

MORGULIS, Naum Davydovich; BORISOVSKAYA, M.A., red.; VLASOVA, N.A.,
tekhn. red.

[Thermoelectric (plasma) energy converter] Termostroimnyi
(plazmennyi) preobrazovatel' energii. Moskva, Gos.isd-vo lit-
ry v oblasti atomnoi nauki i tekhniki, 1961. 80 p.

(MIRA 15:2)

(Thermoelectric apparatus and appliances)

MORGULIS, N.D.

S/141/61/004/001/022/022
E192/E382

AUTHOR: None given

TITLE: Fourth All-Union Conference on Radio-electronics
of the Ministry of Specialised Higher and Secondary
Education of the USSRPERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy,
Radiofizika, 1961, Vol. 4, No. 1, pp. 187 - 196TEXT: The conference took place during October 24 - 29,
1960 in Khar'kov and was attended by 1 000 delegates from 35
towns in the Soviet Union.

Over 250 papers were read at the conference. The conference
was opened by the Deputy Minister of the MVSSO UkrSSR
(Ministry of Specialised Higher and Secondary Education of the
Ukrainian SSR) Comrade I.S. Dzyubko and by the lectures of
Corresponding Member of the AS Ukrainian SSR G.Ya. Braude,
entitled "Radio Oceanographic Investigations of the Sea-wave
Phenomena" and Corresponding Member of the AS Ukrainian SSR
N.D. Morgulis dealing with "Some Problems of the Physics of
Thermionic Energy Conversion".

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Fourth All-Union Conference

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During the concluding plenary session the following survey papers were read:

"Some Problems of Electrodynamics and Thermodynamics of the General Relativity Theory During Accelerated Motion of Macroscopic Bodies with Relativistic Velocities" by V.L. German and "Methods of Experimental Investigation of Electron Beams" by N.S. Zinchenko.

The achievement of the conference was summarized by Corresponding Member of the AS Ukrainian SSR A. Ya. Usikov. The conference recommended that the Fifth All-Union Conference on Radio-electronics should take place in Minsk in the Spring of 1962.

The conference was divided into the following sections: electrodynamics at UHF; UHF electronics; general electronics; quantum radiophysics; radio-wave propagation and radio-astronomy; general radio-engineering; semiconductors and their application in radio-engineering and radio measurements.

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S/141/61/004/001/022/022
E192/E182

Fourth All-Union Conference

1. Papers read at the sections of UHF electronics, general electronics and UHF electrodynamics. In general, it can be said that the papers in these sections were mainly concerned with the investigation of various processes dealing with the interaction of plasma and electromagnetic fields.

The work of O.G. Zagorodnov et al described the experimental investigation of the nonlinear distortion of sinusoidal electromagnetic waves propagating in a cylindrical plasma waveguide.

The lecture by V.Ye. Golant and A.P. Zhilinskiy dealt with the nonlinear effects which accompany wave propagation in waveguides containing plasma.

The work of V.D. Shapiro investigated theoretically the stability of longitudinal nonlinear oscillations of plasma electrons with respect to the perturbations whose wavelength is small in comparison with the wavelength of the stationary potential.

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The works of O.G. Zagorodnov et al were devoted to the investigation of the propagation of electromagnetic waves in moving plasma. A detailed analysis of the propagation of electromagnetic waves in plasma waveguides was given in the experimental works of O.G. Zagorodnov et al (three papers). The work of V.P. Shestopalov and I.P. Yakimenko investigated in detail the scattering characteristics of a helix-plasma system.

The paper of N.A. Kuz'min was concerned with the variation method of analysis of the waveguides which are partially filled with a gyrotropic medium.

The problem of wave propagation in a waveguide partially filled with a weakly relativistic plasma in the presence of a constant magnetic field applied along the axis of the system was considered in the work of A.V. Gaponov and M.I. Petelin. The paper of Ya.M. Turover was concerned with the evaluation of the possibility of description of a plasma delay line by telegraph equations.

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The work of V.D. Ivanova and V.S. Mikhalevskiy gave an experimental investigation of the frequency-control of a travelling-wave tube oscillator. The paper by Yu.F. Filippov was devoted to the investigation of magnetohydrodynamic oscillations of the medium in resonators and waveguides. Electromagnetic waves propagating in plasma transversely to an external magnetic field were considered in the work of Yu.N. Dnestrovskaya and D.P. Kostomarov. Several papers were concerned with the investigation of the interaction of plasma with electron and ion beams; in particular, M.S. Kovner investigated the stability of a beam of charged particles and plasma by using the kinetic equation. The paper of V.O. Rapoport was concerned with the phenomenological method of solving the problem of amplification of electromagnetic waves in a plasma beam moving in plasma in the presence of a magnetic field. The work of V.D. Shapiro considered the deceleration of an electron beam as a result of its interaction with bulk plasma oscillations.

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M.A. Gintsburg gave a detailed analysis of the interaction of plasma with ion beams on the basis of the kinetic equation. The problems of high-frequency discharges in rarefied gases were discussed in two papers: the work of S.B. Mochenev gave a theoretical analysis of the influence of irregularities of the magnetic field on the discharge characteristics, while the work of G.N. Zastenker et al gave results of an experimental investigation of the formation of the discharge at frequencies between 3 and 20 Mc/s and pressures from 0.3 to 30 mm Hg. I.A. Savchenko and A.A. Zaytsev presented the results of an experimental investigation of the electron oscillations in plasma.

2. Section of UHF electronics.

The papers read at this section dealt with the interaction of plasma with electromagnetic fields; apart from that, a number of papers dealt with the theoretical and experimental investigation of electron devices for UHF.

The opening lecture at the section by V.S. Ganzburg and V.G. Karmazin surveyed the present state of technology of a high-power klystron amplifier.

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3. Section of UHF electrodynamics.

Some of the papers read at this section dealt with the propagation of electromagnetic waves in plasma, while a number of papers were concerned with the problems of the electrodynamics of delay systems, waveguides and resonators.

4. Section of general electronics .

During the sessions of this section, 15 papers were read and discussed. Some of the papers were devoted to the investigation of various aspects of electron optics.

5. Section on quantum radiophysics.

Some of the papers in this section dealt with the problem of nuclear magnetic resonance; several papers were concerned with the processes taking place in ferrite media; other papers were devoted to the theory of masers and parametric amplifiers.

6. Section on radio-wave propagation and radio-astronomy.

The 37 papers read at this section were devoted to some of the problems of radio-astronomy, experimental and theoretical investigation of radio-wave propagation in nonuniform media,

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methods of investigation of the structure of the ionosphere and to special antenna systems.

7. Section on general radio-engineering.

The 12 papers read at this section covered a fair variety of subjects.

8. Semiconductor section.

Some of the papers read in this section were concerned with the preparation and application of semiconductor devices for radio-engineering; there were also papers dealing with the investigation of internal processes in semiconductors.

9. Radio-measurements section.

The papers in this section were concerned with the development and investigation of quartz crystal oscillators, measurement of the parameters of travelling-wave and backward-wave tubes, measurement of dielectric characteristics of various substances and new methods of measurement.

Card 8/8

MORGULIS, N.D. [Morhulia, N.D.]; MARCHENKO, R.I.

Partial adsorption and description of residual gas components
on the surfaces of germanium and silicon single crystals in a
very high vacuum. Ukr. fiz. zhur. 6 no.3:376-385 My-Je
'61. (MIRA 14:8)

1. Kiyevskiy gosudarstvennyy universitet im. T. Shevchenko.
(Germanium crystals)
(Silicon crystals)
(Gases in metals)

300,0
S/109/61/006/012/015/020
D246/D,05

26.2530

AUTHORS: Morgulis, N.D., and Korchevoy, Yu.P.

TITLE: Physical properties of the Caesium plasma of a thermo-electrical energy transformer

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 12, 1961
2073 - 2085

TEXT: This is a detailed report of experimental work, brief results of which were published by the authors in (Ref. 4: Doklady AN SSSR 1961, 136, 336). The apparatus used was a Caesium filled vacuum lamp, depicted in Fig. 1, where 1 - W-cathode, covered with ThC₂, 2 - Ta-anode, 3 - W-Pt thermocouple (cathode temperature was measured by optical micropirometer), 4 - W-wire probe; 5 - adjustable slide for the probe. A number of precautions were taken, described in earlier papers and several parameters (pressure, saturation temperature of Caesium, vapor, rate of work) were changed. The curves representing a large number of measurements confirm the conclusion of the earlier publication that there are two entirely different

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30410

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D246/D305

Physical properties of the ...

working conditions of the thermo-electric transformer; Quasivacuum at low temperatures, arc - at high ones. The character of the Caesium plasma is different in these two cases: In the first instance it adjoins the cathode and a potential jump U_a separates it from the anode. This U_a depends on the working conditions and becomes zero for optimum power. In the other state, the plasma is separated from the cathode by a potential jump U_k and a small negative potential U_a ; it is intensively luminescent. All this is very near to the well-known low-voltage arc discharge at reduced pressure. There are other arguments to support this analogy. Measurements also confirmed quantitatively the earlier ideas on the "electrode" character of this device, i.e. the output potential is obtained from the contact potential difference between the electrodes. Hence the possibility of drawing large emission densities (I_0) from metal-caesium cathodes without using additional ionizator. See Fig. 9, where optimum I_0 is plotted as a function of temperature for T_a cathode, when $d = 0.3$ mm. The authors calculate the limiting pressure of

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Physical properties of the ...

