GINZBURG, I.I.

Remarks on the upper zone of weathering surface. Kora vyvetr.
no.5:374-379 '63.   (MIRA 16:7)

1. Institut geologii rudnykh mestorozhdeniy, petrografii,
mineralogii i geokhimii AN SSSR.
                         (Weathering)

GINZBURG, I.I.; ANDRUSHCHENKO, P.F.

Some results of the conference on the composition of metallogenic and forecasting maps of supergene nickel deposits. Kora vyvetr. no.6:312-318 '63.

(MIRA 17:9)

1. Institut geologii rudnykh mestorozhdeniy, petrografii, mineralogii i geokhimii AN SSSR, Moskva.

GINZBURG, I.I.

Fragments of reminscences. Och.po ist.geol.znan. no.11:46-49 '63.
(MIRA 16:7)

(Vernadskii, Vladimir Ivanovich, 1863-1945)

GINZBURG, I.I.

      Karst and ore formation. Trudy MOIP 12:46-53 '64.

                                          (MIRA 18:1)

GINZBURG, I.M., inzh.

Automatic control of the load on a scraper motor. Mekh. stroi.
18 no.11:17-18 N '61.   (MIRA 16:7)

(Scrapers)   (Automatic control)

GINZBURG, I. M.

USSR/Physical Chemistry - Molecule, Chemical Bond.   B-4

Abs Jour   : Referat Zhur - Khimiya, No 1, 1957, 141

Author   : Ye.F. Gross, I.M. Ginzburg.
Inst   : -
Title   : Spectra of Composite Scattering of Crystal of Molecular
               Compounds.

Orig Pub   : Optika i spektroskopiya, 1956, 1, No 5, 710-714

Abstract   : With a view to investigate the influence of the formation
               of molecular compounds on spectra, the spectra of monocrys-
               tals $SbCl_3$ (I) and $SbBr_3$ (II) were studied. Low frequen-
               cies of (in cm^{-1}) 35, 50, 66, 96 and 63 and frequencies of
               intramolecular oscillations (IMO) of 133, 152, 317, 342
               for I and 92, 110, 227 and 236 for II were found. The mi-
               nimum and maximum moments of inertia (I_x . 10^{-40} and I_y .
               10^{-40} g x sq.cm) of the molecules of I and II are:
               I_x = 303 and 696, I_y = 523 and 1210. The low frequencies
               are satisfying the relation
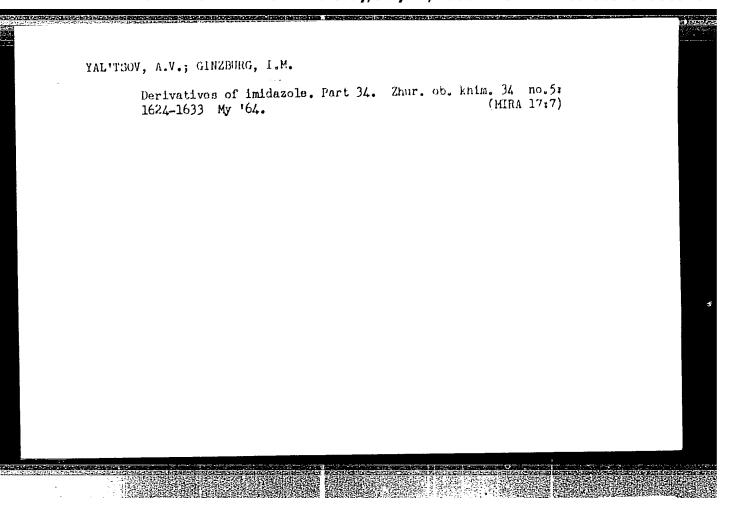 $$ _1^2 / _2^2 = I_2/ I_1 \text{ (1) valid} $$

Card 1/3

USSR/Physical Chemistry - Molecule, Chemical Bond.   B-4

Abs Jour   : Ref Zhur - Khimiya, No 1, 1958, 141

               for the frequencies of the rotational oscillations in iso-
               morphous crystals. The low and the IMO frequencies of
               $2SbCl_3$. C_6H_6 (III) and $2SbBr_3.C_6H_6$ (IV) are as follows:

               22, 43, 64, 83, 110, 117 (III); 22, 42, 58, 71 (IV);
               and 136, 162, 312, 327, 350, 606, 989, 1176, 1573, 1607,
               3062 (III); 89, 102, 213, 225, 241, 990, 3065 (IV).
               The comparison of the spectra of I, II, III and IV leads
               to the conclusion that the low frequency spectra of I, II
               and III, IV differ essentially, while the IMO frequencies
               of III, IV coincide with the IMO frequencies of I, II and
               C_6H_6. Consequently, the molecules of I, II and C_6H_6 move
               in lattices as a whole with reference of one to another.
               The frequencies 22 and 42 - 43 of III and IV refer to the
               rotational oscillations of C_6H_6. The frequencies 64, 83,
               110 (III) and 42, 58, 70 (IV) satisfy (1) and correspond
               to the rotational oscillations of the molecules of I and

Card 2/3

YAL'TSOV, A.V.; GINZBURG, I.M.

Derivatives of imidazole. Part 34.   Zhur. ob. khim. 34 no.5:
1624-1633 My '64.   (MIRA 17:7)

L 1301-66   EWT(m)/EPF(c)/EWP(j)/EWA(o)   RPL   WW/RM
ACCESSION NR: AR5014392   UR/0058/65/000/004/D029/D029

SOURCE: Ref. zh. Fizika, Abs. 4D220

AUTHOR: Ginzburg, I. M.

TITLE: Investigation of the hydrogen bond in trifluoroacetic acid-ester systems
by studying their infrared spectra

CITED SOURCE: Sb. Spektroskopiya. M., Nauka, 1964, 167

TOPIC TAGS: IR spectrum, fluorinated organic compound, acetic acid, ester, spec-
trographic analysis, chemical bonding

TRANSLATION: The IR spectra of trifluoroacetic acid-ester systems are studied.
Spectra for mixtures of these materials always show a band for undisturbed C=O os-
cillation in the ester, and no bands which correspond to acid dimers. This shows
that the esters form a hydrogen bond with oxygen atoms in the carbonyl and alkoxy
radicals. When there is an excess of acid, a 1785 cm^{-1} band which corresponds to
acid dimers appears in the spectrum side by side with bands for free and bound
carbonyl radicals in the ester and the acid carbonyl band. It is concluded that
the molecules in the ester form a strong hydrogen bond only with one molecule of the
acid at the expense of some single oxygen molecule. Yu. Kissin.
Card 1/1   SUB CODE: OC, OP   ENCL: 00

GINZBURG, I.M.

Use of infrared absorption spectra in studying the formation
of hydrogen bonding with ethers and thio ethers. Opt. i spektr.
17 no.1:51-52 Jl '64.   (MIRA 17:9)

GINZBURG, I.M.; PETROV, E.S.; SHATENSHTEIN, A.I.

⟵ Comparison of the electron-donor properties of the series
of aliphatic and cyclic ethers during interaction with CH_3OD.
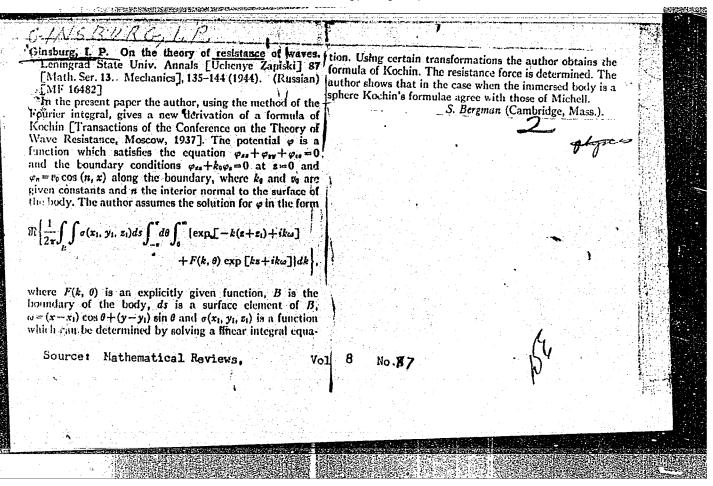⟵ Zhur. ob. khim. 34 no.7:2294-2298 Jl '64   (MIRA 17:8)

GINZBURG, I.M.; LOGINOVA, L.A.

