PHYSICAL REVIEW LETTERS

Contents

VOLUME 78, NUMBER 9 3 March 1997

General Physics

Theory of an Output Coupler for Bose-Einstein Condensed Atoms 1607
R. J. Ballagh, K. Burnett, and T. F. Scott

Infrared Behavior of Interacting Bosons at Zero Temperature 1612
C. Castellani, C. Di Castro, F. Pistolesi, and G. C. Strinati

Noise-Enhanced Multistability in Coupled Oscillator Systems 1616
Seunghwan Kim, Seon Hee Park, and Chang Su Ryu

Gravitation and Astrophysics

Singularity-Free Homogeneous Isotropic Universe in Graviton-Dilaton Models 1620
S. Kalyana Rama

Backreaction Problem for Cosmological Perturbations 1624
V. F. Mukhanov, L. Raul W. Abramo, and Robert H. Brandenberger

Unique Signature of Dark Matter in Ancient Mica 1628
Daniel P. Snowden-Ifft and Andrew J. Westphal

Elementary Particles and Fields

Light Gluino Contribution in Hadronic Decays of the Z Boson and τ Lepton to $O(\alpha_s^3)$ 1632
Louis J. Clavelli and Levan R. Surguladze

Nuclear Physics

Effective Isovector *NN* Interaction Strengths Determined from the $^{28}\mathrm{Si}(\vec{p},\vec{p}\,')^{28}\mathrm{Si}(6^-, T = 1)$ Reaction 1636
E. J. Stephenson, J. Liu, A. D. Bacher, S. M. Bowyer, S. Chang, C. Olmer, S. P. Wells, S. W. Wissink, and J. Lisantti

Nucleon Resonances in Deformed Nuclei 1640
L. S. Ferreira, E. Maglione, and R. J. Liotta

Equation of State of Asymmetric Nuclear Matter and Collisions of Neutron-Rich Nuclei 1644
Bao-An Li, C. M. Ko, and Zhongzhou Ren

Temperature Measurements for Central Au + Au Collisions at 35*A* MeV 1648
M. J. Huang, H. Xi, W. G. Lynch, M. B. Tsang, J. D. Dinius, S. J. Gaff, C. K. Gelbke, T. Glasmacher, G. J. Kunde, L. Martin, C. P. Montoya, E. Scannapieco, P. M. Milazzo, M. Azzano, G. V. Margagliotti, R. Rui, G. Vannini, N. Colonna, L. Celano, G. Tagliente, M. D'Agostino, M. Bruno, M. L. Fiandri, F. Gramegna, A. Ferrero, I. Iori, A. Moroni, F. Petruzzelli, and P. F. Mastinu (Miniball/Multics Collaboration)

Proton-Proton Elastic Scattering Excitation Functions at Intermediate Energies 1652
D. Albers *et al.* (EDDA Collaboration)

Atomic, Molecular, and Optical Physics

Nonresonant Excess Photon Detachment of Negative Hydrogen Ions 1656
Xin Miao Zhao, M. S. Gulley, H. C. Bryant, Charlie E. M. Strauss, David J. Funk, A. Stintz, D. C. Rislove, G. A. Kyrala, W. B. Ingalls, and W. A. Miller

Stability of Magneto-optical Traps with Large Field Gradients: Limits on the Tight Confinement of Single Atoms 1660
P. A. Willems, R. A. Boyd, J. L. Bliss, and K. G. Libbrecht

(Continued on Third Cover)

CODEN: PRLTAO 78 (9), 1607–1832 (3 March 1997)

Contents (Continued)

Observation of the Rotational Spectra of $^4HeH^+$, $^4HeD^+$, $^3HeH^+$, and $^3HeD^+$ 1664
Fusakazu Matsushima, Takeshi Oka, and Kojiro Takagi
Single Molecule Detection Using Surface-Enhanced Raman Scattering (SERS) 1667
Katrin Kneipp, Yang Wang, Harald Kneipp, Lev T. Perelman, Irving Itzkan, Ramachandra R. Dasari, and Michael S. Feld
Hydrogen-Assisted Laser-Induced Resonant Transitions between Metastable States of Antiprotonic Helium Atoms 1671
B. Ketzer, F. J. Hartmann, T. von Egidy, C. Maierl, R. Pohl, J. Eades, E. Widmann, T. Yamazaki, M. Kumakura, N. Morita, R. S. Hayano, M. Hori, T. Ishikawa, H. A. Torii, I. Sugai, and D. Horváth
Size-dependent K-edge EXAFS study of the structure of free Ar clusters 1675
S. Kakar, O. Björneholm, J. Weigelt, A. R. B. de Castro, L. Tröger, R. Frahm, T. Möller, A. Knop, and E. Rühl
Entanglement-Induced Two-Photon Transparency 1679
Hong-Bing Fei, Bradley M. Jost, Sandu Popescu, Bahaa E. A. Saleh, and Malvin C. Teich

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, Etc.

