41283
3/035/62/000/010/032/128
A001/A101

AUTHORS: Steshenko, N. V., Khokhlova, V. L.

TITLE: Excitation of He I in chromospheric flares

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 10, 1962, 50,
abstract 10A357 ("Izv. Krymsk.astrofiz. observ.", 1962, v. 27,
120 - 139)

TEXT: The study of 11 emission lines of parahelium and orthohelium in
the flare of August 30, 1959, and also a number of lines in other flares, show
that in flares, observed on both the limb and disk of the Sun, the optical
thickness of helium lines in the spectrum region from λ 3700 to λ 6700 is small
with exception of the lines λ 5876 and λ 4471. Populations of the He I excited
levels are determined from energies emitted in the lines with allowance for
the optical thickness for opaque lines. On assumption that line broadening is
caused only by thermal atom velocities, the upper limit of kinetic temperature
in the region of He I glow was determined from the width of the lines; it was
$T_{kin} \leqslant 1.7 \times 10^0$K (translator's note: probably misprint) in the flare on the

Card 1/2

Excitation of He I in chromospheric flares

limb on August 30, 1959, and $T_{kin} \lesssim 2.6 \times 10^4$ °K in flares on the disk. Populations of levels of He I were theoretically calculated for $n_e = 2 \times 10^{13}$ cm^{-3} and $T_e = 10^4 - 3 \times 10^4$ °K; for this purpose, equations of stationarity and ionization equilibrium for parahelium and orthohelium were solved jointly. It is shown that the emission observed can be ensured at $n_e = 2 \times 10^{13}$ and $T_e \simeq 1.7 \times 10^4$ at the expense of excitations by electronic impact and recombinations. The possibility of heating the region of flare optical emission at the expense of X-ray radiation of the flare itself is considered. The observed flux of X-radiation and energy liberation of the flare in ultraviolet and visible regions of the spectrum can be ensured at the color temperature of the flare core being $\sim 5 \times 10^6$ °K.

Authors' summary

[Abstracter's note: Complete translation]

Card 2/2

DOBRONRAVIN, Petr Pavlovich, kand. fiz.-matem. nauk; STESHENKO,
        Nikolay Vladimirovich, kand. fiz.-matem. nauk;
        SHUL'TS, N.P., red.

        [Crimean Astrophysical Observatory of the Academy of
        Sciences of the U.S.S.R.] Krymskaia astrofizicheskaia
        observatoriia Akademii nauk SSSR. Simferopol', Krym
        1965. 78 p.   (MIRA 18:12)

35679

3,1540 (*/*//37)
3,1510 (///4)

S/712/60/023/000/013/014
D218/D301

AUTHORS: Abramenko, S. I., Dubov, E. Ye., Ogir', M. B., Steshen-
            ko, N. Ye., Shaposhnikova, Ye. F. and Ts'ap, T. T.

TITLE: The photometry of solar flares

SOURCE: Akademiya nauk SSSR. Krymskaya astrofizicheskaya obser-
            vatoriya. Izvestiya, v. 23, Moscow, 1960, 341-361

TEXT: A continuation of experimental work on the compilation of a
catalogue of photometric curves for flares and a study of the im-
portance of the various factors which influence the shape of these
curves. The authors report photometric curves for 4 1957 flares
and 10 1958 flares of importance $\not> 2$. The observations were carried
out using the КГ-1 (KG-1) coronagraph and an interference polari-
zation filter centered on the H_α line. In May 1958, a wide-angle
filter ГОИ ИТ-44 (GOI IT-44) having a bandwidth of $0.35\overset{\circ}{A}$, was in-
troduced into the apparatus. A detailed description is given of
isolated flares and their development curves. The results are com-

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The photometry of solar flares   S/712/60/023/000/013/014
                                               D218/D301

pared with those obtained with the chromospheric telescope $A\zeta^{p}-2$
(APR-2) (Simeiz) and the APR-2 telescope at the GAO AN USSR (GAO
UkrSSR (Kiyev)). A description is also given of the contributions
due to secondary transmission maxima of the filters and a number
of effects responsible for the shift of the main pass-band. A de-
tailed examination of the large number of graphs revealed that the
photometric curves for a given flare may differ from instrument to
instrument. Differences of the order of 25 - 35% are common. How-
ever, these curves may still be useful for geophysical purposes
and, therefore, the authors consider it essential to continue
their work on compiling a catalogue of photometric curves of flares
obtained at different observatories during the IGY. The present
paper contains over 100 such curves. Acknowledgments are expressed
to N. V. Godovnikov for assistance in preparing the material.
There are 34 figures, 2 tables and 5 Soviet-bloc references.

SUBMITTED: May 1959

Card 2/2

S/035/62/000/005/051/098
A055/A101

AUTHORS: Ogir', M. B., Steshenko, N. Ye.

TITLE: Photometry of solar flares

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 5, 1962, 54,
             abstract 5A393 ("Izv. Krymsk. astrofiz. observ.", 1961, 25, 134 -
             147, English summary)

TEXT: The authors reproduce the photometric curves of the Hα intensity and
the areas of 44 flares whose intensity is not inferior to 2, observed with the
aid of the chromosphere-photosphere telescope AФP-2 (AFR-2) from June 1957 to
December 1959, and with the aid of the coronograph KГ -1 (KG-1) during the year
1959. Some regularities resulting from the examination of the area and the
brightness curves of 86 chromospheric flares are pointed out. The results of a
comparison of the area and the brightness curves, obtained by measuring films
taken with the coronograph and the AFR-2, are presented. There are 5 references.

                                                From the author's summary

[Abstracter's note: Complete translation]

Card 1/1

STESHENKO, F. I.

Agriculture - Caucasus, Northern

Work of the House of Farm Crops. Kolkh proizv. 12, No. 3, 1952.

Monthly List of Russian Accessions, Library of Congress, June 1952. Unclassified.

1. STESHENKO, P. P.

2. USSR (600)

4. Agriculture-Study and Teaching

7. How three-year agricultural courses are carried on. Sov.agron. 11 no. 1, 1953.

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

Development and investigation of the ... fen. izv. vys. uchab. zav.; ...

1. Institut gornoy mekhaniki i tekhnicheskoy kibernetiki imeni M.M. Fedorova.

STESHENKO, V.F., tekhnik

Redesigning of the crossarm cotter pins of generator brush holders.
Energetik 9 no.5:27 My '61.   (MIRA 14:5)
                      (Turbogenerators)

STESHENKO, V.F., tekhnik

System using a turning lathe for making valve vents. Energetik
10 no.4:17-18 Ap '62.   (MIRA 15:4)
        (Electric power plants—Equipment and supplies)

B GD..KV, L.A.; Y... .V, Ye.V.; ...LOV, ...; ...., ...,
        SHELYAPI., ...; STESH...KO, V F., red.

    [Pathology, clinical aspects, and treatment in lesions
    from toxic chemical agents and radioactive substances]
    Patologiia, klinika i terapiia pri porazheniiakh OV i RV.
    Leningrad, Meditsina, 1964. 188 p.   (MIRA 18:3)

GAGARIN, V.G.; STESHENKO, V.M.; TOKOBAYEV, M.M.

Role of rodents in spreading helminthic zoonoses. Trudy Inst. zool.
i paraz. AN Kir. SSR no.6:159-160 '57.   (MIRA 11:3)
         (Rodents as carriers of disease)
         (Kirghizistan--Worms, Intestinal and parasitic)

COUNTRY   :
CATEGORY   : [illegible] of Farm Animals. Diseases Caused
                by Helminths

ABS. JOUR.   : RZhBiol., No. 6 1959, No. [illegible]

AUTHOR   : [illegible], V.S.; Stepanko, V. [illegible]
INST.   : [illegible] Scientific [illegible] Institute of Animal[s]
TITLE   : [illegible] contribution to the [illegible] of [illegible]-
                [illegible] of Ruminants

ORIG. PUB.   : Tr. [illegible]. n.-i. in-ta zhivotnovodstva i veteri-
                narii, 1957, Vyp. 15, 37-42

ABSTRACT   : A description of the results of the study of the
                [illegible]leopathological picture of the pancreas
                (P) in eurythematosis of sheep and partially in
                that of cattle is given. The volume of P is in-
                creased; P is edematous and has a flaccid con-
                sistency with dark-red strands on the surface;

                [illegible]usbandry and Veterinary Medicine

CARD: 1/4
                        17

COUNTRY   :   R
CATEGORY   :

ABS. JOUR. : RZhBiol., No. 9 1959, No. 86016

AUTHOR   :
INST.   :
TITLE   :

