88713

Concrete containing furan resin

S/098/60/000/009/003/006
B019/B067

Its specific gravity is by about   lower than that of ordinary concrete;
its compressive strength is 700 kg/cm², its tensile strength 60-70 kg/cm²,
and its bending strength 120-160 kg/cm². It is impervious up to 20
atmospheres excess pressure; however, no practical data are available on
its durability. Finally, the author deals with the applications of furan
resin in the form of water emulsions for increasing the imperviousness
and acid resistance, as described in non-Soviet publications. In this
connection, reference is made to the British patent no. 767617 from
February 6, 1957. The chemical products mentioned are mainly produced by
Ferganskoye sovnarkhoz (Fergana sovnarkhoz), Luganskoye sovnarkhoz
(Luga sovnarkhoz), and Leningradskiy sovnarkhoz (Leningrad sovnarkhoz).
There are 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc.

Card 2/2

BEREZINSKIY, A.R., doktor tekhn.nauk; SOLOMATOV, V.I., inzh.

Plastic materials in hydraulic engineering. Gidr. i mel. 12 no.10:
39-44 O '60.   (MIRA 13:11)
     (Plastics)   (Hydraulic engineering--Equipment and supplies)

SOLOMATOV, V.I., inzh.

Concrete mixtures made with furan resins. Gidr. stroi. 30
no.9:16-17 S '6ఎ.   (MIRA 13:9)
          (Concrete)   (Furan)

SOLOMATOV, V.I., inzh.

    Lowering the permeability of concrete using polymer materials.
    Izv.ASiA 4 no.4:59-63 '62.   (MIRA 16:1)
        (Polymers)   (Concrete—Testing)

SOLOMATOV, V.I., inzh.

　　　Protecting concrete surfaces with polymer coatings. Stroi.mat.
　　8　no.7:13-15　Jl　'62.　　　　　　　　　　　　　(MIRA 15:8)
　　　　(Polymers)　(Protective coatings)　(Concrete--Testing)

SQPRONKOV, V.I., inzh.

Heat resistance of polymer cement concrete. Strol. mat. 9
no.6:28-30 Je '63.   (MIRA 17:8)

MOSHCHANSKIY, N.A., doktor tekhn.nauk, prof.; ZOLOTNITSKIY, I.M.,
        kand.tekhn.nauk; SOLOMATOV, V.I.; SHNEYDEROVA, V.V.;
        KOSYAKINA, Z.K., red.; KASIMOV, D.Ya., tekhn.red.

[Plastics and synthetic resins in anticorrosion technology]
Plastmassy i sinteticheskie smoly v protivokorrozionnoi
tekhnike. [By] N.A.Moshchanskii i dr. Moskva, Izd-vo lit-
ry po stroit., 1964. 136 p.   (MIRA 17:3)

L 54198-65   EWG(s)-2/EWP(j)/EWT(m)   Pc-4/Pw-4 RM
UR/0228/64/000/007/0006/0007
ACCESSION NR: AP5014972

AUTHOR: Solomatov, V. I. (Candidate of technical sciences)

TITLE: Creep of polymer-cement concrete

SOURCE: Stroitel'nyye materialy, no. 7, 1964, 6-7

TOPIC TAGS: concrete, polymer, cement temperature

Abstract: Since temperature changes chiefly affect the physico-mechanical properties of polymers, a relationship between deformation and temperature conditions can be expected. Consequently, creep was studied at various temperatures of the medium: -16°, -20°, /20°, and /50°C. The copolymer of vinylacetate and dibutylmaleate was the polymer used. The proportion of polymer was 20% by weight to the cement in a dry condition. Specimens of ordinary concrete with the same composition but without the polymers were used as a comparison. The experiments showed that the introduction of the thermoplastic component many times increases the creep of concrete that is air-dried. The presence of moisture intensifies even more the deformation of polymer-cement concrete under load. Temperature has a significant effect on the creep of this concrete. In this con-

Card 1/2

L 45198- 65
ACCESSION NR: AP5014972

nection polymers with high vitrification points and thermoreactive resins
are preferable for combining with concrete. When using polymer-cement
concrete in construction it is especially important to consider their in-
creased creep. Concretes with thermoplastic and elastoplastic inclusions
can be advantageously used as protective floor coverings, for roads, and
in other cases where their increased elastic-strength properties and
physico-chemical durability can be used to best advantage.
Orig. art. has 1 figure and 3 graphs.

ASSOCIATION: none

SUBMITTED: 00   ENCL: 00   SUB CODE: MT, TD

NO REF SOV: 002   OTHER: 002   JPRS

Card 2/2

SOLOMON, I.I., kai I. tov....

Effect of the temperature of the medium on the properties of
polymer-cement concrete. Sbol. mat. 10 n.7:2 S '6.
(MIRA 18:9)

TSIPER, N.A.; kand. tekhn. nauk; SOLOMATOVA, N.A.; sanitarnyy vrach.

Hygienic properties of floors covered with polymer materials.
Gig. sanit. 28 no.2:95-98   '63   (MIRA 17:2)

1. Iz Instituta obshchey i kommunal'noy gigiyeny imeni A.N.
Sysina AMN SSSR i Gorodskoy sanitarn-epidemiologicheskoy stan-
tsii Moskvy.

PETUKHOVSKIY, A.A.; TIMOSHKOV, V.V.; SOLOMATOVA, N.A.; VIZIROV, B.N.

Results of the control of murine rodents and flies on
Moscow livestock farms. Gig. i san. 28 no.7:97   Jl '63.
(MIRA 17:1)

1. Iz Moskovskoy gorodskoy sanitarno-epidemiologicheskoy
stantsii, Moskovskoy gorodskoy dezinfektsionnoy stantsii i
Moskovskogo gorodskogo veterinarnogo otdela.

SOLOMCHENKO, A.

School of craftsmanship in the land of the Juçuls. Mest.prom.i
khud.promys. 3 no.4:34 Ap '62.   (MIRA 15:5)

1. Direktor Kosovskogo uchilishcha prikladnogo iskusstva,
Stanislavskaya oblast'.
                (Kosov—Art industries—Study and teaching)

SOLOMCHENKO, N.I.

Effect of erysimine on cardiovascular insufficiency. Sov.med. 20 no.
6:57-61 '56.   (MLRA 9:9)

1. Iz gospital'noy terapevticheskoy kliniki (zav. prof. A.S.Voronov)
Stalinskogo meditsinskogo instituta imeni A.M.Gor'kogo (dir. dotsent
A.M.Ganichkin) na baze TSentral'noy klinicheskoy bol'nitsy (glavnyy
vrach M.I.Asnes)
        (CARDIAC GLYCOSIDES, therapeutic use,
            erysimine (Rus))

SOLOMCHENKO, N.Ya.; SHUB-SHCHERBA, N.I., RABINER, I.A., akademik

Mutual adsorption of polyacrylamide and a cation-active substance imparting hydrophobicity on the surface of kaolin. Dokl. AN SSSR 158 no.3: 699-701 S '64.   (MIRA 17:10)

1. Institut fizicheskoy khimii AN SSSR.

PCHELIN, V.A.; SOLOMCHENKO, N.Ya.

