"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

On limiting transient processes ... S/024/62/000/002/000/0[illegible]
E140/E135

required for limiting the transient duration to a prescribed value.
There are 2 figures.
SUBMITTED: July 19, 1961

Card 3/3

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

39546

S/024/62/000/004/003/007
E140/E435

13.2510
16.8000

AUTHOR: Litvin-Sedoy, M.Z. (Moscow)

TITLE: On the synthesis of corrective networks in nonlinear systems

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Energetika i avtomatika, no.4, 1962, 94-101

TEXT: The author considers the problem of design of corrective networks, for providing prescribed bounds on the transient oscillations in deterministic oscillatory and controlled systems, in the general case of nonlinear and time-variable parameters. The perturbed motion of such a system is described by a system of three sets of differential equations defining (1) the deviations of the regulated coordinates from their prescribed functions of time, (2) the regulator coordinates and (3) (explicitly) the intermediate coordinates of the regulators. The first two sets of coordinates and time enter into the first two sets of equations, these and the characteristics of the corrective network enter into the third set. The functions involved in the three sets of

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E140/E435

On the synthesis ...

equations are assumed continuous in time for all time $t \geqslant 0$, differentiable with respect to the other variables in a certain region W. For arbitrary corrective-network characteristics continuous in W, a unique solution exists for arbitrary initial conditions in the region W for all time. The problem studied is to constrain the transient motion of the system to remain within certain bounds prescribed for each coordinate for any initial disturbance within the same bounds. The solution to the problem is obtained in a general form, with quantitative relations strictly defined only for $x_i = 0$ and $x_i = \infty$ (x_i certain auxiliary variables functionally related to the regulated coordinates), permitting great freedom in the selection of design parameters for other necessary properties of the system. The problem of finite time delay in the elements measuring the deviations of the coordinates is not treated. A concrete application is indicated relating to the limitation of the deviations from the vertical of a rigid body freely suspended about a horizontal axis, where the oscillations of the object are

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E140/E435

On the synthesis ...

excited by movements of the base on which the system is fixed. There are 3 figures.

SUBMITTED: September 30, 1961

Card 3/3

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

39778

S/147/62/000/002/006/020
E191/E535

26 2195

AUTHOR: Litvin-Sedoy, M.Z.

TITLE: Limitation of oscillations in the linear system of stabilisation of the steady state longitudinal motion

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Aviatsionnaya tekhnika, no.2, 1962, 39-47

TEXT: An analytical method is presented for deriving a control law in linear systems with constant lumped parameters, so that a prescribed limitation of automatically controlled variables in a motion resulting from specific instantaneous initial deviations is achieved. The method is based on the evaluation of the maximum value of the solution of a steady linear homogeneous differential equation with constant coefficients given initial conditions. As an introduction, the sufficient conditions for a prescribed limitation of the coordinates in linear homogeneous systems with constant coefficients are derived. The equations of the aircraft-autopilot system in symmetrical longitudinal motion are formulated. The regulating law embodied in the autopilot is a control deflection equal to the sum of two terms proportional to

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the angle and rate of pitch , , respectively. The problem reduces to the determination of the range of factors of proportionality, wherein asymptotic stability is ensured and a prescribed maximum deviation is not exceeded in the transient motion. The conditions of stability are derived. Only the range of positive factors of proportionality is considered. The conditions of limited amplitude are formulated and the results of these derivations are discussed. A numerical example is given and it is also shown that the control column displacement produced by the autopilot is not excessive. The proposed method yields the sufficient conditions only and is therefore conservative. If the oscillations have to be limited in several variables, each one must be examined separately. The properties of the real autopilot introduce a delay in the regulating process. It is shown that this has a negligible effect on the range of stability combined with amplitude limitation as derived for the ideal autopilot. There is 1 figure.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet, Kafedra prikladnoy mekhaniki (Moscow State University, Department of Applied Mechanics)

SUBMITTED: August 28, 1961

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

44930

S/144/62/000/012/001/001
D230/D308

26.2190

AUTHOR: Litvin-Sedoy, Mikhail Zinov'yevich, Candidate of Physical and Mathematical Sciences

TITLE: Synthesis of a nonlinear compensating circuit for an automatic stabilization system of a motor

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Elektromekhanika, no. 12, 1962, 1327-1335

TEXT: The author examines the design of a nonlinear compensating circuit producing the desired transient action, for given conditions of motor and generator. The method is based on the divergence conditions of the time integral (in terms of the controlling coordinate ω = motor speed) a new steady state of the dynamic force of the complete system. The function of the compensating circuit is to ensure that (a) the translation of the motor from steady state $\omega = 0$ to a new steady state $\omega = \Omega$ is performed in a monotonic manner, (b) that in time T the controlling variable ω will attain the preset value $\omega = \nu$, where $0 < |\nu| < |\Omega|$, and that (c) the

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D230/D308

Synthesis of a nonlinear ...

new steady state of the system is asymptotically stable. A system of differential equations controlling the transition of the motor from one steady state to another is given: it is equally applicable to hydraulic, thermal, electrical and other motors possessing positive, negative or neutral self-alignment. The quadratic equation of the motor statics has one and only one root $\delta(\omega)$ in the working interval of the system motor-final drive, δ being the coordinate of the final drive controlling the supply of energy to the motor. The first integral of the control system is constructed. The drive direction changes as the sign of the function $\Phi(\omega)$ in the interval $0 < \omega < \Omega$. The form of the compensation characteristics is decided on the basis of compatibility of the system equations $f(A) = h(\Omega)$ and its first integral: A is the damping parameter, f and h are static parameters of the corresponding sections. The theory is exemplified on a circuit consisting of a number of sections in series: the generalized discussion allows for cross-coupling between the section. If the meter is inertia-free the compensation circuit is greatly simplified. The first integral suggests, in its time domain, a direct-circuit program in a combined motor control system:

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the direct circuit enhances the response in an unexcited system, whereas the feedback circuit suppresses any deviation from the programmed motion. Control of the direct circuit is effected by applying a suitably processed command $V(\omega)$ to the input of the regulator: the command-processing generator consists of a motor, a computing converter and a compensating circuit. There are 4 figures.

ASSOCIATION: Katedra prikladnoy mekhaniki Moskovskogo gosuniversiteta (Department of Applied Mechanics, Moscow State University)

SUBMITTED: June 27, 1961

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

32827

S/020/62/142/002/005/029
B112/B104

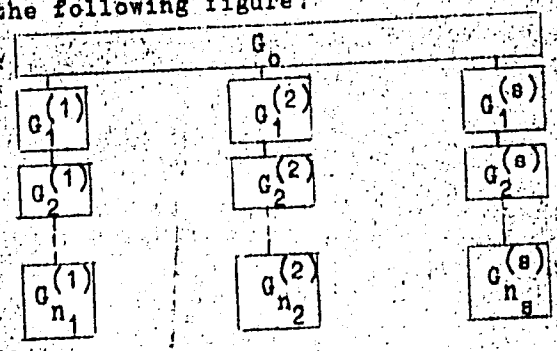
3.2200 (1124, 1132, 1344)

AUTHOR: Litvin-Sedoy, M. Z.

TITLE: Equations of motion of the basic body of a system of solids with variable composition

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 2, 1962, 289 - 291

TEXT: A system G of bodies is considered, which is schematically represented in the following figure:



Card 1/4

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B112/B104

Equations of motion of the basic...

The equations of motion for the basic body G_0 are derived for the case of given laws of motion of $G_\mu^{(\sigma)}$ with respect to $G_{\mu-1}^{(\sigma)}$ and of given external and reactive forces:

$$\frac{dv}{dt} = v\tilde{\omega} + \frac{1}{m}\sum_{\sigma=1}^{s}\sum_{\nu=1}^{n_\sigma}\{V_0 - m_0 c_0 + V_\nu^{(\sigma)} l_{\nu 0}^{(\sigma)} + m_\nu^{(\sigma)}[2(c_\nu^{(\sigma)} l_{\nu 0}^{(\sigma)} + S_\nu^{(\sigma)})\tilde{\omega} - (S_\nu^{(\sigma)} + c_\nu^{(\sigma)} l_{\nu 0}^{(\sigma)})(\tilde{\omega}^2 - \dot{\tilde{\omega}}) - (c_\nu^{(\sigma)} l_{\nu 0}^{(\sigma)} + \dot{S}_\nu^{(\sigma)})]\}, \quad (1)$$

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$$\frac{d\omega}{dt}\sum_{\sigma=1}^{s}\sum_{\nu=1}^{n_\sigma}\{I_0+l_{\nu0}^{(\sigma)\prime}l_{\nu0}^{(\sigma)}l_{\nu0}^{(\sigma)}-m_\nu^{(\sigma)}[(\tilde{S}_\nu^{(\sigma)})^2+U_\nu^{(\sigma)}+U_\nu^{(\sigma)\prime}]\}=$$

$$=M_0+\omega I_0\tilde{\omega}+(\dot{v}-v\tilde{\omega})\left[m_\sigma\tilde{c}_0+\sum_{\sigma=1}^{s}\sum_{\nu=1}^{n_\sigma}m_\nu^{(\sigma)}(\tilde{S}_\nu^{(\sigma)}+l_{\nu0}^{(\sigma)\prime}\tilde{c}_\nu^{(\sigma)}l_{\nu0}^{(\sigma)})\right]+$$

$$+\sum_{\sigma=1}^{s}\sum_{\nu=1}^{n_\sigma}\{m_\nu^{(\sigma)}(\dot{\tilde{S}}_\nu^{(\sigma)}-2\dot{S}_\nu^{(\sigma)}\tilde{\omega}+S_\nu^{(\sigma)}\tilde{\omega}^2)(\tilde{S}_\nu^{(\sigma)}+l_{\nu0}^{(\sigma)\prime}\tilde{c}_\nu^{(\sigma)}l_{\nu0}^{(\sigma)})+$$

$$+m_\nu^{(\sigma)}c_\nu^{(\sigma)}[(\tilde{\omega}_{\nu0}^{(\sigma)})^2-\dot{\tilde{\omega}}_{\nu0}^{(\sigma)}+2\tilde{\omega}_{\nu0}^{(\sigma)}l_{\nu0}^{(\sigma)}\tilde{\omega}l_{\nu0}^{(\sigma)\prime}+l_{\nu0}^{(\sigma)}\tilde{\omega}^2l_{\nu0}^{(\sigma)\prime}]l_{\nu0}^{(\sigma)}\tilde{S}_\nu^{(\sigma)}+$$

$$+[\omega_{\nu0}l_\nu^{(\sigma)}\tilde{\omega}_{\nu0}^{(\sigma)}-\dot{\omega}_{\nu0}^{(\sigma)}l_\nu^{(\sigma)}+2\omega l_{\nu0}^{(\sigma)\prime}(l_\nu^{(\sigma)}-k_\nu^{(\sigma)}E)\tilde{\omega}_{\nu0}^{(\sigma)}]l_{\nu0}^{(\sigma)}-$$

$$-\omega l_{\nu0}^{(\sigma)\prime}l_\nu^{(\sigma)}l_{\nu0}^{(\sigma)}\tilde{\omega}-M_\nu^{(\sigma)}l_{\nu0}^{(\sigma)}-V_\nu^{(\sigma)}l_{\nu0}^{(\sigma)}\sum_{\varkappa=1}^{\nu}l_{(\varkappa-1)0}^{(\sigma)\prime}\tilde{h}_{\varkappa-1}^{(\sigma)}l_{(\varkappa-1)0}^{(\sigma)}\}, \qquad (2)$$

$$U_\nu^{(\sigma)}=\tilde{S}_\nu^{(\sigma)}l_{\nu0}^{(\sigma)\prime}\tilde{c}_\nu^{(\sigma)}l_{\nu0}^{(\sigma)}.$$

The symbols c, h, l, and S denote quantities of configuration, I moments of inertia, V forces, and M moments. A. I. Lur'ye (Tr. Leningradsk.

