PHYSICAL REVIEW A **THIRD SERIES, VOLUME 112, NUMBER 1** **JULY 2025**

Efficient tensor-network simulation of multiemitter non-Markovian systems *(13 pages)* 013721
Irene Papaefstathiou, Daniel Malz, J. Ignacio Cirac, and Mari Carmen Bañuls

Many-body quantum dimerization in two-dimensional atomic arrays *(12 pages)* 013722
Giuseppe Calajó, Matija Tečer, Simone Montangero, Pietro Silvi, and Marco Di Liberto

Heralded generation of entangled states based on N-bundle emission in a waveguide magnonics system *(13 pages)* 013723
Chengsong Zhao, Wenlin Li, Biao Xiong, Jia-Xin Peng, Ling Zhou, and Wei-jiang Gong

COMMENTS

Comment on "Hermitian stochastic methodology for x-ray superfluorescence" *(2 pages)* 017701
Jeong-Wan Park, Kwang-Je Kim, and Ryan Lindberg

Reply to "Comment on 'Hermitian stochastic methodology for x-ray superfluorescence' " *(5 pages)* 017702
Stasis Chuchurka, Vladislav Sukharnikov, and Nina Rohringer

ERRATA

Erratum: Quantum Langevin theory for two coupled phase-conjugated electromagnetic waves [Phys. Rev. A **107**, 053703 (2023)] *(2 pages)* . . . . . 019901(E)
Yue Jiang, Yefeng Mei, and Shengwang Du

Erratum: Superradiance-driven optomechanical entanglement [Phys. Rev. A **111**, 053713 (2025)] *(2 pages)* . . . . . 019902(E)
Kai-Wei Huang, Xin Wang, Yi Ren, and Hao Xiong

Erratum: Low-depth phase oracle using a parallel piecewise circuit [Phys. Rev. A **111**, 062420 (2025)] *(2 pages)* . . . . . 019903(E)
Zhu Sun, Gregory Boyd, Zhenyu Cai, Hamza Jnane, Bálint Koczor, Richard Meister, Romy Minko, Benjamin Pring, Simon C. Benjamin, and Nikitas Stamatopoulos

Erratum: Forces on alkali Rydberg atoms due to nonlinearly polarized light [Phys. Rev. A **111**, 053120 (2025)] *(1 page)* . . . . . 019904(E)
A. Bhowmik and D. Blume

Erratum: Two-dimensional non-Hermitian fermionic superfluidity with spin imbalance [Phys. Rev. A **109**, 063306 (2024)] *(1 page)* . . . . . 019905(E)
Tingting Shi, Siqi Wang, Zhiyue Zheng, and Wei Zhang

Erratum: Generic optical singularities in Brewster-reflected postparaxial beam fields [Phys. Rev. A **103**, 013510 (2021)] *(2 pages)* . . . . . 019906(E)
Anirban Debnath and Nirmal K. Viswanathan

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 112, NUMBER 1** **JULY 2025**

Coupled states of cold ^{174}Yb atoms in a high-finesse cavity *(8 pages)* 013705
Saran Shaju, Dmitriy Sholokhov, Simon B. Jäger, and Jürgen Eschner

Triphoton generation and heralded biphotons via spontaneous six-wave mixing in coherently driven cold atoms *(11 pages)* 013706
Xin-Yi Ling, Hui-Min Zhao, Xiao-Jun Zhang, and Jin-Hui Wu

Non-Hermitian optical scattering in cold atoms via four-wave mixing *(14 pages)* 013707
Xiao Liu, M. Artoni, G. C. La Rocca, and Jin-Hui Wu

Robustness of entanglement in a non-Hermitian cavity-optomechanical system even away from exceptional points *(11 pages)* 013708
Jia-Jia Wang, Yu-Hong He, Chang-Geng Liao, Rong-Xin Chen, and Jacob A. Dunningham

High-efficiency telecom frequency conversion via a diamond-type atomic ensemble *(7 pages)* 013709
Ling-Chun Chen, Meng-Yi Lin, Jiun-Shiuan Shiu, Xuan-Qing Zhong, Po-Han Tseng, and Yong-Fan Chen

Modeling and optimization of pulsed-squeezed-state generation in a ring-resonator system *(10 pages)* 013710
Marc M. Dignam and Marco Liscidini

Excitation of narrow x-ray transitions in thin-film cavities by focused pulses *(17 pages)* 013711
Dominik Lentrodt, Christoph H. Keitel, and Jörg Evers

Magnon blockade in spin-magnon systems with frequency detuning *(11 pages)* 013712
Sheng Zhao, Ya-Long Ren, Xin-Lei Hei, Xue-Feng Pan, and Peng-Bo Li

