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 108, NUMBER 6
PARTS A AND B

CONTENTS

DECEMBER 2023

The Table of Contents is a total listing of Parts A and B.
Part A consists of pages L060201–062616, and Part B pages 062801–069902(E).

PART A

LETTERS

Fundamental concepts

Misinference of interaction-free measurement from a classical system *(6 pages)* L060201
Valeri Frumkin and John W. M. Bush

Quantum information science

Information propagation in long-range quantum many-body systems *(6 pages)* L060401
Marius Lemm, Carla Rubiliani, Israel Michael Sigal, and Jingxuan Zhang (张景宣)

Enhancing qubit readout with Bayesian learning *(7 pages)* L060402
F. Cosco and N. Lo Gullo

Light-induced processes in atomic-scale systems

Dynamic interference in below-threshold ionization *(6 pages)* L061101
Attila Tóth, Sándor Borbély, and András Csehi

Ultracold systems and matter waves

Quantum gas microscopy of fermionic triangular-lattice Mott insulators *(6 pages)* L061301
Jirayu Mongkolkiattichai, Liyu Liu, Davis Garwood, Jin Yang, and Peter Schauss

Bulk density signatures of a lattice quasihole with very few particles *(5 pages)* L061302
R. O. Umucalılar

Photonics, nonlinear optics, and optomechanics

Self-steepening-induced stabilization of nonlinear edge waves at photonic valley-Hall interfaces *(6 pages)* L061501
Ekaterina O. Smolina, Lev A. Smirnov, Daniel Leykam, and Daria A. Smirnova

ARTICLES

Fundamental concepts

Unitarity breaking in self-averaging spectral form factors *(11 pages)* 062201
Apollonas S. Matsoukas-Roubeas, Mathieu Beau, Lea F. Santos, and Adolfo del Campo

(Continued)

2469-9926(202312)108:6:B;1-R

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 108, NUMBER 6** **DECEMBER 2023**

Null dimension witness based on single measurements *(6 pages)* 062202
Josep Batle and Adam Bednorz

Imaginarity of Gaussian states *(13 pages)* 062203
Jianwei Xu

Indefinite temporal order without gravity *(15 pages)* 062204
Kacper Dębski, Magdalena Zych, Fabio Costa, and Andrzej Dragan

$\mathcal{PT}$-symmetry breaking in quantum spin chains with exceptional non-Hermiticities *(8 pages)* 062205
Jacob Muldoon and Yogesh N. Joglekar

Managing rogue quantum amplitudes: A possible control in quantum walks *(7 pages)* 062206
A. R. C. Buarque and E. P. Raposo

Quantum stochastic thermodynamics: A semiclassical theory in phase space *(7 pages)* 062207
Zhaoyu Fei

Nonclassicality induced by nonstationary squeezed reservoirs *(11 pages)* 062208
Mehdi Abdi and Moslem Zarei

Generating entanglement by quantum resetting *(13 pages)* 062210
Manas Kulkarni and Satya N. Majumdar

Effects of one-way correlations on thermodynamics of a multipartite open quantum system *(10 pages)* 062211
Qi Zhang, Yun-Jie Xia, and Zhong-Xiao Man

Multisystem measurements in generalized probabilistic theories and their role in information processing *(15 pages)* 062212
Giorgos Eftaxias, Mirjam Weilenmann, and Roger Colbeck

Quantum contextuality of complementary photon polarizations explored by adaptive input state control *(11 pages)* 062213
Kengo Matsuyama, Ming Ji, Holger F. Hofmann, and Masataka Iinuma

Nonideal measurement heat engines *(6 pages)* 062214
Abhisek Panda, Felix C. Binder, and Sai Vinjanampathy

Dynamical phase transition and scaling in the chiral clock Potts chain *(12 pages)* 062215
Xue-Jia Yu

Entangled time-crystal phase in an open quantum light-matter system *(13 pages)* 062216
Robert Mattes, Igor Lesanovsky, and Federico Carollo

