



"APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000101310001-4



APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000101310001-4"

BEGIN  
REEL  
#13

1. 7895-56 EWP(e)/EPA(s) ?/EWT(m)/SPF(o)/EWP(i)/EPA(w)-2/EWP(j)/T/EWP(t)/EWP(h)

ACC NO: AP0029134 EWA(h) // (o) IJP(o) SOURCE CODE: UR/0048/65/029/011/2113/2115

JD/EM/VN

AUTORS: Plushnikov, V.M.; Amirkhanov, Kh. Kh.; Sosenov, V. S.

ORIG: none

TITLE: Polarisation of ferroelectrics under the combined influence of static and alternating electric fields Report, Fourth All-Union Conference on Ferro-electricity held at Rostov-on-the Don 12-16 September 1964

SOURCE: AN LSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 11, 1965, 2113-2115

TOPIC TAGS: ferroelectric material, ceramic material, single crystal, dielectric constant, nonlinear effect, harmonic analysis, electric field, dielectric amplifier, harmonic oscillator

ABSTRACT: Capacitors with dielectrics of VK-4M Varikon ferroelectric ceramic, mono-crystalline lamellar bismuth titanate, or triglycine sulfate were excited at 50 cycle/sec in the presence of a dc bias up to 200 V and the currents through them were analyzed with a harmonic analyzer. The results are presented as curves showing the amplitudes of various harmonics of the current (up to the ninth) as functions of the applied ac voltage for different values of the dc bias. The three materials gave qualitatively similar results, the nonlinearity being greatest for triglycine sulfate. With zero dc bias no even harmonics of the current were present and the amplitudes of

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L 7842-66

A/C NR: AP5028134

the odd harmonics increased monotonically toward saturation with increasing ac voltage. The lamellar bismuth titanate produced strong high harmonics and this material may find application in the design of frequency multipliers. Application of a dc bias caused the appearance of even harmonics, shifted the characteristic curves toward higher ac voltages, and produced maxima in the harmonics of the current higher than the first at moderate (100-200 V) ac voltages. The negative resistance due to these maxima may find application in the design of special purpose amplifiers and oscillators. For the Varikond, the third harmonic of the current varied more rapidly with the bias than the fundamental, and the fifth harmonic varied more rapidly than the third, higher gains can therefore be obtained with dielectric amplifiers by using higher harmonics. Of the three materials, the lamellar bismuth titanate had the best nonlinearity and temperature stability characteristics, but it also had the highest ferroelectric hardness and losses. The Varikond appeared to be the most advantageous material of those investigated, although its temperature range and nonlinearity were less than those of lamellar bismuth titanate. Orig. art. has: 4 figures.

SUB CODE: 88, EM, B)

SUBM DATE: 00/

ORIG. REF: 000

OTH REF: 000

Card 3/3

SUKHNEV, G.S.; AMIRKHANOV, I.S.

Modification of some units of the AGKS-55/59 gas logging station. Razved.  
geofiz. no. 175-79 '64. (MIRA 18:7)

AMIRKHANOV, L.S.

Automatic vacuum-electric servosystem for regulating the flow of a gas-air mixture. Rasved. geofis. no.1:92-94 '64. (MIRA 18:7)

AMIRAHANOV, N-Sh.I.

[Possibilities of using Upper Sarmatian limestones of the Tarkitan in asphalt-concrete (hot) mixes] Issledovanie  
vozmozhnosti ispol'zovaniia verkhnesarmatskikh izvestniakov  
gory Tarki-tau v asfal'tobetonnykh (goriachikh) smesiakh.  
Makhachkala, Dages:anskii gos. univ. im. V.I.Lenina, 1963.  
13 p. (MIRA 17:7)



AMIRKHANOV, N.A.

Collwort. Priroda 51 no.1:116-117 Ja '62.

(MIRA 15:1)

1. Uzbekskiy gosudarstvennyy universitet, Samarkand.  
(Uzbekistan--Crambe)

AMIRKHANOV, N.A.

Sea kale *Crambe Kotschyana* Boiss., a forage plant. Uzb.  
biol. zhur, 7 no.5:56-59 '63. (MIFA 18:11)

1. Samarkandskiy gosudarstvennyy universitet.

AMIRKHANOV, N. A.

Dissertation defended in the Botanical Institute imeni V. L. Komarov  
for the academic degree of Candidate of Biological Sciences:

"Kocha Kale, Biology and Experience in Bringing It Under Cultivation  
Under Samarakandskaya Oblast Conditions."

Vestnik Akad Nauk No 4, 1963, pp. 119-145

AMITEKHANOV, N. S. ; V. I. I.

Characteristics of the growth of the population of the  
Kochelovskaya Prison in multi-year periods. K. S. M. S. S.  
no. 6-857-885 To 194.

1. Samarkandskiy gosudarstvennyy universitet.

(IRA 1/1/19)

EGAMBERDYEV, M.; AMIRKHANOV, Sh.Kh.

Phosphorus potential of Cretaceous sediments in the southwestern  
spurs of the Gissar Range. Uzb.geol.zhur. 6 no.1:67-71 '62.  
(MIRA 15:4)

1. AN UeSSR.

(Gissar Range--Phosphorus)

AMISKHANOV, Sh.Kh.

Characteristics of Jurassic sediments of the southwestern spurs  
of the Gissar Range based on spectrum analysis data. Dokl. AN  
Uz. SSR 20 no.1:32-35 '63. (MIRA 16:6)

1. Institut geologii i razrabotki neftyanykh i gazovykh mestorozhdeniy  
AN Uzbekskoy SSR. Predstavleno chlenom-korrespondentom AN  
Uzbekskoy SSR A.M.Akrankhodzhayevym.  
(Gissar Range--Sediment: (Geology)--Analysis)

AMIRKHANOV, Sh.Kh.; EGAMBERDYEV, M.

Distribution of some chemical elements in Cretaceous sediments  
in the southwestern spurs of the Gissar Range and their corre-  
lative value. Vop. geol. Uzb. no.3:83-96 '62.

(MIRA 16:6)

(Gissar Range region—Rocks, Sedimentary—Analysis)

AKRAMKHODZHAYEV, A.M.; AMIRKHANOV, Sh.Kh.; ALAVUTDINOV, P.;  
MIRZADZHANOV, T.

Quantity and distribution of scattered hydrocarbons in  
sedimentary rocks. Dokl. AN UzSSR. 21 no.3:35-38 '64.  
(MIRA 19:1)

1. Institut geologii i razrabotki neftyanykh i gazovykh  
mestorozhdeniy AN UzSSR. 2. Chlen-korrespondent AN UzSSR  
(for Akramkhodzhayev). Submitted October 10, 1963.



AKRAMKHODZHAYEV, A.M.; AMIRKHANOV, Sh.Kh.; LAVUTDINOV, D.

Using mass-spectrometric analysis in petroleum geology.  
Usb. geol. zhur. 7 no.3:70-75 '63. (MIRA 16:11)

1. Institut geologii i razrabotki neftyanykh i gazovykh  
mestorozhdeniy AN Uzbekskoy SSR.

*Amirkhanov, Ye.L.*

ROYTMAN, Ye.A., kand.med.; AMIRKHANOV, Ye.L.; ZOLOTUKHIN, V.A.

Apparatus for moist disinfection with compressed air and its advantages [with summary in English]. Gig. i san. 22 no.5:50-55  
My '57. (MIRA 10:10)

1. Iz doroshnoy sanitarno-epidemiologicheskoy stantsii Stalinskoy zheleznoy dorogi.

(ANTISEPSIS AND ASEPSIS, apparatus and instruments,  
moist disinfect. with compressed air (Rus))

2001b

S/081/61/000/002/001/023  
A005/A105

24,7600 (1043, 1158, 1143)

Translation from: Referativnyy zhurnal, Khimiya, 1961, No. 2, p. 35, # 2B233

AUTHOR: Amirkhanova, D.Kh.

TITLE: The Thermo- and Galvano-Magnetic Effects in Indium Antimonide

PERIODICAL: Izv. AN AzerbSSR. Ser. fiz.-matem. i tekhn. n., 1960, No. 1, pp.  
45 - 56 (Azerb. summary)

TEXT: The longitudinal and transverse Nernst - Etingshausen effects (the variation of the thermo-e.m.f. in the magnetic field), the galvanomagnetic effects ( $\Delta\rho/\rho$ ), the Hall effect (R), and the electrical conductivity in single crystals of InSb p- and n-type were investigated at 77 - 400°K and magnetic fields (H) up to 26,000 oersted. A sharp decrease of  $\Delta\rho/\rho$  is observed at 77°K with an increase in H from 300 to 5,000 oersted. The observed dependences of R and  $\Delta\rho/\rho$  on H at < 200°K are explained on the basis of the two-hole model according to which the valence zone of p-InSb contains two types of holes: light holes ( $P_1$  - concentration) defining the effects in weak H, and heavy holes ( $P_2$  - concentration). For

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S/081/61/000/002/001/023  
A005/A105

The Thermo- and Galvano-Magnetic Effects in Indium Antimonide

77°K, the ratio  $P_1/P_2$  is  $< 1$  and decreases with increasing temperature. In the conductivity zone  $n = \text{InSb}$ , only one type of carriers exists with  $m^* = 0.015 m$ .

I. Magidsov

Translator's note: This is the full translation of the original Russian abstract.

