GUTKIN, B.

Economic efficiency is the main criterion. Avt.transp. 43 no.11:8-10 N '65. (MIRA 18:12)

1. Direktor 5-y avtobazy Mostorgtransa.

LOMACHENKOV, S.Ye., inzh.; GUTKIN, B.G., kand. tekhn. nauk; SHAGURIN, K.A., otv. red.; ACHKINADZE, Sh.D., inzh., red.; KRASLAVSKIY, G.M., tekhn. red.

[Portable electric spark systems; work of the Research Branch of the State Planning Institute of the Ministry of Transportation Machinery Manufacture] Perenosnye elektroiskrovye ustanovki; opyt raboty NIF GPI MTrM. Leningrad, 1952, 11 p. (Informatsionno-tekhnicheskii listok, no.23(364)) (MIRA 14:7)

1. Leningradskiy dom nauchno-tekhnicheskoy propagandy. 2. Glavnyy inzhener Leningradskogo doma nauchno-tekhnicheskoy propagandy (for Shagurin)
(Metals--Hardening) (Electric apparatus and appliances)

GUTKIN, B.G.; VISHNITSKIY, A.L.; GUSEV, V.N., laureat Stalinskoy premii, redaktor.

[Control systems for electric spark and electrolytic-mechanical tools] Regu-liatory rezhima raboty elektroiskrovykh i anodno-mekhanicheskikh stankov. Pod red. laureata Stalinskikh premii V.N.Guseva. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1952. 41 p. (MLRA 6:8)

(Electric controllers)

GUTKIN, B.G.

25(1) PHASE I BOOK EXPLOITATION SOV/1404

Levinson, Ye. M., B. G. Gutkin, A. P. Dyatchenko, and Ye. I. Vladimirov

Polucheniye polostey i otverstii v metalle elektroiskrovym sposobom (Electrospark Method of Cutting Cavities and Holes in Metals) Moscow, Mashgiz, 1952. 93 p. (Series: Bibliotechka elektrotekhnologa, No. 4) 6,000 copies printed.

Ed. (Title page): Gusev, V. N., Laureate of the Stalin Prize, Engineer; Ed. (Inside book): Popilov, L. Ya., Engineer; Tech. Ed.: Sokolova, L. V.; Managing Ed. for Literature on Machine Building Technology (Leningrad Division, Mashgiz): Nikitin, F. S., Engineer.

PURPOSE: This booklet is intended for technologists working in the field of electrical metalworking processes and for skilled workers.

COVERAGE: The booklet presents basic principles of the electrospark machining of holes and cavities in metals. Information on electrospark equipment is given and some examples of the applications of electrospark machining methods are presented. The following personalities were awarded Stalin prizes for their contributions to the development of electromachining methods: B. R. Lazarenko, N. I. Lazarenko, and V. N. Gusev. For the purpose of introducing and promoting electromachining methods, the Leningrad branch of Mashgiz (State Scientific

Card 1/3

3

PHASE I BOOK EXPLOITATION 938

Gutkin, B.G., Candidate of Technical Sciences

Avtomatizatsiya elektroiskrovykh i anodno-mekhanicheskikh stankov (Automation of Electrospark Electrolytic Machine Tools) Moscow, Mashgiz, 1952. 226 p. 8,000 copies printed.

Reviewers: Gusev, V.N., Engineer, Laureate of the Stalin Prize, and Levinson, Ye.M., Engineer.; Ed.: Lomachenkov, S.Ye., Engineer; Tech. Ed.: Pol'skaya. R.G.; Managing Ed. for literature on the technology of machine building (Leningrad Division, Mashgiz): Nikitin, F.S., Engineer.

PURPOSE: This book is intended for engineers and technicians working in the field of electromachining of metals, and for students of vuzes and tekhnikums.

COVERAGE: The book deals with various problems of automatic control of electrospark and electrolytic machine tools. Devices used for automatic control of various processes, safety devices, and design features of automatic electrospark and electrolytic machine tools

Card 1/5

are described. No personalities are mentioned. There are 13 Soviet references.

TABLE OF CONTENTS:

Card 2/5

GUTKIN B. G.

Regeleinrichtungen Fur Elektrofunkenund Anodenmechanische Werkzeugmaschinen. Von B.G. Gutkin Und GUTKIN, B. G. Be lin, Technik, 1954.

43 P. Diagrs., Table.

Translation From The Russian, Regulyatory Reshima Raboty Elektroiskovykh I Anodnomekhani Cheskikh Stankov, Leningrad (N. D.)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R000617630006-2"

GUTKIN, B.G.

Apparatus for automatic control of the current density in an electroplating bath. B. G. Gutkin. U.S.S.R. 107,050, Aug. 25, 1957. The wiring and auxiliary instrument for automatic control of c.d. are described. M. Hosch

2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R000617630006-2"

GUTKIN, B.G

LIVSHITS, A.L.kandidat tekhnicheskikh nauk; GUTKIN, B.G., kandidat tekhnicheskikh nauk, retsenzent; UVAROVA, A.F., tekhnicheskiy redaktor.

[Electric erosion treatment of metals] Elektroerozionnaia obrabotka metallov. Moskva, Gos.nauchno-tekhn.izd-vo.mashinostroit. lit-ry, 1957. 117 p. (MLRA 10:6)
(Metal cutting) (Metals--Hardening)

BOGORAD, Lev Yakovlevich; GUTKIN, Ben'yamin Girshevich; SHOBIK, L.Ye., inzh., ved. red.; SHREYDER, A.V., kand. tekhn.nauk, red.; PAUTIN, N.V., inzh., red.; SOROKINA, T.M., tekhn. red.

[Wear resistant chromizing with periodic current reversal]Iznosostoikoe khromirovanie pri periodicheskom izmenenii napravleniia toka. Moskva, Filial Vses. in-ta nauchn. i tekhn. informatsii, 1958. 23 p. (Peredovoi nauchno-tekhnicheskii i proizvodstvennyi opyt. Tema 13. No.M-58-245/25) (MIRA 16:3)
(Chromium plating)

GRISHIN, Valerian Maksimovich, inzh.; GUTKIN, Ben'yamin Girshevich, kand. tekhn. nauk; LIVSHITS, Abram Lazarevich, kand. tekhn. nauk; YAKHIMOVICH, Dmitriy Fedorovich, inzh.; BRYANTSEVA, V.P., inzh., red.; SOROKINA, T.M., tekhn. red.

[Dimensional electric spark machining of metals]Razmernaia elektroerozionnaia obrabotka metallov. Moskva. Filial Vses. in-ta nauchn. i tekhn.informatsii, 1958. 88 p. (Peredovoi nauchno-tekhnicheskii i proizvodstvennyi opyt. Tema 8. No.M-58-6/1) (MIRA 16:2)

(Electric metal cutting)

POPILOV, Lev Yakovlevich, LEVINSON, Yevgeniy Maksimovich,; GUTKIN, B.G., kand. tekhn. nauk, retsenzent,; KOSMACHEV, I.G., inzh., red.; BORODULINA, I.A., red. izd-va,; LEYKINA, T.L., red. izd-va.

[Electric metal-machining processes; a survey of foreign technology] Elektricheskie metody obrabotki metallov; obzor zarubezhnoi tekhniki. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1958. 145 p. (MIRA 11:11)
(Electric cutting machinery)

GUTKIN, B.G.; PODLAZOV, S.S.; YEVSEYEV, V.V.

