L 8621-66   EWT(1)  IJP(a)  WW/GG

ACC NR: AP5027039                     SOURCE CODE:  UR/0120/65/000/005/0220/0221

AUTHOR: Zhernovoy, A.I.; Stakhov, O.V.; Fedorov, N.D.

ORG: Institute of Nuclear Physics, AN KazSSR, Alma-Ata (Institut yadernoy fiziki AN KazSSR)

TITLE: The measurement of strong magnetic fields by means of an NMR flow sensor

SOURCE: Pribory i tekhnika eksperimenta, no. 5, 1965, 220-221

TOPIC TAGS: NMR, strong magnetic field, magnetic field measurement, flow research, electromagnet

ABSTRACT: NMR detectors with fixed probes are often used for the recording and stabilization of strong magnetic fields. However, in addition to the need for various exchangeable sensors, it is often necessary to either place a part of the electronic circuitry into the magnetic gap or increase the length of the HF cable. Since both approaches are far from satisfactory, the authors introduce a flow of liquid which is subsequently used for the NMR measurement of the field of a ⌀ 1.5 m pole piece electromagnet. The measurements are based on the nutation method applied to the nuclei of the liquid; these nuclei are polarized within the magnetic field under investigation, while the recording of the resonance is carried out by the NMR sensor located outside the field under study within an auxiliary field of a permanent magnet. The article presents a description of the device and outlines the characteristics of the strong magnetic field measurements. The minimum value of the recorded field

, UDC: 539.283.078

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ACC NR: AP5027039                                                    5

(limited basically by the signal-to-noise ratio at the exit of the NMR indicator) is in the 300 —
500 Oe region, the maximum (depending on the HF power supply circuit) can be extended above
25 kOe (f > 100 Mc) provided powerful generators or specially matched coil-HF generator
pairs are used. The theoretical recording accuracy does not exceed $1 \cdot 10^{-5}$. In practice, it
was no better than $5 \cdot 10^{-5}$ since the frequency tuning of the G4-7A generator did not allow
sufficiently accurate frequency adjustments. Authors thank A. A. Skakodub for his help.
Orig. art. has: 1 formula and 1 figure.                              44/55

SUB CODE: NP, EM / SUBM DATE: 27Jun64 / ORIG REF: 001

jrn

Card 2/2

S/142/60/000/01/013/022
E140/E335

AUTHOR:     Stakhov, Ye.A.

TITLE:      Gas-discharge Microwave Attenuators,

PERIODICAL:   Izvestiya vysshikh uchebnykh zavedeniy, Radiotekhnika,
              1960, Nr 1, pp 112 - 115 (USSR)

ABSTRACT:  Gas-discharge plasma has variable dielectric constant.  Its
           properties which make it suitable for microwave devices are
           briefly reviewed.  An analysis is made for the case where a
           constant magnetic field is not applied to the plasma.  It is
           further assumed that the electrons have equal energies and
           equal mean free paths, i.e. constant collision frequency.
           Experimental investigations of attenuation were carried out
           with neon gas-discharge tubes type T-0,4.  The experiments
           were carried out in the 3 cm band.  Three alternative
           attenuators were tested and their attenuation and SWR measured
           as functions of discharge current.  These tubes have sub-
           stantial scatter of the microwave characteristics and samples can
           be selected with very good characteristics (for example,
           Figure 4).  Experiments were also carried out using the
           attenuator as an amplitude modulator for microwave energy,
           with sinusoidal, pulse and sawtooth modulation.  These

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S/142/60/000/01/013/022
E140/E335

Gas-discharge Microwave Attenuators

modulators do not introduce frequency modulation into the
microwave signal, a defect of many other systems.
There are 6 figures and 1 Soviet reference.

SUBMITTED:   June 23, 1959

√c

Card 2/2

9(6)
6(4)

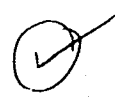S/146/60/003/01/007/016
D002/D006

AUTHOR:      Stakhov, Ye.A., Senior Teacher

TITLE:       Device for Tuning SHF Filters

PERIODICAL:  Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye,
             1960, vol 3, Nr 1, pp 49-53 (USSR)

ABSTRACT:    The author proposes a new unit (Figure 1) for tuning SHF
             filters, consisting of devices used in laboratories and
             plants instead of specialized instruments. The components
             are: a klystron centimeter-range generator connected to a
             gas-discharge amplitude modulator (Figure 2) through a de-
             coupling attenuator and impedance matching transformer.
             The "28-IM" standard amplifier is used for measuring the
             transparent or opaque filter bands in the dynamic range of
             40 decibels. The installation is reliable and can be used
             for tuning almost all wave-guide filter types. The article
             was recommended by the Kafedra "Raschet i konstruirovaniye
Card 1/2     radioapparatury" (Chair "Calculation and Design of Radio

S/146/60/003/01/007/016
D002/D006

Device for Tuning SHF Filters

       Equipment). There are 2 graphs, 1 diagram, 2 photographs
       and 1 Soviet reference.

ASSOCIATION: Ryazanskiy radiotekhnicheskiy institut (Ryazan' Institute of
          Radio Engineering)

SUBMITTED:   December 6, 1959

Card 2/2

STAKHOV, Ye.A.

Gas discharge super-high frequency attenuators.   Izv.vys.ucheb.
zav.; radiotekh.   3   no.1:112-115   Ja-F  '60.          (MIRA 13:8)

1. Rekomendovano kafedroy rascheta i konstuirovaniya
radioapparatury Ryazanskogo radiotekhnicheskogo instituta.
        (Pulse techniques (Electronics))

STAKHOV, Ye. A.

Attachment for the reception of FM shortwave.  Radio no.9:49 S '60.
(MIRA 13:10)

(Radio, Shortwave)

85743
S/115/60/000/011/010/013
B019/B058

9.1300

AUTHOR:        Stakhov, Ye. A.

TITLE:         Device for Oscillographic Observation of the Traveling-
               wave Ratio in Super-high Frequency Tracts

PERIODICAL:    Izmeritel'naya tekhnika, 1960, No. 11, pp. 47 - 49

TEXT:   For oscillographic observation of the traveling-wave ratio, the
use of a reflector scheme with two directional couplers seems most
suitable to the author. Compared with a four-probe reflector, it permits
to obtain a lower inhomogeneity of the tract, and furthermore it re-
quires two detectors only. A formula for the maximum and minimum voltage
in the indicator is given, and the block scheme shown in Fig.1 is dealt
with subsequently. It consists of two equal directional couplers and a
klystron generator which is modulated by rectangular pulses produced by
the modulator. The detector voltage is amplified and fed to the oscillo-
scope input. When a modulated super-high frequency is present, two
luminous spots may be observed on the oscilloscope. The slope of the
line connecting these two spots determines the reflection coefficient.

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85743

Device for Oscillographic Observation of the    S/115/60/000/011/010/013
Traveling-wave Ratio in Super-high Frequency    B019/B058
Tracts

Since the latter is clearly related to the traveling-wave ratio, the
entire device can be calibrated from the start into traveling-wave
ratio units. There are 3 figures and 3 Soviet references.

Card 2/2

S/115/62/000/001/004/007
E192/E382

AUTHOR     Stakhov, Ye. A.

TITLE:     Application of UHF techniques for electronic measurement of angular velocity

PERIODICAL:    Izmeritel'naya tekhnika, no. 1, 1962, 27 - 29

TEXT:    The Doppler effect can be used for measurement of a number of parameters of moving mechanisms. The frequency changes in the electromagnetic waves reflected from a moving surface can be employed for this purpose. By assuming that the reflection conditions for electromagnetic waves are invariable and that the change in the phase is dependent on the distance L from the reflecting element, the phase can be written as:

$$\varphi = \frac{4}{\lambda} L \tag{1}$$

It can be assumed that the distance changes are described by:

$$L(t) = L_o - t\, V \cos \gamma \tag{2}$$

Card 1/5

Application of ....

S/115/62/000/001/004/007
E192/E582

where $L_o$ is the distance at the instant $t = 0$ ,

$V$ is the velocity of the reflecting element and

$\gamma$ is the angle between the velocity vector of the direction of the wave propagation.

If a sinusoidal signal frequency $f$ is employed, the reflected signal can be written as:

$$E_r = E\cos(\omega t - \varphi) = E\cos\left[\omega t - \frac{4\pi}{\lambda}(L_o - Vt\cos\gamma)\right] =$$

$$= E\cos\left[\left(2\pi f + \frac{4\pi}{\lambda}V\cos\gamma\right)t - \frac{4\pi}{\lambda}L_o\right] \qquad (7)$$

where the term $4\pi L_o/\lambda$ is the initial phase. The frequency of the received signal is:

Card 2/3  4

Application of ...

S/115/62/000/001/004/007
E192/E382

$$f_r = f + \frac{2}{\lambda} V \cos \gamma$$

and the frequency shift due to the Doppler effect is given by:

$$f_d = \frac{1}{2\pi} \cdot \frac{d\varphi}{dt} = \frac{2}{\lambda} V \cos \gamma \qquad (4)$$

In practice, the Doppler effect can be produced only if the rotating shaft contains some kind of irregularity (such as a helix or a toothed wheel) which produces a reflected signal containing a continuous spectrum. It is seen from the above equations (in particular, Eq. 4) that at fixed $\lambda$ and $\gamma$, the beat frequency is proportional to the linear velocity of the moving mechanism. Consequently, if the dimensions of the moving part are known, its linear velocity and the angular velocity can be determined. An instrument based on this principle was constructed. The

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Application of .....

S/115/62/000/001/004/007
E192/E382

device is illustrated in the diagram of Fig. 2.  It consists
of:  1  -  klystron generator;  2  -  decoupling attenuator
3  -  double T-junction;  4  -  a matched load;  5  -  detector,
6  -  oscilloscope  and  7  -  audio-generator.  The signal
from the klystron is fed through the decoupling attenuator onto
the T-junction separator, where it is equally divided between
the output to the matched load and the vibrating or rotating
object.  The energy reflected from the rotating component is
received by the crystal detector and the matched load.  This
system has the disadvantage that the matching of the T-bridge
is very critical.  Consequently, a different instrument was
devised in which a directional decoupler was used as a separator.
It is concluded from the experiments with these instruments that
the above UHF method can be employed successfully for designing
comparatively simple instruments for reliable measurement of the
angular velocities of rotating components.
There are 3 figures and 3 Soviet-bloc references, two of which
are translated from English.

Card 4/4

STAKHOV, Ye.A.

Study of the modulation characteristics of gas-discharge
microwave attenuators. Radiotekh. i elektron. 7 🔲
no.12:2007-2012  D '62.                          (MIRA 15:11)
                        (Microwaves)
                (Plasma (Ionized gases))

L 8832-65    EWT(d)/FSF(h)/EWT(1)/EWG(k)/EPA(sp)-2/EEC(k)-2/EEC-4/EPA(w)-2/EEC(t)/T/
EEC(b)-2/EWA(h)/EWA(m)-2    Pn-4/Pz-6/Po-4/Pab-24/Po-4/Pac-4/Pg-4/Peb/Pi-4/Pk-4/Pl-4
IJP(c)/RAEM(a)/AFWL/ASD(f)/AEDC(b)/ASD(d)/ASD(a)-5/AFETR/SSD/ESD(gs)/ESD(t)    AT
ACCESSION NR:  AP4043558                S/0146/64/007/004/0003/0008

AUTHOR:  Stakhov, Ye. A.

