

The Siberian Institute of Radiophysics and Electronics

30-10-16/26

- 6) Focusing by static magnetic fields is used for achieving a well collimated electron ray.
- 7) Construction of an experimental generator with electronic tuning in the decimeter range.
- 8) Determination of the mechanism of the cathode of distillation with thermoelectronic emission. The experts succeeded in designing cathodes which show a current density of  $2\text{a/cm}^2$  at a cathode temperature of no more than  $900^\circ\text{C}$ .

AVAILABLE: Library of Congress.

Card 2/2

KRIVOSHCHIKOV, G.V.

Effect of surface migration in the production of superhigh vacuum.  
Izv.Sib.otd.AN SSSR no.9:164-165 '60. (MIRA 13:11)

1. Institut radiofiziki i elektroniki Sibirskogo otdeleniya AN SSSR.  
(Vacuum)

KRIVOSHCHEKOV, G.V.

Qualitative criteria for selecting a vacuum diffusion pump  
fluid. Izv. Sib. otd. AN SSSR no. 11:135-136 '60. (MIRA 14:1)

1. Institut radiofiziki i elektroniki Sibirskogo otdeleniya  
AN SSSR.

(Vacuum pumps)

L 11126-63 EWA(k)/EWT(1)/FBD/BDS/T-2/3WZ/EEG(b)-2/ES(t)-2 ASD/AFPTC/  
ESD-3/RADG/AFGC/AFWL P1-4/Po-4 JHB/WB/K/EH/IJF(C) S/0288/63/00G/001/0117/0118<sup>87</sup>  
ACCESSION NR: AP3000270

AUTHOR: Kolomnikov, Yu. D.; Krivoshekov, G. V.; Troitskiy, Yu. V.;  
Chebotayev, V. P. 8/

TITLE: Some characteristics of a gas-discharge laser<sup>25</sup>

SOURCE: AN SSSR. Sibirsk. otd. Izv., no. 2. Ser. tekhn. nauk, no. 1,  
1963, 117-118

TOPIC TAGS: gas-discharge laser, helium-neon laser

ABSTRACT: A conventional helium-neon gas-discharge laser has been built and tested. The device uses molybdenum-glass or pyrex tubes 90 cm long and 1.6 to 1.9 cm in inner diameter and mirrors coated with 15 alternating layers of magnesium fluoride and zinc sulfide. One of the mirrors is fixed, while the other can be moved by micrometer screws around two mutually perpendicular axes. A 50-w rf discharge was used to pump the laser. Oscillation was observed at 1.253  $\mu$ ; a weaker oscillation was observed at 1.162  $\mu$ . The laser was tested at various pressures and gas ratios. It was found that addition of a small amount of argon decreased the power output. In addition to an He-Ne mixture,

Card 1/2

L 11126-63

ACCESSION NR: AP3000270

6

pure neon was lased at pressures from  $7 \times 10^{-2}$  to  $4 \times 10^{-2}$  mm Hg at the  $1.153\text{-}\mu$  wavelength with a power output 20—30 times less than that produced by the mixture. "The authors express their thanks to colleagues of the laboratory taking part in the work: M. F. Kry'shtal', V. V. Peshetnikov, and I. F. Burmatov. The authors also thank V. K. Solov'yev and V. A. Lazarev, participants in the manufacture of the interference mirrors." Orig. art. has: 2 figures.

ASSOCIATION: Institut radiofiziki i elektroniki Sibirskogo otdeleniya AN SSSR, Novosibirsk (Institute of Radiophysics and Electronics, Siberian Department, AN SSSR)

SUBMITTED: 16Nov62

DATE ACQ: 12Jun63

ENCL: 00

SUB CODE: PH, SD

NO REF SOV: 001

OTHER: 002

kes/w/  
Card 2/2

TITLE: Investigation of conditions for obtaining the second harmonic excited by a laser in  $NH_4H_2PO_4$  crystal

SOURCE: AN SSSR. Sibirskoye otdeleniye. Izvestiya. Seriya tekhnicheskikh nauk, no. 2, 1964, 120-121

Keywords: laser, second harmonic, nonlinear optics, coherence, second harmonic generation, ammonium dihydrogen phosphate

The dependence of the output intensity of the second harmonic on the matching cone for the angles of refraction of the dielectric was measured. The angle of refraction, variation of the second harmonic intensity with the experiments performed. The output of the laser was measured on a 2-10 mm thick plate of  $NH_4H_2PO_4$  crystal. The second harmonic output was measured by a photomultiplier and a spectrograph. The effect of the orientation of the polarization vector of the laser

Card 1/1

AP4045466

emission relative to the crystal axis on the second harmonic output was also obtained. It was determined that  $I_{2\omega}$  is maximum when the incident ray is an ordinary ray with a total linear polarization. The paper has: 2 figures and 2 formulas.

ASSOCIATION: Institut radiofiziki i elektroniki Sibirskogo otdeleniya AN SSSR (Novosibirsk Institute of Radiophysics and Electronics, Siberian Branch, AN SSSR)

DATE SUBMITTED: 14 Jan 64

ATD PRESS: 3130

NO REF SOV: 001

REVIEWER: EN, EN

OTHER: 002

KRIVOSHEINOV, G.V.; KIRIN, Yu.M.; MALININ, D.I.

Conditions for disclosing the second harmonic in a diode optical maser in the  $\text{NH}_4\text{H}_2\text{PO}_4$  crystal. Izv. AN SSSR no.6 Ser. tekhn. nauk no.2:120-121 '64.

(11/17/10)

1. Institut radiofiziki i elektroniki Sibirskogo otdeleniya AN SSSR, Novosibirsk.



L 2465-66 EWT(1)/EWT(m)/ETC/EPF(n)-2/ENG(m)/EPA(w)-2/T/EP(t)/EWF(b)/EWA(c)

ACCESSION NR: AP5021081 JJP(c) DS/JD/JG/ UR/0288/65/000/002/0147/G151

AT 537.533.621.032.21

72  
68  
B

AUTHOR: Krivoshchekov, G. V.; Shirokov, Ye. G.

TITLE: Field emission from a tungsten disk cathode

SOURCE: AN SSSR. Sibirskoye otdeleniye. Izvestiya. Seriya tekhnicheskikh nauk, no. 2, 1965, 147-151

TOPIC TAGS: field emission, tungsten disk cathode, cathode emission.

ABSTRACT: The cathode had a disk-shaped edge with a large emission surface in comparison with a point, the emission edge being examined with a BS-242 electron microscope. A description is given of the instruments used to study the field emission current and the emission pattern of the tungsten edge. The results showed that under continuous and pulsed conditions, the current from the cold edge was 50 mamp (v = 13 kv) and 2 amp (v = 20 kv), respectively. Volt-ampere characteristics for two values of edge curvature radii, and curves of current distribution along the edge under various anode voltages, indicated that emission was stable under small voltages, while higher

Card 1/2

L 2465-66

ACCESSION NR: AP5021081

4

voltages resulted in a local increase of current. This was due to the spread of the curvature radius in various sections of the edge and to the different work function of crystal faces on the edge. To obtain substantial field emission currents, a suggestion was made to minimize the spread in curvature radius and to prepare the edge from single-crystal material. Orig. art. has: 5 figures. [WC]

ASSOCIATION: Institut fiziki poluprovodnikov Sibirskogo otdeleniya AN SSSR, Novosibirsk (Institute of Semiconductor Physics, Siberian Branch, AN SSSR)

SUBMITTED: 12Oct64

ENCL: 00

SUB CODE: EC

NO REF SOV: 003

OTHER: 001

ATD PRESS: 4/106

Card 2/2

KRIVOSHCHEKOV, G.V.; SHIROKOV, Yo.G.

Autoelectronic emission from a disk-shaped tungsten cathode.  
Izv. SO AN SSSR no.6. Ser. tekhn. nauk no.2:147-151 '65.  
(MIRA 18:11)  
1. Institut fiziki poluprovodnikov Sibirskogo otdeleniya AN  
SSSR, Novosibirsk.

L 02955-67 EWT(1)/EEC(E)-2/I/EMI(k) IJE(c) WG  
ACC NR: AP6032930 SOURCE CODE: UR/0288/66/000/002/0155/0156

AUTHOR: Krivoshchekov, G. V.; Kirin, Yu. M.; Marennikov, S. I. Savvinykh, G. A.;  
Dotsenko, V. I.