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politekhn. inst., v. 210, 7 (1960)) is referred to. There are 1 figure and 8 references: 7 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: R. E. Roberson, Proc. VIII Int. Congr. Astronautics Barcelona, Wien, 1958, p. 317 - 339.

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

PRESENTED: April 6, 1961, by I. I. Artobolevskiy, Academician

SUBMITTED: April 6, 1961

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

BORISENOK, I.T.; GENEROZOV, M.N.; YEREMEYEV, N.V.; KARAMYSHKIN, V.V.; KUZOVKOV, N.T.; BORISENOK, I.T.; KULIKOVSKAYA, N.V.; SAVINOV, G.I., kand.fiz.-mat. nauk, dots. [deceased]; PIROGOV, I.Z.; Prinimali uchastiye: BALAYEVA, I.A.; BALAKIN, B.M.; BELYAYEVA, G.M.; BELYAKOV, V.I.; VELERSHTEYN, R.A.; ZHARKOV, G.M.; KOROLEVA, V.Ye.; LITVIN-SEDOY, M.Z.; POPOV, A.I.; PRIVALOV, V.A.; STUKALOVA, L.M.; CHISTYAKOV, A.I.; SAVVIN, A.B., red.; CHISTYAKOVA, K.S., tekhn. red.

[Laboratory work in theoretical and applied mechanics] Laboratornyi praktikum po obshchei i prikladnoi mekhanike. Moskva, Izd-vo mosk. univ. 1963. 233 p. (MIRA 16:12)

1. Kafedra prikladnoy mekhaniki Moskovskogo gosudarstvennogo universiteta (for Balayeva, Balakin, Belyayeva, Belyakov, Velershteyn, Zharkov, Koroleva, Litvin-Sedoy, Popov, Privalov, Stukalova, Chistyakov).

(Mechanics--Laboratory manuals)

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

S/179/63/000/001/003/031
E031/E135

AUTHOR: Litvin-Sedoy, M.Z. (Moscow)

TITLE: On the undisturbability of a spherical pendulum of variable length as the point of support moves in a central force field

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Mekhanika i mashinostroyeniye, no.1, 1963, 33-40

TEXT: At each moment of time the pendulum is attached to its point of support by a weightless straight rigid rod whose length changes with time according to an a priori given law. Two first order differential equations are obtained for $\varepsilon(t) = R - x$ (where R is the radial distance of the point of support and x is the length of the pendulum) in which the coefficients depend on the parameter σ which is the azimuth of the straight line OA in the plane BON (O is the origin of the force field, A is the point of intersection of the line which passes through the point of support and the bob of the pendulum with the plane BON which is perpendicular to the line OC joining the origin to the point of

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On the undisturbability of a spherical.. S/179/63/000/001/003/031
E031/E135

support). The parameter σ can have any value, so the condition for the undisturbability of the pendulum with respect to the direction of the center of the field is expressed by two equations not involving it. The solutions of these equations for $\varepsilon(0) = 0$ and $\varepsilon(0) \neq 0$ are discussed, expressions for the law of variation of the length of the pendulum being obtained. An important special case is motion in a fixed plane. Then the law of variation does not depend on the initial value ω_0 of the velocity ω, but only on ω/ω_0. Some properties of the plane of the disturbed motion of the pendulum when its direction of motion deviates from the direction of the center of the field are discussed. The conditions under which further deviation from the position $\varphi = 0$ is retarded when $\sin \varphi_0 \neq 0$, $\Omega_0 \neq 0$, $\operatorname{sign} \varphi_0 = \operatorname{sign} \Omega_0$ (φ is the angle between the pendulum and OC, $\dot{\varphi} = \Omega$ and subscript "o" denotes initial values) are investigated.
There are 2 figures.

SUBMITTED: October 8, 1962

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVIN-SEDOY, M.Z.

AID Nr. 990-6 14 June

SCIENTIFIC-TECHNICAL CONFERENCE ON MODERN GYROSCOPE TECHNOLOGY (USSR)

Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye, v. 6, no. 2, 1963, 156-158. S/146/63/006/002/010/010

The Fourth Conference on Gyroscope Technology, sponsored by the Ministry of Higher and Secondary Special Education RSFSR, was held at the Leningrad Institute of Precision Mechanics and Optics from 20 to 24 November 1962. The conference was attended by representatives from 93 organizations in 30 Soviet cities, including educational establishments, scientific research institutes, design bureaus, and industrial concerns. The following are some of the topics covered in the 92 papers presented and discussed at the conference. Vibrations of a gyroscope pendulum with a movable suspension in a nonuniform gravitational field: M. Z. Litvin-Sedoy, Senior Scientific Worker; improving dynamic characteristics of some gyro instruments and devices: A. V. Reprikov, Docent, Candidate of Technical Sciences; some problems of the dynamics of a gyroscope with an electric drive installed in a gymbol suspension: S. A.

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

AID Nr. 990-6 14 June

SCIENTIFIC-TECHNICAL CONFERENCE [Cont'd] S/146/63/006/002/010/010

Kharlamov, Engineer; problems of the theory of the inertial method for measuring aircraft acceleration: I. I. Pomykayev, Docent, Candidate of Technical Sciences; determining the drift of a floated-type integrating gyroscope without the use of a dynamic stand: G. A. Slomyanskiy, Docent, Candidate of Technical Sciences; natural damping of nutational vibrations of a gyroscope: N. V. Gusev, Engineer; motion of a not quite symmetrical gyroscope pendulum with vertically movable support: A. N. Borisova, Aspirant; gyroscope-type inclinometer for surveying vertical freezing wells: V. A. Sinitsyn, Candidate of Technical Sciences; effect of joints between channels in triaxial gyro-stabilized platform: L. N. Slezkin, Engineer; theoretical proposal for the possible design of a generalized gyro instrument: M. M. Bogdanovich, Docent, Candidate of Technical Sciences; problem of drift in a power-type triaxial gyro stabilizer: V. N. Karpov, Engineer; methods of modeling random disturbances in gyro systems: S. S. Shishman, Senior Engineer; method of noise functions for investigating a system subjected to random

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

AID Nr. 990-6 14 June

SCIENTIFIC-TECHNICAL CONFERENCE [Cont'd] S/146/63/006/002/010/010

signals: G. P. Molotkov, Docent, Candidate of Technical Sciences; drifts in a gyro-stabilized platform as a result of the effect of cross joints under determined and random disturbances: B. I. Nazarov, Docent, Candidate of Technical Sciences; stability and natural oscillations in inhomogeneously rigid gyro systems with backlash under external influences: S. A. Chernikov; methods of designing a gyro vertical with automatic latitude and course corrections: A. V. Til', Candidate of Technical Sciences; use of asymptotic methods in solving problems of the motion of an astatic gyroscope in gymbol suspension: D. M. Klimov, Candidate of Physical and Mathematical Sciences, and L. N. Slezkin; theory of aperiodic gyro pendula: V. S. Mochalin, Docent, Candidate of Technical Sciences; and selecting basic parameters of course gyros by using nomograms: V. P. Demidenko, Engineer. [AS]

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVIN-SEDOY, M.Z.

Swings of a gyroscopic pendulum with a movable fulcrum in a nonuniform gravitational field. Izv.vys.ucheb.zav.; prib. 6 no.3:68-76 '63. (MIRA 16:9)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova. Rekomendovana organizatsionnym komitetom IV Nauchno-tekhnicheskoy mezhvuzovskoy konferentsii po problemam giroskopicheskikh priborov i ustroystv.

