

LOMSADZE, D. M., Cand Tech Sci -- (diss) "Investigation of the stress-deformation condition upon transverse rolling and forging." Dnepropetrovsk, 1960. 27 pp with illustrations; (Academy of Sciences Ukrainian SSR, Inst of Ferrous Metallurgy); 150 copies; free; (KL, 18-60, 151)

OKLEY, L.N.; LOMSAZDE, D.M.

Deformations and strains in transverse forging. Izv.vys.ucheb.
zav.; chern.met. no.3:44-50 '60. (MIRA 13:4)

1. Gruzinskiy politekhnicheskiy institut.
(Forging) (Deformations(Mechanics))

S/137/61/000/011/050/123
AGEO/A101

AUTHORS: Okley, L. N., Lomsadze, D. M., Luzin, Yu. F.

TITLE: Pierceability of steel mark 20 as a function of temperature

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 11, 1961, 33, abstract
11D197 ("Shtrombi, Tr. Gruz. politekhn. in-t", 1959, no. 3(64)
87-91)

TEXT: The effect of temperature upon the pierceability of steel mark 20 was verified both under laboratory and plant conditions. On the basis of the experiments, a curve was constructed expressing the dependence of the critical reduction upon the temperature. The tendency of steel mark 20 to fracture under oblique rolling is reduced as the temperature increases. ✓

K. Ursova

[Abstracter's note: Complete translation]

Card 1/1

NOZADZE, Aleksandr Davidovich; LOMSADZE, Dzhemal Mikhaylovich;

[Principles of rolling mill practice] [Osnovy prokatnogo
proizvodstva. Tbilisi, Gos.izd-vo uchebno-pedagog. lit-ry
"Tsodna,"] 1961. 430 p. (MIRA 16:9)
(Rolling (Metalwork))

OKLEY, L.N.; LMSADZE, Dzh. M.

Process of diagonal rolling without mandrels. Trudy GPI
[Gruz.] no.4:93-99 '62 (MIRA 17:8)

OKLEY, L.N.; TUTBERIDZE, A.I.; LOMADZE, Dzh.M.

Deformation process during the rolling of pipe on an automatic mill. Trudy GPI [Gruz] no.4:101-107 '62
(MIRA 17:8)

SOSELIYA, L.D., inzh.; LOMSADZE, I.A., inzh.; YASHAGASHVILI, Ye.I.

Quality of clinkers has been improved. Tsement 31 no.5:16-17 S-0 '65.
(MIRA 18:10)

1. Rustavskiy tsementnyy zavod.

LONSADZE, O. I.

"Morphological Changes in the Testicles During Experimental Nutritional
Dystrophy and Reversibility of Such Changes After Restoration of the Nutritional
Level of Feeding." Cand Med Sci, Tbilisi State Medical Inst, Tbilisi, 1953.
(RZhBiol, No 7, Apr 55)

SO: Sum. No. 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations
Defended at USSR Higher Educational Institutions (16).

Country : USSR
 Category : Diseases of Farm Animals. Diseases Caused
 by Viruses and Rickettsiae. R-2
 Abs. Jour : RZBIol., No. 4, 1959, No. 16818
 Author : Lomsadze, R. N.
 Institut. : Georgian Zootechnical Veterinary Institute.
 Title : Materials for the Study of Epidemiology of
 Q-Fever under the Conditions of Georgia SSR.
 Orig. Pub. : Materialy 12-y Nauchn. Konferentsii, posvyas-
 shen. 25-letiyu Gruz. zootekhn.-vet. in-ta.*
 Abstract : Since 1955 the affliction of people with Q-
 fever was registered in 12 rayons of Georgia.
 Applying the dry Rickettsia burneti antigen
 the author examined by means of the CFT [com-
 plement fixation test] 853 head of
 cattle and 255 sheep; in 120 head of
 cattle (12 percent) and in
 51 sheep (20 percent) positive results were
 obtained. Among cattle Q-fever is ob-
 served throughout the entire year, but a mass
 infestation of the animals is observed in

Card:

1/2

-Tbilisi, 1957, 52-53

Country : USSR
Category : Diseases of Farm Animals. Diseases Caused
by Viruses and Rickettsiae. R-2
Abstr. Jour : RZBiol., No. 4, 1959, No. 16818
Author :
Instit. :
Title :

Orig. Pub. :

Abstract : during. In Georgia the carrier of this disease
is transmitted by the Ixodes ricinus tick.

Card: 2/2

LOMSADZE, R. N., Candidate Vet Sci (diss) -- "Material for the study of Q-fever
in cattle under the conditions of the Georgian SSR." Kirovabad, 1959. 16 pp
(Min Agric USSR, Azerb Agric Inst), 150 copies (KL, No 22, 1959, 119)

LOMSADZE, YU.

PA32/49T76

USSR/Nuclear Physics - Electrons, Pair Theory Feb 49
Nuclear Physics - Neutrettos

"The Pair Theory of Nuclear Forces," Yu. Lomsadze,
M. Markov, Moscow State U, Phys Inst imeni P. N.
Lebedev, Acad Sci USSR, 3 pp

"Zhur Eksper i Teoret Fiz" Vol XIX, No 2

Shows that the neutretto and antineutretto lead to
different laws of reaction in the theory of pair
nuclear forces (spin of neutretto $\frac{1}{2}$).

32/49T76

LOMSADZE, YU. M.
Atomic Physics

Dissertation: "Electromagnetic Interaction of Two Electrons in Higher Approximations of the Theory of Perturbations." Cand Phys-Math Sci, Physics Inst Lenin P. N. Lebedev, 5 Apr 54. (Vechernnyaya Moskva Moscow, 30 Mar 54)

SO: SUM 213, 20 Sep 1954

Lomsadze, Yu. M.

B-5

Category : USSR/Theoretical Physics - Quantum Electrodynamics

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 2946

Author : Lomsadze, Yu. M.

Inst : Physics Institute, Academy of Sciences USSR

Title : On the Singularity of the Electromagnetic Potential in the Higher Approximations of Perturbation Theory.

Orig Pub : Zh. eksperim. i teor. fiziki, 1956, 30, No 4, 707-712

Abstract : It is shown that the singularity at the origin in the potential of the electromagnetic interaction between electrons (or between an electron and a positron) does not exceed $(1/r) \ln^{n-1/2} r$, regardless of the power n of the charge used in an arbitrarily high perturbation-theory approximation (r is the three-dimensional distance between particles). This result theoretically allows the existence of bound stationary states of systems of two oppositely-charged particles, as actually observed in nature (hydrogen atom, positronium). The singularity at the origin in the interaction potential is determined by investigating the asymptotic behavior of the S matrix for the scattering at high momenta. The proof is

Card : 1/2

Category : USSR/Theoretical Physics - Quantum Electrodynamics

B-5

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 2946

performed by using the mathematical induction method. It is shown that in the transition from any n 'th approximation, reduced to its final form by the usual method of renormalization and regularization, to the next approximation, namely the $(n+2)$ nd, after eliminating all the singularities in the $(n+2)$ 'nd approximation by using the same method, the asymptotic approach to zero of the scattering S -matrix is weakened by a factor not stronger than logarithmic. This, in conjunction with the fact that in the second approximation the potential behaves at the origin like $1/r$ is indeed a proof of the above basic premise stated by the author. It is noted that in the non-relativistic, say, fourth-order approximation, the singularity of the electromagnetic potential at the origin is strengthened to $1/r^3$, and this leads to a certain difficulty. However, a consideration of the interaction potential at the origin (which is equivalent to a consideration of the S matrix for the scattering at large momenta) in the non-relativistic approximation (i.e., in the approximation of small momenta) is internally self-contradictory.

Card : 2/2

Lom. sadze, Yu. M.

530.145

1966. A POSSIBILITY IN THE QUANTUM THEORY OF FIELDS. *Ad*

Yu. M. Lomazda.

Ad *Ad*

Ad *Ad*

Given a divergent series, it may be possible to find the correct function for which this is an (asymptotic) expansion. An example in terms of the pair theory of interaction of spinor fields is given.

Ad

2

Ad
Ad

Moscow State U.

LOMSADZE, YU.M.

