APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

MITROSHIN, I.Z.

Training employees for electric and diesel locomotive service.
Zhel.dor.transp. 37 no.7:37-39 Jl '56. (MLRA 9:8)

1. Nachal'nik Glavnogo upravleniya kadrov Ministerstva putey soobshcheniya.
(Electric locomotives) (Electric railroads--Employees')

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L 40152-66 EWT(d)/FBD/FSS-2/EWT(1)/EWT(m)/EWP(w)/EEC(k)-2/T-2/EWP(k)/EWP(v) IJP(c)

ACC NR: AP6025596 EM/BC/JT/AST/JD SOURCE CODE: UR/0413/66/000/013/0036/0036

INVENTOR: Ageyev, Zh. S.; Mitroshin, E. I.; Podol'nyy, O. A.; Ukolov, I. S.

ORG: Moscow Order of Lenin Aviation Institute im. Sergo Ordzhonikidze (Moskovskiy ordena Lenina aviatsionnyy institut)

TITLE: A method for automatic spacecraft control. Class 21, No. 183257

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 13, 1966, 36

TOPIC TAGS: spacecraft control, spacecraft

ABSTRACT: The method for automatic spacecraft control employs overload sensors, gyroscopic sensors, and control units. To achieve optimum aerodynamic performance with changes of parameters and flight conditions, the longitudinal and transverse overload components are measured. The angles between the resultant overload vector and longitudinal axis of the device and between the reference direction and longitudinal axis of the device are determined. The sum of these two angles is kept to a minimum by the control circuits. [IV]

SUB CODE: 22/ SUBM DATE: 15Apr65/ ATD PRESS: 5049

Card 1/1 mlp UDC: 531.55.019:621.3.078

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

L 13817-66

ACC NR: AP6002482

$$y = ax^b e^{cx}$$

where y = ε , tgδ or $\frac{1}{\rho_v}$, x is the amount of hardening agent, and a, b, and c are constants. From the experimental results optimum amounts of hardener and the degree of hardening for resins were determined and their values are tabulated. An empirical equation for the optimum amount of hardener necessary for hardening resins containing different numbers of epoxy groups has been derived as

$$P = \frac{KAM}{BN},$$

where P is the optimum amount of hardener in g/100g of resin, K - the degree of hardening equal to 0.9 and 0.7 for hardeners with a symmetric and nonsymmetric disposition of active groups. Here, A is a fraction of epoxy groups in the nonhardened resin in %, M is molecular weight of hardener, B is molecular weight of the epoxy group, and N is the number of active hydrogen atoms per molecule of hardener. It was found that by carefully choosing the optimum amount of hardener the working temperature of the resin may be raised to 200C. Orig. art. has: 1 table, 2 graphs, and 3 equations.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 006/ OTH REF: 001

Card 2/2

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

L 13817-66 EWT(m)/EWP(j)/T WW/RM

ACC NR: AP6002482 (A) SOURCE CODE: UR/0191/66/000/001/0044/0046

AUTHOR: Mitroshichev, N. V.

ORG: none

TITLE: Dependence of dielectric properties of epoxy resins on the degree of hardening caused by aromatic amines

SOURCE: Plasticheskiye Massy, no. 1, 1966, 44-46

TOPIC TAGS: polymer, resin, epoxy plastic, dielectric loss, dielectric property, dielectric constant / AD 5 epoxy, ED 6 epoxy

ABSTRACT: The dependence of the dielectric and thermophysical properties of epoxy resins on the degree of their hardening caused by aromatic amines was studied. The dielectric constant ϵ, the tangent of the dielectric loss angle $tg\delta$, and the specific resistance ρv (in the temperature interval 30--250C) of the resins AD-5 and ED-6 (molecular weights 402 and 491) were determined as functions of the degree of hardening caused by the action of m-phenylenediamine, p-phenylenediamine, and benzidene. The investigation was performed to extend the work published by N. V. Mitroshichyev, (Avt. svid. 115999; Byull. izobr., No. 11, 1958). The electrical measurements were carried out at a frequency of 1000 cycles/sec, and the experimental results are presented graphically. It was found that the dependence of ϵ, $tg\delta$ or ρv obeyed the empirical expression

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UDC: 678.643'42'5:678.028.01:537.226

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MITROSHICHEV, N.V., kand. tekhn. nauk

Temperature dependence of the dielectric properties of congealed epoxy. Elektrotekhnika 36 no.7:31-33 Jl '65. (MIRA 18:7)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

88911
S/143/60/000/004/003/007
A163/A026

Pressing Powders on the Basis of Epoxide Resins

250 h at a relative humidity of 95 - 98% and a temperature of 20°C. Capacitors molded in the K211-34 powder were also tested. The capacitors molded in PEM-TT powder withstood all tests, and a considerable number of those molded in K211-34 powder did not. In addition to capacitor molding, the PEM-TT pressing powder may also be used in the production of various electrical and radiotechnical products. There are 5 tables and 9 Soviet references.

ASSOCIATION: Vsesoyuznyy zaochnyy energeticheskiy institut (All-Union Power Engineering Correspondence Institute)

PRESENTED: by the Department for Electroinsulation and Cable Engineering

Card 3/3

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

88911

S/143/60/000/004/003/007
A163/A026

Pressing Powders on the Basis of Epoxide Resins

the resin mixed until the solidifier is completely dissolved and the ceresin (or stearin) evenly distributed in the compound. Later, a filler - having a temperature of the surrounding medium - is poured into and is carefully mixed with the resin for 2 - 3 min. The liquid mass is then poured from the mixer into cardboard or metal containers (in 1 to 1.5-cm thick layers) and left at room temperature in the open air for 20 - 24 h. Upon completion of the partial polymerization process, the solidified, dark-grey thermoplastic substance is removed from the containers and crushed and ground in the "Perpleks" mill. The ground powder is then passed through screens with 1.6 to 1.8 mm mesh and is ready to be processed into various products by pressing or by pressure casting. When subjecting it to compression pressing, the temperature is 150 - 170°C, the specific pressure 200 - 300 kg/cm^2, and the time of the pressed powder in the mold is 1 - 1.5 min per 1 mm of product thickness. The main physicomechanical and electroinsulating properties of the PEM-TT pressing powder are compared with those of the K211-34 (K211-34) powder. The PEM-TT powder was also used for molding mica capacitors which were subjected to: damping for 500 h at a relative humidity of 95 - 98% and a tropical temperature of 40°C; prolonged heating at 200°C and subsequent damping for 250 h at a relative humidity of 95 - 98% and a temperature of 20°C; and temperature cycles (-60°C, +150°C) with subsequent damping for

Card 2/3

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

38911

S/143/60/000/004/003/007
A163/A026

15 8420

AUTHOR: Mitroshichev, N.V., Engineer

TITLE: Pressing Powders on the Basis of Epoxide Resins

PERIODICAL: Energetika, 1960, No. 4, pp. 53 - 63

TEXT: The article deals with pressing powders made from epoxide resins. The author describes in detail chemical composition, production process, technology of pressing and the properties of the new ПЭМ-ТТ (PEM-TT) pressing powder. The Soviet chemical industry has produced liquid and solid epoxide resins, of which the following are the most important: ЭД-5 (ED-5), ЭД-6 (ED-6), Э-37 (E-37), Э-40 (E-40), Э-41 (E-41) and Э-44 (E-44). In recent years, a method has been developed for obtaining pressing powder on the basis of liquid epoxide resins. Metaphenylenediamine was used as solidifier. The chemical composition of the pressing powder is as follows: epoxide resin 33.7%, metaphenylenediamine 3.4 - 5%, ground mica 31.2%, ground fluorspar 31.2% and ceresin or stearin 0.5%. When starting the production of the PEM-TT powder - based partly on liquid epoxide resin and partly on ED-6 resin - the resin is first heated with ceresin (or stearin) up to a temperature of 110 - 120°C. Then the solidifier is added and

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S/143/62/000/008/001/004
I011/I242

Investigation of....

Addition of fillers lowers the cost and increases the heating stability and the heat conduction of the plastic. Mica and mica with fluorspar fillers yield at 300°C while resin with TiO_2 or Al_2O_3 at 350°C. There are 5 figures.

ASSOCIATION: Vsesoyuznyy zaochnyy energeticheskiy institut (All-Union Intermural Energetics Institute)

PRESENTED: by the Chair of Electrical Insulation and Cables Technology

SUBMITTED: June 10, 1962

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

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I011/I242

Investigation of ...

hardened by a stochiometric amount (8.2%) of the same hardener and contained 35 to 80% of fillers such as T-150, TiO_2, Al_2O_3, ground mica, ground fluorspar and a 1:1 composition of mica and fluorspar. All the specimens were pressed and aged for 500 hrs at 200°C. ε and tgδ were measured at $f = 10^3$ cps. Minimum values of ε and tgδ and the maximum value of ρ_v were attained at higher temperatures (150°C, 200°C) with the stochiometric amount of hardener. The degree of polymerization increased with increasing amount of hardener up to the stochiometric amount. ε decreased while tgδ and ρ_v remained practically constant with an increase in temperature up to 150-180°C for different amounts of hardener. Between 180 and 210°C tg δ and ε increase and ρ_v decreases. ε and tgδ increase and ρ_v decreases with an increase in % filler. The most stable filler systems are those with fluorspar and T-150.

