"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

177 (1) Concerning Plastic Bending (in Russian) V. P. Romanovskii. Zavodskaya Laboratoriya (Factory Laboratory), v. 15, Dec 1949, p. 1459-1467

Critically analyzes the hypothesis and formula of M. P. Markovets relating to degree of deformation. Ratio between the radius of the mandrel (in the bending test) and thickness of the test specimen are of primary importance. In calculation of the degree of deformation, two different formulas must be used. Both are given and interpreted for different values of the variables (Q5)

METALLURGICAL LITERATURE CLASSIFICATION

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B

13

Concerning Plastic Bending. (In Russian.) V. P. Romanovskii. *Zavodskaya Laboratoriya* (Factory Laboratory), v. 15, Dec. 1949, p. 1459-1467.

Critically analyzes the hypothesis and formula of M. P. Markovets relating to degree of deformation. Indicates that the ratio between the radius of the mandrel (in the bending test) and the thickness of the test specimen are of primary importance. In calculation of the degree of deformation, two different formulas must be used. Both are given and interpreted for different values of the variables.

U.S.S.R. METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

B

-4

Concerning Plastic Bending. (In Russian.) V. P. Romanovskij. *Zavodskaya Laboratoriya* (Factory Laboratory), v. 14, Dec. 1948, p. 1456-1461.

Presents a theoretical analysis of the state of stress during plastic bending. Proposes formulas for accurate calculation of bending moments. Application of these formulas, taking into consideration the displacement of the neutral layer, is of value for determination of permissable radii of bending.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ROMANOVSKIY, V.P., kand.tekhn.nauk

"Press equipment for sheet-metal working shops" by G.N. Rovinskii. Reviewed by V. P. Romanovskii. Vest. mash 41 no.6:83 Je '61. (MIRA 14:6)

(Sheet-metal work—Equipment and supplies)
(Rovinskii, G. N.)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

SOV/110-59-5-20/25

AUTHOR: Romanovskiy, V.R., Engineer and Mints, M.B., Engineer

TITLE: Checking Tachometers With a Cathode-Ray Stroboscope (O Poverke takhometrov elektronno-luchevym stroboskopom)

PERIODICAL: Vestnik elektropromyshlennosti, 1959, Nr 5, pp 70-72 (USSR)

ABSTRACT: The authors have developed and introduced into production a stroboscopic device for checking electrical tachometers by displaying the stroboscopic effect on the screen of a cathode-ray tube. The equipment has all the advantages of normal stroboscopic installations, including high accuracy and wide range, but testing is quicker and easier particularly under mass production conditions. The equipment can be used without modification to measure fixed frequencies and may be remote from the machine being tested. If sinusoidal voltages differing in phase by 90° are applied to the plates of a cathode-ray tube the electron beam describes a circle on the screen. Suppose that a tube with this circular scanning has a high negative voltage applied to the modulating electrode: if voltage impulses of the scanning frequency are then applied, only part of the circular sweep will be illuminated. An arc will appear on the screen, the length

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SOV/110-59-5-20/25

Checking Tachometers With a Cathode-Ray Stroboscope

of which depends on the duration of the impulse. If the impulses are applied as a multiple of the scanning frequency, a circle of dots will be formed. A block diagram of the equipment is given in Fig 1. A mechanical shutter is connected to the shaft of the tachometer under test and signals are received from a photo-electric cell (1). The frequency of the signals is proportional to the angular speed to be measured. The impulses are applied to a circuit (2) which modifies them in such a way that they give a clear stroboscopic effect on the screen. The signals are then applied to the modulator of the cathode-ray tube. The operating principles of the equipment are described with reference to Fig 2, where the paths of circular scans are depicted and also drawn in developed form. The construction of the equipment is then described. An assortment of discs is provided having different numbers of holes suitable for checking

Card 2/3

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SOV/110-59-5-20/25

Checking Tachometers With a Cathode-Ray Stroboscope

tachometers at various speeds. A photograph of the equipment is reproduced in Fig 3. There are 3 figures.

SUBMITTED: 15th May 1958

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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ROMANOVSKIY, V.R.

New method for finding unknown parameters of normal distribution.
Biul.SAGU no.30:55-60 '48. (MLRA 9:5)

1. Deystvitel'nyy chlen AN UzSSR.
(Distribution (Probability theory))

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

Galvanic cell of the Meidinger type. Ya. K. Romanovskii. Russ. 540, August 31, 1925. A Meidinger cell with $CuSO_4$, in the lower part of the cell and the copper electrode in the form of a flat spiral on the bottom of the container is characterized by a perforated Zn container provided for the accumulation of Zn deposits, with Zn electrodes placed in the upper part of the cell.

METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

M

20

Electric Arc Welding of Aluminium and Its Alloys. V. I. Romanovsky (*Avtog. Delo*, **1948**, (5), 18–20).—[In Russian]. The most effective method of joining aluminium and its alloys is welding. The chief trouble is the great affinity of aluminium for oxygen, which necessitates the use of special fluxes. The preparation of the metal to be welded and the welding technique itself are somewhat different from those used for iron and steel. The requirements of special fluxes are discussed, and two are cited: B-3 containing NaCl, LiCl, $AlF_3.3NaF$, Na_2SO_4, and $BaCO_3$, and V-1 containing KCl, $MgCl_2$, NaF, and $AlF_3.3NaF$.—W. J. K.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

CA

15

Apparatus for determination of the thermal conductivity of soils. Vsevolod Romanovsky. *Compt. rend.* 213, 584-6(1941). An app. is described and illustrated for detg. the thermal cond. of soils. Generalizations are made relative to effects of soil continuity and liquid medium.
C. F. Woodward

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ROMANOVSKIY, V.P.

Using ring (wedge) springs in cold-stamping dies (foreign experience). Kuz.-shtam. proizv. 1 no.2:36-37 F '59. (MIRA 12:10)

(Dies (Metalworking))

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

M

11

*On the Use of Specimens Notched on Three Sides for Dynamic Bend Tests on Dynamically Tough Metals. V. P. Romanovsky (*Zavod. Lab.*, 1949, 15, (2), 210-213).—[In Russian]. The usual specimens of the Mesnager and Charpy types for determining the coeff. of dynamic toughness of metals show considerable transverse plastic deformation. Specimens notched on three sides show almost no transverse plastic deformation, and are therefore suitable for the impact testing of highly plastic metals which do not break in the ordinary tests. The considerable decrease of apparent dynamic toughness in the new specimens shows that brittleness is not an inherent property but an indication of the condition of the material. Less plastic metals show a less pronounced decrease of apparent dynamic toughness when the new-type specimens are used instead of the old.—T. O. L.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

FILIPPOV, Viktor Vasil'yevich; SHEKHTER, Viktor Yakovlevich; OLENEV, Vladimir Ivanovich; ROMANOVSKIY, V.P., kand. tekhn. nauk, red.; LISITSYN, V.D., kand. tekhn. nauk, red.; KUREPINA, G.N., red. izd-va; BARDINA, A.A., tekhn. red.

[Fully and semiautomated sheet metal working lines] Avtomaticheskie i avtomatizirovannye kholodnoshtampovochnye linii. Pod obshchei red. V.P. Romanovskogo. Moskva, Mashgiz, 1962. 81 p. (Bibliotechka shtampovshchika, no.1) (MIRA 15:9)
(Automation) (Assembly line methods) (Sheet-metal work)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ROVINSKIY, Georgiy Nikolayevich; ROMANOVSKIY, V.P., kand. tekhn. nauk, red.; ZUBTSOV, M.Ye., kand. tekhn. nauk, red.; LEYKINA, T.L., red. izd-va; BARDINA, A.A., tekhn. red.

[Stamping large parts for the automobile industry]Shtampovka krupnogabaritnykh detalei avtomobil'noi promyshlennosti. Pod obshchei red. V.P.Romanovskogo. Moskva, Mashgiz, 1962. 73 p. (Bibliotechka shtampovshchika, no.5) (MIRA 15:9)
(Sheet-metal work) (Automobiles)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ROMANOVSKIY, Vladimir Petrovich, prof.; LISINSKIY, V.A., kand. tekhn. nauk, red.

[Increasing the forgeability of thin-sheet] Povyshenie shtampuemosti tonkolistovoi malouglerodistoi stali dlia vytiazhki. Leningrad, 1964. 13 p. (MIRA 18:1)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

LISITSYN, Viktor Dmitriyevich; BUDZILOVSKIY, Abram Yefimovich; FILINA, Irina Stepanovna; ROMANOVSKIY, V.P., kand. tekhn. nauk, red.; KUREPINA, G.N., red.; BARDINA, A.A., tekhn. red.

[Special automatic die stamping machines]Spetsial'nye shtampovochnye avtomaty. Pod obshchei red. V.P.Romanovskogo. Moskva, Mashgiz, 1962. 51 p. (Bibliotechka shtampovshchika, no.3) (MIRA 15:9)

(Forging machinery)
(Sheet metal working machinery)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ROMANOVSKIY, Viktor Petrovich, prof.; DAGELAYSKAYA, Natal'ya Aleksandrovna; BELOZEROV, Yu.A., inzh., retsenzent; CHFAS, M.A., red.izd-va; BARDINA, A.A., tekhn. red.

[Progressive die stamping of strips]Posledovatel'naia shtampovka v lente. Pod obshchei red. V.P.Romanovskogo. Moskva, Mashgiz, 1962. 87 p. (Bibliotechka shtampovshchika, no.6) (MIRA 16:2)
(Sheet-metal work)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

KOTELYANETS', V.I.; ROMANOVSKIY, V.T. [Romanovs'kyi, V.T.], red.