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L 41273-65 EED-2/EEO-2/EWP(m)/EWG(a)-2/EWG(j)/EWG(r)/EEC(k)-2/EWG(v)/EWA(h)/EWP(k)/EWA(c)/EWT(d)/EWT(1)/EWT(m)/FBD/FS(v)-3/T-2/EEC(a)/EEC(j)/EEC(r)/EWA(d)/EEC(c)-2/FSS-2/EWP(w)/EWP(v) Pe-5/Pf-4/Pg-4/Ph-4/Pi-4/Pk-4/Pl-4/Pn-4/Po-4/Pq-4/Pac-4/Pae-2/Peb

ACCESSION NR: AP5004766 IJP(c) TT/EM/GW/AST/ BC S/0209/64/000/OSP/0064/0071

109
107
B

AUTHOR: Litvin-Sedoy, M. (Candidate of physico-mathematical sciences)

TITLE: Controlling a cosmic craft

SOURCE: Aviatsiya i kosmonavtika, special issue, 1964, 64-71

TOPIC TAGS: gyroscope, automatic orbit control, control system, guidance, spacecraft guidance

ABSTRACT: The author discusses propulsion systems for control of a spacecraft. Two basic groups of systems are mentioned: 1) systems providing control by means of interaction of forces and force moments against a surrounding medium or another object; 2) systems not involving a surrounding nonvacuous medium or another object. The second category is the topic of the author's principal concentration. A force and moment system based upon variations in the earth's gravitational field is developed in reference to the diagram given in Fig. 1 on the Enclosure. In this figure the spacecraft moves along a path I - II with parameters defined relative to the position of the earth's center O. The author demonstrates that the change in gravitational attraction accounts for variation in the radical distance between the spacecraft and the earth's center for the

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ACCESSION NR: AP5004766

2

case of an orbit that is stationary in the sense that the craft's motion is along the same "local vertical" from the earth at all times. The pitch moment acting upon the craft is defined for the same simplified orbit conditions in terms of two force vectors and one geometric variable. Several secondary force effects are mentioned in regard to stationary orbits: sunlight pressure, radiational and plasma effects, micrometeor bombardment, etc. Stabilization capability for such a satellite is achieved through self-contained and self-perpetuating correctional devices. A mathematical treatment of the effects of changing the mass center of an orbiting body is presented, as well as a discussion of moments of gyration in three dimensions and the use of correctional rotors. Brief consideration is given to the problem of self-contained energy conversion units and to the problem of accurate and continuous computation and application of corrections. The manned space flights of the Soviet crafts Vostok and Voskhod are cited as contributing greatly to the solution of many guidance and control problems. Orig. art. has: 4 figures and 9 equations.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 01 SUB CODE: NG

NO REF SOV: 000 OTHER: 000

Card 2/3

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

L 34513-65 EED-2/EEO-2/EEC(k)-2/EWT(d)/FBD/T-2/EWA(d)/EEC(c)/EWP(1)/FSS-2 Pg-4/
Pk-4/Pl-4/Pn-4/Po-4/Pq-4/Pac-4/Pae-2 IJP(c) BC/WR/GS

ACCESSION NR: AT5004115 S/0000/64/000/000/0126/0134 67

B+1

AUTHOR: Litvin-Sedoy, M. Z.

TITLE: Realization of invariance in non-linear tracking systems with variable parameters

9

SOURCE: Vsesoyuznoye soveshchaniye po teorii invariantnosti i yeye primeneniyu v avtomaticheskikh sistemakh. 2d, Kiev, 1962. Teoriya invariantnosti v sistemakh avtomaticheskogo upravleniya (Theory of invariance in automatic control systems); trudy soveshchaniya. Moscow, Izd-vo Nauka, 1964, 126-134

TOPIC TAGS: invariance, self regulating system, automatic control system, control theory, nonlinear servo system, variable parameter system

ABSTRACT: The present paper describes a method of controlling a non-linear tracking system by means of certain "correcting networks." These networks, which were developed earlier, are capable of limiting the oscillation of the regulating coordinates of a system to within a given range of their required values. Thus, the possible oscillations of the system are restricted. Use of these circuits allows resolution of the well-known conflict between the requirement of raising the amplification coefficient of the system and that of guaranteeing the stability

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ACCESSION NR.: AT5004115

of the system. While the circuits described provide semi-invariance for the systems under consideration, there are complications in developing the specific characteristics required and in solving the computational problems involved in their development. Orig. art. has: 1 figure and 28 formulas.

ASSOCIATION: None

SUBMITTED: 24Sep64 ENCL: 00 SUB CODE: DC, MA

NO REF SOV: 007 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVIN-SEDOY, M.Z. (Moskva)

Stability of the oscillations of a flat pendulum during the motion of its support along a fixed straight line. Izv. AN SSSR. Mekh. no.5 136-137 S-O '65. (MIRA 18:10)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVIN-SEDOY, M.Z.

Realizability of a prescribed limiting cycle in certain systems of the second order. Izv. vys. uchebn. zav.; radiofiz 8 no.4: 839-842 '65. (MIRA 18:9)

1. Nauchno-issledovatel'skiy institut mekhaniki Moskovskogo universiteta.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVIN-SEDOY, M.Z.

Nondisturbance of a gyroscopic pendulum. Izv. vys. ucheb. zav.; prib. 8 no.5:91-93 '65. (MIRA 18:10)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova. Rekomendovana otdelom teoreticheskoy i prikladnoy mekhaniki Nauchno-issledovatel'skogo instituta mekhaniki Moskovskogo gosudarstvennogo universiteta.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

L 40327-66 EWT(1)/EWP(m)/EWG(k)-2/EWP(c) IJP(c)

ACC NR: AP6017822 (N) SOURCE CODE: UR/0147/66/000/002/0019/0028

AUTHOR: Litvin-Sedoy, M. Z.

ORG: none

TITLE: Reaction forces in a system of coupled bodies when assigned motion is accomplished

SOURCE: IVUZ. Aviatsionnaya tekhnika, no. 2, 1966, 19-28

TOPIC TAGS: coordinate system, mathematic matrix, vector, acceleration, parameter, motion equation

ABSTRACT: The reaction forces in a system G (see Fig. 1) of coupled solids of varying composition, which are produced when the system accomplishes previously assigned relative movements, are calculated. The row matrices w^*_{i0} and $w^{*(\sigma)}_{i\nu}$ of the projections of the absolute accelerations w_{i0} and $w^{(\sigma)}_{i\nu}$ of arbitrary particles of bodies G_0 and $G^{(\sigma)}_{\nu}$ have the form

$$w^*_{i0} = w^* + 0^*_{i0}\,(\tilde{\omega}^2 - \dot{\tilde{\omega}}),$$

$$w^{*(\sigma)}_{i\nu} = w^* + 0^{(\sigma)}_{i\nu}\,\ddot{l}^{(\sigma)}_{\nu 0} + \ddot{S}^{*(\sigma)}_{\nu} - 2\,(0^{*(\sigma)}_{i\nu}\,\dot{l}^{(\sigma)}_{\nu 0} + \dot{S}^{*(\sigma)}_{\nu})\,\tilde{\omega} +$$

$$+ (0^{*(\sigma)}_{i\nu}\,l^{(\sigma)}_{\nu 0} + S^{*(\sigma)}_{\nu})\,(\tilde{\omega}^2 - \dot{\tilde{\omega}}),$$

$$w^* = wc^*.$$

UDC: 531.3091

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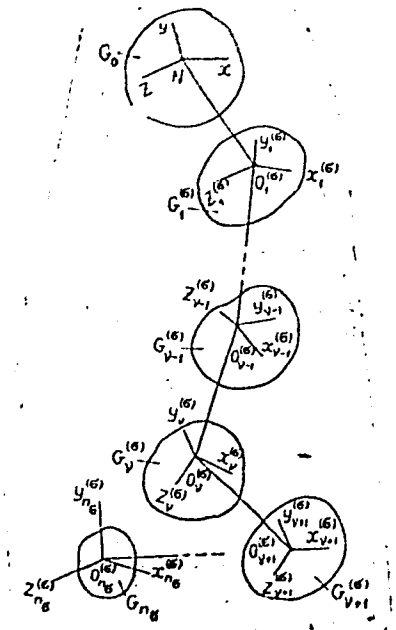
ACC NR: AP6017822

Fig. 1.



The absolute velocity $w_{i\nu}^{(\sigma)}$ of an arbitrary i-th particle of $G_{\nu}^{(\sigma)}$ that belongs to that body at a given moment is determined by the equation: $m_{i\nu} w_{i\nu} = V_{i\nu}$,

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ACC NR: AP6017822

where $m_{i\nu}$ is the mass of the particle and $V_{i\nu}$ is the principal force vector. The unknown moments are found by the equation

$$H^{*}_{\nu(\nu+1)} = H^{*}_{01} + \sum_{h=1}^{\nu} (Y^{*}_{h} - L^{*}_{h0}),$$
$$(\nu = 0, 1, \ldots, n-1),$$

where $L^{*}_{h0} = L^{*}_{h} l_{h0}$, where L^{*}_{h} is the matrix of the projections of the vector L_h onto the axes connected with body G_h. The reactions in the drive system for turning a jet engine installed in a body G_0 with a Cardan suspension are calculated as an example. Orig. art. has: 20 formulas and 5 diagrams.

SUB CODE: 20/ SUBM DATE: 24Aug65/ ORIG REF: 005/ OTH REF: 001

Card 3/3 MLP

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

VYSHELESSKIY, A., prof., doktor tekhn.nauk; LITVINA, L., inzh.

Automatic gas stove. Obshchestv. pit. no.10:52-55 O '61. (MIRA 15:1)

(Stoves, Gas)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

BELYUNOVA, V., inzh.; LITVINA, L., inzh.; SHUMUEL'SON, L., inzh.

Testing of a gas autoclave. Obshchestv.pit. no.5:32-36 My '62. (MIRA 15:5)

(Autoclaves—Testing)
(Restaurants, lunchrooms, etc.—Equipment and supplies)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINA, L.A.

Distr: 4E2c

Use of the method of leaching for evaluation of the suitability of samples for determination of age by the argon method. J. E. Starik and L. A. Litvina (V.G. Khlopin Radium Inst., Acad. Sci. U.S.S.R., Leningrad). *Geokhimiya* 1958, 103-5.—Since the age value depends greatly on the m Ar^{40}/m K^{40} ratio, the behavior of Ar and Kr relative to each other is of interest. Expts. were made in order to det. the effects of weak solns. of soda and H_2SO_4 (0.001, 0.01, and 0.1*N*) on the condition of microcline, muscovite, and biotite at room temp. during periods of 3, 6, and 9 days. Expts. were carried out with agitation, but showed no loss of Ar and K by leaching. The action of 0.1*N* soda and 0.1*N* H_2SO_4 on biotite for 2 months likewise produced no great loss of Ar and K. Then the same minerals were studied by heating them in concd. HCl for one hr. The Ar and K contents remained as before. Next, microcline and muscovite were treated with hot concd. HCl for 5 and 15 hrs., but this also produced no loss of Ar and K. Biotite was treated with HCl, and this did cause a loss of Ar, K_2O, Fe_2O_3, Al_2O_3, and MgO from the samples. The process of soln. was also confirmed by x-ray analysis. The age of each untreated biotite is less, the more sol. each given biotite is in HCl. Results obtained are of a tentative nature, but they seem to provide a possible method for evaluating the suitability of samples for age det. by the Ar method. Gladys S. Macy

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINA, L.A.

