



Simulation of splitting and reformation of a Bose-Einstein condensate vortex. Successive images exhibit time evolution of the density, while insets present the phase profiles. The two frames at the bottom show the trap being switched off at the halfway point, leading to interference fringes. See article 190402.

PHYSICAL REVIEW LETTERS

Contents

VOLUME 89, NUMBER 19

4 November 2002

General Physics

Universal Measurement Apparatus Controlled by Quantum Software	190401
Jaromír Fiurášek, Miloslav Dušek, and Radim Filip	
Split Instability of a Vortex in an Attractive Bose-Einstein Condensate	190402
Hiroki Saito and Masahito Ueda	
Imprinting Vortices in a Bose-Einstein Condensate using Topological Phases	190403
A. E. Leanhardt, A. Görlitz, A. P. Chikkatur, D. Kielpinski, Y. Shin, D. E. Pritchard, and W. Ketterle	
Two Atomic Species Superfluid	190404
G. Modugno, M. Modugno, F. Riboli, G. Roati, and M. Inguscio	
Hydrodynamic Modes in Dense Trapped Ultracold Gases	190405
R. Combescot and X. Leyronas	
Isotopic Dependence of the Casimir Force	190406
Dennis E. Krause and Ephraim Fischbach	
Scaling of the Interface Roughness in Fe-Cr Superlattices: Self-Affine versus Non-Self-Affine	190601
J. Santamaria, M. E. Gómez, J. L. Vicent, K. M. Krishnan, and Ivan K. Schuller	
Universality Class of Nonequilibrium Phase Transitions with Infinitely Many Absorbing States	190602
Frédéric van Wijland	

Gravitation and Astrophysics

Flavor Oscillations in the Supernova Hot Bubble Region: Nonlinear Effects of Neutrino Background	191101
Sergio Pastor and Georg Raffelt	

Elementary Particles and Fields

Observation of $B^\pm \rightarrow \omega K^\pm$ Decay	191801
R.-S. Lu <i>et al.</i> (Belle Collaboration)	
Nuclear Propelled Vessels and Neutrino Oscillation Experiments	191802
J. Detwiler, G. Gratta, N. Tolich, and Y. Uchida	

Atomic, Molecular, and Optical Physics

Semiclassical Dirac Theory of Tunnel Ionization	193001
N. Milosevic, V. P. Krainov, and T. Brabec	
Experimental Link of Photoionization of Sc^{2+} to Photorecombination of Sc^{3+} : An Application of Detailed Balance in a Unique Atomic System	193002
S. Schippers, A. Müller, S. Ricz, M. E. Bannister, G. H. Dunn, J. Bozek, A. S. Schlachter, G. Hinojosa, C. Cisneros, A. Aguilar, A. M. Covington, M. F. Gharaibeh, and R. A. Phaneuf	
S-Matrix Analysis of Coincident Measurement of Two-Electron Energy Distribution for Double Ionization of He in an Intense Laser Field	193003
A. Becker and F. H. M. Faisal	

(Continued on Third Cover)

Contents (Continued)