Quantum dynamics of non-Hermitian many-body Landau-Zener systems *(9 pages)* 062217
Rajesh K. Malla, Julia Cen, Wilton J. M. Kort-Kamp, and Avadh Saxena

Electrodynamic Aharonov-Bohm effect *(5 pages)* 062218
Pablo L. Saldanha

Decoherence limiting the cost to simulate an anharmonic oscillator *(21 pages)* 062219
Tzula B. Propp, Sayonee Ray, John B. DeBrota, Tameem Albash, and Ivan H. Deutsch

(Continued)

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 108, NUMBER 6** **DECEMBER 2023**

Quantum information science

Quantum state transfer on square lattices with topology *(9 pages)* 062401
Mei-Song Wei, Ming-Jie Liao, Yi-Qing Wang, Zijian Lin, Xingze Qiu, Ce Wang, Jingping Xu, and Yaping Yang

Two-mode Raman quantum battery dependent on coupling strength *(12 pages)* 062402
Lu Wang, Shu-Qian Liu, Feng-lin Wu, Hao Fan, and Si-Yuan Liu

℘ Fault-tolerant qubit encoding using a spin-7/2 qudit *(10 pages)* 062403
Sumin Lim, Junjie Liu, and Arzhang Ardavan

Generalized iterative formula for Bell inequalities *(33 pages)* 062404
Xing-Yan Fan, Zhen-Peng Xu, Jia-Le Miao, Hong-Ye Liu, Yi-Jia Liu, Wei-Min Shang, Jie Zhou, Hui-Xian Meng, Otfried Gühne, and Jing-Ling Chen

Quantum signatures of the topological phase in bosonic quadratic systems *(13 pages)* 062405
Yaohua Li and Yong-Chun Liu

Robust quantum teleportation via a non-Markovian channel *(15 pages)* 062406
Yanfang Wang, Shibei Xue, Hongbin Song, and Min Jiang

Strongest nonlocal sets with small sizes *(8 pages)* 062407
Jicun Li, Fei Shi, and Xiande Zhang

Adaptive low-depth quantum algorithms for robust multiple-phase estimation *(16 pages)* 062408
Haoya Li, Hongkang Ni, and Lexing Ying

Robust quantum state transfer with topologically protected nodes *(8 pages)* 062409
Yanlong Chang, JiaoJiao Xue, Yuxiang Han, Xiaoli Wang, and Hongrong Li

Unitary quantum process tomography with unreliable pure input states *(20 pages)* 062410
François Verdeil and Yannick Deville

Sample efficient graph classification using binary Gaussian boson sampling *(12 pages)* 062411
Amanuel Anteneh and Olivier Pfister

Machine learning quantum mechanical ground states based on stochastic mechanics *(9 pages)* 062412
Kai-Hendrik Henk and Wolfgang Paul

Quantum phase processing and its applications in estimating phase and entropies *(24 pages)* 062413
Youle Wang, Lei Zhang, Zhan Yu, and Xin Wang

Reducing circuit depth with qubitwise diagonalization *(10 pages)* 062414
Edison M. Murairi and Michael J. Cervia

Quantum partial information decomposition *(9 pages)* 062415
S. J. van Enk

Coherence in multipath interference via quantum Fisher information *(9 pages)* 062416
Yuan Sun, Nan Li, and Shunlong Luo

Entanglement purification of hypergraph states *(8 pages)* 062417
Lina Vandré and Otfried Gühne

(Continued)

℘ 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 108, NUMBER 6** **DECEMBER 2023**

Additivity of states uniquely determined by marginals *(10 pages)* 062418
Yi Shen and Lin Chen

Quantum maximal correlation for Gaussian states *(18 pages)* 062419
Salman Beigi and Saleh Rahimi-Keshari

