PHYSICAL REVIEW LETTERS

Contents

VOLUME 80, NUMBER 4 26 January 1998

General Physics

Magnetic Waveguide for Trapping Cold Atom Gases in Two Dimensions 645
E. A. Hinds, M. G. Boshier, and I. G. Hughes

Adiabatic Geometric Phases and Response Functions 650
Sudhir R. Jain and Arun K. Pati

Gravitation and Astrophysics

Theorem for Nonrotating Singularity-Free Universes 654
A. K. Raychaudhuri

Chaos in the Einstein-Yang-Mills Equations 656
John D. Barrow and Janna Levin

Elementary Particles and Fields

Measurement of R_b Using a Vertex Mass Tag 660
K. Abe *et al.* (SLD Collaboration)

Measurement of Dijet Angular Distributions and Search for Quark Compositeness 666
B. Abbott *et al.* (D0 Collaboration)

Nuclear Physics

Scissors-Mode Vibrations and the Emergence of SU(3) Symmetry from the Projected Deformed Mean Field 672
Yang Sun, Cheng-Li Wu, Kumar Bhatt, Mike Guidry, and Da Hsuan Feng

Study of the ^{56}Ni$(d, p)^{57}$Ni Reaction and the Astrophysical ^{56}Ni$(p, \gamma)^{57}$Cu Reaction Rate 676
K. E. Rehm, F. Borasi, C. L. Jiang, D. Ackermann, I. Ahmad, B. A. Brown, F. Brumwell, C. N. Davids, P. Decrock, S. M. Fischer, J. Görres, J. Greene, G. Hackmann, B. Harss, D. Henderson, W. Henning, R. V. F. Janssens, G. McMichael, V. Nanal, D. Nisius, J. Nolen, R. C. Pardo, M. Paul, P. Reiter, J. P. Schiffer, D. Seweryniak, R. E. Segel, M. Wiescher, and A. H. Wuosmaa

Atomic, Molecular, and Optical Physics

Electrodynamics of Helium with Retardation and Self-Interaction Effects 680
Jayme De Luca

Experimental Evidence that the $6s6p\,^3P_J$ States of Cs^- Are Shape Resonances 684
M. Scheer, J. Thøgersen, R. C. Bilodeau, C. A. Brodie, H. K. Haugen, H. H. Andersen, P. Kristensen, and T. Andersen

Optomechanical Cooling of a Macroscopic Oscillator by Homodyne Feedback 688
Stefano Mancini, David Vitali, and Paolo Tombesi

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, Etc.

Lyapunov Instability and Finite Size Effects in a System with Long-Range Forces 692
Vito Latora, Andrea Rapisarda, and Stefano Ruffo

Crisis-Induced Transition to Spatiotemporally Chaotic Motions 696
Kaifen He

(Continued on Third Cover)

CODEN: PRLTAO 80 (4), 645–893 (26 January 1998)

Contents (Continued)

Maintaining Chaos in High Dimensions 700
Visarath In, Mark L. Spano, and Mingzhou Ding
Self-Similar Capillary Pinchoff of an Inviscid Fluid 704
Richard F. Day, E. John Hinch, and John R. Lister
Analysis of Random Cascades Using Space-Scale Correlation Functions 708
A. Arneodo, E. Bacry, S. Manneville, and J. F. Muzy
Statistical Evolution of Chaotic Fluid Mixing 712
James Glimm, David Saltz, and David H. Sharp
Permeability of Three-Dimensional Random Fiber Webs 716
A. Koponen, D. Kandhai, E. Hellén, M. Alava, A. Hoekstra, M. Kataja, K. Niskanen, P. Sloot, and J. Timonen

Plasma and Beam Physics

Time-Resolved Study of Nonlocal Electron Heat Transport in High Temperature Plasmas 720
T. Ditmire, E. T. Gumbrell, R. A. Smith, A. Djaoui, and M. H. R. Hutchinson
Poloidal Flow Driven by Ion-Temperature-Gradient Turbulence in Tokamaks 724
M. N. Rosenbluth and F. L. Hinton
Origin of Low-Frequency Oscillations in the Ionosphere 728
Valeriy V. Gavrishchaka, Supriya B. Ganguli, and Gurudas I. Ganguli

Condensed Matter: Structure, Etc.

