TUMANYAN, R.; AVAKYAN, Kh.

Manufacture of casting models from "TSh styracryl". Prom.Arm. 5 no.9:31-32 S '62. (MIRA 15:9)

1. Leninakanskiy zavod shlifoval'nykh stankov.
(Leninakan—Machinery—Models) (Plastics)

TUMANYAN, S.

Eliminate shortcomings; use hidden potentialities more efficiently. Prom.Arm, 6 no.9:3-6 S '63. (MIRA 16:12)

1. Direktor Yerevanskogo zavoda sinteticheskogo kauchuka im. S.M. Kirova.

AMBARTSUMYAN, G.; TUMANYAN, S.

All-Union conference on the theory of probabilities and mathematical statistics. Teor.veroiat. i ee prim. 4 no.1:116-120 '59. (MIRA 12:3)

(Probabilities--Congresses)

TUMANYAN, S.A.

Structure of stems and petioles of some species of the genus Polygonum L. Izv. AN Arm. SSR. Biol. nauki 18 no.5 [illegible] My '65. (MIRA 18:7)

1. Glavnyy botanicheskiy sad AN SSSR, Moskva.

TUMANYAN, S.A.

Petiole structure of three mint species. Biul. Glav. bot. sada no.51: 106-109 '63. (MIRA 17:2)

1. Glavnyy botanicheskiy sad AN SSSR.

TUMANYAN, S.A.; KHALATYAN, G.G.

Desiccation of young mulberry plants under the influence of frost. Biul.Bot.Sada [Eriv.] no.13:5-14 '53. (MLRA 9:8)
(Mulberry) (Plants, Effect of temperature on)

TUMANYAN, S.A.

Wood structure of the Russian pear (Pyrus rossica A.Dan.). Izv.AN Arm.SSR.Biol.i sel'khoz.nauki 7 no.3:99-102 Mr '54. (MLRA 9:8)

1. Botanicheskiy institut AN Arm. SSR.
(Pear) (Botany--Anatomy) (Wood)

VIKHROV, V. Ye.; TUMANYAN, S.A.

Anatomical structure and physicomechanical properties of the wood of oak roots. Izv.AN Arm.SSR,Biol.i sel'khoz.nauki 6 no.11:27-43 '53. (MLRA 9:8)

1. Institut lesa AN SSSR, Moskva i Botanicheskiy institut AN Arm. SSR, Yerevan.

(Oak) (Roots--Anatomy) (Wood)

TUMANYAN, S.A.

Wood fragments in excavations of ancient Khorezm. Izv.AN Arm.SSR. Biol.i sel'khoz.nauki 7 no.9:89-93 S '54. (MLRA 9:8)

1. Botanicheskiy institut AN Arm. SSR.
(Khorezm Province--Trees, Fossil)

TUMANYAN, S.A.

Some data on the spreading of hyphae of different species of wood-staining fungi in the wood of the pine. Izv.AN Arm.SSR. Biol. i sel'-khoz. anuki 9 no.8:37-45 Ag '56. (MLRA 9:10)
(WOOD--STAINING FUNGI) (PINE--DISEASES AND PESTS)

1. VIPPER, P. B.; TUMANYAN, S. A.

2. USSR (600)

4. Cedar

7. Coalescence of cedar trunks, Priroda, 41, No. 11, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

TUMANYAN, S.A.

Leafstalk structure in herbaceous species of barberries (Berberidaceae). Biul.Glav.bot.sada no.58:79-85 '65.
(MIRA 18:12)

1. Glavnyy botanicheskiy sad AN SSSR.

TUMANYAN, S.G.

Achievements due to the initiative of efficiency promoters.
Transp.stroi. 11 no.3:9-10 Mr '61. (MIRA 14:3)

1. Nachal'nik 4-go uchastka tresta Transgidrostroy.
(Hydraulic structures--Labor productivity)

TUMANYAN, S.G., inzh.

Chain bucket soil loosener. Transp. stroi. 11 no.8:27-29 Ag '61.
(Earthmoving machinery)

TUMANYAN, S. Kh.

Call Nr: AF 1108825

Transactions of the Third All-union Mathematical Congress (Cont.) Moscow, Jun-Jul '56, Trudy '56, V. L, Sect. Rpts., Izdatel'stvo AN SSSR, Moscow, 1956, 237 pp.

Sragovich, V. G. (Moscow). Construction of the Statistical Theory of Nonstationary Systems Based on Probability Methods. 130-131

Mention is made of Khinchin, A. Ya.

Statulyavichus, V. A. (Leningrad). Theorem of Nonhomogenous Markov Chains. 131-132

Tumanyan, S. Kh. (Yerevan). On the Capacity of χ^2 Test in Relation to "Close" Alternatives. 132

Eydel'nant, M. I. (Tashkent). Application of the Theory of Decision Functions for Designing Standard Plans of Acceptance Control. 132

Mention is made of Kolmogorov, A. N.

Card 42/80

Transactions of the 6th Conf. on Probability Theory and Mathematical Statistics and of the Symposium on Distributions in Infinite-Dimensional Spaces held in Vil'nyus, 5-10 Sep '60. Vil'nyus Gospolitizdat Lit SSR, 1962. 493 p. 2500 copies printed

AMBARTSUMYAN, G.A. (Yerevan), red.; GNEDENKO, B.V. (Kiyev), red.; DYNKIN, Ye.B. (Moskva), red.; LINNIK, Yu.V. (Leningrad), red.; TUMANYAN, S.Kh. (Yerevan), red.; SILKUNI, A.G., red.izd-va; KAPLANYAN, M.A., tekhn.red.

[Transactions of the All-Union Conference on the Theory of Probability and Mathematical Statistics] Trudy. Erevan, Izd-vo Akad.nauk Armianskoi SSR, 1960. 291 p.
(MIRA 13:11)

1. Vsesoyuznoye soveshchaniye po teorii veroyatnostey i matematicheskoy statistike. Yerevan, 1958.
(Mathematical statistics) (Probabilities)

16(2)

AUTHOR: Tumanyan, S.Kh.

TITLE: On the Efficiency of the χ^2-Test Applied to the Problem of two Selections With Respect to "Near" Alternatives (O moshchnosti kriteriya χ^2, prilagayemogo k probleme dvukh vyborok, otnositel'no "blizkikh" al'ternativ)

SOV/22-11-6-3/10

PERIODICAL: Izvestiya Akademii nauk Armyanskoy SSR. Seriya fiziko-matematicheskikh Nauk, 1958, Vol 11, Nr 6, pp 3-14 (USSR)

ABSTRACT: Let m independent measurings of the random variable ξ and n independent measurings of the random variable η be carried out. In order to examine the assumption that the results of the measurings give two random sequences with equal distribution function, the statistics

$$(1)\ \chi^2 = mn \sum \frac{1}{\mu_i + \nu_i} \left(\frac{\mu_i}{m} - \frac{\nu_i}{n} \right)^2$$

can be used, where the numbers μ_i and ν_i of the measurings

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On the Efficiency of the χ^2-Test Applied to the Problem of two Selections With Respect to "Near" Alternatives

correspond to the intervals Δ_i $(i = \overline{0,s})$. The author investigates the case where the assumption is not true. The probability that the measuring of ξ (or η) belongs to the interval Δ_i is assumed to be p_i (or p_i). Let furthermore be

$$(2) \qquad p_i' - p_i = \frac{z_i \sqrt{(m+n)p_i}}{\sqrt{mn}} ,$$

where z_i are integers. The author investigates the limit distribution of (1) for $m \to \infty$, $n \to \infty$ under the condition (2). The knowledge of this distribution renders possible to determine the probability with which the assumption is to be rejected, if it is not true in the modified form (2). For the solution of the problem the statistics

$$(3) \qquad X^2 = mn \sum_{i=o}^{s} \frac{1}{mp_i + np_i} \left(\frac{\mu_i}{m} - \frac{\nu_i}{n} \right)^2$$

is formed and its limit distribution is determined. Then it is shown that the limit distribution of (1) coincides with the limit distribution of (3) under the condition (2). The expression

$$\lim_{m,n\to\infty} P(\chi^2 < x) = \frac{e^{-\frac{1}{2}\sum_{k=o}^{s} z_k^2}}{2\left(\sum_{k=o}^{s} z_k^2\right)^{\frac{s-1}{4}}} \int_o^x t^{\frac{s-1}{4}} e^{-\frac{t}{2}} J_{\frac{s-1}{2}}\left(\sqrt{t \sum_{k=o}^{s} z_k^2}\right) dt$$

is obtained as final result for the limit distribution of (1) under the condition (2).

