SZAMOSI, Jossef, dr.; BARANYAI, Pal, dr.; STUBER, Adrienne, dr.

Essential fructosuria. Gyermekgyogyaszat 15 no.5:151-155 My'64.

Heim Pal korhaz Fovarosi Tanacs Kozponti Gyermekegeszsegugyi Modszertani, Tudomanyos Kutato es Torabbkepzo Intezetenek (Igazgato: Sarkany, Jeno, dr.) kozlemenye.

*

SZAMOSI, Jozsef, dr.; KONARAS, Ilona, dr.; VARGA, Tibor, dr.

Diagnostic significance of intravenous pyelography in urinary tract infections in children. Orv. hetil. 105 no.37:1734-1738 13 S '64.

1. Fovarosi Tanacs, Kozponti Gyermekegeszsegugyi Modszertani, Tudomanyos Kutato es Tovabbkepzo Intezet, Gyermekosztaly Rtg. Osztaly.

CIELESZKY, Vilmos, dr.; SZAMOSI, Jozsef, dr.

Poisoning by a plant protecting insecticide containing Dieldrin. Orv. hetil. 106 no.10:457-459 6 Mr '65

1. Orszagos Elelmezesi es Taplalkozastudomanyi Intezet (igazgato: Tarjan, Robert, dr.) Novenyvedo Tanacs, Heim Pal Gyermekkorhaza.

HUNGARY

SZAMOSI, Jozsef, Dr, KOVACS, Ilona, Dr, KISTURAY, Terez, Dr; Heim Pal Hospital (Heim Pal Korhaz), and Capital City Council, Central Child Hygiene, Methodological Institute of Scientific Research and Advanced Study, Department of Pediatrics and Toxicology (Fovarosi Tanacs Kozponti Gyermekegeszsegugyi, Modszertani Tudomanyos Kutato es Tovabbkepzo Intezet) (chief physician: SZAMOSI, Jozsef, Dr), Budapest.

"Reiter's Syndrome Involving a 9 Year Old Child."

Budapest, Orvosi Hetilap, Vol 108, No 11, 12 Mar 67, pages 508-510.

Abstract: [Authors' Hungarian summary] The case of a 9 year old boy is described who was a hospitalized patient of the authors for 4 months because of polyarthritis, keratoconjunctivitis and urethritis and was under their regular observation for 17 more months after his discharge. The disease was also accompanied by stomatitis, enteritis and various nervous systemic symptoms. On the basis of the symptom complex and the course, the disease is considered to be Reiter's syndrome. Based on literature data and on the case observed, the etiology of the syndrome and its therapeutic possibilities are discussed. 3 Eastern European, 24 Western references.

1/1

SZAMOSVOLGYI, Attila, dr., okleveles gepeszmernok

With or without applying inventions? Ujit lap 17 no.4:6-7 25 F '65.

SZAMOSVOLGYI, O. (Budapest XI., Muegyetem rakpart 3.)

Determination of tooth point interference of internally geared cogwheel transmission. Periodica polytechn eng 3 no.3:255-271 '59. (EEAI 9:7)

1. Lehrstuhl fur Maschinenelemente der Technischen Universitat, Budapest.
(Gearing)

SZAMOSVOLGYI, Otto

Determination of tooth-point interferences occuring with internally toothed gear drives. Gep 12 no.3:98-105 Mr '60.

1. Budapesti Muszaki Egyetem Gepelemek Tanszek.

VARGA, Laszlo (Budapest, XI., Muegyetem rakpart 3); SZAMOSVOLGYI, Otto, dr. (Budapest, XI., Muegyetem rakpart 3)

Calculating the life span of tapered roller bearings in the front wheels of motor vehicles. Periodica polytechn eng 8 no.3:303-323 '64.

1. Lehrstuhl fur Maschinenelemente, Technische Universitat, Budapest. Submitted February 6, 1964.

L 42271-66 EWP(t)/ETI IJP(c) JD/JH

ACC NR: AP6031497 SOURCE CODE: HU/0012/65/013/006/0177/0180

47
B

AUTHOR: Szots, Geza--Setsh, G. (Associate professor); Szamosvolgyi, Otto--Samoshveldi, O. (Doctor; Associate professor)

ORG: Department for Machine Elements, Technical University, Budapest (Muszaki Egyetem, Gepelemek Tanszek)

TITLE: Measurement of force with a force-measuring cell in strong magnetic and electrical fields

SOURCE: Meres es automatika, v. 13, no. 6, 1965, 177-180

TOPIC TAGS: aluminum metallurgy, strong magnetic field, electric field

ABSTRACT: A load-cell with oscilloscopic display was developed for the measurement of forces between the various anode components during the servicing and replacement of electrodes in aluminum metallurgy. The load-cell was designed for operation in strong magnetic and electrical fields and it performs its task well. The construction, operation, and performance of the assembly containing the cell, and of the cell itself, was described. The device was developed for use at the Aluminum Metallurgical Plant (Aluminiumkoho) in Inota. Orig. art. has: 8 figures. [JPRS: 32,496]

SUB CODE: 11, 20 / SUBM DATE: 28Dec64

UDC: 537.212:538.122

Card 1/1

POLAND

MIKUCKI, J., KRZEMINSKI, Z. and SZARAPINSKA-KWASZEWSKA, J., of the Bacteriology Research Office, School of Medicine (Zaklad Bakteriologii AM), Lodz. Doc. Dr. A. Ganczarski, Head.

"The Effect of Induced Resistance to Antibiotics on Endogenous Respiration of Staphylococcus aureus"

Warsaw, Medycyna Doswiadczalna i Mikrobiologia, Vol 23, No 3, 1966, pp 209-217.

Abstract (Authors' English summary modified): Endogenous respiration was studied in S. aureus strain 31-r, both sensitive and with induced resistance to penicillin, chloramphenicol, oxytetracycline, erythromycin and terramycin. It was found to be lower in the penicillin- and neomycin-resistant strains and higher in the remaining resistant variants than in sensitive strain. Endogenous respiration level in all variants was higher in the presence of glutamic and aspartic acids and proline.
Contains 6 Figures, 1 Table and 13 references (5 Polish and 8 Western).

1/1

PIETRASZEWICZ, W.; SZAMOTULSKI, J.W.

Linearization of angular deflections of ring balances by the design of the inclination vessel. Pomiary 8 no.4:181-184 Ap '62

1. Glowny Urzad Miar

SZAMUELY, L. (Budapest XI., Stoczek utca 2-4)

Keynes' teaching as manifestation of crisis in bourgeois political economy. Periodica polytechn electr 5 no.2:171-194 '61.

1. Kafedra politicheskoy ekonomii budapeshtskogo politekhnicheskogo instituta. Predstavleno zav. kafedroy dotsentom d-rom I. Devichem [I. Devics].

SAMUELI, L. [Szamuely L.] (Budapest XI., Stoczek utca 2-4)

Study of the general theory of employment of J. M. Keynes. Periodica polytechn electr 5 no.3:241-267 '61.

1. Kafedra Politicheskoy Ekonomii Budapeshtskogo Politekhnicheskogo Instituta. Predstavleno zav. Kafedroy dotsentom I. Devichem [Devics].

BEKE, Denes; SZANATAY, Csaba; B. BARCZAI, Marietta

Data on the chemistry of heterocyclic, pseudobasic amino-carbinols. Pt. 14. Magy kem folyoir 65 no. 10:403-406 O '59.

1. Budapesti Muszaki Egyetem Szerves-Kemiai Tanszeke.
2. "Magyar Kemiai Folyoirat" szerkeszto bizottsagi tagja.

Alfred Szancer, Alfred

... high tension insulators be made from stoneware ... a basic ...

... when high- ... low- ... would be, however, obtained because stoneware requires lower firing temp. than porcelain. S. concludes that only small-size stoneware insulators should be made at first, because they are allowed a porosity of 0.5% and the dielectric loss factor is not required to be specified for them. R. S. Lubomirski

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[illegible], [illegible].

[illegible] [illegible] [illegible] [illegible] of [illegible] lutions.

P. 29[illegible]. ([illegible]) ([illegible], Poland) Vol. [illegible], No. 1[illegible], Dec. 1957

SO: Monthly Index of East European Accession (EEAI) LC Vol. 7, No. 5, 1958

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001654410011-8"

PTA SZANCER, S

Miscellaneous
12-

428 526.967

Szancer S., B. Sc. (Eng.). **The Analysis of Mean Square Errors of the Coordinates of Poligonal Points of Open Traverses in the Cracovian Conception.**

„Analiza średnich błędów współrzędnych punktów poligonowych w ciągach otwartych w ujęciu krakowianowym". Przegląd Geodezyjny. No 1—2, 1950, pp. 10—15, 5 figs.