Stochastic-Chebyshev-expansion approach for the simulation of linear polariton spectroscopy in the collective-coupling regime *(12 pages)* 013713
Braden M. Weight and Pengfei Huo

Persistent quantum advantage with definite photon-number states in lossy multiple-phase estimation *(11 pages)* 013714
Min Namkung, Dong-Hyun Kim, Seongjin Hong, Changhyoup Lee, and Hyang-Tag Lim

Wigner-negative states in the steady-state emission of a two-level system driven by squeezed light *(8 pages)* 013715
Miriam J. Leonhardt and Scott Parkins

Optimizing the brightness of a spontaneous parametric down-conversion source in Laguerre-Gaussian modes using a type-0 periodically poled nonlinear crystal *(12 pages)* 013716
Jungmo Lee, Kyungdeuk Park, Dongkyu Kim, Yonggi Jo, Dong-Gil Im, and Yong Sup Ihn

Many-body enhancement of energy storage in a waveguide QED quantum battery *(9 pages)* 013717
Salvatore Tirone, Gian Marcello Andolina, Giuseppe Calajò, Vittorio Giovannetti, and Davide Rossini

Vacuum-induced Goos-Hänchen shift *(10 pages)* 013718
Zareen A. Khan, Anwar Ali Khan, Zeeshan Ali, Rahmatullah, Ziauddin, and Shi-Hai Dong

Quantum beat of two single photons in the transverse momentum space *(12 pages)* 013719
Bixiang Guo, Ziye Chen, Luca Maggio, Wenbo Wu, Shiting Liu, Vincenzo Tamma, and Jingyun Fan

Stark-induced tunable phase transition in the two-photon Dicke-Stark model *(7 pages)* 013720
Cui-Lu Zhai, Wei Wu, Chun-Wang Wu, and Ping-Xing Chen

(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 112, NUMBER 1** **JULY 2025**

Local perfect chirality at reflection zeros away from exceptional points in optical whispering-gallery microcavities *(12 pages)* 013527
Junda Zhu, Haitao Liu, Fang Bo, Can Tao, Guoquan Zhang, and Jingjun Xu

Supercorrelated decay in a quasiperiodic nonlinear waveguide: From Markovian to non-Markovian transitions *(13 pages)* 013528
Jia-Qi Li, Tian-Yu Zhou, and Xin Wang

Chiral solitons in quadratic quasi-phase-matched photonic crystals *(11 pages)* 013529
Yuxin Guo, Xuening Wang, Zhiwei Fan, Zhaopin Chen, Qiuyi Ning, Hexiang He, Wei Pang, Li Zhang, and Yongyao Li

℘ Electromagnetic helicity in twisted cavity resonators *(12 pages)* 013530
E. C. I. Paterson, J. Bourhill, M. E. Tobar, and M. Goryachev

Coupled two-dye gain-medium-based photonic nanolasers for short-pulse generation *(18 pages)* 013531
Shadman Shahid and Muhammad Anisuzzaman Talukder

℘ Gain-modified emission dynamics between two quantum emitters in a plasmonic gain cavity system *(23 pages)* 013532
Becca VanDrunen, Juanjuan Ren, Sebastian Franke, and Stephen Hughes

Increased output of superradiant light-emitting diodes due to population fluctuations *(9 pages)* 013533
Igor E. Protsenko and Alexander V. Uskov

Cross-Kerr nonlinearity and four-wave mixing in an N-type four-level coherent system *(9 pages)* 013534
Jiaxin Ou, Yupeng Duan, and Yingjie Du

Phase-controlled robust tripartite quantum entanglement in cavity-magnon optomechanics *(10 pages)* 013535
Jing-Xue Liu, Ya-Feng Jiao, Bin Yin, Hong-Yun Yu, Ruo-Chen Wang, and Hui Jing

Single solitons and intermode breathing solitons in MgF_2 microresonators *(7 pages)* 013536
Alioune Niang, Logan Courtright, Gary Carter, and Curtis R. Menyuk

Self-phase-modulation of non-Gaussian pulses in multiple quantum wells by a tunneling mechanism *(10 pages)* 013537
Rohit Mukherjee, Nitu Borgohain, Rohit Hazra, Kingshuk Bose, and Arindam Kumar Chatterjee

Quantum optics

Controlling the polarization of superfluorescence in a degenerate system using a continuous resonant laser field *(8 pages)* 013701
K. Kitano, T. Kobayashi, and H. Maeda

Single-atom optical gate and single-photon source based on magneto-optical effects in a waveguide *(6 pages)* 013702
A. S. Kuraptsev and I. M. Sokolov

