"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATALIYEV, M.D.; GRISHINA, V.P.; KUTSYN, V.P.

Instrument for recording core formation. Mash. i neft. obor. no.5:27-28 '64. (MIRA 17:6)

1. AzNIIburneft'.

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

SEID-REZA, M.K.; FATALIYEV, M.D.; TSELOVAL'NIKOV, V.F.; ALIYEV, M.K.; FARADZHEV, T.G.

Stability of walls in deep wells during drilling. Burenie no.8:3-6 '64. (MIRA 18:5)

1. AzNIIburneft'.

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

BAGIROV, A Yu.; KARASHARLY, A.G.; FARADZHEV, T.G.; FATALIYEV, M.D.; SHAMKHALOV, D.A.

Determining the optimal amount of drilling fluid to ensure the thorough cleaning of the well bottom. Izv. vys. ucheb. zav.; neft' i gaz 8 no.1:23-27 '65.

(MIRA 18:2)

1. Azerbaydzhanskiy institut nefti i khimii imeni M. Azizbekova i "AzNIIburneft'".

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L 40075-66 EWT(1)/EEC(k)-2 GW

ACC NR: AP6019206 A (A) SOURCE CODE: UR/0212/66/000/001/0092/0095

38

B

AUTHOR: Kalinin, A. V.; Kalinin, V. V.; Fataliyev, M. Kh.

ORG: Chair of Geophysical Prospecting Methods

TITLE: New method for seismic exploration of shallow ocean depths

SOURCE: Moscow. Universitet. Vestnik. Seriya 4. Geologiya, no. 1, 1966, 92-95

TOPIC TAGS: oceanographic instrument, wave generator, electrohydraulic effect, ocean dynamics

ABSTRACT: The use of an electrohydraulic elastic wave generator to study ocean water in the region of Kerch and Mirnyy is discussed. The generator was developed on the basis of Yutkin's electrohydraulic effect. In testing the apparatus the capacitance, voltage, electrode intervals, depths of electrode submergence, and salinity varied from 8-200μF, 3-15 kV, 3mm-10m, 3-50m, and 0 to 40%. Tests showed that 1) the excited elastic pulse consists of two unipolar pulses; 2) increase in capacitance leads to an increase in amplitude and duration of the initial pulse; 3) even small increases in the depth of submergence of the generator considerably affect the parameters of the initial pulse; 4) an increase in the electrode interval extends the duration of the initial pulse; 5) changes in salinity have almost no effect on the basic parameters of the initial pulse; 6) amplitude of the initial pulse is 0.2-1.5 atm at a distance of

UDC: 550.834+551.35

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ACC NR: AP6019206

0

6m from a generator placed at a depth of 10m; and 7) the amplitudes of first and second pulses increase linearly with an increase in the applied voltage. Pulses of 0.2 msec duration and pass bands of 300-1200 cps and 700-1500 cps, were successfully used in locating layers 2-3m in thickness at depths varying from 40-70m in the Kerch and Mirnyy areas. Pulse durations of 1 msec and a pass band of 70-850 cps were used in the Caspian Sea in locating layers 8-10 m in thickness at depths varying from 200 to 250m.

SUB CODE: 08/ SUBM DATE: 24Dec64/ ORIG REF: 002/ OTH REF: 006

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APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATALIYEV, R.A.

Fossil ferns from Sarmatian deposits of the Kura-Iora interfluve in Transcaucasia. Bot.zhur. 45 no.8: 1213-1218 Ag '60. (MIRA 13:8)

1. Botanicheskiy institut im. V.L.Komarova Akademii nauk SSSR, Leningrad i Institut botaniki Akademii nauk Azerbaydzhanskoy SSR, Baku.
(Kura Valley--Ferns, Fossil)
(Iora Valley--Ferns, Fossil)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATALIYEV, R.A.

Sarmatian ferns in the Kura-Iora interfluve. Bot. zhur. 46 no.9:1315-1320 S '61. (MIRA 14:9)

1. Institut botaniki AN Azerbaydzhanskoy SSR, g. Baku.
(Kura Valley--Ferns, Fossil) (Iora Valley--Ferns, Fossil)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATALIYEV, R.A.

Representatives of the genera Glyptostrobus, Quercus, and Myrica in the Upper Sarmatian flora of Mt. Katar in Transcaucasia. Bot. zhur. 47 no.12:1817-1822 D '62. (MIRA 16:6)

1. Institut botaniki AN Azerbaydzhanskoy SSR, Baku.
(Katar, Mount--Woody plants, Fossil)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATALIYEV, R.A.

A new species of the genus Rhus from the Upper Sarmatian of Transcaucasia. Dokl. AN SSSR 148 no.1:197-198 Ja '63.
(MIRA 16:2)

1. Institut botaniki im. V.L. Komarova AN AzerbSSR. Predstavleno akademikom V.N. Sukachevym.
(Transcaucasia—Rhus, Fossil)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATALIYEV, S.A.

Classification of portland-cement clinker according to its microstructure. Izv.AN Azerb.SSR. Ser.geol.-geog.nauk i nefti no.5:119-124 '61. (MIRA 15:1)
(Cement clinker)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATALIYEV, S.A.

Dependence of the strength of cement on the size of clinker granules. TSement 28 no.4:13 Jl-Ag '62. (MIRA 15:7)

1. Institut stroymaterialov AzSSR.
(Cement clinkers) (Cement—Testing)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

SAPOZHNIKOVA, Ye.V.; FATALIYEVA, S.M.

Variability of biochemical characters in fruit and berry crops. Biokhim.pl.i ovoshch. no.6:175-184 '61. (MIRA 14:6)

1. Azerbaydzhanskiy nauchno-issledovatel'skiy institut sadovodstva, vinogradarstva i subtropicheskikh kul'tur.
(Fruit—Chemical composition)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATALIYEV, S.A.

Effect of the microstructure of limestone on the petrographic nature of portland cement clinkers and the hardness of cement. Dokl. AN Azerb. SSR 19 no.1:41-44 '63. (MIRA 16:4)

1. Institut stroymaterialov AN AzSSR. Predstavleno akademikom AN AzSSR M.A.Kashkayem.
(Limestone) (Cement—Testing)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

ABGAROV, V.I.; FATALIYEVA, S.S.; ALIYEVA, F.A.

Dose of ionizing radiations in roentgeno-diagnostic examinations. Med.rad. 5 no.5:33-37 '60. (MIRA 13:12)
(RADIOGRAPHY)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATALIYEVA, V.A.

Automation of rectification. Izv. AN Azerb.SSR.Ser.fiz.-mat. i tekh. nauk no.4:83-93 '61. (MIRA 14:12)
(Distillation, Functional)
(Automation)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

ABDULLAYEV, G.I., kand. med. nauk; KARAMOV, K.S., kand. med. nauk; GUSEYNOV, I.A., kand. med. nauk; GADZHIYEV, A.A.; FATALIYEVA, V.G.; MUSTAFAYEV, R.A.; BAGIROV, A.M.

Some problems in the diagnosis of stenosis of the left atrioventricular orifice and indications for mitral commissurotomy. Azerb. med. zhur. 41 no.9:8-16 S '64.

(MIRA 18:11)

1. Iz otdela grudnoy khirurgii Instituta eksperimental'noy i klinicheskoy meditsiny AMN SSSR (dir. - chlen-korrespondent AN AzSSR prof. Efendiyev, F.A. [deceased]) i iz kafedry propedevtiki vnutrennikh bolezney 1-go (zav. - prof. G.Kh. Baysheva-Zeynalova) Azerbaydzhanskogo meditsinskogo instituta imeni Narimanova (rektor - prof. Kh.A. Gasanov).

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATALIZADE, F.A.

BC

A-4

Acenaphthene-induced polyploidy in *Nicotiana*. F. A. FATALIZADE (Compt. rend. Acad. Sci. U.R.S.S., 1939, 22, 189—193).—Young seedlings of 5 *Nicotiana* species and hybrids were sprinkled with acenaphthene. Plants which showed morphological changes were grown on. The plants of only 3 types flowered. The % of polyploids produced was 63 with *N. rustica* × *N. paniculata*, 30 with *N. paniculata*, and 32 with *N. paniculata* × (*N. paniculata* × *N. solanifolia*). *N. paniculata* × *N. rustica* plants with a doubled chromosome no. were larger and produced larger and thicker leaves than normal. They showed irregularities at meiosis and crossed successfully only with tetraploid *N. paniculata* and *N. acuminata*. Crosses with other species gave few or no viable seeds.