Structural and mecahnical properties of solutions, gels, and coage-
lates (coacervates) of geleatin. Koll.zhur. 22 no.1:63-68 Ja-F
'60.   (MIRA 13:6)

1. Moskovskiy universitet imeni M.V.Lomonosova, Khimicheskiy
fakul'tet, Kafedra kolloidnoy khimii.
                    (Gelatin)

L 20343-66   EWT(m)/EWP(j)/T   WW/RM

ACC NR: AP6012075   SOURCE CODE: UR/0069/65/027/001/0106/0112

AUTHOR: Solomchenko, N. Ya.; Andreyev, L. N.--Andreev, L. N.; Serb-Serbina, N. N.

ORG: Institute of Physical Chemistry, AN USSR, Moscow (Institut fizicheskoy khimii AN SSSR)

TITLE: Structure formation associated with the reinforcement of clay soils by some synthetic polymers

SOURCE: Kolloidnyy zhurnal, v. 27, no. 1, 1965, 106-112

TOPIC TAGS: copolymer, acrylic plastic, linear polymer, monomer, soil mechanics, soil, elastic modulus

ABSTRACT: Investigations were made of the structural and mechanical proper-
ties of solutions of polyacrylamide and its copolymers with certain "cross-
linking" additives, individually and with the introduction of clayey soil
and its model components.
The conversion of the linear polymer obtained by polymerizing acrylamide
(20% solution) in water with suitable initiators (ammonium persulfate and
sodium hydrosulfite) into three-dimensional water-insoluble copolymers is
associated with the conversion from an infinitely swelling polyacrylamide
solution into sparingly swelling aqueous dispersions of copolymers. The
swelling kinetics and extent of water absorption depend on the amount of
the "cross-linking" reagent.

Card 1/2   UDC: 541.182.02

L 20343-66

ACC NR: AP6012075

The strength of aqueous dispersions of the copolymers increases considerably
and depends both on the nature of the cross-linking reagent and on the rela-
tive proportions of the monomers present in the solution. A pronounced in-
crease in the strength characteristics was obtained in the copolymerization
of acrylamide and 1,3,5-hexahydro-S-triacrylyltriazine (TAT) at a ratio of
1:0.05. Excess TAT caused a decrease in the strength of the cross-linked
dispersions and a simultaneous increase in the equilibrium elastic modulus.
It was shown that copolymerization occurring in aqueous clay - kaolin dis-
persions or in water-logged physicochemical soil models leads to still higher
P_m and P_s values and higher elastic moduli (E_1), and permits the introduction
of larger amounts of the cross-linking additive. Orig. art. has: 7 figures.
[JPRS]

SUB CODE: 08, 11, 20 / SUBM DATE: 27Mar63 / ORIG REF: 010 / OTH REF: 002

Card 2/2

BYALYY, S. inzhener; SOLOMCHENKO, P., inzhener; VAKHLAKOV, P., inzhener;
SOKOLOV, N., inzhener.

Work experience of flour mills at grain procurement stations. Muk.-elev.
prom. 22 no.6:24-26 Je '56.
(MIRA 9:9)

1.Dmitrovskaya mel'nitsa (for Vakhlakov).
(Flour mills)

STRIMBAN, Yu., inzh.; SOLOMEIN, G.

Receiving stations need better grain cleaning machinery. Muk.-elev.
prom. 24 no.7:30 Jl '58.   (MIRA 11:10)

1.Sverdlovskoye oblastnoye upravleniye khleboproduktov (for Strimban)
2.Sverdlovskaya realizatsionnaya baza (for Solomein)
        (Sverdlovsk Province--Grain--Cleaning)

KASHCHYLU, V.E., starshiy nauchnyy sotrudnik; SOLOMIN, I.A., nauchnyy
sotrudnik

Effect of temperature conditions in a friction unit on its wear.
Izv. vys. ucheb. zav.; nashinostr. no.1   :167   '63.
(MIRA 17:10)

1. Tomskiy gosudarstvennyy universitet.

POLOSATKIN, G.D.; SOLOMEIN, I.A.

Wear of aluminum due to microscratching. Izv. vys. ucheb. zav.; fiz.
8 no.2:86-89 '65.
(MIRA 18:7)

1. Sibirskiy fiziko-tekhnicheskiy institut imeni Kuznetsova.

ZHIVAYKIN, L.Ya.; SOLOMEIN, S.K.

Hydraulic resistance of packed apparatus during the
descending cocurrent movement of phases. Zhur. VKHO
7 no.6:701-702 '62.   (MIRA 15:12)

1. Ural'skiy nauchno-issledovatel'skiy khimicheskiy
institut.
                        (Packed towers)

LIMAR', T.F.; IVAROV, K.A.; BULACHEVA, A.F.; SHVYURM, A.S.; BEDNOVA, I.N.; MAKOVSKAYA, F.F., SOLOMEINA, G.I.; DOLMATOV, Yu.D.; BOBYRENKO, Yu. Ya.; KOGAN, F.I.; KOVALENKO, P.N., IVANOVA, L.I.; FOKIN, A.V.; KOMAROV, V.A.; SOROCHKIN, I.N.; DAVYDOVA, S.M.; RAVDEL', A.A.; GORELIK, G.N., DAUKSHAS, V.K. [Dauksas, V.]; FIKUNAYTE, L.A. [Pikunaite, L.], SHARIFOV, A.Kh.; SHABALIN. I.I., STEPNOVA, G.M.; SHMIDT, Ye.V., SUKOV, S.S., STRUKOV, O.G.

Scientific research papers of the members of the All-Union Mendeleev Chemical Society (brief information). Zhur. VHKO 10 no.3:350-360 '65.   (MIRA 18:8)

1. Donetskiy filial Vsesoyuznogo nauchno-issledo atel'skogo instituta khimicheskikh reaktivov i osobo chistykh khimicheskikh veshchestv (for Limar', Uravera, Solomeina). 2. Ural'skiy nauchno-issledovatel'siy khimicheskiy institut (for Shubin, Bednova, Makovskaya, Solomeina). 3. Chelyabinskiy filial Gosudarstvennogo nauchno-issled vatel'skogo i proyektnogo instituta mineral'nykh pigmentov (Dolmatov, Bobyrenko). 4. Rostovskiy-na-Donu universitet (for Kogan, Kovalenko, Ivanova). 5. Leningradskiy tekhnologicheskiy institut imeni Lensoveta i Institut mineral'nykh pigmentov (for Ravdel', Gorelik). 6. Vil'nyusskiy gosudarstvennyy universitet imeni Kapsukasa (for Dauksas, Pikunayte). Nauchno-issledovatel'skiy institut neftekhimicheskikh proizvodstv (for Sharipov, Shabalin). 8. Tomskiy politekhnicheskiy institut imeni Kirova (for Stepnova, Shmidt).

SOLOMENKO, I., inzhener-podpolkovnik

Do we know everything about lubrication? Tekh. i vooruzh. no.5:
57-59 My '64.
(MIRA 17:9)

L 10524-65   EWT(m)/EPF(c)/T   Pr-4   AFETR   DJ

ACCESSION NR: AP4036982   S/0065/64/000/005/0061/0065

AUTHORS: Bezborod'ko, M. D.; Solomenko, I. I.

