CIA-RDP86-00513R002202930008-5

USSR

SHMAKOV, G. B.

UDC 539.4:624.012

"On the Combining of Dynamic Parameters in the Nondestructive Control of the Quality of Concrete Structures"

Sb. tr. Mosk. inzh.-stroit. in-t (Collection of Works of Moscow Structural Engineering Institute), 1971, No. 82, pp 28-34 (from RZh-Mekhanika, No 6, Jun 72, Abstract No 6V849)

Translation: The results of a determination of the quality of reinforced concrete structures by nondestructive methods are presented. The basis of the method is to determine the dynamic characteristics of the reinforced concrete structures: the frequency of natural vibrations, which is a functional related to the elastic modulus of the material, the moment of inertia of a cross section, the linear mass of the structure and its length. It is noted that a vibration test of the structure on the basis of statistical data can be simplified by eliminating the weighing of the structure and measurement of its width, since deviations in this ordinarily did not exceed 3%.

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SHMAKOV, G. B., Sb. tr. Mosk. inzh.-stroit. in-t, 1971, No. 82, pp 28-34

In many cases, however, a determination of only the frequency of the oscillations can be insufficient to determine the quality of the part, for example, if the concrete is insufficiently compacted. It is proposed therefore that the vibration test be ultrasonic (acoustical), making it possible to determine the rate of propagation of ultrasound by a pulse in the concrete of the structure, which in turn is a characteristic of the elastic modulus of the concrete. It is thus proposed that the vibration method be combined with the ultrasonic method so that the rate of the ultrasound can be used as a parameter fulfilling a dual function: to correct the frequency of the natural vibrations and as an independent characteristic evaluating the strength of the concrete in individual, more vital places in the structure. Z. L. Gil'gur.

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	USSR SHMAKOV, G. S.	
	"Increasing the Electrical-Erosion Resistance of a Metal by Creating in Its Base a Honeycomb Structure from Particles of a Dispersed High-Welting Phase"	4
	Elektronnaya Obrabotka Materialov, No 1, 1970, pp 12-14	-
	Abstract: An attempt is made to develop a new principle of raising the electri- cal-corrosion resistance of metals by creating an appropriate structure in their base. It was decided to make this a honeycomb structure consisting of parti- cles of a high-melting dispersed phase. A layer of material consisting of a metal and a dispersed high-melting compound may be prepared by the methods of mechanical and chemical mixing. Chemical mixing is particularly effective when the dispersed high-melting phase is precipitated on a metal particle in the form of a dense layer, a honeycomb structure being formed when the material is pressed into briquets and sintered. For testing the proposed method, cermet materials consisting of copper-aluminum oxide and copper-boron nitride were prepared. Laboratory and production tests showed that the resistance of such materials to electrical-corrosion wear is 2-8 times greater than the resistance	
	of copper. 1/1	•
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USSR VALEYEV, K. G., MEL'NIKOV, B. N., TOKAREV, V. I., and SHMAKOV, I. P. "Method of Determining the Optimal Takeoff Envelope of an Alicerate With Minimum Localized Noise" Samolestostr. i tekhn. vozd. flota. Resp. mezhved. nauchno-tekhn. sb. (Aircraft Construction and the Technical Air Fleet, Republic Interdepart- mental Scientific-Technical Collection), Vypusk (Issue) 21, 1970, pp 27-31 (from RZh-Mekhanika, No 12, Dec 70, Abstract No 12B353, by G. S. Aronin) Translation: A solution to a system of equations of aircraft motion in the vertical plane at takeoff forming a noise criterion at a minimum is derived. The surface density of acoustic energy swept along during the takeoff period at a given point at a location lying in the plane of the takeoff trajectory is adapted as the noise criterion. The problem is solved by a method based on a study of the first variation of a functional charac- terizing the noise criterion adopted. The angle of attack and the thrust are chosen as the control functions. Results of calculations of the takeoff trajectory, optimal in the sense described above, of an aircraft with char-	÷.			
"Method of Determining the Optimal Takeoff Envelope of an Alrcraft With Minimum Localized Noise" Samolestostr. i tekhn. vozd. flota. Resp. mezhved. nauchno-tekhn. sb. (Aircraft Construction and the Technical Air Fleet, Republic Interdepart- mental Scientific-Technical Collection), Vypusk (Issue) 21, 1970, pp 27-31 (from RZh-Mekhanika, No 12, Dec 70, Abstract No 12B353, by G. S. Aronin) Translation: A solution to a system of equations of aircraft motion in the vertical plane at takeoff forming a noise criterion at a minimum is derived. The surface density of acoustic energy swept along during the takeoff period at a given point at a location lying in the plane of the takeoff trajectory is adapted as the noise criterion. The problem is solved by a method based on a study of the first variation of a functional charac- terizing the noise criterion adopted. The angle of attack and the thrust are chosen as the control functions. Results of calculations of the takeoff trajectory, optimal in the sense described above, of an aircraft with char-	USSR		VDC 533.652/.661.013	
Minimum Localized Noise" Samolestostr. i tekhn. vozd. flota. Resp. mezhved. nauchno-tekhn. sb. (Aircraft Construction and the Technical Air Fleet, Republic Interdepart- mental Scientific-Technical Collection), Vypusk (Issue) 21, 1970, pp 27-31 (from RZh-Mekhanika, No 12, Dec 70, Abstract No 12B353, by G. S. Aronin) Translation: A solution to a system of equations of aircraft motion in the vertical plane at takeoff forming a noise criterion at a minimum is derived. The surface density of acoustic energy swept along during the takeoff period at a given point at a location lying in the plane of the takeoff trajectory is adapted as the noise criterion. The problem is solved by a method based on a study of the first variation of a functional charac- terizing the noise criterion adopted. The angle of attack and the thrust are chosen as the control functions. Results of calculations of the takeoff trajectory, optimal in the sense described above, of an aircraft with char-	VALEYEV, K. G., MEL'NIKOV,	B. N., TOKAREV, V. I	., and SHMAKOV, I. P.	
 (Aircraft Construction and the Technical Air Fleet, Republic Interdepartmental Scientific-Technical Collection), Vypusk (Issue) 21, 1970, pp 27-31 (from RZh-Mekhanika, No 12, Dec 70, Abstract No 12B353, by G. S. Aronin) Translation: A solution to a system of equations of aircraft motion in the vertical plane at takeoff forming a noise criterion at a minimum is derived. The surface density of acoustic energy swept along during the takeoff period at a given point at a location lying in the plane of the takeoff trajectory is adapted as the noise criterion. The problem is solved by a method based on a study of the first variation of a functional characterizing the noise criterion adopted. The angle of attack and the thrust are chosen as the control functions. Results of calculations of the takeoff trajectory, optimal in the sense described above, of an aircraft with char- 	"Method of Determining the Minimum Localized Noise"	Optimal Takeoff Enve	lope of an Alicraft With	
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acteristics similar to the Tu-124 are presented. The angle of attack 1/2	the vertical plane at takeo derived. The surface densi takeoff period at a given p takeoff trajectory is adapt by a method based on a stud terizing the noise criterion are chosen as the control for trajectory, optimal in the s acteristics similar to the 2	If forming a noise c ty of acoustic energy oint at a location ly ed as the noise crite y of the first variat n adopted. The angle unctions, Results of sense described above	riterion at a minimum is y swept along during the ying in the plane of the erion. The problem is solved tion of a functional charac- e of attack and the thrust f calculations of the takeoff c. of an aircraft with char-	

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USSR UDC 621.9.025.004.6:53.01
GRANOVSKIY, G. I., Doctor of Technical Sciences, Professor, and SHMAKOV, N. A., Engineer
"The Nature of Wear of Teeth of High Speed, Dispersion-Hardened Steel"
Vestnik Mashinostroyeniya, No 11, Nov 71, pp 65-70.
ABSTRACT: The wear products of cutting tools made of dispersion-hardened steels from the sharpening of various steels and titanium alloys were found to be particles of the tool material, varying from 1 to 100 μ^2 in area and 0.1 to 1 μ and more in thickness. They were spread unevenly over the surface of the material being worked from a few μ to 1 mm and more apart in areas of highest plastic deformation on the contact surfaces, surrounded by oxides, indicating increased local temperatures. The distribution of the particles, structure, chemical composition and total mass indicate that adhesion pheno- mena are most significant in the wear of high speed, dispersion-hardened steel cutting tools. The mechanism of adhesion wear was found to be indepen- dent of type of tool material, cutting rate, cutting temperature, feed and cutting depth within the ranges studied. Changing these parameters changes only the intensity of the wear, not its nature.
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CIA-RDP86-00513R002202930008-5

621.373.431 USSR UDC: SHMAKOV, P. M., MASLENNIKOV, G. B. "A Master Ultralow-Frequency Oscillator" Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 4, 1970, p 31, patent No 260676, filed 19 Jun 68 Abstract: This Author's Certificate introduces a master ultralow frequency oscillator based on a two-pentode push-pull circuit. As a distinguishing feature of the patent, the frequency range is extended and operating stability and reliability are improved by connecting a self-heating diode in the plate circuit of each pentode, the cathode of this diode being connected to the plate of the pentode, while the anode is connected to the load resistor of the same pentode. 1/2

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Television

USSR

SHMAKOV, P. V.

