25989
S/560/61/000/006/007/010
Ionized gas and fast electrons E032/E114

Ref.3: J.A. Van Allen, L.A. Frank.   Nature, V.183, 430, 1959.
Ref.5: J.A. Van Allen, L.A. Frank.   Nature, V.184, 219, 1959.
Ref.6: J.A. Van Allen, C.E. McIlwain, G.H. Ludwig.
       J. Geoph. Res., V.64,   271, 1959.
Ref.11: H.C. van de Hulst. Light Scattering by Small Particles.
       London, 1957.

Card 4/6

3.2300 (1121)

S/366/61/000/007/007/010
E032/E514

AUTHORS: Kurt, V.G, and Moroz, V.I.

TITLE: The potential of a metal sphere in interplanetary
              space

PERIODICAL: Akademiya nauk SSSR, Iskusstvennyye sputniki Zemli,
              No. 7, Moscow, 1961, pp. 78-88

TEXT: The design and interpretation of certain experiments
in interplanetary space necessitate the knowledge of the potential
of the container carrying the payload. The present authors report
an attempt to solve this problem in the first approximation by
inclusion of only the most important factors. Containers used with
Soviet space rockets were approximately spherical in form and
hence the solutions obtained in the present paper are concerned
with spherical metal bodies. The potential can be found from
the condition that the total current to the sphere

$$I_e \cdot I_{re} \cdot I_p \quad J_{ro} \quad \quad J_{R} \quad \quad (1)$$

is zero. In this expression I_e is the current of electrons
from the interplanetary plasma; I_{re} is the current of radiation-

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The potential of a metal sphere   '5(?'/61/C00/007/007/010
                                               :3/C514

belt electrons, I is the plasma ion current (protons),
I_{rp} is the current of radiation-belt protons, I is the
photoelectric current and I_{B} is the current of secondary
electrons produced by radiation-belt electrons and protons
K. I. Gringauz and M. Kh. Zelikman (Ref. 1, FIN. 63, No. 12, 239, 1957)
have considered the analogous problem for artificial earth
satellites, by neglecting all the terms in Eq. (1) except for I
and I_e. This is permissible at relatively low altitudes where I_p
the ion and electron concentrations are high (greater than 10^4 cm^{-3})
so that the photocurrent and radiation belt electrons have little
effect on the potential. In the case of a space rocket, such
simplifications are inadmissible. The present authors show that
if the temperature of the interplanetary gas is assumed to be
10^4 °K and the photo current is 2.5×10^{-9} amp/cm² (these are the
most probable values available), then over the illuminated part of
the trajectory the potential of the container should lie between
-2.5 and + 4 v if the ion concentration is greater than 10 cm⁻³.
The effect of the magnetic field and the motion of the container
has a small effect (1 - 2 V) on the potential. This change can be
Card 2/5

The potential of a metal sphere ...   S/560/61/000/007/007/010
E032/E514

neglected in comparison with other unknown factors. In the region
of the outer belt and over the illuminated part of the trajectory,
the radiation belt electrons make a smaller contribution than the
other factors involved, at least during magnetically quiet days.
However, large negative potentials (up to several kV) are not
excluded if the present information about the high concentration
of soft radiation belt electrons in the outer belt is correct
and the interplanetary gas in the region of this belt is
sufficiently rarefied.   If this is so, then considerable
negative potentials can appear even with relatively low fluxes N_o.
For example, if the ion concentration is 1 cm^{-3} and
$N_p = 3 \times 10^8$ cm^{-2} sec^{-1}, then $U = -25$ V. It is also found that
the potential is not very sensitive to changes in the diameter.
Small departures from the spherical form also have little effect.
Fig. 2 shows an example of the determination of the potential U
for the case $n_e = 1000$ cm^{-3}, $T = 10^4$ $°K$, $i_{photo} = 2.5 \times 10^{-9}$
amp/cm^2 ($I_{photo} = 10^5$ esu). $[1$ - proton current I_p, $2 - I_p + I_{photo}$;
3 - electron current I_e, $4 - I_e + I_{re}$ at $N_o = 10^{10}$ cm^{-2} sec^{-1};

Card 3/5

The potential of a metal sphere ...   S/560/61/000/007/007/010
E032/E514

5   $I_e + I_{re}$ at N_o - 3 x 10^{10} cm^{-2} sec^{-1} at I_{photo} 0 and
I_{re} : 0, then U = -2 V; if I_{photo} 10^5 esu and N_o - 10^{10} cm^{-2}sec^{-1},
then U = -15 V]   There are 3 figures, 3 tables and 31 references:
11 Soviet and 20 non-Soviet.   The four latest English-language
references read as follows: H. E. Hinterregor, K. R. Damon,
L. A. Hall, J. Geoph. Res., 64. 961 1959, M. H. Rees, W. A. Rense.
J. Geoph. Res., 64 1251. 1959: J. Van Allen L. A. Frank, Nature,
184 219, 1959: J. Van Allen. Trudy Mezhdunarodnoy konferentsii po
kosmicheskim lucham Vol.III, izd-vo AN SSSR Moscow 1960
(Proceedings of the International Conference on Cosmic Rays).

Card 4/5

89686

S/026/61/000/002/001/003
A166/A027

9, 9100 (also 1041, 1046, 1060)

AUTHOR: Kurt, V.G.

TITLE: The Upper Atmosphere and the Interplanetary Medium

PERIODICAL: Priroda, 1961, No. 2, pp. 23-30

TEXT: The article presents data on the structure and composition of the upper atmosphere, geocorona and interplanetary medium, as derived from Soviet space rockets and satellites. Data on the density of the earth's atmosphere at different altitudes, determined by observing the diffusion of sodium vapors, are presented in graphic form in Fig. 2. Studies of the chemical composition of the atmosphere have shown that at heights of around 100 km oxygen molecules are dissociated to atoms, while nitrogen molecules dissociate at greater altitude. The limit of complete dissociation of all molecules lies above 300 km. Above this point the atmosphere consists practically exclusively of nitrogen and oxygen atoms. Diffusion separation is effective from approximately 200 km upwards. At heights of around 1,000 km hydrogen is the predominant gas, until eventually the earth's outer atmosphere consists almost exclusively of hydrogen.

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89686

S/026/61/000/002/001/003
A166/A027

The Upper Atmosphere and the Interplanetary Medium

This phenomenon is aided by the fact that the hydrogen atoms may acquire velocities greater than the first cosmic speed in the process of colli- sions. Such atoms will describe ellipses and return to the atmosphere, while those atoms which have acquired velocities greater than the second cosmic speed will be dissipated in space. The results of studies of the electron density of the atmosphere at heights of 100-1,000 km are present- ed in Fig. 3. The results indicate that previous conceptions of the ionized layers D, E, F_1 and F_2 were erroneous. In fact electron concen- tration varies regularly with height. Ionized molecules of three types have been recorded: molecular N_2^+, molecular O_2^+ and molecular NO^+. The latter molecules become involved in dissociative recombination to form neutral atoms. The geocorona consists of neutral and ionized hydrogen. Studies of the neutral component made by observing the resonance scatter- ing of the L_α line by the hydrogen cloud have enabled scientists to map the isophotes of the night sky to depict the distribution of neutral hydrogen in the environs of the earth (cf. Fig. 4b). Recent studies of

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89686
S/026/61/000/002/001/003
A166/A027

The Upper Atmosphere and the Interplanetary Medium

ionized hydrogen have led to a revision of the previous theory that the
earth's atmosphere ends a few radii's distance from the earth and that
the density of the interplanetary medium is approximately 1,000 ions/cu
cm. Indications are that: 1) the earth is surrounded to a distance of
20,000 km by ionized gas with a density of around 1,000 ions/cu cm; 2)
the density of interplanetary space is no more than 100 ions/cu cm and
perhaps considerably less; 3) the transition from oxygen-nitrogen plasma
to hydrogen plasma occurs at a distance of approximately 2,000 km. The
author explains how the former misconception of the density of interplane-
tary medium came about, with reference to Academician V.G. Fesenkov's and
Birmann's views. There are 8 figures, 1 table and 3 Soviet references.
ASSOCIATION: Gosudarstvennyy astronomicheskiy institut im. P.K. Shtern-
              berga (State Astronomical Institute im. P.K. Shternberg),
              Moscow

Card 3/6

KURT, V. G. (Moskva); AVEDISOVA, V. S. (Moskva)

Contemporary concepts of the sun. Fiz. v shkole 22 no.4:9-16
Jl-Ag '62.   (MIRA 15:10)

(Sun)

3,1540

S/033/62/039/003/004/010
E032/E114

..U I...UK: Kurt, ...

TITLE: A study of the spectrum of the solar corona in the wavelength range 7800-1200 Å during the total solar eclipse of February 15, 1961.