Card 2/3

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

41859
S/143/62/000/008/001/004
I011/I242

15.8500

AUTHOR: Mitroshichev, N.V., Engineer

TITLE: Investigation of electrically insulating materials on the basis of epoxide resins at higher temperatures

PERIODICAL: Energetika, no. 8, 1962, 36-42

TEXT: The dielectric constant ε, the loss angle $tg\delta$, and the volume resistivity ρ_v were investigated as functions of temperature for the pure epoxide resin ЭД-6 (ED-6) hardened by different amounts of hardener and at different temperatures. Some of the resin specimens were partially hardened by 7.0, 8.2, 9.2, 9.7, 10.3, and 12.2% of metaphenilendiamin; others were

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M.TROSHICHEV, N.V., inzh.

Study of electric insulating materials based on epoxide resins at increased temperatures. Izv. vys. ucheb. zav.; energ. 5 no. 8:36-42 Ag '62. (MIRA 17:7)

1. Vsesoyuznyy zaochnyy energeticheskiy institut. [illegible] kafedroy elektroizolyatsionnoy i kabel'noy tekhniki.

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MITROSHENKOV, V., mayor.

When maturity comes. Komm. Vooruzh. Sil 46 no.23:63-65 D '65. (MIRA 18:12)

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MITROSHENKOV, V., mayor

Being with young people at all times and places. Komm. Vooruzh. Sil 46 no.11:76-82 Je '65. (MIRA 18:6)

1. Pomoshchnik nachal'nika politicheskogo upravleniya Moskovskogo okruga PVO po komsomol'skoy rabote.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

MITROSHENKO, V. Kh., dotsent

Vascular clamp. Zdrav. Bel. 9 no.3:89-90 Mr.'63 (MIRA 16:12)

1. Iz kafedry topograficheskoy anatomii i operativnoy khirurgii Vitebskogo meditsinskogo instituta (zav. - dotsent V.Kh. Mitroshenko).

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MITROSHENKO, V.Kh., dotsent

Combination raspator. Zdrav. Belor. 6 no. 5:59 My '60.
(MIRA 13:10)

1. Iz kafedry topograficheskoy anatomii operativnoy khirurgii Vitebskogo meditsinskogo instituta (zaveduyushchiy - dotsent V.Kh. Mitroshenko).
(SURGICAL INSTRUMENTS AND APPARATUS)

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S

USSR / Human and Animal Morphology (Normal and Pathological). Nervous System. Peripheral Nervous System.

Abs Jour : Ref Zhur - Biologiya, No 9, 1958, No. 40794

aorta in the thoracic area are situated under the lower border of the aortic arch or at its level.

Card 2/2

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S

USSR / Human and Animal Morphology (Normal and Pathological).
Nervous System. Peripheral Nervous System.

Abs Jour : Ref Zhur - Biologiya, No 9, 1958, No. 40794

Author : Mitroshenko, V. Kh.
Inst : Vitebsk Medical Institute
Title : On the Aortic Branches of the Vagus Nerve in Man

Orig Pub : Sb. nauchn. rabot. Vitebskiy med. in-t, 1957, vyp 8, 75-7

Abstract : It was demonstrated on 250 cadavers (135 men and 115 women) in the ages of 10 - 90 that regardless of sex and age, fibers of the vagus nerve (VN) take part in the composition of the plexus of the thoracic aorta. They enter into the plexus of the thoracic aorta from the cardiac plexus and directly from the VN. The branches coming directly from the VN originate at various levels. The greatest number of branches of the VN going to the

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MITROSHENKO, V.Kh., kandidat meditsinskikh nauk

Collateral vagus innervation of organs of the abdominal cavity. Khirurgiia 32 no.3:50-51 Mr '56. (MLRA 9:7)

1. Iz TSentral'nogo instituta usovershenstvovaniya vrachey, kafedra klinicheskoy anatomii i operativnoy khirurgii (zav.-chlen-korrespondent AMN SSSR prof. B.V.Ognev)

(NERVES, VAGUS,
abdom. organs collateral innervation (Rus))
(ABDOMEN, innervation,
vagus collateral (Rus))

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MITROSHENKO, V. Kh. Cand. Med. Sci.

Dissertation: "On Morphology of the Breast Section of Vagus in Human."

17/10/50
Central Inst. for Advancement of Physicians.

SO Vecheryaya Moskva
Sum 71

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MITROSHENKO, V. Kh.

"On the morphology of the chest section of the vagus nerve in man", Sbornik trudov. posvyashch. prof. Savinykh, Tomsk, 1948, p. 161-63

So: U-3061, 10 April 1953, (Letopis 'zhurnal 'nykh Statey, No. 12, 1949).

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

ZHILKO, E.I.; MITROPOL'SKIY, Yu.I.

High-reliability logical circuits equipped with ferrite transistor cells. Sbor. trud TSNIICHM no.30:82-92 '63. (MIRA 16:10)

(Electronic computers--Design and construction)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

ZHILKO, E.I.; MITROPOL'skiy, Yu.I.

Some problems in the design of arithmetic elements for control computers. Sbor. trud TSNIICHM no.30:72-81 '63. (MIRA 16:10)

(Electric computers--Design and construction)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

GALYATIN, V.M.; KALINSKIY, D.N.; Prinimali uchastiye: KUROCHKIN, I.F.; DUVANOV, A.I.; SOLOV'YEV, Yu.F.; GERASIMOV, Yu.V.; GROSVAL'D, V.G.; SHASHKOV, N.N.; VOLKOV, A.A.; ZHILKO, E.I.; MITROPOL'SKIY, Yu.I.; FEDOSEYEV, S.V.; GONCHAROV, F.I., rabotnik; SHEMETOV, P.Ye., rabotnik; CHUPRINA, I.A., rabotnik; DEMIN, P.Ye., rabotnik; GONCHARENKO, P.V., rabotnik; SIMANYUK, G.N., rabotnik

Investigating power and technological parameters of rolling on the 2350 medium sheet mill. [Sbor. trud.] TSNIICHM no.29:138-148 '63. (MIRA 17:4)

1. Sotrudniki TSentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii (for Gerasimov, Grosval'd, Shashkov, Volkov, Zhilko, Mitropol'skiy, Fedoseyev). 2. Listoprokatnyy tsekh Magnitogorskogo metallurgicheskogo kombinata (for Goncharov, Shemetov, Demin, Chuprina, Goncharenko, Simanyuk).

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L 25899-66

ACC NR: AP6015024

$$\frac{\partial^2 u}{\partial t^2} - a^2 \frac{\partial^2 u}{\partial x^2} = \varepsilon F\left(t,\ x,\ u(t,x),\ u(t-\Delta,x),\ u'_t(t,x),\ u'_t(t-\Delta,x),\ u'_x(t,x),\ u'_x(t-\Delta,x),\ \varepsilon\right), \qquad (1)$$

where F is a nonlinear periodic function of t with the period 2π which has a sufficient number of continuous partial derivatives with respect to its arguments; ε is a positive small parameter. The solution of this equation is sought in the form

$$u(t,x,\varepsilon) = \sum_{n=1}^{\infty} T_n(t,\varepsilon) \sin \frac{n\pi}{l} x, \qquad (2)$$

where $T_n(t, \varepsilon)$ is to be determined. To determine $T_n(t, \varepsilon)$ $(n = 1, 2, \ldots)$, an infinite system of ordinary differential equations with delayed argument and initial conditions are derived. An averaging method is applied for their solution and its use is substantiated. Prospects for further development of asymptotic methods of nonlinear mechanics for studying nonlinear oscillatory systems with delay are outlined and the problems of the theory of differential equations with delayed argument which can be solved by such asymptotic methods are indicated. Orig. art. has: 19 formulas, equations. [LK]

SUB CODE: 12/ SUBM DATE: 27Jan66/ ORIG REF: 028/ OTH REF: 004/ ATD PRESS 4255

Card 2/2

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L 25005-66 EWT(d)/EWT(1)/EWP(c) IJP(c)

ACC NR: AP6015024 SOURCE CODE: UR/0041/66/018/003/0065/0084

AUTHOR: Mitropol'skiy, Yu. A. (Kiev); Fodchuk, V. I. (Kiev)

ORIG: none

TITLE: Asymptotic methods of nonlinear mechanics as applied to nonlinear differential equations with a delayed argument

SOURCE: Ukrainskiy matematicheskiy zhurnal, v. 18, no. 3, 1966, 65-84

TOPIC TAGS: oscillation theory, nonlinear oscillation, nonlinear mechanics, asymptotic method, averaging method, delay system