L. G. G. W.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATALIZADE, F. A.

"Cytogenic Studies on the Genus Nicotania and the Origin of N. Rustica," Dokl. AN SSSR, 25, No.9, 1939

Lab. of Tobacco and Tea, All-Union Plant Industry Inst., Leningrad-Pushkin.

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATALIZADE, F.A.

4676. Zavysokiy Urozhay Chaya. Baku, Azernesher. 1954, 36 S.S. Ill. 20 Sm. (opyt Raboty Peredovykh Kolkhozov). 1.000 Ekz. 45 K.--Na Azerbaydzh. Yaz--(54-53082) 633.72 St. (47.924)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATALI-ZADE, F. G.

Dissertation: "Method of Seed Cultivation of Tea Plantations in the Lenkoran-Astara Area of Azerbaydzhan." Cand Agr Sci, Georgian Order of Labor Red Banner Agricultural Inst, 1 Jun 54. Zarya Vostoka, Tbilisi, 20 May 54.

SO: SUM 284, 26 Nov 1954

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SOURCE: USSR

CATEGORY: Cultivated Plants. Fruits. Berries. Nuts. Tea.

ABS. PROP.: Ref Zhur-Biologiya, No.1, 1959, No. 1856

AUTHOR: Fatali-zade, F.A.

INST.: ~~All-Union Sci.Res.~~ Inst.of Tea and Subtropical

TITLE: An Attempt to Do Away with Thinning in Tea Plantations in Azerbayazhan

ORIG. PUB.: Byul. Vses. n.-i. in-ta chaya i subtrop. kul'tur, 1957, No.3, 58-62

ABSTRACT: No abstract

Cultures

CARD: 1/1

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATALI-ZADE, F.A.; VEYSOV, G.M.; BAGIROV, A.Yu.

Results of testing and introducing a new technological procedure in the manufacture of black beichao tea in factories of the Azerbaijan S.S.R. in 1959. Biokhim. chain. proizv. no.8:186-193 '60. (MIRA 14:1)

1. Trest "Azerchay", Baku.
(Azerbaijan--Tea)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

TA 165T4

FATCHIKHIN, N. V.

USSR/Astronomy - Stars, Motion of 11 Mar 50

"Determination of the Absolute Natural Motions of Stars With Respect to Intragalactic Nebulosities," N. V. Fatchikhin

"Dok Ak Nauk SSSR" Vol LXXI, No 2, pp 253-256

Determination of the motion of 1446 stars up to the 15th magnitude relative to 13 intragalactic nebulosities on 15 pairs of photographic plates taken on normal astrographs at Pulkovo and Tashkent observatories (full aperture of photographic objectives 330 mm, for 3.46 focus and 209 x 209 ft field). Submitted 10 Jan 50 by Acad V. G. Fesenkov.

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATCHIKHIN V.

B. V. Fatchikhin

The Study of the Pulkov, Measuring Instrument Repsol'd 11

Pulkovo, The Main Astronomical Observatory
Izvestiia, Leningrad
Vol. 18, No. 5(146), 1951, pp. 139-151

From Monthly list of Russian Accessions
December 1951, Vol. 4, No. 9, p. 35

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATCHIKHIN, N. V.

"Determining Absolute Proper Motion of Stars by Reference to Nebulae Outside the Galaxy," Iz. Glav. astron. obs., 19, No.1, 1952

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

DEYCH, A.N.; LAVDOVSKIY, V.V.; FATCHIKHIN, N.V.; GAMALEY, N.V.

Selected areas of the sky with extragalactic nebulae for measuring proper motions of stars. Izv.Glav.astron.obser. 19 no.3:12-17 '53. (MLRA 7:1)
(Stars--Proper motion) (Nebulae)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATCHIKHIN, N.V.

Determining the exact positions of minor planet Letitia (39) for 1950 and of Hebe (6) for 1950-1951. Izv.Glav.astron.obser. 19 no.3:154-158 '53. (MLRA 7:1)

(Planets, Minor)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATCHIKHIN, N.V.

Precision in determining absolute proper motions of stars along the extragalactic nebulae. Astron.tsir. no.134:7-8 F '53. (MLRA 6:6)
(Stars--Proper motion)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

DEYCH, A.N.; IAVDOVSKIY, V.V.; PATCHIKHIN, N.V.

Catalog of 1508 extragalactic nebulae in 157 sky regions of the area from 90° to -5° declination, selected for the determination of proper motions of stars. Izv.GAO 20 no.1: 14-46 '55. (MIRA 13:5)

(Nebulae--Catalogs)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATCHIKHIN, N.V.

Determining the parallax of a 14.0 magnitude star in Gemini with coordinates $6^h08^m34^s$, 22° 14!5 (1950.0) Izv. GAO 20 no.4:91-100 '57. (MIRA 13:4)
(Parallax--Stars)

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PATCHIKHIN, N.V.

Precision of measurements of minor planets on plates obtained with the Pulkovo normal astrograph. Izv. GAO 22 no. 1:151-156 '60. (MIRA 13:12)

(Planets, Minor) (Astronomical photography)

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FATCHIKHIN, N.V.

PHASE I BOOK EXPLOITATION SOV/5721

Vsesoyuznaya astrometricheskaya konferentsiya.

Trudy 14-y Astrometricheskoy konferentsii SSSR, Kiyev, 27-30 maya 1958 g. (Transactions of the 14th Astrometrical Conference of the USSR, Held in Kiyev 27-30 May 1958) Moscow, Izd-vo AN SSSR, 1960. 440 p. Errata slip inserted. 1000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Glavnaya astronomicheskaya observatoriya (Pulkovo).

Resp. Ed.: M. S. Zverev, Corresponding Member, Academy of Sciences USSR; Ed. of Publishing House: N. K. Zaychik; Tech. Ed.: R. A. Zamarayeva.

PURPOSE: The book is intended for astronomers and astrophysicists, particularly those interested in astrometrical research.

COVERAGE: This publication presents the Transactions of the 14th Astrometrical Conference of the USSR, held in Kiyev 27-30 May 1958. It includes 27 reports and 55 scientific papers presented at the plenary meeting of the Conference

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60

Transactions of the 14th Astrometrical (Cont.) SOV/5721

and at the special sectional meetings. An appendix contains the resolutions adopted by the Conference, the composition of the committees, the agenda, and the list of participants at the Conference. A brief summary in English is given at the end of each article. References follow individual articles. The Presidium of the Astrometrical Committee (Chairman M. S. Zverev), which supervised the preparation of this publication, expresses thanks to the members of the secretariat: V. M. Vasil'yev, I. G. Kol'chinskiy, A. B. Onegina, and Kh. I. Potter.

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Yefimov, A. A., Yu. M. Otryashenkov, and L. A. Sukharev. Photoelectric Method for Reading the Circles of the Meridian Instruments 165

Fatchikhin, N. V. On Referencing the Stars to Galaxies 169

Onegina, A. B. The Precision of Measuring the Position of Galaxies With the 400-mm Astrograph at Goloseyevo 175

Chudovicheva, O. N. Results of Observations of Minor Planets at Pulkovo in the Period 1949-1958 179

Ye. Ya. Bugoslavskaya, and A. K. Sosnova. Application of the Electronic Digital Computer "Strela" in Some Problems of Astrometry 182

Kolchinskiy, I. G., Investigation of the Flickering of Star Images at the Goloseyevo Observatory 186

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

S/035/62/000/001/005/038
A001/A101

AUTHORS: Fatchikhin, N. V., Latypov, A. A.

TITLE: The catalog of galaxies in the declination zone from -5 to -25°, selected for determinations of absolute proper motions of stars

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 1, 1962, 37, abstract 1A317 ("Tsirkulyar Tashkentsk. astron. observ", 1959, 10, avg., no. 302, 1-16)

TEXT: The Pulkovo program of observing galaxies for determination of absolute stellar proper motions was continued to a declination of -25°. Over 100 plates were taken in 1959 with the Tashkent astrograph for 48 centers selected in the zone from -5 to -25° in declination. 226 galaxies on these plates were analyzed to determine their suitability for precision measurements. Estimates were made according to a 10-point scale developed at Pulkovo. As a result, a catalog of 48 galaxies (no. 158 - 205) was compiled, which describes them and provides estimates of their suitability for precision measurements.

