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Sakharov, I. Ye.

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SAKHAROV, I. YE. Cand. Physicomath. Sci.

Dissertation: "Bending of a Wedge-Shaped Fixed Plate Under the Action of an Arbitrary Load." Moscow Order of Lenin State U, imeni M. V. Lomonosov, 27 Jun. 1947.

SO: Vechernyaya Moskva, Jun. 1947 (Project #17836)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, I. Ye.

Saharov, I. E. The bending of a wedge-shaped clamped plate under the action of an arbitrary load. Akad. Nauk SSSR. Prikl. Mat. Meh. 12, 407–414 (1948). (Russian)

The paper deals with small deflections w of an infinite wedge-shaped elastic plate subjected to an arbitrary normal load $p(\rho, \theta)$, where ρ and θ are polar coordinates in the plane of the plate. If the angle of the wedge is 2α, the clamping condition requires that on the sides $\theta = \pm\alpha$ of the wedge $w = \rho^{-1}\partial w/\partial\theta = 0$. The solution is sought in the form $w = (p/8\pi D)(r^2\Gamma + \psi)$, where ψ is a regular biharmonic function, $\Gamma(\rho, \theta; \rho_0, \theta_0)$ is a harmonic Green's function for the wedge, $r^2 = \rho^2 + \rho_0^2 - 2\rho\rho_0 \cos(\theta - \theta_0)$, p is a concentrated load applied at (ρ_0, θ_0) and D is flexural rigidity. The solution is obtained, for the deflection w under a concentrated load p, in the form of an integral with ρ_0 and θ_0 as parameters. The problem for a distributed load is solved by integrating over the loaded region. The paper contains calculations for the deflection, and bending and twisting moments along the sides of the plate, under a concentrated load when $\alpha = \pi/4$. *I. S. Sokolnikoff* (Los Angeles, Calif.)

Source: Mathematical Reviews, Vol. 10 No. 2

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, I. Ye.

At Moscow, -1947-48-. Candidate Physico-Math Sci. Moscow State V, 1947. "Flexure in a Wedge-Shaped Encastre Plate Subjected to Arbitrary Loads," Prik. Matemat. i Mekh., 12, No. 4, 1948; "Bending of a Beam Stretched by Centrifugal Forces," ibid., 13, No. 3, 1949. (Moscow, 1948)

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SAKHAROV, I. Ye.

280

Saharov, I. E. Bending of a rod under centrifugal force. Akad. Nauk SSSR. Prikl. Mat. Mech. 13, 329–330 (1949). (Russian

Consider a homogeneous horizontal rod of constant cross section, rotating with constant angular velocity about a vertical axis to which one of the ends of the rod is clamped. If r is measured perpendicular to the axis, and $w(r)$ is the (small) deflection, then $Bw^{iv}-[T(r)w']'=f(r)$, where B is the constant flexural rigidity, $T(r)$ is the tension, and $f(r)$ is the transverse load, including the weight of the rod. The end conditions are $w(0)=w'(0)=w''(L)=w'''(L)=0$, where L is the length of the rod. Using $w''(L)=0$, a second order nonhomogeneous ordinary differential equation is obtained for w', which is solved explicitly in terms of confluent hypergeometric functions (reference is made to C. Wells and R. Spence [J. Math. Physics 24, 51–64 (1945); these Rev. 7, 66]). The deflection $w(r)$ is then obtained by integration, and all three remaining arbitrary constants are determined to fulfill the other three end conditions. *J. B. Diaz.*

Source: Mathematical Reviews, Vol. 11 No. 4

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, I.Ye., kandidat fiziko-matematicheskikh nauk; LYUDIN, G.L., inzhener.

Experimental investigation of vibrations in a large turbogenerator. Vest.electroprom. 27 no.7:46-52 Jl '56. (MLRA 10:8)

1.Nauchno-issledovatel'skiy institut Ministerstva elektrotekhnicheskoy promyshlennosti.
(Turbogenerators--Vibration)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

AUTHOR: Sakharov, I. Ye. (Moscow) 24-5-14/25

TITLE: Frequency of natural oscillations of ring-shaped plates. (Chastoty sobstvennykh kolebaniy kol'tsevykh plastinok).

PERIODICAL: "Izvestiya Akademii Nauk, Otdeleniye Tekhnicheskikh Nauk" (Bulletin of the Ac.Sc., Technical Sciences Section), 1957, No.5, pp.107-110 (U.S.S.R.)

ABSTRACT: It is frequently necessary to calculate the behaviour of ring-shaped plates under dynamic load conditions and particularly to determine the frequency of their natural oscillations. In this paper formulae are derived for calculating the frequency of the natural oscillations and the derived formulae are utilised for plotting graphs of the dependence of the basic wave and of the first two harmonics of natural oscillations as a function of the relative hole area for two types of boundary conditions, namely, for the case that the external edge is rigidly clamped and for the case that the external edge is freely supported. There are 2 figures and 4 Slavic references.

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SUBMITTED: February 11, 1957.

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SAKHAROV, I. YE.

AUTHOR: Sakharov, I. Ye. (Moscow) 24-11-20/31

TITLE: On forced oscillations of stators of a.c. electrical machines. (O vynuzhdennykh kolebaniyakh statorov elektricheskikh mashin peremennogo toka).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.11, pp. 167-169 (USSR)

ABSTRACT: In a.c. machines forces of magnetic attraction between the rotor and the stator are generated which rotate together with the field. Since the stator of the machine represents an oscillation system, the rotating magnetic forces of attraction generate vibrations in the stator which, in certain cases, have to be eliminated or at least reduced. This phenomenon can be described using the following simplifying assumptions: the stator is considered as a thin ring of unit width; in the expression for the induction in the air gap only the fundamental is taken into consideration; as resistance forces the forces of external friction are considered which are proportional to the speed of displacement of the axis of the ring and also the internal friction which is proportional to the speed of deformation of the ring fibres. The motion of an element of the uniform thin ring of equal cross section,

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24-11-20/31

On forced oscillations of stators of a.c. electrical machines.

to which the back of the stator is reduced, is expressed by equations given by Love, A. (Ref.1). The internal friction is taken into consideration by means of the formula given by Kushul', M. Ya. (Ref.2) expressing the dependence between the stresses, deformations and the deformation speed, Eq.(3), p.167. The dynamic bending of the back of the stator can be considered as equalling the static bending under the effect of a load $(2pP/\pi R) \times \cos^2 p\theta$, increased by a dynamic coefficient, k, and rotating with an angular speed ω. The maximum bending lags behind the maximum of the distributed load by an angle χ. The derived solution reflects qualitatively the observations made in experimental study of the vibrations of the stators of electrical machines, particularly stators of turbo-generators, namely, that in each point of the laminations the oscillation frequency $2p\omega = 100$ c.p.s. and that the vibrations along the cross section of the machine at the points spaced at 45° apart are always shifted in phase by 90°. The calculated and the experimentally determined maximum bending values differ and this is attributed to the difference between the calculated and the real natural

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420

AUTHOR: Sakharov, I.E., Candidate Phys.Math.Sci., and Lyudin, G.L., Engineer (Scientific Research Institute of the Ministry of the Electro-technical Industry.)

TITLE: Determination of the dynamic stiffness of the rotor supports of a turbo-generator. (Opredeleniye dinamicheskoy zhestkosti opor rotora turbogeneratora.)

PERIODICAL: "Vestnik Elektropromyshlennosti" (Journal of the Electrical Industry), 1957, Vol. 28, No. 5, pp. 31 - 34, (U.S.S.R.)

ABSTRACT: The stiffness of rotor supports influences the critical speed of an alternator, and if the support is considered as an oscillating system it is necessary to know its dynamic characteristics. These cannot be calculated and accordingly experimental determination of the dynamic stiffness of the supports is required. This article gives the results of such a determination.

The oscillations of the bearings were set up by means of an eccentric vibrator with an amplitude force value of 5 000 kg at a speed of 3 000 r.p.m. The vibrator was driven by a 9 kW d.c. motor. The vibrator was rigidly fixed to a special steel liner which replaced the usual bearing liners at the exciter and the turbine ends. Oscillations of the support in three directions were measured by a vibrograph type UV-2.

To determine the dynamic stiffness of the support of a turbo-generator from the exciter end in the vertical direction the vibrator was installed so that the force acted vertically.

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Determination of the dynamic stiffness of the rotor supports of a turbo-generator. (Cont.)

Records were made of three components of the oscillation of the bearing over the speed range from 0 to 3 400 r.p.m. Then the vibrator was installed so that the force acted horizontally and the recordings were repeated. Similar tests were carried out from the turbine end. The speed of the vibrator was increased by stages.

The test results are presented in the form of graphs. The dynamic stiffness of the supports is obtained by dividing the magnitude of the exciting forces by the corresponding amplitudes of vertical or transverse oscillation. On the basis of the experimental results formulae are given for the rigidity of the turbo-generator supports as functions of the speed. The dynamical stiffnesses obtained were used to calculate the critical speed, and the calculated values are compared with experimental ones. The procedure of calculations for determination of the dynamic stiffness of a support from the exciter end is given as an appendix and a particular example is worked out. The results are in good agreement with the experimental data.

3 figures, no literature references.

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SAKHAROV I.E.

110-10-3/18

AUTHOR: Sakharov, I.E., Candidate of Phys.Math. Sciences, and ~~Ter-Mikaelyan,~~ T.M., Candidate of Phys.Math.Sciences.