ABSTRACT: Oscillatory processes in systems with aftereffect which are ordinarily described by differential equations with a delayed argument are studied on the basis of the asymptotic methods of nonlinear mechanics and an averaging method. The basic results obtained in developing methods for constructing asymptotic expansions for various types of quasi-linear differential equations with delayed argument and the basic results in substantiating developed methods are reviewed. An original contribution of the article is a study of an oscillatory system with distributed parameters and with time delay described by a quasi-linear partial differential equation with a delayed argument of the form

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L 27852-66

ACC NR: AP6001086

where A is a matrix of a linear system of differential equations with constant coefficients, $P(\phi, \xi)$ $(\phi = \omega t)$ is a periodic matrix with respect to ϕ having a period of 2π and analytic with respect to ϕ and ξ in certain given domains. The problem studied in the article is formulated as follows: to find an analytic transformation

$$x = \Phi(\phi) y \quad (\phi = \omega t), \tag{3}$$

where $\Phi(\phi)$ is a periodic matrix with respect to ϕ having a period of 2π, and $\xi = \xi^{(\omega)}$ such that system (2) is reduced to a linear system

$$\frac{dy}{dt} = Ay \tag{4}$$

with constant coefficients whose general solution can be easily obtained. To construct the reduction matrix $\Phi(\phi)$, the iterative method ensuring the "accelerated" convergence of the process (of Newton's type) developed and successfully applied in studies by N. A. Kolmogorov, V. I. Arnol'd, and N. N. Bogolyubov is utilized. The s-th$(s \geq 1)$ step of the iterative process is described and a theorem is proved establishing the characteristics of the transition from the $(s-1)$-th to the s-th iteration. The upper bound for the absolute value of the formation $P(\phi, \xi)$ is derived in terms of certain constants characterizing the $(s-1)$-th and s-th iterations. On the basis of the theorem proved here, an iterative convergent process is constructed which establishes the reduction matrix $\Phi(\phi)$. The form of the solution of system (1) is also established. Orig. art. has: 149 formulas. [LK]

SUB CODE: 12 / SUBM DATE: 22Sep65/ ORIG REF: 012/ ATD PRESS: 4169

Card 2/2

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

L 27852-66 EWT(d) IJP(c) SOURCE CODE: UR/0041/65/017/006/0042/0059

ACC NR: AP6001086

AUTHOR: Mitropol'skiy, Yu. A.; Samoylenko, A. M.

ORG: none

TITLE: Construction of solutions of linear differential equations with quasi-periodic coefficients with the aid of the method of accelerated convergence

SOURCE: Ukrainskiy matematicheskiy zhurnal, v. 17, no. 6, 1965, 42-59

TOPIC TAGS: linear differential equation solution, quasi periodic coefficient, solution construction, accelerated convergence method

ABSTRACT: The problem of solving the system of equations

$$\frac{dx}{dt} = [A + P(\omega t)]x, \qquad (1)$$

where A is a constant matrix, $P(\omega t)$ is a small quasi-periodic n-dimensional matrix, ω is the frequency basis of the matrix $P(\omega t)$, x is an n-dimensional vector, and t is time, is analyzed by means of a certain reduction matrix. It is expedient to introduce certain corrections $\xi = \xi_{ij}$ ($i, j = 1, 2, \ldots, n$), and to replace system (1) by the following system of differential equations:

$$\frac{dx}{dt} = Ax + [P(\omega t, \xi) + \xi]x. \qquad (2)$$

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

L 16136-66

ACC NR: AP6004644

The authors express their gratitude to Yu. L. Daletskiy for his valuable comments. Orig. art. has: 48 formulas.

SUB CODE: 12/ SUBM DATE: 12Jun65/ ORIG REF: 010/ OTH REF: 001

Card 2/2

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

L 16136-66 EWT(d) IJP(c)

ACC NR: AP6004644 SOURCE CODE: UR/0041/65/017/005/0043/0053

AUTHORS: Mitropol'skiy, Yu. A. (Kiev); Lykova, O. B. (Kiev)

ORG: none

16,44,55 23 22 B

TITLE: Integral manifold of a nonlinear system in Hilbert space

SOURCE: Ukrainskiy matematicheskiy zhurnal, v. 17, no. 5, 1965, 43-53

TOPIC TAGS: differential equation, stability

ABSTRACT: The authors treat

$$\frac{dx}{dt} = X(x) + \varepsilon Y(t, x). \qquad (1)$$

Here ε is a small parameter, x(t), X(x), Y(t,x) are vector functions with values in Hilbert space $\mathcal{H}$, in a neighborhood of the equilibrium position of

$$\frac{dx}{dt} = X(x). \qquad (2)$$

(the corresponding unperturbed equation). Conditions are given under which (1) has a two-dimensional local integral manifold S allowing a representation of x. Spectral conditions sufficient for asymptotic stability of S are presented.

Card 1/2

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

MITROPOL'SKIY, Yu.A., akademik, otv. red.; TROKHIMCHUK, Yu.Yu., doktor fiz.-mat. nauk, otv. red.; BEREZINETS, L.P., red.

[Second summer school of mathematics; Katsiveli, June - July 1964] Vtoraia letniaia matematicheskaia shkola; Katsiveli, iiun' - Iiul' 1964 g. Kiev, Naukova dumka, 1965. 2 v. (MIRA 19:1)

1. Akademiya nauk URSR, Kiev. Instytut matematyky.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

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BEREZANSKIY, Yu.M.; MITROPOL'SKIY, Yu.A., akademik, otv. red.;
BEREZINETS, L.P., red.

[Expansion of self-adjoint operators in eigenfunctions]
Razlozhenie po sobstvennym funktsiiam samosopriazhennykh
operatorov. Kiev, Naukova dumka, 1965. 798 p.
(MIRA 18:9)

1. Akademiya nauk Ukr.SSR (for Mitropol'skiy).

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

MITROPOL'SKIY, Yu.A., otv. red.; BEREZANSKIY, Yu.M., red.; BREUS, K.A., red.; ZMOROVICH, V.A., red.; LYASHKO, I.I., red.; MARCHENKO, V.A., red.; PARASYUK, O.S., red.; POLOZHIY, G.N., red.; FIL'CHAKOV, P.F., red.; KULAKOVSKAYA, N.S., red.

[Mathematical physics] Matematicheskaia fizika. Kiev, Naukova dumka, 1965. 156 p. (MIRA 18:8)

1. Akademiya nauk URSR, Kiev.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

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ACCESSION NR: AP4026832

where x, X_1, y, Y_1 and z, Z_1 are respectively ℓ-, m- and n-vectors, X is an $\ell \times \ell$ matrix, Y is an m x m matrix, ε is a small positive parameter. Several restrictions are placed on this system, including assumptions of decay, and it is proven that (1) has an s+1-dimensional local integral manifold S whose parametric representation has a specific given form. On the manifold S the original system of equations is equivalent to s+1 equations which are given. Any solution of system (1) not lying on the manifold S, whose initial values lie near S, is attracted to the manifold at an exponential rate at the least. Orig. art. has: 21 formulas.

ASSOCIATION: none

SUBMITTED: 26Feb63 DATE ACQ: 16Apr64 ENCL: 00

SUB CODE: MM NO REF SOV: 004 OTHER: 003

Card 2/2

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

ACCESSION NR: AP4026832

S/0041/64/016/002/0157/0163

AUTHORS: Mitropol'skiy, Yu. A. (Kiev); Ly*kova, O. B. (Kiev)

TITLE: Integral manifold of nonlinear differential equations containing slow and fast motions

SOURCE: Ukrainskiy matematicheskiy zhurnal, v. 16, no. 2, 1964, 157-163

TOPIC TAGS: integral manifold, nonlinear differential equation, slow motion, fast motion, local integral manifold, degenerate system, parametric family, periodic solution, decay assumption, characteristic exponent, parametric representation, exponential rate

ABSTRACT: The authors study the following system of $l + m + n$ equations

$$\frac{dx}{dt} = X(y, z)x + \varepsilon X_1(t, x, y, z),$$

$$\frac{dy}{dt} = Y(x, z)y + \varepsilon Y_1(t, x, y, z), \quad (1)$$

$$\frac{dz}{dt} = \varepsilon Z_1(t, x, y, z),$$

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L 2092-65 EWT(d)/FSF(h) IJP(c)/AEDC(a)

ACCESSION NR: AP4048315

S/0021/64/000/008/0984/0986

AUTHOR: My*tropol's'ky*y, Yu. O. (Mitropol'skiy, Yu. A.); Samoylenko, A. M.

TITLE: Structure of trajectories on toroidal manifolds

SOURCE: AN UkrRSR. Dopovidi, no. 8, 1964, 984-986

TOPIC TAGS: trajectory structure, torus, toroidal manifold, differentiable function

ABSTRACT: The results of V. I. Arnol'd (Izd-vo AN SSSR, ser. matem. v. 25, no. 21, 1961) and N. N. Bogolyubov (Tr. 1-y letney matematicheskoy shkoly*, izd-vo "Nauka", no. 17, 1964) relative to the structure of trajectories on a torus are extended to the case in which the functions defining the torus are only differentiable.