PERIODICAL: Astronomicheskiy zhurnal, v.39, no.3, 1962, 439-444

TEXT: The eclipse was observed from an aeroplane flying at 10000 m over Rostov-on-Don. Such observations have not been carried out before, while the infrared spectrum of the corona has only been studied under normal conditions. The above spectral region includes four coronal lines, namely: 7892 (Fe XI), 8024 (Ni XV), 10747 and 10798 (Fe XIII). The reflection grating spectrograph which was used had a dispersion of the order of 50 Å/mm and incorporated an electron optical image converter. The spectra were photographed from the screen of this converter. The spectrum of neon was recorded at the same time for calibration purposes. Altogether 33 spectrograms were obtained containing eight chromospheric and coronal lines and six unidentified lines. The data obtained are given in Table 3.
Card 1/3

A study of the spectrum of the ...   S/033/62/039/003/004/010
                                      E032/E114

Of the unidentified lines λ 11304 and λ 11386 are probably coronal lines.

There are 5 figures and 3 tables.

ASSOCIATION: Gos. astronomicheskiy in-t im. P.K. Shternberga
             (State Astronomical Institute imeni P.K. Shternberg)

SUBMITTED: June 6, 1961

Card 2/3

A study of the spectrum of the ...   S/033/62/039/003/004/010
                                            E032/E114

Table 3

λ, Å	Light-region	Identification	W_λ, Å	λ, Å	Light-region	Identification	W_λ, Å
8498	chromo-sphere	Ca II	–	10798	Corona	Fe XIII	10 – 2
8542	"	Ca II	–	7780	Chromo-sphere ?	7775(OI)?	< 2
8662	"	Ca II	–	7856	–	–	< 2
10830	"	He I	–	11304	–	–	3.4 ± 2
10938	"	H I	–	11355	–	–	< 2
7892	Corona	Fe XI	4 ± 1	11386	–	–	14 ± 3
10747	"	Fe XIII	20 ÷ 2	11585	–	–	< 2

W_λ = equivalent width.

Card 3/3

ZIGEL', Foliks Yur'yevich; KURT, V.G., kand. fiz.-matem. nauk,
      nauchnyy red.; ZUBKOV, M.A., otv. red.; YEGOROVA, V.K.,
      tekhn. red.

      [Radio waves from outer space] Radiovolny iz kosmosa. Mo-
      skva, Detgiz, 1963. 141 p.   (MIRA 16:6)
                              (Radio astronomy)

KURT, V.G.

"Advance in space science and technology." Reviewed by V.G.Kurt.
Astron.zhur. 40 no.2:392-393 Mr-Ap '63.   (MIRA 16:3)
(Outer space--Exploration) (Space vehicles)

KURT, V.G

Neutral hydrogen in the vicinity of the earth and in interplanetary
space. Usp. fiz. nauk 81 no.2:249-270 O '63.   (MIRA 16:12)

KURT, V.G.; KAPLAN, S.A.; KATYSHINA, V.V.

* Measurements of scattered U.V. radiation (1216A and 1300A) in the upper atmosphere,"(USSR)

R"prt submitted for the COSPAR Fifth international Space Science Symposium, Florence, Italy, 8-20 May 1964.

L 3429-66   EWT(1)/EWT(m)/EPF(c)/FCC/EWA(h)   RPL   WW/GS/GW
UR/0000/65/000/000/0051/0051

ACCESSION NR: AT5023559   33
                                                                          B+1

AUTHOR: Kurt, V. G. 44,55

TITLE: Total amount of neutral hydrogen in the upper atmosphere of the earth
(Thesis)

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow,
1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy
konferentsii. Moscow, Izd-vo Nauka, 1965, 51

TOPIC TAGS: upper atmosphere, optic thickness, atmosphere model, hydrogen line

ABSTRACT: The dependence of the theoretical value of the albedo of the earth's
atmosphere on the total optical thickness for the line center was obtained by
solving the equation for the shift of L_α-radiation for the spherical case con-
sidering shadowing. From these results and several observations it was found by
using the Bates-Patterson thermosphere model that the concentration of neutral
hydrogen is $10^7/cm^3$ at an altitude of 110 km and $2.5 \ 10^5/cm^3$ at 200 km for the
solar dip angle of about $30°$.

ASSOCIATION: none

Card 1/2

L 3429-66

ACCESSION NR: AT5023559   0

SUBMITTED: 02Sep65   ENCL: 00   SUB CODE: ES

NO REF SOV: 000   OTHER: 000

Card 2/2

L 3430-66   EWT(1)/FCC/EWA(h)   GS/GW

ACCESSION NR: AT5023572   UR/0000/65/000/000/0111/0112
                                                                        37
AUTHORS: Kaplan, S. A.; Kurt, V. G.   B+1

TITLE: Scattering of radiation in the upper atmosphere of the earth (Thesis)

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva, Moscow,
1965.   Issledovaniya kosmicheskogo prostranstva (Space research); trudy
konferentsii.   Moscow, Izd-vo Nauka, 1965, 111-112

TOPIC TAGS: solar radiation scattering, solar radiation absorption, upper atmos-
phere, atmosphere model, optic thickness

ABSTRACT: The scattering of O I (λ 1300 Å) radiation in the upper atmosphere
of the earth is considered, using the double layer model of the atmosphere of
great optical thickness. Scattering of the incident solar radiation is assumed
to take place in the upper layer without absorption. Absorption by molecular
oxygen occurs in the lower layer where it is assumed that the albedo per unit
scattering event of Λ increases linearly with increasing optical thickness. The
solution of the shift equation applied to this model of the atmosphere indicates
that the intensity begins to decrease sharply at an altitude of about 180 km,
which agrees well with observation. The original article was published in the

Card 1/2

L 3430-66
ACCESSION NR: AT5023572

journal "Kosmicheskiye issledovaniya," 3, No. 3, 237, 1965.

ASSOCIATION: none

SUBMITTED: 02Sep65   ENCL: 00   SUB CODE: ES, AA

NO REF SOV: 001   OTHER: 000

Card 2/2 /ud

3

L 41313-65   EмT(1)/ɛɛC(m)/ɛмT(m)/EмG(v)/FCC/EɛC-4/EɛC(t)/T/EмA(h)   Po-4/Pe-5/
Pq-4/Pae-2/Peb/Pi-4   JJP(c)   GW
ACCESSION NR: AP5009640   UR/0293/65/003/002/0237/0243

AUTHOR: Babichenko, S. I.; Karpinskiy, I. P.; Kaplan, S. A.; Katyushina, V. V.;
Krylov, L. N.; Kurt, V. G.; Pustovayt, R. M.; Shifrin, A. V.

TITLE: Investigation of scattered ultraviolet radiation in the upper atmosphere.
1. Equipment

SOURCE: Kosmicheskiye issledovaniya, v. 3, no. 2, 1965, 237-243

TOPIC TAGS: UV radiation, radiation counter, photon counter, Geiger counter/SFM-1
radiation counter

ABSTRACT: Photon counters used in investigations of scattered UV radiation in the
upper atmosphere are described. The two counters, of the SFM-1-type, are filled
with NO and have LiF radiation windows for measurements within 1050—1340 Å. The
counters were selected for their narrow sensitivity band and comparatively high
quantum yield (0.01—0.1). Pulses from a counter are recorded by a two-channel
logarithmic rate meter within the interval from 2 to 2×10^3 pps. However, slot
width and brightness were selected so that the counting rate does not exceed
1000 pps, which keeps it within the linear portion of the counting characteristic.

Card 1/2

L 41818-65
ACCESSION NR: AP5009640   0

The operating voltage of the counters is 1000 v. The counter circuitry includes a
preamplifier, trigger, pulse normalizer, storage circuit, transistorized d-c ampli-
fier, supply-voltage regulator, and high-voltage converter for power supply. The
modular design of the system provides a high degree of miniaturization and relia-
bility. Orig. art. has: 5 figures.   [KM]

ASSOCIATION: none

SUBMITTED: 23Jul64   ENCL: 00   SUB CODE: OP, AA

NO REF SOV: 005   OTHER: 002   ATD PRESS: 3235

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L 40543-65   FSS-2/EWT(l)/EWG(v)/FCC/SEC-4/ESC(t)/EWA(h)   Po-4/Pe-5/Pq-4/Pob/
Pac-2/Pt-4   GW

ACCESSION NR: AP5009641   UR/0293/65/003/002/0243/0247

AUTHOR: Katyushina, V. V.; Kurt, V. G.

