MAKSIMOV, M.

They learn from Soviet miners. Mast.ugl. 3 no.11:29 N'54.
(China--Coal miners) (MLRA 8:3)

MAKSIMOV, M.

Ural miners' new village. Mast.ugl.5 no.2:30 F '56.
(Chelyabinsk Basin--Coal miners) (MLRA 9:6)

ALEKSANDROV, I.; MAKSIMOV, M.

More concern and attention to young miners. Mast.ugl. 5 no.5:3-4 My '56. (MLRA 9:8)

(Ukraine--Coal miners)

MAKSIMOV, M.

Master coal miners instruct youth. Mast.ugl 5 no.11:15-16 N '56.
(MLRA 10:1)

(Coal miners)

MAKSIMOV, M.

MAKSIMOV, M.

Kuznetsk Basin miners. Mast. ugl. 6 no.8:15-16 Ag '57. (MLRA 10:9)
(Kuznetsk Basin--Coal miners)

LIDIN, D.; NORMANSKIY, M.; GOLUBEV, B.; SOROKIN, N.; MAKSIMOV, M.; ALEKSANDROV, I.; MOGILKIN, V.; LAKISOV, A.; FIL'CHUK, A.; SAVEL'YEV, V.

Representatives of the people. Mast.ugl. 7 no.4:3-7 Ap '58. (MIRA 11:4)
(Russia--Politics and government--Biographies)

MAKSIMOV, M.

Miners are erecting housing. Mast. ugl. 7 no.9:12 S '58.
(Building) (MIRA 11:10)

MAKSIMOV, M.

Force of competition and its effect. Mast. ugl. 7 no.10:13-14 O '58
(MIRA 11:11)

(Coal mines and mining)
(Socialist competition)

MAKSIMOV, M.

Floating rest home. Mast. ugl. 8 no.8:25 Ag '59.
(MIRA 12:12)

(Lugansk Province--Labor rest homes)

MAKSIMOV, M.

Labor safety is the most important objective. Mast.ugl. no.10: 4-5 O '59. (MIRA 13:3)
(Coal mines and mining--Safety measures)

FARIZOV, I.O.; MEDOVYY, A.I.; MAKSIMOV, M.A.; MASLOV, A.A.; MUSSO, S.; BOGDANCHIKOV, M.M.; VARENTSOV, K.M.; AVARIN, V.Ya., otv. red.; POLYAK, A.A., otv. red.; TRINICH, F.A., red. izd-va; VOLKOVA, V.V., tekhn. red.

[Agrarian-peasant question in the independent underdeveloped countries of Asia; India, Burma, Indonesia] Agrarno-krest'ianskii vopros v suverennykh slaborazvitykh stranakh Azii; Indiia, Birma, Indoneziia. Moskva, 1961. 353 p. (MIRA 14:6)

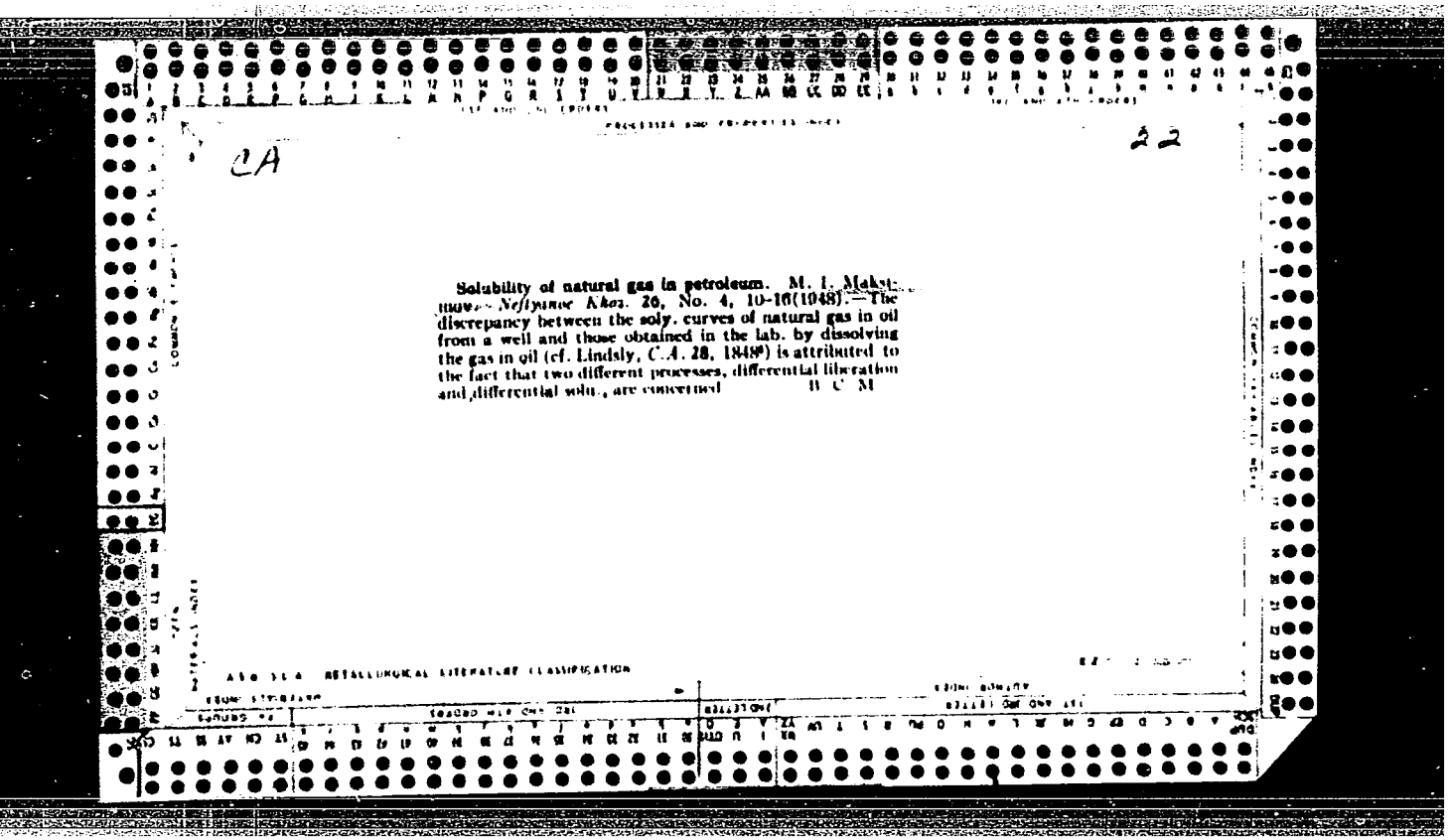
1. Akademiya nauk SSSR. Institut mirovoy ekonomiki i mezhd narodnykh otnosheniy.
(Asia, Southeastern—Agriculture—Economic aspects)

MAKSIMOV, M.G., inzh.

Readers' comments. Prom. stroi. 37 no.9:64 S '59. (MIRA 13:1)
(Building--Cold weather conditions)

GATLAND, K.W.; DUGOSHIN, V.N. [translator]; MAKSIMOV, M.I. [translator]; VAKHMISTROV, V.V. [translator]; GRISHIN, A.P., doktor tekhnicheskikh nauk, redaktor; KRUGLIKOV, F.F., redaktor; KLIMENKO, S.V., tekhnicheskiy redaktor

[Development of the guided missile. Translated from the English] Razvitie upravliaemykh snariadov. Perevod s angliiskogo V.N.Duboshina i dr. Pod red. A.P.Grishina. Moskva, Izd-vo inostrannoi lit-ry, 1958. 369 p. (MLRA 9:12)
(Guided missles)



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Solubility of natural gas in petroleum. M. I. Makat[illegible]. *Neftyanoe Khoz.* 26, No. 4, 10-16(1948).—The discrepancy between the soly. curves of natural gas in oil from a well and those obtained in the lab. by dissolving the gas in oil (cf. Lindsly, *C.A.* 28, 1848[illegible]) is attributed to the fact that two different processes, differential liberation and differential soln., are concerned. H. C. M.

LAKSIYOV, V. I.

Laksiyov, V. I. "The [illegible] Nester K[illegible] and the direction of future work" (from a speech at the 4th (early V, specialist of the Academy of Sciences of the Kazakh SSR, Vestn. Akad. Nauk Kazakh. SSR, [illegible], no. 1, p. 5-8).

[illegible]

MAKSIMOV, M. I.; MIRCHINK, M. F.

Neftepromyslovaya geologiya (Oil Field Geology), Moscow-Leningrad, 1952.

No. 444, 16 Aug 55

MAKSIMOV, M.I.

