UNCLASSIFIED

AD 404 433

DEFENSE DOCUMENTATION CENTER

FOR

SCIENTIFIC AND TECHNICAL INFORMATION

CAMERON STATION ALEXANDRIA, VIRGINIA

UNCLASSIFIED

NOTICE: When government or other drawings, specifications or other data are used for any purpose other than in connection with a definitely related government procurement operation, the U. S. Government thereby incurs no responsibility, nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

404433

AD No.
ASTIA FILE COPY

404 433

JPRS: 18,754 OTS: 63-21598

17 April 1963

FOR REFERENCE ONLY AT EACH OF THE DDC OFFICES. THIS REPORT CANNOT BE SATISFACTORILY REPRODUCED; DDC DOES NOT FURNISH COPIES.

ABSTRACTS FROM EAST EUROPEAN SCIENTIFIC AND TECHNICAL JOURNALS

No. 138

(Physics and Mathematics Series)

MAY 16 1963
TISIA A

U. S. DEPARTMENT OF COMMERCE
OFFICE OF TECHNICAL SERVICES
JOINT PUBLICATIONS RESEARCH SERVICE
Building T-30
Ohio Dr. and Independence Ave., S.W.
Washington 25, D. C.
Price: $1.25

Best
Available
Copy

F O R E W O R D

This publication was prepared under contract for the Joint Publications Research Service as a translation or foreign-language research service to the various federal government departments.

The contents of this material in no way represent the policies, views or attitudes of the U. S. Government or of the parties to any distribution arrangement.

PROCUREMENT OF JPRS REPORTS

All JPRS reports may be ordered from the Office of Technical Services. Reports published prior to 1 February 1963 can be provided, for the most part, only in photocopy (xerox). Those published after 1 February 1963 will be provided in printed form.

Details on special subscription arrangements for JPRS social science reports will be provided upon request.

No cumulative subject index or catalog of all JPRS reports has been compiled.

All JPRS reports are listed in the Monthly Catalog of U. S. Government Publications, available on subscription at $4.50 per year ($6.00 foreign), including an annual index, from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

All JPRS scientific and technical reports are cataloged and subject-indexed in Technical Translations, published semimonthly by the Office of Technical Services, and also available on subscription ($12.00 per year domestic, $16.00 foreign) from the Superintendent of Documents. Semiannual indexes to Technical Translations are available at additional cost.

JPRS: 18,754

ABSTRACTS FROM EAST EUROPEAN SCIENTIFIC AND TECHNICAL JOURNALS

No. 138

- Physics and Mathematics Series -

This report consists of abstracts of articles from the East European scientific and technical journals listed in the table of contents below.

Table of Contents

Page

CZECHOSLOVAKIA

Ceskoslovensky Casopis pro Fysiku, Prague, Vol 12, No 5-6, 62 — 1

Matematicko-Fyzikalny Casopis, Bratislava, Vol 13, No 1, 63 — 39

CZECHOSLOVAKIA

STEENBECK, M., Institute for Magnetohydrodynamics, German Academy of Science, Jena, Germany. [Original version not given]

"On the Work of the Institute of Magneto-Hydrodynamics in Jena"

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, Transactions of the 2nd Czechoslovak Conference on Electronics, pp 414-427.

Author's English Abstract: The report deals with some of the work carried out by the Institute for Magnetohydrodynamics in Jena. It describes both work that has been completed and work which is under way or is just being started. The reason for mentioning such work is an attempt to excite the interest of the audience in some of the new trends in the physics of the plasma and thus provide the basis for close international cooperation in this field. Of concrete questions the report discusses some problems of an astrophysical char-

1/2

- -

CZECHOSLOVAKIA

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 414-427.

acter concerning the flow of plasma, containing the turbulence region, through a magnetic field. It also deals with the minimum principle and its application to an arc discharge and gives the results of experiments that prove that if the partial pressure of the electrons in a low pressure discharge reaches the same order of magnitude as the gas pressure, it pushes out the latter from the middle of the tube and the maximum of light emission is thus brought nearer to the edge of the tube. Other work deals with the normal cathode drop of a glow discharge. Experiments with a fast thoroidal discharge are also described and the perspectives for further research along the following lines are discussed: Reserch in the field of magnetohydrodynamic generators and into highly ionized plasma with a high electron temperature, aimed at the problem of bringing about controlled thermonuclear reactions. 11 Figures, No references.

2/2

CZECHOSLOVAKIA

DOBRETSOV, L.N., Institute of Technical Physics of the U.S.S.R. Leningrad, [Original version not given]

"Thermionic Energy Converter"

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6 April 1962, Transactions of the 2nd. Czechoslovak Conference on Electronics, pp 428-438.

Author's English Abstract: The paper gives an interpretation of the physical processes in the activity of a thermionic convertor from the radiotechnical and thermodynamical point of view and information on the state of research into practically applicable thermoelectron convertors. Two types of convertors are mentioned: a vacuum convertor with a small distance between the electrodes, and a convertor with cesium vapours, the construction of which is technically simpler. The paper describes three kinds of working regimes of the convertor 1/2

CZECHOSLOVAKIA

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6 April 1962, pp 428-438.

with cesium vapours; knudson, diffusion and plasmatic. These regimes are evaluated from the point of view of suitability for application. In connection with the conversion of nuclear into electrical energy in a thermionic convertor, a description is given of a convertor constructed in Los Alamos and the perspectives are shown for the building of a special reactor-convertor.
6 Figures, 20 References, 14 Western, 1 German, 5 Russian.

2/2

CZECHOSLOVAKIA

BLEYVAS, I.M.; LUKOSKOV, V.S.; MESTECHKIN, Ya.I.; KHOMICK, V. B.; SHEKEL, L. A.; SHUBIN, L. V.; Committee for Electronics Technique, Moscow. [Original version not given]

"Solution of Electron Optical and High Frequency Electronics Problems by Means of the Mathematical Model Methods"

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12. No 5-6 April 1962, Transactions of the 2nd. Czechoslovak Conference on Electronics, pp 439-446.

Authors' English Abstract: The methods and devices for solving the two-dimensional problems of high-frequency field interaction with electron flows are described. The model - an automatic device - consists of two parts: an electrolytic tank and an analogue computor.
10 Figures. No references.

1/1

CZECHOSLOVAKIA

NAGY, J., Institute for Communications Technique, Budapest. [Original version not given]

"Hollow Electron Beams in a Periodic Magnetic Field"

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6 April 1962, Transactions of the 2nd. Czechoslovak Conference on Electronics, pp 447-450.

Author's English Abstract: The paper deals with the design of hollow electron beams of constant axial potential in a periodic axial magnetic field. The conditions of focusing the beam are given from which the amplitude and the length of the period of the magnetic field can be obtained in an appropriate form. Use is made of the well-known paraxial approximation.
5 Figures, no references.

1/1

CZECHOSLOVAKIA

MELTZER, B., Edinburgh University, Edinburgh, Scotland.

