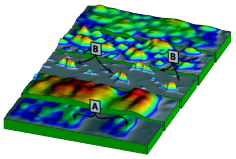
NEWSPAPER

96



Scanning laser microscopy images of the resistive transition in a Nb bridge on a PbFe12O19 substrate, at different temperatures, showing evidence of parallel (A) and reverse (B) domain superconductivity. See article 247003.

PHYSICAL REVIEW LETTERS

Contents

Articles published 17 June–23 June 2006

VOLUME 96, NUMBER 24 23 June 2006

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

Anomalous Hydrodynamics and Normal Fluids in Rapidly Rotating Bose-Einstein Condensates 240401
A. Bourne, N. K. Wilkin, and J. M. Gunn

Structure of Fermion Nodes and Nodal Cells 240402
Lubos Mitas

Proposal of an Experimentally Accessible Measure of Many-Fermion Entanglement 240403
M. Kindermann

Hybrid Quantum Repeater Using Bright Coherent Light 240501
P. van Loock, T. D. Ladd, K. Sanaka, F. Yamaguchi, Kae Nemoto, W. J. Munro, and Y. Yamamoto

Experimental Interference of Independent Photons 240502
Rainer Kaltenbaek, Bibiane Blauensteiner, Marek Żukowski, Markus Aspelmeyer, and Anton Zeilinger

Time-Symmetric Fluctuations in Nonequilibrium Systems 240601
Christian Maes and Maarten H. van Wieren

Hamiltonian Dynamics Reveals the Existence of Quasistationary States for Long-Range Systems in Contact with a Reservoir 240602
Fulvio Baldovin and Enzo Orlandini

Self-Avoiding Random Walk with Multiple Site Weightings and Restrictions 240603
J. Krawczyk, T. Prellberg, A. L. Owczarek, and A. Rechnitzer

Quasiperiodically Driven Ratchets for Cold Atoms 240604
R. Gommers, S. Denisov, and F. Renzoni

Elementary Particles and Fields

Nuclear Effects in Neutrino Induced Coherent Pion Production at K2K and MiniBooNE 241801
S. K. Singh, M. Sajjad Athar, and Shakeb Ahmad

Search for the Rare Decay $B^0 \to \tau^+\tau^-$ at *BABAR* 241802
B. Aubert *et al.* (*BABAR* Collaboration)

Measurement of the Asymmetry in the Decay $\overline{\Omega}^+ \to \overline{\Lambda}K^+ \to \overline{p}\pi^+K^+$ 242001
L. C. Lu, R. A. Burnstein, A. Chakravorty, Y. C. Chen, W.-S. Choong, K. Clark, E. C. Dukes, C. Durandet, J. Felix, Y. Fu, G. Gidal, H. R. Gustafson, T. Holmstrom, M. Huang, C. James, C. M. Jenkins, T. D. Jones, D. M. Kaplan, M. J. Longo, W. Luebke, K.-B. Luk, K. S. Nelson, H. K. Park, J.-P. Perroud, D. Rajaram, H. A. Rubin, J. Volk, C. G. White, S. L. White, and P. Zyla (HyperCP Collaboration)

Nuclear Physics

Near-Threshold Production of ϕ Mesons in pp Collisions 242301
M. Hartmann, Y. Maeda, I. Keshelashvilli, H. R. Koch, S. Mikirtytchiants, S. Barsov, W. Borgs, M. Büscher, V. I. Dimitrov, S. Dymov, V. Hejny, V. Kleber, V. Koptev, P. Kulessa, T. Mersmann, S. Merzliakov, A. Mussgiller, M. Nekipelov, M. Nioradze, H. Ohm, K. Pysz, R. Schleichert, H. J. Stein, H. Ströher, K.-H Watzlawik, and P. Wüstner

(Continued on Third Cover)

Copyright 2006 by The American Physical Society

0031-9007(20060623)96:24;1-K

PRL 96 (24), 240401–249902, 23 June 2006 (272 total pages)

Contents (Continued)

