PHYSICAL REVIEW LETTERS

Contents

VOLUME 84, NUMBER 7 14 February 2000

PRL 84 (7), 1363–1638 (14 February 2000)

General Physics

Conformally Invariant Fractals and Potential Theory 1363
Bertrand Duplantier

"Weighing" a Closed System and the Time-Energy Uncertainty Principle 1368
Yakir Aharonov and Benni Reznik

Propagation of Cold Atoms along a Miniature Magnetic Guide 1371
M. Key, I. G. Hughes, W. Rooijakkers, B. E. Sauer, E. A. Hinds, D. J. Richardson, and P. G. Kazansky

Completely Positive Quantum Dissipation 1374
Bassano Vacchini

Gravitation and Astrophysics

Unstable Superheavy Relic Particles as a Source of Neutrinos Responsible for Ultrahigh-Energy Cosmic Rays 1378
Graciela Gelmini and Alexander Kusenko

Elementary Particles and Fields

Lorentz and *CPT* Tests with Spin-Polarized Solids 1381
Robert Bluhm and V. Alan Kostelecký

Precision Observables and Electroweak Theories 1385
Jonathan A. Bagger, Adam F. Falk, and Morris Swartz

Improved Branching Ratio Measurement for the Decay $K_L^0 \to \mu^+\mu^-$ 1389
D. Ambrose, C. Arroyo, M. Bachman, D. Connor, M. Eckhause, S. Graessle, A. D. Hancock, K. Hartman, M. Hebert, C. H. Hoff, G. W. Hoffmann, G. M. Irwin, J. R. Kane, N. Kanematsu, Y. Kuang, K. Lang, R. Lee, R. D. Martin, J. McDonough, A. Milder, W. R. Molzon, M. Pommot-Maia, P. J. Riley, J. L. Ritchie, P. D. Rubin, V. I. Vassilakopoulos, R. E. Welsh, and S. G. Wojcicki (BNL E871 Collaboration)

First Observation of the Decay $B \to J/\psi\phi K$ 1393
A. Anastassov *et al.* (CLEO Collaboration)

Nuclear Physics

G_{E_p}/G_{M_p} Ratio by Polarization Transfer in $\vec{e}p \to e\vec{p}$ 1398
M. K. Jones *et al.* (The Jefferson Lab Hall A Collaboration)

Microscopic Calculation of the Inclusive Electron Scattering Structure Function in ^{16}O 1403
Bogdan Mihaila and Jochen H. Heisenberg

Atomic, Molecular, and Optical Physics

Slow Spin Relaxation of Rb Atoms Confined in Glass Cells Filled with Dense ^{4}He Gas at 1.85 K 1407
A. Hatakeyama, K. Oe, K. Ota, S. Hara, J. Arai, T. Yabuzaki, and A. R. Young

Doubly Vibrationally Enhanced Four Wave Mixing: The Optical Analog to 2D NMR 1411
Wei Zhao and John C. Wright

(Continued on Third Cover)

Copyright 2000 by The American Physical Society

Contents (Continued)

Rydberg Electron Interferometry 1415
Michael A. Morrison, Eric G. Layton, and Gregory A. Parker
Nonlinear Optics and Quantum Entanglement of Ultraslow Single Photons 1419
M. D. Lukin and A. Imamoğlu

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.
Annihilation of One of the Coexisting Attractors in a Bistable System 1423
A. N. Pisarchik and B. K. Goswami
Periodic-Orbit Theory of Anderson Localization on Graphs 1427
Holger Schanz and Uzy Smilansky
Noncausal Time Response in Frustrated Total Internal Reflection? 1431
John J. Carey, Justyna Zawadzka, Dino A. Jaroszynski, and Klaas Wynne
New Effects in Light Scattering in Disordered Media and Coherent Backscattering Cone: Systems of Magnetic Particles 1435
F. A. Pinheiro, A. S. Martinez, and L. C. Sampaio
Stresses in Silos: Comparison Between Theoretical Models and New Experiments 1439
L. Vanel, Ph. Claudin, J.-Ph. Bouchaud, M. E. Cates, E. Clément, and J. P. Wittmer
Characteristics of Two-Dimensional Turbulence That Self-Organizes into Vortex Crystals 1443
Dezhe Z. Jin and Daniel H. E. Dubin
Two-Dimensional Evolution Equation of Finite-Amplitude Internal Gravity Waves in a Uniformly Stratified Fluid 1447
Takeshi Kataoka, Michihisa Tsutahara, and Tomonori Akuzawa