TITLE: Calculation of the Critical Speeds of a Turbo-generator Rotor on Elastic-massive Supports using an Electronic Computer. (Raschet na elektronnoy schetnoy mashine kriticheskikh skorostey rotora turbo-generatora na uprugo-massivnykh oporakh)

PERIODICAL: Vestnik Elektropromyshlennosti, 1957, Vol.28, No.10, pp. 9 - 17 (USSR)

ABSTRACT: Turbo-generators with an output of greater than about 6 MW are made with flexible shafts and the working speed is above a critical speed. In designing a rotor it is important to be able to ensure that the working speed is at least 20-30% away from the critical speed. This article deals with the influence of give, or pliability of the support bearings of the turbo-generator on the critical speeds of the rotor. The problem is solved accurately by means of a computer. The critical speeds are determined as roots of a characteristic equation obtained from boundary conditions and conditions of continuity of geometrical and power factors at places of step-wise change in the section of the rotor on the assumption that the rotor consists of a number of parts of constant section to each of which

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Calculation of the Critical Speeds of a Turbo-generator Rotor on Elastic-massive Supports using an Electronic Computer.

the equations of oscillation of a beam are applicable. The results of the calculation graphically show the relationship between the critical speeds and the various amounts of give in the two bearings. The results may be compared with calculations of critical speed made by the usual graphical methods.

The formulation of the equation for determination of the critical speeds is then described. The turbo-generator rotor is considered as a beam consisting of a number of sections of different rigidity with a common axis with elastic massive end supports. The equations and boundary conditions are given. The equations required to determine the critical speeds in a rotor consisting of eleven different sections are given in Table 1.

The procedure of calculation for a rotor of eleven sections is then described. Allowance was made for the rigidity of the copper and wedges in the slot. Seven values of static elasticity were used for each support, taking the weight of the support as ten tons. Engineer L.P. Friedman participated in the derivation of the formulae. The equation for the critical speeds is given and appropriate characteristics for the rotor and the supports are taken from Tables 2 and 3. There is a total of

Card 2/4 28 variants which makes the problem very complicated but simpli-

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Calculation of the Critical Speeds of a Turbo-generator Rotor on Elastic-massive supports using an Electronic Computer.

fying assumptions are explained. The application of the equation to a large electronic computer with a memory system containing 1 024 cells is explained. The way in which the method was simplified to adapt it to the computer is explained. The final programme contained 251 orders whilst a further 81 cells were occupied by standard signs and constants used in the programme. Engineer B.I. Kuznetsov participated in the work. Four constants were located in an external memory device to which reference had to be made 28 times. Each variant was worked out in rather less than two minutes which corresponds to approximately a million operations per variant. It is not difficult to extend this programme to a rotor with a greater number of sections. Therefore, once the programme has been drawn up it can be used for practically any turbo-generator rotor. It is, of course, necessary each time to substitute fresh initial data.

The four first critical speeds of the rotor were determined for the variants given in Tables 2 and 3. The results are given in Figs. 2, 3, 4 and 5. The yield of one of the supports is plotted on the abscissus and the yield of the other is the parameter of a family of curves giving the values of the critical speed. Fig. 6 gives the first four critical speeds as a function

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Calculation of the Critical Speeds of a Turbo-generator Rotor on Elastic-massive supports using an Electronic Computer.

of the yield of the supports for the case when both supports have the same dynamic characteristics. The graphs show that, within the range investigated, variations in the yield of the supports has little influence on the first critical speed but much more influence on the higher critical speeds. A practical example is given based on data obtained from a power station. It is shown that the effect of yield in the supports is to reduce the first critical speed by 6% and the second by 25%.

The calculations demonstrate the effectiveness of computers in solving new problems of turbo-generator design connected with reduction of vibration.

There are 6 figures, 3 tables and 1 Slavic reference.

ASSOCIATION: Scientific Research Institute of the Electro-technical Industry. (NII EP) and Institute of Mathematics and Mechanics of Ac.Sc. Armenian SSR. (Institut Matematiki i Mekhaniki AN Arm. SSR)

SUBMITTED: June 17, 1957

AVAILABLE: Library of Congress

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APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

AUTHOR: Sakharov, I. Ye. (Moscow) SOV/179-59-3-8/45

TITLE: Constrained Vibrations of the Disc on a Horizontal Unequal Shaft Rotating in Anisotropic Flexible Bearings (Vynuzhdennyye kolebaniya diska na gorizontal'nom valu dvoynoy zhestkosti, vrashchayushchemsya v anizotropnykh uprugo-massovykh oporakh)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 3, pp 53-58 (USSR)

ABSTRACT: The various factors affecting the vibrations of turbines can be investigated when their shaft disc can be adjusted by means of the flexible bearings which incorporate a set of springs. This type of bearing is known as anisotropic. Such an arrangement is illustrated in Fig 1, where displacements of the disc and bearings can be measured. The following notations are used for the calculations:

c_u, c_v - coefficients of shaft rigidity,

m - mass of the disc,

c_x, c_y - coefficients of bearing rigidity in the vertical and horizontal directions respectively,

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Constrained Vibrations of the Disc on a Horizontal Unequal Shaft Rotating in Anisotropic Flexible Bearings

M - mass of bearing,
ω - angular velocity of shaft rotation,
g - gravity,
e_u, e_v - coordinates of the disc centre,
x_1, y_1 - projected coordinates of the disc centre,
x_2, y_2 - projected coordinates of the bearing centre.

The differential equations of the motion of the disc and the bearing centres, projected at the axis x_2, y_2 can be described as shown in Eq (1.1), and those of the disc projected at the axis x_1, y_1 as Eqs (1.2). These become Eq (1.4) when the forces of interaction between the bearing and the disc, Eq (1.3), are substituted. The complex formula of Eq (1.4) can be given as Eq (1.6). Their solutions can be obtained as Eqs (1.8) and (1.9) when the expressions (1.7) are introduced. These equations can be determined with various approximations. The zero approximation for the action of the disc's weight can be obtained as Eq (2.1), whilst in the case

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Constrained Vibrations of the Disc on a Horizontal Unequal Shaft Rotating in Anisotropic Flexible Bearings

of the unequal shaft - as Eqs (2.2) and (2.3). The character of the critical velocity in the latter case is illustrated in Fig 2, where μ - parameter defining the ratio of the mass of half of the disc to that of the bearing. Similarly, the first approximation for the two groups are obtained as Eqs (3.1) to (3.3) and Eqs (3.4) to (3.7) respectively. The projected displacement of the centres of the disc and bearings at the axis x_j and y_j can be determined as Eqs (4.1) and (4.2) respectively. It can be seen from these formulae that the magnitude of the critical velocities (i.e. with the number of revolutions when the vibrations show their maximum) is not constant. This magnitude increases when the specific frequency of the bearing vibrations becomes near to the first critical velocity of the shaft with large parameters μ (Fig 2). Also, the number of critical velocities of the shaft increases. Generally, it can be said that the investigations showed the complex effect accompanying the rotation. These effects in the case of turbines

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Constrained Vibrations of the Disc on a Horizontal Unequal Shaft Rotating in Anisotropic Flexible Bearings

often produce vibrations of the second and third harmonics.
There are 2 figures and 2 English references.

SUBMITTED: February 7, 1959

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SOV/179-59-5-16/41

AUTHOR: Sakharov, I.Ye. (Moscow)

TITLE: Dynamic Rigidity in the Theory of Axially Symmetric Vibrations of Circular and Annular Plates

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 5, pp 90-98 (USSR)

ABSTRACT: The paper is a continuation of previous work (Ref 5). The method of dynamic rigidity has been successfully applied by a number of workers to the investigation of torsional, bending and other vibrations of rods and rod systems. The value of the method is that it enables the dynamic properties of complex systems to be inferred from the properties of simpler systems. In particular, it is possible to determine the change of natural frequency of separate structural elements as a result of incorporation into the structure. Dynamic rigidities are quantities characterizing the relation between the sinusoidal generalized forces and the sinusoidal generalized displacements. The dynamic rigidity of a circular plate subjected to a concentrated force at the centre and either clamped or supported at the

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Dynamic Rigidity in the Theory of Axially Symmetric Vibrations of Circular and Annular Plates

circumference is found in terms of Bessel functions. The problem is then considered of two annular plates, one having external radius a and internal radius b, the second having external radius b and internal radius c. The plates are mutually connected along the circumference of radius b by a hinged support. The thicknesses and properties of the plates may be different. The dynamic rigidities K_1 and K_2 of the two plates are found from the differential equation governing their vibrations and the frequency of the combined system is found from the condition $K_1 + K_2 = 0$. This equation is solved graphically for the cases when the external plate is clamped or supported at its external boundary. The method is also applied to the determination of the natural frequency of axially symmetric vibrations of a cylindrical shell closed at one end by an annular plate. Thanks are expressed to N.K.Pessenikova for help in carrying out the work. There are 3 figures and 7 Soviet references.