Caesium vapor, necessary for neutralizing the electron space charge current, I_e

$$p_0 = \frac{(1 + \beta)}{e\alpha} I_e \sqrt{2\pi mkT_0} \quad (2)$$

where α and β - ionization coefficient of atoms and neutralization coefficient of ions respectively on the cathode surface, $T_0 = t + 273^\circ$. It is in agreement with experiment. They also calculate the various potential jumps at the electrodes, assuming the two types of operation. There is a satisfactory qualitative agreement with experiment. As several serious facts point against the "plasma" theory of this device, the plasma phenomena may play only a secondary role in the mechanisms. There are 10 figures and 17 references: 12 Soviet-bloc and 5 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: H. Lewis, I. Keitz, J. Appl. Phys., 1959, 30, 1439, 1438; G. Grover, Nucleonics, 1959, 7, 54; W. Ranken, G. Grover, E. Salmi, J. Appl. Phys., 1960, 31, 2140; ✓

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30440

S/109/61/006/012/015/020

D246/D305

Physical properties of the ...

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko (Kiev State University im. T.G. Shevchenko)

SUBMITTED: May 27, 1961

Fig. 1.

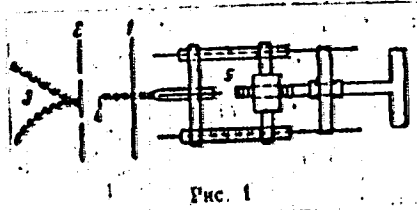
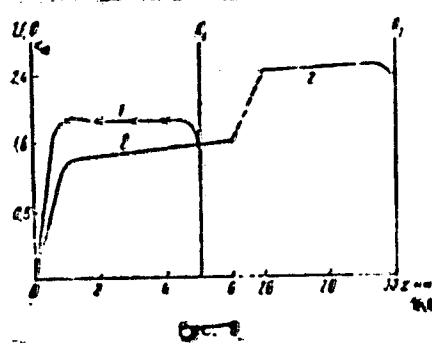


Fig. 9.



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27605
S/030/61/000/009/001/013
B105/B101

26.1640
AUTHOR: Morgulis, N. D., Corresponding Member AS UkrSSR
TITLE: Direct conversion of thermal into electric energy
PERIODICAL: Akademiya nauk SSSR. Vestnik, no. 9, 1961, 25-31

TEXT: Thermal energy is discussed as to the principal methods for its conversion. The late A. F. Ioffe made important contributions in this field. Three direct methods (thermoelectric, thermionic, and ferroelectric-ferromagnetic) as well as one semidirect method (magnetogasdynamic) are mentioned. The Seebeck effect served as the basis for thermoelectric converters, in which semiconductors are used. They should possess maximum electrical conductivity and minimum thermal conductivity. Semiconductor materials in which the hot electrodes attain a limit temperature of 600°C are at present regarded to be suited. PbTe or NiO served as an additional intermetallic compound. Many low-power plants are being planned and built. Conventional fuel, solar energy, as well as the heat liberated in nuclear reactors or when radiation of long-lived isotopes is adsorbed, are used as heat sources. Thermionic converters make use of the thermionic emission X

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Direct conversion of thermal into ...

from heated solids. The efficiency depends on the temperature difference of hot and cold electrodes. The following is required in practice: (1) a high electron current to overcome the large spatial electron charge at the cathode; (2) a low voltage accelerating the electrons between the electrodes. This can be attained by introducing 0.01 - 1 mm Hg cesium vapors into the device. The electron charge at the cathode can also be neutralized by allowing the electrodes to approach $\approx 10\mu$. For a sufficient thermoelectric emission at $\approx 1200-2200^\circ\text{C}$, the hot electrode (cathode) should consist of UC, ThC_2 , or cesium-coated metals, or at $\approx 2300-2800^\circ\text{C}$, of Ta or W. The temperature at the anode should not exceed $\approx 800^\circ\text{C}$ to avoid cesium foil desorption and an appreciable inverse thermionic emission. Laboratory-type converters yielded an efficiency of $\approx 15\%$ and a useful cathode power ranging between 15 and 30 w/cm^2 at an output voltage of 1 - 2 v. A future thermionic converter of 1000 kw and 100 - 200 v might consist of 100 cells connected

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Direct conversion of thermal into ...

in series with cathode and anode cylinders spaced at ≈ 1 mm and a total area of ≈ 1.5 m². A d-c to a-c converter is additionally required in heavy-duty plants. Magnetogasdynamics converters are based on the excitation of electric current in conductors moving in a transverse magnetic field. A maximum increase in the electrical conductivity of the plasma flux is very important. This field of physics as well as the part played by the resulting Hall effect are insufficiently known. A typical 10⁵ kw plant is based on a plasma flux obtained by burning fuel containing 1% potassium at 2200°C. The controlled flux velocity is then $\approx 10^5$ cm/sec, and the magnetic field intensity = 10⁴ oersteds. The plant is ≈ 10 m long in this case. Its efficiency may attain 60%. Nonthermal methods of obtaining electric energy may soon be applicable. Later on, the problem of electric energy supply will be completely solved by controlled nuclear reactions. There is 1 figure. X

ASSOCIATION: AN USSR (AS UkrSSR)

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25032

S/057/61/031/007/015/021.
B104/B206

26.2531

AUTHORS: Morgulis, N. D., Korchevoy, Yu. P., and Chutov, Yu. I.

TITLE: Physical peculiarities of thermionic energy conversion

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 7, 1961, 845-853

TEXT: The authors study the emf of energy converters and give data of its dependence on cathode temperature and caesium-vapor pressure. In the first part they refer to the fact that the emf \mathcal{E} of a converter is defined by the sum

$$\mathcal{E} = \left[u_c + \frac{kT_c}{e} \ln \frac{J_r}{(J_c + J_r)} \right], \quad (1)$$

on the condition $\Sigma I = 0$. I_k , I_a , and I_p are the total cathode-, anode- and thermionic currents. With the aid of the diagram in Fig. 1 the authors show that only in the simplest case 1 (Fig. 1), and when the additional conditions $I_{po} \ll I_a$, $S_k = S_a$ and $\lambda_k = \lambda_a$ are fulfilled (where S is the surface and λ the Richardson constant), equation (1) assumes the known form

$$\mathcal{E} = \varphi_0 \frac{T_c - T_a}{T_c} + 2 \frac{kT_c}{e} \ln \frac{T_c}{T_a}. \quad (2)$$

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Physical peculiarities of...

Thus, the value of the emf appears to be an insufficiently defined quantity which depends on S , A , R_y , etc. It does not directly characterize the important converter parameters, the current passing through the converter, etc. A comparison of experimental data with the results obtained with (1) under the condition $I_p \ll I_a$ shows that I_p must not be neglected. The application of a more suitable parameter for these converters is proposed: the optimum initial voltage with regard to the output. The dependences of this optimum initial voltage v_m on the cathode temperature T_k are graphically shown in Fig. 4 for six different cathodes. The authors refer to the independence of v_m from T_k , and state that an increase of v_m equals an increase of the work function of the electrons. Thus, v_m appears to be a suitable characteristic of energy converters. In connection with the energy conversion at comparatively low temperatures (temperatures of the saturated caesium vapor of 150 - 250°C), the authors investigated tungsten-caesium cathodes at a) low cathode temperatures and emission optimum, which corresponds to a monatomic coating

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B104/B206

Physical peculiarities of...

and low work function of the electrons, and b) very high temperatures for almost uncovered backings. The experimentally determined characteristics of these cathodes for various caesium-vapor pressures show the positive role of additional caesium sources of thermions. The caesium-coated metal cathodes prove very promising for use in energy converters. B. I. Mikhaylovskiy is mentioned. There are 8 figures and 17 references: 11 Soviet-bloc and 6 non-Soviet-bloc.