TITLE: The effect of spraying on the lubricating properties of oils

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 5, 1964, 61-65

TOPIC TAGS: lubricant, lubricating oil, spraying, atomizing, lubricity, critical load, oxidation, antiseize property

ABSTRACT: A comparison was made of the lubricity of oils applied by spraying and by immersion to the working surface of the friction parts of reducing gears. The comparison was based on the critical load (P_K) that could be applied. MT-16p, AU and MK-8 oils were tested on ShKh-15 steel from 20-200C, and it was found that P_K decreased as oil temperature increased; but if the oil was sprayed, the critical load (P_K') was higher than if the gears were immersed in oil. This difference is attributed to the action of atmospheric oxygen which is increased by spraying. The oxide film formed is softer than the tempered steel, and this reduces friction and inhibits seizing of the friction surface. It was also found that P_K'/P_K increases with temperature, approaching a value of 1.5-2 at 150-200C. Tests which
Card 1/2

L 10524-55

ACCESSION NR: AP4036982

conducted with a limited access of air to the reducing gear housing, or in a nitrogen atmosphere, confirmed, the large role of oxygen in improving the lubricating properties of the oils. Under the nitrogen atmosphere P_K was reduced 68% at 100C and 36% at 150C. The effect of oxygen on lubricity is less in oils containing antiseize additives than in oils without additives. A comparison of commercial oils showed in each case that the critical load throughout the 20-200C range was somewhat higher for gears lubricated by spraying than those lubricated by immersion. In the synthetic oils (long chain alcohols) P_K is almost independent of temperature. MK-8 surpasses MT-16p if compared at the same viscosity, possibly because the latter contains a monofunctional additive with antioxidant components. The addition of an antiseize additive to MK-8 increases its P_K by about 5 times. Orig. art. has: 5 figures.

ASSOCIATION: None

SUBMITTED: 00   ENCL: 00

SUB CODE: FP
Card 2/2   NR REF SOV: 005   OTHER: 000

BEZBOROD'KO, M.D.; SOLOMENKO, I.I.; GALIZIN, M.I.

Lubricating capacity of preservative oils. Khim. i tekh. topl.
i masel 8 no.12:55-58 D '63.   (MIRA 17:1)

HRYBOROD'KO, M.N.; SOLOMENKO, I.I.

Friction machine for testing the lubricating performance of
oil fogs. Zav. lab. 30 no.5:616-617 '64.   (MIRA 17:5)

BEZBOROD'KO, M.D.; SOLOHENKO, I.I.

Effect of the spraying of lubricants on their lubricating capa-
city. Khim. i tekh. topl. i masel 9 no.5:61-65   5 My'64
                                                    (MIRA 17:7)

31. ...

... , ... - "...ding ... ... on the breeding sciences
... laye... r (...l... in this ... ...)." ... ..., 1...
... ... Agricultural Inst. (... ... of ... of ... of
Agricultural ...)

... : ...ya... ...ia..., ... L.. 2. November 1... ...ssow.

SOLOMENKO, N.S.; CHUVIKOVSKIY, V.S., redaktor; SHAROV, Ya.F., redaktor.

[Structural mechanics of the ship] Stroitel'naia mekhanika korablia.
Pod obshchei red. IA.F.Sharova. Leningrad, Gos. nauchno-tekhn. izd-vo
mashinostroit. i sudostroit. lit-ry. Leningradskoe otd-nie. 1954.
415 p.   (...Ra 8.1)

        (Shipbuilding)

AZIMOV, I.; STEPANYAN, G.; SOLOMENKO, Ye.; AYRAPETOV, A., inzhener

Offshore oil fields need a uniform classification manual for
laborers. Sots. trud 5 no.12:135-136 D '60.   (MIRA 14:6)

1. Sekretar' partorganizatsii tresta "Azmorneftestroy" (for Azimov).
2. Sekretar' partorganizatsii stroitel'no-montazhnogo upravleniya
No. 2 tresta "Azmornefterazvedka" (for Stepanyan). 3. Predsedatel'
ob"yedinennogo postroykoma profsoyuza rabochikh neftyanoy i khim-
icheskoy promyshlennosti (for Solomenko). 4. Normativno-issledovatel'-
skaya stantsiya ob"yedineniya "Azneft" for Ayrapetov).
                (Caspian Sea—Oil well drilling, Submarine)
                      (Job description)

S/119/62/000/002/009/010
D201/D301

AUTHOR: Solomennikov, A.P.

TITLE: Investigating the effect of humidity and temperature on the characteristics of diaphragms of a pneumatic integrating relay membrane

PERIODICAL: Priborostroyeniye, no. 2, 1962, 30-31

TEXT: The relay in question performs the algebraic additions of up to three pneumatic signals, two having the minus sign and one the plus sign. The structure of the relay is similar to that of БС-34A (BS-34A) manufactured by the 'Tizpribor' plant of the Mosgorsovnarkhoz. The relay was placed in a thermostat at a temp. +60 ± 3°C with the injection of air having a relative humidity of 95 ± 3%. The relay membranes were made of rubberized fabric (rubber type ИМ-93 and lubrication 3499 ТУМХП (3499 TuMKhP)). Before the experiment, the diaphragms were kept stretched for 8 hours under operating conditions, after which characteristics were recorded and compared with those before stretching. The stretching has

Card 1/2

Investigating the effect of ...

S/119/62/000/002/009/010
D201/D301

shown no effects. After subjecting the diaphragms to 95±3% humidity for 48 hrs at 60°C, the characteristics were shifted by a certain magnitude which does not change with further tests. This fact suggests that the given type of membrane with one-sided loading before going into use should ✓ be aged under working conditions for 48 hrs at 60°C, after which there is ⎯ no need for any recalibration and retesting.

Card 2/2

SOLOMENNIKOV, A. P.

ACCESSION NR: AP3000248   S/0119/63/000/005/0025/0026

AUTHOR: Solomennikov, A. P.

TITLE: Testing the AUS pneumatic equipment under specific conditions

SOURCE: Priborostroyeniye, No. 5 p. 25-26, May 1963

TOPIC TAGS: AUS pneumatic amplifier, BP-28V pneumatic unit, pressure-gage relay, AM-93 diaphragm canvas, pneumatic summing relay

ABSTRACT: Results are reported of testing the components of an AUS-type pneumatic amplifier under the following conditions: (a) high positive temperatures, (b) negative temperatures, (c) sea-water action, (d) rolling, and (e) heeling (tilting). A pneumatic summing relay was tested at -10C for 1 hr with a maximum output air pressure of 1.2 kg/cm sup 2. The same relay was also tested at -40C for 1 hr. A similar relay was tested for rolling (plus-minus 45 degrees, 8-10-sec period of roll) and heeling (long-time, up to 45 degrees tilt). A pressure-gage relay was tested (72 hrs) for sea-water (3.5 per cent salinity) action on its diaphragm. Upon the above tests, no appreciable change in the principal characteristics of the equipment was observed. Operating-air consumption by the AUS amplifier (as a part of a BF-28V unit), by two pressure-gage relays, and by a 12-m long 6-mm diameter tubing was measured. Block diagrams of testing hookups and the equipment
Card 1/2

ACCESSION NR: AP3000248

characteristics are given. Orig. art. has: 5 figures.