"Spark-erosion machining of metals" by A.L. Livshits. Reviewed by B.G.Gutkin, S.S. Podlazov, V.V. Evseev. Stan. i instr. 29 no.10: 44-45 O '58. (MIRA 11:11)

1. Nachal'nik sektora elektroobrabotki metallov Leningradskogo filiala Vsesoyuznogo teplotekhnicheskogo instituta im. F. Dzerzhinskogo (for Gutkin). 2. Nachal'nik osobogo konstruktorskogo byuro Eksperimental'nogo nauchno-issledovatel'skogo instituta metallorezhushchikh stankov (for Podlazov). 3. Starshiy inzhener laboratorii rezaniya Leningradskogo Kirovskogo zavoda (for Yevseyev).

(Electric metal cutting)
(Livshits, A.L.)

GUTKIN, Ben'yemin Girshevich; GRIGORCHUK, Igor' Petrovich; POPILOV, L.Ya., red.; VARKOVETSKAYA, A.I., red.izd-va; SPERANSKAYA, O.V., tekhn.red.

[Electric spark machining of metals] Elektrokontaktnaia obrabotka metallov. Pod obshchei red. L.IA.Popilova. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 46 p. (Bibliotechka elektrotekhnologa i ul'trazvukovika, no.5). (MIRA 14:6)
(Electric metal cutting)

PHASE I BOOK EXPLOITATION SOV/3901

Novoye v elektricheskoy i ul'trazvukovoy obrabotke materialov (New Developments in Electrical and Ultrasonic Machining of Materials) [Leningrad], Lenizdat, 1959. 261 p. 5,000 copies printed.

Ed. (title page): L.Ya. Popilov; Ed. (inside book): S.I. Borshchevskaya; Tech. Ed.: P.S. Smirnov.

PURPOSE: This book is intended for technical personnel and production workers.

COVERAGE: This is a collection of 20 articles presented at the Third All-Union Conference of the Scientific and Technical Society of the Machine Industry on Electrical and Ultrasonic Machining of Metals, held in Leningrad. The articles deal with the latest achievements in the field of electrical and ultrasonic machining of metals. New methods of machining presently being developed are described. References follow several of the articles.

AVAILABLE: Library of Congress (TJ 1191 .P 63)

VK/pw/jb
8-12-60

Card 4/4

GUTKIN, B.G.

The EAK automatic electric spark machine for stamping parts. Biul. tekh.-ekon.inform. no.7:48-49 '61. (MIRA 14:8)
(Marking devices)

GUTKIN, Ben'yamin Girshevich, kand. tekhn. nauk; PYATISOTNIKOV, A.I., red.; FREGER, D.P., red. izd-va; GVIRTS, V.L., tekhn. red.

[The ERM semiautomatic electric-spark cutting machine for machining the cone of atomizers]Elektroiskrovoi poluavtomat ERM dlia obrabotki konusa raspylitelei. Leningrad, 1962. 13 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Elektricheskie metody obrabotki materialov, no.4) (MIRA 15:8)

(Electric cutting machinery)

38710
S/193/62/000/006/002/002
A004/A101

1.1110

AUTHOR: Gutkin, B. G., Candidate of Technical Sciences

TITLE: ЭРМ (ERM) electrospark semi-automatic for machining the working cone of sprayers

PERIODICAL: Byulleten' techniko-ekonomicheskoy informatsii, no. 6, 1962, 31 - 35

TEXT: The author reports on the ERM electrospark semi-automatic which has been developed at a plant (Abstracter's note: no name given) and is intended for the electrospark grinding and lapping of working cones of sprayers and nozzle holders of diesel engines. He presents a functional diagram of the machine and gives a description of its operation. The workpiece is rotated by a belt-drive. A characteristic feature of the electric diagram of the semi-automatic is the utilization of a special programming device characterized by simplicity and dependability. The author describes in detail the electric system of the machine and its units and presents the following technical data: input power, w - 300; (maximum) electrode voltage, v -110; (maximum) current between electrodes, amp - 0.9; (maximum) capacitance between electrodes, f - 2; (maximum) deposition depth of

Card 1/2

ЭРМ (ERM) electrospark....

S/193/62/000/006/002/002
A004/A101

the sprayer working cone, mm - 60; angle of taper of the working cone - up to 90°; electrode tool diameter, mm - 1-2; electric motors: electrode tool feed motor - МН-250 (MN-250); main drive motor - АОЛ - 11/2 (AoL-11/2); machining cycle on each condition, sec. - from 2 to 120; total machining time, min - from 1 to 6; class of surface finish after machining (according to GOST 2789-51) - 8; machining accuracy (maximum permissible play of the sprayer working cone relative to the fitting office for the needle) μ - 5; overall dimensions, mm - 540 x 420 x 1,490; weight, kg - 200. The working fluid in which the electrospark machining takes place consists of transformer oil (50%) and lighting kerosene (50%). During two-shift work a section of 10 ERM machines will set free 48 workers and save 27,600 rubles annually. There are 2 figures.

Card 2/2

GUTKIN, B.M.

Machine for the production of sanitary tissues. Bum. prom. 38 no.11:29 N '63.

Roller felt dryers instead of drying cylinders. Ibid.:29 (MIRA 17:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut tsellyulozno-bumazhnoy promyshlennosti.

YEFANOV, A.G., inzhener; GUTKIN, B.M., kandidat tekhnicheskikh nauk;
REYNGOL'D, Yu.R.

Use of magnetic amplifiers in electric drives. Elektrichestvo no.2:9-14 F '56. (MLRA 9:5)

1. TsKB "Elektroprivod" Ministerstvo elektropromyshlennosti.
(Magnetic amplifiers) (Electric driving)

GUTKIN, B M

GUTKIN, B. M.

"A Control Apparatus With Thyratron Rectifiers," pp 76-86, ill

Abst: The article examines the circuits and control apparatus developed by the TsKB (Central Design Bureau) 'Elektroprivod,' and testing in experimental-production installations of rectified current drive in 1954-1956.

SOURCE: Raboty MER SSSR po Mekhan. i Avtomatizatsii Narodn. Khoz. (Work of the Ministry of the Eledtrical Engineering Industry USSR on Mechanization and Automation in the National Economy), Part 3, Mosdow, TsBTI, 1956

Sum 1854

ETTINGER, Ye.L., kandidat tekhnicheskikh nauk; GUTKIN, B.M., kandidat tekhnicheskikh nauk; Borodavchenko, P.M., inzhener.

Present-day systems of rectifier drives. Elektrichestvo no.9: 32-38 S '56. (MLRA 9:11)

1.TSentral'noye konstruktorskoye byuro "Elektroprivod" Ministerstva elektropromyshlennosti.
(Mercury-arc rectifiers)

GUTKIN, B.M., kandidat tekhnicheskikh nauk; ETTINGER, Ye.L., kandidat tekhnicheskikh nauk.

Peak choke for regulating electronic instruments. Vest.elektroprom. 27 no.1:26-32 Ja '56. (MIRA 9:6)
(Electronic apparatus and appliances)(Electric controllers)

ETTINGER, Ye.L., kandidat tekhnicheskikh nauk; GUTKIN, B.M., kandidat tekh-
nicheskikh nauk; BORODAVCHENKO, P.M.

Modern arrangements of rectifier electric drives. Elektrichestvo no.1:60-66 Ja '57. (MLRA 10:2)

1. TSentral'noye knstruktorskoye byuro "Elektroprivod" Ministerstva elektropromyshlennosti.

(Electric driving)

Gutkin, B.M.

Vsesoyuznoye ob"yedinennoye soveshchaniye po avtomatizatsii proizvodstvennykh protsessov v mashinostroyenii i avtomatizirovannomu elektroprivodu v promyshlennosti. 3d, Moscow, 1959

Elektroprivod i avtomatizatsiya promyshlennykh ustanovok; trudy soveshchaniya (Electric Drive and Automation in Industrial Systems; Transactions of the Conference) Moscow, Gosenergoizdat, 1960. 470 p. 11,000 copies printed.