A review of the problem of fixing the co-ordinates and mean square errors of co-ordinates of point of an open poligonal traverse not bound with the azimuthal point. This fixing-method is applied in mining measurings. This problem, well known in the literature of the subject, is expressed by the author almost entirely by Cracovian symbols which helps to make the transformations simple and clear.

SZANCER, S.

Geodetic problems in the development of television installations. p. 332.

PREZEGLAD GEODEZYNJY. (Stowarzyszenie Naukowe-Techniczne Geodetow Polskich) Warszawa, Poland. Vol. 15, no. 8/9, Aug./Sept. 1959.

Monthly List of East European Accession (EEAI) LC, Vol. 9, no. 2, Feb. 1960.

Uncl.

SZ[illegible], S.

"Plans of Industrial Plants Drawn with the Aid of Polygons Based on Wall Signals." p. 56 (Przeglad Geodezyjny. Vol. 10, no. 2 Feb, 1953, Warszawa.)

Vol. 3, no. 6

SO: Monthly List of East European Accessions./Library of Congress, June 1954, Uncl.

SZANCER, Stefan, dr inz.

Remarks on work in factory information centers for surveying purposes in the light of experiences collected in field practice in the Katowice District. Przegl geod 37 no.3:107-109 Mr '65.

SZANDA, W.

A review of the equipment produced in Poland for the mechanization of the processing of molding sands. p.135.

(PRZEGLAD ODLEWNICTWA. Vol. 7, No. 5, May 1957. Warszawa, Poland)

SO: Monthly List of East European Accessions (EEAL)L C. Vol. 6, no. 10, October 1957. Uncl.

SZANDANYI, A.

Technique and organisation of mass pneumoconiosis examinations. Acta Chir. Acad. Sci. Hung. 2 no.4:472-478 '61.

(PNEUMOCONIOSIS radiography)

TIMAR, Miklos, dr.; SZANDANYI, Sandor, dr.; KARPATI, Judit; Mandi, Andras, dr.

Pneumoconiosis of enamelers. Munkavedelem 10 no.4/6:27-33 '64.

1. National Institute of Labor Hygiene, Budapest.

KARACSONY, J.; DEBRECZENI, M.G.; SZANDER, E.

Data on the role of the liver in the pathomechanism of psoriasis. Acta med. acad. sci. Hung. 21 no.3:241-245 '65.

1. Dermatologische Klinik (Direktor: Prof. Dr. I. Szodoray) der Medizinischen Universitat, Debrecen. Submitted March 14, 1963.

MATRACKA, W.; SZANDOROWSKI, M.

Quick method of testing resistance of paint coatings to aqueous erosion. Polimery tworz wielk 7 no.10:378-380 O '62.

1. Instytut Farb i Lakierow, Gliwice.

SZANDTNER, F

Calculation of the Area of Moulding Floors. F. Szandtner.
(*Kohászati Lapok*, 1954, 9. Ontöde, June, 140–144; July, 157–165.) A method of calculating the area of moulding

JUBA, Adolf, dr.,; SZANDTNER, Gyorgy, dr.,; ZETENY, Gyozo, dr.

Surgical therapy of Sturge-Weber disease. Orv. hetil. 96 no.12: 329-333 20 Mar 55

1. A Szegedi Orvostudomanyi Egyetem 2. Sebeszeti Klinikajanak (igazgato: Lang Imre dr. egyet. tanar) es a Gyulai Megyei Korhaz Elme-ideg (foorvos: Juba Adolf dr.) es Radiologiai Osztalyanak (foorvos Zeteny Gyozo dr.) kozlemenye.
(ANGIOMATOSIS,
Sturge-Weber dis., surg.)

TAKATS, Laszlo; SZANDTNER, Gyorgy; PALKO, Gyorgy

Trophopathia pedis myelodysplastica. Magy. radiol. 9 no.2:94-99 July 57.

1. Kozlemeny a Szegedi Orvostudomanyi Egyetem I. es II. sz. Sebeszeti Klinikajarol.

(FOOT, abnorm.
trophopathia pedis myelodysplastica, case reports (Hun))

SZANDTNER, Gyorgy, Dr.

Unusual industrial head injury (Scalping). Magy. sebeszet 10 no.5-6: 339-342 Oct-Dec 57.

1. A szegedi Orvostudomanyi Egyetem II. sz.Sebeszeti Klinikajanak kozlemenye Igazgato: Lang Imre dr. egyetemi tanar az orvostudomanyok kandidatusa.

(HEAD, wds. & inj.
scalping due to indust. accid., replacement of detached scalp (Hun))

SZANDTNER, Gyorgy; DERGOVICH, Dezso, dr.

Spontaneous rupture of a goiter with danger of suffocation. Magy. sebesz. 15 no.6:407-410 D '62.

1. Varpalotai Varosi Tanacs Korhaz Sebeszeti Osztalya.
(GOITER) (ASPHYXIA)

DENES, Laszlo, dr.; SZANDANYI, Istvan, dr.

The role of the palm-chin and thumb-chin reflex in the diagnosis of cerebral concussion. Orv. hetil. 106 no.26:1208-1210 27 Je'65.

1. Bacs-Kiskun megyei Tanacs Korhaza, Ideggyogyaszati Osztaly (foorvos: Denes, Laszlo, dr.) es Baleseti Sebeszeti Osztaly (foorvos: Jobbagy, Andor, dr.).

KULESZA, Jan; BARANOWSKA, Irena; SZANIAWSKA, Danuta

Attempts to intensify the resin exudation by means of fertilizing and the application of resin diluting chemicals. Sylwan 106 no.3:55-62 '62.

JASIOROWSKI, H.; PIOTROWSKI, J.; SZANIAWSKI, A.; WIERNY, A.; ZURKOWSKI, M.

Variations of blood serum urea level in cows as affected by different feeding conditions. In English. Bul Ac Pol biol 8 no.9:479-482 '60. (EEAI 10:7)

1. Institute of Experimental Animal Breeding, Polish Academy of Sciences. Presented by L. Kaufman.
(BLOOD) (COWS)

SZANIAWSKI A.

POL.

624.97 : 534.01 : 531.2

9307

Nalepkiewicz J., Szaniawski A. Oscillations and Stability of Masts and Obelisks.

„Drgania i stateczność masztów oraz igieł". (Rozprawy Inżynierskie II). Warszawa, 1933, PWN, 169, 30 pp., 4 figs., 15 tabs.

Calculation of the influence function for a transverse load and partial derivatives of an elastically fixed cantilever the flexural rigidity of which varies irregularly. The load at a certain height is assumed to comprise 1) a vertical load Q; 2) a horizontal load by the force of inertia P, and 3) a concentrated moment of inertia N. These assumptions make it possible to find the partial deflection $y_{(i)}$ (x, s). All the partial deflections are summed up for the real load, comprising the concentrated loads Q_i, the radii of inertia being equal to e_i, plus the weight of the cantilever; q (s) and ρ (s) denote the weight of unit length and the radius respectively. Certain transformations make it possible to obtain the desired integral equation of the resulting deflection. Approximate computation of the influence of shearing forces and moments of inertia — the values of rigidity, the radii of inertia and the weights being calculated from the drawing of the obelisk erected in Wrocław.

In the case considered and in many other practical applications a simplified integral equation can be used, leaving out of account the influence of shearing forces and of rotation of cross section. The process of integration is replaced in that case by approximate numerical formulae, approximate equations being established for the period of oscillations and for the critical load. Hence the required quantities are found by the method of successive approximations.

SZANIAWSKI, A.

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(2)

Teoria Napedu Odrzutowowodnego Dwuczynnikowego (La Théorie de la Propulsion Hydraulique à Réaction à Deux Fluides). M. Luc and A. Szaniawski *Arch. Mech. Stosowanej* (Warsaw), No. 1, 1953, p. 490. In Polish; abridged in French. Theoretical study of hydraulic propulsion of two compressible flows with heat; calculation with diagrams, to solve the thermal and flow problems.

10/11/54 IM

Szaniawski, Andrzej. Propagation of small perturbations in a gas-liquid emulsion. Rozprawy Inż. 5 (1957), 269–329. (Polish. Russian and English summaries)

Under simplifying assumptions such as a quasi-homogeneous state of gas-liquid mixture, uniform distribution, etc., the author derives and linearizes equations of motion. Their number is less by two than the number of unknown functions. Three types of additional assumptions are considered: barotropic changes, disregarding the influence of inertia of liquid surrounding a gas bubble and harmonic vibration of a gas bubble in an infinite incompressible fluid. In each case the author calculates wave velocity and damping coefficient. A resonance phenomenon can be also observed. *M. Z. Krzywoblocki* (Urbana, Ill.).

