VAVILIN, G.I.

Roentgen diagnosis of fibrous changes in the pulmonary tissue in
tuberculosis. Probl. tub. no.5:67-68 S-O '54.          (MLRA 7:12)

1. Iz Leningradkogo nauchno-issledovatel'skogo tuberkuleznogo
instituta imeni A.Ya.Shternberga (dir. doktor meditsinskikh nauk
A.D.Semenov)
          (TUBERCULOSIS, PULMONARY, pathology,
               fibrous changes, x-ray)

VAVILIN, G.I., kandidat meditsinskikh nauk

Modifications in the innervation of the pulmonary arteries and veins in certain clinical forms of pulmonary tuberculosis. Probl.tub. no.1: 53-58 Ja-F '55.                                                                (MIRA 8:4)

1. Iz otdela patologicheskoy anatomii Nauchno-issledovatel'skogo tuberkuleznogo instituta (dir. doktor meditsinskikh nauk A.D.Semenov)
        (TUBERCULOSIS, PULMONARY, pathology,
            pulm. arterial & venous innervation)
        (ARTERIES, PULMONARY, innervation,
            in tuberc., pathol. changes)
        (VEINS, PULMONARY, innervation,
            in tuberc., pathol. changes)

VAVILIN, G. I.

"Morphology of the Cavern Walls in Some Chinicoanatomical Forms of Pulmonary Tuberculosis in Adults." Cand Med Sci, State Inst for the Advanced Training of Physicians, Leningrad

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (10)

SO: Sum. No. 481, 5 May 55

USSR/Human and Animal Physiology (Normal and Pat'ological).          T-3
            Blood. Blood Diseases.

Abs Jour   :  Ref Zhur - Biol., No 16, 1958, 74690

Author     :  Kan, Ye.L., Vavilin, G.I.
Inst       :  -
Title      :  On the Mechanism of the Development of Experimental
              Anemia Which Appears in Connection with Denervation of the
              Spleen.

Orig Pub   :  Arkhiv patologii, 1957, 19, No 2, 61-68.

Abstract   :  In chronic tests on 18 cats, denervation (D) of the spleen
              (S) was carried out.  In all cases, expressed hypochromic
              normocytotic anemia developed, lasting $1\frac{1}{2}$-7 months.  In 14
              cats, the most expressed anemia was noted on the 5-24th
              day.  Anemia was caused by strong hemolysis, since after
              D the content of bilirubin in the serum and hemosiderin in
              the S, bone marrow (BM), liver and kidneys did not change.
              In 50% of the cats anemia proceeded with peripheral

Card 1/3

USSR/Human and Animal Physiology (Normal and Pathological).          T-3
Blood. Blood Diseases.

Abs Jour    :   Ref Zhur - Biol., No 16, 1958, 74690

reticulocytosis, which either preceeded the period of most
expressed anemia, or corresponded to it. This negated the
plastic character of the anemia. Changes in the BM were
noted even in the first week after D of S. In all cases
significant undulant fluctuations of erythrocytes (E) and
Hb were observed. In 50% of the animals, temporary peaks
of "restoration" of the blood composition were noted up to
the original number with subsequent decrease of the number
of E in the peripherial blood, in the remaining this was
not observed. In the first case, only the admission of
E in the peripheral blood was hindered; in the second -
the ripening of the erythroblasts was also hindered, but
without depression of the erythropoiesis in the BM. The
development of anemia with D of S was condition in the
last analysis by suppression? of the ripening of the ery-
throblasts and the entrance of the mature E into the

Card 2/3

USSR/Human and Animal Physiology (Normal and Pathological). Blood. Blood Diseases.

T-3

Abs Jour  :  Ref Zhur - Biol., No 16, 1958, 74690

peripheral blood.  The number of leukocytes after D increased by 32-299%, and in one case by 488% (58,700 per 1 mm3). In 21 tests on 5 cats with fistula of the stomach and denervated S, the walls of the stomach were stimulated by inflation with a rubber balloon.  D was conducted in single animals resulting in the increase of the number of E, in others to the decrease, and in some to the decrease of the number of E following their temporary increase.  Also insignificant fluctuations of the number of E were observed, resembling "spontaneous ones" in intact animals.  D of S has little bearing on the reactiveness of white blood.  -- A.D. Beloborodova.

Card 3/3

- 43 -

VAVILIN, G.I. (Leningrad)

Effect of streptomycin on the course of experimental tuberculosis
[with summary in English].  Arkh.pat. 20 no.7:41-45 '58 (MIRA 11:9)

1.  Iz patologoanatomicheskogo otdeleniya (konsul'tant - prof. A.N.
Chistovich) Leningradskogo nauchno-issledovatel'skogo instituta
tuberkuleza.
            (TUBERCULOSIS, experimental,
                eff. of streptomycin (Rus))

VAVILIN, G.I.; FUNSHTEYN, L.V.; SHCHERBAN', E.I.

Histoautoradiographic study of the distribution of phthivazid labelled with radioactive carbon in the lung, liver and spleen. Probl. tub. 42 no.3:74-79 '64.                                (MIRA 18:1)

1. Janingradskiy nauchno-issledovatel'skiy institut tuberkuleza (direktor - prof. A.D.Semenov) i TSentral'nyy nauchno-issledovatel'-skiy rentgeno-radiologicheskiy institut (direktor Ye.I.Vorob'yev), Leningrad.

VAVILIN, G.I.

Exacerbation of chronic pulmonary tuberculosis tumor in elderly persons as a manifestation of a malignant tumor. Probl. tub. 42 no.10:81-82 '64.                              (MIRA 18:11)

1. Leningradskiy nauchno-issledovatel'skiy institut tuberkuleza (direktor - prof. A.D. Semenov).

FUNSHTEYN, L.V.; VAVILIN, G.I. [Leningrad]

Distribution of sulfur-containing compounds (methionine-$S^{35}$) in the focus of pulmonary tuberculosis. Arkh. pat. 27 no.9:27-31 '65.
(MIRA 18:12)

1. TSentral'nyy nauchno-issledovatel'skiy rentgeno-radiologicheskiy institut (direktor Ye.I. Vorob'yev) Ministerstva zdravookhraneniya SSSR i Leningradskiy nauchno-issledovatel'skiy institut tuberkuleza (direktor A.D. Semenov) Ministerstva zdravookhraneniya RSFSR.  Submitted October 9, 1963.

VAVILIN, Kolya; TARTAKOVA, Valya, uchenitsa 8-go klassa; SOLOMKO, Lida, uchenitsa 8-go klassa; YASTREBOVA, Svetlana

Treasure chest of young naturalists' experience. IUn.nat. no.12:22-23
D '58.
(MIRA 11:12)

1. Kozul'skaya srednyaya shkola, Kozul'skogo rayona Krasnoyarskogo
kraya (for Vavilin) 2. Selo Sarykamyshka, Chulymskogo rayona Novosibir-
skoy oblasti (for Tartakova). 3. Ramonskaya srednyaya shkola, Bere-
zovskogo rayona Voronezhskoy oblasti (for Solomko). 4. Shkola No.2
Stanitsy Grigoripolisskoy Starvopol'skogo kraya (for Yastrebova).
(Nature study)  (Agriculture)

MATVEYEV, A.V.; SMIRNOV, V.A.; VAVILIN, L.N.; YEVDOKIMOV, Yu.P.;
KORNILOV, F.M.

Experience in using the method of reducing local aerogamma
anomalies to the level of the earth's surface for aeroradiometric
prospecting.  Vop. rud. geofiz. no.5:76-87  '65.

(MIRA 18:9)

VAVILIH, ..h.; ..........  .

Using a frequency-selective channel in an airborne magnetometer.
Razved. i okh. nedr 31 no.2:25-29  F '65.

(MIRA 18:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut razvedochnoy
geofiziki.

YASEVICH, V.K., prof.; KHODIYEV, E.M., assistent; VAVILIN, M.K.; AKALAYEV,
    N.Kh.; BORZENKO, A.A., ordinator; ALIMOV, R.A.; RABINOVICH, S.A.;
    TSENER, Kh.Kh.; KOKOSOVA, T.A.

