SOV/58-59-7-16134

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 7, p 213 (USSR)

AUTHOR: Detinko, V.N.

TITLE: On the Passage of Electromagnetic Waves Through a Diaphragm in a
               Waveguide

PERIODICAL: Tr. Sibirsk. fiz.-tekhn. in-ta, 1958, Nr 36, pp 399 - 404

ABSTRACT: On the example of a diaphragmed waveguide the author discusses the
               question of depicting phenomena in microwave networks by the method of
               equivalent long waves. He points out the necessity of exercising
               extreme caution when applying this method to the analysis of new problems.

                                                    I.F. Dobrovol'skiy

Card 1/1

S/141/62/005/006/017/023
E140/E435

AUTHOR: Detinko, V.N.

TITLE: The effect of two harmonic signals on an oscillator

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Radiofizika.
               v.5, no.6, 1962, 1192-1195

TEXT: The case considered is that of synchronization of an
oscillator by two weak signals close together in frequency.   The
problem is solved using ordinary differential equations -
it is found that the oscillator frequency is modulated by the
difference frequency of the two synchronization signals.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri
               Tomskom universitete (Siberian Physicotechnical
               Institute at Tomsk University)

SUBMITTED: December 25, 1961

Card 1/1

S/141/62/005/006/017/023
E140/E435

AUTHOR: Detinko, V.N.

TITLE: The effect of two harmonic signals on an oscillator

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Radiofizika.
            v.5, no.6, 1962, 1192-1195

TEXT: The case considered is that of synchronization of an
oscillator by two weak signals close together in frequency.   The
problem is solved using ordinary differential equations -
it is found that the oscillator frequency is modulated by the
difference frequency of the two synchronization signals.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri
             Tomskom universitete (Siberian Physicotechnical
             Institute at Tomsk University)

SUBMITTED: December 25, 1961

Card 1/1

DETINKO, V. N.; PETROV, A. S.

Forced oscillations in an electric circuit with a nonlinear capacitor. Izv. vys. ucheb. zav.; fiz. no.6:90-98 '62.
(MIRA 16:1)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosudarstvennom universitete imeni Kuybysheva.

(Electric circuits)   (Oscillations)

DETINKO, V.N.

Action of two harmonic e.m.f. on a self-oscillator. Izv.vys.ucheb.
zav.; radiofiz. 5 no.6:1192-1195 '62.   (MIRA 16:2)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom universitete.
(Oscillators, Electric)

DETINKO, V.N.

Electromechanical parametric system of a nondegenerate pattern.
Izv. vys. ucheb. zav.; fiz. no.4:62-69 '63.   (MIRA 16:9)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosu-
darstvennom universitete imeni Kuybysheva.
                    (Parametric amplifiers)

DETINKO, V.N.; PETROV, A.S.

       Analysis of the operation of a single-stage amplifier-converter
with nonlinear capacitance. Radiotekh. i elektron. 8 no.10:
1692-1697 O '63.   (MIRA 16:10)

CHEKANNIKOV, B.A.; DETINKO, V.N.

Voltage transformation with random reactive load. Elektrosviaz'
18 no.10:56-65 O '64.   (MIRA 17:12)

DETINKO, V.N.

Four-frequency system with nonlinear capacity. Izv. vys. ucheb. zav.; fiz. 8 no.1:99-102 '65. (MIRA 18:3)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosudarstvennom universitete imeni Kuybysheva.

L. 0957-67   EWT(1)

ACC NR: AT6023408   SOURCE CODE: UR/0139/66/000/003/0014/0020

AUTHOR: Detinko, V. N.; Petrov, A. S.   5 ,

ORG: Siberian Physicotechnical Institute im. V. D. Kuznetsov (Sibirskiy fiziko-
tekhnicheskiy institut)

TITLE: Analysis of reactive modulation amplifier with semiconductor-diode capacitance

SOURCE: IVUZ. Fizika, no. 3, 1966, 14-20   25

TOPIC TAGS: amplifier design, amplitude modulation, phase modulation, parametric
amplifier, nonlinear effect

ABSTRACT: The authors point out that earlier analysis of such amplifiers, carried out
by the method of complex amplitudes and making use of the similarity between the
modulation-type and parametric amplifiers, does not yield specific information on the
type of modulation which takes place at a given tuning of the tank circuit, and does
not permit analysis of nonlinear effects. To eliminate these shortcomings, the
authors solve the differential equations for the equivalent circuit of the amplifier
by the methods of oscillation theory in the linear and nonlinear approximations. Only
single-ended amplifiers are considered. In the linear approximation it is shown that
modulation amplification can be accompanied by both amplitude and phase modulation,
the latter going over into the frequency modulation with increasing signal frequency.
In the nonlinear approximation, the critical mode due to the nonlinearity of the sys-
tem is considered. It is shown that in this mode amplitude and phase modulation with

Card 1/2

L 09357-67

ACC NR: AP6023408   ○

maximum depth exist simultaneously. In the critical mode, the gain increases without
limit with decreasing frequency, so that this mode can be used for dc amplification.
The spectrum of the oscillations on the diode is determined for the critical mode.
It is shown that the use of the upper sideband frequency is more effective than the
use of the lower one. Orig. art. has: 2 figures and 21 formulas.

SUB CODE: 09   SUBM DATE: 20Jul64/   ORIG REF: 006/   OTH REF: 003

Card   2/2

KOSTOCHKIN, Ye.; DETINOV, P.

     Panel construction for pallet transport of bricks. Avt.transp.34
     no.2:13 F '56.   (MLRA 9:7)

     1.TSentral'nyye avtoremontnyye masterskiye Glavmosavtotransa.
          (Bricks--Transportation)

L 22969-66   EWA(h)/EWP(k)/EWT(d)/EWT(m)/ETC(m)-6/EWP(w)/EWP(r)   IJP(c)   EM/AW

SOURCE CODE: UR/0420/65/000/002/0070/0076

ACC NR: AP6007896

AUTHOR: Detinov, Yu. M.

ORG: None

TITLE: Reduction of the stress peaks in the vicinity of the notch of a cylindrical shell by means of a patch

SOURCE: Samoletostroyeniye i tekhnika vozdushnogo flota, no. 2, 1965, 70-76

TOPIC TAGS: cylindric shell structure, reinforced shell structure, shell structure stability, bending stress, torsion stress, stress analysis

ABSTRACT: This paper presents results of an experimental investigation of the stressed state of an arch of a framed cylindrical shell in the vicinity of a large rectangular notch during bending by a concentrated force and torsion by a couple. Experimental data are obtained for the normal and tangential stresses in the seam of the arch. The expedience of using patches is discussed. The strengthening of the notch by means of patch plates is found to markedly affect the peaks of the tangential stresses in the angles of the notch during bending as well as during torsion. The greatest drop in the peaks of tangential stresses is obtained by the application of solid patches. The stress peaks in this case drop by 50%. When torsion is applied, asymmetry of normal stresses is observed in the elongated and compressed regions of the shell arch. This may be due to the loss of stability of the compressed region and stress relaxation. This phenomenon requires further study. Orig. art. has: 8 figures.