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81627  
S/181/60/002/06/15/050  
B122/B063

24:7600

AUTHOR: Amirkhanova, D. Kh.TITLE: Thermomagnetic Properties of Gallium Antimonide

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 6, pp. 1125 - 1127

TEXT: The Nernst-Ettinghausen (N-E) effects, which had hitherto not been examined, were measured by the author on five p-type specimens of GaSb. Results are graphically represented in Figs. 1 and 2. A magnetic field of more than 27 koe was necessary for the measurements. The N-E effects of all specimens had negative signs between 100 and 900°K. The perpendicular N-E effect  $Q_{\perp}(T)$  found at high temperatures was composed of mixed and intrinsic conductivity. The author derived formulas for  $Q$  for the regions of mixed and intrinsic conductivity: (1) and (2). Proceeding from the lattice scattering at 700°K, the author calculated  $Q$  for a homeopolar crystal lattice  $r = 0$  and for an ion lattice  $r = 2$ , and compared the resulting values with experimental data. The theoretical values  $Q = 0.135$  CGSM ( $r = 0$ ) and  $Q = 0.27$  CGSM ( $r = 2$ ) and the experimental value  $Q = 0.15$  CGSM show that

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Amir Khanova, D. Kh.

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S/181/60/002/007/033/042  
B006/B060

24.9600

AUTHORS: Amirkhanova, D. Kh., Bashirov, R. I.

TITLE: The Effect of a Magnetic Field<sup>21</sup> on the Thermal Conductivity of Indium Antimonide <sup>21</sup>

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 7, pp. 1597-1607 ✓

TEXT: The authors studied the effect of a magnetic field on the thermal conductivity of five indium antimonide specimens in the range of 20-500°K. A decrease of thermal conductivity due to the magnetic field is known for metals, but is only little investigated for semiconductors. The authors wanted to obtain data in the range of greater field strengths and to compare them with theoretical results. In order to attain large uH values, the authors made use of fields up to 30,000 oersteds and specimens with an electron mobility of  $\mu = 10^4$  cm<sup>2</sup>/v.sec. Also the temperature dependence of thermal conductivity was measured for some of the specimens. The first part of the paper describes the method of measurement and the apparatus (Fig. 1) in detail. Results are illustrated by diagrams. Fig. 2 shows the

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The Effect of a Magnetic Field on the Thermal Conductivity of Indium Antimonide

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S/181/60/002/007/033/042  
B006/B060

electrical conductivity as a temperature function, and Fig. 3 the Hall constant as temperature function. The numbers near the curves (which exhibit very different courses) denote the various specimens used. Nos. 2a, 3, and 14 were n-type InSb, 1-2 and 1-3 were p-type. In the purer specimens 1-2, 2a, and 3 the range of intrinsic conductivity was above 300°K, which may be seen both from  $\log \sigma(10^3/T)$  (Fig. 2) and from  $\log R(10^3/T)$  (Fig. 3). Specimen No. 14 showed impurity conduction up to 500°K, its specific electrical conductivity attained the value 2000 ohm<sup>-1</sup>cm<sup>-1</sup>. The effect of the magnetic field on the thermal conductivity

$\frac{\Delta \kappa}{\kappa} (H^2)$  is illustrated in Figs. 4 and 5. Fig. 6 shows  $\frac{\Delta \kappa}{\kappa} (T)$  and Fig. 7

the variation in thermal conductivity with the temperature in the range 20 - 700°K.  $\kappa_{\text{lattice}} = f(T)$  and the same in logarithmic coordinates. For weak fields a quadratic function  $\frac{\Delta \kappa}{\kappa} = f(H^2)$  is predicted theoretically.

As can be seen from Fig. 4,  $\frac{\Delta \kappa}{\kappa} \sim \left(\frac{uH}{c_0}\right)^2$  is fulfilled only in the lower region, while at  $H > 6000$  oe,  $\frac{\Delta \kappa}{\kappa}$  tends toward saturation. It follows

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The Effect of a Magnetic Field on the Thermal  
Conductivity of Indium Antimonide

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from the theory of strong fields that with growing  $\omega H$  the ratio  $\frac{\Delta \kappa}{\kappa}$  tends to unity. It follows indeed from formula (5), which describes the thermal conductivity in the magnetic field, and from the assumption of carrier scattering through lattice vibrations, that if  $\frac{\omega H}{c} \rightarrow \infty$ , and  $\frac{\Delta \kappa}{\kappa} \rightarrow 1$  and the specimens Nos. 3, 3a, and 1-2 showed saturation of  $\frac{\Delta \kappa}{\kappa}$  at  $H > 16,000$  oe. The behavior of the various specimens in the various temperature ranges is described in detail. The table of p. 1604 gives several numerical data. Calculations were also made of electron contributions to the thermal conductivity  $\kappa_{el}/\kappa$  calculated according to the Wiedemann-Franz law and the formula by Davydov-Shmushkevich, which takes account of the heat transfer due to electron and hole diffusion as well as diffusion and recombination of electron-hole pairs.

$\frac{\Delta \kappa}{\kappa} < \frac{\kappa_{el}}{\kappa}$  at all temperatures. In the range of 86 - 300°K  $\frac{\Delta \kappa}{\kappa} \sim T^{1.85}$ .

Pure InSb specimens at low temperatures did not reveal any influence of the field on thermal conductivity, which fact is ascribed to low

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The Effect of a Magnetic Field on the Thermal  
Conductivity of Indium Antimonide

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B006/B060

$\frac{\kappa_{el}}{\kappa}$ . The heat transfer in the range 20 - 700°K is mainly due to lattice vibrations (phonon-phonon processes). At 400°K  $\frac{\kappa_{el}}{\kappa}$  starts growing important and attains 5 - 10%. The authors finally thank Kh. I. Amirkhanov and G. B. Abdullayev for their interest and useful advice. There are 7 figures, 1 table, and 11 references: 4 Soviet, 4 US, 2 British, 1 Dutch, and 1 Italian. ✓

ASSOCIATION: Institut fiziki Dagestanskogo filiala AN SSSR  
(Institute of Physics of the Dagestan Branch of the AS USSR)

SUBMITTED: June 23, 1959

Card 4/4

<sup>kh</sup>  
AMIRKHANOVA, D., BASHIROV, R. I.

Heat conductivity of indium antimonide in a magnetic field. Dokl.  
AN Azerb. SSR 16 no.2:121-125 '60. (MIRA 13:8)

1. Institut matematiki AN AzerSSR. Predstavleno akademikom  
AN Azerbaydzhanskoy SSR Kh. I. Amirkhanovym.  
(Indium antimonide--Thermal properties)

AMIRKHANOVA, D. KH., CAND PHYS-MATH SCI, "THERMOMAGNETIC  
PROPERTIES OF ANTIMONIDES OF INDIUM AND GALLIUM." BAKU,  
PUBLISHING HOUSE OF ACAD SCI AZSSR, 1961. (ACAD SCI AZSSR,  
AZERBAYDZHAN STATE UNIV. IM S. M. KIROV). (KL, 3-61, 202).

20792

S/181/61/003/003/018/030  
B102/B205

Nernst-Ettinghausen ...

the cyclotron frequency; the effective mass for n-type InSb is  $m^* = 0.015 m_0$  ( $m_0$  - free electron mass). A study has now been made of the dependence of  $\epsilon_y$  on  $H$  for  $\hbar\omega_0 > kT$ . The two n-type InSb specimens studied here yielded the same results: At  $77^\circ\text{K}$  and  $6000$  oe, the specimens had an impurity carrier concentration of  $n = 1.25 \cdot 10^{16} \text{ cm}^{-3}$  and  $R\sigma = 6 \cdot 10^4 \text{ cm}^2/\text{v}\cdot\text{sec}$ . A figure illustrates the measurement of the transverse Nernst-Ettinghausen effect. Whereas, according to (1),  $\epsilon_y \sim H^{-1}$  was expected for  $H > 10^4$  oe,  $\epsilon_y \sim H^{0.2}$  at  $117^\circ\text{K}$  and  $\epsilon_y \sim H^{0.5}$  at  $30^\circ\text{K}$ .  $\epsilon_y \sim H^0$  had been observed already earlier at  $100^\circ\text{K}$ . The mobility calculated from  $uH/c = 1$  was found to be  $40,000 \text{ cm}^2/\text{v}\cdot\text{sec}$  in accordance with the Hall mobility. The increase in  $\epsilon_y$  with increasing  $H$  (over  $10^4$  oe) is undoubtedly related to orbital quantization of the carrier motion in the magnetic field. It was really found that  $\hbar\omega_0/kT > 3$  if  $H > 10^4$  oe. Thus, the curve  $\epsilon_y(H)$  consists of two sections: a classical and a quantum-theoretical section. The quantum effects undoubtedly influence the Nernst-Ettinghausen field also at  $117^\circ\text{K}$ . Here,  $\hbar\omega_0/kT > 1$  for

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S/181/61/003/003/018/030  
B102/B205

Nernst-Ettinghausen ...

$H > 13,000$  oe. In the range of  $30-117^{\circ}\text{K}$ ,  $\xi_y \sim T^{1.25}$  for  $H = 2 \cdot 10^4$  oe. Also this fact cannot be explained by (1). The course of the  $\xi_y(T)$  curve indicates that the specimen was degenerate. In view of this fact, one obtains  $\xi_y = K_2(\mu^*)(uH/c)^{-1}$  instead of (1). Here,  $K_2(\mu^*)$  is a function depending on the scattering mechanism and the reduced chemical potential ( $\mu^* = \mu/kT$ ); on a change from  $117^{\circ}\text{K}$  to  $30^{\circ}\text{K}$ ,  $\mu^*$  changes from  $-0.5$  to  $+5$ , and  $K_2(\mu^*)$  drops to one-third of its value. A decrease of the Nernst-Ettinghausen field to one-fifth of its value on a change from  $117$  to  $30^{\circ}\text{K}$  could be observed by the present authors and was ascribed to the effect of quantization. The transverse magnetic resistivity  $\Delta\rho/\rho_0$  increases at  $77$  and  $20^{\circ}\text{K}$  with increasing  $H$ , without tending toward saturation. This observation was also ascribed to a quantum effect. Professor Kh. I. Amirkhanov is thanked for suggesting the topic and for discussions. This is the reproduction of a report held at the Conference on Low-temperature Physics, Khar'kov, June 23-28, 1960. There are 1 figure and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc.

