PHYSICAL REVIEW A™

For editorial and subscription correspondence, please see inside front cover
(ISSN: 2469-9926)

PERIODICALS
Postmaster send address changes to:

APS Subscription Services
P.O. Box 41
Annapolis Junction, MD 20701

THIRD SERIES, VOLUME 114, NUMBER 4
PARTS A, B, AND C

CONTENTS

OCTOBER 2026

The Table of Contents is a total listing of Parts A, B, and C.
Part A consists of pages L040201–042466, Part B pages 042601–043314, and Part C pages 043501–049905(E).

PART A

LETTERS

Fundamental concepts

Optimal quantum Feshbach engines *(6 pages)* L040201
Aaron Wandhammer, Vincent Hardel, Paul-Antoine Hervieux, and Giovanni Manfredi

Margenau-Hill distribution as a necessary and sufficient signature of measurement incompatibility *(7 pages)* L040202
Partha Patra and A. K. Pan

Quantum information science

Direct characterization of classical dephasing noise for a qubit *(8 pages)* L040401
Yuan-De Jin, Zheng-Fei Ye, and Wen-Long Ma

Control of multipartite entanglement through anisotropy against thermal noise *(7 pages)* L040402
Samudra Sur and Saikat Sur

Quantum technologies

Stochastic multipath routing for high-throughput entanglement distribution in quantum repeater networks *(7 pages)* L040601
Ankit Mishra and Kang Hao Cheong

Atomic and molecular structure and dynamics; high-precision experiments; chemical physics

Magnetic atoms with a large electric dipole moment *(6 pages)* L040801
J. Seifert, S. C. Wright, B. G. Sartakov, G. Valtolina, and G. Meijer

Light-induced processes in atomic-scale systems

Vortex photoelectron holography in strong-field tunneling ionization *(7 pages)* L041101
Yongkun Chen, Oleg I. Tolstikhin, Toru Morishita, Yueming Zhou, and Peixiang Lu

Ultracold systems and matter waves

Pair-condensation peak in radio-frequency dimer-projection spectroscopy of a unitary Fermi gas *(7 pages)* L041301
Zhixiu Peng and Zhenhua Yu

(Continued)

2469-9926(202610)114:4:A;1-U

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

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A THIRD SERIES, VOLUME 114, NUMBER 4 OCTOBER 2026

Drag-induced skin effect in a Bose-Fermi mixture *(10 pages)* L041302
Wenjie Liu, Yee Sin Ang, Ching Hua Lee, and Yi Qin

ARTICLES

Fundamental concepts

Undecidability of consistency of generalized probabilistic theories *(16 pages)* 042201
Serge Massar

Quantum spectroscopy of optical near fields using low-energy free-electron Rabi oscillations in synthetic energy space *(8 pages)* 042202
Yiming Pan, Bin Zhang, and Daniel Podolsky

Tomonaga-Luttinger liquid theory for one-dimensional attractive Fermi gases *(13 pages)* 042203
Hai-Ying Cui, Yu-Hao Yeh, Aashish Kafle, Randall G. Hulet, Han Pu, Thierry Giamarchi, and Xi-Wen Guan

Analysis of self-thermalization dynamics in the Bose-Hubbard model by using the pseudoclassical approach *(7 pages)* 042204
Andrey R. Kolovsky

Paraxial diffusion-field retrieval. II. Fokker-Planck generalization of the transport-of-intensity equation *(42 pages)* 042205
David M. Paganin and Kaye S. Morgan

Postselection-induced localization and coherence in quantum walks on heterogeneous networks *(14 pages)* 042206
Adithya L. J., Suraj S. Hegde, and Chandrakala Meena

Emergence of classical stochasticity *(12 pages)* 042207
Xuan Du Trinh, Ismaël Septembre, and Hai-Chau Nguyen

Summing to uncertainty: On the necessity of additivity in deriving the Born rule *(19 pages)* 042208
Jiaxuan Zhang

Dissipation-engineered dual-charger quantum batteries *(13 pages)* 042209
Yi-jia Yang, Yu-qiang Liu, Zheng Liu, Zhi-Hao Ma, Ming-Xing Luo, and Chang-shui Yu

Photons in media: A second-quantization scheme based on the optical Dirac equation *(12 pages)* 042210
Lili Yang, Longlong Feng, and Pengming Zhang

Geometric power capacity of coherent ergotropy in quantum batteries *(18 pages)* 042211
Dong-Ping Xuan, Hua Nan, Zhi-Xi Wang, and Shao-Ming Fei

Puiseux series about exceptional singularities dictated by symmetry-allowed Hessenberg forms of perturbation matrices *(9 pages)* 042212
Ipsita Mandal

Fragile single-cone Dirac quantum walks in two dimensions *(11 pages)* 042213
C. W. J. Beenakker, J. Sánchez Fernán, and J. Tworzydło

Complementarity beyond definite causal order *(12 pages)* 042214
Mohd Asad Siddiqui, Md Qutubuddin, and Tabish Qureshi

Complementarity in quantum and general information theories *(10 pages)* 042215
Davide Rolino, Paolo Perinotti, and Alessandro Tosini

(Continued)

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

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 114, NUMBER 4** **OCTOBER 2026**

Eigenstate-thermalization-hypothesis-ansatz-motivated environmental-branch approach to open quantum systems *(22 pages)* 042216
Wen-ge Wang

Critical timescales for chiral state conversion and irreversibility *(12 pages)* 042217
Giorgos Pappas, Diego Bautista Avilés, Luis E. F. Foa Torres, and Vassos Achilleos

Hall's exact uncertainty relation and the geometry of Krylov-space operator dynamics *(11 pages)* 042218
Mohsen Alishahiha and Souvik Banerjee

Thermodynamics of a biophotomimetic nonreciprocal quantum battery *(13 pages)* 042219
Trishna Kalita, Manash Jyoti Sarmah, and Himangshu Prabal Goswami

Gaussian-amplitude transitions and Wigner phase-space dynamics of electron Airy beams in a uniform magnetic field *(17 pages)* 042220
Ziqiang Huang, Qi Meng, Zhenyu Huang, Xuan Liu, Wei Ma, Zhen Yang, Liang Lu, Alexander J. Silenko, Pengming Zhang, and Liping Zou

Synergistic charging of a quantum battery via Dzyaloshinskii-Moriya interaction and non-Markovian noise *(12 pages)* 042221
Si-Yu Zhang, Meng-Long Song, Hai-Tao Dong, Xue-Ke Song, Liu Ye, and Dong Wang

Multipartite Bell-Greenberger-Horne-Zeilinger nonclassicality from interwoven frustrated down-conversion *(7 pages)* 042222
Marek Żukowski, Paweł Cieśliński, Marcin Markiewicz, and Konrad Schlichtholz

Enhanced quantum parameter estimation based on the Hardy paradox *(7 pages)* 042223
Ming Ji, Yuxiang Yang, and Holger F. Hofmann

Quantum information science

Quantum teleportation with partially entangled joint measurements induced by coherent errors *(14 pages)* 042401
Jeonghyeon Shin, Jaehak Lee, Soojoon Lee, and Seung-Woo Lee

Inverse reconstruction of disordered Hamiltonians from open dynamics *(26 pages)* 042402
Tengyuan Liu, Kejia Zhang, and Tingting Song

