PHYSICAL REVIEW LETTERS

Contents

VOLUME 81, NUMBER 26(I) 28 December 1998

General Physics

Fringe Visibility and Which-Way Information in an Atom Interferometer 5705
S. Dürr, T. Nonn, and G. Rempe

Decoherent Dynamics of a Two-Level System Coupled to a Sea of Spins 5710
Jiushu Shao and Peter Hänggi

Entropic Lower Bound for the Quantum Scattering of Spinless Particles 5714
D. B. Ion and M. L. D. Ion

Phase Separation of Bose-Einstein Condensates 5718
E. Timmermans

Gravitation and Astrophysics

Observing the Birth of Supermassive Black Holes with the Planned ICECUBE Neutrino Detector 5722
Xiangdong Shi, George M. Fuller, and Francis Halzen

A New Solar System Dark Matter Population of Weakly Interacting Massive Particles 5726
Thibault Damour and Lawrence M. Krauss

Solar Neutrino Puzzle: An Oscillation Solution with Maximal Neutrino Mixing 5730
Anthony J. Baltz, Alfred Scharff Goldhaber, and Maurice Goldhaber

Elementary Particles and Fields

New Limit on Muon and Electron Lepton Number Violation from $K_L^0 \to \mu^{\pm} e^{\mp}$ Decay 5734
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)

Prospects for Direct *CP* Violation in Exclusive and Inclusive Charmless *B* Decays 5738
Xiao-Gang He, Wei-Shu Hou, and Kwei-Chou Yang

Search for the Decays B_s^0, $B_d^0 \to e^{\pm}\mu^{\mp}$ and Pati-Salam Leptoquarks 5742
F. Abe *et al.* (CDF Collaboration)

Search for Higgs Bosons Produced in Association with a Vector Boson in $p\overline{p}$ Collisions at $\sqrt{s} = 1.8$ TeV 5748
F. Abe *et al.* (CDF Collaboration)

Measurement of the Lepton Charge Asymmetry in W-Boson Decays Produced in $p\overline{p}$ Collisions 5754
F. Abe *et al.* (CDF Collaboration)

Observation of a New $J^{PC} = 1^{-+}$ Exotic State in the Reaction $\pi^- p \to \pi^+\pi^-\pi^- p$ at 18 GeV/c 5760
G. S. Adams *et al.* (E852 Collaboration)

Nuclear Physics

Evidence of Early Multistrange Hadron Freeze-Out in High Energy Nuclear Collisions 5764
H. van Hecke, H. Sorge, and N. Xu

(Continued on Third Cover)

Copyright 1998 by The American Physical Society

CODEN: PRLTAO 81 (26) 5705–5955 (28 December 1998)

Contents (Continued)

Atomic, Molecular, and Optical Physics

Degenerate Raman Sideband Cooling of Trapped Cesium Atoms at Very High Atomic Densities 5768
Vladan Vuletić, Cheng Chin, Andrew J. Kerman, and Steven Chu

Observation of a Nondecaying Wave Packet in a Two-Electron Atom 5772
Xin Chen and John A. Yeazell

Double Photoionization of Spatially Aligned D_2 5776
R. Dörner, H. Bräuning, O. Jagutzki, V. Mergel, M. Achler, R. Moshammer, J. M. Feagin, T. Osipov, A. Bräuning-Demian, L. Spielberger, J. H. McGuire, M. H. Prior, N. Berrah, J. D. Bozek, C. L. Cocke, and H. Schmidt-Böcking

Quantum Scattering in a Juggling Atomic Fountain 5780
Ronald Legere and Kurt Gibble

Quantum Electrodynamic Shifts of Rydberg Energy Levels between Parallel Metal Plates 5784
M. Marrocco, M. Weidinger, R. T. Sang, and H. Walther

Nonlinear Magneto-optic Effects with Ultranarrow Widths 5788
Dmitry Budker, Valeriy Yashchuk, and Max Zolotorev

Charged Wire Interferometer for Atoms 5792
S. Nowak, N. Stuhler, T. Pfau, and J. Mlynek

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.