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 002

L 07591-67   EWT(d)/EWT(m)/EWP(w)/EWP(v)/EWP(k)   IJP(c)   WW/EM
ACC NR: AP6030431   SOURCE CODE: UR/0420/66/000/006/0056/0058

AUTHOR: Detinov, Yu. M.; Makeyev, A. I.

ORG: None

TITLE: Effect of variations in intermediate resistance on the readings of strain gauges in strength studies

SOURCE: Samoletostroyeniye i tekhnika vozdushnogo flota, no. 6, 1966, 56-58

TOPIC TAGS: strain gage, electric resistance, error statistics, probability, STRESS
DISTRIBUTION

ABSTRACT: The authors analyze the errors introduced by imperfections in experimental equipment in measuring the distribution of stresses in complex structural elements. A strain gauge was connected to a shell and readings were taken at all switch positions under a constant load to determine the effect which changes in the intermediate resistance in the switches have on the strain gauge readings. The results were used for an empirical determination of the distribution of random errors. An analysis of these data shows that variations in the intermediate resistance of switches do not change the strain gauge reading by more than ±1.75 scale divisions with a density function of 0.98. This corresponds to a probability range of 0.979-0.986 with a confidence coefficient of 0.95. The standard deviation for the errors of individual measurements is 0.58 which may be used to determine the confidence range as a function of the number of loading stages in analyzing experimental data from strength tests. Orig. art. has: 1 figure, 2 tables, 3 formulas.

SUB CODE: 12, 13/ SUBM DATE: None/ ORIG REF: 003

Card 1/1

DETINOVA, T. S.

"Extent and Composition of the Population of Anopheles maculipennis messeae in
Conditions Obtaining at Small Villages which Have Been Treated With DDT", Med. Paraz. i
Paraz. Bolez., Vol. 17, No. 1, pp 19-26, 1948.

DETINOVA, T. S.

      "The Increase in the Number of Anopheles Mosquito as a Criterion for
Evaluating Effective Antimosquito Measures," Malyariya i Bor'ba s Ney, Moscow, 1952,
pp 57-63.

DETINOVA, T.S.; SERGIYEV, P.G., professor, direktor instituta; BEKLEMISHEV, V.N., professor, zaveduyushchiy otdelom.

Changes in the oviducts of Anopheles maculipennis in which the egg was detained, which developed during the previous ovogenetic cycle. Med.paraz. i paraz.bol. no.3:279-280 My-Je '53.   (MLRA 6:8)

1. Entomologicheskiy otdel Instituta malyarii, meditsinskoy parazitologii i gel'mintologii Ministerstva zdravookhraneniya SSSR.   (Mosquitoes)

DETINOVA, T.S.; SERGIYEV, P.G., professor, direktor instituta; BEKLEMISHEV, V.N., professor, zaveduyushchiy otdelom.

Effect of the development of ovaries upon the rate of blood digestion by the female mosquito Anopheles maculipennis. Med.paraz.i paraz.bol. no.4:337-338 Jl-Ag '53.   (MLRA 6:9)

1. Entomologicheskiy otdel Instituta malyarii, meditsinskoy parazitologii i gel'mintologii Ministerstva zdravookhraneniya SSSR.   (Mosquitoes)

DETINOVA, T.S.

Duration of the gonotrophic cycle in mosquitoes A.Maculipennis: Time which elapses from the laying of eggs to the sucking of blood. Med.paraz.i paraz. bol. no.5:446-449 S-O '53.   (MLRA 6:12)

1. Iz entomologicheskogo otdela Instituta malyarii, meditsinskoy parazitologii i gel'mintologii Ministerstva zdravookhraneniya SSSR (direktor instituta professor P.G.Sergiyev, zaveduyushchiy otdelom - professor V.N.Beklemishev).
                                                                              (Mosquitoes)

DETINOVA, T.S.

Age composition and epidemiological significance of the population of Anopheles maculipennis under conditions prevailing in Moscow Province. Med.paraz.i paraz.bol. no.6:486-495 N-D '53.   (MLRA 6:12)

1. Iz entomologicheskogo otdela Instituta malyarii, meditsinskoy para- zitologii i gel'mintologii Ministerstva zdravookhraneniya SSSR (direktor instituta - professor P.G.Sergiyev, zaveduyushchiy otdelom - professor V.N.Beklemishev).

                    (Moscow Province--Mosquitoes) (Mosquitoes--Moscow Pro-
                                                                    vince)

DETINOVA, T.S.; LOZGACHEVA, V.A.

Mechanism of gonotrophic harmony in the common malaria mosquito
(Anopheles maculipennis Mg.). Zool.zhur. 32 no.6:1178-1188 N-D '53.
(MLRA 6:12)

1. Entomologicheskiy otdel Instituta malyarii, meditsinskoy parazitologii
i gel'mintologii Ministerstva dzravookhraneniya SSSR.   (Mosquitoes)

DETINOVA, T.S.

Fertility of Anopheles maculipennis. Med.paraz.i paraz.bol. 24
no.1:6-11 Ja-Mr '55.   (MLRA 8:5)

1. Iz entomologicheskogo otdela Instituta malyarii, meditsinskoy
parazitologii i gel'mintologii Ministerstva zdravookhraneniya SSSR
(dir. instituta prof. P.G.Sergiyev, zav. otdelom prof. V.N.Beklemi-
shev).
        (MOSQUITOES,
            Anopheles maculipennis, fertility)

DETINOVA, T.S.; BUTENKO, O.M.

Autogenous development of ovaries in the female Anopheles hyr-
canus in northern Kirghizia. Med.paraz. i paraz.bol. 24 no.3:
269 Jl-S '55.   (MLRA 8:12)

1. Iz entomologicheskogo otdela Instituta malyarii, meditsinskoy
parazitologii i gel'mintologii Ministerstva zdravookhraneniya
SSSR (dir. instituta prof. P.G.Sergiyev, zav.otdelom prof. V.N.
Beklemishev)
     (KIRGHIZISTAN--MOSQUITOES)

DETIBOVA, T.S.

Growth modification in the ovaries of Hippobosca capensis Olf.
Dokl.AN SSSR 103 no.5:937-939 Ag '55.   (MIRA 9:1)

1.Institut malyarii, meditsinskoy parazitologii i gel'mintologii
Ministerstva zdravookhraneniya SSSR. Predstavleno akademikom
K.I.Skryabinym.
        (FLIES,
            Hippobosca capensis, develop. of ovaries)

DETINOVA, T.S.

