NIKOLSKIY, A. A.

"Investigation of Separated Vortex Flows"

A paper presented at the 9th International Congress of Applied Mechanics, Brussels, 5-13, Sep 56

SOV/124-59-10-11482

Translation from: Referativnyy zhurnal, Mekhanika, 1959, No. 10, p. 61 (USSR)

AUTHOR: Nikol'skiy, A. A.

TITLE: Some Exact Solutions of Three-Dimensional Gas Flow Equations

PERIODICAL: Sb. teor. rabot po aerodinamike. Moscow, Oborongiz, 1957, pp. 27-33

TEXT: The author searches for the class of three-dimensional adiabatic gas flows, which are represented by the curve line l in the hodograph space. The known Prandtl-Mayer flows are obtained as a special case for the plane l-curve. He notes that the considered flows may be used for solving the problem of flow around unfolding wings with leading knife edges, specifically, conic edges, in a supersonic flow.

R. G. Barantsev

VB

Card 1/1

81829

SOV/124-59-10-11483

10.2000

Translation from: Referativnyy zhurnal, Mekhanika, 1959, No. 10, p. 61 (USSR)

AUTHOR: Nikol'skiy, A. A.

TITLE: On the Adiabatic Gas Flow Class Represented in the Velocity Hodograph Space by Surfaces

PERIODICAL: Sb. teor. rabot po aerodinamike. Moscow, Oborongiz, 1957, pp. 39-42

TEXT: The author studies the class of three-dimensional steady adiabatic gas flows, which are represented in the space of the velocity hodograph by the Σ-surface described by the equation $w = w(u, v)$, where u, v, w are the coordinates of the hodograph space. x, y, z are the coordinates of the flow space, and φ is the velocity potential. The distribution function is introduced in the shape:

$$\chi = \chi(u, v) = u x + v y + w z - \varphi.$$

The equations of laminarity and continuity lead to equations of second order for the functions $w(u, v)$ and $\chi(u, v)$, if z = constant, first of which is quasilinear, but the coefficients of the second function are equal to the coefficients of the first function. Therefore, the Σ-surface can not be arbitrary. A straight line,

Card 1/2

SOV/124-59-10-11480

Translation from: Referativnyy zhurnal, Mekhanika, 1959, No. 10, pp. 60-61 (USSR)

AUTHOR: Nikol'skiy, A. A.

TITLE: On Bodies of Revolution Having an Internal Passage and External Minimum Wave Impedance in Supersonic Flow

PERIODICAL: Sb. teor. rabot po aerodinamike. Moscow, Oborongiz, 1957, pp. 56-63

TEXT: Within the framework of the linear theory, a method is worked out for determining the shape of a body of revolution having an internal passage and minimum wave impedance. The incident flow, the length, and the radii at the ends of the body of revolution are assumed to be given. The wave impedance magnitude of the body of revolution is not expressed by the pressure onto the body, which should necessitate an approximate solution, but by a function on the reference contour, which contains the characteristics and closed by the required generatrix. Suppressed passage of gas through the streamlined body is expressed also by functions on the reference contour. The arising variation problem with isoperimetric condition is solved in explicit form. A simple formula for the wave

VB

Card 1/2

NIKOL'SKIY, A.A.

AUTHOR: Nikol'skiy, A.A. (Moscow) 40-21-2-6/22

TITLE: On the Uplift and Induced Resistance of the System Wing-Fuselage (O nesushchikh svoystvakh i induktivnom soprotivlenii sistemy krylo-fyuzelyazh)

PERIODICAL: Prikladnaya Matematika i Mekhanika, 1957, Vol 21, Nr 2 pp 189-194 (USSR)

ABSTRACT: Since for a common flow of the wing and fuselage under a certain angle of incidence the determination of the pressure distribution on the surface of fuselage is difficult, the author proposes a method which under certain assumptions allows to calculate the lift and the induced resistance from the distribution of circulation along the wing spread (and without the knowledge of the pressure distribution on the fuselage). It is assumed that the wing is a plane plate of arbitrary form and that the fuselage is a body of revolution which can be replaced approximately by an infinitely long cylinder. Further it is assumed that the flow appears in an incompressible fluid for a small angle of flow and under a negligible friction. Let the flow of the fuselage take place without separation of flow. For the solution of the problem

Card 1/2

On the Uplift and Induced Resistance of the System Wing- 40-21-2-6/22
Fuselage

the author makes the following fundamental assertions: for small α also the intensity of the free whirl layer γ which leaves the wing backwards is small and tends to zero with α. Therefore the elementary whirls of γ for $\alpha \to 0$ distribute along the flow lines of the axial-symmetric flow which appears at $\alpha = 0$. This fact permits to determine the distribution of the circulation of the whirl layer behind the body and the forces acting on the whole system from the given distribution of circulation along the wing spread. There is 1 Soviet reference.

SUBMITTED: December 20,1956

AVAILABLE: Library of Congress

1. Fuselages--Lift 2. Fuselages--Pressure distribution
3. Bodies of revolution--Theory

Card 2/2

NIKOL'SKIY, A.A.

20-2-8/50

AUTHOR: NIKOL'SKIY, A. A.

TITLE: The "second" form of motion of an ideal fluid past a solid (an investigation of discontinuous vortical flows (O "vtoroy" forme dvizheniya ideal'noy zhidkosti okolo obtekayemogo tela (issledovaniye otryvnykh vikhrevykh potokov)).

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 116, Nr 2, pp. 193-196 (USSR)

ABSTRACT: The author gives a somewhat more detailed representation of the lecture which was given in Brussels on September 12, 1956 on the occasion of the IX-th International Congress on Applied Mechanics.

ASSOCIATION: Mechanical Institute, Acad.Sci. USSR (Institut mekhaniki AN SSSR)

SUBMITTED: November 9, 1956

AVAILABLE: Library of Congress

CARD 1/1

NIKOL'SKIY, A. A. (Moscow)

"On Gas Flows in Hypersonic Nozzles."

"On the Motion of Perfect Fluids, and Gases for Which the Moment of Momentum about an Axis is Constant with Time."

reports presented at the First All-Union Congress on Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb 1960.

NIKOLSKIY, A. A.

"Hydrodynamics of Rotating Fluids."

report presented at the 2nd International Congress of the International Council of Aeronautical Sciences, Zurich, Switzerland, 12-16 Sep 60

S/703/61/000/000/011/013

AUTHOR: Nikol'skiy, A. A.

TITLE: Some problems of the hydrodynamics of a rotating fluid.

SOURCE: Nekotoryye problemy matematiki i mekhaniki. Novosibirsk, Izd-vo Sib. otd. AN SSSR, 1961, 201-211.

TEXT: The paper endeavors to establish the laws governing the interaction between (a) axially-symmetrical solid bodies or surfaces that are either moving or changing with time and (b) fluid masses that have attained a state of rotation equivalent to that of a solid body. A typical instance of such a configuration is that of a rotating hollow solid body filled with a fluid which, because of its viscosity, has after some time acquired a solid-body-like state of rotation. Only the outer layer of the fluid is regarded as viscous, the remainder as ideal. A general linear theory of the nonstationary motions of the given type for the case of a small deviation from the initial motion of the fluid as a solid body is developed. The problem of the axial motions of the body from a state of rest is reduced to the classical problem of the potential motion of bodies in an irrotational fluid. A general solution is given for the problem of the motion according to an arbitrary law from the state of rest of an arbitrary ellipsoid of revolution and, in particular, of a sphere and a circular disk.

Card 1/2

It is established that in the motions of a fluid from a state of rotation as a solid body the ratio of the characteristic time of the process of motion to the time of revolution per radian of the fluid as a solid body is of extreme consequence. If this ratio is small (short-term processes), then the law of the radial axial displacement and the law of the dynamic interaction are the same as in the motion of a nonrotating fluid with the same boundary conditions. If the ratio is greater than 1, then the universal law of the resistance to the motion obtained indicates that the rotation of the fluid changes the nature of the drag forces radically. The drag is then proportional to the velocity of motion of the body at a given time point and not to the acceleration as is the case in a nonrotating fluid. Here the drag does not depend on the actual shape of the body, but depends on its maximal radial dimension only. The investigation comprises the interation of rotating fluids with the walls of hollow channel-like bodies during translatory motion and also flows of the type of the drainage flow of rotating fluids. The concepts set forth in the paper were made public by the author at the Second International Aeronautics Congress in Zurich. There are 6 figures and 7 references (1 Russian-language Soviet, 1 German, and 5 English-language).

Card 2/2

S/124/62/000/004/004/030
D251/D301

14.2120

AUTHOR: Nikol'skiy, A. A.