TITLE: Measurements of the scattered L_α-radiation in the upper atmosphere at the height of 500 km

SOURCE: Kosmicheskiye issledovaniya, v. 3, no. 2, 1965, 243-247

TOPIC TAGS: scattered L_α radiation, geophysical rocket, rocket trajectory

ABSTRACT: In 1963 measurements of scattered L_α-radiation have been carried out by means of geophysical rockets in three flights. The container axis during the first flight was pointed towards the zenith. During the second and third flights the container axis rotated describing an arc of 180° which passed through the nadir, the west, and the zenith. Two counters were used; the signal of the one counter characterized the radiation of the OI triplets, and the signal of the second counter related the total of radiations in OI and L_α lines. During the first flight measurements were made on the whole trajectory beginning at 120 km in the ascent and finishing at 80 km in the

Card   1/2

ACCESSION NR: AP5009641

descent. During the second and third flights measurements were made only to a height of 250 km. Absolute values of the radiation intensity from all measurements were obtained: for the first flight, 3.2 kR [coefficient reading]; for the second flight, 4 kR; and for the third flight, 0.8 kR. Orig. art. has: 2 tables, 4 figures, and 2 formulas.
. [EG]

ASSOCIATION: none

SUBMITTED: 23Jul64   ENCL: 00   SUB CODE: ES,AA

NO REF SOV: 003   OTHER: 001   ATD PRESS: 3245

Card 2/2

L 41815-65   FSS-2/EWT(1)/EWC(v)/FCC/EEC-4/EEC(t)   Po-4/Pe-5/Pq-4/Pi-4   G/!

ACCESSION NR: AP5009643   UR/0293/65/003/002/0251/0256

AUTHOR: Kaplan, S. A.; Kurt, V. G.

TITLE: The theory of the resonance scattering of L sub Alpha radiation in the geocorona

SOURCE: Kosmicheskiye issledovaniya, v. 3, no. 2, 1965, 251-256

TOPIC TAGS: geocorona, L sub Alpha radiation, resonance radiation theory, upper atmosphere, hydrogen distribution

ABSTRACT: The authors point out that the various papers which have appeared in recent years dealing with rocket-observations of scattered $L\alpha$-radiation in the upper atmosphere of the Earth, while they have provided an approximate solution of this problem in the theory of scattering with allowance for non-coherence, cannot be represented in the form of graphic formulae. Moreover, the solution is valid only for small or large optical thicknesses t. The need for simple, graphic solutions, suitable for any t, is emphasized, and it is pointed out that in none of the works which have thus far appeared has a concrete case of scattering in the $L\alpha$ line been studied. The best approximation in this case is seen to be the step distribution. Special attention is called to the fact that, under real conditions, the distribution of the scattering hydrogen atoms cannot be described with sufficient accuracy

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L 41815-65
ACCESSION NR: AP5009643

either in a model of plane-parallel layers or in a spherical-symmetrical model, since the density varies during a 24-hour period by almost one order of magnitude. For this reason, the authors view as unadvisable any refinement of the solutions through a stricter consideration of the geometry of the problem. In the present article, a simple method is outlined for computing the intensity of the scattered resonance radiation in the L α line in the upper atmosphere for different zenith differences of the Sun. This extremely graphic solution to the problem of L α radiation scattering in the geocorona will make possible the analysis of observation-derived data, even when such observations have been effected under non-standard experimental conditions. In their calculations, the authors disregard true absorption. For an interpretation of the observational data it is necessary to switch over from optical depths to a scale of heights. For this purpose, a combined model of hydrogen distribution is employed: below 500 km according to Bates and Patterson, and at greater altitudes according to the ballistic model of Singer and Opik. The theoretical curves derived by the method presented in the article show excellent agreement with observational data, differing from the latter in their graphic character and extreme simplicity, thus permitting a rapid examination of all possible cases. Orig. art. has: 3 figures and 15 formulae.

ASSOCIATION: None.   SUB CODE: AA
SUBMITTED: 23Jul164   ENCL: 00
NO REF SOV: 004   OTHER: 006
Card 2/2

L 42125-65   EWT(1)/FCC/EWG(v)/EEC(t)   Po-4/Pe-5/Pq-4/Pae-2/Pt-7/Pi-4   GW
ACCESSION NR: AP5009644   UR/0293/65/003/002/0256/0261   43
                                                                        B

AUTHOR: Kaplan, S. A.; Kurt, V. G.

TITLE: Interpretation of observations of the OI(λ 1300 Å) triplet in the upper
atmosphere

SOURCE: Kosmicheskiye issledovaniya, v. 3, no. 2, 1965, 256-261

TOPIC TAGS: airglow intensity, light dispersion, albedo, integral radiation,
Doppler contour, Lorentz contour

ABSTRACT: For purposes of studying the change of airglow intensity with height,
the whole atmosphere is divided into two layers. The lower layer extends up to
225 km. The other layer consists of the upper part of the atmosphere, in which the
absorption of the molecular oxygen may be neglected. In this layer the dispersion
is invariable. In the lower layer the albedo changes with height. Optical in-
struments measure the spectrum integral radiation, which may be compared with the
intensity of radiation expressed theoretically. The integral radiation may be
compared with the growth curve. Special formulas have been developed for computing
the integral radiation for Doppler contours. A transit from Doppler contours to
Lorentz contours makes it possible to compute changes of intensity with height.

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L 42125-65

ACCESSION NR: AP5009644

A table of the computation results is given in the original article, where the maximum intensity occurs at 180 km. Orig. art. has: 4 figures, 1 table, and 12 formulas.

[EG]

ASSOCIATION: none

SUBMITTED: 23Jul64   ENCL: 00   SUB CODE: ES

NO REF SOV: 004   OTHER: 004   ATD PRESS: 3237

Card 2/2

L 3433-66   EWT(1)   GS/GW   UR/0000/65/000/000/0576/0581
ACCESSION NR: AT5023641   33
                                                                                     B+1
AUTHOR: Kurt, V. G.

TITLE: Measurement of scattered L$_\alpha$-radiation in the neighborhood of the earth
in interplanetary space

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow,
1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy
konferentsii. Moscow, Izd-vo Nauka, 1965, 576-581

TOPIC TAGS: L radiation, space research, ultraviolet radiation, space probe,
photon, ionization chamber, phosphorus, thermoluminescense, corona, hydrogen

ABSTRACT: A device for measuring scattered ultraviolet radiation was intstalled
in the space probe "Zond 1", consisting of two screened photon counters and reg-
istration circuitry. Both had long wavelength limits at about 1350 Å, one being
provided additionally with a calcium fluoride filter cutting off all wavelengths
below 1225 Å. The counters were calibrated to L$_\alpha$ radiation by using an ioniza-
tion chamber and thermoluminescent phosphorus, as described by S. I. Babichenko,
I. P. Karpinskiy, et. al. (Kosmicheskiye issledovaniya, 3, No. 3, 237, 1965).
The probe moved in an orbit in a plane approximately perpendicular to the

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L 3433-66

ACCESSION NR: AT5023641

earth-sun line of centers, scanning the profile of the earth's hydrogen corona.
Data were obtained for distances from the center of the earth to 37-47 thousand
kilometers and for greater distances up to 15 million kilometers. By means of a
formula relating observed luminosity to volume emissivity, the data were pro-
cessed to give values for the neutral hydrogen number density shown in Table 1 on
the Enclosure. A comparison with the theoretical model of Donahue reveals a
substantially smaller density gradient than in the theory. The number densities
obtained at 15 million kilometers are also compared with those obtained by other
workers. Orig. art. has: 4 figures, 1 table, and 13 formulas.

ASSOCIATION: none

SUBMITTED: 02Sep65   ENCL: 01   SUB CODE: AA

NO REF SOV: 001   OTHER: 005

Card 2/3

L 3433-66

ACCESSION NR: AT5023641

ENCLOSURE: 01

Table 1.

R	R, 10² км	n, см⁻³	N, см⁻²	n
1,25	8,1	$6,5 \cdot 10^2$	$4,30 \cdot 10^{11}$	$2,5 \cdot 10^4$
1,50	9,6	3,6	3,02	$8,0 \cdot 10^3$
2,00	12,8	1,0	3,10	$2,4 \cdot 10^3$
2,50	16,0	1,2	2,70	$0,5 \cdot 10^3$
3,00	19,0	0,84	2,42	$4,5 \cdot 10^2$
3,50	22,4	0,65	2,20	$2,6 \cdot 10^2$
4,00	25,6	0,51	2,06	$1,5 \cdot 10^2$
4,50	28,8	0,42	1,90	$0,5 \cdot 10$
5,00	32,0	0,36	1,82	$6,0 \cdot 10$
5,50	35,1	0,31	1,75	$4,0 \cdot 10$
6,00	38,3	0,26	1,69	$3,0 \cdot 10$
6,50	41,6	0,22	1,63	$2,2 \cdot 10$

Results for the number density of neutral hydrogen as a function of radius. R in the first column is distance from the center of the earth in units of earth radii. N is the integral of n(r) from R to ∞. The last column is the corresponding value of the number density given by the theory of T. M. Donahue (preprint, January 16, 1963).

Card 3/3 Hed

L 22699-66   EWT(1)/FCC   GW

ACC NR: AP6007741   SOURCE CODE: UR/0293/66/004/001/0111/0115

AUTHOR: Kurt, V. G.

