



Topological defect in a spinor BEC. The white and black tubes indicate the creation of a knot with topological charge equal to 1. A component of the order parameter is represented on the torus with color-coded phase information. See article 180403.



PHYSICAL REVIEW LETTERS

Contents

Articles published 3 May–9 May 2008

VOLUME 100, NUMBER 18

9 May 2008

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

Joule Expansion of a Pure Many-Body State	180401
S. Camalet	
Non-Markovian Quantum Jumps	180402
Jyrki Piilo, Sabrina Maniscalco, Kari Härkönen, and Kalle-Antti Suominen	
Knots in a Spinor Bose-Einstein Condensate	180403
Yuki Kawaguchi, Muneto Nitta, and Masahito Ueda	
Dynamical Instability of the XY Spiral State of Ferromagnetic Condensates	180404
R. W. Cherng, V. Gritsev, D. M. Stamper-Kurn, and E. Demler	
Atom Interferometry with up to 24-Photon-Momentum-Transfer Beam Splitters	180405
Holger Müller, Sheng-wei Chiow, Quan Long, Sven Herrmann, and Steven Chu	
Engineering Correlation and Entanglement Dynamics in Spin Systems	180406
T. S. Cubitt and J. I. Cirac	
Experimental Realization of Linear-Optical Partial SWAP Gates	180501
Antonín Černoch, Jan Soubusta, Lucie Bartůšková, Miloslav Dušek, and Jaromír Fiurášek	
Experimental Evidence of Non-Gaussian Fluctuations near a Critical Point	180601
S. Joubaud, A. Petrosyan, S. Ciliberto, and N. B. Garnier	
Optimized Free Energies from Bidirectional Single-Molecule Force Spectroscopy	180602
David D. Minh and Artur B. Adib	

Gravitation and Astrophysics

Evidence of Primordial Non-Gaussianity (f_{NL}) in the Wilkinson Microwave Anisotropy Probe 3-Year Data at 2.8σ ..	181301
Amit P. Yadav and Benjamin D. Wandelt	

Elementary Particles and Fields

Proton Decay and Flavor Violating Thresholds in SO(10) Models	181801
Bhaskar Dutta, Yukihiro Mimura, and Rabindra N. Mohapatra	
First Observation of the Decay $D_s^+ \rightarrow p\bar{\pi}$	181802
S. B. Athar <i>et al.</i> (CLEO Collaboration)	
QCD Corrections to Double J/ψ Production in e^+e^- Annihilation at $\sqrt{s} = 10.6$ GeV	181803
Bin Gong and Jian-Xiong Wang	
Determination of the Parity of the Neutral Pion via Its Four-Electron Decay	182001
E. Abouzaid <i>et al.</i> (KTeV Collaboration)	
Observation of the Decay $B_c^\pm \rightarrow J/\psi\pi^\pm$ and Measurement of the $B_c^\pm$ Mass	182002
T. Aaltonen <i>et al.</i> (CDF Collaboration)	

Nuclear Physics

New Binding Energy for the Two-Neutron Halo of ^{11}Li	182501
C. Bachelet, G. Audi, C. Gaulard, C. Guénaut, F. Herfurth, D. Lunney, M. de Saint Simon, and C. Thibault	

(Continued Inside)



By suggesting a few manuscripts each week, we hope to promote reading across fields. Please see our Announcement Phys. Rev. Lett. 98, 010001 (2007).

Copyright 2008 by The American Physical Society



0031-9007(20080509)100:18;1-0

Contents (Continued)