TITLE: Magnetohydrodynamic motion with 'frozen' circular magnetic lines

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 4, 1962, 1-2, abstract 4B6 (Inzhenernyy zh., 1961, v. 1, no. 1, 168-175)

TEXT: The axi-symmetric motion is considered of an ideal incompressible liquid of infinite conductivity. The axial and radial components of stress of the magnetic field H are assumed equal to zero. It then follows from the equations of magnetic hydrodynamics that if at some initial instant $H = \lambda_r$ where λ = const and r is the distance from the axis of symmetry, then $H = \lambda r$ is preserved everywhere for all the time of motion, and then the system of equations of magnetic hydrodynamics coincides with the system of equations for the motion of an ideal liquid in ordinary hydrodynamics

Card 1/ 2

NIKOL'SKIY, A.A. (Moskva)

Hypertolic problems for magnetohydrodynamic motions of an ideal incompressible fluid with "frozen" circular magnetic lines. Inzh.-shur. 1 no.2:41-44 '61. (MIRA 14:12)

1. Institut mekhaniki AN SSSR.
(Magnetohydrodynamics)

NIKOL'SKIY, A.A. (Moskva)

Hyperbolic problems for the flow of an ideal incompressible fluid twisted according to an arbitrary law. Inzh.zhur. 1 no.2:149-152 '61. (MIRA 14:12)

(Fluid dynamics)

NIKOL'SKIY, A.A. (Moskva)

Force action of a hypersonic flow on slender bodies under gas radiation conditions in the vicinity of the blunt nose. Inzh.zhur. 1 no.3:40-45 '61. (MIRA 15:2)

1. Institut mekhaniki AN SSSR.
(Aerodynamics, Hypersonic)

21558
S/020/61/137/003/006/030
B104/214

16.7600

AUTHOR: Nikol'skiy, A. A.

TITLE: The symmetric motion of an ideal liquid from a state in which it rotates like a solid body

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 3, 1961, 537-540

TEXT: The author starts from a consideration of the system of equations

$$\frac{\partial v_x}{\partial t} = -\frac{1}{\rho}\frac{\partial p'}{\partial x}; \quad \frac{\partial v_r}{\partial t} - 2\omega v_\theta' = -\frac{1}{\rho}\frac{\partial p'}{\partial r}; \qquad (1)$$

$$\frac{\partial v_\theta'}{\partial t} + 2\omega v_r = 0; \quad \frac{\partial (r v_x)}{\partial x} + \frac{\partial (r v_r)}{\partial r} = 0.$$

describing the symmetric motion of an ideal incompressible liquid of density ρ in cylindrical coordinates. This state of motion differs only little from the rotation with an angular velocity ω of a solid body about

Card 1/6

The symmetric motion ...

the x-axis. The stream function ψ satisfying the Eq.

$$\frac{\partial}{\partial t}\left[\frac{\partial}{\partial r}\left(\frac{1}{r}\frac{\partial \psi}{\partial r}\right)+\frac{1}{r}\frac{\partial^2 \psi}{\partial x^2}\right]+4\omega^2\frac{1}{r}\frac{\partial^2 \psi}{\partial x^2}=0. \qquad (3)$$

is introduced in the usual manner. This equation possesses solutions of the form

$$\psi = \omega r_0^3 \beta e^{2k\omega t} V(X,R); \quad x = r_0 X, \quad r = r_0 R, \quad \beta = \text{const} \qquad (4).$$

Here, $V(X,R)$ is a real function, k a real or imaginary constant, and r_0 a characteristic constant having the dimension of length. From this, the author derives the following system of equations which describes an axially symmetric potential motion of an incompressible liquid with the velocity potential $\Phi(X_1,R)$ and the stream function $V(X_1,R)$.

Card 2/ 6

The asymmetric motion ...

$$X_1 = \frac{ikX}{\sqrt{1+k^2}} = \frac{k}{\sqrt{1+k^2}}\frac{x}{r_0}; \quad (12)$$

$$\frac{1}{R}\frac{\partial^2\Psi}{\partial X_1^2} + \frac{\partial}{\partial R}\left(\frac{1}{R}\frac{\partial\Psi}{\partial R}\right) = 0; \quad (13).$$

$$\frac{\partial\Phi}{\partial X_1} = \frac{1}{R}\frac{\partial\Psi}{\partial R}, \quad \frac{\partial\Phi}{\partial R} = -\frac{1}{R}\frac{\partial\Psi}{\partial X_1}; \quad (14).$$

$$R\frac{\partial^2\Phi}{\partial X_1^2} + \frac{\partial}{\partial R}\left(R\frac{\partial\Phi}{\partial R}\right) = 0. \quad (15).$$

By satisfying the identities $\psi = 0$ and $p' = 0$ at $t = -\infty$, one obtains as solution of the type (4): $p' = -2\sqrt{1+k^2}\,\varrho(\omega r_0)^2\beta\,\Phi(X_1, R)e^{2k\omega t}$ (16). Here, for imaginary $k = ik_1$ ($k_1 > 0$) two principal cases are possible. The following equations hold: For $k_1 > 1$

$$X_1 = \frac{k_1 X}{\sqrt{k_1^2 - 1}} = \frac{ik_1}{\sqrt{k_1^2-1}}\frac{x}{r_0}, \quad (17)$$

Card 3/6

The symmetric motion ...

for $0 < k_1 < 1$:

$$X_1 = \frac{k_1 X}{\sqrt{1-k_1^2}} = \frac{k_1}{\sqrt{1-k_1^2}} \frac{x}{r_0}; \quad \frac{1}{R}\frac{\partial \Psi}{\partial X_1} - \frac{\partial}{\partial R}\left(\frac{1}{R}\frac{\partial \Psi}{\partial R}\right) = 0; \qquad (18a)$$

$$\frac{\partial \Phi}{\partial X_1} = \frac{1}{R}\frac{\partial \Psi}{\partial R}, \quad \frac{\partial \Phi}{\partial R} = \frac{1}{R}\frac{\partial \Psi}{\partial X_1}; \quad R\frac{\partial \Phi}{\partial X_1} - \frac{\partial}{\partial R}\left(R\frac{\partial \Phi}{\partial R}\right) = 0. \qquad (18б)$$

The solution (16) is written for both cases in its corresponding-modified form. This result is used to study the motion of a body in an unbounded liquid which moves originally as a solid body. The body is supposed to lie axially symmetric and symmetric on the x-axis and move along the negative direction of the x-axis. The maximum radial dimension is taken to be r_0, and the problem is solved in a coordinate system at rest with respect to the body. The solution is obtained in the form of Eq. (4) and when the boundary conditions are given by (21):

$$\Psi(X_1, R) = 0 \quad \text{при } X_1 = \frac{k}{\sqrt{1+k^2}} f_1(R), \quad X_1 = -\frac{k}{\sqrt{1+k^2}} f_2(R); \qquad (21)$$

and (22):

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21558
S/020/61/137/005/006/030
B104/B214

The symmetric motion ...

$$\frac{1}{R}\frac{\partial\Psi(X_1,R)}{\partial R}=\frac{\partial\Phi(X_1,R)}{\partial R}\to 1 \quad \text{при } \sqrt{X_1^2+R^2}\to\infty. \tag{22}$$

it satisfies the Eqs. (12) - (15). The hydrodynamic resistance is found to be given by the formulas:

$$D=2\sqrt{1+k^2}\,\beta\omega^2 r_0^4 e^{2k\omega t}M(k)=\frac{\sqrt{1+k^2}}{k}M(k)\frac{dV_0}{dt}; \tag{23}$$

and

$$M(k)=2\pi\rho r_0^4\int_0^1\left\{\Phi_1\left[\frac{k}{\sqrt{1+k^2}}f_1(R),R\right]-\Phi_1\left[-\frac{k}{\sqrt{1+k^2}}f_1(R),R\right]\right\}R\,dR. \tag{24}$$

where M(k) is the "associated mass" in the hydrodynamical sense. It is shown finally that for small k the effective "associated mass" is very large. The following expression is found for the hydrodynamic resistance

$$D=2\omega^2 r_0\int_0^{k_0}\beta(k)\sqrt{1+k^2}\,e^{2k\omega t}M(k)dk.$$

It is shown that for $k_0<1$ the resistance depends only on the maximum radius r_0 of the body and the velocity of the body. There are 7 references: 1 Soviet-bloc and 6 non-Soviet-bloc.

Card 5/6

21558
S/020/61/137/003/006/030
B104/B214

The symmetric motion ...

ASSOCIATION: Institut mekhaniki Akademii nauk SSSR
(Institute of Mechanics of the Academy of Sciences USSR)

PRESENTED: October 26, 1960, by A. A. Dorodnitsyn, Academician

SUBMITTED: April 15, 1960

Card 6/6

NIKOL'SKIY, A.A. (Moskva)

A class of exact solutions of three-dimensional equations in gas dynamics. Inzh.zhur. 1: no.4:11-17 '61. (MIRA 15:4)

1. Institut mekhaniki AN SSSR.
(Gas dynamics)

S/124/61/000/011/012/046
D237/D305

AUTHOR: Nikol'skiy, A.A.