Angiocardiography in the diagnosis of congenital vitia cordis.
Med. zhur. Uzb. no.10:10-16 '61.                        (MIRA 14:10)

1. Iz fakul'tetskoy khirurgicheskoy kliniki sanitarnogo i pediatri-
cheskogo fakul'tetov (zav. - prof. V.K.Yasevich) Tashkentskogo
gosudarstvennogo meditsinskogo instituta.
                        (ANGIOCARDIOGRAPHY)
            (HEART—ABNORMITIES AND DEFORMITIES)

VAVILIN, M.P., assistent; KHODIYEV, E.M., assistent

Vascular transplantation in arteriosclerosis obliterans.  Med. zhur.
Uzb. zhur. Uzb. no.11:28-29 N '61.                    (MIRA 15:2)

1. Iz kafedry fakul'tetskoy khirurgii (zav. - prof. V.K.Yasevich)
Tashkentskogo gosudarstvennogo meditsinskogo instituta.
       (ARTERIOSCLEROSIS)   (BLOOD VESSELS—TRANSPLANTATION)

Z/019/62/019/006/002/003
D006/D102

AUTHOR:        Vavilin, O.A.

TITLE:         Diagrams of the automatic control of ventilating equipment

PERIODICAL:    Prehled technicke a hospodarske literatury. Energetika a
               elektrotechnika, v. 19, no. 6, 1962, 258, abstract # E 62-
               3469.  Vodosnabzh. i sanit. Tekhn.,December 1961, no. 12,
               19-20

TEXT:          The article presents diagrams, description, and a comparison
of automatic controls of warm-air heating-plant machine rooms with and with-
out recirculation.  The individual automatic-control elements and their
functions are described.  The original article contains ? figures and 2
tables.  /Abstracter's note: Complete translation./

Card 1/1

VAVILIN, O.A., inzh.

Automatic control layouts for ventilating units. Vo⊃. i san.
tekh. no.12:19-20  D '61.                              (MIRA 15:6)
                (Ventilation)  (Automatic control)

VAVILIN, O.A., inzh.

      Air conditioning on ships. Khol. tekh. 38 no.4:38-39 Jl-Ag '61.
                                              (MIRA 14:1)
      1. Leningradskiy tekhnologicheskiy institut kholodil'noy promy-
shlennosti.
                        (Ships--Air conditioning)

VAVILIN, O.

Cooling whirlwind. Nauka i zhizn' 29 no.9:33　S '62.
(MIRA 15:10)

(Refrigeration and refrigerating machinery)

VAVILIN, O.A., inzh.

Single-duct high-pressure marine air conditioning systems.
Khol. tekh. 40 no.4:30-34 Jl-Ag '63.          (MIRA 16:8)

1. Leningradskiy tekhnologicheskiy institut kholodil'noy
promyshlennosti.
          (Ships—Air conditioning)

VAVILIN, O.A.

Nomogram for determining the air flow rate in a round duct.
Khol.tekh. 42 no.2:75-76 Mr-Ap '65.　　　　　　　　(MIRA 18:5)

VAVILIN, P.A.

    Characteristics of the density of microflora in the air in scarlet fever wards.  Gig.i san. no.7:46-47 Jl '53.                                             (MLRA 6:7)

1. TSentral'nyy institut usovershenstvovaniya vrachey.
                (Air--Bacteriology)  (Scarlet fever)

VAVILIN, P. A., KUZYAKOV, S. I.

Air Sanation in Surgery Dressing Rooms by Means of Bactericidal
Lamps BUV-30.

VOYENNO-MEDITSINSKIY ZHURNAL ( MILITARY MEDICAL JOURNAL), No 12, 1954. p. 48

VAVILIN, P.A., dotsent

Results of the All-Russian Conference on Research Topic Planning.
Gig.i san. 25 no.7:106 Jl '60.       (MIRA 14:5)

1. Iz Moskovskogo nauchno-issledovatel'skogo instituta gigi-
yeny i sanitarii imeni F.F. Erismana.
               (PUBLIC HEALTH RESEARCH)

VAVILIN, Ye.G.

Basic economic effectiveness indices of land reclamation measures for agricultural purposes on farms with livestock raising as their main branch of economy. Trudy SevNIIGiM no.14:91-106 '58. (MIRA 13:6)
(Drainage--Economic aspects)

84445

S/057/60/030/009/010/021
B019/B054

*26.2313*

AUTHORS:        Vavilin, Ye. I., Vagner, S. D., Lanenkina, V. K., and
                ~~Mitrofanova,~~ S. S.

TITLE:          An Investigation of the Positive Discharge Column in a
                Mercury - Neon Mixture

PERIODICAL:     Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 9,
                pp. 1064-1066

TEXT:  The authors studied the ion distribution of the mixture
components; the measurements were made with probes. The methods and the
theory of ion currents on the probes had been developed previously
(Refs. 3,4, and 5). Two formulas are given for the relative ion
concentrations of the components of a binary gas mixture. Fig. 1 shows
the discharge tube. The results are graphically shown in Fig. 2. It
appears that considerable quantities of Ne and Hg ions are present on the
cathode side of the positive column. As ionization leads to a decrease in
Hg in the anode region, and the relative neon and mercury contents are

Card 1/2

84445

An Investigation of the Positive Discharge       S/057/60/030/009/010/021
Column in a Mercury - Neon Mixture              B019/B054

equal on the cathode side of the tube, the ionization of neon is
considerable, irrespective of the low ionization potential of Hg.
Variations in the discharge current do not change this result. There are
2 figures and 6 references: 2 Soviet, 1 German, and 2 US.

ASSOCIATION: Petrozavodskiy gosudarstvennyy universitet  (Petrozavodsk
             State University)

SUBMITTED:   November 16, 1959

Card 2/2

VAVILIN, Ye.I.; VAGNER, S.D.; LANENKINA, V.K.; MITROFANOVA, S.S.

Investigating the positive column of discharge in a mercury--neon mixture.  Zhur. tekh. fiz. 30 no.9:1064-1066 S '60.  (MIRA 13:11)

1. Petrozavodskiy gosudarstvennyy universitet.
        (Electric discharges through gases)

24.3000

75335
SOV/57-29-10-12/18

AUTHOR:      Vavilin, Ye. I., Vagner, S. D., and Drukman, A. M.

TITLE:       Characteristics of a High-Frequency Mercury Discharge
             in a Constant Magnetic Field

PERIODICAL:  Zhurnal tekhnicheskoy fiziki, 1959, Vol 29, Nr 10, pp
             1263-1270 (USSR)

ABSTRACT:    The paper gives the results of an experimental study of
             the effect of a longitudinal constant magnetic field on
             a high-frequency mercury discharge.  The same two-probe
             method is used as that employed by all other investi-
             gators, and the results obtained are compared with
             those obtained by the optical photometric method.  The
             latter method consisted in measuring the intensity of
             the 4916A line when the magnetic field is on, and
             when it is switched off.  The frequency is 7.5 mega-
             cycles, and the voltage is measured with an electro-
             static voltmeter connected to a capacitive divider.
Card 1/3     The spectrometer is of the PS-2 (ПС C-2) type set

Characteristics of a High-Frequency Mercury          75335
Discharge in a Constant Magnetic Field               SOV/57-29-10-19/18

longitudinally with the chamber.  A ten-step reducer
recorded the intensity marks.  The magnetic field
intensity varied between 0 and 68 oersteds, and the
mercury gas pressure varied between $0.5 \times 10^{-3}$ and
$8.9 \times 10^{-3}$ mm Hg.  The results have shown that the
electronic temperature drops with the increase in the
intensity of the magnetic field and with the decrease
in mercury gas pressure.  As the magnetic field
intensity increases, so also increases the concentra-
tion of charged particles over the entire cross section
of the tube.  The concentration reaches its maximum
at a gas pressure at which the electron mean free
path is much greater than their mean Larmor radii,
whether or not the magnetic field is on.  When there
is no magnetic field the density of the gas current
at the walls of the tube is not affected by changes
in pressure; just as soon, however, as the field is
switched on, the gas density sharply increases.  The
magnetic field also decreases the transverse electrical

Card 2/3

Characteristics of a High-Frequency Mercury
Discharge in a Constant Magnetic Field

75335
SOV/57-29-10-12/18

field, at all gas pressures. It was noticed that there
are two types of discharges, a "weak" and a "strong" dis-
charge; these two words are placed in quotation marks
by the authors. The passage from one type of discharge
into another is sudden. The "strong" discharge is
more luminous, and it has higher conductivity and
greater concentration of charged particles than the
"weak" discharge. As the intensity of the magnetic
field increases, the "weak" discharge suddenly changes
into a "strong" one. There are 3 tables; 5 figures; and
11 references, 8 Soviet, 2 U.S., 1 U.K. The U.S. and
U.K. references are: Davies, L. W., Proc. Phys. Soc.,
B66, Nr 397, 33, 1953; Johnson, E., and Malter, L.,
Phys. Rev., 80, 58, 1950; Guthrie, A., Wakerling, R.,
The Characteristics of Electrical Discharges in
Magnetic Fields, 1949.

