



The phase diagram of a two-dimensional electron system with two energy levels reveals intriguing topology due to electron spin interactions. See article 216801.



PHYSICAL REVIEW LETTERS

Contents

Articles published 12 November–18 November 2005

VOLUME 95, NUMBER 21

18 November 2005

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

Stronger Two-Observer All-Versus-Nothing Violation of Local Realism	210401
Adán Cabello	
Optimal Bell Tests Do Not Require Maximally Entangled States	210402
Antonio Acín, Richard Gill, and Nicolas Gisin	
Entanglement of Formation of Bipartite Quantum States	210501
Kai Chen, Sergio Albeverio, and Shao-Ming Fei	
Experimental Analysis of a Four-Qubit Photon Cluster State	210502
Nikolai Kiesel, Christian Schmid, Ulrich Weber, Géza Tóth, Otfried Gühne, Rupert Ursin, and Harald Weinfurter	
Decoherence in Josephson Qubits from Dielectric Loss	210503
John M. Martinis, K. B. Cooper, R. McDermott, Matthias Steffen, Markus Ansmann, K. D. Osborn, K. Cicak, Seongshik Oh, D. P. Pappas, R. W. Simmonds, and Clare C. Yu	
Demonstration of a Simple Entangling Optical Gate and Its Use in Bell-State Analysis	210504
N. K. Langford, T. J. Weinhold, R. Prevedel, K. J. Resch, A. Gilchrist, J. L. O'Brien, G. J. Pryde, and A. G. White	
Linear Optics Controlled-Phase Gate Made Simple	210505
Nikolai Kiesel, Christian Schmid, Ulrich Weber, Rupert Ursin, and Harald Weinfurter	
Demonstration of an Optical Quantum Controlled-NOT Gate without Path Interference	210506
Ryo Okamoto, Holger F. Hofmann, Shigeki Takeuchi, and Keiji Sasaki	

Gravitation and Astrophysics

Maximum Elastic Deformations of Compact Stars with Exotic Equations of State	211101
Benjamin J. Owen	
Demonstration of a Squeezed-Light-Enhanced Power- and Signal-Recycled Michelson Interferometer	211102
Henning Vahlbruch, Simon Chelkowski, Boris Hage, Alexander Franzen, Karsten Danzmann, and Roman Schnabel	
Difficulty of Detecting Minihalos via γ Rays from Dark Matter Annihilation	211301
Lidia Pieri, Enzo Branchini, and Stefan Hofmann	
Looking for Light Pseudoscalar Bosons in the Binary Pulsar System J0737-3039	211302
Arnaud Dupays, Carlo Rizzo, Marco Roncadelli, and Giovanni F. Bignami	
Cosmic 21 cm Delensing of Microwave Background Polarization and the Minimum Detectable Energy Scale of Inflation	211303
Kris Sigurdson and Asantha Cooray	

(Continued on Third Cover)



Contents (Continued)

Elementary Particles and Fields

Describing Oscillations of High Energy Neutrinos in Matter Precisely	211801
E. Kh. Akhmedov, M. Maltoni, and A. Yu. Smirnov	
Solar Mass-Varying Neutrino Oscillations	211802
V. Barger, Patrick Huber, and Danny Marfatia	
<i>B</i> -Meson Decay Constant from Unquenched Lattice QCD	212001
Alan Gray, Matthew Wingate, Christine T. Davies, Emel Gulez, G. Peter Lepage, Quentin Mason, Matthew Nobes, and Junko Shigemitsu (HPQCD Collaboration)	

Nuclear Physics

Gamow-Teller Strengths in Proton-Rich Exotic Nuclei Deduced in the Combined Analysis of Mirror Transitions	212501
Y. Fujita, T. Adachi, P. von Brentano, G.P. Berg, C. Fransen, D. De Frenne, H. Fujita, K. Fujita, K. Hatanaka, E. Jacobs, K. Nakanishi, A. Negret, N. Pietralla, L. Popescu, B. Rubio, Y. Sakemi, Y. Shimbara, Y. Shimizu, Y. Tameshige, A. Tamii, M. Yosoi, and K.O. Zell	

Atomic, Molecular, and Optical Physics

Coherent Single Photon Transport in a One-Dimensional Waveguide Coupled with Superconducting Quantum Bits	213001
Jung-Tsung Shen and Shanhui Fan	
Control of Diabatic versus Adiabatic Field Dissociation in a Heavy Rydberg System	213002
R.C. Shnell, E. Reinhold, F. Magnus, and W. Ubachs	
Anomalous Decline of Molecular Ion Mobility in Cooled Helium Gas	213201
Kazumasa Ohtsuki, Masatoshi Hananoe, and Michio Matsuzawa	
Ultrafast Dynamics of All- <i>trans</i> - β -Carotene Explored by Resonant and Nonresonant Photoexcitations	213601
D. Kosumi, M. Komukai, H. Hashimoto, and M. Yoshizawa	

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.