UDC 621.397:528.2

"Television Communication on the Moon"

Moscow, Tekhnika kino i televideniya, No. 8, 1971, pp 3-10

Abstract: Conditions on the moon inhibiting or aiding the use of television and radio communication on its surface are discussed. Because of the absence of an atmosphere on the moon, voice communication is possible only through radio, and to estimate the possibilities of television communication on the moon, the characteristics of the space between the earth and the moon must be considered. The author finds that the most rational system for television on the moon and especially for communication to the earth from points on the unseen hemisphere of the moon is a system involving a lunar artificial satellite. Veriants of such a system are discussed, and suggestions as to what can be done until such time as a material base is set up on the moon's surface for creating cable and radio relay communication similar to that on earth are offered. Also examined are the effect on FM and AM electrical communication of lunar conditions, antenna design, and possible power sources. The author is connected with the M. A. Bronch-Bruyevich Electrical Engineering Communications Institute

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USSR

UDC: 621.397:535.67

SHMAKOV, P. V.

"Color Television"

V sb. <u>Televizion. tekhnika</u> (Television Technology--collection of works), Moscow, "Svyaz'", 1971, pp 94-126 (from <u>RZh-Radiotekhnika</u>, No 6, Jun 71, Abstract No 66130)

Translation: The general principles of the SECAM system are presented. The possibilities of using a color TV channel for transmitting three--dimensional monochromatic images are considered. A description is given of one of the methods which does not require modifications in a standard color television set with the exception of adding a program selector switch. Consideration is given to the LEIS stero color system which operates in a standard broadcast channel. The system can operate with a four-tube camera or with a three-signal vidicon (or a two-signal vidicon with separate brightness tube). Consideration is given to the possibilities of applying holography to television. A color phototelegraph system developed in the Soviet Union is described. The basic technical parameters of the color television system used in the Soviet Union are given in an appendix. Twenty-seven illustrations. N. S.

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ŧ	Reproduction of Three-	Dimensional by th	ne Use of Coh	erent Light"	
М	oscow, <u>Elektrosvyaz</u> '(E	lectrical Communi	ications), No	2, Feb 70, pp 5-10	
e s s i	limination of vertical hortenings in the hori eries of images focuse ng end of the holograp he image of three-dime	parallax and pro zontal direction; d in normal light h, making it poss nsional objects, ough investigatio	eservation of ; 2) The meth ; and the for ; ible to perc is undoubted on: and 3) Pr	possible because of the a limited number of fore- od of transmission of a ming of them at the receiv- eive depth and to examine ly of great interest and ogress in analysis, trans- oformation is obviously	
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USSR

YEL'CHANINOV, V. D., LAVROV, M. T., OBUKHOV, N. YA., SHMAKOV, V. A. "Pneumatic Motor"

USSR Author's Certificate No 383862 (from Otkrytiya, Izobreteniya, Promyshlennyye obraztsy, Tovarnyye znaki (Discoveries, Inventions, Industrial Models, Trademarks), No 24, 1973, page 90)

Translation: This is a pneumatic motor in accordance with USSR Author's Certificate No 182442 distinguished by the fact that in order to reduce the rundown time and exclude autocranking of the shaft when the supply of working medium is stopped the halfcoupling of a ball locking clutch is fitted rigidly to the shaft, the second halfcoupling of which is spring-loaded and made to move with the possibility of axial displacements and between the cover and the housing a control cavity is formed with a diaphragm in it which contacts the sliding halfcoupling at the central point.

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USSR UDC 539.3:534.1 BRUSILOVSKIY, A. D., SHMAKOV, V. P., and YABLOKOV, V. A. (Moscow) *A Method for Calculating the Natural and Forced Oscillations of Elastic Shells of Revolution Filled With an Ideal Incompressible Fluid" Moscow, Mekhanika Tverdogo Tela, No 3, May-June 1973, pp 99-110 Abstract: An algorithm is proposed for calculation of the natural and forced oscillations of elastic shells of revolution filled with an ideal incompressible fluid. The algorithm is based upon reduction of the boundary-value problem for a system of integrodifferential equations to the corresponding Cauchy problems that are integrated by the method of orthogonal successive elimination. The axisymmetrical oscillations of a cylindrical and an ellipsoidal shell are dealt with as an illustration. A description is given of the general algorithm for calculation of the dynamic characteristics (frequencies, forms, attached masses) of the natural oscillations of fluid-filled shells of revolution, as well as of an algorithm for determination of the reaction of a fluid-filled shell to an arbitrary harmonic load. In the solution of the latter problem, account is taken of energy dispersal in the material of the shell on the basis of the hypothesis of a complex modulus of elasticity. 4 figures. 22 references. - 77 -

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USSR

KOBYCHKIN, V. S., and SHMAKOV, V. P.

"Investigation of the Vibration Frequency Spectrum of a Closed Spherical." Shell Partially Filled With Fluid"

Tr. VII Vses. konferentsii po teorii obolochek i plastinok (Proceedings of Seventh All-Union Conference on Shall and Plate Theory), 1961, Moscow, "Nauka," 1970, pp 285-289 (from RZh-Mekhanika, No 1, Jan 71, Abstract No iV393 by F. N. Shklyarchuk)

Translation The article considers the normal modes of a closed spherical shell partially filled with ideal incompressible fluid. The shell is elastically fixed along an arbitrary parallel. It is assumed that the free surface of the fluid remains flat and parallel to the undisturbed free surface during vibrations. After separation of the circular coordinate, displacement potentials for fluid and shell shifts are sought in the form of expansions in respect of gien functions with unknown coefficients. Associated Legendre functions and theri derivatives are used as coordinate functions. In the displacements, taking into consideration the kinematic boundary condition on a wetted shell surface the problem reduces to a system of circultaneous homo-1/2

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USSR KOBYCHKIN, Y. S., and SHMAKOV, V. P., Tr. VII Vses. konferentsii po teorii obolochek i plastinok, 1969, Moscow, "Nauka," 1970, pp 285-289 geneous algebraic equations with respect to unknown expansion coefficients. For a shell completely filled with fluid an exact solution can be obtained. An exact solution is presented for the case where a completely filled shell is fixed along the equator from all displacements and is free along the angle of rotation in meridian sections. Frequency equations are obtained for modes symmetric and antisymmetric about the equator. An example of the calculation of a concrete equatorially fixed shell is considered, and the dependence of natural frequencies, modes and coefficients of associated mass of fluid on filling depth is shown, 2/2

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202930008-5 SHMAKO Yy. I. 1.4 ズキて a rigid ellipsoid of rotation will exhibit non-Newtonian properties. Brownian motion, weak polymer solutions of molecules. approximated by in the presence of macromolocular inertia with or without macromolecular force fields and rotational Brownian motion is analyzed. It is found that, solution with rigid «Ilipsoidal macromolecules in the absence of external the rheological constants. As an example, the Couette flow of a polymer are found by averaging Ericksen's tension tensors over the angular distribution is found by considering a special case (the absence of external force fields function for the axis of rotation of an elliptical particle, and making use of and a negligibly small particle inertia). Rheological equations of state magnilude structural orientation vector. The ninth rheological constant seothermal motion of an incompressible anisotropic fluid with a constant sheelogical constants are determined for equations describing the derive equations for the stressed state of liquid. From these, eight by a suspended rigid ellipsoid in a viscous Newtonian fluid, the authorfare analyzed. Using Jeffery's expressions for flow Perturbation caused effects of macromolecular inertia on the rheological properties of liquids ellipsoidal macromolecules and macromolecular Brownian motion. The rheological equations of state for weak polymer solutions with rigid external electric and magnetic force fields into account when deriving 1970) are generalized by taking macromolecular inertia and the effects of 00072 R-160 / 5- NR 1- 13 Results obtained by Shmakov and Taran (I-FZh, v. 18, nc. 6, ·ZhPMTF, no. 2, 1972, 125-129. <u>enlutions</u> with right ellipsoidal macromolecules. Pridatchesko, Yu. V., and Yu. I. Shmakov. heological equations of state for weak polymer XII. EQUATIONS OF STATE 3 Q

