NEWSPAPER 78

PHYSICAL REVIEW LETTERS

Contents

VOLUME 78, NUMBER 11 17 March 1997

General Physics

A No-Go Theorem for Joint Property Ascriptions in Modal Interpretations of Quantum Mechanics 2033
Pieter E. Vermaas

Diffraction of Atoms from a Measurement Induced Grating 2038
Stefan Kunze, Kai Dieckmann, and Gerhard Rempe

Toward a Statistical Thermodynamics of Steady States 2042
Mark E. Tuckerman, Christopher J. Mundy, and Michael L. Klein

Precision Rotation Measurements with an Atom Interferometer Gyroscope 2046
T. L. Gustavson, P. Bouyer, and M. A. Kasevich

Gravitation and Astrophysics

Self-Consistent Wormhole Solutions of Semiclassical Gravity 2050
David Hochberg, Arkadiy Popov, and Sergey V. Sushkov

Signature of Gravity Waves in the Polarization of the Microwave Background 2054
Uroš Seljak and Matias Zaldarriaga

A Probe of Primordial Gravity Waves and Vorticity 2058
Marc Kamionkowski, Arthur Kosowsky, and Albert Stebbins

Weakly First-Order Phase Transitions: The ϵ Expansion vs Numerical Simulations in the Cubic Anisotropy Model ... 2062
Peter Arnold, Stephen R. Sharpe, Laurence G. Yaffe, and Yan Zhang

Nonintercommuting Cosmic Strings 2066
Luís M. A. Bettencourt, Pablo Laguna, and Richard A. Matzner

Elementary Particles and Fields

Search for Diphoton Events with Large Missing Transverse Energy in $p\overline{p}$ Collisions at $\sqrt{s} = 1.8$ TeV 2070
S. Abachi *et al.* (D0 Collaboration)

Improved Measurement of the Left-Right Z^0 Cross Section Asymmetry 2075
K. Abe *et al.* (SLD Collaboration)

Nuclear Physics

Collective Expansion in High Energy Heavy Ion Collisions 2080
I. G. Bearden *et al.* (The NA44 Collaboration)

Evidence for the Decay of Nuclear Matter Toroidal Geometries in Nucleus-Nucleus Collisions 2084
N. T. B. Stone, O. Bjarki, E. E. Gualtieri, S. A. Hannuschke, R. Lacey, J. Lauret, W. J. Llope, D. J. Magestro, R. Pak, A. M. Vander Molen, G. D. Westfall, and J. Yee

Atomic, Molecular, and Optical Physics

Delta Kick Cooling: A New Method for Cooling Atoms 2088
Hubert Ammann and Nelson Christensen

Spatial Quantum Signatures in Parametric Down-Conversion 2092
I. Marzoli, A. Gatti, and L. A. Lugiato

Observing the Position Spread of Atomic Wave Packets 2096
A. Görlitz, M. Weidemüller, T. W. Hänsch, and A. Hemmerich

(Continued on Third Cover)

CODEN: PRLTAO 78 (11), 2033–2273 (17 March 1997)

11

High Harmonic Generation Spectra of Neutral Helium by the Complex-Scaled (t, t') Method: Role of Dynamical Electron Correlation 2100
Nimrod Moiseyev and Frank Weinhold

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, Etc.

First Order Phase Transition Resulting from Finite Inertia in Coupled Oscillator Systems 2104
Hisa-Aki Tanaka, Allan J. Lichtenberg, and Shin'ichi Oishi

Decay of High Order Optical Vortices in Anisotropic Nonlinear Optical Media 2108
A. V. Mamaev, M. Saffman, and A. A. Zozulya

Vorticity Generation in Slow Cooling Flows 2112
Ami Glasner, Eli Livne, and Baruch Meerson

Molecular Simulation of Reentrant Corner Flow 2116
Joel Koplik and Jayanth R. Banavar

Gas-Film Levitated Liquids: Shape Fluctuations of Viscous Drops 2120
M. Papoular and C. Parayre

Plasma and Beam Physics

Observation of Self-Amplified Spontaneous Emission in the Mid-Infrared in a Free-Electron Laser 2124
R. Prazeres, J. M. Ortega, F. Glotin, D. A. Jaroszynski, and O. Marcouillé

Test Particle Transport due to Long Range Interactions 2128
F. Anderegg, X.-P. Huang, C. F. Driscoll, E. M. Hollmann, T. M. O'Neil, and D. H. E. Dubin

Electron Parametric Instabilities of Ultraintense Short Laser Pulses Propagating in Plasmas 2132
B. Quesnel, P. Mora, J. C. Adam, S. Guérin, A. Héron, and G. Laval

Condensed Matter: Structure, Etc.