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet (Kiev State University)

SUBMITTED: May 3, 1960

Card 3/4

15
20
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89613

S/O20/61/136/002/017/034
B019/B056

26.2310

26.2531
AUTHORS:Morgulis, N. D., and Korchevoy, Yu. P.

TITLE:

Some Properties of the Cesium Plasma of a Thermionic Energy Converter

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol 136, No. 2, pp. 336-338

TEXT: In the converter, by means of which the here described experiments had been carried out, a tube with a ThC_2 -cathode and a Ta anode with Cs vapors was used. The cathode-anode distance was roughly 3mm, a W-Pt thermocouple was fastened near the anode. By means of a probe, the Cs plasma parameters were measured. From the measured results given in form of two diagrams and one table, the authors draw the conclusions: 1) There is no connection between the electron temperature T_e and the cathode temperature T_k or between the anode temperature T_a , the electron concentration n_e and the converter parameters. In the case of short-circuit operation, T_e is, in most cases, less than in the case of a maximum

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Some Properties of the Cesium Plasma of a
Thermionic Energy Converter

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B019/B056

initial output. Corresponding to the low degree of ionization of Cs, n_e attains considerable values. This provides the possibility of increasing the short circuit current J_0 further, and also, by increasing the emission power of the cathode, to increase the initial output. The potential V_p of the inner plasma may be lower and higher than the anode potential. With an increase of the Cs vapor temperature t , V_p becomes positive, and

the characteristics moves towards the right. The authors further studied the effect produced by the vapor pressure upon the plasma parameters, and in Fig. 2 the dependences of V_p , n_e , T_e and J_0 upon t for $T_k = 2050^\circ \text{K}$ are graphically represented. The diagram uniquely shows the existence of two different operational conditions, whose range limit is at $t \approx 145^\circ \text{C}$. These two operational conditions are discussed, and further a phenomenon is described, which occurs with small p . Accordingly, in transition from short circuit operation to operation with a maximum initial output, V_p changes in the positive direction. The results obtained up to now are discussed and finally the continuation of these investigations is announced. There are 3 figures, 1 table, and 6 references: 4 Soviet and 2 US.

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Some Properties of the Cesium Plasma of a
Thermionic Energy Converter

19613
S/020/51/136/002/017/034
B019/B156

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im. T. G. Shevchenko
(Kiev State University imeni T. G. Shevchenko)

PRESENTED: July 18, 1960, by A. F. Ioffe, Academician

SUBMITTED: July 15, 1960

Card 3/4

26.2253
26.1140

34497
S/109/62/007/002/022/024
D256/D303

AUTHORS: Morgulis, N.D., Levitskiy, S.M., and Groshev, I.N.

TITLE: Current oscillations in the system of a thermo-electronic energy converter with cesium vapor

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 2, 1962, 352 - 353

TEXT: The experimental cesium-vapor tube contained a Tatape cathode and a similar anode covered with a layer of cesium and provided with additional screening electrodes, the distance between the anode and the cathode being adjustable. The following parameters were varied during the investigation: The temperature of the cathode T_k , the saturation temperature of the cesium vapor t and the distance between the electrodes d . It was found that for a given d there are two discrete regions where oscillations exist, these are shown on a $t - T_k$ diagram. In the low T_k regions the oscillations are almost purely sinusoidal with a frequency ranging from 20 to 160 kcs/sec.

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Current oscillations in the ...

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In the second region of oscillations with higher T_k the oscillations were non-sinusoidal and their frequency was in the range of 1000 kcs/sec, the output power of the oscillations at this region being appreciable. The output power was investigated for both a.c. and d.c. as a function of the load resistance with the remaining parameters fixed at the following values: $T_k = 2450^{\circ}\text{K}$; $t = 120^{\circ}\text{C}$; $d = 1 \text{ mm}$, and 3.6 and 0.9 watt/cm² maximum values of the output power were observed for d.c. and a.c. respectively, the corresponding voltages being 1.9 and 0.9 V. The respective efficiency of the converter for d.c. and a.c. was estimated to be $\eta_1 \geq 5 \%$, $\eta_2 \geq 1 \%$. There are 3 figures and 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: R. Fox and W. Gust, Bul. Amer. Phys. Soc., 1960, 5, 80; Electronics 1960, 33, 5, 78.

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko (Kiyev State University im. T.G. Shevchenko)

SUBMITTED: July 3, 1961

Card 2/2

MORGULIS, N.D. [Morhulis, N.D.]; CHUTOV, Yu.I.

Effect of a magnetic field on phenomena in a diode with cesium vapors.
Ukr. fiz. zhur. 7 no.9:1003-1014, 8 '62. (MIRA 15:12)

1. Kiyevskiy gosudarstvennyy universitet im. Shevchenko.
(Magnetic fields) (Diodes) (Cesium)

MORGULIS, N.D. [Morkulis, N.D.]

Role of the phenomena occurring on the cathode of a plasma diode
as a model of a magnetogasdynamic energy converter. Ukr. fiz.
zhur. 7 no.10:1131-1134 0 '62. (MIRA 16:1)

1. Kiyevskiy gosudarstvennyy universitet im. Shevchenko.
(Plasma (Ionised gases)) (Magnetohydrodynamics) (Diodes)

MORGULIS, N.D.; KORCHEVOY, Yu.P.

Mobility and scattering cross section of electrons in a weakly
ionized cesium plasma. Zhur.tekh.fiz. 32 no.7:900-902 J1 '62.
(MIRA 15:8)

1. Kiyevskiy gosudarstvennyy universitet.
(Plasma (Ionized gases)) (Electrons—Scattering)
(Cesium)

MORGULIS, N.D.; KORCHEVOY, Yu.P.

Effect of an interelectrode cesium plasma on the characteristics
of a thermionic converter. Zhur. tekhn. fiz. 32 no.12:1487-1489
D '62. (MIRA 16:2)

1. Kiyevskiy gosudarstvennyy universitet imeni T.G. Shevchenko.
(Plasma (Ionized gases))
(Electric current converters)

MORGUN, Ye. G.

MORGUN, Ye. G. "The formation of a complement and its components in the ontological development of vertebrates", Mikrobiol. zhurnal, Vol. X, No. 1, 1948, p. 51-57, (in Ukrainian, resume in Russian), - Bibliog: 12 items.

SO: U-3042, 11 March 53, (Letopis 'zhurnal 'nakh State, No.7 1949).

WORGUN, YE. G.

Embryology

Complement formation in the ontogenetic process in vertebrates.
Medych. zhur. 20, No. 4, 1950.

> Monthly List of Russian Accessions, Library of Congress, August 1952. UNCLASSIFIED.

MORCHUN, Ye. G.

Cytotoxic shock in dogs. Arkh. pat., Moskva 14 no. 3:52-57 May-June
1952.
(CML 23:2)

1. Of the Department of Immunology (Head -- E. N. Sirotnin, Academy of
Sciences Ukrainian SSR), Institute of Experimental Biology and Pathology,
Ministry of Public Health Ukrainian SSR imeni Academician A. A. Bogomo-
lets (Director -- Prof. A. A. Bogomolets).

4-22
MORQUN.

Investigations on the biological action of purified antireti-
cular cytotoxic serum. Medych.zhur.24 no.4:63-65 '54.(MLRA 8:10)

1. Institut fiziologii im.O.O.Bogomol'tsya Akademii nauk URSS
(RETICO-ENDOTHELIAL SYSTEM,
antireticular cytotoxic serum, aff.)

MORGUN, Ye.G. [Morhun, I.E.H.]

Motor function of the small intestine during animal locomotion
[with summary in English]. *Fiziol. zhur.* [Ukr.] 4 no.2:206-215
Apr-May '58.

(INTESTINES) (MOVEMENT (PHYSIOLOGY))

(MIRA 11:5)

VOROB'YEV, A.M. [Vorobiov, A.M.], (deceased), MORHUN, Ye.G. [MORHUN, YE.G.]
SVISTUN, T.I. [Svyatun, T.I.], SHOSTKOVS'KAJA, I.V. [SHOSTAKIVS'KA, I.V.]

Secretory activity of the stomach and pancreas and gastric evacuation
during excitation and inhibition of the cerebral cortex [with
summary in English]. *Fiziol. zhur.* [Ukr] 4 no. 4:435-441 *Jl-Ag '58*
(MIRA 11:10)

1. Institut fiziologii im. A.A. Bogomoletsa AN USSE, laboratoriya

fiziologii pishchevareniya.

(STOMACH)

(PANCREAS)

(CEREBRAL CORTEX)

MORGUN, Ya.G.; SAKUN, P.A.; SVISTUN, T.I.; STANETS, M.P.

Effect of gamma rays in small doses on the secretory and motor functions of the stomach in dogs [with summary in English].
Med.rad. 4 no.1:31-35 Ja '59. (MIRA 12:2)

1. Iz laboratorii biofiziki i laboratorii fiziologii pishchevareniya
Instituta fiziologii imeni A.A. Bogomol'tsa AN UZSSR.

(COBALT, radioactive,

eff. of gastric secretion & motility (Rus))

(STOMACH, effect of radiations,
radiocobalt, on motility (Rus))

(GASTRIC JUICE,

secretion, eff. of radiocobalt (Rus))

MORQUN, Ya.G. [Morhun, I.E.H.]

Evacuating function of the stomach in a moving animal. *Fiziol. zhur.* [Ukr] 5 no.1:46-52 Jan '59. (MIRA 12:5)

1. Institut fiziologii im. A.A.Bogomol'tsa AN USSR, laboratoriya fiziologii pishchevareniya.
(STOMACH) (ANIMAL LOCOMOTION)

MORQIN, Ye.G. [Morkun, I.E.H.]; KOVTUN, S.D.

At the Ninth Congress of the All-Union Society of Physiologists,
Biochemists, and Pharmacologists. Fiziol.sbur. [Ukr.] 5 no.6:848-
854 K-D '59. (MIRA 13:4)

(DIGESTION)

(ELECTROPHYSIOLOGY)

MORGUN, Ye.G.

