"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

L 16635-65
ACCESSION NR: AP4049827

state. Orig. art. has: 12 figures, 62 formulas, and 3 tables.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00

SUB CODE: AA NR REF SOV: 041 OTHER: 032

Card 3/3

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

ACCESSION NR: AP4012962 S/0020/64/154/004/0809/0811

AUTHORS: Doroshkevich, A.G.; Novikov, I.D.

TITLE: The average radiation density in the metagalaxy, and some problems of relativistic cosmology

SOURCE: AN SSSR. Doklady*, v. 154, no. 4, 1964, 809-811

TOPIC TAGS: electromagnetic radiation, spectral distribution, cosmology, astrophysics, metagalaxy, Euclidean space, empty space, metagalactic expansion, intergalactic dust, atmospheric noises, metric space, diffuse matter

ABSTRACT: A comparison of the calculations with the observations of the electromagnetic radiation in the metagalaxy would facilitate the definition of the nature of galactic evolution, provide information on the state of the matter in the early stages of metagalactic expansion as well as possible data on the processes occurring in interstellar and intergalactic space. Experiments in this field, however, are complicated by such factors as galactic dispersion, the

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ACCESSION NR: AP4012962

difference between metric and Euclidean space and the presence of diffuse matter in intergalactic space. The experiment under consideration was based on the assumption that the intergalactic medium is completely transparent. The presence of diffuse matter alone does not in any way affect the isotropic radiation field. An analysis of the observation data on the relative distribution of various types of galaxies within the stellar population shows that the energy distribution per unit of volume in the metagalactic radiation spectrum can be approximated in the optical and infrared regions by the sum of two Planck curves with a temperature of T_1 = 10,000°K (type I of stellar population) and T_2 = 5,000°K (type II stellar population), and with an equal integral intensity at the present time. No reliable data on the evolution of the galaxies are as yet available. "The authors are profoundly grateful to Prof. S. B. Pikel'ner for his valuable advice, and Acad. Ya. B. Zel'dovich for his numerous discussions of the project." Orig. art. has: 2 figures.

Card 2/3

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

ACCESSION NR: AP4034533 S/0020/64/155/005/1033/1036

AUTHOR: Zel'dovich, Ya. B. (Academician); Novikov, I. D.

TITLE: Radiation of Gravitational Waves by Bodies Moving in the field of a Collapsing Star.

SOURCE: AN SSSR. Doklady*, v. 155, no. 5, 1964, 1033-1036

TOPIC TAGS: gravitational wave, collapsing star, general theory of relativity, gravitation theory, gravitational radiation friction, astronomy

ABSTRACT: In the present communication, the author considers the radiation of gravitational waves by a body of small mass m moving in a spherical field of a large mass, the effect of this radiation on the motion of m, and the possible observable effects. The gravitational radiation friction provides a force acting on the body. This is the result of interaction of mass m with its own gravitational field, which is proportional to m^2, whereas the interaction with the external field is proportional to m. Thus, the radiation of gravitational waves introduces a correction to the motion of a body in an external gravitational field. Calculation shows that as a result of gravitational radiation, the system may

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L 12914-65 EWT(1)/EWG(v)/EEC(t) Pe-5/Pae-2 GW

ACCESSION NR: AP4047318 S/0020/64/158/004/0811/0814

AUTHOR: Zel'dovich, Ya. B. (Academician); Novikov, I. D.

TITLE: Estimating the mass of a superstar

SOURCE: AN SSSR. Doklady*, v. 158, no. 4, 1964, 811-814

TOPIC TAGS: superstar, stellar mass, stellar spectrum

ABSTRACT: Analysis of observed data concerning superstars of the 3C 273 type indicates that the continuous spectrum of these objects in the optical region is emitted by a central body with dimensions on the order of $2 \cdot 10^{16}$ cm, while the emission lines arise in the outer envelope measuring several parsecs or more. The generation of the light flow takes place, in all likelihood, in the innermost region of the central body, referred to by the authors of this article as the nucleus. They arbitrarily call the plasma surrounding this nucleus the "atmosphere". The forces acting on the plasma of the atmosphere are considered for the purpose of estimating the mass of the superstar. A fundamental assumption is that the force of gravity is balanced by the force of light pressure. The basic value in this line of reasoning is the total radiation flow. For 3C 273 the authors have adopted a value of $q_0 = 3.5 \cdot 10^{25}$ erg/cm^2· sec for the energy flow at the surface of the Earth. The red shift $\lambda_1/\lambda_2 = 1.158$ when H = 100 km/sec·mps corresponds to a distance of $R = 5 \cdot 10^8$

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L 12914-65
ACCESSION NR: AP4047318

mps, giving a total flow for the object of $Q = 4\pi R^2 q_r \approx 2 \cdot 10^{46}$ spr/cek. The authors indicate that the hypothesis to the effect that the light pressure in the atmosphere of the superstar is balanced by the force of gravity leads to an estimation of the mass of the nucleus of the superstar on the order of 10^8 M. Moreover, they show that in the outer parts of the atmosphere, where the light pressure is fundamentally determined by photoionization processes and not by scattering on electrons, radiation forces increase sharply, the balance is disrupted and the external parts of the atmosphere are ejected outward. As a possible mechanism for the generation of the energy of the superstar, the authors point to the accretion of atmospheric matter into the small circumference of the collapsed nucleus. The quantity of incident matter, necessary to provide the light flow observed, is about 3 M /year. This mechanism is said to be self-regulating. Orig. art. has: 6 formulae.

ASSOCIATION: None

SUBMITTED: 16Jul64 ENCL: 00 SUB CODE: AA

NO REF SOV: 005 OTHER: 004

Card 2/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

L 38565-65 FBD/EWT(1)/EWG(v)/EEC-4/EEC(t) Pe-5/Pae-2/Pi-4 GW/WS-4
ACCESSION NR: AR5004841 S/0269/64/000/012/0076/0076

SOURCE: Ref. zh. Astronomiya. Otd. vyp., Abs. 12.51.620

AUTHORS: Novikov, I. D.

TITLE: On the mechanism of energy release during the collapse of a quasar

CITED SOURCE: Astron. tsirkulyar, no. 290, apr 8, 1964, 1-5

TOPIC TAGS: quasar, gravitational collapse, gravitational energy, electromagnetic radiation energy, hydromagnetic wave

TRANSLATION: The last stages of collapse of a quasar are accompanied by a strong increase of the magnetic field. The change in the field during the process of compression leads to electromagnetic radiation. The total amount of radiated energy is determined by the expression

$$E = \frac{\Phi^2}{15R_g}\left(\frac{R_g}{R}\right)^{2.5}.$$

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ACCESSION NR: AR5004841

where R_g -- gravitational radius, equal to $3M/M_\odot$ /km, $\Phi = d/R$, d -- magnetic moment, and R -- radius of the star. When $M = 10^8 M_\odot$ and the field intensity during the last stages of the collapse is $H \approx 10^9$ G, the radiated energy is $\approx 5 \times 10^{56}$ erg. The radiation is produced in the case when the density N of the plasma surrounding the star satisfies the condition

$$\Phi/R_g^3 > 2\pi Ne,$$

where e -- electron charge. In the opposite case, a hydromagnetic wave is produced. E. Kotok.

SUB CODE: GP, AA ENCL: 00

Card 2/2

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.D.

Delay of the explosion of a part of the Friedman universe and superstars. Astron. zhur. 41 no.6:1075-1083 N-D '64 (MIRA 18:1)

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, Igor' Dmitriyevich, SHISHAKOV, Vitaliy Alekseyevich, KULIKOV, O.S., red.

[Homemade astronomical instruments and observations with them] Samodel'nye astronomicheskie instrumenty i nabliudeniia s nimi. Moskva, Nauka, 1965. 122 p. (MIRA 18:5)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

L 5444-66 EWT(1)/EWP(m)/T IJP(c) GW

ACCESSION NR: AP5019230 UR/0056/65/049/001/0170/0181

AUTHOR: Doroshkevich, A. G.; Zel'dovich, Ya. B.; Novikov, I. D.