5

Determination of the absolute geological age for monazites by the helium method. K. K. Zhirov, N. V. Baranovskaya, and L. A. Litvina (V. G. Khlopin Radium Inst., Acad. Sci. U.S.S.R., Leningrad). Geokhimiya 1958, 16-70.—The age of a series of monazites from the pegmatites of Northern Karelia was detd. Detns. of U and Th were made by the emanation method, with an accuracy of ±3-5%. For the detn. of He, the monazites were fused with $KHSO_4$, followed by purification of the noble gases liberated. Measured vols. of He were reported for standard conditions (0° and 760 mm.). 15 references. G. S. M.

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APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

STARIK, I.Ye., KURBATOV, V.V., LITVINA, L.A.

Effect of heat on the texture of micas and microcline and the preservation of argon in them. Zap. Vses. min. ob-va 88 no.6:724-728 '59. (MIRA 13:8)

1. Radiyevyy institut im. V.G.Khlopina AN SSSR, Leningrad.
(Microcline) (Mica) (Argon)

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

S/194/61/000/007/045/079
D201/D305

AUTHOR: Litvina, L.A.

TITLE: Decomposition of xantogenates under the effect of ultrasound

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 7, 1961, 12, abstract 7 E71 (Obogashcheniye rad. 1959, no. 4(22), 51-52)

TEXT: The solutions of sodium-butyl-xantogenate as normally encountered in the sewage water of enriching plants with concentrations from 2 to 26 mg/l were put into a glass beaker and subjected to ultrasound at frequencies from 20 to 1000 kc/s. The greatest decomposition of xantogenate is obtained for small concentration solutions (at a concentration of 2 - 3 mg/l, 94 - 95% of xantogenate is decomposed after 10 minutes). The decomposition of xantogenate increases with time, during which it is subjected to ultrasound. The decomposition of xantogenate in a neutral medium with all other

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Decomposition of xantogenates... S/194/61/000/007/045/079
D201/D305

conditions remaining the same takes place faste than in an alkaline medium. With the increasing intensity of US the process of decomposition of xantogenate is accelerated (a complete decomposition of xantogenate in a solution with concentration of 10 mg/l has been observed to occur in 3 - 5 minutes at the ultrasound intensity of 10 - 15 W/cm^2). 2 figures. 1 table. 5 references. [Abstracter's note: Complete translation]

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APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINA, Lyudmila Markovna; POPOV, I.S., retsenzent; KULICHEV, A.F., retsenzent; RAZUMOVSKAYA, Ye.V., redaktor; EL'KINA, E.M., tekhnicheskiy redaktor.

[Fashioning wearing apparel from checks and plaids] Modelirovanie odezhdy iz kletchatykh tkanei. Moskva, Gos.nauchno-tekhnicheskoe izd-vo Ministerstva promyshlennykh tovarov shirokogo potrebleniia SSSR, 1954. 61 p. (MLRA 8:3)
(Fashion)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

VYSHELESSKIY, A.N.; SHMUEL'SON, I.E.; LITVINA, L.S.; DRUSKIN, L.I.; BELYUNOVA, V.S.

New gas heating equipment for public eating establishments. Gaz. prom. 7 no.5:46-50 '62. (MIRA 17:11)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

VYSHELNOSHIY, A.N.; LITVINA, L.S.

Determining the basic heat engineering indices of the closed grids of gas stoves. Gaz. prom. 9 no.10:13-18 '64. (MIRA 17:12)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINA, Lidiya Semenovna; BAULIN, V.A., red.; SUDAK, D.M., tekhn.red.

[Assembly, operation, and minor repairs of the equipment of public eating places] Montazh, ekspluatatsiia i malyi remont oborudovaniia predpriiatii obshchestvennogo pitaniia. Moskva, Gos.izd-vo torg.lit-ry, 1959. 208 p. (MIRA 12:12)
(Restaurants, lunchrooms, etc.--Equipment and supplies)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINA, Lidiya Semenovna; BAULIN, V.A., red.; EL'KINA, E.M., tekhn.red.

[Gas equipment of public eating establishments] Gazovoe oborudovanie predpriiatii obshchestvennogo pitaniia. Moskva, Gos. izd-vo torg.lit-ry, 1961. 174 p. (MIRA 14:4)

(Restaurants, lunchrooms, etc.--Equipment and supplies)
(Gas appliances)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

PETROV, Gennadiy Alekseyevich; LITVINA, Lidiya Semenovna; BAULIN, V.A., red.; GROMOV, A.S., tekhn. red.

[Operation of the equipment of public-food service] Ekspluatatsiia oborudovaniia predpriiatii obshchestvennogo pitaniia. Moskva, Gos. izd-vo torg. lit-ry, 1962. 243 p. (MIRA 15:7)
(Restaurants, lunchrooms, etc.—Equipment and supplies)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

AKSENOV, M.A.

L 54368-65 EWT(d)/EWT(m)/EEC(k)-2/EWP(i)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EED-2/ //
EWP(b)/EWP(i)/EWA(c) Pq-4/Pf-4/Pad/Pg-4/Pk-4 IJP(c) BB/JD/AW/JG/GG
ACCESSION NR: AP5013852 UR/0103/65/026/005/0938/0942
681.142.6

79
58
B

AUTHOR: Boyarchenkov, M. A.

TITLE: All-Union Conference on magnetic elements of automation and computer technique

SOURCE: Avtomatika i telemekhanika, v. 26, no. 5, 1965, 938-942

TOPIC TAGS: electric engineering conference, magnetism conference, computer component, automation equipment, automation, electronic data processing

ABSTRACT: The Ninth All-Union Conference on Magnetic Elements of Automation and Computer Technology, held in Kaunas from 7 to 10 September 1964, was organized by the National Committee of the USSR on Automatic Control, the Institute of Power and Electrical Engineering of the Academy of Sciences, Lithuanian SSR, the Lithuanian Scientific and Technical Society of the Instrument Building Industry, and the Institute of Automation and Telemechanics of the Main Committee on Instrument Building, Means of Automation, and Control Systems under Gosplan and the Academy of Sciences USSR. Over 450 participants discussed some 90 reports concerning the theory, design,

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L 54268-65
ACCESSION NR: AP5013852

production, and application of magnetic and magnetic-semiconductor elements. Reports were presented for seven areas: digital and analog elements, memory devices, magnetic power devices, magnetic amplifiers and converters, parametrons, and power sources.

At the opening plenary session, M. A. Rozenblat presented a survey of the present state of contactless magnetic elements, which he considers to be one of the most efficient and promising technical means of automation and computer technology. Problems of designing logic elements to provide stable operation for various types of circuits were discussed in a series of reports. B. A. Yefimov and G. N. Chizhukhin reported on the development of modules of ferrite-transistor elements (FTE) which can be used for various types of computers and also for discrete automation for general and special purposes. This system provides reliable operation at a 200-kc clock frequency in the -10 to +50° C temperature range.

The same authors together with M. A. Aksenov reported on the development of a general-purpose heavy-duty FTE which can be used as a cell of a clock-frequency pulse generator or as an independent heavy-duty control

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L 54868-65
ACCESSION NR: AP5013852

element. It is capable of performing command recording or readout of information reaching it in large quantities from a low-power FTE. I. A. Tyumin, B. A. Yefimov, and A. A. Shavrov reported on the development and testing of biax-type logic circuits operating at 1 Mc and performing several logic operations. Advantages cited are: high s/n ratio, about 20; high switching rate, about 2 Mc; and high reliability due to the simplicity of the circuit. Such circuits may also be used in complex logic devices. Additional reports discussed logic circuits using biax-type elements in a working storage device with a nondestructive readout cycle of 10^{-7} sec and a recording time for new information of several microseconds.

L. P. Afinogenov et al. reported on discrete and discrete-analog computer units based on the use of the area of an emf pulse originating in the winding during magnetization reversal in the ferrite. Development of ferrite matrixes which release a voltage pulse at the output with an area proportional to the code supplied at the matrix input was also discussed.

Problems connected with the development of single-wire memory elements with multiaperture ferrite plates were presented by R. A. Lashev-

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

L 54868-63

ACCESSION NR: AP5013852

skiy et al. A. S. Sverdlov and others presented results of developing working storage units using miniature memory cubes made with multiaperture ferrite plates.

Thin-film technology was discussed in several reports. A paper by Ye. F. Berezhnyy et al. dealt with the development of a super storage device built on thin-film matrices with conductive substrates with a capacity of 64 56-bit words and a cycle of 400 nsec. Experiments with magnetic-film storage devices produced by electrochemical deposition on glass and metal cylindrical substrates were discussed, and a method of using an element of cylindrical magnetic film in a matrix storage device was also reported.

A. Tutauskas and R. Litvinaytis reported on a stable storage device with a short access time, a capacity of 512 x 32 bits, an access rate of 500 kc, and a readout time of 1 usec. A. B. Lyasko et al. have developed a small decade counter of periodic and nonperiodic signals in which a parametric element with five stable phase states was used. The counter displays better energy properties than other known counters, high reliability, and high noise immunity. A. G. Rabin'kin reported on the characteristics of

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L 54863-63

ACCESSION NR: AP5013852

new high-coercivity (5000 oe) alloys of the cobalt-platinum system. M. A. Rozenblat et al. discussed the theory and design of magnetic analog computing devices (adder, integrator, multiplier) based on single-stage magnetic amplifiers using magnetic analog storage.

A large number of reports was devoted to the theory and application of power magnetic devices. The papers presented by the Gor'kiy school of A. M. Bamdas concerning frequency multipliers and voltage stabilizers were of great interest in this field.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: DP, IE

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4021-F

Card 5/5

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

ACC NR: AP7002886 (A) SOURCE CODE: UR/0189/66/000/006/0059/0063

AUTHOR: Bol'shova, T. A.; Alimarin, I. P.; Litvinchova, A. S.

ORG: Analytical Chemistry Department, Moscow State University (Kafedra analiticheskoy khimii Moskovskogo gosudarstvennogo universiteta)

TITLE: Separation of small amounts of In from Ga by partition chromatography on a column with teflon

SOURCE: Moscow. Universitet. Vestnik. Seriya II. Khimiya, no. 6, 1966, 59-63

TOPIC TAGS: indium, gallium, chromatography, teflon

ABSTRACT: A rapid method for separating trace amounts of gallium and indium by column partition chromatography on teflon has been developed. It is based on the difference in the stability of chloride and bromide complexes of these elements. The conditions of separation were determined by studying the behavior of gallium and indium in the systems hydrobromic acid solutions - tributyl phosphate (TBP) and lithium bromide solutions - TBP, the extractant used being TBP. In the system 0.8 M HBr - TBP, indium was found to be quantitatively retained on teflon when the solution (in which In:Ga = 1:1) was passed at 0.5 ml/min. Separation of indium from gallium present in the ratio of 1:800 was also satisfactory. The systems 1 M LiBr - TBP and 3 M HCl - TBP were also found to be suitable for the quantitative separation of In and Ga. Orig. art. has: 3 figures and 1 table.