Spectroscopic manifestations and energy of the intramolecular
hydrogen bonding in thiosalicylic acid. Dokl. AN SSSR 156 no.
6:1382-1385 Je '64.   (MIRA 17:8)

1. Leningradskiy khimiko-farmatsevticheskiy institut. Predstavleno
akademikom A.N. Tereniym.

GINZBURG, I. P.

"On the Question of the Motion of Real Gases at High Velocities,"
Ucheniye Zapiski LGU, No.42, pp. 5-60, 1939

Dissertation for the degree of Bachelor of Physico-Mathematical Sciences.
Presented in December 1937.

G-INSBURG, L. P.

Ginsburg, L. P. On the theory of resistance of waves. Leningrad State Univ. Annals [Uchenye Zapiski] 87 [Math. Ser. 13.. Mechanics], 135–144 (1944). (Russian) [MF 16482]

In the present paper the author, using the method of the Fourier integral, gives a new derivation of a formula of Kochin [Transactions of the Conference on the Theory of Wave Resistance, Moscow, 1937]. The potential φ is a function which satisfies the equation $\varphi_{xx}+\varphi_{yy}+\varphi_{zz}=0$ and the boundary conditions $\varphi_{zz}+k_0\varphi_z=0$ at $z=0$ and $\varphi_n=v_0\cos(n,x)$ along the boundary, where k_0 and v_0 are given constants and n the interior normal to the surface of the body. The author assumes the solution for φ in the form

$$\Re\left\{\frac{1}{2\pi}\iint_B \sigma(x_1, y_1, z_1)ds \int_{-\pi}^{\pi} d\theta \int_0^\infty \left[\exp[-k(z+z_1)+ik\omega]\right.\right.$$
$$\left.\left.+F(k,\theta)\exp[kz+ik\omega]\right]dk\right\}.$$

where $F(k,\theta)$ is an explicitly given function, B is the boundary of the body, ds is a surface element of B, $\omega=(x-x_1)\cos\theta+(y-y_1)\sin\theta$ and $\sigma(x_1, y_1, z_1)$ is a function which can be determined by solving a linear integral equa-

tion. Using certain transformations the author obtains the formula of Kochin. The resistance force is determined. The author shows that in the case when the immersed body is a sphere Kochin's formulae agree with those of Michell.

_ S. Bergman (Cambridge, Mass.).

Source: Mathematical Reviews,   Vol 8   No. 87

1. GINSBURG, I. P., BORETSKAYA, B. A., OZHEGOVA, A. I., LUNEGOVA, A. N.

2. USSR (600)

4. Manganese Ores - Polunochnoye Deposits

7. Study of the composition of the manganese ores of the Polunochnoye deposit.
    (Abstract.) Izv. Glav. upr. geol. fon. no. 2, 1947.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

GINZBURG, I.P.

Sufficient stability conditions for the solution of the equation;
$y'' + py' + qy = 0$. Uch.zap.Len.un.no.114:200-204 '49.
(Equations, Theory of)   (MIRA 10:3)

GINZBURG, I.P.

Equations for the motion of variable-mass solids. Uch.sap.Len.un.
no.114:205-216 '49.   (MLRA 10:3)
                    (Motion)

TA 251T100

GINZBURG, I. P.

251T100

USSR/Physics - Hydraulic Impact   Jun 52

"Computation of Hydraulic Impact in Pipes With Variable Cross Section," D. M. Volkov, I. P. Ginzburg

Vest Leningrad U, Ser Mat, Fiz, Khim, Vol 7, No 6, pp 29-46

Generalizes results by I. F. Livurdov (Iz Artiller Akad imeni Dzerzhinskogo, 18 (1944)) for the case where wall thickness of pipe and sound velocity are variables, and presents solutions of problem for a wide class of pipes with variable cross sections.

GINZBURG, I.P.

On sufficient stability conditions of zero solutions for n-order linear
homogeneous differential equations and n-homogeneous differential
equation systems with variable coefficients. Vest.Len.un.9 no.5:53-65
My '54.   (Differential equations)   (MLRA 9:7)

GINZBURG, I.P.; GRIB, A.A.

Water hammer in a complex conduits. Vest.Len.un. 9 no.8:107-128 Ag '54.
Vest.Len.un. 9 no.8:107-128 Ag '54.   (MLRA 8:7)
    (Water hammer)

(Ginzburg, I. P.)

USSR/Physics - Gas flow

Card 1/1   Pub. 127 - 6/12

Authors   : Ginzburg, I. P.

Title   : Stabilized outflow of a gas from the containers producing friction and
             local resistances

Periodical : Vest. Len. un. ser. mat. fiz. khim. 5, 55-84, May 1955

Abstract   : A method of computing the amount of gas flow from a container, considering
             friction and local resistances, is described. Various cases of gas flow
             (adiabatic, long pipes with thermal or isothermal processes during the
             flow) are considered. Tables; graphs; diagrams.

Institution : .....

Submitted   : April 16, 1954

GINZBURG, I. P.

124-11-12679

Translation from: Referativnyy Zhurnal, Mekhanika, 1957, Nr 11, p 5! (USSR)

AUTHOR: Ginzburg, I. P.

TITLE: The "Water Hammer" in Pipes Made of Elastic-Viscous Materials. (Gidravlicheskiy udar v trubakh iz uprugo-vyazkogo materiala).

PERIODICAL: Vestn. Leningr. un-ta. , 1956, N₁ 13, : 99-.u8

ABSTRACT: The A. establishes the equations of the water hammer in a thin-walled pipe having a varying diameter along its length and consisting of an elastic-viscous or plastic material. Discarding the convective terms and assuming a linear frictional function, these equations are reduced to a single differential equation of the fourth or third order. A general solution for this equation is offered for the case of a cylindrical pipe, obtained by means of a Laplace transformation.   N. A. Kartvelishvili
Bibliography: 5 references

Card 1/1

AKSENOV, A.P.; GINZBURG, I.P., prof., doktor fiziko-matemat.nauk, nauchnyy
rukovoditel'·

[Determining the surface temperature and surface friction of cones
and a certain class of axisymmetrical bodies of revolution moving
with high supersonic speeds; dissertation presented for the degree
of Candidate of Physicomathematical Sciences] Opredelenie tempera-
tury na poverkhnosti i poverkhnostnogo treniia konusov i nekotorogo
klassa osesimmetrichnykh tel vrashcheniia, dvizhushchikhsia s
bol'shimi sverkhzvukovymi skorostiami; avtoreferat dissertatsii
na soiskanie uchenoi stepeni kandidata fiziko-matematicheskikh
nauk. Leningrad, 1957. 7 p.   (MIRA 12:8)
        (Aerodynamics, Supersonic)   (Friction)

SOV/124-58-8-8424

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 8, p 12 (USSR)

AUTHOR: Ginzburg, I. P.

TITLE: Basic Equations for the Dynamics of the Control of Water Turbines
            (Osnovnyye uravneniya dinamiki regulirovaniya gidroturbin)

PERIODICAL: Uch. zap. LGU, 1957, Nr 217, pp 144-184

ABSTRACT: The article gives a detailed account of the derivation of an
             equation for the process of controlling a water turbine with the aid
             of a hydraulic regulator. Equations are given for the turbine con-
             trolled, the sensor element, the servomotors, the gate valve, and
             the penstocks. The equations evolved are compared with those
             appearing in the fundamental work on turbine control by A. Stodola.
             The present equations, however, are not investigated.

                                                         M. A. Ayzerman

Card 1/1

PHASE I BOOK EXPLOITATION   SOV/2053

10(0)

Ginzburg, Isaak Pavlovich

Prikladnaya gidrogazodinamika (Applied Hydro- and Gas Dynamics) /Leningrad/
    Izd-vo Leningr. univ., 1958. 337 p. Errata slip inserted. 4,000 copies
    printed.