CARD 1 / 2

PA - 1646

SUBJECT USSR / PHYSICS
 AUTHOR LOMSADZE, YU.M.
 TITLE On the Potential of the Pair-Theories of Nuclear Forces.
 PERIODICAL Dokl. Akad. Nauk, 110, fasc. 4, 545-548 (1956)
 Issued: 12 / 1956

Here the problem of the elimination of singularities, which is new in the pair-theory, is solved. These singularities occur in the pair-theory (contrary to what is the case in the no-pair-theories) already in the first non-vanishing order. For reasons of concreteness a pseudoscalar coupling is assumed:
 $\mathcal{H}_g(x) = g \bar{\Psi}(x) \gamma_5 \Psi(x)$. Here $\bar{\Psi}(x)$ and $\Psi(x)$ denote the operators of the (spinorial) nucleon- and meson field respectively and it holds that $\bar{\Psi}(x) = \Psi^H(x) \gamma_4$; H denotes the hermetically conjugated operator. The character of singularity at zero of the interaction potential of two nucleons is determined in the most simple manner by investigating asymptotic behavior in the case of high-momenta of the S-matrix of the scattering of these nucleons. In the pair-theory no longer three, but four lines originate from each point of the diagram: two nucleon- and two meson lines (in each case one input- and one output line). Each point may be looked upon as a superposition of one point in each case of the nucleon- and meson line sequences. Other computation rules for the S-matrix were taken over without modifications by the pair-theory. To the scattering of two nucleons in the first non-vanishing order (up to "commutation") there corresponds a univocal diagram. The element of the

Dokl.Akad.Nauk, 110, fasc.4, 545-548 (1956) CARD 2 / 2

PA - 1646

corresponding S-matrix is reduced to a "relativistically covariant" form in the usual manner. All 1-integrals (which are in general divergent) are reduced to a relativistically covariant form. A certain infinite part can and must be included within the constant \mathcal{K} of a "contact term" having the form

$$\mathcal{K} [\bar{\psi}(x) \gamma_5 \psi(x)]^2. \text{ For this purpose the additional term}$$

$$\mathcal{H}'_g(x) = \mathcal{H}_g(x) + \delta \mathcal{K} [\bar{\psi}(x) \gamma_5 \psi(x)]^2 \text{ is introduced into the}$$

HAMILTONIAN. Thereby a second diagram is added to those of the first non-vanishing order. The sum of the elements of the S-matrix corresponding to these diagrams diverges only logarithmically. However, also this divergence can be included in a constant. Next, the definite form of the S-matrix is given. The assuming of other types of coupling than the pseudoscalar one leads to the same results.

Consideration of relativistic effects and of the recoil of nucleons does not do away with the shortcomings of the pair-theory of the interaction of spinor fields. Though the present theory describes real conditions also for the case of very small distances correctly, it is necessary that either the constants g and f for the coupling between nucleon- and meson field be equal to zero, or the contradiction between theory and reality is due to the shortcomings of the usual perturbation theory (of the first order).

INSTITUTION: State University UZGOROD

SOV/58-59-10-21854

Translation from: Referativny Zhurnal, Fizika, 1959, Nr 10, p 19 (USSR)

AUTHOR: Lomsadze, Yu.M.

TITLE: A New Approach to the Problem of Constructing a Theory of Nonlocal Fields

PERIODICAL: Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. i khim., 1957, Nr 1, pp 3 - 5

ABSTRACT: The author reports on an attempt to construct a theory of nonlocal fields by introducing the concept of "the function of the region" of four-dimensional space-time, as well as the derivative of such a function. In the quantum theory of the particle such an approach leads to a peculiar principle of indeterminacy having the following form:
 $\Delta x \Delta y \Delta z \Delta t \sim \lambda^4$, where Δt is the time interval during which the coordinates of the particle can be measured with errors of Δx , Δy , and Δz , while λ^4 is a volume of the four-dimensional region. It is shown that no internal contradiction arises in the case of free particles and quantum fields; but the simplest attempt to construct a theory of

Card 1/2

30V/58-59-10-21854

A New Approach to the Problem of Constructing a Theory of Nonlocal Fields

interacting quantum fields leads to the incompatibility of the equations of motion. However, it is pointed out that the S-matrix formally obtained from these equations nonetheless satisfies all the requirements usually made of such a matrix: invariance, unitarity, and causality. (Cf. RZhFiz, 1958, Nr 2, 2693, 2699).

Yu.M. Lomsadze ✓

Card 2/2

SOV/58-59-10-21843

Translation from: Referativnyy Zhurnal, Fizika, 1959, Nr 10, p 17 (USSR)

AUTHOR: Lomsadze, Yu. M.

TITLE: A New Method of Solving Equations of Motion in Quantum Field Theory

PERIODICAL: Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. i. khim., 1957, Nr 1, pp 23 - 25

ABSTRACT: The author reports on a new method of solving the Tomonaga-Schwinger equation by introducing two generalizations of the usual conception of "the sum of an infinite series": the generalized sum and the l-sum (RZhFiz, 1957, Nr 9, 21881; 1958, Nr 2, 2693). The method is applied to pair theory, electrodynamics, and the PS(PV)-variant of pion theory. The so-called modified series which are obtained in all cases prove to be not only renormalizable, but apparently also (after carrying out the renormalization) absolutely convergent, at any rate in the event of great momenta of "real" particles. It is noted that the possibility of the

Card 1/2

SOV/58-59-10-21843

A New Method of Solving Equations of Motion in Quantum Field Theory

emergence in the S-matrix of new infinities because of the additional complex poles arising in l-summation, can be fully eliminated through correct procedures of calculation.

Yu.M. Lomsadze ✓

Card 2/2

LOMSADZE, Yu. M.

Distr: 4E3d

1428
CONCERNING A CERTAIN POSSIBILITY IN QUANTUM
FIELD THEORY¹ Yu. M. Lomsadze (Moscow State Univ.).
Soviet Phys. JETP 4, 154 (1957) June.

The author has attempted to overcome the well known difficulties of contemporary relativistic quantum field theory which result, first, from the appearance of irremovable infinities in many unrenormalizable variants of the theory (among which are evidently all variants with an interaction Hamiltonian which either consists of the product of more than three field operators or contains the derivatives of these operators) and, secondly, from the divergence of series that are obtained after the elimination of all infinities in the renormalizable variants (particularly in electrodynamics). (A.C.)

4

||

st

LOMSADZE, Yu.M.; MAKSIMOV, B.I.

Double π -meson annihilation of an antiproton according to the theory of parity. Nauch. dokl. vys. shkoly; fiz.-mat. nauki no.1: 80-83 '58. (MIRA 12:3)

1.Uzhgorodskiy gosudarstvennyy universitet.
(Particles, Elementary) (Quantum theory)

LOMSADZE, Yu.M.

Significance and correctness of the modified excitation method
in the quantum field theory. Izv. vys. ucheb. zav.; fiz. no.1:
88-96 '58. (MIRA 12:8)

1.Uzhgorodskiy gosuniversitet.
(Field theory)

SOV/58-59-10-21846

Translation from: Referativnyy Zhurnal, Fizika, 1959, Nr 10, p 17 (USSR)

AUTHOR: Lomsadze, Yu.M.

TITLE: A Possibility of Treating Elementary Particles as Bound States

PERIODICAL: Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. i khim., 1958,
Nr 2, pp 4 - 6

ABSTRACT: On the basis of the most general considerations, it is pointed out that in the framework of the modified method of perturbations (cf. e.g. abstract 21842) between the nucleon and the pion, there must exist a specific interaction capable of leading to a strongly bound state in the PS(PS)-variant, as well as in the PS(PV)-variant, of the theory. This provides a ground for the assumption that involves treating hyperons as strongly bound states between nucleons and pions.

Yu.M. Lomsadze ✓

Card 1/1

SOV/58-59-10-21847

Translation from: Referativny Zhurnal, Fizika, 1958, Nr 10, p 17 (USSR)

AUTHORS: Lend'yel, V.I., Lomsadze, Yu.M.

TITLE: Application of the Modified Method of Perturbations to N-P-Scattering Using the PS(PS)-Variant

PERIODICAL: Dokl. i soobshch. Uzhgorodsk. un-ta, 1958, Nr 2, pp 7 - 9

ABSTRACT: The presence of neutron-proton scattering was calculated using the symmetrical PS(PS)-variant of pion theory in a first non-vanishing approximation of the modified method of perturbations (cf. e.g. abstract 21842). Adopting the modified method of perturbations apparently somewhat improves the agreement between theory and experiment in comparison with the usual method of perturbations, although it is not possible to achieve complete agreement. If it be assumed that the coupling between the nucleon and pion fields is only effected through the PS(PS)-variant, the modified method leads to a resonance peak of the cross section in the vicinity of ~ 4 Bev energy in the laboratory system.

Yu.M. Lomsadze ✓

Card 1/1

67181

SOV/58-59-7-14826

24.6510

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 7, p 36 (USSR)

AUTHORS: Krivskiy, I.Yu., Lend'yel, V.I., Lomsadze, Yu.M.

TITLE: On a Possible Explanation of N-P Scattering

PERIODICAL: Dokl. i soobshch. Uzhgorodsk. un-t, 1958, Nr 2, pp 11 - 14

ABSTRACT: It is suggested that an ordinary pion beam contains, in addition to the usual pseudo-scalar pions, an admixture of scalar pions that form an isotopic sextet together with the former. Using the Hamiltonian of interaction

$$H(x) = ig : \bar{\Psi} \gamma_5 \tau_1 \Psi \varphi_1 : + g' : \bar{\Psi} \tau_1 \Psi \varphi_1 : ;$$

the neutron-proton scattering process (the nucleons not being polarized) is then calculated by the usual method of perturbations. In the case of the constants $g = 7.6$ and $g' = 0.96$, it is possible to achieve sufficiently satisfactory agreement between the magnitudes of the differential, as well as total effective cross sections and the experiments in a wide energy range from ~ 100 to ~ 600 mev. If it can be admitted that the principle of the independence of nuclear forces is violated while retaining their symmetry at high energies, and if one assumes that $\varphi_3 =$

4

SOV/58-59-7-1989

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 7, p 46 (USSR)

AUTHORS: Krivskiy, I.Yu., Lomsadze, Yu.M.