Analytic solution to degenerate biphoton states generated in arrays of nonlinear waveguides *(21 pages)* 013703
Jefferson Delgado-Quesada, David Barral, Kamel Bencheikh, and Edgar A. Rojas-González

Quantum-optical scattering by macroscopic lossy objects: A general approach *(37 pages)* 013704
A. Ciattoni

(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 112, NUMBER 1** **JULY 2025**

Mechanical squeezed Kerr oscillator based on a tapered ion trap *(8 pages)* 013511
Bogomila S. Nikolova, Moritz Göb, Kilian Singer, and Peter A. Ivanov

Probing the topological Anderson transition in quasiperiodic photonic lattices via chiral displacement and wavelength tuning *(10 pages)* 013512
Abhinav Sinha, Trideb Shit, Avinash Tetarwal, Diptiman Sen, and Sebabrata Mukherjee

Topologically enabled high-Q chiral electromagnetically induced transparency in all-dielectric metasurfaces *(9 pages)* 013513
Yingfang Zhang, Tao Hu, Penglai Guo, and Jianqing Li

Light propagation in magnetoelectric materials: The role of optical coefficients in refractive index modulation *(11 pages)* 013514
Vitorio A. De Lorenci and Lucas T. de Paula

Induced Berry connection and photonic spin Hall effect in optical Dirac theory *(12 pages)* 013515
Lili Yang and Longlong Feng

Programmable interferometer: An application in quantum channels *(10 pages)* 013516
J. S. Araújo, K. Khan, and A. S. Coelho

Transverse momentum exchange in optical vector beam propagation: Theory and experiment *(10 pages)* 013517
J. M. Nichols, D. V. Nickel, and F. Bucholtz

Scalar product for the radiation of resonant modes *(11 pages)* 013518
Maria Paszkiewicz-Idzik, Lukas Rebholz, Carsten Rockstuhl, and Ivan Fernandez-Corbaton

Nonreciprocal optical metasurface based on spinning cylinders *(11 pages)* 013519
Zheng Yang, Wanyue Xiao, Hengzhi Li, Hao Pan, and Shubo Wang

Band structures of generalized eigenvalue equations and conic sections *(7 pages)* 013520
Takuma Isobe, Tsuneya Yoshida, and Yasuhiro Hatsugai

Plasmon hybridization and the charge-transfer plasmon in a nanoparticle complex: An equivalent circuit model approach *(11 pages)* 013521
Yifan Zhi and Wei Zhang

Cooperative absorption model for photon avalanche upconversion *(6 pages)* 013522
Glauco S. Maciel, Anderson S. L. Gomes, and Cid B. de Araújo

Time-reversed Landau-Zener tunneling in synthetic temporal lattices *(7 pages)* 013523
Lange Zhao, Shulin Wang, Chengzhi Qin, Zhuoxiong Liu, Lingzhi Zheng, Bing Wang, and Peixiang Lu

Diffraction-resistant arbitrary-trajectory plasmon with multitunability *(9 pages)* 013524
Zhang Ruan, Junxi Zhang, Yanru Chen, Shibin Wen, Meixia Ma, and Dongmei Deng

Nanomechanical squeezing: Toward quantum imaging with atomic force microscopy *(15 pages)* 013525
Wael M. Al-Sawai and Ali Passian

Noise avalanche and its quantum quenching in bosonic chains with random off-diagonal disorder *(11 pages)* 013526
Vladislav Stefanov, Andre Stefanov, Lea Sirota, Gregory Slepyan, and Dmitri Mogilevtsev

(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 112, NUMBER 1** **JULY 2025**

Gyroscopic stability for nanoparticles in Stern-Gerlach interferometry and spin contrast *(13 pages)* 013315
Tian Zhou, Sougato Bose, and Anupam Mazumdar

Narrowline cooling of dysprosium atoms in an optical tweezer array *(10 pages)* 013316
Giulio Biagioni, Britton Hofer, Nathan Bonvalet, Damien Bloch, Antoine Browaeys, and Igor Ferrier-Barbut

Shortcuts to adiabatic topological pumping *(12 pages)* 013317
Wenjie Liu, Yongguan Ke, and Chaohong Lee

Elongated vortex quantum droplets in binary Bose-Einstein condensates *(8 pages)* 013318
Guilong Li, Zibin Zhao, Rui Zhang, Zhaopin Chen, Bin Liu, Boris A. Malomed, and Yongyao Li

Bound-like states in a one-dimensional self-similar δ-barrier array *(11 pages)* 013319
Jia-Chen Tang, Xu-Yang Hou, Yan He, and Hao Guo

Mobility rings in a non-Hermitian non-Abelian quasiperiodic lattice *(8 pages)* 013320
Rui-Jie Chen, Guo-Qing Zhang, Zhi Li, and Dan-Wei Zhang