D. Karimova

[Abstracter's note: Complete translation]

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CA

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

The absorptive power of lake silt deposits. O. E. Fatehikhinov. *Trudy Limnolog. Stantsii v Kosino* 1939, No. 23, 5-34; *Khim. Referat. Zhur.* 1939, No. 8, 25.—The absorption of Ca and P by lake silt deposits was investigated. The relations between the amt. of dissolved O_2, the pH of the soln. and the chem. characteristics of the silt (molar ratio $SiO_2:R_2O_3$ and the absorption capacity) were detd. The silts of various lakes possess different absorption abilities with respect to both elements. The amt. of absorbed P at optimum conditions of the reaction of the medium, which has the max. effect on the absorption process, varied for silts of various reservoirs from 250 to 1000 mg./100 g. of the dry substance P_2O_5. Max. effects were produced by silts possessing a max. absorption capacity which varied between 13.64 and 133.60 mol.-equiv./100 g. of the dry silt. Data that illustrate the dynamics of the absorbed Ca in the silt of one of the lakes are given. W. R. Henn

COMMON ELEMENTS

MATERIALS INDEX

OPEN

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATCHIKHINA, G. YE.

Fatchikhina, G. Ye. - "Natural properties and agricultural utilization of peat-pit soils," In symposium: Torf v nar. khozyaye Belorus. SSR, Minsk, 1948, p. 209-18

So: U-3566, 15 March 53, (Letopis 'Zhurnal 'nykh Statey, No. 13, 1949)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

14

The dynamics of the phosphorus and iron content in the Black lake. O. K. Fatchikhina (Hydrochem. Inst., Novocherkassk). *Gidrokhim. Materialy* (Hydrochem. Materials) 15, 199-204(1948).—Data are presented on the compn. of the water and mud from the bottom of the Black Lake which is a closed lake, with no water coming in or out from brooks or streams. The water was analyzed for pH, O, CO_2 (free carbonate and bicarbonate), total and ferric Fe, and total and sol. P. The mud was analyzed for pH, crit. equil. concn. of P_2O_5, adsorbed and total P. The P content is high even in the surface layer of the water, as much as 4.75 mg./l.; the P content fluctuates from 0.01 to 0.2 mg./l. During stagnation periods, as in winter of 1937 the Fe content was 43 mg./l. at the bottom of the Lake, and the sol. P was 2.32 mg./l. When the water is disturbed the Fe and P content decreases since pptn. of $FePO_4$ and $Fe(OH)_3$ takes place. During the summer the P content decreases with depth; the reverse is true for the winter season. The max. content of org. P is found in the layer depleted of O. In the spring and early summer the org. P content drops. Large quantities of P are found in the mud, increasing with depth.

J. S. Joffe

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CA

7

Oxidation of organic matter with chromic acid. O. E. Patchikhina (Hydrochem. Inst., Novocherkassk). *Gidrokhim. Materialy* (Hydrochem. Materials) 15, 205-12 (1948).—A description of the method of heating org. samples with $K_2Cr_2O_7$ and H_2SO_4 in aq. soln. J. S. J.

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATCHIKHINA, O. E.

25043. FATCHIKHINA, O. E. Priroda i Svoystva Torfyanykh Kar'ernykh Pochv. (K Voprosy C.-X. Ispol'Zovaniya). Trudy Yubileynoy Sessii, Posvyashch. Stoletiyu So Dnya Rozhdeniya Dokuchayeva. M.-L., 1949, S. 610-16

SO: Letopis' No. 33, 1949

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

BTR 31

11234. **The Use of Peat in Truck Farming.** (Russian.) A. Ia. Pikalev and O. E. Fatchikhina. *Sad i Ogorod*, Feb. 1952, p. 67-72.

Peat-manure mixtures with and without bacterial fertilizer additions were used as fertilizer in crop-rotation plans. Data from field tests are tabulated and discussed.

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

PATCHIKHINA, O.Ye.

Exchangeable aluminum as the cause of low productivity of several peat-glei soils. Pochvovedenie '53, No.3, 29-37. (MLRA 6:3)
(CA 47 no.21:11622 '53)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

ANTONOV, V.Ya., kand.tekhn.nauk; BEZZUBOV, N.D., kand.tekhn.nauk; BELOKO-
PYTOV, I.Ye., kand.sel'skokhoz.nauk; BLYUMENBERG, V.V., kand.tekhn.
nauk; BOGDANOV, N.N., kand.tekhn.nauk; BHAGIN, N.A., inzh.; VASIL'YEV,
Yu.K., inzh.; VINOGRADOV, V.A., inzh.; ROZENBERG, B.I., inzh.; GOR-
GIDZHANYAN, S.A., kand.tekhn.nauk; ZIZA, A.A., kand.sel'skokhoz.nauk;
KALABUKHOV, M.V., agronom-meliorator; KOLOTUSHKIN, V.I., inzh.; KORCHU-
NOV, S.S., kand.tekhn.nauk; KRYUKOV, M.N., dotsent; VAVULO, V.A., inzh.;
MAUMOV, D.K., kand.tekhn.nauk; OLENIN, A.S., inzh.; PROVORKIN, A.S.,
inzh.; PROKHOROV, N.I., dotsent; RASKIN, G.I., inzh.; SAVENKO, I.V.,
inzh.; SERGEYEV, B.F., kand.tekhn.nauk; STOYLIK, M.A., inzh.; SUKHA-
NOV, M.A., inzh.; TOPOL'NITSKIY, N.M., kand.tekhn.nauk; TYURENNOV, S.N.,
doktor biol.nauk, prof.; FATCHIKHINA, O.Ye., kand.sel'skokhoz.nauk;
TSVETKOV, B.I., inzh.; CHUBAROV, N.D., inzh.; MANDEL'BAUM, A.I., inzh.;

(Continued on next card)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

ANTONOV, V.Ya.---(continued) Card 2.

YARTSEV, A.K.; SAMSONOV, N.N., inzh., glavnyy red.; BERSHADSKIY, L.S., inzh., nauchnyy red.; VARENTSOV, V.S., kand.tekhn.nauk, nauchnyy red.; VYSOTSKIY, K.P., kand.tekhn.nauk, nauchnyy red.; GORINSHTEYN, L.L., kand.tekhn.nauk, nauchnyy red.; GORYACHKIN, V.G., prof., nauchnyy red.; YEFIMOV, P.N., kand.tekhn.nauk, nauchnyy red.; KUZEMAN, G.I., kand.tekhn.nauk, nauchnyy red.; KULAKOV, N.N., kand. tekhn.nauk, nauchnyy red.; KUTAIS, L.I., prof., doktor tekhn.nauk, nauchnyy red.; MIRKIN, M.A., inzh., nauchnyy red.; SEMENSKIY, Ye.P., kand.tekhn.nauk, nauchnyy red.; SOKOLOV, A.A., kand.tekhn.nauk, nauchnyy red.; KHAZANOV, Ya.N., dotsent, nauchnyy red.; KHALUGO, A.K., inzh., nauchnyy red.; TSUPROV, S.A., dotsent, nauchnyy red.; SHTEYNBOK, G.D., inzh., nauchnyy red.; KOLOTUSHKIN, V.I., red.; SKVORTSOV, I.M., tekhn.red.

[Reference book on peat] Spravochnik po torfu. Moskva, Gos.energ. izd-vo, 1954. 728 p. (MIRA 13:7)

1. Chlen-korrespondent AN BSSR (for Goryachkin).
(Peat—Handbooks, manuals, etc.)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

PATCHIKHINA, O.YE

SAVICH-LYUBITSKAYA, L.I., doktor biologicheskikh nauk; PATCHIKHINA, O.Ye., kandidat sel'skokhozyaystvennykh nauk; SAVICH, V.P., professor, zasluzhennyy deyatel' nauki RSFSR, otvetstvennyy redaktor; GOLOVEIN, M.I., redaktor izdatel'stva; ZENDEL', R.Ye., tekhnicheskiy redaktor

[Significance and use of peat in agriculture] Znachenie i ispol'zovanie torfa v sel'skom khoziaistve. Moskva, Izd-vo Akad.nauk SSSR, 1957. 92 p. (MLRA 10:8)
(Peat)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

USSR / Soil Science. Organic Fertilizers. J

Abs Jour: Ref Zhur-Biol., No 21, 1958, 95763.

Author : Fatchikhina, O. Ye.
Inst : Central Peat-Marsh Experiment Station.
Title : Effectiveness of Peat Composts Depending on the Moisture in the Original Peat.

Orig Pub: Byul. nauchno-tekhn. inform. Tsentr. torfo-bolotn. opytn. st., 1957, No 1, 36-42.

Abstract: By experiments at the Central Peat-Marsh Station, it was established that moisture which equals 65-75% is the best relative moisture for all peats when mixing them with manure and phosphorite flour for a compost. Such composts are noted for the greatest accumulation of nitrates, strong development of microbiological processes and highest effectiveness during a short period of com-

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USSR/Soil Science - Biology of Soils.

Abs Jour : Ref Zhur - Biol., No 15, 1958, 67916

Author : Fatchikhina, O.Ye.

