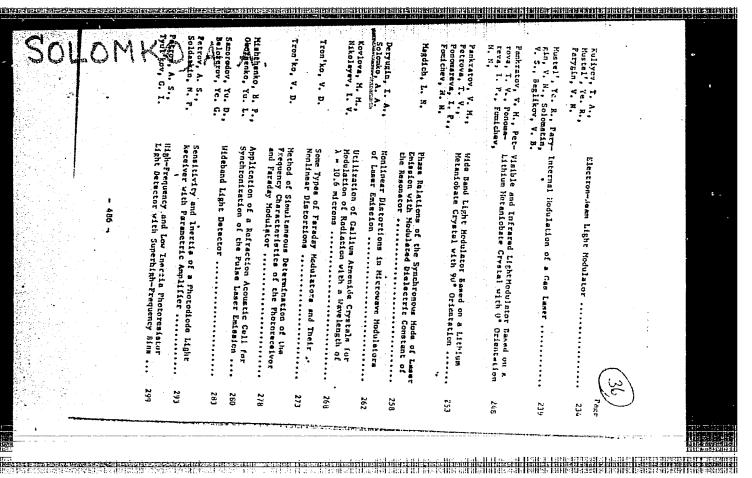(3)

USSR
BUDOVSKIY, I. I. et al., Pribory i Tekhnika Eksperimenta, No 3, May/Jun 72,
pp 110-112

A study of the frequency response of the meter showed a sharp drop in the
band above 600 kHz. This is caused by a temperature increase due to losses
from high hysteresis impedance. This impedance is appreciably reduced by
placing the $Y_3Fe_5O_{12}$ crystal in a transverse magnetic field. The optimum
field strength was found to be close to 500 oersteds.

4/4

- 117 -

TECHNICAL TRANSLATION

FSTC-HT-23-2015-72

ENGLISH TITLE: PROBLEMS OF LASER BEAM DATA TRANSMISSION
PROCEEDINGS OF THE FIRST ALL-UNION CONFERENCE, KIEV,
SEPTEMBER 1968

FOREIGN TITLE: PROBLEMY PEREDACHI INFORMATSII LAZERNYM IZLUCHENIYEM

AUTHOR: I. A. DERYUGIN, ET AL.

SOURCE: KIEV ORDER OF LENIN STATE UNIVERSITY
IMENI T.G. SCHEVCHENKO

Translated for FSTC by ACSI

NOTICE

The contents of this publication have been translated as presented in the original text. No attempt has been made to verify the accuracy of any statement contained herein. This translation is published with a minimum of copy editing and graphics preparation in order to expedite the dissemination of information.

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USSR

UDC 621.373.029.7

GUSEV, V. A., SIDORENKO, V. S., SOLONKO, A. A.

"A Laser Modulator on a Frequency of 1.5 GHz With Low Control Power"

Moscow, Radiotekhnika i Elektronika, Vol 16, No 10, Oct 71, pp 1994-1995

Abstract: The article is a report on a microwave laser modulator with a toroidal resonator cavity. A modulator with extremely low controlling power can be made by utilizing the extremely high electric field concentration in a capacitive gap in the toroidal resonator cavity. Resonators with X-cut and Z-cut $LiNbO_3$ crystals were studied. The light source was a helium-neon laser. The parameters of the modulator with the X-cut crystal are much superior to those for the Z-cut. However, the X-cut crystal has a natural birefringence which is strongly dependent on temperature. For normal operation of the modulator, the temperature should be stabilized to within $0.03°C$. One figure, bibliography of three titles.

1/1

1/2   018   UNCLASSIFIED   PROCESSING DATE--20NOV70
TITLE--INITIATION OF RADICAL POLYMERIZATION IN EMULSIONS -U-

AUTHOR-(04)-IVANCHEV, S.S., SOLOMKO, N.I., KONOVALENKO, V.V., YURZENKO,
  V.A.
COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(3), 593-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--RADICAL POLYMERIZATION, POLYMERIZATION KINETICS, STYRENE,
  PEROXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0223   STEP NO--UR/0020/70/191/003/0593/0595

CIRC ACCESSION NO--AT0132495
                    UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--20NOV70

CIRC ACCESSICN NO--AT0132495
ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE EMULSION POLYMN., KINETICS OF
STYRENE IN THE PRESENCE OF VARIOUS INITIAORS SUGGESTED THAT COMPOS.
HAVING AN OPTIMUM RATIO BETWEEN THE POLAR (PEROXIDE) AND NONPOLAR
MOIETIES IN THE MOL. WERE THE MOST EFFECTIVE INITIATORS. THESE
INITIATOR MOLS. WERE ORIENTED IN SUCH A WAY THAT THE PEROXIDE BONDS
ENETERED THE SPHERE OF INFLUENCE OF THE SURFACE FORCES WHICH FACILITATED
ITS CLEAVAGE.   FACILITY: ODESS. GOS. UNIV. IM. MECHNIKOVA,
ODESSA, USSR.

UNCLASSIFIED

1/2   016   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--STUDIES OF PACKING DENSITY OF SUPERMOLECULAR STRUCTURES IN FILLED
AND UNFILLED POLYFORMALDEHYDE BY MEANS OF MICROHARDNESS -U-
AUTHOR-(02)-GORDIYENKO, V.P., SOLOMKO, V.P.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOLEK SOED (USSR), VOL. 12, NO. 2, P. 300-5 (FEB. 1970)

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--MOLECULAR STRUCTURE, FILLER, POLYFORMALDEHYDE, SPHERULITE,
MICROHARDNESS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1846   STEP NO--UR/0459/70/012/002/0300/0305

CIRC ACCESSION NO--AP0135411
                              UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LOCAL MICROHARDNESS OF DIFFERENT
PARTS OF SUPERMOLECULAR STRUCTURES IN UNFILLED AND FILLED
POLYFORMALDEHYDE WITH THE PARTICLES OF VARIOUS SHPAES BUT WITH THE SAME
NATURE OF SURFACE HAS BEEN STUDIED. THE MICROHARDNESS IS RELATED TO THE
PACKING DENSITY. IN THE SPHERULITES IT DECREASES FROM THE CENTER TO THE
BORDERS.   ACTIVE FILLER CONSIDERABLY INCREASES MICROHARDNESS AND
PACKING DENSITY IN THE SPHERULITES. AT POLYFORMALDEHYDE CRYSTALLIZATION
WITH INACTIVE FILLER A DEFECT ZONE WITH LOOSE PACKING IS FORMED AROUND
ITS PARTICLES. MICROHARDNESS OF THE POLYMER IN SPHERULITE RIBBONS IS
HIGHER THAN IN SINGLE SPHERULITES. THE MINIMUM MICROHARDNESS IS
OBSERVED ON THE BORDERLINES OF SUPERMOLECULAR STRUCTURES.

UNCLASSIFIED

1/2   029   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--STABILIZATION OF SUPRAMOLECULAR STRUCTURE AND MECHANICAL PROPERTIES
  OF POLYFORMALDEHYDE BY THE INTRODUCTION OF FILLERS -U-
AUTHOR-(02)-SOLOMKO, V.P., GORDIYENKO, V.P.

COUNTRY OF INFO--USSR

SOURCE--FIZ.-KHIM. MEKH. MATER. 1970, 5(6), 683-7

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--MOLECULAR STRUCTURE, FILLER, POLYFORMALDEHYDE, ALUMINUM OXIDE,
  SILICA, PLASTIC MECHANICAL PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0954   STEP NO--UR/0369/70/005/006/0683/0687

CIRC ACCESSION NO--AP0124614
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0124614
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF 3AL SUB2 O SUB3.2SIO
   SUB2 IN THE FORM OF NEEDLES (I), POWDER (II) OR PRISMS (III) ON THE
   STRUCTURAL STABILITY AND MECH. PROPERTIES OF POLYFORMALDEHYDE WAS
   STUDIED. I AND II IMPROVED THE MECH. PROPERTIES OF THE POLYMER AND
   STABILIZED THE SUPRAMOL. STRUCTURE, WHEREAS III WAS INACTIVE. THE AGING
   STABILITY WAS EXPLAINED BY AN EQUIL. STATE OF THE POLYMER WITH I OR II.
   THE FILLERS WERE CLASSIFIED ACCORDING TO THEIR "THERMODYNAMIC ACTIVITY".
      FACILITY: KIEV. GOSUNIV., KIEV, USSR.

UNCLASSIFIED

1/2   018   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--FILLED MOLDING COMPOSITION -U-

AUTHOR-(02)-GORDIYENKO, V.P., SOLOMKO, V.P.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 267,064
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--01APR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHEMICAL-PATENT, FORMALDEHYDE, ALUMINUM OXIDE, SILICON
DIOXIDE, WEAR RESISTANT MATERIAL, MOLDING MATERIAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/1805   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0132071
                         UNCLASSIFIED

CIRC ACCESSION NO--AA0132071
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FILLED MOLDING COMPN. CONSISTED OF
  A MIXT. OF STABILIZED POLYFORMALDEHYDE AND A FILLER STRUCTURE FORMING
  AGENT. TO INCREASE WEAR RESISTANCE AND RESISTANCE TO AGING NEEDLE
  SHAPED CRYST. MULLITE (WITH THE COMPN. 3AL SUB2 O SUB3 TIMES 2SIO SUB2
  AND CONTG. PARTICLES 30-300 MU LONG AND 3-8MU THICK) WAS USED FOR THE
  STRUCTURE FORMING AGENT.   FACILITY: SHEVCHENKO, Y. G., STATE
  UNIVERSITY, KIEV.

UNCLASSIFIED

Acc. Nr.
AP0045162   Abstracting Service: Ref. Code
CHEMICAL ABST.   *5-70*   UR0191

91068d **Effect of dispersed fillers on the temperature depen-
dence of the specific heat of polystyrene.** Tryuchenko, V. S.;
Dushchenko, V. P.; Solomko, V. P.; Galinskaya, V. I. (USSR).
Plast. Massy 1970, (1), 31-2 (Russ). Block polystyrene (I) was
filled with a finely divided kaolin (diam. ~1-5 μ), 2 fractions of
powd. quartz (II) (diam. <0.05 mm; 0.1 < diam. <0.16 mm),
and glass fibers (diam. = 0.003 mm, length = 1.0 mm), and its
sp. heat (C_p) as a function of temp. was detd. thermal anal. at
20-140°. The C_p of the filled I increased with temp.; the rate of
increase in the glass state region was 7×10^{-4} cal/g-degree. In-
creased filler content brought about a decline in C_p, which was
most pronounced in I-II compns. (when diam. <0.05 mm), pre-
sumably due to the lower heat capacity of the filler and a reac-
tion with the binder.   CKJR

REEL/FRAME
19780062   7

111994h Thermomechanical and electrical properties of poly-
(butyl methacrylate) polymer homologs. Nizhnik, V. V.; So-
lomko, V. P.; Zueva, R. A.; Nizhnik, A. S.; Pochinok, V. Ya.
(Kiv. Derzh. Univ., Kiev, USSR). Dopov. Akad. Nauk Ukr.
RSR, Ser. B 1970, 32(1), 67-70 (Ukrain). Thermomech. and ther-
moelec. properties of the title polymer were dependent upon the
mol. wt. of the polymer. Considerable changes were observed,
esp. for the elec. vol. resistance, during the transition states of the
polymer.   O. Elsner

USSR

YEMEL'YANOVA, L. I., DUSHIN, YU. A., SOLOMKO, YU. V.

UDC 669.285.018.8:620.186:669-977

"Variation of the Structure of MT Alloy in the Case of High-Temperature Hold-ing in an Inert Gas Stream"

Metallovedeniye -- V sb. (Physical Metallurgy -- collection of works), No 14, Leningrad, Sudostroyeniye Press, 1970, pp 194-199 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4I760)

Translation: The structure of MT alloy was studied after operation in an argon stream at 1,700° and holding from 10 minutes to 20 hours. Complex re-distribution of the alloy components under the effect of a mixture of O_2 in argon was detected. The experimental results agree with thermodynamic and diffusion estimates. There are 4 illustrations, 1 table, and an 8-entry bibliography.