Plasma and Beam Physics
Spontaneous Fluctuations of a Temperature Filament in a Magnetized Plasma 1451
A. T. Burke, J. E. Maggs, and G. J. Morales
Reconnection Rate for the Inhomogeneous Resistivity Petschek Model 1455
Nikolai V. Erkaev, Vladimir S. Semenov, and Ferdinand Jamitzky
Effect of the Plasma Density Scale Length on the Direction of Fast Electrons in Relativistic Laser-Solid Interactions 1459
M. I. K. Santala, M. Zepf, I. Watts, F. N. Beg, E. Clark, M. Tatarakis, K. Krushelnick, A. E. Dangor, T. McCanny, I. Spencer, R. P. Singhal, K. W. D. Ledingham, S. C. Wilks, A. C. Machacek, J. S. Wark, R. Allott, R. J. Clarke, and P. A. Norreys
Suppression of Plasma Turbulence During Optimized Shear Configurations in JET 1463
G. D. Conway, D. N. Borba, B. Alper, D. V. Bartlett, C. Gormezano, M. G. von Hellermann, A. C. Maas, V. V. Parail, P. Smeulders, and K-D. Zastrow

Condensed Matter: Structure, etc.
Evidence of Highly Collective Co Diffusion in the Whole Stability Range of Co-Zr Glasses 1467
A. Heesemann, V. Zöllmer, K. Rätzke, and F. Faupel
Atomistic Simulation of Aging and Rejuvenation in Glasses 1471
Marcel Utz, Pablo G. Debenedetti, and Frank H. Stillinger
Structure and Formation Mechanism of Ge E' Center from Divalent Defects in Ge-doped SiO_2 Glass 1475
Takashi Uchino, Masahide Takahashi, and Toshinobu Yoko
Silicon Clusters of Intermediate Size: Energetics, Dynamics, and Thermal Effects 1479
Lubos Mitas, Jeffrey C. Grossman, Ivan Stich, and Jaroslav Tobik
Orientational Melting in Carbon Nanotube Ropes 1483
Young-Kyun Kwon and David Tománek
Dislocation Patterning: From Micro- to Mesoscale Description 1487
I. Groma and B. Bakó
Mesoscopic Analysis of Structure and Strength of Dislocation Junctions in fcc Metals 1491
V. B. Shenoy, R. V. Kukta, and R. Phillips
Lattice Location and Stability of Ion Implanted Cu in Si 1495
U. Wahl, A. Vantomme, G. Langouche, J. G. Correia, and ISOLDE Collaboration

(Continued on Preceding Page)

Contents (Continued)

Ab Initio Study of Screw Dislocations in Mo and Ta: A New Picture of Plasticity in bcc Transition Metals 1499
Sohrab Ismail-Beigi and T. A. Arias
Breakdown of Scaling in the Nonequilibrium Critical Dynamics of the Two-Dimensional *XY* Model 1503
A. J. Bray, A. J. Briant, and D. K. Jervis
Nagel Scaling, Relaxation, and Universality in the Kinetic Ising Model on an Alternating Isotopic Chain 1507
L. L. Gonçalves, M. López de Haro, J. Tagüeña-Martínez, and R. B. Stinchcombe
From Microscopic Interactions to Macroscopic Laws of Cluster Evolution 1511
Markos A. Katsoulakis and Dionisios G. Vlachos
Attenuation of Second Sound in Superfluid ^{3}He-A_1 1515
T. Sato, J. J. Coleman, P. G. N. de Vegvar, H. Kojima, and Y. Okuda
Wetting and Molecular Orientation of 8CB on Silicon Substrates 1519
Lei Xu, Miquel Salmeron, and Sebastien Bardon
Diffusion Driven Concerted Motion of Surface Atoms: Ge on Ge(001) 1523
H. J. W. Zandvliet, T. M. Galea, E. Zoethout, and Bene Poelsema
Control and Characterization of a Multistep Unimolecular Reaction 1527
L. J. Lauhon and W. Ho
Inelastic Neutron Scattering Measurements and *Ab Initio* Calculations of Hydrogen in Single-Crystal Palladium 1531
M. Kemali, J. E. Totolici, D. K. Ross, and I. Morrison