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On the Efficiency of the χ^2-Test Applied to the Problem of two Selections With Respect to "Near" Alternatives SOV/22-11-6-3/10

There are 2 American references.

ASSOCIATION: Institut matematiki i mekhaniki AN Armyanskoy SSR (Institute of Mathematics and Mechanics, AS Armenian SSR)

SUBMITTED: March 10, 1958

16(1),16(2) SOV/42-14-2-16/19

AUTHORS: Ambartsumyan,G.A., and Tumanyan,S.Kh.

TITLE: All-Union Congress on Probability Theory and Statistics

PERIODICAL: Uspekhi matematicheskikh nauk,1959,Vol 14,Nr 2,pp 253-258 (USSR)

ABSTRACT: This is a report on the congress on probability theory and statistics which took place from September 19, 1958 to September 25, 1958 in Yerevan. It was organized by the Academy of Sciences Arm.SSR. Ca. 100 participators from Moscow, Leningrad, Kiyev, Tashkent, Vil'nyus, Yerevan, Riga, and Baku. Opening session by V.A.Ambartsumyan, president of the AS Arm.SSR. Final Address by B.V.Gnedenko, Academician AS Ukr SSR. Greeting telegrams to S.N. Bernshteyn, Academician, A.N.Kolmogorov, Academician, A.Ya. Khinchin, Corresponding member AS USSR. Deliveries were given by B.V.Gnedenko (Kiyev), Yu.V.Linnik (Leningrad), Yu.V.Prokhorov (Moscow), I.P.Tsaregradskiy, V.M.Zolotarev, B.M.Kloss, V.V.Petrov, V.A.Statulyavichus, F.I.Karpelevich, V.N.Tutuballin, M.G.Shur, N.N.Vorob'yev (Leningrad), V.N.Karableva, L.Komleva, T.A.Sarymsakov, D.K.Faddeyev, S.Nagayev, B.S.Fleyshman, I.M.Gel'fand, A.S. Frolov, N.N.Chentsov, R.L.Dobrushin, Ya.I.Khurgin, B.A.Sevast'yanov, L.V.Seregin, A.V.Skorokhod, N.P.Slobodenyuk, R.A.Zaydman, E.I.Vilkas, N.V.Smirnov (Moscow), O.V.Sarmanov (Moscow), A.A. Zinger, O.V.Shalayevskiy, G.A.Ambartsumyan (Yerevan), R.Kh.

Card 1/2

Diveyev, S.Kh.Tumanyan (Yerevan), V.A.Ambartsumyan, K.F.Gorodnikov, A.M.Yaglom (Moscow), V.S.Michalevich, S.M.Brodi, G.P. Basharin, I.N.Kovalenko, I.P.Kubilyus, R.V.Uzhdavinis, B.S. Tsybakov, M.S.Pinsker, I.A.Ovsiyevich, N.A.Borodachev, M.K. Kamalov, Kh.B.Kordonskiy, L.A.Khalfin, I.V.Romanovskiy, A.K. Kutay, M.I.Eydel'nant, Ye.B.Dynkin (Moscow), V.A.Volkonskiy, A.D. Ventsel', R.Z.Khas'minskiy, I.V.Girsanov, A.A.Yushkevich, V.G. Vinokurov, I.I.Gikhman (Kiyev), M.I.Yadrenko, I.A.Ibragimov, and Yu.A.Rozanov. The names of the scientists who were chairmen of the single sessions are underlined.

Kn

$$\chi^2 = \sum_{j=1}^{k} \frac{n}{p_j} \left(\frac{m_j}{n} - p_j \right)^2, \quad F(x) = \Pr[\chi^2 < x]$$

and

Let n, s and p_i vary simultaneously in such a way that $\min_{1\le i\le k} np_i \to \infty$. Then for all x, $F(x)\to K(x)$. Let n, s, k, [illegible] satisfies the condition, $\min_{1\le i\le k} np_i \to \infty$. Then, for all u,

$$F(s+u\sqrt{2s})\to \frac{1}{\sqrt{2\pi}}\int_{-\infty}^{u} e^{-u^2/2}du$$

J. L. Snell, Hanover, N. H.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001757420017-7"

TUMANYAN, S.Kh. (Yerevan).

Asymptotic distribution of the χ^2 criterion when the size of observations and the number of groups simultaneously increase [with summary in English]. Teor.veroiat.i ee prim. no.1:131-145 '56. (MLRA 9:12)

(Distribution (Probability theory))

TUMANYAN, S.Kh.

Maximum deviation of empirical distribution densities. Nauch.trudy Erev. un.48 no.2:3-48 '55. (MLRA 9:9)
(Mathematical statistics)

TUMANYAN, S. Kh.

"Asymptotic Distrubution of Chi-Square Criterion When the Size of Observations and the Number of Groups Simultaneously Increase"

Teor Ver. i Yeye Prim,1,No. 1, 1956
Sum 1137, 28 Nov 56

TUMANYAN, S.Kh.

Study of asymptotic multinomial probability distributions. Dokl. AN Arm. SSR 20 no.3:65-74 '55. (MLRA 8:7)

1. Sektor matematiki i mekhaniki Akademii nauk Armyanskoy SSR. Predstavleno V.A. Ambartsumyanom. (Distribution (Probability theory))

TUMANYAN, S.Kh.

PHASE I BOOK EXPLOITATION SOV/4981

Soveshchaniye po teorii veroyatnostey i matematicheskoy statistike, Yerevan, 1958

Trudy Vsesoyuznogo soveshchaniya po teorii veroyatnostey i matematicheskoy statistike, Yerevan, 19-25 sentyabrya 1958 g. (All-Union Conference on the Theory of Probability and Mathematical Statistics. Held in Yerevan 19-25 September, 1958. Transactions) Yerevan, Izd-vo AN ASSR, 1960. 291 p. Errata slip inserted. 2,500 copies printed.

Sponsoring Agency: Akademiya nauk Armyanskoy SSR.

Editorial Staff: G.A. Ambartsumyan, B.V. Gnedenko, Ye.B. Dynkin, Yu.V. Linnik and S. Kh. Tumanyan; Ed. of Publishing House: A.G. Sikuni; Tech. Ed.: M.A. Kaplanyan.

PURPOSE: The book is intended for mathematicians.

COVERAGE: The book contains 41 articles submitted to the Conference and dealing with the theory of probability and mathematical statistics. Some of the articles are the papers read at the Conference and edited for publication, while others outline the theses of papers which appeared or are scheduled to appear, wholly or in part, in other publications; in some cases, such publications are quoted. A list of the papers whose contents were published elsewhere is included and the places of publication are indicated. Individual articles examine theories of mass service, spectral instruments, numbers, games, and certain functions, and discuss the theorems of Shannon, Markov's chains, and certain processes, quantities, and functions. Such items as the method of least squares, the stochastic, Markov's and diffusion processes, measures and their applications, a scheme of Bernoulli experiments, Markov-type random fields, visible distribution of stars, Brownian motion, capacity of radio channels, and defective products are considered. No personalities are mentioned. References accompany some of the articles.