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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202930008-5 Acc. Nr: A70046313 Abstracting Service: 5/70 INTERNAT. AEROSPACE ABST. Ref. Code: URO441 Г_{А70-23390 //} the stream of anisotropic fluid at the Reynolds large numbers (Pozdovzhne obtikannia napivneskinchennoi plastinki petokom anizotropnoi ridini za velikikh chisel Reinol'dsa). E III. Taran and U. A Sinth Tribut and Construct and the second and the A-Fiziko-Tekhnichni i Matematichni Nauki, vol. 32, Jan. 1970, p. The flow is considered of semiinfinite plate by the stream of incompressible anisotropic fluid at the Reynolds large numbers. To obtain boundary layer equations and those of the second approximation for the boundary layer the method of interlocked asymptotic expansions and the one of deformed coordinates are (Author) ALS 18

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USSR SHMAKOV, Yu. M. UDC 539.3:534.1 "Determining the Minimum Frequency of Natural Vibrations of an Open Hollow Shell" V sb. Raschet prostranstv. sistem v stroit. mekh. (Calculation of Three-Dimensional Systems in Structural Mechanics -- Collection of Works), Saratov, Saratov University, 1972, pp 224-227 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V209) Translation: The Ritz method is used to solve the problem of the natural frequencies and shapes of bending vibrations of a system of orthogonal uncut rectangular beams that are hinge supported at the ends. The connection of the uncut beams at points of intersection is assumed to be hinged. The presence of the hollow shell, which must be made from the designation of the operation, and its effect on the shape and frequency of the oscillations of the reinforcing system of stringers is not taken into account. Some computational and experimental data on this system are given. E. I. Sokolov. 1/1

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SHMAL', D. D., (Reviewer)

Shum i Zdorov'ya Lyudini (Noise and the Health of Human Beings), by E. P. Orlovs'ka, Zdorov'ya, 1969, 2.8 printed sheets, 2000 copies

Kiev, Vrachebnoye Delo, No 5, May 71, p 156

Abstract: The small amount of publications on noise does not correspond to the present-day importance of this factor from the standpoint of public health. For this reason the booklet that is reviewed must be regarded as of value. It is written interestingly and is on a sufficiently high scientific level. However, it has some shortcomings that must be noted. Noise is defined as a tary Standards) 785-65 defines noise as "noise or sound of any kind that interferes with the perception of useful sounds or violates silence as well as opens up extensive possibilities for remedies aimed at safeguarding the health. Only industrial noise is discussed, although noises that are associated with ordinary living are more harmful, because they act on the population, including children and aged, sick, and weakened persons, for 24 hrs per day. In the next 1/3

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SHMAL', D. D., Vrachebnoye Delo, No 5, May 71, p 156

data from Sanitarnyye Normy Dopustimogo Shuma v Zhilykh Domakh i na Territorii Zhiloy Zastroyki (Sanitary Standards for Permissible Noise in Residential Buildings and Built-Up Residential Sections), No 535-65. Only addition of two items (that on residential rooms and that on rest areas adjacent to residential quarters) to the table on p 24 will be necessary. It would be useful to add corrections taking account of specific conditions, so that the reader might understand better the effects on the action of noise of factors such as the length of time over which the noise continues, the season of the year, the time of the day, the tonality of sounds, etc. This would eliminate difficulties connected with the acquisition of reference publications, specifically of official materials. It would be useful to cite as an illustration data on the level of intensity of noise associated with various objects (sources of noise) and reporduce I. I. Slavin's table for the estimation of the loudness of noise on the basis of the deafening of speech by it. The description of the organs of hearing on p 12 should be illustrated by a schematic figure. The book defines in an unclear and sometimes contradictory manner concepts understood. with difficulty by non-specialists such as those of the intensity and level of intensity of sound, loudness, and the units for their measurement. Thus, it is stated on p 9 that a decibel is a unit indicating by what factor a sound

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USSR

SHMAL', D. D., Vrachebnoye Delo, No 5, May 71, p 156

exceeds the threshold of hearing, while further on, on the same page, it is stated that a level of 90 db indicates that the noise is by a factor of 90 above the level of hearing. This is an obvious error, because in the case mentioned the strength of the sound will exceed by a factor of one billion that of a sound of threshold intensity, while the level of intensity will be higher by 90 db. Among measures for the control of noise and prevention of its effects, separation of sources of noise into parts, control from a distance, occupational selection, transfer to another job (temporarily or permanently), medical treatment, therapy at a hospital, and transfer to a nonworking status because of incapacitation are not mentioned. Overtones are referred to as auxiliary and the harmonicity of sounds is associated in the text with proximity to the principal sound rather than the multiplicity of overtones (p 8). The abbreviation SNIP No 785-69 is incorrectly expanded as "Sanitary Standards for Designing Industrial Enterprises" (p 21). The list of recommended reading matter should be supplemented by including regulations on standards that are in force at present. The detailed description of work with a noise meter and an analyzer of the noise spectrum as well as the photographs of these devices will be superfluous for the readers of the booklet.

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DEMIDENKO, T. F. CHURLEN		UDC 534	.2
DEMIDENKO, T. F., STEPANOVA, "Disintegrated Structure of M Acoustic Measurement" V sb. Novyye metody issled. si i mekhanizmov (New Methods of Diagnostics of Machines and Me pp 68-70 (from RZh-Mekhanika, Karaushev) Translation: To evaluate the device, it is desirable to have spectrum, with adequate stabili proposed using for this purpose pressure of 2-4 atm from a smal of tests made of the spectral p at the surface of the disintegr. empirical formula is proposed for the pressure pulsations. The sp stant and decays at high frequent	humov i vibratsiy i Studying Noises an echanisms collect No 12, Dec 70, Abs efficiency of noise a point source of ity and easy reprod a nonimmersed liq 1 orifice (0.3-0.6 roperties of press	f Random Force for kibernet. diagnost. d Vibrations and Cyb tion of works), Kaun tract No 12B254, by (e- and vibration-insu noise exhibiting a b ucibility. D. G. Top uid jet escaping at a mm in diameter). Re	mashin ernetic as, 1970, G. P. lating road nkonogov a ssults
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SHMALIY, G., Lt Col Med Serv, and DANILKIN, A., Capt Med Serv "Fules of Hygiene for a Submarine Crew" Moscow, Starshina Serzhant, No 12, Dec 70, p 36

Translation: Whereas in the past the duration of a ship's voyage has depended on its technical capabilities, it is now determined by the physical potentialities of man. These factors in turn depend to a great degree on the strict adherence by sailors to behavioral rules, including the rules of personal hygiene.

A few words about the physiological capacities of a submariner. Before a. long autonomous voyage, a great deal of attention should be devoted to such sports as volleyball, basketball, football, gorodki (a kind of skittles), light athletics, and swimming. Such athletic games develop endurance and adroitness in submariners and greatly improve the functioning of their cardiovascular and respiratory systems and gastrointestinal tract.

In order to follow the rules of personal hygiene, every submariner should 1/6

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USSR

SHMALIY, C., and DANIKLIN, A., Starshina Serzhant, No 12, Dec 70, p 36

seaman Gushchin became disabled as a result of his slovenliness. The submarine doctor spent a great deal of time in restoring Gushchin's health.

Regular changing of one's underwear and bedding is very important. Underwear and bedding fabrics absorb perspiration and are soiled with oils and diesel fuels, lowering their sanitary properties. It is a known fact that after a week's wear in a submarine environment the weight of work clothes increases by 10%, that of socks by 25%, and that of underwear by 40-50%. With microtraumas of the skin, soiled fabric produces pustular diseases. It is therefore recommended that submariners change their underwear and bedding more often than normal, especially while at sea in the tropics.

