

Planck CMB temperature data (blue to red spans 100 μK) from 25 galaxy clusters showing a dipole signal from rotating intracluster gas. Selected for an Editors' Suggestion. [Samuel Goldstein and J. Colin Hill, Phys. Rev. Lett. **137**, 161001 (2026)]

NEWSPAPER

PHYSICAL REVIEW LETTERS

Contents

Articles published 10 October–16 October 2026

VOLUME 137, NUMBER 16 16 October 2026

Quantum Information, Science, and Technology

Geometric Optimization over Quantum State Spaces: Tight Uncertainty Relations and Resource Certification 160201
Ma-Cheng Yang and Cong-Feng Qiao
Far-from-Equilibrium Thermodynamics of Non-Abelian Thermal States 160401
Franklin L. S. Rodrigues and Eric Lutz
Magnetic Domains Stabilized by Symmetry-Protected Zero Modes 160402
Pavel Kos, Dominik S. Wild, and Kristian Knakkergaard Nielsen
Superextensive Charging Power in the Absence of Global Operations 160403
Anupam Sarkar, Sheryl Mathew, and Sibasish Ghosh
Digital Dissipative State Preparation for Frustration-Free Gapless Quantum Systems 160404
Johannes Feldmeier, Yu-Jie Liu, Mikhail D. Lukin, and Soonwon Choi
Lévy-Khintchine Structure Enables Fast-Forwardable Lindbladian Simulation 160405
Minbo Gao, Zhengfeng Ji, and Chenghua Liu
Thermodynamic Uncertainty Relation with Quantum Feedback 160406
Ryotaro Honma and Tan Van Vu
Distributed Quantum Simulation 160601
Tianfeng Feng, Jue Xu, Wenjun Yu, Zekun Ye, Penghui Yao, and Qi Zhao
Large-Scale Implementation of Quantum Subspace Expansion with Classical Shadows 160602
Laurin E. Fischer, Daniel Bultrini, Timothée Dao, Ivano Tavernelli, and Francesco Tacchino
Multipartite Mixed-Species Entanglement over a Quantum Network 160801
D. Main, P. Drmota, E. M. Ainley, A. Agrawal, D. Webb, S. Saner, O. Băzăvan, B. C. Nichol, R. Srinivas, D. P. Nadlinger, G. Araneda, and D. M. Lucas
Bayesian Phase Stabilization at the Shot-Noise Limit for Scalable Quantum Networks 160802
Guang-Cheng Liu, Chao-Hui Xue, Fa-Xi Chen, Ming-Yang Zheng, Yi Yang, Li-Bo Li, Bin Wang, Bo-Wen Yang, Hai-Feng Jiang, Yong Wan, Ye Wang, Jiu-Peng Chen, Qiang Zhang, and Jian-Wei Pan

Cosmology, Astrophysics, and Gravitation

Evidence of Galaxy Cluster Rotation and Intrahalo Gas Motions in the Cosmic Microwave Background 161001
Samuel Goldstein and J. Colin Hill
Universal Closed Form for Dynamical Love Numbers of Black Holes 161401
Mikhail P. Solon
Neutrino Emissivity in Δ-Direct-Urca Processes inside Neutron Stars 161402
Yogeesh N, Monika Sinha, and Vishal Parmar

(Continued Inside)

This paper was highlighted in the APS publication *Physics* (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 2026 American Physical Society

0031-9007(20261016)137:16;1-4

Particles and Fields

Perturbative Approach to Symmetric Mass Generation 161601
Simon M. Martin and Tarun Grover

Hidden Simplicity in AdS Spinning Mellin Amplitudes via Scaffolding 161602
Song He (何颂), Xiang Li (李想), Yuyu Mo (莫裕宇), and Dongyu Yang (杨东昱)

Geometry of In-In Correlators 161603
Ross Glew

Proton's Isovector Parton Distribution Function with Updated Analysis of Large-Momentum Lattice Data 161901
Xiangdong Ji and Yushan Su

Real-Time String Dynamics in a 2 + 1D Non-Abelian Lattice Gauge Theory: String Breaking, Glueball Formation, Baryon Blockade, and Tension Reduction 161902
Giovanni Cataldi, Simone Orlando, and Jad C. Halimeh

Nuclear Physics

Particle Correlations in Jets 162301
Wenbin Zhao, Volker Koch, and Feng Yuan

Time-Dependent Wave-Packet Approach to Reactions for Quantum Computation 162501
Evan Rule and Ionel Stetcu

Precision Hypernuclear Structure from Interaction Cross Sections 162502
Carlos A. Bertulani