Card 6/8

TUMANYAN, Sof'ya

Anatomy of the leaves of dicotyledons and its significance for taxonomy. Izv. AN Arm. SSR. Biol. nauki 16 no.11:3-12 N '63. (MIRA 17:4)

1. Glavnyy botanicheskiy sad AN SSSR, Moskva.

TUMAN'YAN, T.G.

"Elements" of Euclid according to ancient Armenian sources. Ist.-mat. issl. no.6:659-671 '53. (MLRA 7:9)
(Geometry--Early works to 1800)

TUMANYAN, T. M.

TUMANYAN, T. M.: "The effect of the angle of contact, the stress, and the diameter of the block on the endurance of a cable." Min Higher Education USSR. Leningrad Polytechnic Inst imeni M. I. Kalinin. Leningrad, 1956. DISSERTATION FOR THE DEGREE OF CANDIDATE IN TECHNICAL SCIENCE.

SO: Knizhnaya Letopis', No. 18, 1956

SOV/122-59-3-38/42

AUTHOR: Tumanyan, T.M.

TITLE: The Effect of the Magnitude of the Enveloping Angle, the Tension and the Pulley Diameter on the Endurance of a Wire Rope (Vliyaniye velichiny ugla obkhvata, napryazheniya i diametra bloka na vynoslivost' kanata)

PERIODICAL: Vestnik Mashinostroyeniya, 1959, Nr 3, p 87 (USSR)

ABSTRACT: Author's summary of a dissertation submitted to the Leningrad Polytechnic Institute (Leningradskiy Politekhnicheskiy Institut) imeni M.I. Kalinin for the attainment of the degree of Candidate of Technical Sciences. The conclusions reached include: a) In the region of large enveloping angles, a decrease in the magnitude of the angle within a large range causes only a moderate increase in the wire rope endurance; b) in the region of small enveloping angles, a reduction in the enveloping angle substantially increases the endurance of the wire ropes. It was also established that, in order to reduce the wire rope wear caused by

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The Effect of the Magnitude of the Enveloping Angle, the Tension and the Pulley Diameter on the Endurance of a Wire Rope

sliding friction, it is necessary to mount the individual pulleys and the pulley assemblies on rolling bearings and to reduce the mass of the pulleys so far as possible.

TUMANYAN, T.M.

Effect of the value of the angle of contact, the tension, and the diameter of pulleys on the strength of wire ropes. Trudy LPI no.191:44-61 '57. (MIRA 11:9)

(Wire rope)

AVAKYAN, Ts.M.; TUMANYAN, V.A.

Theory of the visibility of X rays. Izv.AN Arm.SSR. Biol. i sel'khoz. nauki 9 no.8:21-28 Ag '56. (MLRA 9:10)

1. Institut fiziologii Akademii nauk armyanskoy SSR. 2. Institut fiziki Akademii nauk Armyanskoy SSR.
(X RAYS)

TUMANYAN, V. I.

56-5-5/55

AUTHOR VARFOLOMEYEV, A.A., GERASIMOVA, R.I., TUMANYAN, V.A.

TITLE Multiple Electron Production in a High Energy Electron-Photon Shower (Mnozhestvennoye obrazovaniye elektronov v elektronno-fotonnom livne bol'shoy energii. Russian)

PERIODICAL Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr5 , pp969 - 973 (U.S.S.R.)

ABSTRACT In connection with the systematic investigation of electron-photon showers occuring in the nuclear emulsion layers in the stratosphere an unusual formation of showers was recorded. A 150 - layer plate of the emulsion "P" was used as photoplate. The thickness of a layer was about 400 μ and the plates had a diameter of 10 cm.

Expcsure was carried out for about 10 hours in an altitude of about 20 - 24 km. The density of orbital traces in the emulsion was 37 grains per 100 μ in the case of a minimum of ionozation.

The unusual shower was caused by single electrons the path of which in the individual layers of the emulsion was $\sim$0,5 cm.

21 secondary electron-positron pairs were found, of which 12 had an energy of $\sim 10^8$ eV.

An exact analysis of these traces allows the conclusion that the primary electrons causing the effect had an energy of from 0,6 to $2;10^{12}$ eV.

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56-5-5/55

Multiple Electron Production in a High Energy Electron-Photon Shower

As a particular feature when analyzing the traces it was found that 6 electron-positron pairs always in couples occured and must therefore also have been formed simultaneously.

ASSOCIATION Not given
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Card 2/2

TUMANYAN, V.A.

USSR/Nuclear Physics - Cosmic Rays C-7

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 573

Author : Varfolomeyev, A.A., Gerasimova, R.I., Tumanyan, V.A.
Inst : -
Title : Multiple Formation of Electrons in an Electron-Photon Shower of High Energy.

Orig Pub : Zh. eksperim. i teor. fiziki, 1957, 32, No 5, 969-973

Abstract : An unusual electron-photon shower, due to an electron with an initial energy $>10''$ ev, was observed in a stack of unbacked emulsion layers, exposed in the stratosphere. Experimental data are given, obtained in the investigation of this shower, which evidence that there were three cases of simultaneous production of four electrons (two electron-positron pairs).

Card 1/1

21(7) SOV/2o-122-2-12/42

AUTHORS: Tumanyan, V. A., Zharkov, V. A., Stolyarova, G. S.

TITLE: **Allowance for Pseudotrident Process in Estimating the Cross Section for the Direct Formation of** Electron-Positron Pairs by Electrons (Uchet psevdotroynykh protsessov pri otsenke secheniya neposredstvennogo obrazovaniya elektronno-pozitronnykh par elektronami)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 2, pp 2o8-21o (USSR)

ABSTRACT: In the determination of the cross section of the immediate production of electron-positron pairs by high-energy electrons ("trident" (troynik)) it is essential to know the number of the so-called "pseudotridents" produced on a given length of the electron track. These "pseudotridents" are produced by the conversion of the γ-quanta of the bremsstrahlung of the electron in the immediate neighborhood of its track. The authors calculated the number of the "pseudotridents" according to the Monte-Carlo (Monte Karlo) method. These calculations were carried out for nuclear emulsions for the following 3 initial energies of the electrons:

Allowance for Pseudotrident Processes in Estimating the Cross Section for the Direct Formation of Electron-Position Pairs by Electrons

10^{10}, 10^{11}, 10^{12}, eV. According to the results of these calculations, the number of the "pseudotridents" depends slightly depends on the criteria mentioned by the authors. The results of this paper are then compared with those obtained by other authors. It is interesting to estimate the number of the immediate pair-productions by electrons on the basis of the number of the "pseudotridents". The results of this estimation are given in a table. Finally, the authors in some lines report on the results of other papers. They thank Professor I. I. Gurevich for his interest in this paper, B. A. Nikol'skiy for useful advice, and A. P. Sobolev for his help in the calculations. There are 2 figures, 2 tables, and 9 references, 3 of which are Soviet.

PRESENTED: May 13, 1958, by L. A. Artsimovich, Academician

SUBMITTED: February 5, 1958

TUMANYAN, V.A.

"DIRECT PRODUCTION OF ELECTRON-PHOSITRON PAIRS BY HIGH ENERGY ELECTRONS"
V.A. Tumanyan, S.A. Chuyeva, A.A. Varfolomeyev, R.I. Gerasimova, L.A. Makaryina, A.P. Mishakova, A.S. Romantseva, G.S. Stolyarova,

The cross-section of direct production of electron-positron pairs by high energy electrons was measured experimentally. For this purpose, a study was made ofisolated electron-photon cascades and the photon component of high energy muclear interactions in emulsion stacks exposed to adiation in the stratosphere. In order to exclude spurious cases of direct pair production, which constitute the main difficulty in experimental measurement of the cross-section of such pairs, the calculation was carried out by the Monte Carlo method.

The calculation was made for three values of primary electron energy: 10; 100 and 1,000 Bev, taking into consideration two possible variants of the Bremsstrahlung spectrum: Bethe-Heitler and Migdal variants (Landau-Pomeranchik and Ter-Mikaelyan effects). A method for determining the energy of ultra-relativistic electrons from the lateral distribution of the apexes of electron-positron pairs is suggested.

