik kirjastus, 1960. 173 p. (MIRA 15:5)

1. Estonian S.S.R. Statistika Keskvalitsus. 2. Sotrudniki Statisticheskogo upravleniya Soveta Ministrov Estonskoy S.S.R. (for all except Juhani, Einberg). 3. Direktor Statisticheskogo upravleniya Soveta Ministrov Estonskoy S.S.R. (for Timakov).
(Estonia—Economic conditions)

DANILOV, V.A.

Replacing steel by textolite [illegible] on compressor [illegible]. Tsement 27 no.1:29 Ja-F '61. (MIRA 14:2)
(Compressors)

DANILOV, V. A, and KRASNIKOV, V. V.

"Heat and Mass Transfer at the Process of Combined Drying by Convection and Conduction."

Report submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.

DANILOV, V., inzh.; NEBYLOV, G., inzh.; TAL'YANOV, V., inzh.

The "Kazakhstan" and "Kazakhstan-2" radio receivers. Radio no.4:31 Ap '65. (MIRA 18:5)

MAZEL', Solomon Isaakovich; DANILOV, Viktor Aleksandrovich; AKINFIYEV, B.F., otvetstvennyy redaktor; KOKOSOV, L.V., redaktor; LEDNEVA, N.V., tekhnicheskiy redaktor

[City telephone lineman] Monter-spaishchik gorodskikh telefonnykh setei. Moskva, Gos. izd-vo lit-ry po voprosam sviazi i radio, 1956. 112 p. (MLRA 9:9)

(Telephone--Handbooks, manuals, etc.)

DANILOV, Viktor Aleksandrovich; D'YACHENKO, Vladimir Fedorovich; NEMIROVSKIY, S.A., otvetstvennyy redaktor; LEYBOV, M.K., redaktor; BERESLAVSKAYA, L.Sh., tekhnicheskiy redaktor

[The work of a brigade with installation of telephone cables lead-in] Rabota brigady po ustroistvu vvodov telefonnogo kabelia. Moskva, Gos. izd-vo lit-ry po voprosam sviazi i radio, 1957. 17 p.
(Telephone cables) (MLRA 10:2)

DANILOV, V. A.

"New Experimental Method of Investigation of Kinetics of High - rate Drying."

Report submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.

KRASNIKOV, V.V.; DANILOV, V.A.

Heat and mass transfer in the conductive convective drying of capilliary porous bodies. Inzh.-fiz. zhur. 4 no.6:27-32 Je '61. (MIRA 14:7)

1. Tekhnologicheskiy institut pishchevoy promyshlennosti, Moskva.

(Mass trasfer) (Heat—Transmission) (Drying)

KRASNIKOV, V.V.; DANILOV, V.A.

Local rates of mass transfer in composite drying. Inzh.-fiz. zhur. 5 no.7:39-44 Jl '62. (MIRA 15:7)

1. Tekhnologicheskiy institut pishchevoy promyshlennosti, Moskva. (Mass transfer) (Drying)

KRASNIKOV, V.V.; DANILOV, V.A.

Electric contact method of drying thin fibrous materials. Trudy MTIPP 15:87-93 '60. (MIRA 16:2)
(Paper—Drying)

DANILOV, V.A.

Methodology of investigating a combined intermittent drying process. Trudy MTIPP 15:101-104 '60. (MIRA 16:2)
(Drying)

KRASNIKOV, V.V., dotsent, kand.tekhn.nauk; DANILOV, V.A., inzh.

Kinetics of paper heating in case of drying. Bum.prom. 37 no.11:18-20 N '62. (MIRA 15:12)
(Paper—Drying)

KRASNIKOV, V. V.; TANILOV, V. A.

"High-velocity convective and combined drying of fibrous materials."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minsk, 6-12 May 1964.

Moscow Technological Inst of Food Industry.

SOV/137-58-8-16826

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 85 (USSR)

AUTHORS: Starchenko, D.I., Kapustina, M.I., Gorenshteyn, M.M., Danilov, V.D., Savchenko, A.M., Yefimenko, S.P.

TITLE: Intensifying Breakdown Operations ... Rolling Heavy Sheet (Intensifikatsiya rezhimov obzhatiya pri prokatke tolstykh listov)

PERIODICAL: Sb. nauchn. tr. Zhdanovsk. metallurg. in-t, 1957, Nr 4, pp 126-142

ABSTRACT: Experimental rolling (R) and study of existing breakdown schedules (B) for thick sheets of the major sizes, types, and grades of steel on the Nr-1 mill of the im. Il'ich plant make it possible to define the unused power and available energy of the mill during the initial period of R of 8.8x2095 mm and 10.8x2085 mm Nr-3 steel sheets, and also to determine unused biting capacity of the rolls. These factors are used to develop and recommend new, more intensive B schedules, envisaging a considerable increase in B during the first passes, with the present deformation ratios being retained essentially at the end of B. The B of sheets of different types and dimensions was performed in 21-23 passes as against 27-31 passes under the

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SOV-137-58-8-16826

Intensifying Breakdown Operations in Rolling Heavy Sheet

old B schedules, making it possible to reduce the R time for a single ingot and thus to raise the productivity of a three-high Lauth mill by 5-6% on the average.

A.N.

1. Steel--Processing 2. Ingots
3. Rolling mills--Performance

Card 2/2

SOV/137-58-9-18985

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 119 (USSR)

AUTHORS Kapustina, M.I., Danilov, V.D., Savchenko, A.M.

TITLE A Contribution to the Problem of Determination of Pressures and Torque Moments in Rolling Mills (K voprosu ob opredelenii davleniy i krutyashchikh momentov na prokatnykh stanakh)

PERIODICAL: Izv. vyssh. uchebn. zavedeniy. Chernaya metallurgiya, 1958, Nr 1, pp 138-143

ABSTRACT: An examination is made of the operating conditions of resistance strain gages (SG) pasted onto rolling-mill spindles. These are compared to the operating conditions for similar SG pasted onto a calibration beam. It is shown that a wire SG attached to the surface of a spindle at 45° to its axis is subjected to a state of plane stress (PS) when the spindle is subjected to torque. The constantan SG usually employed have a tensile sensitivity range of 2.1-2.3 and function differently under conditions of linear and plane S. Therefore, given identical degrees of SG strain on the beam and the spindle, the strains causing them prove to be different. It is determined by experiment that the stress on the spindle is 75% of that on the beam. It is

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A Contribution to the Problem of Determination of Pressures (cont.)

shown that the correction factors of 0.9 to 1 recommended in the literature are erroneous. Therefore, it is shown that in order to determine torque moments under conditions of industrial operation, the calibration of wire SG must be done on special models, the nature of the S on the surface of which corresponds to the nature of the S on the surface of the shaft being subjected to torque. It is observed that the accuracy of measurement of the roll-separating pressure by attaching a pick-up to the housing depends upon the point at which the pick-up is bonded.

M.Z.

1. Rolling mills--Operation 2. Rolling mills--Torque 3. Strain gages--Application
4. Rolling mills--Pressure

Card 2/2

STARCHENKO, D.I., doktor tekhn.nauk, prof.; KAPUSTINA, M.I., kand.tekhn.nauk, dotsent; GORENSHTEYN, M.M., kand.tekhn.nauk, dotsent; DANILOV, V.D., inzh.; SAVCHENKO, A.M., inzh.; YEFIMENKO, S.P., inzh.

Investigating deformation conditions in plate rolling. Izv. vys. ucheb. zav.; chern.met. no.5:121-129 My '58. (MIRA 11:7)

1.Zhdanovskiy metallurgicheskiy institut.
(Deformations (Mechanics)) (Rolling (Metalwork))

KIRILLOV, B.S., kand.tekhn.nauk; KAPUSTINA, M.I.; KUZEMA, I.D.; DANILOV, V.D., inzh.; SAVCHENKO, A.M.

Investigating the crankshaft of a rolling mill steam driving system. Izv.vys.ucheb.zav.; chern.met. 2 no.2:143-151 F '59. (MIRA 12:6)

1. Zhdanovskiy metallurgicheskiy institut. Rekomendovano kafedroy mekhanicheskogo oborudovaniya metallurgicheskikh zavodov Zhdanovskogo metallurgicheskogo instituta.
(Cranks and crankshafts--Testing)
(Rolling mills)

KAPUSTINA, M.I., kand.tekhn.nauk; KUZEMA, I.D., kand.tekhn.nauk, KIRILLOV, B.S., kand.tekhn.nauk; DANILOV, V.D., inzh., SAVCHENKO, A.M., insh.

Developing efficient conditions of ingot rolling on cogging mills. Zool.shur. 38 no.1:95-100 Ja '59. (MIRA 13:4)

1. Zhdanovskiy metallurgicheskiy institut.
(Rolling (Metalwork)

S/137/61/000/002/008/046
A006/A001

Translation from: Referativnyy zhurnal, Metallurgiya, 1961, No. 2, p. 4, # 2D31

AUTHORS: Kapustina, M.I., Danilov, V.D., Yefimenko, S.P., Savchenko, A.M. and Mezhaurov, M.M.

TITLE: Improved Reduction Conditions on a Reversing Thick-Sheet Mill at Insufficient Power of the Main Motor

PERIODICAL: "Sb.nauchn.tr.Zhdanovsk. metallurg. in-t", 1960, No.5, pp.257-263

TEXT: The authors analyze factors determining the permissible reduction in the rolling of sheets and plates on a reversing 1,200x4,450 mill. It is established that the factor, limiting the reduction, is insufficient power of the drive motor. Under these conditions it is recommended to perform the metal grip by the rolls not at the time of speeding-up the motor, which requires the expenditure of the dynamical torque component, but after the rolls have attained the rated rotation speed; to accelerate the speed of rolls the time of pauses should be used.

Ya. Sh.

Translator's note: This is the full translation of the original Russian abstract.

Card 1/1

DANILOV, V. G.

DANILOV, V. G. -- "Lamps with Transverse and Network Control and Their Use." Min Higher Education USSR. Moscow Order of Lenin Power Engineering Inst imeni V. M. Molotov. Moscow, 1955. (Dissertation for the Degree of Candidate of Technical Sciences.)

SO: Knizhnaya Letopis', No 5, Moscow, Feb 1956

L 48216-65

ACCESSION NR: AP5011730 UR/0146/65/008/002/0027/0028

AUTHOR: Danilov, V. G.; Orekhov, A. P.

TITLE: Amplifier with simplified stabilization of electrometer tubes

SOURCE: IVUZ. Priborostroyeniye, v. 8, no. 2, 1965, 27-28

TOPIC TAGS: electrometer amplifier, electrometer pentode, electrometer tube stabilization/M24 microammeter

ABSTRACT: An electrometer amplifier with a simplified stabilization scheme, used to measure collector current in rf mass spectrometers, is described. The circuit diagram is shown in Fig. 1 of Enclosure. The amplifier utilizes a superminiature pentode in the first stage with a gain of 30, which eliminates the need for filament-circuit stabilization in the tubes of the succeeding stages. The circuit employs 100% negative feedback, and all stages are balanced networks, requiring only one degree of filament stabilization in the electrometer stage. To reduce gain, the voltage is applied to the screen grids of the tubes of the first stage from a divider. A cathode-follower ensures low output resistance. The amplifier is used in conjunction with the M24 microammeter with interchangeable resistors for currents of 10^{-11} amp (65 mv).

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L 48316-65
ACCESSION NR: AP5011730

10^{-10} amp (650 mv), 10^{-9} amp (6.5 v), and 10^{-8} amp (65 v). Drift does not exceed 3 μv/hr. Sensitivity can be improved by changing the measurement resistance from 6.5 to 1000 Gohm. Orig. art. has: 1 figure. [DW]

ASSOCIATION: Novosibirskiy elektrotekhnicheskiy institut. Kafedra elektronnykh priborov (Novosibirsk Electrotechnical Institute. Department of Electronic Devices)

SUBMITTED: 26May64 ENCL: 01 SUB CODE: EC

NO REF SOV: 000 OTHER: 000 ATD PRESS: 3252

Card 2/3

DANILOV, V.I., inzhener; MUSAELYAN, E.S., inzhener.

