



Isoscattering quantum graphs (top) and pictures of corresponding microwave scattering networks (middle). Panel (bottom) shows the experimental setup for measuring the scattering matrix of a network, to ascertain if the shape of a graph can be determined from its scattering properties. [Oleh Hul *et al.*, Phys. Rev. Lett. **109**, 040402 (2012)]

PHYSICAL REVIEW LETTERS™

Contents

Articles published 21 July–27 July 2012

VOLUME 109, NUMBER 4

27 July 2012

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

Weak Measurements with Orbital-Angular-Momentum Pointer States	040401
G. Puentes, N. Hermosa, and J.P. Torres	
Are Scattering Properties of Graphs Uniquely Connected to Their Shapes?	040402
Oleh Hul, Michał Ławniczak, Szymon Bauch, Adam Sawicki, Marek Kuś, and Leszek Sirko	
Experimental Activation of Bound Entanglement	040501
Fumihiro Kaneda, Ryosuke Shimizu, Satoshi Ishizaka, Yasuyoshi Mitsumori, Hideo Kosaka, and Keiichi Edamatsu	
Quantum Entanglement in Random Physical States	040502
Alioscia Hamma, Siddhartha Santra, and Paolo Zanardi	
Equation of State Beyond the Radius of Convergence of the Virial Expansion	040601
M.V. Ushcats	

Gravitation and Astrophysics



Evidence of Galaxy Cluster Motions with the Kinematic Sunyaev-Zel'dovich Effect	041101
Nick Hand <i>et al.</i>	
Quantum Stability of Chameleon Field Theories	041301
Amol Upadhye, Wayne Hu, and Justin Khoury	

Elementary Particles and Fields



Kaon B Parameter from Improved Staggered Fermions in $N_f=2+1$ QCD	041601
Taegil Bae, Yong-Chull Jang, Chulwoo Jung, Hyung-Jin Kim, Jangho Kim, Jongjeong Kim, Kwangwoo Kim, Sunghye Kim, Weonjong Lee, Stephen R. Sharpe, and Boram Yoon (SWME Collaboration)	
Probing New Physics via the $B_s^0 \rightarrow \mu^+ \mu^-$ Effective Lifetime	041801
Kristof De Bruyn, Robert Fleischer, Robert Kneijens, Patrick Koppenburg, Marcel Merk, Antonio Pellegrino, and Niels Tuning	
Four-Jet Production at the Large Hadron Collider at Next-to-Leading Order in QCD	042001
Z. Bern, G. Diana, L.J. Dixon, F. Febres Cordero, S. Höche, D.A. Kosower, H. Ita, D. Maître, and K. Ozeren	
Eliminating the Renormalization Scale Ambiguity for Top-Pair Production Using the Principle of Maximum Conformality	042002
Stanley J. Brodsky and Xing-Gang Wu	
First Observation of the $M1$ Transition $\psi(3686) \rightarrow \gamma \eta_c(2S)$	042003
M. Ablikim <i>et al.</i> (BESIII Collaboration)	

(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).



Nuclear Physics

High-Precision Measurement of the ^{19}Ne Half-Life and Implications for Right-Handed Weak Currents	042301
S. Triambak, P. Finlay, C.S. Sumithrarachchi, G. Hackman, G.C. Ball, P.E. Garrett, C.E. Svensson, D.S. Cross, A.B. Garnsworthy, R. Kshetri, J.N. Orce, M.R. Pearson, E.R. Tardiff, H. Al-Falou, R.A. Austin, R. Churchman, M.K. Djongolov, R. D'Entremont, C. Kierans, L. Milovanovic, S. O'Hagan, S. Reeve, S.K. Sjøe, and S.J. Williams	
Limits on Neutrino Masses from Neutrinoless Double- β Decay	042501
J. Barea, J. Kotila, and F. Iachello	

