GOLUB, A.M. [Holub, A.M.]; KILIMNIK, G.M. [Kylymnyk, H.M.]

Use of ΔM curves in the comparative stability characteristics of complexes. Dop.AN URSR no.7:932-934 '61. (MIRA 14:8)

1. Kiyevskiy gosudarstvennyy universitet. Predstavleno akademikom AN USSR Yu.K Delimarskim, [Delimars'kyi, IU.K.].
(Complex compounds)

KILIMNIK, T.V.; KHOCHENKO, R.V.; LUTOKHIN, I., red.

[Adjustment of the devices of systems and mechanisms of motor vehicles] Regulirovka priborov sistem i mekhanizmov avtomobilei. Kishinev, Kartia moldovenieske, 1964. 106 p. (MIRA 18:10)

BELENYA, Ye.I., doktor tekhn. nauk; KILIMNIK, L.Sh., inzh.

Performance of prestressed steel beams during the development of plastic deformations. Prom. stroi. 42 no.5:29-34 '65.
(MIRA 18:8)

ANDRIYEVS'KIY, Sergiy Kostyantinovich; SHAPIRO, Mikhaylo Naumovich; KILIMNIK, M.A., redaktor; SIDNYEV, P.P., redaktor; MONZHERAN, V.F., tekhnichniy redaktor

[Principles of electric engineering; a textbook for students of secondary schools] Osnovy elektrotekhniky; posibnyk dlia uchniv seredn'oi shkoly. Kyiv, Derzh. uchbovo-pedagog. vyd-vo "Radians'ka shkola," 1957. 294 p. (MLRA 10:6)
(Electric engineering)

LEVANDOVSKIY, Sergey Vasil'yevich; KILIMNIK, M.A., redaktor; POLITIYENKO, S.R., tekhnichniy redaktor

[Motion pictures in school physics courses; methodological handbook] Kino na urokakh fizyky; metodychnyi posibnyk. Kyiv, Derzh. uchbovo-pedagog. vyd-vo "Radians'ka shkola," 1957. 93 p. (MLRA 10:4)
(Motion pictures in education) (Physics--Study and teaching)

KILIMNIK, N.G.

Severe anaphylactic reaction to polyglucin infusions. Vest. khir. 94 no.2:112 F '65. (MIRA 18:5)

1. Iz otdeleniches koy bol'nitsy stantsii Kupyansk-Uzlovaya.

KILIMNIK, N.G.

Complication in penicillin therapy. Vrach.delo no.2:193 F '57.
(MLRA 10:6)

1. Zdravpunkt parovoznogo depo stantsii Kupyansk Yuzhnoy zheleznoy dorogi.
(PENICILLIN)

ISAKOV, A.A. (Kemerovskaya oblast'); ZHURGARAYEV, Amangel'dy (Dzhambul'-skaya obl., KazSSR); VLADIMIROV, A. (Asbest); FRIMAN, L.I. (Yaroslavl'); KILIMNIK, Ya.Ye. (Vinnitsa); TEREKHOV, I.A. (Skopin); AKDAULETOV, N.A. (pos.Mertuk. KazSSR); ZAKHARKIN, V.Ye. (pos.Rudtsev, Tul'skaya oblast'); SHESTOPAL, G.A. (Moskva); KOTIY, O.A. (Yaroslavl'); GAUKHMAN, V.A. (Moskva); LOPSHITS, A.M. (Yaroslavl'); SERGUSHOV, S.A. (Yaroslavl'); GOTMAN, E.G. (Pechora); VETROV, K.V. (Putintsevo, Vostochno-Kazakhstanskoy obl.); MIKHELEVICH, Sh.Kh. (Daugavpils); SKOPETS, Z.A. (Yaroslavl'); RYBAKOV, L.M. (Yaroslavl'); CHEGODAYEV, A.I. (Gavrilov-Yam)

Problems. Mat.v shkole no.6:85-92 N-D '62. (MIRA 16:1)
(Mathematics—Problems, exercises, etc.)

KILICHIK, Ya.Ye. (Vinnitsa)

Means for the substitution of parameters in solutions of problems. Mat. v shkole no. 6:63-64 N-D '60. (MIRA 14:2)
(Equations)

KILIMNIK, YE. YE.

3

S/020/62/144/002/028/028
B144/B101

AUTHORS: Zaitsin, N. V., Academician, Cherkasskiy, Ye. S., Bushchik, T. N., Shmal'ko, V. F., Lyadova, G. L., Kilimnik, Ye. Ye., and Belyayeva, A. S.

TITLE: Latest about the struggle against cabbage maggots (Chortophila brassicae Bouché and Ch. floralis Fall.)

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 2, 1962, 457 - 460

TEXT: A cheap insectofungicidal repellent dust ИФРД (IFRD) was prepared from by-products of the production of activated creolin (AC) and hexachloro cyclohexane (HCCH) by mixing with peat or other fillers. In 1960 excellent results were obtained in small-scale tests by dusting cauliflower, with 10-12 g of coarse-grained peat creolin dust per plant (AC - peat mixture of 1 : 3). Oviposition before the test, damage to roots and number of maggots during the crop were observed. One treatment was sufficient for initial oviposition (single eggs on 4-8 % of the plants); two dustings were applied at 14-day interval with massive oviposition (on 74.7 % of the plants). A finer-grained preparation was used in 1961,

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S/020/62/144/002/026/026
B144/B101

Latest about the struggle against ....

which reduced considerably the consumption. Treatment with IFRD was carried out as follows by: immersing the root before planting in 0.5, 1, and 2 % suspensions for 1-3 min; putting into peat humus pots (250, 300, 350, and 500 g per 10 kg of peat mixture); placing in the planting holes (10, 20, 50 g per hole); sprinkling the root with 50 cm³ of 3, 5, and 10 % suspension; dusting the collum (1-6 g). The latter method was the most efficient. Similar results were obtained by sprinkling with 50 cm³ of 10 % IFRD suspension, a method requiring no additional work. Considerable yield increases (2-24 tons per ha) were attained for several varieties of cauliflower and head cabbage (no. 1, Chinese, and 'Slava' cabbage) by one or two dustings with 3-6 g of IFRD after initial or massive oviposition, respectively, and by abundant, additional sprinkling to guarantee a fast penetration of the liquid. Plant and fruit were not unfavorably affected. IFRD residues in the cabbage were not found by the Sanitarno-epidemiologicheskoy stantsiya Moskvy (Moscow Sanitation Epidemiological Station). IFRD is harmless to workers, and not inferior in efficiency to expensive organochlorine compounds. There are 2 tables.

Card 2/3

Latent about the struggle against ... S/020/62/144/002/028/028
B144/B101

ASSOCIATION: Glavnyy botanicheskiy sad Akademii nauk SSSR (Main Botanical Garden Academy of Sciences USSR); Opytno-pokazatel'nyy sovkhoz im. Mossoveta (Experimental and Model Sovkhoz imeni Mossovet); Sovkhoz im. A. M. Gor'kogo (Sovkhoz imeni A. M. Gor'kiy)

SUBMITTED: February 9, 1962

Card 3/3

TSITSIN, N.V., akademik; CHERKASSKIY, Ye.S., prof.; BUSHCHIK, T.N., kand. biolog.nauk; SIMAL'KO, V.F., kand.sel'skokhoz.nauk; LYADOVA, G.L., agronom; KILIMNIK, Ye.Ye., agronom; BELYAYEVA, A.S., agronom

Preparation for controlling the cabbage maggot. Zashch. rast. ot vred. i bol. 7 no.7:33-34 Jl '62. (MIRA 15:11)

1. Glavnyy botanicheskiy sad AN SSSR. Oporno-pokazatel'nyy sovkhoz imeni Moskovskogo Sovkhoz imeni Gor'kogo.
(Moscow Province--Cabbage maggot--Extermination)
(Insecticides)

TSITSIN, N.V., akademik; CHERKASSKIY, Ye.S.; PROSENKO, Ye.P.; MAZIN, V.V.; LYADOVA, G.L.; KILIMNIK, Ye.Ye.

Effect of the insecticidal and fungicidal repellent dust (IFRD-1) on cabbage clubroot. Dokl. AN SSSR 143 no.4:972-975 Ap '62. (MIRA 15:3)

1. Glavnyy botanicheskiy sad AN SSSR i Opytno-pokazatel'nyy sovkhoz im. Mossoveta Lyuberetskogo rayona Moskovskoy oblasti.
(Clubroot) (Fungicides)

TSITSIN, N.V., akademik; CHERKASSKIY, Ye.S.; BUSHCHIK, T.N.; SHMAL'KO, V.F.; LYUDOVA, G.L.; KILIMNIK, Ye.Ye.; BELYAYEVA, A.S.; Prinimali uchastiye: AZIYASHVILI, L.N.; ANTONOVA, I.I.; VOLKOVA, A.A.; DOBROCHINSKAYA, I.B.; MIROSHNICHENKO, O.N.; YUZHAKOVA, N.P.

New data on the control of cabbage flies (Chortophila brassicae Bouché and Chortophila floralis Fall.). Dokl.AN SSSR 144 no.2:457-460 My '62. (MIRA 15:5)

1. Glavnyy botanicheskiy sad AN SSSR, Opytno-pokazatel'nyy sovkhoz im. Mossoveta i Sovkhoz im. A.M.Gor'kogo.
(Cabbage—Diseases and pests)

VANTOV, M.; KILIMOV,

Comparative studies on fever therapy and intravenous novocain in the treatment of sciatica. Suvrem.med., Sofia 6 no.10:61-67 1955.

1. Iz Klinikata po nervni bolesti pri Visshiia meditsinski institut I.P.Pavlov-Plovdiv (direktor: prof. Tr.Zaprianov).
(SCIATICA, therapy,
fever ther. & procaine, comparison (Bul))
(PROCAINE, therapeutic use,
sciatica, comparison with faver ther. (Bul))
(FEVER THERAPY, in various diseases,
sciatica, comparison with procaine (Bul))

KILIMOV, A.P.; NABOYKIN, Yu.V.

Theory of the one-electron bond of K.P.Medvedev. Zhur.fiz.khim. 28 no.3: 554-555 Mr '54. (MLRA 7:6)

1. Khar'kovskiy politekhnicheskiy institut im. V.I.Lenina.
(Medvedev, K.P.) (Chemical structure)

KILIMOV, A.P.; NABOYKIN, Yu. V.; VOLKOVA, A.M.

Colorimetric method of determining thallium in sodium oidide.
Trudy IREA no.22:124-127 '58. (MIRA 14:6)
(Thallium—Analysis)
(Sodium iodide)

Kilimov, A.P.

AUTHORS: Kilimov, A. P., Shumanskaya, N. P. 48-1-6/20

TITLE: The Extinction of Photoluminescence in Stilbene by Extraneous Substances (Tusheniye fotolyuminestsentsii stil'bena postoronnimi veshchestvami).