SUBMITTED: March 17, 1959

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S/179/59/000/06/022/029
E081/E141

AUTHORS: Pesennikova, N.K., and Sakharov, I.E. (Moscow)

TITLE: Fundamental Frequency of Natural Vibrations of Ring Shaped Plates with Cylindrical Anisotropy

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 6, pp 134-136 (USSR)

ABSTRACT: The known equation (1) for axially symmetric vibration of a circular plate with cylindrical anisotropy is

$$\frac{\partial^4 w}{\partial \xi^4} + \frac{2}{\xi}\frac{\partial^3 w}{\partial \xi^3} - D\frac{1}{\xi^2}\frac{\partial^2 w}{\partial \xi^2} + D\frac{1}{\xi^3}\frac{\partial w}{\partial \xi} = -\frac{mb^4}{D_1}\frac{\partial^2 w}{\partial t^2} \qquad \left(D = \frac{D_2}{D_1}\right) \qquad (1)$$

The notation is as follows: D_1, D_2 are the plate stiffnesses in bending in the radial and tangential directions; ν_1, ν_2 are the principal Poisson's ratios; m is the mass per unit area of the plate; a and b are the internal and external boundary radii of the plate; ω is the frequency of vibration of the plate;

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Fundamental Frequency of Natural Vibrations of Ring Shaped Plates with Cylindrical Anisotropy

$w(\xi, t)$ is the deflection of the middle plane of the plate; $\xi = r/b$ is the polar coordinate, referred to the radius of the external boundary of the plate.

Boundary conditions:

(a) External boundary clamped, internal boundary free of load

$$w = 0, \quad \partial w/\partial \xi = 0 \quad \text{for} \quad \xi = 1 \qquad (2)$$

$$M = -D_1 \frac{1}{b^2}\left(\frac{\partial^2 w}{\partial \xi^2} + \nu_2 \frac{1}{\xi}\frac{\partial w}{\partial \xi}\right) = 0 \quad \text{for} \quad \xi = \frac{a}{b} = \alpha$$

$$Q = -D_1 \frac{1}{b^3}\left(\frac{\partial^3 w}{\partial \xi^3} + \frac{1}{\xi}\frac{\partial^2 w}{\partial \xi^2} - D\frac{1}{\xi^2}\frac{\partial w}{\partial \xi}\right) = 0$$

(b) External boundary hinged supported, internal boundary free of load

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$$w = 0, \quad M = -D_1 \frac{1}{b^2}\left(\frac{\partial^2 w}{\partial \xi^2} + \nu_2 \frac{1}{\xi}\frac{\partial w}{\partial \xi}\right) = 0, \text{ for } \xi = 1 \qquad (3)$$

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Fundamental Frequency of Natural Vibrations of Ring Shaped Plates with Cylindrical Anisotropy

$$M = -D_1 \frac{1}{b^2}\left(\frac{\partial^2 w}{\partial \xi^2} + \nu_2 \frac{1}{\xi}\frac{\partial w}{\partial \xi}\right) = 0, \quad \text{for } \xi = \frac{a}{b} = \alpha$$

$$Q = -D_1 \frac{1}{b^3}\left(\frac{\partial^3 w}{\partial \xi^3} + \frac{1}{\xi}\frac{\partial^2 w}{\partial \xi^2} - D\frac{1}{\xi^2}\frac{\partial w}{\partial \xi}\right) = 0 \qquad (3)$$

Assuming harmonic vibrations, i.e. $w(\xi, t) = W(\xi) \sin \omega t$, Eq (1) is transformed to

$$\frac{d^4 W}{d\xi^4} + \frac{2}{\xi}\frac{d^3 W}{d\xi^3} - \frac{D}{\xi^2}\frac{d^2 W}{d\xi^2} + \frac{D}{\xi^3}\frac{dW}{d\xi} - \Omega^2 W = 0 \qquad (4)$$

$$\left(\Omega^2 = \frac{mb^4}{D_1}\omega^2\right)$$

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To find the frequency of natural vibration of the plate under the given boundary conditions, the Bubnov-Galerkin method is used, taking as coordinate functions linear combinations of the solution to the problem of the vibration of an isotropic ring-shaped plate, depending

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on the parameter $\lambda_n (n=1,2)$. The choice of $\lambda_n (n=1,2)$ is subjected to the requirement of satisfying the boundary conditions which gives an equation in the form of a fourth order determinant for finding $\lambda_n (n=1,2)$. We then use the property of proportionality of arbitrary constants corresponding to the minors of this determinant. In the case of boundary conditions (a)

$$W_1(\xi) = C_1 [\Delta_{11} J_0(\lambda_1 \xi) + \Delta_{12} Y_0(\lambda_1 \xi) + \Delta_{13} I_0(\lambda_1 \xi) + \Delta_{14} K_0(\lambda_1 \xi)] \quad (5)$$

where

$$\Delta_{11} = - \begin{vmatrix} Y_0(\lambda_1) & I_0(\lambda_1) & K_0(\lambda_1) \\ -Y_1(\lambda_1) & I_1(\lambda_1) & -K_1(\lambda_1) \\ -Y_{01}(\lambda_1, a) & I_{01}(\lambda_1, a) & K_{01}(\lambda_1, a) \end{vmatrix}$$

$$\Delta_{12} = \begin{vmatrix} J_0(\lambda_1) & I_0(\lambda_1) & K_0(\lambda_1) \\ -J_1(\lambda_1) & I_1(\lambda_1) & -K_1(\lambda_1) \\ -J_{01}(\lambda_1, a) & I_{01}(\lambda_1, a) & K_{01}(\lambda_1, a) \end{vmatrix} \quad (6)$$

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Fundamental Frequency of Natural Vibrations of Ring Shaped Plates with Cylindrical Anisotropy

$$\Delta_{13} = -\begin{vmatrix} J_0(\lambda_1) & Y_0(\lambda_1) & K_0(\lambda_1) \\ -J_1(\lambda_1) & -Y_1(\lambda_1) & -K_1(\lambda_1) \\ -J_{01}(\lambda_1,\alpha) & -Y_{01}(\lambda_1,\alpha) & K_{01}(\lambda_1,\alpha) \end{vmatrix}$$

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$$\Delta_{14} = \begin{vmatrix} J_0(\lambda_1) & Y_0(\lambda_1) & I_0(\lambda_1) \\ -J_1(\lambda_1) & -Y_1(\lambda_1) & I_1(\lambda_1) \\ -J_{01}(\lambda_1,\alpha) & -Y_{01}(\lambda_1,\alpha) & I_{01}(\lambda_1,\alpha) \end{vmatrix} \qquad (6)$$

and λ_1 is a root of the equation

$$\begin{vmatrix} J_0(\lambda_1) & Y_0(\lambda_1) & I_0(\lambda_1) & K_0(\lambda_1) \\ -J_1(\lambda_1) & -Y_1(\lambda_1) & I_1(\lambda_1) & -K_1(\lambda_1) \\ -J_{01}(\lambda_1,\alpha) & -Y_{01}(\lambda_1,\alpha) & I_{01}(\lambda,\alpha) & K_{01}(\lambda_1,\alpha) \\ (1-A_1)J_1(\lambda_1\alpha) & (1-A_1)Y_1(\lambda_1\alpha) & (1+A_1)I_1(\lambda_1\alpha) & -(1+A_1)K_1(\lambda_1\alpha) \end{vmatrix} = 0 \qquad (7)$$

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Fundamental Frequency of Natural Vibrations of Ring Shaped Plates with Cylindrical Anisotropy

Here and subsequently, the notation is

$$J_{01}(\lambda_n,a) = J_0(\lambda_n a) - \frac{1-\nu_2}{\lambda_n a} J_1(\lambda_n a),$$

$$Y_{01}(\lambda_n, a) = Y_0(\lambda_n a) - \frac{1-\nu_2}{\lambda_n a} Y(\lambda_n a)$$

$$I_{01}(\lambda_n, a) = I_0(\lambda_n a) - \frac{1-\nu_2}{\lambda_n a} I_1(\lambda_n a)$$

$$K_{01}(\lambda_n, a) = K_0(\lambda_n a) + \frac{1-2}{\lambda_n a} K(\lambda_n a) \quad (n=1,2)$$

where J_k, Y_k, I_k, K_k are first and second kind Bessel functions of real and imaginary argument and of order k $(k = 0,1)$

$$A_n = \frac{1-D}{\lambda_n^2 a^2} \quad (n = 1,2)$$

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In the case of boundary conditions (b),

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Fundamental Frequency of Natural Vibrations of Ring Shaped Plates with Cylindrical Anisotropy

$$W_2(r) = C_2 \left(\Delta_{21} J_0(\lambda_2 r) + \Delta_{22} Y_0(\lambda_2 r) + \Delta_{23} I_0(\lambda_2 r) + \Delta_{24} K_0(\lambda_2 r) \right) \quad (8)$$

where

$$\Delta_{21} = - \begin{vmatrix} Y_0(\lambda_2) & I_0(\lambda_2) & K_0(\lambda_2) \\ -Y_{01}(\lambda_2, 1) & I_{01}(\lambda_2, 1) & K_{01}(\lambda_2, 1) \\ -Y_{01}(\lambda_2, a) & I_{01}(\lambda_2, a) & K_{01}(\lambda_2, a) \end{vmatrix}$$

$$\Delta_{22} = \begin{vmatrix} J_0(\lambda_2) & I_0(\lambda_2) & K_0(\lambda_2) \\ -J_{01}(\lambda_2, 1) & I_{01}(\lambda_2, 1) & K_{01}(\lambda_2, 1) \\ -J_{01}(\lambda_2, a) & I_{01}(\lambda_2, a) & K_{01}(\lambda_2, a) \end{vmatrix} \quad (9)$$

$$\Delta_{23} = - \begin{vmatrix} J_0(\lambda_2) & Y_0(\lambda_2) & K_0(\lambda_2) \\ -J_{01}(\lambda_2, 1) & -Y_{01}(\lambda_2, 1) & K_{01}(\lambda_2, 1) \\ -J_{01}(\lambda_2, a) & -Y_{01}(\lambda_2, a) & K_{01}(\lambda_2, a) \end{vmatrix}$$