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B020/B067

10.6121

AUTHOR: Szaniawski, Andrzej

TITLE: Certain Relations Between the Partial Derivatives on Both Sides of a Shock Wave

PERIODICAL: Aplikace Matematiky, 1960, Vol. 5, No. 5, pp. 341-351

TEXT: The author proceeds from the assumption of a shock wave passing through a gas which is in onedimensional, unsteady motion (Fig. 1). If, $x = \varphi(t)$ holds for the propagation of the shock wave, functions $u(x,t)$, $p(x,t)$, $\varrho(x,t)$ (u - velocity, p - pressure, and ϱ density of the gas, which are functions of position x and of time t) exhibit a jump on the curve $x = \varphi(t)$. In the present paper the relations between the limits of these functions and their partial derivatives on both sides of the curve $x = \varphi(t)$ are given. The moment t_0 is considered at which the position of the shock wave is determined by the coordinate x_0. By means of the Hugoniot - Rankine condition (Equation 2.3) and the equation of motion

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(Equation 2.4), and by expanding the functions concerned into an exponential series a relation can be found for the relation between the values of partial derivatives on both sides of the shock wave (Equation 3.6). An ideal gas is considered in which the enthalpy h is a linear function of temperature, where the constant C in the enthalpy equation, however, depends on the chemical energy of the molecules (Fig. 2). The propagation of the shock wave (or detonation wave) is regarded as a special case with supersonic velocity in a gas at rest. In this case the partial derivations beside the shock wave can be determined from the given relations and the linear approximations of the desired functions can then be directly determined beside the shock wave, so also the second approximations for the particle trajectories and characteristics, (Fig. 3). Thus, for a given moment the linear approximation of the motion on the one side of the wave can be found if the linear approximation on the other side of the wave, the velocity, and the acceleration of wave propagation are known. The propagation of a shock wave in nitrogen under given conditions is calculated as an example. Due to the changed propagation velocity of the shock wave, the flow behind it becomes inhomogeneous, with the density

Certain Relations Between the Partial Derivatives on Both Sides of a Shock Wave

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gradient increasing to a considerable degree. This result qualitatively agrees with the theory by L. I. Sedov (Ref. 2). Ya. B. Zel'dovich, Yu. P. Rayzer (Ref. 3) and Yu. P. Lun'kin (Ref. 4) have already calculated the influence exerted by dissociation on the values of the parameters behind the shock wave. The results of the author indicate that dissociation may increase the damping effect of the wave on the inhomogeneity of the flow behind the wave. There are 3 figures and 4 Soviet references.

SUBMITTED: November 6, 1959

26618
P/033/60/012/004/004/007
D242/D301

24.4300

AUTHOR: Szaniawski, Andrzej (Warsaw)

TITLE: Certain problems of the dynamics of a perfect gas containing molecules which can decompose

PERIODICAL: Archiwum mechaniki stosowanej, v. 12, no. 4, 1960, 483 - 495

TEXT: The thermodynamic properties of perfect gas mixtures in which one or more molecular species can decompose are studied by making the approximation that a given decomposition reaction can occur only on a definite curve p = (T) in the p, T plane, rather than over a wide region of the plane. With this approximation, the p, T plane for a given system can be divided into mutually exclusive regions: for example, if ionization is neglected, the p, T plane for air, regarded as a mixture of oxygen and nitrogen only, can be divided into region I containing O_2 and N_2, region II containing O and N_2 and region III containing O and N. General ex-

Card 1/3

Certain problems of the ...

pressions are given for specific energy, enthalpy and entropy in different regions of the p, T plane and for the relations between the constants occurring. Expressions for the speed of sound and the equations of the adiabat and Hugoniot are obtained; these have discontinuities as the decomposition curves are traversed. A detailed discussion is given numerically for air; the resulting Hugoniot curves for different initial densities are given in Fig. 5. The calculations are made very much easier by this approximation, and the trends of numerical values agree reasonably well with those of other authors; errors are greatest in the regions furthest from the decomposition curve, where the real gas approximates closest to this model. There are 5 figures and 8 references: 4 Soviet-bloc and 4 non-Soviet-bloc. The references to the English-language publications read as follows: Thermodynamics and Physics of Matter, Editor F.D. Rossini, Princeton 1955; E.A. Guggenheim, Thermodynamics, Amsterdam 1957; R.A. Alpher, H.D. Creyber, Calculation of shock Hugoniots and Related Quantities for Nitrogen and Oxygen, Phys. of Fluids, 2, 1, 1958; M. Lighthill, J. of the Fluid Mechanics, 1, 2, 1957.

Card 2/3

Certain problems of the ...

ASSOCIATION: Division of Fluid Mechanics, IBTP Polish Academy of Sciences

SUBMITTED: March 30, 1960

Fig. 5.

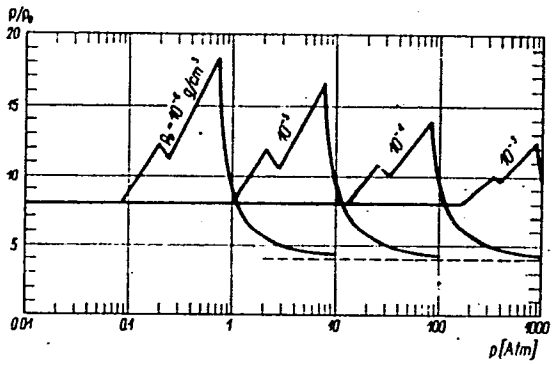

Fig. 5

Card 3/3

SZANIAWSKI, Andrzej

Sound velocity and Hugoniot's adiabatic curve in heavy inert gases partly ionized. Archiw mech 14 no.3/4:565-581 '62.

1. Division des Mechanique des Fluides, Institut des Problemes Fondamentals Techniques, Academie Polonaise des Sciences, Varsovie.

SZANIAWSKI, Andrzej

Equations of transonic flow of a heat conducting fluid. Archiw mech 14 no.6:905-919 '62.

1. Department of Mechanics of Fluids, Institute of Basic Technical Problems, Polish Academy of Sciences, Warsaw.

P/0033/63/015/006/0903/0914

ACCESSION NR: AP4019650

AUTHOR: Szaniawski, Andrzej (Warsaw)

TITLE: Transonic approximation to the equations of flow

SOURCE: Archiwum mechaniki stosowanej, v. 15, no. 6, 1963, 903-914

TOPIC TAGS: gas dynamics, transonic flow, velocity of sound, flow parameter, homogeneous flow, equation of flow, fluid flow, Taylor series, ideal gas, perturbation

ABSTRACT: If stationary transonic flows are considered a result of superposition of a field of small perturbations on a homogeneous flow with the velocity of sound, local values of flow parameters should differ only very slightly from the reference values of the unperturbed homogeneous flow. Thus the solution of transonic equations of flow can be expanded into power series of the small parameter tau describing the amplitude of perturbation. Equations representing, in first approximation, the perturbation of any flow parameter have been derived previously. The purpose of the present work is to present a method of deriving differential equations for further approximations, that is, describing the

Card 1/2

ACCESSION NR: AP4019650

coefficients of the power series. The method is explained on the example of an ideal gas with constant dissipation coefficients, for which equations are derived in second transonic approximation (two coefficients of the lowest powers of tau). Orig. art. has 79 formulas.

ASSOCIATION: Department of Fluids, IBTP, Polish Academy of Sciences

SUBMITTED: 06Jun63 DATE ACQ: 27Mar64 ENCL: 00

SUB CODE: AI NO REF SOV: 000 OTHER: 004

Card 2/2

SZANIAWSKI, A.

Transonic flow in a jet with an intersection point of two lines of sound. Archiw mech 16 no.3:643-659 '64.

1. Department of Fluid Mechanics of the Institute of Basic Technical Problems of the Polish Academy of Sciences, Warsaw.

L 26360-65 EWT(1)/EWP(m)/EWA(d)/FCS(k)/EWA(l) Pd-1
ACCESSION NR: AP5002533 P/0033/64/016/005/1117/1129

AUTHORS: Szaniawski, A. (Warsaw) 19 16

TITLE: Equations of plane-symmetric transonic viscous and heat-conducting flow

SOURCE: Archiwum mechaniki stosowanej, v. 16, no. 5, 1964, 1117-1129

TOPIC TAGS: transonic flow, viscous flow, heat conducting flow, plane flow, symmetric nozzle

ABSTRACT: This is a continuation of an earlier paper by the author (Archiwum mechaniki stosovanej, no. 3, v. 16, 1964), in which it was concluded that to find approximate values of flow parameters in some cases of two-dimensional transonic flow (through a symmetrical nozzle, for example) it suffices to find a few functions that depend on a single variable. This conclusion is made use of in the

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present article to obtain a new method of determining the flow through a symmetrical nozzle with a specified contour. This paper contains the first part of this analysis, and a set of equations is derived to describe plane transonic flow in which one of the stream lines is straight and constitutes the symmetry axis. It is assumed for such a flow that the flow parameters can be expressed in a form of expansions in powers of a small parameter τ and the coordinate y (x is the symmetry axis), with coefficients that are functions of x. A new system of an infinite set of equations, which interrelates the coefficients of these expansions, is derived from the general flow equation, and will be used in the next paper to develop a method for determining successive approximations of flow in a transonic plane nozzle. Orig. art. has: 49 formulas.

