

Time history of the simulated electric field component in the direction of the Earth's magnetic field near a double layer in the auroral upward-current region, plotted with time vertical and distance along the geomagnetic field horizontal. Red & yellow denote electric fields parallel to the geomagnetic field, while dark blue & black denote antiparallel fields. See article 185001.

PHYSICAL REVIEW LETTERS

Contents

Articles published 28 October–3 November 2006

VOLUME 97, NUMBER 18 3 November 2006

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

Condition for Any Realistic Theory of Quantum Systems 180401
A. Montina
Maxwell's Demon Assisted Thermodynamic Cycle in Superconducting Quantum Circuits 180402
H. T. Quan, Y. D. Wang, Yu-xi Liu, C. P. Sun, and Franco Nori
Efficient Quantum-State Estimation by Continuous Weak Measurement and Dynamical Control 180403
Greg A. Smith, Andrew Silberfarb, Ivan H. Deutsch, and Poul S. Jessen
Observation of Heteronuclear Feshbach Molecules from a ^{85}Rb–^{87}Rb Gas 180404
S. B. Papp and C. E. Wieman
Oblique Dark Solitons in Supersonic Flow of a Bose-Einstein Condensate 180405
G. A. El, A. Gammal, and A. M. Kamchatnov
Interaction-Free Measurements with Superconducting Qubits 180406
G. S. Paraoanu
Vortex-Core Structure in Neutral Fermion Superfluids with Population Imbalance 180407
M. Takahashi, T. Mizushima, M. Ichioka, and K. Machida
Melting of Discrete Vortices via Quantum Fluctuations 180408
Chaohong Lee, Tristram J. Alexander, and Yuri S. Kivshar
Dynamical Evolution of a Doubly Quantized Vortex Imprinted in a Bose-Einstein Condensate 180409
A. Muñoz Mateo and V. Delgado
Probing the Quantum State of a Guided Atom Laser Pulse 180410
Kevin L. Moore, Subhadeep Gupta, Kater W. Murch, and Dan M. Stamper-Kurn
Quantum Insulating States of $F = 2$ Cold Atoms in Optical Lattices 180411
Fei Zhou and Gordon W. Semenoff
Classifying Novel Phases of Spinor Atoms 180412
Ryan Barnett, Ari Turner, and Eugene Demler
Quantum Fluids of Self-Assembled Chains of Polar Molecules 180413
Daw-Wei Wang, Mikhail D. Lukin, and Eugene Demler
Critical Rotational Frequency for Superfluid Fermionic Gases across a Feshbach Resonance 180414
Hui Zhai and Tin-Lun Ho
Topological Quantum Distillation 180501
H. Bombin and M. A. Martin-Delgado
Perfect Quantum State Transfer with Spinor Bosons on Weighted Graphs 180502
David L. Feder

Elementary Particles and Fields

Two-Loop Iteration of Five-Point $\mathcal{N} = 4$ Super-Yang-Mills Amplitudes 181601
Z. Bern, M. Czakon, D. A. Kosower, R. Roiban, and V. A. Smirnov

(Continued on Third Cover)

Copyright 2006 by The American Physical Society

0031-9007(20061103)97:18;1-0

Gauge and Yukawa Mediated Supersymmetry Breaking in the Triplet Seesaw Scenario 181801
Filipe R. Joaquim and Anna Rossi
Anomalous Superfluidity in (2 + 1)-Dimensional Two-Color Lattice QCD 182001
Shailesh Chandrasekharan

Nuclear Physics
Calculating the Jet Quenching Parameter 182301
Hong Liu, Krishna Rajagopal, and Urs Achim Wiedemann

Atomic, Molecular, and Optical Physics
M_F-Dependent Lifetimes due to Hyperfine Induced Interference Effects 183001
Ke Yao, Martin Andersson, Tomas Brage, Roger Hutton, Per Jönsson, and Yaming Zou
Ultracold Rb-OH Collisions and Prospects for Sympathetic Cooling 183201
Manuel Lara, John L. Bohn, Daniel Potter, Pavel Soldán, and Jeremy M. Hutson
Spectroscopic Exploration of Atomic Scale Superfluidity in Doped Helium Nanoclusters 183401
A. R. McKellar, Yunjie Xu, and Wolfgang Jäger
Existence of a $^2P^o$ Excited State for the e^+Ca System 183402
M. W. Bromley and J. Mitroy
Quantum Study of Information Delay in Electromagnetically Induced Transparency 183601
M. T. Hsu, G. Hétet, O. Glöckl, J. J. Longdell, B. C. Buchler, H.-A. Bachor, and P. K. Lam

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.
Acoustic Attenuation in Self-Affine Porous Structures 184301
Steven R. Pride and Yder J. Masson
Mechanics of Climbing and Attachment in Twining Plants 184302
Alain Goriely and Sébastien Neukirch
Destabilization of a Viscous Film Flowing Down in the Form of a Vertical Cylindrical Curtain 184501
Christophe Pirat, Christian Mathis, Manoranjan Mishra, and Philippe Maïssa
Experimental Evidence for Magnetorotational Instability in a Taylor-Couette Flow under the Influence of a Helical Magnetic Field 184502
Frank Stefani, Thomas Gundrum, Gunter Gerbeth, Günther Rüdiger, Manfred Schultz, Jacek Szklarski, and Rainer Hollerbach
Experimental Evidence of the Vapor Recoil Mechanism in the Boiling Crisis 184503
V. S. Nikolayev, D. Chatain, Y. Garrabos, and D. Beysens