Reactorless start of a synchronous generator for compensating operation. Elek.sta. 24 no.9:55 S '53. (MLRA 6:8)
(Dynamos)

STROKOV, S.A.; DANILOV, V.I.; GURVICH, Yu.A.

The S Sh-70 motor-driven chassis. Trakt. i sel'khozmash. no.1:4-8 Ja '59. (MIRA 12:1)

1. Rostsel'mash.

(Motor vehicles)

STETSENKO, A.K., inzhener; DANILOV, V.I., inzhener.

Dry nitrogen used for protection of machines and instruments.
Vest.mash. 37 no.6:32-33 Je '57. (MLRA 10:7)
(Protective atmospheres) (Nitrogen)

AUTHOR: Danilov, V.I., Engineer 67-58-3-8/18

TITLE: The Application of Dry Nitrogen for the Conservation of Machines and Apparatus (Primeneniye sukhogo azota dlya konservatsii mashin i priborov)

PERIODICAL: Kislorod, 1958, [illegible] Nr 3, pp. 36-39 (USSR)

ABSTRACT: The application of organic oil as an anticorrosive agent for the protection of metal parts is not very advantageous in the case of such metals as must have no greasy surface. It is recommended that such parts of machines and apparatus be conserved in dry nitrogen. A device serving this purpose is shown and described (fig. 1). For the drying of nitrogen in the cooler liquid nitrogen is here used as a coolant. The use of the conservation device described gave good results when used in the USSR and it is further being improved. By comparison it was established that, while metal objects covered with a protective coating against oxidation showed signs of corrosion after 2 months, the same objects showed no signs of corrosion even after 6 months when unprotected in the apparatus mentioned. This method of conservation was found to offer the same advantages when compared to various protective coatings such as oil, etc.

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The Application of Dry Nitrogen for the Conservation of Machines and Apparatus

67-58-3-8/18

used for the conservation of metal. This method of metal conservation was tested simultaneously on hundreds of such apparatus and was found to give satisfactory results both from a practical and an economic point of view. There are 3 figures.

1. Industrial equipment--Preservation 2. Corrosion inhibitors --Applications 3. Nitrogen--Applications 4. Nitrogen (Liquid) --Performance 5. Nitrogen--Dehydration.

Card 2/2

DANILOV, V.I, [Danylov, V.I.]; CHURSIN, M.I.; GAVRILOV, V.P.; KAZARNOVSKIY, F.A. [Kazarnovs'kyi, F.A.]

Special problems of operating the electric equipment of SK-3 combines. Mekh. sil'.hosp. 11 no.8:10-14 Ag '60. (MIRA 13:9)

1. Rabotniki Spetsial'nogo konstruktorskogo byuro zavoda "Rostsel'-mash" (for Danilov, Chursin). 2. Rabotniki DSKB pri Taganrogskom kombaynovom zavode (for Gavrilov, Kazarnovskiy).
(Combines (Agricultural machinery)-- Electric equipment)

DANILOV, V.I.

Air feeder. Stek. i ker. 18 no. 1:38 Ja '61. (MIRA 14:1)
(Pneumatic machinery) (Weighing machinery)

GOLITSYN, S.V., DANILOV, V.I.

Onobrychis radiata M.B., a new Caucasian plant in the flora of the eastern Ukraine. Bot zhur. 45 no.5:727-730 My '60. (MIRA 13:7)

1. Voronezhskiy gosudarstvennyy universitet.
(Ukraine—Onobrychis)

GOLOVANOVA, E.N., kand.biolog.nauk; DANILOV, V.I.; PITERSKAYA, A.M.; DERYABIN, V.I., nauchnyy sotrudnik; BALAYAN, L.N., nauchnyy sotrudnik; BURDA, Yu.N., nauchnyy sotrudnik

Controlling sparrows. Zashch. rast. ot vred. i bol. 8 no.9: 19-20 S '63. (MIRA 16:10)

1. Samarkandskaya oblastnaya sel'skokhozyaystvennaya opytnaya stantsiya (for Deryabin, Balayan, Burda).

MATEVOSYAN, P.A.; DANILOV, V.I.; LAPSHOVA, M.P.; KISELEV, A.A.; LISOV, I.V.; VOLYANSKIY, V.M.

Improving the quality of blooming mill ingots. Stal' 23 no.12:1086-1087 D '63. (MIRA 17:2)

1. Volgogradskiy metallurgicheskiy zavod "Krasnyy Oktyabr'".

AM4017341 BOOK EXPLOITATION

Granatman, Vsevolod Vladimirovich; Danilov, Vladimir Ivanovich, Kiryachek, Andrey Yakovlevich

Industrial contactless apparatus with discrete action; a survey (Promy*shlennaya beskontaktnaya apparature diskretnogo deystviya; obzor), Leningrad, LDNTP, 1963, 102 p. illus., biblio. 4,500 copies printed. (At head of title: Leningradskoye otdeleniye Obshchestva po rasprostraneniyu politicheskikh i nauchny*kh znaniy RSFSR)

Series Note: Leningradskiy Dom nauchno-tekhnicheskoy propagandy*. Seriya: Pribory* i elementy* avtomatiki

TOPIC TAGS: contactless apparatus, automation, magnetic core, automation, magnetic logic element, ferrite transistor logic element, square hysteresis loop

TABLE OF CONTENTS [abridged]:

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S/879/62/000/000/056/088
D234/D308

AUTHORS: Danilov, V. I. and Sachenkov, A. V. (Kazan')

TITLE: Some nonlinear problems of stability of a cylindrical shell with uniform external pressure

SOURCE: Teoriya plastin i obolochek; trudy II Vsesoyuznoy konferentsii, L'vov, 15-21 sentyabrya 1961 g. Kiev, Izd-vo AN USSR, 1962, 336-338

TEXT: The authors investigate the stability of a shell one edge of which is free and the other either freely supported or clamped. The problems are solved by the energy method in the second approximation. Expressions for the energy are given. It is stated that the final results coincide with those obtained previously by F. S. Isanbayeva in two papers (up to a constant factor), except that the essential quantity is the double length of the shell. Conclusion: the upper and lower critical loads of a shell in the above cases are equal to those of a shell having twice the same length, freely supported along both edges.

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KAYNARSKIY, I.S.; DEGTYAREVA, E.V.; PINDRIK, B. Ye.; KUKHTENKO, V.A.; KULAKOV, N.I.; BEL'CHENKO, B.I.; IVNITSKAYA, N.S.; SMORODA, I.M.; SHAROV, M.F.; KOZIN, L.M.; KVASHA, A.S.; PELESHCHUK, M.I.; PRYAKHIN, L.G.; LEVINA, L.I.; DANILOV, V.I.; DIDENKO, S.Yu. PROTSENKO, G.A.

Reducing dust formation from dinas bricks and dinas mortar. Ogneupory 29 no.3:109-112 '64 (MIRA 17:3)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (for Kaynarskiy, Degtyareva, Pindrik, Kukhtenko). 2. Gosudarstvennyy institut po proyektirovaniyu predpriyatiy koksokhimicheskoy promyshlennosti (for Kulakov, Bel'chenko, Ivnitskaya). 3. Vsesoyuznyy trest po stroitel'stvu i montazhu koksokhimicheskikh zavodov (for Peleshchuk, Pryakhin, Levina). 4. Ukrainskiy nauchno-issledovatel'skiy institut gigiyeny truda i professional'nykh zabolevaniy (for Danilov, Didenko, Protsenko).

DANILOV, V.I.; YENCHEVICH, I.E.; NOVIKOV, .L.; P'LEF.LV, E.A.; SAFONOV, A.N.; FEOKTISTOV, B.V.

[Calcu.ation of the initial region of staole phase oscillations in a synchrocyclotrone] Raschet nachal'noi oblasti ustoic·ivykh kolebanii v sinkhrotsiklotrone. Dubna, Ob"edinennyi in.-t iadernykh issl. 1963. 14 p. (MIRA 17:7)

KRUGLYAK Yu.A.; DANILOV, V.I.; GAYDAY, V.M.

Recording tautomeric forms of bases in the process of the construction of a genetic code. Dokl. AN SSSR 157 no.1:201-202 Jl '64 (MIRA 17:8)

1. Institut fizicheskoy khimii AN UkrSSR. Predstavleno akademikom V.A. Engel'gardtom.

DANILOV, V.I.; KRUGLYAK, Yu.A.

Diagram of an "untwisted" [illegible] complex[illegible]s in
DNA. Dokl. AN SSSR 157 no.4:985 Ag '64 (MIRA 17:8)

1. Institut fizicheskoy khimii im. [illegible] AN
[illegible]. Predstavlen [illegible].

KRYUGER, P.K.; KOTS, S.L.; KAZAKOV, V.N.; GRECHANSKIY, V.S.; FEDOROV, P.N.; NEBOZHENKO, I.A.; PEREL'MAN, Yu.S.; DANILOV, V.I., inzh., red.; KHITROV, P.A., tekhn.red.

[Repairing electric equipment and cab sections of diesel locomotives] Remont elektrooborudovaniia i ekipazhnoi chasti teplovozov. Moskva, Gos.transp.zhel-dor. izd-vo, 1956. 150 p. (MIRA 11:6)
(Diesel locomotives--Maintenance and repair)

DANILOV, V.I., inzh.; KHATSKELEVICH, M.M., inzh.; CHERNYSHEVICH, F.I., inzh.

Reply to the inquiries of our readers. Elek. i tepl. tiaga 4 no.5: 44 My '60. (MIRA 13:7)
(Electric railway motors) (Railroads--Signaling)

KONOVALOV, N.A.; DANILOV, V.I., inzh.; KHATSKELEVICH, M.N., inzh.

Reply to the inquiries of our readers. Elek.i teplotiaga. 4 no.6:42-43 Je '60. (MIRA 13:8)

1. Master motorno-apparatnogo tsekha depo Moskva III Moskovskoy dorogi.
(Electric locomotives--Maintenance and repair)
(Diesel locomotives)
(Railroads--Signaling)

GORN, V.N., inzh.; KLIMOV, N.N., inzh.; DANILOV, V.I., inzh.;
KHATSKELEVICH, M.N., inzh.

Reply to the inquiries of our readers. Elek. i tepl. tiaga 4
no. 9:44 S '60. (MIRA 13:12)
(Railroads--Signaling) (Diesel locomotives)

GORN, V.N., inzh.; DANILOV, V.I., inzh.

Reply to the inquiries of our readers. Elek. i tepl. tiaga 4 no.10: 45 O '60. (MIRA 13:10)
(Railroads--Brakes) (Diesel locomotives)

KHATSKELEVICH, M.N., inzh.; DANILOV, V.I., inzh.

Reply to the inquiries of our readers. Elek. i tepl. tiaga 4 no.11: 42 N '60. (MIRA 13:12)

(Railroads--Signaling)

DANILOV, V.I.; CHEREPANOV, K. Ye.; ANTROPOV, K.V., osmotrshchik-avtomatichik; KHRIPUNOV, V.S., osmotrshchik-avtomatchik; SHASHMURIN, A. Ye., osmotrshchik-avtomatchik

Are emergency brake accelerators necessary on freight trains? Elek. i tepl. tiaga 5 no.3:43 Mr '61. (MIRA 14:6)

1. Master avtokontrol'nogo stantsii Sverdlovsk-Sortirovochanay (for Danilov). 2. Starshiy master punkta tekhnicheskogo osmotra stantsii Sverdlovsk-Sortirovochnaya (for Cherepanov) 3. Stantsiya Sverdlovsk—Sortirovochnaya (for Antropov, Khripunov, Shashmurin).
(Railroads—Brakes)

TOLKACHEV, V.P., inzh.; KLIMOV, N.N., inzh.; DANILOV, V.I., inzh.

Replies to the inquiries of our readers. Elek. i tepl. tiaga 5 no.3:44 Mr '61. (MIRA 14:6)
(Railroads--Brakes)

DANILOV, V.I., inzh.

What causes the skidding of electric locomotives? .ut' i
put.:hoz. 5 no.7:32-33 Jl '61. (MIRA 14:8)
(Electric locomotives)

KHATSKELEVICH, M.N., inzh.; ZAV'YALOV, G.N.; NOVIKOV, A.V., inzh.; OZOLIN, A.K., inzh.; LAPIN, V.B., inzh.; DANILOV, V.I., inzh.

