NEWSPAPER 81

PHYSICAL REVIEW LETTERS

Contents

VOLUME 81, NUMBER 18 2 November 1998

General Physics

Cold Collision Frequency Shift of the $1S$-$2S$ Transition in Hydrogen 3807
Thomas C. Killian, Dale G. Fried, Lorenz Willmann, David Landhuis, Stephen C. Moss, Thomas J. Greytak, and Daniel Kleppner

Bose-Einstein Condensation of Atomic Hydrogen 3811
Dale G. Fried, Thomas C. Killian, Lorenz Willmann, David Landhuis, Stephen C. Moss, Daniel Kleppner, and Thomas J. Greytak

Elementary Particles and Fields

$O(\alpha)$ Radiative Correction to the Casimir Energy for Penetrable Mirrors 3815
M. Bordag and K. Scharnhorst

Operator Expansion for the Elastic Limit 3819
Ratindranath Akhoury, Michael G. Sotiropoulos, and George Sterman

First Search for CP Violation in Tau Lepton Decay 3823
S. Anderson *et al.* (CLEO Collaboration)

Nuclear Physics

Universalities of Triplet Pairing in Neutron Matter 3828
V. A. Khodel, V. V. Khodel, and J. W. Clark

Atomic, Molecular, and Optical Physics

25-State Calculation for e^--Na_2 Scattering 3832
Alexandra P. P. Natalense, Luiz G. Ferreira, and Marco A. P. Lima

Direct Observation of Band-Gap Closure in Mercury Clusters 3836
Ram Busani, Mareike Folkers, and Ori Cheshnovsky

In-Loop Squeezing Is Like Real Squeezing to an In-Loop Atom 3840
H. M. Wiseman

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.

Smallest Focal Spot 3844
Tasso R. M. Sales

Clustering and Non-Gaussian Behavior in Granular Matter 3848
A. Puglisi, V. Loreto, U. Marini Bettolo Marconi, A. Petri, and A. Vulpiani

Spinodal Decomposition of Binary Mixtures in Uniform Shear Flow 3852
F. Corberi, G. Gonnella, and A. Lamura

Effect of Nonlinear Gradient Terms on Breathing Localized Solutions in the Quintic Complex Ginzburg-Landau Equation 3856
Robert J. Deissler and Helmut R. Brand

Observation of a Finite-Time Singularity in Needle Propagation in Hele-Shaw Cells 3860
O. Greffier, A. Al kahwaji, J. Rouch, and H. Kellay

Nonuniform Stationary Measure of the Invariant Unstable Foliation in Hamiltonian and Fluid Mixing Systems 3864
M. Giona and A. Adrover

(Continued on Third Cover)

Copyright 1998 by The American Physical Society

CODEN: PRLTAO 81 (18) 3807–4020 (2 November 1998) 18

Contents (Continued)

Fingering Instability in Combustion 3868
Ory Zik, Zeev Olami, and Elisha Moses

Condensed Matter: Structure, etc.
Rodlike Behavior of Polyelectrolyte Brushes 3872
P. Guenoun, F. Muller, M. Delsanti, L. Auvray, Y. J. Chen, J. W. Mays, and M. Tirrell
Dynamics of Lightly Sulfonated Polystyrene Ionomers 3876
R. H. Colby, X. Zheng, M. H. Rafailovich, J. Sokolov, D. G. Peiffer, S. A. Schwarz, Y. Strzhemechny, and D. Nguyen
Formation of Helical States in Wormlike Polymer Chains 3880
Josh P. Kemp and Zheng Yu Chen
Theory of Strain Percolation in Metals 3884
Robb Thomson and L. E. Levine
Charge Glass in Two-Dimensional Arrays of Capacitively Coupled Grains with Random Offset Charges 3888
Enzo Granato and J. M. Kosterlitz
Differences in the Detachment of Electron Bubbles from Superfluid ^{4}He Droplets versus Nonsuperfluid ^{3}He Droplets 3892
Michal Fárník, Ulrich Henne, Björn Samelin, and J. Peter Toennies
Liquid ^{3}He in Aerogel: Crossover from Drude's to Hagen-Poiseuille's Law 3896
Dietrich Einzel and Jeevak M. Parpia
Coupling between Phase Separation and Surface Deformation Modes in Self-Organizing Polymer Blend Films 3900
Brett D. Ermi, Giovanni Nisato, Jack F. Douglas, John A. Rogers, and Alamgir Karim
Distortion of a Substrate Induced by Adsorption at Solid-Liquid Interfaces 3904
E. V. Vakarin, A. E. Filippov, and J. P. Badiali
Silicon Epoxide: Unexpected Intermediate during Silicon Oxide Formation 3908
Boris B. Stefanov, Alejandra B. Gurevich, Marcus K. Weldon, Krishnan Raghavachari, and Yves. J. Chabal