1/1

USSR

UDC 547.754.756.759.07

KOST, A. N., SOLOMKO, Z. F., PRIKHOD'KO, N. M., and TERENT'YEV, A. P. (deceased)
Moscow State University Imeni M. V. LOMONOSOV, Dnepropetrovsk State University

"Chemistry of Indole. XXIV. Synthesis of 1-Acetyl-6-methyl-8-keto-2,3,7,8-tetrahydro-1H,9H-1,4-diazepine-[2,3-f]-indole"

Abstract: To 1.91 g of 1-acetyl-5,6-diaminoindoline in 50 ml dry xylene, 1.52 ml of acetoacetate in 5 ml xylene is added dropwise with heating. The reaction mixture is heated for one hour with continuous removal of water. After cooling, a solid product -- 1-acetyl-6-methyl-8-keto-2,3,7,8-tetrahydro-1H,9H-1,4-diaze-pino-[2,3-f]-indole (I) is obtained, which after repeated recrystallization from methanol melts at 223.5-224.5°. Another route to (I) consists of indoline reaction with acetoacetate to form ethyl ester of β-[(1-acetyl-6-aminoindo-linyl-5)-amino]crotonic acid, which then reacts with sodium ethoxide to yield (I). Heating (I) in 2N sulfuric acid gives 2-methyl-5-acetyl-6,7-dihydroimidazo-[2,3-f]-indole, m.p. 328-329°.

1/1

USSR   UDC: 621.396.6:621.315.61

SOLOMONIK, A. M.

"A Method for Accelerated Determination of the Heating Resistance of Electrical Insulation Materials and Probabilistic Evaluation of Service Life"

Tr. Mosk. elektrotekhn. in-ta svyazi (Works of the Moscow Electrical Engineering Institute of Communications), 1970, vyp., pp 188-195 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12V420)

Translation: A method of accelerated testing utilizing differential thermal analysis was used to study the heating resistance of high-temperature materials. The results confirm the theoretical possibility of accelerating tests for heating resistance by using methods of thermal analysis to predetermine the activation energy. A study was made of high-temperature molding materials SMF-50M (base -- alkali-free aluminoborosilicate fabric) and UMF (base -- glass fiber and chromium oxide). The binder for both materials is methylphenylpolysiloxane resin. The continuous working temperature for these materials is $300^{\circ}C$. Four illustrations, bibliography of four titles. Ye. M.

1/1

USSR

UDC: 621.372.828

VOROB'YEV, P. A., MALYUTIN, N. D., SOLOMONIK, I. Sh.

"Computing the Capacitance of an Asymmetrical Zigzag Ribbon Line With Shielding"

Abstract: Open ribbon delay lines with better operating characteristics than ordinary lines of a similar type are examined. The superiority of these lines results from the use of shielding which reduces radiation losses, increases the linear capacitance, and thus reduces the dimensions of the ribbon conductor. For compactness in the 30-100 MHz range, the lines are manufactured in zigzag form. In this type of construction, the shielding reduces coupling between neighboring strips and provides phase shift linearity along the length of the line. Results are given of the investigation of the field of the line in electrostatic models, a picture of the field being obtained on electrically conducting paper. A method is offered for correcting the inaccuracies in computing the capacitance of the line committed by earlier researchers, and curves of experimental results as compared with the results computed by this method are given.
1/1

Navigation Aids

SOLOMONIK, M. Ye., ROTENBERG, M. I., IL'IN, G. B., RASIN, A. M., SHESTAKOV,
A. V., Members of the Scientific and Technical Society of Radio Engineering,
Electronics and Communications imeni A. S. Popov

"A High-Precision Radio Direction Finder With Steerable Antenna"

Abstract: The errors in radio direction finding due to distortions of the
phase front of the received signal increase with a reduction in wavelength.
One way to reduce these errors is to take a "sample" of the electromagnetic
field from as large a region of space as possible. A new way to realize
this method on meter wavelengths is considered which combines simplicity of
the direction finder circuit with short-base antennas and reduced sensi-
tivity to local distortions of the phase front. The antenna is steerable
about the vertical axis. The motion of the antenna results in a change in
the errors of the instrument in accordance with a periodic law, with the
result that time averaging considerably reduces error. The authors discuss
the theory of operation of such a direction finder with an antenna which
moves in a closed curve.

1/1

1/2   018   UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--OXIDATIVE CHLORINATION OF TOLUENE. 1. EFFECT OF THE COMPOSITION OF
THE CHLORINATING MIXTURE AND TEMPERATURE ON THE OXIDATIVE CHLORINATION
AUTHOR--SOLOMONOV, A.B., GERTSEN, P.P., KETOV, A.N.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGARD) 1970, 43(2), 471-2

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHLORINATION, OXIDATION, TOLUENE, THERMAL EFFECT, CHEMICAL
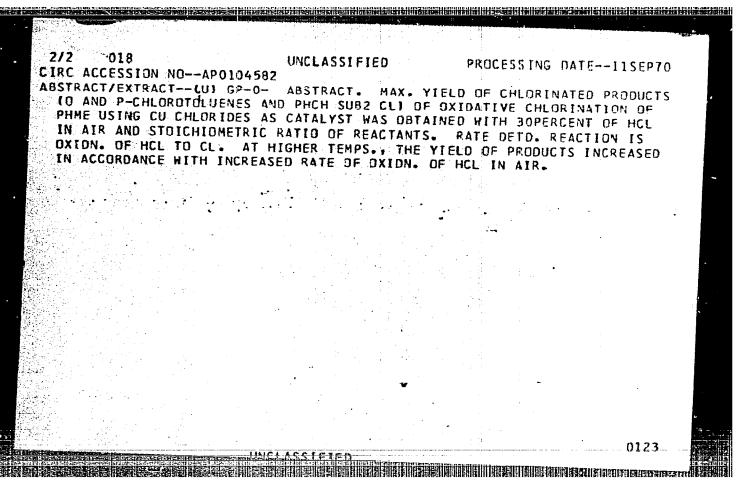REACTION RATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/1216   STEP NO--UR/0080/70/043/002/0471/0472

CIRC ACCESSION NO--AP0104582
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0104582
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MAX. YIELD OF CHLORINATED PRODUCTS
   (O AND P-CHLOROTOLUENES AND PHCH SUB2 CL) OF OXIDATIVE CHLORINATION OF
   PHME USING CU CHLORIDES AS CATALYST WAS OBTAINED WITH 30PERCENT OF HCL
   IN AIR AND STOICHIOMETRIC RATIO OF REACTANTS. RATE DETD. REACTION IS
   OXIDN. OF HCL TO CL. AT HIGHER TEMPS., THE YIELD OF PRODUCTS INCREASED
   IN ACCORDANCE WITH INCREASED RATE OF OXIDN. OF HCL IN AIR.

0123

UNCLASSIFIED

USSR

UDC 681.332.65

CHETVERIKOV, V. N., BAKANOVICH, E. A., MEN'KOV, A. V., and SOLOMONOV, L. A.,
Moscow Higher Technical School

"Device for Forming Random Time Intervals"

USSR Authors' Certificate No 312253, Cl. G 06 f 1/02, filed 18 Mar 70,
published 13 Oct 71 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya
Tekhnika, No 5, May 72, Abstract No 5B205P)

Translation: The invention is related to the field of computer technology and
can be used in random process simulation. A well-known device containing a
cyclic shift register, coincidence circuits, OR circuits, a noise voltage
generator, a level quantizer, and commutator requires complex adjustment for
the required distribution function. The proposed device differs from this
one in that in it the control circuit for the advance of the cyclic shift
register has connected to it a generator of random pulses following a known
time interval distribution law, while the pulse inputs of the coincidence cir-
cuits have connected to them generators of periodic pulses, the frequency of
which changes during adjustment for the required distribution law. This
simplifies the process of adjusting for a given distribution law.

1/1

USSR

MAREYEV, I. V., SOLOMONOV, L. A., STREKALOV, L. N.

UDC 8.74

"A Data Gathering Control Algorithm"

Translation: A study was made of an algorithm for adaptive digitalization permitting data sampling for transmission over a communications channel at the times of arrival of data on an investigated measuring signal significant to the user. The conditions of creating an adaptive digitalization device are analyzed: selection of the system of base functions, procedures for calculating the coefficients, an algorithm for calculating and controlling the error in the correspondence of the transmitted signal to its model. As the base functions, the orthogonal system of Haar polynomials is used which has the property that any continuous function is expanded in a uniformly converging series in the system functions. It is noted that the algorithm obtained significantly improves the quality of the adaptive interpolation and noiseproofness of the digitalizer, and it increases the length of the adaptation interval.
1/1

USSR

UDC: 621.373.444.681.333

CHETVERIKOV, V. N., BAKANOVICH, E. A., MEN'KOV, A. V., SOLOMONOV, L. A.,
Moscow Higher Technical School imeni N. E. Bauman

"A Device for Shaping Streams of Random Events"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 13, May 72, Author's Certificate No 335684, Division G, filed 1 Jun 70,
published 11 Apr 72, pp 204-205

Translation: This Author's Certificate introduces a device for shaping a
stream of random events. The device contains a controllable frequency pulse
generator whose outputs are connected to a block of coincidence gates. The
device also contains a coincidence gate number register whose outputs are
connected to a pulse counter. The unit also includes a blocking circuit and
a pulse generator. As a distinguishing feature of the patent, the instal-
lation is designed for producing streams of random events which are dis-
tributed in space and in time. The device contains a unit for setting the
duration of a random test, a coincidence gate number encoder whose inputs
are connected to the outputs of the block of coincidence gates, while the
outputs of the encoder are connected to the coincidence gate number register.

1/2

USSR

CHETVERIKOV, V. N., et al., USSR Author's Certificate No 335684

The outputs of this number register are connected in addition to the corresponding inputs of the blocking circuit whose output is connected to the first potential input of the block of coincidence gates. The second potential input of this block is connected to the output of the unit for setting the random test duration. The output of the pulse generator is connected to the pulse counter, and the output of the pulse counter is connected in turn to the output of the device, and to the corresponding input of the coincidence gate number register.

2/2

-- 101 --

USSR

CHETVERIKOV, V. N., BAKANOVICH, E. A., MEN'KOV, A. V., and SOLOMONOV, L. A.

"A Device for Shaping Random Time Intervals"

Abstract: This patent claims a device for the shaping of random time intervals, containing a cyclical shift register, to the outputs of each digit of which are connected potential inputs from the coincidence circuits; the outputs of these coincidence circuits are connected with the output of the device through the first "OR" circuit; the output of the device is connected to the inputs of the device's "0" and "1" through the second "OR" circuit of the cyclical register, distinguished by the fact that for the purpose of simplifying adjustment of the circuit a random impulse generator with a known law of distribution for the time intervals is connected to the circuit for controlling the advance of the cyclical shift register, and periodic impulse generators with a regular frequency are connected to the inputs of the coincidence circuits.

1/1

USSR   UDC: 681.3-523.8

SOLOMONOV, L. A., P'YAVCHENKO, A. N., ZHIRKOV, V. F., BAKANOVICH, E. A., Moscow
Higher Technical Academy imeni N. E. Bauman

"A Device for Shaping Random Time Intervals"

Abstract: This Author's Certificate introduces a device for shaping random time intervals. The unit contains a noise voltage generator, a level quantizer, commutator, cyclic shift register, cadence generator, and AND and OR circuits. As a distinguishing feature of the patent, setting up the required law of time interval distribution is simplified by connecting the commutator outputs to some inputs of the AND circuits, connecting the outputs of the cyclic register to the other inputs of the AND circuits, and connecting the outputs of the AND circuits to the inputs of the OR circuit. The output of the OR circuit is connected to the input of the dump circuit for the cyclic register.

