AL'TMAN, K.Z., inzh.

Manufacturing neutral acid-free felt for technical uses. Leg. prom. 18 no.3:42-43 Mr '58. (MIRA 11:4)
(Felt)

AL'TMAN, K.Z., inzh.

Vat dyeing of staple fibers in centrifuge-type apparatuses. Tekst. prom. 18 no.4:58-59 Ap '58. (MIRA 11:4)
(Dyes and dyeing--Apparatus)

AL'TMAN, K.Z., inzh.

Dyeing blankets. Tekst. prom. 18 no.8:20 Ag '58. (MIRA 11:10)
(Dyes and dyeing--Wool) (Blankets)

AL'TMAN, K.Z., insh.

[redacted]lsion used for oiling raw material mixtures in the felting industry. Leg. prom. 18 no.9:46-47 S '58. (MIRA 11:10)
(Felt)

AL'TMAN, K.Z., inzh.

Increasing the felting power of sheep wood from spring shearing. Tekst.prom. 21 no.3:16-17 Mr '61. (MIRA 14:3)
(Feltwork) (Wool)

LEVIN, M.I.; GUSHCHA, L.A.; AL'TMAN, K.Z., starshiy inzh.; PESIN, I.Ya.; AKSENOVA, A.F.

New reagents for feltwork. Tekst.prom. 21 no.12:48-50 D '61. (MIRA 15:2)

1. Nachal'nik otdela valyal'no voylochnykh izdeliy Rosglavlegsnabsbytsyr'ye pri Vserossiyskom sovete narodnogo khozyaystva (for Levin). 2. Glavnyy inzh. TSentral'noy nauchno-issledovatel'skoy laboratorii khlopka i shersti Mosgorsovnarkhoza (for Gushcha). 3. TSentral'naya nauchno-issledovatel'skaya laboratoriya khlopka i shersti Mosgorsovnarkhoza (for Al'tman). 4. Glavnyy inzh. fabriki "Tekhvoylok" (for Pesin). 5. Zaveduyushchiy laboratoriyey fabriki "Tekhvoylok" (for Aksenova).

(Feltwork)
(Ammonium sulfate)

AL'TMAN, L.M., inzh.

Self-propelled tanker model made of reinforced concrete. Rech.transp. 18 no.2:50 F '59. (MIRA 12:4)
(Berlin--Ship models)

STEBLIN-KAMENSKAYA, O.S.; AL'TMAN, L.P.

Comprehensive atlas of a Union Republic ("Atlas of the White Russian Socialist Republic." Reviewed by O.S. Steblin-Kamenskaia, L.P. Al'tman. Vest. LGU 14 no.24:159-160 '59. (MIRA 12:12)
(White Russia--Maps)

AL'TMAN, L.P.; NEVEL'SHTEYN, G.S.; KONSTANTINOV, O.A., doktor geogr. nauk, prof., otv. red.; GOMOZOVA, N.A., red.; KUZNETSOV, N.S., red. kart; BAZANOVA, A.A., tekhn. red.

[Petrozavodsk, the capital of the Karelo-Finnish S.S.R.]Petrozavodsk, stolitsa Karelo-Finskoi SSR. Moskva, Gos.izd-vo geogr. lit-ry, 1951. 47 p. (MIRA 16:1)
(Petrozavodsk)

AL'TMAN, L.

AL'TMAN, L. Karel'skii peresheek. (Geografiia v. shkole, 1948, no.5, p. 15.)

DLC: Unclass.

So; LC, Soviet Geography, Part II, 1951/Unclassified

BABKOV, I.I.; AL'TMAN, L.P., kandidat geograficheskikh nauk, redaktor; IVANOVA, L.P., redaktor.

[The South Ukrainian and the North Crimea canals and their influence on the transformation of nature] IUzhno-Ukrainskii i Severo-Krymskii kanaly i ikh vliianie na preobrazovanie prirody. Leningrad, Vses. ob-ve po rasprostraneniiu polit. i nauch. znanii, Leningradskoe otd-nie, 1951. 29 p. [Microfilm] (MLRA 9:6)
(South Ukrainian Canal) (North Crimea Canal)

KHRSHANOVSKIY, A.A., otv.red.; AL'TMAN, L.P., red.; VERZILIN, N.M., red.; GRODENSKIY, G.P., red.; OBRUCHEV, S.V., red.; SUSLENNIKOVA, N.M., tekhn.red.; LEONT'YEVA, L.B., tekhn.red.

[Globus; a geographical yearbook for children, 1957] Globus; geograficheskii ezhegodnik dlia detei, 1957. Leningrad, Gos. izd-vo detskoi lit-ry M-va prosv.RSFSR, 1957. 438 p. (MIRA 12:8)

(Geography--Juvenile literature)

AL'TMAN, L.P.

"Division of the U.S.S.R. into economic regions." Reviewed by L.P. Al'tman. Vest. LGU 12 no.18:139-141 '57. (MIRA 11:3)
(Geography, Economic)

CHETYRKIN, V.M.; AL'TMAN, L.P.; CHERTOV, L.G.

Division into economic regions of the northwestern and northern parts of the R.S.F.S.R. [with summary in English]. Vest. LGU 12 no.24:104-116 '57. (MIRA 11:5)
(Russia, Northern--Geography, Economic)

AL'TMAN, L.P.

The Leningrad Economic Region in the system of the northwestern part of the R.S.F.S.R. [with summary in English]. Vest. LGU 13 no.6:48-50 '58. (MIRA 11:5)
(Leningrad Economic Region)

AL'TMAN, L.F.

Interuniversity conference on the division of the U.S.S.R. into districts on the basis of natural history and economic conditions. Vest.LGU 13 no.18:164-167 '58. (MIRA 12:1)
(Natural history) (Russia--Economic conditions)

NIKOLAYEVA, N.V.; AL'TMAN, L.P.; CHERTOV, L.G.; KUZNETSOV, B.B.; LAVROV, S.B.; LAGUTINA, Ye.I.

V.M. Chetyrkin; obituary. Vest. LGU 13 no.24:121-122 '58. (MIRA 12:4)
(Chetyrkin, Vladimir Mikhailovich, 1892-1958)

AUTHOR: ~~Al'tman~~, L.P. SOV/10-59-1-30/32

TITLE: Losses to Science (Poteri nauki) Vladimir Mikhaylovich Chetyrkin, '1892-1958)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya geograficheskaya, 1959, Nr 1, p 159 (USSR)

ABSTRACT: This is an obituary on the well-known economic geographer, Head of the Chair for Economic Geography at the Leningrad State University, Professor, Doctor of Geographic Sciences Vladimir Mikhaylovich Chetyrkin, the author of numerous scientific works, who died on 29 Oct 58. His death prevented him from completing the monumental work he was working on, "The Soviet Economic Zoning" (Sovetskoye ekonomicheskoye rayonirovaniye).

Card 1/1

AL'TMAN, L.P.

Prospects for the development of the Leningrad Economic Region and its division into economic sectors. Vest.LGU 14 no.18:50-56 '59. (MIRA 12:8)
(Leningrad Economic Region--Economic policy)

AL'TMAN, L.P.; PINKHENSON, D.M.; CHERTOV, L.G.; SEMEVSKIY, B.N., prof., nauchnyy red.; VOROB'YEV, G.S., red.izd-va; GURDZHIYEVA, A.M., tekhn.red.

[Geography of great works] Geografiia velikikh rabot. Leningrad, Vses.ob-vo po rasprostraneniiu polit. i nauchn.znanii. Leningr. otd-nie, 1960. 39 p. (MIRA 13:7)
(Russia--Industries)

TSABENKO, F.F., red.; AL'TMAN, L.P., red.; VERZILIN, N.M., red.; BABKOV, I.I., red.; OBRUCHEV, S.V., red.; LEONT'YEVA, L.B., tekhn.red.

[The globe; geographical yearbook for children] Globus; geograficheskii ezhegodnik dlia detei, 1960. Leningrad, Gos.izd-vo detskoi lit-ry M-va prosv.RSFSR, 1960. 341 p. (MIRA 13:8)
(Geography--Yearbooks)

AL'TMAN, L.P.

