SUDAKOV, V.V.; LANDAU L.D., akademik.

Isotopic-invariant theory of β-decay. Dokl. AN SSSR 90 no.6:1009-1010

Je '53. (MLHA 6:6)

1. Akademiya nauk SSSR (for Landau).

(Nuclear physics)

SHEVELEV, Ya.V.; LANDAU, L.D., akademik

Poiseuille's flow in nonsymmetrical radial clearance; analogy with the torsion of beams. Dokl. AN SSSR 91 no.1:35-38 Jl '53. (MLRA 6:6)

1. Akademiya nauk SSSR (for Landau) (Fluid mechanics)

LIPSHITS, I.M.; KOSEVICH, A.M.; LANDAU, L.D., akademik.

On the theory of magnetic susceptibility of thin metal layers at low temperatures. Dokl.AN SSSR 91 no.4:795-798 Ag '53. (MERA 6:8)

1. Akademiya nauk SSSR (for Landsu). 2, Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (for Lifshits and Kosevich). 3. Khar'kov-skiy gosudarstvennyy universitet im. A. M. Gor'kogo (for Lifshits and Kosevich).

(Magnetism) (Metals at low temperatures)

AKHIYEZER, A.; ALEKSIN, V.; LANDAU, L.D., akademik.

Market British of the second property of the second of the con-

Magnetization time in weak solutions of He³ in He⁴. Dokl.AF SSSE 92 no.2:259-262 S '53. (MIRA 6:9)

1. Akademiya nauk SSSR (for Landau). 2. Fiziko-tekhnicheskiy institut Akademii nauk Ukrayinskoy SSR, Khar'kov (for Akhiyezer and Aleksin).

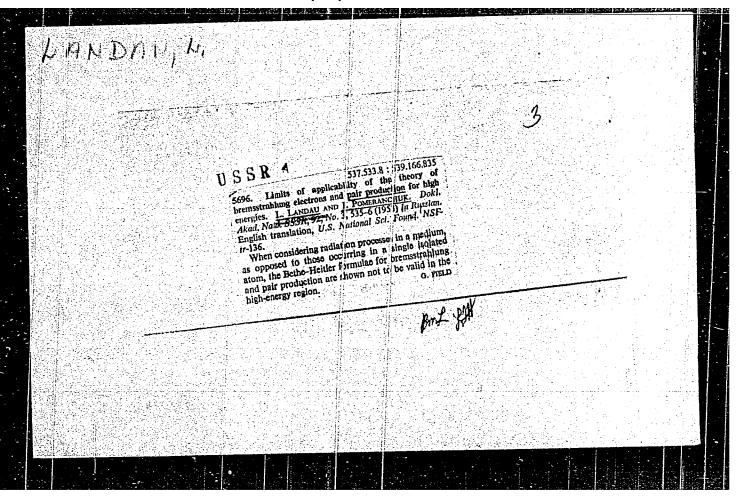
(Helium-Isotopes) (Magnetism)

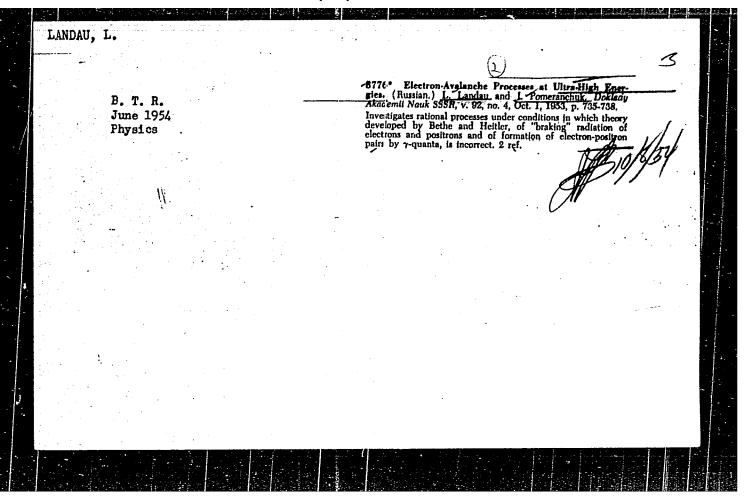
BERESTETSKIY, V.B.; LANDAU, L.D., akademik.

Decay into 3 Theeons and the hypothesis of isotopic invariance. Dokl.AN SSSR 92 no.3:519-521 S '53. (MLHA 6:9)

1. Akademiya nauk SSSR (for Landau). (Mesons) (Isotopes)

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R000928510019-6





RUDNIK, A.; LANDAU, L.D., akademik.

Capture of p-mesons by deuterons. Dokl. AN SSSR 92 no. 4:739-742 0 '53.

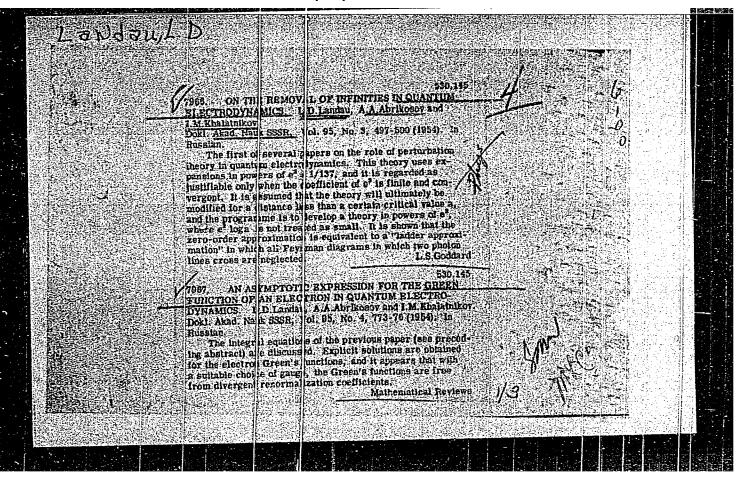
(MIGA 6:9)

1. Akademiya nauk SSSR (for Landau). (Mesons) (Deuterons)

IANDAU, L.D.; LIFSHITS, Ye.M.; ALEKSKYEV, D.M., redaktor; TUMARKINA, N.A.,
tekhnicheskiy redsktor

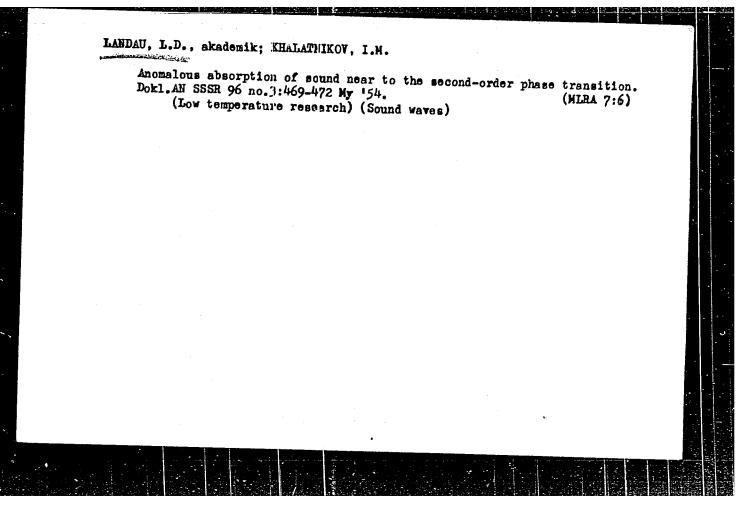
[Mechanics of continuous media] Mekhanika sploshnykh sred. Izd.
2-oe, perer. i dop. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry,
1954. 795 p.