[Organization of transportation operations on collective and state farms] Organizatsiia transportnykh robit u kolhospakh i radhospakh. Kyiv, Urozhai, 1964. 50 p. (MIRA 17:10)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

KARAUSHEV, A.V.; SOLOV'YEV, N.Ya.; YAKOVLEV, F.I.; ROMANOVSKIY, V.V.

Improvement of devices and equipment used in studying sediments of reservoirs. Trudy GGI no.111:122-130 '64. (MIRA 17:6)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

SOV/56-34-5-58/61

AUTHORS: Romanovskiy, Ye. A., Timushev, G. F.

TITLE: Non-Elastic Scattering Cross Sections of 4,5 MeV Deuterons of Some Light Nuclei (Poperechnyye secheniya neuprugogo rasseyaniya deytronov s energiyey 4,5 MeV na nekotorykh legkikh yadrakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34, Nr 5, pp. 1350 - 1351 (USSR)

ABSTRACT: In this paper the differential cross sections of the non-elastic scattering of deuterons with $E_d \sim 4$ to 4,5 MeV at nuclei of Li^7, Fe^{19}, Na^{23}, Mg^{24} and of Al^{27} were measured. The groups of the non-elastically scattered deuterons were separated by a magnetic analyzer with double focusing. The deuterons were accelerated by the 72-cm cyclotron of the Institute of Nuclear Physics at the Moscow State University (Moskovskiy gosudarstvennyy universitet). The values of the differential cross sections for $E_d = 4,5$ MeV and for the scattering angle (in the laboratory system) $\vartheta_{labor.} = 91^\circ$ are given in a table. This table also contains the values of the differential cross sections $d\sigma_{F2}/d$ and of

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the total cross sections σ_{E_2} of the Coulomb (Kulon) excitation of the levels in the nuclei F^{19}, Na^{23} and Mg^{24}. These cross sections were computed by means of the formulae by A. Alder et al. (Ref 9). The results compiled in this table tend to show the following: At E_d=4,5 MeV the contribution of σ_{E_2} to the experimental value of σ_{total} amounts to a few %. Therefore at $E_d \sim 4$ to 4,5 MeV and above the excitation of the nuclei by the Coulomb field of the approaching deuterons cannot be the predominant process which leads to a non-elastic scattering of the deuterons. This conclusion disagrees with the theory of the (d,d')-reaction which was developed by C. Mullin (Mellin) and E. Guth (Gut). There are 1 table and 11 references, 2 of which are Soviet.

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

Non-Elastic Scattering Cross Sections of 4,5 MeV Deuterons of Some Light Nuclei SOV/56-34-5-58/61

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: February 24, 1958

1. Deuterons--Scattering 2. Cyclotrons--Applications 3. Deuteron cross sections 4. Nuclei--Excitation

Card 3/3

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

GRANCHA, I.; ROMANOVSKIY, Ye.A., TIMUSHEV, G.F.

Measuring the polarization of 6.6 Mev. protons elastically scattered by Li^7. Vest. Mosk. un. Ser. 3: Fiz., astron. 19 no.3:100 My-Je '64. (MIRA 17:11)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo universiteta.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

21(7) SOV/56-37-1-12/64

AUTHOR: Romanovskiy, Ye. A.

TITLE: On the Problem of Excitation of Vibrational and Rotational States of Nuclei in the Scattering of Charged Particles (K voprosu o vozbuzhdenii kolebatel'nykh i vrashchatel'nykh sostoyaniy yader pri rasseyanii zaryazhennykh chastits)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 1(7), pp 83-91 (USSR)

ABSTRACT: Some previous papers on this subject are mentioned at first. In the present paper, the author calculates the cross section of the inelastic scattering of heavy charged nuclei on a half-transparent, non-spherical even-even nucleus which is an ellipsoid of revolution with low eccentricity (the spin of this nucleus being assumed equal to zero), and also on an even-even nucleus with vibrational states. Adiabatic approximation is used as in the papers by S. I. Drozdov (Refs 1, 2) and Ye. V. Inopin. The cross section of the inelastic scattering is calculated by a method developed by K. A. Ter-Martirosyan.

The formulas derived by the author hold for the whole range of scattering angles. The first part deals with the posing of the problem and with a method of calculating the

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

SOV/56-37-1-12/64

On the Problem of Excitation of Vibrational and Rotational States of Nuclei in the Scattering of Charged Particles

excitation probability. In the collision of a heavy charged particle with a nucleus, the inelastic scattering causing the excitation of the deep-lying levels of the target nucleus is apparently due to direct interaction. This is why the inelastic scattering of charged particles is excluded from consideration. The author introduces a coordinate system K, the Z-axis of which is perpendicular to the plane of motion of the charged particle, and the X-axis of which runs along the symmetry axis of the trajectory, and also a system K', the Z'-axis of which is directed along the symmetry axis of the nucleus. The excitation probabilities are calculated in the second part. In the following part, the author is concerned with the conditions of applicability of the half-classical way of consideration. This half-classical method is suitable for the analysis of experimental data on the inelastic scattering of charged particles with excitation of the second spin levels 2^+ in even-even nuclei. In the last part, the cross section of the inelastic scattering are calculated. The formulas for these differential cross sections are explicitly

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

SOV/56-37-1-12/64

On the Problem of Excitation of Vibrational and Rotational States of Nuclei in the Scattering of Charged Particles

written down. The author also calculated the probabilities of excitation of the second level 2^+ in Th_{90}^{232} ($\Delta E = 0.790$ Mev) by α-particles with the energies of 25, 30, 40, 50 Mev as well as the corresponding angular and energy distributions. 3 diagrams illustrate the functions $P = P(\vartheta)$ for different energy values, the angular distributions of inelastically scattered α-particles as well as for the dependence of the total cross section on energy. The dependence of the cross section of the inelastic scattering on the angle is characterized by the existence of a maximum, the half-width of which decreases with increasing energy of the incident particle. The absolute value of the differential cross section of the inelastic scattering in the maximum decreases with an increase in energy. The author thanks S. S. Vasil'yev for his interest in the present paper, A. S. Davydov, S. I. Drozdov, V. G. Neudachin and K. A. Ter-Martirosyan for the discussion of the paper as well as G. S. Tyurikov for his help in the execution of the numerical computations.

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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

SOV/56-37-1-12/64

On the Problem of Excitation of Vibrational and Rotational States of Nuclei in the Scattering of Charged Particles

There are 4 figures and 13 references, 8 of which are Soviet.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta
(Institute of Nuclear Physics of Moscow State University)

SUBMITTED: December 23, 1958

Card 4/4

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

21 (7), 21 (8), 24 (5)

AUTHOR: Romanovskiy, Ye. A.

SOV/56-37-3-41/62

TITLE: On the Excitation of Rotational States of Nonaxial Nuclei in the Scattering of α-Particles

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 3(9), pp 851 - 853 (USSR)

ABSTRACT: The present "Letter to the Editor" deals with an evaluation of the excitation probability of the second level in even-even non-axial nuclei (2^+) in the scattering of α-particles with an energy of $E \gtrsim F_y$ (F_y denotes the height of the Coulomb barrier of the nucleus) with a view of determining the part played by the excitation mechanisms (direct nuclear interaction and Coulomb excitation). Theoretical considerations are made in classical approximation. The scattering of α-particles on heavy nuclei ($kR \gg 1$) is investigated, which entails an excitation of the second level with a spin 2^+, where it holds, according to Davydov and Filippov (Ref 2) that

$$M(0 \to 2^+) = \frac{\beta^2}{10}\left[1 - \frac{3-2\sin^2 3\gamma}{\sqrt{9-8\sin^2 3\gamma}}\right], \quad \beta^2 = \sum_\mu |a_\mu|^2,$$ where γ is the

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

deformation parameter. With $\gamma \to 0$ or $\gamma \to 30^{\circ}$ M tends towards zero, at $\gamma \approx 20^{\circ}$ it attains the maximum value of $\sim 7 \cdot 10^{-3} \beta^2$. From these results the conclusion is drawn that it is possible, when investigating 2^+-excitation, to operate with the perturbation theory. By using a method described by the author in a previous paper (Ref 3) the probability of the excitation of a 2^+-level is calculated in the following on the basis of perturbation theory. The results obtained are illustrated on the basis of an example (Cd_{48}^{114}) in form of a diagram. The ratio of the probabilities P/P_{Coul} is plotted versus the scattering angle ϑ. At $\vartheta \sim 25^{\circ}$, the curve has a steep and considerable slope upwards, and with further increasing ϑ, a weakly exponential downward slope. The high value of the 2^+ excitation cross section may be explained by the interaction of α-particles with the nuclear surfaces and renders an investigation of the properties of the second excited states with spin 2^+ in even-even non-axial nuclei by recording the inelastic α-scatterings possible. The author thanks V. G. Neudachin

Card 2/3

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

On the Excitation of Rotational States of Nonaxial Nuclei in the Scattering of α-Particles SOV/56-37-3-41/62

for discussions. There are 1 figure and 6 references, 3 of which are Soviet.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of Moscow State University)

SUBMITTED: April 6, 1959

Card 3/3

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

YEDAKOVA, V.A.; NEUDACHIN, V.G.; ROMANOVSKIY, Ye.A.