History and present-day problems of the division of the U.S.S.R. into economic regions ("Division of the U.S.S.R. into economic regions" by P.M.Alampiev. Reviewed by L.P.Al'tman). Vest. LGU 15 no.18:149-151 '60. (MIRA 13:9)
(Geography, Economic)
(Alampiev, P.M.)

AL'TMAN, L.P.

Comprehensive mapping and comprehensive atlases of the republics, territories, and provinces of the U.S.S.R. Vest.LGU 16 no.12:167-168 '61. (MIRA 14:6)

(Maps)

AL'TMAN, I.F.

Geography of the population in the allied Baltic Republics and White Russia. Vest.LGU 16 no.24:170-171 '61. (MIRA 14:12)
(Baltic states--Economic geography--Congresses)
(White Russia--Economic geography--Congresses)

AL'TMAN, L.P.

Twenty-Second Congress of the CPSU and the economic regions of the U.S.S.R. Vest. LGU 17 no.12:32-41 '62. (MIRA 15:7)
(Economic zoning)

AL'TMAN, L.P.

The Leningrad Economic Region and main problems of its development. Uch.zap.LGU no.315:3-28 '62. (MIRA 16:2)
(Leningrad Economic Region--Economic geography)
(Leningrad Economic Region--Economic policy)

AL'TMAN, L.P.; DOLKART, M.L.

Economic relations of the northwest of the U.S.S.R. and their improvement. Vest. LGU 19 no.18:57-62 '64.
(MIRA 17:11)

IVANOV-YESIPOVICH, Nikita Konstantinovich. Prinimala uchastiye AL'TMAN, L.V., aspirantka; YEVROPIN, V.A., red.

[Physical and chemical principles of the manufacture of radioelectronic apparatus] Fiziko-khimicheskie osnovy proizvodstva radioelektronnoi apparatury. Moskva, Vysshaia shkola, 1965. 194 p. (MIRA 18:9)

ACC NR: AR6032129 SOURCE CODE: UR/0275/66/000/008/B004/B005

AUTHOR: Al'tman, L. V.; Gorbanenko, N. D.

TITLE: Investigation of cadmium selenide films obtained by vapor deposition under a vacuum

SOURCE: Ref. zh. Elektronika i yeye primeneniye, Abs. 8B32

REF SOURCE: Tr. Nauchno-techn. konferentsii Leningr. elektrotekhn. in-ta svyazi. Vyp. 3. L., 1965, 115-120

TOPIC TAGS: cadmium selenide, semiconducting film, polycrystalline film, thin film, cadmium selenide film

ABSTRACT: The influence of various technological factors on the properties of semiconducting polycrystalline CdSe films of stoichiometric composition is investigated. The basic physical constants of the CdSe compound are given and some of its advantages, when applied in film transitors, are noted. CdSe films, 0.2—0.4 thick, were obtained by vapor deposition on substrates made of glass or GaF_2. The following values were verified in this connection: substrate temperature, settling velocity (usually 50 Å/sec), distance between vaporizer and substrate and residual

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ACC NR: AR6032129

pressure in the system. With variation in substrate temperature from 75 to 310C, ρ varied from 10^6 to 10 ohm. cm, respectively; it is suggested that this strong variation is caused by the influence of oxygen occlusions during deposition. An insignificant photosensitivity was observed in all sprayed films which were not subjected to further heat treatment. At substrate temperatures of up to 350C, crystallite dimensions did not exceed 0.5 μ. Measurements of voltampere characteristics in two-electrode structures showed that films which had not been subjected to heat treatment are exceptionally unstable. They are stabilized by annealing in air and in contact with CdSe powder alloyed with $CuCl_2$ or $InCl_3$. As a result of annealing, the deep-trap concentration decreases. The observed increase of crystallite dimensions resulted in a considerable increase of mobility. Investigations of transistor structures showed that CdSe films can be used in the development of channel film transistors. [Translation of abstract]

SUB CODE: 20/

Card 2/2

ALTMAN, M.

"Wages and premiums in the textile industry."

p. 300 (Tekstilna Industrija) Vol. 4, no. 9, Sept. 1956
Belgrade, Yugoslavia

SO: Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 4, April 1958

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S/044/62/000/004/073/099
C111/C222

AUTHOR: Altman, M.

TITLE: A linear iterative method with a vector parameter

PERIODICAL: Referativnyy zhurnal, Matematika, no. 4, 1962, 81, abstract 4B379. ("Bull. Acad. polon. sci. Sér. sci. math., astron. et phys.", 1961, 9, no. 3, 169 - 174)

TEXT: Let A be a linear self-adjoint positive definite operator in the Hilbert space H. Let $m(x,x) \leq (Ax,x) \leq M(x,x)$ and $0<m<M<+\infty$. The equation

$$Ax = b (x,b \in H, \|b\| = 1) \quad (1)$$

is written in the equivalent form

$$Ax = (Ax,b)b \quad . \quad (2)$$

Let $z = Rx$ be the vector of discrepancy of equation (2); let x_0 be such an initial approximation for (2) that $(x_0,b) \neq 0$ and

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A linear iterative method ... S/044/62/000/004/073/099
C111/C222

$$x_{n+1} = x_n - \alpha_n z_n, \quad \alpha_n = (z_n, Az_n) \| Rz_n \|^{-2} . \qquad (3)$$

Then the successive approximations y_n for equation (1) can be defined as

$$y_n = (Ax_n, b)^{-1} x_n = (x_n, A\, b)^{-1} x_n . \qquad (4)$$

Thereby the iteration process converges to the solution with the speed of a geometric series, and this speed is not smaller than that of the method of fastest descent by L.V. Kantorovich.

[Abstracter's note : Complete translation.]

Card 2/2

ALTMAN, M.

An iterative method for linear algebraic equations. Bul Ac Pol mat 9 no.3:175-177 '61.

1. Institute of Mathematics, Polish Academy of Sciences. Presented by W. Orlicz.

(Linear programing) (Equations)

S/044/62/000/004/072/099
C111/C222

AUTHOR: Altman, M.

TITLE: On Chebyshev's generalized method of solving non-linear functional equations

PERIODICAL: Referativnyy zhurnal, Matematika, no. 4, 1962, 78, abstract 4B369. ("Bull. Acad. polon. sci. Sér. sci. math., astron. et phys.", 1961, 9, no. 4, 261 - 265)

TEXT: The majorante method developed by L.V. Kantorovich is used to further examine a generalization of the Chebyshev method, which has been used to solve non-linear equations in Banach spaces approximately. Let $F(x)$ be a non-linear functional in the sphere $S(x_0,r)$ of the reflexive Banach space X which is three times differentiable according to Frechet. In addition to equation

$$F(x) = 0 , \quad x \in S(x_0,r) , \qquad (1)$$

the real equation

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$$Q(z) = 0 , \quad z \in (z_0, z') \tag{2}$$

is considered, where $Q(z)$ is three times continuously differentiable in (z_0, z').

Theorem : Let the following conditions be fulfilled : 1) the equation (2) majorizes equation (1) ; 2) $[Q'(z_0)]^2 - 2Q''(z_0)Q(z_0) > 0$ 3) for $z \in [z_0, \frac{5}{4}z^*]$, where z^* is the smallest positive solution of (2), it is $Q'(z) < 0$. Then the Chebyshev process

$$z_{n+1} = z_n - \left[1 + Q''(z_n)Q(z_n)(Q'(z_n))^{-2}\right] \frac{Q(z_n)}{Q'(z_n)}$$

$(n = 0,1,2,\ldots)$ converges to z^*, the equation (1) has the solution x^* and the process (suggested by the author in his mentioned paper)

On Chebyshev's generalized method ... S/044/62/000/004/072/099
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$$x_{n+1} = x_n - \left[1 + \frac{1}{2}\frac{F''(x_n)y_n^2F(x_n)}{\|F(x_n)\|^2}\right]\frac{F(x_n)}{F'(x_n)}\,y_n,\quad \|y_n\| = 1,$$

$$F'(x_n)y_n = \|F'(x_n)\|$$

converges to x^*. The estimate

$$\|x^* - x_n\| \leq z^* - z_n$$

holds.

