PHYSICAL REVIEW LETTERS

Contents

VOLUME 78, NUMBER 25 23 June 1997

CODEN: PRLTAO 78 (25), 4671–4892 (23 June 1997)

General Physics

Reparametrization Invariant Statistical Inference and Gravity 4671
Vipul Periwal

Phase and Phase Diffusion of a Split Bose-Einstein Condensate 4675
Juha Javanainen and Martin Wilkens

Elementary Particles and Fields

Cross-Confinement in Multi-Chern-Simons Theories 4679
Lorenzo Cornalba and Frank Wilczek

Intrinsic Charm of Vector Mesons: A Possible Solution of the "$\rho\pi$ Puzzle'' 4682
Stanley J. Brodsky and Marek Karliner

A Measurement of the Michel Parameters in Leptonic Decays of the Tau 4686
R. Ammar *et al.* (CLEO Collaboration)

Measurement of the τ Neutrino Helicity and Michel Parameters in Polarized e^+e^- Collisions 4691
K. Abe *et al.* (The SLD Collaboration)

Nuclear Physics

Break-up and Coherent Photoproduction of η Mesons on the Deuteron 4697
P. Hoffmann-Rothe, M. Krebeck, J. Hey, M. Breuer, G. v. Edel, E. Hourany, M. Rigney, J. Ajaka, G. Anton, J. Arends, G. Berrier-Ronsin, W. Beulertz, G. Blanpied, A. Bock, J.-P. Didelez, K. Helbing, R. Maass, G. Nöldeke, B. Preedom, B. Richie, L. Rosier, B. Saghai, M. Schumacher, and F. Smend

Schottky Mass Measurements of Cooled Proton-Rich Nuclei at the GSI Experimental Storage Ring 4701
T. Radon, Th. Kerscher, B. Schlitt, K. Beckert, T. Beha, F. Bosch, H. Eickhoff, B. Franzke, Y. Fujita, H. Geissel, M. Hausmann, H. Irnich, H. C. Jung, O. Klepper, H.-J. Kluge, C. Kozhuharov, G. Kraus, K. E. G. Löbner, G. Münzenberg, Yu. Novikov, F. Nickel, F. Nolden, Z. Patyk, H. Reich, C. Scheidenberger, W. Schwab, M. Steck, K. Sümmerer, and H. Wollnik

Atomic, Molecular, and Optical Physics

Symmetry Breaking in Crossed Magnetic and Electric Fields 4705
C. Neumann, R. Ubert, S. Freund, E. Flöthmann, B. Sheehy, K. H. Welge, M. R. Haggerty, and J. B. Delos

Radiation Pressure in a Rubidium Optical Lattice: An Atomic Analog to the Photorefractive Effect 4709
S. Guibal, C. Mennerat-Robilliard, D. Larousserie, C. Triché, J.-Y. Courtois, and G. Grynberg

Novel Optical Trap of Atoms with a Doughnut Beam 4713
Takahiro Kuga, Yoshio Torii, Noritsugu Shiokawa, Takuya Hirano, Yukiko Shimizu, and Hiroyuki Sasada

Parity Nonconservation in Relativistic Hydrogenic Ions 4717
M. Zolotorev and D. Budker

Close-Coupling Theory of Ionization: Successes and Failures 4721
Igor Bray

Absolute Electron-Impact Cross Section for Stable Anion Formation from CF_3Cl Isolated in Solid Kr 4725
K. Nagesha and L. Sanche

Structure and Stability of ^{3}He Droplets 4729
M. Barranco, J. Navarro, and A. Poves

(Continued on Third Cover)

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, Etc.