Generation of tripartite non-Gaussian entanglement via cascaded three-mode and two-mode spontaneous parametric down-conversion *(9 pages)* 042403
Lixia Ma, Yafei Zheng, Juan Gao, Zhihong Ren, Yuhang Tian, and Da Zhang

Prepare and broadcast scenario *(20 pages)* 042404
Tailan S. Sarubi, Moisés Alves, Santiago Zamora, Vinícius F. Alves, A. de Oliveira Junior, and Rafael Chaves

Transduction-enabled superconducting quantum repeater: Toward deterministic entanglement distribution with high-fidelity gates *(18 pages)* 042405
Francesco Fiorini, Jing Wu, Andrew Cameron, Changqing Wang, Doga M. Kurkcuoglu, Rosario G. Garroppo, Michele Pagano, and Silvia Zorzetti

Quantifiers of noise reducibility under restricted control *(16 pages)* 042406
Graeme D. Berk, Kavan Modi, and Simon Milz

(Continued)

This paper was highlighted in the APS publication *Physics* (physics.aps.org).
The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 114, NUMBER 4** **OCTOBER 2026**

Temperature-enhanced quantum sensing for the cutoff frequency of Ohmic-family environments *(9 pages)* 042407
Ji-Bing Yuan, Ya-Ju Song, Shi-Qing Tang, Xin-Wen Wang, and Le-Man Kuang

Shaping of the finite-size chaos crossover in Floquet circuits by coherent-mismatch architecture *(25 pages)* 042408
Xiangjun Tan, Wenqi Liu, Hanjie Zhu, Wenkai Bai, and Zhanning Wang

Universal entanglement detection with geometrically optimal witnesses *(16 pages)* 042409
Xuanran Zhu, Keyi Huang, Chao Zhang, Xinfang Nie, Qi Zhao, and Dawei Lu

Quantum random walks on d-regular graphs with Haar-random coin operators *(15 pages)* 042410
Alice C. Quillen

Open-system adiabatic quantum search under dephasing *(13 pages)* 042411
Afaf El Kalai, Peter J. Eder, and Christian B. Mendl

Fluctuation-dissipation structure of quantum-dynamical semigroups revealing a unique internal Hamiltonian *(7 pages)* 042412
Fabricio Toscano and Sergey Sergeev

Solving conic programs over sparse graphs using a variational quantum approach: The case of the AC optimal power flow *(21 pages)* 042413
Thinh Viet Le, Mark M. Wilde, and Vassilis Kekatos

Analytic formulas for nonlocal nonstabilizerness in bipartite systems of qutrits and ququints *(11 pages)* 042414
Giorgio Busoni, John Gargalionis, Ewan N. V. Wallace, and Martin J. White

Quantum trajectories for time-binned data and their closeness to fully conditioned quantum trajectories *(16 pages)* 042415
Nattaphong Wonglakhon, Areeya Chantasri, and Howard M. Wiseman

Sequential cavity-cooperativity enhancement for high-sensitivity microwave reception with dual-resonator Rydberg atoms *(14 pages)* 042416
Weichao Gao, Jinyun Wu, Peiyun Cheng, Bo Wu, Hao Zhang, Fuquan Li, Yinfa Zhang, and Jian Yang

Chiral transfer and entanglement generation of even-parity Bell states with engineered two-photon loss *(10 pages)* 042417
Lin Xiao, Jian Li, Mu Zhou, Bin Wei, Qing-Xu Li, and Jia-Ji Zhu

Imaginarity-assisted minimum error discrimination *(12 pages)* 042418
Zhihua Guo, Yadi Qiao, Huaixin Cao, and Tsung-Lin Lee

Maximum confidence channel discrimination: Probe design, entanglement assistance, and sequential measurement *(16 pages)* 042419
Jeremy Johnston and Xiaodong Wang

Phase-preserving steady-state operations beyond Lindblad master equations *(9 pages)* 042420
Man Yin Cheung, Mona Berciu, and Kyle Monkman

Geometry-conditioned basin initialization for variational quantum eigensolvers in strongly correlated molecules *(14 pages)* 042421
Yangshuai Wang

Ancilla-train quantum algorithm for simulating non-Markovian open quantum systems *(30 pages)* 042422
Hans Michael Christensen, Johannes Agerskov, and Frederik Nathan

(Continued)

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

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 114, NUMBER 4** **OCTOBER 2026**

Critical response and enhanced parameter sensitivity in gapless fermionic systems *(16 pages)* 042423
Qi Liu, M. N. Chen, and Ke Deng

State objectivity and information scrambling in realistic qubit-bosonic systems *(13 pages)* 042424
Feng Tian, Wenting Lu, Jinzhu Jiang, Junxiao Wang, Haiqing Xie, and Jian Zou

Relationship between vanishing pairwise entanglement and global separability: Entanglement structure and measures in W subspace *(8 pages)* 042425
Reza Hamzehofi

Floquet quantum gates with ion-enhanced Rydberg blockade *(12 pages)* 042426
Ji-Yuan Zhang, Ji-Ze Han, Jian-Chun Shi, Zhi-Guo Huang, and Shi-Lei Su

Continuous-variable dense coding under realistic nonideal scenarios *(18 pages)* 042427
Mrinmoy Samanta, Ayan Patra, Rivu Gupta, and Aditi Sen(De)

Low-overhead tailoring and learning of noise in graph states *(23 pages)* 042428
Guedong Park, Jinzhao Sun, and Hyunseok Jeong

Reliable global entanglement distribution based on probabilistic photon sources *(13 pages)* 042429
Pei-Xi Liu, Yu-Ping Lin, Zong-Quan Zhou, Chuan-Feng Li, and Guang-Can Guo

Traceable quantum secret sharing *(18 pages)* 042430
Mengyan Qiao, Jian Long, Yu Li, and Zhu Cao

Mitigating the barren plateau problem in linear optics *(19 pages)* 042431
Matthew D. Horner

Bounding eigenstate overlap from Hamiltonian moments: Success-probability guarantees for quantum phase estimation *(13 pages)* 042432
Junan Lin and Artur F. Izmaylov

Quantum error correction in adversarial regimes *(17 pages)* 042433
Rahul Arvind, Nikhil Bansal, Dax Enshan Koh, Tobias Haug, and Kishor Bharti

Towards noble gas quantum optical magnetometry using direct ultraviolet detection *(12 pages)* 042434
James Maldaner and Gil Porat

Source temporal imperfections in measurement-device-independent quantum key distribution *(12 pages)* 042435
Zhi-Jian Hu, Guan-Jie Fan-Yuan, Wei-Xin Xie, Shuang Wang, Wei Chen, Zhen-Qiang Yin, Fang-Xiang Wang, De-Yong He, Guang-Can Guo, and Zheng-Fu Han

Probability distribution analysis of the cascaded variational quantum eigensolver *(9 pages)* 042436
Yi-Hua Lai, John P. T. Stenger, Gloria Bazargan, Igor V. Schweigert, and Daniel Gunlycke

Catalytic quantum thermodynamics beyond additivity and reduced-state monotones *(26 pages)* 042437
Ali Can Günhan, Onur Pusuluk, Thomas Oikonomou, and G. Baris Bagci