For prevention of dental diseases, we regard oral sanitation prior to going to sea as very important. As a rule, submariners leave for long voyages with healthy teeth. During the voyage every member of the crew must brush his teeth twice a day, morning and night. According to our observations a toothpaste of the Pomorin type and a mouthwash have a good effect on the condition of the teeth and oral cavity.

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er da tristile dal la IN SPECT AND A STATE OF STATE USSR SHMALIY, C., and DANIKLIN, A., Starshina Serzhant, No 12, Dec 70, p 36 Of special importance during an extended voyage is the prevention of gastrointestinal diseases. Infectious diseases such as dysentery, typhoid fever, and enteritis are very dangerous for the submarine crew. These diseases are mainly transmitted through dirty hands. Therefore, hands should always be clean and nails short. The washing of hands before every meal and after the use of cleaning of toilet facilities is a must. At any sign of a gastrointestinal tract disorder, a submariner must immediately Noncontagious diseases of the gastrointestinal tract are gastritis, hemorrhoids, and frequent constipation. To prevent these diseases among submariners, special attention must be devoted to proper planning of the daily food intake, menu planning, control over the quality and storage of food products, and preparation of meals. Gastritis, hemorrhoids, and constipation are caused by lack of exercise, diet monotony, an insufficient quantity of vegetable dishes, and the body's loss of a large amount of 4/6 - 96 -

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SHMALIY, G., and DANIKL. A few words about smokin go for a long period wit tine habit. Upon surface nausea, dizziness, tickl tachycardia. It has bee than among smokers; the watch, and have a better endures long underwater of A submariner's duty is not absolutely all the demand rules of personal hygiene	ng. It is known hout smoking. Sing, smokers re- ling of the thro n noted that ef nonsmokers are appetite. Hen- voyages much mon ot easy. Every	that while The body grad sume smoking wat, increased ficiency is f calmer, more ce the conclu re easily.	submerged, sub dually loses to , and develop d pulse rate, digher among n alert when st sion that a n	omariners the nico- mild and onsmokers anding onsmoker	
rules of personal hygiene develop his strength and		y perform phy	ollow strictly /sical exercis	the the ses, and	
Every submariner must at military task.	all times be re	ady to perfor	m the most co	mplex	
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USSR LAGUTIN, V. I., <u>et al. Mekhanika Zhidosti i Gaza</u>, No 5, Sep-Oct 70, pp 189-191 bodies decreases. It has also been noted that an increase in trease in stability and has an opposite influence at larger amplitudes. The particular role of the entropy effect in hypersonic unstable aerodynamics has been emphasized. This article presents an attempt at more careful investigation of the flow picture around bodies with flares moving through hypersonic flows. 2/2

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CIA-RDP86-00513R002202930008-5

1 USSR UDC:533,6.011.5 SHMANENKOVA, G. A., Moscow "Calculation of Low-Entropy Stream Arising Upon Interaction of Jumps Before Moscow, Mekhanika Zhidkosti i Gaza, No.5, Sep-Oct 73, pp 182-185 Abstract: Several problems concerning the behavior of a supersonic lowentropy gas stream formed in the area of interaction of an incident flat compression jump with a receding shock wave before a blunt body are studied. The flow in the stream and its shape are calculated by the twodimensional method of characteristics. A simple approximate formula is suggested for the radius of curvature of the axis of the stream, which agrees well with the results of numerical calculations. An estimate of the influence of transverse gas flow due to the three-dimensional nature of the flow on the shape of the axis of the stream shows that this influence is slight. It is pointed out that there are two types of flow in the area of interaction of jumps, differing in degree of effect on the body. The mixing of the stream with the surrounding subsonic stream was

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CIA-RDP86-00513R002202930008-5

USSR UDC 628.16.081.3 SHMANNIKOV Ye. V. and SHINDRYAYEV, A. A., Sararov Medical Institute "Sorption Methods of Removing Toxins From Drinking Water" Moscow, Gigiyena i Sanitariya, No 10, 1971, pp 18-21 Abstract: Laboratory tests of the ability of the mineral coagulants Al2(SO4)3 and Fe2(SO)4 and the flocculants polyacrylamide and BA-2 to neutralize botulinus toxin type C showed that neither the coagulants alone nor the flocculants alone were particularly effective. Only when both types of agents were combined were the coagulation process and degree of purification of the water significantly improved. The most effective was the combination of polyacrylamide with Fe2(SO)4 (withor without alkalization), while the combination of BA-2 and $Fe_2(SO)_4$ was less effective. The extent to which the toxin was removed from the water and the nature of the coagulation were found to depend largely on the anion composition and physical properties of the water. The cation composition had little influence on the dgree of decontamination of the water. 1/1- 53 -

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UDC 621.315.598:546.28

GOLUBEV, L. V., VUL', A. Ya., and SHMARTSEV, Yu. V.

"Growth of Single Crystals of Gallium Antimonide Doped With Tellurium or Sulfur"

V sb. Protessy rosta kristallov i plenok poluprovodn. (Procedures for the Growth of Semiconductor Crystals and Films -- Collection of Works), Novosibirsk, 1970, pp 485-493 (from <u>RZh-Elektronika i yeye primeneniye</u>, No 7, July 1971, Abstract No 7B123)

Translation: The preparation of single crystale of GaSb by the Czochralski method is described. To, S, Sb2S3, GaS, and Ga2S3 were used for doping. Seeding was performed in the (III) plane. In order to decrease the density of dislocations, the diameter of the initial part of the crystal was decreased to 1.5 + 2 mm at a length of 15 # 20 mm which assured emergence to the orystal surface of dislocations germinating from the seed. With the introduction of elemental Te into the melt, single, crystals of the n type were obtained with concentrations of free electrons of 1017___ 5. 1018. During doping by S, single crystals were obtained, 65-70 mm long with a diameter of 12-15 mm. The resistivity for p-type ingots amounted to 0.1 -- (2 : 3) chm.cm for different crystals. Crystals of the n-type had a resistivity from Q.1 to geveral tens of ohm.cm. The density of dislocations did not exceed $10^2 - 10^2$ cm^{-2} . It is determined that S as a doping impurity is found in the lattice in active and nonactive states. Doping of the melt by elemental S from the gaseous phase or a compound leads only to an insignificant compensation of the material. In order to 1/2

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GOLUBEV, L. V., et al., Protessy rosta kristallov i plenok poluprovodn. (Procedures for the Growth of Semiconductor Crystals and Films -- Collection of Works), Novosibirsk, 1970, pp 485-493 (from RZh-Elektronika i yeye primeneniye, No 7, July 1971, Abstract No 7B123)

obtain n-type GaSb it is necessary to introduce into the melt an excess of Ga,filling vacant places in the sublattice of Ga. Use of the compounds GaS and Ga₂S₃ gives the best results as alloys. 7 ref. N.Sh.

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UDC 621.315.592

VUL', S. P., POLYANSKAYA, T. A., and SHMARTSEV YIL VILLE

"Production and Study of Single Crystals of CdSnAs?"

V sb. Protsessy rosta kristallov i plenok poluprovodn. (Procedure for the Growth of Semiconductor Crystals and Films -- Collection of Works), Novosibirsk, 1970, pp 476-484 (from <u>RZh-Elektronika i yeye primeneniya</u>, No 7, July 1971, Abstract No 7B37)

Translation: The method of zone crystallization with seeding was used for production of single crystals of CdSnAs₂. The compound, synthesized at a temperature of 750° C in an atmosphere of spectrally pure argon, was subjected to zone refinement. The method of horizontal zone crystallization with seeding proved to be most effective in comparison with other methods which were used for production of CdSnAs₂. The results of a study of the physical properties of CdSnAs₂ are also presented. 22 ref. A. Eydenzon