Random Walk of Polarized Light in Turbid Media	213901
M. Xu and R.R. Alfano	
Interaction of an Optical Soliton with a Dispersive Wave	213902
A. Efimov, A.V. Yulin, D.V. Skryabin, J.C. Knight, N. Joly, F.G. Omenetto, A.J. Taylor, and P. Russell	
Stokes Amplification Regimes in Quasi-cw Pumped Hydrogen-Filled Hollow-Core Photonic Crystal Fiber	213903
F. Benabid, G. Antonopoulos, J.C. Knight, and P.St. J. Russell	
Solitons in Nonlinear Media with an Infinite Range of Nonlocality: First Observation of Coherent Elliptic Solitons and of Vortex-Ring Solitons	213904
Carmel Rotschild, Oren Cohen, Ofer Manela, Mordechai Segev, and Tal Carmon	
Theory of Nonlinear Dispersive Waves and Selection of the Ground State	213905
A. Soffer and M.I. Weinstein	
Identifying Turbulent Energy Distributions in Real, Rather than Fourier, Space	214501
P.A. Davidson and B.R. Pearson	
Turbulence Regeneration in Pipe Flow at Moderate Reynolds Numbers	214502
Björn Hof, Casimir W. van Doorne, Jerry Westerweel, and Frans T. Nieuwstadt	

Plasma and Beam Physics

Fourier-Space Nonlinear Rayleigh-Taylor Growth Measurements of 3D Laser-Imprinted Modulations in Planar Targets	215001
V.A. Smalyuk, O. Sadot, J.A. Delettrez, D.D. Meyerhofer, S.P. Regan, and T.C. Sangster	
Anomalous High Near-Wall Sheath Potential Drop in a Plasma with Nonlocal Fast Electrons	215002
V.I. Demidov, C.A. DeJoseph, Jr., and A.A. Kudryavtsev	
Self-Consistent Generation of Superthermal Electrons by Beam-Plasma Interaction	215003
Peter H. Yoon, Tongnyeol Rhee, and Chang-Mo Ryu	
Radiation-Driven Hydrodynamics of High-Z Hohlraums on the National Ignition Facility	215004
E.L. Dewald <i>et al.</i>	

(Continued on Preceding Page)

Contents (Continued)

Condensed Matter: Structure, etc.

High-Resolution Spectroscopy of NO in Helium Droplets: A Prototype for Open Shell Molecular Interactions in a Quantum Solvent	215301
K. von Haeften, A. Metzethin, S. Rudolph, V. Staemmler, and M. Havenith	
Measurement of the Normal-Fluid Velocity in Superfluids	215302
Demosthenes Kivotides, Carlo F. Barenghi, and Yuri A. Sergeev	
Direct Evidence of Nanometric Invasionlike Grain Boundary Penetration in the Al/Ga System	215501
E. Pereiro-López, W. Ludwig, D. Bellet, P. Cloetens, and C. Lemaignan	
Structural Organization of π Conjugated Highly Luminescent Molecular Material	215502
B. Toudic, P. Limelette, G. Froyer, F. Le Gac, A. Moréac, and P. Rabiller	
Direct Evidence for As as a Zn-Site Impurity in ZnO	215503
U. Wahl, E. Rita, J.G. Correia, A.C. Marques, E. Alves, and J.C. Soares (ISOLDE Collaboration)	
Direct Observation of Hydrogen Adsorption Sites and Nanocage Formation in Metal-Organic Frameworks	215504
T. Yildirim and M.R. Hartman	
Observation of a Wurtzite Form of Gallium Arsenide	215505
M.I. McMahon and R.J. Nelmes	
Simulation of Screw Dislocation Motion in Iron by Molecular Dynamics Simulations	215506
Christophe Domain and Ghiath Monnet	
Structural Origin of Negative Thermal Expansion in High-Temperature Silica Polymorphs	215901
Liping Huang and John Kieffer	
New Types of Unstable Step-Flow Growth on Si(111)-(7 × 7) during Molecular Beam Epitaxy: Scaling and Universality	216101
Hiroo Omi, Yoshikazu Homma, Vesselin Tonchev, and Alberto Pimpinelli	
Surface Smoothing Mechanism of Amorphous Silicon Thin Films	216102
Mayur S. Valipa, Tamas Bakos, Eray S. Aydil, and Dimitrios Maroudas	
Probing Nanotube-Nanopore Interactions	216103
G.M. King and J.A. Golovchenko	

Condensed Matter: Electronic Properties, etc.