ASSOCIATION: Insty*tut matematy*ky* AN URSR (Mathematics Institute, AN URSR)

SUBMITTED: 31Mar64

ENCL: 00

SUB CODE: MA

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OTHER: 001

JPRS

Card 1/1

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MITROPOL'SKIY, Yu.A.

Integral manifold for a system of nonlinear equations, close to equations with variable coefficients, in a Hilbert space. Ukr.mat.zhur. 16 no. 3:334-338 '64. (MIRA 17:7)

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AM4037985

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AM4037985 BOOK EXPLOITATION S/

Mitropol'skiy, YUriy Alekseyevich

Problems in asymptotic theory of nonstationary oscillations (Problemy* asimptoticheskoy teorii nestatsionarny*kh kolebaniy), Moscow, "Nauka", 1964, 431 p. illus., biblio. 4,300 copies printed.

TOPIC TAGS: physics, mathematics, nonlinear oscillation system, nonstationary oscillation, gyroscope, differential equation, automatic regulation

PURPOSE AND COVERAGE: This book is devoted to approximate asymptotic methods of solving problems in the theory of nonstationary oscillation processes. The methods developed by the author are applicable for investigation of a broad class of irregular oscillation processes in nonlinear systems. They permit solution of problems of passing through resonance and study of nonstationary processes in gyroscopic systems, accelerator assemblies, systems of automatic regulation, and other important problems of physics and technology. The book is intended for a broad circle of engineers, technicians, and researchers interested in the various problems of the theory of oscillations and differential equations containing a small parameter.

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BOGOLYUBOV, N. N.; MITROPOLSKIY, Yu. A.

"Regimes quasi-periodiques dans les systemes oscillants non lineaires."

report submitted for Intl Symp on Forced Vibrations in Nonlinear Systems, Marseille, 7-12 Sep 64

Moscow - Kiev.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

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MITROPOLSKIY, Yu. A. (Kiev)

"Anwendung asymptotischer Methoden der nichtlinearen Mechanik zur Untersuchung nichtlinearer Schwingungssysteme mit verteilten Parametern."

report submitted for 3rd Conf on Nonlinear Oscillations, E. Berlin, 25-30 May 64.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

MITROPOL'SKIY, Yuriy Alekseyevich, red.

[Approximate methods of solving differential equations] Priblizhennye metody resheniia differentsial'nykh uravnenii. Kiev, Naukova dumka, 1964. 174 p. (MIRA 18:8)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

MITROPOL'SKIY, Yu.A.

[Problems of mathematical physics and the theory of functions] Voprosy matematicheskoi fiziki i teorii funktsii. Kiev, Izd-vo AN USSR, 1964. 2 v.
(MIRA 18:5)

1. Akademiya nauk URSR, Kiev. Instytut matematyky.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

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MITROPOL'SKIY, Yu.A., akademik, otv. red.; BOGOLYUBOV, N.N., akademik, glav. red.; LUR'YE, A.I., red.; LYKOVA, O.B., kand. fiz.-matem. nauk, red.; NEMYTSKIY, V.V., prof., red.; PISARENKO, G.S., red.; POGREBYSSKIY, I.B., kand. fiz.-matem.nauk, red.; KORENBLYUM, B.I., doktor fiz.-matem.nauk, red.; KOZUBOVSKAYA, I.G., red.; LISOVETS, A.M., tekhn. red.

[Proceedings of the International Symposium on Nonlinear Oscillations] Trudy Mezhdunarodnogo simpoziuma po nelineinym kolebaniiam. Kiev, Izd-vo AN USSR. Vol.2.[Qualitative methods in the theory of nonlinear oscillations] Kachestvennye metody teorii nelineinykh kolebanii. 1963. 538 p. [Applications of the methods in the theory of nonlinear oscillations to problems in physics and technology] Prilozheniia metodov teorii nelineinykh kolebanii k zadacham fiziki i tekhniki. 1963. 513 p. (MIRA 17:1)

1. International Symposium on Nonlinear Oscillations, Kiev, 1961. 2. Akademiya nauk Ukr.SSR (for Mitropol'skiy). 3. Chlen-korrespondent AN SSSR (for Lur'ye). 4. Chlen-korrespondent AN Ukr.SSR (for Pisarenko).

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MITROPOL'SKIY, Yu.A.

Second conference on nonlinear oscillations organized by the Polish and Czechoslovakian Academies of Sciences. Ukr. mat. zhur. 15 no.1:115-116 '63. (MIRA 16:3)
(Physics--Congresses) (Oscillations)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

by L. S. Pontryagin and Ye. F. Mishchenko and with results concerning the generalized averaging method obtained by V. M. Volosova. There are 49 references, mostly Soviet.

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PHASE I BOOK EXPLOITATION SOV/6574

Bogolyubov, Nikolay Nikolayevich, and Yuriy Alekseyevich Mitropol'skiy

Asimptoticheskiye metody v teorii nelineynykh kolebaniy (Asymptotic Methods in the Theory of Nonlinear Vibrations) 3d ed., rev. and enl. Moscow, Fizmatgiz, 1963. 410 p. 5000 copies printed.

Ed.: Ye. Ye. Zhabotinskiy; Tech. Ed.: L. V. Likhacheva.

PURPOSE: The book is intended for engineers and scientific workers interested in oscillatory processes.

COVERAGE: The book is revised and extended edition of a well-known book first published in 1955. It deals with approximate asymptotic methods for solving problems in the theory of nonlinear oscillations which arise in physics and engineering. The methods are discussed in a very simple form; special mathematical training is not required for their understanding. This edition is supplemented with results concerning relaxational oscillation obtained

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MITROPOL'SKIY Yu.A., otv. red.; BEREZANSKIY, Yu.M., red.; KOROLYUK, V.S., red.; PARASYUK, O.S., red.; SOKOLOV, Yu.D., red.; FESHCHENKO, F.F., red.; FIL'CHAKOV, P.F., red.; BREUS, K.A., red.; MEL'NIK, T.S., red.; BEREZOVSKAYA, D.N., tekhn. red.

[Approximate methods of solution of differential equations] Priblizhennye metody resheniia differentsial'nykh uravnenii. Kiev, Izd-vo AN USSR, 1963. 153 p. (MIRA 17:3)

1. Akademiya nauk URSR, Kiev. Instytut matematyky.

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MITROPOL'SKIY, Yu.A.

"Energy dissipation in mechanical vibrations" by G.S. Pisarenko. Reviewed by IU.A. Mitropol'skii. Ukr. mat. zhur. 14 no.4:456-457 '62. (MIRA 15:12)

(Force and energy)
(Vibration)
(Pisarenko, G.S.)

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MITROPOL'SKIY, Yu.A.

International conference on nonlinear vibrations. Stroi. mekh. i rasch. soor. 4 no.1:44-45 '62. (MIRA 16:12)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

PURPOSE: This book is intended for scientific and engineering personnel who are interested in recent work in theoretical and applied mechanics.

COVERAGE: The articles included in these transactions are arranged by general subject matter under the following heads: general and applied mechanics (5 papers), fluid mechanics (10 papers), and the mechanics of rigid bodies (8 papers). Besides the organizational personnel of the congress, no personalities are mentioned. Six of the papers in the present collection have no references; the remaining 17 contain approximately 1400 references in Russian, Ukrainian, English, German, Czechoslovak, Rumanian, French, Italian, and Dutch.

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MITROPOL'SKIY, YU. A.

PHASE I BOOK EXPLOITATION SOV/6201

Vsesoyuznyy s''yezd po teoreticheskoy i prikladnoy mekhanike. 1st, Moscow, 1960.

Trudy Vsesoyuznogo s''yezda po teoreticheskoy i prikladnoy mekhanike, 27 yanvarya -- 3 fevralya 1960 g. Obzornyye doklady (Transactions of the All-Union Congress on Theoretical and Applied Mechanics, 27 January to 3 February 1960. Summary Reports). Moscow, Izd-vo AN SSSR, 1962. 467 p. 3000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Natsional'nyy komitet SSSR po teoreticheskoy i prikladnoy mekhanike.

Editorial Board: L. I. Sedov, Chairman; V. V. Sokolovskiy, Deputy Chairman; G. S. Shapiro, Scientific Secretary; G. Yu. Dzhanelidze, S. V. Kalinin, L. G. Loytsyanskiy, A. I. Lur'ye, G. K. Mikhaylov, G. I. Petrov, and V. V. Rumyantsev; Resp. Ed.: L. I. Sedov; Ed. of Publishing House: A. G. Chakhirev; Tech. Ed.: R. A. Zamarayeva.

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MITROPOL'SKIY, YU. A.

"The method of integral manifolds in the theory of nonlinear differential equations"

report submitted at the Intl Conf of Mathematics, Stockholm, Sweden, 15-22 Aug 62

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BOGOLYUBOV, N.N.; MITROPOL'SKIY, Yu.A.