[Abstracter's note : Complete translation.]

Card 3/3

S/044/62/000/004/074/099
C111/C222

AUTHOR: Altman, M.

TITLE: The extension and stability of certain iterative methods for solving non-linear functional equations in Banach spaces

PERIODICAL: Referativnyy zhurnal, Matematika, no. 4, 1962, 81, abstract 4B380. ("Bull. Acad. polon. sci. Sér. sci. math., astron. et phys.", 1961, 9, no. 4, 267 - 271)

TEXT: In his previous papers (cf. e.g. Ref. 4B369), the author considered an iterative process to approximate the solution of the equation $F(x) = 0$. There he constructed the successive approximations x_n with the help of vectors

$$y_n : \|y_n\| = 1 , F'(x_n)y_n = \|F'(x_n)\| , n = 0,1,... . \quad (1)$$

The choice of such y_n is possible in reflexive Banach spaces. In order to remove the assumption of reflexivity relative to the space, condition 1) is replaced by condition

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$$\|y_n\| \leqslant 1 \ , \ |Q'(z_n)| \leqslant |F'(x_n)y_n| \leqslant \|F'(x_n)\| \ ,$$

where $Q(z)$ is a function which majorizes the functional $F(x)$. It is proven that such y_n can be chosen in an arbitrary Banach space.

[Abstracter's note : Complete translation.]

ALTMAN, M.

A generalization of Laguerre's method for functional equations. Bul Ac Pol Mat 9 no.8:581-586 '61.

1. Institute of Mathematics, Polish Academy of Sciences. Presented by W. Orlicz.

ALTMAN, M.

A method of steepest ortho-descent. Bul Ac Pol Mat 9 no.8:575-580 '61.

1. Institute of Mathematics, Polish Academy of Sciences. Presented by W. Orlicz.

ALTMAN, M.

Concerning the method of tangent hyperbolas for operator equations. Bul Ac Pol Mat 9 no.9:633-637 '61.

1. Institute of Mathematics, Polish Academy of Sciences. Presented by W. Orlicz.

ALTMAN, M.

An iterative method for eigenvalues and eigenvectors of matrices. Bul Ac Pol Mat 9 no.9:639-644 '61.

1. Institute of Mathematics, Polish Academy of Sciences. Presented by W. Orlicz.

ALTMAN, M.

A general method of steepest ortho-descent. Bul Ac Pol Mat 9 no.9: 645-651 '61.

1. Institute of Mathematics, Polish Academy of Sciences. Presented by W.Orlicz.

ALTMAN, M.

A gradient relaxation method for linear labegraic equations. Bul Ac Pol Mat 9 no.9:653-657 '61.

1. Institute of Mathematics, Polish Academy of Sciences. Presented by W. Orlicz.

ALTMAN, M.

ALTMAN, M.

A general method with minimum ortho-residua. Bul Ac Pol Mat 9 no.10: 739-744 '61.

1. Institute of Mathematics, Polish Academy of Sciences. Presented by W. Orlicz.

ALTMAN, M.

A linear iterative method with a vector parameter. Bul Ac Pol mat 9 no.3:169-174 '61.

1. New York University, N.Y. (U.S.A.), and Institute of Mathematics, Polish Academy of Sciences, Warsaw. Presented by W. Orlicz.

S/035/62/000/007/081/083
A001/A101

AUTHOR: Altman, M.

TITLE: An iterative method for linear algebraic equations

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 7, 1962, 30, abstract 7G219 ("Bull. Acad. polon. sci. Ser. sci. math., astron. et phys.", 1961, v. 9, no. 3, 175 - 177, English; Russian summary)

TEXT: The author reduces the solution of a linear system of algebraic equations $Ax=b$ with a non-singular matrix A and vector b, $\| b \| = 1$, to the solution of some problem of eigenvalues by the power method. Moreover, he introduces, as a parameter, an arbitrary vector, similar to scalar parameter in the upper relaxation method, on which essentially depends the convergence speed of the method. Convergence can be improved by a due selection of the vector parameter.

N. L.

[Abstracter's note: Complete translation]

Card 1/1

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A060/A000

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AUTHOR: Altman, M.

TITLE: A method of steepest ortho-descent

PERIODICAL: Referativnyy zhurnal, Matematika, no. 12, 1962, 37, abstract 12V191 (Bull. Acad. polon. sci. Sér. sci. math., astron. et phys., 1961, v. 9, no. 8, 575 - 580, English; summary in Russian)

TEXT: The solution of the linear equation

$$Ay = b \qquad (1)$$

is considered in Hilbert space, where A is a self-conjugate positive definite operator. Instead of solving equation (1), one solves the equation

$$Ax = (Ax,b)b, \quad \|b\| = 1, \qquad (2)$$

whose solution x is related to the solution y of equation (1) by the equation

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A method of steepest ortho-descent

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$$y = \frac{x}{(Ax,b)}.$$

In order to solve (2) the author constructs an iterative process differing from the Kantorovich method of steepest descent in that the corrections obtained at each step of the process are chosen orthogonal to the free term of the equation. Namely, one introduces a linear operator R with the aid of the relation $z = Rx = Ax - (Ax,b)b$, and the iterative process is constructed according to the formulae

$$x_{n+1} = x_n - \alpha_n z_n, \quad z_n = Rx_n,$$

where α_n is selected from the condition of minimality of the functional $F(z) = (R^{-1}z, z)$ defined in a subspace orthogonal to b.. It is demonstrated that the convergence of the process depends upon the free term and will be, in general, more rapid than the convergence of the method of steepest descent. An analogous process is constructed using incomplete relaxation.

[Abstracter's note: Complete translation]

V. N. Kublanovskaya

Card 2/2

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S/044/62/000/009/044/069
A060/A000

AUTHOR: Altman, M.

TITLE: A generalization of Laguerre's method for functional equations

PERIODICAL: Referativnyy zhurnal, Matematika, no. 9, 1962, 27, abstract 9V133 ("Bull. Acad. polon. sci. Sér. sci. math., astron. et phys.", 1961, v. 9, no. 8, 581 - 586; English; Russian summary)

TEXT: A linear equation $F(x) = 0$ in Banach space is considered, where F is a functional thrice differentiable continuously in the sense of Frechet. Say there exists a polynomial $f(z)$ of degree N, having distinct real roots and which majors the functional F:

$$\|F(x_0)\| \leqslant f(z_0),\ \frac{1}{\|F'(x_0)\|} \leqslant -\frac{1}{f'(z_0)},\ \|F''(x)\| \leqslant f''(z) \text{ and } \|F'''(x)\| \leqslant$$

$$\leqslant f'''(x) \text{ at } \|x - x_0\| \leqslant z - z_0 \leqslant z' - z_0,$$

where z' bounds the limit of possible variation of z_k under Laguerre iterations for the polynomial $f(z)$:

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A060/A000

A generalization of Laguerre's method for ....

$$z_{k+1} = z_k - \frac{Nf(z_k)}{f'(z_k) + \sqrt{H(z_k)}},$$

$H(z) = (N-1)^2 f'^2(z) - N(N-1) f(z) f''(z)$, $k = 0, 1, \ldots$. Under these conditions the sequence x_k defined by the iterative process

$$x_{k+1} = x_k - \frac{N F(x_k)}{\|F'(x_k)\| + \sqrt{H(x_k)}} y_k, \quad k = 0, 1, \ldots,$$

converges to the solution x^* of the equation $F(x) = 0$. The notation used here is $H(x) = (N-1)^2 \|F'(x)\|^2 - N(N-1) F(x) F''(x) yy$; y is an element determined from the condition $\|y\| = 1$, $F'(x) y = \|F'(x)\|$.