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E081/E141

Fundamental Frequency of Natural Vibrations of Ring Shaped Plates with Cylindrical Anisotropy

$$\Delta_4 = \begin{vmatrix} J_0(\lambda_2) & Y_0(\lambda_2) & I_0(\lambda_2) \\ -J_{01}(\lambda_2, 1) & -Y_{01}(\lambda_2, 1) & I_{01}(\lambda_2, 1) \\ -J_{01}(\lambda_2, a) & -Y_{01}(\lambda_2, a) & I_{01}(\lambda_2, a) \end{vmatrix} \quad (9)$$

and λ_2 is a root of the equation

$$\begin{vmatrix} J_0(\lambda_2) & Y_0(\lambda_2) & I_0(\lambda_2) & K_0(\lambda_2) \\ -J_{01}(\lambda_2, 1) & -Y_{01}(\lambda_2, 1) & I_{01}(\lambda_2, 1) & K_{01}(\lambda_2, 1) \\ -J_{01}(\lambda_2, a) & -Y_{01}(\lambda_2, a) & I_{01}(\lambda_2, a) & K_{01}(\lambda_2, a) \\ (1-A_2)J_1(\lambda_2 a) & (1-A_2)Y_1(\lambda_2 a) & (1+A_2)J_1(\lambda_2 a) & -(1+A_2)K_k(\lambda_2 a) \end{vmatrix} = 0 \quad (10)$$

According to the Bubnov-Galerkin method, C_1 and C_2 are found from the condition

$$\int_a^1 F(W_n)W_n \, d\xi = 0 \qquad (n = 1, 2) \quad (11)$$

where $F(W_n)$ is the left-hand side of Eq (4) after substituting the coordinate functions $W_n(\xi)$ $(n = 1, 2)$.

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Fundamental Frequency of Natural Vibrations of Ring Shaped Plates with Cylindrical Anisotropy

The equation for determining ... is converted to the form

$$\lambda_n^4 \int_\alpha^1 W_n^2(\lambda_n \xi)\, d\xi - \lambda_n^2 (1 - D) \int_\alpha^1 \frac{1}{\xi} f1_n(\lambda_n \xi) W_n(\lambda_n \xi)\, d\xi +$$

$$+ 2\lambda_n (1 - D) \int_\alpha^1 \frac{1}{\xi^2} f2_n(\lambda_n \xi) W_n(\lambda_n \xi)\, d\xi - \int_\alpha^1 W_n^2(\lambda_n \xi)\, d\xi =$$

$$= 0 \qquad (n = 1,\ 2) \qquad (12)$$

where

$$W_n(\lambda_n \xi) = \ {}_{n1} J_0(\lambda_n \xi) + {}_{n2} Y_0(\lambda_n \xi) + {}_{n3} I_0(\lambda_n \xi) + {}_{n4} K_0(\lambda_n \xi)$$

$$f_{1n}(\lambda_n \xi) = {}_{n1} J_0(\lambda_n \xi) + {}_{n2} Y_0(\lambda_n \xi) - {}_{n3} I_0(\lambda_n \xi) - {}_{n4} K_0(\lambda_n \xi)$$

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Fundamental Frequency of Natural Vibrations of Ring Shaped Plates with Cylindrical Anisotropy

$$f_{2n}(\lambda_n) = {}_{n1}J_1(\lambda_n) + {}_{n2}Y_1(\lambda_n) - {}_{n3}I_1(\lambda_n) + {}_{n4}K_1(\lambda_n) \qquad (n = 1, 2)$$

Figures 1 and 2 show the relationship between the dimensionless frequency and the relative aperture α for two boundary conditions on the outer edge of the plate: (a) clamped, and (b) hinged support. In both cases the parameter D is the ratio of the bending stiffnesses in the tangential and radial directions. There are 2 figures.

SUBMITTED: July 30, 1959

Literature Reference:

1) Lekhintskiy, S.G. Anisotropic Plates. Gostekhizdat, 1947.

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This is a complete translation.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

LYUDIN, G.L., inzh., POZNYAK, E.L., kand.tekhn.nauk, SAKHAROV, I.Ye., kand.fiz.-matem.nauk

Experimental determination of the give of the oil film in th sleeve bearings and of the critical velocities of the rotor of a TB2-100-2 turbogenerator. Vest. elektroprom. 31 no.5:1-8 My '60. (MIRA 13:8)

(Turbogenerators)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, Igor' Yevgen'yevich, kand.fiziko-matematicheskikh nauk starshiy nauchnyy sotrudnik

Duration of contact of contactors. Izv. vys. ucheb. zav.; elektromkh. 3 no.7:80-87 '60. (MIRA 13:9)
(Electric contactors)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

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E081/E135

10 7800 1103 1327

AUTHOR: Sakharov, I.Ye. (Moscow)

TITLE: Vibration Equations for Orthotropic Sloping Spherical and Conical Shells

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1960, No. 5, pp. 154-156

TEXT: A widely applied method in engineering calculations involves the transition from shells with a number of strengthening ribs to homogeneous orthotropic shells. The utilization of this method for determining the natural vibration frequency of sloping spherical and conical shells, strengthened by radial and circumferential ribs, often allows satisfactory practical solutions to be achieved which are unattainable by other methods. For an orthotropic spherical shell of radius R, the principal elasticity directions are taken as coinciding with the coordinates α, β. The elastic properties are characterized: by the extensional and flexural rigidities B_1, D_1 in the direction α; and B_2, D_2, in the direction β; the shear and torsional

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Vibration Equations for Orthotropic Sloping Spherical and Conical Shells

rigidities C_k, D_k and the generalised Poisson's ratios μ_1, μ_2, μ_1, μ_2. Using the equations of equilibrium, of stress and train, and of continuity, the equations governing the vibrations of the spherical shell are obtained in terms of two functions $w(\alpha,\beta,t)$ and $\varphi(\alpha,\beta,t)$ in the form

$$\frac{1}{r_0^2 R}\nabla^2\varphi + \frac{D_1}{r_0^2\alpha}\left\{\frac{\partial}{\partial\alpha}\left(\alpha\frac{\partial^2 w}{\partial\alpha^2}\right) + \frac{2T}{\alpha}\frac{\partial^4 w}{\partial\alpha^2\partial\beta^2} + \frac{Q}{\alpha^3}\frac{\partial^4 w}{\partial\beta^4} - \frac{2T}{\alpha^2}\frac{\partial^3 w}{\partial\alpha\partial\beta^2} + \right.$$
$$\left. + \frac{2(T+Q)}{\alpha^3}\frac{\partial^3 w}{\partial\beta^3} - Q\frac{\partial}{\partial\alpha}\left(\frac{1}{\alpha}\frac{\partial w}{\partial\alpha}\right)\right\} + m\frac{\partial^2 w}{\partial t^2} = Z(\alpha,\beta,t) \qquad (1.6)$$

$$\frac{1}{R}\nabla^2 w - \frac{1}{r_0^2 B_2(1-\nu_1\nu_2)\alpha}\left\{\frac{\partial^2}{\partial\alpha^2}\left(\alpha\frac{\partial^2\varphi}{\partial\alpha^2}\right) + \frac{2\Gamma}{\alpha}\frac{\partial^4\varphi}{\partial\alpha^2\partial\beta^2} + \frac{P}{\alpha^3}\frac{\partial^4\varphi}{\partial\beta^4} - \right.$$
$$\left. - \frac{2\Gamma}{\alpha^2}\frac{\partial^3\varphi}{\partial\alpha\partial\beta^2} + \frac{2(\Gamma+P)}{\alpha^3}\frac{\partial^3\varphi}{\partial\beta^3} - P\frac{\partial}{\partial\alpha}\left(\frac{1}{\alpha}\frac{\partial\varphi}{\partial\alpha}\right)\right\} = 0$$

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

33048 R
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ibration Equations for Orthotropic Sloping Spherical and Co
ells

$$\nabla^2 = \frac{\partial^2}{\partial\alpha^2} + \frac{1}{a}\frac{\partial}{\partial\beta} + \frac{1}{a^2}\frac{\partial^2}{\partial\beta^2} \qquad (1.6)$$

cont.

$$Q = \frac{D_2}{D_1}, \quad T = \frac{2D_k}{D_1} + \mu_2, \quad P = \frac{B_2}{B_1}, \quad \Gamma = \frac{B_2(1 - \nu_1\nu_2)}{2C_k} - \nu_2$$

or a conical shell of vertex angle 1/2 - χ (χ small), the
orresponding equations are obtained as