PERIODICAL: Izvestiya AN SSSR Seriya Fizicheskaya, 1958, Vol. 22, Nr 1, pp. 24-28 (USSR).

ABSTRACT: The dependence of the relative emission of photoluminescence in stilbene-powders on the concentration of admixtures was investigated here. Benzoin, deoxybenzoin, hydrobenzoin, 1,2-dibenzylpinacone, 1,2-diphenylethane and phenanthrene were investigated. Of these 6 an extinguishing action upon the photoluminescence of stilbene was determined in the first three, i. e. in compounds with carbonyl- or hydroxyl-groups. The last three are substances which possess luminescence themselves and which intensify the luminescence of stilbene. It is shown that at high concentrations of 1,2-dibenzylpinacone and 1,2-diphenylethane in the case of an oxygen-containing pinacone a stronger extinction was observed than in the case of 1,2-diphenylethane. A comparison of the luminescence-spectra of pure stilbene and of stilbene with admixtures admits the conclusion that in the case of phenanthrene and deoxybenzoin the excitation-energy is transferred from the stilbene-molecules to the admixture-molecules. In the case of an addition of benzoin and

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The Extinction of Photoluminescence in Stilbene by Extraneous Substances. 18-1-6/20

hydrobenzoin no changes were observed in the luminescence-spectra. The changes in the luminescence-spectra of the mixtures of stilbene and 1,2-dibenzylpinacone and the 1,2-diphenylethane repectively are not distinctly marked and yield no foundations for an evaluation of the processes causing the intensification of luminescence in these cases.
There are 7 figures, and 5 references, 3 of which are Slavic.

ASSOCIATION: Khar'kov Branch of the All-Union Scientific Research Institute for Chemical Reagents (Khar'kovskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta khimicheskikh reaktivov).

AVAILABLE: Library of Congress.

1. Chemistry 2. Stilbenes 3. Chemical compounds-Luminescence

Card 2/2

05452
SOV/120-59-3-23/46

AUTHORS: Kilimov, A. P., Nagornaya, L. L. and Zadorozhnyy, B. A

TITLE: An Adaptor to the SF-4 Spectrophotometer for use in Measuring Fluorescence Spectra (Pristavka k spektrofotometru SF-4 dlya izmereniya spektrov lyuminestsentsii)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 3, pp 105-107 (USSR)

ABSTRACT: Fig 1 illustrates the instrument; here 1 is a high-pressure mercury arc, 2 is a cylindrical quartz lens, 3 is a liquid filter, 4 is the sample, 5 is a holder, 6 is a mirror, 7 is the entrance slit of the monochromator, and 8 is a case. The filter is a cell fitted on one side with a quartz window, on the other with a special glass window, and filled with a saturated aqueous solution of nickel sulphate. This filter isolates (mainly) the 253 and 313 mμ lines. Fig 2 illustrates the holder, which would appear to be meant for use with solids or liquids. Fig 3 illustrates the photomultiplier detector (the original SF-4 uses a simple vacuum photocell). Fig 4 shows the spectral sensitivity of the monochromator with photomultiplier; Fig 5 shows fluorescence curves

Card 1/2

SOV/120-59-4-12/50

AUTHORS: Nagornaya, L. L., Kilimov, A. P.

TITLE: Plastic Phosphors Containing 1:2-di-(1-naphthyl)-ethylene

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 4, pp 63-66 (USSR)

ABSTRACT: Various plastic phosphors based on polystyrene and this compound (DNE) are described. A method described in Ref 9, in which the styrene monomer is polymerized at a high temperature, is used to make the phosphors. Fig 1 shows absorption spectra for DNE: 1) in heptane, 2) in polystyrene; 3) relates to p-terphenyl (PTP) in polystyrene, and 4) to polystyrene itself. Fig 2 shows the luminescence spectra 1) of DNE in polystyrene, 2) of DNE + PTP in polystyrene, 3) of POPOP + PTP in polystyrene; 4) is the response curve of the photomultiplier. Fig 3 shows the light yield (from ^{110}Ag) as a function of DNE concentration: 1) is DNE alone in polystyrene, while 2) is for PTP (2%) + DNE (best value 0.1%) in polystyrene (here the DNE acts to shift the emission spectrum to the region in which the multiplier is most sensitive).

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(PTP (2%) in polystyrene), absorption and emission maxima (in that order). The substances are stilbene in polystyrene, diphenylbutadiene (2%) in polystyrene, tetraphenylbutadiene (1%) in polystyrene, DNE in polystyrene, PTP (2%) + POPOP (0.1%) in polystyrene, PTP (2%) + α-NPO (0.1%) in polystyrene, PTP (2%) + DNE (0.1%) in polystyrene, and PTP (2%) + tetraphenylbutadiene (0.1%) in polystyrene. It is concluded that DNE is as good as the best other substance (POPOP). The paper contains 3 figures, 1 table and 14 references, 9 of which are Soviet and 5 English.

ASSOCIATION: Khar'kovskiy filial VNII khimicheskikh reaktivov (Khar'kov Branch of the All-Union Chemical Reagents Research Institute)

SUBMITTED: May 26, 1958.

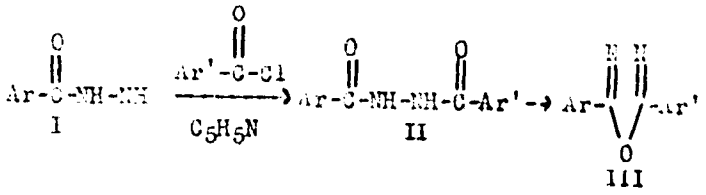
Card 2/2

AUTHORS: Shimanskaya, N.P., Kilimov, A.P. and Grokov, A.P. 07/51-6-2-11/39

TITLE: Investigation of the Scintillation Properties of Certain Derivatives of 1,3,4-Oxadiazole (Issledovaniye stsintillyatsionnykh svoystv nekotorykh proizvodnykh 1,3,4-oksadiazola)

PERIODICAL: Optika i Spektroskopiya, 1959, Vol 6, Nr 2, pp 194-197 (USSR)

ABSTRACT: The authors synthesized a large number of monoaryl and diaryl derivatives of 1,3,4-oxadiazole and studied their scintillation and luminescent properties. They found several new scintillators including 2-(1-naphthyl)-5-(4-biphenylyl)-1,3,4-oxadiazole (LNBD) and 2-(4-methoxyphenyl)-5-phenyl-1,3,4-oxadiazole (MtPPD). The present paper reports measurements on photoluminescence and scintillation of LNBD and MtPPD, as well as of 2-phenyl-5-(4-biphenylyl)-1,3,4-oxadiazole (PBD) which was first obtained by Hayes et al. (Ref 1). LNBD and MtPPD were synthesized by means of the reaction



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(notation is the same as that used by Hayes et al. in Refs 1, 2). Each substance was purified by recrystallization from solution and chromatography on aluminium oxide. The authors measured the relative intensity and photoluminescence spectra and the integral scintillation yield in toluene and polystyrene solutions of various concentrations. The absorption and luminescence spectra of MtPPD, LNBD and PBD in heptane were also measured. The spectra and intensities of luminescence were measured by means of a SF-4 spectrophotometer, used as a monochromator and a photomultiplier FEU-18. A mirror galvanometer M-21 was used to record the photo-current. The integral scintillation yield was determined from the photo-current of a FEU-19 photomultiplier to whose window a radioactive Ag^{110} source (0.1 millicuries) was fixed. The absorption spectra were measured by means of a SF-4 spectrophotometer. The results are given in Figs 1-11. The concentration dependences of the intensity of photoluminescence and of the scintillation efficiency were similar for all the three substances in polystyrene (Figs 1-3). In toluene solutions MtPPD shows a stronger concentration quenching of luminescence (Fig 4) than the other two substances (Figs 5 and 6). The absorption spectra of the three substances are shown in Figs 7-9, together with

Investigation of the Scintillation Properties of Certain Derivatives of 1,3,4-Oxadiazole SOV/51-6-2-11/38

their luminescence spectra. Figs 7-9 show that the three substances when dissolved in heptane obey the law of symmetry between the absorption and the luminescence spectra. The absorption maxima of PBD and LNBD were found to coincide with the emission maxima of polystyrene. The optimum concentrations and the scintillation efficiency at these concentrations are given for all the three substances in a table on p 197. This table contains also data on pTP (p-terphenyl) and pTP + POPOP scintillators. All the three new substances (LNBD, MtPPD, PBD) are better scintillators than pTP or pTP + POPOP. Of the former three compounds LNBD and MtPPD are better than PBD. There are 11 figures, 1 table and 5 references, 3 of which are Soviet and 2 English.

SUBMITTED: February 17, 1958

Card 3/3

SOV/51-7-3-12/21

AUTHORS: Shimanskaya, N.P., Kilimov, A.P., Grekov, A.P., Yegupova, L.M. and Azen, R.S.

TITLE: Plastic Scintillators with Additions of Aryl Derivatives of 1,3,4-Oxadiazole.

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, Nr 3, pp 366-370 (USSR)

ABSTRACT: The authors measured the scintillation efficiency and recorded the absorption and luminescence spectra of solid solutions of eight 2,5-aryl derivatives of oxadiazole in polystyrene. These derivatives were:
2-(4-biphenylyl)-1,3,4-oxadiazole (BD);
2,5-di-(4-methoxyphenyl)-1,3,4-oxadiazole (MtPMtPD);
2-phenyl-5-(4-biphenylyl)-1,3,4-oxadiazole (PBD);
2-phenyl-5-(1-naphthyl)-1,3,4-oxadiazole (αNPD);
2-phenyl-5-(2-naphthyl)-1,3,4-oxadiazole (βNPD);
2,5-di-(4-biphenylyl)-1,3,4-oxadiazole (BBD);
2-(4-biphenylyl)-5-(2-naphthyl)-1,3,4-oxadiazole (αNBD);
2-(1-naphthyl)-5-(2-naphthyl)-1,3,4-oxadiazole (αNβND).