Dramatic Effect of Single-Atom Replacement on the Surface Tension of Liquid-Crystal Compounds 732
P. Mach, C. C. Huang, and H. T. Nguyen
Effect of Charge State on Polymeric Bonding Geometry: The Ground State of Na_2RbC_{60} 736
Götz M. Bendele, Peter W. Stephens, Kosmas Prassides, Konstantinos Vavekis, Konstantinos Kordatos, and Katsumi Tanigaki
Dislocation Content of Micropipes in SiC 740
J. Heindl, W. Dorsch, H. P. Strunk, St. G. Müller, R. Eckstein, D. Hofmann, and A. Winnacker
Quasicontinuum Models of Interfacial Structure and Deformation 742
V. B. Shenoy, R. Miller, E. B. Tadmor, R. Phillips, and M. Ortiz
Ideal Brittle Fracture of Silicon Studied with Molecular Dynamics 746
Dominic Holland and M. Marder
Influence of Bose Condensation on the Excitation Spectrum of Liquid ^{4}He 750
J. Mayers
Influence of Hydrodynamic Interactions on the Kinetics of Colloidal Particles' Adsorption 754
P. Wojtaszczyk and J. B. Avalos
Novel Reconstruction Mechanism for Dangling-Bond Minimization: Combined Method Surface Structure Determination of SiC(111)-(3 × 3) 758
U. Starke, J. Schardt, J. Bernhardt, M. Franke, K. Reuter, H. Wedler, K. Heinz, J. Furthmüller, P. Käckell, and F. Bechstedt
Mixed Dissociative and Molecular Adsorption of Water on the Rutile (110) Surface 762
Philip J. D. Lindan, N. M. Harrison, and M. J. Gillan
Covalent Bonding of CN to the Pt(111) Surface 766
W. Daum, F. Dederichs, and J. E. Müller
Lower Critical Dimension of the *XY* Spin-Glass Model 770
J. Maucourt and D. R. Grempel
Nanoscale Observation of a Grain Boundary Related Growth Mode in Thin Film Reactions 774
M. Seibt, S. Buschbaum, U. Gnauert, W. Schröter, and D. Oelgeschläger
Internal Dynamics and Elasticity of Fractal Colloidal Gels 778
A. H. Krall and D. A. Weitz
Near-Field Electron Energy Loss Spectroscopy of Nanoparticles 782
H. Cohen, T. Maniv, R. Tenne, Y. Rosenfeld Hacohen, O. Stephan, and C. Colliex

(Continued on Preceding Page)

Condensed Matter: Electronic Properties, Etc.