Photonics, nonlinear optics, and optomechanics

Dissipative structures in one- and two-dimensional Kerr cavities with a spatially periodic pump *(7 pages)* 013501
Wen-Rong Sun, Wei-Chao Ma, and Boris A. Malomed

Extreme electrodynamics in time-varying media *(13 pages)* 013502
M. Scalora, M. A. Vincenti, D. de Ceglia, N. Akozbek, M. Ferrera, C. Rizza, A. Alù, N. Litchinitser, C. Cojocaru, and J. Trull

Directional intense terahertz emission by abruptly autofocusing lasers *(9 pages)* 013503
Xiao-Ran Zheng, Nan Li, Wei-Min Wang, Rui Zhang, Cun-Lin Zhang, and Liang-Liang Zhang

Engineering polariton states through liquid-crystal-induced anisotropy and topology optimization *(9 pages)* 013504
E. Sedov and A. Kavokin

High-order harmonic generation with radially chirped annular beams in the overdriven regime: Spectral extension and coherent high-flux radiation *(14 pages)* 013505
Mohamad Dashcasan and Atamalek Ghorbanzadeh

Observation of distinct first-order and second-order topological insulators in photonic martini lattices *(10 pages)* 013506
Weizhao Cheng, Ruichang Chen, Haixiang Wu, Weijie Liu, Menghan Zhang, Bin Zhang, Wenchao Yan, and Feng Chen

Crossed ponderomotive lenses for spherical aberration correction in electron optics *(10 pages)* 013507
Yuuki Uesugi and Yuichi Kozawa

Goos-Hänchen shift and photonic spin Hall effect in semi-Dirac material heterostructures *(10 pages)* 013508
Hong-Liang Cheng and Yong-Mei Zhang

Room-temperature exciton-vibration-photon entanglement in polariton optomechanics *(10 pages)* 013509
Jian Huang and Zhedong Zhang

Deep-sub-cycle ultrafast optical pulses *(10 pages)* 013510
Hongliang Dang, Jiaxin Gao, Hao Wu, Yudong Zhang, Xin Guo, and Limin Tong

(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 112, NUMBER 1** **JULY 2025**

Anomalous suppression of spin-exchange relaxation in alignment signals in cesium in ultraweak magnetic fields *(12 pages)* 013123
M. V. Petrenko and A. K. Vershovskii

Ultracold systems and matter waves

Strongly repulsive one-dimensional gases at higher branches: Spin-charge correlation and coupled spin-chain model *(10 pages)* 013301
Yu Chen and Xiaoling Cui

Tunneling control of dipolar bosons in triple-well circuits via dipole polarization orientation and quantum sensing application *(10 pages)* 013302
Leandro H. Ymai and Arlei P. Tonel

Nonintegrability of driven-dissipative one-dimensional hard-core bosons *(7 pages)* 013303
M. Zündel

Condensation of vanishing photon emission rates in random atomic clouds *(9 pages)* 013304
Viviana Viggiano, Romain Bachelard, Fabio Deelan Cunden, Paolo Facchi, Robin Kaiser, Saverio Pascazio, Francesco V. Pepe, and Antonello Scardicchio

Quantum tomography of the superfluid-insulator transition for a mesoscopic atomtronic ring *(21 pages)* 013305
Yehoshua Winsten and Doron Cohen

Beyond mean-field effects in dynamics of Bose-Einstein condensate in two-core trap *(8 pages)* 013306
Fatkhulla Kh. Abdullaev, Ravil M. Galimzyanov, and Akbar M. Shermakhmatov

Competing bosonic reactions: Insight from exactly solvable time-dependent models *(17 pages)* 013307
Fumika Suzuki, Rajesh K. Malla, and Nikolai A. Sinitsyn

Topological phases in two-dimensional Rydberg lattices *(8 pages)* 013308
Mathias B. M. Svendsen and Beatriz Olmos

Droplets of bosons at a narrow resonance *(8 pages)* 013309
Ke Wang, Thimo Preis, and Dam Thanh Son

Rotational decoherence dynamics in ultracold molecules induced by a tunable spin environment: The central rotor model *(10 pages)* 013310
Timur V. Tscherbul and Lincoln D. Carr

Condensation of composite bosonic trions in interacting Bose-Fermi mixtures *(11 pages)* 013311
Qi Song, Jie Lou, and Yan Chen

Microwave spectroscopy of ultracold-sodium least-bound molecular states *(15 pages)* 013312
M. Ballu, Z. Yao, B. Mirmand, D. J. Papoular, H. Perrin, and A. Perrin