Card 1/4 The BD compound was obtained by heating of 4-biphenylylhydrazide with ethyl ester of o-formic acid (Ref 2). The other seven compounds were

Plastic Scintillators with Additions of Aryl Derivatives of 1,3,4-Oxadiazole

prepared by cyclization of the corresponding dihydrazides by heating with phosphorus oxychloride (Ref 3). All compounds were purified by re-crystallization and chromatographic treatment. The scintillators were in the form of polystyrene discs (with the appropriate 1,3,4-oxadiazole derivative added to them) of 20 mm diameter and 12 mm height; they were prepared by high temperature polymerization in an atmosphere of nitrogen. The absorption spectra were recorded by means of a spectrophotometer SF-4. The luminescence spectra were obtained by means of the same instrument used as a monochromator; they were recorded photoelectrically. The scintillation efficiency was deduced from the current of a FEU-19 photomultiplier. A sample of Ag^{110} of 0.1 μcurie intensity was used as the source of excitation. The absorption spectra of the eight oxadiazoles are shown in Figs 1 (curves 1-4) and 2 (curves 1-4). The luminescence spectrum of polystyrene is shown as curve 5 in both figures. The greatest amount of overlapping of the absorption spectrum with the luminescence spectrum of polystyrene was exhibited by the compounds with 1-naphthyl radical, that is the compounds αNPD, αNβND and αNBD. Figs 3 and 4 show the photoluminescence spectra (excited with 253 and 313 mμ mercury lines). Here again the oxadiazoles with 1-naphthyl radical show the greatest amount of overlap with the maximum of the FEU-19 sensitivity. The dependence of the scintillation

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efficiency on the concentration of the oxadiazoles (Fig 7) shows that the compounds ANPD, ANND, ANBD and BBD are the most efficient. In a table on p 369 the authors list the absorption and luminescence maxima (cols 3 and 4), the concentration oxadiazole in polystyrene (col 5) and the scintillation efficiency (col 6) of the eight oxadiazole derivatives listed above and eight other 1,3,4-oxadiazole derivatives studied earlier. The authors found that the scintillation efficiency of organic compounds in plastics is determined primarily by their absorption and luminescence spectra and their luminescence yield. The scintillation efficiency may be measured in relative units by Swank and Buck's method (Ref 8), allowing for the overlapping of the luminescence spectrum of the base (polystyrene) and the absorption spectrum of the additive (oxadiazole derivative), the photoluminescence yield of the additive and the efficiency of recording of the emission by the additive. The best scintillation property among the diaryl derivatives of oxadiazole were found in the compounds with 1-naphthyl and biphenylyl radicals. Among the sixteen compounds listed in the table on p 369 the following were found to be most efficient in

Plastic Scintillators with Additions of Aryl Derivatives of 1,3,4-Oxadiazole

plastic scintillators:
2,5-di-(4-biphenylyl)-1,3,4-oxadiazole (BBD);
2,5-di-(1-naphthyl)-1,3,4-oxadiazole (αNαND);
2-phenyl-5-(4-methoxyphenyl)-1,3,4-oxadiazole (MtPPD);
2-(4-biphenylyl)-5-(2-naphthyl)-1,3,4-oxadiazole (βNBD);
2-phenyl-5-(1-naphthyl)-1,3,4-oxadiazole (αNPD).

There are 7 figures, 1 table and 9 references, 3 of which are Soviet, 4 English, 1 German and 1 translation into Russian.

SUBMITTED: December 26, 1958

Card 3/3

69072

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E201/E391

5.5500

AUTHORS: Nagornaya, L.L., Kilimov, A.P., Maikes, L.Ya., Shubina, L.V. and Timchenko, A.I.

TITLE: Plastic Scintillators with 1,2-diarylethylenes

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, Nr 1, pp 34 - 36 (USSR)

ABSTRACT: Properties of 1,2-diaryl derivatives of othylene as luminescent additives to plastic scintillators are comparatively unknown (Refs 1-3). This is surprising because of the good properties reported for 1,2-di-(1-naphthyl)-ethylene (Ref 4). The present paper describes results obtained in an investigation of scintillation and luminescence properties of polystyrene solutions of three 1,2-diarylethylenes:
1-phenyl-2-(4-methoxyphenyl)-ethylene (I),
1-phenyl-2-(4-chlorophenyl)-ethylene (II),
1-phenyl-2-(4-biphenylyl)-ethylene (III).
The properties of stilbene and 1,2-di-(1-naphthyl)-ethylene are also reported. The luminescence spectra were obtained with an SF-4 spectrophotometer, used as a monochromator and

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Plastic Scintillators with 1,2-diarylethylenes

fitted with a photoelectric device (Ref 8); they are shown in Figure 1. The scintillation efficiency was deduced from the current at the output of a photomultiplier FEU-19. The samples were excited with gamma-rays from Ag^{110} of 0.1 millicurie intensity. It was found (Figure 2 and a table on p 36) that the scintillation efficiency of a 1% solution of III in polystyrene amounts to 147% compared with the efficiency (taken as 100%) of a 2% solution of p-terphenyl in polystyrene. It was also found that the scintillation efficiency of 1,2-diarylethylenes is proportional to the photoluminescence yield. There are 2 figures, 1 table and 8 references, 6 of which are Soviet and 2 English.

ASSOCIATION: Khar'kovskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta khimicheskikh reaktivov (Khar'kov Branch of the All-Union Chemical Reagents Scientific-research Institute)

SUBMITTED: December 13, 1958
Card 2/2

5.5500

AUTHORS: Kilimov, A.P. and Nagornaya, L.L.

TITLE: The Effect of a Primary Luminescent Additive on the Efficiency of Plastic Scintillators Containing Substances Which Displace the Spectra

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, Nr 1, pp 37 - 39 (USSR)

ABSTRACT: The authors recorded the luminescence spectra and measured the gamma-scintillation efficiency of polystyrene scintillators with the following luminescent additives:
n-terphenyl (nTP),
2,5-diphenyl-oxazole-1,3 (PPO),
1-phenyl-2-(4-biphenylyl)-ethylene (PBE).
The following substances were used to displace the luminescence spectra:
2,5-di-(4-biphenylyl)-1,3-oxazole (BBO),
1,4-di-[2-(5-phenyl)-oxazolyl]-benzene (POPOP),
1,2-di-(1-naphthyl)-ethylene (NNE).
The results are shown in Figures 1 and 2 and in a table on p 37. It was found that PBE is the best luminescent

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S/120/60/000/02/012/052
E032/E314

AUTHORS: Nagornaya, L.L., Kilimov, A.P., Distanov, B.G. and Podgornaya, L.M.

TITLE: Plastic Scintillators with Additions of Aryl-substituted Pyrazolines

PERIODICAL: Pribory i tekhnika eksperimenta. 1960, No. 2, pp 48 - 50 (USSR)

ABSTRACT: The scintillation efficiency and the luminescence spectrum of polystyrene solutions of the following substances have been investigated: 1.3-diphenyl-5-(2-chlorophenyl)-pyrazoline; 1.5-diphenyl-3-(4-biphenyl)-pyrazoline. 1.5-diphenyl-3-(1-naphthyl)-pyrazoline; 1.5-diphenyl-3-(2-naphthyl)-pyrazoline. It was found that polystyrene solutions with the addition of 2% n-terphenyl and 0.2% 1.3-diphenyl-5-(2-chlorophenyl)-pyrazoline have a scintillation efficiency of 155%. Triaryl pyrazolines can be used as additives to plastic scintillators. They are most usefully employed as spectrum shifters. Figures 1 and 2 show the photoluminescence spectra of the plastic scintillators and Figures 3 and 4 the concentration

Card1/2

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S/120/60/000/02/012/052
E032/E314

Plastic Scintillators with Additions of Aryl-substituted Pyrazolines

dependence of the scintillation efficiency
There are 4 figures, 1 table and 3 Soviet references.

ASSOCIATION: Khar'kovskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta khimicheskikh reaktivov (Khar'kov Branch of the All-Union Scientific Research Institute for Chemical Reagents)

SUBMITTED: January 17, 1959

Card 2/2

KILIMOV, A.P.; VOLOSHINA, V.V.

Photoluminescence and absorption of acridone in solutions. Opt.i spektr. 12 no.5:647-649 My '62. (MIRA 15:5)
(Acridanone--Spectra)

KILIMOV, A.P.; ZWEGINTSEVA, L.N.

Effect of small quantities of water on the luminescence spectra of 5,6-benzoquinoline solutions in p-dioxane. Opt.i spektr. 13 no.2:285-287 Ag '62. (MIRA 15:11)
(Benzoquinoline--Spectra) (Dioxane)

L 19468-63 EPF(c)/EWT(m)/BDS Pr-4 RM/WW/MAY

ACCESSION NR: AT3002198 S/2941/63/001/000/0072/0077

AUTHORS: Kilimov, A. P.; Zvegintseva, L. N.; Brandesova, I. K. 59

TITLE: Effect of hydrogen ion concentration on spectra of 5,6-benzoquinoline

SOURCE: Optika i spektroskopiya; sbornik statey. v. 1: Lyuminestsentsiya. Moscow, Izd-vo AN SSSR, 1963, 72-77

TOPIC TAGS: luminescence, absorption, spectra, hydrogen ion, reaction rate constant

ABSTRACT: The change in luminescence and absorption spectra of 5,6-benzoquinoline in solutions containing hydrogen ions has been investigated. The solvents used were: water, ethanol, 82% p-dioxyn-water mixture, and 50% acetone-water mixture. The method of H. H. Perkampus and T. Rössel (Zs. Electrochem., 60, 1102, 1956) was used to determine the reaction constants in the hydrogen-5,6-benzoquinoline reaction. Analysis was limited to the ground and first singlet excitation states of the benzoquinoline molecule. It was noted that increasing the solvent dielectric constant increases the difference between the reaction rate constant of the ground state and the reaction rate constant of the excited state. Orig. art. has: 6 figures and 2 formulas.

Card 1/

L 13386-63 EWP(j)/BDS/EWT(m) AFFTC/ASD Pc-4 RM

ACCESSION NR: AP3002747 S/0120/63/000/003/0175/0176

58

AUTHOR: Kilimov, A. P.; Orachev, N. M. 15

TITLE: Efficiency of plastic scintillators based on styrene and para-vinyl-toluene copolymers

SOURCE: Pribory* i tekhnika eksperimenta, no. 3., 1963, 175-176

TOPIC TAGS: plastic scintillator

ABSTRACT: Experimental investigation of light yield of the above copolymers as a function of para-vinyl-toluene concentration is reported. An optimum copolymer composition was found. The results are practically useful as they show that, with equal efficiency, a less expensive copolymer can be used to replace pure vinyl-toluene. Orig. art. has: 2 figures.

ASSOCIATION: VNII monokristallov (VNII of Single Crystals)

SUBMITTED: 03Aug62 DATE ACQ: 12Jul63 ENCL: 00

SUB CODE: PH, NS NO REF SOV: 002 OTHER: 003

Card 1/1

KILIMOV, A.P.; ZVEGINTSEVA, L.N.

Formation of hydrogen bonds between the angular analogs of acridine and proton donors. Izv. SO AN SSSR no.11 Ser.khim.nauk no.3:129-131 '63. (MIRA 17:3)

1. Institut fiziki Sibirskogo otdeleniya AN SSSR, Krasnoyarsk.

L 62935-65 EWT(m)/EPF(c)/EWP(j)/EWA(c) PM

ACCESSION NR: AR5012282 UR/0058/65/000/003/D067/D067

SOURCE: Ref. zh. Fizika, Abs. 3D541

AUTHOR: Kiliмov, A. P.; Zvagintseva, L. N.

