

Orientation of a vortex lattice (black ovals) of a Bose-Einstein condensate greatly influences the transmission of light (see arrow). The resulting directional band gap allows a nondestructive measurement of the rotation frequency of the condensate. See article 220404.



PHYSICAL REVIEW LETTERS

Contents

Articles published 4 June–10 June 2005

VOLUME 94, NUMBER 22 10 June 2005

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

Ion Trap Simulations of Quantum Fields in an Expanding Universe 220401
Paul M. Alsing, Jonathan P. Dowling, and G. J. Milburn
Deconfinement and Phase Diagram of Bosons in a Linear Optical Lattice with a Particle Reservoir 220402
Kingshuk Majumdar and H. A. Fertig
Simulating Maximal Quantum Entanglement without Communication 220403
N. J. Cerf, N. Gisin, S. Massar, and S. Popescu
Photonic Band Gap via Quantum Coherence in Vortex Lattices of Bose-Einstein Condensates 220404
Ö. E. Müstecaplıoğlu and M. Ö. Oktel
Measurement of Quantum Weak Values of Photon Polarization 220405
G. J. Pryde, J. L. O'Brien, A. G. White, T. C. Ralph, and H. M. Wiseman
Demonstrating Superior Discrimination of Locally Prepared States Using Nonlocal Measurements 220406
G. J. Pryde, J. L. O'Brien, A. G. White, and Stephen D. Bartlett
Pixel Entanglement: Experimental Realization of Optically Entangled $d = 3$ and $d = 6$ Qudits 220501
Malcolm N. O'Sullivan-Hale, Irfan Ali Khan, Robert W. Boyd, and John C. Howell
High-Fidelity Teleportation beyond the No-Cloning Limit and Entanglement Swapping for Continuous Variables 220502
Nobuyuki Takei, Hidehiro Yonezawa, Takao Aoki, and Akira Furusawa
Propulsion of a Molecular Machine by Asymmetric Distribution of Reaction Products 220801
Ramin Golestanian, Tanniemola B. Liverpool, and Armand Ajdari

Gravitation and Astrophysics

Gravitational Radiation Reaction and Inspiral Waveforms in the Adiabatic Limit 221101
Scott A. Hughes, Steve Drasco, Éanna É. Flanagan, and Joel Franklin
Designer Gravity and Field Theory Effective Potentials 221301
Thomas Hertog and Gary T. Horowitz
Quantum Gravity and Lorentz Invariance Violation in the Standard Model 221302
Jorge Alfaro
Effects of a Decaying Cosmological Fluctuation 221303
Luca Amendola and Fabio Finelli

Elementary Particles and Fields

Measurement of Dijet Azimuthal Decorrelations at Central Rapidities in $p\bar{p}$ Collisions at $\sqrt{s} = 1.96$ TeV 221801
V. M. Abazov *et al.* (D0 Collaboration)
Scales of Mass Generation for Quarks, Leptons, and Majorana Neutrinos 221802
Duane A. Dicus and Hong-Jian He
Search for Decays of $B^0 \to e^+e^-$, $B^0 \to \mu^+\mu^-$, $B^0 \to e^\pm\mu^\mp$ 221803
B. Aubert *et al.* (*BABAR* Collaboration)
Measurement of Polarization and Triple-Product Correlations in $B \to \phi K^*$ Decays 221804
K.-F. Chen *et al.* (Belle Collaboration)

(Continued on Third Cover)

Copyright 2005 by The American Physical Society

0031-9007(2005061O)94:22;1-Z

Observation of the $D_1(2420) \to D\pi^+\pi^-$ Decays 221805
K. Abe *et al.* (Belle Collaboration)

Atomic, Molecular, and Optical Physics

Quantum Electrodynamics in Strong Electric Fields: The Ground-State Lamb Shift in Hydrogenlike Uranium 223001
A. Gumberidze, Th. Stöhlker, D. Banaś, K. Beckert, P. Beller, H. F. Beyer, F. Bosch, S. Hagmann, C. Kozhuharov, D. Liesen, F. Nolden, X. Ma, P. H. Mokler, M. Steck, D. Sierpowski, and S. Tashenov