TITLE:  Instrument for measuring electron concentration in plasma

SOURCE:  IVUZ. Priborostroyeniye, v. 7, no. 4, 1964, 3-8

TOPIC TAGS:  plasma, electron concentration measurements, super high
frequency interferometer, gas discharge modulator, interferometer
resolution

ABSTRACT:  A super-high-frequency interferometer for the measurement
of electron concentration in plasma, which contains a gas discharge
tube modulator, is described.  The modulator makes it possible to
obtain a considerable frequency shift, which effectively improves the
time resolution of the interferometer.  The block-diagram of the
instrument is shown in Fig. 1. of the Enclosure.  The signal from the
shf generator is applied to the measuring and reference channels.  The
investigated plasma device, which introduces an instantaneous phase
shift, is switched in the measuring channel.  This shift is determined
by the dimensions of the measuring channel waveguide.  The signal at
the reference-channel output is shaped by the balanced gas-discharge
Card  1/4

L 8832-65
ACCESSION NR:   AP4043558

modulator.   The use of a balanced circuit makes possible the suppres-
sion of the carrier frequency by 20—25 db, in relation to the maximum
level of sideband frequencies, so that the signal at the output of the
reference channel consists of only two sidebands.  Modulation frequency
$\Omega$, defining the time resolution of the device, is determined by the
time of plasma decay in the modulator discharge tube.  From the meas-
uring and reference channels the signals are transmitted to the bal-
anced converter where the $\Omega$ frequency oscillations, which are phase
modulated by the investigated plasma device, are separated.  After
amplification of these $\Omega$ signals, their phase is compared to the phase
of the voltage from an auxiliary frequency generator in a synchronous
detector.  Interference processes are observed on the oscillograph.
The time resolution is determined by the value of $\Omega$.  The device was
operated at a frequency  of 37.4 Gc and the measured electron concen-
tration was of the order of $10^{13}$ e/cm$^3$.  Orig. art. has:  4 figures
and 6 formulas.

ASSOCIATION:  Ryazanskiy radiotekhnicheskiy institut (Ryazan' Institute
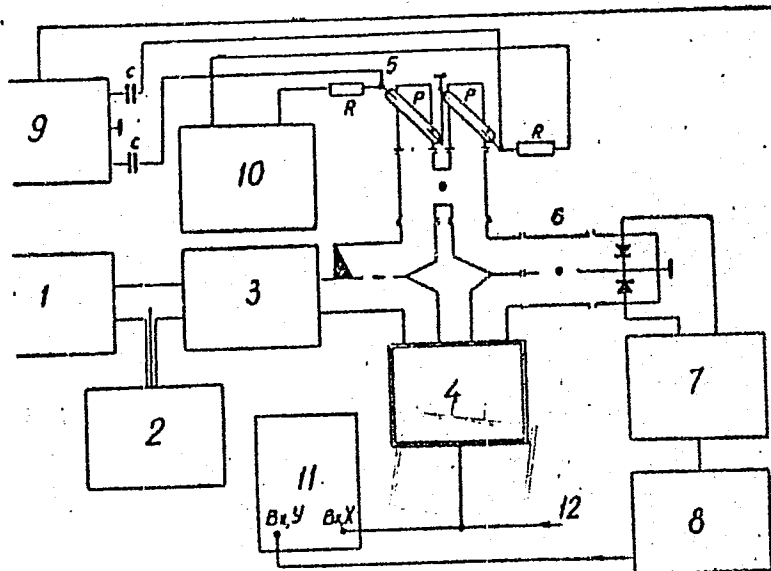of Radio Engineering)

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L 8832-65
ACCESSION NR: AP4043558

Fig. 1. Block-diagram of an instru-
ment for the measurement of electron
concentration in plasma

1 - Super-high-frequency generator;
2 - wavemeter; 3 - ferrite isolator;
4 - investigated plasma device; 5 -
balanced gas-discharge modulator;
6 - balanced detector; 7 - i-f
amplifier; 8 - synchronous detector;
9 - $\Omega$-frequency generator; 10 - source
of stabilized firing current; 11 -
oscillograph; 12 - trigger terminal.

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L 8832-65
ACCESSION NR: AP4043558

SUMBITTED: 15Jan64                    ATD PRESS: 3106                ENCL: 01

SUB CODE: DC ,NP                      NO REF SOV: 004                OTHER: 000

Card 4/4

BOCHAROV, M.D., otvetstvennyy red.; GRININ, A.G., red.; KOZLOV, K.I., red.;
    KOSTENKO, N.G., red.; KOCHEYEV, I.P., red.; STAKHOVA, A.P., red.;
    TADYYEV, P.Ye., red.; SHEVTSOV, N.I., red.; TEKHTIYEKOV, M.I.,
    tekhn.red.

[In the mountains of the Altai] V gorakh Altaia. [Gorno-Altaisk]
Gorno-Altaiskoe knizhnoe izd-vo. Vol.1. 1957. 72 p.  (MIRA 11:6)
        (Altai Territory--Description and travel)

5(3)                                          SOV/156-59-1-30/54
AUTHORS:      Stakhovich, V., Nesmeyanov, An. N.

TITLE:        The Investigation of the Interaction of Ethyl Bromide With
              Bromine in the Field of X-rays by the Radioactive Indicator
              Method (Issledovaniye vzaimodeystviya bromistogo etila s bromom
              v pole rentgenovykh luchey metodom radioaktivnykh indikatorov)

PERIODICAL:   Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya
              tekhnologiya, 1959, Nr 1, pp 120-122 (USSR)

ABSTRACT:     Ethyl bromide with bromine, which had been dissolved therein
              in various concentrations ($0.4 \cdot 10^{-3}$ to $2.0 \cdot 10^{-3}$ g/mole) and
              to which $Br^{82}$ had been added, was irradiated in the TRTs-3A
              apparatus at an X-ray dosage of $2.10^{16}$ ev/sec. The time of
              irradiation was varied between 24 minutes and 2 hours. After
              the irradiation nonactive bromine compounds, which corresponded
              in composition to the reaction products to be expected, and
              bromoform were added to the sample as carrier substances in
              a separating funnel and an aqueous solution of sodium bromide
              and sodium sulphate was admixed. After shaking, the water
              fraction was separated and the organic fraction dried over
              calcium chloride was rectified. The radioactivity was measured
Card 1/3      with a scintillometer. According to the tabulated results the

SOV/156-59-1-30/54

The Investigation of the Interaction of Ethyl Bromide With Bromine in the Field of X-rays by the Radioactive Indicator Method

reaction products consist mainly of $C_2H_5Br^{82}$ and $C_2H_4BrBr^{82}$. A break of the C-C bond takes place only to a small extent. Higher boiling products are also formed. The contents of $C_2H_5Br^{82}$, $CH_2BrBr^{82}$ and $CH_3CHBrBr^{82}$ increase with the concentration of bromine whereas the contents of higher boiling products decreases. A decrease in the yield of $CH_2BrCH_2Br^{82}$ is explained by secondary reactions between the starting product and primary radicals formed during the irradiation:

$$CH_3CH_2Br + R^\cdot \longrightarrow CH_2CH_2Br^\cdot + RH.$$ There are 1 figure and 3 tables.

ASSOCIATION: Kafedra neorganicheskoy khimii gosudarstvennogo universiteta im. M. V. Lomonosova

(Chair of Inorganic Chemistry of State University imeni M. V. Lomonosov)

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SOV/156-59-1-30/54

The Investigation of the Interaction of Ethyl Bromide With Bromine in the Field of X-rays by the Radioactive Indicator Method

SUBMITTED:   July 21, 1958

Card 3/3

L 15592-66  EPF(n)-2/EWP(j)/T/EWA(h)/EWA(l)   WW /GG/RM

SOURCE CODE: PO/0046/65/010/006/0375/0380

ACC NR: AP6008236

AUTHOR: Czarnodola, Helena--Charnodol'ya, Kh.; Stachowicz, Waclaw--Stakhovich, V.

66

ORG: Institute of Nuclear Research, Warsaw

TITLE: Homopolymerization of some alkyl maleates and diethyl fumarate under influence of gamma irradiation. II. Infra-red study on the structural transformations in gamma irradiated diethyl maleate and diethyl fumarate

B

SOURCE: Nukleonika, v. 10, no. 6, 1965, 375-380

TOPIC TAGS: gamma irradiation, polymerization, IR spectrum, radiation, monomer, polymerization, ester, molecular structure, radiation chemistry

ABSTRACT: Infrared spectra of separated radiopolymerization products of diethyl maleate and diethyl fumarate were compared with those of monomers. On the basis of the analysis of C = O, C — O, C - C, = C — H absorption on bands, the disappearance of carbon-carbon double bond in polyesters was found. The structure of both polyesters is suggested. The authors thank Prof. S. Minc for his guidance and encouragement and Docent Z. Kecki for helpful discussions and critical comments. Thanks are also due to Mr. J. Pachelski for technical assistance. Orig. art. has: 4 figures. [NA]

SUB CODE: 07  /  SUBM DATE: none  /  ORIG REF: 002  /  OTH REF: 006

Card 1/1

L 50184-65
ACCESSION NR: AP5016336                 PO/0046/65/010/002/0089/0094    14
                                                                        B

AUTHOR: Stachowicz, Waclaw (Stakhovich, V.); Kecki, Zbigniew (Kentski, Z.); Minc,
Stefan (Mints, S.)
TITLE: Effect of protection in gamma radiolysis of deaerated NEDA, NETA and naphtha-
lene mixtures

SOURCE: Nukleonika, v. 10, no. 2, 1965, 89-94

TOPIC TAGS: gamma ray, radiation chemistry, hydrocarbon

ABSTRACT: Variations of the $G(H_2)$ values with the composition of deaerated two and
three component mixtures of NEDA, NETA, and Naphthalene were determined. In all
cases the deviation from the mixture-law considered here as energy transfer process,
was found. "The authors wish to thank Mrs. D. Korytkowska and Mr. B. Harbutt for their
technical assistance. Orig. art. has 5 graphs.

ASSOCIATION: Institute of Nuclear Research, Warsaw

SUBMITTED: 18Jun64              ENCL: 00                  SUB CODE: GC, NP

NO REF SOV: 000                OTHER: 022                 NA

Card 1/1

CA STAKHOVSKAYA, E. K.                              //- L

Effect of glycine on the development of larvae and forma-
tion of silk in Antheraea pernyi. S. Yu. Demyanovskii
and E. K. Stakhovskaya (V. I. Lenin State Pedagog. Inst.,
Moscow). Doklady Akad. Nauk S.S.S.R. 78, 733 6
(1951). The addn. of 0.5% (by wt.) of glycine to the fresh
oak-leaf diet of the caterpillars from the 1st day of life until
pupation sharply retards growth and development and
leads to greater sensitivity to disease. The spinning of
cocoons is retarded and sometimes prevented and the quality
of silk is also poorer (in mech. indexes). Glycine content
in the bodies is increased; thus normal metabolism is dis-
turbed; however, no change in carbohydrate metabolism
is observed. The citric acid level remains normal, but the
fat content increases slightly. The synthesis of amino N
remains normal and the observed disturbances probably
occur at the stage of protein synthesis from the amino acids.
Alanine content in the tissues declines.   G. M. Kosolapoff

STAKHOVSKAYA, E.K.