Replies to the inquiries of our readers. Elek.i tepl.tiaga 5 no.9:45-46 S '61. (MIRA 14:10)

1. Glavnyy tekhnolog po avtotormozam Glavnogo upravleniya lokomotivnogo khozyaystva Ministerstva putey soobshcheniya (for Zav'yalov).
(Railroads--Brakes) (Diesel locomotives)
(Insulating oils)

YURCHENKO, I.F.; GORN, V.N., inzh.; DANILOV, V.I., inzh.

Answering readers' queries. Elek.i tepl. tiaga 5 no.12:39 D '61.
(MIRA 15:1)

1. Nachal'nik Upravleniya truda, zarabotnoy platy i tekhniki bezopasnosti Ministerstva putey soobshcheniya (for Yurchenko).
(Locomotives)

YURCHENKO, I.F.; OKUNEV, P.F., starshiy mekhanik; TOLKACHEV, V.P., inzh.; BYCHKOVSKIY, A.V., kand.tekhn.nauk; GORBATYUK, V.A., inzh.; LAGUN, Ya.I., starshiy inzh.; SHALIMOV, V.S., inzh.; DANILOV, V.L., inzh.

Replies to the inquiries of our readers. Elek. i tepl. tiaga 5 no.6:41-43 Je '61. (MIRA 14:10)

1. Nachal'nik Upravleniya truda, zarabotnoy platy i tekhniki bezopasnosti Ministerstva putey soobshcheniya (for Yurchenko). 2. Otdeleniye avtotormoznogo khozyaystva Vsesoyuznogo nauchno-issledovatel'skogo instituta zheleznodorozhnogo transporta Ministerstva putey soobshcheniya (for Okunev). 3. Otdel glavnogo tekhnologa Perovskogo zavoda po remonty elektropodvizhnogo sostava (for Lagun).

(Diesel locomotives)
(Railroads--Rolling stock)

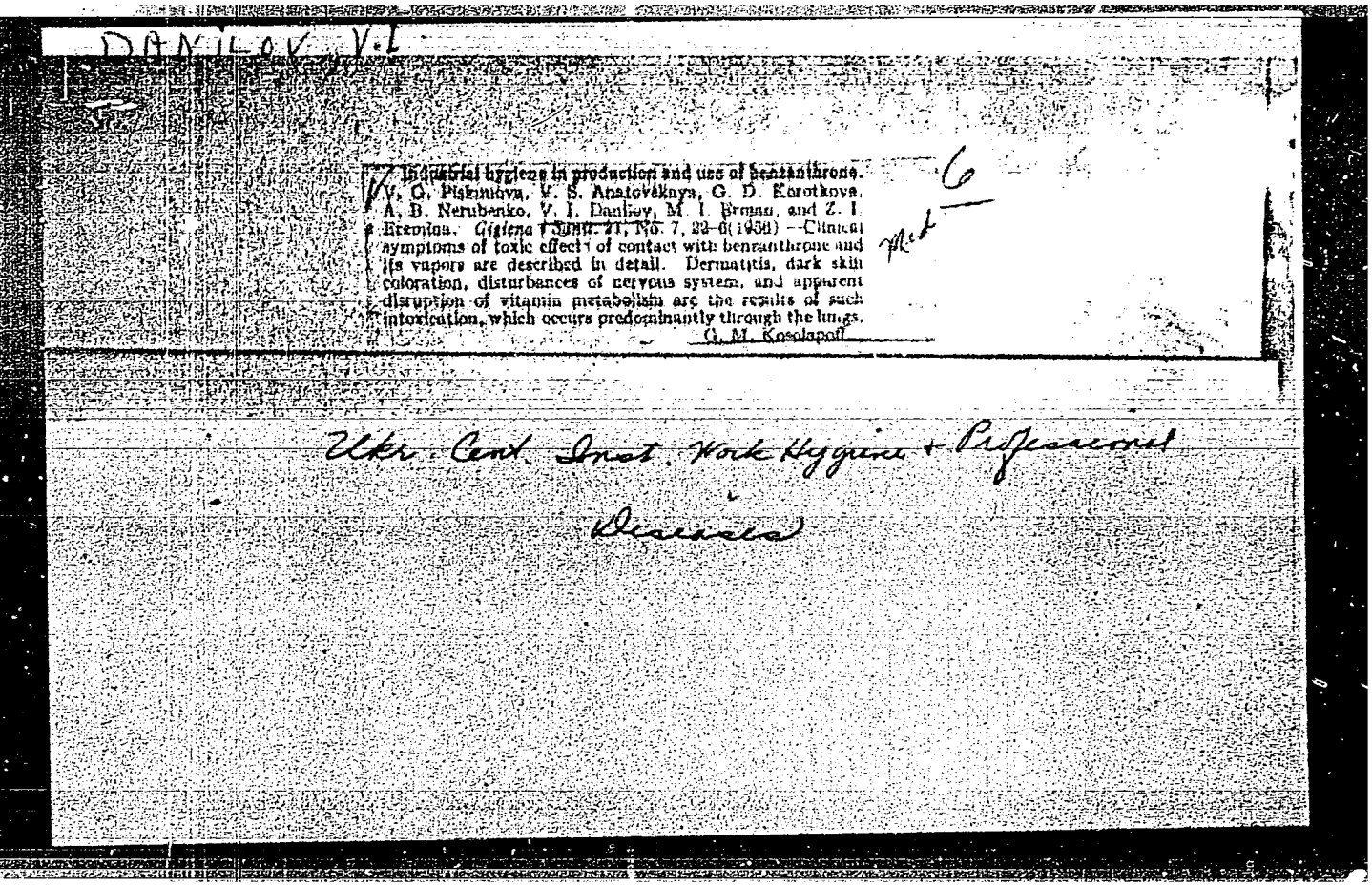
BOYKO, Fedor Ivanovich; DANILOV, Valentin Ivanovich; SHAKURSKIY, K.D., inzh., retsenzent; SARANTSEV, Yu.S., inzh., red.; VOROTNIKOVA, L.F., tekhn. red.

[Repair of provisory No.270-002 air distributors] Remont vozdukhoraspredelitelei USL. No.270-002; opyt kontrol'nogo punkta avtotormozov stantsii Sverdlovsk-Sortirovochnyi. Moskva, Transzheldorizdat, 1963. 41 p. (MIRA 16:4)
(Air brakes--Maintenance and repair)

BOVE, Ye.G., kand. tekhn. nauk; KHATKEVICH, G.N., inzh.;
DANILOV, V.I., inzh.; ZEL'VYANSKIY, Ya.A.; NIKUSHIN, A.I., inzh.;
NIKOLAYEV, N.S., inzh.

Replies to the inquiries of our readers. Elek. i tepl. tiaga
no.5:34-36 My '63. (MIRA 16:8)

1. Starshiy inzh. Glavnogo upravleniya elektrifikatsii i
energeticheskogo khozyaystva Ministerstva putey soobshcheniya
(for Zel'vyanskiy).
(Diesel locomotive) (Electric railroads)



DANILOV V.I.

Industrial hygiene in production and use of benzanthrone. V. G. Pishchulova, V. S. Anatovskaya, G. D. Korotkova, A. B. Nerubenko, V. I. Danilov, M. I. Braun, and Z. I. Brevnina. *Gigiena i Sanit.* 21, No. 7, 22-6(1956).—Clinical symptoms of toxic effects of contact with benzanthrone and its vapors are described in detail. Dermatitis, dark skin coloration, disturbances of nervous system, and apparent disruption of vitamin metabolism are the results of such intoxication, which occurs predominantly through the lungs.
G. M. Kosolapoff

6

Ukr. Cent. Inst. Work Hygiene + Prof. Diseases
Kharkov

ERMAN, M.I.; DANILOV, V.I.; SOKRUTINA, Z.A.; SIGALOVSKAYA, K.K.

Hygienic working conditions in benzene divisions, in benzene rectification shops, in resin distillation shops in byproduct-coking plants. Gig. i san. 21 no.10:50-51 O '56. (MLRA 9:11)

1. Iz Ukrainskogo tsentral'nogo instituta gigiyeny truda i professional'nykh zabolevaniy.

(AIR POLLUTION
in by-product coke indust. causing occup. dis.)
(INDUSTRIAL HYGIENE
prev. of occup. dis. in caused by air pollution in by-product coke indust.)

DANILOV, V. I., Cand Med Sci -- (diss) "~~Hygienic~~ Labor Hygiene Problems in the Production and Rectification of Benzene in Coal-tar Chemical Plants." Kharkov, 1957. 10 pp. (Khark Med Inst). (KL, 7-58, 112)

RUMANIA/Chemical Technology. Chemical Products and Their Application. Safety Engineering. Sanitary Engineering.

Abs Jour: Ref Zhur-Khim., No 13, 1958, 43787.

Author : Piskunova V. G., Anatovskaya V. S., Korotkova G. D., Nerubenko A. B., Danilov V. I., Erman M. I., Yeremina Z. I.

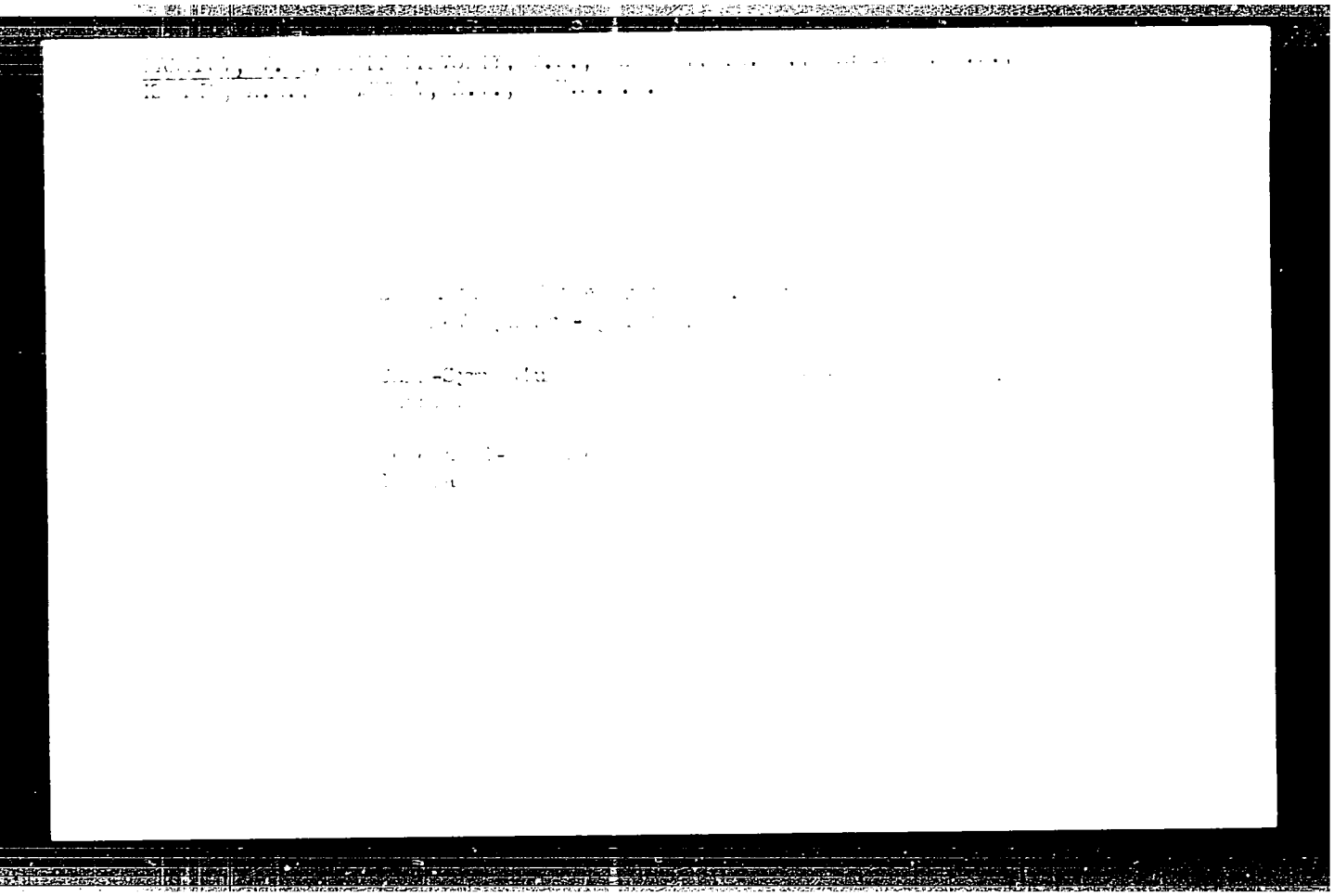
Inst :