Photoionization of Synchrotron-Radiation-Excited Atoms: Separating Partial Cross Sections by Full Polarization Control 223002
S. Aloïse, P. O'Keeffe, D. Cubaynes, M. Meyer, and A. N. Grum-Grzhimailo

Experimental and Theoretical Evidence for Long-Lived Molecular Hydrogen Anions H_2^- and D_2^- 223003
R. Golser, H. Gnaser, W. Kutschera, A. Priller, P. Steier, A. Wallner, M. Čížek, J. Horáček, and W. Domcke

Collisional Properties of Cold Spin-Polarized Metastable Neon Atoms 223201
P. Spoden, M. Zinner, N. Herschbach, W. J. van Drunen, W. Ertmer, and G. Birkl

Atom Interferometric Detection of the Pairing Order Parameter in a Fermi Gas 223202
Iacopo Carusotto and Yvan Castin

Tuning the Continuum Ground State Energy of NO_2^{2-} by Water Molecules 223401
A. Svendsen, H. Bluhme, M. O. Ghazaly, K. Seiersen, S. Brøndsted Nielsen, and L. H. Andersen

Proof that the Hydrogen-Antihydrogen Molecule Is Unstable 223402
D. K. Gridnev and Carsten Greiner

Wolf Equations for Two-Photon Light 223601
Bahaa E. Saleh, Malvin C. Teich, and Alexander V. Sergienko

Indistinguishable Photons from a Single Molecule 223602
A. Kiraz, M. Ehrl, Th. Hellerer, Ö. E. Müstecaplıoğlu, C. Bŕuchle, and A. Zumbusch

Spatially Noiseless Optical Amplification of Images 223603
Alexis Mosset, Fabrice Devaux, and Eric Lantz

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.

Measurement of Net Group and Reshaping Delays for Optical Pulses in Dispersive Media 223901
Aminul I. Talukder, Takatoshi Haruta, and Makoto Tomita

Temporal Behavior of Radiation-Pressure-Induced Vibrations of an Optical Microcavity Phonon Mode 223902
Tal Carmon, Hossein Rokhsari, Lan Yang, Tobias J. Kippenberg, and Kerry J. Vahala

Controlled Observation of a Nonequilibrium Ising-Bloch Transition in a Nonlinear Optical Cavity 223903
A. Esteban-Martín, V. B. Taranenko, J. García, Germán J. de Valcárcel, and Eugenio Roldán

Self-Organization of Two-Dimensional Waves in an Active Dispersive-Dissipative Nonlinear Medium 224101
Sergey Saprykin, Evgeny A. Demekhin, and Serafim Kalliadasis

Inelastic Gravitational Billiards 224102
S. Feldt and J. S. Olafsen

Universality and Hysteretic Dynamics in Rapid Fracture 224301
A. Livne, G. Cohen, and J. Fineberg

Asymptotic Behavior of the Rayleigh-Taylor Instability 224501
Laurent Duchemin, Christophe Josserand, and Paul Clavin

Effective Conductivity of Heterogeneous Multiphase Media with Circular Inclusions 224502
Aldo Fiori, Igor Janković, and Gedeon Dagan

Plasma and Beam Physics

Edge-Localized-Mode–Induced Transport of Impurity Density, Energy, and Momentum 225001
M. R. Wade, K. H. Burrell, A. W. Leonard, T. H. Osborne, and P. B. Snyder

Onset of Turbulence and Profile Resilience in the Helimak Configuration 225002
K. Rypdal and S. Ratynskaia

Direct Experimental Evidence for Current-Transfer Mode Operation of Nested Tungsten Wire Arrays at 16–19 MA 225003
M. E. Cuneo, D. B. Sinars, D. E. Bliss, E. M. Waisman, J. L. Porter, W. A. Stygar, S. V. Lebedev, J. P. Chittenden, G. S. Sarkisov, and B. B. Afeyan

(Continued on Preceding Page)