"Some Aspects and Extension of the Pierce Method of Electron Gun Design"

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6 April 1962, Transactions of the 2nd. Czechoslovak Conference on Electronics, pp 450-459.

Author's English Abstract: The following topics are discussed: (a) the application of perturbation analysis to space-charge theory to estimate effects such as those due to apertures in anodes; (b) design of electromagnetically focussed beams; (c) methods of circumventing the Gauchy-type instability involved in standard methods of calculating Pierce electrode systems; (d) triode and multi-electrode systems; (e) the relevance of the Pierce and perveance approach to the design of conventional electrode systems such as those of cathode-ray tubes and amplifier triodes.
4 Figures, 20 References, 19 British and U.S.A, 1 German

1/1

CZECHOSLOVAKIA

PODSKALSKY, E., Research Institute for Vacuum Electro-Technique, Prague. (Vyzkumny ustav pro vakuovou elektrotechniku)

"The Shape of Electric Field Along a Given Electron Trajectory"

Prague, Ceskoslovensky Casopis pro Fysiki, Vol 12 No 5-6 April 1962, Transactions of the 2nd. Czechoslovak Conference on Electronics, pp 459-462.

Abstract: The author gives equations that closely describe electron trajectories in progressive stages, and are suitable for use in computers.
2 Figures. No references.

1/1

CZECHOSLOVAKIA

SUSHKOV, A.L., Professor of Radiotechnical Electronics, Electrotechnical Institute of Leningrad. [Original version not given]

"Electric Fields of Bunches of Charged Particles"

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6 April 1962, Transactions of the 2nd. Czechoslovak Conference on Electronics, pp 462-468.

Author's English Abstract: The static problem of finding the electric field of bunches of charged particles with rotational symmetry when the charge distribution is non-uniform is solved. Formulas are given for the fields of cylindrical, annular and coaxial bunches in a metal tube. The longitudinal field component of the cylindrical bunch with a non-uniform charge distribution is analysed in detail and it is demonstrated that the variation in the longitudinal field component at the boundary and off the bunch can be expressed by an elementary function.
7 Figures. 7 References, 4 Western, 3 Russian.
1/1

CZECHOSLOVAKIA

JARES, V., Research Institute for Vacuum Electrotechnique, Prague. (Vyzkumny ustav pro vakuovou elektrotechniku)

"Electron Immersion Objective"

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6 April 1962, Transactions of the 2nd. Czechoslovak Conference on Electronics, pp 468-470.

Abstract: The author describes determination of the properties of an immersion objective using Tungsten cathodes.
4 Figures. No references.
1/1

CZECHOSLOVAKIA

DELONG, A.; DRAHOS, V.; and ZORAC, L.; CSAV [Czechoslovak Academy of Sciences] Institute of Instrumentation Engineering, Optical Electronics Laboratory (Ustav pristrojove techniky CSAV, Laborator elektronove optiky), Brno

" A High Resolving Power Electron Microscope"

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6 April 1962, Transactions of the 2nd. Czechoslovak Conference on Electronics, pp 471-478.

Authors' English Abstract: Some significant features of a recently constructed high-performance magnetic-type electron microscope are described in detail. A double condenser lens and a three-stage imaging system are used, the electron-optical magnification being variable from 5000 to 180,000. The resolving power of the instrument is better than 10 A°. The valves of the vacuum system are electromagnetic and the control of its working positions is automised. Electronic stabilizers for feeding the coils

1/2

CZECHOSLOVAKIA

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6 April 1962, pp 471-478.

of the lenses are placed separately from the optical system. A high long-term stability was obtained by improved design of the high-voltage multiplier.
4 Figures. 1 Czech Reference.

2/2

CZECHOSLOVAKIA

DRAHOS, V., CSAV [Ceskoslovenska akademie ved; Czechoslovak Academy of Sciences] Institute for Instrumentation Engineering, Optical Electronics Laboratory (Ustav pristrojove techniky CSAV, Laborator Elektronove optiky), Brno; and KOMRSKA, J., CSAV Laboratory for the Study of the Properties of Metals (CSAV Laborator pro studium vlasnosti kovu), Brno.

"The Angular Aperture of the Illuminating Beam and the Illuminated Specimen Area in an Electron Microscope"

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12 No 5-6 April 1962, Transactions of the 2nd. Czechoslovak Conference on Electronics, pp 479-488.

Authors' English Abstract: Some formulas are derived which permit the angular aperture of the illuminating beam and the diameter of the illuminated target region to be calculated for an electron microscope system with a single and a double condenser lens in the whole range of variable focal lengths of the condensers. The formulas are of a very general character which is obvious from the number

---

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12 No 5-6 April 1962, pp 479-488.

of parameters involved; the crossover size, the size of the condenser diaphragms, the condenser-to-condenser distance, the specimen condenser distance, the focal lengths of the two condensers. These formulas can be used for different electron optical systems.
6 Figures. 8 References, 3 Western, 2 Czech, 3 German.

CZECHOSLOVAKIA

SCHWARTZE, W., Research Institute for Electron Microscopy, Jena. [Original version not given]

"Origin and Effects of Ions in the Electron-Mirror Surface Microscope"

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6 April 1962, Transactions of the 2nd. Czechoslovak Conference on Electronics, pp 488-490.

Abstract: Author describes the principle of the microscope and shows schemes of pictures provided by his instrument.
3 Figures. 3 References, 2 German, 1 British.

1/1

CZECHOSLOVAKIA

VEJVODOVA, J., Chair of Electronics and Vacuum Physics, Charles University (Katedra Elektroniky a Vakuove Fysiky Karlovy University), Prague

"Bunching of Ions in an Omegatron"

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12 No 5-6 April 1962, Transactions of the 2nd. Czechoslovak Conference on Electronics, pp 490-496.

Author's English Abstract: On the basis of the theory of the two-dimensional omegatron it is demonstrated that bunching of resonent ions takes place in the omegatron. The bunching zone rotates with a corresponding cyclotron frequency, which results in rectangular periodic pulsations of the collector current. The non-resonent ions of masses near to the resonent ones after having left the bunching zone do not strike the collector simultaneously with the resonent ones. This improves the natural resolving power of the device.
4 Figures. 1 U.S.A. 1 French reference.

1/1

CZECHOSLOVAKIA

NEKRASHEVICH, I.G., BAKUTO, I.A., Institute of Technical Physics, Department of Experimental Physics of the State University of V.I.Lenin of White Russia at Minsk. [Original version not given]
"The Erosion of Metals in an Electric Impulse Discharge by Atmospheric Pressure"

Prague, Ceskoslovensky Casopis pro Fyziku, Vol 12, No 5-6 April 1962, Transactions of the 2nd. Czechoslovak Conference on Electronics, pp 497-502.