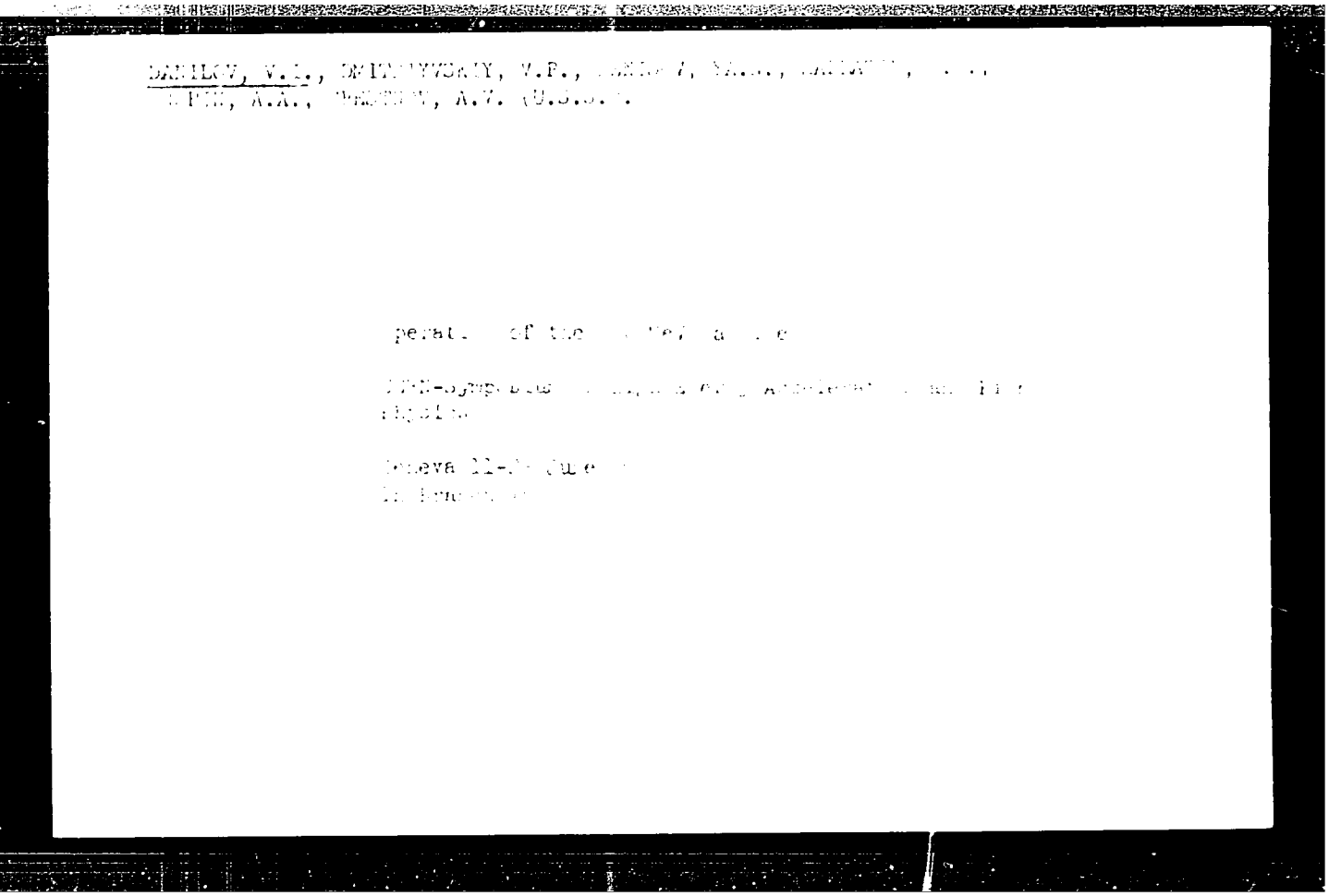
Title : Labor Hygiene Problems in the Production and Use of Benzanthrone.

Orig Pub: An. Rom.-Sov. Ser. igiena si organiz. sanit., 1957, 11, No 2, 57-61.

Abstract: A translation. See RZhKhim, 1957, 21784.

Card : 1/1



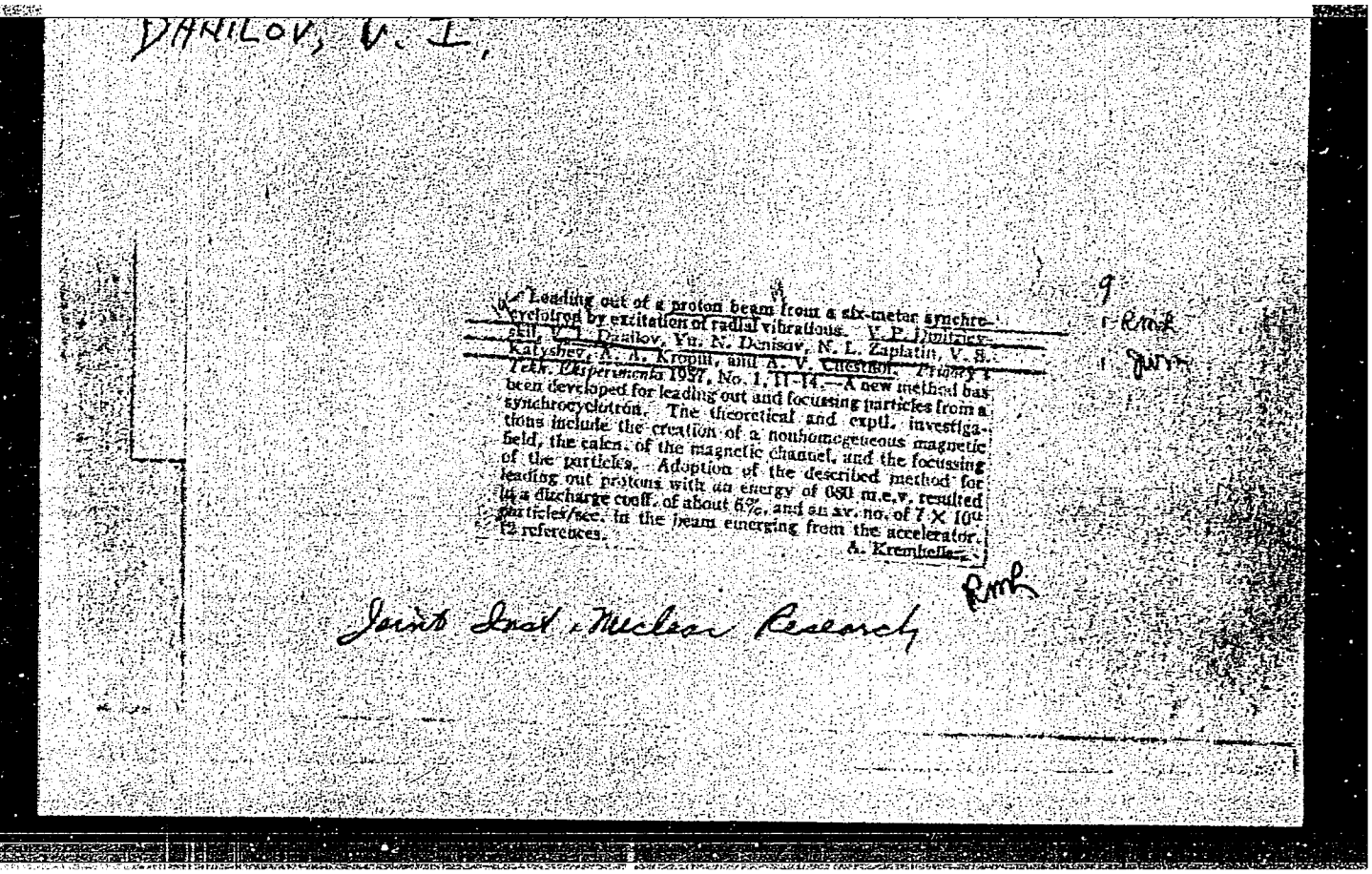


PARTICLE ACCELERATORS: SYNCHROCYCLOTRON

"Method of Increasing Density of a Proton Beam Taken from the Six-Meter Synchrocyclotron", by V.I. Danilov, V.P. Dmitrievskiy, and A.V. Chestnoy, Joint Institute for Nuclear Research. Pribory i Tekhnika Eksperimenta, No 3, November-December 1956, pp 9-13.

Description of a method for increasing the density of the proton beam taken from the six-meter synchrocyclotron. This method reduces to forming, on the path of the output beam, a magnetic field of a particular configuration in the non-working region of the electromagnet of the accelerator. The focusing action of the magnetic field is calculated on the basis of the analysis of the motion of the particles along the beam trajectory. A similar effect is used in the 184-inch synchrocyclotron in Berkley (see Powell, Henrich, and Kerns et al. Review of Scientific Instruments, 1948, 19, 506).

Card 1/1



DANILOV, V. I.

Leading out of a proton beam from a six-meter synchrocyclotron by excitation of radial vibrations. V. P. Dmitriev, V. I. Danilov, Yu. N. Denisov, N. L. Zaplatin, V. S. Katyshev, A. A. Kropin, and A. V. Chestkov. *Priroda* 1957, No. 1, 11-14.—A new method has been developed for leading out and focussing particles from a synchrocyclotron. The theoretical and expt. investigations include the creation of a nonhomogeneous magnetic field, the calcn. of the magnetic channel, and the focussing of the particles. Adoption of the described method for leading out protons with an energy of 680 m.e.v. resulted in a discharge coeff. of about 6%, and an av. no. of 7×10^{12} particles/sec. in the beam emerging from the accelerator. 12 references.

A. Kremheller

Joint Inst. Nuclear Research

12-2-21/37

AUTHOR: Danilov, V. I., Denisov, Yu. N . and Dmitriyevskiy, V. P.

TITLE: **A Differential Electronic Fluxmeter.** (Differentsial'nyy **Elektronnyy** Flyuksmetr.)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.2, pp. 74 - 77 (USSR).

ABSTRACT: An instrument for measuring sharply inhomogeneous magnetic fields is described. The probe element consists of two calibrated coils wound in opposition and differing in their characteristics by not more than 0.002%. The rotation of coils, which are both wound on the same former, is achieved with the help of a special current excited winding. The electronic part of the arrangement consists of an integrating network, of an inductively coupled amplifier, of a peak reading voltmeter and of a remote control arrangement. The characteristic constant of the instrument was determined from measurements on a known magnetic field using Equation 4, where N is the flux meter reading. The sensitivity obtained for an instrument, built at the Institute, was 0.027 oersted/cm/division. A mechanical drawing of the coil arrangement and a circuit diagram of the electronic part of the instrument are given. There are 2 Slavic references.

Card 1/2

A Differential Electronic Fluxmeter. 1[illegible]-8-21/37

SUBMITTED: July, 30, 1956.

ASSOCIATION: Joint Institute for Nuclear Research. (Ob"yedinennyy Institut Yadernykh Issledovaniy).

AVAILABLE: Library of Congress.