V.L. Zaguskin

[Abstracter's note: Complete translation]

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C111/C333

AUTHOR: Altman, M.

TITLE: A general method of steepest ortho-descent

PERIODICAL: Referativnyy zhurnal, Matematika, no. 7, 1962, 34, abstract 7V153. ("Bull. Acad. polon. sci. Sér. sci. math., astron. et phys.", 1961, 2 no. 9, 645-651)

TEXT: Considered is the equation

$$Ax = b \qquad (1)$$

where x and b are vectors in the Hilbert-space H, and A being a linear selfadjoint positively definite operator in H. One describes an iteration method for the solution of (1); the method converges like a geometric series. It is shown that the denominator of a series is generally smaller than in the steepest descent method of L. V. Kantorovich. The acceleration of the convergence thus possible demands a more complicated calculation scheme: On every step the auxiliary equation $Ay_n = b_n$ has to be solved, where y_n is contained in a certain subspace $L \subset H$ which has been chosen a priori. A special case of this method

Card 1/2

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A general method of steepest ...

was earlier described by the author.

[Abstracter's note: Complete translation.]

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Card 2/2

S/035/62/000/011/078/079
A001/A101

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AUTHOR: Altman, M.

TITLE: The gradient relaxation method for linear algebraic equations

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 11, 1962, 32, abstract 11G227 ("Bull. Acad. polon. sci. Sér. sci. math., astron. et phys.", 1961, v. 9, no. 9, 653 - 657, English; Russian summary)

TEXT: The author considers the system of equations

$$Ax = b \qquad (1)$$

where x and b are n-dimensional vectors, A is a symmetric positive definite matrix. An iteration method of solving system (1) is proposed:

$$x_{k+1} = x_k - \frac{(r_k, r_k) - (r_k, u_k)(Ar_k, u_k)}{(Ar_k, r_k) - (Ar_k, u_k)^2} y_k,$$

$$r_k = Ax_k - b, \quad y_k = r_k - (Ar_k, u_k) u_k,$$

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A001/A101

where u_k is an arbitrary vector satisfying the condition: $(r_k, u_k)(Ar_k, u_k) < 0$. The author proves that the method converges more rapidly than the method, by L. V. Kantorovich, of fastest drop. The fastest drop method can be considered as the limiting case of the described method (at $u_k = 0$). In the second part of the article the method is generalized; this yields a further improvement of convergence on account of using a larger number of vectors u_{ks}. The case is considered when u_k are coordinate vectors.

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V. Zaguskin

[Abstracter's note: Complete translation]

16.6500

S/044/62/000/010/026/042
B108/B102

AUTHOR: Altman, M.

TITLE: An iterative method for the eigenproblem of matrices

PERIODICAL: Referativnyy zhurnal. Matematika, no. 10, 1962, 55, abstract 10V162 (Bull. Acad. polon. sci. Ser. sci. math., astron. et phys., v. 9, no. 10, 1961, 727 - 732 [Eng.; summary in Russ.])

TEXT: An iterative method of finding the eigenvalues and eigenvectors of real symmetric matrices is considered. Its basis is a generalization of Newton's method, which was given by the author to find the zeros of nonlinear functionals in the Banach space (RZhMat, 1958, 3085). Let x_0 be an arbitrary vector such that

$$\|x_0\|^2 \neq \sum_{i=0}^{n} \frac{F^2(x_i)}{\|y_i\|^2},$$

where $F(x) = \left\| Ax - \frac{(Ax,x)}{(x,x)} x \right\|^2$,

Card 1/2

the x_i are determined by the recurrence formula

$$x_{n+1} = x_n - \frac{F(x_n)}{2\|y_n\|}\, y_n,\quad y_n = \left(A - \frac{(Ax_n, x_n)}{(x_n, x_n)}\, I\right)^2 x_n .$$

It is demonstrated that $\frac{(Ax_n, x_n)}{(x_n, x_n)}$ converges to the eigenvalue λ of the matrix A. If λ is a single eigenvalue then x_n will converge to the eigenvector x^* corresponding to λ, and $\left\| \frac{(x_n, x^*)}{\|x^*\|^2}\, x^* - x_n \right\| < \frac{\sqrt{2F(x_n)}}{c}$ for sufficiently large n. c is the distance from λ to the next eigenvalue. If λ is a multiple eigenvalue, then an eigenvector x_n^* corresponding to λ will exist such that

$$\|x_n^* - x_n\| < \frac{\sqrt{2F(x_n)}}{c} \quad \text{for sufficiently large n.}$$

[Abstracter's note: Complete translation.]

Card 2/2

41455

S/044/62/000/009/045/069
A060/A000

11. 6500

AUTHOR: Altman, M.

TITLE: A generalized method of steepest descent

PERIODICAL: Referativnyy zhurnal, Matematika, no. 9, 1962, 27 - 28, abstract 9V134 ("Bul. Acad. polon. sci. Sér. sci. math., astron. et phys.", 1961, v. 9, no. 10, 733 - 737, English; Russian summary)

TEXT: A is a self-adjoint operator with bounds m and M, $0 < m < M < \infty$. A method is proposed for solving the equation

$$Ax = b \qquad (1)$$

which is considered by the author as a generalization of the method of steepest descent. Let L be any subspace orthogonal to b, $\mathcal{L} = A(L)$, and P_L is the projection operator onto L. Set $P_{\mathcal{L}} b = Ab$, $b' = b - Ab$. If x^* is a solution of equation (1) then $x' = x^* - b$ solves the equation

$$Ax = b', \qquad (2)$$

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S/044/62/000/009/045/069
A060/A000

A generalized method of steepest descent

We set

$$Rx = Ax - \frac{(Ax, b')}{(b', b')} b' - P_{\gamma} Ax$$

and seek the nontrivial solution of equation $Rx = 0$. For this we select an element x_0, $(x_0, b) \neq 0$ and construct a sequence $\{x_n\}$ according to the formula $x_{n+1} = x_n - a_n z_n$, where

$$z_n = Rx_n, \quad a_n = \frac{(z_n, z_n)}{(Az_n, z_n)}.$$

It is demonstrated that x_n tends to the nontrivial solution of the equation $Rx = 0$ at the rate of a geometric progression. The sequence

$$y_n = \frac{\|b'\|^2}{(Ax_n, b')} (x_n - \tilde{x}_n), \quad \tilde{x}_n = A^{-1} P_{\gamma} Ax_n$$

converges to the solution of equation (2) at the same rate. Reviewer's Remark: In those cases when the need for an approximate solution of equation (1) actually arises, the author's method apparently cannot be realized, since the construc-

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S/044/62/000/009/045/069
A060/A000

A generalized method of steepest descent

tion of a sequence of elements $\tilde{b} = A^{-1}P_L b$, $\tilde{x}_n = A^{-1}P_L x_n$ is a more difficult task than the construction of a single element $x^* = A^{-1}b$.

S. G. Mikhlin

[Abstracter's note: Complete translation]

Card 3/3

41456
S/044/62/000/009/046/069
A060/A000

16.6500

AUTHOR: Altman, M.

TITLE: A general method with minimum ortho-residua

PERIODICAL: Referativnyy zhurnal, Matematika, no. 9, 1962, 28, abstract 9V135 ("Bull. Acad. polon. sci. Sér. sci. math., astron. et phys.", 1961, v. 9, no. 10, 739 - 744 (English; Russian summary)

TEXT: A is a self-adjoint operator with finite bounds, acting in some Hilbert space. The following method is proposed for the approximate solution of the equation $Ax = b$. It may be considered that $\|b\| = 1$. Let L be any subspace orthogonal to b and to Ab, and $\mathcal{L} = A(L)$. $P_{\mathcal{L}}$ denotes the projection operator onto $\mathcal{L}$. We set

$$Rx = Ax - (Ax,b)\, b - P_{\mathcal{L}} Ax$$

and seek the nontrivial solution of the equation $Rx = 0$. For this we select an

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16.6500

S/044/62/000/007/060/100
C111/C333

AUTHOR: Altman, M.

