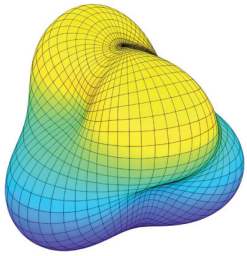

Excited state of ^{80}Zr exhibiting tetrahedral symmetry. [F. F. Xu and P. W. Zhao, Phys. Rev. Lett. **136**, 232503 (2026)]

NEWSPAPER

PHYSICAL REVIEW LETTERS

Contents

Articles published 6 June–12 June 2026

VOLUME 136, NUMBER 23 12 June 2026

Quantum Information, Science, and Technology

Observation of Five Distinct Localization Phases in a 1D Floquet System 230401
Yao Qin, Chao Yang, Jiankun Zhu, Weitao Wu, Zhixin Duan, Rufang Zhao, Yuxiang Guo, Jizhou Wu, Sheng-Jun Yang, Yucheng Wang, and Jingyun Fan

Exotic Critical States as Fractional Fermi Seas in the One-Dimensional Bose Gas 230402
Alvise Bastianello, Yi Zeng, Sudipta Dhar, Zekui Wang, Xudong Yu, Milena Horvath, Grigori E. Astrakharchik, Yanliang Guo, Hanns-Christoph Nägerl, and Manuele Landini

Magic Barrier before Thermalization 230403
Lukas Ebner, Berndt Müller, Andreas Schäfer, Leonhard Schmotzer, Clemens Seidl, and Xiaojun Yao

Real-Time Sign-Problem-Suppressed Quantum Monte Carlo Algorithm for Noisy Quantum Circuit Simulations 230601
Tong Shen and Daniel A. Lidar

Coupling a ^{73}Ge Nuclear Spin to an Electrostatically Defined Quantum Dot in Silicon 230602
Paul Steinacker, Gauri Goenka, Rocky Yue Su, Tuomo Tanttu, Wee Han Lim, Santiago Serrano, Tim Botzem, Jesus D. Cifuentes, Shao Qi Lim, Jeffrey C. McCallum, Brett C. Johnson, Fay E. Hudson, Kok Wai Chan, Christopher C. Escott, Andre Saraiva, Chih Hwan Yang, Vincent Mourik, Andrea Morello, Andrew S. Dzurak, and Arne Laucht

Retrocausal Capacity of a Quantum Channel: Communicating through Noisy Closed Timelike Curves 230801
Kaiyuan Ji, Seth Lloyd, and Mark M. Wilde

Adaptable Route to Fast Coherent State Transport via Bang-Bang-Bang Protocols 230802
Ya-Tang Yu, Hsin-Lien Lee, Shao-Hung Chung, Ting Hsu, Guin-Dar Lin, Ying-Cheng Chen, and H. H. Jen

Efficient Implementation of a Single-Qutrit Gate Set via Coherent Control 230803
Xiang-Min Yu, Xiang Deng, Wen Zheng, Wei Xin, Tao Zhang, Hanxin Che, Kun Zhou, Haoyu Zhou, Yangyang Ge, Zhenchuan Zhang, Wanli Huang, Haoyang Cai, Xianke Li, Jie Zhao, Xinsheng Tan, Yu Zhang, Shao-Xiong Li, and Yang Yu

Cosmology, Astrophysics, and Gravitation

Energy Distribution of the Galactic Center Excess's Sources 231001
Florian List, Yujin Park, Nicholas L. Rodd, Eve Schoen, and Florian Wolf

Newman-Janis Algorithm from Taub-Newman-Unti-Tamburino Instantons 231401
Joon-Hwi Kim

Primordial-Black-Hole-Based Pathways to Little Red Dots 231402
Valerio De Luca, Loris Del Grosso, Gabriele Franciolini, Konstantinos Kritos, Emanuele Berti, Daniel J. D'Orazio, and Joseph Silk

(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).