SUB CODE: 07/ SUBM DATE: 13Jan66/ ORIG REF: 003/ OTH REF: 003

UDC: 541.183:546.631

Card 1/1

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINCHUK, G.S.; KHAPLANOV, M.G.

Bases and complete systems in the space of analytic functions of two variables. Usp.mat.nauk 12 no.4:319-325 Jl-Ag '57. (MIRA 10:10)
(Functions, Analytic) (Functions of several variables)
(Matrices)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINCHUK, G.S.: Master Phys-Math Sci (diss) -- "Integral equations with analy. nuclei". Rostov na Donu, 1958. 7 pp, (Rostov State U), 150 copies (KL, No 1, 1959, 113)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

AUTHOR: Litvinchuk, G.S. SOV/140-58-2-17/20

TITLE: On Integral Equations With Analytic Kernels (Ob integral'nykh uravneniyakh s analiticheskimi yadrami)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy Ministerstva vysshego obrazovaniya SSSR, Matematika, 1958, Nr 2, pp 197-209 (USSR)

ABSTRACT: The author considers the integral equation

$$(1) \qquad \varphi(z) = f(z) + \lambda \int_C \frac{G(z,\tau)}{H(z,\tau)} \varphi(\tau) d\tau,$$

where C is a piecewise smooth curve of the z-plane; $f(z), G(z,\tau)$, $H(z,\tau)$ are analytic in z if z changes in a domain containing C in the interior; $G(z,\tau)$, $H(z,\tau)$ are continuous in τ for $\tau \in C$, where $H'_\tau(z,\tau)$ exists and is continuous. In D for $\tau \in C$ the equation $H(z,\tau) = 0$ defines certain curves E_i $[z_i = z_i(\tau)]$ called polar curves of the kernel of (1).
The author investigates the behavior of the solutions of (1) in the neighborhood of the lines E_i. Here it is demanded that G and H satisfy additionally the Hölder condition and partially the existence of several partial derivatives, the highest one of which also has to satisfy the Hölder condition. In § 1 the

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On Integral Equations With Analytic Kernels SOV/140-58-2-17/20

author treats the case where C and the polar lines have no common intersection points. § 2 admits also a finite number of intersection points. Seven theorems are proved altogether being similar to the older results of Julia [Ref 1], Janchevskiy [Ref 2,3], Platrier [Ref 6,7,8].
There are 9 references, 2 of which are Soviet, and 7 French.

ASSOCIATION: Rostovskiy gosudarstvennyy universitet (Rostov State University)

SUBMITTED: October 14, 1957

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

69768

S/155/59/000/02/009/036

16,3200

AUTHOR: Litvinchuk, G.S.

TITLE: On Some Bases in the Space of Analytic Functions of two Variables

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki, 1959, No. 2, pp. 49-55

TEXT: Theorem 2 : The system of polynomials

$$(1) \qquad P_{m,n}(z,w) = \sum_{k,l=0}^{m,n} a_{m-k,n-l} z^k w^l$$

is a basis in $\{|z| < R, |w| < T\}$, if and only if

$$(2) \qquad \varphi(z,w) = \sum_{i,j=0}^{\infty} a_{ij} z^i w^j$$

is analytic in $\left\{|z| \leq \frac{1}{R}, |w| \leq \frac{1}{T}\right\}$ and there vanishes nowhere.

Theorem 3 : $$(5) \qquad f_{m,n}(z,w) = \sum_{p,q=0}^{\infty} a_{m+p,n+q} z^{m+p} w^{n+q}$$

Card 1/2

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On Some Bases in the Space of Analytic Functions of two Variables S/155/59/000/02/009/036

is a basis in $\{|z| < R, |w| < T\}$ and in every smaller bicylinder, if and only if all $a_{kl} \neq 0$ and $\lim_{k+l \to \infty} \sqrt[k+l]{a_{kl} R^k T^l} = 1$.

Theorem 1 is of general character and is known; the theorems 4 and 5 are modifications of theorem 3.
There is 1 Soviet reference.

ASSOCIATION: Rostovskiy gosudarstvennyy universitet (Rostov State University)

SUBMITTED: February 21, 1958 (Uspekhi matematicheskikh nauk)

February 23, 1959 (Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki)

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SOV/140-59-2-12/30

16(1)

AUTHOR: Litvinchuk, G.S.

TITLE: On the Integral Equations With Ambiguous Kernels (Ob integral-nykh uravneniyakh s mnogoznachnymi yadrami)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1959, Nr 2, pp 128-137 (USSR)

ABSTRACT: The author considers the integral equations

$$\varphi(z) = f(z) + \lambda \int_C K(z,\tau)\varphi(\tau)d\tau ,$$

the ambiguous kernels $K(z,\tau)$ of which have logarithmic or polar-logarithmic singular lines. Intersection, tangenting or overlapping of these lines are not considered. The author investigates the possibility to determine unique branches of the solution $\varphi(z)$ in the z-plane, furthermore the behavior of the solution in the neighborhood of the ramification lines of the kernel. The investigation is carried out separately for several special types

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On the Integral Equations With Ambiguous Kernels SOV/140-59-2-12/30

of ambiguous kernels of the above kind. The author thanks Professor F.D.Gakhov for the guidance of the work. There are 3 references, 2 of which are Soviet, and 1 French.

ASSOCIATION: Rostovskiy gosudarstvennyy universitet (Rostov State University)

SUBMITTED: March 27, 1958

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16(1)

AUTHOR: Litvinchuk, G.S. SOV/20-128-1-8/58

TITLE: On the Completeness of Some Systems of Analytic Functions of two Variables

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 1, pp 37-40 (USSR)

ABSTRACT: Theorem 1 : Let

$f(z,w) = \sum_{k,l=0}^{\infty} a_{kl} z^k w^l \in A_{r,t}$, where $A_{r,t}$ is the space of the functions analytic in $\{|z| < r, |w| < t\}$. Let (1)

$a_{kl} \neq 0$, $k,l = 0,1,\ldots,$ $\overline{\lim_{k+l\to\infty}} \sqrt[k+l]{|a_{kl}|\, r^k t^l} = 1$.

Then the system

$$(2)\quad f_{m,n}(z,w) = \frac{1}{z^m w^n} \overbrace{\int_0^z \cdots \int_0^z}^{m} (d\xi)^m \overbrace{\int_0^w \cdots \int_0^w}^{n} f(\xi,\tau)(d\tau)^n, \quad m,n=1,2,\ldots$$

is complete for all R,T $(0<R<r,\ 0<T<t)$ in $\overline{A}_{R,T}$ the space

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On Completeness of Some Systems of Analytic Functions SOV/20-128-1-8/58
of two Variables

of the functions which are analytic in $\{|z| \leq R, |w| \leq T\}$.

Theorem 2 : If $f(z,w) \in A_{r,T}$ and if (1) is satisfied, then the system $f_{m,n}(z,w) = \int_0^z \xi^{m-1} d\xi \int_0^w \tau^{n-1} f(\xi,\tau) d\tau$, $m,n,=1,2\ldots$ is complete in $\overline{A}_{R,T}$, $0<R<r$, $0<T<t$.

Theorem 3 : Let $f(z,w) \in A_{r,T}$ and let (1) be satisfied. Then

$$(4) \quad f_{m,n}(z,w) = \sum_{k,l=0}^{\infty} k^m l^n a_{kl} z^k w^l$$

is complet in $\overline{A}_{R,T}$, $0<R<r$, $0<T<t$.

Theorem 4 : If $f(z,w) \in A_{R,T}$ and $a_{mo} = a_{on} = 0$, $m,n = 1,2,\ldots$, while the other a_{kl} are different from zero, then the system

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$$(6)\quad f_{m,n}(z,w) = \sum_{k,l=0}^{\infty} a_{km,ln} z^{km} w^{ln}, \quad m,n = 1,2,\ldots$$

is complete in $A_{R,T}$.

Theorem 5: If $f(z,w) \in A_{1,1}$ and $f(0,0)=0$, $\frac{\partial^m f(0,0)}{\partial z^m} = 0$ $(m=1,2,\ldots)$, $\frac{\partial^n f(0,0)}{\partial w^n} = 0$ $(n=1,2,\ldots)$, $\frac{\partial^2 f(0,0)}{\partial z \partial w} = 1$, then the system of analytic functions $1, f(z^m, w^n)$, $m,n = 1,2,\ldots$ is complete in $A_{1,1}$.

S.A. Yeremin and I.I. Ibragimov are mentioned in the paper. There are 4 Soviet references.

ASSOCIATION: Rostovskiy-na-Donu gosudarstvennyy universitet (Rostov-na-Donu State University)

PRESENTED: May 6,1959, by P.Ya.Kochina, Academician

SUBMITTED: April 5,1959

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

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S/020/60/134/006/004/031
C111/C222

AUTHOR: Litvinchuk, G.S.

