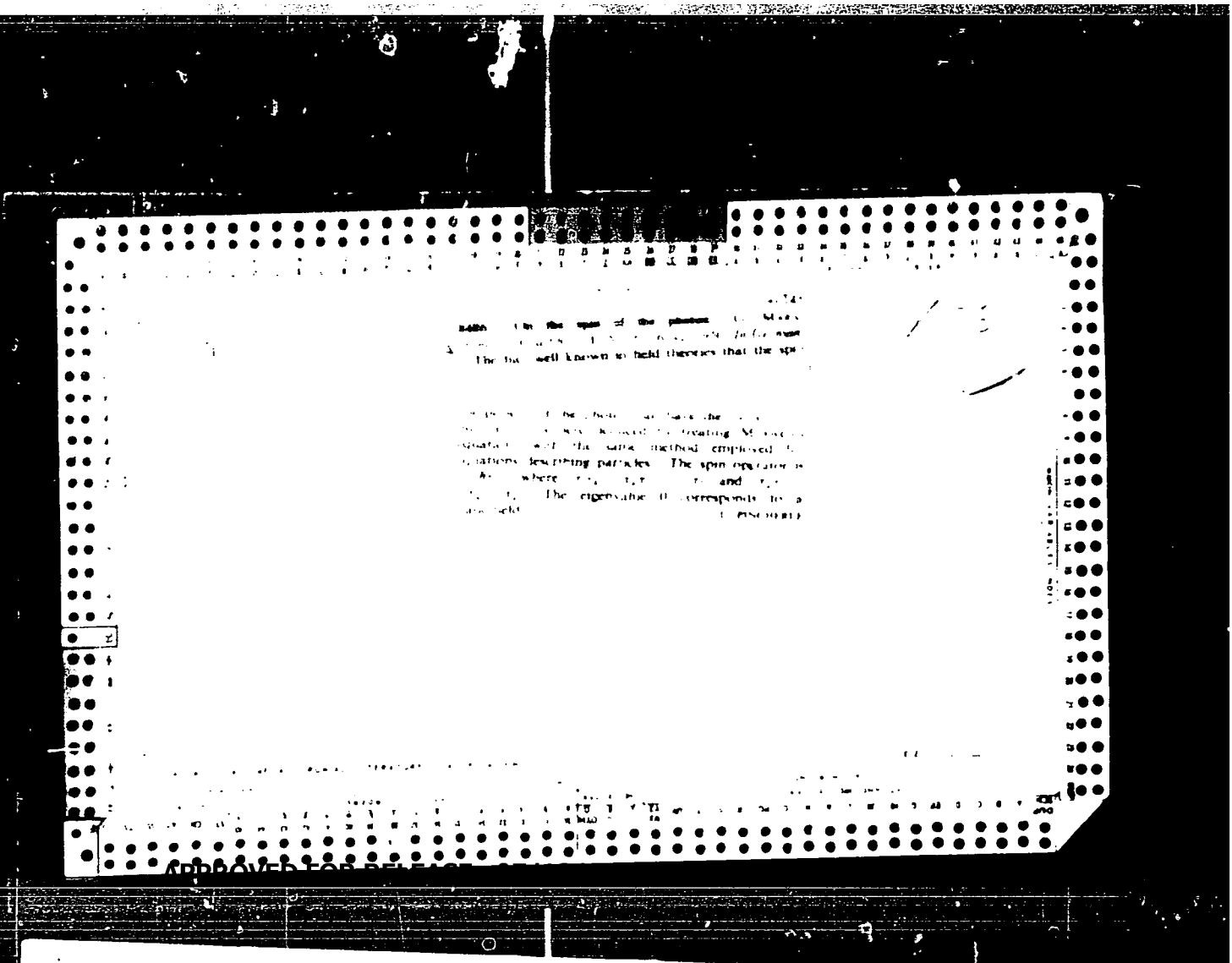


Mathematical Reviews
Vol. 14 No. 7
July - August, 1953
Mathematical Physics.

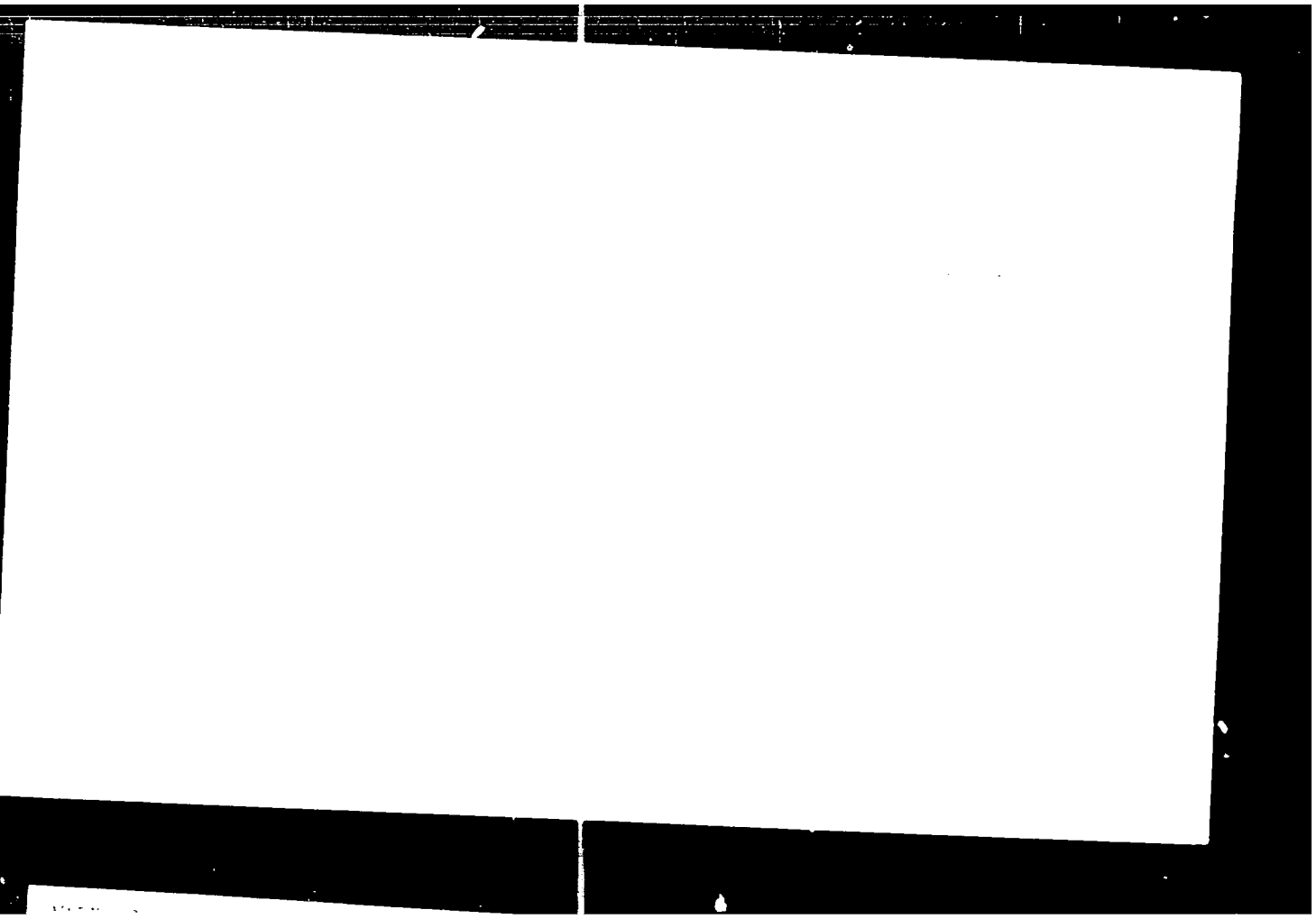
Marx, G. Relativistische Elektrodynamik der Magnete. Acta Phys. Acad. Sci. Hungar. 2, 67–84 (1952). (Russian summary)