Small-Angle Excess Scattering: Glassy Freezing or Local Orientational Ordering? 2136
H. Weber, W. Paul, W. Kob, and K. Binder

Tricritical Behavior in Rupture Induced by Disorder 2140
Jørgen Vitting Andersen, Didier Sornette, and Kwan-tai Leung

Role of Ultrafine Microstructures in Dynamic Fracture in Nanophase Silicon Nitride 2144
Rajiv K. Kalia, Aiichiro Nakano, Andrey Omeltchenko, Kenji Tsuruta, and Priya Vashishta

Crack Front Propagation and Fracture in a Graphite Sheet: A Molecular-Dynamics Study on Parallel Computers 2148
Andrey Omeltchenko, Jin Yu, Rajiv K. Kalia, and Priya Vashishta

Low-Frequency Phason and Amplitudon Dynamics in the Incommensurate Phase of Rb_2ZnCl_4 2152
P. Mischo, F. Decker, U. Häcker, K.-P. Holzer, J. Petersson, and D. Michel

Kinetics of Crossover in Phase-Separating Liquid Mixtures Induced by Finite-Size Effects 2156
C. Lalaude, J. P. Delville, S. Buil, and A. Ducasse

Carrier Concentrations and Relaxation Spectroscopy: New Information from Scaling Properties of Conductivity Spectra in Ionically Conducting Glasses 2160
B. Roling, A. Happe, K. Funke, and M. D. Ingram

Transition from Island Growth to Step-Flow Growth for Si/Si(100) Epitaxy 2164
Bert Voigtländer, Thomas Weber, Pavel Šmilauer, and Dietrich E. Wolf

Droplet Fluctuations in the Morphology and Kinetics of Martensites 2168
Madan Rao and Surajit Sengupta

Etching of Silica Glass under Electric Fields 2172
B. Lesche, F. C. Garcia, E. N. Hering, W. Margulis, I. C. S. Carvalho, and F. Laurell

Condensed Matter: Electronic Properties, Etc.

Anomalous Drude Model 2176
Hermann Schulz-Baldes

One-Dimensional Kondo Lattice at Partial Band Filling 2180
Graeme Honner and Miklós Gulácsi

(Continued on Preceding Page)

Contents (Continued)

Fast Hole Transport in a New Calamitic Liquid Crystal of 2-(4′-Heptyloxyphenyl)-6-Dodecylthiobenzothiazole 2184
Masahiro Funahashi and Jun-ichi Hanna

Hopf Term and the Effective Lagrangian for the Skyrmions in a Two-Dimensional Electron Gas at Small g Factor ... 2188
W. Apel and Yu. A. Bychkov

Optically Induced Damping of the Surface Plasmon Resonance in Gold Colloids 2192
M. Perner, P. Bost, U. Lemmer, G. von Plessen, J. Feldmann, U. Becker, M. Mennig, M. Schmitt, and H. Schmidt

Fractional Pumping of Energy into a Ballistic Quantum Ring 2196
L. Gorelik, S. Kulinich, Yu. Galperin, R. I. Shekhter, and M. Jonson

New Universality at the Magnetic Field Driven Insulator to Integer Quantum Hall Effect Transitions 2200
S.-H. Song, D. Shahar, D. C. Tsui, Y. H. Xie, and Don Monroe

Correlation Effects on the Coupled Plasmon Modes of a Double Quantum Well 2204
N. P. R. Hill, J. T. Nicholls, E. H. Linfield, M. Pepper, D. A. Ritchie, G. A. C. Jones, Ben Yu-Kuang Hu, and Karsten Flensberg

Precision Ginzburg-Landau Solution of Ideal Vortex Lattices for Any Induction and Symmetry 2208
Ernst Helmut Brandt

