"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

Doklady Akad.Nauk 110, 7-10 (1956) CARD 3/3 PG - 707

If the 2n-dimensional vector (x, ψ) is a solution of the system

$$(2) \qquad \left.\begin{aligned} \dot{x}^i &= f^i(x,u) = \frac{\partial H}{\partial \psi_i} \\ \dot{\psi}_i &= -\frac{\partial f^\alpha}{\partial x^i}\psi_\alpha = -\frac{\partial H}{\partial x^i} \end{aligned}\right\} \quad i=1,\ldots,n,$$

where the piecewise continuous vector $u(t)$ always satisfies the condition $H(x(t),\psi(t),u(t)) = M(x(t),\psi(t)) > 0$, then $u(t)$ is the optimal control and $x(t)$ is the corresponding locally optimal path.
Starting from a fixed initial condition $x(t_0) = \xi_0$ and changing the condition $\psi(t_0) = \eta_0$, then (2) with these conditions and the condition $H(x(t),\psi(t),u(t)) - M(x(t),\psi(t)) > 0$ determines the set of all locally optimal paths through the point $\xi_0 = x(t_0)$ and the corresponding optimal control mechanisms $u(t)$.

INSTITUTION: Math.Inst.Acad.Sci.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAMKRELIDZE, R.V.

L.S.Pontriagin's seminar on mathematical problems of the oscillation theory and automatic control. Usp.mat.nauk 12 no.3 267-272 My-Je '57. (MIRA 10:10)

(Automatic control--Study and teaching) (Oscillations--Study and teaching)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

AUTHOR: GAMKRELIDZE R.V. 20-1-1/44

TITLE: On the Theory of Optimal Processes in Linear Systems (K teorii optimal'nykh protsessov v lineynykh sistemakh)

PERIODICAL: Doklady Akad. Nauk SSSR, 1957, Vol.116, Nr.1, pp.9-11 (USSR)

ABSTRACT: Given the linear differential equation

(1) $\dot{x} = Ax + bu,$

where x and b are n-dimensional vectors, A is a linear transformation matrix and $u = u(t)$ is a piecewise continuous function with infinitely many points of discontinuity, where $|u| \leq 1$. Let ξ_0 and ξ_1 be two points of the n-dimensional phase space. The author seeks a "controlling" $u = u(t)$ such that the image point $x(t)$ which moves on the trajectory of (1), in shortest time comes from the point ξ_0 into the point ξ_1. The corresponding $u(t)$ is denoted as optimal controlling and the corresponding trajectory is denoted as optimal trajectory.

Theorem: All optimal $u(t)$ and all optimal $x(t)$ corresponding to them, which for $t = 0$ leave the point ξ, are contained in the controllings and trajectories which result by the solution of the system

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(2) $\dot{x} = Ax + bu, \quad x(0) = \xi, \quad \dot{\varphi} = -A'\varphi, \quad u = \operatorname{sign}\varphi \cdot b.$

The initial values $\varphi(0)$ of the solution $\varphi(t)$ satisfy the single condition

$$\varphi(0)\left[Ax(0) + bu(0)\right] \geq 0.$$

The system (2) improves the maximum principle formulated by Boltyanskiy, Gamkrelidze and Pontryagin but not proved in the general case [Ref. 1].

ASSOCIATION: Mathematical Institute im.V.A.Steklov, Acad.Sc.USSR (Matematicheskiy institut im. V.A.Steklova AN SSSR)
SUBMITTED: April 4, 1957
PRESENTED BY: P. S. Aleksandrov, Academician, April 5, 1957
AVAILABLE: Library of Congress

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

AUTHOR: Gamkrelidze, R.V. SOV/38-22-4-1/6

TITLE: The Theory of Optimum Processes With Regard to the Velocity in Linear Systems (Teoriya optimal'nykh po bystrodeystviyu protsessov v lineynykh sistemakh)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya matematicheskaya, 1958, Vol, 22, Nr 4, pp 449-474 (USSR)

ABSTRACT: About three years ago Pontryagin took the lead of the Moscow seminary on the theory of oscillations and automatic control. One of the first visible results of this occupation was a precise definition of the notion "optimum" [Ref 1]. The given rigorous definition soon allowed the formulation of new results ([Ref 1] and the report at the International Congress 1958 in Edinburgh). The author - a coworker of Pontryagin - considers in detail the linear special case which is described by the equation

$$\dot{\varphi} = \alpha\varphi + b_1 u^1 + b_2 u^2 + \ldots + b_r u^r \quad ,$$

where φ is an n-dimensional vector, α a given transformation matrix, b_i constant vectors and $u^i(t)$ so-called re-

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gulating functions which are subject to the condition $|u^i| \leq 1$. The existence of an optimum control is proved, i.e.: If it is possible to go from ξ^0 to ξ^1 by means of an admissible control, then it is possible also by means of an optimum control. The optimum functions u^j prove to be relay functions, i.e. they assume the values ± 1 and perform, finitely, many jumps. Of special interest is the proof of the fact that there may be a sequence of control functions u^j_k, so that the transitions from ξ^0 to ξ^1 take place in periods t_k monotonely decreasing to T : $t_1 > t_2 > \ldots > t_k > \ldots > T$, but that there is not necessarily an admissible limit control u^j for which the transition exactly lasts the time T. The optimum control can only be aimed at by a stronger "tremor" of the regulations u^k_j. For the case $r = 1$ (one final control element) the author proves two uniqueness theorems.
There are 3 references, 2 of which are Soviet, and 1 American.

ASSOCIATION: Matematicheskiy institut imeni V.A. Steklova Akademii nauk SSSR (Mathematical Institute imeni V.A.Steklov of the Academy of Sciences of the USSR)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

AUTHOR: Gamkrelidze, R.V. SOV/20-123-2-3/50

TITLE: On the General Theory of Optimal Processes (K obshchey teorii optimal'nykh protsessov)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 2, pp 223-226 (USSR)

ABSTRACT: The present paper originated in the seminar on the theory of oscillation and on the theory of automatic control under the direction of L.S.Pontryagin. The paper joins [Ref 1] and contains the proof of a general maximum principle (formulated at first in [Ref 1]), if in an optimal system a functional of the form

$$\int_{T_1}^{T_2} f^0(x(t),u(t))dt$$

reaches a minimum. The proof bases on variation processes and convex sets, where arbitrary bounded measurable functions with values in a topological Hausdorff space are admitted as control functions. The author's problem generalizes the question given in [Ref 1].
There are 3 references, 2 of which are Soviet, and 1 English.

