"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'PINER, L.I., starshiy nauchnyy sotrudnik; YAKOVLEVA, G.P., mladyshiy nauchnyy sotrudnik

Experimental studies on decontamination of water containing Mycobacterium tuberculosis by means of ultrasonics and chlorination. Gig. i san. 26 no.6:8-14 Je '61. (MIRA 15:5)

1. Iz TSentral'noy nauchno-issledovatel'skoy laboratorii gigiyeny vodnogo transporta i iz kafedry kommunal'noy gigiyeny I Moskovskogo ordena Lenina meditsinskogo instituta imeni Sechenova.
(WATER--CHLORINATION) (MYCOBACTERIUM TUBERCULOSIS)
(ULTRASONIC WAVES--PHYSIOLOGICAL EFFECT)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'PINER, L.I., kand.med.nauk

Sanitary significance of the Escherichia coli index in the sterilization of wastes with ultrasonic waves. Gig. i san. 26 no.10:13-16 O '61. (MIRA 15:5)

1. Iz TSentral'noy nauchno-issledovatel'skoy laboratorii gigiyeny vodnogo transporta Ministerstva zdravookhraneniya RSFSR.
(ULTRASONIC WAVES—PHYSIOLOGICAL EFFECT)
(WATER—STERILIZATION) (ESCHERICHIA COLI)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

NAUMOVA, O.A., kand.med.nauk; EL'PINER, L.I., kand.med.nauk

Scientific conference on hygienic problems in water transportation. Gig. i san. 26 no.11:99-101 N '61. (MIRA 14:11)
(NAVAL HYGIENE)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

DOLIVO-DOBROVOL'SKIY, L.B.; GLUSHKOVA, A.I.; KUZYANINA, T.N.; EL'PINER, L.I.; YAKOVLEV, V.K.

Effect of biomycin and penicillin on the vital activity of some algae. Biul. MOIP. Otd. biol. 67 no.1:154-155 Ja-F '62. (MIRA 15:3)

(ALGAE) (AUREOMYCIN) (PENICILLIN)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'PINER, E. G.

7869. Dudob, I. N. I EL'PINER, E. G. Bukhgalterskiy uchet V potrebitel'skoy kooperatsii. (Prakt. posobiye). Kiyev, gostekhizdat USSR, 1954. 440 S. 21 SM. 15,000 EKZ. 10 R. 80 K. V per.-- V vyp. Dan. 2-y avt: E. N. (!) El' piner.-- Na ukr. yaz.-- (55-1629)

657.53:334.5

SO: Knizhnaya Letopis', Vol, 7, 1955

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'PINER, Z. G.

N/5
611.91
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Zhurnal-no-ordernaya forma ucheta dlya kommunal'nykh pred-
priyatiy; prakticheskoye posobiye (Journal-voucher system
of accounting in communal enterprises; a practical aid, by)
Z. G. El'piner, M. P. Rubinchik (1) Z. M. Bank. Moskva,
Izd-vo Ministerstva Kommunal'nogo Khozyaystva RSFSR, 1953.
122 p. tables.

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'PINER, Z. G.

Zhurnal'no-orderngia forma bukhgalterskogo ucheta na promyshlennykh predpriiatniakh [Journal order form of bookkeeping in industrial enterprises] Moskva, Rosgizmestprom, 1953. 160 p.

SO: Monthly List of Russian Accessions, Vol. 6 No. 9 December 1953

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6909 Dudov, I. N. El'Piner, Z. G. Buklgalterskiy uchet V potrebitel'skdy Kooperatsii. (Prakt. Posobiye). Baku, Ob"yedin. izd., 1954. 20 sm. (Tsentr. soyuz potreb. Obshchest "Tsenrosoyuz". Tsentr. Buklgalteriya). -Na Azerbaydzh. Yaz. Ch. 1. 258s. 2.000 ekz. 3r. 70k.-(55-2505) 657.53:334.5

SO: Knizhnaya Letopis' No. 6, 1955

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'PORT, A.Ye.

Vibration-resistant turning tool. Stan.i instr. 33 no.9:44 S '62. (MIRA 15:9)

(Metal cutting tools)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'PORT, I., inzhener-sudovoditel'.

Compensation and determination of the residual deviation of magnetic compass at the bearing of a remote object. Mor.flot.16 no.8:11-13 Ag '56. (MLRA 9:10)

1.Kholmskoye morekhodnoye uchilishche.
(Compass)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

BUDNIKOV, P.P.; EL'-RAFIY, E.A.

Magnesite refractory with a high content of calcium oxide.
Ogneupory 28 no.8:371-377 '63. (MIRA 16:9)

1. Khimiko-tekhnologicheskiy institut im. D.I.Mendeleyeva.

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

BUDNIKOV, P.P.; EL-RAFIJ, E.A.

Transformation of calcium-chromate-chromite into monochromite in dolomitic magnesite chromium refractory materials. Epitoanyag 16 no. 2:63-66 F '64.

1. Moszkvai Egyetem.

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

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SILAYEV, A.B.; AGRE, N.S.; EL'-REGISTAN, G.I.; VEYS, R.A.; SEMENOV, M.N.

Isolation, purification and basic properties of antibiotics from Actinomyces globisporus var.roseus strain No. 2911. Antibiotiki 6 no.10:871-878 O '61. (MIRA 14:12)

1. Laboratoriya antibiotikov biologo-pochvennogo fakul'teta Moskovskogo universiteta imeni Lomonosova.
(ANTIBIOTICS) (ACTINOMYCES)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

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EL'-REGISTAN, G.I.; KIRILLOVA, N.F.; KRASIL'NIKOV, N.A.

Carotenoid pigments from Proactinomyces asteroides. Izv. AN SSSR Ser. biol. 30 no.1:128-130 Ja-F '65. (MIRA 18:2)

1. Institut mikrobiologii AN SSSR.

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ENDOCRINOLOGY

HUNGARY/UNITED ARAB REPUBLIC

ISMAIL, A. A., EL-RIDI, M. S. ABDEL-HAY, A., KAMEL, G., TALAAT, M., El Mofty Metabolic and Endocrine Research Unit, Biochemistry Department, Faculty of Medicine, Cairo; and TAPOUZADA, Salwa, National Research Centre, Dokki, both in the United Arab Republic.