TITLE: Protolytic equilibrium of 9-methylphenanthridine

CITED SOURCE: Tr. Komis. po spektroskopii, AN SSSR, vyp. 1, 1964, 250-256

TOPIC TAGS: hydrogen ion, luminescence spectrum, absorption spectrum, photoluminescence

TRANSLATION: Variations in the absorption and photoluminescence spectra of 9-methylphenanthridine are studied in solutions with respect to the number of hydrogen ions. Equilibrium constants are found for the dissociation reaction of 9-methylphenanthridine in the ground and first excited singlet states for solutions in water, in a 50% mixture of water and acetone, in a 70% mixture of n-dioxane and water and in n-dioxane. It is shown that the alkalinity of the compound increases during photoexcitation.

SUB CODE: GC, OP ENCL: 00

Card 1/1 0402

KILIMOV, I.; SHCHETKIN, S.

Compete with the best, my friends! Rabotnitsa 37 no.5:14-15 My '59.
(MIRA 12:7)

1.Redator mnogotirazhnoy gazety "Kabel'shchik," Leningrad, zavod Sevkabel' (for Kilimov). 2.Avtomobil'nyy zavod, g.Gor'kiy (for Shchetkin).
(Labor productivity)

AUTHOR: Kilimov, I.M., Engineer SOV/122-59-3-2/42

TITLE: The Increase in the Load Capacity of Gear Transmissions by the Use of the Hardness Difference Effect (Povysheniye nagruzochnoy sposobnosti zubchatykh peredach pri ispol'zovanii effekta perepada tverdostey)

PERIODICAL: Vestnik Mashinostroyeniya, 1959, Nr 3, pp 9-11 (USSR)

ABSTRACT: Tests on gear transmissions with corrected and uncorrected tooth profiles and different combination of gear and pinion hardnesses were carried out under the direction of Kudryavtsev, V.N., Professor at the Leningrad Military Mechanical Engineering Institute (Leningradskiy Voyenno-Mekhanicheskiy Institut). Closed circuit test rigs were used at 1500 pinion rpm with straight spur gears and at 3000 pinion rpm with helical gears. In preliminary tests with spur gear transmissions having equal hardnesses of wheel and pinion, it was established that, below Brinell hardness values of 300, the contact stress for infinite endurance could be expressed as 25 times the Brinell hardness value. Other gear pairs were judged by the ratio of their endurance torque to a torque designated

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the normal torque, corresponding to the above value of the contact stress. The tests showed the ratios of the endurance torques of uncorrected helical and straight gears, defined by the absence of pitting, to be 1.3. The straight and helical gear pairs tested had a module of 3 mm, 27 pinion teeth and 53 gear teeth. The width of the straight gears was 10 mm and of the helical gears 27 mm. The helix angle was about 21°. The gear was made of hardened and tempered chromium steel, 40 Kh, with a Brinell hardness of 250-270. The pinion was made of nitriding steel, 35 KhYuA, nitrided to a depth of 0.3-0.4 mm, the hardness of the nitrided layer exceeded 55 Rock-well C, the core hardness, 270 Brinell. All gears were run-in with boron carbide abrasive. Alternative pinions were made to the same specification as the gear. The tests showed no advantage in straight gears arising from a harder pinion. The contact stress with a softer pinion reached 6700 kg/cm^2, and with a harder pinion only 6200. (computed from the torque by the method of Professor V.N. Kudryavtsev proposed in "Gear Transmissions"

(Zubchatyye peredachi, Mashgiz, 1957). Thus, the recommendation given by other Soviet authors as well as Buckingham, Thomas and Machinery's Handbook outside the USSR have not been substantiated. Helical gears yielded a completely different result. The load capacity of gear pairs with a harder pinion was larger by 1.73 in uncorrected pairs and by 2.15 in pairs with a negative correction in the pinion profile than the load capacity in pairs of equal hardness. The explanation advanced rests on the theory that the presence of wear helps the resistance of contact surfaces against pitting. Thus the greater wear in pairs of equal hardness improves their fatigue resistance. The improvement in helical gears of unequal hardness is explained by the greater pitting resistance of the contact surfaces near the tip compared with those near the root of the tooth. A harder pinion causes a re-distribution of load so that the tip regions of the wheel teeth and the root region of the pinion

teeth receive larger shares. This would also explain the beneficial effect of the profile correction. There are 3 photographs, 1 table and 9 references, including 7 in Russian, 1 in English and 1 in German.

KILIMOV, I.M., inzh.

Contact strength of spiral gear transmissions. Rasch.na prochn. no.7:300-309 '61. (MIRA 14:11)
(Gearing, Spiral)

Pharmacology and Toxicology

BULGARIA

KILIMOV, N.; Group for the Study of Problems of Epilepsy (Director Academician G. Usunov), Bulgarian Academy of Science

"Problem of Nerve Impulse Conduction and Anticholinesterase Drugs"

Sofia, Nevrologiya, Psikhiatriya i Nevrokhirurgiya, Vol 5, No 6, 1966, pp 445-450.

Abstract: According to D. Nachmansohn's theory developed by considering biochemical data, the acetylcholine-cholinesterase system forms the basis not only for synaptic transmission of nerve impulses, but also for conduction along the axons themselves. An electromyographic investigation was carried out with the view of establishing whether or not the Bulgarian anticholinesterase drug nivalin exerts an effect on conduction in peripheral motor nerves. Nivalin was injected intravenously and intramuscularly to 21 patients with diseases of the locomotor apparatus, whereupon electromyographic tests were made. The results of the tests indicated that nivalin had no effect on the velocity of conduction in peripheral nerves. The work described was planned and begun at the Neurological Clinic of the Medical Academy in Warsaw. Table, figure, and graphs. Six references (all Western). Russian and English summaries. Manuscript received Jun 65.

1/1

L 02146-67

ACC NR: AP6025982

AUTHOR: Kilimov, N.

ORG: Research Group of Neurology and Psychiatry, Bulgarian Academy of Sciences

TITLE: Effect of nivalin on audiogenic seizures in mice

SOURCE: Doklady Bolgarskoy Akademii Nauk, v. 18, no. 3, 1965, 287-289

TOPIC TAGS: rat, mouse, drug effect, nervous system disease, pharmacology

ABSTRACT: /English article/ Audiogenic epilepsy in rats and mice represents a convenient model for elucidating major problems of experimental epilepsy. Of prime importance are the problems connected with the study of the pathogenic mechanisms of epileptic seizures as well as of the effectiveness of drugs in preventing or relieving their emergence. Drugs used in the treatment of epilepsy, such as bromates, barbiturates, hydantoins, oxacolicidines, and the like, noticeably suppress and prevent audiogenic seizures. A number of investigators have shown that it is possible to produce audiogenic seizures in nonsusceptible animals which have previously been treated with convulsive drugs: strychnine, cardiazol, coffein, theophyllin, camphor, and picrotoxin (H. W. Kern, et al., J. Comp. Physiol., 32, 1941, 563-567). Consequently, the purpose of the present investigation is to establish whether nivalin, the Bulgarian anticholinesterase drug, produces an activating effect on audiogenic seizures in mice. The results of tests on 121 albino mice show that nivalin does not increase the number of audiogenic seizures in mice but intensifies the gravity of epileptic symptoms. This paper was presented by Academician G. Usunoff on 16 November 1964. Orig. art. has: 1 figure. [JPRS]

SUB CODE: 06 / SUBM DATE: 16Nov65 / ORIG REF: 002 / SOV REF: 002 / OTH REF: 008

Card 1/1

0822 0519

KILIMOV, N.

Effect of nivalin on audiogenic seizures in mice. Dokl. Bolg. akad. nauk 18 no.3:287-289 '65

1. Submitted on November 16, 1964.

KILIMOV, N.; SHILEV, P.

A case of Pancoast-Tobias syndrome. Suvrem. med., Sofia 8 no.9:102-106 1957.

1. Iz klinikata po nervni bolesti pri VMI "I. P. Pavlov"-Plovdiv Zavezhdashch: prof. Tr. Zaprianov Katedrata po patologichna anatomiia pri VMI "I.P. Pavlov" - Plovdiv Zavezhdashch: prof. As. Prodanov.
(PANCOAST SYNDROME, case reports)

Kilimov, N.

BULGARIA/Pharmacology. Pharmacognosy. Toxicology - Toxicology. T-11

Abs Jour : Referat Zhur - Biologiya, No 16, 1957, 71986

Author : Kilimov, N.
Inst :
Title : The Damage to the Central Nervous System as a Result of Bee and Wasp Bites.

Orig Pub : C"vrem. med. 1956, 7, No 2, 74-78

Abstract : Severe hyperergic reactions due to Bee- and wasp bites (dizziness, nausea, difficulty in breathing, hives, local edema, pain) were observed on two people. The anamnesis of these patients shows presence of bee bites with a less severe reaction, though also hyperergic. A chorea-type hyperkinesis as a result of an allergic encephalitis, is described, which flared-up after a bee-bite.

Card 1/1

UZUNOV, N.; KILIMOV, N.

A case of paroxysmal myoplegia. Suvrem. med., Sofia 7 no.8: 74-78 1956.

1. Iz Katedrata po nervni bolesti pri VMI I.P. Pavlov; Plovdiv (Zav. katedrata: prof. Tr. Zaprianov).
(PARALYSIS, case reports
familial periodic)

KILIMOV, N.

A case of anaphylactic shock following the use of Nivaline.
Suvr. med. 12 no.11:111-112 '61.

1. Iz I poliklinika, Plovdiv. (Glaven lekar V. Popov).
(GALANTHAMINE) (DRUG ALLERGY) (ANAPHYLAXIS)

SHISHOV, Ye.L., kand.tekhn.nauk; SYCHEV, A.S., inzh.; KILIMOV, S.L., inzh.; SHPARBER, P.A., inzh.

"Handbook on special methods of shaft sinking." Reviewed by E.L. Shishov and others. Shakht. stroi. 6 no.5:32-3 of cover M- '62 (MIRA 15:7)

(Shaft sinking)

KILIMOV, Sergey Leonidovich; SHUT'KO, Yuriy Petrovich

[Accelerated sinking of directional shafts] Skorostnaia prokhodka naklonnykh stvolov. Kiev, Gos.izd-vo tekhn.lit-ry USSR, 1959. 112 p. (MIRA 13:5)

(Shaft sinking)

AYRUNI, Arsen Tigranovich, kand. tekhn. nauk; ALEKSEYEV, Viktor Borisovich; BURSHTEYN, Mark Aleksandrovich; GEYMAN, Leonid Mikhaylovich; GRABILIN, Yuriy Nikolayevich; KILIMOV, Sergey Leonidovich; SOSNOV, Vladimir Dmitriyevich; SENCHEVA, Valentina Ivanovna; SUYETIN, Georgiy Georgiyevich; FEYGIN, Lev Mikhaylovich; SHEVCHENKO, Vadim Dmitriyevich; KAZAKOV, B.Ye., otv. red. toma; TAYTS, T.L., red.; OSVAL'D, E.Ya., red. izd-va; MINSKER, L.I., tekhn. red.

