



Force transmitted through a shear-thickening fluid causes a depression in molding clay, as a sphere is driven to a point just above it. See article 188301.

PHYSICAL REVIEW LETTERS

Contents

Articles published 23 October–29 October 2010

VOLUME 105, NUMBER 18

29 October 2010

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

Strongly Interacting Atom Lasers in Three-Dimensional Optical Lattices	180401
Itay Hen and Marcos Rigol	
General Optimality of the Heisenberg Limit for Quantum Metrology	180402
Marcin Zwierz, Carlos A. Pérez-Delgado, and Pieter Kok	
Bringing Entanglement to the High Temperature Limit	180501
Fernando Galve, Leonardo A. Pachón, and David Zueco	
Metal-Coated Nanocylinder Cavity for Broadband Nonclassical Light Emission	180502
I.S. Maksymov, M. Besbes, J.P. Hugonin, J. Yang, A. Beveratos, I. Sagnes, I. Robert-Philip, and P. Lalanne	

Gravitation and Astrophysics

Cosmology Favoring Extra Radiation and Sub-eV Mass Sterile Neutrinos as an Option	181301
Jan Hamann, Steen Hannestad, Georg G. Raffelt, Irene Tamborra, and Yvonne Y. Wong	
Non-Gaussianity in Axion N -flation Models	181302
Soo A. Kim, Andrew R. Liddle, and David Seery	

Elementary Particles and Fields

Event Excess in the MiniBooNE Search for $\bar{\nu}_\mu \rightarrow \bar{\nu}_e$ Oscillations	181801
A.A. Aguilar-Arevalo <i>et al.</i> (MiniBooNE Collaboration)	
Color Sextet Scalars in Early LHC Experiments	181802
Edmond L. Berger, Qing-Hong Cao, Chuan-Ren Chen, Gabe Shaughnessy, and Hao Zhang	
Determination of the Axial-Vector Weak Coupling Constant with Ultracold Neutrons	181803
J. Liu, M.P. Mendenhall, A.T. Holley, H.O. Back, T.J. Bowles, L.J. Broussard, R. Carr, S. Clayton, S. Currie, B.W. Filippone, A. García, P. Geltenbort, K.P. Hickerson, J. Hoagland, G.E. Hogan, B. Hona, T.M. Ito, C.-Y. Liu, M. Makela, R.R. Mammei, J.W. Martin, D. Melconian, C.L. Morris, R.W. Pattie, Jr., A. Pérez Galván, M.L. Pitt, B. Plaster, J.C. Ramsey, R. Rios, R. Russell, A. Saunders, S.J. Seestrom, W.E. Sondheim, E. Tatar, R.B. Vogelaar, B. VornDick, C. Wrede, H. Yan, and A.R. Young (UCNA Collaboration)	

Nuclear Physics

Indirect Observation of an In-Medium η' Mass Reduction in $\sqrt{s_{NN}} = 200$ GeV Au + Au Collisions	182301
T. Csörgő, R. Vértesi, and J. Sziklai	
Excitation of the Isomeric ^{229m}Th Nuclear State via an Electronic Bridge Process in $^{229}\text{Th}^+$	182501
S.G. Porsev, V.V. Flambaum, E. Peik, and Chr. Tamm	
New Superheavy Element Isotopes: $^{242}\text{Pu}(^{48}\text{Ca}, 5n)^{285}114$	182701
P.A. Ellison, K.E. Gregorich, J.S. Berryman, D.L. Bleuel, R.M. Clark, I. Dragojević, J. Dvorak, P. Fallon, C. Fineman-Sotomayor, J.M. Gates, O.R. Gothe, I.Y. Lee, W.D. Loveland, J.P. McLaughlin, S. Paschalis, M. Petri, J. Qian, L. Stavsetra, M. Wiedeking, and H. Nitsche	

(Continued Inside)

Selected for a Viewpoint in *Physics*. Please visit <http://physics.aps.org/>.

By suggesting a few manuscripts each week, we hope to promote reading across fields. Please see our Announcement Phys. Rev. Lett. 98, 010001 (2007).