Coexistence of Covalent Superdeformation and Molecular Resonances in an Unbound Region of ^{12}Be	182502
M. Ito, N. Itagaki, H. Sakurai, and K. Ikeda	
Atomic, Molecular, and Optical Physics	
Ionization of Methane in Strong and Ultrastrong Relativistic Fields	183001
Sasi Palaniyappan, Rob Mitchell, Rob Sauer, Isaac Ghebregziabher, Samantha L. White, M.F. Decamp, and B.C. Walker	
Absolute Charge Transfer and Fragmentation Cross Sections in He^{2+} - C_{60} Collisions	183401
A. Rentenier, L.F. Ruiz, S. Díaz-Tendero, B. Zarour, P. Moretto-Capelle, D. Bordenave-Montesquieu, A. Bordenave-Montesquieu, P.-A. Hervieux, M. Alcamí, M.F. Politis, J. Hanssen, and F. Martín	
Ultrabroadband Biphotons Generated via Chirped Quasi-Phase-Matched Optical Parametric Down-Conversion	183601
Magued B. Nasr, Silvia Carrasco, Bahaa E. Saleh, Alexander V. Sergienko, Malvin C. Teich, Juan P. Torres, Lluís Torner, David S. Hum, and Martin M. Fejer	
Casimir-Lifshitz Theory and Metamaterials	183602
F.S. Rosa, D.A. Dalvit, and P.W. Milonni	
Subnatural Linewidth Biphotons with Controllable Temporal Length	183603
Shengwang Du, Pavel Kolchin, Chinmay Belthangady, G.Y. Yin, and S.E. Harris	
Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.	
Suppression of Nonlinear Interactions in Resonant Macroscopic Quantum Devices: The Example of the Solid-State Ring Laser Gyroscope	183901
Sylvain Schwartz, François Guty, Gilles Feugnet, Philippe Bouyer, and Jean-Paul Pocholle	
Bound States in the Continuum in Photonics	183902
D.C. Marinica, A.G. Borisov, and S.V. Shabanov	
Universality of Algebraic Decays in Hamiltonian Systems	184101
G. Cristadoro and R. Ketzmerick	
Semiclassical Propagation of Gaussian Wave Packets	184102
Raphael N. Maia, Fernando Nicacio, Raúl O. Vallejos, and Fabricio Toscano	
Generation of Magnetic Field by Combined Action of Turbulence and Shear	184501
T.A. Yousef, T. Heinemann, A.A. Schekochihin, N. Kleeorin, I. Rogachevskii, A.B. Iskakov, S.C. Cowley, and J.C. McWilliams	
Formation of the “Superconducting” Core in Turbulent Thermal Convection	184502
J.J. Niemela and K.R. Sreenivasan	
Extreme Lagrangian Acceleration in Confined Turbulent Flow	184503
Benjamin Kadoch, Wouter J. Bos, and Kai Schneider	
Plasma and Beam Physics	
High-Transmission Planar X-Ray Waveguides	184801
T. Salditt, S.P. Krüger, C. Fuhse, and C. Bähz	
Plasma Currents and Electron Distribution Functions under a dc Electric Field of Arbitrary Strength	185001
S.M. Weng, Z.M. Sheng, M.Q. He, J. Zhang, P.A. Norreys, M. Sherlock, and A.P. Robinson	
Scale Separation between Electron and Ion Thermal Transport	185002
T. Görler and F. Jenko	
Studies of Plastic-Ablator Compressibility for Direct-Drive Inertial Confinement Fusion on OMEGA	185003
S.X. Hu, V.A. Smalyuk, V.N. Goncharov, J.P. Knauer, P.B. Radha, I.V. Igumenshchev, J.A. Marozas, C. Stoeckl, B. Yaakobi, D. Shvarts, T.C. Sangster, P.W. McKenty, D.D. Meyerhofer, S. Skupsky, and R.L. McCrory	
Lagrangian-Eulerian Micromotion and Wave Heating in Nonlinear Self-Excited Dust-Acoustic Waves	185004
Chen-Ting Liao, Lee-Wen Teng, Chen-Yu Tsai, Chong-Wai Io, and Lin I	
Role of Hot-Electron Preheating in the Compression of Direct-Drive Imploding Targets with Cryogenic D_2 Ablators	185005
V.A. Smalyuk, D. Shvarts, R. Betti, J.A. Delettrez, D.H. Edgell, V.Yu. Glebov, V.N. Goncharov, R.L. McCrory, D.D. Meyerhofer, P.B. Radha, S.P. Regan, T.C. Sangster, W. Seka, S. Skupsky, C. Stoeckl, B. Yaakobi, J.A. Frenje, C.K. Li, R.D. Petrasso, and F.H. Séguin	

(Continued on Preceding Page)

Contents (Continued)

