

Simulation of high-intensity laser beams propagating through a plasma under National-Ignition-Facility conditions. The image on the right shows the effect that temporal beam smoothing has in significantly reducing the beam spray due to laser-plasma instabilities. See article 085005.

World Year of PHYSICS 2005
www.physics2005.org

PHYSICAL REVIEW LETTERS

Contents

Articles published 26 February–4 March 2005

VOLUME 94, NUMBER 8 4 March 2005

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

Justification of *c*-Number Substitutions in Bosonic Hamiltonians 080401
Elliott H. Lieb, Robert Seiringer, and Jakob Yngvason

Equivalence of Bose-Einstein Condensation and Symmetry Breaking 080402
András Sütő

Fermionic Atoms in a Three Dimensional Optical Lattice: Observing Fermi Surfaces, Dynamics, and Interactions 080403
Michael Köhl, Henning Moritz, Thilo Stöferle, Kenneth Günter, and Tilman Esslinger

Observations on Sound Propagation in Rapidly Rotating Bose-Einstein Condensates 080404
T. P. Simula, P. Engels, I. Coddington, V. Schweikhard, E. A. Cornell, and R. J. Ballagh

Iterative Optimization of Quantum Error Correcting Codes 080501
M. Reimpell and R. F. Werner

Nonergodicity of Blinking Nanocrystals and Other Lévy-Walk Processes 080601
G. Margolin and E. Barkai

Thermodynamic Theory of Incompressible Hydrodynamics 080602
Santosh Ansumali, Iliya V. Karlin, and Hans Christian Öttinger

Elementary Particles and Fields

Lorentz Violation in Supersymmetric Field Theories 081601
Stefan Groot Nibbelink and Maxim Pospelov

Measurement of Neutrino Oscillation with KamLAND: Evidence of Spectral Distortion 081801
T. Araki *et al.* (KamLAND Collaboration)

Evidence for Muon Neutrino Oscillation in an Accelerator-Based Experiment 081802
E. Aliu *et al.* (The K2K Collaboration)

Measurement of the Transverse Beam Spin Asymmetry in Elastic Electron-Proton Scattering and the Inelastic Contribution to the Imaginary Part of the Two-Photon Exchange Amplitude 082001
F. E. Maas, K. Aulenbacher, S. Baunack, L. Capozza, J. Diefenbach, B. Gläser, Y. Imai, T. Hammel, D. von Harrach, E.-M. Kabuß, R. Kothe, J. H. Lee, A. Sanchez-Lorente, E. Schilling, D. Schwaab, G. Stephan, G. Weber, C. Weinrich, I. Altarev, J. Arvieux, M. Elyakoubi, R. Frascaria, R. Kunne, M. Morlet, S. Ong, J. Vandewiele, S. Kowalski, R. Suleiman, and S. Taylor

Nuclear Physics

Centrality Dependence of Charm Production from a Measurement of Single Electrons in Au + Au Collisions at $\sqrt{s_{NN}} = 200$ GeV 082301
S. S. Adler *et al.* (PHENIX Collaboration)

(Continued on Third Cover)

Copyright 2005 by The American Physical Society

0031-9007(20050304)94:8;1-7

Nuclear Modification Factors for Hadrons at Forward and Backward Rapidities in Deuteron-Gold Collisions at $\sqrt{s_{NN}} = 200$ GeV 082302
S. S. Adler *et al.* (PHENIX Collaboration)
Measurement of the Absolute np Scattering Differential Cross Section at 194 MeV 082303
M. Sarsour, T. Peterson, M. Planinic, S. E. Vigdor, C. Allgower, B. Bergenwall, J. Blomgren, T. Hossbach, W. W. Jacobs, C. Johansson, J. Klug, A. V. Klyachko, P. Nadel-Turonski, L. Nilsson, N. Olsson, S. Pomp, J. Rapaport, T. Rinckel, E. J. Stephenson, U. Tippawan, S. W. Wissink, and Y. Zhou
Centrality Dependence of Charged Hadron Transverse Momentum Spectra in Au + Au Collisions from $\sqrt{s_{NN}} = 62.4$ to 200 GeV 082304
B. B. Back *et al.*
Measurement of the ^{3}He$(e, e'p)pn$ Reaction at High Missing Energies and Momenta 082305
F. Benmokhtar *et al.* (Jefferson Lab Hall A Collaboration)
Asymmetries in the Nonmesonic Weak Decay of Polarized Λ Hypernuclei 082501
W. M. Alberico, G. Garbarino, A. Parreño, and A. Ramos
Neutron Spectroscopic Factors in ^{9}Li from ^{2}H(^{8}Li, p)^{9}Li 082502
A. H. Wuosmaa, K. E. Rehm, J. P. Greene, D. J. Henderson, R. V. Janssens, C. L. Jiang, L. Jisonna, E. F. Moore, R. C. Pardo, M. Paul, D. Peterson, Steven C. Pieper, G. Savard, J. P. Schiffer, R. E. Segel, S. Sinha, X. Tang, and R. B. Wiringa
Direct Measurement of the ^{14}N$(p, \gamma)^{15}$O S Factor 082503
R. C. Runkle, A. E. Champagne, C. Angulo, C. Fox, C. Iliadis, R. Longland, and J. Pollanen