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ABSTRACT/EXT REFRACTION ORIENTATED OF DOUBLE DOUBLE REF 10-300DEGR THE PLATES MU. WITH DEPENDENCE BELONGING	ON NUAPO105173 RACT(U) GP-O- COEFFS. OF ORDI SINGLE CRYSTAL REFRACTION. THE RACTION IS STUDI EESK. DELTA N I IN LINEARLY POI DECREASING TEMP. IS PERSERVED. TO THE BAR 42M F INST. IM. KALINI	ABSTRACT, TH NARY AND EXTRA OF COSNAS SUB RELATIONS FOR ED ON PAIRS OF S CALCD, FROM ARIZED LIGHT H OELTA N DECRE THE METHOD IS POINT GROUP,	HE DIFFERENCE E ADROINARY RAYS, 2 CAN BE OBTAIN 2 CALCN. OF DEL 5 COSNAS SUB2 P EXPTL. DATA ON IN THE WAVE LEN EASES; HOWEVER, APPLICABLE FOR FACILITY	DELTA N, IN A ED FROM THE ST TA N ARE GIVEN LATES AT TRANSPARENCY GTH REGION 4-14 THE DISPERSIO ALL CRYSTALS	NON UDY • OF 4
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USSR BOGOMOL'NYY, YE. B., DOLGOV, A. D., ZAKHAROV, V. I., OKINI, L. B., SHIFMAN, M. A., SHMATIKOV, M. ZH., Institute of Theoretical and Experimental Physics of the State Cormittee for the Use of Atomic Energy $K_{T}^{0} \rightarrow \mu^{+}\mu^{-}$ and the Anomalous Interaction of Muons With Hadrons" Moscow, Yadernaya Fizika, Vol. 16, No. 1, Jul 72, pp 129-142 Abstract: The possible contribution of the 3π -intermediate state in the imaginary part of the amplitude of $K_L^0 \rightarrow \mu^+ \mu^-$ decay and the possibility of the existence of anomalous muon-pion interaction which could balance the imaginary part of the amplitude of $K_L^0 \rightarrow \mu^+\mu^-$ decay arising through the 2y-intermediate state are discussed. It is noted that the existence of an anomalously strong pion-muon interaction could resolve the contradiction between the experimental results of Clark, Field, et al and the theory, but it is shown that the anomalous interactions $\pi^0 - 2\mu$ and $3\pi - 2\mu$ do not contradict existing experimental data on elastic and inelastic scattering of a muon by a nucleon, on the generation of muon pairs by pions, and by data on (g - 2) for the muon. It is noted that in this approach series difficulties arise which are associated with the very large value of Re $\frac{\mathcal{M}(3\pi)}{KL} \rightarrow \frac{\mathcal{M}(3\pi)}{KL}$ 1/2

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JSSR BOGOMOL'NYY, YE. B., et al., Yadernaya Fizika, Vol 16, No 1, Jul 72, pp 129-142 \rightarrow 2µ and with the necessity for compensating for it with a high degree of accuracy. Experimental observation of the anomalous zuon-pion interaction was complicated by two circumstances: the smallness of the anomalous cross section ($\sim 10^{-34}$ cm²) and the large value of the cross sections for background processes which exceed the anomalous processes by a factor of 10-1000. Elastic backscattering of the μ -meson by a proton at an energy of \sim 1 Gev, measurement of (g - 2) of the µ-meson, and a study of the $\mu p \rightarrow \mu p \pi^0$ process at $E_{\mu} \geq 10$ GeV are recommended as the most sensitive methods for observing this interaction. It is proposed that $ImM_{MAG}^{(2\gamma)}$ is compensated not by the contribution of the 3π -intermediate state but by the contribution of other intermediate states arising in $K_L^0 \rightarrow \mu^+\mu^-$ decay, such as $2\pi\gamma$. A discussion of the consequences of possible $2\pi\gamma$ - 2μ -anomalous interaction will be the subject of a later paper, 2/2 ไร้ได้รับสารปลายไม่สุดเลยาะการประกอบไปการประกอบไปไปก่องสายไปให้สุดายแอกกระดาษาเพราะการประกอบสารของการสารสารการส

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Nuclear Science and Technology UDC 621.039.566:669.054(088.8) USSR ARNOL'DOV. M. N., IVANOVSKIY, M. N., FILIPPOV, I. T., and SHMATKO, B. A., "A Crystallizer-Accumulator" USSR Authors Certficate No 275247, filed 13/11/68, published 22/10/70 (translated from Referativnyy Zhurnal-Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.31 P) Translation: A crystallizer-accumulator is patented for purification of liquid metal heat-transfer media of impurities and corrosion products in a system consisting of a cooled body and pipe lines for supply and drainage of the heat-transfer medium. In order to improve purification by creating agitation of the flow of the heat transfer-medium, the internal surface of the cooled body carries a number of parallel ribs made of a material with high heat conductivity, equipped with an aperture for passage of the heat-transfer medium. 1/1

CIA-RDP86-00513R002202930008-5

Nuclear Science and Technology UDC 621.039.566:669.054(088.8) USSR ARNOL'DOV. M. N., IVANOVSKIY, M. N., FILIPPOV, I. T., and SHMATKO, B. A., "A Crystallizer-Accumulator" USSR Authors Certificate No 275247, filed 13/11/68, published 22/10/70 (translated from Referativnyy Zhurnal-Yadernyyc Reaktory, No 3, 1971, Abstract No 3.50.31 P) Translation: A crystallizer-accumulator is patented for purification of liquid metal heat-transfer media of impurities and corrosion products in a system consisting of a cooled body and pipe lines for supply and drainage of the heat-transfer medium. In order to improve purification by creating agitation of the flow of the heat transfer-medium, the internal surface of the cooled body carries a number of parallel ribs made of a material with high heat conductivity, equipped with an aperture for passage of the heat-transfer medium. 1/1

APPROVED FOR RELEASE: 07/20/2001

CIA-RDP86-00513R002202930008-5

UDC 669.046.5 USSR ROGULEV, B. A., SHMATKO, G. A., PRONICHKIN, A. A., GOLIKOV, Ye. S., NOVOZHILOV, N. G., PARMOTIN, I. P., SMIRNOV, YYu. D., and CHERNOV, G. A. "Electrical Steel Degassing by Argon Blowing in 100-ton Ladles" Moscow, V sb. "Sovremennyye problemy kachestva stali" (MISiS) (Collection of Works. Modern Problems of Steel Quality) (Moscow Institute of Steel and Alloys), Izd-vo "Metallurgiya," No 61, 1970, pp 264-265 Translation of Abstract: Data are presented on the use of porous refractory inserts for argon blowing in 100-ton ladles. The results of an investigation on degassing of ShKh15 steel produced with refining by liquid synthetic slag are presented (hydrogen content at blowing decreases by 23% and that of oxygen by 55-65%). Attention is paid to increasing the refining effect of synthetic slag at argon blowing, resulting in a higher (up to 95%) degree of desulfurization; in a rise of metal-slag distribution coefficient (up to 164) with a reduction in slag consumption and production cost; and lowering of steel contamination. Plastic properties of the degassed metal are significantly higher than those of the nondegassed metal. 1 figure, 2 tables. 1/1 NAME OF THE PROPERTY OF THE PR

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	USSR UDC 669.15'24'295 194:620.183
	SAVITSKIY, Ye. M., POPOV, V. F., <u>SHMATKO, M. N.</u> , and SAPEL'NIKOV, P. P., Moscow, Chelyzbinsk
	"The Effect of Cerium and Niobium on the Structure of Kh25T Steel"
	Moscow, Izvestiya Akademii Nauk SSSR, No 5, 1973, pp 145-149
	Abstract: The optical metallography of specimens of Kh26T steel from experimental and industrial melts makes possible the unco- vering of the difference in the development of excess phases on grain boundaries of the cast metal. Microadditions of ferroce- rium and ferroniobium favor a coagulation of separations. Semi- transparent film separations of chromium carbides ($Cr_{23}C_6$) in common cast steel are arranged on grain boundaries in the form of continuous separations, they occupy a 5-10 times greater sur- face than in the experimental steel. Their quantity in the metal with ferrocerium and ferroniobium is much lower, and they are sepa-
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SAVITSKIY, YE. M., et al., Izvestiya Akademii Nauk SSSR, No 5, 1973, pp 145-149

rated and distributed more uniformly in the matrix. Microalloying with ferrocerium and ferroniobium favored a higher coagulation of chromous carbides, if compared with ferrocerium. A substantial difference in the distribution of chromium carbides in fractures of the metal of pipes before and after thermal treatment was uncovered. Microalloying of steel with ferrocerium changes completely the structure of the investigated steel after forging: the grains were highly elongated and showed a fine-fragmented structure. The relation was established between the change of the structure and the increase of plastic characteristics of high--alloy steel of ferrite type. Three figures, one table, ten bibliographic references.