ORG: none

TITLE: The total quantity of neutral hydrogen in the upper terrestrial atmosphere

SOURCE: Kosmicheskiye issledovaniya, v. 4, no. 1, 1966, 111-115

TOPIC TAGS: solar resonance radiation, optical depth, dispersion line, upwelling radiation, downwelling radiation, theoretical albedo

ABSTRACT: The distribution of hydrogen in the upper atmosphere of the earth can be studied by observations of scattered solar-resonance L_α radiation. Curves of surface brightness obtained from observations at the zenith have approximately the same character at any optical depth τ. At a height of 140 km the brightness becomes steady and only some variations depend upon the optical depth, which is difficult to determine. A method for determining the optical depth is developed on the basis of an approximate theory of dispersion containing arbitrary assumptions. The contour of the dispersion lines L_α is assumed to be a rectangle the width of which is $2\Delta\lambda_D$. The width of the solar emission line is $\Delta\lambda_S$ at the intensity of $\pi F_S = 3$ ergs/cm^{2}sec. It is assumed that the radiation is scattered only in the direction of the terrestrial radius, and that the density of hydrogen is proportional to r^{-3} for direct radiation (r is the distance from the earth's surface expressed in units of the

Card 1/2   UDC: 551.510.04

L 22699-66

ACC NR: AP6007741

earth's radius). A system of equations was composed assuming that at a height of 110 km from the earth's surface the upwelling radiation is equal to zero. The downwelling radiation is denoted by I_1 and the upwelling radiation, by I_{-1}. The ratio $I_{-1}/I_1 = A$, represents the theoretical albedo and is computed for various values of the optical depth τ and represented graphically in the original article. The scattered radiation is isotropic. Orig. art. has: 1 table, 2 figures, and 10 formulas.

[EG]

SUB CODE: 04/ SUBM DATE: 30Jan65/ ORIG REF: 003/ OTH REF: 010/ ATD PRESS:
4216

Card   2/2

ACC NR: AP7007064   SOURCE CODE: UR/0030/66/000/012/0033/0039

AUTHOR: Kurt, V. G. (Candidate of physico-mathematical sciences)

ORG: none

TITLE: Investigations of neutral hydrogen

SOURCE: AN SSSR. Vestnik, no. 12, 1966, 33-39

TOPIC TAGS: upper atmosphere, solar activity

ABSTRACT: The problem of study of neutral hydrogen in the Earth's upper atmosphere
is reviewed. The review centers on three basic problems: study of the law of
distribution of hydrogen as a function of distance from the earth, determination of
the total quantity of atoms of neutral hydrogen in the atmosphere, and study of
variations in the distribution of hydrogen associated with time of day, solar
activity and other factors. Particular attention is given to studies of the H_α
line. I. S. Shklovskiy has shown that the $L_\beta (\lambda 1026 \text{ A})$ emission line in the solar
spectrum should excite a third level of the hydrogen atom with subsequent re-emission
of either the same L_β line or $L_\alpha + H_\alpha$. The number of quanta in the H_α line should
be related to the number of L_α quanta as the Einstein coefficients for an optically
thin medium. In 1963 and 1964 P. V. Shcheglov discovered an asymmetry of neutral
hydrogen in the geocorona. Neutral hydrogen forms a disk in the Earth's orbital
plane with a thickness of approximately one Earth radius (5,000 km); the extent of

Card 1/2   UDC: 525.73:546.11

ACC NR: AP7007064

the disk is about 3,000 km on the morning side and about 10,000 km on the evening side. Among the work which must still be done the author lists: observations in the L_α line at heights up to 10,000 km from an oriented spacecraft; observations at distances of millions of kilometers from the earth with different known orientations of the ship for detection of asymmetry of interplanetary hydrogen; theoretical studies for obtaining numerical solutions of transfer equations for a three-dimensional medium with cylindrical symmetry; more rigorous solution of the problem of the interaction of a corpuscular stream with interstellar cold hydrogen and with the interstellar magnetic field. Solution of the latter problem will give an answer to the problem of the origin of hot neutral hydrogen in the solar system. Orig. art. has: 2 figures and 1 formula. [JPRS: 39,718]

SUB CODE: 04

Card 2/2

KURT, V.L.

Jupiter in January-February 1942. Biul.VAGO no.12:15-17 '53.

(MLRA 7:3)

1. Moskovskoye otdeleniye VAGO, otdel planet i Luny.

(Jupiter (Planet))

29(

SOV/26-59-5-16/47

AUTHOR: Kurt, V.L.

TITLE: An Artificial Sodium Comet

PERIODICAL: Priroda, 1959, Nr 5, pp 74 - 76   (USSR)

ABSTRACT: The author refers to the great speed and weak
               brightness of the Earth's artificial satellites
               (sputniks) which makes their observation difficult.
               The difficul y becomes more complicated in photo-
               graphing rockets at a distance of several hundred
               thousand kilometers from the Earth. This diffi-
               culty has been overcome by a method whereby solar
               radiation was reflected from a disseminated gas
               thrown out of the rocket. Each atom of this gas
               acts as a fluorescent vibrator from an artificial
               comet. The author describes this method in detail,
Card 1/2   and also the experiment carried out on 19 September

SOV/26-59-5-16/47

An Artificial Sodium Comet

> 1958, which enabled Soviet scientists to ascertain the density of the Earth's atmosphere at 440 km. There is 1 set of photographs and 2 graphs.

ASSOCIATION: Gosudarstvennyy astronomicheskiy institut im. P.K. Shternberga / Moskva (State Astronomical Institute imeni P.K. Shternberg/Moscow.

Card 2/2

KURT, V.L.

Remains of unknown supernovae. Priroda 49 no.8:87-88 Ag '60.
(MIRA 13:8)

1. Gosudarstvennyy astronomicheskiy institut im. P.K.Shternberga,
Moskva.
(Stars, New)

KURT, Ya.

Exhibition of innovations in the printing industry. NTO 2 no.5:
39-40 My '60.   (MIRA 14:5)

1. Zamestitel' predsedatelya Moskovskogo pravleniya nauchno-tekhniche-
skogo obshchestva poligrafii i izdatel'stv.
(Moscow--Exhibitions)   (Printing--Technological innovations)

KURT, Ya.

Following the example of Kolomna workers. NTO 2 no.7:53
J1 '60.   (MIRA 13:7)

1. Zamestitel' predsedatelya oblastnogo pravleniya Nauchno-
tekhnicheskogo cbshchestva poligrafii i izdatel'stv.
        (Moscow--Printing--Technological innovations)

KURT, Ya.

Quicker printing of books. NTO 3 no.6:50-51 Je '61. (MIRA 14:6)

1. Chlen prezidiuma Moskovskogo pravleniya nauchno-tekhnicheskogo
obshchestva poligrafii i izdatel'stv.
(Printing)

KARNYUSHIN, L.V., kand.tekhn.nauk, dotsent; KURT-UMEROV, V.O., inzh.

Principles of the control of the reliability of the elements of
automatic control systems during their operation. Elektrichestvo
no.11:81-84 N '64.   (MIRA 18:2)

1. Ukrainskiy zaochnyy politekhnicheskiy institut.

L 21978-66   EWA(h)/EWP(k)/EWT(d)/EWT(1)/EWP(h)/T/EWP(1)/EWP(v)   IJP(c)   TG

ACC NR: AP6007870   SOURCE CODE: UR/0103/66/000/002/0142/0146

AUTHOR: Kurt-Umerov, V. O.(L"vov)

ORG: none

TITLE: A mathematical model for the prediction of gradual failures in system components

SOURCE: Avtomatika i telemekhanika, no. 2, 1966, 142-146

TOPIC TAGS: mathematic model, circuit failure, system reliability, reliability engi-
neering, reliability theory

ABSTRACT: This article deals with questions on mathematical descriptions of the proces-
ses of gradual change in the parameters which determine the efficiency of components of
complex radioelectronic devices. These questions are of practical importance in the
prediction of probability of gradual failure in a given interval of time. Although such pre-
dictions do not consider sudden failure of components, in some cases they are necessary,
as, for example, in the determination of the operational reliability of precision systems.
For such systems, operational reliability is considered approximately as the probability

Card 1/2   UDC: 621.396.6.019.3.001.57

L 21978-66
ACC NR: AP6007870

of maintaining a prescribed accuracy in an interval of time. In operational conditions, it is considered expedient to predict functional reliability on the basis of the processing of information obtained from each individual component. In this case, the problem is reduced to the determination of the measure of probability of future states of the controlled component solely on the basis of the analysis of its prehistory. Such a prediction makes it possible to recommend replacement of components which have lowered their reliability. In order to realize this method of prediction the author constructs a mathematical model of the change of future states of a component as a function of its past states. Author expresses his deep gratitude to L. V. Karnyushin under whose supervision this work was performed. Orig. art. has: 3 figures and 18 formulas.

SUB CODE: 09, 12 / SUBM DATE: 26Aug65 / ORIG REF: 004 / OTH REF: 001

Automatic control theory

Card 2/2   nst

KURTA, Alexandru

 To who was conferred the title "Excellent Worker in
Socialist Competition." Munca sindic 7 no.9:18-20 S '63.

