



Predicted positron spectra from annihilation in the galactic halo of Kaluza-Klein gauge bosons, a dark-matter candidate, for different values of the boson mass. The sharp peaks above the estimated background indicate that an upcoming space-based experiment may be able to detect positrons from KK dark-matter. See article 211301; see also the Phys. Rev. Focus article at <http://focus.aps.org/story/v10/st21>.

PHYSICAL REVIEW LETTERS

Contents

VOLUME 89, NUMBER 21

18 November 2002

General Physics

Locality and Topology in the Molecular Aharonov-Bohm Effect	210401
Erik Sjöqvist	
Effective Size of Certain Macroscopic Quantum Superpositions	210402
Wolfgang Dür, Christoph Simon, and J. Ignacio Cirac	
Convergent Resummed Linear δ Expansion in the Critical $O(N)$ $(\phi^2)_{3d}^2$ Model	210403
Jean-Loïc Kneur, Marcus B. Pinto, and Rudnei O. Ramos	
Three-Body Problem in a Dilute Bose-Einstein Condensate	210404
Thorsten Köhler	
Torus Quantization for Spinning Particles	210405
Stefan Keppeler	
Faraday Patterns in Bose-Einstein Condensates	210406
Kestutis Staliunas, Stefano Longhi, and Germán J. de Valcárcel	
Enhanced Light Confinement in a Near-Field Optical Probe with a Triangular Aperture	210801
A. Naber, D. Molenda, U.C. Fischer, H.-J. Maas, C. Höppener, N. Lu, and H. Fuchs	

Gravitation and Astrophysics

Kaluza-Klein Dark Matter	211301
Hsin-Chia Cheng, Jonathan L. Feng, and Konstantin T. Matchev	

Elementary Particles and Fields

Search for the $K_L \rightarrow \pi^0 \pi^0 e^+ e^-$ Decay in the KTeV Experiment	211801
A. Alavi-Harati <i>et al.</i> (KTeV Collaboration)	

Nuclear Physics

Flow Measurements via Two-Particle Azimuthal Correlations in Au + Au Collisions at $\sqrt{s_{NN}} = 130$ GeV	212301
K. Adcox <i>et al.</i> (PHENIX Collaboration)	
Measurement of Spin-Transfer Observables in $\bar{p}p \rightarrow \bar{\Lambda}\Lambda$ at 1.637 GeV/c	212302
B. Bassalleck <i>et al.</i> (PS185 Collaboration)	
Limiting Temperatures and the Equation of State of Nuclear Matter	212701
J.B. Natowitz, K. Hagel, Y. Ma, M. Murray, L. Qin, R. Wada, and J. Wang	

Atomic, Molecular, and Optical Physics

Relativistic Density Functional Calculations for Pt ₂	213001
J. Anton, T. Jacob, B. Fricke, and E. Engel	
Background-Free Observation of Cold Antihydrogen with Field-Ionization Analysis of Its States	213401
G. Gabrielse, N.S. Bowden, P. Oxley, A. Speck, C.H. Storry, J.N. Tan, M. Wessels, D. Grzonka, W. Oelert, G. Schepers, T. Seifick, J. Walz, H. Pittner, T.W. Hänsch, and E.A. Hessels (ATRAP Collaboration)	

(Continued on Third Cover)

PRL 89 (21), 210401–219901, 18 November 2002 (248 total pages)

Contents (Continued)