Sponsoring Agency: Leningrad. Universitet imeni A. A. Zhdanova. Redak-
    tsionnoizdatel'skiy sovet.

Ed.: Ye. V. Shchemeleva; Tech. Ed.: S. D. Vodolagina.

PURPOSE: This textbook is for students of physics-mathematics and mathe-
    matics and mechanics departments at universities and other institutions
    of higher learning. It may also be useful to engineers and scientific
    personnel conerned with problems of design and research on engines, gas
    exhaust, pneumatic installations, etc.

Card 1/11

Applied Hydro- and Gas Dynamics   SOV/2053

COVERAGE: This textbook on applied hydro- and gas dynamics is based on a
series of lectures on mathematical mechanics given by the author at the
Leningrad State University. The book develops the basic equations of hy-
draulics and the theory of similitude and dimensional analysis. It treats
uniform and unsteady motions of fluids and gases in straight and curved
pipes of uniform and varying cross section, the discharge of fluids and
gases from containers, the time required to fill and empty vessels, and
the reactions of flowing liquids and gases on rigid boundaries due to mo-
mentum changes. Examples of the application of these methods to part-
icular engineering problems are presented. Problems of airfoil and cas-
cade theory are not discussed since they are fully treated in other books,
such as Professor G. N. Abramovich's Prikladnaya Gazodinamika (Applied
Gas Dynamics); etc. In view of Professor K. P. Stanyukovich's detailed
monograph,Neustanovivsheyesya dvizheniye sploshnoy sredy (Unsteady Motion
of a Continuous Medium), the unsteady motion of gases is considered only
in connection with the emptying of vessels. Similarly, problems of un-
steady motion of a fluid in rivers and channels are not considered since
they can be found in the article by Academician S. A. Khristianovich,

Card 2/11

80V/2053

Applied Hydro- and Gas Dynamics

"Unsteady Motion in Channels and Rivers", in the collection Nekotoryye no-vyye voprosy mekhaniki sploshnoy sredy (Some New Problems in the Mechanics of a Continuous Medium) and in V. A. Arkhangel'skiy's monograph Raschety neustanovivshegosya dvizheniye v otkrytkh vodotokakh (Calculation of an Unsteady Motion in Open Water Currents). There are 69 references, 65 of which are Soviet, and 4 translations from German.

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Applied Hydro- and Gas Dynamics   SOV/2053

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Applied Hydro- and Gas Dynamics

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Applied Hydro- and Gas Dynamics   SOV/2053

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Applied Hydro- and Gas Dynamics   SOV/2053

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Applied Hydro- and Gas Dynamics   SOV/2053

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Applied Hydro- and Gas Dynamics   SOV/2053

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Applied Hydro- and Gas Dynamics   SOV/2053

AVAILABLE: Library of Congress (QA 911 . G49)

                                        IS/bg
                                        7/14/59

Card 11/11

KOVALEV, Maksim Antonovich; BELOVA, Aleksandra Vasil'yevna; MARKEVICH,
Natal'ya Mikhaylovna; LANDMAN, Vera Gennadiyevna; GINZBURG,
I.P., prof., red.; BUSORGINA, N.I., red.; ZHUKOVA, Ye.G.,
tekhn.red.

[Manual for laboratory work on aerogasdynamics] Rukovodstvo
k laboratornym rabotam po aerogazodinamike. Pod red. I.P.
Ginzburga. Leningrad, Izd-vo Leningr.univ., 1959. 175 p.
(MIRA 13:1)

(Aerohydrodynamics--Handbooks, manuals, etc.)

PHASE I BOOK EXPLOITATION   SOV/5290

Soveshchaniye po prikladnoy gazovoy dinamike. Alma-Ata, 1956

Trudy Soveshchaniya po prikladnoy gazovoy dinamike, g. Alma-Ata, 23-26 oktyabrya 1956 g. (Transactions of the Conference on Applied Gas Dynamics, Held in Alma-Ata, 23-26 October 1956) Alma-Ata, Izd-vo AN Kazakhskoy SSR, 1959. 233 p. Errata slip inserted. 900 copies printed.

Sponsoring Agency: Akademiya nauk Kazakhskoy SSR. Kazakhskiy gosudarstvennyy universitet imeni S.M. Kirova.

Editorial Board: Resp. Ed.: L.A. Vulis; V.P. Kashkarov; T.P. Leont'yeva and B.P. Ustimenko. Ed.: V.V. Aleksandriyskiy. Tech. Ed.: Z.P. Rorokina.

PURPOSE: This book is intended for personnel of scientific research institutes and industrial engineers in the field of applied fluid mechanics, and may be of interest to students of advanced courses in the field.

Card 1/9

Transactions of the Conference (Cont.)   SOV/5290

COVERAGE: The book consists of the transcriptions Of 31 papers read at the
    conference on gas dynamics which was convened under the initiative of the
    Kazakhskiy gosudarstvennyy universitet imeni S.M. Kirova (Kazakh State Univer-
    sity imeni S.M. Kirov) and the Institut energetiki Akademii nauk Kazakhskoy
    SSR Institute of Power Engineering of the Academy of Sciences Kazakhskaya
    SSR) and held October 23-26, 1956. Three branches of applied gas dynamics
    were discussed, namely: jet flow of liquids and gases, aerodynamics of furnace
    processes, and the outflow of liquids. The practical significance of the
    "Transactions" of the conference consists in the adaptation of theory to
    methods of technical computation and measuring methods related to industrial
    furnaces and other industrial processes in which aerodynamic phenomena play
    a predominant role. Eight papers read at the Conference are not included
    in this collection for various reasons. The authors of the missing papers
    are: L.D. L'vov (Thermal and Aerodynamic Characteristics of Pulverized Coal
    Flame Burners) and A.A. Goleyevskiy (Outlines and Physical Models of the Jet
    Motion Mechanics of Fluids), N.I. Akatnov, Ye. P. Bogdanov, S.V. Bukhman,
    T.K. Mironenko, A.B. Reznyakov, and G.V. Yakubov. L.G. Loytsyanskiy is
    mentioned as being in charge of a department of the Kazakh State University,
    and I.D. Malyukov, Candidate of Physical and Mathematical Sciences, Docent,
    as a member of the same university. References are found at the end of
    most articles.

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Transactions of the Conference (Cont.)   SOV/5290

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Session of October 24, 1956 (Morning)

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Transactions of the Conference (Cont.)   SOV/5290

                    Session of October 24, 1956 (Evening)

Card 5/9

                    Session of October 25, 1956 (Morning)

Card 6/9

Transactions of the Conference (Cont.)   SOV/5290

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SOV/5290

Transactions of the Conference (Cont.)

Vulis, L.A. On the Circular Motion of a Viscous Gas   202

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in a High Velocity Flow of Gas

Lifshits, A.G. Flow of Boiling and Hot Water Through Conical Nozzles   215

Radchenko, G.A., and P.V. Beloborodov. Concentration Fields of   223
Highly Dispersed Aerosols in Air Conduits

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AVAILABLE: Library of Congress

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AC/rn/mas
7-29-61

GINZBURG, I. P.

GINZBURG, I.P.

[Possible methods for solving boundary layer problems in the
case of dissociation and diffusion; Conference on Heat and Mass
Transfer, Minsk, June 5-10, 1961] O vozmozhnykh metodakh reshe-
niia zadach pogranichnogo sloia pri nalichii dissotsiatsii i dif-
fuzii; soveshchanie po teplo-i massoobmenu, g. Minsk, 5-10 iiunia
1961 g. Minsk, 1961. 35 p.   (MIRA 15:2)
    (Boundary layer) (Dissociation) (Diffusion)

GINSBURG, I. P.

"On Possible Solution Methods of Problems of a
Boundary Layer at Dissociation and Diffusion."

Report submitted for the Conference on Heat and Mass Transfer,
Minsk, BSSR, June 1961.

GINSBURG, I. P., GALANOVA, S. S. , and DEMENTYEV, V. G.