[Method of integral manifolds in nonlinear mechanics] Metod integral'nykh mnogoobrazii v nelineinoi mekhanike. Kiev, In-t matematiki AN USSR, 1961. 126 p. (MIRA 18:7)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

MITROPOL'SKIY, Yu.A

International Symposium on Nonlinear Vibrations. Ukr.mat.zhur. 13 no.4:115-116 '61. (MIRA 15:7)
(Vibration--Congresses)

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MITROPOL'SKIY, Yu.A. (Kiyev); PARASYUK, O.S. (Kiyev); SOKOLOV, Yu.D. (Kiyev)

"Operational methods and their development in the theory of linear differential equations with variable coefficients" by Y.Z. Shtokalo. Reviewed by IU.A. Mitropolskii, O.S. Parasiuk, IU.D. Sokolov. Ukr. mat. zhur. 13 no.3:116-117 '61. (MIRA 14:9)
(Calculus, Operational) (Differential equations, Linear)
(Shtokalo, Y.Z.)

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MITROPOL'SKIY, Yu.O. [Mytropol's'kyi, IU.O.], akademik

Nonlinear vibrations. Nauka i zhyttia no.11:31 N '61. (MIRA 14:12)

1. AN USSR. (Vibration--Congresses)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

MITROPOL'SKIY, Yu.A. [Mytropol's'kyi, IU.O.], akademik; SENIK, P.M. [Senyk, P.M.]

Developing the asymptotic solution for an autonomous system with a high degree of nonlinearity. Dop.AN URSR no.7:839-844 '61. (MIRA 14:8)

1. Institut matematiki AN USSR i L'vovskiy politekhnicheskiy institut. 2. AN USSR (for Mitropol'skiy).
(Differential equations)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

MITROPOLSKIY, YU. A. and BOGOLYUBOV, N. N.

"The method of integral manifolds in nonlinear mechanics."

Paper presented at the Intl. Symposium on Nonlinear Vibrations, Kiev, USSR, 9-19 Sep 61

Institute of Mathematics, Kiev, USSR

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SHTOKALO, Iosif Zakharovich; MITROPOL'SKIY, Yu.A., akad., otv. red.; KISI-NA, I.V., red. izd-va; LISOVETS, A.M., tekhn. red.

[Operational methods and their development in the theory of linear differential equations with variable coefficients] Operatsionnye metody i ikh razvitie v teorii lineinykh differentsial'nykh uravnenii s peremennymi koeffitsientami. Kiev, Izd-vo Akad. nauk USSR, 1961. 127 p. (MIRA 14:11)

1. AN USSR (for Mitropol'skiy).
(Differential equations, Linear) (Calculus of operations)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

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KRYLOV, Nikolay Mitrofanovich, akademik, matematik [deceased]; MITROPOL'SKIY, Yu.A., prof., otv. red.; BOGOLYUBOV, N.N., akademik, glav. red.; BLAGOVESHCHENSKIY, Yu.V., kand. tekhn. nauk, red.; LYKOVA, O.B., red.izd-va; SKLYAROVA, V.Ye., tekhn. red.

[Selected works in three volumes] Izbrannye trudy v trekh tomakh. Kiev, Izd-vo Akad. nauk USSR. Vols.1-3. 1961. (MIRA 14:10)

1. Chlen-korrespondent AN USSR (for Mitropol'skiy).
(Mathematics)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

MITROPOL'SKIY, Yu.A.

"Linear differential equations with variable coefficients" by I.Z. Shtokalo". Reviewed by IU. A. Mitropol'skii. Ukr. mat. zhur. 12 no.4:492-493 '60. (MIRA 14:3)

(Differential equations, Linear)
(Shtokalo, I.Z.)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

SHTOKALO, I.Z., adademik; MITROPOL'SKIY, Yu.A.; FIL'CHAKOV, P.F., doktor fiz-mat. nauk

Mikhail Alekseevich Laverent'ev; on his 60th birthday. Ukr. mat. zhur. 12 no.4:490-491 '60. (MIRA 14:3)

1. AN USSR (for Shtokalo). 2. Chlen-korrespondent AN USSR (for Mitropol'skiy).
(Lavrent'ev, Mikhail Alekseevich, 1900-)

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88302

S/041/60/012/004/003/011
C111/C222

On the Question on Periodic Solutions of Nonlinear Systems of Equations With a Small Parameter

where X, Y are continuous and 2π- periodic in t, the undisturbed system

(38) $$\frac{dx}{dt} = X(t,x)$$

has an isolated stable 2π -periodic solution

(39) $$x = x(t) ,$$

and in a certain neighborhood of (39) the right sides of (37) satisfy certain conditions of smoothness.
There are 2 Soviet references.

SUBMITTED: May 18, 1960

Card 5/5

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88302
S/041/60/012/004/003/011
C111/C222

On the Question on Periodic Solutions of Nonlinear Systems of Equations With a Small Parameter

$$(6) \qquad \Delta_a(x) = \begin{cases} A_a \left\{1 - \frac{x^2}{a^2}\right\}^2 & |x| \leq a \ , \\ 0 & |x| > a \end{cases}$$

and normed by

$$(7) \qquad \int_{E_n} \Delta_a(x)dx = 1 \quad .$$

Besides, the authors estimate the difference $|x(t) - x_1(t)|$, where $x_1(t)$ is the first approximation of the solution of (1').
Similar results are obtained for the more general system

$$(37) \qquad \frac{dx}{dt} = X(t,x) + \varepsilon Y(t,x) \quad ,$$

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S/041/60/012/004/003/011
C111/C222

On the Question on Periodic Solutions of Nonlinear Systems of Equations With a Small Parameter

where M and η are positive constants.
Under the given assumptions it is shown (theorem 1) that in a certain neighborhood of the solution $x^* = x_0$ of (2) the system (1') has a unique, asymptotically stable, 2π - periodic solution $x = x(t)$. This solution has the structure $x(t) = x_0^* + Dh(t) + \varepsilon u(t, x_0^* + Dh(t))$, where D is the quadratic constant matrix appearing in the general solution $\delta x^* = D\overline{h}$ of (4) ; h(t) denotes the periodic solutions of a complicated auxiliary system, and u(t,x) is given by

$$(9) \quad u(t,x) = \int_{U_{\varrho o}} \Delta_a(x - x_1) \left\{ \int_0^t \left[Y(t_1, x_1) - \overline{Y}(x_1) \right] dt_1 \right\} dx_1 \quad ,$$

where $\Delta_a(x)$ is defined by

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C111/C222

On the Question on Periodic Solutions of Nonlinear Systems of Equations With a Small Parameter

among their solutions $x^* = x^*(t)$, for which the characteristic equation

(3) $$|I_n z - \phi'_x(x_o^*)| = 0$$

corresponding to the system of equations in variations

(4) $$\frac{d\delta x^*}{dt} = \phi'_x(x_o^*)\,\delta x^* \quad ,$$

has only roots with a negative real part.

3. There exists a convex neighborhood $U_{\varrho o} \in E_n$ of the solution x_o^* in which the $\phi(x)$ have continuous partial derivatives to x up to the second order.

4. For x, x', $x'' \in U_{\varrho o}$ and all real t it holds

(5) $$|Y(t,x)| \leqslant M$$
$$|Y(t,x') - Y(t,x'')| \leqslant \eta\,|x' - x''|$$

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S/041/60/012/004/003/011
C111/C222

AUTHORS: Mitropol'skiy, Yu.A., and Lykova, O.B.

TITLE: On the Question on Periodic Solutions of Nonlinear Systems of Equations With a Small Parameter

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, 1960, Vol. 12, No. 4, pp. 391 - 401

TEXT: The authors consider the system

(1') $$\frac{dx}{dt} = X(x) + \epsilon Y(t,x) \quad ,$$

where $\epsilon > 0$ is a small parameter ; t is the time ; x,X,Y are n-dimensional vectors of the Euclidean E_n , and the following conditions are satisfied :

1. Y(t,x) are continuous and 2π - periodic in t ;
2. The equations

(2) $$\frac{dx}{dt} = X(x) + \epsilon \overline{Y}(x) = \phi(x) \quad ,$$

where $\overline{Y}(x) = \frac{1}{2\pi} \int_0^{2\pi} Y(t,x)dt$, have an isolated statical solution $x^* = x_0^*$

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BOGOLYUBOV, N.N., akad.; MITROPOL'SKIY, Yu.A.

Nikolai Mitrofanovich Krylov; on his 80th birthday. Ukr. mat. zhur. 12 no.2:205-208 '60. (MIRA 13:10)

1. Chlen-korrespondent AN USSR (for Mitropol'skiy).
(Krylov, Nikolai Mitrofanovich, 1879-)

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P/006/60/000/002/001/...
A222/A026

Latest Achievements in the Field of Non-Linear Mechanics

(Ref. 10) and Ye. P. Popov (Ref. 20, 21) who employed the principles of non-linear mechanics in the theory of automation. At the close of the article the author points out that due to space limitation, the papers of many other significant authors have not been mentioned, e.g., L.S. Pontryagin, E.F. Mishchenko, A.N. Tikhonov, V.M. Volosov et al. There are 22 Soviet references.