Atomic, Molecular, and Optical Physics

Resonant and Near-Threshold Photoionization Cross Sections of Fe^{14+}	183001
M. C. Simon, J. R. Crespo López-Urrutia, C. Beilmann, M. Schwarz, Z. Harman, S. W. Epp, B. L. Schmitt, T. M. Baumann, E. Behar, S. Bernitt, R. Follath, R. Ginzler, C. H. Keitel, R. Klawitter, K. Kubiček, V. Mäkel, P. H. Mokler, G. Reichardt, O. Schwarzkopf, and J. Ullrich	
Quantum Lithography beyond the Diffraction Limit via Rabi Oscillations	183601
Zeyang Liao, M. Al-Amri, and M. Suhail Zubairy	
Self-Similar Modes of Coherent Diffusion	183602
O. Firstenberg, P. London, D. Yankelev, R. Pugatch, M. Shuker, and N. Davidson	

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.



Fluctuations of the Local Density of States Probe Localized Surface Plasmons on Disordered Metal Films	183901
V. Krachmalnicoff, E. Castanié, Y. De Wilde, and R. Carminati	
Extremely Short Pulses via Stark Modulation of the Atomic Transition Frequencies	183902
Y. V. Radeonychev, V. A. Polovinkin, and Olga Kocharovskaya	
Spectral Theory of the Turbulent Mean-Velocity Profile	184501
Gustavo Gioia, Nicholas Guttenberg, Nigel Goldenfeld, and Pinaki Chakraborty	
Direct Measurement of Effective Magnetic Diffusivity in Turbulent Flow of Liquid Sodium	184502
Peter Frick, Vitaliy Noskov, Sergey Denisov, and Rodion Stepanov	
Flower Patterns in Drop Impact on Thin Liquid Films	184503
Guillaume Lagubeau, Marco A. Fontelos, Christophe Josserand, Agnès Maurel, Vincent Pagneux, and Philippe Petitjeans	

Plasma and Beam Physics

Measurements of Magneto-Rayleigh-Taylor Instability Growth during the Implosion of Initially Solid Al Tubes Driven by the 20-MA, 100-ns Z Facility	185001
D. B. Sinars, S. A. Slutz, M. C. Herrmann, R. D. McBride, M. E. Cuneo, K. J. Peterson, R. A. Vesey, C. Nakhleh, B. E. Blue, K. Killebrew, D. Schroen, K. Tomlinson, A. D. Edens, M. R. Lopez, I. C. Smith, J. Shores, V. Bigman, G. R. Bennett, B. W. Atherton, M. Savage, W. A. Stygar, G. T. Leifste, and J. L. Porter	
Experimental Observation of Increased Threshold Electric Field for Runaway Generation due to Synchrotron Radiation Losses in the FTU Tokamak	185002
J. R. Martín-Solís, R. Sánchez, and B. Esposito	
Neoclassical Transport Caused by Collisionless Scattering across an Asymmetric Separatrix	185003
Daniel H. Dubin, C. F. Driscoll, and Yu. A. Tsidulko	
β -Induced Alfvén Eigenmodes Destabilized by Energetic Electrons in a Tokamak Plasma	185004
W. Chen, X. T. Ding, Q. W. Yang, Yi Liu, X. Q. Ji, Y. P. Zhang, J. Zhou, G. L. Yuan, H. J. Sun, W. Li, Y. Zhou, Y. Huang, J. Q. Dong, B. B. Feng, X. M. Song, Z. B. Shi, Z. T. Liu, X. Y. Song, L. C. Li, X. R. Duan, and Y. Liu (HL-2A team)	

Condensed Matter: Structure, etc.