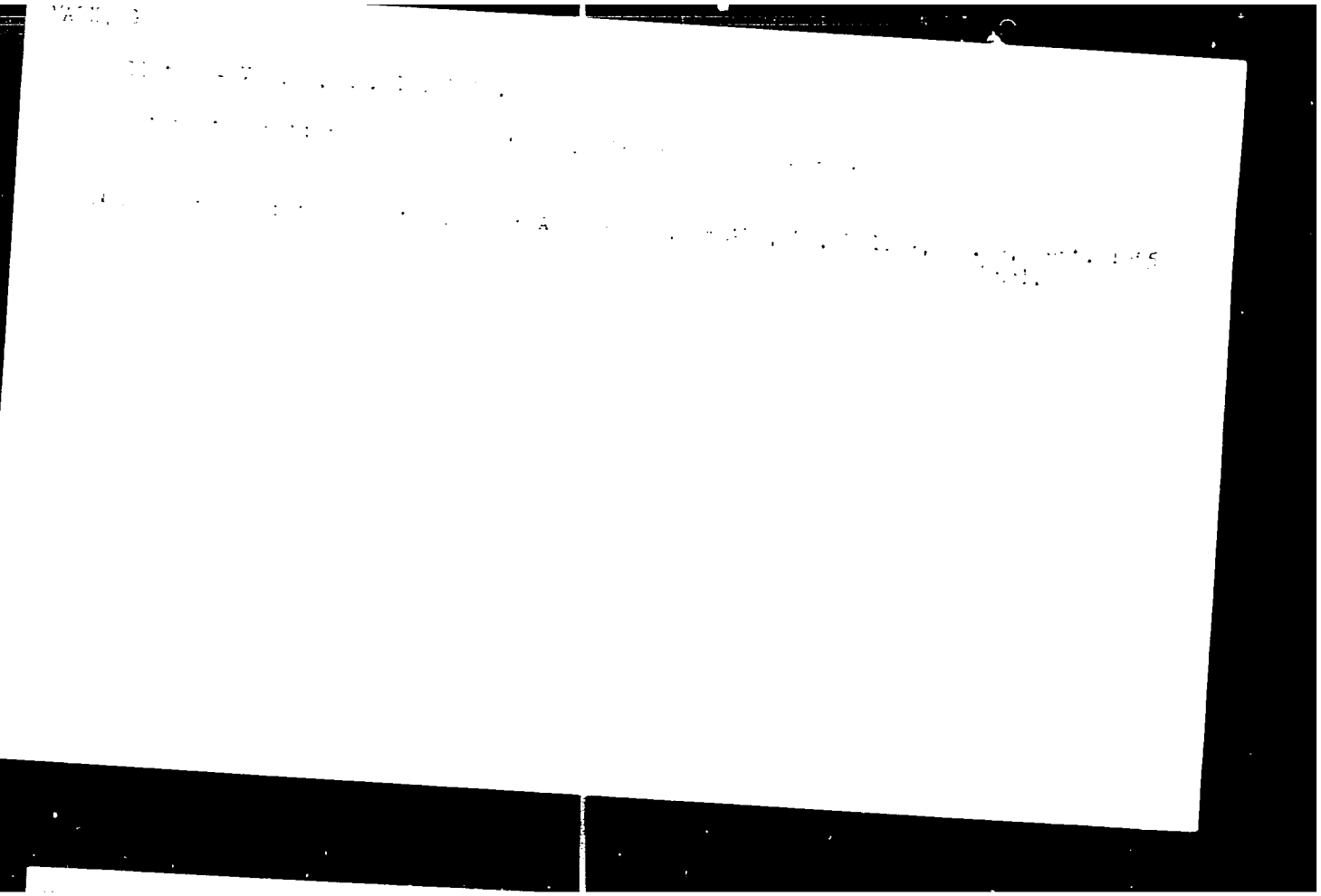
A theory of the electromagnetic field is developed in which there are present magnetic dipoles as well as [illegible] particles. The presence of these magnetic dipoles is taken into account by introducing the additional term $\frac{1}{2}M_{\alpha\beta}F_{\alpha\beta}$ in the Lagrangian, where $F_{\alpha\beta}$ is the usual antisymmetric tensor and $M_{\alpha\beta}$ the magnetic moment tensor. The energy-momentum tensor is derived, from which the [illegible] for the force on the magnet is obtained.

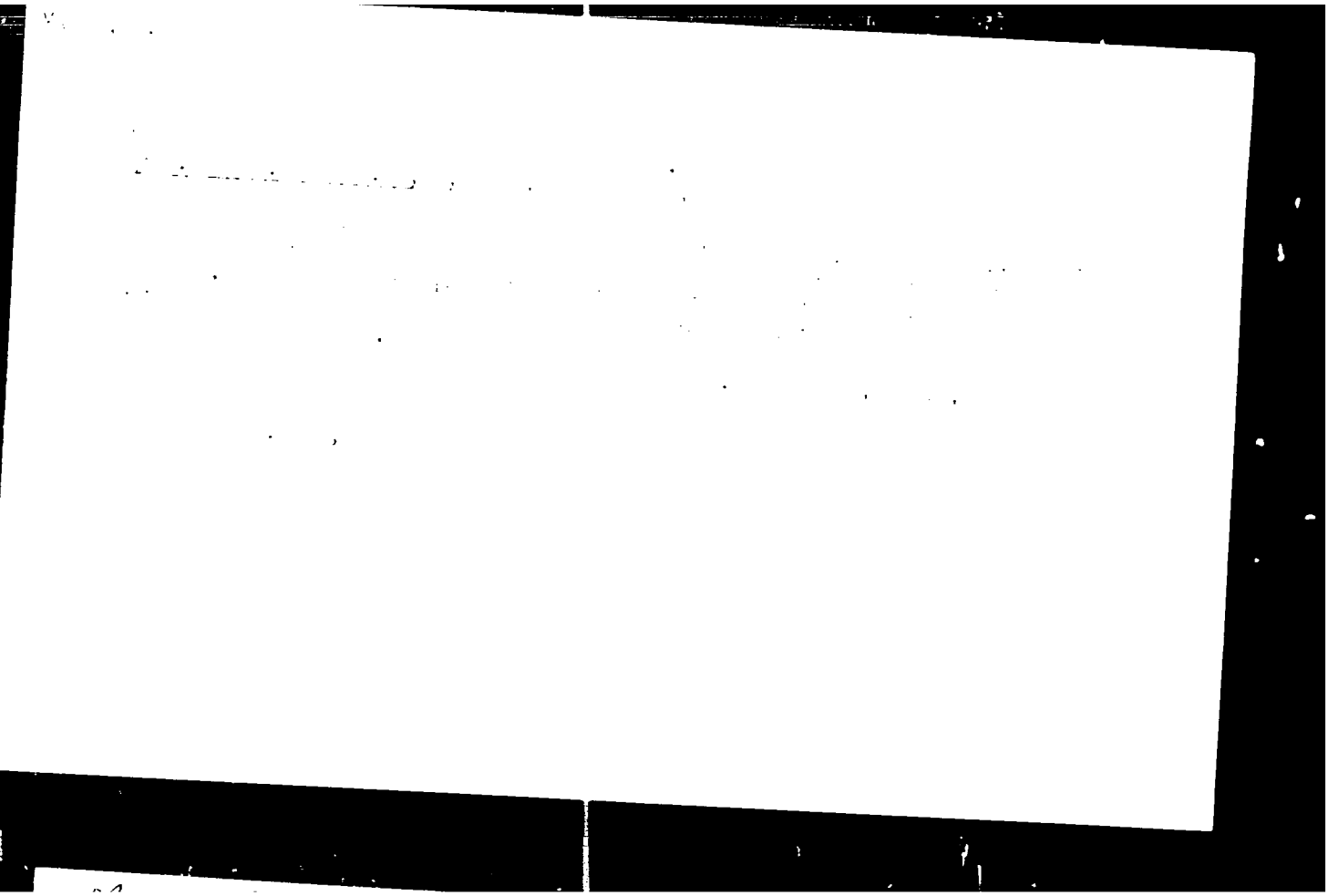
(C. Kikuchi, East Lansing, Mich.)

6737. The electromagnetic field in moving anisotropic media. [illegible] *Acta phys. Hungar.* 3, Fasc. 2, [illegible] *In German*

Field equations [illegible] written in covariant form and an expression [illegible] for the Lagrange function. [illegible]







Marx, G.

4

Marx, G., and Szamosi, G. Relativistic motion in a scalar field. Bull. Acad. Polon. Sci. Cl. III. 2 (1954), 475–479. (1955).

The classical relativistic equations of motion of a particle in a scalar field are investigated. It is found that the rest-mass is in general not constant. In the case of a scalar, attractive, meson field, the rest mass (but not the total mass or energy) will vary between some distance from the center of force and the velocity of light will be equal to that of light. For smaller distances the effective force on the particle will be repulsive.

N. Rosen (Haifa).

1-F/W

(1)

MARX, G.

HUNG.

10345. The energy impulse tensor of the electromagnetic field and the ponderomotive forces in dielectrics. G. MARX AND G. GYÖRGYI. *Acta phys. Hungar.*, 3, No. 3–4, 213–42 (1954) *In German.*

The calculation of the energy impulse tensor for electromagnetic fields in vacuum using the method of Lorentz forces is well known. The calculations for various fields in dielectric media are discussed here.

C. A. HOGARTH

536.3

MARX, G.