The effect of some vitamins on the biology of the oak silk worm. S. Ya. Demyanovskii, V. A. Rozhdestvenskaya, E. K. Stakhovskaya, V. K. Kondrat'eva, and A. N. Usova. Uchenye Zapiski Gosudarst. Pedagog. Inst. 77, No. 7, 81-91 (1953); Referat. Zhur. Khim., Biol. Khim. 1955, No. 16316.—A study of the effect of nicotinic acid, its amide, of vitamin $B_1$ (I), $p$-aminobenzoic acid (II) and of folic (III) and ascorbic (IV) acids on the oak silk worm was made. I and II stimulate the development of silk worm caterpillars, hasten the exudation and the winding of the silk threads, increase the wt. of the caterpillars, and enhance their resistance to the jaundice infection.        B. S. Levine

USSR.

Effect of glycine feeding on the development and silk-producing function of oak silkworms. E. K. Stakhovskaya. *Uchenye Zapiski Moskov. Gosudarst. Pedagog. Inst.* 77, No. 7, 93-123(1953); *Referat. Zhur., Khim.* 1954, No. 18308.— The study was carried out on caterpillars of *Antheraea pernyi* (I). The glycine (II) feeding started with the 1st day of the 4th growth period of I. The oak leaves prior to being fed were sprayed with a soln. of II contg. 0.5% of wt. of the leaves. Leaves fed to the control group were sprayed with water. While feeding of II had no effect on the wt. of I nor on the amt. of silk produced, it had a deleterious effect on the development of I and the quality of the silk thread. I receiving II prolonged their period of molting and cocoon-ing; the strength and elongation of the silk thread was lower than in the control I. The II passed without change through the walls of the intestines into the hemolymph and was ab-sorbed by the tissue. Part of the II was found in the excreta and part transformed inside the organism. The II content in the hemolymph and tissue returned to normal after 3 days of dormancy in the 5th period. The bodies of I receiving II have an increased fat content but this was not at the expense of carbohydrates since the quantity of glucose, pyruvate, and glycogen remained unchanged. Nor did feeding of II change the quantity of HCHO which is a metabolism product of II in the hemolymph. In the hemolymph, tissue, and intes-tines of I there was found a quantity of citric acid appre-ciably larger than its content in tissue of vertebrates. Its conen. was not affected by II. Feeding of II lowered the alanine content in tissue but did not affect its conen. in the hemolymph. II did not affect the synthesis of amino acids from oxalacetic acid, pyruvic acid, and (NH₄)₂CO₃. It is concluded that the depressing effect of II on the organ-ism of I is not caused by the toxicity of its metabolic products but rather by the effect of excess II on the synthesis of pro-teins and a possible shift in the normal concn. of amino acids in tissue.      M. Hoseh

**Thianthrene series. II. 1,2-Dihydroxythianthrene disulfone. 2-Hydroxythianthrene disulfone.** V. V. Kozlov and N. I. Stakhovskaya (Moscow Chem. Tech. Inst.). *J. Gen. Chem.* (U.S.S.R.) **16**, 1115-20(1946)(in Russian); cf. *C.A.* **35**, 4025.—Na 2-thianthrenesulfonate 5,10-disulfone (I) (1.27 g.), 8 g. NaOH, 0.65 g. NaNO₃, and 20



(I)
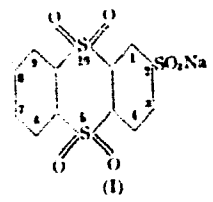
cc. water were heated in an autoclave 5 hrs. to 190°, the mixt. acidified to Congo red with HCl, evapd. to dryness, and extd. with EtOH to give 0.5 g. *1,2-dihydroxythianthrene 5,10-disulfone*, a deep-yellow mass, m. 197°; *di-Na salt*, yellow needles (from dil. EtOH); *Pb salt*, yellow grains (from EtOH); the *K, Ca, Zn, Co, Ni*, and *Cu salts* are readily sol. in water and EtOH, the *Ag salt* poorly sol. in water. The above expt. was repeated, using 2 g. Na salt and 2 g. CaO in 20 cc. water 3.5 hrs. at 180-90°, followed by acidification with HCl to Congo red; the soln. was then condensed with diazo-*p*-nitroaniline in Na₂CO₃ soln. to yield a red-orange dye. The product of

the CaO reaction may be partially extd. with Et₂O, CHCl₃, or xylene from the original reaction mixt., but, due to its great soly. in water, the mother liquors still give the above-mentioned dye. It was possible to isolate only 25-30% *2-hydroxythianthrene 5,10-disulfone* (II). m. 160° (decompn.) (from EtOH), in a state of comparative purity; it gives a brown color with FeCl₃, a black ppt. with NH₄-AgNO₃, a white ppt. with CaCl₂, and a yellow ppt. with Br water. II was acetylated only with difficulty on heating to 120° with Ac₂O in the presence of a little H₂SO₄; Ac deriv. m. above 360° (from EtOH); treatment with Br in AcOH gave a *dibromide*, C₁₂H₄O₆S₄Br₂, m. 159.5° (from AcOH or EtOH). The mono-OH compd. may also be obtained in 17% yield by conducting the autoclave reaction with 1.27 g. Na sulfonate, 2 g. NaOH, and 20 cc. water 5 hrs. at 180-90°, with isolation of the product by EtOH extn. of the evapd., acidified reaction mixt.

G. M. Kosolapoff

*mbr. Lab. Dyes.*

*f//R H(·S(/4·9//,  · ·/ ·*

15-57-1-1134D

Translation from:  Referativnyy zhurnal, Geologiya, 1957, Nr 1,
                   p 180 (USSR)

AUTHOR:        Stakhovskaya, Z. I.

TITLE:         Investigation of Yung's Modulus in Rock Samples$_2$
               Under the Surrounding Pressures up to 5000kg/cm$^2$,
               by Applying the Method of Bending (Issledovaniye
               modulya Yunga obraztsov gornykh porod pri
               vsestoronnikh davleniyakh do 5000 kg/sm$^2$ metodom
               izgiba)

ABSTRACT:      Bibliographic entry of the author's dissertation
               for the degree of Candidate of Technical Science,
               presented to the Geophysical Institute of the AS
               USSR (Geofiz. in-t AN SSSR), Moscow, 1956.

ASSOCIATION:   Geofiz. In-t AN SSSR (Geophysical Institute of
               the AS USSR)

Card 1/1

STAKHOVSKAYA, Z. I.

BALAKINA, L. M.

X(10)                    PHASE I BOOK EXPLOITATION              SOV/1665

Akademiya nauk SSSR. Komitet po geodezii i geofizike.

Tezisy dokladov na XI General'noy assembleye Mezhdunarodnogo geodezicheskogo
i geofizicheskogo soyuza. Mezhdunarodnaya assotsiatsiya seysmologii i
fiziki nedr zemli (Abstracts of Reports Submitted to the XI General
Assembly of the International Union of Geodesy and Geophysics. The
International Association of Seismology and Physics of the Earth's
Interior) Moscow, 1957. 108 p. /Parallel texts in Russian and English/.
1,500 copies printed.

No additional contributors mentioned

PURPOSE: This booklet is intended for geophysicists, especially those special-
izing in seismology.

COVERAGE: This collection of articles deals with the structure and composition
of the Earth and phenomena related thereto. The majority of the articles con-
cern studies of earthquakes and seismic waves. Other articles cover the struc-
ture of the Earth's crust and mountain roots; the elastic properties of rocks
at high pressures; the piezoelectric effect of rocks and the method of
modelling in tectonophysics. The collection also contains articles on the
Card 1/5    Earth's thermal history, the microseismic method of tracing storms and
            others.

modelling in tectonophysics. The collection also contains articles on the
Earth's thermal history, the microseismic method of tracing storms and others.
No references are given.

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Volarovich, M.P., E.I. Stakhovskaya, and D.B. Balashov. Investigation
   of Elastic Properties of Rocks at High Pressures in Connection
   With Geophysical Problems

STAKHOVSKAYA, Z. I., M. P. VOLAROVICH and D. B. BALASHOV

"Investigation of Elastic Properties of Rocks Under High Pressure"  p. 137

"Synthesis and Structure of Hydrosilicates containing Simple and Complex Heavy Metal Cations." p. 38

Transactions of the Fifth Conference on Experimental and Applied Mineralogy and Petrography, Trudy ... Moscow, Izd-vo AN SSSR, 1958, 516pp.

reprints of reports presented at conf. held in Leningrad, 26-31 Mar 1956. The purpose of the conf. was to exchange information and coordinate the activities in the fields of experimental and applied mineralogy and petrography, and to stress the increasing complexity of practical problems.

49-58-5-2/15

AUTHORS: Volarovich, M.P. and Stakhovskaya, Z. I.

TITLE:   Investigation by the Method of Bending of the Young Modulus
         of Rock Specimens in the Case of Applying from All Sides
         Pressures of up to 5000 kg/cm$^2$ (Issledovaniye modulya Yunga
         obraztsov gornykh porod pri vsestoronnikh davleniyakh do
         5000 kg/sm$^2$ metodom izgiba)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya,
         1958, Nr 5, pp 582-593 (USSR)

ABSTRACT:   Apparatus is described which has been developed for pro-
         ducing a high gas pressure from all sides, enabling obtaining
         gas pressures of up to 5000 kg/cm$^2$ and carrying out in such
         gaseous media bending tests on rock specimens. The pressure
         was produced by compressing nitrogen in a high pressure com-
         pressor described by L. F. Vereshchagin and V. E. Ivanov
         (Ref.14, quoting largely the work of Bridgeman) and feeding
         it into a bomb through a hole (2, Fig.1, p 583). The entire
         test apparatus was fitted inside a cabin of 1.4 x 1.8 x 2.3 m
         made of 8 mm thick sheet steel. The authors succeeded in
         measuring the stresses and strains with a higher accuracy
         than is possible by using equipment earlier described in
         literature, by placing the dynamometer and the deformation
         metering gauge (elastic elements with wire strain gauges)
Card 1/4

49-58-5-2/15

Investigation by the Method of Bending of the Young Modulus of Rock Specimens in the Case of Applying from All Sides Pressures of up to 5000 kg/cm$^2$.

inside the high pressure space. The Young modulus was measured at gas pressures between 1 and 5000 kg/cm$^2$ by the static method for a number of igneous and sedimentary rocks (basalt, gabbro, diorite, labradoroite, cyenite, marble, quartz, sandstone). The rock specimens were tested both in copper foil shells a n d · without such shells. The experiments without copper shells have shown that the Young modulus increases on applying a pressure of up to about 500 kg/cm$^2$ and, following that (at higher pressures) it decreases sharply. This is attributed to the fact that the gas penetrates into the pores of the rock and compresses not the entire specimen but individual grains and does not bring about a compression of the substance but, on the contrary, disturbs the coherence of the material. For rock specimens inside a copper shell the Young modulus increases appreciably for the pressure range 1 to 1000 kg/cm$^2$ (by 30 to 70% depending on the rock) and this is attributed to the greater degree of compressing the pores. The speed of increase of the Young modulus depends on the porosity of the rock, as well as on the mineralo-

Card 2/4

49-58-5-2/13

Investigation by the Method of Bending of the Young Modulus of Rock Specimens in the Case of Applying from All Sides Pressures of up to 5000 kg/cm$^2$.

gical composition, the structure, etc. For pressures from all sides exceeding 1000 kg/cm$^2$, the speed of increase of the Young modulus drops sharply; the increase in the modulus in this case is due to compression of the rock substance. The obtained data on the Young modulus of rocks under conditions of applying from all sides pressures up to 5000 kg/cm$^2$ correspond with the conditions pertaining at a depth of about 20 km below the surface. Therefore, the results of the experiments are of interest from the point of view of seismic methods of prospecting and also from the point of view of physics of earthquakes, since the foci of the most destructive earthquakes are located at depths of 10 to 40 km. Acknowledgements are expressed to V. A. Pavlogradskiy, A. T. Bondarenko and N. P. Semenova for their assistance in carrying out the experimental work. There are 3 tables, 10 figures and 20 references, of which 15 are Soviet, 1 German and 4 English.