Melting of Bi Sublattice in Nanosized BiFeO_3 Perovskite by Resonant X-Ray Diffraction	185501
V. Petkov, S. M. Selbach, M.-A. Einarsrud, T. Grande, and S. D. Shastri	
Role of Surface Reconstructions in (111) Silicon Fracture	185502
Delia Fernandez-Torre, Tristan Albaret, and Alessandro De Vita	
Significance of Self-Trapping on Hydrogen Diffusion	185901
Andreas Blomqvist, Gunnar K. Pálsson, C. Moysés Araújo, Rajeev Ahuja, and Björgvin Hjörvarsson	
Self-Consistent Interpretation of the 2D Structure of the Liquid $\text{Au}_{82}\text{Si}_{18}$ Surface: Bending Rigidity and the Debye-Waller Effect	186101
S. Mechler, P. S. Pershan, E. Yahel, S. E. Stoltz, O. G. Shpyrko, B. Lin, M. Meron, and S. Sellner	

Condensed Matter: Electronic Properties, etc.

Topological Majorana and Dirac Zero Modes in Superconducting Vortex Cores	186401
Rahul Roy	

(Continued on Preceding Page)



Selected for a Viewpoint in *Physics*. Please visit <http://physics.aps.org/>.

By suggesting a few manuscripts each week, we hope to promote reading across fields. Please see our Announcement Phys. Rev. Lett. 98, 010001 (2007).

Contents (Continued)

BCS Wave-Function Approach to the BEC-BCS Crossover of Exciton-Polariton Condensates	186402
Tim Byrnes, Tomoyuki Horikiri, Natsuko Ishida, and Yoshihisa Yamamoto	
Quantum Valence Criticality as an Origin of Unconventional Critical Phenomena	186403
Shinji Watanabe and Kazumasa Miyake	
Electronic Structure of Crystalline ^4He at High Pressures	186404
Ho Kwang Mao, Eric L. Shirley, Yang Ding, Peter Eng, Yong Q. Cai, Paul Chow, Yuming Xiao, Jinfu Shu, Russell J. Hemley, Chichang Kao, and Wendy L. Mao	
Nonlinear Current Response of an Isolated System of Interacting Fermions	186405
Marcin Mierzejewski and Peter Prelovšek	
Spin Edge Helices in a Perpendicular Magnetic Field	186601
S.M. Badalyan and J. Fabian	
Alternative Approach to Computing Transport Coefficients: Application to Conductivity and Hall Coefficient of Hydrogenated Amorphous Silicon	186602
Ming-Liang Zhang and D.A. Drabold	
Robustness of Topologically Protected Surface States in Layering of Bi_2Te_3 Thin Films	186801
Kyungwha Park, J.J. Heremans, V.W. Scarola, and Djordje Minic	
Exploring the Fragile Antiferromagnetic Superconducting Phase in CeCoIn_5	187001
E. Blackburn, P. Das, M.R. Eskildsen, E.M. Forgan, M. Laver, C. Niedermayer, C. Petrovic, and J.S. White	
Superconductivity in Strongly Repulsive Fermions: The Role of Kinetic-Energy Frustration	187002
L. Isaev, G. Ortiz, and C.D. Batista	
Out-of-Equilibrium Heating of Electron Liquid: Fermionic and Bosonic Temperatures	187003
A. Petković, N.M. Chtchelkatchev, T.I. Baturina, and V.M. Vinokur	
Nodes versus Minima in the Energy Gap of Iron Pnictide Superconductors from Field-Induced Anisotropy	187004
A.B. Vorontsov and I. Vekhter	
Disordered Ground State and Magnetic Field-Induced Long-Range Order in an $S = 3/2$ Antiferromagnetic Honeycomb Lattice Compound $\text{Bi}_3\text{Mn}_4\text{O}_{12}(\text{NO}_3)$	187201
M. Matsuda, M. Azuma, M. Tokunaga, Y. Shimakawa, and N. Kumada	
Possible Exciton Bose Liquid in a Hard-Core Boson Ring Model	187202
Tiamhock Tay and Olexei I. Motrunich	
Direct Determination of Large Spin-Torque Nonadiabaticity in Vortex Core Dynamics	187203
L. Heyne, J. Rhensius, D. Ilgaz, A. Bisig, U. Rüdiger, M. Kläui, L. Joly, F. Nolting, L.J. Heyderman, J.U. Thiele, and F. Kronast	
Entanglement Routers Using Macroscopic Singlets	187204
Abolfazl Bayat, Sougato Bose, and Pasquale Sodano	
Dynamical Magnetic Excitations of Nanostructures from First Principles	187205
S. Lounis, A.T. Costa, R.B. Muniz, and D.L. Mills	
Dynamics of Magnetic Charges in Artificial Spin Ice	187206
Paula Mellado, Olga Petrova, Yichen Shen, and Oleg Tchernyshyov	
Ultrafast Melting of a Charge-Density Wave in the Mott Insulator $1T\text{-TaS}_2$	187401
S. Hellmann, M. Beye, C. Sohrt, T. Rohwer, F. Sorgenfrei, H. Redlin, M. Kalläne, M. Marczyński-Bühlöw, F. Hennies, M. Bauer, A. Föhlisch, L. Kipp, W. Wurth, and K. Rossnagel	
Theory of Magnetic Switching of Ferroelectricity in Spiral Magnets	187601
Masahito Mochizuki and Nobuo Furukawa	
Electron Spin Decoherence in Isotope-Enriched Silicon	187602
Wayne M. Witzel, Malcolm S. Carroll, Andrea Morello, Łukasz Cywiński, and S. Das Sarma	
Evidence for an Ultrafast Breakdown of the BeO Band Structure Due to Swift Argon and Xenon Ions	187603
G. Schiwietz, K. Czerski, M. Roth, P.L. Grande, V. Koteski, and F. Staufenbiel	
Soft Matter, Biological, and Interdisciplinary Physics	
Fluid Velocity Fluctuations in a Suspension of Swimming Protists	188101
Ilia Rushkin, Vasily Kantsler, and Raymond E. Goldstein	
Focused Force Transmission through an Aqueous Suspension of Granules	188301
Bin Liu, Michael Shelley, and Jun Zhang	