0031-9007(20260612)136:23;1-2

Lorentz Violation in Emergent Gravity and Its Cosmological Consequences 231501
Raymond Isichei and João Magueijo

Particles and Fields

First Search for $B \to X_s \nu\bar{\nu}$ Decays 231801
M. Abumusabh *et al.* (The Belle II Collaboration)

Search for Feebly Interacting Particles in B Decays with Missing Energy at Belle 231802
M. Abumusabh *et al.* (The Belle and Belle II Collaborations)

Unveiling Light-Quark Yukawa Flavor Structure via Dihadron Fragmentation at Lepton Colliders 231901
Qing-Hong Cao, Xin-Kai Wen, Bin Yan, and Shu-Tao Zhang

Analytical Soft Functions for Heavy-Quark Final States at Hadron Colliders 231902
Ze Long Liu and Pier Francesco Monni

Precise Measurement of the Chromoelectric Dipole Moment of the Charm Quark 231903
M. Ablikim *et al.* (BESIII Collaboration)

First Measurement of Time-Dependent CP Violation in the Flavor-Changing Neutral-Current Decay $B^0 \to K^0_S \mu^+ \mu^-$ 231904
R. Aaij *et al.* (LHCb Collaboration)

Nuclear Physics

D-Meson Production via Sequential Hadronization in High-Energy Nuclear Collisions 232301
Zi-Xuan Xu, Wei Dai, Ben-Wei Zhang, Jiaxing Zhao, and Pengfei Zhuang

New Ground State in ^{149}La Removes Two-Neutron-Separation-Energy Anomaly in Lanthanum Isotopes 232501
S. Kimura, M. Wada, H. Haba, Y. Hirayama, H. Ishiyama, Y. Ito, T. Niwase, M. Rosenbusch, P. Schury, H. Ueno, Y. X. Watanabe, and Y. Yamanouchi

Search for Double Beta Decays of ^{134}Xe with EXO-200 Phase II 232502
S. Al Kharusi *et al.* (EXO-200 Collaboration)

Mass Probe of Tetrahedral Symmetry in Atomic Nuclei 232503
F. F. Xu (许方方) and P. W. Zhao (赵鹏巍)

Beta-Delayed Neutron Emission of $N = 84$ ^{132}Cd 232504
M. Madurga *et al.*

Atomic, Molecular, and Optical Physics

Momentum-Resolved Two-Dimensional Spectroscopy as a Probe of Nonlinear Quantum Field Dynamics 233401
Duilio De Santis, Alex Gómez-Salvador, Nataliia Bazhan, Sebastian Erne, Maximilian Prüfer, Claudio Guarcello, Davide Valenti, Jörg Schmiedmayer, and Eugene Demler

Efimov Effect in Ultracold Microwave-Shielded Polar Molecules 233402
Shayamal Singh and Chris H. Greene

Magneto-Optical Trapping of a Metal Hydride Molecule 233403
Jinyu Dai, Benjamin Riley, Qi Sun, Debayan Mitra, and Tanya Zelevinsky

Pound-Drever-Hall Method for Superconducting-Qubit Readout 233601
Ibukunoluwa Adisa, Won Chan Lee, Kevin C. Cox, and Alicia J. Kollár

Hybrid SU(1,1) Interferometry in Optomechanics 233602
Chao Meng, Emil Zeuthen, and Polina R. Sharapova

Cavity-Free Mode Control of Superfluorescence from Thermal Gas 233603
H. Maeda and K. Kitano

Nanomechanical Sensor Resolving Impulsive Forces below Its Zero-Point Fluctuations 233604
Martynas Skrabulis, Martin Colombano Sosa, Nicola Carlon Zambon, Andrei Militaru, Massimiliano Rossi, Martin Frimmer, and Lukas Novotny

Optical Tautochrone and Squeezing Dynamics in Nonuniform Lattices 233801
Ioannis Kiorpelidis, Matthias Heinrich, Alexander Szameit, Georgios A. Siviloglou, and Konstantinos G. Makris

(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)

Condensed Matter and Materials

Electrical Switching of Strain Gradients and 90° Domain Walls via Hidden Polar-Acoustic Coupling in $PbTiO_3$ 236101
Yajun Zhang, Konstantin Shapovalov, Xu He, Chang Liu, Huadong Yong, Xingyi Zhang, Jie Wang, Kun Zhou, and Philippe Ghosez

Quantifying Lattice Strains in Elastically Deformed Covalent Crystals 236102
Jiayi Li, Heyi Wang, Juzheng Chen, Qian Zhang, Fanling Meng, Yiling Lian, Man Kit Cheng, Pak San Yip, Kefan Guo, Wenjun Liang, Yu Deng, and Yang Lu