Authors' English Abstract: The surface of a metal is disturbed (erosion) for arbitrary forms of a discharge in which the electric current passes through the boundary surface of the metal or of another medium. It is universally admitted at present that erosion in an impulse discharge at atmospheric pressure is caused by thermal processes. From a number of experiments it seems most natural to allow that the surface of a conducting contact of
1/2

- -

CZECHOSLOVAKIA

Prague, Ceskoslovensky Casopis pro Fyziku, Vol 12, No5-6 April 1962, pp 497-502

a discharge channel with an electrode extends over the puncture up to a value not exceeding 10^{6} to 10^{7} cm^2 while the current density attains minimum values of 10^{6} to 10^{7} A/cm^2. As a result overheating and a micro-explosion of a small volume of metal occurs, which is accompanied by the formation of a conducting contact of the channel at another part of the surface. Such a process is continually repeated and the erosion trace is thus the result of the migration of the conducting metal contact with the discharge channel. The amount of metal removed from the electrodes during the discharge was calculated. The authors succeeded in explaining all the peculiarities of the effects of erosion observed during electric impulse discharges in gaseous and liquid media at pressures of the order of one atmosphere and higher. The results of experiments performed with bimetal electrodes agree with the concepts described.
13 References, 2 British, 2 German, 9 Russian.
2/2

CZECHOSLOVAKIA

GRAKOV, V.E., Bielorussian State University imeni V.I. Lenin, Minsk
[Original-language version not given]

"Photoelectric Measurement of Self-absorption of Spectral Lines in Impulse-Gas Discharge Plasma."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 502-504. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: In most instances maximum absorption corresponds to the maximum radiation of the plasma.
2 Figures, 1 Table, 5 Russian, 1 German reference.

1/1

CZECHOSLOVAKIA

KAPICKA, V., Chair of Electronics and Vacuum Physics at the University of J.E. Purkyne (Katedra Elektroniky a Vakuove Fysiky, Universita J. E. Purkyne) Brno

"Use of Single-Pole High Frequency Discharge in Spectroscopy."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 505-507. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: Minimum amounts needed for analysis were studied. Al, Cu, Mo, W, C, Pb and Grey Cast Iron as well as some liquids and gases were included in the study.
1 Table, 5 Czech, 4 Russian, 3 Rumanian references.

1/1

CZECHOSLOVAKIA

KEPRT, M., Chair of Electronics and Vacuum Physics at the University of J.E. Purkyne (Katedra Elektroniky a Vakuove Fysiky, Universita J.E. Purkyne), Brno

"Measurements of Characteristics on Single-Pole High Frequency Discharge."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 507-508. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: Results of some measurements made with the apparatus constructed by the author are discussed.
2 Figures, 3 Czech, 1 Rumanian references.

1/1

CZECHOSLOVAKIA

BRABLC, J. Chair of Physics, College of Transportation, Prague. (Katedra Fysiky Vysoke Skoly Dopravni)

" The Electric Resistance of Plasma as a Function of Temperature and Pressure."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 509-516. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: From the analogy with the transfer coefficients a new picture is obtained of the temperature and pressure dependence of the electrical resistance plasma, determined in the paper both graphically and analytically. Conclusions are also reached for the diagnostics and homogeneity of plasma in three of the four regions found. The results are extrapolated up to the nuclear plasma.
4 Figures, 1 Czech, 2 Western, 2 German, 1 Russian ref.

1/1

CZECHOSLOVAKIA

TCHEN, C.V. National Bureau of Standards, Washington, D.C.

" Collective Correlation of Plasma."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962 pp 516-521. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: The one-particle distribution function is described by the BBGKY equation, while the correlation function is determined by an equation of the Vlasov type (with self-consistent field, but without collision) Oscillations of small amplitudes are considered. The dispersion relation is obtained, and the Landau damping is calculated.
1 U.S.A., 1 Russian references.

1/1

CZECHOSLOVAKIA

RUTSCHER, A. Institute of Physics at the University of Greifswald. [Original version not given]

"On the Influence of the Stepwise Ionization in the Positive Column of the Low Pressure Discharge."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 521-529. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: New measurements of electron temperature in neon indicate that particularly in higher current region and using smaller relative diameters of tubes, we obtain values of temperatures which are remarkably lower than the values effected by simple diffusion theory assuming direct ionization. When we consider the final concentration of charged particles upon the wall of the tube, as well as the dependence of the ion mobility on the field strength, we still obtain temperatures that are too high. Using the conditions of stepwise

1/2

CZECHOSLOVAKIA

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 521-529.

ionization we tried to take quantitatively into account on a model the influence of metastable atoms on the parameters of a single plasma column. The case of smaller currents was of special importance to us.
7 Figures, 24 references, 8 Western, 8 German, 7 Russian, 1 Czech.

2/2

CZECHOSLOVAKIA

GRYCZ, B., Chair of Electronics and Vacuum Physics at the Charles University (Katedra Elektroniky a Vakuove Fysiky Karlovy University) Prague.

"Estimation of Upper Thermal Load Limit for Rotating Water-Cooled Metal Electrodes for Plasma Torches."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 530-535. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: A brief analysis of the function of the rotating electrode in a plasma torch is made. The electrode provides suitable contact both in electrical and thermal circuits of the plasma torch. The temperature of the outer surface of the electrode has the highest influence on material losses, therefore this temperature is estimated in the article. The resulting temperature field is considered to be a superposition of the steady-state field (determined by the total heat flow, by the thermal resistance of
1/2

CZECHOSLOVAKIA

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 530-535.

the material of the electrode and by the thermal resistance of the metal-liquid boundary) and of the variable temperature field created by the "rain" of the anode or cathode spots.
2 Czech, 1 Russian references.

2/2

CZECHOSLOVAKIA

BLAHA, A., Slovak Technical University (Slovenska Vysoka Skola Technicka) Bratislava.

"Melting of Transparent Quartz in a Subatmospheric Discharge."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 536-538. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: The author studied electric arc discharge at very low pressures. A discharge furnace was operated at pressures below 1 mm Hg and 2000 to 3000°C. Quartz ingots were prepared and their properties are described.
2 Figures, 1 Czech reference.

1/1

CZECHOSLOVAKIA

KRAMAR, J. State Research Institute for High Electric Current Technology at Bechovice, near Prague. (Statni Vyzkumny Ustav Silnoproude Elektrotechniky) "Sputtering of Iron, Graphite and Molybdenum by Hg Ions."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 539-543. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: Sputtering of metals caused by accelerating currents of 100 V to 2000 V was studied. Pressures of 10^{-5} Torr were used. Mainly iron, molybdenum and graphite were studied and main emphasis given to low current potentials as this is the area where there is the least amount of information available at present.
2 Figures, 3 Tables, 2 Czech, 1 U.S.A. 1 German references.

