"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

L 32469-65
ACCESSION NR: AR4046311

$$\mathfrak{A}^{*}: H^{-l+m}(\Omega) \times \prod_{j} H^{-l+m_j+\frac{1}{2}}(\partial\Omega) \to H^{-l}(\Omega)$$

determines the homeomorphism (also with an accuracy to finite-dimensional spaces). In addition, the following theorem on increased smoothness is correct: if the solution of the equation

$$Au = f(x) \quad (x \in \Omega),$$
$$B_j u = \varphi_j(x) \quad (x \in \partial\Omega)$$

a priori pertains to $H^s(\Omega)$ $s \geq l_0$, and $f(x) \in H^{1-2m}(\Omega)$, $\varphi_j \in H^{1-m_j-1/2}(\partial\Omega)$, then for $l' > s$, the solution actually pertains to the space $H^{l'}(\Omega)$ and the corresponding apriori estimate is true. The paper presents theorems on homeomorphism for the intermediate spaces H^k and normal homogeneous boundary conditions. These theorems are applied to local increase of smoothness of the solution down to the boundary. The proof rests on the interpolation theorem which consists in the following: if H^t and $H^{t'}$ are 2 Hilbert scales of space and the operator B operates

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L 32469-65

ACCESSION NR: AR4046311

continuously from H^{t_1} to $H^{t'_1}$ and from H^{t_2} to $H^{t'_2}$ $(t_2 > t_1)$, then it will continuously map some space $H_{(1-\lambda)t_1+\lambda t_2}$ in $H'_{(1-\lambda)t'_1+\lambda t'_2}$ $(\lambda \in [0, 1])$. It is noted, in conclusion, that all results are correct for equations in which the coefficients a (x) can undergo discontinuity on the smooth, closed, mutually disjoined manifolds grouped inside . In this case, natural conjugation conditions are given on these manifolds. B. Sternin.

SUB CODE: MA ENCL: 00

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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ROYTBERG, Ya.A.; SHEFTEL', Z.G.

Elliptic equations with discontinuous coefficients. Dokl. AN SSSR 146 no.6:1275-1278 O '62. (MIRA 15:10)

1. Stanislavskiy pedagogicheskiy institut i Drogobychskiy pedagogicheskiy institut. Predstavleno akademikom S.L. Sobolevym. (Differential equations)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ROYTBERG, Ya.A.; SHEFTEL', Z.G.

Energy inequalities for elliptic operators with discontinuous coefficients, for general boundary conditions and conditions of conjugation. Dokl. AN SSSR 148 no.3:531-533 Ja '63. (MIRA 16:2)

1. Stanislavskiy gosudarstvennyy pedagogicheskiy institut i Drogobychskiy gosudarstvennyy pedagogicheskiy institut im. Iv.Ya. Franka. Predstavleno akademikom S.L. Sobolevym.
(Inequalities (Mathematics) (Operators (Mathematics))

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

BEREZANSKIY, Yu.M.; KREYN, S.G.; ROYTBERG, Ya.A.

Theorem on homeomorphisms and a local increase in smoothness up to the boundary of solutions to elliptic equations. Dokl. AN SSSR 148 no.4:745-748 F '63. (MIRA 16:4)

1. Institut matematiki AN UkrSSR, Voronezhskiy gosudarstvennyy universitet i Stanislavskiy pedagogicheskiy institut
Predstavleno akademikom I.G.Petrovskim.
(Hilbert space) (Differential equations)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

S/020/63/148/005/007/029
B112/B186

AUTHORS: Roytberg, Ya. A., Sheftel', Z. G.

TITLE: General boundary-value problems for elliptic equations with discontinuous coefficients

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 5, 1963, 1034-1037

TEXT: General boundary-value problems for any-order elliptic differential equations with discontinuous coefficients are shown to be solvable in the generalized as well as in the classical sense. The boundary and transition conditions are formulated by means of general differential operators. The investigation is based on a series of inequalities derived by the authors in their paper DAN, 148, no. 3 (1963). Once more the well-known functional method is applied.

ASSOCIATION: Stanislavskiy gosudarstvennyy pedagogicheskiy institut (Stanislav State Pedagogical Institute); Drogobychskiy gosudarstvennyy pedagogicheskiy institut im. Iv. Ya. Franko (Drogobych State Pedagogical Institute imeni Iv. Ya. Franko)

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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

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S/020/63/148/005/007/029
B112/B186

General boundary-value problems for ...

PRESENTED: July 20, 1962, by S. L. Sobolev, Academician

SUBMITTED: July 20, 1962

Card 2/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

BEREZANSKIY, Yu.M. (Kiyev); ROYTBERG, Ya.A. (Kiyev)

Smoothness of the resolvent of an elliptic operator up to the boundary of the nuclear region. Ukr. mat. zhur. 15 no.2:185-189 '63. (MIRA 16:9)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ROYTBERG, Ya.A.; SHEFTEL', Z.G.

General boundary value problems for elliptic equations with discontinuous coefficients. Dokl. AN SSSR 148 no.5:1034-1037 F '63. (MIRA 16:3)

1. Stanislavskiy gosudarstvennyy pedagogicheskiy institut i Drogobychskiy gosudarstvennyy pedagogicheskiy institut im. Iv.Ya. Franko. Predstavleno akademikom S.L.Sobolevym.
(Boundary value problems) (Differential equations)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ROITBERG, Ya. Yu.

Roof shingle. L. A. Kislyakov and Ya. Yu. Roitberg (M. Hosch, inventor). U.S.S.R. 61,697, May 31, 1945; abstracted in *Chem. Zentr.*, 1948, I [5/6] 393.—A mixture of CaO, ashes, and ground shingle (with or without the addition of 2 to 3% gypsum, $CaCl_2$, or NaCl) is molded, dried in air, and treated with water or steam.

M.HA.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ROITBERG, Ya. Yu.

Shingles. L. A. Kislyakov and Ya. Yu. Roitberg. U.S.S.R. 64,697, May 31, 1945. A mixt. of CaO, ash, and ground shingle (with or without 2-3% of a promotor such as gypsum, $CaCl_2$ or NaCl) is molded, air-dried, conditioned in water, or steamed.

M. Hoseh

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

GERCHIKOV, Ye.Ya.; KVASHA, I.N.; ROYTBLAT, M.M.; IVANOVA, V.F.; BANAS, N.A.; IVANOV, D.A.

Papers presented by the participants of a conference. Vest. sviazi 24 no.6:4-10 Je '64. (MIRA 17:11)

1. Nachal'nik upravleniya elektrosvyazi i radiofikatsii Ministerstva svyazi UkrSSR (for Gerchikov). 2. Zamestitel' ministra svyazi BSSR (for Kvasha). 3. Glavnyy inzh. Stavropol'skogo krayevskog upravleniya svyazi (for Roytblat). 4. Glavnyy inzh. TSelinnogo krayevogo upravleniya svyazi (for Ivanova). 5. Glavnyy inzh. Altayskogo krayevogo upravleniya svyazi (for Banas). 6. Nachal'nik Leningradskoy oblastnoy direktsii radiotranslyatsionnoy seti (for Ivanov).

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

S/020/60/131/04/025/073
B013/B007

AUTHORS: Lyubov, B. Ya., Roytburd, A. L.