ASSOCIATION: Matematicheskiy institut imeni V.A.Steklova AN SSSR
(Mathematical Institute imeni V.A.Steklov, AS USSR)

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

16(1)
AUTHOR: Gamkrelidze, R.V. SOV/20-125-3-2/63

TITLE: Optimum - Rate Processes With Bounded Phase Coordinates (Optimal'nyye po bystrodeystviyu protsessy pri ogranichennykh fazovykh koordinatakh)

PERIODICAL: Doklady Akademii nauk SSSR,1959,Vol 125,Nr 3,pp 475-478 (USSR)

ABSTRACT: During the last years the author and others investigated optimum control processes with the aid of the maximum principle set up by L.S. Pontryagin (see [Ref 5,6]). The principle supposes that the image point can attain all possible positions in the phase plane. In the present paper the author investigates the exceptional case : In the phase space X^n let the points ξ_1 and ξ_2 be given, they lie in a closed domain G. It is asked for a control function u(t) with the following properties 1.) The phase point ξ_1 is to move to ξ_2 on a trajectory of $\dot{x}^i = f^i(x,u)$ entirely lying in G 2.) This motion is to take place in a minimum time. The author states

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Optimum - Rate Processes With Bounded Phase Coordinates SOV/20-125-3-2/63

that in this case the maximum principle is only piecewisely applicable and he says in which way the optimum trajectory of the problem can be pieced together.
There are 6 Soviet references.

ASSOCIATION: Matematicheskiy institut imeni V.A. Steklova AN SSSR
(Mathematical Institute imeni V.A. Steklov AS USSR)

SUBMITTED: December 17, 1958

PRESENTED: December 25, 1958, by L. S. Pontryagin, Academician

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAMKRELIDZE, R. V., Doc Phys-Math Sci-- (diss) "Theory of optimal processes." Moscow, /Academy of Sciences USSR Publishing House/, 1960. 15 pp; (Academy of Sciences USSR, Mathematics Inst im V. A. Steklov); 200 copies; free; bibliography on pp 14-15 (15 entries); (KL, 25-60, 121)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAMKRELIDZE, R.V.

report to be presented at the 1st Intl Congress of the Intl Federation of Automatic Control, 25 Jun-5 Jul 1960, Moscow, USSR.

AGEYKIN, D. I. - "Compensating thermo-magnetic gas analyzers"
ANDREYEV, N. I. - "Method of determining the optimum dynamic system according to the criterion of the functional extra, which is a given function of several other functions"
AYZERMAN, M. A., and GANTMAKHER, F. P. - "Some problems of the theory of nonlinear systems of automatic regulation with discontinuous characteristics"
BARBASHIN, E. A. - "Concerning the organization of the LYAPUNOV function - for nonlinear systems"
BASHARIN, A. V. - "Graphic methods of synthesis of nonlinear systems of automatic regulation"
BASHTA, T. M. - "Problems of the application of high liquid pressures for automatic systems"
BEDEL'BAYEV, A. K. - "The theory of stability of regulation systems"
BELYAKOV, Yu. N. - "Multicoordinate nonlinear interpolator for program control of machines"
BERENDS, T. K., and TAL', A. A. - "Pneumatic alloy systems"
[illegible], V. L., [illegible], V. I., KRYAZHEVSKIY, V. V., MAZIN, L. V., POPOV, G. A. - "Automated electric drive of the propeller installation of the atomic icebreaker 'Lenin'"
[illegible], V.A., and FEDOROV, S. M. - "Application of the equivalent transmission function in the calculation of follower systems by the logarithmic frequency curve method"
[illegible], R. V., [illegible], V. A., and PRANGISHVILI, I. V. - "Contactless telemechanical systems with temporary separation of channels"
BOLTYANSKIY, V.G., GAMKRELIDZE, R. V., MISHCHENKO, Ye. F., and PONTRYAGIN, L. S. - "The maximum principle in the theory of optimum control processes"
[illegible], M. M. - "Automated electric drives of a metallurgical plant"
[illegible], I. A. - "Automatic regulation of froth-layer processes in nonferrous metallurgy"

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

16(1)

AUTHORS: Boltyanskiy, V.G., Gamkrelidze, R.V., and Pontryagin, L.S.

S/038/60/024/01/001/006

TITLE: Theory of Optimal Processes. I Maximum Principle

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya matematicheskaya, 1960, Vol 24, Nr 1, pp 3-42 (USSR)

ABSTRACT: The paper contains a detailed representation of the results published by the authors in [Ref 1-6, 10]. At the Mathematical Congress in Edinburgh L.S.Pontryagin has reported about the most essential results.
There are 10 references, 7 of which are Soviet, 1 German, and 2 American.

SUBMITTED: May 14, 1959

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S/038/60/024/03/02/008

AUTHOR: Gamkrelidze, R.V.

TITLE: Optimal Regulating Processes for Bounded Phase Coordinates

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya matematicheskaya, 1960, Vol. 24, No. 3, pp. 315-356

TEXT: A function $u(t) = (u^1,\ldots,u^r)$ is called admissible if it is piecewise continuous and piecewise smooth and if it has only discontinuities of first kind. Let B be a closed domain of the phase space $X^n = \{\bar{x} = (x^1,\ldots,x^n)\}$; let the boundary of B be a regular hypersurface of the X^n with a continuously variable curvature. Let the real scalar functions $L(\bar{x}, u)$, $f^i(\bar{x},u)$ be continuous and continuously differentiable with respect to all coordinates of the vectors $\bar{x}$ and u. The motion of the image point $\bar{x} = (x^1,\ldots,x^n)$ is described by

(1.1) $\dot{\bar{x}} = \bar{f}(\bar{x}, u)$

where

(1.2) $\bar{f}(\bar{x},u) = (f^1(\bar{x},u),\ldots, f^n(\bar{x},u))$.