TITLE: Gravitational collapse of asymmetrical and rotating masses

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 1, 1965, 170-181

TOPIC TAGS: gravitation, stellar evolution, cosmogony, gravitation effect, gravitation field

ABSTRACT: The theory of stars contracting without limit, hitherto developed for a simple model of a spherical body, is extended in this article to include nonspherical and asymmetrical stars. It is proved rigorously that the characteristic pattern of gravitational self-closing is valid also for the general case. Moreover, collapse of a non-rotating body leads to damping (proportional to the reciprocal of the time) of the quadrupole and higher field moments as seen by an external observer. The variation of a rotating body is shown to be different. The changes in the metric, connected with the rotation of the local inertial frame, are shown to tend to a nonvanishing constant value, but otherwise the collapse remains qualitatively the same as in the spherical case. Static nonspherical solutions of Einstein's

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ACCESSION NR: AP5019230

equations are investigated and the properties of the Schwarzschild surface are analyzed for the case of static field with axial symmetry, a rotating body with an external field, a Schwarzschild sphere in an external quadrupole field, and the collapse of a perturbed spherical dust cloud. Orig. art. has: 1 figure and 20 formulas.

ASSOCIATION: none

SUBMITTED: 16Dec64 ENCL: 00 SUB CODE: GP, AA

NR REF SOV: 006 OTHER: 010

Card 2/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

L 2009-66 EWT(1)

ACCESSION NR: AP5018609

UR/0053/65/086/003/0447/0536
523 + 530.12:531.51

AUTHOR: Zel'dovich, Ya. B.; Novikov, I. D.

TITLE: Relativistic astrophysics. II.

SOURCE: Uspekhi fizicheskikh nauk, v. 86, no. 3, 1965, 447-536

TOPIC TAGS: astrophysics, radio astronomy, stellar evolution, cosmogony

ABSTRACT: The first part of the article was published in Uspekhi fizicheskikh nauk v. 84, 377, 1964, and dealt with the conditions under which stars go over to the neutron or collapsed (cooled) state. The present part is a review of the literature up to the end of 1964, deals with the observational properties of stars that are on the verge of collapse or neutronization, and analyzes in detail how a star can either avoid or reach the state of collapse. Some problems concerning quasars, for which there is no complete theory as yet, are expounded. The section headings are: 1. Introduction. 2. Equilibrium of a supermassive star. 3. Equilibrium of a rotating star with $\gamma = 4/3$. 4. The possible occurrence of a supermassive star. 5. Evolution of supermassive stars. 6. Evolution of stars of medium mass. 7. Motion of trial particles and light rays in a Schwarzschild field. 8. Radiation of gravitational waves. 9. Collapse of rotating star. 10. Collapse of nonspherical body. 11. Does rapid rotation interfere with collapse of a star?

Card 1/2

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12. Comparison with observations. 13. Accretion of gas by neutron and cooled stars. 14. Magnetic and magnetohydrodynamic phenomena. 15. Quasars ("superstars"). 16. Magnetoturbulent theory of quasars. 17. The anticollapse hypothesis. Appendix. Literature. Orig. art. has: 17 figures and 100 formulas.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: AA

NR REF SOV: 081 OTHER: 071

Card 2/2 DP

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.D.

Mechanism of energy release during the collapse of superstars. Astron. tsir. no.290:1-5 Ap '64. (MIRA 18:10)

1. Otdeleniye prikladnoy matematiki Matematicheskogo instituta imeni Steklova AN SSSR.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

L 24376-66 EWT(1) GW

ACC NR: AP6010440 SOURCE CODE: UR/0386/66/003/005/0223/0227

AUTHOR: Novikov, I. D.

ORG: Division of Applied Mathematics, Mathematics Institute im. V. A. Steklov, Academy of Sciences, SSSR (Otdeleniye prikladnoy matematiki Matematicheskogo instituta Akademii nauk SSSR)

TITLE: Change of relativistic collapse into anti-collapse and kinematics of a charged sphere

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 5, 1966, 223-227

TOPIC TAGS: cosmogony, gravitation field, gravitation effect

ABSTRACT: The author shows that a collapsing star, on reaching the Schwarzschild radius, and going beyond it, may reverse its motion and expand from under the Schwarzschild sphere, but into another external region (which is Euclidian at infinity) with the same properties as the first external region and situated in the absolute future relative to it. This is demonstrated for a sphere of charged dust in a strictly spherical geometry. The change from contraction to expansion within the Schwarzschild sphere occurs without the matter going through infinite density (except for the particle in the center). The sphere is assumed to be uniformly charged and the charge did not become redistributed during the course of the collapse. The contraction gives way to expansion not simultaneously, but beginning at the edge

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ACC NR: AP6010440

of the sphere and moving toward the center. This is demonstrated by investigating separately the motion of a point on the surface of the sphere and internal points under the combined influence of the masses and charges acting on the particle in question. Orig. art. has: 1 figure.

SUB CODE: 20, 03/ SUBM DATE: 24Jan66/ ORIG REF: 004/ OTH REF: 003

Card 2/2

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

L 44706-66 EWT(1) GW

ACC NR: AP6031342 SOURCE CODE: UR/0386/66/004/003/0117/0120

AUTHOR: Zel'dovich, Ya. B.; Novikov, I. D.

ORG: none

TITLE: Charge asymmetry and entropy of a hot Universe

SOURCE: Zh. eksper. i teoret. fiz. Pis'ma v redaktsiyu. Prilozheniye v. 4, no. 3, 1966, 117-120

TOPIC TAGS: cosmology, stellar evolution, entropy, gravitation effect

ABSTRACT: The authors offer a natural explanation of the small charge asymmetry of the Universe at high density, which is deduced from recent measurements of the cosmic background of radio emission at wavelengths 20, 7, 3, and 0.25 cm, which have confirmed the theory of the hot Universe. The dimensionless entropy (per baryon, in a system of units where the Boltzmann constant is $k = 1$), amounts to approximately 10^9. This means that there are approximately 10^8 quanta of electromagnetic radiation per baryon, and approximately as many electrons and muonic neutrinos. The almost-charge-symmetrical state becomes rational if it is assumed that a phase when matter was compressed existed at $t < 0$. In this phase (at $t \approx -10^{18}$ sec) there were no antibaryons at all, and only baryons existed (nucleons, ordinary nuclei, ions, and atoms). The average density at this instant was 10^{-30} g/cm^3. It is further assumed that up to that instant there was released an energy of the order of $E = 10^{16}$ erg/g as a result of nuclear reactions or gravitational processes. During the course of contraction

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ACC NR: AP6031342

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this energy (which initially could be in the form of optical quanta and high-energy neutrinos) should be transformed into equilibrium forms; the presented value of E ensures the necessary entropy. In this case the occurrence of baryon-antibaryon pairs and the surprising almost-charge-symmetrical state are already a natural consequence of the known laws of physics. Consequently, during the expansion phase there exists the same high specific entropy and almost complete charge symmetry at high densities. In particular, it follows from this that cyclic evolution with an infinite number of contraction and expansion cycles does not agree with the finite value of the entropy S at the present time. This quantity, which is fundamental for cosmology, may possibly be expressed in terms of a combination of atomic and gravitational quantities. The expression for S differs from the outwardly analogous formulas of Eddington, Dirac, and others in the fact that S is a local quantity and the expression has been derived logically, from a consideration of physical processes during the course of the evolution. It can be concluded on this basis that the Universe is 100% charge-symmetrical, with the exception of a short high-density period, when it is almost symmetrical for natural reasons. The authors thank B. P. Konstantinov and A. D. Sakharov for discussion that led to the formulation of the problem considered in this note. Orig. art. has: 1 formula.