TITLE: Temperature Conditions on the Surface of a Growing Martensite Crystal

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 4, pp 809-812 (USSR)

TEXT: The authors of the present paper made the attempt of estimating the temperature conditions at various sites of the crystal surface in consideration of its shape. The solution of the problem of thermodynamic growth of the martensite crystal furnishes the true value of the moving force of this process. Mention is made of various earlier papers which are based only on qualitative considerations, whereas the solution of the afore-mentioned problem requires a quantitative investigation of the relations between heat emission and heat conduction from the growing surface. The shape of the crystal, which is usually not taken into account, is of great importance to such investigations. The martensite crystal may be described as an elliptic cylinder with a small ratio b/a of the semiaxes of the cross section. From the minimum condition holding for the energy of distortions of the crystal it follows for the radius of curvature of the crystal edge that $Q = b^2/a = (A/B)a + 2\sigma/B$. In this case it

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

Temperature Conditions on the Surface of a Growing Martensite Crystal

S/020/60/131/04/025/073
B013/B007

holds that $A = \mu(1 + (1/\varkappa))\pi\alpha^2/2$; $B = \mu(1 + (1/\varkappa))\pi(k^2 + \alpha^2)/2$; $\varkappa = 3 - 4\nu$; α and k denote the coefficient of linear expansion and the shear modulus of macroscopic deformation in the conversion of martensite, μ and ν = the torsion modulus and Poisson's ratio of the austenite die, σ = surface tension at the interface between austenite and martensite. As soon as the crystal dimensions exceed a certain critical size, the rate of growth in the longitudinal direction is determined by the rate of shift of those dislocations which form the interface between the crystal and the surrounding die. In this direction the crystal grows with the constant rate v, so that $\varrho = \frac{A}{B} vt + \frac{2\sigma}{B}$ holds. The determination of temperature on the edges of the crystal can be reduced to the determination of temperature on the vertex of a parabola moving along the x-axis with constant velocity. $\frac{\partial^2 T}{\partial x^2} + \frac{\partial^2 T}{\partial y^2} = \frac{1}{\chi}\frac{\partial T}{\partial t}$ holds for the temperature field round the crystal, where χ denotes thermal diffusivity. The solution of this equation obtained for the corresponding conditions is written down. This solution can be used also in the case of a time-variable temperature field. ϱ is approximate-

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ly constant and equal to $2\sigma/B$ in the first stage of the process with $t \ll 2\sigma/Av$. With $q/c \approx 100^{\circ}$ it holds that $T_{surface} \approx 13^{\circ}$, i.e., the temperature of the crystal edge differs but little from the temperature of the surrounding medium. The thickness, b, of the crystal is related to the rate of its growth along the x-axis by the equation $b = \sqrt{\frac{A}{B} v^2 t^2 + \frac{2\sigma}{B} vt} = \sqrt{\varrho vt}$. In the initial period of growth the temperature prevailing on the plane crystal faces also differs but little from the temperature of the surrounding medium. $t \gg 2\sigma/Av$ holds for the further growth of the crystal. With $\beta\sqrt{t} \approx 3$ the process is adiabatic. The time necessary for attaining the steady state (which, in the case of a plane face, corresponds to the occurrence of adiabatic conditions) is inversely proportional to the rate of growth. In the initial stages, the growth of the crystal is an isothermal process, but when the martensite plate is formed, the conditions prevailing on its surface become more and more adiabatic. These adiabatic conditions are attained more rapidly on the blunted edge of the crystal than on its plane faces. There are 3 figures and 8 references, 3 of which are Soviet.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

Temperature Conditions on the Surface of a Growing Martensite Crystal

S/020/60/131/04/025/073
B013/B007

ASSOCIATION: Institut metallovedeniya i fiziki metallov Tsentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii (Institute of Metallography and Metal Physics of the Central Scientific Research Institute of Ferrous Metallurgy)

PRESENTED: November 30, 1959, by G. V. Kurdyumov, Academician

SUBMITTED: November 18, 1959

Card 4/4

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

L 17536-63 EWP(q)/EWT(m)/BDS AFFTC/ASD Pad JD/HW

ACCESSION NR: AP3004422 S/0020/63/151/004/0833/0836

AUTHORS: Roytburd, A. A.; Usikov, M. P.

60
58

TITLE: Formation of flat hexagonal nets during polygonization

SOURCE: AN SSSR. Doklady*, v. 151, no. 4, 1963, 833-836

TOPIC TAGS: metallurgy, nets formed during steel polygonization, polygonization of an alloy, nickel, chromium, nichrome alloy

ABSTRACT: The authors showed in an earlier paper (Fiz. tverd. tela, 5, No. 1, 1963, 100) that, when a slightly-deformed nichrome alloy (Ni + 20% Cr) is heated, the dislocations form pile-ups in the slip planes with formation of flat, hexagonal dislocation nets. In this work, a more detailed electron microscopic investigation of their formation during polygonization was carried out. During tempering at 900C, the nets appear after 5 min. The process of formation is completed after 30 minutes. The nets disappear upon further tempering for 1 hour. A possible mechanism of the phenomenon is suggested, and the

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

L 17536-63

ACCESSION NR: AP3004422

2

activation energy is estimated to 15 kcal/mole. "We express our gratitude to L. M. Utevskiy for a useful discussion of the work." Orig. art. has: 4 figures, 1 table and 6 equations.

ASSOCIATION: Institut metallovedeniya i fiziki metallov Tsentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii im. I. P. Bardina (Institute for Metallography and Physics of Metals of the Central Scientific-Research Institute for Ferrous Metallurgy).

SUBMITTED: 18Feb63 DATE ACQ: 21Aug63 ENCL: 00

SUB CODE: PH, ML NO REF SOV: 003 OTHER: 004

Card 2/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

LYUBOV, B.Ya.; ROYTBURD, A.L.

Unsteady period in the nucleation of new phase centers during isothermal phase transformations in a single-component system. Dokl. AN SSSR 111 no.3:630-633 N '56. (MLRA 10:2)

1. Institut metallovedeniya i fiziki metallov TSentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii. Predstavleno akademikom G.V. Kurdyumovym.
(Phase rule and equilibrium)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

SOV/137-58-7-15651

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 248 (USSR)

AUTHOR: Lyubov, B. Ya., Roytburd, A. L.

TITLE: On the Speed of Nucleation of a New Phase in Single-component Systems (O skorosti zarozhdeniya tsentrov novoy fazy v odnokomponentynkh sistemakh)

PERIODICAL: Sb. tr. In-ta metalloved. i fiz. metallov Tsentr. n.-i. in-t chernoy metallurgii, 1958, Vol 5, pp 91-123

ABSTRACT: The nonstationary process of nucleation (N) is analyzed theoretically. At a constant temperature the rate of N can be considered independent of time and calculated according to the formula: $J_{st} = K_{le} - \Delta \Phi_k/RT - u/RT$ only after the lapse of a certain amount of time from the beginning of the isothermal soaking [time of the nonstationary state (TS)]. On the basis of the solution of the kinetic equation describing the nonstationary N process, an evaluation of TS during phase transformation in single-component systems is made. The deductions of the general theory are applicable to the investigation of transformations in the solid state, which proceed without changes in the chemical composition of the phases. The TS is

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

SOV/137-58-7-15651

On the Speed of Nucleation of a New Phase (cont.)

$<10^{-7}-10^{-10}$ sec for processes with a low activation energy (AE) (martensite transformation) but can be considerable (commensurable with the time of complete transformation) in processes with AE close to the AE of self-diffusion (normal polymorphic transformations). Therefore the N process with martensite transformation may be regarded as stationary. The application of a stationary expression for the rate of N in the case of normal polymorphic transformation might lead to considerable errors and demands a preliminary evaluation of TS. Bibliography: 36 references.

