



Damage produced in silica glass under dynamic compression is evinced by a wing crack (gray) and nanocavities (color) in these snapshots from a molecular dynamics simulation. See article 135501.



PHYSICAL REVIEW LETTERS

Contents

Articles published 17 September–23 September 2005

VOLUME 95, NUMBER 13

23 September 2005

General Physics: Statistical and Quantum Mechanics, Quantum Information, etc.

Quantum Decoupling Transition in a One-Dimensional Feshbach-Resonant Superfluid	130401
Daniel E. Sheehy and Leo Radzihovsky	
Atom-Molecule Coherence in a One-Dimensional System	130402
R. Citro and E. Orignac	
Propagation of a Dark Soliton in a Disordered Bose-Einstein Condensate	130403
Nicolas Bilas and Nicolas Pavloff	
Holonomic Quantum Computation in Decoherence-Free Subspaces	130501
L.-A. Wu, P. Zanardi, and D.A. Lidar	
Nonadiabatic Electron Pumping: Maximal Current with Minimal Noise	130601
Michael Strass, Peter Hänggi, and Sigmund Kohler	
Equality Connecting Energy Dissipation with a Violation of the Fluctuation-Response Relation	130602
Takahiro Harada and Shin-ichi Sasa	
Coarse Nonlinear Dynamics and Metastability of Filling-Emptying Transitions: Water in Carbon Nanotubes	130603
Saravanapriyan Sriraman, Ioannis G. Kevrekidis, and Gerhard Hummer	
Structural Order for One-Scale and Two-Scale Potentials	130604
Zhenyu Yan, Sergey V. Buldyrev, Nicolas Giovambattista, and H. Eugene Stanley	

Elementary Particles and Fields

Search for New Physics Using High-Mass Tau Pairs from 1.96 TeV $p\bar{p}$ Collisions	131801
D. Acosta <i>et al.</i> (CDF Collaboration)	
Measurement of Time-Dependent CP Asymmetries in $B^0 \rightarrow D^{(*)\pm} D^{\mp}$ Decays	131802
B. Aubert <i>et al.</i> (BABAR Collaboration)	
Measurement of Branching Fractions and Charge Asymmetries in B^+ Decays to $\eta\pi^+$, ηK^+ , $\eta\rho^+$, and $\eta'\pi^+$, and Search for B^0 Decays to ηK^0 and $\eta\omega$	131803
B. Aubert <i>et al.</i> (BABAR Collaboration)	
Monoenergetic Neutrino Beam for Long-Baseline Experiments	131804
Joe Sato	

Nuclear Physics

Evidence for Pygmy and Giant Dipole Resonances in ^{130}Sn and ^{132}Sn	132501
P. Adrich, A. Klimkiewicz, M. Fallot, K. Boretzky, T. Aumann, D. Cortina-Gil, U. Datta Pramanik, Th. W. Elze, H. Emling, H. Geissel, M. Hellström, K.L. Jones, J.V. Kratz, R. Kulessa, Y. Leifels, C. Nociforo, R. Palit, H. Simon, G. Surówka, K. Sümmerer, and W. Waluś (LAND-FRS Collaboration)	
Doppler Shift as a Tool for Studies of Isobaric Analog States of Neutron-Rich Nuclei: Application to ^7He	132502
P. Boutachkov, G.V. Rogachev, V.Z. Goldberg, A. Aprahamian, F.D. Becchetti, J.P. Bychowski, Y. Chen, G. Chubarian, P.A. DeYoung, J.J. Kolata, L.O. Lamm, G.F. Peaslee, M. Quinn, B.B. Skorodumov, and A. Wöhr	

(Continued on Third Cover)



Contents (Continued)

