



Temperature and polarization maps from the *Planck* satellite of the microwave sky at 353 GHz before (left) and after (right) BICEP2/Keck filtering. Selected for a Viewpoint in *Physics* and an Editors' Suggestion. [P. A. R. Ade *et al.*, Phys. Rev. Lett. **114**, 101301 (2015)]

NEWSPAPER

PHYSICAL REVIEW LETTERS™

Contents

Articles published 7 March–13 March 2015

VOLUME 114, NUMBER 10

13 March 2015

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

Topological States in a One-Dimensional Fermi Gas with Attractive Interaction	100401
Jonathan Ruhman, Erez Berg, and Ehud Altman	
Two Copies of the Einstein-Podolsky-Rosen State of Light Lead to Refutation of EPR Ideas	100402
Krzysztof Rosołek, Magdalena Stobińska, Marcin Wieśniak, and Marek Żukowski	
Nonlinear Entanglement and its Application to Generating Cat States	100403
Y. Shen, S. M. Assad, N. B. Grosse, X. Y. Li, M. D. Reid, and P. K. Lam	
Asymptotic Bound for Heat-Bath Algorithmic Cooling	100404
Sadeqh Raeisi and Michele Mosca	
 Atom Interferometry in an Optical Cavity	100405
Paul Hamilton, Matt Jaffe, Justin M. Brown, Lothar Maisenbacher, Brian Estey, and Holger Müller	
Spin-Orbital Exchange of Strongly Interacting Fermions in the p Band of a Two-Dimensional Optical Lattice	100406
Zhenyu Zhou, Erhai Zhao, and W. Vincent Liu	
 Entanglement Swapping between Discrete and Continuous Variables	100501
Shuntaro Takeda, Maria Fuwa, Peter van Loock, and Akira Furusawa	
Solution to the Quantum Zermelo Navigation Problem	100502
Dorje C. Brody and David M. Meier	
 Randomized Benchmarking of Single-Qubit Gates in a 2D Array of Neutral-Atom Qubits	100503
T. Xia, M. Lichtman, K. Maller, A. W. Carr, M. J. Piotrowicz, L. Isenhower, and M. Saffman	
Absence of Diffusion in an Interacting System of Spinless Fermions on a One-Dimensional Disordered Lattice	100601
Yevgeny Bar Lev, Guy Cohen, and David R. Reichman	
Quantum Imaging by Coherent Enhancement	100801
Guang Hao Low, Theodore J. Yoder, and Isaac L. Chuang	

Gravitation and Astrophysics

 Joint Analysis of BICEP2/Keck Array and <i>Planck</i> Data	101301
P. A. R. Ade <i>et al.</i> (BICEP2/Keck and Planck Collaborations)	
 Sequestration of Vacuum Energy and the End of the Universe	101302
Nemanja Kaloper and Antonio Padilla	
Reconstructing the Nature of the First Cosmic Sources from the Anisotropic 21-cm Signal	101303
Anastasia Fialkov, Rennan Barkana, and Aviad Cohen	
Measuring the Speed of Light with Baryon Acoustic Oscillations	101304
Vincenzo Salzano, Mariusz P. Dąbrowski, and Ruth Lazkoz	

Elementary Particles and Fields

Search for Monotop Signatures in Proton-Proton Collisions at $\sqrt{s} = 8$ TeV	101801
V. Khachatryan <i>et al.</i> (CMS 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).

Copyright 2015 American Physical Society



Contents (Continued)