Absorption of nutrients in the small intestine during motor activities in animals. Vop.pit. 20 no.2:22-28 M-A, '61.

1. Iz laboratorii fiziologii pishchevareniya (zav. -- doktor meditsinskikh nauk N.I.Putilin) Instituta fiziologii imeni A.A.Bogomol'tsa AN USSR. Kiyev. (MIRA 14:6)

(INTESTINES)

(EXERCISE)

MORGUN, Ye. G., kand. biologicheskikh nauk

Absorption processes in the small intestine at various food intake rates. Vrach. delo no.3:100-105 M^r '62.

(MIRA 15:7)

I. Laboratoriya fiziologii pishchevareniya (rukovoditel' - prof. N. I. Futilin) Instituta fiziologii imeni A. A. Bogomol'tsa AN USSR.

(INTESTINES) (ABSORPTION(PHYSIOLOGY))

PLEROV, Yu.I.; MOROZH, V.G. [Morozh, B.B.]

Effect of waters of increased mineralization on the functional state of the stomach. Fiziol.zhur. [Ukr] 9 no.3:349-356 My-Je '63.

(MIRA 18:1)

1. Ukrainian Research Institute for General Hygiene and the A.A. Bogomolets Institute of Physiology of the Academy of Sciences of the Ukrainian S.S.R., Kiev.

MORGUN, Ye.G. [Morhun, Ye.H.]

Modification of the anthrone method for determining sugar
in the blood, excretions and some foodstuffs. *Fiziol. zhur.*
[Ukr.] 9 no.6:830-832 K-D '63. (MIRA 17:8)

1. Laboratoriya fiziologii pishchevareniya Instituta fiziologii
im. Bogomol'tsa AN UkrSSR, Kiyev.

MORGUN, Ye. M.

Cand Tech Sci - (diss) "Analysis of the forage distribution process in commercial dairy farms and means of its mechanization and automatization." Kiev, 1961. 15 pp; 1 page of tables; (Ministry of Agriculture Ukrainian SSR, Ukrainian Academy of Agricultural Sciences); 150 copies; price not given; (KL, 5-61 sup, 191)

L 62850-65 EWA(k)/FBD/EWT(1)/EWT(m)/EEC(k)-2/T/EWP(t)/EEC(b)-2/EWP(k)/EWP(b)/
EWT(+)-2/EWA(h) SGA/LJP(c) WJ/JD/K

ACQUISITION NR: AFD016250

UR/0368/65/003/001/0092/0095

533-05

AUTHOR: Filipovich, V. A.; Morgun, Yu. Z. 44

TITLE: Operation of a Q-switched neodymium laser

SOURCE: Zhurnal prikladnoy spektroskopii, v. 5, no. 1, 1965, 91-95

TOPIC TERMS: laser, neodymium laser, Q switching, giant pulse, level population, pump energy, loss factor

ABSTRACT: The authors investigated the parameters of a single pulse produced by a neodymium laser in which a Ferro prism rotating at speeds up to 30,000 rpm was used for Q-switching. Since the most difficult part of the analysis is the calculation of the inverse population at the instant when the interferometer is switched on, the authors propose to determine this population from the dependence of the threshold pump energy on the useful loss factor. The medium used was a cylindrical neodymium rod 12 mm in diameter and 120 mm long, placed in a cylindrical illuminator with two straight lamps. The pump energy reached 1500 J. The maximum generated power was 60 MW and the pulse duration was 20 nsec. The luminescence curves in the 1.06 μ region were obtained with a ZMR monochromator. The pulse energy was measured with a bolometer. The time characteristics of the pump, luminescence, and laser generation pulses were investigated with oscilloscope. A certain dis-

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I 52250.65

ACCESSION NR: AP5018890

4

crepancy between the calculated and the experimental results is attributed to the fact that the interferometer does not switch on instantaneously. The results confirmed the applicability of the method. The authors thank A. M. Samacyn and V. A. Savva for useful discussions." Orig. art. has: 3 figures and 4 formulas. [02]

ABSTRACT: none

DATE: 16Mar65

NO REP SCV: 011

ENCL: 00

OTHER: 008

SUB CODE: EC

ATD PRESS: 4876

Card 1/2 207P

L 43192-65 EEC(b)-2/ENG(r)/EEC(k)-2/EWA(h)/EWA(k)/EWP(k)/EWT(l)/EWT(m)/
 EEC(e)/EWA(m)-2/EWP(e) P1-4/P1-4/P1-4/P2-4/P2-4/P2-4/P2-4/
 ACCESSION NO: AP5010041 . IJP(c) WH/VG UR/0368/65/002/002/0132/0137

AUTHOR: Philipovich, V. A.; Lebedev, V. I.; Morzun, Yu. E.

67

TITLE: Determination of losses in lasers

4/8

SOURCE: Zhurnal prikladnoy spektroskopii, v. 2, no. 2, 1965, 132-137

B

TOPIC TAGS: laser loss, laser efficiency, laser pump threshold, ruby laser, laser

In view of experimental and theoretical difficulties inherent in earlier methods, the authors propose a new method for determining the total loss in lasers. The method is based on determining the ratio of the laser output power to the pump power in the range in which the threshold pump energy (defined as the energy necessary to produce a single spike) is linearly proportional to the level inversion population. The latter range was measured experimentally for two rubies of equal size, with the useful losses varied by replacing one of the resonator mirrors. The equations derived were used to determine the harmful losses, the efficiency of the active medium, the efficiency of the illuminator, and the laser gain. Tables are presented of the harmful loss as a function of the pump power and of the laser efficiency

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L 43192-55
ACCESSION NO: AP5010041

as a function of the pump power and of the percentage pump power of one ruby laser.
"We are deeply grateful to Academicians of the AN BSSR A. N. Strychenko and B. I.
Shabanov for interest in the work and useful advice." Orig. art. has: 2 figures,
13 formulas, and 1 table. [02]

ASSOCIATION: none

SUBMITTED: U3Aug64

EXCL: 00

SUB CODE: FC

NO REP SV: 003

OTHER: 005

ADD PRESS: 3242

650
Card 2/2

L 15622-56 FND/ENT(1)/RRE(k)-3/T/EMP(k)/EWA(h) SCTB/LIP(c) W3

ACC NR: AP6006969

SOURCE CODE: UR/0368/66/004/G02/0179/0179

AUTHOR: Pilipovich, V. A.; Morgun, Yu. F.

ORG: none

TITLE: Synchronization switching system for a Q-switched laser 25, 44

SOURCE: Zhurnal prikladnoy spektroskopii, v. 4, no. 2, 1966, 179

TOPIC TAGS: laser, ~~Q-switched laser~~, ~~plant-pulse laser~~; laser synchronization, laser switching; ~~synchronization switching~~, photodiode/FD-1 photodiode

ABSTRACT: A laser synchronization system featuring an FD-1 photodiode is described and shown in Fig. 1. The proposed system differs from existing systems, which use photocells or photomultipliers, in that it eliminates the need for complex power supplies, is very compact, and is convenient and reliable in operation. The system consists essentially of a receptacle with an aperture, which is mounted axially with respect to the total-internal-refraction prism 1. An SM-36 type bulb 3 is placed in the receptacle. An FD-1 type photodiode 5 is inserted into a cylinder 4 at the same level as the aperture in receptacle 2. Laser firing is achieved when bulb 3 is switched in, causing light to be incident through the aperture on the photodiode.

Card 1/3

UDC: 535.89

66
B

L 25622-66

ACC NR: AP6006969

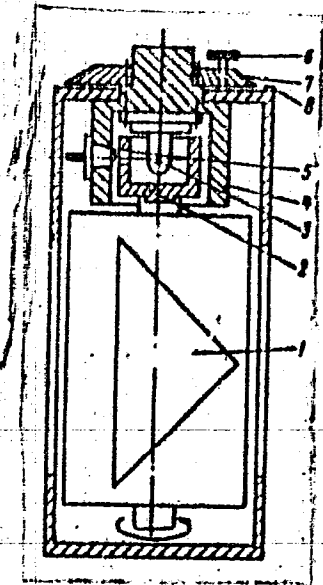


Fig. 1. Schematic diagram of synchronization system

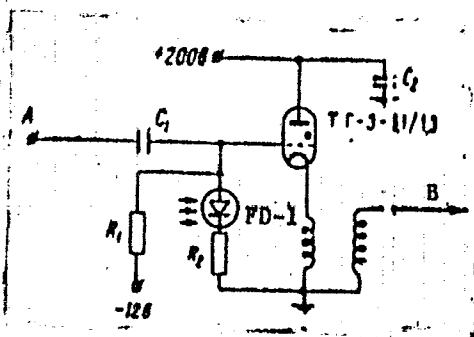


Fig. 2. Photodiode-thyratron switching circuit

$R_1 = 100 \text{ kohm}$; $R_2 = 10 \text{ kohm}$; $C_1 = 1000 \text{ pf}$;
 $C_2 = 0.5 \text{ uf}$; A—input; B—output: to pump.

