



As the length of the gas cell in a laser wakefield accelerator increases from 3 to 40 mm, camera images (top) of the resulting x-ray beam and tracks (bottom) of the electron energy reveal that beyond ~10 mm, a second burst of lower-energy electrons appears, increasing the x-ray flux.
[J. C. Wood, *et al.*, Phys. Rev. Lett. **137**, 105001 (2026)]

NEWSPAPER

PHYSICAL REVIEW LETTERS

Contents

Articles published 29 August–4 September 2026

VOLUME 137, NUMBER 10

4 September 2026

Quantum Information, Science, and Technology

Experimental Multipartite Entanglement Detection with Minimal-Size Correlations	100201
Dian Wu, Fei Shi, Jia-Cheng Sun, Bo-Wen Wang, Xue-Mei Gu, Giulio Chiribella, Qi Zhao, and Jian Wu	
Analytically Continuing the Randomized Measurement Toolbox	100202
Akash Vijay, Ayush Raj, Jonah Kudler-Flam, Benoît Vermersch, Andreas Elben, and Laimei Nie	
Entanglement Structure and Matrix Inequalities from Isotypic Measurements	100203
Albert Rico, Dmitry Grinko, Robin Krebs, and Lin Htoo Zaw	
Many-Body Cages: Disorder-Free Glassiness from Flat Bands in Fock Space and Many-Body Rabi Oscillations	100401
Tom Ben-Ami, Markus Heyl, and Roderich Moessner	
Symmetry-Driven Thermalization via Finite de Finetti Theorems	100402
Uttam Singh and Nicolas J. Cerf	
Two-Tooth Bosonic Quantum Comb for Temporal-Correlation Sensing	100403
Shaojiang Zhu, Xinyuan You, Alexander Romanenko, and Anna Grassellino	
Qubit Syndrome Measurements with a High-Fidelity Rb-Cs Rydberg Gate	100601
J. Miles, M. T. Lichtman, A. M. Scott, J. Scott, S. A. Norrell, M. J. Bedalov, D. A. Belknap, D. C. Cole, S. Y. Eubanks, M. Gillette, P. Gokhale, J. Goldwin, M. Iliev, R. A. Jones, K. W. Kuper, D. Mason, P. T. Mitchell, J. D. Murphree, N. A. Neff-Mallon, T. W. Noel, A. G. Radnaev, I. V. Vinogradov, and M. Saffman	
Entanglement-Enhanced Quantum Metrology via Alternating In-Phase and Quadrature Modulation	100801
Jihao Ma, Jiahao Huang, and Chaohong Lee	
Spectator Leakage Suppression via Invariant Subspace Engineering for CZ Gates in Superconducting Quantum Circuits	100802
Peng Wang, Bin-Han Lu, Tian-Le Wang, Sheng Zhang, Zhao-Yun Chen, Hai-Feng Zhang, Ren-Ze Zhao, Xiao-Yan Yang, Ze-An Zhao, Zhuo-Zhi Zhang, Xiang-Xiang Song, Yu-Chun Wu, Peng Duan, and Guo-Ping Guo	
Room-Temperature Storage of Entanglement in a Silicon Carbide Quantum Node	100803
Shuo Ren, Rui-Jian Liang, Qi-Cheng Hu, Zhen-Xuan He, Ji-Yang Zhou, Wu-Xi Lin, Zhi-He Hao, Tao Tu, Jin-Shi Xu, Chuan-Feng Li, and Guang-Can Guo	

Cosmology, Astrophysics, and Gravitation

Novel Kinetic Sunyaev-Zel'dovich Estimator for Electron-Electron Correlations	101001
Neha Anil Kumar, Mesut Çalışkan, Selim C. Hotinli, Kendrick Smith, and Marc Kamionkowski	
Distinguishing the Nature of Dark Matter by Mapping Cosmic Filaments from Lyman-Alpha Emission	101002
Yizhou Liu, Liang Gao, Shihong Liao, Kai Zhu, Yingjie Jing, and Huijie Hu	
Emergence of Critical Phenomena from the Black Hole Interior	101401
Caiying Shao, Jun-Qi Guo, Yu Tian, and Hongbao Zhang	