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CIA-RDP86-00513R002202930008-5

Miscellaneous UDC: 539.21:536.42 USSR BARANOVSKIY, V. M., GUREVICH, M. Ye., LARIKOV, L. N., KHOMENKO, B. S., SHMATKO, O. A. Investigation of Spatial Effects During Aging" Metallofizika. Resp. mezhved. sb. (Physics of Metals. Republic Interdepartmental Collection), 1970, vyp. 27, pp 65-79 (from RZh-Pizika, No 9, Sep 70, Abstract No 9Ye477) Translation: The article is a brief survey of methods of studying spatial effects, with a description of the EAD-65 and AD-2 automatic dilatometers developed at the Institute of Physics of Metals, Academy of Sciences of the Ukrainian SSR. The data obtained on the automatic equipment are compared with those obtained on an optical dilatometer. The spatial effects during aging of an alloy of cobalt with 31.89 percent tungsten is calculated. The calculation is compared with experimental data. Authors' abstract. 1/1

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USSR	UDC 538.662.14	
YEFIMOVA, T. V., P	OLOTNYUK, V. V., and SHMATKO, O. A.	
"Investigation of t Solutions of Tungst	the Decomposition of Supersatured Solid ten in Cobalt by the Thermomagnetic Method"	
View Materia Citat	a, No 32, 1970, pp 56-59	
Translation: Cobal were investigated b	It alloys with 3.58, 5.22, and 13 at.% tungsten	
Iranslation: Cobal were investigated b tion dependence of constructed. It wa tempered at 700° C formed volume of th tungsten concentrat	It alloys with 3.58, 5.22, and 13 at.% tungsten by the thermomagnetic method. The concentre- the Curie point of the alloys studied was as shown that in an alloy with 13 at.% tungsten two Curie points were observed. The trans- ne alloy tempered at 700° C for 3.5 hours and tion in the separation stage ware conclusioned	
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GUREVICH, M. YE., of Metal Physics A	LARIKOV, L. N., cademy of Scienc	and <u>SHMATKO, (</u> es Ukr SSR). A., Institute	
"The Size and Spec	trums of Volume	Changes in Met	al Systems"	
Kiev, Metallofizik	a, No 32, 1970,	pp 5-25		
Translation: The of various process volume effect. An nature of the most search methods, an metric and x-ray m of determining the structure and of a are examined.	es accompanied b evaluation is m widespread volue d a comparative ethods of measur: number of defec	y volume chang add of the inf netric and dil evaluation is ing volume cha ts in the crys	tes or by the formative atometric re- made of dilato- nges. Methods talline	stics
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SINCE SCIENCES PT	
-	USSR UDC 681.3.056
	ALEKSA, A. K., DOTSENKO, S. A., SHMATKOY, N. A., Institute of Mining Mechanics and Technical Cybernetics imeni M. M. Fedorov
	"A Penumatic Logic Device"
	Moscow, Otkrytiya, Izobreteniya, Promychlennyye Obraztsy, Tovarnyye Znaki, No 12, 1970, Author's Certificate No 267178, filed 28 Oct 68, p 116
	Abstract: This Author's Certificate introduces: 1. A pneumatic logic device which contains single-contact valves mounted in a housing and isolated from one another. As a distinguishing feature of the patent, the device is designed for realization of elementary logic functions by incorporation of a universal elastic insert with commutating channels. 2. A modification of this device with the
	distinguishing feature of construction for realizing complex logic functions by incorporation of an additional rotating plate with
	commutating channels.
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SHMATOV V. T.

"Mechanism of the Internal Friction Grain Boundary Peak"

Sb. "Vnutrenneye treniye v metallicheskikh materialakh" (Internal Friction in Metallic Materials), Moscow, Izd-vo "Nauka," 1970, pp 124-129

Abstract: Internal friction related to vacancy diffusion between grain boundaries of a polycrystal is considered. It is shown that the velocity of inelastic deformation of the sample consists of two terms: the diffusion creep velocity and the deformation velocity, governed by temporary variation of nonuniform concentration of vacancies in the grain volume. The first term leads to a high temperature background, and the second to an internal friction peak. The dependence of the peak height and temperature position on grain size and the presence of impurities in the sample are analyzed and the corresponding relaxation time is evaluated. It is assumed that this peak can be identified with an internal friction grain boundary peak. 1 figure, 15 references.

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CIA-RDP86-00513R002202930008-5

USSR UDC: 519.1 PALAUS, A. Ya., SHMAYLO, N. V. "Synthesis of a Check Test for Automata With Memory" Kiev, Probl. nadezhnosti sistem upr.--sbornik (Problems of Reliability of Control Systems--collection of works), "Nauk. dumka", 1973, pp 118-123 (from RZh-Matematika, No 9, Sep 73, abstract No 9V463 from the introduction) Translation: A regular method is proposed for constructing a test for an automaton given by a nonredundant, multiple-output logic circuit with feedbacks when the combination part of the single-output subcircuits contains no branchings. The test is intended for detecting isolated and multiple malfunctions equivalent to constants at the inputs or outputs of the logic 1/1 78 -

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CIA-RDP86-00513R002202930008-5

USSR PALAUS, A YA and SHMAYLO, N. V. "Synthesis of a Checking Test for Automata with Memory" Probl. Nadezhnosti Sistem Upr. [Problems of the Reliability of Control Systems -- Collection of Works], Kiev, Nauk. Dumka Press, 1973, pp 118-123 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V463) Translation: A regular method is suggested for construction of a test for an automaton, fixed by a nonredundant multiple-output logic system with feedback, the combination portion of the single-output subcircuits of which contains no branchings. The test is designed for detection of individual and multiple defects equivalent to constants at the inputs or outputs of the logic elements. From the introduction 1/1 邰

APPROVED FOR RELEASE: 07/20/2001

USSR UDC 531.731.2.087.92
VOLCHEK, A. V., SHMEL, O. S., Engineers
"Characteristics of Strain Gages Made of Monocrystalline Silicon of Various Specific Resistances"
Moscow, Pribory i Sistemy Upravleniya, No 2, 1972, pp 36-38
Abstract: A study was made of the characteristics of strain gages made from p-type silicon with a specific resistance ρ equal to 0.02, 0.01 and 0.005 ohms- cm designated KM, KMA and KMB, respectively. The experimental procedures and results are presented for determining the sensitivity of the strain gages to deformation, the dependence of the sensitivity on temperature, the temperature increment of the resistance, and the dependence of the relative variation of the resistance on deformation. Technical specifications are presented for the tested silicon strain gages of both rod and π -type configuration. The KMA and KMB strain gages made from low-resistance silicon ($\rho = 0.01$ and 0.005 ohms-cm) have less sensitivity dependence on temperature and better linearity of the dependence of the relative resistance variation on deformation than KM type strain gages made of ordinary silicon with a specific resistance of 0.02 ohms- cm.
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TITLEAPPROXIMATING THE RO	OTS OF SOM	E TRANSCE	INDENTAL	EQUATIONS	-U-
AUTHORSHMELEV, A.A.					
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SOURCEMOSCOW, MATEMATICHE	SKIYE ZAME	TKI, VOL	7, NO 2,	1970, PP	203-210
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SHMELEV, A. A.					
"Approximating the Roots of	Some Transcend	dental Equat	ions"		
Moscow, Matematicheskiye Zam	netki, Vol 7, 1	No 2, 1970,	pp 203-210		
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	UDC 621.039.5/6	
	USSR LEYUNSKIY, A. I., YUROVA, L. N., BOBROV, S. B., MURCGOV, V. M., TOCHENYY, L. V., TROYANOV, M. F., and SHNELEV, A. H.	
	"Improving the Physical Characteristics of Fast Plutoniun Reactors by	
	Using U ²³³ and Thorium"	
	Moscow, Atomnaya Energiya, Vol 30, No 6, Jun 71, pp 491-498	
-	Abstract: Investigations carried out on the physics of fast reactors, Abstract: Investigations carried out on the physics of fast reactors, both in the USSR and abroad, have shown the requirements for a high breeding time and safety guarantee may be contradictory. This article seeks to find ways for resolving these contradictions. The authors first discuss the basic physical characteristics of fast reactors using a mixed fuel by equalizing the field of heat release. Com- putations showed that in a fast reactor using a mixed fuel composed of U^{233} and plutonium the radial coefficient of inbalance can be reduced, the breeding ratio increases significantly, and the doubling time is improved. Table 1 compares the characteristic of different types of high-power fast reactors. The authors then discuss changing the profile of the heat release	

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LEYPUNSKIY, A. I., et al., Atomnaya Energiya, Vol 30, No 6, Jun 71, pp 491-498

field during the operating period of a high-power fast reactor using a mixed fuel and give Figure 1 as illustration. They then discuss change in the reactance during the same period for such a reactor, using Figures 2, 3, and 4 for graphic visualization. Finally, they discuss the Doppler and sodium coefficients of reactance in such a reactor and use Figure 5 and Table 2 to clarify the discussions. Eased on their research the authors claim that the possibility does exist for increasing the power strength and fast reactor using a sodium heat carrier; this is possible by using U^{233} and thorium in conjunction with U^{238} and plutonium in high-power fast

The article contains 5 figures, 2 tables, and a bibliography of 15 titles.