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2001/2155

Vibration Equations for Orthotropic Sloping Spherical and Conical Shells

$$\frac{\operatorname{tg}\chi}{\alpha}\frac{\partial^2\varphi}{\partial\alpha^2}+\frac{D_1}{\alpha}\left\{\frac{\partial^4}{\partial\alpha^2}\left(\alpha\frac{\partial^2 w}{\partial\alpha^2}\right)+\frac{2\Gamma}{\cos^2\chi}\frac{1}{\alpha}\frac{\partial^4 w}{\partial\alpha^2\partial\beta^2}+\frac{Q}{\cos^4\chi}\frac{1}{\alpha^3}\frac{\partial^4 w}{\partial\beta^4}-\right.$$

$$\left.-\frac{2T}{\cos^2\chi}\frac{1}{\alpha^2}\frac{\partial^3 w}{\partial\alpha\partial\beta^2}+\frac{2(T+Q)}{\cos^2\chi}\frac{1}{\alpha^3}\frac{\partial^2 w}{\partial\beta^2}-Q\frac{\partial}{\partial\alpha}\left(\frac{1}{\alpha}\frac{\partial w}{\partial\alpha}\right)\right\}+m\frac{\partial^2 w}{\partial t^2}=Z(\alpha,\beta,t)$$

$$\frac{\operatorname{tg}\chi}{\alpha}\frac{\partial^2 w}{\partial\alpha^2}-\frac{1}{D_2(1-\nu_1\nu_2)\alpha}\left\{\frac{\partial^2}{\partial\alpha^2}\left(\alpha\frac{\partial^2\varphi}{\partial\alpha^2}\right)+\frac{2\Gamma}{\cos^2\chi}\frac{1}{\alpha}\frac{\partial^4\varphi}{\partial\alpha^2\partial\beta^2}+\right. \qquad (2.5)$$

$$\left.+\frac{P}{\cos^4\chi}\frac{1}{\alpha^3}\frac{\partial^4\varphi}{\partial\beta^4}-\frac{2\Gamma}{\cos^2\chi}\frac{1}{\alpha^2}\frac{\partial^3\varphi}{\partial\alpha\partial\beta^2}+\frac{2(\Gamma+Q)}{\cos^2\chi}\frac{1}{\alpha^3}\frac{\partial^2\varphi}{\partial\beta^2}-P\frac{\partial}{\partial\alpha}\left(\frac{1}{\alpha}\frac{\partial\varphi}{\partial\alpha}\right)\right\}=0$$

where α is the distance from the vertex, measured along the generators, and β is the dihedral angle formed by two planes intersecting on the axis of the cone.

There are 5 Soviet references.

SUBMITTED: May 26, 1960

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APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

83270

S/109/60/005/009/017/026
E140/E455

9.3120

AUTHORS: Kirsanova, T.S. and Sakharov, I.Ye.

TITLE: Work Function of Thin Barium Oxide Films on Molybdenum Base

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.9, pp.1500-1507

TEXT: An oscillographic method for measuring work function from the shift of volt-ampere characteristics has been developed, substantially shortening the duration of the measurement and reducing the intensity of electron bombardment of the sample. A feedback circuit is used in which variation of contact difference of potential is compensated to maintain the potential between the anode and the cathode constant. All possible causes for a change in the slope of the characteristics, for example, cathode heating currents, have been reduced to a minimum. Hence, the only cause for change in slope admitted by the authors is a change in contact difference of potentials. The change was read on a pointer instrument and also observed on the oscillograph screen. Measurements were carried out in an experimental diode (Fig.3) at residual pressures of the order of 10^{-9} mm Hg. In each sealed-off

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...sent results is claimed

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10.7500

24549
S/179/61/000/002/017/017
E073/E535

AUTHORS: Pesennikova, N.K. and Sakharov, I. Ye. (Moscow)

TITLE: The natural fundamental vibration frequencies of sloping orthotropic spherical shells

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1961, No.2, pp.168-172

TEXT: The paper is a continuation of previous work (Ref.1: Izv. AN SSSR, OTN, Mekhanika i mashinostroyeniye, 1960, No.5; Ref.3: Izv. AN SSSR, OTN, 1957, No.5; Ref.4: Izv. AN SSSR, OTN, Mekhanika i mashinostroyeniye, 1959, No.6). The problem dealt with is the theoretical determination of the natural fundamental frequency of part of a spherical shell bounded by two parallel circles of the radii a and b ($a < b$), applying the equation of sloping orthotropic spherical shells derived in earlier work (Ref.1). It is assumed that one of the main directions of orthotropy coincides with the meridian of the shell (the coordinate α changes along the meridian). If the oscillations of the fundamental frequency are axis symmetrical, the equations can be

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24549

The natural fundamental vibration ... S/179/61/000/002/017/017
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simplified. Utilizing the fact that the oscillations are harmonic, the sag can be determined as a function of the stresses. The basic differential equation governing the vibration is stated, together with the analytical expressions for the boundary conditions. The frequencies of vibration are found by the Bubnov-Galerkin method and are shown graphically as a function of a/b for clamped and supported external boundaries, and for various ratios of the elastic constants of the orthotropic material forming the shell. There are 6 figures and 4 references: all Soviet.

SUBMITTED: November 3, 1960

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APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

KUTNIKOVA, V.P. (Moskva); SAKHAROV, I. Ye. (Moskva)

Frequencies of natural vibration of the basic tone of orthotropic shallow conic shells. Izv. AN SSSR. Otd.tekh.nauk.Mekh. i mashinostr. no.4:183-186 Jl-Ag '61. (MIRA 14:8)
(Elastic plates and shells--Vibration)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

VEYNBERG, D.M., inzh.; LYUDIN, G.L., inzh.; SAKHAROV, I.Ye., kand. fiziko-matematicheskikh nauk

Experimental study of elastic centering rings of the banding network of a large turbogenerator. Vest. elektroprom. 32 no.5:34-40 My '61. (MIRA 15:5)

(Turbogenerators)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

ANDREYEV, V.B., inzh.; SAKHAROV, I.Ye., kand.fiziko-matematicheskikh nauk

Elasticity modulus of a stator segment pack. Vest.elektroprom. 33 no.1:42-44 Ja '62. (MIRA 14:12)

(Elasticity)
(Steel--Testing)

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L 23907-65 EWT(1)/EWG(k)/EPA(sp)-2/EPA(w)-2/EEC(t)/T/EEC(b)-2/EWA(m)-2
Pz-6/Po-4/Pab-10/Pi-4 IJP(c) AT

ACCESSION NR: AP4038643 S/0109/64/009/005/0838/0843

AUTHOR: Sakharov, I. Ye.; Liventseva, I. F.

TITLE: Introducing an electron beam into plasma located in a strong magnetic field

SOURCE: Radiotekhnika i elektronika, v. 9, no. 5, 1964, 838-843

TOPIC TAGS: electron beam, plasma, plasma amplifier, plasma shf oscillator, plasma proof electron beam

ABSTRACT: A new electron-beam source is described in which the beam is shielded from plasma penetration into the accelerating gap and from ion bombardment of the cathode. A sharp nonuniformity of an external magnetic field created by counter-connected coils is used for shielding. The device used in the experiments (see Fig. 1 of the Enclosure) consisted of a 50-mm-diameter, 500-mm-long, glass cylinder filled with He at 10^{-2} to (1-2) x 10^{-7} torr. Both the accelerating gap and the discharge gap were in the uniform-magnetic-field region. The anode-discharge-cathode distance was 120 mm. An electron-beam collector with an analyzer permitted evaluating the straggling of electrons in the beam. Stable operation was ob-

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ACCESSION NR: AP4038643

served at pressures of up to 5×10^{-2} torr in He. The magnetic nonuniformity resulted in a reduction in the ion current (through the cathode) by 3 orders of magnitude. The energy straggling of electrons associated with longitudinal motion was 20% or less of the total energy involved. "The authors are deeply indebted to V.Ye. Golant for his constant help and discussing the results." Orig. art. has: 3 figures and 4 formulas.

ASSOCIATION: none

SUBMITTED: 05Jul62 ENCL: 01 SUB CODE: ME, NP

NO REF SOV: 002 OTHER: 002

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ACCESSION NR: AP4038643

ENCLOSURE: 1

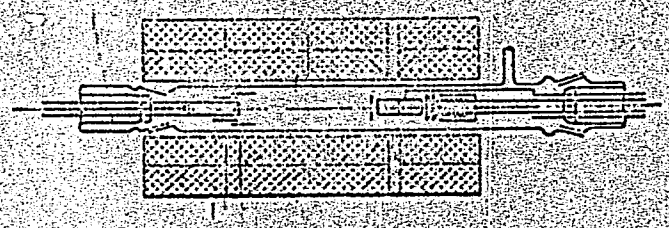

Fig. 1. Experimental device with magnetic coils

Right - an electron projector inserted through a ground-glass joint. Left - a discharge cathode; next to it, a beam collector.