ORIG. PUB. :

ABSTRACT   : efferent ducts are greatly dilated and filled
cont'd.   with parasites. Histopathological examination
               revealed the following: atrophy, and in some
               places thickening of duct walls, hyperplasia of
               epithelium of the mucosa, dystrophia and hyper-
               plasia of glandular epithelium; sectors of 3 ad-
               jacent to the ducts lose their alveolar struc-
               ture and are filled with parasites; nuclei are
               in a state of rhexis; dystrophia of the islands
               of Langerhans; connective tissue around the

CARD: 2/3

COUNTRY   :   R
CATEGORY   :

ABS. JOUR. : RZhBiol., No. 6   1959, No. 25756

AUTHOR   :
INST.   :
TITLE   :

ORIG. PUB. :

ABSTRACT   : vessels and ducts is thickened, edematous, and
cont'd.   infiltrated with serous exudate and lymphoid
              elements; the blood vessels are dilated and
              overfilled with blood; the nerve cells are
              swollen, increased in size and in a state of
              karyorrhexis; nerve fibers are swollen and un-
              evenly thickened. The authors are of the opinion
              that in sheep eurytrematosis can take a form of

CARD: 3/4
                                18

AUTHOR   :
INST.   :
TITLE   :

ORIG. PUB. :

ABSTRACT   : ... which are manifested with an acute, chronic
cont'd.   course and lesions of both nervous and endo-
              crine tissue, as well as of nerve elements.-- N.
              V. Davidov.

CARD: 4/4

USSR / Diseases of Farm Animals.   Diseases Caused   R-1
          by Bacteria and Fungi

Abs Jour: Ref Zhur-Biol., No 2, 1958, 7309

Author : Kh.Sh. Alimeyev, V. M. Mitrofanov, V. M. Stesh-
          enko, T. M Mukanbayev.
Inst   : Not Given
Title   : Pathological Histology of Infectious Pleuropneumonia
          of Sheep.

Orig Pub: (M-vo s-kh. SSSR. Latv. s-kh. akad.) Riga, 1957,
          22 str. ill.

ODYNETS, R.N.; STESHENKO, V.M.; VALUYSKIY, P.P.; ILIBEZOVA. Ye.P.

Effect of stable strontium isotopes on the sheep organism.
Izv.AN Kir.SSR. Ser.biol.nauk 1 no.1:93-117 '59.

(MIRA 13:6)

(STRONTIUM--ISOTOPES)   (SHEEP--PHYSIOLOGY)

DUBININ, V.B.[deceased]; GREBENYUK, R.V.; STESHENKO, V.M.

    Sarcoptic mange in the Central Asiatic mountain goat, teke
    (Capra sibirica Meyer.) in Kirghizia. Izv.AN Kir.SSR no.6:
    137-154 '58.   (MIRA 11:12)
         (Kirghizistan--Goats--Diseases) (Scabies)

GAGARIN, V.G.; STESHENKO, V.M.

Case of acute fascioliasis in sheep in the Chuya Valley. Trudy
Inst.zool.i paraz.AN Kir.SSR no.7:153-159   '59.   (MIRA 13:4)
       (Chuya Valley--Liver flukes)
       (Sheep--Diseases and pests)

ODYNETS, R.N.; ILIBEZOVA, Io.P.; STESHENKO, V.M.; VALYUSKIY, P.P.

Effect of chalk and sodium bicarbonate on strontium deposition in
the organs and tissues of sheep. Izv. AN Kir. SSR Ser. biol. nauk
2 no.5:53-67 '60.   (MIRA 14:6)
        (SHEEP—PHYSIOLOGY)   (STRONTIUM IN THE BODY)
      (CALCIUM—PHYSIOLOGICAL EFFECT)   (SODIUM—PHYSIOLOGICAL EFFECT)

LUSHCHIKHIN, M.N.; STESHENKO, V.M.

Formation of the fleece in fine-wool sheep of Kirghizistan.
Izv. AN Kir. SSR Ser. biol. nauk 2 no15:69-79 '60.

(MIRA 14:6)

(KIRGHIZISTAN—SHEEP)   (WOOL)

ODYNETS, N.N.; STESHENKO, V.M.; ILIBEZOVA, Ye.P.; VALUYSKIY, P.P.

Strontium as a goitrogenic factor. Izv. AN Kir. SSR. Ser. biol. nauk
3 no.2:33-41 '61.   (MIRA 14:12)
          (STRONTIUM—PHYSIOLOGICAL EFFECT)   (GOITER)

ODINETS, R.N.; STESHENKO, V.M.; ILIBEZOVA, Ye.P.; VALYUSKIY, P.P.

Toxicity of copper to sheep. Izv. AN Kir. SSR. Ser. biol. nauk 3
no.2:43-49 '61.   (MIRA 14:12)
        (COPPER—TOXICOLOGY)   (SHEEP—DISEASES AND PESTS)

GRÍDÍNYUP, N.V.; STLÍHÍNÍ ,Í.Í.

Pathogenic effect of ixodid tick bites on guinea pigs. Izv.
AN Kir. SSR. Ser. biol. nauk 6 no.3:39-42 '64   (MIRA 18:7)

SLEGIN, S.A., inzh., FUCHADZHI, K.S.; STESHENKO, V.P.; inzh., red.

[Catalog of spare parts for the ZAZ-965A and ZAZ-965AB
"Zaporozhets'" automobile] Katalog zapasnykh chastei avto-
mobilia "Zaporozhets'" modelei ZAZ-965A i ZAZ-965AB. Moskva.
Mashinostroenie, 1965. 273 p.   (MIRA 18:12)

1. Zaporozhskiy avtomobil'nyy zavod "Kommunar."

L 15531-63   EWP(q)/EWT(m)/BDS   AFFTC/ASD/APGC   WH
ACCESSION NR: AP3004917   S/0120/63/000/004/0189/0190

AUTHOR: Steshenko, V. V.; Pivovarov, A. V.; Rubanov, I. A.

TITLE: One-crystal short-wave focusing x-ray quantometer

SOURCE: Pribory*i tekhnika eksperimenta, no. 4, 1963, 189-190

TOPIC TAGS: quantometer, spectrometer, x-ray-spectral analysis

ABSTRACT: A ten-channel spectrometer is described whose distinguishing feature is that it uses one crystal for all working channels. The quantometer includes a 5BKhV-1 x-ray tube, a curved quartz analyzing crystal, a container with MSTR-4 counters, and a PS-10000 scaler. An eleventh, monitor, channel is of goniometer type and can be tuned to any of the working elements. The quantometer is tuned to the following elements: 32 Ge, 37 Rb, 39 Y, 40 Zr, 41 Nb, 42 Mo, 82 Pb, 73 Ta, 90 Th, 92 U; stronger analytical lines are tabulated. A functional diagram and a collimator arrangement are presented. Orig. art. has:

Card 1/2

L 15531-63

ACCESSION NR: AP3004917

2 figures.

ASSOCIATION: NII mineral'nogo sy*r'ya Ministerstva geologii i okhrany* nedr KazSSR (Scientific-Research Institute of Crude Minerals, Ministry of Geology and Conservation of Mineral Resources, KazSSR)

SUBMITTED: 29Sep62   DATE ACQ: 28Aug63   ENCL: 00

SUB CODE: PH   NO REF SOV: 001   OTHER: 004

Card 2/2

KROYCHUK, L.A.; NESTEROVA, V.N.; ROYAK, S.M.; STESHENKO, Ye.M.

Firing of two-component charges. TSement 29 no.6:16-17 N-D '63.
(MIRA 17:3)

1. Vsesoyuznyy gosudarstvennyy nauchno-issledovatel'skiy institut
tsementnoy promyshlennosti, i Volkhovskiy tsementnyy zavod.

STESHENKO,Ye.M.; FOKIN,V.V.

Dust recuperation in a rotary kiln. TSement 21 no.3:30 My-Je '55.
(MLRA 8:10)

1. Volkhovskoy alyuminiyevyy zavod.
(Kilns, Rotary)

STESHENKO, Ye.M.

Installing protective heat-resistant faceplates in rotary kilns.
TSement 26 no.5:30 S-O '60.   (MIRA 13:10)
                    (Kilns, Rotary)

STESHENKO, Ye.M.

Using screw unloaders from removing dust from bunkers of electric filters. TSement 26 no. 6:22 N-D '60.   (MIRA 13:12)
(Electric filters--Cleaning)
(Dust--Removal)

CHULANOV, V.N.; STESHENKO, Ye.M.; TAGER, A.R.