Inst : Central Peat-Bog Experiment Station.

Title : The Connection Between Fertility of Peat-Mine Soils and the Thickness of the Peat Stratum.

Orig Pub : Byul. nauchno-tekhn. inform. Tsentr. torfo-bolotn. opytn. st., 1957, No 1, 55-57.

Abstract : In order to use peat mines on the territory of Moscow Oblast' for agricultural crops, industrial peat mines usually leave a 10 centimeter protective layer of peat. According to data from field experiments conducted on peat-clay mine soils of a transitional peat bog (Vtorovskoye Testing Field), the potato and oats crops were considerably greater when a 20-centimeter layer of peat was

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NIKONOV, M.N., prof.; FATCHIKHINA, O.Ye., kand.sel'skokhozyaystvennykh nauk

Improve the quality of peat fertilizers. Zemledelie 8 no.8:69-75 Ag '60. (MIRA 13:8)

1. TSentral'naya torfobolotnaya opytnaya stantsiya.
(Peat) (Fertilizers and manures)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

VIKHLYAYEV, I.I., prof.; OLENIN, A.S., kand.tekhn.nauk; RUNOV, D.I., inzh.; TEREGULOV, I.Kh., insh.; PATCHIKHINA, O.Ye., kand.sel'skokhoz.nauk; SHISHKOV, K.N., kand.sel'skokhoz.nauk; MINENKOVA, V.R., red.; BALLOD, A.I., tekhn.red.

[Manual on peat] Spravochnik po torfu. Moskva, Gos.izd-vo sel'khoz. lit-ry, 1960. 318 p. (MIRA 14:2)
(Peat)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

KOZHARSKIY, A.M.; FATCHIKHINA, O.Ye., kand.sel'skokhozyaystvennykh nauk, starshiy nauchnyy sotrudink

Winning and using peat fertilizers in Smolensk Province. Zemledelie 8 no.12:56-62 D '60. (MIRA 13:11)

1. Zaveduyushchiy sel'skokhozyaystvennym otdelom Smolenskogo oblastnogo komiteta kommunisticheskoy Partii Sovetskogo Soyuza (for Kozharskiy).
2. TSentral'naya torfobolotnaya opytnaya stantsiya (for Fatchikhina)
(Smolensk Province--Peat)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

NIKONOV, M.N., prof.; FATCHIKHINA, O.Ye., kand. sel'khoz. nauk; GORSHKOV, L.A.; KOCHER, S.G.; KATS, P.S., kand. sel'-khoz. nauk; GRIGOR'YEVA, A.I., red.; SOKOLOVA, N.N., tekhn. red.

[Peat in agriculture]Torf v sel'skom khoziaistve. [By] M.N. Nikonov i dr. Moskva, Sel'khozizdat, 1962. 166 p. (MIRA 15:11)

(Fertilizers and manures) (Peat)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

GLUZMAN, M.P., insh. (Kramatorsk); PATELEVICH, F.B., insh. (Kramatorsk)

Improvement of DSG boilers with 90/110 t/hr. evaporative capacity. Energetik 13 no. 12:13 D '65 (MIRA 19:1)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATELEVICH, M.D., sanitarnyy vrach

Water supply in Rostov Province. Gig. i san. 24 no.5:52-55 My '59. (MIRA 12:7)

1. Iz Rostovskoy oblastnoy sanitarno-epidemiologicheskoy stantsii.
(ROSTOV PROVINCE--WATER SUPPLY)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATEEVICH, S., inzh.-polkovnik; GRASIS, A., mayor.

Adapter for ultrashortwave radio stations. Voen. sviaz. 16 no.2: 44-45 F '58. (MIRA 11:3)

(Radio, Shortwave--Equipment and supplies)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATENKOV, V. N.

Precipitation reaction with antigen from the myocardium in myocardial infarct and other diseases. Terap. arkh. 33 no.5:11-15 My '61. (MIRA 14:12)

1. Iz kafedry propedevticheskoy terapii (zav. - prof. S. V. Shestakov) i kafedry patologicheskoy fiziologii (zav. - prof. I. V. Kolpakov) Kuybyshevskogo meditsinskogo instituta.

(HEART—INFARCTION)
(ANTIGENS AND ANTIBODIES)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

NOVOSZEL, Tibor, dr.; RISKO, Tibor, dr.; FATER, Jozsef, dr.

The role of spondylodesis in the therapy of spinal tuberculosis. Tuberk. kerdesei 9 no.2:79-82 Apr 56.

1. Az Allami Fodor Jozsef TBC. Gyogyintezet (igazgato-foorvos: Risko, Tibor dr.) kozlemenye.
(TUBERCULOSIS, SPINAL, surg.
spondylodesis, indic. & compl. (Hun))

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

BARKHATINOVA, T.G.; POPOV, N.A.; FATEYEV, A.A.; FRISHBERG, V.D.

Distinction between low caking and noncaking coals in the Kuznetsk Basin. Koks i khim. no.8:3-4 '61. (MIRA 15:1)

1. Vostochnyy uglekhimicheskiy institut.
(Kuznetsk Basin--Coal)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATEYEV, A.F., inzhener.

Discussing cracks appearing in a beam of a bridge crane. Vest.mash. 33 no. 10:31-32 O '53. (MLRA 6:10)

(Cranes, derricks, etc.)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

PATEYEV, A. F.

PATEYEV, A.F., doktor tekhn. nauk; VAVILOV, A.A., kand. tekhn. nauk; ULYANOV, V.A., inzh.

Method for improving the characteristics of amplidynes. Vest. elektro-prom. 27 no.8:54-57 Ag '56. (MIRA 10:9)

1. Leningradskiy elektrotekhnicheskiy institut imeni V.I. Ul'yanova (Lenina).

(Electric controllers)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATEYEV, A.F., inzh.; ALEKHIN, V.K., inzh.

Slab foundations of residential buildings. Bet.i zhel.-bet. 8 no.4:187-189 Ap '62. (MIRA 15:5)
(Concrete footings)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATEYEV, A.I.

Presence of amylase in drops of exudate formed in colonies of Aspergillus niger and Aspergillus oryzae. Trudy Inst. mikrobiol. no.4:107-109 '55. (MLRA 9:1)

(ASPERGILLUS,
niger & A. oryzae, amylase in exudates formed in cultures of)
(CARBOHYDRASES,
amylase in Aspergillus niger & A. oryzae cultures)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATEYEV, A I

Effects of prolonged culture of *Aspergillus niger* AN-6 in mineral salt starch solution. A I Fateyev [illegible] 25, [illegible] [illegible] passaging during 15 months of the mould in media [illegible] starch as the sole org nutrient did not result in increase [illegible] power of the organisms The mould obtained after [illegible] passages grew more slowly in wort or sugar solutions than did the original stock [illegible]

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FATEYEV, A.I.

More attention should be given to river transportation within the city. Gor.khoz.Mosk. 36 no.8:50-51 Ag '62. (MIRA 16:1)
(Moscow--Waterways)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATEYEV, A.I.

Role of the bark of woody plants in photosynthetic processes. (MIRA 18:10)
Biofizika 10 no.5:886-888 '65.

1. Institut biologicheskoy fiziki AN SSSR, Moskva.

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

KOZLOV, Pavel Dmitriyevich; FATEYEV, Anatoliy Mikhaylovich; YAKOVLEVA, Serafima Alekseyevna; CHAPSKIY, O.U., red.; BARANOVA, L.G., tekhn.red.

[Operation and repair of the "Belarus" tractor] Ekspluatatsiia i remont traktora "Belarus'." Leningrad, Gos.izd-vo sel'khoz. lit-ry, 1960. 210 p. (MIRA 14:1)
(Tractors)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATEYEV, A.P.

"Use of Readings of a Statoscope for the Determination of the Longitudinal Angles of Inclination of Aerial Photographs and Base Lines in Large-Scale Photographs," by A. P. Fateyev, Geodeziya i Kartografiya, No 1, Jan 57, pp 16-21

The article presents the procedure, formulas, tables, examples, and results of a method of calculating the true longitudinal angles of inclination of aerial photographs and base lines in stereotopographic photographs in large-scale photographs. Use of the readings of the statoscope for this purpose was limited due to the low accuracy of such determinations.

As a result of the studies based on this method, it is possible to state that the proposed method of treating the readings of the statoscope significantly lowers the error of the determination of the true angles of inclination of aerial photographs and base lines and broadens the field of application of the statoscope in large-scale aerial photographic surveying. (U)

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2

FATEYEV, A. P., Cand Tech Sci--(diss) "Study of the possibilities of the use of two-scale photographs for the reduction of altitude and planar scales in the preparation of large-scale topographic plans." Mos, 1958. 13 pp (Min of Higher Education USSR). Mos Inst of Engineers of Geodesy, Aerial Photography, and Cartography), 100 copies (KL,26-58 113)

-104-

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATEYEV, A.P.