Card 2/2

DANILOV, V. I. Cand Phys-Math Sci -- (diss) "Formation of magnetic fields for accelerators with spatial variation." [Dubna, 1959] 13 pp (Joint Inst of Nuclear Studies. Laboratory of Nuclear Problems), 170 copies. Printed by duplicating machine. Bibliography: pp 12-13 (10 titles) (KL, 41-59, 102)

PHASE I BOOK EXPLOITATION SOV/4540

Danilov, V.I., V.P. Dmitriyevskiy, N.L. Zaplatin, V.V. Kol'ga, Liu Nieh-ch'uan, V.S. Rybalko, and L.A. Sarkisyan

Formirovaniye magnitnogo polya tsiklotrona s prostranstvennoy variatsiyey (Production of a Magnetic Field in a Cyclotron With Space Variation) Dubna [Izdatel'skiy otdel Ob"yedinennogo instituta yadernykh issledovanii] 1959. 27 p. 300 copies printed. [PHOTOCOPY]

Sponsoring Agency: Ob"yedinennyy institut yadernykh issledovaniy. Laboratoriya yadernykh problem.

Tech. Ed.: V.R. Sarantseva.

PURPOSE: The publication is intended for nuclear physicists.

COVERAGE: The book analyzes problems associated with the production of a magnetic field in a spiral cyclotron by a system of ring and spiral shims. Calculation of the magnetic field in a system of such shims was based on the assumption of

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Production of a Magnetic Field (Cont.) SOV/4540

uniform magnetization of their volume in the direction of the vertical component of the outer magnetizing field. Technical problems in construction of spiral shims and design characteristics of the pole terminals of the electromagnet are described. The author thanks V.P. Dzhelepov, B.I. Zamolodchikov, L.V. Vasil'yev, Yu. N. Denisov, M.M. Semenov, K.A. Baycher, N.I. D'yakov, N.S. Matyukhin, and A.A. Oleynik. There are 22 references: 16 Soviet and 6 English.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress (QC787.C8D8)

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12-7-60

05431
SOV/12[illegible]-59-3-[illegible]/46

AUTHORS: Danilov, V. I., and Savchenko, O. V

TITLE: A method of Focusing Charged Particles from Accelerators (Metod fokusirovki zaryazhennykh chastits ot uskoriteley)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 3, pp 17-20 (USSR)

ABSTRACT: Charged particles extracted from the accelerator chamber usually have to travel a considerable distance before they reach the detecting apparatus. This leads to a considerable decrease in the useful intensity In many experiments electromagnets are used either to bend the beam or as analyzers. It would be useful to use such electromagnets not only to bend the beam but also to focus it. This can be carried out by shaping the magnetic field along the path of the beam so that it resembles a quadrupole lens. If a ferromagnetic body is placed in the gap of the electromagnet, such that its dimensions in the direction of the field are greater than at least one of its transverse dimensions then in
Card 1/3 fields greater than 9000 oerrsted the body will be

A Method of Focusing Charged Particles from Accelerators

magnetized almost to saturation. In this case, the ferromagnetic body may be looked upon as a collection of uniformly distributed magnetic dipoles and the field components due to the specimen may be evaluated analytically. The field in the electromagnetic gap is assumed to be uniform. The ferromagnetic body considered in the present paper is in the form of the parallelipiped shown in Fig 1. In the set of coordinates shown in this figure, the z and y components of the field due to such saturated specimens are given by Eq (1) and (2) where $M = (21000 \pm 500)/4\pi$ oerrsted, which is the magnetization for the majority of ferromagnetic materials. When ferromagnetic bodies of this form are placed in the electromagnet gap as shown in Fig 2, then in the region defined by Eq (3) one obtains a non-uniform magnetic field as a result of the superposition of the external fields of the block 1 and the blocks 2 and 3. In choosing the geometry of these ferromagnetic blocks, and in the calculation of the magnetic field due to them, it is necessary to take into account the effect of the pole pieces. This may be done by the method Card 2/3 given by Smythe in Ref 2. It is shown that a

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A Method of Focusing Charged Particles from Accelerators

configuration of such ferromagnetic blocks may be used to obtain double focusing, and this is obtained by placing along the path of the beam ferromagnetic block assemblies which simulate quadrupole lenses having gradients with alternating signs. Such quadrupole-simulating lenses have been used by the authors with 600 Mev protons and 300 Mev π-mesons The increase in the intensity obtained with these lenses was found to be of the order of 3 and 2.7 respectively B S. Nezhanov is thanked for making and testing the lenses and A. A Kropin is thanked for a number of valuable suggestions There are three figures and 3 references, 1 of which is Soviet and 2 are Soviet translations from English

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute for Nuclear Studies

SUBMITTED: April 24, 1958

Card 3/3

21(9) SOV/89-6-6-7/27

AUTHORS: Vasilevskaya, D P., Glazov, A A , Danilov, V I., Denisov, Yu. N., Dzhelepov, V. P., Dmitriyevskiy, V. P., Zamolodchikov, B. I., Zaplatin, N. L., Kol'ga, V. V , Kropin, A. A., [illegible], Rybalko, V. S , Savenkov, A. L , Sarkisyan, L. A.

TITLE: Putting Into Operation a Cyclotron With a Spatially Varying Tension of the Magnetic Field (Zapusk tsiklotrona s prostranstvennoy variatsiyey napryazhennosti magnitnogo polya)

PERIODICAL: Atomnaya energiya, 1959, Vol 6, Nr 6, pp 657 - 658 (USSR)

ABSTRACT: In the present "Letter to the Editor" the authors report on some measurements and theoretical considerations concerning some parameters of the new cyclotron In the Laboratoriya yadernykh problem Ob"yedinennogo instituta yadernykh issledovaniy (Laboratory for Nuclear Problems of the Joint Institute for Nuclear Research) in the town of Dubna the new cyclic accelerator was started in January 1959; this new type shows both an azimuthally and a radially periodically varying magnetic field. The diameter of the magnet of the accelerator is 1200 mm. The lines of constant field tension have the shape of spirals of Archimedes, r = 16 2 φ, periodicity of the field structure:

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N = 6. The mean value of the field tension increases radially according to the relativistic mass increase of the accelerated ions. Since the acceleration originates from the center of the magnet the fundamental frequencies of the free oscillations change accordingly $\nu_z = 0$, $\nu_r = 1$ (at r=0) to $\nu_z = 0.2$, $\nu_r = 1.01$ (at r = 52 cm). It was shown theoretically that the radial increase of the mean magnetic field tension which is necessary for the elimination of the nonlinear resonance effect occurring in the center of the accelerator may decrease with increasing N, according to $N/2^N(N-1)!$ and with an increase of the radial spacing in the case of a fixed N as $(r_1/r_2)^{N-2}$. These investigation results were taken into account in selecting the six-spiral structure of the magnetic field in the center of which no nonlinear resonance occurs. All measurements of the field tensions were carried out by means of a nuclear magnetometer (error ± 1.5 Oe). A resonance quarter-wave system with one D-shaped electrode was used for the ion acceleration. In the cyclotron deuterons

Putting Into Operation a Cyclotron With a Spatially Varying Tension of the Magnetic Field

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were accelerated up to 12 Mev and α-particles up to 24 Mev at a minimum amplitude of the acceleration tension on the duant of 8 kv. The two methods which were used for measuring the energy in the case of a maximum orbital radius are briefly described. A picture shows the accelerating chamber of the cyclotron (Fig 2), another one an autograph of a neutron beam in the case of different radii. The investigation results prove the possibility of producing a relativistic cyclotron with a proton energy which equals that of a modern phasotron. There are 2 figures and 2 references, 1 of which is Soviet

SUBMITTED: April 9, 1959

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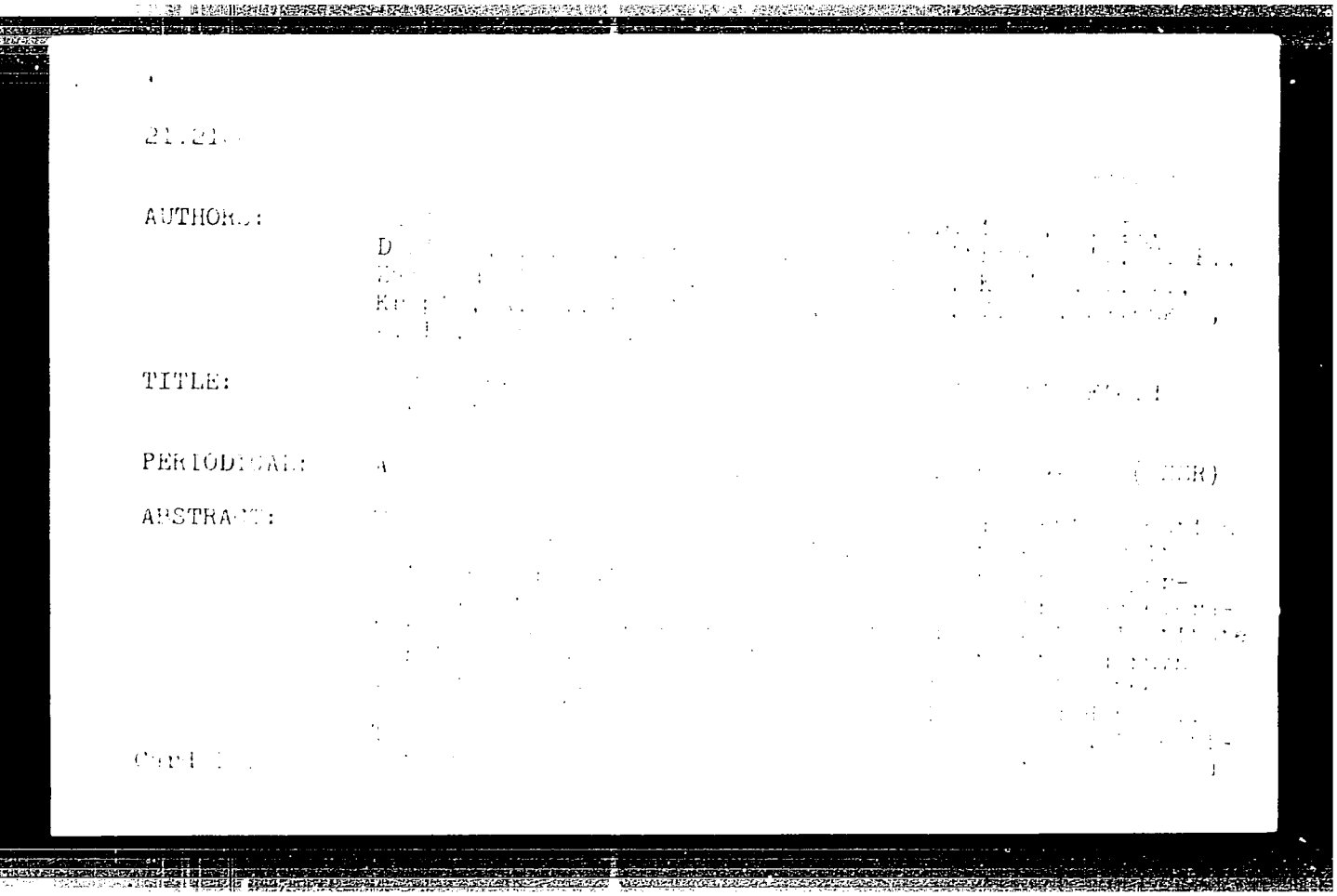
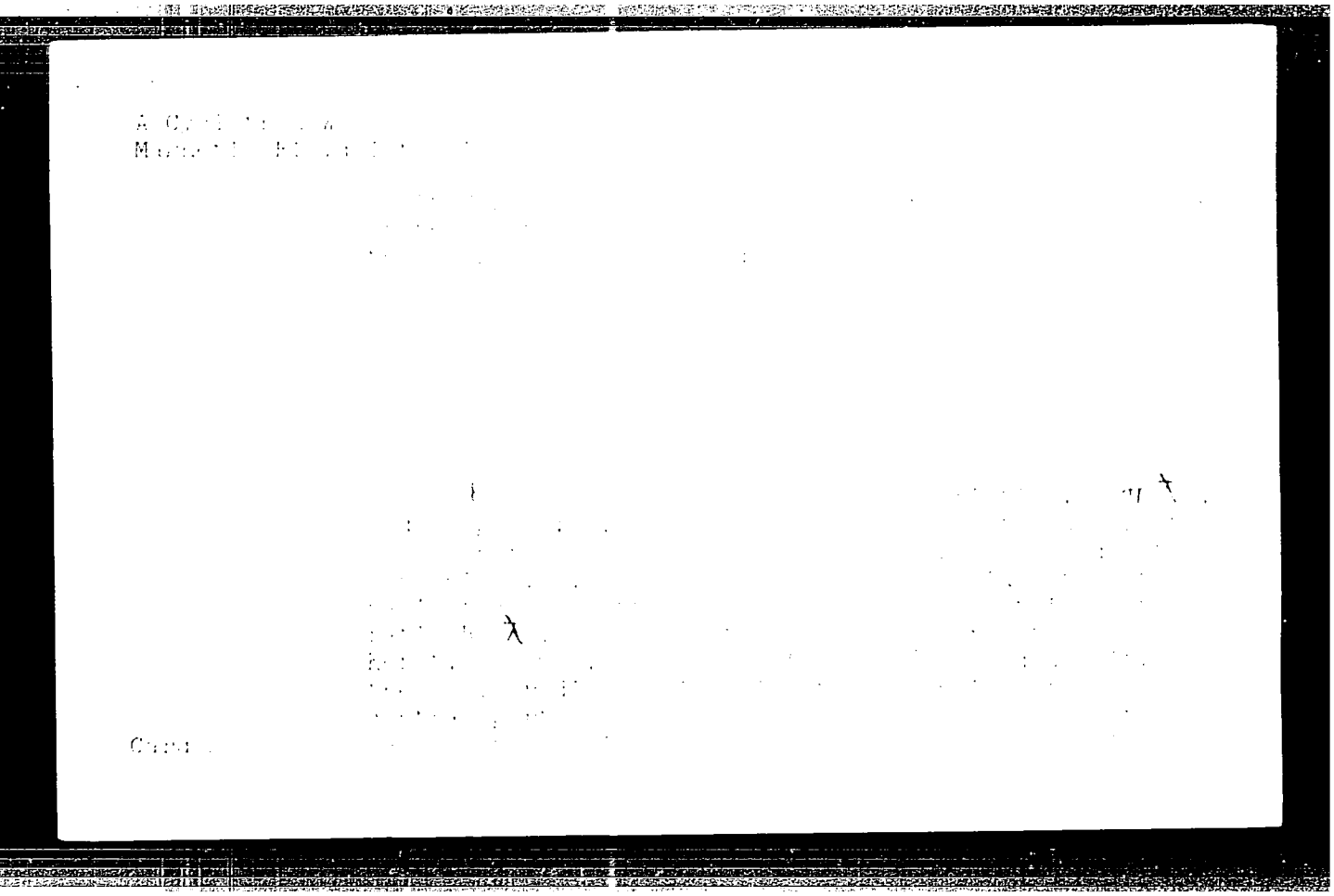