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L 15622-66

ACC NR: AF6006969

When this happens, the photodiode resistance decreases, which triggers the thyatron and supplies the firing pulse to the flash lamp. The switching circuit is shown in Fig. 2. The desired Q-switching delay time for any rotation rate of the prism can be regulated by appropriate rotation of cylinder 4 with respect to the rotation axis. The proposed system operated without failure for 18 months. Orig. art. has: [YK]
2 figures:

SUB CODE: 20/ SUBM DATE: 19Jul65/ ATD PRESS: 4200

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TS
Card 3/3

MORGUNENKO, N., inzhener; PANCHENKO, N.

A new method in action. Grashd.av.13 no.6:27-28 Jo '56. (MIRA 9:9)

I. Gosudarstvennyy nauchno-issledovatel'skiy institut Grashdanskogo
vozдушnogo flota (for Morgunenke). N. Nachal'nik Vaukevs'kikh LERN
(for Panchenke).

(Airplanes--Engines)

POKROVSKIY, Ya. D., inzhener.

Phasing one-anode mercury-arc rectifiers with the aid of a
wattmeter. Energetik 5 no. 7:18-19 J1 '57. (12. 1:2)

(Mercury-arc rectifiers)

MORGUNOV, N., izh.; MORGUNOV, A., inzh.

Check-row planting with the aid of radio. IUn.tekh. 5 no.5:22-23
My '61. (MIFA 14:5)

(Radio in agriculture)
(Planters(Agricultural machinery))

5(4)

AUTHORS:

Fomin, V. V., Zagorets, P. A.,
Korgunov, A. F.

SOV/78-4-3-55/34

TITLE:

The Extraction of Sulfuric Acid With Benzene Solution of
Trioctyl Amine (Ekstraktsiya sernoy kisloty rastvorom
trioktilamina v benzole)

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 3,
pp 700-701 (USSR)

ABSTRACT:

The extraction of sulfuric acid by benzene solutions of
trioctyl amine (TOA=R) was investigated at different acidity.
For the investigation of polymerization the cryoscopic method
was used. It was found that in the case of low acidity of the
solution $(RH)_2SO_4$ is formed which, with increasing concentra-
tion, polymerizes in the organic phase. In the case of exces-
sive sulfuric acid the normal sulfate passes over into acid
sulfate $[RHHSO_4]_3$, which forms polymers from 3.3 - 3.4 mole-
cules. The polymerization constants calculated hold only in
the case of the polymers $[(RH)_2SO_4]_2$ or $[(RH)_2SO_4]_3$. There are
2 tables and 3 references, 2 of which are Soviet.

Card 1/2

The Extraction of Sulfuric Acid With Benzene
Solution of Trioctyl Amine

SOV/78-4-3-33/34

ASSOCIATION: Moskovskiy ordena Lenina khimiko-tekhnologicheskoy institut
im. D. I. Mendeleeva (Moscow Lenin Order Chemical-techno-
logical Institute imeni D. I. Mendeleev)

SUBMITTED: October 12, 1958

Card 2/2

5(2)

SOV/78-4-10-17/40

AUTHORS:

Fomin, V. V.; Zagorets, F. A., Morgunov, A. V., Tertishnik, I.I.

TITLE:

Extraction of Iron Chloride by Means of Dibutyl Ether

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 10,
pp 2276-2286 (USSR)

ABSTRACT:

The extraction of FeCl_3 from hydrochloric acid solutions by means of organic solvents was discussed frequently (Refs 1-16), but no paper gave the structure of the solvates which FeCl_3 forms there in the organic phase. On passing HCl through a solution of FeCl_3 in anhydrous isopropyl ether Lorin et al (Ref 9) obtained an insoluble precipitate of the composition $\text{HFeCl}_4 \cdot 2\text{E}$ (E = ether), which dissolved on addition of water.

There are no indications available with respect to the solvation of the compound dissolved. In order to investigate the composition of such solvates, the dependence of the partition coefficient on the concentration of the extracting agent on dilution with an inert solvent and maintenance of all other conditions was investigated. This method is based on the fact that

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SOV/78-4-10-17/40

Extraction of Iron Chloride by Means of Dibutyl Ether

the extraction is considered a chemical reaction:

$$\text{Fe}_{\text{aqu}}^{3+} + \text{H}_{\text{aqu}}^{+} + x\text{E}_{\text{org}} + y\text{H}_2\text{O} \rightleftharpoons \text{HFeCl}_4 \cdot x\text{E} \cdot y\text{H}_2\text{O}_{\text{org}}$$

(org=organic phase). If the concentration of the ions H^{+} and Cl^{-} is kept constant and no polymerization occurs, the logarithm of the partition coefficient must be a linear function of the equilibrium concentration of the ether. In order to be able to maintain the concentration of H^{+} and Cl^{-} , it must be known, how far the acid is extracted by the ether. Therefore the first part of this paper deals with the extraction of HCl by dibutyl ether (DBE) and by mixtures of DBE and CCl_4 and DBE and benzene (Tables 1-3, Figs 1-3). The results indicate that in the organic phase the compound $\text{HCl} \cdot \text{DBE}$ occurs which is also confirmed by cryoscopy. Then, the extraction of FeCl_3 with the same solvents is investigated (Tables 6-7, Fig 4). On extraction from 10-n HCl the trisolvate $\text{FeCl}_3 \cdot x\text{HCl} \cdot 3\text{DBE} \cdot y\text{H}_2\text{O}$ is formed in the organic phase. If DBE is diluted with benzene, the partition coefficient is directly proportional to the third power of the DBE activity, whereas on dilution with CCl_4 the partition coefficient decreases more rapidly than would correspond with the

Card 2/3

Extraction of Iron Chloride by Means of Dibutyl Ether

SOV/78-4-10-17/40

calculated activity of DBE. There are 4 figures, 10 tables,
and 22 references, 4 of which are Soviet.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskii institut im. D. I. Men-
del'yeva (Moscow Institute of Chemical Technology imeni
D. I. Mendel'ev)

SUBMITTED: July 2, 1958

Card 3/3

5(a) 5.1110

66222
SOV/78-5-1-42/45

AUTHORS:

Fomin, V. V., Morgunov, A. F.

TITLE:

Extraction by Means of a Binary Extracting Mixture

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1960, Vol 5, Nr 1,
pp 233-234 (USSR)

ABSTRACT:

In the present paper the authors investigated the extraction of $UO_2(NO_3)_2$ and HNO_3 by means of cyclohexanone, methyl-isobutyl ketone (hexone) and their mixture as well as the extraction of $FeCl_3$ by means of ethers and their mixtures. Figure 1 shows the dependence of the logarithm of the distribution coefficient α on the logarithm of concentration S of the extracting agent. The determination was carried out at $20 \pm 0.2^\circ$. It was attempted to extract $FeCl_3$ by means of diisopropyl ether (DPE) and diisooamyl ether (DAE). In the extraction of uranyl nitrate and nitric acid there is a linear dependence of the logarithm of α on the logarithm of concentration of the ketones (Kt) with a concentration of up to 4 moles/l of the latter. For the straight section it holds that $\alpha = KS^n$ according to the formation of one solvate with n molecules of the ex-

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SOV/78-5-1-42/45

Extraction by Means of a Binary Extracting Mixture

tracting agent per 1 molecule of the extracted substance. The formation of the solvates $\text{HNO}_3 \cdot 2\text{Kt}$, $\text{UO}_2(\text{NO}_3)_2 \cdot 4\text{Kt}$ may be seen from the slope of the straight. The solvate $\text{HFeCl}_4 \cdot 4\text{DPE}$ results in the extraction of FeCl_3 , whereas in the case of DAE ($n=2.5$) either the formation of two solvates ($\text{HFeCl}_4 \cdot 2\text{DAE}$ and $\text{HFeCl}_4 \cdot 3\text{DAE}$) or a considerable change of the activity coefficients in the organic phase is assumed. Figure 2 illustrates the dependence of the distribution coefficient upon the composition of the organic phases for the extraction with the benzene solution of two extracting agents. In all cases this distribution coefficient was greater than the sum of distribution coefficients of the individual components wherefrom the formation of mixed solvates was concluded. There are 2 figures and 2 Soviet references.

ASSOCIATION: Moskovskiy ordena Lenina khimiko-tekhnologicheskii institut im. D. I. Mendeleeva (Moscow "Order of Lenin" Institute of Chemical Technology imeni D. I. Mendeleev)

SUBMITTED: July 3, 1959

Card 2/2

FOMIN, V.V.; MORGUNOV, A.F.

Extraction of ferric chloride hydrates with ethers. Zhur.neorg.
khim. 5 no.6:1385-1386 Je '60. (MIRA 13:7)

1. Moskovskiy ordena Lenina khimiko-tekhnologicheskii institut im.
D.I.Mendeleeva.
(Extraction (Chemistry)) (Iron chloride)

FOCIN, V.Y.; MOHFUNOV, A.F.; KOBHOV, I.V.