Atomic, Molecular, and Optical Physics

Mechanism of Angular Momentum Exchange between Molecules and Laguerre-Gaussian Beams 243001
Adrian Alexandrescu, Dan Cojoc, and Enzo Di Fabrizio

Comparison Study of Atomic and Molecular Single Ionization in the Multiphoton Ionization Regime 243002
Jian Wu, Heping Zeng, and Chunlei Guo

Analytical Control of Molecular Excitations Including Strong Field Polarization Effects 243003
Shiyang Zou, Qinghua Ren, Gabriel G. Balint-Kurti, and Frederick R Manby

Universal Reduced Potential Function for Diatomic Systems 243201
Rui-Hua Xie and Paul S. Hsu

Three-Dimensional Images for Electron-Impact Single Ionization of He: Complete and Comprehensive $(e, 2e)$ Benchmark Data 243202
M. Dürr, C. Dimopoulou, B. Najjari, A. Dorn, and J. Ullrich

Reactive Scattering Damage to DNA Components by Hyperthermal Secondary Ions 243203
Zongwu Deng, Ilko Bald, Eugen Illenberger, and Michael A. Huels

Determination of the Antiproton-to-Electron Mass Ratio by Precision Laser Spectroscopy of $\overline{p}\mathrm{He}^+$ 243401
M. Hori, A. Dax, J. Eades, K. Gomikawa, R. S. Hayano, N. Ono, W. Pirkl, E. Widmann, H. A. Torii, B. Juhász, D. Barna, and D. Horváth

Experimental Evidence of Interatomic Coulombic Decay from the Auger Final States in Argon Dimers 243402
Y. Morishita, X.-J. Liu, N. Saito, T. Lischke, M. Kato, G. Prümper, M. Oura, H. Yamaoka, Y. Tamenori, I. H. Suzuki, and K. Ueda

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.

Observation of Dynamic Localization in Periodically Curved Waveguide Arrays 243901
S. Longhi, M. Marangoni, M. Lobino, R. Ramponi, P. Laporta, E. Cianci, and V. Foglietti

Imaging Single Quantum Dots in Three-Dimensional Photonic Crystals 243902
Michael Barth, Roman Schuster, Achim Gruber, and Frank Cichos

Correcting Ray Optics at Curved Dielectric Microresonator Interfaces: Phase-Space Unification of Fresnel Filtering and the Goos-Hänchen Shift 243903
Henning Schomerus and Martina Hentschel

Resonance Pacemakers in Excitable Media 244101
Tabitha Ruvarashe Chigwada, P. Parmananda, and Kenneth Showalter

Synchronization of Chaotic Systems with Coexisting Attractors 244102
A. N. Pisarchik, R. Jaimes-Reátegui, J. R. Villalobos-Salazar, J. H. García-López, and S. Boccaletti

Crossing Bifurcations and Unstable Dimension Variability 244103
K. T. Alligood, E. Sander, and J. A. Yorke

Noise-Induced Front Motion: Signature of a Global Bifurcation 244104
J. Hizanidis, A. Balanov, A. Amann, and E. Schöll

Anomalous Slow Fidelity Decay for Symmetry-Breaking Perturbations 244105
T. Gorin, H. Kohler, T. Prosen, T. H. Seligman, H.-J. Stöckmann, and M. Žnidarič

Plasma and Beam Physics

Formation and Dynamics of Dark Solitons and Vortices in Quantum Electron Plasmas 245001
P. K. Shukla and B. Eliasson

Collimated Multi-MeV Ion Beams from High-Intensity Laser Interactions with Underdense Plasma 245002
L. Willingale, S. P. Mangles, P. M. Nilson, R. J. Clarke, A. E. Dangor, M. C. Kaluza, S. Karsch, K. L. Lancaster, W. B. Mori, Z. Najmudin, J. Schreiber, A. G. Thomas, M. S. Wei, and K. Krushelnick

Condensed Matter: Structure, etc.