"Interrelation Between Thyroid Hormones and Essential Fatty Acids"

Budapest, Acta Physiologica Academiae Scientiarum Hungaricae, Vol 29, No 3-4, 8 Jun 1966, pp 225-234.

Abstract: [English article] Since both fatty acids and thyroid hormones are frequently used as hypocholesterolaemic agents, the authors investigated the effect of thyroid hormone administration on rats maintained on a synthetic diet deficient in essential fatty acids. The deficiency reduced fertility in both sexes; fetuses were absorbed in some cases and the females failed to lactate. Triiodothyronine, in doses of 1.0 µg /rat/day markedly enhanced the essential fatty acid deficiency; thyosine, in doses of 10 µg /rat/day showed no such effect. The symptoms disappeared upon treatment with highly unsaturated fatty acids in doses of 0.1 ml /rat/day. 26 references, including 1 German and 25 Western. (Manuscript received 21 Jun 1965).

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After a general review of

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L 46772-66 EWT(d)/EWT(m)/EWP(w) IJP(c) EM

ACC NR: AP6032175 SOURCE CODE: UR/0055/66/000/005/0101/0108

43 39 B

AUTHOR: El'-Sakka, A. G.

ORG: Department of Gas and Wave Dynamics (Kafedra gazovoy i volnovoy dinamiki)

TITLE: On oblique impact on a flexible diaphragm 26

SOURCE: Moscow. Universitet. Vestnik. Seriya I. Matematika, mekhanika, no. 5, 1966, 101-108

TOPIC TAGS: ~~oblique~~ impact, strength, flexible diaphragm, ~~normal~~ impact, test, flexible plate, thin diaphragm, thin plate, conic body, motion equation

ABSTRACT: The impact of a perfectly rigid cone of infinite mass and certain apex angle 2α on an infinite plane flexible diaphragm is discussed. The plane of the diaphragm is normal to the cone axis, and the velocity vector V_0 (which is constant before and after the impact) is at an angle β to it. It is assumed that the thickness of the diaphragm is constant and independent of time and coordinates, that there are no initial strains and stresses in it, and that the material of the diaphragm envelopes the nose of the cone during penetration, as shown in Fig. 1. Under these conditions, there exist two domains of motion of diaphragm material separated by a wave of strong discontinuity (in strain and velocity of particles) whose rate of propagation depends on V_0 and α, so that the cone acts on the diaphragm by an impact force distributed along this wave, which is the intersection of the cone with

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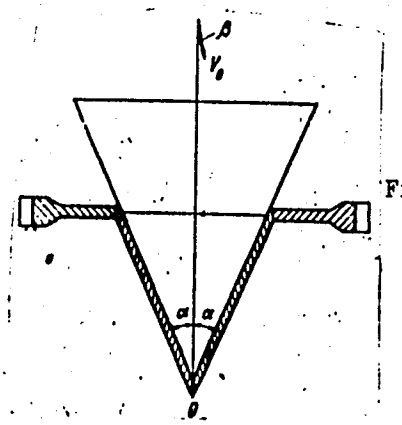

Fig. 1.

the plane of the diaphragm. The distribution of velocities and strains of the diaphragm particles after impact is discussed, and differential equations of motion with boundary conditions for determining the associated displacement parameters for the given V_0, β, and α are worked out. The study is based on results obtained by Kh. A. Rakhmatulin and Yu. A. Dem'yanov in their monograph on the strength of structures under suddenly applied loads (Prochnost' pri intensivnykh kratkovremenykh nagruzkakh. Fizmatgiz, Moscow, 1961) by generalizing the existing solution of the

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problem in the case of a normal impact (A. L. Pavlenko. Pryamoy udar po gibkoy plastine telom vrashcheniya zadannogo profilya. Dissertation. Moscow State University, 1952). The author thanks his scientific supervisor, Professor Kh. A. Rakhmatulin. Orig. art. has: 8 figures and 8 formulas. [VK]

SUB CODE: 20/ 13/ SUBM DATE: 10Jul65/ ORIG REF: 002/ ATD PRESS: 5091

Card 3/3 hs

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

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L 41303-66 EWT(1)/EWT(m)/EWP(t), ETI IJP(c) JG/JD

ACC NR: AP6019621 (A,N) SOURCE CODE: UR/0048/66/030/002/0292/0300 58

AUTHOR: Kurdyumov, I.V.; El' Samarai, S.Kh.; Smirnov, Yu.F.; Shitikova, K.V. 55 B

ORG: none

TITLE: Dipole photoabsorption in Li-6 /Report, Fifteenth Annual Conference on Nuclear Spectroscopy and Nuclear Structure, held at Minsk, 25 January to 2 February 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.30, no. 2, 1966, 292-300

TOPIC TAGS: nuclear reaction, nuclear structure, nuclear shell model, gamma ray absorption, lithium, nuclear energy level,

ABSTRACT: The authors have employed the translation invariant oscillator potential shell model of Yu.F.Smirnov and K.V.Shitikova (Izv. AN SSSR. Ser. Fiz., 27, 1442 (1963)) to calculate the dipole photoabsorption of Li^6 as well as the cross section for the Li^6 $(\gamma,n)Li^5$ reaction. Excitation probabilities in the $Li^7(p,2p)He^6$ reaction of odd He^6 states analogous to the Li^6 states of interest in connection with the photoabsorption were also calculated by the method of V.V.Balashov and A.N.Boyarkina (Nucl. Phys. 38, 629 (1962)) and K.Dietrich (Phys. Lett., 2, 139 (1962)), and the energies of the Li^6 states were determined by comparing the He^6 calculations with experimental data. The photoabsorption calculations were effected by diagonalizing, together with the spin-orbital interaction, the matrix for the residual two-particle interactions,