Continuous-time quantum control across an exponentially small bottleneck in a frustrated Ising ring model *(15 pages)* 042438
Vincenzo Roberto Arezzo, Kiran Thengil, and Giuseppe E. Santoro

Type-I and type-II fusion protocols for weighted graph states *(20 pages)* 042439
Noam Rimock and Yaron Oz

(Continued)

This paper was highlighted in the APS publication *Physics* (physics.aps.org).
The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 114, NUMBER 4** **OCTOBER 2026**

Noise-robustness for delegated quantum computation in the circuit model *(12 pages)* 042440
Anne Broadbent and Joshua Nevin

Local marking of locally implementable unitary operations *(7 pages)* 042441
Adil Imam and Satyaki Manna

Improved certification of Bell-operator correlations via optimization *(12 pages)* 042442
Weikang Li, Mengyao Hu, Ke Wang, Shibo Xu, Zhide Lu, Jiachen Chen, Yaozu Wu, Chuanyu Zhang, Feitong Jin, Xuhao Zhu, Yu Gao, Zhengyi Cui, Aosai Zhang, Ning Wang, Yiren Zou, Fanhao Shen, Jiarun Zhong, Zehang Bao, Zitian Zhu, Pengfei Zhang, Hekang Li, Qiujiang Guo, Zhen Wang, Dong-Ling Deng, Chao Song, H. Wang, Patrick Emonts, and Jordi Tura

Hybrid quantum-classical framework for Betti-number estimation with applications to topological data analysis *(11 pages)* 042443
Nhat A. Nghiem and Tzu-Chieh Wei

Defect-adaptive lattice surgery on irregular boundary surface-code patches *(14 pages)* 042444
Gunsik Min, Youshin Chung, Yujin Kang, and Jun Heo

Rigorous error bounds for dissipative thermal state preparation from weak system-bath coupling *(20 pages)* 042445
Christopher Ong, S. A. Parameswaran, Benedikt Placke, and Dominik Hahn

Classification of Kirkwood-Dirac positivity-preserving unitaries *(21 pages)* 042446
Jędrzej Burkat and Sergii Strelchuk

Sufficient conditions for additivity of the zero-error classical capacity of quantum channels *(8 pages)* 042447
Jeonghoon Park and Jeong San Kim

Detecting multilevel entanglement from light-based entanglement witnesses *(12 pages)* 042448
P. Rosario and R. Bachelard

Postselected amplification and photon recycling applied to optical sensing of magnetic fields *(10 pages)* 042449
Yazhi Niu, Jialin Li, Lupei Qin, and Xin-Qi Li

Microwave quantum illumination based on cavity optomagnomechanics *(8 pages)* 042451
Qing-Min Zeng, A-Peng Liu, Cheng-Hua Bai, Yuchi Zhang, Qi Guo, Gang Li, and Tiancai Zhang

Entanglement percolation enhanced by the power of choice *(9 pages)* 042452
Yanxuan Shao and Adilson E. Motter

Multiflux Aharonov-Bohm caging with tunable couplings *(10 pages)* 042453
Le-Chuan Wang, Sai Li, Jia Liu, and Zheng-Yuan Xue

Ergotropy activation and coherence in dissipatively charged quantum batteries *(15 pages)* 042454
Hui-Yu Yang, Kang-Yuan Chen, Kun Zhang, Yang-Yang Chen, and Xiao-Hui Wang

Sparse anisotropic positive maps for qutrit entanglement: Exact indecomposability and positive-partial-transpose geometry *(13 pages)* 042455
Massimiliano F. Sacchi

Adaptive stabilizer-state-fidelity certification *(21 pages)* 042456
Kun Wang

(Continued)

This paper was highlighted in the APS publication *Physics* (physics.aps.org).
The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 114, NUMBER 4** **OCTOBER 2026**

Qubit-centric transformer for surface code decoding *(13 pages)* 042457
Seong-Joon Park, Hee-Youl Kwak, and Yongjune Kim

Finite-data certification of mixed-state nonstabilizerness from Pauli witnesses *(16 pages)* 042458
Wenlong Sun and Yuanfeng Jin

Theory and interpretability of quantum extreme learning machines: A Pauli transfer matrix approach *(36 pages)* 042459
Markus Gross and Hans-Martin Rieser

Space-efficient quantum solvers for Boolean satisfiability problems via structural reduction *(12 pages)* 042460
Quanfeng Lu, Shijie Wei, Jinfeng Zeng, Wentao Yang, Muxi Zheng, Peijie Chang, Dong Ruan, Zeguo Wang, and Guilu Long

Hierarchy of entanglement detection criteria for random high-dimensional states *(15 pages)* 042461
Akhil Kumar Awasthi, Sudipta Mondal, Rivu Gupta, and Aditi Sen(De)

Hybrid analog-digital simulation of the Abelian Higgs model with transmon qutrits *(29 pages)* 042462
Muhammad Asaduzzaman, Rayleigh W. Parker, Noah Goss, Ahmed I. Mohamed, Max Neiderbach, Zane Ozzello, Ravi K. Naik, Alexander F. Kemper, Irfan Siddiqi, Yannick Meurice, and Machiel S. Blok

Spectral theory of energy-selective quantum search with Ising Hamiltonian phase oracles *(15 pages)* 042463
A. S. Plyashechnik, A. A. Zhukov, A. V. Lebedev, and W. V. Pogosov

Lower bounding the secret key capacity of bosonic Gaussian channels via optimal Gaussian measurements *(7 pages)* 042464
Giuseppe Ortolano, Stefano Pirandola, and Leonardo Banchi

Linear-optical generation of hybrid Gottesman-Kitaev-Preskill entanglement from small-amplitude cat states *(20 pages)* 042465
Shohei Kiryu, Yohji Chin, Masahiro Takeoka, and Kosuke Fukui

Unifying charge-learnability transitions in monitored U(1)-symmetric quantum circuits through informational power of local measurement *(9 pages)* 042466
Yi-Fan Gong and Dan-Bo Zhang

PART B

Quantum technologies

Squeezing- and non-Gaussianity-enhanced quantum thermometry and magnetometry via quadratic interactions in optomechanical-like systems *(19 pages)* 042601
Asghar Ullah and Özgür E. Müstecaplioğlu

Closed-form finite-key scaling for the Bennett-Brassard 1984 protocol with device imperfections *(14 pages)* 042602
Kaushik Dehingia and Nimisha Dutta

Quantum networking with advances in fiber technology *(20 pages)* 042603
Prateek Mantri, Michael S. Bullock, Aditya Tripathi, Robert Kwolek, Rajveer Nehra, and Don Towsley

Network-based evolving quantum secret sharing for general access structures with dynamic membership *(23 pages)* 042604
Suchandan Ghosh, Niloy Das, and Avishek Adhikari

(Continued)

This paper was highlighted in the APS publication *Physics* (physics.aps.org).
The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 114, NUMBER 4** **OCTOBER 2026**

Effective Hamiltonian for an off-resonantly driven qubit-cavity system *(7 pages)* 042605
Martin Jirlow, Kunal Helambe, Axel M. Eriksson, Simone Gasparinetti, and Tahereh Abad