1/1

1/2   018   UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--PULSE METHOD FOR STUDYING THE THERMAL ACTIVITY OF DIELECTRIC
LIQUIDS -U-
AUTHOR--SPIRIN, G.G., POLYAKOV, YU.A., SOLOMONOV, S.D.

COUNTRY OF INFO--USSR

SOURCE--INZH.,FIZ. ZH. 1970, 18(2), 253-8

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--DIELECTRIC PROPERTY, HEAT CAPACITY, ETHYL ALCOHOL, WATER,
MATERIAL MIXING, MEASUREMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0580   STEP NO--UR/0170/70/018/002/0253/0258

CIRC ACCESSION NO--AP0107177
-------------------------------UNCLASSIFIED------------------

CIRC ACCESSION NO--AP0107177

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ON IMMERSING A THIN PLATE TEMP. SENSOR FORMED BY A METALLIC LAYER SUPPORTED BY A DIELEC. PLATE INTO A DIELEC. LIQ., A CONST. HEAT FLUX IS GENERATED AFTER INTRODUCTION OF A RECTANGULAR CURRENT PULSE. BY KEEPING THE INTERVAL OF THE PULSE AT 100-1000 MUSEC, THE HEAT CAPACITY OF THE BEARER PLATE CAN BE NEGLECTED AND THE EQUATION OF THERMAL CONDUCTION CAN BE APPLIED AND SOLVED. THE WIRING DIAGRAM OF THE MEASURING BRIDGE IS GIVEN, AS WELL AS THE CHANGE IN THERMAL ACTIVITY IN MIXING OF ETOH AND H SUB2 O. THE MEASUREMENT EXACTNESS DEPENDS ON INPUT SIGNAL AMPLITUDE; FOR AMPLITUDES OF 30-50 MM, IT IS 2-4PERCENT.

UNCLASSIFIED

1/2   030

UNCLASSIFIED

TITLE--MEASUREMENT OF THE BRIGHTNESS TEMPERATURE OF THE EARTH'S ATMOSPHERIC EMISSION IN THE SUBMILLIMETER BAND FROM A HEIGHT OF 35 KM

PROCESSING DATE--02OCT70

AUTHOR-(05)-LAPSHIN, V.I., SALOMONOVICH, A.E., SOLOMONOV, S.V., TROITSKIY, V.F., FRADKOV, A.B.

COUNTRY OF INFO--USSR

SOURCE--IZVUZ, RADIOFIZIKA, VOL. 13, NO. 3, 1970, P. 388-394

DATE PUBLISHED-------70

SUBJECT AREAS--NAVIGATION, PHYSICS, ATMOSPHERIC SCIENCES

TOPIC TAGS--RADIOMETER, RADIO BRIGHTNESS TEMPERATURE, SUBMILLIMETER WAVE, RADIO EMISSION, ATMOSPHERIC RADIATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1991/0846

STEP NO--UR/0141/70/013/003/0388/0394

CIRC ACCESSION NO--AP0110567

UNCLASSIFIED

2/2   030   UNCLASSIFIED   PROCESSING DATE--02OCT70
CIRC ACCESSION NO--AP0110567

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   DESCRIPTION OF A RADIOMETER AND
THE RESULTS OF PRELIMINARY MEASUREMENTS OF THE BRIGHTNESS TEMPERATURE OF
THE EARTH'S ATMOSPHERIC EMISSION, TAKEN AT A HEIGHT OF 35 KM AT
WAVELENGTHS FROM 0.5 TO 2MM.   THE SENSITIVE ELEMENTS OF THE RADIOMETER
CONSISTED OF N-TYPE INSB PHOTORESISTORS COOLED TO LIQUID HELIUM
TEMPERATURE.   ANGULAR DISTRIBUTIONS OF BRIGHTNESS TEMPERATURE WERE
OBTAINED IN THE VERTICAL PLANE.   THE NATURE OF THE DISTRIBUTION AND THE
RELATIVELY LOW BRIGHTNESS TEMPERATURE INDICATE THAT THE MAIN
CONTRIBUTION TO THE SUBMILLIMETER RADIATION IS MADE BY THE RELATIVELY
COLD UPPER LAYERS OF THE ATMOSPHERE.   FACILITY: AKADEMIIA NAUK
SSSR, FIZICHESKII INSTITUT, MOSCOW, USSR.

UNCLASSIFIED

USSR

5

UDC 621.181.001.5.

GRISHIN, A. D., GUTSALO, G. I., SHTAL'MAN, S. G., ABRYUTIN, A. A., DRONOV, L. A., SOLOMONOV, V. M., KROL', A. Ya. and BRITVIN, O. V., (all engineers); and Candidate of Technical Sciences VIKHREV, Yu. V., ORGRES-VTI-Kostromskaya GRES

"Results of a Study of the Combustion and Temperature Regime of the Lower Radiation Section of the TGMP-114 Boiler"

Moscow, Teploenergetika, No 3, 1973, pp 43-46

Abstract: Earlier gas-mazut boilers of this general type were not completely satisfactory on account of the low reliability of the heating surfaces (mainly the lower radiation section) and the great heat flow in the combustion chamber. This difficulty has been corrected in the new main-series supercritical pressure TGMP-114 boiler by reducing the number of boilers (from 8 to 6), securing maximal removal of the extreme burners from the side walls, and use of recirculation of cold smoke gases into the lower part of the furnace chamber.

The direct-flow TGMP-114 boiler has an output of 950 t/hr, with steam parameters of 255 kg/cm2 and 565/570°C. Analysis of operational data on chemical control
1/2

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USSR   5

GRISHIN, A. D., et al., Teploenergetika, No 3, 1973, pp.43-46

shows that in 1971 iron content of feed water was 10-15 µg/kg, 15-20 µg/kg
the previous year, and 20-50 µg/kg during the start-up period in 1969, with
high content of 100-150 µg/kg in individual cases. These facts point up the
formation of iron oxide deposits as a basic cause of the external corrosion
of the screening pipes of the lower radiation section, and emphasize the
necessity of water control and chemical cleansing.

2/2

1/2   026
TITLE--ON LATENT PERIOD OF THE KNEE JERK IN PRE MATURELY BORN INFANTS —U—

UNCLASSIFIED   PROCESSING DATE--13NOV70

AUTHOR-(02)-KAMENETSKAYA, A.G., SOLOMONOVA, Z.A.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII, 1970, VOL 6, NR 1,
PP 92-94

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--INFANT, REFLEX, BIOELECTRIC PHENOMENON, MUSCLE PHYSIOLOGY,
CENTRAL NERVOUS SYSTEM, BRAIN, BLOOD CIRCULATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0376

STEP NO--UR/0385/70/006/001/0092/0094

CIRC ACCESSION NO--AP0132605

UNCLASSIFIED

2/2   026   UNCLASSIFIED   PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0132605
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDIES HAVE BEEN MADE ON PRE
MATURELY BORN INFANTS ON THE 1ST AND THE 7TH DAYS OF THEIR POSTNATAL
LIFE. BIOELECTRICAL ACTIVITY WAS RECORDED IN M. QUADRICEPS OF THE
THIGH.   IT WAS DEMONSTRATED THAT THE INTERVAL BETWEEN STIMULATION AND
THE ONSET OF THE ELECTRICAL RESPONSE OF MUSCLE DECREASES DURING THE
DEVELOPMENT OF PRE MATURELY BORN INFANTS. HOWEVER THE DURATION OF THE
LATENT PERIOD DEPENDS NOT ONLY ON MORPHOLOGICAL MATURATION OF VARIOUS
PARTS OF THE REFLEX ARC BUT ON FUNCTIONAL CONDITION OF THE CENTRAL
NERVOUS SYSTEM AS WELL (AS INDICATED BY STUDIES ON MATURELY BORN INFANTS
WITH DISTURBANCES IN BRAIN BLOOD CIRCULATION.   FACILITY:
INSTITUTE OF EVOLUTIONARY PHYSIOLOGY AND BIOCHEMISTRY, USSR ACADEMY OF
SCIENCES, LENINGRAD.   FACILITY: INSTITUTE OF OBSTETRICS AND
GYNECOLOGY, USSR ACADEMY OF MEDICAL SCIENCES, LENINGRAD.

UNCLASSIFIED

USSR

MEZHLUMYAN, R. A. SOLOMONYAN, R. SH., Kirovakan Branch of the Yerevan Poly-
technical Institute imeni Karl Marx

"A Method for Determining the Unsteady Downwash Behind a Wing of Finite
Span in Supersonic Motion"

Yerevan, Izvestiya Akademii Nauk Armyanskoy SSR -- Mekhanika, No 6, 1970,
pp 50-53

Abstract: In the paper is presented a method for determining the unsteady
downwash behind a wing of finite span in the case of a supersonic flow, when
the wing, in addition to the basic translational motion, also performs
small supplemental oscillations according a harmonic law. By means of ex-
panding the stream into an exponential series on the basis of powers of the
Strouhal number, two-dimensional integral equations of the Abel type are
obtained for coefficients of expansion, the right-hand parts of which have
singularities at the ends of the integration intervals. Formulas for solving
these equations are given. Two figures, 7 bibliographic entries.

1/1

1/2   006

TITLE--ON ESTIMATES FOR SINGULAR VALUES OF INTEGRAL OPERATORS. IV -U-

UNCLASSIFIED

PROCESSING DATE--09OCT70

AUTHOR--SOLOMYAK, M.Z.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK LENINGRADSKOGO UNIVERSITETA, NO 1, MATEMATIKA, MEKHANIKA, ASTRONOMIYA, 1970, NR 1, PP 76-87

DATE PUBLISHED--------70

SUBJECT AREAS--MATHEMATICAL SCIENCES

TOPIC TAGS--INTEGRAL OPERATOR, APPROXIMATION

CONTROL MARKING--NO RESTRICTIONS

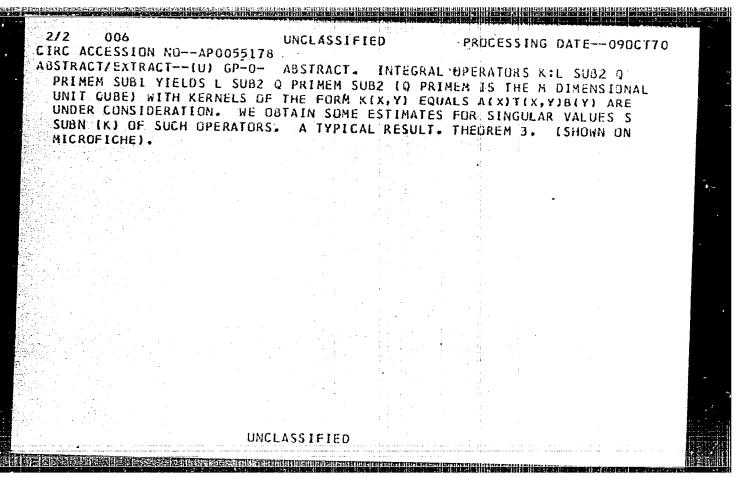DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0393

CIRC ACCESSION NO--AP0055178

STEP NO--UR/0043/70/000/000/0076/0087

UNCLASSIFIED

CIRC ACCESSION NO--AP0055178

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INTEGRAL OPERATORS K:L SUB2 Q PRIMEM SUB1 YIELDS L SUB2 Q PRIMEM SUB2 (Q PRIMEM IS THE M DIMENSIONAL UNIT CUBE) WITH KERNELS OF THE FORM K(X,Y) EQUALS A(X)T(X,Y)B(Y) ARE UNDER CONSIDERATION. WE OBTAIN SOME ESTIMATES FOR SINGULAR VALUES S SUBN (K) OF SUCH OPERATORS. A TYPICAL RESULT. THEOREM 3. (SHOWN ON MICROFICHE).