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Optimal Regulating Processes for Bounded Phase Coordinates

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For given initial values, to every regulating $u(t)$ there corresponds a certain trajectory $\bar{x}(t)$ of (1.1). Let $U(\bar{\xi}_1, \bar{\xi}_2)$ be the set of all $u(t)$ with the property that the corresponding trajectories $\bar{x}(t)$ connect the points $\bar{\xi}_1, \bar{\xi}_2 \in B$ with eachother and lie entirely in B. Problem : Determine in $U(\bar{\xi}_1, \bar{\xi}_2)$ that regulating $u(t)$, $t_1 \leq t \leq t_2$, which gives a minimum of the integral

$$(1.3) \qquad \int_{t_1}^{t_2} L(\bar{x}(t), u(t))dt \quad ,$$

where $\bar{x}(t)$ in (1.3) is the trajectory corresponding to the regulating $u(t)$. The original maximum principle of Pontryagin cannot be applied in this case since it assumes that the set of the possible $\bar{x}$ - values fills up the whole X^n , while here $\bar{x} \in B$. The solution of the problem under this restriction - essential for practical applications - was already given by the author in (Ref. 7) for the special case of the quickest regulating (i.e. $L(\bar{x},u) \equiv 1$). Here the general case is considered. Under considerable mathematical expense the author obtains a system of equations which must be

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Optimal Regulating Processes for Bounded Phase Coordinates

S/038/60/024/03/02/008

satisfied by every optimal trajectory and regulating.
The author mentions A.Ya. Lerner and Ye.A. Rozenman.
There are 10 Soviet references.

ASSOCIATION: Matematicheskiy institut imeni V.A. Steklova AN SSSR
(Mathematical Institute imeni V.A. Steklov AS USSR)

PRESENTED: by L.S. Pontryagin, Academician

SUBMITTED: July 7, 1959

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

(GAMKRELIDZE, R. V.)

PHASE I BOOK EXPLOITATION SOV/5883

Pontryagin, Lev Semenovich, Vladimir Grigor'yevich Boltyanskiy, Revaz Valerianovich Gamkrelidze, and Yevgeniy Frolovich Mishchenko

Matematicheskaya teoriya optimal'nykh protsessov (Mathematical Theory of Optimum Processes) Moscow, Fizmatgiz, 1961. 391 p. 10,000 copies printed.

Ed.: N. Kh. Rozov; Tech. Ed.: K. F. Brudno.

PURPOSE: This book is intended for specialists concerned with the mathematical theory of optimum control processes.

COVERAGE: The book contains a systematic presentation of results on the theory of optimum control processes obtained by the authors during the years 1956-1961. Some data obtained from other scientists are also included. The authors' so-called "Principle of Maximum" makes possible the solution of a considerable number of variational problems of nonclassical type associated with the optimization of controlled processes. The principle is presented in detail and is compared with Bellman's principle of dynamic programming. A series of problems on optimum processes is studied on the basis of general methods of the Principle

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of Maximum. No personalities are mentioned. There are 28 references: 23
Soviet, 4 English, and 1 German.

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D298/D302

16.8000 (1031, 1132, 1329

AUTHORS: Boltyanskiy, V.G., Gamkrelidze, R.V., Mishchenko, Ye. F., and Pontryagin, L.S. (USSR)

TITLE: Principle of maximum in the theory of optimal processes

SOURCE: IFAC, 1st Congress, Moscow 1960. Teoriya diskretnykh, optimal'nykh i samonastraivayushikhsya sistem. Trudy, v. 2, 1961, 457 - 470

TEXT: The general optimum problem is formulated, as well as the basic results obtained by the authors. The n-dimensional phase-space X^n is considered, and the controlled object (plant) is described by the vector equation

$$\dot{x} = f(x, u), \quad f = (f^1, \ldots, f^n); \qquad (2)$$

is the class of allowed controllers is defined as the class of piecewise linear functions $u(t)$, $t_1 \leq t \leq t_2$. The optimum problem is formulated as follows: The two points ξ_1, ξ_2 are given in X^n; it

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Principle of maximum in the theory ...

is required to choose, among the allowed controllers, a controller $u(t)$, so that the corresponding trajectory $x(t)$ of Eq. (2), defined on the entire interval $t_1 \leq t \leq t_2$, connects the points ξ_1, ξ_2, $(x(t_1) = \xi_1,\ x(t_2) = \xi_2)$, and the integral

$$\int_{t_1}^{t_2} f_0(x(t),\ u(t))dt \qquad (3)$$

is minimized. Any allowed controller which satisfies the above conditions, is called the optimal controller, and the corresponding trajectory -- optimal trajectory. Depending on the choice of the function $f^0(x,\ u)$ integral (3) may represent the time elapsed, the fuel, energy, etc. spent during the process. The necessary conditions which any optimal controller and its corresponding trajectory satisfies, are expressed by the following basic theorem 1, called the principle of maximum. Preliminarily, the vector $\bar{x}$ of $(n + 1)$-dimensional space X^{n+1} is introduced, as well as the covariant vector $\bar{\psi}$ and the scalar function

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Principle of maximum in the theory ...

$$H(\bar{\psi}, x, u) = \sum_{\alpha=0}^{n} \psi_\alpha f^\alpha(x, u) .$$

Thereupon the Hamiltonian system of equations

$$\dot{x}^i = \frac{\partial H(\bar{\psi}, x, u)}{\partial \psi_i}, \quad i = 0, \ldots, n \qquad (6)$$

$$\dot{\psi}_i = \frac{\partial H(\bar{\psi}, x, u)}{\partial x^i}, \quad i = 0, \ldots, n \qquad (7)$$

is set up. The notation

$$M(\bar{\psi}, x) = \sup_{u \in \Omega} H(\bar{\psi}, x, u)$$

is used. Theorem 1 (principle of maximum): Let u(t) be the optimum controller and x(t) -- the corresponding optimum trajectory of (2). Then the nonzero, covarient, continuous function $\psi(t)$ can be found

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Principle of maximum in the theory ...

so that the coordinates x^1 and x^0 satisfy on the interval $t_1 \leq t \leq t_2$ the Hamiltonian system

$$\left.\begin{aligned} \dot{x}_i &= \frac{\partial H(\bar{\psi}, x, u)}{\partial \psi_i} \\ \dot{\psi}_i &= -\frac{\partial H(\bar{\psi}, x, u)}{\partial x^i} \end{aligned}\right\} \quad i = 0, 1, \ldots, n$$

and the condition of maximum

$$H(\bar{\psi}(t), x(t), u(t)) = M(\bar{\psi}(t), x(t)); \qquad (8)$$

thereby $M, x \equiv 0$, and $\psi_0 = \text{const} \leq 0$. It is noted that the principle of maximum holds also under more general assumptions than above Under certain conditions, the problem is equivalent to Lagrange's problem of variational calculus, whereby the principle of maximum coincides with Weierstrass's criterion. The basic difference between both formulations consists in the arbitrariness of the set Ω (of the values of u) in the case of the principle of maximum. The optimum problem for the case of limited phase coordinates means