Post-selective attack with multimode projection onto Fock subspace *(9 pages)* 042606
Andrei Gaidash, George Miroshnichenko, and Anton Kozubov

Frequency-time multiplexing for near-deterministic generation of *n*-photon frequency-bin states *(7 pages)* 042607
Alex Fischer, Nathan T. Arnold, Colin P. Lualdi, Kelsey Ortiz, Michael Gehl, Paul Davids, Kai Shinbrough, and Nils T. Otterstrom

Universal sensitivity bound for thermal quantum dynamic sensing *(14 pages)* 042608
Rui Zhang, Yang Yang, Xin-You Lü, Wenkui Ding, and Xiaoguang Wang

Hybrid method for quantum dynamics simulation *(10 pages)* 042609
Niladri Gomes, Jia Yin, Siyuan Niu, Chao Yang, and Wibe Albert de Jong

Quantum annealing approach to the minimum distance problem of quantum codes *(14 pages)* 042610
Refaat Ismail, Ashish Kakkar, and Anatoly Dymarsky

Magnon-mediated motional entanglement of levitated magnetic microspheres *(6 pages)* 042611
Lihua Wang, Peiran Yin, and Pu Huang

Critical quantum sensing via backaction-evading continuous measurement *(7 pages)* 042612
Cheng Zhang, Mauro Cirio, Xin-Qi Li, and Pengfei Liang

Time-frequency Talbot effect as Clifford operations on entangled time-frequency Gottesman-Kitaev-Preskill states *(19 pages)* 042613
T. Pousset, R. Dalidet, L. Labonté, and N. Fabre

Engineering Zeeman-manifold quintets using state-dependent light shifts in neutral atoms *(19 pages)* 042614
Benedikt Heizenreder, Bas Gerritsen, Katya Fouka, Robert J. C. Spreeuw, Florian Schreck, Arghavan Safavi Naini, and Alexander Urech

Learning Volterra memory kernels for non-Markovian qubit dynamics *(16 pages)* 042615
Jimmie Adriazola and Katarzyna Roszak

Quantum battery optimized by parametric amplification *(11 pages)* 042616
Fang-Mei Yang, Jun-Hong An, and Fu-Quan Dou

Robust quantum key distribution with imperfections in state preparation and characterization *(14 pages)* 042617
Yi-Fei Lu, Yan-Yang Zhou, Yang Wang, Xin-Hang Li, Yu Zhou, Xiao-Lei Jiang, Jia-Ji Li, Chun Zhou, Hong-Wei Li, Yu-Yao Guo, Lin-Jie Zhou, and Wan-Su Bao

Hybrid quantum repeater chains with atom-based quantum processing units and quantum memory multiplexers *(19 pages)* 042618
Shin Sun, Daniel Bhatti, Shaobo Gao, David Elkouss, and Hiroki Takahashi

Shortcuts for adiabatic and variational algorithms in molecular simulation *(14 pages)* 042619
Julián Ferreiro-Vélez, Iñaki Iriarte-Zendoia, Yue Ban, and Xi Chen

Quantum architecture generation via predictor-guided diffusion models *(22 pages)* 042620
Jiawen Dai, Jialiang Gu, Raymond Ho, Gary Man-Tat Man, Kwok Tai Chui, Kevin Hung, and Fanxu Meng

(Continued)

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

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A THIRD SERIES, VOLUME 114, NUMBER 4 OCTOBER 2026

Spin-polarized transport tomography of a quantum-dot spin qubit via ferromagnetic leads *(13 pages)* 042621
M. B. Sambú, L. Sanz, and F. M. Souza

Hamiltonian-induced error-channel control for Lyapunov quantum state transfer *(9 pages)* 042622
Yiwei Chen, Xun Lang, and Jiande Wu

Light-induced line narrowing of the magnetic resonance in a parametric resonance optically pumped rubidium magnetometer *(9 pages)* 042623
Yongbiao Yang, Yang Li, Zhengyu Su, Jun He, Xiaojun Jia, Yanhua Wang, and Junmin Wang

Charging efficiency bursts in a quantum battery with cyclic indefinite causal order *(11 pages)* 042624
Po-Rong Lai, Hsien-Chao Jan, Jhen-Dong Lin, and Yueh-Nan Chen

Partial reversibility and counterdiabatic driving in nearly integrable systems *(9 pages)* 042625
Rohan Banerjee, Shahyad Khamnei, Anatoli Polkovnikov, and Stewart Morawetz

Atomic and molecular structure and dynamics; high-precision experiments; chemical physics

Nuclear magnetic octupole moments of ^{69}Ga and ^{71}Ga determined from *ab initio* hyperfine-structure calculations *(9 pages)* 042801
Fei-Chen Li and Yong-Bo Tang

Limits of statistical models of ultracold complex lifetimes *(14 pages)* 042802
Kevin B. Xu and John L. Bohn

High-resolution spectroscopy of ionic-core transitions in alkaline-earth-metal Rydberg atoms *(8 pages)* 042803
Mitsuki Odahara and Shinsuke Haze

Ionization energies for Rydberg ^{4}He ($1snp\,^{1,3}P$) states using the correlated B-spline basis function method *(14 pages)* 042804
Jing Chi, Hao Fang, Yong-Hui Zhang, Li-Yan Tang, and Ting-Yun Shi

Charge transfer in intermediate-energy $H^+ + H_2$ collisions *(10 pages)* 042805
Bei-Yuan Zhang, Ya-Dong Liu, Ming-Xuan Ma, Ling Liu,
Károly Tőkési, Yong Wu, Lin-Fan Zhu, and Jian-Guo Wang

Electronic properties of the Radium-monochalcogenides RaX (X = O, S, Se) and $RaO^{\pm}$ ions *(17 pages)* 042806
Mateo Londoño and Jesus Pérez-Ríos

Theoretical and experimental study of $4f$-$5d$ Fano resonances in EUV photoabsorption of Au I and Au II *(8 pages)* 042807
David McKeagney, Lynda R. Hutcheson, Eric Doyle, Eoin Fagan, Padraig Dunne, and Emma Sokell

Low-energy positron scattering from metastable helium *(13 pages)* 042808
Ning-Ning Gao, Hui-Li Han, Ting-Yun Shi, and Li-Yan Tang

Quantum master equation approach for the multiphonon up-pumping model *(10 pages)* 042809
Jiong Cheng, Yanqiang Yang, Wenlin Li, and Xun Li

Calculation of the energy levels and hyperfine structure for Xe II, Rn II, and Og II ions *(8 pages)* 042810
T. H. Dinh, V. A. Dzuba, and V. V. Flambaum

(Continued)

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

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A THIRD SERIES, VOLUME 114, NUMBER 4 OCTOBER 2026

Nonlinear subharmonic response and spectral shifts in bichromatically driven atomic magnetic resonance *(16 pages)* 042811
Xu-xing Geng, Ao-dong Xie, Cheng Sheng, Kai Jin, Jian-feng Xiao, Wang-wang Tang, Yan Yan, Guo-qing Yang, Hui Huang, Guang-ming Huang, Hong-Ping Liu, and Gao-xiang Li

Relativistic configuration-interaction perturbation-theory calculations of energy levels and *g*-factors in neutral plutonium *(10 pages)* 042812
Igor Savukov and James Colgan