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assumed to have a Gaussian radial dependence. The calculations were performed for the two exchange force variants of Serber and Rosenfeld and for several values of the spin-orbital coupling constant. The results did not depend strongly either on the spin-orbital coupling or on the exchange force variant. The energy of one Li^6 state was evaluated as 16.6 MeV by comparing the He^6 calculations with the experimental data of I.P.Garron et al. (Phys. Rev. Lett., 7, 261 (1961)) on the Li^7 (p,2p)He^6 reaction, and three groups of Li^6 photoabsorption levels were found in the 10-12, 16-25, and 31-35 MeV regions. It is concluded that it is possible to locate in a unified way with the aid of the present model all three groups of Li^6 levels that are observed to be excited in dipole photoabsorption. According to the present calculations the only Li^6 levels that can disintegrate into a He^3 nucleus and a triton have energies between 16 and 18 MeV; therefore the conclusion of Ye.D.Makhnovskiy and A.P.Komar (Dokl.AN SSSR, 156, 774 (1964)) that these levels are located in the 21-23 MeV region is doubtful, and further experimental investigation of the photodisintegration of Li^6 is desirable. The authors thank V.V.Balashov, V.G.Heudachin, and N.P.Yudin for discussions and valuable advice. Orig. art. has: 1 formula, 4 figures and 2 tables.

SUB CODE: 20 SUBM DATE: 00 ORIG. REF: 008 OTH REF: 005

Card 2/2 hs

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

ELSASSER, H.

Rolled joints of welded boiler pipes with high-pressure drums, p. 169, zvaranie, (Ministerstvo hutneho prumyslu a rudnych bani a Ministerstvo strojarstvo) Bratislava, Vol. 3, No. 6, June 1954

SOURCE: East European Accessions List (EEAL) Library of Congress, Vol. 4, No. 12, December 1955

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'SBERG, P.Ye.; YASTREBOV, V.D.

Determining the density of the upper atmosphere according to results of observations of the third Soviet artificial earth satellite. Isk.sput.Zem. no.4:18-30 '60. (MIRA 13:5)

(Artificial satellites)
(Atmosphere, Upper--Rocket observations)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

ANGER, F.P.; ELSBERG, A.K.

New equipment for pickling cucumbers. Kons. i ov. prom. 16 no.10:25-26 O '61. (MIRA 14:11)

1. Latviyskaya sel'skokhozyaystvennaya akademiya (for Anger).
2. Mezhkolkhoznyy soyuz Liyepayskogo rayona Latviyskoy SSR (for Elsberg).

(Cucumbers--Preservation)

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ELSCHEK, O.

Karel Vetterl's Lidove pisne a tance z Valasskoklobouckа (Folk Songs and Dances from the Area of Valasske Klobouky); a book review. p. 224. (Slovensky Narodopis, Vol. 5, no. 2, 1957. Bratislava, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 10, October 1957. Uncl.

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ELSE, Max

Sieve pressure and its mechanical installations. Epitoanyag 12 no.5: 198-200 My '60.

1. Bundei Szitanyomogepgyar fomernoke.

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ELSEGR, V.

Hydraulic copying. p. 233.

(Technicka Praca. Vol. 9, no. 4, Apr. 1957. Bratislava, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 10, October 1957. Uncl.

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Teoriya invariantov, dayushchikh otsenku chisla kriticheskikh tochek nepreryvnoy funktsii, zadannoy na mnogoobrazii. Matem. sb., 5 (47), (1939), 551-558.

SO: Mathematics in the USSR, 1917-1947
edited by Kurosh, A.G.,
Markushevich, A.I.
Rashevskiy, P.K.
Moscow-Leningrad, 1948

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Izmeneniye chisel betti poverkhnostey uroynya nepreryvnoy funktsii, zadannoy na mnogoobrazii. Matem, sb., 5 (47), (1939) 559-564.

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Dlina mnogoobraziya i yeye svoystva. Matem. sb., 5 (47), (1939), 565-571.

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Rashevskiy, P.K.
Moscow-Leningrad, 1948

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K voprosu ob otsenke chisla kriticheskikh tochek nepreryvnykh funktsii, zadannykh na prostranstvakh, ne yaylyayushchi khsya mnogoobraziyami. Matem. sb., 8 (50), (1940), 455-462.

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edited by Kurosh, A.G.,
Markushevich, A.I.,
Rashevskiy, P.K.
Moscow-Leningrad, 1948

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EL'SGOL'TS, L. E.

K voprsu ob izmenenii topologicheskikh invariantoy poverkhnostey urovnya. Matem. sb., 8 (50), (1940), 463-470.

SO: Mathematics in the USSR, 1917-1947
edited by Kurosh, A.G.,
Markushevich, A.I.,
Rashevskiy, P.K.
Moscow-Leningrad, 1948

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9 pp

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'SGOL'S, L. E.

"The Approximated Integration of Differential Equations with Retarded Argument"

Prik. Mat. Mech. 15, 771-772, 1951

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PHASE I Treasure Island Bibliographic Report

BOOK

Call No.: AF-540841, Incl. I.

Author: EL'GOL'TS, L.E.

Full Title: VARIATION CALCULUS

Transliterated Title: Variatsionnoe ischislenie

Publishing Data

Originating Agency: Physical-Mathematical Library for Engineers.

Publishing House: State Publishing House of Theoretical-Technical Literature

Date: 1952. No. pp.: 168. No. copies: 7,000

Editorial Staff

Editor: Chudov, L.A. Technical Editor: None.

Editor-in-Chief: None. Appraiser: None.

Text Data

Coverage: The work explains the fundamental concepts and methods of variation calculus including the direct method of solving specific problems most important in mechanics and engineering; also, the method of solving functional equations of Kantorovich.

Purpose: The book is written primarily for engineers and post-graduate students of technical colleges.

Facilities: None.

No. Russian References: 9.

Available: A.I.D., Library of Congress.