Most Degenerate Chiral Doublet Bands in Nuclei 162503
W. Z. Xu (许文政), S. Y. Wang (王守宇), G. S. Li (李广顺), H. F. Bai (白洪斐), X. D. Wang (王旭东), E. H. Wang (王恩宏), J. G. Wang (王建国), L. Mu (穆琳), X. C. Han (韩星池), C. Liu (刘晨), B. Qi (亓斌), H. Jia (贾慧), Y. J. Li (李英健), G. Y. Li (李广有), S. Q. Zuo (左思琪), L. Zhu (祝霖), R. J. Guo (郭睿巨), X. Xiao (肖骁), Z. Q. Li (李志泉), Y. D. Fang (方永得), Y. H. Qiang (强赟华), B. Ding (丁兵), M. L. Liu (柳敏良), F. F. Zeng (曾凡斐), A. Rohilla, S. Guo (郭松), and X. H. Zhou (周小红)

$^{16}\mathrm{O}(\mathrm{p},\gamma)^{17}\mathrm{F}$ Reaction and the C and O Isotopic Ratios in Red Giant Branch Stars 162701
D. Robb *et al.* (LUNA Collaboration)

Atomic, Molecular, and Optical Physics

Photon-Statistics Time Delay in Quantum Attosecond Photoelectron Interferometry 163201
Liding Li, Xu Zhang, Shouyu Xiao, Yang Li, Peixiang Lu, and Yueming Zhou

Transient Alignment of Distinct *l*-Doubling Populations via Centrifugal Distortion Precompensation 163202
Inbar Sternbach, Kfir Rutman Moshe, Amit Beer, Soumitra Hazra, and Sharly Fleischer

High-Performance Quantum Frequency Conversion from Ultraviolet to Telecom Band 163601
Yi Yang, Bin Wang, Ji-Chao Lin, Yang Gao, Xin Li, Jiu-Peng Chen, Lei Hou, Ye Wang, Yong Wan, Xiu-Ping Xie, Ming-Yang Zheng, Qiang Zhang, and Jian-Wei Pan

Magnon Kerr Effect in a Magnetic Thin Film Strongly Coupled to a Microwave Resonator 163602
Davit Petrosyan, Hiroki Matsumoto, Hanchen Wang, Jamal Ben Youssef, Richard Schlitz, William Legrand, and Pietro Gambardella

First-Principles Calculations of Internal Conversion Processes in Spin Defects 163603
Stefano Paolo Villani, Yu Jin, and Giulia Galli

Minimum Energy and Photon Content in *PT*-Symmetric Metamaterials 163604
J. B. Pendry and S. A. R. Horsley

Physics of Fluids, Earth & Planetary Science, and Climate

Exact Coherent Structures as Building Blocks of Turbulence on Spatially Extended Domains 164001
Dmitriy Zhigunov and Jacob Page

Thin-Film Drainage Becomes Singular at Saddles 164002
Simeon Djambov, Alice Marcotte, François Gallaire, and Pier Giuseppe Ledda

(Continued on Preceding Page)

This paper was highlighted in the APS publication *Physics* (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)

Plasma and Solar Physics, Accelerators and Beams

Statistical Limitations on Detecting Diamagnetic Suppression of Reconnection at Earth's Magnetopause 165201
Nicolas Aunai, Bayane Michotte de Welle, Ambre Ghisalberti, and Benoit Lavraud

Local Relaxation and Scale-Dependent Alignment in Compressible, Magnetized Turbulence 165202
James R. Beattie and Amitava Bhattacharjee

Condensed Matter and Materials

Multiterminal Quasiballistic Josephson Effect in Monocrystalline Gold 166001
K. B. Polevoy, G. A. Bobkov, D. S. Kalashnikov, A. G. Shishkin, I. V. Trofimov, A. M. Bobkov, E. A. Sedov, E. A. Krivko, M. A. Tarkhov, I. V. Bobkova, and V. S. Stolyarov

Topological Defects Control Dynamic Crossover in Glass-Forming Liquids 166101
Y. J. Lü, C. C. Jin, Y. J. Hou, K. Yang, H. R. Qin, Z. W. Wu, and W. H. Wang

Hybrid *Ab Initio* and Empirical Machine Learning Models for the Potential Energy Surface 166102
Pablo Peña-Cano and Pablo M. Piaggi

Observation of Superlubricity at Commensurate Moiré Graphite Interfaces 166201
Weipeng Chen, Jin Wang, Quanshui Zheng, and Zhanghui Wu