ORG: Institute of Semiconductor Physics, Siberian Department AN SSSR, Novosibirsk <sup>54</sup>  
(Institut fiziki poluprovodnikov Sibirskogo otdeleniya AN SSSR) <sup>B</sup>

TITLE: A method of laser frequency conversion 25

SOURCE: AN SSSR. Sibirskoye otdeleniye. Seriya tekhnicheskikh nauk, no. 2, 1966,  
155-156

TOPIC TAGS: laser, ruby laser, laser output frequency, laser frequency variation,  
*laser emission*

ABSTRACT: A method is described for converting the output frequency of a laser by using the Raman lines of the beam in benzene and its subsequent mixing in an ADP crystal. The arrangement consists of a Q-switched ruby laser (the output beam of which is passed through a vessel with benzene), the mixing crystal, a filter of aqueous solution of  $\text{CuSO}_4$  (for suppression of the main frequency of the laser at  $\lambda = 6943 \text{ \AA}$ ), and a PCS-2 spectrograph with photographic recording. The intensity of Raman lines ( $\lambda = 6494, 7459, \text{ and } 8059 \text{ \AA}$ ) is sufficient to effect a nonlinear interaction of all frequencies within the 2-mm thick mixing crystal. The emissions at 3471 and 3729  $\text{\AA}$  can be considered second harmonics or the results of the mixing of corresponding frequencies, while those at 3596 and 3874  $\text{\AA}$  are the results of mixing

Card 1/2

UDC: 621.378.329

1 0290-7  
ACC NR: AP6032930

only. The intensity of these lines can be explained by a large divergence of the focused beam, which insures that the conditions of synchronism are fulfilled for all frequencies. The experiments show that by employing Raman scattering in various substances with subsequent nonlinear transformation in an ADP-type crystal, a coherent output beam can be obtained at any frequency within the optical range. Orig. art. has: 2 figures and 2 tables.

SUB CODE: 20/ SUBM DATE: 23Feb65/ ORIG REF: 005/ OTH REF: 003/ ATD PRESS: 5099

Card 2/2

ACC NR: AP7004644

SOURCE CODE: UR/0288/66/000/003/0118/0124

AUTHOR: Kirin, Yu. M.; Krivoshechekov, G. V.; Marennikov, S. I.; Savvinykh, G. A.

ORG: Institute of Semiconductor Physics, Siberian Department, AN SSSR, Novosibirsk  
(Institut fiziki poluprovodnikov Sibirskogo otdeleniya AN SSSR)TITLE: Influence of the linear electro-optic effect on second-harmonic generation  
in ADP crystalsSOURCE: AN SSSR. Sibirskoye otdeleniye. Izvestiya. Seriya tekhnicheskikh nauk,  
no. 3, 1966, 118-124TOPIC TAGS: ADP crystal, second harmonic, <sup>harmonic</sup> generation, nonlinear optics, ~~Bokeh~~  
~~effect~~, electrooptic effect, *crystal optic property, electric field, laser beam, ruby laser*

ABSTRACT: Theoretical and experimental investigations were made of the variation  $\Delta\psi_0$  affecting the phase-matching angle  $\psi_0$  for second harmonic generation (SHG) in an ADP crystal whose optical characteristics are modified by an applied electric field. It was found that only the component  $E_z$  of the field along the optical axis has an appreciable effect on the angle  $\psi_0$ . This effect is at its maximum when the plane of the laser beam in the crystal and the optical axis is at  $45^\circ$  to the transverse crystal axes. Then,  $\Delta\psi_0 = 54.04 (10^{-6}) E_z$ , where  $E_z$  is in Kv/cm and  $\Delta\psi_0$  is in radians. From this it follows that a field of 100 Kv/cm causes an 18' variation

Card 1/2

UDC: 548.0:535

ACC NR: AP7004644

of  $\psi_0$ , which can be measured easily since harmonic generation is appreciable only in the immediate vicinity of  $\psi_0$ . The beam generator was a 12 x 120 mm ruby laser, which operated in 500—700- $\mu$ sec single pulses. Oscillograms of the SHG are given. Numerical results for field values of 45 and 90 kv/cm are in satisfactory agreement with the theory. The authors suggest that the described effect can be used for making accurate measurements of nonlinear constants of materials and accurate adjustments of the index-matching angle in the case of displacement and parametric amplification of optical frequencies. The authors thank V. N. Ishchenko, N. D. Lizunov, and B. V. Ankeyev for their help in carrying out the work. Orig. art. has: 5 figures and 20 formulas. [JM]

SUB CODE: 20/ SUBM DATE: none/ ATD PRESS: 5115

Card 2/2

KRIVOSHCHEKOV, Ya. 'ja'

Mechanized shortwall. Mast. ugl. 7 no. 7:13 J1 '58.  
(Coal mining machinery)

(MIRA 11:8)



KRIVOSHCHEKOV, Ye.Ya., gornyy inzh.

Pillar mining systems with underhand stoping by strips in the Artemovsk deposit. Ugol' 35 no.8:49-50 Ag '60. (MIRA 13:9)

1. Shakhta No.6-6bis tresta Artemugol'.  
(Maritime Territory--Coal mines and mining)

KRIVOSHCHEKOV, Ye.Ya., gornyy inzh.

Practice of using the chamber and pillar system to work the  
Artem coal deposit. Ugol' 38 no.6:18-20 Je '63. (MIRA 16:8)

(Uglovoye Basine--Coal mines and mining)

SIMANOV, V.G., kand. tekhn. nauk; SIVOROV, N.I., ~~ing.~~, V.S.,  
inzh. KRIVOSHEKOV, Yu.V., inzh.; KRAVTSOV, V.M., inzh.; KUZHEL',  
S.A., inzh.

Results of some experimental studies on the drillability of  
Pervouralsk quartzite by thermal piercing. Izv. vuz. geol.  
zav., gor. zhur. 8 no.244-90 '65. (MIRA 18 9)

1. Sverdlovskiy gornyy institut imeni Tekhnikova (for Simanov,  
Sivorov). 2. Nauchno-issledovatel'skiy i proyektno-konstruktorskiy  
institut gornogo i obogatitel'nogo soderzheniya (for Vinogradov,  
Krivoshekov). 3. Rudnik Pervouralskogo dinasovogo zavoda (for  
Kravtsov, Kuzhel'). Rekomendovana kalitroy shakirnoy stroitel's-  
tva Sverdlovskogo gornogo instituta.

KRIVOSHCHENKOVA, N.I.

Axinite and datolite in the Eastern Pamirs. Dokl. AN Tadzh.  
SSR 2 no.4:15-18 '59. (MIRA 13:4)

1. Tadzhikskiy gosudarstvennyy universitet. Predstavleno  
akademikom AN Tadzhikskoy SSR S.M.Yusupovoy.  
(Pamirs--Axinite) (Pamirs--Datolite)

KRIVOSHCHKOVA, N.I.; KHASANOV, A.Kh.

Brief characterization of accessory minerals in granitoids of the  
Karategin Range. Trudy Inst.geol.AN Tadzh.SSR 6:123-136 '62.  
(MIRA 16:5)

(Karategin Range—Mineralogy)

SHAMSHURIN, A.A.; KRIVOSHCHEKOVA, O.Ye.

New acceptor for the preparation of esters of pyrocarbonic  
acid. Zhur.VKHO 10 no.5:594 '65. (MIRA 18:11)

1. Institut khimii AN Moldavskoy SSR.

SHAMSHURIN, A.A.; KRIVOSHCHKOVA, O.Ye.; KHIMSK, M.Z.

Synthesis of dialkylcarbalkoxy phosphates. Zhur. ob. khim.  
35 no.10:1877-1878 O '65. (MIRA 18:10)

1. Institut khimii AN Moldavskoy SSR.

/KRIVOSHCHIKOVA, O. Ye.; SHAMSHURIN, A.A.

Esterification of high-molecular acids with pyrocarboinic  
esters. Zhur. VKhO 10 no. 6:701 '65 (M.R. 1961)

1. Institut khimii AN Moldavakoy SSR. Submitted April 29, 1965.



L 36493-66 EWT(m)/EWP(j) RM

ACC NR: AP6027086

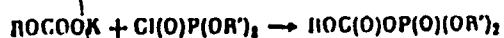
SOURCE CODE: UR/0079/65/035/010/1877/1878

AUTHOR: Shamshurin, A. A.; Krivoshekova, O. Ye.; Krimer, M. Z.ORG: Institute of Chemistry, AN MoldSSR (Institut khimii AN MoldSSR)TITLE: Synthesis of dialkylcarbalkoxyphosphates

SOURCE: Zhurnal obshchey khimii, v. 35, no. 10, 1965, 1877-1878

TOPIC TAGS: chemical synthesis, phosphate, potassium compound, carbonate, ester, solubility, organic solvent, chemical stability, hydrolysis

ABSTRACT: To synthesize dialkylcarbalkoxyphosphates; the authors used various potassium monoalkylcarbonates as one component and dialkylchlorophosphates as the other component in accordance with the equation



The 15 esters obtained were colorless liquids with a faint odor, sparingly soluble in water and soluble in ether, alcohol, benzene, and other organic solvents. They are unstable at room temperature and stable at 0°C. Hydrolysis results in the formation of dialkyl phosphate, alcohol, and carbon dioxide. The yield of dialkyl-carbalkoxyphosphates was 60%. The physicochemical properties of the products are presented. Orig. art. has: 1 table. [JPRS: 36,328]

SUB CODE: 07 / SUBM DATE: 14Dec64 / ORIG REF: 007

Card 1/1 *MLP*

UDC: 546.185:547.26'118

KRIVOSHEIN, A.D., inzh.