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L 0513-66 EWT(1)/EWT(m)/EPF(c)/EIC/EPF(n)-2/EWG(m)/EPA(w)-2/EWP(t)/EWP(b) IJP(c)

ACC NR: AP5028318 JD/GG/AT SOURCE CODE: UR/0057/65/035/011/2034/2041

AUTHOR: Golant, V.Ye.; Zhilinskiy, A.P.; Liventseva, I.F.; Sakharov, I.Ye. 44,55 44,55 44,55 44,55 89

ORG: Leningrad Polytechnic Institute im. M.I.Kalinin (Leningradskiy politekhnicheskiy institut) 44,55 B

TITLE: Electromagnetic radiation from an electron beam traversing a plasma in a magnetic field 21,44,55

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 11, 1965, 2034-2041

TOPIC TAGS: helium plasma, plasma beam interaction, plasma, plasma oscillation, plasma wave, cyclotron resonance, electron beam 21,44,55

ABSTRACT: The authors have investigated the microwave (3 cm wavelength) fields in and radiation from plasmas produced by 20 to 900 mA beams of 0.8 to 2 keV electrons traversing helium at pressures from 5×10^{-3} to 1×10^{-1} mm Hg in the presence of a 2kOe or weaker uniform longitudinal magnetic field. The plasmas were produced in a 5 cm diameter 40 cm long glass tube containing at one end an electron gun producing a 0.5 cm diameter beam. The electron gun was operated with 2 μsec pulses at a repetition rate of 50/sec. The radial distribution of the longitudinal microwave electric field was determined with the aid of a uhf probe consisting of a section of twinlead with 4 mm spacing, and the radiated microwaves were received with an open ended wave-

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guide section located close to the discharge tube. The uhf signals were recorded with a superheterodyne receiver with a 2 Mc passband and a sensitivity of 5×10^{-12} W. One conductor of the uhf probe was employed also as a Langmuir probe to determine the plasma density. The discharge tube contained in the end opposite the electron gun an anode and a directly heated cathode, with the aid of which a gas discharge plasma could be produced. This plasma was employed to calibrate the Langmuir probe in the presence of the magnetic field and in some other auxiliary experiments. The plasma produced by the electron beam was found to extend far beyond the limits of the beam. The microwave field strength and radiation intensity were investigated as functions of the magnetic field strength, gas pressure, beam current, and electron energy, and the results are presented graphically and discussed. The intensity of the uhf radiation varied greatly with the conditions of operation, but such radiation was observed at magnetic field strengths an order of magnitude lower than that corresponding to the electron cyclotron resonance, and in some cases in the absence of a magnetic field. Further work will be required to elucidate the nature of the coupling between the longitudinal plasma oscillations and the transverse electromagnetic waves which makes the radiation possible. Orig. art. has: 9 figures. [15]

SUB CODE: ME, EM/ SUBM DATE: 18Feb65/ ORIG REF: 011/ OTH REF: 006/ ATD PRESS: 4143

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PRIKASHCHIKOV, I.; SAKHAROV, K.

Interconnecting rural water supply systems. Sel'. stroi. 13 no.10:19-20 O '58. (MIRA 11:10)

1. Nachal'nik otdela sel'skokhozyaystvennogo vodosnabzheniya i obvodneniya "Giprovodkhoza" Ministerstva sel'skogo khozyaystva SSSR (for Prikashchikov). 2. Rukovoditel' gruppy po sostavleniyu proyekta vodosnabzheniya v Omskoy oblasti (for Sakharov).
(Omsk Province--Water supply, Rural)

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SAKHAROV, K.M., inzhener-elektrik.

Stalingrad Hydroelectric Power Station. Nauka i pered. op. v sel'khoz. 6 no.11:31-32 N '56. (MIRA 10:1)
(Stalingrad Hydroelectric Power Station)

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SAKHAROV, K. Ye.

25(2); 24(6) PHASE I BOOK EXPLOITATION SOV/2591

Akademiya nauk SSSR. Institut mashinovedeniya

Kolebaniya v turbomashinakh; sbornik statey (Vibrations in Turbomachines; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 117 p. Errata slip inserted. 2,300 copies printed.

Resp. Ed.: S. V. Serensen, Academician, Academy of Sciences, USSR; Ed. of Publishing House: Ya. A. Klimovitskiy; Tech. Ed.: V. V. Volkova.

PURPOSE: This collection of articles is intended for scientific research workers, engineers, and designers inthe field of turbomachinery.

COVERAGE: This collection of articles deals with vibrations in turbomachinery. The following topics are discussed: vibrations and stresses in the rotor and bearings of a turbogenerator, vibrations and stability of beams, flexural vibrations of a rotating shaft, whirling speeds of a flexible rotor with two unbalanced masses, acceleration through resonance of a nonlinear system, whirling speed and clearance in bearings, dynamic stresses in blades of an axial compressor, and damping of vibrations. No personalities are mentioned. References follow several of the articles.

Dayshik, M.L., F.M. Dimentberg, A.S. Zil'berman, G.L. Lyudin, N.I. Prigorovskiy, and K.Ye. Sakharov. Investigation of Vibrations and Stresses in the Rotor and Bearings of a High-power Turbogenerator During Operation 5

The authors discuss an experimental investigation made on a high-power turbogenerator in order to analyze the real state of stress of the rotor and vibrations of the rotor and bearings. The dynamic behavior of the whole system of joined rotors and bearings is treated. The influences of bases and foundations are not taken into consideration.

Bolotin, V.V. Vibration and Stability of Beams Under Action of Nonconservative Forces 23

A cantilever rectilinear beam loaded by uniformly distributed following forces acting in the plane of its maximum rigidity is analyzed for stability at planar deformation. Critical parameters of the loading with and without consideration of damping are established.

Guzarov, A.A. Acceleration Through Critical Speeds of a Flexible Rotor With Two Unbalanced Masses in the Presence of Friction 51

The author derives a system of two complex differential equations as a solution to the problem. The solution is based on the following assumptions: that the mass of the shaft, the gyroscopic movements of masses caused by deflections of the shaft, and the initial deflections of the shaft are negligible; that the shaft supports are absolutely rigid; that the shaft itself is torsionally rigid; and that the acceleration through critical speeds is uniform.

Rubanik, V.P. Acceleration Through Resonance in One Case of a Nonlinear System 75

Analysis is made of a nonlinear vibrating system with one degree of freedom having a nonlinear restoring force and excited by a low-frequency sine-shaped disturbing force. The effect of the rate of acceleration on amplitudes of the motion is discussed.

Natanson, V.Ya. (Deceased). Critical Speeds of a Rotor and Clearances in Bearings 81

The effect of the clearance in rolling contact bearings on the motion and whirling speed of a rotor is discussed. Rotors having no critical speed are described together with an experimental checking installation for selecting eccentricities of disks.

Rusanova, Ye.I. Investigation of Dynamic Stresses in Blades of an Axial Compressor With a Wide Control Range 104

The basic results of an experimental investigation of dynamic stresses in blades of an axial compressor by means of wire resistance transducers placed in the root sections are presented. The behavior of the blade at various speeds, including resonance, is described.

Sergeyev, S.I. Damping of Vibrations of Anisotropoelastic Rotors 114

Conditions for successful damping of a rotor with unequal elasticity coefficients along its principal axis are discussed. The inertia and

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SAKHAROV, L. N.

KANTAVENKO, A. N. and SAKHAROV, L. N. "On the problem of the clinical behavior and treatment of early traumatic abcesses of the brain", Trudy Smol. gos. med. in-ta, Vol. II, 1948, p. 114-17.

SO: U-4393, 19 August 53, (Letopis 'Zhurnal 'nykh Statey', No. 22, 1949).

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SAKHAROV, L. N.

SAKHAROV, L. N. "Firearm wounds to the nerves and the removal of the results of their surgical treatment", Trudy Smol. gos. med. in-ta, Vol. II, 1946, p. 256-62.

SO: U-4393, 17 August 53, (Letopis 'Zhurnal 'nykh Statey', No. 24, 1949).

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, L.N.; BODACHEV, V.I.

Treatment of lumbosacral radiculitis with pyrabutol. Zhur. nevr. i psikh. 65 no.2:232-234 '65. (MIRA 18:9)

1. Kafedra nervnykh bolezney (zaveduyushchiy - prof. G.S. Margolin) Smolenskogo meditsinskogo instituta.

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SAKHAROV, M., inzh.

Window blocks of apartment houses. Zhil. stroi. no.2: 11-14 '64. (MIRA 18:11)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M.

Controlling caustic embrittlement of boilers. Zhil.-kom.khoz. 5 no.7:14-15 '55. (MLRA 9:1)

1. Inspektor Novosibirskoy okruzhnoy inspektsii Gostekhgornadzora RSFSR. (Boilers)

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SAKHAROV, M.

New kinds of window units for dwellings. Sel'stroi. 15 no.1:24-25 Ja '60. (MIRA 15:7)

1. Glavnyy tekhnolog laboratorii derevoobrabotki nauchno-issledovatel'skogo instituta "Glavnospromstroymaterialy". (Windows)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

TSVID, A., kand.tekhn.nauk; LUTSENKO, I.; PIKHAY, G.; SAKHAROV, M.; ZLODEYEV, P.; DENISENKO, V.

We get word. Stroitel' no.7:7 Jl '61. (MIRA 14:8)
(Construction industry--Technological innovations)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

GUSEV, Vladimir Petrovich. Prinimali uchastiye: SAKHAROV, M.A.; OBICHKIN, Yu.G.; FOMIN, A.V.; SEMIKOV, G.A.; NAZAROV, A.S.; ANDREYEVSKIY, M.N., retsenzent; KUNYAVSKIY, G.M., retsenzent; BLINNIKOV, I.V., retsenzent; BEREZNITSKIY, V.S., red.; SUKHANOV, Yu.I., red.; SVESHNIKOV, A.A., tekhn. red.