TITLE: On Beta Interaction Between the Electron and the Proton. I.

PERIODICAL: Dokl. i soobshch. Uzhgorodsk. un-ta, 1958, Nr 2, pp 31 - 33

ABSTRACT: The authors suggest that a study of the $e + p \rightarrow n + \nu$ process may provide an answer to the question as to which of the 20 admissible variants of beta decay theory are actually realized in nature. The authors cite the results of calculating the above-mentioned process for a number of variants of beta decay theory.

Yu.M. Lomsadze ✓

Card 1/1

SOV/58-59-7-14827

24.6510

24.4500

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 7, p 36 (USSR)

AUTHORS: Krivskiy, I.Yu., Lend'yel, V.I., Lomsadze, Yu.M.TITLE: π^+ -P Scattering^A in the Light of the Pion^A Doublet HypothesisPERIODICAL: Dokl. i soobshch. Uzhgorodsk. un-t, 1958, Nr 2, pp 39 - 42

ABSTRACT: The process of π^+ -p scattering is examined on the basis of the hypothesis contained in the authors' preceding study (abs. 14826) but with a substitution of the PS(PS) variant for the PS(PV) variant without affecting the results of that study. It is shown that it is possible to achieve agreement between theory and experiment up to energies of ~ 200 mev in the framework of the usual method of perturbations if it be assumed that the scalar pions in the beam account for approximately 1 or 2% of the total. In this case the coupling constant in the PS(PV) variant corresponds exactly to the constant obtained for the PS(PS) variant in the authors' preceding study on the basis of examining nucleon-nucleon scatterings (with allowance for the equivalence theorem).

Yu.M. Lomsadze ✓

Card 1/1

67182

SOV/58-59-7-14828

24.6900

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 7, p 36 - 37 (USSR)

AUTHORS: Krivskiy, I.Yu., Lend'yal, V.I., Lomsadze, Yu.M.

TITLE: Some Considerations Concerning Pion Parity¹⁹

PERIODICAL: Dokl. i soobshch. Uzhgorodsk. un-t, 1958, Nr 2, pp 43 - 46

ABSTRACT: Since the hypothesis of the parity pion doublet (abs. 14826, 14827) leads to satisfactory agreement between theory and experiment (mainly in connection with nucleon-nucleon scattering), the authors proceed to an analysis of the basic experimental and theoretical data available at the present time. These data lead the authors to conclude that pions have a pseudo-scalar character. The authors examine data concerning neutral pion decay into two gamma quanta, negative pion capture by the deuteron, π^- -p scattering entailing charge-exchange, and the photoproduction of pions; they conclude that these data in principle do not contradict the hypothesis of the parity pion doublet. The authors suggest a number of experiments for the direct verification of the existence of a slight admixture of scalar mesons in the pion beam.

Yu.M. Lomsadze

Card 1/1

L O M S A D Z E, Y M

304/3369

21(1,8); 24(5) PHASE I BOOK EXPLOITATION
 Vsesoyuznaya nauchnoy konferentsiya po kvantovoy teorii polya i teorii elementarnykh chastits. Uzhgorod, 1958
 Problemy sovremennoy teorii elementarnykh chastits. No. 2: Teoriya kvantovoy teorii... (Problems in the Modern Theory of Elementary Particles. No. 2: Translations of the All-Union Conference on the Quantum Field Theory and the Theory of Elementary Particles) Uzhgorod, Zakarpatskoye oblastnoye isd-vo, 1959. 214 p. 5,000 copies printed.

Ed.: Ya. Losadze, Docent; Tech. Ed.: M. Belous.
 PURPOSE: This book is intended for physicists, particularly those concerned with problems in the field of elementary particles and the quantum theory.

CONTENTS: This book contains articles on elementary particles originally read at the All-Union Inter-Vuz Conference held at Uzhgorod State University on October 26, 1958. Among the topics discussed are: the spinor field theory, the fusion theory, Lorentz contractions, parity studies, nucleon-nucleon scattering, etc. English abstracts accompany each article. References follow each article.

| | |
|---|-----|
| Sokolik, G.A. New Formulation of Parion Theory | 26 |
| Losadze Yu.M. and B.I. Malinik. Application of Schwinger's Variation Method to the Pair Theory | 30 |
| Sokolik, G.A. Generalization of the Lorentz Group | 37 |
| Ivanitskiy, O.S. Generalized Equivalent Potential and the Sequence of Infinitesimal Lorentz Contractions Under Rotary Motion | 44 |
| Sokolik, G.A. Representation of the Complete Lorentz Group | 52 |
| Sokolik, G.A. Connection Between the "Local" Representation of the Space-Time Inversion Group and the Pauli Transformations | 56 |
| Gashkubayn, B.V., G.A. Maslovskaya, and A.F. Rudik Non-Conservation of Parity in $\beta\beta$ | 58 |
| Kilen'kiy, S.M. and R.M. Ermdin. Determination of Parity of Strange Particles | 63 |
| Losadze Yu.M. The Possible Versions of the β^- Decay Theory | 69 |
| Vasyshin, V.S. Equations of the Second Order for Spinor Wave Functions | 80 |
| Soder'zha, V.O. Conservation of the Combined Parity, as a Fundamental Law of the Symmetry in Nature | 83 |
| Gashkubayn, B.V. Polarization of Electrons of the Inner Conversion Subsequent to β^- Decay, Taking Into Account the Electric Field of the Nucleus | 89 |
| Ritenko, A.G. Polarization of the Nucleons Under the Stripping Reaction in the High Energy Region | 99 |
| Dyglan, E. Wave Equations for Elementary Particles | 109 |
| Karachenkov, V.S., and R.M. Burishanov. Some Remarks on the Super Structure of the Nucleon | 117 |
| Soder'zha, V.O. On the Superfluid State of an Atom Nucleus | 126 |
| Losadze Yu.M. The β^- -Summation of the Perturbation Method | 182 |
| Losadze Yu.M., V.I. Kondratyev, and I.Ye. Krivitskiy. The Problem of Nucleon-Nucleon Scattering in High-Energy Regions | 195 |
| Losadze Yu.M., V.I. Kondratyev, I.Ye. Krivitskiy, V.K. Puzhich, V. Plukhin, L.F. Lukin, and B.W. Ernst. The Application of the Modified Perturbation Method to the Interpretation of the Nucleon-Nucleon Scattering | 211 |

24(5)

SOV/139-59-1-15/34

AUTHOR: Lomsadze, Yu.M.

TITLE: On the Principle and Validity of the "Modified" Perturbation Method in the Theory of Quantized Fields (O sushchnosti i korrektnosti modifitsirovannogo metoda vozmushcheniy v teorii kvantovannykh poley)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, 1959, Nr 1, pp 88-96 (USSR)

ABSTRACT: The principle of the "modified" method is to replace the interaction representation of the Tomonoga-Schwinger theory by a representation defined by:

$$\hat{S}(g) = T \exp \left[-i \int d^4 x H(x) \right] \quad (2)$$

Here $\hat{S}(g)$ is the new "modified" operator, replacing the old interaction operator, T is the 'chronological symbol', H is the Hamiltonian of the system in 4-space and all other symbols have their standard significance. The conventional units $\hbar/2\pi = c = 1$ are adopted. One useful manipulative property of $\hat{S}(g)$ is that it transforms a function of the remote past into one of the remote future according to:

$$\text{Card 1/3} \quad \phi [+ \infty] = \hat{S}(g) \phi [- \infty]$$

SOV/139-59-1-15/34
On the Principle and Validity of the "Modified" Perturbation
Method in the Theory of Quantized Fields

The method is applied to general quantized field theory and is shown to have certain advantages over the interaction representation in regard to manifest covariance and renormalization. Specifically, renormalization difficulties associated with integration paths deformed to infinity are eliminated, since such paths are finite in the new representation. The validity of the method, while not rigorously established, is shown to be plausible by discussing its application to the scattering matrix and showing how the various steps in the practical computation of this matrix would have their counterparts in the well-established interaction representation. Finally the method is applied to the PS(PS) and PS(PV) variants of pion theory; the results obtained are consistent with the experimental evidence for the respective regions of validity of the two theories. Acknowledgements are made to Professor

Card 2/3

SOV/139-59-1-15/34

On the Principle and Validity of the "Modified" Perturbation
Method in the Theory of Quantized Fields

D.D. Ivanenko, A.M. Brodskiy, G.A. Sokolik, Yu.A. Gol'fand,
B.V. Silin, V.Ya. Faynberg and Ye.S. Fradkin, for their
advice.

