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hold. [Abstractor's note: The repetition of the inequality (12) seems almost certain to be a misprint]. Similarly solutions can be found for the remaining vectors $\mu_\nu(\tau)$ ($\nu = 2, 3, \ldots, n$). The method is then applied to the problem of the elastic-viscous thread, q and $P(\tau, \varepsilon)$ becoming two-dimensional vectors, and $A(\tau, \varepsilon)$, $C(\tau, \varepsilon)$ and $B(\tau, \varepsilon)$ becoming matrices of the second order. [Abstractor's note: Throughout the treatment of the problem, numerous symbols are left undefined]. There are 3 Soviet-bloc references.

ASSOCIATION: Instytut mekhaniky AN URSR (Institute of Mechanics AS UkrSSR (Savin); Instytut matematyky AN URSR (Institute of Mathematics of the AS UkrSSR) (Feshchenko)

SUBMITTED: June 15, 1960



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SAVIN, G.N. [Savin, H.M.]; SHUGAYLIN, A.V. [Shuhailin, O.V.]

V.I.Lenin and philosophical problems of mechanics. Prykl. mekh. 6 no.2:121-124 '60. (MIRA 13:8)
(Lenin, Vladimir Il'ich, 1870-1924)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G.N. [Savin, H.M.]; LEONOV, M.Ya.; PODSTRIGACH, Ya.S. [Podstryhach, IA.S.]

Possibilities for generating thermal stresses in a strained body by mechanical means. Prykl.mekh. 6 no.4:445-448 '60. (MIRA 13:11)

1. Institut mekhaniki AN USSR, Kiyev i Institut mashinovedeniya i avtomatiki AN USSR, L'vov.
(Thermal stresses)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, Guriy Nikolayevich; GEORGIYEVSKAYA, Valentina Vladimirovna; KOVALENKO, A.D., akademik, otv. red.; IMAS, R.L., red. izd-va; YEFIMOVA, M.I., tekhn. red.

[Development of mechanics in the Ukraine during the Soviet period] Razvitie mekhaniki na Ukraine za gody Sovetskoi vlasti. Kiev, Izd-vo Akad. nauk USSR, 1961. 279 p. (MIRA 14:11)

1. AN USSR (for Kovalenko).

(Ukraine—Mechanics)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

KOVALENKO, Anatoliy Dmitriyevich; GRIGORENKO, Yaroslav Mikhaylovich; LOBKOVA, Nonna Aleksandrovna; SAVIN, G.N., akademik, otv. red.; IMAS, R.L., red. izd-va; RAKHLINA, N.P., tekhn. red.

[Design of conic shells with linearly variable thickness] Raschet konicheskikh obolochek lineino-peremennoi tolshchiny. Kiev, Izd-vo Akad. nauk USSR, 1961. 327 p. (MIRA 14:10)

1. Akademiya Nauk USSR (for Savin).
(Elastic plates and shells)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

OSTROGRADSKIY, Mikhail Vasil'yevich, matematik, mekhanik; SHTOKALO, I.Z., akademik, otv. red.; GNEDENKO, B.V., akademik, zam. otv. red.; ISHLINSKIY, A.Yu., akademik, zam. otv. red.; BOGOLYUBOV, N.N., akademik, red.; REMEZ, Ye.Ya., red.; SAVIN, G.N., akademik, red.; SOKOLOV, Yu.D., red.; SMIRNOV, V.I., akademik, red.; YUSHKEVICH, A.P., prof., red.; POGREBYSSKIY, I.B., dotsent, red.; SHTELIK, V.G., red. izd-va; RAKHLINA, N.P., tekhn. red.

[Complete works in three volumes] Polnoe sobranie trudov v trekh tomakh. Kiev, Izd-vo Akad. nauk USSR. Vol.2. 1961. 358 p. (MIRA 14:11)

1. AN USSR (for Shtokalo, Gnedenko, Ishlinskiy). 2. Chlen-korrespondent AN USSR (for Remez, Sokolov).

(Mechanics, Analytic)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

PATON, Yevgeniy Oskarovich; SAVIN, G.N., akademik, otv. red.; DOBROKHOTOV, N.N., akademik, red.; KHRENOV, K.K., akademik, red.; BELYANKIN, F.P., akademik, red.; PATON, B.Ye., akademik, red.; REMENNIK, T.K., red.; KADASHEVICH, O.A., tekhn. red.

[Selected works; in three volumes] Izbrannye trudy; v trekh tomakh. Kyiv, Izd-vo Akad. nauk USSR. Vol.2. [Welded structures] Svarnye konstruktsii. 1961. 418 p. (MIRA 14:8)

1. Akademiya nauk Ukrainskoy SSR (for Savin, Dobrokhotov, Khrenov, Belyankin, Paton, B.Ye.)

(Structural frames—Welding)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

PATON, Yevgeniy Oskarovich; SAVIN, G.N., akademik, otv. red.; DOBROKHOTOV, N.N., red.; KHRENOV, K.K., red.; BELYANKIN, F.P., red.; PATON, B.Ye., red.; REMENNIK, T.K., red. izd-va; KADASHEVICH, O.A., tekhn. red.

[Selected works in three volumes] Izbrannye trudy v trekh tomakh. Kiev, Izd-vo Akad. nauk USSR, Vol.3. [Welding under flux] Svarka pod fliusom. 1961. 557 p. (MIRA 15:4)

1. Akademiya nauk USSR (for Savin).
(Electric welding) (Flux (Metallurgy))

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

NERED, N.T.; SAVIN, G.N.

Causes of scorings in cylindrical air drills. Trudy Inst.gor.dela AN Kazakh.SSR 8:116-121 '61. (MIRA 15:4)
(Boring machinery)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

OSTROGRADSKIY, Mikhail Vasil'yevich [deceased]; SHTOKALO, I.Z., akademik, otv.red.; GNEDENKO, B.V., akademik, otv.red.toma; ISHLINSKIY, A.Yu., akademik, zamestitel' otv.red.; BOGOLYUBOV, N.N., akademik, red.; REMEZ, Ye.Ya., otv.red.toma; SAVIN, G.N., akademik, red.; SOKOLOV, Yu.D., red.; SMIRNOV, V.I., akademik, red.; YUSHKEVICH, A.P., prof., red.; POGREBYSSKIY, I.B., dotsent, red.; SHTELIK, V.G., red.izd-va; RAKHLINA, N.P., tekhn.red.

[Complete collection of works in three volumes] Polnoe sobranie trudov v trekh tomakh. Kiev, Izd-vo Akad.nauk USSR. Vol.3. 1961. 395 p. (MIRA 15:2)

1. AN USSR (for Shtokalo, Gnedenko, Savin). 2. Chleny-korrespondenty AN USSR (for Remez, Sokolov).
(Mathematics)
(Ostrogradskii, Mikhail Vasil'evich, 1801-1861)

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D299/D304

10.6000 G.M.

AUTHORS: Savin, H.M., Academician AS UkrRSR, Van Fo Fy and Buyvol, V. M.

TITLE: Concentration of stresses in the neighborhood of two holes of a spherical shell

PERIODICAL: Akademiya nauk UkrRSR. Dopovidi, no. 11, 1961, 1435-1439

TEXT: A sloping spherical shell of radius R is considered, having two circular holes with radii $r_1$ and $r_2$, under the constant internal pressure q and the shearing stresses Q. The basic equation is

$$\nabla^2\nabla^2\Phi + i\nabla^2\Phi = 0 \qquad (1)$$

where $\Phi = w + ig\varphi$, w and $\varphi$ being the bending- and stress function respectively, and $g = \sqrt{12(1-\nu^2)}/Eh^2$. In the case of a single hole

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and axisymmetric loading, the function $\Phi$ depends on the coordinate x only:

$$\Phi = iC \ln x + (A + iB)H_0^{(1)}(x\sqrt{i}) \qquad (2)$$

where A, B, C are arbitrary constants which are determined by the boundary conditions, $H_0$ is Hanckel's function of the first kind and zeroth order. If the shell has 2 holes which are at a sufficient distance from each other, then the stressed state near the holes is described by the function

$$\Phi_0 = ig\varphi^0 + \Phi^{(1)} + \Phi^{(2)} \qquad (3)$$

where $\varphi^0$ is the stress function for the unperforated shell, $\Phi^{(k)}$ is of type (2), and k - the number of the hole. If the holes are near each other, the function (3) has to be considered as the zeroth approximation only. In this case the functions $\Phi$ are sought in the



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form

$$\Phi = igC \ln x + \sum_{n=1}^{\infty}(A_n + iB_n)x^{-n}\cos_n\theta + \sum_{n=0}^{\infty}(C_n + iD_n)H_n^{(1)}(x\sqrt{i})\cos n\theta \qquad (4)$$

where the constants are determined from the boundary conditions. The boundary conditions yield an infinite system of linear algebraic equations which can be solved for all n. Assuming the constants C, $A_n$, $B_n$, $C_n$, $D_n$ as already determined, and using formulas from the references, one obtains the corrections of the first approximation. Hence the function which solves the problem in the first approximation has the form

$$\Phi \approx ig\varphi^0 + \Phi^{(1)} + \Phi^{(2)} + \Phi_{12}^{(1)} + \Phi_{21}^{(1)} \qquad (7)$$

If the holes are at a distance apart, not below the length of the



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Concentration of stresses ...

smaller hole-radius, it is not worthwhile to find the second approximation; anyway, the second approximation cannot be found by the above method. A numerical example is considered. Computations have shown that the disturbance due to the holes is of a local character: It does not reach farther than a hole-diameter's length. Hence 2 neighboring holes do not affect the stressed state if the distance between them is not smaller than the diameter of the larger hole. There are 2 figures and 2 references: 1 Soviet-bloc and 1 non-Soviet-bloc (in translation).