ASSOCIATION: none

SUBMITTED: 00

SUB CODE: IE

DATE ACQ: 14Jun63   ENCL: 00

NO REF SOV: 000   OTHER: 000

Card   2/2

L 41006-66   EWT(1)/EWT(m)/T   IJP(c)   DS/AT

ACC NR: AP6018742   SOURCE CODE: UR/0057/66/036/006/1121/1124

3 ?8

AUTHOR: Potsar, A.A.; Solomennikov, G.V.

ORG: Leningrad Electrotechnical Institute im. Ul'yanov (Lenin) Leningradskiy elektrotekhnicheskiy institut)

TITLE: On the temperature conditions in an oxide-coated cathode in a low pressure mercury discharge

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 6, 1966, 1121-1124

TOPIC TAGS: cathode, electron tube cathode, barium oxide, temperature control

ABSTRACT: The core and surface temperatures of an oxide coated cathode operating in a low pressure mercury vapor atmosphere were determined as functions of the current drawn from it in order to acquire data that would allow of specifying optimal operating conditions for oxide-coated cathodes in high current applications. The oxide coating was deposited on the plane surface of an indirectly heated base of electrolytic nickel. The core temperature was measured with a thermocouple. To measure the surface temperature of the oxide coating, the near infrared radiation from the surface was focused onto a photoresistor connected into a bridge circuit. The optical device was calibrated against the thermocouple by assuming that the core and surface temperatures were equal when the cathode current was zero. Curves were plotted giving the core and surface temperatures as functions of the cathode current for fixed values

UDC: 537.53

Card   1/2

L 41006-66

ACC NR: AP6018742

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of the heater current. Only three such curves are presented as examples; they cover the range of cathode currents from zero to about 450 mA/cm^2. All the curves showed that under normal conditions the cathode temperature changed with changing cathode current, and that the surface temperature was always lower than the core temperature. The measurements confirm the opinion of S.V.Ptitsyn (Fizicheskiye yavleniya v oksidnom katode, Gostekhizdat, 1949) that most of the resistance of an oxide coated cathode is contributed by an intermediate layer (rather than by a thin surface layer). The temperature difference between the core and the surface increased somewhat at the higher temperatures. The slopes of the curves recorded at high temperatures were flatter than those of the curves recorded at lower temperatures; that confirms the known fact that the resistivity of the oxide coating decreases with increasing temperature. It is concluded that the temperature condition of an oxide-coated cathode in operation can be adequately determined for control purposes by measuring the core temperature. Orig. art. has: 3 figures.

SUB CODE: 09 /   SUBM DATE: 07Jul65/   ORIG. REF: 007

Card 2/2 hs

ACC NR: AR7000950   SOURCE CODE: UR/0275/66/000/011/A022/A022

AUTHOR: Potsar, A. A.; Solomennikov, G. V.

TITLE: Analysis of the work of an oxide cathode in a low-pressure mercury discharge

SOURCE: Ref. zh. Elektronika i yeye primeneniye, Abs. 11A157

REF SOURCE: Izv. Leningr. elektrotekhn. in-ta, vyp. 56, ch. 2, 1966, 14-18

TOPIC TAGS: cathode, oxide cathode, mercury discharge, transverse resistance, low pressure

ABSTRACT: An analysis was made to compare the heating of oxide cathodes with pure and with silicon-nickel cores in a low-pressure mercury discharge,and to clarify the role of intermediate and surface layers in transverse cathode resistance. [Translation of abstract]   [NT]

SUB CODE: 11, 20/

Card   1/1   UDC: 537.525

SOLOMENNIKOV,V., inzhener-mayor tyagi

Gas cylinder freight handling cart. Zhel.dor.transp. no.8:80-83
Ag'47.   (MLRA 8:12)
        (Motor trucks--Engines (Compressed gas))

SOLOMENNIKOV, V.A., kandidat tekhnicheskikh nauk.

The nature of premature wear of crankshaft and bearing in diesel
locomotive engines. Trudy RIIZHT no.17:95-145 '53. (MLRA 9:6)
(Diesel locomotives)

SHISHKIN, K.A., prof. [deceased]; DOMBROVSKIY, A.B., dotsent;
TRET'YAKOV, A.P., dotsent; SOLOMENNIKOV, V.A., dotsent;
BOGOYAVLENSKIY, V.N., dotsent; STEPANOV, A.D., doktor tekhn.
nauk; IVAKOV, V.N., prof.; KUZNETSOV, N.V., kand.tekhn.nauk;
SLITIKOV, P.A., prof., doktor tekhn.nauk, retsenzent; GAKKEL',
Ye.Ya., dotsent, doktor tekhn.nauk, retsenzent; PANSKIY, V.M.,
dotsent, kand.tekhn.nauk, retsenzent; LUGININ, N.G., kand.tekhn.
nauk, red.; KHITROV, P.A., tekhn.red.

[Diesel locomotives] Teplovozy. Moskva, Vses.izdatel'sko-poligr.
ob"edinenie M-va putei soobshcheniia, 1960. 340 p.
                                    (MIRA 14:1)

1. Leningradskiy ordena Lenina institut inzhenerov zheleznodorozhno-
go transporta im. akademika V.N.Obraztsova (for Slitikov, Gakkel',
Panskiy).
              (Diesel locomotives)

SOLOMENNIKOV, V.A., kand.tekhn.nauk

Investigating the work of internal moments of inertia in the D-50 diesel-locomotive engine. Izv.vys.ucheb.zav.; mashinostr. no.1: 96-106 '61.   (MIRA 14:4)

1. Rostovskiy institut inzhenerov zheleznodorozhnogo transporta.
                    (Diesel locomotives)

SOLOMENNIKOV, V.A., kand.tekhn.nauk

Effect of the degree of freedom of main journals in bearing clear-
ances on the dynamics of an engine with a symmetrical crankshaft.
Izv.vys.ucheb.zav.; mashinostr. no.7:128-141 '61.   (MIRA 14:9)

1. Rostovskiy-na-Donu institut inzhenerov zheleznodorozhnogo tran-
sporta.
                    (Diesel locomotives--Dynamics)

SOLOMENNIKOV, V.A., kand.tekhn.nauk

Interaction of the diesel locomotive engine with the frame struc-
ture of the locomotive. Izv.vys.ucheb.zav.; mashinostr. no.7:148-
157 '63.   (MIRA 16:11)

1. Rostovskiy-na-Donu institut inzhenerov zheleznodorozhnogo
transporta.

SOLOMENIKOV, V.A., kand. tekhn. nauk

Selecting an efficient system of the inside balancing of diesel engines with symmetrical crankshaft. Trudy RIIZHT no.44:89-104 '64.

Methodology for studying the transversal dynamics of type D-100 diesel engines. Ibid.:105-116

(MIRA 19:1)

KOPYTOV, V.S.; SOLOMENNIKOV, Ye.I.; TUGARINOV, V.K.

Improving crushing department operations in Leninogorsk
Combine plants. Obog.rud. 7 no.1:49-53 '62.   (MIRA 15:3)

1. Leninogorskiy kombinat.
        (Leninogorsk (East Kazakhstan Province)—Ore dressing)

KOPYTOV, V.S.; SOLOMENNIKOV, Ye.I.; TUGARINOV, V.K.