Detecting Unstable Periodic Orbits of Chaotic Dynamical Systems 4733
P. Schmelcher and F. K. Diakonos
Quantum Mechanical Time-Delay Matrix in Chaotic Scattering 4737
P. W. Brouwer, K. M. Frahm, and C. W. J. Beenakker
Cryogenic Optical Resonators: A New Tool for Laser Frequency Stabilization at the 1 Hz Level 4741
Stefan Seel, Rafael Storz, Giuseppe Ruoso, Jürgen Mlynek, and Stephan Schiller
Localized Synchronization in Two Coupled Nonidentical Semiconductor Lasers 4745
A. Hohl, A. Gavrielides, T. Erneux, and V. Kovanis
Spatial Solitons and Induced Kerr Effects in Quasi-Phase-Matched Quadratic Media 4749
Carl Balslev Clausen, Ole Bang, and Yuri S. Kivshar
Optical Vector Wave Mixing Processes in Nonlinear Birefringent Nematic Liquid Crystals 4753
H. J. Eichler, G. Hilliger, R. Macdonald, and P. Meindl

Plasma and Beam Physics

Laser Cooling of Electron Beams for Linear Colliders 4757
Valery Telnov
V-Shaped dc Potential Structure Caused by Current-Driven Electrostatic Ion-Cyclotron Instability 4761
Seiji Ishiguro, Tetsuya Sato, Hisanori Takamaru, and The Complexity Simulation Group
Anomalous Absorption of Very High-Intensity Laser Pulses Propagating through Moderately Dense Plasma 4765
J. C. Adam, A. Héron, S. Guérin, G. Laval, P. Mora, and B. Quesnel
Distributed Divertor Radiation through Convection in DIII-D 4769
A. W. Leonard, M. A. Mahdavi, S. L. Allen, N. H. Brooks, M. E. Fenstermacher, D. N. Hill, C. J. Lasnier, R. Maingi, G. D. Porter, T. W. Petrie, J. G. Watkins, and W. P. West
Experimental Evidence of Photon Acceleration of Ultrashort Laser Pulses in Relativistic Ionization Fronts 4773
J. M. Dias, C. Stenz, N. Lopes, X. Badiche, F. Blasco, A. Dos Santos, L. Oliveira e Silva, A. Mysyrowicz, A. Antonetti, and J. T. Mendonça

Condensed Matter: Structure, Etc.

Charge Density of MgO: Implications of Precise New Measurements for Theory 4777
J. M. Zuo, M. O'Keeffe, P. Rez, and J. C. H. Spence
Direct Observation of a Defect-Mediated Viscoelastic Transition in a Hydrogel of Lipid Membranes and Polymer Lipids 4781
S. L. Keller, H. E. Warriner, C. R. Safinya, and J. A. Zasadzinski
Interaction of Dislocations on Crossed Glide Planes in a Strained Epitaxial Layer 4785
K. W. Schwarz
Microscopic Theory of the Shape Memory Effect in TiNi 4789
J. M. Zhang and G. Y. Guo
Order Parameter and Scaling Fields in Self-Organized Criticality 4793
Alessandro Vespignani and Stefano Zapperi
Site Hopping of Single Chemisorbed Oxygen Molecules on Si(111)-(7 $\times$ 7) Surfaces 4797
Ing-Shouh Hwang, Rong-Li Lo, and Tien T. Tsong
Superfluid Transition of ^{4}He in Porous Gold 4801
Jongsoo Yoon and Moses H. W. Chan

Condensed Matter: Electronic Properties, Etc.

Ab initio Calculations for the Polarizabilities of Small Semiconductor Clusters 4805
Igor Vasiliev, Serdar Öğüt, and James R. Chelikowsky
Spin Degree of Freedom in Two Dimensional Exciton Condensates 4809
J. Fernández-Rossier and C. Tejedor
Bragg-Cherenkov Scattering and Nonlinear Conductivity of a Two-Dimensional Wigner Crystal 4813
M. I. Dykman and Yuri G. Rubo

(Continued on Preceding Page)

Contents (Continued)

Interband Transitions and Band Gap Measurements in Bloch Transistors 4817
Daniel J. Flees, Siyuan Han, and J. E. Lukens