ASSOCIATION: Instytut mekhaniky AN USSR (Institute of Mechanics AS UkrRSR)

SUBMITTED: June 26, 1961

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10.1000 also 3108

AUTHOR: Savin, G.M., (Kyyiv)

TITLE: On stress concentration around holes in thin elastic shells

PERIODICAL: Prykladna mekhanika, v. 7, no. 1, 1961, 3 - 14

TEXT: Experimental evidence shows that the stress concentration around holes in thin elastic shells is of a local nature. The present article proposes a possible treatment of this problem, and establishes a basic system of equations, together with a system of equations dealing with the case of shells weakened by holes whose contours are space-curves without angular points. In conclusion, some special cases are considered. The equation of the given part of the shell in terms of a system of curvilinear coordinates $\alpha$ and $\beta$ is put into vector form

$$\vec{\rho}^* (\alpha, \beta) = \vec{i} f_1(\alpha, \beta) + \vec{j} f_2(\alpha, \beta) + \vec{k} f_3(\alpha, \beta), \quad (1)$$

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where $f_1(\alpha, \beta)$, $f_2(\alpha, \beta)$, $f_3(\alpha, \beta)$ are known functions. It is assumed that $\vec{\rho}^*(\alpha, \beta)$ has continuous second-order derivatives in $\alpha$ and $\beta$. The components of stress arising in a shell with a hole under the action of the external stresses and boundary conditions are:

$$T^*_\alpha;\ T^*_\beta;\ S^*_\alpha;\ S^*_\beta;\ G^*_\alpha;\ G^*_\beta;\ H^*_\alpha;\ H^*_\beta;\ Q^*_\alpha;\ Q^*_\beta. \quad (4)$$

The corresponding components of stress in the same shell not weakened by a hole are

$$T^0_\alpha;\ T^0_\beta;\ S^0_\alpha;\ S^0_\beta;\ G^0_\alpha;\ G^0_\beta;\ H^0_\alpha;\ H^0_\beta;\ Q^0_\alpha;\ Q^0_\beta \quad (5)$$

[Abstractor's note: These symbols are not explained]. Experimental work shows that the distribution of stress around the hole has a local character, and extends through a comparatively small perturbed zone $\Sigma^*$ enclosed by the contour $L^*$ (Fig. 1) [Abstractor's note: $\Sigma^*$ is not specifically marked]. A suitable model of the stressed state around a circular hole in a cylindrical surface is provided by a circular rubber disc (thickness 3 mm, diameter 10 mm), glued to a cylindrical rubber surface (thickness of wall 1 mm, dia-



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meter 40 mm, where the surface remains intact under an internal hydrostatic pressure $p_0$ = 0.25 atm., and axial extension 0.50. The surface in its undeformed state is ruled with rectangular coordinates, whose deformation under stress reveals the intensity and distribution of that stress. Outside $\Sigma^*$, the components $T_\alpha$, $T_\beta$, ... $H_\beta$ (7) are equal to zero, and the size of $\Sigma^*$ depends on the size and shape of the hole and on the basic stressed state. Within $\Sigma^*$ the components $T_\alpha$, $T_\beta$, ... $H_\beta$, are quickly-decaying functions of the coordinates which may be determined by the existing approach to the theory of the stressed state with large indices of variation. It is assumed that L* always lies within the given part of the shell with the hole and does not touch itself at any point. The author then establishes the basic system of equations and the boundary conditions. By introducing a complex function

$$\Phi(\rho,\theta) = \frac{Eh^2}{\sqrt{12(1-\nu^2)}}\, w(\rho,\theta) + i\varphi(\rho,\theta), \qquad (27)$$



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the system is reduced to a single equation

$$\nabla^2\nabla^2\Phi + i\frac{\sqrt{12(1-\nu^2)}}{h}\nabla_k^2\Phi = 0. \qquad (28)$$

To integrate this equation, it is necessary to know a) the boundary conditions on Fig. 1, b) the behavior of $w(\rho, \theta)$ and $\varphi(\rho, \theta)$ at infinity. The boundary conditions may be given in several forms: When the external forces acting on the contour are given as a function of $\theta$, $F_1(\theta)$, $F_2(\theta)$, $F_3(\theta)$, $F_4(\theta)$, the boundary conditions have the form

$$\begin{gathered}(T_\rho)_{\rho=\rho_0} = F_1(\theta) - (T_\rho^0)_{\rho=\rho_0}; \quad (S_\rho)_{\rho=\rho_0} = F_2(\theta) - (S_\rho^0)_{\rho=\rho_0}; \\ \left(Q_\rho - \frac{1}{H}\cdot\frac{\partial H_\rho}{\partial\theta}\right)_{\rho=\rho_0} = F_3(\theta) - \left(Q_\rho^0 - \frac{1}{H}\cdot\frac{\partial H_\rho^0}{\partial\theta}\right)_{\rho=\rho_0}; \\ (G_\rho)_{\rho=\rho_0} = F_4(\theta) - (G_\rho^0)_{\rho=\rho_0}.\end{gathered} \qquad (29)$$



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On stress concentration ...

An interesting case arises, when, in the basic stressed state, there is a constant internal hydrostatic pressure $p_o$. The problem is then treated on the hypothesis that the hole in the shell is tightly surrounded by a specially constructed cover which preserves the internal pressure in the reservoir, and transmits to the contour of the hole, only the cross-sectional force, and does not create any additional force in the part of the shell around the hole. The form of the boundary conditions in this case is identical to that of an arbitrary shell with a hole free from the action of external forces, with the given basic stressed state, as in the case of a cylindrical shell, whose axis lies along the Oz axis, weakened by a hole, and stretched along a generator, under the influence of uniformly-distributed forces q = const. applied to the perpendicular $z = \pm 1$. The conditions "to infinity" emerge from the local nature of the perturbed stressed state around the hole, and have the form

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On stress concentration ...

$$(T_\rho)_{\rho=\rho_1} = 0; \quad (S_\rho)_{\rho=\rho_1} = 0; \quad (G_\rho)_{\rho=\rho_1} = 0;$$
$$\left(Q_\rho - \frac{1}{H}\cdot\frac{\partial H_\rho}{\partial \theta}\right)_{\rho=\rho_1} = 0, \tag{32}$$

where $\rho_1$ must be taken to infinity. By substitution in the foregoing equations, expressions will be found to satisfy $w(\rho, \theta)$ and $\varphi(\rho, \theta)$ both on the contour of the shell and in regions sufficiently distant from it. There are 2 figures and 26 references: 23 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: G.D. Galletly, Analysis of Discontinuity Stresses Adjacent to a Central Circular Opening in a Hemispherical Shell, David W. Taylor, Mod. Bassin Rep. 870, 1954; G. Grioli, On the Deformation of a Cylindrical Shell with Holes Stressed Uniformly, Publ. Inst. Appl. Calc. No. 246, 1946, L'Ingenere 5, 1949.

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On stress concentration ...

ASSOCIATION: Instytut mekhaniky AN URSR (Institute of Mechanics, AS UKrSSR)

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SAVIN, G.N. [Savin, H.M.]

"Elasticity and plasticity" by J.N. Goodier, P.G. Hodge. Reviewed by H.M. Savin. Prykl. mekh. 7 no. 1:108-109 '61. (MIRA 14:2)

(Elasticity) (Plasticity)

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SAVIN, G.N. [Savin, H.M.]

On the occasion of the 70th birthday of Nikolai Ivanovich Muskhelishvili. Prykl.mekh. 7 no.2:223-227 '61. (MIRA 14:4)
(Muskhelishvili, Nikolai Ivanovich, 1891-)

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24.4200 1327 G.M.