General Eds.: I.I. Petrov, A.A. Sirotin, and M.G. Chilikin; Eds.: I.I. Sud, and E.V. Silayev; Tech. Eds.: E.P. Voronin, and G.Ye. Larionov.

PURPOSE: The collection of reports is intended for the scientific and technical personnel of scientific research institutes, plants and schools of higher education.

COVERAGE: The book is a collection of reports submitted by scientific workers at plants, scientific institutes and schools of higher education at the third Joint All-Union Conference on the Automation of Industrial Processes in Machine Building and Automated Electric Drives in Industry held in Moscow on May 12-16, 1959. The Conference was called by the Academy of Sciences USSR, the Gosplan SSSR (State Planning Commission USSR), the GSTK SSSR, the Gosudarstvennyy Komitet po avtomatizatsii i mashinostroyeniyu (State Committee on Automation and Machine Building) and the Natsional'nyy Komitet SSSR po avtomaticheskomu upravleniyu (USSR National Committee on Automatic Controls) and prepared by the Nauchno-tekhnicheskiy komitet po avtomatizirovannomu elektroprivodu (Scientific and Technical Committee on Automated Electric Drives), the MEI (Moscow Institute of Energetics), the VNIIEM, the IAT (Institute of Automation and Telemechanics) of the Academy of Sciences USSR, and the Komissiya po tekhnologii mashinostroyeniya Instituta mashinovedeniya AN SSSR (Commission on the Technology of Machine Building of the Institute of Science of Machines of the Academy of Sciences USSR). It was the purpose of the Editorial Board to arrange the reports in a way which would ensure a relatively systematic presentation of theoretical and practical problems relating to electric drives and automatic controls of industrial mechanisms used in various branches of industry. Basic problems of automated electric drive and their solution are outlined. The book also contains articles on electric machinery and means of automation. Considerable attention is paid to noncontact automatic control systems, including systems with semiconductor devices and magnetic amplifiers, and to computers intended both for the analysis and the synthesis of linear and nonlinear automatic regulation and control systems. Reports already published in journals or official publications have been considerably abbreviated; those which have appeared in volume V of EII EP transactions or in the journal "Elektrichestvo" are marked with an asterisk. No personalities are mentioned. References accompany some of the papers.

PART I. GENERAL PROBLEMS CONCERNING THE THEORY AND PRACTICE OF ELECTRIC DRIVE AND AUTOMATION OF CONTROL

GUTKIN, E.M., kand.tekhn.nauk

D.C. drive with ionic excitation. Elektrichestvo no.11:14-22 N '61. (MIRA 14:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut elektromekhaniki.
(Electric driving)

GUTKIN, Boris Mironovich; SILAYEV, E.F., red.

[Direct current drives with ignitrons] Ionnyi privod postoiannogo toka. Moskva, Energiia, 1965. 455 p. (MIRA 18:7)

Mas[illegible] [illegible], doktor tekhn. nauk; [illegible], [illegible], kand. tekhn. nauk

[illegible] of steady periodic modes of an autonomous inverter. [illegible]ektrotekhnika 36 no.8:31-37 Ag '65. (MIRA 18:9)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R000617630006-2"

GUTKIN, E.

USSR/ Miscellaneous

Card 1/1 Pub. 89 - 28/28

Authors : Klyukachev, V.; Gol'dreer, I.; Roginskiy, V.; Piltakyan, A.; and Gutkin, E.

Title : Exchange of experiments

Periodical : Radio 4, pages 48, 53, and 63, Apr 1955

Abstract : The following subjects and items are briefly discussed and described: A two-voltage rectifier used for rectification of the 300-320 and 130-150 volt plate circuits in a cathode-ray tube; electronic compensators for stabilizing power feeds; the use of the 6ZhZP pentode as an amplifier; the semi-duplex operation during amateur radio communications; and the contest of amateur radio clubs in establishing radio communication with Experimental Arctic Stations No. 3, and No. 4. Circuit diagrams; graphs; tables.

Institution : .....

Submitted : .....

AID P - 4330

Subject : USSR/Radio

Card 1/1 Pub. 89 - 4/14

Author : Gutkin, E. (UB5TsE)

Title : KV and UKV Transmitter

Periodical : Radio, 1, 26-29, Ja 1956

Abstract : The design and performance of this transmitter as used in telegraph and telephone operations at the radio station UB5TsE are described in detail. The standardized parts of the equipment are referred to by types. A table gives data on the wires used. Two figures illustrate the lay-out and mounting of the transmitter.

Institution : None

Submitted : No date

GUTKIN, E.I.

Eliminating antenna "doubling" in the television transmitter. Tekh. kino i telev. 4 no.4:67-70 Ap '60. (MIRA 13:9)

1. Luganskiy televizionnyy tsentr.
(Television—Transmitters and transmission)

GUTKIN, E.I., inzh.; YESHCHENKO, A.T., inzh.; STRATINEVSKIY, N.I., inzh.

Increase in the power of the TRSA-56 relay transmitter. Vest. sviazi 23 no.1:15-17 Ja '63. (MIRA 16:3)

(Radio relay systems)

GUTKIN, E.I.

Improvement of UI-10 preamplifiers. Vest. sviazi 24 no.3:10-11 Mr '64. (MIRA 17:4)

1. Starshyy inzhener Luganskogo televizionnogo tsentra.

GUTKIN, G.M., inzhener.

Developing a more efficient design for weak-current ship cables. Sudostroenie 22 no.8:13-14 Ag '56. (MLRA 9:10)

(Electric cables) (Electricity on ships)

GUTKIN, I.; KROL', A.

Schools of culture in the mechanization schools. Prof.-tekh. obr. 18 no.8:20-21 Ag '61. (MIRA 14:9)
(Student activities)

MARKIN, V. F., kand. tekhn. nauk; [redacted] inzh.; KOSTYUK, A. G., kand. tekhn. nauk; SHIFRIN, Ye. L., inzh.

Effect of unsettled heat exchange on the regulation process of gas turbine systems. Teploenergetika 10 no.3:38-42 Mr '63. (MIRA 16:4)

1. Moskovskiy energeticheskiy institut i zavod "Ekonomayzer".

(Gas turbines)

GUTKIN, I.I.

USSR/Nuclear Physics - Structure and Properties of Nuclei. C-4

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 452

Author : Demirkhanov, R.A., Gutkin, I.I., Dorokhov, V.V.
Inst : -
Title : Mass of the Isotope He^3.

Orig Pub : Atomn. energiya, 1957, 2, No 5, 469-470

Abstract : A mass-spectroscopic determination was made of the mass of the isotope He^3, in a mixture of helium isotopes enriched with He^3 to 99.5%, using a setup previously described (Referat Zhur Fizika, 1957, No 4, 8706). The mass was measured in the doublets H^3 -- He^3 and HD^3 -- He^3. The results of the measurements were checked against the HD -- H^3 doublet. The mass scale was calibrated against the spectrum $N^{14}H$ -- $N^{14}H_2$ -- $N^{14}H_3$. The value obtained for the mass of He^3 is 3.016970 ∓ 2 atomic units of mass. The data of this

Card 1/2

USSR/Nuclear Physics - Structure and Properties of Nuclei. C-4

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 452

work were used to calculate the energy values for the reaction

D(d,n) He^3, D(p,) He^3, and He (d, p) He^4,

which equal 3.275 0.004, 5.501 0.003, and 18.336 0.005 Mev respectively.

Card 2/2

GUTKIN, I.A., inzh.; SHIFRIN, Ye.L., inzh.; GOL'DZAND, L.D., inzh.; KIRAKOSYANTS, G.A., kand.tekhn.nauk.