UNCLASSIFIED

USSR

BIRMAN, M. Sh. and SOLOMYAK, M. Z., Leningrad

UDC 519.55

"Notes on the Nuclearity of Integral Operators and on the Boundedness of Pseudodifferential Operators"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Matematika, No. 9, Sep 69, pp 11-17

Abstract: New tests of a general nature for the nuclearity of integral operators are presented. The tests make it possible to refine the conditions for the boundedness of double operator Stieltjes integrals. A simple interpretation of the results leads to tests (of a multiplicative character) for the boundedness of pseudodifferential operators in L_2. A simpler approach than the one used earlier by the authors, based on evaluating singular numbers, is used: analytical conditions imposed on the kernel are used to represent it in the form of a composite of two Hilbert-Schmidt kernels.

1/1

USSR   UDC: 621.317.8

AVVAKUMOV, Yu. I., DEGTYAR', L. E., ZELINOVSKIY, Z. I., KERITSKIY, L. P.,
SOLOMYANCHUK, L. K., TSAYREF, K. M., Kishinev, Scientific Research Institute
of Instrument Building

"A Wire-Wound Resistor"

Translation: This Author's Certificate introduces a wire-wound resistor
which consists of wires connected in parallel and wound on a common form.
As a distinguishing feature of the patent, reactance is reduced by using
an even number of wires in the winding, connecting the initial ends of
even-numbered wires and terminal ends of odd-numbered wires to one of the
current leads arranged along the axis of the form, and connecting the
initial ends of odd-numbered wires and terminal ends of even-numbered
wires to the other current lead.

1/1

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USSR

UDC 681.32.31

GRITSEVSKIY, P. M., and SOLOMYANNIK, V. P., Central Scientific-Research
Institute of Railroad Transportation

"System of Duplex Control Digital Computers"

Translation: Systems of duplex digital computers are known which contain con-
trol digital computers, registers, readout control units, readiness-of-result
tag units, and logic circuits. However, these systems are of low reliability.
In the proposed system, outputs of the output register of the first computer
are connected to the first inputs of the output gates of the first machine and
to the inputs of the input register of the second computer. The outputs of the
output register of the second machine are connected to the first inputs of the
output gates of the second machine and to the inputs of the input register of
the first machine. The output of the readout control unit of the first machine
is connected to the second inputs of the output gates of the second machine and
to the control input of the input register of the second machine. The output
of the readout control unit of the second machine is connected to the second
1/2

USSR

GRITSEVSKIY, P. M., et al., USSR Authors' Certificate No 311272

inputs of the output gates of the first machine. The output of the readiness-of-result tag unit of the first machine is connected to the input of the input register of the second machine, while the output of the readiness-of-result tag unit of the second machine is connected to the input of the input register of the first machine. This makes it possible to increase system reliability, as well as to reduce the time to search for defective external registers.

2/2

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USSR

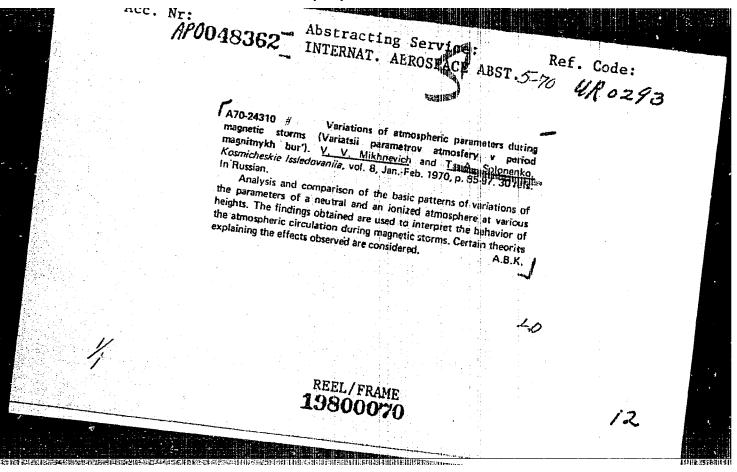SOLONCHUK, V. A., NOSOV, YE. N., DROZDOV, P. I.

UDC 681.326.75

"Device for Monitoring the Elements of Automatic Control Systems"

USSR Author's Certificate No 304587, filed 12 Jan 70, published 7 Jul 71 (from RZh--Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 4, Apr 72, Abstract No 4A550P)

Translation: A device is proposed for monitoring the elements of automatic control systems. The device is redundant with respect to an odd number of elements. It contains a level selector connected to the outputs of the monitored elements and comparison circuits the first inputs of which are connected to the outputs of the corresponding monitored elements and the second inputs of which are connected to the output of the level selector. To increase the monitoring reliability, each comparison circuit is executed, for example, from a magnetic amplifier and it is encompassed by a positive feedback circuit containing a circuit with a variable magnitude of the dead zone the control input of which is connected to the output of the level selector.

1/1

A70-24310 #   Variations of atmospheric parameters during magnetic storms (Variatsii parametrov atmosfery v period magnitnykh bur'). V. V. Mikhnevich and T. A. Solonenko. Kosmicheskie Issledovaniia, vol. 8, Jan.-Feb. 1970, p. 85-97. 30 refs. In Russian.

Analysis and comparison of the basic patterns of variations of the parameters of a neutral and an ionized atmosphere at various heights. The findings obtained are used to interpret the behavior of the atmospheric circulation during magnetic storms. Certain theories explaining the effects observed are considered.

A.B.K.

REEL/FRAME
19800070

USSR

UDC: 621.317:621.391.822

KLYUYEV, L. L., MESHKOV, M. N., SOLONENKO, V. G., KHODASEVICH, R. G.,
CHERDYNTSEV, V. A.

"Comparative Analysis of Instruments for Measuring the Delay Time of
Noise-Like Signals"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Re-
ports of the All-Union Scientific and Technical Conference on Radio Engineer-
ing Measurements. Vol. 2), Novosibirsk, 1970, pp 147-148 (from RZh-Radiotekh-
nika, No 1, Jan 71, Abstract No 1A316)

[No abstract]

1/1

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USSR   S   UDC 621.396.75

SOLONENKO, V. G.

"Effect of Source Structure on Accuracy of the Determination of Its Angular Coordinates"

Dokl. Nauchno-tekhn. konferentsii po itogam nauchno-issled. rabot za 1968-1969 gg. Mosk. energ. in-t, 1970. Sekts. radiotekhn. Podsekts. sistemy svyazi i upr. (Reports of the Scientific- Engineering Conference on Advances in Scientific-Research Studies in 1968-1969. Moscow Energetics Institute, 1970. Section on Radio Engineering. Subsection on Communications and Control Sys- tems), Moscow, 1969, pp 30-33 (from RZh-Radiotekhnika, No 2, Feb 70, Abstract No 2G68)

Translation: Relations are obtained which make it possible to compute the fluctuation error of the bearing of a complex source of random signals as a function of its spatial characteristics and the properties of the partial signals. The model of the complex source in the form of point radiators arbitrarily distributed in
1/2

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USSR

SOLOVENKO, V. G., Dokl. Nauchno-tekhn. konferentsii po itogam
nauchno-issled. rabot za 1968-1969 gg. Mosk. energ. in-t, 1970.
Sekts. radiotekhn. Podsekts. sistemy svyazi i upr., 1969, pp 30-33
(from RZh-Radiotekhnika, No 2, Feb 70, Abstract No 2G68)

space is used. It is assumed that the signals radiated from
each point are stationary normal processes with zero mean and
energy spectrum symmetric about the receiver tuning frequency. It
is shown that an increase of the source angular dimensions leads
to an increase of the fluctuation error in the measurement of its
coordinates. The particular case is examined in which the angular
dimensions of the source are small in comparison with the overall
antenna radiation pattern width. Three references. A.M.

2/2

USSR

ALEKSEYEV, V. A., BELONOSOV(?), V. A., V'YUKHIN, V. N., KASPEROVICH, A. N.,
POPOV, Yu. A., SOLOVYEV(?), V. I., Novosibirsk

"A Multipoint High-Speed Digital System for Data Collection and Storage"

Novosibirsk, Avtometriya, No 4, Jul/Aug 71, pp 40-50

Abstract: The article describes a multipoint high-speed digital system for
data collection and storage developed at the Atomic Energy Institute of the
Siberian Department of the Academy of Sciences of the USSR for converting
a large volume of analog information to digital form prior to computer
input. The system comprising a level-fixing module, a commutator with its
own control unit, a data-stacking unit, a core store, a system control
unit, and a CRT display. Block and circuit diagrams are presented, and
the purpose and operation of each element of the system is described.
Initial tests of the pilot model of the system have shown that it satis-
fies the design requirements. Printed-circuit construction is used, and
the system is assembled in two equipment bays -- one for the system
proper, and the other for the core store. Seven figures, two tables,
bibliography of two titles.
1/1

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USSR

SKURLATOV, E. D., SOLONENKO, V. R., Moscow

UDC 533.6.013.42

"Study of the Behavior of Cylindrical Shells Under the Influence of Moving, Pulsating Pressure Jumps"

Kiev, Problemy Prochnosti, No 6, 1972, pp 7-11.

Abstract: Transonic flow over the surface of a structure causes compression jumps in areas of sharp change of shape of the body (for example, where a conical section is replaced by a cylindrical section), moving downstream and at the same time oscillating at a certain amplitude. These jumps oscillate with a discrete frequency and cause a sharp increase in the amplitude of vibration of walls of shell. This work presents the results of solution of the nonlinear problem of forced oscillations of a smooth cylindrical panel, subjected to the influence of a pulsating compression jump, and certain experimental data from studies performed in a wind tunnel with cylindrical shells. The behavior of cylindrical shells of slight curvature is studied. The equations of motion of a panel in ordinary derivatives produced from the initial equations in partial derivatives by application of the Bubnov-Galerkin method, are integrated numerically by digital computer. The calculated data agree qualitatively with the experimental data produced in the wind tunnel tests.

1/1

Turbine & Engine Design

USSR

UDC: 621.165.53.62-752

DON, E. A., Engineer, SOLONETS, B. P., All-Union Heat-Engineering Institute

"Off-Center Imbalance and Vibration of High-Power Turbogenerator Shafts"

Moscow, Teploenergetika, No 5, May 73, pp 62-66

Abstract: Research is done on the operation of high-power turbogenerator shafts under working conditions. Vibration measurements were accompanied by simultaneous investigation of the actual eccentric displacements of the shaft due to thermal expansions of the base and support bearings after a cold start, and also due to the variation in vacuum and in the mass of the water in the condenser. The results show that with off-balance shafting of turbogenerators a change takes place in the static characteristics of the lubricating layer of the main bearings, which affects the frequencies and modes of the natural oscillations, as well as the amplitudes of forced oscillations. During operation of a turbogenerator the relative displacements of the main bearings should not cause a change of reactions by more than 40-60%. In the case of low-frequency vibrations, the additional restrictions of the manufacturer should be followed. In the case of rotation of non-coaxial shafts with flexible coupling the vibration spectrum shows

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USSR

DON, E. Z., SOLONETS, B. P., Teploenergetika, No 5, May 73, pp 62-66

an increase in the content of the harmonic component which is twice the rotational component; a slighter change is observed in the higher harmonics.

2/2

USSR

SOLONIN, S. M., CHERNYSHEV, L. I. and FEDORCHENKO, I. M., Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Effect of Heat Treatment on the Properties of Nickel-Molybdenum and Nickel-Chrome-Molybdenum Powdered-Metal Alloys"

Abstract: This study concerns the effect of tempering temperatures on the conductivity, notch toughness, shear strength, and corrosion resistance of sintered Ni-30Mo and Ni-15Cr-15Mo alloys. The sintered specimens of the binary alloy were subjected to normalizing from 1180°C (0.5 hr hold time). The sintered specimens of the ternary alloy were normalized from 1200°C (0.5 hr hold time) and tempered at 500-1100°C (1 hr hold time). The experimental results are reflected in curves. Resistivity measurements show that binary sintered Ni-30Mo alloys become markedly brittle and lose both shear strength and corrosion resistance on tempering at 750-800°C. High properties in sintered Ni-30Mo alloys may be achieved by rapid cooling

1/2

USSR

SOLONIN, S. M., et al, Poroshkovaya Metallurgiya, No 12, Dec 71, pp 44-48

from sintering temperatures to 500°C. The deterioration of properties in sintered Ni-15Cr-15Mo alloys following tempering is less significant than in cast commercial grades. This might be attributed to the lower tendency of sintered ternary alloys (having fewer impurities) to σ-phase segregation. (4 illustrations, 11 bibliographic references).