(Continued on Preceding Page)



Selected for a Viewpoint in *Physics*. Please visit <http://physics.aps.org/>.

By suggesting a few manuscripts each week, we hope to promote reading across fields. Please see our Announcement Phys. Rev. Lett. 98, 010001 (2007).

Contents (Continued)

Thermal Decomposition of the Solid Phase of Nitromethane: <i>Ab Initio</i> Molecular Dynamics Simulations	188302
Jing Chang, Peng Lian, Dong-Qing Wei, Xiang-Rong Chen, Qing-Ming Zhang, and Zi-Zheng Gong	
Comments	
Comment on “Normal Phase of an Imbalanced Fermi Gas”	188901
Zhenhua Yu, Sascha Zöllner, and C.J. Pethick	
Comment on “Transitions in the Communication Capacity of Dissipative Qubit Channels”	188902
Michael Nathanson and Mary Beth Ruskai	
Daems Replies	188903
D. Daems	
Comment on “Repulsive Casimir Force in Chiral Metamaterials”	189301
Mário G. Silveirinha and Stanislav I. Maslovski	
Zhao <i>et al.</i> Reply	189302
R. Zhao, J. Zhou, Th. Koschny, E.N. Economou, and C.M. Soukoulis	
Comment on “Circular Dichroism in the Angle-Resolved Photoemission Spectrum of the High-Temperature $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ Superconductor: Can These Measurements Be Interpreted as Evidence for Time-Reversal Symmetry Breaking?”	189701
M.R. Norman, A. Kaminski, S. Rosenkranz, and J.C. Campuzano	
Lindroos, Arpiainen, and Bansil Reply	189702
Matti Lindroos, Ville Arpiainen, and Arun Bansil	
Errata	
Publisher’s Note: Oscillatory Flows Induced by Microorganisms Swimming in Two Dimensions [Phys. Rev. Lett. 105 , 168102 (2010)]	189901
Jeffrey S. Guasto, Karl A. Johnson, and J.P. Gollub	



Selected for a Viewpoint in *Physics*. Please visit <http://physics.aps.org/>.

By suggesting a few manuscripts each week, we hope to promote reading across fields. Please see our Announcement Phys. Rev. Lett. 98, 010001 (2007).

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.