TITLE: Generalization of Riemann waves for a spatial case

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 11, 1961, 22, abstract 11B126 (Sb. teor. rabot po aerodinamike, M., Oborongiz, 1957, 34 - 38)

TEXT: Solutions are found of the equations of adiabatic non-steady potential gas flow on the assumption that velocity components u, v, w, are functions of the pressure p. From Lagrange's integral which occurs in view of potentiality of flow it follows that the function $\lambda = \partial\varphi/\partial t$, where φ - potential is also a function of p. It is shown that the hyperaurface given by constant velocity vector is a hyperplane, whose equation is

$$x + v'y + w'z + \lambda't = f(u),\ v = v(u),\ w = w(u),\ \lambda = \lambda(u),$$

$$\lambda + \frac{u^2 + v^2 + w^2}{2} + \frac{a^2}{\varkappa - 1} = c, \qquad (1)$$

Card 1/2

NIKOLSKIY, Alexander A.

"On some Possibilities of Realization of Hypersonic Flow in Wind Tunnels"
Paper presented at the Third Congress of the International Council of Aeronautical Sciences, Stockholm 27-31 Aug '62

39935
S/258/62/002/001/001/011
I028/I228

26.2111

AUTHOR: Lashkov, A. I. and Nikol'skiy, A. A. (Moscow)

TITLE: Wave start-up of a supersonic diffuser

PERIODICAL: Inzhenernyy zhurnal, v. 2, no. 1, 1962, 11-16

TEXT: A method is described for starting-up a supersonic diffuser in its optimal range without the need of regulation. The experiments were conducted on a short action supersonic aerodynamic tube with rectangular nozzle of critical section 5mm × 30 mm. Three interchangeable diffusers were used, with ratios of throttle area to the maximum nozzle area $h = 0.57; 0.415; 0.31$ respectively. The area of the working section was 19.3mm × 30 mm, and the value of M (calculated for air) at the end of the nozzle, was 2.905. A diaphragm was placed in the critical section of the nozzle. A vacuum was created in the supersonic part of the nozzle and the diffuser, while the subsonic part was filled with gas. The pressure of the gas was increased gradually until the diaphragm burst. This produced a non-stationary supersonic gas flow, which stabilized in a short time into the necessary design stationary supersonic flow. The gas first used was air, which, however, was found unsatisfactory and replaced by nitrogen The experiments permit a start-up of optimum supersonic diffusers and their steady operation during the time of operation as designed for the installation; this was achieved with throat areas considerably smaller ($h = 0.57$ as against $h = 0.72$) than in diffusers started up in the usual way. There are 9 figures

Card 1/2

Wave start-up...

S/258/62/002/001/001/013
I028/I228

ASSOCIATION: Institut mekhaniki AN SSSR (Institut of Mechanics AS USSR)

SUBMITTED: November 30, 1961

Card 2/2

399lds

S/258/62/002/001/013/013
1028/1228

10.1410

AUTHOR: Nikol'skiy, A. A. and Smirnov, V. A. (Moscow)

TITLE: Action of a shock wave on an obstacle

PERIODICAL: Inzhenernyy zhurnal, v. 2, no. 1, 1962, 181–188

TEXT: After the wave passage, a flow is established past the obstacle, similar to steady potential flow having at infinity a velocity equal to the velocity of the gas particles behind the front of the undisturbed shock wave, the similarity will be complete if the impulses are taken after a certain finite time (when the passing through and the reflected waves are sufficiently far away), and if the velocities of the gas particles are sufficiently small (so that flow eddying can be neglected). The distribution of the pressure impulses on the surface of different obstacles (cylinder, rectange, ellipsoid, sphere) is determined under those assumptions, and the angular momentum of the pressure impulses is calculated. There are 7 figures.

ASSOCIATION: Institut mekhaniki AN SSSR (Institute of Mechanics AS USSR)

SUBMITTED: October 3, 1961

Card 1/1

40030
S/258/62/002/002/005/018
I028/I228

24.4300

AUTHOR: Nikol'skiy, A. A. (Moscow)

TITLE: Some non-stationary gas motions and their stationary hypersonic analogies

PERIODICAL: Inzhenernyy zhurnal, v. 2, no. 2, 1962, 246–253

TEXT: The similarity between hypersonic stationary gas motions and non-stationary gas motions in a space of a smaller number of dimensions, established by many authors for the case of hypersonic flow past thin bodies, is extended to the case of any hypersonic stationary flow satisfying the inequality $1/M^2 \ll 1$. This similarity permits the approximate plotting of stationary hypersonic flows in some types of nozzles with the aid of some non-stationary motions.

ASSOCIATION: Institut mekhaniki AN SSSR (Institute of Mechanics AS USSR)

SUBMITTED: March 9, 1962

Card 1/1

S/050/62/000/002/005/008
B105/B110

AUTHORS: Dorodnitsyn, A. A., Academician, Nikol'skiy, A. A., Doctor of Physics and Mathematics, Chushkin, P. I., Candidate of Physics and Mathematics

TITLE: Aerodynamics of high velocities and high altitudes

PERIODICAL: Akademiya nauk SSSR. Vestnik, no. 2, 1962, 80 - 83

TEXT: From August 28 to September 2, 1961 a conference on the mechanics of fluids and gases was convened by the Polish Academy of Sciences at Jablonna, a suburb of Warsaw. This conference dealt with problems of the aerodynamics of high-velocities and high altitudes. The conference was attended by delegates from Austria, Great Britain, the German Democratic Republic, Roumania, the USSR, and France. At the conference problems of the boundary layer, dilute gases and of hypersonic flows were discussed. A. A. Dorodnitsyn suggested a numerical method of calculating the equations of the laminar boundary layer in the case of incompressibility, and showed that this method can be extended to the compressible boundary layer. The numerical method of calculating equations of the boundary layer

Card 1/3

of a bluff body which had been developed at the Vychislitel'nyy tsentr Akademii nauk SSSR (Computer Center of the Academy of Sciences USSR) were described. Yu. N. Pavlovskiy (USSR) reported on results of methods of group analysis for equations of the boundary layer in the case of incompressibility. V. Prosnak (Poland) spoke about the calculation of the boundary layer between two incompressible flows moving in opposite directions. Ya. Lubonski (Poland) described a special case of the Couette flow. P. I. Chushkin and O. M. Belotserkovskiy (USSR) gave the numerical solution of the problem of bluff bodies being circumflown by ultrasonic flight velocities. A. A. Nikol'skiy (USSR) dealt with the nonsteady axisymmetrical movements of the incompressible fluid of infinite conductivity. S. Apanasewicz (Poland) studied magnetohydrodynamic problems. K. P. Stanyukovich (USSR) spoke about the propagation of cylindrical waves in gas. V. Fiszdon and Z. Dzigadlo (Poland) dealt with the solution of linearized problems of harmonic oscillations of axisymmetrical bodies in the ultrasonic gas flow. Yu. Bonder (Poland) suggested a new invariant form for equations of gas dynamics for the compressible nonsteady case. I. M. Yur'yev (USSR) and K. Iacob (Roumania) dealt with the development of the theory of S. A. Chaplygin for plane gas flows. New problems of gas dynamics were

SANDLER, A.S., kand.tekhn.nauk; SARBATOV, R.S., inzh.; KUDRYAVTSEV, A.V., inzh.; ZEL'DIN, V.Sh., inzh.; NIKOL'SKIY, A.A., inzh.

Static frequency converters for regulating the speed of asynchronous motors. Vest. elektroprom. 33 no.3:45-51 Mr '62. (MIRA 15:3)
(Frequency regulation) (Electric motors, Induction)

P/033/62/014/003/008/011
D237/D308

AUTHOR: Nikol'skiy, A. A. (Moscow)

TITLE: Hyperbolic problems for magnetohydrodynamic perfect fluid flows with 'frozen-in' circular magnetic field lines

PERIODICAL: Archiwum Mechaniki Stosowanej, v. 14, no. 3-4, 1962, 675-680

TEXT: Axially symmetric nonsteady perfect incompressible fluid flows with infinite conductivity are considered. Pressure and magnetic fields are supposed to be slightly different from those corresponding to axially-symmetric states of magnetic equilibrium when magnetic lines of force are circles with centers on the x-axis. Linearization of equations of motion and introduction of the stream function ψ leads to an equation possessing particular solutions of the type

Card 1/3

Hyperbolic problems for ...

$$\varphi = \frac{r_0^3}{t_0} e^{kr} \psi(X, R) \qquad (9)$$

where r_0, t_0 - characteristic length and time constants, $X = x/r_0$, $R = r/r_0$, $\tau = t/t_0$, k - real or imaginary constant $\psi(X, R)$ - real function satisfying a 2nd order partial differential equation, which is elliptic or hyperbolic, depending on the magnitude and character of k. For some ranges of values of k, the equation changes its type within the motion domain. Characteristic equations are derived and investigated. The author discusses the case when the partial differential equation reduces to the equation of a vibrating string. Here, under some conditions, velocity discontinuities can occur across characteristic lines. The usual boundary problems of the Dirichlet-Neumann type are incorrect. In the case of solutions for φ which are exponential in t it indicates the instability of the initial magnetic equilibrium, while for the solutions sinusoidal in t it probably means that a long-term sinusoidal

Card 2/3

boundary deformation of a finite volume does not result in harmonic oscillation of the fluid within that volume.