1/1

CZECHOSLOVAKIA

LASKA, S., CIBULKA, F. State Institute for High Electric Current Technology at Bechovice near Prague. (Statni Vyzkumny Ustav Silnoproude Elektrotechniky) "The Influence of the Presence of Some Gases on the Electrochemical Sputtering of Graphite in the Low-Pressure Discharge in the Mercury Vapor."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 543-545. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: The authors believe that the formation of impurities in a mercury valve is not due to the sputtering of graphite but to chemical and electrochemical reactions, in which both the graphite of the main anode and mercury vapors take part. Presence of oxygen causes decrease of weight of graphite electrodes, nitrogen causes deposition of impurities.
3 Czech 1 German references.

1/1

CZECHOSLOVAKIA

PEKAREK, L. and KREJCI, V. Institute of Physics, Czechoslovak Academy of Science, Prague. (Fysikalni Ustav CSAV)

"Analogy Between Wave of Stratification in Plasma and Waves on Fluid Surface."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 546-552. Transactions of the 2nd Czechoslovak Conference on Electronics.

Authors' English Abstract: Moving striations in a positive column discharge plasma differ significantly from most of the other wave phenomena in continous media. The particular properties of this phenomenon are evident in the wave of stratification, where the striations are produced by an aperiodic pulse disturbance. Properties of the wave of stratification and of the stiations produced by an oscillation disturbance are described in detail and compared with the properties of gravitational and capillary waves on a fluid

1/2

- -

CZECHOSLOVAKIA

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 546-552.

surface. Finally both types of phenomena are compared from the point of view of the physical character of the processes participating in them.
3 Figures, 3 Czech, 1 English references.

2/2

CZECHOSLOVAKIA

STIRAND, Oto, Institute of Physics, Czechoslovak Academy of Science. (Fysikalni Ustav CSAV) Prague

"Standing Striations in Hydrogen and Deuterium."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 552-554. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: The reason for the existence of standing striations in hydrogen and deuterium is not known. The author determined that hydrogen has a bigger tendency to the forming of this phenomenon than deuterium.
2 Figures, 2 Czech references.

1/1

CZECHOSLOVAKIA

KUZICKA, T., Institute of Physics, Czechoslovak Academy of Science (Fysikalni Ustav CSAV) Prague.

"The Group and Phase Velocity of Striations at High Currents."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 554-556. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: Mathematically calculated values were compared to experimental results. Neon and argon comply with the knew formulas and equations, while krypton and helium show irregularity. The author feels that striations behave as waves of an ionic level.
4 Figures, 1 Czech, 1 German reference.

1/1

CZECHOSLOVAKIA

DUROEK, J., Chair of Physics, University of Transportation (Katedra Fysiky Vysokej Skoly Dopravnej) Zilina.

"Cyclotron Resonance of Electrons in Electric Discharges in He and Ar."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 557-560. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: The author studied the discharges in pressures of 10^{-1} to 10 mm Hg and in electric currents of 10 to 200 μA. The influence of pressure is much more felt than the changes in the current.
3 Figures, 5 Western, 2 Czech, 1 Russian references

1/1

CZECHOSLOVAKIA

ECKERTOVA, L., Chair of Electronics and Vacuum Physics at Charles University (Katedra Elektroniky a Vakuove Fysiky Karlovy University) Prague.

"Physics and Applications of Field Cathodes."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 561-572. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: A survey is given of papers devoted to cathodes, the emission of which is connected with the presence of a strong electric field, and some results obtained by the author are appended. The paper deals with point cathodes, flat Malter-type cathodes, cathodes with thin layers of MgO and cathodes of the condenser type. The physical processes taking place in these cathodes are compared, the advantages and disadvantages of different types are pointed out and possibility of their use is outlined.
5 Figures, 31 references, 14 Western, 5 Czech, 8 Russian, 4 German.

1/1

CZECHOSLOVAKIA

HAJEK, J., Chair of Electronics and Vacuum Physics at Charles University (Katedra Elektrotechniky a Vakuove Fysiky Karlovy University), Prague

"Flat Field Cathode."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 573-578. Transactions of the 2nd Czechoslovak Conference on Electronics.

Authors English Abstract: A flat self-emission cathode of the Al-Al_2O_3-Me type was constructed. The conditions needed for design of such cathodes were found, namely properties of the basic metal, treatment of its surface, properties of the dielectric layer and the upper semitransmitting metallic layer. Production method was worked out and some measuremets made indicating practical uses of such cathodes. Emission and upper electrode current measured was compared to theoretical values expected for such cathode emissions. 6 Figures, 2 Western, 3 Russian references.

1/1

- -

CZECHOSLOVAKIA

TRUNECEK, V., Chair of Electronics and Vacuum Physics at Charles University (Katedra Elektrotechniky a Vakuove Fysiky Karlovy University), Prague.

"Overheating and Self-sustained Electron Emission from Oxide Cathodes."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 578-583. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: Overheating of thermoemission cathodes is usually explained by their bombardment by positive ions produced by the residual gas in the electron tube. Distribution of electron velocities leaving a cathode slightly spontaneously overheated, spectrum of the surface as well as other effects indicate that the cathode temperature does not decisively influence the emission. Positive ions of the oxide cathode excite a high gradient of the electric field causing the emission of electrons. 5 Figures, 2 Western, 1 Czech references.

1/1

CZECHOSLOVAKIA

NEKRASHEVICH, Y. G., BAKUTO, J. A. Institute of Technical Physics College of Experimental Physics at the White Russian State University, Minsk. (Original version not given.)

"On the Electric Breakdown of Dielectrics."

Prague, Ceskoslovensky Casopis pro Fyziku, Vol 12, No 5-6, April 1962, pp 583-589. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: Electric breakdown in an arbitrary dielectric is discussed as energy. The authors use the general Fourier equation with a term for the action of the spatial thermal source adding a term for particles of material having a critical energy value. Analysis and integration of the equation give results characterizing electric breakdown of dielectrics. A puncture criterion is derived. Dependence of puncture strength on physical properties of the electric is determined. The equation can also be applied to analogical processes (creep of solids etc). 2 References.

1/1

CZECHOSLOVAKIA

PETRU, C. State Research Institute for High Electric Current Technology at Bechovice, near Prague. (Statni Vyzkumny Ustav Silnoproude Elektrotechniky)

"Contribution to an Explanation of the Arc-back in Mercury Arc Valves."

Prague, Ceskoslovensky Casopis pro Fyziku, Vol 12, No 5-6, April 1962, pp 590-596. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: The current of accelerated ions during the arc-back impinging after commutation on the anode is proportional to mutual conductance of the decay of anode current. Secondary emission coefficient is proportional to the inversion voltage. The charge produced on dielectric or semi-conductive layers on their surface is proportional to the product of the 2 above values. At a given electric field strength in the layer the arc-back takes place due to the tunnel effect. The surface charge can be explained by a non-linear differential equation, giving conditions for commutative and non-commutative arc-back.

1/1 5 figures, 3 German, 3 Western references.

CZECHOSLOVAKIA

BOKERTOVA, L., Chair of Electronics and Vacuum Physics at Charles University (Katedra Elektrotechniky a Vakuove Fysiky Karlovy University), Prague.

"Contribution to the Czech Terminology of Electron Emission"

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 596-597.