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Principle of maximum in the theory ...

that only such allowed controllers can be chosen, for which the corresponding phase trajectory of (2) belongs entirely to a fixed, closed region G of n-dimensional phase space X^n. In this case the functional (3) is minimized. Further, a theorem is formulated for optimal trajectories which lie at the boundaries of the region G. In order to uniquely determine the optimum trajectory, a further condition has to be satisfied by the trajectory when it passes from the interior of G to its boundary; this condition is called discontinuity (jump) condition (as the covariant function $\overline{\psi}$ may undergo a discontinuity). Points of the boundary $g(x) = 0$, which satisfy certain conditions, are called point of contiguity (junction). A theorem is formulated which relates the discontinuity conditions to the points of contiguity. Further, a statistical problem is stated. The significance, for optimization theory, of the obtained result, has yet to be ascertained. It is noted, that it led already to the solution of a new problem "small parameter" for parabolic equations. The phase-coordinates are denoted by z. In addition, the point Q with probability distribution in the space R, is considered. It is required to select the controller u(t) of z so that the functional

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Principle of maximum in the theory ...

$$\int_0^\infty h(\tau)\,\frac{\partial}{\partial\tau}\left[\psi_u(x,\ c,\ \tau)\right]d\tau \qquad (15)$$

is minimized. The author obtained an effective formula for calculating the probability function ψ_u. A discussion followed, A.I. Lur'-ye (USSR), Sun-Tsyan' (People's Republic of China) were taking part. There are 10 references: 14 Soviet-bloc and 4 non-Soviet-bloc The references to the English-language publications read as follows: R.E. Bellman, G.I. Glicksber, O.A. Gross, Some aspects of the mathematical theory of control provesses. U.S.Air Force Project RAND, RAND Corporation, California, 1958; J.P. La Salle, Time optimal control systems. Proc. Nat. Ac. Sci., v. 45, no. 4, 1958, 573 - 577 D.W. Bushaw, Experimental towing tank. Stevens Institute of Technology, Report N 469, Hoboken, N.Y., 1953.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAMKRELIDZE, R.V.

Optimum control processes associated with limited phase coordinates. Izv.AN SSSR Ser.mat. 24 no.3:315-356 My-Je '61. (MIRA 14:4)

1. Matematicheskiy institut imeni V.A.Steklova AN SSSR. Predstavleno akademikom L.S.Pontryaginym.
(Calculus of variations)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAMKRELIDZE, R. V.

"On moving optimal regimes"

report submitted at the Intl Conf of Mathematics, Stockholm, Sweden, 15-22 Aug 62

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

S/020/62/143/006/001/024
B125/B112

AUTHOR: Gamkrelidze, R. V.

TITLE: Gliding optimum behavior (Optimal Sliding Processes)

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 6, 1962, 1243-1245 (MIRA 15:4)

TEXT: Practically always a sequence of admissible controls u exists for the equation $\dot{x} = f(x,u)$ so that the corresponding solutions x converge toward a limit which fulfills given boundary conditions and through which a functional to be minimized becomes a minimum. If this limit is no solution, a motion along it is termed a gliding optimum behavior. The author demonstrates that a gliding optimum behavior exists for the equation $\dot{x} = f(x,u)$ only if for a system of basic controls $u_\alpha(t)$, a certain system of equation $H(\psi(t),x(t), u_\alpha(t)) = \sup_{u\in\Omega} H(\psi(t),x(t),u)$ cannot be solved unambiguously.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Institute of Mathematics imeni V. A. Steklov of the Academy of Sciences USSR)

Card 1/2

Submitted Dec 19, 61

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

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[Mathematical analysis. Theory of probability. Regulation, 1962] Matematicheskii analiz. Teoriia veroiatnostei. Regulirovanie, 1962. Moskva, AN SSSR, 1964. 209 p. (MIRA 18:7)

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L 3215-66 EWT(d) IJP(c)

ACCESSION NR: AP5009210 S/0020/65/161/001/0023/0026

AUTHOR: Gamkrelidze, R. V. 44,55

TITLE: On the theory of first variation

SOURCE: AN SSSR, Doklady, v. 161, no. 1, 1965, 23-26

TOPIC TAGS: variational calculus, 16, 44, 55 vectorial function, first variation, optimal control

ABSTRACT: This article treats the theory of first variation for variational problems of the most general form, including optimal control problems. We consider the family

$$F = \{f(x,t)\} \qquad (1)$$

of n-dimensional vectorial functions $f(x,t)$, determined at $x \in G$, $t \in I$, where G is the region of n-dimensional space R^n and I is the interval of the time axis. It is assumed that every function $f(x,t)$ of the family is measurable with respect to t at constant x, that it is of class C^1 with respect to x at constant t, and that for every compactum $X \subset G$ it is majorized with respect to the modulus of some function $m(t)$ which is integrable with respect to I (depending on the

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ACCESSION NR: AP5009210

choice of f,X): $|f(x,t)| \leq m(t)$ $x \in X$, $t \in I$. Several "semi-convex" examples of this family which occur most often in variational problems are considered and the necessary condition for an extremum is stated and proved. Orig. art. has: 14 formulas.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Mathematical Institute, Academy of Sciences, SSSR)

SUBMITTED: 14Sep64 ENCL: 00 SUB CODE: MA

NR REF SOV: 002 OTHER: 000

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Country : USSR
Category: Pharmacology. Toxicology. Narcotics and Hypnotics.

V

Abs Jour: RZhBiol., No 6, 1959, No 27675

Author : Gamkrelidze, Sh.
Inst : Scientific Research Institute of Psychiatry Georgian SSR.
Title : On the Problem of the Patho-Architectonics of Acute Alcohol Intoxication.

Orig Pub: Tr. N.-i. in-ta psikhiatrii GruzSSR, 1958, 8, 71-83

Abstract: As a result of intravenous introduction of alcohol (ethyl alcohol, 'wine vodka' to 30°, or natural wine) to dogs in lethal or sublethal doses, diffuse dystrophic changes, of reversible as well as irreversible character were noted primarily in the cerebral cortex

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Country : USSR V
Category: Pharmacology. Toxicology. Narcotics and Hypnotics.