During the experimental measurement of very high electron energies, certain possible sources of underestimation were eliminated.

The cross-section of direct pair production by high energy electrons was found to be in agreement with Bhabha's calculation within the limits of experimental error.

report presented at the International Cosmic Ray Conference, Moscow 6-11 July 1959

TUMANYAN, V. A., Cand Phys-Math Sci -- (diss) "Immediate formation of electron-positron pairs by high energy electrons." Moscow, 1959. 12 pp; (Moscow Engineering Physics Inst); 125 copies; price not given; bibliography at end of text (19 entries); (KL, 17-60, 140)

24.2500
3.2410

S/627/60/002/000/026/027
D299/D304

AUTHORS: Tumanyan, V. A., Stolyarova, G. S., and Mishakova, A.P.

TITLE: Direct creation of electron-positron pairs by high-energy electrons

SOURCE: International Conference on Cosmic Radiation. Moscow, 1959. Trudy, v. 2. Shirokiye atmosfernyye livni i kaskadnyye protsessy, 314-319

TEXT: A modified version of the Monte Carlo method is proposed, yielding several new results. In particular, the absolute number of so-called "false triplets" is computed, as well as the cross-section for direct pair creation. The computations were carried out for electrons of 3 initial energies: 10^{10}, 10^{11} and 10^{12} ev. It was assumed that an electron of given initial energy appears at the point x=y=z=0, in the direction of the x-axis, penetrating to a depth x of up to 2.9 cm. Two types of bremsstrahlung spectra were considered in the computations which are based on Migdal's formula.

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D299/D304

Direct creation of ...

A figure shows the dependence of the mean number of false triplets on the distance to the point where the primary electron appeared. The indicated errors constitute the standard deviations computed according to the Monte Carlo method. It is noted that although for energies of 10^{11} ev. the number of false triplets is similar for both the Bethe-Heitler and Migdal spectra, yet for energies $\geq 10^{12}$ ev. a substantial discrepancy arises between these 2 types of spectra. Hence it is important (at such energies) to ascertain the validity of Migdal's formulas. Three strongnuclear interactions were observed, as well as three isolated electron-photon showers. The energy of the electron-positron pairs was mainly estimated by deviation-measurements during relative multiple scattering. As a result of the experiments, 54 cases of visible-triplet production were established. The total length of the investigated electron-track with mean energy of 20 Bev. equals 107.5 units of length. With a correction for false triplets, it was found that 19.6 ± 7.9 triplets were produced over that length. The dependence of the

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Direct creation of ...

mean-free path of triplet formation on electron energy is shown in a figure, where the results of other investigators are also plotted (for comparison). From the figure it is evident that all the results are in complete agreement with the theory of T. Murota et al. (Ref. 20: Progr. Theor. Phys., 16, 482, 1956). Hence the conclusion that the available experimental results on direct pair creation by high-energy electrons do not contradict the predictions of quantum electrodynamics up to primary-electron energies of 100 Bev. There are 4 figures and 20 references: 5 Soviet-bloc and 15 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: H. Fay. Nuovo Cim., 5, 293, 1957; M. Koshiba, M. F. Kaplon. Phys. Rev., 100, 327, 1955; F. J. Loeffler. Phys. Rev., 108, 1058, 1957; S. L. Leonard. Bull. Amer. Phys. Soc., I, 167, 1956.

Card 3/3

21(7) SOV/56-37-2-5/56

AUTHORS: Tumanyan, V. A., Stolyarova, G. S., Mishakova, A. P.

TITLE: On the Problem of the Direct Electron-Positron Pair Formation by Electrons of High Energy

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 2(8), pp 355-365 (USSR)

ABSTRACT: The direct pair formation cross section for electron energies of 0.5 - 100 Bev has already been investigated several times (Refs 1-13); the results differ considerably. The main experimental difficulty is the necessary elimination of "false triplets" (pair formation caused by the conversion of a γ-quantum of the bremsstrahlung of an electron immediately after its production). Methods of evaluating that fraction are discussed; the most favorable theoretical treatment of this problem is that by the Monte Carlo method. Also in the present paper this problem is investigated by means of an improved variant of the Monte Carlo method. The fundamentals of the calculation of the absolute number of false triplets for the primary electron energies 10^{10}, 10^{11} and 10^{12} ev are given; the experimental data

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On the Problem of the Direct Electron-positron Pair Formation by Electrons of High Energy

(bremsstrahlung cross section and all cross sections of elementary processes) entering into these calculations were obtained from the nuclear emulsions NIKFI-R and Ilford G-5. Determination of the distance at which the bremsstrahlung quantum transforms into a pair from the primary electron ϱ differs. $\varrho = \sqrt{\Delta y^2 + \Delta z^2}$ is between 0.2 and 0.44 μ (Refs 1,4,5). This criterium is to be unified: $\Delta y \leq 0.2\mu$; $\Delta z \leq 0.44\mu$, but also for 0.3 and 0.66 μ results are given. The diagram (Fig 2) shows the dependence of the average number of false triplets $\bar{n}$ on the distance to the primary electron; the values are compared with the curves obtained by Weil as well as with those obtained according to the spectra of Bethe-Heitler and Migdal (Ref 17). Figure 2 shows the dependence of $\bar{n}$ on electron energy (again compared with Bethe-Heitler and Migdal). Agreement is satisfactory. Further, the differential transversal distribution of pairs, the integral energy spectrum of the primary electrons (after passage of a unit of length - figure 5), the differential energy spectrum of the electron-positron pairs (comparison with

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Bethe-Heitler and Migdal - figure 6); figure 7 shows the dependence of the average distance of the pairs on the axis and of $\bar{n}$ on the electron energy. The results obtained are discussed in detail. The type of bremsstrahlung spectrum described by the Migdal formulas also takes the Landau-Pomeranchuk and the Ter-Mikayelyan-effect into account. The possibility is shown of measuring the energy of the fast electrons by determining the energy dependence of the mean transverse distance between the vertices of the electron-positron pairs produced by bremsstrahlung γ-quanta. In the last part of this paper experimental results are finally discussed, and it is shown that the cross section of direct pair production calculated by Bhabha agrees well with experimental results. The authors finally thank Professor I. I. Gurevich for his interest and discussion, as well as Professors A. I. Alikhanyan, K. A. Ter-Martirosyan and M. L. Ter-Mikayelyan, and A. A. Varfolomeyev and B. A. Nikol'skiy for their advice, and V. A. Zharkov for his assistance. There are 7 figures and 22 references, 8 of which are Soviet.

SUBMITTED: February 21, 1959

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TUMANYAN, V.A.

Direct generation of electron-positron pairs by electrons. Zhur. eksp. i teor. fiz. 38 no.1:264-265 Jan '60. (MIRA 14:9)
(Electrons) (Positrons) (Cosmic rays)

28722
S/022/61/014/003/008/008
D201/D304

24.6712

AUTHOR: Tumanyan, V.A.