Soaking pits in roughing mills of the Soviet Union. Stal' 24 no.6;  
553-558 Je '64. (MIRA 17:9)

1. Gosudarstvennyy soyuznyy institut po proyektirovaniyu  
agregatov stalelitsynogo i prokatnogo proizvodstva dlya chernoy  
metallurgii.

KRIVOSHEIN, A.N., inzh.; REZNICHENKO, Ye.D., inzh.

Using the open-cut method in constructing subway tunnels. Transp.  
stroi. 9 no.11:20-23 N '59 (MIRA 13:3)  
(Moscow--Subways)

KRIVOSHEIL, A.N., inzh.; REZNICHEIKO, Ye.D., inzh.; YAKOBSON, I.M., inzh.

Precast reinforced concrete linings in the runway tunnels of  
the Moscow subway. Shakht. Stroi. 4 no.3:19-23 Mr '60.

(MIRA 13:11)

(Moscow--Subways) (Precast concrete construction)

REZNICHENKO, Ye.D., insh.; KRIVOSHEIN, A.M., insh.

Constructing shallow tunnels without opening streets. Transp. stroi.  
IC no.9:18-21 S '60. (MIRA 13:9)  
(Moscow--Tunneling)

KRIVOSHEIN, B.L.; KHODANOVICH, I.Ye.

Effect of condensate on the efficiency of a gas pipeline.  
Trudy VNIIGAZ no.13:93-103 '61. (MIRA 14:12)  
(Gas, Natural--Pipelines)

KRIVOSHEIN, B.L.; KHODANOVICH, I.Ye.

'Determining the integral throttle effect of natural gas. Gaz.  
prom. 8 no.1:47-51 '63 (MIRA 17:7)

KHODANOVICH, I.Ye.; KRIVOSHEIN, B.L.; GULYAYEV, A.I.; NIZIYENKO, I.G.;  
CHERNOBYL'SKIY, V.A.

Results of factory tests of an expansion-chamber condensate  
tank with automatic cleaning. Gaz. delo no.6/7:65-68 '63.  
(MIRA 17:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut prirodnogo  
gaza, Krasnodarskoye upravleniye magistral'nykh gasoprovodov  
i Gosudarstvennyy proizvodstvennyy komitet po gazovoy  
promyshlennosti SSSR.



KRIVOSHEIN, B.L.; GALIULLIN, Z.T.

Taking into consideration phase transformations in determining  
the throttle effect of gas mixtures. Gaz. prom. 9 no.3:13-16 '64.  
(MIRA 17:9)

GALMULLIN, Z.T.; KRIVOSHEIN, B.L.

Nonadiabatic flow of a real gas in a pipeline. Inzh.-Fiz. zhur.  
no.11:47-54 N '64. (MIRA 18:2)

1. Institut pri'r dnogo gaza, Moskva.

KHODANOVICH, I.Ye.; BORISOV, S.N.; GALIULLIN, Z.T.; KRIVOSHEIN, B.L.

Determining the location of a gas-gathering point on the  
field on the basis of minimal capital investment. Trudy  
VNIIGAZ no.21/29:10-13 '64. (MIRA 17:9)

KRIVOSHEIN, B.L.; KHODANOVICH, I.Ye.

Determining the interval throttle effect of natural gas.  
Trudy VNIIGAZ no.21/29:14-22 '64.

Determining the displacement of the hydraulic resistance of  
an "expansion chamber" type gas condensate collector. (MIRA 17:9)  
Ibid. 162-71

SHALIMOV, B.V.; KRIVOSHEIN, B.L.

Joule-Thompson effect of a multicomponent mixture. Trudy  
VNIIGAZ no.21/29:23-31 '64. (MIRA 17:9)

KHODANOVICH, I.Ye.; GALIULLIN, Z.T.; KRIVOSHEIN, B.L.

Flow of real gas in pipes with porous walls. Trudy VNIIGAZ  
no.21/29:32-37 '64.

Nonisothermic flow of a real gas in a gas pipeline with a  
varying heat-transfer coefficient. Ibid.:38-42 (MIRA 17:9)

KHODANOVICH, I.Ye.; ZAREMBO, K.S.; SHALIMOV, B.V.; KRIVOSHEIN, B.L.

Calculation of the temperature change in a gas based on the  
length of the pipeline. Trudy VNIIGAZ no.21/29:43-48 '64.  
(MIRA 17:9)

KHODANOVICH, I.Ye.; NEFELOVA, N.V.; KRIVOSHEIN, B.L.

Effect of the hydraulic resistances of pipeline stopclocks on  
the flow-through capacity of gas pipelines. Trudy VNIIGAZ  
no.21/29:72-77 '64. (MIRA 17:9)



ABDULLAYEV, M.N.; GALIULLIN, Z.T.; KRIVOSHEIN, B.L.; KHODANOVICH, I.Ye.

Analytic method for determining the locations of gas leakage in gas pipelines. Izv. vys. ucheb. zav.; neft' i gaz. 8 no.5:85-88 '65.  
(MIRA 18:7)

1. Azerbaydzhanskiy politekhnicheskiy institut i Vsesoyuznyy nauchno-issledovatel'skiy prirodnoy gaza.

GALIULLIN, Z.T.; KRIVOSHEIN, B.L.; KHODANOVICH, I.Ye.

Analytical basis for selecting the optimal version of the  
network routes of gas pipelines. Gaz.prom. 10 no.2:42-45  
'65. (MIRA 18:12)

BUSLIK, N.G., inzh.; KRIVOSHEIN, D.I., inzh.; SHYERN, V.A., inzh.

Special problems in assembling the VVT-100 turbine unit. Energ.  
stroil. no.2:19-23 '59 (MIRA 13:3)

1. Treat "Teploenergomontazh."  
(Turbines) (Concrete footings)

KRIVOSHEIN, Dmitriy Ivanovich; BANNIK, V.P., inzh., red.; LEVCHIK,  
L.P., red.; LEBEDEVA, L.V., tekhn. red.

[Experience in the installation of 150 Mw. turbogenerators]  
Iz opyta montazha turboagregatov moshchnost'iu 150 Mvt. Mo-  
skva, Orgenergostroi, 1962. 36 p. (MIRA 15:11)  
(Electric power plants) (Turbogenerators)

KRIVOSHEIN, D.I., inzh.

Power block with a two-shaft 800 Mw. turbogenerator.  
Energetik 13 no.5:3-5 My '65. (MIRA 18:8)

L 22587-66

ACC NR: AP6012987

SOURCE CODE: UR/0091/65/000/005/0003/0005

AUTHOR: Krivoshein, D. I. (Chief project engineer)

ORG: KHOTEP

TITLE: Power system with two-shaft turbine and 800 Mw power capacity

SOURCE: Energetik, no. 5, 1965, 3-5

TOPIC TAGS: thermoelectric power plant, power generating station, electric rotating equipment, electric distribution equipment

ABSTRACT: A description of the 800 Mw power system to be installed at the Slavyanskiy power station. Thermal diagrams and a cross sectional drawing of the installation are accompanied by the following parameter information: power, 800 Mw; equipped with dual shaft turbine type K-800-240 and dual boiler type TPP-200, producing 2,500/1,700 tons/hr of steam at 255/37 atm, 565/570° C. The boiler, turbine section with generators, main feed turbo-pumps, electric supply pumps, de-aerators, fuel bunkers and other supplementary equipment will be installed in one building. The fuel preparation will take place in a separate building 250 meters from the main unit. The unit is to be computer controlled. Orig. art. has: 2 figures and 1 table. [JPRS]

SUB CODE: 10 / SUBM DATE: none

Card 1/1 *ya*

UDC: 621.311.23

28 (5)  
AUTHORS:

Bezborod'ko, M. D., Krivoshein, G. S.