Benchmarking a boson sampler with Hamming nets *(12 pages)* 062420
Ilia A. Iakovlev, Oleg M. Sotnikov, Ivan V. Dyakonov, Evgeniy O. Kiktenko, Aleksey K. Fedorov, Stanislav S. Straupe, and Vladimir V. Mazurenko

Invasiveness of nonequilibrium pure-dephasing quantum thermometry *(15 pages)* 062421
Francesco Albarelli, Matteo G. A. Paris, Bassano Vacchini, and Andrea Smirne

Quantum-probabilistic Hamiltonian learning for generative modeling and anomaly detection *(13 pages)* 062422
Jack Y. Araz and Michael Spannowsky

Shallow quantum circuits for deeper problems *(14 pages)* 062423
Adrián Pérez-Salinas, Radoica Draškić, Jordi Tura, and Vedran Dunjko

Quantum algorithm for solving open-system dynamics on quantum computers using noise *(19 pages)* 062424
Juha Leppäkangas, Nicolas Vogt, Keith R. Fratus, Kirsten Bark, Jesse A. Vaitkus, Pascal Stadler, Jan-Michael Reiner, Sebastian Zanker, and Michael Marthaler

Minimum-time generation of a uniform superposition in a qubit with only transverse field control *(14 pages)* 062425
Vasileios Evangelakos, Emmanuel Paspalakis, and Dionisis Stefanatos

Fault-tolerant measurement-free quantum error correction with multiqubit gates *(14 pages)* 062426
Michael A. Perlin, Vickram N. Premakumar, Jiakai Wang, Mark Saffman, and Robert Joynt

Quantum technologies

Coherent control of the causal order of entanglement distillation *(16 pages)* 062601
Zai Zuo, Michael Hanks, and M. S. Kim

Higher-order methods for Hamiltonian engineering pulse sequence design *(18 pages)* 062602
Matthew Tyler, Hengyun Zhou, Leigh S. Martin, Nathaniel Leitao, and Mikhail D. Lukin

Adiabatic ground-state preparation of fermionic many-body systems from a two-body perspective *(14 pages)* 062603
Dyon van Vreumingen and Kareljan Schoutens

Enhancing quantum computation via superposition of quantum gates *(37 pages)* 062604
Jorge Miguel-Ramiro, Zheng Shi, Luca Dellantonio, Albie Chan, Christine A. Muschik, and Wolfgang Dür

Entanglement-enhanced quantum strategies for accurate estimation of multibody-group motion and moving-object characteristics *(10 pages)* 062605
Yongqiang Li and Changliang Ren

Teleamplification on the Borealis boson-sampling device *(12 pages)* 062606
Aaron Z. Goldberg and Khabat Heshami

Self-testing of an unbounded number of mutually commuting local observables *(11 pages)* 062607
Sneha Munshi and A. K. Pan

(Continued)

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 108, NUMBER 6** **DECEMBER 2023**

Information-theoretic hardness of out-of-time-order correlators *(15 pages)* 062608
Jordan Cotler, Thomas Schuster, and Masoud Mohseni

Exploring ququart computation on a transmon using optimal control *(13 pages)* 062609
Lennart Maximilian Seifert, Ziqian Li, Tanay Roy, David I. Schuster, Frederic T. Chong, and Jonathan M. Baker

Zero-field optical magnetometer based on spin alignment *(13 pages)* 062610
A. Meraki, L. Elson, N. Ho, A. Akbar, M. Koźbiał, J. Kołodyński, and K. Jensen

Optimal Ramsey interferometry with echo protocols based on one-axis twisting *(11 pages)* 062611
M. S. Scharnagl, T. Kielinski, and K. Hammerer

Quantum sensor network metrology with bright solitons *(11 pages)* 062612
Dmitriy Tsarev, Stepan Osipov, Ray-Kuang Lee, Sergey Kulik, and Alexander Alodjants

Synchronizing clocks via satellites using entangled photons: Effect of relative velocity on precision *(21 pages)* . . . 062613
Stav Haldar, Ivan Agullo, and James E. Troupe