Improving the operation of crushing and grinding departments in plants of the Leninogorsk Combine. Obog. rud 7 no.4:51-54 '62. (MIRA 16:4)

1. Leninogorskiy kombinat.
(Leninogorsk (East Kazakhstan Province)—Ore dressing)

DEL'NENKII, J.H., Cand. (Vinnitsa)

Immediate and late outcome of surgical treatment of fractures of
the mandible with the use of wire suture. Probl. chel.-lits. khir.
...1.126-129 '57.   (MIRA 18:10)

SOLOMENTSEV, D.G., dotsent, kand.ekonomicheskikh nauk

    Postwar development of the steel industry in the Tula Economic
    Region. Trudy TMI 13:76-99 '59.   (MIRA 13:6)
          (Tula Province--Steel industry)

BAKULEV, Grigoriy Dmitriyevich, prof., doktor ekonom.nauk; SOLOMENTSEV, Dmitriy Gavrilovich, dotsent, kand.ekonom.nauk; TYLKIN, M.M., red.; PULIN, L.I., tekhn.red.

[Industry of the Tula Economic Region] Promyshlennost' Tul'skogo ekonomicheskogo raiona. Tula, Tul'skoe knizhnoe izd-vo, 1960.
366 p.   (MIRA 13:7)
          (Tula Province--Industries)

DIL', A.; CHARUGINA, N.; BORODIN, A.; SOLODOVNIK, P.; SKLYAR, I.;
        SOLOVKIN, N.; POTAPOV, G.; PONOMAREV, N.; ALEKHIN, I. ;
        SOLOMENTSEV, K.; TOPYLIN, N.; SKOROVAROV, M.; KARABANOV, S.;
        BOGDANOV, N.; STRYUKOV, P.

        Nikolai Vasil'evich Romenskii (on the occasion of the 40th
        anniversary of his scientific, pedagogic, and public activity).
        Muk.-elev. prom. 24 no.12:29-30 D '58.   (MIRA 12:1)
                (Romenskii, Nikolai Vasil'evich, 1894-)

SOLOMENTSEV, K.

Improve the control of grain preservation. Muk.-elev.prom. 29
no.1:4-5 Ja '63.   (MIRA 16:4)

1. Gosudarstvennaya khlebnaya inspektsiya Gosudarstvennogo
komiteta zagotovok Soveta Ministrov SSSR.
                    (Grain trade—Accounting)

Solomentsev, M.N.

KRASTOSHEVSKIY, L.S.; DANCHICH, V.V.; AVDIYENKO, T.G.; ARKHANGEL'SKIY, A.F.; GAK, A.M.; YEPIFANTSEV, Yu.P.; ZELINSKIY, V.M.; IVANOV, P.S.; IVASHCHENKO, P.R.; KALININA, M.D.; KRAVCHENKO, A.G.; KOTLYAROVA, A.V.; KRUGLYAKOVA, M.D.; LEVIKOV, I.I.; LIBKIND, R.I.; NIKOLAYEVA, N.A.; NAUMENKO, V.F.; PRESHMAN, I.B.; PRISYAZHNIKOV, V.S.; POBEDINSKAYA, L.P.; POKALYUKOV, S.N.; POPOV, A.A.; SOLOMENTSEV, M.N.; TARASOV, I.V.; FILONENKO, A.S.; SHISHOV, Ye.L.; SHRAYMAN, L.I.; YAKUSHIN, N.P.; ZVORYKINA, L.N., red. izd-va; LOMILINA, L.N., tekhn.red.

[Horizontal mining in foreign countries] Provedenie gorizontal'nykh vyrabotok za rubezhom. Moskva, Ugletekhizdat, 1958. 342 p. (MIRA 12:4)

1. Kharkov. Vsesoyuznyy nauchno-issledovatel'skiy institut organizatsii i mekhanizatsii shakhtnogo stroitel'stva.
(Mining engineering)

BULAKH, Vladimir Leont'yevich; SOLOMENTSEV, Nikolay Afanas'yevich; CHEKMAREV,
       Viktor Aleksandrovich; BIRYUKOV, V.K., redaktor; SOLOVEYCHIK, A.A.,
       tekhnicheskiy redaktor.

       [Principles of hydrology and agricultural improvement] Osnovy
       gidrologii i sel'skokhoziaistvennykh melioratsii. Leningrad, Gidro-
       meteorologicheskoe izd-vo, 1955. 311 p.   (MLRA 9:6)
                              (Hydrology)

SOLOMENTSEV, Nikolay Afanas'yevich; ZVORYKIN, K.A., otvetstvennyy red.;
    SHATILINA, M.K., red.; SOLOVEYCHIK, A.A., tekhn.red.

[Hydrometry] Gidrometriia. Izd. 2-oe, perer. Leningrad, Gidro-
meteor. izd-vo, 1957. 458 p.   (MIRA 11:5)
        (Hydrology)   (Stream measurements)

SOLOMENTSEV, Nikolay Afanas'yevich; L'VOV, Andrey Mikhaylovich;
   SIMIRENKO, Sof'ya L'vovna; CHERMAREV, Viktor Aleksandrovich;
   SHATILINA, M.K., red.; SERGEYEV, A.N., tekhn. red.

  [Land hydrology] Gidrologiia sushi. [By] N.A.Solomentsev i dr.
  Leningrad, Gidrometeor. izd-vo, 1961. 448 p.   (MIRA 15:3)
       (Hydrology)

BULAKH, Vladimir Leont'yevich [deceased]; SOLOMENTSEV, Nikolay
Afanas'yevich; CHEKMAREV, Viktor Aleksandrovich;
ANDREYANOV, V.G., otv. red.; SHATILINA, M.K., red.;
ALEKSEYEV, A.G., tekhn. red.

[Fundamentals of hydrology and land improvement] Osnovy
gidrologii i sel'skokhoziaistvennykh melioratsii. 2., dop.
izd. Leningrad, Gidrometeoizdat, 1963. 366 p.
                                        (MIRA 16:10)
    (Hydrology)   (Irrigation) (Drainage)

SOLOVENTSEV, N. I.

"Investigation of the Effect of Structural Shapes and the Character of Stress on the Diffusion of Energy in Material During Vibration." Cand Tech Sci, Chair of the Resistance of Materials, Kiev Order of Lenin Polytechnic Inst, Min Higher Education USSR, Kiev, 1955. (KL, No 15, Apr 55).

SO: Sum. No. 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (16).

SOV/124-58-11-13538

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 11, p 223 (USSR)

AUTHOR: Solomentsev, N. I.

TITLE: On the Energy Dissipation in Nodular Iron During Torsional Vibra-
            tions (K voprosu o rasseyanii energii v globulyarnom chugune pri
            krutil'nykh kolebaniyakh)

PERIODICAL: Izv. Kiyevsk. politekhn. in-ta, 1957, Vol 20, pp 261-267

ABSTRACT: A presentation of experimental data which characterize the damping
            ability of nodular irons.
                                          Reviewer's name not given

Card 1/1

SOLOMENTSEV, N.I., kand.tekhn.nauk; KAZACHEK, A.A., inzh.

Unit for continuous vulcanization of conveyor and flat transmission
belts. Khim. mashinostr. no. 6:40-41 N-D '62.   (MIRA 17:9)

SOLOMENTSEV, M.I., kand. tekhn. nauk; KOZACHOK, A.A.