Fracture Patterns Generated by Diffusion Controlled Volume Changing Reactions 245501
A. Malthe-Sørenssen, B. Jamtveit, and P. Meakin

Extraordinary Plasticity of Ductile Bulk Metallic Glasses 245502
Mingwei Chen, Akihisa Inoue, Wei Zhang, and Toshio Sakurai

(Continued on Preceding Page)

Phase Separating Bulk Metallic Glass: A Hierarchical Composite 245503
Byung Joo Park, Hye Jung Chang, Do Hyang Kim, Won Tae Kim, Kamanio Chattopadhyay, T. A. Abinandanan, and Saswata Bhattacharyya
Quantitative Parameter-Free Prediction of Simulated Crystal-Nucleation Times 245701
Rachel S. Aga, James R. Morris, Jeffrey J. Hoyt, and Mikhail Mendelev
In Situ Surface X-Ray Diffraction Studies of Homoepitaxial Electrochemical Growth on Au(100) 246101
K. Krug, J. Stettner, and O. M. Magnussen
Decompositional Incommensurate Growth of Ferrocene Molecules on a Au(111) Surface 246102
K.-F. Braun, V. Iancu, N. Pertaya, K.-H. Rieder, and S.-W. Hla
Origins of Nanoscale Heterogeneity in Ultrathin Films 246103
J. B. Hannon, J. Sun, K. Pohl, and G. L. Kellogg
Dynamics of Individual Single-Walled Carbon Nanotubes in Water by Real-Time Visualization 246104
Rajat Duggal and Matteo Pasquali

Condensed Matter: Electronic Properties, etc.
Theory of Defect Levels and the "Band Gap Problem" in Silicon 246401
Peter A. Schultz
Fermi Surface and Quasiparticle Excitations of Sr_2RhO_4 246402
F. Baumberger, N. J. Ingle, W. Meevasana, K. M. Shen, D. H. Lu, R. S. Perry, A. P. Mackenzie, Z. Hussain, D. J. Singh, and Z.-X. Shen
Voltage-Induced Metal-Insulator Transition in Polythiophene Field-Effect Transistors 246403
A. S. Dhoot, G. M. Wang, D. Moses, and A. J. Heeger
Spin-Singlet Small Bipolarons in Nb-Doped $BaTiO_3$ 246404
T. Kolodiazhnyi and S. C. Wimbush
Determination of the Mechanism for Resonant Scattering in $LaMnO_3$ 246405
Q. Shen, I. S. Elfimov, P. Fanwick, Y. Tokura, T. Kimura, K. Finkelstein, R. Colella, and G. A. Sawatzky
Coherence Control of Hall Charge and Spin Currents 246601
Hui Zhao, Eric J. Loren, H. M. van Driel, and Arthur L. Smirl
Deterministic Teleportation of Electrons in a Quantum Dot Nanostructure 246801
R. L. de Visser and M. Blaauboer
Sub-Poissonian Shot Noise in Graphene 246802
J. Tworzydło, B. Trauzettel, M. Titov, A. Rycerz, and C. W. Beenakker
Generation and Control of Greenberger-Horne-Zeilinger Entanglement in Superconducting Circuits 246803
L. F. Wei, Yu-xi Liu, and Franco Nori
Enhanced Shot Noise in Tunneling through a Stack of Coupled Quantum Dots 246804
P. Barthold, F. Hohls, N. Maire, K. Pierz, and R. J. Haug
Understanding the $\frac{5}{2}$ Fractional Quantum Hall Effect without the Pfaffian Wave Function 246805
Csaba Tőke and Jainendra K. Jain
Broad Peak in the $d_{x^2-y^2}$ Superconducting Correlation Length as a Function of Hole Concentration in the Two-Dimensional *t-J* Model 247001
W. O. Putikka and M. U. Luchini
Phenomenological Model of Protected Behavior in the Pseudogap State of Underdoped Cuprate Superconductors ... 247002
Victor Barzykin and David Pines
Local Observation of Reverse-Domain Superconductivity in a Superconductor-Ferromagnet Hybrid 247003
J. Fritzsche, V. V. Moshchalkov, H. Eitel, D. Koelle, R. Kleiner, and R. Szymczak
Thermal Conductivity of the Pyrochlore Superconductor KOs_2O_6: Strong Electron Correlations and Fully Gapped Superconductivity 247004
Y. Kasahara, Y. Shimono, T. Shibauchi, Y. Matsuda, S. Yonezawa, Y. Muraoka, and Z. Hiroi
Spin Waves in the Frustrated Kagomé Lattice Antiferromagnet $KFe_3(OH)_6(SO_4)_2$ 247201
K. Matan, D. Grohol, D. G. Nocera, T. Yildirim, A. B. Harris, S. H. Lee, S. E. Nagler, and Y. S. Lee
Unusual Evolution of the Magnetic Interactions versus Structural Distortions in $R\mathrm{MnO}_3$ Perovskites 247202
J.-S. Zhou and J. B. Goodenough