Condensed Matter: Electronic Properties, etc.
Density of States near the Mott-Hubbard Transition in the Limit of Large Dimensions 3912
Stefan Kehrein
Finite Temperature Transport at the Superconductor-Insulator Transition in Disordered Systems 3916
Igor F. Herbut
Stimulation of Polariton Photoluminescence in Semiconductor Microcavity 3920
Le Si Dang, D. Heger, R. André, F. Bœuf, and R. Romestain
Are Directed Waves Multifractal? 3924
Yi-Kuo Yu and H. Mathur
Magnetic Control of Electric-Field Domains in Semiconductor Superlattices 3928
T. Schmidt, A. G. M. Jansen, R. J. Haug, K. v. Klitzing, and K. Eberl
Coulomb Drag at $\nu = \frac{1}{2}$: Composite Fermion Pairing Fluctuations 3932
Iddo Ussishkin and Ady Stern
Bad Metals Made with Good-Metal Components 3936
S. B. Arnason, S. P. Herschfield, and A. F. Hebard
Role of Spatial Amplitude Fluctuations in Highly Disordered *s*-Wave Superconductors 3940
Amit Ghosal, Mohit Randeria, and Nandini Trivedi
Transport Properties of $Bi_2Sr_2CaCu_2O_8$ Crystals with and without Surface Barriers 3944
D. T. Fuchs, R. A. Doyle, E. Zeldov, S. F. W. R. Rycroft, T. Tamegai, S. Ooi, M. L. Rappaport, and Y. Myasoedov
Anisotropic Rescaling of a Splayed Pinning Landscape in Hg Cuprates: Strong Vortex Pinning and Recovery of Variable Range Hopping 3948
L. Krusin-Elbaum, G. Blatter, J. R. Thompson, D. K. Petrov, R. Wheeler, J. Ullmann, and C. W. Chu
Dynamic Vortex Mass in Clean Fermi Superfluids and Superconductors 3952
N. B. Kopnin and V. M. Vinokur
Peierls Dimerization with Nonadiabatic Spin-Phonon Coupling 3956
G. Wellein, H. Fehske, and A. P. Kampf

(Continued on Preceding Page)

Contents (Continued)

Pd/Cu Site Interchange and Non-Fermi-Liquid Behavior in UCu_4Pd 3960
C. H. Booth, D. E. MacLaughlin, R. H. Heffner, R. Chau, M. B. Maple, and G. H. Kwei

Neutron Scattering Investigation of Magnetic Bilayer Correlations in $La_{1.2}Sr_{1.8}Mn_2O_7$: Evidence of Canting above T_C 3964
R. Osborn, S. Rosenkranz, D. N. Argyriou, L. Vasiliu-Doloc, J. W. Lynn, S. K. Sinha, J. F. Mitchell, K. E. Gray, and S. D. Bader

Lateral Quantization of Spin Waves in Micron Size Magnetic Wires 3968
C. Mathieu, J. Jorzick, A. Frank, S. O. Demokritov, A. N. Slavin, B. Hillebrands, B. Bartenlian, C. Chappert, D. Decanini, F. Rousseaux, and E. Cambril