3

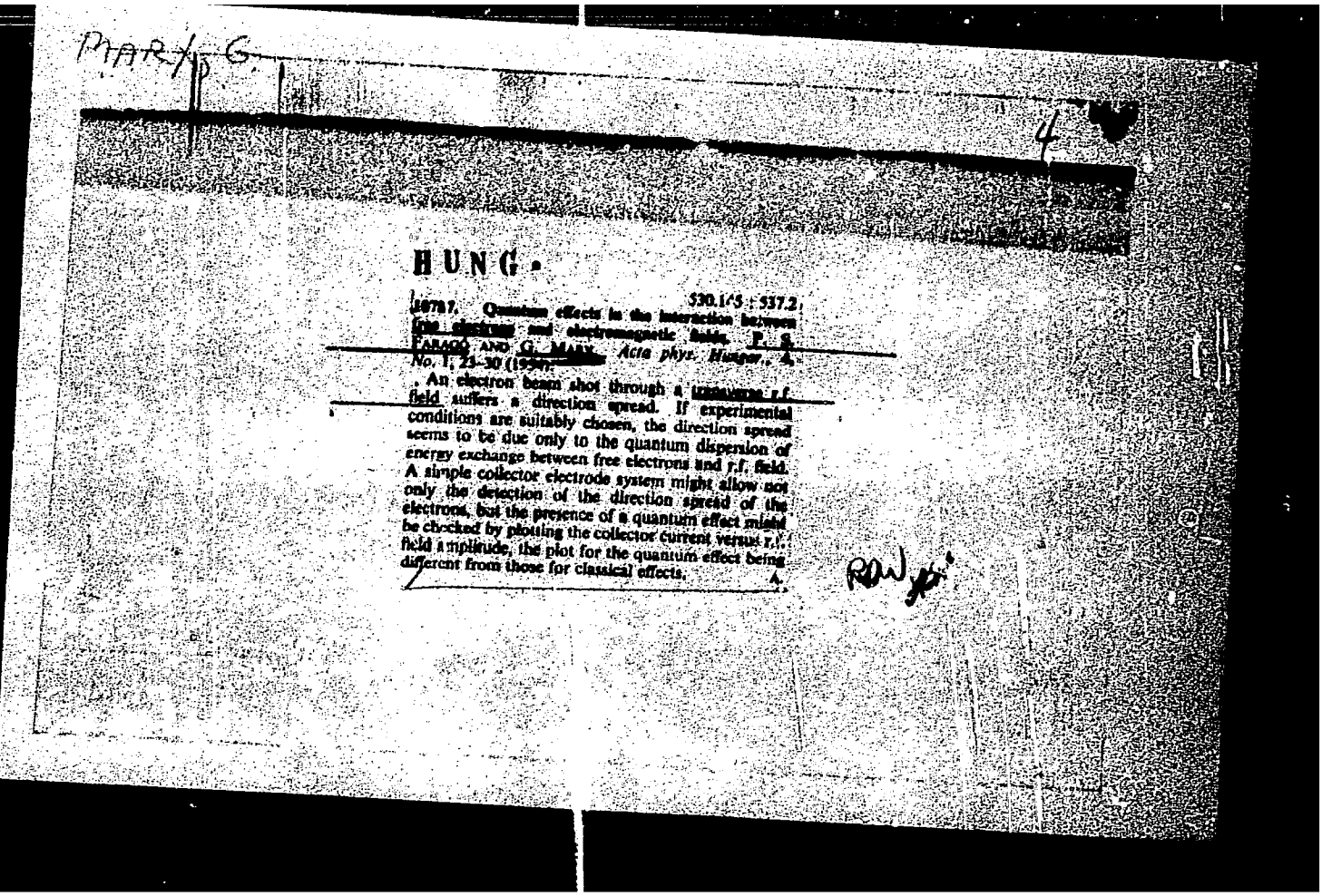
POL.

538.3

18346. The equation of motion of the magnetic dipole. G. MARX. *Bull. Acad. Polon. Sci. Cl. 3, 2, No. 5, 219–24 (1954).*

The field due to a moving dipole of moment m is obtained as a power series in c^{-1}. The force on the dipole is calculated from considerations of field momentum and expressed in the form $K + (m \cdot \nabla)H + E \times \dot{m}/c + (\dot{v} \times m) \times H/c^2$, where E and H are the intensities of the external field. The self-force term K is not discussed in the present note.

R. A. NEWING



MARK G.

4

HUNG.

530.145 : 537.2

16787. Quantum effects in the interaction between free electrons and electromagnetic fields. P. S. FARAGO AND G. MARX. *Acta phys. Hungar.*, 4, No. 1, 23–30 (1954).

An electron beam shot through a transverse r.f. field suffers a direction spread. If experimental conditions are suitably chosen, the direction spread seems to be due only to the quantum dispersion of energy exchange between free electrons and r.f. field. A simple collector electrode system might allow not only the detection of the direction spread of the electrons, but the presence of a quantum effect might be checked by plotting the collector current versus r.f. field amplitude, the plot for the quantum effect being different from those for classical effects. A.

Category SUMMARY Theoretical [illegible] B-0

Author Marx, [illegible]

Abstract General treatment of the [illegible] See

Card 1 1

[illegible], [illegible].

"[illegible] momentum of electrons and nucl[illegible] the Dirac theory." p. 291

[illegible] (Magyar Tudomanyos Akademia) Budapest, Hungary
Vol. [illegible], No. [illegible], [illegible].

Monthly List of East European Accessions [illegible] LC, Vol. [illegible], No. [illegible], June 1959.
Uncl.

MAIK, [illegible]

[illegible] energy impulse tension of radiation [illegible] dielectrics. In German. p. 29
ACTA PHYSICA. Budapest. Vol. [illegible], No. [illegible], 1955.

Source: East European Accessions List (EEAL), LC, Vol. 5, No. 2, February 1956

MARX, G.

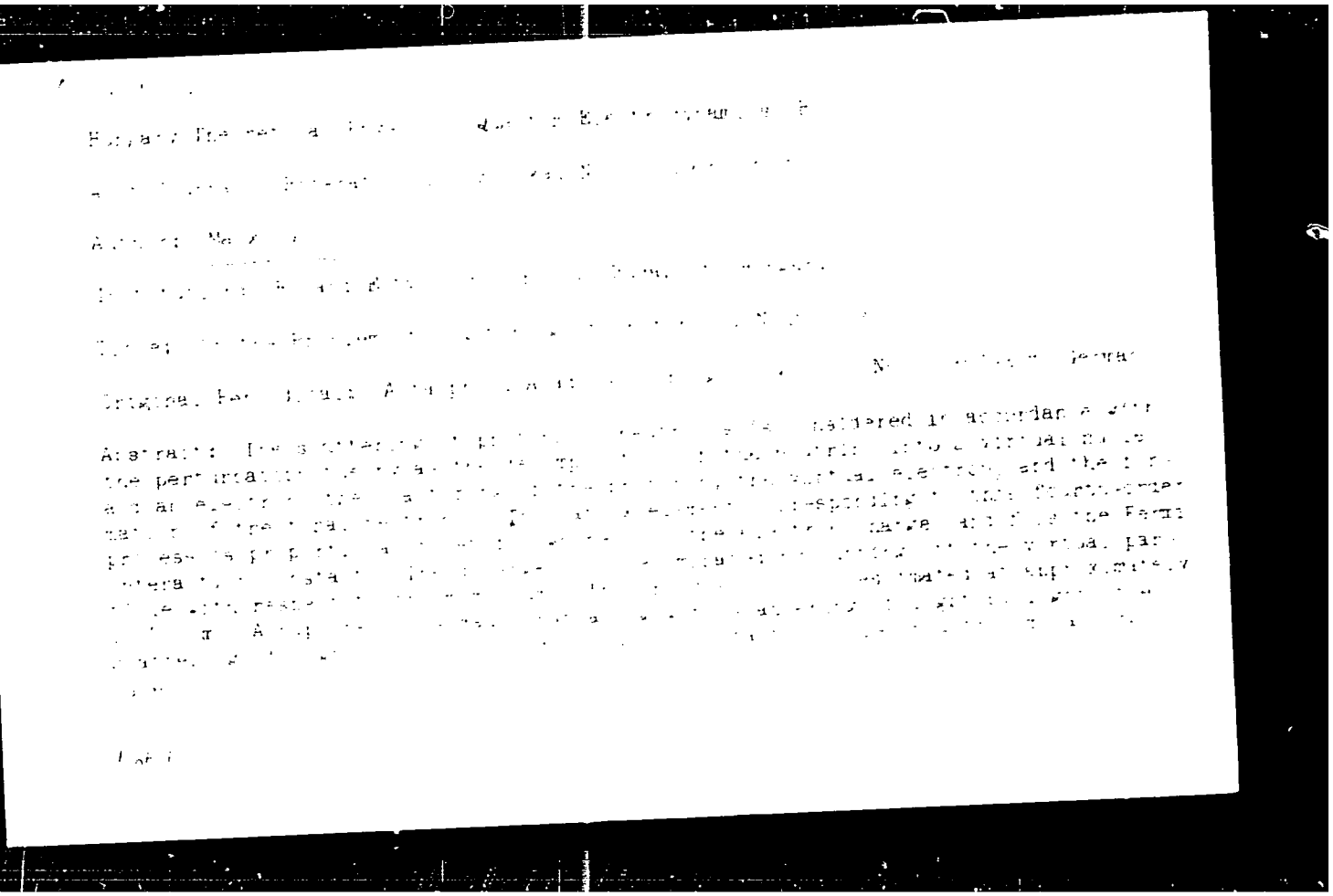
51

IRML

The surface energy of excited atomic nuclei. G. Marx and G. Szamosi (Roland-Eötvös Univ., Budapest). *Acta Phys. Acad. Sci. Hung.* 9, 189–98 (1958) (in German).—

Born and Courant's method (*C.A.* 7, 3562) for the treatment of the surface tension of fluids is applied to a calcn. of the surface energy of at. nuclei as a function of temp. The results show that the surface tension of nuclei decreases appreciably with the energy of excitation. It is suggested that this fact should be of importance in the interpretation of nuclear processes. H. H. Jaffé

NU



MARX, GY.

Open discussion about the dissertation by Lajos Keszthelyi, candidate in physics. p. 379. KOZLEMENYEI. Budapest. Vol. 5, no. 3, 1955.

SOURCE: East European Accessions List (EEAL), LC, Vol. 5, No. 2, 1956

MARK, GY.

To the memory of Albert [illegible] ... [illegible] of the shipbuilding industry of the German Democratic Republic. p. 23. March [illegible], 19[illegible], resolution of the board of the Union of the Building, Wood-[illegible], and Building Materials Industries on cooperation between the trade-union and the [illegible] organizations related to these industries. p. 24.

MUSZAKI ELET, No. [illegible], May 19[illegible]

(Muszaki es Termeszettudomanyi Egyesuletek Szovetsege, Budapest)

SOURCE: East European Accessions List [illegible] Vol. [illegible], No. [illegible] September, 19[illegible]

MARX, GY.

Composite elements of the atom. p. 453. Atomic technology. p. 458.
TERMESZET ES TARSADALOM. Budapest. Vol. 114, no. 8, Aug. 1955.