Out-of-equilibrium behavior of quantum vortices: A comparison of point vortex dynamics and Fokker-Planck evolution *(13 pages)* 013313
R. J. Tattersall, A. W. Baggaley, and T. P. Billam

Hybrid-pair superfluidity in a strongly driven Fermi gas *(23 pages)* 013314
Brendan C. Mulkerin, Olivier Bleu, Cesar R. Cabrera, Meera M. Parish, and Jesper Levinsen

(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 112, NUMBER 1** **JULY 2025**

Purcell effect in chiral environments: A macroscopic QED perspective *(14 pages)* 013109
C. S. Rapp, Janine C. Franz, Stefan Yoshi Buhmann, and O. J. Franca

Quantum state engineering of light using intensity measurements and postselection *(13 pages)* 013110
J. Rivera-Dean, Th. Lamprou, E. Pisanty, M. F. Ciappina, P. Tzallas, M. Lewenstein, and P. Stammer

Quantum versus semiclassical signatures of correlated triple ionization in Dalitz plots *(12 pages)* 013111
Dmitry K. Efimov, Georgios P. Katsoulis, Tymoteusz Rozpętkowski, Sergiusz Chwałowski, Agapi Emmanouilidou, and Jakub S. Prauzner-Bechcicki

Phase-dependent Coulomb focusing effect in orthogonally polarized two-color laser fields *(9 pages)* 013112
Peng Qin, Yidian Tian, Long Xu, Min Gong, Kunlong Liu, Lingling Zheng, Xufei Sun, and Zhanghai Chen

Semiclassical Floquet-Markov master equation for Monte Carlo spin integration *(11 pages)* 013113
Raymond Tat

Generation of Bessel vortex electrons via atomic photoionization *(13 pages)* 013114
B. Kumar Das, C. Granados, L. Wang, and M. F. Ciappina

Radio-frequency pseudonull induced by light in an ion trap *(12 pages)* 013115
Daun Chung, Yonghwan Cha, Hosung Shon, Jeonghyun Park, Woojun Lee, Kyungmin Lee, Beomgeun Cho, Kwangyeul Choi, Chiyoon Kim, Seungwoo Yu, Suhan Kim, Uihwan Jeong, Jiyong Kang, Jaehun You, and Taehyun Kim

Dissipation-induced transition between optical reciprocity and nonreciprocity *(7 pages)* 013116
Lifan Chen, Jiale Li, Zhan Zheng, Jin Yan, Feng Li, Yanpeng Zhang, and Yin Cai

Formation of a Schrödinger cat state of a strong circularly polarized laser field due to Thomson scattering by free electrons *(9 pages)* 013117
Evgeny S. Andrianov and Oleg I. Tolstikhin

Reconstruction of attosecond beating by interference of two-photon transitions with higher-order processes *(12 pages)* 013118
L. Roantree, H. W. van der Hart, and A. C. Brown

Photodissociation dynamics of XH^+ (X = Na, K, Rb, Cs): Rovibrationally resolved shape resonances driven by potential barriers in the ultraviolet spectrum *(9 pages)* 013119
Kun Wang, Xing Guang Su, Dong Liu, Yu Wang, Yongjun Cheng, Yong Wu, Jian Guo Wang, Yi Zhi Qu, Ke Dong Wang, Song Bin Zhang, and Yu Kun Yang

Coherent and incoherent control of ionization-fragmentation dynamics in H_2 driven by a two-color laser field *(10 pages)* 013120
JinPeng Ma, CongCong Jia, Ting Xu, SiQi Pei, YinSong Tang, HaoDong Ju, XiaoQing Hu, Yong Wu, and JianGuo Wang

Role of mechanical effects on the excitation spectra of microwave-dressed Rydberg states in a cold atomic cloud *(12 pages)* 013121
H. Failache, J. A. Muniz, L. Velazco, D. Talento, and A. Lezama

Long-range electron correlation in dissociative double ionization of argon dimers *(9 pages)* 013122
Hao Huang, Hongcheng Ni, Jian Wu, Yan Yang, Junyang Ma, and Zhenrong Sun

(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 112, NUMBER 1** **JULY 2025**

Laser-fluence-dependent production of molecular thorium ions in different charge states for trapped-ion experiments *(9 pages)* 012821
Jonas Stricker, Jean Velten, Valerii Andriushkov, Lennard M. Arndt, Dmitry Budker, Konstantin Gaul, Dennis Renisch, Ferdinand Schmidt-Kaler, Azer Trimeche, Lars von der Wense, and Christoph E. Düllmann (TACTICa Collaboration)

Electronic structure calculation for superheavy elements livermorium (Lv, $Z = 116$) and tennessine (Ts, $Z = 117$) and their lighter analogs Te, I, Po, and At *(9 pages)* 012822
V. A. Dzuba, V. V. Flambaum, and G. K. Vong