Electron correlation effects via triple excitations on energies and hyperfine structure constants of ^{23}Na *(12 pages)* 042813
Vaibhav Katyal and B. K. Sahoo

Photodetachment energy of negative hydrogen ions *(18 pages)* 042814
Maen Salman and Jean-Philippe Karr

Dynamical evolution of quantum scattering in $Li^+ + H^-$ mutual neutralization from the meV/u to the keV/u regime *(8 pages)* 042815
Kun Wang, Yu Wang, Xiao He Lin, Yong Wu, Yi Zhi Qu, and Yu Kun Yang

Emulating atomic data of Cd-like ions using Gaussian process regression *(9 pages)* 042816
Dipti

Numerical evaluation of Casimir forces using the discontinuous Galerkin time-domain method *(19 pages)* 042817
Carles Martí Farràs, Bettina Beverungen, Philip Trøst Kristensen, Francesco Intravaia, and Kurt Busch

Two-photon Doppler-free spectroscopy of the $6s^2\,{}^1S_0 \rightarrow 6s23s\,{}^1S_0$ Rydberg transition for quantum sensing in ytterbium *(16 pages)* 042818
Benjamin D. Hunt, Kyle Beloy, Roger C. Brown, Tobias Bothwell, Harikesh Ranganath, Tanner Grogan, Jacob L. Siegel, and Andrew D. Ludlow

Theory framework for medium-mass muonic atoms *(10 pages)* 042819
S. Rathi, I. A. Valuev, Z. Sun, M. Heines, P. Indelicato, B. Ohayon, and N. S. Oreshkina

Rotational excitation of asymmetric-top molecular ions by electron impact: Application to H_2O^+, HDO^+, and D_2O^+ *(15 pages)* 042820
Joshua Forer

Light-induced processes in atomic-scale systems

Plateau reshaping in solid-state high-harmonic generation driven by the photon statistics of a bright squeezed vacuum *(11 pages)* 043101
Shidong Yang, Jianbin Lin, Xiwang Liu, Yu Jiang, Torsten Meier, Xiaohong Song, and Weifeng Yang

Disentangling multipole contributions to nondipole strong-field photoelectron momentum distributions *(7 pages)* 043102
Morten Førre

Channel-resolved Coulomb explosion dynamics of strong-field-ionized water from real-time time-dependent density functional theory *(16 pages)* 043103
Bohui Wan, Chen Jiang, Cody L. Covington, Kálmán Varga, and Kedong Wang

Observing the temporal evolution of a core hole with photoelectron interferometry *(7 pages)* 043104
Tatsuo Kaneyasu, Yasuamasa Hikosaka, Shin-ichi Wada, Masaki Fujimoto, Hiroshi Iwayama, Hiroshi Ota, Kohei Shimizu, Masahiro Katoh, and Fumihiro Koike

(Continued)

This paper was highlighted in the APS publication *Physics* (physics.aps.org).
The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 114, NUMBER 4** **OCTOBER 2026**

Orbit-resolved spin holography: Role of Coulomb focusing in target-dependent polarization *(12 pages)* 043105
Tao Chen, Yang Li, Fang Liu, Pei-Lun He, Carla Figueira de Morisson Faria, and Feng He

Imaging photoinduced isomerization in triply ionized acetonitrile *(8 pages)* 043106
Noah Frese, Sergio Díaz-Tendero, Debadarshini Mishra, Aaron C. LaForge, Cameron Brady, Fernando Martín, and Nora Berrah

Sawtooth-wave adiabatic passage in a grating magneto-optical trap *(9 pages)* 043107
Peter K. Elgee, Ananya Sitaram, Sara Ahanchi, Nikolai N. Klimov, Stephen P. Eckel, Gretchen K. Campbell, and Daniel S. Barker

Coupling nonlinear propagation with electronic Coulomb dynamics in two-color strong-field terahertz radiation *(7 pages)* 043108
Yange Chen, Ahai Chen, Jiahui Guo, Tianmin Yan, Yizhu Zhang, and Yuhai Jiang

Macroscopic purely optical trap for laser cooling and trapping of mercury atoms *(9 pages)* 043109
A. A. Kirpichnikova, V. I. Yudin, R. Ya. Ilenkov, A. V. Taichenachev, and O. N. Prudnikov

Role of a hydrogen-bond network in liquid high-order harmonic generation *(15 pages)* 043110
Zhuang-Wei Ding and Xue-Bin Bian

Spin-orbit-resolved resonant Auger spectrum of a dissociating HCl molecule *(22 pages)* 043111
M. Žitnik, J. Turnšek, K. Bučar, and A. Mihelič

Modeling angularly resolved resonant phase jumps in fine-structure-split regions of heavy atoms *(19 pages)* 043112
Elisei Mankov, Soumyajit Saha, Anton Ljungdahl, Johanna Sörngård, Jimmy Vinbladh, Eva Lindroth, and C. Leon M. Petersson

Core relaxation and interchannel coupling effects on the Ar 3*s* photoionization time delay in the vicinity of the 2*p* thresholds *(12 pages)* 043113
Suraj Rai, Aarthi Ganesan, Pranawa C. Deshmukh, and Steven T. Manson

Learning hidden structures in open quantum dynamics *(19 pages)* 043115
Alexander Teretenkov, Sergey Kuznetsov, and Alexander Pechen

Intense-laser nondipole-induced symmetry breaking in solids *(6 pages)* 043116
Asger Weeth and Lars Bojer Madsen

Free-electron vortices in photoelectron momentum distributions from molecules with coupled electronic-nuclear motion *(13 pages)* 043117
Paul Winter and Manfred Lein

Ultracold systems and matter waves

Thouless pumping of large Chern numbers in optical Floquet quasicrystals *(14 pages)* 043301
Shien Wan, Zecheng Li, and Bo Song

Tunable dephasing-induced non-Hermitian jumps in quasiperiodic lattices *(10 pages)* 043302
Ping Chen, Shan-Zhong Li, and Zhi Li

Fractional incompressible phases and ordering competition in tilted dipolar bosons with cavity-mediated interactions *(15 pages)* 043303
Fang-Ru Jin and Ji-Guo Wang

(Continued)

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

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A THIRD SERIES, VOLUME 114, NUMBER 4 OCTOBER 2026

Dynamics of one-dimensional Bose-Josephson junction in a box trap: From coherent oscillations to many-body dephasing and dynamical freezing *(23 pages)* 043304
Abhik Kumar Saha, L. F. Calazans de Brito, Cesare Vianello, Rhombik Roy, Romain Dubessy, Barnali Chakrabarti, and Arnaldo Gammal

Identical-particle symmetry-enabled complete coherent control of ultracold atomic and molecular collisions *(14 pages)* 043305
Jing-Chen Zhang (张京晨), Adrien Devolder, Timur V. Tscherbul, Paul Brumer, and Yu Liu

Two-body loss dynamics as a probe of dynamical bulk viscosity in ultracold atomic gases *(9 pages)* 043306
Tingyu Zhang, Hiroyuki Tajima, and Takeo Kato

Mass-imbalanced two-dimensional Bose-Fermi mixtures with boson-fermion pairing *(16 pages)* 043307
Cristiano L. K. Chiarappa, Pietro Bovini, and Pierbiagio Pieri