ASSOCIATION: Department of Fluids IBTP, Polish Academy of Sciences

SUBMITTED: 10Jan64 ENCL: 00 SUB CODE: ME

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001654410011-8"

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Card 3/3

L 20249-66 EWT(1)/EWP(m)/EWA(d)/ETC(m)-6/EWA(1) WW

ACC NR: AP5012333 SOURCE CODE: PO/0033/65/017/001/0079/0085

AUTHOR: Szaniawski, A. (Warsaw)

66
B

ORG: Department of Fluid Mechanics, IPPP Polish Academy of Sciences

TITLE: Transonic approximations of flow through a nozzle

SOURCE: Archiwum mechaniki stosowanej, v. 17, no. 1, 1965, 79-85

TOPIC TAGS: transonic flow, perfect gas, nozzle flow, Laval nozzle, potential energy, small parameter, flow velocity, gas flow, fluid flow

ABSTRACT: The present work represents a method, together with an example of application, for the determination of flow through a nozzle, of which the contour is prescribed by means of an equation. The nature of this method consists in assuming the velocity potential in the form of a power expansion such that the coefficients of this series can be determined by means of a set of recurrence equations. Orig. art. has: 2 figures and 4 formulas. [Based on author's abstract.]

SUB CODE: 20/ SUBM DATE: 17Apr64/ OTH REF: 005/

Card 1/1

L 00353-66 EWT(d)/EWT(l)/EWP(m)/EWP(w)/EWA(d)/EWP(v)/T-2/EWP(k)/FCS(k)/EWA(h)/ETC(m)/EWA(l) WW/EM

ACCESSION NR: AP5021705 PO/0033/65/017/003/0453/0466

AUTHORS: Kopystynski, J. (Warsaw); Szaniawski, A. (Warsaw)

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B

TITLE: Flow structure in a nozzle throat

SOURCE: Archiwum mechaniki stosowanej, v. 17, no. 3, 1965, 453-466

TOPIC TAGS: transonic flow, sonic point, nozzle flow, real gas flow, ordinary differential equation, velocity profile

ABSTRACT: A detailed mathematical analysis is made of the transonic flow of a real gas in the throat section of a nozzle. The analysis is based on a paper by A. B. Vasileva (Zhurnal vychislitnel'noy matematiki i matematicheskoy fiziki 4, 3 (1963), 611-642). The discussion of the following differential equation

$$\delta U'' = UU' - ff',$$

$$\delta = \frac{1}{(\gamma+1)\tau}\left[D_k + \frac{1}{\varrho^* a^*}\left(\frac{4}{3}\eta^* + \zeta^*\right)\right],$$

also includes first order dissipation effects. The differential equation is written in the form

$$\delta \frac{dW}{dx} = F(W, U, x), \quad \frac{dU}{dx} = W,$$

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and the following two problems are considered: (1) for $\delta > 0$, a solution is sought for U(x) and W(x) satisfying boundary conditions

$$U(x_0) = U_0, \quad W(x_0) = W_0;$$

(2) for $\delta = 0$ a solution is sought for $\overline{U}$ and $\overline{W}$ subject to boundary condition $U = U_0$. Conditions are established which make solution (1) tend to solution (2), and an approximate asymptotic solution is proposed for problem (1), i.e.,

$$\delta \frac{d^2U}{dx^2} = U\frac{dU}{dx} - f\frac{df}{dx}, \quad \delta \to 0 .$$

This is done by expanding f in Maclaurin series and defining U by a stream function $\psi(\xi)$

$$U = \sqrt{2\delta f_0'}\,[\psi(\xi) + R(\delta, \xi)], \quad \text{where} \quad \lim_{\delta \to 0} R(\delta, \xi) = 0 .$$

This leads to the solution

$$\psi(\xi, A, \psi_0) = -\xi + \frac{(1+A)\xi F\left(\frac{1-A}{4}, \frac{3}{2}, \xi^2\right) + \psi_0 F\left(-\frac{1+A}{4}, \frac{1}{2}, \xi^2\right)}{F\left(\frac{1-A}{4}, \frac{1}{2}, \xi^2\right) - \psi_0 \xi F\left(\frac{3-A}{4}, \frac{3}{2}, \xi^2\right)} .$$

It is shown that if $\psi(\xi, \psi_0)$ is a solution, then $-\psi(-\xi, -\psi_0)$ is also a solution. For large ξ, the asymptotic solution yields

L 00353-66

ACCESSION NR: AP5021705

$$\psi(\xi, A, \psi_0) = \begin{cases} \xi + \dfrac{1-A}{2\xi} - \dfrac{(1-A)(3-A)}{8\xi^3} + O(\xi^{-5}), \\ -\xi + \dfrac{1+A}{2\xi} + \dfrac{(1+A)(3+A)}{8\xi^3} + O(\xi^{-5}). \end{cases} \qquad \xi \to \pm\infty .$$

The solution is then discussed in the framework of continuous and discontinuous domains. It is shown that the external solutions $\bar{U}(x)$ can be fitted with the internal solutions $\tilde{U}(\xi)$. This shows that the negative acceleration inside the thin dissipative layer at the throat can attain large values despite the fact that the velocity differences on both sides approach zero with vanishing dissipation. Orig. art. has: 51 equations, 5 figures, and 1 table.

ASSOCIATION: Department of Fluid Mechanics, IBTP Polish Academy of Sciences

SUBMITTED: 24Sep64 ENCL: 00 SUB CODE: ME

NO REF SOV: 003 OTHER: 004

Card 3/3

L 45183-66 EWP(m)/T DS/WW/DJ

ACC NR: AP6027452 SOURCE CODE: PO/0033/66/018/002/0127/0144

68

B

AUTHOR: Szaniawski, A.

ORG: Department of Mechanics of Fluids, IBTP, Polish Academy of Sciences

TITLE: Structure of a weak shock-wave in a viscous heat conducting fluid [12]

SOURCE: Archiwum mechaniki stosowanej, v. 18, no. 2, 1966, 127-144

TOPIC TAGS: weak shock wave, shock wave analysis, shock wave structure, viscous fluid, molecular structure, chemical kinetics, approximate solution

ABSTRACT: The structure of a weak shock-wave in a viscous heat-conducting fluid has been investigated. The approximate solutions of equations are intended to describe a shock-wave structure of very small amplitude. An example is given which shows the difference between an approximate and accurate solution. The fluids under consideration often constitute mixtures in which a considerable role may be played by diffusion. The complex molecular structure of the fluid may be the cause of a number of relaxation phenomena connected with pertrubations of internal degrees of freedom. Problems of chemical kinetics of molecules varying

1

Card 1/2

SZANIAWSKI, Hubert

POLAND

SZANIAWSKI, Hubert

Department of Deposits of Petroleum, Salts, and Chemical Raw Materials, Geological Institute (Zaklad Zloz Ropy Soli i Surowcow Chemicznych)

Warsaw, Kwartalnik geologiczny, No 3, 1963, pp 510-11.

"Attempts for a New Division of the Cechstine (Cechsztyn) of the Galezicki Syncline".

POLAND

SZANIAWSKI, Hubert

Laboratory for Paleozoic and Mezozoic Stratigraphy, Department of Geological Sciences, Polish Academy of Sciences (Pracownia Stratygrafii Paleozoiku i Mezozoiku Zakladu Nauk Geologicznych PAN)

Warsaw, Acta geologica polonica, No 2, Apr-Jun 1966, pages 229-247

"Facial development and paleogeography of the Zechstein within the elevation of Leba."

SZANIAWSKI, Ignacy, prof.

Polytechnic education and the structure of the public school system. Przegl techn no.47:3,4 23 N '60.

SZANIAWSKI, Janusz

Notes on the export from the Bent Furniture Plant in Radomsko.
Przem drzew 12 no.11:14-17 '61.