There are 15 references, 13 of which are Soviet and
2 Italian.

ASSOCIATION: Uzhgorodskiy Gosuniversitet (Uzhgorod State University)

SUBMITTED: August 9, 1958;

After revision, December 14, 1958

Card 3/3

LOMSADZE, Yu.M.; LEND'YEL, V.I. [Lend'iel, V.I.]; KRIVSKIY, I.Yu.
[Kryvs'kiy, I.IU.]

Scattering of a neutron on a proton from the point of view
of a π -meson pair doublet. Ukr. fiz. zhur. 4 no.1:123-125
Ja-F '59. (MIRA 12:6)

L.Uzhgorodskiy gosudarstvennyy universitet.
(Neutrons--Scattering) (Protons) (Mesons)

LOMSADZE, Yu.M.; LEND'YEL, V.I.; KRIVSKIY, I.Yu.

Problem of the scattering of nucleons on nucleons at high energies.
Izv. vys. ucheb. zav.; fiz. no.4:123-129 '59. (MIRA 13:3)

1.Uzhgorodskiy gosuniversitet.
(Nucleons--Scattering)

LEVASHEV, Anatoliy Yevgen'yevich; LOMSDAZE, Yu.M., dotsent, otv.red.;
GAVRILOV, V.D., red.; MOROZ, S.M., tekhn.red.

[Elementary particles] Elementarnye chastitsy. Kiev, Izd-vo
Kievskogo univ. Pt.1. 1960. 135 p. (MIRA 14:2)
(Particles (Nuclear physics))

30602

S/058/61/000/008/002/044
A058/A101

24. 4400

AUTHOR: Lomsadze, Yu. M.

TITLE: On a possible theory of the quantum "field of probability amplitude"

PERIODICAL: Referativnyy zhurnal, Fizika, no. 8, 1961, 20, abstract 8A214
("Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. n.", no. 3,
1960, 11-14)

TEXT: The theory of the quantum "field of probability amplitude" (QFPA) considers the Schrödinger equation of quantum field theory as the "classical" field equation of the probability amplitude (or vector of state) $\hat{\Phi}(N, t)$ of a system of quantum fields. A commutation relation is established between the classical functional $\hat{\Phi}(N, t)$ and the canonically conjugate field $\hat{\Pi}(N, t)$ with the introduction of a new constant 1 , which here plays the role of Planck's constant. An equation of motion is derived for vector of state of QFPA $\Psi(Z(N), t)$ in some special Z representation. For solving the equation of motion one can use a perturbation method analogous to the conventional method. The entire discussion is cast in nonrelativistic form. The author points out

Card 1/2

X

30602
S/058/61/000/008/002/044
A058/A101

On a possible theory of the quantum ...

the mathematical difficulties associated with the necessity of introducing a
supercontinuous integral from the functional of the functional.

V. Lend'yel

[Abstracter's note: Complete translation.]

Card 2/2

X

8603

S/058/61/000/008/003/044
A058/A101

24.4400

AUTHOR: Lomsadze, Yu. M.

TITLE: The gist of the theory of the quantum "field of probability amplitude"

PERIODICAL: Referativnyy zhurnal, Fizika, no. 8, 1961, 20, abstract 8A215
("Dokl. i. soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. n.", no. 3, 1960, 15-17)

TEXT: The author discusses the physical meaning of the vector of state $\Psi(Z(N), t)$ (cf. abstract 8A214) of the quantum "field of probability amplitude" $\Psi(Z(N), t)$ should be understood as the amplitude of the probability of finding incident to measurement of a system at time t a given probability distribution $Z(N)$ in terms of the filling functions N . Inasmuch as the quantization of the "probability amplitude field" is effected with the aid of anticommutators and the filling numbers can assume only the values 0 and 1, the given vector of state can be interpreted in the same sense as the vector of state of conventional quantum field theory.

V. Lend'yel

[Abstracter's note: Complete translation]

Card 1/1

X

S/058/61/000/010/004/100
A001/A101

AUTHOR: Lomsadze, Yu. M.

TITLE: Problems of 1-summation of a series in the perturbation method

PERIODICAL: Referativnyy zhurnal. Fizika, no. 10, 1961, 24, abstract 10A255
(V sb. "Probl. sovrem. teorii elementarn. chastits", no. 2, Uzhgorod, 1959, 182-194, Engl. summary)

TEXT: Problems are discussed which are related to the application of an approximate method, "modified perturbation method", proposed by the author (RZh Fiz, 1957, no. 9, 21881; 1958, no. 2, 2693; 1959, no. 10, 21842; 1960, no. 2 2702), to renormalizable versions of the quantum field theory, in particular to the PS (PS) variant of the meson theory.

[Abstracter's note: Complete translation]

Card 1/1

✓

S/058/61/000/010/005/100
A001/A101

AUTHORS: Lomsadze, Yu. M., Lend'yel, V. I., Krivskiy, I. Yu.

TITLE: On the problem of nucleon-nucleon scattering at high energies

PERIODICAL: Referativnyy zhurnal. Fizika, no. 10, 1961, 24-25, abstract 10A256
(V sb. "Probl. sovrem. teorii elementarn. chastits", no. 2, Uzhgorod, 1959, 195-210, Engl. summary)

TEXT: The consequences of the hypothesis on existence of a scalar $\tilde{\eta}$ -meson triplet in addition to pseudoscalar mesons, are studied in detail. It is shown that an assumption of the presence in a $\tilde{\eta}$ -meson beam of 1-2% admixture of scalar $\tilde{\eta}$ -mesons does not contradict available experimental data; moreover, it is possible, even in the framework of the perturbation method, to obtain characteristics of a number of processes concordant with experiments. In particular, the following results are obtained on the basis of this hypothesis: 1) correct ratio of cross sections for processes of $\tilde{\eta}$ -meson scattering on neutrons, 2) good value for the Panovsky ratio, 3) correct ratio of cross sections for photoproduction processes, etc. Experiments are proposed for detecting scalar $\tilde{\eta}$ -mesons. Considerations are presented on violation of charge independence of

Card 1/2

On the problem of nucleon-nucleon scattering ...

S/058/61/000/010/005/100
A001/A101

nuclear forces at high energies. Total and differential cross sections of NN-scattering (calculated to the first approximation of the perturbation theory) agree well with experiments in the 100 - 600 Mev range. ↙

V. Lend'yel

[Abstracter's note: Complete translation]

Card 2/2

S/058/61/000/010/006/100
A001/A101

AUTHORS: Lomsadze, Yu. M., Lend'yel, V. I., Krivskiy, I. Yu., Pushchich, V.I.,
~~Khimich, I. V.,~~ Lukin, L. P., Ernst, B. M.

TITLE: On applying modified perturbation method to interpretation of nucleon scattering

PERIODICAL: Referativnyy zhurnal. Fizika, no. 10, 1961, 25, abstract 10A257
(V sb. "Probl. sovrem. teorii elementarn. chastits", no. 2, Uzhgorod, 1959, 211-216, Engl. summary)

TEXT: Differential effective cross sections for all types of NN-scattering have been determined in the first non-vanishing approximation of the modified perturbation method (consisting in a special summation over all simplest barion loops inserted into internal \bar{q} -meson lines of the Feynman 2nd-order graphs); assumptions are made on existence of scalar \bar{q} -mesons and violation of charge independence of nuclear forces at high energies. The cross sections calculated for the range 100 - 600 Mev agree sufficiently well with experimental data. Thereby the results of the preceding study (abstract 10A256) are additionally substantiated. An interesting possibility is discussed that at sufficiently

Card 1/2

On applying modified perturbation ...

S/058/61/000/010/006/100
A001/A101

great coupling constant, the scattering cross section may be completely independent of its value.

[Abstracter's note: Complete translation]



Card 2/2

S/058/61/000/006/001/003
A001/A101

24 4500

AUTHOR: Lomsadze, Yu.M.

TITLE: On calculation techniques in a new method of "strong" coupling in the theory of quantum fields

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1961, 30, abstract 6A314 (Dokl. i soobshch. Uzhgorodsk un-t. Ser. fiz.-matem n.", 1960, no. 3, 25 - 30)

TEXT: The author develops a method of calculating the matrix elements of the S-matrix in presentation in which the interaction operator of fields H' is diagonal. The method consists in expanding the S-matrix in a series in powers of the energy operator of the free meson field (this expansion should correspond to the expansion of the matrix element of a transition in powers of the quantity $1/g^2$, where g is coupling constant). As an example, the author considers the equation of a harmonic oscillator being in a field of external forces.

J
B

K.T.-M.

[Abstracter's note: Complete translation]

Card 1/1

S/058/61/000/006/006/063
AC01/A101

24.4500

AUTHORS: Lend'yel, V.I., Lomsadze, Yu.M., Ernst, B.M.