05745  
SOV/32-25-10-34/63

TITLE:

On the Evaluation of Results of Tests for Pitting

PERIODICAL:

Zavodskaya laboratoriya, 1959, Vol 25, Nr 10, pp 1238 - 1240  
(USSR)

ABSTRACT:

An evaluation of the results obtained when investigating the influence exercised by lubricants on pitting was carried out by means of mathematical statistics. The experiments were carried out on a four-ball frictional machine (Ref 1) with a friction mechanism and a liquid thermostat (Ref 2). Work was carried out at 20°, a rotational speed of the machine shaft of 1500 to 3000 r.p.m., and with a load of 300 kg. Balls (diameter 12.7 mm) made from steel of the type ShKh6 and having a hardness of 62 and 56 R<sub>g</sub> were used as frictional bodies, a softer ball rolling on three hard ones. Diesel oil (GOST 7449-49) and the naphthene-paraffin fraction of MS-14 oil (with and without the addition of MoS<sub>2</sub> and 1 and 2% of preparations from colloidal iron (Ref 3)) was used as lubricant. The three lower balls were completely covered by the lubricant. The frequencies observed (up to the occurrence of the pittings) were adapted to

Card 1/2

On the Evaluation of Results of Tests for Pitting

05745  
SOV/32-25-10-34/63

the theoretical frequencies by means of the Gaussian law and the criterium of agreement was determined, according to which the straggling of test results were found to obey the normal distribution law, which was also graphically confirmed (Figs a,b) by the agreement of results with those obtained by Barwell (Ref 1) and Scott (Ref 5). The diagram of the probability distribution may be represented in form of a straight line. According to the methods of mathematical statistics the results obtained for different lubricants can be compared (Table 2). The influence exercised by the additions to the fraction of the oil of the type MS-14 upon the pitting was determined by means of the distribution according to Styutent (Ref 4), (Table 2). Additions of MoS<sub>2</sub> considerably increase resistivity to pitting, whereas small additions of colloidal iron showed no particular effect. Papers by V. I. Romanovskiy (Ref 4) are mentioned in the text. There are 2 figures, 2 tables, and 5 references, 3 of which are Soviet.

Card 2/2

AUTHOR:

Krivosheyn, G. S.S/032/60/036/03/055/064  
B010/B117

TITLE:

On the Evaluation of the Effect of the Lubricant<sup>11</sup> on the Fatigue Pitting Failure of Steel

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol 36, Nr 3, pp 375-377 (USSR)

TEXT: The modified friction machine suggested by V. P. Pavlov (Ref 1) makes it possible to perform a relatively simple study of the effect of lubricants on the pittings formed in consequence of fatigue on friction balls. Work with this model machine differs somewhat from work with the usual-type friction machines by the fact that there are very high contact potentials, a special recording apparatus, and that a considerable spread of measured values has always to be considered. These problems are discussed in the present case. Because of the high contact pressure in the friction unit, the casing must be made of steel of the type ShKh (hardness H<sub>C</sub> = 60-62), and must be kept in a thermostat. The end of the test is established by means of a special sound-measuring device since the formation of pittings changes the acoustic frequency of the friction unit. A diagram of this sound-measuring device is given (Fig 2) which shows that an acoustic sonde of the type ZA-4<sup>11</sup> is installed in very close proximity to the friction unit. The acoustic frequency is transformed into an electric frequency

Card 1/2



On the Evaluation of the Effect of the Lubricant  
on the Fatigue Pitting Failure of Steel

S/052/60/056/03/055/064  
B010/B117

applying a device of the type UPU-2.<sup>28</sup> To the latter, a cathode-ray oscillograph is connected on the projection screen of which the change in acoustic frequency (obtained by the occurrence of pittings) can be observed. An example how to calculate the correction factor (Table) which must be introduced because of the spread of the measured values is given for a diesel oil ( $n = 1500$  rpm,  $p = 390$  kg). There are 2 figures, 1 table, and 7 references, 3 of which are Soviet.

Card 2/2

35547

S/081/62/000/006/081/117  
B167/B101

11-9000

AUTHORS: Bezborod'ko, M. D., Krivoshein, G. S.

TITLE: Effect of lubricating materials and their additives on the incidence of pitting

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1962, 539, abstract 6M249 (Sb. "Prisadki k maslam i toplivam". L., Gostoptekhizdat, 1961, 278-283)

TEXT: The anti-pitting properties of oils have been evaluated on a 4-sphere friction machine, in which the lower spheres were free (under rocking conditions), by noting the time PT required, at constant load until pitting appeared on the track of the upper sphere. The spheres were 12.7mm in diameter, and were made of UX-6 (ShKh-6) steel. The hardness of the lower and upper spheres was 62 and 56 Rc, respectively. The speed of the upper sphere was usually 1500 rpm, the load on the upper spheres was 390 and 500 kg, and the oil temperature was 20 and 80°C. With oils free from additives (oil MC-14 (MS-14)) PT decreased with an increase in temperature from 20 to 150°C, whereas in the presence of additives (oil MT-16 (MT-16))  
Card 1/2 X

Effect of lubricating materials and ...

S/081/62/000/006/081/117  
B167/B101

and lubricant Tsiatim-208) PT remained constant between 20 and 80°C. The retardation of pitting by lubricants is shown to depend on the viscosity of the oils, on their chemical composition, and on the presence of additives. The PT values for various oils and their fractions are given below (oil type, temperature, load in kg, and PT in min are listed): tractor transmission (without additive), 80°C, 390, 93; sulphurized tractor transmission, 80°C, 390, 238; MS-14, 80°C, 390, 39; MS-14, 20°C, 300, 89; naphthene-paraffin fraction of MS-14, 20°C, 300, 41; aromatic fraction of MS-14, 20°C, 300, 130; Diesel fuel, 20°C, 300, 13. Addition of an anti-oxidant to synthetic oil lowered its PT 4.5-fold. Addition of 1% of MoS<sub>2</sub> with a particle size < 2μ for 95% of the particles increased the PT of mineral oil by a factor of 2-3. The superior anti-pitting properties of mineral oils containing MoS<sub>2</sub> were checked by operating trials in actual transmission systems. [Abstracter's note: Complete translation.]

X

Card 2/2

KRIVOSHEIN, G.S.; BEZBOROD'KO, M.D.

Antipitting properties of oils. Khim.i tekhn. topl.i masel 6 no.6:  
47-51 Je '61. (MIRA 14:7)  
(Lubrication and lubricants)

BEZBOROD'KO, M.D.; VINOGRADOV, G.V.; KRIVOSHEIN, G.S.; LIAN GO-LIN'  
[Liang Kuo-lin]; PODOL'SKIY, Yu.Ya.

Investigating wear-preventing properties of lubricants under  
rolling-friction conditions. Tren.i isn.mash. no.15:420-431 '62.  
(MIRA 15:4)

(Lubrication and lubricants—Testing)

BEZBORODKO, M.D.; KRIVOSHEIN, G.S.

Investigating the pitting on a four-ball testing machine. Tren.i  
ian.mash. no.16:5-23 '62. (MIRA 15:4)  
(Mechanical wear--Testing)

KRIVOSHEIN, G.S.; BEZBOROD'KO, M.D.

Evaluating the effect of lubricants on the development of pitting.  
Zav.lab. 28 no.3:356-358 '62. (MIRA 15:4)  
(Lubrication and lubricants--Testing)  
(Corrosion and anticorrosives)

KRIVOSHEIN, Igor' Aleksandrovich; CHERVONENKIS, Ya.M., red.

[Household electric heating appliances and equipment]  
Bytovye elektronagrevatel'nye pribory i ustanovki. Mo-  
skva, Izd-vo M-va kommun.khoz.RSFSR, 1963. 182 p.  
(MIRA 17:7)



MANGERON, D.; KRIVOSHEIN, L.E.

New methods of numerical calculation for the solutions of various integrodifferential systems. Pt.1. *haz meo appli* Roum 9 no.6:1195-1221 '64.

1. Polytechnic Institute, Iasi (for Mangeron). 2. Academy of Sciences of the Kirghiz S.S.R. (for Krivoshein).

1. KRIVOSHEIN, L. N., SEMENOVA, M. A.

2. USSR (600)

4. Forests and Forestry

7. Material and documents on the history of forestry in Russia. Les i step' 4,  
no. 10, 1952.

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

*KRIVOSHEIN, L. Ye.*

KRIVOSHEIN, L. Ye., Cand Phys-Math Sci --(diss) "Approximate Solution of certain Problems for Linear Integral-Differential Equations." [Tashkent], 1958, 20pp (Central Asian State Univ im V.I. Lenin), 150 copies. (KL, 41-58, 119)

Bibliography pp 17-20 (15 titles)

- 5 -

88893

S/044/60/000/007/050/058  
C111/C222

16.4500

AUTHOR: Krivoshein, L.Ye.