Strange Waves in Coupled-Oscillator Arrays: Mapping Approach 1683
Hiroaki Daido
Karhunen-Loève Decomposition of Extensive Chaos 1687
Scott M. Zoldi and Henry S. Greenside
Chaotic Hysteresis in an Adiabatically Oscillating Double Well 1691
N. Berglund and H. Kunz
Spinodal Decomposition to a Lamellar Phase: Effects of Hydrodynamic Flow 1695
G. Gonnella, E. Orlandini, and J. M. Yeomans

Plasma and Beam Physics

Superradiance in a Short-Pulse Free-Electron-Laser Oscillator 1699
D. A. Jaroszynski, P. Chaix, N. Piovella, D. Oepts, G. M. H. Knippels, A. F. G. van der Meer, and H. H. Weits
Rotation and Locking of Magnetic Islands 1703
F. L. Waelbroeck and R. Fitzpatrick
Measurements of Inverse Faraday Effect and Absorption of Circularly Polarized Laser Light in Plasmas 1707
Y. Horovitz, S. Eliezer, A. Ludmirsky, Z. Henis, E. Moshe, R. Shpitalnik, and B. Arad

Condensed Matter: Structure, Etc.

Time-Resolved Analysis in Transmission Electron Microscopy and Its Application to the Study of the Dynamics of Vortices 1711
N. Osakabe, H. Kasai, T. Kodama, and A. Tonomura
Coherent Dynamic Structure Factor of Liquid Lithium by Inelastic X-Ray Scattering 1715
H. Sinn, F. Sette, U. Bergmann, Ch. Halcoussis, M. Krisch, R. Verbeni, and E. Burkel
Multifractal Dimensions and Their Fluctuations in Diffusion-Limited Aggregation 1719
Thomas C. Halsey, Bertrand Duplantier, and Katsuya Honda
Thermal Waves, Criticality, and Self-Organization in Excitable Media 1723
P. Jung
Microscopic Calculation of Superfluidity and Kinetic Energies in Isotopic Liquid Helium Mixtures 1727
Massimo Boninsegni and Saverio Moroni
Adiabatic Analysis of Quantum Dynamics 1731
G. R. Darling, M. Kay, and S. Holloway
Prewetting Transitions in a Near-Critical Metallic Vapor 1735
V. F. Kozhevnikov, D. I. Arnold, S. P. Naurzakov, and Michael E. Fisher
Nonwetting of Cesium by Neon near Its Critical Point 1739
G. B. Hess, M. J. Sabatini, and M. H. W. Chan
Stabilization of Cubic AlN in Epitaxial AlN/TiN Superlattices 1743
A. Madan, I. W. Kim, S. C. Cheng, P. Yashar, V. P. Dravid, and S. A. Barnett

(Continued on Preceding Page)

Anomalous Dimension and Spatial Correlations in a Point-Island Model 1747
Ji Li, A. G. Rojo, and Leonard M. Sander

Condensed Matter: Electronic Properties, Etc.

Observation of a Metallic Antiferromagnetic Phase and Metal to Nonmetal Transition in $Ca_3Ru_2O_7$ 1751
G. Cao, S. McCall, J. E. Crow, and R. P. Guertin

High-Dilution Carbon-Black/Polymer Composites: Hierarchical Percolating Network Derived from Hz to THz ac Conductivity 1755
L. J. Adriaanse, J. A. Reedijk, P. A. A. Teunissen, H. B. Brom, M. A. J. Michels, and J. C. M. Brokken-Zijp

Dissipative Tunneling in Insulators: Noninteracting Blip Approximation and Beyond 1759
Alois Würger

Observation of Screening in the Magneto-Coulomb Drag between Coupled Two-Dimensional Electron Systems 1763
H. Rubel, A. Fischer, W. Dietsche, K. von Klitzing, and K. Eberl