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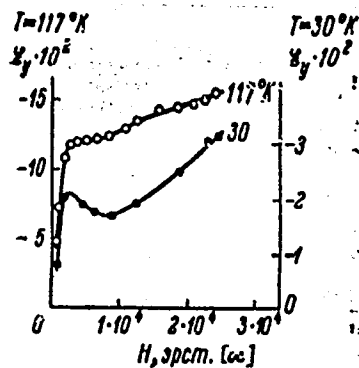
20792

S/181/61/003/003/018/030  
B102/B205

Nernst-Ettinghausen ...

ASSOCIATION: Dagestanskiy filial AN SSSR Makhachkala (Dagestan Branch of the AS USSR, Makhachkala)

SUBMITTED: July 25, 1960



Card 4/4

AMIRKHANOVA, D.Kh.; BASHIROV, R.I.

Phenon entrainment in indium and gallium antimonides. Izv. AN  
Azerb. SSR. Ser. fiz.-mat. i tekhn. nauk ~~1965~~ '63. (MIRA 17:3)

AMIRKHANOVA, G. F.

Amirkhanova, G. F.

"The problem of sanitary conditions for the release of the waste waters from gas and oil shale production into water reservoirs." Min Health RSFSR. Leningrad Sanitary-Hygiene Medical Inst. Leningrad, 1956. (Dissertation for the degree of Candidate in Sciences).

Knizhnaya letopis  
No. 15, 1956. Moscow



AMIRKIANOVA, G.P., transl. and mark

Sanitary requirements for the discharge of effluents from gas-shale plants into natural waters. (Fig. 1 and 22 no. 1-27 My '57. (MIRA 10:10)

1. In kofedny kormozhnyy sigitnyy Leningradskogo santonno-sigitechnicheskogo politehnicheskogo instituta.

(GZVAKB, discharge from gas-shale indust. into water streams (Rus.))

(KAZHAY & POKH, discharge of effluents from gas-shale indust. into water streams (Rus.))

Evaporation coefficient... 1965

Evaporation coefficients were determined by measuring the increase in pressure by evaporation of the substance in a closed system. The apparatus consisted of an evaporation vessel with a pressure gauge, a stopcock, a thermometer, and a Dewar flask, all placed in a vacuum chamber. The basis of the evaporation coefficient of a substance is the ratio of the mass of the substance evaporated to the mass of the substance remaining. After evacuation to 10<sup>-5</sup> mm Hg, the apparatus was purged with the gas studied; then the substance was condensed. After establishing a pressure equilibrium, the pressure was quickly reduced with a syphon and the subsequent pressure increase due to the evaporation of the liquid

Evaporation coefficients of liquid ...

S/020/63/149/001/014/023  
B144/B186

studied was recorded. With the same apparatus the condensation coefficients of liquids can be measured if the initial pressure in the evaporating vessel is adjusted so that it exceeds the equilibrium pressure. It is asserted that this was done for the first time. The evaporation and condensation coefficients were calculated from the measurements using the formula of L. Bogdandy et al. (Zs. Elektrochem. 59, 460 (1955)) and compared in the case of  $C_2H_5OH$  with previous results. For  $BF_3$  and  $BCl_3$  the evaporation and condensation coefficients were almost consistent. Further theoretical and experimental research should clear up why the values found are so low. There are 2 figures and 1 table.

PRESENTED: October 27, 1962, by N. N. Zhavoronkov, Academician

SUBMITTED: June 27, 1962

Card 2/2

AMIRKHANOVA, I.B.; BORISOV, A.V.; OVerDTSITELI, I.O.; KUCHEROV, R.Ya.

Possible reason for divergence in the results of measurements of the ratios of isotope vapor pressures at equilibrium as shown by the differential and Rayleigh methods. Dokl. AN SSSR 149 no.2: 351-352 Apr '69. (MIRA 16:3)

1. Fiziko-tekhnicheskiy institut AN GrusSSR. Predstavleno akademikom N.M. Zhavoronkovym.  
(Isotope separation) (Vapor pressure)

L 4450-66

EWP(e)/EWT(m)/EWP(c)/EWP(A)/EWP(t)/EWP(b)

DIAAP/IJP(c)

JD/JW/DM

ACC NR: AF5028435

SOURCE CODE: UR/0089/65/019/001/0020/0024

AUTHOR: Andrkhanova, I. B.; Borisov, A. V.; Gverdtsiteli, I. G.; Karamyan, A. T.

ORG: none

TITLE: Relative difference of vapor pressure in sup 11 BF sub 3 - sup 10 BF sub 3.

SOURCE: Atomnaya energiya, v. 19, no. 1, 1965, 20-24

TOPIC TAGS: differential calculus, vapor pressure, difference method, solution property, radioisotope, boron, fluoride, radiation chemistry

ABSTRACT: The relative differences of vapor pressures of the isotopic molecules  $^{11}\text{BF}_3$  and  $^{10}\text{BF}_3$  at temperatures of 147 to 247.7°K were measured by a differential method. The coefficient of enrichment is reduced from  $20 \times 10^{-3}$  (147.0°K) to  $1.1 \times 10^{-3}$  (247.7°K). Within the limits of error of the experiment (2 to 4%), the liquids of the  $^{11}\text{BF}_3$ - $^{10}\text{BF}_3$  solutions are ideal. In the measured interval of temperatures corrections to the coefficient of enrichment associated with the nonideality of the gas phase are calculated. Data obtained in the presence of other parameters of the process of fractionation of  $\text{BF}_3$  (the height of the theoretical plate, the throughput of the adapter, etc.) allow the efficiency of the process of separation of  $^{11}\text{BF}_3$  and  $^{10}\text{BF}_3$  at various pressures to be calculated. G. L. Kakuliya participated in taking the measurements. The mass spectrometer measurements were made by L. I. Chernovaya under the direction of K. G. Orizhonikidze. The authors express thanks to Yu. V. Nikolayev.

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UDC: 621.039.332/546.27

L 4450-ES

ACC NR: AP5028435

V. V. Boyko, and N. Ye. Menabde for participation in discussion of the work. Orig. art. has: 4 figures, 4 formulas. [NA]

SUB CODE: NP, TD, GC, MA / SUBM DATE: 01Jul64 / ORIG REF: 008 / OTH REF: 003

PC  
Card 2/2

NIKITINA, Ye.T.; ISABAYEVA, M.K.; AMIRKHANOVA, L.

Volatile antibiotics from four fungus species of the genus Trichoderma. Trudy Inst,mikrobiol.i virus.AN Kazkah.SSR 6:48-52 '62.  
(MIRA 15:8)

(TRICHODERMA) (ANTIBIOTICS)

AMIRKHANOV, N.A.; SOLAPOV, N.S.

Introducing *Cranbe kotschyana* Boiss into cultivation. *Biul.Glav.*  
bot.sad no.52:32-34 '64. (*MIRA* 17:4)

1. Samarkandskiy gosudarstvennyy universitet imeni Alishera Navoi.

AMIRKHANOVA, N. G. — Cand. Chem. Sci.

Dissertation: "Investigation of the Chemical Nature of the Solid Hydrocarbones of Fergana Ceresin." Inst of Mineral Fuels, Acad Sci USSR, 4 Nov 47.

SO: Vechernyaya Moskva, Nov, 1947 (Project #17836)



AMIRKHANOVA, N. G.

Chemical Abst.  
Vol. 48  
Apr. 10, 1954  
Petroleum, Lubricants, and Asphalt

(4)  
Structure of hydrocarbons of ceresin. Verghana ozokerite. S. S. Namchin, N. G. Amirkhanova, and S. S. Nilontova. *Trudy Akad. Nauk S.S.S.R.* No. 1, 130-44 (1949).—Ozokerite from the Verghana Valley (Central Asia) was purified, and four 5-degree fractions were obtained from benzene soln. Detn. of phys. consts. indicated that ceresin, regardless of source, had a higher sp. gr., mol. wt., coeff. of refraction, and viscosity than paraffins of similar m.p. Nitration of fraction contg. 63% of ceresin and m. 69° yielded nitro compds. of tertiary nature, also a small am't. of nitro compds. of a N-contg. substance, the nature of which was not definitely established.  
B. Z. Kamleh

7-16-54

ROBINZON, Ye.A.; GRISHINA, O.N.; MUKHAMEDOVA, L.A.; URMANGHEYEV, F.A.;  
IZMAYLOV, R.I.; BONCHER, L.Ye.; KASHAYEV, S.-Kh.G.; AMIRKHANOVA,  
N.G.; GONIK, V.K.; BAYBUROVA, M.Kh.; NECHAYEVA, M.A.

Petroleum of the Tatar A.S.S.R. Izv.Kazan.fil.AN SSSR.Ser.khim.  
nauk no.4:93-113 '57. (MIRA 12:5)  
(Tatar A.S.S.R.--Petroleum)

15.4100

17548  
SOV/65-60-2-8/15

AUTHORS: Amirkhanova, N. G., Virobyants, R. A., Martynov, A. A.,  
Nechayeva, M. A.