AUTHOR(S):

TITLE:

PERIODICAL:

ABSTRACT:



A Cyclotron With a Spatially [illegible]
Magnetic Field Intensity

[illegible]317
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[illegible] limitations on proton energies due to [illegible] oscillations. Next, they note that the small parameter λ in Eqs.(2) and (') modify the oscillations of proton accelerators and develop [illegible] of magnetic field [illegible] was produced [illegible], λ [illegible], $\varepsilon = 0.0$[illegible], and [illegible] the pattern of [illegible], with the [illegible] $> \lambda$ [illegible] radial [illegible], λ = [illegible], and ε [illegible] field [illegible] and [illegible]

Card

of the dees was 5 kv. Figure 4 shows the relation between inner beam intensity and accelerator radius with an accelerating dee voltage of 11 kv. The beam was well focused everywhere and the half-width of its vertical spread was not more than 1 cm. Next, the authors describe the computations of the required magnetic field and compare them with experimentally measured values. Figure 5 shows results for a field with N = 6, χ = 2.7. The absolute values of the field were measured using the Hall and nuclear resonance type magnetometers. In the region of r = 4,5 m (pole width 5-10 cm gradient, the fields were measured with an accuracy of ±0.01%. Volume of the magnetometer probe was $5 \cdot 10^{-4}$ m^3, and the gradients were measured with an accuracy of ±1%. The [illegible] magnetic field intensity was stabilized automatically to ±0.02% using a nuclear stabilizer [illegible] Pribory i tekhnika eksperimenta (Instruments and Techniques of Experiment), Nr 1, [illegible]). The r-f system was described earlier by Glukhov and others (Radiotekhnicheskaya

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A Cyclotron With a Spatially Varying
Magnetic Field Intensity

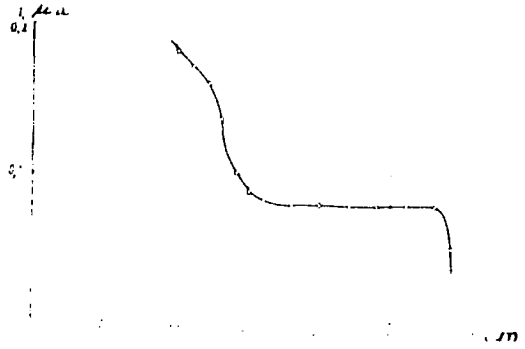

Fig. 4. Part
(=).

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A Cyclotron With a Spacially Varying Magnetic Field Intensity

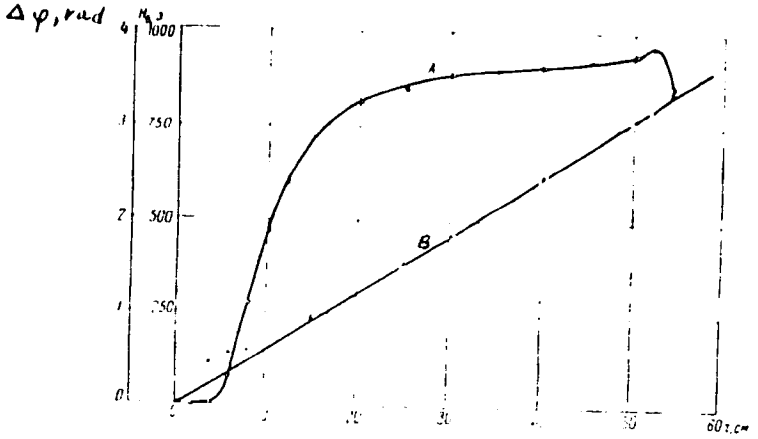

Fig. 7. (A) Amplitude of sixth harmonic of magnetic field H_z versus radius. (B) Phase φ of spiral shim versus radius (full line--calculated; crosses--experimental data).

A [illegible]ron With a Spacially Varying
Magnetic Field Intensity

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sistema modeli tsiklotrona s prostranstvenno variatsiyey magnitnogo polya, Otchet Laboratorii yadernykh problem OIYaI (Radiofrequency System for a Model of a Cyclotron With Spacially Varying Magnetic Field, Report of the Laboratory of Nuclear Problems OIYaI) (1959)). The special feature is the existence of a single dee with a radius of 57.5 cm and a small gap between the dee and the chamber of 1.5 cm. Aperture of the dee was 4 cm. The amplitude of the accelerating potential was stabilized to an accuracy of 1.5%. To reduce the background due to long-lived radioactive isotopes, the cyclotron chamber was made from the "avial" alloy. Working vaccum was 1 to 2·10^{-5} mm Hg. The ion source was of the Penning variety and could be displaced in arbitrary direction with affection the vacuum. Three quartz targets with tungsten wire served as visual or current measuring indicators of the beam. The authors claim that all tests confirmed the linear theory of spacial stability of the charged particle motion in accelerators, and that the methods of creating necessary magnetic field variations possess sufficient accuracy.

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A Cyclotron With a Spacially Varying Magnetic Field Intensity

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Theoretical and experimental investigation of the spacially varying fields and the methods developed for shimming the central field enable one to obtain, on cyclotrons of appropriate size, resonant accelerations of particles up to energies achieved until now only in phasotrons and with beam currents of the order of hundreds of microamperes. K. A. Baybarov, N. I. Frolov, M. F. Shul'ga, and F. V. Chumakov were the managers of various divisions of the OIYaI engaged in the construction of the cyclotron. D. I. Blokhintsev, D. V. Yefremov, K. N. Meshcheryakov, and V. N. Sergiyenko showed interest and helped accelerate the work. E. G. Komar, I. F. Malyshev, and L. N. Fedulov constructed the chamber and the accelerator magnet, while A. V. Chestnyy helped in the early stages of planning the technical problems. There are 9 figures; and 34 references, 22 Soviet, 3 U.K., 9 U.S. The 5 most recent U.K. and U.S. references are: N. King, W. Walkinshow, Nucl. Instr. 3, 1 (1958); D. Kerst, H. Hagsman, R. Haxby, L. Laslett, F. Milles, T. Ohkawa, F. Peterson, A. Sessler, J. Snyder.

Card 9/10

A Cyclotron With a Spacially Varying
Magnetic Field Intensity

W. Wallenmeyer, Rev. Scient. Instrum., 28, Nr 11, 970 (1957); W. Walkinshaw, N. King, Linear Theory in S/R Cyclotron Design, AERE, GP/R 2052 (1956); P. Dunn, L. Mullett, T. Pickavance, W. Walkinshaw, J. Wilkins, CERN Symposium, 1, 9 (1956); D. Dorst, K. Terwilliger, K. Symon, L. Jones, Bull. Amer. Phys. Soc., 30, Nr 1 (1955).

SUBMITTED: August 27, 1959

Card 10/10

S/057/61/031/004/006/018
B125/B205

9.2120 (also 1001, 1155),
21.1100

AUTHORS: Biryukov, V. A. and Danilov, V. I.

TITLE: Magnetic field of a rectangular, current-carrying coil

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 4, 1961, 428-435

TEXT: A study has been made of some special cases of exact formulas for the coefficients of the magnetic field of a current-carrying, rectangular coil. These exact formulas are obtained by summation of the magnetic fields of elementary currents satisfying the Biot-Savart law. For both theoretical analyses and practical calculations it is advisable to have an exact solution to the problem of a coil having several layers of finite dimensions. The first part presents the calculation of the field of a current-carrying turn. The turn, through which a current i flows and which has an infinitely thin cross section in the plane z=0 of a rectangular coordinate system, is assumed to be such that the axis Oz passes through its center. If the radius vector $\vec{R}$ points from an element of the turn $d\vec{l}$ to the point of observation (x_0, y_0, z_0), the magnetic field

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Magnetic field of a...

generated by this element is given by $d\vec{H} = \frac{i}{4\pi R^3}[\vec{dl}\ \vec{R}]$ according to the Biot-Savart law. The equation

$$\left.\begin{aligned} dH_x &= \frac{i}{4\pi R^3}(dl_y R_z), \\ dH_y &= \frac{i}{4\pi R^3}(-dl_x R_z), \\ dH_z &= \frac{i}{4\pi R^3}(dl_x R_y - dl_y R_x), \end{aligned}\right\} \qquad (1a)$$

holds for the components of the field along the axis. Only the field produced by the sides 1 and 3 has a component along the Ox axis, i.e.,

$$H_x = \frac{iz_0}{4\pi}\left\{\int_{-a}^{a}\frac{dy}{\left[(x_0-l)^2+(y_0-y)^2+z_0^2\right]^{3/2}} + \int_{-a}^{a}\frac{(-dy)}{\left[(x_0+l)^2+(y_0-y)^2+z_0^2\right]^{3/2}}\right\} =$$

$$= -\frac{iz_0}{4\pi}\left\{\left[\frac{\beta}{(\alpha^2+z_0^2)\sqrt{\alpha^2+\beta^2+z_0^2}}\right]_{\alpha_1=x_0-l}^{\alpha_1=x_0+l}\right\}_{\beta_1=y_0-a}^{\beta_1=y_0+a}. \qquad (2)$$

The field generated by currents 2 and 4 has a component along the Oy axis, i.e.,

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Magnetic field of a...

$$H_y = -\frac{Iz_0}{4\pi}\left\{\int_{-l}^{l}\frac{(-dx)}{\left[(x_0-x)^2+(y_0-a)^2+z_0^2\right]^{3/2}}+\right.$$
$$\left.+\int_{-l}^{l}\frac{dx}{\left[(x_0-x)^2+(y_0+a)^2+z_0^2\right]^{3/2}}\right\}= \quad (3)$$
$$=-\frac{Iz_0}{4\pi}\left\{\left[\frac{a}{(\beta^2+z_0^2)\sqrt{a^2+\beta^2+z_0^2}}\right]_{\alpha_1=x_0-l}^{\alpha_2=x_0+l}\right\}_{\beta_1=y_0-a}^{\beta_2=y_0+a}. \quad (3)$$