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USSR

UDC: 533.652/.661.013

SOLONIN, S. V., YERSHOVA, V. S., MAZOVER, S. I.

"Determining the Minimum Flight Time Trajectory of an Airplane by the Method of Dynamic Programming With Regard to the Sphericity of the Earth"

Tr. Leningr. gidrometeorol. in-ta (Works of the Leningrad Hydrometeorological Institute), 1971, vyp. 42, pp 43-50 (from RZh-Mekhanika, No 5, May 72, Abstract No 5B400)

Translation: The paper deals with the problem of determining the minimum flight time trajectory of an aircraft in a variable wind field with regard to the sphericity of the earth. It is important to account for the earth's sphericity on a long flight path. The method of dynamic programming is used to determine the minimum-time trajectory. A program for computing the minimum-time trajectory in algol-60 is set up in accordance with the functional equations of this method. An example is given of determination of the minimum-time trajectory for a specific synoptic situation. Authors' abstract.

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USSR

SOLONIN, S. V., YERSHOVA, V. S., MAZOVER, S. I.

UDC: 533.652/.661.013

"Determining the Trajectory of Minimum Flight Time of an Airplane with Restrictions on Coordinates"

Tr. Leningr. gidrometeorol. in-ta (Works of the Leningrad Hydrometeorological Institute), 1971, vyp. 42, pp 36-42 (from RZh-Mekhanika, No 5, May 72, Abstract No 5B399)

Translation: The paper deals with the problem of determining the minimum flight time trajectory for horizontal flight of an aircraft in a variable wind field with restrictions on the phase coordinates. The method of dynamic programming is used to determine the minimum-time trajectory. A program is given for computing a minimum-time trajectory in algol-60 algorithmic language, together with an example of calculation of a minimum-time trajectory for a specific synoptic situation. All calculations were checked on the BESM-4 digital computer. Bibliography of 6 titles. Authors' abstract.

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USSR

SOLONIN, S. V., YEROSHOVA, V. S., MAZOVER, S. I., GAVRILOV, E. M.

UDC: 553.652/.661.013

"Determining the Trajectory of Minimum Flight Time of an Aircraft by the Method of Dynamic Programming"

Tr. Leningr. gidrometeorol. in-ta (Works of the Leningrad Hydrometeorological Institute), 1971, vyp. 42, pp 24-35 (from RZh-Mekhanika, No 5, May 72, Abstract No 5B398)

Translation: The paper deals with the problem of an optimum accounting for the effect of a variable wind field on airplane flight. The authors formulate the problem of determining the trajectory along which flight from a point of departure to a point of arrival takes place in minimum time. The airplane trajectory is plotted in a rectangular coordinate system. The method of dynamic programming is used to determine the minimum-time trajectory. In conformity with the principle of optimality on which dynamic programming is based, recurrent relations are written out and used for step-by-step optimization. A program is given for determining the minimum-time trajectory by the method of dynamic programming in algorithmic language algol-60. The program contains all operations which immediately

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USSR

SOLONIN, S. V. et al., Tr. Leningr. gidrometeorol. in-ta, 1971, vyp. 42, pp 24-35

precede optimization: computation of wind velocity components, the flight path of the airplane, etc. An example is given of calculation of the minimum-time trajectory for a given synoptic situation. The initial data for determining the minimum-time trajectory were the values of the geo-potential taken at points of intersection of a rectangular grid from a chart of absolute baric topography corresponding to the flight altitude. All calculations were checked on the BESM-4 computer. Bibliography of 14 titles. Author's abstract.

2/2

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USSR

UDC: 532.526
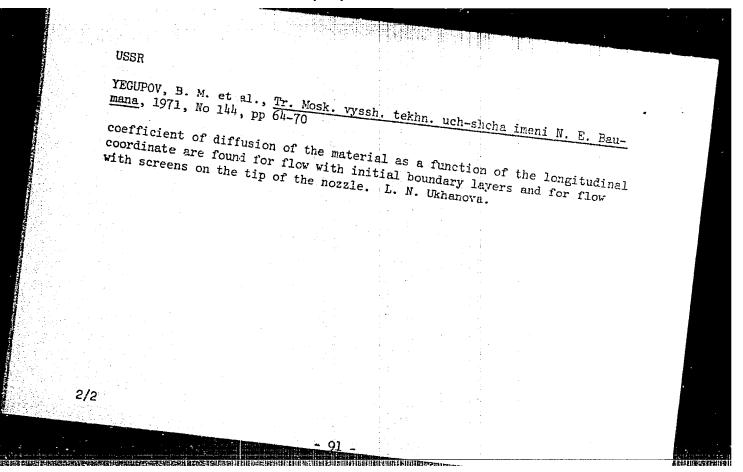
YEGUPOV, B. M., KATORGIN, B. I., SOLONIN, V. I.

"Mixing of Dissimilar Jets and Accompanying Equal-Velocity Flow"

Tr. Mosk. vyssh. tekhn. uch-shcha imeni N. E. Baumana (Works of the Moscow Higher Technical Academy imeni N. E. Bauman), 1971, No 144, pp 64-70 (from RZh-Mekhanika, No 5, May 72, Abstract No 5B971)

Translation: An experimental study is done on mixing of a jet escaping from a nozzle 20 mm in diameter with an accompanying flow of the same velocity. The outside diameter of the accompanying jet was 55 mm. The thickness of the nozzle edge was 0.25 and 2 mm. The initial boundary layers were transitional or well-developed turbulent layers, and they had a thickness of 0.5-3.5 mm. The nature of the density field was studied in the wake behind the edge at various distances from it. The ratio of the density of the accompanying flow to the density of the jet varied from 0.033 to 7.2. The relation between the coefficient of diffusion and conditions of jet escape is analyzed. The initial conditions of escape were varied by installing screens of various porosities at the tip of the nozzle to cover the jet and the accompanying flow. Experimental curves for the

1/2

USSR

YEGUPOV, B. M. et al., _Tr. Mosk. vyssh. tekhn. uch-shcha imeni N. E. Bau-mana_, 1971, No 144, pp 64-70

coefficient of diffusion of the material as a function of the longitudinal coordinate are found for flow with initial boundary layers and for flow with screens on the tip of the nozzle. L. N. Ukhanova.

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USSR

BARMIN, I. V., KATORGIN, B. I., SOLONIN, V. I.

UDC 629.7.064

"Concentration Field of Mixed Gases in a Vortex Chamber"

Tr. Mosk. vyssh. tekhn. uch-shcha im. N. E. Baumana (Works of Moscow Higher Technical School imeni N. E. Bauman), 1971, No. 144, pp 77-80 (from RZh-Aviatsionnyye i raketnyye dvigateli, No 4, Apr 72, Abstract No 4.34.182)

Translation: An experimental study of concentration fields of mixed gases in a vortex chamber is described. Most of the experiments were conducted using helium and air as working bodies differing in density by a factor of ~7. The results of studies of the concentration fields for different flow regimes, different shapes of the output channels, and different ratios of the gas flows are given. The studies can be applied in solving such problems as stabilization of an electric arc in plasmatrons and plasma stabilization in a high-frequency discharge.   5 ill., 2 ref.

1/1

- 5 -

UDC 621.762.27

USSR

SKOROKHOD, V. V., KHRIYENKO, A. F., SOLONIN, YU. M., and KHANDROS, L. L., Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Study of Packing Defects in Electrolytic Nickel Powder"

Kiev, Poroshkovaya Metallurgiya, No. 10, Oct 70, pp 9-13

Abstract: A study is presented of the kinetics of isothermal annealing of packing defects in electrolytic nickel powder at 141 and 191°C. The probability of the emergence of packing defects was calculated from the anisotropy of blocks for directions [111] and [100]. It is suggested that the hydrogen present in the powder in amounts of 0.0075 to 0.0035% is responsible for the decrease in defect formation energy. On dissolution in nickel, hydrogen becomes ionized; the released electrons are captured by the s-d band. Since hydrogen increased the number of s-d electrons per atom, it is bound to decrease the packing defect energy. Annealing

1/2

S   UDC 669.295.5'27

USSR

MOYNOV, S. G., REZNICHENKO, V. A., SOLONINA, O. P., ULYAKOVA, N. M., and
YEGOROV, S. I., Moscow

"Production of Ti-W Alloys by Coreduction of Chlorides, and Some of Their
Mechanical Properties"

Abstract: Results are presented of investigations on the development of a
direct metal-thermal method of producing binary Ti-W alloys. The method in-
volves diffusion of hexachloride tungsten in tetrachloride titanium and reduc-
tion of the solution by metallic magnesium. The quantity of tungsten chloride
introduced into the solution is determined by the composition of the obtained
alloy. As a result of coreduction of chlorides and subsequent vacuum separa-
tion of the products of reduction, a tungsten-doped titanium sponge is produced
from which it is possible to obtain ingots with a uniform distribution of alloy
component. Increase of tungsten content in the alloy up to 10 percent raises
the tensile strength of titanium with insignificant reduction of ductility in
the hot-forging state. A considerable effect of work hardening at room tempera-
ture can be obtained by means of heat treatment of Ti-W alloys. A considerable

1/2

USSR

MOYNOV, S. G., et al, Izvestiya Akademii Nauk SSSR, Metally, No 1, Jan-Feb 1970, pp 26-32

softening of the Ti-W alloys was observed in the 300-550° C temperature interval. In alloys with 6 and 10% tungsten at temperatures above 400°C an anomalous change in the magnitude of transverse reduction was observed, a fact which points to increased creep resistance of the alloys.

2/2

1/2   030   UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--PREPARATION OF TITANIUM TUNGSTEN ALLOYS BY COREDUCTION OF THEIR
  CHLORIDES, AND SOME MECHANICAL PROPERTIES OF THE ALLOYS -U-
AUTHOR--MOYNOV, S.G., REZNICHENKO, V.A., SOLONINA, O.P., ULYAKOVA, N.M.,
  YEGOROV, S.I.
COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, METAL. 1970, (1), 26-32

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--TITANIUM ALLOY, TUNGSTEN ALLOY, MECHANICAL PROPERTY, CHLORIDE,
  BINARY ALLOY, METAL HEAT TREATMENT, MAGNESIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0539   STEP NO--UR/0370/70/000/001/0026/0032

CIRC ACCESSION NO--AP0105524
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0105524
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A NEW METALLOTHERMIC METHOD OF
OBTAINING BINARY TI-W ALLOYS AND SOME OF THE MECH. PROPERTIES OF THESE
ALLOYS ARE DESCRIBED. THE METHOD FUNDAMENTALLY CONSISTS IN DISSOLVING
THE WCL SUB6 IN TICL SUB4 AND IN REDUCING THE SOLN. BY METALLIC MG. THE
AMT. OF WCL SUB6 DISSOLVED DEPENDS ON THE DESIRED QUALITIES OF THE
ALLOY. AFTER COREDN. OF THE CHLORIDES AND AFTER VACUUM SEPN. OF THESE
REACTION PRODUCTS, A TI TUBE ALLOYED WITH W IS FORMED, FROM WHICH
CASINGS CONTG. AN EVENLY DISTRIBUTED ALLOYING ELEMENT CAN BE OBTAINED.
BY INCREASING THE W CONTENT TO 10PERCENT, THE BREAKING STRENGTH OF THE
TI ALLOY IS INCREASED. BY HEAT TREATMENT OF THE TI-W ALLOYS, AN
IMPORTANT IMPROVEMENT OF MECH. PROPERTIES AT ROOM TEMP. CAN BE OBTAINED.