Possibility of the appearance of a second-order process in the case of nonelastic deuteron scattering by nuclei. Zhur. eksp. i teor. fiz. 38 no.1:248-250 Jan '60. (MIRA 14:9)

1. Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.

(Deuterons--Scattering)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

VASIL'YEV, S.S.; ROMANOVSKIY, Yo.A.; TIMUSHEV, G.F.

Lower excited states of Ca^{40}. Vest. Mosk. un. Ser. 3: Fiz., astron. 16 no.6:88-89 N-D '61. (MIRA 14:12)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.
(Quantum theory)
(Calcium)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

VASIL'YEV, S.S.; ROMANOVSKIY, Ye.A.; TIMUSHEV, G.F.

Collective excited states in Mn^{55}. Vest. Mosk. un. Ser. 3: Fiz., astron. 16 no.6:89-90 N-D '61. (MIRA 14:12)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.
(Quantum theory)
(Manganese)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

VASIL'YEV, S.S.; ROMANOVSKIY, Ye.A.; TIMUSHEV, G.F.

Measuring the angular distribution for the Al^{27} (p, p')Al^{27*} reaction with the aid of a magnetic analyzer when E_p = 6.6 Mev.
Zhur.eksp.i teor.fiz. 40 no.3:972-973 Mr '61. (MIRA 14:8)

1. Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.
(Nuclear reactions) (Magnetic measurements)
(Aluminum--Isotopes)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

VASIL'YEV, S.S.; ROMANOVSKIY, Ye.A.; TIMUSHEV, G.F.

Inelastic proton scattering on F^{19} nuclei. Zhur.eksp.i teor.fiz. 41 no.4:1040-1042 O '61. (MIRA 14:10)

1. Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.
(Protons--Scattering)

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

S/188/62/000/004/010/010
B108/B102

AUTHORS: Vasil'yev, S. S., Romanovskiy, Ye. A., Timushev, G. F.

TITLE: Cross section of 6.6-Mev proton absorption by F^{19} nuclei

PERIODICAL: Moscow. Universitet. Vestnik. Seriya III. Fizika, astronomiya, no. 4, 1962, 93

TEXT: In order to collect evidence for the hypothesis of surface absorption of low and medium-energy nucleons by nuclei (Bjorklund F. E., Fernbach S. Phys. Rev., 10, 1295, 1958) the authors studied the collision of 6.6-Mev protons with F^{19} nuclei. Such collisions involve several processes: elastic and inelastic scattering, (p,n), (p,α), and (p,γ). Nine levels with energies between 0.110 and 4.036 Mev are excited by such processes. The total cross section of inelastic scattering of 6.6-Mev protons from F^{19} nuclei as found from the level excitation cross sections is approximately 450 mb. Data on the cross sections of the other processes were taken from publications. The total absorption cross section is

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$$\sigma_r = \sigma_{p,p'}(450\ \text{mb}) + \sigma_{pp}(20\ \text{mb}) + \sigma_{p\alpha}(10\ \text{mb}) + \sigma_{pn}(55\ \text{mb}).$$

As the accuracy of the (p,n) and (p,p) reaction cross sections is not known it is difficult to estimate the error in the total absorption cross section. The exact value of σ_r will certainly be between 500 and 550 mb.

ASSOCIATION: NIIYaF

SUBMITTED: March 14, 1962

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

S/188/62/000/001/008/008
B145/B110

AUTHORS: Vasil'ev, S. S., Romanovskiy, Ye. A., Timushev, G. F.

TITLE: Absorption cross sections of Cu^{63} and Cu^{65} nuclei for 6.6-Mev protons

PERIODICAL: Moscow Universitet. Vestnik. Seriya III. Fizika, astronomiya, no. 1, 1962, 94 - 95

TEXT: Inelastic scattering of 6.6-Mev protons from Cu^{63} and Cu^{65} was studied, since contrary to $\sigma_{p,n}$ and $\sigma_{p,\alpha}$ the component $\sigma_{p,\gamma}$ of the absorption cross section (σ_r) has hardly been investigated. The measuring technique has been described previously (Trudy II Vsesoyuznoy konferentsii po yadernym reaktsiyam pri malykh i srednykh energiyakh (Proceedings of the Second All-Union Conference on Nuclear Reactions at Low and Medium Energies). M., 1960 (in print)). Results are listed in a table. Accuracy is 5 - 7 % for nonoverlapping peaks and about 15 % for overlapping peaks. The measured values show that inelastic scattering takes place via formation of a compound nucleus. The absolute partial cross sections were calculated by using

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data of Mazazi (Ref. 5, see below) on the relative intensities of inelastically scattered proton groups corresponding to the excitation of 46 Cu^{63} levels and 21 Cu^{65} levels (E_p = 6.51 Mev). The sums of the relevant partial cross sections are 240 ± 30 mb (Cu^{63}) and 70 ± 15 mb (Cu^{65}), and were set equal to $\sigma_{p,p'}$. The cross section $\sigma_{p,p'}$ of inelastic scattering via the compound nucleus formation was estimated on the basis of data on inelastic scattering with excitation of the first level: about 20 - 25 mb for Cu^{63}, and about 10 - 15 mb for Cu^{65}. From these results and from published data on $\sigma_{p,n}$ and $\sigma_{p,\alpha}$, σ_r was calculated to be 600 mb (Cu^{63}) and 617 mb (Cu^{65}). A comparison of these data with those obtained from the optical model can answer the question whether low-energy protons are absorbed by a thin surface layer or by the entire volume of the nucleus. A. P. Klyucharev is mentioned. There are 1 table and 7 references: 3 Soviet and 4 non-Soviet. The 3 references to English-language publications read as follows: Bjorklund F. E., Fernbach S., Phys. Rev., 10, 1295, 1958; Ref 5: Mazazi M., Buechner W. W., Figueiredo R. P., Phys. Rev., 108, 373, 1957; Benveniste J., Rooth R.,

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

Absorption cross sections... S/186/62/000/001/008/008
B145/B110

Mitchell A., Phys. Rev. 123, 1819, 1961.

ASSOCIATION: NIIYaF MGF

SUBMITTED: December 26, 1961

Table. Legend: (1) nucleus; (2) level, Mev; (3) differential inelastic scattering cross section, mb/steradian.

(1) Ядро	(2) Уровень в *мэв*	(3) Дифференциальное сечение неупругого рассеяния в *мб/стерад*							
		48°07	65°05	77°23	89°52	105°56	122°09	136°45	150°58
Cu^{63}	0,657±0,007	0,93	0,93	0,89	0,89	0,90	0,92	0,92	0,94
—»—	0,956±0,008	1,44	1,45	1,44	1,48	1,45	1,44	1,42	1,42
—»—	1,328±0,015	—	1,14	1,06	1,16	1,20	1,13	1,15	1,20
—»—	1,419±0,015	1,06	1,12	1,02	1,16	1,12	1,05	1,16	1,23
—»—	1,544±0,015	1,01	0,89	0,90	0,97	0,93	0,92	0,99	0,80
—»—	1,856±0,015	0,72	0,77	0,68	0,72	0,58	—	0,72	0,58
Cu^{65}	0,777±0,008	—	0,68	0,58	0,58	0,70	0,55	0,59	—
—»—	1,106±0,008	—	1,1	0,98	0,99	1,20	1,06	—	1,03

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40869

S/048/62/026/009/004/011
B125/B186

24 66 P

AUTHORS: Vasil'yev, S. S., Romanovskiy, Ye. A., and Timushev, G. F.

TITLE: Inelastic scattering of 6.6-Mev protons from nickel and copper nuclei

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 9, 1962, 1143-1149

TEXT: The inelastic scattering of 6.6-Mev protons from Ni^{58}, Ni^{60}, Cu^{63} and Cu^{65} nuclei is studied in detail. The proton beam from the 120-cm cyclotron of the NIIYaF MGU was focused into the reaction chamber by quadrupole lenses. The protons from nickel and copper foils with natural isotopic composition scattered through an angle ϑ, were analyzed with a double-focusing magnetic spectrometer. The energies of the excited states as measured (Table 1) are in good agreement with the results of C. H. Paris, W. W. Buechner, Bull. Amer. Soc., Ser. II, 2, 61 (1957) and of M. Mazari et al., Phys. Rev., 108, 373 (1957). The inelastic proton scattering occurs probably via compound nucleus formation because the angular distributions of the scattered protons are isotropic within the limits of

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measurement error.

$$\sigma = \frac{1}{2}\pi\lambda^2\left\{T_0\left[\frac{2(2T_2')}{T_0+2T_2'}\right] + T_1\left[\frac{2(T_1'+T_3')}{T_1+T_1'+T_3'} + \frac{4(2T_1'+2T_3')}{T_1+2T_1'+2T_3'}\right] + T_2\left[\frac{10(T_0'+2T_2')}{T_2+T_0'+2T_2'}\right] + T_3\left[\frac{6(2T_1'+2T_3')}{T_3+2T_1'+2T_3'} + \frac{8(T_1'+2T_3')}{T_3+T_1'+2T_3'}\right] + T_4\left[\frac{8(2T_2')}{T_4+2T_2'} + \frac{10T_2'}{T_4+T_2'}\right]\right\}. \quad (6)$$

is the total inelastic scattering cross section of protons (E_p=6.6Mev) from Ni^{60}. The "penetrabilities" T_L and $T_{L'}$ are equal to zero if $T > 4$, and $T' > 3$. L and L' are the orbital angular momenta of the incident and of the outgoing proton. The contribution of the direct processes to the scattering here considered is negligibly small. Table 2 gives the total

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cross sections of the proton scattering from Cu^{63} and Cu^{65} with E_p=6.6Mev. The sum of the total cross sections of inelastic scattering in the range up to 3.9 Mev is 230±20 millibarn for Ni^{58} and 250±30 millibarn for Ni^{60}. For this reason the fraction of the pp-processes that occurs via a compound nucleus formation may be 300 to 350 millibarn in the scattering of protons from Ni^{58} and Ni^{60} at E_p = 6.6 Mev. The present results do not contradict the hypothesis of increased elastic scattering cross section of even-even Ni^{58} and Ni^{60} nuclei through large angles due to the great contribution of the pp-processes taking place via a compound nucleus. There are 6 figures and 2 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gos. universiteta im. M. V. Lomonosova (Scientific Research Institute of Nuclear Physics of the Moscow State University imeni M. V. Lomonosov)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

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Table 1. Energies of the excited states in Ni^{58}, Ni^{60}, Cu^{63}, and Cu^{65} (in Mev).