L. V.

1. Alloys--Transformations 2. Nuclear physics--Applications

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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

[illegible], B. [illegible], [illegible], [illegible] [illegible]

[illegible] [illegible] in austenite in the vicinity of a formed [illegible] austenite [illegible]

[illegible] [illegible], pp. 1011-1014 [illegible]

[illegible] This is a detailed [illegible] in austenite, [illegible] formed [illegible] component [illegible]. In order to determine the stressed state of the austenite it is necessary to [illegible] the so-called [illegible] and [illegible] determin- [illegible] In this [illegible] The boundary condition is given in complex notation. By employing the method of conformal [illegible] for the components of the stresses and for the deformations at every point of the domain. When the elliptical domain becomes more

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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

in the Vicinity of a Formed Martensite Crystal

and the

elastic deformation

Metallography

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

SOV/20-120-5-22/67

Stressed States in Austenite in the Vicinity of a Formed Martensite Crystal

SUBMITTED: February 28, 1958

1. Austenite--Stresses 2. Martensite crystals--Metallurgical effects 3. Stress analysis 4. Mathematics

Card 3/3

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

IVANTSOV, G.P.; LYUBOV, B.Ya.; POLYAK, B.T.; ROYTBURD, A.L.

Calculation of the crystallization of a metallic ingot with various types of heat flow through its surface. Inzh.-fiz. zhur. no.3:41-47 Mr '60. (MIRA 13:10)

1. Institut chernoy metallurgii, Moskva.
(Crystallization)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ROYTBURD, A.L.

Theory of nucleus formation during martensite transformation. Fiz. met. i metalloved. 10 no.2:161-168 Ag '60. (MIRA 13:9)

1. Institut metallovdeniya i fiziki metallov TSentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii.
(Metal crystals) (Phase rule and equilibrium)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

18.7500

68985
S/020/60/131/02/024/071
B013/B011

AUTHORS: Lyubov, B.Ya., Roytburd, A.L.

TITLE: Energy Relations in Martensite Transformation

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 2, pp 303-305 (USSR)

ABSTRACT: The authors derive the energy relations mentioned in the title under the following simplified premises: The pure shear k along the habit plane (gabitusnaya ploskost') zx is selected as the deformation with an invariant plane. The presence of a net of dislocations on the interface allows to neglect the deformations within the martensite crystal. The forces acting upon the martensite crystal from the deformed matrix, compensate with the forces of the surface tension on the interface between the phases. These premises are bound to influence the numerical results of computation to a certain degree. This can, however, be taken into the bargain, because the investigation under review aims at determining only certain general rules. Therefore, the anisotropy of the elastic properties of the material is also neglected with a view to simplifying calculations. The stressed state and the energy of the deformations occurring with the formation of an isolated martensite crystal, can be solved by solving the plane problem of the theory of elasticity. This solution holds for the region situated outside the elliptic hole (at the edge of which the dislocations $u = ky + \alpha x$; $v = \alpha y$ are given). Here, x and y denote

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the coordinates of the point at the edge of the opening, u and v the components of the shift toward the x- and y-axis respectively, k the shear, and α the dilatation parameter. By using function-theoretical methods one finds the following relation for the specific energy of elastic deformations: $E_0 = \mu(1+\frac{1}{\varkappa})\frac{k^2+\alpha^2}{2}\frac{b}{a} + \mu(1+\frac{1}{\varkappa})\frac{\alpha^2}{2}\frac{a}{b} + \mu(1-\frac{1}{\varkappa})\alpha^2$. Here, μ denotes the shear modulus, a and b the semimajor and semiminor axis of the ellipse (which constitutes the cross section of the martensite crystal) and $\varkappa = 3 - 4\nu$ holds. ν denotes Poisson's ratio. The free energy of the system changes with the formation of a martensite crystal which is coherent with the matrix, by $\Delta F = -(\Delta F_0\pi - C)ab + Aa^2 + Bb^2 + \sigma s$. Here, ΔF_0 denotes the change in the "chemical" energy in the transition of a unit volume of the old phase into the new modification, and σ denotes the surface tension. The authors then determine a relation for the energetically optimum dimensions of the martensite crystal. With increasing growth of the crystal the ratio b/a decreases and tends toward a certain limit. If dilatation does not change (α=0), the relation b^2/a = const holds for the growth of the crystal, i.e.,

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

S/058/62/000/005/068/119
A061/A101

AUTHORS: Lyubov, B. Ya., Roytburd, A. L., Temkin, D. Ye.

TITLE: Mathematical analysis of the crystallization process in plain-shaped bodies

PERIODICAL: Referativnyy zhurnal, Fizika, no. 5, 1962, 10, abstract 5E81 (V sb. "Rost kristallov. T. 3", Moscow, AN SSSR, 1961, 68 - 74. Discuss., 214 - 218)

TEXT: Problems of crystallization (temperature field and the motion of the front of the solidified phase) have been solved for plain-shaped bodies, such as plates, cylinders, and spheres. The calculations are based on the assumption that the thermophysical characteristics of the material are temperature-independent, and that there is neither supercooling nor overheating of the liquid phase.

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

L 18980-63 EWT(1)/EWP(q)/EWT(m)/BDS AFFTC/ASD/ESD-3/IJP(C) JD/JW

ACCESSION NR: AT3001919 S/2912/62/000/000/0226/0234

63

AUTHORS: Lyubov, B. Ya., Roytburd, A. L.

TITLE: Effect of supercooling along the phase boundary on the rate of advancement of the crystallization front under directional heat rejection

SOURCE: Kristallizatsiya i fazovyye perekhody. Minsk, Izd-vo AN BSSR, 1962, 226-234

TOPIC TAGS: crystal, crystallization, crystallography, supercooling, phase boundary, crystallization front, heat, rejection, heat transfer, directional

ABSTRACT: This theoretical paper sets forth a mathematical analysis of the thermal aspects of the process of growth of a crystal with due consideration to supercooling on the crystallization front in the presence of a directionally controlled heat rejection. Several simplifying assumptions are made, and it is assumed that the liquid phase is not heated and that intense convective heat exchange occurs within it. The mathematical examination of the crystal-growth process under the stated conditions shows that, if on the external surface of the crystal ($k=0$) a constant temperature t_0 lower than t_k (the phase-equilibrium temperature) prevails, then $y(t)$ is approximately t at the beginning of the process and y is appx. $\sqrt{t}$ for fairly large values of t. The effect of supercooling affects the values of the coefficients of proportionality in the stated limit forms of the dependence of y as a function t.

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

L 18980-63

ACCESSION NR: AT3001919

For $y(t) = A_0 \sqrt{t+C} - A_0 \sqrt{C}$ (C = constant), the surface temperature of the crystal ($x = 0$) changes with a jump at $t = 0$ ($T > T_M$, the temperature of metastability), and then approaches T_0 gradually. This, apparently, corresponds to the slowdown of the cooling of the surface ($x = 0$) attributable to the release of the latent heat of transformation and the advection of heat from the fusion. The calculational formulas obtained permit in principle a determination of the value of the rate factor D (that is, the factor that expresses the ratio of the rate of growth to the difference between the phase equilibrium temperature and the true temperature along the growing surface of the crystal). The experimentally obtained form of the function expresses the temperature of the external surface of the crystal ($x = 0$) as a function of time. The latter is satisfactorily described by eq. (22) of the paper (not reproduced here). The theory developed can be employed in the analysis of similar problems of the diffusionally limited growth of crystals from a solution. Orig. art. has 6 figures.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 16Apr63 ENCL: 00

SUB CODE: CH, PH, MA NO REF SOV: 005 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

L 18981-63 EWT(1)/EWP(q)/EWT(m)/BDS AFFTC/ASD/ESD-3/IJP(C) JD

ACCESSION NR: AT3001920 S/2912/62/000/000/0235/0248

AUTHOR: Roytburd, A. L. 60

TITLE: Two mechanisms of the displacement of the phase-discontinuity boundary in the growth of crystals in condensed systems.