Rollers for the processing of electrode carbon mass. Khim. prom.
[Ukr.] no.3:60-62 Jl-S '63.   (MIRA 17:8)

1. Ukrainskiy nauchno-issledovatel'skiy institut plasticheskikh
mass.

SOLOMENTSEV, N.I., kand.tekhn.nauk; KOZACHOK, A.A., inzh.

Roll mills for processing a mixture of carbon black and pitch. Khim.
mashinostr. no.2:41-42 Mr-Ap '63.   (MIRA 16:4)
                              (Rolling mills)

SOLOMENTSEV, N.I., kand.tekhn.nauk

Energy dissipation in solid round bars and thin-walled bars with
open profiles subjected to torsional vibrations.   Izv. KPI
20:268-271 '57.   (MIRA 11:3)
              (Elastic rods and wires--Vibration)

AUTHORS: Markov, B. L., Solomentsev, S. L.   SOV/163-58-2-23/46

TITLE: Cooling of the Panels of Measuring Instruments Used at
              High Temperatures (Okhlazhdeniye armatury izmeritel'nykh
              priborov, rabotayushchikh pri vysokikh temperaturakh)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958,
              Nr 2, pp. 142-144 (USSR)

ABSTRACT: The system of the air-water cooling makes possible a suffi-
              cient measurement of the temperature in the Martin furnace in
              the tempering and melting processes. The construction and the
              effect of the thermocouple produced this way are described.
              A chromium-aluminum thermocouple was used which was protected
              by a steel tube covered by a chromium-magnesite layer con-
              sisting of 85 % chromium-magnesite powder and 15 % refractory
              clay. The thermocouple tube protected this way permits opera-
              tion up to 2000°C. In the case of a normal cooling an air-
              pressure of 4,5 atmospheres excess pressure and a water
              pressure of 1,5 atmospheres excess pressure are necessary.
              By means of these thermocouples also on hard conditions, espe-
              cially at high temperatures, satisfactory results may be

Card 1/2

Cooling of the Panels of Measuring Instruments   SOV/163-58-2-23/46
Used at High Temperatures

> obtained. The air-water cooling can also be sucessfully used
> in the construction of various measuring instruments suited
> for higher temperatures. Its use in longlasting temperature
> measurements of liquid steel is especially practical. The
> air-water cooling removes the danger of an explosion when the
> liquid metals contact the slag.
> There are 3 figures.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: October 28, 1957

Card 2/2

MARKOV, B.L.; SOLOMENTSEV, S.L.

Thermal conductivity in a layer of lump materials. Izv.vys.
ucheb.zav.; chern.met. no.3:176-183 '60.
                                             (MIRA 13:4)

1. Moskovskiy institut stali.
          (Metallurgical furnaces) (Heat--Conduction)

GLINKOV, M.A., doktor tekhn.nauk; MEN'SHIKOV, R.I., kand.tekhn.nauk;
    KAGANOV, V.Yu., kand.tekhn.nauk; SOLOMENTSEV, S.L., inzh.

    Automatic control of thermal and technological conditions in
    open-hearth furnace smelting. Biul. TSIICHM no.10:23-28 '60.
                                                        (MIRA 15:4)

    (Open-hearth furnaces) (Automatic control)

KRIVANDIN, Vladimir Alekseyevich, dots., kand. tekhn. nauk; MOLCHANOV,
Nikolay Grigor'yevich, dots.; SOLOMENTSEV, Semen Leonidovich,
inzh.; Prinimali uchastiye: MARKOV, B.L., kand. tekhn. nauk;
FILIMONOV, Yu.P., inzh.; TEBEN'KOV, B.F., kand. tekhn. nauk,
retsenzent; VASIL'YEVA, R.A., inzh., retsenzent; LANOVSKAYA,
M.R., red. izd-va; MIKHAYLOVA, V.V., tekhn. red.

[Metallurgical furnaces] Metallurgicheskie pechi. Pod ob-
shchei red. V.A.Krivandina. Moskva, Gos. nauchno-tekhn.izd-
vo lit-ry po chernoi i tsvetnoi metallurgii, 1962. 600 p.
                                           (MIRA 15:2)
                (Metallurgical furnaces)

BOLTYANSKIY, V.G., red.; DYNKINA, Ye.B., red.; POSTNIKOV, M.M., red.;
    SOLOVENTSEV, Ye.D., red.; IOVLEVA, N.A., tekhn.red.

[Fiber spaces and their applications; collection of translations]
Rassloennye prostranstva i ikh prilozheniia; sbornik perevodov.
Moskva, Izd-vo inostr.lit-ry, 1958. 460 p.   (MIRA 12:1)
                        (Topology)

SOLOMENTSEV, Ye. D.: Master Phys-Math Sci (diss) -- "On limiting values and

classes of subharmonic functions". Moscow, 1959. 10 pp (Moscow Order of Lenin

State U im M. V. Lomonosov), 150 copies (KL, No 11, 1959, 115)

SHILEYKO, A.V. [translator]; KOGAN, B.Ya., red.; SOLOMENTSEV, Ya.D.,
red.; LAGUTINA, I.M., tekhn.red.

[Digital differential analyzers] TSifrovye differentsial'nye
analizatory. Moskva, Izd-vo inostr.lit-ry, 1959.   242 p.
Translated from the English by A.V.Shileiko.   (MIRA 12:8)
            (Electronic calculating machines)

KRASNOSEL'SKIY, M.A., red.; MOISEYEV, N.N.; SOLOMENTSEV, Ye.D., red.;
SMIRNOVA, N.I., tekhn.red.

[Theory of surface waves; collection of translations] Teoriia
poverkhnostnykh voln; sbornik perevodov. Pod red. M.A.Krasno-
sel'skogo i N.N.Moiseeva. Moskva, Izd-vo inostr.lit-ry, 1959.
366 p.   (MIRA 12:11)
                        (Waves)

69476

S/055/59/000/05/009/020

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AUTHOR: Solomentsev, Ye. D.

TITLE: On Classes of Functions Subharmonic in the Half Space

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1959, No. 5, pp 73-92

TEXT: The paper consists of three paragraphs and contains 24 only partially new theorems and 11 lemmata. In § 1 the author formulates results (see (Ref 5)) on the existence of boundary values of subharmonic functions of the class A in the half space (the subharmonic function u(P) belongs to the class A, if the function u$^+$ (P) possesses a harmonic majorant in the whole half space). In § 2 the author investigates classes of functions defined in the half space (he assumes that in every point of the half space the functions are subharmonic in the sense of J. J. Privalov (Ref.1,2)); their analytic representation is given, e. g.:

Theorem 6: In order that a function u(P) subharmonic in the half space D (z > 0) belongs to the class A it is necessary and sufficient