Condensed Matter: Electronic Properties, etc.
Commensurability, Excitation Gap, and Topology in Quantum Many-Particle Systems on a Periodic Lattice 1535
Masaki Oshikawa
Resolution of the Scaling Exponent Puzzle for Weakly Compensated Crystalline Silicon and Germanium Metal-Insulator Systems 1539
T. G. Castner
Coulomb Gap: How a Metal Film Becomes an Insulator 1543
V. Yu. Butko, J. F. DiTusa, and P. W. Adams
Angle-Resonant Stimulated Polariton Amplifier 1547
P. G. Savvidis, J. J. Baumberg, R. M. Stevenson, M. S. Skolnick, D. M. Whittaker, and J. S. Roberts
Band Structure of the Jahn-Teller Polaron from Quantum Monte Carlo 1551
P. E. Kornilovitch
Time-Correlated Soliton Tunneling in Charge and Spin Density Waves 1555
J. H. Miller, Jr., C. Ordóñez, and E. Prodan
Undercompensated Kondo Impurity with Quantum Critical Point 1559
P. Schlottmann
Enhanced Fluctuations of the Tunneling Density of States near the Bottom of a Landau Band Measured by a Local Spectrometer 1563
J. P. Holder, A. K. Savchenko, Vladimir I. Fal'ko, B. Jouault, G. Faini, F. Laruelle, and E. Bedel
Probing the Plateau-Insulator Quantum Phase Transition in the Quantum Hall Regime 1567
R. T. F. van Schaijk, A. de Visser, S. M. Olsthoorn, H. P. Wei, and A. M. M. Pruisken
Anisotropic Vortex Plasticity in the Liquid State of $YBa_2Cu_3O_7$: Evidence for Quenched c-Axis Vortex Correlation Length 1571
Teresa Puig and Xavier Obradors
Observation of Out-of-Phase Bilayer Plasmons in $YBa_2Cu_3O_{7-\delta}$ 1575
M. Grüninger, D. van der Marel, A. A. Tsvetkov, and A. Erb
Accurate Prediction of Large Antiferromagnetic Interactions in High-T_c $HgBa_2Ca_{n-1}Cu_nO_{2n+2+\delta}$ ($n = 2, 3$) Superconductor Parent Compounds 1579
D. Muñoz, F. Illas, and I. de P. R. Moreira
Imaging of a Vortex Lattice Transition in YNi_2B_2C by Scanning Tunneling Spectroscopy 1583
Hideaki Sakata, Morimi Oosawa, Ken Matsuba, Nobuhiko Nishida, Hiroyuki Takeya, and Kazuto Hirata
Pressure Dependence of the Irreversibility Line in $Bi_2Sr_2CaCu_2O_{8+\delta}$: Role of Anisotropy in Flux-Line Formation 1587
M. P. Raphael, M. E. Reeves, E. F. Skelton, and C. Kendziora
Photoemission Quasiparticle Spectra of Sr_2RuO_4 1591
A. Liebsch and A. Lichtenstein

(Continued on Preceding Page)

Contents (Continued)

Spin-Triplet Superconductivity in Sr_2RuO_4 Probed by Andreev Reflection 1595
F. Laube, G. Goll, H. v. Löhneysen, M. Fogelström, and F. Lichtenberg
Phase Separation in Supersolids 1599
G. G. Batrouni and R. T. Scalettar
Cooperative Jahn-Teller Coupling in the Manganites 1603
Z. Popovic and S. Satpathy
Negatively Charged Quantum Well Polaritons in a GaAs/AlAs Microcavity: An Analog of Atoms in a Cavity 1607
R. Rapaport, R. Harel, E. Cohen, Arza Ron, E. Linder, and L. N. Pfeiffer

Interdisciplinary Physics: Biological Physics, Quantum Information, etc.
Classical Information and Distillable Entanglement 1611
J. Eisert, T. Felbinger, P. Papadopoulos, M. B. Plenio, and M. Wilkens
Influence of Superpositional Wave Function Oscillations on Shor's Quantum Algorithm 1615
Gennady P. Berman, Gary D. Doolen, and Vladimir I. Tsifrinovich
Discrete Coherent Amplification of Oscillations by Nonresonant Forcing 1619
G. D. Chagelishvili, A. G. Tevzadze, G. T. Gogoberidze, and J. G. Lominadze
Twirling and Whirling: Viscous Dynamics of Rotating Elastic Filaments 1623
Charles W. Wolgemuth, Thomas R. Powers, and Raymond E. Goldstein
Chiral Self-Propulsion of Growing Bacterial Macrofibers on a Solid Surface 1627
Neil H. Mendelson, Joelle E. Sarlls, Charles W. Wolgemuth, and Raymond E. Goldstein
Bistable Helices 1631
Raymond E. Goldstein, Alain Goriely, Greg Huber, and Charles W. Wolgemuth

Comments
Comment on "Stellar Reactions with Short-Lived Nuclei: $^{17}F(p,\alpha)^{14}O$" 1635
H. T. Fortune and R. Sherr
Comment on "Low-Temperature Charge Ordering in the Superconducting State of $YBa_2Cu_3O_{7-\delta}$" 1636
B. Grévin, Y. Berthier, and G. Collin
Krämer and Mehring Reply 1637
S. Krämer and M. Mehring

Errata
Erratum: Charge, Polarizability, and Photoionization of Single Semiconductor Nanocrystals [Phys. Rev. Lett. **83**, 4840 (1999)] 1638
Todd D. Krauss and Louis E. Brus