TITLE: Structural Analysis of Kerosene of Bavly (Tatar ASSR)  
Petroleum

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1960, Nr 2, pp  
38-43 (USSR)

ABSTRACT: The kerosene fraction (180-320°) was obtained from petroleum rich in sulfur compounds by distillation under vacuum (10-12 mm). Chromatography, rectification, and urea dewaxing were used to separate the kerosene fraction into its structural groups. All chromatographic fractions were classed into six structural groups according to their refraction index. They were further subjected to rectification and dewaxing. The results of the analysis of the kerosene fraction of Bavly petroleum with respect to its structural components are given below.

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Structural Analysis of Kerosene of Bavly  
(Tatar ASSR) Petroleum

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SOV/65-60-2-8/15

<u>Name of group</u>	<u>The amount present in kerosene fraction (in %)</u>
Normal paraffins	15
Isoparaffins	23
Monocyclic naphthenes	12
Bicyclic naphthenes, including polycyclic	13
Monocyclic aromatic hydrocarbons	13
Bicyclic hydrocarbons, including polycyclic	3
Aromatic sulfides	3
Cyclic sulfides (mono-, bi-, and tricyclic thiophanes)	3
Tarry residue	1.4

Card 2/4

Structural Analysis of Kerosene of Bavly  
(Tatar ASSR) Petroleum

77548

SOV/65-60-2-8/15

(Continued from card 2/4 .

Uninvestigated hydrocarbons	1.5
Residue from distillations	2
Losses	<u>10.1</u>
Total	100

Aromatic sulfides and thiophanes (about 1:1) comprise more than 7.5% of the kerosene fraction from Bavly petroleum. The kerosene fraction investigated is characterized by a high percentage of monocyclic aromatic hydrocarbons, a small amount of bicyclic aromatic hydrocarbons, and a comparatively large amount of thiophanes. There are 2 figures; and 16 references, 14 Soviet, 2 U.S. The 2 U.S. references are: Mair, B. J., Marenlaitis, W. J., Rossini, F. D., Anal. Chem.,

Card 3/4

VIROBYANTS, R.A.; AMIRKHANOVA, N.G.; MARTYNOV, A.A.; NECHAYEVA, M.A.;  
GONIK, V.K.

Chemical composition of Bavly petroleum kerosines. Izv. Kazan. fil.  
AN SSSR. Ser. khim. nauk no. 6:101-115 '61. (MIRA 16:5)  
(Bavly region--Petroleum--Analysis) (Kerosine)

S/081/62/000/006/068/117  
B149/B108

AUTHORS: Virobyants, R. A., Nechayeva, M. N., Rusetskaya, G. M.,  
Gonik, V. K., Amirkhanova, N. G.

TITLE: Sulfur and organic sulfur compounds in the kerosene and  
solar oil fractions of petroleum from the Tatarskaya ASSR

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1962, 527, abstract  
6M134 (Sb. "Khimiya serraorgan. soyedineniy, soderzhashchikhsya  
v neftiyakh i nefteproduktakh. v. 4", M. Gostoptekhizdat,  
1961, 113 - 120)

TEXT: The content and nature of organic sulfur compounds (SC) in the  
kerosene and solar oil fractions of petroleum in the carbonaceous  
Bavlinskoye deposits and in the Devonian deposits ( $D_I - D_{II}$ ) in the  
Minnibayevo area of the Romashkino deposits were determined. The SC were  
isolated chromatographically on silica gel and  $Al_2O_3$  with subsequent  
elution with petroleum ether,  $CCl_4$ , benzene, and ethanol. The sulfur  
content in the isolated fractions was determined and their ring structure  
Card 1/2

Sulfur and organic sulfur compounds ...

S/081/62/000/006/068/117  
B149/B108

calculated from specific dispersion and molecular weight data by the Martin and Zankin method. The structural groups isolated from the Bav-linskoye kerosene were vacuum-fractionated with collection of 5% by volume. Chromatographing of the SC concentrate on  $Al_2O_3$  made it possible to isolate fractions with  $n_D^{20}$  1.49 - 1.52 and  $d_4^{20}$  0.93 - 0.97, sulfur content 13.8 - 11.7%, which corresponds to 70 - 80% of SC. The SC content of the kerosene-solar oil fractions of Devonian petroleum deposits varies from 2 to 15% and of carbonaceous deposits from 7.5 to 22%. The SC concentrates isolated from the kerosene-solar oil fractions are of two types: one corresponds to aromatic sulfides (I), the other to thiophanes (II). The ratio of I to II in Devonian petroleum is about 6:1 and in carbonaceous petroleum about 1:1. [Abstracter's note: Complete translation.]

Card 2/2



AMIRKHANOVA, R. G.

AMIRKHANOVA, R. G. — "Sanitary-Hygienic Evaluation of Dwellings with Light Wall-Construction. (Walls of Hollow Slag Concrete Blocks, Silicate Brick Pit Kolodtsov Masonry of the S. A. Vlasov System, and Silicate Walls Two Bricks Thick)." Min Public Health RSFSR, Leningrad Sanitary Hygienic Med Inst, Leningrad, 1955. (Dissertation For the Degree of Candidate in Medical Sciences).

SO: Knishnaya letopis', No. 37, 3 September 1955

AMIRKHANOVA, R.G.

Hygienic characteristics of natural ultraviolet irradiation in  
Sverdlovsk. Gig.i san. 26 no.12:86-87 D '61. (MIRA 15:9)

1. Iz Sverdlovskogo gosudarstvennogo meditsinskogo instituta.  
(SVERDLOVSK--ULTRAVIOLET RAYS)

AMIRKHANOVA, R.G.

Biological evaluation of ultraviolet solar radiation in a  
large city. (erythemic effect). Vop.kur., fizioter. i lech.  
fiz. kul't. 28 no.2:139-142 Mr-Apr'63. (MIRA 16:9)

1. Iz Sverdlovskogo meditsinskogo instituta (rukovoditel'  
raboty - prof. V.S.Serebrennikov [deceased])  
(ULTRAVIOLET RAYS--PHYSIOLOGICAL EFFECT)  
(ERYTHEMA)

# A M I R K H A N O U G S H I K I

28 (9)  
ABSTRACT

Gegeshvili, E. M., Perinaova, T. M.,  
Voskovitsky, E. M., Ouzguyev, V. F., Kozlov, I. A.,  
Smyshlakov, A. S., Gullabidze, M. P., Podan, G. A., Kozlov,  
N. A., Zhukovskaya, E. F., Subbotko, E. A., Karambura, T. V.,  
Tikhon, I. G., ANALIZ SPECTRA

How to find

Laboratory ANALIZ SPECTRA, Vol. 25, No. 6, pp. 981-985 (USSR)

1) The authors determined the impurities of Si, Fe, Al, Mn, Mg, Cu, Co, Ni, Pb, Sn, and Ba in titanium dioxide with a sensitivity of  $10^{-4}$ - $10^{-5}$ % by means of a bromate from the sample mixed with carbon powder (Si) in the method of wetting of the electrode type "anode". The spectrophotometer SP-22 was used. The analytical results are listed. 2) The author reports on the application of a photoelectric device PM-1 for the rapid analysis of specimens from alloys for silicon dioxide (19-20%), sodium oxide (35-38%) and samples from (5-15%). There is a description of the operational method. 3) The Laboratory of the Plant Laboratory applies a spectrum method for the determination of titanium impurities (of an approximately 0.01% concentration) in aluminum

Good 1/A

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Good 2/A

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GOOD 1/A

С.Н. К.Н. Динамик

807/53-61-4-7/7

24(6)  
 AUTHOR: Chentsov, E.  
 TITLE: The Fifth All-Union Conference on the Physics of Low Temperatures (5-ye Vsesoyuznaya soubhazhnye po fizike niskikh temperatura)

PERIODICAL: Uspehi fizicheskikh nauk, 1959, Vol 67, Nr 4, PP 745-750 (USSR)

ABSTRACT: This Conference took place from October 27 to November 1 at Tbilisi; it was organized by the Odessa State University. The mathematical section was held at the Odessa State University. The mathematical section of the Academy of Sciences of the USSR, the Academy of Sciences of the Georgian SSR, the Academy of Sciences of the Azerbaijan SSR, and the Academy of Sciences of the Tadzhik SSR were also represented. The conference was attended by about 300 specialists from Tbilisi, Moscow, Kharkov, Kiev, Leningrad, Sverdlovsk, and other cities as well as by a number of young Chinese scientists at present working in the USSR. About 50 lectures were delivered which were divided according to research fields:

