PHYSICAL REVIEW LETTERS

Contents

VOLUME 86, NUMBER 21 21 May 2001

PRL 86 (21), 4721–4981 (21 May 2001)

General Physics

Measuring the Quantum State of a Large Angular Momentum 4721
G. Klose, G. Smith, and P. S. Jessen

Superfluid Gyroscope with Cold Atomic Gases 4725
S. Stringari

Quasicontinuous Atom Laser in the Presence of Gravity 4729
F. Gerbier, P. Bouyer, and A. Aspect

Uniting Bose-Einstein Condensates in Optical Resonators 4733
D. Jaksch, S. A. Gardiner, K. Schulze, J. I. Cirac, and P. Zoller

Coherence Resonance in Coupled Chaotic Oscillators 4737
Zonghua Liu and Ying-Cheng Lai

Solving N-Body Problems with Neural Networks 4741
Marcelino Quito, Jr., Christopher Monterola, and Caesar Saloma

Gravitation and Astrophysics

Plasmoid Impacts on Neutron Stars and Highest Energy Cosmic Rays 4745
C. Litwin and R. Rosner

E_{10}, BE_{10} and Arithmetical Chaos in Superstring Cosmology 4749
Thibault Damour and Marc Henneaux

Elementary Particles and Fields

Beta Function for Anisotropic Current Interactions in 2D 4753
B. Gerganov, A. LeClair, and M. Moriconi

(De)Constructing Dimensions 4757
Nima Arkani-Hamed, Andrew G. Cohen, and Howard Georgi

On Some Positivity Properties of the Interquark Potential in QCD 4762
Shmuel Nussinov

In-Medium Properties of the $D_{13}(1520)$ Nucleon Resonance 4764
B. Krusche, J. Ahrens, R. Beck, I. J. D. MacGregor, J. C. McGeorge, V. Metag, and H. Ströher

Direct Measurement of the Pion Valence-Quark Momentum Distribution, the Pion Light-Cone Wave Function Squared 4768
E. M. Aitala *et al.* (Fermilab E791 Collaboration)

Observation of Color-Transparency in Diffractive Dissociation of Pions 4773
E. M. Aitala *et al.* (Fermilab E791 Collaboration)

Nuclear Physics

Midrapidity Antiproton-to-Proton Ratio from Au + Au Collisions at $\sqrt{s_{NN}} = 130$ GeV 4778
C. Adler *et al.*

Flow at the SPS and RHIC as a Quark-Gluon Plasma Signature 4783
D. Teaney, J. Lauret, and E. V. Shuryak

(Continued on Third Cover)

Copyright 2001 by The American Physical Society

Three- and Four-Nucleon Systems from Chiral Effective Field Theory 4787
E. Epelbaum, H. Kamada, A. Nogga, H. Witała, W. Glöckle, and Ulf-G. Meißner
New Mechanism for the Enhancement of *sd* Dominance in Interacting Boson Models 4791
J. Dukelsky and S. Pittel

Atomic, Molecular, and Optical Physics
Sharp Spectral Lines Observed in γ-Ray Ionized Parahydrogen Crystals 4795
Takamasa Momose, C. Michael Lindsay, Yu Zhang, and Takeshi Oka
Motional Effect in Surface Sum-Frequency Vibrational Spectroscopy 4799
Xing Wei and Y. R. Shen
Charge Transfer and Elastic Scattering in Very Slow $H^+ + D(1s)$ Half Collisions 4803
E. Wells, K. D. Carnes, B. D. Esry, and I. Ben-Itzhak
Electron Delocalization in Magnesium Clusters Grown in Supercold Helium Droplets 4807
Thomas Diederich, Tilo Döppner, Jenny Braune, Josef Tiggesbäumker, and Karl-Heinz Meiwes-Broer

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.
Effect of Stacking Faults on the Optical Properties of Inverted Opals 4811
V. Yannopapas, N. Stefanou, and A. Modinos
Anomalous Coherent Backscattering of Light from Opal Photonic Crystals 4815
J. Huang, N. Eradat, M. E. Raikh, Z. V. Vardeny, A. A. Zakhidov, and R. H. Baughman
Spiraling Bubbles: How Acoustic and Hydrodynamic Forces Compete 4819
Judith Rensen, Dennis Bosman, Jacques Magnaudet, Claus-Dieter Ohl, Andrea Prosperetti, Rüdiger Tögel, Michel Versluis, and Detlef Lohse
Critical Behavior of a Heavy Particle in a Granular Fluid 4823
Andrés Santos and James W. Dufty
Passive Scalar Intermittency in Low Temperature Helium Flows 4827
F. Moisy, H. Willaime, J. S. Andersen, and P. Tabeling
Anisotropic Homogeneous Turbulence: Hierarchy and Intermittency of Scaling Exponents in the Anisotropic Sectors 4831
Luca Biferale and Federico Toschi