ASSOCIATION:    Petrozavodsk State University    (Petrozavodskiy gosudar-
                stvennyy universitet)

SUBMITTED:      November 15, 1958

Card 3/3

DUDKO, K., podpolkovnik; VAULIN, Yu., mayor

Testing gas masks in subunits. Voen. vest. 42 no.3:39-40
Mr '63.                                                    (MIRA 17:1)

VAVILINA, A.

Lessons on the subject "atmosphere."  Geog. v shkole no.6:31-39
N-D '53.                                        (MLRA 6:12) ·
                                        (Meteorology--Study and teaching)

SHTENBERG, A.I., prof.; VAVILINA, G.P.  (Moskva)

    Content of the residual quantities of pesticides in foodstuffs;
    survey of literature.  Vop. pit. 24 no.1:3-9  Ja-F '65.
                                     (MIRA 18:9)

VAVILINA, G.P.; SHILLINGER, Yu.I.; MIKHAL'CHUK, B.V.

Method for determining "residual" amounts of simazine in corn
seed.  Vop.pit 21 no.4:60-63 Jl-Ag '62.            (MIRA 15:12)

1. Iz otdela gigiyeny pitaniya (zav. B.D.Vladimirov) Instituta
pitaniya AMN SSSR i analiticheskoy laboratorii (zav. B.V.
Mikhal'chuk) Nauchno-issledovatel'skogo instituta udobreniy i
insektofungitsidov, Moskva.
                    (TRIAZINE)    (CORN (MAIZE))

5 (3)

AUTHORS:    Kutepov, D. F.; Potashnik, A. A.,        SOV/79-29-6-17/72
            Vavilina, K. I.

TITLE:      Investigation in the Field of Synthesis and Transformations in
            the Series of Diaryl Ureas (Issledovaniye v oblasti sinteza i
            prevrashcheniy v ryadu diarilmochevin). VIII. On the Synthesis
            of Chlorine-substituted Diaryl Ureas (VIII. K voprosu sinteza
            khlorzameshchennykh diarilmochevin)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 6, pp 1857 - 1859
            (USSR)

ABSTRACT:   In a previous paper (Ref 2) syntheses of chlorine-substituted
            diaryl ureas under different conditions and by means of phosgene
            were described, in which connection the reaction takes place vig-
            orously already at room temperature owing to the high mobility
            of the hydrogen atoms in the amino groups. In contrast to these
            products the phosgenation with 2,4,6-trichloro- and 2,3,5,6-tet-
            rachloro-aniline takes place only at high temperatures and in
            high-boiling solvents. In the present paper the authors invest-
            igated the phosgenation of 2,4,6-trichloro-aniline in chloro-
            -benzene and 1,2,4-trichloro-benzene. The reaction of trichloro-
Card 1/2    -aniline with phosgene was found to take place more readily in

Investigation in the Field of Synthesis and Trans-    SOV/79-29-6-17/72
formations in the Series of Diaryl Ureas. VIII. On the
Synthesis of Chlorine-substituted Diaryl Ureas

trichloro-benzene at increased temperature on otherwise equal
conditions. It was found that at increasing temperature the re-
action rate and the yield in the end product increases up to a
certain optimum and then decreases. At this temperature increase
apparently side reactions play a certain role which results in
a partial or finally even complete decomposition of the hexa-
chloro-diphenyl-urea. The comparison data on its synthesis in-
dicate (Figure) that the yield in this urea is somewhat higher
in trichloro-benzene than in chloro-benzene. The optimum reac-
tion temperature in trichloro-benzene is $120^{\circ}$ (in chloro-ben-
zene $110^{\circ}$). The 2,2',3,3',5,5',6,6'-octachloro-diphenyl-urea
not yet described in publications was synthesized. There are 1
table and 3 references, 2 of which are Soviet.

SUBMITTED:    May 12, 1958

Card 2/2

VAVILINA, V.

A hand shake across the ocean.  Rabotnitsa 40 no.7:12-13 Jl '62.
(MIRA 16:2)

(Women and peace)

VAVILINA, V.

Congress of women of Uzbekistan. Rabotnitsa 36 no.5:6-8 My '58.

(MIRA 11:5)

(Uzbekistan--Women)

VAVILINA, V.

Far, far away.  Rabotnitsa  36  no.7:12-15  Jl '58.  (MIRA 11:9)
(Uruguay--Description and travel)

VAVILINA, V.

        Mountains bend their peaks. Rabotnitsa  37 no.4:18-20 Ap  '59.
                                          (MIRA 13:1)
         (China--Description and travel)

VAVILINA, V.

    Force that moves mountains. Rabotnitsa 37 no.2:21-24  F '59.

                    (MIRA 12:3)

         (China--Social conditions)

VAVILINA, V.

Women of Azerbaijan. Rabotnitsa 35 no.6:5-7 Je '57.    (MLRA 10:8)

(Azerbaijan--Women)

MARTYSHEV, F.G., prof., doktor sel'skokhoz.nauk; LYAYMAN, E.M., prof.,
doktor biolog.nauk; GRINEVSKIY, A.M., kand.ekonom.nauk; VAVILKIN,
A.S., kand.biolog.nauk; KARPANIN, D.P., kand.biolog.nauk; BABKINA,
N.G., red.; ZUBRILINA, Z.P., tekhn.red.

[Raising fish in ponds] Prudovoe rybovodstvo.  Moskva, Gos.
izd-vo sel'khoz.lit-ry, 1959.  347 p.                (MIRA 13:8)
                        (Fish culture)

VAVILINA, V.

Our Vietnamese friends. Rabotnitsa 34 no.10:22-24 O '56.

(Vietnam--Social conditions)                    (MLRA 9:11)

SHEVTSOV, A.I.;  VAVILKIN, A.P.

Merits and shortcomings of the Regulation on Business Accounting.
Zhel.dor.transp. 37 no.6:59-60 Je '56.                    (MLRA 9:8)

1. Machal'nik Vladimirskogo otdeleniya Gor'kovskoy dorogi (for
Shevtsov);  2. Machal'nik planovogo sektora Vladimirskogo otdele-
niya (for Vavilkin).
                    (Railroads--Accounts, bookkeeping, etc)

VAVILKIN, A. S.

"Biology of Tench and Its Breeding in Ponds."
Thesis for degree of Cand. Biological Sci.
Sub 16 Jun 50, Moscow Technical Inst of Fish
Industry and Economy imeni A. I. Mikoyan

Summary 71, 4 Sep 52, Dissertations Pre-
sented for Degrees in Science and Engineering in
Moscow in 1950. From Vechernyaya Moskva,
Jan-Dec 1950.

VAVILKIN, A.S., kand.biologicheskikh nauk, dotsent

Feeding habits of tenches in ponds. Izv. TSKhA no.3:187-195
'60.                                                    (MIRA 14:4)
                    (Tench-- Food)

VAVILKIN, Vasiliy Mikhaylovich

[How to prepare and conduct trade-union meetings] Kak pod-
gotovit' i provesti profsoiuznoe sobranie. Moskva, Profizdat,
1959.   63 p.                                             (MIRA 14:2)
            (Trade unions)

VAVILOV, A.