SUB CODE: 20/ SUBM DATE: 2Jun66/ ORIG REF: 004/ OTH REF: 005

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Card 2/2

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

ACC NR: [illegible]

[illegible]

AUTHOR: Novikov, I. D. (Candidate of the Physical Mathematical Sciences)

ORG: none

TITLE: Radiation on the wavelength of 7.5 cm

SOURCE: Zvezdy i vselennaya (Stars and the universe). Moscow, Izd-vo Znaniye, 1966, 36-39

TOPIC TAGS: cosmic radiation, metagalaxy, Doppler effect, astrophysics

ABSTRACT: The importance of the discovery of the total cosmic radiation on the wavelength of 7.5 cm is discussed in the light of the theories of Alfer-Bilov and Zeldovich. A general treatment of the metagalactic radiation is given. The metagalactic radiation spectrum was calculated by A. G. Doroshkevich and by the author in the Theoretical Astrophysics Laboratory of the Academy of Sciences, USSR, in 1962 (see Figure 1. Orig. art. has: 1 fig.

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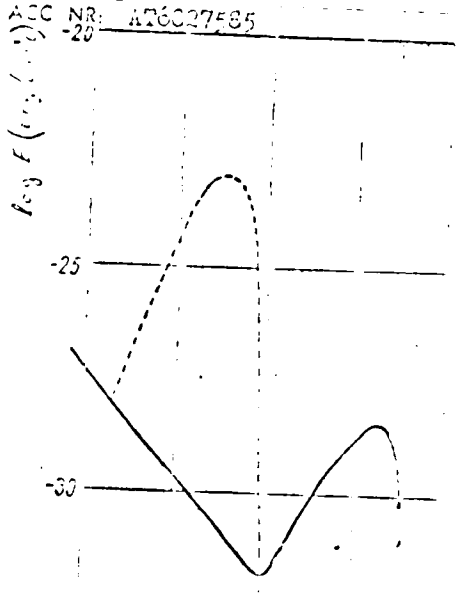
ACC NR: AT6027585



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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

ACC NR: AP6027542 SOURCE CODE: UR/0384/66/000/003/0011/0013

AUTHOR: Novikov, I. D. (Candidate of physico-mathematical sciences)

ORG: none

TITLE: The discovery of primary radio frequency radiation from the metagalaxy

SOURCE: Zemlya i vselennaya, no. 3, 1966, 11-13

TOPIC TAGS: radio astronomy, galactic radiation, metagalaxy, space research

ABSTRACT: The author explains why the general radiation from space on the 7.5 cm wavelength is significant in our understanding of the evolution of the universe. In the region of lower radio frequencies (wavelengths greater than 3 cm), the principal radiation is not produced by stars and cosmic dust but rather by non-thermal processes in our galaxy and in other galaxies, particularly in radiogalaxies. The possibility exists that intergalactic space contains quanta which originate not in galaxies but, rather 10 billion years ago before the galaxies existed. At that time, the density of matter was not less than the nuclear density and this density decreased as the metagalaxy expanded. According to the "hot" model of outer space, the temperature 10 billion years ago was very high and the density of radiation exceeded the density of matter. After a long period of time, after matter expanded to its modern state and galaxies and stars were formed, the primary radiation still remained. At the present time, the den-

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sity of primary radiation in accordance with the "hot" model is much less than the density of matter while the radiation temperature is only 1-10°K. In 1965 it was reported that the American radioastronomers observed radiation at a wavelength of 7.5 cm as predicted. This corresponds to a modern temperature of 3.5°K for primary radiation. Thus the conclusion is confirmed that matter in the far past (10 billion years ago) was in a dense state and was at a very high temperature. If future radio frequency observations confirm this discovery, the scientists will obtain interesting information concerning the far distant epoch which determined the modern state of the metagalaxy. Orig. art. has: 2 figures, 1 photograph.

SUB CODE: 03/ SUBM DATE: none

Card 2/2

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

ACC NR: AR6035556 SOURCE CODE: UR/0269/66/000/010/0076/0076

AUTHOR: Zel'dovich, Ya. B.; Novikov, I. D.; Syunyayev, R. A.

TITLE: Methods of investigation and the cosmological importance of He in the intergalactic matter

SOURCE: Ref. zh. Astronomiya, Abs. 10.51.572

REF SOURCE: Astron. tsirkulyar, no. 371, apr. 27, 1966, 1-3

TOPIC TAGS: helium, model, star cluster, intergalactic helium, cosmological model, quasar spectrum

ABSTRACT: An investigation of intergalactic He would make it possible to determine the degree of isotropy in the expansion of the metagalaxy in its early stages and the present density of intergalactic matter. Observation of the following phenomena is suggested: 1) light absorption in quasar spectra by intergalactic He remaining in its basic state; 2) absorption lines of neutral He in source spectra located beyond the cluster of galaxies; 3) neutral He radiation lines located in clusters of galaxies; 4) He^3 observations by radio methods. The presence of intergalactic He, which, according to the "hot" cosmological model, represents

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ACC NR: AR6035556

~ 30% of the gas which has not passed the stellar state, increases the rate of intergalactic gas cooling and changes the conditions of its ionization. Bibliography has 6 titles. A. Zasov. [Translation of abstract] [DW]

SUB CODE: 03/

Card 2/2

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

ACC NR: AP6033161 SOURCE CODE: UR/0033/66/043/005/0911/0918

AUTHOR: Novikov, I. D.

ORG: none

TITLE: The change from relativistic gravitational contraction to expansion, and physical characteristics during contraction

SOURCE: Astronomicheskiy zhurnal, v. 43, no. 5, 1966, 911-918

TOPIC TAGS: cosmology, astrophysics, stellar evolution

ABSTRACT: The problem of stellar change from relativistic gravitational contraction, or collapse, to expansion in the case of stars with dimensions smaller than their gravitational radius is discussed. In the model problem of a charged sphere, infinite density does not have to be attained by the matter, except for the particle in the center of the sphere, for such a change to occur. Maximum density of matter is determined by the term $\rho \approx c^6 (m^4/\varepsilon^6)$ where c is the speed of light, m is the mass and ε is the charge. The results obtained from the charged model should indicate the nature of the solution in the general case of the change from relativistic contraction to expansion of a neutral star, with allowance for instability of spherical contraction and possible processes at super high densities over 10^{93} gm/cm^3. Problems on change from contraction to expansion are discussed for cosmological models. "The author

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

ACC NR: AP6033161

thanks Ya. B. Zel'dovich for many stimulating discussions." Orig. art. has: 4 figures and 6 equations.

SUB CODE: 03/ SUBM DATE: 09Feb66/ ORIG REF: 010/ OTH REF: 009

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, Il'ya Dmitriyevich; KONDYUKOVA, P.D., red.; AVDEYEVA, V.A., tekhn. red.

[Efficient organizers of the masses]Boevye organizatory mass; iz opyta partiinoi raboty. Moskva, Sovetskaia Rossiia, 1962. 63 p. (MIRA 15:11)

1. Sekretar' Partiynogo komiteta zavoda "Serp i molot",Moscow(for Novikov). 2. Chlen partiynogo komiteta zavoda "Serp i molot",Moscow (for Ryzhkov). (Moscow--Steel industry)
(Communist Party of the Soviet Union--Party work)

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.F.

Results of parathyroid adenomectomy. Trudy [illegible]

[illegible]

1. Iz kafedry obshchey khirurgii Leningradskogo pediatricheskogo meditsinskogo instituta i urologicheskogo otdeleniya Ob"yedinennoy bol'nitsy imeni Kuybysheva, Leningrad.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

VI[illegible]ITSKI[illegible], I.G.; KR[illegible]V, B.[illegible]; [illegible], [illegible]; [illegible], Yu.I.; NOVIKO[illegible], I.G.; [illegible]VA, I.A.; IVAN[illegible], [illegible] red.; [illegible] red.

[Album of mo[illegible] in [illegible] nachertatel'n[illegible] [illegible]metrii. [illegible] Rodol'sk, [illegible] 135 p. [illegible]

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

STAROSTIN, Petr Fedorovich; NOVIKOV, I.I., red.