Electron Binding Energies of Anionic Magnesium Clusters and the Nonmetal-to-Metal Transition	213402
Paulo H. Acioli and Julius Jellinek	
Onset of Metallic Behavior in Magnesium Clusters	213403
Owen C. Thomas, Weijun Zheng, Shoujun Xu, and Kit H. Bowen, Jr.	
Observation and Theoretical Description of Periodic Geometric Rearrangement in Electronically Excited Nonstoichiometric Sodium-Fluoride Clusters	213404
Štefan Vajda, Cosmin Lupulescu, Andrea Merli, Filip Budzyn, Ludger Wöste, Michael Hartmann, Jiří Pittner, and Vlasta Bonačić-Koutecký	
Measurement of the Photonic de Broglie Wavelength of Entangled Photon Pairs Generated by Spontaneous Parametric Down-Conversion	213601
Keiichi Edamatsu, Ryosuke Shimizu, and Tadashi Itoh	
Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.	
Space-Time Considerations in the Phase Locking of High Harmonics	213901
Mette B. Gaarde and Kenneth J. Schafer	
A Metamaterial for Directive Emission	213902
Stefan Enoch, Gérard Tayeb, Pierre Sabouroux, Nicolas Guérin, and Patrick Vincent	
Border between Regular and Chaotic Quantum Dynamics	214101
Yaakov S. Weinstein, Seth Lloyd, and Constantino Tsallis	
Fractal Structures of Normal and Anomalous Diffusion in Nonlinear Nonhyperbolic Dynamical Systems	214102
N. Korabel and R. Klages	
Competitive Clustering in a Bidisperse Granular Gas	214301
René Mikkelsen, Devaraj van der Meer, Ko van der Weele, and Detlef Lohse	
Plasma and Beam Physics	
Long-Pulse Operation at Constant Output Power and Single-Frequency Mode of a High-Power Electrostatic Free- Electron Maser with Depressed Collector	214801
W. H. Urbanus, W. A. Bongers, V. Bratman, C. A. J. van der Geer, M. F. Graswinckel, P. Manintveld, B. L. Militsyn, and A. Savilov (FEM Team)	
Beam-Halo Measurements in High-Current Proton Beams	214802
C. K. Allen, K. C. D. Chan, P. L. Colestock, K. R. Crandall, R. W. Garnett, J. D. Gilpatrick, W. Lysenko, J. Qiang, J. D. Schneider, M. E. Schulze, R. L. Sheffield, H. V. Smith, and T. P. Wangler	
Probability of Statistical L – H Transition in Tokamaks	215001
Sanae-I. Itoh, Kimitaka Itoh, and Shinichiro Toda	
Ion Acceleration in a Solitary Wave by an Intense Picosecond Laser Pulse	215002
A. Zhidkov, M. Uesaka, A. Sasaki, and H. Daido	
Observation of Saturation of Energy Transfer between Copropagating Beams in a Flowing Plasma	215003
R. K. Kirkwood, J. D. Moody, A. B. Langdon, B. I. Cohen, E. A. Williams, M. R. Dorr, J. A. Hittinger, R. Berger, P. E. Young, L. J. Suter, L. Divol, S. H. Glenzer, O. L. Landen, and W. Seka	
Condensed Matter: Structure, etc.	
Transverse Sound in Liquid- ³ He–Aerogel System	215301
S. Higashitani, M. Miura, T. Ichikawa, M. Yamamoto, and K. Nagai	
Ortho and Para Interstitial H ₂ in Silicon	215501
E. V. Lavrov and J. Weber	
Experimental Evidence for Dendrite Tip Splitting in Deeply Undercooled, Ultrahigh Purity Cu	215502
K. Dragnevski, R. F. Cochrane, and A. M. Mullis	
Cooperative Origin of Low-Density Domains in Liquid Water	215503
Jeffrey R. Errington, Pablo G. Debenedetti, and Salvatore Torquato	
Smectic Phases with Cubic Symmetry: The Splay Analog of the Blue Phase	215504
B. A. DiDonna and Randall D. Kamien	
Thermoreversible, Epitaxial fcc ↔ bcc Transitions in Block Copolymer Solutions	215505
Joona Bang, Timothy P. Lodge, Xiaohui Wang, Kristin L. Brinker, and Wesley R. Burghardt	

(Continued on Preceding Page)

Contents (Continued)