FATEYEV, A.P., aspirant.

Using two different-scale photographs for condensing plane and altitude bases in large-scale survey maps. Trudy MIIGAIK no.28: 61-70 '57. (MIRA 11:1)
(Photography, Stereoscopic) (Topographical surveying)

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L 46160-65 EWT(m)/EPA(w)-2/EWA(m)-2 Pab-10/Pt-7 IJP(c) GS

ACCESSION NR: AT5007925 S/0000/64/000/000/0365/0367

46
45
B+1

AUTHOR: Kolomenskiy, A. A.; Lebedev, A. N.; Fateyev, A. P.

TITLE: Interaction of colliding beams in storage systems

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 365-367

TOPIC TAGS: high energy accelerator, charged particle beam, plasma physics

19

ABSTRACT: The theoretical investigation of the dynamics of beams in storage systems that takes into consideration their electromagnetic interaction is involved with great difficulties and requires the solution of self-consistent kinetic equations. The present report, therefore, discusses the qualitative picture of the occurring phenomena on the basis of certain simplified model representations which reflect in one way or another the specifics of storage systems. The given expressions are mainly related to so-called concentric systems and particularly to symmetric ring phasotrons, where the colliding beams of identical particles intersect on each revolution several times. The report discusses only the behavior of orbits of two steady-state beams which circulate in an ideal magnetic field and lie in one plane. It is concluded that the effects enumerated in the report do not by any

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L 46160-65

ACCESSION NR: AT5007925

means exhaust the behavioral peculiarities of the orbits for large currents. The real picture must be essentially complicated through a possible splitting of the beam of given dimension, through the appearance of specific plasma instabilities, and through other effects. Orig. art. has 3 figures.

ASSOCIATION: Fizicheskiy institut imeni P. N. Lebedeva AN SSSR (Physics Institute AN SSSR)

SUBMITTED: 26May64 ENCL: 00 SUB CODE: NP

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

L 4223-66 EWT(m)/EPA(w)-2/EWA(m)-2 IJP(c) GS S/0000/64/000/000/0653/0657 39
ACCESSION NR: AT5007945 25 B+1

AUTHOR: Kanunnikov, V. N.; Kolomenskiy, A. A.; Ovchinnikov, Ye. P.; Troyanov, Ye. F.; Fateyev, A. P.; Yablokov, B. N.

TITLE: Some results of the work on starting the symmetrical electron ring-phasotron at FIAN

19

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 653-657

TOPIC TAGS: electron accelerator, synchrotron

ABSTRACT: The Physics Institute im. P. N. Lebedev, AN SSSR, is developing new accellerators of the ring-phasotron type. The principal idea of the development is to replace the growth of the magnetic field in time, which holds true in the case of synchrotron-type accelerators, by its growth in space in correspondence with the growth of the particles' energy. This permits increasing the intensity of the beam of accelerated particles, and also, by utilizing the accumulation of particles in a constant field, realization of the method of counter collisions of relativistic particles. As has been clear from the very beginning of the work, the complexity and novelty of the problem could not permit the work to be limited to theo-

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ACCESSION NR: AT5007945

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retical investigations. It was decided to construct a comparatively small accelerator, the symmetrical 30-Mev electron ring-phasotron, ensuring the simultaneous acceleration of two electron beams moving in opposite directions. This accelerator has to serve as a sufficiently flexible and resourceful basis for experiments on the creation of strong-current accelerators and accumulators. It was planned, in particular, to investigate with it various injection alternatives, accelerator regimes, and also the process of storing one and two counter beams. The principal results of the theoretical and experimental works completed in connection with the development of this accelerator have been published (V. N. Kanunnikov, et. al., Proc. International Conference on High Energy Accelerators, CERN, 1959, p. 89). The present report describes the main difficulties which were overcome in the initial period of starting the installation, and notes the results obtained up to the present moment. The principal parameters of the ring-phasotron are discussed, as well as the measurement and correction of its magnetic field. The characteristics of the beam during static operation are investigated. "The authors wish to thank for their participation workers of various organizations, expecially the associates of the Physics Institute: V. S. Voronin, L. N. Kazanskiy, D. D. Krsil'nikov, A. N. Lebedev, S. S. Semenov, and of the Scientific-Research Institute of Electro-

Card 2/3

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L 4223-66
ACCESSION NR: AT5007945

Physical Equipment: N. A. Monoszon, B. V. Rozhdestvenskiy, K. M. Kozlov, A. M. Stolov, V. A. Titov, V. B. Zalmanson, Ye. A. Dmitriyev." Orig. art. has: 7 figures.

ASSOCIATION: Fizicheskiy institut imeni P. N. Lebedeva, AN SSSR (Physics Institute, AN SSSR)

SUBMITTED: 26May64 ENCL: 00 SUB CODE: NP

NO REF SOV: 004 OTHER: 001

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40363-66 EWT(1)/T IJP(c)

ACC NR: AP6014251 SOURCE CODE: UR/0109/66/011/005/0940/0942

52
51
B

AUTHOR: Fateyev, A. P.

ORG: none

TITLE: Calculation of focusing of charged beams by periodic fields

SOURCE: Radiotekhnika i elektronika, v. 11, no. 5, 1966, 940-942

TOPIC TAGS: particle beam, ~~periodic~~ magnetic field, beam focusing

ABSTRACT: A new simple method is suggested for determining the modulation of charged beams moving in a stationary periodic magnetic (or electric) field. The particle motion is described in terms of accelerator theory. First, a balanced trajectory (orbit) of particles that repeats itself periodically in the magnetic field is found. Then, this trajectory stability is tested, i.e., the nature of oscillations in its neighborhood is determined. The trajectory stability corresponds to the

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L 40363-66

ACC NR: AP6014251

beam focusing: its instability, to defocusing. Thus, the stability analysis permits finding the conditions corresponding to optimal beam parameters. The J. T. Mendel (Proc. IRE, 1955, 43, 3, 327) equation that describes charged-particle paths in a longitudinal axisymmetrical magnetic field is used; it takes into account the space charge of the beam. The method is also suitable for calculating any periodic system, such as a quadrupole-lens system. "The author wishes to thank A. A. Kolomenskiy through whose initiative this short article has been written." Orig. art. has: 26 formulas.

SUB CODE: 20, 09 / SUBM DATE: 24Jul65 / ORIG REF: 002 / OTH REF: 001

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APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

L 06995-67 EWT(m) IJP(c)

ACC NR: AP6021528 SOURCE CODE: UR/0089/66/020/006/0513/0514

AUTHOR: Kolomenskiy, A. A.; Kamunnikov, V. N.; Kazanskiy, L. N.; Ovchinnikov, Ye. P.; Papadichev, V. A.; Semenov, S. S.; Fateyev, A. P.; Yablokov, B. N.

ORG: none

TITLE: Starting of a new accelerator - symmetrical annular FM synchrotron of the Physics Institute im. P. N. Lebedev AN SSSR

SOURCE: Atomnaya energiya, v. 20, no. 6, 1966, 513-514

TOPIC TAGS: electron accelerator, synchrotron/ KF electron accelerator

ABSTRACT: This is a brief report of the starting of a new experimental symmetrical annular FM synchrotron (KF installation). It is a strong-focusing accelerator with constant magnetic field, in which the time variation of the magnetic field is replaced by a radial increase of the field in accordance with the growth of the particle energy. The accelerator was proposed by one of the authors (Kolomenskiy, ZhETF v. 33, 298, 1957; Atomnaya energiya v. 3, 492, 1957) and its construction is described in detail elsewhere (V. N. Kamunnikov et al., in: Trudy Mezhdunarodnoy konferentsii po uskoritelyam, Dubna, 1963 [Transactions of International Conference on Accelerators, Dubna, 1963] Atomizdat, 1964, p. 653). The article describes briefly the magnet, the initial operation, the accelerating system, the electron injection, and some of the preliminary results. The authors thank V. S. Voronin, D. D. Krasil'nikov, A. N. Lebedev, O. A. Smirnov, V. M. Gapanovich, N. V. Platonov, G. T. Ponomarev, V. A. Ryabov, Ye.

Card 1/2 UDC: 621.384.612.4

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L 06995-67

ACC NR: AP6021528

3

F. Troyanov, G. I. Kharlamova, L. N. Chekanova, and the technicians' and mechanics' group for help with the starting of the accelerator, and Professor N. A. Dobrotin for interest in the work. Orig. art. has: 2 figures.

