

Laboratory laser setup for trapping and cooling yttrium monoxide molecules in an optical lattice down to the record low temperature of 1 μK. Selected for an Editors' Suggestion and a Synopsis in *Physics*. [Yewei Wu *et al.*, Phys. Rev. Lett. **127**, 263201 (2021)]

NEWSPAPER

PHYSICAL REVIEW LETTERS

Contents

Articles published 18 December–24 December 2021

VOLUME 127, NUMBER 26 24 December 2021

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

Learning Temporal Quantum Tomography 260401
Quoc Hoan Tran and Kohei Nakajima
Entropy and Reversible Catalysis 260402
H. Wilming
Quantum Fisher Information from Randomized Measurements 260501
Aniket Rath, Cyril Branciard, Anna Minguzzi, and Benoît Vermersch
Trapped Ion Quantum Computing Using Optical Tweezers and Electric Fields 260502
M. Mazzanti, R. X. Schüssler, J. D. Arias Espinoza, Z. Wu, R. Gerritsma, and A. Safavi-Naini
Hilbert Space Shattering and Disorder-Free Localization in Polar Lattice Gases 260601
Wei-Han Li, Xiaolong Deng, and Luis Santos

Elementary Particles and Fields

Measurement of Differential Branching Fractions of Inclusive $B \to X_u \ell^+ \nu_\ell$ Decays 261801
L. Cao *et al.* (Belle Collaboration)
Dark Matter Search Results from the PandaX-4T Commissioning Run 261802
Yue Meng *et al.* (PandaX-4T Collaboration)
Search for Invisible Axion Dark Matter in the 3.3–4.2 μeV Mass Range 261803
C. Bartram *et al.* (ADMX Collaboration)
Search for Long-Lived Particles Decaying in the CMS End Cap Muon Detectors in Proton-Proton Collisions at $\sqrt{s} = 13$ TeV 261804
A. Tumasyan *et al.* (CMS Collaboration)
Two-Loop Helicity Amplitudes for Diphoton Plus Jet Production in Full Color 262001
Bakul Agarwal, Federico Buccioni, Andreas von Manteuffel, and Lorenzo Tancredi

Nuclear Physics

Measurement of the Sixth-Order Cumulant of Net-Proton Multiplicity Distributions in Au + Au Collisions at $\sqrt{s_{NN}} = 27$, 54.4, and 200 GeV at RHIC 262301
M. S. Abdallah *et al.* (STAR Collaboration)
First Measurement of Timelike Compton Scattering 262501
P. Chatagnon *et al.* (CLAS Collaboration)
First Observation of the Four-Proton Unbound Nucleus ^{18}Mg 262502
Y. Jin, C. Y. Niu, K. W. Brown, Z. H. Li, H. Hua, A. K. Anthony, J. Barney, R. J. Charity, J. Crosby, D. Dell'Aquila, J. M. Elson, J. Estee, M. Ghazali, 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, S. M. Wang, H. Y. Wu, C. X. Yuan, and K. Zhu

(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 2021 American Physical Society

0031-9007(20211224)127:26;1-G

Atomic, Molecular, and Optical Physics

QED Effect on the Nuclear Magnetic Shielding of ^{3}He 263001
Dominik Wehrli, Anna Spyszkiewicz-Kaczmarek, Mariusz Puchalski, and Krzysztof Pachucki

Zeeman-Sisyphus Deceleration of Molecular Beams 263002
Benjamin L. Augenbraun, Alexander Frenett, Hiromitsu Sawaoka, Christian Hallas, Nathaniel B. Vilas, Abdullah Nasir, Zack D. Lasner, and John M. Doyle

Inseparable Time-Crystal Geometries on the Möbius Strip 263003
Krzysztof Giergiel, Arkadiusz Kuroś, Arkadiusz Kosior, and Krzysztof Sacha

Symmetry-Protected Topological Phases in a Rydberg Glass 263004
Kai Li, Jiong-Hao Wang, Yan-Bin Yang, and Yong Xu

High Phase-Space Density of Laser-Cooled Molecules in an Optical Lattice 263201
Yewei Wu, Justin J. Burau, Kameron Mehling, Jun Ye, and Shiqian Ding

Picometer-Resolved Photoemission Position within the Molecule by Strong-Field Photoelectron Holography 263202
Wenhai Xie, Jiaqing Yan, Min Li, Chuanpeng Cao, Keyu Guo, Yueming Zhou, and Peixiang Lu

Splashing of Large Helium Nanodroplets upon Surface Collisions 263401
Paul Martini, Simon Albertini, Felix Laimer, Miriam Meyer, Michael Gatchell, Olof Echt, Fabio Zappa, and Paul Scheier

Photonic Angular Superresolution Using Twisted N00N States 263601
Markus Hiekkamäki, Frédéric Bouchard, and Robert Fickler

Quantum Nonlinear Optics Based on Two-Dimensional Rydberg Atom Arrays 263602
M. Moreno-Cardoner, D. Goncalves, and D. E. Chang

Super-resolved Imaging of a Single Cold Atom on a Nanosecond Timescale 263603
Zhong-Hua Qian, Jin-Ming Cui, Xi-Wang Luo, Yong-Xiang Zheng, Yun-Feng Huang, Ming-Zhong Ai, Ran He, Chuan-Feng Li, and Guang-Can Guo

Plasma and Beam Physics

Reduction of Cross-Beam Energy Transfer by a Speckle Pattern 265001
A. Oudin, A. Debayle, C. Ruyer, and D. Bénisti

Condensed Matter: Structure, etc.