AID P - 3054

Subject : USSR/Mining

Card 1/1 Pub. 78 - 8/20

Author : Maksimov, M. I.

Title : Most advantageous relationship between injection wells and oil producing wells and influence of the forcing pressure in cases of an intra-contour flooding

Periodical : Neft. khoz., v. 33, no. 8, 38-43, Ag 1955

Abstract : The author analyses secondary methods for increasing oil recovery through flooding. He considers the placing of water injection wells inside the producing wells of an oil field as most advantageous because in such a case the forcing pressure can be brought and utilized to a higher degree. The most economical relationship of the amount of water injection wells to the amount of producing wells is discussed. Charts.

Institution : None

Submitted : No date

MAKSIMOV, M.I.

Some problems of central intraboundary flooding. Neft.khoz. 34 no.10:22-26 O '56. (MLRA 9:11)
(Oil field flooding)

BELASH, P.M.; MAKSIMOV, M.I.

Effect of the time factor in the production of watered wells on the shape of the edge water line and oil and water recovery ratio. (MIRA 14:6)
Trudy VNII no.10:221-239 '57.
(Oil fields—Production methods)

AGADZHANOV, Artem Minayevich [deceased]; MAKSIMOV, Mikhail Ivanovich; KHEL'KVIST, G.A., doktor geol.-mineral.nauk, prof., retsenzent; SHAN'GIN, S.N., doktor geol.-mineral.nauk, prof., retsenzent; BEKMAN, Yu.K., vedushchiy red.; POLOSINA, A.S., tekhn.red.

[Oil-field geology] Nefte-promyslovaia geologiia. Moskva, Gos. nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1958. 413 p. (MIRA 11:2)
(Petroleum geology)

MIRCHINK, M.F.

FEDOROV, A.N. [deceased]; UL'YANOV, A.V. [deceased]; TEODOROVICH, G.I.; USPENSKIY, V.A.; RADCHENKO, O.A.; FEDYNSKIY, V.V.; MAKSIMOV, M.I.; SUBBOTINA, N.N.; STEPANOV, D.L.; MIRCHINK, Mikhail Fedorovich, red.; IONINA, I.N., vedushchiy red.; YASHCHURZHINSKAYA, A.B., tekhn. red.

[Dictionary of petroleum geology] Slovar' po geologii nefti. Izd.2., ispr. i dop. Leningrad, Gos. nauchno-tekhn. izd-vo neft i gorno-toplivnoi lit-ry, Leningr. otd-nie, 1958. 776 p. (MIRA 11:10)

1. Chlen-korrespondent Akademii nauk SSSR (for Mirchink).
(Petroleum geology—Dictionaries)

MAKSIMOV, M.I.

Principal results of studies on oil-field development. Trudy VNII no.18:55-74 '58. (MIRA 12:2)
(Petroleum engineering)

AUTHOR: Maksimov, M.I., Director SOV/25-58-11-6/44

TITLE: Analog of Oil Stratum (Model' neftyanogo plasta

PERIODICAL: Nauka i zhizn', 1958, Nr 11, p 13 (USSR)

ABSTRACT: With the aid of new engineering methods the annual oil production of the USSR will be increased to 350,000,000 - 400,000,000 tons. For analyzing the productivity of wells, the electric integrator "EI-S" has been designed by the All-Union Oil-Gas Institute. One of the outstanding features of the "EI-S" device is the possibility to simulate the properties of oil strata, such as the face pressure, thickness, permeability, porosity and other characteristics by means of electric current of varying power, tension, etc. As the integrator has a grid of resistance with 20,000 nodal points, large oil fields with hundreds of wells can be examined The integrator is fully automatic, and operates with 8,000 different radio tubes. Research work with the help of this electric integrator is conducted on the basis of geological and operative data, obtained as a result of drilling operations and exploitation of wells. Recently the analog of the Devonian oil stratum of the Bavly deposit of the Tartar ASSR was simulated. This deposit is being exploited by more than

Card 1/2

200 operative and pressure wells. It was found that the level of oil production can be maintained with a reduced number of operative wells. By reducing the number of wells 50 %, the losses of oil will amount to only several percent. There is 1 photo.

ASSOCIATION: Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut (The All-Union Oil-Gas Scientific Research Institute)

MAKSIMOV, M. I., BETASH, P. A., KRYLOV, A. P. (USSR - II)

"Electrical-Model Studies and Prediction of Oilfield Development."

Report submitted at the Fifth World Petroleum Congress, 30 May - 5 June 1959. New York.

MAKSIMOV, M. I., Candidate Geolog-Mineralog Sci (diss) -- "A method of computing the extractable reserves of oil in the final stage of working, when oil is being forced out by water". Moscow, 1959. 12 pp (Gosplan USSR, Main Admin of Sci Res and Design Organizations, All-Union Petroleum-Gas Sci Res Inst VNII), 150 copies (KL, No 26, 1959, 124)

MAKSIMOV M.I

MAMIKOV, M. I., KRYLOV, A. P., TREBIN, F. A., BORISOV, Y. A., KOROTKOV, S. T., BUCHIN, A. N., ABASOV, M. T., MIRCHINK, M. F., VASILEVSKIY, V. N., SHELKACHEV, V.N., KOZLOV, A. L., and MINSKIY, E.M.

"Development of the Theory and Practice of Oil and Gas Field Production in the USSR."

Report submitted at the Fifth World Petroleum Congress, 30 May - 5 June 1959. New York City.

MAKSIMOV, M.I.

Calculating the amount of oil recovered in the final stage of exploitation of wells by water flood. Geol. nefti i gaza 3 no.3:42-47 Mr '59. (MIRA 12:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy neftyanoy institut.
(Oil field flooding)

KRYLOV, A.P.; MAKSIMOV, M.I.; BAYRAK, K.A.; PERMYAKOV, I.G.

Measures for improving the production system in the Tuymazy oil field. Neft.khoz. 37 no.2:44-50 F '59. (MIRA 12:4)
(Tuymazy region--Oil fields--Production methods)

MAKSIMOV, M.I.

Methods for calculating the long-range production program and development drilling. Trudy VNII no.26:3-18 '60.
(MIRA 13:9)
(Oil fields--Production methods)

MAKSIMOV, M.I.; BAISHEV, B.T.; GATTENBERGER, Yu.P.; MUSIN, M.Kh.

Geology of a producing layer as a basis for improving the programming of petroleum production. Geol. nefti i gaza 5 no. 3:20-24 Mr '61. (MIRA 14:4)

1. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut.
(Oil fields—Production methods)

MAKSIMOV, M.I.

Industry's requirements for oil prospecting data to be used in programming the development systems. Trudy VNII no.33:25-32 '61. (MIRA 16:7)

1. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut, Moskva.

(Petroleum geology)

KRYLOV, Aleksandr Petrovich; BELASH, Pavel Maksimovich; BORISOV, Yuriy Petrovich, kand. tekhn. nauk; BUCHIN, Aleksandr Nikolayevich; VOINOV, Viktor Viktorovich; GLOGOVSKIY, Mark Mikhaylovich; MAKSIMOV, Mikhail Ivanovich; NIKOLAYEVSKIY, Nikolay Matveyevich, doktor ekon. nauk; ROZENBERG, Maks Davidovich; SAVINA, Z.A., ved. red.; POLOSINA, A.S., tekhn. red.

[Programming the development of oil fields; principles and methods] Proektirovanie razrabotki neftianykh mestorozhdenii; printsipy i metody. Moskva, Gostoptekhizdat, 1962. 429 p. (MIRA 15:6)

1. Chlen-korrespondent Akademii nauk SSSR (for Krylov).
(Oil reservoir engineering)

KOGAN, L.G.; MAKSIMOV, M.I.

Development of nonuniform-permeability fields with variation in reservoir structure. Nauch.-tekh. sbor. po dob. nefti no.17: 38-45 '62. (MIRA 17:8)

1. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut.

MAKSIMOV, M.I.

Distant spacing of production wells is an important measure of the national economy. Geol.nefti i gaza 6 no.8:1-8 Ag '62. (MIRA 15:9)

1. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut.
(Oil fields--Production methods)

MAKSIMOV, M.I.

Thinning the networks of oil derricks in exploitation, an important measure for the Rumanian economy. Analele geol geogr 17 no.3:85-93 Jl-S '63.