Bayesian Error Estimation in Density-Functional Theory	216401
J.J. Mortensen, K. Kaasbjerg, S.L. Frederiksen, J.K. Nørskov, J.P. Sethna, and K.W. Jacobsen	
Interaction of the Ground State of Quarter-Filled One-Dimensional Strongly Correlated Electronic System with Localized Spins	216402
Chisa Hotta, Masao Ogata, and Hidetoshi Fukuyama	
Negative Spin Polarization and Large Tunneling Magnetoresistance in Epitaxial Co SrTiO ₃ Co Magnetic Tunnel Junctions	216601
J.P. Velev, K.D. Belashchenko, D.A. Stewart, M. van Schilfgaarde, S.S. Jaswal, and E.Y. Tsymbal	
Electrical Switching in Metallic Carbon Nanotubes	216602
Young-Woo Son, Jisoon Ihm, Marvin L. Cohen, Steven G. Louie, and Hyoung Joon Choi	
Spin Noise Spectroscopy in GaAs	216603
M. Oestreich, M. Römer, R.J. Haug, and D. Hägele	
Multiple Phases with the Same Quantized Hall Conductance in a Two-Subband System	216801
X.C. Zhang, D.R. Faulhaber, and H.W. Jiang	
Dark-State Luminescence of Macroatoms at the Near Field	216802
Ulrich Hohenester, Guido Goldoni, and Elisa Molinari	
Spiral Spin State in High-Temperature Copper-Oxide Superconductors: Evidence from Neutron Scattering Measurements	217001
Per-Anker Lindgård	
Novel Coexistence of Superconductivity with Two Distinct Magnetic Orders	217002
A.D. Christianson, A. Llobet, Wei Bao, J.S. Gardner, I.P. Swainson, J.W. Lynn, J.-M. Mignot, K. Prokes, P.G. Pagliuso, N.O. Moreno, J.L. Sarrao, J.D. Thompson, and A.H. Lacerda	
Charge-Transfer Excitations in the Model Superconductor HgBa ₂ CuO _{4+δ}	217003
L. Lu, G. Chabot-Couture, X. Zhao, J.N. Hancock, N. Kaneko, O.P. Vajk, G. Yu, S. Grenier, Y.J. Kim, D. Casa, T. Gog, and M. Greven	

(Continued on Preceding Page)

Contents (Continued)