TITLE: On a Singular Integral Equation With a Shear

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 6, pp. 1295 - 1298

TEXT: The author considers

$$a(t)f(t) + \frac{b(t)}{\pi i} \int_L \frac{f(\tau)d\tau}{\tau - \alpha(t)} = h(t) \quad , \tag{1}$$

where $a(t)$, $b(t)$ and $h(t)$ satisfy the Hölder condition on a closed Lyapunov curve L, where $a(t) \neq 0$, $b(t) \neq 0$ on L ; $\alpha(t)$ maps L biuniquely onto itself, where the orientation is changed ; $\alpha'(t)$ is different from zero and satisfies the Hölder condition on L. The solution is sought in the class of functions which satisfy the Hölder condition. Furthermore it is assumed:

$$\alpha[\alpha(t)] = t \quad , \tag{2}$$

$$\frac{b(t)b[\alpha(t)]}{a(t)a[\alpha(t)]} = 1 \quad . \tag{3}$$

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On a Singular Integral Equation With a Shear S/020/60/134/006/004/031
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With the aid of the Sokhotskiy-formulas for the limit values of the integral $\phi(z) = \frac{1}{2\pi i} \int_L \frac{f(\tau)}{\tau - z} dz$, (1) is reduced to the boundary value problem for a piecewise analytic function $\phi(z)$:

(4) $\phi^+(t) + A(t)\phi^+[\alpha(t)] - \phi(t) + A(t)\phi^-[\alpha(t)] = H(t)$

on L, where $A(t) = \frac{b(t)}{a(t)}$, $H(t) = \frac{h(t)}{a(t)}$, and instead of (3) it holds

(3') $A(t)A[\alpha(t)] = 1$. To every solution of (4) vanishing in ∞ there corresponds a solution of (1): $f(t) = \phi^+(t) - \phi^-(t)$. By use of (2) and (3'), (4) can be reduced further to an equivalent pair of Riemann-Carleman boundary value problems. $\varkappa = \text{Ind } A(t) = \text{Ind } a(t) - \text{Ind } b(t)$ is denoted as index $\varkappa$ of (4) and (1). In two long theorems the author asserts: If $H(t)=0$, then (4) is solvable for all $\varkappa$; the number of linearly independent solutions is given. For $\varkappa > 0$ the general solution reads

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(7) $$\phi^+(z) = X^+(z)\left\{R_{\varkappa'}(z) + \frac{1}{2\pi i}\int_L \frac{\varphi(\tau)}{\tau - z}\,d\tau\right\},$$

$$\phi^-(z) = 0 ,$$

where $R_{\varkappa'}(z)$ is a rational function with arbitrary coefficients and a pole in $z = 0$ with the order $< \frac{\varkappa}{2}$; $\varphi(t)$ is a solution of the Fredholm equation

$$K_+\varphi = \varphi(t) + \frac{1}{2\pi i}\int_L \left[\frac{1}{\tau - t} - \frac{\alpha'(\tau)}{\alpha(\tau) - \alpha(t)}\right]\varphi(\tau)d\tau = \lambda R_{\varkappa'}[\alpha(t)] - R_{\varkappa'}(t) .$$

Similar data are given for $\varkappa < 0$. The inhomogeneous problem (4) is unconditionally solvable only for $\varkappa = 0$, for $\varkappa \neq 0$ there exists a solution only then if additional conditions are satisfied. From these results for (4) there follows for (1) : The homogeneous equation (1) is unsolvable if

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C111/C222

On a Singular Integral Equation With a Shear

1) $\varkappa = 0$, $A(t_o') = A(t_o'') = 1$, 2.) $\varkappa = -1$, 3.) $\varkappa = -2$, $A(t_o') = A(t_o'') = -1$, where t_o' and t_o'' are the fixed points of $\alpha(t)$ on L.

The author thanks Professor F.D. Gakhov. There are 10 references: 7 Soviet, 1 Swedish, 1 Italian and 1 Swiss.

ASSOCIATION: Rostovskiy-na-Donu gosudarstvennyy universitet (Rostov-na-Donu State University)

PRESENTED: June 1, 1960, by P.Ya. Kochina, Academician

SUBMITTED: May 27, 1960

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C111/C222

AUTHORS: Litvinchuk, G.S., and Khasabov, E.G.

TITLE: On the theory of singular integral equations subjected to Fredholm's alternative

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 140, no. 1, 1961, 48-51

TEXT: On a simple closed Lyapunov curve L let be given a function $\alpha(t)$ the derivative of which on L satisfies the Hölder condition ($\alpha'(t) \in H$) and is different from zero. Let L by $\alpha(t)$ be mapped biuniquely onto itself with a preservation of the orientation. Let L divide the plane into the regions D^+ and D^-, where D^+ is finite and contains the coordinate origin.
The authors consider the singular equation

$$\alpha(t)\overline{\varphi(t)} + \frac{b(t)}{\pi i}\int_L \frac{\varphi(\tau)}{\tau - \alpha(t)}\,d\tau = c(t) \quad , \qquad (1)$$

where $a(t)$, $b(t)$, $c(t) \subset H$ on L and $a(t) \neq 0$, $b(t) \neq 0$ on L. For $\alpha(t) \equiv t$ one obtains instead of (1)

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$$a(t)\,\overline{\varphi(t)} + \frac{b(t)}{\pi i}\int_L \frac{\varphi(\tau)}{\tau - t}\,d\tau = c(t)\,. \qquad (2)$$

It is assumed that the conditions

$$\alpha\left[\alpha(t)\right] = t \qquad (3)$$

$$a(t)a\left[\overline{\alpha(t)}\right] = b(t)b\left[\overline{\alpha(t)}\right] \qquad (4)$$

$$|a(t)| = |b(t)|\,, \quad \text{if } \alpha(t) \equiv t \qquad (5)$$

are satisfied.
It is stated that the Fredholm's alternative holds for (1), (2) .
After introduction of the function

$$\phi(z) = \frac{1}{2\pi i}\int_L \frac{\varphi(\tau)}{\tau - z}\,d\tau\,, \qquad (6)$$

(1) is reduced to the boundary value problem for the piecewise analytic function $\phi(z)$:

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$$a(t)\overline{\phi^{+}(t)} - b(t)\phi^{+}\left[\alpha(t)\right] - a(t)\overline{\phi^{-}(t)} + b(t)\phi^{-}\left[\alpha(t)\right] = c(t). \quad (7)$$

Because of (3)-(5) the problem is equivalent to the system

$$\phi^{+}\left[\alpha(t)\right] = G(t)\overline{\phi^{+}(t)} + g_{+}(t) \quad , \quad (8)$$

$$\phi^{-}\left[\alpha(t)\right] = -G(t)\overline{\phi^{-}(t)} + g_{-}(t) \quad , \quad (9)$$

where

$$G(t) = -\frac{a(t)}{b(t)} \quad , \quad g_{\pm}(t) = \frac{c(t)\overline{a\left[\alpha(t)\right]} \pm b(t)\overline{c\left[\alpha(t)\right]}}{2\overline{a\left[\alpha(t)\right]}\, b(t)} \quad .$$

Let $\varkappa = \mathrm{Ind}\, G(t) = \frac{1}{2\pi}\left\{\arg G(t)\right\}_L$.

By the investigation of the boundary value problems (8) and (9) the authors obtain the following results : The homogeneous equation (1) is

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solvable for every $\varkappa$ and has $\varkappa + 1$ linearly independent solutions if $\varkappa \geqslant 0$, and $-\varkappa - 1$ linearly independent solutions if $\varkappa < 0$.
In general the inhomogeneous equation (1) is not solvable. In order that there exists a solution of this equation it is necessary and sufficient that the $-\varkappa - 1$ conditions

$$\operatorname{Im} \frac{1}{2\pi i}\int_L \tau^{-1} \varphi\left[\alpha(\tau)\right] d\tau = 0 , \quad \operatorname{Re} \int_L \tau^{-k-1} \varphi\left[\alpha(\tau)\right] d\tau = 0 ,$$

$$\operatorname{Im} \int_L \tau^{-k-1} \varphi\left[\alpha(\tau)\right] d\tau = 0 , \quad k = 1,2,\ldots,n-1 \tag{12}$$

are satisfied if $\varkappa < 0$, and that certain $\varkappa + 1$ conditions are satisfied if $\varkappa \geqslant 0$ (theorem 1).
Theorem 2 : The indices of the integral equations (1) and (2) are equal to zero.
Theorem 3 : The integral equations (1) and (2) are normally solvable.

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There are 3 Soviet-bloc and 1 non-Soviet-bloc reference.

ASSOCIATION: Rostovskiy-na-Donu gosudarstvennyy universitet (Rostov-na-Donu State University)

PRESENTED: April 20, 1961, by I.G. Petrovskiy, Academician

SUBMITTED: April 15, 1961

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S/140/61/000/006/004/007
C111/C444

AUTHOR: Litvinchuk, G. S.

TITLE: On some Riemannian boundary value problems with displacements

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, no. 6, 1961, 71-81

TEXT: Let L be a simple, smooth, closed plane curve, its tangent forming with a fixed direction an angle which satisfies the Hölder condition with respect to the arc length of the curve. The inner domain D^+ of L shall contain the origin; the exterior domain D^- shall contain the point at infinity.

The following problem is considered: Determine a function $\phi(z)$ analytic in D^- which on L satisfies

$$\phi^-[\alpha(t)] = G(t)\,\phi^-(t) + g(t), \qquad (A)$$

G(t) and g(t) being functions given on L which satisfy on L the Hölder condition, $G(t) \neq 0$ everywhere on L; the function $\alpha(t)$ transforms L one-to-one onto L with a change of the direction on L; $\alpha'(t)$ does

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exist, being on L different from 0, and satisfying the Hölder condition on L. Besides

$$\alpha\left[\alpha(t)\right] = t \qquad (B)$$

be satisfied.

First of all the boundary value problem

$$\phi^{-}\left[\alpha(t)\right] = \lambda\phi^{-}(t) + g(t) \text{ on } L, \ \lambda = \pm 1 \qquad (1,1)$$

is considered. A solution of (1.1) being analytic in D^{-} is searched with the set-up

$$\phi(z) = \frac{1}{2\pi i}\int_{L} \frac{\varphi(\tau)}{\tau - z}\, d\tau \qquad (1.2)$$

where $\varphi(t)$ satisfies the Hölder condition, and where

$$\varphi(t) + \lambda\varphi\left[\alpha(t)\right] = \frac{1+\lambda}{2} C \qquad (1.3)$$

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C being an arbitrary constant. It is proved:

Theorem: Every solution of (1.1), vanishing at infinity and being analytic in D^-, can be obtained by the formula

$$\phi(z) = \frac{1}{2\pi i} \int_L \frac{\varphi(\tau)}{\tau - z} d\tau, \qquad z \in D^-$$

where $\varphi(t)$ is the solution of the integral equation

$$K\varphi \equiv \varphi(t) - \frac{1}{2\pi i} \int_L \left[\frac{1}{\tau - t} - \frac{\alpha'(\tau)}{\alpha(\tau) - \alpha(t)}\right] \varphi(\tau) d\tau = \lambda g(t)$$

where at $\lambda = -1$ for the solvability of the problem the condition

$$\int_L g(t)\, \psi(t)\, dt = 0$$

is necessary, $\psi(t)$ being any non-trivial solution of the homogeneous

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adjoint equation

$$\varphi(t) + \frac{1}{2\pi i} \int_L \left[\frac{1}{\tau - t} - \frac{\alpha'(t)}{\alpha(\tau) - \alpha(t)}\right] \varphi(\tau)\, d\tau = 0. \qquad (1.9)$$

The arbitrary constant in the expression for $\varphi(t)$ appearing additiv, the so found solution $\phi(z)$ is independant from this constant.