Abstract: The author discusses generally translating of terms from English and Russian into Czech and criticises literal translations. She suggests a list of terms to be used in connection with various types of cathodes.
No references.

1/1

CZECHOSLOVAKIA

SZCZERSKI, W., BIALA, Z. Institute of Industrial Electronics, Warsaw. [Original version not given]

"Phenomena at Activation of Impregnated Cathode."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 598-600. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: A porous tungsten cathode impregnated by barium calcium aluminate was studied. The emission increases with increasing temperatures and is decreased by poisoning with gases leaving the anode. The cathodes were maintained in the range of 1000°C to 1200°C.
3 Figures, no references.

1/1

CZECHOSLOVAKIA

TARZANOWSKI, A., Institute of Industrial Electronics, Warsaw. [Original version not given]
"Some surface Phenomena on the Dispenser Cathode."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 600-602. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: The author studied some phenomena occurring on the surfaces of pressed nickel and impregnated tungsten cathodes. He feels that the changes in emission that take place are due to the oxidation of barium on the cathode surface.
4 Figures, no references.

1/1

CZECHOSLOVAKIA

SCHNEIDER, P. Tesla Roznov, Development Department of the Plant at Vrsovice, Prague. (Tesla Roznov, Zavod Vrsovice, Vyvojove Oddeleni)
"Contribution to the Estimation of the Efficiency of Some Anti-emission Materials for Tubes with Thoriated Tungsten."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 603-604. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: The author studied methods supressing thermal emission of grids caused by thorium transferred from a cathode using thoriated tungsten. Titanium silicides and zirconium silicides applied on tungsten grids seemed to be the most promising.
5 Figures, no references.

1/1

CZECHOSLOVAKIA

FIRKOWICZ,S., Industrial Institute of Electronics,Warsaw. [Original version not given]
"Maximum Leading of Oxide Cathodes."

Prague,Ceskoslovensky Casopis pro Fysiku,Vol 12, No 5-6, April 1962, pp 605-608. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: During the impulse operation of an oxide cathode large currents produce Joule's heat and change the concentration of doners in the surface layer. The critical load of the cathode can be taken as the maximum value of the current allowing to neglect its influence on the physical properties of the emission layer. A relation was found in agreement with the observed influence of the properties of an oxide cathode on its allowed load.
2 Figures, 3 Russian, 1 German reference.

1/1

CZECHOSLOVAKIA

GUYENOT,E.,SOA,E.A., Research Laboratory VEB of Carl Zeiss Jena.[Original version not given]

"Some Contributions to Emission Microscopy."

Prague,Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962,pp 608-610. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: Layers of barium, strontium and cesium oxides on tantalum, tungsten and molybdenum were studied. The emission pattern is described.
5 Figures,no references.

1/1

CZECHOSLOVAKIA

JEDLICKA, M. Research Institute for Vacuum Electrotechnology, Prague. (Vyzkumny Ustav Vakuove Elektrotechniky)

"Optical Properties of the $SbCs_3$ Photo-Cathode."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 610-616. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: Spectral reflection, transmission and absorption curves of antimony-cesium cathodes with back illumination were evaluated. The photoelectric layers had a thickness of 10 to 800 nm and were deposited on molybdenum glass with refraction index 1.488. Published values for spectral dependance of the refraction and absorption indexes of the photocathode were used. Curves were evaluated for spectral range 400 to 1000 nm. Evaluated and measured curves of a photocathode 6e nm thick are compared.
6 Figures, 9 references; 3 Czech, 4 German, 2 Russian.
1/1

CZECHOSLOVAKIA

JEDLICKA, M., VILIM, P. Research Institute for Vacuum Electrotechnology, Prague. (Vyzkumny Ustav Vakuove Elektrotechniky)

"The Photocathode (Te-Cs, Sb-Na) and (Te-Cs, Sb-Na-K) "

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 617-619. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: Authors conducted experiments with the photocathode mentioned. It seems that these cathodes are suitable for technical application as they give a high quantitative yield in the region of long ultraviolet waves even when ordinary glass is used. Further work has to be made concerning their thermoelectric emission, fatigue, optical properties etc. It appears that with the use of suitable glass sensitivity could be increased to cover as well the region of short ultraviolet waves.
4 Figures, 1 reference.
1/1

CZECHOSLOVAKIA

GORLICH, P., HAESKE, A., KROHS, A., POHL, H.J., Research Laboratories VEB Carl Zeiss, Jena. [Original version not given].

" On the Anomaly of Secondary Emission in Layers of Alkali-Earths Oxides."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 620-622. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: The authors conducted experiments to determine how the coefficient of the secondary emission of oxidised alloys of alkali-earths depends on current densities. The densities were followed up to 100 μA/mm sq. It was shown that above a certain value this coefficient is no longer constant but becomes a function of the density of the primary current. The measurements made at various densities of the current and at various degrees of activation confirmed the nature of this anomaly. 3 Figures, no references.
1/1

CZECHOSLOVAKIA

GORLICH, P., KROHS, A., POHL, H.J., Research Laboratories VEB Carl Zeiss, Jena. [Original version not given]

"A New Photo-Multiplier with a Small Time of Flight Dispersion."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 623-628. Transactions of the 2nd Czechoslovak Conference on Electronics.

Authors' English Abstract: A new photomultiplier for measurements in the region of 10^{-9} sec. has been developed for scintillation measurements. Details in the design of the dynode system and the results obtained are given. In a measuring system of electrodes high values of the electric field strength and dynode current were obtained and thus the dispersion of the transit times and the space charges were lowered. The starting time was about 2nsec, the decay 3 nsec, the mean width approximately 3 nsec. The linearit-
1/2

CZECHOSLOVAKIA

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 623-628.

ty of the impulses is preserved up to a current of 0.5 A Scintillating measurements with stilbene crystals were made with currents up to 1.5 A.
7 Fibures, 3 Tables, 6 references, 1 Russian, 5 German.

2/2

CZECHOSLOVAKIA

KLOSS, H.G., Institute of Technical Physics German Academy of Science, Berlin. [Original version not given]

"Measurement of Extremely Short Decay Times of Organic Phosphors."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, NO 5-6, April 1962, pp 628-633. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: A new fluorometer working with an accuracy of 2×10^{-11} seconds is described. A modulated electron ray is used to excite the luminophore ; the phase difference between the excitation and the emission of light is measured by electronic means. Practical difficulties are described including factors arising from measuring such short time intervals with such accuracy.
6 Figures, 5 German references.

1/1

CZECHOSLOVAKIA

COMSA,G.,IOSIFESCU,B.,Institute of Atomic Physics of the Rumanian Republic's Academy, Bucharest. [Original version not given]
"Adsorption and Desorption Phenomena in High Vacuum."

Prague,Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962,pp 634-640. Transactions of the 2nd Czechoslovak Conference on Electronics.