TITLE: The application of the "strong" coupling method to a simplest model

PERIODICAL: Referativnyy zhurnal. Fizika, no. 6, 1961, 30, abstract 6A315 ("Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. n.", 1960, no. 3, 31-32)

TEXT: To check the relativistic method of strong coupling in the field theory (abstract 6A314), the author considers an example, the equation of a harmonic oscillator placed into a field of external forces. It is shown that already the first approximation, in a case of a strong external field, makes it possible to find the wave function at $t = 0$ with a very high precision.

K.T.-M.

[Abstracter's note: Complete translation]

JB

Card 1/1

LOMSADZE, Yu.M.; LEND'YEL, V.I. [Lend'iel, V.I.]; ERNST, B.M.

Parity doublet of π -mesons and Chew's approximation method.
Ukr. fiz. zhur. 5 no.6:773-776 R-D '60 (MIRA 14:3)

1. Uzhgorodskiy gosudarstvennyy universitet.
(Mesons)

KRIVSKIY, I. Yu. [Kryvs'kyi, I. IU.]; LOMADZE, Yu.M.; FUSHCHICH, V.I.;
KHIMICH, I.V.

Problem of theradiative decay of a π -meson. Ukr. fiz. zhur. 5
no.6:777-780 N-D '60. (MIRA 14:3)

1. Uzhgorodskiy gosudarstvennyy universitet.
(Mesons--Decay)

LOMSADZE, Yu.M.; LEND'YEL, V.I. [Lend'iel, V.I.]

All-Union Conference on Elementary Particle Theory. Ukr. fiz. zhur. 5
no.6:865-868 N-D '60. (MIRA 14:3)
(Particles(Nuclear physics)—Congresses)

LOMSADZE, Yu.M.; LEND'EL, V.I.; ERNST, B.M.

Behavior of the total cross sections of \bar{p} -scattering at high energies. Zhur. eksp. i teor. fiz. 39 no.4:1154-1155 O '60.
(MIRA 13:11)

1. Uzhgorodskiy gosudarstvennyy universitet.
(Protons--Scattering)

S/058/61/000/011/001/025
A058/A101

24.6400

AUTHOR: Lomsadze, Yu.M.

TITLE: Concerning possible variants of β -decay theory

PERIODICAL: Referativnyy zhurnal. Fizika, no. 11, 1961, 25, abstract 11A27⁴ (V sb. "Probl. sovrem. teorii elementarn. chastits". no. 2, Uzhgorod, 1959, 69 - 79, English summary)

TEXT: This is a conference report (RZhFiz, 1961, 7A197). The author examines the feasibility of applying a relativistically invariant renormalization and regularization method to pseudo-scalar and pseudo-vector variants of β -decay theory, $\pi^- \rightarrow e + \nu$ and $\pi^- \rightarrow e + \nu + \gamma$ processes are investigated within the framework of interaction variants .

✓
B

[Abstracter's note: Complete translation]

Card 1/1

S/058/61/000/010/003/100
A001/A101

AUTHORS: Lomsadze, Yu. M., Maksimov, B. I.

TITLE: Application of Schwinger's variational method to the pair theory

PERIODICAL: Referativnyy zhurnal. Fizika, no. 10, 1961, 24, abstract 10A254
(V sb. "Probl. sovrem. teorii elementarn. chastits", no. 2, Uzhgorod, 1959, 30-36, Engl. summary)

TEXT: In complete analogy with the known methods, a system of equations in variational derivatives has been derived for the Green one-nucleon and one-meson functions in the isotopically invariant version of the theory with π -meson pair coupling. This system, in view of its non-linearity, can be solved only approximately. The system of equations for vacuum functional has been also derived and solved in the form of iterate integral.

V. Lend'yel

[Abstracter's note: Complete translation]

Card 1/1

✓

24.4400

S/058/62/000/004/013/160
A058/A101

AUTHOR: Lomsadze, Yu. M.

TITLE: Notes on the theory of the quantized "probability-amplitude field"

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 37, abstract 4A293
("Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. n.",
1961, no. 4, 9 - 14)

TEXT: The author examines the question of the physical meaning of the state vector in his proposed theory of the quantized "probability-amplitude field" (RZhFiz, 1961, 8A214 - 215). He indicates a relativistically invariant formulation of his new theory.

[Abstracter's note: Complete translation]

Card 1/1

24.4400

S/058/62/000/004/014/160
A058/A101

AUTHORS: Krivskiy, I. Yu., Lomsadze, Yu. M., Khimich, I. V.

TITLE: Concerning the correspondence principle in the theory of the quantized "probability-amplitude field"

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 37, abstract 4A294
("Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. n.", 1961 no. 4, 15 - 18)

TEXT: The authors prove a theorem of equivalence between the conventional quantum-field theory and the special case of their proposed theory in which the probability-amplitude field is being quantized (RZhFiz, 1961, 8A214 - 215).

[Abstracter's note: Complete translation]

Card 1/1

S/058/62/000/007/010/068
A061/A101

AUTHORS: Lend'yel, V. I., Lomsadze, Yu. M., Ernst, B. M.

TITLE: Parametric correlation in the effective range theory using
Mandel'shtam's dispersion relations

PERIODICAL: Referativnyy zhurnal, Fizika, no. 7, 1962, 29, abstract 7A274
("Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. n.", 1961,
no. 4, 19 - 21)

TEXT: The authors proceeded from the analytic characteristics of the energy variable of the singlet amplitude of fixed angle p-p scattering, and used a new form of approximation of experimental data (in accordance with the general scheme of Cini, Fubini, Stanghellini - RZhFiz, 1960, no. 4, 7765) to determine more accurately the coupling constant f^2 which turned out to be somewhat less than the universally adopted value $f^2 = 0.08$. They also succeeded in determining the parameters of the effective range theory, and found them to be very near those specific to the Yukawa potential. ✓

V. Lend'yel

[Abstracter's note: Complete translation]

Card 1/1

24 10 10

S/058/62/000/005/016/119
A001/A101

AUTHOR: Lomsadze, Yu. M.

TITLE: On utilizing a possible analyticity of matrix elements in field coupling constant

PERIODICAL: Referativnyy zhurnal, Fizika, no. 5, 1962, 34, abstract 5A316
("Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. n.",
1961, no. 4, 22-24)

TEXT: The author proposes an approach to solving the problems of strong interactions. The method is based on the assumption that matrix elements in coupling constant g are analytical in the vicinity of $g = 0$. The author proposes to utilize the solution of perturbation theory and to construct its analytical continuation, by means of Mittag-Leffler expansion, in the region of large physical values of interaction constant.

A. Brodskiy

[Abstracter's note: Complete translation]

Card 1/1

24.4400

S/058/62/000/004/015/160
A058/A101

AUTHORS: Khimich, I. V., Lomsadze, Yu. M., Krivskiy, I. Yu.

TITLE: $U(x)$ - $uN(k)$ representations in quantum-field theory

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 37, abstract 4A295
("Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. n.", 1961,
no. 4, 25 - 27)

TEXT: The authors establish a connection between functionals in different representations of the new strong-coupling method proposed earlier by one of the authors (RZhFiz, 1961, 11A247). VK

[Abstracter's note: Complete translation]

Card 1/1

S/058/62/000/005/015/119
AG01/A101

AUTHORS: Lomsadze, Yu. M., Krivskiy, I. Yu., Khimich, I. V.

TITLE: Some aspects of the new method of "strong" coupling in the theory of quantized fields

PERIODICAL: Referativnyy zhurnal, Fizika, no. 5, 1962, 34, abstract 5A315
("Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. n.", 1961, no. 4, 28-32)

TEXT: The method of strong coupling suggested earlier by one of the authors (RZhFiz. 1961, 11A247) is discussed. The possibility is considered of a consequent calculation, within the framework of this method, of Green's functions, in particular, Green's function of a single particle.

[Abstracter's note: Complete translation]

Card 1/1

S/044/62/000/004/076/099
C111/C222

AUTHORS: Kushtan, V.I., Lomsadze, Yu.M., Shuba, I.M.

TITLE: On the theory of generalized functionals

PERIODICAL: Referativnyy zhurnal, Matematika, no. 4, 1962, 87,
abstract 4B412. ("Dokl. i soobshch. Uzhgorodsk. un-t. Ser.
fiz.-matem. n.", 1961, no. 4, 116 - 121)

TEXT: In quantum-field theory there exist so-called singular
functionals, e.g. the δ -functional $\int [N(x) - N_0(x)]$ with the property
that

$$\int \delta N(x) \delta [N(x) - N_0(x)] = 1,$$

if the functional (continuous) integration extends over an open set of
functions containing $N_0(x)$. A definition of singular functionals is given
in the following way (as in the theory of generalized functions): The
singular functional (or, as the author terms it, hyperfunctional) is a

Card 1/2

On the theory of generalized functionals S/044/62/000/004/076/099
C111/C222

linear continuous functional over the space of basis functionals (the infinitely often differentiable and finite functionals with natural topology). The support of the singular functionals is defined, and a procedure is developed to regularize divergent functional integrals in which the functional in the integrand has in discrete "points" singularities of the type of a "pole".