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

1. EL'SGOL'TS (ELSHOLZ), L. E.

2. USSR (600)

4. Physics and Mathematics

7. Linear Differential Equations with Lagging Argument, A. D. Myshkis. ("Modern Problems of Mathematics," Moscow-Leningrad, State Technical Press, 1951). Reviewed by L. E. El'sgol'ts (Elsholz), Sov. Kniga, No. 7, 1952.

9. [redacted] Report U-3081, 16 Jan 1953, Unclassified.

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'SGOL'TS, L. E.

PA 243T98

USSR/Mathematics - Lagging Argument Oct 52

"Variational Problems With Lagging Argument," L. E. El'sgol'ts, Chair of Math, Moscow State U

"Vest Moskov U, Ser Fiz-Mat i Yest Nauk" No 7, pp 57-62

States that variational problems connected with regulation process are often complicated by lagging effect. Gives a simple example of a brachistochrone problem with lagging argument. Generalizes. Submitted 30 Apr 52.

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APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'SGOL'TS, L.E.

Accurate estimate of geometrically and analitically different critical points. Uch.zap.Mosk.un. no.163:61-68 '52. (MIRA 8:5)
(Topology) (Aggregates)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

1. EL'SGOL'TS, L. Ye.

2. USSR (600)

4. Stability

7. Theory of stability. I. G. Malkin. Reviewed by L. Ye. El'sgol'ts. Usp. mat. nauk 8, No. 2, 1953.

9. **Monthly List of Russian Accessions**, Library of Congress, April 1953. Unclassified.

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Èl'sgol'c, L. È. Approximate methods of integration of differential-difference equations. Uspehi Matem. Nauk (N.S.) 8, no. 4(56), 81–93 (1953). (Russian)

The author classifies (single) differential-difference equations into advanced, neutral, and retarded types. He surveys various methods for integrating these: the method of successive integration, the method of successive approximations, the method of approximating by Taylor series, and finally the dangerous method of expanding in powers of the log. *J. M. Danskin* (Washington, D. C.).

10-28-54 LL

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'SGOL'TS, L.E.; TSVETKOV, A.T., redaktor; GAVRILOV, S.S., tekhnicheskiy redaktor

[Ordinary differential equations] Obyknovennye differentsial'nye uravneniia. Izd. 2-e. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry, 1954. 239 p. (Fiziko-matematicheskaia biblioteka inzhenera)

(Differential equations) (MLRA 8:5)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'SGOL'TS, L.E.

Stability of solutions of difference-differential equations. Usp.mat.nauk 9 no.4:95-112 '54. (MLRA 8:1)
(Differential equations) (Difference equations)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'SGOLITS, L.E.

Estimate of the number of critical points of a continuous mapping of a manifold onto a circle. Uch.zap.Mosk.un. 165:34-38 '54.
(Topology)(Aggregates) (MLRA 8:2)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'SGOL'TS, L.E.

Note on the estimate of the number of fixed points of dynamic systems with a retarding argument. Uch.zap.Mosk.un. 165:221-222 '54. (MLRA 8:2)
(Differential equations)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'SGOL'TS, Lev Ernestovich; TSVETKOV, A.T., redaktor; GAVRILOV, S.S., tekhnicheskiy redaktor

[Qualitative methods in mathematical analysis] Kachestvennye metody v matematicheskom analize. Moskva, Gos.izd-vo tekhniko-teoret. lit-ry, 1955. 300 p. (MLRA 9:2)
(Calculus)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'SGOL'TS, L.E.

"Lectures on variational calculus." N.I.Akhiezer. Reviewed by L.E.El'sgol'ts. Usp. mat.nauk 11 no.1:265-266 Ja-F '56. (Calculus of variations) (Akhiezer N.I.) (MLRA 9:6)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'SGOL'TS, Lev Ernestovich; NORKIN, S.B., redaktor; NEGRIMOVSKAYA, R.A., tekhnicheskiy redaktor

[Differential equations] Differentsial'nye uravneniia. Moskva, Gos.izd-vo tekhniko-teoret.lit-ry, 1957. 271 p. (MLRA 10:8)
(Differential equations)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

ELSGOLTS, L. E.

SUBJECT USSR/MATHEMATICS/Functional analysis CARD 1/2 PG - 778
AUTHOR ELSHOLZ L.E.
TITLE Variation problems with retarded argument.
PERIODICAL Uspechi mat.Nauk 12, 1, 257-258 (1957)
reviewed 5/1957

Beside of some general remarks on variation problems with retarded argument the author mentions that the functionals

$$\int_{t_0}^{t_1} F(t,x(t),x(t-\tau),\dot{x}(t),\dot{x}(t-\tau))dt$$

and

$$\int_{t_0}^{t_1} F(t,x(t-\tau_1(t)),\ldots,x(t-\tau_n(t)),\dot{x}(t-\tau_1(t)),\ldots,\dot{x}(t-\tau_n(t))dt$$

can reach their extremal values in the class of smooth functions only on the solutions of the equations

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$$\left(\int_0^s F'_x(s)\,ds - F'_{\dot{x}}(s)\right)_{s=t} + \left(\int_0^s F'_x(s-\tau)\,ds - F'_{\dot{x}}(s-\tau)\right)_{s=t+} = C$$

and

$$\sum_{i=1}^{n} \left.\frac{(1-\tau'_i(s))\int_{t_0}^{s} F'_x(t-\tau_i(t))\,dt - F'_{\dot{x}}(s-\tau_i(s))}{1-\tau'_i(s)}\right|_{s=\gamma_i(t)} = C$$

respectively. In the first case we have

$$F = F(s, x(s), x(s-\tau), \dot{x}(s), \dot{x}(s-\tau))$$

and in the second case correspondingly. The function $\gamma_i(t)$ is the reversion function of $s = t-\tau_i(t)$ and $\tau'_i(t) \leq d < 1$ $(i=1,2,\ldots,n)$.