SUB CODE: 18/. SUBM DATE: 31Mar66/ ORIG REF: 004/ OTH REF: 001

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APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

FATEYEV, A.P.

AUTHOR BOLOTOVSKIY, B.M., FATEYEV, A.P. 56-7-62/66

TITLE On the Applicability of the Einstein-Fokker Equations for the Determination of Particle Losses in the Residual gas in Accelerators. (O primenimosti uravneniy Eynshteyna -Fokkera pri opredelenii poter' chastits na ostatochnom gaze v uskoritelyakh - Russian)

PERIODICAL Zhurnal Eksperim. i Teoret.Fiziki,1957, Vol 33, Nr 7,pp 304-306 (U.S.S.R.)

ABSTRACT First reference is made to several previous works dealing with this subject. By P(y,t) the authors denote the probability of the fact that at the moment t the particle has the amplitude y of the betatron or synchrotron oscillations. The Einstein-Fokker equation in this case has the following shape:

$\partial P(y,t)/\partial t = -\partial(\overline{\Delta y}P)/\partial y + (1/2)\partial^2(\overline{\Delta y^2}P)/\partial y^2$ with $\overline{\Delta y^n} = \lim_{\Delta t \to 0} (1/\Delta t) \int_{-\infty}^{+\infty} Q(y, \Delta y, \Delta t)(\Delta y)^n \, d(\Delta y)$. Here $Q(y,\Delta y,\Delta t)$ denotes the probability that the amplitude y of the vibrations of the particles will be modified by Δy during the time $\Delta t \to 0$. The above equation is correct if $(\Delta y)^3 \ll (\overline{\Delta y})^2, \ll \overline{\Delta y}$ is true. The authors here investigate the problem as to whether this condition applies also in the case of the modification of frequency of betatron vibrations as a result of elastic scattering. The frequency modification of synchrotron vibration as a result of nonelastic collisions of the particles to be accelerated with the residual gas is here used as an example. If, on the occasion of collisions, a particle loses more than a certain (here

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On the Applicability of the Einstein-Fokker Equations fo. the Determination of Particles Losses in the Residual Gas in Accelerator.

56-7-62/66

mentioned) amount of energy, it is immediately eliminated from the acceleration process. The probability of such losses, which occur only once, is considerable. On the basis of what has been discussed here losses caused by multiple nonelastic interaction were computed for a 25o MeV synchrotron and for a 1o BeV synchrophasotron. For the 1o BeV synchrophasotron particle losses amounting to several % are thus obtained.
(No illustrations)

ASSOCIATION Physical Institute "P.N. Lebedev" of the Academy of Sciences of the U.S.S.R. (Fizicheskiy institut im. P.N. Lebedeva Akademii nauk SSSR).

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66360

21.2100 SOV/120-59-5-3/46

AUTHORS: Kolomenskiy, A.A. and Fateyev, A.P.

TITLE: Determination of the Tolerance Values for the Magnetic Field Parameters in Accelerators, Using Eigenfunctions

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 5, pp 22-26 (USSR)

ABSTRACT: The method of eigenfunctions may be used in studying the effect of distortions in the magnetic field on the betatron oscillations of particles in cyclic accelerators (Refs 1-4). In this approach the distortion is expanded in terms of the eigenfunctions (harmonics) of the corresponding differential operator and the solution of the equation is sought in the form of a series. The eigenfunction method is convenient in determining the tolerances for the magnetic field parameters and the development of methods for the correction of the distortions. The aim of the present note is to consider some practical applications of the eigenfunction method. The equation of betatron oscillations is, in general, of the form given by Eq (1) (Ref 5). When the righthand side of this equation is such that $F(\theta, y) \equiv F_1(\theta)$, where $F_1(\theta) = F_1(\theta + 2\pi)$, a special solution of Eq (1) can be written

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Determination of the Tolerance Values for the Magnetic Field Parameters in Accelerators, Using Eigenfunctions

down in the form of the series given by Eq (2), where $y_k(\theta)$ are complex eigenfunctions of the operator $L = d^2/d\theta^2 + Q(\theta)$ and λ_k are the corresponding eigenvalues. The coefficients a_k are determined by Eq (3), where $u(\theta)$ is a certain "weight" function which is introduced for convenience. The eigenfunctions $y_k(\theta)$ satisfy the same boundary condition as the function $F_1(\theta)$ and are of the form given by Eq (4). In Eq (4) $\mu_k = 2k\pi/N$ and C_k is a normalizing factor which can be determined using the condition given by Eq (5). The function $f_k(\theta)$ is given by $f_k(\theta) = Y_{1k}(\theta) + iY_{2k}(\theta)$, where $Y_1(\theta)$, and $Y_2(\theta)$ are two special periodic solutions of Eq (6) which satisfy the initial conditions $Y_1(0) = 1$, $Y_2(0) = 0$; $Y_1'(0) = 0$, $Y_2'(0) = 1$. In general, Y_1 and Y_2 must be found by a numerical integration of Eq (6). Eigenfunctions can also be used to study the transition through resonances when the coefficients in Eq (1) and the "frequency" $\mu = \mu_m$ are slowly varying. Using the method of variation of constants, the amplitude A is given by

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Determination of the Tolerance Values for the Magnetic Field Parameters in Accelerators Using Eigenfunctions

Eq (7). In the case of a simple resonance ($F(\theta,y) \equiv F_1(\theta)$), Eq (7) leads to Eq (8). If the particle passes through a resonance corresponding for example to the kth eigenfunction, i.e. when $\mu(m_0) \simeq 2\pi k/N$, then only the phase γ_k will vary slowly. After averaging, the solution of Eq (8) gives, after passage through a simple resonance, the expression for the amplitude A given by Eq (9). In the case of parametric resonance ($F(\theta,y) = F_2(\theta)y$, $F_2(\theta) = \sum_k b_k y_k$), the equation for A is of the form given by Eq (10). From Eq (10) it is clear that the dangerous harmonics are those whose "frequency" μ_k is greater by a factor of 2 than the natural "frequency" of the system μ, i.e. $2\mu = \mu_k = 2\pi k/N$. After averaging of Eq (10), the expression given by Eq (11) is obtained. Substituting $A = a \exp(i\alpha)$ one obtains an approximate expression which describes the change in the amplitude after transition through parametric resonance and this is given by Eq (12), where v_0 is the value of $\delta - 2\alpha$ at the resonance point ($\delta = \arg B$).

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Determination of the Tolerance Values for the Magnetic Field Parameters in Accelerators, Using Eigenfunctions

L. L. Sabsovich is thanked for reading the manuscript and for a number of valuable suggestions.
There are 2 figures, 1 table and 9 references, 8 of which are Soviet and 1 English.

ASSOCIATION: Fizicheskiy institut AN SSSR (Physical Institute, Ac.Sc., USSR)

SUBMITTED: July 21, 1958

Card 4/4

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SOV/57-29-10-7/18

AUTHORS: Kanunnikov, V. N., Fateyev, A. P.

TITLE: On Calculation of the Magnet of a Circular Synchrocyclotron

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1959, Vol 29, Nr 10, pp 1228-1234 (USSR)

ABSTRACT: The paper discusses changes in the density of magnetizing current in the magnet of a circular synchrocyclotron with distributed windings. The method of magnetostatic potential φ is first applied to an ideal case of an infinite winding, and distortions taking place in an actual magnet are then considered. The magnetostatic potential of an ideal case is represented as a harmonic function $\varphi(r,z)$, where r is the radius from the center of the synchrocyclotron in the average plane, and z is a point on the axis of coordinates, with Bessel functions under the sign of the integral of the equation. After using the Kelvin transformation, an expression for the density of magnetizing current is given. The integration of this equation gives the law of changes of ampere-turns I(r). When the magnetizing tu[illegible] are

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

On Calculation of the Magnet of a Circular Synchrocyclotron 75330
SOV/57-29-10-7/18

not continuously distributed, distortions occur. In order to evaluate these distortions the magnetic field must be considered for a case when the density of magnetizing current is given a priori. To this purpose the study considers a magnet with an airgap increasing in proportion to the increase of the radius. Having set a certain density of magnetizing current an equation is derived for the magnetostatic potential for the particular case. The paper then discusses field distortions due to the finite dimension of the windings when there are spaces on the magnet, without any winding on it, and when the edges have their effect. In such a case the component of the field that underwent the change must be compensated by a supplementary winding on the magnet's yoke. An expression is written giving the magnitude of the component of the current which must be compensated. A field distortion is also discussed when the actual distribution of current density differs from that assumed a priori. Expressions for the distortion of the field index are given for a constant airgap for cases of distortion on one pole only and for distortion of the average magnetic plane. The compensatory windings must be arranged so as to give a uniform field distrib-

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On Calculation of the Magnet of a Circular Synchrocyclotron 75330
SOV/57-29-10-7/13

ution on the particular part of the magnet. Curves are given showing the change in field distortion obtained after the distortions have been compensated. Kolomenskiy, A. A., assisted in the study. There are 3 figures and 4 Soviet references.