High-Areal-Density Fuel Assembly in Direct-Drive Cryogenic Implosions	185006
T.C. Sangster, V.N. Goncharov, P.B. Radha, V.A. Smalyuk, R. Betti, R.S. Craxton, J.A. Delettrez, D.H. Edgell, V. Yu. Glebov, D.R. Harding, D. Jacobs-Perkins, J.P. Knauer, F.J. Marshall, R.L. McCrory, P.W. McKenty, D.D. Meyerhofer, S.P. Regan, W. Seka, R.W. Short, S. Skupsky, J.M. Soures, C. Stoeckl, B. Yaakobi, D. Shvarts, J.A. Frenje, C.K. Li, R.D. Petrasso, and F.H. Séguin	
Condensed Matter: Structure, etc.	
Phase Separated BEC for High-Sensitivity Force Measurement	185301
S.G. Bhongale and Eddy Timmermans	
Metadynamics Simulations of the High-Pressure Phases of Silicon Employing a High-Dimensional Neural Network Potential	185501
Jörg Behler, Roman Martoňák, Davide Donadio, and Michele Parrinello	
Disorder-Recrystallization Effects in Low-Energy Beam-Solid Interactions	185502
M.J. Beck, R.D. Schrimpf, D.M. Fleetwood, and S.T. Pantelides	
Dislocation-Source Shutdown and the Plastic Behavior of Single-Crystal Micropillars	185503
H. Tang, K.W. Schwarz, and H.D. Espinosa	
Critical Surfaces for General Bond Percolation Problems	185701
Christian R. Scullard and Robert M. Ziff	
Nucleation-Limited Dewetting of Ice Films on Pt(111)	186101
Konrad Thürmer and Norman C. Bartelt	
Nanoscale Periodicity in Stripe-Forming Systems at High Temperature: Au/W(110)	186102
J. de la Figuera, F. Léonard, N.C. Bartelt, R. Stumpf, and K.F. McCarty	
Wetting on Nanorough Surfaces	186103
T. Biben and L. Joly	
Strain Induced Dewetting of a Molecular System: Bimodal Growth of PTCDA on NaCl	186104
S.A. Burke, W. Ji, J.M. Mativetsky, J.M. Topple, S. Fostner, H.-J. Gao, H. Guo, and P. Grütter	
Condensed Matter: Electronic Properties, etc.	
Band Offsets at the Si/SiO ₂ Interface from Many-Body Perturbation Theory	186401
R. Shaltaf, G.-M. Rignanese, X. Gonze, Feliciano Giustino, and Alfredo Pasquarello	
Electronic Structure, Phonons, and Dielectric Anomaly in Ferromagnetic Insulating Double Pervoskite La ₂ NiMnO ₆	186402
Hena Das, Umesh V. Waghmare, T. Saha-Dasgupta, and D.D. Sarma	
Band-Gap Design of Quaternary (In,Ga)(As,Sb) Semiconductors via the Inverse-Band-Structure Approach	186403
Paulo Piquini, Peter A. Graf, and Alex Zunger	
Dimensional Tuning of Electronic States under Strong and Frustrated Interactions	186404
Chisa Hotta and Frank Pollmann	
Direct Evidence for Delocalization of Charge Carriers at the Fermi Level in a Doped Conducting Polymer	186601
Jing-Mei Zhuo, Li-Hong Zhao, Perq-Jon Chia, Wee-Sun Sim, Richard H. Friend, and Peter K.H. Ho	
Boundary-Mediated Electron-Electron Interactions in Quantum Point Contacts	186801
V.T. Renard, O.A. Tkachenko, V.A. Tkachenko, T. Ota, N. Kumada, J.-C. Portal, and Y. Hirayama	
Self-Organization of Irregular Nanoelectromechanical Vibrations in Multimode Shuttle Structures	186802
L.M. Jonsson, F. Santandrea, L.Y. Gorelik, R.I. Shekhter, and M. Jonson	
Low-Density Ferromagnetism in Biased Bilayer Graphene	186803
Eduardo V. Castro, N.M. Peres, T. Stauber, and N.A. Silva	
Surface Plasmon Optical Tweezers: Tunable Optical Manipulation in the Femtonewton Range	186804
Maurizio Righini, Giovanni Volpe, Christian Girard, Dmitri Petrov, and Romain Quidant	
<i>Ab Initio</i> Studies of the Spin-Transfer Torque in Magnetic Tunnel Junctions	186805
Christian Heiliger and M.D. Stiles	
Spectrum of π Electrons in Graphene as a Macromolecule	186806
Lyuba Malysheva and Alexander Onipko	
Many-Body Generalization of the Z ₂ Topological Invariant for the Quantum Spin Hall Effect	186807
Sung-Sik Lee and Shinsei Ryu	
Bardeen-Cooper-Schrieffer Theory of Finite-Size Superconducting Metallic Grains	187001
Antonio M. García-García, Juan Diego Urbina, Emil A. Yuzbashyan, Klaus Richter, and Boris L. Altshuler	

(Continued on Preceding Page)

Contents (Continued)