"Solution of Laminar Boundary Layer Problems With Regard of
Radiation and Absorption of a Medium."

Report submitted for the Conference on Heat and Mass Transfer,
Minsk, BSSR, June 1961.

20762
S/043/61/000/001/004/010
C111/C222

10.4100

AUTHOR: Ginzburg, I.P.

TITLE: Turbulent boundary layer in a compressible fluid (gas mixture)

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya matematiki, mekhaniki i astronomii, no.1, 1961, 75-88

TEXT: Starting from the semiempirical theory of turbulence the author gives an approximate solution of the problem of the determination of skin friction and heat of a plate being in a compressible fluid during a turbulent motion. Dissociation and diffusion are considered, the Prandtl number may be an arbitrary constant.
At first the author establishes the stationary boundary layer equations under consideration of the diffusion and the forces due to inertia. For the determination of the components of the friction tensor and the diffusion and heat vectors the author uses the results of the semi-empirical theory of turbulence, where the mixing ways in all cases are equated. It is assumed that there exists a laminar lower stratum, where at the boundary of it the derivatives of the velocity, of the heat content and the concentration have jumps, while the velocity, the heat content and the concentration themselves, as well as the skin friction,

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Turbulent boundary layer...

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the diffusion and the heat flow remain continuous. A number of further simplifications is made, e.g. it is put

$$\frac{T}{M} = a_1 h^3 + b_1 h^2 + c_1 h + d,$$

(3.3)

where T -- temperature, $\frac{1}{M} = \sum_i \frac{\xi_i}{M_i}$, M_i -- molecular weight of the i-th component, $\xi_i = \frac{\rho_i}{\rho}$ -- relative mass concentration, $h = \sum_i h_i \xi_i$, h_i -- specific entalpy of the i-th component; the gas is assumed to be thermodynamically ideal; the friction stress is arranged as a quadratic polynomial in $\frac{Y}{\delta}$, where y -- coordinate $\perp$ to the plate, δ -- thickness of the boundary layer. The equations can be integrated under these and further assumptions. For the velocity distribution in the laminar lower stratum the author obtains

$$v_x \left\{ 1 + n \frac{\bar{B}}{2} v_x + n \frac{\bar{C}}{3} v_x^2 \right\} = \frac{\tau_w}{\mu_w} y,$$

(8.3)

where τ_w is the friction stress at the wall, while μ_w and n are

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Turbulent boundary layer...
connected by the arrangement

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C111/C222

$$\mu = \mu_w \left(\frac{h+d_1}{h_w+d_1} \right)^n,$$

(7.3)

where μ -- coefficient of the physical tenacity, h_w -- the h-value at the wall. The author determines: 1. The dependence of the full heat content of the velocity. 2. Velocity profile. 3. Thickness of the laminar lower stratum and the velocity at its boundary. 4. The connection between ζ and δ-thickness of the boundary layer. 5. Law of friction. 6. temperature of the surface of the plate. 7. The appearing constants.
The author mentions L.Ye.Kalikhman. There are 2 figures, 1 Soviet-bloc and 2 non-Soviet-bloc references. The reference to the English-language publication reads as follows: M.Leghthill. J. fluid mech., 2, no.1,1957.

Card 3/3

23154

/6, 8000 (1031, 1121, 1132)

AUTHORS: Babushkin, S.A. and Ginzburg, I.P. (Leningrad)

TITLE: On the theory of nonlinear combined and autonomous control systems

TEXT: The article attempts to determine the nature of a computer (analogue) for an automatic control system in which k controllers regulate that many system coordinates, such that absolute invariance of the regulated parameters and their autonomy with respect to the other coordinates of the system be obtained.   The system considered in all generality is shown in Fig.1, where A is the object, B the computer, the small blocks labelled $1, \ldots, \nu, k$ are the regulators. Further y_ν $(\nu = 1, \ldots, k)$ are the coordinates of the object in k-space, $x_{j\nu}(\nu)$ $(j_\nu = 1, \ldots, n_\nu)$ describe the motion of the regulators, $x_{n\nu}(\nu)$ $(\nu = 1, \ldots, k)$ is the action applied by the ν-th regulator to the object, $g_\nu(t)$ is the input programme to the computer, $\theta_\nu = y_\nu - g_\nu(t)$ are error signals (physically

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23154

S/024/61/000/003/002/012
E140/E463

On the theory of nonlinear ...

measured) $f_{i\nu}^{(\nu)}(t)$ $(i = 1, \ldots, p_\nu; \nu = 1, \ldots, k)$ are external perturbations acting on the object and regulators, and $x_1^{(\nu)}$ are the computed control signals. Finally, Φ_ν are the functions generated by the computer. Such a system is described by a system of differential equations consisting of three groups of equations: equations describing the motion of the controlled object and the controllers, equations describing the motion of the computer, and k equations describing the errors. It is assumed that the equations of the object are fixed while the equations of the regulators are only slightly varying. The physical measurements and their conversion to computer input signals are assumed inertialess. The object and regulator functions and their partial derivative as well as the computer functions and partial derivative are assumed continuous and bounded over the entire range of possible variation. The computer has k equations for solving the k input signals to the regulators. In these equations there are initially undetermined equations describing as yet unknown corrective networks. The problem posed by the paper can now be stated more precisely. It is required to determine the conditions placed on the computer functions Φ_ν.

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such that

$$y_\nu \equiv g_\nu(t) \qquad (\nu = 1, 2, \ldots, k) \qquad (1.2)$$

i.e. that the motion of the object identically correspond to the input programme, as well as the conditions on the equations of the individual regulators and the overall automatic control system, in order that the motion defined by this solution be stable. Such motion is termed: programme motion. Eq.(1.2) permits the system of differential equations of the general system to be simplified by elimination of the static error equations. The second section of the article is concerned with the derivation of the simplified equations. This simplification depends on the fact that for an approximately invariant system, the error terms in the object and regulator equations are negligible (which is not true for the computer equations which depend precisely on the error values). Then a subset of the equations simplify to an autonomous system of N differential equations in N variables, which can therefore be integrated independently of the remaining k equations of the system. The problem of determining the Card 3/7

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computer function is solved by first substituting the functions of
time found for the simplified object and regulator equations in the
general expression for the as yet unknown computer functions.
By the formulation itself of the problem, the steady state values
of the errors are arbitrarily small.   Then the functions Φ_ν
can be expanded close to the plane in which the errors and their
derivative vanish in a Taylor series in variations of the error
from this plane.   This implies that absolute invariance of the
system will occur only when the functions Φ_ν vanish identically
and the partial derivatives with respect to the errors are bounded
with substitution in them of the functions of time $\bar{x}_{j\nu}^{(\nu)}$,
where the bar indicates the solution of the simplified system.
Examining further the conditions placed on the functions Φ_ν ,
it is found that one sufficient solution to the problem is
equivalent to a control system using perturbation only.   No system
operating on deviation alone can satisfy the criteria of absolute
invariance and autonomy.   The author then derives a system of
variational equations which constitute the basis for the final
stage of the solution.   In the final section, the author examines
the question of stability of the motion defined by the solution
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obtained.   The stability problem reduces to the study of the
stability of the zero solution of an homogeneous system of linear
differential equations with variable coefficients.   In a
particular case the coefficients of the equations become constants.
It is this particular case which is examined in detail in the
article.   The examination is carried out in two stages, firstly
for each of the k coordinates independently and then the system
as a whole.   The stability conditions are expressed in terms of
the roots of algebraic equations.   It is found that the stability
depends not only on the form of control function, but on the
parameters of the controlled object and the regulators.   Thus
conditions can be obtained for the physical realizability of the
system.   A brief remark on the general case (where the stability
coefficients are variable) indicates that the dependence on the
system parameters holds here as well.   In conclusion the author
mentions various related questions which have not been treated
in the article.   The possibility of substantially simplifying the
form of the differential equations defining the regulation function
or even of excluding from these equations a part of the information
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external to the the ∇-th coordinate system;   the elimination of mutual couplings between the regulators;   the possibility of using self-adjusting corrective networks in the computer and the inclusion of nonlinear equations in the latter.   There are 3 figures and 16 references: 12 Soviet-bloc and 4 non-Soviet-bloc. The four references to English language publications read as follows: Moore, I.R. Proc.IRE, 1951, v.39, Noll, pp.1421-1432; Baksenbom, A.S., Hood, R., NACA, Rep.980, 1950; Aseltine, I.A., Manicini, A.R., Sarture, C.W., Trans. IRE on Automatic Control, PGAC-6, 1958;   Margolis, M., Leondes, C.T., IRE Weson Convention Record, 1959, pt.4, p.104.