AUTHORS: Savin, H.M., and Fleyshman, N.P. (Kyyiv - L'viv)

TITLE: Plates whose rims are reinforced with thin ribs

PERIODICAL: Prykladna mekhanika, v. 7, no. 4, 1961, 349 - 361

TEXT: The combined contact problem with attenuated boundary conditions is first investigated. The authors consider a thin plate with a curvilinear edge which is reinforced by a thin elastic curvilinear rib of a material different from that of the plate. It is assumed that the axis of the rib $\Gamma$ lies in the plane of the plate xOy, and the contact of the rib with the plate occurs on the cylindrical surface S, which runs along $\Gamma$ and is normal to the plane. The positive direction of describing $\Gamma$ is that which keeps the plane on the left-hand-side. On S, only the two following boundary conditions are considered: a) the forces and moments acting between the plate and rib obey Newton's third law; b) the extensions $\varepsilon_\tau$ and $\varepsilon_0$ of the fibers of the plate and rib equidistant from the

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plane xOy equal each other. The reinforcing rib is taken to be sufficiently thin so that it has only either: I bending rigidity (the case of the bending of a thin plate, or II tensile rigidity (the case of a generalized plane stressed state). In this case the problem is reduced to determining two functions $\phi(z)$ and $\psi(z)$ which are analytic in the region of the plate and which satisfy the boundary condition

$$a_1\overline{\varphi(t)} + \bar{t}\varphi'(t) + \psi(t) + iK\dot{t}Re\left\{\dot{t}\frac{d}{ds}[a_2\overline{\varphi(t)} - \bar{t}\varphi'(t) - \psi(t)]\right\} = \tag{1.1}$$

$$= f_1(t) - iC_1'\bar{t} + C_2' \text{ на } \Gamma:$$

Here t denotes the affix of the point on $\Gamma$, s with corresponding indices denote the arcs counted from some origin $\dot{t} = dt/ds$, and the other quantities are defined by the following formulae: In case I,

$$a_1 = -\frac{3+\nu}{1-\nu}; \quad a_2 = -1; \quad K = -\frac{A}{D(1-\nu)} < 0 \tag{1.2}$$



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$$f_1(t) = \frac{1}{D(1-\nu)}[I_2(s) - I_1(s)] - \frac{i\bar{t}A}{D(1-\nu)} Re\left[\bar{t}\frac{d}{ds}\left(\frac{\partial w_0}{\partial x} - t\frac{\partial w_0}{\partial y}\right)\right],$$
$$I_k(s) = -\int_0^s (m_k - i\int_0^{s_1} p_k ds_2)\bar{t}ds_1 \quad (k = 1, 2), \tag{1.2}$$

where $\nu$ is Poisson's coefficient, D is the cylindrical rigidity of the plate, $A = E_1 I$ is the variable (generally) rigidity of reinforcing rib for bending, $m_1$ and $p_1$ are the external bending moment and transverse forces acting on the rib, $w_0$ is some particular solution of Germain's differential equation of bending, $m_2$ and $p_2$ are the known bending moment and transverse force on $\Gamma$, which correspond to $w_0$, $C_1'$ and $C_2'$ are the real and complex constants of integration. In case II, with a plate of thickness h,



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$$a_1 = 1;\ a_2 = \frac{3-\nu}{1+\nu};\ K = \frac{E_1 F}{2\mu h} > 0;\ C_1' = 0;$$
$$f_1'(t) = -\frac{i}{h}\int_0^s (P_x - iP_y)\,ds, \tag{1.3}$$

where $E_1F$ is the variable (in general) rigidity of the rib from tension, $\mu$ is the shear modulus of the plate, $P_x$ and $P_y$ are projections of the given external load on the ring, referred to a unit of its length. Writing

$$U(t) = \overline{t\varphi'(t)} + \overline{\psi(t)}, \tag{1.5}$$

the extenuated boundary condition is given by

$$a_2(t)\,[a_1\varphi(t) + t\overline{\varphi'(t)} + \overline{\psi(t)}] - a_3(t)\,t\,[\varphi'(t) + \overline{\varphi'(t)}] = f_*(t) \tag{1.9}$$



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Plates whose rims are ...

$$= iK \quad 2\dot{t}\,\ddot{\bar{t}}\,\overline{f_1(t)} - 2\dot{t}^2 \frac{d}{ds}\left(\dot{\bar{t}}\,\mathrm{Im}[i\dot{\bar{t}}\,\overline{f_1(t)}]\right) + (a_1 + a_2)\dot{t}[\varphi^{o\,\prime}(t) + \overline{\varphi^{o\,\prime}(t)}]\,. \qquad (1.14)$$

In the case where the plate lies outside the contour , (an infinite plate with a hole), then the corresponding boundary condition is

$$a_1\varphi_*(t) + t\overline{\varphi_*'(t)} + \overline{\psi_*(t)} - a_1(t)[\varphi_*'(t) + \overline{\varphi_*'(t)}] = f_3(t) \qquad (1.15)$$

where

$$t) = \frac{f_{**}(t)}{\alpha_2(t)};\ \alpha_1(t) = \frac{i\dot{t}\ddot{K}(a_1 + a_2)}{2(1 - iK\dot{t}\,\ddot{\bar{t}})}. \qquad (1.16)$$

By means of a suitable holomorphic solution of (15) it is easy to arrive at the equivalent system of two singular-integro-differential equations described in the work of N.P. Vekua (Ref. 4: Ob odnoy sisteme singulyarnykh integro-differentsial'nykh uravneniy i



APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G.N. [Savin, H.M.] (Kiyev); VAN FO FY, G.A. [VAN FO FY, H.A.] (Kiyev); BUYVOL, V.N. [Buivol, V.M.] (Kiyev)

Applying the method of consecutive approximations to certain problems in the theory of shallow shells. Prykl.mekh. 7 no.5:487-495 '61. (MIRA 14:10)

1. Institut mekhaniki AN USSR.
(Elastic plates and shells)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G.N. [Savin, H.M.]; KAYUK, Ya.F.

"Problems in continuum mechanics." Reviewed by H.M.Savin, IA. F Kaiuk. Prykl.mekh. 7 no.5:571-572 '61. (MIRA 14:10)
(Mechanics)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4



$$\bar{\tau}^{12} = 4^0 \varepsilon\left\{\frac{\partial}{\partial\eta}\left(\frac{\partial U^{(1)}}{\partial\bar{z}}\right) + \varepsilon\left[\frac{\partial}{\partial\eta}\left(\frac{\partial U^{(2)}}{\partial\bar{z}}\right) - \frac{\partial D^{(1)}}{\partial\eta}\frac{\partial}{\partial\eta}\left(\frac{\partial U^{(1)}}{\partial\bar{z}}\right) - \right.\right.$$
$$\left.\left. - \frac{\partial\bar{D}^{(1)}}{\partial\eta}\frac{\partial}{\partial\bar{\eta}}\left(\frac{\partial U^{(1)}}{\partial\bar{z}}\right)\right]\right\};$$

$$\bar{\tau}^{22} = -4^0 H\varepsilon\left\{\frac{\partial}{\partial\bar{\eta}}\left(\frac{\partial U^{(1)}}{\partial\bar{z}}\right) + \varepsilon\left[\frac{\partial}{\partial\bar{\eta}}\left(\frac{\partial U^{(2)}}{\partial\bar{z}}\right) - \frac{\partial D^{(1)}}{\partial\bar{\eta}}\frac{\partial}{\partial\eta}\left(\frac{\partial U^{(1)}}{\partial\bar{z}}\right) - \right.\right.$$
$$\left.\left. - \frac{\partial\bar{D}^{(1)}}{\partial\bar{\eta}}\frac{\partial}{\partial\bar{\eta}}\left(\frac{\partial U^{(1)}}{\partial\bar{z}}\right)\right]\right\}. \qquad (1.6)$$

where $D = z - \eta$ is the (complex) displacement function, U - Airy's function, $^0H$ - a constant equal to the shear modulus $\mu$ or to $2h\mu$ respectively. Second-order potential functions: It is assumed



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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

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D299/D301



value problems: In contradistinction to the linear formulation, the boundary conditions in nonlinear theory can be formulated differently. First principal problem: a.) External stresses given at known contour of deformed body. B.) External stresses given at contour of undeformed body. C.) Boundary given for undeformed state, external stresses - for deformed state. Second principal problem: D.) Displacement components of points of boundary given, whose form is known in deformed state. E.) Displacement components of points of boundary given, whose form is known in undeformed state. It was found that the second-order potentials with formulations A) and B) are simultaneously determined for similar problems. The elastic equilibrium of infinite plate is then discussed, having a circular hole filled by a ring of different material. For the boundary conditions and the compatibilty equations one obtains

$$\left.\frac{\partial U^{(1)}}{\partial \bar{z}}\right|_{L_1} = f^{(1)}(t); \quad \varepsilon_0 D_0^{(1)} = \varepsilon_1 D_1^{(1)} + g_0(t); \quad \frac{\partial U_0^{(1)}}{\partial \bar{z}} = \frac{\partial U_1^{(1)}}{\partial \bar{z}} \text{ on } L \qquad (4.2)$$



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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

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S/198/61/007/006/001/008
D299/D301

Plane problems in ...

theory, Proceedings of Royal Society, ser. A, N 1219, v. 239, 1957.

ASSOCIATIONS: Institut mekhaniky AN URSR (Institute of Mechanics of the AS UkrRSR); Konstruktors'ke byuro (Design Bureau), L'viv

SUBMITTED: June 30, 1961

Card 6/6

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

PISARENKO, Georgiy Stepanovich; SAVIN, G.N., akademik, otv. red.; MEL'NIK, T.S., red.izd-va; YEFIMOVA, M.I., tekhn. red.

[Energy dissipation caused by mechanical vibrations] Rasseianie energii pri mekhanicheskikh kolebaniiakh. Kiev, Izd-vo Akad.nauk USSR, 1962. 435 p. (MIRA 15:3)
(Vibration) (Force and energy)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G.N., otv.red.; ADADUROV, R.A., red.; ALUMYAE , N.A., red.; AMBARTSUMYAN, S.A., red.; AMIRO, I.Ya., red.; BOLOTIN, V.V., red.; VOL'MIR, A.S., red.; GOL'DENVEYZER, A.L., red.; GRIGOLYUK, E.I., red.; KAN, S.N., red.; KARMISHIN, A.V., red.; KIL'CHEVSKIY, N.A., red.; KISELEV, V.A., red.; KOVALENKO, A.D., red.; MUSHTARI, Kh.M., red.; NOVOZHILOV, V.V., red.; UMANSKIY,A.A., red.; FILIPPOV, A.P., red.; LISOVETS, A.M., tekhn. red.