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PHASE I BOOK EXPLOITATION 624

El'sgol'ts, Lev Ernestovich

Variatsionnoye ischisleniye (Calculus of Variations) 2d ed., rev. Moscow, Gostekhizdat, 1958. 62 p. (Series: Fiziko-matematicheskaya biblioteka inzhenera) 10,000 copies printed.

Ed.: Norkin, S. B.; Tech. Ed.: Yermakova, Ye. A.

PURPOSE: This book is intended for engineers and graduate students at vtuzes.

COVERAGE: The basic concepts and methods of the calculus of variation, which are very important in the solution of practical variational problems, are presented. Many examples of the solution of the variational problems are given. The author thanks Professor V. I. Levin, Docent Yu. L. Rabinovich and the editor of the book, L. A. Chudov, for their aid in preparing the book. There are 10 references, all Soviet.

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PHASE I BOOK EXPLOITATION 974

Lunts, Grigoriy L'vovich and El'sgol'ts, Lev Ernestovich

Funktsii kompleksnogo peremennogo s elementami operatsionnogo ischisleniya (Functions of Complex Variables With Elements of Operational Calculus) Moscow, Fizmatgiz, 1958. 296 p. 15,000 copies printed.

Ed.: Norkin, S.B.; Tech. Ed.: Akhlamov, S.N.

PURPOSE: This book is intended for students of vtuzes and for engineers.

COVERAGE: The basic theory of functions of a complex variable is given, including differentiation and integration of functions in a complex plane and analytic functions. Infinite series in a complex plane are presented, as well as the theory of residues with its applications to the evaluation of real definite integrals and to the study of the stability of motion. Conformal mapping is treated with many illustrative examples and with applications to the solution of certain engineering problems. The elements of operational calculus are studied, together with their applications

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to the integration of ordinary linear differential equations with constant coefficients and of other types of equations. In the Foreword the authors thank Docents Yu.L.Rabinovich and A.G.Sveshnikov for their advice and assistance. There are 16 Soviet references.

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16(1) PHASE I BOOK EXPLOITATION SOV/2660

Vsesoyuznyy matematicheskiy s"yezd. 3rd, Moscow, 1956

Trudy. t. 4: Kratkoye soderzhaniye sektsionnykh dokladov. Doklady inostrannykh uchenykh (Transactions of the 3rd All-Union Mathematical Conference in Moscow. vol. 4: Summary of Sectional Reports. Reports of Foreign Scientists) Moscow, Izd-vo AN SSSR, 1959. 247 p. 2,200 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Matematicheskiy institut.

Tech. Ed.: G.N. Shevchenko; Editorial Board: A.A. Abramov, V.G. Boltyanskiy, A.N. Vasil'yev, B.V. Medvedev, A.D. Myshkis, S.M. Nikol'skiy (Resp. Ed.), A.G. Postnikov, Yu. V. Prokhorov, K.A. Rybnikov, P. L. Ul'yanov, V.A. Uspenskiy, N.G. Chetayev, G. Ye. Shilov, and A.I. Shirshov.

PURPOSE: This book is intended for mathematicians and physicists.

COVERAGE: The book is Volume IV of the Transactions of the Third All-Union Mathematical Conference, held in June and July 1956. The book is divided into two main parts. The first part contains summaries of the papers presented by Soviet scientists at the Conference that were not included in the first two volumes. The second part contains the text of reports submitted to the editor by non-Soviet scientists. In those cases when the non-Soviet scientist did not submit a copy of his paper to the editor, the title of the paper is cited and, if the paper was printed in a previous volume, reference is made to the appropriate volume. The papers, both Soviet and non-Soviet, cover various topics in number theory, algebra, differential and integral equations, function theory, functional analysis, probability theory, topology, mathematical problems of mechanics and physics, computational mathematics, mathematical logic and the foundations of mathematics, and the history of mathematics.

Starzhinskiy, V.M. (Moscow). On the problem of the boundedness of solutions of a system of linear differential equations with periodic coefficients 37

Tumarkin, S.A. (Moscow). Asymptotic solution of linear nonhomogeneous differential equations and its applications to the design of shells and blades 39

Chaghik, V.A. (Voronezh). Singular differential equations 40

El'sgolts, L.E. (Moscow). Periodic solutions of quasilinear differentail equations with delayed argument 41

Yakubovich, V.A. (Leningrad). Extension of certain studies of A.M. Lyapunov on a differential equation of the second order to canonical systems with periodic coefficients 41

Yanenko, N.N. (Moscow). On discontinuities in solutions of quasilinear equations 42

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

69475

S/055/59/000/05/008/020

16.3400

AUTHOR: El'sgol'ts, L. E.

TITLE: On the Stability Theory of Differential Equations With Deviating Arguments

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1959, No. 5, pp. 65-72

TEXT: Let the equation

(1) $\dot{X}(t) = F(t, X(t), x(t - \tau_1(t)), \ldots, X(t - \tau_m(t))$

or

(2) $X(t) = F(t, X(t), X(t - \tau_1(t)), \ldots X(t - \tau_m(t)), \dot{X}(t - \tau_1(t)) \ldots$
$\ldots \dot{X}(t - \tau_m(t))$

be given, where $X(t)$ and F are n-dimensional vector functions, $\tau_k(t) > 0$ continuous functions.

Definition I: The solution $X_\Phi(t)$ which corresponds to the initial vector function $\Phi(t)$ defined on the initial set E_{t_0} is called stable with respect to the metric of the spaces (ω, Ω), if to every $\varepsilon > 0$ there exists a $\delta > 0$ so that from $\rho_\omega(\Phi(t), \Psi(t))$ it follows

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On the Stability Theory of Differential Equations With Deviating Arguments

$$\varrho_{\Omega}(X_{\Phi}(t),\ X_{\Psi}(t)) < \varepsilon \quad , \ t_1 \leq t \leq t_2$$

for all $t_1 > t_0$, $t_2 > t_0$, where $\Psi(t)$ is an arbitrary admissible initial vector function, ϱ_{ω} and ϱ_{Ω} are the distances in the space of the initial vector functions which are defined on E_{t_0}, and in the space of the solutions $X(t)$, $t_1 \leq t \leq t_2$ which are defined by the admissible initial vector functions $\Psi(t)$.
The asymptotic stability is correspondingly defined (definition II).
The author mentions that it is suitable for several stability problems of mechanics to define the distances ϱ_{ω} and ϱ_{Ω} in different metrics, e. g.