Phases of interacting bosons in a hybrid Harper-Hofstadter system with a synthetic dimension of harmonic trap states *(19 pages)* 043308
David G. Reid, Holly A. J. Middleton-Spencer, Grazia Salerno, Nathan Goldman, and Hannah M. Price

Atomic interferometry with spin-orbit-coupled spin-1 Bose-Einstein condensates *(8 pages)* 043309
Renfei Zheng, Junying Wu, Josep Cabedo, Alessio Celi, Zhihao Lan, Weiping Zhang, and Lu Zhou

Efimov-like phonon production for an analog coasting universe in Bose-Einstein condensates *(15 pages)* 043310
Yunfei Xue, Jiabin Wang, Li Chen, Chenwei Lv, and Ren Zhang

Ramsey atom interferometry with transverse optical modes *(9 pages)* 043311
Ryan Husband, Ryan J. Thomas, Yosri Ben-Aïcha, Rhys H. Eagle, Jessica Eastman, John E. Debs, Patrick J. Everitt, Michael Larsen, Eric Imhof, Charles A. Sackett, John D. Close, Simon A. Haine, and Samuel Legge

Scattering and bound states of two heteronuclear ultracold atoms in a quasi-two-dimensional confinement *(15 pages)* 043312
Binhao Wang, Fan Yang, and Peng Zhang

Directional quantum walks of two bosons on the Hatano-Nelson lattice *(14 pages)* 043313
Sk Anisur, Kartik Singh, and Sayan Choudhury

Dipolar mixtures in checkerboard optical bilayers *(7 pages)* 043314
Rukmani Bai and Luis Santos

PART C

Photonics, nonlinear optics, and optomechanics

Topologically protected state transfer beyond single excitation and its acceleration via shortcut to adiabaticity *(15 pages)* 043501
Sibo Fang, Biao Xiong, Jin Yang, Hao Zhao, Jibing Liu, and Chuanjia Shan

Experimental investigation of nonclassicality in the simplest scenario via the degrees of freedom of classical light *(13 pages)* 043502
J. M. M. Gama, G. T. C. Cruz, Massy Khoshbin, Lorenzo Catani, J. A. O. Huguenin, and W. F. Balthazar

Effective skyrmion number for mixed polarization states of light *(7 pages)* 043503
Rosario Martínez-Herrero and Ángel S. Sanz

(Continued)

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

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 114, NUMBER 4** **OCTOBER 2026**

Self-organized nonlinear scar modes in fully chaotic microcavity lasers *(7 pages)* 043504
Yoshikazu Kuribayashi, Shunsuke Nakamura, Moka Kurita, Mengyu You, Susumu Shinohara, Satoshi Sunada, and Takahisa Harayama

Klein tunneling of the laser coherence *(8 pages)* 043505
Konstantin Manannikov, Sagie Gadasi, Amit Pando, Ekaterina Mironova, Eran Bernstein, Andrei Poliakov, Nir Davidson, and Alexander N. Poddubny

Staircase mechanical energy growth in optomechanical systems of intermediate mechanical frequencies *(11 pages)* 043506
Yi Xiao, Yi Wu, Qi-Kai Zhan, Jin Lian Zhang, Bing He, and Qing Lin

Thermoelastic limit on the focal intensity in Fabry-Pérot cavities *(9 pages)* 043507
Jeremy J. Axelrod, Lothar Maisenbacher, Ashwin Singh, Isaac M. Pope, Petar N. Petrov, Jessie T. Zhang, and Holger Müller

Controllable temporal drift of soliton rain and its internal interaction dynamics under birefringence phase regulation *(13 pages)* 043508
Xue-Peng Wang, Ze-Tian Wang, Hao-Yu Feng, Jun-Yi Ye, Zhi-Cheng Zhang, Hui-Jun Li, Yue-Yue Wang, and Chao-Qing Dai

Enhanced magneto-optical intensity effect in a helicity-preserving all-dielectric metasurface at Mie resonances and the anapole state *(12 pages)* 043509
P. V. Zorina, D. O. Ignatyeva, A. E. Bezmenova, A. N. Kalish, S. Xia, Yi Shuai, L. Bi, and V. I. Belotelov

Two topological transitions of the isofrequency contour in a plasmonic-dielectric layered photonic crystal *(16 pages)* 043510
Zhenzhen Liu, Xin Liu, Dongni Chen, Pengcheng Li, and Jun-Jun Xiao

Multioutcome circuit optimization for enhanced non-Gaussian state generation *(14 pages)* 043511
S. Ismailzadeh and B. Abedi Ravan

Spatiotemporal polarization-to-topology mapping in a plasmonic skyrmion lattice *(11 pages)* 043512
Jintao Gong, Lingxing Xiong, Kaili Sun, Chunhao Liang, and Yangjian Cai

Thermal vacuum friction of objects with different dimensionality *(10 pages)* 043513
Gor Chalyan and F. Javier García de Abajo

Experimental demonstration of chiral bound states in the continuum enabled by time-reversal-symmetry breaking *(9 pages)* 043514
Hao-Chang Mo, Wen-Jin Zhang, Ze-Yu Wu, Xin-Tao He, Xiao-Dong Chen, and Jian-Wen Dong

Dissipative Kerr soliton self-balancing from Kerr-induced synchronization *(9 pages)* 043515
Pradyoth Shandilya, Kartik Srinivasan, Curtis Menyuk, and Grégory Moille

Generalized time-varying Drude model for dispersive and lossy modulations *(16 pages)* 043516
A. Ganfornina-Andrades, J. E. Vázquez-Lozano, I. Liberal, and S. A. R. Horsley

Scalable single-mode and high-power lasing governed by topological propagation dynamics *(6 pages)* 043517
Shouqi Zhang, Bofeng Zhu, Qi Jie Wang, and Yongquan Zeng

Nonlinear lens: A generalized form of the Gaussian imaging law *(7 pages)* 043518
Xiaoxue Zhang, Yaqin Zhou, Meihua Zhuang, Jingjing Wang, Xiangsheng Xie, Xiaodong Qiu, Haoxu Guo, and Lixiang Chen

(Continued)

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

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 114, NUMBER 4** **OCTOBER 2026**

Optical trapping of low-refractive-index Mie particles using a single linearly polarized circular Airy beam *(9 pages)* 043519
Zejun Wang and Wanli Lu

Quantum analysis of a multifrequency laser with a photonic time crystal *(12 pages)* 043520
Igor E. Protsenko and Alexander V. Uskov

Geometro-optical depolarization manifold as an organizing principle for plasmonic transitions *(11 pages)* 043521
Isuf Tredhaku, Ana Sánchez-Iglesias, Ivan Petranović, Marek Grzelczak, Jordi Sancho-Parramon, and Stefano A. Mezzasalma

Experimental observation of vector geometric parametric instability *(8 pages)* 043522
Romain Morel, Andrey V. Gorbach, Alexandre Kudlinski, Gil Fanjoux, John M. Dudley, and Thibaut Sylvestre

Topological character of a nonlinear square lattice waveguide array *(10 pages)* 043523
Yi-Qing Wang, Mei-Song Wei, Jing-Yang Li, Zi-Jian Lin, Shuai-Ling Wang, Xiu-Wen Xia, Jingping Xu, and Yaping Yang