UNCLASSIFIED

USSR

UDC 669.295:620.17:621.78

SOLONINA, O. P., and ULYAKOVA, N. M.

"The Effect of Heat Treatment on the Mechanical Properties of VTZ-1 Titanium Alloy"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 11, 1972, pp 26-30

Abstract: A study was made of the effects of repeated isothermal annealing, the cooling rate after high-temperature heating, and the temperature of the second annealing stage on the mechanical properties of VTZ-1 alloy smelted on a sponge titanium base. The effect of aging time and aging temperature on the mechanical properties of the annealed (920 °C) and hardened VTZ-1 alloy, and its mechanical properties after repeated and isothermal annealing are discussed. The rate of cooling from 870 to 650°C in isothermal annealing did not affect the mechanical properties; repeated isothermal annealing increased the plasticity properties. Optimum double annealing increases the ultimate strength by 8-10 kg/mm^2, with negligible losses in plasticity. Double annealing, in comparison with isothermal annealing, requires a shorter cycle of heat treatment, particularly for large-size parts. Five figures, two tables.
1/1

USSR   UDC 669.295'29;620.172.226

SOLONINA, O. P., and ULYAKOVA, N. M.

"Investigation of Titanium Alloys Alloyed with Refractory Elements"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 4, Apr 73,
pp 39-43

Abstract: To study the properties of titanium alloys above 600°C (alloy
VT18 is only used up to 600°C) a number of alloys were produced: binary
alloys Ti-Mo (up to 30% Mo), Ti-V (up to 30% V), Ti-Nb (up to 60% Nb), and
Ti-Cr (up to 30% Cr); ternary and more complex alloys of the systems Ti-Mo-Nb,
Ti-Mo-Nb-V, Ti-Mo-Nb-Cr, and Ti-Mo-Nb-V-Cr containing up to 30-40% total
alloying elements and additionally alloyed with B, Si, Cu, and Al. It was
found that alloys with a high content of alloying elements possess reduced
ductility in a comparison with alloys having an alpha- and alpha+ beta-
structure. Most of the compositions with the beta-titanium structure have
low heat resistance and high ductility at 650°C in comparison with existing
alloys having alpha- and alpha+ beta-structures. Alloys of the Ti-Mo-Nb-Cr
and Ti-Mo-Nb-V-Cr systems are the most heat resistant. Increased heat resis-
tance of beta-structured titanium alloys can be achieved by complex alloying
of the beta-solid solution and intermetallide strengthening. Two figures,
one table, five bibliographic references.
1/1

UDC: 531.788

USSR

SOLONITSYN, Yu. P., Leningrad State University

"An Analytical Expression for the Graduation Curve of a Thermocouple Vacuum Meter"

Moscow, Pribory i Tekhnika Eksperimenta, No 3, May/Jun 72, pp 170-171

Abstract: It is shown that when radiation is disregarded, the graduation curve for a thermocouple vacuum meter with LT-2 and LT-4M gauges can be approximated by the expression

$$p = A(V_{max}/V-1),$$

where V is the emf of the thermocouple, and A is a constant determined by the gauge design and the nature of the gas. A comparison with experimental data for $V_{max} = 10$ mV gives values of $A = 3.5 \cdot 10^{-2}$ for the LT-2 gauge, and $A = 2.9 \cdot 10^{-2}$ mm Hg for the LT-4M.

1/1

1/2   025   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--ABSORPTION SPECTRA AND CHEMICAL STRUCTURE OF 5, AMINOSALICYLIC ACI
  AND ITS N,ACETYL AND N,BENZOYL DERIVATIVES -U-
AUTHOR-(02)-SOLONSKA, N.T., BLIZNYUKOV, V.I.

COUNTRY OF INFO--USSR

SOURCE--FARM. ZH. (KIEV) 1970, 25(1), 22-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ABSORPTION SPECTRUM, UV ABSORPTION, AMINOSALICYLIC ACID,
  PHARMACEUTICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0142   STEP NO--UR/0491/70/025/001/0022/0028

CIRC ACCESSION NO--AP0135639
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0135639

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE UV ABSORPTION SPECTRA OF 3
TRISUBSTITUTED BENZENES, RELATED TO PAS, AND THEIR DERIVS. (ACETYLATED,
BENZOYLATED, ETC.) WERE STUDIED. THE SUBSTITUTENTS STUDIED WERE: CO
SUB2 H, OH, NH SUB2, NHAC, AND NHBZ. SPECTRA WERE MEASURED IN 6
DIFFERENT ACIDIC AND BASIC SOLVENTS. THE UV SPECTRUM OF
5,AMINOSALICYLIC ACID AND OF ITS ACYL AS WELL AS BENZOYL DERIV. ARE
TYPICAL FOR PI YIELDS PI TRANSITION IN THE AROMATIC RING, INCLUDING THE N
ATOM FROM THE AMINO GROUP. IN SOME CASES, THE NONBONDING ELECTRONS OF O
FROM THE OXO GROUP CAN ALSO BE INVOLVED. THE ELECTRONIC STRUCTURE AND
THE MODE OF CONJUGATION OF 5,NH SUB2 AS WELL AS 5,NHCOR WITH AROMATIC
RINGS ARE ALSO DISCUSSED. INCLUSION OF N ELECTRONS IS RESPONSIBLE FOR
THYLONG WAVE ABSORPTION AND THE TRANSITIONS FROM THE RING TO PI ORBITAL
OF THE CARBONYL GROUP FOR THE SHORT WAVE BANDS. BOTH 5,AMINOSALICYLIC
ACID AND ITS N,ACYL DERIV. HAVE A SIGNIFICANT AFFINITY FOR
M,AMINOBENZOIC ACID. MANIFESTED IN THE FACT THAT ALL THESE COMPDS. DO
NOT POSSESS DONOR ACCEPTOR PROPERTIES, DISTINCT FROM PAS. THE
STRUCTURAL STABILITY OF THE ABOVE COMPDS. IS DETD. BY THE OBSD. N YIELDS
PI TRANSITIONS.   FACILITY: KHARKOV PHARM. INST., KHARKOV, USSR.

UNCLASSIFIED

VAL'SKIY, B. G., KNYUPFER, A. P., SOLOPCHENKO, G. N.

"A Device for Automatically Measuring the Statistical Characteristics of Random Errors of Analog-Digital Converters"

Translation: This invention, which applies to the field of measurement technology, is designed for measuring the integral distribution function of analog-digital voltage-to-code converters and digital voltmeters for practically any ratios between the mean square deviation of the error and a unit in the least significant place of the instrument code. A device is known for automatically measuring the statistical characteristics of random errors of analog-digital voltage-to-code converters which contains the instrument to be studied, a control device, and an arithmetic unit. However, this device can be used to determine the statistical characteristics of random errors only for the case in which the noise level at the input to the instrument is greater than its digital error. The purpose of the invention is to enable measurement of the integral distribution function of random

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USSR

VAL'SKIY, B. G., et al., USSR Author's Certificate No 319065

errors in analog-digital voltage-to-code converters. In order to achieve
this, a master code-to-voltage converter, digital reset device, and digital
comparison circuit are added to the installation. The input of the instrument
to be studied is connected to the output of the master code-to-voltage con-
verter, and the counting input of this converter is connected to the output
of the control device. The separate inputs are connected to the outputs of
the digital reset device and to one of the inputs of the digital comparison
circuit. The other input of the comparison circuit is connected to the
digital outputs of the instrument to be studied, and the output is connected
to the arithmetic unit.

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- 57 -

TITLE--HEAT TRANSFER DURING THE BOILING OF SATURATED HYDROCARBONS IN A
    THERMOSIPHON VAPORIZER -U-

AUTHOR-(03)-GELPERIN, N.I., SOLOPENKOV, K.N., UZUMOV, A.KH.

COUNTRY OF INFO--USSR

SOURCE--ZH. VSES. KHIM. OBSHCHEST. 1970, 15(2), 234

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--HEAT TRANSFER, BOILING, SATURATED HYDROCARBON, VAPORIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1582   STEP NO--UR/0069/70/015/002/0234/0234

CIRC ACCESSION NO--AP0128972
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0128972
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FROM AN EXPTL. STUDY OF HEAT
  TRANSFER IN A THERMOSYPHON VAPORIZER WITH 50, 70, AND 90PERCENT DYNAMIC
  LIQ. LEVEL IN THE VERTICAL PIPE OVER A RANGE OF THERMAL LOADINGS IN THE
  SINGLE TUBE CLOSED CIRCUIT CU PIPE CAPABLE OF VARIOUS REGIMES OF
  CIRCULATORY MOTION, IT WAS SHOWN THAT THE HEAT TRANSFER RATE WAS
  INDEPENDENT OF THE CIRCULATION RATE OR THE VAPOR CONTENT IN THE STREAM.
  THE RELATION: ALPHA EQUAL 13.9 PHI Q PRIME0.62, WHERE PHI IS THE COEFF.
  OF LOWERING OF THE HEAT TRANSFER RATE IN TRANSITION FROM BOILING H SUB2
  O TO BOILING HYDROCARBON, ALPHA IS THE AV. HEAT TRANSFER COEFF. AND Q IS
  THE SP. HEAT FLUX OF THE HEATING SURFACE.   THE VALUE OF PHI IS ALSO
  EXPRESSED AS: PHI EQUALS (M SUBW-M SUBH) PRIME0.56, WHERE M SUBW AND M
  SUBH ARE MOL. WTS. OF H SUB2 O AND THE HYDROCARBON USED, RESP.; THE 0.56
  EXPONENT APPEARS CHARACTERISTIC OF ALIPHATIC HYDROCHARBONS OF NORMAL
  STRUCTURE (E.G., HEPTANE, OCTANE, DECANE) WHICH ARE LIQ. AT NORMAL TEMP.
  AND PRESSURES.   FACILITY: MOSK. INST. TONKOI KHIM. TEKHNOL, IM.
  LOMONOSOVA, MOSCOW, USSR.

TITLE--HEAT TRANSFER DURING THE BOILING OF NORMAL ALKANES IN THE VERTICAL
  HEATING TUBE OF A EVAPORATOR WITH NATURAL CIRCULATION -U-

AUTHOR--GELPERIN, N.I., SOLOPENKOV, K.N., UZUNOV, A.KH.

COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(1) 44-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--HEAT TRANSFER, HEPTANE, OCTANE, DECANE, EVAPORATOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0191   STEP NO--UR/0064/70/046/001/0044/0047

CIRC ACCESSION NO--AP0106847
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0106847   UNCLASSIFIED   PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN EMPIRICAL EQUATION FOR THE HEAT
TRANSFER COEFF., ALPHA, IN THE BOILING OF ETA,HEPTANE, ETA,DECANE IN A
VERTICAL TUBE UNDER ATM. PRESSURE IS PROPOSED: ALPHA EQUALS 13.9(R
PRIME-R) PRIME 0.47 Q PRIME0.62, WHERE R PRIME AND R ARE THE SO CALLED
REOCHORS (FRIEND (1942)) FOR H SUB2 O AND FOR THE ALKANE, RESP., AND Q
IS THE THERMAL LOAD AT THE TUBE WALL. FOR THE ABOVE ALKANES AT Q
BETWEEN 14000 AND 35000 KCAL-M PRIME2 HR, THE VALUES OF ALPHA (FOR A CU
TUBE) RANGED FROM 2000 TO SIMILAR TO 4000 KCAL-M PRIME2 HR.