This theorem is used for the investigation of the problem (A).

Let $\varkappa = \mathrm{Ind}\, G(t) \geqslant 0$.

Theorem: The homogeneous problem (A) (i.e. $g(t) \equiv 0$) with an even index $\varkappa = 2\varkappa'$ possesses $\frac{\varkappa}{2} + 1$ or $\frac{\varkappa}{2}$ linearly independant solutions, according as whether in the fixed points of the transformation $x = \alpha(t)$ there is $G(t) = 1$ or $G(t) = -1$.

The general solution is given by the formula

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$$\Phi(z) = P_{\varkappa'}(z)\, X(z) + \frac{X(z)}{2\pi i} \int_L \frac{\varphi(\tau)}{\tau - z}\, d\tau\,, \quad z \in D^-, \quad \varkappa' = \frac{\varkappa}{2}\,,$$

where $P_{\varkappa'}(z)$ is a polynomial of at most $\varkappa'$-th degree with $(\varkappa'+1)$ or with $\varkappa'$ arbitrary coefficients, according as whether in the fixed points there is $G(t) = +1$ or $G(t) = -1$; $\varphi(t)$ is the solution of the Fredholm integral equation $K\varphi = P_{\varkappa'}(t) - \lambda P_{\varkappa'}[\alpha(t)]$ and $X(z) = z^{-\varkappa'} F(z)$, $F(z)$ being the solution of

$$F^-[\alpha(t)] = G_1(t)\, F^-(t) \qquad (2.3)$$

with $G_1(t) = \lambda\, t^{-\varkappa'} \alpha^{\varkappa'}(t)\, G(t)$, where λ is the value of $G(t)$ in the fixed points.

The case $\varkappa = 2\varkappa'+1$ can be reduced to the above considered one.

Theorem: The inhomogeneous problem (A) with $\varkappa \geqslant 0$ has $\varkappa'+1$ linearly

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independant solutions for $\lambda = 1$ and $\varkappa'$ linearly independant solutions for $\lambda = -1$; there is $\varkappa' = E\left(\frac{\varkappa}{2}\right)$. The general solution being analytic in D^- is given by

$$\phi(z) = P_{\varkappa'}(z)\, X(z) + \frac{X(z)}{2\pi i} \int_L \frac{\varphi(\tau)\, d\tau}{\tau - z}$$

where $P_{\varkappa'}(z)$ is a polynomial of at most $\varkappa'$-th degree with $\varkappa' + 1$, respectively $\varkappa'$ arbitrary coefficients for $\lambda = 1$, respectively $\lambda = -1$. $X(z)$ is the canonic function as above; $\varphi(t)$ is the solution of

$$K\varphi = P_{\varkappa'}(t) - \lambda\, P_{\varkappa'}\left[\alpha(t)\right] - \frac{g\left[\alpha(t)\right]}{X^-(t)} .$$

If $\varkappa = 0$, then the problem (A) possesses a unique solution anaytic in D^-

$$\phi^*(z) = \frac{X(z)}{2\pi i} \int_L \frac{\varphi^*(\tau)}{\tau - z}\, d\tau , \quad z \in D^-$$

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where $\varphi^*(t)$ is the solution of $K\varphi = -\frac{g[\alpha(t)]}{X^-(t)}$. In order ϕ^* to exist in the case of $\lambda = 1$, it is necessary and sufficient that the $-\varkappa'$ conditions of solvability

$$\int_L t^{k-1} \varphi^*(t)\, dt = 0, \quad k = 1,2,\ldots, -\varkappa', \qquad (3.8)$$

be satisfied.

For $\lambda = -1$ the following condition

$$\int_L \frac{g[\alpha(t)]}{X^-(t)} \psi(t)\, dt = 0$$

is added to (3.8), where $\psi(t)$ is the solution of the adjoint equation $K'\psi = 0$.

The author thanks Professor F. D. Gakhov for advices. There are 2 Soviet-

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On some Riemannian boundary value . . . C111/C444

bloc references and 1 non-Soviet-bloc reference.

ASSOCIATION: Rostovskiy gosudarstvennyy universitet (Rostov State University)

SUBMITTED: April 22, 1959

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINCHUK, G.S.

One problem generalizing Carleman's boundary value problem. Dokl. AN SSSR 139 no.2:291-293 Jl '61. (MIRA 14:7)

1. Rostovskiy-na-Donu gosudarstvennyy universitet. Predstavleno akademikom P.Ya. Kochinoy.
(Boundary value problems) (Functions, Analytic)
(Integral equations)

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S/038/61/025/006/003/004
B112/B108

AUTHOR: Litvinchuk, G. S.

TITLE: A certain type of particular functional equations and boundary value problems with displacement for analytic functions

PERIODICAL: Akadimiya nauk SSSR. Izvestiya seriya Matematicheskaya, v. 25, no. 6, 1961, 871 - 886

4

TEXT: The author considers the integral equation

$$Tf = a(t)f(t) + (b(t)/\pi i)\int_L (f(\tau)/(\tau - \alpha(t)))d\tau = h(t). \qquad (1)$$

The function $\alpha(t)$ effects an unambiguous mapping of the contour L into itself(reversal of sign) and satisfies the Carleman conditions: $\alpha(\alpha(t)) = t$, $b(t)b(\alpha(t))/a(t)a(\alpha(t)) = 1$. The following boundary value problem of the Carleman type is solved:

$a(t)\Phi^+(t) + b(t)\Phi^+(\alpha(t)) - a(t)\Phi^-(t) + b(t)\Phi^-(\alpha(t)) = h(t)$ on L, where

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B112/B108

A certain type of particular ...

$$f(t) = \Phi^+(t) - \Phi^-(t), \quad (1/\pi i)\int_L (f(\tau)/(\tau - \alpha(t)))d\tau = \Phi^+(\alpha(t)) + \Phi^-(\alpha(t)).$$

The solution of this problem depends essentially on the number $\varkappa = \mathrm{Ind}(b(t)/a(t)) = \mathrm{Ind}\, b(t) - \mathrm{Ind}\, a(t)$, which is called the index of the equation (1). Several theorems concerning the existence and the number of linearly independent solutions are derived. Lyapunov is mentioned. F. D. Gakhov and L. I. Chibrikova (Matem. sborn., 35(77): 3 (1954), 395 - 436.), and Kveselava D. A. (Doklady Ak. nauk SSSR, 55, No. 8 (1947), 683 - 686., Trudy Matem. in-ta Ak. nauk Gruz. SSR, 16 (1948), 39 - 80.) are referred to. There are 11 references: 9 Soviet and 2 non-Soviet.

ASSOCIATION: Rostovskiy gos. universitet (Rostov State University)

SUBMITTED: June 3, 1960

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APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

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LITVINCHUK, G.S.; KHASABOV, E.G.

Hilbert's boundary value problem with shear. Dokl. AN SSSR 142 no.2:274-277 Ja '62. (MIRA 15:2)

1. Rostovskiy-na-Donu gosudarstvennyy universitet. Predstavleno akademikom V.I.Smirnovym.
(Boundary value problems)
(Hilbert space)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINCHUK, G.S.

One type of singular functional equations and boundary value problems with displacement for analytic functions. Izv. AN SSSR. Ser. mat. 25 no.6:871-886 N-D '61. (MIRA 14:11)

1. Rostovskiy gosudarstvennyy universitet.
(Boundary value problems)
(Integral equations)
(Functions, Analytic)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINCHUK, G.S.

One boundary value problem with inverse translation in the class of generalized analytic functions. Sib.mat.zhur. 3 no.2:223-228 Mr-Ap '62. (MIRA 15:4)
(Functional, Analytic) (Differential equations)
(Boundary value problems)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

ZVEROVICH, E.I.; LITVINCHUK, G.S.

Unilateral boundary value problems in the theory of analytic functions. Dokl.AN SSSR 145 no.2:266-269 Jl '62. (MIRA 15:7)

1. Rostovskiy-na-Donu gosudarstvennyy universitet. Predstavleno akademikom V.I.Smirnovym.
(Boundary value problems) (Functions, Analytic)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINCHUK, G.S.

Some Rieman boundary value problems with displacements. Izv. vys. ucheb. zav.; mat. no.6:71-81 '61. (MIRA 15:3)

1. Rostovskiy gosudarstvennyy universitet.
(Boundary value problems)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINCHUK, G.S.; KHASABOV, E.G.

Note on the theory of singular integral equations obeying Fredholm's alternative. Dokl. AN SSSR 140 no.1:48-51 S-O '61. (MIRA 14:9)

1. Rostovskiy-na-Donu gosudarstvennyy universitet. Predstavleno akademikom I.G.Petrovskim.

(Integral equations)

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

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B125/B102

16.3500

AUTHOR: Litvinchuk, G. S.