TITLE: A possible method of investigating high-energy nuclear interactions

PERIODICAL: Akademiya nauk Armyanskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, v. 14, no. 3, 1961, 149 - 161

TEXT: A statistical approach is proposed of investigating otherwise little known physical characteristics of high-energy nuclear interactions. The increase of the life-time of relativistic particles is discussed to show its effect upon enhancing nuclear interactions of strange particles. In a medium of sufficient density a considerable number of strange particles produced in primary collisions will sustain nuclear interactions before having chance to decay, due to the increased life-time. It is shown that in secondary interactions the proportion of strange particles in the particle flux is always increased. For purpose of convenience the following

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assumption is introduced: The nuclear (inelastic) cross-sections for strange and ordinary particles are assumed to be nearly equal to each other and constant at a sufficiently high energy. In particular, all the strong interacting particles are assumed to have the same mean free path for nuclear interaction λ_B for energy $\gg 5$ BeV. The justification of the above assumption is discussed and at the same time it is pointed out that its violation should not upset the scheme in principle since it could be rectified by introducing adequate corrections. A quantity proposed to be called "excess strangeness" is introduced as follows: Two classes of secondary collisions of energy E_{2k} are distinguished 1) incident ordinary particles, 2) incident strange particles. By identifying strange particles of both classes one can determine the total positive strangeness S^+_{2k} and the total negative strangeness S^-_{2k} for the secondary collision, and in similar way S^+_{0k} and S^-_{0k} are determined for the primary collision (e.g. using particles from an accelerator) with the same energy of interaction. The excess strangeness is then defined

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as: $S^{+}_{1k} = S^{+}_{2k} - S^{+}_{0k}$ and $S^{-}_{1k} = S^{-}_{2k} - S^{-}_{0k}$. The excess strangeness S^{+}_{1k} and S^{-}_{1k} are proportional to the number of strange particles produced in the primary collision, and, therefore, the quantity $S_1 = \sum (S^{+}_{1k} + /S^{-}_{1k}/)$ and its dependence upon E_0 of the primary collision describes the behavior of the strange particle production cross-section. The proportionality between S_1 and the number of produced strange particles would be violated if at some value of E_0 intense production of Ξ and $\tilde{\Xi}$ - hyperons occurred, since then the increase of S_1 would include the additional contribution of double strangeness cascade hyperons. The behavior of the strange particle production cross-section as well as the possibility of production particles with strangeness 2 and 3 can be tested by looking at fluctuations of S_1. E.g. if the numbers of the produced strange particles were distributed according to Poisson's law, the distribution of S_1 will also be a Poisson one with a standard deviation

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$\sqrt{S_1}$, $2\sqrt{S_1}$ or $3\sqrt{S_1}$ for respective strangeness 1, 2 and 3. An indication of the production of strange particles of a higher than 1 order of strangeness can be this way obtained by a statistical analysis of experimental data; however, the expected effect will be rather small due to the comparative rareness of cascade hyperon production. To assess the possibilities and requirements of the proposed method a more detailed discussion is presented: 1) It is observed that from a set of values of $S^{\pm}_{1k}$ for different energies E_{2k} of the secondary collisions one can obtain information on the energy spectrum of the primary collisions and the strange particle production cross-section, assuming λ_B = const for energy $\geqslant 5$ BeV. 2) Angular distributions of strange particles are considered. By measuring the dependence of S_1 upon a mean angle of interaction one can obtain angular characteristics of strange particles production in the primary collision. 3) The problem is discussed of obtaining separate information on production of K-mesons and hyperons by investigating the excess strangeness S^{+}_{1k} and S^{-}_{1k}. This is possi-

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ble since the small contribution of antihyperons can be neglected and S^{+}_{1k} will depend only on nuclear interactions of K^{+} and K^{o} - mesons. 4) From a known production cross-section at an energy E_{2k} the cross-section of the primary collision at a higher energy E_o can be estimated by considering the ratio of the total excess strangeness S_1/S_o. 5) Practical experimental possibilities are considered. The obvious procedure would be to apply the scheme first to experiments using artificially accelerated particles to produce the primary collisions; by combining previous information on strange particle production at an energy E_{2k} with those obtained at a higher energy E_o, it will be thus possible to step up the energy until the limit available from accelerators is reached and then use particles of cosmic radiation. It should be possible to carry out these investigations up to energies E_o = 100 - 500 BeV, the limitation being implied by the difficulty of identifying strange particles produced in collisions of such high energy. It is suggested,

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however, that by investigating ternary collisions using the same statistical approach it should be possible to extend the limit up to $E_0 = 10^4$ BeV. Finally a discussion is given of the experimental limitations in terms of the required statistics and it is shown that in order to obtain reliable data on excess strangeness in secondary collisions considerably statistics are needed, however, the requirements are within experimental possibilities. There are 2 figures and 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: G. Von Dardel, et al., Phys. Rev. Letters, 5, 333, 1960; C.F. Powell, P.H. Fowler, and D.H. Perkins, The study of elementary particles by the photographic method, London, Pergamon press, 1959.

ASSOCIATION: Fizicheskiy institut akademiy nauk Armyanskoy SSR (Institute of Physics, AS Armenian SSR)

SUBMITTED: January 11, 1961

S/022/61/014/006/003/004
D299/D301

AUTHORS: Laziyev, E. M. and Tumanyan, V. A.

TITLE: On a method of measuring the velocity of charged particles

PERIODICAL: Akademiya nauk Armyanskoy SSR. Izvestiya. v. 14, no.6, 1961, 111-116

TEXT: The method is based on the relativistic nature of the interaction between traveling particle and electromagnetic field. It is proposed observing the relativistic change in the distance between the points where the particles and the wave peaks meet, by means of the radiation called forth at these points by accelerated ionization-electrons. In earlier works, the particle velocity was measured by standing electromagnetic waves, using the formula

$$l = \frac{1}{2}\lambda\beta \qquad (1)$$

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On a method of measuring ...

where l denotes the distance between neighboring points of meeting between traveling particle and wave peak, λ - the wavelength in the resonator, ß - ratio of particle to light velocity. Another (earlier) method involved the use of traveling electromagnetic waves, whose plane velocity may either equal the velocity of light or not. In the first case ($v_{ph} = c$), one obtains

$$l = \frac{\lambda}{2} \beta (1 + \beta) \left(\frac{E}{m_o c^2} \right)^2 \qquad (4)$$

where E is the particle energy and m_o the rest mass. The method of traveling waves permits measurement of higher velocities than those allowed by formula (1). In addition, $v_{ph} < c$ yields greater precision of measurement than follows from formula (1). However, in the region of higher energies, the length of the apparatus ought to

increase with the square of (E/m_0c^2). This limits the scope of the method, as the apparatus would become too unwieldy. These difficulties can be overcome by setting up a system of resonators along a straight line, the resonators being excited with a phase shift $\varphi(1)$. Assume the particle meets the wave peak in the first resonator. The condition for the subsequent meeting in one of the other resonators which is at a distance l from the first, is

$$\varphi(1) + l\frac{\omega}{v\cos\alpha} = m2\pi \qquad (5)$$

where m is set equal to 1. With m = 2,3,..., one obtains the other conditions. In the following, one always sets m = 1, as it is convenient to have minimum size of apparatus. Formula (5) describes the most general case, the formulas (1) and (4) being special cases of it. The system of resonators offers wide possibilities of velocity measurement. By appropriate choice of φ, any dependence of l on ß, required by the experiment, can be obtained. Two such re-

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lationships are considered, yielding

$$\text{a)} \quad \varphi(l) = \pi\left[1 - \frac{2l}{\lambda}\frac{1}{\sqrt{1-\left(\frac{\lambda}{nl}\right)^2}}\right],$$

$$\text{b)} \quad \varphi_1(l) = \pi\left[1 - \frac{2l}{\lambda}\frac{\left(\frac{nl}{\lambda}+\varepsilon\right)}{\sqrt{\left(\frac{nl}{\lambda}+\varepsilon\right)^2 - 1}}\right] \qquad (7)$$

n and ε are positive numbers, chosen from the conditions of the experiment. Fairly high energies can be measured, without a large increase in apparatus size; l depends linearly on E/m_0c^2, which makes formulas (7) more convenient than (4). Besides, the size of the

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apparatus can be further reduced by increasing n. Further, experimental conditions are considered which would involve an arbitrarily small angle of incidence α of the particles. Such conditions can be realized by means of an apparatus consisting of 2 completely identical systems of resonators or waveguides, whose axes are at a certain fixed angle θ. There are 2 figures and 2 references: 1 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: D. Gabor, B. Hampton, A Wilson cloud chamber with time-marking of particle tracks. Nature, 180, 746, 1957.