Abs Jour: RZhBiol., No 6, 1959, No 27675

and cerebellum. Seven days after intoxication, the intensity of these changes decreased. - From the author's resume.

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(ALCOHOL--TOXICOLOGY)

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Sebestoimost' Promyshlennoy Produktsii i Puti Yeye Snizheniya (Cost of Industrial Production and Ways of Reducting It) Tbilisi, Izd-vo Akademii Nauk Gruzinskoy SSR, 1956.

81 P. Tables (Nauchno-Populyarnaya Seriya)

At head of title: Akademia Nauk Gruzinskoy SSR.

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[The Georgian S.S.R.; concise historical and economic study] Gruzinskaia SSR; kratkii istoriko-ekonomicheskii ocherk. Pod red. P.V.Gugushvili. Tbilisi, Izd-vo Soiuza pisatelei Gruzii "Zaria Vostoka," 1961. 133 p. (MIRA 15:9)

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Antituberculotic Drugs.

Abs Jour : Ref Zhur - Biol., No 21, 1958, 98595

Author : Ganlitskaya, S.V.

Inst : Karaganda Medical Institute.

Title : Experiment of Treatment of Tuberculous Meningitis with Streptomycin.

Orig Pub : Tr. Karagandinsk. med. in-ta, 1957, 1, No 7, 464-466

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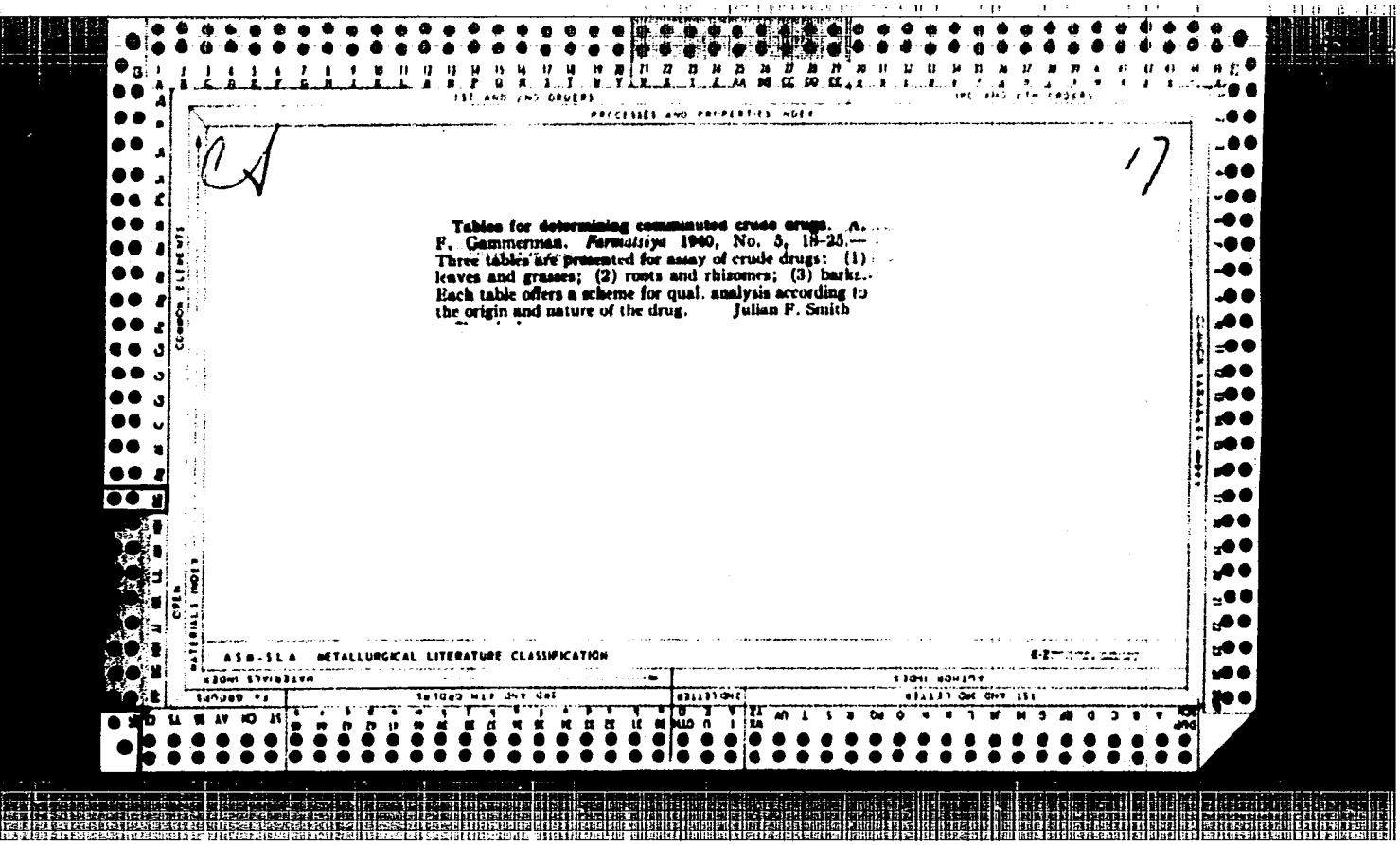

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ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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(Pharmacognosy)

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Editors: GAMMERMAN, A. F.; GUSYNIN, I. A.; IL'IN, M. M.; NEKRASOVA, V. L.; NIKITIN, A.A.; FEDOROV, Al. A.; Responsible editor: SHISHKIN, B. K.

Poisonous Plants of Meadows and Pastures, Botanical Institute imeni V. L. Komarov. Moscow-Leningrad; 1950, 527 pp.

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QK99.G23

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(Herbs--Therapeutic use) (Bactericide)

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1. Professor.

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(Botany, Medical)

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

BLAGOVIDOVA, Yu.A., dots., otv. red.; MEL'NICHENKO, A.K., zam. otv. red.; GAMBERYAN, A.F., prof., red.; KUTUMOVA, Ye.N., red.; SEDOVA, K.D., kand. farm. nauk, red.; SENOV, P.L., prof., red.; SIDORKOV, A.M., red.; STETSYUK, A.M., red.; SHILOV, Yu.M., kand. farm. nauk, red.; KHALETSKIY, A.M., prof., red.