[Selecting optimum structures of rubber sealings] Vybor optimal'nykh konstruktsii rezinovykh uplotnenii. Leningrad, 1964. 13 p. (MIRA 18:4)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I.

1. VALUEV, I. V., NOVIKOV, I.I.

2. USSR (600)

4. Grinding and Polishing

7. Machine for lapping prismatic grooves, Stan. i instr. 24 No. 2 1953

9. Monthly List of Russian Accessions, Library of Congress, May 1953, Uncl.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I. I.

USSR/Miscellaneous - Machinery

Card : 1/1

Authors : Novikov, I. I.

Title : Application of combined multi-blade cutters

Periodical : Stan i instr, 3, 33 - 35, Mar 1954

Abstract : A detailed description of combined multi-blade cutters used in machining various articles. Diagrams are included.

Institution : ....

Submitted : ....

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I. I.

USSR/ Engineering - Machine tools

Card : 1/1

Authors : Novikov, I. I. and Akimov, N. M.

Title : A highly-efficient device for rolling semi-finished components with complicated profiles.

Periodical : Stan. i Instr., Ed. 6, 33 - 34, June 1954

Abstract : The employees of the machine construction industry in cooperation with the scientific institute, designed and built a device for rolling semi-finished components with complicated profiles on a turret lathe. Description of the above device, is presented. Diagrams; illustration.

Institution : ...

Submitted : ...

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I.; KALININ, M.A.

Attachment for cutting blanks for Woodruff keys. Stan. i instr. 28 no.10:38 O '57. (MLRA 10:11)

(Grinding machines--Attachments)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

AUTHOR: Novikov, I. I. SOV/12-58-8-19/29

TITLE: Heads with Live Centre for the Trepanning of Holes (Golovki s plavayushchim tsentrom dlya kol'tsevoy obrabotki otverstiy)

PERIODICAL: Stanki i Instrument, 1958, Nr 8, pp 34-35 (USSR)

ABSTRACT: Several types of trepanning tools are illustrated and described. For machining holes of 15-50 mm diameter in sheet material a mandrel with a mounted crown cutter and a live centre running in needle bearings is shown in Fig 1. For larger holes a boring head with interchangeable and adjustable individual cutters also carrying a live centre is shown in Fig 2. The adjustable tool bits move in slots of the cross beam provided with permanent scales. The mandrel has a morse cone at one end, and a live centre at the other in both types of trepanning drill head. The crown type of cutter may be integral or provided with carbide cutting tooth inserts. There are 7 figures.

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I.

Milling heads used for machining aluminum alloys. Stan.i instr. 29 no.11:38 N '58. (MIRA 11:11)
(Milling machines)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I., inzh.

Hermetically sealed joints of distant rings of an assembled piston for a nonlubricated compressor. Khim. mash. no.6:32-33 N-D '59. (MIRA 13:3)

(Compressors)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

S/184/60/000/006/008/012
A104 A130

15 6010 1583, 1208, 1404

AUTHOR: Nevikov, I. I., Graduate Engineer

TITLE: Computation of the friction of non-lubricated piston rings

PERIODICAL: Khimicheskoye mashinostroyeniye, no. 6, 1960, 32-36

TEXT: The author describes briefly the purpose of graphite compressor rings consisting of three segments and states that suggestions with regard to metal piston rings contained in References 1 - 7 [Solov'yev, P. N. - Ref. 1: "Nauchno-tekhnicheskiy byulleten Leningradskogo politekhnicheskogo instituta" no. 2, 1957; Beltinskiy, V. N. - Ref. 2: Avtotraktornyye dvigateli (Automobile and tractor engines), Sel'khozgiz, 1948; Gur'kusha, G. N., Yuzhina, A. G. - Ref. 4: Teoriya, konstruktsiya i raschet lokomobilya (Theory, design and calculation of the locomobile), Mashgiz, 1952] cannot be applied to non-lubricated piston rings. The friction force is calculated according to Formula $T_K = \mu P$ assuming that the gas pressure on ring falls from p_1 to p_2. Forces effective on the inner surface of the segment are shown in Figure 2. Calculations show that the force which presses the segment to the cylinder does not depend on the ring thickness. Having obtained the value

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20163

S/184/60/000/006/008/012
A104/A130

Computation of the friction of .

T_k, the friction force of complete piston packings consisting of z-rings, the cylinder pressure and the friction loss are calculated. Tests were carried out at constant pressure on a special non-lubricated compressor equipped with a cylinder of 50 mm diameter (D), piston stroke 160 mm (S), rotation speed 300 rpm (n). All piston parts, with the exception of rings and springs, were made of stainless steel. Piston rings (h = 10 mm, t = 6 mm) consisted of three segments pressed to the cylinder by a flat spring at 0.8 kg/sq cm pressure. Piston rings were made according to a special method developed by the author [Ref. 9: Porshnevyye kol'tsa, rabotayushchiye bez smazki (Piston rings working without lubricants), Leningradskiy dom nauchnoy-tekhnicheskoy propagandy, seriya "Modernizatsiya, avtomatizatsiya i remont oborudovaniya", no. 4, 1960]. D (D) graphite was used for pistons and support rings. The friction force of compressor rings was measured by a new method which is briefly described. Rings were tuned on the compressor for 80 hrs. During the first 30 hrs there was a constant pressure of 10 kg/sq cm inside the piston. A brief description of the method and conditions is given. Figure 6 shows an elastic cylinder support used for kinetic tests carried out at constant pressure with air pumped into the container by a lubricated compressor. It was later revealed that the kinetic friction coefficient had increased due

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

to the presence of lubricant's vapors in air. Friction force and friction losses can be calculated and provide accurate data at constant pressure and approximative at alternating pressure. The friction of piston rings caused by gas pressure does not depend on their number which can be calculated empirically $z \geqslant \sqrt{2p}$ at which p = maximum pressure drop in kg/sq cm. The friction force and durability depend on the elastic force P_e of springs [Abstracter's note: designation e (elasticity) is a translation from the Russian P_y (uprugost')]. This dependency is particularly evident at low pressures. One kg/sq cm of elastic force causes the same friction as 6.7 kg/sq cm gas. The value P_y should not exceed 0.1 - 0.2 kg/sq cm, particularly as there were cases of rings operating entirely without springs [Plutalova, L. A. - Ref. 5: Antifriktsionnyye materialy, rabotayushchiye bez smazki (Anti-friction materials operating without lubricants), Trudrezervizdat, 1957]. Overall friction inside piston packing depends on the pressure drop rather than on the distribution of pressure on piston rings. The production method of small graphite rings with interchangeable segments proved satisfactory and suited for industrial purposes. There are 8 figures and 9 references: 1 German and 8 Soviet.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

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A104/A130

Computation of the friction of...

(2)

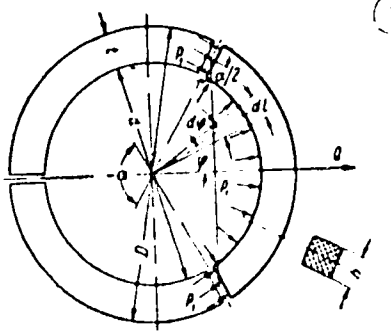

Figure 2:

Diagram of forces acting on inner surface of segment

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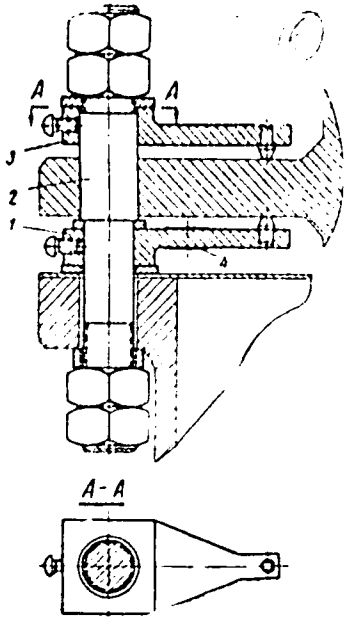

Figure 6:
Elastic cylinder support

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I., inzh.