Evidence for Two-Component High-Temperature Superconductivity in the Femtosecond Optical Response of $YBa_2Cu_3O_{7-\delta}$ 2212
C. J. Stevens, D. Smith, C. Chen, J. F. Ryan, B. Podobnik, D. Mihailovic, G. A. Wagner, and J. E. Evetts

Schwinger-Boson Approach to Quantum Spin Systems: Gaussian Fluctuations in the "Natural" Gauge 2216
A. E. Trumper, L. O. Manuel, C. J. Gazza, and H. A. Ceccatto

Low Temperature Relaxational Dynamics of the Ising Chain in a Transverse Field 2220
Subir Sachdev and A. P. Young

Soliton and 2D Domains in Ultrathin Magnetic Films 2224
S. T. Chui and V. N. Ryzhov

Resonant Femtosecond Emission from Quantum Well Excitons: The Role of Rayleigh Scattering and Luminescence 2228
S. Haacke, R. A. Taylor, R. Zimmermann, I. Bar-Joseph, and B. Deveaud

Excitonic Emission of THz Radiation: Experimental Evidence of the Shortcomings of the Bloch Equation Method ... 2232
P. Haring Bolivar, F. Wolter, A. Müller, H. G. Roskos, H. Kurz, and K. Köhler

Anisotropy in the Positron 2D Angular Correlation of Annihilation Radiation for Singly Negative Divacancies in Si ... 2236
Z. Tang, M. Hasegawa, T. Chiba, M. Saito, A. Kawasuso, Z. Q. Li, R. T. Fu, T. Akahane, Y. Kawazoe, and S. Yamaguchi

Cross-Disciplinary Physics

Evidence of an Elastic Instability between the Amorphous and the Microcrystalline State of Ca-modified Lead Titanate as revealed by Brillouin Spectroscopy 2240
J. K. Krüger, C. Ziebert, H. Schmitt, B. Jiménez, and C. Bruch

Kinetics of Trapping Reactions with a Time Dependent Density of Traps 2244
Alejandro D. Sánchez, Ernesto M. Nicola, and Horacio S. Wio

Curvature Determination of Spinodal Interface in a Condensed Matter System 2248
Hiroshi Jinnai, Tsuyoshi Koga, Yukihiro Nishikawa, Takeji Hashimoto, and Stephen T. Hyde

Active Stabilization, Quantum Computation, and Quantum State Synthesis 2252
A. M. Steane

Security of Quantum Cryptography against Collective Attacks 2256
Eli Biham and Tal Mor

Comments

Comment on "Dispersion Velocity of Galactic Dark Matter Particles" 2260
N. W. Evans

Comment on "Dispersion Velocity of Galactic Dark Matter Particles" 2261
Evalyn Gates, Marc Kamionkowski, and Michael S. Turner

Cowsik *et al.* Reply 2262
R. Cowsik, Charu Ratnam, and P. Bhattacharjee

(Continued on Preceding Page)

Contents (Continued)

Critical Exponents of the Classical Heisenberg Ferromagnet 2265
Christian Holm and Wolfhard Janke
Brown and Ciftan Reply 2266
Robert G. Brown and Mikael Ciftan
Comment on "Sonoluminescence as Quantum Vacuum Radiation" 2267
Astrid Lambrecht, Marc-Thierry Jaekel, and Serge Reynaud
Comment on "Sonoluminescence as Quantum Vacuum Radiation" 2268
N. García and A. P. Levanyuk
Eberlein Replies 2269
Claudia Eberlein
Comment on "Extended Van Hove Singularity in a Noncuprate Layered Superconductor Sr_2RuO_4" 2271
A. P. Mackenzie, S. R. Julian, G. G. Lonzarich, Y. Maeno, and T. Fujita
Yokoya *et al.* Reply 2272
T. Yokoya, A. Chainani, T. Takahashi, H. Katayama-Yoshida, M. Kasai, and Y. Tokura

Errata

The Rosseland Mean Opacity of a Mixture of Gold and Gadolinium at High Temperatures [Phys. Rev. Lett. **77**, 3545 (1996)] 2273
T. J. Orzechowski, M. D. Rosen, H. N. Kornblum, J. L. Porter, L. J. Suter, A. R. Thiessen, and R. J. Wallace