Multiparty entanglement routing in quantum networks *(15 pages)* 062614
Vaisakh Mannalath and Anirban Pathak

Monte Carlo graph search for quantum circuit optimization *(10 pages)* 062615
Bodo Rosenhahn and Tobias J. Osborne

Efficient two-qutrit gates in superconducting circuits using parametric coupling *(9 pages)* 062616
Mahadevan Subramanian and Adrian Lupascu

PART B

Atomic and molecular structure and dynamics; high-precision experiments

Testing the nonclassicality of gravity with the field of a single delocalized mass *(9 pages)* 062801
Alessandro Pesci and Pierbiagio Pieri

Atoms, dimers, and nanoparticles from orbital-free density-potential-functional theory *(19 pages)* 062802
Martin-Isbjörn Trappe, William C. Witt, and Sergei Manzhos

Studying highly relativistic vortex-electron beams by atomic scattering *(13 pages)* 062803
V. K. Ivanov, A. D. Chaikovskaia, and D. V. Karlovets

Numerical evaluation of systematics in the experiment for electron electric dipole moment measurement in HfF^+ *(5 pages)* 062804
Alexander Petrov

Short-range physics of the three-body recombination for ultracold helium atoms *(10 pages)* 062805
Bin-Bin Wang and Yong-Chang Han

Nuclear mass and size corrections to the magnetic shielding *(6 pages)* 062806
Krzysztof Pachucki

Robustness of attosecond molecular modes under nuclear dynamics *(10 pages)* 062807
Wan-Dong Yu, Lei Geng, and Liang-You Peng

(Continued)

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 108, NUMBER 6** **DECEMBER 2023**

Direct measurement of delayed-detachment rate constants of C_7^- *(7 pages)* 062808
S. Iida, S. Kuma, J. W. Niman, S. Masuda, H. Tanuma, P. Ferrari, K. Hansen, H. Shiromaru, and T. Azuma

Collinear laser spectroscopy of highly charged ions produced with an electron-beam ion source *(12 pages)* 062809
P. Imgram, K. König, B. Maaß, P. Müller, and W. Nörtershäuser

Controlling electron projectile coherence effects using twisted electrons *(13 pages)* 062810
A. L. Harris

Tunable nonadditivity in the Casimir-Lifshitz force between graphene gratings *(10 pages)* 062811
Youssef Jeyar, Minggang Luo, Kevin Austry, Brahim Guizal, Yi Zheng, H. B. Chan, and Mauro Antezza

Absorption spectroscopy for laser cooling and high-fidelity detection of barium monofluoride molecules *(10 pages)* 062812
Marian Rockenhäuser, Felix Kogel, Einius Pultinevicius, and Tim Langen

Shift of nuclear clock transition frequency in ^{229}Th ions due to hyperfine interaction *(6 pages)* 062813
V. A. Dzuba and V. V. Flambaum

Electrical and thermal control of Fabry-Pérot cavities mediated by Casimir forces *(7 pages)* 062814
Lixin Ge, Bingzhong Li, Hao Luo, and Ke Gong

Candidate molecules for next-generation searches of hadronic charge-parity violation *(7 pages)* 062815
Aurélien Marc, Mickaël Hubert, and Timo Fleig

Positron scattering and annihilation from helium at low energies *(8 pages)* 062816
Xian-Jun Li, Meng-Shan Wu, Jun Jiang, Chen-Zhong Dong, Jun-Yi Zhang, Zong-Chao Yan, and Kalman Varga

Effective field theory for the bound states and scattering of a heavy charged particle and a neutral atom *(11 pages)* 062817
Daniel Odell, Daniel R. Phillips, and Ubirajara van Kolck

Application of the correlated *B*-spline basis functions to the leading relativistic and QED corrections of helium *(9 pages)* 062818
Hao Fang, Yong-Hui Zhang, Pei-Pei Zhang, and Ting-Yun Shi