 1. Presedintele comitetului sindicatului Intreprinderea de
Produse Finite din Lemn "23 August", Tirgu Mures.

KURTA, K.Ye. [Kurta, K.IE]

Pupils' understanding of a change in the size of a fraction by a change in its parts. Nauk. zap. Nauk.-dosl. inst. psykhol. 11:130-134 '59. (MIRA 13:11)

1. Pedagogicheskiy institut, Zaporozh'ye.
(Arithmetic--Study and teaching (Primary))

SAMOYLOVA, T.S.; MICHURIN, N.V.; KURTACH, B.L. (Leningrad)

Metastatic adenoma of the thyroid gland. Probl.endok.i gorm.
no.1:106-110 '62.   (MIRA 15:8)

1. Iz kafedry obshchey khirurgii (zav. - prof. V.I. Korkhov)
Leningradskogo pediatricheskogo meditsinskogo instituta (dir. -
Ye.P. Semenova).
            (THYROID GLAND—TUMORS)

Kurtagić, Meho

Soils in Zagorje, Croatia, and an agropedological soil map of the experimental Šaulovec plantation. Meho Kurtagić (Inst. Agro-ecol., Zagreb, Yugoslavia). *Zemljište i Biljka* 1, 201–311(1952)(English summary).—The paper deals with the suitabilities of the soils for growing of fruit trees. All the soils are developed from a marl with 20–30% $CaCO_3$. Tables are presented with data of the pH in KCl and H_2O; K_2O, P_2O_5, Al_2O_3, and Fe_2O_3 sol. in 26% HCl; % humus; % N; also for the granulometric compn. From these and the topological map it is concluded that all slopes of more than 15°, crop growing should be discontinued and fruit and wine should be raised. One should fertilize 1st with manure and N fertilizers; P and K are to be given in a 2nd application of fertilizer. Such fertilization program must go hand in hand with a fight against erosion.   Werner Jacobson

KURTAGIC, MEHO

Poljoprivredna tla i krs sjeverne Dalmacije. The agricultural soils and the Karst
of north Dalmatia (by Meho Kurtagic and Borivoj Pusic) Beograd, 1956. 130 p.
(Jugoslovensko drustvo za proucavanje zemljista, Belgrade. (Izdanje) no. 5)
(English summary. illus., map)
          CLU   Not in DLC

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

KURTALJ, I.

11th Annual Assembly of the Union of Textile Engineers and Technicians
of Yugoslavia in Zadar. p.423

TEKSTIL. (Drustvo inzenjera i tehnicara tekstilaca Hrvatske) Zagreb, Yugoslavia
Vol. 8, no.6, June 1959.

Monthly list of East European Accessions (EEAI) LC, Vol.8, no.9, Sept. 1959

Uncl.

KURTANIDZE, T. S.: Master Agric Sci (diss) -- "Material for explaining the

differentiated agrotechnology in the fruit orchards of Meskheti /southwest

Georgia/". Tbilisi, 1959. 20 pp (Min Agric USSR, Georgian Order of Labor

Red Banner Agric Inst), 150 copies (KL, No 11, 1959, 121)

KURTANIDZE, V.M.

SAFAR'YAN,A.M., inzhener; KURTANIDZE,V.M., inzhener

Protecting roads from gully detritus. Avt.dor.17 no.3:10-11
N-D'54.   (MLRA 8:10)
          (Georgia--Road drainage)

YUGOSLAVIA/Diseases of Farm Animals - Diseases Caused by
Viruses and Rickettsiae.

Abs Jour   : Ref Zhur - Biol., No 14, 1958, 64669

Author   : Forsek, Z., Zeljko, M., Kurtanjek, I.
Inst   : -
Title   : Immunization of Chickens Against the Newcastle Disease by
               Means of the Addition of the Virus of the Newcastle Disea-
               se to Drinking Water with a Stabilizer.

Orig Pub   : Veterinaria (Jugosl.), 1957, 6, No 1, 4-12.

Abstract   : The best vaccine for the immunization of chickens accor-
               ding to this method was found to be the glycerinated virus
               of the Muktesvar strain, and the best stabilizer, powdered
               milk. The amount of virus necessary for immunization was
               about 15 thous. units DL_{50} per 1 ml. The titer of the
               retardation of agglutination in the vaccinated chickens
               averaged about 1:250 and the number of chickens that had
               not acquired immunity did not exceed 4%. Bacterial

Card 1/2

contamination of the drinking water reduces the preserva-
bility of the virus, and it is therefore necessary to use
a sterile stabilizer and purer water if possible.

Card 2/2

GOLUBCHINA, M.N.; KURTAZINA, T.M.; GUSAKOVA, A.N.

Isolation of small quantities of lead from rocks and minerals for
the determination of isotope compotition. Inform.sbor..VSEGEI
no.16:113-119 '59.   (MIRA 15:3)
                        (Lead--Isotopes)

KURTEK, P.

"School excursions through Yugoslavia" by V. Corofejev. Reviewed by P.Kurtek. Geogr hor 4 no.4:41-42 '59.

1. Clan Uzeg redakcionog odbora, "Geografski Horizont".

KURTEK, Pavao

    Milan Jokanovic's Lik nastavnika geografije u reformisanoj skoli (The
Image of the Teacher of Geography in Reformed Schools); a book review.
Geogr hor 6 no.3:64-65 '60.

KURTEK, P.

Development of big cities in the USA. from 1950 to 1960. Geogr hor 7 no.1/2:41-42 '61.

1. Clan Uzeg redakcionog odbora, odgovorni urednik, "Geografski horizont".

KURTEK, Pavao

Radio broadcasting in teaching geography. Geogr hor 7 no.3:42-43 '61.

1. Clan Uzeg reakcionog odbora i odgovorni urednik, "Geografski horizont".

KURTEK, P.

"The application of graphic method in teaching geography" by Radovan
Pavic. Reviewed by P.Kurtek. Geogr hor 7 no.4:37 '61.

1. Clan Uzeg redakcionog odbora, "Geografski horizont"

KURTEK, Pavao

 Some geographical characteristics of Sudan. Geogr hor 8
 no.1/2:16-29 '62.

 1. Clan Uzeg redakcionog odbora i odgovorni urednik, "Geografski
 horizont."

KURTEK, P.

Teaching geography in Sudan, and what the students there learn and know about Yugoslavia. Geogr hor 8 no.1/2:55-56 '62.

1. Clan Uzeg redakcionog odbora i Odgovorni urednik, "Geografski horizont."

KURTEK, Pavao

"On the shore of the Levant and Red Sea" by Milorad Vasovic.
Reviewed by P. Kurtek. Geogr hor 8 no.3:50-51 '62.

KURTEK, Pavao

Importance of outside literature in teaching geography. Googr hor 8 no.3:45-46 '62.

1. Odgovorni uredni i clan Uzeg redakcionog odbora, "Geografski horizont".

KURTEK, Pavao

"Collected tranactions of the 6th Congress of Geographers of
Yugoslavia." Reviewed by P. Kurtek. Geogr hor 9 no.1/2:71-
72 '63.

1. Clan Uzeg redakcionog odbora i odgovorni urednik, "Geografski
horizont."

KURTEK, Pavao

Soem geographical characteristics of Budapest. Geogr hor 9
no.3:1-14 '63.

1. Odgovorni urednik, clan Uzeg redakcionog odbora, "Geografski
horizont".

KURTEK, Tadeusz, mgr inz.; WIECKOWSKI, Jan, mgr inz.

Coke breeze briquetting for blast furnaces and heating. Gosp paliw 11 Special issue no.(95):23-24 Ja '63.

1. Zaklady Przemyslu Wapienniczego Sitkowka k. Kielc.

KURTEK, Tadeusz, mgr inz.; WILCKOWSKI, Jan, mgr inz.

      Coke breeze briquetting for blast furnaces and heating.
      Gosp paliw 11 Special issue no.(95):23-24 Ja '63.

      1. Zaklady przemyslu Wapienniczego Sitkowska K, Kielc.

KURTENER, D.A.

Temperature of a gas flow in a thin-walled perforated tube of
constant cross section.   Inzh.-fiz. zhur. 7 no. 3:54-56
Mr '64.   (MIRA 17:5)

1. Agrofizicheskiy nauchno-issledovatel'skiy institut, Leningrad.

ZAKHAROV, N.G.; KURTENER, D.A.

    Heating system for spring and summer greenhouses. Biul.
    tekh.-ekon. infor. os. nauch.-issl. inst. nauch. i tekh.
    inform. 17 no.3:64-65 '64.   (MIRA 17:9)

L 06178-67

ACC NR: AP6017539   (A)   SOURCE CODE: UR/0193/66/000/001/0039/0040

AUTHOR: Kaganov, M. A.; Kurtener, D. A.