Spin Conductivity and Spin-Charge Separation in the High-T_c Cuprates 1767
Qimiao Si

Momentum, Temperature, and Doping Dependence of Photoemission Lineshape and Implications for the Nature of the Pairing Potential in High-T_c Superconducting Materials 1771
Z.-X. Shen and J. R. Schrieffer

Controlled Symmetry Breaking in Superconducting UPt_3 1775
D. S. Jin, A. Husmann, T. F. Rosenbaum, T. E. Steyer, and K. T. Faber

New Universality Class at the Superconductor-Insulator Transition 1779
Karl-Heinz Wagenblast, Anne van Otterlo, Gerd Schön, and Gergely T. Zimányi

Impurity Driven Phase Transition in the Antiferromagnetic Spin-1 Chain 1783
R. A. Hyman and Kun Yang

Reduction of Ordered Moment and Néel Temperature of Quasi-One-Dimensional Antiferromagnets Sr_2CuO_3 and Ca_2CuO_3 1787
K. M. Kojima, Y. Fudamoto, M. Larkin, G. M. Luke, J. Merrin, B. Nachumi, Y. J. Uemura, N. Motoyama, H. Eisaki, S. Uchida, K. Yamada, Y. Endoh, S. Hosoya, B. J. Sternlieb, and G. Shirane

Experimental Evidence of the Néel-Brown Model of Magnetization Reversal 1791
W. Wernsdorfer, E. Bonet Orozco, K. Hasselbach, A. Benoit, B. Barbara, N. Demoncy, A. Loiseau, H. Pascard, and D. Mailly

Dependence of the Electric Field Gradient of Ir in Fe on the Direction of Magnetization with respect to the Crystallographic Axes 1795
G. Seewald, E. Hagn, E. Zech, D. Forkel-Wirth, and A. Burchard (ISOLDE Collaboration)

Pulsed Mie Scattering Measurements of the Collapse of a Sonoluminescing Bubble 1799
K. R. Weninger, B. P. Barber, and S. J. Putterman

Defect Spectroscopy and Determination of the Electron Diffusion Length in Single Crystal Diamond by Total Photoelectron Yield spectroscopy 1803
J. Ristein, W. Stein, and L. Ley

Adlayer Core-Level Shifts of Random Metal Overlayers on Transition-Metal Substrates 1807
M. V. Ganduglia-Pirovano, J. Kudrnovský, and M. Scheffler

Cross-Disciplinary Physics

Light Diffraction from Shear Ordered Colloidal Dispersions 1811
Christian Dux and Heiner Versmold

Scaling Law for Ballistic Bunching in Multicavity Harmonic Gyroklystrons 1815
G. S. Nusinovich, G. P. Saraph, and V. L. Granatstein

Spiral Breakup in Excitable Tissue due to Lateral Instability 1819
A. F. M. Marée and A. V. Panfilov

Can a Universal Quantum Computer Be Fully Quantum? 1823
John M. Myers

(Continued on Preceding Page)

Contents (Continued)

Comments

Comment on "Charge-Symmetry-Breaking Potentials from Isospin-Violating Meson-Baryon Coupling Constants" 1825
Simon Capstick and B. D. Keister

Gardner, Horowitz, and Piekarewicz Reply 1826
S. Gardner, C. J. Horowitz, and J. Piekarewicz

Comment on "Noise-Induced Nonequilibrium Phase Transition" 1827
Seunghwan Kim, Seon Hee Park, and Chang Su Ryu

Van den Broeck *et al.* Reply 1828
C. Van den Broeck, J. M. R. Parrondo, and R. Toral

Comment on "Upper Limit of the Bose-Glass Transition in $YBa_2Cu_3O_7$ at High Density of Columnar Defects" 1829
L. Civale and L. Krusin-Elbaum

Konczykowski and Samoilov Reply 1830
M. Konczykowski and A. V. Samoilov

Intrinsic Photoemission Spectra for YbB_{12} 1831
J. J. Joyce and A. J. Arko

Susaki *et al.* Reply 1832
T. Susaki, A. Sekiyama, K. Kobayashi, T. Mizokawa, A. Fujimori, M. Tsunekawa, T. Muro, T. Matsushita, S. Suga, H. Ishii, T. Hanyu, A. Kimura, H. Namatame, M. Taniguchi, T. Miyahara, F. Iga, M. Kasaya, and H. Harima

Cumulative Author Index i