ASSOCIATION: Institut fiziki AN Armyanskoy SSR (Institute of Physics, AS ArmSSR)

SUBMITTED: June 27, 1961

TUMANYAN, V.A.; SARINYAN, M.G.; GALSTYAN, D.A.; KANETSYAN, A.R.; ARUSTAMOVA, M.Ye.; SARKISYAN, G.S.

Investigation of hypernuclei produced by 8.8 Bev. protons. Zhur. eksp.i teor.fiz. 41 no.4:1007-1012 O '61. (MIRA 14:10)

1. Fizicheskiy institut AN Armyanskoy SSR.
(Nuclei, Atomic) (Protons)

S/048/62/026/006/006/020
B125/B112

AUTHOR: Tumanyan, V. A.

TITLE: A possible method of studying high-energy nuclear interactions

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 6, 1962, 728 - 733

TEXT: A new experiment in obtaining information of high-energy nuclear reactions by statistical methods is described. Provided the medium is dense enough, relativistic time dilatation ensures that a notable proportion of the strange particles flying in that medium are developed before they are destroyed by nuclear interactions. At E_{2k} = 7.5 Bev, with a mean free path λ_{int} = 35 cm, the ratio between decaying and interacting strange particles at a distance t from the place of production, is less than 1% for K-mesons and $\sim$1 for Λ- and Σ-hyperons. Information on the production of strange particles through primary interaction at high energies is obtained by determining the yield of such particles from secondary nuclear interactions and by comparing this with the yield of

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strange particles from an equal number of interactions due to accelerated protons and mesons of equal energy. For each E_{2k} the yield of strange particles in the auxiliary collisions, caused by protons and pions, has to be measured. The total positive and negative strangenesses, as well as the "excess strangenesses" $S^+_{1k} = S^+_{2k} - S^-_{0k}$ and $S^-_{1k} = S^-_{2k} - S^-_{0k}$, can be determined by identifying the strange particles. Here S^+_{2k} and S^-_{2k} are the positive and negative strangenesses generated in the secondary interactions with the energies E_{2k} whilst S^+_{0k} S^-_{0k} are the strangenesses for the equal number of collisions (at the same energies) caused by accelerated particles. The strange particle production cross section can be found from the quantity $S_1 = \sum(S^+_{1k} + |S^-_{1k}|)$ (4) and from its dependence on E_0. The energy spectrum of the secondary particles arising is obtained from the quantities S^+_{1k} and S^-_{1k} at different energies E_{2k} of the secondary particles. There is 1 figure. The most important English-language reference is: C. F. Powell, P. H. Fowler, D. H. Perkins. The study of

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S/048/62/026/006/006/020
B125/B112

elementary particles by the photographic method, p. 534. Pergamon press, London.

ASSOCIATION: Fizicheskiy institut Akademii nauk ArmSSR (Physics Institute of the Academy of Sciences ArSSR)

Card 3/3

ARUSTAMOVA, M.Ye.; KANETSYAN, A.R.; SARINYAN, M.G.; TOSHYAN, R.T.; TUMANYAN, V.A.; TUMANYAN, E.R.

Production of hypernuclei by 8.8 Bev. protons. Zhur. eksp. i teor. fiz. 44 no.3:861-865 Mr '63. (MIRA 16:3)

1. Fizicheskiy institut AN Armyanskoy SSR.
(Photography, Particle track) (Protons) (Nuclear reactions)

L 13398-63 BDS/EWT(1)/EWT(m) AFFTC/AFWL/ASD JT
ACCESSION NR: AP3003144 S/0056/63/044/006/2100/2103

59
57

AUTHOR: Arutyunyan, F. R.; Tumanyan, V. A.

TITLE: Compton effect on relativistic electrons and the possibility of obtaining beams of hard Gamma quanta

SOURCE: Zhurnal eksper. i teor. fiziki, v. 44, no. 6, 1963, 2100-2103

TOPIC TAGS: Compton effect, relativistic electrons, hard Gamma quanta, bremsstrahlung

ABSTRACT: It is shown that the energy distribution of hard photons obtained by the Compton effect on relativistic electrons will differ appreciably from the bremsstrahlung spectrum, and that at relatively low energies of the scattered photons there will be produced monoenergetic hard Gamma quanta to some degree. The fluxes of the Gamma quanta produced in this manner are comparable with the corresponding quantities for bremsstrahlung. It is suggested that the hard Gamma quanta obtained by using sources of photons harder than those of light will be useful in the solution of many problems in physics. "The authors are indebted to Prof. A. I. Alikhanyan for interest and attention to the work, and to V. M. Arutyunyan for valuable advice. Orig. art. has 3 figures and 4 formulas.

Card 1/2 ASSOCIATION: Physics Inst. GKAE, Yerevan

TOPIC TAGS: high ene[illegible] accelerator, light scattering, laser, photon scatter[illegible]

ABSTRACT: Observation and investigation of the rare and very important process of light light scattering are possible at present-day intensities of laser emission

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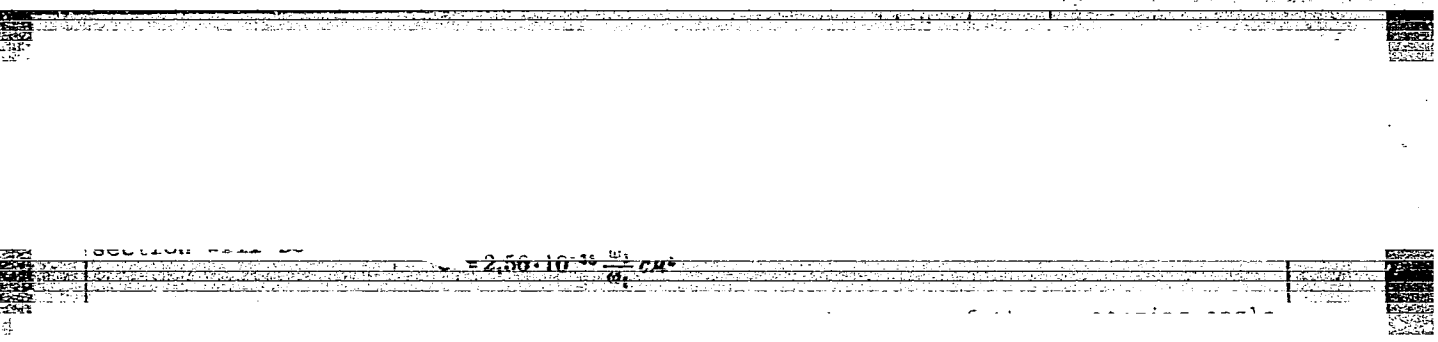

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001757420017-7"

ACCESSION NR: AP4038548 S/0053/64/083/001/0003/0034

AUTHORS: Arutyunyan, F. R.; Tumanyan, V. A.

TITLE: Quasimonochromatic and polarized Gamma quanta of high energy

SOURCE: Uspekhi fizicheskikh nauk, v. 83, no. 1, 1964, 3-34

TOPIC TAGS: gamma quantum, high energy particle, bremsstrahlung, Compton effect, pair production, relativistic electron, scattered radiation, polarized radiation

ABSTRACT: The two most promising methods for producing quasi-monochromatic and polarized gamma rays are discussed -- bremsstrahlung or pair production in crystals, and scattering of light by relativistic electrons. Such gamma rays can be useful in research on pion photoproduction and pion-pion interaction, and there is no systematic exposition of their production in the literature. A theoretical analysis and a review of the experimental research are presented for each

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ACCESSION NR: AP4038548

method. The section headings are: I. Introduction. II. Bremsstrahlung and pair production in crystals. 1. Qualitative treatment of interference phenomena in crystals. 2. Theory. 3. The polarization of the radiation. 4. Experimental investigations. III. The Compton effect on a moving electron. 1. Production of high-energy gamma rays by the scattering of light on relativistic electrons. 2. Polarization effects. 3. Experimental investigations. Orig. art. has: 24 figures, 68 formulas, and 4 tables.