SUBMITTED: January 23, 1961

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29027
S/043/61/000/004/005/008
D274/D302

10 1300   1327

AUTHORS: Ginzburg, I.P., and Kocheryzhenkov, G.V.

TITLE: Turbulent boundary layer of heat-insulated airfoil or axisymmetric body

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya matematiki, mekhaniki i astronomii, no. 4, 1961, 115 - 121

TEXT: The problem of gas flow in a turbulent boundary layer is solved by assuming Pr = 1. Velocity profile: It is assumed that the friction stress in the boundary layer can be expressed by

$$\tau = \tau_w \left\{ \left[1 - \left(\frac{y}{\delta}\right)^2 \right] + \omega\left[\left(\frac{y}{\delta}\right) - \left(\frac{y}{\delta}\right)^2 \right] \right\}, \qquad (1.1)$$

where τ_w is the shear stress at the wall, δ - the thickness of the boundary layer and y the distance from the wall;

$$\omega = \frac{\delta}{\tau_w} \frac{dp}{dx};$$

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the gas is ideal; equation

$$\frac{T}{m} = c_1 h + d \qquad (1.3)$$

holds. Hence

$$\frac{\rho}{\rho_w} = \frac{c_1 H_w + d}{c_1 h + d} = \frac{H_w + \dfrac{d}{c_1}}{H_w + \dfrac{d}{c_1} - A \dfrac{v_x^2}{2}}, \qquad (1.5)$$

where H_w is the heat content of unit mass outside the boundary lay-
er. The equations of semi-empirical turbulence theory are used (in
conjunction with Eqs. (1.1) and (1.5)) for obtaining the equation
for the velocity profile in the turbulent boundary layer, viz.

$$\frac{\tau_w}{\rho_w} \frac{1 + \omega\left(\dfrac{y}{\delta}\right) - (1 + \omega)\left(\dfrac{y}{\delta}\right)^2}{k^2 y^2} = \frac{H_w + \dfrac{d}{c_1}}{H_w + \dfrac{d}{c_1} - A \dfrac{v_x^2}{2}} \left(\frac{\partial v_x}{\partial y}\right)^2,$$

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The presence of a laminar sublayer is assumed. There one can approximately set:

$$v_x = \frac{\tau_w}{\mu_w} y + \frac{1}{\mu_w} \frac{dp}{dx} \frac{y^2}{2} . \tag{1.7}$$

The velocity at the boundary of the laminar sublayer is

$$u_\ell = \frac{\tau_w}{\mu_w} \delta_\ell + \frac{1}{\mu_w} \frac{dp}{dx} \frac{\delta_\ell^2}{2} = \delta_\ell \frac{\tau_w}{\mu_w} (1 + \frac{\omega_\ell}{2}) = \frac{k_1}{k} \frac{\nu_w}{v_*} \frac{1 + \frac{\omega_\ell}{2}}{\sqrt{1 + \omega}} \frac{\tau_w}{\mu_w} \approx$$

$$\approx \frac{k_1}{k} v_* = \frac{k_1}{k} \frac{u}{\zeta}, \text{ where } v_* = \sqrt{\frac{\tau_w}{\rho_w}} , \quad \zeta = \frac{u}{v_*} . \tag{19}$$

The derivation is examined of relationship between τ_w and δ^{**}. By expansion in series (of arc sin $k_1/k \, \bar{u}/\zeta$) one obtains from

$$\frac{k_1}{\bar{u}} \left[\arcsin \frac{k_1}{k} \frac{\bar{u}}{\zeta} - \arcsin \bar{u} \right] = \ln \left(\frac{k_1}{k} - \frac{e}{2} \frac{v_\infty}{u\delta} \zeta \frac{\cdot 1}{\sqrt{1 + \omega_\ell}} \right) - \frac{\omega}{2} .$$

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equation

$$\frac{u\delta}{\nu_w} = D\frac{k_1}{k} \frac{\varsigma}{\sqrt{1 + \omega_\ell}} e^{\frac{k\varsigma}{u}} \arcsin \bar{u} \text{ , where } D = \frac{1}{2} e^{1-k_1-\frac{\omega}{2}}. \tag{2.1}$$

In order to find the friction resistance of an airfoil, a second equation between δ and τ_w is required. This can be obtained from the law of conservation of momentum. For using it, one has to know the thickness δ^{**} of lost momentum and the thickness δ^* of displacement. If, in their computation, the velocity profile in the boundary layer is assumed to be that of a plate, one obtains the appropriate expressions

$$\frac{\delta^{**}}{\delta} = \int_0^1 \frac{\rho}{\rho_0} \frac{v_x}{u} \left(1 - \frac{v_x}{u}\right) d\frac{y}{\delta} = \frac{\rho_w}{\rho_0} I, \tag{22}$$

where $(\bar{H}_w = 1)$

$$I = \frac{1}{k\varsigma} \frac{1}{\sqrt{1 - \bar{u}^2}} - \frac{1}{(k\varsigma)^2} \frac{2 + \bar{u}^2}{1 - \bar{u}^2} + \frac{1}{(k\varsigma)^3} \frac{\bar{u}^2(\bar{u}^2 + 2)}{(1 - \bar{u}^2)^{3/2}} + \cdots$$

$$\frac{\rho_w}{\rho_0} = 1 - \bar{u}^2$$

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and
$$\frac{\delta^*}{\delta^{**}} = \frac{1 + \bar{u}^2}{1 - \bar{u}^2} + \frac{1}{k\zeta} \frac{1}{\sqrt{1 - \bar{u}^2}} + \dots \qquad (2.3)$$

If the influence of the longitudinal pressure gradient is taken in-
to account, then

$$\frac{u\delta^{**}}{\nu_w} = \frac{\rho_w}{\rho_0} \frac{u\delta}{\nu_w} \frac{k(\omega)}{k'} \frac{1}{\sqrt{1 - \bar{u}^2}} = \frac{\rho_w}{\rho_0} D \frac{k_1}{k^2} k(\omega) \frac{e^{\frac{k\zeta}{\bar{u}} \arcsin \bar{u}}}{\sqrt{1 + m_1} \sqrt{1 - \bar{u}^2}}, \qquad (2.6)$$

where
$$\bar{u} = \frac{u}{\sqrt{\frac{2\left(H_w + \frac{d}{c_1}\right)}{A}}}, \quad H_w = H_s.$$

Determination of friction law: In order to find the friction law,
i.e. the dependence of ζ on x, the equation

$$\frac{1}{r^\varepsilon} \frac{d}{dx} (r^\varepsilon \rho_0 u^2 \delta^{**}) + \rho_0 u \frac{du}{dx} \delta^* = \tau_w \qquad (3.1)$$

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Turbulent boundary layer of ...   D274/D302

is used which expresses the momentum law; $\varepsilon = 0$ for an airfoil and $\varepsilon = 1$ for an axisymmetric body. One obtains

$$\frac{d}{dx}\left(\frac{\rho_0}{\rho_\infty}\frac{u\delta^{**}}{v_\infty}\right) + \frac{u'}{u}\frac{\rho_0}{\rho_\infty}\frac{u\delta^{**}}{v_\infty}\left(1 + \frac{\delta^*}{\delta^{**}} + \frac{u}{u'}\frac{d\ln r'}{dx}\right) = \frac{u}{\zeta^2}\frac{1}{v_\infty}\frac{\rho_w}{\rho_\infty}, \qquad (3.2)$$

where

$$\frac{\rho_0}{\rho_\infty}\frac{u\delta^{**}}{v_\infty} = \frac{\rho_0}{\rho_\infty}R^{**}$$