Force-Free Magnetic Relaxation in Driven Plasmas 225004
X. Z. Tang and A. H. Boozer
Excitation of Toroidicity-Induced Alfvén Eigenmodes by the Electrodes Inserted in a Heliotron/Torsatron Plasma ... 225005
G. Matsunaga, K. Toi, S. Kawada, J. Kotani, C. Suzuki, and K. Matsuoka (CHS Group)

Condensed Matter: Structure, etc.
Universal Transition State for High-Pressure Zinc Blende to Rocksalt Phase Transitions 225501
M. S. Miao and Walter R. Lambrecht
Nonlocal Screening, Electron-Phonon Coupling, and Phonon Renormalization in Metals 225502
Peihong Zhang, Steven G. Louie, and Marvin L. Cohen
Near-Field Intensity Correlations in Semicontinuous Metal-Dielectric Films 226101
K. Seal, A. K. Sarychev, H. Noh, D. A. Genov, A. Yamilov, V. M. Shalaev, Z. C. Ying, and H. Cao
Kinetic Step Bunching Instability during Surface Growth 226102
Thomas Frisch and Alberto Verga
Dynamic Ad-Dimer Twisting Assisted Nanowire Self-Assembly on Si(001) 226103
Jian-Tao Wang, E. G. Wang, D. S. Wang, H. Mizuseki, Y. Kawazoe, M. Naitoh, and S. Nishigaki
Charging of Metal Atoms on Ultrathin MgO/Mo(100) Films 226104
Gianfranco Pacchioni, Livia Giordano, and Matteo Baistrocchi

Condensed Matter: Electronic Properties, etc.
Long-Distance Diffusion of Excitons in Double Quantum Well Structures 226401
Z. Vörös, R. Balili, D. W. Snoke, L. Pfeiffer, and K. West
Field-Induced Suppression of the Heavy-Fermion State in $YbRh_2Si_2$ 226402
Y. Tokiwa, P. Gegenwart, T. Radu, J. Ferstl, G. Sparn, C. Geibel, and F. Steglich
STS Observations of Landau Levels at Graphite Surfaces 226403
T. Matsui, H. Kambara, Y. Niimi, K. Tagami, M. Tsukada, and Hiroshi Fukuyama
Spin-Orbit Coupling and Anisotropy of Spin Splitting in Quantum Dots 226404
J. Könemann, R. J. Haug, D. K. Maude, V. I. Fal'ko, and B. L. Altshuler
Effects of Thickness on the Spin Susceptibility of the Two Dimensional Electron Gas 226405
S. De Palo, M. Botti, S. Moroni, and Gaetano Senatore
Bragg Diffraction of Microcavity Polaritons by a Surface Acoustic Wave 226406
Kikuo Cho, Kazunori Okumoto, N. I. Nikolaev, and A. L. Ivanov
Ab initio Calculation of the Intrinsic Spin Hall Effect in Semiconductors 226601
G. Y. Guo, Yugui Yao, and Qian Niu
Pressure-Induced Non-Fermi-Liquid Behavior of $PrNiO_3$ 226602
J.-S. Zhou, J. B. Goodenough, and B. Dabrowski
Current-Driven Oscillations and Time-Dependent Transport in Nanojunctions 226801
Chao-Cheng Kaun and Tamar Seideman
Magnetic-Field-Induced Insulating Phases at Large r_s 226802
G. A. Csáthy, Hwayong Noh, D. C. Tsui, L. N. Pfeiffer, and K. W. West
Spin-Orbit-Driven Coherent Oscillations in a Few-Electron Quantum Dot 226803
Stefan Debald and Clive Emary
Vortex-Antivortex Nucleation in Magnetically Nanotextured Superconductors: Magnetic-Field-Driven and Thermal Scenarios 227001
M. V. Milošević and F. M. Peeters
Ground-State Entanglement of the BCS Model 227002
Clare Dunning, Jon Links, and Huan-Qiang Zhou
Nickel Impurity-Induced Enhancement of the Pseudogap of Cuprate High-T_c Superconductors 227003
A. V. Pimenov, A. V. Boris, Li Yu, V. Hinkov, Th. Wolf, J. L. Tallon, B. Keimer, and C. Bernhard
^{17}O NMR Studies of a Triangular-Lattice Superconductor $Na_xCoO_2 \cdot yH_2O$ 227004
F. L. Ning and T. Imai
Observation of Interband Pairing Interaction in a Two-Band Superconductor: MgB_2 227005
J. Geerk, R. Schneider, G. Linker, A. G. Zaitsev, R. Heid, K.-P. Bohnen, and H. v. Löhneysen