1. Helium Properties of Compounds of the Type  $AlX_3$  and  $Al_2X_6$ , and dealt with the phenomenon of the "photon wind" predicted by Curie; the investigation was carried out at the Magistanskii filial of USSR (Magadan branch, AS USSR).  
 2. Electron Spin Resonance (ESR) in the Polymers of the Type  $CH_2=CH-CH_2-CH_2-$  and  $CH_2=CH-CH_2-$  at low temperatures; P. L. Kapitza commented on this topic during the discussion.  
 3. Electron Spin Resonance (ESR) in the Polymers of the Type  $CH_2=CH-CH_2-$  and  $CH_2=CH-CH_2-$  at low temperatures; the method of low-temperature ESR was investigated by the methods of low-temperature ESR.  
 4. Electron Spin Resonance (ESR) in the Polymers of the Type  $CH_2=CH-CH_2-$  and  $CH_2=CH-CH_2-$  at low temperatures; the method of low-temperature ESR was investigated by the methods of low-temperature ESR.  
 5. Electron Spin Resonance (ESR) in the Polymers of the Type  $CH_2=CH-CH_2-$  and  $CH_2=CH-CH_2-$  at low temperatures; the method of low-temperature ESR was investigated by the methods of low-temperature ESR.  
 6. Electron Spin Resonance (ESR) in the Polymers of the Type  $CH_2=CH-CH_2-$  and  $CH_2=CH-CH_2-$  at low temperatures; the method of low-temperature ESR was investigated by the methods of low-temperature ESR.  
 7. Electron Spin Resonance (ESR) in the Polymers of the Type  $CH_2=CH-CH_2-$  and  $CH_2=CH-CH_2-$  at low temperatures; the method of low-temperature ESR was investigated by the methods of low-temperature ESR.  
 8. Electron Spin Resonance (ESR) in the Polymers of the Type  $CH_2=CH-CH_2-$  and  $CH_2=CH-CH_2-$  at low temperatures; the method of low-temperature ESR was investigated by the methods of low-temperature ESR.  
 9. Electron Spin Resonance (ESR) in the Polymers of the Type  $CH_2=CH-CH_2-$  and  $CH_2=CH-CH_2-$  at low temperatures; the method of low-temperature ESR was investigated by the methods of low-temperature ESR.  
 10. Electron Spin Resonance (ESR) in the Polymers of the Type  $CH_2=CH-CH_2-$  and  $CH_2=CH-CH_2-$  at low temperatures; the method of low-temperature ESR was investigated by the methods of low-temperature ESR.

Card 2/11

Card 10/11

*Bilibio*

AMIRKHANOVA, S. N.

(3)  
✓ Protein fractionation by successive precipitation. S. N. Amirkhanova and A. Kh. Amirkhanov (Bashkir Branch Acad. Sci. U.S.S.R., Ufa). *Biokhimiya* 19, 19-23(1954).  
A method is detailed for the successive pptn. of proteins from 3.5% soln. of uranyl nitrate. The protein-pptn. curves are identical with electrophoretic pptn. curves. The distribution of the uranyl nitrate in the pptd. protein fractions is studied by making use of the radioactive properties of the reagent. It serves as an indicator of the pptn. distribution of the proteins.  $\gamma$ -Globulins appear most reactive with uranyl nitrate. The method serves the same needs as the Tiselius (C.A. 32, 1728), and has the advantages of low cost, simplicity, rapidity, and nearer complete sepn. of the protein fractions. B. S. Levine

Amirichhona, T. B.

Determination of Nitrite in Insoluble Nitrites by the  
method of I. V. Lankov, N. A. Lankov, G. A. Saitov

Abstract: This paper describes a method for the determination of nitrite in insoluble nitrites by the method of I. V. Lankov, N. A. Lankov, G. A. Saitov.

(2)

POGGORNOVA, T.B. MIRMANOVA, T.B.

New anabasine azo compound as an analytical reagent. Nauch. trudy  
KashGU no.263. Khim. nauki no.13:77-80 '64.

(MIRA 18:8)



AMIRKHANOVA, T.B.; PODCORNova, V.S.; SHCHESTEROVA, I.P.

Photometric determination of vanadium with N-methylanabasine-*o*-azo-*o*-naphthol. Nauch.trudy VashGU no.263.  
Khim.zhurn no.3381-87 '64. (MIRA 18:8)

AMIRKHANYAN, A. M.

Automatic device for punching and cutting steel packing bands. Avt. trakt.  
prom., No. 3, 1952.

SO: MLRA. June 1952

AVAKYAN, V.A.; GUKASYAN, L.A.; AMIRKHANYAN, M.A.

Qualitative difference of the apical and basal ends of  
potato tubers. Izv. AN Arm. SSR. Biol. nauki 17 no.5:  
93-98 My '64. (MIRA 17:9)

MNDZHOYAN, A.L.; DIVANYAN, N.M.; AMIRKHANYAN, M.M.; TIMOSHENKO, V.A.

Isoindoline. Report No.1. Izv.AN Arm.SSR,Khim.nauki 15 no.1:95-100  
'62. (MJRA 15:7)

1. Institut tonkoy organicheskoy khimii AN Armyanskoy SSR.  
(Isoindoline)

AMIRKHANYAN, P.O.; TARAS'YANTS, R.B., kand.ekonom.nauk, dots., red.;  
TARAS'YANTS, R.B., red.; SERGEYEVA, A., tekhn. red.

[Relationships among state supply and Soviet trade organs]  
Vz'mootnosheniia organov gosnabzheniia i organov sovetskoi  
to.rgovli. Moskva, Mosk. in-t narodnogo khoz. im. G.V.Plekha-  
nova, 1961. 26 p. (MIRA 15:8)  
(Industrial procurement)

PKHRIKHYAN, Zh.A.; AMIRKHANYAN, S.S.

Conservation of Bone marrow for the purposes of transplantation in radiation lesions. Zhur. eksp. i klin. med. 3 no.4: 57-60 '63 (MIRA 16:12)

1. Institut gematologii i perelivaniya krovi Ministerstva zdravookhraneniya Armyanskoy SSR.

USSR / Meadow Cultivation.

L

Abs Jour: Ref Zhur-Biol., No 7, 1958, 29617.

Author : ~~Amirkhanyan, Yes G.~~  
Inst: : The Armenian Scientific Research Institute for  
Animal Husbandry and Veterinary Science.  
Title : The Chemism of Individual Groups in the Grass  
Stand of the Meadow Steppe and Alpine Zones.  
(O khimizme otdel'nykh grupp travostoya lugo-  
stepnogo i al'piyskogo poyasov).

Orig Pub: Byul. nauchno-tekhn. inform. Arm. n.-1. in-ta  
zhivotnovodstva i veterinarii, 1957, No 1, 49-51.

Abstract: Analyses are made of the individual groups of  
grass stand, taken in two zones, the alpine  
(Gegamskiy mountain ridge, at 3000 meters) and  
the meadow steppe (Loriyskaya plain, 1500 meters).  
The grass stand of the alpine meadows are dis-  
tinguished by higher protein content and less

Card 1/2

USSR / Meadow Cultivation:

Abs Jour: Ref Zhur-Biol., No 7, 1958, 29617.

Abstract: cellulose than the grass stand of the meadow  
steppe zone. The highest content was observed  
in the leguminous plants, the least in sedge  
(in both zones). The least cellulose content  
was noted in the leguminous grasses at the al-  
pine zone and at the meadow steppe in mixed  
grasses.

Card 2/2

78

AMIRO, I. V. (Kiev)

Determination of limit load for plates composed of separate hinged sections. *Prykl.mekh.* 2 no.3:318-324 '56. (MLRA 9:10)  
(Elastic plates and shells)



SOV/124-57-4-4574

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 4, p 100 (USSR)

AUTHOR: Amiro, I. Ya.

TITLE: Determination of Thermal Stresses in the Plane Problem of the Theory of Elasticity (Opredeleniye temperaturnykh napryazheniy v sluchaye ploskoy zadachi teorii uprugosti)

PERIODICAL: Sb. tr. In-ta stroit. mekhan. AN UkrSSR, 1956, Nr 21, pp 44-50

ABSTRACT: The author examines a temperature problem in the theory of planar elasticity expressed by the equation

$$\nabla^2 \nabla^2 F + \frac{\alpha E}{1 - \nu} \nabla^2 t = 0$$

where  $F$  is the stress function and  $t$  the temperature. By means of representing this equation in the form of finite differences, the author examines the problem of the stresses existing in the base slab of a concrete spillway dam when a specified temperature field is given. A comparison of results obtained by solving a two-dimensional (plane) and a one-dimensional temperature problem shows that in the case

Card 1/2

SOV/124-57-4-4574

Determination of Thermal Stresses in the Plane Problem of the Theory of Elasticity

of sections which are sufficiently remote from the edges the procedure may be confined to the solution of the one-dimensional problem only, provided the temperature field exhibits only slight variations in one direction.

P. M. Varvak

Card 2/2

VARVAK, P.M., prof., doktor tekhn.nauk, starshiy nauchnyy sotrudnik;  
GUBERMAN, I.O., starshiy inzh.; MIROSHNICHENKO, M.M., inzh.;  
PREDTECHENSKIY, N.D., inzh.: Prinimali uchaatiye: AMIRO, I.Ya.,  
starshiy nauchnyy sotrudnik; DLUGACH, M.I., starshiy nauchnyy  
sotrudnik; BOBYR', B.A., inzh.; KUZNETSOVA, A.K., inzh.; PETRA-  
SHEN', R.N., inzh.; SOKOL'SKIY, M.M., inzh.; KAPLAN, Ya.L., red.  
izd-va; LABINOVA, N.M., red.izd-va

[Tables for designing rectangular slabs] Tablitsy dlia rascheta  
priamougol'nykh plit. Pod red. P.M.Varvaka. K'iev, Izd-vo Akad.  
nauk USSR, 1959. 418 p. (MIRA 12:11)

1. Institut stroitel'noy mekhaniki Akademii nauk USSR (for Varvak,  
Guberman, Amiro, Dlugach). 2. Vsesoyuznyy proyektno-izyskatel'skiy  
i nauchno-issledovatel'skiy institut "Gidroproyekt" im. S.Ya.Zhuk  
(for Miroshnichenko, Predtechenskiy, Bobyr', Kuznetsova, Petrashen',  
Sokol'skiy).