Plasma and Beam Physics
Wave-Field Formation in a Hollow X-Ray Waveguide 184801
I. Bukreeva, A. Popov, D. Pelliccia, A. Cedola, S. B. Dabagov, and S. Lagomarsino
Double Layers and Ion Phase-Space Holes in the Auroral Upward-Current Region 185001
D. S. Main, D. L. Newman, and R. E. Ergun
Rayleigh-Taylor Turbulence is Nothing Like Kolmogorov Turbulence in the Self-Similar Regime 185002
Olivier Poujade

Condensed Matter: Structure, etc.
Experimental Evidence of the Local Character of Vibrations Constituting the Boson Peak in Amorphous Solids 185501
Yu. G Vainer, A. V. Naumov, M. Bauer, and L. Kador
Multiple Wave Diffraction Anomalous Fine Structure 185502
Yen-Ru Lee, Yuri P. Stetsko, Wen-Hsien Sun, Shih-Chang Weng, Shen-Yuan Cheng, Guin-Gi Lin, Yun-Liang Soo, and Shih-Lin Chang
Quantum Critical End Point for the Kondo Volume Collapse Model 185701
M. Dzero, M. R. Norman, I. Paul, C. Pépin, and J. Schmalian
In Situ Imaging of Field-Induced Hexagonal Columns in Magnetite Ferrofluids 185702
Mark Klokkenburg, Ben H. Erné, Johannes D. Meeldijk, Albrecht Wiedenmann, Andrei V. Petukhov, Roel P. Dullens, and Albert P. Philipse

(Continued on Preceding Page)

Dynamic Structure Formation at the Fronts of Volatile Liquid Drops 186101
Y. Gotkis, I. Ivanov, N. Murisic, and L. Kondic
Clustering of Chemisorbed H(D) Atoms on the Graphite (0001) Surface due to Preferential Sticking 186102
L. Hornekær, E. Rauls, W. Xu, Ž. Šljivančanin, R. Otero, I. Stensgaard, E. Lægsgaard, B. Hammer, and F. Besenbacher
Reentrant Adhesion Behavior in Nanocluster Deposition 186103
A. Awasthi, S. C. Hendy, P. Zoontjens, and S. A. Brown
Real-Space Direct Visualization of the Layer-Dependent Roughening Transition in Nanometer-Thick Pb Films 186104
F. Calleja, M. C. Passeggi, Jr., J. J. Hinarejos, A. L. de Parga, and R. Miranda
Real-Time Observation of Nonadiabatic Surface Dynamics: The First Picosecond in the Dissociation of NO on Iridium 186105
Ian M. Lane, David A. King, Zhi-Pan Liu, and Heike Arnolds
Rotational Dynamics and Friction in Double-Walled Carbon Nanotubes 186106
J. Servantie and P. Gaspard

Condensed Matter: Electronic Properties, etc.

Bosonization Approach for Bilayer Quantum Hall Systems at $\nu_T = 1$ 186401
R. L. Doretto, A. O. Caldeira, and C. Morais Smith
Magnetization-Switched Metal-Insulator Transition in a (Ga,Mn)As Tunnel Device 186402
K. Pappert, M. J. Schmidt, S. Hümpfner, C. Rüster, G. M. Schott, K. Brunner, C. Gould, G. Schmidt, and L. W. Molenkamp
Adatom Self-Organization Induced by Quantum Confinement of Surface Electrons 186403
V. S. Stepanyuk, N. N. Negulyaev, L. Niebergall, R. C. Longo, and P. Bruno
Valley Susceptibility of an Interacting Two-Dimensional Electron System 186404
O. Gunawan, Y. P. Shkolnikov, K. Vakili, T. Gokmen, E. P. De Poortere, and M. Shayegan
Complete *d*-Band Dispersion Relation in Sodium Cobaltates 186405
D. Qian, L. Wray, D. Hsieh, L. Viciu, R. J. Cava, J. L. Luo, D. Wu, N. L. Wang, and M. Z. Hasan
Suppression of Shot Noise in Quantum Point Contacts in the "0.7 Regime" 186801
A. Golub, T. Aono, and Yigal Meir
Quantum Hall Ferrimagnetism in Lateral Quantum Dot Molecules 186802
Ramin M. Abolfath and Pawel Hawrylak
Detecting Non-Abelian Statistics with an Electronic Mach-Zehnder Interferometer 186803
D. E. Feldman and Alexei Kitaev
Interface Controlled Electronic Charge Inhomogeneities in Correlated Heterostructures 187001
Natalia Pavlenko and Thilo Kopp
Effect of the Vortices on the Nuclear Spin Relaxation Rate in the Unconventional Pairing States of the Organic Superconductor $(TMTSF)_2PF_6$ 187002
M. Takigawa, M. Ichioka, K. Kuroki, Y. Asano, and Y. Tanaka
Magnon Excitation with Spin-Polarized Scanning Tunneling Microscopy 187201
T. Balashov, A. F. Takács, W. Wulfhekel, and J. Kirschner
Numerical Linked-Cluster Approach to Quantum Lattice Models 187202
Marcos Rigol, Tyler Bryant, and Rajiv R. Singh
Raman Spectrum of Graphene and Graphene Layers 187401
A. C. Ferrari, J. C. Meyer, V. Scardaci, C. Casiraghi, M. Lazzeri, F. Mauri, S. Piscanec, D. Jiang, K. S. Novoselov, S. Roth, and A. K. Geim
Coherence Length of Cold Exciton Gases in Coupled Quantum Wells 187402
Sen Yang, A. T. Hammack, M. M. Fogler, L. V. Butov, and A. C. Gossard
Motional Enhancement of Exciton Magnetic Moments in Zinc-Blende Semiconductors 187403
J. J. Davies, D. Wolverson, V. P. Kochereshko, A. V. Platonov, R. T. Cox, J. Cibert, H. Mariette, C. Bodin, C. Gourgon, E. V. Ubyivovk, Yu. P. Efimov, and S. A. Eliseev
Quantum-Size-Induced Oscillations of the Electron-Spin Motion in Cu Films on Co(001) 187404
L. Joly, L. Tati-Bismaths, and W. Weber