Partial quantization of non-Hermitian Berry phases in time-varying media *(7 pages)* 043524
Calvin M. Hooper

Impurity-induced loss bursts from anomalous scale-free localization in a non-Hermitian dissipative lattice *(14 pages)* 043525
Hui Liu and Zhihao Xu

Spectral contraction from Gaussian beams to Helmholtz waves *(8 pages)* 043526
A. Domínguez-Cruz and B. M. Rodríguez-Lara

Coherent control of photon pairs via quantum interference between second- and third-order quantum nonlinear processes *(7 pages)* 043527
Alessia Stefano, Samuel E. Fontaine, J. E. Sipe, and Marco Liscidini

Generation of optical pulling force in liquid-core fibers: Dual perspectives of scattering and gradient effects *(16 pages)* 043528
Qirong Huang, Jia Ai, Youjun Luo, Zhen Zhao, Yongchun Zhong, Haihua Fan, Haiying Liu, Zhongchao Wei, and Qiaofeng Dai

Hanbury Brown–Twiss effect and classical entanglement with light carrying orbital angular momentum *(9 pages)* 043529
Jyrki Laatikainen, Sushil Pokharel, and Olga Korotkova

Exact geometric optics of parabolic mirrors: The angular caustic and geometric stability analysis *(9 pages)* 043530
Luciano Medina and Eric Davis

Relay-type soliton driven by the delayed coupling in multiplexed mode-locked fiber laser *(19 pages)* 043531
Hao-Yu Feng, Ze-Tian Wang, Zhen-Tao Ju, Xue-Peng Wang, Xiang-Zhong Jiang, Qin Zhou, and Chao-Qing Dai

Generation of perfectly achromatic optical vortices using a compensated tandem twisted nematic cell *(27 pages)* 043532
Dmytro O. Plutenko and Mikhail V. Vasnetsov

(Continued)

This paper was highlighted in the APS publication *Physics* (physics.aps.org).
The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 114, NUMBER 4** **OCTOBER 2026**

Topological defect states via local symmetry breaking in modified Haldane models *(9 pages)* 043533
Chengxi Yang, Jialin Liu, Jianfei Li, Yuanhang Jiang, Zheyu Zhang, Jingfeng Yao, Zhongxiang Zhou, and Chengxun Yuan

Ultrafast electron-impact-excited N_2 superfluorescence in femtosecond filaments *(9 pages)* 043534
Cheming Chen (陈车明), Chuan Cheng (郑铨), Zoumingyang Zhu (朱邹明阳), Zetao Liu (刘泽涛), Jinping Yao (姚金平), Aurélien Houard, André Mysyrowicz, Yi Liu (刘一), Wen-Te Liao (廖文德), and Pengji Ding (丁鹏基)

Soliton Thouless pumping engineered by intersite nonlinearities *(10 pages)* 043535
Tao Jiang and Li-Chen Zhao

Electromagnetic wave scattering by a semi-infinite time-varying Lorentzian medium *(9 pages)* 043536
M. I. Bakunov, M. A. Kurnikov, A. V. Shirokova, and O. V. Meshkov

Sublattice-polarized bound state in the continuum in a silicon waveguide array with approximate chiral symmetry *(7 pages)* 043537
Zhenzhen Liu, Xianghang Zhan, Dongni Chen, Pengcheng Li, and Jun-Jun Xiao

Shaping the spectra of a second-harmonic laser by spatial focusing *(8 pages)* 043538
Yan-Ming Liu, Tao Xie, Xiangying Hao, and Rui-Bo Jin

Quantum optics

Enhanced charging in open Rabi and Dicke quantum batteries *(15 pages)* 043701
A-Long Zhou, Nuo Xu, Ya-Wen Xiao, Li-Li Gao, Long-Jie Li, Zi-Min Li, and Chuan-Cun Shu

Exchange symmetry in multiphoton quantum interference *(9 pages)* 043702
Shreya Kumar, Alex E. Jones, Daniel Bhatti, and Stefanie Barz

Multiphoton heralding generates large-amplitude squeezed Schrödinger cat states and parity-selective Fock superpositions from squeezed vacuum via an optical parametric amplifier *(20 pages)* 043703
Yusuf Turek, Ming-Yan Sun, and Xiao-Xi Yao

Coherent Bose-Einstein condensation with fluctuating density *(9 pages)* 043704
L. Salasnich, A. Crisanti, A. Sarracino, and M. Zannetti

Enhanced dissipative criticality at an exceptional point *(9 pages)* 043705
Jongjun M. Lee

Second-order sideband generation and slow-fast light control in coupled exciton-optomechanical cavities via a parametric amplifier *(18 pages)* 043706
Abdul Wahab and Fahhad H. Alharbi

Macroscopic entanglement between two magnon modes via two-tone driving of a superconducting qubit *(9 pages)* 043707
Rong-Can Yang, Gang Liu, Gen Li, and Jie Li

Nonclassical many-body superradiant states with interparticle and spin-momentum entanglement *(19 pages)* 043708
Jarrod T. Reilly, Gage W. Harmon, John Drew Wilson, Murray J. Holland, and Simon B. Jäger

Robustness and optimization of NOON-state interferometry *(9 pages)* 043709
Romain Dalidet, Anthony Martin, Louis Bellando, Matthieu Bellec, Nicolas Fabre, Sébastien Tanzilli, and Laurent Labonté

(Continued)

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

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 114, NUMBER 4** **OCTOBER 2026**

Deviations from thermal light statistics in ensembles of independent two-level emitters *(13 pages)* 043710
M. Bojer, A. Cidrim, R. Bachelard, and J. von Zanthier

First-order Maxwell operator formalism for macroscopic quantum electrodynamics with open dielectric boundaries *(22 pages)* 043711
Ishita Agarwal, Ankit Kundu, Christian M. Lange, and Jonathan D. Hood

Mirrorless unidirectional lasing with inversionless gain in asymmetric ladder atomic Bragg lattices *(13 pages)* . . . 043712
Xinfu Zheng, Chen Peng, Duanfu Chen, Hanxiao Zhang, Dong Yan, and Hong Yang

Experimental evidence-based sub-Rayleigh source discrimination *(12 pages)* 043713
Saurabh U. Shringarpure, Yong Siah Teo, Hyunseok Jeong, Michael Evans, Luis L. Sánchez-Soto, Antonin Grateau, Alexander Boeschoten, and Nicolas Treps

Kirkwood-Dirac distributions in classical optics *(11 pages)* 043714
Alfredo Luis and Lorena Ballesteros Ferraz

$\mathcal{PT}$-symmetry-breaking phase transitions in a Lipkin-Meshkov-Glick dimer *(6 pages)* 043715
Simon Kothe, Christopher Oliver, and Peter Kirton

Preparation of multiexcitation subradiant states in giant-atom–waveguide systems *(20 pages)* 043716
Jun-Min Chen, Ke-Xiong Yan, Jun-Hao Lin, Ye-Hong Chen, and Yan Xia

Finite-temperature quenches of local edge memory and nonlocal Majorana parity in the Kitaev chain *(10 pages)* 043717
Ria Rushin Joseph