[Proceedings of the Second All-Union Conference on the Theory of Plates and Shells]Trudy Vsesoiuznoi konferentsii po teorii plastin i obolochek.2d,Lvov, 1961.Kiev, Izd-vo Akad.nauk USSR, 1962. 581 p. (MIRA 15:12)

1. Vsesoyuznaya konferentsiya po teorii plastin i obolochek. 2, Lvov, 1961.
(Elastic plates and shells)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

S/879/62/000/000/005/088
D234/D308

AUTHOR: Savin, G. N. (Kiev)

TITLE: Stress concentration near holes in shells

SOURCE: Teoriya plastin i obolochek; trudy II Vsesoyuznoy konferentsii, L'vov, 15-21 sentyabrya 1961 g. Kiev, Izd-vo AN USSR, 1962, 70-85

TEXT: A review of literature on the subject starting from 1898. There are 2 figures and 65 references.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

S/879/62/000/000/006/088
D234/D308

AUTHORS: Savin, G. N., Van Fo-Fy, G. A. and Buyvol, V. N. (Kiev)

TITLE: A spherical shell weakened by two unequal circular holes

SOURCE: Teoriya plastin i obolochek; trudy II Vsesoyuznoy konferentsii, L'vov, 15-21 sentyabrya 1961 g. Kiev, Izd-vo AN USSR, 1962, 89-93

TEXT: Using the results of two previous papers by G. N. Savin, the authors obtain the first-order correction for the above problem. The solution in the first approximation is $\Phi_1 = ig\varphi^0 + \Phi^{(1)} + \Phi^{(2)} + \Phi_{21}^{(1)} + \Phi_{12}^{(1)}$, where the first term corresponds to a shell without holes, the second and third are given by

$$\Phi^{(k)} = iC^{(k)} \ln x_k + (A^{(k)} + iB^{(k)}) H_0^{(1)} (x_k \sqrt{i}) \quad (k = 1,2) \qquad (3)$$

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and the last two by

$$\Phi = igC \ln x + \sum_{n=1}^{\infty} (A_n + iB_n)x^{-n}\cos n\theta + \sum_{n=0}^{\infty} (C_n + iD_n)H_n^{(1)}(x\sqrt{i})\cos n\theta \quad (4)$$

It is assumed that a constant internal pressure acts on the shell and that the holes are provided with covers which transfer only shearing forces to the shell. Numerical calculations give satisfactory accuracy if the distance between the holes is not smaller than the radius of the smaller hole. There are 5 figures.



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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

PUTYATA, T.V.: SAVIN, G.N. [Savin, H.M.]

"Theoretical mechanics in examples and problems" by M.Y. Bat', H.IU. Dzhanelydze, A.S. Kel'zon. Reviewed by T.V. Putiata, G.N. Savin. Prykl.mekh. 8 no.3:339-340 '62. (MIRA 15:6)
(Mechanics—Problems, exercises, etc.)
(Bat', M.Y.) (Dzhanelydze, H.IU.) (Kel'zon, A.S.)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G.N.

"Dynamics of aninelastic strong of variable length."

Report submitted to the Intl. Symp. on Stress Waves in Anelastic Solids, Providence, Rhode Island 3-5 April 1963

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, Guriy Nikolayevich, doktor fiz.-matem. nauk, akademik; KIL'CHEVSKIY, Nikolay Aleksandrovich, doktor fiz.-matem.nauk; PUTYATA, Tat'yana Vasil'yevna, kand. fiz. matem.nauk; LAVRINENKO, P.P., kand. fiz.-mat. nauk, retsenzent; BONDARENKO, O.P., inzh., red.izd-va; STARODUB, P.A., tekhn. red.

[Theoretical mechanics] Teoreticheskaia mekhanika. Pod obshchei red. G.N.Savina. Izd.2., dop. i perer. Kiev, Gostekhizdat USSR, 1963. 610 p. (MIRA 17:2)

1. Akademiya nauk Ukr.SSR (for Savin).

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

S/021/63/000/003/013/022
D405/D301

AUTHORS: Savin, G. N., Memeber of the Academy of Sciences UkrRSR, and Rvachov, V. L.

TITLE: Disturbance of compatibility of deformation in contact problems of elasticity theory

PERIODICAL: Akademiya nauk UkrRSR. Dopovidi. no. 3, 1963, 354-357

TEXT: The disturbance of the compatibility of deformations was studied in problems involving the contact between a die and an elastic half-plane (half-space respectively). The disturbance of the compatibility of deformations in contact problems is accompanied by the interpenetration of the points of the elastic body and of the die. Such an effect of course has no physical sense. The plane problem is considered first. From the formulas for the normal and tangential stresses P(x) and T(x) it is evident that on approaching the ends of the contact region these stresses change sign infinitely many times. It is shown that this effect is related to the appearance of zones of fictitious deformation. After

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transformations, the formula expressing the condition of compatibility of deformations assumes the form

$$1 - \frac{P_0 \nu}{\pi \mu \sqrt{\tau} \sqrt{l^2 - x^2}} \cos \left( \beta \ln \frac{l + x}{l - x} \right) > 0 \qquad (9)$$

It can be readily seen that for $x \longrightarrow \pm l$ this condition is violated infinitely many times; hence the compatibility of deformation is violated at infinitely many points of the contact region. Further, the contact problem involving a circular die with a plane base and an elastic half-space is considered. In this case, the compatibility condition is violated if



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$$P > \frac{2a\pi hE}{(1-\nu^2)\arccos\frac{a^2-h^2}{a^2+h^2} - \frac{(1+\nu)ah}{a^2+h^2}} \qquad (20)$$

i.e. if the force P under the die is sufficiently large (a denotes the radius of the die and h is a positive number).

ASSOCIATIONS: Institut mekhaniky AN URSR (Institute of Mechanics of the AS UkrRSR); Berdyans'kyy pedahohichnyy institut (Berdyans'k Pedagogical Institute)

SUBMITTED: November 5, 1962



APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

S/021/63/000/001/007/012
D251/D308

AUTHORS: Savin, G. N. M. M., Academician, and Rvachov, V. L.

TITLE: On the formal and actual conjointness of deformations

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 1, 1963, 35-39

TEXT: In the statical theory of elasticity solutions are sought, in general, which satisfy the boundary conditions, the equilibrium condition and the conjointness of strains. However, in certain special cases there is no actual conjointness of strains. Conjointness is defined to occur if: a) any part of an elastic body that is simply connected before deformation will be transformed into a simply connected region after deformation; b) the outside and inside defined by any surface will remain outside and inside respectively after deformation. The mathematical formulation of the second condition is obtained by considering Boussinesq's solution. The zone of fictitious deformations is considered for the special cases of a concentrated force applied to the boundary of

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4



an elastic half-space, for the contact problem of the pressure of a circular die on an elastic half-space, and for the problem of a tube on which a uniformly distributed pressure acts. The last case is used to show that in Lami's problem fictitious stresses will appear if the external compression is sufficiently great or the walls of the pipe sufficiently thin. In each case the deformations are defined in terms of the Jacobian

$$I(x,y,z) = \begin{vmatrix} 1 + \frac{\partial u}{\partial x} & \frac{\partial u}{\partial y} & \frac{\partial u}{\partial z} \\ \frac{\partial v}{\partial x} & 1 + \frac{\partial v}{\partial y} & \frac{\partial v}{\partial z} \\ \frac{\partial w}{\partial x} & \frac{\partial w}{\partial y} & 1 + \frac{\partial w}{\partial z} \end{vmatrix} \qquad (2)$$



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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4



where a point with coordinates (x,y,z) is transformed into the point (x + u, y + v, z + w). The region of conjointness is given by $I(x,y,z) > 0$, and the surface of separation of the zone of fictitious strains is given by $I(x,y,z) = 0$. There is 1 figure.

ASSOCIATIONS: Instytut mekhaniky AN URSR (Institute of Mechanics of the AS UkrSSR)(Savin); Berdyans'kyy pedahohichnyy instytut (Berdyan'sk Pedagogic Institute)(Rvachov)

SUBMITTED: October 4, 1962



APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

S/198/63/009/001/001/006
D251/D308

AUTHOR: Savin, G.N. (Kiev)

TITLE: The effect of physical nonlinearity on the concentration of stresses in the vicinity of holes

PERIODICAL: Prykladna mekhanika, v. 9, no. 1, 1963, 11-22

TEXT: A method is presented for studying the stresses round a hole in a thin plate of a physically nonlinear elastically isotropic material. The contour of the hole is given by

$$x = x(\rho,\theta): \quad y = y(\rho,\theta) \tag{1}$$

with $\rho = \rho_o$ = const, where $x(\rho,\theta)$ and $y(\rho,\theta)$ are the real and imaginary parts of the function which conformally maps the outside of the hole in the z-plane onto the outside of the unit circle in the $\zeta$-plane. A stress function $F(x,y)$ is adopted and a solution is sought in terms of an expansion in the small parameter $\varepsilon$,

$$F(x,y) = H_o \left[F^{(o)}(x,y) + \varepsilon F^{(1)}(x,y) + \varepsilon^2 F^{(2)}(x,y) + \ldots\right] \tag{16}$$

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4



where

$$H_o = \frac{1}{\beta} = \frac{G}{g_2}\sqrt{3 + \frac{G}{K}} \qquad (16b)$$

K is the bulk modulus, G is the shear modulus, and $g_2$ is an experimental constant. By equating the coefficients of even powers of $\varepsilon$ to zero, an infinite system of biharmonic equations is obtained. The Kolosov-Mushkhelishvili method of complex potentials is applied, to this system, in which the nth equation is $\Delta\Delta F^{(n)} + A_n = 0$ $(n = 1,2,3...)$. Here, $\Delta$ is Laplace's operator, and an algorithm for determining $A_n$ is indicated. By applying the method stated and taking boundary values on the contour and at infinity, the values for the stress components (the second derivatives of F) are found to the m-th approximation in terms of the complex potentials, and also in terms of the components of a partial solution. There are 2 figures.