ASSOCIATION: None

SUBMITTED: 00 / DATE ACQ: 09Jun64 ENCL: 00

SUB CODE: NP / NR REF SOV: 010 OTHER: 038

Card 2/2

ARUTYUNYAN, F.R.; TUMANYAN, V.A.

High-energy quasi-monochromatic and polarized gamma quanta.
Usp. fiz. nauk 83 no. 1:3-34 My '64. (MIRA 17:6)

ACCESSION NR: AT4014035 S/2918/63/000/000/0464/0473

AUTHOR: Tumanyan, V. A.

TITLE: Compton effect for a moving electron

SOURCE: ANArmSSR. Fizicheskiy institut. Voprosy* fiziki elementarny*kh chastits, 1963, 464-473

TOPIC TAGS: Compton effect, relativistic electron, laser, laser photon scattering, hard Gamma radiation, polarized Gamma radiation

ABSTRACT: Several features that distinguish gamma rays produced when photons are scattered by fast electrons from those produced by bremsstrahlung are discussed. With increased incident photon energy, the energy of the scattered γ quantum approaches that of the primary electrons. For example, in scattering of photons from a ruby laser (λ = 6943 Å) by 6, 40, and 500 BeV electrons, the scattered γ quanta have approximate energies of 0.848, 21 and 400 BeV,

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ACCESSION NR: AT4014035

respectively. The energy distribution of the scattered γ quanta becomes more monochromatic with increasing energy. Furthermore, unlike bremsstrahlung, the energy of the scattered quanta bears a one-to-one correspondence to their angle relative to the direction of the primary electron. The number of γ quanta produced by a laser pulse of 10^{-8} sec can reach 10^{5}--10^{7}, which is comparable with the bremsstrahlung yield. Advantages of this method of generating hard γ quanta are the fact that the light can interact with the accelerated electrons at any part of the acceleration cycle without being accompanied by extraneous background, and the high degree of polarization of the quanta produced. The availability of beams of polarized γ quanta with a favorable energy spectrum is of interest in the solution of many physical problems, such as particle photoproduction and nuclear photodisintegration. Orig. art. has: 4 figures and 18 formulas.

ASSOCIATION: Fizicheskiy institut AN ArmSSR (Physics Institute, AN ArmSSR)

Card 2/2

ARUTYUNYAN, F.R.; GOL'DMAN, I.I.; TUMANYAN, V.A.

Polarization phenomena due to the Compton effect on a moving electron and the production of beams of polarized gamma quanta. Zhur. eksp. i teor. fiz. 45 no.2:312-315 Ag '63. (MIRA 16:9)

1. Fizicheskiy institut Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR.
(Polarization (Nuclear physics)) (Compton effect)

ARUTYUNYAN, V.M.; ARUTYUNYAN, F.R.; ISPIRYAN, K.A.; TUMANYAN, V.A.

Light scattering on light. Zhur. eksp. i teor. fiz. 45 no.4: 1270-1272 O '63. (MIRA 16:11)

1. Institut fiziki Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR, Yerevan.

ARUTYUNYAN, F.R.; TUMANYAN, V.A.

Compton effect on relativistic electrons and the possibility of producing beams of hard gamma quanta. Zhur. eksp. i teor. fiz. 44 no.6:2100-2103 Je '63. (MIRA 16:6)

1. Fizicheskiy institut Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR, Yerevan.
(Compton effect) (Gamma rays)

ACCESSION NR: AP3005285 S/0056/63/045/002/0312/0315

AUTHOR: Arutyunyan, F. R.; Gol'dman, I. I.; Tumanyan, V. A. 16 55

TITLE: Polarization phenomena in Compton effect on a moving electron and possibility of obtaining beams of polarized gamma quanta

SOURCE: Zhur. eksper. i teoret. fiz. , v. 45, no. 2, 1963, 312-315

TOPIC TAGS: gamma quantum polarization, Compton effect, relativistic electron , laser, polarized photon beam

ABSTRACT: The polarization of gamma[19] quanta resulting from Compton scattering[19] of soft photons by relativistic electrons is analyzed. This problem is of interest because the polarization of the primary photons can be chosen in arbitrary manner, for example primaries from lasers. It is shown that the degree of polarization of such photons can approach 100% both in the case of photons scattered at a given azimuth angle and in the case when the polarization state is averaged over this angle. This shows Compton scattering on relativistic electrons to be an efficient means of obtaining polarized gamma quanta, which can help in the solution of many problems such as photoproduction processes, and nuclear photodisintegration.

Orig. art. has [illegible].

Card 1/2/ ASSOCIATION: Physics Inst. Nair Atomic Energy Com .

L 17603-63 EWT(m)/BDS APFTC/ASD S/056/63/044/003/014/053 57 56

AUTHOR: Arustamova, M. Ye., Kanetsyan, A. R., Sarinyan, M. G., Toshyan, R. T., Tumanyan, V. A., and Tymanyan, E. R.

TITLE: Production of hypernuclei by 8.8 Bev protons

PERIODICAL: Zhurnal eksperimental'noy i tekhnicheskoy fiziki, v. 44, no. 3, 1963, 861-865

TEXT: This paper is the continuation of the work investigating the production of hypernuclei in photoemulsion exposed to the internal 8.8 Bev proton beam. The experimental procedure was described in an earlier paper by V. A. Tumanyan, M. G. Sarinyan, D. A. Galstyan, A. R. Kanetsyan, and M. Ye. Arustamova (Ref. 1: ZhETF, 41, 1007, 1961). The results are summarized in Table 1 containing the first known cases of the B_{Λ}^{10} and B_{Λ}^{11} decays. The article concludes with a detailed discussion of the results on the basis of theoretical suggestions by F. Ferrary and L. Fonda (Ref. 3: Nuovo Cim., 7, 320, 1958) and H. Primakoff and W. B. Cheston (Ref. 4: Phys. Rev., 92, 1537, 1953). The physical results are in agreement with the conclusions of the first part of the Ref. 1. There are 3 figures and 2 tables.

Card 1/5 ASSOCIATION: Physics Institute of the Academy of Sciences of the Armenian.SSR

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001757420017-7"

TUMANYAN, V.A., uchitel'

School stockbreeding farm. Biol. v shkole no.3:81 My-Je '61.
(MIRA 14:7)

1. Shkola No.153 Leningrada.
(Stock and stockbreeding)

SAMARINA, O.P.; LERMAN, M.I.; TUMANYAN, V.D.; ANAN'YEVA, L.N.; GEORGIYEV, G.P.

Characteristics of chromosomal informational RNA. Biokhimiia 30 no.4:880-893 Jl-Ag '65. (MIRA 18:8)

1. Institut radiatsionnoy i fiziko-khimicheskoy biologii AN SSSR, Moskva.

TUMANYAN, V.G.; SHNOL', S.E.

Physiological and mutagenic action of D_2O on Drosophila melanogaster. Biofizika 8 no.1:15-18 '63. (MIRA 17:8)

1. Institut biologicheskoy fiziki AN SSSR, Moskva i fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta imeni Lomonosova.

TUMANYAN, V.G.; YESIPOVA, N.G.; ANDREYEVA, N.S.

RNA, carrier and code of hereditary information. Biofizika 8 no.1:124-125 '63. (MIRA 17:8)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.

TUMANYAN, V.G.; KISELEV, L.L.

Decoding the sequence of nucleotides in transfer ribonucleic acids. Biofizika 8 no.2:147-153 '63. (MIRA 17:10)

1. Institut biologicheskoy fiziki AN SSSR, Moskva, i Institut radiatsionnoy i fiziko-khimicheskoy biologii AN SSSR, Moskva.

TUMANYAN, V. G. Cand Biol Sci -- (diss) "Biological ~~properties~~ activities of actinomycetes of the soils of the Armenian SSR." Yerevan, 1957. 24 pp (Acad Sci Armenian SSR. ~~Department~~ Sector of Microbiology), 150 copies (KL, 45-57, 97)

AFRIKYAN, E.K.; TUMANYAN, V.G.; SARUKHANYAN, L.B.; BOBIKYAN, R.A.; AVAKYAN, Z.G.