KRYLOV, A.P., red.; AFANAS'YEVA, A.V., kand. tekhn.nauk, red.; BORISOV, Yu.P., doktor tekhn. nauk, red.; BRISKMAN, A.A., red., kand. tekhn. nauk; BUCHIN, A.N., kand. ekon. nauk, red.; VIRNOVSKIY, A.S., doktor tekhn. nauk, prof., red.; ZHELTOV, Yu.P., kand. tekhn. nauk, red.; MAKSIMOV, M.I., kand. geol.-miner. nauk, red.; MARKOVSKIY, G.E., inzh., red.; MELIK-PASHAYEV, V.S., doktor geol.-miner. nauk, red.; NIKOLAYEVSKIY, N.M., doktor ekon. nauk, prof, red.; PETROVSKAYA, A.N., kand. geol.-miner. nauk, red.; PILATOVSKIY, V.P., doktor fiz.-mat. nauk, red.; ROZENBERG, M.D., doktor tekhn. nauk, red.; SAFRONOV, S.V., kand. tekhn. nauk, red

[Petroleum production; theory and practice. 196[illegible] yearbook] Dobycha nefti; teoriia i praktika. Ezhegodnik 1963. Moskva, Nedra, 1964. 302 p. (MIRA 17:9)

1. Chlen-korrespondent AN SSSR (for Krylov). 2. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut (for Melik-Pashayev, Rozenberg). 3. Institut mekhaniki AN SSSR (for Nikolayevskiy).

KALAMKAROV, V.A.; ORUDZHEV, S.A.; GALONSKIY, P.P.; KRYLOV, A.P.; MAKSIMOV, M.I.; TREBIN, F.A.

Accomplishments of Soviet petroleum workers in the development of oil fields. Neft. khoz. 42 no.9/10: 89-99 S-O '64. (MIRA 17:12)

MAKSIMOV, Mikhail Ivanovich

[Geological bases for the development of oil fields] Geologicheskie osnovy razrabotki neftianykh mestorozhdenii. Moskva, Nedra, 1965. 487 p.
(MIRA 19:1)

MAKSIMOV, M.M.

Factors governing the formation of Devonian sediments (layer D_1) in the Bavly oil field and a method using zonal maps for studying them. Izv. vys. ucheb. zav.; neft' i gaz no. 3:3-9 '58.
(MIRA 11:7)

1. Moskovskiy neftyanoy institut im. akad. I.M.Gubkina.
(Bavly District--Petroleum geology)
(Geology--Maps)

11(0) SOV/93-58-11-7/15

AUTHOR: Krylov, A.P., Maksimov, M.M., Dorokhov, O.I.

TITLE: Studying the Fluid Gathering Properties of the D_I Formation at the Bavly Oilfield by Means of an EI-S Electronic Integrator (Izucheniye kollektorskikh svoystv plasta D_I Bavlinskogo mestorozhdeniya na elektrointegratore EI-S)

PERIODICAL: Neftyanoye khozyaystvo, 1958, Nr 11, pp 34-41 (USSR)

ABSTRACT: This is an experimental study of oilwell spacing at the D_I formation of the Bavly Oilfield. The experiments were carried out by the VNII Institute by means of an EI-S electronic integrator [Ref 1] under water pressure conditions. The D_I formation is of a nonuniform structure and of changeable facies [Ref 2] and it was developed by pressure maintenance through water flooding [Ref 3]. The data on its development from 1949 through 1956 are given in Table 1. The formation's resistivity to filtration is reflected in Fig. 1. The formation pressure recorded by the electronic integrator at low and high electric grid capacitance and at an increased volume of water injection is shown by Fig. 2. The electronic integrator produced more accurate data on the formation's resistivity to filtration (Fig. 3) and these are reflected in the isobar maps (Figs. 4 and 4b). The EI-S integrator made it possible to reproduce for the first time the oilfield development process

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under water pressure conditions and to learn in detail the nonuniformity of the formation as well as the change in oilwell yield during the 10 years of its development. The results obtained with the integrator characterize the formation's structure better than those obtained through well drilling and this will make it possible to employ the integrator in studying the fluid gathering properties of formations with sparse wells prior to actual exploration. Furthermore, the new data on the structure of formations will make it possible to carry out correctly the preliminary development of an oil deposit with the aim of increasing the oil output. There are 4 figures, 1 table and 3 Soviet references.

MAKSIMOV, V.M., Cand Geol-Min Sci -- "Detailed geological-industrial study of productive Devonian deposits of the Pavlinsk petroleum formation; further improvement of the employed development system." Moscow, 1959. 9 pp (Min of Higher Education USSR. Mos, Order of Labor Red Banner Inst of Petroleum Chemistry and Gas Industry im I.M. Gubkin. Chair of Exploration and Development of Petroleum and Gas Deposits), 150 copies (KL, 27-59, 119)

-13-

MAKSIMOV, M.M.

Calculating the resistance of model wells using productivity factors. Nauch.-tekh. sbor. po dob. nefti no.16:70-72 '62.
(MIRA 15:9)

1. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut.
(Oil reservoir engineering)

BRYKINA, M.M.; MAKSIMOV, M.M.; POLIKARPOVA, R.V.; RYBIN, F.S.; SMIRNOVA, A.A.

Comparison of the properties of reservoir rocks in level D_1 of the central section of the Minnibayevo region based on field data and data obtained with the EI-S electric integrator. Nauch-tekh. sbor. po dob. nefti. no.21:3-13 '63. (MIRA 17:5)

1. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut.

DOROKHOV, O.I.; MAKSIMOV, M.M.

Effect of the density of the well pattern on the nature of the displacement of the oil boundaries as revealed by a study of the Bavly oil field. Nauch.-tekh.sbor.po dob.nefti, no. 14: 30-35 '61. (MIRA 17:6)

AFANAS'YEVA, A.V.; KORNEVICH, L.I.; MAKSIMOV, M.M.; PALIY, A.O.; RAKOVSKIY, N.L.

Electric modeling of the flooding of petroleum with a fringe of liquefied gases taking into consideration the mutual solution of fluids. Trudy VNII no.42:198-221 '65. (MIRA 18:5)

L 43883-66 EWT(d)/EWP(1) IJP(c) BB/GG

ACC NR: AP6030573 SOURCE CODE: UR/0413/66/000/016/0055/0055

INVENTOR: Kreynin, S. I.; Lashevskiy, R. A.; Maksimov, M. N.; Rabkina, N. V.; Khavkin, V. Ye.; Skvortsov, A. M.; Norkin, L. M.

ORG: none

TITLE: Memory device. Class 21, No. 184935

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 16, 1966, 55

TOPIC TAGS: computer memory, computer storage device

ABSTRACT: This Author Certificate introduces a word-organized memory consisting of multiaperture ferrite plates, and a magnetic decoder with transformers using multiaperture ferrite plates (see Fig. 1). To increase both the speed and capacity

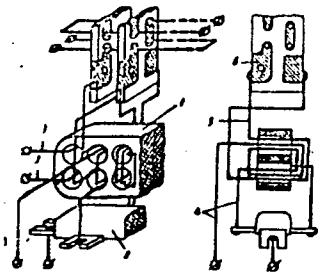

Fig. 1. Memory device

1 - Ferrite plate; 2 - diode matrix; 3 - bias winding; 4 - excitation winding; 5 - output winding; 6 - printed winding.

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ACC NR: AP6030573

and to reduce the required power, the magnetic decoder contains a diode matrix of integral planar structures with a number of p-n junctions equal to the number of addresses in the device. Orig. art. has: 1 figure. [JR]

SUB CODE: 09/ SUMB DATE: 20May65/ ATD PRESS: 5075

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MAKSIMOV, M.P. DECEASED 1961/3

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PHYSICAL CHEMISTRY

TSIKERMAN, L.Ya., doktor tekhn.nauk; SLAVIN, M.B., kand.tekhn.nauk;
MAKSIMOV, M.P., inzh.

Electronic-acoustical methods for finding the locations of water leakages from underground pipelines. Vod. i san. tekh. no.11:1-3 N '64. (MIRA 18:2)

MAKSIMOV, M.V.; MALOV, V.S., red.; LARIONOV, G.Ye., tekhn.red.

[Telemetering devices] Teleizmeritel'nye ustroistva. Moskva, Gos.energ.izd-vo, 1951. 55 p. (Massovaia radiobiblioteka, no.108) (MIRA 12:5)

(Telemetering)

MAKSIMOV, M.

PA 253T87

USSR/Electronics - Radiosondes Feb 53
Meteorology - Measurements

"Professor P. A. Molchanov's Radiosonde System," B. Krivitskiy and M. Maksimov

Radio, No 2, pp 18-20

Claims radio sounding was invented by Molchanov and tested in 1930 for the first time in the world in Pavlovsk. Describes Molchanov's sonde in detail. Gives brief account of a radarsonde developed in the USSR in 1946 by V. V. Kostarev (original paper published in "Meteorol i Gidrol," No 2, 1946).