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Card 1/3

69476

On Classes of Functions Subharmonic in the Half Space

that it has the representation

(16)
$$u(P) = K_z + \frac{z}{2\pi}\int_{\Gamma}\frac{u(\xi,\eta,0)\,d\xi\,d\eta}{[(x-\xi)^2+(y-\eta)^2+z^2]^{3/2}} + \frac{z}{\pi}\int_{\Gamma}\frac{d\gamma}{[(x-\xi)^2+(y-\eta)^2+z^2]^{3/2}} - \int_{D}G(P,Q)\,d\mu$$

where Γ is the boundary of D, i. e. z = 0, k = const, γ(e) an addi-
tive function of the sets e $\subset \Gamma$ with derivative which vanishes almost
everywhere on Γ , and G(P,Q) denotes the Green function of D; the
function μ(e) is a nonnegative, nondecreasing additive function,
completely continuous from below, of e $\subset$ D which corresponds to the
function u(P) (mass distribution); furthermore it is

$$\int_{\Gamma}\frac{|u(\xi,\eta,0)|\,d\xi\,d\eta}{(1+\xi^2+\eta^2)^{3/2}} < \infty \quad , \quad \int_{\Gamma}\frac{|d\gamma|}{(1+\xi^2+\eta^2)^{3/2}} < \infty .$$

In § 3 the author considers φ-subharmonic functions (see (Ref.4))

Card 2/3

69476

S/055/59/000/05/009/020

On Classes of Functions Subharmonic in the Half Space

(if $\varphi(x)$ is an increasing concave function and $\varphi[u(P)]$ subharmonic, then $u(P)$ is called φ-subharmonic).
The author mentions P. J. Kuznetsov and V. J. Krylov; he thanks Professor A. J. Markushevich for advices.
There are 10 references: 6 Soviet, 1 Japanese, 1 American, 1 French and 1 Polish.

SUBMITTED: March 31, 1958

Card 3/3

SOLO...TSIV, Ye.D.

Example of a finite and continuous subharmonic function not having angular boundary values. Sib. mat. zhur. 1 no.3:48(-491 S-O '60.
(MIRA 14:2)

(Harmonic functions)

GOLUBEV, Vladimir Vasil'yevich; MARKUSHEVICH, A.I., red.; ARAMANOVICH, I.G., red.; SOLOMENTSEV, Ya.D., red.; ARANOVICH, I.G., red.; MURASHOVA, N.Ya., tekhn. red.

[Single-valued analytic functions; automorphic functions] Odno-znachnye analiticheskie funktsii, avtomorfnye funktsii. Vstup. stat'ia A.I.Markushevicha. Moskva, Gos. izd-vo fiziko-matem.lit-ry, 1961. 455 p.   (MIRA 15:1)
        (Functions, Analytic)   (Functions, Automorphic)

STOILOV,Simon [Stoilow, S.], akademik; BERSHTEYN, I.[translator];
.SOLOMENTSEV,.Ye.D., red.; PRIDANTSEVA, S.V., tekhn. red.

[Theory of functions of complex variables]Teoriia funktsii
kompleksnogo peremennogo. Moskva, Izd-vo inostr.lit-ry.
Vol.1.[Fundamental concepts and principles]Osnovnye ponia-
tiia i printsipy. 1962. 364 p. Translated from the
Rumanian.
   (Functions of complex variables)   (MIRA 15:9)

ALEKSANDROV, P.S., red.; BOL'SHEV, L.N., red.; VLADIMIROV, V.S., red.;
     KUDRYAVTSEV, L.D., red.; LEONT'YEV, A.F., red.; NIKOL'SKIY, S.N.,
     red.; POSTNIKOV, M.M., red.; SOLCMENTSEV, Ye.D., red.; SHAFAREVICH,
     I.R., red.; GRIBOVA, M.P., tekhn. red.

[English-Russian mathematical dictionary]Anglo-russkii slovar' ma-
tematicheskikh terminov. Red. kollegiia; P.S.Aleksandrov (predse-
datel') i dr. Moskva, Izd-vo inostr. lit-ry, 1962. 369 p.
                                                  (MIRA 15:11)
1. Akademiya nauk SSSR. Matematicheskiy institut.
          (English language—Dictionaries—Russian)
                (Mathematics—Dictionaries)

SOLOMENTSEV, Ye.D.

Phragmén-Lindelöf's theorems for harmonic functions. Trudy MEI
no.42:161-164 '62.   (MIRA 16:7)

(Harmonic functions)

KOZHUKHOV, Petr Semenovich; ERIN, I.A., kand. fiz.-matem. nauk,
    dots., red.; SOLOMENETSEV, Ye.D., kand. fiz.-matem.nauk,
    dots., red.

[Ordinary differential equations] Obyknovennye differentsial'-
nye uravneniia. Moskva, Mosk. energ. in-t, 1963. 121 p.
                                          (MIRA 17:5)

SOLOMENTSEV, Ye.D.

Phragmen – Lindelof type theorem for harmonic functions in space.
Dokl. AN SSSR 155 no. 4:765-766 Ap '64.   (MIRA 17:5)

1. Moskovskiy energeticheskiy institut. Predstavleno akademikom
P.S.Novikovym.

TSLAF, L.Ya.; KERIMOV, M.K.; MYSHKIS, A.D.; AMERBAYEV, V.; PANOV,
    D.Yu.; SOLOMENTSEV, Ye.D.

Book reviews. Zhur. vych. mat. i mat. fiz. 5 no.1:161-168
Ja-F '65.   (MIRA 18:4)

SOLOMENTSEV, Yu., kand.tekhn.nauk

Study of the dynamic load on ceilings. Zhil. stroi. no.9:30-31
'62.   (MIRA 16:2)
                        (Ceilings)

SOLOVYSEV, Yu.A., kand. tekhn. nauk

Investigation of the rigidity and vibration of ribbed panels of apartment houses. Nauch. trudy NIIMosstroia no.1:3-18 '64.
                                        (MIRA 19:2)

SOLOMENTSEV, TU. L.

Solomentsev, Yu. L.

"The effect of loading speed on the resistance of wooden rods to linear bending." Min Higher Education USSR. Moscow Order of Labor Red Banner Construction Engineering Inst imeni V. V. Kuybyshev. Moscow, 1956 (Dissertation for the degree of Candidate in Biological Science)

Knizhnaya letopis'
No. 25, 1956. Moscow

SOLOMENTSEV, Yu.A., kand.tekhn.nauk

Fine concretes for rolled structures. Bet. i zhel.-bet. no. 5:226-227
My '60.
(MIRA 14:5)
(Concrete)

SOLMENTSEV, Yu.M., Inzh.; PEYSAKHOVICH, I.B.

Share of parts machined on lathes with a running live
center. Vest.mashinostr. 45 no.8:64-69 Ag '65.

(MIRA 18:12)

SOLOMENTSEVA, N.N., inzhener.

Effect of the cutting speed on the precision of machining. Sbor.
st. CHPI no.4:12-19 '55.   (MIRA 10:6)
                        (Metal cutting)

16.3500

26461
S/140/61/000/003/007/009
C111/C333

AUTHORS: Slobodetskiy, L. N., Solomeshch, I. A.