TITLE: A general majorant principle for functional equations

PERIODICAL: Referativnyy zhurnal, Matematika, no. 7, 1962, 34-35, abstract 7V155. ("Bull. Acad. polon. sci. Sér. sci. math., astron et phys.", 1961, 9, no. 10. 745-750)

TEXT: One investigates several iteration methods of higher order for the solution of functional equations in the Banach space by determination of the zero elements of certain non-linear functionals. For these iteration methods one puts up a general majorant principle the special cases of which are the methods of Newton, Chebyshev, Laguerre and the method of the tangential hyperboles.

[Abstracter's note: Complete translation.]

Card 1/1

S/044/62/000/010/027/042
B108/B102

AUTHOR: Altman, M.

TITLE: An iterative method for the eigenproblem of linear operators

PERIODICAL: Referativnyy zhurnal. Matematika, no. 10, 1962, 33-34, abstract 10V163 (Bull. Acad. polon. sci. Sér. sci. math., astron. et phys., v. 9, no. 10, 1961, 751 - 755 (Eng.))

TEXT: The author's method of finding the approximate eigenvalues and eigenvectors of a matrix (abstract 10V162) is extended to the case of self-adjoint linear limited operators in Hilbert space. Let x_0 be an arbitrary element such that

$$\|x_0\|^2 \neq \frac{7}{4} \sum_{i=0}^{\infty} \frac{F^2(x_i)}{\|y_i\|} ,$$

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An iterative method for the ...

where $F(x) = \|x\|^2 \|Ax\| - \frac{(Ax,x)}{\|x\|^2} x^2$ and where x_i is determined by the recurrence formula

$$x_{n+1} = x_n - \frac{\|x_n\|^2 \|Ax_n\|^2 - (Ax_n,x_n)^2}{2\|y_n\|^2} y_n ,$$

$$y_n = \|x_n\|^2 \left(A - \frac{(Ax,x)}{\|x\|^2} I\right)^2 x_n + \left\| \left(A - \frac{(Ax,x)}{\|x\|^2} I\right) x \right\|^2 x.$$

It is demonstrated that $\frac{(Ax_n,x_n)}{\|x_n\|^2}$ converges to a definite value λ, in which case $Ax_n - \frac{(Ax_n,x_n)}{\|x_n\|^2} x_n \to 0$. Moreover, if the operator A is

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B108/B102

An iterative method for the ...

completely continuous, then λ will be an eigenvalue for A, and the progression x_n converges rapidly to the eigenvector x^* which corresponds to λ. A generalization of this method by introducing a numerical parameter is considered. [Abstracter's note: Complete translation.]

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Card 3/3

S/044/62/000/008/047/073
C111/C333

An iterative method for the . . .

If $a_n = (Ax_n, x_n)$, then $0 \leq a_{n+1} \leq a_n$. If x_n is not weakly converging to zero, then $\lim a_n = \lambda$ is an eigenvalue of A and there exists a subsequence, which converges weakly to the corresponding eigenvector. If $A = A_1 + aI$, a being a number and A_1 being a compact operator, then x_n converges strongly to the eigenvector. There is considered a generalized method, where $x^{n+1} = x_n + \alpha t_n y_n$, α being a suitable chosen parameter.

[Abstracter's note: Complete translation.]

Card 2/2

~~16.6500~~

S/044/62/000/012/037/049
A060/A000

AUTHOR: Altman, M.

TITLE: Two iterative methods for linear algebraic equations

PERIODICAL: Referativnyy zhurnal, Matematika, no. 12, 1962, 37, abstract 12V189 (Bull. Acad. polon. sci. Sér. sci. math., astron. et phys., 1961, v. 9, no. 11, 779 - 783, English; summary in Russian)

TEXT: A modification is considered of gradient methods (the method of steepest descent and the gradient method with minimal misclosure) which makes it possible to reduce the number of multiplications required for every step of the process by a factor of almost two. Namely, in contradistinction to the above-mentioned methods, the vectors in the direction of which the minimization of the chosen functionals is carried out are not gradients of the functional, but vectors whose coordinates are the signs of the coordinates of the gradient under consideration. The convergence of the constructed processes is proven and their extension is considered to gradient methods with incomplete relaxation.

[Abstracter's note: Complete translation] V. N. Kublanovskaya

Card 1/1

11.(2M)

S/044/62/000/012/038/049
A060/A000

AUTHOR: Altman, M.

TITLE: A general deflation principle for linear iterations

PERIODICAL: Referativnyy zhurnal, Matematika, no. 12, 1962, 37, abstract 12V190 (Bull. Acad. polon. sci. Sér. sci. math., astron. et phys., 1961, v. 9, no. 11, 785 - 790, English; summary in Russian)

TEXT: To accelerate the convergence of gradient iterative methods for solving linear systems, the author considers three versions of the deflation principle, which make it possible to carry out iterative processes in an auxiliary subspace chosen in such a way as to improve the specificity of the operator. Methods are indicated for the efficient construction of a subspace, and the convergence of the iterative processes constructed in them is proven.

V. N. Kublanovskaya

[Abstracter's note: Complete translation]

Card 1/1

16 4500

S/044/62/000/009/041/069
A060/A000

AUTHOR: Altman, M.

TITLE: A Newton-type method for linear equations

PERIODICAL: Referativnyy zhurnal, Matematika, no. 9, 1962, 25, abstract 9V127 ("Bull. Acad. polon. sci. Sér. sci. math., astron. et phys.", 1961, v. 9, no. 11, 791 - 794; English; Russian summary)

TEXT: To solve the equation $Ax = b$, where A is a linear operator, x and b are vectors in Hilbert space, $\|b\| = 1$, the iteration process $x_{n+1} = x_n - \frac{(y_n, x_n)}{2\|y_n\|^2} y_n$, where $y_n = R' Rx_n$, is proposed, or, what is equivalent,

$$y_{n+1} = y_n - \frac{(y_n, x_n)}{2\|y_n\|^2} R' Ry_n, \quad R = A - bb'A .$$

The author asserts that it is more convenient to program this method than, for instance, the method of steepest descent

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S/044/62/000/009/041/069
A060/A000

A Newton-type method for linear equations

$$\left(x_{n+1} = x_n - \frac{(y_n, y_n)}{(y_n, Ay_n)} y_n,\ y_n = Ax_n - b \quad \text{or} \right.$$

$$\left. y_{n+1} = y_n - \frac{(y_n, y_n)}{(y_n, Ay_n)} Ay_n \right).$$

V.L. Zaguskin

[Abstracter's note: Complete translation]

Card 2/2

ALTMAN, M.

Concerning the deflation principle of linear iterations. Bul Ac Pol mat 9 no.12:873-876 '61.

1. Institute of Mathematics, Polish Academy of Sciences, Warsaw. Presented by W. Orlicz

ALTMAN, M.

Connection between gradient methods and Newton's method for functionals. Bul Ac Pol mat 9 no.12:877-880 '61.

1. Institute of Mathematics, Polish Academy of Sciences, Warsaw. Presented by W. Orlicz

ALTMAN, M.

An iterative method for the eigenproblem of normal operators in Hilbert space. Bul Ac Pol mat no.5:245-250 '63.

1. Institute of Mathematics, Polish Academy of Sciences, Warsaw.
Presented by T. Wazewski.

ALTMAN, M.

Existence of weak solutions of general quasi-linear hyperbolic equations with two independent variables and their numerical computations. Bul AŒ Pol mat 11 no.3:85-88 '63.

1. Institute of Mathematics, Polish Academy of Sciences, Warsaw. Presented by T. Wazewski.

ALTMAN, M.

Existence, uniqueness and numerical computation of the solution of Cauchy's problem for quasi-linear hyperbolic systems with two independent variables. Bul Ac Pol mat 11 no.5:251-255 '63.

1. Institute of Mathematics, Polish Academy of Sciences, Warsaw. Presented by T. Wazewski.

ALTMAN, M.

Stationary points in nonlinear programming. Bul Ac Pol mat 12 no. 1: 29-35 '64.