253T87

MAKSIMOV, M.

"Trokhotron." Radio no.11:57-60 N '53. (MLRA 6:11)
(Electron tubes)

Maksimov M.M. III

AID P - 4398

Subject : USSR/Radio

Card 1/1 Pub. 89 - 7/11

Authors : Maksimov, M. and Yu. Shumikhin, Yu.

Title : Radio-telemetering

Periodical : Radio, 3, 43-46, Mr 1956

Abstract : The measuring at a distance by radio recording is discussed. A block diagram of a 23 channel voltage type measuring system is presented. Samples of radio recording of wave signals by means of a measuring radio instrument mounted on a rocket are shown. A detailed description of the instruments' functions is given. Five diagrams.

Institution : None

Submitted : No date

MAKSIMOV, M.V.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1493
AUTHOR MAKSIMOV,M.V.
TITLE The Reciprocal Correlation of Fluctuation Disturbances at the Output of Frequency Filters.
PERIODICAL Radiotechnika, 11, fasc.9, 28-38 (1956)
Issued: 10 / 1956 reviewed: 11 / 1956

The present work is devoted to the determination of the function of reciprocal correlation $K(\tau)$ of the voltages $U_1(t)$ and $U_2(t)$ obtained at the output of the filters Φ_1 and Φ_2 respectively. At first this function is determined in a system with a detector. On this occasion radiofrequency cascades are used which have a resonance system Φ_0 (filters arranged before the other filters Φ_1 and Φ_2). The latter has a sufficiently narrow and symmetric frequency characteristic. In the course of computations the expression $R(\tau) = \frac{K(\tau)}{\sigma_1 \sigma_2}$ is used for the coefficient of reciprocal correlation, where σ_1^2 and σ_2^2 are the average values of the squares of the voltages $U_1(t)$ and $U_2(t)$. The formula is derived by means of which $R(\tau)$ can be computed in dependence on the parameters of the filters Φ_1, Φ_2, Φ_0. A similar equation is derived for the function of the reciprocal correlation of the disturbances in the system without detector.

Accordingly the reciprocal correlation of disturbances is determined by using the resonance circuit as a filter. Again the coefficient of the reciprocal correlation in the system with and without a detector is determined. The expressions thus obtained for these coefficients show that with the increase of the passage of frequencies, the coefficients of the reciprocal correlation diminish with sufficient rapidity and in accordance with the same rule, both in the system with a linear detector and also in the system without a detector. Computations of the dependences $R(0)=F(k)$ and $R_1(0)=F_1(k)$,/ R in the case of systems with, and R_1 in the case of systems without a detector / make it possible to conclude that for radiotechnical installations the voltages $U_1(t)$ and $U_2(t)$ may be described as noncorrelative if $k \gg 4 \div 5$. As a rule most radio receivers occurring in practice are marked by such a behavior of the resonance frequencies of separating filters. The parameters of the resonance system of the radio receiver also influence the function of reciprocal correlation of disturbances at the output of separating filters.

INSTETUTION:

109-8-19/17

AUTHOR: **Maksimov, M.V.**

TITLE: Influence of the Fluctuation Noise on a Pulse Group Selector. (Deystviye flyuktuatsionnykh pomekh na selektor gruppy impul'sov)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol.II, Nr 8, pp.1071-1073 (USSR)

ABSTRACT: Very often the triggering of a monostable circuit is done by a group pulse **circuit** which is normally known under the name of the coincidence **circuit.** The output pulse of the coincidence selector is formed by a combination of n input pulses. If the input pulses are subjected to the fluctuation noise, the output pulse would be randomly phase-modulated. It is assumed that in the absence of noise the output pulse occurs at time $t = 0$ while in the presence of the fluctuation noise it is shifted by $\Delta\tau$. The probability density distribution $W(\Delta\tau)$ for the instants of the appearance of the output pulses is given by equation 4, in which $\Delta\tau_i$ is the shift of an individual pulse and $W_i(\Delta\tau)$ is the probability density distribution for a particular train of input pulses. If it is assumed that the input pulses have a Gaussian shape and the input **circuit** has a bandwidth Δf ,

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. Influence of the Fluctuation Noise on a Pulse Group Selector.

then the probability density distribution is given by equation 12:

$$W(\Delta\tau) = \frac{qn\ \Delta f}{2^n\sqrt{\pi}}\left[1 + \Phi\left(\frac{q\ \Delta f\ \Delta\tau}{2}\right) \exp\left(-\frac{q^2 \Delta f^2 \Delta\tau^2}{4}\right)\right] \quad (12)$$

where $q = \frac{U_{max}}{\sigma_{ex}}$ where U_{max} and σ_{ex} are the input signal and noise respectively. There are 2 figures and 2 references, one of which is Slavic.

SUBMITTED: March 31, 1956.

AVAILABLE: Library of Congress.

Card 2/2

MAKSIMOV, M.V., inzh.-podpolkovnik, dotsent, kandidat tekhn.nauk

"Instrumentation for relaying data by radio from rockets and missiles." Reviewed by M.V.Maksimov. Vest.Vozd.Fl. no.2:88-89 F '60. (MIRA 13:7)
(Rocketry) (Telemetering)

29590

S/108/61/016/011/006/007
D201/D304

9.3277

AUTHOR: Maksimov, M.V., Member of the Society

TITLE: Mathematical expectation of the voltage and the average number of pulses per unit time at the output of a coincidence circuit

PERIODICAL: Radiotekhnika, v. 16, no. 11, 1961, 59 - 66

TEXT: In analyzing multi-channel radio-lines with a code channel division, it is often necessary to evaluate the mathematical expectation $\overline{u(t)}$ of voltage $u(t)$ and the average number N_{av} of pulses as produced at the output of the coincidence stage, to whose input are applied the transmitted codes and chaotic pulse interference (CPI). It is also important to know in practice the spectral density (energy spectrum) $\Phi(\omega)$. The solution of the problem of the function $\Phi(\omega)$ will be given in an article which is to be published at a later date. In the present article the problem of determining $\overline{u(t)}$ and N_{av} only is considered. This evaluation is made for the condi-

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Mathematical expectation of the ...

tion that only rectangular pulses of constant amplitude and duration are applied to the coincidence circuit and with the following further assumptions: a) That the instants of appearance of CPI have the Poisson distribution; b) That the intervals between consecutive pulses are different for each of the transmitted codes which results in maximum interference-killing properties of the radio-line; c) The changes of duration and in the instants of appearing of input $u_1(t)$ and output $u_2(t)$ coincidence circuit pulses are independent of each other; d) That pulses $u_2(t)$ are independent of each other; e) That the amplitudes and durations of pulses of transmitted codes and interference at the input of coincidence circuit remain constant; f) That the transmitted codes do not overlap. The above conditions are satisfied usually in practice and the results obtained in this article reflect the statistical properties of signals at the output of coincidence circuits very well. The mathematical expectation $\overline{u(t)}$ of pulses produced by the coincidence stages is derived as

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Mathematical expectation of the ...

$$\overline{u(t)} = U_m \frac{\tau_{in}}{nT_i} \left\{[n(n-1)+(N_c-1)n^2]P_c(1-P_{at})-T_i z P_c\right\} + U_m \frac{n}{T_i} (1-P_{at})^n \quad (11)$$

which shows that it may easily be evaluated if the following are known: duration τ_{in} of input pulses and interference, the pulse amplitude U_m, the number of pulses in the transmitted codes, the average number z of interference pulses per second, the probability P_c of formation of false codes and P_{at} = probability of attenuation of transmitted signals; P_c and P_{at} may be evaluated by analyzing the formation of false codes and from the transmission of signals and noise through the receiver. In practice the receiving equipment is often designed so that $P_{at} = 0$. Eq. (11) may then be simplified into

$$\overline{u(t)} = \frac{U_m \tau_{in}}{nT_i} \left\{[n(n-1)+(N_c-1)n^2 + zT_i]n(z\tau_{in})^{n-1}\right\} + U_m \frac{\tau_{in}}{T_i} \quad (18)$$

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Mathematical expectation of the ...

where (as in Eq. (11)) T_i is the average period of input pulses. Eq. (18) is simple and applicable in engineering design. It shows that u(t) at $P_{at} = 0$ and $U_{in} = \text{const.}$ is a function of interference intensity z, of properties of transmitted signals (n_1, n_2, ..., n_c; τ_{in} and T_i) and of the number N_c of radioline channels. The average number N_{av} of pulses formed per unit time at the output of the coincidence circuit is derived as

$$N_{av} = \frac{P_c(1 - P_{at})}{T_i}\left[n_1(n_1 - 1) + n_2^2 + n_3^2 + \ldots + n_c^2\right] + zP_c + \frac{(1 - P_{at})n_1}{T_i} \quad (19)$$

or for equal number of pulses per code of the line

$$N_{av} = \frac{P_c(1 - P_{at})}{T_i}\left[n(n - 1) + (N_c - 1)n^2\right] + zP_c + \frac{(1 - P_{at})^n}{T_i} \quad (20)$$