[Technology of the manufacture of radio electronic equipment] Tekhnologiia proizvodstva radioelektronnoi apparatury. Moskva, Izd-vo "Sovetskoe radio," 1961. 387 p. (MIRA 14:9)
(Radio—Equipment and supplies)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

GUSEV, V.P.; FOMIN, A.V.; KUNYAVSKIY, G.M.; OBICHKIN, Yu.G.; MOLOSTOV, Ye.A.; NAZAROV, A.S.; SAKHAROV, M.A.; GREBNEV, A.K.; VARLAMOV, R.G., retsenzent; DEMBITSKIY, L.N., retsenzent; RAKOV, N.A., retsenzent; LYUBIMOVA, T.M., red.; BELYAYEVA, V.V., tekhn. red.

[Calculation of electrical tolerances in radio-electronic apparatus] Raschet elektricheskikh dopuskov radioelektronnoi apparatury. [By] V.P.Gusev i dr. Moskva, "Sovetskoe radio," 1963. 366 p. (MIRA 17:1)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

EVIN, Gustav Davidovich; SAKHAROV, M.B., inzh., red.; MEDVEDEVA, M.A., tekhn.red.

[Mechanization of the repair of caustic storage batteries] Mekhanizatsiia remonta vagonnykh shchelochnykh akkumuliatorov. Moskva, Vses.izdatel'sko-poligr.ob"edinenie M-va putei soobshcheniia, 1961. 32 p. (MIRA 14:6)

(Railroads—Electric equipment)
(Storage batteries)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

BEZTSENNYY, Viktor Ivanovich, inzh.; PETROV, Vasiliy Afanas'yevich, kand. tekhn. nauk; SAKHAROV, Mikhail Borisovich, inzh.; TUROVTSEV, Vasiliy Ivanovich, kand. tekhn. nauk. Prinimal uchastiye CHERNYSHEV, P.N., inzh.; KHUDOKORMOV, V.I., inzh., retsenzent; EVIN, G.D., inzh., retsenzent; DERGACH, Ye.S., inzh., retsenzent; GROKHOL'SKIY, N.F., kand. tekhn. nauk, retsenzent; NIKOLAYEV, K.I., kand. tekhn. nauk, retsenzent; SMARAGDOV, G.I., kand. tekhn. nauk, retsenzent; ZOLOTNIKOV, I.M., kand. tekhn. nauk, retsenzent; VISHNYAKOV, B.I., aspirant, retsenzent; ARSHINOV, I.M., inzh., red.; MEDVEDEVA, M.A., tekhn. red.

[Car repairing at factories] Remont vagonov na zavodakh. By V.I.Beztsennyi i dr. Moskva, Vses.izdatel'sko-poligr. ob"edinenie M-va putei soobshcheniia, 1961. 363 p. (MIRA 14:12)

1. Kafedra "Vagony i vagonnoye khozyaystvo" Leningradskogo instituta inzhenerov zheleznodorozhnogo transporta (for Grokhol'skiy, Nikolayev, Smaragdov, Zolotnikov)
(Railroads--Cars--Maintenance and repair)

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SAKHAROV, M.

42560. Za Polnoye Ispol'zovaniye Proizvodstvennykh Moshchnostey Vagonoremontnykh Zavodov. Zh-d. Transport, 1948, No 11, s. 10-1[illegible]

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SAKHAROV, M. D.

Sawmills

New method of sawing up logs. Les. prom. 11, No. 7, 1951.
p. 25-27

9. Monthly List of Russian Accessions, Library of Congress, December, 1952 1953. Unclassified.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M. D.

Zagotovka i raspilovka lyzhnykh kriazhei [Procuring and sawing logs for skis] Moskva, Gostekhizdat, 1953. 296 p.

SO: Monthly List of Russian Accessions, Vol. 6 No. 12 March 1954.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M. D.

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Izgotouleniye kleyenykh lyzh. M., Koiz, 1954. 15s., Ulkuch. obc. s. ill. 20sm. (Tsentr. sover promysl. kooperatsii SSSR. Tekhn. Urp. obmen proizvoo-tekhn. opykom. Inform. Listoic. 65). 1.000Ekz. Bespl.-Aur. Ukazan v konrse tekhsta. - (54-14846)
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SO: Knizhnaya Letopis', Vol. 1, 1955

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SAKHAROV, M.D., inzhener.

New equipment for manufacturing skis. Der. i lesokhim.prom. 3 no.7:3-7 Jl '54. (MLRA 7:7)

1. TSentral'nyy nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki dereva.
(Woodworking machinery) (Skis and skiing)

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SAKHAROV, M.D., inzhener.

Reducing lumber gluing time in externally warmed presses. Der. prom. 5 no.5:11-13 My '56. (MLRA 9:8)

1. TSentral'nyy nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki drevesiny.

(Gluing)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M.D., starshiy nauchnyy sotrudnik.

New method for rapid gluing wooden parts. Stroi.prom. 34 no.4: 44 Ap '56. (MLRA 9:8)

1. Tsentral'nyy nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki drevesiny.

(Gluing)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M.D., inzh.

Pressing equipment used in manufacturing bent and glued parts.
Der. prom. 7 no.2:3-5 F '58. (MIRA 11:1)

1. TSentral'nyy nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki drevesiny.

(Woodworking)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M., inzh.

"Stroitel'" advises. Stroitel' no.9:28-29 '58. (MIRA 13:3)

(Woodworking machinery--Maintenance and repair)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, Mikhail Dem'yanovich; ANIKIN, A.M., red.; SHNEYDER, B.I., red.izd-va; PROKOF'YEVA, L.N., tekhn.red.

[Making large laminated glued girders] Opyt izgotovleniia krupnomernykh kleenykh brus'ev. Moskva, Goslesbumizdat, 1959. 24 p. (MIRA 13:2)

(Girders)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M.D.

Stamping and pressing wood used for tenon joints. Der.prom. 8 no.3:7-9 Mr '59. (MIRA 12:4)

(Wood, Compressed)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M.D.; STAROKOZHEV, S.V.

Automatic production lines for varnishing veneered doors and parquet floor boards. Der.prom. 10 no.10:21-22 O '61. (MIRA 14:9)
(Varnish and varnishing) (Assembly-line methods)

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SAKHAROV, M.D.

Roller machine for the varnishing of panels. Der.prom. 11 no.5:25 My '62. (MIRA 15:5)

(Wood finishing)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

BELOZEROVA, Anastasiya Sergeyevna; VETRYUK, Ivan Martynovich; GODILO, Petr Viktorovich; ZUBAREV, Georgiy Nikolayevich; KOVAL'CHUK, Leonid Mikhaylovich; KSYUNINA, Nina Grigor'yevna; NIKIFOROV, Yuriy Nikolayevich; PARINI, Yevgeniy Pavlovich; PATUROYEV, Vasiliy Vasil'yevich; PETROV, Igor' Stepanovich; CHERNYY, Boris Grigor'yevich; GUBENKO, A.B., doktor tekhn. nauk, red.; SAKHAROV, M.D., red.; MAKSAKOVA, A.M., red.izd-va; GRECHISHCHEVA, V.I., tekhn. red.

[Glued wooden elements and techniques for their manufacture] Kleenye dereviannye konstruktsii i tekhnologiia ikh izgotovleniia. [By] A.S.Belozerova. i dr. Moskva, Goslesbumizdat, 1962. 180 p. (MIRA 16:5)

(Gluing)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, Mikhail Dem'yanovich; KREYDLIN, L.N., red.; BASINKEVICH, I.R., red.izd-va; AKOPOVA, V.M., tekhn. red.

[Machine production of window units] Mekhanizatsiia proizvodstva okonnykh blokov. Moskva, Goslesbumizdat, 1963. 106 p. (MIRA 16:11)

(Windows)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M.D.; ZAGOSKINA, G.V., red.

[Present-day elements of window blocks for housing construction] Sovremennye konstruktsii okonnykh blokov dlia zhilishchnogo stroitel'stva. Moskva, TSentr. nauchno-issl. in-t informatsii i tekhniko-ekon. issledovanii po lesnoi, tsellyulozno-bumazhnoi, derevoobrabatyvaiushchei promyshl. i lesnomu khoz., 1963. 47 p. (MIRA 17:9)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

GURVICH, Abram Osipovich; SAKHAROV, M.D., nauchn. red.; RYCHEK, T.I., red.; TOKER, A.M., tekhn. red.

[Carpentry] Stoliarnye raboty. Izd.5., perer. i dop. Moskva, Vysshaia shkola, 1964. 607 p. (MIRA 17:1)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M.D.

Strengthening slabs with ethinol varnish. Stroi. mat. 10 no.5:16 My '64. (MIRA 17:9)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M.D.

Reducing lumber expenditure in the manufacture of window frames.
Der. prom. 13 no.2:3-5 F '64. (MIRA 17:3)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M.D.; ZHILONOV, V.G.

Mechanization and automation of production processes in th woodworking enterprises. Biul. tekh.-ekon. inform. Gos. nauch.-issl. inst. nauch. i tekh. inform. 17 no.2:50-53 '64.
(MIRA 17:6)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M.D.; ZHILONOV, V.G.

Use of synthetic materials in the woodworking industry. Biul. tekh.-ekon. inform. Gos. nauch.-issl. inst. nauch. i tekh. inform. 17 no.8: 66-69 Ag '64. (MIRA 17:11)

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SAKHAROV, M.D.; KIRILLOV, V.G.

Automatic production of board-type articles. Biul. tekh.-ekon. inform. Gos. nauch.-issl. inst. nauch. i tekh. inform. 18 no.3: 36-38 Mr '65. (MIRA 18:5)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M.D.