A feasible direction method for solving the nonlinear programming problem. Ibid.: 43-50.

1. Institute of Mathematics, Polish Academy of Sciences, Warsaw. Presented by T. Wazewski.

AITMAN, M.

Optimum simplex methods and degeneracy in linear programming.
Bul Ac Pol mat 12 no.4:217-225 '64.

1. Institute of Mathematics, Polish Academy of Sciences, Warsaw.
Presented by T. Kazowski.

ALTMAN, M.

A gradient method in linear programming. Bul Ac Pol math 12 no.8:483-489 '64.

1. Institute of Mathematics of the Polish Academy of Sciences, Warsaw. Presented by T. Wazewski.

ALTMAN, M.

Elimination method in linear programming. Bul Ac Pol math 12 no.7:405-413 '64.

1. Institute of Mathematics of the Polish Academy of Sciences, Warsaw. Presented by T. Wazewski.

ALTMAN, M.

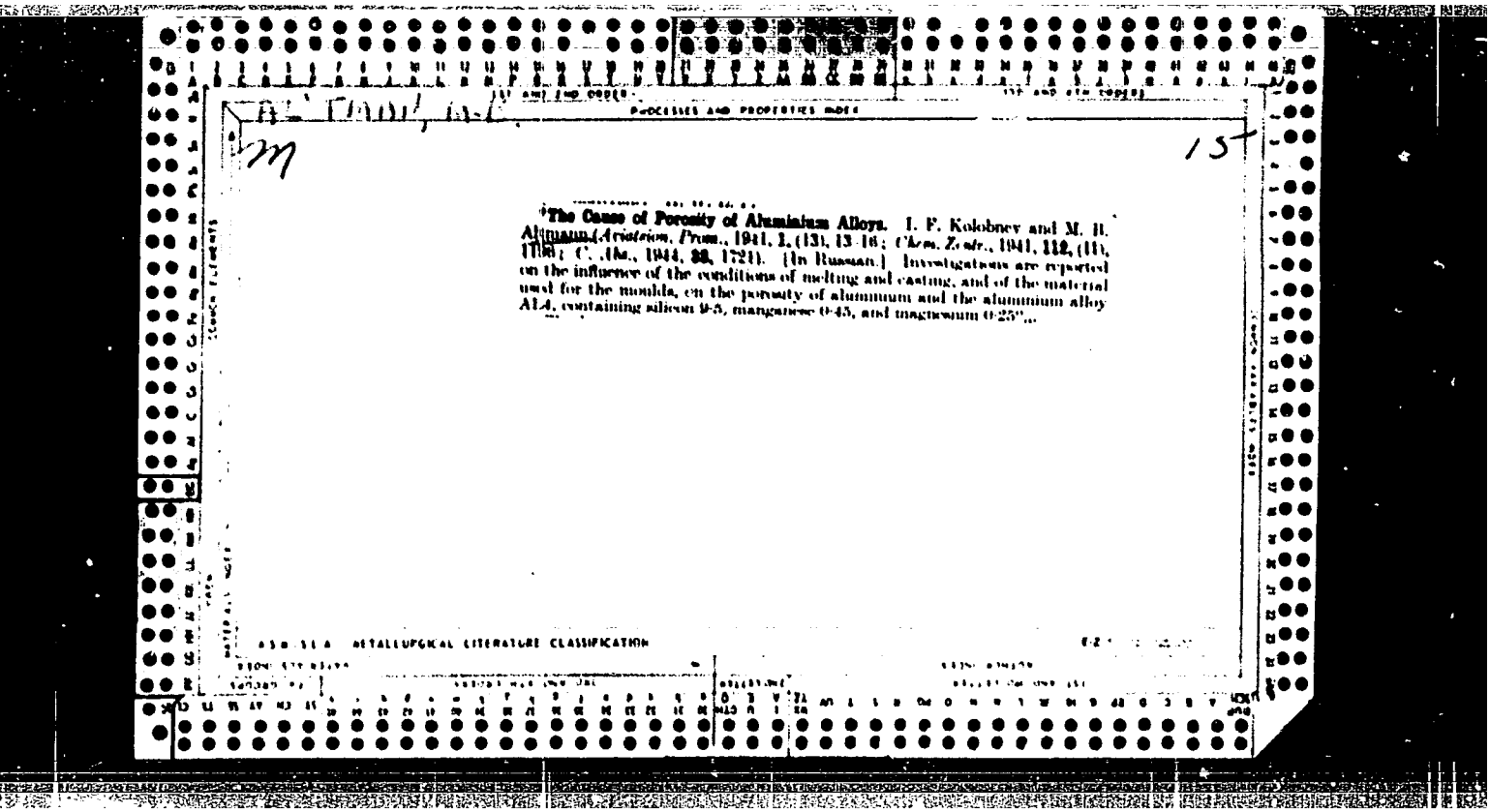
An elimination method for linear programming with application to the decomposition problem. Bul Ac Pol math 13 no.1:49-53 '65.

1. Institute of Mathematics of the Polish Academy of Sciences, Warsaw. Submitted November 9, 1964.

ALTMAN, M.(Warsaw)

The cosine equation method for the eigenproblem of bounded normal operators in Hilbert space. Annales Pol math 16 no.3: 353-357 '65.

1. Submitted October 1, 1964.



PROCESSES AND PROPERTIES INDEX

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The Cause of Porosity of Aluminium Alloys. I. F. Kolobnev and M. B. Alimarin. *Aviatsion. Prom.*, 1941, 1, (13), 13–16; *Chem. Zentr.*, 1941, 112, (II), 1788; *C. (Ab.)*, 1944, **38**, 1721). [In Russian.] Investigations are reported on the influence of the conditions of melting and casting, and of the material used for the moulds, on the porosity of aluminium and the aluminium alloy A14, containing silicon 9·5, manganese 0·45, and magnesium 0·25"...

ASM STEEL METALLURGICAL LITERATURE CLASSIFICATION

AL'TMAN, M.B.

SOKOLOVSKIY, L.O.; VAKHROMEYER, M.N.; KAPALIN, A.G.; AL'TMAN, M.B., kandidat tekhnicheskikh nauk, redaktor; UVAROVA, A.F.; tekhnicheskiy redaktor.

[Casting with aluminum-magnesium alloys AL8 and AL13] Lit'e iz aluminievo-magnievykh splavov AL8 i AL13. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1955. 63 p. (MLRA 8:8)
(Aluminum founding)

AL'TMAN, M. B., LEBEDEV, A. A., POLYANSKIY, A. P. CHUKHROV, M. V.

Plavka i Lit'ye Legkikh Splavov (Smelting and Casting of Light Alloys), by M. B. Al'tman, A. A. Lebedev, A. P. Polyanskiy, and M. V. Chukhrov, Moscow, Metallurgizdat, 1956, 491 pp (from catalogue card, State Library USSR imeni V. I. Lenin, 6P4.1)

"The book describes the fundamental technological processes of smelting and casting aluminum and magnesium alloys. Information on casting in sand molds, chill molds, pressure casting, shell casting, and investment casting is presented. Furnace layouts for smelting are studied. Instructions for the collection and reprocessing of tailings and methods of inspecting castings and the mechanical properties of alloys are specified. A separate chapter is devoted to the properties of aluminum and magnesium alloys. Bibliography (21 items). The book is intended for engineering-technical workers of enterprises in which light metal castings are produced, and may also be used as a textbook for students in higher educational institutions."

Sum 1219

ALTMAN, M.B.

KOLOBNEV, I.F.; KRYMOV, V.V.; POLYANSKIY, A.P.; ALTMAN, M.B., kand.tekhn. nauk, retsenzent; ZAKHAROVA, G.V., kand.tekhn.nau, retsenzent; TIKHOVA, M.M., kand.tekhn.nauk, retsenzent; ARBUZOV, B.A., inzh., retsenzent; ASTAULOV, V.S., inzh., retsenzent; BOYKOVA, L.T., inzh. retsenzent; KITARI-OGLU, G.S., inzh.retsenzenty; KRYSIN, B.T., inzh., retsenzent; LOTAREVA, O.B., inzh., retsenzent; SMIRNOVA, T.I., inzh., retsenzent; KHODOROVSKIY, G.L., inzh., retsenznet; RUBTSOV, N.N.,prof. doktor tekhn.nauk,red.; KOLOBNEV, I.F., kand.tekhn.nauk., red. SIROTIN, A.I., inzh. red.izd-va; MODEL', B.I., tekhn.red.