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Mathematical expectation of the ...

which shows that with increasing n the magnitude of N_{av} with T_i = const sharply decreases tending to unity at $P_{at} = 0$ and to zero at $P_{at} \neq 0$. It means that, having P_{at} equal or near zero, by proper choice of n, a practically undistorted reception (from the point of view of the average number of pulses) may be obtained. There are 2 figures and 4 Soviet-bloc references.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A.S. Popova (Scientific and Technical Society of Radio Engineering and Electrical Communication im. A.S. Popov) [Abstractor's note: Name of Association taken from 1st page of journal]

SUBMITTED: January 11, 1961 (initially)
June 13, 1961 (after revision)

Card 5/5

BARSUKOV, Filipp Ivanovich; MAKSIMOV, Matvey Vasil'yevich; STERLIGOV, V.L., red.; CHAPAYEVA, R.I., tekhn. red.

[Radio-telemetry] Radiotelemetriia. Moskva, Voenizdat, 1962. 183 p. (MIRA 15:8)
(Telemetering)

BARSUKOV, Filipp Ivanovich; MAKSIMOV, M.V., red.; SHIROKOVA, M.M., tekhn. red.

[Radio telemechanics]Radiotelemekhanika. Moskva. Gos-energoizdat, 1962. 87 p. (Massovaia radiobiblioteka no.433) (MIRA 15:10)
(Radio control) (Electronic control)

9,3277 (also 1524)
9,3279

35381
S/108/62/017/003/007/009
D299/D303

AUTHOR: Maksimov, M.V., Member of the Society (see Association)

TITLE: Spectral density of output voltage of a coincidence stage

PERIODICAL: Radiotekhnika, v. 17, no. 3, 1962, 61 - 70

TEXT: Formulas are obtained for the spectral density $\Phi(\omega)$ of the output signal U(t) of a coincidence stage, as a function of the statistical characteristics of the pulse sequences formed at the output, and of the parameters of the transmitted signals and random noises. Assumptions and results from an earlier article by the author *(Ref. 1: Radiotekhnika, v. 16, no. 11, 1961), are used. The spectral density of the random pulse-sequence u(t) is

$$\Phi(\omega) = \lim_{T_1 \to \infty} \overline{\frac{1}{T_1} |A^{(k)}(\omega)|^2}, \qquad (2)$$

where $A^{(k)}$ is the spectral function of the voltage u, and T_1 is the

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* S/108/61/016/011/006/007

interval in which the pulse sequence is given. Rectangular pulses are considered. First, $A^{(k)}$ is calculated. In determining the spectral density, the interval T_1 is chosen in such a way that it contains $(2N + 1)$ pulses of the sequence $u_{1.1}$ and $(2M + 1)$ pulses of the sequence $u_2(t)$; the time-coordinate t is chosen so that the mean pulse of the $(2N + 1)$ pulses of the $u_{1.1}$-sequence, is found at the point $t = 0$; $u_{1.1}(t)$ is a function which describes the l-th sequence of pulses at the output, formed as a result of the interaction between the random noises and the transmitted signals. Substituting the obtained expression for $A^{(k)}$ in formula (2), one obtains an equation for the spectral frequency which contains several quantities yet to be determined, viz. $\Phi_{1.1}(\omega)$, $\Phi_{rec}(\omega)$, $\Phi_2(\omega)$ and $\Phi_{rec\ 1}$ (ω) (Φ_{rec} denoting the total reciprocal spectral density of the various sequences $u_1(t)$, and $\Phi_2(\omega)$ is given by a formula involving the probability density of the sequences $u_2(t)$ and other functions

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of frequency and time). A final expression for the spectral density is obtained. This expression shows that the spectral density $\Phi(\omega)$, consisting of a discrete and a continuous part, can be found if the following quantities are known: the number of pulses in the code of each channel, the duration of a pulse, the mean number of noise pulses at the input, the mean period T_i of sequence of the pulses $u_{1...1}(t)$, the amplitude U_m at the output, the number of channels N, and probability-density and time functions; these functions can either be calculated or experimentally determined without difficulty. There are 3 Soviet-bloc references.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A.S. Popova (Scientific and Technical Society of Radio Engineering and Electrical Communications imeni A.S. Popov) [Abstractor's note: Name of Association taken from first page of journal]

SUBMITTED: January 11, 1961 (initially)
June 13, 1961 (after revision)

L 61331-65 ARG/EEC-2/EWT(d)/FBD/FSS-2/FBO/EEC(k)-2/EWG(s)-2/EWP(c)/EEC-4/
EWP(h)/EED-2/FCS(k)/EWA(c)/EWA(m)-2/Pn-4/Po-4/Pq-4/Pac-4/Pg-4/
AM5012955 Pk-4/Pe-4/Pl Lar(c) BOOK EXPLOITATION UR/ 623.451.8.054.93 150 BYI

Maksimov, Matvey Vasil'yevich; Gorgonov, Gennadiy Ivanovich

Radio control of rockets (Radioupravleniye raketami), Moscow, Izd-vo "Sovetskoye radio", 1964. 643 p. illus., biblio. Errata slip inserted. 10,300 copies printed.

TOPIC TAGS: missile guidance equipment, automatic control system, homing device, radio command system, aircraft autopilot, radio guidance, rocket guidance, missile guidance system, electronic component, rocket, electric detonator

PURPOSE AND COVERAGE: The book sets forth the principles of construction and theoretical elements of radio control systems for rockets and radio detonators. Radio engineering components of guidance equipment are discussed in detail. An analysis of these components shows that they are dynamic links in control systems. In conjunction with this, much attention is given to a complete analysis of radio control systems which takes various disturbing influences into account. The book is intended for radio engineers and radio engineering students in universities. It can also be used by people who are not specialists in radio engineering but are interested in radio control techniques for rockets.

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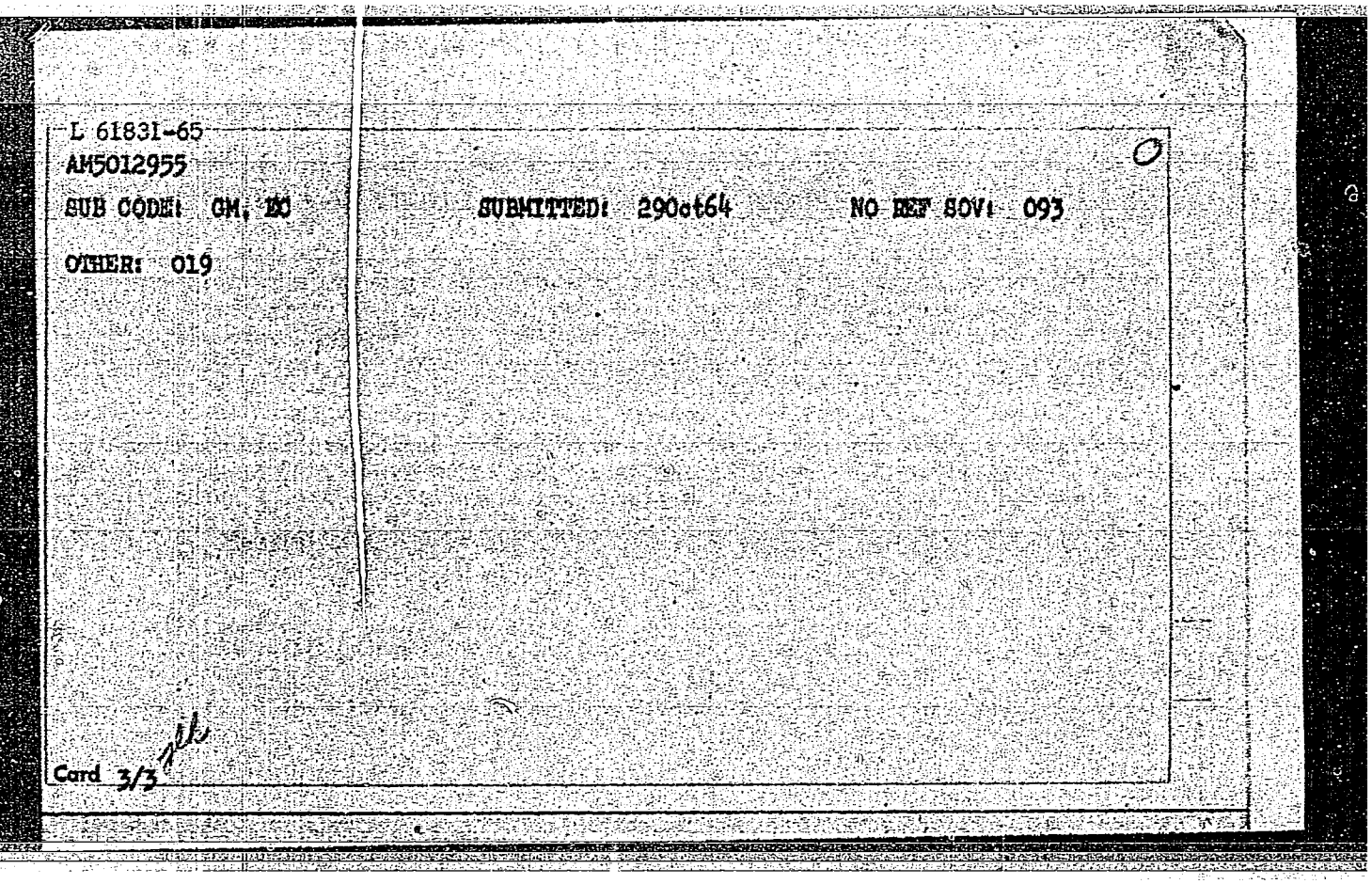