Introducing a semiautomatic line for painting wooden articles in an electrostatic field. Biul. tekh.-ekon. inform. Gos. nauch.-issl. inst. nauch. i tekh. inform. 18 no.10:38-39 O '65. (MIRA 18:12)

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SAKHAROV, M.D.; ZELNITSKIY, N.N.

Introducing a semiautomatic line for painting board articles. Biul. tekh.-ekon. inform. Gos. nauch.-issl. inst. nauch. i tekh. inform. 18 no. 12:46-47 D '65 (MIRA 19:1)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M.D.

Use of plastics in making doors and window sashes. Stroi. mat. 11 no. 12:29-30 D '65. (MIRA 18:12)

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KLIMOV, K.M., professor, laureat Stalinskoy premii; SMIRNOV, Ye. professor; KIRILLOV, B.K., professor, FAYVISHENKO, E.L., professor, MUKHIN, M.V. professor; BAL', professor, NORENBERG-CHARKVIANI, A.Ye., doktor meditsinskikh nauk; SAKHAROV, M.I., doktor meditisnkikh nauk; MAKAROV, M.P., dotsent; BUTIKOVA, N.I., dotsent; SHELOMOVA, T.P., kandidat meditsinskikh nauk; RAKITINA, L.N., kandidat meditsinskikh nauk; KAMPEL'MAKHER, Ya.A., kandidat meditsinskikh nauk.

Forty years of Professor A.T.Lidskii's scientific, medical and pedagogical activities. Khirurgiia no.6:82-83 Je '55 (MIRA 8:10)
(LIDSKII, ARKADII TIMOFEEVICH)

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SAKHAROV, M.I., doktor meditsinskikh nauk; SHCHERBATSKAYA, V.A., dotsent; LARIONOVA, Ye.M.; GORLOVA, M.A.

Influence of glycocol on the survival of erythrocytes in preserved blood and in an erythrocytic suspension as (revealed by experimental and clinical material). Probl. gemat. i perel. krovi 5 no.3:43-52 Mr '60. (MIRA 14:5)

1. Iz kafedry biologicheskoy khimii i meditsinskoy radiologii Sverdlovskogo gosudarstvennogo meditsinskogo instituta i Sverdlovskoy stantsii perelivaniya krovi.
(GLYCINE) (ERYTHROCYTES)
(BLOOD--COLLECTION AND PRESERVATION)

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SAKHAROV, M.I., doktor med.nauk; CHIKANTSEVA, N.V.

Late results of treating leg ulcers with sterilized blood serum. Vest.khir. no.4:52-54 '61. (MIRA 14:4)

1. Iz kliniki obshchey khirurgii (zav. - doktor med.nauk M.I. Sakharov) Sverdlovskogo meditsinskogo instituta i Sverdlovskoy stantsii perelivaniya krovi.
(VARIX) (SERUM THERAPY)

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VINOGRADOVA, T. V.; SAKHAROV, M. K.

Bee Culture

Protein-vitamin supplemental feed.
Pchelovodstvo 29, No. 7, 1952.

9. Monthly List of Russian Accessions, Library of Congress, October 1952. UNCLASSIFIED.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M. M.

500

Preparation of methane labeled with carbon[14]. E. A. Andreev, B. V. Klimenok, and M. M. Sakharov. *Doklady Akad. Nauk S.S.S.R.* 94, 1089-[illegible] treated with H_2SO_4 gave $C^{14}O_2$, which was circulated with H_2 over the activated catalyst by means of an electromagnetic circulating device, the reaction being run at about 310° (initially 240°). The poisoning of the catalyst by Hg was prevented by Au-wire tampons inserted in the connecting tubes. The product was collected in a cold trap. The catalyst was prepd. by grinding together 2–4 g. Ru with 10 g. asbestos and activated by boiling in 6 N HNO_3 10–15 min., then thoroughly washing and drying 30 min. at 400°. The yield of CH_4 was 85–7% both gravimetrically and radiometrically. G. [illegible]

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SAKHAROV, M.M

Exchange of carbon between hydrocarbons in the presence of aluminosilicate catalysts. B. V. Klimenok, B. A. Andreev, O. V. Krylov, and M. M. Sakharov. *Doklady Akad. Nauk S.S.S.R.* 95, 101-3(1954). A method is described for testing the C^{14} exchange between hydrocarbons in the presence of aluminosilicates. $C^{14}H_4$, 162 cc. with radioactivity of 80 μc. and 860 cc. of C_2H_4 were allowed to react over 100 cc. of aluminosilicate catalyst (I) in a glass lab. cracking app. at 500° for 1 hr. The product was sepd. into C_2H_4 and C_2H_6. After purification the CH_4 had a radioactivity of 0.62 μc. (specific radioactivity 0.016 μc./mol.), 0.78% of the original. Similarly with C_2H_4, 490 cc. mixed with $C^{14}H_4$, 232 cc. with radioactivity 206 μc., allowed to react at 500° with I for 47.5 min., and purified had a radioactivity of 0.35 μc. (0.17% of the original). Radioactive exchange between hydrocarbons occurs only to a slight extent. A method for *measuring the radioactivity* is described. David S. Gifford

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SAKHAROV, M. M.

U S S R .

Secondary reaction in the catalytic cracking of hydrocarbons by radiochemical methods. Ye. A. Andreev, T. I. Andryanova, B. V. Klimenok, O. V. Krylov, S. Z. Roginskiy, and M. M. Sakharov, Doklady Akad. Nauk S.S.S.R. 96, 781-4(1954). ---Cracking of C_2H_6, tagged with C^{14}, in combination with n-C_6H_{14} on an alumino-silicate catalyst at 520 showed 12.4% decompn. for n-C_6H_{14} and 9% for C_2H_6. Radioactive C_3H_8, C_4H_{10}, and C_5H_{12} were formed. C_2H_6 plays only a minor part in the formation of coke. Cracking of tagged C_2H_4 and n-C_6H_{14} showed 17.9% destruction for n-C_6H_{14} and 33% for C_2H_4. Radioactivity of the products was ascribed to copolymerization of C_2H_4 with Unsatd. products of cracking. Cracking of tagged C_3H_6 and iso-C_8H_{18} at 500° decompd. 53.4% of iso-C_8H_{18} and 82% of C_3H_6. C_3H_8 was the radioactive product obtained with the highest yield which indicates intensive hydrogenation of C_3H_6 during cracking. Coking appears to proceed through chemisorption and polymerization of olefins on the surface of the catalyst.

V. N. Bednarski

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SAKHAROV, N. N.

"Studying Reactions in the Catalytic Cracking of Hydrocarbons With the Use of Radioactive Carbon C^{14}." Cand Chem Sci, Inst of Physical Chemistry, Acad Sci USSR, Moscow, 1955. (KL, No 16, Apr 55)

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

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M.M.

4143. INVESTIGATION OF SECONDARY REACTIONS IN CRACKING OF HYDROCARBONS, USING C^{14}. Andreev, E.A., Andrianova, T.I., Krylov, O.V. and Sakharov, M.M. (Dokl. Akad. Nauk SSSR (Rep. Acad. Sci. U.S.S.R.), 21 June 1955, vol. 102, (6), 1119-1.22). Iso-octane was cracked at 500°C over an alumina-silica catalyst. In successive experiments radioactive methane, propane and isobutylene were added to the feed and the radioactivity of the reaction products was measured. The results showed that methane plays only a slight part in secondary reactions, while propane and isobutylene react in many ways, which include the destructive alkylation of iso-octane and the hydrogenation of isobutylene. (L).

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SAKHAROV, M. M.

USSR/ Chemistry - Organic chemistry

Card 1/1 Pub. 22 - 23/46

Authors : Sakharov, M. M., and Andreyev, Ye. A.

Title : Synthesis of methylcyclohexane, marked with C^{14} in the methyl group

Periodical : Dok. AN SSSR 103/1, 87-89, Jul 1, 1955

Abstract : The three basic phases of the synthesis of methylcyclohexane, marked with C^{14} isotope in the methyl group, are described. All synthesis phases take place over non-radioactive substances with the determination of all physical constants of the hexane. The processes of esterification of the benzoic acid marked with C^{14} are explained. The extent to which the catalytic isomerization reaction is capable of converting the radio carbon (C^{14}) from the methyl group into the benzene ring is discussed. Eight references: 5 USSR and 3 Ger. (1895-1954). Table; drawing.

Institution : Acad. of Sc., USSR, Inst. of Phys. Chem.

Presented by : Academician P. A. Rebinder, April 30, 1955

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

SAKHAROV, M.M., kandidat khimicheskikh nauk.

Conference on the use of isotopes in catalysis. Khim.nauka i prom. 1 no.5:588-591 '56. (MLRA 9:12)
(Catalysis) (Isotopes)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001446810001-6

Sa Kharov, M. M.

Verification, by means of labeled alcohol, of the dehydration-condensation mechanism of formation of the hydrocarbon chain in synthesis of hydrocarbons from carbon monoxide and hydrogen. O. A. Golovina, S. Z. Roginskii, M. M. Sakharov, and Ya. T. Eidus. *Proc. Acad. Sci. U.S.S.R., Sec. Chem.* 108, 228-31(1956)(English translation).—See *C.A.* 50, 14501d. B. M. R.

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