Card 3/4

49-58-5-2/15

Investigation by the Method of Bending of the Young Modulus of Rock
Specimens in the Case of Applying from All Sides Pressures of up to
5000 kg/cm$^2$.

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki Zemli (Academy
of Sciences USSR, Institute of Physics of the Earth)

SUBMITTED: April 22, 1957.

1. Gases--Pressure    2. Rock--Stresses

Card 4/4

S/120/60/000/01/037/051
E032/E314

AUTHOR:   Stakhovskaya, Z.I.

TITLE:    Application of Resistance Strain Gauges to the Measurement
          of Stresses and Deformations at High Pressures

PERIODICAL:  Pribory i tekhnika eksperimenta, 1960, Nr 1,
          pp 122 - 125 (USSR)

ABSTRACT: The aim of the present work was to develop a method for
          measuring the stresses and deformations produced in rocks
          under hydrostatic pressure (Ref 5) with the aid of elastic
          elements having resistance strain gauges attached to
          them.  The strain gauges have been described by Rayevskiy
          in Ref 6.  Figures 1 and 2 show a schematic drawing of the
          devices employed.  The elastic elements were in the form of
          elliptic rings and plates, as shown.  The dotted lines
          indicate the gauges.  The dynamometers were placed inside
          the high-pressure chamber between the specimen and the
          piston producing the stress so that the piston pressed
          against the plane  A  (Figure 1) while the specimen received
          the stress through the plane  B .  In the measurement of
          deformation (Figure 2) one end was fixed  (A)  and

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S/120/60/000/01/037/051
E032/E314

Application of Resistance Strain Gauges to the Measurement of
Stresses and Deformations at High Pressures

deformation of the specimen was transmitted at  (B) .
The resistance strain gauges were included in the usual
Wheatstone-bridge arrangement and the off-balance
current was measured with a mirror galvanometer having
a sensitivity of about $2 \times 10^{-9}$ A/mm at 1 m.  The elastic
rings and plates were prepared from 40 Kh steel and were
thermally hardened  ($R_c = 48 - 52$) .  The rings and plates

used to measure deformation were made from phosphor bronze
ribbons.  Two methods were used.  In one, all the four
arms of the bridge were placed in a high pressure chamber
and the gauges were connected so that  $R_1$  and  $R_4$

(extension) were in opposite arms of the bridge, and
similarly for the gauges subjected to compression.  In
the second method, only two adjacent arms of the bridge
were placed inside the high-pressure chamber so that one
of them was compressed and the other extended.  In another
method employed,  $R_1$  and  $R_4$  were connected in series

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S/120/60/000/01/037/051
E032/E314

Application of Resistance Strain Gauges to the Measurement of Stresses and Deformations at High Pressures

in one arm and the elements $R_2$ and $R_3$ in another arm. This excluded the error due to non-central application of the load. Figures 3 and 4 show typical calibration curves for the readings of the instruments as a function of deformation. The first of these figures refers to the dynamometer shown in Figure 1b and the second refers to the arrangement shown in Figure 2a. As may be seen, the relations are linear. These calibration curves were plotted in air. They were then repeated with the probes subjected to a large hydrostatic pressure (up to 200 kg/cm$^2$). In the latter case the devices were placed inside a high-pressure chamber in an unloaded state and their indications were noted as a function of pressure. A constant stress was then applied to one of the arrangements in Figure 1 and a constant deformation to one of the arrangements in Figure 2. The corresponding curves are shown in Figures 5 and 6. In these figures the pressure

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S/120/60/000/01/037/051
E032/E314

Application of Resistance Strain Gauges to the Measurement of
Stresses and Deformations at High Pressures

(in $kg/cm^2$) is plotted along the vertical axis and the
indications of the instrument along the horizontal axis.
Figure 5 refers to the dynamometer shown in Figure 1a
and Figure 6 to that shown in Figure 2a.  It is concluded
that this method can be used to determine stresses between
0.05 and 50 kg and deformations between 0.005 and 3 mm.
There are 6 figures and 6 references, 3 of which are
Soviet (1 translation from English) and 3 English.

ASSOCIATION:  Institut fiziki Zemli AN SSSR (Institute of
Physics of the Earth of the Ac,Sc., USSR)

SUBMITTED:    December 20, 1958

Card4/4

/8.8200

S/126/60/009/04/020/033
E021/E435

AUTHORS:     Stakhovskaya, Z.I. and Tomashevskaya, I.S.

TITLE:       Investigation of the Modulus of Elasticity of Metals
             Under Hydrostatic Pressures up to 4000 kg/cm2 by
             Static Methods

PERIODICAL:  Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 4,
             pp 589-592 (USSR)

ABSTRACT:    Young's modulus and the shear modulus of several metals
             was tested in a high pressure chamber.  Bend and torsion
             tests were employed.  Fig 3 shows the relation between
             Young's modulus and pressure for steel U10 (curve 1),
             Armco iron (2), copper (3), brass (4) and duralumin (5
             and 6).  With increase in pressure to 1000 kg/cm2, there
             is an increase in Young's modulus by 5% for the steel and
             for Armco iron,  7.5% for brass and 1.2% for copper.
             With increase in pressure from 1000 to 4000 kg/cm2,
             Young's modulus is constant within the limits of accuracy
             of the measurements (3%).  Duralumin gave unexpected
             results with an initial increase of 20 to 25% in Young's
             modulus and then a decrease.  Results on duralumin did
             not agree with one another.  The shear modulus, with

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S/126/60/009/04/020/033
E021/E435

Investigation of the Modulus of Elasticity of Metals Under
Hydrostatic Pressures up to 4000 kg/cm$^2$  by Static Methods

increase in pressure up to 1000 kg/cm$^2$, increased by
3 to 6% for brass and duralumin and changes with further
increase in pressure were within the limits of accuracy
of the measurements.  The shear modulus for Armco iron
remained constant.  These results are shown in Fig 4
where curve 1 is Armco iron,  2  is L-6 brass,
3  is L-3 brass,  4  is D-2 duralumin,  5  is D-4
duralumin.  Thus the results show that with increase
in pressure, Young's modulus increases more than the
shear modulus.  There are 4 figures and 11 references,
7 of which are Soviet and 4 English.

ASSOCIATION: Institut fiziki zemli AN SSSR
            (Institute of Terrestrial Physics AS USSR)

SUBMITTED:  May 9, 1959 (initially)
            December 7, 1959 (after revision)

Card 2/2

STAKHOVSKAYA, Z.I.

Study of elastic and strength properties of rocks by the fold
method under high confined pressure.  Trudy Inst. fiz. Zem.
no.23:25-35  '62.                                        (MIRA 16:11)

STAKHOVSKIY, M. I.

PRIKHOT'KO, A F

24(7)    p 3    PHASE I BOOK EXPLOITATION    SOV/1365

L'vov. Universytet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1:
Molekulyarnaya spektroskopiya (Papers of the 10th All-Union
Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy)
[L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies
printed. (Series: Its: Fizychnyy zbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po
spektroskopii. Ed.: Jaxer, S.L.; Tech. Ed.: Saranyuk, T.V.;
Editorial Board: Landsberg, G.S., Academician (Resp. Ed., Deceased),
Neporent, B.S., Doctor of Physical and Mathematical Sciences,
Fabelinskiy, I.L., Doctor of Physical and Mathematical Sciences,
Fabrikant, V.A., Doctor of Physical and Mathematical Sciences,
Kornitskiy, V.J., Candidate of Technical Sciences, Rayskiy, S.M.,
Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K.,
Candidate of Physical and Mathematical Sciences, Miliyanchuk, V.S.,
Candidate of Physical and Mathematical Sciences, and Glauberman,
A. Ye., Candidate of Physical and Mathematical Sciences.

Card 1/30

*Stakhovskiy, A.D.*

DIANOV-KLOKOV, V.I.; STAKHOVSKIY, A.D.; OSTERMAN, L.A.

Amplifier input units for bolometers and thermocouples. Izm. tekh.
no.2:37-41 Mr-Ap '57.                          (MIRA 10:6)
    (Bolometer)   (Amplifiers, Electron-tube)   (Thermocouples)

*STAKHOVSKIY, A.D.*

120-4-23/35

AUTHOR:    Dianov-Klokov, V.I. and Stakhovskiy, A.D.

TITLE:     A Double-beam Recording Apparatus for an Infra-red
           Spectrometer (Dvukhluchevoye registriruyushcheye ustroystvo
           k infrakrasnomu spektrometru)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.4,
                                          pp. 82 - 84 (USSR)

ABSTRACT:  The so-called "phase" method of measurement of relative
           intensities, which has been previously used for ultra-violet
           and visible light (Refs. 4-6) is used in this equipment.
           The method has been used for the infra-red region by Golay
           (Ref.7), but his apparatus is very complicated. The block
           diagram is given in Fig.1. A disc-perforator, rotated by a
           synchronous motor, interrupts two beams of light (the working
           and the reference beams) at a frequency of 20 c.p.s. with a
           phase difference of $90°$. Both beams fall onto a nickeliferous
           bolometer (impedance 10 - 20 $\Omega$, sensitivity 0.3 - 0.5 V/Watt,
           $\tau \cong 0.02$ sec.) and the phase of the resulting signal voltage
           depends on their relative intensities. This voltage, after
           amplification in a pre-amplifier, passes through the main
           amplifier to a phase detector to which is also applied a
           reference voltage from the induction generator directly coupled
Card1/2    to the perforator. The output voltage of the phase detector

120-4-23/35

A Double-beam Recording Apparatus for an Infra-red Spectrometer

depends only on the phase difference between the signal
voltage and the reference voltage, and thus indicates the
relative intensities. Because the output signal is related
to the transparency of the sample in a non-linear manner, a
simple linearising circuit follows the detector. The linearised
output signal is passed to a valve voltmeter and to a pen
recorder. The signal and references voltages are also dis-
played on a miniature oscillograph. The circuit is given in
Fig. 2. A sample spectrogram obtained with a prism of NaCl
at the highest sweep speed is given in Fig.4.
There are 4 figures and 9 references, 5 of which are Slavic.