Insulating Out-of-Plane Transport in Anisotropic Metals: The Case of Sr_2RuO_4 and Related Layered Oxides 166301
Sophie Beck, Matthew Shammami, Lorenzo Van Muñoz, Jason Kaye, Antoine Georges, and Jernej Mravlje

Restoring the Surface Magnetic Gap in $MnBi_2Te_4$ 166401
Ce Bian, Hengxin Tan, and Wenhui Duan

Transport and Temperature: Exact Spectrum and Drude Weight for the One-Dimensional Infinite-U Hubbard Model 166501
Shuo Liu, Yuhao Ma, Hitesh J. Changlani, Philip W. Phillips, and B. Andrei Bernevig

Revealing the Nature of the Charge Density Wave Order of $ErTe_3$ via Raman Scattering under Anisotropic Strain 166502
Théotime Freitas, Mattia Udina, Alexandr Alekhin, Niloufar Nilforoushan, Sarah Houver, Alain Sacuto, Benito A. Gonzalez, Ian R. Fisher, Indranil Paul, and Yann Gallais

Wilson-Loop-Ideal Bands and General Idealization 166601
Awwab A. Azam, Biao Lian, Shinsei Ryu, and Jiabin Yu

Orbitally Tuned Composite-Fermion Pairing Transitions in Bilayer Graphene 166602
Ravi Kumar, Tomer Firon, André Haug, Misha Yutushui, Alon Ner Gaon, Kenji Watanabe, Takashi Taniguchi, David F. Mross, and Yuval Ronen

Interacting Chern Insulator Transition on the Sphere: Revealing the Gross-Neveu-Yukawa Criticality 166603
Zhi-Qiang Gao, Taige Wang, and Dung-Hai Lee

Orbitronics: Orbit-Spin Interconversions for Long-Range Orbital Propagation Enabled by Spin Current 166701
Melissa Yactayo, A. Pezo, J. L. Ampuero, M. Tian, L. Badie, J. Quispe-Marcatoma, C. V. Landauro, Y. Xu, Sébastien Petit-Watelot, Michel Hehn, A. Fert, and J.-C. Rojas-Sánchez

Fourier-Space Approach to Physics-Informed Magnetization Reconstruction from Nitrogen-Vacancy Measurements 166702
Alexander Setescak, Florian Bruckner, Dieter Suess, Young-Gwan Choi, Hayden Binger, Lotte Boer, Chenhui Zhang, Hyunsoo Yang, Claire Donnelly, Uri Vool, and Claas Abert

Optical Poling of a Quantum Ferroelectric Metal across the Order-Disorder Phase Transition 166801
Mohamed Kandil, Yasuhide Tomioka, Yafei Ren, Ryan Comes, Isao H. Inoue, and Wencan Jin

Statistical Physics; Classical, Nonlinear, and Complex Systems

Physics of Local Optimization in Complex Disordered Systems 167401
Mutian Shen, Gerardo Ortiz, Zhiqiao Dong, Martin Weigel, and Zohar Nussinov

Nested Hyperedges Promote the Onset of Collective Transitions but Suppress Explosive Behavior 167402
Federico Malizia, Andrés Guzmán, Federico Battiston, and István Z. Kiss

Preferential Attachment with Local Flexibility 167403
Tingyu Zhao, Balázs Maga, Pierfrancesco Dionigi, Gergely Ódor, Kyle Soni, Anastasiya Salova, Bingjie Hao, Miklós Abért, and István A. Kovács

(Continued on Preceding Page)

This paper was highlighted in the APS publication *Physics* (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)

Polymers, Chemical Physics, Soft Matter, and Biological Physics

Thermodynamically Consistent Machine Learning Potentials for Constant-Potential Simulations 168001
Zichen Song, Jiaqi Wang, Jian Han, and Lei Li

Stress Relaxation Driven by Elementary Plastic Events in Nonaging Liquid Foams 168201
Florian Schott, Benjamin Dollet, Christian M. Schlepütz, Cyrille Claudet, Stefan Gstöhl, Rajmund Mokso, Stéphane Santucci, and Christophe Raufaste

Errata

Erratum: Dynamical Orbital Angular Momentum Induced by Circularly Polarized Phonons [Phys. Rev. Lett. **137**, 066301 (2026)] 169901
Dapeng Yao, Dongwook Go, Yuriy Mokrousov, and Shuichi Murakami

This paper was highlighted in the APS publication *Physics* (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).

Physics
spotlighting exceptional research

The American Physical Society's free online publication, *Physics* (physics.aps.org), provides thought-provoking analysis and spotlights exceptional research.