(Elasticity) (Hydrodynamics)



Card 1/1	- Quant. electrodynamics
Authora	: Landau, L. D., Academician; Abrikosov, A. A., Khalatnikov, I. M.
Ticle	* Asymptotic expression of the Green photon function in quantum electrodynamics.
Periodical	Reports of the Acad. of Scs. of the USSR 95, 6, 1177 - 1180, 21 Apr 1954
Abstract	: An asymptotic expression for the Green photon function (D, v) used in quantum electrodynamics is derived. The article contains a diagram.
Institution	* Acad. of Scs. of the USSR
Submitted	\$ 25 Peb 1954
	[발표] 등로 가는 중에 되고 있다. 는 시간 보면 이 등 경찰에 걸려진 하는 다른 모든 보다 함께 보다.

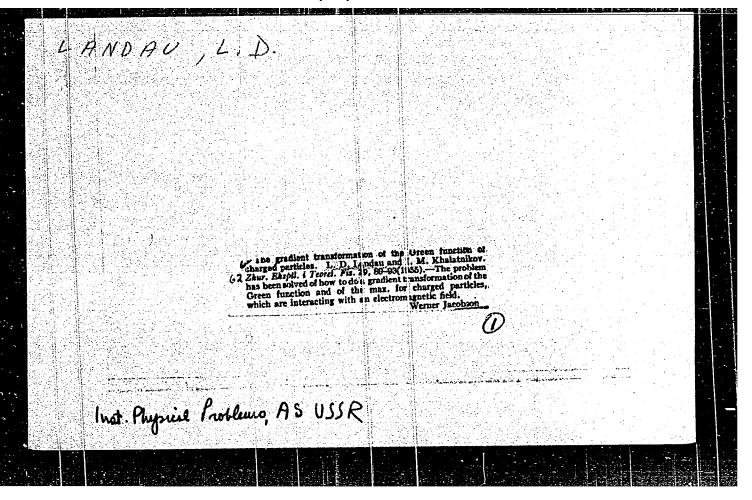
LANDAU, L. D. USSR/Physics Card 1/1 Authors landau, l. L. Academician; Abrikosov, A. A.; and Rhalatnikov, I. l.. Title : Electron mass in quantum electrodynamics Periodical Dokl. AN SSSR, 56, Ed. 2, 261 - 264, May 1954 Abstract : The problem of electron mass and particularly the problem concerning the role of the electro-magnetic and natural mass of the electron is one of the most interesting problems of quantum electrodynamics. Of basic importance in solving this problem is the characteristic of the Green function of the electron G(p) when pom. Equations enabling one to solve such a problem are given. Three references all USSR. Institution Submitted harch 6, 1954

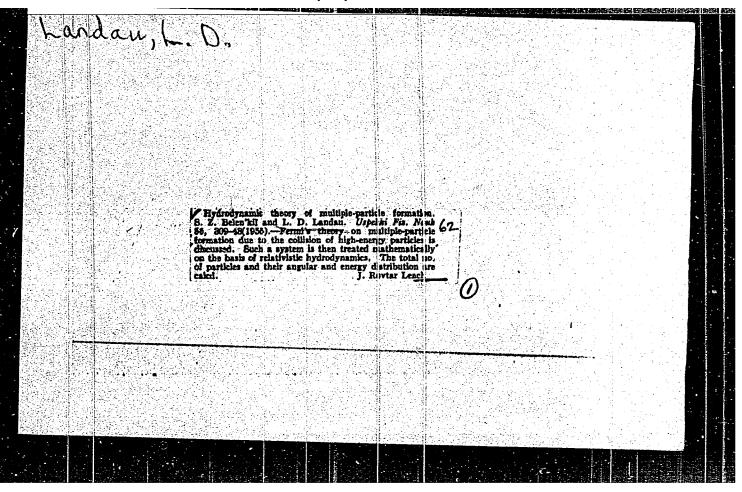


ĽÁŇďÁÚ, L. D. USSR/Physics - Shock waves Card : 1/1 Authors : Landau, L. D., Academician; and Lifshits, E. M. Title : Investigation of flow characteristics with the aid of the Euler-: Dokl. AN SSSR, 96, Ed. 4, 725 - 728, June 1954 Periodical Abstract : Analysis of an application of the Euler-Tricomi equation to various problems dealing with shock and sound waves. Graphs illustrating the Institution: Submitted : April 13, 1954

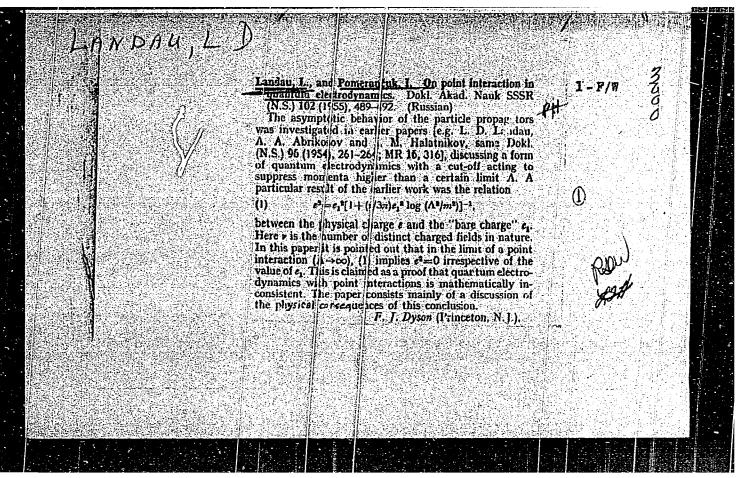
LANDAU, Lev Davydovich; SMORODINSKIY, Yakov Abramovich; ALEKSEYEV, D.M., redaktor; GAVRILOV, S.S., tekhnicheskiy redaktor.

[Lectures on the theory of the atomic nucleus] Lektsii pe teorii atomnege iadra. Moskva, Ges. izd-ve tekhnike-teoret. lit-ry, 1955.
140 p. (Nuclear physics) (MLRA 9:4)





LANDAU, L.D. USSR/Physics - Helium II Card 1/1 Pub. 22 - 16/60 Authors Landau, L. D., Academician; and Lifshits, E. M. Title About the rotation of liquid helium Periodical Dok. AN SSSR 100/4, 669-672, Feb 1, 1955 Abstract An explanation of the laminar structure of rotating helium II liquid is given from the point of view of the thermodynamic equalibrium theory. Formulas are derived for calculating the thickness of the rotating layers for fast and slow rotations. Four references: 1 British and 3 USSR (1941-1951). Acad. of Scs., USSR, The S. V. Vavilov Institute of Physical Problems Institution : Submitted



LANDAU, L. D., MIGDAL, A. B. and GALITEKTY, V. M.

"The Disintegration of the Deuteron by the Coulomb Field of the Nucleus" a paper presented at the International Conference on Nuclear Reactions, Amsterdam, 2-7 July 1956.

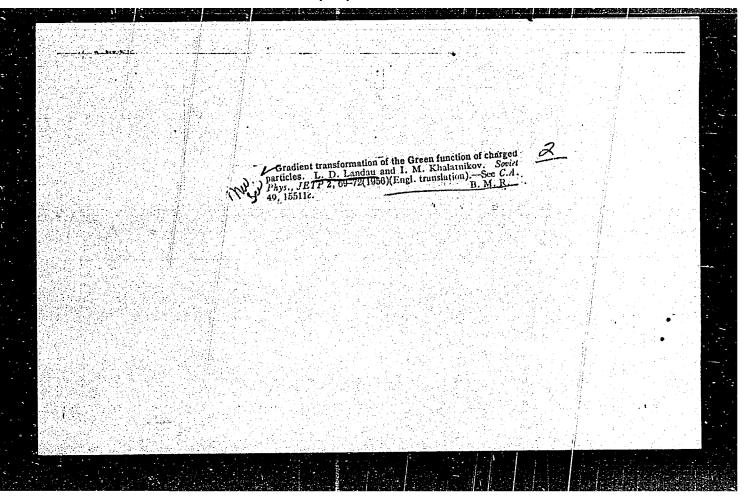
D551274

Radiation of gamma quanta during the collision of fast pions and nuclei (11/51)

CERN-Symposium on High Energy Accelerators and Pion Thysics

Geneva 11-23 June 56

ln. Branch #5



ANDAU,

USSR/Atomic and Molecular Physics - Statistical Physics. Thermo-**D-3** dynamics.