ASSOCIATION: Institut mekhaniki Akademii nauk SSSR (Institute of Mechanics of the Academy of Sciences, USSR)

JA

Card 3/3

KOROLITSYN, A.A., akademik; NIKOL'SKII, A.A., doktor fiz.-matem.nauk; CHUSHKIN, P.I., kand.fiz.-matem.nauk

Aerodynamics of high speeds and high altitudes. Vest. AN SSSR 32 no.2:80-83 F '62. (MIRA 15:2)

(Aerodynamics, Supersonic)

S/258/63/003/001/015/022
E191/E135

AUTHOR: Nikol'skiy A.A. (Moscow)

TITLE: Invariant transformations of the equations of motion of an ideal gas for special cases

PERIODICAL: Inzhenernyy zhurnal, v.3, no.1, 1963, 140-142

TEXT: In a concurrent paper on an invariant transformation of the equations of motion of an ideal monoatomic gas (to be published in Prikladnaya Matematika i Mekhanika) the author has shown an invariant transformation of three-dimensional equations of motion of a gas with an adiabatic exponent of 5/3. Similar invariant transformations exist for two-dimensional motions of an ideal gas with an adiabatic exponent of 2 and for one-dimensional motions of an ideal gas with an adiabatic exponent of 3. The typical form of these transformations consists in the statement that if a set of functions satisfies a system of equations then the same system is satisfied by another set of functions obtained from the first in a certain manner. This manner constitutes the transformation. SUBMITTED: January 4, 1963

ASSOCIATION: Institut mekhaniki AN SSSR
(Institute of Mechanics, AS USSR)

Card 1/1

ACCESSION NR: AP3003244 S/0040/63/027/003/0496/0508

AUTHOR: Nikol'skiy, A. A. (Moscow)

TITLE: Invariant transformation of the equations of motion of an ideal monatomic gas and new categories of their exact solutions

SOURCE: Prikladnaya matematika i mekhanika, v. 27, no. 3, 1963, 496-508

TOPIC TAGS: ideal monatomic gas motion, invariant transformations of equations, homogeneous expansion and compression, source and sink flows, point explosion, intense explosion, exact solution of equations

ABSTRACT: Transformation of the equations of motion of an ideal monatomic gas into homogeneously expandable space coordinates is studied. With corresponding transformations of time, velocity fields, pressures, densities, and temperatures, the same equations of motion are obtained as in fixed coordinates, which permits the extension of the whole general dynamic theory to the dynamics of expanding gas and the comparison of the exact solutions of the

Card 1/2

NIKOL'SKIY, A.A.

Simple exact solutions to Boltzmann's equation for the motions of a rarefied gas. Dokl. AN SSSR 151 no.2:299-301 Jl '63. (MIRA 16:7)

1. Institut mekhaniki AN SSSR. Predstavleno akademikom A.A. Dorodnitsynym.

(Gas flow)

L 14375-63 EWT(l) SSD [illegible]

ACCESSION NR: AP3003843 S/0020/63/151/003/0522/0524 51

AUTHOR: Nikol'skiy, A. A.

TITLE: Three-dimensional homogeneous expansion-compression of rarified gas with step functions of reaction

SOURCE: AN SSSR. Doklady*, v. 151, no. 3, 1963, 522-524

TOPIC TAGS: Boltzmann equation, distribution function, Maxwell distribution

ABSTRACT: The author compares the solutions of the Boltzmann equations for the distribution functions of velocity of molecules, corresponding to the motion of three-dimensional homogeneous expansion-compression of monatomic gas and an arbitrary homogeneous state of gas. It is concluded that in the case of expansion, the velocity distribution tends towards a Maxwell distribution function, while in the compression case, the velocity distribution does not attain a Maxwell distribution. Orig. art. has: 25 formulas.

ASSOCIATION: Institut mekhaniki Akademii nauk SSSR (Institute of Mechanics of the Academy of Sciences SSSR).

Card 1/2 1

NIKOL'SKIY, A.A.

Motion of a monatomic rarefied gas in a uniformly expanding space. Dokl. AN SSSR 153 no.3:543-546 N '63.
(MIRA 17:1)

1. Institut mekhaniki AN SSSR. Predstavleno akademikom A.A. Dorodnitsynym.

NIKOL'SKIY, A.A. (Moscow)

"Aerodynamical processes in a gas at extension and compression"

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

NIKOLSKIY, A. A.

"On the stability of vortex rotational fluid flow."

Report to be submitted at the International Union of Theoretical and Applied Mechanics Symposium on Concentrated Vortex Motions in Fluids, Ann Arbor, Michigan, 6-11 July 64.

L 3277-66 EWT(1)/EPA(s)-2
ACCESSION NR: AR5014348 UR/0271/65/000/005/A032/A033
62-52:621.314.26

SOURCE: Ref. zh. Avtomatika, telemekhanika i vychislitel'naya tekhnika. Svodnyy tom, Abs. 5A222

AUTHOR: Sandler, A. S.; Kudryavtsev, A. V.; Sarbatov, R. S.; Nikol'skiy, A. A.; Zel'din, V. Sh.

TITLE: Static frequency changer with thyristors intended for speed regulation of high-speed induction motors

CITED SOURCE: Tr. Mosk. energ. in-ta, vyp. 56, 1964, 59-74

TOPIC TAGS: frequency changer, induction motor

TRANSLATION: A frequency changer designed with VKDU-20 thyristors consists of a power controlled rectifier, a 3-phase inverter, and a control system that comprises a frequency-setting unit, rectifier and inverter control units, a protection unit, and a supply source. The changer has an output power of 3-kva and a voltage controllable within 26—130 v at frequencies of 200—1000 cps,

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L 3277-66
ACCESSION NR: AR5014348

respectively. Oscillograms are presented of motor voltages and currents under steady-state conditions and also the oscillograms which illustrate starting, braking, and speed regulation of the motor. Cited advantages of the changer are: the possibility of continuous independent control of frequency and voltage, small weight, and small size. Cited disadvantages are: impossibility of efficient generator-type braking and greater installed capacity of equipment at higher (close to 1000 cps) frequencies. Calculation of transformers and coincidence circuit is indicated. Figs. 12, tabs. 2.

SUB CODE: EE ENCL: 00

Card 2/2

L 2361-66 EWT(1)/EWP(m)/EWA(d)/FCS(k)/EWA(1)
ACCESSION NR: AP5021532 UR/0258/65/005/004/0752/0755
533.6.011.8

AUTHOR: Nikol'skiy, A. A. (Moscow)

TITLE: Uniform slip flow of monatomic rarefied gas

SOURCE: Inzhenernyy zhurnal, v. 5, no. 4, 1965, 752-755

TOPIC TAGS: slip flow, rarefied gas flow, monatomic gas flow, Boltzman equation

ABSTRACT: Previous work of the author (Prostoyshiye tochnyye resheniya uravneniy Boltzmana dlya dvizheniy razrezhennogo gaza. DAN, 1963, tom 151, No. 2; and DAN, 1963, t.151, No. 3) on slip flow of monatomic rarefied gases was continued. The case of monatomic rarefied gas flow in an unbounded space with the macroscopic flow velocity consisting of pure one-dimensional displacement

$$u = u_1 = ey, \quad v = \text{const}, \quad v = 0, \quad w = 0$$

was considered. The Boltzman equation for this case takes the form

$$\frac{\partial f_i}{\partial t} - ev_i \frac{\partial f_i}{\partial u_i} = I_i(t, e_i), \quad i$$

where

$$I_i(t, e_i) = \sum_j \iiint (f_i(t, e_i') f_j(t, e_j') - f_i(t, e_i) f_j(t, e_j)) g_{ij} b db d\varepsilon de_j,$$

Card 1/3

After transforming to $\xi_i = u_i' + av_i t$, $\eta_i = u_i - av_i t$, v_i, w_i and assuming $I_i(t, c_i) \neq 0$ (i.e., no interaction between molecules), the Boltzman equation becomes

$$\frac{\partial f_i}{\partial \eta_i} = 0$$

with a general solution

$$f_i = F_i(\xi_i, v_i, w_i) = F_i(u_i + av_i t, v_i, w_i).$$

The function representing the change in time of the flow of the ith type of gas along the x-axis is derived as

$$\theta_i(t) = \sigma_i^{(2)} + 2\sigma_i^{(1)} at = -\iiint F_i(\xi_i, v_i, w_i)\, u_i v_i\, du_i\, dv_i\, dw_i =$$

$$= -\iiint F_i(\xi_i, v_i, w_i)(\xi_i - av_i t)\, v_i\, d\xi_i\, dv_i\, dw_i.$$

For the case in which the molecular interactions have the inverse square law, the solution for the Boltzman equation

$$\frac{\partial f_i}{\partial t} - av_i \frac{\partial f_i}{\partial u_i} = I_i = \sum_j \iiint (f_i(t, c_i') f_j(t, c_j') -$$

$$- f_i(t, c_i) f_j(t, c_j))\, g_{ij}^3 (m_i m_j g^2 b / m_0 \mid u_{ij} \mid)^{-\frac{2}{s-1}} \Phi_s\, d\Phi_s\, db\, du\, d\varepsilon_{ij}$$

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L 2361-66
ACCESSION NR: AP5021532

is sought in the form $f_i = ae^{-\alpha\tau}\Phi_i(\xi_i, \eta_i, \zeta_i) = ae^{-\alpha\tau}\Phi_i(A_i)$
$\xi_i = \lambda e^{-\sigma\tau}x_i,\ \eta_i = \lambda e^{-\sigma\tau}y_i,\ \zeta_i = \lambda e^{-\sigma\tau}w_i,\ \tau = \sigma t;$

where the equation for ϕ_i becomes a differential equation, the solution of which is not presented. Orig. art. has: 28 formulas.