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OTHER: 019

Card 3/3

MAKSIMOV, M.V., kand.tekhn.nauk; BORDYUKOV, A.P., inzh., retsenzent; SYTNIK, N.A., inzh. red.; UVAROVA, A.F., tekhn. red.

[Boiler units with a large evaporative capacity design and construction] Kotel'nye agregaty bol'shoi paroproizvoditel'nosti; raschet i konstruktirovanie. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. 430 p. (MIRA 14:5)
(Boilers)

Maksimov, M. Z.

2 1-EML 2

3809

DEPENDENCE OF THE TAPER LENGTH OF EMULSION TRACKS ON PARTICLE CHARGE. D. V. Viktorov and M. Z. Maksimov. Soviet Phys. JETP 5, 42-4(1957) Aug. Proceeding from Freier's hypothesis that the tapering of tracks is due to the increase of specific energy losses, it is suggested that an increase of the quantum yield of developed grains with increasing energy absorbed by the photographic layer takes place in nuclear as well as in x ray emulsions. The energies at which this phenomenon begins are approximately the same. The dependence of the taper length on the particle charge has been computed. The calculations satisfactorily agree with the available experimental data. (auth)

Distr: 1E3d/1E1c

AUTHOR: VIKTOROV, D.V., MAKSIMOV, M.Z.

TITLE: Dependence of the Taper Length of Emulsion Tracks on Particle Charge. (zavisimost' dliny suženija sleda v fotoemul'sijach ot zarjada casticy, Russian).

PERIODICAL: Zhurnal Eksperimental'noi i Teoret.Fiziki, 1957, Vol 32, Nr 1, pp 135-138 (U.S.S.R.)
Received: 3 / 1957 Reviewed: 4 / 1957

ABSTRACT: At first preliminary works on the subject are cited and discussed in short. In the course of computations carried out in the present paper the THOMAS-FERMI computations are used only up to the K shell, and for the K shell the formulae obtained from the quantum mechanical computations are used:
$mv_e^2/2 \sim 13{,}5\ Z_{eff}^{4/3}$ (eV); $1 \leq Z_{eff} \leq (Z-2)$ $mv_e^2/2 = 13{,}5\ Z_{eff}^2$(eV);
$(Z-2) \leq Z_{eff} \leq Z$. Here v_e denotes the velocity of the orbital electrons. On the occasion of the passage of charged particles through matter with a high nuclear charge number it must be taken into consideration that not all electrons participate in deceleration but only a part in a proportion of
$Z^{1/3} v_s \hbar/e^2$, where v_s denotes the velocity of the orbital electrons of the decelerating medium. The formulae applicable on

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Dependence of the Taper Length of Emulsion Tracks on Particle Charge.

these conditions for the loss of energy and for the narrowing length L are given. By "narrowing length" we understand that part of the remaining range from that point where the velocity of the ion of the order of magnitude of the orbital K-electron is equal to $\gamma v \sim ve^z$, up to complete standstill. For a photo emulsion $L \sim 4{,}7Z\,[1 + 0{,}33\,\ln(Z - 2)]$ is obtained (in micron). This formula is in general correct for $Z > 2$. The values of L computed with this formula are probably somewhat too low for great Z. A table compares the values of L computed by means of this formula with the results obtained by P. FREIER et al. (Phys. Rev. 74, 1818 (1948) and with experimental data. The values of L found by the authors are in better agreement with experimental data than the corresponding results obtained by FREIER. As with FREIER, computations were carried out on the supposition that the width of the tracks of the particles depends upon the specific losses of energy. In the case of nuclear emulsions the proportionality of the width of the track of the particle to specific losses of energy begins with somewhat higher values than in the case of X-ray emulsions. The increase of the developed grains is in the latter case effected by secondary electrons. The

PA - 2069

Dependence of the Taper Length of Emulsion Tracks on Particle Charge.

thickening of the tracks of the multiply charged particles is apparently caused by the same mechanism. To verify the assumption that the track is narrowed by diminishing the specific loss of energy with the capture of orbital electrons, the charge of specific energy losses with multiply charged particles must be measured. The difficulties of the measuring of the taper length of particles with $Z < 6$ are due to the fact that the specific energy losses on the occasion of the capture of electrons by the decelerated particle are only inconsiderably modified and that therefore the width of the track remains practically constant. Further investigations in this direction would be desirable.

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED:
AVAILABLE: Library of Congress

MAKSIMOV, M Z

56-6-14/47

AUTHOR: Maksimov, M. Z.

TITLE: The Emission of Particles by Excited Nuclei (Ispuskaniye chastits vozbuzhdennymi yadrami)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1957, Vol. 33, Nr 6 (12), pp. 1411 - 1416 (USSR)

ABSTRACT: The present paper gives an approximated evaluation of the probability of the production of a remanent nucleus by the successive emission of several (k) particles by an excited nucleus in dependence on bombarding target nuclei A with any other nuclei a, and therefore it is easy to determine the dependence of the probabilty to be investigated here on the energy of the inciding nuclei. The author here investigates the reaction

$$(A + a) \rightarrow (A + a)^* \rightarrow (A + a - \sum_{i=1}^{k} b_i) + \sum_{i=1}^{k} (b_i),$$

where (X) denotes a nucleus with the mass number X. Thus the above reaction, according to what is assumed by Bohr, consists of two independent reactions. The cross section of this reaction can be represented in the form $\sigma_k = \sigma_c(a)\,\bar{\eta}_k$, where $\sigma_c(a)$ denotes the cross section of the production of a compound nucleus from the nuclei A and a, and $\bar{\eta}_k$ - the probability of the decay of the compound nucleus

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The Emission of Particles by Excited Nuclei

into the final products. Expressions for these quantities are derived and explicitly written down. The cross sections thus computed can be compared with experimental data, and can be used for the purpose of determining the yield of the various isotopes. As an example the author investigates the reaction

$Cu_{29}^{63} + p \rightarrow (Zn_{30}^{64})^* \rightarrow Cu_{29}^{62} + ((n_1 + p_2)$ or $(p_1 + n_2)$ or $d_1)$.

The just derived formulae are specialized for this case. Dependence on excitation energy and mass number can be determined if a certain nuclear model is assumed. Next, the cross section of the nuclear reaction $(A + a) \rightarrow (A + a - kn) + k(n)$ is computed. By means of the formulae derived here it is possible to compute the cross sections of the nuclear reactions with emission of neutrons if the impinging nuclei are p, d, or α-particles. The immediate determination of thresholds from the masses is somewhat difficult, particularly if 2, 3, or more neutrons are emitted. The results of the computations carried out here are illustrated in form of diagrams, and the cross sections computed agree well with those which are determined by experiments. There are 3 figures, and 11 references, 3 of which are Slavic.

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56-6-14/47

The Emission of Particles by Excited Nuclei

SUBMITTED: June 1, 1957

AVAILABLE: Library of Congress

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001031620016-1

MAKSIMOV, M. Z.