Abs Jour : Ref Zhur - Fizika, No 4, 1957, 8973

Author : Landay, L.D.

: Institute of Physical Problems, Academy of Sciences, USSR. Inst

Title : The Theory of a Fermi Liquid

Orig Pub : Zh. eksperim. i teor. fiziki, 1956, 30, No 6, 1058-1064

Abstract : A theory of a Fermi liquid (FL) is developed, based on the representation of the excitation energy as a functional of the distribution function. In a Fermi gas (FG) with specified (weak) interaction between the atoms at sufficiently low temperatures the "indeterminacy of the momenta," connected with the finite length of the mean free path, is always small compared with the momentum itself, and with the width of the Fermi smearing zone. This serves as the basis for an assumption that as the interaction between the atoms is gradually "turned on," i.e., upon transition from FG to a FL, the classification of the levels remains unchanged. The role of the gas particles in this classification is assumed by the "elementary excitations" ("quasi-particles"), each of

which has a definite momentum. They obey the Fermi statistics,

Card : 1/3

USSR/Atomic and Molecular Physics - Statistical Physics . Thermo- D-3 dynamics

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 8973

and their number agrees with the number of particles of the liquid. The variation of the energy density of the system δ E is determined in the form δ E = $\operatorname{Sp}_{\sigma} \int_{\mathcal{E}} \delta$ nd \mathcal{T} , where \mathcal{E} is the energy of the quasi-particle, n the distribution function of the quasi-particles, d T the element of phase volume, and Spo- is the trace over the spin states. Representing the entropy of the FL in a combinatroial manner and using the ordinary supplementary conditions $\delta N = \delta E = 0$, the author obtains the Fermi distribution for the quasi-particles, $n(\mathcal{E})$ $= \left\{ \exp \left[(\xi - h)/\varpi \right] + 1 \right\}^{-1}, \text{ in which } \xi \text{ is a functional of } \xi \in \mathbb{R}^{n}$ n. At low temperatures the FL still obeys the linear law for the specific heat. It differs from the specific heat of the FG only in replacing the true mass m by an effective mass of the quase-particle m* = $\sqrt{p}/(\partial \mathcal{E}/\partial p)/p = p_0$, where p_0 is the limiting momentum of the Fermi distribution of the quasi-particles at absolute zero. The change in \mathcal{E} , caused by the change in n, is given by the expression $\mathcal{S}_{\mathcal{E}}(p) = \operatorname{Sp}_{\sigma'} f(p) \circ \sigma' \mathcal{S}_{\tau'}$. The function f can be considered as a scattering amplitude of the scattering of the quasi-particle : 2/3

Card.

USSR/Atomic and Molecular Physics - Statistical Physics. Thermodynamics. D-3

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 8973

by an angle 0° upon collision with each other, taken with the negative sign. Using the Gallilean relativity principle, a relation is obtained between m and m'. The compressibility of the FL at absolute zero is computed. An expression is obtained for the velocity of sound. The magnetic susceptibility of the FL is found to be $1/\chi = \beta^{-2} \left\{ 2\pi^2 k^2/3\alpha + \overline{\psi}_0 \right\}$, where β is the magnetic moment of the free particle, α the coefficient in the linear law for specific heat, and $\overline{\psi}_0$ takes into account the exchange interaction. An analysis of the experimental results have shown that $\overline{\psi}_0 < 0$ and amounts to approximately 2/3 of the first term. Using the kinetic equations, the author obtains expressions for the momentum and energy fluxes.

Card.

: 3/3

HEY DAVYDOVICH Landau, Lev Davydovich and Lifshits, Yevgeniy Mikhaylovich 203 Elektrodinamika sploshnykh sred (Electrodynamics of Continuous Media) Moscow, Gostekhizdat, 1957. Teoreticheskaya fizika) 532 p. (Their: Ed: Rynik, V.I.; Tech. Ed: Murashova, N.Ya. PURPOSE: This study is intended for advanced students and specialists with an excellent knowledge of mathematical analysis and electrodynamics. COVERAGE: The present volume of the "Theoretical Physics" series is devoted to the theory of electromagnetic fields in material media and to the theory of macroscopic electric and magnetic properties of matter. The authors consolidate, clarify, and correct the literature existing on these theories. As in the case of their classic Mekhanika sploshnyk sred (Mechanics of Continuous Media) they suggest in their investigation of the phenomena of very diverse fields of science an integrated approach which they think capable of fruitful applications. Personalities mentioned include: Ginzberg, V.L., Professor, who contributed many valuable suggestions and read the manuscript; Dzyaloshinskiy, I.Ye., and Pitayevskiy, L.P., who assisted in proofreading. There are no references. Card 1/9

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APPROVED FOR RELEASE: 06/20/2000