Plasma and Beam Physics
Signature of Turbulent Zonal Flows Observed in the DIII-D Tokamak 4835
S. Coda, M. Porkolab, and K. H. Burrell

Condensed Matter: Structure, etc.
Liquid Alumina: Detailed Atomic Coordination Determined from Neutron Diffraction Data Using Empirical Potential Structure Refinement 4839
C. Landron, L. Hennet, T. E. Jenkins, G. N. Greaves, J. P. Coutures, and A. K. Soper
Effect of a Rippling Mode on Resonances of Carbon Nanotubes 4843
Jefferson Z. Liu, Quanshui Zheng, and Qing Jiang
Soft Acoustic Modes in the Two-Dimensional Spin System $SrCu_2(BO_3)_2$ 4847
B. Wolf, S. Zherlitsyn, S. Schmidt, B. Lüthi, H. Kageyama, and Y. Ueda
Pressure-Induced Invar Effect in Fe-Ni Alloys 4851
Leonid Dubrovinsky, Natalia Dubrovinskaia, Igor A. Abrikosov, Marie Vennström, Frank Westman, Stefan Carlson, Mark van Schilfgaarde, and Börje Johansson
Particle Excursions in Colloidal Crystals 4855
Mischa Megens and Willem L. Vos
Freezing of Dynamical Exponents in Low Dimensional Random Media 4859
Horacio E. Castillo and Pierre Le Doussal
Self-Similarity and Pattern Selection in the Roughening of Binary Liquid Films 4863
Harald Hoppe, Marcus Heuberger, and Jacob Klein
Observation of a Metastable Periodic Structure for the (001) Surface of $KTaO_3$ after Cleaving *In Situ* 4867
Jaime A. Li, E. A. Akhadov, Jeff Baker, L. A. Boatner, D. Bonart, F. A. Flaherty, J. Fritsch, S. A. Safron, U. Schröder, J. G. Skofronick, T. W. Trelenberg, and D. H. Van Winkle

(Continued on Preceding Page)

Phase Coexistence during Surface Phase Transitions 4871
J. B. Hannon, F.-J. Meyer zu Heringdorf, J. Tersoff, and R. M. Tromp
Novel Layered Superstructures in Mixed Ultralong n-Alkanes 4875
X. B. Zeng and G. Ungar
Epitaxial Growth of a Low-Density Framework Form of Crystalline Silicon: A Molecular-Dynamics Study 4879
Shinji Munetoh, Koji Moriguchi, Kazuhito Kamei, Akira Shintani, and Teruaki Motooka

Condensed Matter: Electronic Properties, etc.

Fluorescence Intermittency in Self-Assembled InP Quantum Dots 4883
Mitsuru Sugisaki, Hong-Wen Ren, Kenichi Nishi, and Yasuaki Masumoto
Coulomb Interaction and Quantum Transport through a Coherent Scatterer 4887
Dmitrii S. Golubev and Andrei D. Zaikin
Surface Soft Phonon and the $\sqrt{3} \times \sqrt{3} \leftrightarrow 3 \times 3$ Phase Transition in Sn/Ge(111) and Sn/Si(111) 4891
Rubén Pérez, José Ortega, and Fernando Flores
Fermi-Liquid Behavior of the Low-Density 2D Hole Gas in a GaAs/AlGaAs Heterostructure at Large Values of r_s ... 4895
Y. Y. Proskuryakov, A. K. Savchenko, S. S. Safonov, M. Pepper, M. Y. Simmons, and D. A. Ritchie
Isotope Effects in Underdoped Cuprate Superconductors: A Quantum Critical Phenomenon 4899
T. Schneider and H. Keller
Theory of Equilibrium Flux Lattice in UPt_3 under Magnetic Field Parallel to Hexagonal Crystal Axis 4903
T. Champel and V. P. Mineev
Transport Anomalies and the Role of Pseudogap in the 60-K Phase of $YBa_2Cu_3O_{7-\delta}$ 4907
Kouji Segawa and Yoichi Ando
Scanning Tunneling Spectroscopy of $Bi_2Sr_2CuO_{6+\delta}$: New Evidence for the Common Origin of the Pseudogap and Superconductivity 4911
M. Kugler, Ø. Fischer, Ch. Renner, S. Ono, and Yoichi Ando
High-Resolution Photoemission Study of MgB_2 4915
T. Takahashi, T. Sato, S. Souma, T. Muranaka, and J. Akimitsu
Reversal of Momentum Relaxation 4918
G. A. Melkov, Yu. V. Kobljanskyj, A. A. Serga, V. S. Tiberkevich, and A. N. Slavin
Stripes Induced by Orbital Ordering in Layered Manganites 4922
Takashi Hotta, Adrian Feiguin, and Elbio Dagotto
Chaotic Domain Patterns in Periodic Inhomogeneous Magnetic Films 4926
N. García, V. V. Osipov, E. V. Ponizovskaya, and A. del Moral
Observation of Phonon Bottleneck in Quantum Dot Electronic Relaxation 4930
J. Urayama, T. B. Norris, J. Singh, and P. Bhattacharya
Spectrum of Luminescence from Laser-Created Bubbles in Water 4934
Ohan Baghdassarian, Han-Ching Chu, Bernd Tabbert, and Gary A. Williams