(Concrete construction--Tables, calculations, etc.)  
(Concrete slabs)

AMIRO, U.Ya. [Amiro, U.IA.]

"Outlines of the history of the theory of structures by  
S.A. Bernshtein. Reviewed by U.IA. Amiro. Prykl.mekh. 5 no.1:114-115  
'59. (MIRA 12:6)

(Structures, Theory of)  
(Bernshtein, S.A.)

AMIRO, I.Ya. (Kiyev)

Investigating the stability of a ribbed cylindrical shell subjected to longitudinal compression. *Prykl.mekh.* 6 no.3:272-281 '60. (MIRA 13:8)

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

10. 0000 137, 2607

29184

S/021/60/000/010/006/016  
D251/D303AUTHOR: Amiro, I.Ya.

TITLE: The stability of a ribbed cylindrical shell under longitudinal compression

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 10, 1960, 1344 - 1348

TEXT: The critical longitudinal stress is evaluated, using the real positions of the supporting ribs, by means of the energy method and the theory of small deformations. A ribbed closed shell is considered, hinged by a beam support on a rigid diaphragm and under a uniformly distributed longitudinal pressure. For the walls of the shell, taking  $w$  as the deflection and  $\varphi$  as the stress function, the deformation equation gives

$$\frac{\partial^4 \varphi}{\partial x^4} + 2 \frac{\partial^4 \varphi}{\partial x^2 \partial y^2} + \frac{\partial^4 \varphi}{\partial y^4} = - \frac{E}{r} \frac{\partial^2 w}{\partial x^2} \quad (1)$$

Card 1/6

29184

S/021/60/000/010/006/016

D251/D303

The stability of a ribbed ...

[Abstractor's note: Symbols not explained]. The technical theory of thin shells is applied and instead of the equation of equilibrium, the conditions of minimum potential energy are used. The potential energy of the internal forces consists of the potential energy of the shell itself ( $U_0$ ) the potential energy of the ties ( $U_t$ ) and the potential energy of the ribs ( $U_r$ ), where

$$U_0 = \frac{D}{2} \int_0^l \int_0^{2\pi r} [(\chi_x + \chi_y)^2 - 2(1-\nu)(\chi_x \chi_y - \chi_{xy}^2)] dx dy +$$

$$+ \frac{h}{2E} \int_0^l \int_0^{2\pi r} [(\sigma_x + \sigma_y)^2 - 2(1+\nu)(\sigma_x \sigma_y - \tau_{xy}^2)] dx dy; \quad (2)$$

$$U_t = \sum_{i=1}^n \int_0^l \left[ \frac{B}{2} \left( \frac{d^2 z_i}{dx^2} \right)^2 + \frac{K}{2} \left( \frac{d\theta_i}{dx} \right)^2 + \frac{EF}{2} \epsilon_i^2 \right] dx; \quad (3)$$

Card 2/6

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S/021/60/000/010/006/016  
D251/D303

The stability of a ribbed ...

$$U_r = \sum_{j=1}^k \int_0^{2\pi r} \left[ \frac{B_1}{2} \left( \frac{d^2 z_j}{dy^2} + \frac{z_j}{r_s} \right)^2 + \frac{K_1}{2} \left( \frac{d\theta_j}{dy} \right)^2 + \frac{EF_1}{2} \epsilon_j^2 \right] dy. \quad (4)$$

where D is the cylindrical rigidity of the shell, B, K, F are the rigidity of a tie under bending and torsion and its area of cross-section, k is the number of ties, and B<sub>1</sub>, K<sub>1</sub>, F<sub>1</sub> and k<sub>1</sub> are the corresponding values for the ribs. The potential energy of the external forces consists of the external forces acting on the shell and the external forces acting on the ties. The expression for the bending of the shell is

$$w = C_1 \sin \frac{mX}{l} \cos \frac{nY}{r} + C_2 \sin \frac{mX}{l} \sin \frac{nY}{r}. \quad (6)$$

Substitution in (1) and evaluation gives

$$\sigma = - \frac{pY^2}{2} + Er \frac{m^2}{(m^2 + n^2)^2} \sin \frac{mX}{r} (C_1 \cos \frac{nY}{r} + C_2 \sin \frac{nY}{r}) \quad (7)$$

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The stability of a ribbed ...

where  $m = mkr/t$ . Since the deformation of the ribs and ties equals the corresponding deformation of the shell the expression for the total potential energy  $\Phi$  of the system may be found, depending on two parameters  $C_1$  and  $C_2$ . The conditions for minimum potential energy

$$\left(\frac{\partial \Phi}{\partial C_1} = 0; \frac{\partial \Phi}{\partial C_2} = 0\right)$$

are the equations for evaluating the critical values of the compressive longitudinal stress. The formula for the critical stress is of the form

$$p_{cr} = \eta \frac{Eh}{r}. \tag{8}$$

In the general case of deformation, when ribs and ties undergo deformation,  $\eta$  is given by

$$\eta = \frac{1}{1 + \gamma k} \left[ \frac{t}{12(1 - \nu^2)} \left( \alpha + \alpha km^2 + \beta kn^2 + \alpha_1 k_1 \frac{(n^2 - 1)^2}{m^2} + \beta_1 k_1 n^2 \right) + \frac{1}{I\Phi} (1 + \gamma k \Phi_1 + \gamma_1 k_1 \Phi_2) \right]. \tag{9}$$

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$$t = \frac{h}{r}, \quad \alpha = \frac{B}{2\pi r D}, \quad \beta = \frac{K}{2\pi r D}, \quad \gamma = \frac{F}{2\pi r h}.$$

(9)

$$\alpha_1 = \frac{B_1}{ID}, \quad \beta_1 = \frac{K_1}{ID}, \quad \gamma_1 = \frac{F_1}{lh}.$$

$$\Phi = \frac{(m^2 + n^2)^2}{m^2}, \quad \Phi_1 = \frac{(n^2 - \nu m^2)^2}{(m^2 + n^2)^2}, \quad \Phi_2 = \frac{(m^2 - \nu n^2)^2}{(m^2 + n^2)^2}.$$

The value of the coefficient  $\eta$  depends upon the number of half-waves  $m$  along the length of the shell, and the number of waves  $n$  around the circumference. The following buckling cases of the shell are also considered: 1) ties which only bend, 2) ties which only twist, 3) ribs which only bend, 4) ribs which only twist, 5) ties which only bend, and ribs which only twist, 6) ties which only twist, and ribs which only bend, 7) ties and ribs which both only bend, 8) ties and ribs which both only twist.  $\eta$  is then of the form

$$\eta = \frac{1}{12} \left[ \frac{t}{12(1 - \nu^2)} (\Phi + S + S_1) + \frac{1}{tI} \right]. \quad (10) \quad \times$$

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D251/D303

The stability of a ribbed ...

The values of  $\kappa$ ,  $S$  and  $S_1$  are given in tabulated form as are also the conditions on  $m$  and  $n$  ( $m_1, n_1$  are some integers). The critical values of the general case are close to the upper values of the critical stresses for a non-isotropic shell. It is possible that the least values of the stresses may correspond to one of the special cases of buckling. There are 1 figure, 1 table and 2 Soviet-bloc references.

ASSOCIATION: Instytut budivel'noyi mekhaniky AN URSR (Institute of Construction Mechanics AS UkrSSR)

X

Card 6/6

AMIRO, I. Ya.

Using the method of deformations in designing plate and plate-rod systems. Zbir.prats'. Inst.mekh.AN URSR no.23:20-31'61.  
(MIRA 14:12)

(Structors, Theory of )

1963

S/198/61/007/005/004/015  
D274/D303

244200

AUTHOR: Amiro, I.Ya. (Kyyiv)

TITLE: Investigating the ultimate load for stiffened cylindrical shells under the simultaneous action of axial forces and internal pressure

PERIODICAL: Prykladnaya mekhanika, v. 7, no. 5, 1961, 496 - 502

TEXT: Two methods are considered of determining the approximate value of the ultimate load. Proceeding from linear shell-theory, the critical axial stress is determined (by the energy method) which corresponds to loss of elastic stability of the structure under consideration. For structures which are described by an idealized diagram without stiffening the ultimate axial stress is determined which corresponds to the plastic state of the unstiffened shell and of the longitudinal ribs. First, the problem of general loss of stability is solved, the critical axial stress is determined as well as its dependence on the magnitude of the internal pressure. It is assumed that under the effect of the axial stress-

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Investigating the ultimate load ...

ses P, applied to the end sections, and of the internal pressure q the shell preserves its cylindrical form until loss of stability occurs. The bending is expressed by

$$w = (C_1 \cos \frac{nY}{r} + C_2 \sin \frac{nY}{r}) \sin \frac{mX}{l}. \quad (1)$$

By the theory of thin elastic shells, the stress function is found as the solution of the compatibility equation

$$\frac{\partial^4 \varphi}{\partial x^4} + 2 \frac{\partial^4 \varphi}{\partial x^2 \partial y^2} + \frac{\partial^4 \varphi}{\partial y^4} = - \frac{E}{r} \frac{\partial^2 w}{\partial x^2}. \quad (2)$$

Using Eq. (1), the expression

$$\varphi = - \frac{pY^2}{2} + \frac{qrx^2}{2h} + Er \frac{m^2}{(m^2 + n^2)} (C_1 \cos \frac{nY}{r} + C_2 \sin \frac{nY}{r}) \sin \frac{mX}{r}, \quad (3)$$

is obtained; h, r and l are, respectively, the thickness, radius and length of the shell, p -- the evenly-distributed longitudinal

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S/198/61/007/005/004/015  
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Investigating the ultimate load ...