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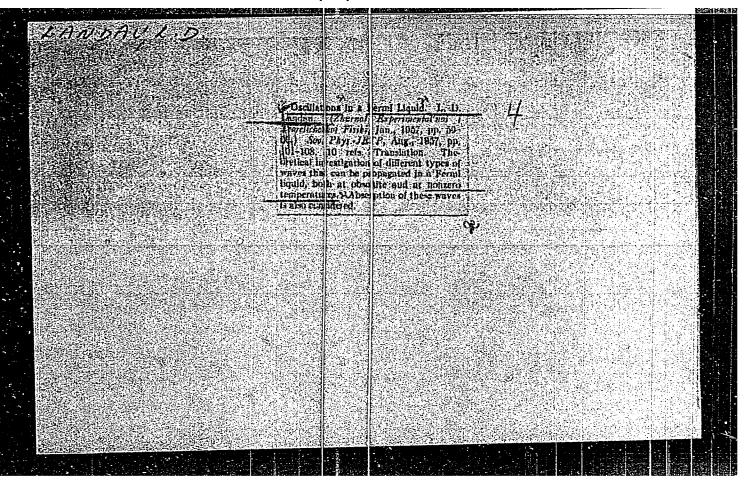
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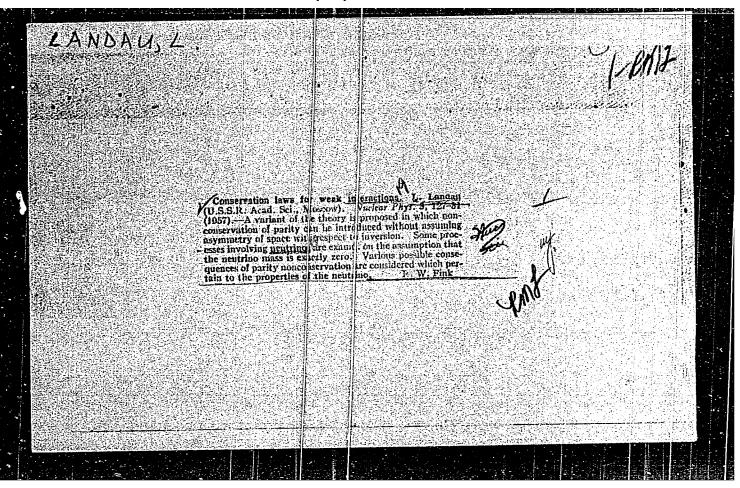
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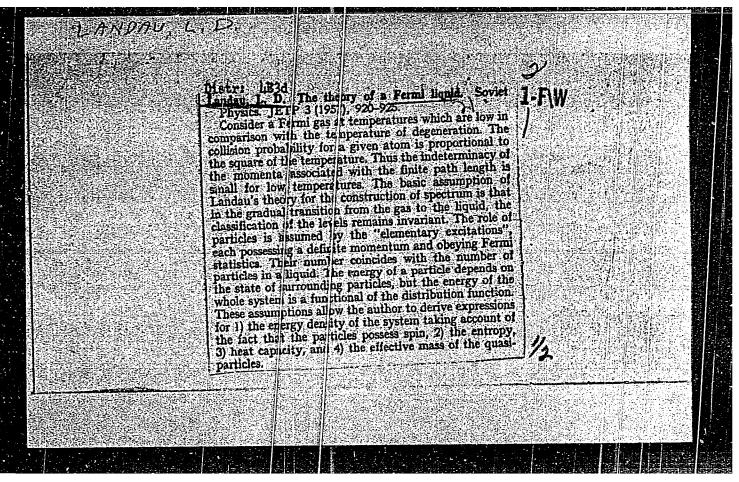
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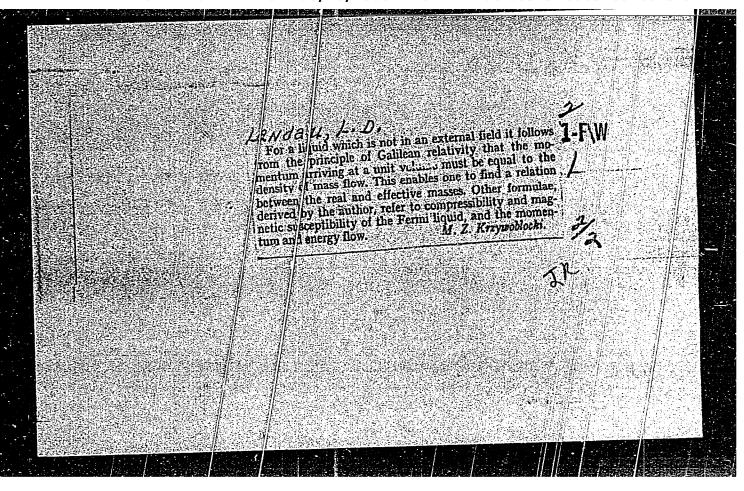


LANDAU, L.D., POMERANCHUK, Yu.Ya.

"Radiation of Gamma Quanta During the Collision of Fast Pions and Nuclei," paper presented at CERN Symposium, 1956, appearing in Nuclear Instruments, No. 1, pp. 21-30, 1957







CIA-RDP86-00513R000928510019-6 "APPROVED FOR RELEASE: 06/20/2000

AUTHOR

LANDAU L.D.

PA - 3053

TITLE

On the conservation Theorems at Weak Interactions.

(O zakonakh sokhraneniya pri slabykh vzaimodeystviyakh.-Russian)

Atomnaia Erergiia 1957, Vol 2, Nr 2, pp 405-406 (USSR) PERIODICAL

Reviewed: 7/1957

ABSTRACT

Received: 5/1957 First of all the paper under review points out the difficulties which result for modern theoretical physics from the properties of the K- mesons. As a matter of fact, the theoretical physicist faces the following dilemma: either there exist two different kinds of K-mesons, or the conservation theorems are no more

valid at the decay of K-mesons.

To assume the existence of two different kinds of K-mesons would mean to contradict the experimental results, and therefore there remains only the possibility that at K-decay the at present assumed conservation theorems are no more valid. As it is impossible to doubt the conservation of momentum, we have here a direct violation of the conservation theorem of parity. One could assume that at weak interactions the conservation theorem of parity and the invariance are not valid in detail with regard to the charge conjugability. But it would be possible that there exists an invariance with regard to the totality of the two operations denoted as combined inversion in the paper under review). At such

CARD 1/2

PA - 3053

On the Conservation Theorems at Weak Interactions.

a combined inversion we have simultaneously a space inversion and a transition of the particles into the corresponding antiparticles. The invariance of all interactions with regard to a combined inversion leaves the total symmetry of the space unchanged. But the electric charges then prove to be asymmetrical. In this case there results for charged particles no conservation theorem of parity, because the operator of the combined inversion does not transmit the charged particles into themselves. Furthermore, the constants which characterize the particles and antiparticles (mass, life span) must; be identical. The really neutral particles, i.e. such particles which are identical with their antiparticles, go over into themselves at a combined inversion. For such particles the combined inversion has the character of a normal space inversion, and for such particles the conversation theorem of parity is valid at all interactions.

ASSOCIATION: Institute for Problems of Physics, Academy of Sciences of the USSE.

PRESENTED BY: -

SUBMITTED: 11.12. 1956.

AVAILABLE: Library of Congress.

CAR.D 2/2

LANDAU, L. D.

"Oscillations of a Fermi Fluid," by L. D. Iandau, Institute of Physical Problems, Academy of Sciences USSR, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 32, No 1, Jan 57, pp 59-66

"The present article presents an investigation of wave propagation in.

B Fermi fluid. The development is based on the general theory of such fluids
developed by the author (ZhETF, 30, 1058, 1956). The phenomenon must be
highly unusual in a Fermi fluid since it is impossible for ordinary hydrohighly unusual in a Fermi fluid since it is impossible for ordinary hydrohighly unusual in a Fermi fluid since it is at absolute zero temperature. This
dynamic sound waves to propagate in it at absolute zero temperature of a Fermi
is obvious from the fact that path length and, with it, viscosity of a Fermi
is obvious from the fact that path length and, the coefficient of sound
fluid tend to infinity as T - 0. As a result, the coefficient of sound
absorption increases without limit.

"It appears, however, that other waves, of a substantially different nature from ordinary sound waves, can be propagated in a Fermi fluid at absolute zero. We shall call such waves 'zero sound' waves...."

Oscillations of a Fermi fluid at absolute zero and at temperatures above absolute zero, absorption of waves, and spin waves are discussed. (U)

54m.1391

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CIA-RDP86-00513R000928510019-6"

AUTHOR

LANDAU, L.D.,

PA - 2715

TITLE

On the Possibility for the Polarization Properties of the Neutrino. (Ob odnoy vozmozhnosti dlya polarisatsionnykh svoystv neytrino - Russian)

Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 2,

pp 407-408, (U.S.S.R.)

Received 5/1957

Reviewed 6/1957

ABSTRACT

PERIODICAL

If we abandon the law of conservation of parity we obtain new properties of the neutrino. The Dirac equation for particles with the mass zero is decomposed into two pairs of equations which are not connected with each other. If we limit ourselves to combined inversion, it is possible to describe the neutrino with just one pair of equations. According to the usual scheme this means that the neutrino is always polarized only in the direction of motion (or in the opposite direction) The antineutrino is always polarized in the corresponding opposite direction. The author of the present paper denotes such a neutrino as longitudinally polarized neutrino or, for short, as longitudinal neutrino. The mass of this longitudinal neutrino automatically equals zero, and this is not changed by any kind of interaction. The concept of the longitudinal neutrino considerably diminishes the number of the possible types of operators for weak interactions. In the paper under review, the author deals with decay of a myon into an electron and two neutrinos. As usual, the interaction operator is represented in the form of a product of operators. The one operator is made up of the γ -operators of themyon and of the electron, whereas the other operator consists

Card 1/2

On the Possibility for the Polarization Properties of the PA - 2715

of the γ -operators of the two neutrinos. For a longitudinal neutrino only one combination, namely a scalar, can be composed of the two γ -operators. Two combinations can be composed of myon and electron, namely a scalar and a pseudoscalar combination. When the decay of a myon results in a neutrino and an antineutrino, only a four-dimensional vector can be composed from the operators of the longitudinal neutrino and the longitudinal antineutrino. The experiments on the decay of myons do not contradict the conceptof the longitudinal neutrino and they show clearly that at the decay of a myon we obtain a neutrino and an antineutrino. Finally the paper under review discusses the influence of longitudinality of the neutrino on the β -decay. (No reproduction).