Particles and Fields

Giant Graviton Integrated Correlators at Finite Coupling and All Orders in $1/N$	101601
Augustus Brown, Daniele Dorigoni, and Congkao Wen	
Limiting the Parameter Space for Unstable eV-Scale Neutrinos Using IceCube Data	101801
R. Abbasi <i>et al.</i> (IceCube Collaboration)	

(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(20260904)137:10;1-S

	Unconventional Materials for Light Dark Matter Detection	101802
	Yonit Hochberg, Dino Novko, Rotem Ovidia, and Antonio Politano	
	Search for New Physics via Low-Energy Electron Recoils with a 4.2 Tonne-Year Exposure from the LZ Experiment	101803
	D. S. Akerib <i>et al.</i> (The LZ Collaboration)	
	Fundamental Impossibility of a Superradiant Neutrino Laser	101804
	Yu-Kun Lu, Hanzhen Lin (林翰桢), and Wolfgang Ketterle	
	Can Bose-Einstein Condensates Enhance Radioactive Decay?	101805
	Hanzhen Lin (林翰桢), Yu-Kun Lu, and Wolfgang Ketterle	
	Search for Associated Production of a Higgs Boson and Two Vector Bosons via Vector-Boson Scattering at $\sqrt{s} = 13$ TeV	101806
	A. Hayrapetyan <i>et al.</i> (CMS Collaboration)	
	Measurement of Reactor Antineutrino Oscillations with 1.46 Kilotonne-Years of Data at SNO+	101807
	M. Abreu <i>et al.</i> (SNO+ Collaboration)	
	Infrared Singularities of Multileg Amplitudes with a Massive Particle at Three Loops	101901
	Einan Gardi and Zehao Zhu	
	Nuclear Physics	
	Emergence of Thermal Recoil Jets in High-Energy Heavy-Ion Collisions	102301
	Peng Jing, Yichao Dang, Lejing Zhang, Yang He, Shanshan Cao, Li Yi, and Xin-Nian Wang	
	Identification of ^{17}Na Ground State and Mirror Symmetry Violation with ^{17}C	102501
	L. Ni, Z. C. Xu, Y. Jin, Z. H. Li, K. W. Brown, H. Hua, S. M. Wang, C. Y. Niu, A. K. Anthony, J. Barney, R. J. Charity, D. Dell'Aquila, J. M. Elson, J. Estee, G. Jhang, J. G. Li, W. G. Lynch, N. Michel, L. G. Sobotka, S. Sweany, F. C. E. Teh, A. Thomas, C. Y. Tsang, M. B. Tsang, H. Y. Wu, C. X. Yuan, and K. Zhu	
	Best Reaction Target to Determine Proton Distribution Radii of Atomic Nuclei	102502
	Jun-Yao Xu (徐俊瑶), Bao-Hua Sun (孙保华), Isao Tanihata (谷畑勇夫), Satoru Terashima (寺嶋知), Jian-Wei Zhao (赵建伟), Ji-Chao Zhang (张寂潮), Ge Guo (郭戈), Shi-Tao Wang (王世陶), Lei Shen (沈雷), Jun Su (苏军), Xiao-Dong Xu (徐晓栋), Andrej Prochazka, Guang-Shuai Li (李光帅), Xiu-Lin Wei (魏秀琳), Chang-Jian Wang (王长建), Feng Wang (王枫), Meng Wang (王萌), Jing Wang (王晶), Liu-Chun He (何臻春), Chuan-Ye Liu (刘传业), Wen-Jian Lin (林文健), Wei-Ping Lin (林炜平), Zhong Liu (刘忠), Pei-Pei Ren (任培培), Yu Zhang (张宇), Mei-Xue Zhang (张湄雪), Ya-Zhou Sun (孙亚洲), Zhi-Yu Sun (孙志宇), Chen-Gui Lu (鲁辰桂), Xue-Heng Zhang (章学恒), Jin-Rong Liu (刘锦蓉), and Tian-Yu Wu (吴天宇)	
	Atomic, Molecular, and Optical Physics	
	Critical Quantum Metrology beyond Adiabaticity in Collectively Pumped Superradiance	103601
	Yoav Shimshi and Ephraim Shahmoon	
	Quantum Magnetometry with Orientation beyond Steady-State Limits in Cavity-Magnon Systems	103602
	Zheng Liu, Ding-hui Xu, Yi-jia Yang, Yu-qiang Liu, and Chang-shui Yu	
	Optimizing Optomechanical Detection by Spatially Mapping and Masking Measurement Inefficiency	103603
	Youssef Tawfik, Shan Hao, and Thomas P. Purdy	
	Generation of Fully Phase-Controlled Two-Photon Entangled States	103604
	Ian Ford, Adrien Amour, and Matthias Keller	
	Passive Quantum State Transfer in a Dispersion-Engineered Waveguide	103605
	Zeyu Kuang, Oliver Diekmann, Lorenz Fischer, Stefan Rotter, and Carlos Gonzalez-Ballester	
	Spin-1 Weyl Points in Isotropic Chiral Metamaterials	103801
	Ekin Gunes Ozaktas and Shanhui Fan	
	Close Encounters between Periodic Light and Periodic Arrays of Quantum Emitters	103802
	Frieder Lindel, Carlos J. Sánchez Martínez, Johannes Feist, and Francisco J. García-Vidal	
	Optical Thermodynamics beyond the Weak Nonlinearity Limit	103803
	Emily Kabat, Shrohan Mohapatra, P. G. Kevrekidis, and Tsampikos Kottos	

