NEWSPAPER 84

PHYSICAL REVIEW LETTERS

Contents

VOLUME 84, NUMBER 13 27 March 2000

PRL 84 (13), 2765–3023 (27 March 2000)

General Physics

Incompatibility of Macroscopic Local Realism with Quantum Mechanics in Measurements with Macroscopic Uncertainties 2765
M. D. Reid

Interpretation of the Nonextensivity Parameter q in Some Applications of Tsallis Statistics and Lévy Distributions 2770
G. Wilk and Z. Włodarczyk

Topology and Phase Transitions: Paradigmatic Evidence 2774
Roberto Franzosi, Marco Pettini, and Lionel Spinelli

Gravitation and Astrophysics

Gravity in the Randall-Sundrum Brane World 2778
Jaume Garriga and Takahiro Tanaka

Elementary Particles and Fields

The Pinch Technique at Two Loops 2782
Joannis Papavassiliou

Isolated Photon Cross Section in $p\overline{p}$ Collisions at $\sqrt{s} = 1.8$ TeV 2786
B. Abbott *et al.* (D0 Collaboration)

Differential Production Cross Section of Z Bosons as a Function of Transverse Momentum at $\sqrt{s} = 1.8$ TeV 2792
B. Abbott *et al.* (D0 Collaboration)

Nuclear Physics

Bombarding Energy Dependence of π^- Interferometry at the Brookhaven AGS 2798
M. A. Lisa *et al.* (E895 Collaboration)

Novel Rapidity Dependence of Directed Flow in High-Energy Heavy-Ion Collisions 2803
R. J. M. Snellings, H. Sorge, S. A. Voloshin, F. Q. Wang, and N. Xu

Atomic, Molecular, and Optical Physics

Enhanced Cooling of Hydrogen Atoms by Lithium Atoms 2806
R. Côté, M. J. Jamieson, Z-C. Yan, N. Geum, G.-H. Jeung, and A. Dalgarno

Autoionization of Triply Excited Rydberg Series 2810
Gilles Verbockhaven and Jørgen E. Hansen

Cold Rubidium Molecules Formed in a Magneto-Optical Trap 2814
C. Gabbanini, A. Fioretti, A. Lucchesini, S. Gozzini, and M. Mazzoni

Quantum Entanglement via Optical Control of Atom-Atom Interactions 2818
M. D. Lukin and P. R. Hemmer

Strong Species Dependence of High Order Photoelectron Production in Alkali Metal Atoms 2822
M. B. Gaarde, K. J. Schafer, K. C. Kulander, B. Sheehy, Dalwoo Kim, and L. F. DiMauro

(Continued on Third Cover)

13

Copyright 2000 by The American Physical Society

Contents (Continued)

Doppler Splitting of In-Flight Auger Decay of Dissociating Oxygen Molecules: The Localization of Delocalized Core Holes 2826
O. Björneholm, M. Bässler, A. Ausmees, I. Hjelte, R. Feifel, H. Wang, C. Miron, M. N. Piancastelli, S. Svensson, S. L. Sorensen, F. Gel'mukhanov, and H. Ågren
Photoinduced Polarization Inversion in a Polymeric Molecule 2830
X. Sun, R. L. Fu, K. Yonemitsu, and K. Nasu

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.

Ergodicity of Random-Matrix Theories: The Unitary Case 2833
Z. Pluhař and H. A. Weidenmüller
Relaxation and Diffusion for the Kicked Rotor 2837
Maxim Khodas and Shmuel Fishman
Unification of Perturbation Theory, Random Matrix Theory, and Semiclassical Considerations in the Study of Parametrically Dependent Eigenstates 2841
Doron Cohen and Eric J. Heller
Brewster's Scattering Angle in Scattered Waves from Slightly Rough Metal Surfaces 2845
Tetsuya Kawanishi
Observation of a cw Dark-Field Signal in an Absorption Spectroscopic Experiment Using a Phase Locked Free-Electron Laser 2849
Eric B. Szarmes, John M. J. Madey, and Karl D. Straub
Robust Photonic Band Gap from Tunable Scatterers 2853
W. Y. Zhang, X. Y. Lei, Z. L. Wang, D. G. Zheng, W. Y. Tam, C. T. Chan, and Ping Sheng
Momentum Conservation Implies Anomalous Energy Transport in 1D Classical Lattices 2857
Tomaž Prosen and David K. Campbell