Extraction of nitric acid with cyclohexane and methyl isobutyl ketone. Zhur. neorg. khim. 5 no.8:1846-1851 Ag '60.

(MIRA 13:9)

1. Moskovskiy khimiko-tekhnologicheskiy institut im. D.I.Mendeleeva.
(Ketone) (Nitric acid) (Cyclohexane)

MORGUNOV, A.F.; POMIN, V.V.

Hydration of complex halogen acids of metals during extraction
with ethers. Zhur.neorg.khim. 7 no.4:948-950 Ap '62.

(MIRA 15:4)

1. Moskovskiy khimiko-tekhnologicheskii institut im. D.I.Mandeleeva.
(Complex compounds) (Halides) (Ethers)

MORGUNOV, A.F.; FOMIN, V.V.

Extraction of ferric chloride with ethers and ketones. Dependence of the distribution coefficient on the concentration of ferric chloride. Zhur.neorg.khim. 8 no.2:508-515 F '63. (MIRA 16:5)

I. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Mendeleeva.
(Iron chlorides) (Extraction (Chemistry))

MORJUNOV, A.F.; FOMIN, V.V.

Hydration and solvation of ferric chloride during extraction
by ethers and ketones. Zhur.neorg.khim. 11 no.1:226-227
Ja '66. (MIRA 1961)

1. Moskovskiy khimiko-tekhnologicheskii institut imeni D.I.
Mendeleyeva. Submitted June 23, 1965.

MORGUNOV, A.N.

Maximum division ratio of storing frequency dividers. Izv.
tekh. no.11:38-42 N '65. (MIRA 18:22)

MORGUNOV, A.P., DEMIN, L.M.

Development of shoestring sand pools in the P₆ layer of the Fila horizon in the Pokravka field. Geol. nefi i gaza 5 no. 5:23-25 My '61. - (MIRA 14:4)

1. Neftepromyslovoye upravleniye Chapayavskneft'. (Pokrovka region (Kuybyshev Province)—Oil fields—Production methods)

SURJUCHEV, M.L.; MORGUNOV, A.P.

Oil recovery from the A_2 layer of the Pokrovka field. Geol.nefti
i gaza 6 no.8:13-16 Ag '62. (MIRA 15:9)

I. Gosudarstvennyy institut po proyektirovaniyu predpriyatiy
neftyanoy promyshlennosti vostochnykh i yuzhnykh rayonov SSSR
i Neftepromyslovoye upravleniye Chapayevsk Ministerstva neftyanoy
promyshlennosti SSSR.
(Kuybyshev Province—Oil reservoir engineering)

MC GUNOV, A.V.

The development of and prospects for the trade life of the
capital. Gor.khoz.Mosk. 31 no.11:7-11 N '57. (KIRA 10:12)

1.Zamestitel' predsedatelya Ispolkoma Moskovskogo Soveta.
(Moscow--Commerce)

MORGUNOV, B.I.

Higher approximations in calculations involving certain rotary motions.
Vest. Mosk. un. Ser. 3: Fiz., astron. 18 no.6:35-42 N-D '63.
(MIRA 17:2)

1. Kafedra matematiki Moskovskogo universiteta.

L 18874-63

EWT(1)/EDS AF/TC/ASD/IJP(C)

ACCESSION NR: AP3006584

S/0020/63/151/006/1260/1263

54
53

AUTHORS: Volosov, V. M.; Morgunov, B. I.

TITLE: Asymptotics of certain rotary motions [Presented by Academician I. G. Petrovskiy, 8 March 1963]

SOURCE: AN SSSR. Doklady*, v. 151, no. 6, 1963, 1260-1263

TOPIC TAGS: motion, rotary motion, nonperturbed system, perturbed motion, freedom degree

ABSTRACT: The present work is a continuation of previous investigations by the author of systems with a single degree of freedom in which the solution of a non-perturbed system is described by an oscillating process. Amplitude curves, the period and other parameters were found for such systems in first or second approximation. The rotational processes of such systems are analyzed in this paper, by previously described methods, by finding in first approximation the slowly changing function $E(\epsilon, t)$ describing in first approximation the energy of the perturbed motion (where ϵ is a small parameter) and finding in the same approximation the slowly changing parameters in the given universe. Orig. art. has: 22 formulas.

Card 1/1 *ASSN: Moscow State University*

VOLOGOV, V.M.; MORGUNOV, B.I.

Calculation of steady-state resonance states of certain
nonlinear oscillatory systems. Dokl. AN SSSR 153 no.3:559-
561 N '63. (MIRA 17:1)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
Prudstavleno akademikom N.N. Bogolyubovym.

VOLOSOV, V.M.; MOISEYEV, N.M.; MORGUNOV, B.I.; CHERNOUS'KO, F.L. (Moscow)

"Asymptotic methods of non-linear mechanics associated with the process of averaging"

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 January - 5 February 1964

ACCESSION NR: AP4033629

8/0188/64/000/002/0003/0007

AUTHOR: Morgunov, B. I.

TITLE: Motion of charged particles in a magnetic field

SOURCE: Moscow. Universitat. Vestnik. Seriya III. Fizika, astronomiya, no. 2, 1964, 3-7

TOPIC TAGS: magnetic field, charged particle, drift equation, axially symmetric magnetic field.

ABSTRACT: A study has been made of the drift equations for an axially symmetric magnetic field. It is shown that for such a field the equations are greatly simplified; assuming $\vec{H} = 0$:

$$\frac{dr}{dt} = u \frac{H_r}{H}$$

$$\frac{dx}{dt} = u \frac{H_x}{H}$$

$$\frac{du}{dt} = -\frac{u^2}{2H^2} \left[H_r^2 \frac{\partial H_r}{\partial r} + 2H_r H_x \frac{\partial H_r}{\partial x} + H_x^2 \frac{\partial H_x}{\partial x} \right]$$

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ACCESSION NR: AP4033629

$$\frac{dw}{dt} = \frac{uw}{2H^2} \left[H_r^2 \frac{\partial H_r}{\partial r} + 2H_r H_x \frac{\partial H_r}{\partial x} + H_x^2 \frac{\partial H_r}{\partial x} \right]$$

$$r \frac{d\varphi}{dt} = \frac{mc}{e} \left(u^2 + \frac{w^2}{2} \right) \frac{1}{H^2} \left[H_r H_x \left(\frac{\partial H_r}{\partial r} - \frac{\partial H_x}{\partial x} \right) + \frac{\partial H_r}{\partial x} (H_x^2 - H_r^2) \right]$$

Here r, φ, z are the cylindrical coordinates of the guiding center, u is the component of velocity of the guiding center directed tangent to the line of force, w is the velocity component perpendicular to u . The system of drift equations is supplemented by an equation for phase whose knowledge makes it possible to compute the parameters of motion of a particle with respect to coordinates and the velocity of its guiding center. The author obtains an approximate integral of precise equations of motion

$$I = \frac{w^2}{2H} + f(\vec{r}, \vec{v}) \cdot f(\vec{r}, \vec{v}) = -\frac{mc^2}{e} (2u^2 + w^2) \frac{1}{H^2} \times$$

$$\times \left[H_r H_x \left(\frac{\partial H_r}{\partial r} - \frac{\partial H_x}{\partial x} \right) + \frac{\partial H_r}{\partial x} (H_x^2 - H_r^2) \right] \sin \alpha +$$

$$+ \frac{mc^2}{2e} \frac{uw^2}{H^2} \left[\frac{2}{r} H_r + \frac{1}{H^2} \left(H_r^2 \frac{\partial H_r}{\partial r} + 2H_r H_x \frac{\partial H_r}{\partial x} + H_x^2 \frac{\partial H_r}{\partial x} \right) \right] \sin 2\alpha.$$

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ACCESSION NR: AP4033629

The total derivative of this time integral has the order of $\frac{1}{\sqrt{tH}}$. A numerical example is cited for investigation of the dependence of the derived integral on time for an axially symmetric magnetic field. "The author thanks A. N. Tikhonov for interest in the work and valuable comments". Orig. art. hqs: 8 formulas.

ASSOCIATION: Kafedra matematiki, Moskovskiy universitet (Department of Mathematics, Moscow University)

SUBMITTED: 22Mar63

DATE ACQ: 30Apr64

EXCL: 00

SUB CODE: GP

NO REF SOV: 003

OTHER: 002

Card 3/3

MORGUNOV, B.I.

Complete computation of the second approximation for rotary motion.
Vest. Mosk. un. Ser.3: Fiz., astron. 19 no.1:23-28 Ja-F '64.

(MIRA 17:4)

1. Kafedra matematiki Moskovskogo universiteta.

MORGUNOV, B. I.

Steady-state resonance modes of certain rotary motions. Dokl.
AN SSSR 155 no. 2:277-280 Mr '64. (MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova.
Predstavleno akademikom N. N. Bogolyubovym.

VOLOSOV, V. M.; WORGHEW, H. I.