ASSOCIATION:   Institute of Elemental-organic Compounds Ac.Sc. USSR
               (Institut elementoorganicheskikh soyedineniy AN SSSR)

SUBMITTED:     February 23, 1957

AVAILABLE:     Library of Congress
Card 2/2

DIANOV-KLOKOV, V.I.; PALITSYNA, I.A.; STAKHOVSKII, A.B.

Narrow-band recording device for the frequency range 5 — 5,000 cps. Prib. i tekh. eksp. 8 no.6:89-92 N-D '63. (MIRA 17:6)

1. Institut fiziki atmosfery AN SSSR.

L 3978-66

ACCESSION NR:  AP5022357

UR/0115/65/000/007/0035/0039
621.314.22.001.24

AUTHOR:  Dianov-Klokov, V. I.; Stakhovskiy, A. D.; Palitsyna, I. A.

TITLE:  Designing the input transformer of an amplifier for a thermocouple and bolometer (operating frequency, dimensions, inherent noise)

SOURCE:  Izmeritel'naya tekhnika, no. 7, 1965, 35-39

TOPIC TAGS:  circuit design, electric transformer, amplifier design, bolometer

ABSTRACT:  The authors derive formulas for calculating the equivalent resistivities of losses in the core and wire, inductance per turn and number of turns in the secondary as functions of frequency and core parameters in the input transformer of an amplifier for a thermocouple and bolometer.  These formulas are then used for finding the maximum amplification of the transformer as a function of frequency and dimensions.  A formula is given for the passband at optimum tuning.  The design formulas were tested by making three transformers with cores of various sizes made of various types of permalloy.  The results are tabulated.  The curves based on experimental data are compared with theoretical curves.  There is a noticeable deviation

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ACCESSION NR: AP5022357

from the theoretical curves only at higher frequencies due to the fact that the design curves do not account for losses from eddy currents nor for self-capacitance. Formulas are also given for determining inherent noise in the transformer. These formulas were experimentally verified on the noisiest transformers and found to agree satisfactorily with empirical data. Orig. art. has: 5 figures, 19 formulas, 1 table.

ASSOCIATION: none

SUBMITTED: 00                    ENCL: 00                    SUB CODE: EC

NO REF SOV: 003                  OTHER: 001

Card 2/2

STAKHOVSKIY, A.I.

TROFIMCHUK, Vyacheslav Dmitriyevich; STAKHOVSKIY, A.I., redaktor;
    GOLYATKINA, A.G., redaktor; ATTOPOVICH, M.K., tekhnicheskiy redaktor.

[Defects in rolled steel and measures of overcoming them] Defekty
prokatnoi stali i mery bor'by s nimi. Moskva, Gos. nauchno-tekhn. izd-
vo lit-ry po chernoi i tsvetnoi metallurgii, 1954. 631 p.(MLRA 8:1)
        (Steel) (Rolling(Metalwork))

STAKHOVS'KIY, Lev.

[Venezuelan diary]  Z venesuel's'koho shchodennyka.  Buenos-Aires,
Vyd-vo Mykoly Denysiuka, 1953. 86 p,                (MIRA 10:12)
                    (Venezuela--Description and travel)

STAKHOVSKIY, N.N.


"A scientific session dedicated to the 300-year unification of the Ukraine with Russia."
Vestnik Vysshey Shkoly. Vol. 12, No 4, pp 59, 1954.


SO: D-81919, 25 Aug 1954.

STAKHOVSKIY, R. I.

Stakhovskiy, R. I. -- "A Method of Diminishing the Error of Electrical
    Automatic Control Apparatus via Periodic Checking." Acad Sci USSR,
    Inst c f Automatics and Telemechanics, Moscow, 1955 (Dissertation
    for the Degree of Candidate in Technical Sciences)

SO: Knizhnaya Letopis', No. 23, Moscow, Jun 55, pp 87-104

STAKHOVSKIY, R. I.; SHUMILOVSKIY, N. N. (Prof.)

   "Automatic Gas-analysers of the Mass-spectrometric Type,"

paper read at the Session of the Acad. Sci. USSR, on Scientific Problems of Automatic
Production, 15-20 October 1956.
Avtomatika i telemekhanika, No. 2, p. 182-192, 1957.

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SIMKOVSKIY, R.I., Cand Tech Sci--(diss) "Development and study of
an automatic optimizer." Mos, Publishing House of the Acad Sci USSR,
1958. 12 pp (Acad Sci USSR. Inst of Automation and Telemechanics),
185 copies (KL,49-58, 124)

-64-

STAKHOVKIY R.I.

Akademiya nauk SSSR. Institut avtomatiki i telemekhaniki

Avtomatika i telemekhanika; sbornik (Automation and Telemechanics; Collection of Articles) Moscow, 1958. 144 p. 5,000 copies printed

Resp. Ed.: Ya.Z. Tsypkin; Ed. of Publishing House: V.A. Kotov; Tech. Ed: I.N. Guseva

PURPOSE: This collection of articles is intended for specialists in automation and remote control.

COVERAGE: The book contains fifteen papers presented at the fourth and fifth scientific and technical conferences, held in 1955 and 1956, by junior members of the staff of the Institut automatiki i telemekhaniki (Institute of Automation and Telemechanics), Academy of Sciences, USSR. The papers are based on the individual research of their authors. The collection consists of five parts: Automatic Control, Components of Automatic and Remote Control Systems, Automated Electric Drive, Automatic Checking, and Remote Control.

Petelin, D.P. Mechanical Transient Processes of a Synchronous Motor With Frequency Control    7

The author investigates the qualitative and quantitative characteristics of mechanical transients in synchronous motors with frequency control for conditions of starting, braking, and speed regulation. In analyzing the processes of starting synchronous motors by means of changing the frequency of the a-c supply from zero, the process of starting at reduced frequencies and the process of motor acceleration by a smooth change of frequency were investigated separately. It was found that synchronous acceleration and braking depend on the rate of frequency change. The author forms equations and makes an analysis of the free transient process of a synchronous generator-synchronous motor system. There are 11 references:6 Soviet, 4 English and 1 German. No personalities are mentioned.

AUTOMATIC CHECKING

Meitser, L.V. Selection of Operating Conditions of a Phase Ionization Flowmeter    86

The author compares two kinds of ionization flowmeters, a pulse flowmeter and a phase flowmeter, both of which he describes in detail. He finds the latter to be more sensitive to current than the first because of the use of narrow-band amplifiers. In addition, a longer radiation time (trad) is usually selected for the phase flowmeter than for the pulse flowmeter, which contributes to better utilization of radiation. There are 5 references:  4 Soviet and 1 English. No personalities are mentioned.

Stakhovskiy, R.I. Causes of Instability of Gas Currents in an Analytical Mass Spectrometer and a Method of Periodic Automatic Calibration    91

The author presents experimental results of the practical application of periodic calibration in an experimental mass-spectrometer gas analyzer developed jointly by IAT and the Vsesoyuznyy nauchno-issledovatel'skiy i proyektnyy institut podzemnoy gazifikatsii ugley Ministerstva uglevoy promyshlennosti SSSR (All Union Scientific Research and Design Institute for the Underground Gasification of Coal, Ministry of the Coal Industry, USSR). Work on automatic calibration was begun at IAT in 1951 and is now being conducted in the USSR with good results but on a limited scale. The author also describes experiments on the quantitative determination of the effect of secondary electron emission in the ionization chamber-on gas current. The method of automatic periodic calibration is one of the measures used to increase the accuracy of mass-spectrometer gas analyzers, and the author recommends its application for industrial gas analyzers of this type. There are 8 references:  4 Soviet, 3 English and 1 German.

AUTHOR:     Stakhovskiy, R. I. (Moscow)                SOV/103-19-8-4/11

TITLE:      Two-Channel Automatic Optimizer (Dvukhkanal'nyy avtomati-
            cheskiy optimizator)

PERIODICAL: Avtomatika i telemekhanika, 1958, Vol. 19, Nr 8, pp. 744-756
            (USSR)

ABSTRACT:   The purpose of the present paper was to construct an auto-
            matic device destined for the determination of the extremum
            of a function of many variables on the basis of the circuits
            proposed in reference 1. A number of results from this work
            are given. The creation of the device made necessary theoreti-
            cal (Ref 2) as well as experimental investigations. A two-
            -channel optimizer is described which permits to solve the
            following problems: 1) A practical checking of the mode of
            operation of finder systems given in reference 1. 2) An ex-
            perimental checking of the various algorithms of determination
            and the selection of the best algorithm for the operation of
            the apparatus. 3) The development of variants of simple and
            reliable circuits of individual blocks of the apparatus and
            the tracing of new ways for the further simplification and
Card 1/4    for the further increase of operational safety. 4) The ex-

perimental investigation of the characteristics of the theo-
retical dependences of the determination process and of the
time required on the data of the apparatus for various methods
of determination. 5) An experimental determination of the
characteristics of the optimizer, when it is operated with
an object having a characteristic of the form $Q = A_1 x_1^2 + A_2 x_2^2$.
Objects with constant and variable coefficients and with
additional limitations are investigated. A mode of operation
was also investigated in which the object was subjected to
the effects of arbitrary disturbances. A general description
of the equipment and a short description of the individual
elements is given. On the basis of the investigation the fol-
lowing is stated: 1) The device described in this paper (built-
-up according to the principle proposed in reference 4) is
capable of determining the extremum  point of a function of
several variables, the shape of which may be unknown. The re-
strictions imposed on the object, the extremum of which is
wanted, consists only of the demand, that this extremum - a
real one, or one subject to conditions (taking into account
the limitations) - must exist. 2) A combination of the method
of fastest triggering and of the gradient method must be con-
sidered to be the better suitable algorithm for such an appa-

Card 2/4

Two-Channel Automatic Optimizer                              SOV/103-19-8-4/11

ratus. It was experimentally shown that an accuracy of a
few tenths of a per cent can be attained in the determination
of $Q_{min}$ in comparison to the maximum possible value of Q.
3) The developed variants of the circuits for the elements
of the device were satisfactory from the viewpoint of simplici-
ty and operational safety. Still further possibilities exist,
however, for the improvement of the structure of the appara-
tus as a whole as well as of the circuits of the  separate
blocks. 4) The experimental checking of the theoretical
dependences (where it was possible) showed a satisfactory
agreement of the experimental results with the formula ob-
tained in reference 2. 5) The experimental investigation of
the characteristic of the apparatus showed that the greatest
influence upon the process of determination is exerted by
the data of the optimizer, the amplification factor of the
input differentiator and the magnitude of the computation
step $\delta x$ as well as the product of these, which is proportional
to the computation step scale. The investigation of the stabili -
ty with respect to disturbances showed that disturbances are
Card 3/4         suppressed more successfully in an operation with objects

Two-Channel Automatic Optimizer                        SOV/103-19-8-4/11

continuous with respect to time. A. A. Fel'dbaum supervised
the work. A. V. Kalinina took part in the experiments.
There are 18 figures and 4 references,      which are Soviet.