Nondestructive inelastic recoil spectroscopy of a single molecular ion: A versatile tool toward precision action spectroscopy *(5 pages)* 062819
Aaron Calvin, Scott Eierman, Zeyun Peng, Merrell Brzeczek, Samuel Kresch, Elijah Lane, Lincoln Satterthwaite, and David Patterson

Electromagnetically induced transparency and optical pumping in the hyperfine Paschen-Back regime *(9 pages)* 062820
Roberto Mottola, Gianni Buser, and Philipp Treutlein

Hyperfine structure of the $A^1\Pi$ state of AlCl and its relevance to laser cooling and trapping *(14 pages)* 062821
John R. Daniel, Jamie C. Shaw, Chen Wang, Li-Ren Liu, Brian K. Kendrick, Boerge Hemmerling, and Daniel J. McCarron

Precision Rydberg state spectroscopy with slow electrons and the proton-radius puzzle *(8 pages)* 062822
Ulrich D. Jentschura and Dylan C. Yost

(Continued)

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 108, NUMBER 6** **DECEMBER 2023**

Charge-exchange-dependent energy loss of H and He in freestanding monolayers of graphene and MoS_2 *(8 pages)* 062823
Anna Niggas, Lukas Fischer, Silvan Kretschmer, Matthias Werl, Herbert Biber, Carsten Speckmann, Niall McEvoy, Jani Kotakoski, Friedrich Aumayr, Arkady V. Krasheninnikov, and Richard A. Wilhelm

Light-induced processes in atomic-scale systems

High-order above-threshold ionization of an atom in intense quantum light *(6 pages)* 063101
ShiJun Wang and XuanYang Lai

Quantum-corrected semiclassical theory for strong-field ionization *(10 pages)* 063102
Wenhai Xie, Min Li, Yueming Zhou, and Peixiang Lu

Retrieval of the molecular alignment distribution from THz generation *(8 pages)* 063103
Ya-Ning Li, Jin-Xu Du, Lei Zhang, Zhi-Hong Jiao, Song-Feng Zhao, and Guo-Li Wang

Non-Hermitian landscape of autoionization *(6 pages)* 063104
G. Mouloudakis and P. Lambropoulos

Stimulating electron competition with extreme-ultraviolet-initiated high-order harmonic generation *(8 pages)* 063105
Kathryn R. Hamilton, Lynda Hutcheson, Hugo W. van der Hart, and Andrew C. Brown

Interference from interband harmonics generated by different crystal momentum channels *(8 pages)* 063106
Shuang Wang, Si-Tong Liu, Xiao-Xin Huo, Yun-He Xing, and Jun Zhang

Attosecond time delay in atomic photoionization: Angular-dependent transition from dipole to quadrupole and spin-flip dynamics *(6 pages)* 063107
Rezvan Khademhosseini, Pranawa C. Deshmukh, and Steven T. Manson

Visualizing molecular unidirectional rotation by a rotated weak-field polarization technique *(9 pages)* 063108
Zhenzhong Lian, Zhou Chen, Juan Li, Chuan-Cun Shu, and Zhan Hu

All-optical three-dimensional orientation of asymmetric-top molecules with combined linearly and elliptically polarized two-color laser fields *(10 pages)* 063109
Md. Maruf Hossain, Nanse Esaki, and Hirofumi Sakai

Absolute cross sections and asymmetry parameters for the photodetachment and binding energy of excited $C^-(^2D^o)$ *(9 pages)* 063110
Raphaël Marion and Xavier Urbain

Magneto-optical trap performance for high-bandwidth applications *(9 pages)* 063111
B. Adams, S. Kinge, K. Bongs, and Y. H. Lien

Classical gravitational effect on the standard quantum limit of finite-size optical lattice clocks in estimating gravitational potential *(11 pages)* 063112
Fumiya Nishimura, Yui Kuramochi, and Kazuhiro Yamamoto