[Materials of the Second All-Union Conference of Pharmacists] Materialy Vtoroi Vsesoiuznoi konferentsii farmatsevtov. Moskva, Medgiz, 1961. 394 p. (MIRA 17:7)

1. Vsesoyuznaya konferentsiya farmatsevtov, 2d, Leningrad, 1959. 2. Kafedra tekhnologii lekarstv I Moskovskogo meditsinskogo instituta im. I.M.Sechenova (for Blagovidova). 3. Direktor Tsentral'nogo aptechnogo nauchno-issledovatel'skogo instituta (for Kutumova). 4. Zaveduyushchiy kafedroy farmatsevticheskoy khimii I Moskovskogo meditsinskogo instituta imeni I.M.Sechenova (for Senov). 5. Zamestitel' direktora po nauchnoy chasti TSentral'nogo aptechnogo nauchno-issledovatel'skogo instituta (for Shilov).

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

MINTS, I.P.; GAMMERMAN, A.F., red.

[Etymological dictionary of Latin names of medicinal plants] Etimologicheskii slovar' latinskikh nazvanii lekarstvennykh rastenii. Leningrad, 1962. 52 p. (MIRA 18:9)

1. Leningrad. Khimiko-farmatsevticheskiy institut.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAMMERMAN, A.F.

Progress in the study of medicinal plants during the last five years. Apt. delo 11 no.6:9-13 N-D'62 (MIRA 17:7)

1. Leningradskiy khimiko-farmatsevticheskiy institut.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAMMERMAN, Adolf Fedorovna, prof.; SEMICHOV, Boris Vladimirovich; GERASIMOVA, K.M., kand. ist. nauk, otv. red.; BOGDANOV, G.G., red.

[Dictionary of Tibetan-Latin-Russian names of medicinal plants used in Tibetan medicine] Slovar' tibetsko-latino-russkikh nazvanii lekarstvennogo rastitel'nogo syr'ia, primeniaemogo v tibetskoi meditsine. Ulan-Ude, Izd-vo AN SSSR, 1963. 1 v. (MIRA 16:9)
(TIBET--BOTANY, MEDICAL--DICTIONARIES)
(TIBETAN LANGUAGE--DICTIONARIES, POLYGLOT)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAMMERMAN, A.F., doktor farm. nauk, prof.; SOTNIK, V.F.

Maps of the distribution of some medicinal plants. Trudy Len. khim.-farm. inst. no.17:24-28 '64. (MIRA 18:1)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAMMERMAN, A.F., doktor farm. nauk, prof.; SELYNINA, L.V.

Diagnostic anatomy of species of the genus Polygonum L. of the section Persicaria Meisn. Trudy Len. khim.-farm. inst. no.17:97-112 '64. (MIRA 18:1)

1. Kafedra farmakognozii i botaniki Leningradskogo khimiko-farmatsevticheskogo instituta.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAMMERMAN, A. F.

"Narodnaya farmatsiya u narodov SSSR."

report submitted for 7th Intl Cong, Anthropological & Ethnological Sciences, Moscow, 3-10 Aug 64.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAMMERMAN, A.F.; [illegible]YAN, L.I.

Anatomic study of the cortex of Hippophae rhamnoides L. Apt. delo 13 no.3:21-26 My-Je '64. (MIRA 18:3)

1. Leningradskiy khimiko-farmatsevticheskiy institut.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAMMERMAN, A.F., doktor farm. nauk prof., red.; YURKEVICH, I.D., akademik, red.

[Medicinal plants; wild growing] Lekarstvennye rasteniia;dikorastushchie. Moskva, Nauka i tekhnika, 1965. 378 p. (MIRA 19:1)

1. Akademiya navuk BSSR, Minsk. Instytut eksperymental'noy bataniki i mikrabiialohii. 2. AN Belorusskoy SSR (for Yurkevich).

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

S/589/62/000/063/005/021
E194/E436

AUTHOR: Gammerman, M.Ya., Consultant

TITLE: Heat meter type TC-1 (TS-1)

SOURCE: USSR. Komitet standartov, mer i izmeritel'nykh priborov. Trudy institutov Komiteta. no. 63(123). Moscow, 1962. Issledovaniya v oblasti teplovykh i temperaturnykh izmereniy, 51-62

TEXT: The Tallinskiy zavod kontrol'no-ismeritel'nykh priborov (Tallin Control and Measuring Instrument Works) developed, in 1957-58, the first Soviet heat meter in regular production, type TC-1 (TS-1), intended for the medium size or domestic installations. The heater operates by measuring both the rate of flow of water and the temperature difference between the incoming and outgoing water and subsequently multiplying and integrating the two quantities. For simplicity and cheapness the instrument consisted of two units, one of which is a well known hot water meter; the other part (heat meter TC-1 (TS-1)) contains a differential expansion thermometer consisting of inlet and outlet pipes for the circulating water. On the end of the

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Heat meter ...

differential thermometer arm, its movement being proportional to the difference in temperature between the two pipes, is a revolution counter driven by a roller which is moved across a rotating disc which is itself driven by the water meter. The speed of rotation of the counter roller depends both on the speed of the disc, which is proportional to the rate of water flow, and on its position in respect of the disc radius, which is proportional to the temperature difference. Simple formulae are derived by means of which an instrument of convenient size, shape and characteristics can be designed. The constructional details of the heat counter are then described. The differential manometer tubes are U-shaped, a movement lock being provided to avoid damage in transport. The instrument is fitted into a metal case. The heat meter is produced for use with water meters suitable for a rate of flow of 0.1 m^3 per revolution of the counter and if different meters are used the calibration must be altered accordingly. Full scale reading of the counters in the instrument corresponds to 10000 m^3 water and 1000 Gcal of heat, the error of the heat counter (excluding that of the water counter) is $\pm$ 4%. A test rig ИСТ-3Э (IST-3E) which has been specially

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constructed for calibrating these instruments is described. Arrangements are made to circulate water at two different temperatures through the inlet and outlet pipes. For purposes of calibration the water-meter part is replaced by an equivalent driving device. A brief analysis is made of certain errors of heat meter TS-1. They are resolved into two components, one corresponding to a constant temperature of the returning water and the other to a constant temperature difference. Theoretical and experimental error curves are plotted for instruments fitted with a differential thermometer made of steel (St.10). Under certain circumstances the error curve need not be linear. Therefore the instrument should be calibrated at several different rates of water flow with different values of temperature difference. There are 9 figures and 2 tables.