SUBMITTED:    December 12, 1957

1. Mathematical computers--Design    2. Mathematical computers
--Performance    3. Mathematical computers--Test results

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PHASE I BOOK EXPLOITATION

SOV/4411

Konferentsiya po voprosam teorii i primeneniya diskretnykh avtomaticheskikh sistem, Moscow, 1958

Teoriya i primeneniye diskretnykh avtomaticheskikh sistem; trudy konferentsii (Theory and Application of Discrete Automatic Systems; Transactions of the Conference) Moscow, AN SSSR, 1960. 572 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Natsional'nyy komitet SSSR po avtomaticheskomu upravleniyu. Institut avtomatiki i telemekhaniki.

Editorial Board: M.A. Gavrilov, Doctor of Technical Sciences, Yu.V. Dolgolenko, Doctor of Technical Sciences, V.I. Loci'nikov, Candidate of Technical Sciences, A.Ya. Lerner, Doctor of Technical Sciences, I.S. Morosanov (Scientific Secretary), G.S. Pospelov, Doctor of Technical Sciences, A.A. Fel'dbaum, Doctor of Technical Sciences, A.V. Khramoy, Candidate of Technical Sciences, and Ya.Z. Tsypkin, Doctor of Technical Sciences; Resp. Ed.: Ya.Z. Tsypkin, Doctor of Technical Sciences; Ed. of Publishing House: M.L. Podgayetskiy; Tech. Ed.: S.G. Markovich.

PURPOSE: These transactions are intended for the members of the conference and other specialists in automatic control.

COVERAGE: The Conference on the Problems of Theory and Application of Discrete Automatic Systems took place in Moscow from September 22 to 26, 1958. It was the first conference devoted to discussions of the present status of the theory and techniques of discrete automatic systems and to planning for future development. The papers discussed at the conference have been divided into four groups. In the first group optimization switching circuits are discussed as well as methods of relay control systems, in particular plant lag control systems in which are devoted to the analysis and synthesis of pulse systems with variable parameters, of pulse systems with several pulse components, to the study of self-oscillation phenomena in nonlinear pulse systems, and to the methods of calculating linear pulse systems. Problems of simulating pulse systems and descriptions of some pulse replicators have also been included. The third group of papers deals with digital systems. Problems of using elements of digital technique and digital computers for the extraction of various fields of engineering, i.e., power engineering, mining, radio communication, metallurgy, etc., are discussed. Problems of analog-digital conversion and vice versa as well as problems of developing specialized functional converters have been included in this group. The fourth group of papers includes theoretical elements and certain practical applications of the simplest types of self-adjusting systems, optimizing control systems, which are developed as relay, pulse and digital devices. Here are also found papers describing various methods of investigating steady state conditions in optimalizing systems, results of studying the effects of random factors on the process of automatic scanning, and examples of adjusting optimalizing control systems. Some of the more interesting communications and observations made during the discussion of the various conference papers have also been included in the transactions. Personalities and references accompany most of the papers.

[illegible]. [Moscow]. Synthesis of Self-Adjusting Systems of Automatic Regulation with Discrete Correcting Devices    101
The author investigates two basic problems of self-adjusting automatic systems. The first concerns the selection of a transfer function of the discrete correcting device of a linear regulating system which would secure optimalizing processes in a closed-loop system with given characteristics of the object and of the servomechanisms. The second problem consists in automatic adjustment of the discrete correcting device when the characteristics of both the object and the servomechanisms are changing. The author also suggests certain ideas pertaining to the connection diagram of the correcting and self-adjusting devices. There are 5 references, all Soviet, including 4 translations.

Stakhovskiy, R.I. Comparison of Certain Scanning Methods for an Automatic Optimalizing System    505
The author adopts the accuracy of scanning and its duration as criteria for such comparison. He compares the following methods of finding the optimal value of a function of a variable: a) the Gauss-Zeidel method (of alternate changing of variables) which he finds applicable only when deviations from the object are small; b) the gradient method; c) the method of the quickest triggering. The last two methods combined give the best results in scanning time and accuracy. There are 2 references, both Soviet.

Krug, Ye.K. [Moscow]. Concerning a Principle of Optimalizing Control    523
The author examines problems connected with the selection of frequencies of oscillation of input quantities with an evaluation of the accuracy of determining partial derivatives of these quantities, and with the selection of the controller's structure. There are 7 references: 6 Soviet (including 1 translation) and 1 English.

STAKHOUSKIY, R. I.

STAKHOVSKIY, S.I.

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

LERNER, A. Ya.- "The application of a self-adjusting system of automatic control"

MALOV, V. S., PREOBRAZHENSKIY, A. M., and REMEZENKOV, A. - "Industrial telemeasurement systems and digital technique"

METREV, M. V. - "Some peculiarities of the structure of multi-communications regulation systems"

KURBATOVSKIY, V. M. - "Evaluation indexes and the possibility of increasing the quality of telemeasurement systems"

KRASINSKIY, V. V. - "Concerning the problem of established routines in automatic regulation systems"

METREVELI, L. A. "Principle of construction of digital double code automatic compensators"

BROMARY, Yu. I. - "Concerning the relation of systems of automatic regulation with the parameters of periodic movements"

KHOLYAYEV, M. S., and EPSHTEYN, V. L. - "System of automatic control of cutting of rolled metal on a continuous bar mill with the use of digital calculating machines"

OBDUYNTSEV, V. M. - "Some principles of organizing systems of complex automation of large scale chemical production and optimization of these systems"

OSTROVSKIY, G. M. - "Systems of automatic regulation with intermittent change of parameters"

PETROV, V. P. - "Statistical synthesis of impulse systems"

PETROV, B. N. - "The invariant principle and its application in the calculation of linear and nonlinear systems"

PIVEL, V. D. - "The problem of autonomy in the technique of automatic control"

POPOV, E. P. - "Some problems of synthesis of automatic control non-linear systems"

PUGACHEV, V. S. - "Method of determining the optimum system with non-linear relation of the observed function with the parameters of the signal"

PUSHILIN, V. P., PETROV, V. V., KONDNOV, R. V., and VOLKOV, E. B. - "Principles of construction of a single class of extra control systems for automating production processes"

ROGINSKIY, V. N. - "The development of the theory of relay devices in the USSR"

ROZENBLAT, M.A. - "Dynamic characteristics of cores with right angle hysteresis winding and their influence on magnetic boosters"

ROZNER, L.I. - "Varied methods of investigating the quality of automatic control systems"

RUCHINSKIY, V. M. - "Dynamics of automatic regulation of boiler-turbine units"

SHUMILOVSKIY, N. N., MELTSTER, L. V., NAUMOV, A. A., KEN-CHEN-CHZHUN, and PIVOVAROV, L. A. - "Automatic control of composition of multi-ingredient mixtures"

SIMOVSKIY, R. S., and SHULLIN, G. v.- "Some results of work for the utilization of radioactive radiation for automatic control of mining machinery"

SOLODOVNIKOV, V. V., BATKOV, A. M., BARKIN, V. M., VALEDINSKIY, Yu. S., MANYKIN, P. S., and POKROVSKIY, A. K. - "Analyses and synthesis of automatic control systems with the aid of calculating machine facilities"

STARKOVSKIY, S. I., FISHER, L. S., and BYTAS, A. A. "Autdatio optimizers and their use for solution of variation problems in automatic synthesis"

STRAKHOV, S. V. - "A system of alternating current electric drives with autonomous power supply"

ZAGAR, I. M., and YARKHUNOVSKIY, V. A. - "Apparatus for technical control of production with the use of nuclear radiation"

TEODORCHIK, K. F., and BEDRUKOV, G. A. - "Methods of organizing the trajectory of roots of linear systems and qualitative determination of type of trajectory"

TSYPKIN, Ya. Z. - "Elements of the theory of digital automatic systems"

VENIKOVSKIY, D. S., KASILKIN, V. A., CHUIKO, Yu. I., and SHASTOVA, G. A. - "Static stability of telemeasurement"

VENIKOV, V. A. - "Interactions of a mathematical modeling and calculating technology experiment in calculating leads in electrical systems"

28.1000     1013, 1024, 1031

S/123/61/000/007/013/026
A004/A104

AUTHOR:     Stakhovskiy, R.I.

TITLE:     Comparing some searching methods for the automatic optimizer ("optimizator")

PERIODICAL:     Referativnyy zhurnal, Mashinostroyeniye, no. 7, 1961, 2-3, abstract 7D25 (V sb. "Teoriya i primeneniye diskretn. avtomat. sistem", Moscow, AN SSSR, 1960, 505 - 522)

TEXT:     The author compares processes of searching the function extremum of some variables by the Gauss-Saidel method, the gradient method and the method of the fastest fall-off. The searching accuracy and the time spent on the searching of the extremum, i.e. the searching time are taken as comparison criteria. It is pointed out that for the equality of the steady motions of the automatic optimizer, characterizing the accuracy of determining the extremum (minimum) during the searching by the mentioned methods, it is necessary that the step of searching by the Gauss-Saidel method is approximately half the trial step of the search by the gradient method of the method of the fastest fall-off. The mean searching time by the Gauss-Saidel method is proportional to the sum of the maximum coordinate values,

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A004/A104

Comparing some searching methods ...

while the mean searching time by the gradient method is proportional to the logarithm of the maximum coordinate value and depends on the step scale. Because of the inaccuracy of determining the point of the partial extremum during the search by the method of the fastest fall-off the search is delayed. As a result of this the approach to the minimum point by the method of the fastest fall-off is not taking place smoothly but with re-adjustments, while with the searching by the gradient method a very smooth approach to the minimum point can be observed. The total searching time with both methods is practically the same. Besides, the steady value during the searching by the method of the fastest fall-off is practically greater than with the gradient method, since the minimum detection circuit has a functioning threshold which is stipulated by the noiseproof feature. The author concludes, that the optimum searching algorithm for the step system of motion is a combination of the gradient method and the method of the fastest fall-off. With great deviations from the minimum it is necessary to carry out the search by the method of the fastest fall-off which makes it possible to approach the extremum vicinity. Near the point of extremum the search should be effected by the gradient method. The utilization of the Gauss-Saidel method is only expedient in those cases if the magnitude being minimized is the sum of the addends depending on separate variables and if the distance from the minimum point is not large. There are 7 figures and 2 references.                                         V. Genishta

Card 2/2        [Abstracter's note:  Complete translation]

S/030/60/000/008/005/013
B021/B054

AUTHOR:      Stakhovskiy, R. I.

TITLE:      Automatic Optimizers

PERIODICAL:   Vestnik Akademii nauk SSSR, 1960, No. 8, pp. 74-80                    VC

TEXT:   Optimization tasks can be solved by automatic optimizers, special computing machines developed by the Institut avtomatiki i telemekhaniki Akademii nauk SSSR (Institute of Automation and Telemechanics of the Academy of Sciences USSR). The optimization task consists in the searching of the extremum of functions with several variables $Q = Q_1 (x_1 \ldots x_n)$, where the field of investigation is limited by boundary conditions. These boundary conditions have the form of the inequality $Hj(x_1 \ldots x_n) < 0$ (j

= 1 ... m). Here, the analytical form of the functions Q and Hj is unknown. The combination of the high-speed trigger action with the gradient method is indicated as the most convenient search algorithm. The automatic optimizers consist of two basic blocks: the operative and the control block. Fig. 1 shows an electronic 12-channel optimizer.