Hydraulic system of control and protection of the OSPT-1150 turbine pump. Energomashinostroenie 9 no.9:11-14 S '63. (MIRA 16:10)

S/096/63/000/003/006/010
E194/E455

AUTHORS: Markin, V.F., Candidate of Technical Sciences, Gutkin, I.A., Engineer, Kostyuk, A.G., Candidate of Technical Sciences, Shifrin, Ye.L., Engineer

TITLE: The influence of transient heat-exchange on the process of regulating gas-turbine sets

PERIODICAL: Teploenergetika, no.3, 1963, 38-42

TEXT: In governing a gas turbine it is not the amount of gas flow which is regulated (as is the case in a steam turbine) but the amount of heat applied to the flow. Under steady-state conditions a steady temperature distribution is achieved between the various parts of the gas duct and the gas flowing through it. However, under transient conditions, the gas duct may either give up heat to the gas or extract heat from it, thus temporarily modifying the influence of the regulator. This effect can be of considerable practical significance. The differential equation for a gas-turbine regenerator is derived in the form

$$\frac{d\theta}{dz} = \frac{\mu}{\tau_\mu} + \frac{\theta}{\tau_\theta} + \frac{\nu}{\tau_\nu} + \frac{\rho}{\tau_\rho} \qquad (8)$$

Card 1/3

where $\theta = \Delta T_e/T_{e\,o}$; $\mu = \Delta B/B_o$; $\nu = \Delta G/G_o$; $\rho = \Delta\varepsilon/\varepsilon_o$; Te - air temperature beyond regenerator, °K; B - rate of fuel consumption; G - rate of air consumption, ε - compression ratio. This equation was used to calculate the effect when a turbine picks up load and it is shown that because of transient cooling in the regenerator the temporary loss of output is greater than it otherwise would be. The problem cannot be overcome by increasing the regulator speed but a solution may be achieved by temporary over-regulation. The device used by the "Ekonomayzer" Works to achieve such temporary over-regulation of a gas turbine type ГТУ-6 (GTU-6) is then described. In basic principle there is only one fuel-control valve, which over-travels in the first stage of the transient process and gradually returns to the correct setting. Two servo-motors are used in the regulator. Comparative test results on a gas turbine type GTU-6 with the normal regulator and with this special one are quoted for cases of picking up and throwing off 100% load. There is a substantial improvement in performance with the new regulator. The use of temporary over-regulation avoids the need to alter the

S/096/63/000/003/006/010
E194/E455

The influence of transient ...

static characteristics of the regulation system; perfection has not yet been achieved but further improvement is possible. It should be noted that a regenerator does not always distort the transient process, but only in such cases when at different loads the temperature gradient between the regenerator wall and gas changes markedly. The greatest change occurs in gas turbines in which a compressor of flat characteristic runs at approximately constant speed. The main criterion in assessing the probable influence of the regenerator on the transient process is the gas temperature beyond the turbine. The more this changes on change of load the greater the influence of the regenerator on the transient process. There are 5 figures.

ASSOCIATION: Moskovskiy energeticheskiy institut - zavod "Ekonomayzer" (Moscow Power Engineering Institute - "Ekonomayzer" Works)

GUTKIN, I.N.

USSR/Nuclear Physics - Structure and Properties of Nuclei C-4

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 453

Author : Demirkhanov, R.A., Gutkin, I.N., Dorokhov, V.V.
Inst : -
Title : Masses of the Isotopes C^{13}, N^{14}, and N^{15}.

Orig Pub : Atomn. energiya, 1957, 2, No 6, 544-551

Abstract : Results are reported on new mass-spectrographic measurements of the masses of C^{13}, N^{14}, and N^{15}. It is shown that there exists "an internal agreement" for the values of the masses of these isotopes, obtained from various systems of coublets. The measurements were performed under conditions that exclude the systematic errors. A procedure is given for a precision adjustment of the ion-optical system. For the masses of C^{13}, N^{14}, and N^{15}, the values obtained were $13.007491 \pm 3 \times 10^{-6}$, $14.007527 \pm 4 \times 10^{-6}$ and $15.004890 \pm 5 \times 10^{-6}$ atomic units of mass respectively, which is in good agreement with the values

Card 1/2

USSR/Nuclear Physics - Structure and Properties of Nuclei. C-4

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 453

published in recent times by Nier and his associates. These data are high compared with the average values, obtained from nuclear reactions as the result of a statistical analysis. The discrepancy in these values is attributed to the inaccuracy of the measurement of the values of Q, used to calculate the masses of

n_0H, D, He^4, and C^{12}, as well as of the isotopes C^{13}, N^{14}, and N^{15}.

Card 2/2

GUTKIN, I.V.

Introducing the 2V460 jig-boring machine. Biul.tekh.-ekon. inform.Gos.nauch.-issl.inst.nauch.i tekh.inform. 18 no.11:25-26 N '65. (MIRA 18:12)

GUTKIN, I. Ye.

Impact extrusion of steering knuckles for GAZ-63 automobiles.
Kuz.-shtam. proizv. no.4:15-18 Ap '61. (MIRA 14:3)
(Extrusion (Metals))
(Automobiles—Steering gear)

GUTKIN, K.A., kand.med.nauk, zaslyzhennyy vrach respubliki.
SAMSONOV, V.A., kand.med.nauk (Petrozavodsk)

Giant mixed tumor (fibromyoma in a cystoma) of the round ligament of the uterus. Akush. i gin. 34 no.4:102-103 Jl-Ag '58 (MIRA 11:9)

1. Iz ginekologicheskogo i patologoanatomicheskogo otdeleniy Respublikanskoy bol'nitsy (glavnyy vrach L.T. Filimonova) Ministerstva zdravookhraneniya i sotsial'nogo obespecheniya Kazakhskoy ASSR.

(PELVIC SUPPORTING STRUCTURES, neoplasms
mesothelioma of round ligament (Rus))
(MESOTHELIOMA, case reports
round ligament (Rus))

KORIN, D. L., kand. med. nauk; SMOLIN, V. V.; GUTKIN, Kh. G.

Injury of the ureters and kidneys in retrograde pyelography. Urologiia no.3:11-14 '61. (MIRA 14:12)

1. Iz gospital'noy khirurgicheskoy kliniki (zav. - prof. G. D. Obraztsov) i fakul'tetskoy khirurgicheskoy kliniki (zav. - prof. I. D. Korabel'nikov) Chelyabinskogo meditsinskogo instituta.

(KIDNEYS--RADIOGRAPHY)
(KIDNEYS--WOUNDS AND INJURIES)
(URETERS--WOUNDS AND INJURIES)

GUTKIN, Kh.G.; KUZNETSOV, V.I.

Total substitution of the ureter with a segment of the small intestine. Urologiia no.6:58-59 '62. (MIRA 16:7)

1. Iz khirurgicheskogo otdeleniya (zav. V.I.Pel'tsverger) 2-oy dorozhnoy bol'nitsy Yuzhno-Ural'skoy zheleznoy dorogi.
(URETERS--SURGERY) (SURGERY, PLASTIC)

GUTKIN, Kh.G.

Parental hypernephroma with thrombosis of the "I" renal vien.
Vop. onk. 3 no.11:105-107 '62. (MIRA 17:6)

1. Iz khirurgicheskogo otdeleniya 2-y Dorozhnoy bol'nitsy Yuzhno-Ural'skoy zheleznoy dorogi (zav. - V.I. Pel'tsverger, glavnyy vrach - T.M. Ovchinnikova).

GUTKIN, L.