Effect of gas pressure on the performance of the graphite piston ring. Khim. mash. no.4:20-24 Jl-Ag '61. (MIRA 14:8)
(Piston rings)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

L 41721-65 EWG(j)/EPA(bb)-2/EPA/EWT(1)/EWP(e)/EWT(m)/EPF(c)/EWP(i)/EWP(f)/EWG(v)/EPR/T-2/EWP(b) Pe-5/Pr-4/Pc-4/Pw-4 WW/WH

ACCESSION NR: AP5010899 UR/0286/65/000/007/0087/0088

4/6

B

AUTHOR: Novikov, I. I.

TITLE: Graphite piston ring. 15 Class 27, No. 169733 15

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965, 87-88

TOPIC TAGS: piston ring, graphite, compressor

ABSTRACT: This Author Certificate presents a graphite piston ring, as for instance for compressors working without lubrication. The ring has one or several locks. To facilitate the construction and to extend the longevity of the ring, the locks are made in the form of rough cracks formed in the ring by subjecting it to a mechanically applied force.

ASSOCIATION: Leningradskiy filial nauchno-issledovatel'skogo instituta khimicheskogo mashinostroyeniya (Leningrad Branch of the Scientific Research Institute of Chemical Machine Construction)

SUBMITTED: 20May64 ENCL: 00 SUB CODE: IE

NO REF SOV: 000 OTHER: 000

Card 1/1 nl

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

L 13529-66 EWT(m)/EWP(w)/EPF(n)-2/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/WW/JG

ACC NR: AP5028982 SOURCE CODE: UR/0149/65/000/004/0131/0133

AUTHOR: Novikov, I. I.; Novik, F. S.

ORG: Moscow Institute of Steel and Alloys, Non-Ferrous, Rare, and Radioactive Metals Department (Moskovskiy institut stali i splavov, Kafedra metallovedeniya tsvetnykh, redkikh i radioaktivnykh metallov)

TITLE: Effect of straining rate on the plasticity of aluminum alloys in solid-liquid state

SOURCE: IVUZ. Tsvetnaya metallurgiya, no. 4, 1965, 131-133

TOPIC TAGS: strain, elongation, aluminum alloy, tensile test, plasticity, liquid state, solidus

ABSTRACT: The effect of straining rate on the temperature dependence of relative elongation in solid-liquid state was investigated for alloys with variations in the thickness of liquid intergranular layers. Binary Al alloys with 1.5 and 6.5% Cu as well as with 0.6 and 5% Si, greatly differing in the amounts of liquid phase in the lower part of the crystallization range, were selected for the investigation. The alloy specimens were annealed for 20 hr at temperatures of 0.9 m.p. Tensile tests in the melting range (on heating specimens from solid state) were performed at deformation rates of 8 and 80 mm/min. Findings: on transition across the solidus to the

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L 13529-66
ACC NR: AP5028982

region of solid-liquid state relative elongation either abruptly falls to a fraction of a percent or remains unchanged or slightly increases over some temperature range (in the brittleness range), whereupon, with increasing temperature, it continually increases. If the liquid phase is abundant and its intergranular layers are sufficiently thick, the straining rate greatly affects the degree of relative elongation. The Al alloy with 5% Si, with its considerable amount of eutectic, is characterized by extremely thick liquid intergranular layers throughout the brittleness range, and hence in this case the straining rate greatly affects elongation (increase in straining rate from 8 to 80 mm/min reduces relative elongation from 0.7 to 0.2%). By contrast the annealed Al alloy with 0.6% Si and the alloy with 1.5% Cu, which contain no eutectic, contain an extremely small amount of liquid phase in the brittleness interval and hence for them the straining rate does not affect plasticity. It is interesting that so long as the Al alloy with 5.6% Cu contains little liquid in the brittleness interval (at up to ≈560°C), the straining rate does not affect elongation. Once the temperature is raised above this limit, however, the amount of liquid increases and elongation increases with decreasing straining rate. In addition to tensile tests in the melting range, tests in the crystallization range, with cooling of specimens from liquid state, were performed. The resulting pattern of the effect of straining rate on plasticity was the same. For example, for the Al alloy with 5% Si conversion to straining rates of 5 and 2 mm/min caused a further increase in elongation within the brittleness range. Thus, a change in straining rate markedly influen-

Card 2/3

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L 13529-66

ACC NR: AP5028982

ces the level of relative elongation in the brittleness range, if the liquid intergranular layers are sufficiently thick. Orig. art. has: 2 figures.

SUB CODE: 11, 13, 20/ SUBM DATE: 26Apr64/ ORIG REF: 006/ OTH REF: 000

Card 3/3

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I., dotsent.

Histological structure of mule sperm. Nauch.biul Len.un.no.21:24-26 '48. (MLRA 10:3)

1. Kafedra darvinizma.
(Asses and mules) (Spermatozoa)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I., dotsent.

Histological structure of testes of hybrids obtained by crossing the Asiatic wild ass with horses and asses. Nauch.biul.Len.un. no.21:26-28 '48. (MLRA 10:3)

1. Kafedra darvinizma.
(Asses and mules) (Testicle)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I. I.

NOVIKOV, I.I.

Effect of intervarietal blood transfusion on the color of fur of rabbits. Uch.zap.Len.un. no.165:215-216 '53. (MIRA 7:7)

1. Laboratoriya biologii razvitiya zhivotnykh kafedry darvinizma. (Rabbits) (Blood--Transfusion)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I. I.

NOVIKOV, I.I.

Heterotransplantation of ovaries. Uch.zap.Len.un. no. 165:209-214 '53. (MLRA 7:7)

1. Laboratoriya biologii razvitiya shivotnykh kafedry darvinizma.
(Transplantation (Physiology)) (Ovaries--Transplantation)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I.

Changes in the pigmentation of Himalayan rabbits resulting from the transfusion of blood of a different breed. Zhur. ob.biol. 20 no.3:214-215 My-Je '59. (MIRA 12:8)

1. Leningradskiy gosudarstvennyy universitet im. A.A.Zhdanova.
(RABBITS) (BLOOD--TRANSFUSION) (COLOR OF ANIMALS)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, Ivan Ivanovich; GOROBETS, A.M., kand. biolog. nauk, nauchnyy red.; VOROB'YEV, G.S., red. izd-va; GURDZHIYEVA, A.M., tekhn. red.

[Is everyting expedient in living nature?]Vse li tselesoobrazno v zhivoi prirode. Leningrad, Vses. ob-vo po raspr. polit. i nauchn. znanii RSFSR, 1961. 59 p. (MIRA 15:12)
(Zoology—Ecology)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I., kand.iskusstvovedeniya, arkhitektor.

Experimental construction of apartment houses made of large silicate blocks. Opyt stroi. no.8:33-52 '57. (MIRA 11:1)
(Apartment houses)
(Silicates)
(Precast concrete construction)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, Ivan Ivanovich; CHERNOV, Ye., red.; YEGOROVA, I., tekhn.red.

[Tiling] Plitochnye raboty. Moskva, Mosk.rabochii, 1958. 30 p. (MIRA 13:1)

1. Brigadir plitochnikov 82-go spetsializirovannogo upravleniya tresta "Mosotdelstroy" No.2 Glavmosstroya.
(Tile construction)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I., kand.iskusstvovedeniya arkh.

City planning in people's democracies. Opyt stroi. no.14: 3-65 '58. (MIRA 11:10)

(Europe, Eastern--City planning)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I., kand.iskusstovovedeniya arkh.

Constructing houses using effective building materials. Opyt. stroi. no.19:51-86 '58. (MIRA 12:1)
(Silicates) (Building blocks)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I., kand.iskusstv.nauk, arkhitektor; SKOROV, B.M., kand. tekhn.nauk, red.; MOROZOVA, G.V., red.izd-va; RUDAKOVA, N.I., tekhn.red.