Quantum Chaos with Nonperiodic, Complex Orbits in the Resonant Tunneling Diode 5796
D. S. Saraga and T. S. Monteiro

Universal Conductance Fluctuations of Light 5800
Frank Scheffold and Georg Maret

Demonstration of a High Average Power Tabletop Soft X-Ray Laser 5804
B. R. Benware, C. D. Macchietto, C. H. Moreno, and J. J. Rocca

Observation of Solitary Waves with Different Phase Behavior in Stimulated Raman Forward Scattering 5808
A. S. Grabtchikov, D. E. Gakhovich, A. G. Shvedko, V. A. Orlovich, and K. J. Witte

Acoustic Phase Conjugation in Superfluid Helium 5812
Dmitry Rinberg and Victor Steinberg

Plasma and Beam Physics

Observation of Self-Amplified Spontaneous-Emission-Induced Electron-Beam Microbunching Using Coherent Transition Radiation 5816
A. Tremaine, J. B. Rosenzweig, S. Anderson, P. Frigola, M. Hogan, A. Murokh, C. Pellegrini, D. C. Nguyen, and R. L. Sheffield

Linear Kinetic Modes in Weakly Collisional Plasma 5820
F. Skiff, S. De Souza-Machado, W. A. Noonan, A. Case, and T. N. Good

Asymptotic Theory of Nonlinear Landau Damping and Particle Trapping in Waves of Finite Amplitude 5824
M. V. Medvedev, P. H. Diamond, M. N. Rosenbluth, and V. I. Shevchenko

Condensed Matter: Structure, etc.

Quantum Mechanical Effects on the Static Structure Factor of Pairs of Orthodeuterium Molecules 5828
Milva Celli, Renato Magli, Henry Fischer, Lothar Frommhold, and Fabrizio Barocchi

Coherent X-Ray Study of Fluctuations during Domain Coarsening 5832
A. Malik, A. R. Sandy, L. B. Lurio, G. B. Stephenson, S. G. J. Mochrie, I. McNulty, and M. Sutton

Fluctuations in Electrolytes: The Lebowitz and Other Correlation Lengths 5836
Stefan Bekiranov and Michael E. Fisher

Mechanism and Strength of Polymer Bridging Flocculation 5840
J. Swenson, M. V. Smalley, and H. L. M. Hatharasinghe

Surface-Dominated Orientational Dynamics and Surface Viscosity in Confined Liquid Crystals 5844
A. Mertelj and M. Čopič

(Continued on Preceding Page)

Contents (Continued)

Coupling of Polarization and Dislocation in Ferroelectric Smectic Liquid-Crystal Films 5848
Robert Hołyst, A. Poniewierski, P. Fortmeier, and H. Stegemeyer

Direct Measurement of Intercage Hopping in Strongly Adsorbing Guest-Zeolite Systems 5852
D. E. Favre, D. J. Schaefer, S. M. Auerbach, and B. F. Chmelka

Sn-Background-Induced Diffusion Enhancement of Sb in Si 5856
Jacob Fage-Pedersen, Arne Nylandsted Larsen, Peter Gaiduk, John Lundsgaard Hansen, and Margareta Linnarsson

Localized Collective Excitations in Superfluid Helium in Vycor 5860
R. M. Dimeo, P. E. Sokol, C. R. Anderson, W. G. Stirling, K. H. Andersen, and M. A. Adams

Positional Order in Langmuir Monolayers 5864
V. M. Kaganer, G. Brezesinski, H. Möhwald, P. B. Howes, and K. Kjaer

Carbon Atomic Chain Formation on the β-SiC(100) Surface by Controlled $sp \rightarrow sp^3$ Transformation 5868
V. Derycke, P. Soukiassian, A. Mayne, G. Dujardin, and J. Gautier

Ad-Dimer Diffusion between Trough and Dimer Row on Si(100) 5872
Gun-Do Lee, C. Z. Wang, Z. Y. Lu, and K. M. Ho

Icelike Water Monolayer Adsorbed on Mica at Room Temperature 5876
P. B. Miranda, Lei Xu, Y. R. Shen, and Miquel Salmeron

Condensed Matter: Electronic Properties, etc.