SOURCE: Kristallizatsiya i fazovyye perekhody. Minsk, Izd-vo AN BSSR, 1962, 235-248.

TOPIC TAGS: crystal, crystallization, crystallography, condensation, condensed, noncondensed, system, phase boundary, crystallization front, growth, nondiffusional, phase transformation, potential, carrier.

ABSTRACT: This theoretical paper deals with the hitherto disregarded aspect of the interatomic-interaction effect on the mechanism of phase transformation in condensed systems (that is, systems not involving condensation of a vapor or crystallization from vapor and from a dilute solution). It is conceded that the approximate study of isolated transitions of atoms from one phase to another is to some degree justified in the analysis of processes within a vapor or within a solution, but it is postulated that such approximations may lead to significant errors in the treatment of the growth of crystals in a fusion or solid phase. The present study

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L 18981-63

ACCESSION NR: AT3001920

0

employs the simple model previously proposed by the author (in Sbornik rabot tsentral'nogo nauchno-issledovatel'skogo institua cherney metallurgii, Compendium of studies of the Central Scientific-Research Institute of Ferrous Metallurgy, no. 4, 1960, 56) to attempt an investigation of the peculiarities of the kinetics of nondiffusional phase transformations with due consideration of the bonds between atoms that participate in the transformation. The energy analysis made indicates that a transition through a potential barrier of single atoms in the presence of an interaction between them renders possible and facilitates the transition of subsequent atoms, if the motive power exceeds a critical value. The growth of a new phase proceeds as a result of the directed transition of the atoms, when the energy required for the activation of the subsequent atoms is communicated to it as a result of the transition of the preceding ones. This process does not require the formation of thermal fluctuations for its existence. It is not certain that the scheme of an ideal crystal as set forth here exists in actuality. According to the scheme, the growth of a crystal occurs in stages, wherein the limiting elements of the process consist of the initial moments of each sequential stage after the completion of the preceding one; the formation of a two-dimensional nucleus of a new plane and the initial stage of the attachment of an atomic series to the edge of a two-dimensional crystal. In a real crystal this stage-like phenomenon apparently is not present because of the existence of defects in the crystalline structure. In

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L 18981-63

ACCESSION NR: AT3001920

particular, spiral dislocations can grow without the presence of two-dimensional nuclei. The concepts adduced here can be employed in the explanation of two observed mechanisms of transformation of a crystalline lattice during phase transformations in the solid state, namely, the martensitic and the normal or recrystallizational transformation. Orig. art. contains 3 figures and 23 numbered equations.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 16Apr63 ENCL: 00

SUB CODE: CH, PH, MA NO REF SOV: 010 OTHER: 007

Card 3/3

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

36115

S/070/62/007/002/013/022
E132/E160

24,7300

AUTHOR: Roytburd, A.L.

TITLE: On certain peculiarities of the growth of crystals in condensed systems

PERIODICAL: Kristallografiya, v.7, no.2, 1962, 291-299

TEXT: The growth of crystals in a condensed phase is examined, taking into account the transitions of atoms from one phase to the other. It is shown that if the departure of the system from equilibrium is greater than a certain critical value then the movement of the border of separation of the phases is not connected with the surmounting of the energy barrier and consequently is not limited by the frequency of the thermal fluctuations. The results obtained can be used in the analysis of the growth of crystals in the solid phase and also for the analysis of crystallisation from the melt.
There are 3 figures.

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

On certain peculiarities of the ... S/070/62/007/002/013/022
E132/E160

ASSOCIATION: Institut metallovedeniya i fiziki metallov (Institute of Science of Metals and Physics of Metals)

Tsentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii im. I.P. Bardina (Central Scientific Research Institute of Ferrous Metallurgy imeni I.P. Bardin)

SUBMITTED: June 5, 1961

Card 2/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

KOYTBURD, A. L.

Dissertation defended for the degree of Candidate of Physicomathematical Sciences at the Institute of Crystallography in 1962:

"Several Problems of the Theory of Nondiffusion Phases Transformations in Solid Metals and Alloys."

Vest. Akad. Nauk SSR. No. 4, 1963, pages 119-145

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

S/020/63/148/004/018/025
B142/B144

AUTHOR: Roytburd, A. L.

TITLE: Theory of growth of the ideal crystal

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 4, 1963, 821-824

TEXT: The growth of an ideal, hemimorphic crystal with simple rhombic lattice is studied. The transition of the bounding plane from one position of equilibrium to the other is accompanied by an energy change in the system. Contrary to Kossel, a different amount of energy is assumed for each stage of growth.

$\Delta f_i^a = \Delta f_{i-1}^a L(\lambda_i)$, $i = 1,2,3$

Δf_i^a, Δf_{i-1}^a are the amounts of energy at the boundary shift, λ_i is the boundary width, $L(\lambda_i) \sim \frac{1}{\lambda_i}$, $L(\lambda_i) = 1$ at $\lambda_i = 1$. If $L(\lambda_i) < 1$, then $\Delta f_i^a < \Delta f_{i-1}^a$, i.e., the energy barrier for the dislocation of a shear on the step (i=3) is smaller than the activation energy for moving the step

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(i=2). The latter, again, is smaller than the activation energy for the dislocation of all the bounding planes together (i=1). If no thermodynamic equilibrium exists in the system, then the free energy is reduced in the boundary glide toward the more unstable phase. At a critical value the activation energy for the phase transition vanishes, and on the disequilibrium being further increased the stability is reversed so that the boundary glide proceeds from the more unstable initial phase toward the more stable. The crystal growth depends not only on temperature and pressure but also on the crystal dimensions. At a certain critical dimension the motive force of the growing process reaches a critical value; growth, therefore, proceeds in two stages: the formation of the crystal of critical dimension (this stage may be fluctuating), followed by spontaneous growth of the crystal of overcritical dimension (without need for heat activation). In connection with the rate of growth, the normal growth of the crystal faces is found to be inhibited by undercooling or overheating of the system with respect to the equilibrium temperature. This is important for martensite conversions in the solid phase. The ideal crystal grows by formation of a two-dimensional nucleus which initiates the composition of the new atomic plane. In the real

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crystal, defects (e.g. screw dislocations) may prevent this development. There is 1 figure. The English-language reference is: J. W. Cahn, Acta Metal.,8,554 (1960).

ASSOCIATION: Institut metallovedeniya i fiziki metallov Tsentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii im. F. P. Bardina (Institute of Metal Science and Metal Physics of the Central Scientific Research Institute of Ferrous Metallurgy imeni F. P. Bardin)

PRESENTED: August 20, 1962, by G. V. Kurdyumov, Academician

SUBMITTED: August 17, 1962

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ROYTBURD, A.L.; USIKOV, M.P.

Formation of plane hexagonal nets in polygonization. Dokl. AN SSSR 151 no.4:833-836 Ag '63. (MIRA 16:8)

1. Institut metallovedeniya i fiziki metallov TSentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii im. I.P.Bardina. Predstavleno akademikom G.V.Kurdyumovym.
(Nickel-chromium alloys—Metallurgy)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ROYTBURD, A.L.; RUTBERG, V.P.; USIKOV, M.P.; UTEVSKIY, L.M.