Operation of the cement works of an aluminum factory. TSement 27
no. 2:8-10 Mr-Ap '61.   (MIRA 14:5)
      •   (Dust—Removal)   (Cement plants)

AUTHOR   Iteshenko, Ye.S.   SOV-101-58-5-8/10

TITLE: Effecient Removal of Clinker Grit   (Ratsionali-
             zatsiya udaleniya klinkernoj krupki)

PERIODICAL: Tsement, 1958, Nr 5, p 28 (USSR)

ABSTRACT: In the Cement Workshop of the Volkhov Aluminum Plant, three
             clinker mills which form 1.9 - 2.2 tons of clinker grit per
             day are in operation. This grit was removed by workers to
             the clinker storeroom. The transportation of the clinker
             grit has now been mechanized by installing a pneumatic ap-
             paratus. This apparatus removes 160 kg of grit in 4 minutes.
             The consumption of compressed air is 42 m^3 per day. Manual
             labor is no longer needed.
             There are 2 sets of diagrams.

ASSOCIATION: Tsementnyy tsekh Volkhovskogo alyuminiyevogo zavoda (Cement
             Workshop of the Volkhov Aluminum Plant)

             1. Cement--Production   2. Industrial plants--Equipment
             3. Pneumatic systems--Performance

Card 1/1

22

AUTHOR: Steshenko, Ye,S,   SOV/101-58-6-10/13

TITLE: The Replacement of Cast Iron Protective Pins by
               Wooden Ones (Zamena predokhranitel'nykh chugun-
               nykh pal'tsev derevyannymi)

PERIODICAL: Tsement, 1958, Nr 6, p 33 (USSR)

ABSTRACT: At the Volkhov Aluminum Plant, hammer crushers
               are used for crushing lime stone and bauxite.
               Protective pins connect the drive (1) with the
               rotor shaft (2) of the crusher. These pins are
               made of cast iron. The yearly consumption is
               6,496 pieces. It is recommended to substitute
               them by wooden pins, made on a turning lathe.
               They are very resistant. The yearly consumption
               is only 2,400 pieces. Another device is mentioned
               which switches off the electromotor if metal ob-
               jects happen to be in the material to be crushed.

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SOV/101-58-6-10/13

The Replacement of Cast Iron Protective Pins by Wooden Ones

There are 2 diagrams.

ASSOCIATION: Volkhovskiy alyuminiyevyy zavod (Volkhov Aluminum Plant)

Card 2/2

STESHENKO, Ye.S.

Efficient way of removing klinker grit. TSement 24 no.5:28
S-O '58.   (MIRA 11:11)

1. TSementnyy tsekh Volkhovskogo alyuminiyevogo zavoda.
        (Cement klinkers)   (Crushing machinery)

ZYBIN, Yu.P., doktor tekhnicheskikh nauk, professor; STESHEV, I.I., retsenzent; VINOGRADOV, A.P., retsenzent.

[Technology of footwear] Tekhnologiia obuvi. Moskva, Gos. nauchno-tekhn. izd-vo Ministerstva promyshlennykh tovarov shirokogo potrebleniia SSSR, 1953.   (MIRA 7:6)
        (Shoe industry)

STESHEV,I.I., glavnyy inzhener

Multi-line conveyor system in a cutting-out shop. Leg.prom.
15 no.7:18-20 Jl'55.   (MIRA 8:10)

1. Glavnoye upravleniye obuvnoy promyshlennosti Ministerstva
promyshlennykh tovarov shirokogo potrebleniya.
           (Shoe industry) (Conveying machinery)

S/117/62/000/001/001/006
A004/A101

AUTHOR: Steshin, A. S., Turner

TITLE: Metallic ceramics should be introduced more widely

PERIODICAL: Mashinostroitel', no. 1, 1962, 22

TEXT: The author points out that, although ceramic metal cutting tools do
not represent a novelty nowadays, the present problem is to choose the most
suitable grades and shapes. He reports on work being carried out at the Gor'-
kovskiy politekhnicheskiy institut (Gor'kiy Polytechnic Institute) under the
supervision of I. I. Lubyanyy to select the most expedient shapes of ceramic
metal bits. At the "Krasnoye Sormovo" Plant, a mandrel has been developed for
ЦМ -332 (TsM-332) bits which possesses a superposed sintered-carbide chip breaker.
Research work on the application of metallic ceramics is being carried out at the
Leningrad Nevskiy Mechanical Engineering Plant im. V. I. Lenin. The known inno-
vator Yu. M. Frantsuzov of the Moscow Plant imeni Kalinin has been using ceramic
metal tools for some years. The author recommends to use the hexahedral tool bit,
with three and six cutting edges, developed by the Vsesoyuznyy nauchno-issledova-
tel'skiy instrumental'nyy institut (All-Union Scientific Research Institute of

Card 1/2

STESHIN, A.S.

> Our practice in using molybdenum disulfide lubricant. Mashino-
> stroitel' no.6:36 Je '64.   (MIRA 17:8)

STESHIN, I., upravlyayushchiy.

Tighter control of water losses. Zhil.-kom.khoz. 3 no.7:26-29 Jl '53.
(MLRA 6:8)

1. Saratovskiy trest "Vodokanal."
(Saratov--Water supply) (Water supply--Saratov)

STESHIN, I., inzhener.

Competition between two cities. Zhil.-kom.khoz. 6 no.7:4-6
'56.   (MLRA 10:2)

(Saratov--Municipal services)
(Stalingrad--Municipal services)

STESHIN, I.

Emergency repair of water pipes. Zhil.-kom. khoz. 7 no.6:18-19
'57.   (MIRA 10:10)

1.Upravlyayushchiy Saratovskim trestom "Vodokanal."
                     (Water pipes)

STESHIN, I.

Socialist competition among groups of water-supply systems of four cities. Zhil.-kom. khoz. 10 no.5:25-26 '60.   (MIRA 13:10)

1. Upravlyayushchiy trestom "Vodokanal," Saratov.
                    (Water supply)

ERSHEL'BERG, V.A., kand. tekhn. nauk; BRAUN, I.A., inzh.

Gas burners for cement plants. Ispol'. gaza v nar. khoz.
no.2:219-225 '63.   (MIRA 17:9)

1. Laboratoriya ispol'zovaniya gaza v promyshlennosti Saratovskogo
gosudarstvennogo nauchno-issledovatel'skogo i proyektnogo
instituta po ispol'zovaniyu gaza v narodnom khozyaystve.

SIMANOVSKIY, M.L.; STESHIN, Ye.A.

Making an actual shaft layout in boring inclined-level holes.
Podzem.gaz.ugl. no.2:56-58 '59.   (MIRA 12:9)

1. Podmoskovnaya stantsiya "Podzemgaz".
   (Mine surveying) (Boring)

STESHITS, V.K., kand.meditsinskikh nauk

Significance of the reconstruction of the posture of the victim in an inquest on an auto accident. Zdrav. Belor. 4 no.2:37-39 F '58.

(MIRA 13:8)

1. Iz kafedry sudebnoy meditsiny (zaveduyushchiy - dotsent S.A. Prilutskiy) Minskogo meditsinskogo instituta.

(BORISOV—TRAFFIC ACCIDENT)   (MEDICAL JURISPRUDENCE)

STESHKIN, A.M.

   Laboratory courses in the teachers' institute. Fiz. v shkole 13 no.5:71-73
   S-O '53.   (MLRA 6:8)

   1. Uchitel'skiy institut, Armavir.   (Physics--Study and teaching)

AVDONIN, N.S.; STESHKINA, V.I.

 Effect of various amounts of lime on the yield and quality of plants.
Nauch.dokl.vys.shkoly; biol.nauki no.4:142-146 '62.
             (MIRA 15:10)
1. Rekomendovana kafedroy agrokhimii Moskovskogo gosudarstvennogo
universiteta im. Lomonosova.
     (PLANTS, EFFECT OF LIME ON)

AVDONIN, N.S.; STESHKINA, V.I.

Effect and aftereffect of various amounts of lime on changes in
the properties of soil, yield, and quality of farm plants.
Pochvovedenie no.9:1-7 Ag [i. e. S] '63.   (MIRA 16:10)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
          (Liming of soils)

ACC NR: AR6035402   SOURCE CODE: UR/0372/66/000/009/G041/G041

AUTHOR: Steshkovich, N. T.