Ultracold systems and matter waves

Characterization of three-body loss in ^{166}Er and optimized production of large Bose-Einstein condensates *(7 pages)* 063301
Milan Krstajić, Péter Juhász, Jiří Kučera, Lucas R. Hofer, Gavin Lamb, Anna L. Marchant, and Robert P. Smith

(Continued)

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 108, NUMBER 6** **DECEMBER 2023**

Self-bound vortex lattice in a rapidly rotating quantum droplet *(7 pages)* 063302
Qi Gu and Xiaoling Cui

Detecting the phase transition in a strongly interacting Fermi gas by unsupervised machine learning *(5 pages)* . . . 063303
D. Eberz, M. Link, A. Kell, M. Breyer, K. Gao, and M. Köhl

Mixing-spacetime symmetry in the Floquet-Bloch band theory *(10 pages)* 063304
Pei Wang

Optimizing persistent currents in a ring-shaped Bose-Einstein condensate using machine learning *(11 pages)* 063306
Simeon Simjanovski, Guillaume Gauthier, Matthew J. Davis,
Halina Rubinsztein-Dunlop, and Tyler W. Neely

Repulsion-driven metallic phase in the ground state of the half-filled t-t' ionic Hubbard chain *(16 pages)* 063307
Gerardo L. Rossini and George I. Japaridze

Sequential large momentum transfer exploiting rectangular Raman pulses *(25 pages)* 063308
B. Dubetsky

Characterizing the impact of the magnetic field in the frequency domain for a multiwave atom interferometer *(9 pages)* 063309
Xudong Ren, Wenhua Yan, Yukun Yang, Xiaobing Deng, Wenjie Xu, Zhongkun Hu, and Minkang Zhou

Occupancy oscillation of honeycomb-lattice hard-core bosons under a pseudo-magnetic-field *(7 pages)* 063310
Jiaojiao Guo and Huaiming Guo

Theoretical investigation of an ultracold atom-dimer reaction for three identical bosons *(7 pages)* 063311
Zhong-Bo Chen, Jing-Lun Li, and Shu-Lin Cong

Fermi spin polaron and dissipative Fermi-polaron Rabi dynamics *(13 pages)* 063312
Hui Hu and Xia-Ji Liu

Absolute-phase-shift measurement in a phase-shear-readout atom interferometer *(9 pages)* 063313
Si-Tong Yan, Jun-Jie Jiang, Lin Zhou, Yu-Hang Ji, Chuan He, Zhuo Hou, Biao Tang, Xi Chen,
Jin Wang, and Ming-Sheng Zhan

Wave-packet dynamics and edge transport in anomalous Floquet topological phases *(9 pages)* 063314
Miguel F. Martínez and F. Nur Ünal

Generalized effective spin-chain formalism for strongly interacting spinor gases in optical lattices *(19 pages)* 063315
Sagarika Basak and Han Pu

Persistent-current states originating from the Hilbert-space fragmentation in momentum space *(15 pages)* 063316
Masaya Kunimi and Ippei Danshita

Faraday pattern formations in temporally driven Rydberg-dressed Bose-Einstein condensates *(12 pages)* 063317
Zeyun Shi, Lu Qin, Fazal Badshah, Yuan Zhou, and Haibo Huang

Dressed-molecule theory for the quasi-two-dimensional quantum anomaly *(8 pages)* 063318
Fan Wu, Jian-shen Hu, and Lianyi He

Flux-induced reentrant dynamics in the quantum walk of interacting bosons *(6 pages)* 063319
Mrinal Kanti Giri, Biswajit Paul, and Tapan Mishra

(Continued)

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 108, NUMBER 6** **DECEMBER 2023**

Machine learning one-dimensional spinless trapped fermionic systems with neural-network quantum states *(25 pages)* 063320
J. W. T. Keeble, M. Drissi, A. Rojo-Francàs, B. Juliá-Díaz, and A. Rios