Legend to Table 2: (1) process; (2) σ_{total}

Ni^{58}	Cu^{63}	Cu^{65}
1,450±0,006	0,657±0,007	0,777±0,008
2,457±0,012	0,956±0,008	1,106±0,008
2,772±0,012	1,328±0,015	1,480±0,010
2,892±0,012	1,419±0,015	1,635±0,015
2,941±0,012	1,544±0,015	1,730±0,015
3,036±0,012	1,856±0,015	2,099±0,015

(1) Процесс	σ, мб	
	Cu^{63}	Cu^{65}
(p, p')	240±30	70±15
(p, α)	35± 3	37±10
(p, n)	300±30	500±50
(p, p)	~25	~10
(2) $\sigma_{полн}$	600±50	617±50

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

S/048/62/026/012/012/016
B117/B102

AUTHORS: Vasil'yev, S. S., Romanovskiy, Ye. A., and Timushev, G. F.

TITLE: Properties of the lower excited states of F^{19} and Al^{27} nuclei inferred from data on inelastic proton scattering

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 12, 1962, 1508 - 1517

TEXT: Predictions as to the possibilities for obtaining information on nuclear states by investigating inelastic nucleon scattering are here re-examined experimentally in the light of recent model conceptions of direct inelastic interactions between elementary particles. For this purpose pro-tons were accelerated to 6.6 Mev in the 120-cm cyclotron of the NIIYaF MGU and their inelastic scattering on F and Al nuclei was investigated. By evaluating the proton energy spectra recorded at 8 to 9 different angles (from 30 to 150°) information could be obtained on the energy levels of the nuclei investigated. Comparison with results of other authors showed that the level positions can be determined with great accuracy by using targets thick enough to ensure a big enough yield of inelastically

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Properties of the lower ... S/048/62/026/012/012/016
B117/B102

scattered particles. This paper was presented on the 12th Annual Conference on Nuclear Spectroscopy in Leningrad from January 26 to February 2, 1962. There are 1 figure, 1 table, and 46 references.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gos. universiteta im. M. V. Lomonosova (Scientific Research Institute of Nuclear Physics of the Moscow State University imeni M. V. Lomonosov)

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

S/056/62/042/002/015/055
B102/B138

AUTHORS: Vasil'yev, S. S., Romanovskiy, Ye. A., Timushev, G. F.

TITLE: Inelastic scattering of 6.6-Mev protons from Ca^{40} and Mn^{55} nuclei

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 2, 1962, 395-402

TEXT: Inelastic proton scattering was studied with a rotating magnetic analyzer. The protons were accelerated in the 120-cm cyclotron of the Institute of Nuclear Physics of MGU [Assoc.]. The angular distributions were measured, of elastically scattered protons or proton groups corresponding to the excited levels 3.352 ± 0.010, 3.733 ± 0.014 and 3.912 ± 0.015 Mev of Ca^{40}, and 0.131 ± 0.007, 0.984 ± 0.005, 1.291 ± 0.010, 1.523 ± 0.007 and 1.885 ± 0.007 Mev of Mn^{55}. The scattering mechanism is most probably a (p,n) reaction; its threshold is at [illegible] Mev for Ca^{40} and 1.020 Mev for Mn^{55}. From the results, shown in

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[illegible] are thanked for help. A. K. Val'ter, I. I. Zalyubovskiy, L. P. Kovaleva

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

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B102/B138

Inelastic scattering of

V. P. Luteik (UFZh, 4, 705, 1959) and A. V. Luk'yanov, I. B. Teplov, M. K. Akimova (Tablitsa volnovykh kulonovskikh funktsiy - Tables of Coulomb wave functions - Izd. AN SSSR, 1961) are mentioned. There are 6 figures and 23 references: 8 Soviet and 15 non-Soviet. The four most recent references to English-language publications read as follows: A. M. Lane, E. D. Pendlebury, Nucl. Phys. 15, 39, 1960; G. E. Brown et al. Nucl. Phys. 24, 1, 1961; N. Nath et al. Nucl. Phys. 13, 74, 1959; E. Post, N. Austern, Phys. Rev. 120, 1375, 1960.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of Moscow State University)

SUBMITTED: August 31, 1961

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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

GRANCHA, I.; ROMANOVSKIY, Ye.A.; TIMUSHEV, G.F.; KHASANI, M.M.

Polarization of protons scattering on carbon. Vest. Mosk. un. Ser. 3: Fiz., astron. 19 no.4:87 Jl-Ag '64.

(MIRA 17:10)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo universiteta.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ACCESSION NR: AP4041443 S/0188/64/000/003/0100/0100

AUTHOR: Grancha, I.; Romanovskiy, Ye. A.; Timushev, G. F.

TITLE: Measurement of the polarization of protons with an energy of 6.6 Mev during elastic scattering on Li seven

SOURCE: Moscow. Universitet. Vestnik. Seriya 3. Fizika, astronomiya, no. 3, 1964, 100

TOPIC TAGS: proton polarization, proton scattering, lithium, elastic scattering

ABSTRACT: By use of a magnetic analyzer and polarimeters described earlier, the authors measured the polarization of protons elastically scattered on Li^7, with an energy of 6.6 Mev. Protons were accelerated to an energy of 6.6 Mev in the 120-cm cyclotron of the NIIYaF MGU. The targets were made of metallic lithium of natural isotopic composition by spraying in a vacuum on a backing of gold leaf. The thickness of lithium on the backing was about 1.5 mg/cm^2. The targets measured 35 x 70 mm. The magnetic analyzer made it possible to detect protons scattered on Li^7 and focus them onto targets. The results of the measurements are given in a table in the original. The angular distribution of elastic scattering of protons on Li^7 also was measured, making it possible to compare the character of the curve of angular distribution of polarization and the Rodberg theory (Nuclear

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ACCESSION NR: AP4041443

Physics, 15, 72, 1960). The agreement was very good. Orig. art. has: 1 table.

ASSOCIATION: NIIYaF MGU

SUBMITTED: 01Jan64 ENCL: 00

SUB CODE: NP NO REF SOV: 001 OTHER: 001

Card 2/2

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ACCESSION NR: AP4043803 S/0188/64/000/004/0087/0087

AUTHOR: Grancha, I., Romanovskiy, Ye. A., Timushev, G. F., Khasani, M. M.

TITLE: Polarization of protons during scattering on carbon

SOURCE: Moscow. Universitet. Vestnik. Seriya 3. Fizika, astronomiya, no. 4, 1964,87

TOPIC TAGS: proton polarization, proton, carbon target, cyclotron, proton scattering, polystyrene film target

ABSTRACT: The polarization of elastically scattered protons with an energy $E_p = 6.6$ Mev was measured at the NIIYaF MGU during scattering on carbon. A beam of protons was accelerated to an energy of 6.6 Mev in the institute's 120-cm cyclotron. After exit from the acceleration chamber the beam was focused by a deflecting magnet and quadrupole lenses onto a target in the room adjacent to the cyclotron. Individual groups of particles, emanating from the target, were separated by a magnetic analyzer with a uniform field and terminals in the form of a circular ring. The central angle of the ring was 90°. The ring was 200 mm thick and had a mean radius of 70 cm. The carbon target consisted of a polystyrene film with a thickness of 7-10 mg/cm^2. The analyzer was a polarimeter, also with a polystyrene film. After double scattering the protons were recorded by MK

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ACCESSION NR: AP4043803

nuclear photoplates with an emulsion thickness of 15-20 microns. The polarimeter used has been described earlier (I. Grancha et al., Vestn. Mosk. un-ta, ser. fiziki, astronomii, No. 4, 62, 1963). The results of the measurements are given in a table. Orig. art. has: 1 table.

ASSOCIATION: NIIYaF MGU

SUBMITTED: 10Jan64 ENCL: 00

SUB CODE: NP NO REF SOV: 001 OTHER: 001

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ASFUR, F.; GRANCHA, I.; ROMANOVSKIY, Ye.A.; TIMUSHEV, G.F.; KHASANI, M.

Measuring the angular distribution for the reaction Al^{27} (p,)Mg^{24} by means of a magnetic analyzer at E_p = 6.6 Mev. Vest. Mosk. un. Ser.3:Fiz., astron. 19 no.1:21-22 Ja-F '64. (MIRA 17:4)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo universiteta.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

VASIL'YEV, S. S.; ROMANOVSKIY, Ye. A.; TIMUSHEV, G. F.