Study of the physiological age of vectors of transmissive diseases in connection with the evaluation of the effectiveness of control measures. Med.paras.i paras.bol. 26 no.6:673-679 N-D '57.   (MIRA 13:4)

1. Iz Instituta malyarii, meditsinskoy parazitologii i gel'mintologii Ministerstva zdravookhraneniya SSSR (direktor instituta - prof. P.G. Sergiyev, zaveduyushchiy otdelom - prof. V.N. Beklemishev).
(INSECTS AS CARRIERS OF DISEASE)   (MALARIA)

BEKLEMISHEV, V.N., prof.; VINOGRADSKAYA, O.N.; DARSKAYA, N.F.; DERBENEVA-
UKHOVA, V.P.; DETINOVA, T.S.; DOLMATOVA, A.V.; LANGE, A.B.;
OLSUF'YEV, N.G.; POSPELOVA-SHTROM, M.V.; RODENDORF, B.B.;
SHIPITSINA, N.K.; PLAVIL'SHCHIKOV, N.N., red.; LYUDKOVSKAYA,
N.I., tekhn.red.

[Guide to arthropods harmful to human health] Opredelitel'
chlenistonogikh, vrediashchikh zdorov'iu cheloveka. Moskva, Gos.
izd-vo med.lit-ry, 1958. 419 p.   (MIRA 12:5)

1. Deystvitel'nyy chlen AMN SSSR (for Beklemishev). 2. Institut
malyarii i meditsinskoy parazitologii Ministerstva zdravookhra-
neniya SSSR (for Beklemishev, Derbeneva-Ukhova, Detinova, Dolmatova,
Pospelova-Shtrom, Shipitsina). 3. Kafedra parazitologii TSentral'-
nogo inst. usovershenstvovaniya vrachey (for Vinogradskaya). 4.
Nauchno-issledovat.inst. Kavkaza i Zakavkaz'ya Ministerstva zdravo-
okhraneniya SSSR v Stavropole (for Darskaya). 5. Kafedra entomo-
logii Moskovskogo gosudarstvennogo universiteta im. M.V.Lomonosova
(for Lange). 6. Otdel parazitologii i meditsinskoy zoologii Inst.
epidemiologii i mikrobiologii im. N.F.Gamalei AMN SSR (for Ol-
suf'yev). 7. Institut paleontologii Akademii nauk SSSR (for Roden-
dorf).
    (ARTHROPODA) (INSECTS AS CARRIERS OF DISEASE) (PARASITES--MAN)

DETINOVA, T.S.

The organization of an antiepidemic program at a Siberian construction
project. Med.paraz. i paraz. bol. 27 no.1:3-6 Ja-F '58.
(MIRA 11:4)

1. Iz Instituta malyarii, meditsinskoy parazitologii i gel'mintologii
Ministerstva zdravookhraneniya SSSR (dir. instituta - prof. P.G.
Sergiyev, zav. otdelom - prof. V.N.Beklemishev)
(COMMUNICABLE DISEASES, prevention & control
organiz. of anti-epidemic program in Siberia (Rus))

DETINOVA, T.S.

BEL'TYUKOVA, K.N.; BEY-BIYENKO, I.G.; BUYANOVA, O.F.; DETINOVA, T.S.;
REMBERG, M.S.; SHLENOVA, M.F.

Preliminary report on the development of a system of measures for
the control of blood-sucking insects at the construction site of the
Krasnoyarsk Hydroelectric Power Station. Med.paraz. i paraz.bol. 27
no.1:20-26 Ja-F '58.
(MIRA 11:4)

1. Iz sektora entomologii Instituta malyarii, meditsinskoy parazito-
logii i gel'matologii Ministerstva zdravookhraneniya SSSR (dir. insti-
tuta - prof. P.G.Sergiyev, zav. sektorom - prof. V.N.Beklemishev).
Permskogo gosudarstvennogo universiteta i iz Krasnoyarskoy krayevoy
sanitarno-epidemiologicheskoy stantsii (glavnyy vrach S.I.Nozik)
(INSECTS,
control measures in rural construction zones, evaluation
(Rus))

SARIKYAN, S.Ya.; DUKHANINA, N.N.; DETINOVA, T.S.

Conference of directors of institutes of malaria and medical
parasitology, institutes of epidemiology, microbiology and hy-
giene, and physicians of republic sanitation and epidemiological
control stations. Med.paraz. i paraz.bol. 27 no.5:615-624 S-O '58.

(MIRA 12:1)

(PARASITOLOGY--CONGRESSES)

DETINOVA, T.S.; BEL'TYUKOVA, K.N.

Repeated gonotrophic cycles in black flies (Simulidae) according
to observations in Krasnoyarsk Territory [with summary in English].
Med.paraz.i paraz.bol. 27 no.6:686-688 N-D '58.   (MIRA 12:2)

1. Iz Instituta malyarii meditsinskoy parasitologii i gel'minto-
logii Ministerstva zdravookhraneniya SSSR (dir. instituta - prof.
P.G. Sergiyev, zav. otdelom - prof. V.N. Beklemishev) i kafedry
zoologii besposvonochnykh Permskogo gosudarstvennogo universiteta
(zav. kafedroy Yu. G. Mitrofanova).
      (FLIES,
           Simulidae, repeated gonotrophic cycles (Rus))

SHIPITSINA, N.K.; DETINOVA, T.S.; SHLENOVA, M.F.; BEL'TYUKOVA, K.N.;
    BUYANOVA, O.F.; BEY-BUYENKO, I.G.

Protection of Krasnoyarsk Hydroelectric Power Station construction
workers from biting midges. Med.paraz. i paraz.bol. 28 no.4:456-463
Jl.-Ag '59.   (MIRA 12:12)

1. Iz sektora entomologii Instituta malyarii, meditsinskoy parazito-
logii i gel'mintologii Ministerstva zdravookhraneniya SSSR (dir. insti-
tuta - prof. P.G. Sergiyev, zav. sektorom - prof. V.N. Beklemishev) i
iz Permskogo gosudarstvennogo universiteta.
            (DIPTERA)

DETINOVA, T. S., Doc Biol Sci -- (diss.) "Problem of the growth condi-
tion of populations of Anopheles maculipennis Mg. and their signifi-
cance in the epidemiology of malaria." Moscow, 1960. 30 pp; (Moscow
Order of Lenin and Order of Labor Red Banner State Univ im M. V. Lom-
onosov, Biology-Soils Faculty); 200 copies; price not given; list of
author's work on pp 28-30 (27 entries); (KL, 51-60, 116)

SERGIYEV, P.G., prof., redl; SMIRNOV, Ye.S., prof., red.;
DERBENEVA-UKHOVA, V.P., prof., red.; DETINOVA, T.S., doktor
biol. nauk, red.; LANGE, A.B., kand. biol. nauk, red.;
OSIPOVA, L.S., red.