TITLE: Two solutions of one logical problem

SOURCE: Ref. zh. Kibernetika, Abs. 9G265

REF. SOURCE: Sb. tr. Leningr. mekhan. in-ta, no. 51, 1965, 152-157

TOPIC TAGS: teaching machine, computer input unit, input circuit

ABSTRACT: For ultimate use in the input unit of a teaching machine (knowledge-control automation), the author considers the problem of synthesis of a switching circuit whose input relay must operate upon closing of only one n tumbler switches intended for the insertion of the answer into the machine and must not operate upon simultaneous or sequential closing of two or more tumblers or when there are no input signals. A comparative estimate of two variants of the solution of this problem is given. 2 illustrations. Bibliography, 2 titles. G. V. [Translation of abstract]

SUB CODE: 09

Card 1/1   UDC: 62-506.9

MININ, Ye.V., aspirant; STEBKOV, G.I., asp... ...: ...SHKVA, I.S., doktor
tekhn. nauk, prof.; GOLOVTEYEVA, A..., ...i. tekhn. nauk, dotsent

.ffect of the preliminary treatment of ollagen on its dissolving.
Report No.6. Nauch. trudy MTILP no.2 . .-66 '63.
(MIRA 17:12)

1. Kafedra tekhnologii kozhi i mekha ... vchego tekhnologicheskoro
instituta legkoy promyshlennosti.

STESHOV, I.I.

New shoe factories. Nauka i zhizn' 21 no.8:6-7 Ag '54.(MLRA 7:8)

1. Zamestitel' nachal'nika Glavobuvi Ministerstva promyshlennykh tovarov shirokogo potrebleniya SSSR.
    (Shoe industry)

VEYNBKRG, Ikhil' Abramovich; PIMENOV, V.I., kandidat tekhnicheskikh nauk,
retsenzent; STESHOV, I.I., inzhener, retsenzent; MINAYEVA, T.M.,
redaktor, NEKRASOVA, O.I., tekhnicheskiy redaktor.

[Hot vulcanization in footwear production] Goriachaia vulkanizatsiia
v obuvnon proizvodstve. Moskva, Gos.nauchno-tekhnicheskoe izd-vo
Ministerstva tekstil'noi promysh. SSSR, 1955. 230 p.   (MLRA 9:4)
        (Vulcanization) (Boots and shoes)

ZYBIN, Yuriy Petrovich, doktor tekhnicheskikh nauk, professor; STESHOV, I.I., retsenzent; VINOGRADOV, A.P., retsenzent; MINAYKVA, T.M. redaktor; MEDVEDEV, L.Ya., tekhnicheskiy redaktor.

[Technology of footwear] Tekhnologiia obuvi. Moskva, Gos.nauchno-tekhn.izd-vo Ministerstva promyshlennykh tovarov shirokogo po-trebleniia SSSR, Pt. 2, 1955. 446 p.   (MLRA 8:10)
        (Shoe industry)

KOBYLKIN, Artemiy Fedorovich; STESHOV, I.I., inzh., retsenzent; MINAYEVA,
    T.M., red.; MEDVEDEV, L.Ya., tekhn.red.

[New laboratory equipment for the leather and footwear industries]
Novye laboratornye pribory v kozhevennoi i obuvnoi promyshlennosti.
Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po legkoi promyshl., 1959.
188 p.   (MIRA 12:12)
            (Shoe industry--Equipment and supplies)
            (Leather industry--Equipment and supplies)

KOTEL'NIKOV, Viktor Nikolayevich, kand.tekhn.nauk; LIOKUMOVICH, Khatskel'
      Khaimovich, kand.tekhn.nauk; PETRUNINA, Mariya Matveyevna, inzh.;
      SHVETSOVA, Tamara Petrovna, inzh.; FINGER, A.M., prepodavatel'
      tekhnikuma, retsenzent; STESHOV, I.I., inzh., nauchnyy red.; GRACHEVA,
      A.V., red.; PLEMYANNIKOV, M.N., red.; MEDVEDEV, L.Ya., tekhn.red.

      [Technology of shoe manufacturing] Tekhnologiia obuvi. Moskva, Gos.
      nauchno-tekhn.izd-vo lit-ry po legkoi promyshl., 1959. 602 p.
                                                        (MIRA 13:3)
                  (Shoe manufacture)

SHNAYDR, Frantishek [Snaidr, Frantisek]; MAGID, M.I.[translator];
    KONYAKINA, T.G.[translator]; BINEVSKIY, P.S.[translator];
    STESHOV, I.I., red.; GLACHEVA, A.V., red.; SHAPENKOVA, T.A.,
    tekhn. red.

[Technology of shoe manufacture] Tekhnologiia obuvi. Pod re.
M.I.Magida i I.I.Steshova. Moskva, Izd-vo nauchno-tekhn. lit-
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        (Czechoslovakia—Shoe manufacture)

SHNAYDR, Frantishek [Snaidr, Frantisek]; MAGID, M.I.[translator];
        KONYAKHINA, T.G.[translator]; STESHOV, I.I., red.;
        GLACHEVA, A.V., red.; BATYREVA, G.G., tekhn. red.;
        SHAPENKOVA, T.A., tekhn. red.

        [Technology of footwear] Tekhnologiia obuvi. Pod red.
        M.I.Magida i I.I.Steshova. Moskva, Gizlegprom. Pt.2.
        1963. 234 p. Translated from the Czech. (MIRA 17:2)

MURAV'YEV, M.I.; KARASIK, Z.S.; OKUN', B.D.; TRUSHIN, S.A.;
    ASHRATOVA, S.K., kand. tekhn. nauk; GOROKHOVSKIY, A.I.;
    LAPSHIN, V.F., inzh., retsenzent; STESHOV, I.I., red.;
    MINAYEVA, T.M., red.

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Moskva, Gizlegprom. Vol.3. 1963. 505 p.   (MIRA 17:5)

STESHOV, I.I.

Special characteristics of the technology for the manufacture
of cold weather footwear (boots) with uppers made from the new
types of artificial leather. Kozh.-obuv. prom. 7 no.4:17-18
Ap '65.   (MIRA 18:6)

1. Zamestitel' direktora TSentral'nogo nauchno-issledovatel'skogo
instituta kozhevenno-obuvnoy promyshlennosti.

SHOV, I.L.:

... state standard for the lasts for shoe manufacture. Kozh.-obuv.
prom. 7 no.3:7-10 Mr '65.   (MIRA 18:10)

LAVRENT'YEV, A.F.; STESHOV, V.A.

Raise the importance of standardization departments. Standartizatsiia
29 no.1:55 Ja '65.   (MIRA 18:4)

LAVRENT'YEV, A.F.; STESHOV, V.A.

Promotion of the standardization at a plant. Standartizatsiia
29 no.5:56 My '65.   (MIRA 19:1)

5 (4), 2 (5)

AUTHORS: Stesik, L. N., Akimova, L. N.   SOV/76-33-8-14/39

TITLE: Indirect Method for the Evaluation of the Width of the Reaction
            Zone in a Detonation Wave

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 8, pp 1762 - 1768
            (USSR)

ABSTRACT: An evaluation of the width of the explosion zone (EZ) of vari-
            ous explosive substances is made starting from the dependence
            of the detonation velocity (DV) on the radius of the explosive
            charge (EC). The influence of (EC) on (DV) is due to the dis-
            persal of the substance out of the reaction zone so that the
            width of the (EZ) is determinant of the (DV) as a function of
            (EC). On the other hand, the dependence of (DV) on (EC), which
            can be found experimentally, serves to calculate the scope of
            the zone of chemical reaction in the detonation wave (DW). The
            width of the (EZ) is determined by the distance between the
            front of the (DW) and the Zhuge point. In the present case, an
            experimental curve is plotted which is characterized by the
            function $D/D_i = F$ (R na) (1) and holds for various explosives

Card 1/3 $(D_i$ = ideal (DV). D = (DV) with the radius R, n = constant co-

Indirect Method for the Evaluation of the Width of   SOV/76-33-8-14/39
the Reaction Zone in a Detonation Wave

efficient) The investigations were carried out with charges
of trotyl (I) of various densities, hexogen (II), and mix-
tures of (I) and (II) in different compositions. The (DV) was
measured with a photorecorder CFR, the explosions being initi-
ated in case of charges with a diameter of less than 30 mm,
by means of a detonator consisting of TG 40/60. The functional
curve (1) for (I) was plotted by means of the function $D/D_i =$

$= f (R)$ (2) which was obtained with densities of 0.80 and

1.46 g/cm^3 (Table 1). L. A. Vladimirov, Candidate for Diploma,
cooperated in the determination of function (2) for (II) and a
number of mixtures of (I) + (II) with various densities (Ta-
ble 2). The measurement results obtained are in good agreement
with equation (1). According to the measurement method (Ref 4),

the width of the reaction zone of (I) (density 1.55 g/cm^3) was
measured by A. N. Dremin by means of magnesium laminas. The
values of the function D/D_i of a/R are given (Table 4), and it

Card 2/3   is stated that all values calculated for the scope of the re-
action zone for different explosives agree with those (EC) for

Indirect Method for the Evaluation of the Width of   SOV/76-33-8-14/39
the Reaction Zone in a Detonation Wave

> which (DV) shows the ideal value. There are 3 figures, 4 ta-
> bles, and 7 references, 2 of which are Soviet.