(3) $\varrho_{\omega}(\Phi(t),\Psi(t)) = \sum_{i=1}^{n} \sup_{t \in E_{t_0}} |\varphi_i(t) - \psi_i(t)|$ or

(5) $\varrho_{\omega}(\Phi(t),\Psi(t)) = \sum_{i=1}^{n} \sup_{t \in E_{t_0}} |\varphi_i(t) - \psi_i(t)| + \sum_{i=1}^{n} \sup_{t \in E_{t_0}} |\dot{\varphi}_i(t) - \dot{\psi}_i(t))|$ etc.

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On the Stability Theory of Differential Equations With Deviating Arguments

Here ρ_ω can be defined in one metric and ρ_Ω in another.
The author proves that from the stability of the trivial solution of

$$(10)\quad x^{(n)}(t) = f(t, x(t), \dot{x}(t), \ldots, x^{(n-1)}(t), x(t - \tau(t)), \dot{x}(t - \tau(t)), \ldots, x^{(n-1)}(t - \tau(t))$$

it follows the stability of the trivial solution of the corresponding system of differential equations of first order.
The solution $X_\Phi(t)$ of (1) or (2) is called superstable, if it is identical with every solution $X_\Psi(t)$ whose initial value function satisfies the condition $\Phi(t_0) = \Psi(t_0)$.
The author states the applicability of the results of N. N. Krasovskiy (Ref.1,2) to equations (2) for which ρ_ω is defined by (5).
Some examples are given.
There are 5 Soviet references.

SUBMITTED: February 18, 1958

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69487

S/055/59/000/05/020/020

11.3400

AUTHOR: El'sgol'ts, L. E.

TITLE: Some Properties of Periodic Solutions of Linear and Quasilinear Differential Equations With Deviating Arguments

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1959, No. 5, pp. 229-234

TEXT: The author considers the equations

$$(1) \quad x^{(n)}(t) + \sum_{k=0}^{n-1} \left[a_k x^{(k)}(t) + b_k x^{(k)}(t-\tau)\right] = f(t)$$

and

$$(2) \quad \sum_{k=0}^{n} \left[a_k x^{(k)}(t) + b_k x^{(k)}(t-\tau)\right] = f(t)$$

where $a_n \neq 0$, $b_n \neq 0$, $\tau > 0$.

Theorem 1: (1) possesses at most n characteristic frequencies.

Theorem 2: (2) possesses in general at most n characteristic frequencies; however, the exceptional case, where (2) possesses infinitely many characteristic frequencies, is possible.

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

EL'SGOL'TS, L. E., Doc Phys-Math Sci -- (diss) "Some problems in the theory of differential equations with diverging arguments." Moscow, 1960. 6 pp, (Moscow State Univ im Lomonosov), 150 copies, price not given, list of authors' works on pp 5-6 (19 entries), (KL, 17-60, 138)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

ALEKSANDROV, P. S.; VISHIK, M. I.; SAUL'YEV, V. K.; EL'SGOL'TS, L. E.

Lazar' Aronovich Liusternik; on his 60th birthday. Usp. mat. nauk 15 no.2:215-230 Mr-Ap '60. (MIRA 13:9)
(Liusternik, Lazar' Aronovich, 1899-)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412030003-8

S/042/60/015/005/003/005
C111/C222

AUTHOR: El'sgol'ts, L.E.

TITLE: On Boundary Value Problems for Ordinary Differential Equations With Deviating Arguments

PERIODICAL: Uspekhi matematicheskikh nauk, 1960, Vol.15, No.5, pp.222-224.

TEXT: I. Determine a solution of

$$F(t, x(t-\tau_j(t)), \dot{x}(t-\tau_j(t)), \ddot{x}(t-\tau_j(t))) = 0$$

(1) $\tau_j(t) \geqslant 0, \quad \tau_0(t) \geqq 0 \quad (j=0,1,\ldots,m)$

being smooth for $t_0 \leq t \leq a$, which on the initial set E_{t_0} is identical with the two times continuously differentiable function $\varphi(t)$, where in t_0 the solution continued on E_{t_0} is continuous but in general not smooth, $x(a) = b$, $a > t_0$. The problem can be solved step by step where the method can also be extended to equations of higher order. Given e.g. the equation

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On Boundary Value Problems for Ordinary Differential Equations With Deviating Arguments

(4) $$\sum_{p=0}^{n} \sum_{k=0}^{m} a_{kp}(t)x^{p}(t-\tau_k(t)) = f(t), \quad a_{on}(t) \neq 0,$$

$$\tau_j(t) \geqslant 0, \quad \tau_0(t) \leqslant 0$$

and the boundary conditions

(2) $$x^{(p)}(t_0+0) = \varphi^{(p)}(t_0-0), \quad p=0,1,\ldots,k, \quad k<n-1,$$

(3) $$x^{(s)}(a) = b_s, \quad s=0, 1,\ldots(n-k-2), \quad a>t_0.$$

Then the solution of (4)-(2) is written in the form

(5) $$x(t) = \underset{\varphi}{x}(t) + \sum_{j=1}^{n-k-1} c_j \underset{\varphi}{x}_{k+j}(t),$$

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where $x_{\sigma k+j}(t)$ are the solutions of (4) with the initial conditions $x_{\sigma k+j}(t) \equiv 0$ on E_{t_0}, $x^{(s)}_{\sigma k+j}(t_0+0) = 0$ for $s=0,1,\ldots,k+j-1,k+j+1,\ldots n-k-1$, $x^{(k+j)}_{\sigma k+j}(t_0+0) = 1$. The constants are obtained from the condition (3). If the determinant is $\left|x^{(s)}_{\sigma k+j}(a)\right| \neq 0$, then there exists a unique solution.