Reversible to Irreversible Flow Transition in Periodically Driven Vortices	187002
N. Mangan, C. Reichhardt, and C.J. Reichhardt	
Strong Tunable Coupling between a Superconducting Charge and Phase Qubit	187003
A. Fay, E. Hoskinson, F. Lecocq, L.P. Lévy, F.W. Hekking, W. Guichard, and O. Buisson	
Supercurrent Switch in Graphene π Junctions	187004
Jacob Linder, Takehito Yokoyama, Daniel Huertas-Hernando, and Asle Sudbø	
de Haas–van Alphen Oscillations in the Underdoped High-Temperature Superconductor $\text{YBa}_2\text{Cu}_3\text{O}_{6.5}$	187005
Cyril Jaudet, David Vignolles, Alain Audouard, Julien Levallois, D. LeBoeuf, Nicolas Doiron-Leyraud, B. Vignolle, M. Nardone, A. Zitouni, Ruixing Liang, D.A. Bonn, W.N. Hardy, Louis Taillefer, and Cyril Proust	
Restoration of the Magnetic hc/e -Periodicity in Unconventional Superconductors	187006
Vladimir Juričić, Igor F. Herbut, and Zlatko Tešanović	
Theory of Néel and Valence-Bond Solid Phases on the Kagome Lattice of Zn Paratacamite	187201
Michael J. Lawler, Lars Fritz, Yong Baek Kim, and Subir Sachdev	
Achieving Subdiffraction Imaging through Bound Surface States in Negative Refraction Photonic Crystals in the Near-Infrared Range	187401
R. Chatterjee, N.C. Panoiu, K. Liu, Z. Dios, M.B. Yu, M.T. Doan, L.J. Kaufman, R.M. Osgood, and C.W. Wong	
Soft Matter, Biological, and Interdisciplinary Physics	
☞ Out-of-Equilibrium Dynamics of Gene Expression and the Jarzynski Equality	188101
Johannes Berg	
☞ Differential Dynamic Microscopy: Probing Wave Vector Dependent Dynamics with a Microscope	188102
Roberto Cerbino and Veronique Trappe	
Subdiffusion in Peptides Originates from the Fractal-Like Structure of Configuration Space	188103
Thomas Neusius, Isabella Daidone, Igor M. Sokolov, and Jeremy C. Smith	
Mutual Voronoi Tessellation in Spoke Pattern Convection	188104
Stefano Mazzoni, Fabio Giavazzi, Roberto Cerbino, Marzio Giglio, and Alberto Vailati	
Phase Transition to Bundles of Flexible Supramolecular Polymers	188301
B.A. Huisman, P.G. Bolhuis, and A. Fasolino	
Analytic Expressions for the Statistics of the Primitive-Path Length in Entangled Polymers	188302
Renat N. Khaliullin and Jay D. Schieber	
Reversible Phase Transition of Colloids in a Binary Liquid Solvent	188303
Hua Guo, Theyencheri Narayanan, Michael Sztuchi, Peter Schall, and Gerard H. Wegdam	
Nonequilibrium Accumulation of Surface Species and Triboelectric Charging in Single Component Particulate Systems	188305
Daniel J. Lacks, Nathan Duff, and Sanat K. Kumar	
Comments	
Comment on “Huge Excitonic Effects in Layered Hexagonal Boron Nitride”	189701
Ludger Wirtz, Andrea Marini, Myrta Grüning, Claudio Attaccalite, Georg Kresse, and Angel Rubio	
Arnaud, Lebègue, Rabiller, and Alouani Reply	189702
B. Arnaud, S. Lebègue, P. Rabiller, and M. Alouani	
Errata	
Erratum: Magnetically Tuned Spin Dynamics Resonance [Phys. Rev. Lett. 97 , 110404 (2006)]	189901
J. Kronjäger, C. Becker, P. Navez, K. Bongs, and K. Sengstock	
Publisher’s Note: Quantum Benchmark for Teleportation and Storage of Squeezed States [Phys. Rev. Lett. 100 , 170503 (2008)]	189902
Gerardo Adesso and Giulio Chiribella	
Erratum: Measurement of Branching Fractions and Mass Spectra of $B \rightarrow K\pi\pi\gamma$ [Phys. Rev. Lett. 98 , 211804 (2007)]	189903
B. Aubert <i>et al.</i>	

(Continued on Preceding Page)

Contents (Continued)

Erratum: Observation of Atom Pairs in Spontaneous Four-Wave Mixing of Two Colliding Bose-Einstein Condensates [Phys. Rev. Lett. 99 , 150405 (2007)]	189904
A. Perrin, H. Chang, V. Krachmalnicoff, M. Schellekens, D. Boiron, A. Aspect, and C.I. Westbrook	
Erratum: Graphene Antidot Lattices: Designed Defects and Spin Qubits [Phys. Rev. Lett. 100 , 136804 (2008)]	189905
Thomas G. Pedersen, Christian Flindt, Jesper Pedersen, Niels Asger Mortensen, Antti-Pekka Jauho, and Kjeld Pedersen	



By suggesting a few manuscripts each week, we hope to promote reading across fields. Please see our Announcement Phys. Rev. Lett. 98, 010001 (2007).



Brief explanations of selected papers from this and other APS journals appear regularly at the *Phys. Rev. Focus* web site (<http://focus.aps.org>). Readers can also sign up for weekly e-mail summaries of *Focus* stories.