[City building in foreign countries (France, the Netherlands, Belgium, Austria, and the German Federal Republic] Iz praktiki gradostroitel'stva za rubezhom (Frantsiia, Gollandiia, Bel'giia, Avstriia i FRG). Moskva, Gos.izd-vo lit-ry po stroit., arkhit.i stroit.materialam, 1959. 73 p. (Opyt stroitel.stva, no.25) (MIRA 13:2)

(Europe, Western--City planning)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

SEDOV, A.P., kand.arkhitektury; [illegible], [illegible], [illegible]

Planning and building [illegible] reinforced concrete [illegible]
[illegible] no.31:5-59 [illegible].
(Cement plants) (Precast concrete)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I. I.

Novikov, I. I.

"Arterial Blood Supply of the Pons Varolii of the Human Brain." Second Moscow State Medical Inst imeni I. V. Stalin. Moscow, 1[illegible]. (Dissertation for the Degree of Candidate in Medical Science)

So: Knizhnaya letopis', No. 27, 2 July 1955

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I. I.

USSR / Human and Animal Morphology (Normal and Pathological). S
Cardiovascular System.

Abs Jour : Ref Zhur - Biol., No 21, 1958, No 97085

Author : Novikov, I.I.
Inst : 2nd Moscow Medical Institute
Title : Blood Supply of the Pons Varolii from Median Arteries.

Orig Pub : Uch. zap. 2-y Mosk. med. in-t, 1957, 4, 92-95

Abstract : It was shown on 18 preparations of the human cerebrum by methods of momentary polychromic injection of vessels and by preparation, that from the dorsal surface of the basal artery, 5-8 median arteries (MA) begin, which enter the substance of the pons varolii along the external border of the sulcus basilaris and penetrate through the entire mass of the pons up to IV ventricle. In the region of MA distribution, there are pyramidal tracts, the nuclei of the pons itself, the internal part of the medial lemniscus, the posterior longitudinal fasciculus, the nucleus and

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I.

Development of the innervation of the common carotid artery in man. Vop.morf.perif.nerv.sist. no.4:159-178 '58. (MIRA 13:5)
(CAROTID ARTERY--INNERVATION)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVI[illegible], I.I., Cand Med Sci - (diss "Development of ~~the~~ innervation of vessels ~~ix~~ ~~originating in~~ derived from the arterial branchial ~~area~~ arches." Minsk 19[illegible], 14 pp (Minsk State Med Inst) 1[illegible] (KL, 3[illegible], [illegible])

- 101 -

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

GOLUB, D.M.; AMVROS'YEV, A.P.; LEONTYUK, A.S.; NOVIKOV, I.I.; ORLOVA, B.L.; KHEYNMAN, F.B.

Formation of new sensory paths in the pelvic organs. Dokl.AN BSSR 3 no.3:123-125 Mr '59. (MIRA 12:8)
(Viscera--Innervation)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I.

The right subclavian artery as a highly sensitive reflexogenic zone. Zdrav. Belor. 5 no.3:50-52 Mr '59. (MIRA 12:7)

1. Iz kafedry normal'noy anatomii (zaveduyushchiy - prof. D.M. Golub) Minskogo meditsinskogo instituta.
(SUBCLAVIAN ARTERY--INNERVATION)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I.

Role of the superior cerebellar arteries in the blood supply of the pons varolii. Zhur.nevr. i psikh. 59 no.8:944-946 '59. (MIRA 12:12)

1. Kafedra normal'noy anatomii (zav. - prof. V.N. Ternovskiy) II Moskovskogo meditsinskogo instituta.
(PONS blood supply)
(CEREBELLUM blood supply)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I.

Innervation of Botallo's duct in human embryos and fetuses. Vop. morf. perif. nerv. sist. no.5:19-30 '60. (MIRA 14:3)
(DUCTUS ARTERIOSUS—INNERVATION) (FETUS)
(FETUS)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

MARSHALKOVICH, D.B., polkovnik meditsinskoy sluzhby; SACHENKO, N.L., podpolkovnik meditsinskoy sluzhby; BELOUSOV, G.G., podpolkovnik meditsinskoy sluzhby; NOVIKOV, I.I., mayor meditsinskoy sluzhby; FURMAN, M.A., mayor meditsinskoy sluzhby

Organization of work at a receiving and sorting section of a therapeutic hospital. Voen.-med. zhur. no.6:15-17 Je '61. (MIRA 14:8)
(HOSPITALS) (RADIATION SICKNESS)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

SUPRON, L.F., dots., otv. red.; ARINCHIN, N.I., prof., red.; GEL'BERG, S.I., prof., red.; KLEPATSKIY, B.I., prof., red.; LIBERZON, G.Ya., prof., red.; NOVIKOV, I.I., kand. med.nauk red.; RAZUMOVICH, A.N., assistent, red.

[Abstracts of the reports of the Fourth Scientific Session on the Problem: Physiology, Morphology and Pathology of the Cardiovascular System] Tezisy dokladov Nauchnoi sessii po probleme: Fiziologiia, morfologiia i patologiia serdechno-sosudistoi sistemy. Grodno, Grodnenskii med. in-t, 1962. 207 p. (MIRA 17:10)

1. Nauchnaya sessiya po probleme: Fiziologiya, morfologiya i patologiya serdechno-sosudistoy sistemy, 4th, 1962. 2. Zaveduyushchiy kafedroy patologicheskoy fiziologii Grodenskogo meditsinskogo instituta (for Supron). 3. Zaveduyushchiy kafedroy normal'noy fiziologii Grodenskogo meditsinskogo instituta (for Arinchin). 4. Kafedra normal'noy anatomii Grodenskogo meditsinskogo instituta (for Novikov). 5. Zaveduyushchiy kafedroy mikrobiologii Grodenskogo meditsinskogo instituta (for Gel'berg). 6. Zaveduyushchiy kafedroy obshchey khirurgii Grodenskogo meditsinskogo instituta (for Klepatskiy). 7. Zaveduyushchiy kafedroy nervnykh bolezney Grodenskogo meditsinskogo instituta (for Liberzon). 8. Kafedra biokhimii Grodenskogo meditsinskogo instituta (for Razumovich).

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I.

Innervation of the subclavian arteries in man. Vop. morf. perif. nerv. sist. no.6:143-152'63. (MIRA 16:10)
(SUBCLAVIAN ARTERY — INNERVATION)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I.

Arteriovenus anastomoses in the wall of the human subclavian artery. Arkh. anat., gist. i embr. 45 no.7:104-107 Je 63. (MIRA 17:4)

1. Kafedra normal'noy anatomii (zav. - prof. A.N. Gapuzov) Grodnskogo meditsinskogo instituta i kafedra normal'noy anatomii (zav.- akademik AN BSSR prof. D.M. Golub) Minskogo meditsinskogo instituta. Adres avtora: Grodno, ulitsa Ozheshko, 1, Meditsinskiy institut, kafedra normal'noy anatomii.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

GOLUB, [illegible], akademik; [illegible], A.[illegible]; [illegible], [illegible].A.; [illegible], A.S.; [illegible], [illegible].A.; [illegible], [illegible].A.; [illegible], [illegible].; [illegible], [illegible].; [illegible], [illegible].A.; [illegible], [illegible].; KHEYNMAN, [illegible].

[Formation of new nervous and vascular tracts in the organs of the small pelvis] Obrazovanie novykh nervnykh i sosudistykh putei organov malogo taza. [illegible] Goluba. Minsk, [illegible] 1958. [illegible]

1. Akademiya nauk [illegible], Min[illegible]. [illegible].
2. Akademiya nauk [illegible] (for [illegible]).

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

GOLUB, D.M.; AMVROS'YEV, A.P.; LEONTYUK, A.S.; NOVIKOV, I.I.; ORLOVA, B.L.; KHEYNMAN, F.B.