ASSOCIATION: Instytut mekhaniky AN URSR (Institute of Mechanics of the AS UkrSSR)

SUBMITTED: September 10, 1962



APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

PUTYATA, T. V.; SAVIN, G. N.[Savin, H. M.]

"Theoretical mechanics in examples and problems" by M. I. Bat', G. IU. Dzhanelidze, A. S. Kel'zon. Reviewed by T. V. Putiata, H. M. Savin. Prykl. mekh. 9 no.3:336-337 '63. (MIRA 16:4)

(Mechanics, Analytic—Problems, exercises, etc.)
(Bat', M. I.) (Dzhanelidze, G. IU.) (Kel'zon, A.S.)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G.N. [Savin, H.M.]; FLEYSHMAN, N.P. [Fleishman, N.P.]

"Elements of the calculation of thin elastic shells".
Prykl. mekh. 9 no.4:447-448 '63. (MIRA 16:8)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G.N. [Savin, H.M.]; SOKOLOV, Yu.D.; PUTYATA, T.V.; FRADLIN, B.N.

Oleksandr IUliiovych Ishlins'kyi; on the occasion of his 50th birthday. Prykl. mekh. 9 no.4:450-454 '63. (MIRA 16:8)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G.N. [Savin, H.M.] (Kiyev); PUTYATA, T.V. (Kiyev); FRADLIN, B.N. (Kiyev)

Scientific heritage of P.V. Voronets' ( 1871-1923). Prykl. mekh. 9 no.6:581-591 '63. (MIRA 16:12)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G.N.; SOKOLOV, Yu.D.; PUTYATA, T.V.

Aleksandr IUl'evich Ishlinskii; on his 50th birthday. Ukr. mat. zhur. 15 no.3:299-302 '63. (MIRA 16:12)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G.N. (Kiev)

"Stress concentration around curvi-linear holes in plates and shells"

Report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow 29 Jan - 5 feb 64.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G.N.; FLEYSHMAN, N.P. (Kiev)

"Plates with curvi-linear stiffeners"

Report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow 29 Jan - 5 Feb 64.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G. N.

"Concentration of stresses around curvilinear holes in plates and shells."

report submitted for 11th Intl Cong of Theoretical & Applied Mechanics & General Assembly, Munich, 30 Aug-5 Sep 64.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

DLUGACH, Mikhail Iosifovich; SAVIN, G.N., akademik, otv. red.; FURER, P.Ya., red.

[The method of finite differences in the mixed two-dimensional problem in the theory of elasticity] Metod setok v smeshannoi ploskoi zadache teorii uprugosti. Kiev, Naukova dumka, 1964. 259 p. (MIRA 18:2)

1. AN Ukr.SSR (for Savin).

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, Guriy Nikolayevich, akademik; PUTYATA, Tat'yana Vasil'yevna
FRADLIN, Boris Naumovich; BELASH, I.K., red.; GILELAKH,
V.I., red.

[Essays on the development of some basic problems in
mechanics] Ocherki razvitiia nekotorykh fundamental'nykh
problem mekhaniki. Kiev, Naukova dumka, 1964. 375 p.
(MIRA 17:12)

1. Akademiya nauk Ukr.SSR (for Savin).

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, Guriy Nikolayevich; FLEYSHMAN, Nukhim Pinkasovich;
REMENNIK, T.K., red.

[Plates and shells with stiffening ribs] Plastinki i obolochki s rebrami zhestkosti. Kiev, Naukova dumka, 1964. 383 p. (MIRA 17:12)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

FIL'CHAKOV, Pavel Feodos'yevich; SAVIN, G.N., akademik, otv. red.

[Approximate methods of conformal mapping; reference book] Priblizhennye metody konformnykh otobrazhenii; spravochnoe rukovodstvo. Kiev, Naukova dumka, 1964. 530 p. (MIRA 18:1)

1. Akademiya nauk Ukr.SSR (for Savin). 2. Chlen-korrespondent AN Ukr.SSR (for Fil'chakov).

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

ACCESSION NR: AP4010058 S/0021/64/000/001/0054/0058

AUTHOR: Savin, G. N. (Academician); Guz', O. M.

TITLE: Stress concentration around an elliptical hole in a spherical shell

SOURCE: AN UkrRSR. Dopovidi, no. 1, 1964, 54-58

TOPIC TAGS: elasticity, eccentricity, stress, stress concentration, stress concentration factor

ABSTRACT: In a previous work by Savin a solution was constructed for the problem of stress concentration in a spherical shell around an elliptical hole for small values of eccentricity (a/b less than or equal to 1.10). Use of that formula for larger values of eccentricity can give incorrect results. The present work proposes a new solution which gives the possibility of determining the stress concentration factor for much larger values of eccentricity. The solution is obtained by the method of "perturbation of the boundary shape." The zero, first and second approximations are examined and a formula is derived for the values on the contour of the hole with the second approximation taken into consideration. A numerical example is presented which shows the effect of the ellipticity of the hole on the

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

ACCESSION NR: AP4010058

stress concentration factor. The solution obtained here may be applied when there is a considerably greater value of eccentricity. Orig. art. has 22 formulas and 1 table.

ASSOCIATION: Insty*tut mekhaniky* AN UkrRSR (Institute of Mechanics, AN UkrRSR)

SUBMITTED: 18May63 DATE ACQ: 10Feb64 ENCL: 00

SUB CODE: PH, MM NO REF SOV: 005 OTHER: 001

Card 2/2

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 35463-65 EPR/EWA(h)/EWP(k)/EWT(d)/EWT(m)/EWP(b)/T/EWA(d)/EWP(w)/EWP(v)/EWP(t)
Pf-4/Peb EM/JD

ACCESSION NR: AP5005177 S/0179/64/000/006/0096/0105

AUTHORS: Savin, G. N. (Kiev); Guz', A. N. (Kiev)

TITLE: Stress conditions near curved openings in shells

SOURCE: AN SSSR. Izvestiya. Mekhanika i mashinostroyeniye, no. 6, 1964, 96-105

TOPIC TAGS: shell theory, stress concentration, stress analysis, stress distribution

ABSTRACT: The method of "perturbation of boundary shape," proposed by F. M. Morse and G. Feshbokh (Metody teoreticheskoy fiziki. Izd-vo inostr. lit., 1960, t. II) for estimating the stress conditions near curved openings in shells, is described and demonstrated. To find the additional stress conditions ($T_n \ldots Q_s$) which are added to known stress conditions ($T_n^0 \ldots Q_s^0$) by a hole, the equations

$$\nabla^2\nabla^2\Phi - i\varkappa^2\nabla_k^2\Phi = 0$$

$$\Phi = w + in\varphi, \qquad n = \frac{\sqrt{12(1-\nu^2)}}{Eh^2}, \qquad \varkappa = r_0\left(\frac{12(1-\nu^2)}{h^2}\right)^{1/4}$$

have to be solved with appropriate boundary conditions (where $r_0$ characterizes

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L 35463-65

ACCESSION NR: AP5005177

the size of the opening ). The solution is assumed in the form

$$\Phi(r, \theta) = \sum_{k=0}^{\infty} f_k(r) \cos k\theta + g_k(r) \sin k\theta$$

in polar coordinates with hole at origin. The contour G is assumed such that the function

$$z = \omega(\zeta), \qquad \omega(\zeta) = \zeta + \varepsilon f(\zeta)$$

$$(z = re^{i\theta},\ \zeta = \rho e^{i\gamma},\ \varepsilon \ll 1)$$

conformally maps an infinite plane with an opening of the shape G. The coefficients of the series solution are obtained and compared with solutions obtained for a flat plate with an arbitrarily shaped hole. As an example, the stress conditions for an almost square hole (rounded corners) and an elliptical hole in an axially stressed cylinder are calculated and compared with flat plate results. It is concluded that the results for the maximum stress concentration factor obtained for a flat plate can be applied to axially stressed cylinders with an arbitrary hole shape with an accuracy of 5-8%. Orig. art. has: 4 figures and 27 formulas.

ASSOCIATION: none

Card 2/3

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 35463-65

ACCESSION NR: AP5005177

SUBMITTED: 08May63 ENCL: 00 SUB CODE: AS, NP, MA

NO REF SOV: 009 OTHER: 002

Card 3/3

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 29133-65 EWT(d)/EWT(m)/EWP(w)/EWA(d)/EWP(v)/EPR/EWP(k)/EWA(h) Pf-4/Peb EM

ACCESSION NR: AP5000609 S/0021/64/000/011/1456/1459

AUTHOR: Savin, G.M. (Savin, G.N.)(Academician AN UkrSSR); Guz', O.M. (Guz', A.N.)