Effect of antibiotics on the causative agents of bacterial diseases of silkworms. Dokl.An ARM SSR 32 no.2:113-116 '61. (MIRA 14:3)

1. Sektor mikrobiologii Akademii nauk Armyanskoy SSR. Predstavleno akademikom AN Armyanskoy SSR V.O. Gulkanyanom.
(SILKWORMS--DISEASES AND PESTS)

TUMANYAN, V. G.

30(1) SOV/30-59-1-50/57

AUTHORS: Afrikyan, E. K., Kuchayeva, A. G., Candidates of Biological Sciences

TITLE: Use of Antibiotics in Plant Cultivation (Primeneniye antibiotikov v rasteniyevodstve)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 1, pp 142-143 (USSR)

ABSTRACT: A conference dealing with this subject took place in Yerevan
from 8 to 13 October, 1958; it had been called by the Institut
mikrobiologii Akademii nauk SSSR (Microbiological Institute
of the Academy of Sciences USSR), the Vsesoyuznyy institut
sel'skokhozyaystvennoy mikrobiologii VASKhNIL (All-Union
Institute for Agricultural Microbiology of the VASKhNIL) and
the Sektor mikrobiologii Akademii nauk Armyanskoy SSR (Depart-
ment for Microbiology of the Academy of Sciences of the
Armyanskaya SSR).
M. Kh. Chaylakhyan spoke about microbe metabolites which
promote the development of higher plants.
N. M. Pidoplichko reported on investigations of several years'
duration carried out by Ukrainian mycologists on soil fungus
flora and its utilization in the fight against agricultural
plant diseases.
V. I. Bilay, S. V. Prokorsis dealt with the utilization of the
fungus Trichoderma in fighting the diseases of cotton bushes,
potatoes and some other agricultural breeds.
R. O. Mirzabekyan's report dealt with the excretions of
actinomycetes which produce active antibiotics against the
carriers of potato wart disease and diplodia in maize.
S. Oryrbayev, V. N. Karunina spoke about the utilization of
the actinomycetes antagonists in fighting potato ring rot and
mucous bacteria in cabbage.
S. M. Kublanovskaya reported on the effect of preparations from
cultures of actinomycetes to prevent wilt of the cotton bush.
V. G. Tumanyan, E. K. Afrikyan, R. A. Bobikyan, Ye. [illegible] Nikitina
spoke about the successful utilization of several bacteria
against diseases of vegetable cultures and potato wilt.
Yu. P. [illegible], O. G. Shirokov, A. D. Nalbandyan dealt
with the utilization of epiphyte microflora in fighting several
fungus diseases in plants.
D. M. [illegible], E. I. [illegible], L. P. [illegible],
V. G. Chernil'yan mentioned results obtained in investigations
of phytobacteriomycene as well as its utilization in fighting
diseases occurring in cotton bushes and beans.

Card 2/4

R. M. Galakhiyan, Ye. P. [illegible], A. G. Kuchayeva, [illegible]
[illegible] tried the effect of antibiotic preparations as
tomatoseed steeps against bacterial cankers in fighting diseases
of decorative plants.
Ye. Ya. [illegible], K. I. [illegible] described the investigation
of plant antibiotics.
[illegible], A. R. Silayev spoke about the production of the
preparations "griseoful'vin" and "trikhotetsin" and their ef-
fect on fungus carriers of diseases in cabbage, wheat and
water melons.
A. G. Kuchayeva reported on results achieved in the utilization
of antibiotics against unpaired silk moths.

Card 3/4

V. P. Izrail'skiy, N. D. [illegible], M. D. Kulikovskaya dealt
with the formation of phytopathogen forms of bacteria resistant
to antibiotics.
K. A. Vinogradova, [illegible] described a method of rapid de-
termination of the effect of antibiotics on plants. The
participants in the conference found the work carried out in
this field in the USSR insufficient. The organization of an
industrial production of antibiotics and microbe preparations
for the purpose of their large-scale practical introduction in
agriculture was pointed out as necessary. The necessity of an
intensification of joint investigation of the growth stimuli
and the development of plants of microbial origin was further
pointed out. The importance of coordination of work for purposes
of research and utilization of antibiotics in plant breeding
was emphasized as well as the holding of periodical conferences
dealing with this problem.

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TUMANYAN, V.G.; GARNIKHANYAN, L.B.

Distribution of Bac. megaterium bacteriophage in soil. Vop. mikrobiol. no.1:281-288 '61. (MIRA 17:10)

TUMANYAN V. G.

F

USSR / Microbiology. Antibiosis and Symbiosis. Antibiotics. Antibiosis.

Abs Jour : Ref Zhur - Biologiya, No 6, 1959, No. 24028

Author : Afrikyan, E. K.; Tumanyan, V. G.
Inst : Not given
Title : The Antagonistic Action of Soil Microorganisms on Cultures of Bacterium Radicicola

Orig Pub : Izb. AN ArmSSR. Biol. i s.-kh. n., 1958, 11, No 2, 37-46

Abstract : Various degrees of antagonistic action of actinomyces, sporogenous and non-sporogenous bacteria with respect to B. radicicola (BR) were established. It was shown that the strongest antagonists to BR are found among the bacilli of the group Bac. subtilis-mesentericus and Bac. circulans-polymyxa, and among

Card 1/2

USSR / Microbiology. Antibiosis and Symbiosis. F
Antibiotics. Antibiosis.

Abs Jour : Ref Zhur - Biologiya, No 6, 1959, No. 24028

the actinomyces in Act. griseus and Act. globisporus. The sensitivity of various cultures of BR to the action of antagonists is various, and this index may be utilized in the systematics of ecological strains of BR.
-- A. G. Kuchayeva

Card 2/2

TUMANYAN, V.G.; SARKHANYAN, L.B.; BOBIKYAN, R.A.; AFRIKYAN, E.K.

Effect of antibiotic feeding on the development and productivity of the silkworm. Vop. mikrobiol. no.2:312-331 '64.
(MIRA 18:3)

AFRIKYAN, E.K.; TUMANYAN, V.G.; CHIL-AKOPYAN, L.A.; BOBIKYAN, R.A.; SARUKHANYAN, L.B.; AVAKYAN, Z.G.

Effectiveness of antibiotics in bacterial diseases of the silkworm and in increasing productiveness. Dokl.AN Arm.SSR 32 no.3:155-158 '61. (MIRA 14:5)

1. Sektor mikrobiologii Akademii nauk Armyanskoy SSR. Predstavleno akademikom AN Armyanskoy SSR V.O.Gulkanyanom.
(Silkworms--Diseases and pests) (Antibiotics)

AFRIKYAN, E.K.; TUMANYAN, V.G.; BOBIKYAN, R.A.

Effect of penetrating radiations on the nitrogen-fixing activity of Azotobacter cultures. Dokl. AN Arm. SSR 26 no.4:253-256 '58. (MIRA 11:5)

1.Sektor mikrobiologii Akademii nauk Armyanskoy SSR. Predstavleno V.A. Farandzhyanom.
(Azotobacter) (X rays--Physiological effect)

TUMANYAN, V.I., kand.tekhn.nauk

Thickener and divider for ash pulp. Elek.sta. 29 no.8:45-47 Ag '58. (MIRA 11:11)
(Electric power plants) (Ash disposal)

AFRIKYAN, E.K.; TUMANYAN, V.G.

Antagonistic effect of soil micro-organisms on cultures of nodule bacteria. Izv. AN Arm. SSR. Biol. i sel'khoz. nauki 11 no.2:37-46 F '58. (MIRA 11:3)

1. Sektor biologii AN ArmSSR.
(Bacterial antagonism) (Soils--Bacteriology)
(Micro-organisms, Nitrogen-fixing)