TITLE: A boundary value problem with an inverse displacement in a class of generalized analytical functions

PERIODICAL: Sibirskiy matematicheskiy zhurnal, v. 3, no. 2, 1962, 223-228

TEXT: The Riemann-Carleman boundary value problem $d\bar{U}/dz = A(z)\bar{U}$ (1), $U^-[\alpha(t)] = G(t)U^-(t) + g(t)$ (2) for an infinite domain, is solved in a class of generalized functions. $A(z)$ is continuous in the entire plane except for a set of discrete points and a finite number of lines of discontinuity of the first kind. In infinity, $|A(z)| \leq M/|z|^\beta$, $M > 0$, $\beta > 1$. L. G. Mikhaylov (Dokl. Ak. nauk. SSSR, 112, no. 1 (1957), 13-15) and G. N. Aleksandriya (Trudy Tbilisskogo un-ta, 56 (1955), 135-139) have studied some boundary value problems with displacements for generalized functions. A. I. Markushevich (Uchen. zap. Mosk. un-ta, 1, no. 100 (1946), 20-29) set generalized problems. Theorem 1: The homogeneous boundary value problem $U^-[\alpha(t)] = G(t)U^-(t)$ (2.1) for the closed Lyapunov contour L, with even index $\varkappa \geqslant 0$ has $\varkappa + 2$ of $\varkappa + 1$ linearly independent solutions if

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$G(t) = 1$ or $G(t) = -1$ in the fixed points $\alpha(t)$ of the displacement. The general solution is

$$\frac{U(z)}{\chi(z)} = \frac{1}{2\pi i}\int_L \Omega_1^*(z,\tau)\varphi(\tau)\,d\tau - \frac{1}{2\pi i}\int_L \Omega_2^*(z,\tau)\overline{\varphi(\tau)\,d\tau} + V_{\varkappa'}(z),\ z \in D^- \quad (2.5),$$

where $\varphi(t)$ is the solution of the integral equation $K\varphi = V_{\varkappa'}(t) - \lambda V_{\varkappa'}[\alpha(t)]$ (2.6). If $\varkappa < 0$, the homogeneous problem has trivial solutions only. $V_{\varkappa'}(z) = \sum_{k=0}^{2\varkappa'+1} A_k \overset{(k)}{V}(z)$ is a generalized polynomial, $\overset{(k)}{V}(z)$ are generalized powers, A_k are real coefficients. Theorem 2 for the homogeneous boundary value problem (2): The general solution regular in D^- of boundary value problem (2) with the index $\varkappa \geqslant 0$ for $\lambda = 1$ and $\lambda = -1$ depends respectively on $\varkappa + 2$ and $\varkappa + 1$ arbitrary constants, and is defined by (2.5), where $\varphi(t)$ is the solution of $K\varphi = V_{\varkappa'}(t) - \lambda V_{\varkappa'}[\alpha(t)] - G[\alpha(t)]/\Lambda^-(t)$. If $\varkappa < 0$ and $V_{\varkappa'}(z) \equiv 0$, the fulfillment of $(-\varkappa'-1)$ conditions $\int_L r(t)t^k dt = 0$, $k = 0, 1, \ldots, -\varkappa'-1$ is necessary and sufficient for the existence of an unambiguous solution regular

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B125/B102

A boundary value problem with ...

in D^-. If $\lambda = -1$, there is also the condition $\mathrm{Re}\int_L (G[\alpha(t)]/\chi^-(t))\psi(t)dt = 0$

to be fulfilled. There are 12 references: 11 Soviet and 1 non-Soviet.

SUBMITTED: January 31, 1961

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINCHUK, G.S.; KHASABOV, E.G.

On a certain class of singular integral equations with a displacement. Dokl.AN SSSR 145 no.4:731-734 Ag '62. (MIRA 15:7)

1. Rostovskiy-na-Domu gosudarstvennyy universitet. Predstavleno akademikom I.G.Petrovskim.
(Integral equations)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

GAKHOV, Fedor Dmitriyevich; ROGOZHIN, V.S., dots., red.; BACHURINA, T.A., aspirant, red.; GOVORUKHINA, A.A., aspirant, red.; ZARIPOV, R.Kh., aspirant, red.; MEL'NIK, I.M., aspirant, red.; MIKHAYLOV, L.G., aspirant, red.; LITVINCHUK, G.S., aspirant, red.; PARADOKSOVA, I.A., aspirant, red.; KHASABOV, E.G., aspirant, red.; CHERSKIY, Yu.I., aspirant, red.; YANOVSKIY, S.V., aspirant, red.; ARAMANOVICH, I.G., red.; Prinimali uchastiye: BOROVSKAYA, N.I., red.; RYSYUK, N.A., red.; SMAGINA, V.I., red.; KHAYRULLIN, I.Kh., red.; CHUMAKOV, F.V., red.; POLOVINKIN, S.M., red.; KEPPEN, I.V., red.; MIKHLIN, E.I., tekhn. red.

[Bondary value problems]Kraevye zadachi. Izd.2., perer. i dop. Moskva, Fizmatgiz, 1963. 639 p. (MIRA 16:3)
(Boundary value problems)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINCHUK, G.

Collective and state farm administration's aid to lagging farms. Sots. trud 8 no.12:30-35 D '63. (MIRA 17:2)

1. Starshiy ekonomist Kiyevskogo oblastnogo upravleniya proizvodstva i zagotovok sel'skokhozyaystvennykh produktov.

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINCHUK, G.S.

Index and normal solvability of certain class of functional equations. Dokl. AN SSSR 149 no.5:1029-1032 Ap '63. (MIRA 16:5)

1. Predstavleno akademikom V.I.Smirnovym.
(Functional equations)

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

LITVINCHUK, G.S.

Some systems of singular integral equations. Usp. mat. nauk 18 no.2:139-144 Mr-Ap '63. (MIRA 16:8)

(Integral equations)

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ACCESSION NR: AP4039566 S/0199/64/005/003/0608/0625

AUTHOR: Litvinchuk, G. S.; Khasabov, E. G.

TITLE: On one type of singular integral equations

SOURCE: Sibirskiy matematicheskiy zhurnal, v. 5, no. 3, 1964, 608-625

TOPIC TAGS: integral equation, singular integral equation, Hölder condition, Lyapunov contour, mapping, homeomorphic mapping

ABSTRACT: The authors consider the integral equation

$$a(t)\overline{\varphi(t)}+\frac{b(t)}{\pi i}\int_L \frac{\varphi(\tau)}{\tau-\alpha(t)}\,d\tau=c(t), \qquad (1)$$

in which the functions a(t), b(t), c(t) satisfy the Hölder conditions on a simple, closed Lyapunov contour L; a(t) and b(t) do not vanish on L; the function $\alpha(t)$ effects a hemeomorphic, orientation-preserving mapping of contour L onto itself and has a nonzero derivative satisfying a Hölder condition on L. If $\alpha(t) = t$, equation (1) has the form

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$$a(t)\overline{\varphi(t)}+\frac{b(t)}{\pi i}\int_L \frac{\varphi(\tau)}{\tau-t}\,d\tau=c(t). \qquad (2)$$

The paper is devoted to a study of equations (1) and (2) under the following conditions:

$$\alpha[\alpha(t)]=t \text{ на } L, \qquad (3)$$

$$a(t)\overline{a[\alpha(t)]}=b(t)\overline{b[\alpha(t)]} \text{ на } L. \qquad (4)$$

In the course of the paper, seven theorems are proven.
Orig. art. has: 68 numbered formulas.

ASSOCIATION: None

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000930210015-0

S/0140/64/000/004/0099/0110

ACCESSION NR: AP4042543

AUTHORS: Litvinchuk, G. S. (Rostov na Donu); Khasabov, E. G. (Rostov na Donu)

TITLE: A class of singular integral equations and a Carleman type boundary value problem, 1

SOURCE: IVUZ. Matematika, no. 4, 1964, 99-110

TOPIC TAGS: singular integral equation, boundary value problem, Carleman problem, Lyapunov contour, Holder condition, characteristic equation, elasticity theory, Fredholm kernel

ABSTRACT: Consider a function $\alpha(t)$ with non-zero derivative $\alpha'(t)$ given on the closed Lyapunov contour L. $\alpha(t)$ satisfies a Holder condition on L and homeomorphically maps L into itself, either keeping or changing orientation on L, and satisfying Carleman's condition

$$\alpha[\alpha(t)] \equiv t. \quad (1)$$

Let the functions A(t), B(t), C(t), D(t), H(t) satisfy a Holder condition on L and let $k_1(t,\tau)$, $k_2(t,\tau)$ be Fredholm kernels; consider the singular integral equation

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$$K\varphi = A(t)\overline{\varphi(t)} + B(t)\varphi[\alpha(t)] + C(t)\overline{\frac{1}{\pi i}\int_L \frac{\varphi(\tau)\,d\tau}{\tau - t}} + D(t)\frac{1}{\pi i}\int_L \frac{\varphi(\tau)\,d\tau}{\tau - \alpha(t)} +$$

$$+ \overline{\int_L k_1(t,\tau)\varphi(\tau)\,d\tau} + \int_L k_2[\alpha(t),\tau]\varphi(\tau)\,d\tau = H(t), \qquad (2)$$

which is called characteristic if $k_1(t,\tau) \equiv k_2(t,\tau) \equiv 0$. This is equivalent to the boundary value problem

$$a(t)\overline{\Phi^+(t)} + b(t)\Phi^+[\alpha(t)] + c(t)\overline{\Phi^-(t)} + d(t)\Phi^-[\alpha(t)] = h(t), \qquad (3)$$

where

$$a(t) = C(t) + A(t), \quad b(t) = D(t) + B(t),$$
$$c(t) = C(t) - A(t), \quad d(t) = D(t) - B(t), \quad h(t) = H(t). \qquad (4)$$

and $\Phi^+(t)$, $\Phi^-(t)$ are the limit values of the Cauchy integral with density $\varphi(t)$, $\Phi^-(\infty) = 0$. Since for the homogeneous problem (3) ($h(t) \equiv 0$) nontrivial solutions exist, the corresponding glued surface allows infinitesimal flexures; otherwise this surface is rigid. For the two possible directions on L established by the transformation $\alpha(t)$ the authors compute the index of (2) and find conditions for this equation to be normally solvable. Analogous results are obtained for (3). These results are obtained by reducing (2) to a system of singular integral equations with

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Cauchy kernels. The authors also find conditions for solvability of (3) and (2), compute the number of linearly independent solutions of the corresponding homogeneous problems and equations, and show how to obtain the solutions. They distinguish the types of singular equation (2) subject to a Fredholm alternative. (2) and (3), for $\alpha(t) = t$, are useful in certain problems of elasticity theory. Orig. art. has: 50 formulas.

ASSOCIATION: none

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L 6767-65 EWT(d) Pg-4 IJP(c)/AFWL/ESD(dp)/RAEM(t)

ACCESSION NR: AP4047310 S/0140/64/000/005/0041/0053

AUTHORS: Litvinchuk, G. S. (Rostov-na-Donu); Khasabov, B. G. (Rostov-na-Donu)

TITLE: A class of singular integral equations and a Karlemann boundary value problem, 2

SOURCE: IVUZ. Matematika, no. 5, 1964, 41-53

TOPIC TAGS: integral equation, uniqueness

ABSTRACT: In theorems, the authors give conditions for unconditional solvability of certain integral equations and give the solution as well as the number of (linearly occurring) arbitrary constants. The notation is from part I of this paper (Odin klass singulyarnykh integral'nykh uravneniy i krayevaya zadacha tipa zadachi Karlemana. I. Izv. vuzov, Matem., No. 4, 1964), as is one of the problems solved. Problems posed in the cited work are then considered. The authors prove theorems concerning the number of linearly independent solutions of homogeneous problems and the number of conditions which uniquely determine a solution of corresponding inhomogeneous problems. Orig. art. has: 39 formulas.

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