Identification of Higher-Order Electronic Coherences in Semiconductors by their Signature in Four-Wave-Mixing Signals 5880
G. Bartels, A. Stahl, V. M. Axt, B. Haase, U. Neukirch, and J. Gutowski

Quantum Phase Transition in Fe/Cr Multilayers Tuned by a Magnetic Field 5884
F. G. Aliev, V. V. Moshchalkov, and Y. Bruynseraede

Aharonov-Bohm Cages in Two-Dimensional Structures 5888
Julien Vidal, Rémy Mosseri, and Benoit Douçot

Effects of Band Structure on Electron Attachment to Adsorbed Molecules: Cross Section Enhancements via Coupling to Image States 5892
K. Nagesha and L. Sanche

Quantum Zeno Effect and Parametric Resonance in Mesoscopic Physics 5896
G. Hackenbroich, B. Rosenow, and H. A. Weidenmüller

Changing the Electronic Spectrum of a Quantum Dot by Adding Electrons 5900
S. R. Patel, D. R. Stewart, C. M. Marcus, M. Gökçedağ, Y. Alhassid, A. D. Stone, C. I. Duruöz, and J. S. Harris, Jr.

Mesoscopic Coulomb Blockade in One-Channel Quantum Dots 5904
S. M. Cronenwett, S. M. Maurer, S. R. Patel, C. M. Marcus, C. I. Duruöz, and J. S. Harris, Jr.

Persistent Edge Current in the Fractional Quantum Hall Effect 5908
Kazusumi Ino

Isotope Dependence of the Spin Gap in $YBa_2Cu_4O_8$ as Determined by Cu NQR Relaxation 5912
F. Raffa, T. Ohno, M. Mali, J. Roos, D. Brinkmann, K. Conder, and M. Eremin

Critical Behavior and Griffiths-McCoy Singularities in the Two-Dimensional Random Quantum Ising Ferromagnet 5916
C. Pich, A. P. Young, H. Rieger, and N. Kawashima

Anisotropic Magnetoelastic Phenomena in Layered Manganite Crystals: Implication of Change in Orbital State 5920
T. Kimura, Y. Tomioka, A. Asamitsu, and Y. Tokura

Coexistence of Order-Disorder and Displacive Features at the Phase Transitions in Hydrogen-Bonded Solids: Squaric Acid and its Analogs 5924
N. Dalal, A. Klymachyov, and A. Bussmann-Holder

Interdisciplinary Physics: Biological Physics, Quantum Information, etc.

How to Teleport Superpositions of Chiral Amplitudes 5928
Christopher S. Maierle, Daniel A. Lidar, and Robert A. Harris

Quantum Repeaters: The Role of Imperfect Local Operations in Quantum Communication 5932
H.-J. Briegel, W. Dür, J. I. Cirac, and P. Zoller

(Continued on Preceding Page)

Contents (Continued)

First-Principles Study of Oxide Growth on Si(100) Surfaces and at SiO_2/Si(100) Interfaces 5936
Hiroyuki Kageshima and Kenji Shiraishi
Collective Motion and Structural Order in Adsorbate Vibrational Dynamics 5940
M. V. Pykhtin, Steven P. Lewis, E. J. Mele, and Andrew M. Rappe
Screened and Unscreened Phases in Sedimenting Suspensions 5944
Alex Levine, Sriram Ramaswamy, Erwin Frey, and Robijn Bruinsma

Comments

Comment on "Full f-p Shell Calculation of ^{51}Ca and ^{51}Sc" 5948
Yutaka Utsuno, Takashi Sebe, Takaharu Otsuka, and Takahiro Mizusaki
Novoselsky, Vallières, and La'adan Reply 5949
A. Novoselsky, M. Vallières, and O. La'adan
Comment on "Selection of the Saffman-Taylor Finger Width in the Absence of Surface Tension: An Exact Result" ... 5950
J. Casademunt and F. X. Magdaleno
Comment on "Selection of the Saffman-Taylor Finger Width in the Absence of Surface Tension: An Exact Result" ... 5951
Robert F. Almgren
Mineev-Weinstein Replies 5952
Mark Mineev-Weinstein
Comment on "Roughening Transition of Interfaces in Disordered Systems" 5953
Anusha Hazareesing and Jean-Philippe Bouchaud
Emig and Nattermann Reply 5954
Thorsten Emig and Thomas Nattermann

Errata

Erratum: Full f-p Shell Calculation of ^{51}Ca and ^{51}Sc [Phys. Rev. Lett. **79**, 4341 (1997)] 5955
A. Novoselsky, M. Vallières, and O. La'adan

AUTHOR INDEX to Volume 81 (Part II) 5957