(Continued on Preceding Page)

Quantifying Desorption of Saturated Hydrocarbons from Silicon with Quantum Calculations and Scanning Tunneling Microscopy 187601
N. L. Yoder, N. P. Guisinger, M. C. Hersam, R. Jorn, C.-C. Kaun, and T. Seideman

Soft Matter, Biological, and Interdisciplinary Physics

Nonquiescent Relaxation in Entangled Polymer Liquids after Step Shear 187801
Shi-Qing Wang, Sham Ravindranath, Pouyan Boukany, Michael Olechnowicz, Roderic P. Quirk, Adel Halasa, and Jimmy Mays

Vegetation Against Dune Mobility 188001
Orencio Durán and Hans J. Herrmann

Designing the Dynamics of Spiking Neural Networks 188101
Raoul-Martin Memmesheimer and Marc Timme

Percolation in Living Neural Networks 188102
Ilan Breskin, Jordi Soriano, Elisha Moses, and Tsvi Tlusty

Dynamics of Sequential Decision Making 188103
Mikhail I. Rabinovich, Ramón Huerta, and Valentin Afraimovich

Eigenvalue Spectra of Random Matrices for Neural Networks 188104
Kanaka Rajan and L. F. Abbott

Zipper Dynamics of Surfactant Nanotube Y Junctions 188105
Tatsiana Lobovkina, Paul Dommersnes, Jean-François Joanny, Johan Hurtig, and Owe Orwar

Physical Theory of the Competition that Allows HIV to Escape from the Immune System 188106
Guanyu Wang and Michael W. Deem

Salt-Induced Swelling-to-Shrinking Transition in Polyelectrolyte Multilayer Capsules 188301
Karen Köhler, P. Maarten Biesheuvel, Richard Weinkamer, Helmuth Möhwald, and Gleb B. Sukhorukov

Lifshitz-Safran Coarsening Dynamics in a 2D Hexagonal System 188302
Leopoldo R. Gómez, Enrique M. Vallés, and Daniel A. Vega

Ribbon-to-Fiber Transformation in the Process of Spinning of Carbon-Nanotube Dispersion 188303
Konstantin G. Kornev, Gerardo Callegari, John Kuppler, Sigrid Ruetsch, and Alexander V. Neimark

Estimating Topology of Networks 188701
Dongchuan Yu, Marco Righero, and Ljupco Kocarev

Comments

Comment on "Soft Phonon, Dynamical Fluctuations, and a Reversible Phase Transition: Indium Chains on Silicon" 189701
H. W. Yeom

González, Flores, and Ortega Reply 189702
C. González, F. Flores, and J. Ortega

Comment on "Pressure Dependence of Fragile-to-Strong Transition and a Possible Second Critical Point in Supercooled Confined Water" 189801
Jan Swenson

Comment on "Pressure Dependence of Fragile-to-Strong Transition and a Possible Second Critical Point in Supercooled Confined Water" 189802
Silvina Cerveny, Juan Colmenero, and Angel Alegría

Chen, Liu, and Faraone Reply 189803
Sow-Hsin Chen, Li Liu, and A. Faraone

Errata

Publisher's Note: Variable Orbital Coupling in a Two-Dimensional Quantum-Dot Solid Probed on a Local Scale [Phys. Rev. Lett. **97**, 096803 (2006)] 189901
Peter Liljeroth, Karin Overgaag, Ana Urbieta, Bruno Grandidier, Stephen G. Hickey, and Daniël Vanmaekelbergh

Publisher's Note: Condition for Any Realistic Theory of Quantum Systems [Phys. Rev. Lett. **97**, 180401 (2006)] ... 189902
A. Montina