(Continued on Preceding Page)

Experimental Observation of the 1/3 Magnetization Plateau in the Diamond-Chain Compound $Cu_3(CO_3)_2(OH)_2$ 227201
H. Kikuchi, Y. Fujii, M. Chiba, S. Mitsudo, T. Idehara, T. Tonegawa, K. Okamoto, T. Sakai, T. Kuwai, and H. Ohta
Reentrant Spin-Glass Transition in a Dilute Magnet 227202
S. Abiko, S. Niidera, and F. Matsubara
Observation of Giant Magnetic Linear Dichroism in (Ga, Mn)As 227203
A. V. Kimel, G. V. Astakhov, A. Kirilyuk, G. M. Schott, G. Karczewski, W. Ossau, G. Schmidt, L. W. Molenkamp, and Th. Rasing
Magnetization Process in Holmium: Easy Axis Spin Reorientation Induced by the Magnetostrictive Basal Plane Distortion 227204
L. Benito, M. Ciria, C. de la Fuente, J. I. Arnaudas, R. C. Ward, and M. R. Wells
Evidence for Noncollinearity between Surface and Bulk Magnetization in Ultrathin Co Films 227205
M. Gruyters, T. Bernhard, and H. Winter
Ultrafast Core-Hole-Induced Dynamics in Water Probed by X-Ray Emission Spectroscopy 227401
Michael Odelius, Hirohito Ogasawara, Dennis Nordlund, Oliver Fuchs, Lothar Weinhardt, Florian Maier, Eberhard Umbach, Clemens Heske, Yan Zubavichus, Michael Grunze, Jonathan D. Denlinger, Lars G. Pettersson, and Anders Nilsson
Modified Spontaneous Emission and Qubit Entanglement from Dipole-Coupled Quantum Dots in a Photonic Crystal Nanocavity 227402
S. Hughes
Stimulated and Spontaneous Optical Generation of Electron Spin Coherence in Charged GaAs Quantum Dots 227403
M. V. Dutt, Jun Cheng, Bo Li, Xiaodong Xu, Xiaoqin Li, P. R. Berman, D. G. Steel, A. S. Bracker, D. Gammon, Sophia E. Economou, Ren-Bao Liu, and L. J. Sham

Soft Matter, Biological, and Interdisciplinary Physics

Modeling Surfactant Adsorption on Hydrophobic Surfaces 228301
Steve O. Nielsen, Goundla Srinivas, Carlos F. Lopez, and Michael L. Klein
Convex Error Growth Patterns in a Global Weather Model 228501
John Harlim, Michael Oczkowski, James A. Yorke, Eugenia Kalnay, and Brian R. Hunt

Comments

Comment on "Fano Line Shapes Reconsidered: Symmetric Photoionization Peaks from Pure Continuum Excitation" 229301
John W. Cooper, Chris H. Greene, Peter W. Langhoff, Anthony F. Starace, and Carl Winstead
Eichmann, Gallagher, and Konik Reply 229302
U. Eichmann, T. F. Gallagher, and R. M. Konik
Comment on "Josephson Current through a Nanoscale Magnetic Quantum Dot" 229701
Mahn-Soo Choi, Minchul Lee, Kicheon Kang, and W. Belzig
Siano and Egger Reply 229702
F. Siano and R. Egger

Errata

Erratum: ac-Driven Double Quantum Dots as Spin Pumps and Spin Filters [Phys. Rev. Lett. **94**, 107202 (2005)] ... 229901
Ernesto Cota, Ramón Aguado, and Gloria Platero
Erratum: Nonrelativistic QED Approach to the Bound-Electron g Factor [Phys. Rev. Lett. **93**, 150401 (2004)] 229902
Krzysztof Pachucki, Ulrich D. Jentschura, and Vladimir A. Yerokhin

Physical Review Focus

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.