ASSOCIATION: none

SUBMITTED: 16Jan64 ENCL: 00 SUB CODE: ME

NO REF SOV: 002 OTHER: 001

QC
Card 3/3

L 15294-66 EWT(1)/EWP(m)/EWA(d)/ECS(k)/EWA(1)

ACC NR: AP6002618 SOURCE CODE: UR/0250/65/005/006/1044/1050

AUTHOR: Nikol'skiy, A. A. (Moscow)

ORG: none

TITLE: On a general class of uniform motions in continuous media and rarefied gases

SOURCE: Inzhenernyy zhurnal, v. 5, no. 6, 1965, 1044-1050

TOPIC TAGS: rarefied gas, continuous medium, uniform flow, vector field, Cauchy problem

ABSTRACT: Consider the vector field $c(t, x_i)$ $i = 1,2,3$ in a stationary Cartesian coordinate system with velocity components $v_i(t, x_i)$. A "fixed point" may be defined whose arbitrary motion in the x_i-space can be described by

$$\frac{dx_i}{dt} = v_i(t, x_1, x_2, x_3) \quad (i = 1, 2, 3).$$

The motion of this point can be called uniform if the velocity fields in any coordinate system connected with this "fixed point" are identical, and if the accelerations of all fixed points are identical such that

$$v_i = \sum_{k=1}^{3} a_{ik}(t)\, x_k.$$

Card 1/2 UDC: 533.6.011.8

L 15294-66

ACC NR: AP6002618

It can be shown that the coefficients a_{ik} can be determined from the solution of the following Cauchy problem

$$\frac{da_{i1}}{dt} + \sum_{r=1}^{3} a_{ir}a_{r1} = 0, \qquad \frac{da_{i2}}{dt} + \sum_{r=1}^{3} a_{ir}a_{r2} = 0,$$

$$\frac{da_{i3}}{dt} + \sum_{r=1}^{3} a_{ir}a_{r3} = 0 \qquad (i = 1, 2, 3).$$

For given initial conditions, these coefficients are obtained in determinant form and are applied to the flow problems defined by continuum equations as well as the Boltzmann equation for rarefied gases. For example, the continuity equation is given by

$$\frac{d \ln \rho}{dt} + \sum_{i=1}^{3} a_{ii}(t) = 0$$

and the density is calculated by the direct integration

$$\rho(t) = \rho_0 \exp\left(-\int_0^t \frac{\Delta_1 + \Delta_2 + \Delta_3}{\Delta}\, dt\right),$$

where the Δ's are determinants for the various a_{ik}'s. Orig. art. has: 26 equations.

SUB CODE: 20/ SUBM DATE: 10Jul65/ ORIG REF: 004/ OTH REF: 002

Card 2/2 mjs

L 04273-67

ACC NR: AP6013295 SOURCE CODE: UR/0413/66/000/008/0090/0090

AUTHORS: Korotkov, V. P.; Nikol'skiy, A. A.; Shmakov, V. A. 32

ORG: none B

TITLE: A method for inspecting the internal surface of spherical details. Class 42, No. 180829

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 8, 1966, 90

TOPIC TAGS: surface geometry, ~~surface roughness~~, SPHERIC SHELL STRUCTURE, OPTIC METHOD

ABSTRACT: This Author Certificate presents a method for inspecting the internal surface of spherical details by the deflection of the constant level line from the standard value. To inspect details of complex shape, the lines of constant level are obtained by cutting the inspected detail by a layer of low reflection liquid. The level of the liquid is then changed by a desired amount, and the line is photographed on the same colored film with the use of interchangeable color filters.

SUB CODE: 20/ SUBM DATE: 19Oct64

Card 1/1 UDC: 778.6:531.717.7

NIKOL'SKIY, A.A., inzh.; MELAMED, M.S., inzh.

Mechanization of auxiliary operations in textile plants of the Ivanovo Economic Council. Mekh.i avtom.proizv. 16 no.12:18-22 D '62. (MIRA 16:1)

(Ivanovo Province—Textile industry)
(Automation)

RATNER, A.P. [deceased]; KLAUKMAN, V.R.; NIKOL'SKIY, A.B.

Adsorption of zinc and cerium on precipitates of barium and lead sulfates. Radiokhimiia 1 no.2:174-180 '59. (MIRA 12:8)

(Zinc) (Cerium) (Adsorption)

MYULLER, R.L.; DANILOV, A.V.; MARKOVA, T.P.; MEL'NIKOV, V.N.; NIKOL'SKIY, A.B.; REPINSKIY, S.M.

Kinetics of solution of germanium in acid and basic solutions of hydrogen peroxide. Vest. LGU 15 no.4:80-87 '60. (MIRA 13:2)
(Germanium) (Hydrogen peroxide)

S/186/62/004/003/018/022
E075/E436

AUTHORS: Myuller, R.L., Nikol'skiy, A.B.

TITLE: A method of the determination of vapour pressure of ruthenium tetroxide over its aqueous solution with the aid of radioactive indicators

PERIODICAL: Radiokhimiya, v.4, no.3, 1962, 364-370

TEXT: The authors developed two independent methods (static and dynamic) for the determination of partial vapour pressure of RuO_4 over its aqueous solutions at a wide range of temperatures and concentration of RuO_4. Ru^{103} and Ru^{106} were used as radioactive indicators. In the static method the solution was placed in a glass bulb (5 ml) joined to another bulb, which was filled with the vapour of RuO_4. The bulbs were placed in a thermostat and the radioactivity of the vapour in the upper bulb measured with a β-counter. A transpiration (dynamic) method was also used for the vapour pressure determination. In this case the radioactivity of the solution was measured during removal of the vapour with a carrier gas (air). It was found that the dynamic method is more complicated to operate but is more sensitive

Card 1/2

A method of the determination ...

than the static method. In addition, the dynamic method could measure simultaneously partial vapour pressures of several components in a solution. There are 5 figures and 1 table.

SUBMITTED: July 26, 1961

Card 2/2

NIKOL'SKIY, A.B.

Saturated vapor pressure of ruthenium tetroxide. Zhur.neorg.khim. 8 no.5:1045-1048 My '63. (MIRA 16:5)

1. Leningradskiy gosudarstvennyy universitet.
(Ruthenium oxide) (Vapor pressure)

NIKOL'SKIY, A.E.

Occurrence of two modifications of ruthenium tetroxide. Zhur.-neorg.khim. 8 no.5:1269 My '63. (MIRA 16:5)

1. Leningradskiy gosudarstvennyy universitet.
(Ruthenium oxide)

RYABOV, A.N.; NIKOL'SKIY, A.B.

Reaction of ruthenium tetraoxide with ammonia. Zhur.neorg.khim. 8 no.9:2213 S '63. (MIRA 16:10)

1. Leningradskiy gosudarstvennyy universitet, kafedra neorganicheskoy khimii.

NIKOL'SKII, A.B.; RYABOV, A.N.

Determination of the heat of formation of ruthenium tetroxide. Zhur. neorg.khim. 9 no.1:7-11 Ja '64. (MIRA 17:2)

NIKOL'SKIY, A.B.

Saturated vapor pressure of ruthenium tetraoxide over aqueous solutions. Zhur. neorg. khim. 9 no.11:2511-2517 N '64 (MIRA 18:1)

1. Leningradskiy gosudarstvennyy universitet.

MINC[illegible]LY, A.M.; RYABOV, A.N.

Thermodynamic properties and stability of ruthenium and osmium oxides. Zhur. neorg. khim. 10 no.1:3-9 Ja '65.
(MIRA 18:11)

1. Leningradskiy gosudarstvennyy universitet, kafedra neorganicheskoy khimii. Submitted May 5, 1964.

NIKOL'SKIY, A.B.