Non-Hermitian Michelson interferometer for exceptional-point-enhanced sensing *(14 pages)* 043718
Zhihao Xie, Jianghua Cheng, Yuwei Jing, Yahui Cai, Jiangshan Tang, Tao Li, and Keyu Xia

Controlled-Z gates with giant atoms in structured waveguides *(12 pages)* 043719
Walter Rieck, Ariadna Soro, Anton Frisk Kockum, and Guangze Chen

Bistable squeezing in a multimode circuit-quantum-acoustodynamics system *(13 pages)* 043720
Can Hong, Ke-Wen Xiao, and Wen-Yuan Wang

Chirped-pulse adiabatic population transfer in a dissipative three-level ladder: Bath-dependent transfer via the multiple Davydov D_2 ansatz *(12 pages)* 043721
Pradhyun Naresh, Yiying Yan, Frank Grossmann, and Yang Zhao

Heisenberg scaling in optical magnetometry with measurement-induced correlations as a quantum resource *(23 pages)* 043722
Georg Engelhardt, Ming Li, Xingchang Wang, JunYan Luo, and J. F. Chen

Ghost imaging with zero photons *(7 pages)* 043723
Meixue Chen, Yiqi Song, Yu Gu, Huafan Zhang, Huaibin Zheng, Yuchen He, Hui Chen, Zhuo Xu, Jianbin Liu, Yu Zhou, and Fuli Li

Dynamical signatures of a connectivity-breaking global bifurcation in a driven-dissipative Kerr dimer *(14 pages)* 043724
Zhan-Cheng Zhu, Sheng-Chen Liu, and Liang-You Peng

Frequency up-conversion of infrared signals via molecular cavity optomechanical systems with gain *(8 pages)* . . . 043725
Shu-Xian Quan, Fen Zou, and Yong Li

(Continued)

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

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 114, NUMBER 4** **OCTOBER 2026**

Quantum-corrected Floquet dynamics: Bridging fully quantum and semiclassical regimes *(7 pages)* 043726
E. K. Twyeffort and A. D. Armour

Generation of energy-time correlated triphotons in a Kobrak-Rice five-level atomic system *(10 pages)* 043727
Da Zhang, Juan Gao, Junfeng Zhao, Wenzhuo Zhang, Pengrui Ren, Zengliang Hou, Chaofan Zhang, Yuhang Tian, Junsheng Li, and Donghai Zhang

Deterministic quantum states storage via dynamical control of subradiant states *(22 pages)* 043728
Li-Ping Yang and Yue Chang

Angular momentum dynamics in two-atom superradiance *(14 pages)* 043729
Zeyuan Wang, A. Kuzmich, and P. R. Berman

Chirally frustrated superradiant phases in a Jaynes-Cummings trimer *(9 pages)* 043730
Lin-Lin Jiang, Ya-Ping Ni, Xuan Xie, Lin Tian, and Jin-Feng Huang

Photon climbing in a Kerr ladder for steady nonclassical light generation *(24 pages)* 043731
Jiahua Li and Yan Liu

Tunable Goos-Hänchen shift assisted by parametric amplification in a cavity magnomechanical system *(14 pages)* 043732
Shuting Shen, Jing-Yi Pan, Ming-Ming Du, Xi-Yun Li, Wei Zhong, Lan Zhou, and Yu-Bo Sheng

Computational framework for non-Markovian multiemitter dynamics beyond the single-excitation limit *(21 pages)* 043733
Hyunwoo Choi, Weng Cho Chew, and Dong-Yeop Na

Multimodal spectroscopy theory for ultrafast control of Rabi oscillations *(14 pages)* 043734
Jia-Wang Yu, Hong-Bin Wang, Xiao-Qing Zhou, Min Tang, Zhi-Bo Ni, Xiao-Tian Cheng, Yi Zhao, Shu-Ning Ding, Jun-Yong Yan, Hui-Hui Zhu, Chen-Hui Li, Feng Liu, and Chao-Yuan Jin

Squeezing enhancement through resonant interference in multiring resonators *(29 pages)* 043735
M. Sloan and J. E. Sipe

Invariant energy subspaces in quantum-optical high-harmonic generation: An information-theoretic approach *(12 pages)* 043736
Philipp Stammer

Simultaneous ground-state cooling of six mechanical modes of two levitated nanoparticles *(16 pages)* 043737
Qian Zhang, Yi Xu, and Jie-Qiao Liao

Regular and chaotic dynamics of nonlinear optomechanical systems controlled by modulated light *(9 pages)* 043738
A. P. Saiko, G. A. Rusetsky, S. A. Markevich, and R. Fedaruk

Single- and two-parameter sensing near critical points in the anisotropic quantum Rabi model *(16 pages)* 043739
Ming Xue, Lu Zhou, Xu-xing Geng, Guang-Ming Huang, and Gao-xiang Li

Diagonal-hopping control of superradiant photon-current routing in a two-dimensional Rabi-Hofstadter lattice *(9 pages)* 043740
Shu He, Li-Wei Duan, and Yanzhi Wang

Photon pairs, squeezed light, and the quantum wave-mixing effect in a cascaded qubit system *(11 pages)* 043741
R. D. Ivanovskikh, W. V. Pogosov, A. A. Elistratov, S. V. Remizov, A. Yu. Dmitriev, T. R. Sabirov, A. V. Vasenin, S. A. Gunin, and O. V. Astafiev

(Continued)

This paper was highlighted in the APS publication *Physics* (physics.aps.org).
The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 114, NUMBER 4** **OCTOBER 2026**

Nonreciprocal multiphoton blockade and photon-number filtering in a rotating Kerr resonator *(13 pages)* 043742
Lin-Peng You, Pei Zhou, Xin-Ping Lan, Jie Liu, Ya-Ya Deng, Yi-Bing Qian, Qi-Zhong Hu, Cong-Hua Yan, Bang-Pin Hou, and Lei Tang

ERRATA

Erratum: Quantum theory of photon emission during strong-laser-field-induced ionization. II. Continuum dynamics [Phys. Rev. A **114**, 013114 (2026)] *(5 pages)* . . . . . 049901(E)
D. B. Milošević and W. Becker

Erratum: Gravitational decoherence estimation in optomechanical systems [Phys. Rev. A **114**, 022442 (2026)] *(3 pages)* . . . . . 049902(E)
Leonardo A. M. Souza, Olimpio P. de Sá Neto, Enrico Russo, Rosario Lo Franco, and Gerardo Adesso

Erratum: Nonclassicality of multiphoton-added cat states [Phys. Rev. A **113**, L041701 (2026)] *(2 pages)* . . . . . 049903(E)
Jhordan Santiago and Petr Steindl

Erratum: Higgs and Nambu-Goldstone modes in a spin-1 XY model with long-range interactions [Phys. Rev. A **113**, 053325 (2026)] *(2 pages)* . . . . . 049904(E)
Daiki Kawasaki and Ippei Danshita

Erratum: Statistical mechanics from quantum envariance and exchange symmetry [Phys. Rev. A **113**, 042221 (2026)] *(1 page)* . . . . . 049905(E)
Amul Ojha, Shubhit Sardana, and Arnab Ghosh

This paper was highlighted in the APS publication *Physics* (physics.aps.org).
The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).