Atomic, Molecular, and Optical Physics

Violation of the Franck-Condon Principle due to Recoil Effects in High Energy Molecular Core-Level Photoionization	133001
E. Kukk, K. Ueda, U. Hergenhahn, X.-J. Liu, G. Prümper, H. Yoshida, Y. Tamenori, C. Makochekeanwa, T. Tanaka, M. Kitajima, and H. Tanaka	
Observation of Atom Wave Phase Shifts Induced by Van Der Waals Atom-Surface Interactions	133201
John D. Perreault and Alexander D. Cronin	
Ionization of Hydrogen Rydberg Molecules at a Metal Surface	133202
G.R. Lloyd, S.R. Procter, and T.P. Softley	
On-Demand Superradiant Conversion of Atomic Spin Gratings into Single Photons with High Efficiency	133601
Adam T. Black, James K. Thompson, and Vladan Vuletić	

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.

Photonic Quasicrystals for Nonlinear Optical Frequency Conversion	133901
Ron Lifshitz, Ady Arie, and Alon Bahabad	
Linear Instability of Planar Shear Banded Flow	134501
S.M. Fielding	

Plasma and Beam Physics

Visible-Laser Acceleration of Relativistic Electrons in a Semi-Infinite Vacuum	134801
T. Plettner, R.L. Byer, E. Colby, B. Cowan, C.M. Sears, J.E. Spencer, and R.H. Siemann	
Effect of Radial-Electric-Field Polarity on Wire-Array Z-Pinch Dynamics	135001
S.N. Bland, S.V. Lebedev, J.P. Chittenden, D.J. Ampleford, S.C. Bott, J.A. Gómez, M.G. Haines, G.N. Hall, D.A. Hammer, I.H. Mitchell, and J.B. Palmer	

Condensed Matter: Structure, etc.

Observation of a Metallic Superfluid in a Numerical Experiment	135301
E. Smørgrav, E. Babaev, J. Smiseth, and A. Sudbø	
Dynamics of Wing Cracks and Nanoscale Damage in Glass	135501
Zhen Lu, Ken-ichi Nomura, Ashish Sharma, Weiqiang Wang, Cheng Zhang, Aiichiro Nakano, Rajiv Kalia, Priya Vashishta, Elisabeth Bouchaud, and Cindy Rountree	
Nucleation Time of Nanoscale Water Bridges	135502
Robert Szoszkiewicz and Elisa Riedo	
How Multivalency Controls Ionic Criticality	135701
Michael E. Fisher, Jean-Noël Aqua, and Shubho Banerjee	
Fractal Structure of High-Temperature Graphs of $O(N)$ Models in Two Dimensions	135702
Wolfhard Janke and Adriaan M. Schakel	
Dynamical Zero-Temperature Phase Transitions and Cosmic Inflation or Deflation	135703
Ralf Schützhold	
Sublimation of a Vibrated Granular Monolayer: Coexistence of Gas and Solid	135704
Andreas Götzendorfer, Jennifer Kreft, Christof A. Kruelle, and Ingo Rehberg	
Observation of the Dynamical Change in a Water Monolayer Adsorbed on a ZnO Surface	136101
Olga Dulub, Bernd Meyer, and Ulrike Diebold	
1D Lattice Distortions as the Origin of the $(2 \times 2)p4gm$ Reconstruction in γ' -Fe ₄ N(100): A Magnetism-Induced Surface Reconstruction	136102
J.M. Gallego, D.O. Boerma, R. Miranda, and Felix Ynduráin	
Reversible Self-Propelled Droplet Movement: A New Driving Mechanism	136103
Paul Lazar and Hans Riegler	
Evolution of Topological Order in Xe Films on a Quasicrystal Surface	136104
Stefano Curtarolo, Wahyu Setyawan, Nicola Ferralis, Renee D. Diehl, and Milton W. Cole	
Dissociation of Water on Defective Carbon Substrates	136105
M.K. Kostov, E.E. Santiso, A.M. George, K.E. Gubbins, and M. Buongiorno Nardelli	
Critical Epinucleation on Reconstructed Surfaces and First-Principle Calculation of Homonucleation on Si(100) ...	136106
Raj Ganesh S. Pala and Feng Liu	

(Continued on Preceding Page)

Contents (Continued)

Condensed Matter: Electronic Properties, etc.