Role of the deposited charge in the transmission of low-energy electrons through insulating nanocapillaries *(11 pages)* 012823
Shuai Ha, Pengfei Li, Wenming Zhang, Bo Jin, Ben Niu, Zidong Chen, Hua Yuan, Chengliang Wan, Ying Cui, Ke Yao, Yue Ma, Zhihu Yang, Reinhold Schuch, Hongqiang Zhang, and Ximeng Chen

Bayesian approach for strong-field QED tests with He-like ions *(6 pages)* 012824
César Godinho, Jorge Machado, Nancy Paul, Mauro Guerra, Paul Indelicato, and Martino Trassinelli

Time-dependent coupled-cluster theory of multireference systems *(13 pages)* 012825
Martín A. Mosquera

PART B

Light-induced processes in atomic-scale systems

Machine-learning-constructed molecular potential and its application for exploring deep-lying-orbital effects in high-order harmonic generation *(17 pages)* 013101
Duong D. Hoang-Trong, Khang Tran, Doan-An Trieu, Quan-Hao Truong, Ngoc-Hung Phan, Ngoc-Loan Phan, and Van-Hoang Le

Atom transporting and routing by crossed waveguides on a chip *(7 pages)* 013102
Aiping Liu, Tong Wang, Xiaofeng Jian, Pengfei Zhang, Mingkai Chen, Xifeng Ren, Chang-Ling Zou, and Qin Wang

Polarizability of one-dimensional soft-core atoms *(7 pages)* 013103
Thomas Garm Pedersen

Algorithmic cooling based on quantum measurement *(8 pages)* 013104
Hao Fan, Feng-Lin Wu, Lu Wang, Shu-Qian Liu, and Si-Yuan Liu

Orientation-dependent enhanced ionization in acetylene revealed by ultrafast cross-polarized pulse pairs *(8 pages)* 013105
S. A. Mohideen, A. J. Howard, C. Cheng, I. Gabalski, A. M. Ghrist, E. Weckwerth, and P. H. Bucksbaum

Origin of entanglement in an H($2p$) atom pair produced through the photodissociation of an H_2 molecule *(9 pages)* 013106
Kouichi Hosaka, Yutaro Torizuka, Philipp Schmidt, Takeshi Odagiri, Arno Ehresmann, Masashi Kitajima, and Noriyuki Kouchi

Nonperturbative effects in attosecond four-wave-mixing spectra *(7 pages)* 013107
Sergio Yanez-Pagans, Nathan Harkema, Arvinder Sandhu, Coleman Cariker, and Luca Argenti

All-optical Raman control of ultracold atomic hyperfine states using the pulsed jump protocol *(13 pages)* 013108
Xin-Xia Jian, Zhi-Jian Zheng, Jun-Jie Jiang, Lin Zhou, Chuan-Cun Shu, and Jun He

(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 112, NUMBER 1** **JULY 2025**

Measurement of *D*-line energies in sodiumlike Ir *(10 pages)* 012807
H. Staiger, G. Mondeel, S. A. Blundell, Dipti, G. O'Neil, R. Silwal, A. Lapierre, G. Gwinner, J. N. Tan, J. D. Gillaspy, Yu. Ralchenko, and E. Takacs

Spins extracted from fermionic states and their entanglement properties *(14 pages)* 012808
Filippo Troiani, Andrea Secchi, and Stefano Pittalis

Comparative analysis of Mg^+ properties using multiconfiguration Dirac-Hartree-Fock and relativistic coupled-cluster methods *(16 pages)* 012809
B. K. Sahoo, Per Jönsson, and Gediminas Gaigalas

Positronium formation and threshold behavior in positron-sodium collisions at low energies *(11 pages)* 012810
Ning-Ning Gao, Hui-Li Han, and Ting-Yun Shi

One- and two-photon spectroscopy with a test of the Kennard-Stepanov relation in high-pressure two-species xenon–noble-gas mixtures *(8 pages)* 012811
Eric Boltersdorf, Thilo vom Hövel, Jeremy Andrew Morín Nenoff, Frank Vewinger, and Martin Weitz

State-selective single- and double-electron capture in slow N^{4+}-He collisions *(8 pages)* 012812
Dadi Xing, Shucheng Cui, Xiaoxia Wang, Denghong Zhang, Xubin Zhu, Kaizhao Lin, Yong Gao, Dalong Guo, Dongmei Zhao, Shaofeng Zhang, Xiaolong Zhu, and X. Ma

Fast calculation of diffraction patterns from an ensemble of aligned molecules *(11 pages)* 012813
Yanwei Xiong and Martin Centurion