TITLE: On an approximate method for the solution of ordinary  
linear integro-differential equationsPERIODICAL: Referativnyy zhurnal. Matematika, no.7, 1960, 222.  
Abstract no.8292. In sb: Materialy 8-y Nauchn.konferentsii  
professorsko-prepodovat.sostava Fiz.-matem.fak. (Kirg.un-t).  
Frunze 1959, 35-38TEXT: The author describes a method (which is based on the method of  
the neighboring differential operator) for the construction of the  
approximate solution of the integro-differential equation

$$L[y] = f(x) + \lambda \int_a^b K(x,t)P[y]dt \quad (1)$$

which satisfies the initial conditions

$$y^{(i)}(c) = r_i \quad (i=0,1,\dots,n-1), \quad (2)$$

where  $L[y] \equiv y^{(n)}(x) + \sum_1^n a_i(x)y^{(n-i)}(x)$ ;  $P[y] \equiv \sum_0^m b_i(t)y^{m-i}(t)$ ;  $n \geq m$ ;

Card 1/2

88893

On an approximate method...

S/044/60/000/007/050/058  
C111/C222

$c \in [a, b]$  are known functions continuous for all  $x, t \in [a, b]$ .  
A formula for the estimation of the error is given. It is pointed out  
that the problem (1)-(2) can be solved in an analogous manner for  
integro-differential equations of the type of Volterra, and that the  
described method for an approximate solution of such an equation can  
be transferred in the same manner to the solution of the Cauchy problem  
for a system of linear integro-differential equations. X

[Abstracter's note: The above text is a full translation of the original  
Soviet abstract.]

Card 2/2

KRIVOSHEIN, L.Ye.

One method for solving some linear integro-differential equations.  
Izv. vys. ucheb. zav.; mat. no. 3:168-172 '60. (MIRA 13:12)

1. Kirgizskiy gosudarstvennyy universitet.  
(Differential equations, Linear)

16.4500

15869  
S/O44/62/000/002/062/092  
C111/C222

AUTHORS: Manzheron, D., Krivoshein, L. Yo.  
 TITLE: The approximate solution of some linear integro-differential equations  
 PERIODICAL: Referativnyy zhurnal, Matematika, no. 2, 1962, 40, abstract 2V213. ("Bul. Inst. politehn. Iasi", 1960, 6, no. 1-2, 17-28)

TEXT: According to the Galerkin method, the Cauchy problem

$$y^{(i)}(x_0) = y_0^{(i)} \quad (i = 0, 1, \dots, n-1) \quad x_0 \in [a, b] \quad (1)$$

for the integro-differential equation of the Fredholm type

$$L[y] = f(x) + \lambda \int_a^b \sum_0^m K_i(x, t) y^{(i)}(t) dt \quad (2)$$

is solved approximately. Here  $L[y] = y^{(n)}(x) + \sum_1^n a_i(x) y^{(n-i)}(x)$ ,

$n \geq m$ ,  $\lambda$ -- parameter. The solution is sought in the form

Card 1/3

✓

S/044/62/000/002/062/092  
C111/C222

The approximate solution of some ...

$$y_k(x) = \varphi(x) + \sum_{s=1}^k b_s \varphi_s(x),$$

where the n-times differentiable functions  $\varphi(x)$  and  $\varphi_s(x)$  are linearly independent and satisfy the conditions  $\varphi^{(i)}(x_0) = y_0^{(i)}$ ,  $\varphi_s^{(i)}(x_0) = 0$  ( $i = 0, 1, \dots, n-1$ ;  $s = 1, \dots, k$ ). The unknown coefficients  $b_s$  ( $s=1, \dots, k$ ) of the approximating function  $y_k(x)$  are determined through a system of equations, which is obtained in one of the following ways: a) from the condition that the deviation is orthogonal to an arbitrary system of k linearly independent functions; b) from the condition that the square integral of the deviation is a minimum; c) with the collocation method; d) from the condition that the deviation has a contact of first order with the x-axis. In all cases, the deviation of the approximate solution from the rigorous solution of (1) - (2) is estimated for all  $x \in [a, b]$ ,  $|\lambda| \leq |c|$  (assuming that certain inequalities are fulfilled). f

Card 2/3



The approximate solution of some ...

S/044/62/000/002/062/092  
C111/C222

Approximate solutions of problem (1) are constructed in an analogous way for integro-differential equations of the Volterra type, where an error estimate is given. The method is also applied to the integral equation which corresponds to (1)-(2); the error is estimated. The method of integral equations is used to solve (1)-(2) in the case  $m > n$ , where it is assumed that the functions  $a_i(x)$ ,  $f(x)$  and the kernels  $K_i(x, s)$  are differentiable as is necessary.

[Abstracter's note: Complete translation.]

Card 3/3

✓

16.6500

38500  
S/044/62/000/005/041/072  
C111/C444

AUTHORS:

Manzheron, D., Krivosh, L. Ye.

TITLE:

The approximative solution of boundary value problems for ordinary differential equations

PERIODICAL:

Referativnyy zhurnal, Matematika, no. 5, 1962, 30, abstract 5V182. ("Bul. Inst. politehn. Iasi," 1960, 6, no. 3-4, 21-30)

TEXT:

It is presumed that the boundary value problem

$$R_j[y] \equiv \sum_{i=0}^{n-1} [a_{ij} y^{(i)}(c) + b_{ij} y^{(i)}(d)] = \delta_j \quad (j=1, 2, \dots, n) \quad (1)$$

$$L[y] = f(x) + \lambda \int_a^b \sum_{j=0}^m K_j(x, t) y^{(j)}(t) dt \quad (2)$$

where  $a_{ij}, b_{ij}, \delta_j$  ( $i=0, 1, \dots, n-1, j=1, \dots, n$ ) are well-known numbers;  $L[y] \equiv y^{(n)}(x) + \sum_{i=1}^n a_i(x) y^{(n-i)}(x)$ ; the functions appearing in (2) are piecewise

Card 1/3

The approximative solution of boundary ... C111/C444  
S/044/62/000/005/041/072

continuous for  $n \geq m$  and  $p = n-m$ -times differentiable with respect to  $x$  on  $[a, b]$  for  $m > n$ ;  $\lambda$  is a parameter;  $[c, d] \subseteq [a, b]$  possesses a solution. The solution is searched with the rate

$$y_k(x) = \varphi_0(x) + \sum_{s=1}^k \alpha_s \varphi_s(x) \quad (3)$$

where the well-known linear independent functions  $\varphi_0(x), \varphi_1(x), \dots, \varphi_k(x)$  are  $n$ -times continuously differentiable, satisfying the boundary conditions  $R_j[\varphi_0] = \gamma_j; R_j[\varphi_s] = 0$  ( $j = 1, \dots, n; s = 1, \dots, k$ ). The unknown coefficients are determined according to methods of Galerkin, by the least square error and by collocation; the deviation of the function (3) from the exact solution of (1), (2) is estimated. Analogously one solves the boundary value problem (1) for the Volterra integro-differential equation

$$L[y] = f(x) + \lambda \int_0^x \sum_{i=0}^m K_i(x, t) y^{(i)}(t) dt \quad (4)$$

Card 2/3

The approximative solution of boundary ...  $S/044/62/000/005/041/072$   
C111/C444

where

$$L[y] = y^{(n)}(x) + \sum_{i=1}^n a_i(x) y^{(n-i)}(x), x \in [a, d].$$

The given approximation methods are not only applied immediately on the problems (1), (2) and (1); (4), but also on especially constructed so-called solving integral equations (as well in the case of  $n \geq m$  as in the case of  $m > n$ ).

[Abstracter's note: Complete translation.]

Card 3/3

BYKOV, Yakov Vasil'yevich; KRIVOSHEIN, L.Ye., red.; ANOKHINA, M.G.,  
tekh.n.red.

[Some methods for deriving solutions of integral and integro-  
differential equations] O nekotorykh metodakh postroeniia  
resheniia integral'nykh i integro-differentsial'nykh uravnenii.  
Frunze, Izd-vo Kirgizskoi SSR, 1961. 107 p.

(MIRA 14:3)

(Integral equations)

16.4500

38189  
S/044/62/000/005/020/072  
C111/C333

AUTHOR: Krivoshein, L. Ye.