[Problems of general zoology and medical parasitology]Voprosy
obshchei zoologii i meditsinskoy parazitologii. Moskva, Medgiz,
1962. 610 p.   (MIRA 16:1)

1. Deystvitel'nyy chlen Akademii meditsinskikh nauk SSSR (for
Sergiyev). 2. Kafedra entomologii Moskovskogo gosudarstvennogo
universiteta (for Smirnov, Lange). 3. Institut meditsinskoy pa-
razitologii i tropicheskoy meditsiny imeni Ye.I.Martsinovskogo
(for Derbeneva-Ukhova, Detinova).
    (ZOOLOGY)   (PARASITOLOGY)
    (BEKLEMISHEV, VLADIMIR NIKOLAEVICH, 189C-)

DETINOVA, T.S.; GILLIES, M.T.

Data on determination of the age composition and epidemiological
significance of the population of Anopheles gambiae Giles and
Anopheles funestus Giles in Tanganyika. Med. paraz. i paraz. bol.
33 no.1:25-31 Ja-F '64   (MIRA 18:1)

1. Institut meditsinskoy parazitologii i tropicheskoy meditsiny
imeni Ye.I. Martsinovskogo Ministerstva zdravookhraneniya SSSR,
Moskva, i Vostochno-afrikanskiy institut malyarii i perenoschikov
bolezney Amani, Tangan'ika.

SVYATKINA, Klavdiya Andreyevna, prof.; KHVUL', Anna Markovna,
doktor med. nauk; RASSOLOVA, Mariya Alekseyevna, kand.
med. nauk; PONOMAREVA, P.A., prof. red.; DETINOVA,
Ye.P., red.

[Rickets] Rakhit. Moskva, Meditsina, 1964. 221 p.
(MIRA 17:10)

SOKOLOVA, Klavdiya Fedorovna; DETINOVA, Ye.P., red.

[Pneumonia in young children] Pnevmoniia u detei rannego
vozrasta. Moskva, Meditsina, 1964. 254 p.
(MIRA 17:11)

DETISTOV, F.M.

The APP-4-70 tillage and planting unit. Trakt. i sel'khozmash.
33 no.7:34-35 Jl '63.   (MIRA 16:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sel'skokho-
zyaystvennogo mashinostroyeniya.

DETISTOV, F.M.

The MVN-4,2 rotary hoe. Trakt. i sel'khozmash. 33 no.8:38 Ag '63.
(MIRA 16:11)

GAN'SHIN, V.N., kand.tekhn.nauk; DETISTOV, A.I.

Crossing of large bodies of water with leveling. Geod. i kart.
no.8:19-23 Ag '60.   (MIRA 13:10)
                    (Leveling)

DETISTOV, F.M., kand.tekhn.nauk

Polygons for testing tractors and agricultural machinery.
Trakt.i sel'khozmash. no.1:29-31 Ja '60.
(MIRA 13:4)
(Tractors--Testing) (Agricultural machinery--Testing)

DETISTOV, F.M.

The KVP-6,3 cultivator for tall crops. Trakt. i sel'khozmash.
33 no.4:36-37 Ap '63.

(MIRA 16:10)

(Cultivators)

DETISTOV, F.M.

Grain cleaning and drying station. Trakt. i sel'khozmash. 33
no.5:36-37 My '63. (MIRA 16:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sel'skokhozyaystven-
nogo mashinostroyeniya.

DETISTOV, I.Ye., kandidat tekhnicheskikh nauk.

Split boring bit with leading cutting edge. Ugol' 29 no.7:29-30
Jl '54.
                                                    (MLRA 7:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut organizatsii i
mekhanizatsii shakhtnogo stroitel'stva.
        (Boring machinery)

DETISTOV, I.Ye., kandidat tekhnicheskikh nauk.

Checking the effectiveness of delayed action blasting in shaft
sinking.   Shakht.stroi.   no.2:6-8   F '57.   (MIRA 10:7)
              (Shaft sinking)   (Blasting)

DETISTOV, I.Ye., kandidat tekhnicheskikh nauk.

Effect of the number of miners in a shaft breast on their product-
ivity. Shakht. stroi. no.7:10-13 Jl '57.   (MIRA 10:8)
         (Shaft sinking)   (Efficiency, Industrial)

DETISTOV, I.
DETISTOV, I.

Hidden potentialities for increasing miners' output in shaft sinking.
Sots. trud no.2:131-133 F '58.   (MIRA 11:1)
              (Mine tumbering--Production standards)

DETISTOV, I.Ye.,kand.tekhn.nauk

Evaluating the efficiency of explosives. Ugol' 33 no.4:19-20 Ap '58.

(MIRA 11:4)

(Explosives)

DETISTCVA, R. N.

USSR / Cultivated Plants.   A

Abs Jour   : Ref Zhur - Biol., No 3, 1958, No 34669

Author   : Dotistova, R. N.
Inst   : Stalingrad Institute of Agriculture
Title   : Timetables and Methods for Sowing Rice in the
              Northern Part of Volga-Akhtubinskiy Bottom Land
              Under Conditions of Periodical Irrigation.

Orig Pub   : Sb. nauch. rabot stud. Stalingr. s. kh. in-ta,
              1956, vyp. 2, 56-58

Abstract   : The work was conducted by the Experimental Im-
              provement Station of Stalingrad. On clean,
              well-cultivated soils, the highest yield was
              obtained by uniform sowing. Weed-choked ground re-
              quired* Early dates (first decade of May) for
              sowing rice are recommended solely in cultiva-
              tions over perennialgrasses and virgin soil. Ge-
              nerally, the best date for sowing appears to be
              the beginning of the 3rd decade of May. -- A. F.
              Khlystova.
Card 1/1   *wide row single strip

DETKENS, Stanislaw

Present state of animal science in Norway. Postepy nauk roln 9 no.5:
133-139 S-O '62.

1. Zaklad Hodowli Doswiadczalnej Zwierzat, Polska Akademia Nauk,
Warszawa.

SMIRNOV
DETKNOV, S. P
DOTKI-CF, B.P.

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Real

DETERMINATION OF THE VAPOR TENSION OF METALS WITH RADIOACTIVE ISOTOPES. M. V. Smirnov and S. P. Detknov. Doklady Akad. Nauk S.S.S.R. 98, 777-80(1954).
Oct. 11.

A dynamic method of measuring the vapor pressure of metals with γ-emitting isotopes, in which the metal vapor flowing through a tube from a retort is measured radiometrically, is described. Data on the vapor pressure of Zn from 554 to 904.2°C are presented. (C.Y.)

DETKO, V.

    Experience in magazine mining. p. 258

RUDY   Vol. 3, no. 9, Sept. 1955

Czechoslovakia

Source: EAST EUROPEAN LISTS   Vol. 5, no. 7   July 1956

Open stone mining. p. 260. RUDY. (Ministerstvo hutniho prumslu a rudnych dolu) Praha. Vol. 4, no. 9, Se t. 1956.