Steady-state resonance modes of certain oscillatory systems.
Dokl. AN SSSR 156 no. 1:50-53 My '64. (MIRA 17:5)

1. Mosko,skiy gosudarstvennyy universitet im. M. V. Lomonosova. Predstavleno akademikom N. N. Bogolyubovym.

1. SOZIN, SE. MW(d) LJP(a)
AUTHOR: LPSO11522

UR/0020/65/161/005/1048/1090

19
18
B

AUTHORS: Volosov, V. N.; Morgunov, B. I.

TITLE: On the computation of the vibrational regimes of certain non-Hamiltonian systems

SOURCE: LH USSR. Doklady, v. 161, no. 5, 1965, 1048-1050

TOPIC TERMS: vibration, nonlinear system, perturbation, periodic motion

ABSTRACT: The authors have considered a nonlinear system (in general non-Hamiltonian) described by

$$\dot{y} = G(y, p), \quad \dot{p} = F(y, p).$$

Let the solution of this system be purely periodic with y having one maximum F_1 and one minimum F_2 during each period. By perturbing this system, using a small parameter ϵ , the following set of equations is obtained

$$\begin{cases} \dot{y} = G(x, y, p) + \epsilon g(x, y, p, \epsilon) \\ \dot{p} = F(x, y, p) + \epsilon f(x, y, p, \epsilon) \\ \dot{x} = \epsilon X(x, y, p, \epsilon) \end{cases}$$

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L 50525-415
ACCESSION NO: AP9011522

The problem considered is the following: to find the approximate dependence of the amplitude curves of F_1 and F_2 and of x on the small parameter ϵ . The basic results are

$$F_1 = \frac{\epsilon}{T} \sum_{l=1,2} \int_0^T \frac{B_l(x, y, P_l, 0)}{D(x, y, P_l)} dy, \quad x = \frac{\epsilon}{T} \sum_{l=1,2} \int_0^T \frac{X(x, y, P_l, 0)}{D(x, y, P_l)} dy$$

$$T = \sum_{l=1,2} \int_0^T \frac{dy}{D(x, y, P_l)}$$

and the period of oscillation is given by

$$B_l = \left(\frac{\partial P_l}{\partial \epsilon} \right)^{-1} \left\{ - \frac{\partial P_l}{\partial y} g(x, y, P_l, 0) + f(x, y, P_l, 0) - \frac{\partial P_l}{\partial x} X(x, y, P_l, 0) \right\}$$

Orig. art. has 11 equations.

ASSOCIATION: Moskoverskiy gosudarstvennyy universitet (Moscow State University)

CLASSIFIED: 210c564

ENCL: 00

SUB CODE: OP, MA

NO REF SCHEM: 007

OTHER: 000

Card 2/2

VOLOSOV, V.M.; MORGUNOV, B.I.

Asymptotic calculations of certain rotary motions in the resonance case. Dokl. AN SSSR 161 no.6:1303-1305 Ap '65. (MIRA 18:5)

1. Moskovskiy gosudarstvennyy universitet. Submitted November 11, 1964.

REF ID: A55010780

08/01/88/05/000/004/05070001

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24
CO
B

AUTHOR: Morganov, B. I. 14, 85

TITLE: Asymptotic analysis of some rotary motions

SOURCE: Moscow, Universitet, Vestnik. Seriya B. Fizika, astronomiya, no. 4, 1985.

58-85

TOPIC: Mathematic analysis, motion equation, rotation

$$m(\dot{y})^2 + Q(x, y) = E(x, y, \theta)$$

$$x = X(x, y, \theta)$$

Here y is a one-dimensional coordinate, \dot{y} is velocity, $m(x)$ is mass, $x = (x_1, \dots, x_n)$ is the set of n parameters, $Q(x, y) = \frac{\partial V(x, y)}{\partial y}$ is the potential force due to rotation

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ADDITIONAL NR: APS020240

(V is potential), t_f , t_s are small nonlinear perturbations, and ϵ is a small positive parameter. Equations were derived describing changes in the energy of rotation and in the parameter α in the first approximation with respect to powers of ϵ . In this paper, the author derives second approximation equations for the rotational energy and parameter α , determines the period and phase of rotation, and derives first approximation formulas for coordinates y and velocity \dot{y} . The formulas derived do not require preliminary solution of the degenerate system. The method developed in the paper may be used for calculating approximations of any order, and also for studying cases where the perturbations are periodically dependent on time. "I take this opportunity to express my deep gratitude to V. M. Golovinskiy for proposing the problem and discussing the results." Orig. art. has. 18 formulas.

ASSOCIATION: Kafedra matematiki Moskovskogo gosudarstvennogo universiteta (Department of Mathematics, Moscow State University)

DATE: 26Apr64

ENCL: 00

SUB CODE: RA

REF ID: C08

OTHER: 000

Page 2.7

MOFGUNOV, B.I.

Highest approximations in the calculation of stationary
resonance conditions of some nonlinear systems. Vest.
Mosk. un. Ser. 3: Fiz., astron. 20 no.5:38-44 S-O '65.
(MIRA 18:11)
1. Kafedra matematiki Moskovskogo universiteta. Submitted
April 4, 1964.

MORGUNOV, B.I.

Calculation of the rotational states of certain non-Hamiltonian systems. Vest. Mosk.un. Ser. 3: Fiz., astron. 20 no.4:83-86 J1-Ag '65. (MIRA 18:12)

1. Kafedra matematiki Moskovskogo gosudarstvennogo universiteta. Submitted September 20, 1964.

L 16157-66 EWT(d)/T/EWP(1) LJP(c)

ACC NR: AP5025158

SOURCE CODE: UR/0183/65/000/005/0038/0066

21
23
B

AUTHOR: Morganov, B. I.

ORG: Department of Mathematics, Moscow University (Kafedra matematiki Moskovskogo universiteta)

TITLE: Higher approximations in evaluating the stationary resonances of certain nonlinear systems

SOURCE: Moscow Universitet. Vestnik. Seriya III. Fizika, astronomiya,
no. 5, 1965, 38-44

TOPIC TAGS: nonlinear theory, motion stability

ABSTRACT: The author developed a specialized scheme for the averaging method which allowed the determination of stationary, oscillatory, and rotary states of nonlinear systems with one degree of freedom and with coefficients depending on n arbitrary parameters. Moreover, he studied the respective stability problems by means of transformations of the initial system which yielded second-order approximation equations for determining the coordinates of the stationary points. As a result, second-order approximations for the stability conditions of the

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UDC: 62-501.3

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L 16157-66

ACU NR: AF5025158

stationary states were derived allowing the increase of the time interval during which the stability of the system is secured. The author expresses his thanks to V. M. Volosov for advice. Orig. art. has: 18 formulas.

SUB CODE: 12/ SUBM DATE: 28Apr64/ ORIG REF: 006

Card 2/2

MORGUNOV, B.I.

Asymptotic analysis of certain rotary motions. Vest. Mosk.un.
Ser. 3: Fiz., astron. 20 no.4:56-65 J1-Ag '65.

(MIRA 18:12)

1. Kafedra matematiki Moskovskogo gosudarstvennogo universiteta.
Submitted April 28, 1964.

VOLOSOV, V.M.; MORGUNOV, B.I.

Calculation of stationary resonance vibrational modes of certain
non-Hamiltonian systems. Vest. Mosk.un. Ser. 3: Fiz., astron.
20 no.4:86-89 JI-Ag '65. (MIRA 18:12)

1. Kafedra matematiki Moskovskogo gosudarstvennogo universiteta.
Submitted October 20, 1964.

VOLOSOV, V.M.; MEDVEDEV, G.N.; MORGUNOV, B.I.

Use of the method of averaging in solving certain systems of differential equations with delayed argument. Vest. Mosk. un. Ser. 3: Fiz., astron. 20 no.6:89-91 N-D '65.

(MIRA 19:1)

1. Kafedra matematiki Moskovskogo universiteta. Submitted June 28, 1965.

L 0/13-67 ENT(1)/EWP(e) IJP(e) GG

ACC NR: AP6032272

SOURCE CODE: UR/00:0/66/170/002/0239/0241

AUTHOR: Volosov, M. V.; Morgunov, B. I. 20
BORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitat)TITLE: Certain stability conditions connected with the study of resonanceSOURCE: AN SSSR. Doklady, v. 170, no. 2, 1966, 239-241TOPIC TAGS: motion equation, motion stability, perturbation theory

ABSTRACT: The purpose of this work is to examine the system of equations describing fast and slow motion, i. e., a system of the type

$$\dot{x} = \varepsilon X(x, y, \varepsilon) = \varepsilon X_1(x, y) + \varepsilon^2 \dots, \quad \dot{y} = Y(x, y, \varepsilon) = Y_0(x) + \varepsilon Y_1(x, y) + \varepsilon^2 \dots;$$

where $\varepsilon > 0$ is a small parameter, $x = (x_1, \dots, x_n)$ is a series of slowly changing variables, $y = (y_1, \dots, y_m)$ is a series of fast changing variables.

$$X_j = (X_j^{(1)}, \dots, X_j^{(n)}), \quad Y_k = (Y_k^{(1)}, \dots, Y_k^{(m)}) \quad (j = 1, 2, \dots; \quad k = 0, 1, 2, \dots).$$