ASSOCIATION: Akademiya nauk SSSR,Institut khimicheskoy fiziki,Moskva
               (Academy of Sciences, USSR, Institute of Chemical Physics,
               Moscow)

SUBMITTED: January 17, 1958

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20742

S/020/61/137/002/016/020
B103/B215

/1 P200

AUTHORS: Stesik, L. N., Akimova, L. N., and Apin, A. Ya.

TITLE: Determination of the width of the reaction zone, and the
             parameters of the detonation wave of a compact explosive

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 2, 1961, 369-371

TEXT: The authors measured the width of zone a of the chemical reaction
and detonation wave of a compact explosive with practically optimum density
(1.56 g/cm^{3}), namely H (N) ballistite powder with a nitroglycerin content of
approximately 27%. The charges had a diameter of 40 mm and a height of
60 mm. The powder was fired by a lensshaped charge guaranteeing a plain
detonation front. The detonation velocity was 7010 m/sec. The zone width
is the distance between the front of the shock wave and the Chapman-Jouguet
plane. The authors determined the zone width by the methods of R. Duff,
E. Houston (Ref. 1: J. Chem. Phys., 23, 1263 (1955))and A. N. Dremin,
P. F. Pohkil, (Ref. 2: DAN, 127, no. 6, 1245 (1959)), in which first the
shape of mass velocity a is determined by an aluminum plate moved by the

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Determination of the width...

explosion. the shock adiabatic of the metal, and the detonation velocity
are known, n be calculated from the formula

$$u = b \ \frac{(D - V)(u + c - D_1)}{D_1(u + c - V)} \quad (1),$$

where b denotes the thickness of the metal plate, at which a discontinuity
on the curve $u = f(\delta)$ occurs; D is the detonation velocity, D_1 the average
velocity of the shock wave in section b of the metal, V the average velocity
of the moving boundary between explosive and metal, u and c velocities of
mass and sound in the metal with a depth of b. The discontinuity of curve
$u = f(\delta)$ (δ - thickness of the metal) has been experimentally proved. The
mass velocity of the metal at this point is determined by pressure and
mass velocity of the detonation products in the Chapman-Jouguet plane of
the detonation wave. The authors used 0.3-5 mm aluminum plates, whose shock
adiabatic was shown. Table 1 and Fig. 1 give the experimental results.
The values of mass velocity of the aluminum adjacent to the powder was

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Determination of the width...

calculated from the known shock adiabatics. The authors found the discontinuity of the curve $u = \varphi(\delta)$ to occur at a plate thickness of 0.85 mm. $D_1 = 7520$ m/sec, V = 1730 m/sec, u = 1360 m/sec, c = 7590 m/sec. Hence, a reaction zone width of 0.12 ± 0.4 mm was obtained. In formula (1), however, the rebound of the detonation wave on the boundary between explosive and metal is not taken into account. The authors determined the width of the non-disturbed reaction zone of powder N on the basis of the function of Ref. 2 which gives the relation between the measured value of a and the dynamic rigidity of explosive and metal (the dynamic rigidity is the product of initial density and velocity of the shock wave $(\rho_0 D)$). The above width is 0.15 ± 0.5 mm. On the basis of their experiments, the authors determined the polytropic curves of the detonation products (for method of calculation see Ref. 6: A. N. Drémin et al., DAN. 128, no. 5, 989, 1959): $P = 2.4 \cdot 10^{10} \rho^{2.80}$ bar (2). The values characterizing the state of the substance in the Chapman-Jouguet plane are: P = $204 \cdot 10^9$ bar, ρ = 2.14 g/cm³, c = 5160 m/sec, u = 1840 m/sec. Since the average value u in the reaction zone is 1.25 times as high as u in the above plane. the authors calculated

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Determination of the width...

the duration of the chemical reaction of powder N in the detonation wave as follows: $t = a/(D - \bar{u}) = 3.3 \cdot 10^{-8}$ sec. According to their calculations, the critical diameter d_{cr} of the powder N is 28 mm. They proved d_{cr}/a to be approximately 200. Since the detonation velocity of compact powder does not depend on the diameter of the charge, critical and ideal velocities practically do not differ. Hence, the authors conclude that the detonation vanishes without ejecting the incompletely reacting substance from the reaction zone. This vanishing is caused by radial expansion of the detonation products occurring along the edges of the charge. It is known (Ref. 8, H. Eyring, R. Powell et al., Chem. Rev., 45, 69, 1949) that the detonation front is bent due to this expansion, i.e., the smaller the radius of the charge, the more it is bent. The current of substance is diverged when passing the bent front. This means that the radial expansion of the substance behind the front of the convex detonation wave covers the whole cross section of the charge, irrespective of the distance covered by the dispersion wave. A certain curvature of the front causes the pressure to decrease to an extent which stops further expansion of the detonation.

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Determination of the width...

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There are 1 figure, 1 table and 10 references: 8 Soviet-bloc.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences)

PRESENTED: October 29, 1960 by V. N. Kondrat'yev, Academician

SUBMITTED: October 26, 1960

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Determination of the width...

Legend to Fig. 1: Dependence of mass velocity in aluminum on thickness of plate. Abscissa: mm. Ordinate: m/sec.

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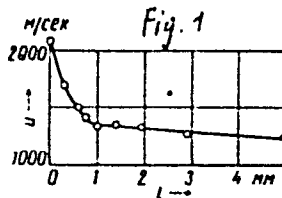
Fig. 1

Legend to Table 1: 1) Thickness of plate, mm, 2) mass velocity, m/sec.

Таблица 1

Толщина пластинки, мм	Массовая скорость, м/сек	Толщина пластинки, мм	Массовая скорость м/сек
0,00	2100	1,38	1340
0,30	1700	1,95	1320
0,59	1500	2,90	1260
0,74	1400	5,00	1230
1,00	1330		
1	2	1	2

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21573

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B103/B208

II. 8000

AUTHORS: Apin, A. Ya., Kostin, I. D., and Stesik, L. N.

TITLE: Detonation of ballistite powders

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 3, 1961, 652-653

TEXT: The authors studied the detonation velocity (D, m/sec) as a function
of the charge diameter of a compact explosive on two samples of HB (NB)
ballistite powder containing 40% nitroglycerin. Their density was 1.62 g/cm^3.
The critical diameters of the samples were different, probably owing to
some deviations from the nominal composition. D was measured on the
CФP (SFR) device by the optical method. A cast charge of the composition
ТГ 50/50 (TG 50/50) with the same diameter as the charge in question was
used as auxiliary detonator. Experiments with sample no. 1 disclosed
that D is practically independent of the charge diameter. D was assumed
to vary in a very narrow range of diameters (of about 1 mm) which are
near the critical diameter. To check this assumption, experiments were
made with sample no. 2, and the same results were obtained. This indicates

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Detonation of ballistite powders

initiation. Such an initiation takes place particularly if the detonator does not touch the surface of the charge, but is at some distance from it. The authors confirmed in experiments of this kind that 1) detonation is either initiated by a high D (at a certain depth of the charge), or 2) the charge does not detonate. These experiments have shown that NB powder is very little sensitive for the transmittance of a detonation over an air interval. Its 20-mm charge does not detonate any more by a charge of cast TG 50/50 of the same diameter if the interval is 4 mm. Under the same conditions, TG 50/50 does not detonate at a distance of 25 mm. There are 1 table and 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows: M. A. Cook, R. Keyes et al., J. Am. Chem. Soc., 79, 32 (1957).

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

PRESENTED: October 29, 1960, by V. N. Kondrat'yev, Academician

SUBMITTED: October 26, 1960

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21503

S/020/61/137/004/028/031
B103/B208

// 8200

AUTHORS: Apin, A.Ya., Stesik, L.N., and Shvedova, N.S.