Plasma and Beam Physics

Two-Color Operation in High-Gain Free-Electron Lasers 2861
H. P. Freund and P. G. O'Shea
New Alfvén Continuum Gaps and Global Modes Induced by Toroidal Flow 2865
B. van der Holst, A. J. C. Beliën, and J. P. Goedbloed
First Observation of Ion Acoustic Waves Produced by the Langmuir Decay Instability 2869
S. Depierreux, J. Fuchs, C. Labaune, A. Michard, H. A. Baldis, D. Pesme, S. Hüller, and G. Laval
Dynamics of Fast Electrons Driven by the Lower Hybrid Wave in Giant Sawtoothing Plasmas 2873
Frédéric Imbeaux and Yves Peysson

Condensed Matter: Structure, etc.

Correlations between the Scanning Tunneling Microscopy Imaged Configurations and the Electronic Structure on Stepped Si(111)-(7 × 7) Surfaces 2877
M. Hupalo, B. J. Min, C. Z. Wang, K. M. Ho, and M. C. Tringides
Structures of High-Density and Low-Density Water 2881
Alan K. Soper and Maria Antonietta Ricci
Compositional Patterning in Systems Driven by Competing Dynamics Of Different Length Scale 2885
Raúl A. Enrique and Pascal Bellon
Nanocrystalline versus Microcrystalline Li_2O:B_2O_3 Composites: Anomalous Ionic Conductivities and Percolation Theory 2889
Sylvio Indris, Paul Heitjans, H. Eduardo Roman, and Armin Bunde
Molecular Traffic Control in a Nanoscale System 2893
Louis A. Clark, George T. Ye, and Randall Q. Snurr
Atomic Structure of the Polar NiO(111)-$p(2 \times 2)$ Surface 2897
A. Barbier, C. Mocuta, H. Kuhlenbeck, K. F. Peters, B. Richter, and G. Renaud

(Continued on Preceding Page)

Microstructure Controlled Shear Band Pattern Formation and Enhanced Plasticity of Bulk Metallic Glasses Containing *in situ* Formed Ductile Phase Dendrite Dispersions 2901
C. C. Hays, C. P. Kim, and W. L. Johnson

Condensed Matter: Electronic Properties, etc.

A Nearly Universal Critical Conductivity for Semiconductor-Metal Alloys 2905
T. G. Castner

Metallic Low-Temperature Resistivity in a 2D Electron System Over an Extended Temperature Range 2909
S. V. Kravchenko and T. M. Klapwijk

Density of States in Coupled Chains with Off-Diagonal Disorder 2913
P. W. Brouwer, C. Mudry, and A. Furusaki

Defects, Quasibound States, and Quantum Conductance in Metallic Carbon Nanotubes 2917
Hyoung Joon Choi, Jisoon Ihm, Steven G. Louie, and Marvin L. Cohen

Dynamic Conductance of Carbon Nanotubes 2921
Christopher Roland, Marco Buongiorno Nardelli, Jian Wang, and Hong Guo

Coupling Between Adsorbate Vibrations and an Electronic Surface State 2925
Eli Rotenberg, J. Schaefer, and S. D. Kevan

Bloch Electrons in a Magnetic Field: Why Does Chaos Send Electrons the Hard Way? 2929
R. Ketzmerick, K. Kruse, D. Springsguth, and T. Geisel

Apparent Spin Polarization Decay in Cu-Dusted $Co/Al_2O_3/Co$ Tunnel Junctions 2933
P. LeClair, H. J. M. Swagten, J. T. Kohlhepp, R. J. M. van de Veerdonk, and W. J. M. de Jonge

Conductivity Tensor of Striped Quantum Hall Phases 2937
Felix von Oppen, Bertrand I. Halperin, and Ady Stern

High-Field Electrical Transport in Single-Wall Carbon Nanotubes 2941
Zhen Yao, Charles L. Kane, and Cees Dekker

Abrupt Change of Josephson Plasma Frequency at the Phase Boundary of the Bragg Glass in $Bi_2Sr_2CaCu_2O_{8+\delta}$ 2945
M. B. Gaifullin, Yuji Matsuda, N. Chikumoto, J. Shimoyama, and K. Kishio