Raman Quantum Beats of Interacting Excitons 786
K. B. Ferrio and D. G. Steel
Interchain Coherence of Coupled Luttinger Liquids at all Orders in Perturbation Theory 790
Enrico Arrigoni
Ab Initio Inclusion of Electron-Hole Attraction: Application to X-Ray Absorption and Resonant Inelastic X-Ray Scattering 794
Eric L. Shirley
Wave Function for Beryllium from X-Ray Diffraction Data 798
Dylan Jayatilaka
Pressure-induced Transition of the Sublattice Magnetization in $EuCo_2P_2$: Change from Local Moment Eu($4f$) to Itinerant Co($3d$) Magnetism 802
M. Chefki, M. M. Abd-Elmeguid, H. Micklitz, C. Huhnt, W. Schlabitz, M. Reehuis, and W. Jeitschko
Anomalous Behavior above the Melting Point of Two-Dimensional Electrons on Liquid Helium 806
K. Djerfi, P. Fozooni, S. Harris, M. J. Lea, P. J. Richardson, A. Santrich-Badal, R. J. F. van Haren, and A. Blackburn
Intersubband Relaxation Rates of a Two-Dimensional Electron Gas under High Magnetic Fields 810
C. Hartmann, G. Martinez, A. Fischer, W. Braun, and K. Ploog
Shifts of Random Energy Levels by a Local Perturbation 814
I. L. Aleiner and K. A. Matveev
Comparison of Tunneling Rates of Fractional Charges and Electrons across a Quantum Hall Strip 817
Assa Auerbach
Free Carrier Generation in Semiconductors Induced by Absorption of Subband-Gap Light 821
D. Vanmaekelbergh and L. van Pieterson
Raman Scattering Study on Fully Oxygenated YBa_2CuO_7 Single Crystals: x-y Anisotropy in the Superconductivity-Induced Effects 825
M. F. Limonov, A. I. Rykov, S. Tajima, and A. Yamanaka
Tunneling Center as a Source of Voltage Rectification in Josephson Junctions 829
I. Zapata, J. Łuczka, F. Sols, and P. Hänggi
Structure and Correlations of the Flux Line Lattice in Crystalline Nb through the Peak Effect 833
P. L. Gammel, U. Yaron, A. P. Ramirez, D. J. Bishop, A. M. Chang, R. Ruel, L. N. Pfeiffer, E. Bucher, G. D'Anna, D. A. Huse, K. Mortensen, M. R. Eskildsen, and P. H. Kes
Characteristics of First-Order Vortex Lattice Melting: Jumps in Entropy and Magnetization 837
Matthew J. W. Dodgson, Vadim B. Geshkenbein, Henrik Nordborg, and Gianni Blatter
Two-Dimensional Localization and Superconductor-Insulator Transition in Strongly Underdoped Single Crystals of $Y_{1-x}Pr_xBa_2Cu_3O_{7-\delta}$ 841
G. A. Levin, T. Stein, C. C. Almasan, S. H. Han, D. A. Gajewski, and M. B. Maple
Phase Separation in Electronic Models for Manganites 845
S. Yunoki, J. Hu, A. L. Malvezzi, A. Moreo, N. Furukawa, and E. Dagotto
Domain Wall Creep in an Ising Ultrathin Magnetic Film 849
S. Lemerle, J. Ferré, C. Chappert, V. Mathet, T. Giamarchi, and P. Le Doussal
Direct Relationship between Magnetism and MnO_6 Distortions in $La_{1-x}Ca_xMnO_3$ 853
C. H. Booth, F. Bridges, G. H. Kwei, J. M. Lawrence, A. L. Cornelius, and J. J. Neumeier
Anisotropic ac Electrical Permittivity of a Periodic Metal-Dielectric Composite Film in a Strong Magnetic Field 857
David J. Bergman and Yakov M. Strelniker
Conversion of Excitons to Spin-Soliton Pairs in Quasi-One-Dimensional Halogen-Bridged Metal Complexes 861
H. Okamoto, Y. Kaga, Y. Shimada, Y. Oka, Y. Iwasa, T. Mitani, and M. Yamashita
Evidence for Gas Exchange in Single-Bubble Sonoluminescence 865
Thomas J. Matula and Lawrence A. Crum

(Continued on Preceding Page)

Cross-Disciplinary Physics

Teleportation of Continuous Quantum Variables 869
Samuel L. Braunstein and H. J. Kimble
Synchronization Defects and Broken Symmetry in Spiral Waves 873
Andrei Goryachev, Hugues Chaté, and Raymond Kapral
Metastability and Crystallization in Suspensions of Mixtures of Hard Spheres 877
S. I. Henderson and W. van Megen
Topological Interactions in Multiply Linked DNA Rings 881
M. Otto and T. A. Vilgis

Comments

Comment on "Monte Carlo Computation of Pair Correlations in Excited Nuclei" 885
S. Rombouts and K. Heyde
Cerf Replies 886
Nicolas J. Cerf
Comment on "Upper Critical Dimension of the Kardar-Parisi-Zhang Equation" 887
T. Ala-Nissila
Phase Transition of the Kardar-Parisi-Zhang Equation in Four Substrate Dimensions 888
Jin Min Kim
Lässig and Kinzelbach Reply 889
Michael Lässig and Harald Kinzelbach
Comment on "Generalized Gradient Approximation Made Simple" 890
Yingkai Zhang and Weitao Yang
Perdew, Burke, and Ernzerhof Reply 891
J. P. Perdew, K. Burke, and M. Ernzerhof

Errata

Erratum: Evolution of Correlation Properties and Appearance of Broken Symmetry in the Process of Bose-Einstein Condensation [Phys. Rev. Lett. **79**, 3331 (1997)] 892
Yu. Kagan and B. V. Svistunov
Erratum: Nonfactorizable QCD and Electroweak Corrections to the Hadronic Z Boson Decay Rate [Phys. Rev. Lett. **77**, 3955 (1996)] 893
Andrzej Czarnecki and Johann H. Kühn