PHASE I BOOK EXPLOITATION SOV/1297

Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya po primeneniyu radioaktivnykh i stabil'nykh izotopov i izlucheniy v narodnom khozyaystve i nauke, Moscow, 1957

Polucheniye izotopov. Moshchnyye gamma-ustanovki. Radiometriya i dozimetriya; trudy konferentsii... (Isotope Production. High-energy Gamma-Radiation Facilities. Radiometry and Dosimetry; Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science) Moscow, Izd-vo AN SSSR, 1958. 293 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR; Glavnoye upravleniye po ispol'zovaniyu atomnoy energii SSSR.

Editorial Board: Frolov, Yu.S. (Resp. Ed.), Zhavoronkov, N.M. (Deputy Resp. Ed.), Aglintsev, K.K., Alekseyev, B.A., Bochkarev, V.V., Leshchinskiy, N.I., Malkov, T.P., Sinitsyn, V.I., and Popova, G.L. (Secretary); Tech. Ed.: Novichkov, N.D.

PURPOSE: This collection is published for scientists, technologists, persons engaged in medicine or medical research, and others concerned with the production and/or use of radioactive and stable isotopes and radiation.

COVERAGE: Thirty-eight reports are included in this collection under three main subject divisions: 1) production of isotopes 2) high-energy gamma-radiation facilities, and 3) radiometry and dosimetry.

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PART I. PRODUCTION OF ISOTOPES

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57-28-6-31/34

AUTHORS: Agrest, M. M., Maksimov, M. Z., Khmelevskiy, A. K.

TITLE: The Determination of the Solid Angle Formed by a Circular Target With Respect to the Point Source (Opredeleniye telesnogo ugla, obrazovannogo krugloy mishen'yu otnositel'no tochechnogo is_tochnika)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 6, pp. 1345 - 1348 (USSR)

ABSTRACT: In the present work the authors developed a final and accurate formula for the determination of the solid angle formed in space with respect to any point. In spherical coordinates the required solid angle is expressed in the case $p > R$ by the formula

$$\Omega = \frac{1}{2\pi} \int_0^{\varphi_1} d\varphi \int_{\theta_1}^{\theta_2} \sin\theta \, d\theta.$$

Calculation of Ω is rendered considerably more simple if the

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table for total elliptical integrals of the 3. kind $\Pi(n,k)$, if $k^2 < n < 1$, as developed by Heuman (Reference 7) is used. Ω is determined according to the following formula:

$$\Omega = \frac{1}{4} - \frac{\gamma}{2\pi\sqrt{\gamma^2+(1+\mu)^2}} K(k) + \frac{\mu - 1}{4|\mu - 1|}\left\{\Lambda\ (\gamma, \delta) - 1\right\}$$

The formulae obtained can be used in calculation of the share of radiation of surface emitters on a round detector. Especially the share of radiation of the inner surface of the hollow cylinder with the radius R and the height H, which impinges upon a target of the same radius with the center on the cylinder axis and which is located at a distance d from its upper base, can be determined according to the formula

$$\eta = \frac{1}{2} + \frac{2R}{\pi H}\left\{\frac{1}{k_o} E(k_o) - \frac{1}{k_1} E(k_1)\right\}$$

Card 2/3 There are 1 figure and 7 references, 2 of which are Soviet.

The Determination of the Solid Angle Formed by a Circular Target With Respect to the Point Source

57-28-6-31/34

ASSOCIATION: Fiziko-tekhnicheskiy inst. AN Gruzinskoy SSR (Institute of Physics and Technology, AS Georgian SSR)

SUBMITTED: May 10, 1956

1. Radiation—Mathematical analysis

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SOV/56-36-3-44/71

21(7)

AUTHOR: Maksimov, M. Z.

TITLE: The Excitation of Nuclei by Particles of High Energy (Vozbuzhdeniye yader chastitsami bol'shikh energiy)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 3; pp 922-924 (USSR)

ABSTRACT: In the present paper the author theoretically investigates ("Letter to the Editor") the dependence of the average number of nucleons $\bar{N}$ knocked out in the interaction between fast particles and nuclei and of the average excitation energy $\bar{U}$ of the remainder of the nucleus on the energy E_0 and the mass number A. It is assumed in this connection that $A \approx 2Z$ and all cascade nucleons fly mainly in a forward direction (cf. Refs 2,3). Several formulae are derived on the assumption of the existence of weakly energy-dependent collision cross sections, i.e. for $\bar{\sigma}_{eff} \sim \frac{1}{2}(\sigma_{pp} + \sigma_{pn})(1 - 7E_f/5E_c)$; $\sigma_{pp} \sim \sigma_{nn}$; $\sigma_{pn} = \sigma_{np}$; σ_{np} - total elastic collision cross section for free nucleons E_f = 22-25 Mev, the Fermi energy;

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The Excitation of Nuclei by Particles of High Energy

$E_c = E_0 + V_0$ kinetic energy of the nucleons in the nucleus, V_0 the depth of the potential well. For the $\overline{N}$-and $\overline{U}$-dependence of E_0 and A an expression of the following kind is obtained:

$$\overline{U}(E_0,\beta) = E_0 + |\varepsilon| - (V_0 + B/2)\overline{F} + (V_0 - |\varepsilon|)\overline{N}$$

A diagram shows the dependence calculated according to the Monte Carlo method, and, for comparison, also the measured dependence of $\overline{U}$ on E_0 between 80 and 600 Mev for AgBr; a second diagram shows $\overline{U}(A)$ at $E_0 \approx 460$ Mev. The author finally thanks M. M. Agrest and I. M. Rozman for their advice and discussions, and N. V. Khaykhyan for calculations.
There are 2 figures and 6 references, 2 of which are Soviet.

SUBMITTED: September 2, 1958

21(7), 24(5)
AUTHOR: Maksimov, M. Z.

SOV/56-36-5-52/76

TITLE: The Disintegration of Charged Particles in the Nuclear Coulomb Field (O rasshcheplenii zaryazhennykh chastits kulonovskim polem yader)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 5, pp 1582-1583 (USSR)

ABSTRACT: Charged particles (charge Z_a) with the mass number a enter into interaction with the target nucleus (Z,A); in certain cases the interaction energy may be sufficiently high in order to tear the bonds of the incident particles, in-so-far as composite particles are concerned (D- or B-nucleus, H_2^+ and others). The theory of this phenomenon has already been dealt with (Refs 1, 2). In the present "Letter to the Editor" the author investigates the disintegration cross section. A composite particle (Z_a,a) is assumed to disintegrate as a result of Coulomb interaction into the parts (Z_1,a_1) and (Z_2,a_2); ε_0 denotes the binding energy.

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The following expression is obtained for the cross section:

$$\sigma = \frac{\pi(Ze^2)^2}{E_0\varepsilon_0}\,\frac{Z_1^2a_2^2 + Z_2^2a_1^2}{a_1a_2}\left(1 - \frac{\varepsilon_0}{E_0}\,\frac{Z_a^2a_1a_2}{Z_1^2a_2^2+Z_2^2a_1^2}\left(\frac{A+a}{2A}\right)^2\right)$$

For relativistic velocities the kinetic energy E_0 of the inciding particle must be replaced by $E_0(1+E_0/2M_ac^2)$ $(1+E_0/M_ac^2)^{-2}$. If $E_0 \gg \varepsilon_0$, $\sigma \approx 6.3\cdot10^{-26}\,\frac{Z^2}{\varepsilon_0E_0}\,\frac{a_2^2Z_1^2+a_1^2Z_2^2}{a_1a_2}$ cm^2

The following numerical evaluations are given:

Deuterons $\varepsilon_0 = 2.18$ $E_0 \sim 200$ Mev $\sigma = 1.4\cdot10^{-28}\,Z^2$ cm^2

Beryllium $\varepsilon_0 = 1.7$ $E_0 \sim 100$ Mev $\sigma = 0.45\cdot10^{-28}\,Z^2$ cm^2

H_2^+, D_2^+ $\varepsilon_0 \approx 2.5$ ev $E_0 \sim 20$ - 30 kev $\sigma \approx 10^{-18}\,Z^2$ cm^2

The Disintegration of Charged Particles in the Nuclear Coulomb Field SOV/56-36-5-52/76

The author thanks Yu. V. Kursanov for his assistance. There are 3 references, 2 of which are Soviet.

SUBMITTED: January 14, 1959

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SOV/56-37-1-20/64

21(8)

AUTHOR: Maksimov, M. Z.