Atomic, Molecular, and Optical Physics
ac Electric Trap for Ground-State Molecules 083001
Jacqueline van Veldhoven, Hendrick L. Bethlem, and Gerard Meijer
Simple Route to Strong-Field Coherent Control 083002
Nirit Dudovich, Thomas Polack, Avi Pe'er, and Yaron Silberberg
Mapping Attosecond Electron Wave Packet Motion 083003
Hiromichi Niikura, D. M. Villeneuve, and P. B. Corkum
Photoassociative Spectroscopy at Long Range in Ultracold Strontium 083004
S. B. Nagel, P. G. Mickelson, A. D. Saenz, Y. N. Martinez, Y. C. Chen, T. C. Killian, P. Pellegrini, and R. Côté
Highly Spin-Polarized Atoms and Molecules from Rotationally State-Selected Molecules 083005
T. Peter Rakitzis
Two-Photon Coincident-Frequency Entanglement via Extended Phase Matching 083601
Onur Kuzucu, Marco Fiorentino, Marius A. Albota, Franco N. Wong, and Franz X. Kärtner
Superradiant Light Scattering from Thermal Atomic Vapors 083602
Yutaka Yoshikawa, Yoshio Torii, and Takahiro Kuga

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.
$1/f^{\alpha}$ Noise in Spectral Fluctuations of Quantum Systems 084101
J. M. Gómez, A. Relaño, J. Retamosa, E. Faleiro, L. Salasnich, M. Vraničar, and M. Robnik
Measuring Phase Synchronization of Superimposed Signals 084102
Frank C. Meinecke, Andreas Ziehe, Jürgen Kurths, and Klaus-Robert Müller
Mixing of Non-Newtonian Fluids in Steadily Forced Systems 084501
Paulo E. Arratia, Troy Shinbrot, Mario M. Alvarez, and Fernando J. Muzzio
Measuring Topological Chaos 084502
Jean-Luc Thiffeault

Plasma and Beam Physics
Broad Energy Spectrum of Laser-Accelerated Protons for Spallation-Related Physics 084801
P. McKenna, K. W. Ledingham, S. Shimizu, J. M. Yang, L. Robson, T. McCanny, J. Galy, J. Magill, R. J. Clarke, D. Neely, P. A. Norreys, R. P. Singhal, K. Krushelnick, and M. S. Wei
Evidence for High-m Secondary Islands Induced by Large Low-m Islands in a Tokamak Plasma 085001
A. J. Donné, J. C. van Gorkom, V. S. Udintsev, C. W. Domier, A. Krämer-Flecken, N. C. Luhmann, Jr., and F. C. Schüller (TEXTOR team)

(Continued on Preceding Page)

Observation of the Effects of Radially Sheared Electric Fields on the Suppression of Turbulent Vortex Structures and the Associated Transverse Loss in GAMMA 10 085002
T. Cho, M. Yoshida, J. Kohagura, M. Hirata, T. Numakura, H. Higaki, H. Hojo, M. Ichimura, K. Ishii, K. Md. Islam, A. Itakura, I. Katanuma, Y. Nakashima, T. Saito, Y. Tatematsu, M. Yoshikawa, Y. Kojima, S. Tokioka, N. Yokoyama, Y. Tomii, T. Imai, V. P. Pastukhov, and S. Miyoshi (GAMMA 10 Group)
Experimental Observation of Nonlinear Synchronization due to a Single Wave 085003
F. Doveil, D. F. Escande, and A. Macor
Efficiency and Energy Spread in Laser-Wakefield Acceleration 085004
A. J. Reitsma, R. A. Cairns, R. Bingham, and D. A. Jaroszynski
Intensity Limits for Propagation of 0.527 μm Laser Beams through Large-Scale-Length Plasmas for Inertial Confinement Fusion 085005
C. Niemann, L. Divol, D. H. Froula, G. Gregori, O. Jones, R. K. Kirkwood, A. J. MacKinnon, N. B. Meezan, J. D. Moody, C. Sorce, L. J. Suter, R. Bahr, W. Seka, and S. H. Glenzer

Condensed Matter: Structure, etc.