Stability of Small Mixed Clusters of ^4He and ^3He Atoms	193401
R. Guardiola and J. Navarro	
Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.	
Experimental Characterization of the Transition to Phase Synchronization of Chaotic CO_2 Laser Systems	194101
S. Boccaletti, E. Allaria, R. Meucci, and F.T. Arecchi	
Proposal for a Chaotic Ratchet Using Cold Atoms in Optical Lattices	194102
T.S. Monteiro, P.A. Dando, N.A.C. Hutchings, and M.R. Isherwood	
Plasma and Beam Physics	
Evidence for Electron Acceleration up to ~ 300 keV in the Magnetic Reconnection Diffusion Region of Earth's Magnetotail	195001
M. Øieroset, R.P. Lin, T.D. Phan, D.E. Larson, and S.D. Bale	
Nonlinear Theory of the Ablative Rayleigh-Taylor Instability	195002
J. Sanz, J. Ramírez, R. Ramis, R. Betti, and R.P.J. Town	
Condensed Matter: Structure, etc.	
Jamming under Tension in Polymer Crazes	195501
Jörg Rottler and Mark O. Robbins	
Coagulation of Charged Microparticles in Neutral Gas and Charge-Induced Gel Transitions	195502
A.V. Ivlev, G.E. Morfill, and U. Konopka	
Rearrangements and Dilatancy for Sheared Dense Materials	195503
Anaël Lemaître	
Effect of Pressure on Hydrogen Bonding in Liquid Methanol	195504
A. Arencibia, M. Taravillo, F.J. Pérez, J. Núñez, and V.G. Baonza	
First-Order Fréedericksz Transition Above the Nematic-Smectic-A Phase Transition	195505
Bing Wen and Charles Rosenblatt	
Extremal Model for Amorphous Media Plasticity	195506
Jean-Christophe Baret, Damien Vandembroucq, and Stéphane Roux	
Structural Stability and Phase Transitions in K_8Si_{46} Clathrate under High Pressure	195507
John S. Tse, Serge Desgreniers, Zhi-qiang Li, Michael R. Ferguson, and Yoshiyuki Kawazoe	
Decoupling of Diffusion from Structural Relaxation and Spatial Heterogeneity in a Supercooled Simple Liquid	195701
Mikhail Dzugutov, Sergei I. Simdyankin, and Fredrik H.M. Zetterling	
Distinguishing Two Contributions to the Nearly Constant Loss in Ion-Conducting Glasses	195901
D.L. Sidebottom and C.M. Murray-Krean	
ac Conductivity Spectra of Alkali Tellurite Glasses: Composition-Dependent Deviations from the Summerfield Scaling	195902
S. Murugavel and B. Roling	
Transition from Overlay Growth to Alloying Growth of Ga on $\text{Si}(111)\text{-}\alpha\text{-(}\sqrt{3}\times\sqrt{3}\text{)-Au}$	196101
T. Yamanaka and S. Ino	
Charge Exchange in Li Scattering from Si Surfaces	196102
Y. Yang and J.A. Yarmoff	
Thermal Desorption of Large Molecules from Solid Surfaces	196103
Kristen A. Fichthorn and Radu A. Miron	
Barrierless Formation and Faceting of SiGe Islands on $\text{Si}(001)$	196104
J. Tersoff, B.J. Spencer, A. Rastelli, and H. von Känel	
Condensed Matter: Electronic Properties, etc.	
Gap Formation and Soft Phonon Mode in the Holstein Model	196401
D. Meyer, A.C. Hewson, and R. Bulla	
Correlated Tunneling in Intramolecular Carbon Nanotube Quantum Dots	196402
M. Thorwart, M. Grifoni, G. Cuniberti, H.W.Ch. Postma, and C. Dekker	
Stripe Phases in the Two-Dimensional Falicov-Kimball Model	196403
R. Lemański, J.K. Freericks, and G. Banach	

(Continued on Preceding Page)

Contents (Continued)