Properties of the lower excited states of F^{19} and Al^{27} nuclei determined from data on inelastic proton scattering. Izv. AN SSSR. Ser. fiz. 16 no.12:1508-1517 D '62. (MIRA 16:1)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova.

(Fluorine) (Aluminum) (Protons—Scattering)

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GRANCHA, I.; ROMANOVSKIY, Ye. A.; TIMUSHEV, G. F.

"Investigation of the Scattering of Protons by Li Nuclei."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22 Feb 64.

Moscow State Univ.

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ASFUR, F.; GRANCHA, I.; ROMANOVSKIY, Ye.A.; TIMUSHEV, G.F.; KHASANI, M.M.

Measurement of the polarization of CE_p = 6.6 Mev. protons scattered on aluminum. Vest. Mosk. un. Ser. 3:Fiz., astron. 18 no.5:8-10 S-O '63. (MIRA 16:10)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

GR[illegible] [illegible]; ROMANOVSKIY, Ye. A.; TIMUSHEV, G. F.; KHASANI, M. M.

"Polarizations of Protons with Energies 6.6 MeV in the Case of Elastic and Inelastic Scattering on Some Light Nuclei."

report sumitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22 Feb 64.

Moscow State Univ.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ROMANOVSKIY, Ye.A.; TIMUSHEV, G.F.

Studying nuclear reactions with the aid of a magnetic analyzer. Vest. Mosk. un. Ser. 3: Fiz., astron. 18 no.4:56-61 Jl-Ag '63. (MIRA 16:8)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.
(Nuclear reactions) (Magnetic instruments)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

GRANCHA, I.; ROMANOVSKIY, Ye.A.; TIMUSHEV, G.F.; KHASANI, M.M.

Efficient polarimeters for low and medium energy protons operated in combination with magnetic analyzers. Vest. Mosk. un. Ser. 3: Fiz., astron. 18 no.4:62-67 Jl-Ag '63. (MIRA 16:8)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.
(Polariscope) (Magnetic instruments)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

S/903/62/000/000/018/044
B102/B234

AUTHORS: Vasil'yev, S. S., Romanovskiy, Ye. A., Timushev, G. F.

TITLE: Problem of the inelastic scattering mechanism of slow protons from Al^{27}

SOURCE: Yadernyye reaktsii pri malykh i srednikh energiyakh; trudy Vtoroy Vsesoyuznoy konferentsii, iyul' 1960 g. Ed. by A. S. Davydov and others. Moscow, Izd-vo AN SSSR, 1962, 201-206

TEXT: In order to find out whether direct processes play the main role even at low proton energies and whether the anisotropy observed in the angular distributions is due to compound nucleus formation of a with several levels, excited, or whether it may be also explained by a direct mechanism, the inelastic scattering of 6.6-Mev protons from Al^{27} was investigated. In the Al^{27}+p reaction, Si^{28} is formed with an excitation energy of ~18 Mev. If the level density of the compound nucleus is assumed to be $\sim\exp(2\sqrt{\beta E_{exc}})$, then for E_{exc} ~18 Mev the level distance will be 4 - 6 kev. Then, in the

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case of an energy spread of the protons effecting overlap of a great number of levels, the quantum characteristics is random and the proton angular distribution in the case of Si^{28} formation will be isotropic. In the case of direct processes no strong dependence of σ on θ may be expected. A double-focusing magnetic analyzer was used for measuring the angular distributions in the interval 30-150° of six proton groups scattered from Al^{27} with excitation of the levels 0.840, 1.014, 2.216, 2.743, and 3.000 Mev. The protons were accelerated in the 120-cm cyclotron of the NIIYaF MGU, their energy spread was 45 kev, the target thickness 20 kev. The differential elastic scattering cross sections were determined by way of comparison with those of Au^{197} and the compound nucleus formation cross section was estimated from the relation $\sigma_c \simeq \pi(R_o+\lambda\!\!\!^-)^2(1-V/E_p)$ where $R_o = 1.4A^{1/2}$ Fermi, $\lambda\!\!\!^-$ is the reduced proton wavelength. With $V = Ze^2/(R_o+\lambda\!\!\!^-)$ this yields $\sigma_c \sim 600$ mb. A comparison of the results indicates that the asymmetry observed may be explained by the contribution of direct processes to scattering and an experimental-theoretical comparison on the basis of the direct-

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B102/B234

Problem of the inelastic...

interaction relation $d\sigma/d\Omega \sim j_l(|\vec{k}_i-\vec{k}_f|R_o)^2$ verifies this conclusion. j_l is a spherical Bessel function of l-th order, $\vec{k}_i$, $\vec{k}_f$ are the wave vectors of incident and scattered proton, and R_o the interaction radius. There are 5 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki, MGU im. M. V. Lomonosova (Scientific Research Institute of Nuclear Physics, MGU imeni M. V. Lomonosov)

Card 3/3

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ACC NR: AP6034590 (N) SOURCE CODE: UR/0375/66/000/011/0069/0071

AUTHOR: Romanovskiy, Yu. B. (Engineer; Captain 2d Rank)

ORG: None

TITLE: Use of the surface warship engineering installation in tropical climates

SOURCE: Morskoy sbornik, no. 11, 1966, 69-71

TOPIC TAGS: propulsion performance, combatant ship, tropic maintenance, equipment tropicalization, military personnel, naval equipment

ABSTRACT: The operation of the engineering installation [EMU] in the tropics requires the application of special techniques. Several examples, based on practical experience gained from tropical cruises, of measures employed to maintain at a normal level the operating efficiency of both machinery and personnel are presented. These include the use of special paint, the relocation of certain components, and the introduction of auxiliary apparatuses. The problem of refrigeration of perishables is also discussed. Orig. art. has: none.

SUB CODE: 13,15/SUBM DATE: None

Card 1/1

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ROMANOVSKIY, Yu.G., inzh.; SMIRNOV, A.A., inzh.

Prospects for the adoption of telemechanical systems of centralized control in mining. Gor. zhur. no.2:46-50 F '58. (MIRA 11:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy ugol'nyy institut.
(Remote control) (Mining engineering)

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

SNAGOVSKIY, Yevgeniy Stefanovich, kand. tekhn. nauk; VEREM'YEV, V.M., kand. tekhn. nauk; ROMANOVSKIY, Yuriy Georgiyevich, inzh.; CHERNOV, Vladimir Aleksandrovich, inzh.; MIRSKAYA, V.V., red. izd-va; MINSKER, L.I., tekhn. red.; OVSENKO, V.G., tekhn. red.

[Remote control apparatus in mines] Telemekhanicheskie ustroistva na shakhtakh. [By] E.S.Snagovskii i dr. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po gornomu delu, 1962. 276 p. (MIRA 15:4)

(Mining machinery) (Remote control)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ROMANOVSKIY, YU. G.

ALEKSANDROV, B.F., inzh.; BALYKOV, V.M., inzh.; BARANOVSKIY, F.I., inzh.; BOGUTSKIY, N.V., inzh.; BUN'KO, V.A., kand.tekhn.nauk, dotsent; VAVILOV, V.V., inzh.; VOLOTKOVSKIY, S.A., prof., doktor tekhn.nauk; GRIGOR'YEV, L.Ya., inzh.; GRIDIN, A.D., inzh.; ZARMAN, L.N., inzh.; KOVALEV, P.F., kand.tekhn.nauk; KUZNETSOV, B.A., kand.tekhn.nauk, dotsent; KUSNITSYN, G.I., inzh.; LATYSHEV, A.F., inzh.; LEYBOV, R.M., doktor tekhn.nauk, prof.; LEYTES, Z.M., inzh.; LISITSYN, A.A., inzh.; LOKHANIN, K.A., inzh.; LYUBIMOV, B.N., inzh.; MASHKEVICH, K.S., inzh.; MALKHAS'YAN, R.V.; MILOSERDIN, M.M., inzh.; MITNIK, V.B., kand.tekhn.nauk; MIKHEYEV, Yu.A., inzh.; PARAMONOV, V.I., inzh.; ROMANOVSKIY, Yu.G., inzh.; RUBINOVICH, Ye.Ye., inzh.; SAMOYLYUK, N.D., kand.tekhn.nauk; SMEKHOV, V.K., inzh.; SMOLDYREV, A.Ye., kand.tekhn.nauk; SNAGIN, V.T., inzh.; SNAGOVSKIY, Ye.S., kand.tekhn.nauk; FEYGIN, L.M., inzh.; FRENKEL', B.B., inzh.; FURMAN, A.A., inzh.; KHORIN, V.N., dotsent, kand.tekhn.nauk; CHETVEROV, B.M., inzh.; CHUGUNIKHIN, S.I., inzh.; SHELKOVNIKOV, V.N., inzh.; SHIRYAYEV, B.M., inzh.; SHISHKIN, N.F., kand.tekhn.nauk; SHPIL'BERG, I.L., inzh.; SHORIN, V.G., dotsent, kand.tekhn.nauk; SHTOKMAN, I.G., doktor tekhn.nauk; SHURIS, N.A., inzh.; TERPIGOREV, A.M., glavnyy red.; TOPCHIYEV, A.V., otv.red.toma; LIVSHITS, I.I., zamestitel' otv.red.; ABRAMOV, V.I., red.; LADYGIN, A.M., red.; MOROZOV, R.N., red.; OZERNOY, M.I., red.; SPIVAKOVSKIY, A.O., red.; FAYBISOVICH, I.L., red.; ARKHANGEL'SKIY, A.S., inzh., red.;

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ALEKSANDROV, B.F.---(continued) Card 2.