Authors' English Abstract:Some of the causes of a pressure dependence in using ionic pumps are explained. Decrease during pumping and increase when pumping stops is explained by the assumption that molecules are desorbed from the walls of the vessel.These were originally absorbed by processes other than pumping.Special role is played by molecules with heat of adsorption of 20 kcal/mol.
5 Figures, 13 References, 7 Western, 5 Rumanian, 1 German.

1/1

CZECHOSLOVAKIA

ROBOZ,P.,Institute of Technical Physics,Hungarian Academy of Science,Budapest. [Original version not given]

"Study of Adsorption of Gases in Ultra-High Vacuum by a Field-Emission Microscope."

Prague,Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 641-643. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract:Experiments with a field-emission microscope with a tungsten cathode are described.Amount of time between cleaning out of the cathode by degassing and the moment when the cathode was covered by a monolayer of gases under different pressures was studied.The possibility of using this correlation for measuring ultra high vacuum pressures was pointed out.
2 Tables, no references.

1/1

CZECHOSLOVAKIA

COMSA, G., SIMIONESCU, C., Institute of Atomic Physics of the Rumanian Republic's Academy, Bucharest [Original version not given]

"Ion Pump with Titan-Getter Effect"

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 644-645. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: The article describes details of construction of a vacuum pump constructed by the authors in their laboratory. It is easy to make and can be assembled and disassembled. It is similar to the "Vacion" pump.
1 Figure, 3 Western, 1 Rumanian references.

1/1

CZECHOSLOVAKIA

KILISZEK, C., CZARNICKI, W., Industrial Institute of Electronics, Warsaw. [Original version not given]

"Ion Pump with Magnetic Field."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 646-647. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: The authors constructed a vacuum pump with a double anode, having a capacity of 1.5 liters/sec with an anodic potential of 5 kV and an intensity of magnetic field 1500 gauss. A pressure of 2×10^{-10} mm Hg was obtained.
3 Figures, no references.

1/1

CZECHOSLOVAKIA

CZARNYCKI, W., CYRANSKI, W., KILISZEK, C., Industrial Institute of Electronics, Warsaw. [Original version not given]

"A Miniature Ion-Evaporation Pump."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 647-649. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: The authors constructed a pump with 4 electrodes, with a glowing tungsten cathode. Properties and performance of the pump are described. Pump has a very low power consumption.
4 Figures, 1 Polish reference.

1/1

CZECHOSLOVAKIA

PATY, L., Chair of Electronics and Vacuum Physics at Charles University (Katedra Elektroniky a Vakuove Fysiky Karlovy University) Prague.

"Vacuum Cold-Traps with a Condensation Surface of Non-fluctuating Size."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 649-651. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: The author describes two types of vacuum cold-traps that were constructed in his laboratory. Both are free of the usual trouble, that is increase in temperature and lowering of the level of the cooling liquid.
2 Figures, 4 Western references.

1/1

CZECHOSLOVAKIA

BALAS, V., Chair of Electronics and Vacuum Physics at the University of J.E. Purkyne (Katedra Elektroniky a Vakuove Fysiky University J.E. Purkyně), Brno

"Improvement of Indium Valve."

Prague, Ceskeslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 651-652. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: A new type of indium valve was developed by the author. The construction minimizes the formation of oxides that decrease the adhesion of the metal to glass.
1 Figure, 1 Czech, 2 German references.

1/1

CZECHOSLOVAKIA

SIMONOV, V. A., MILESHKIN, A.G., Research Institute for Vacuum Electronics, at the Council of Ministers of the USSR, Moscow.
[Original version not given]

"Method and Apparatus of Impulse Mass Spectrometer for Studying Fast Phenomena in Low-Pressure Gases and Non-Stationary Plasma."

Prague, Ceskeslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 653-665. Transactions of the 2nd Czechoslovak Conference on Electronics.

Authors English Abstract: Characteristics of an impulse point spectrometer for the transit time (chronotron) are given. Neutral gases at pressures of 1×10^{-10} to 10 mm Hg, ions in a non-stationary plasma with concentrations 10^{-6} to 10^{-16} cm^{-3} and ions in a strong magnetic field can be analyzed. Minimum time needed 1×10^{-7} sec. but even continous operation is possible. Examples of applications are given: currents of molecules desorbed from solids, interaction of hydrogen plasma with walls of vacuum system, passage of atomic beams through ionized plasma. 12 Figures, 1 Western, 3 Russian references.
1/3

CZECHOSLOVAKIA

MASICA, B., Industrial Electrotechnical Institute, Warsaw.
[Original version not given]
"On The Problem of the Gas-Desorption from the Electron Valves Components During their Working Time."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 665-667. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: The author studied gas desorption in an omegatron having an oxide cathode. Changes in the composition of gases in the valve during operation were studied. Main components were H_2, CO, CH_4, H_2O, He and Ar. During the bombarding of the anode by electrons the gases from the surface layers of the metal are desorbed faster than those at a certain depth. To obtain good results of measurements it is necessary to assure desorbtion of gases by heating the anode for a sufficient length of time.
No references. 4 Figures.
1/1

CZECHOSLOVAKIA

MARKS, E., Industrial Electrotechnical Institute, Warsaw.
[Original version not given]
"Gas Desorption from Glass."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 667-669. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: Desorption of gases from glass was studied using glass of the composition 68% SiO_2, 17% Na_2O + K_2O, 8.6% CaO at temperatures of 100, 200, 300, 400, 500°C ; at this temperature the desorption was practically complete.
3 Figures, no references.

1/1

CZECHOSLOVAKIA

JECH, C., Institute of Physical Chemistry, Czechoslovak Academy of Science, Prague. (Ustav Fysikalni Chemie CSAV)

"Sputtering of Radioactive Atoms from Surface-Layers of Single Crystals by Ionic Bombardment."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 669-672. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: Atoms of radioactive isotopes of lead and bismuth (RaB and RaC) were incorporated into the surface layers of lead and copper single crystals sputtered by bombarding with a beam of krypton ions. Directional distribution of the material of the single sputtered crystal was compared with the distribution of the sputtered activity. In lead crystals they were substantially identical. This permits using radioactive labelling for the study of crystal structure of very thin layers on the surface of a lead single crystal. 1 Figure, 4 Western, 1 Eastern reference.

1/1

CZECHOSLOVAKIA

SKALA, J., Military Academy of Ant. Zapotocky, Brno. (Vojenska Akademie Ant. Zapotockeho)

"The Molecular Generator."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 673-685. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: Some applications of highly stable frequencies in science require a stability and definition of the frequencies which cannot be ensured by usual means, i.e. electronic methods of stabilizing frequencies or radiospectroscopic methods. A qualitatively new stage in the design of sources of a highly stable frequency is represented by methods of quantum radio-engineering, i.e. methods using a molecular generator or maser as the basic oscillator.
11 Figures, 17 references, 6 Western, 5 German, 6 Russian.