SOURCE: East European Accessions List (EEAL), LC, Vol. 5, No. 2, Feb. 1956

MARX, G.

"Relativistic [illegible]"

Published from Inst. for Theoretical Physics of Univ. of Budapest, April 1957.

In: Nuclear Physics, Vol. 4, No. 3, Dec.

POLAND Theoretical Physics [illegible] of Electrodynamics. B-5

Abs Jour : Ref Zhur - Fizika, No [illegible], 1957, 9409

Author : Marks, G.
Inst : P. Eotvos University, Budapest, Hungary
Title : Variational Principles for Dielectrics.

Orig Pub : Byul. Polsk. I V. Mat. III. 1956, 4, No [illegible], 29-35

Abstract : The author gives the variational principle of the electrodynamics of dielectrics. The first portion is devoted to the derivation of the equations of motion and the energy-momentum tensor in relativistic hydrodynamics of an ideal liquid. If one employs as the Lagrangian the simplest invariant, it is possible to obtain in the usual manner the known equations of motion; these equations can be represented in the form analogous to that given by Weyssenhoff (Referat Zhur Fizika, 1954, 11077) for the equations of motion of the scalar meson field. In the second part of the above arguments are generalized

Card 1/2

POLAND/Theoretical Physics - Classical Electrodynamics.

Abs Jour : Ref Zhur - Fizika, No 4, 1957, 8400

B-3

to include a dielectric liquid, having a certain space charge. By supplementing the Lagrangian invariance connected with the electrodynamic field, we obtain the energy-momentum tensor as a result of applying the variational method. This tensor is a covariant generalization of the Abraham tensor. The resultant tensor is examined in greater detail for the case of incompressible liquid; it is the sum of the tensor of a moving ideal liquid and the Einstein-Laub tensor for a dielectric at rest. Considering that the density of the dielectric medium is increased by the polarization energy, the author finds that the resultant expression is the sum of the tensor of the moving ideal liquid and the tensor obtained by Kluitenberg (Kluitenberg, G.A., Thesis, Rotterdam, 1954) by a thermodynamic consideration. Thus, the Abraham, Einstein-Laub, and Kluitenberg tensors are particular cases of the tensor obtained by the author.

Card 2/2

MARKS G.

Category : POLAND/Theoretical Physics - Classical Electrodynamics B-3

Abs Jour : Ref Zhur - Fizika, No 3, 1957, No 5644

Author : Marks G., Nad', K.

Inst : Roland Eotvos University, Budapest, Hungary.

Title : Concerning the Transfer of Momentum by Continuous Electromagnetic Waves in Dielectric Media.

Orig Pub : Byul. Pol'skoy AN, 1956, Otd. 3, 4, No 2, 75-77

Abstract : An analysis is given of the derivation obtained by Rubinovich (Referat Zhur Fizika, 1956, 21772), on the basis of an investigation of Abraham's energy-momentum tensor, concerning the transfer of momentum to a dielectric by the moving surfaces of the discontinuity of the electromagnetic field intensity. The discontinuity $\Delta \underline{E}$ creates in the dielectric an increment in polarization, i.e., a motion of charges. The corresponding density of polarization current is $\sum (\varepsilon - 1)/4\pi) v \cdot \Delta \underline{E}$, where v is the speed of wave propagation in the dielectric. In this case the medium should be acted upon at the point of discontinuity, by the same force as is produced in the case of the conduc-

Card : 1/2

Marx, G.

1427 THE PROBLEM OF PULSE TRANSMISSION BY DISCONTINUOUS ELECTROMAGNETIC WAVES IN DIELECTRIC MEDIA. 621.372.21 : 538.566.1

G. Marx and K. Nagy.

Bull. Acad. Polon. Sci. Cl. 3, Vol. 4, No. 2, 79-81 (1956). In German.

A. Rubinowicz (Abstr. 4629A/1955; Acta phys. Polon., Vol. 14, No. 3, 225-31, 1955) has given an expression for a field impulse derived from the integral form of the conservation law. In the case where the surface current and surface charges vanish and the surface of discontinuity is propagated with the velocity of light, then the discontinuities in electric and magnetic field strengths in a homogeneous medium have an impulsive form. The source of this phenomenon is not understood and the present paper examines the case of media with both conduction and elastically bound electrons. It is concluded that the results of Rubinowicz are consistent with the conditions in the media.