SOURCE: East European Accessions List, (EEAL), Library of Congress
          Vol. 5, no. 12, December 1956.

DETKO, V.

Blasting of stope pillars in open-stope mining.

P. 225, (Rudy) Vol. 5, no. 7, July 1957, Praha, Czechoslovakia

SO: Monthly Index of East European Acessions (EEAI) Vol. 6, No. 11 November 1957

GETKO, Viliam, inz.

       Choice of underground mining method for magnesite according to
its quality. Rudy 11 no.7/8:218-221 Jl-Ag'64   (MIRA 17:8)

1. Slovenske magnezitove zavody, Lubenik.

DETKO, Villam, inz.

       Simplified support of a rise. Rudy 13 no.4:130 Ap '65.

    1. Slovenske magnezitove zavody National Enterprise, Lubenik.

DETKO, W.

2867   725.4 : 86.013.5 : 666 91

Detko W. Engineering Problems in the Cement Industry;
Zagadnienia Inżynierskie w przemyśle cementowym". Cement, Wapno,
Gips. No. 7—8, 1953, pp. 119—121, 7 figs.

This article deals with the range of problems which the building
engineer is, under conditions of socialist economy, called upon to solve
in modern cement works. The designer is required to posses an all-
-round knowledge not merely of statics, but also of cement technology,
industrial building economy, modern organisation and execution me-
thods in building schemes. The author explains which factors should
be taken into consideration in designing and constructing such major
items of cement works premises and equipment as rotary kilns, ware-
houses for raw material, fuel and semi-products, slurry tanks and silos.

DETKO, W.

DETKO, W.   A vindication of the economic importance of prestressed constructions.
          p. 385

Vol. 13, no. 10, Oct. 1956
INZYNIERIA I BUDOWNICTWO
POLITICA: SCIENCE
Warszawa, Poland

So: East European Accession Vol. 4, No. 3, March 1957

DETKO, W.

The application of prestressing the construction of circular reservoirs for the cement industry. p. 18.
(Budownictwo Przemyslowe, Warszawa, Vol. 6, no. 4, Apr. 1957)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 7, July 1957. Uncl.

DETKO, W.

The quality of cement and prestressed concrete. p. 25.

CEMENT, WAPNO, GIPS. (Wydawnictwo "Budownictwo i Architektura") Krakow, Poland.   Vol. 13, no. 2, Feb. 1957.

Monthly list of East European Accessions Index (EEAI), LC, Vol. 8, no. 6, June 1959
uncla.

DETKO, W.

TECHNOLOGY

PERIODICAL: BUDOWNICTWO PRZEMYSLOWE.   Vol. 7, no. 8, Aug. 1958

DETKO, W. Prestressed water cistern of a gas storage tank. p. 10.

Monthly List of East European Accessions (EEAI) LC, Vol 8, no. 4.
                                                     April 1959, Unclass

DETKO, Wladyslaw, mgr., inz., (Krakow)

Cement and prefabricate. Cement wapno gips 16/26 no.7:228-230 '61.

(Cement)

DETKO, W., mgr., inz.

From monolithic to prefabricated water reservoirs. Przegl techn
31 no.20:13-14 '60.

DETKO, Wladyslaw   (Krakow)

Some remarks on cement factories built during the period
1945-1960. Przegl budowl i bud mieszk 33 no.1:29-34   Ja   '61

DETKO, Wladyslaw, mgr inz.; ZIOBRON, Wladyslaw, mgr inz.

Method of testing the strength of concrete subject to vacuum.
Inz i bud 19 no.3:113-116 Mr '62.

1. Politechnika, Krakow.

CIESIELSKI, Jerzy; DETKO, Wladyslaw; STYLINSKI, Jan

Determination of the strength of standard concrete by applying Schmidt's sclerometer. Ins i bud 19 no.7:252-257 Jl '62.

1. Politechnika, Krakow.

CIESIELSKI, Jerzy (Krakow); DETKO, Wladyslaw (Krakow); ZIOBRON,
Wladyslaw (Krakow)

Practical application of vacuum treatment of concrete in
construction. Przegl budowl i mieszk 34 no.12:706-709 D '62.

DETKOV, G.S.

Economic efficiency of enameling steel pipes. Stroi. trubo-
prov. 8 no.8:25-26 Ag '63.

1. Institut ekonomiki AN SSSR.

(MIRA 16:11)

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Remarks concerning B.S.Revzin's article "Technical and economic comparison of regenerative and nonregenerative gas turbines for gas pipelines." Energomashinostroenie 9 no.12:44-48 D '63.   (MIRA 17:1)

DETKOV, G.S.

Economic basis for selecting the type of gas-pumping assembly
for the compressor stations of gas pipelines. Gaz. prom. 8 no.8:
23-27 '63.   (MIRA 17:11)

DETKOV, S. N.

"Resultant Absorptivity and Methods of Its Calculation."

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

DETKOV, S. P.

USSR/Physics - Technical physics

Card 1/1   Pub. 22 - 21/47

Authors   : Smirnov, M. V., and Detkov, S. P.

Title   : Vapor pressures of metals determined through the application of radioactive
              isotopes
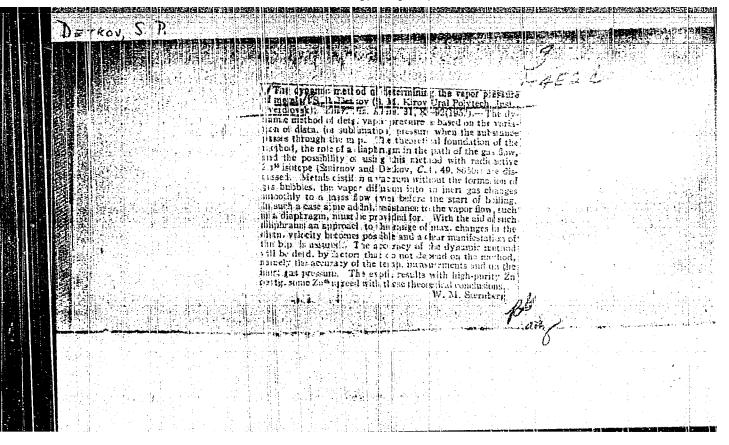
Periodical : Dok. AN SSSR 98/5, 777-780, Oct 11, 1954

Abstract   : A dynamic method for the determination of vapor pressures through the appli-
              cation of gamma-radioactive isotopes was introduced. This method was applied
              for the first time for measuring the vapor pressure of Zn at temperatures of
              554 to 904.2° and the results obtained are tabulated. This vapor pressure
              measuring method is recommended not only for pure metals but also for alloys
              and salts provided the tested element has a gamma-radioactive isotope of
              sufficiently great semi-decomposition period. Four references: 2-USA; 1-
              English and 1-USSR (1920-1950). Table; graphs; drawing.

Institution : ...

Presented by: Academician G. V. Kurdyumov, May 25, 1954

Detkov, S. P.