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USSR BOBROV, S. B., MUROGOV, V. M., TOCHENYY, L. V., and SHMELEV, A. N. UDC 621.039 "High-Power Fast Reactor With a Stable Heat Release Field Throughout a Run" V sb. Fiz. yadern. reaktorov (Physics of Nuclear Reactors -- Collection of Works), No. 2, Moscow, Atomizdat, 1970, pp 129-135 (from RZh-Fizika, No 4, Apr 71, Translation: Computational studies of a fast power reactor with an electric power of 1000 Mw with Na coolant in which radial balancing of the heat release field is achieved by the use of different types of fuel in the core are presented: in the inner portion PuO_2-UO_2 with an average density of 8 g/cm³ and in the outer portion the allcy Pu-U-Zr (12%) with a Pu-U density of 15.1 g/cm³. The calculations were made with the 18-RZ-4-B program considering the change in the isotope composition with time. The results show that fuel productivity improves in this reactor as compared with a purely oxide version (the average conversion coefficient in the core is 1) and the change in reactivity over the run also decreases (by a factor of 4) and does not exceed 0.3%. The coefficient of nonuniformity and the heat release profile throughout the run are almost constant and less in

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BCBROV, S. B., et pp 129-135	al, Fiz. yadern. reaktor	rov, No. 2, Hosee	w, Atomizdat, 1970,	
absolute value th burn-up achievable for metallic furt	an for the purely oxide w e simultaneously for both) corresponds to the perm simultaneous recharging o P. Demin.	version. It is a	lso shown that maxim	um
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BOBROV, S. B., MUROGOV, V. M., TOCHENYY, L. V., and SHMELEV, A. N.

"Possibility of the Stabilization of the Heat Release Field in Fast Power Reactors Operating in a Mixed Fuel Cycle"

V sb. Fiz. yadern. reaktorov (Physics of Nuclear Reactors -- Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 121-128 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V536)

Translation: The physical characteristics are calculated for a fast reactor that is optimal with respect to breeding, with a heat capacity of 2500 Mw on mixed fuel (U^{233} , Pu^{239} , U^{238} , Th) and profiling of the heat release field by developing zones of different enrichment with the preservation of a fixed amount of fuel by volume in the core. Calculations of the heat release field were made for reactors of the BN-1000 type in zones of different enrichment, taking into consideration changes in the isotope composition of the fuel and changes in the neutron spectrum and flux during the run (with the 18-RZ-4-B enrichment of the mixed fuel makes it possible to reduce the radial coefficient of nonuniformity (from 1.8 to 1.2), increase the breeding coefficient

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	rizika, no 4,	Apr 71, Abst	ract No 4V	536)	as i o i _hh	121-120	(from RZh-	
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BRODULENKO, I.I., GALANIN, A.K., GRIGOROV, N.K., ROZE, YE. A., VOVNENKO, V.L., SHELEY, A. YE.

"Reflex Klystrons With Interchangeable Resonators"

Elektron. tekhnika. Nauch.-tekhn. sb. Elektron. SVGh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics), 1971, Issue 5, pp 74-82 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10A163)

Translation: The paper considers glass and metalcoremic reflex klystrons with interchangeable [s"yemnyy] reconstors, which operate in the shortwave part of the centimeter range of wave lengths with output powers up to 0.5 watt. Metalcersmic klystrons with interchangeable reconstors assure high output electrical paremeters and in comparison with glass klystrons are more resistant to mechanical and climatic effects and are also more promising during utilization of the shortwave part of the centimeter range of wavelengths. Summary.

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USSR WDC 549.517.11:546.821 ZHMUD', YE. S., SHMELEV, A. YE., and METELKIN, P. N. "Interaction of Titanium with a Highly Aluminous Ceramic" Moscow, Neorganicheskiye Materialy, Vol 9, No 10, Oct 73, pp 1798-1801 Abstract: VT-1 titanium and A-995 ceramic material were used to study the products of interaction between titanium and the ceramic which consisted of 99.5% Al_2O_3 and 0.5% MgO with the effect of the MgO on the Ti-Al_2O_3 not considered in order to simply the investigation. The reaction products are situated in the metallic portion of the layer bond in which their number, thickness, structure microhardness, and composition depend on temperature. In the bonds between the two materials, two layers are formed near the ceramic: the intermetallide TIAl with some oxygen content and a solid solution (Ti(Al, 0)). These layers form at 1150-1450°C while at 1550-1600°C only the solid solution forms, The middle portion of the metal is the solid solution which forms independently of the temperature at which the studied alloys were produced. The oxides of titanium, sub-compounds of Ti-O and Ti-Al, as well as free aluminum were not detected in the investigated bonds. Four figures, one bibliographic reference. - 48 -A LONG CONTRACTORS at the second

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USSR UDC 546.82	21:546.623-31
ZHMUD', YE. S., and SHMELEV, A. YE.	
"X-Ray Phase Study of the Interaction of Titanium with Aluminu	m Cride"
Mcscow, Neorganicheskiye Materialy, Vol 9, No 10, Oct 73, pp 1	733-1737
Abstract: A systematic study was made of the interaction of T	1 w1+5 43 0
in relation to heat-treatment mode and ratio of initial compon ray phase analysis showed that, in the reaction of powdered Ti solutions of 0 and al is may appear of 1	
extended sintering in a specified temperature interval) the control and TiAl are formed. One solid solution, $Ti(Al_2O_3)$, is presentering products at 1500-1700°C. Data on the simultaneous for two solid solutions, as well as the change in concentration of element with respect to the other in the solid solution $Ti(Al_2O_3)$ is presented as the change in concentration of evidence to the separate dissolution of and Al in Ti, which the confirmed by the breakdown of the Al_2O_3 molecule during interaction.	tions (during apounds esent in the ormation of one dissolved 0 ₃), give is experimentally ation with Ti
and serves as an explanation of the formation of solid solution interaction of substances with different crystal lattices. The nine bibliographic references. 1/1	