ASSOCIATION PRESENTED BY SUBMITTED Institute for Physical Problems, Academy of Sciences of the USSR.

AVAILABLE Card 2/2 11.12.1956 Library of Congress

AUTHOR:

LANDAU, L.D., LIFSHITS, E.M.

PA - 2990

TITLE:

On Hydrodynamic Fluctuations. (O gidrodinamicheskikh fluktuatsiyakh,

Russian)

PERIODICAL:

Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 3, pp 618-619

(U.S.S.R.)

Received: 6 / 1957

Reviewed: 7 / 1957

ABSTRACT:

The general Theory of hydrodynamic fluctuations can be constructed by the introduction of additional "foreign" terms into the equations of motion of the liquid. (Similar to the method used by RYTOV for fluctuations of the electromagnetic field in continuous media by the introduction of corresponding "foreign fields", into the MAXWELL equations).

The introduction of such additional terms can be realized by various equivalent methods. The greatest advantage, however, is offered by such a form in which the fluctuations of the "foreign quantities" in the various points of the liquid are not correlated with each other. This is obtained by the introduction of a "foreign voltage tensor" s, into the equation by NAVIER-STOKES and of a vector of the "foreign heat current" g into the equation of heat transfer. (The continuity equation remains unchanged). The system of hydrodynamic equations then takes the following form:

Card 1/3

On Hydrodynamic Fluctuations.

PA - 2990

$$\partial Q/\partial t + \operatorname{div}(QV) = 0, Q\partial V_1/\partial t + Q(V\Delta)V_1 = -\partial Q/\partial x_1 + \partial \sigma_{1k}^{!}/\partial x_k;$$

$$\varrho^{\text{T}}((\partial \mathbf{s}/\partial \mathbf{t} + \overrightarrow{\mathbf{v}} \Delta \mathbf{s}) = (1/2)\sigma_{ik}^{\dagger}(\partial \overrightarrow{\mathbf{v}}_{i}/\partial \mathbf{x}_{k} + \partial \overrightarrow{\mathbf{v}}_{k}/\partial \mathbf{x}_{i}) - \operatorname{div}_{\mathbf{q}}, \quad \mathbf{q} = -\alpha \Delta \mathbf{T} + \mathbf{g}.$$

$$\sigma_{ik}^* = \eta((\partial v_i/\partial x_k) + (\partial v_k/\partial x_i) - (2/3)\delta_{ik}\partial v_i/\partial x_i) + \xi(\partial v_i/\partial x_i)\delta_{ik} + s_{ik}$$

The denotations are here the same as those in the authors' well-known textbook. Relations have yet to be added to these equations, whic determine the average value of the products of the components s and g_4 .

The authors do so, at first assuming the fluctuations to be classical and the viscosity and heat conductivity of the liquid as being not dispersing.

For the velocity of the modification of the total entropy S of the liquid the following expression applies

$$S = \left\{ \frac{\sigma_{1k}^{\prime}}{2T} \left(\frac{\partial \gamma_{1}}{\partial x_{k}} + \frac{\partial \gamma_{k}}{\partial x_{1}} \right) - \frac{Q \sqrt{T}}{T^{2}} \right\} dV$$

The final formulae have the following form:

Card 2/3

On Hydrodynamic Fluctuations

PA - 2990

$$s_{ik}(\vec{r}_{1}, t_{1})s_{1m}(\vec{r}_{2}, t_{2}) = 2kT[\eta(\delta_{i1}\delta_{km} + \delta_{im}\delta_{k1}) + (\{-2\eta/3\})]\delta(\vec{r}_{2} - \vec{r}_{1})$$

$$\delta(t_{2} - t_{1})g_{i}(\vec{r}_{1} \cdot t_{1})g_{k}(\vec{r}_{2} \cdot t_{2}) = 2kT \approx \delta_{ik}\delta(\vec{r}_{2} - \vec{r}_{1})\delta(t_{2} - t_{1}),$$

$$g_{1}(\vec{r}_{1} \cdot t_{1})s_{1m}(\vec{r}_{2} \cdot t_{2}) = 0$$

These results can easily be generalized for the case in which a dispersion of the viscosity coefficient of the thermal conductivity coefficient exists or that the fluctuations are quantum-like.

ASSOCIATION:

Institute for Physical Problems of the Academy of Science of the

U.S.S.R.

PRESENTED BY:

SUBMITTED:

29.11.1956

AVAILABLE:

Library of Congress

Card 3/3

LANDAU, L. D., and LIFSHITS, Ye. M.

Quantum Mechanics, Non-Relativistic Theory, Vol. 3, Course of Theoretical Physics, Translated from Fussian, by J. B. Sykes and J. S. Bell. 515pp.

Pergammon Press Ltd., England; for US and Canada, Addison Wesley Futl. Co., Inc. Reading Mass, 1958.

PHASE I BOOK EXPLOITATION

SOV/1787

Landau, Lev Davydovich and Yevgeniy Mikhaylovich Lifshits

Mekhanika (Mechanics) Moscow, Fizmatgiz, 1958. 206 p. (Series: Teoreticheskaya fizika, t. 1) 35,000 copies printed.

Ed.: B.L. Livshits; Tech. Ed.: S.N. Akhlamov.

MANUAL PROPERTY BETTER THE STATE OF THE STAT

PURPOSE: This book may be useful to engineers, scientific research workers, and vuz students in the field of mechanics.

COVERIGE: The book is the first volume of the new edition of the authors' Theoretical Physics. The book discusses equations of motion and their integration, impact of particles, vibrations about a position of stable equilibrium, motion of a rigid body, and canonical equations. The succeeding volumes will be: 2) The Theory of the Field, 3) Quantum Mechanics (Nonrelativistic Theory), 4) Relativistic Quantum Theory, 5) Statistical Physics, 6) Hydrodynamics, 7) Elasticity Theory, 8) Electrodynamics of Continuous Media, and 9) Physical Kinetics. The authors thank I.Ye. Dzyaloshinskiy and L.P. Pitayevskiy. L. Pyatigorskiy is mentioned as having contributed to this field. There are no references.

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LANDAU, LEV DAVYDOVICH

Statistical physics, by L. D. Landau and Ye. M. Lifshits
London, Paris, Pergamon Press; Reading, Mass., Addison-Wesley, 1958
184 p. Diagrs.
Original Russian title: Statisticheskaya Fizika (Teoreticheskaya Fizika, *.5)

LANDAU, L. D.

"Excitations in Liquid Helium"

paper submitted, but not presented at the Kamerlingh Cnnes Conference, Leiden, Conference on Low Temperature Physics, Leiden, 23-28 Jun 58.