The z-component of the magnetic field will be the sum of the summands of all four sides of the turn:

$$H_z = \frac{I}{4\pi}\left\{-(x_0-l)\int_{-a}^{a}\frac{dy}{\left[(x_0-l)^2+(y_0-y)^2+z_0^2\right]^{3/2}}+\right.$$
$$+(y_0-a)\int_{-l}^{l}\frac{(-dx)}{\left[(x_0-x)^2+(y_0-a)^2+z_0^2\right]^{3/2}}- \quad (4)$$
$$\left.-(x_0+l)\int_{-a}^{a}\frac{(-dy)}{\left[(x_0+l)^2+(y_0-y)^2+z_0^2\right]^{3/2}}+\right.$$

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Magnetic field of a...

$$+(y_0+a)\int_{-l}^{l}\frac{dx}{\left[(x_0-x)^2+(y_0+a)^2+z_0^2\right]^{3/2}}\Bigg\}=$$

$$=\frac{i}{4\pi}\left\{\left[\frac{\alpha\beta}{(\beta^2+z_0^2)\sqrt{\alpha^2+\beta^2+z_0^2}}+\frac{\alpha\beta}{(\alpha^2+z_0^2)\sqrt{\alpha^2+\beta^2+z_0^2}}\right]_{\alpha_1=x_0-l}^{\alpha_2=x_0+l}\right\}_{\beta_1=y_0-a}^{\beta_2=y_0+a}. \quad (4)$$

Here and henceforward, α and β indicate the limits of the integrals determined; thus, $\left\{\left[f(\alpha,\beta)\right]_{\alpha_1}^{\alpha_2}\right\}_{\beta_1}^{\beta_2} = f(\alpha_2,\beta_2) + f(\alpha_1,\beta_1) - f(\alpha_2,\beta_1) - f(\alpha_1,\beta_2)$ is valid. The constant in (2) - (4) and in the later formulas corresponds to the MKSM system chosen here. Thus, the field strength is expressed in a/cm, the current i in a, and all linear dimensions in cm. The magnetic field of a rectangular coil of infinitely thin cross section can be expressed as the sum of magnetic fields generated by similar turns. The winding of the coil is supposed to be continuous. The current $i = jdz$ flows through a coil element of height dz; here, $j = iW/2h$ stands for the linear current density, where i is the current flowing through the winding, W the number of turns, and 2h the height of the coil. The plane xOy traverses the center of the coil. Then, one finds the components of

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Magnetic field of a...

the magnetic field of a coil having the dimensions $2l \times 2a$ by integration of (2) - (4) over the height of the coil:

$$H_x = -\frac{J}{4\pi}\left[\left(\int_{-h}^{h}\frac{\beta(z_0-z)\,dz}{[a^2+(z_0-z)^2]\sqrt{a^2+\beta^2+(z_0-z)^2}}\right)_{\alpha_1}^{\alpha_2}\right]_{\beta_1}^{\beta_2} =$$

$$= -\frac{J}{4\pi}\left\{\left[\left(\operatorname{ar\,sh}\frac{\beta}{\sqrt{a^2+\gamma_1^2}}\right)_{\alpha_1=x_0-l}^{\alpha_2=x_0+l}\right]_{\beta_1=y_0+a}^{\beta_2=y_0-a}\right\}_{\gamma_1=z_0+h}^{\gamma_2=z_0-h}, \qquad (5)$$

(5)

$$H_y = -\frac{J}{4\pi}\left\{\left[\left(\operatorname{ar\,sh}\frac{\alpha}{\sqrt{\beta^2+\gamma_1^2}}\right)_{\alpha_1=x_0+l}^{\alpha_2=x_0-l}\right]_{\beta_1=y_0+a}^{\beta_2=y_0-a}\right\}_{\gamma_1=z_0+h}^{\gamma_2=z_0-h}, \qquad (6)$$

(6)

$$H_z = \frac{J}{4\pi}\left[\left(\int_{-h}^{h}\frac{\alpha\beta\,dz}{[\beta^2+(z_0-z)^2]\sqrt{a^2+\beta^2+(z_0-z)^2}} + \right.\right.$$

$$\left.\left. + \int_{-h}^{h}\frac{\alpha\beta\,dz}{[a^2+(z_0-z)^2]\sqrt{a^2+\beta^2+(z_0+z)^2}}\right)_{\alpha_1}^{\alpha_2}\right]_{\beta_1}^{\beta_2} =$$

(6a)

$$= -\frac{J}{4\pi}\left\{\left[\left(\operatorname{arc\,tg}\frac{\alpha\eta}{\beta\sqrt{a^2+\beta^2+\eta^2}} + \operatorname{arc\,tg}\frac{\beta\eta}{\alpha\sqrt{a^2+\beta^2+\eta^2}}\right)_{\alpha_1}^{\alpha_2}\right]_{\beta_1}^{\beta_2}\right\}_{\eta_1}^{\eta_2}. \qquad (6a)$$

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Magnetic field of a...

Here and henceforward, the field strength is written down in the form of (6a). After summing up the arc tangents one obtains

$$H_z = -\frac{I}{4\pi}\left\{\left[\left(\operatorname{arc\,ctg}\frac{\alpha\beta}{\eta\sqrt{\alpha^2+\beta^2+\eta^2}}\right)_{\alpha_1=x_0-l}^{\alpha_2=x_0-l}\right]_{\beta_1=y_0-a}^{\beta_2=y_0-a}\right\}_{\eta_1=z_0-h}^{\eta_2=z_0-h}. \qquad (7)$$

instead of (6a). The field of a coil having an infinitely small height and many turns is given by

$$H_z = \frac{I}{4\pi}\left\{\left[\operatorname{arc\,tg}\frac{k_1'\varphi'-z_0^2}{z_0\sqrt{(k_1'+\varphi')^2+\varphi'^2+z_0^2}}+\right.\right.$$

$$\left.+\operatorname{arc\,tg}\frac{k_3'\varphi'-z_0^2}{z_0\sqrt{(k_3'+\varphi')^2+\varphi'^2+z_0^2}}\right]_{\varphi_1'=z_0-l}^{\varphi_2'=z_0-l-d}-$$

$$-\left[\operatorname{arc\,tg}\frac{k_2'\psi'-z_0^2}{z_0\sqrt{(k_2'+\psi')^2+\psi'^2+z_0^2}}+\right.$$

$$\left.\left.+\operatorname{arc\,tg}\frac{k_4'\psi'-z_0^2}{z_0\sqrt{(k_4'+\psi')^2+\psi'^2+z_0^2}}\right]_{\psi_1'=z_0+l}^{\psi_2'=z_0+l+d}\right\}, \qquad (9)$$

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Magnetic field of a...

where d denotes the thickness of the coil. The symbols

$$\left.\begin{aligned} k_1' &= [(y_0 - a) - (x_0 - l)] = -k_1, \\ k_2' &= [(y_0 + a) - (x_0 + l)] = -k_2, \\ k_3' &= -[(y_0 + a) + (x_0 - l)] = k_3, \\ k_4' &= -[(y_0 - a) + (x_0 + l)] = k_4, \end{aligned}\right\} \quad (8) \qquad (8)$$

are used here. With the symbol $f_{xy}(k,\varphi) = \arctan \frac{k\varphi - z_0}{z_0 \sqrt{(k+\varphi)^2 + \varphi^2 + z_0^2}}$ the

y-component of the field is given by

$$H_y = \frac{I}{4\pi}\left\{[f_{xy}(k_1, \varphi) + f_{xy}(k_4, \varphi)]_{\varphi_1 = y_0 - a}^{\varphi_2 = y_0 - a - d} - [f_{xy}(k_2, \psi) + f_{xy}(k_3, \psi)]_{\psi_1 = y_0 + a}^{\psi_2 = y_0 + a + d}\right\}, \qquad (10)$$

где для краткости обозначено

$$f_{xy}(k, \varphi) = \operatorname{arc\,tg} \frac{k\varphi - z_0^2}{z_0 \sqrt{(k+\varphi)^2 + \varphi^2 + z_0^2}}.$$

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Magnetic field of a...

and the z-component by

$$H_z = \frac{I}{4\pi}\left\{[f_z(k_1\varphi) + f_z(k_4,\ \varphi)]_{\varphi_1=y_0-a}^{\varphi_2=y_0-a-d} - [f_z(k_2,\ \psi) + f_z(k_3,\ \psi)]_{\psi_1=y_0+a}^{\psi_2=y_0+a+d} + \right.$$

$$+ [f_z(k_1',\ \varphi') + f_z(k_3',\ \varphi')]_{\varphi_1=x_0-l}^{\varphi_2'=x_0-l-d} -$$

$$\left. - [f_z(k_2',\ \psi') + f_z(k_4',\ \psi')]_{\psi_1=x_0+l}^{\psi_2'=x_0+l+d}\right\}. \qquad (11) \qquad (11)$$

The examples calculated here comprise many practical applications. The calculation of the field strength of a coil having finite dimensions, which is necessary in spite of all approximation methods, is discussed in the fourth part. The magnetic field of a rectangular coil having the internal dimensions l and a, a height 2h, and a winding of thickness d can be represented as the sum of fields of coils having an infinitely small cross section and a height 2h (Part II), on the one hand, and as the sum of field strengths of coils having an infinitely small height and a thickness d (Part III). The same result is obtained in both cases. The

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Magnetic field of a...

components of a coil of height 2h are given by

$$= -\left\{ \eta \operatorname{arc\,tg} \frac{k\varphi - \eta^2}{\eta\sqrt{(k+\varphi)^2 + \varphi^2 + \eta^2}} - \varphi \operatorname{ar\,sh} \frac{k+\varphi}{\sqrt{\varphi^2+\eta^2}} - \right.$$

$$\left. - \frac{k}{\sqrt{2}} \operatorname{ar\,sh} \frac{k+2\varphi}{\sqrt{k^2+2\eta^2}} \right\}_{\eta_1 = z_0 + h}^{\eta_2 = z_0 - h} = -\left[F_{xy}(k, \varphi, \eta)\right]_{\eta_1}^{\eta_2}. \qquad (11a)$$

wherefrom it follows by integration that

$$H_y = -\frac{I^*}{4\pi}\left\{ \left[F_{xy}(k_1', \varphi', \eta) + F_{xy}(k_3', \varphi', \eta)\right]_{\varphi_1' = z_0 - l}^{\varphi_2' = z_0 - l - d} - \right.$$

$$\left. - \left[F_{xy}(k_2', \psi', \eta) + F_{xy}(k_4', \psi', \eta)\right]_{\psi_1' = z_0 + l}^{\psi_2' = z_0 + l + d} \right|_{\eta_1 = z_0 + h}^{\eta_2 = z_0 - h}, \qquad (12)$$

$$H_y = -\frac{I^*}{4\pi}\left\{ \left[F_{xy}(k_1, \varphi, \eta) + F_{xy}(k_4, \varphi, \eta)\right]_{\varphi_2 = y_0 - a}^{\varphi_1 = y_0 - a - d} - \right.$$

$$\left. - \left[F_{xy}(k_2, \psi, \eta) + F_{xy}(k_3, \psi, \eta)\right]_{\psi_1 = y_0 + a}^{\psi_2 = y_0 + a + d} \right|_{\eta_1 = z_0 + h}^{\eta_2 = z_0 - h}, \qquad (13)$$

F_{xy} being defined by (11a). The parameters k are defined by Eq. (8). The

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Magnetic field of a...