[Abstracter's note : Complete translation.]

Card 2/2

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)

24.4400

S/135/C2/007/009/002/006
D234/D308

AUTHORS: Khimich, I.V., Lomsadze, Yu.li. and Kryvs'kyy, I.Yu.
TITLE: Some physical consequences of the theory of quantized field of the probability amplitude
PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 7, no. 9, 1962, 967-973

TEXT: The authors refer to their previous papers where the above theory was formulated (Doklady i soobshcheniya Uzhgorodskogo universite-ta, seriya fiz.-mat. nauk, no. 4, 15, 1961; Yu.M. Lomsadze, as above, no. 3, 11, 1960, no. 4, 9, 1961, Izv. Phys. 36, 1962) and derive an expression connecting the probability of transition from the initial to the final state, defined by this theory, with the experimentally observed probability. It is stated that the matrix element in the new theory can be obtained with any approximation in closed form according to the perturbation method developed in the papers quoted above. The new constant I can have any value. The authors quote the expressions for the matrix element in the case

✓B

Card 1/2

Some physical consequences ...

S/185/62/007/009/002/006
D254/D303

of $I = 2$, in the first and second approximation. They conclude that renormalization in the new theory has no additional difficulties in comparison with the usual quantized field theory. If the errors in determining the initial momenta of the particles are sufficiently small, the effective cross section given by the new theory for any process is the same as in the usual theory, up to the second approximation (for $I = 2$). It is found that for finding I special experiments are necessary, in which the initial state of the system would contain sufficiently distant momenta. The basic ideas forming the basis of the new theory are discussed. An essential feature of the new theory is stated to be the fact that it allows any degree of accuracy in measuring the complete set of physical quantities but no absolutely exact measurement. The authors express their gratitude to Ya.A. Smorodyn's'kyy, B.L. Yoffe, M.I. Podhorets'kyy and K.D. Tolstoy for discussion. 1B

ASSOCIATION: Uzhhorods'kyy derzhuniversytet (Uzhhorod State University)

SUBMITTED: January 20, 1962
Card 2/2

S/056/62/043/003/036/063
B108/B102

AUTHORS: Lend'yel, V. I., Lomsadze, Yu. M., Ernst, B. M.

TITLE: A more exact determination of parameters of the effective radius theory with the aid of Mandelstam's dispersion relations

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 3(9), 1962, 974 - 976

TEXT: On the basis of the Mandelstam dispersion representation for scalar NN-scattering amplitudes, M. Cini et al. (Phys. Rev., 114, 1633, 1959) have proposed a function $F(\omega)$ which makes it possible to determine the coupling constant f^2 by extrapolation from the region $\omega \gg 0$ to the non-physical point $\omega = -1/2$. ω is the square momentum of the nucleon. To approach that pole the authors suggest an "inverse" polynomial of the form $\omega = A_0 + A_1 F(\omega) + A_2 F^2(\omega) + A_3 F^3(\omega) + \dots$. At the non-physical point $\omega = -1/2$, the function $F(-1/2) = -1/\sqrt{2}$. Extrapolation of experimental data on low-energy pp-scattering distribution led to the coupling

Card 1/2

A more exact determination of...

S/056/62/043/003/036/063
B108/B102

constant $f^2 = 0.058 \pm 0.005$. The following parameters of the effective radius theory were calculated: $a_{\text{equiv}} = -17.6 \cdot 10^{-13}$ cm, $r = 2.80 \cdot 10^{-13}$ cm, $P = 0.045$, $Q = 0.0127$. These numerical values indicate that the nucleon interaction potential at low energies is a Yukawa type potential. There is 1 table.

ASSOCIATION: Uzhgorodskiy gosudarstvennyy universitet (Uzhgorod State University)

SUBMITTED: March 29, 1962

Card 2/2

LOMSADZE, Yu.M.; LEND'YEL, V.I.; KRIVSKIY, I.Yu. [Kryvs'kyi, I.IU.]
KHIMICH, I.V.

Third All-Union Conference on the Theory of Elementary Particles.
Ukr.fiz.zhur. 7 no.4:448-454. Ap '62. (MIRA 15:8)
(Particles (Nuclear physics))

B/881/57/000/001/001/013
A066/A126

AUTHOR: Lomsadze, Yu. M.

TITLE: Quantization of "free" fields in the generalized quantum theory

SOURCE: Uzhgorod. Universitet. Nekotoryye problemy sovremennoy fiziki yadra i elementarnykh chastits; sbornik statey, no. 1, 1957, 6 - 13

TEXT: In a previous work (Yu. M. Lomsadze. Nauchnyye zapiski Uzhgorodskogo universiteta, v. 18, p. 93 (1957) the author developed the fundamentals of a generalized theory for a "free" quantized spinor particle and a "free" classical electromagnetic field. The theory is based on the assumption that the conceptions of "wave function" and "field" refer not only to the point x_{μ} in the space-time continuum but also to a region σ therein with the volume λ^4 . λ is designated elementary length. These fields are now quantized in a relativistically covariant manner. For the purpose of quantizing the free electromagnetic field,

Card 1/2

Quantization of "free" fields in the

S/881/57/000/001/001/013
A066/A126

its operator in the Heisenberg or interaction representation is defined by a commutative relation, whereas the "free" spinor field is quantized with the aid of an anticommutative relation. Finally, the author considers the possibility of developing a generalized, relativistically covariant theory of interaction between quantized fields. It is stated that no difficulties are encountered with a quantized particle interacting with a classical electromagnetic field, not even in the similar case of a multi-electron system. The interaction of a multi-electron system with a quantized electromagnetic field is, however, problematic. ✓

SUBMITTED: October 14, 1956

Card 2/2

S/881/57/000/001/002/013
A066/A126

AUTHORS: Lomsadze, Yu. M., Maksimov, B. I.

TITLE: An idea of developing a non-local field theory

SOURCE: Uzhgorod. Universitet. Nektoryye problemy sovremennoy fiziki yadra i elementarnykh chastits; sbornik statey, no. 1, 1957, 14 - 18

TEXT: The hitherto vain attempt to develop a non-local field theory free from inherent contradictions is attributed to the fact that the very conception of non-locality is incompatible with the ordinary Cauchy problem. The equation of motion for a non-local field is chosen in such a manner that the quantities which determine the state of the field and which are given on a discrete set of points or regions within the space-time continuum can be determined uniquely. The equation of motion reads

$$\psi(x) = \sum_1^I S(x - x_1) \psi(x_1) \quad (2)$$

on the right-hand side of which summation is taken over all the points

Card 1/2

An idea of developing a non-local

S/881/57/000/001/002/013
A066/A126

of the chosen set. A detailed analysis of the equation reveals that the latter results in inconsistencies because the group property is disturbed.

SUBMITTED: October 14, 1956

Card 2/2

S/881/57/000/001/003/013
A066/A126

AUTHOR: Lomsadze, Yu. M.

TITLE: An effective method of calculating the S-matrix in quantum-field theory. Part II

SOURCE: Uzhgorod. Universitet. Nekotoryye problemy sovremennoy fiziki yadra i elementarnykh chastits; sbornik statey, no. 1, 1957, 19 - 38

TEXT: Part I of the present work (Yu. M. Lomsadze. Nauchnyye zapiski Uzhgorodskogo universiteta, v. 18, 151 (1957)) presented a method of solving the quantized equation of motion (Tomonaga-Schwinger equation). The formalism developed there allows the function $f(g, p)$ to be expanded in a generalized Maclaurin series with respect to g . For $g = 0$ the expansion possesses derivatives with respect to g of any order. The expansion is intended to lead to an initial function $f(g, p)$ that fulfills comprehensive prerequisites, of which the most important is that $f(g, p)$ be analytic. This can be achieved by introducing a "generalized sum" and

Card 1/2

An effective method of calculating

S/881/57/000/001/003/013
A066/A126

and an "l-sum". The aim of present work is to prove the validity and applicability of the mathematical formalism employed in the previous paper and to illustrate it by a simple example. The modified series is shown to be both renormalizable and convergent in the ordinary sense of the term. If real particles have large momenta, then the modified series will be absolutely convergent. There are 13 figures. ✓

SUBMITTED: October 7, 1956

Card 2/2

S/881/57/000/001/004/013
A066/A126

AUTHOR: Lomsadze, Yu. M., Maksimov, B. I.