Inst. for Physical Problems, AS USSR

AUTHOR:

Landau, L.D., Academician (Moscow)

SOV-26-58-10-3/51

TITLE:

The Quantum Theory From Max Planck to the Present Day (Tecriya

kvant ot Maksa Planka do nashikh dney)

PERIODICAL:

Priroda, 1958, Nr 10, pp 16-21 (USSR)

ABSTRACT:

The author rescribes the development of the quantum theory from Max Planck to Dirac and mentions the contributions made by Feyrman, Schwinger and Dyson. By 1954, Soviet theoreticlans had found a means of avoiding the application of the perturbation theory - with surprising results. After rigorous calculation, not only are no sensible results obtained but all interactions completely disappear. The intensity of all the inveractions; calculated from the theory, invariably come down to zero, thus leaving the theory in a crisis. This tends to throw doubt on the point-interaction concept. Heisenberg has tried in the past few years to preserve the point-interaction concept and to introduce some very fundamental changes into the formal structure of the theory.

1. Perturbation theory---USSR

Card 1/1

SOV/4-58-11-4/31

AUTHORS:

Landau, L. D., Academician; and Rumer, Yu. B., Professor

TITLE:

Relativity of Time (Otnositel'nost' vremeni)

PERIODICAL:

Znaniye - sila, 1958, Nr 11, pp 4 - 6 (USSR)

ABSTRACT:

On the basis of theories developed by Galilei, Michelson and Einstein the authors demonstrate the relativity of move-

ment, time and space. There are 7 drawings.

Card 1/1

CIA-RDP86-00513R000928510019-6" APPROVED FOR RELEASE: 06/20/2000

CIA-RDP86-00513R000928510019-6 "APPROVED FOR RELEASE: 06/20/2000

LANDAU, L. D. 56-1-56/56 Landau, L. D. AUTHOR: The Properties of the Green Function of a Particle in Statistics (Svoystva grinovskoy funktsii chastits v statistike) TITLE: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34. PERIODICAL: Nr 1, pp. 262 - 264 (USSR) The present report shows that certain very general relations can be derived for the Green function $G = -i < T \ \psi_1 \ \psi_2 >$ of the particles. In this connection the indices 1 and 2 show that the ABSTRACT: W-operators are taken at the moments t, and t2. T is the symbol of the chronological product and the averaging takes place over the factual state of the given macroscopic system. Then formulas for the chronological and for the spatial dependence of the matrix elements of the operator ψ are given. The expressions for the Green function are then transformed with the aid of these expressions. Then follows the statistical averaging over the Gibbs distribution. On that occasion the quantity G is expressed as a function of the temperature T and of the chemical potential μ . Then the author goes over from the spatial-chronological repre-

Card 1/2

CIA-RDP86-00513R000928510019-6" **APPROVED FOR RELEASE: 06/20/2000**

sentation of the Green function to its Fourier (Fur ye) components.

56-1-56/56

The Properties of the Green Function of a Particle in Statistics

The expression for the Green function obtained after some further steps of calculation is explicitly written down. A certain relation exists between the real part and the imaginary part of the Green function. It is here explicitly written down for the case of the Bose statistics and the Fermi statistics and specialized for the case of the temperature zero.

ASSOCIATION:

Institute for Physical Problems AN USSR

(Institut fizicheskikh problem Akademii nauk SSSR)

SUBMITTED:

November 5, 1957

AVAILABLE:

Library of Congress

Card 2/2

sov/56-35-1-13/59 Landau, L. D. AUTHOR: On the Theory of the Fermi Liquid (K teorii Fermi-zhidkosti) TITLE: Zhurnal eksperimental noy i teoreticheskoy fiziki, 1958, PERIODICAL: Vol. 35, Nr 1, pp. 97 - 103 (USSR) In connection with two previous papers by the same author (Refs 1 and 2), which deal with the general theory of ABSTRACT: the Fermi liquid, the present paper investigates the collision of quasiparticles in a Fermi liquid at scattering angles of 0°. For the investigation of the scattering properties of the quasiparticles, the author proceeds from the variation of the energy of the interacting particles during a modification of their distribution function: $\delta \varepsilon(p) = Sp_{\sigma}, f(\vec{p}, \vec{p}') \delta n(\vec{p}') dr'$ where $dr = d^3\vec{p}/(2\pi)^3$ and $\hbar = 1$. The function $f(\vec{p},\vec{p}^i)$ dealt with in detail by reference 1 characterizes the scattering amplitude of the quasiparticles in the liquid in collisions of quasiparticles. For the investigation of the multi-Card 1/3

On the Theory of the Fermi Liquid

SOV/56-35-1-13/59

particle system the author used a method of the quantum field theory based upon the application of Green's (Grin) function G and the "vertex part" $\boldsymbol{\gamma}$. The properties of these two functions and their application to the problem to be investigated are described as follows: In the case that momentum and energy transfer tend towards zero, the scattering amplitude at the collision of quasiparticles will depend essentially upon the boundary value of the ratio between momentum transfer and energy transfer. In conclusion, the question is investigated as to which of these boundary values are connected with the energy of the interacting quasiparticles with respect to the general theory of the Fermi liquid (Refs 1,2). The author finally, expresses his thanks to A.G. Migdal, who drew his attention to the dependence of the scattering amplitude upon the ratio ω/k , as well as to Ye.M.Lifshits and L.P. Gor'kov for their discussion of his paper. There are 3 references, all of which are Soviet.

Card 2/3

On the Theory of the Fermi Liquid

sov/56-35-1-13/59

ASSOCIATION: Institut fizicheskikh problem AN SSSR(Institute for Physical Problems, AS USSR)

SUBMITTED:

February 5, 1958

Card 3/3

PHASE I BOOK EXPLOITATION

80V/3865

Landau, Lev Davydovich, Academician, and Yuriy Borisovich Rumer, Professor

Chto takoye teoriya otnositel'nosti (What is the Theory of Relativity?)

Moscow, Izd-vo "Sovetskaya Rossiya," 1959. 61 p. 15,000 copies printed.

Ed.: Yu.E. Berenson; Tech. Ed.: N.L. Yusifina.

PURPOSE: This booklet is intended for the general reader interested in the theory of relativity.

COVERAGE: The booklet is a popular presentation of the basic concepts of the theory of relativity and their role in modern physics. Various physical phenomena are explained in terms of the theory of relativity by using examples from everyday experience. No personalities are mentioned. There are no references.

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What is it now - day or night?
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The absolute seems relative
"Common sense" attempts to protest

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LANDAU, LIV DAVYXXVICH

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Lectures on Nuclear Theory, by L. D. Landau and Ya. Smorodinsky. Rev. Ed. New York, Plenus Fress, 1959

Vii, 108 p. Illus., Dia rs., Tables. Translated From the Russian: Lektall Po Teorll Atomnogo Yadra.

LANDAU, Lev Davidovich
Fluid mechanics, by Lov. D. Landau and D. M. Lifshitz.

London, Pergamon Fress, Reading Mass., Addison-Wesley

Pub. Co., 1959.

XII, 536 p. diagrs., graphs. (Theoretical Physics,

Vol. ϵ .)

Translated from the original Russian: Mekhanika

sploshnykh sred. Moscow, 1984.

Pibliographical footnotes.

CIA-RDP86-00513R000928510019-6 "APPROVED FOR RELEASE: 06/20/2000

24(5)

Landau, L. D.