Target Morphologies via a Two-Step Dissolution-Quench Process in Polymer Blends	215506
Nigel Clarke	
Ferroelectric Order of Parallel Bistable Hydrogen Bonds	215507
Marek Szafranski, Andrzej Katrusiak, and Garry J. McIntyre	
Anion Bridges Drive Salting Out of a Simple Amphiphile from Aqueous Solution	215508
D.T. Bowron and J.L. Finney	
Morphological Instability and Additive-Induced Stabilization in Electrodeposition	215509
Mikko Haataja and David J. Srolovitz	
Fast Anomalous Diffusion of Small Hydrophobic Species in Water	215901
Barbara Kirchner, John Stubbs, and Dominik Marx	
Frustrated Soft Modes and Negative Thermal Expansion in ZrW_2O_8	215902
D. Cao, F. Bridges, G.R. Kowach, and A.P. Ramirez	
Surface Atomic Arrangement Visualization via Reference-Atom-Specific Holography	216101
Huasheng Wu, Shihong Xu, Simon Ma, W.P. Lau, M.H. Xie, and S.Y. Tong	
Competing Roughening Mechanisms in Strained Heteroepitaxy: A Fast Kinetic Monte Carlo Study	216102
Chi-Hang Lam, Chun-Kin Lee, and Leonard M. Sander	
Condensed Matter: Electronic Properties, etc.	
Structure and Passivation Effects of Mono- and Dihydrogen Complexes in $\text{GaAs}_y\text{N}_{1-y}$ Alloys	216401
A. Amore Bonapasta, F. Filippone, P. Giannozzi, M. Capizzi, and A. Polimeni	
Dynamical Structure Factor of the Homogeneous Electron Liquid: Its Accurate Shape and the Interpretation of Experiments on Aluminum	216402
Yasutami Takada and Hiroshi Yasuhara	
Possible Path to a New Class of Ferromagnetic and Half-Metallic Ferromagnetic Materials	216403
I.S. Elfimov, S. Yunoki, and G.A. Sawatzky	
Role of Single Defects in Electronic Transport through Carbon Nanotube Field-Effect Transistors	216801
Marcus Freitag, A.T. Johnson, Sergei V. Kalinin, and Dawn A. Bonnell	
Spin-Resolved Photoemission of Surface States of $\text{W}(110)-(1 \times 1)\text{H}$	216802
M. Hochstrasser, J.G. Tobin, Eli Rotenberg, and S.D. Kevan	
<i>Ab Initio</i> Calculations of the Anisotropic Dielectric Tensor of GaAs/AlAs Superlattices	216803
Silvana Botti, Nathalie Vast, Lucia Reining, Valerio Olevano, and Lucio Claudio Andreani	
Continuous Absorption Background and Decoherence in Quantum Dots	216804
A. Vasanelli, R. Ferreira, and G. Bastard	
Vortex Charges in High-Temperature Superconductors	217001
Yan Chen, Z.D. Wang, Jian-Xin Zhu, and C.S. Ting	
Local Moment Formation in the Superconducting State of a Doped Mott Insulator	217002
Ziqiang Wang and Patrick A. Lee	
Visualization of Interacting Crossing Vortex Lattices in the Presence of Quenched Disorder	217003
A.N. Grigorenko, S.J. Bending, A.E. Koshelev, John R. Clem, T. Tamegai, and S. Ooi	
Quantum Fluctuations in Josephson Junction Comparators	217004
Thomas J. Walls, Timur V. Filippov, and Konstantin K. Likharev	
Separation of Time Scales and Reparametrization Invariance for Aging Systems	217201
Claudio Chamon, Malcolm P. Kennett, Horacio E. Castillo, and Leticia F. Cugliandolo	
<i>p</i> -Spin Model in Finite Dimensions and Its Relation to Structural Glasses	217202
M.A. Moore and Barbara Drossel	
Giant Dielectric Permittivity Observed in Li and Ti Doped NiO	217601
Junbo Wu, Ce-Wen Nan, Yuanhua Lin, and Yuan Deng	
Interdisciplinary Physics: Biological Physics, Quantum Information, etc.	
Minimum Energy Requirements for Quantum Computation	217901
Julio Gea-Banacloche	
Inhibition of Vascularization in Tumor Growth	218101
M. Scalerandi and B. Capogrosso Sansone	

(Continued on Preceding Page)

Contents (Continued)

Scale-Free Networks on Lattices	218701
Alejandro F. Rozenfeld, Reuven Cohen, Daniel ben-Avraham, and Shlomo Havlin	
Comments	
Comment on “Low-Density Spin Susceptibility and Effective Mass of Mobile Electrons in Si Inversion Layers” ...	219701
S. V. Kravchenko, A. A. Shashkin, and V. T. Dolgoplov	
Pudalov <i>et al.</i> Reply	219702
V. M. Pudalov, M. Gershenson, H. Kojima, N. Busch, E. M. Dizhur, G. Brunthaler, A. Prinz, and G. Bauer	
Comment on “Effects of Cosmic Rays on Atmospheric Chlorofluorocarbon Dissociation and Ozone Depletion”	219801
N. R. P. Harris, J. C. Farman, and D. W. Fahey	
Lu and Sanche Reply	219802
Q.-B. Lu and L. Sanche	
Comment on “Effects of Cosmic Rays on Atmospheric Chlorofluorocarbon Dissociation and Ozone Depletion”	219803
Prabir K. Patra and M. S. Santhanam	
Lu and Sanche Reply	219804
Q.-B. Lu and L. Sanche	
Comment on “Dynamics of HIV Infection: A Cellular Automata Approach”	219805
Matthew C. Strain and Herbert Levine	
Errata	
Publisher’s Note: Overcoming the Diffraction Limit in Wave Physics using a Time-Reversal Mirror and a Novel	
Acoustic Sink [Phys. Rev. Lett. 89 , 124301 (2002)]	219901
J. de Rosny and M. Fink	