Phase-Sensitive Tests of the Pairing State Symmetry in Sr_2RuO_4	217004
Igor Žutić and Igor Mazin	
Why Spin Ice Obeys the Ice Rules	217201
S. V. Isakov, R. Moessner, and S.L. Sondhi	
Anomalous Magnetic Properties Near the Spin-Flop Bicritical Point in Mn_2As_4 ($A = \text{Si}$ and Ge)	217202
K. Ohgushi and Y. Ueda	
Negligible Magnetism in Excellent Structural Quality $\text{Cr}_x\text{Ti}_{1-x}\text{O}_2$ Anatase: Contrast with High- T_C Ferromagnetism in Structurally Defective $\text{Cr}_x\text{Ti}_{1-x}\text{O}_2$	217203
T.C. Kaspar, S.M. Heald, C.M. Wang, J.D. Bryan, T. Droubay, V. Shutthanandan, S. Thevuthasan, D.E. McCready, A.J. Kellock, D.R. Gamelin, and S.A. Chambers	
Spin Reorientation Transition in Single-Domain $(\text{Ga}, \text{Mn})\text{As}$	217204
K.-Y. Wang, M. Sawicki, K.W. Edmonds, R.P. Campion, S. Maat, C.T. Foxon, B.L. Gallagher, and T. Dietl	
Quantum Magnetic Deflagration in Mn_{12} Acetate	217205
A. Hernández-Mínguez, J.M. Hernandez, F. Macià, A. García-Santiago, J. Tejada, and P.V. Santos	
Magnetic Exchange Interactions in Quantum Dots Containing Electrons and Magnetic Ions	217206
Fanyao Qu and Pawel Hawrylak	
Atomic Origin of Magnetocrystalline Anisotropy in $\text{Nd}_2\text{Fe}_{14}\text{B}$	217207
D. Haskel, J.C. Lang, Z. Islam, A. Cady, G. Srajer, M. van Veenendaal, and P.C. Canfield	
Raman Modes of Index-Identified Freestanding Single-Walled Carbon Nanotubes	217401
Jannik C. Meyer, Matthieu Paillet, Thierry Michel, Alain Moréac, Anita Neumann, Georg S. Duesberg, Siegmur Roth, and Jean-Louis Sauvajol	
Transmission Resonances of Metallic Compound Gratings with Subwavelength Slits	217402
Diana C. Skigin and Ricardo A. Depine	
Strain-Induced Interference Effects on the Resonance Raman Cross Section of Carbon Nanotubes	217403
A.G. Souza Filho, N. Kobayashi, J. Jiang, A. Grüneis, R. Saito, S.B. Cronin, J. Mendes Filho, Ge.G. Samsonidze, G. Dresselhaus, and M.S. Dresselhaus	
Soft Matter, Biological, and Interdisciplinary Physics	
Liquids on Topologically Nanopatterned Surfaces	217801
Oleg Gang, Kyle J. Alvine, Masafumi Fukuto, Peter S. Pershan, Charles T. Black, and Benjamin M. Ocko	
Computer Simulation of Nematic Reentrance in a Simple Molecular Model	217802
Enrique de Miguel and Elvira Martín del Río	
Spontaneous and Reversible Switch from Amphiphilic to Oil-Like Structures	218101
Frédéric Pincet, David Taresté, Martine Ben Amar, and Éric Perez	
Coarse-Grained Model of Proteins Incorporating Atomistic Detail of the Active Site	218102
Marilisa Neri, Claudio Anselmi, Michele Cascella, Amos Maritan, and Paolo Carloni	
Correlated Dynamics Determining X-Ray Diffuse Scattering from a Crystalline Protein Revealed by Molecular Dynamics Simulation	218103
Lars Meinhold and Jeremy C. Smith	
Can One Predict DNA Transcription Start Sites by Studying Bubbles?	218104
Titus S. van Erp, Santiago Cuesta-Lopez, Johannes-Geert Hagmann, and Michel Peyrard	
Long-Ranged Attraction between Charged Polystyrene Spheres at Aqueous Interfaces	218301
Wei Chen, Susheng Tan, Tai-Kai Ng, Warren T. Ford, and Penger Tong	
Model for the Distribution of Aftershock Interoccurrence Times	218501
Robert Shcherbakov, Gleb Yakovlev, Donald L. Turcotte, and John B. Rundle	
Comments	
Comment on “Novel Superfluidity in a Trapped Gas of Fermi Atoms with Repulsive Interaction Loaded on an Optical Lattice”	218901
M. Rigol, S.R. Manmana, A. Muramatsu, R.T. Scalettar, R.R. Singh, and S. Wessel	
Machida <i>et al.</i> Reply	218902
M. Machida, S. Yamada, Y. Ohashi, and H. Matsumoto	

(Continued on Preceding Page)

Contents (Continued)

Realization and Detection of Fulde-Ferrell-Larkin-Ovchinnikov Superfluid Phases in Trapped Atomic Fermion Systems	218903
Kun Yang	
Comment on “Critical Branching Captures Activity in Living Neural Networks and Maximizes the Number of Metastable States”	219801
Dietmar Plenz	
Beggs and Haldeman Reply	219802
John M. Beggs and Clayton Haldeman	
Errata	
Erratum: Importance of Quantum Tunneling in Vacancy-Hydrogen Complexes in Diamond [Phys. Rev. Lett. 95 , 105502 (2005)]	219901
M. J. Shaw, P. R. Briddon, J. P. Goss, M. J. Rayson, A. Kerridge, A. H. Harker, and A. M. Stoneham	
Publisher’s Note: Doping Evolution of the Electronic Properties of Hole- and Electron-Doped High- T_c Cuprates: Role of Density Wave Correlations [Phys. Rev. Lett. 95 , 207003 (2005)]	219902
F. Onufrieva and P. Pfeuty	
Publisher’s Note: Precision Measurement of the Three 2^3P_J Helium Fine Structure Intervals [Phys. Rev. Lett. 95 , 203001 (2005)]	219903
T. Zelevinsky, D. Farkas, and G. Gabrielse	