Microstresses in polycrystals. Fiz. tver. tela 6 no.1:320-322 Ja '64. (MIRA 17:2)

1. Institut metallofiziki, Moskva.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

L 17688-65 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(b) Pad IJP(c)/AFWL/SSD/ASD(f)-2/ASD(m)-3/AFETR JD/HW

ACCESSION NR: AP4049484 S/0020/64/159/002/0317/0320

AUTHORS: Roytburd, A. L.; Usikov, M. P.; Utevskiy, L. M.

TITLE: On the mechanism of plastic deformation in stationary creep of metals

SOURCE: AN SSSR. Doklady*, v. 159, no. 2, 1964, 317-320, and insert facing p. 318

TOPIC TAGS: plastic deformation, creep, dislocation study, dislocation motion, nickel alloy

ABSTRACT: An electron-microscopic study was made of the dislocation structure produced during the creep process. The purpose of the study was to check whether nonconservative dislocation motion can actually be neglected in the case of high temperatures and low stresses. The object of investigation was an alloy of nickel with 20% Cr, 1.2% Ti, and 0.6% Al. Annealed ribbon specimens (0.05 mm

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ACCESSION NR: AP4049484

4

thick) were deformed under creep conditions at 700C in vacuum. To fix the dislocation structure, the samples were unloaded only after total cooling. The samples were then electrolytically polished and observed in a JEM-6A electron microscope at 80 and 100 kV accelerating voltage. The main elements observed after creep are helicoidal dislocation whose shape is distorted by the plastic deformation. This dislocation has an appreciable velocity of nonconservative motion, giving rise to a plastic deformation rate of 10^{-5}--10^{-6} sec^{-1}. It is concluded that in contrast to earlier opinions, a considerable fraction of the deformation, if not all, in high-temperature stationary creep is the result of nonconservative motion of helicoidal dislocations, limited by closed self-diffusion flow. The origin of the dislocations calls for additional study. This report was presented by G. V. Kurdyumov. Orig. art. has: 3 figures and 4 formulas.

ASSOCIATION: Institut metallovedeniya i fiziki metallov Tsentral'-

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ACCESSION NR: AP4049484

nogo nauchno-issledovatel'skogo instituta chernoy metallurgii (Institute of Metal Research and Metal Physics, Central Scientific Research Institute of Ferrous Metallurgy)

SUBMITTED: 07May64 ENCL: 00

SUB CODE: MM, SS NR REF SOV: 004 OTHER: 002

Card 3/3

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ROYTBURD, A.L.

Theory of martensite transformations. Fiz. met. i metalloved. 18 no.3:401-408 S '64. (MIRA 17:11)

1. Institut metallovedeniya i fiziki metallov TSentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii imeni Bardina.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

L 33252-66 EWT(d)/EWT(m)/T/EWP(w)/EWP(t)/ETI IJP(c) EM/JD

ACC NR: AR6016222 SOURCE CODE: UR/0058/65/000/011/E031/E031

56

B

AUTHOR: Roytburd, A. L.

TITLE: Internal stresses in phase transitions in solids

SOURCE: Ref. zh. Fizika, Abs. 11E243

REF SOURCE: Sb. tr. In-t metalloved. i fiz. metallov Tsentr. n.-i. in-ta chernoy metallurgii, vyp. 36, 1964, 235-268

TOPIC TAGS: phase transition, internal stress, relaxation process, elasticity theory, crystal growth, plastic deformation, martensitic transformation

ABSTRACT: A theoretical analysis is presented of internal stresses which arise when a new phase is produced inside the initial phase of a crystal. The inclusions of the new phase are classified in accord with the character of the surface of their conjugation with the matrix and in accord with the degree of development of the relaxation processes. The stress fields and the elastic energy of a coherent inclusion of different shape are calculated in the approximation of the linear theory of elasticity for a continuous isotropic medium. The results of the calculations are used to investigate the thermodynamics and kinetics of crystal growth during the martensitic transformation. Different cases of plastic deformation in the host matrix and in the inclusion, which lead to the relaxation of the elastic stresses and to violation of the coherent conjugation of the phases, are considered. An energy criterion is derived for the possible violation of coherence. The energy of the

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

L 33252-66

ACC NR: AR6016222

inclusions is calculated under the condition of total relaxation of the tangential stresses in the inclusion (the Nabarro model). The use of complex variable methods in the calculation of internal stresses of heterophase systems is described in the appendix. [Translation of abstract]

SUB CODE: 20

Card 2/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

L 00771-66 EWT(1)/EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/GG

ACCESSION NR: AP5012540 UR/0181/65/007/005/1349/1351

38
35
B

AUTHOR: Roytburd, A. L. 44,55

TITLE: Contribution to the theory of stationary nonconservative motion of dislocations 16,44,55

SOURCE: Fizika tverdogo tela, v. 7, no. 5, 1965, 1349-1351

TOPIC TAGS: crystal dislocation phenomenon, physical diffusion, crystal lattice vacancy, crystal imperfection 21,44,55

ABSTRACT: This is a continuation of earlier work by the author (FTT v. 7, 1142, 1965), in which the kinetics of stationary climbing of dislocations was considered, with no account taken of the possibility of preferred self-diffusion along the dislocation line. In this paper the author calculates theoretically the speed of stationary climbing of dislocations of arbitrary form, with account taken of the difference between the coefficient of migration of the vacancies along the dislocation tube (D_e) and outside the tube (D). This expression is derived on the basis of the equality of the dissipation rate to the work done per unit time when a dislocation moves in the stress field. The motion of a helicoidal dislocation is analyzed as an example. Orig. art. has: 8 formulas.

ASSOCIATION: Nauchno-issledovatel'skiy institut chernoy metallurgii im. I. P.

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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

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L 00771-66

ACCESSION NR: AP5012540

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Bardina, Moscow (Scientific Research Institute for Ferrous Metallurgy)

SUBMITTED: 19Oct64 ENCL: 00 SUB CODE: SS

NR REF SOV: 002 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ROYTBURD, A.L.

Internal stresses during phase transformations in the solid state. Probl. metalloved. i fiz. met. no.8:235-268 '64. (MIRA 18:7)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ROYTBURD, A.L.; USIKOV, M.P.; UTEVSKIY, L.M.

Mechanism underlying plastic deformation in steady creep of metals. Dokl. AN SSSR 159 no.2:317-320 N '64. (MIRA 17:12)

1. Institut metallovedeniya i fiziki metallov TSentral'nogo naushno-issledovatel'skogo instituta chernoy metallurgii. Predstavleno akademikom G.V. Kurdyumovym.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ROYTBURD, A.L.