1/1

CZECHOSLOVAKIA

BERNASHEVSKIY, G.A.; CHERNOV, Z.S.; Institute of Radiotechnology and Electronics, Academy of Science of the USSR, Moscow. [Original version not given]

"The Resonance Properties and Fluctuations Due to High-Frequency Oscillations Amplification in the System Plasma-Electron Beam."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 686-690. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: Resonance and fluctuation properties of a plasma-electron beam system in a longitudinal magnetic field were studied. It was found that resonance properties appear less sharply in experiments than in theory. Hypothesis was derived that the fluctuations in the electron beam are decisive for the height of the noise level in the system and that the fluctuations of the plasma itself have only a small influence.
8 Figures, 4 Western, 7 Russian, 1 Japanese references.

1/1

CZECHOSLOVAKIA

AKALOVSKIY, I.V., Institute of Radiotechnical Problems Academy of Science of the USSR, Kiev. [Original version not given]

"Kinetics of Electron Motion in a Phasochronous Generator with Combined Interaction."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 691-697. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: The paper describes the principle of the phasochronous generator with transversal and combined interaction. Relations are given for the magnetic induction of the generator of a direct and back wave and equations are found for the trajectories of the electrons in a generator with combined interaction.
4 Figures, 1 Russian reference.

1/1

CZECHOSLOVAKIA

FRIC, V., Research Institute for Vacuum Electrotechnology, Prague. (Vyskumny Ustav pro Vakuovou Elektrotechniku)

"Electronic Limitation of the High-Frequency Output Power of Magnetrons."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 697-709. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: A relation is derived for the stability of the working mode from the synchronization of the basic components of a high-frequency field and electrons in the neighborhood of the cathode. The way in which the problem is put shows the influence of the space charge on the upper limit of the magnetic field, at which the magnetron can be operated stably in the π mode. The limiting influence of the space charge and the high-frequency field in the interaction space is included in the common func-

1/2

CZECHOSLOVAKIA

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 697-709.

tion F, the value of which was determined from an evaluation of the data published on a large number of magnetrons. The conclusions reached can be used with advatage in designing a new magnetron as a criterion of the fundamental possibility of the generation of the required high-frequency output.

5 Figures, 8 references, 3 Western, 3 Czech, 1 German, 1 Russian.

2/2

CZECHOSLOVAKIA

DONOCIK, R., Research Institute for Communications Technique of A.S.Popov, Prague, (Vyzkumny Ustav pro Sdelovaci Technika A. S. Popova)

"Impedance Theorem of the Effect of Inhomogeneity in Arrangement with Electromagnetic Field."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 709-720. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: The well known relation for the complex frequency of cavity resonators with small inhomogeneity is derived in a manner which permits the simple determination of the range of validity of the approximate relation. Further the procedure for obtaining an impedance theorem of the influence of an arbitrary inhomogeneity in closed electromagnetic formations is outlined. The uses of the new theorem are described. A listed approximate relation was derived to explain the effectiveness of the theo-

1/2

- -

CZECHOSLOVAKIA

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 709-720.

rem. The new theorem can be used in non-contact measurement of the complex material constants of permittivity ε and permeability μ by means of an electromagnetic field.
2 Figures, 5 references, 3 Western, 2 Czech.

2/2

CZECHOSLOVAKIA

DUROCEK, J., Chair of Physics University of Transportation (Katedra Fyziky Vysokej Skoly Dopravnej, Zilina; and TIRPAK, A., Chair of Experimental Physics, Faculty of Natural Sciences at the Comenius University (Katedra exper. fyziky Prirodovedeckej Fakulty Univerzity Komenskeho), Bratislava.

"Directional Coupler in 3 CM Band with use of Cycletron Resonance in Gaseous Discharge."

Prague, Ceskoslovensky Casopis pro Fyziku, Vol 12, No 5-6, April 1962, pp 720-722. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: The authors describe a coupler suitable as a modulating or regulating element. It is possible to obtain amplitudinally modulated signals that can be used in selective amplifiers.
3 Figures, 2 Western, 2 Czech references.

1/1

CZECHOSLOVAKIA

KOLOVRAT, J., Chair of General Physics at the Faculty of Mathematics and Physics at Charles University (Katedra Obecne Fyziky Matematicko-Fyzikalni Fakulty, Karlovy University), Prague.

"Simple Production of Some Waveguide Members for Band 2.35-3.65 cm."

Prague, Ceskoslovensky Casopis pro Fyziku, Vol 12, No, 5-6, April 1962, pp 723-724. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: The author describes a method of producing waveguide members that is easily reproduced in any laboratory.
2 Figures, 2 Czech references.

1/1

CZECHOSLOVAKIA

HAMAL, K., Faculty of Technical and Nuclear Physics, CVUT,* Prague. (Fakulta Technicke a Jaderni Fysiky CVUT)

"Experimental Methods of Transmitter Tube Testing from the Viewpoint of their Application in the Radar Sets Provided with the MTI System."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 724- 727. Transactions of the 2nd Czechoslovak Conference on Electronics.

Abstract: The author studied various testing methods and developed a method suitable for testing magnetrons. The method is also suitable for testing stabilotrons, amplitrons and clystrons.
4 Figures, 10 references, 7 Western, 2 Czech, 1 Russian.

*[Ceske vysoke uceni technicke; Czech Institute of Technology]

1/1

CZECHOSLOVAKIA

WINTER, E., Institute of Technical Physics, Hungarian Academy of Science, Budapest. [Original version not given]

"Contributions to the Problem of the Electron."

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 728-733. Transactions of the 2nd Czechoslovak Conference on Electronics.

Author's English Abstract: Problems studied covered: minimum magnitude of basic physical quantities, Planck's action quantum and elementary charge from the minimum quantities. Further studies covered the shortest possible trajectory of an electron. Calculation of the electron mass from the field energy gives the correct value of the electron radius. Discontinous motion of electron permits the wave process closely connected with the displacing current of the moving electron, to be ascribed to the moving electron. The wave-length of this process is given by the relation $\lambda = (d/v)c$, where

1/2

CZECHOSLOVAKIA

Prague, Ceskoslovensky Casopis pro Fysiku, Vol 12, No 5-6, April 1962, pp 728-733.

d is the minimum trajectory, v the velocity of the electron and c the velocity of light. The identification of this wave -length with De Broglie's wave-length of an electron gives for d the Compton electron wave-length d = h/mc.
No references.

2/2

CZECHOSLOVAKIA

TUHACEK, Karel ; Usti nad Orlici [Affiliation not given]

" Special Types of Continuous Functions of Multiple Variables"

Bratislava, Matematicko-fyzikalni casopis of the Slovak Academy of Sciences, Vol 13, №1 , 63, pp 3-15

Abstract [Author's French and Russian summaries modified]: Two theorems are analyzed, one with a continuous function F(x) of "n" variables and another with a continuous function G(x) of "n" variables where G(x) is a full differential at each point and the partial derivatives of the first order are discontinued at any given point $\alpha \in A$. Solutions of equations pertaining to each theorem are given demonstrating characteristics of functions in question.