ORG: none

TITLE: Experience with a multipoint instrument for remote measuring and automatic recording temperatures by semiconductor sensors

SOURCE: Byulleten' tekhniko-ekonomicheskoy informatsii, no. 1, 1966, 39-40

TOPIC TAGS: temperature measurement, temperature instrument

ABSTRACT: A 12/24-point temperature measuring-and-recording instrument was developed in the Agrophysical Scientific Research Institute. Thanks to the use of an unbalanced bridge circuit with an output electronic potentiometer, the resistance of connecting wires can be neglected. Semiconductor thermistors (over 1 kohm, 3—5% per 1C) are employed as sensors. Only three wires are needed for connecting the instrument to the sensors, the latter being switched in succession by a step-type switch. These characteristics are claimed: scale span, −5+45C; error, 0.25%; distance, 2—3 km. Orig. art. has: 1 figure.

SUB CODE:13,09 / SUBM DATE: none

Card 1/1   UDC: 536.51-52

ZAKHAROV, N.G.; KURTENER, D.A.

Possibilities of using hotbeds for solar heating, Mekh. khoz. sel'khoz. prod. no. [illegible] '62. (MIRA 18:5)

1. Agrofizicheskiy nauchno-issledovatel'skiy institut.

KURTENKOV, L. A.

AUTHOR   Kurtenkov, L.A.   56-2-46/47

TITLE   On the Statistical Treatment of the Structure of
Elementary Particles.
(O statisticheskoy traktovke struktury elementarnykh
chastits.)

PERIODICAL   Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol. 33,
Nr 2(8), pp. 554-555 (USSR)

ABSTRACT   The following problem arises: Have the fields, which
surround the elementary particles, any properties of the
usual particles, in particular statistical properties?
The author here studies the elementary particle as a
cloud of virtual particles which satisfy canonical
statistics. Thus, it applies for the distribution of
pseudophotons that

$$u(\omega)\, d\omega = (\hbar\omega^3(2\pi^2 c^3)) \left[\exp(\hbar\omega) \textcircled{N} + \alpha) - 1 \right]^{-1} d\omega,$$

where $= \hbar\omega$ holds. In the case of black radiation
$\alpha = 0$, but in the general case $\alpha \neq 0$. With the aid of
the uncertainty relation it is possible to bring the
energy of the virtual particles into connection with the
length of existence of the virtual particle t and with
its distance R from the center:

CARD 1/3

On the Statistical Treatment of the Structure of Elementary Particles.

$$\mathcal{E}t \quad \hbar; \quad R \sim ct; \quad \mathcal{E} \, 3 \quad nc/pR.$$

Here c denotes the velocity of light and p - a factor
of the order of one. Thus, the uncertainty relation
causes no contradiction to the law of conservation of
energy if the following is assumed: The particle with the
energy $\mathcal{E} = \hbar\omega$, which moves with the velocity of $\sim$ c
can be observed at a distance of from 0 to $R \sim \hbar c/r$. It is
therefore possible that, at the point with the distance
r, there are particles with energies of from

0 to $\hbar c/r$. We therefore find for the energy density at
the point with the distance r (if the integration
variable ω is replaced by c/R) the expression

$$W(r) = \int_{0}^{r/c} u(\omega)d\omega = -\frac{\hbar c}{2\,p^4\pi^2} \int_{\infty}^{r} \left[\exp\left(\frac{\hbar c}{p \,\textcircled{R}\, R} + \alpha\right) - 1\right]^{-1}\frac{dR}{R^5}$$

The total energy E of the virtual field is determined
by the integration of $W(r)$ with respect to the entire space.
This energy is also to be considered as the rest energy
$m_e c^2$ of the particle (if the other possible virtual
fields, as. e.g. the field of gravitation, are neglected).

CARD 2/3

56-2-46/47

On the Statistical Treatment of the Structure of Elementary Particles.

The density $W(r)$ can, however, be identified with the energy density of the Coulomb field. The integrals of W and E converge everywhere. Essential deviations from Coulomb's theory begin only at

$$\hbar c/p \ \theta R_o \sim 1, \ R_o \sim \hbar c/\theta \sim 10^{-13} \ cm.$$

In conclusion the results obtained here are specialized for the case of the nucleon.
There are no figures.

ASSOCIATION: None given.
SUBMITTED: September 6, 1956.
AVAILABLE: Library of Congress.

CARD 3/3

L 28399-66   EWT(m)/EWA(d)/EWP(t)/ETI   IJP(c)   JD/HW/WB/GD

ACC NR: AT6013792   SOURCE CODE: UR/0000/65/000/000/0123/0135

AUTHOR: Mirolyubov, Ye. N.(Candidate of chemical sciences); Kazakov, A. P.;
    Kurtepov, A. P.

ORG: none

TITLE: Effect of chlorides on the corrosion resistance of stainless steels in nitric
acid solutions

SOURCE: Korroziya metallov i splavov (Corrosion of metals and alloys), no. 2.
Moscow, Izd-vo Metallurgiya, 1965, 123-135

TOPIC TAGS: chromium steel, nickel steel, stainless steel, corrosion resistance,
nitric acid, test method/1Kh18N9T stainless Cr-Ni steel

ABSTRACT: Various corrosion tests were performed, each suited to the test objective:
measurement of corrosion potentials as a function of time, and of corrosion as a
function of the potential of the steel, with the aid of a hydrogen reference elec-
trode. The potential measurements were based on the scheme: x mol HNO_3/KNO_3 (sat.)/
/KCl(sat), Hg_2Cl_2/Hg, with the chlorine ions being added to the solution in the form
of NaCl. Findings: the addition of Cl^- ions to HNO_3 solutions causes the potential
of stainless steels to shift from a passive state, characterized by a high corrosion
resistance, to an active state at which their corrosion rate increases by several
orders of magnitude. After some time, however, the corrosion process ceases and the
steel returns to passive state. In this connection, the corrosion rate of stainless
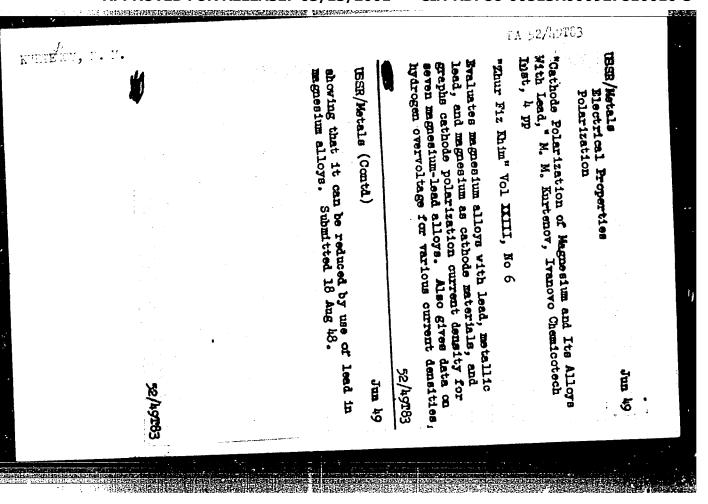
Card   1/2

L 28399-66

ACC NR: AT6013792

steels is greatly affected by the test method. For example, it was established that, all other conditions remaining equal, the corrosion rate of 1Kh18N9T steel at 20°C increases with increasing ratio of the volume V of 3M H_2SO_4 solution (containing 10 g/liter NaCl) to the surface S of the specimens of this steel (length of experiments 20 hr); thus, for a V/S ratio (cm^3/cm^2) of 3.7 the corrosion rate K is 3.8 g/(m^2-hr), whereas for V/S = 70, K = 24.4 g/(m^2-hr). Corrosion rate also varies with time; thus, for 1Kh18N9T steel in 3M HNO_3 with 10 g/liter NaCl at 20°C and V/S = 7.5, K = 12.3 g/(m^2-hr) when test time τ = 1 hr, but K = 24.2 g/(m^2-hr) when τ = 4 hr and K = 2.9 g/(m^2-hr) when τ = 46 hr, and for τ > 46 hr the steel ultimately returns to passive state. Corrosion rate tends to increase with increasing V/S ratio as well as with decreasing distance from surface of specimen to surface of solution. Thus, when evaluating the effect of various factors on the corrosion rate of stainless steels in HNO_3 solutions with Cl^- ions, allowance must be made for the features of the test method selected, preferably selecting a test method that simulates best the presumed operating conditions. Generally, for stainless steels in HNO_3 solutions with chlorides in active state, the corrosion rate increases with increasing temperature and mixing rate of the solution and decreasing Ni content of the steel, and passes through a maximum when the concentrations of the acid and chloride and the Cr content of the steel are increased. Orig. art. has: 9 figures and 4 tables.

SUB CODE: 07,11   SUBM DATE: 19Jul65/ ORIG REF: 012/ OTH REF: 003

Card   2/2

KURTENOV, M. M.