"New trends in the development of electrification of railroads in the United States; on the pages of the American press."

p.44 (Transportno Delo, Vol. 10, no. 3, 1958, Sofiia, Bulgaria)

Monthly Index of East European Accessions (EEAI) LC, Vol. 7, No. 8, August 1958

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R000617630006-2"

GUTKIN, L. S. PA 19T31

USSR/Demodulators Sep 1946
Frequency changers

"Relationships between Diode Detection and Frequency Conversion and Amplitudes of Incoming Signal and Heterodyne," L. S. Gutkin, Candidate of Mech Sci, 19 pp

"Radiotekhnika" Vol I, No 6

A calculation procedure is presented which makes possible an analytical determination of the relationships between detection parameters and the amplitude of the incoming signal (for detection) and the amplitude of the heterodyne signal (for frequency conversion).

19T31

GUTKIN, L. S.

USSR/Radio Receivers, Superregenerative Dec 1946
Radio Interference

PA 20T67

"Interference Effect in Superregenerative Receivers," L. S. Gutkin, Candidate of Mechanical Sciences, 23 pp

"Radiotekhnika" Vol I, No 9

Results of a theoretical investigation on the performance of a superregenerator acted upon by oscillatory interference and aperiodic interference. The selectivity of a superregenerative receiver operating under varying conditions and different laws of circuit attenuation is analyzed. The influence of fluctuational and impulse interference on the superregenerator is examined, and a general comparative estimation of the interference probability in a superregenerative receiver is given.

20T67

5A

B64

Effect of interference on super-regenerative reception. II. Effect of random noise. GUTKIN, L. S. *Radiotekhnika*, 2 (*No.* 4) 24-45 (1947) *In Russian*.—A mathematical analysis is given of the signal/noise deterioration in a super-regenerative receiver when compared with a normal receiver having similar characteristics. The s.-r. receiver is equipped with a narrow low-pass a.f. filter with a cut-off at the highest modulation frequency. Two methods used to determine the thermal noise of the input circuit agree well. The valve noise is calculated, and it is shown that the signal/noise is always lower (down to 1 : 2 in extreme case) than in a normal receiver, but remains unaffected by linear or non-linear quenching operation. A. L.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

GUTKIN, L. S.

Gutkin, L. S., "Theory of Superregenerative Receivers"

Moscow Power Engineering Institute imeni Molotov (MEI)

SO: Radiotekhnika, No. 3, 1948; (W-27801, 14 Sept. 1953)

Journal of Technical Physics USSR, Vol. 18, No. 5, 1948

El'tsin, I.A. (Scientific Research Physics Institute, Moscow State University), The disk method for the determination of dielectric penetrability and the tangent of the angle of loss, 657-64

"A rigorous theory for the case of a thin disk placed in the center of a tuned Lecher system. The formulas that are obtained are used to calculate the dielectric permeability and loss (for wave length of 336 cm) for different dielectrics."

Gutkin, L.S., Basic relations for diode frequency conversion, 614-38

"Basic relationships in diode frequency conversion are derived on the basis of results of the general theory of frequency transformation. The conditions for obtaining maximum amplification are analyzed on the basis of loading the converter with a single and double contour filter. The action of noise is analyzed and conditions of minimal noise production are investigated."

Source: CTRSPL, Vol. 1, No. 5

GUTKIN, L. S.

Jan/Feb 49

USSR/Radio Receivers, Super-
regenerative
Radio Interference

"Effect of Interference on a Superregenerative Receiver," L. S. Gutkin, Cand Tech Sci, ~~15 pp~~

"Radiotekh" ~~Vol IV~~, No. 1.

Considers action of impulse interference, consisting of single and periodic impulses, on superregenerative receiver. Proves that superregenerative receiver has better noise-limiter action during impulse interference than ordinary receiver. Makes general conclusion on noise-limiter action

36/49T103

GUTKIN, L. S.

GUTKIN, L. S. -- "Theory and Desgin of Detectors in Radio-Receiving Equipment." Sub 28 Apr 52, Moscow Order of Lenin Power Engineering Inst imeni V. V. Molotov (Disseration for the Degreeof Doctor in Technical Sciences)

SO: Vechernaya Moskva January-December 1952

GUTKIN, L.S.

Preobrazovanie sverkhvysokikh chastot i detektirovanie (Transformation of superhigh frequencies and detection) Moskva, Gosenergoizdat, 1953. 415 p.

SO: Monthly List of Russian Accessions, Vol. 7, No. 5, August 1954

Gutkin, L.S.

3000

621.385.2 : 621.370.23

3137. THE EFFECT OF ELECTRON TRANSIT TIME IN DIODE DETECTORS AND FREQUENCY CHANGERS.

L.S.Gutkin and A.D.Kuz'min.

Radiotekhnika, Vol. 10, No. 3, 14-30 (1955). In Russian.

Assuming parallel electrodes (true in the case of "light-house" diodes and almost true for cylindrical diodes with very short anode—cathode gaps) and neglecting electrode inductances and capacitances (which are usually absorbed by the external circuit), formulae are derived for detector current and input conductance for the first application and for conversion gain and noise factor for the second application. It is then shown how these alter at frequencies where electron transit time can no longer be neglected. The effect is of loss of gain and increase of noise, but the same laws are still valid, with new values for parameters such as internal impedance and input admittance. For the vicinity of the upper frequency limit, experimental determination of operating conditions is considered to be preferable to the analytical method described.

A. Lasilman

GUTKIN, L. S.

GUTKIN, L. S.

"Determination of Nominal Power Amplification of Linear and Quasilinear Quadripoles," pp 72-78, ill

Abst: The general formula for rated power amplification of a network is derived; specific cases -- common-cathode amplifier and common-grid amplifier -- are examined.

SOURCE: Trudy Moskovskogo Energetichaskogo In-ta im. V. M. Molotova (Works of the Moscow Energetics Institute Imeni V. M. Molotov), No 21 -- Radio Engineering, Moscow-Leningrad, Gosenergoizdat, 1956

Sum 1854

GUTKIN, L.S.

USSR / Radio Physics. Reception of Radio Waves. I-7

Abs Jour : Ref Zhur - Fizika No 3, 1957, No 7336

Author : Gutkin, L.S.

Title : Transients in the Detection of Weak Signals

Orig Pub : Radiotekhnika i elektronika, 1956, 1, No 4, 433-437

Abstract : The transients in the detection of weak signals are analyzed. A formula is derived for the distortion of the envelope of a pulse of arbitrary shape.

Card : 1/1

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R000617630006-2"

CARD 1 / 2 PA - 1215

SUBJECT USSR / PHYSICS
AUTHOR GUTKIN, L.S.
TITLE The Interaction between Signal and Noise in an Inert Detector.
PERIODICAL Radiotechnika, 11, fasc. 2, 43-53 (1956)
Publ. 2 / 1956 reviewed 8 / 1956

Here the simultaneous detection of the voltages of the signal and of the noise through a linear inert detector is discussed.

General relations: The voltage acting at the input of the detector is the sum of the momentary values of the voltages of the noise and of the signal. Because of the inertia of the detector the resistance of capacity must be low not only for the high-frequency- but also for the low frequency components of the current spectrum. Therefore, also the voltage at the RC-load of the detector must be constant. For this voltage a formula is derived by means of which the result of detection may be determined both if a signal is given and also if there is no signal.