(Continued on Preceding Page)

Low-Temperature Spin Diffusion in a Highly Ideal $S = \frac{1}{2}$ Heisenberg Antiferromagnetic Chain Studied by Muon Spin Relaxation 247203
F. L. Pratt, S. J. Blundell, T. Lancaster, C. Baines, and S. Takagi
Time-Resolved Spin-Torque Switching and Enhanced Damping in Permalloy/Cu/Permalloy Spin-Valve Nanopillars 247204
N. C. Emley, I. N. Krivorotov, O. Ozatay, A. G. Garcia, J. C. Sankey, D. C. Ralph, and R. A. Buhrman
Effect of Orbital Rotation and Mixing on the Optical Properties of Orthorhombic $R\mathrm{MnO_3}$ (R = La, Pr, Nd, Gd, and Tb) 247205
M. W. Kim, S. J. Moon, J. H. Jung, Jaejun Yu, Sachin Parashar, P. Murugavel, J. H. Lee, and T. W. Noh
Long-Distance Entanglement in Spin Systems 247206
L. Campos Venuti, C. Degli Esposti Boschi, and M. Roncaglia

Soft Matter, Biological, and Interdisciplinary Physics

Counterion-Mediated Attraction and Kinks on Loops of Semiflexible Polyelectrolyte Bundles 247801
A. Cēbers, Z. Dogic, and P. A. Janmey
Relaxation Processes in Supercooled Confined Water and Implications for Protein Dynamics 247802
Jan Swenson, Helén Jansson, and Rikard Bergman
Probing the Mechanical Unzipping of DNA 248101
N. K. Voulgarakis, A. Redondo, A. R. Bishop, and K. Ø. Rasmussen
Cytoskeleton Influence on Normal and Tangent Fluctuation Modes in the Red Blood Cells 248102
S. B. Rochal and V. L. Lorman
Soft Nanopolyhedra as a Route to Multivalent Nanoparticles 248301
Jiunn-Ren Roan

Comments

Comment on "Measurements of Energetic Proton Transport through Magnetized Plasma from Intense Laser Interactions with Solids" 249201
S. Gaillard, J. Fuchs, N. Renard-LeGalloudec, and T. E. Cowan
Clark *et al.* Reply 249202
E. L. Clark, K. Krushelnick, M. Zepf, M. Tatarakis, F. N. Beg, P. A. Norreys, and A. E. Dangor
Comment on "Sodium Pyroxene $\mathrm{NaTiSi_2O_6}$: Possible Haldane Spin-1 Chain System" 249701
S. V. Streltsov, O. A. Popova, and D. I. Khomskii
Popović *et al.* Reply 249702
Zoran S. Popović, Željko V. Šljivančanin, and Filip R. Vukajlović

Errata

Erratum: Correlated Hybridization in Transition-Metal Complexes [Phys. Rev. Lett. **96**, 196401 (2006)] 249901
A. Hübsch, J. C. Lin, J. Pan, and D. L. Cox
Publisher's Note: Magnetic Reversal of the Ferroelectric Polarization in a Multiferroic Spinel Oxide [Phys. Rev. Lett. **96**, 207204 (2006)] 249902
Y. Yamasaki, S. Miyasaka, Y. Kaneko, J.-P. He, T. Arima, and Y. Tokura

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.