UNCLASSIFIED

USSR

UDC: 621.791.72

PATON, B. YE. and NAZARENKO, O. K., Institute of Electric Welding imeni Y. O. Paton Academy of Sciences Ukrainian SSR, and GABOVICH, M. D. and SOLOSHENKO, I. A., Institute of Physics, Academy of Sciences Ukrainian SSR

"Particulars and Principles of Conducting Ion-Beam Welding"

Kiev, Avtomaticheskaya Svarka, No 10, Oct 73, pp 1-4

Abstract: The authors show the necessity to neutralize ion beams in order to achieve their high specific power. Neutralization methods are studied. The attainable specific power is calculated and experimentally verified. The ion welding beam is described and the possibility of its practical application indicated. The results of the study show that it is possible to weld with an axially-symmetric, electron compensated, helium ion beam with specific power in excess of 10^4 w/cm^2. The following attest to the prospective use of ion-electron beam welding: absence of x-ray radiation, low sensitivity to the effect of external magnetic fields, the possibility of welding products without electrical contact with the charged particle source, and welding dielectric.

1/1

USSR   UDC   539.188

GABOVICH, M. D., KUZNETSOV, V. S., SOLOSHENKO, I. A., TRUBNIKOV, G. I.,
Scientific Research Institute of Electrophysical Equipment imeni D. V.
Yefremov, Leningrad; Institute of Physics, Ukrainian SSR Academy of Sci-
ences, Kiev

"Investigation of Neutralization of an Intense Ion Beam by a Numerical
Method"

Abstract: Numerical solution of a system of equations of a self-consistent
field is used to study neutralization of the space charge of an ion beam by
introducing electrodes. The changes in configurations of transverse phase
volumes of the electron and ion components lengthwise of the beam are con-
sidered. The values found for the radial potential differential in a neu-
tralized beam are compared with the results of approximate calculation.
The experimentally observed increase of electron temperature in the beam
is confirmed and explained.

1/1

USSR

UDC 533.9:538.561

GABOVICH, M. D., SOLOSHENKO, I. A., PROTSENKO, I. M., TOVKACHENKO, V. N., and KOLOCHKO, V. N.

"Low-Frequency Oscillations in Plasma Formed by an Ion Beam"

Minsk, Kolebaniya i Volny v Plazme, (Oscillations and Waves in a Plasma), "Nauka i Tekhnika," 1971, pp 61-64

Abstract: In a plasma formed by an ion beam, passing through a neutral gas along the magnetic field, the mean energy of the ions is higher than in ordinary gas discharges, comprising approximately 1 eV. The authors examine the case in which the plasma was formed by an ion beam having an energy of approximately 20 keV and a current of about 1 mA. They discuss the investigation carried out on the excitation of ion-cyclotron oscillations in plasma formed by a cylindrical beam; they are also concerned with the investigation of oscillations at lower frequencies in the plasma of a tubular ion beam. On the basis of the data which they obtained, the authors come to the conclusion that the instability generated in the heterogeneous plasma is largely due to the existence of a radial electric field crossed with a longitudinal magnetic field. The article contains 2 illustrations and 6 bibliographic entries.
1/1

1/2   026   UNCLASSIFIED   PROCESSING DATE--09OCT70
TITLE--EXCITATION OF ION CYCLOTRON OSCILLATIONS IN A PLASMA FORMED BY AN
ION BEAM -U-

AUTHOR-(02)-GABOVICH, M.D., SOLOSHENKO, I.A.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL TEKHNICHESKOI FIZIKI, VOL. 40, FEB. 1970, P. 254-258

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ION BEAM, CYCLOTRON FREQUENCY, PLASMA OSCILLATION, ELECTRIC
FIELD, PLASMA STABILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1978/1506   STEP NO--UR/0057/70/040/000/0254/0258

CIRC ACCESSION NO--AP0046345
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0046345

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTAL INVESTIGATION SHOWING
THAT OSCILLATIONS AT THE ION CYCLOTRON FREQUENCY AND ITS HARMONICS CAN
BE EXCITED IN A PLASMA FORMED BY AN ION BEAM MADE TO PASS THROUGH THE
NEUTRAL GAS ALONG A MAGNETIC FIELD. IT IS SHOWN THAT THE OSCILLATIONS
OBSERVED ARE PURELY AZIMUTHAL WAVES OF THE MODE N EQUALS 1, PROPAGATING
IN THE SAME DIRECTION AS THE ION LARMOR DRIFT. THE OSCILLATIONS CAN BE
STABILIZED BY A RADIAL ELECTRIC FIELD DIRECTED TOWARD THE CENTER OF THE
BEAM.

UNCLASSIFIED

USSR

UDC: 619:616.986.7 036.2:636

SOLOSHENKO, I. Z., PETROV, Ye. M., SHOROKHOV, V. V., DROGUN, A. G., REYCHUK, Ye. A., and OBOLONKOVA, L. K., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of Sciences USSR, and Moscow Technological Institute of Meat and Dairy Industry

"Problems of Leptospirosis Epizootiology"

Moscow, Veterinariya, No 12, Dec 70, pp 41-43

Abstract: Cattle, hogs, horses, and sheep in several regions of the Soviet Union were subjected to serological studies (microagglutination), culturing kidney suspensions, and microscopic examination of urine, with subsequent infection of guinea pigs. Leptospira tarassovi and pomona were agents in hogs. The possibility of infection in the Ulyanovsk region by L. grippotyphosa is not excluded. Cattle appear to be infected by L. pomona, hebdomadis, and tarassovi. Antibodies for tarassovi, icterohaemorrhagiae, and australis were most frequently observed in the blood sera of horses. The L. ballum group was found in the sera of sheep and goats. Antibody titers in all serological groups were low. Acute infections did not exist among test animals.

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1/2   021   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--THE PATHOMORPHOLOGY OF SWINE LEPTOSPIROSIS UPON SPONTANEOUS
INFECTION -U-
AUTHOR-(04)-DROGUN, A.G., SHOROKHOV, V.V., SOLOSHENKO, I.Z., PETROV, YE.M.

COUNTRY OF INFO--USSR

SOURCE--VETERINARIYA, 1970, NR 2, PP 47-49

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--LEPTOSPIROSIS, HOG, LYMPHOID TISSUE, LIVER, KIDNEY, HISTOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1216   STEP NO--UR/0346/70/000/002/0047/0049

CIRC ACCESSION NO--AP0130226
                           UNCLASSIFIED

CIRC ACCESSION NO--AP0130226   UNCLASSIFIED   PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDIES SHOWED THAT LEPTOSPIROSIS OF ADULT SWINE SPONTANEOUSLY INFECTED WITH L. POMONA OR L. TARASSOVI PROCEEDS WITHOUT ANY PRONOUNCED PATHOLOGICAL CHANGES. THE DISEASE IS MORE APPARENT IN ANIMALS INFECTED SIMULTANEOUSLY WITH BOTH L. POMONA AND L. TARASSOVI. HISTOLOGICAL STUDIES SHOWED MOSTLY DYSTROPHIC CHANGES AND PROLIFERATION ON LYMPHOID CELLS IN LIVER AND KIDNEYS. GRANULAR DYSTROPHY AND LYMPHOID CELL PROLIFERATION IN KIDNEY INTERSTITIAL TISSUE WERE FOUND IN ALL CASES, AND ARE CONSIDERED THE FIRST STAGE OF INTERSTITIAL NEPHRITIS AND A SPECIFIC SIGN OF SWINE LEPTOSPIROSIS.
  FACILITY: MOSCOW TECHNOLOGICAL INSTITUTE OF THE MEAT AND DAIRY INDUSTRY.   FACILITY: INSTITUTE OF EPIDEMIOLOGY AND MICROBIOLOGY IMENI N. F. GAMALEYA.

UNCLASSIFIED

USSR

GABOVICH, M. D., SOLOSHENKO, I. A.

S

"Perturbation of Ion Cyclotron Oscillations in a Plasma Formed by an Ion Beam"

Leningrad, Journal of Technical Physics, February 1970, pp 254-258

Abstract: The paper deals with the perturbation of oscillations on an ion cyclotron frequency and its harmonics in a plasma formed by an ion beam passing along a magnetic field through a neutral gas. It is shown that the observed oscillations are purely azimuthal waves with mode $n = 1$, such that the direction of propagation coincides with the direction of the Larmor precession. A radial electrical field directed towards the center of the beam stabilizes the oscillations; a field of the reverse sign leads to an increase in the amplitude of the oscillations. The possibility of stabilization by an electrical field in the case of low-frequency oscillations $(\omega \ll \omega_{\mu},$ where $\omega_{\mu} = \frac{H}{Wc}$

is the ion cyclotron frequency) is indicated by several authors in previous works (B. B. Kadomtsev, Yaderniy Sintez, 1, 286, 1961; A. V. Timofeyev, Yaderniy Sintez, 6, 93, 1966; and Yu. N. Dnestrovskiy and D. P. Kostomarov, DAN SSSR, 167, 1032, 1966).
1/2

USSR

The article includes 7 figures. There are 7 bibliographic references.

2/2

USSR

ZHITNYAYA, V. G., SOLOSHENKO, L. I.

"The Stressed State of a Half-Plane With Two Circular Openings"

Translation: The problem of the plane stressed state of a half-plane with two symmetrically located circular openings into which were soldered the nuclei of another isotropic material is discussed. Concentrated forces producing the plane stressed state and applied at the centers of the nuclei act on the body. An elastic potential making it possible to determine stresses and displacements in the nuclei and the half-plane is constructed for the given problem. K. A. Kitover.

1/1

USSR

UDC: 533.697

GOLUBKOV, A. G., KOZ'MENKO, B. K., OSTAPENKO, V. A., SOLOTCHIN, A. V., In-
stitute of Theoretical and Applied Mechanics Siberian Department of the
Academy of Sciences of the USSR, Novosibirsk

"Concerning the Interaction Between an Underexpanded Supersonic Jet and a
Flat Bounded Obstacle"

Abstract: The authors study certain kinds of interaction between a super-
sonic underexpanded jet and a flat bounded obstacle as a function of the
gasdynamic parameters of the jet and the geometric characteristics of the
jet-obstacle system. The conditions for transition from stationary to non-
stationary flow around the obstacle are experimentally determined. The
effect of the obstacle on displacement of the central compression shock is
analyzed. Computer processing of experimental data by the method of least
squares shows that the dimensions and location of zones of self-oscillations
cease depending on the Mach number of the gas flow in the outlet section
of the nozzle.

1/1

USSR

GADOMSKIY, O. N., NAGIBAROV, V. R., SOLOVAROV, N. K., Kazan' State
Pedagogical Institute of the Ministry of Education RSFSR

UDC 539.18

"Toward a Theory of the Radiation of Systems of Weakly Interacting Particles"

Translation: The Hamiltonian for the interaction of a system of atoms with
an external electromagnetic field, considering the delaying part of the
Coulomb interaction between them, is obtained. The radiation intensity
(absorption) of electromagnetic fields is calculated with the resulting
Hamiltonian. It is shown that consideration of the delaying portion of the
Coulomb interaction between atoms leads to the appearance of formulas for
the intensity, along with the usual new terms. Numerical calculations show
that consideration of the latter is especially important for the infrared
region of frequencies under the condition of coherence of the exciting field.
The intensity of the superradiant signals, in addition to the ordinary term
$\sim N^2$, contains many terms with higher powers of N, where N is the number of
atoms. The intensity of the superradiant signals of the light induction and

1/2

USSR

GADOMSKIY, O. N., et al, Manuscript deposited at VINITI No. 4538-72 Dep.
from 12 July 1972

echo type was calculated with the Hamiltonian obtained. Analysis of the expression showed that under certain conditions the system of atoms, besides emitting on the basic frequency ω_{12}, can emit (absorb) detectable power on the double frequency $2\omega_{12}$, where ω_{12} is the frequency of splitting in the spectrum of the isolated atom. For $N = 2$ this corresponds to simultaneous radiation transition of both atoms to the ground (excited) state. Authors abstract.

2/2

- 62 -

TITLE--INDUCTIONS AND ECHOES IN SYSTEMS WITH UNEQUIDISTANT SPECTRUM -U-

UNCLASSIFIED   PROCESSING DATE--23OCT70

AUTHOR-(02)-NAGIBAROV, V.R., SOLOVAROV, N.K.