Orbital Ordering Transition in Ca_2RuO_4 Observed with Resonant X-Ray Diffraction	136401
I. Zegkinoglou, J. Strempler, C.S. Nelson, J.P. Hill, J. Chakhalian, C. Bernhard, J.C. Lang, G. Srajer, H. Fukazawa, S. Nakatsuji, Y. Maeno, and B. Keimer	
All-Electron Exact Exchange Treatment of Semiconductors: Effect of Core-Valence Interaction on Band-Gap and d -Band Position	136402
S. Sharma, J.K. Dewhurst, and C. Ambrosch-Draxl	
Optical Spin Hall Effect	136601
Alexey Kavokin, Guillaume Malpuech, and Mikhail Glazov	
Nondissipative Spin Hall Effect via Quantized Edge Transport	136602
L. Sheng, D.N. Sheng, C.S. Ting, and F.D. Haldane	
Optical Signatures of Spin-Orbit Interaction Effects in a Parabolic Quantum Dot	136603
Tapash Chakraborty and Pekka Pietiläinen	
Link between Adatom Resonances and the Cu(111) Shockley Surface State	136801
Jérôme Lagoute, Xi Liu, and Stefan Fölsch	
Sensing Dipole Fields at Atomic Steps with Combined Scanning Tunneling and Force Microscopy	136802
Jeong Young Park, G.M. Sacha, M. Enachescu, D.F. Ogletree, R.A. Ribeiro, P.C. Canfield, C.J. Jenks, P.A. Thiel, J.J. Sáenz, and M. Salmeron	
Quasiparticle Tunneling through a Barrier in the Fractional Quantum Hall Regime	136803
Elad Shopen, Yuval Gefen, and Yigal Meir	
Imaging Transport Resonances in the Quantum Hall Effect	136804
G.A. Steele, R.C. Ashoori, L.N. Pfeiffer, and K.W. West	
Particle-Hole Asymmetry in Doped Mott Insulators: Implications for Tunneling and Photoemission Spectroscopies	137001
Mohit Randeria, Rajdeep Sensarma, Nandini Trivedi, and Fu-Chun Zhang	
Correlation between Superfluid Density and T_C of Underdoped $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$ Near the Superconductor-Insulator Transition	137002
Yuri Zuev, Mun Seog Kim, and Thomas R. Lemberger	
Spin-Dependent Scattering in Multilayered Magnetic Rings	137201
F.J. Castaño, D. Morecroft, W. Jung, and C.A. Ross	
Interface Magnetization Reversal and Anisotropy in Fe/AlGaAs(001)	137202
H.B. Zhao, D. Talbayev, G. Lüpke, A.T. Hanbicki, C.H. Li, M.J. van't Erve, G. Kioseoglou, and B.T. Jonker	
Spin-Polarized Tunneling Spectroscopy in Tunnel Junctions with Half-Metallic Electrodes	137203
M. Bowen, A. Barthélémy, M. Bibes, E. Jacquet, J.-P. Contour, A. Fert, F. Ciccacci, L. Duò, and R. Bertacco	
Berry Phase Correction to Electron Density of States in Solids	137204
Di Xiao, Junren Shi, and Qian Niu	
Orbital Magnetization in Periodic Insulators	137205
T. Thonhauser, Davide Ceresoli, David Vanderbilt, and R. Resta	
Two-Step Restoration of SU(2) Symmetry in a Frustrated Ring-Exchange Magnet	137206
A. Läuchli, J.C. Domenge, C. Lhuillier, P. Sindzingre, and M. Troyer	
Peierls Transition in the Quantum Spin-Peierls Model	137207
William Barford and Robert J. Bursill	
Ground States and Thermal States of the Random Field Ising Model	137208
Yong Wu and Jonathan Machta	
Fraction of Boroxol Rings in Vitreous Boron Oxide from a First-Principles Analysis of Raman and NMR Spectra	137401
P. Umari and Alfredo Pasquarello	
Femtosecond Electron and Spin Dynamics in Gd(0001) Studied by Time-Resolved Photoemission and Magneto- optics	137402
M. Lisowski, P.A. Loukakos, A. Melnikov, I. Radu, L. Ungureanu, M. Wolf, and U. Bovensiepen	
Photon Statistics from Coupled Quantum Dots	137403
Brian D. Gerardot, Stefan Strauf, Michiel J. de Dood, Andrey M. Bychkov, Antonio Badolato, Kevin Hennessy, Evelyn L. Hu, Dirk Bouwmeester, and Pierre M. Petroff	
Experimental Demonstration of Near-Infrared Negative-Index Metamaterials	137404
Shuang Zhang, Wenjun Fan, N.C. Panoiu, K.J. Malloy, R.M. Osgood, and S.R. Brueck	