The dynamic method of determining the vapor pressure of metals. S. P. Detkov (S. M. Kirov Ural Polytech. Inst., Sverdlovsk). Zhur. Fiz. Khim. 31, X-92(1957).— The dynamic method of detg. vapor pressure is based on the variation of distn. (or sublimation) pressure when the substance passes through the m.p. The theoretical foundation of the method, the role of a diaphragm in the path of the gas flow, and the possibility of using this method with radioactive Zn^{65} isotope (Smirnov and Detkov, C.A., 49, 8650) are discussed. Metals distil in a vacuum without the formation of gas bubbles, the vapor diffusion into an inert gas changes smoothly to a mass flow (not before the start of boiling). In such a case some addnl. resistance to the vapor flow, such as a diaphragm, must be provided for. With the aid of such diaphragm an approach to the range of max. changes in the distn. velocity becomes possible and a clear manifestation of the b.p. is assured. The accuracy of the dynamic method will be detd. by factors that do not depend on the method, namely, the accuracy of the temp. measurements and on the inert gas pressure. The exptl. results with high-purity Zn and some Zn^{65} agreed with the theoretical conclusions.

W. M. Sternberg

DETKOV, S. P.

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria,
Physical-Chemical Analysis, Phase Transitions.   B-8

Abs Jour: Referat. Zhurnal Khimiya, No 2, 1958, 3796.

Author : M.V. Smirnov, N.G. Il'yushchenko, S.P. Detkov, L.Ye. Ivanovskiy.
Inst   :
Title   : Solubility of Thorium in Liquid Zinc.

Orig Pub: Zh. fiz. khimii, 1957, 31, No 5, 1013-1018.

Abstract: Alloys of Zn with Th containing up to 25% by weight of Th
were investigated by the methods of electron-photographic, metallo-
graphic and thermal analyses. The structural component alloys are
practically pure Zn and the metallic compound Th_2Zn_{17} (I), the
composition of which has been established by chemical analysis.
The solubility of Th in Zn was determined, it is $3.55 \cdot 10^{-3}$ %
at $419.4°$ and 1.44% at $907°$. It was found that the isobaric po-
tential changes at the formation of I from the elements, and the
activities with activity factors of Th in the binary alloy I

Card   : 1/2   -34-

Detkov, S. P

AUTHOR: Detkov, S. P.   76-10-31/34

TITLE: On the Determination of Vapor Pressure by the Rate of
            Vaporization in High Vacuum (K opredeleniyu uprugosti
            parov po skorosti ispareniya v vysokom vakuume).

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 10,
            pp. 2367-2370 (USSR)

ABSTRACT: It is referred to the methods of M. Knudsen (Ann.
            d. Phys. 28, 75, 179, 99, 1909), O. Langmuir (Phys.
            Rev. 2, 329, 1913), as well as to the formula given
            for the general case by C. J. Witmann (Journ. Chem.
            Phys. 20, 161, 1952). A molecular current from the
            surface of the substance is investigated. The substance
            is as a layer on the bottom of a pipe and flows through
            two pipes into a container. It is shown that the general
            correction $W_{general}$ given by Witman is expressed in too
            complicated a form and that it can be obtained by a
            much more simple way if the electric analogy distributed
            in the vacuum technique is used therefore. Here the
            vaporization surface, the two connecting pipes, and the
            aperture must be considered as resistances connected in

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On the Determination of Vapor Pressure by the Rate of   76-10-31/34
Vaporization in High Vacuum

series with the molecular current. The transmission
capacity of the pipe is expressed by the probability of
P. Clausing (Ann. d. Phys. 12, 961, 1932).
There are 1 figure and 3 Slavic references.

ASSOCIATION: Polytechnical Institute imeni S. M. Kirov, Sverdlovsk,
Ural (Ural'skiy politekhnicheskiy institut im. S. M.
Kirova, Sverdlovsk).

SUBMITTED: October 15, 1956

AVAILABLE: Library of Congress

CARD 2/2

S/081/62/000/005/005/112
B158/B110

AUTHOR: Detkov, S. P.

TITLE: Methods of determining the vapor pressure of metals and their
              compounds using radioisotopes

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 5, 1962, 47, abstract
              5B284 (Tr. Ural'skogo elektromekhan. in-ta. inzh. zh.-d.
              transp., no. 2, 1959, 101 - 123)

TEXT: This is a survey of basic methods of determining the vapor pressure
of metals and their compounds. A more detailed examination is given of the
integral and differential effusion methods, as well as the method of
exposed surface evaporation, static and dynamic methods, and the isotopic
exchange method; some details of methods using radioisotopes. 80 references.
[Abstracter's note: Complete translation.]

Card 1/1

16.7800,24.3000

77335
SOV/57-30-1-14/18

AUTHOR: Detkov, S. P.

TITLE: On the Problem of Radiation Exchange Between Gray Surfaces

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol 30, Nr 1, pp 96-104 (USSR)

ABSTRACT: To discuss the problem of the resulting radioactive emis-
              sivities of surfaces investigated earlier by others, the
              author introduces a new concept of a flow of radiation
              which he calls generalized. The term resultative was
              introduced earlier by Surinov (Izv. AN SSSR, OTN, Nr 5,
              1952). The idea was to develop further the method of
              multiple reflections between a system of gray, opaque
              surfaces separated by nonabsorptive media. The surfaces
              satisfy the following conditions: (a) all elements of
              a surface have the same temperature and coefficient of
              emission; (b) emission from the surface follows Lambert's
              law; (c) the incoming rays scatter diffusely from the
Card 1/12   surface; (d) the coefficients of radiative emission

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and absorption are equal; and (e) the reflected flux
is constant over all elements of the surface. Condi-
tions (a) and (e) can exist simultaneously for rather
specialized situations: (1) for two infinite planes;
(2) for concentric spheres and infinite coaxial
cylinders; (3) for surfaces which are parts of one
sphere. The author points out that the effective
flow from a surface consists of its own emission and
of the reflected flux. The latter depends on the
geometrical and optical properties of the surrounding
surfaces and on their temperature. On the other hand,
the generalized flow Q_o does not depend on the tempera-
tures of other bodies since in the case of the i-th
surface Q_{oi} consists of its own emission plus that part
of the radiations reflected from the i-th surface
which earlier originated from that same i-th surface.
These rays were reflected from other members of the
system, and so Q_{oi} contains rays originating from the

Card 2/12   i-th surface only. It is convenient to connect Q_{oi}

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with the density E_i of radiation of an absolutely black
body having the same temperature as the surface i.

$$Q_{0i} = W_i F_i E_i, \qquad (1)$$

where F_i - the surface of i; W - a factor describing
the optical and geometrical relationships between the
surface i and the system. If one denotes by A_i the
coefficient of emissivity of the surface i, then
obviously $1 \geqslant W_i \geqslant A_i$. In the case of total loss
of emitted photons one has

$$W_i = A_i.$$

If the photons have a probability f_i to return to the
i-th surface, the probability for a photon to be

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emitted, to come back, and to be reflected again into
the generalized flow is

$$A_i f_i (1 - A_i).$$

One can extend this reasoning to further multiple events,
and the generalized emission probability W_i is then
given by

$$W_i = A_i + A_i f_i (1 - A_i) + A_i f_i^2 (1 - A_i)^2 + \ldots = \frac{A_i}{1 - f_i (1 - A_i)}. \quad (2)$$

The author introduces also a generalized absorption
probability for the k-th surface, $\mathcal{E}_k$. It represents
the probability that a particular photon originating on
the i-th surface and reaching the k-th surface directly
or indirectly (via reflection from other surfaces) is
Card 4/12   absorbed on the k-th surface. Obviously $1 \geqslant \mathcal{E}_k \geqslant A_k$.