School for instructors. IUn.nat. no.4:30-31  Ap '59.  (MIRA 12:3)

1. Direktor oblastnoy stantsii yunnatov, g. Ivanovo.
(Ivanovo Province--Pioneers (Communist youth))

YAKUSHEVSKIY, Ya.N. (Ivanovo); ZHURAVLEV, Ya.G. (Ivanovo); LEONOV, N. (Ivanovo); VAVILOV, A. (Ivanovo)

In memory of Leonid Petrovich Shuiskii. Bot. zhur. 47 no.6:890-893 Je '62. (MIRA 15:7)
. (Shuiskii, Leonid Petrovich, 1893[?]-1961)

ACCESSION NR: AP4029146                 S/0105/64/000/004/0066/0071

AUTHOR: Vavilov, A. A. (Candidate of technical sciences, Docent, Leningrad)

TITLE: Calculating the parameters of nonlinear oscillatory systems from a
specified coefficient of harmonics

SOURCE: Elektrichestvo, no. 4, 1964, 66-71

TOPIC TAGS: oscillatory system, nonlinear oscillatory system, nonlinear
oscillatory system calculation

ABSTRACT: An approximate relation is theoretically established between the
coefficient of harmonics of generated oscillations and the parameters of the
generating nonlinear oscillatory system. The harmonic content at the nonlinear-
element output is approximately evaluated including a particular case of relatively
small higher harmonics. Then, the first-approximation equation for determining
amplitude $A_1$ and frequency $\omega$ of the first harmonic is given by:

Card 1/2

ACCESSION NR: AP4029146

$[1 + W_{n_i}(A_i, j\omega) W_i(j\omega)] x_i = 0$, where $W_i(j\omega) = R_i(\omega) e^{j\gamma_i(\omega)}$ is the complex transfer constant of the linear part of the system $W_i$ . The coefficient of harmonics at the section $W_i$ output is:

$$x_i = \sqrt{\sum_{k=2}^{k=\infty} \left[ b_k(A_i, \omega) \frac{R_i(k\omega)}{R_i(\omega)} \right]^2} \cdot 100\%,$$

where $R_i(\omega)$ and $R_i(k\omega)$ are the moduli of the complex transfer constant of the section $W_i$ at frequencies $\omega$ and $k\omega$. Orig. art. has: 6 figures and 51 formulas.

ASSOCIATION: none

SUBMITTED: 01Jul63          DATE ACQ: 01May64          ENCL: 00

SUB CODE: $EC$              NO REF SOV: 004            OTHER: 000

Card 2/2

VAVILOV, A. A.

USSR/Electricity - Personalities

May 52

"Professor N. P. Bogoroditskiy, in Connection With His 50th Birthday," P. I. Skotnikov, A. F. Alabyshev, S. Ya. Sokolov, A. A. Vavilov, V. V. Pasynkov, B. M. Tareyev

"Elektrichestvo" No 5, p 68

Reviews main features of professional life of Nikolay Petrovich Bogoroditskiy, born 20 May 02 in Tashkent. His principal interest has been development of h-f dielectrics. Between 1933 and 1942 he developed the now widely-used radio materials tikond, micalex, h-f glass, radio porcelain, and ultra-porcelain. Affiliations include Military Elec Eng Acad imeni Budennyy ( 1933 - 1942) and a large plant laboratory (where he produced a number of inventions) during World War II. He has published a number of articles in journals, books, and textbooks. He received three Stalin Prizes: for an invention in field of ceramics (1942); for textbook "Electrical Engineering Materials" (1952); and for development and organization of mass production of parts for radio equipment (1952).

PA 240T58

VAVILOV, A-A.

AID P - 1470

Subject : USSR/Electricity

Card 1/1 Pub. 27 - 21/36

Authors : Rabinovich, I. N., Bayko, V. F., Vavilov, A. A., Engs.

Title : Amplidyne regulators with in-phase field (Discussion of the article by O. I. Zolotarev, Elektichestvo, No.3, 1953)

Periodical : Elektrichestvo, 2, 67-68, F 1955

Abstract : The authors criticize the statement of the problem by O. I. Zolotarev, in which they say he made several incorrect assumptions leading to wrong conclusions. They also criticize the definitions of the basic characteristics of amplidyne regulators. This, they conclude, disqualifies the article for use in the study and testing of this type of electrical machinery.

Institution: Plant "Elektrosila"

Submitted : No date

VAVILOV, A.A.; VERKHOLAT, M.Ye.; RUBASHKIN, I.B.; Prinimali uchastiyc:
YAKOVLEV, V.B.; DEMIDOV, S.V.; VOROSHILOV, M.S., kand. tekhn.
nauk, retsenzent

[Actuating electromechanical servosystems for copying milling
machines] Silovye elektromekhanicheskie slediashchie sistemy
kopiroval'no-frezernykh stankov. Moskva, Mashinostroenie,
1964.  406 p.                                    (MIRA 18:2)

of both components of armature reaction, and one with incomplete compensation. A simplified formula is derived for rate of rise of amplifier voltage, which is proportional to control voltage applied, or to square root of control power. There is good agreement with experiment.

FATEYEV, A.F., doktor tekhn. nauk; VAVILOV, A.A., kand. tekhn. nauk;
OLEYNIKOV, V.A., inzh.

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

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

VAVILOV, A.A

BUTUSOV, Ivan Vasil'yevich; VAVILOV, A.A., red.; DUSHIN, Ye.M., red.; DOLMATOV, P.S., vedushchiy red.; YASHCHURZHINSKAYA, A.B., tekhn. red.

[Automatic measuring and regulating instruments] Avtomaticheskie kontrol'no-izmeritel'nye i reguliruiushchie pribory. Leningrad, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry, Leningr. otd-nie, 1958. 388 p.　　　　　　　　　　　　(MIRA 11:5)
　　　　(Measuring instruments)

SOV/146-58-4-11/22

AUTHORS:     Fateyev, A.V., Doctor of Technical Sciences, Professor, Vavilov, A.A., Candidate of Technical Sciences, Docent, Granstrem, M.P., and Kotchenko, F.F., Engineers

TITLE:       An Automatic Quick-Response Compensator Developed on the Basis of the EPP-09 Instrument

ABSTRACT:    The automatic, quick-response compensator EPP-09, produced by the Soviet industry, does not meet the quick-response requirements for laboratory and production purposes, since the indicator travels over the dial within 1 second, while in some cases a travelling speed of 0.2 - 0.3 seconds is required. The solution of this problem presents great difficulties, since re-adjustments must be kept at a minimum and must not exceed 0.2 - 0.3% of the dial length. The minimum zone of non-sensitivity must not exceed 0.1 - 0.2% of the dial length. The experience of a number of foreign enterprises proves the possibility of creating a device which

Card 1/4

An Automatic Quick-Response Compensator Developed on the Basis of
the EPP-09 Instrument

provides the required quick-response.  In this paper,
the authors describe the servo mechanism for the
quick-response automatic compensator EPP-09 with a
measuring range of 0 - 10 millivolts and 0 - 500 micro-
volts, and present also some results of the experimen-
tal investigation of the model of the automatic, quick
-response compensator.  It has an indicator travelling
time of 0.25 - 0.3 seconds with a maximum readjustment
value of     0.2 - 0.3% of the dial length.  The improve-
ments were developed at the Kafedra avtomatiki i tele-
mekhaniki Leningradskogo elektrotekhnicheskogo insti-
tuta imeni V.I. Ul'yanova (Le·ina) (Chair of Automation
and Remote Controls of the Leningrad Electrical Engi-
neering Institute imeni V.I. Ul'yanov (Lenin)).  Fig-
ure 1 shows the principal circuits of the servo mecha-
nism.  The motor RD-09 which was originally used, was
replaced by a DARM-4/2 motor, because the ASM-100
motor did not provide the required quick-response

Card 2/4

SOV/146-58-4-11/22

An Automatic Quick-Response Compensator Developed on the Basis of
the EPP-09 Instrument

(only 0.5 seconds). The control winding of the DARM-
4/2 motor is fed from the push-pull output stage of
an electronic amplifier with 6P3S tubes. Figure 3
shows the circuit diagram of the electronic amplifier
of the automatic quick-response compensator for the
measuring range of 0 - 10 millivolts, while the ampli-
fier of the range of 0 - 500 microvolts is shown in
Figure 4. Each amplifier is built with two 6N2P, one
6N1P and two 6P3S tubes. Figure 5 shows a photograph
of the electronic amplifier. Figures 6, 7, 8, 9 show
oscillograms and diagrams of the functioning of the
servo mechanism. The zone of non-sensitivity is 0.1 -
0.2% of the dial length. The authors recommend the
servo mechanism also for other automatic, quick-re-
sponse compensators produced by the Soviet industry.
There are 1 photograph, 3 circuit diagrams, 1 graph,
4 oscillograms, 2 diagrams and 3 references, 2 of which
Card 3/4        are Soviet and 1 English.