SOV/56-37-1-10/64

AUTHOR:

TITLE:

On the Analytical Properties of Vertex Parts in the Quantum Field Theory (Ob analiticheskikh svoystvakh vershimykh chastey

v kvantovoy teorii polya)

PERIODICAL: Zhurnal eksperimental noy i teoreticheskoy fiziki, 1959,

Vol 37, Nr 1(7), pp 62-70 (USSR)

ABSTRACT:

Numerous papers have in recent years been written about dispersion relations, which express the analytical properties of the quantities of the quantum field theory. Recently it was found on the basis of such works as those by Karplus, Nambu, Sommerfeld and Wichman (Refs 1-3) that a representation of the distribution and the singularities of the vertex parts is possible in form of a direct diagram representation. The opinion that diagrams are not sufficient is based upon a misunderstanding. The representation of quantum quantities of the field goes beyond the scope of existing theories, and therefore an assumption is made in which neither ϕ -operators nor the Hamiltonian are used. The diagram practice is therefore the only possibility when calculating the dispersion

Card 1/3

relations, and is in no way equivalent to the perturbation

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On the Analytical Properties of Vertex Parts in the Quantum Field Theory

日至西州出海市省政治区,以外,在北京山东北京,1971年,1971

theory, because in the latter the quantum particles are considered to be stable, irrespective of the question as to whether they are "simple" or "composed". A generalization of the present diagram techniques must also serve as a basis for future theories. For the detection of singularities the diagrams are analyzed at their ends. When setting up the diagrams it is possible that at every branch-point an unlimited number of lines converge. By the rules actually in force a restriction is, however, imposed: thus, it is not possible for an odd number of pions to intersect at one point. All stable particles with strong interactions may figure as lines. The lengths of the internal lines correspond to the masses. Particular properties occur in the scattering amplitude. The integrals are functions which are connected in the lower and upper half plane by the relation $F(x^*) = F^*(x)$, or, in other words: above and below the axis functions are analyzed which are non-analytical continuations of each other and which have the significance of a discontinuity. In the case of "foreign" half planes the factors a, b may have arbitrary and arbitrarily distributed singularities, which can not be determined at all on the basis of general consideration. (Representation of

Card 2/3

507/56-37-1-10/64 On the Analytical Properties of Vertex Parts in the Quantum Field Theory

the scattering amplitude according to Feynman $a(x - i\delta)$ + + b(x - ib)), e.g. the well-known resonance in the scattering of pions by nucleons, which has the property of "foreign" half planes. Such properties may be determined from a theory, which gives an explanation of the scattering amplitude. The author finally thanks L. B. Okun', A. P. Rudik and Ya. A. Smorodinskiy for their valuable remarks. There are 15 figures and 3 references.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR

(Institute of Physical Problems of the Academy of Sciences,

USSR)

February 19, 1959 (initially) and April 7, 1959 (after revision) SUBMITTED:

Card 3/3

CIA-RDP86-00513R000928510019-6" **APPROVED FOR RELEASE: 06/20/2000**

24 (0) AUTHOR:

Landau, L. D

SOV/53-68-3-10/11

TITLE:

Wolfgang Pauli (Deceased) (Vol'fgang Pauli)

PERIODICAL:

Uspekhi fizicheskikh nauk, 1959, Vol 68, Nr 3, pp 557-559 (USSR)

ABSTRACT:

On the occasion of the death of the famous theoretical physicist and holder of the Nobel Prize, Wolfgang Pauli, at Zürich in December 1958, the Russian Academician L. D. Landau in his necrology discussed the scientific work of the deceased and his great importance for modern physics. A list of the most important publications and books by the deceased is attached.

There are 1 figure and 13 references.

Card 1/1

SOV/4308 PHASE I BOOK EXPLOITATION

Landau, Lev Davydovich, Academician, and Yevgeniy Mikhaylovich Lifshits, Professor

Teoriya polya (Field Theory). 3rd ed., rev. Moscow, Fizmatgiz, 1960. 400 p. (Series: Teoreticheskaya fizika, t. 2) 25,000 copies printed.

Ed.: U. Ya. Margulis; Tech. Ed.: S. N. Akhlamov.

PURPOSE: This book is intended for students at schools of higher technical education.

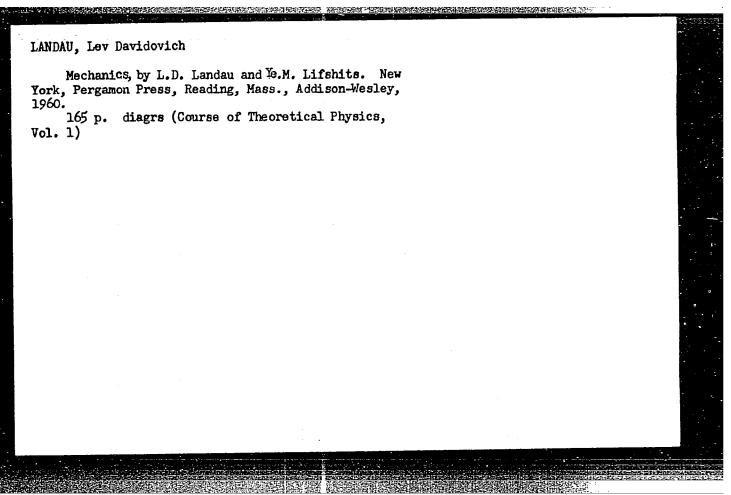
COVERAGE: The book is the third revised edition of the second volume in a series on theoretical physics. The series will consist of the following nine volumes: 1) Mechanics, 2) Field theory, 3) Quantum mechanics (nonrelativistic theory),
4) Relativistic quantum theory, 5) Statistical physics,
6) Wednesday (2) Theory (3) Theory (4) Theory (4) Theory (5) Theory (6) Theory (6 6) Hydrodynamics, 7) Theory of elasticity, 8) Electrodynamics of continuous media, and 9) Physical kinetics. The present volume deals with the theory of electromagnetic and gravitational fields. The material is based on the special and general theories of relativity and the equations are derived Card 1/9

LANDAU, Lev Davidovich

Electrodynamics of Continuous Media, by L.D.
Landau and Ye. M. Lifshits. London, New York,
Pergamon Press, Reading, Mass., Addison-Wesley,
1960.

x, 417 p. diagrs. (Theoretical Physics, V. 8)
Translated from the original Russian: Elektrodinamika Sploshnykh Sred, Moscow, 1959.

Bibliographical footnotes.



LANDAU, Lev Davidovich, akademik; RUMER, Yuriy Borisovich, prof.

Figures which seem to be reassuring. Izobr.i rats. no.1:
17-18 Ja '60.
(Space flight)

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s/056/60/039/006/063/063 B006/B063

24.4500 AUTHOR:

Landau, L. D.

TITLE:

Low Binding Energies in the Quantum-field Theory

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,

Vol. 39, No. 6(12), pp. 1856-1857

TEXT: This "Letter to the Editor" shows that in the quantum-field theory there is a relation between coupling constant and binding energy of weakly bound but strongly interacting particles. A spin-zero particle c (e.g., a deuteron) is assumed to disintegrate into the particles a and b; then $M_{\rm C}=M_{\rm a}+M_{\rm b}-\xi$, where ξ is the binding energy which is assumed to

be small. The particle c is supposed to be even with respect to the spin-zero particles a and b (s-state). The total vertex part for the a + b \rightarrow c transition is indicated by g. The mutual scattering amplitude of particles a and b contains a pole-type term which is related to the virtual production of particle c: $(g^2/8\pi)/(M_a+M_b) \lfloor (p_a+p_b)^2 - M_c^2 \rfloor$, or, if

Card 1/2

88470

Low Binding Energies in the Quantum-field Theory

s/056/60/039/006/063/063 B006/B063

 $(\text{M}_a+\text{M}_b\pm\text{E})^2$ is substituted for $(\text{p}_a+\text{p}_b)^2$ (E - rest energy in the center-of-mass system): $(\text{g}^2/16\pi)/(\text{M}_a+\text{M}_b)^2$ (E + E) with small E and E . When comparing this expression with that derived for the resonance scattering amplitude, one obtains $g^2/16\pi(M_a+M_b)^2=\sqrt{2(1/M_a+1/M_b)}\xi$ and, hence, $\xi=(g^4/512\pi^2)$. Marb/(mark) Also V. Faynberg and Ye. Fradkin obtained a similar relation from the dispersion relations for nucleon scattering. There is 1 Soviet

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute

of Physical Problems, Academy of Sciences USSR)

SUBMITTED: October 21, 1960

Card 2/2

LANDAU, L. D.