This equation is solved by the method of successive approximation. Setting

$$D\frac{k_1}{k^2}\frac{1}{\sqrt{1 - \bar{u}^2}} = f_1(x), \quad \frac{k}{\bar{u}}\arcsin\bar{u} = f_2(x), \qquad \text{⋋}$$

one obtains $$\ln\frac{\rho_0}{\rho_\infty}R^{**} = \ln f_1(x) + \zeta f_2(x). \qquad (3.3)$$

For the determination of $Z = \rho_0/\rho_\infty R^{**}$, one obtains

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$$Z^{n_1-1}\frac{dZ}{dx} + \frac{u'}{u}Z^{n_1}\left(1 + \frac{\delta^*}{n_1^{**}} + \frac{u}{u'}\frac{d\ln r'}{dx}\right) = \frac{F_2(x)}{n_2},$$
(3.4)

where $$F_2(x) = n_2\frac{u}{v_\infty}f_1^{n_1-1}f_2^2 e^{-n_1}\frac{\rho_\infty}{\rho_\infty}.$$

If δ^*/δ^{**} is considered as a known function of x, then Eq. (3.4) is a linear differential equation whose solution is

$$Z^{n_1} = e^{-\int F_1(x)\,dx}\left\{C + \int_0^x F_2(x)\,e^{\int F_1(x)\,dx}\,dx\right\}.$$
(3.5)

In the case of a plate ($\bar{u}' = 0$), one obtains for the friction coefficient

$$C_f = 2\frac{\delta_{r=1}^{**}}{l} = \frac{2}{l}\frac{v_\infty}{u}Z_l\frac{\rho_\infty}{\rho_0} =$$
(3.6)

$$= 2k^{\frac{2}{n_1}}e^{-\frac{n_1}{n_1}}\left(\frac{ul}{v_0}\right)^{\frac{1-n_1}{n_1}}\left(\frac{\arcsin\bar{u}}{u}\right)^{\frac{2}{n_1}}(1-\bar{u}^2)^{\frac{1-n_1}{2n_1}}\left(D\frac{k_1}{k_2}\right)^{\frac{n_1-1}{n_1}}n_2^{\frac{1}{n_1}}\left(\frac{\mu_\infty}{\mu_0}\right)^{\frac{n_1-1}{n_1}}\left(\frac{\rho_\infty}{\rho_0}\right)^{\frac{1}{n_1}}.$$

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If $\mu_0/\mu_w = h_0/H_w^h$, then

$$C_f = 2k^{\frac{2}{n_1}}e^{-\frac{n_1}{n_2}}\left(\frac{ul}{v_0}\right)^{\frac{1-n_2}{n_2}}\left(D\frac{k_1}{k^2}\right)^{1-\frac{1}{n_2}}\left(\frac{\arcsin \bar{u}}{u}\right)^{\frac{2}{n_1}}(1-u^2)^{\frac{3}{2n_1}-\frac{1}{2}-n\frac{n_2-1}{n_1}}\frac{1}{n_2^{n_1}}.$$ (3.7)

There are 3 Soviet-bloc references.

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GINZBURG, I.P.; KOCHERYZHENKOV, G.V.

　　　　Turbulent boundary layer of a thermally insulated wing or
　　　axisymmetrical body.　Vest.LGU　16　no.19:115-121　'61.　(MIRA 14:10)
　　　　　　　　　　　(Aerodynamics)

AID Nr. 986-5   10 June

TURBULENT BOUNDARY LAYER ON THERMALLY NONINSULATED WING (USSR)

Ginzburg, L. P., and G. V. Kocheryzhenkov. IN: Leningrad. Universitet. Vestnik, no. 7: Seriya matematiki, mekhaniki i astronomii, no. 2, 1963, 86-98.   S/043/63/007/002/003/008

An approximate solution is presented of the problem of a turbulent boundary layer on a thermally noninsulated wing or an axisymmetrical body in compressible hypersonic flow. The method is based on two previous papers and requires the assumption that the velocity dependence of total enthalpy in the turbulent region of the boundary layer and in the laminar sublayer can be expressed as a quadratic function of v_x in the form·

$$H = A_1 + Bv_x + Cv_x^2 \text{ in the turbulent region, and}$$

$$H = Hw + B_1 v_x + C_1 v_x^2 \text{ in the laminar sublayer.}$$

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AID Nr. 986-5   10 June

TURBULENT BOUNDARY LAYER [Cont'd]   S/043/63/007/002/003/008

The velocity profiles are determined, the relationship between friction stress t_w and thickness of momentum loss δ^{xx} is described, and expressions for drag and local skin friction coefficient are established. The calculation procedure is outlined for a numerical example of a spherical body with a radius of 20 cm in an air flow of $M = 20$ with stagnation point-temperature $T_{00} = 7000°$. The results are plotted in graphs.   [ANB]

Card 2/2

LYKOV, A.V., akademik, red.; SMOL'SKIY, B.M., doktor tekhn. nauk, prof., red.; GINZBURG, I.P., doktor fiz.-matem. nauk, prof., red.; ZABRODSKIY, S.S., doktor tekhn. nauk, red.; KONAKOV, P.K., doktor tekhn. nauk, prof., red.; KOSTERIN, S.I.,doktor tekhn. nauk, prof., red.; SHUL'MAN, Z.P., inzh., otv. za vypusk; KORIKOVSKIY, I.K., red.; LARIONOV, G.Ye., tekhn. red.

[Heat and mass transfer] Teplo- i massoperenos. Moskva, Gos-energoizdat. Vol.3.[General problems of heat transfer] Obshchie voprosy teploobmena. 1963. 686 p.   (MIRA 16:6)

1. Akademiya nauk Belorusskoy SSR (for Lykov).
    (Heat--Transmission)   (Mass transfer)

GINZBURG, I.P.; KOCHERYZHENKOV, G.V.

Turbulent boundary layer of a nonthermally insulated wing or axisymmetric body in a compressible fluid. Vest.LGU 18 no.7:
86-98 '63. (MIRA 16:4)
(Aerothermodynamics) (Boundary layer)

VERESHCHAGINA, L.I.; GINZBURG, I.P., prof., rukovoditel' raboty

Base pressure for solids of revolution in supersonic gas flow.
Vest. LGU 18 no.13:139-143 '63.   (MIRA 16:9)
(Aerodynamics, Supersonic)

ACCESSION NR: AP4044416

S/0170/64/000/008/0064/0074

AUTHOR: Ginzburg, I. P.

TITLE: The relationship between heat content and velocity in the boundary layer of flowing gas

SOURCE: Inzhenerno-fizicheskiy zhurnal, no. 8, 1964, 64-74

TOPIC TAGS: boundary layer, heat transfer, Prandtl number, laminar flow, turbulent flow, Lewis number

ABSTRACT: An approximate relationship between heat content h and flow velocity v_x for arbitrary values of Pr in turbulent as well as in physical flows was established using the boundary layer equations in Crocco variables. On the assumption that $Le_i = 1$ and $\rho\mu = $ const in the boundary layer, general expressions are derived for the coefficients $R(\phi, \xi)$ and $S(\phi, \xi)$

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ACCESSION NR: AP4044416

$$S(\varphi, \xi) = \frac{1}{Pr(0)} \int_0^\xi Pr \cdot exp\left(-\int_0^\xi \frac{1-Pr}{\bullet} \frac{\partial \bullet}{\partial \varphi} d\varphi\right) d\varphi;$$

$$R(\varphi, \xi) = 2 \int_0^\xi Pr exp\left(-\int_\bullet^{\varphi_1} \frac{(1-Pr)}{\bullet} \frac{\partial \bullet}{\partial \varphi} d\varphi\right) \times$$

$$\times \int_0^{\varphi_1} exp\left(\int_\bullet^\xi \frac{1-Pr}{\bullet} \frac{\partial \bullet}{\partial \varphi} d\varphi\right) d\varphi_1.$$