Theory of steady nonconservative motion of a dislocation. Fiz. tver. tela 7 no.5:1349-1351 My '65. (MIRA 18:5)

1. Nauchno-issledovatel'skiy institut chernoy metallurgii imeni Bardina, Moskva.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

L 51538-65 EWT(m)/T/EWB(t)/EWP(b)/EWA(c) JD

ACCESSION NR: AP5010725 UR/0181/65/007/004/1142/1149

14

AUTHOR: Roytburd, A. L. 13

TITLE: Stationary nonconservative motion of dislocations 4 B

SOURCE: Fizika tverdogo tela, v. 7, no. 4, 1965, 1142-1149

TOPIC TAGS: dislocation motion, energy dissipation, self diffusion, helicoidal dislocation

ABSTRACT: A theoretical analysis is presented of the kinetics of nonconservative motion of dislocations. Such motion takes place if a segment of a dislocation line moves in such a way that the instantaneous plane of its motion does not contain the Burger's vecotr. The rate of energy dissipation due to self-diffusion in stationary motion of dislocations of arbitrary form is calculated. By equating the dissipation rate to the work per unit time performed by the moving dislocation in the stress field, the author obtains an expression for the velocity of a dislocation of arbitrary form. It is shown that helicoidal dislocations have high mobility because their motion is effected by self-diffusion fluxes which are closed over a distance on the order of the dimensions of one turn of the helicoid. The analysis

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

L 51538-65

ACCESSION NR: AP5010725

is limited to crystals containing only vacancies. Orig. art. has: 1 figure and 26 formulas.

ASSOCIATION: Nauchno-issledovatel'skiy institut chernoy metallurgii im. I. P. Bardina, Moscow (Scientific Research Institute of Ferrous Metallurgy)

SUBMITTED: 26May64 ENCL: 00 SUB CODE: SS

NR REF SOV: 002 OTHER: 006

Card 2/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ROYTBURD, Abram Samoylovich; RENSKIY, N.M., red.; LOBANOV, Ye.M., red. izd-va; RIDNAYA, I.V., tekhn. red.

[Innovators on the motorship "Nikopol'"]Novatory teplokhoda "Nikopol'." Moskva, Izd-vo "Rechnoi transport," 1962. 32 p. (MIRA 16:1)

(Nikopol' (Motorship))--Technological innovations)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ROYTBURD, A.S.

Manufacturers of marine diesel engines. Biul. tekh.-ekon. inform. Tekh. upr. Min. mor. flota 7 no.3:89-93 '62. (MIRA 16:5)

1. Zaveduyushchiy otdelom gazety "Vodnyy transport".
(Marine diesel engines)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ROYTBURD, A.S.

SOYUZOV, A.A., doktor tekhn.nauk; ROYTBURD, A.S.

Anniversary scientific session. Rech.transp. 16 no.12:37-39 D '57. (MIRA 11:1)

(Inland water transportation)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

LEONOV, K.Ye.; ROYTSURD, A.S.

Organization and leadership of technical ship operations at the "Krasnyi Flot" maintenance and operations base. Rech.transp.16 no.7:11-14 Jl '57. (MLRA 10:9)

1. Nachal'nik remontno-ekspluatatsionnoy bazy "Krasnyy flot" (for Leonov).
(Rostov-on-Don--Ships--Maintenance and repair)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

S

1

Stakhanov Working at the New Open-Hearth Shop at the Dzerzhinskiy Works. M. Orman and L. Roytburd. (Stal, 1939, No. 12, pp. 21–27). (In Russian). The melting shop at the Dzerzhinskiy works has four basic furnaces each with a hearth area of 50-74 sq. m. The timing of the various stages of the open-hearth process is discussed. A heat of axle steel takes 9 to 10½ hr., depending on the gas supply. The life of the furnaces has been improved by certain structural alterations and efficient upkeep. Reference is made to certain improvements in the working conditions in the shop and to the reorganisation of the wage system, which is based on an appraisal of results. At the time the shop changed over to operation to a time schedule, a control and despatch system was organised. Some data characterising the way in which the planned schedule was carried out in the shop during 1939 are given.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

PHASE I BOOK EXPLOITATION SOV/5323

Bannyy, Nikolay Pavlovich, Viktor Borisovich Brodskiy, Iosif Grigor'yevich Gorelik, Yakov Antonovich Oblomskiy, Vyacheslav Viktorovich Rikman, and Lazar' Nisonovich Roytburd

Ekonomika chernoy metallurgii SSSR (Economics of Ferrous Metallurgy in the USSR) Moscow, Metallurgizdat, 1960. 566 p. Errata slip inserted. 5,700 copies printed.

Eds. (Title page): I. P. Bardin, Academician (Deceased), Ya. A. Oblomskiy, Docent, and V. V. Rikman, Docent. Ed. of Publishing House: Ye. S. Khutorskaya; Tech. Ed.: A. I. Karasev.

PURPOSE : This textbook is intended for students at metallurgical schools of higher education, in divisions of metallurgy at schools of higher technical education, and at engineering and economic schools of higher technical education. It may also be useful to engineering, technical, planning, and economic personnel in scientific, economic, and planning bodies, and in industry.

Card 1/16

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

Economics of Ferrous Metallurgy (Cont.) SOV/5323

COVERAGE: The book discusses the role of ferrous metallurgy in the Soviet national economy. Principal laws of the development of ferrous metallurgy, the organization of management, planning principles, and problems of raw-material and fuel-and-power supply bases are examined. Considerable attention is given to the problem of technical progress and its effect on the economics of blast-furnace, steelmaking, and rolling production. The development of ferrous metallurgy in the Soviet Union, capitalist countries, and People's Democracies is briefly described. The introduction and Chs. 13,14, and 15 were written by Ya. A. Oblomskiy, Candidate of Economic Sciences, Docent, Moskovskiy gosudarstvennyy ekonomicheskiy institut (Moscow State Institute of Economics); Chs. 1,2,3,4,11 (Sections 3,4, and 5), and 12, by I. G. Gorelik, Candidate of Economic Sciences, Docent, Moskovskiy inzhenerno-ekonomicheskiy institut (Moscow Institute of Engineering Economics); Chs. 5,20,21, and 22, by L. N. Roytburd, Doctor of Economic Sciences, Professor, Moscow Institute of Engineering Economics; and Chs. 6,9, 11 (Sections 1 and 2), 18, 19,23, and 24, by N. P. Bannyy, Candidate of Economic Sciences, Docent, Moskovskiy institut stali (Moscow

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Steel Institute) V. V. Rikman, Candidate of Economic Sciences, Docent, Moscow Steel Institute, and V. B. Brodskiy, Candidate of Economic Sciences, Gosudarstvennyy institut proyektirovaniya metallurgicheskikh zavodov (State Institute for the Design and Planning of Metallurgical Plants), wrote Chs. 7,8, and 17 and Chs. 10 and 16, respectively. According to the Foreword, the book is based on Soviet and non-Soviet materials. The authors thank the Department of the Economics and Organization of Ferrous Metallurgy Enterprises of the Ural Polytechnic Institute, directed by A. S. Osintsev, Doctor of Economic Sciences, Professor, and L. I. Ulitskiy, Doctor of Economic Sciences, Professor. There are no references.

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ROYTBURD, L. N.

BANNYY, Nikolay Pavlovich, dotsent, kand.ekonom.nauk; BRODSKIY, Viktor Borisovich, kand.ekonom.nauk; GORELIK, Iosif Grigor'yevich, dotsent, kand.ekonom.nauk; OBLOMSKIY, Yakov Antonovich, dotsent, kand.ekonom.nauk; RIKMAN, Vyacheslav Viktorovich, dotsent, kand. ekonom.nauk; ROYTBURD, Lazar' Nisonovich, prof., doktor ekonom. nauk; BARDIN, I.P., akademik, red. [deceased]; KHUTORSKAYA, Ye.S., red.izd-va; KARASEV, A.I., tekhn.red.