TITLE: On the solution of a problem for integro-differential equations

PERIODICAL: Referativnyy zhurnal, Matematika, no. 5, 1962, 77, abstract 5B348. ("Issled. po integro-differents. uravneniyam v Kirgizii." vyp. 1. Frunze, AN Kirg SSR, 1961, 177-189)

TEXT: The author describes a method for constructing the solution of the integro-differential equation ✓

$$L(y) = f(x) + \lambda \int_a^b \sum_{i=0}^m K_i(x,t) y^{(i)}(t) dt, \quad (1)$$

which satisfies the polylocal-integral boundary conditions

$$R_j[y] = \sum_{i=0}^{n-1} \sum_{\alpha=1}^{\sigma} a_{ij}^{\alpha} y^{(i)}(x_{\alpha}) + \int_a^b S_j(t) P[y(t)] dt = d \quad (2)$$

(j = 1, ..., n),

Card 1/4

On the solution of a problem for ... S/044/62/000/005/020/072  
C111/C333

where  $L$  and  $P$  are linear differential operators of order  $n$  and  $k$ ,  $a_{ij}$  and  $x_\alpha$  are fixed numbers and  $x_\alpha \in [a, b] \equiv I$ . The solution of (1) with the arrangement

$$y(x) = \sum_{i=1}^n c_i z_i(x) + \int_a^x T(x, t) \Psi(t) dt \quad (3)$$

is sought for  $n \geq m, k$ , where  $c_1, \dots, c_n$  are certain constants;  $z_1(x), \dots, z_n(x)$  is an arbitrary fixed system of  $n$ -times differentiable functions, the Vronski determinant of which is not equal to zero on  $I$ ;  $T(x, t)$  is an arbitrary fixed function with the property

$$\left[ \frac{\partial^i T(x, t)}{\partial x^i} \right] = \begin{cases} 0 & \text{for } i=0, 1, \dots, n-2 \\ a(x) \neq 0 & \text{for } x \in I \text{ for } i = n-1; \end{cases}$$

$\Psi(x)$  is the new unknown function. After substituting (3) in (1) one

Card 2/4

On the solution of a problem for ...  
obtains an integral equation

S/044/62/000/005/020/072  
C111/C333

$$\psi(x) = f_1(x) + \sum_{i=1}^n c_i \xi_i(x, \lambda) + \lambda \int_a^b M(x, t) \psi(t) dt \quad (4)$$

where  $f_1$ ,  $\xi_i$ ,  $M$  are known functions. Assuming that  $\lambda$  is not a characteristic number of the kernel  $M(x, t)$ ; one finds in (4) the explicit expression for  $\psi(x)$  and after substituting this expression in (3) obtains

$$y(x) = F(x, \lambda) + \sum_{i=1}^n c_i h_i(x, \lambda) \quad (5)$$

By substituting (5) in (2) one obtains a linear algebraic system in  $c_1, \dots, c_n$ . If this system is not singular, then  $c_1, \dots, c_n$  are uniquely determined and the problem (1), (2) has a unique solution. The case when this system is singular is also examined. The author then examines the case where  $\lambda$  is the characteristic number of the kernel  $M(x, t)$ .

Card 3/4

On the solution of a problem for ...

S/044/62/000/005/020/072  
C111/C333

Further, the cases 1)  $m > n, k$ ; 2)  $k > n, m$  are considered almost analogously. The method for solving (1) described in this paper has great advantages in comparison to other methods, because here the necessity of determining a fundamental system of equation  $L(u) = 0$  is omitted.

[Abstracter's note: Complete translation.]

Card 4/4



16.4500

3/190  
S/044/62/000/005/021/072  
C111/C333

AUTHOR: Krivoshein, L.Ye.

TITLE: On a general method for solving systems of linear integro-differential equations

PERIODICAL: Referativnyy zhurnal, Matematika, no. 5, 1962, 77, abstract 4B349. ("Issled. po integro-differents. uravneniyam v Kirgizii". No. 1. Frunze, AN KirgSSR, 1961, 191-199)

TEXT: The solution of the Cauchy problem

$$u(c) = u^0 \tag{1}$$

for the systems of integro-differential equations

$$\frac{du}{dx} = A(x)u + \lambda \int_a^b \left[ K(x,t)u(t) + M(x,t) \frac{du(t)}{dt} \right] dt, \tag{2}$$

$$\frac{du}{dx} = A(x)u + \lambda \int_a^x \left[ K(x,t)u(t) + M(x,t) \frac{du(t)}{dt} \right] dt \tag{3}$$

is sought with the set-up

Card 1/2

S/044/62/000/005/021/072  
C111/C333

On a general method for...

$$u(x) = Z(x)b + \int_c^x H(x,t)\psi(t)dt, \quad (4)$$

where  $Z(x)$  and  $H(x,t)$  are arbitrary fixed continuous  $n \times n$  - matrices;  $Z(x)$  is differentiable;  $\det Z(x) \neq 0$ ;  $\det H(x,x) \neq 0$  for  $x \in [a,b]$ ,  $Z(c)b = u^0$ . After substituting (4) in (2) one obtains the integral equation

$$\psi(x) = F(x,\lambda) + \lambda \int_a^b N(x,t)\psi(t)dt. \quad (5)$$

If  $\lambda$  is not a characteristic number of the kernel  $N(x,t)$ , then one determines  $\psi(x)$  from (5), substitutes it in (4) and obtains the solution of (1), (2). The case where  $\lambda$  is a characteristic number is considered. If  $c=a$ , then the problem (1), (3) has a unique solution. This solution is also sought in the form (4), whereby a Volterra integral equation results for the determination of  $\psi(x)$ . If  $c \neq a$ , then one obtains a Fredholm integral equation for the determination of  $\psi(x)$ . To determine the explicit expressions for the solutions of problems (1), (2) and (1), (3), one must construct the resolvents of several kernels. Finally, the author gives a method to construct approximative solutions. [Abstracter's note: Complete translation.]

Card 2/2

KRIVOSHEIN, L. Ye.

Approximative Solution Methods of Some Classes of Integral-differential  
Equations p. 23

TRANSACTIONS OF THE 2ND REPUBLICAN CONFERENCE ON MATHEMATICS AND MECHANICS  
(TIZDY VE TRY REPUBLICANSKOY KONGRESSNOY POKALYUBAYE I MEKHANIKE), 164  
pages, published by the Publishing House of the AN SSSR, MMA-ATA, USSR, 1962

KRIVOSHEIN, Leonid Yevgen'yevich; BYKOV, Ya.V., otv. red.; ANOKHINA,  
M.G., tekhn. red.

[Approximate methods for solving ordinary linear integrodifferential equations] Priblizhennye metody reshenia obyknovennykh lineinykh integro-differentsial'nykh uravnenii. Frunze, Akad. nauk Kirgizskoi SSR, 1962. 183 p. (MIRA 15:9)  
(Integrodifferential equations)

16,4500

3672  
S/140/62/000/002/001/005  
C111/C444

Arzhanykh, I. S., Krivoshein, L. Ye.  
On the solution of the generalised Cauchy problem for a  
class of integro-differential equations  
Vysshiye uchebnyye zavedeniya. Izvestiya. Matematika,  
no. 2, 1962, 3-12  
Considered is the generalised Cauchy problem

AUTHORS:  
TITLE:

PERIODICAL:

TEXT:

$$y^{(i)}(x_0) = l_i + \int_a^b \alpha_i(t) P[y] dt \quad (i = 0, 1, \dots, n-1) \quad (1)$$

where

$$\alpha_i(t) P[y] = \alpha_i(t) \sum_0^k b_j(t) y^{(j)}(t) \neq 0 \quad (t, x_0 \in [a, b]),$$

for the equation

$$L[y] = f(x) + \lambda \int_a^b \sum_0^m K_i(x, t) y^{(i)}(t) dt, \quad (2)$$

Card 1/3

On the solution of the generalised ...

S/140/62/000/002/001/005  
C111/C444

where  $L[y] = y^{(n)}(x) + \sum_1^n a_i(x) y^{(n-i)}(x)$ . One supposes that either  
 $K_j(x, t) \neq 0$  in  $a \leq t \leq x, x \leq t \leq b, j = 0, 1, \dots, n$ , or

$$K_i(x, t) = \begin{cases} E_i(x, t) \neq 0, & a \leq t \leq x \\ 0, & x \leq t \leq b \end{cases}$$

the other given functions are regular. The authors use the set-up

$$H_x^{(i)}(x, t) \Big|_{t=x} = \begin{cases} 0; & (0 \leq i \leq n-2), \\ p(x) \neq 0; & (i = n-1, x \in [a, b]) \end{cases} \quad (3)$$

$$y(x) = \sum_1^n c_i z_i(x) + \int_{x_0}^x H(x, t) z(t) dt \quad (4)$$

where  $z_i(x)$  is a linearly independent, n-times differentiable system of  
functions with a Wronski determinant different from zero,  $z(x)$  is the

Card 2/3

On the solution of the generalised ...