(Continued on Preceding Page)

Contents (Continued)

Ground-State Decay Rate for the Zener Breakdown in Band and Mott Insulators	137601
Takashi Oka and Hideo Aoki	
Structural and Electronic Properties of the Interface between the High- k Oxide LaAlO_3 and $\text{Si}(001)$	137602
Clemens J. Först, Karlheinz Schwarz, and Peter E. Blöchl	
Soft Matter, Biological, and Interdisciplinary Physics	
Shear Stress Fluctuations in the Granular Liquid and Solid Phases	138001
F. Dalton, F. Farrelly, A. Petri, L. Pietronero, L. Pitolli, and G. Pontuale	
Symmetry-Breaking Motility	138101
Allen Lee, Ha Youn Lee, and Mehran Kardar	
Efficient Sampling of Protein Structures by Model Hopping	138102
Wooseop Kwak and Ulrich H. Hansmann	
Neuronal Oscillators in <i>Aplysia californica</i> that Demonstrate Weak Coupling <i>In Vitro</i>	138103
Amanda J. Preyer and Robert J. Butera	
Comments	
Comment on “Acoustical Klein-Gordon Equation: A Time-Independent Perturbation Analysis”	139401
Hans Werner Strube	
Forbes and Pike Reply	139402
Barbara J. Forbes and E. Roy Pike	
Comment on “ $a/[110]$ Stacking Fault Model for Platelets in Diamond”	139601
R. Jones, M.I. Heggie, and J.P. Goss	
Miranda, Antonelli, and Nunes Reply	139602
C.R. Miranda, A. Antonelli, and R.W. Nunes	
Errata	
Erratum: Quantum Opacity, the RHIC Hanbury Brown–Twiss Puzzle, and the Chiral Phase Transition [Phys. Rev. Lett. 94 , 102302 (2005)]	139901
John G. Cramer, Gerald A. Miller, Jackson M. Wu, and Jin-Hee Yoon	
Erratum: Observation of Shock Transverse Waves in Elastic Media [Phys. Rev. Lett. 91 , 164301 (2003)]	139902
S. Catheline, J.-L. Gennisson, M. Tanter, and M. Fink	
Erratum: Upper Limits on Gravitational-Wave Emission in Association with the 27 Dec 2004 Giant Flare of SGR1806-20 [Phys. Rev. Lett. 95 , 081103 (2005)]	139903
L. Baggio, M. Bignotto, M. Bonaldi, M. Cerdonio, L. Conti, M. De Rosa, P. Falferi, P. Fortini, M. Inguscio, N. Liguori, F. Marin, R. Mezzena, A. Mion, A. Ortolan, G.A. Prodi, S. Poggi, F. Salemi, G. Soranzo, L. Taffarello, G. Vedovato, A. Vinante, S. Vitale, and J.P. Zendri (AURIGA Collaboration)	