TITLE: Some preliminary calculations in pair theory

SOURCE: Uzhgorod. Universitet. Nekotoryye problemy sovremennoy fiziki yadra i elementarnykh chastits; sbornik statey, no. 1, 1957, 39 - 54

TEXT: Part I: The scattering of π - and μ -mesons from a nucleon. On the basis of the pair theory, the cross sections for the scattering of pions and muons from a nucleon are calculated in first non-vanishing approximation of a perturbational method developed by the first-mentioned author in previous papers (Nauchnyye zapiski Uzhgorodskogo universiteta, v. 18, p. 155 (1957); Nekotoryye problemy sovremennoy fiziki yadra i elementarnykh chastits; sbornik statey, no. 1, 1957, p. 19). A comparison between the differential cross sections obtained by the modified perturbational method and those obtained in the usual first non-vanishing approximation indicates that almost the same results are achieved with

Card 1/2

Some preliminary calculations in pair theory

S/881/57/000/001/004/013
A066/A126

muon energies of up to 135 Mev and with much higher pion energies. - Part II: The scattering of an antinucleon from a nucleon in $\bar{\kappa}$ -meson pair theory. The same method was used here to calculate the cross section for the scattering of an antinucleon from a nucleon. The differential cross section recorded for the scattering of an antiproton by a proton exhibits a resonance peak at a definite energy of the antiproton. A similar maximum was observed in Part I. These maxima permit a qualitative interpretation of the multiple production of pions. - Part III: The application of Schwinger's variational method to the pair theory. Assuming that the Green function of a meson is independent of the mesonic field averaged over the vacuum operator, and that it is a given function of the coordinates, the authors consider the system of equations derived by them in one of the above-mentioned publications for the Green function of a nucleon within the framework of the pion pair theory. From the Green function of a nucleon within a classical mesonic field they derive an integral functional for the Green function of a nucleon in a quantized mesonic field. There are 4 figures. ✓

SUBMITTED: October 16, 1956

Card 2/2

S/881/57/000/001/011/013
A066/A126

AUTHOR: Lomsadze, Yu. M.

TITLE: The relation between interaction potential and S-matrix

SOURCE: Uzhgorod. Universitet. Nekotoryye problemy sovremennoy fiziki yadra i elementarnykh chastits; sbornik statey, no. 1, 1957, 102 - 110

TEXT: When $t = t'$ the one-dimensional Dirac-Pok-Podolsky equation (Phys. Zs. d. Sowjetunion, 2, 468 (1932)) assumes the form

$$\left[\gamma_1^{(n)} \gamma_1^{(n)} \frac{\partial}{\partial x_1} + \gamma_1^{(n)} x_0 + \gamma_1^{(n)} \gamma_1^{(n)} \frac{\partial}{\partial x_1} + \gamma_1^{(n)} x_0 + \gamma_1^{(n)} D'(x) + \right. \\ \left. + \gamma_1^{(n)} D'(x') \right] \Psi(\bar{x}, \bar{x}', t) = i \frac{\partial}{\partial t} \Psi(\bar{x}, \bar{x}', t) \quad (5)$$

The nucleon-nucleon interaction potential is regarded as an operator that does not act on the dynamic field variables and by means of which one obtains

Card 1/3

The relation between interaction

S/881/57/000/001/011/013
A066/A126

$$\left[\gamma_4^{(1)} \gamma_4^{(2)} \frac{\partial}{\partial x_1} + \gamma_4^{(1)} x_0 + \gamma_4^{(2)} \gamma_4^{(1)} \frac{\partial}{\partial x_1'} + \gamma_4^{(2)} x_0 + V^{(0, \eta)} \right] \Psi(\bar{x}, \bar{x}', t) = i \frac{\partial}{\partial t} \Psi(\bar{x}, \bar{x}', t), \quad (6)$$

if the terms, $\gamma_4^{(1)} D'(x) + \gamma_4^{(2)} D'(x')$ in Equation (5) are replaced by it. It is demonstrated that with an accuracy up to the first non-vanishing approximation the interaction potential

$$S_{\text{int}} = -\frac{1}{2\epsilon} \int d^3x \int d^3x' \int dt \Psi_{\text{in}}^*(\bar{x}, \bar{x}', t) V_{\text{int}} \Psi_{\text{in}}(\bar{x}, \bar{x}', t) \quad (7)$$

together with Equation (6), furnishes the same S-matrix as that obtained from Equation (5) without limitations. The calculation of the S-matrix is limited by the following: 1) The theorem of conservation of energy in the initial, and final states is not used; 2) only those elements are considered which correspond to Feynman graphs and furnish irreducible representations. The potential is usually dependent upon the three-dimensional vector of the distance between the particles and on their momentum operators. The singularity in the zero interaction potential can be defined asymptotically by the behavior of the S-matrix if the momenta

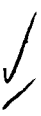
Card 2/3

The relation between interaction

S/881/57/000/001/011/013
A066/A126

are large. It is shown that an interaction must exist between nucleons and pions and also between electrons and photons, which permits a new hypothesis of coupled steady states. There is 1 figure.

SUBMITTED: October 15, 1956



Card 3/3

9/881/57/000/001/012/013
A066/A126

AUTHOR: Lomsadze, Yu. M., Maksimov, B. I.

TITLE: Investigation of potentials in theories with "non-linear" meson coupling

SOURCE: Uzhgorod. Universitet. Nekotoryye problemy sovremennoy fiziki yadra i elementarnykh chastits; sbornik statey, no. 1, 1957, 111 - 141

TEXT: Part I: Theories with triple meson coupling. It is shown that it is possible in theories with triple meson coupling to give a finite representation of the S-matrix of two nucleons in first non-vanishing approximation of the perturbation theory by renormalizing the constants of the "contact" terms. The singularities of the potentials are considered for several varieties of the theory (scalar mesonic field and pseudoscalar mesonic field). The singularities are of the types $1/r^7$ and $\ln(r/r^7)$. - Part II: Theories with quadruple meson coupling. The S-matrix can again be represented in a finite manner, and, in analogy

Card 1/2

Investigation of potentials in

S/881/57/000/001/012/013
A066/A126

to Part I, the singularities of the potentials have the form $1/r^{11}$ and $\ln(r/r^{11})$. Some varieties of the theory lead to attractive and repulsive potentials. - Part III: The finite form of the scattering matrix can again be attained by renormalizing a sufficient number of constants of the "contact" terms. The elimination of all infinities requires a minimum number of constants. An analysis of the singularities in the various varieties of the theory indicates that in the case of a 2m-fold spinor meson coupling and of an n-fold pseudoscalar meson coupling the singularities have the form $\ln(r/r^{6m+2n-1})$. There are 14 figures. ✓

SUBMITTED: October 15, 1956

Card 2/2

LOMSADZE, Yu.M., dots., otv. red.

[Program of and abstracts of papers read at the All-Union Interuniversity Conference on Quantum Field Theory and Elementary Particles] Programma i tezisyy dokladov Vsesoyuznoi mezhvuzovskoi konferentsii po teorii kvantovykh poley i elementarnykh chastits. 2d, Uzhgorod, Uzhgorodskiy gos. univ., 1960. 70 p. (MIRA 16:10)

1. Vsesoyuznaya mezhvuzovskaya konferentsiya po teorii kvantovykh poley i elementarnykh chastits. 2d, Uzhgorod, 1960.

(Quantum field theory)
(Particles (Nuclear physics))

LOMSADZE, Yu.M., dots., otv. red., PILIPOV, Ye., tekhn red.

[Program of and abstracts of papers read at the All-Union Interuniversity Conference on Quantum Field Theory and Elementary Particles] Programma i tezisyy dokladov. Posviashchaetsia 22 s"ezdu KPSS. Uzhgorod, Uzhgorodskii gos. univ., 1961. 117 p. (MIRA 16:10)

1. Vsesoyuznaya mezhvuzovskaya konferentsiya po teorii kvantovannykh poley i elementarnykh chastits, 3d, Uzhgorod, 1961.

(Quantum field theory)
(Particles (Nuclear physics))

LOMSADZE, Yuriy Melitonovich; TAL'SKIY, D.A., red.; VORONINA, R.K.,
tekhn. red.

[Theoretical introduction to the group concept in the theory of
elementary particles] Teoretiko-grupповое vvedenie v teoriu
elementarnykh chastits. Moskva, Vysshaya shkola, 1962. 181 p.
(MIRA 16:3)
(Particles (Nuclear physics)) (Groups, Theory of)

KUSHTAN, V.I.; LOMSDAZE, Yu.M., dotsent; ROMANKO, G.D.

Principle of invariance claimed relative to the inversion of
each constant in the theory, and its consequences. Dokl. i
soob. UzhGU. Ser. fiz.-mat. i ist. nauk no.5:20-24 '62.
(MIRA 17:9)

KOVAL'CHUK, A.Ye.; LOMADZE, Yu.M., dotsent; SHUBA, I.M.

Use of the method of strong coupling in solving Soln's model.
Dokl. i soob. UzhGU. Ser. fiz.-mat. i ist. nauk no.5:26-30 '62.
(MIRA 17:9)

LOMSADZE, Yu.M., dotsent

Renormalization of weak four-fermion interactions. Dokl. 1
soob. UzhGU. Ser. fiz.-mat. i ist. nauk no.5:66-69 '69.