[The coal industry of capitalist countries]Ugol'naia promyshlennost' kapitalisticheskikh stran. Moskva, Gos.nauchno-tekhn.izdvo lit-ry po gornomu delu. Vol.2.[Technology, mechanization, and organization of development workings]Tekhnologiia, mekhanizatsiia i organizatsii rabot pri provedenii podgotovitel'nykh gornykh vyrabotok. Otv. red. toma: B.E.Kazakov, V.D.Sosnov, G.G.Suetin. 1962. 351 p. (MIRA 16:2)

1. Moscow. TSentral'nyy institut tekhnicheskoy informatsii ugol'noi promyshlennosti. 2. TSentral'nyy institut tekhnicheskoy informatsii ugol'noy promyshlennosti, Moscow(for Suyetin, Sencheva). 3. Gosudarstvennyy proyektnyy institut po avtomatizatsii ugol'noy promyshlennosti (for Feygin). 4. Gosudarstvennyy komitet Soveta Ministrov SSSR po avtomatizatsii i mashinostroyeniyu (for Sosnov). 5. Vsesoyuznyy tsentral'nyy proyektnyy institut po proyektirovaniyu shakhtnogo stroitel'stva kamennougol'noy promyshlennosti (for Burshteyn, Shevchenko). 6. Gosudarstvennoye nauchno-tekhnicheskoye izdatel'stvo po ugol'noy promyshlennosti(for Geyman).

(Continued on next card)

KILIMOV, S. L., inzh.

Self-sliding "Leven" make form. Ugol' Ukr. 6 no.10:44-45 O '62. (MIRA 15:10)

(Netherlands—Shaft sinking)

KILIMOV, V. N.

"An experiment in operational treatment of acute cholecystitis (comparative evaluation of results of operational treatment in the acute and chronic stages of the process)." Sverdlovsk State Medical Inst. Sverdlovsk, 1956. (Dissertations for the Degree of Candidate in Medical Science)

So: Knizhnaya letopis', No. 16, 1956

BULGARIA

PODVURZACHOVA, A., A. KHAYTOV, and E. KILIMOVA, First Hospital for Infectious Diseases (I Infektsiozna Bolnitsa), Sofia.

"The Cholostatic Form of Epidemic Hepatitis."

Sofia, Suvremenna Meditsina, Vol 14, No 3, 1963, pp 25-31.

Abstract: [Authors' Russian summary modified] The authors report on 27 sufferers from epidemic hepatitis which occurred in the form of cholostatic hepatitis. The clinical features are described in comparison with the common forms of hepatitis and jaundice and in consequence of the extrahepatitic obstruction of the bile ducts. The diagnosis of cholostatic hepatitis is relatively difficult and is based on the overall clinical picture, paraclinical tests, the absence of data on extrahepatitic mechanical obstacles to the draining of the bile, and in some cases long-term observation or laparotomy. In cases with evidence of mechanical jaundice with full bile obstruction 1/2/which does not respond to treatment, surgical inter-

BULGARIA

Sofia, Suvremenna Meditsina, Vol 14, No 3, 1963, pp 25-31 (continued).

vention is in order after the 30th day to prevent biliar cirrhosis even in cases with a clinical diagnosis of cholostatic hepatitis.

Eight recent Western references.

2/2

KOIEV, N.; KILIMOVA, L.; ZHUROVSKA, N.

Oxidation of ethylene up to ethylene oxide. Khim i industriia 34 no.2:64-69 '62.

PANAMSKI, Iv., inzh.; NIKOLOV, N., d-r; KILIMOVA, L.

Self-hardening anticorrosive coverings based on phenolformaldehyde resins. Godishnik Inst khim prom 2:139-146 '63.

KOLEV, N.; ZHUROVSKA, N.; KILIMOVA, L.; TSANKOV, Khr.

Mechanism of the activation of a silver catalyst for the oxidation of ethylene into ethylene oxide. Godishnik Inst khim prom 2:71-81 '63.

KILIMOVA, L. G.

H-24

COUNTRY: Bulgaria
CATEGORY :

ABS. JOUR. : RZKhim., No. 5 1960, No. 19614

AUTHOR : Nikolov, N. I. and Kilimova, L. G.
INST. : Research Institute of the Chemical Industry (Sofia)
TITLE : The Investigation of the Composition of Bulgarian Turpentine Oils

ORIG. PUB. : Godishnik Nauch Issledovatel Inst Khim Promishlenost, 1958, T. I. Sofia, 73-98 (1958)

ABSTRACT : The results from an investigation of the composition of various types of turpentine (T) (extraction, dry distillation, sulfate process, regenerated) are described. The data indicate that the total content of α- and β-pinenes (in %) is 80-90 in regenerated T, 75-80 in extraction T, about 90 in sulfate process T, and 45-55 in T from the dry distillation of wood. The specific rotation of the plane of polarization of α- and β-pinenes is negative. The majority of Bulgarian T contain 3-5% of two

CARD: 1/2

CATEGORY :

ABS. JOUR. : RZKhim., No. 5 1960, No. 19614

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : unknown dextrorotatory terpenes, which are provisionally designated as d-terpene A and d-terpene B. The various types of Bulgarian T, with the exception of dry distillation T, contain small amounts of limonene, dipentene, and low-volatile substances. Retort dry distilled T contains a mixture of limonene and dipentene in amounts of 21.2-29.4%. Bulgarian T is comparable to French T in pinene content.

A. Knovnskaya

CARD: 2/2

552

VERBEV, P.Ye.; PODVARZACHEVA, A.; YEFREMOVA, A.; GYBEV, Ye.; IVANOV, N.; SELEKTAR, A.; KILIMOVA, Ye.; STAYKOVA, A.; KHYSTEV, T.

Studies on epidemiological and clinical aspects of epidemic hepatitis in Bulgaria. Zhur.mikrobiol.epid.i immun. 31 no.9:96-101 S '60. (MIRA 13:11)

S/169/63/000/002/120/127
D263/D307

AUTHORS: Sultanov, S. A., Astaf'yeva, M. S., Kilimushin, I. M. and Khisamov, R. B.

TITLE: Use of industrial geophysical methods of determining rock properties of terrigeneous ores at Romashkinskoye deposit

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 2, 1963, 35-36, abstract 2D211 (Tr. Tatarsk. neft. n.-i. in-t, 1961, no. 3, 49-59)

TEXT: At Romashkinskoye deposit different methods of determining the porosity of ores (K_p) from natural potential (NP) diagrams, the permeability (K_{pr}) from the data of the resistance method, and N. V. Vilkov's methods were checked. A comparative analysis of methods of determining K_p from NP was made for strata having K_p larger than 16% in boreholes of the central part of the deposit, characterized by three and more cores. The research group method of

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S/169/63/000/002/120/127
D263/D307

Use of industrial ...

'Tatneftegeofizika' trust, and methods of A. I. Krinari and L. P. Dolina were checked. The minimum mean relative error in determining K_{pr} was obtained using the research group method, and the maximum error using Dolina's method. Maximum relative error in all methods is observed for strata less than 3 m thick. Methods of determining K_{pr} from the resistivity ρ_p of L. P. Dolina, S. A. Sultanov, V. M. Dobrynin and 'Tatneftegeofizika' trust were checked. G. S. Morozov's method was not checked as it gives high errors. Best results were obtained by L. P. Dolina's method, worst by the trust's method. All methods give small errors for strata with ρ_p 100 ohm.m, all methods give a low value of K_{pr}. The error in determining K_{pr} by all methods increases in strata less than 2 m thick. N. V. Vilkov's method of determining K_{pr} from NP is unsatisfactory, as it takes no account of the lack of connection between the NP amplitude, A_{NP}, and the permeability for K_{pr} 100 millidarcies, and of the very weak connection between A_{NP} and K_{pr} for

Card 2/3

Use of industrial ...

K_{pr} 100 millidarcies; no corrections are made in the values of A_{NP} for the effect of thickness and resistivity of the stratum. The general character of the connection between A_{NP} and K_{pr} indicated by Vilkov differs from the actual one. [Abstracter's note: Complete translation.]

Card 3/3

KILIN, F.M.

AUTHOR: Kilin, F. M. (Leningrad)

103-12-1/12

TITLE: Transient and Stabilized Processes in Pulse-Systems with Step Variables (Perekhodnyye i ustanovivshiyesya protsessy v impul'snykh sistemakh s peremennymi/parametrami, izmenyayushchimisya skachkom).

PERIODICAL: Avtomatika i Telemekhanika, 1957, Vol. 18, Nr 12, pp. 1061-1080 (USSR)

ABSTRACT: In this paper methods which are more general than the ones usually found in litterature for the determination of transient processes in pulse systems with locally continuous variability are represented, which can be used in a wide range of arrangements under the most varying conditions. At the outset the pulse system with a locally continuous variability of the parameters is investigated and the equations for this system are laid down. Complex methods of analysis, which provide for the utilization of the set-up of step-functions together with the continuous functions, are explained. The fundamentals of these methods are given in short and then the expressions for the continuous and the step functions are determined. These functions determine the modification of the quantities

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$x_j(t)$ $(j = 1,2, \ldots, r)$ with time. Moreover, another method for the expression of transient- and stabilized processes is given. Then a special case is of the method of operation of a pulse system is investigated. In this case it is assumed, that the duration of the pulses is of constant magnitude, which means, that

$E_o[n] = E$ and $\alpha_n = \alpha$, and, besides, that the condition

$|a^o_{jk}\alpha| \ll 1$, $|a^1_{jk} T| \ll 1$ is satisfied by the matrix elements a^o and a^1. The absolute sign $| |$ here denotes the absolute values of the product of the corresponding element per pulse duration α and of the period of recurrence T. It is shown, that, on this condition the processes in a pulse system result in continuous processes in a system with constant parameters. This transition to the system with constant parameters consists in a computation of equivalent time constants for the pulse elements. An example, the

Card 2/3

AUTHOR: Kilin, F. M. (Leningrad) SOV/103-19-10-1/12

TITLE: Transient Processes and Steady State in an Automatic Range Bearing Display (Perekhodnyye i ustanovivshiyesya protsessy v avtomaticheskom indikatore dal'nosti) Part I. Description of the Operation of the Device and the Utilization of the Apparatus of Step-Functions for the Analysis of the Processes in the Range Display (Chast' I. Opisaniye raboty ustroystva i primeneniye apparata stupenchatykh funktsiy dlya analiza protsessov v indikatore)

PERIODICAL: Avtomatika i telemekhanika, 1958, Vol 19, Nr 10, pp 901-916 (USSR)

ABSTRACT: Modern radiolocation and radionavigation systems incorporate an automatic range bearing display, which is generally called an automatic range finder. This device may be used for various purposes in different types of apparatus. One of these types of application is the subject of this paper, that is to say, an automatic range finder, in a radio location unit. The investigation covers the transient processes and steady state operation taking into account the particular features of the operation of automatic range finders. The block scheme of

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Transient Processes and Steady State in an Automatic Range Bearing Display. Part I. Description of the Operation of the Device and the Utilization of the Apparatus of Step-Functions for the Analysis of the Processes in the Range Display

the finder is presented and it is specified to be a servo-system. The equations for the automatic range finder are deduced for the case that no interferences occur at the input of the time discriminator. The equations thus obtained for the time discriminator and for the operational amplifier are transformed. The transient processes and the steady-state operation in the time discriminator and in the operational amplifier are investigated. The discreet equations (30), (31), and (32) are obtained holding for the automatic range finder, they are presented in their operational form and transformed from discreet into continuous equations.
Summary: The equations describing the operation of an automatic range finder with discontinuously varying parameters can in the general case be transformed into a system of discreet equations with constant coefficients: Equations (30), (31), and (32). The solution and the examination of these equations afford no difficulties. In this paper conditions are found under which the analysis of the performance of the automatic range finder can be reduced to the analysis of

Transient Processes and Steady State in an Automatic Range Bearing Display. Part I. Description of the Operation of the Device and the Utilization of the Apparatus of Step-Functions for the Analysis of the Processes in the Range Display

processes in a definite equivalent continuous system. There are 6 figures and 13 references, 10 of which are Soviet.