Exclusive Window onto Higgs Yukawa Couplings	101802
Alexander L. Kagan, Gilad Perez, Frank Petriello, Yotam Soreq, Stoyan Stoynev, and Jure Zupan	
Effects of Heavy Sea Quarks at Low Energies	102001
Mattia Bruno, Jacob Finkenrath, Francesco Knechtli, Björn Leder, and Rainer Sommer (ALPHA collaboration)	
Atomic, Molecular, and Optical Physics	
Polarization Shaping for Unidirectional Rotational Motion of Molecules	103001
G. Karras, M. Ndong, E. Hertz, D. Sugny, F. Billard, B. Lavorel, and O. Faucher	
Association of Atoms into Universal Dimers Using an Oscillating Magnetic Field	103002
Christian Langmack, D. Hudson Smith, and Eric Braaten	
Two-State Wave Packet for Strong Field-Free Molecular Orientation	103003
Sebastian Trippel, Terry Mullins, Nele L. M. Müller, Jens S. Kienitz, Rosario González-Férez, and Jochen Küpper	
Signatures of Molecular Orbital Structure in Lateral Electron Momentum Distributions from Strong-Field Ionization ...	103004
Ingo Petersen, Jost Henkel, and Manfred Lein	
Molecular Orbital Imaging of the Acetone S_2 Excited State Using Time-Resolved (e , $2e$) Electron Momentum Spectroscopy	103005
Masakazu Yamazaki, Keiya Oishi, Hiroyuki Nakazawa, Chaoyuan Zhu, and Masahiko Takahashi	
Conditional Ramsey Spectroscopy with Synchronized Atoms	103601
Minghui Xu and M. J. Holland	
Nonclassicality Phase-Space Functions: More Insight with Fewer Detectors	103602
Alfredo Luis, Jan Sperling, and Werner Vogel	
Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.	
Hard-X-Ray Directional Dark-Field Imaging Using the Speckle Scanning Technique	103901
Hongchang Wang, Yogesh Kashyap, and Kawal Sawhney	
Gauge Field Optics with Anisotropic Media	103902
Fu Liu and Jensen Li	
☞ Radially Polarized Light for Detection and Nanolocalization of Dielectric Particles on a Planar Substrate	103903
S. Roy, K. Ushakova, Q. van den Berg, S. F. Pereira, and H. P. Urbach	
Theory of the Antibubble Collapse	104501
Denis Nikolaevich Sob'yanin	
Plasma and Beam Physics	
Observation of a Multimode Plasma Response and its Relationship to Density Pumpout and Edge-Localized Mode Suppression	105001
C. Paz-Soldan, R. Nazikian, S. R. Haskey, N. C. Logan, E. J. Strait, N. M. Ferraro, J. M. Hanson, J. D. King, M. J. Lanctot, R. A. Moyer, M. Okabayashi, J-K. Park, M. W. Shafer, and B. J. Tobias	
Pedestal Bifurcation and Resonant Field Penetration at the Threshold of Edge-Localized Mode Suppression in the DIII-D Tokamak	105002
R. Nazikian, C. Paz-Soldan, J. D. Callen, J. S. deGrassie, D. Eldon, T. E. Evans, N. M. Ferraro, B. A. Grierson, R. J. Groebner, S. R. Haskey, C. C. Hegna, J. D. King, N. C. Logan, G. R. McKee, R. A. Moyer, M. Okabayashi, D. M. Orlov, T. H. Osborne, J-K. Park, T. L. Rhodes, M. W. Shafer, P. B. Snyder, W. M. Solomon, E. J. Strait, and M. R. Wade	
Enhancement of Maximum Attainable Ion Energy in the Radiation Pressure Acceleration Regime Using a Guiding Structure	105003
S. S. Bulanov, E. Esarey, C. B. Schroeder, S. V. Bulanov, T. Zh. Esirkepov, M. Kando, F. Pegoraro, and W. P. Leemans	
Condensed Matter: Structure, etc.	
Softening of Roton and Phonon Modes in a Bose-Einstein Condensate with Spin-Orbit Coupling	105301
Si-Cong Ji, Long Zhang, Xiao-Tian Xu, Zhan Wu, Youjin Deng, Shuai Chen, and Jian-Wei Pan	

(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)