(Poland—Furniture) (Poland—Commerce)

16.0800

S/044/62/000/002/085/092
C111/C333

AUTHOR: Szaniawski, Klemens

TITLE: Some remarks concerning the criterion of rational decision making

PERIODICAL: Referativnyy zhurnal, Matematika, no. 2, 1962, 71-72, abstract 2V402. ("Studia log.", 1960, 9, 221-239)

TEXT: The author considers an $m \times n$ - game with the payoff matrix $\| u_{ij} \|$. The following optimality criterion is proposed: The strategy i_o is optimal, if

$$p(i_o; \beta) = \max_i p(i, \beta),$$

$$p(i; \beta) = \beta \min_j u_{ij} + (1 - \beta) \frac{1}{n} \sum_j u_{ij}$$

where β is fixed, $0 < \beta < 1$, and is a parameter of the criterion. The proposed criterion satisfies a certain postulational system determining a "rational" choice of the strategy. This system is a

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Some remarks concerning the . . . C111/C333

modification of the postulational system gathered by Lewis and Raifa and arises from this by changing two postulates. The criteria of a rational choice of Laplace, Savage Hurwitz and Maximin do not satisfy the new postulational system.

[Abstracter's note: Complete translation.]

Card 2/2

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S/044/62/000/012/028/049
A060/A000

AUTHOR: Szaniawski, Klemens

TITLE: A method of deciding between N statistical hypotheses

PERIODICAL: Referativnyy zhurnal, Matematika, no. 12, 1962, 12 - 13, abstract 12V54 (Stud. log., 1961, v. 12, 135 - 143, English; summaries in Polish, Russian)

TEXT: The author considers the problem of the validity of one of N statistical hypotheses h_r relative to the probability distribution of an observable stochastic variable. It is assumed that the observations $x_1, x_2, \ldots$ occur in sequence and the number of steps till the adoption of the final decision is not fixed in advance. As a generalization of A. Wald's well-known method for N = 2, the following method for deciding between N hypotheses is proposed: for every n the sample space $\{x_1, \ldots, x_n\}$ is distributed into N + 1 regions $R_n^1, \ldots, R_n^{N+1}$, where for $r \leq N$

$$R_n^r = \{x_1, \ldots, x_n : f_r(x_1)\ldots f_r(x_n) \geq A_{rs} f_s(x_1)\ldots f_s(x_n),\ s \neq r\},$$

Card 1/2

A method of deciding between...

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A060/A000

$|A_{rs}| < 1$, $f_i(x)$ is the probability density of the stochastic variable under the hypothesis h_i. If the point $(x_1, \ldots, x_n) \in R_n^{N+1}$, then the (n+1)-th observation is performed. But, if $(x_1, \ldots, x_n) \in R_n^r$, $r \leqslant N$ then the hypothesis h_r is adopted. The question of the relation between the errors arising through the adoption of final decisions and the constants A_{rs} is briefly discussed. For the case of a binomial and normal distributions it is demonstrated that for the recommended testing procedure the number of samples required is finite with probability one. Reviewer's note: The problems of optimality, which arise naturally in connection with the proposed method of testing, are not considered.

A. N. Shiryayev

[Abstracter's note: Complete translation]

Card 2/2

SZANIAWSKI, Z.

PHASE I BOOK EXPLOITATION POL/5033

Czapliński, Stefan, Master in Engineering, Jan Dyduszyński, Professor, Master in Engineering, Jan Sobolewski, Docent, Master in Engineering, Zbigniew Szaniawski, Master in Engineering, and Zdzisław Ziołkowski, Professor, Master in Engineering.

Najnowsze rozwiązania konstrukcyjne w budowie aparatury chemicznej 1959/1960; praca zbiorowa (Latest Design Developments in the Construction of Chemical Apparatus 1959/60; a Collective Work) Warsaw, Państwowe Wydawn. Techniczne, 1960. 127 p. Errata slip inserted. 1,690 copies printed. (Series: Nowa technika, zesz. 32)

Coordinator: Jan Dyduszyński, Professor, Master in Engineering; Scientific Ed. PWT: Irena Gajewska, Master in Science; Tech. Ed.: I. Milewska.

PURPOSE: This book is intended for chemists, engineers, and designers of chemical equipment for research and industry. It may also be used by students in higher technical schools.

Card 1/5

30971
P/045/61/020/012/002/004
B137/B104

24.7600(1137,1164,1482)

AUTHOR: Szaniecki, Jan (Śledzik)

TITLE: Spin-wave theory for cubic ferromagnetics. I. Dyson's model

PERIODICAL: Acta Physica Polonica, v. 20, no. 12, 1961, 983 - 993

TEXT: Dyson's spin-wave theory of a cubic crystalline isotropic ferromagnetic is modified for obtaining an easier method of calculating various thermodynamical quantities. First, Dyson's theory is outlined in general. The slight modifications introduced concern the generalization of the theory to any type of neighborhood of lattice points and the derivation of correspondence between the oscillator operators and the spin operators direct from matrix elements for the indefinite metric operator. First, the Hamiltonian of a cubic ferromagnetic is formulated on the assumption that the ferromagnetic consists of a single species of atoms with any number of magnetic electrons and that the atoms are located at regularly distributed cubic lattice points. If interaction is considered to take place only between nearest neigbors, the Hamiltonian has the form

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Spin-wave theory for cubic...

$$\hat{H} = \tfrac{1}{2} S(S+1) \sum_{\lambda} \mathcal{J}_{\lambda} - LN^{1/2} \hat{S}_0^z - \tfrac{1}{2} \sum_{\lambda} \mathcal{J}_{\lambda} \hat{\mathbf{S}}_{\lambda} \cdot \hat{\mathbf{S}}_{-\lambda}, \tag{2.16}$$

For spin-wave states, the Hamiltonian reads

$$\hat{\mathcal{H}} = E_0 + \sum_{\lambda} (L + \varepsilon_{\lambda}) \alpha_{\lambda}^{*} \alpha_{\lambda} - \tfrac{1}{4} \mathcal{J} N^{-1} \sum_{\lambda \varrho \sigma} \Gamma_{\varrho,\sigma}^{\lambda} \alpha_{\sigma+\lambda}^{*} \alpha_{\varrho-\lambda}^{*} \alpha_{\varrho} \alpha_{\sigma}, \tag{3.28}$$

$$E_0 = -LSN + \tfrac{1}{2} S(S+1) \sum_{\lambda} \mathcal{J}_{\lambda} - \tfrac{1}{2} \mathcal{J}_0 S^2 N, \tag{3.29}$$

$$\Gamma_{\varrho,\sigma}^{\lambda} = \mathcal{J}^{-1} (\mathcal{J}_{\lambda} - \mathcal{J}_{\lambda-\varrho} - \mathcal{J}_{\lambda+\sigma} + \mathcal{J}_{\lambda+\sigma-\varrho}), \tag{3.30}$$

$$\varepsilon_{\lambda} = 6(\mathcal{J}_0 - \mathcal{J}_{\lambda}). \tag{3.31}$$

The non-diagonal part of the Hamiltonian (3.28) describes the dynamical interaction between the spin waves. $\mathcal{J}\Gamma_{\varrho,\sigma}^{\lambda}$ are the coupling functions of spin-wave interaction. The statistical function is defined as

$$Z = \mathrm{Sp} \exp(-\beta \hat{\mathcal{H}}) \equiv \sum_{u} E_u(u| \exp(-\beta \hat{\mathcal{H}})|u), \tag{4.1}$$

wherein

$$\beta = \frac{1}{kT}, \quad E_u = \prod_j E_{u_j}, \quad E_{u_j} = \begin{cases} 1, & 0 \leqslant u_j \leqslant 2S, \\ 0, & u_j > 2S. \end{cases} \tag{4.2}$$

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Spin-wave theory for cubic...