BELYAYEV, V.S., inzh., red.; BUKHANOVA, L.I., inzh., red.; VLASOV, V.M., inzh., red.; GLADILIN, L.V., prof., doktor tekhn.nauk, red.; GREBTSOV, N.V., inzh., red.; GRECHISHKIN, F.G., inzh., red.; GONCHAREVICH, I.F., kand.tekhn.nauk, red.; GUDALOV, V.P., kand.tekhn. nauk, red.; IGNATOV, N.N., inzh., red.; LOMAKIN, S.M., dotsent, kand. tekhn.nauk, red.; MARTYNOV, M.V., dotsent, kand.tekhn.nauk, red.; POVOLOTSKIY, I.A., inzh., red.; SVETLICHNYY, P.L., inzh., red.;SAL'-TSEVICH, L.A., kand.tekhn.nauk, red.; SPERANTOV, A.V., kand.tekhn. nauk, red.; SHETLER, G.A., inzh., red.; ABARBARCHUK, F.I., red.izd-va; PROZOROVSKAYA, V.L., tekhn.red.; KONDRAT'YEVA, M.A., tekhn.red.

[Mining; an encyclopedic handbook] Gornoe delo; entsiklopedicheskii spravochnik. Glav.red.A.M.Terpigorev. Chleny glav.redaktsii A.I. Baranov i dr. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu. Vol.7. [Mining machinery] Gornye mashiny. Redkol.toma A.V.Topchiev i dr. 1959. 638 p. (Mining machinery) (MIRA 13:1)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ROMANOVSKIY, Yu. M.

15728* (Multiplication of Electrically Given Functions by Means of the Cathode-Ray Tube.) Umnozhenie elektricheski zadannykh funktsii s pomoshch'iu elektronno-lucheyoi trubki. In: M. Romanovskii. *Moskovskogo Universiteta, Vestnik, Seriia Fiziko-Matematicheskikh i Estestvennykh Nauk*, v. 4, no. 6, June 1954, p. 67-70.

Method of luminescent square and interaction of electric and magnetic fields. Diagrams, graph, oscillograms. 1 ref.

62

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

ROMANOVSKIY, YU. M., STRATONOVICH, R. L. (MGU, Moscow)

"The Parametric Effect of a Random Force on Linear and Non-Linear Oscillator Networks."

Problem was solved by using shortened equations for second order equations. The conditions for parametric excitation were found for linear networks in the presence of a wide and narrow fluctuation spectrum (compared to the bandwidth of the network). The author determined the borders of the main parametric resonance field with simultaneous parametric influence of the harmonic force and wide-band noise. The laws of probability distribution for amplitudes and phases were found for the non-linear case. A great number of reports dealt with the investigation of slow fluctuations.

report presented at the 1st All-Union Conference on Statistical Radio Physics, Gor'kiy, 13-18 October 1958. (Izv. vyssh ucheb zaved-Radiotekh., vol. 2, No. 1, pp 121-127) COMPLETE card under SIFOROV, V. I.)

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

16(1)

AUTHORS: Stratonovich, R.L., and Romanovskiy, Yu.M. SOV/155-58-3-37/37

TITLE: Parametric Influence of a Random Force on Linear and Nonlinear Oscillation Systems (Parametricheskoye vozdeystviye sluchaynoy sily na lineynyye i nelineynyye kolebatel'nyye sistemy)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki, 1958, Nr 3, pp 221-224 (USSR)

ABSTRACT: Given the equation

$$\ddot{y} + 2\delta\dot{y} + \omega^2\left[1+\xi(t)\right]y = 0,$$

where $\xi(t)$ is a stationary random function. The solution is sought in the form $y(t) = A(t)\cos\phi$, $\phi = \omega t+\varphi(t)$. Under the assumption $A(t+T) - A(t) \ll A(t)$, $T = \frac{2\pi}{\omega}$, a shortened system is obtained:

$$\dot{u} = m_1-\delta+\xi_1(t);\ \dot{\varphi} = m_2+\xi_2(t),\ \text{where } u = \ln A,$$

$$m_1 = \omega\langle\xi\sin\phi\cos\phi\rangle,\ m_2 = \omega\langle\xi\cos^2\phi\rangle,\ \xi_1(t) = \omega\xi\sin\phi\cos\phi-m_1;\ \xi_2(t) = \omega\xi\cos^2\phi-m_2$$

and $\langle\ \rangle$ means the mean value. Herefrom the calculation yields:

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

Parametric Influence of a Random Force on Linear and Nonlinear Oscillation Systems SOV/155-58-3-37/37

$$m_1 = \frac{1}{8}\omega^2 \varkappa(2\omega);\ m_2 = 0;\ \int_{-\infty}^{\infty} \langle \xi_1, \xi_{1\tau} \rangle d\tau = \frac{\omega^2}{8} \varkappa(2\omega);$$

$$\int_{-\infty}^{\infty} \langle \xi_2 \xi_{2\tau} \rangle d\tau = \frac{\omega^2}{4}\left[\varkappa(0) + \frac{1}{2}\varkappa(2\omega)\right],$$ where $\varkappa(2\omega)$ denotes the half spectral density for the frequency 2ω:

$$\varkappa(2\omega) = \int_{-\infty}^{\infty} \langle \xi \xi_\tau \rangle \cos 2\omega\tau d\tau.$$

For the probability that the amplitude is greater than b the authors obtain

$$P(A(t) > b) = \frac{1}{2} - \frac{1}{2}\phi\left(\sqrt{\lambda_1}\left[\frac{\ln b}{\sqrt{t}} - (m_1 - \delta)\sqrt{t}\right]\right),$$

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

Parametric Influence of a Random Force to Linear and Nonlinear Oscillation Systems SOV/155-58-3-37/37

where $\Phi(x) = \frac{2}{\sqrt{\pi}}\int_0^x e^{-z^2}dz$, $\eta_1 = \frac{16}{\omega^2 \varkappa(2\omega)}$.

The authors thank Professor S.P.Strelkov.
There are 4 Soviet references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova (Moscow State University imeni M.V.Lomonosov)

SUBMITTED: October 31, 1957

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

SOV/120-58-4-23/30

AUTHOR: Romanovskiy, Yu. M.

TITLE: A Low Frequency Noise Generator (Generator shumov nizkoy chastoty)

PERIODICAL: Pribory i tekhnika eksperimenta, 1958, Nr 4, pp 98-100 (USSR)

ABSTRACT: The operating principle of the noise generator is based on heterodyning the audio frequency noise signals. This is done by means of a device (see Fig.1) which consists of the following elements: an audio-range noise generator, a bandpass filter, a mixer, a low frequency filter, a local oscillator and an output cathode follower. The detailed circuit diagram of the device is shown in Fig.3. In this the bandpass filter consists of an amplifier stage and a pair of capacitively coupled resonant circuits; the filter has a uniform amplitude stage and a pair of capacitively coupled resonant circuits; the filter has a uniform amplitude-frequency characteristic from 350 to 450 cps. The mixer is on electronic switch built around two type 6Zh8 tubes. The low frequency filter is connected to the output of the mixer.

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SOV/120-58-4-23/30

A Low Frequency Noise Generator

consists of LC elements. The filter has a bandwidth extending from 0 to 30 cps, so that the spectrum of the output noise is in the form of the curve shown in Fig 4. The filter is followed by a cathode follower which acts as the output stage; the output voltage is of the order of 2 to 3 V rms. The author expresses his gratitude to V. I. Shmal'gauzen for valuable advice and help during the experiments. The paper contains 4 figures and 1 English reference.

ASSOCIATION: Fizicheskiy fakul'tet MGU (Physics Department of the Moscow State University)

SUBMITTED: September 16, 1957.

Card 2/2

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

~~16(1)~~ 16.6100

AUTHORS: Stratonovich, R.L., Romanovskiy, Yu.M. SOV/155-58-4-27/34

TITLE: A Simultaneous Parametric Influence of an Harmonic and of a Random Force on Oscillation Systems (Odnovremennoye parametricheskoye vozdeystviye garmonicheskoy i sluchaynoy sily na kolebatel'nyye sistemy)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki, 1958, Nr 4, pp 161 - 170 (USSR)

ABSTRACT: Enlarging the systems considered by the authors in [Ref 1] they investigate the systems

$$\ddot{y} + 2\delta\dot{y} + \omega^2\left[1 + h\sin\nu t + \xi(t)\right]y = 0$$

where $\xi(t)$ is a stationary random function with mean value zero, while h and ν are constants. Amplitude and phase are sought in the form

$$y(t) = A(t)\cos\phi \quad , \quad \phi = \frac{\nu}{2}t + \varphi(t) \quad .$$

It is assumed that A and φ change slowly which imposes restrictions of the intensity of $\xi(t)$ (as in [Ref 1]). The simplest case, where $\xi(t)$ contains no components of

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A Simultaneous Parametric Influence of an Harmonic and of a Random Force on Oscillation Systems SOV/155-58-4-27/34

lower frequencies, is explicitly considered. Then for $u = \ln A$ and φ one obtains :

$$\dot{u} = m_1 - \delta + \frac{h\omega}{4} \cos 2\varphi + \xi_1$$

$$\dot{\varphi} = \frac{\Delta}{2} - \frac{h\omega}{4} \sin 2\varphi + \xi_2$$

where the intensities of ξ_1 and ξ_2 are equal to

$$K = \frac{\omega^2}{8} \varkappa(2\omega)$$

($\varkappa(2\omega)$ is half the spectral density for the frequency 2ω),

$$\Delta = 2\omega - \nu \ , \quad m_1 = \frac{\omega^2}{8} \varkappa(2\omega).$$

Then conditions for parametric excitation are obtained and the boundaries of the domain of instability depending on the parameters of the system are determined.