ASSOCIATION: Physics Institute imeni P.N.Lebedev (Fizicheskiy institut imeni P. N. Lebedeva), Moscow

SUBMITTED: December 11, 1958

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S/089/60/008/06/08/021
B006/B063 82309

21.2100

AUTHORS: Fateyev, A. P., Yablokov, B. N.

TITLE: A Ring-type Cyclotron Accelerator 19 With a Perpendicularly Increasing Magnetic Field 21

PERIODICAL: Atomnaya energiya, 1960, Vol. 8, No. 6, pp. 552-553

TEXT: Following the papers of Refs. 1-3 in which similar problems were treated without reference to the possibility of stable acceleration of particles, the authors of the present paper describe the theoretical investigation of an accelerator with a regulating magnetic field (ring-type cyclotron) that increases perpendicularly and is constant with time, as well as of the stability of particle motion in this field. The magnetic system of such an accelerator consists of uniform, periodically arranged elements each of which is made up of two sectors (Fig. 1). The direction of the magnetic field is opposite in the neighboring sections, and the curvature of the orbit changes its sign during the transition from one sector to another. The absolute

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

A Ring-type Cyclotron Accelerator With a Perpendicularly Increasing Magnetic Field

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magnitude of the field rises perpendicularly according to $H \sim z^n$. In their theoretical consideration of such an accelerator, which may be based on various principles, the authors confine themselves to the simplest case in which the particle orbits are plane curves (Fig. 1), and are composed of several arcs of equal radius of curvature (of different signs) but different size: $R_1 = R_2 = R$; the vertical angles of the sectors ϑ_1 and ϑ_2 are assumed to be large compared to straight distances and radial gaps, so that boundary effects are negligible. Such a field as the one examined here is represented in Fig. 2. An expression is derived for the range of stability of such a ring-type cyclotron. In a practical case in which $N = 30$ and $n \simeq 10$, $1.21 < \nu_1/\nu_2 < 1.33$ holds for the range of stability. The authors thank A. A. Kolomenskiy for his discussion of this work. There are 2 figures and 5 references: 2 Soviet, 1 American, and 1 Czech.

SUBMITTED: January 1, 1960

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APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4"

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FATEYEV, A. P., Cand. Phys-Math. Sci. (diss) "Methods of Computation of Accelerators with Constant Field and Strong Focusing." Moscow, 1961, 8 pp (Moscow State Univ., Scientif. Res. Instit. of Physics)150 copies (KL Supp 12-61, 253).

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

S/035/62/000/003/029/053
A001/A101

AUTHOR: Fateyev, A. P.

TITLE: On decentering photographs while performing transformation on ФТБ (FTB)

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 3, 1962, 15, abstract 3G126 ("Tr. Novosib. in-ta inzh. geod., aerofotos"yemki i kartogr.", 1961, v. 14, 81-89)

TEXT: The author derives formulae for changing lengths of segments of an aerial photograph being transformed while introducing longitudinal and transversal decentering. Formulae are derived for various cases of segment orientation relative to the photograph axes. A table was compiled on the basis of the formulae derived, which shows the magnitude of longitudinal and transversal decentering to be introduced in transformation with magnification coefficients from 0.5 to 3.0 for photographs taken with aerial cameras with f_k = 36 - 200 mm. Angles of photograph inclinations are from 30' to 3°.

V. Orlov

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

S/169/63/000/002/091/127
D263/D307

AUTHOR: Fateyev, A. P.

TITLE: Application of the method of radiophotogrammetric combination of photographs in geophysical methods of exploration

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 2, 1963, 16, abstract 2D95 (Tr. Novosib. in-ta inzh. geod., aerofotos" emiki i kartogr. 1961, v. 15, 43-48)

TEXT: The discrepancy between the rates of geophysical and especially aerogeophysical methods and the laborious geodesic methods constitutes a delay in the exploration for various required minerals. This disadvantage may, according to the author, be avoided by applying the radiophotogrammetric method of combining photographs. /Abstracter's note: Complete translation./

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510004-4

S/089/61/010/004/010/027
B102/B212

21,2000 (also 1538)

AUTHOR: Fateyev, A. P.

TITLE: Theory of the ring-cyclotron

PERIODICAL: Atomnaya energiya, v. 10, no. 4, 1961, 373-375

TEXT: The magnetic system of this cyclotron differs from that of standard sector-type accelerators in that the field in the sectors increases not radially but vertically ($H \sim z_n$). This causes an upward shift of the particle orbit when the energy increases; then, the particle orbit remains within a small cylindrical ring. The stability is also maintained by a spiral modulation of the field; the ring cyclotron has a "screw-shaped" magnetic field. Since the orbital perimeter of this accelerator type is practically independent of energy, it is particularly suited for electron acceleration in the relativistic energy range. In this "Letter to the Editor", it is shown in general there are closed stable orbits and the boundary effects are taken into account. Particular attention has been paid to the "symmetric variant" where acceleration, accumulation, and head-on collisions of particles of two beams orbiting simultaneously in opposite direction are possible. With

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the formulas obtained it is possible to investigate various modifications of this type of cyclotron. In cylindrical coordinates, the magnetic field $\vec{H} = (H_r, H_\theta, H_z)$ is given by

$$\left.\begin{aligned} H_r &= -\sum_k R_k\left(\frac{z}{\bar z}\right)^{n_k+1}\left\{\left[k^2-n_k(n_k+1)\left(\frac{\bar r}{z}\right)^2\right]\frac{\Delta r}{\bar r}+\right.\\ &\left.+\frac{1}{2}\left[3k^2+n_k(n_k+1)\left(\frac{\bar r}{z}\right)^2\right]\left(\frac{\Delta r}{\bar r}\right)^2+\dots\right\}e^{ik\theta};\\ H_\theta &= -\sum_k \Theta_k\left(\frac{z}{\bar z}\right)^{n_k+1}\left\{1-\frac{\Delta r}{\bar r}+\frac{1}{2}\left[2+k^2-n_k(n_k+1)\left(\frac{\bar r}{z}\right)^2\right]\left(\frac{\Delta r}{\bar r}\right)^2+\dots\right\}e^{ik\theta};\\ H_z &= -\sum_k Z_k\left(\frac{z}{\bar z}\right)^{n_k}\left\{1+\frac{1}{2}\left[k^2-n_k(n_k-1)\left(\frac{\bar r}{z}\right)^2\right]\left(\frac{\Delta r}{\bar r}\right)^2+\dots\right\}e^{ik\theta}, \end{aligned}\right\} \quad (1),$$

where $\Delta r = r - \bar r$; $n_k = n - iks$ (s denotes the parameter characterizing the screw-shaped field); $R_k = \bar z Z_k/\bar r(n_k + 1)$, $\Theta_k = ik\bar z Z_k/\bar r(n_k + 1)$; $Z_k = \bar H_{z,k} = H_{z,k}(\bar r, \bar z)$; $k = 0, \pm N, \pm 2N, \dots$; N denotes the number of

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Theory of ...

periodicity elements. $\bar{z}/\bar{r} = \Delta$ yields

$$\left.\begin{aligned} &\bar{H}_{r,k}=0,\ \bar{H}_{\theta,k}=\frac{ik\Delta}{n_k+1}\bar{H}_{z,k},\ \frac{\partial\bar{H}_{z,k}}{\partial r}=0,\\ &\frac{\partial\bar{H}_{z,k}}{\partial z}=\frac{n_k}{\bar{z}}\bar{H}_{z,k},\\ &\frac{\partial\bar{H}_{r,k}}{\partial r}=\frac{k^2\Delta^2-n_k(n_k+1)}{\bar{z}(n_k+1)}\bar{H}_{z,k} \text{ и т. д.}\end{aligned}\right\} \quad (2).$$

The wavelike shape of the orbits can be represented by $X = (r - \bar{r})/\bar{r}$ and $Y = (z - \bar{z})/\bar{r}$, and is small with respect to a "mean" circumference $\bar{r}$, $\bar{z}$. Now, the following expression is obtained approximately:

$$\left.\begin{aligned} X_k &\simeq -\frac{a}{k^2}\left[\bar{H}_{z,k} - a\sum_{m\neq 0}\frac{\bar{H}_{z,m}\left(\bar{H}_{z,k-m} + \bar{r}\,\frac{\partial\bar{H}_{z,k-m}}{\partial r}\right)}{m^2}\right];\\ Y_k &\simeq \frac{a^2}{k^2}\sum_{m\neq 0}\left[\frac{\bar{H}_{z,m}}{m^2}\left(im\,\bar{H}_{\theta,k-m} - \bar{r}\,\frac{\partial\bar{H}_{r,k-m}}{\partial r}\right)\right];\end{aligned}\right\} \quad (4),$$