S/140/62/000/002/001/005  
C111/C444

new unknown function, and they reduce the problem (1), (2) to the solution of an determination equation which is an integral equation of well-known type; the constants  $c_1$  are obtained by substituting (4) into (1).

Numerous subcases are especially discussed:  $n \geq (m, k)$  or  $m = n + p$  ( $p \geq 1, n \geq k$ ) or  $m > n, m \geq k$  or  $n \geq m, k - n = s \geq 1$ , where  $\lambda$  is either eigenvalue of the kernel of the determination equation or not at all. In all cases the determination equations, the form of the solution, and the systems for the determination of the constants  $c_1$  are given separately.

The authors mention A. I. Nekrasov. The most important English-language reference reads as follows: I. D. Tamarkine. On Fredholms integral equations, whose kernels are analytic in a parameter. Ann. Math., 28, 2, 1927.

ASSOCIATION: Sredneaziatskiy gosudarstvennyy universitet; Kirgizskiy gosudarstvennyy universitet (Central Asian State University; Kirgisian State University)

SUBMITTED: May 15, 1959  
Card 3/3

45132

S/166/62/000/006/001/016  
B112/B186

24 4/00

AUTHORS: Arzhanykh, I. S., Krivoshein, L. Ye.

TITLE: Solution of Cauchy's problem for linear integro-differential equations

PERIODICAL: Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 6, 1962, 7-16

TEXT: The problem

$$y^{(l)}(x_0) = y_0^{(l)}; \quad (l=0, 1, \dots, n-1, \quad x_0 \in [a, b]) \quad (1)$$

$$L[y] = f(x) + \lambda \int_a^b \sum_0^m K_l(x, \eta) y^{(n-l)}(\eta) d\eta, \quad (2)$$

$$L[y] = y^{(n)}(x) + \sum_1^m a_l(x) y^{(n-l)}(x) \quad \text{и} \quad K_l(x, t) \neq 0, \quad (l=0, 1, \dots, m),$$

Card 1/4

Solution of Cauchy's problem for ...

S/166/62/000/006/001/016  
B112/B186

is transformed into the equation

$$\varphi(x) - \int_{x_0}^x M_1(x, t) \varphi(t) dt = F(x, \lambda) + \lambda \int_{x_0}^b M_2(x, t) \varphi(t) dt, \quad (6)$$

or

$$\varphi(x) = F_1(x, \lambda) + \lambda \int_{x_0}^b M_2(x, t) \varphi(t) dt, \quad (7)$$

by means of a substitution

$$y(x) = \sum_{i=1}^n c_i z_i(x) + \int_{x_0}^x H(x, t) \varphi(t) dt, \quad (3)$$

wherein H is a given function of the Cauchy type. Eq. (7) is solved by a function of the form

Card 2/4



Solution of Cauchy's problem for ...

S/166/62/000/006/001/016  
B112/B186

$$y(x) = F_1(x, \lambda) + \lambda \int_a^b R(x, t, \lambda) F_1(t, \lambda) dt.$$

$R(x, t, \lambda)$  denotes the resolvent of the kernel  $M_1(x, t)$ . The particular case

$$K_l(x, t) = \begin{cases} E_l(x, t) \neq 0, & a < t < x, \\ 0, & x < t < b, \end{cases} \quad l = 0, 1, \dots, m. \quad (21)$$

f

is investigated separately. The study was made to elucidate aftereffect phenomena occurring in physical and technical processes.

Card 3/4

Solution of Cauchy's problem for ...

S/166/62/000/006/001/016  
B112/B186

ASSOCIATION: Institut matematiki im. V. I. Romanovskogo AN UzSSR  
(Institute of Mathematics imeni V. I. Romanovskiy AS UzSSR);  
Institut fiziki, mekhaniki i matematiki AN KirgSSR  
(Institute of Physics, Mechanics and Mathematics AS KirSSR) ✓

SUBMITTED: February 5, 1962

Card 4/4

ACCESSION NR: AT3013106

S/2757/62/000/002/0253/0265

AUTHOR: Krivoshein, L. Ye.

TITLE: Approximate solution of one class of linear integro-differential equations

SOURCE: AN KirgSSR. Institut fiziki, matematiki i mekhaniki. Issledovaniya po integro-differentsial'ny'm uraveniyam v Kirgizii, no. 2, 1962, 253-265

TOPIC TAGS: integrodifferential equation, linear integrodifferential equation, Volterra integrodifferential equation, Cauchy problem, approximate differential operator, piecewise linear approximation.

ABSTRACT: An approximate method is presented for the solution of the Cauchy problem

$$y^{(l)}(a) = d_l, \quad (l=0, 1, \dots, n-1)$$

(1)

Card 1/3

ACCESSION NR: AT3013106

for the linear Fredholm integro-differential equation with variable coefficients

$$Z[y] = f(x) + \lambda \int_a^b K(x,t)P[y]dt, \quad (2)$$

where

$$Z[y] \equiv y^{(n)}(x) + \sum_{i=1}^n a_i(x)y^{(n-i)}(x); \quad P[y] \equiv \sum_{i=0}^m b_i(t)y^{(i)}(t)f(x),$$

a, b, and K are known continuous functions and  $\lambda$  is a numerical parameter. Both fixed and variable integration limits are considered. The method is based on a piecewise-linear approximation of the coefficients such that the resultant simplified equation

Card 2/3

ACCESSION NR: AT3013106

$$Z_r[y_r] \equiv y_r^{(n)}(x) + \sum_{j=1}^n a_j(x_{r-1}) y_r^{(n-j)}(x) - \int_a^b K(x,t) P[Y_r] dt, \quad (3)$$

can be integrated. The approximate solution is obtained in the form of conjugate arc segments. The approximation error is estimated. Orig. art. has: 64 formulas.

ASSOCIATION: Institut fiziki, matematiki i mekhaniki AN KirgSSR (Institute of Physics, Mathematics, and Mechanics, AN KirgSSR)

SUBMITTED: 00

DATE ACQ: 30Sep63

ENCL: 00

SUB CODE: MM

NO REF SOV: 005

OTHER: 001

Card 3/3

MANGERON, D.; ~~KRIVOSHEIN, L.~~ [Krivoshein, L.]

Solutions of the integral differential equations by polynomial method. Doklady BAN 15 no.4:345-348 '62.

1. Institut Polytechnique, Jassy, R.P. Roumanie (for Mangeron).
2. Université d'Etat "Frunze," U.R.S.S. (for Krivoshein). Note présentée par L. Tchakaloff [Chakalov, L.], membre de l'Académie.

L 13071-63 EWT(d)/FCC(w)/BDS AFFTC Pg-4 IJP(C)  
ACCESSION NR: AP3000952 S/0140/63/000/003/0074/0084

AUTHOR: Krivoshin, L. Ye. (Frunze) 55

TITLE: Approximate solution of integro-differential equations 16

SOURCE: IVUZ. Matematika, no. 3, 1963, 74-84

TOPIC TAGS: approximation, integral equation, close operator

ABSTRACT: Using the method of close operators, the author constructs approximations to the solutions of Fredholm and Volterra-type integral equations and gets an upper bound for the error of these approximations. Orig. art. has: 54 formulas.

ASSOCIATION: none

SUBMITTED: 17May60 DATE ACQ: 12Jun63 ENCL: 00  
SUB CODE: 00 NO REF SOV: 009 OTHER: 001

MANZHERON, D. [Mangeron, D.] (Iassy); KRIVOSHEIN, L. Ye. (Frunze, SSSR)

Solutions of a class of boundary problems. Rev math pures 7 no. 4:603-615 '62.