II. Determine the solution of (1) with the same conditions on E_{t_0} while in other endpoints it holds

(7) $\varphi(a,x(a),\dot{x}(a)) = 0.$

III. Determine the solution of (1) if the right endpoint is fixed: $x(a) = b$ and the left endpoint (t_0,x_0) is movable.

The author mentions S.B.Norkin. There are 3 Soviet references.

SUBMITTED: March 8, 1960

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16.3400

AUTHOR: El'sgol'ts, L.E.

TITLE: Quasiasymptotic Stability in the Large

PERIODICAL: Uspekhi matematicheskikh nauk, 1960, Vol.15, No.5, pp.224-226.

TEXT: Definition: The solution $x(t, t_0, x_0)$ of

(1) $\dot{x}(t) = F(t, x(t))$, 16

where $x(t)$ is an n-dimensional vector, is called quasiasymptotically stable in the large if 1) it is stable and 2) it holds $\lim_{t \to \infty} [x(t, t_0, \overline{x_0}) - x(t, t_0, x_0)] = 0$ for all $(\overline{t_0}, \overline{x_0})$, $\overline{t_0} \geq t_0$ (with a possible exception of the points of the set $Q_{\overline{t_0}}$). For a fixed $\overline{t_0}$ here $Q_{\overline{t_0}}$ shall be an at most (n-1)-dimensional set of the points $(\overline{t_0}, \overline{x_0})$. This definition of stability is suitable for dynamic systems on closed manifolds and can easily be extended to systems with deviating arguments. The author mentions Ye.A. Barbashin and N.N.Krasovskiy. There are 3 references: 2 Soviet and 1 American.

SUBMITTED: March 8, 1960

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16.5400 16.3400

AUTHOR: El'sgol'ts, L.E.

TITLE: Estimation of the number of points of rest for dynamic systems having the first integral on the whole

PERIODICAL: Moskva. Universitet. Vestnik. Seriya I. Matematika, mekhanika, no. 3, 1961, 19 - 21

TEXT: If a dynamic system defined at a closed manifold has a twice continuously differentiable integral on the whole, then for estimating the number of points of rest, use can be made of the methods employed for estimating the number of critical points of functions as stated by L.A. Lyusternik and L.G. Shnirel'man (Ref. 5: Topologicheskiye metody v variatsionnykh zadachakh (Topological Methods in Variation Problems) 1930). A dynamic system is considered

$$x_i(t) = f_i(x_1, x_2, \ldots, x_n), \quad i = 1, 2, \ldots, n, \qquad (1)$$

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Estimation of the number ...

satisfying the conditions of the theorem of existence and of the uniqueness of the solution of the fundamental initial problem defined at a closed manifold M^n. This is said to be an integral of Eq. (1) on the whole. It is assumed that the system (1) has a twice continuously differentiable first integral

$$U(x_1, x_2, \ldots, x_n) = c, \quad a < c < b, \qquad (2 \qquad (2)$$

determined on the whole manifold M^n. This is said to be an integral of Eq. (1) on the whole. It is also assumed that surfaces

$$U(x_1, x_2, \ldots, x_n) = c_1 \quad \text{и} \quad U(x_1, x_2, \ldots, x_n) = c_2$$

at $C_1 \neq C_2$ do not have any common points, and at any C the quantity (U = C) does not contain n dimension zones. In case of the presence of a first integral on the whole. (2) represents the projection of the manifold M^n on a sector where isolated topologic cri-

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tical points of this projection are the points of rest of the dynamic system (1). A critical point p on the level (U = U(p)) has a non-homomorphological neighborhood of the (n-1) sphere and thus a number of projections on the surface of this level in the neighborhood of the point p are not topologically equivalent to a (n-2) dimension of the family of parallel straight lines which means that the point p is the point of rest of the system (1). A minimum number of the points of rest $N(M^n)$ of the system (1) could thus be estimated by applying any of the alternatives where twice continuously differentiable functions, given at manifolds, are used.. For estimating the number of geometrically different critical points use could be made of the homologic and homotopic category (Ref. 5: Op. cit.). In case of the odd dimensional manifolds with the presence of the first integral it could be stated that system (1) has a continuum of the points of rest, having different critical values. Should the homotopic category at the manifold be more than 5 then use could be made of the estimation of the category of the surfaces of a level.

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$$\max_{a<x<b} \operatorname{cat}_{M^n}(U=x) > \frac{\operatorname{cat}_{M^n} M^n - 1}{2}.$$

This expression states that there are surfaces of the level, whose category is not less than 3. It follows that on each of these surfaces of a level there are the points of rest, or distributed components α or ω in limited quantities as cited by L.E. El'sgol'ts (Ref. 9: Otsenka chisla osobykh tochek, dinamicheskoy sistemy zadannoy na mnogoobrazii (The Estimation of the Singular Points of a Dynamic System, Given at a Manifold) Matem sb. 26 (2), 215 - 223, 1950). The author notes that he considers interesting the existence of such values for any first integral on the whole U = C, under the assumption of existence of only a finite quantity of critical points of the function U, that

$$\operatorname{cat}(U=c) > \frac{\operatorname{cat}_{M^n} M^n - 1}{2}.$$

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Should a system (1) have a twice continuously differentiable integral on the whole representing the manifold M^n not on a sector, but on a circumference (i.e. U = C, where $a \leqslant C \leqslant b$ satisfying the conditions that: 1) not-empty quantities (U = a) and (U = b) coincide; 2) quantities ($U = C_1$) and $U = C_2$) do not have common points if $c_1 \neq c_2$ and $a \leqslant c_i \leqslant b$, i = 1, 2) then, isolated topological critical points of the projection V appear to be the points of rest of system (1), and use could be made of the methods given by the author (Ref. 12: Otsenka chisla kriticheskikh tochek nepreryvnogo otobrazheniya mnogoobraziya na okruzhnost' (Estimation of the Number of Critical points of Continuous Projection of a Manifold on Circumference) Uch. zap. MGU (matem) 7, 34-38, 1954). If there exist two independent integrals on the whole U = c and V = C, then making use of the above methods it is possible to estimate the number of the points of rest on each surface of the level, as for non-critical values C(u = c) will turn out to be manifold, on which there will be given either the function V, or the projection of V's manifold on the circumference. There are 12 references, 8 Soviet-