TITLE: Shock adiabate of Ballistite powder

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 4, 1961, 908 – 909

TEXT: The shock adiabate represents the relationship between pressure and density of the substance in the shock wave. The laws of conservation of mass and momentum $\rho_o D = \rho (D - U)$, $P = \rho_o DU$ (1) relate the pressure P and the density ρ with the propagation velocity D of the shock wave and with the flow velocity U of the substance behind the front of the shock wave. The shock adiabate is determined from the measured values D and U. Shock adiabates of both inert and non-detonating explosives were determined in several recent papers. A knowledge of the shock adiabate of a non-detonating explosive is useful when studying the mechanisms of dissolution and the course of the chemical reaction in the detonation wave. Compact explosives are most interesting from this point of view, as their density deviates only slightly from the maximum. The authors have now

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Shock adiabate of ...

determined the shock adiabate of H (N) Ballistite powder which contains 27% nitroglycerin, and has a density of 1.58 g/cm³. The experimental methods were previously described (Ref. 3, A.N. Dremin, G.A. Adadurov, DAN, 128, no. 2, 261, 1959). D was measured in the powder (thickness of the layer ≤ 5 mm). The shock wave penetrated a 5-mm copper plate. The shock adiabate of copper is known. The moment when the shock wave passed through the powder layer was recorded by an ОК-15М (OK-15M) cathode oscillograph. The relation between the depth where the detonation is released and the pressure in the shock wave entering into the powder was first determined. It was concluded from Fig. 1 that D in the powder N may be determined up to a pressure of about $130 \cdot 10^9$ bar. Table 1 contains experimental data. It is expressed in the coordinates D, U as follows:

D = 1.760 + 1.86 U (km/sec) (2). By substituting this value in Eq. (1) one obtains a formula that interrelates pressure and density in the shock wave:

$$P = (1.76)^2 \cdot 10^{10} \cdot \rho_0 \frac{\rho/\rho_0 (\rho/\rho_0 - 1)}{\left[\rho/\rho_0 - 1.86(\rho/\rho_0 - 1)\right]^2}$$ (3). The limiting

compression $(\rho/\rho_0)_{max}$ of the powder in the shock wave is determined there-

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Shock adiabate of ...

from, if the pressure approaches infinity, $(\rho/\rho_0)_{max}$ was found to be
2.16. In the pressure range of $35 \cdot 10^9$ $127 \cdot 10^9$ bar the shock adiabate
of the powder N is well described by the exponential formula

$P = 5.31 \cdot 10^9 \left[(\rho/\rho_0)^{7.7} - 1 \right]$ (4). The resultant value of the shock adi-
abate may be used for estimating pressure and density of the powder in
the peak of the reaction zone of the shock wave. For this purpose, the
shock adiabate has to be extrapolated up to the point of intersection
with the Michelson straight line: $D^2 = V_0^2 \frac{P}{V_0 - V}$, (5). To construct

this straight line, the detonation velocity of the powder N must be known;
it was found to be 7010 m/sec. Extrapolation gave a pressure of
$312 \cdot 10^9$ bar, a density of 2.64 g/cm^3, and a mass velocity in this zone of
2820 m/sec. The pressure of the explosion products in the Chapman-
Jouguet plane of the detonation wave of the powder N was $204 \cdot 10^9$ bar.
The ratio of the pressure in the chemical peak to the pressure in the
Chapman-Jouguet plane is 1.53, which agrees with data obtained by other

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Shock adiabate of ...

authors. There are 1 figure, 1 table, and 7 references: 6 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English language publication reads as follows: Ref. 7; R.E. Duff, E. Houston, J. Chem. Phys., 23, no. 7, (1956).

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

PRESENTED: October 29, 1960 by V.N. Kondrat'yev, Academician

SUBMITTED: October 26, 1960

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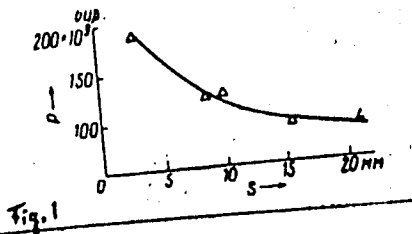
Shock adiabate of ...

Fig. 1

Legend to Fig. 1. Relation between the depth where the detonation is released and the pressure in the shock wave. Abscissae: mm; ordinates: bar.

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Shock adiabate of ...

Таблица 1

Активное в. в.	ρ_0, г/см³	Скорость детонации, м/сек	Скорость ударной волны в порохе, м/сек	Массовая скорость в порохе, м/сек	Давление в порохе, ·10⁵ бар	Плотность пороха, г/см³
A. Тротил	1,203	5680	3100	725	35	2,064
	1,208	5700	3170	735	37	2,058
	1,315	6060	3430	865	47	2,115
	1,405	6360	3570	985	55	2,175
	1,463	6560	3760	1060	63	2,202
	1,495	6660	3790	1095	76	2,224
	1,581	6930	4010	1185		2,244
B. ТГ50/50					96	2,179
	1,592	7400	4180	1200	102	2,336
	1,655	7000	4440	1435		
C. Гексоген	1,655	8220	4520	1600	127	2,499
	1	2	3	4	5	6	7

Table 1. 1) Active explosive: A) trotyl, B) ТГ 50/50 (TG50/50),
C) Hexogen, 2) ρ_0, g/cm³, 3) detonation velocity, m/sec; 4) D in the
powder, m/sec, 5) mass velocity, m/sec, 6) pressure in the powder 10⁹ bar,
7) density of the powder, g/cm³

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ACCESSION NR: AP4035820

S/0020/64/156/001/0152/0153

AUTHOR: Yakovleva, G. S.; Apin, A. Ya.; Kurbangalina, R. Kh.; Stesik, L. N.

TITLE: The rate of detonation of liquid hydrazoic acid

SOURCE: AN SSSR. Doklady*, v. 156, no. 1, 1964, 152-153

TOPIC TAGS: hydrazoic acid, explosive, detonation, detonation rate, liquid hydrazoic acid

ABSTRACT: HN_3 is not used in practice as an explosive, nevertheless, it is of interest to determine its detonation characteristics in the liquid state. Measurement of the detonation characteristics are frequently used in the studies of the equation of the state of gases at high pressures (hundreds of thousands of atmospheres) and at high temperatures (several thousand degrees). In treating experimental data one is involved with multicomponent systems, since the majority of explosives consist of at least four types of atoms. Consequently, the explosion products contain several types of molecules. In this respect HN_3 differs favorably from other explosives because one might expect that products of detonation of liquid HN_3 will consist primarily of molecular nitrogen and hydrogen. The rates

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L 8901-65   EPA/EWT(1)/EPA(b)/EPA(s)-2/EWT(m)/EPF(c)/EPR/EWP(j)/FCS(f)/H/FCS(k)/
EWA(h)   Pc-4/Paa-4/Pd-4/Pr-4/Ps-4/Pt-10/Pi-4   RPL/SSD/AEDC(b)/AFWL   WW/RM/JWD
ACCESSION NR: AP4044730   S/0207/64/000/004/0124/0126

AUTHOR: Stesik, L. N. (Moscow); Shvedova, N. S. (Moscow)   B

TITLE: Detonation of condensed explosives of small charge density

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 4, 1964, 124-126

TOPIC TAGS: explosive, detonation, detonation velocity, trotyl, tetryl, hexogen,
nitrocellulose, charge density

ABSTRACT: To study the possibility of calculating the detonation velocity of
explosives with very low charge densities (0.005—0.01g/cm³), the detonation
velocities of nitrocellulose charges (13.3% N) in cellophane cases with densities
of 0.13—0.67 g/cm³ were measured by high-speed photography. The detonation
velocities of charges with lower densities (0.005—0.01 g/cm³) were then calculated
with a computer, and the results were compared with the curve of detonation velocity
vs charge density extrapolated from data obtained at the higher densities. The
results for nitrocellulose are represented by curve 3 in Fig. 1 of the Enclosure.
The results showed that the extrapolated values were in good agreement with
calculated values. In the calculations, it was assumed that the heat capacity of
nitrocellulose is 605.4 kcal/kg, thermodynamic equilibrium is established in the

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ACCESSION NR: AP4044730

detonation wave, and the explosion products obey the ideal gas law. Analogous calculations were made for trotyl, tetryl, hexogen, PETN, and picric acid at a single charge density of 0.01 g/cm^3. These values together with previous experimental values obtained at higher densities are also plotted in the figure. Curves 6, 5, 4, and 2 represent trotyl, picric acid, PETN, and hexogen, respectively. Trotyl and picric acid showed good agreement between extrapolated experimental and calculated values. For PETN and hexogen, the calculated values were considerably lower than the extrapolated data. The largest discrepancy was found with hexogen. To explain this, special tests were made with hexogen of 0.53—1-g/cm^3 density. The results are represented by curve 1. It was found that the present experimental data were somewhat lower than those obtained previously. This is attributed to the use of glass cases. Orig. art. has: 4 tables and 1 figure.