Dynamic Elastic Hysteretic Solids and Dislocations 085501
M. W. Barsoum, M. Radovic, T. Zhen, P. Finkel, and S. R. Kalidindi
Heat Transfer between Two Nanoparticles Through Near Field Interaction 085901
Gilberto Domingues, Sebastian Volz, Karl Joulain, and Jean-Jacques Greffet
Initial Stages of Ti Growth on Diamond (100) Surfaces: From Single Adatom Diffusion to Quantum Wire Formation 086101
Yu Jia, Wenguang Zhu, E. G. Wang, Yuping Huo, and Zhenyu Zhang
Crystal Structure and Interaction Dependence of the Crystal-Melt Interfacial Free Energy 086102
Ruslan L. Davidchack and Brian B. Laird
Spectroscopy of Shear Horizontal Surface Phonons by Rotation-Flip Scattering of Ortho-H_2 Molecules 086103
Giorgio Benedek, Franziska Traeger, and J. Peter Toennies
Adsorbate-Induced Enhancement of Electrostatic Noncontact Friction 086104
A. I. Volokitin and B. N. Persson
Hydrogen-Induced Instability of the Ge(105) Surface 086105
Yasunori Fujikawa, T. Nagao, Y. Yamada-Takamura, T. Sakurai, T. Hashimoto, Y. Morikawa, K. Terakura, and M. G. Lagally

Condensed Matter: Electronic Properties, etc.

New Type of Charged Defect in Amorphous Chalcogenides 086401
S. I. Simdyankin, T. A. Niehaus, G. Natarajan, Th. Frauenheim, and S. R. Elliott
Strongly Enhanced Hole-Phonon Coupling in the Metallic State of the Dilute Two-Dimensional Hole Gas 086402
X. P. Gao, G. S. Boebinger, A. P. Mills, Jr., A. P. Ramirez, L. N. Pfeiffer, and K. W. West
Kondo Screening Cloud Around a Quantum Dot: Large-Scale Numerical Results 086601
Erik S. Sørensen and Ian Affleck
Ruderman-Kittel-Kasuya-Yosida and Magnetic-Field Interactions in Coupled Kondo Quantum Dots 086602
Pascal Simon, Rosa López, and Yuval Oreg
Temperature Dependence of the Tunneling Amplitude between Quantum Hall Edges 086801
Roberto D'Agosta, Giovanni Vignale, and Roberto Raimondi
Electron-Phonon Interaction and Transport in Semiconducting Carbon Nanotubes 086802
Vasili Perebeinos, J. Tersoff, and Phaedon Avouris
Fractional Quantum Hall States of Atoms in Optical Lattices 086803
Anders S. Sørensen, Eugene Demler, and Mikhail D. Lukin
Electron Interactions and Transport between Coupled Quantum Hall Edge States 086804
J. W. Tomlinson, J.-S. Caux, and J. T. Chalker
Transport Spectroscopy of Kondo Quantum Dots Coupled by RKKY Interaction 086805
Maxim G. Vavilov and Leonid I. Glazman
Noise and Full Counting Statistics of Incoherent Multiple Andreev Reflection 086806
S. Pilgram and P. Samuelsson

(Continued on Preceding Page)