Assume at $\varepsilon = 0$ that the system has a point of rest (x_0, y_0) . The general problem can be formulated in the following manner:

$$\dot{z} = A(\varepsilon)z + \Phi(\varepsilon, z, t), \quad \varepsilon > 0,$$

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UDC: 517.9

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ACC NR: AP6032272

where $A(c)$ is the matrix:

$$A(c) = \begin{pmatrix} c_{11} \dots c_{1n} & c_{b1} \dots c_{b1n} \\ \dots & \dots \\ c_{n1} \dots c_{nn} & c_{bn} \dots c_{bn1n} \\ c_{11} + c'_{11} \dots c_{1n} + c'_{1n} & c_{11} \dots c_{1m} \\ \dots & \dots \\ c_{m1} + c'_{m1} \dots c_{mn} + c'_{mn} & c_{m1} \dots c_{mn} \end{pmatrix}$$

where

$$a_{1k} = (\partial X_1^{(1)} / \partial x_k)_0, \quad b_{1l} = (\partial X_1^{(1)} / \partial y_l)_0, \quad c_{pc} = (\partial Y_c^{(p)} / \partial x_c)_0, \quad d_{re} =$$

$$= \frac{1}{2} \sum_{i=1}^n \left(\frac{\partial^2 Y_i^{(r)}}{\partial x_i \partial x_i} \right)_0 x_i + \left(\frac{\partial Y_i^{(r)}}{\partial x_i} \right)_0, \quad c_{as} = (\partial Y_s^{(a)} / \partial y_s)_0$$

(the symbol $(\dots)_0$ indicates that the corresponding term is taken at $x = 0, y = 0$) and $s = (s_1, \dots, s_{n+m}), \Phi = (\Phi_1, \dots, \Phi_{n+m})$.

while the function Φ_s satisfies the conditions:

$$\Phi_l = O(\epsilon^2 + \epsilon^2 \|z\| + \epsilon \|z\|^2), \quad l = 1, \dots, n;$$

$$\Phi_j = O(\epsilon^2 + \epsilon^2 \|z\| + \|z\|^2), \quad j = 1, \dots, m.$$

For the case of $n \geq m = 1$, and under the restrictions:

$$a) \quad S = \sum_{i=1}^n a_{1i} + c_{11} < 0; \quad b) \quad -k^2 = \sum_{i=1}^m b_{1i} c_{1i} < 0;$$

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ACC NR: AP6032272

c) all roots of equation $\text{Det } B(p) = 0$ are different and have a negative real part; 0

d) $\sum_{k_1 < k_2 < \dots < k_n} \Delta_{k_1, \dots, k_n} - k^2 S > 0,$

is the diagonal minor of third order of determinant of matrix $B(0)$. At $n = 1$ conditions (c) and (d) can be discarded and at $n > 1$ condition (a) is not required. At sufficiently small c , it can be proved that with requirements (a)-(d) all eigenvalues $\lambda(c)$ of the matrix $A(c)$ are given by $\text{Re } \lambda(c) < -Lc$ ($L = \text{constant} > 0$). For conditions (a)-(d) the trivial solution of the general equation (at $m = 1$) is stable in the sense that for an arbitrary $T > 0$ and $\gamma_1 > 0$, one can denote such $c_0 > 0$ and $\gamma_2 > 0$ that with all $0 \leq c \leq c_0$ and $t_0 \leq t \leq t_0 + T$ any solution of the general set of equations satisfying in the initial moment the condition

$$\|z(t_0)\| \leq \gamma_1$$

and fixed for all $t \in [t_0, t_0 + T]$ at all values of $t \in [t_0, t_0 + T]$ satisfies the inequality $\|z(t)\| \leq \gamma_2$. In general, for $T \sim 1/\sqrt{c}$, $\gamma_1 \sim \sqrt{c}$, $\gamma_2 \sim c$: for an arbitrary $\delta > 0$, there exist such $C_1, C_2, c_0 > 0$ that all $0 \leq c \leq c_0$ every solution of the equation

$$\dot{x} = A(c)x + f(c, x, t)$$

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L 07174-67

ACQ NR: AP6032272

satisfying the condition $|z(t)| \leq \delta \epsilon$.
the inequality $|z(t)| \leq C_1 \sqrt{\epsilon}$.

satisfies for $t \in [t_0, t_0 + C_1/\gamma \epsilon]$

0

These equations can be used in the study of stationary resonance of oscillating and rotating systems. Presented by Academician N. M. Bogolyubov on 17 December 1965. Orig. art. has: 4 formulas.

SUB CODE: 12,20/

SUBM DATE: 02Dec65/

ORIG REF: 010

Card 4/4 *egk*

ACCESSION NR: AP4014441

S/0188/64/000/001/0021/0028

AUTHOR: Morgunov, B. I.

TITLE: A complete calculation of the second approximation for rotational motion

SOURCE: Moscow. Universitet. Vestnik. Seriya 3. Fiz. astron., no. 1, 1964, 23-28

TOPIC TAGS: rotational motion, perturbed motion, perturbation theory, rotational motion approximation, Einstein pendulum

ABSTRACT: In earlier studies (DAN SSSR, 151, No. 6, 1260-1263; Vestn. Mosk. un-ta, ser. fiziki, astronomii, No. 6, 1963), the author considered the asymptotic form of certain rotational motions with one degree of freedom, dependent on slowly changing parameters, and derived equations describing the slow change of energy of perturbed motion in the first and second approximations. In this study, on the basis of the second approximation for the energy of disturbed motion derived earlier, the author determines the phase and period of perturbed motion and the first approximations for the coordinate and velocity. Development of the method also makes it possible to compute approximations of higher orders. Several physical examples are considered. Among these is an Einstein pendulum (a mathematical pendulum whose length changes slowly under the influence of external forces) in a rotational regime. The equation of motion of such a pendulum has the form

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ACCESSION NR: AP4014441

$$\frac{d}{dt} (x^2(\tau) \dot{\psi}) + gx(\tau) \sin \psi = 0, \tau = t, \quad (1)$$

where $X(\tau)$ is the length of the filament and g is the acceleration due to gravity (this problem was also considered in the two papers mentioned above). Expressions are derived for the period of rotation in the second approximation and for the coordinate and velocity of the pendulum. "The author wishes to thank V. K. Volosov for formulation of the problem and discussion of the results". Orig. art. has: 20 formulas.

ASSOCIATION: KAFEDRA MATEMATIKI, MOSKOVSKIY GOSUDARSTVENNYY UNIVERSITET (Department of Mathematics, Moscow State University)

SUBMITTED: 22Mar63

DATE ACQ: 12Mar64

ENCL: 00

SUB CODE: PH, M4

NO REF SOV: 011

OTHER: 000

Card 2/2

ACCESSION NR: AP4022705

S/0020/64/155/002/0277/0280

AUTHOR: Morgunov, B. I.

TITLE: Stationary resonance regimes of some rotational motions

SOURCE: AN SSSR. Doklady*, v. 155, no. 2, 1964, 277-280

TOPIC TAGS: resonance regime, stationary resonance regime, rotational motion, rotational motion resonance regime, perturbed motion, analysis, theory of functions, elliptic integrals, motion equation

ABSTRACT: A number of authors examined the asymptotics of some rotational motions with one degree of freedom which are dependent upon slowly-changing parameters. Volosov and Morgunov (DAN, 151, No. 6, 1963) and Morgunov (Vest. MGU, No. 6, 1964; No. 1, 1964) obtained equations which described, in the first and second approximations, the slow change in a perturbed motion energy. They also found the phase and period of perturbed motion as well as the first approximations for the coordinates and rate. On the other hand, the case

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ACCESSION NR: AP4022705

where the perturbation clearly depends upon time was not examined. Present paper analyzes the case where the perturbation periodically depends upon time, and the problem of the existence and stability of stationary resonance regimes of similar systems. The study was based on methods developed by Volosov and Morgunov (DAN, 153, No. 3, 1963). The findings were used to solve examples of a mathematical pendulum in a rotational regime and the flat motion of a satellite with respect to the center of inertia travelling in a central gravitational field along a near-circular orbit. "I take this opportunity to express my deep gratitude to V. M. Volosov for posing the problem and discussion of the results." Orig. art. has: 12 equations

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosov
(Moscow State University)

SUBMITTED: 14Nov63

DATE ACQ: 08Apr64

ENCL: 00

SUB CODE: MA

NO REF SOW: 000

OTHER: 000

Card 2/2

SHIRYAYEV, Sergey Dmitriyevich. Prinimal uchastiye MORGUNOV, B.P.
MIKITIN, V.A., al'pinist, red.; SKLYARKENKO, V.V., al'pinist,
red.; ONILOVSKIY, V.G., red.; KHARCHENKO, L.I., red.;
STEBLYANKO, T.V., tekhn.red.

[Across the Northern Caucasus] Po Severnomu Kavkazu. Stavropol'.
Stavropol'skoe knizhnoe izd-vo, 1960. 380 p.

(MIRA 13:12)

(Caucasus, Northern--Guidebooks)