Paired and Unpaired Charge Stripes in the Ferromagnetic Phase of $La_{0.5}Ca_{0.5}MnO_3$ 3972
S. Mori, C. H. Chen, and S-W. Cheong

Static Scaling on an Interacting Magnetic Nanoparticle System 3976
T. Jonsson, P. Svedlindh, and M. F. Hansen

Spin Dependent Hopping and Colossal Negative Magnetoresistance in Epitaxial $Nd_{0.52}Sr_{0.48}MnO_3$ Films in Fields up to 50 T 3980
P. Wagner, I. Gordon, L. Trappeniers, J. Vanacken, F. Herlach, V. V. Moshchalkov, and Y. Bruynseraede

Singular Behavior in the Pressure-Tuned Competition between Spin-Peierls and Antiferromagnetic Ground States of $(TMTTF)_2PF_6$ 3984
D. S. Chow, P. Wzietek, D. Fogliatti, B. Alavi, D. J. Tantillo, C. A. Merlic, and S. E. Brown

Nuclear Spin Polarization Transfer with a Single Radio-Frequency Field in Optically Pumped Indium Phosphide 3988
Carl A. Michal and Robert Tycko

Interdisciplinary Physics: Biological Physics, Quantum Information, etc.

Nonlinear Quantum Mechanics Implies Polynomial-Time Solution for *NP*-Complete and #*P* Problems 3992
Daniel S. Abrams and Seth Lloyd

Metastability and Depletion-Driven Aggregation 3996
Erik K. Hobbie

Universal Statistical Behavior of Neural Spike Trains 4000
Naama Brenner, Oded Agam, William Bialek, and Rob R. de Ruyter van Steveninck

Entropic Colloidal Interactions in Concentrated DNA Solutions 4004
Ritu Verma, J. C. Crocker, T. C. Lubensky, and A. G. Yodh

Super-Rough Dynamics on Tumor Growth 4008
Antonio Brú, Juan Manuel Pastor, Isabel Fernaud, Isabel Brú, Sonia Melle, and Carolina Berenguer

Stochastic and Deterministic Resonances for Excitable Systems 4012
André Longtin and Dante R. Chialvo

Robust "Topological" Codes by Keeping Control of Internal Redundancy 4016
M. Haft

Comments

Comment on "New Limits to the Infrared Background: Bounds on Radiative Neutrino Decay and on Contributions of Very Massive Objects to the Dark Matter Problem" 4020
Georg G. Raffelt

Evidence for Dynamical Fragment Production? 4021
L. Phair, L. Beaulieu, L. G. Moretto, and G. J. Wozniak

Comment on "Is There an Electronic Topological Transition in Zinc under High Pressure?" 4022
A. W. Overhauser

Comment on "*T* Dependence of the Magnetic Penetration Depth in Unconventional Superconductors at Low Temperatures: Can It Be Linear?" 4023
G. E. Volovik

Comment on "*T* Dependence of the Magnetic Penetration Depth in Unconventional Superconductors at Low Temperatures: Can It Be Linear?" 4024
P. J. Hirschfeld, M.-R. Li, and P. Wölfle

Schopohl and Dolgov Reply 4025
N. Schopohl and O. V. Dolgov

(Continued on Preceding Page)

Contents (Continued)

Low-Energy Physics of Hole Doped Y_2BaNiO_5 4027
C. D. Batista, A. A. Aligia, and J. Eroles
Dagotto and Riera Reply 4028
Elbio Dagotto and José Riera

Errata

Erratum: Ideal Brittle Fracture of Silicon Studied with Molecular Dynamics [Phys. Rev. Lett. **80**, 746 (1998)] 4029
Dominic Holland and M. Marder
Erratum: X-Ray Resonant Scattering as a Direct Probe of Orbital Ordering in Transition-Metal Oxides
[Phys. Rev. Lett. **80**, 3400 (1998)] 4030
Michele Fabrizio, Massimo Altarelli, and Maurizio Benfatto

Cumulative Author Index i