Interdisciplinary Physics: Biological Physics, Quantum Information, etc.

Optimal Cloning of Coherent States with a Linear Amplifier and Beam Splitters 4938
Samuel L. Braunstein, Nicolas J. Cerf, Sofyan Iblisdir, Peter van Loock, and Serge Massar
Optical Implementation of Continuous-Variable Quantum Cloning Machines 4942
Jaromír Fiurášek
Heavy-Atom Skeleton Quantization and Proton Tunneling in "Intermediate-Barrier" Hydrogen Bonds 4946
Mark E. Tuckerman and Dominik Marx
Optical Analogy to Electronic Quantum Corrals 4950
Gérard Colas des Francs, Christian Girard, Jean-Claude Weeber, Cédric Chicane, Thierry David, Alain Dereux, and David Peyrade
Clustering of Arrays of Chaotic Chemical Oscillators by Feedback and Forcing 4954
Wen Wang, István Z. Kiss, and John L. Hudson
Mutual Information of Population Codes and Distance Measures in Probability Space 4958
K. Kang and H. Sompolinsky

(Continued on Preceding Page)

Contents (Continued)

Time Resolved Collapse of a Folding Protein Observed with Small Angle X-Ray Scattering 4962
L. Pollack, M. W. Tate, A. C. Finnefrock, C. Kalidas, S. Trotter, N. C. Darnton, L. Lurio, R. H. Austin, C. A. Batt, S. M. Gruner, and S. G. J. Mochrie
Long-Range Reactive Dynamics in Myoglobin 4966
J. Timothy Sage, Stephen M. Durbin, Wolfgang Sturhahn, David C. Wharton, Paul M. Champion, Philip Hession, John Sutter, and E. Ercan Alp
Effective-Area Elasticity and Tension of Micromanipulated Membranes 4970
J.-B. Fournier, A. Ajdari, and L. Peliti

Comments

Antiferroelectricity in Liquid Crystals 4974
Helmut R. Brand, P. E. Cladis, and Harald Pleiner
Link, Maclennan, and Clark Reply 4975
Darren R. Link, Joseph E. Maclennan, and Noel A. Clark
Comment on "High Pressure Behavior of ZrW_2O_8: Grüneisen Parameter and Thermal Properties" 4976
S. L. Chaplot and R. Mittal
Ravindran and Arora Reply 4977
T. R. Ravindran and Akhilesh K. Arora
Comment on "Invalidation of the Kelvin Force in Ferrofluids" 4978
A. Engel
Liu replies 4979
Mario Liu

Errata

Erratum: Structural Principles and Amorphouslike Thermal Conductivity of Na-Doped Si Clathrates [Phys. Rev. Lett. **85**, 114 (2000)] 4980
J. S. Tse, K. Uehara, R. Rousseau, A. Ker, C. I. Ratcliffe, M. A. White, and G. MacKay
Measurement of the Dipole and Electric Quadrupole Strength Distributions up to 10 MeV in the Doubly Magic Nuclei ^{40}Ca and ^{48}Ca [Phys. Rev. Lett. **85**, 274 (2000)] 4981
T. Hartmann, J. Enders, P. Mohr, K. Vogt, S. Volz, and A. Zilges