1. Yasskiy politekhnicheskiy institut, Kirgizskiy Gosudarstvennyy universitet.



L 19376-63 EWT(d)/FCC(w)/BDS AFPTC/IJP(C) PK-4 IJP  
ACCESSION NR: AP3005416 C/0021/63/013/001/0063/0067

AUTHOR: Mangeron, D.; Krivoshein, L. Ye. (S) (R) ~~ⓧ~~ B

TITLE: Qualitative study of a class of boundary-value problems for integro-differential equations and approximate determination of their solutions

SOURCE: Shu Hsueh Hsueh Pao, v. 13, no. 1, 1963, 63-67

TOPIC TAGS: boundary-value problem, integro-differential equation, approximate solution, resolvent kernel

ABSTRACT: Authors discuss within the scope of their study the approximate solutions under different boundary conditions or initial-value conditions for different classes of integro-differential equations (Bul. Inst. Polit. Iasi, s. n., 6, 10, 1960, fasc. 1-2, 17-28; *ibid*, fasc. 3-4, 21-30) or integro-differential equations with total derivatives (Bull. Acad. Polonaise des Sci., Sci. Math., IX, 10, 1961, 707-712; C. R. Acad. Sci., Paris, 1961, 253, no. 11, 1190-1192) the approximate solution of problem

$$L[y] = f(x) + P[y] + \lambda \int_a^b \sum_{i=1}^n K_i(x, t) y^{(i)}(t) dt, \quad (1)$$

Card 1/3

L 19576-63

ACCESSION NR: AP3005416

$$R_i[y] = \int_c^d r_i(t)S[y]dt = \gamma_i \quad (i = 1, \dots, n) \quad (2)$$

where

$$L[y] = y^{(n)}(x) + \sum_{i=1}^k a_i(x)y^{(n-i)}(x),$$

$$P[y] = \sum_{i=1}^k b_i(x) \sum_{j=1}^k c_j(x_j)y^{(n)}(x_j) = \sum_{i=1}^k b_i(x)D_i[y],$$

$$S[y] = \sum_{i=0}^n d_i(x)y^{(i)}(x),$$

$a_i(x)$ ,  $b_i(x)$ ,  $c_j(x_j)$ ,  $r_i(t)$ ,  $d_i(t)$ ,  $K_i(x, t)$  have known values,  $\lambda$  is a parameter,  $x_1, \dots, x_k$  are points of line segment  $[c, d]$  and  $\{[a, x], [a, b]\} \subset [c, d]$ ,  $d > c$ . Authors studied problem (1), (2) in another article (A Magyar Tudományos Akademia Matematikai Kutató Intézetének, Budapest, VI, s. A.) under the assumption of constructivity of the resolvent kernels of the equivalent integral equations corresponding to cases  $u = x, n \geq (m, p, r)$ ;  $u = x, p > (n, r, m)$ ;  $u = x, r > (m, n, p)$ ;  $u = x, m > (n, r, p)$ ;  $u = b, n \geq (m, p, r)$ ;  $u = b, m > (n, p, r)$  and others. In this article authors choose the

Card 2/3

L 19376-63

ACCESSION NR: AP3005416

2

case  $u \equiv b, n > (m, p, r)$  which is of special interest to applied science and give the calculation for the proposed problem. Authors also state that a similar method may be applied to the determination of approximate solutions for the cases of  $m > (n, p, r); p > (n, r, m)$  and  $r > (m, n, p)$ . Orig. art. has: 30 formulas.

ASSOCIATION: Iasi Institute of Polytechnics, Rumanian People's Republic (Mangeron, D.); National Frunze University, Kirgiz kaya SSR (Krivoshein, L. Ye.)

SUBMITTED: 30Nov61

DATE ACQ.: 26Aug63

ENCL: 00

SUB CODE: MM

NO REF SOV: 004

OTHER: 007

Card 3/3

02/15-05 EWT(d) Pg-4 IJP(c)

COMMISSION NO. AR5003376

SI 004464 000/010/0000 0000

Mathematics

Korovin, L. Ye Marzhenko, V.

Contribution to the solution of the initial problem for the integro-differential equation in partial derivatives

17

CITED SOURCE: So. Materialy 12-y Nauchn. konferentsii prof. -prepodavat. matemat. fak. Kirg. univ. Sekt. matemat. i mekhan. (1977)

Integro-differential equations in partial derivatives and their applications

The initial linear integro-differential equation in partial derivatives

$$\frac{\partial^2 u}{\partial x_1^2} + \frac{\partial^2 u}{\partial x_2^2} = \dots$$

ACCESSION NR AR5002276

By means of linear transformation this equation is brought to the form

$$\sum_{k=0}^n [L_k(A, B) u^{(k)}(B) + K_k(A, B) \frac{\partial^k u(A)}{\partial t^k}] dt = -F(A), \quad (1)$$

where  $P^k u(A) \equiv \partial^k u(A) / (\partial x^k \partial y^k)$ ,  $S = [a < x < b] \times [c < y < d]$

The solution of equation (1) is sought which would satisfy the conditions

$$\frac{\partial u(A)}{\partial x^{\alpha-1}} \Big|_{x=a} = \varphi_{\alpha}(y), \quad \frac{\partial u(A)}{\partial y^{\beta-1}} \Big|_{y=c} = \psi_{\beta}(x), \quad \dots, \alpha-1, \quad \varphi_{\alpha}(a) = \varphi_{\alpha}(c) \quad (2)$$

Results of the paper (RZHM, 1964, 1007) show that the solution of equation (1) is unique. The solution is sought from known functions  $F(A)$ ,  $\varphi_{\alpha}(y)$ ,  $\psi_{\beta}(x)$  and the boundary conditions (2) are satisfied.

ACCESSION NR: AR4039850

B/0044/64/000/004/B135/B135

SOURCE: Ref. zh. Matematika, Abs. 4B601

AUTHOR: Krivoshein, L. Ye.

TITLE: Approximating method of solution of a class of integro-differential

CITED SOURCE: Sb. Materialy\* 7-y Nauchn. konferentsii Kafedry\* vyssh. matem. Frunzensk. politekhn. in-t Frunze, 1963, 70-74

TOPIC TAGS: approximating method, solution method, differential equation, integro differential equation

TRANSLATION: For the numerical solution of the problem

$$y^{(l)}(a) = d_l \quad (l=0, 1, \dots, n-1), \quad (1) \quad L[y] = f(x) + \lambda \int_a^b H(x, t) P[y] dt, \quad (2)$$

where  $L[y] = y^{(n)} + a_1(x)y^{(n-1)} + \dots + a_n(x)y$ ;  $P[y] = b_0(t)y^{(m)} + \dots + b_m(t)y$ ;  $a_i(x)$ ,  $b_i(t)$ ,  $H(x, t)$ ,  $f(x)$  are given functions, continuous for all  $x, t \in [a, b]$ ;  $n \geq m$ ;  $\lambda$  is a parameter, —

Card 1/2

ACCESSION NR: AR4039850

the following method is suggested. The interval  $[a, b]$  is divided into  $k$  parts and on each sub-interval the coefficients  $\alpha_i(x)$  are replaced by constant quantities  $\alpha_i(x_p)$ . Let  $y_i(x)$  be the approximate solution of problem (1), (2) for  $x \in [x_{i-1}, x_i]$ . Then the  $P[y_i]$  are defined, and  $y_k(x), y_{k-1}(x), \dots, y_1(x)$  are found in succession. An estimate of the error is given. The method is meant for the case where at each step one knows the resolvent of a certain auxiliary integral equation. V. Fedorov

DATE ACQ: 15May64

SUB CODE: MA

ENCL: 00

Card 2/2

MANGERON, D.; KRIVOSEIN, L.E. [Krivoshein, Leonid Yevgen'yevich]

Contributions to the study of polyvibrant equations. Pt. 2.  
Studia cerc mat 16 no.8:967-985 '64.

1. Polytechnic Institute, Iasi (for Mangeron).
2. Academy of Sciences of the Kirghia S.S.R. (for Krivosein).



MANZHERON, D. [Mangeron, D.] (Iasi); KRIVOSHEIN, I.Ye. (Prunze)

Certain questions of solving boundary problems for linear integral and differential equations in partial derivatives with the M. Picone higher derivative. Bull math Rum 6 no.3/4:175-193 '62 [publ. '64].

1. Submitted January 1, 1963.

... [Name], et al.; [Name], I.S. [Name], [Name].

Boundary problems for integrodifferential equations with external operators of parabolic type. Studii cerc mat 16 no.9:1070-1084 '67.

I. Polytechnic Institute, Buch (for Movement). J. Pavia State University, Pavia I.S.S. (for Movement).

MANGERON, D.; KRIVOSEIN, L.E. [Krivoshe'n, L.Ye.]

Mixed problems of a class of integrodifferential equations  
of the parabolic type. Bul Inst Politeh 26 no.1:17-31 Ja-F '64.

1. Polytechnic Institute, Iasi (for Mangeron).
2. Kirghis State University, U.S.S.R. (for Krivosein).

L 54892-65 ENT(d) Pg-4 LJE(c)

ACCESSION NR: AR5016321

UR '0044/65/000/006/B067/B067  
51:948.34

SOURCE: Ref. zh. Matematika, Abs. 68339

15  
B

AUTHORS: Manzheron, D.; Krivoshein, L. Ye.

TITLE: Solution of the Goursat problem for a class of integro-differential equations

Tomskiy un-t., 1964, 133-135

TOPIC TAGS: Integral equation, differential equation

TRANSLATION: The Goursat problem for a linear integro-differential equation with ...  
... dependence of the ... with ...

Card 1/1