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Automatic Optimizers                           S/030/60/000/008/005/013
                                               B021/B054

Fig. 2 shows the circuit diagram of the system ГД (GD = generator-motor).
Fig. 3 shows the circuit diagram of the automatic optimizer. The plant
consists of an automatic optimizer, an electronic model of the type
ЭМУ-6 (EMU-6), a signal- and a synchronization block. Fig. 4 shows
an oscillogram. One of the most promising modes of application of
analytical optimizers seems to be their use as control devices of
operating units for their automatic regulation of best working conditions.
Further, the author describes accidental disturbances, the cause of
essential difficulties in the operation of optimizers. There are 4 figures.

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26223
S/103/61/022/009/004/014
D206/D304

*16.8000 (1124, 1132, 1344)*

AUTHOR:     Stakhovskiy, R.I. (Moscow)

TITLE:      Statistical autonomy of dynamic processes in optimi-
            zation installations containing control systems

PERIODICAL: Avtomatika i telemekhanika, v. 22, no. 9, 1961,
            1179 - 1186

TEXT: In the present article the author discusses a particular
case of the optimization problem, i.e. optimization in the presen-
ce of disturbances in the system to be controlled by the regulator
adjustments. The system is assumed to be optimized and controlled
by n systems of regulators, i.e. there exist in the system to be
controlled n parameters every one of which is stabilized around a
given value $X_{10}$. All n control systems are interdependent, i.e.
$x_i = x_i(t, x_1, \ldots x_n)$. The optimized system is assumed to be dis-
turbed by m random disturbances $P_j(t)$, stationary random processes.

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Statistical autonomy of dynamic ...    D206/D304

If Q is a criterion of quality, in general also a stationary pro-
cess then its fluctuation $q(t) = Q(t) - Q_0$ ($Q_0$ the average value of
quality), is obtained by the summation of $Q_0$ and of the inverted
value of $Q(t)$. Under the influence of disturbances $P_j(t)$

$$X_i(t) = X_{i0} + x_i(t), \quad Q(t) = Q_0 + q(t), \quad P_j(t) = P_{j0} + p_j(t), \quad (1)$$

where $X_{10}$ - the setting of the i-th regulator, $Q_0$ - mathematical
expectation of the criterion of quality, $p_{j0}$ - mathematical expec-
tation of the j-th random disturbance, $x_i(t)$ dynamic error in the
i-th regulator, $Q(t)$ - the fluctuation of the quality criterion
with respect to its average value $Q_0$ $p_j(t)$ - the fluctuation of
the j-th random disturbance with respect to $p_{j_0}$. The problem is to
find the extremum of the function $Q_0(X_{10} \ldots X_{n0})$ using only the

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values of $x_i(t)$ and $q(t)$. Only the case of reacting disturbance $p_j(t)$ is considered together with the properties of the correlation function $R_{x_i q}(t)$. The fluctuation $q(t)$ consists of two components, one of which is produced directly by the dynamic error $x_i(t)$ transformed by the matrix of the operator $A_{jk}$ (an operator describing the influence of function $p_j(t)$, considered as the disturbance of the i-th component of function $X_Q(t)$ ($i = 1, \ldots, n+1$) which, in turn, is the result of transformation of a vector random function $P(t)$ with components $p_j(t)$), the second component is introduced due to the disturbance transformed by the generalized operator $A_{jq}$ and

$$q_j(t) = \{A_{iq} x_{i(j)}(t)\} + z_j(t). \tag{2}$$

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Statistical autonomy of dynamic ...    D206/D304

In it $z_j(t)$ – the component of fluctuation of quality criterion due to disturbance $p_j(t)$ transformed by the operator $A_{jq}$, $x_{i(j)}(t)$ the component of dynamical error of the i-th regulator due to the j-th disturbance, $q_j(t)$ – the component of fluctuation of quality criterion due to the j-th disturbance – Eq. (2) may be rewritten as

$$q_j(t) = \frac{\partial Q_0}{\partial X_{t_0}} \{A^1_{iq} x_{i(j)}(t)\} + z_j(t).$$

(3)

Multiplying both sides of Eq. (3) by $x_{i(j)}(t+\tau)$ the mathematical expectation of both parts is

$$M\,[x_{i(j)}(t+\tau)\,q_j(t)] = R_{x_i q_j}(\tau) = \frac{\partial Q_0}{\partial X_{t_0}} M\,[x_{i(j)}(t+\tau)\,\{A^1_{iq} x_{i(j)}(t)\}] +$$

$$+ M\,[x_{i(j)}(t+\tau)\,z_j(t)] = \frac{\partial Q_0}{\partial X_{t_0}} \overline{R^1_{x_i q_j}}(\tau) + R^{\cdot}_{x_i q_j}(\tau).$$

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Statistical autonomy of dynamic ...

$$S/103/61/022/009/004/014$$
$$D206/D304$$

in which $\frac{\partial Q_o}{\partial X_{10}} R^1_{x_i q_j}(\tau)$ is the useful component function proportio-

nal to $\frac{\partial Q_o}{\partial X_{10}}$; $R^*_{x_i q_j}(\tau)$ is the unwanted component function $R_{x_i q};$ $(\tau)$

which can be determined by putting $A_{iq} = 0.$ It is shown that there
exists at least one value of $\tau_{10}$ such that

$$R_{x_i q}(\tau_{10}) = \frac{\partial Q_o}{\partial X_{10}} R^1_{x_i q}(\tau_{10}) \tag{12}$$

which permits the use of $R_{x_i q}(\tau_{10})$ as the measure for the partial

derivative $\partial Q_o / \partial X_{10}$ to which is proportional the signal giving the
extremum of function $Q_o(X_{10}, \ldots, X_{n0}).$ The following conclusions

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S/103/61/022/009/004/014
Statistical autonomy of dynamic ...     D206/D304

are drawn. 1) For a wide range of installations with n - parameters which are being optimized by means of varying the setting of regulators and which are subjected to random disturbances, there exist certain values of correlated displacements in the mutual correlation functions of dynamic regulator errors and of fluctuations of the quality criterion, for which the system of automatic optimization with respect to separate inputs are statistically autonomic. The m - parameter optimization system reduces thus to m single parameter systems. 2) The magnitudes of these correlated displacements may be determined from automatic tracking of the extremum of the average value of criterion of quality by considering the correlated displacements as independent variables. 3) This tracking does not require the application of sample disturbance onto the system to be controlled. There are 5 figures, and 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: J.P. Reswick, T.B. Goodman, Determination of System Characteristics from Normal Operating Records, Trans. ASME, v. 78, no. 2, Feb. 1956; A.B. Chelustkin, The

Card 6/7

28223
S/103/61/022/009/004/014
Statistical autonomy of dynamic ...     D206/D304

Design and Application of Correlation Control. Automatic Control,
May 1958.

SUBMITTED: February 22, 1961

Card 7/7

Probability distribution density ...     S/103/62/023/002/006/015
                                         D230/D301

the English-language publications read as follows: F.B. Smith, Eng.
Rev., vol. 14, no. 5, May 1955, J. Daniel, Electronics, vol. 14,
p. 162-163, March 1956; Lien Hwachii, Rev. Sci. Instr., vol. 30,
no. 12, 1959.

SUBMITTED: March 13, 1961

Card 3/3

L1103

S/103/62/023/009/006/007
D201/D308

AUTHOR:      Stakhovskoy, R. I. (Moscow)

TITLE:       Selection of initial delays in an optimization system
             as described by the author in an earlier paper (Avto-
             matika i telemekhanika, v. 22, no. 9, 1961)

PERIODICAL:  Avtomatika i telemekhanika, v. 23, no. 9, 1962,
             1243-1246

TEXT:  The author previously suggested an optimization system for
objects subjected to random interference and controlled by the
setting of a regulator. The system utilizes the properties of the
mutual correlation function $R_{iq}$ $(\tau)$ between the dynamic error of
the i-th regulator and the fluctuation of the quantity taken as
the optimization criterion. In the present article the author
shows that in order to determine the initial delays, securing the
process of convergence, one must find $R_{iq}$ $(\tau)$ with the aid of a
real object, then find the values of $\tau_{i\ comp}$ (two components of

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K S/103/61/...     ...004/014

Selection of initial ...

S/103/62/023/009/006/007
D201/D308

the correlation function) at which it intersects the abscissa axis..
Taking any of these as the initial point, one must close the feed-
back circuit of the optimization system and determine the polarity
of the output signal of the multiplier circuit according to the
author's method; then the optimization system is switched on for
search of the minimum steady state gain. There is 1 figure.

SUBMITTED:  April 11, 1962

Card 2/2

S/103/62/023/010/003/008
D201/D308

/6.9000

AUTHOR:     Stakhovskiy, R. I. (Moscow)

TITLE:      Investigation of the analog of a single-channel auto-
nomous optimizer of the correlation type

PERIODICAL: Avtomatika i telemekhanika, v. 23, no. 10, 1962,
1313-1322

TEXT:  The analog utilizes ЭМУ-6 (EMU-6) amplifiers. The nonlinear
element is simulated by an aperiodic network with a controlled
time constant, consisting of a thyrite and a summing circuit with
the optimization criterion at its output. The results of experi-
mental investigations show the possibility of synthesizing the
optimizer according to the principle described by the author ear-
lier (Avtomatika i telemekhanika, v. 23, no. 9, 1961), in which
instead of controlled delay blocks it is possible to use first
order elements with inertia, having controlled time constants.
Search of the minimum of the steady-state performance criterion
function may be performed by an ordinary single-channel optimizer.

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Investigation of the ...

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D201/D308

The transient duration in, the nonlinear element may be reduced,
provided necessary precautions are taken for maintaining the sta-
bility. Once determined, the value of the time constant of the
nonlinear element at which the correlation function of fluctuation
of performance factor and dynamic error is zero, remains constant
with changing static characteristics of the element and changes
only when either the dynamic properties of the object or the auto-
correlation functions of the interference are varied. There are
7 figures.