Resonant Tunneling through a Macroscopic Charge State in a Superconducting Single Electron Transistor 4821
D. V. Averin, A. N. Korotkov, A. J. Manninen, and J. P. Pekola

Collective Excitations, NMR, and Phase Transitions in Skyrme Crystals 4825
R. Côté, A. H. MacDonald, Luis Brey, H. A. Fertig, S. M. Girvin, and H. T. C. Stoof

Theory of Incompressible States in a Narrow Channel 4829
Tapash Chakraborty, K. Niemelä, and P. Pietiläinen

Anisotropic Latent Heat of Vortex-Lattice Melting in Untwinned $YBa_2Cu_3O_{7-\delta}$ 4833
A. Schilling, R. A. Fisher, N. E. Phillips, U. Welp, W. K. Kwok, and G. W. Crabtree

Pseudogap and Superconducting Gap in the Electronic Raman Spectra of Underdoped Cuprates 4837
R. Nemetschek, M. Opel, C. Hoffmann, P. F. Müller, R. Hackl, H. Berger, L. Forró, A. Erb, and E. Walker

Quasiparticle Spectra around a Single Vortex in a *d*-Wave Superconductor 4841
Y. Morita, M. Kohmoto, and K. Maki

Weakly Pinned Bose Glass vs Mott Insulator Phase in Superconductors 4845
Carsten Wengel and Uwe Claus Täuber

Neutron Scattering Study of the Flux Lattice in YNi_2B_2C 4849
M. Yethiraj, D. McK. Paul, C. V. Tomy, and E. M. Forgan

Quantum Critical Properties of Ferrimagnetic Hubbard Chains 4853
E. P. Raposo and M. D. Coutinho-Filho

Field-Induced Commensurate-Incommensurate Phase Transition in a Dzyaloshinskii-Moriya Spiral Antiferromagnet 4857
A. Zheludev, S. Maslov, G. Shirane, Y. Sasago, N. Koide, and K. Uchinokura

Nonequilibrium Magnetization Dynamics of Nickel 4861
J. Hohlfeld, E. Matthias, R. Knorren, and K. H. Bennemann

Calculations of Exchange Bias in Thin Films with Ferromagnetic/Antiferromagnetic Interfaces 4865
N. C. Koon

uv Studies of Tetrahedral Bonding in Diamondlike Amorphous Carbon 4869
V. I. Merkulov, J. S. Lannin, C. H. Munro, S. A. Asher, V. S. Veerasamy, and W. I. Milne

Interaction Induced Electron Self-Interference in a Semiconductor: The Phonon Staircase Effect 4873
J. A. Kenrow, K. El Sayed, and C. J. Stanton

Cross-Disciplinary Physics

Mechanism for $SiCl_2$ Formation and Desorption and the Growth of Pits in the Etching of Si(100) with Chlorine 4877
G. A. de Wijs, A. De Vita, and A. Selloni

Ionic Currents Generated by Tip Growing Cells 4881
Laurent Limozin, Bruno Denet, and Pierre Pelce

Statistics of Earthquakes in Simple Models of Heterogeneous Faults 4885
Daniel S. Fisher, Karin Dahmen, Sharad Ramanathan, and Yehuda Ben-Zion

Comments

Comment on "No Enhancement of the Localization Length for Two Interacting Particles in a Random Potential" 4889
Klaus Frahm, Axel Müller-Groeling, Jean-Louis Pichard, and Dietmar Weinmann

Römer and Schreiber Reply 4890
Rudolf A. Römer and Michael Schreiber

Comment on ''Superconducting Gap Anisotropy vs Doping Level in High-T_c Cuprates'' 4891
K. C. Hewitt, T. P. Devereaux, X. K. Chen, X-Z Wang, J. G. Naeini, A. E. Curzon, J. C. Irwin, and Airton Martin

Kendziora and Onellion Reply 4892
C. Kendziora and M. Onellion