If Matsubara's representation and Wick's theorem are used,

$$\hat{T}[\alpha_\lambda^*(\tau_1)\alpha_\sigma(\tau_2)] = \hat{N}[\alpha_\lambda^*(\tau_1)\alpha_\sigma(\tau_2)] + \underline{\alpha_\lambda^*(\tau_1)\alpha_\sigma(\tau_2)}. \quad (4.14)$$

is obtained, wherein the last term is called "τ-contraction". The latter becomes

$$\underline{\alpha_\lambda^*(\tau_1)\alpha_\sigma(\tau_2)} = \begin{cases} 0, & \tau_1 > \tau_2, \\ \delta_{\lambda,\sigma} e^{(L+\varepsilon_\lambda)(\tau_1-\tau_2)}, & \tau_1 < \tau_2, \end{cases} \quad (4.18) \text{ and}$$

$$\alpha_\lambda(\tau_1)\alpha_\sigma^*(\tau_2) = \delta_{\lambda,\sigma}\theta(\tau_1 - \tau_2)e^{-(L+\varepsilon_\lambda)(\tau_1-\tau_2)} \quad (4.22).$$

The Feynman graphs of the matrix elements are given in a graphical interpretation. A term with one τ-contraction, for instance, yields the following graph:

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30972
P/045/61/020/012/003/004
B137/B104

24,7600 (1137, 1164, 1482)

AUTHOR: Szaniecki, Jan (Śledzik)

TITLE: Spin-wave theory for cubic ferromagnetics. II. New approach

PERIODICAL: Acta Physica Polonica, v. 20, no. 12, 1961, 995 - 1003

TEXT: A new spin-wave approach to the theory of a cubic ferromagnetic is developed. Allowance is made for the smallness of the spin-wave kinematic interaction at low temperatures, by which the statistical function can be computed as the trace over the complete orthonormal set of ideal spin-wave vectors. The Hamiltonian of the ferromagnetic is taken from Dyson's theory, but, owing to the new way of obtaining the statistical function and applying Matsubara's technique, the logarithm of the grand partition function is now an expansion containing Bloch's term and the sum of connected ladder diagrams. Since the kinematic interaction is quite small at appropriately low temperatures, the statistical function can be defined as

$$Z = \mathrm{Sp}\, e^{-\beta\hat{\mathcal{H}}} \equiv \sum_{q=0}^{2SN} \sum_{a} \delta\left(\sum_{\lambda} a_\lambda - q\right) (a|e^{-\beta\hat{\mathcal{H}}}|a), \qquad (1.1),$$

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where

$$\hat{\mathcal{H}} = E_0 + \sum_{\lambda} (L+\varepsilon_\lambda)\alpha^*_\lambda\alpha_\lambda - \tfrac{1}{4}\mathcal{J}N^{-1}\sum_{\lambda q\sigma}\Gamma^{\lambda}_{q,\sigma}\alpha^*_{\sigma+\lambda}\alpha^*_{q-\lambda}\alpha_q\alpha_\sigma. \tag{1.2}$$

In Matsubara's representation, Eq. (1.1) assumes the form

$$Z = e^{-\beta E_0}\sum_{q=0}^{2SN}\sum_{a}\delta\Big(\sum_{\lambda} a_\lambda - q\Big)(a|e^{-\beta\hat{\mathcal{H}}}\hat{S}(\beta)|a). \tag{1.7}$$

The τ-contraction is given by

$$\hat{T}[\alpha_\lambda(\tau_1)\alpha^*_\sigma(\tau_2)] = \hat{N}[\alpha_\lambda(\tau_1)\alpha^*_\sigma(\tau_2)] + \underline{\alpha_\lambda(\tau_1)\alpha^*_\sigma(\tau_2)}, \tag{2.6}$$

$$\underline{\alpha_\lambda(\tau_1)\alpha^*_\sigma(\tau_2)} = \begin{cases}[\alpha^{(-)}_\lambda(\tau_1), \alpha^{*(+)}_\sigma(\tau_2)], & \tau_1>\tau_2,\\ [\alpha^{(-)}_\lambda(\tau_1), \alpha^{*(+)}_\sigma(\tau_2)] - [\alpha_\lambda(\tau_1), \alpha^*_\sigma(\tau_2)], & \tau_1<\tau_2\end{cases} \tag{2.7}$$

or

$$\underline{\alpha_\lambda(\tau_1)\alpha^*_\sigma(\tau_2)} = \begin{cases}\delta_{\lambda,\sigma}q_\lambda(1-\omega_\lambda)\,e^{-(L+\varepsilon_\lambda)(\tau_1-\tau_2)}, & \tau_1>\tau_2\\ \delta_{\lambda,\sigma}[q_\lambda(1-\omega_\lambda)-1]\,e^{-(L+\varepsilon_\lambda)(\tau_1-\tau_2)}, & \tau_1<\tau_2.\end{cases} \tag{2.8}$$

For coinciding variables τ one obtains

$$\langle \hat{N}[\alpha^*_{\lambda_1}(\tau_1)\alpha^*_{\lambda_2}(\tau_2)\ldots\alpha^*_{\lambda_n}(\tau_n)\alpha_{\sigma_1}(\tau_{n+1})\alpha_{\sigma_2}(\tau_{n+2})\ldots\alpha_{\sigma_n}(\tau_{2n})]\rangle = 0, \quad n = 1, 2, 3, \ldots, +\infty, \tag{2.18}$$

Spin-wave theory for cubic...

Graphical interpretation yields

$$\Gamma_2 = \frac{1}{2!}\left(\frac{1}{4}\mathcal{J}N^{-1}\right)^2 \sum_{\substack{\lambda\varrho\sigma \\ \varkappa\mu\nu}} \Gamma^{\varkappa}_{\varrho,\sigma}\Gamma^{\varkappa}_{\mu,\nu}\int_0^\beta d\tau_1 \int_0^\beta d\tau_2\, e^{(\epsilon_\mu+\epsilon_\nu-\epsilon_\varrho-\epsilon_\sigma)(\tau_1-\tau_2}\times$$

$$\times[\theta(\tau_1-\tau_2)\,n_\mu n_\nu(n_\varrho+1)(n_\sigma+1)+\theta(\tau_2-\tau_1)(n_\mu+1)(n_\nu+1)\,n_\varrho n_\sigma]\cdot[\delta(\vec{\sigma}+\vec{\lambda}-\vec{\nu})\delta(\vec{\varrho}-\vec{\lambda}-\vec{\mu})\times$$

$$\times\,\delta(\vec{\nu}+\vec{\varkappa}-\vec{\sigma})\,\delta(\vec{\mu}-\vec{\varkappa}-\vec{\varrho})+\delta(\vec{\sigma}+\vec{\lambda}-\vec{\mu})\,\delta(\vec{\varrho}-\vec{\lambda}-\vec{\nu})\,\delta(\vec{\nu}+\vec{\varkappa}-\vec{\sigma})\,\delta(\vec{\mu}-\vec{\varkappa}-\vec{\varrho})+\delta(\vec{\sigma}+\lambda-\vec{\nu})\times$$

$$\times\,\delta(\vec{\varrho}-\vec{\lambda}-\vec{\mu})\,\delta(\vec{\nu}+\vec{\varkappa}-\vec{\varrho})\,\delta(\vec{\mu}-\vec{\varkappa}-\vec{\sigma})+\delta(\vec{\sigma}+\vec{\lambda}-\vec{\mu})\,\delta(\vec{\varrho}-\vec{\lambda}-\vec{\nu})\,\delta(\vec{\nu}+\vec{\varkappa}-\vec{\varrho})\,\delta(\vec{\mu}-\vec{\varkappa}-\vec{\sigma})].$$

One part of the ladder diagram of this equation has the following graphical shape:

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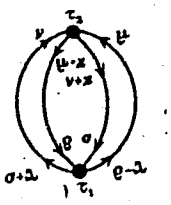
Spin-wave theory for cubic...



$$a^*_{\sigma+\lambda}(\tau_1)\, a^*_{\varrho-\lambda}(\tau_1)\, a_{\varrho}(\tau_1)\, a_{\sigma}(\tau_1)\, a^*_{\nu+\varkappa}(\tau_2)\, a^*_{\mu-\varkappa}(\tau_2)\, a_{\mu}(\tau_2)\, a_{\nu}(\tau_2)$$

Fig. 2.