[Economics of ferrous metallurgy in the U.S.S.R.] Ekonomika chernoi metallurgii SSSR. Pod red. I.P.Bardina, IA.A.Oblomskogo i V.V.Rikmana. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1960. 566 p. (MIRA 14:2)

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(Iron industry) (Steel industry)

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[Problems of the economics and organization of production in Moscow industry] Voprosy ekonomiki i organizatsii proizvodstva v promyshlennosti Moskvy; sbornik statei. Moskva, Gosplanizdat, 1960. 358 p. (MIRA 13:12)

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(Moscow--Industrial organization)

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323 Organizatsiya Zarabotnoy Platy Na Predpriyatiyakh Chernoy Metallurgii. M., Metallurgizdat, 1954. 132s. 20SM. (Ekon. Voprosy Metallurgii). 5,000 Ekz. Cr. 20K.-(54-55316) P

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Includes Bibliographies.

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ROYTBURD, Lazar' Nisonovich, kandidat ekonomicheskikh nauk, dotsent; BANNYY, N.P., redaktor; RAVDEL', P.G., retsenzent; AVRUTSKAYA, R.F., redaktor; EVRISON, I.M., tekhnicheskiy redaktor

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Roytburd, L.N

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123, 3, p. tables.
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ROYTBURD, L., inzh.;KLIMOV, S., inzh.

Direct combine-to-procurement-station system in Voronezh Province. Muk.-elev. prom. 25 no.11:4-5 N '59 (MIRA 13:3)

1.Ministerstvo khleboproduktor RSFSR.
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[Mathematical methods and computer equipment for industrial planning in metallurgical enterprises] Matematicheskie metody i schetnaia tekhnika v organizatsii i planirovanii proizvodstva na metallurgicheskom predpriiatii; sbornik. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 148 p. (MIRA 14:11)
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ROYTBURD, L.S.; SOROCHINSKAYA, A.I.

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(DIURETICS AND DIURESIS)

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ROYTBURD, S.L.; KHRAMCHENKO, V.I.; SOROKIN, A.I.; YAKUBENOK, I.N.; MIKHAYLICHENKO, B.F.

Improved construction of the K864 forging press. Kuz.shtam. proizv. 2 no.12:44-46 D '60. (MIRA 14:3)
(Power presses)

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S/182/60/000/012/010/010
A161/A030

AUTHORS: Roytburd, S.L.; Khramchenko, V.I.; Sorokin, A.I.; Yakubenok, I.N.; Mikhaylichenko.B.F.

TITLE: Improving the K864 Hot Stamping Press Design

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, 1960, No.12, pp. 44-46

TEXT: The Chelyabinsk plant im. Ordzhonikidze is producing a 1,600-ton hot stamping crank press, "K864", making 75 strokes of 300 mm height a minute, having a 49.7-ton cast iron frame of two parts joined with tie bolts. A team from NIITEKhMASh institute of the Chelyabinsk sovnarkhoz and the plant investigated the press in work at (not named) plants. The following faults were stated. Mismatched valve operation repeatedly causes too early clutching before retraction of the brake, and the brake cylinder bracket becomes torn off. The control panel is too near the work space, and the push buttons are damaged by die replacements. The safety fencing obstructs access to the oil piping, and the piping is too easily damaged (must by sunk into the frame and closed with covers). The blind bore housing the brake band shackle axle makes replacement too difficult. The

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

Improving the K864 Hot Stamping Press Design

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A161/A030

tie bolt holes in the frame must be enlarged for heating (for tubular electric heaters are not available). Plastics are not used on the "K864" and other similar presses, though 700 kg bronze are needed for the slide guides alone. The frame base is too small, and the press swings. Replacement of the broken lever on the top ejector, or any other repair on it is not possible without removing the slide. A scale is needed for setting the wedge-shaped press table. The friction clutch splines wear too fast. Debugging is estimated to cost 3-5% of the total press cost. It is recommended to study the electric drive and modernize it for automation; to raise the durability of the gear couple, and to design a load indicator suitable for shop work. Several minor design improvement suggestions are illustrated, including one made by Engineer N.F. Polovnev. The press is being further studied on a test stand. There are 5 figures.

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ROYTBURD, TS.YA., VALETDINOV, R.K.

Synthesis based on phosphine.

Khimiya i Primeneniye Fosfororganicheskikh Soyedineniy (Chemistry and application of organophosphorus compounds) A. YE. ARBUZOV, Ed. Publ. by Kazan Affil. Acad. Sci. USSR, Moscow 1962, 632 pp.

Collection of complete papers presented at the 1959 Kazan Conference on Chemistry of Organophosphorus Compounds.

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Results of testing a reinforced concrete bridge. Bet. i zhel.-bet. 9 no.10:469-470 O '63. (MIRA 16:12)

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TURPAYEV, T.M.; NISTRATOVA, S.N.; MITROPOLITANSKAYA, R.L.; PUTINTSEVA, T.G.; ROYTBURG, Ye.M.

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1. Laboratoriya obshchey i sravnitel'noy fiziologii imeni Kh.S. Koshtoyantsa Instituta morfologii zhivotnykh imeni Severtsova AN SSSR, Moskva.

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GVA-1 automatic multiple effect gas water heater. Gaz. prom. no.9:34-36 S '58. (MIRA 11:10)
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Infinitely variable terminal speed regulators in automatic welding units. Avtom.svar. 6 no.1:75-76 Ja-F '53. (MLRA 7:6)

1. Kiyevskiy zavod "Bol'shevik". (Electric welding)

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ZININ, B.S.; ROYTENBERG, B.N.

Pneumatic internal gauges for checking holes. Izm. tekh. no.3:78-79 My-Je '57. (MLRA 10:8)

(Gauges)

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(Clocks and watches--Escapements)
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D299/D301

13.2521

AUTHOR: Roytenberg, L.Ya. (Moscow)

TITLE: Gyroscopic servosystems in the presence of multidimensional random noises

PERIODICAL: Prikladnaya matematika i mekhanika, v. 26, no. 2, 1962, 247 - 158

TEXT: The design is considered of an optimal gyroscopic servosystem with a two-dimensional input signal, in the presence of both input noises and disturbances due to the motion of the object on which the servosystem is fixed. The servosystem consists of a gyroscope with 3 degrees of freedom and of an input-signal converter, whose transfer function has to be chosen in such a way that the mean-square error of signal reproduction should be minimal. The equations of motion of the gyroscope are

$$A\alpha'' + \sigma\alpha' - H\beta' = -l[y_2(t) + \Psi_2(t)]$$
$$B\beta'' + H\alpha' = S[y_1(t) + \Psi_1(T)] \qquad (1.1)$$