B.C. Dunn

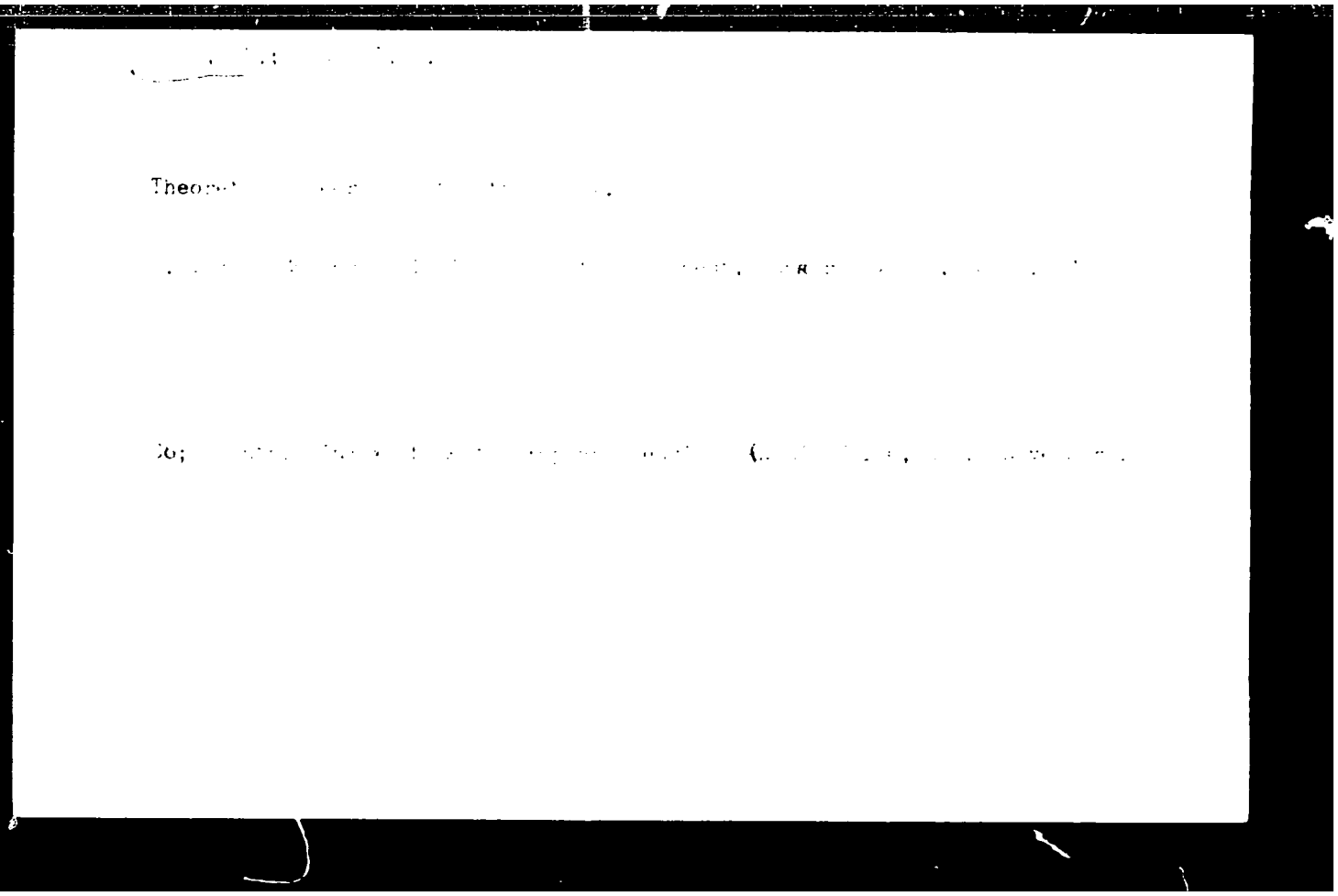
Distr: ---

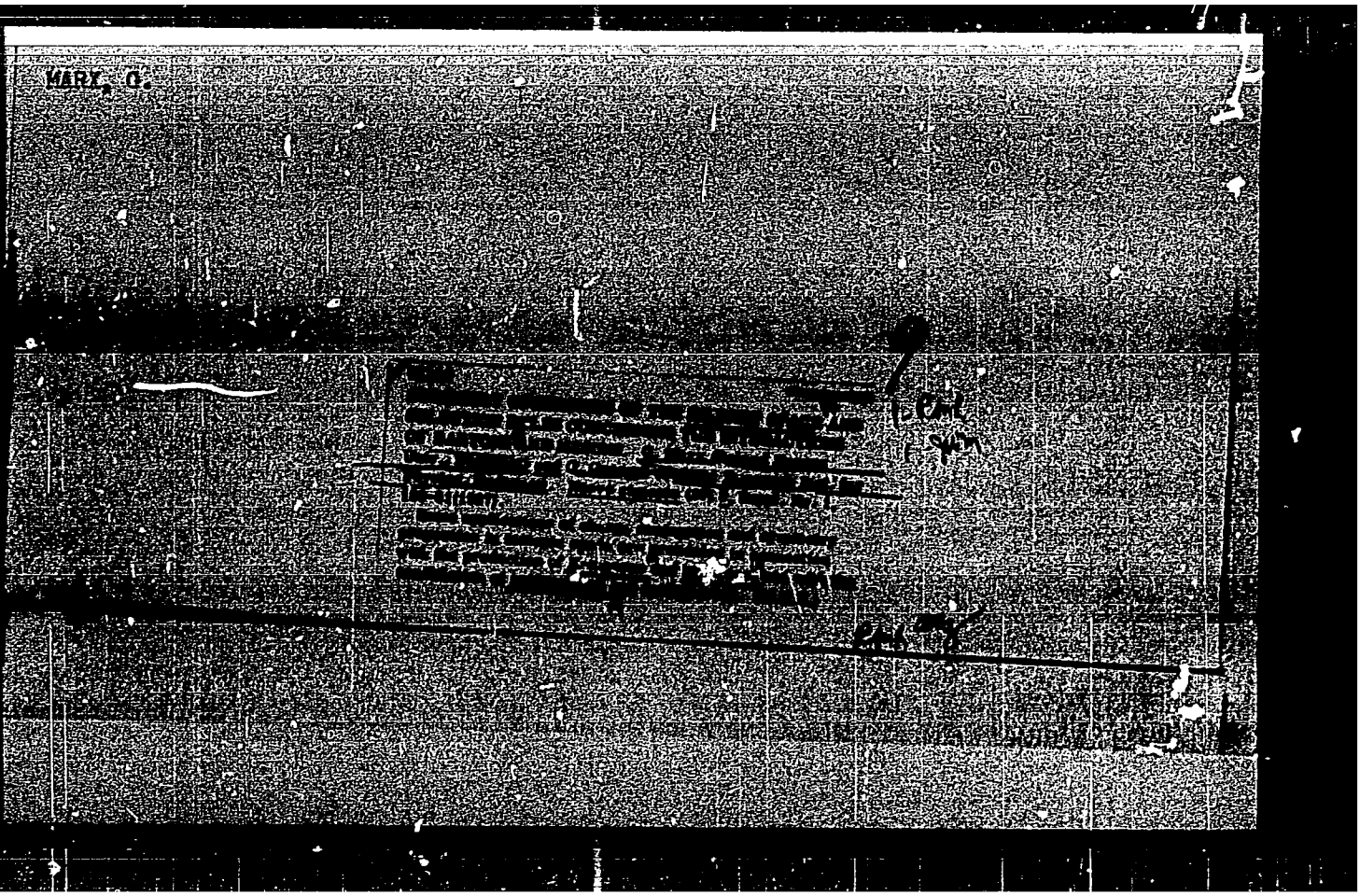
3
1

Marx, György; and Román, Pál. Energy and momentum in the general theory of fields. Magyar Tud. Akad. Mat. Fiz. Oszt. Közl. 6 (1956), 269-287. (Hungarian)

This paper contains an exposition of the different methods one can use to generate the energy-momentum tensor in field theories. These methods are based on the invariance of the Lagrangian under certain variations. 1) Hilbert's method: The invariance of the Lagrangian with respect to variations of the metric tensor gives the (symmetric) energy-momentum tensor; 2) Belinfante's method: The invariance of the Lagrangian with respect to variations which correspond to infinitesimal inhomogeneous Lorentz transformations enables us to construct a nonsymmetric canonical energy-momentum tensor which can be symmetrized, giving the energy-momentum tensor. The authors then show that the two methods generate the same energy-momentum tensor, if the system is closed (i.e., if the divergence of the energy-momentum tensor is zero); if the system is open, only method 1) can be used. Large numbers of applications are given; the authors construct the energy-momentum tensor for scalar fields, pseudo-scalar fields, spinor fields and Maxwell-fields, without and with sources.

N. L. Balazs (Chicago, Ill.)





Marx Gyorgy

HUNGARY/Theoretical Physics - Relativity. Unified Field Theory B-2

Abs Jour : Ref Zhur - Fizika, No 4, 1958, No 7564

Author : Marx Gyorgy
Inst : Not Given
Title : Relativistic Hydrodynamics

Orig Pub : Magyar fiz. folyoirat, 1957, 5, No 2, 91-104

Abstract : The author gives the fundamentals of relativistic hydrodynamics, following from the variational principle. The problem of the propagation of elastic waves is considered; the laws of motion of a charged liquid are derived. The conclusions obtained are applied to the case of motion of an electron beam.

Card : 1/1

principles of thermodynamics with the use of the Planck quantum hypothesis. It turns out that in the formation of surface tension, a great role is played by the so-called capillary waves which have a quantum character. The application

energy of evaporation of the nucleus (corresponding to a case where the surface tension equals to zero).

Card : 1/1

Distr: 4E3c/4E3d 19

5
2

15. Selectivity rules in the single-K-meson theory. G.y. MAJK. *A Magyar Tudományos Akadémia Központi Fizikai Kutató Intézetének Közleményei* (Proceedings of the Central Research Institute for Physics of the Hungarian Academy of Sciences). Vol. 5, 1957, No. 3, pp. 301—304 19

Selectivity rules for the radioactive decay of a nucleon-antinucleon pair into K mesons as well as of K mesons into π mesons have been determined. The radioactive decay of a nucleon-antinucleon pair may be suitable for deciding whether only a single type of K meson exists or whether this particle forms a K meson parity doublet.

RB
111

MARX, G.

Distr: 4A1c/4E3c/4E3d

1.4 **The theorem of the conservation of the fermion number and the principle of the minimum number of states in the theory of the neutrino.** [illegible] *Magyar Tudományos Akadémia Központi Fizikai Kutató Intézetének Közleményei* (Proceedings of the Central Research Institute for Physics of the Hungarian Academy of Sciences) Vol 5, 1957, No. 3, pp 305 - 313, 4 refs

Two simplifying principles may be introduced concerning the neutrino, the theorem of the conservation of the fermion number and the minimum condition for the number of the possible states of elementary particles. Among the "classical" neutrino theories the first has been accepted by the Fermi theory, the second being adopted by the Majorana theory. After dispensing with the law of the conservation of parity both principles may be applied simultaneously as can be seen from the Landau theory. The possibility of applying both principles for the decay of μ mesons and other particles is investigated.

MARX

MARX, Gyorgy

Elements of quantum physics. Pt. 2. Fiz szemle [illegible]
62-73 Ap-Je '57.

1. Egyetemi Elmeleti Fizikai Intezet, Budapest; Kozponti Fizikai Kutato Intezet Atomfizikai Osztalya; "Fizikai Szemle" szerkeszto bizottsagi tagja.

MARX, Gyorgy

Elements of quantum physics, pt.3. Fiz szemle 7 [illegible] – 128 Ag '57.

[illegible] Egyetemi Elmeleti [illegible] Intezet, Budapest; Kozponti Fizikai Kutato Intezet Atomfizikai osztalya, "Fizikai Szemle" szerkeszto bizottsagi tagja.

MARX, Gyorgy

Symposium on the physics of elementary particles. Fiz szemle 7 no.4:113-13; Ap '57.

1. Egyetemi Elmeleti Fizikai Intezet, Budapest, Kozponti Fizikai Kutato Intezet Szilardtestfizikai Osztalya, "Fizikai Szemle" szerkeszto bizottsagi tagja.

MARX, Gyorgy

The Arend-Roland comet. Fiz szemle [illegible] 1957.

1. Egyetemi Elmeleti Fizikai Intézet, Magyar Fizikai Kutató Intézet Atomfizikai Osztálya. "Fizikai szemle" szerkesztő bizottsági tagja.

MARX, Gyorgy

Geographos, a new planetoid. Fiz szemle 7 no.4:137 Ap '57.

1. Egyetemi Elmeleti Fizikai Intezet, Kozponti Fizikai Kutato Intezet Atomfizikai Csoport, "Fizikai Szemle" szerkeszto bizottsagi tagja.

MARX, Gyorgy

Miniature atomic plant. Fiz szemle 7 no.4:135 Ag '57.

1. Egyetemi Elmeleti Fizikai Intezet, Kozponti Fizikai Kutato Intezet Atomfizikai Osztalya, "Fizikai Szemle" szerkeszto bizottsagi tagja.

HUNGARY/Nuclear Physics - Elementary Particles C-3

Abs Jour : Ref Zhur - Fizika, No 11, 1958, No 24643

Author : Marx G.
Inst : R. Eotvos University, Central Research Institute of Physics, Budapest, Hungary
Title : Selection Rules in the One K-Meson Theory

Orig Pub : Acta phys. Acad. sci. hung., 1957, 7, No 4, 469-472

Abstract : The author examines certain selection rules, which occur in the annihilation of a found nucleon-antinucleon system (nucleonium state with formation of and K mesons). He next investigated the decay of neutral K mesons with allowance for the conservation of combined parity.

Card : 1/1

HUNGARY/Theoretical Physics - Quantum Mechanics B-4

Abs Jour : Ref Zhur - Fizika, No 9, 1958, No 19761

Author : Marx Gyorgy
Inst : Not Given
Title : Does Nature Have a Mirror Symmetry?

Orig Pub : Fiz. szemle, 1957, 7, No 5, 156-164

Abstract : Survey article, devoted to the problem of non-conservation of parity. The work of Yang and Lee is discussed along with experimental results that confirm non-conservation of parity in weak interactions, and the hypothesis of the two-component neutrino. Theoretical consequences of non-conservation of parity are discussed.

Card : 1/1

Abs Jour : Ref Zhur - Fizika, No 4, 1959, No 9153

Author : Marx Gyorgy
Inst : -
Title : Unsolved Problems in the Theory of β Decay

Orig Pub : Magyar fiz. folyoirat, 1958, 6, No 3, 261-272

Abstract : No abstract

Card : 1/1

MARX, Gy.