SUBMITTED:  December 1, 1961

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L 12942-63        EWT(d)/BDS/FCC(w)    AFFTC/ASD/ESD-3/AFGC   IJP(C)
ACCESSION NR:  AP3003743                 S/0103/63/024/007/0962/0974

AUTHOR:  Stakhovskiy, R. I. (Moscow)

TITLE:  On the algorithm for solving boundary-value problems

SOURCE:  Avtomatika i telemekhanika, v. 24, no. 7, 1963, 962-974

TOPIC TAGS:  optimum process, boundary-value problem, boundary value, solution algorithm, time-optimal process, general optimal process

ABSTRACT:  The problem of the synthesis of optimal processes, which is reduced to the solution of a certain boundary-value problem, is studied.  Algorithms for the solution of such boundary-value problems on analog computers are proposed in the case of time-optimal processes (G = constant) and in the case of general optimal processes (G $\neq$ constant).  Methods are proposed which make it possible to reduce the solution of the boundary-value problem to the solution of the problem without end conditions.  The methods are based on the introduction of the criterion of the proximity of the end point of a trajectory of the given point into the minimizing integral criterion given as

$$Q = \int_0^T G(\bar{x},\bar{u})dt,\qquad(1)$$

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ACCESSION NR: AP3003743                                                    3

where T is the control time and $G(\bar{x}, \bar{u})$ is a given function with $\bar{x}$ the vector of the output coordinates of the controlled object and $\bar{u}$ the control function. The modification of the method of direct search (Ritz method), convenient for the application of the proposed algorithm to the solution of the non-boundary-value problem obtained, is presented. This modification consists of separating the control interval T, which is used as the parameter of the family of allowable solutions, from the general set of variables on which the solution of the problem depends. Thus the process of determining the optimal solution is carried out in steps in which the value T is constant. The optimal solution is obtained by selecting from the set of allowable solutions one which minimizes the functional (1). The search for the optimal solution in each step is carried out by proper selection of weight coefficients at the given time functions from which control functions are constructed. "The author thanks A. A. Fel'dbaum for a discussion of the results and for valuable advice and A. N. Kabalevskiy and V. P. Goly*shev for their discussion of the article." Orig. art. has: 26 formulas and 4 figures.

ASSOCIATION: none

SUBMITTED: 03Sep63                DATE ACQ: 02Aug63              ENCL: 00
SUB CODE: MM                      NO REF SOV: 008                OTHER: 002

Card  2/2

L 25733-65   EWT(d)/EWT(1)/EPF(n)-2/EPR/T-2/EWG(k)   Po-4/Pq-4/Pg-4/Ps-4/Pae-2/Pu-4/

Pk-4/P1-4   IJP(c)   WW/BC                           S/2588/64/000/006/0199/0212

ACCESSION NR: AT4045211

AUTHOR: Stakhovskiy, R. I.

TITLE: A principle of statistical optimization of objects controlled after the setting of regulators

SOURCE: Avtomaticheskoye upravleniye i vy*chislitel'naya tekhnika   no. 6, 1964, 199-212

TOPIC TAGS: automation theory, optimization, regulator, self adjusting system, control theory

ABSTRACT: For a wide class of systems having n degrees of freedom, which are optimized with the aid of various changes in the settings of regulators and which are exposed to random hindrances, there exist values of the system arguments which depend on the coefficient of mutual correlation between the dynamic progression of the regulators and the fluctuation of the criteria of system quality — the quantities $\tau_i$, for which the system of optimization based on separate adjustments of the regulators seems statistically automatic. For this type of n-dimensional system of optimization, the mathematical and statistical problems can be reduced to treating n one-dimensional systems. It is shown that the values of the time displacements can be found with the aid of an automatic

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ACCESSION NR: AT4045211                                          $O$

search for the minimum average value of the criteria of optimization. In this case, the
time displacements — the quantities $\tilde{\tau}_i$ - can be viewed as independent variables. It
is also shown that the value of the minimum of the criteria in the function of time
displacement coincides with the searched-for minimum of the criteria in the function
of regulator adjustment. Lastly, it is shown that the initial values of the time
displacement in the system for automatic search are located as the zeroes of a mutual
correlation function $R_{iq}(t)$. Orig. art. has: 7 figures and 24 formulas.

ASSOCIATION: none

SUBMITTED: 00                    ENCL: 00                 SUB CODE: IE

NO REF SOV: 003                  OTHER: 004

Card 2/2

STAKHOVSKIY, S., inzh.-mekhanik

Ways of shortening time consumed by control operations. Sots.
trud 7 no.9:90-92 S '62.                                    (MIRA 15:9)

1. Gor'kovskiy politekhnicheskiy institut.
                         (Gorkiy Province—Quality control)

STAKHOVSKIY, S. S.

AID P - 3217

Subject      :  USSR/Electricity

Card 1/1     Pub. 29 - 2/30

Author       :  Stakhovskiy, S. S., Eng.

Title        :  Use of VMG-133 type circuit breakers in installations with arc
                furnaces

Periodical   :  Energetik, 8, 4-5, Ag 1955

Abstract     :  The author suggests the use of VMG-133 type small-volume oil
                circuit breakers instead of the VM-22 type which has become
                obsolete. He considers the need of revising the "Rules for the
                Establishment of Electric Installations" in the paragraphs
                prohibiting the use of small-volume oil circuit breakers for
                arc furnaces. He invites discussion. One table.

Institution  :  None

Submitted    :  No date

137-1957-12-24237

Translation from:  Referativnyy zhurnal, Metallurgiya, 1957, Nr 12, p 191 (USSR)

AUTHORS:    Stakhovskiy, S. S.,   Plekhanov, V. M.

TITLE:      The Stabilization of Welding Current (Stabilizatsiya svarochnogo toka)

PERIODICAL:   Tr. Gos. Tsentr. n.-í. in-ta tekhnol. i organiz. proiz-va
              M-va radiotekhn. prom-sti SSSR. 1956, Nr 3, pp 72-101

ABSTRACT:    An examination of the problem of stabilizing the welding current
             in heavy-duty spot-weld apparatus during voltage fluctuations in the
             power network.  The stabilization is accomplished by means of
             changing the ignition angle of the ignitrons (I).  It is shown theoreti-
             cally that the ignition angle of I is practically a linear function of
             the voltage variation in the power network within ± 20 percent.  It
             is pointed out that the design of the RAST-type regulator for
             welding current deserves the most serious attention.  A diagram
             of a      I-breaker, which incorporates a circuit for the stabili-
             zation of the welding current is given.  The power-supply section
             and the sensing and actuating circuits utilize the principles of the
             corresponding circuit sections of the I-breaker PIT-50.  The
Card 1/2     breaker includes a time relay section.  The automatic regulator

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'The Stabilization of Welding Current

    section both produces and controls the impulse which ignites the
    I.  A trigger cascade stabilizes the current in the automatic
    regulator section.

                                                    A. N.


    1.  Ignitrons-Applications      2.  Electric currents-Stabilization
    3.  Welding-Equipment


Card 2/2

STAKHOVSKIY, S. S.:  Master Tech Sci (diss) -- "Stabilization of machine current

for spot welding".  Gor'kiy, 1958.  12 pp (Min Higher Educ USSR, Gor'kiy Poly-

tech Inst im A. A. Zhdanov, Chair of Electrical Machines), 100 copies (KL, No 13,

1959, 107)

AID P - 2656

Subject      :  USSR/Aeronautics

Card 1/1     Pub. 135  -  11/17

Author       :  Stakhovskiy, T., Capt. Eng.

Title        :  Repair of aircraft radar stations

Periodical   :  Vest. vozd. flota,  9,  65-68,  S 1955

Abstract     :  The author describes the layout, installation and
                equipment of repair laboratory and shop for aircraft
                radar stations.  He gives trade marks of various
                apparatus and some details of the repair procedure.
                Names are mentioned.

Institution  :  None

Submitted    :  No date

STAKHOVSKIY, V. V.

Stakhovskiy, V. V. "Materials on fauna of the terrestrial vertebrates of
the Samara forest, " Nauch. zaniski (Dnepropetr. gos. un-t), Vol. XXXII,
1949, pl 199-226

SO:: U-3550, 16 June 53, (Letopis 'Zhurnal 'nykh Statey, No. 5, 1949).

STAKHOVSKIY, V.V.

Agricultural significance of the lapwing (Vanellus vanellus L.).
Zool.zhur.33 no.1:216-217 Ja-F '54.          (MLRA 7:2)

1. Kafedra zoologii pozvonochnykh Dnepropetrovskogo gosudarstvennogo
universiteta.     (Birds, Injurious and beneficial)  (Plovers)

STAKHOVSKIY, V.V.

Improvement of a trap for small mammals. Biul.MOIP.Otd.biol.
59 no.5:96 S-0 '54.                                    (MLRA 8:1)
        (Trapping)

STAKHOVSKIY, V.V.

Experiments in the use of bottle gourds as artificial nesting places. Trudy Probl. i tem. sov. no.9:362-363 '60.
(MIRA 13:9)

1. Dnepropetrovskiy gosudarstvennyy universitet.
(Birds--Eggs and nests)    (Gourds)

STAKHOVSKIY, V.V.

Avifauna of water reservoirs. Ornitologiia no.7:488 '65.    (MIRA 18:10)

MARKEVICH, S.V.; KHARAMONENKO, S.S. [Kharamonenka, S.S.]; GORBUNOV, P.T.
    (Harbunou, P. TS.]; STAKHOVSKIY, Ye.V. [Stakhouski, IA.V.];
    VOLOKHANOVICH, A.I. [Valakhanovich, A.I.]; BONDARENKO, N.T.
    [Bandarenka, M.TS.]

Radiolysis of polyglukin solution. Vestsi AN BSSR Ser. biial.
nav. no.3:107-113  '64                              (MIRA 18:1)

STAKHOVSKIY, Ye.V. [Stakhouski, E.V.]

Effect of antibacterial substances on the electrophoresis rate of
microbes. Vestsi AN BSSR.Ser.biial.nav.  no.4:115-121  '59.

(MIRA 13:4)

(ANTISEPTICS)  (ELECTROPHORESIS) (AGGLUTINATION)

STAKHOVSKIY, Ya.V.

Comparative evaluation of the bactericidal action of various
blood preservatives. Zdrav.Belor. 5 no.6:42-45 Je '59.
                                              (MIRA 12:9)

1. Belorusskiy nauchno-issledovatel'skiy institut perelivaniya
krovi (direktor S.S.Kharamonenko, nauchnyy rukovoditel' -
zaveduyushchiy kafedroy Minskogo meditsinskogo instituta
prof.B.Ya.El'bert).
            (BLOOD--COLLECTION AND PRESERVATION)

STAKHOVSKIY, Ye. V., Cand Med Sci -- (diss) "Comparative evaluation of the

bactericidal action of various blood preservatives," Minsk, 1960, 14 pp

(Minsk State Medical Institute) (KL, 39-60, 116)

BUGLOV, Ye.D. [Buhlou, IA.D.]; CHIRKOVA, G.N. [Chyrkova, H.M.]; YERMOLENKO,
I.N. [IArmolenka, I.M.]; STAKHOVSKIY, Ye.V. [Stakhouski, E.V.].

Biological properties of preparations obtained on the basis of
oxycellulose. Vestsi AN BSSR Ser. fiz.-tekh. nav. no.1:55-60
'64                                              (MIRA 17:7)

STAKHCVYAK, F.

USSR /Chemical Technology. Chemical Products          (-27
    and Their Application

    Wood chemistry products. Cellulose and its
    manufacture. Paper.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 32691

Author  : Lysenko V.P., Stakhovyak F., Popov Yu. A.

Inst    : Leningrad Technological Institute imeni Lensovet

Title   : Fractionation of Technical Ethyl Cellulose

Orig Pub: Sb. stud. rabot Leningr. tekhnol. in-ta im.
          Lensoveta, L., 1956, 126-130

Abstract: A study was made of the fractional composition
          of technical ethyl cellulose (EC) (by the
          method of precipitation and by the method of

Card 1/2