CA 52/49T83

USSR/Metals
    Electrical Properties
        Polarization

Jun 49

"Cathode Polarization of Magnesium and Its Alloys
With Lead," M. M. Kurtenov, Ivanovo Chemicotech
Inst, 4 pp

"Zhur Fiz Khim" Vol XXIII, No 6

Evaluates magnesium alloys with lead, metallic
lead, and magnesium as cathode materials, and
graphs cathode polarization current density for
seven magnesium-lead alloys. Also gives data on
hydrogen overvoltage for various current densities,

52/49T83

USSR/Metals (Contd)   Jun 49

showing that it can be reduced by use of lead in
magnesium alloys. Submitted 18 Aug 48.

52/49T83

Irreversible electrode potentials in hydrofluoric acid solutions. M. M. Kurtepov and A. S. Fedoseeva (Inst. Phys.-Chem., Acad. Sci. U.S.S.R., Moscow) *Doklady Akad. Nauk S.S.S.R.* 75, 561 4(1950). Potentials *E* of 25 metals were measured in 0.01, 0.1, and 1 N soln. of HF over 24 hrs. The initial *E* of metals of the 1st, 6th, and 8th groups (Cu, Ag, Au, Cr, Se, Mo, Te, W, Fe, Ni, Pd, Pt) were pos.; those of the other metals (Mg, Zn, Cd, Al, Ga, In, Tl, Si, Pb, Nb, Sb, Bi, Mn) were neg. relative to the H electrode. The initial and final *E* of Au, Ga, In, and Pd were neg., and *E* of Mg, Al, Si, Cr, Mn, Fe, and Ni were pos. relative to the region of reversible potentials. For the other metals, *E* was close to the equil. potential. Marked changes of *E* with time were observed with Au, Mg, Al, Nb, Sb, Mn, Fe, Pd, Pt, and the metals of the 6th group. The concn. of HF showed no significant effect on *E*.
                                                            N. Thon

KURTEPOV, M.N

Corrosion Properties of Magnesium-Lead Alloy Systems.

"Research in Corrosion of Metals (Issledovaniya po Korrosii Metallov)".
Published by--Inst. of Physical Chemistry, USSR Academy of Sciences, Moscow-151.
Translation---ATIC-79062-D
             F-TS-8030-A/V.

KURTEPOV, M.M.

Electrode potentials of alloys in the magnesium-lead system. Trudy
Inst. Fiz. Khim., Akad. Nauk S.S.S.R. 2, Issledovaniya po Korrozii
Metal. No.1, 237-40 '51.   (MLRA 4:10)
(CA 47 no.13:6279 '53)

KURTEPOV, M.M.; KOL'TSOVA, A.S.

Device for measuring electrode potentials. Trudy Inst. Fiz.Khim.,
Akad. Nauk S.S.S.R. 3, Issledovaniya Korrozii Metal. No.2, 83-5 '51.
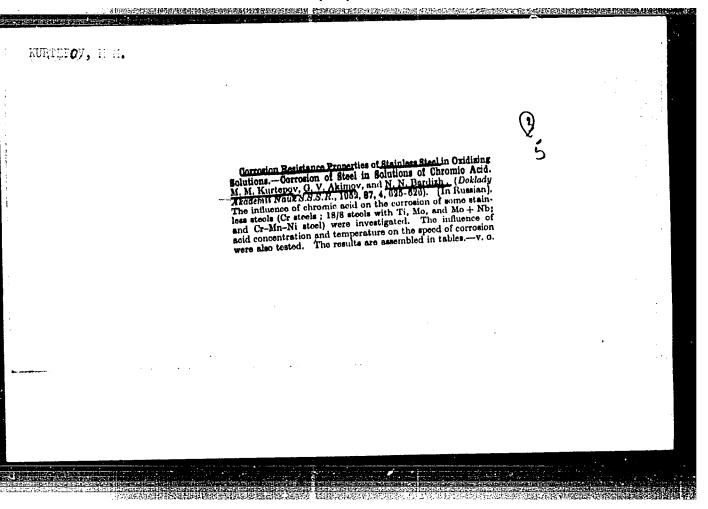(CA 47 no.16:7831 '53) (MLRA 4:10)

1. Gorki Fat Combine.

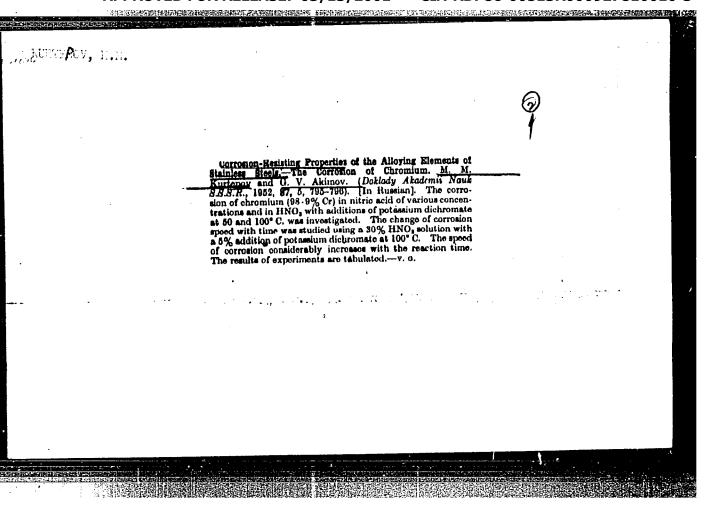KURTEPOV, M. M.: KOL'TSOVA, ... S.

ELECTRIC MEASUREMENTS

Device for measuring electrode potentials. Trudy Inst. Fiz. Khim. AN SSSR, No. 3, 1951

Monthly List of Russian Accessions, Library of Congress, May 1952, UNCLASS.

KURTEPOV, M. M.

Corrosion Resistance Properties of Stainless Steel in Oxidising Solutions.—Corrosion of Steel in Solutions of Chromic Acid. M. M. Kurtepov, G. V. Akimov, and N. N. Bardizh. (*Doklady Akademii Nauk S.S.R.*, 1952, 87, 4, 625-628). [In Russian]. The influence of chromic acid on the corrosion of some stainless steels (Cr steels ; 18/8 steels with Ti, Mo, and Mo + Nb; and Cr-Mn-Ni steel) were investigated. The influence of acid concentration and temperature on the speed of corrosion were also tested. The results are assembled in tables.—v. o.

AKIMOV, I...

Corrosion-Resisting Properties of the Alloying Elements of Stainless Steels.—The Corrosion of Chromium. M. M. Kurtepov and G. V. Akimov. (*Doklady Akademii Nauk S.S.S.R.*, 1952, 87, 5, 795-796). [In Russian]. The corrosion of chromium (98·9% Cr) in nitric acid of various concentrations and in HNO_3 with additions of potassium dichromate at 50 and 100° C. was investigated. The change of corrosion speed with time was studied using a 30% HNO_3 solution with a 5% addition of potassium dichromate at 100° C. The speed of corrosion considerably increases with the reaction time. The results of experiments are tabulated.—v. o.

KURTEPOV, M. M.   PA 240T78

USSR/Metallurgy - Steel   Dec 52
                    Corrosion

"Corrosion Properties of Stainless Steels in Oxidizing
Solutions: Effect of Oxidizers on the Electrode Poten-
tials and Kinetics of Electrode Processes on Stain-
less Steels," M. M. Kurtepov and G. V. Akimov, Corr
Mem Acad Sci USSR, Inst of Phys Chem, Acad Sci USSR

"DAN SSSR" Vol 87, No 6, pp 1005-1007

Continues investigation (DAN, 87, 4, 1952) of ef-
fect of oxidizers added to HNO_3 on corrosion of
18-8-type steels, presenting some results from in-
vestigation of the effect of $K_2Cr_2O_7$, NH_4VO_3 and
KIO_3 additions on 18-8-type steel with Mo and Cb.

                                        240T78

BATRAKOV, V.P.; KURTEPOV, M.M.; TOMASHOV, N.D.

Georgii Vladimirovich Akimov. Zhur. Fiz. Khim. 27, 313-16 '53.(MLRA 6:5)
(CA 47 no.18:9071 '53)

Kurtepov, M M.

USSR/Chemistry - Chemical technology

Card 1/1   Pub. 22 - 32/40

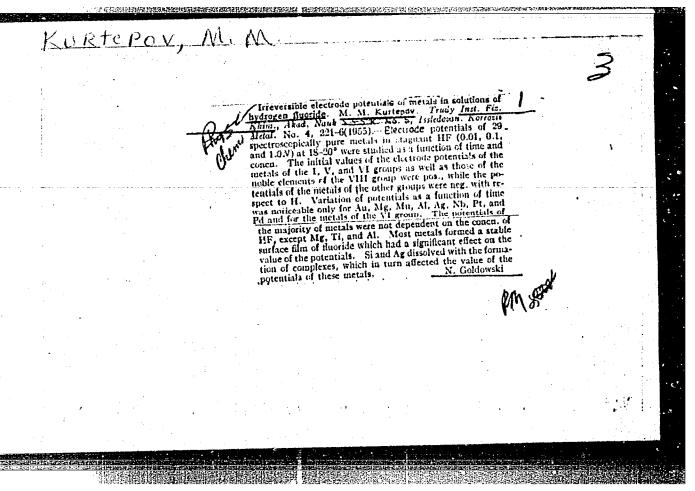Authors   : Kurtepov, M. M.