11. On the wave equation of the second order of fermions. Gy. Marx. *A Magyar Tudományos Akadémia Központi Fizikai Kutató Intézete-k Közleményei* (Proceedings of the Central Research Institute for Physics of the Hungarian Academy of Sciences), Vol. 6, 1958, No. 3, pp. 384–396.

Detailed studies according to Feynman were conducted on some problems relating to the description of the spinor fields by a wave equation of the second order, *e. g.* on those of interactions. The possibility of representing the iso-doublet fermions by a four-component spinor is presented. This facilitates the formulation of the commutation law and may serve as a model for the invariance properties of the Heisenberg equation.

HUNGARY/Theoretical Physics - Quantum Theory of Fields. B-

Abs Jour : Ref Zhur Fizika, No 3, 1967 5068

Auth : Marx Gyorgy
Inst : -
Title : Fundamental Theorem of Continuous Transformations in Quantum Theory

Orig Pub : Magyar tud. akad. kozp fiz. kutato int. kozl., 1958, 6, No 5, 397-407, VII

Abstract : Starting out with the field equations and the commutation relations, the author constructs a unitary operator, which is the generating function of symmetry transformations in Hilbert space. The sequency of the author's arguments is the opposite of that used by Schwinger in the covariant formulation of quantum theory: this eliminates certain inconsistancies in the preceeding analysis.

Card 1/1

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MARX, Gyorgy

"Blue Books"; physics series published by Muszaki Konyvkiado.
Fiz szemle 8 no.1:30 Ja '58.

1. "Fizikai Szemle" foszerkesztoje.

MARX, Gyorgy

Catalog of data on X-ray diffraction issued by the American Society for Testing Materials. Fiz szemle 8 no.2:68 F'58

1. "Fizikai Szemle" Foszerkesztoje.

MARY, GY.

FIZIKAI SZEMLE. (Eotvos Lorand Fizikai Tarsulat) Budapest

New trends in research in elementary particles. p. 240

Vol. 8, No. 8, Oct. 1958

Monthly List of East European Acessions (EEAI), LC, Vol. 8, No. 3, March 1959
Unclass.

MARX, Gyorgy

Neutrino. Fiz szemle 9 no.6:167-175 Je '59.

1. Eotvos Lorand Tudomanyegyetem Elmeleti Fizikai Intezete, es "Fizikai Szemle" foszerkesztoje.

MARX, Gyorgy

Catalyzing amalgamation by π^--meson. Fiz szemle 9 no.7:4 of cover Jl '59.

The largest accelerators. Fiz szemle 9 no.7:4 of cover Jl '59.

1. "Fizikai Szemle" fosszerkesztoje.

MARX, Gyorgy

Five-million atmospheric pressure. Fiz szemle v. no.10:4 of cover O '59.

1. "Fizikai Szemle" foszerkesztoje.

MARX, Gyorgy

Large-size bubble chamber. Fiz szemle 9 no.10:4 of cover '59.

1. "Fizikai Szemle" foszerkesztoje.

KAROLYHAZY, F.; MARX, G.

Strong interactions of the four-dimensional isotopic space. In English.
Acta phys.Hung. 10 no.4:421-428 '59. (MIRAI 9:4)

1. Institute for Theoretical Physics of the Roland Eotvos University, Budapest.
(Mesons) (Nucleons)

MARX, Gyorgy, dr., Kossuth-[illegible]as, [illegible] fizikai tudomanyok [illegible] Budapest

New heavy elementary particles. Term tud kozl [illegible]

[illegible] '60

MARX, Gyorgy

The famous classic equation of motion of the electron. Magy fiz folyoir 8 no.3:247-254 '60. (EEAI 10:1)

1. Eotvos Lorand Tudomanyegyetem Elmeleti Fizikai Intezete.
(Electrons)

MARX, Gyorgy; MENYHARD, Nora

On the possibility of neutrino astronomy. Magy fiz folyoir 8 no.6: 507-517 '60. (EEAI 10:5)

1. Eotvos Lorand Tudomanyegyetem Elmeleti Fizikai Intezete (for Marx). 2. Magyar Tudomanyos Akademia Kozponti Fizikai Kutato Intezete (for Menyhard).
(Neutrinos) (Astronomy)

MARX, Gyorgy

Reflection of radio waves from Venus. Fiz szemle 10 no.1:32 Ja '60.

1. "Fizikai Szemle" foszerkesztoje.

MARX, Gyorgy

The validity limit of quantum electrodynamics. Fiz szemle 10 no.1: 32 Ja '60.

1. "Fizikai Szemle" foszerkesztoje.

MARX, Gyorgy

"The work of Einstein and its effect upon our age" by Leopold Infeld. Reviewed by Gyorgy Marx. Fiz szemle 10 no.4:125 Ap '60.

1. "Fizikai Szemle" fosszerkesztoje.

MARX, Gyorgy

Solar energy. Fiz szemle 10 no.4:127 Ap '60.

1. "Fizikai Szemle" fosszerkesztoje.

MARX, Gyorgy

Reactor forming high neutron density. Fiz szemle 10 no.4:128 Ap '60.

1. "Fizikai Szemle" foszerkesztoje.

MARX, Gyorgy

"Csillagaszati evkonyv, 1960". Reviewed by Gyorgy Marx. Fiz szemle 10 no.5:159 My '60.

1. "Fizikai Szemle" foszerkesztoje.

MARX, Gyorgy

Antigravitation? Fiz szemle 10 no.6:163-165 Je '60.

1. "Fizikai Szemle" foszerkesztoje.

MARX, Gyorgy

Discovery of the anti-Σ-plus hyperon. Fiz szemle 10 no.6:192 Je '60.

1. "Fizikai Szemle" foszerkesztoje.

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H/016/60/010/07/03/009
B009/B064

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AUTHORS: Marx, György, Szabó, János

TITLE: The Possibility of the Photon Rocket

PERIODICAL: Fizikai Szemle, 1960, Vol. 10, No. 7, pp. 206 - 213

TEXT: The time it takes to cover a distance x measured in the space vehicle is computed with $t_o = \frac{x}{v}\sqrt{1-v^2/c^2}$ from the Lorenz transformation formula. This time could be reduced arbitrarily to the same extent to which the velocity of the space vehicle approaches the velocity of light: $v \longrightarrow c$. The mass ratio for a given launching speed w of the rocket, which is necessary to attain the velocity v is derived from the principle of conservation of momentum. $m(0)/m(t) = e^{v/w}$, where m(0) is the mass of the rocket at the beginning, and m(t) its mass at the instant t. In the case of a chemical propulsion, w is set equal to 3 km/sec, where-from $m(0)/m(t) = 10^{50,000}$ would result; an approach to the velocity of light can therefore not be reached in this way. In the case of the thermal

Card 1/3

The Possibility of the Photon Rocket

H/016/60/010/07/03/009
B009/B064

rocket with atomic propulsion, a mass ratio of $m(0)/m(t) = 10^{11}$ seems to be attainable. Plasma- and ionic propulsion promise higher w-values as compared to chemical combustion. The problems of mass and thrust have, however, not yet been solved, not even on principle. The photon rocket would mean the ideal solution of the problem; the discharge of matter could take place in the form of magnetic radiation with light velocity. The diagram of Eugen Sänger (Fig. 4) shows the attainable distances and velocities. A problem that is still unsolved is the direction of radiation which is necessary to obtain the required thrust; the usual metal mirrors are not suited for this purpose. Even the most concentrated nuclear substances (uranium, heavy hydrogen) permit only the transformation of some thousandths into radiation energy which is due to the general conservation theorem of the baryon charge. Herefrom it follows that the photon rocket can work only with such a fuel at a permissible mass ratio, that has no positive baryon charge. This would be a combination of 50 % of nucleons and 50 % of antinucleons. The production and storage of the latter is, at present, technically unrealizable. Frigyes Károlyházi suggested to utilize the fusion energy of interstellar matter (mainly hydrogen), without the necessity of

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The Possibility of the Photon Rocket

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B009/B064

accelerating it to the velocity of the rocket. However, this suggestion will meet with considerable difficulties, since ordinary hydrogen is a difficultly "inflammable" fusion fuel. There are 7 figures and 1 table.

ASSOCIATION: Eötvös Loránd Tudományegyetem, Elméleti Fizikai Intézet, Budapest (Loránd Eötvös University, Institute of Theoretical Physics, Budapest)

Card 3/3

MARX, Gyorgy

"Microphysics" by Imre Fenyes and Miklos Nagy. Reviewed by Gyorgy Marx. Fiz szemle 10 no.7:222-223 Jl '60.

1. Eotvos Lorand Tudomanyegyetem Elmeleti Fizikai Intezete, Budapest, es "Fizikai Szemle" foszerkesztoje.

MARX, Gyorgy

Max Laue, 1879-1960; obituary. Fiz szemle 10 no.8:227-228 Ag '60.

1. Eotvos Lorand Tudomanyegyetem Elmeleti Fizikai Intezete, es "Fizikai Szemle" foszerkesztoje.

MARX, Gyorgy

Conservation of electric charges. Fiz szemle 10 no.8:255 Ag '60.

1. Eotvos Lorand Tudomanyegyetem Elmeleti Fizikai Intezete, Budapest, es "Fizikai Szemle" szerkeszto bizottsagi tagja.

MARX, Gyorgy

Newer results of astronautical experiments. Fiz szemle 10 no.8:256 Ag '60.