The detection of noise: The last mentioned formula is specialized for the case with lacking noise, i.e. with vanishing voltage u_{sig}, it is several times transformed and illustrated by means of a diagram. A further formula shows the increase of the rectified voltage on the occasion of transition from an inertialess to an inert detector. Next, a formula for the simultaneous detection of a harmonic signal and of noise is given. In view of the fact that this equation can be solved analytically only in the case of a very high or very low value of the ratio (signal/noise), these two limit-

Radiotechnika, 11, fasc. 2, 43-53 (1956) CARD 2 / 2 PA - 1215

ing cases are the first to be dealt with. In the case of very low values of this ratio the useful effect of detection in the inert and inertialess detector is proportional to the square of the ratio (signal/noise) at the input of the detector. In the case of any value of this ratio, the basic equation must be solved numerically. On this occasion the absolute amount of the rectified voltage in the inert detector is higher, and the ratio of this voltage to the noise voltage is lower than the corresponding quantities in the inertialess detector.
There follow deliberations concerning the constancy of the voltage at the RC-load, the input resistance of the detector for the voltages of the noise, and concerning the case with modulated signal. On this occasion the following conclusions result: a) With $a \gg 1$ (a denotes the ration signal/noise) an inert detector furnishes the same result as an inertialess one, because for the s i g n a l the detector is practically without inertia.
b) With $a \ll 1$ the amplitude $U_{m\Omega}$ of the modulated voltage depends, as in the case of the inertialess detector, quadratically on the ratio (voltage U_{om} of the modulated signal at the input/voltage U_R) of the noise, but the absolute amount of $U_{m\Omega}$ is higher.

INSTITUTION:

CARD 1 / 2 PA - 1236

SUBJECT USSR / PHYSICHS
AUTHOR GUTKIN, L.S.
TITLE The Interaction of Signal and Noise in an Inert Detector.
PERIODICAL Radiotechnika, 11, fasc. 3, 51-62 (1956)
Publ. 3 / 1956 reviewed 9 / 1956

This is the conclusion of a previous work published under the same title in fasc. 2, p. 43 of this year's edition.

7. The ratio between signal and noise at the output of the detector:

General relations: In the most interesting case, namely that in which the ratio (signal / noise) is low ($a < 1$), the influence exercised by the signal upon the noise voltage $U_{R\Omega}$ may in first approximation be neglected. Besides, $U_{R\Omega}$ in that case depends comparatively little on the amplitude of the signal. It is therefore possible to proceed from a scheme in which the voltage at the load consists of a constant component $u_=$ and a weak fluctuation component $u_\sim$. The equivalence scheme of the detector for the determination of $u_\sim$ and the method for the determination of the inside resistance $R_{i\partial}$ of this detector are discussed. $R_{i\partial} = \Delta U_= / \Delta I_=$ is found; here $\Delta I_=$ denotes the modification of the constant component of the current caused by a slight modification of the constant voltage $\Delta U_=$. For very inert detectors the following approximate relation is valid: Amperage of the low frequency component i_{nf} = amperage i_{knf} of the low frequency component at $u_\sim = 0 + \varphi_o \cdot u_\sim$.

Radiotechnika, 11, fasc. 3, 51-62 (1956) CARD 2 / 2 PA - 1236

Here $\varphi_o = 1/R_{i\partial}$. There follows the determination of $R_{i\partial}$; in the case of an inert detector it is larger than in the case of an inertialess detector, and this difference increases with increasing parameter. Next, the amperage i_{knf}- and the correlation function of this low frequency component, and, following this, the voltage of the noise on the charge of the detector are determined. The output band ΔF_E being equal the voltage of the noise at the output of an inert detector is considerably larger already at SR > 10 than in the case of an inertialess detector. In conclusion, the ratio between signal and noise at the output of the detector is ascertained. Now ΔF_E and $\Delta F'_E$ denote the breadth of the output band in the case of an inert and an inertialess detector respectively. In the case of $\Delta F_E = \Delta F'_E$ the ratio (noise / signal) is considerably higher than in the case of an inertialess detector only at SR > 100. The relations found by this work were checked by experiment; experimental results were found to agree well with theory.

INSTITUTION:

GUTKIN, L. S.

RECEPTION

"Use of Low-Frequency Equivalents for the Analysis of Transients Occurring in Diode Detection," by L. S. Gutkin and O. S. Chentsova, Radiotekhnika, No 6, June 1957, pp 31-44.

A method is proposed for the analysis of transients in a system consisting of a high frequency amplifier and a diode detector, whereby it is possible to determine relatively easily results that take into account the transients in the system of resonant circuits of the system of amplifier resonant circuits that feed the detector, for various types of resonant circuits and for various variations of the envelope of the input signals. The method is based on a linearization of the processes occurring upon detection, and on the replacement of the detector as well as of the system of driving resonant circuits, with low-frequency equivalence.

Card 1/1

GUTKIN, L. S.

CIRCUITS

"Generalization of the Theory of Diode Detection of Weak Signals" by L. S. Gutkin, Elektrosvyaz', No 11, November 1957, pp 47-51.

The author derives a single equivalent detector circuit, which holds for the regulation of the detection of weak unmodulated, amplitude-modulated, and pulse signals, and also for small noise voltage for a sum of signal and noise. Examples of application of this circuit to the calculation of several types of signals are given.

Card: 1/1

AUTHOR: Gutkin, L.S. 109-8-7/17

TITLE: Analysis of the detection of amplitude-modulated signals by the method of low frequency analogues. (Analiz detektirovaniya amplitudno-modulirovannykh kolebaniy metodom nizkochastotnykh ekvivalentov)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol.II, Nr 8, pp.1012-1026 (USSR)

ABSTRACT: The system considered consists of a tuned output circuit, a rectifier and a load (see Fig.1). It is pointed out that the analysis of such systems is usually carried out without considering the effect of the modulation envelope on their performance. This can be done by describing the system by equations 10:

$$\left.\begin{aligned} dI_{=} &= S_{1d}\, dU_1 + g_{1d} dU_{=} , \\ dI_1 &= g_{2d} dU_1 + S_{2d}\, dU_{=} , \end{aligned}\right\}$$

where U_1 is the input voltage, I_1 is the magnitude of the first input harmonic and $U_{=}$ and $I_{=}$ are the load voltage and current respectively (see Fig.1), and the

109-8-7/17

Analysis of the detection of amplitude-modulated signals by the method of low frequency analogues.

parameters S_{1d}, g_{1d}, S_{2d} and g_{2d} are defined by equations 11. The input admittance of the system is then defined by equation 15:

$$Y_{BX\Omega} = \frac{\Delta^* I_1}{\Delta^* U_1}$$

where $\Delta^* I$ and $\Delta^* U$ are the complex current and voltage amplitudes of the input envelope. $Y_{BX\Omega}$ is referred to as the input admittance of the detector for the deviations of the envelope (see Fig.2). Expressions for $Y_{BX\Omega}$ can be easily evaluated and it is shown that for a double-tuned amplifier they are in the form of equation 25, (p.1016), and for a single tuned amplifier they are given by equation 29 (p.1017). Thus the full input impedance of a detector connected to a resonant amplifier can be determined if the internal parameters of a detector (S_{1d}, g_{1d}, S_{2d} and g_{2d}) are known. The analysis is carried out for the case of

Card 2/3

109-8- 7/17

Analysis of the detection of amplitude-modulated signals by the method of low frequency analogues.

small signals and it is shown that the input admittance is equal to the standard input conductance of the detector. In a linear detector the input admittance is no longer equal to its standard input conductance (see Figs.14 and 16), and in this case the presence of the detector can lead to a decrease of the bandwidth of the system. Similar effects can be observed with an exponential detector. For this case the actual input conductance is in the form shown in Figs. 16 and 17. There are 17 figures and 3 references, all of which are Slavic.

SUBMITTED: December 27, 1956.

AVAILABLE: Library of Congress.

Card 3/3

[illegible]

AUTHOR GUTKIN L.S., Regular Member of Society, CHENTSOVA O.S. XXXXXXXX

TITLE Analysis of the Transition Processes in the Case of Diode Detection According to the Method of Audio-Frequency Equivalents. (Analiz perekhodnykh protsessov pri diodnom detektirovanii metodom nizkochastotnykh ekvivalentov-Russian)

PERIODICAL Radiotekhnika, 1957, Vol 12, Nr 6, pp 31 - 44 (U.S.S.R.)