Data on the formation of new afferent pathways in the urinary bladder and large intestine. Arkh. anat. gist.i embr. 38 no.1:3-19 Ja '60. (MIRA 13:7)

1. Kafedra anatomii cheloveka (zav. - prof.D.M.Golub) Minskogo meditsinskogo instituta i laboratorii morfologii Instituta fiziologii Akademii nauk BSSR. Adres avtorov: Minsk, Universitetskaya ul., 2, Meditsinskiy institut. Kafedra anatomii cheloveka.
(BLADDER--INNERVATION) (INTESTINES--INNERVATION)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, .

Morphology of blood vessels of the bone marrow in some long tubular and flat bones of the skeleton under normal and experimental conditions. Arkh. anat., gist. i embr. 49 no. 8 3-[illegible] Ag '66. (MIRA 18:9)

1. Kafedra normal'noy anatomii (zav. - prof. V.V. Kupriyanov) Zaporozhskogo gosudarstvennogo meditsinskogo instituta imeni N. [illegible] Pirogova.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

Heat capacity of real gases. M. P. Vukalovitsch and I. I. Novikov (Bull. Acad. Sci. U.R.S.S., Cl. Sci. Tech., 1939, No. 6, 111—128).—The theory of the preceding abstract is applied to calculation of the heat capacity of associated gases. J. J. B.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

CA

2

Determination of thermodynamic parameters of real gases and investigation of water vapor, air and diatomic gases. M. P. Vukalovich and I. I. Novikov. *Bull. acad. sci. U. R. S. S., Classe sci.-tech.* 1939, No. 8, 101-21.—Equations for various thermodynamic magnitudes were deduced from the equation of state previously derived (cf. 2nd preceding abstr.). The results agree well with the existing data for the thermodynamic properties of air and H_2O vapor. The methods previously employed have been successfully applied to the investigation of the thermodynamic properties of diat. gases. B. C. P. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

2

Ca

The equation of state of real gases. M. P. Vukalovich and I. I. Novikov. *Compt. rend. acad. sci. U. R. S. S.* 23, 708-72(1939)(in English).—Assuming a system of simple mols. of one kind in mass-action equil. with its first-order assocn. product, and applying the equation of state of Clapeyron to each gas ideally, the equation of state of $pv = RT(1 - a + 4a^2 \ldots)$, where $a = c \cdot RT^{(s+m)/6}(1/v)$, c is a proportionality const., and m is the no. of rotational degrees of freedom lost to a single mol. by the assocn. process. Applying the van der Waals corrections to each component, the equation for real gases is $pv = RT[1 - A(T)(1/v) - B(T)(1/v^2) \ldots]$, where $A(T) = (a/RT) + (cR/T^{(s+m)/6}) - b$ and $B(T) = (bcR/T^{(s+m)/6})$; a and b are the van der Waals consts. This describes water vapor at pressures up to 225 atms and temps. from atm. to 550° with max. deviation of 6%. For diat. gases and air, the deviation is less than 1-2%. Greater precision is secured by considering more extended assocns. The assocn. theory is more practical and simple than the kinetic power series equation of Born, Fuchs, Meier, *et al.*, in which the coeffs. A and B are indefinite.

S. R. Korman

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

CA

An apparatus for high-temperature processes under high pressures. I. Novikov. *Neftyanoe Tekhnika* 1949, No. 30, 30-7; *Khim. Referat. Zhur.* 1949, No. 6, 138.—The exptl. plant of the Acad of Sci. of U. S. S. R. constructed an autoclave for syntheses (NH_3, MeOH, etc.), cracking, hydrogenation, etc. The autoclave consists of a reaction chamber within an elec. oven. The pressures on both sides of the walls of the reactor are regulated by passing out the excess gases through valves in the reactor and the oven. With a 500-atm. outside pressure for the reactor inner working pressures of 800, 1000 and 1200 atm. with corresponding working temps. of 800, 700 and 600°, resp., are possible. W. R. Henn

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

CA

2

Theory of the limiting state of flow of gases. I. I. Novikov. *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1948, 1127-40.—Gas-dynamic characteristics of the limiting state of accelerated flow of a viscous gas along a cylindrical heat-insulated tube are given. The thermodynamic characteristic of the limiting state at the tube exit is not the vanishing of the entropy differential dS, as stated by Guchman (*C.A.* 37, 2073[4]), by Schiule, and by Koitschin, since it can be shown that dS attains its max. value under these conditions. If P_{ext} is the external pressure, P_1 and P_2 are pressures at the entrance and exit of a tube of length l and diam. D (P_1 being $>P_{ext}$, so that the motion is accelerated), w_1 and w_2 are the corresponding gas velocities, T_1 and T_2 are the temp., a_1 and a_2 are the velocities of sound in the sections, λ is the resistance coeff. (assumed const.), k is c_p/c_v, and $\beta = w^2/a^2 = w^2/kgRT$, then the only possible states of motion are given by values of $\beta_1 = \beta_1^*_{min}$, where $\beta_1^*_{min}$ is the lower of the two real roots of the equation: $\frac{1}{2}[(1/\beta_1^*) - 1] - [(k + 1)/4]\log_e[1 + [2/(k + 1)][(1/\beta_1^*) - 1]] = k\lambda l/D$. The limiting state of flow occurs when $\beta_1 = \beta_1^*_{min}$ and $w_2^* = a_2$. In the limiting state P_1^*/P_1 is independent of P_{ext} and equals $[[2\beta_1^*_{min}/(k + 1)] \times [1 + (k - 1)\beta_1^*_{min}/2]]^{1/2}$, whereas P_1^* may be $>P_{ext}$. If $\lambda = 0$ (nonviscous gas), there is no limiting state, and β_1 may have any value from 0 to 1 (velocity < that of sound) or ∞ to 1 (ultrasonic velocities). The increase of entropy, dS, of 1 kg. of gas over a distance dx of the tube is dQ/T, where dQ is heat given out on account of frictional work, and from gas-dynamic theory equals $(\lambda w^2/2Dg)dx$; hence $dS = (\lambda w^2/2DgT)dx = (\lambda kR/2D)\beta dx$, showing that, in the limiting state where $\beta_1^* = 1$, dS or $(dS/dx)^*_{x=l} = (\lambda kR/2D)\beta_1^* = \lambda kR/2D = 0$. Further, since β increases continuously from the beginning of the tube to the end, dS does so also, and its max. value is therefore attained at the exit.

B. A.

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I. I. Dr. Tech. Sci.

Dissertation: "On Certain Thermodynamic Regularities of the Real (Nonconcertible) Processes of Gas and Vapor Flows." Power Engineering Inst., imeni G. M. Krzhizhanovskiy, Acad. Sci. USSR, 19 Jun 47.

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

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

2

CA

Yakolevich, M. P., and Novikov, I. I.: Uravnenie Sostoyaniya Real'nykh Gazov (The State Equation of Real Gases). Moscow: Gosudarst. Energeticheskoe Izdatel. 1948. 320 pp. R20. Reviewed in *Uspekhi Fiz. Nauk* 34, 213(1948).

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

Laws of the Atomization of Liquids in Centrifugal Atomizers. (In Russian.) I. I. Novikov. Zhurnal Tekhnicheskoy Fiziki (Journal of Technical Physics). v. 18, Mar 1948, p. 345-354.

A formula is derived which gives the average diameters of the drops. Comparison with experimental data shows the extreme accuracy of the formula.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I. I.

PA47T42

USSR/Engineering Mar 1948
Thermodynamics
Steam

"Adiabatic Indicator of Saturated and Damp Steam," I. I. Novikov, Naval Acad Shipbuilding and Armament imeni A. N. Krylov, 3 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LIX, No 8
pp. 1425-27

Gives expression for value of the adiabatic indicator as

$$k = \frac{v}{p}\left(\frac{\partial p}{\partial v}\right)_s ,$$

good for both a constant gas and for damp steam. Elaborates on this equation. Submitted by Academician M. V. Kirpichev, 17 Jan 1948.

[redacted] 47T42

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I. I.