1. Eotvos Lorand Tudomanyegyetem Elmeleti Fizikai Intezete, Budapest, es "Fizikai Szemle" foszerkesztoje.

MARX, Gyorgy

Gravitational waves. Fiz szemle 10 no.8:256 Ag '60.

1. Eotvos Lorand Tudomanyegyetem Elmeleti Fizikai Intezete, Budapest, es "Fizikai Szemle" foszerkesztoje.

MARX, Gyorgy .

"The son of the witch" by Rosemarie Schuder. Reviewed by Gyorgy Marx.
Fiz szemle 10 no.9:289 S '60.

1. "Fizikai Szemle" foszerkesztoje.

85[illegible]

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6.4700

AUTHOR: Marx, György

TITLE: Messages From the Universe

PERIODICAL: Fizikai Szemle, 1960, Vol 10, No 11, pp 345-347

TEXT: On the basis of investigations of Polish, Chinese and American researchers, the author examines the physical conditions of life development in the universe and the possibilities of telecommunication with intelligent creatures living on celestial bodies. The development of intelligent creatures seems possible on a planet orbiting in the astronomical biosphere of an average temperature between the boiling and the freezing point of water where several billions of undisturbed years have been available for the development of life. Such stability is only possible in the environs of stars whose source of energy is the H→He-synthesis. Of 40 stars within a distance of 17 light years from the earth, only two satisfy these physical conditions, and of these the τCeti is most promising at a distance of 10.8 light years. Radiocommunications with inhabitants of planets of such stars, who are of similar or

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Messages From the Universe

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B009/B057

superior intelligence relative to Man, appears possible MASERS (microwave amplification by stimulated emission of radiation) eliminate the instrumental noise of senders Decimeter waves of strongly narrowed down frequency band are recommended A receiver named "OZMA" is under construction. Otto Struve plans to send periodical signals through the radiotelescope of Greenbanks to some stars chosen hoping that reply would come back after some decades Another problem is how to pick out a frequency band that the supposed stellar radio operators are using A sensible idea is to choose the 21 cm wave corresponding to a very sharp spectral line of the H-atom, which is being intensively studied by radio astronomers Finally, what code is to be used? One proposal is Morse signals of the first prime numbers Maybe, in 21 years answer will come from the τ Ceti, perhaps digits of π in the binary system

Card 2/2

MARX, G.; NAGY, K.L.

The problem of the "anomalous" mass of muons. Acta phys Hung 11 no.2: 161-176 '60. (EEAI 9:10)

1. Institute for Theoretical Physics of the Roland Eotvos University, Budapest. Presented by K.F.Novobatzky.
(Mesons) (Muons)

MARX, G.; ELKISHEM, M.

Absorption of high energy neutrinos. Acta phys Hung 12 no.3:257-262 '60. (EEAI 10:5)

1. Institute for Theoretical Physics, Roland Eotvos University, Budapest.
(Neutrinos) (Fermions)

MARX, Gyorgy

A new antihyperon was discovered. Musz elet 15 no.8:3 Ap '60. (EEAI 9:8)

(Antihyperons)

MARX, Gyorgy

Discovery of the third hyperon. Musz elet 15 no.10:23 My '60.
(Mesons) (EEAI 9:8)

Marx, Georg

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Cosmic neutrino radiation. Georg Marx and Nora Ménybérd (Roland Eötvös Univ., Budapest, Hung.). *Science* 131, 299–300 (1960).—Cosmic neutrino flux can eventually be detected (Reines and Cowan, *CA* 50, 12044e) as well as neutrinos and antineutrinos from nuclear reactors. For cosmic neutrino radiation, however, new and more efficient ways are necessary to get rid of background intensity, so that neutrino astronomy could arise as a powerful science tool. A solar reaction $Be^7(p,\gamma)B^8(e^+,\nu)$ (further $B^8(\beta^+\nu)$-$Be^8(\alpha)\alpha$) delivers neutrinos with 14.1 m.e.v. The capture cross section of these is $\sigma = 2 \times 10^{-[illegible]}$ sq. cm. with the high detection rate $3\nu \sim 8 \times 10^{-[illegible]}$ ν/sec. Similar data are valid for antimatter in distant suns yielding antineutrinos which can be distinguished from neutrinos, whereas the light (photons) from these suns is indistinguishable from other light. Because of the small capture cross section, the mean free neutrino path is about $10^{[illegible]}$ light yr. (for the antineutrino somewhat less). Events $10^{[illegible]}$ light yr. distant and $10^{[illegible]}$ yr. old could be observed in a neutrino telescope. A neutrino flux of $3 \sim 10^{[illegible]}$ ν/sq. cm. sec. is to be expected, if heavy nuclei in the universe have gradually condensed from protons and very few antineutrinos; an antineutrino flux 100 times higher than this neutrino flux would exist, if the birth of heavy nuclei has taken place early in a compressed state of the expanding universe and then also a similarly still much higher neutrino flux. A possible method of construction of a neutrino telescope is discussed. Manfred [illegible]

4

MARX, Gyorgy

Measuring units - with the eyes of a physicist. Fiz szemle 11 no.3:67-74 Mr '61.

1. ELTE Elmeleti Fizikai Intezete.

MARKS, G.[Marx, Gyorgy], doktor fiz. nauk; TOT, Bela[Toth, Bela, translator]; ERDI, K., red.; LOMZADZE, Yu.M., nauchnyy red. perevoda; KHUT, I.[Hut, I.], tekhn. red.

[Introduction to quantum mechanics] Vvedenie v kvantovuiu mekhaniku. Perer. i dop. izd. Budapest, Izd-vo Akad. nauk Vengrii, 1962. 346 p. Translated from the Hungarian. (MIRA 15:7)

1. Budapeshtskiy universitet (for Marks). 2. Uzhgorodskiy gosudarstvennyy universitet (for Lomzadze).
(Quantum theory)

L 1692-66 FBD/EWP(m)/FS(v)-3/EEC(k)-2 TT

ACCESSION NR: AT5013656 HU/0000/62/000/000/0007/0032

AUTHOR: Marx, Gyorgy (Kossuth prize winner, Doctor of physical sciences, Doctor)

35
34
B+1

TITLE: Beyond the frontiers of the solar system

SOURCE: Az urrepules es a tudomany; tanuimanyok az urrepules fiziki, technikai, csillagaszati, elettani es jogi problemairol (Space flights and science; articles on flight physics, technology, astronomy, biology, and legal problems), Budapest, MK, 1962, 7-32

TOPIC TAGS: space flight, extraterrestrial intelligence, extraterrestrial life possibility

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ABSTRACT: Some aspects of space travel, life on celestial bodies other than the Earth, and means for communicating with extraterrestrial beings are discussed in a general manner. It is considered unlikely that intelligent beings live anywhere else in the solar system. The criteria for the potential development of human-type life on celestial bodies are relatively narrow (although a great number of such bodies would qualify within the known Universe); it is shown that planets revolving in relatively close orbits around solitary yellow stars are most likely to harbor such life. With the technological means presently available or foreseeable, man

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ACCESSION NR: AT5013656

cannot hope to reach such planets. Limitations in attainable velocity, the brevity of man's life-span, and unavailability of appropriate propulsion systems represent the principal obstacles. For the distant future, the use of photon- or antimatter-rockets for this purpose can be speculated on. Communication with intelligent beings on other celestial bodies is feasible by means of radio and laser waves. Provided that a large number of conditions are simultaneously fulfilled, such communication could shortly be established.

ASSOCIATION: METESZ Kozponti Asztronautikai Szakosztalya (Central Department for Astronautics, METESZ)

SUBMITTED: 00 ENCL: 00 SUB CODE: LS, SV

NO REF SOV: 000 OTHER: 000

Card 2/2 BT

MARX, Gyorgy

Current views on the problem of nuclear forces. Fiz szemle 12 no.4:101-111 Ap '62.

1. Eotvos Lorand Tudomanyegyetem Elmeleti Fizikai Intezete, Budapest, es "Fizikai Szemle" foszerkesztoje.

MARX, Gyorgy

Lev Davidovich Landau, the 1962 Nobel-prize winner in physics.
Fiz szemle 12 no.12:374-376 D '62.

1. "Fizikai Szemle" Foszerkesztoje; Eotvos Lorand Tudomanyegyetem Elmeleti Fizikai Intezete, Budapest.

MARX, G.

A model with superconducting solution in quantum field theory.
Acta phys Hung 14 no.1:27-38 '62.

1. Institute of Theoretical Physics, Roland Eotvos University, Budapest. Presented by K.F. Novobatzky.

MARX, Gyorgy, dr., [illegible]
doktora (Bud[illegible]

Antiparticles. Pt.1. Term Fiz Kozl [illegible] no.12:531-533 D '63.

MARX, Gyorgy

Neutrino astronomy. Fiz szemle 13 no.1:13-20 Ja '63.

1. Eotvos Lorand Tudomanyegyetem Elmeleti Fizikai Intezete, Budapest; "Fizikai Szemle" foszerkesztoje.

CHEN SHI; MARX, G. [Marx, Gyorgy]

Pion decay and the anomalous interaction of muons. Acta phys Hung 15 no.3:251-255 '63.

1. Institute of Theoretical Physics, Roland Eotvos University, Budapest. 2. Now in Peking, at the Academica Sinica (for Chen Shi).

MARX, Gyorgy

Will the manned interstellar flight become a reality?
Fiz szemel 14 no. 3:83-90 Mr '64.