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The resulting emissivity A_{1k} is then given as a product of W_1 and $\mathcal{E}_k$. The author gives values of f_1 and $\mathcal{E}_k$ for the simple cases: (1) two pairs of plane surfaces

$$f = \varphi_{12}\varphi_{21}(1 - A_2) \text{ and } \varepsilon_2 = A_2.$$

(2) two concentric spherical or infinite, cylindrical surfaces

$$f_1 = \frac{\varphi_{21}(1 - A_2)}{1 - (1 - \varphi_{21})(1 - A_2)} \text{ and } \varepsilon_2 = A_2$$

$$f_1 = 1 - A_1\varphi_1 \text{ and } \varepsilon_1 = A_1.$$

(3) two spherical segments

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$$f_1 = \frac{\varphi_{12}\,\bar{\tau}_{21}\,(1 - A_2)}{1 - \bar{\tau}_{22}\,(1 - A_2)} \quad \text{and} \quad \varepsilon = A'_2.$$

Here φ – mean integral angular coefficient. A'_k –
emissivity of a curved surface is defined as

$$A'_k = \frac{A_k}{1 - \varphi_{kk}\,(1 - A_k)}, \tag{4}$$

Radiation Exchange in a System of Three and More Than
Three Gray Surfaces. The author starts with expres-
sions for general curved surfaces:

$$A'_1 = \frac{A_1}{1 - \varphi_{11}(1 - A_1)}, \quad A'_2 = \frac{A_2}{1 - \varphi_{22}(1 - A_2)} \quad \text{and} \quad A'_3 = \frac{A_3}{1 - \varphi_{33}(1 - A_3)}. \tag{7}$$

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and states the probability

$$f_1 = \frac{\dot{r}_{12}(1 - A_2')\left[\dot{r}_{23}(1 - A_3')\dot{\varphi}_{31} + \dot{\varphi}_{21}'\right] + \dot{r}_{13}(1 - A_3')\left[\dot{r}_{32}(1 - A_2')\dot{r}_{21} + \dot{\varphi}_{31}'\right]}{1 - \dot{r}_{23}\dot{r}_{32}(1 - A_2')(1 - A_3')}. \qquad (8)$$

Here the φ'_{1k} are given by

$$\varphi'_{ik} = \frac{\varphi_{ik}}{1 - \varphi_{ii}}. \qquad (6)$$

Using (2) one obtains

$$W_1 = \frac{A_1'}{1 - f_1(1 - A_1')}. \qquad (9)$$

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Using reasoning similar to that in the first part of
this paper, the author derives

$$\varepsilon_2 = \frac{1 + \dfrac{\bar{\varphi}_{13}}{\bar{\varphi}_{12}}\bar{\varphi}_{32}(1 - A_3')}{1 - \bar{\varphi}_{23}\bar{\varphi}_{32}(1 - A_2')(1 - A_3')}A_2'. \tag{13}$$

The resulting radiation emissivity for surfaces 1 and
2 is given by

$$A_{12} = W_1 \varepsilon_2 = \frac{A_1'A_2'\left[1 + \dfrac{\bar{\varphi}_{13}}{\bar{\varphi}_{12}}\bar{\varphi}_{32}(1 - A_3')\right]}{1 - \bar{\varphi}_{23}\bar{\varphi}_{32}(1 - A_2')(1 - A_3') - \bar{\varphi}_{12}(1 - A_1')(1 - A_2')[\bar{\varphi}_{23}(1 - A_3) \times \\ \times \bar{\varphi}_{31} + \bar{\varphi}_{21}] - \bar{\varphi}_{13}(1 - A_1')(1 - A_3')[\bar{\varphi}_{32}(1 - A_2')\bar{\varphi}_{21} + \bar{\varphi}_{31}]}. \tag{14}$$

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or using the unprimed φ symbols

$$A_{12} = \frac{A_1 A_2 \left[1 - \varphi_{33} + \varphi_{33} A_3 + \frac{\varphi_{13}}{\varphi_{12}} \varphi_{32} (1 - A_3) \right]}{1 - \varphi_{11}(1 - A_1) - \varphi_{22}(1 - A_2) - \varphi_{33}(1 - A_3) + (1 - A_1)(1 - A_2)(\varphi_{11}\varphi_{22} - \varphi_{12}\varphi_{21}) + (1 - A_1)(1 - A_3)(\varphi_{11}\varphi_{33} - \varphi_{13}\varphi_{31}) + (1 - A_2)(1 - A_3)(\varphi_{22}\varphi_{33} - \varphi_{32}\varphi_{23}) - (1 - A_1)(1 - A_2)(1 - A_3)(\varphi_{11}\varphi_{22}\varphi_{33} + 2\varphi_{12}\varphi_{23}\varphi_{31} - \varphi_{21}\varphi_{32}\varphi_{11} - \varphi_{12}\varphi_{21}\varphi_{33} - \varphi_{13}\varphi_{31}\varphi_{22})} . (15)$$

This agrees with equations obtained by Budrin (Trudy
UPI. Metallurgizdat, 1951), Timofeyev (Sb. n.-issled.
pabot UOVTI, vyp. 5, M., 1940; Izv. Vsesoyuznogo teplo-
tekhnich. inst., Nr 11, 1947) and Surinov (Izv. AN SSSR,
OTN, Nr 5, 1952). For the case where the surfaces are
part of a spherical surface, the angular coefficients
are given by

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$$\left.\begin{array}{l}\varphi_{11} = \dfrac{F_1}{4\pi r^2}\\[1mm]\varphi_{27} = \dfrac{F_1}{4\pi r^2}\\[1mm]\varphi_{31} = \dfrac{F_1}{4\pi r^2}\end{array}\right\}\ \varphi_{11} = \varphi_{21} = \varphi_{31},\qquad\qquad (16)$$

where r - radius of the sphere, and one notes also that

$$\varphi_{22} = \varphi_{32} = \varphi_{12}\qquad \varphi_{33} = \varphi_{23} = \varphi_{13}.$$