Nanoscale Coherent Phonons with Broadband Frequency Tunability 236201
Zhengpu Zhao (赵正朴), Da Wu (吴达), Chuwei Zhang (张楚惟), Duanyun Cao (曹端云), Haotian Zheng (郑浩天), Yuqing Huang (黄玉清), Qin Wang (王钦), En-Ge Wang (王恩哥), Chaoyu Guo (郭钞宇), and Ying Jiang (江颖)

Role of Anionic Lone-Pair-Like Electrons in Producing Minimum Lattice Thermal Conductivity 236301
Hongwei Ming, Jiahui Wang, Shike Xu, Bushra Jabar, Yunpeng Zheng, Zhong-Zhen Luo, and Zhigang Zou

Room-Temperature Intrinsic Nonlinear Planar Hall Effect in $TaIrTe_4$ 236302
Chang Jiang, Fan Yang, Yu Zhao, Jinshan Yang, Peng Yu, Huiying Liu, Yuda Zhang, Zehao Jia, Xiangyu Cao, Li Tian, Jingyi Yan, Zheng Liu, Zhongkai Liu, Xian-Lei Sheng, Cong Xiao, Shengyuan A. Yang, Shaoming Dong, and Faxian Xiu

Crystal-Field-Tuned Spin-Flip Luminescence in $NiPS_3$ 236401
Léonard Schué, Nashra Pistawala, Hebatalla Elnaggar, Yannick Klein, Christophe Bellin, Johan Biscaras, Fausto Sirotti, Yves Lassailly, Fabian Cadiz, Luminita Harnagea, and Abhay Shukla

Evidence for Atomic-Scale Vibron-Mediated Electron Bunching 236501
A. Maiti, M. Amato, V. S. Stolyarov, H. Aubin, J. Estève, F. Pistolesi, M. Aprili, and F. Massee

Controlling the Subpicosecond Coherent Spin and Valley Dynamics with Anomalous Magnetic Proximity Effect 236701
Qian Hu, Yong Tan, Qirui Cui, Yuqing Huang, Wenkai Zhu, Xiaomin Zhang, Yujing Wang, Yue Wang, Xuan Qian, Jing Zhang, Zhongming Wei, Jingbi You, Yang Ji, Lixia Zhao, Qihua Xiong, and Kaiyou Wang

Proper Theory of Magnon Orbital Angular Momentum at Equilibrium 236702
Junyu Tang and Ran Cheng

Topological Transition and Emergence of Elasticity of Dislocation in Skyrmion Lattice: Beyond Kittel's Magnetic-Polar Analogy 236703
Kohta Kasai, Akihiro Uematsu, Yu Wang, Tao Xu, Chang Liu, Susumu Minami, and Takahiro Shimada

Chiral Spin Liquid Instability of the Kitaev Honeycomb Model with Crystallographic Defects 236704
Arnab Seth, Fay Borhani, and Itamar Kimchi

Observation of Switchable Chiral Magnons in an Altermagnet 236705
Zheyuan Liu, Hodaka Kikuchi, Zijun Wei, Shinichiro Asai, Mechthild Enderle, Ursula B. Hansen, Vasile O. Garlea, Manh D. Le, Gøran J. Nilsen, Igor A. Zaliznyak, and Takatsugu Masuda

Fast and Continuous Detection of Single Microwave Photons via Photoassisted Quasiparticle Tunneling to a Superconducting Island 237001
J. Basset, O. Stanisavljević, J. Gabelli, M. Aprili, and J. Estève

Statistical Physics; Classical, Nonlinear, and Complex Systems

Long-Range Order in a Strictly Short-Range Quasi-2D XY Model: When Critical Fluctuations Matter 237101
Minghui Hu, Chao Zhang, Dajun Zhang, Yanan Sun, Youjin Deng, and Jian-Ping Lv

Learning the Action for Long-Time-Step Simulations of Molecular Dynamics 237301
Filippo Bigi, Johannes Spies, and Michele Ceriotti

Polymers, Chemical Physics, Soft Matter, and Biological Physics

Polaron-Polariton-Assisted Thermally Activated Superradiance 238001
Yi-Ting Chuang and Liang-Yan Hsu

Topological Approach to Measuring the Gaussian Curvature Modulus of Lipid Membranes in Simulation 238201
Seamus F. Gallagher and Markus Deserno

(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)

Errata

Erratum: Bacterial Turbulence at Compressible Fluid Interfaces [Phys. Rev. Lett. **136**, 138301 (2026)] 239901
Yuanfeng Yin, Bokai Zhang, H. P. Zhang, and Shuo Guo