Superfluid β phase of ^{3}He 265301
V. V. Dmitriev, M. S. Kutuzov, A. A. Soldatov, and A. N. Yudin

Evolution and Nonreciprocity of Loss-Induced Topological Phase Singularity Pairs 266101
Mengqi Liu, Chen Zhao, Yixuan Zeng, Yang Chen, Changying Zhao, and Cheng-Wei Qiu

Temperature-Dependent Bending Rigidity of *AB*-Stacked Bilayer Graphene 266102
S. D. Eder, S. K. Hellner, S. Forti, J. M. Nordbotten, J. R. Manson, C. Coletti, and B. Holst

Condensed Matter: Electronic Properties, etc.

Realizing Kagome Band Structure in Two-Dimensional Kagome Surface States of RV_6Sn_6 (R = Gd, Ho) 266401
Shuting Peng, Yulei Han, Ganesh Pokharel, Jianchang Shen, Zeyu Li, Makoto Hashimoto, Donghui Lu, Brenden R. Ortiz, Yang Luo, Houchen Li, Mingyao Guo, Bingqian Wang, Shengtao Cui, Zhe Sun, Zhenhua Qiao, Stephen D. Wilson, and Junfeng He

Cascades between Light and Heavy Fermions in the Normal State of Magic-Angle Twisted Bilayer Graphene 266402
Jian Kang, B. Andrei Bernevig, and Oskar Vafek

Strange Metals from Melting Correlated Insulators in Twisted Bilayer Graphene 266601
Peter Cha, Aavishkar A. Patel, and Eun-Ah Kim

Oscillations of the Spacing between van Hove Singularities Induced by sub-Ångstrom Fluctuations of Interlayer Spacing in Graphene Superlattices 266801
Ya-Xin Zhao, Xiao-Feng Zhou, Yu Zhang, and Lin He

Competition between Coulomb and van der Waals Interactions in Xe-Cs^+ Aggregates on Cu(111) Surfaces 266802
J. Thomas, C. Bertram, J. Daru, J. Patwari, I. Langguth, P. Zhou, D. Marx, K. Morgenstern, and U. Bovensiepen

(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)

Controllable Enhancement of p-Wave Superconductivity via Magnetic Coupling to a Conventional Superconductor 267001
Linde A. B. Olde Olthof, Lina G. Johnsen, Jason W. A. Robinson, and Jacob Linder

Observation of 4- and 6-Magnon Bound States in the Spin-Anisotropic Frustrated Antiferromagnet FeI_2 267201
Anaëlle Legros, Shang-Shun Zhang, Xiaojian Bai, Hao Zhang, Zhiling Dun, W. Adam Phelan, Cristian D. Batista, Martin Mourigal, and N. P. Armitage

Heat Transport in Herbertsmithite: Can a Quantum Spin Liquid Survive Disorder? 267202
Y. Y. Huang, Y. Xu, Le Wang, C. C. Zhao, C. P. Tu, J. M. Ni, L. S. Wang, B. L. Pan, Ying Fu, Zhanyang Hao, Cai Liu, Jia-Wei Mei, and S. Y. Li

Topological Magnon Band Crossing in $Y_2Ir_2O_7$ 267203
Thi Huyen Nguyen, Jaeseok Son, Soyeun Kim, Hwanbeom Cho, Choong H. Kim, Y. P. Wang, Kenneth S. Burch, In-Sang Yang, Jaehong Jeong, Je-Geun Park, S. J. Moon, and T. W. Noh

General Framework of Canonical Quasinormal Mode Analysis for Extreme Nano-optics 267401
Qiang Zhou, Pu Zhang, and Xue-Wen Chen

Polymer, Soft Matter, Biological, Climate, and Interdisciplinary Physics

Topological Defects in Solids with Odd Elasticity 268001
Lara Braverman, Colin Scheibner, Bryan VanSaders, and Vincenzo Vitelli

Topographic Control of Order in Quasi-2D Granular Phase Transitions 268002
J. G. Downs, N. D. Smith, K. K. Mandadapu, J. P. Garrahan, and M. I. Smith

Shear Is Not Always Simple: Rate-Dependent Effects of Flow Type on Granular Rheology 268003
Joel T. Clemmer, Ishan Srivastava, Gary S. Grest, and Jeremy B. Lechman

Swarming Bottom Feeders: Flocking at Solid-Liquid Interfaces 268004
Niladri Sarkar, Abhik Basu, and John Toner

Role of Advective Inertia in Active Nematic Turbulence 268005
Colin-Marius Koch and Michael Wilczek

Dynamics of Switching at Stall Reveals Nonequilibrium Mechanism in the Allosteric Regulation of the Bacterial Flagellar Switch 268101
Bin Wang, Yuhui Niu, Rongjing Zhang, and Junhua Yuan

Evolutionary Game Model of Group Choice Dilemmas on Hypergraphs 268301
Andrea Civilini, Nejat Anbarci, and Vito Latora

Errata

Erratum: *In Situ* Generation of High-Energy Spin-Polarized Electrons in a Beam-Driven Plasma Wakefield Accelerator [Phys. Rev. Lett. **126**, 054801 (2021)] 269901
Zan Nie, Fei Li, Felipe Morales, Serguei Patchkovskii, Olga Smirnova, Weiming An, Noa Nambu, Daniel Matteo, Kenneth A. Marsh, Frank Tsung, Warren B. Mori, and Chan Joshi

Retraction: Pressure-Induced Superconducting State of Europium Metal at Low Temperatures [Phys. Rev. Lett. **102**, 197002 (2009)] 269902
M. Debessai, T. Matsuoka, J. J. Hamlin, J. S. Schilling, and K. Shimizu

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.