Then A_{12} simplifies into

$$A_{12} = \frac{A_1 A_2}{1 - \varphi_{11}(1 - A_1) - \varphi_{22}(1 - A_2) - \varphi_{33}(1 - A_3)}.\qquad (17)$$

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The author rederives the same expression for surfaces
which are parts of one single sphere and this leads
him to a generalized expression for A_{1k} for the case

of an arbitrary number of surfaces which are parts of
a single sphere:

$$A_{ik} = \frac{A_i A_k}{1 - \sum_{j=1}^{n} \varphi_{jj}(1 - A_j)} . \tag{28}$$

One can now go over to the case of a chosen sphere and
since now $\sum_{j=1}^{p} \varphi_{jj} = 1$, the author obtained

$$A_{ik} = \frac{A_i A_k}{\sum_{j=1}^{n} \varphi_{jj} A_j} . \tag{29}$$

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The resultative radiative flow between the i-th and k-th surface is then

$$(Q_{ik})_{\text{рез.}} = A_{ik}\varphi_{ik}F_i\,(E_i - E_k).$$

and the balance flow is given by

$$Q_k = \sum_{i=1}^{n}(Q_{ik})_{\text{рез.}}.$$

D. V. Budrin and A. S. Nevskiy discussed the results.
There are 8 references, 6 Soviet, 2 German.

ASSOCIATION: Ural' Electromechanical Institute of the Railroad Trans-
                port Engineers, Sverdlovsk (Ural'skiy elektromekhani-
                cheskiy institut inzhenerov zh.-d. transporta, Sverd-
                lovsk)

SUBMITTED: November 19, 1957   Card 12/12

DETKOV, S.P.

Differential effusion method of determining vapor pressure. Zhur.
fiz.khim. 34 no.1:196-199 Ja '60.   (MIRA 13:5)

1. Ural'skiy elektromekhanicheskiy institut inzhenerov
zheleznodorozhnogo transporta.
                    (Vapor pressure)

DETKOV, S.P.

Direct method of vapor pressure determination. Zhur. fiz.khim. 34 no.7:1634-1637 Jl '60.   (MIRA 13:7)

1. Ural'skiy elektromekhanicheskiy institut inzhenerov zheleznodorozhnogo transporta.
          (Vapor pressure)

26.5300

AUTHOR: Detkov, S.P., Candidate of Technical Sciences

TITLE: Calculation of radiant heat transfer using computers

PERIODICAL: Teploenergetika, 1961, No.9, pp. 33-36

TEXT: A great deal of work has been published on calculation
of radiant heat exchange in furnaces by the zonal method, in which
the surfaces and volumes participating in the radiant heat exchange
are sub-divided into zones. Mean values of the parameters are
taken for each separate zone. By representing the furnace by such
a model the integral radiation equations of the system are replaced
by algebraic linear equations. When the temperature distribution
and optical constants are given, the solution consists of two
parts; firstly, calculation of the coefficients of the system of
equations, and secondly solving of the system of equations. Both
processes are laborious and computers can be used with advantage.
The present calculations were made on a machine type Урал -1
(Ural-1) which is quite slow, operating only at 100 operations per
second, though in a few hours it can work out all the necessary
calculations for 10 - 12 zones. The algorithm of the solution is
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Calculation of radiant heat transfer...

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E194/E155

formulated on the basis of allowing for multiple reflection or
dispersion by zones of the system. The algorithm and calculation
on a cylindrical model, which is also given here, were first
published in a much less general form in 1929 by O.Ye. Vlasov
(Ref.1: Izvestiya teplotekhnicheskogo instituta, No.1 (44), 1929).
The system of equations formulated on the basis of the zonal method
is   Ax = b   where: A is a square matrix of coefficients;
x is a column matrix of unknown heat fluxes;   b is a column
matrix of free terms.   If x is the matrix of incident fluxes
then

$$A = \begin{pmatrix} 1 - \psi_{11} & - \psi_{21} & \cdots & - \psi_{n1} \\ - \psi_{12} & 1 - \psi_{22} & \cdots & - \psi_{n2} \\ \cdot \cdot \cdot & \cdot \cdot \cdot & \cdot \cdot \cdot & \cdot \\ - \psi_{1n} & - \psi_{2n} & \cdots & 1 - \psi_{nn} \end{pmatrix}$$

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$$
b = \begin{pmatrix}
Q_{c1}\varphi_{11} + Q_{c2}\varphi_{21} + \cdots + Q_{cn}\varphi_{n1} \\
Q_{c1}\varphi_{12} + Q_{c2}\varphi_{22} + \cdots + Q_{cn}\varphi_{n1} \\
\cdots\cdots\cdots\cdots\cdots\cdots\cdots \\
Q_{c1}\varphi_{1n} + Q_{c2}\varphi_{2n} + \cdots + Q_{cn}\varphi_{nn}
\end{pmatrix}
$$

Solution of the system of equations consists mainly in converting
the matrix A, since
$$ x = A^{-1} b $$

This complex matrix equation can be represented as a sum of simpler
matrix equations in the following way:

$$ x = A^{-1}b = \sum_{i=1}^{n} Q_{ci}A^{-1}\varphi_i = \sum_{i=1}^{n} A_{ik}Q_{ci} = \sum_{i=1}^{n} \frac{w_{ik}}{\varphi_{ik}} Q_{ci} \tag{1} $$

The essence of Vlasov's method of successive allowance for
reflections is the well-known iteration method of solving a system
of equations where the product $A^{-1}b$ is resolved into a
geometrical series. However, in the general form the series may be
drawn up with a single matrix E.

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$$x = b + (E - A)b + (E - A)^2 b + \ldots = \frac{b}{E - (E - A)} = A^{-1}b \qquad (2)$$

Each term of the matrix series has a clear physical meaning. If x
is the incident flux, then b is the matrix of direct incident
fluxes; (E - A)b is the matrix of additional fluxes incident after
the first reflections from the zones of the system; $(E - A)^2 b$ is
the matrix of additional fluxes incident after the second
reflections, and so on.   Algorithm (2) is very convenient for use
on computers.   Once the product (E - A)b is programmed, the machine,
by analogy, repeats the operations when calculating the successive
terms of the matrix series, since all its terms are columns and the
factor (E - A) is always the same.   By way of example, the
computer type Ural-1 was used to make calculations on a cylindrical
model which was selected so that the results could be compared with
existing published data. Various simplifications are possible in
the particular case considered and programming of the computer is
described. Preliminary investigations showed that it would be
advisable to take five reflections into account to achieve the
desired accuracy. The results of the calculations are compared

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with available published data and differences occur only in the fourth significant figure. The entire operation was carried out on the machine in five hours. The programme consisted of 632 commands, of which 312 were concerned with standard sub-programmes.
There are 5 tables and 5 references: 4 Soviet and 1 non-Soviet.

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