stresses, and  $m = \frac{2\pi r}{\ell}$ . The equivalent radial load is introduced, whose intensity is given by

$$q_1 = -qr \left( \frac{\partial^2 w}{\partial r^2} + \frac{w}{r^2} \right). \quad (4)$$

Hence, the potential energy of the system is found. From the minimum condition of the potential energy, the critical values of the longitudinal stresses  $p$  are determined. Thereby, taking account the discrete distribution of the ribs, the general case bending and torsion of the ribs is considered, as well as particular cases (such as torsion only, of longitudinal or circular ribs). All these cases are described by Eq. (1) for various values of  $k$  and of  $\ell_0$  (the distance between the end membrane and the outer circumferential rib), ( $k$  being the number of ribs). From the minimum condition of potential energy, one obtains, for both the general as well as for the particular cases, the formula

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$$P_{or} = \frac{1}{k} \left[ \frac{t}{12(1-\nu^2)} (\Phi + s) + \frac{1}{t\alpha} \right] Et + \frac{\omega_1}{t\kappa} q. \quad (6)$$

The coefficients  $\kappa$  and  $s$  are found, depending on the case considered, from a table. The notations in formula (6) and in the table are

$$\Phi = \frac{(n^2 + m^2)^2}{n^2}; \quad \omega_1 = \frac{n^2 - 1}{n^2}; \quad t = \frac{h}{r}; \quad \gamma = \frac{F}{2\pi r h}; \quad \alpha = \frac{B}{2\pi r D}; \quad \beta = \frac{K}{2\pi r D}; \quad \alpha_1 = \frac{B_1}{tD}; \quad \beta_1 = \frac{K_1}{tD},$$

where  $D$  is the cylindrical rigidity of the shell,  $F$  - the cross section of the rib,  $B$  and  $K$  - the rigidity under bending and torsion respectively. After a substitution, one obtains for the critical axial stress which corresponds to loss of stability:

$$P_{or} = \frac{F_0(1 + \gamma k)}{\kappa} \left[ \frac{t}{12(1-\nu^2)} (\Phi + s) + \frac{1}{t\alpha} \right] Et + \left[ \frac{\omega_1 F_0(1 + \gamma k)}{t\kappa} + \pi r^2 \right] q. \quad (8)$$

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D274/D303

Investigating the ultimate load ...

This formula shows that P increases with increasing internal pressure q. In using the above formulas for computations beyond the elastic limit, the critical stresses assume overrated values. In order to obtain more satisfactory results, the behavior of a structure is considered under stresses above the elastic limit. Only the ultimate state of a stiffened shell is considered, under an axial stress and internal pressure. For an axial stress which corresponds to plastic state of the shell walls and to elastic loss of stability of the longitudinal ribs, the formula

$$\bar{P}_{ul} = \sigma_T F_0 \left(1 + \gamma k \frac{\sigma_{cr}^c}{\sigma_T}\right) - \pi r^2 q \quad (9)$$

is obtained. The axial force which corresponds to plastic state of the walls and of the longitudinal ribs, is expressed by

$$P_{ul} = \sigma_T F_0 (1 + \gamma k) - \pi r^2 q \quad (10)$$

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D274/D303

Investigating the ultimate load ...

The limits of applicability of the above formulas are indicated. A numerical example is considered. A table shows (for comparison) the values of  $P_{cr}$  calculated by the above formulas and by the formulas for orthotropic shells as given in the references. There are 1 figure, 2 tables and 5 Soviet-bloc references.

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

SUBMITTED: November 25, 1960

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24.4200

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S/198/62/008/004/001/006  
D407/D301

AUTHOR: Amiro, I. Ya. (Kyryiv)

TITLE: Study of the stability of stiffened cylindrical shells under eccentric compression

PERIODICAL: Prykladna mekhanika, v. 8, no. 4, 1962, 359 - 366

TEXT: The critical stresses of a stiffened cylindrical shell are determined, allowance being made for the discrete disposition of the reinforcing ribs. The problem of determining the critical stresses is solved approximately by the energy method. Thereby, it is assumed that the critical stresses related to general loss of stability can be determined by considering small deformations. From the expression for the bending  $w$  and the compatibility equation, one obtains the stress function  $\varphi$ . The critical stresses are determined from the minimum condition of the system's potential energy. Thereby, one obtains two systems of algebraic equations which permit investigating the stability of stiffened cylindrical shells under axial compression, under pure bending, and under

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Study of the stability of stiffened ...

S/198/62/008/004/001/006  
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eccentric compression. The first system of equations is not always homogeneous. In some cases, described by these equations, the shell does not preserve its cylindrical shape even at low compressive stresses  $p_1$ ; the critical state of the shell is characterized by a great increase in the initial deformations, and not by the appearance of new types of deformation; when the compressive stresses approach the critical values, the bending of the shell increases without bounds. The second system of equations is homogeneous. From the condition that the determinant of this system is zero, follows that the critical stresses correspond to inverse-symmetrical deformation of the shell, (on loss of stability). A numerical example is considered. Conclusions: The critical stresses of general loss of stability under eccentric compression and pure bending of stiffened closed cylindrical shells, can be determined by solving the simpler problem of axial compression. The critical stresses of axial compression can be determined by the formulas of an earlier work by the author; these formulas were obtained by retaining only the first term in the series which enter the expression for the bending. There is 1 figure and 2 tables.

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AMIRO, I. YA.

PHASE I BOOK EXPLOITATION

SOV/6 206

Konferentsiya po teorii plastin i obolochek. Kazan', 1960.

Trudy Konferentsii po teorii plastin i obolochek, 24-29 oktyabrya 1960. (Transactions of the Conference on the Theory of Plates and Shells Held in Kazan', 24 to 29 October 1960). Kazan', [Izd-vo Kazanskogo gosudarstvennogo universiteta] 1961. 426 p. 1000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Kazanskiy filial: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina.

Editorial Board: Kh. M. Mushtari, Editor; F. S. Isanbayeva, Secretary; N. A. Alomyae, V. V. Bolotin, A. S. Vol'mir, N. S. Ganiyev, A. L. Gol'denveyzer, N. A. Kil'chevskiy, M. S. Kornishin, A. I. Lur'ye, G. N. Savin, A. V. Sachenkov, I. V. Svirskiy, R. G. Surkin, and A. P. Filippov. Ed.: V. I. Aleksagin; Tech. Ed.: Yu. P. Semenov.

PURPOSE: The collection of articles is intended for scientists and engineers who are interested in the analysis of strength and stability of shells.

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Transactions of the Conference (Cont.)

SOV/6206

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AMIRO, I.Ya. (Kiyev)

Investigating the stability of a ribbed cylindrical shell subjected to an eccentric compression. Prikl.mekh. 8 no.4:359-367 '62.  
(MIRA 15:9)

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

S/124/63/000/003/025/065  
D234/D308

AUTHOR: Amiro, I. Ya.

TITLE: Investigation of the stressed state of a rectangular plate with a rectangular hole

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 3, 1963, 6, abstract 3V34 (In collection: Deslidzhennya napruzhen. stanu hidrotekhn. sporud. Kyiv, AN URSSR, 1961, 5-17 (Ukr.))

TEXT: Rectangular plates with holes are considered as frames with elements having stepwise varying rigidity; the rigidity of one element within the limits of contact with another element is assumed to be infinite. The author recommends the use of expressions given by N. V. Kornukhov (Sb. nauchn. tr. Kiyevsk. inzh.-stroit. in-t, 1959, no. 12, 5-13; RzhMekh, 1961, 10V315). Plane problems of stressed state of plates with holes are solved by the lattice method (see I. Ya. Amiro, Sb. tr. in-ta stroit. mekhaniki AN URSSR, 1954, no. 19, 60-73; RZhMekh, 1955, no. 4, 2003). The solutions

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Investigation of the stressed ...

S/124/63/000/003/025/065  
D234/D308

are compared with those obtained by reduction to frame structures.  
[Abstracter's note: Complete translation.]

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S/879/62/000/000/052/088

D274/D308

**AUTHOR:** Amirc, I. Ya. (Kiev)

**TITLE:** Investigation of stability of a closed ribbed cylindrical shell subject to an eccentrically applied longitudinal force

**SOURCE:** Teoriya plastin i obolochek; trudy II Vsesoyuznoy konferentsii, L'vov, 15-21 sentyabrya 1961 g. Kiev, Izd-vo AN USSR, 1962, 318-321

**TEXT:** An abstract of an unpublished paper, stating that the problem of determining critical stresses was solved for a circular cylindrical shell with equally spaced longitudinal and ring-shaped ribs, taking into account the spacing. Energy method and theory of thin shells were used. The algebraic system of equations obtained and a numerical example are quoted. Conclusion: eccentric compression and pure bending can be reduced to axial compression. There is 1 table.

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AMIRO, I. Ya. (Kiyev)

Stability of thin cylindrical shells. Prykl. mekh. 9 no.3:  
264-269 '63. (MIRA 16:4)

1. Institut mekhaniki AN UkrSSR.

(Elastic plates and shells)

KORNOUKHOV, Nikolay Vasil'yevich, akademik; BELYANKIN, F.P., akademik, otv. red.; STREL'BITSKAYA, A.I., doktor tekhn. nauk; AMIRO, I.Ye., kand. tekhn. nauk, red.; DLUGACH, M.I., kand. tekhn. red.; YEREMENKO, V.S., kand. tekhn. nauk, red.; NIKITIN, Yu.P., kand. tekhn. nauk, red.; PAVLOV, I.G., kand. tekhn. nauk, red.; POLYAKOV, P.S., kand. tekhn. nauk, red.; KIYANITSA-GUSLISTAYA, N.N., mlad. nauchn. sotr., red.; ORLIK, Ye.L., red.; LISOVETS, A.M., tekhn. red.