TITLE: Concerning the concentration of stresses around holes in cylindrical shells

SOURCE: AN UkrRSR. Dopovidi, no. 11, 1964, 1456-1459

TOPIC TAGS: cylindrical shell, shell structure stability, cylindrical function, harmonic function

ABSTRACT: The authors consider the behavior of a cylindrical shell weakened by a large hole on the basis of the general formulation of such problems (G. N. Watson, A Treatise on the Theory of Bessel Functions, Cambridge University Press, 1944) and on the basis of a general formulation presented by one of the authors earlier (Savin, Prykladna mekhanika, v. 7, 3, 1961). The problem reduces to the solution of the equation

$$\nabla^2\nabla^2\Phi + 8i\beta^2\frac{\partial^2\Phi}{\partial x^2} = 0$$

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 29133-65

ACCESSION NR: AP5000609

which is found in the form of a series in Hankel functions. By expanding the solution in a Fourier series and using certain formulas for cylindrical functions, a final solution is obtained with separated variables, with relations established between the old and the new constants. As an example, the authors consider the portion of a cylindrical shell weakened by a round hole. The solution is presented in the form of expansions in Hankel and hyperbolic functions, and the constants are determined from an infinite system of algebraic equations. Orig. art. has: 16 formulas.

ASSOCIATION: Instytut mekhaniki AN UkrSSR (Institute of Mechanics AN UkrSSR)

SUBMITTED: 30Jun64 ENCL: 00 SUB CODE: AS, MA

NR REF SOV: 012 OTHER: 003

Card 2/2

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G.N. [Savin, H.M.]; RVACHEV, V.L. [Rvachev, V.L.]

Displacements under the action of a concentrated force. Prykl. mekh. 10 no.2:222-225 '64 (MIRA 17:7)

1. Institut mekhaniki AN UkrSSR i Khar'kovskiy institut gornogo mashinostroyeniya, avtomatiki i vychislitel'noy tekhniki.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 38143-65 EWT(m)/EWP(w)/EPR EM

ACCESSION NR: AP5001620 P/0033/64/016/004/1009/1021

AUTHOR: Guz', A. N. (Kiev); Savin, G. N. (Kiev); Tsurpal, I. A. (Kiev)

TITLE: Stress concentration around curvilinear openings in a physically nonlinear elastic plate

SOURCE: Archiwum mechaniki stosowanej, v. 16, no. 4, 1964, 1009-1021

TOPIC TAGS: stress concentration, nonlinear elasticity theory, elliptical hole, nonlinear plate, elastic plate, stress strain curve, conformal mapping

ABSTRACT: The stress concentration near curvilinear openings without edge points in a thin plate made of a material in which the stress-strain relationship is nonlinear even during relatively small deformations is discussed. For the deformations under consideration, all geometric elasticity relationships remain linear, i.e., one considers a version of the physically nonlinear theory of elasticity having a very specific nonlinearity law. G. N. Savin (Prikl. Mekh., 1, 9, [illegible], 1. 10, 1964) previously used conformal mapping of the region under consideration onto the exterior region of a unit circle and, using the Kolosov-Muskhelishvili complex potential, studied the problem in the case of the nonlinear elasticity law

$$e_r = \frac{1}{3K}k(s_0)\sigma_0 + \frac{1}{2G}g(t_0^2)(\sigma_r - \sigma_0),$$

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

ACCESSION NR: AP5001620

$$\varepsilon_\varphi = \frac{1}{3K} k(s_0)\sigma_\theta + \frac{1}{2G} g(t_0^2)(\sigma_\varphi - \sigma_\theta),$$

$$\varepsilon_{r\varphi} = \frac{1}{G} g(t_0^2)\tau_{r\varphi},$$

In the present paper, the problem is solved for the same law by means of the "boundary shape perturbation" approximation method (see P. M. Morse, H. Feshbach, Methods of Theoretical Physics, II, McGraw-Hill Book Company, Inc.). The solutions are represented in the form of power expansions. The determination of the stress function reduces, for each approximation, to the integration of a set of nonlinear differential equations. As an example, the authors calculate the stress concentration around an elliptical hole in the zeroth, first, and second approximation. The stress concentration found along the contour of the hole depends on the tensile forces, the ellipticity of the hole, and a parameter characterizing the mechanical properties of the plate, and its values are tabulated for the case of linear and nonlinear theories. Orig. art. has: 45 formulas, 1 figure, and 2 tables.

ASSOCIATION: Institut mekhaniki, Akademiya nauk Ukrainskoy SSR (Institute of Mechanics, Academy of Sciences of the Ukrainian SSR)

SUBMITTED: 08Jan64 ENCL: 00 SUB CODE: ME, AS

NO REF SOV: 008 OTHER: 002

Card 2/2

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

GOROSHKO, Oleg Aleksandrovich; SAVIN, G.N., akademik, otv. red.; GILELAKH, V.I., red.; DIKIY, V.N., red.

[Dynamics of a flexible structure under free flight conditions] Dinamika uprugoi konstruktsii v usloviiakh svobodnogo poleta. Kiev, Naukova dumka, 1965. 164 p. (MIRA 18:3)

1. Akademiya nauk Ukr.SSR (for Savin).

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 00899-67 EWT(d)/EWT(m)/EWP(w)/EWP(v)/EWP(k) IJP(c) WW/EM/GD

ACC NR: AT6020801 SOURCE CODE: UR/0000/65/000/000/0005/0038

41
40
B+1

AUTHOR: Savin, G. N. (Kiev)(Academician AN UkrSSR)

ORG: none

TITLE: Stress concentration around curvilinear holes in plates and shells

SOURCE: AN UkrSSR. Institut mekhaniki. Kontsentratsiya napryazheniy (Concentration of stresses). no. 1. Kiev, Naukova dumka, 1965, 5-38

TOPIC TAGS: stress concentration, shell theory, elastic plate, reinforced shell structure, nonlinear theory

ABSTRACT: An extensive survey is made on the status of theoretical methods used in estimating stress concentrations around curvilinear holes in plates and shells. The greater part of the review is devoted to plates. Here, the fundamental method of calculating the stress concentration around curvilinear holes is by a conformal mapping of the given hole onto a circle. Solutions are cited from the literature giving relatively simple formulae for estimating the stress concentration around an infinite set of nonuniform holes in isotropic as well as in anisotropic materials. Solutions also exist for the dynamic problem with a sudden uniform pressure loading on the hole contours. A detailed study is then made of elastic-plastic problems where holes have symmetric fractures at their edges. The problem is generalized to local bulges around the holes under tension, and the case is considered where the holes are

Card 1/2

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 00899-67
ACC NR: AT6020801

reinforced with rings. Existing solutions are limited in this case to circular holes, and the aim is to find optimum reinforcements which give minimum weight rings for given loading conditions. The nonlinear stress concentration problem is discussed in great detail under three topics: general two-dimensional nonlinearities; physical nonlinearities in two-dimensional problems; geometrical nonlinearities in two-dimensional problems. Conditions determining the accuracy with which the stress concentration coefficients can be determined for the nonlinear cases are reviewed. The method of solution is outlined for the case of physical nonlinearities (geometrically linear), using conformal mapping. A simple example is given to illustrate the point. The remaining portion of the paper is devoted to the same problems encountered in shells with holes. The method of obtaining complex stress functions is outlined, and a simple case is studied for a spherical shell. Problems are listed in shell stress concentration studies where little or no work is reported in the literature. These include angular holes, negative curvatures near holes, and the effect of physical and geometric nonlinearities near the holes. A brief note is included on temperature-induced stresses around holes. Orig. art. has: 14 formulas, 9 figures, and 1 table.

SUB CODE: 20/ SUBM DATE: 11Oct65/ ORIG REF: 136/ OTH REF: 042

awm
Card 2/2

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 42991-65 EPR/EWT(d)/EWT(m)/EWA(d)/EWP(w) EM

ACCESSION NR: AP5008353 S/0021/65/000/003/0309/0313

AUTHOR: Savin, H. M. (Savin, G. N.); Hrylits'kyy, D. V. (Grilitskiy, D. V.) 22 21 B

TITLE: A contact problem

SOURCE: AN UkrRSR. Dopovidi, no. 3, 1965, 309-313

TOPIC TAGS: elasticity theory, 16 contact stress, stress calculation, 16 soldered part

ABSTRACT: The problem of determining the contact stresses along the contact line of a soldered-in circular disc 16 made from a different isotropic material than the plate into which it is soldered is considered. In this case, there are slits free of stress at the boundary of the two media. The concentrated force or moment is applied at an arbitrary point on the plate of the disc. The problem is reduced to the solution of a singular integral equation. An example with a plate weakened by one slit along the solder line is considered in detail, the force being applied at the center of the disc. For the case when the slit extends to the circumference, the curves of contact stresses were constructed for three values of the parameter $n = \mu_1/\mu_2$: 0, 1, $\infty$, where $\mu_1$ and $\mu_2$ are shear moduli for the disc and the plate, respectively. Orig. art. has: 3 figures and 24 formulas.