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

A Simultaneous Parametric Influence of an Harmonic and of a Random Force on Oscillation Systems SOV/155-58-4-27/34

The authors thank Professor S.P. Strelkov and D.P. Kostómarov for their assistance.

There are 2 figures, and 3 Soviet references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova (Moscow State University imeni M.V. Lomonosov)

SUBMITTED: February 21, 1958

Card 3/3

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001445310012-0

3(4)

AUTHORS: Romanovskiy, Yu. M., Strelkov, S. P. (Moscow) SOV/179-59-4-1/40

TITLE: On the Influence of Atmospheric Turbulence on an Airplane With Elastic Wings at Different Flying Speeds

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye tekhnicheskikh nauk. Mekhanika i mashinostroyeniye, 1959, Nr 4, pp 3 - 10 (USSR)

ABSTRACT: The restrained vibrations of the elastic wing of an airplane under the influence of turbulence in dependence on the flying speed are investigated here. The investigation refers to airplanes with straight wings with a high wing aspect ratio at subsonic flying speed. Therefore, the computation of aerodynamic loads is based on the unsteady theory of motion of a wing with infinite wing aspect ratio in a plane current (Ref 1). With some restrictions, the external fluctuation effect on the wing of the airplane can be regarded as a steadily normal random process depending on time (Ref 2). For this reason, and as the entire system is assumed to be linear, the motion of this system can be described on the basis of the correlation theory. The equations of the system are investigated by the method of Bubnov and

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Galerkin and a system of equations (1.8) is obtained, the solution of which in a general form is not possible due to its extent. A program was set up to solve this system. By means of this program, the values required were obtained on the digital electron computer of the "Strela" type. The formulas for the statistic characteristics of restrained wing vibrations (i. e. the statistic characteristics of the bending and torsional moments of the wing) are indicated. The method described permits these characteristics to be obtained in a simple way. By means of them, vibrations of different degrees of freedom can be taken into account. An increase in the number of degrees of freedom by one causes an increase in the order of magnitude of the system of algebraic equations by two orders. The program must only be modified inconsiderably. Accordingly, the time required for the computation increases multiply. A comparison of statistic vibration characteristics on the same airplane model shows that the wing torsion may not be neglected at sufficiently low frequencies of the wing torsion near the critical velocities of the flutter, and that the joint bending- and

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On the Influence of Atmospheric Turbulence on an Airplane With Elastic Wings at Different Flying Speeds SOV/179-59-4-1/40

torsional vibrations of the wing must absolutely be taken into account in the computation. V. A. Druzhinina and V. B. Glasko compiled the program, and made the computations on the "Strela" computer. There are 7 figures, 2 tables, and 10 references, 3 of which are Soviet.

ASSOCIATION: Fizicheskiy fakul'tet MGU (Department of Physics of Moscow State University)

SUBMITTED: January 8, 1959

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B019/B056

16.7300

AUTHORS: Romanovskiy, Yu. M., Uvarov, I. I.

TITLE: An Experimental Investigation of the Parametric Excitation of a String With Fluctuating Tensions

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya 3, fizika, astronomiya, 1960, No. 3, pp. 24 - 27

TEXT: An investigation of parametric stability in an oscillation system consisting of two strings with one bead in the middle is dealt with. The fluctuation parameters are given by the tensions of the strings. By means of the experimental arrangement schematically shown in Fig. 1, the excitation of the parametric oscillation of the strings by random signals was investigated. A noise was applied to the input of the generator of mechanical oscillations, which set a vibrator in motion. The string oscillations were measured by means of a transmitter. By variation of the noise at the generator input, the strings were excited to random vibrations. The condition (2) for the paramagnetic excitation of the oscillation system is given, and the important parts played here by the

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An Experimental Investigation of the Parametric Excitation of a String With Fluctuating Tensions S/188/60/000/03/03/008 B019/B056

spectral density of the random processes in the parametric excitation of the system is pointed out. From the experiments described here it follows that even a high-quality oscillation system becomes unstable under certain conditions. This is in qualitative agreement with theory. The authors thank Professor S. P. Strelkov for his valuable advice and L. A. Shenyavskiy for his help in carrying out the experiments. There are 2 figures and 1 non-Soviet reference.

ASSOCIATION: Kafedra obshchey fiziki dlya mekhmata (Chair of the General Physics of Mechanical Mathematics)

SUBMITTED: October 20, 1959

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E191/E181

AUTHOR: Romanovskiy, Yu.M. (Moscow)

TITLE: Parametric Random Effects in Certain Problems of Aero-Elasticity

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1960, No 4, pp 133-135

TEXT: In determining the dynamic reaction of an elastic aeroplane to atmospheric turbulence in the vicinity of critical conditions such as divergence or flutter, the effect of horizontal airspeed fluctuations is of interest. These fluctuations are caused by atmospheric turbulence and have the same nature as the random vertical component of turbulent velocity. Following H. Press and J.C. Houbolt (Ref 1), the spectral density of the horizontal component can be evaluated from the graphs of the spectral density of the vertical component. A method of evaluating the effect of random parameters on the behaviour of the oscillating system (elastic aeroplane-air) is given. The first problem considered is that of the torsional oscillations of a wing having a large aspect ratio exposed to turbulent flow. The horizontal airspeed is assumed

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Parametric Random Effects in Certain Problems of Aero-Elasticity

subsonic, the bending stiffness of the wing is taken as infinite and the fuselage mass as very large compared with the wing mass. Only the fundamental mode of symmetrical torsional oscillations of the wing is considered. The equivalent scheme is that of a profile in plane flow hinged in torsion at the elastic centre with a restoring spring about the torsion "hinge". The equation of motion of this system, including the moment of random aerodynamic forces due to the effect of the vertical component of turbulence, is formulated and simplified for small random disturbances. Eq (3) so obtained is a linear equation with variable coefficients. It has been shown before that the effect of the fluctuation of the coefficient which determines the natural frequency of the system is equivalent to the introduction of a certain amount of negative damping. A Table gives the values of the effective damping and the additional negative damping for a range of variables. The effective damping diminishes with an increasing mean airspeed (as a fraction of the critical divergence speed) with a decreasing distance between the elastic centre and the mid-chord position, with an increasing mass moment of inertia of the wing and with a decreasing natural frequency of

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Parametric Random Effects in Certain Problems of Aero-Elasticity

torsional oscillations. These variations, therefore, reduce the reserve of stability and may even cause parametric excitation of wing oscillations. The numerical values of the Table correspond to a level of turbulence with root mean square values of wind gusts exceeding those recorded by Press and Houbolt by a factor of 7. Introducing many degrees of freedom, the method of mapping the trajectories of the complex frequencies on the complex plane of damping and frequency plane is used. The effect of small variations of the parameters on the parametric stability of the system can, in practice, show up in the regions of the natural frequency trajectories near the imaginary axis of the complex plane. This approach makes it possible to set the problem of parametric stability separately for each degree of freedom. The variation of each among the degrees of freedom can then be approximately described by an equation of the second order with coefficients determined by the frequency and damping corresponding to this coordinate. Such an equation, with a periodic variation of its coefficients, covers the response of a helicopter blade. When the coefficients vary in random

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fashion, the effect of the horizontal component of atmospheric turbulence on wing oscillations in the vicinity of the flutter speed can be evaluated. An approximate evaluation can be given by the slope of the frequency trajectory near the imaginary axis. If the slope is small, the turbulent fluctuations have no effect on the stability of the system. It is pointed out that the whole spectrum in atmospheric turbulence is important in the evaluation of its effect on the loss of stability and average values should not be used.

There are 2 figures, 1 table and 5 references: 4 Soviet and 1 English.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet, Fizicheskiy fakul'tet (Moscow State University, Faculty of Physics)

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ROMANOVSKIY, Yu. M. Cand Phys-Math Sci -- "Vibrations of ~~an elastic~~ a flexible aircraft under the effect of atmospheric turbulence." Mos, 1961 (Mos State Univ im M. V. Lomonosov. Mechanical-Math Faculty). (KL, 4-61, 185)

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AUTHORS: Babykin, V.V. and Romanovskiy, Yu.M. (Moscow)

TITLE: Non-linear aircraft wing oscillations when flying in disturbed air

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyenie, 1961, No.4, pp.83-90

TEXT: The effect of the non-linear properties of several elastic elements of a wing and movable control surfaces upon the critical flutter speed has been established in certain cases. Dry friction in the aileron and rudder hinge and friction in the control transmission linkage plays a substantial part. The relation between the critical speed and the design parameters of the aircraft is unaffected by dry friction and the limits of instability regions remain unchanged but vibrations can build up only with certain initial conditions which depend on the speed. Since the build-up of flutter depends, in the presence of dry friction, on initial conditions and thus on the nature of the external excitation, it is expected that, when flying in disturbed air, the atmospheric turbulence characteristics may determine the

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Non-linear aircraft wing ...