SUBMITTED: March 25, 1957

Card 3/3

KILIN, F.M.

28(1) SOV/30-59-1-48/57

AUTHOR: Nerosnov, I. S.

TITLE: Development of the Theory and the Application of Discreet Automatic Systems (Razvitiye teorii i primeneniy diskretnykh avtomaticheskikh sistem)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 1, pp 130-139 (USSR)

ABSTRACT: The conference dealing with this problem took place in Moscow from September 22 to 26, 1958 and was opened by V. A. Trapeznikov, chairman of the Natsional'nyy komitet SSSR po avtomaticheskomu upravleniyu (National Committee of the USSR for Automatic Control). In the Plenary Meeting Ya. Z. Tsypkin reported on discreet automatic systems and their development prospects. The work of the conference was undertaken by 5 sections. Reports were held by:).
G. P. Tartakovskiy and V. P. Perov reported on new investigation results in the case of pulse systems with variable parameters.
Fan Ch'ung-wei dealt in his report with his successful procedures of analysis of pulse systems with several elements.
F. M. Kilin spoke about the problem of an increase of the perturbation stability of the systems.

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Ya. Z. Tsypkin investigated the possibilities of pulse systems.
A. M. Krasovskiy investigated one of the possible ways of constructing an automatic control system with a discreet correcting device.
M. A. Krogius analyzed pulse systems.
[illegible] investigated the conditions of eigen oscillations (avtokolebaniye) in a system with wide range pulse modulation.
Ya. V. Dolgolenko reported on the method of determining parameters of a boundary cycle for an extreme system.
V. V. Kazakevich dealt with the results of approximation calculation methods of extreme systems.
A. A. Fel'dbaum investigated the influence of perturbations.
A. G. Butkovskiy and S. K. [illegible] reported on the construction of optimum control systems for objects with retardation.
O. K. Nadzhafova investigated methods of determining the maximum [illegible] effect of control systems.
O. G. Varshavskiy spoke about the construction of an automatic machine for objects with retardation which permits the best possible control systems.

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M. A. Gavrilov analyzed modern telemechanical equipment from the viewpoint of the so-called "finite automatic machines" (consisting of systems of a finite number of elements).
P. P. Parkhomenko reported on the effect and [illegible] construction of a special logical machine for the analysis of relay orders.
Yu. Ya. Bazilevskiy investigated accurate "finite automatic machines" which in the case of an unvariable structure furnish arbitrary items of several arguments.
G. K. Berends and [illegible] reported on a parametric system of elements of "finite automatic machines" with the logical elements described as "not", "and", "or" by means of which further logical functions can be put into practice.
The participants in the conference considered the technical working out of the papers presented [illegible] insufficient. In the last session the heads of the committees summarized the results obtained at the conference and briefly mentioned the important tasks in further developing the theory and the application of discreet automatic systems.

Card 3/3

KILIN, F.M.

Questions on the dynamics of pulse systems with step-wise varying parameters. Avtom. upr. i vych. tekh. no.2:50-103 '59.
(MIRA 13:2)
(Pulse techniques (Electronics))

10.8300, 1.1660

AUTHOR: Klin, V. N. (Leningrad)

TITLE: Transient and Steady-state Processes in an Automatic Range Finder. Part II. Automatic Range Finder With an Operational Amplifier.

PERIODICAL: Avtomatika i telemekhanika, 1960, Vol 21, No 2, pp 209-219 (USSR)

ABSTRACT: The study investigated dynamic properties of an automatic range finder with an operational amplifier that includes integrating and lag elements. This article is Part II of a paper published by the same author. (Transient and Steady-State Processes in an Automatic Range Finder. Part I. The Operation of the Arrangement and Application of Steep Function Method for the Analysis of Processes in the Indicator. (Perekhodnye i ustanovivshiesya protsessy v avtomaticheskom indikatore dal'nosti. Chast'I. Opisanie raboty ustroystva i primenenie apparata stupenchatykh funktsiy dlya analiza protsessov v indikatore). Avtomatika i telemekhanika, 1958, Vol 19,

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Mr. 10.) Conditions were established at which investigation of the automatic range finder is reduced to investigation of a continuously operating system described by Eq. (38) of Part I. It is assumed that these conditions are satisfied by the system considered in Part II. (1) Properties of the automatic range finder with an operational amplifier investigated as a continuous automatic regulation system. The equations of the time discriminator and the operational amplifier are given in form

$$\begin{aligned}
(D + a_{11})U_1(t) &= \frac{2K_0 E_r}{\tau_{10} T}\Delta\tau(t),\\
a_{21}U_1(t) + (D + a_{22})U_2(t) &= 0,\\
a_{31}U_1(t) + a_{32}U_2(t) + (D + a_{33})U_3(t) &= 0,\\
&\cdots\cdots\cdots\cdots\cdots\cdots\\
\sum_{m=1}^{r-1} a_{rm}U_m(t) + (D + a_{rr})U_r(t) &= 0.
\end{aligned} \qquad (1)$$

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where D is operator of differentiation; U_1, U_2, U_3 are

elements of matrix B(t) which participate in the equation for time discriminator and operational amplifiers; K_{op} is gain of amplifier of signal error; E_{in} is height of impulses reflected from the object; a_{ik} are parameters participating in the equation of the operational amplifier, written in the form of a sum of components. (Abstractor's note: The above description of notations is taken from part I of the paper.) Parameter a_{11} belongs to the time discriminator and is determined by the time constants τ_{10} and τ_{11} as follows:

$$a_{11} = \frac{\frac{1}{\tau_{10}} + \frac{\tau' - \tau}{\tau_{11}}}{\tau'}. \qquad (2)$$

The equations of the circuit regulating time [illegible] and the lag error are

$$\Delta\vartheta(t) = \sigma U_r(t),\ \Delta\tau(t) + \Delta\vartheta(t) = \Delta\vartheta_1(t). \qquad ([illegible])$$

Making use of Laplace transformation in Eqs. ([illegible]) [illegible] ([illegible]) and solving the equations with respect to $L\{\Delta\,\omega(t)\}$, the following equation is obtained:

$$L\{\Delta\tau(t)\} = \frac{\Delta a(p)}{X(p)} L\{\Delta\vartheta_1(t)\} - \sigma \sum_{k=1}^{r} \frac{A_{rk}(p)\,U_k(0)}{X(p)}, \qquad ([illegible])$$

where

$$X(p) = \Delta a(p) + \frac{2\sigma N_r U_r}{[illegible]} A_{rr}(p). \qquad ([illegible])$$

[illegible] $\Delta a(p)$ and $A_{rk}(p)$ are [illegible] parameters. [illegible] following notations are introduced:

Transient and Steady-State Processes in ...
Automatic Phase Finder. Part II.

$$\Delta x = \Delta x_1 + \Delta x_2,$$

$$L\{\Delta x_1(t)\} = \sum_{k=1}^{r} \frac{A_{k0}(p)}{A(p)} F_k(0), \tag{8}$$

$$L\{\Delta x_2(t)\} = \frac{\Delta x(0)}{A(p)} L\{\Delta x_1(t)\}.$$

If an automatic range finder is present a stable system, then $\Delta(t)_{\infty} = 0$ for the steady-state condition. At greater values of t, the component $\Delta x_{20}(t)$ has the greatest influence on the accuracy of operation. $\Delta x_{20}(t)$ is determined as follows:

$$\Delta\alpha_{\Sigma 0}(t) = \tau_{10} G_0 t^{\nu}, \quad G_0 = \frac{\prod_{k=1}^{r} a_{kk}}{\prod_{k=1}^{r} a_{kk} + \frac{2\sigma K_0 E_c}{\tau_{10} \Gamma} A_{r1}(0)}, \tag{12}$$

WHERE

$$A_{r1}(0) = (-1)^{r+1}\begin{vmatrix} a_{11}, & a_{22}, & 0, & \ldots, & 0 \\ a_{31}, & a_{32}, & a_{33}, & \ldots, & 0 \\ \ldots & \ldots & \ldots & \ldots & \ldots \\ a_{r1}, & a_{r2}, & a_{r3}, & \ldots, & a_{r,r-1} \end{vmatrix}. \qquad (13)$$

On the basis of Eq. (13) influence of the automatic range finder parameters on ... of parameters of the influence discussion on ... accuracy of operation is discussed. (2) Automatic range finder with an operational amplifier of one-fold integration. Putting n = 2 in Eqs. (1) and (3), equations are obtained of the automatic range finder with the simplest operational amplifier. Assuming that the shift of answer impulses from the object is described by the function

$$\Delta\vartheta_1(t) = \begin{cases} 0 & \text{for } t \leq 0, \\ \tau_{10} + \tau_{11}t & \text{for } t > 0, \end{cases} \qquad (18)$$

Card 2/4

where η_0 and η_1 are constant coefficients, the following equations for $\Delta x_2(t)$ are obtained:

$$\Delta x_2(t) = \eta_0 \left[G_0 + \sum_{k=1}^{2} S_k e^{p_k t} \right] + \eta_1 \left[G_1 t + G_1 + \sum_{k=1}^{2} \frac{S_k}{p_k} e^{p_k t} \right]. \quad (19)$$

where

$$G_0 = \frac{a_{11} a_{22}}{X_2}, \quad G_1 = -\frac{2\sigma K_0 E_{opt} (a_{11} + a_{22})}{\tau_{1c} T X_2^2}, \quad (20)$$

$$S_k = \frac{\lambda_0 (p_k)}{p_k X' (p_k)} \quad (k = 1, 2),$$

and

$$X' (p_k) = \left\{ \frac{d}{dp} X (p) \right\}_{p = p_k}. \quad (21)$$

here

$$X (p) = p^2 + X_1 p + X_2, \quad X_1 = a_{11} + a_{22}, \quad X_2 = a_{11} a_{22} - \frac{2\sigma K_0 E_0}{\tau_{1c} T} a_{21}. \quad (22)$$