ASSOCIATION: VNIIM

SUBMITTED: March 3, 1961

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

VALLIKIVI, A.Yu.; GAMMERMAN, M.Ya. [Hammerman, M.]

Problem concerning the errors and regulation of TS-1 heat registers. Teploenergetika 9 no.12:67-71 D '62. (MIRA 16:1)

1. Tallinskiy zavod izmeritel'nykh priborov.
(Heat--Measurement)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAMMERMAN, M.Ya.; MEYSTER, A.A.

Electromagnetic (induction) flowmeters for electrically conductive liquids. Prib. i sred. kompl. avtomatiz. no.2:27-39 '63.
(MIRA 17:12)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

L 43119-65 EWT(m)/EPF(c)/T Pr-4 DJ

ACCESSION NR: AP5005733 S/0318/65/000/001/0014/0015

AUTHOR: Rudakova, N. Ya.; Polishchuk, S. A.; Lobov, V. A.; Gamol'skaya, L. N.

TITLE: Possibility of manufacturing transformer oil and freon from Valenskaya (Moldavian SSR) petroleum

SOURCE: Neftepererabotka i neftekhimiya, no. 1, 1965, 14-15

TOPIC TAGS: Valenskaya crude oil, transformer oil, freon, transformer oil yield, freon yield, paraoxydiphenylamine additive, chemical treatment, transformer oil production, freon production/ VTI-1 additive

ABSTRACT: The 300-400° lube cut obtained from Valenskaya petroleum is used as the distillate for the manufacture of transformer oil. The distillate whose highest freezing point is -45°C is chemically treated and yields stable transformer oil, with a consumption of 36% of acid of 94% concentration. The yield of transformer oil on the petroleum is 27% and is obtained without the use of antioxidant additives. The 370-410° fraction serves as the distillate for the manufacture of freon and is chemically treated. The freon, however, is unstable even when using up to 80% acid on the distillate. Only the use of antioxidants produces satisfactory stability and reduces the acid consumption to 50% on the distillate. The use

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of 0.02% VTI-1 additive (paraoxydiphenylamine) makes it possible to obtain KnF-12 freon with a stability corresponding to GOST specifications. The material balance of the chemical treatment for both distillates is given in Table 1 of the Enclosure. Orig. art. has: 3 tables.

ASSOCIATION: UkrNIIgiproneft', L'vovskiy filial (UkrNIIgiproneft', L'vov Branch)

SUBMITTED: 00 ENCL: 01 SUB CODE: FP

NO REF SOV: 000 OTHER: 000

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

LESHCHINSKIY, L.K., inzh.; TSOLOLO, Ye.S., inzh.; GAMOL'SKAYA, L.A., tekhn.

Welded tilting open-hearth furnace. Svar.proizv. no.12:35-36 D '65. (MIRA 18:12)

1. Zavod "Azovstal'".

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

ACC NR: AP6036885 (A) SOURCE CODE: UR/0122/66/000/011/0041/0043

AUTHOR: Gamol'skaya, Z. M. (Engineer); Guterman, V. M. (Candidate of technical sciences)

ORG: none

TITLE: High wear resistance of case-hardened high chromium steels working in an abrasive hydraulic medium

SOURCE: Vestnik mashinostroyeniya, no. 11, 1966, 41-43

TOPIC TAGS: wear resistance, chromium steel, abrasive, case hardening

ABSTRACT: The article gives the results of an investigation of the wear resistance of case-hardened high chromium steels 3Kh13, Kh12M, and 9Kh18. The chemical composition of these steels and of two high chromium cast irons is given in a table. The samples were subjected to carburization at 1050°C (samples of steel 9Kh18 at 1070-1100°C) for a period of 10-15 hours in a solid charcoal carburizing agent consisting of 60 parts (by weight) of spent carburizing agent and 40 parts fresh carburizing agent, with the addition of 5% soda, as well as in a gaseous medium with the use of triethanolamine. The samples were then immediately quenched in oil from 950° and annealed at 160-180°C. The properties of the case are given in a table, and the microstructure is shown in a table. To evaluate the behavior of the materials under

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ACC NR: AP6036885

different conditions of hydraulic abrasion, tests were run by the following methods: 1) slot condensation--the samples were in the form of two concentric sleeves, of which the outer sleeve was fixed and the inner sleeve rotating; a slurry of water and sand flowed at a high rate between the sleeves; 2) samples in the form of cylindrical rods were placed in a vertical tube perpendicular to the flow of slurry; 3) samples in the form of plates were placed in a special unit and subjected to the periodic impact of a horizontal jet of a slurry of sand. It was found that the wear resistance of the case of a high chromium steel was 3-5 times greater than the wear resistance of a case obtained by the carburization of conventionally used steels. Orig. art. has: 3 figures and 2 tables.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 004/ OTH REF: 001

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAM[illegible]

[illegible]-temperature treatment of [illegible] iron. Lit. pr[illegible]. 5:42-43 My '64. (MIRA 18:3)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GUTERMAN, V.M.; GARBER, M.Ye.; GAMOL'SKAYA, Z.N.; Prinimali uchastiye: ZELIKMAN, I.D.; TSYPIN, I.I.; KEL'MANSON, V.I.; KISELEVA, V.S.; MIKHAYLOVSKAYA, S.S.; GRINBERG, A.Ya.; MARKIN, I.S.

Raising the wear resistance of equipment parts operating in a hydraulic abrasive medium. Ugol' 39 no.9:61-63 S '64. (MIRA 17:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy i proyektno-tekhnologicheskiy institut ugol'nogo mashinostroyeniya.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAMOL'SKAYA, Z.M.; GUTERMAN, V.M.; KOTINA, M.M.

Increasing the wear resistance of hydraulic machinery parts. Metalloved. i term. obr. met. no.11:33-37 N '65. (MIRA 18:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy i proyektno-tekhnologicheskiy institut ugol'nogo mashinostroyeniya.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

ORATOVSKIY, V.I.; GEYSHIN, P.A.; GAMOL'SKIY, A.M.

Continuous distillation of ammonium sulfide. Trudy IREA no.25: 457-460 '63. (MIRA 18:6)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

ORATOVSKIY, V.I.; GAMOL'SKIY, A.N.; KLIMENKO, M.M.