, where $\phi = v_x/u$, $w = \tau_{xy}/\tau_w$ and for $\phi = 1$, R becomes the recovery factor. The values of $R(1, \xi)$ and $S(1, \xi)$ are then determined for laminar boundary layers—

$$S(1) = Pr^{-\nu_1}, \quad R(1) = \sqrt{Pr}.$$

turbulent boundary layer, assuming a sublayer —

$$S(1) = \frac{1}{Pr_A} [1-(1-Pr_A)\varphi_A], \quad R(1) = 1-(1-Pr_A)\varphi_A^2.$$

turbulent boundary layers assuming Van-Driest's three-layer approximation, and

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ACCESSION NR: AP4044416

Turbulent boundary layer with power law velocity distribution of Salaznik and Vorotnikov. Finally, S and R are calculated for $Pr \neq 1$ with the result

$$S(1) = \varphi_s \left(1 - \frac{Pr_T}{Pr_s} \right) +$$

$$+ \frac{Pr_T}{Pr_s} \frac{\Gamma(Pr_T)\Gamma(1/3)}{\Gamma(Pr_T + 1/3)} \quad , \text{ and } \quad R(1) = Pr_s \varphi_s^2 - Pr_T \varphi_s^2 + 2Pr_T I(Pr_T) \quad , \text{ where}$$

$$I(Pr_T) = \int_0^1 (1 - \varphi^3)^{Pr_T - 1} \left[\int_0^\varphi (1 - \varphi^3)^{1 - Pr_T} d\varphi \right] d\varphi$$

, for $Pr = 1$ in the presence of flow injection at the wall the values of R and S take a modified form given by

$$S(1) = S(\varphi_s) + \frac{1}{Pr_s} \varphi_s^{Pr_s - 1} (1 - \varphi_s),$$

$$R(1) = R(\varphi_s) + (1 - \varphi_s^2).$$ These results show the effect of Pr (turbulent and laminar) on heat transfer to the walls from the boundary layer and establish a relationship between h and v_x. Orig. art. has: 66 formulas and 2 figures.

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ACCESSION NR: AP4044416

ASSOCIATION: Gosudarstvenny*y universitet im A. A. Zdanova g. Leningrad
(Leningrad State University)

SUBMITTED: 22Nov63

ENCL: 00

SUB CODE: ME,TD   NO REF SOV: 005

OTHER: 000

Card 4/4

GINZBURG, I.P. (Leningrad)

"On the solution of problems of the turbulent boundary layer in a compressible fluid-gas mixture".

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

L 8826-65   EWT(1)/EPA(b)/EWT(m)/T/FCS(k)/EWA(1)   Pd-4/Pi-4   AFETR/AFWI
AEDC(a)/ASD(f)/BSD/SSD/AS(mp)-2/ASD(d)/AFTC(a)/ESD(gs)/ESD(t)   RM
ACCESSION NR: AP4044459   S/0043/64/000/003/0089/0102

AUTHOR: Ginzburg, I. P.; Kochery*zhenkov, G. V.; Mordvinova, N. I.

TITLE: A turbulent boundary layer on a permeable plate

SOURCE: Leningrad. Universitet. Vestnik. Seriya matematiki, mekhaniki i astronomii, no. 3, 1964, 89-102

TOPIC TAGS: turbulent boundary layer, boundary layer permeable plate, mass transfer, heat transfer, skin friction, diffusion, compressible gas flow

ABSTRACT: The effect of mass transfer on compressible, turbulent-boundary-layer skin friction and on heat transfer when mass is injected into or withdrawn from the layer normal to the surface of a permeable plate is studied for arbitrary constant Prandtl and Lewis numbers. Investigations were carried out on the basis of a semiempirical theory of turbulence by means of a two-layer method proposed by I. P. Ginzburg. Steady flow of a thermodynamically ideal gas is considered in the presence of diffusion and in the absence of inertial forces, heat emission, and chemical reactions. The effect of thermal diffusion is neglected. Formulas expressing relations between total
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ACCESSION NR: AP4044459

enthalpy and velocity, mass concentration of the components of a binary mixture and velocity, and shear stress and layer thickness are derived. Expressions for determining velocity and temperature profiles and evaluating the effect of injection on the skin-friction coefficient are established. The results of calculation made by this method agree with available experimental data. Orig. art. has: 1 figure and 60 formulas.

ASSOCIATION: none

SUBMITTED: 03Jun63   ATD PRESS: 3100   ENCL: 00

SUB CODE: ME, AS   NO RI F SOV: 007   OTHER: 000

Card 2/2

GINZBURG, I. P.

"Methods of solution of turbulent boundary layer problems for a mixture of gases."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minsk, 4-12 May 1964.

Sci Res Inst of Mathematics & Mechanics, Leningrad State Univ.

GINZBURG, I.P.

Relation between the enthalpy and velocity of a gas moving in a
boundary layer. Inzh.-fiz. zhur. 7 no.8:64-74 Ag '64.

(MIRA 17:10)

1. Gosudarstvennyy universitet im. A.A. Zhdanova, Leningrad.

VALLANDER, S.V.; GINZBURG, I.P.; POLYAKOV, N.N.; YUSHKOV, P.P.

Konstantin Ivanovich Strakhovich, 1905- ; on his 60th birthday.
Inzh.-fiz. zhur. 8 no.3:409-410 Mr '65.

(MIRA 18:5)

L 5153-66   EWT(1)/EWP(m)/EWT(m)/EWP(w)/EPF(c)/ETC/EPF(n)-2/EWG(m)/EWA(d)/
    T/EWP(t)/FCS(k)/EWP(b)/EWA(1)   JD/WW/DJ

ACCESSION NR: AP5020937   UR/0170/65/009/002/0155/0162

                                          532.517.4

AUTHOR: Ginzburg, I. P.; Korneva, I. V.

TITLE: The effect of the turbulent number $Pr_{\varkappa}$ on the friction and heat transfer of a plate in turbulent gas flow

SOURCE: Inzhenerno-fizicheskiy zhurnal, v. 9, no.2, 1965, 155-162

TOPIC TAGS: friction coefficient, heat transfer, plate, turbulent flow, gas flow, Prandtl number

ABSTRACT: The following expression was obtained elsewhere (Ginzburg, I. P. IFZh, No. 8, 1964.) to determine the relationship between the heat content and flow rate in the case of nongradient flow at arbitrary Pr_L and $Pr_{\varkappa}$ (where L and $\varkappa$ are laminar and turbulent flow, respectively):

$$\bar{h} = \bar{h}_w + \left(\frac{\partial \bar{h}}{\partial \varphi}\right)_w S(\varphi) - \bar{u}^* R(\varphi), \qquad (1)$$

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ACCESSION NR: AP5020937

where

$$S(\varphi) = \int_0^{\varphi} \exp\left(-\int_0^{\varphi} \frac{Pr}{\omega} \frac{\partial \omega (1/Pr - 1)}{\partial \varphi} d\varphi\right) d\varphi,$$

$$R(\varphi) = 2 \int_0^{\varphi} \exp\left(-\int_0^{\varphi_1} \frac{Pr}{\omega} \frac{\partial \omega (1/Pr - 1)}{\partial \varphi} d\varphi\right) \left\{\int_0^{\varphi_1} Pr\left[\exp\int_0^{\varphi} \frac{Pr}{\omega} \times \right.\right.$$

$$\left.\left. \times \frac{\partial \omega (1/Pr - 1)}{\partial \varphi} d\varphi\right] d\varphi\right\} d\varphi_1, \qquad (1a)$$

$$\omega = \tau/\tau_\omega, \quad \varphi = v_x/u, \quad \bar{h} = h/H_0, \quad \bar{u}^2 = u^2/2H_0.$$

The present authors use this expression and the basic premises in the semiempiric theory of turbulence to evaluate the effect of the Pr number on the friction and heat transfer coefficient of a plate. Orig. art. has: 18 numbered formulas.