Carl King	
USSR	UDO 621.385.032.5:666.3.037.5
ZHMUD', YE.S	, SHNELEV. A.YE., PERSHINA, L.K., RONAMI, G.N., KUDOYAROV, M.V.
"Microroentge Seals"	n Spectral Investigation Of Ti-Cerazic A-995 And Ti-Ag-Cerazic A-995
DC10NT1110-10	hnika. Nauchno-tekhn. eb. Elektron. SVCh (Electronic Technology. chnical Collection. Microwave Electronics), 1970, Issue 11, pp 117-123 ektronika i yeye primeneniye, No 2, February 1971, Abstract No 2A104)
Sames firm. that the maxi	Distribution of the elements in experimental metalcoramic seals was with the aid of a Type MAR-1 microanalyzer and a microanalyzer of the For the metal part of the seals Ti-Coramic A-995, it is established man concentration of aluminum is observed mear the coramic, and the oxygen in the depth of the metal. In the seals Ti-Ag-Corumic A-995,
the silver is silver is fou	on of almost all the titanium close to the ceramic is detected, and in the central part of the metal, while in the initial state the ad between the ceramic and titanium. The results obtained confirm
seals. Summary	Di the conclusions made during x-ray structural investigation of the
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USSR	UDC 661.183.6+549.623.5	
SHMELEV, G. A., SERDY Technological Institu	UKOV, V. I., and BOBR-SERGEYEV, A. A., Ivanovo Chemico- te, Department of Silicate Technology	
"Synthesis of Lithia	Mica in Eutectic Fluoride Fusions"	
Ivanovo, Izvestiya Vys Tekhnologiya, Vol XIII	sshikh Uchebnykh Zavedeniy, Khimiya i Khimicheskaya L, No 10, 1970, pp 1,496-1,499	
Abstract: Existing me amount of high-quality	ethods of synthesizing mica either yield an inadequate crystals, or are too complex technologically.	
The initial charge con	the authors studied experimentally the synthesis of $\left(0_{10}\right)F_2$) from solution in a fused mixture of fluorides. Sisted of quartz sand, periclase, MgF ₂ , LiF, K ₂ SO ₃ , rge amounts (more than 12% by weight) of fused fluorides tectic composition).	
Data on the composition promising method of syn	n of the mica obtained indicate that this is a very nthesis.	
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KORBEYNICHEV, O.P., SHM	<u>ELEV, K. S</u> ., TATEVOSKYAN	UDC 536.46:533.6	
"A Model of Combustion (Aluminum Perchlorate)"	Catalysis for Single-Comp	ponent Fuel (As Applied to	
Fiz. goreniya i vzryva (No. 3, pp 378-388 (from	Physics of Combustion an RZh-Mekhanika, No 3, Mar	d Explosion), 1972, Vol. 8, 73, Abstract No 3B961)	
Translation: According in a gas flow and simult and a heterogeneous reac given for the supplement reaction for the case who first order equation. An catalytic reaction. Also located on the surface of perchlorate is postulated	to the proposed model ca aneously there occurs a tion on particles of the ary flow of heat to fresh en the latter occurs in a expression is given for considered is the case a hot charge. A two-ze	talyzer particles are suspended homogeneous reaction in the gas catalyzer. An expression is h material due to catalytic a kinetic regime according to a r the effective constant of the when catalyzer particles are one combustion model of aluminum bustion rate due to the intro- y within the framework of this	
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COMPLETE STREET, STREE

CHAPLYGIN, E. I., TROSHKIN, A. K., SEMELEV, Las BORODIN, Yu. F., SYCHEV, Ye. A., GLYZIN, A. N., CHERNYSHEVA, M. A., KASPAROV, G. Ye., Volga Affiliate of the All-Union Scientific Research Institute of Abrasives and Grinding

"An OR-NOR Fluidic Element"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 33, Soviet Patent No 285341, class 42, filed 14 Jul 69, published 29 Oct 70, pp 118-119

Translation: This Author's Certificate introduces an OR-NOR fluidic element which contains supply, control, and output channels; a jet interaction chamber; and also channels which are open to the atmosphere. As a distinguishing feature of the patent, the device is designed for improved stability of the characteristics of the element. The unit contains an added projection on the wall opposite the control channels preceding the corresponding channel which is open to the atmosphere, and also an additional chamber made in this channel which is open to the atmosphere and located immediately behind the projection.

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BOBROVSKIY, G.A., GCRYUNOV, N.N., SHAELEV, S.K. "Investigation Of The Effect Of Gamma Irradiation On The Parameters Cf Transistors Used In Micromodule Magneto-Semiconductor Components" Dokl. nauchno-tekhn. konferentsii po ispol'z. ionizir. izlucheniy v nar. zh-ve (Reports Of The Scientific-Technical Conference On The Use Of Ionized Radiation In The National Economy), Issue >, Tula, Prickskiy Book Fress, 1970, pp 254-305 (from RZh--Elektronika i yeye primeneniye, No 4, April 1971, Abstract No 4B228) Translation: Averaged quantitative indices are presented for the dependences of the parameters of transistors on an integral dose of Gamma radiation, and a connection is also established between the efficiency of a micromodule magnetosemiconductor component (MSC), after irradiation of its transistor part, and an integral dose of Gamme radiation. It is noted that the current amplification factor B and the back current of the emitter junction Igo undergo the greatest change. Forty Type TM-5 alloy-type germanium transistors which are used in micromodules of MSC were investigated with respect to a complex of parameters under control. The correspondence of the complex of their parameters to the norms of technical conditions was taken into account by the criterion of the reliable functioning of transistors which are tested in the structure of the MSC. The irradiation dose amounted to $\sim 5.0 \cdot 10^{\circ}$ R. G.V. - 79 -

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PLOTNIKOV, M. A., CHERNYAVSKAYA,		
	ic Properties of Gases at Pressures Over	
Novosibirsk, <u>Fizika Goreniya i Vz</u>	rvva, Vol. 6, No. 3, Sep 70, pp. 263-267	
other problems require determinat: strongly compressed gases. Recent fifth virial coefficients using th action potential have significant the virial equation for the state 30-40 Kbar and higher for gases wi molecules. Precise experimental d available for a number of gases al	applications, including calculation of ssion of gases by strong shock waves and ion of the thermodynamic properties of t machine calculations of the fourth and he Leonard-Jones intermolecular inter- ly expanded the area of applicability of of a gas into the area of pressures of ith spherically symmetrical nonpolar lata on the thermodynamic properties low semiempirical corrections to be by expanding the area of practical appli-	
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"APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202930008-5 general, burd on the usual deterministic approach exployed in the above works, are limited. The complexity of the transmission will the multitude of workships operating make it more effective to above the broad to any two approximationally, using statistical methals are a fractive of the many factors related in the interval of a fractive the transmission of the proof describe the statistical processes, was independent statistication parameters of the system republicing human residences and the concentration of axygen and emboralized in the statistical residences and the concentration of axygen and emboralized in the statistical fractions and the concentration in the republication of respiration and in producting the balavier of the respiration of respiration and in producting the balavier of the transmission of a statistical and the statistication is believed a such a statis-ture (hopoxia, hypercapital). The gaseous mixture was inhaled for 10 to 15 min. Analysis of the dynamics of the parameters recorded showed that they became stabilized at rest by any of the above mixtures after 10 min, as indication that a study stude had been achieved by this time. Therefore, our report includes the results of analysis of the values recorded at the loth minute of inhulation of the corresponding gaseous mixtures. where x' is the normalized value of the variable, x is the absolute value of the variable, M_X is the average value of the variable in the experiment, Two kinds of equations were cought, one for the chaotate values of the variables, the other for the normalized variables. The second detuck made it possible to evaluate the contribution (verght) of each variable to a given function. Normalization of the following kind was used: In subsections the subject first (shaled off (21 percent series, in siturgen) and there is attract to decayed compartion. The (pleasing situres were used: hypoxic (d, 15, 12, or 9 percent 02 is siturgen), sy-taining a reduced quantity of expensive CO2 is air), and a combination con-there is a reduced quantity of expensive VC2 added. Thus, we investigated the entire range of changes in concentration of respiratory goves compatible with man's which processes. Experiments were performed on 18 heatray access (3 holes and 5 framework) are 18 to 32. We used a complete approximation (7) to receive the minute volume of respiration, COn content of adverting the (2). We construct a subverting the structure of a substantian of arterial block (with an 0-35 extremenyingh). The physical reactions were mathematically departied by arong of multiple correlation and regression analysis $\sum_{i=1}^{n} e_i$. Procedure 4 ÷ <u>د مع مع المع مع الم</u> N ť

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WDC 612,014,464+612,281

BRESLAV, I. S., KARIYEV, N. N., and SHAFIEVA Administration Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

1.1.

"Voluntary Control of Breathing in Altered Gaseous Media"

Leningrad, Fiziologicheskiy Zhurnal SSSR, No 12, 1971, pp 1,768-1,773

Abstract: Two series of experiments were performed to determine the effect of the volitional factor on the respiratory reactions of man to hypoxia and hypercapnia. One series involved a level of lung ventilation normal for each person, the other an increased level of ventilation. When the subjects were to breathe not only ordinary air and a hyperoxic mixture but also moderate hypoxic and, to a lesser degree, hypercapnic mixtures. In pressure-chamber experiments at a simulated altitude of 3,600 m, the subjects' ability to control their breathing detoriorated markedly. A study of newcomers to high mountains (Pamirs) revealed the same phenomenon as in the pressure-chamber breathing and invariable disruption of the ventilation regime in response to breathing and invariable disruption of the ventilation regime in response to able to maintain the prescribed level of ventilation; oxygen saturation of the blood with natural breathing was virtually the same as with restricted 1/2

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