Title   : Corrosion of rustproof steel in acid oxidizing solutions

Periodical : Dok. AN SSSR 99/2, 305-306, Nov. 11, 1954

Abstract   : A new type of corrosion destruction of welded joints of rustproof and acid-
resistant steel is discussed. Such types of corrosion destructions were ob-
served in more diluted ($<30\%$) nitric acid solutions with greater oxidizer
additions, but only during continuous action of the corrosion medium. The
intercrystalline nature of this new type of corrosion was established.
Joints with low carbon content were observed to be less sensitive to inter-
crystalline corrosion than otherwise. The mechanism of corrosion destruc-
tion is explained. Two USSR references (1945-1952). Illustrations.

Institution : Academy of Sciences USSR, Institute of Physical Chemistry

Presented by: Academician P. A. Rebinder, September 17, 1954

KURTEPOV, M. M.

3

Irreversible electrode potentials of metals in solutions of hydrogen fluoride. M. M. Kurtepov. *Trudy Inst. Fiz. Khim., Akad. Nauk S.S.S.R. No. 5, Issledovan. Korrozii Metal.* No. 4, 221-6(1955).—Electrode potentials of 29 spectroscopically pure metals in stagnant HF (0.01, 0.1, and 1.0 N) at 18-20° were studied as a function of time and concn. The initial values of the electrode potentials of the metals of the I, V, and VI groups as well as those of the noble elements of the VIII group were pos., while the potentials of the metals of the other groups were neg. with respect to H. Variation of potentials as a function of time was noticeable only for Au, Mg, Mn, Al, Ag, Nb, Pt, and Pd and for the metals of the VI group. The potentials of the majority of metals were not dependent on the concn. of HF, except Mg, Ti, and Al. Most metals formed a stable surface film of fluoride which had a significant effect on the value of the potentials. Si and Ag dissolved with the formation of complexes, which in turn affected the value of the potentials of these metals.

N. Goldowski

KURTEPOV, M.M.

Apparatus for corrosion tests. Zav.lab.21 no.11:1389-1390 '55.
(MLRA 9:2)

1.Institut fizicheskey khimii Akademii nauk SSSR.
(Corrosion and anticorrosives--Testing)

KURTEPOV, M.M.; GRYAZNOVA, A.S.

Corrosion of stainless steels in solutions containing hydrofluoric
acid.   Trudy Kom. po bor'. s korr. met. no.2:59-68 '56.

(MLRA 10:2)

(Steel, Stainless--Corrosion) (Hydrofluoric acid)

KURTEPOV, M.M.; AKIMOV, G.V.; BARDIZH, N.N.

Corrosive properties of stainless steels in chromic acid solutions.
Trudy Kom. po bor'. s korr. met. no.2:89-91 '56.   (MLRA 10:2)

(Steel, Stainless--Corrosion)

137-58-6-12879

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 242 (USSR)

AUTHOR   Kurtepov, M.M.

TITLE   Corrosion of Chromium in Acid Oxidizing Solutions (Korroziya
              khroma v kislykh okislitel'nykh rastvorakh)

PERIODICAL: V sb.: Teoriya i praktika elektrolit. khromirovaniya. Mos-
              cow, AN SSSR, 1957, pp 204-207

ABSTRACT: An investigation of corrosion of Cr (98.9% alumino-thermit
              Cr) in acid oxidizing solutions was carried out. It is shown that
              Cr in HNO_3 of up to 60% concentration possesses high corro-
              sion resistance (0.05 g/m^2.hr) up to 100°C. The rate of corro-
              sion of Cr in H_2CrO_4 solutions depends on the pH of the solu-
              tion: the rate of corrosion diminishes with an increase in pH.
              However, an increase in HNO_3 concentration and in the amount
              of $K_2Cr_2O_7$ addition results in a very high corrosion (attaining
              60 g/m^2.hr with 15% of $K_2Cr_2O_7$ and at a temperature of 100°).
              Investigations of the behavior of Cr in a chrome mixture and in
              HNO_3 with H_2O_2, $KMnO_4$, PbO_2, and Na_2BiO_3 additions at el-
              evated temperatures reveal a reduced corrosion resistance. Cr
Card 1/2   corrosion in acid oxidizing solutions exhibits a steady character.

137-58-6-12879

Corrosion of Chromium in Acid Oxidizing Solutions

The low corrosion resistance in acid oxidizing solutions is explained by the formation on their surface of a CrO_3 film which is easily soluble in aqueous solutions of acids.

L.A.

1. Chromium--Corrosion   2. Acid solutions--Corrosive effects   3. Chromium solvates
--Test results

Card 2/2

KURTEPOV, M.M.

USSR /Chemical Technology. Chemical Products   H-4
    and Their Application
    Corrosion. Protection from Corrosion

Abs Jour: Referat Zhur - Khimiya, No 1, 1958, 1602

Author : Medobar B.I., Langer N.A., Kurtepov M.M.

Title   : Corrosion Characteristics of Welded Seams of
           Stainless Steels in Oxidizing Solutions

Orig Pub: Avtomat. svarka, 1957, No 2, 57-60

Abstract: Tests of corrosion resistance of welded seams
           of stainless steels 1Kh18N9T, Kh18N11B and
           Kh18N12M2T in boiling 15% HNO_3 (I), 55% HNO_3
           (II) and 15% solution of HNO_3 + 10% $K_2Cr_2O_7$
           (III), have shown that in I all the seams tested,
           are stable; in II the rate of corrosion is 100-
           200 times higher. Particularly harmful admixtures

Card 1/2

USSR /Chemical Technology. Chemical Products   H-4
    and Their Application
    Corrosion. Protection from Corrosion.

Abs Jour: Referat Zhur - Khimiya, No 1, 1958, 1602

        in seams of 1Kh18N9T steel are W and Mn. In
        seams of Kh18N11B steel a beneficial effect is
        produced by an addition of Mo. In II seams in
        Kh18N11B steel are superior, in corrosion re-
        sistance, to seams in 1Kh18N9T and Kh18N12M2T
        steels. In III a sharp acceleration of the
        corrosion of welded seams off all the investigated
        typed takes place. In this instance seams in
        Kh18N11B steel are less stable than seams in
        1Kh18N9T and Kh18N12M2T steels. In II and III,
        in addition to intensive general corrosion,
        develops intercrystallite corrosion of base
        metal and a shearing corrosion along the steel-
        to-seam line of fusion.

Card 2/2

76-32-4-27/43

AUTHORS: Tomashov, N. D., Kurtepov, M. M., Mirolyubov, Ye. N.

TITLE: The Corrosion of Stainless and Carbon Steels During Cathodic
               Polarization in Nitric Acid Solutions (Korroziya nerzha-
               veyushchey i uglerodistoy staley pri katodnoy polyarizatsii
               v rastvorakh azotnoy kisloty)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 4,
               pp. 904 - 908 (USSR)

ABSTRACT: Investigations of stainless steel 18-8(with niobium- 1X18H11Б)
               in nitric acid solutions of from 3 - 40% HNO_3,as well as of
               carbon steel of a similar carbon content and with additions
               of Mn, Si, S, P in 3% nitric acid were carried out. From the
               experimental results follows that the displacement of the
               steel potential to negative values with both kinds of steel
               leads to an increase of corrosion velocity with a maximal value
               being passed and a gas separation occurring only within certain
               intervals. The further experimental results in which were ob-
Card 1/3   served the presence of analogous functions of the corrosion

76-32-4-27/43

The Corrosion of Stainless and Carbon Steels During Cathodic Polarization in Nitric Acid Solutions

velocity on the potential, of the acid concentration and the temperature, as well as of a resistence to corrosion according to time, point at a principal analogy of their mechanisms of corrosion in nitric acid solutions. The phenomenon of the above mentioned maximal value is explained by the fact that the protective layer forming on iron is reduced from iron oxide by cathodic polarization, and that it converts into a soluble modification, enters completely solution at the maximum, and that then a cathode protection of the steel occurs and the values decrease again. Similar observations were made by Bonhoeffer et al (Reference 11,12). The corrosion properties distinguishing the two types of steel are to be found in the corrosion velocity in active state as well as in the gas formation, which is explained by the reduction type of the protective layer, so that it is the decisive factor. There are 4 figures and 12 references, 8 of which are Soviet.

Card 2/3

76-32-4-27/43

The Corrosion of Stainless and Carbon Steels During Cathodic Polarization in Nitric Acid Solutions

ASSOCIATION: Akademiya nauk SSSR, Institut fizicheskoy khimii, Moskva
               (Moscow Institute for Physical Chemistry, AS USSR)

SUBMITTED: January 8, 1957

AVAILABLE: Library of Congress

               1. Stainless steel--Corrosion   2. Carbon steel--Corrosion
               3. Nitric acid--Corrosive effects

Card 3/3