Atomic, Molecular, and Optical Physics

Characteristic Spectrum of Very Low-Energy Photoelectron from Above-Threshold Ionization in the Tunneling Regime	043001
C.Y. Wu, Y.D. Yang, Y.Q. Liu, Q.H. Gong, M. Wu, X. Liu, X.L. Hao, W.D. Li, X.T. He, and J. Chen	
Adiabatic State Preparation of Interacting Two-Level Systems	043002
R.T. Brierley, C. Creatore, P.B. Littlewood, and P.R. Eastham	
Quantum Resonances in Selective Rotational Excitation of Molecules with a Sequence of Ultrashort Laser Pulses	043003
S. Zhdanovich, C. Bloomquist, J. Floß, I.Sh. Averbukh, J.W. Hepburn, and V. Milner	
Strong-Field Ionization Rate Depends on the Sign of the Magnetic Quantum Number	043004
Thushani Herath, Lu Yan, Suk Kyoung Lee, and Wen Li	
Absolute Measurement of the Relativistic Magnetic Dipole Transition Energy in Heliumlike Argon	043005
Pedro Amaro, Sophie Schlessler, Mauro Guerra, Eric-Olivier Le Bigot, Jean-Michel Isac, Pascal Travers, José Paulo Santos, Csilla I. Szabo, Alexandre Gumberidze, and Paul Indelicato	
Spin Dynamics in the Kapitza-Dirac Effect	043601
Sven Ahrens, Heiko Bauke, Christoph H. Keitel, and Carsten Müller	
Noiseless Optical Amplifier Operating on Hundreds of Spatial Modes	043602
N.V. Corzo, A.M. Marino, K.M. Jones, and P.D. Lett	

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.

Depolarization Remote Sensing by Orthogonality Breaking	043901
Julien Fade and Mehdi Alouini	
Ultrafast and Octave-Spanning Optical Nonlinearities from Strongly Phase-Mismatched Quadratic Interactions	043902
B.B. Zhou, A. Chong, F.W. Wise, and M. Bache	
Adjoint Method Provides Phase Response Functions for Delay-Induced Oscillations	044101
Kiyoshi Kotani, Ikuhiro Yamaguchi, Yutaro Ogawa, Yasuhiko Jimbo, Hiroya Nakao, and G. Bard Ermentrout	
Solutions of the Vector Nonlinear Schrödinger Equations: Evidence for Deterministic Rogue Waves	044102
Fabio Baronio, Antonio Degasperis, Matteo Conforti, and Stefan Wabnitz	
Homogeneous Nucleation in Water in Microfluidic Channels	044501
Keita Ando, Ai-Qun Liu, and Claus-Dieter Ohl	

Plasma and Beam Physics

High-Harmonic Fast-Wave Power Flow along Magnetic Field Lines in the Scrape-Off Layer of NSTX	045001
R.J. Perkins, J.C. Hosea, G.J. Kramer, J.-W. Ahn, R.E. Bell, A. Diallo, S. Gerhardt, T.K. Gray, D.L. Green, E.F. Jaeger, M.A. Jaworski, B.P. LeBlanc, A. McLean, R. Maingi, C.K. Phillips, L. Roquemore, P.M. Ryan, S. Sabbagh, G. Taylor, and J.R. Wilson	

Condensed Matter: Structure, etc.

Activated Nucleation of Vortices in a Dipole-Blockaded Supersolid Condensate	045301
Peter Mason, Christophe Josserand, and Sergio Rica	
Interaction-Induced Impeding of Decoherence and Anomalous Diffusion	045302
Dario Poletti, Jean-Sébastien Bernier, Antoine Georges, and Corinna Kollath	
Mass Flux Characteristics in Solid ^4He for $T > 100$ mK: Evidence for Bosonic Luttinger-Liquid Behavior	045303
Ye. Vekhov and R.B. Hallock	
Quantum Confinement Drives Macroscopic Stress Oscillations at the Initial Stage of Thin Film Growth	045501
David Flötotto, Zumin Wang, Lars P. Jeurgens, and Eric J. Mittemeijer	

(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).