Photonics, nonlinear optics, and optomechanics

Multipole solitons in competing nonlinear media with an annular potential *(8 pages)* 063501
Liangwei Dong, Mingjing Fan, Changming Huang, and Boris A. Malomed

Family of oscillatory electromagnetic pulses *(7 pages)* 063502
John Lekner

Temporal control of high-order harmonic cutoffs in periodic crystals *(10 pages)* 063503
Nivash R, Amol R. Holkundkar, and Jayendra N. Bandyopadhyay

Low-threshold lasing with a stationary inflection point in a three-coupled-waveguide structure *(11 pages)* 063504
Kessem Zamir-Abramovich, Nathaniel Furman, Albert Herrero-Parareda, Filippo Capolino, and Jacob Scheuer

Improving photon blockade, entanglement, and mechanical-cat-state generation in a generalized cross-Kerr optomechanical circuit *(18 pages)* 063505
H. Solki, Ali Motazedifard, and M. H. Naderi

Quantum interference and exceptional points in a nonreciprocal two-level system *(10 pages)* 063506
Jing Dong, Xiao-Lin Li, Fu-Quan Dou, and Wen-Yuan Wang

Spatial beam dynamics in graded-index multimode fibers under Raman amplification: A variational approach *(8 pages)* 063507
Ashis Paul, Anuj P. Lara, Samudra Roy, and Govind P. Agrawal

Optical self-cooling of a membrane oscillator in a cavity optomechanical experiment at room temperature *(10 pages)* 063508
P. Vezio, M. Bonaldi, A. Borrielli, F. Marino, B. Morana, P. M. Sarro, E. Serra, and F. Marin

Optical trapping performance of circular Pearcey beams on Mie particles *(6 pages)* 063509
Xiaofang Lu, Liu Tan, Nana Liu, Chuanwen Chen, Kaijian Chen, Haixia Wu, Xiaoshuang Xia, Peiyu Zhang, Peilong Hong, Bingsuo Zou, and Yi Liang

Ionization-induced susceptibility by nearly free electrons in gases influenced by the Coulomb potential *(7 pages)* 063510
F. R. Arteaga-Sierra, J. Herrmann, and A. Husakou

Ferromagnetic levitation and harmonic trapping of a milligram-scale yttrium iron garnet sphere *(12 pages)* 063511
Maria Fuwa, Ryosuke Sakagami, and Tsuyoshi Tamegai

Turbulent dynamics in a two-dimensional paraxial fluid of light *(7 pages)* 063512
Myrann Baker-Rasooli, Wei Liu, Tangui Aladjidi, Alberto Bramati, and Quentin Glorieux

Mode-degeneracy lifting in exceptional points of a coupled spaser-dielectric waveguide system *(9 pages)* 063513
Anton V. Hlushchenko, Vitalii I. Shcherbinin, Oksana L. Andrieieva, Viktor I. Tkachenko, and Vladimir R. Tuz

Theory of high-efficiency adiabatic frequency conversion in coupled microrings *(24 pages)* 063514
Luis Cortes-Herrera, Xiaotong He, Jaime Cardenas, and Govind P. Agrawal

(Continued)

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 108, NUMBER 6** **DECEMBER 2023**

Floquet engineering Dirac bands in synthetic frequency lattices *(8 pages)* 063515
Lingzhi Zheng, Bing Wang, Chengzhi Qin, Shuyue Chen, Lange Zhao, Shulin Wang, Weiwei Liu, and Peixiang Lu

Broadband optical nonreciprocity via nonreciprocal band structure *(10 pages)* 063516
Ning Hu, Zhi-Xiang Tang, and Xun-Wei Xu

Theory of hydrodynamic phenomena in optical mesh lattices *(24 pages)* 063517
Hannah M. Price, Martin Wimmer, Monika Monika, Ulf Peschel, and Iacopo Carusotto

Quantum optics

Cooperative photon emission rates in random atomic clouds *(13 pages)* 063701
Viviana Viggiano, Romain Bachelard, Fabio Deelan Cunden, Paolo Facchi, Robin Kaiser, Saverio Pascazio, and Francesco V. Pepe