[Founder's handbook; shape founding with aluminum and magnesium alloys] Spravochnik liteishchika; fasonnoe lit'e iz aliuminevykh i magnievykh splavov. Pod obshchei red. N.N.Rubtsova. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1957. 482 p. (MIRA 11:2)
(Founding) (Aluminum--Metallurgy)
(Magnesium--Metallurgy)

SOV/24-58-9-4/31

AUTHORS: Al'tman, M.B., Vinogradova, D.V., Slotin, V.I. and Eskin, G.I.

TITLE: The Effect of Elastic Ultrasonic-frequency Vibrations on the Processes of De-gassing Aluminium Alloys (O vozdeystvii uprugikh kolebaniy ul'trazvukovoy chastoty na protsess degazatsii alyuminiyevykh splavov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 9, pp 25 - 30 (USSR)

ABSTRACT: When elastic vibrations of ultrasonic frequency are induced in a molten metal, the resulting excitation phenomena leads to breaks in the continuity of the liquid phase and to the formation of voids which tend to be filled with the gas dissolved in the melt. Thus, the elastic vibrations of sonic and particularly ultrasonic frequency promote the nucleation of gas bubbles, their subsequent growth and coalescence into bubbles large enough to rise up spontaneously to the surface of the liquid phase. The present paper describes the results of experiments in which this effect of ultrasonic vibrations was utilised for removing hydrogen from an aluminium alloy (AL20) containing 2% Cu, 0.8% Mg, 2.5% Si, 1% Ni, 1% Fe and 0.1% Ti. A 10 kW self-exciting

Cardl/3

The Effect of Elastic Ultrasonic-frequency Vibrations on the Processes of De-gassing Aluminium Alloys

generator was used as the source of the high-frequency electromagnetic (20 kc/s) vibrations. These were converted into mechanical vibrations by means of a magnetostrictive converter which is described in detail and shown schematically in Figure 1. Finding a suitable material for the probe (the part transmitting the mechanical vibrations to the melt) presented the main difficulty in the construction of the converter. The cavitation effects in the liquid surrounding the probe resulted in sudden changes of the pressure causing micro-explosions which in a very short time led to a failure of the probe due to erosion. Fused quartz, steel, steel with copper and a titanium alloy end plates and a titanium alloy VT1 were tried. The VT1 alloy was found to be most durable, although this alloy was also eroded to some extent, as shown by the fact that the Ti content of the melt subjected to ultrasonic vibrations for 23 min increased from 0.1 to 0.3%. The degree of de-gassing was determined qualitatively by watching the number and size of the gas bubbles given off in the moment of its solidification by a small sample of the molten metal ladled from the melt with an iron

The Effect of Elastic Ultrasonic-frequency Vibrations on the Processes of De-gassing Aluminium Alloys

spoon and placed under an evacuated glass bell (residual pressure - approx. 0.5 mm Hg). In addition the macro-structure of the solidified samples was examined and the effect of the ultrasonic vibrations treatment of various durations on the gas porosity of the investigated alloy is shown in Figures 2 - 4. Increasing the energy of the ultrasonic vibrations did not affect the results of the experiments. With the average energy output of 1 kW, 5 min treatment of the melt at 720-730 °C was sufficient to obtain an alloy free from gas porosity. There are 4 figures, 1 table and 10 references, 2 of which are Soviet, 7 German and 1 English.

SUBMITTED: May 15, 1958

Card 3/3

SOV/180-59-3-15/43

AUTHORS: Al'tman, M.B., Slotin, V.I., Stromskaya, N.P. and Eskin, G.I., (Moscow)

TITLE: Change in the Structure and Properties of Aluminium and its Alloys Produced by Ultrasonic Treatment

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1959, Nr 3, pp 88-91 (USSR)

ABSTRACT: An ultrasonic vibrator UZG-10 was used together with a magnetostriction transducer PMS-9. Alloys tested were A-00 (pure Al), AL-9 (Al-Si-Mg) and high strength AL-20 (Al-Si-Cu-Mg). They were subjected to ultrasound of up to 6-7 W/cm^2 intensity and 19-20 kc/s frequency. Fig 1 shows photographs of macrostructures of A-00 and Al-20 before and after ultrasonic treatment. Microstructures are given in Fig 2 and here the differences are less noticeable. Mechanical properties, density and Ti content are given in the table. This shows that ultrasonic vibrations are very effective in degassing aluminium melts giving ingots of higher density. Mechanical properties are also improved by ultrasonic vibrations eg the tensile strength of Al-9 is increased from 18.8 to 20.2 kg/mm^2; density and the yield point are also increased. Similar increases are observed for

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Change in the Structure and Properties of Aluminium and its Alloys Produced by Ultrasonic Treatment

other alloys. Ultrasonics were introduced through metal waveguides which were immersed in molten (720-730°C) aluminium. The waveguides were gradually corroded by cavitation and diffusion into molten aluminium. This corrosion effect can be used to introduce refractory materials such as Ti, V, Zr into aluminium and its alloys by using Ti, V, Zr etc as waveguide material. Fig 5 shows the time rate of increase of the Ti content in A-0-0, AL-20 and AL-9 when a Ti waveguide was used. The results obtained are confirmed by X-ray analysis (Fig 3) which showed that ultrasonic vibrations caused grain refinement and polygonisation. There are 5 figures, 1 table and 3 references, 1 of which is English and 2 Soviet.

SUBMITTED: March 4, 1959

ESKIN, Georgiy Iosifovich; AL'TMAN, M.B., red.; EL'KIND, L.M., red. izd-va; EVENSON, I.M., tekhn. red.

[Ultrasonics in metallurgy; improving the structure and properties of metals and alloys]Ul'trazvuk v metallurgii; uluchshenie struktury i svoistv metallov i splavov. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii,1960. 46 p. (MIRA 14:9)
(Ultrasonic waves—Industrial applications) (Metallography)

Altman, M.B.

PHASE I BOOK EXPLOITATION SOV/4343

Soveshchaniye po teorii liteynykh protsessov, 3d

Usadochnyye protsessy v metallakh; trudy soveshchaniya (Shrinkage Processes in Metals; Transactions of the Third Conference on the Theory of Casting Processes) Moscow, AN SSSR, 1960. 281 p. Errata slip inserted. 3,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.

Resp. Ed.: B.B. Gulyayev, Doctor of Technical Sciences, Professor; Ed. of Publishing House: V.S. Rzheznikov; Tech. Ed.: T.V. Polyakova.

PURPOSE: This collection of articles is intended for scientific workers, engineers, technicians of scientific research institutes and industrial plants, and for faculty members of schools of higher education.

COVERAGE: The collection contains technical papers presented at the Third Conference on the Theory of Casting Processes, organized by Liteynaya sektsiya Komissii po tekhnologii mashinostroyeniya Instituta mashinovedeniya AN SSSR (Casting Section of the Commission for Machine-Building Technology of the Institute of Science of Machines, Academy of Sciences USSR) and by Institut metallurgii imeni Baykova AN SSSR (Institute of Metallurgy imeni A.A. Baykov, Academy of Sciences USSR). The most serious defects in castings, ingots, and welds as a result of metal shrinkage are reviewed. Factors contributing to the formation of shrinkage cavities, porosity, cracks, fissures, distortion, and internal stresses are analysed along with measures taken to prevent and remedy them. The hydrodynamics of molten metals and the process of solidification of metals are discussed. Also presented are resolutions adopted at the Conference with regard to the problem of shrinkage in metals. No personalities are mentioned. Most papers are accompanied by bibliographic references, the majority of which are Soviet.