instant of flutter occurrence and the probability of its appearance at a given flight speed. This problem was treated in another context by P.S.Landa and S.P.Strelkov (Ref.2: Avtom. i telemekh., 1960, v.XXI, no.10) for non-linearities of the clearance type in the control transmission. Inherently non-linear elements in the structure and control system components may also have a large effect on the magnitude of various statistical characteristics of the forced motion of aircraft parts subject to continuous atmospheric turbulence. The present paper is a study of the effect of dry friction in the aileron hinge upon the oscillations of an elastic wing when the aircraft is flying in disturbed air. The purpose of the study is the selection of the dry friction torque in the aileron hinge so that reliable damping of forced vibrations is assured and also the examination of the possibility of preventing flexural-aileron flutter with the help of dry friction dampers. Electronic analogue simulating circuits were used to obtain the results presented in the paper. In the analysis, the wing is assumed to perform symmetrical oscillations in the fundamental mode and the aileron rotational motion as a solid body with a single degree of freedom. The mass and moment

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of inertia of the fuselage are considered infinitely large compared with those of the wing and aileron. The basic equations describing the flexural oscillations of the wing with the aileron are taken as the non-dimensional equations obtained by the Bubnov-Galerkin method with the addition of terms expressing the dry friction torque in the aileron hinge and external regular or random disturbances. For the solution, a standard analogue computer was provided with some special apparatus and the numerical constants of the aircraft examined by Landa (Ref.2) were introduced. Flexural aileron oscillations were first examined in the absence of external disturbances and in the presence of gusts of a definite shape, considering the effectiveness of dry friction dampers. In the presence of dry friction, the flutter regions depend on the amount of friction. At zero initial conditions and without external disturbances, no oscillations are excited even inside the flutter regions. The effect of dry friction dampers outside the flutter regions was examined. The effectiveness of dampers in vertical gust conditions can be summarized as follows: (a) the flutter region is sharply reduced even at small amounts of friction; (b) doubling the friction increases the critical

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aircraft speed by 20%; (c) in the presence of linear and quadratic friction terms produced by hydraulic dampers, a dry friction analysis is conservative; (d) near the flutter region, even small dry friction torques lead to substantial damping of wing oscillations; (e) away from the flutter region, dry friction has little effect on the wing oscillations. The study of wing and aileron oscillations in the presence of dry friction under continuous excitation by atmospheric turbulence has led to the following conclusions: (a) dry friction has about the same damping effect on oscillations caused by excitation of a certain form as on oscillations caused by random excitation; (b) variations of dry friction substantially change the distribution laws for the probability of oscillation amplitudes, in particular the number of freak peaks; (c) analogue simulator methods permit the determination of instability boundaries to an accuracy of 15%. Acknowledgments are expressed to S.P.Strelkov and A.A.Kharlamov for discussions. There are 8 figures and 6 Soviet references.

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AUTHORS: Glasko, V.B., Romanovskiy, Yu.M. (Moscow)

TITLE: Investigation of complex compound frequencies of an elastic aeroplane depending on its velocity

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Mekhanika i mashinostroyeniye, no.2, 1962, 105-109

TEXT: In this paper the authors consider the effect of the torsional oscillations of a wing on the nature of the bending oscillations produced by application of ailerons. The problem is presented in such a way that it can be solved with computing machines. The solution is based on the dimensionless equation derived by S. Strelkov and A. Kharlamov

$$z'' - h_0\sigma_1\theta'' - h_0\sigma_2\beta'' + \xi_1 z - \frac{\mu_{11}}{4} w(\theta' + \Delta_2\beta') - \\ - \mu_{11} w\left[\frac{w}{h_0}(\theta + h_{12}\beta) + \Delta_1\theta' + h_{13}\beta' - \frac{h_{11}}{h_0} z'\right] = 0$$

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$$\theta'' - \sigma_1 \frac{R_0}{h_0} z'' + \sigma_3 \beta'' + \xi_2 \theta + \frac{\mu_{21}}{4} \frac{w}{h_0} \left(\Delta_1 \theta' + A_6^* \beta' + A_6^* \frac{w}{h_0} \beta \right) -$$
$$- \mu_{21} \Delta_2 \frac{w}{h_0} \left[\frac{w}{h_0} (\theta + h_{22} \beta) + \Delta_1 \theta' + h_{23} \beta' - \frac{h_{21}}{h_0} z' \right] = 0$$

$$\beta'' - \sigma_2 \frac{R_0}{h_0} z'' + \sigma_4 \theta'' + \xi_3 \beta + \frac{\mu_{31}}{4} \frac{w}{h_0} \left(A_7^* \theta' + A_9^* \beta' + A_{10}^* \frac{w}{h_0} \beta \right) +$$
$$+ \mu_{31} \Delta_4^* \frac{w}{h_0} \left[\frac{w}{h_0} (\theta + h_{32} \beta) + \Delta_1 \theta' + h_{33} \beta' - \frac{h_{31}}{h_0} z' \right] = 0 \qquad (1)$$

It is assumed that Theodorsen's function $C(k) = 1$, that the wing is cantilevered and oscillates according to standard bending and twisting functions of the first order, $z(t)$, $\theta(t)$ and $\beta(t)$ are variables corresponding to coordinates of bending and torsion of the wing and to aileron deflection, w and h_0 - velocity and chord of the wing, σ_1, σ_2, σ_3 and σ_4 - parameters determining mechanical equilibrium of the wing and the aileron, ξ_1, ξ_2, ξ_3 - squares of parameters of frequencies of bending and torsion of the wing and rotation of the aileron. The problem is reduced to finding the characteristic indices of

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$$\sum_{k=1}^{3} \alpha_{ik} y_k'' + w \sum_{k=1}^{3} \beta_{ik} y_k' + w^2 \sum_{k=1}^{3} \gamma_{ik} y_k - \xi_i y_i = 0 \quad (i = 1, 2, 3) \tag{2}$$

where $y_1 = z$, $y_2 = \theta$, $y_3 = \beta$. Coefficients of α_{ik}, β_{ik} and γ_{ik} do not depend on w, their values can be obtained by equating Eq.(1) with Eq.(2). Assume that $y_k = y_{ko} \exp \lambda t$, then

$$p_{i1} y_{10} + p_{i2} y_{20} + p_{i3} y_{30} = 0 \qquad (i = 1, 2, 3)$$

$$p_{ik} \equiv \alpha_{ik} \lambda^2 + w \beta_{ik} \lambda + w^2 (1 - \delta_{ik}) \gamma_{ik} - \delta_{ik} \xi_i, \qquad \delta_{ij} = \begin{cases} 1 & (i = j) \\ 0 & (i \neq j) \end{cases}$$

Consequently characteristic equation of (2) will be

$$\text{Det} \left\| p_{ik}(\lambda) \right\| = 0 \tag{3}$$

This equation has 6 roots of $\lambda = \delta \pm j\omega$ type.
Of particular interest is

$$D(\lambda) \equiv D_1(\delta, \omega) + jD_2(\delta, \omega) = 0$$

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and its solution is worked out in detail. Graphs of roots for a number of values of ω are included. The results show that the roots corresponding to torsional oscillations of the wing and to oscillations of the aileron do not cause any reduction in the oscillatory stability margin of the system. It is shown that a system having two degrees of freedom is adequate for the investigation of flutter. The method can be used to determine a whole range of frequencies depending on various parameters. There are 3 figures.

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AUTHORS: Romanovskiy, Yu.M. and Sosulin, Yu.G.

TITLE: Microphony effects in directly-heated tubes

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiotekhnika, v. 5, no. 2, 1962, 268 - 270

TEXT: Two microphony effects occurring in subminiature directly-heated tubes (such as type [2] (P2B)) were investigated experimentally. The test circuit is illustrated in Fig. 2. The envelope of the tube was fixed onto a vibrator supplied from an audiogenerator for measurement of the first effect. The anode-current waveform was monitored by an oscilloscope and the electrodes of the tube were observed by a stereoscopic microscope. A curve illustrating anode-current modulation frequency as a function of the vibration frequency was thus measured (Fig. 3). It was found by means of the microscope that the cathode exhibited strong mechanical oscillations at a frequency of 3 kc/s. In the second case the filament of the tube was supplied from an audiofrequency source and it was found that the beat frequency observed at

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the anode (as a function of the filament current frequency) was analogous to the curve given in Fig. 3. The resonance curve for this case was also identical with the curve for the tube subjected to mechanical vibrations. The appearance of the cathode-filament oscillations when this is supplied from an audio source can be explained by interaction of the heater current with the external magnetic field. The above effects can be observed in other types of directly-heated tubes. There are 5 figures.

ASSOCIATION: Kafedra obshchey fiziki fizicheskogo fakul'teta Moskovskogo gos. universiteta im. M.V.Lomonosova (Department of General Physics of the Physics Division of Moscow State University im. M.V. Lomonosov)

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ACCESSION NR: AP5021288 UR/0020/65/163/005/1266/1269

AUTHOR: Stepanova, N. V.; Romanovskiy, Yu. M.; Iyerusalimskiy, N. D. (Corresponding member AN SSSR)

TITLE: Mathematical model of the growth of microorganisms in a continuous culture

SOURCE: AN SSSR. Doklady, v. 163, no. 5, 1965, 1266-1269

TOPIC TAGS: bacteriology, mathematic model, differential equation, oscillograph

ABSTRACT: Tests with continuous cultures have shown that the basic features of biomass growth may be described knowing only the following values: concentration of the culture medium at its minimum, concentration of the inhibitor affecting the minimal rate in the biochemical order of reactions, and concentration of the biomass. The mathematical task thus consists of constructing and studying systems of kinetic differential equations, and the values of the coefficients in such systems may be obtained from the test itself. A model was constructed based on Propionibacterium shermanii grown in a culture medium with lactate as the carbon source. Given was the

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