Uniformly Frustrated *XY* Model without a Vortex-Pattern Ordering 087001
S. E. Korshunov
Generalized Anisotropic Scaling Theory and the Transverse Meissner Transition 087002
Anders Vestergren, Jack Lidmar, and Mats Wallin
Macroscopic Quantum Tunneling in *d*-Wave $YBa_2Cu_3O_{7-\delta}$ Josephson Junctions 087003
T. Bauch, F. Lombardi, F. Tafuri, A. Barone, G. Rotoli, P. Delsing, and T. Claeson
Thermal Conductivity of Quasi-One-Dimensional Antiferromagnetic Spin-Chain Materials 087201
A. V. Rozhkov and A. L. Chernyshev
General Features of Photoinduced Spin Dynamics in Ferromagnetic and Ferrimagnetic Compounds 087202
T. Ogasawara, K. Ohgushi, Y. Tomioka, K. S. Takahashi, H. Okamoto, M. Kawasaki, and Y. Tokura
Roundabout Relaxation: Collective Excitation Requires a Detour to Equilibrium 087203
Hidetoshi Morita and Kunihiko Kaneko
Revealing Antiferromagnetic Order of the Fe Monolayer on W(001): Spin-Polarized Scanning Tunneling Microscopy and First-Principles Calculations 087204
A. Kubetzka, P. Ferriani, M. Bode, S. Heinze, G. Bihlmayer, K. von Bergmann, O. Pietzsch, S. Blügel, and R. Wiesendanger
Orbital Order and Ferrimagnetic Properties of $Sr_8CaRe_3Cu_4O_{24}$ 087205
Xiangang Wan, Masanori Kohno, and Xiao Hu
Optical Polarization Driven Giant Relief Modulation in Amorphous Chalcogenide Glasses 087401
K. E. Asatryan, T. Galstian, and R. Vallée
Polarization Dependence of the Optical Absorption of Single-Walled Carbon Nanotubes 087402
Yoichi Murakami, Erik Einarsson, Tadao Edamura, and Shigeo Maruyama
Room-Temperature Ordered Photon Emission from Multiexciton States in Single CdSe Core-Shell Nanocrystals 087403
Brent Fisher, Jean Michel Caruge, Don Zehnder, and Moungi Bawendi
Reflectance Anisotropy Spectra of the Diamond (100)-(2×1) Surface: Evidence of Strongly Bound Surface State Excitons 087404
Maurizia Palummo, Olivia Pulci, Rodolfo Del Sole, Andrea Marini, M. Schwitters, S. R. Haines, K. H. Williams, D. S. Martin, P. Weightman, and J. E. Butler
Narrow Luminescence Linewidth of a Silicon Quantum Dot 087405
Ilya Sychugov, Robert Juhasz, Jan Valenta, and Jan Linnros
Magnetic Order and Spin Dynamics in Ferroelectric $HoMnO_3$ 087601
O. P. Vajk, M. Kenzelmann, J. W. Lynn, S. B. Kim, and S.-W. Cheong

Soft Matter, Biological, and Interdisciplinary Physics

Microstructure and Thermodynamics of Inhomogeneous Polymer Blends and Solutions 087801
Sandeep Tripathi and Walter G. Chapman
Dynamics of Fluctuations below a Stationary Bifurcation to Electroconvection in the Planar Nematic Liquid Crystal N4 087802
Xin-Liang Qiu and Guenter Ahlers
Hydrodynamic Singularities and Clustering in a Freely Cooling Inelastic Gas 088001
Efi Efrati, Eli Livne, and Baruch Meerson
Precise Toppling Balance, Quenched Disorder, and Universality for Sandpiles 088002
R. Karmakar, S. S. Manna, and A. L. Stella
Scaling Behavior of Laser Population Dynamics with Time-Delayed Coupling: Theory and Experiment 088101
Min-Young Kim, Rajarshi Roy, Joan L. Aron, Thomas W. Carr, and Ira B. Schwartz
Passive or Active Fluctuations in Membranes Containing Proteins 088102
P. Girard, J. Prost, and P. Bassereau
Membrane Potential and Response Properties of Populations of Cortical Neurons in the High Conductance State ... 088103
Rubén Moreno-Bote and Néstor Parga
Number and Length of Attractors in a Critical Kauffman Model with Connectivity One 088701
Barbara Drossel, Tamara Mihaljev, and Florian Greil

Comments

(Continued on Preceding Page)

Comment on "Thermoinduced Magnetization in Nanoparticles of Antiferromagnetic Materials" 089701
A. H. MacDonald and C. M. Canali
Mørup and Frandsen Reply 089702
Steen Mørup and Cathrine Frandsen

Errata

Publisher's Note: Experimental Benchmark for an Improved Simulation of Absolute Soft-X-Ray Emission from Polystyrene Targets Irradiated with the Nike Laser [Phys. Rev. Lett. **94**, 045002 (2005)] 089901
J. L. Weaver, M. Busquet, D. G. Colombant, A. N. Mostovych, U. Feldman, M. Klapisch, J. F. Seely, C. Brown, and G. Holland

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.