Electromagnetically induced transparency in many-emitter waveguide quantum electrodynamics: Linear versus nonlinear waveguide dispersions *(8 pages)* 063702
Tiberius Berndsen and Imran M. Mirza

Magnon squeezing by two-tone driving of a qubit in cavity-magnon-qubit systems *(7 pages)* 063703
Qi Guo, Jiong Cheng, Huatang Tan, and Jie Li

Nonreciprocal magnon-photon-phonon entanglement in cavity magnomechanics *(6 pages)* 063704
Subhadeep Chakraborty and Camelia Das

Fundamental sensitivity limit of lossy cavity-enhanced interferometers with external and internal squeezing *(9 pages)* 063705
M. Korobko, J. Südbeck, S. Steinlechner, and R. Schnabel

Quantum entanglement between signal and frequency-up-converted idler photons *(7 pages)* 063706
Jiaxuan Wang, Alexei V. Sokolov, and Girish S. Agarwal

Significant enhancement of group delay in electromagnetically induced transparency with a spatially partially coherent coupling field *(6 pages)* 063707
You-Lin Chuang

Limits for realizing single photons *(20 pages)* 063708
Jan Gulla, Kai Ryen, and Johannes Skaar

Time-reversal-symmetry breaking in a scalable cavity QED lattice *(8 pages)* 063709
Yusef Maleki, Chaofan Zhou, and M. Suhail Zubairy

Photon-number resolution with microwave Josephson photomultipliers *(17 pages)* 063710
E. V. Stolyarov, O. V. Kliushnichenko, V. S. Kovtoniuk, and A. A. Semenov

Interference of cavity light by a single atom acting as a double slit *(11 pages)* 063711
Yijia Zhou, Xinwei Li, Weibin Li, and Hao Zhang

Multilevel Purcell effect and the impact of vibrational modes in molecular quantum optics *(12 pages)* 063712
Charlie Nation, Valentina Notararigo, and Alexandra Olaya-Castro

Source-field approach to phase-matched cascade correlated emission *(16 pages)* 063713
P. R. Berman and A. Kuzmich

(Continued)

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 108, NUMBER 6** **DECEMBER 2023**

Spectral domain nonlinear quantum interferometry with pulsed laser excitation *(9 pages)* 063714
Jasleen Kaur, Yu Mukai, Ryo Okamoto, and Shigeki Takeuchi

Nonreciprocal single-photon scattering in giant-spin-ensemble–waveguide magnonics *(15 pages)* 063715
Xin Wang, Qing-Yang Qiu, Kai-Wei Huang, and Hao Xiong

Periodically and quasiperiodically driven anisotropic Dicke model *(13 pages)* 063716
Pragna Das, Devendra Singh Bhakuni, Lea F. Santos, and Auditya Sharma

COMMENTS

Comment on "Generalized James' effective Hamiltonian method" *(6 pages)* 066201
W. Rosado and Ivan Arraut

Comment on "Multiparty quantum mutual information: An alternative definition" *(2 pages)* 066401
Jaehak Lee, Gibeom Noh, Changsuk Noh, and Jiyong Park

Reply to "Comment on 'Multiparty quantum mutual information: An alternative definition' " *(2 pages)* 066402
Asutosh Kumar

ERRATA

Erratum: Variations of the Kibble-Zurek scaling exponents of trapped Bose gases
[Phys. Rev. A **108**, 023315 (2023)] *(1 page)* . . . . . 069901(E)
Tenzin Rabga, Yangheon Lee, Dalmin Bae, Myeonghyeon Kim, and Y. Shin

Erratum: Chiral discrimination in helicity-preserving Fabry-Pérot cavities
[Phys. Rev. A **107**, L021501 (2023)] *(3 pages)* . . . . . 069902(E)
L. Mauro, J. Fregoni, J. Feist, and R. Avriller