SOV/146-58-4-11/22

An Automatic Quick-Response Compensator Developed on the Basis of the EPP-09 Instrument

ASSOCIATION: Leningradskiy elektrotekhnicheskiy institut imeni V. I. Ul'yanova (Lenina) (Leningrad Electrical Engineering Institute imeni V.I. Ul'yanov (Lenin))

SUBMITTED:   April 13, 1958

Card 4/4

SOV/144-58-7-7/15

AUTHOR:  Vavilov, Aleksandr Aleksandrovich, Candidate of Technical
         Sciences, Docent

TITLE:   The Stabilisation of Automatic Control Systems by Means
         of Analogue Links Connected in a Local Feed-back Circuit
         (Stabilizatsiya sistem avtomaticheskogo regulirovaniya
         pri pomoshchi analogov zven'yev, vklyuchayemykh v tsep'
         mestnoy obratnoy svyazi)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy,
            Elektromekhanika, 1958, Nr 7, pp 67-74 (USSR)

ABSTRACT: The article first gives a brief review of the use of local
          feed-back to stabilise automatic control systems.
          Expression (1) is given for the complex transmission
          coefficient of such a system, in which conditions (2) and
          (3) are usually fulfilled.  It is stated that three main
          difficulties arise with normal methods of feed-back and
          that in a number of cases these can be overcome by using
          analogue links in the feed-back circuit.  The main
          feature of this method of stabilising automatic control
          systems is that instead of using one or several real
          links as shown in Fig 1 their analogues are used and the
Card 1/4  links themselves are not included in the feed-back
          circuit  (see Fig 3).  In this case for the frequency

SOV/144-58-7-7/15

The Stabilisation of Automatic Control Systems by Means of Analogue
Links Connected in a Local Feed-back Circuit

range in which condition (2) is fulfilled the complex
transmission coefficient of the corrected system is given
by expression (4). Various modifications of the
transmission coefficient necessary to meet particular
cases are considered. Three examples of stabilisation
of automatic control systems by analogue links in the
feed-back circuit are then considered. The first example
concerns a control system in which it is necessary to
effect feed-back from two aperiodic links with a high
level of interference in the output of one of them.  In
order to reduce the interference a filter is usually
connected in the feed-back circuit as shown in Fig 2,
but the use of such a filter considerably complicates the
problem of determining the stability of the internal
circuit.  Fig 4a shows a typical diagram of an internal
circuit of a system with a filter in the feed-back
circuit whilst Fig 4b shows a diagram of an internal
control system circuit with an analogue generator in the
local feed-back circuit.  With this arrangement
interference does not enter the feed-back circuit.

Card 2/4

SOV/144-58-7-7/15

The Stabilisation of Automatic Control Systems by Means of Analogue Links Connected in a Local Feed-back Circuit

In the second example, it is supposed that the control system must take feed-back from an amplifier of given transmission function and a direct current motor. Feed-back related to the motor speed is usually obtained from a tacho-generator or a tachometric bridge and in either case there is liable to be considerable interference in the output because of the presence of a commutator, and so a filter must be used in the feed-back circuit. Fig 5a shows a diagram of the internal circuit of a system with filters in the feed-back circuit and a d.c. tacho-generator, whilst Fig 5b shows the corresponding circuit with a tachometric bridge. To use analogue links in a circuit of this kind there must be applied to the output of the amplifier link a negative feed-back from an analogue of the d.c. motor, as shown in Fig 6a. The third example is similar to example (2) except that the internal circuit may be unstable because one link has a higher amplification factor or because of the values of the time constants. Fig 6b gives a diagram of the system with partial analogue of

Card 3/4  internal circuit of the system with partial analogue of

SOV/144-58-7-7/15

The Stabilisation of Automatic Control Systems by Means of Analogue
Links Connected in a Local Feed-back Circuit

motor and tacho-generator in the local feed-back circuit
by means of which the stability of the internal circuit
can be increased. If it is necessary still further to
increase the stability of the internal circuit, use may
be made of the diagram shown in Fig 6, of a circuit with
analogue in the local feed-back circuit corresponding to
a motor and tacho-generator only over a certain
frequency range.
There are 6 figures, no references.

ASSOCIATION: Kafedra avtomatiki i telemekhaniki Leningradskogo
elektrotekhnicheskogo instituta (Chair of Automation
and Telemechanics, Leningrad Electro-technical
Institute)

SUBMITTED: May 5, 1958

Card 4/4

SOV/110-58-11-3/28

AUTHOR:     Vavilov, A.A.    (Cand.Tech.Sci.)

TITLE:     The Selection of a Rational Control Circuit for an Amplidyne-motor without a Tacho-generator    (Vybor ratsional'noy skhemy sistemy regulirovaniya ƏMU-D bez takhogeneratora).

ABSTRACT:   Systems for automatically controlling the speed of a d.c. motor over a wide range are extensively used, particularly for machine tools.    When the speed range is very great and high stability of speed is not specially important it is advantageous to use simplified control systems on the amplidyne-motor system with no tacho-generator.    In order to make a rational choice of circuit for such a control system it is necessary to compare existing systems.    A generalised equivalent control system circuit is given in Fig.1.    This circuit can be used to allow for all the main factors that influence the operation of the system.    Various control circuits without intermediate amplifier or tacho-generator can be considered as particular cases of this circuit.

Card 1/5

SOV/110-58-11-3/28

The Selection of a Rational Control Circuit for an Amplidyne-motor Without a Tacho-generator.

This article compares control systems on the basis of their steady-state performance. To compare amplification factors and errors of control systems it is necessary to formulate steady-state equations for the generalised equivalent circuit. An equation for the control system in the steady state is then written. Six major variants of the circuit given in Fig.1 are drawn in Fig.2. Half are variants of a low-impedance asymmetric bridge circuit; the others are variants of a symmetrical but otherwise similar circuit. Of the former, the greatest amplification factor, and, therefore, the greatest range of speed control, can be obtained with the circuit that includes a compensation winding in the bridge arm containing the motor. In the case of three symmetrical bridge circuits, the same preference applies. Thus of the nine possible variants of bridge circuit it is necessary to consider particularly variants I and IV of Fig.2. The errors of these control circuits are then analysed. In circuit I the main error depends on the load and the width of the amplidyne hysteresis

Card 2/5

SOV/110-58-11-3/28

The Selection of a Rational Control Circuit for an Amplidyne-motor
Without a Tacho-generator.

loop.    The load error may be minimised by appropriate
choice of control system parameters, and the hysteresis
error may be reduced by special circuit features.  However,
the errors cannot be corrected over the entire range of
control without altering the control-circuit characteristics
for different parts of the range.    An expression is then
derived for the main errors of circuit IV.    In order to
compare the amplification factors of control systems
based on circuits I and IV and to elucidate the influence
of control-winding parameters, the example is considered
of a speed-control system for motor type PN-28.5 with
amplidyne EMU-25-3000, and the optimum control-winding
parameters for this system are determined.    The
calculations are first made for circuit I;  Fig.3 gives a
graph of the relationship between the amplification factor
of the control system and the control-winding parameters,
and the additional resistance in the bridge diagonal.
Similar calculations are then made for circuit IV and
similar curves for this case are plotted in Fig.4.    The

Card 3/5

The Selection of a Rational Control Circuit for an Amplidyne-motor
Without a Tacho-generator.

graphs show that bridge-circuit speed-control systems
for d.c. motors can operate without control windings in
the bridge diagonal.   A greater amplification factor than
that obtained with no control winding can only be achieved
with certain control-winding parameters.   Experimental
tests on various control systems confirmed the conclusions
arrived at in the work, and demonstrated the practicability
of a control system with a speed variation range of
100 - 150.   Experimental curves of the characteristics
of a d.c. motor with the control system are given in Fig.5.
It is concluded that the circuit of Fig.1 gives the
greatest amplification factor.   However, with this circuit
it is necessary to alter the degree of compensation of the
amplifier when altering the controlled speed, which
considerably complicates control.   The bridge symmetrical
circuit is recommended to ensure minimum errors and
simplicity of control.   When circuit IV is used without
a control winding in the bridge arm it is advisable to

Card 4/5

SOV/110-58-11-3/28

The Selection of a Rational Control Circuit for an Amplidyne-motor
Without a Tacho-generator.

include appropriate control windings in the bridge
diagonal.    There are 5 figures and 3 Soviet references.