The grand partition function reads:

$$Z = Z^{(0)} \exp\left(\sum_{i=1}^{+\infty} \Gamma_i\right). \qquad (3.7).$$

The function Z finally assumes the form

$$Z = e^{-\beta E_0} \prod_{\lambda} [1 - e^{-\beta(L+\varepsilon_\lambda)}]^{-1} \exp\left(\sum_{i=1}^{+\infty} \Gamma_i\right). \qquad (3.10)\ .$$

Card 4/5

32366
P/045/62/023/001/001/002
B137/B138

24,2200 (1144, 1147, 1160)

AUTHOR: Szaniecki, Jan (Śledzik)

TITLE: Spin wave theory for cubic ferromagnetics. III. Magnetization

PERIODICAL: Acta Physica Polonica, v. 21, no. 1, 1962, 3-11

TEXT: Referring to two previous papers, the author calculates the spontaneous magnetization of a ferromagnetic for three cubic lattice types at low temperatures. The study is based on Matsubara's calculation of the statistical function. First, the corrected Bloch part of the magnetization is computed. The first dynamical correction to the magnetization, obtained from the first-order connected graph, behaves as θ^4. It consists of contributions from the connected graphs of all orders. Since summation over all distinct parts of the connected diagrams is very complicated, only the contribution of the first connected diagram, i.e. the part independent of the atomic spin quantum number, is considered. The higher-order graphs must yield the coefficient at θ^4 in the form of a power series in S^{-1}. The magnetization of a ferromagnetic is found to be

Card 1/3

Spin wave theory for cubic ...

$$M(T) = \frac{m}{S}\left[S - \zeta(3/2)\,\theta^{1/2} - \frac{3}{4}\pi\nu\zeta(5/2)\,\theta^{1/2} - \omega\pi^2\nu^3\zeta(7/2)\,\theta^{1/2} - \right.$$
$$\left. - \frac{3}{2}\pi\nu S^{-1}\zeta(3/2)\,\zeta(5/2)\,\theta^2 + O(\theta^{1/2})\right], \qquad (2.15)$$

with $\nu = 1,\ 2^{1/3},\ 3\cdot 2^{-4/3}$, $\omega = 33/32,\ 15/16,\ 281/288$ for simple, face-centered and body-centered cubic lattices, respectively. This equation is identical with the one obtained by Dyson, save for the coefficient at θ^4, which has the form

$$C_3 = -\frac{3}{2}\pi\nu S^{-1}\left[1 + \frac{4}{3}(GS-1)^{-1} + \alpha(3S)^{-1}\right]\zeta(3/2)\,\zeta(5/2), \qquad (2.16)$$

$$G = 10,\ 24,\ 16,$$
$$\alpha = 0.52,\ 0.34,\ 0.39,$$

for simple, face-centered and body-centered cubic lattices, respectively. The identity of this result and that obtained by Dyson proves the possibility of operating with Matsubara's formalism of the grand partition function, which is in many ways simpler and easier to handle than that

Spin wave theory for cubic ...

given by Dyson. Nevertheless, Dyson's statement that the kinematic interaction is small at low temperatures remains the basis of this modification. The author thanks Professor S. Szczeniowski for interest and K. Flatau, B. Sc., for reading the English version. There are 9 references: 1 Soviet and 8 non-Soviet-bloc. The four most important references to English-language publications read as follows: Dyson, F., Phys. Rev., 102, 1217 (1956, a). Ibid. 102, 1230 (1956, b); Keffer, F., and Loudon, R., J. appl. Phys., 32, Suppl. no. 3, 2 (1961); Matsubara, T., Progr. theor. Phys., 14, 351 (1955); Oguchi, T., Phys. Rev., 117 (1960).

ASSOCIATION: Institute of Physics of the Polish Academy of Sciences, Department of Ferromagnetics in Poznań

SUBMITTED: May 31, 1961

Card 3/3

P/045/62/021/003/001/005,
B137/B102

21,7900

AUTHOR: Szaniecki, Jan (Śledzik)

TITLE: Spin wave theory for cubic ferromagnetics. IV. The coefficient at T4 in the magnetization series

PERIODICAL: Acta Physica Polonica, v. 21, no. 3, 1962, 219 - 228

TEXT: This is the author's fourth article of a series (Acta phys. Polon., 20, 983,(1961); ibid., 20, 995 (1961)) on the same subject. The contribution of ladder diagrams to magnetization is analyzed. As had been previously established, the first-order diagram yields the smallest contribution proportional to T^4. The contributions of the second- and third-order diagrams to the coefficient at T^4 in Dyson's formula for magnetization are now considered. Diagrams of a higher order are neglected since the contributions of the second- and third-order diagrams already yield the coefficient at T^4, differing from Dyson's data by 1.3% for the simple cubic lattice and spin S = 1/2. The magnetization per atom has the form

Card 1/3

Spin wave theory for ...

$$M(T) = \frac{m}{S}\left[S - \zeta(3/2)\,\theta^{3/2} - \frac{3}{4}\pi\nu\zeta(5/2)\,\theta^{5/2} - \omega\pi^2\nu^2\zeta(7/2)\,\theta^{7/2} - \right.$$

$$\left. - \frac{3}{2}\pi\nu S^{-1}Q'\zeta(3/2)\,\zeta(5/2)\,\theta^4 + O(\theta^{9/2})\right], \qquad (3.8)$$

(3.9)

with

$$Q' = 1 + (3S)^{-1}(2\Gamma + \alpha) + (3S)^{-2}\,3\Gamma^2, \qquad (3.10)$$

$$\theta = \frac{3kT}{2\pi\mathcal{J}S\gamma_0\nu},$$

and

$$\omega = \frac{33}{32},\ \frac{15}{16},\ \frac{281}{288}, \quad \nu = 1,\ 2^{1/3},\ 3\cdot 2^{-4/3}, \quad \gamma_0 = 6,\ 12,\ 8, \qquad (3.11)$$

$$2\Gamma^{-1} = 10,\ 24,\ 16, \quad \alpha = 0.52,\ 0.34,\ 0.39,$$

for simple, face-centered and body-centered cubic lattices, respectively. Dyson's formula is identical in form with (3.8), but the coefficient Q' is

Card 2/3

SZANIECKI, Jan

Spin waves and phonons in ferromagnetics. I. The Hamiltonian. II. Spontaneous magnetization at low temperatures. Acta physica Pol 22 no.1:3-19 Jl '62.

1. Institute of Physics, Polish Academy of Sciences, Department of Ferromagnetics, Poznan.

SZANIECKI, Jan

Spin deviations and phonons in ferromagnetics. III. Spontaneous magnetization close to the Curie point. Acta physica Pol 22 no.1:21-28 Jl '62.

1. Institute of Physics, Polish Academy of Sciences, Department of Ferromagnetics, Poznan.

SZANIECKI, Jan

Some remarks on retarded and advanced Green's functions for isotropic ferromagnetics. Acta physica Pol 22 no.1:125-127 Jl '62.

1. Institute of Physics, Polish Academy of Sciences, Department of Ferromagnetics, Poznan.

SZANIECKI, Jan

Green's function for cubic ferromagnetics. Pts. 1-3. Acta physica Pol 21 no.5:481-508 My '62.

1. Institute of Physics, Polish Academy of Sciences, Department of Ferromagnetics, Poznan.

P/045/62/022/001/002/006

AUTHOR: Szaniecki, Jan

TITLE: Spin waves and phonons in ferromagnetics
I. The hamiltonian

PERIODICAL: Acta Physica Polonica, v. 22, no. 1, 1962, 3-7

TEXT: The Hamiltonian of a cubic crystalline ferromagnetic is derived taking into account the interaction between spin waves and phonons. In deriving the Hamiltonian of interacting ferromagnons and phonons the author adopts a new procedure consisting in the introduction of the exchange Hamiltonian on the assumption that the ion-cores are distributed everywhere near their equilibrium positions, which are at the regular lattice points (adiabatic approximation); he then lets the ion-cores carry out harmonic oscillations. The other assumption made is that the ferromagnons and phonons are weakly coupled. As to the lattice waves, we consider only longitudinal lattice oscillations, since the transversal ones contribute nothing on account of momentum conservation. The computation yields also that longitudinal phonons do not transfer the

Card 1/2

P/045/62/022/001/002/006

Spin waves and phonons in ferromagnetics...

zero momentum value.

ASSOCIATION: Institute of Physics of the Polish Academy of Sciences, Department of Ferromagnetics, Poznań

SUBMITTED: October 25, 1961

Card 2/2

P/045/62/022/001/003/006

AUTHOR: Szaniecki, Jan

TITLE: Spin waves and phonons in ferromagnetics
II. Spontaneous magnetization at low temperatures

PERIODICAL: Acta Physica Polonica, v. 22, no. 1, 1962, 9-19

TEXT: The present work is the second in a series of three articles. In the preceding part of the present investigation the Hamiltonian containing i. a. the interaction terms of spin waves and phonons in a ferromagnetic of translational symmetry was derived. In the present part, this Hamiltonian is used for obtaining the spontaneous magnetization at low temperatures. Although the theory proposed here is valid throughout the temperature range from absolute zero up to 1/3 of the Curie temperature value, evaluation of the spontaneous magnetization is restricted to low temperatures, as the integrals appearing in the coefficients of the magnetization series are difficult to compute. Taking into consideration the interaction between ferromagnons and phonons, the result that the spontaneous magnetization increases owing

Card 1/2

P/045/62/022/001/004/006

AUTHOR: Szaniecki, Jan

TITLE: Spin deviations and phonons in ferromagnetics III. Spontaneous magnetization close to the curie point

PERIODICAL: Acta Physica Polonica, v. 22, no. 1, 1962, 21-28

TEXT: This is the third in a series of three papers. In the preceding two papers the Hamiltonian of a cubic crystalline ferromagnetic was derived taking into account the interaction between spin waves and phonons. This Hamiltonian was then applied to obtain the spontaneous magnetization at low temperatures. In the present paper the effect of the existence of phonons on the spontaneous magnetization near the Curie temperature is investigated. It is found that whereas the spin wave-lattice wave coupling causes increased spontaneous magnetization at low temperatures, the contribution from acoustic lattice oscillations diminishes spontaneous magnetization near the Curie point.