Card 1/2

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 42991-65

ACCESSION NR: AP5008353

ASSOCIATION: L'vivskyy derzhavnyy universytet (L'vov State university); Instytut mekhaniky AN URSR (Institute of mechanics, AN URSR)

SUBMITTED: 21Mar64 ENCL: 00 SUB CODE: AS

NO REF SOV: 003 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 33549-65 EPR/EWT(m)/EWP(w) EM S/0198/65/001/001/0005/0014

ACCESSION NR: AP5006984

AUTHORS: Savin, G. N. (Kiev, L'vov); Grilitskiy, D. V. (Kiev, L'vov)

TITLE: On determining the stressed state in an anisotropic plate with an elastic core

SOURCE: Prikladnaya mekhanika, vo. 1, no. 1, 1965, 5-14

TOPIC TAGS: plate deflection, anisotropic medium, conjugate function, stress load

[illegible] equilibrium in an anisotropic plate with a sealed [illegible] is subjected to a [illegible]

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$$af(\sigma) + \bar{a}f(\sigma) + \frac{\ }{\pi i}\int_{\gamma} \frac{\ }{t-\sigma} - \frac{\ }{\pi i}\int_{\gamma} \frac{\ }{t-\sigma}$$

where a, b, c, d are constants

depending on the elastic properties of the plate and the core material, $F_1$ and $F_2$

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 33549-65

ACCESSION NR: AP5006984

are known functions that depend on the load and its location. The above two equations are solved to yield

$$f(\sigma) = \frac{1}{\lambda_2 - \lambda_1}\left\{\frac{\lambda_2}{Q_1^2 - K_1^2}\left[Q_1(F_1 + N_1F_2) - \frac{K_1}{\pi i}\int_\gamma \frac{F_1 + N_1F_2}{t - \sigma}\,dt\right] - \right.$$

$$\left. - \frac{\lambda_1}{Q_2^2 - K_2^2}\left[Q_2(F_1 + N_2F_2) - \frac{K_2}{\pi i}\int_\gamma \frac{F_1 + N_2F_2}{t - \sigma}\,dt\right]\right\},$$

$$\overline{f(\sigma)} = -\frac{1}{\lambda_2 - \lambda_1}\left\{\frac{1}{Q_1^2 - K_1^2}\left[Q_1(F_1 + N_1F_2) - \frac{K_1}{\pi i}\int_\gamma \frac{F_1 + N_1F_2}{t - \sigma}\,dt\right] - \right.$$

$$\left. - \frac{1}{Q_2^2 - K_2^2}\left[Q_2(F_1 + N_2F_2) - \frac{K_2}{\pi i}\int_\gamma \frac{F_1 + N_2F_2}{t - \sigma}\,dt\right]\right\},$$

where N is an arbitrary constant and is a function of a, b, c, d. These equations are then solved for four particular load distributions: concentrated load located on the plate, a moment applied to the plate, concentrated load applied to the core, and a moment applied to the core. Orig. art. has: 34 equations and 4 figures.

ASSOCIATION: Institut mekhaniki AN UkrSSR (Institute of Mechanics, AN UkrSSR); L'vovskiy gosuniversitet im. Ivana Franko (L'vov State University)

Card 2/3

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 33549-65

ACCESSION NR: AP5006984

SUBMITTED: 29Apr64

NO REF SOV: 008

ENCL: 00

OTHER: 002

SUB CODE: ME,SS

Card 3/3

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 23219-66 EWT(d)/EWT(m)/EWP(w)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EWP(l) JD

ACC NR: AP6013591 SOURCE CODE: UR/0198/65/001/002/0124/0125

AUTHOR: Savin, G. N.; Pavlenko, G. L.

ORG: Institute of Mechanics, AN UkrSSR (Institut mekhaniki AN UkrSSR)

30

B

TITLE: Machine for fatigue-testing wire with a cyclical, variable load

SOURCE: Prikladnaya mekhanika, v. 1, no. 2, 1965, 124-125

TOPIC TAGS: wire, metal test, fatigue test, cyclic load, physics laboratory instrument

ABSTRACT: The machine, covered by USSR patent #26104/449986, performs testing of wire by simultaneous application of stretching and bending, determining the limit of fatigue with an eccentric cycle. An electric motor is used to supply the eccentric-action bending stress, and a clamp and spring arrangement supplies the stretching stress. As envisaged by the authors, the machine has four racks for four wire samples and is driven simultaneously by the same electric motor for multiple testing of several samples. Orig.art. has: 2 figures. [JPRS]

SUB CODE: 13, 20 / SUBM DATE: 08Apr64

Card 1/1

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 23220-66 EWT(d)/EWT(m)/EWP(w) IJP(c) EM

ACC NR: AP6013592 SOURCE CODE: UR/0198/65/001/004/0001/0011

AUTHOR: Savin, G. N. (Kiev); Khoroshun, L. P. (Kiev)

ORG: Institute of Mechanics, AN UkrSSR (Institut mekhaniki AN UkrSSR)

TITLE: Two-dimensional problem of physically nonlinear elastic bodies

SOURCE: Prikladnaya mekhanika, v. 1, no. 4, 1965, 1-11

TOPIC TAGS: elastic stress, elastic deformation, successive approximation

ABSTRACT: Relationships are established between the stresses and strains in a two-dimensional deformation of an elastic body, the material of which deviates slightly from Hooke's law. The two-dimensional problem of the physically nonlinear elastic body is represented by complex potentials of the Kolosov-Muskhelishvili type, and the solution is sought by means of the method of successive approximations. The general formulas for a multiconnected and infinite region are examined. The problem of the concentration of stresses near a curvilinear opening in an infinite plane is considered; certain problems of the concentration of stresses near a circular and an elliptical opening are cited as examples. Orig. art. has: 5 figures. [JPRS]

SUB CODE: 20 / SUBM DATE: 26Nov64 / ORIG REF: 006

Card 1/1

001/009/0001/0013

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 4115-66

ACC NR: AP5024933

hole is reinforced by a thin, linearly elastic ring. The stress distribution and the coefficient of stress concentration K are determined for each problem, and the effect of the rigidity of the reinforcing ring is discussed. It is concluded that by varying the rigidity ratio between the reinforcing ring and plate, the stress concentration can be reduced by using a more elastic and flexible reinforcing element; therefore in problem (3), the stress concentration is almost eliminated (K = 1), whereas in problem (2) the coefficient K assumes considerable values. The association of the first and second approximations with the physical and geometric nonlinearities is briefly discussed. The authors point out the need to determine the third approximation for some simplest problems of stress concentration around holes with reinforced edges in order to be completely able to establish and evaluate the role of physical nonlinearity in these problems. Orig. art. has: 2 tables and 42 formulas. [VK]

SUB CODE: AS/ SUBM DATE: 23Apr65/ ORIG REF: 006/ OTH REF: 002/ ATD PRESS: 4121

Card 2/2

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 40756-65 EPR/EWA(h)/EWP(k)/EWT(d)/EWT(m)/EWA(d)/EWP(w)/EWP(v) Pf-4/Peb EM

ACCESSION NR: AP5006161 S/0258/65/005/001/0103/0109

28
B

AUTHOR: Guz', A. N.; Savin, G. N.

TITLE: Stressed state near curvilinear reinforced holes in shells

SOURCE: Inzhenernyy zhurnal, v. 5, no. 1, 1965, 103-109

TOPIC TAGS: shell structure, structure analysis, spherical shell structure, stress distribution

ABSTRACT: The article investigates the stressed state in shells near curvilinear holes reinforced by thin elastic rings (regarded as material filaments) that offer resistance to tension, flexure, and torsion. The general formulation of the problem is that of G. N. Savin (Problemy mekhaniki sploshnoy sredy [Problems of mechanics of a continuous medium], AN SSSR, 1961), and the boundary conditions are those written for this case by N. P. Fleyshman (Prikladna mekhanika v. 1, no. 1, 1961). The problem is solved by an approximate method proposed by the authors (Izv. AN SSSR, Otd. tekhn. n., Mekhanika i mashinostroyeniye, no. 6, 1964) for the investigation of the stressed state in shells weakened by curvilinear openings whose contours have no sharp corners. The case of a spherical shell loaded by

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 40756-65

ACCESSION NR: AP5006161

uniform internal pressure and weakened by an elliptic hole with small eccentricity, the edge of which is reinforced by an elastic ring, is considered in detail. It is shown that even small ellipticity of the hole (a/b = 1.2) exerts a strong influence on the stresses near the hole. At a distance of 1.5--2 radii, the stress and moment distribution is close to that near a circular hole, and approaches the main momentless stressed state with further increase in distance. With increasing rigidity of the supporting ring, the concentration of the stresses and of the moments increases on the end of the minor semiaxis and decreases on the end of the major semiaxis. Orig. art. has: 5 figures and 9 formulas.