(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

High-Flux X-Ray Emission due to Injection into a Laser-Wakefield Accelerator beyond Its Depletion Length	105001
J. C. Wood, K. Pöder, N. C. Lopes, J. M. Cole, S. Alatabi, A. J. Hughes, P. Foster, C. Kamperidis, O. Kononenko, S. P. D. Mangles, D. Neely, C. A. J. Palmer, D. R. Rusby, G. Sarri, M. J. V. Streeter, D. R. Symes, J. R. Warwick, and Z. Najmudin	
Resonant Excitation of Surface Plasmon for Wakefield Acceleration by Beating GW Lasers on Smooth Cylindrical Surface	105002
Bifeng Lei, Hao Zhang, Alexandre Bonatto, Bin Liu, Javier Resta-López, Matt Zepf, Guoxing Xia, and Carsten Welsch	
 Topological Arrest of Ballooning Modes in Nonaxisymmetric Toroidal Plasmas	105101
Amitava Bhattacharjee	
 Experimental Evidence for Coronal Mass Ejection Suppression in Strong Stellar Magnetic Fields	105201
S. N. Chen, K. Burdonov, W. Yao, J. D. Alvarado-Gómez, C. Argiroffi, J. Béard, S. Bolanós, R. Bonito, A. Ciardi, I. Cohen, O. Cohen, J. J. Drake, S. Orlando, and J. Fuchs	