ASSOCIATION: none

SUBMITTED: 06Jan64

SUB CODE: WA

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NO REF SOV: 003   OTHER: 004

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L 45087-65   EPA/EPA(s)-2/EWT(m)/EPF(c)/EPR/EWP(j)/EWA(c)   Pc-4/Paa-4/Pr-4/
Ps-4/Pt-7   RPL   WW/JWD/RM _____ UR/0207/65/000/002/0146/0149

ACCESSION NR: AP5013384

AUTHOR: Apin, A. Ya. (Moscow); Stesik L. N. (Moscow)

TITLE: Mechanism of the chemical reaction in the detonation of solid explosives

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 2, 1965, 146-149

TOPIC TAGS: detonation, reaction mechanism, explosive, solid explosive, NB explosive, N explosive

ABSTRACT: The effect of additives (finely ground $CaCO_3$, MgO, Bi_2O_3, PbO, HgO, and W) on the critical charge diameter (d_*) of solid explosives (powder NB containing 40% nitroglycerin and powder N containing 28% nitroglycerin and 11% dinitrotoluene) was studied photographically using cylindrical charges 25—30 cm long in cellophane cases. Both the critical diameter at which the detonation propagates steadily (d_*+) and the diameter at which the detonation velocity decreases (d_*-) were determined, and the data tabulated. In all cases in the presence of additives, particularly PbO, HgO, and Bi_2O_3, a considerable decrease in d_* was observed. The data indicate that d_* decreases linearly with the distance between the additive particles in the explosive. Based on this conclusion the following reaction mechanism is suggested. The reaction is initiated at certain centers by the reflection of the detonation wave from the additive particles or other nonuniformities in the explosive, and the

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reaction spreads to other points of the charge. Thus the reaction proceeds in two stages, the initiation stage (reaction delay, t_0) and the reaction propagation time (t_p). The total reaction time is: $t = t_0 + t_p = t_0 + (r-\delta)/2u$, where r is the average distance between the reaction centers, δ is the size of the center, and u is the average detonation velocity. The distance r may be expressed as $r = N^{-1/3}$, where N is the number of reaction centers (number of the additive particles (n_0)) plus the number of nonuniformities in the explosive (n), i.e., $N = n_0 + n$. When t_0, δ, and n_0 are negligibly small, then $d_*^3 N = $ constant, and each explosive may be characterized by this constant. The minimum value of the initiation impulse needed for a stable detonation near the critical diameter is proportional to the critical volume $V_* = d_*^3$. Thus the sensitivity of explosives may be characterized by $V_*^{-1} = AN$, which depends on the chemical properties and uniformity of the explosive. Orig. art. has: 2 tables and 1 figure. [PS]

ASSOCIATION: none

SUBMITTED: 31Jan64   ENCL: 00   SUB CODE: WA, FP

NO REF SOV: 005   OTHER: 002   ATD PRESS: 3255

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ACCESSION NR: AP4022725   S/0020/64/1b5/002/0422/0425

AUTHOR: Stesikov, V. P.; Ovchinnikov, Yu. V.; Kargin, V. A. (Academician)

TITLE: Effect of nonsolvent on the physico-mecnanical properties of concentrat-
ed solutions of polymers.

SOURCE: AN SSSR. Doklady*, v. 1b5, no. 2, 1964, 422-425

TOPIC TAGS: polymer property, acrylonitrile methyacrylate copolymer, poly-
mer solution property, property change, glass point temperature, strength,
relative elongation, propylene carbonate solvent, dibutyl phathalate, supermole-
cular structure, polymer solubility

ABSTRACT: The possibility of changing a wide range of the mechanical proper-
ties of concentrated solutions of polymers by changing the solubility of the poly-
mers in a solvent system was investigated. The physico-mechanical properties
of concentrated solutions of acrylonitrile-methacrylate copolymers (2u% metha-
crylate) such as glass point temperature (T_g) (fig. 1),strength and relative elon-

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ACCESSION NR: AP402272b

gation during rupture (fig. 2) were determined using a solvent system having propylene carbonate as the low molecular solvent and dibutylphthalate as the nonsolvent. The polymer strength in the pure solvent is low, but it increases rapidly by adding 10-20% dibutylphthalate, and decreases thereafter upon separation of two macroscopic phases, namely a solution of a copolymer in a low molecular liquid and a solution of a liquid in a copolymer. The effect of the amount of nonsolvent on the glass point temperature is somewhat similar; at up to about 10% dibutylphthalate the glass point changes little, then rises sharply in the 10-20% range. In the first case, where the low molecular liquid combines well with the copolymer, the mechanical properties are determined by the primary structural units of the polymer-the polymeric chain. In the second case, above 10% nonsolvent, the mechanical properties are determined by the secondary structures-blocks of chains. This change occurs within very narrow dibutyl-pnthalate limits. Thus the physico-mechanical properties of polymeric solutions are varied significantly within the limits of one and the same phase by changing their supermolecular structure, which is accomplished by changing the solubility
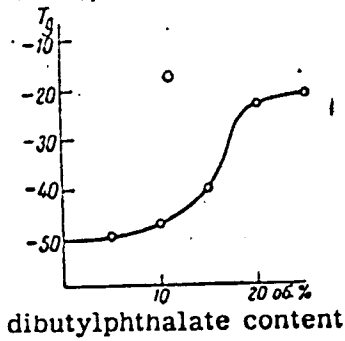
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dibutylphthalate content
Fig. 1.
Relationship between glasspoint temper-
ature (T_g) and non-solvent content.
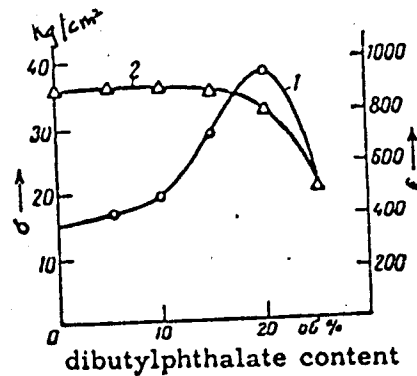
dibutylphthalate content
Fig. 2
Relationship between ultimate
strength (σ) and relative elonga-
tion during rupture (ε) and the
non-solvent content:
1. ultimate tensile strength
2. relative elongation during
   rupture

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USSR/Mathematics - Continuous Fractions

Card 1/1

Author   : Stesin, I. M.

Title   : Conputation of eigenvalues by means of continuous fractions

Periodical : Usp. mat. nauk, 9, No 2, 191-198, 1954

Abstract   : Extends the method for finding the eigenvalues of a symmetrical matrix
               A and linear operators by means of the conversion to a continuous fraction
               of a special series, which was indicated by L. A. Lyusternik in his
               report entitled: "Resheniye zadach lineyncy algebry metodom nepreryvnykh
               drobey, Otchet otedla priblizhennykh vychisleniy ITM i VT AN SSSR za
               yanvary'-iyul' 1952 g. [Solution of problems of linear algebra by the
               method of continuous fractions, report of the division of approximate
               computations of the Institute of Precision Mechanics and Computer
               Technology for January-July 1952]. Acknowledges the helpful advice of
               L. A. Lyusternik.

Submitted   : July 24, 1953

Mat. Vyčisl. Tehn. 2 (1955), 145–150. (Russian)

Let $x_1 > x_2 > \cdots$ be the set of numbers such that $x_i \phi_i(x) = \int_a^b K(x, y) \phi_i \, dy$, where K is a symmetric positive definite kernel. Let $f_0(x) = \sum_{i=1}^{\infty} d_i \phi_i(x)$ with $\sum d_i^2 = 1$. Let $f_k = \int_a^b K f_{k-1} \, dy$, $c_k = \int_a^b f_k f_0 \, dx$. Develop the series $\sum_{k=0}^{\infty} (-1)^k c_k z^{-k-1}$ into a continued fraction

$$(*) \qquad \frac{1}{z} + \frac{b_1}{1} + \frac{b_2}{z} + \frac{b_3}{1} + \cdots .$$

Let the zeros of the denominator $Q_n(z)$ of the nth convergent of (*) be denoted by $z_{n1} > z_{n2} > \cdots$. It is known [Stesin, Uspehi Mat. Nauk (N.S.) 9 (1954), no. 2(60), 191–198; MR 16, 405], that $z_{ni} \to x_i$ as $n \to \infty$. The author now gives asymptotic bounds for $h_{ni} = x_i - z_{ni}$ as $n \to \infty$. The proof for even n is given in detail. Let

$$A_{ni} = (b_n + b_{n+1})(z_{n,i-1} - z_{ni})^{-1},$$

$$B_{ni} = -Q_{n+1}(-z_{ni})\{Q_n'(-z_{ni}) z_{ni}\}^{-1}.$$

The result for even n is that, up to quantities of 3rd order in h_{ni}

$$B_{ni}(1 - A_{ni}) < h_{ni} < B_{ni}(1 + A_{ni}) \quad (n \to \infty).$$

G. E. Forsythe (Los Angeles, Calif.).

STESIN, I. M.