ASSOCIATION: Institut Matematiki AN UkrSSR, Kiyev (Institute of Mathematics, Academy of Sciences UkrSSR, Kiyev)

SUBMITTED: December 23, 1959

Card 3/3

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

P/006/60/008/002/001/007
A222/A026

Latest Achievements in the Field of Non-Linear Mechanics

who investigated unstable vibration in turbine rotors; B.I. Moseyenkov (Ref. 18) who evolved an "energetic" method and investigated transition processes in the vibration of shafts, bars, etc., with distributed parameters; V.O. Kononenko (Ref. 8), Yu.O. Mitropol'skiy and O.B. Likova (Ref. 15) who engaged in linear differential equations with slowly changing parameters approximated to linear systems with periodic coefficients and making possible research on accelerated systems; K.V. Zadiraka (Ref. 11) who investigated systems approximated to relaxation systems; N.N. Bogolyubov and D.N. Zubarev (Ref. 3) who extended the compensation principle in lon-linear mechanics; K.A. Breus (Ref. 4) who investigated differential equation systems with periodic coefficients, which may be used in the analysis of special gyroscope systems with high-speed revolving parts; A. M. Fedorchenko (Ref. 22) who introduced new variables in canonic equations describing a certain gyroscope system; G.S. Pisarenko (Ref. 19) and successors who employed the methods of non-linear mechanics in mechanical engineering and automatic control; V.O. Kononenko (Ref. 9) who solved a number of problems related to the influence of dry friction on vibration and the influence of relaxation oscillation on harmonic oscillation. A.I. Lur'ye

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

P/006/60/008/002/001/...
A222/A026

AUTHOR: Mitropol'skiy, Yu. A.

TITLE: Latest Achievements in the Field of Non-Linear Mechanics

PERIODICAL: Rozprawy Inżynierskie, 1960, Vol. 8, No. 2, pp. 123-135

TEXT: The article presents a brief and general survey of results obtained during the last decade by the successors to N.N. Bogolyubov in the field of non-linear mechanics. The author gives a brief explanation of the concept of asymptotic evolvements referred to a non-linear vibrating system with slowly changing parameters by means of differential and integral calculus. The method was used to solve a number of problems and explain phenomena such as transition through resonance in non-linear vibrating systems, vibrations in a variable-length pendulum, the effect of a modulated-frequency "sinusoidal" force on a non-linear vibrator, unstable processes in gyroscope systems, passage through critical numbers in crankshafts, centrifuges, turbine rotors, etc. Lately, the method was used by Veksler (Ref. 5) and associates to solve a number of problems in cyclotron calculation, especially to calculate the amplitudes of synchrotron oscillation excited by resonance and acoustic means. Brief mention is further made of the following authors: V.A. Grobov (Ref. 6)

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On the periodic solutions of a . . . S/044/62/000/008/015/073
C111/C333

Such a reduction method was already used by M. Urabe (Rzh. Mat., 1959, 3750), if the right side of (1) is integrable with respect to x. The existence of a periodic solution to (1) was proved with the help of the well known Schauder topological fix point theorem. In the uniqueness proof the authors also used the known principle of contracting mappings of Cacciopoli-Banach.

[Abstracter's note: Complete translation.]

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S/044/62/000/008/015/073
C111/C333

16.3400

AUTHORS: Mitropol'skiy, Yu. A., Lykova, O. B.

TITLE: On the periodic solutions of a system of differential equations with a non-differentiable right side

PERIODICAL: Referativnyy zhurnal, Matematika, no. 8, 1962, 42-43, abstract 8B192. ("Bul. Inst. politehn. Iaşi", 1960, 6, no. 3-4, 7-12)

TEXT: Theorems on the existence and uniqueness of the periodic solution are given for non-linear systems of differential equations

$$\dot{x} = \varepsilon X(t,x) \qquad (1)$$

with a small parameter ε and a non-differentiable right side. The result of this paper is, among others, a substantiation of the fact that one can obtain periodic approximate solutions to (1) by averaging, i.e., by examining the non-autonomous "averaged" system $\dot{\xi} = \varepsilon \overline{X}(\xi)$, where

$$\overline{X}(\xi) = \frac{1}{2\pi} \int_0^{2\pi} X(t,\xi)\, dt .$$

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S/021/60/000/001/001/013
A158/A029

AUTHORS: Mitropol'skyy, Yu.O., Corresponding Member of the AS UkrSSR; Lykova, O.B.

TITLE: On Periodic Solutions of Non-Automatic Systems in the Case of an Isolated Originating Solution

PERIODICAL: Dopovidi Akademiyi nauk Ukrains'koyi Radyanskoyi Sotsialistychnoyi Respubliky, 1960, No. 1, pp. 3 - 6

TEXT: The authors deal with an allegedly existing periodical solution of a system of nonlinear differential equations closely relating to autonomous equations when the right-hand additives corresponding to the perturbing forces are not differentiated. The paper is an amplification of the first author's work (Ref. 1). No conclusions are drawn and no practically applicable formulas are offered. There are 2 Soviet references.

ASSOCIATION: Instytut matematyky AN UkrSSR (Institute of Mathematics of the AS UkrSSR)

SUBMITTED: July 1, 1959

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SHTOKALO, Iosif Zakharovich; MITROPOL'SKIY, Yu.A., otv.red.; KISINA, I.V., red.izd-va; BUNIY, R.A., tekhn.red.

[Linear differential equations with variable coefficients; asymptotic methods and criteria of the stability and instability of solutions] Lineinye differentsial'nye uravneniia s peremennymi koeffitsientami; asimptoticheskie metody i kriterii ustoichivosti i neustoichivosti reshenii. Kiev, Izd-vo Akad.nauk USSR, 1960. 75 p. (MIRA 13:7)

1. Chlen-korrespondent AN USSR (for Mitropol'skiy).
(Differential equations, Linear)

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66401

Periodical Solutions of Simultaneous Non-Linear Differential Equations Having Non-Differentiable Right-Hand Members

SOV/20-128-6-5/63

(5) $|X(t,x)| \leqslant M$,

(6) $|X(t,x') - X(t,x'')| \leqslant \eta |x' - x''|$,

where $x, x', x'' \in U_g$, $-\infty < t < \infty$, $M > 0$, $\eta > 0$ are constants. It is shown that under these assumptions (1) has a periodic solution $x = x(t)$ in a certain neighborhood of $\xi = \xi_0$. If besides

(28) $|X(t,x') - X(t,x'')| < \varphi(t) |x' - x''|$,

where $\frac{1}{2\pi}\int_0^{2\pi} \varphi(t)dt < \varkappa$, $\varkappa$ - sufficiently small, and if $\xi = \xi_0$ is asymptotically stable, then the mentioned periodic solution of (1) is determined uniquely in the neighborhood of $\xi = \xi_0$. The author mentions V.V.Kozakevich. There is 1 Soviet reference.

ASSOCIATION: Institut matematiki Akademii nauk USSR (Institute of Mathematics AS Ukr.SSR)

PRESENTED: June 22, 1959, by N.N.Bogolyubov, Academician
SUBMITTED: June 12, 1959

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~~16(1)~~ [redacted] 16.3400 SOV/20-128-6-5/63

AUTHOR: Mitropol'skiy,Yu.A.

TITLE: Periodical Solutions of Simultaneous Non-Linear Differential Equations Having Non-Differentiable Right-Hand Members

PERIODICAL: Doklady Akademii nauk SSSR,1959,Vol 128,Nr 6,pp 1118-1121 (USSR)

ABSTRACT: Given the system

(1) $\frac{dx}{dt} = \varepsilon X(t,x)$;

$x, X \in E_n$, t - time, $\varepsilon > 0$ - small parameter. Let A) $X(t+2\pi, x) = X(t,x)$

B) the functions

(3) $\overline{X}(\xi) = \frac{1}{2\pi}\int_0^{2\pi} X(t,\xi)dt$

have bounded derivatives up to the third order with respect to ξ. Let among the solutions $\xi = \xi(t)$ of

(2) $\frac{d\xi}{dt} = \varepsilon \overline{X}(\xi)$

exist one isolated statical solution $\xi = \xi_0$ for which $\overline{X}(\xi_0) = 0$, $\left\| \frac{\partial \overline{X}}{\partial \xi} \right\|_{\xi=\xi_0} \neq 0$; C) in a convex neighborhood $U_\varrho \in E_n$ of the solutions $\xi = \xi(t)$ we have

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

Nikolay Nikolayevich Bogolyubov. SOV/53-69-1-9/11
(On the Occasion of His Fiftieth Birthday)

He published about 200 scientific papers and 15 monographs, the most important of which are listed in chronological order. Bogolyubov was awarded the Prize imeni M. V. Lomonosov, two Stalin Prizes, and one Lenin Prize (1958). There are 1 figure and 62 references, 60 of which are Soviet.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001134700009-6

Nikolay Nikolayevich Bogolyubov. SOV/53-69-1-9/11
(On the Occasion of His Fiftieth Birthday)

recent times he paid particular attention to the quantum theory. Besides, he was interested in pedagogical and scientific organization. Since 1936 he held a chair, first at Kiyev, but later at Moskovskiy gosudarstvennyy universitet (Moscow State University), from 1946-49 he was Dean at the mechanical-mathematical department of Kiyev State University imeni T. G. Shevchenko. Bogolyubov further supervised the work of a number of departments of the AS UkrSSR, recently the Otdel teoreticheskoy fiziki Matematicheskogo instituta im. V. A. Steklova AN SSSR (Department of Theoretical Physics of the Mathematics Institute imeni V. A. Steklov of the AS USSR). He is director of the Laboratoriya teoreticheskoy fiziki Ob"yedinennogo instituta yadernykh issledovaniy (Laboratory for Theoretical Physics of the Joint Institute of Nuclear Research). Under his supervision about 50 dissertations of persons aspiring for the degrees of Candidate or Doctor were defended. He founded schools for nonlinear mechanics (Kiyev) and theoretical physics (Moscow, Dubna, Kiyev).