Resonance strengths and linear polarization of higher-order electronic recombination from Li-like to N-like ions *(7 pages)* 012814
Tianluo Luo, Zhencen He, Zhihao Yang, and Zhimin Hu

Selective reflection Casimir-Polder spectroscopy in vapor cells: The influence of the thermal velocity distribution *(7 pages)* 012815
B. Dutta, C. Boldt, G. Garcia-Arellano, M. Ducloy, P. Pedri, S. Scheel, and A. Laliotis

Radiative corrections to the nuclear size and polarizability effects in atomic systems *(10 pages)* 012816
Krzysztof Pachucki

Applications of maximum likelihood estimations for analyzing photon counts in few-atom experiments *(10 pages)* 012817
M. Weyland, L. Sanchez, P. Ruksasakchai, and M. F. Andersen

Momentum imaging and kinetic-energy-release measurements for various fragmentation pathways in MeV-energy proton collisions with an SO_2 molecule *(10 pages)* 012818
Sandeep Bajrangi Bari, Ranojit Das, R. Tyagi, and A. H. Kelkar

High-precision measurement of the $2s2p\ ^1P_1^o$ center of gravity in neutral ^{9}Be at the parts-per-billion level *(6 pages)* 012819
K. J. Ahrendsen, E. M. Kay, and W. D. Williams

Atom-field-medium interactions. II. Covariance matrix dynamics for *N* harmonic atoms in a dielectric-altered quantum field and effects of dielectric on atom-field entanglement *(20 pages)* 012820
Jen-Tsung Hsiang and Bei-Lok Hu

(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 112, NUMBER 1** **JULY 2025**

Dissipation-assisted steady-state entanglement engineering based on electron transfer models *(16 pages)* 012617
Mingjian Zhu, Visal So, Guido Pagano, and Han Pu

Entanglement-assisted private communication over a classical-quantum multiple-access channel *(11 pages)* 012618
Xiaomin Liu, Fangyuan Chen, and Zhengjun Xi

Boson sampling validation approach by examining the sample space filling *(11 pages)* 012619
A. A. Mazanik and A. N. Rubtsov

Hybrid quantum simulations with qubits and qumodes on trapped-ion platforms *(19 pages)* 012620
Jack Y. Araz, Matt Grau, Jake Montgomery, and Felix Ringer

Deterministic carving of quantum states with Grover's algorithm *(27 pages)* 012621
Omar Nagib, M. Saffman, and K. Mølmer

Quantum reservoir computing on random regular graphs *(9 pages)* 012622
Moein N. Ivaki, Achilleas Lazarides, and Tapio Ala-Nissila

Analog quantum simulation of Dirac Hamiltonians in circuit QED using Rabi-driven qubits *(13 pages)* 012623
Gal Gumpel, Jiwon Kang, Eliya Blumenthal, Aron Klevansky, Eunseong Kim, and Shay Hacohen-Gourgy

Nondemolition fluorescence readout and high-fidelity unconditional reset of a fluxonium qubit via dissipation engineering *(10 pages)* 012624
Shu Watanabe, Kotaro Hida, Kohei Matsuura, and Yasunobu Nakamura

Classical postprocessing approach for quantum amplitude estimation *(9 pages)* 012625
Yongdan Yang and Ruyu Yang

Spin-squeezed vector atomic magnetometry *(11 pages)* 012626
Jinyang Li, Gour Pati, Renu Tripathi, and Selim M. Shahriar

Atomic and molecular structure and dynamics; high-precision experiments

Spin manipulation and nuclear polarization enhancement in particle beams with static magnetic fields *(14 pages)* 012801
C. S. Kannis, R. Engels, T. El-Kordy, N. Faatz, S. J. Pütz, V. Verhoeven, T. P. Rakitzis, and M. Büscher

Systematic Bayesian optimization for atomic structure calculations of heavy elements *(21 pages)* 012802
Ricardo Ferreira da Silva, Andreas Flörs, Luís Leitão, José P. Marques, Gabriel Martínez-Pinedo, and Jorge M. Sampaio

Spectroscopic footprints of quantum friction in nonreciprocal and chiral media *(17 pages)* 012803
O. J. Franca, Fabian Spallek, Steffen M. Giesen, Robert Berger, Kilian Singer, Stefan Aull, and Stefan Yoshi Buhmann

Doubly differential cross sections for ionization in He^{2+}+He collisions *(10 pages)* 012804
Sh. U. Alladustov, K. H. Spicer, N. W. Antonio, A. M. Kotian, and A. S. Kadyrov