SUBMITTED: December 21, 1957.

1. Amplidynes--Operation   2. Electric motors--Control systems
3. Electric circuits--Performance   4. Control systems--Performance

Card 5/5

Vavilov, A·A

8(2)

PHASE I BOOK EXPLOITATION    SOV/1953

Anisimov, Vladimir Ivanovich, Aleksandr Aleksandrovich Vavilov, and
Aleksandr Vasil'yevich Fateyev

Sbornik primerov i zadach po lineynoy teorii avtomaticheskogo
regulirovaniya. (Collection of Examples and Problems on Linear
Theory of Automatic Control)  Moscow, Gosenergoizdat, 1959.
254 p.  10,000 copie printed.

Ed. (Title page): A.V. Fateyev, Doctor of Technical Sciences, Pro-
fessor;  Ed. (Inside book): V.G. Kepperman; Tech. Ed.: Ye.M. Soboleva

PURPOSE:  This collection of examples and problems may be used by
students of higher technical schools and by engineering and tech-
nical personnel engaged in the design and study of automatic
control systems.  This book is intended to help the reader to acquire
experience in applying linear automatic control theory to the solu-
tion of practical problems.  The book may be used by students
taking the course in automatic control offered by the Leningradskiy
elektrotekhnicheskiy institut (Leningrad Electrical Engineering
Institute imeni V.I. Ul'yanov).

Card 1/4

SOV/1953

Collection of Examples (Cont.)

COVERAGE: Particular attention is given to problems in automatic
control of voltages, currents, power, position, speed, etc.
Problems of obtaining equations and transfer functions of elements
and systems of automatic control are also discussed. The authors
thank A.A. Voronov, Doctor of Technical Sciences, and Docent
V.G. Kepperman, Candidate of Technical Sciences, for reviewing the
manuscript. There are 8 Soviet references (including two
translations).

TABLE OF CONTENTS:                                                    3

Card 2/4

SOV/1953

Collection of Examples (Cont.)

Card 3/4

Collection of Examples (Cont.)                              SOV/1953

AVAILABLE:  Library of Congress

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                                                            8-10-59
    Card 4/4

*16.9500*
~~9(2)~~

67465
SOV/146-2-4-3/19

AUTHOR: Vavilov, A.A. Candidate of Technical Sciences, Docent, Solodovnikov, A.I., Engineer

TITLE: An Instrument for Determining Frequency Characteristics in the Infra-Low Frequency Range

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroye-niye, 1959, Nr 4, pp 19-27 (USSR)

ABSTRACT: This is a detailed engineering account of the design and performance of a new instrument developed at the Chair of Automatics and Telemechanics of the Lenin-grad Electrotechnical Institute imeni V.I. Ul'yanov (Lenin) (LETI). The instrument determines with a high accuracy the amplitude and phase characteristics of frequencies according to the first harmonics progression of various automatic control systems (follower and other) and their elements working on direct current as well as carrier frequencies of 400 - 500 cycles.

Card 1/3

67465
SOV/146 -2-4-3/19

# An Instrument for Determining Frequency Characteristics in the Infra-Low Frequency Range

The article includes a block diagram of the device (Figure 1), diagrams showing its general working principle (Figure 2), and its measuring system (Figures 3 and 4). An example of logarithmic frequency characteristics of a circuit with a nonlinear element measured by the instrument (Figure 7) is given. A model of the instrument was produced at the LETI. The voltage amplitude of the instrument is 0-100 volts; the frequency of sinusoidal oscillations and the modulation frequency of the carrier frequency variations on the output of the generator is 0.02-50 cycles, the output resistance of the instrument's measuring circuit is 1 megohm, and the measuring range of the voltage amplitude on the input and output of the checked object is 1, 5, 10, 50, 100,

Card 2/3

67465
SOV/146-2-4-3/19

An Instrument for Determining Frequency Characteristics in the
Infra-Low Frequency Range

and 250 volts. The instrument has in every range
an accuracy of $1-2^\circ$ in phase and of 2% in ampli-
tude. The authors wish to express their gratitude
to the engineers F.F.Kotchenko, E.V.Sergeyev, and
V.B. Yakovlev for having participated in the deve-
lopment and checking of the device. This article
was recommended by the Kafedra avtomatiki i tele-
mekhaniki (The Chair of Automati  and Telemechanics).
There are 5 diagrams, 2 graphs, 1 table, and 2 So-
viet references.

ASSOCIATION: Leningradskiy elektrotekhnicheskiy institut imeni
V.I. Ul'yanova /Lenina/ (The Leningrad Electrical
Engineering Institute imeni V.I. Ul'yanov/Lenin)

SUBMITTED:  March 31, 1959

Card 3/3

BASHARIN, Artemiy Vasil'yevich. Prinimal uchastiye POL', A.Yu., VAVILOV,
A.A., red.; SOBOLEVA, Ye.M., tekhn.red.

[Calculation of the dynamics and synthesis of nonlinear control
systems] Raschet dinamiki i sintez nelineinykh sistem upravleniia.
Moskva, Gos.energ.izd-vo, 1960.  298 p.                (MIRA 13:12)

(Automatic control)

S/119/60/000/06/11/016
B014/B014

AUTHORS:    Vavilov, A. A., Candidate of Technical Sciences,
            Solodovnikov, A. I., Engineer

TITLE:      An Instrument for Recording Frequency Characteristics

PERIODICAL: Priborostroyeniye, 1960, No. 6, pp. 28-29

TEXT:  The instrument described here was developed at the Kafedra
avtomatiki i telemekhaniki Leningradskogo elektrotekhnicheskogo instituta
im. V. I. Ul'yanova (Lenina) (Chair of Automation and Telemechanics of
the Leningrad Electrotechnical Institute imeni V. I. Ul'yanov (Lenin))
for the purpose of extending the possibilities of experimental investi-
gation of automatic control systems. By means of this instrument it is
possible to record the amplitude-frequency and phase-frequency character-
istics of various linear and non-linear elements of an automatic control
system with a high degree of accuracy. Its block diagram is shown in
Fig. 1. The instrument further permits the examination of elements
using alternating or direct current. Such a device was built by the
Laboratoriya avtomatiki i telemekhaniki Leningradskogo elektrotekhniches-

Card 1/2

An Instrument for Recording Frequency
Characteristics

S/119/60/000/06/11/016
B014/B014

kogo instituta (Laboratory of Automation and Telemechanics of the
Leningrad Electrotechnical Institute). Finally, the authors give the
technical data of this instrument, which records the frequency character-
istic of elements using alternating or direct current (carrier
frequency of 400-500 cps) according to the first harmonic. There are
4 figures and 1 table.