Specification of the heat of sublimation of ruthenium tetroxide. Zhur. neorg. khim. 10 no.1:290-292 Ja '65. (MIRA 18:11)

1. Leningradskiy gosudarstvennyy universitet. Submitted April 11, 1964.

OSTROVERKHOV, G.Ye., prof.; SUVOROVA, T.A., doktor med. nauk; NIKOL'SKIY, A.D.

Direct extraperitoneal protohepatography and manometry through the umbilical vein. Khirurgiia 40 no.5:84-91 My '64.
(MIRA 18:2)

1. Kafedra operativnoy khirurgii i topograficheskoy anatomii (zav.-prof. G.Ye. Ostroverkhov) II Moskovskogo meditsinskogo instituta imeni Pirogova i khirurgicheskoye otdeleniya nauchno-issledovatel'skogo rentgeno-radiologicheskogo instituta (zav. doktor med. nauk T.A. Suvorova).

OSTROVERKHOV, G. Ye., prof. (Moskva, G-117, [illegible] pereulok, 17 kv. 35); [illegible]L'SKIY, A.D.

Technique of photography. Vest. khir. 92 no.4:33-41 Ap '64 (MIRA 18:1)

1. Iz kafedry operativnoy khirurgii i topograficheskoy anatomii (zav. - prof. G. Ye. Ostroverkhov) 2-go Moskovskogo meditsinskogo instituta imeni N.I. Pirogova.

SOV/115-58-11-6/16

AUTHOR: Nikol'skiy, A.F.

TITLE: Pumps and Nozzles Without Special Precision Parts for Two-Cycle Engines with Spark Ignition (Nasosy i forsunki bez osobo tochnykh detaley dlya dvukhtaktnykh dvigateley s iskrovym zazhiganiyem)

PERIODICAL: Avtomobil'naya promyshlennost', 1958, Nr 11, pp 21 - 24, (USSR)

ABSTRACT: The author states that many efforts have been made in the USSR and abroad, especially West Germany, to render feasible internal carburation by aid of a direct fuel injection in two-cycle engines with spark ignition. Such a device must supply measured-off amounts of highly-dispersed fuel within time intervals of 1/1000th second at 5,000 to 6,000 rpm of the camshaft. The device released by the West German firm of Bosch in 1955 met the requirements but increased the cost of a two-cycle engine too much. In 1956, the Moscow Institute of Automotive Mechanics worked out an experimental design of a plunger-type pump with a sealing cup, for the IZh-350 two-cycle engine. For the manufacture of the cups, resins Nr 68, AK-7, and AK-7 with graphite of the group of the polyamide resins and fluorine plastic were used. Those made of Nr-68 and AK-7 resins proved best. They allowed

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SOV/113-59-11-6/16

Pumps and Nozzles Without Special Precision Parts for Two-Cycle Engines with Spark Ignition

ASSOCIATION: Moskovskiy avtomekhanicheskiy institut (The Moscow Institute of Automotive Mechanics)

1. Internal combustion engines--Equipment 2. Nozzles--Performance
3. Fuel injectors--Applications 4. Fuel pumps--Performance

Card 3/3

NIKOL'SKIY, A.F.

Development and testing of unprecisional fuel-feed systems for direct gasoline injection into high-speed engines. Mekh. dokl. vys. shkoly; mash. i prib. no.2:30-36 '59. (MIRA 12:12)
(Gas and oil engines--Fuel systems)

12(2) SOV/113-59-6-9/21

AUTHOR: Nikol'skiy, A.F.

TITLE: A Unit for Examining Fuel Apparatus

PERIODICAL: Avtomobil'naya promyshlennost', 1959, Nr 6,

ABSTRACT: The Moskovskiy avtomekhanicheskiy institut (Moscow Auto-Mechanical Institute) has planned and produced a reliable automatic stand unit for testing and adjusting special apparatus working at 1000-5000 rpm and fuel supply cycles of 3-60 mm³. It enables the cycle fuel supply, the law of supply and the length and dispersion of the jet of fuel to be established, and includes devices for determining the moment on the main drive shaft by tensometric pick-ups, adjusting the pump regulators, etc. The law of fuel supply is determined by an additional stroboscopic device (Figure 3) which has an accuracy of 4% with A-66 gasoline. The operation and design of the

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SOV/113-59-6-9/21

A Unit for Examining Fuel Apparatus

unit is described at length. There are 3 diagrams and 1 photo.

ASSOCIATION: Moskovskiy avtomekhanicheskiy institut (Moscow Auto-Mechanical Institute)

Card 2/2

LENIN, I.M., doktor tekhn.nauk; NIKOL'SKIY, A.F.

Regulating the performance of a two-stroke engine with gasoline injection. Avt.prom. 27 no.12:5-8 D '61. (MIRA 15:1)

1. Moskovskiy avtomekhanicheskiy institut.
(Gas and oil engines--Fuel systems)

NIKOLSKY, A. I.

THE SPATIAL DISTRIBUTION OF ENERGY FLUXES OF THE ELECTRON-PHOTON AND NUCLEAR-ACTIVE COMPONENT OF EXTENSIVE AIR SHOWERS AT 3860 METRES ABOVE SEA LEVEL
A.I. Nikolsky and Ye.I. Tukish

1. Experimental data have been obtained by means of a large composite apparatus for studying extensive air showers. A general discription of this equipment was given earlier at the Varenna conference.

Investigations were made of extensive air showers with the total number of particles $6 \times 10^4 < N < 12 \times 10^4$ and $2 \times 10^5 < N < 4 \times 10^5$. In the case of each registered shower, hodoscope counters were used to determine the position of the shower axis and the total number of charged particles. The energy carried by the electron-photon and nuclear-active components of the shower was determined from the amount of ionization observed in ionization chambers under lead filters 1, 2, 3, 5, 10, 20, 50 and 80 cm thick.

2. On the basis of an analysis of the dependence of the number of particles (registered by the ionization chambers) on the distance from the shower axis and on the thickness of the lead filter, a determination was made of the magnitude of the energy flux carried by the electron-photon component of the shower. For example, in showers with $\sim 10^5$ particles, the energy carried by the electrons and photons at ~ 5 m from the shower axis amounts to $\sim 4 \times 10^8$ ev per charged particle. As the distance from the shower axis increases, the energy per particle diminishes ($\sim 1.8 \times 10^8$ ev for a 10-20- range).

3. At distances of less than one metre from the shower axis the energy carried by the nuclear-active component of the shower considerably exceeds the total energy of the electrons and photons within the same range.
4. The experimental data are correlated with calculations based on the electromagnetic cascade theory and the nuclear-cascade scheme of development of an extensive air shower. The correlation shows that the observed total energy of the electrons and photons in extensive air showers is less than that calculated from the cascade theory for values of primary energy $E_0 \sim 10^{12}$ and the parameter $S = 1.2$.

Report presented at the International Cosmic Ray Conference, Moscow, 6-11 July 1959

NIKOL'SKIY, A.K., kandidat tekhnicheskikh nauk; BRODOV, Ye.Yu., inzhener

Current problems of rock excavation by means of ejection explosives. Tekh.shel.dor.6 no.8:15-17 Ag '47. (MLRA 8:12)
(Railroads--Earthwork)

NIKOL'SKIY, A. K.

30355

Novaya elektropila povyshennoy chastoty toka. Inform. bfllyetye n'akad. (Voyen.-transl. akad. vooruzh. sil im kaganovicha), No 19, 1949, S. 50-51.

SO: Letopis' No. 34

NIKOL'SKIY, Anatoliy Kapitonovich, kandidat tekhnicheskikh nauk; BARSUKOV, K.P., inzhener, redaktor; BORUKOVA, Ye.N., tekhnicheskiy redaktor.

[Over-all mechanization of ballast laying for railroad lines] Kompleksnaia mekhanizatsiia ballastirovki zheleznodorozhnogo puti. Moskva, Gos.transp.zhel-dor.izd-vo, 1957. 91 p. (MLRA 10:4)
(Ballast)

IL'MENEV, Ye.S.; KUZIN, V.N.; NIKOL'SKIY, A.I.

Studying metamict minerals under an electron microscope. Izv. vys. ucheb. zav.; geol. i razv. 7 no.11:126-130 N '64.
(MIRA 18:5)

1. Moskovskiy geologorazvedochnyy institut im. S. Ordzhonikidze.

1. NIKOL'SKIY, A.L.

2. USSR 600

4. Intestines - Diseases; Medicine, Rural

7. Organization and method of epidemiologic investigation of intestinal infectious diseases in rural areas. Fel'd. i akush. No. 3, 1952

9. Monthly List of Russian Accessions, Library of Congress, July 1952, Unclassified.

NIKOL'SKIY, A.L.

USSR (600)

Flies

Control of flies. Fel'd i akush. no. 6, 1952

SO: Monthly List of Russian Accessions, Library of Congress, September 1952. Uncl.

NIKOL'SKAY, A. L.