1. Eotvos Lorand Tudomanyegyetem Elmeleti Fizikai Intezete;
"Fizikai Szemle" foszerkeszto e.

KUTI, G.; MAFX, G.

Model with superconducting solution in quantum field theory II. Acta phys Hung 17 no.1/2:125-155 '64.

1. Institute of Theoretical Physics, Lorand Eotvos University, Budapest. Presented by Z.Gyulai.

FODOR, L.; KOVESY, Zs.; MARX, G.

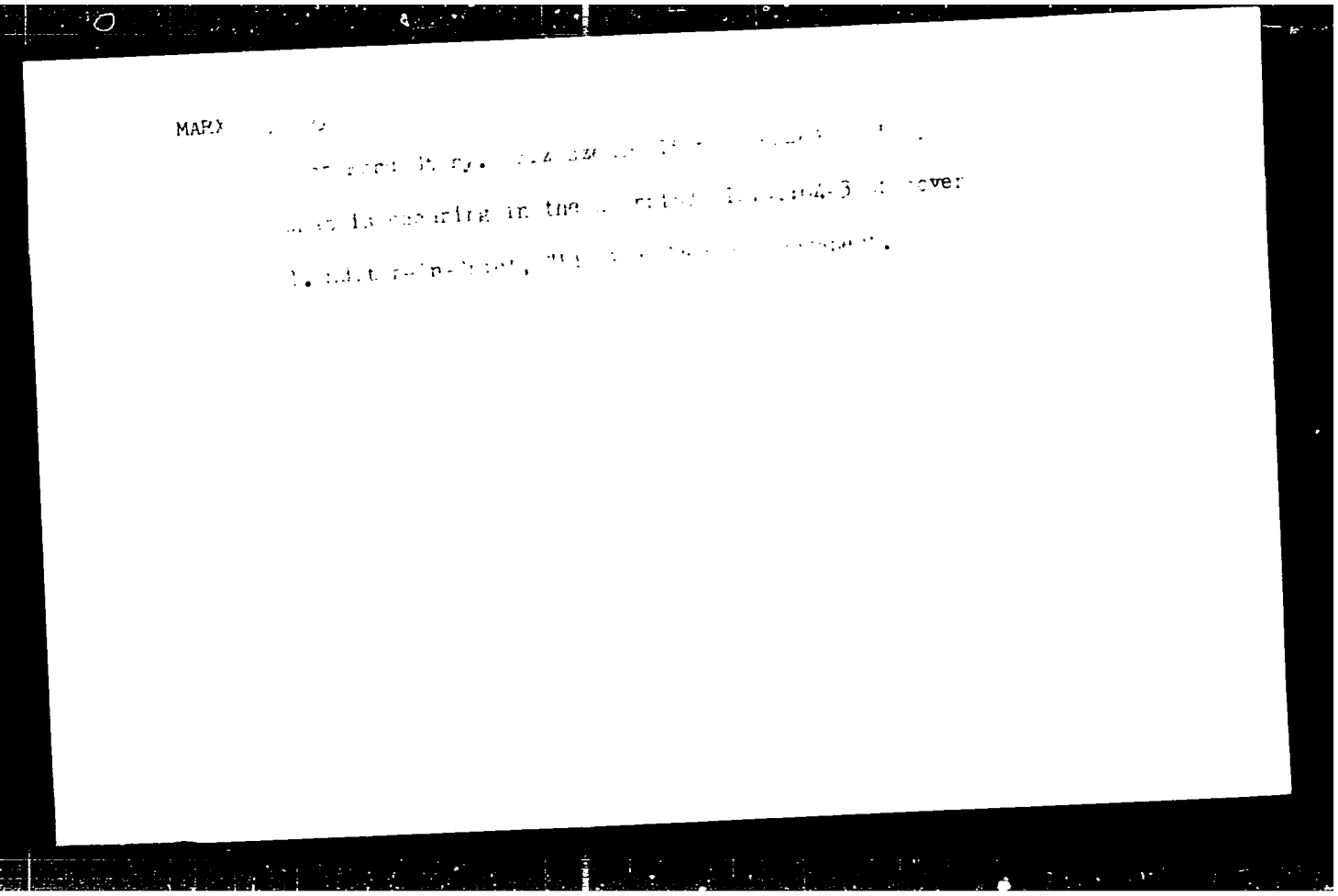
Interstellar neutrino density and cosmogony. Acta phys hung 17 no.1/2:171-183 '64.

1. Institute of Theoretical Physics, Lorand Eotvos University, Budapest (for Marx). 2. Astronomical Observatory of the Hungarian Academy of Sciences, Budapest-Szabadsaghegy (for Fodor). 3. Central Research Institute of Physics, Hungarian Academy of Sciences, Budapest (for Kovesy).

MARX, Gyorgy; NEMETH, J

Pressure in a relativistically degenerated fermion gas with scalar interaction Acta phys Hung 18 no.1:77-82 '64.

1. Institute of Theoretical Physics of Lorand Eotvos University, Budapest Submitted March 23, 1964.



MARY

ACC NR: AP6026459 SOURCE CODE: PO/0009/66/016/001/0081/0092

AUTHOR: Marx, S.; Pfau, W.

ORG: none

TITLE: Optical tests of the new 24/36 in. telescope of the Jena University Observatory

SOURCE: Acta astronomica, v. 16, no. 1, 1966, 81-92

TOPIC TAGS: telescope, optic system, optics/24/36 telescope

ABSTRACT: The two optical systems (the Schmidt and the Quasi-[illegible]egrain systems) of the new 24/36-in. telescope were investigated by the modified Hartmann method. A brief account of this method is given and computations were made for spherical aberration, Hartmann constant, astigmatism, aberration of waves, and concentration of light. The authors thank H. G. Beck, Head of the Astronomical Department of the VEB Carl Zeiss, Jena, for supporting this work and particularly for his permission to use the device for measuring coordinates in his department. They also thank G. Fehlkamm of the Astronomical Department of the VEB Carl Zeiss, for placing the computer program at their disposal and

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ACC NR: AP6026459

supervising the computations by the electronic computer. They also express thanks to R. Sander for his assistance during the observations and to R. Schielicke for measuring the plates. Orig. art. has: 2 tables and 7 figures. [Based on authors' abstract]

SUB CODE: 03/SUBM DATE: none/ORIG REF: 008/OTH REF: 002/

Card 2/2

MARX, H.

"On relationships of sex hormones to calcium exchange and to bone marrow. (German translation)" (p. 177) by Arnold, C.; Holtz, F.; and Marx, H.:

SO: Advances in Contemporary Biology (Uspekhi Sovremennoi Biologii) Vol. VI, No. 1 1937

MARX, J.

Proposed strong interactions of [illegible] J. Marx and [illegible] L. [illegible] [illegible] 12, 125-32 [illegible] — The existence of a moderately strong universal interaction between baryons-K mesons and muons K mesons was assumed to explain the anomalously large mass of muons. The interaction also gives rise to several other effects, e.g., to a short-range strong singular muon-nucleon potential. These effects do not seem to contradict the expts. [illegible]rman B. Pick[illegible]

MARX, J.

[illegible]

1. Valenske [illegible]

MARX, V.F.

Hypertrophy of the pylorus in adult. Cesk. rentg. 9 no.4:171-176 Nov 55.

1. Z roentgenoveho oddeleni statniho sanatoria v Praze
(PYLORUS, diseases,
hypertrophy, x-ray & surg. diag.)
(HYPERTROPHY AND HYPERPLASIA,
phylorus, x-ray & surg. diag.)

MARKEN KAZIMIERA

BOGUSLAWSKA, Halina; MARKEN, Kazimiera

Mental disorders in encephalitis of infectious origin. Neurologia etc.polska 4 no.3:299-305 May-June 54.

1. Panstwowy Szpital dlia Nerwowo i Psychicznie Chorych w Lublincu. Dyrektor: dr E.Cyran.

(ENCEPHALITIS, EPIDEMIC, complications, ment. disord.)
(MENTAL DISORDERS, etiology and pathogenesis, encephalitis, epidem.)

MARKEN-LADZINSKA, Maria; LADZINSKI, Kazimierz

Fulminating course in a case of spinal leptomeningeal sarcomatosis. Neurologia etc. polska 11 no.1:61-68 Ja-F '61.

1. Z Zakladu Neuropatologii Polskiej Akademii Nauk i z Kliniki Neurochirurgicznej AM w Krakowie Kierownik: prof. dr A. Kunicki.

(MENINGIOMA case reports) (PIA MATER neopl)

Czechoslovakia/Analytical Chemistry - Analysis of Inorganic Substances, G-2

Abst Journal: Referat Zhur - Khimiya, No [illegible], 1957, 12[illegible]

Author: Marxova, I., and Zyka, J.

Institution: None

Title: Hydrazine Sulfate as a Reagent in Volumetric Analysis (Hydrazinometry). VI. A New Volumetric Determination of Nitrites Applicable to the Control of Medicinal Compounds

Original Periodical: Ceskosl. farmac., 1956, Vol 5, No 4, 210-221 (published in Czech with summaries in German, English, and Russian)

Abstract: The determination of nitrites is based on the reaction $N_2H_4 + 2HNO_2 \rightleftharpoons N_2 + N_2O + 3H_2O$ which proceeds quantitatively in acid solution (5-10% HCl). Three to 5 ml of 0.005 M hydrazine sulfate solution are diluted to ~30 ml with ~10% hydrochloric acid and titrated potentiometrically with ~0.01 M solution of the nitrite to be determined. At the equivalent point a considerable variation in potential is observed (~300 mv). It is thus possible to make a quick determination

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