Cu NQR Study of the Stripe Phase Local Structure in the Lanthanum Cuprates 2949
G. B. Teitel'baum, B. Büchner, and H. de Gronckel

Magnetothermodynamics of the Spin-$\frac{1}{2}$ Kagomé Antiferromagnet 2953
P. Sindzingre, G. Misguich, C. Lhuillier, B. Bernu, L. Pierre, Ch. Waldtmann, and H.-U. Everts

Entropy Balance and Evidence for Local Spin Singlets in a Kagomé-Like Magnet 2957
A. P. Ramirez, B. Hessen, and M. Winklemann

Thermal and Electronic Transport Properties and Two-Phase Mixtures in $La_{5/8-x}Pr_xCa_{3/8}MnO_3$ 2961
K. H. Kim, M. Uehara, C. Hess, P. A. Sharma, and S-W. Cheong

Effects of Nuclear Spins on the Quantum Relaxation of the Magnetization for the Molecular Nanomagnet Fe_8 2965
W. Wernsdorfer, A. Caneschi, R. Sessoli, D. Gatteschi, A. Cornia, V. Villar, and C. Paulsen

Low to High Spin-State Transition Induced by Charge Ordering in Antiferromagnetic $YBaCo_2O_5$ 2969
T. Vogt, P. M. Woodward, P. Karen, B. A. Hunter, P. Henning, and A. R. Moodenbaugh

Spatial Mapping of Mobility and Density of the Conduction Electrons in $(FA)_2PF_6$ 2973
G. Alexandrowicz, T. Tashma, A. Feintuch, A. Grayevsky, E. Dormann, and N. Kaplan

Measurement of the Relaxation Rate of the Magnetization in $Mn_{12}O_{12}$-Acetate Using Proton NMR Echo 2977
Z. H. Jang, A. Lascialfari, F. Borsa, and D. Gatteschi

Impulsive Excitation of Phonon-Pair Combination States by Second-Order Raman Scattering 2981
Albrecht Bartels, Thomas Dekorsy, and Heinrich Kurz

Observation of Vibrational Excitation and Deexcitation for $NO(v = 2)$ Scattering from Au(111): Evidence for Electron-Hole-Pair Mediated Energy Transfer 2985
Y. Huang, A. M. Wodtke, H. Hou, C. T. Rettner, and D. J. Auerbach

Interdisciplinary Physics: Biological Physics, Quantum Information, etc.

Scheme for Total Quantum Teleportation 2989
E. DelRe, B. Crosignani, and P. Di Porto

Optimal Quantum Cloning via Stimulated Emission 2993
Christoph Simon, Gregor Weihs, and Anton Zeilinger

(Continued on Preceding Page)

Contents (Continued)

Patterned Colloidal Deposition Controlled by Electrostatic and Capillary Forces 2997
Joanna Aizenberg, Paul V. Braun, and Pierre Wiltzius
Instabilities in a Liquid-Fluidized Bed of Gas Bubbles 3001
M. U. Vera, A. Saint-Jalmes, and D. J. Durian
Thermodynamics of Heat-Shock Response 3005
Kristine Bourke Arnvig, Steen Pedersen, and Kim Sneppen
Role of Secondary Motifs in Fast Folding Polymers: A Dynamical Variational Principle 3009
Amos Maritan, Cristian Micheletti, and Jayanth R. Banavar
Beyond Hebb: Exclusive-OR and Biological Learning 3013
Konstantin Klemm, Stefan Bornholdt, and Heinz Georg Schuster
Particle Diffusion in a Quasi-Two-Dimensional Bacterial Bath 3017
Xiao-Lun Wu and Albert Libchaber

Comments

Comment on "Stripes and the t-J Model" 3021
Steven R. White and D. J. Scalapino
Hellberg and Manousakis Reply 3022
C. Stephen Hellberg and E. Manousakis

Errata

Erratum: Core Level Analysis of the Surface Charge Density Wave Transition in Sn/Ge(111) [Phys. Rev. Lett. **83**, 2789 (1999)] 3023
T. E. Kidd, T. Miller, and T.-C. Chiang