Sibirskaia iazva [Malignant anthrax]. Moskva, Medgiz, 1953, 24 p.

SO: Monthly List of Russian Accessions, Vol. 6 No. 12 March 1954.

NIKOL'SKIY, A.L.

Organization of public health at the construction of the Fergana canals as an experiment which can be followed in medical servicing of Stalin's new construction projects. Zhur.mikrobiol.epid.i immun. no.2:16-21 F '53. (MLRA 6:5)

(Fergana Canal Region--Public health)

NIKOL'SKIY, A. I.

All-Union conference on prevention of dysentery. Gig. sanit., Moskva no.6:55-56 June 1953. (CIML 25:1)

NIKOL'SKIY, Anatoliy Leonidovich

[Preventive inoculations] Profilakticheskie privivki. Moskva. Medgiz, 1958. 58 p. (MIRA 13:9)
(VACCINATION)

NIKOL'SKIY, A.M?

Properties of the Differentiable Functions of Several Variables on Closed Smooth (glatten) Manifold. DANSSSR, n. Ser. 88, 213-216 (1953).

NIKOL'SKIY, A.M. (Gomel')

Simplest problems concerning the theory of probabilities.
Mat. v shkole no.2:5-16 '56. (MLRA 9:6)
(Probabilities--Problems, exercises, etc.)

NEDNYAKOV, N.V.; KARCHEVSKIY, M.M.; NIKOL'SKIY, A.N.; PROKHOROV, V.P.

[Hydraulic engineering for land improvement on the Tatar collective farms] Vodno-meliorativnoe stroitel'stvo v kolkhozakh Tatarii. Kazan', Tatgosizdat, 1952. 126 p. (MLRA 9:8)
(Tatar A.S.S.R.--Hydraulic engineering)

NIKOL'SKIY, A. N.

NIKOL'SKIY, A. N. -- "The Ring-Precipitation Reaction as a Method of Titrating Antitetanus Sera." Tashkent State Medical Inst imeni V. M. Molotov. Tashkent, 1955. (Dissertation for the Degree of Candidate of Biological Sciences.)

SO: Knizhnaya Letopis', No 5, Moscow, Feb 1956

NIKOL'SKIY, A.N.; SULEYMANYAN, M.S.; DIAKOVA, Ye.I.; MAKHON'KOVA, M.I.

Immunization reactivity in horses immunized with a diphtherial anatoxin; effect of pilocarpine on the development of antitoxin in horses. Trudy Tash. NIIVS 5:139-144 '62.
(MIRA 16:10)

(HORSES) (DIPHTHERIA ANTITOXIN)
(PILOCARPINE —PHYSIOLOGICAL EFFECT)

NIKOL'SKIY, A.N.; SULEYMANYAN, M.S.; DIAKOVA, Ye.I.; MAKHKO'KOVA, M.I.

Study of immunization reactivity in horses immunized with a diphtherial anatoxin; preparation of horses for the production of diphtheria serum at an early age. Trudy Tash. NIIVS 5: 145-148'62. (MIRA 16:10)
(HORSES) (DIPHTHERIA) (SERUM)

NIKOL'SKIY, A.P., doktor sel'skokhozyaystvennykh nauk

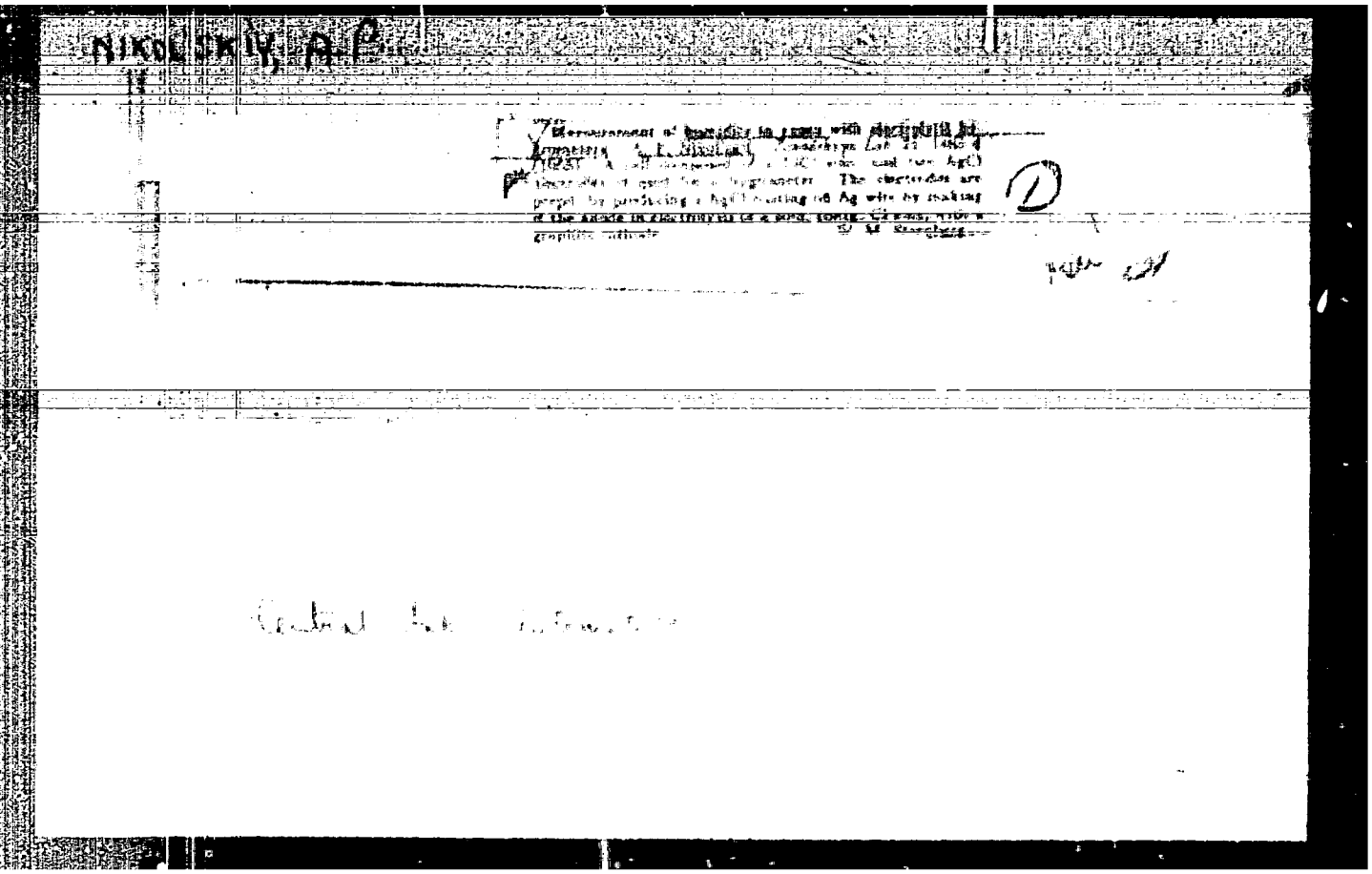
Effect of feeding on the viability and productivity of farm animals. Agrobiologiia no.5:73-79 S-O '58. (MIRA 11:11)

1. Permskiy sel'skokhozyaystvennyy institut imeni D.N.Pryanishnikova.
(Domestic animals--Feeding and feeding stuffs)

NIKOL'SKIY, A. P.

In the Technical Council of the State Institute for the Design and Planning of Peat Industry Plants attached to the Supreme Council of the National Economy. Torf. prom. 40 no.3:38-39 '63. (MIRA 16:4)

(Peat industry)



124-58-9-10057

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 9, p 88 (USSR)

AUTHORS: Batova, G. A., Deryagin, B. V., Leonov, L. F., Nikol'skiy, A. P., Prokhorov, P. S.