Thermodynamic Study of Simple Molecular Glasses: Universal Features in Their Heat Capacity and the Size of the Cooperatively Rearranging Regions	045701
Soichi Tatsumi, Shintaro Aso, and Osamu Yamamuro	
Condensed Matter: Electronic Properties, etc.	
Determining the In-Plane Orientation of the Ground-State Orbital of CeCu_2Si_2	046401
T. Willers, F. Strigari, N. Hiraoka, Y. Q. Cai, M. W. Haverkort, K.-D. Tsuei, Y. F. Liao, S. Seiro, C. Geibel, F. Steglich, L. H. Tjeng, and A. Severing	
Exciton Mott Transition in Si Revealed by Terahertz Spectroscopy	046402
Takeshi Suzuki and Ryo Shimano	
Phonon Self-Energy Corrections to Nonzero Wave-Vector Phonon Modes in Single-Layer Graphene	046801
P. T. Araujo, D. L. Mafra, K. Sato, R. Saito, J. Kong, and M. S. Dresselhaus	
Circularly Polarized Photoluminescence as a Probe of Density of States in GaAs/AlGaAs Quantum Hall Bilayers	046802
Yu. A. Pusep, L. Fernandes dos Santos, G. M. Gusev, D. Smirnov, and A. K. Bakarov	
Canted Antiferromagnetic Phase of the $\nu=0$ Quantum Hall State in Bilayer Graphene	046803
Maxim Kharitonov	
Anisotropy of Electrical Transport in Pnictide Superconductors Studied Using Monte Carlo Simulations of the Spin-Fermion Model	047001
Shuhua Liang, Gonzalo Alvarez, Cengiz Şen, Adriana Moreo, and Elbio Dagotto	
Vibrating-Coil Magnetometry of the Spin Liquid Properties of $\text{Tb}_2\text{Ti}_2\text{O}_7$	047201
S. Legl, C. Krey, S. R. Dunsiger, H. A. Dabkowska, J. A. Rodriguez, G. M. Luke, and C. Pfleiderer	
Mapping of Electron-Hole Excitations in the Charge-Density-Wave System 1T-TiSe_2 Using Resonant Inelastic X-Ray Scattering	047401
C. Monney, K. J. Zhou, H. Cercellier, Z. Vydrova, M. G. Garnier, G. Monney, V. N. Strocov, H. Berger, H. Beck, T. Schmitt, and P. Aebi	
Evidence of Sharp and Diffuse Domain Walls in BiFeO_3 by Means of Unit-Cell-Wise Strain and Polarization Maps Obtained with High Resolution Scanning Transmission Electron Microscopy	047601
A. Lubk, M. D. Rossell, J. Seidel, Q. He, S. Y. Yang, Y. H. Chu, R. Ramesh, M. J. Hytch, and E. Snoeck	
Ultrahigh-Resolution Magnetic Resonance in Inhomogeneous Magnetic Fields: Two-Dimensional Long-Lived-Coherence Correlation Spectroscopy	047602
Srinivas Chinthalapalli, Aurélien Bornet, Takuya F. Segawa, Riddhiman Sarkar, Sami Jannin, and Geoffrey Bodenhausen	
Soft Matter, Biological, and Interdisciplinary Physics	
Pathway-Based Mean-Field Model for <i>Escherichia coli</i> Chemotaxis	048101
Guangwei Si, Tailin Wu, Qi Ouyang, and Yuhai Tu	
Estimation Theoretic Measure of Resolution for Stochastic Localization Microscopy	048102
James E. Fitzgerald, Ju Lu, and Mark J. Schnitzer	
Functional Strain-Line Pattern in the Human Left Ventricle	048103
Gianni Pedrizzetti, Elisabeth Kraigher-Krainer, Alessio De Luca, Giuseppe Caracciolo, Jan O. Manguel, Amil Shah, Loira Toncelli, Federico Domenichini, Giovanni Tonti, Giorgio Galanti, Partho P. Sengupta, Jagat Narula, and Scott Solomon	
Unifying Microscopic Mechanism for Pressure and Cold Denaturations of Proteins	048104
Cristiano L. Dias	
Quantifying Screening Ion Excesses in Single-Molecule Force-Extension Experiments	048301
Jonathan Landy, D. B. McIntosh, and O. A. Saleh	
Structure and Dynamics of Loosely Cross-Linked Ionic Microgel Dispersions in the Fluid Regime	048302
P. Holmqvist, P. S. Mohanty, G. Nägele, P. Schurtenberger, and M. Heinen	
Comments	
Comment on “Direct Observation of Charge Ordering in Magnetite Using Resonant Multiwave X-Ray Diffraction”	049701
Joaquin Garcia and Gloria Subias	

(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)

Errata

Publisher's Note: Nonadiabatic Preparation of Spin Crystals with Ultracold Polar Molecules [Phys. Rev. Lett. 109 , 035301 (2012)]	049901
Mikhail Lemeshko, Roman V. Krems, and Hendrik Weimer	



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.