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where X_k and Y_k denote Fourier expansion coefficients: $X = \sum_k X_k e^{ik\theta}$, $Y = \sum_k Y_k e^{ik\theta}$. From

$$\bar{r} = \frac{1}{\theta_0}\int_0^{\theta_0} r(\theta)\,d\theta, \quad \bar{z} = \frac{1}{\theta_0}\int_0^{\theta_0} z(\theta)\,d\theta, \quad \theta_0 = \frac{2\pi}{N} \qquad (5)$$

it follows that $X_0 = Y_0 = 0$. The dimension parameter $\alpha = e\bar{r}/pc$ characterizes the spatial position of the mean circumference for a given value of the momentum and may be determined from (5). The sign of α depends on the direction of motion and the type of particle. It can be shown that

$$\alpha = -\frac{\bar{H}_{z,0}}{2B} \pm \sqrt{\left(\frac{\bar{H}_{z,0}}{2B}\right)^2 - \frac{1}{B}}, \qquad (6) \text{ and}$$

$$B = -\sum_{m \neq 0} \frac{\bar{H}_{z,-m}}{m^2}\left(\frac{3}{2}\bar{H}_{z,m} + \bar{r}\frac{\partial \bar{H}_{z,m}}{\partial r}\right). \qquad (7)$$

are in general valid. If $\bar{H}_{z,0} = 0$ it follows that $\alpha_1 = -\alpha_2$. In such a

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symmetric field, the particles will move with momenta $\pm p$ opposite to each other on nearly the same mean circumference. Substituting (2) in (4) gives

$$\left.\begin{aligned} X_k &\simeq -\frac{\alpha}{k^2}\left[\left(1-\frac{\alpha\bar{H}_{z,0}}{k^2}\right)\bar{H}_{z,k}-\alpha\sum_{m\neq k,0}\frac{k+3m}{2m(k-m)^2}\bar{H}_{z,m}\bar{H}_{z,k-m}\right]; \\ Y_k &\simeq \frac{\alpha^2}{k^2\Delta}\left[\frac{n}{k^2}\bar{H}_{z,0}\bar{H}_{z,k}-\sum_{m\neq k,0}\frac{k(k-m)\Delta^2-n_{k-m}(n_{k-m}+1)}{m^2(n_{k-m}+1)}\bar{H}_{z,m}\bar{H}_{z,k-m}\right]. \end{aligned}\right\} \quad (8);$$

α can be determined from (6), where $B = -\frac{3}{2}\sum_{m\neq 0}\frac{|\bar{H}_{z,m}|^2}{m^2}$. For $\bar{H}_{z,0} = 0$ (symmetric ring cyclotron) and $s = 0$, the following expression is obtained for a purely sinusoidal modulation:

$$\left.\begin{aligned} X &\simeq \pm\frac{2\sqrt{3}}{3N}\cos N\theta+\frac{5}{12N^2}\cos 2N\theta; \\ Y &\simeq -\frac{\Delta}{3(n+1)}\left[1-\frac{n(n+1)}{2N^2\Delta^2}\right]\cos 2N\theta. \end{aligned}\right\} \quad (9).$$

Finally, the equations and several questions regarding the geometric and

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dynamic similarity are briefly discussed. In order to assure the former, $H \sim e^{\gamma z}$ has to increase (γ = const). The author thanks A. A. Kolomenskiy and B. N. Yablokov for discussions. There are 5 Soviet-bloc references.

SUBMITTED: July 26, 1960

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AUTHOR: Fat'yev, A. P.

TITLE: Free motion of particles in accelerators with constant field and strong focusing

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 2, 1961, 238-253

TEXT: The author discusses the theoretical study of the free motion of particles in accelerators with constant field and strong focusing with special consideration of the "symmetric" annular synchrocyclotron. All equations are given in the most adequate form for direct application. The values obtained are illustrated by the example of the magnetic system of an annular synchrocyclotron. The equations of motion of a relativistic particle with the mass m and charge e in the magnetic field $\vec{H} = \{H_r, H_\theta, H_z\}$ have form

$$\left.\begin{aligned} &\text{a)}\quad r''(r^2+z'^2) - r(r^2+2r'^2+z'^2) - r'z'z'' = \frac{e\Phi}{pc}(rH_z - z'H_\theta), \\ &\text{b)}\quad z''(r^2+r'^2) - r'z'(r''+r) = \frac{e\Phi}{pc}(r'H_\theta - rH_r), \end{aligned}\right\} \quad (1,1)$$

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where r,θ,z cylindrical coordinates; p≃const the particle momentum and $\Phi = (r'^2 + r^2 + z'^2)^{3/2}$; the prime denotes the differentiation with respect to θ. The particle path in the circular accelerator can be expressed by equation

$$\left.\begin{aligned} r &= r_0(\theta) + \rho(\theta), \\ z &= z_0(\theta) + \Delta z(\theta), \end{aligned}\right\} \qquad (1,2)$$

in the general case, where r_0, z_0 the coordinates of the orbit, ρ and Δz the betatron oscillations. The field $\vec{H}$ and the function $\Phi(r, r', z')$ were expanded in exponents of ρ and Δz.

$$\left.\begin{aligned} H_s &= \sum_{m=0}^{\infty} \frac{1}{m!}\left(\frac{\partial}{\partial r}\rho + \frac{\partial}{\partial z}\Delta z\right)^m H_s^0; \quad s = r, \theta, z; \\ \Phi &= \sum_{m=0}^{\infty} \frac{1}{m!}\left(\frac{\partial}{\partial r'}\rho' + \frac{\partial}{\partial r}\rho + \frac{\partial}{\partial z'}\Delta z'\right)^m \Phi_0. \end{aligned}\right\} \qquad (1,3)$$

The subscript 0 indicates that the quantity concerned is referred to the path. When introducing (1,2) and (1,3) into (1,1) two systems of equations

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$$\left.\begin{aligned} &\text{a)}\quad r_0''(r_0^2+z_0'^2)-r_0'(2r_0r_0'+z_0'z_0'')- \\ &-r_0(r_0^2+z_0'^2)-\frac{e\Phi_0}{pc}(r_0'H_z^0-z_0'H_\theta^0)=0, \\ &\text{b)}\quad z_0''(r_0^2+r_0'^2)-z_0'r_0'(r_0''+r_0)- \\ &-\frac{e\Phi_0}{pc}(r_0'H_\theta^0-r_0'H_r^0)=0, \end{aligned}\right\} \qquad (1,4)$$

and

$$\left.\begin{aligned} &\text{a)}\quad a_1\rho''+a_2\Delta z''+a_3\rho'+a_4\Delta z'+a_5\rho+a_6\Delta z+\ldots=0, \\ &\text{b)}\quad b_1\rho''+b_2\Delta z''+b_3\rho'+b_4\Delta z'+b_5\rho+b_6\Delta z+\ldots=0, \end{aligned}\right\} \qquad (1,5)$$

are obtained, where

$$\begin{cases} a_1=r_0^2+z_0'^2, \\ a_2=-r_0'z_0', \\ a_3=-4r_0r_0'-z_0'z_0''-\frac{e}{pc}(r_0H_z^0-z_0'H_\theta^0)\frac{\partial\Phi_0}{\partial r'}, \\ a_4=2z_0'(r_0''-r_0)-r_0'z_0''-\frac{e}{pc}\left[-H_\theta^0\Phi_0+(r_0H_z^0-z_0'H_\theta^0)\frac{\partial\Phi_0}{\partial z'}\right], \\ a_5=-3r_0^2-2r_0'^2-z_0'^2+2r_0r_0''-\frac{e}{pc}\left[\left(H_z^0+r_0\frac{\partial H_z^0}{\partial r}-\right.\right. \\ \qquad\qquad \left.\left.-z_0'\frac{\partial H_\theta^0}{\partial r}\right)\Phi_0+(r_0H_z^0-z_0'H_\theta^0)\frac{\partial\Phi_0}{\partial r}\right], \\ a_6=-\frac{e\Phi_0}{pc}\left(r_0\frac{\partial H_z^0}{\partial z}-\frac{z_0'}{r_0}\frac{\partial H_z^0}{\partial\theta}\right); \end{cases} \qquad (1,6)$$

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