PHASE I BOOK EXPLOTEATION

807/5982

International Conference on High-Energy Physics. 9th, Kiyev, 1959.

Devynteya merhimarednaya kenferentsiya po fizilm vysokikh energiy, Kiyev 15-25 iyulya 1959 6. (Hinth International Conference on High-Energy Fhysics. Kiyev, July 15-25, 1959), Moscow, 1961. 759 p. 2,500 copies printed.

Spensoring Agency: Almdeniya nauk SSSR. Mezhdumarodnyy Soyuz chistoy i prikladnoy fiziki.

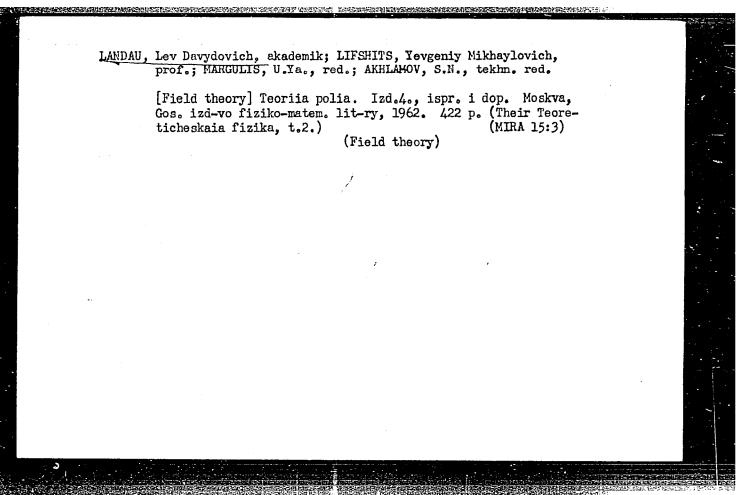
Contributors not mentioned.

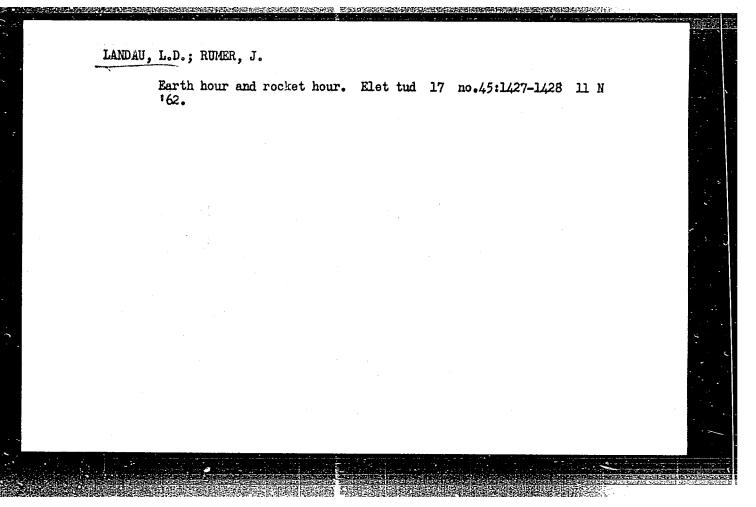
PURPOSE: This book is intended for nuclear physicists.

COVERAGE: The collection contains 30 scientific articles presented at the 9th International Conference on High-Energy Physics, held in Kiyev from 15 to 25 July 1959. The articles presented relate mainly to the pregress in nuclear physics achieved in 1959. Subjects discussed are the production of Card 1/8

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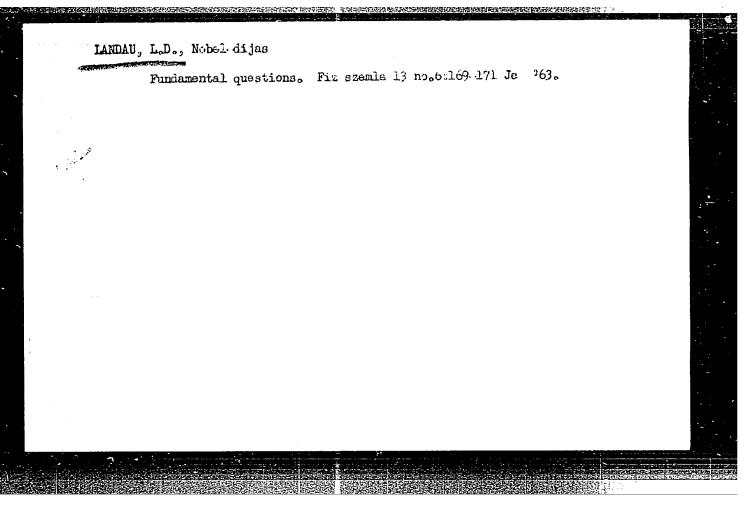
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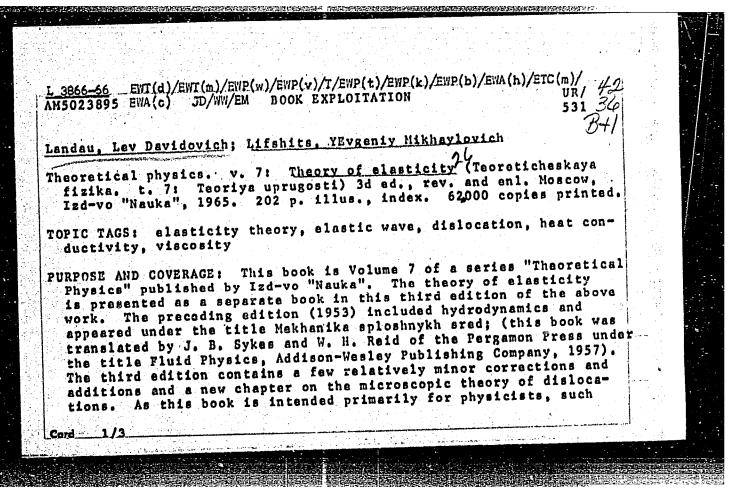
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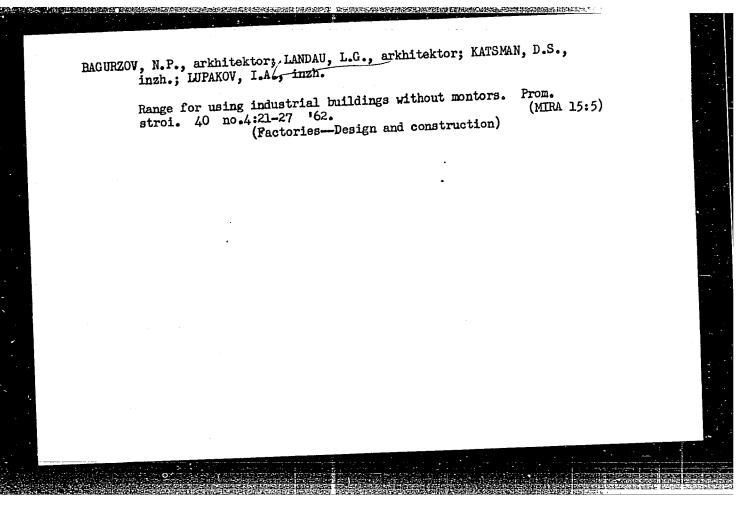
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