Anisotropic Phases of Superfluid ^3He in Compressed Aerogel	105302
J. I. A. Li, A. M. Zimmerman, J. Pollanen, C. A. Collett, and W. P. Halperin	
Anomalous Quantum Glass of Bosons in a Random Potential in Two Dimensions	105303
Yancheng Wang, Wenan Guo, and Anders W. Sandvik	
Spin-Dependent Acoustic Response in the Nonunitary A_1 and A_2 Phases of Superfluid ^3He under High Magnetic Fields	105304
S. Murakawa, A. Yamaguchi, M. Arai, M. Wasai, Y. Aoki, H. Ishimoto, R. Nomura, Y. Okuda, Y. Nagato, S. Higashitani, and K. Nagai	
Molecular to Atomic Phase Transition in Hydrogen under High Pressure	105305
Jeremy McMinis, Raymond C. Clay, Donghwa Lee, and Miguel A. Morales	
Morphological Instability of Grain Boundaries in Two-Phase Coherent Solids	105501
Pierre-Antoine Geslin, Yechuan Xu, and Alain Karma	
Competing Kinetics and He Bubble Morphology in W	105502
Luis Sandoval, Danny Perez, Blas P. Uberuaga, and Arthur F. Voter	
Big Data of Materials Science: Critical Role of the Descriptor	105503
Luca M. Ghiringhelli, Jan Vybiral, Sergey V. Levchenko, Claudia Draxl, and Matthias Scheffler	
From Mild to Wild Fluctuations in Crystal Plasticity	105504
J. Weiss, W. Ben Rhouma, T. Richeton, S. Dechanel, F. Louchet, and L. Truskinovsky	
Distinct Metallization and Atomization Transitions in Dense Liquid Hydrogen	105701
Guglielmo Mazzola and Sandro Sorella	
Local Observation of the Site Occupancy of Mn in a MnFePSi Compound	106101
M. J. Neish, M. P. Oxley, J. Guo, B. C. Sales, L. J. Allen, and M. F. Chisholm	
Condensed Matter: Electronic Properties, etc.	
Universality Class of the Mott Transition	106401
M. Abdel-Jawad, R. Kato, I. Watanabe, N. Tajima, and Y. Ishii	
Strong Localization of Majorana End States in Chains of Magnetic Adatoms	106801
Yang Peng, Falko Pientka, Leonid I. Glazman, and Felix von Oppen	
☞ Signatures of Fractional Exclusion Statistics in the Spectroscopy of Quantum Hall Droplets	106802
Nigel R. Cooper and Steven H. Simon	
Chiral Projected Entangled-Pair State with Topological Order	106803
Shuo Yang, Thorsten B. Wahl, Hong-Hao Tu, Norbert Schuch, and J. Ignacio Cirac	
☞ Approaching Truly Freestanding Graphene: The Structure of Hydrogen-Intercalated Graphene on $6H\text{-SiC}(0001)$	106804
J. Sforzini, L. Nemec, T. Denig, B. Stadtmüller, T.-L. Lee, C. Kumpf, S. Soubatch, U. Starke, P. Rinke, V. Blum, F. C. Bocquet, and F. S. Tautz	
Novel Relativistic Plasma Excitations in a Gated Two-Dimensional Electron System	106805
V. M. Muravev, P. A. Gusikhin, I. V. Andreev, and I. V. Kukushkin	
Topological Index for Periodically Driven Time-Reversal Invariant 2D Systems	106806
David Carpentier, Pierre Delplace, Michel Fruchart, and Krzysztof Gawędzki	
☞ Controlling the Spin of Co Atoms on Pt(111) by Hydrogen Adsorption	106807
Q. Dubout, F. Donati, C. Wäckerlin, F. Calleja, M. Etzkorn, A. Lehnert, L. Claude, P. Gambardella, and H. Brune	
Phase Diagram of Cuprate High-Temperature Superconductors Described by a Field Theory Based on Anharmonic Oxygen Degrees of Freedom	107001
Jenhao Hsiao, Glenn J. Martyna, and Dennis M. Newns	
Glide-Plane Symmetry and Superconducting Gap Structure of Iron-Based Superconductors	107002
Y. Wang, T. Berlijn, P. J. Hirschfeld, D. J. Scalapino, and T. A. Maier	
☞ Detection of a Superconducting Phase in a Two-Atom Layer of Hexagonal Ga Film Grown on Semiconducting GaN(0001)	107003
Hui-Min Zhang, Yi Sun, Wei Li, Jun-Ping Peng, Can-Li Song, Ying Xing, Qinghua Zhang, Jiaqi Guan, Zhi Li, Yanfei Zhao, Shuaihua Ji, Lili Wang, Ke He, Xi Chen, Lin Gu, Langsheng Ling, Mingliang Tian, Lian Li, X. C. Xie, Jianping Liu, Hui Yang, Qi-Kun Xue, Jian Wang, and Xucun Ma	
Tunable Giant Spin Hall Conductivities in a Strong Spin-Orbit Semimetal: $\text{Bi}_{1-x}\text{Sb}_x$	107201
Cüneyt Şahin and Michael E. Flatté	

(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)

Electric-Field-Induced Modification of the Magnon Energy, Exchange Interaction, and Curie Temperature of Transition-Metal Thin Films	107202
M. Oba, K. Nakamura, T. Akiyama, T. Ito, M. Weinert, and A. J. Freeman	
Three-Particle Complexes in Two-Dimensional Semiconductors	107401
Bogdan Ganchev, Neil Drummond, Igor Aleiner, and Vladimir Fal'ko	
Ultrafast Terahertz Probes of Interacting Dark Excitons in Chirality-Specific Semiconducting Single-Walled Carbon Nanotubes	107402
Liang Luo, Ioannis Chatzakis, Aaron Patz, and Jigang Wang	
Exciton Mapping at Subwavelength Scales in Two-Dimensional Materials	107601
Luiz H. G. Tizei, Yung-Chang Lin, Masaki Mukai, Hidetaka Sawada, Ang-Yu Lu, Lain-Jong Li, Koji Kimoto, and Kazu Suenaga	
Polymer, Soft Matter, Biological, and Interdisciplinary Physics	
Identifying Structural Flow Defects in Disordered Solids Using Machine-Learning Methods	108001
E. D. Cubuk, S. S. Schoenholz, J. M. Rieser, B. D. Malone, J. Rottler, D. J. Durian, E. Kaxiras, and A. J. Liu	
Calcium Alternans is Due to an Order-Disorder Phase Transition in Cardiac Cells	108101
Enrique Alvarez-Lacalle, Blas Echebarria, Jon Spalding, and Yohannes Shiferaw	
Emergence of Upstream Swimming via a Hydrodynamic Transition	108102
Chih-kuan Tung, Florencia Ardon, Anubhab Roy, Donald L. Koch, Susan S. Suarez, and Mingming Wu	
 Interactions and Stress Relaxation in Monolayers of Soft Nanoparticles at Fluid-Fluid Interfaces	108301
Valeria Garbin, Ian Jenkins, Talid Sinno, John C. Crocker, and Kathleen J. Stebe	
Friction Boosted by Equilibrium Misalignment of Incommensurate Two-Dimensional Colloid Monolayers	108302
Davide Mandelli, Andrea Vanossi, Nicola Manini, and Erio Tosatti	
Burstiness and Aging in Social Temporal Networks	108701
Antoine Moinet, Michele Starnini, and Romualdo Pastor-Satorras	