Composition of saturated vapor over aqueous solutions of cadmium sulfide at high temperatures. Zhur. prikl. khim. 37 no.11:2392-2398 N '64 (MIRA 18:1)

1. Donetskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta khimicheskikh reaktivov i osobo chistykh khimicheskikh reaktivov i osobo chistykh khimicheskikh veshchestv.

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~~GAMOLITSKIY, P. A.~~

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr. 1954)

Name	Title of Work	Nominated by
Gamolitskiy, P. A.	"Cotton Growing" Textbook	Ministry of Agriculture Uzbek

SO: W-30604, 7 July 1954

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

GAMON, N.N., inzh.

Electric power supply of the construction site. Energ.stroi. no.23: 107-114 '61. (MIRA 15:1)

1. Glavnyy energetik stroitel'stva Kremenchugskoy gidroelektrostantsii. (Kremenchug Hydroelectric Power Station--Design and construction) (Electric engineering)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

176T76

GAMORINA, G. N.

USSR/Medicine - Pulmonary Tuberculosis Nov 50
Physiotherapy

"Physiotherapeutic Methods of Treating Pulmonary Tuberculosis," G. N. Gamorina, Med Nurse

"Med Sestra" No 11, pp 27, 28

Discusses favorable results of using iontophoresis for treatment of pulmonary tuberculosis. A 2% soln of calcium chloride is widely used in this method to introduce ions of calcium, and also ions of dionin using 0.1% soln, and ions of antipyrine using 1% soln. Discusses variations in type of current used and other factors in application of treatment.

176T76

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

S/710/62/000/008/002/003
E075/E436

AUTHORS: Rudakova, N.Ya., Polishchuk, S.A., Sheremeta, B.K., Candidates of Technical Sciences, Gamolina, L.N., Stanitskaya, Z.N., Germash, E.A., Vasil'yeva, Z.N., Engineers

TITLE: The possibility of producing transformer oils from Okha and Katangli crudes

SOURCE: Kiyev. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut ugol'noy, neftyanoy i gazovoy promyshlennosti. Nauchnyye zapiski. no.8. 1962. Neftepererabotka. 64-70

TEXT: An attempt was made to produce transformer oils satisfying ГОСТ982-56 (GOST 982-56) specification from Okha and Katangli crudes subjected to acid or furfural treatment without dewaxing. The properties of the crudes are given in Table 1. These crudes contain about 50% of oil fractions and can fully satisfy the demand of the Siberian and the Far East regions for transformer oils. A distillate from a mixture of crudes was investigated (2 parts of Okha and 1 part of Katangli crudes) in view of differences in their composition, the Katangli crude containing

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more aromatic hydrocarbons. A transformer oil satisfying the specification was produced from the 300 to 375°C fraction extracted with furfural (optimum furfural:distillate rate 2:1) or subjected to an acid-alkali treatment. The latter gave higher yields (about 86%) than the furfural extraction (68 to 78%). Oils with the best stability are obtained by the acid treatment with the consumption of 10% H_2SO_4 and 0.74% alkali. Such treatment gives oils with relatively high contents of aromatic hydrocarbons which exert an oxidation-inhibiting action. The stability of the oils can be increased further by adding 0.1% antioxidant ВТИ-1 (VTI-1). The oils produced from Okha crude have higher stability than those from Katangli crude. This is due to the relatively high content of aromatic hydrocarbons in the Okha oils. There are 6 tables.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

S/710/62/000/008/003/003
E075/E436

AUTHORS: Rudakova, N.Ya., Polishchuk, O.A., Candidates of Technical Sciences, Gamolina, L.N., Orazova, M.R., Engineers

TITLE: Crude naphthenic acids - effective emulsion breakers for hydrophobic petroleum emulsions

SOURCE: Kiyev. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut ugol'noy, neftyanoy i gazovoy promyshlennosti. Nauchnyye zapiski. no.8. 1962. Neftepererabotka. 71-80

TEXT: The emulsion breakers in current use in the USSR are reviewed and it is concluded that to be effective they must contain salts of surface active oil-soluble sulphonic acids and the minimum content of non-active ballast. Separation of water from a light Glinsk Rozbyshev crude and heavy Kokhanovo crude was investigated to elucidate the action of various emulsion breakers. These include neutralized kerosene and gas oil sulphonic acids, crude and neutralized naphthenic acids produced in different refineries. The most effective were the oil-soluble crude naphthenic acids isolated from alkali wastes after

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

Crude naphthenic acids ...

neutralization of light distillates such as diesel fuels, kerosenes and transformer oils. The best of these are the acids separated from the alkali wastes of diesel fuels (a product of the type "acidol-mylonafta"). Presence of the soaps of naphthenic acids increases their emulsion breaking action by conferring on them both oil-soluble and water-soluble properties. Water separation from the Glinsk-Rozbyshev crude at 70 to 80°C and a settling time of 3 hours is best achieved with the use of 0.4 to 0.5% of the naphthenic acids. The separation of water under pressure was carried out in a laboratory autoclave under 4 to 8 atm at 150 to 180°C. This separation can be achieved without emulsion breakers, but the rate of water separation increases in the latter's presence. The degree of water separation increases with the increasing pressure, settling time and the amount of emulsion breakers. Satisfactory water separation is obtained under 4 atm and 1 h settling time in the presence of 0.1 to 0.5% of an emulsion breaker. There are 3 figures and 5 tables.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

CZECHOSLOVAKIA/Chemical Technology - Carbohydrates and Their Processing. H.

Abs Jour : Ref Zhur - Khimiya, No 16, 1958, 55421

Author : Gamous
Inst :
Title : Evaluation of Crude Sugar.

Orig Pub : Listy cukrovarn., 1956, 72, No 11, Priloha, 28-30

Abstract : Based on the average analysis of crude wugar from ten plants, a point scale was drawn up which characterizes the quality of sugar by the following indices: polarization, randeiman, ash content-polarization ratio, color in Stammers units per dry material and granulation. The quality of sugars examined and evaluated by the point scale, varied from 7 to 42 points. The results of the analysis and the calculated evaluations are furnished.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1

BARANOV, Yu., dotsent; GAMOV, A., dotsent

Determining the circulation of the vessel by photographing the radar screen. Mor. flot 25 no.5:22-24 My '65. (MIRA 18:5)

1. Leningradskoye vysshaye inzhenernoye morekhodnoye uchilishche imeni admirala S.O. Makarova.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000614210015-1"