ABSTRACT A method for the analysis of the transition processes in a high-frequency-amplifier-diode detector system is given. By means of this method relatively simple results can be obtained and the transition processes in the system of the amplifier circuit, which feed the detector, are taken into account in the case of various types of these circuits as well as of various rules governing modification of the envelope curves of the initial signal. This method is based on a linearization of the processes occuring on the occasion of detection, then on the replacement of the detector as well as of the system of fedding circuits by audio-frequency equivalents. The authors show that the audio-frequency equivalent of the selection system must meet the following two demands: 1. It must have a transmission coefficient which is similar to the complex transmission coefficient for the envelope curves of the selection system in the case of idle motion i.e. without regard to detector reaction. 2.-It must have an initial resistance which is similar to the initial resistance for the envelope curves of the selection system. The parameters of an audio-frequency equivalent

Card 1/2

Analysis of the Transition Processes in the Case of Diode Detection According to the Method of Audio-Frequency Equivalents.

with a two-circuit filter are determined as examples (18 illustrations and 6 Slavic references).

ASSOCIATION Not Given.
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SUBMITTED 14.6.1956
AVAILABLE Library of Congress.
Card 2/2

GUTKIN, L. S.

AUTHORS: Gutkin, L. S., Real Member of the Society, and Chentsova, O. S. 108-11-6/10

TITLE: Transition-Processes in the "High Frequency-Amplifier-Detector" System (Perekhodnyye protsessy v sisteme "usilitel' vysokoy chastoty-detektor").

PERIODICAL: Radiotekhnika, 1957, Vol. 12, Nr 11, pp. 50-61 (USSR).

ABSTRACT: With reference to the earlier work of the authors (reference 1) and the in this work established method of low frequency-equivalents is adapted for the analysis of the transition-processes in the most common schemes. The indicated method allows to take into consideration the influence of the transition-processes in a system feeding the detector under various variation-rules of the envelope curve of the input signal. Examined are: a tuned resonance-circuit, a untuned resonance-circuit and two coupled circuits.
There are 19 figures and 5 references, 5 of which are Slavic.

SUBMITTED: June 14, 1956.

Card 1/2

108-11-6/10

Transition-Processes in the "High Frequency-Amplifier-Detector" (Cont.)

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A.S. Popova (Scientific-technical Society of Radio Engineering and Electrical Communications im. A.S. Popov)

AVAILABLE: Library of Congress

Card 2/2

GUTKIN, L.S.

Noise factor and sensibility of superregenerators. Nauch.dokl. vys.shkoly; radiotekh. i elektron.no.1:176-181 '58. (MIRA 12:1)

1. Kafedra radiopriyemnykh ustroystv Moskovskogo energeticheskogo instituta.
(Radio--Receivers and reception)

6(4) SOV/108-13-11-13/15

AUTHOR: Gutkin, L. S.

TITLE: On the Article by V. Ya. Khevrolin "On the Theory of the Super-Regenerative Receiver Operating in a Linear Domain" (Po povodu stat'i V. Ya. Khevrolina "K teorii superregeneratora, rabotayushchego v lineynom rezhime")

PERIODICAL: Radiotekhnika, 1958, Vol 13, Nr 11, pp 75-78 (USSR)

ABSTRACT: This is a letter to the editor. In his article (Ref 1) V. Ya. Khevrolin declares that the papers by L. S. Gutkin and M. K. Belkin contain errors in connection with the determination of the conditions for the stability of the amplification of the super-regenerative receiver. It is shown in this letter that this is not the case and that Khevrolin himself committed errors. Thus, the errors alleged to have been committed by Gutkin have, in reality, been committed by Khevrolin himself. There are 2 Soviet references.

Card 1/1

1(1); 6(4); 9(0) PHASE I BOOK EXPLOITATION SOV/3257

Gutkin, Lev Solomonovich

Printsipy radioupravleniya bespilotnymi ob"yektami (Principles of the Radio Control of Pilotless Objects) Moscow, Izd-vo "Sovetskoye Radio," 1959. 383 p. Errata slip inserted. No. of copies printed not given.

Eds.: V.I. Shamshur and A.A. Kokushkin; Tech. Eds.: K.P. Boronin and B.V. Smurov.

PURPOSE: This book is intended for radio engineers and students of advanced courses in radio. It may also be useful to specialists interested in the radio control of guided missiles.

COVERAGE: The author outlines the principles of the radio control of guided missiles, e.g., rockets, airborne torpedoes, bombs, etc. General characteristics of controlled missiles and various methods of guidance and control are described (i.e., self-guidance, homing, remote control and combined control). Basic factors affecting the accuracy and range of radio control systems are analyzed. According to the author, while the information contained in the book is 10 to 15 years old, it is based on material not subject

Card 1/7

to rapid change, i.e., basic equipment and general principles of control. Latest data on control systems for guided missiles were for obvious reasons not available to the author. The present book serves only as an introduction to this problem. Numerical data and examples apply to equipment used in World War II and are included only for purposes of illustration. Certain problems are treated only briefly or not at all. These include dynamics of flight, stability and quality of regulation, problems of jet technique, control of long-distance rockets, and proximity fuses. The manuscript was prepared in 1954; in 1958 small additions were introduced concerning the development of the intercontinental ballistic rocket in the USSR, corrected values of aircraft speeds, a short history of radio control based on the book by A.V. Khramoy "Ocherk istorii razvitiya avtomatiki v SSSR" (AN SSSR 1956), and additions to the list of references. There are 25 references: 15 Soviet (10 are translations), 9 English, and 1 German.

TABLE OF CONTENTS:

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R000617630006-2"

SOLOV'YEV, I.V. [translator]; GUTKIN, L.S., prof., red.; FRIDMAN, V.Ya., red.; GRIBOVA, M.P., tekhn.red.

[Reception of signals in the presence of noise; collection of articles] Priem signalov pri nalichii shuma; sbornik statei. Moskva, Izd-vo inostr.lit-ry, 1960. 342 p. Translated from the English. (MIRA 14:1)

(Radio--Noise) (Radio--Receivers and reception)

6.9000

77562
SOV/108-15-2-7/12

AUTHOR: Gutkin, L. S.

TITLE: Some Relationships in Optimal Systems of Signal Detection (To Be Continued)

PERIODICAL: Radiotekhnika, 1960, Vol 15, Nr 2, pp 47-57 (USSR)

ABSTRACT: The paper analyzes various aspects of signal detection in the presence of white noise. Approximate expressions for determining the sensitivity of optimal detecting systems are derived. The signal x(t) and the noise n(t) at the receiver input are represented by y(t) = x(t) + n(t). When the oscillation y(t) is received there is a probability $P_y(x)$ that the signal x(t) is transmitted. An optimal receiver evaluates $P_y(x)$ for all possible signals x and selects the signal for which $P_y(x)$ is a maximum. Three types of signals are considered: (1) an exactly known signal; (2) a signal with a random phase; and (3) a slow

Card 1/12

Some Relationships In Optimal Systems of Signal Detection (To Be Continued)

77562
SOV/108-15-2-7/12

fluctuating signal with amplitude distribution according to the Raleigh law. The binary detection is considered first. Here the presence or absence of the signal has to be determined against a noise-background. Thereby two types of errors are possible; (1) the false alarm, i.e., indication of signal presence while only the noise is acting; (2) the signal omission, i.e., indication of signal absence, while actually at the input is the sum of signal and noise. The probabilities of these errors are noted as P_{fa} and P_{so}, respectively. They are defined for an exactly known signal by the following expressions:

$$P_{fa} = \sqrt{\frac{N_0}{4\pi E_1}} \int_a^\infty e^{-\frac{N_0}{4E_1} y^2} dy, \qquad (1)$$

$$P_{so} = 1 - \sqrt{\frac{N_0}{4\pi E_1}} \int_a^\infty e^{-\frac{N_0}{4E_1}\left(y - \frac{2E_1}{N_0}\right)^2} dy, \qquad (2)$$