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Nikólay Nikolayevich Bogolyubov. SOV/53-69-1-9/11
(On the Occasion of His Fiftieth Birthday)

Later, he occupied himself with the theory of nonlinear oscillations and developed approximation methods in the field of nonlinear mechanics; he then passed on the asymptotic methods in statistical mechanics and statistical physics, and published, among others, a number of papers in the field of statistical physics of classical systems. He developed a method of distribution functions and of generating functionals for the solution of the main problem of statistical physics - the calculation of thermodynamic functions by means of the molecular characteristics of the substance, in which connection he developed a theory of non-perfect gases. By means of the mathematical apparatus of distribution functions he further dealt with the nonequilibrium processes as well as with problems of quantum systems; he developed a method of approximative second quantization in order to remove the difficulties arising in connection with the symmetry of the density matrix. He further dealt with the theory of the degeneration of non-perfect gases and made the first step towards developing a microscopical theory of the superfluidity of He II. Further work was devoted to problems of supraconductivity, and in

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24(0)

AUTHORS: Mitropol'skiy, Yu. A., Tyablikov, S. V. SOV/53-69-1-9/11

TITLE: Nikolay Nikolayevich Bogolyubov (Nikolay Nikolayevich Bogolyubov) (On the Occasion of His Fiftieth Birthday) (k pyatidesyatiletiyu so dnya rozhdeniya)

PERIODICAL: Uspekhi fizicheskikh nauk, 1959, Vol 69, Nr 1, pp 159-164 (USSR)

ABSTRACT: On August 21, 1959 the well-known Soviet theoretical physicist N. N. Bogolyubov celebrated his 50th birthday. He was born at Gor'kiy, worked at the seminar of N. M. Krylov already in 1923, and wrote his first scientific paper in 1924; in 1925 he was Aspirant at the Chair for Mathematical Physics of the AS USSR, and defended his dissertation in 1928. Two years later he was awarded the title of Doctor h. c. ; in 1939 he became Corresponding Member, AS UkrSSR, in 1947 he was appointed Corresponding Member AS USSR, in 1948 Real Member AS UkrSSR, and in 1953 he became Real Member AS USSR. He began his scientific career as a mathematician and published a number of papers (calculus of variations, theory of periodic functions, differential equations) together with his teacher N. M. Krylov.

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05777

On Periodic Solutions of Systems of Nonlinear Differential Equations With Non-Differentiable Right Parts SOV/41-11-4-3/15

$$(33) \qquad \frac{d\,\delta\xi}{dt} = \varepsilon \bar{X}'_{\xi}(\xi_0)\cdot\delta\xi;$$

let its solution be

$$(34) \qquad \delta\xi = D\bar{h},$$

where D is a constant quadratic matrix and $\bar{h}$ is a linear combination of polynomials and exponential functions with n constants of integration. Then the term h appearing in the theorem, is defined by

$$(35) \qquad \xi = \xi_0 + Dh.$$

The author mentions B.V.Bulgakov, I.G.Malkin, Krylov, Bogolyubov, N.A.Ayzerman, F.R.Gantmakher, and V.Ye.Germaidze. There are 8 references, 7 of which are Soviet, and 1 German.

SUBMITTED: June 19, 1959

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05777

On Periodic Solutions of Systems of Nonlinear Differential Equations With Non-Differentiable Right Parts SOV/41-11-4-3/15

If besides

(97) $\left|X(t,x') - X(t,x'')\right| < \varphi(t)\left|x'-x''\right|$,

where

(98) $\frac{1}{2\pi}\int_0^{2\pi}\varphi(t)dt < \varkappa$,

$\varkappa > 0$ sufficiently small, and if the characteristic equation of the differential equation valid for the deviations from the statical solution $\xi = \xi_0$, has only roots with negative real parts, then there exist $a^* < a_0$, $\varepsilon^* < \varepsilon_0$, and $\delta^* < \delta_0$ so that for all $0 < \varepsilon < \varepsilon^*$ (90) has a single 2π-periodic solution in the ϱ^*-neighborhood ($x \in U_{\varrho^*}$ if $h \in U_{\delta^*}$) of the statical solution $\xi = \xi_0$.

Supplement: Let the mentioned differential equation for the deviations $\delta\xi$ from the statical solution $\xi = \xi_0$ be

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05777

On Periodic Solutions of Systems of Nonlinear Differential Equations With Non-Differentiable Right Parts

SOV/41-11-4-3/15

(93) $\bar{X}(\xi_0) = 0, \quad \left\| \frac{\partial \bar{X}(\xi)}{\partial \xi} \right\|_{\xi=\xi_0} \neq 0.$

Let there exist a convex neighborhood U_ϱ ($U_\varrho \subset E_n$) of the solution $\xi = \xi(t)$ in which

(94) $|X(t,x)| \leq M,$

(95) $|X(t,x') - X(t,x'')| \leq \eta\, |x' - x''|$

holds for $x, x', x'' \in U_\xi$ and all real t, where M and η are constants.

Then for every arbitrarily small σ there exist $\varepsilon_0, \delta_0, a_0$ so that in the ϱ-neighborhood of the statical solution $\xi = \xi_0$ of (91) ($\varrho < \varrho_0$, $x \in U_{\varrho_0}$ if $h \in U_{\delta_0}$) the system (90) has a 2π-periodic solution $x(t)$ for which

(96) $|x(t) - \xi_0| \leq \sigma.$

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16(1) 05777

AUTHOR: Mitropol'skiy, Yu.A. (Kiyev) SOV/41-11-4-3/15

TITLE: On Periodic Solutions of Systems of Nonlinear Differential Equations With Non-Differentiable Right Parts

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, 1959, Vol 11, Nr 4, pp 366-379 (USSR)

ABSTRACT: Theorem: Given the system

$$(90) \qquad \frac{dx}{dt} = \varepsilon X(t,x),$$

where x,X are points of the E_n, t is the time, $\varepsilon > 0$ is a small parameter. a) Let X(t,x) be continuous $X(t+2\pi,x) = X(t,x)$. b) Let

$$(91) \qquad \frac{d\xi}{dt} = \varepsilon \overline{X}(\xi),$$

where

$$(92) \qquad \overline{X}(\xi) = \frac{1}{2\pi}\int_0^{2\pi} X(t,\xi)dt$$

have the properties: 1. $\overline{X}(\xi)$ have bounded partial derivatives with respect to ξ up to the third order inclusively. 2. Among the solutions $\xi = \xi(t)$ of (91) there exists one isolated statical solution $\xi = \xi_0$ for which

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16(1)

AUTHORS: Mitropol'skiy, Yu.A., and Tyablikov, S.V. SOV/41-11-3-8/16

TITLE: Nikolay Nikolayevich Bogolyubov (on the Occasion of his 50th Birthday)

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, 1959, Vol 11, Nr 3, pp 295-311 (USSR)

ABSTRACT: The authors give some biographical data and a survey on the most essential scientific results of Bogolyubov: He was born on August 21, 1909 in Gor'kiy. Since 1923 he was in the seminar of the Academician N.M.Krylov; in 1924 he published his first paper; in 1928 he published his dissertation; in 1930 he became Dr.math.h.c., in 1939 he became a corresponding member of the AS Ukr.SSR, and in 1953 Academician of the AS USSR. Bogolyubov has two Stalin prizes, a Lenin prize, two Lenin orders, four further distinctions, and the Merlani prize (Bologna).
There is a photo of Bogolyubov and a list of his 179 publications with translations in other languages.