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L 5153-66
ACCESSION NR: AP5020937   3

ASSOCIATION: Gosudarstvennyy universitet im. A. A. Zhdanova, Leningrad (Leningrad
State University) 44 05.

SUBMITTED: 22Sep64   ENCL: 00   SUB CODE: ME, TD

NO REF SOV: 002   OTHER: 000

Card 3/3

L 7827-66   EWT(1)/EWP(m)/EPF(c)/ETC/EPF(n)-2/EWG(m)/ECS(k)/EWA(1)   WW

ACC NR: AP5026851   SOURCE CODE: UR/0170/65/009/004/0444/0450

AUTHOR: Ginzburg, I. P.; Krest'yaninova, N. S.

ORG: State University im. A. A. Zhdanov, Leningrad (Gosudarstvennyy universitet)

TITLE: The turbulent boundary layer on a plate in an incompressible fluid with blowing of a substance

SOURCE: Inzhenerno-fizicheskiy zhurnal, v. 9, no. 4, 1965, 444-450

TOPIC TAGS: turbulent boundary layer, heat transfer, incompressible flow, Reynolds number

ABSTRACT: The effect of blowing on surface friction and heat transfer in the case of a turbulent boundary layer has been treated previously. To solve the resulting euqations, certain supplementary assumptions were made as to the thickness of the laminar sublayer or as to the velocities at its boundary. The present article considers the effect of blowing on the parameters of the boundary layer and on friction, on the basis of the two-layer scheme of the semiempirical theory of turbulence. To confirm the validity of the limiting (boundary) laws proposed previously, and to simplify the calculations, the present article considers the case of an incompressible fluid. The article develops an approximate numerical solution of the basic equa-

Card 1/2   UDC:532.517.4

L 7827-66

ACC NR: AP5026851

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tions. The dependence of the relative friction coefficient on the blowing parameter is shown in a figure. The results calculated by the proposed scheme, with a finite Re_x number, are shown to be closer to experimental results than the results of previous work. In the limiting case when Re_x approaches infinity, the results coincide. Orig. art. has: 25 formulas, 3 figures and 1 table

SUB CODE: ME/ SUBM DATE: 18Jan65/ ORIG REF: 005/ OTH REF: 002

Card 2/2

GINZBURG, I. S.

"Chronic Ulcerative Ginrivitis," Stomatologiya, No.1, 1952

GINZBURG, I.S., dotsent, kandidat meditsinskikh nauk; NOVIK, I.O., dotsent, zave-
    duyushchiy; GORCHAKOV, A.K., professor, direktor.

Pathogenic therapy of ulcerative stomatitis. Stomatologiia no.4:10-15 Jl-
Ag '53.   (MLRA 6:9)

1. Kafedra terapevticheskoy stomatologii Kiyevskogo meditsinskogo stomatolo-
gicheskogo instituta (for Novik). 2. Kiyevskiy meditsinskiy stomatologiche-
skiy institut (for Gorchakov).   (Stomatitis)

GINZBURG, I.S., kandidat meditsinskikh nauk

Role of vascular changes in the periodontal tissues in the pathogenesis of paradontosis. Stomatologiia, no.3:12-16 My-Je '54
(MLRA 7:6)

1. Iz kafedry terapevticheskoy stomatologii(zav. dotsent I.O. Vovik) i kafedry patologicheskoy anatomii (zav. prof. I.M. Peysakhovich) Kiyevskogo meditsinskogo stomatologicheskogo instituta (dir. prof. A.K.Gorchakov)
(PERIODONTIUM, diseases,
*pathogen., periodontal vasc. changes)
(PERIODONTIUM, blood supply,
*vasc. changes in pathogen. of periodontosis)

GINZBURG, I.S.

Pathogenesis and therapy of hypertrophic gingivitis. Stomatologiia
no.4:63-64 Jl-Ag '55.   (MLRA 8:10)

1. Iz kafedry t erapevticheskoy stomatologii (zav.dotsent I.O.Novik)
Kiyevskogo meditsinskogo stomatologicheskogo instituta.
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NOVIK, I.O., prof.; GINZBURG, I.S., dotsent (Kiyev)

"Principles of the pathological anatomy of the oral cavity and
teeth" by I.M. Peisakhovich. Reviewed by I.O. Novik, I.S. Ginzburg.
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GINZBURG, I.S.; NASIROV, A.B.

Some peculiarities in the pathogenesis and clinical aspects of
tuberculous lymphadenitis with an external and mesenterial loca-
lization. Azerb.med.zhur.   no.2:14-18 F '60.   (MIRA 13:5)
                    (LYMPHATICS--TUBERCULOSIS)

VAYSBLAT, Solomon Naumovich, zasl. deyatel' nauki USSR, prof.;
    GINZBURG, I.S., red.; BYKOV, N.M., tekhn. red.

    [Local anesthesia for operations on the face, the jaws, and
    the teeth]Mestnoe obezbolivanie pri operatsiiakh na litse,
    cheliustiakh i zubakh. Kiev, Gosmedizdat USSR, 1962. 468 p.
                                             (MIRA 16:3)
      (LOCAL ANESTHESIA) (FACE—SURGERY)
             (JAWS—SURGERY) (ANESTHESIA IN DENTISTRY)

GINZBURG, I.S. prof., zasluzhennyy deyatel' nauki; KAFAROV, K.I., aspirant.

Phlegmon in the newborn and infants during the first year
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1. Iz kafedry II gospital'noy i detskoy khirurgii pediatriches-
kogo fakul'teta (zav.-prof. I.S.Ginzburg) Azerbaydzhanskogo go-
sudarstvennogo meditsinskogo instituta imeni N.Narimanova (rektor
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[Periodontosis; pathogenesis, clinical aspects and
treatment] Parodontoz; patogenez, klinika i lechenie.
2., ispr. i dop. izd. Kiev, Zdorov'ia, 1964. 325 p.
(MIRA 17:12)

BETEL'MAN, Abram Isaakovich; POZDNYAKOVA, Antonina Illaricnovna;
    MUKHINA, Anastasiya Denisovna; ALEKSANDROVA, Yuliya
    Mikhaylovna; GINZBURG, I.S., red.

    [Pediatric orthopedic stomatology] Ortopedicheskaia stoma-
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                                        (MIRA 18:9)

GINZBURG, I. S.

Ginzburg, I. S. "Certain clinical-morphological peculiarities of cancer of the mammary gland," (Report), Trudy III Zakavkazsk. s"yezda khirurgov, Yerevan, 1948 (on cover: 1949), p. 103-113

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GINZBURG, I.S., zaslushennyy deyatel' nauki

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1. Iz nauchno-issledovatel'skogo instituta rentgenologii, radiologii
i onkologii AsSSR.
        (NEOPLASMS, prevention and control,
            ther. of precancerous cond.)

GINZBURG, I.S.

NADZHAROV, A.G., kandidat meditsinskikh nauk; AVERBUKH, R.I.; GINZBURG, I.S., pro-
fessor, zasluzhennyy deyatel' nauki, direktor.

Tuberculosis of the stomach and duodenum. Khirurgiia no.7:56-61 Jl '53.
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1. Azerbaydzhanskiy nauchno-issledovatel'skiy institut rentgenologii, radio-
logii i onkologii.   (Stomach--Tuberculosis) (Duodenum--Tuberculosis)

GINZBURG, I. S., Prof.

"Proliferations, Tumor Growth, and Tropism of Radioactive Isotopes." a report
presented at the Transcaucasian Radiological Conference, Tbilisi, 28-31 Oct 55.

Sum. No. 1047, 31 Aug 56

GINSBURG, I.S.

USSR/General Problems of Pathology - Tumors.   T-5

Abs Jour   : Ref Zhur - Biol., No 1, 1958, 3074

Author   : Ginsburg, I.S.
Inst   : -
Title   : Proliferations, Tumor Growth, and Tropism of the Radioacti-
              ve Isotopes.

Orig Pub   : Tr. 1-y Zakavkazsk. Konferentsii Po Med. Radiol. Tbilisi,
              Gruzmedgiz, 1956, 245-252

Abstract   : No abstract.

Card 1/1