PA 51T95

USSR/Physics
Steam
Shock Waves

21 Mar 1948

"Existence of Rarefaction Shock Waves," I. I. Novikov, Nav Acad Shipbuilding and Armament imeni A. N. Krylov, 2 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LIX, No 9

Pp-1145-6

Novikov's research leads to conclusion that in current of water steam at near critical pressures it is thermodynamically possible to have formation of rarefaction shock waves. Analogous conclusion will hold also for other substances.

[redacted]

51T95

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I. I.

27601. NOVIKOV, I. I. O skachkakh uplotneniya, voenikayuchshikh pri neravnovesnykh khimicheskikh prevrashchiyakh v sverkhzvukovom potoke gaza. zhurnal tekhn. fiziki, 1949, vyp. 9, s. 1053-55

SO: Knizhaya Letopis, Vol. 1, 1955

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I. I.

PA 46/49T107

USSR/Physics
Gas Dynamics
Gas Flow

Jun 49

"Polytropic Processes in Gas Flow," I. I. Novikov, 5 pp

"Zhur Tekh Fiz" Vol XIX, No 6

Shows the polytropic processes are impossible in gas flows in which the change in state of a moving gas satisfies the equation pv^n = const, where the index of polytropy n = const, in general does not equal the adiabatic index $k = c_p/c_v$. Submitted 12 Jun 48.

[redacted]

46/49T107

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I. I.

PA 46/49T106

USSR/Physics Jun 49
Gas Flow
Mathematics - Applied

"Properties of Boundary (Critical) States in Gas Flow," I. I. Novikov, 6 pp

"Zhur Tekh Fiz" Vol ~~XIX~~ 19, No 6

One property of equations describing the one-dimensional stationary movement of a compressible liquid is the presence of special points at which flow speed equals local speed of sound. Possibility of continuous smooth transfer from presonic to supersonic speeds (and inversely) depends upon type of special point. Studies these special points for the case of stationary flow of a viscous gas along a heat-insulated pipe of constant cross section. Submitted 12 Jun 48

46/49T106

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

541.124 : 533.6.011.5

3451. Sudden changes of compression produced at non-equilibrium chemical transformations in a supersonic gas stream. I. L. Novikov. *J. Tech. Phys., USSR*, 19, 1053-5 (Sept., 1949) *In Russian.*

By solving the quadratic equation for a flat supersonic gas stream in which a non-equilibrium chemical change takes place, two solutions for $\lambda_1 (= w_1/a_1)$ are obtained for each value of $e > e' = 2\lambda_1/(1 + \lambda_1^2)$ (where $\lambda_1 = w_1/a_1$, w_1 and w_2 are gas speeds, and a_1 and a_2 the so-called critical speeds before and after the sudden change, respectively). Solutions > 1 lie on the upper branch of the curve, while those < 1 lie on its lower branch. The lower branch corresponds to sudden changes of compression of the usual type, i.e. with subsonic post-change speed. One part of the upper curve corresponds to sudden changes of rarefaction, the other part to sudden changes of compression characterized by supersonic post-change speed. The latter compression changes differ strongly from the ordinary ones by having local character only; they are thermodynamically possible.

F. LACHMAN

MEI im. Molotov, Moscow

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

[illegible], I.I.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

VUKALOVICH, Mikhail Petrovich; NOVIKOV, Ivan Ivanovich; ANDRYUSHCHENKO, A. I., redaktor; FRIDKIN, A.M., tekhnicheskiy redaktor.

[Technical thermodynamics] Tekhnicheskaia termodinamika. Izd. 2-oe, perer. Moskva, Gos.energ.izd-vo 1955. 336 p. (MLRA 9:1) (Thermodynamics)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

Novikov, I. I.

AID P - 2573

Subject : USSR/Engineering

Card 1/1 Pub. 110-a - 12/16

Author : Novikov, I. I., Doc. Tech. Sci., Prof.

Title : Thermodynamic theory of the regenerative cycles of high-pressure steam power units

Periodical : Teploenergetika, 8, 51-54, Ag 1955

Abstract : A theoretical and mathematical analysis of the regenerative cycles for feed water determining the temperature by the optimal effective power factor of the unit. Two Russian references, 1951-1953.

Institution : Moscow Engineering and Physics Institute

Submitted : No date

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I.I., professor

International scientific cooperation on the peaceful use of atomic energy (at the Geneva Conference) Vest.AN SSSR 25 no.9:47-61 S'55. (Geneva--Atomic power--Congresses) (MLRA 8:12)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I. I.

USSR/ Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 23/47

Authors : Novikov, I. I.

Title : Two types of phase diagrams with congruently melting chemical compounds

Periodical : Dok. AN SSSR 100/6, 1119-1121, Feb 21, 1955

Abstract : Two basic types of phase diagrams theoretically formulated on the basis of geometrical thermodynmics are described. The basic differences between the two phase diagrams is that in one case the compounds melt congruently in the distectic point and in the intermediate point in the other case. The phase diagram with compounds congruently melting in the intermediate point was found to be the independent type which reflects the real phase conversions. Three USSR references (1935-1947). Diagram.

Institution : .....

Presented by : Academician A. A. Bochvar, September 21, 1954

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

NOVIKOV, I. I.

USSR/Nuclear Physics - Nuclear Engineering and Power, C-4

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34143

Author: Novikov, I. I.

Institution: None

Title: Exhibit on the Utilization of Atomic Energy for Peaceful Purposes

Original Periodical: Atom. Energiya, 1956, No 1, 102-105

Abstract: None

1 of 1

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1518

AUTHOR NOVIKOV, I.I., SOLOVEV, A.N., CHABACHPAŠEVA, E.M., GRUZDEV, V.A., PRIDANZEV, A.I., VASENINA, M.JA.

TITLE The Heat Transfer and the Thermophysical Properties of Fused Alkali Metals.

PERIODICAL Atomnaja Energija, 1, fasc. 4, 92-106 (1956)
Issued: 19.10.1956

From 1950 to 1955 the authors carried out experimental research work concerning the thermophysical parameters and the heat transfer of fused metals. The present article deals with the most important results obtained in the course of this research work.

Heat transfer: The experimental apparatus consisted of a heat commutator, cooler, pump, consumption meter, and registering valve. The individual components and their functions are discussed. In a series of experiments the heat transfer between liquid sodium and the copper heating surface is investigated. In the course of a second series of experiments the inner surface of the same heat commutator was coated with a nickel layer of about 10 μ thickness. Experiments were carried out at a velocity of flow of the liquid sodium amounting to from 0,8 to 11 m/sec and at temperatures of from 140 to 340° C. On this occasion the dimenionless criteria characterizing heat transfer were modified within the following limits:

$Re = 1,5.10^4$ to $2,1.10^5$, $Pr = (5 \text{ to } 9).10^{-3}$, $Pe = 100$ to 1400.

The viscosity of Na, K, Li and of a eutectic mixture of Na and K (22% Na +

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"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001137420020-1

Atomnaja Energija, 1, fasc.4, 92-106 (1956) CARD 2 / 2 PA - 1518

75% K) was measured by the method of damped torsion oscillations of a small pail filled with the fused metal. The experiments, which were carried out under different conditions, yielded results which agreed well with one another and which are shown in diagrams. In the case of all metals investigated, ν (= viscosity?) diminishes at first rapidly and later more slowly.

The temperature conductivity of alkali metals: The metal is investigated in a vertical thin tube of stainless steel the lower end of which is closed by welding. The carrying out of experiments is discussed in detail on the basis of drawings. The temperature conductivity coefficient of K diminishes at first sharply and later more slowly as temperature rises. The temperature conductivity coefficient of Na grows from 100 to 150°, after which it decreases monotonously with a further increase of temperature, but the temperature conductivity coefficient of the alloy mentioned increases monotonously.

The density of the fused alkali metals was measured in a simple manner and with sufficient accuracy by means of a body of known volume which was submerged in the liquid to be investigated. All measuring values are on a straight line with an accuracy of 0,4%. The density of Na and K decreases linearly with rising temperature.

INSTITUTION:

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