component H_z is given by

$$-\int_{z_0-h}^{z_0-h}\left(\operatorname{ar\,sh}\frac{|k+\varphi}{\sqrt{\varphi^2+\eta^2}}-\frac{1}{\sqrt{2}}\operatorname{ar\,sh}\frac{k+2\varphi}{\sqrt{k^2+2\eta^2}}\right)d\eta=$$

$$=\left\{-\eta\operatorname{ar\,sh}\frac{k+\varphi}{\sqrt{\varphi^2+\eta^2}}+\varphi\operatorname{arc\,tg}\frac{(k+\varphi)\eta}{\varphi\sqrt{(k+\varphi)^2+\varphi^2+\eta^2}}-\right.$$

$$-\frac{k}{2}\operatorname{ar\,sh}\frac{\eta}{\sqrt{(k+\varphi)^2+\varphi^2}}+\frac{\eta}{\sqrt{2}}\operatorname{ar\,sh}\frac{k+2\varphi}{\sqrt{k^2+2\eta^2}}-$$

$$\left.-\frac{k}{2}\operatorname{arc\,tg}\frac{(k+2\varphi)\eta}{k\sqrt{(k+\varphi)^2+\varphi^2+\eta^2}}\right\}_{\eta_1=z_0+h}^{\eta_2=z_0-h}. \qquad (13a)$$

which leads finally to

$$H_z=\frac{I^0}{4\pi}\left\{[f_z^0(k_1,\varphi,\eta)+f_z^0(k_4,\varphi,\eta)]_{\varphi_1=z_0-a}^{\varphi_1=z_0-a-d}-\right.$$

$$-[f_z^0(k_2,\psi,\eta)+f_z^0(k_3,\psi,\eta)]_{\psi_1=z_0+a}^{\psi_1=z_0+a+d}+$$

$$+[f_{z1}(k_1',\varphi',\eta)+f_{z1}(k_3',\varphi',\eta)]_{\varphi_1'=z_0-l}^{\varphi_1'=z_0-l-d}-$$

$$\left.-[f_{z1}(k_2',\psi',\eta)+f_{z1}(k_4',\psi',\eta)]_{\psi_1'=z_0+l}^{\psi_1'=z_0+l+d}\right\}_{\eta_2=z_0+h}^{\eta_2=z_0-h}, \qquad (15)$$

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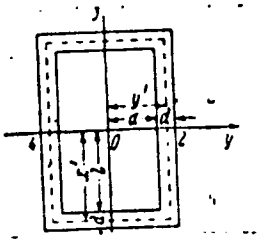
Magnetic field of a...

The difference between the fields of real coils and those determined from the formulas derived here is determined by the uniformity of distribution of the current density over the cross section of the winding, i.e., by the degree of constancy of j and j^*. There are 2 figures and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc.

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

SUBMITTED: June 14, 1960



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L 69189-65 EWT(d)/EWT(m)/EWF(w)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EWA(h)/
ETC(m) JD/WW/EM

ACCESSION NR: AR5019361 UR/0124/65/000/007/V033/V033

39
B

SOURCE: Ref. zh. Mekhanika, Abs. 7V240

AUTHOR: Danilov, V. I.

TITLE: Creep of a conical shell in the fringe effect area

CITED SOURCE: Sb. Issled. po teorii plastin i obolochek. No. 2. Kazan', Kazansk. un-t., 1964, 175-178

TOPIC TAGS: conic shell structure, creep, Kachanov method, shell structure dynamics, compressive stress

TRANSLATION: L. M. Kachanov's approximate method is employed in solving a problem concerning the influence of the fringe effect on the stressed state of a circular conic shell which is in a state of secondary creep due to the uniformly distributed external pressure P and compressive forces distributed along the end sections. The relationship of stresses to strain rates is taken from the theory of flow. Stresses and strains consist of zero-moment state and fringe effect components. The latter assume also the guise of a correction factor in calculations of stress intensities and magnitudes of creep deformation rates. An axial compression case is also considered. M. A. Koltunov

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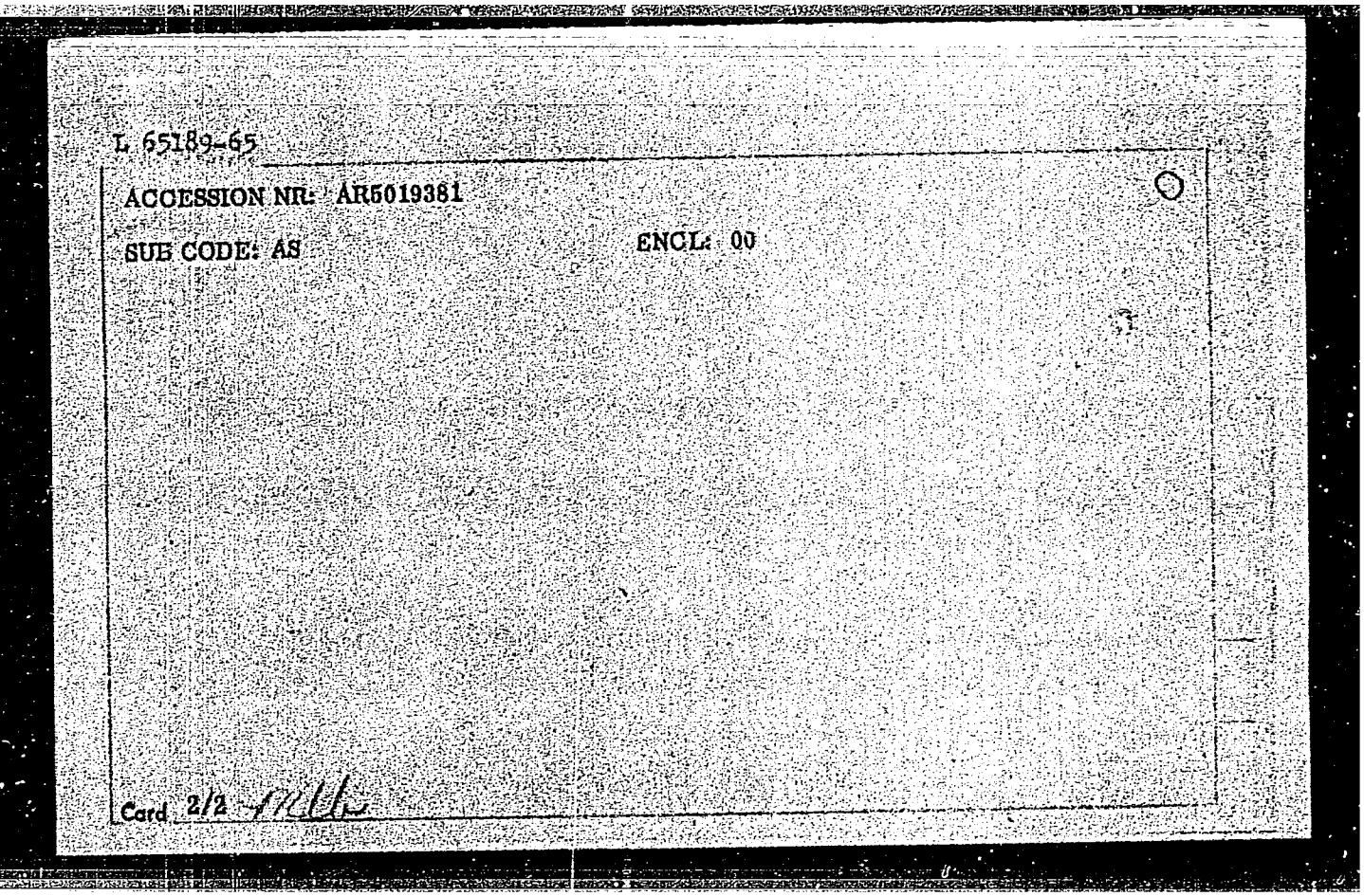

L 65189-65

ACCESSION NR: AR5019381

SUB CODE: AS ENCL: 00

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L 53861-65 EPA(w)-2/EWT(m)/EWA(m)-2 Pt-7 IJP(c) GS
ACCESSION NR: AT5007940 S/0000/64/000/000/0591/0594

AUTHOR: Danilov, V. I.; Yenchevich, I. B.; Zamolodchikov, B. I.; Marchenko, B. K.; Novikov, D. L.; Polferov, E. A.; Rozanov, Ye. I.; Savenkov, A. L.; Safonov, A. N.; Shestov, A. V.

TITLE: Increasing the internal beam current of the OIYaI synchrocyclotron to 680-Mev

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 591-594

TOPIC TAGS: synchrocyclotron, high energy accelerator

ABSTRACT: The Laboratory of Nuclear Problems of OIYaI modified the synchrocyclotron to increase the intensity of the internal beam, with the work being conducted in two directions: (a) obtaining a high-frequency program in the synchrocyclotron such that the current at the terminal radius of the accelerator would be a maximum; and (b) creating a focusing system that compensates for the defocusing action of the spatial charge at the center of the accelerator and thus increases the mean current of accelerated protons. The phase motion in the synchrocyclotron is analyzed in

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two principal stages: first, the capture of the particles at the center of the synchrocyclotron during the accelerating regime; and second, their phase motion during the acceleration process up to the terminal radius. The equations of D. Bohm and L. Foldy (*Phys. rev.*, 72, 649 (1947)) are insufficient for the solution of the problem of the optimum capture of charged particles in the accelerating regime in synchrocyclotrons of several hundred Mev. This is explained by the fact that the growth in energy per revolution in the first stage for a constant accelerating potential (U_0=const.) depends upon the radius of the orbit. The curve describing the relative growth of proton energy per revolution as a function of radius was calculated by means of pictures of the dee potential field which were obtained from a model of the central region of the OIYaI synchrocyclotron in an electrolytic tank. Experimental measurements of the current at the radius R=30 cm determined the magnitude of $\dot{\omega}_{s\ init}$ (growth of the circular frequency in units of radians per second^2) that ensures optimum capture conditions. Choice of this radius necessitates excluding the influence of variations in the phase conditions during proton acceleration in the region of the middle and terminal radii. The magnitude of $\dot{\omega}_{s\ init}$ varied over a wide range with variation of the magnetic field strength at the center of the accelerator. For voltage at the dee of U_0=12 kilovolts and for existing geom-

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etry of the accelerating gap, the dependence of the intensity (capture effectiveness) upon $\dot{\omega}_{s\ init}$ for the OIYaI synchrocyclotron showed the optimum value to be 2.25x 10^{10} rad/sec^2 (B.I. Zamolodchikov, et al. Preprint OIYaI P-720, Dubna, 1961). Correction of the parameters of the accelerator's resonance system in January 1961 led to a frequency program with the indicated value of $\dot{\omega}_{s\ init}$ at the beginning of acceleration, which led in turn to increasing the internal beam from 0.3 to 0.8 microamperes at the terminal radius R=274.5 cm. The proton current was measured by means of the induced activity of an aluminum target, according to the reaction $Al^{27}(p,3pn)Na^{24}$, obtained at radii R=270 to 280 cm. A target with a lead backing was calibrated against a beam of protons, extracted from the synchrocyclotron chamber, by means of a Faraday cylinder. The second stage of the work consisted in creating high-frequency characteristics of the synchrocyclotron $\omega_g=\omega_g(t)$ and $U_0=U_0(\omega_g)$ such that they ensure simultaneously the optimum conditions for the capture of the ions and their subsequent acceleration up to the terminal radius without phase loss. During selection of the frequency program of the synchrocyclotron consideration was taken of the damping of phase oscillations during the process of proton acceleration up to the terminal radius of the accelerator. Use was made of the invariance of the integral of action J during the adiabatic variations of the system's parameters.

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ACCESSION NR: AT5007940

Further increase in the intensity of the synchrocyclotron was reached by introduction of additional vertical (axial) focusing of the accelerated ion beam in the central region of the accelerator. Investigations of the focusing systems demonstrated the advantage of electrostatic focusing over magnetic focusing at the center of the accelerator. The system of focusing electrodes used in the OIYaI synchrocyclotron was constructed with the possibility of regulating the gap between the dee and supplementary electrodes. Moreover, the configuration of the electric field can be varied by regulation of the arrangement of the grounded screen placed between the dee and the potential electrodes. The Hill equation can describe the motion of the ions in the accelerator's magnetic field and in the electrostatic field created by the supplementary electrodes. The optimum arrangement of the electrodes of the focusing installation was found by experimental study of the properties of the system according to the dependence of the beam current upon the focusing voltage in kilovolts for various distances of the electrodes from the center of the accelerator. The internal beam current for the indicated conditions was approximately doubled, amounting at the present time to 2.2-2.5 microamperes. Orig. art. has: 7 figures.

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