[Selected works on structural mechanics] Izbrannye trudy po stroitel'noi mekhanike. Kiev, Izd-vo AN Ukr.SSR, 1963. 321 p.  
(MIRA 17:2)

1. Akademiya nauk Ukr.SSR (for Kornoukhov, Belyankin).

L 55022-65 EWT(d)/EWT(m) EWP(w)/EWA(d)/EWP(v)/EWP(i)/EWP(k)/EWP(z)/EWP(o)  
EWA(h) 2-4/Feb: AJW/JD/m/2a

ACCESSION NR: A5011782

UR/0198/65/001/004/0039/0043<sup>001</sup>

Author: Amiro, I. Ya. (Kiev); Zarutskiy, P. A. (Kiev); Polyakov, P. S. (Kiev)

TITLE: Experimental investigation of the bearing capacity of ribbed cylindrical shells

SOURCE: Prikladnaya mekhanika, v. 1, no. 4, 1965, 39-43

TOPIC TAGS: ribbed surface, shell stability, shell buckling, shell structure, shell theory / AMG 6 alloy

ABSTRACT: The results obtained in experimental studies of the load bearing capacity of ribbed cylindrical shells are presented. Two loading conditions were studied: 1) axial compression, and 2) axial compression combined with internal pressure. Test shell specimens were 250 mm long with a radius of 120 mm and were prepared from sheets of AMG-6 alloy 0.3 mm thick. A total of six series of shells was tested each series having a different spacing of longitudinal ribs. The sixth series has 32 longitudinal and no annular ribs. In the axial compression tests, comparison is made of experimentally determined critical stresses with theoretically determined stresses. It is shown that the noted

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ACCESSION NR: AP5011782

amount of initial buckling allows a satisfactory computation of critical stresses and of general loss of stability. In addition, it is shown that the application

not control the value of the load limit. For specimens with larger diameters of free ends, the axial load limit is noticeably lower in the presence of internal

A. I. I. N. Institut mekhaniki, AN Ukr. S. S. R. Institute of Mechanics, AN Ukr. S. S. R.

SUBMITTED: 06Aug64

ENGL: 00

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KO REF SOV: 000

OTHER: 000

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 ACCESSION NR: AT5017585 EWP(b)/EWA(h) MJW/JD/SH/EA/GS OR/0000/65/000/000/0159/0165

AUTHORS: Amiro, I. Ya. (Kiev); Zarutskiy, V. A. (Kiev); Polyakov, P. S. (Kiev) 29

TITLE: Experimental studies of stability and bearing capacity of ribbed cylindrical shells 21

SOURCE: Vse. yuznaya konferentsiya po problemam ustoychivosti v stroitel'noy mekhanike. Moscow, 1963. Problemy ustoychivosti v stroitel'noy mekhanike (Problems of stability in structural mechanics); trudy konferentsii. Moscow, Stroyizdat, 1965. 159-165

TOPIC TAGS: shell theory structural strength, structural property, cylindrical shell/ alloy AMG 6M 4

ABSTRACT: The nature of the loss of stability and the reduction of bearing capacity of closed ribbed cylindrical shells was studied. Experiments were conducted to determine the relationship of stability and bearing capacity with the number of longitudinal reinforcing ribs. Critical stresses obtained in experiment are compared with theoretical values. Shell test specimens were prepared from sheet rolls of alloy AMG-6M having a thickness of 0.3 mm. Longitudinal ribs were placed on the outer surface of the shell, and annular ribs were placed on the inner surface

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(see Fig. 1 on the Enclosure). The test structures were constructed with precision  
 mekhanik. AN INSTITUTE of Mechanics, AN K... with were applied  
 by means of a 5-ton hydraulic press. special procedures were followed to protect  
 shell surfaces, to maintain internal pressure, and to provide heliostere scanning of  
 the shell. Several shell structures were prepared with varying numbers of lonsi-

... The number of semiwaves in the ...  
 waves in the perimeter were measured and tabulated. The states of stability ...  
 were noted for small numbers of longitudinal braces. It is noted that linear sta-  
 bility theory is computationally adequate for cases involving large numbers of ribs.  
 Relatively large internal pressures forestalled the loss of structural stability.  
 values of failure stresses. Orig. art. has: ...

ASSOCIATION: none

SUBMITTED: 12Feb65

ENCL: 01

SUB CODE: AS

NO REP SOV: 009

OTHER: 000

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L 63865-65

ACCESSION NR: AT5017595

ENCLOSURE: 01

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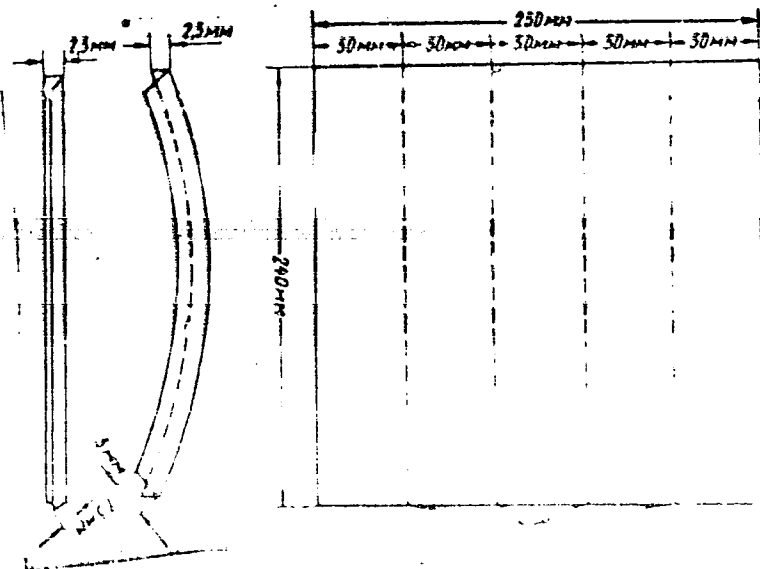


Fig. 1.

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L 8298-66 EWT(d)/EWT(m)/EWP(w)/EWP(v)/EWP(k)/EWA(h)/ETC(m) WV/EM

ACC NR: AP6000239

SOURCE CODE: UR/0198/65/001/010/0030/0037

AUTHOR: Amiro, I. Ya. (Kiev)ORG: Institute of Mechanics, AN-UkrSSR (Institut mekhaniki AN UkrSSR)

TITLE: On investigation of stability and postbuckling deformations of stiffened cylindrical shells under longitudinal compression

SOURCE: <sup>2p</sup> Prikladnaya mekhanika, v. 1, no. 10, 1965, 30-37TOPIC TAGS: stiffened shell, shell stability, shell buckling, postbuckling deformation, *cylindric shell structure*

ABSTRACT: The buckling and the postbuckling behavior of a closed circular cylindrical shell, stiffened by frames and stringers, under longitudinal compressive loading distributed along the face edges are discussed. In order to derive expressions for relationships which account for discrete spacing of reinforcing elements, the stiffened shell is treated as a system consisting of a plain shell and a set of stiffeners. The analytical conditions for the joint deformation of both the skin and stiffeners are reduced to a differential compatibility equation for the skin and to relationships which couple the strains of the skin with those of the stiffeners. The conditions for the minimum potential energy of the shell system (potential strain energy of the skin and stiffeners, and potential energy of external forces) are used instead of equilibrium equations. Expressions which establish the dependence between

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ACC NR: AP6000239

the stress and deflection parameters of the stiffened shell are derived. The buckling and the postbuckling deformations of the shell are investigated by analyzing these relationships. The buckling-stress parameters (the lower and upper values) in the plain shell and in the stiffened shell are determined, discussed, and illustrated by diagrams. The results of numerical calculations of the buckling stress parameters and determining their minimum value for a series of shells which differed only by the number of stringers are shown in diagrams and in a table, and the postbuckling stress-strain relations are analyzed. Orig. art. has: 4 figures, 14 formulas, and 1 table. [VK]

SUB CODE: 20

SUBM DATE: 22Apr65/

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L 21637-66 EWT(d)/EWT(m)/EWP(w)/EWP(v)/EWP(k)/EWA(h)/ETC(m)-6 IJP(c) WW/EM  
ACC NR: AP6007546 SOURCE CODE: UR/0198/66/002/001/0053/0058

AUTHOR: Amiro, I. Ya. (Kiev) 38

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

TITLE: On the effect of initial deflections on the stability of finned cylindrical shells under axial compression 2u

SOURCE: 2p Prikladnaya mekhanika, v. 2, no. 1, 1966, 53-58

TOPIC TAGS: shell theory, cylindric shell, stress analysis, compressive stress, critical pressure

ABSTRACT: The critical load is calculated on a finned cylindrical shell under compression. The fins consist of longitudinal and circumferential rings, and the shell has two radii of curvature  $r$  and  $\rho$  whose deformation is governed by the following compatibility equation

$$\left[ \frac{\partial^2 \phi}{\partial x^2} + 2 \frac{\partial^2 \phi}{\partial x \partial y} + \frac{\partial^2 \phi}{\partial y^2} - \frac{E}{r} \frac{\partial^2 \phi}{\partial x^2} - \frac{E}{\rho} \frac{\partial^2 \phi}{\partial y^2} \right]$$

The potential energy of the system is shown to consist of five components: potential energy of the shell; the potential energy of the strips; potential energy of the

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