TITLE: Diffusion Hygrometers (Diffuzionnyye gigrometry)

PERIODICAL: V sb.: Issled. oblakov, osadkov i grozovogo elektrichestva. Leningrad, Gidrometeoizdat, 1957, pp 189-191

ABSTRACT: Bibliographic entry

1. Hygrometers--Equipment 2. Diffusion

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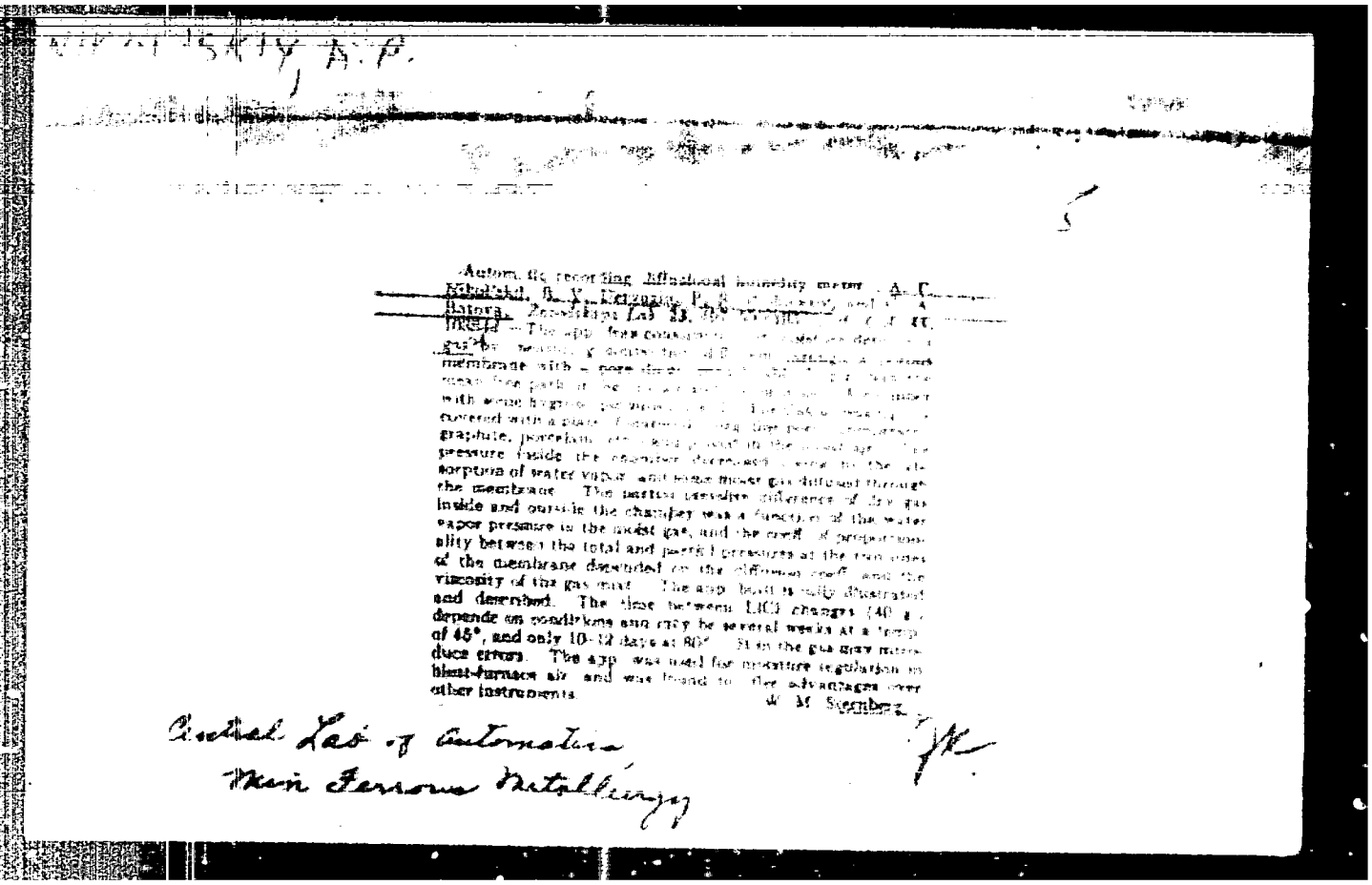

Automatic recording differential humidity meter. A. P. Nikolskii, B. Y. Kazanskii, P. S. [illegible], and A. Batova. Zavodskaya Lab. 13, [illegible] (1947). — The app. has continuous [illegible] gas by means of a [illegible] membrane with a pore diameter [illegible] mean free path of [illegible] with some hydrogen permeating [illegible] covered with a plate [illegible] graphite, porcelain, [illegible] pressure inside the chamber increases owing to the admixture of water vapor and more moist gas diffuses through the membrane. The initial osmotic difference of the gas inside and outside the chamber was a function of the water vapor pressure in the moist gas, and the rapid [illegible] ality between the total and partial pressures at the two sides of the membrane depended on the diffusion coeff. and the viscosity of the gas mixt. The app. built is fully illustrated and described. The time between LiCl changes (40 [illegible] depends on conditions and may be several weeks at a temp. of 45°, and only 10–12 days at 80°. Si on the gas may reduce errors. The app. was used for moisture regulation in blast-furnace air and was found to [illegible] the advantages over other instruments. W. M. Sternberg

Central Lab. of Automatics
Main Ferrous Metallurgy

NIKOL'SKIY, A. P.

"The Electrification of Combination Machine Tools." Stanki i Instrument, 10, No 6, 1939. Engineer, EMIMS.

Report U-1505, 4 Oct 1951

SOV/121-58-10-8/25

AUTHOR: Nikol'skiy, A.P.

TITLE: Grounding Signal Indicator (Signalizator Zazemleniya)

PERIODICAL: Stanki i Instrument, 1958, Nr 10, p 23 (USSR)

ABSTRACT: A signalling device detecting a grounding fault in the electrical system of a machine tool has been developed by the SKB-6 Machine Tool Design Office. The device has been used successfully in the automatic production lines of the First National Ball-Bearing Factory (1 GPZ) the ploughshare production line at the "Altaysel'mash" Works and others. The device is intended for control circuits with a separate transformer. The circuit diagram of the device is shown in Fig.2. In the absence of a grounding the two lamps in the device are dimly lit, otherwise one lamp goes out and the

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Grounding Signal Indicator

other is brightly lit. A continuously connected a grounding fault signalling device is recommended in complex control circuits. There are 2 illustrations.

PHASE I BOOK EXPLOITATION SOV/5291

Soveshchaniye po kompleksnoy mekhanizatsii i avtomatizatsii tekhnologicheskikh protsessov v mashinostroyenii. 2d, Moscow, 1956

Avtomatizatsiya mashinostroitel'nykh protsessov. t. III: Obrabotka rezaniyem i obshchiye voprosy avtomatizatsii (Automation of Machine-Building Processes. v. 3: Metal Cutting and General Automation Problems) Moscow, Izd-vo AN SSSR, 1960. 296 p. (Series: Its: Trudy, t. 3) 4,700 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.

Resp. Ed.: V. I. Dikushin, Academician; Ed. of Publishing House: V. A. Kotov; Tech. Ed.: I. F. Kuz'min.

PURPOSE: This collection of articles is intended for technical personnel concerned with the automation of the machine industry.

COVERAGE: This is Volume III of the transactions of the Second Conference on the Full Mechanization and Automation of Manufacturing Processes in the Machine Industry, held September 25-29, 1956. The transactions have been published in three volumes. Volume I deals with the hot pressworking of metals, and volume II, with the actuation and control of machines. The present volume deals with the automation of metal machining and work-hardening, and with general problems encountered in automation. The transactions on the automation of metal-machining processes were published under the supervision of F. S. Dem'yanok and A. N. Karatygin, and those on the automation of work hardening processes, under the supervision of E. A. Satel' and R. O. Yakobson. No personalities are mentioned. There are no references.

Automation of Machine-Building Processes (Cont.) SOV/5291

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Automation of Machine-Building Processes (Cont.) SOV/5291

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Automation of Machine-Building Processes (Cont.) SOV/5291

Automation of Machine-Building Processes (Cont.) SOV/5291

AVAILABLE: Library of Congress

S/876/62/000/000/003/007
E191/E481

AUTHOR: Nikol'skiy, A.P.

TITLE: Problems in the design of control circuits and components for automatic production lines (Experience of SKB-6)

SOURCE: Proyektirovaniye i ekspluatatsiya avtomaticheskikh liniy mekhanicheskoy obrabotki. Mosk. dom nauchno-tekhn. prop. Ed. by A.P.Vladziyevskiy. Moscow, Mashgiz, 1962. 88-111

TEXT: Problems and experience which have arisen in ball bearing production plant are discussed. The complexity of control is illustrated by the automatic production shop commissioned in 1956 at the 1 GPZ embracing two comprehensive automatic production lines for ball and roller bearings, respectively. The shop contains 110 productive units and 108 handling units (each with individual drive). The installation includes 650 electric motors with a total installed power of 2000 kW and 7000 units of equipment. The utilization factor is usually assumed to be 0.7 to.0.8. Its improvement depends on the basic configuration. The best is considered to be a parallel arrangement of plant in relation to the

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Problems in the design of control ...

loading and unloading transporters. The types of equipment most favored in automatic shops are listed. One of the basic tasks in the automatic line is automatic tool resetting. The centralized control arrangements are mentioned. It is stated that currently produced electrical control gear is inadequate and obsolete. Some standardization results are enumerated. The electrical equipment is discussed using the example of the automatic ball bearing factory. The basic configuration is illustrated in a block diagram showing individual sections such as turning, heat treatment, surface grinding and others. Each machine tool operates only when a component is present in the loading channel and absent in the unloading position. The mechanical collision of consecutive transporters must be avoided. Subject to these conditions, each machine tool unit and transporter must operate automatically and independently. Transporting channels must be utilized for maximum storage of components. Individual sections are considered in detail in the light of these requirements. A typical electrical control circuit is illustrated. Some problems in the design of electrical control circuits for