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After certain transformations the resultant equation for $\Delta u(t)$ is as follows:

$$\Delta u(t) = \frac{2G_0}{\text{[illegible]}}[R_0 + R_1 t] + \frac{2R_1G_1}{\text{[illegible]}}. \quad (24)$$

and the range error corresponding to $\Delta u_p(t)$ is given in the form:

$$\Delta R(t) = \frac{\Delta u_p(t)}{2} = G_0[R_0 + R_1 t] + R_1G_1. \quad (25)$$

Here function $R(t) = R_0 + R_1(t)$ describes the movement of the object with respect to the automatic range finder station. In this system the accuracy of tracking is limited by the possibility of diminishing the parameter a_{11}. The parameter a_{11} affects also the nature of the

transient state processes. The increase in X_1 causes decrease in the steady-state error but simultaneously leads to overregulations and to oscillations in transient states. (3) Structure of the operational amplifier assuring a change in dynamic properties of the automatic range finder. It is shown that limitations of X_1 and a_{11} also take place and even to a greater extent, when the operational amplifier with manifold integrations is applied. These objectionable features can be removed from the system with an amplifier of another type; e.g., with the amplifier satisfying the following set of equations:

$$
\begin{aligned}
&(D + a_{11})U_1(t) = -\frac{2K_0E_c}{\tau_{10}T}\Delta\alpha(t),\\
&a_{21}U_1(t) + (D + a_{22})U_2(t) = 0,\\
&a_{31}U_1(t) + a_{32}U_2(t) + (D + a_{33})U_3(t),\\
&\cdots\cdots\cdots\cdots\cdots\cdots\\
&\sum_{k=1}^{r-1} a_{rk}U_k(t) + (D + a_{rr})U_r(t) = 0,\\
&\sum_{k=1}^{r} a_{r+1,k}U_k(t) + U_{r+1}(t) = 0.
\end{aligned}
\qquad (34)
$$

Equations (34) can be obtained from Eq. (1) addin; the equation

$$U_{r+1} = -\sum_{k=1}^{r} a_{r+1,k}U_k,$$

This equation represents the simple amplification or signals U_k proportional to coefficients $a_{r+1,k}$

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and also their summation. Making further transformations of Eq. (34), equations similar to Eqs. (3, 4, 5) and (8) are obtained. Here, all parameters X_1, X_2,.....X_n depend only on parameters of the operational amplifier. Thus, parameter a_{11} does not have to be changed by passage of the system from one state of operation to the other. This passage is provided for by corresponding changes in the parameters of the operational amplifier. Using the operational amplifier of the type (34), parameter a_{11} must be decreased because the error in the steady-state decreases with decrease in a_{11}. (4) Automatic range finder with an operational amplifier of two-fold integration. Using an operational amplifier with two-fold integration satisfying Eq. (34), we have equations of the automatic range finder in the form

$$(D + a_{11}) U_1(t) = \frac{2K_0 E_c}{\tau_{10} T} \Delta\alpha(t),$$

$$a_{21} U_1(t) + (D + a_{22}) U_2(t) = 0,$$

$$a_{31} U_1(t) + a_{32} U_2(t) + (D + a_{33}) U_3(t) = 0,$$

$$a_{41} U_1(t) + a_{42} U_2(t) + a_{43} U_3(t) + U_4(t) = 0, \tag{39}$$

$$\Delta\vartheta(t) = \sigma U_4(t),$$

$$\Delta\alpha(t) + \Delta\vartheta(t) = \Delta\vartheta_1(t).$$

Transforming this set of equations, the following equation for $\Delta\alpha_2$ at steady-state conditions is obtained :

$$\Delta\alpha_2(t) = \frac{2F_1}{c} f_1(t) + \frac{B_2}{c} f_2(t),$$

$$f_1(t) = G_{10} t + G_{11}, \tag{45}$$

$$f_2(t) = \frac{G_{20}}{21} t^2 + \frac{G_{21}}{11} t + G_{22}, \quad (t > t_0),$$

where t_3 is a quantity determining the duration of the transient state, and coefficients G_{1K} and G_{2K} are determined by equation

$$G_{ik} = \frac{1}{k!}\left[\frac{d^k \Delta a(p)}{dp^k A(p)}\right]_{p=0} \quad (i = 1,2) \qquad (46)$$

The best conditions for increase in accuracy of tracking are obtained for $a_{22} = a_{13} = 0$, when the operational amplifier turns itself into the system of two-fold integration. The method presented is illustrated in three examples given in the appendix. In two examples, transient states and error of tracking at the steady-state condition are found by the above given system parameters. In the third example, parameters of the operational amplifier are found by the above given data of the automatic range finder and on the assumption imposed on the system characteristic equations. Figure 7 shows the structure of the time discriminator and the operational amplifier.

[illegible] and Steady-State Processes in an Adjustable Lever Mixer. Part II.

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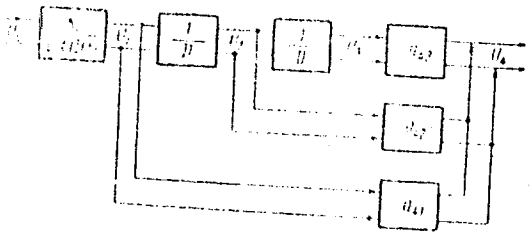

[illegible]

This [illegible] should be considered because of its [illegible] mathematical design. There are 2 Figures; and 2 Soviet references.

[illegible]: June 15, 1959

Card 1/1 [illegible]

KILIN, E.M.

report to be presented at the 1st Intl Congress of the Intl Federation of Automatic Control, 25 Jun-5 Jul 1960, Moscow, USSR.

BYKHOVETSKIY, M. L. - "Ultra stability in electronic calculating devices in the solution of nonlinear equations in indefinite form"
CHEKHUNTKIN [illegible], A. B. - "Use of calculating devices in systems for the automatic control of rolling mills"
CHICHINADZE, V. K. - "Concerning some problems of the organization of self-adjusting and self-teaching systems of automatic control, based on principles of random search"
DAVYDOV, N. I. - "Development of automatic control systems for boiler units"
DUDNIKOV, Ye. G. - "Determination of optimum adjustments of industrial automatic regulation systems according to initial data obtained from experience"
DUB'YE, A. I., and ROZENVASSER, Ye. N. - "Methods of organizing Lyapunov functions in the theory of nonlinear regulating systems"
DRUZHININ, N. N. - "Balanced regulation and inter-communications of a multi-motor electric drive and technology in continuous rolling mills"
FEL'DBAUM, A. A. - "Problems of statistical theory of automatic optimization systems"
FEYGIN, Y. I. - "Automation of a reversible cold rolling mill for nonferrous metals"
FILIPPOV, A. F. - "Application of the theory of differential equations with a discontinuous right side to nonlinear problems of automatic regulation"
GAVRILOV, M.A. - "Structural surplus and operational reliability of relay devices"
GANKIN, M. Z. - "Automation of irrigation systems"
GORNSHTEYN [illegible], G. R., KASHTELYAN, V. E., [illegible], M. P., NEDMAN [illegible], L. R., and KIEYT [illegible], N. S. - "Power regulation of disturbance and problems of the stability of electric power systems"
GINZBURG, S. A. - "Logical method of synthesis of functional converters"
IL'IN, V. A. - "Methods of transmission of information and the structure of telemechanical systems for dispersed structures"
ILOBOV [illegible], V. L., and LUTSKIY (fnu) - "The code-impulse system of tele-measurement for dispatched operations of trunk-line gas pipe lines"
IVAKHNENKO, A.G. - "Concerning the application of the theory of combined regulation systems for cybernetic adaptation systems"
KARANDEYEV, K. B., and SHTAMBERGER, G. A. - "A quasi-equilibrated bridge as an element in a system of automatic control"
KAZAKEVICH, V. V. - "Concerning the process of extra regulation of inert objects in the presence of disturbance"
KAZAKOV, I. Ye. - "Some problems of the theory of statistical linearization and its application"
KILIN, F. M. - "Some problems of the theory of impulse systems with time selectors"
KOBRINSKIY, A. E., BOLKHOVITIN, S. V., VOSKOBOYNIKOV, L.M., IOFFE, D. M., POLYAN, E. P., POPOV, B. P., SLAVUTSKIY, Ya. L., SYSIN, A. Ya., and YAKOBSON, Ya. S. - "The problem of bioelectric control"
KOLOMIYETS, B.T. - "New types of photo resistances and their field of use"
KOPOBKO [illegible], M. L., [illegible], B. G., and SHCHEGLOV, K. A. - "System of automatic control and regulation of blast distribution in the Dzyerzs [illegible] of blast furnace."
KOROBOCHKIN, B. L. - "Investigation of the dynamics of the hydraulic duct of a copying lathe"
KRASOVSKIY, A. A. - "Dynamics of continuous systems of automatic regulation with extra self-adjustment of corrective devices"
KRASOVSKIY, N. N. - "Concerning the selection of parameters of optimum stability systems"
KUDRYAVTSEV [illegible], A. I. - "The dynamics of devices imitating living organisms"
KULEBAKIN, V. S. - "The invariant theory of automatic regulation and control systems"
LANIN, I. D. - "Pneumatic calculating devices as a means of insuring the reliability of complex automation systems"
LAZAREV, V. G. and PARKHOMENKO, P.P. - "Mechanization of processes of analysis and synthesis of the structure of relay devices"

26221
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16.8000 (1031, 1121, 1344)

AUTHOR: Kilin, F.M. (Leningrad)

TITLE: The passing of random signals through a time discriminator and integrating amplifier. 1) Development of recurrent ratios for determining coordinate lattice functions characterizing random processes in pulse systems

PERIODICAL: Avtomatika i telemekanika, v. 22, no. 9, 1961, 1151 - 1162

TEXT: In the present article the author determines the basic properties of a pulse system limited to the solution of a linear problem and derives the recurrent expression for the coordinates of a lattice function $\Phi(n)$, which will be used in subsequent parts of the article for determining the correlation functions and spectral densities of a pulse system, a system with a time discriminator and integrator is analyzed, whose operation is described by

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The passing of random ...

$$[\tau_1(t)D + 1]\, U_1(t) = K_0\gamma(t)[E_s\,\psi_0(t) + E_d(t)],\ [\tau_2 D + 1]\, U_2(t) = K_1 U_1(t). \qquad (1.1)$$

In it $D = d/dt$ - the D - operator, t - time, U_2 - the output signal of the operational amplifier, a passive network with time constant τ_2; K_0 and K_1 respective gains. The second of Eq. (1.1) describes an active integrator having a transfer function

$$K_{ac.in}(D) = \frac{K_1}{(K_1 + 1)\,CRD + 1},$$

where R - the input resistance of the integrating amplifier, C - the capacitance of the feedback path. It follows that $\tau_2 = (K_1 + 1)$ CR. The bloc diagram of the system is shown in Fig. 1. In it A1 and 2 - time selectors (coincidence amplifiers), DD - differential de-