Condensed Matter and Materials

Fermi-Level Reduction Drives Vacancy-Mediated Dislocation Motion	106101
Zhi-Qiao Li, Wen-Tao Zhang, Jing-Jing Chen, Lu-Hua Wang, Xu-Jun Su, and Ke Xu	
Nucleation, Creep, and Dynamic Tensile Fracture Are Described by Extended LEFM	106102
Yuval Paz, Meng Wang, Mokhtar Adda-Bedia, and Jay Fineberg	
 Phonon-Assisted Broadband Light Emission in Strain-Gradient-Modulated Diamond Nanoribbons	106201
Yuxuan Zhang, Shuo Qiao, Anliang Lu, Xiaohui Sun, Jun Lyu, Jinlong Du, Yang Lu, and Lin Yang	
Quantized Transconductance Emerges from Nonsymmetric Quantum Fluctuations	106301
K. Mertiri and Yuli V. Nazarov	
 Giant Thermopower Changes Related to the Resistivity Maximum and Colossal Magnetoresistance in EuCd_2P_2	106302
Judith Grafenhorst, Sarah Krebber, Kristin Kliemt, Cornelius Krellner, Elena Hassinger, and Ulrike Stockert	
 Europium Valence in Pressurized EuO	106401
Christoph J. Sahle, Alessandro Mirone, Robert P. C. Bauer, Harald Müller, Sylvain Petitgirard, Kari O. Ruotsalainen, Michael Hanfland, and John S. Tse	
Light-Induced Transient Polarization Reversal in Rhombohedrally Stacked Bilayer Transition Metal Dichalcogenides via an Electronic Mechanism	106402
Xiangzhou Zhu, Stefano Mocatti, and Matteo Calandra	
Competition between Geometrical Frustration and the Kondo Effect in CePdAl Revealed by High-Resolution Magnetization	106501
Yusei Shimizu, Shota Nakamura, Yoichi Ikeda, Yohei Kono, Shunichiro Kittaka, Toshiro Sakakibara, and Yosikazu Isikawa	
Emergent Gauge Flux and Spin Ordering in Magnetized Triangular Spin Liquids: Applications to Hofstadter-Hubbard Model	106502
Jiahao Yang (杨家豪), Hao Tian, Si-Yu Pan, and Gang v. Chen	
 Electronic Tuning of the Soft-Phonon Transport Anomaly in $\text{Ta}_2\text{Ni}(\text{S}_x\text{Se}_{1-x})_5$	106503
Yuan-Shan Zhang, Masahiko Isobe, Hidenori Takagi, and Dennis Huang	
 Chern-Simons-Matter Conformal Field Theory on the Fuzzy Sphere: Higgs Transition of the Kalmeyer-Laughlin Chiral Spin Liquid	106504
Zheng Zhou (周正), Chong Wang (王翀), and Yin-Chen He (何寅琛)	
Terahertz Magneto-Photocurrents in the Topological Insulator Bi_2Se_3 Probe Its Topological Surface States	106601
Chihun In, Genaro Bierhance, Deepti Jain, Tom S. Seifert, Oliver Gueckstock, Roberto Mantovan, Seongshik Oh, and Tobias Kampfrath	
 Collinear p -Wave Magnetism and Hidden Orbital Ferrimagnetism	106701
Valentin Leeb and Johannes Knolle	
 Kinetic Kagome Magnetism: From Self-Trapping RVB Polarons to Semiclassical Correlations	106702
Yufei Pei, Shuai A. Chen, Claudio Castelnovo, and Roderich Moessner	

(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)

Contents (Continued)

	Orbital Magnetization and Magnetic Susceptibility of Interacting Electrons	106703
	Jian Kang, Minxuan Wang, and Oskar Vafek	
	Symmetry Classification of Nonrelativistic Hidden Spin Polarization in Noncollinear Magnets	106704
	Yuzhong Hu, Pan Zhou, Baoru Pan, PengBo Lyu, and Lizhong Sun	
	Quantum Geometry of Altermagnetic Magnons Probed by Light	106901
	Rundong Yuan, Wojciech J. Jankowski, Ka Shen, and Robert-Jan Slager	
	Q-Factor Matching for Femtosecond Near-Field Enhancement in Hybrid Metal-Dielectric Metasurfaces	106902
	Yaolong Li, Xu Shi, Yuxin Zhang, Lin Qiao, Hong Yang, Shufeng Wang, Guowei Lyu, Yasutaka Matsuo, Xiaoyong Hu, Qihuang Gong, and Hiroaki Misawa	
	Dynamical Breaking of Inversion Symmetry, Strong Second Harmonic Generation, and Nonequilibrium Ferroelectricity with Nonlinear Phonons	106903
	Egor I. Kiselev	
	Polymers, Chemical Physics, Soft Matter, and Biological Physics	
	Colloidal Suspensions Can Have Nonzero Angles of Repose below the Minimal Value for Athermal Frictionless Particles	108201
	Jesús Fernández, Loïc Vanel, and Antoine Bérut	



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.