Card 2/2

VAVILOV, A.A., kand.tekhn.nauk, dotsent (Leningrad)

Calculation of the parameters of nonlinear oscillatory systems
using a known harmonic factor. Elektrichestvo no.4:66-72 Ap
'64.                                                (MIRA 17:4)

9(6)(2)

AUTHORS: Vavilov, A.A., Candidate of Technical Sciences, Solodovnikov, A.I., Post Graduate Student, Kotchenko, F.F., Assistent

TITLE: A Sinusoidal Oscillator With a Frequency Range of $10^{-4}$ to 100 Cycles

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye, 1960, Vol. 3, Nr 1, pp 10-17 (USSR)

ABSTRACT: For checking automatic control systems and investigating vibrational phenomena, oscillations must be generated in a low frequency range of $10^{-4}$ to $10^{-3}$ cycles. In the USSR, the infra-low "NG-2" and "NGPK" [Ref. 1] oscillators with a frequency range of 0.01-100 cycles are used. G. Klein [Ref. 2, English], describes an electronic oscillator generating sinusoidal oscillations in a frequency range of $0.8 \cdot 10^{-4}$ to 0.05 cycles. The present article contains information on an electronic oscillator of infralow-frequency harmonic oscillations with a relay control unit (Figure 1). The principal block diagram is given (Figure 3). The device can be assembled on three computing amplifiers with an electro-magnetic or electronic

Card 1/3

S/146/60/003/01/002/016
D002/D006

A Sinusoidal Oscillator With a Frequency Range of $10^{-4}$ to 100 Cycles

relay element, and has two dividers, viz., the "D1" and "D2". The authors carried out theoretical and experimental investigations in order to prove the possibility of constructing this oscillator using standard computing amplifiers. The polarized "RP" relay can be used in the frequency range of $10^{-4}$ to 10 cycles, or an electronic key for frequencies of $10^{-4}$ to 100 cycles and more. "MN-7" electronic amplifiers were used for experiments at frequencies down to $10^{-3}$ cycles. The proposed oscillator can be used for measurement purposes, e.g. in oscillographs for obtaining the circular scan in a wide frequency range or in automatic installations. The article was recommended by the Kafedra avtomatiki i telemekhaniki (Chair of Automation and Tele-mechanics). There are 2 diagrams, 1 graph, 1 photograph, and 2 references, 1 of which is English, 1 Soviet.

ASSOCIATION: Leningradskiy elektrotekhnicheskiy institut imeni V.I.Ul'yanova/Lenina (Leningrad Electrotechnical Institute imeni V.I.Ul'yanov /Lenin)

Card 2/3

S/146/60/003/01/002/016
D002/D006

A Sinusoidal Oscillator With a Frequency Range of $10^{-4}$ to 100 Cycles

SUBMITTED:     January 16, 1960

Card 3/3

VAVILOV, A.A.

      Consideration of periodically distrubin; actions in the synthesis
      of the automatic speed regulatin; system of an electric motor. Izv.
      vys. ucheb. zav.; elektromekh. 3 no.11:85-93 '60.    (MIRA 14:2)
              (Electric motors)

22553

S/146/61/004/002/006/011
B124/B206

9.7000

AUTHORS: Vavilov, A. A., Bezvikonnyy, A. A., Sergeyev, E. V.

TITLE: Potentiometer-type tracking system with dynamic error compensation

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye, v. 4, no. 2, 1961, 58-66

TEXT: This paper presents the results of developing the system mentioned in the title for joint operation with a programming device performing the approximation to a given function by means of linear sections. For the total elimination of the steady dynamic error and considerable reduction of the transitional dynamic error of the tracking system it is of advantage to use compensation circuits in the main feedback and at the system input. The diagram of such a tracking system is given in Fig. 1. The tracking system contains: ПУ a programming device for linear approximation of the given function; $W_1(p)$ the elements of the main part of the tracking system, and $W_{kII}(p)$ a $W_{kI}(p)$ a compensating circuit at the input of the system, and $W_{kII}(p)$ a compensating circuit in the main feedback of the system. For elaboration

Card 1/8

22553
S/146/61/004/002/006/011
B124/B206

Potentiometer-type tracking...

of the system it is suitable to achieve a velocity compensation of the
steady dynamic error by using the compensation circuit in the main feed-
back of the system, and of the transitional dynamic error by using a
compensation circuit connected to the input of the system. For the tracking
system shown in Fig. 1, the following correlations exist between the output
value $x(p)$, the dynamic error of the system $x(p)$, and the controlling
action $x_c(p)$:

$$x(p) = \frac{W_1(p)\,[1 + W_{\kappa I}(p)]}{1 + W_1(p)\,W_{\kappa II}(p)}\,x_y(p); \qquad (1)$$

$$\Delta x(p) = \frac{1 + W_1(p)\,[W_{\kappa II}(p) - 1 - W_{\kappa I}(p)]}{1 + W_1(p)\,W_{\kappa II}(p)}\,x_y(p), \qquad (2)$$

where $W_1(p) = N_1(p)/D_1(p)$ is the transmission function of the open tracking
system without considering the compensation circuits, $W_{\kappa I}(p) = N_{\kappa I}(p)/D_{\kappa I}(p)$
the transmission function of the compensation circuit at the input of the
system, and $W_{\kappa II}(p) = N_{\kappa II}(p)/D_{\kappa II}(p)$ the transmission function of the
compensation circuit in the main feedback of the system. Fig. 2 shows a
potentiometer-type tracking system with the amplifier ЭМУ-3 (EMU-3A) and

Card 2/8

Potentiometer-type tracking...

the electric motor $СЛ$-621 (SL-621). For the transmission function of the compensation circuit with respect to the controlling action,

$$W_{kI}(p) = u_{kI}(p)/u(p) = K_{3t}R_4''C_1 p^2/\left[(R_4' + R_4'')Cp + 1\right]$$

$$= \left[(R_4''/R_4' + R_4'')(K_{3t}/T_3)T_3^2 p^2\right]/(T_3 p + 1) = (\alpha T_3^2 p^2)/(T_3 p + 1) \quad (5)$$

holds, where $T_3 = (R_4' + R_4'')C_1$ is the time constant of the differentiating circuit, $\alpha = (R_4''/R_4' + R_4'')K_{3t}/T_3$ the transmission coefficient of the compensating circuit $W_{kI}(p)$, which connects the voltage $u_{kI}$ at the output of the compensation circuit with the controlling action to the system u, and $K_{3t}$ the transmission coefficient of the voltage u' at the potentiometer pickup to the controlling action u. The logarithmic amplitude-frequency characteristics $L_1(\omega)$ and phase-frequency characteristics $\varphi_1(\omega)$ of the open system under consideration of the flexible and rigid feedbacks are given in Fig. 3. The low-frequency range of the simplified equivalent system determines the steady dynamic error, and the mean frequency range the

Card 3/8

22553

S/146/61/004/002/006/011
B124/B206

Potentiometer-type tracking...

transitional dynamic error. On the basis of the asymptotic characteristics $L_1(\omega)$ and $\varphi_1(\omega)$ shown in Fig. 3, the simplified transitional function of the system has the form $W_{1e}(p) = K/[p(Tp+1)^2]$ (8), where K is the quality of the system without consideration of the compensation circuits and T the time constant of the simplified equivalent system. In Fig. 3, the logarithmic frequency characteristics of the open system are given under consideration of the compensation circuit $W_{kII}(p)$: $L(\omega) = L_{e1}(\omega) + L_{kII}(\omega)$ and $\varphi(\omega) = \varphi_{e1} + \varphi_{kII}(\omega)$. As can be seen from these characteristics, the introduction of a compensation circuit with the time constant $T_1 = 0.5$ sec into the main feedback of the system is of no essential effect on the stability of the system. The oscillogram 4,a shows the operation of the tracking system without compensation of the dynamic error at a transmission speed $\vartheta = 1.2$ v/sec; in this case the steady error is $\Delta\bar{u}_{st} = 170$ mv and the maximum transitional dynamic error $\Delta\bar{u}_{max} = 195$ mv. Fig. 4,б shows the operation of the tracking system with compensation of the steady error by means of a compensation circuit in the main feedback of the system, 4,в

Card 4/8

S/146/61/004/002/006/011
B124/B206

Potentiometer-type tracking...

the operation of a tracking system with compensation of the steady and
transitional dynamic errors for the same transmission speed of $f = 1.2$ v/sec.
From Fig. 4,6 results that the steady error of the tracking system practi-
cally equals zero and the maximum transitional dynamic error is $\Delta U_{max} = 25$ mv.
This study was recommended by the Department of Automation and Telemechanics.
There are 4 figures and 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc.
The reference to the English-language publication reads as follows:
King L. H. Reduction of Forced Error in Closed-Loop Systems. Proc. I. R. E.
1953, v. 41, No. 8, August, 4648, pp. 1037-1043.