TITLE: On the first boundary value problem for some degenerate elliptic equations

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, no. 3, 1961, 116-126

TEXT: Let Ω be a finite domain of the n-dimensional space $x = (x_1,\ldots, x_n)$; S -- sufficiently smooth boundary of Ω. Let $\sigma = \sigma(x)$ be a $(2k + 1)$ - times continuously differentiable function in $\overline{\Omega} = \Omega + S$ for which

$$A_1 \varphi(x) \leqslant \sigma(x) \leqslant A_2 \varphi(x) \tag{1}$$

where $\varphi(x)$ is the distance from x to S and A_1, A_2 are positive constants. Let $u = u(x) \in W_{2,\alpha}^{(k)}(\Omega)$ $(0 \leqslant \alpha < 1)$, if u is square summable over Ω and possesses all generalized derivatives of order k in Ω, where it holds

Card 1/8

26461
S/140/61/000/003/007/009
C111/C333

On the first boundary value . . .

$$D_{\alpha}^{(k)}(u) = \int_{\Omega} \left[\sum_{i_1,\dots,i_k=1}^{n} \left(\frac{\partial^k u}{\partial x_{i_1} \dots \partial x_{i_k}} \right)^2 \right] \sigma^{\alpha} dx < + \infty \quad (2)$$

Let

$$\| u \|_{W_{2,\alpha}^{(k)}}(\Omega) = \left\{ \int_{\Omega} u^2 dx + D_{\alpha}^{(k)}(u) \right\}^{\frac{1}{2}} . \quad (3)$$

Assume that the subdomain $\Omega_\delta (\delta > 0)$ of Ω consists of the points for which $\varsigma(x) > \delta$. Let S_δ be the boundary of Ω_δ. Let f_0, $f_1, \dots, f_{k-1}$ be functions defined on S; $\vec{v} = \vec{v}(x')$ is assumed to be unit vector of the interior normal of S in $x' \in S$. Let $u \in W_{2,\alpha}^{(k)}(f)$, if $u \in W_{2,\alpha}^{(k)}(\Omega)$ and if it holds

Card 2/8

26461
S/140/61/000/003/007/009
On the first boundary value . . .   C111/C333

$$\frac{\partial^{j} u}{\partial \nu^{j}}\Bigg|_{S} = f_{j} \quad (j = 0,1,\ldots, k - 1), \qquad (4)$$

where the equality $u\big|_{S} = f$ is understood in the sense of $u\big|_{S_{\delta}} \to f$
in the mean for $\delta \to 0$.

Let the Sobolev spaces $W_{2}^{(1)}$ be defined as usual.

The boundary S of Ω is assumed to satisfy the conditions:
a.) S can be covered by a finite number of overlapping surfaces
$\sigma_{1},\ldots, \sigma_{q}$, where each of the surfaces σ has the equations

$$x_{l} = x_{l}(t_{1},\ldots, t_{n-1}) \quad (l = 1,2,\ldots,n) \qquad (6)$$

where $x_{l}(t_{1},\ldots, t_{n-1}) = x_{l}(t')$ are defined in a cube γ of the space
of the $t' = (t_{1},\ldots, t_{n-1})$; b.) there exists a $\delta > 0$ such that for every

Card 3/8

26461
S/140/61/000/003/007/009
On the first boundary value . . .   C111/C333

s = 1,2,..., q the equation

$$x = x(t') + \nu\, t_n \qquad (7)$$

defines a one-to-one transformation of Ω_s onto the rectangular parallelepiped K_s : $t' \in \gamma_s$, $0 < t_n < 2\delta$ (Ω_s consists of those points of Ω which are in a distance from σ_s smaller than 2δ);

c.) $x(t)$ is k-times continuously differentiable with respect to $t_1, \ldots, t_n$ and $t = t(x)$ with respect to $x_1, \ldots, x_n$.

Theorem 1: If $u \in W_{2\alpha}^{(k)}(\Omega)$, then u possesses all generalized derivatives of orders $1 < k$ in Ω, where on each sufficiently smooth manifold Γ of the dimension $m > n' - 2(k - 1 - \alpha)$ the derivatives $D^l u$ of the order l are summable in the power

$$q^* < \frac{2n}{n'-2(k-1-\alpha)} \qquad (10)$$

Card 4/8

On the first boundary value . . .

26461
S/140/61/000/003/007/009
C111/C333

and

$$\left\| D'u \right\|_{L_{q*}(\Gamma)} \leqslant C \left\| u \right\|_{W_{2,\alpha}^{(k)}(\Omega)} \tag{11}$$

holds, where C does not depend on u.

Theorem 2: If the class $W_{2,\alpha}^{(k)}(f)$ is not empty, then there exists a unique function $u \in W_{2,\alpha}^{(k)}(f)$, which gives a minimum to the integral (2) in the class $W_{2,\alpha}^{(k)}(f)$. This function is 2k-times continuously differentiable in Ω and is the single solution of

$$\sum_{i_1,\ldots,i_k=1}^{n} \frac{\partial^k}{\partial x_{i_1} \ldots \partial x_{i_k}} \left(\sigma^\alpha \frac{\partial^k u}{\partial x_{i_1} \ldots \partial x_{i_k}} \right) = 0 \tag{5}$$

Card 5/8

On the first boundary value . . .

in $W_{2,\alpha}^{(k)}$ (f).

Theorem 3: If $u = u(x) \in W_{2,\alpha}^{(k)}$ (Ω), then the boundary values of its normal derivatives of the order $j \leq n - 1$ on S belong to the spaces $W_2^{(\tau_j)}$(S) with $\tau_j = k - 1 - \frac{1+\alpha}{2}$. Here it holds

$$\left\| \frac{\partial^j u}{\partial \nu^j} \right\|_{W_2^{(\tau_j)}(S)} \leq C \|u\|_{W_{2,\alpha}^{(k)}(\Omega)} \tag{18}$$

where C does not depend on u.

Theorem 4: Let $f_j \in W_2^{(\tau_j)}$(S) $(j = 0,1,\ldots, k-1)$. Then there exists a function $u \in W_{2,\alpha}^{(k)}$ (Ω) which satisfies the boundary conditions (4).
Here it holds

Card 6/8

On the first boundary value . . .

$$\|u\|_{W_{2,\alpha}^{(k)}(\Omega)} \leqslant C \sum_{j=0}^{k-1} \|f_j\|_{W_2^{(\tau_j)}(S)} \tag{29}$$

where C does not depend on f_j ($j = 0,1,\ldots, k-1$).

Theorem 5: In order that the class $W_{2,\alpha}^{(k)}(f)$ be not empty it is necessary and sufficient that $f_j \in W_2^{(\tau_j)}(S)$ ($j = 0,1,\ldots, k-1$).

Theorem 6: In order that the boundary value problem (5), (4) be solvable in $W_{2,\alpha}^{(k)}(\Omega)$ it is necessary and sufficient that $f_j \in W_2^{(\tau_j)}(S)$ ($j = 0,1,\ldots, k-1$). If these conditions are satisfied, then for the solution $u = u(x)$ it holds:

$$C_1 \sum_{j=0}^{k-1} \|f_j\|_{W_2^{(\tau_j)}(S)} \leqslant \|u\|_{W_{2,\alpha}^{(k)}(\Omega)} \leqslant C_2 \sum_{j=0}^{k-1} \|f_j\|_{W_2^{(\tau_j)}(S)}, \tag{37}$$

Card 7/8

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On the first boundary value . . .

where C_1, C_2 are positive constants only depending on Ω.

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There are 12 Soviet-bloc references and 1 non-Soviet-bloc reference. The reference to English-language-publication reads as follows: N. Aronszain, Boundary values of functions with finite Dirichlet integral. Conf. on part. diff. equat., No. 14, (Univ. of Kansas), 1955.

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SUBMITTED: February 9, 1959

Card 8/8