Card 1/2

SZANIECKI, Jan

Some remarks on the spin wave theory for cubic ferromagnetics. I. II. Acta physica Pol 22 no.5:379-397 N '62.

1. Institute of Physics, Polish Academy of Sciences, Department of Ferromagnetics, Poznan.

ACCESSION NR: AP4040359 P/0045/64/025/003/0359/0384

AUTHOR: Szaniecki, Jan

TITLE: Spin wave theory for anisotropic cubic ferromagnetics. The case of arbitrary S

SOURCE: Acta physica polonica, v. 25, no. 3, 1964, 359-384

TOPIC TAGS: ferromagnetic, anisotropic ferromagnetic

ABSTRACT: An anisotropic cubic ferromagnetic is investigated by a method of connected diagram expansions. Contributions to the free energy from the pseudodipolar and quadrupolar interactions are derived. The accuracy is restricted to terms proportional to the square of the pseudodipolar and to the first power of the quadrupolar coupling constants and to temperature terms not exceeding the 3/2 power of the ratio of the absolute and Curie temperatures. The spin quantum number is arbitrary. The perturbation method applied in the article is based on expansions in connected ladder diagrams whose good convergence is ensured by the smallness of the geometrical factors. Detailed computations are given for simple and body-centered

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ACCESSION NR: AP4040359

cubic lattices. Orig. art. has: 3 figures.

ASSOCIATION: Zaklad Ferromagnetykow IF PAN, Poznan (Ferromagnetics Laboratory, Institute of Physics, Polish Academy of Sciences)

SUBMITTED: 07Sep63 DATE ACQ: 15May64 ENCL: 00

SUB CODE: GP NO REF SOV: 001 OTHER: 005

Card 2/2

SZANIECKI, Jan

On the decoupling procedure in the Green function method. Acta physica Pol 25 no.5:695-709 My '64.

1. Ferromagnetic Laboratory, Institute of Physics, Polish Academy of Sciences.

SZANIECKI, Jan

Spin wave theory for a cubic ferromagnetic with two magnetic exchange-coupled sublattices. Acta physica Pol 26 no.1:57-70 Jl '64.

1. Institute of Physics, Polish Academy of Sciences, Ferromagnetic Laboratory, Poznan.

SZANIECKI, Jan

Spin wave theory for an isotropic cubic ferrimagnetic. Acta physica Pol 26 no.2:235-256 '64.

1. Laboratory of Ferromagnetics, Poznan, of the Institute of Physics of the Polish Academy of Sciences.

L 21461-66
ACC NR: AP6001444 SOURCE CODE: PO/0045/65/028/005/0599/0630

AUTHOR: Szaniecki, J.

ORG: Institute of Physics of the Polish Academy of Sciences, Ferromagnetics Laboratory, Poznan (Institut Fizyki Polskiej Akademii Nauk, Zaklad Ferromagnetykow)

TITLE: Spin wave theory with interaction for a cubic ferrimagnet

SOURCE: Acta physica polonica, v. 28, no. 5, 1965, 599-630

TOPIC TAGS: spin wave theory, cubic ferrimagnet, Hamiltonian

ABSTRACT: The present paper deals with computation of several long series corrections in the perturbation treatment as a method of obtaining the correct size of the dynamic interaction contribution to the partition function. A spin wave theory with both kinematic and dynamic interactions for a cubic ferrimagnet is proposed. The procedure of deriving the kinematic corrections is given and the kinematic interaction is shown to contribute exponentially small terms to the partition function at low temperatures. Dynamic interaction contributes similarly, although the effect of the latter is somewhat larger. Thus theories using the diagonalized Hamiltonian only are fully justified. The author wishes to thank Professor P. W. Kasteleyen of the

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L 21461-66
ACC NR: AP6001444

Instituut-Lorentz, Universiteit van Leiden, Nederland, for calling his attention to the identity between the extended and basic diagrams when renormalization of the spin wave energy was carried out. Orig. art. has: 6 formulas. [Author's abstract.] [KS]

SUB CODE: 20/ SUBM DATE: 10Apr65/ ORIG REF: 001/ OTH REF: 009

Card 2/2 dda

SOBOTKOWSKI, Kazimierz; SZANIEWSKI, Henryk

A case of myositis ossificans of non-traumatic origin. Polski przegl. radiol. 26 no.2:117-121 '62.

1. Z Zakladu Radiologii AM w Lodzi Kierownik — vacat; Kurator: doc. dr med. L. Mazurek i z Przychodni Medycyny Pracy dla m. Lodzi Dyrektor: dr K.Wosik.

(MYOSITIS OSSIFICANS radiog)

SZANIEWSKI, Henryk

A case of myelitis misdiagnosed as acute rheumatic fever. Wiad. lek. 18 no.7:603-605 1 Ap '65

1. Z I Przychodni Wojewodowej Medycyny Przemyslowej w Lodzi (Kierownik: dr. S. Czkwianianc).

SZANIEWSKI, Henryk

Contribution to conservative treatment of persistant ulcerations of the leg with human blood plasma. Przegl. lek. 21 no.6:459-461 '65.

1. Z I Przychodni Obwodowej Medycyny Przemyslowej Lodz-Srodmiescie (Kierownik: Dr. med. S. Czkwianianc).

H

COUNTRY : POLAND
CATEGORY : Chemical Technology. Chemical Products and Their Applications. Lacquers. Paints. Coatings

ABS. JOUR. : RZKhim., No. 19, 1959, No. 69819

AUTHOR : Mielnikowa, R.; Szaniewski, S
INST. : -
TITLE : Changes in Viscosity of the Spray Lacquers as Affected by the Type of Colloxylin and Solvent Used and by Its Initial Viscosity

ORIG. PUB. : Prace Inst. Ichn., 1957, No 3, 5-9

ABSTRACT : The investigation of ways of lowering viscosity of spray lacquers prepared as solutions of indigenous Polish colloxylins (of the BK2W and NC2W grade) during their storage. Viscosity of such lacquers is affected mainly by the quality of a solvent and to some degree by the type of colloxylin. In commercial solvents, viscosity decreases by 20% during 4 months of storage as compared to viscosity of the same material stored in chemically pure solvents. The latter one does not change

CARD: 1/2

H - 153

H

Country : POLAND
Category : Chemical Technology. Chemical Products (Part 4). Lacquers. Paints. Coatings
Abs. Jour. : Ref Zhur-Khim, 1959, No 7, 25577

Author : Szaniewski, S.; Krawczyk, J.
Institut. : Institute of Aviation
Title : Use of Polyamides for Coating Airplane Canvas

Orig. Pub. : Prace Inst. lotn., 1957, No 3, 21-24

Abstract : The results of tests of colored and uncolored polyamide coatings (PC) for airplane canvas regarding their mechanical strength (strain), resistance to heat, water and oil, and resistance to liquid fuels and atmospheric influences, are described. Compared with ordinary nitrolacquers, PC have a considerably lower inflammability and also a lower resistance to atmospheric effects. The pigmented PC have a low resistance to water, and were difficult to apply. The other properties

Card: 1/2

H-170

H-30

Country : Poland
Category : Chemical Technology. Chemical Products and Their Applications. -- Lacquers. Paints. Coatings.
Abs. Jour. : R. Zh. - Khim., No. 11, 1959 40829

Author : Mielnikowa, B. and Szaniewiski, S.
Institut. : Polish Aviation Research Institute [?]
Title : The Testing of Pain Finishes on Various Metallic and Wooden Surfaces

Orig. Pub. : Prace Inst Lotn, No 3, 42-52 (1957)

Abstract : A number of Polish-produced paints have been tested on steel, duralumin, wood, and cloth-covered surfaces under conditions of natural aging and in the spray chamber. The results from the tests of the weathering resistance and anticorrosion properties of the coatings are tabulated ; photographs are also included in order to permit the selection of the best paint composition.

B. Shemyakin

Card: 1/1

H-171

DEAK, Bertalan, fomernok; FUKSZ, Pal; HLINYANSZKI, Istvan, dr.; SZANISZLO, Andras; ZACHEMSZKI, Ferenc; ELSZASZ, Rezso.

Analytic investigations, instrumentation. Energia es atom 17 no.1:27-30 Ja'64.

1. Pecsi Kokszmuvek (for Deak).