Thermally Activated Magnetic Reversal Induced by a Spin-Polarized Current	196801
E.B. Myers, F.J. Albert, J.C. Sankey, E. Bonet, R.A. Buhrman, and D.C. Ralph	
Kondo Model for the “0.7 Anomaly” in Transport through a Quantum Point Contact	196802
Yigal Meir, Kenji Hirose, and Ned S. Wingreen	
Quantum Monte Carlo Calculations of Nanostructure Optical Gaps: Application to Silicon Quantum Dots	196803
Andrew J. Williamson, Jeffrey C. Grossman, Randolph Q. Hood, Aaron Puzder, and Giulia Galli	
Quantum Phase Transition in One-Dimensional Arrays of Resistively Shunted Small Josephson Junctions	197001
Hisao Miyazaki, Yamaguchi Takahide, Akinobu Kanda, and Youiti Ootuka	
Spin-Spin Cross Relaxation in Single-Molecule Magnets	197201
W. Wernsdorfer, S. Bhaduri, R. Tiron, D.N. Hendrickson, and G. Christou	
Why Temperature Chaos in Spin Glasses Is Hard to Observe	197202
T. Aspelmeier, A.J. Bray, and M.A. Moore	
Abrupt Topological Transitions in the Hysteresis Curves of Ferromagnetic Metalattices	197203
J.E. Han and Vincent H. Crespi	
<i>Ab Initio</i> Molecular Dynamics Investigation of the Structure and the Noncollinear Magnetism in Liquid Oxygen: Occurrence of O ₄ Molecular Units	197204
Tatsuki Oda and Alfredo Pasquarello	
Dominance of the Excitation Continuum in the Longitudinal Spectrum of Weakly Coupled Heisenberg $S = 1/2$ Chains	197205
A. Zheludev, K. Kakurai, T. Masuda, K. Uchinokura, and K. Nakajima	
Accurate First-Principles Detailed-Balance Determination of Auger Recombination and Impact Ionization Rates in Semiconductors	197601
S. Picozzi, R. Asahi, C.B. Geller, and A.J. Freeman	
Field Emission of Individual Carbon Nanotubes in the Scanning Electron Microscope	197602
Jean-Marc Bonard, Kenneth A. Dean, Bernard F. Coll, and Christian Klink	
Interdisciplinary Physics: Biological Physics, Quantum Information, etc.	
Quantum Communication Complexity Protocol with Two Entangled Qutrits	197901
Časlav Brukner, Marek Żukowski, and Anton Zeilinger	
Scalable Quantum Computing with Josephson Charge Qubits	197902
J.Q. You, J.S. Tsai, and Franco Nori	
Quantum Computation with Untunable Couplings	197903
Xingxiang Zhou, Zheng-Wei Zhou, Guang-Can Guo, and Marc J. Feldman	
Universal Fault-Tolerant Quantum Computation in the Presence of Spontaneous Emission and Collective Dephasing	197904
K. Khodjasteh and D.A. Lidar	
Conduction Block in One-Dimensional Heart Fibers	198101
Jeffrey J. Fox, Robert F. Gilmour, Jr., and Eberhard Bodenschatz	
Insulating Behavior of λ -DNA on the Micron Scale	198102
Y. Zhang, R.H. Austin, J. Kraeft, E.C. Cox, and N.P. Ong	
Fabrication of a Synthetic Nanopore Ion Pump	198103
Z. Siwy and A. Fuliński	
Comments	
Comment on “Complementarity between Local and Nonlocal Topological Effects”	198901
Philipp Hyllus and Erik Sjöqvist	
Aharonov and Reznik Reply	198902
Yakir Aharonov and Benni Reznik	
Comment on “Lasatron: A Proposed Source of Powerful Nuclear-Time-Scale Electromagnetic Bursts”	199501
G. Stupakov and M. Zolotarev	
Kaplan and Shkolnikov Reply	199502
A.E. Kaplan and P.L. Shkolnikov	
Comment on “Dissociation of Water under Pressure”	199601
Christoph Dellago, Phillip L. Geissler, David Chandler, Jürg Hutter, and Michele Parrinello	

(Continued on Preceding Page)

Contents (Continued)

Schwegler <i>et al.</i> Reply	199602
Eric R. Schwegler, Giulia Galli, Francois Gygi, and Randolph Q. Hood	
Errata	
Erratum: Size-Dependent Tunneling and Optical Spectroscopy of CdSe Quantum Rods [Phys. Rev. Lett. 89 , 086801 (2002)]	199901
David Katz, Tommer Wizansky, Oded Millo, Eli Rothenberg, Taleb Mokari, and Uri Banin	
Publisher's Note: Polynomial-Time Simulation of Pairing Models on a Quantum Computer [Phys. Rev. Lett. 89 , 057904 (2002)]	199902
L.-A. Wu, M.S. Byrd, and D.A. Lidar	
Cumulative Author Index	i