Possibility of detecting and using the analytic properties of
the scattering amplitude in quaternion four-dimensional space.
Ibid.:69-72 (MIRA 1969)

KHIMICH, I.V.; LOMSADZE, Yu.M.; KRIVSKIY, I.Yu. [Krvys'kyi, I.IU.]

Certain conclusions drawn from the theory of the quantum field of the probability amplitude. Ukr. fiz. zhur. 7 no.9:967-974 S '62.
(MIRA 15:12)

1. Uzhgorodskiy gosudarstvennyy universitet. (Probabilities)
(Quantum field theory)

LEND'YEL, V.I.; LOMSADZE, Yu.M.; ERNST, B.M.

A more accurate presentation of the effective radius theory obtained with the aid of the Mandel'stam dispersion relations. Zhur. eksp. i teor. fiz. 43 no.3:974-976 '62. (MIRA 15:10)

1. Uzhgorodskiy gosudarstvennyy universitet.
(Protons--Scattering)

LOMSADZE, Yu.M.; KRIVSKIY, I.Yu.; KHMICH, I.V.

General principles of developing a theory of the quantized field
of the probability amplitude. Izv. vys. ucheb. zav.; fiz. no.4:
26-33 '63. (MLA 16:9)

1. Uzhgorodskiy gosudarstvennyy universitet.
(Quantum field theory)

L 16151-63

EWI(d)/FCC(w)/BDS AFFTC/IJP(G)/SSD

8/0058/63/000/006/B021/B021

ACCESSION NR: AR3005146

54

SOURCE: RZh. Fizika, Abs. 6 B163

AUTHOR: Lomsadze, Yu. M.

TITLE: Possibility of disclosing and utilizing the analytic properties of the scattering amplitude in quaternion 4-space

CITED SOURCE: Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. i istor. n., no. 5, 1962, 69-72

TOPIC TAGS: spinor field, quaternion field, Lorentz transformation, wave equation, scattering, four-space

TRANSLATION: Lorentz transformations of the spinor quaternion field are considered. A wave equation that coincides formally with the Dirac equation, in which the numerical matrices are replaced by quaternion matrices, is written down for such a field.

ENCL: 00

DATE ACQ: 15Jul 63

SUB CODE: PH

Card 1/1

LOMSADZE, Yu.M.

Making use of the possible analyticity of matrix elements with respect to the field coupling constant. *Izv.vys.ucheb.zav.; fiz.* no.3:119-122 '63. (MIRA 16:12)

1. Uzhgorodskiy gosudarstvennyy universitet.

LOMSADZE, Yu.M.; KRIVSKIY, I.Yu.; KHIMICH, I.V.

Fourth All-Union Conference on the Theory of Elementary Particles.
Izv.vys.ucheb.zav.; fiz. no.3:190-191 '63. (MIRA 16:12)

1. Uzhgorodskiy gosudarstvennyy universitet.

LOMSADZE, Yu.M.; KRIVSKIY, I.Yu.; KHIMICH, I.V.

Physical nature of the theory of the quantized field of the probability amplitude. Izv. vys. ucheb. zav.; fiz. no.4:113-119 '63.
(MIRA 16:9)

1. Uzhgorodskiy gosudarstvennyy universitet.
(Quantum field theory) (Probabilities)

L 17178-63

EWT(1)/EWT(m)/FCC(w)/BDS AFFTC/ASD

S/0185/63/008/005/0601/0605

59
55

ACCESSION NR: AP3000242

AUTHOR: Lomsadze, Yu. M.; Kry*vs'ky*ty, I. Yu.; Khimich, I. V.

TITLE: Fourth All-Union Conference on the Theory of Elementary Particles held in Uzhgorod from 26 to 29 November 1962/

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 8, no. 5, 1963, 601-605

TOPIC TAGS: elementary particle, Regge pole, quantum electrodynamics, quantum field theory, unified theory of relativity, photonuclear reaction, gravitation theory

ABSTRACT: The authors describe the proceedings of the Fourth All-Union Conference on the Theory of Elementary Particles, held in Uzhgorod on 26 to 29 November 1962, and preceded by a four-day (21 to 24 November) seminar of theoretical physicists, specialists in the field of elementary particles. At the seminar eminent specialists lectured on recent developments in the field of strong interaction, high-energy quantum electrodynamics, problems of the spatial-temporal description in the relativistic quantum theory, pseudo-Euclidean space-time at small distances,

Cord 1/2

L 17178-63

ACCESSION NR: AP3000242

4
the unified theory of relativity. The discussion during the conference proper was concerned with such topics as Regge poles, strong interactions, weak and electromagnetic interactions, gravitation theory, the group approach to and systematization of elementary particles, and new ideas and generalizations of the quantized field theory. The conference also included a section on photonuclear reactions, a seminar to commemorate the eminent Danish physicist Niels Bohr, and a seminar on the philosophical problems of the contemporary theory of elementary particles. The proceedings of the conference are being prepared for publication.

ASSOCIATION: None

SUBMITTED: 00

DATE ACQ: 18 Jun 63

ENCL: 00

SUB CODE: NS, PH

NO REF SOV: 000

OTHER: 000

Card 2/2

ACCESSION NR: AP4010405

S/0185/83/008/012/1303/1312

AUTHOR: Lomsadze, Yu. M.; Kry*vs'ky*y, I. Yu.; Romanko, G. D.

TITLE: On the possibility of a specific interaction between the E-states in the quantized probability amplitude field theory .

SOURCE: Ukrayins'ky*y fiz. zhurnal, v. 8, no. 12, 1963, 1303-1312

TOPIC TAGS: quantized field, probability amplitude, quantum mechanics, quantum theory, quantum, E-state, G-state, S-matrix, S-operator, wave function, interaction Hamiltonian, Hamiltonian

ABSTRACT: This article is a continuation of work by the authors in developing the quantized amplitude probability field theory. It is shown that two types of interaction Hamiltonians exist in the framework of that theory. Those of the first type, corresponding to absence of interaction among the E-states entering into G-states, with any arbitrary degree $I = 1, 2, 3, \dots$ of the internal chaotic state, for characteristics of processes usually observed experimentally, lead to the same results as conventional quantized field theory and therefore cannot determine the value of the universal constant I realized in nature. Those of the second type, which have no analogy in quantized field theory and which correspond to the

Card 1/2

ACCESSION NR: AP4010405

occurrence of a specific interaction among the E-states belonging to one G-state, in addition to interaction of the first type, lead to physical effects which depend on the degree I of the internal chaotic state of the particles; that degree can in principle be experimentally determined. Since the effects are small, they can be observed only after a substantial increase in experimental precision. It probably will be easiest to detect them in processes of particle decay. The authors are cordially grateful to Professor V. L. Bonch-Bruyevy*ch for valued stimulating remarks and also to Ye. V. Ky*ry*ohuk and Sh. Kazinets' for aid in making certain calculations. Orig. art. has: formulas.

ASSOCIATION: Uzhgorodskyy dershuniversity*tet (Uzhgorod State University)

SUBMITTED: 03May63

DATE ACQ: 20Jan64

ENCL: 00

SUB CODE: NS

NO REF SOV: 008

OTHER: 003

Card 2/2

ACCESSION NR: AP4020305

S/0139/64/000/001/0111/0121

AUTHORS: Krivskiy, I. Yu.; Lomsadze, Yu. M.

TITLE: Problem of discrete stationary states in the theory of a quantized field of amplitude of probability

SOURCE: IVUZ. Fizika, no. 1, 1964, 114-121

TOPIC TAGS: discrete stationary state, quantized field, amplitude of probability, wave function, harmonic oscillator, hydrogen atom, energy spectrum, universal constant, discrete energy state

ABSTRACT: In the framework of the recently constructed new quantum theory--the theory of a quantized field of amplitude of probability and the theory of quantized field of a wave function--the authors study the treatment of discrete stationary states in examples of a harmonic oscillator and a hydrogen atom (and hydrogen-like atoms). They show that the results of the new quantum theory with respect to the energy spectrum of a hydrogen atom (and hydrogen-like atoms), for any value of the universal constant $I = 1, 2, 3, \dots$, involved in this theory, are identical to the results of the usual quantum theory. They also show that the scheme of filling

Card 1/2

ACCESSION NR: APl4020305

electronic shells of atoms coming from the new quantum theory with any I coincides precisely with the scheme coming from the usual quantum theory. They indicate the theoretical possibility of determining the value which is realizable in nature of the new universal constant I on the basis of special experiments with atomic electrons. They discuss certain details relative to the treatment of discrete energy states in general in the new quantum theory. Orig. art. has: 18 formulas.

ASSOCIATION: Uzhgorodskiy gosudarstvennyy universitet (Uzhgorod State University)

SUBMITTED: 04Sep62

DATE ACQ: 31Mar64

ENCL: 00

SUB CODE: PH

NO RER SOV: 011

OTHER: 007

Card 2/2