TABLE OF CONTENTS:

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FRIDLYANDER, I.N., doktor tekhn. nauk, red.; AL'TMAN, M.B., kand. tekhn. nauk, red.; BAZHENOV, M.F., inzh., retsenzent; RZHEZNIKOV, V.S., kand. tekhn. nauk, red.; ANIKINA,M.S., red.izd-va; ORESHKINA, V.I., tekhn. red.

[Aluminum foundry alloys (properties, technology of melting, casting and heat treatment)] Liteinye aliuminevye splavy (svoistva, tekhnologiia plavki, lit'ia i termicheskoi obrabotki); sbornik statei. Moskva, Gos. nauchno-tekhn. izd-vo Oborongiz, 1961. 202 p. (MIRA 15:2)
(Aluminum alloys) (Founding)

FRIDLYANDER, Iosif Naumovich, kand. tekhn. nauk; KUTAYTSEVA, Yekaterina Ivanovna, kand. tekhn.nauk; UDAL'TSOV, A.N., glav. red.; AL'TMAN, M.B., kand. tekhn. nauk, red.

[High strength V95 aluminum alloy; system aluminum - magnesium - zinc - copper]Vysokoprochnyi aliuminevyi splav V95; sistemy aliuminii - magni - tsink- med'. Moskva, In-t tekhniko-ekon. informatsii, 1956. 61 p. (Informatsiia o nauchno-issledovatel'skikh rabotakh. Tema 6. No.I-56-34) (MIRA 16:3)

(Aluminum-magnesium-zinc alloys)

S/724/61/000/000/005/020

AUTHORS: Al'tman, M. B., Lotareva, O. B., Postnikov, N. S., Spiridonova, S. B.

TITLE: The cast Aluminum alloy BAA 4 [VAL4] (BA15 [VL15]).

SOURCE: Liteynyye alyuminiyevyye splavy; svoystva, tekhnologiya plavki, lit'ya i termicheskoy obrabotki. Sbornik statey. Ed. by I. N. Fridlyander and M. B. Al'tman. Moscow, Oborongiz, 1961, 43-51.

TEXT: The paper describes a new alloy of the system Al-Mg-Zn, developed by I. F. Kolobnev, M. B. Al'tman, and O. B. Lotareva to achieve better strength characteristics than those of the similar alloy A612F described in the ALCOA Aluminum Handbook, 1957. The technological properties of the new alloy permit its application over a wide range of casting dimensions and configurations. The alloy excels in the stability of its mechanical properties across the cross-section of a thick casting. The alloy machines and polishes well and is readily welded and brazed, all of which makes it suitable for complex parts of electrical and radio equipment. The step-by-step development of the alloy is described, leading up to the final composition of the alloy: 3.5-4.25% Zn, 1.5-2% Mg, 0.2-0.5% Mn, 0.1-0.2% Ti, the remainder Al. The alloy is essentially an Al-$Al_2Mg_3Zn_3$ alloy. The phase diagram of this type of alloy is examined to obtain guidance for a suitable heat treatment.

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A two-stage heating procedure prior to quench, comprising a heating to 475°C for 2 hrs and 580° for 3 hrs was selected, except that thin-walled parts, free of any local thickenings, can be heated directly to 580° for 5 hrs. Parts are then quenched and are maintained at 120° for 8 hrs to achieve a further strengthening. Air-cooling from 580° was also tested. The microstructure of the cast alloy consists of solid-solution grains, along the boundaries of which small quantities of $MgZn_2$ and impurities appear. After heat treatment, a $MgZn_2$ phase is no longer observed, and the amount of T phase is significantly reduced. Corrosion tests showed a corrosion resistance of the VAL4 alloy close to that of the AL2 and AL13 alloys, and, hence, far exceeding that of the ordinary cast alloys which contain Cu. The hermeticity of VAL4 is not outstandingly good; leakage began at 60- to 80-atm pressure, thus placing the VAL4 alloy into the same category as the AL7 and AL8 alloys. There are 4 figures, 3 tables, and 4 references (2 Russian-language Soviet and 2 English-language: Metallurgia, v.51, no.306, 1955, and the ALCOA Aluminum Handbook, 1957).

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S/724/61/000/000/016/020

AUTHORS: Al'tman, M.B., Slotin, B.I., Stromskaya, N.P., Eskin, G.I., Loktionova, L.I.

TITLE: The degassing of Aluminum and its alloys by ultrasonic vibrations

SOURCE: Liteynyye alyuminiyevyye splavi; svoystva, tekhnologiya plavki, lit'ya i termicheskoy obrabotki. Sbornik statey. Ed. by I.N. Fridlyander and M. B. Al'tman. Moscow, Oborongiz, 1961, 134-143.

TEXT: The paper describes an experimental investigation which deals with the use of ultrasonic (US) vibrations in the degassing of Al and its alloys. A brief state-of-the-art survey is presented. The equipment involved comprising a magnetostrictive transformer, a concentrator, a wave-guide, and a crucible containing the melt are shown in a cross-sectional diagram. The metals tested by means of US vibrations comprised pure Al of grade A00, a medium-strength alloy with good casting properties, namely AL9 (AL9), an Al-Si-Mg alloy, and a high-strength cast alloy, AL20 (AL20), an Al-Si-Cu-Mg alloy. Following the US treatment, the alloys were cast in sand molds, and tensile specimens 10-mm diam and various practical parts were cast. The parts were subjected to X-ray transillumination and hydraulic tests under a 10-at pressure. An empirical gas-content scale was

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adopted based on the segregation of gas bubbles at the moment of crystallization under vacuum, ranging from 5 points for intensive segregation of gas along the specimen surface to 1 point for crystallization without any visible segregation of gas. In addition, the vacuum specimens were cut in two, and the macrostructure of the sections was inspected after etching with a 10% solution of NaOH. The US treatment of the Al and its alloys was found to be an effective method for degassing. US treatment of an alloy prior to pouring into a mold increases the density and improves the mechanical properties of the castings. The properties are summarized in a full-page table. It was found that during US treatment of an alloy the alloy becomes saturated with the material of certain vibrators (for example, Mo) as a result of their dispersion under the action of the elastic vibration and of the temperature. It is suggested that this phenomenon may be usefully employed to produce intentional inoculation and alloying of the alloys. It is established that Nb is the most stable material for wave-guides, so that it may be recommended for the making of wave-guides from which no inoculation is to occur. There are 4 figures, 2 tables, and 5 references (2 Russian-language Soviet and 3 German-language). Thanks are expressed to the late G. M. Rovenskiy and to G. V. Zhevakina for the performance of the X-ray investigation.

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AUTHORS: Al'tman, M. B., Stromskaya, N. P., Baykova, L. T., Korol'kova, L. M.

TITLE: The refining of cast Al alloys with trichloride of Boron.

SOURCE: Liteynyye alyuminiyevyye splavy; svoystva, tekhnologiya plavki, lit'ya i termicheskoy obrabotki. Sbornik statey. Ed. by I. N. Fridlyander and M. B. Al'tman. Moscow, Oborongiz, 1961, 144-149.

TEXT: The paper describes an experimental investigation of the refining of cast Al alloys by means of BCl_3 for the purpose of eliminating gaseous and solid nonmetallic inclusions comprising primarily H and oxides of Al and of other metals participating in an Al alloy. The investigation endeavors to obviate the shortcoming of $ZnCl_2$, $MnCl_2$, and $AlCl_2$, heretofore employed for this purpose, namely, the introduction by them of quantities of water which, as is known, constitutes the primary source of gaseous porosity of Al alloys. BCl_3 with its low temperature of vaporization (18°C) appeared to be suitable. The Al alloys tested comprised the Al-Si system (alloy AL4), the Al-Cu system (alloys AL10-V and AL1), and the Al-Mg system (alloy AL8). The refining procedure of each of these alloys is described in detail. In summary, the BCl_3 refining of the four alloys produced a favorable effect on the density and the mechanical properties of the castings (tensile strength,

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