7 references, predominantly Western

1/1

CZECHOSLOVAKIA

FABRICI, Imrich ; Bratislava [Affiliation not given]

" On Totally Maximal Elements in Semigroups "

Bratislava, Matematicko-fyzikalni casopis of the Slovak Academy of Sciences, Vol 13, №1 , 63, pp 16-19

Abstract [Author's English summary modified]: Two theorems are analyzed on the basis of certain assumptions regarding the structure of semigroups.

3 Western and one Czech references

1/1

CZECHOSLOVAKIA

KOTZIG, Anton; Department of Mathematics, Slovak Academy of Sciences, Bratislava (Kabinet matematiky Slovenskej akademie vied).

" From the Theory of Euler's Polyhedrons " [Russian article]

Bratislava, Matematicko-fyzikalni casopis of the Slovak Academy of Sciences, Vol 13, N°1, 63, pp 20-31.

Abstract: [Author's English summary modified]: Eight theorems are defined for Euler's polyhedrons with given edges h, faces S_1 and S_2 incident with h and $\gamma(S_i)$ denoting the number of vertices incident with face S_i. A specific polyhedron P of n-th degree for a case when each of its vertices is incident exactly with n edges in considered in the analysis. Values of function $\sigma(h)$ are derived in the theorems.

2 Western and one Czech reference

1/1

CZECHOSLOVAKIA

KAUCKY, Josef ; Department of Mathematics, Slovak Academy of Sciences, Bratislava (Kabinet matematiky Slovenskej akademied vied).

" About a Problem in the Ancient Chinese Mathematics "

Bratislava, Matematicko-fyzikalni casopis of the Slovak Academy of Sciences, Vol 13, N°1, 63, pp 32-40

Abstract[Author's German summary modified]: A certain mathematical relation found in an ancient Chinese work on mathematics, but lacking an analytical solution and proof, has been a subject for study of numerous modern mathematicians who seem to have succeeded in different ways to arrive at a solution . A suggestion is made in this paper for a simplified solution.

12 references, predominantly Soviet-bloc.

1/1

CZECHOSLOVAKIA

HRMOVA, Renata; Chair of Mathematics and Descriptive Geometry, Electrotechnic Faculty, Slovak Institute of Technology, Bratislava (Katedra matematiky a deskriptivni geometrie elektrotechnicke fakulty Slovenskej vysokej skoly technicke).

" On Generalized Ideals in Semigroups " [Russian article]

Bratislava, Matematicko-fyzikalni casopis of the Slovak Academy of Sciences, Vol 13, N°1, 63, pp 41-54

Abstract [Author's English summary modified]: The author introduces a certain relative ideal "H-ideal" for facilitating solutions of problems of subsemigroups of simple semigroups which can also be useful in the study of general semigroups.

5 Soviet-bloc and one Western references

1/1

CZECHOSLOVAKIA

CLIFFORD, A.H.; Tulane University of Louisiana, New Orleans, La, USA

" Note on a Double Coset Decomposition of Semigroups due to Stefan Schwarz " [English article]

Bratislava, Matematicko-fyzikalni casopis of the Slovak Academy of Sciences, Vol 13, N°1 , 63, pp 55-57

Abstract: The author departs from the Stefan Schwarz' theorem that any homomorphism "φ" of a completely simple semigroup "S" onto a group "G" can be described by a double coset decomposition of "S" with respect to the kernel "H" of "φ". An example given by the author proves that there exist regular semigroups with the Schwarz property that are not completely simple.

One Czech reference

1/1

CZECHOSLOVAKIA

WEISS, Jan; Chair of Physics, Faculty of Mechanical Engineering, Slovak Institute of Technology, Bratislava (Katedra fyziky strojnicke fakulty Slovenskej vysoke skoly technickej)

" A Contribution to the Method of Determination of Potentials from the Singularities of Jost Functions "

Bratislava, Matematicko-fyzikalni casopis of the Slovak Academy of Sciences, Vol 15, No 1, 65, pp 58-63

Abstract [Author's English summary modified] : A simplified method for solving equations determining Jost functions is outlined in this paper with reference to functions regular in the origin in the complex plane of impulse as well as to cases when Just functions have the poles of the first and second order applied to the origin of coordinates.

3 Soviet-bloc references

1/1

CZECHOSLOVAKIA

KAVECANSKY, Vincent; HAJKO, Vladimir; DANIEL-SZABO, Juraj ; Chair of Physics, Institute of Technology, Kosice (Katedra fyziky vysoke skoly technicke).

" Effects of Gradual Demagnetizing on Makrostructures of Polycrystal Fe-Si Sheets " [German article]

Bratislava, Matematicko-fyzikalni casopis of the Slovak Academy of Sciences, Vol 15, No 1, 65, pp 64-71

Abstract [Authors' Russian summary modified] : Effects of gradual non-symmetric demagnetizing on structures of Fe-Si polycrystal sheet specimens by using the Bitter-Akulov cintered method are analyzed in the light of reptation and other phenomena related to changes in the structures.

7 Western and 2 Czech references

1/1

CZECHOSLOVAKIA

MARTISOVITS, Viktor; Chair of Experimental Physics, Faculty of Natural Sciences, Komensky University, Bratislava (Katedra experimentalni fyziky prirodovedecke fakulty university Komenskeho)

" High Frequency Mass Spectrometer "

Bratislava, Matematicko-fyzikalni casopis of the Slovak Academy of Sciences, Vol 13, #1, 63, pp 72-79

Abstract [Author's English summary modified]: A mathematical analysis of Bennet's "rf" mass spectrometer is given in this paper and a design of a three-stage analyzer forming part of a mass spectrometer based on this analysis is described. The designed mass spectrometer is claimed to have a sensitivity 2.10^{-2}% of volume and is suitable for measuring absolute age of minerals by means of argon-calium methods.

2 Western and one Soviet-bloc references

1/1

CZECHOSLOVAKIA

LAMPERT, Milos; SRANKO, Silvestr; SURKA, Stefan; TRPAK, Andrej; Chair of Experimental Physics, Faculty of Natural Sciences, Komensky University, Bratislava (Katedra experimentalni fyziky prirodovedeckej fakulty university Komenskeho).

" Measuring of Relaxation Periods Using Spin-Echo method "

Bratislava, Matematicko-fyzikalni casopis of the Slovak Academy of Sciences, vol 13, #01, 63, pp 80-96

Abstract [Authors' English summary modofied] : A special nuclear spin-echo spectrometer has been designed and adapted for Hahn's and Carr-Purcell's methods in the range of frequencies 13 to 17 Mc/s. The instrument is designed for measuring of relaxation times "T_1" and "T_2" in the range of 5.10^{-4} to 5.10^{-1} sec with an accuracy of 5%. Results of measurments of "T_1" and "T_2" with aqueous solution of $CuSO_4$ are given.

12 references predominantly Western

1/1

2568, 2573

CSO: 2000-N

- END -