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bloc and 4 non-Soviet-bloc. The references to the English-language publications read as follows: M. Morse, latations between the critical points of a real function of n variables. Trans.Amer.Math. Soc., 27, 345 - 396, 1925; F. Haas, The global behavior of differential equations of n-dimensional manifolds. Proc.Nat.Acad.Sci. USA, 39, 12, 1258 - 1260, 1953; F. Haas, On the total number of singular points and limit cycles of a differential equation. Ann. Math. Studies, 36, 137 - 172, 1956.

ASSOCIATION: Kafedra matematiki fizicheskogo fakul'teta (Department of Mathematics of the Physics Faculty)

SUBMITTED: June 6, 1960

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D251/D305

16.4500

AUTHOR: El'sgol'ts, L.E.

TITLE: The form of the general solution of certain linear stationary equations with deviating arguments

PERIODICAL: Moscow. Universitet. Vestnik. Seriya I, Matematika, Mekhanika, no. 6, 1961, 28 - 32

TEXT: The author states that by considering several known partial solutions $x(t)$ $(k = 1, 2, \ldots, p)$ of a stationary linear homogeneous
$\varphi_k(t)$
equation with deviating arguments a more general solution of the equation may be obtained in the form

$$\sum_{k=1}^{p} c_k \frac{x(t)}{\varphi_k(t)} + \int_{s_0}^{s_1} \frac{x(t+s)}{\varphi_k(t)} y_k(s)\, ds, \qquad (3)$$

where c_k, s_0, s_1 are arbitrary constants, $s_i > t_0$ $(i = 0, 1)$, $y_k(s)$

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are arbitrary continuous functions. To obtain a solution in the form (3) the arbitrary constants and functions must be chosen to satisfy: 1) $x_{\varphi}(t) = \varphi(t)$ on the initial set E_{τ_0} and for the equation of the n-th order; 2) $x^{(s)}_{\varphi(t)}(t_0 + 0) = \varphi^{(s)}(t_0 - 0)$, $s = 0, 1, \ldots, (n - 1)$. Application of 1) gives a generalized Fredhol'm equation of the 1st type, whose solution, if $\varphi_k(t) = t^q$, where q is a non-negative integer, leads to the solution of a linear differential equation with constant coefficients without deviating argument. The above presentation of the problem is used to solve various boundary value problems as examples. [Abstractor's note: Throughout the paper, some symbols are not fully explained]. There are 2 references, 1 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: H. R. Pitt, On the class of linear integro-differential equations, Proc. Cambr. Phil. Soc. 43, 2, 153-163, 1947.

ASSOCIATION: Kafedra matematiki fizicheskogo fakul'teta (Department of Mathematics of the Physics Faculty)

SUBMITTED: December 21, 1960

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D251/D305

16.4500

AUTHOR: El'sgol'ts, L.E.

TITLE: A natural homomorphism in the theory of linear homogeneous equations with deviating arguments

PERIODICAL: Moscow. Universitet. Vestnik. Seriya I, Matematika, Mekhanika, no. 6, 1961, 33 - 37

TEXT: A linear homogeneous equation with deviating argument

$$L(x(t)) = 0 \qquad (1)$$

is considered, and it is assumed that the initial set E_t is the segment $t_0 - \tau \leqslant t \leqslant t_0$. Each initial function $\varphi(t)$ is put into correspondence with the solution $\underset{\varphi}{x}(t)$, $t_1 \leqslant t \leqslant t_2$, $t_1 \geqslant t_0$ of (1) which it defines. This relation is stated to be a homomorphism. A linear metric is introduced to convert the sets of $\varphi(t)$ and $x(t)$ into linear spaces $\underset{\varphi}{M}$ and $\underset{x}{M}$ respectively. It is stated that the nucleus H of the homomorphism under consideration is some linear sub-

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space of $\underset{\varphi}{M}$, and $\underset{\varkappa}{M}$ is isomorphic to the factor-space $\underset{\varphi}{M}$ - H, and in that sense the space H defines $\underset{\varkappa}{M}$. If the solution $\underset{\varphi}{x}(t)$ is a linear functional defined on $\underset{\varphi}{M}$ then, by the Reiss theorem,

$$\underset{\varphi}{x}(t) = \int_{t_0-\tau}^{t_0} \varphi(s) d_s k(t, s) \qquad (2)$$

where k(t, s) is a function with bounded variation with respect to s, $t-\tau \leqslant s \leqslant t_0$. A.M. Zverkin (Ref. 1: Nauchnyye doklady vysshey shkoly, ser.fiz-matem.nauk, no. 1, 30-37, 1959) has shown that k(t, s) is a solution of (1) which satisfies some special initial conditions. k(t, s) may be found easily for many stationary linear equations. If only some of the properties of k(t, s) are known (2) gives the possibility of expressing some of those included in the properties of the solution. Some particular cases are considered, and it is shown that (with certain restrictions) the properties of the solutions are determined by the properties of the initial func-

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tions. x(t) throughout may or may not be a vector function. There are 2 Soviet-bloc references.

ASSOCIATION: Kafedra matematiki fizicheskogo fakul'teta (Department of Mathematics of the Physics Faculty)

SUBMITTED: December 21, 1960

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(Differential equations)

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Determining systems of solutions to a linear homogeneous equation with deviating argument. Ibid.:242-244

"Adhesion" of solutions to differential equations with delayed argument. Ibid.:249-251

(MIRA 19:1)

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