ASSOCIATION:    Leningradskiy elektrotekhnicheskiy institut im. V. I. Ul'yanova
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SUBMITTED:    December 19, 1960

Legend to Fig. 1:
a) ПУ programming device
b) $x_{outp}$ (p)

Card 5/8
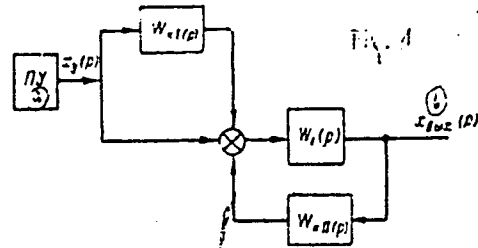
S/146/62/005/003/007/014
D201/D308

AUTHORS:     Vavilov, A.A. and Solodovnikov, A.I.

TITLE:     Analysis of operation of a very low frequency gener-
ator with a limiter

TEXT:     In the present article a ULF generator is described,
based on a very low frequency oscillating system and utilizing an
amplitude limiter. The oscillating system consists of two integra-
ting amplifiers and of a summing amplifier having an overall feed-
back. The oscillations are produced by a variable local positive
feedback chain. The amplitude of oscillations is limited by a
double diode limiter. Continuous tuning is obtained potentiometric-
ally. The above principle of ULF generation is used in generators
type HГ-2 (NG-2) and HГПК-2 (NGPK-2), for producing sinusoidal
oscillations within the frequency range 10-2 - 100 c/s with total
harmonic content less than 5% for the frequency range 10-2 - 0.1 c/s

Card 1/2

Analysis of operation ...                     S/146/62/005/003/007/014
                                              D201/D308

and less than 3% for other ranges.   The description of this type of
generator is given, basic relationships, permitting a choice of a
set of optimum parameters for a given harmonic content, amplitude
and frequency of oscillations, are derived; the stability of ampli-
tude and of harmonic content in tuning are analyzed and means of
improving the generator characteristics are discussed.  The use of
an additional amplifier stage or of a limiter with varying limiting
level is stated to reduce distortion down to 0.1 - 1%, which is nec-
essary for obtaining a two-phase harmonic oscillation.  A short
survey of existing types of ULF generators is also given.  There are
5 figures.

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SUBMITTED:      June 3, 1961

Card 2/2

39337
S/146/62/005/004/006/013
D295/D308

9.2586

AUTHORS:     Vavilov, A.A. and Solodovnikov, A.I.

TITLE:       Electronic generator of infra-low frequencies with
             a relay-type control element

PERIODICAL:  Izvestiya vysshikh uchebnykh zavedeniy. Priboro-
             stroyeniye, v. 5, no. 4, 1962, 31-39

TEXT:        The paper gives a mathematical analysis as the basis
for the design of a sinusoidal oscillator covering the frequency
band 0.0001 - 100 c/s with a harmonic content $\leq$ 1%. The system
consists of an integrating amplifier with negative feedback, a sec-
ond integrating amplifier, a summing amplifier, and a feedback loop
containing a relay-type element to compensate for attenuation every
half period. Two idealized versions of piece-wise linear character-
istics for the relay element are treated by the method of harmonic
linearization. Then, from the equation of the oscillatory system
in operational form, the resonant frequency and the relative attenu-
ation are obtained, and conditions for self-sustained close-to-sinu-

Card 1/2

Electronic generator ...

S/146/62/005/004/006/013
D295/D308

soidal oscillations are established. The harmonic content is given in graphical form. The output-amplitude stability is shown to be governed mainly by the stability of the characteristic of the relay element. In addition to the low-harmonic content and good amplitude stability the following features revealed by the analysis are emphasized: phase-quadrature voltages can be obtained from the outputs of the first and second integrator; a suitable choice of the parameters gives transientless frequency regulation over a wide band; the circuit lends itself to be driven from an external periodic impulse voltage which permits the design of generators of several sinusoidal or rectangular oscillations of multiple frequencies. One such circuit is discussed in detail. There are 5 figures.

ASSOCIATION:     Leningradskiy elektrotekhnicheskiy institut im. V.I. Ul'yanova (Lenina) (Leningrad Electrotechnical Institute im. V.I. Ul'yanov (Lenin))

SUBMITTED:       June 3, 1961

Card 2/2

S/103/62/023/008/006
D409/D301

AUTHOR:          Vavilov, A.A. (Leningrad)

TITLE:           Investigating symmetrical self-oscillations in relay systems by means of logarithmic characteristics

TEXT:            An approximate method is proposed for studying the existence and stability of periodic motions in relay systems; the method is based on describing-function analysis. The approximate equation for symmetrical periodic motions in relay systems is derived, viz.:

$$[1 + W(j\omega) k_n W_n(\mu)] x_1 = 0.$$     (3)

where $W(j\omega)$ is the complex transfer-ratio of the linear part of the system, $k_n$ - the transfer ratio of the relay element (which does not depend on the amplitude $\mu$ of the input signal), $W_n$ - the normalized

1/4

S/103/62/023/008/003/006
D409/D301

Investigating symmetrical ...

equivalent complex transfer-ratio of the relay element, and $x_1$ the first harmonic at the output of the linear part. The formulas for the equivalent logarithmic amplitude- and phase characteristics are:

$$L(\mu) = 20 \lg k_n + L_n (\mu), \tag{4}$$

$$\varphi_n (\mu) = \text{arc tg } \frac{q' (\mu)}{q (\mu)} . \tag{5}$$

where $L_n(\mu)$ is the normalized, equivalent, logarithmic amplitude characteristic of the relay element. The equivalent logarithmic characteristics of various types of relay elements are listed in a table. The condition for the existence of periodic motions in the relay system under consideration is

$$k_n R (\omega_i) e^{j \varphi (\omega_i)} = \frac{e^{-j[(2N+1)\pi + \varphi_n (\mu_i)]}}{R_n (\mu_i)} , \tag{15}$$

Card 2/4

Investigating symmetrical ...

S/103/62/023/008/003/006
D409/D301

where R denotes the absolute value of $W(j\omega)$ and $\varphi$ - its argument (for the frequency $\omega = \omega_i$), and $R_n$, $\varphi_n$ - the corresponding values $W_n$. A periodic solution, to which the describing-function method can be applied, exists, if one or more values $\mu = \mu_i$ can be found, so that the conditions

$$\varphi(\omega_i) = \varphi_k(\mu_i), \tag{16}$$

$$L_r(\omega_i) = -L_n(\mu_i), \tag{17}$$

are satisfied; $L_r$ is the reduced logarithmic characteristic of the linear part, and $\varphi_k$ is the phase characteristic which determines the critical value of the phase shift at the amplitude $\mu = \mu_i$. Further, the conditions for the stability of the periodic motions are derived. Practical methods are considered for the study of the existence and stability of symmetrical periodic motions. These involve the construction of the phase- and amplitude. logarithmic character-istics ($\varphi(\omega)$, $L_r$ and $-L_n$). The frequencies of the possible periodic solutions are determined graphically; thereupon the amplitude of the

Card 3/4

Investigating symmetrical ...          S/103/62/023/008/003/006
                                       D409/D301

periodic solution is found. This method is illustrated by examples.
Conclusions: The families of equivalent logarithmic phase-amplitude
characteristics ·shown, can be used for design of various relay sys-
tems. In those cases where the characteristics are given, it is con-
venient to study the relay systems by L.S. Gol'dfarb's method (given
in the references). If it is necessary to calculate and construct
frequency characteristics of the linear part of the system and of the
relay element for pre-assigned parameter-values, then logarithmic
characteristics should be used.  There are 6 figures and 1 table.

SUBMITTED:     March 22, 1962

Card. 4/4

VAVILOV, A. A., kand. tekhn. nauk; SOLODOVNIKOV, A. I., aspirant

Measuring techniques and equipment for the experimental deter-
mination of the frequency characteristics of automatic control
systems. Izv. LETI 59 no.46:74-105  '62.          (MIRA 15:10)

(Automatic control)
(Electronic measurements)