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66645
SOV/21-59-11-1/27

On Periodic Solutions of Nonlinear Systems of Differential Equations That Come Close to the Autonomous Ones

approximation of the periodic solution of system (1) is given in the form: $x1(t)=x_0^*+Dh_1(t)+\varepsilon u(t,x_0^*+Dh_1(t)$, (22)

where $h_1(t)$ is the periodic solution of the system of equations

$$\frac{dh_1}{dt} = Hh_1 + \varepsilon D^{-1}X'x(x_0^*)u't,x_0^*). \quad (23)$$

The unique, stable and periodic solution of system (1) is formulated:

$$x(t) = x_0^* + Dh(t) + \varepsilon u\left(t,x_0^* + Dh(t)\right).$$

There are 4 references, 1 of which is French, 1 Soviet, 1 Italian and 1 German.

ASSOCIATION: Instytut matematyky AN URSR (Institute of Mathematics, AS UkrSSR)

SUBMITTED: July 1, 1959

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On Periodic Solutions of Nonlinear Systems of Differential Equations That Come Close to the Autonomous Ones

where eqquation

$$\bar{Y}(x) = \frac{1}{2\pi} \int_0^{2\pi} Y(t,x)dt \qquad (3)$$

among its $x^* = x^*(t)$ solutions has an isolated static solution $x^* = x_0$, for which the equation $|J_n z - \Phi'_x (x_0^*)^0| = 0$ has all its radicals with substractable real parts, and that within Euclidean space E_n there exists a convex area U_p for the $x^* = x^*(t)$ solution of system (2), in which functions $\Phi(x)$ have continuous partial derivatives by x up to the third order inclusively, whereas functions $Y(t,x)$ are limited and satisfying the Lipshits conditions $|Y(t,x)| \leqslant M$ (5)

and $|Y(t,x') - Y(t,x'')| \leqslant \eta |x'-x''|$ (6)

Card 2/3 where M and η are additional constants. The first

4

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SOV/21-59-11-1/27

AUTHORS: Mitropol's'kyy, Yu.A., Corresponding Member, AS UkrSSR, and Lykova, O.B.

TITLE: On Periodic Solutions of Nonlinear Systems of Differential Equations That Come Close to the Autonomous Ones

PERIODICAL: Dopovidi Akademiyi nauk Ukrayins'koyi RSR, 1959, Nr 11, pp 1175-1178 (USSR)

ABSTRACT: Examining a system of nonlinear differential equations

$$\frac{dx}{dt} = X(x) + \varepsilon Y(t,x), \qquad (1)$$

where x,X and Y are n-dimensional vectors of Euclidean space E_n, ε is a small additional parameter and t is time, the authors prove the existence, uniqueness and stability of the periodic solution for that system and give an estimation of the difference between that solution and its first approximation. They assume that functions Y(t,x) are periodic in t with a period of

2π, that a system of equations $\frac{dx}{dt} = X(x) + \varepsilon Y(x) = \Phi(x), \qquad (2)$

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MITROPOL'SKIY, Yu.A.

Some equations which lend themselves to precise integration.
Avtom. upr. i vych. tekh. no.2:221-248 '59. (MIRA 13:2)
(Integral equations) (Differential equations)

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transverse oscillations of a log with flexible load and force of disturbance. One points to the fact that the described method can also be used for more complicated oscillation systems with distributed parameters.

[Abstracter's note: Complete translation.]

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$$\frac{d\psi}{dt} = \omega - \frac{s}{r}\nu + \frac{2\varepsilon}{m_1 a}\sum_{\sigma=\infty}^{\infty}\frac{(r\omega_1 - s\nu)\sigma_1\frac{\delta\overline{W}_\sigma}{\delta\psi}\frac{1}{a} - 2\omega_1\frac{\delta\overline{W}_\sigma}{\delta a}}{4\omega_1^2 - (r\omega_1 - s\nu)^2\sigma^2},$$

where

$$\overline{\delta W} = \sum_{\sigma=-\infty}^{\infty}\overline{\delta W}_\sigma = \sum_{\sigma=-\infty}^{\infty}\left\{\frac{\delta\overline{W}_\sigma}{\delta a}\delta a + \frac{\delta\overline{W}_\sigma}{\delta\psi}\delta\psi\right\},$$

where $\overline{\delta W}_\sigma$ is the virtual energy averaged on the oscillation cycle of the σ-th term of the Fourier expansion of the force of disturbance. Analogously one can construct the equations of the second approximation. Considered is the case where there are only potential forces present. The application of the method on systems with distributed parameters is shown by the following examples: transverse oscillations of a bar of the length l, at the end of which there works an axial force;

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expression is expanded into a Fourier series. In this expansion the authors introduce the symbolic denotations $\frac{\delta \overline{W}}{\delta a}$ and $\frac{\delta \overline{W}}{\delta \psi}$ for the coefficients at the variations δa and $\delta \psi$ and obtain for the determination of $A_1(\tau, a, \psi)$, $B_1(\tau, a, \psi)$ the system

$$\left(\omega_1 - \frac{s}{r}\nu\right)\frac{\partial A}{\partial \psi} - 2\omega_1 a B_1 = \frac{2}{m_1}\frac{\delta \overline{W}}{\delta a},$$

$$\left(\omega_1 - \frac{s}{r}\nu\right) a \frac{\partial B_1}{\partial \psi} + 2\omega_1 A_1 = -\frac{a}{m_1}\frac{d(m_1\omega_1)}{d\tau} + \frac{2}{m_1 a}\frac{\delta \overline{W}}{\delta \psi}.$$

The equations of the first approximation are

$$\frac{da}{dt} = -\frac{\varepsilon a}{2m_1\omega_1}\frac{d(m_1\omega_1)}{d\tau} + $$

$$+\frac{2\varepsilon}{m_1}\sum_{\sigma=-\infty}^{\infty}\frac{(r\omega_1 - s\nu)\,\sigma_l\,\frac{\delta \overline{W}_\sigma}{\delta a} + 2\omega_1\frac{\delta \overline{W}_\sigma}{\delta \psi}\frac{1}{a}}{4\omega_1^2 - (r\omega_1 - s\nu)^2\sigma^2},$$

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AUTHORS: Mitropol's'kiy, Yu. O., Mosyeyenkov, B. I.

TITLE: An investigation of instationary oscillating processes in systems with distributed parameters

PERIODICAL: Referativnyy zhurnal, Matematika, no. 7, 1962, 37-38, abstract 7B183. ("Visnyk Kyivs'k. un-tu", 1959, no. 2, ser. astron., matem. ta mekhan., no. 1, 3-17)

TEXT: By aid of the energetic method of Yu. A. Mitropol'skiy one investigates one-frequence processes in a number of concrete mechanical systems with distributed parameters. First of all the method itself is described: Instead of setting up strict equations one starts from the expressions for kinetic and potential energy and the generalised forces and sets up approximative equations for the determination of the phase and the amplitude of the oscillations. In order to obtain the equations of the first approximation one calculates the mean virtual energy which the forces of disturbance at a sine-shaped process would have carried out during a complete oscillation cycle on the virtual displacements which correspond to the variations of the amplitude and the phase. The obtained

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On the Stability of a One-Parametric Family of Solutions of a System of Equations With Variable Coefficients SOV/41-10-4-4/11

phase space, the functions $X(\tau,x)+\varepsilon X^*(\tau,\theta,x,\varepsilon)$ $(\tau=\varepsilon t,\ \frac{d\theta}{dt}=\nu(\tau))$ are 2π-periodic in θ, bounded, and sufficiently often differentiable with respect to x,t,ε. Then there exist $\varrho^*<\varrho$, $\varepsilon^*<\varepsilon$, so that for all positive $\varepsilon<\varepsilon^*$ it holds: (1) has a unique one-parametric family of solutions $x(\varepsilon t,\theta,\psi)$ with the property that every solution $x(t)$ of (1) with time becomes "attracted" by this family, i.e.

$$|x(\varepsilon t,\theta,\psi)-x(t)|\leq Ce^{-\gamma(t-t_0)},$$

where C and γ are positive constants.
There are 3 Soviet references.

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16(1)

AUTHOR: Mitropol'skiy, Yu.A. SOV/41-10-4-4/11

TITLE: On the Stability of a One-Parametric Family of Solutions of a System of Equations With Variable Coefficients (Ob ustoychivosti odnoparametricheskogo semeystva resheniy sistemy uravneniy s peremennymi koeffitsiyentami)

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, 1958, Vol 10, Nr 4, pp 389-393 (USSR)

ABSTRACT: Let the system of equations

(1) $$\frac{dx}{dt} = X(\tau, x) + \varepsilon X^*(\tau, \theta, x, \varepsilon)$$

satisfy the following conditions: 1) for the undisturbed system

(2) $$\frac{dx}{dt} = X(\tau, x), \quad \tau = \text{const}$$

for all $\tau (-\infty < \tau < \infty)$ there exists a family of stable periodic solutions

(3) $x = x^0(\tau, \omega t + \varphi)$; $x^0(\tau, \psi) = x^0(\tau, \psi + 2\pi)$, $\psi = \omega t + \varphi$;

2) there exist ϱ and ε_0 so that in the domain $-\infty < t < \infty$, $x \in D_\varrho$, $0 < \varepsilon < \varepsilon_0$, where D_ϱ is a ϱ-neihborhood of (3) in the

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