COUNTRY OF INFO--USSR

SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 37, NR 2, PP 889-906

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PARTICLE SPECTRUM, PULSE GENERATOR, PULSE SIGNAL,
    ELECTROMAGNETIC INDUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1072

STEP NO--GE/0030/70/037/002/0889/0906

CIRC ACCESSION NO--AP0107581

UNCLASSIFIED

CIRC ACCESSION NO--AP0107581   UNCLASSIFIED   PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A GENERAL METHOD IS DEVELOPED OF CALCULATION OF RESPONSE SIGNALS OF N-PARTICLE SYSTEMS WITH AN UNEQUIDISTANT SPECTRUM TO PULSE ACTION OF COHERENT PHYSICAL FIELDS RESONANT FOR ANY TRANSITION OF THE SYSTEM. THE CASE OF A PARTICLE SYSTEM WHERE EACH PARTICLE HAS THREE ENERGY LEVELS E SUB1 SMALLER THAN E SUB2 SMALLER THAN E SUB3 IS ANALYSED. IT IS SHOWN THAT IF SUCH A SYSTEM IS SUBJECTED TO PULSE ACTION OF TWO GENERATORS EXCITING TRANSITIONS E SUB1 EQUILIBRIUM E SUB2 AND E SUB2 EQUILIBRIUM E SUB3 AT INITIAL TIME AND AT TIME TAU TO PULSE ACTION OF A GENERATOR WITH FREQUENCY OMEGA SUB31 EQUALS H PRIME NEGATIVE1 (E SUB3 MINUS E SUB1), THE SYSTEM GENERATES INDUCTION AND ECHO SIGNALS WITH POWER PROPORTIONAL TO N PRIME2 AT ALL POSSIBLE TRANSITIONS. ECHO SIGNALS ARISE AT TIMES (1 PLUS E) TAU, 2 TAU, AND (1 PLUS 1 OVER E) TAU AFTER THE FIRST PULSE, WHERE E EQUALS E SUB2 MINUS E SUB1 OVER E SUB3 MINUS E SUB2. THE OBSERVED RESPONSES MAY HAVE A PHYSICAL NATURE WHICH IS BOTH IDENTICAL WITH THE EXCITATION AND DIFFERENT FROM IT. SUPPLEMENTS ARE GIVEN BY WHICH THE RESPONSES OF PARTICLE SYSTEMS MAY BE CALCULATED TO A SERIES OF PULSES DIFFERENT FROM THOSE CONSIDERED HERE. WHEN E YIELDS 1 THE RESULTS TRANSFORM TO THE CASE OF EQUIDISTANT SPECTRUM. FACILITY: PHYSICO-TECHNICAL INSTITUTE, ACADEMY OF SCIENCES OF THE USSR, KAZAN.

UNCLASSIFIED

USSR

AFONIN, Yu. V., PONOMARENKO, A. G., SOLOUKHIN, R. I., and KHAPOV, Yu. I.

UDC: 53.07/08+53.001.89.

"Compact Electron Pulse Accelerator With Independent Power Supply"

Abstract: Research in CO_2 ionization lasers under high pressure and plasma experiments for modeling conditions of accelerated particle generation in solar or terrestrial plasmas require high-powered electron pulse sources. The device described in this paper has been designed for such research, has small dimensions and an independent power supply, and can be remotely controlled, thus rendering it convenient for use under space conditions. The basic circuit of the electron accelerator is given, together with a block diagram of the power supply and remote control system. Pulse power of the electron accelerator is $4 \cdot 10^8$ watts, and the coefficient for the conversion of the electric field energy into electron-beam kinetic energy is 25%. The authors express their gratitude to V. A. Korni-lov and B. V. Kulikov for their assistance with the design of the instrument.

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USSR   UDC: 533.9...15

SOLOUKHIN, R. I., YAKOBI, Yu. A.

"Methods of Infrared Diagnosis and Laser Interferometry in Gas Dynamics"

Translation: Optical methods were used to study a pulse discharge plasma in
shock tubes. Laser interferometry and schlieren photography were used. A
diagram is given of the experimental equipment, which enables rapid conversion
from one research method to another or a combination of different methods.
The principal components are a carbon dioxide laser and a Michelson interfero-
meter. The authors give the radial distributions of electron density in the
forward pulse discharge, as well as a schlieren signal oscillogram which shows
a series of sequential radial perturbations. Experiments for measuring absorp-
tion in a pulsed discharge of molecular hydrogen emission on a wavelength of
10.6 μm are briefly described. Detailed calculations of the absorption
coefficient of the plasma were made for interpretation of these measurements.
The following are obtained and presented for the shock tube: an oscillogram of
the phase advance, the profile of the electron concentration behind the shock
wave front, and the variation of maximum electron concentration with temperature.
1/1

USSR

GOLOVICHEV, V. I.,DIMITROV, V. I., SOLOUKHIN, R. I., Novosibirsk

UDC: 662.58

"Numerical Analysis of Kinetic Models of Hydrogen Combustion"

Novosibirsk, Fizika Goreniya i Vzryva, Vol 9, No 1, Jan/Feb 73, pp 95-101

Abstract: The paper presents a numerical integration of the system of kinetic equations which describe the reaction of ignition and combustion of hydrogen, for various initial states and kinetic models of the system (introduction of additives, change in the initial level of concentration of active centers, addition of water vapor). These calculations are done to determine the sensitivity of the kinetic model to the effect of changes in small initial concentrations of active centers, and to define the part played by nonisothermality of the combustion process. A comparison is made with experimental data on ignition delays.

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SOLOUKHIN, R. I.

RAN/ / R-760 / 5 - MKP - 73
Dec. 1972.

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1. SHOCK WAVES AND EXPLOSIONS IN GASES

Bayev, V. K., D. N. Kondrikov, V. P.
Korobeynikov, V. V. Mitrofanov, R. I.
Soloukhin, and M. Ye. Topchiyan.
Research on explosion gas dynamics and
reacting systems. FGIV, no. 2, 1971,
311-317.

The Third International Colloquium on explosion gas
dynamics and reacting systems took place on September 12-17, 1971 in
Marseilles, France. Basic topics of theoretical and experimental
research reported on were in the field of unsteady dynamic gas flow,
accompanied by physicochemical transformations of the medium: gas-
dynamic aspects of detonation; and problems of the physics and
chemistry of rocket-fuel combustion and working processes in engines.
The colloquium also dealt with the gas dynamics of explosions in space.
The conference was divided into seven sections: a) space phenomena,
b) vortex flow, c) explosion gas dynamics, d) detonation, e) shock waves,
f) gas-liquid systems, and g) reacting systems. V. P. Korobeynikov
gave a gas-dynamic description of the motion and explosion of meteorites
on the basis of the supposed explosion pattern of the Tungusskiy meteorite.

A session on twisted flows included a joint report by four
U.S. delegates and V. P. Korobeynikov on the influence of heat conduction
and viscosity on wave propagation from a powerful explosion. A. A.
Vasil'yev, T. P. Gavrilenko, and M. Ye. Topchiyan described planned
experimental research on the position of the Chapman-Jouguet plane in a
multifront detonation wave in gas. V. P. Korobeynikov, G. G. Chernyy,
et al. presented a theoretical analysis and an example of a numerical

USSR

UDC 536.46

SOLOUKHIN, R. I., Corresponding Member of the Academy of Sciences USSR, Institute of Nuclear Physics, Siberian Department of the Academy of Sciences USSR, Novosibirsk

"Ignition Kinetics in High-Temperature Oxidation With Nitrous Oxide in Shock Waves"

Abstract: The article describes results of systematic measurements of ignition delays behind a forward shock-wave front in a wide range of temperatures for three different gas mixtures using nitrous oxide as the oxidant ($NH_3/N_2O/Ar$, $CO/N_2O/Ar$ and $CH_4/N_2O/Ar$). It is shown that there is a single controlling stage of the ignition reaction for all three systems, making it possible to find an ignition mechanism common to all three systems at temperatures above $1600°$ K.

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UNCLASSIFIED

TITLE—OPTICAL CHARGE EXCHANGE AND THERMAL STIMULATION EFFECT IN GAAS WITH
FE -U-

PROCESSING DATE--11DEC70

AUTHOR-(04)-CHELYANOVSKIY, E.M., PALOV, N.M., SOLOVYER, N.N., SOLOVER,
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DATE PUBLISHED-----MAR70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--CRYSTAL OPTIC PROPERTY, OPTIC PROPERTY, CHARGE EXCHANGE,
THERMAL EFFECT, SIMULATION, IRON IMPURITY, GALLIUM ARSENIDE, ELECTRON
PARAMAGNETIC RESONANCE, ELECTRON TRIPLET STATE
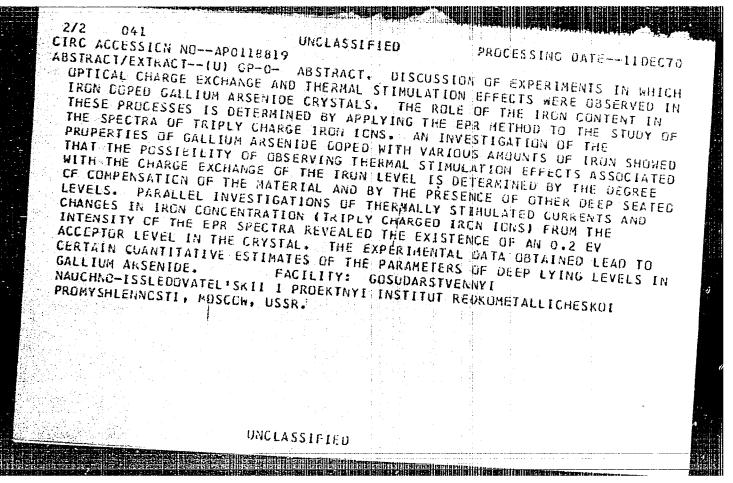
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF EXPERIMENTS IN WHICH
OPTICAL CHARGE EXCHANGE AND THERMAL STIMULATION EFFECTS WERE OBSERVED IN
IRON DOPED GALLIUM ARSENIDE CRYSTALS. THE ROLE OF THE IRON CONTENT IN
THESE PROCESSES IS DETERMINED BY APPLYING THE EPR METHOD TO THE STUDY OF
THE SPECTRA OF TRIPLY CHARGE IRON IONS. AN INVESTIGATION OF THE
PROPERTIES OF GALLIUM ARSENIDE DOPED WITH VARIOUS AMOUNTS OF IRON SHOWED
THAT THE POSSIBILITY OF OBSERVING THERMAL STIMULATION EFFECTS ASSOCIATED
WITH THE CHARGE EXCHANGE OF THE IRON LEVEL IS DETERMINED BY THE DEGREE
OF COMPENSATION OF THE MATERIAL AND BY THE PRESENCE OF OTHER DEEP SEATED
LEVELS. PARALLEL INVESTIGATIONS OF THERMALLY STIMULATED CURRENTS AND
CHANGES IN IRON CONCENTRATION (TRIPLY CHARGED IRON IONS) FROM THE
INTENSITY OF THE EPR SPECTRA REVEALED THE EXISTENCE OF AN 0.2 EV
ACCEPTOR LEVEL IN THE CRYSTAL. THE EXPERIMENTAL DATA OBTAINED LEAD TO
CERTAIN QUANTITATIVE ESTIMATES OF THE PARAMETERS OF DEEP LYING LEVELS IN
GALLIUM ARSENIDE.   FACILITY: GOSUDARSTVENNYI
NAUCHNO-ISSLEDOVATEL'SKII I PROEKTNYI INSTITUT REDKOMETALLICHESKOI
PROMYSHLENNCSTI, MOSCOW, USSR.

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172   022

UNCLASSIFIED

TITLE--FATE OF INFLUENZA VIRUS RNA IN CELLS TREATED WITH ULTRAVIOLET RAYS
-U-

PROCESSING DATE--16OCT70

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