Stesin, I. M. Application of continued fractions to finding the solution of integral equations. Dokl. Akad. Nauk SSSR (N.S.) 105 (1955), 225–228. (Russian)

If $G_n(x)$ is the characteristic polynomial of a finite matrix A, and if $\lambda = \chi^{-1}$ is not an eigenvalue, then the equation $y - \lambda A y = b$ is solved by the Sylvester formula

$$(1). \quad y = \chi(\chi I - A)^{-1} b = \frac{\chi}{G_n(\chi)} \left[\frac{G_n(\chi I) - G_n(A)}{\chi I - A} \right] b.$$

The purpose of this note is to announce and prove an extension of (1) when A is a selfadjoint completely continuous operator in Hilbert space, corresponding to a symmetric, positive definite kernel $K(x, s)$. [See the review of Stesin, Vyčisl. Mat. Vyčisl. Tehn. 2 (1955), 145–150; MR 17, 414.] We wish to solve

$$(2) \quad y(x) = \lambda \int_a^b K(x, s) y(s) ds + f_0(x) = \lambda A y + f_0.$$

where $f_0 \in L_2$. Let $P_n(-Z)/Q_n(-Z)$ be the nth convergent of (*), loc. cit., and let $Z_{n1} > Z_{n2} > \cdots$ be the roots of $Q_n(-Z) = 0$. Theorems: I. The sequence of functions

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$$y_n(x) = \frac{\chi}{Q_{2n}(-\chi)}\left[\frac{Q_{2n}(-\chi) - Q_{2n}(-A)}{\chi I - A} \cdot \right]f_0(x)$$

converges uniformly in x to the solution $y(x)$, as $n \to \infty$, if $\lambda = \chi^{-1}$ is not an eigenvalue of (2). II. The sequence

$$\phi_{ni}(x) = (Z_{ni} - A)^{-1}Q_{2n}(-A)f_0(x)R_{2n}(-Z_{ni})$$

converges uniformly in x to the ith normed eigenfunction of the kernel $K(x, s)$, as $n \to \infty$. Here

$$R_n(Z) = \{P_n(Z)Q_n'(Z)\}^{\frac{1}{2}}.$$

G. E. Forsythe (Los Angeles, Calif.).

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SOV/44 - 58 - 4 - 3307

Translation from: Referativnyy zhurnal, Matematika, 1958, Nr 4,
p 147 (USSR)

AUTHOR: Stesin, I. M.

TITLE: Conversion of Orthogonal Decompositions to a Sequence of
Convergents of the Continued Fraction (Obrashcheniye orto-
gonal'nykh razlozheniy v posledovatel'nost' podkhodyaschikh
drobey)

PERIODICAL: Vychislit. matematika, sb. 1, 1957, pp 116-119

ABSTRACT: In a manner similar to the conversion of a power series
to a continuous fraction, a conversion of the series $R = \sum_{K=0}^{\infty} C_K \omega_K(x)$
is carried out, where $\omega_K(x)$ is a system of orthogonal functions
with weight which satisfy a certain recurring relation in a
sequence of rational fractions. These fractions, as in the case
of continued fractions, are called convergents. An example is
given: The function $\ln(1 + x)$ in the interval $(0, 1)$ is expanded

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in a series by Chebyshev polynomials (to the 8th order), thence a designated higher conversion is realized. As the result $\ln(1+x)$ is approximated by a rational fraction with great accuracy.

Ya. I. Alikhashkin

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SOV/49-59-1-4/23

AUTHORS: Keylis-Borok, V. I. and Stesin, I. M.

TITLE: Dispersion of the Rayleigh Waves in a Two-Layer Model of the Earth's Crust (Dispersiya releyevskikh voln v dvukhsloynoy modeli Zemnoy kory)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1959, Nr 1, pp 27-31 (USSR)

ABSTRACT: In order to improve the data for the Earth's crust calculated by the dispersion method, a two-layer dispersion method is proposed. The calculation is based on the half-space $z > 0$ covered by two layers: $0 > z > -m_1$ and $-m_1 > z > -(m_1 + m_2)$. The base and the two layers are composed of a homogeneous medium which is also isotropic and ideally elastic. The phase velocity v of the Rayleigh waves in such a medium can be represented by Eq.(1), where

m_q - thickness of q-layer,

a_q, b_q - velocities of longitudinal and transverse waves respectively,

u_q - a constant (q = 1, 2, 3 denote top, middle layers and base respectively).

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Dispersion of the Raleigh Waves in a Two-Layer Model of the Earth's Crust

The relationship of these values is calculated from the following:

$$\sigma_q = \mu_{q+1}/\mu_q; \quad \alpha_q = \sqrt{1 - v^2/a_q^2}; \quad \beta_q = \sqrt{1 - v^2/b_q^2}; \quad \gamma = 2 - v^2/b_q^2;$$

$$s = 2(\sigma_1 - 1) + v^2/b_1^2, \quad c = 2(\sigma_1 - 1) - \sigma_1 v^2/b_1^2; \quad d = c + v^2/b_1^2;$$

$$X_{i_\alpha} = ch\ \alpha_i \xi m_i; \quad Y_{i_\alpha} = sh\ \alpha_i \xi m_i; \quad X_{i_\beta} = ch\ \beta_i \xi m_i; \quad Y_{i_\beta} = ch\ \beta_i \xi m_i.$$

(ξ – wave characteristic, $\xi = p/v$, p – rotational frequency). The dispersion surface is equal to $v/b_3 = f(\lambda/m_1, \lambda/m_2)$, where $\lambda = 2\pi(b_3/p)$ – the length of the transverse wave with frequency p. It is divided into successive parts according to the different harmonics (Refs 2,4,5). For computation on hand machines

Card 2/4 it is better to find the solution of ξm_1 with given

Dispersion of the Raleigh Waves in a Two-Layer Model of the
Earth's Crust

v/b_3 and ξ m_2. The results obtained by means of the
electronic machine BESM, Ac.Sc., USSR are shown in
Figs. 1-4. The constants used were those for the
Central Asia (Refs 6,7) $a_3/b_3 = 1.85$, $a_2/b_3 = 1.46$;
$a_1/b_3 = 1.28$, $b_2/b_3 = 0.88$, $b_1/b_3 = 0.76$, $\sigma_1 = 1.48$,
$\sigma_2 = 1.48$ (a_3, b_3 – the outer surface). Fig.1 shows
the data of the dispersion surface: the curves of the
phase v and the group velocity V of the first
harmonic for various values of φ = arc tg m_1/m_2.

The limiting values of v/b_3 (as related to the Raleigh
waves) are 0.9265 for $\lambda \rightarrow \infty$, 0.6923 for $\lambda = 0$,
$\varphi \neq 0$, 0.8011 for $\lambda = 0$, $\varphi = 0$.   Figs.2-4 show the
surface v/b_3 (for second, third and fourth harmonics).
When $V/b_3 \approx 0.7$ for $\lambda = 0$ and m_1/m_2 is small, the

Card 3/4 group velocity has a second minimum in high frequencies
(Ref 1). It can be seen from Fig.1 that when the value

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of m_1/m_2 increases, the equivalent value $(m_1 + m_2)$ decreases. This is explained by a decrease of the wavelength due to $b_1 < b_2$. In order to determine m_1 and m_2 by means of the curves (Fig.1), it is necessary to find the dispersion V in the homogeneous region so that the respective value of b_3 can be established. (The notations of Fig.1 are as follows: 1 - phase and 2 - group velocities, 3-6 - experimental data for Rayleigh waves in various localities (Ref 1)). There are 4 figures, 1 table and 8 references, 5 of which are Soviet, 3 English.

ASSOCIATION: Akademiya Nauk SSSR Institut fiziki Zemli
         (Ac.Sc. USSR, Institute of Earth Physics)
SUBMITTED: September 10, 1957

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