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The passing of random ...

tector. A1 and A2 and the differential detector for m the cct of the time discriminator. The gate generator produces two sequences of pulses shifted by α_o in time with respect to each other. At the input the wanted signal $E_s(\psi_o)$ and disturbance $E_d(t)$ are applied so that the input signal may be represented by

$$E_{in}(t) = E_s \psi_o(t) + E_d(t). \qquad (1.2)$$

The first of Eq. (1.1) describes the transformation of the input signal $E_{in}(t)$ in the time discriminator; after the time transformation described by the pulse function $v(t)$, the signal undergoes further transformation in a four terminal network with a step varying parameter τ_1. The second of Eq. (1.1) describes the subsequent to time discriminator transformations of the signal in the passive network with a time constant τ_2. The pulse function $\psi_1(t)$ has the form

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The passing of random ...

$$[\psi_0(t) = \sum_{k=0}^{\infty} [H(t - \eta_k - kT) - H(t - \alpha - \eta_k - kT)]. \qquad (1.3)$$

in which α - the duration of wanted component, T - repetition period of reference pulses, $H(t)$ - a unit step function satisfying

$$H(t) = \begin{cases} 0 \text{ for } t < 0, \\ 1 \text{ for } t \geqslant 0. \end{cases} \qquad (1.4)$$

The lattice function η_k ($k = 0, 1, 2, 3 \ldots \infty$) describes the relative position in time of the k-th wanted pulse component with respect to the k-th reference pulse. The pulse function $\gamma(t)$ which describes the transformation of the input pulse in the time discriminator is given by

$$\gamma(t) = \gamma_1(t) - \gamma_2(t) \qquad (1.5)$$

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where

$$\tau_1(t) = \sum_{k=0}^{\infty} [H(t - \vartheta_k - kT) - H(t - \alpha_o - \vartheta_k - kT)],$$

$$\tau_2(t) = \sum_{k=0}^{\infty} [H(t - \alpha_o - \vartheta_k - kT) - H(t - 2\alpha_o - \vartheta_k - kT)], \quad (1.6)$$

where α_o - the duration of gating pulse. The lattice function ϑ_k = ($k = 0, 1, 2, 3, \ldots \infty$) determines the time shift of control pulses with respect to the reference pulses and the error in their position in this case is given by

$$\alpha[n] = \eta_n + \frac{\alpha}{2} - \vartheta_n - \alpha_o. \quad (1.7)$$

The schematic of the time discriminator is shown. The transforma-

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The passing of random ...

tion of input signal in time detectors and the differential stage is shown as being a four-terminal network with the transfer function $k_o\, v(t)$. The subsequent transformation of the signal is carried out in a four terminal network with the transfer function (in operational form)

$$Q_1(D,\ t) = \frac{1}{\tau_1(t)\ D + 1}. \qquad (1.8)$$

Introducing coordinate functions for time discriminator and the operational amplifier $\Phi_1(t)$ and $\Phi_2(t)$ respectively, the author obtains the matrix form

$$[DI + a(t)]\ \Phi(t) = \frac{K_{o\omega}}{\tau_{10}}\ Y(\omega,\ t)\ \gamma(t). \qquad (2.3)$$

The solution of Eq. (2.3) is sought for the interval of time $nT \leqslant t \leqslant (n + 1)T$ (2.7). This interval can be split into three subintervals, for each of which formulae are derived. The recurrent

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The passing of random ...

ratio for determining the coordinate lattice is found by putting in

$$\Phi(t) = e^{-a'(t-2a_0-\vartheta_n-nT)}e^{-2a'a_0}e^{-a'\vartheta_n}\Phi[n] + e^{i\omega(nT+\vartheta_n)}e^{-a'(t-2a_0-\vartheta_n-nT)}R(i\omega), \tag{5.6}$$

$$nT + \vartheta_n + 2a_0 < t \leqslant (n+1)T. \tag{5.6}$$

$t = (n + 1)$ T and denoting $\Phi(n+1) = \Phi(nT + T)$,

$$e^{-C_nT} = e^{-a'(T-2a_0-\vartheta_n)}e^{-2a'a_0}e^{-a'\vartheta_n}, \tag{6.1}$$

Then

$$\Phi[n+1] = e^{-C_nT}\Phi[n] + e^{i\omega(nT+\vartheta_n)}e^{-a'(T-2a_0-\vartheta_n)}R(i\omega), \tag{6.2}$$

from which the coordinate lattice function $\Phi[n]$ can be determined. Under several simplifying assumptions Eq. (6.2) is thus finally written as

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The passing of random ...

$$\overline{\Phi[n+1]} = e^{-\alpha T}\overline{\Phi[n]} + e^{i\omega(nT+\theta_n)}R(i\omega). \qquad (6.6)$$

which will be used in further instalments of the article. There are 5 figures, and 22 Soviet-bloc references.

SUBMITTED: November 18, 1960

Card 8/9

16.8000

S/044/61/000/008/024/039
C111/C333

AUTHOR: Kilin, F. M.

TITLE: Some questions of the investigation and of the synthesis of impulse systems with discontinuous variable parameters

PERIODICAL: Referativnyy zhurnal, Matematika, no. 8, 1961, 74, abstract 8B360. ("Teoriya i primeneniye diskretn. avtomat. sistem". M., AN SSSR, 1960, 80-100)

TEXT: The author considers questions of the analysis and synthesis of impulse control systems with variable parameters for which the function of the parameter variation is piecewise constant. Impulse with discontinuous variable parameters are distinguished by increased exactness; an automatic control of the level of the internal noises is principally possible in them. The special attention of the paper is directed to 1.) the investigation of the mean quadratic deviation $\sigma_x(t)$ in automatic control systems with a different ratio of the useful signal to the noise and 2.) the comparison of exactness in discrete and in continuous systems in the case mentioned. By introduction of δ-functions the author succeeds to reduce the investigation of impulse

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Some questions of the investigation ... S/044/61/000/008/024/039
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systems with discontinuous variable parameters to the investigation of a special class of linear scanning controls, the mathematical treatment of which is based on the calculus of operations for step functions.

[Abstracter's note: Complete translation]

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30554

S/569/61/002/000/001/008
D298/D302

AUTHOR: Kilin, F.M. (USSR)

TITLE: Some problems in the theory of sampled-data systems with time-varying samplers

SOURCE: IFAC, 1st Congress, Moscow 1960. Teoriya diskretnykh, optimal'nykh i samonastraivayushchikhsya sistem. Trudy, v. 2, 1961, 225 - 237

TEXT: Sampled-data systems with time-varying (time-domain) samplers and variable parameters are considered. The parameters vary in accordance with the arriving signals. Such systems exhibit greater possibilities of noise filtering. Another advantage of these systems is the statistical analysis of signal and noise during the system operation itself (i.e. they are adaptive systems). The matrix form of the differential equations is used which is very convenient; thus, the transient characteristics, the correlation function etc., can be readily calculated. The sequence of pulses $f_1(t)$ with period T (the signal) and the noise $E_1(t)$ which is described

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Some problems in the theory of ...

by a stationary random function are applied to the system which consists of a principal system and several subsystems. The signal and noise arrive first at the time-varying samplers 0, 1 and 2, where they are transformed. Then the signals are applied to the system, whose parameters change stepwise. The processes in the principal system are described by the matrix equation

$$[DI + a(t)]\,X(t) = G[F(t) + E(t)]\gamma_0(t); \qquad (1)$$

the equations of the two subsystems are

$$\left.\begin{aligned}[DI + b(t)]\,Y(t) &= G[F(t) + E(t)]\gamma_1(t),\\ [DI + c(t)]\,Z(t) &= G[F(t) + E(t)]\gamma_2(t).\end{aligned}\right\} \qquad (2)$$

D is a differential operator, a, b, c are square matrices, I is the unit matrix, E and F are column matrices. The functions f_1, γ describe the corresponding pulse-sequences; γ_0 describes the sampling pulses which are synchronous with f_1; γ_1 and γ_2 describe the pulses which are not synchronous with f_1. Hence system (1) is acted upon by both signal and noise, whereas system (2) -- by noise only.

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The parameters of (1) vary in accordance with the arriving pulses γ_o. The matrix function a(t) which characterizes the change in system parameters, has the form

$$a(t) = a^o\gamma_o(t) + a^1[H(t) - \gamma_o(t)], \quad t \geq 0 \tag{7}$$

where

$$a^o = //a^o_{jk}//(r \times r); \quad a^1 = //a^1_{jk}//(r \times r); \tag{8}$$

the elements a^o_{jk} and a^1_{jk} have constant values; H(t) is the switching function:

$$H(t) = \begin{cases} 0 \text{ for } t \leq 0, \\ 1 \text{ for } t > 0. \end{cases} \tag{9}$$

In the subsystems (2), the variation of the parameters is analogous to that in system (1). The random function $E_1(t)$ is expressed by

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$$ME_1(t) = 0,$$
$$k_\varepsilon(t-t') = \int_{-\infty}^{+\infty} S_\varepsilon(\omega)\, e^{i\omega t}\, e^{-i\omega t'}\, d\omega, \qquad (13)$$

where M is the mathematical expectation, k and S are the correlation function and the spectral density, respectively. $E_1(t)$ can also be expressed as:

$$E_1(t) = \int_{-\infty}^{+\infty} Z_\varepsilon(\omega)\, e^{i\omega t}\, d\omega;$$
$$K_z(\omega, \omega') = M[Z_\varepsilon(\omega)\,\overline{Z_\varepsilon(\omega')}] = S_\varepsilon(\omega)\,\delta(\omega - \omega'). \qquad (14)$$

Transient and steady-state processes in sampled-data systems are analyzed by a method, set forth in earlier works by the author. Thereby the form of the functions X(t), Y(t) and Z(t) has to be determined for the time interval

$$nT < t \leq (n+1)T. \qquad (15)$$

After transformations, one obtains the matrix difference-equation:

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$$X[n+1] - e^{-aT} X[n] = QU[n] + \int_{-\infty}^{+\infty} Z_e(\omega) e^{i\Omega Tn} R(\Omega) d\omega. \quad (31)$$

Its solution is

$$X[n] = e^{-anT} X[0] + \sum_{k=0}^{n-1} e^{-aT(n-k-1)} U[k] + \int_{-\infty}^{+\infty} Z_e(\omega) \Phi[\Omega, n] d\omega. \quad (32)$$

Φ is the coordinate step function, determined by

$$\Phi[\Omega, n+1] - e^{-aT} \Phi[\Omega, n] = e^{i\Omega Tn} R(\Omega). \quad (33)$$

By (33) and the initial conditions, one obtains

$$\Phi(\Omega, n) = \frac{1}{e^{i\Omega T} - e^{-aT}} \left[e^{i\Omega Tn} - e^{-aTn} \right] R(\Omega). \quad (35)$$

If the processes are stable, then for steady-state conditions one obtains

$$N[n] = X_v[n] + X_e[n] \quad (36)$$

where

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