TITLE: The Range - Energy Relation for Various Substances (Sootnosheniye probeg - energiya dlya razlichnykh veshchestv)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 1(7), pp 127-130 (USSR)

ABSTRACT: At first, the known non-relativistic formula for the energy losses of a particle with the charge Z_a and with the mass number a at the passage through a substance with the nuclear-charge number Z and the mass number A is written down. According to Bloch's approximation ($I_A \sim Z$), the specific losses must be a function of the parameter v^2/Z alone. Further investigations (Ref 3) showed, however, that this approximation was not quite justified. If the energy properties of the atoms of the slowing-down substance are approximately described by the mean excitation potential, the specific losses must only depend (because of dimensional deliberations) on the ratio between the mean kinetic energy (which is taken up by the electrons of the substance atoms) and the mean excitation potential. If the energy E_a of the incident particle is measured

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The Range - Energy Relation for Various Substances

in Mev, and I_A in kev, it is convenient to choose the quantity $y = E_a/aI_A$ as a non-dimensional parameter. On the basis of the above circumstances, the formula $\varepsilon = cf(y)$ is obtained for the specific losses, and the constant c can be determined by comparison with the above-mentioned approximation: $\varepsilon(E_a) = (Z/AI_A)Z_a^2 f(y)$. This gives an expression for the range: $R(E_a) = \frac{AI_A^2 a}{ZZ_a^2} F(y)$ $F(y) = \int_o^y \frac{dt}{f(t)}$. Both f(y) and F(y) only depend on y, and in the above-mentioned non-relativistic case the following expression holds: $f(y) \sim (145/y)\ln(2.17y)\text{kev}^2.\text{cm}^2/\text{mg}$. On the basis of these formulas, universal curves are obtained which permit the determination of the range and of the specific losses in various substances, if their mean excitation potential is

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known. The author is interested in the curve $F(y)$, and the experimental data used for its determination are indicated. For the determination of the desired curve $F(y)$, also the mean excitation potential must be known, which, however, has not been determined for all substances. The results of the analysis are illustrated by a diagram in which, for the matter of convenience, the experimental data are compiled in the diagram $F(y)/y^2$. This diagram shows that the experimental data fits to the curve in a sufficiently wide range of values of y, as was expected. The deviations are partly connected with the experimental errors in the determination of the ranges and energies ($F(y)/y^2 \sim R(E)/E^2$). Besides, the function $yf(y) = (A/\bar{Z}aZ_a^2)E\,\varepsilon(E)$ in the interval $0.1 \leq y \leq 10^3$ was determined on the basis of experimental data on the slowing-down power. The data thus obtained fits even better to the above-mentioned curve than $y^{-2}F(y)$. This may be connected with a smaller influence of the effect of scattering. At sufficiently high y, the formula $f(y) \sim (145/y)\ln(2.17\ y)\,kev^2.cm^2mg$ delivers satisfactory results for the calculation of $F(y)$.

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The author thanks M. M. Agrest for the discussion of the results. There are 1 figure, 1 table, and 10 references, 2 of which are Soviet.

SUBMITTED: January 15, 1959

S/120/60/000/005/023/051
E032/E514

AUTHORS: Leont'yev, N.I., Udovichenko, Yu.K. and Maksimov, M.Z.

TITLE: An Omegatron with a Nonuniform Magnetic Field

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No.5, pp.97-99

TEXT: Brubacker and Perkins (Ref.3) have shown that an omegatron can work in a nonuniform magnetic field. The present paper investigates the resolving power of an omegatron in a non-uniform field which falls off along the radius in accordance with a parabolic law. This type of field is of great practical importance since it is obtained in a magnet with circular pole-pieces and plane-parallel gap. An expression is derived for the resolving power of an omegatron working in such a field and it is shown that there is no point in increasing the degree of non-uniformity above 3 or 4% since even though the resolving power increases, the intensity decreases very strongly. Moreover, experiments showed that the accuracy in the case of a highly nonuniform field is not very high. The present authors have used a permanent magnet having a weight of 2.9 kg and a gap of 29 mm. The degree of non-uniformity was 6.5%. A typical spectrum obtained is shown in

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An Omegatron with a Nonuniform Magnetic Field

Fig.4. In this way the omegatron can be converted to a portable instrument suitable for gas analysis in the region of low mass numbers. There are 4 figures and 4 references: 2 Soviet, 1 German and 1 English.

SUBMITTED: July 31, 1959

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S/089/61/010/003/009/021
B102/B205

24.6520

AUTHOR: Maksimov, M. Z.

TITLE: The (d, p) reaction cross section on different nuclei

PERIODICAL: Atomnaya energiya, v. 10, no. 3, 1961, 260-262

TEXT: The (d, p) reaction which, on account of its large cross section, is particularly suited for studies of nuclear properties, has been studied both experimentally and theoretically in many papers. The calculation of the absolute cross sections, however, is still unsatisfactory since the formulas derived for this purpose are very complicated and contain unknown parameters. The present "Letter to the Editor" deals with the possibilities of estimating the cross section $\sigma_{d,\,p}$ in a semi-empirical manner. Analysis of experimental data shows that the cross section of a (d, p) reaction resulting in the production of a certain isotope may be represented as a function of the deuteron energy:

$\sigma_{d,\,p} \simeq C_{d,\,p} P(E_d - E_d^{eff})$ (cf. curve 1 of figure). The coefficient $C_{d,\,p}$ expressed in barns is only a function of the properties of the target

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The (d, p) reaction ...

nucleus: $E_d^{eff} = \frac{0.96\ Z_A}{A^{1/3} + 0.8}(1 - \alpha) - 0.028Z_A - 0.65$ Mev and

$\alpha = 1.78\left[\frac{2AZ_A}{A + 2}(A^{1/3} + 0.8)\right]^{-1/3}$. It is seen that the experimental values do actually fit the curve P(y) and this, of course, within the limits of the experimental error of 20-30%. Using the range-energy curve, the following expression is obtained for the yield from thick targets:

$B_{d,p} \approx \frac{2.3 \cdot 10^{-3}}{Z_A^{3/4} E_d^{1/4}} C_{d,p}\left[\varphi(y) + E_d^{eff} f(y)\right]$, where $y = E_d - E_d^{eff}$.

$f(y) = 2.07 \cdot 10^{-1} \cdot \int_0^y P(y)\,dy$ and $\varphi = 2.07 \cdot 10^{-1} \cdot \int_0^y yP(y)dy$ (cf. figure). The $C_{d,p}$ values expressed in barns, which have been obtained with the aid of these formulas and experimental data, are compiled in a table for several

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nuclei. For most of these nuclei, the values are almost equal to one. The fact that some of the values are too low is explained by transitions from isomeric states. The above formulas, along with the diagram and the table, allow (d, p) reaction yields from thin and thick targets to be easily estimated. V. I. Shevchenko and P. P. Dmitriyev are thanked for discussions. There are 1 figure, 1 table, and 8 references: 5 Soviet-bloc and 3 non-Soviet-bloc.

SUBMITTED: June 18, 1960

Legend to Figure: 1) - P(y); 2) - f(y); 3) - φ(y); □ - Na^{23}, □ - Fe^{54}, ∇ - Co^{59}, + - Cu^{63}, Δ - Br^{81}, ⊙ - Ag^{197}, ○ - Bi^{209}.

The (d, p) reaction ...

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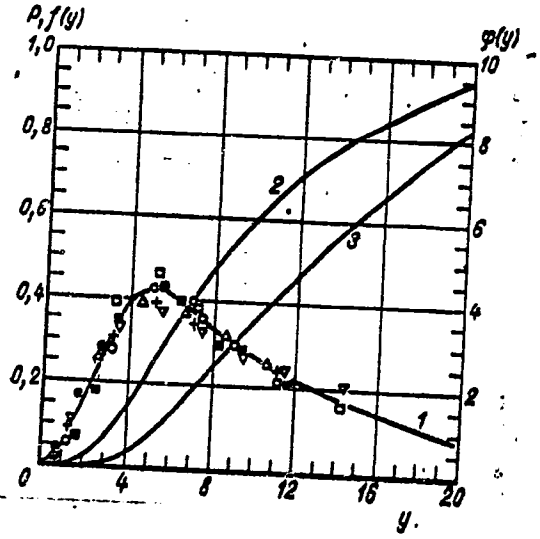

Ядра	C_d, p. барн	Ядра	C_d, p. барн	Ядра	C_d, p. барн
$C^{12}(d,n)$	0,23	Fe^{58}	0,12*	Au^{197}	0,65
Na^{23}	1,05	Co^{59}	0,69	Hg^{204}	0,85**
Si^{30}	0,70*	Cu^{63}	0,61	Tl^{205}	1,1**
P^{31}	0,67	Br^{81}	1,00	Pb^{208}	0,63
Cl^{37}	0,93*	Sr^{88}	0,92	Bi^{209}	0,27
K^{41}	0,40*	Pt^{196}	0,40**	U^{238}	0,68
$Fe^{54}(d,n)$	0,37	Pt^{198}	0,87**	Np^{237}	0,25

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