Card 2/12

This individual is repeated on the next reel.

$$\alpha = \frac{E_1}{N_0} + \beta. \qquad (3)$$

Here N_0 is the specific noise power given as

$$N_0 = \frac{\overline{n^2(t)}}{\Delta f}, \qquad (4)$$

where $\overline{n^2(t)}$ is the average square of the noise voltage at entrance to the receiver; Δf is the passband within limits of which N_0 is being determined; E_1 is the specific signal energy. When the signal $x(t) = U_m \cos(\omega t + \psi)$ is acting during the observation time T, E_1 may be written as

$$E_1 = \frac{U_m^2 T}{2}; \qquad (5)$$

where β is a threshold coefficient, which may be eliminated for the considered relationships. Assuming $P_{fa} \leqslant 0.1$

and $P_{so} \leqslant 0.1$ the following expression is obtained after transformations of Eq. (1), (2), and (3):

$$\frac{E_1}{N_0} = (a + b)^2, \qquad (6)$$

where

$$a = \sqrt{\ln \frac{1}{P_{fa}} - 1,4}, \qquad (7a)$$

$$b = \sqrt{\ln \frac{1}{P_{so}} - 1,4}. \qquad (7b)$$

A comparison of the approximate Eq. (6) with the exact results obtained from Eq. (1), (2), and (3) shows that the errors introduced by expression (6) do not exceed 0.5 db and tend to zero asymptotically when $P_{fa} \to 0$ and $P_{so} \to 0$. In case of a signal with a random phase the exact expressions for P_{fa} and P_{so} are transformed under the same assumption as above. In the thus obtained Eq. (9)

$$\frac{E_1}{N_0} = (a' + b)^2, \qquad (9)$$

b is defined by Eq. (7b) and a' is

$$a' = \sqrt{\ln \frac{1}{P_{fa}}}. \qquad (10)$$

The error introduced by Eq. (9) does not exceed 0.5 db and tends to zero asymptotically when $P_{fa} \rightarrow 0$ and $P_{so} \rightarrow 0$. For the fluctuating signal the following exact expression

$$\frac{E_{us}}{N_0} = \frac{\ln \frac{1}{P_{fa}}}{\ln \frac{1}{P_{no}}} - 1, \qquad (11)$$

where

$$P_{no} = 1 - P_{so} \qquad (12)$$

shows the probability of correct signal detection when there is actually a signal at the input; E_{as} is the average specific energy of the fluctuating signal at the receiver input. Comparing Eq. (6), (9), and (11), the following basic conclusions may be drawn: (1) When $P_{fa} \leqslant 0.1$ and $P_{so} \leqslant 0.1$ the energy required for detection of a signal with a random phase exceeds the energy required for detection of a signal with a random phase exceeds the energy required for detection of an exactly known signal by no more than 2 db. When P_{fa} 10^{-2} and P_{so} 10^{-2} the difference does not exceed 1.1 db. Consequently, no considerable amount of signal energy can be saved by taking into account the signal phase; (2) When P_{so} 0.63, then E_{as} E_1; i.e., the average energy required for the detection of a fluctuating signal exceeds the energy required for the detection of a signal of known amplitude. The difference increases sharply as P_{so} decreases. The case of

Some Relationships in Optimal Systems of Signal Detection (To Be Continued)

77562
SOV/108-15-2-7/12

multichannel detection is illustrated on Fig. 1.

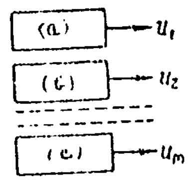

Fig. 1. (a) 1st channel; (b) 2nd channel; (c) m-th channel.

The signal x(t) is either present in one of the channels or absent in all channels. The following problems are considered; (a) detection only, i.e., to determine whether the signal x(t) is present at the entrance of any of the m-channels; (b) recognition only, i.e., when the presence of x(t) is known, so as to determine in which channel the signal is present; and (c) detection and recognition, combining (1) (2).

Card 7/12

Some Relationships in Optimal Systems of Signal Detection (To Be Continued)

77562
SOV/108-15-2-7/12

(a) Detection only. For a signal exactly known, assuming $P_{fa} \leqslant 0.1$ and $P_{so} \leqslant 0.1$, the following expression is obtained:

$$\frac{E}{N_0} = (a + b)^2 + 0{,}5 \ln m, \qquad (16')$$

where a and b are given by Eq. (7a) and (7b); E is the signal energy required for the m-th alternative detection ($m > 1$). For a signal with a random phase, under the above assumptions, the corresponding expression is:

$$\frac{E}{N_0} = (a' + b) + 0{,}5 \ln m + 1, \qquad (18)$$

where a' and b are defined by Eq. (10) and (7b), respectively. Comparing Eq. (16') and (18), it is seen that the signal with a random phase requires only a little more energy than the exactly known signal (the difference does not exceed 2db. (b) Recognition. After transformation of the expression for an exactly

Card 8/12

Some Relationships in Optimal Systems of Signal Detection (To Be Continued)

77562
SOV/108-15-2-7/12

known signal and under the assumption that the probability of distortion $P_{dis} \leqslant 0.1$, the following expression is obtained:

$$\frac{E}{N_0} = 2 \ln \frac{1}{P_{dis}} + \ln (m - 1) - 2{,}8. \qquad (20)$$

P_{dis} is the probability of distortion, i.e., that the signal will not be attributed to the channel in which the signal is actually present. When $P_{dis} \leqslant 0.1$ Eq. (20) introduces an error not exceeding 1 db. Under the same assumption of $P_{dis} \leqslant 1$ it may be considered that Eq. (20) is valid also for a signal with a random phase. (c) Detection and recognition. An optimum reception system is shown on Fig. 2

Card 9/12

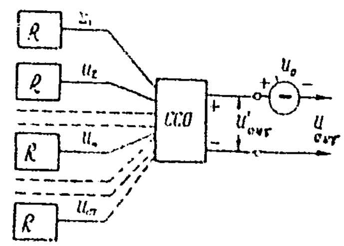

Fig. 2.

Here R_1, R_2,..., R_m are optimal receivers of the corresponding channels. The output of any receiver, for instance of R_k is proportional to $P_y(x_k)$

where C is a constant of equal mangiutde for all channels. The voltage u_0 is constant and corresponds to the probability that there is only noise present. The block CCO performs two functions: (a) it compares the voltages $u_1, \ldots, u_m$, one against the other, and it determines the largest of them. Consequently, it determines also the channel with the highest output voltage; (b) it supplies an output voltage u'_{out} equal to the largest u_k. The total output of the system is then

$$u_k = CP_s(x_s). \qquad (21)$$

When $u_{out} \leqslant 0$, it is considered that there is no signal in any of the m channels. When $u_{out} > 0$ it is considered that the signal is present in the channel K having the largest u_k. It is shown that expression

Some Relationships in Optimal Systems of Signal Detection (To Be Continued)

77502
SOV/108-15-2-7/12

for the signal-to-noise ratio in an n-channel system may be obtained from corresponding expressions of a one-channel system by substituting P_{fa}/m for P_{fa}.

Changes in the form of the detector characteristic do not affect the sensitivity of the above system, provided the threshold u_0 is changed correspondingly.

Therefore, the system shown on Fig. 2 may be used for optimal reception of various signal types.

(To be continued)

Card 12/12

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REEL # 176

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