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where α is the angle of rotation of the external gyroscope ring, β – the angle of rotation of the casing, H – the kinetic moment, A and B – moments of inertia, α' – the moment of friction forces, $lI_2(t)$ and $S\,I_1(t)$ – disturbing moments which could arise, for example, as a result of the motion of the ship on which the system is mounted. It is assumed that I_1 and I_2 are stationary random processes with zero mean. The moments (with respect to the gyroscope axes) due to the compensating electromagnets, are denoted by $-ly_2(t)$ and $Sy_1(t)$. These moments are proportional to the signals y_2 and y_1, formed in the converter. The matrix elements of the transfer function are denoted by $X_{jk}(D)$, where $D = d/dt$. After transformations, Eq. (1.1) is replaced by the matrix equation

$$I(D)\,\varepsilon(t) = e(D)[y(t) + I(t)]. \qquad (1.8)$$

Denoting the matrix of signals by $m(t)$, the matrix of noises by $n(t)$, and the matrix of the reproduction error by $\varepsilon(t)$, one obtains:

$$\varepsilon(t) = E(D)[m(t) - Y(D)I(t) - Y(D)X(D)n(t)] \qquad (1.20)$$

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The disturbances lead to a cross-correlation of the reduced input signals, even if the input signals themselves are not correlated. The cross correlation function of the reduced input signals is determined by the statistical characteristics of the disturbances, as well as by the structure and the parameters of the matrix transfer function of the gyroscopic device. Therefore, the optimal weighting function of the entire servosystem, and not only of its compensating network, depends considerably on the dynamical characteristics of the gyroscopic device. The mean-square error of signal reproduction is minimized by Wiener's method. An equivalent system without feedback is considered, i.e. an optimal filter. Thereby, the condition for optimum signal-reproduction are obtained. The converter with transfer function X(D), consists of 3 devices, connected in series: A computer for solving integral equation

$$\xi(t) - \int_0^t \Gamma(t-\tau)\,(\tau)d\tau = r(t), \qquad (4.11)$$

a filter with transfer function $\Phi(D)$, at whose input the solution

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of Eq. (4.11) is applied, and a computer for solving integral equation

$$\int_0^t W(t - \tau)\, y(\tau)dt = \xi(t). \qquad (4.15)$$

(The solution of Eq. (4.15) is in fact the signal y which ought to arrive from the converter to the input of the gyroscope). Such a type of converter has the following advantage: A change in the form of the input signals requires only a replacement of the optimal filter and a modification of the kernel Γ of Eq. (4.11). Further, it is shown how the transfer function $\Phi(D)$ of the optimal filter is derived. An example is considered, in which the spectral density of the input signal has the form

$$C_{m_i m_i} = \frac{2\gamma_i \sigma_i}{\omega^2 + \gamma_i^2}, \quad G_{n_i n_i} = K_i \ (i = 1, 1). \qquad (6.1)$$

There are 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc. The

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

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D299/D301

Gyroscopic servosystem in the ...

reference to the English-language publication reads as follows: N. Wiener, Extrapolation, interpolation and Smoothing of Stationary Time Series, J. Wiley, New York, 1949.

SUBMITTED: December 22, 1961

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

L 09986-67 EWT(d)/EWT(1)/EWP(c) IJP(c)

ACC NR: AP6030806 SOURCE CODE: UR/0424/66/000/003/0019/0023

51

AUTHOR: Roytenberg, L. Ya. (Moscow)

ORG: none

TITLE: The effect of random variations in the angular velocity of gyroscope rotors on the motion of a gyrocompass

SOURCE: Inzhenernyy zhurnal. Mekhanika tvordogo tela, no. 3, 1966, 19-23

TOPIC TAGS: gyroscope, gyrocompass, random noise signal, white noise, motion equation, integral equation

ABSTRACT: The effect of random variations in the angular speed of a two-rotor gyroscope is investigated. The random noise is assumed to be caused by variations in the intensity and frequency of the electric current supplied to the rotor. The fluctuations in the rotor are assumed to be small such that

$$B = B_0 (1 + \lambda \frac{z}{z_0}).$$

where B_0 = const is the mean gyroscopic moment and z(t) is a steady random process with zero expectancy. The resulting perturbation equations lead to the matrix integral equation

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

L 09986-67

ACC NR: AP6030806

$$X(t) = N(t)X(0) - \lambda \int_0^t N(t-\tau_1)Z(\tau_1)\,d\tau_1 - \lambda \int_0^t N(t-\tau_1)Y(\tau_1)X(\tau_1)\,d\tau_1,$$

where N(t) is the matrix weight function for the homogeneous matrix differential equation

$$\frac{dX}{dt} + aX = 0$$

The solution of the integral equation is given by successive approximations, and a special case is considered where the random fluctuations are given as white noise. The analysis shows that these fluctuations lead to a definite gyroscopic drift. Orig. art. has: 18 equations.

SUB CODE: 20/ 17/ 12/ SUBM DATE: 14Mar66/ ORIG REF: 005

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445520008-2

ACC NR: AP6034140 (N) SOURCE CODE: UR/0424/66/000/005/0013/0025

AUTHOR: Roytenberg, L. Ya. (Moscow)

ORG: none

TITLE: Gyroscopic servo systems with a discrete control in the presence of multidimensional random disturbances

SOURCE: Inzhenernyy zhurnal. Mekhanika tverdogo tela, no. 5, 1966, 13-25

TOPIC TAGS: control theory, control statistics, gyroscope, operations research, optimal control

ABSTRACT: A study is made of the problem on the selection of a discrete system of control satisfying the optimal regeneration of useful input signals by a servo system. The equations of motion of a gyroscope are of the form

$$A\alpha'' + \sigma\alpha' - H\beta' = -l\,[y_2(t) + \psi_2(t)]\,,$$

$$B\beta'' + H\alpha' = S\,[y_1(t) + \psi_1(t)]\,,$$

where α is the rotation angle of the outer Cardan ring of the gyroscope; β --the rotation angle of the gyroscope housing; H--the kinetic moment of the gyroscope; A--the moment of inertia of the gyroscope together with the housing and the outer Cardan ring (with respect to the axis of this ring); B--the moment of inertia of the gyroscope together with the housing (relative to the axis of the housing); $\sigma\alpha'$--the

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moment of forces of friction in the supports of the axis of the outer Cardan ring; and $\ell\,\psi_2(t)$ and $S\,\psi_1(t)$ are disturbance moments relative to the axis of the outer Cardan ring and the axis of the housing, respectively. The disturbance moments are random. Electromagnetic correction moments proportional to the signals $y_2(t)$ and $y_1(t)$ are transformed according to the law

$$y_i(t) = X_{i1}(T)[0_1(t) - \alpha(t)] + X_{i2}(T)[0_2(t) - \beta(t)] \quad (i = 1, 2),$$

where

$$0_i(t) = P_i(t) + m_i(t) + n_i(t) \qquad (i = 1, 2).$$

$P_i(t) + m_i(t)$ is the useful signal, and $n_i(t)$ is a disturbance term; $P_i(t)$ is a deterministic function, and $m_i(t)$ and $n_i(t)$ are stationary random processes with mathematical expectations of zero. A signal transformer transmission function is developed in matrix form and is related to the deterministic and random terms of the signal function. Transformer inputs from disturbance forces are included in the formulation of an input signal matrix. An algorithm for minimizing the dispersion of the regeneration error is developed partly on the basis of a necessary and sufficient minimization condition shown by H. S. Hsieh and C. T. Leondes (On the optimum synthesis of sampled data multiple filters with random and nonrandom inputs. IRE, National Conv. Rec., 1961, vol. 9, part 4). Orig. art. has: 108 equations.

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ROYTENBERG, L. Ya.

Motion of a gyrocompass during random vertical shifts of its point of support. Dokl. AN SSSR 159 no.5:999-1002 D '64 (MIRA 18:1)

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AUTHORS: Roytenberg, L. Ya.

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TITLE: On the motion of a gyroscopic compass whose suspension is subjected to random vertical displacements

SOURCE: AN SSSR. Doklady, v. 159, no. 5, 1964, 999-1002

TOPIC TAGS: gyroscope motion, gyroscope error compensation, random error

ABSTRACT: After first indicating that the vertical component of the velocity of the support of a gyroscopic compass, exposed to vibrations and other motions, can be regarded as a stationary random process, the author derives the equation of motion of the gyroscopic compass under vertical vibrations of this type, using the general equations of motion of the gyrocompass as given by A. Yu. Ishlinskiy (Prikl. matem. i mekh. v. 20, No. 4, 1956) and by the author (Prikl.

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