ASSOCIATION: None

SUBMITTED: 09Apr64 ENCL: 00 SUB CODE: AS

NR REF SOV: 005 OTHER: 000

Card 2/2 mb

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

L 46137-66 EWT(m)/EWP(w)/EWP(v)/T/EWP(j) IJP(c) WW/EM/RM

ACC NR: AP6026739 SOURCE CODE: UR/0198/66/002/005/0005/0011

AUTHOR: Savin, G. N. (Kiev); Van Fo Fy, G. A. (Kiev)

ORG: Institute of Mechanics, AN UkrSSR (Institut mekhaniki AN UkrSSR)

TITLE: Stress distribution about an elliptical opening in a fiber plate

SOURCE: Prikladnaya mekhanika, v. 2, no. 5, 1966, 5-11

TOPIC TAGS: stress distribution, stress analysis, anisotropic medium

ABSTRACT: The stress distribution about a circular and an elliptical opening in a fiber glass reinforced plastic plate based on a epoxy-maleic binder was examined. The stress distribution was studied at varying angles to the orientation of the fiber in a system of Cartesian coordinates; the non-elastic properties of the polymer were taken into consideration. It was found that the stress concentration coefficient in a fiber glass plastic medium is a product of two coefficients: one coefficient defines the perturbations produced by an opening in an anisotropic viscoelastic body, the other coefficient defines the stress distribution in the structure of the composition material. To obtain an accurate picture, the fiber glass was not treated by finishing compounds which might have produced flexible films around the fibers. Using the Volterra principle, it was found that the redistribution of the actual stresses, in time,

Card 1/2

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

COUNTRY : RUMANIA
CATEGORY : Plant Diseases. Diseases of Cultivated Plants 0

APS. JOUR. : RZhBiol., No. 23 1958, No. 105037

AUTHOR : Savin Gh.
INST. : Valea Calugareasca Experiment Station
TITLE : Studies on the Prevention of Mildew at the Experiment Station of Viticulture of Valea Calugareasca.

ORIG. PUB. : Gradina, via si livada, 1958, 7, No. 6, 52-57

ABSTRACT : No abstract.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G.P.

25(1) b.r PHASE I BOOK EXPLOITATION SOV/2290

Moskovskiy dom nauchno-tekhnicheskoy progagandy imeni F.E. Dzerzhinskogo

Shtampovka vydavlivaniyem; proizvodstvennyy opyt (Impact Extrusion; Industrial Practice) Moscow, 1958. 37 p. (Series: Peredovoy opyt proizvodstva. Seriya "Tekhnologiya mashinostroyeniya," vyp. 8. Obrabotka metallov davleniyem) 4,000 copies printed.

Additional Sponsoring Agency: Obshchestvo po rasprostraneniye politicheskikh i nauchnykh znaniy RSFSR.

Ed.: A.V. Rebel'skiy; Tech. Ed.: R.A. Sukhareva.

PURPOSE: This booklet is intended for engineers and technicians occupied with problems of die forging, upsetting, and impact extrusion.

COVERAGE: The four articles of the booklet report on experience gained at four plants in the field of impact extrusion. No personalities are mentioned. There are no references.

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Kozlov, I.N. Die Forging and Impact Extrusion From Ball-shaped Blanks (Experience of the Pervyy gosudarstvennyy podshipnikovyy zavod [First State Bearing Plant]) 3

The advantages of using ball-shaped blanks for impact extrusion (hot or cold) of ring-and cup-shaped steel parts are stressed, and arrangement of dies, materials used and technique are discussed.

Savin, G.P. Fabrication of Automobile Engine Valves by Direct Impact Extrusion With a Single Blow (Experience of the Gor'kiy avtozavod [Gor'kiy Automobile Plant]) 19

The technique of the process and the dies and meterials used are described. The relationship between the speed of the ram and the speed of the flow of material is discussed.

Sokolov, N.L. Making Steel Forgings by Hot Impact Extrusion (Experience of the Moskovskiy zavod malolitrazhnykh avtomobiley [Moscow Small Automobile Plant]) 26

The impact extrusion technique for making small, medium, and large forgings and the design of dies are described. Sugges-



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SOV/2290

Impact Extrusion; Industrial Practice

tions are made for the further development of the process.

Kutsovskiy, F.V. Hot Impact Extrusion (Experience of the "Kalibr" Plant) 33

Hot impact extrusion of live center bodies and various types of inserts for gages are described. The use of lubricants is discussed.

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SOV/123-59-15-59397

Translation from: Referativnyy zhurnal. Mashinostroyeniye, 1959, Nr 15, p 77 (USSR)

AUTHOR: Savin, G.P.

TITLE: The Stamping of Automobile Valves by Hot Forging in Two Stages

PERIODICAL: Za tekhn. progress (Sovnarkhoz Gor'kovsk. ekon. adm. r-na), 1958, Nr 8-9 pp 20 - 23

ABSTRACT: The article has not been reviewed.

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SAVIN, G.P.

General overhauling of the factory electrical equipment without interrupting the production. Khim.volok. no.6:75-77 '59. (MIRA 13:5)

1. Klinskiy kombinat.
(Textile factories--Electric equipment)

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

ALEKSEYEV, A.S.; SAVIN, G.P.

Device for determining the duration of starting periods in the rythmical production of several articles by the use of the same equipment. Izv.vys.ucheb.zav.;radiofiz. 5 no.1:199-200 '62. (MIRA 15:5)

1. Nauchno-issledovatel'skiy fiziko-tekhnicheskiy institut pri Gor'kovskom universitete.
(Production control)
(Oscillometer)

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ACCESSION NR: AP3004679 S/0286/63/000/006/0049/0049

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AUTHOR: Simkin, A. B.; Shevchenko, G. I.; Kazy*mov, A.; Kolesnikov, N. N.; Kazakov, A. A.; Savin, G. P.

TITLE: Automatic temperature-regulating device. Class 42, No. 153622

SOURCE: Byul. izobret. i tovarny*kh znakov, no. 6, 1963, 49

TOPIC TAGS: automatic temperature regulation, temperature regulator, thyratron, temperature control

ABSTRACT: This automatic temperature-regulating device consists of temperature sensors, a multipoint regulating device, and thyratrons (e.g., semiconductor type) connected to the power circuit of the heating elements. To simplify the design without loss of accuracy, both the pulse transformer and choke coil are connected to the circuit which regulates the firing mode of the thyratrons. One field winding of the choke coil is connected to the regulating device, and two others are connected to the circuit for voltage fluctuation compensation in the network. Orig. art. has: 1 figure.

ASSOCIATION: none

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G.P.

Temperature conditions and calculation of the capacity of spinneret caps with electric heating. Khim. volok. no.3:24-29 '65. (MIRA 18:7)

1. Klinskiy kombinat iskusstvennogo i sinteticheskogo volokna.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

SAVIN, G.P.

Use of electrically heated spinning heads in the manufacture of kapron fibers. Khim.volok. no.1:33-37 '61. (MIRA 14:2)
(Nylon)

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

S/058/62/000/006/075/136
A061/A101

AUTHORS: Luca, Emil, Petrescu, V., Bărbulescu, D., Savin, Gh.

TITLE: A study of dielectric absorption and dispersion of the dielectric constant in barium ferrites with $Bi_2O_3$ addition

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 24, abstract 6E201 ("Bul. Inst. politehn. Iaşi," 1960, v. 6. no. 3-4, 239-244, Rumanian; Russian and French summaries)

TEXT: A study has been made of the change of $\varepsilon$ and $\tan\delta$ of barium ferrite with $Bi_2O_3$ addition in the frequency range from 30 cps to 10 Mc at temperatures from -65 to +150°C. Two zones of dispersion of $\varepsilon$ were detected: one below 30 cps and the other in the range from 500 kc to 5 Mc. A maximum of $\tan\delta$ was observed near 3 Mc. At this frequency $\varepsilon$ grows with temperature considerably.

[Abstracter's note: Complete translation]

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SAVIN, I.

Across Asia and Africa. Mast.ugl. 9 no.12:24-25 D '60.
(MIRA 13:12)

1. Sekretar' Sakahlinskogo obkoma profsoyuza rabochikh ugol'noy promyshlennosti.
(Asia--Description and travel)
(Africa--Description and travel)

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447330005-4

AUTHOR: Savin, I., Engineer 29-4-9/20

TITLE: Punching of Molten Steel (Shtampovka zhidkoy stali)

PERIODICAL: Tekhnika Molodezhi, 1958, Nr 4, pp. 17-18 (USSR)

ABSTRACT: Almost every machine has forged component parts. They constitute a substantial part - approximately 45% of the total weight of the machine. Approximately 35 million tons of forging ingots are produced every year for their manufacture. The whole material provided for the forging ingots must at present pass the stage of preliminary casting. Following the way which the metal has to cover from casting to the finished part, it turns out that 1 ton of steel bath yields only 100 kilograms of the finished product. 900 kilos from this are scrap (for remelting) and waste (loss by burning and scale). 1 500 000 tons of cast iron are consumed annually for the manufacture of ingot molds. The weight of the cast iron bottom plates for large ingots amounts to up to 40% of the weight of the ingot. The technologists found after long searching that component parts can be produced immediately from the steel bath. They developed a new process which requires very few investments and which is very simple. A high productivity will be obtained by using hydraulic forging presses. The yield of steel in finished parts amounts to approximately 90-95% of the weight of the liquid metal. The specific weight of Bessemer steel in solid

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state increases from 7.5 to 7.81 gr/cm$^3$. The working-time is shortened 15 times compared with the time required for punching from the rolled product. The time for casting and transporting is not taken into account in this case. The consumption of steel and fuel decreases more than 4 times. The structure of the pressed metal is distinguished by greater physical homogeneity than the cast, forged, or even rolled steel. The greater strength, elasticity, and resilience of the steel pressed during crystallization is explained by the fact that fewer layers are formed between the metal cores. The method of punching component parts from the steel bath can be successfully applied by all machine-building works which have aggegration (Siemens-Martin furnaces, electric furnaces, converters, etc.) for the preparation of steel baths at their disposal. There are 3 figures.

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Card 2/2 1. Steel-Forging 2. Steel-Processing

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