Charge-exchange dynamics in He^{+} and He^{2+} collisions with Ne and Ar at 0.63–1.41-a.u. velocities *(9 pages)* 012805
Xinfei Hui, Baowei Ding, Deyang Yu, Tao Guo, Xiaoxun Song, Tongmin Zhang, Long Kang, Jinyu Li, Xiaolong Zhu, and Ximeng Chen

Ionization and state-selective electron capture in collisions of fully stripped and hydrogenlike oxygen ions with hydrogen atoms *(13 pages)* 012806
A. M. Kotian, N. W. Antonio, and A. S. Kadyrov

(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 112, NUMBER 1 JULY 2025

Quantum technologies

Dephasing-induced leakage in multilevel superconducting quantum circuits *(9 pages)* 012601
Frederick W. Strauch

Short-time simulation of quantum dynamics by Pauli measurements *(10 pages)* 012602
Paul K. Faehrmann, Jens Eisert, Mária Kieferová, and Richard Kueng

Quantum Monte Carlo methods and stabilizer states *(9 pages)* 012603
Bhilahari Jeevanesan

Fluctuation as a probe of entanglement transition in a monitored free-fermion chain *(10 pages)* 012604
Wen-Jie Qiu, Yi-Cong Yu, and Xiaoming Cai

Robust, fast, and high-fidelity composite single-qubit gates for superconducting transmon qubits *(10 pages)* 012605
Hristo G. Tonchev, Boyan T. Torosov, and Nikolay V. Vitanov

Self-testing supersinglets with perfect quantum strategies *(10 pages)* 012606
Debashis Saha and Adán Cabello

Efficient quantum circuit execution with continuous distribution of entanglement *(16 pages)* 012607
Hao Fu, Fangzheng Chen, Mingzheng Zhu, Chi Zhang, Jun Wu, Wei Xie, and Xiang-Yang Li

Noise-resistant phonon operations in a hybrid superconducting circuit-mechanical resonator system *(10 pages)* 012608
Le-Tian Zhu, Xing-Yu Zhu, Guang-Can Guo, Tao Tu, and Chuan-Feng Li

Robust implicit quantum control of interacting spin chains *(12 pages)* 012609
Luca Stefanescu, Louis Edwards-Pratt, Jeremy O'Connor, Ezra Tsegaye, Nguyen H. Le, and Florian Mintert

Binned-detector probability distributions for Gaussian boson sampling validation *(14 pages)* 012610
Gabriele Bressanini, Benoit Seron, Leonardo Novo, Nicolas J. Cerf, and M. S. Kim

Continuous-variable quantum teleportation, U(2)-invariant squeezing, and non-Gaussian resource states *(10 pages)* 012611
Mohak Sharma, Chandan Kumar, Shikhar Arora, and Arvind

Generalized numerical framework for improved finite-sized key rates with Rényi entropy *(7 pages)* 012612
Rebecca R. B. Chung, Nelly H. Y. Ng, and Yu Cai

Spin contrast, finite temperature, and noise in matter-wave interferometers *(12 pages)* 012613
Tian Zhou, Ryan Rizaldy, Martine Schut, and Anupam Mazumdar

Real-time scattering processes with continuous-variable quantum computers *(15 pages)* 012614
Steven Abel, Michael Spannowsky, and Simon Williams

Nonlinear protocol for high-dimensional quantum teleportation *(9 pages)* 012615
Luca Bianchi, Carlo Marconi, Giulia Guarda, and Davide Bacco

Finite-key analysis of high-dimensional quantum key distribution utilizing a subset of the monitoring states *(10 pages)* 012616
Zhengeng Zhao, Yongqiang Du, Wei Li, and Kejin Wei

(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 112, NUMBER 1** **JULY 2025**

Imperfect entangling power of quantum gates *(16 pages)* 012417
Sudipta Mondal, Samir Kumar Hazra, and Aditi Sen(De)

Overcoming the superposition-state limitation for directed graph centrality ranking with ancilla assistance *(9 pages)* 012418
Miaomiao Yu, Pingyu Zhu, Yang Wang, Yan Wang, Yuxing Du, Kun Wang, and Ping Xu

Entanglement witnesses for fermionic lattices *(13 pages)* 012419
Bing Xu, Yangyang Wang, Xiaofei Qi, and Jinchuan Hou

Virtual cloning of quantum states *(8 pages)* 012420
Zhi-Hao Bi, Jing-Tao Qiu, and Xiao-Dong Yu

Phase-selective tripartite entanglement and asymmetric Einstein-Podolsky-Rosen steering in squeezed optomechanics *(18 pages)* 012421
Ya-Feng Jiao, Jie Wang, Dong-Yang Wang, Lei Tang, Yan Wang, Yun-Lan Zuo, Wan-Su Bao, Le-Man Kuang, and Hui Jing

Warm-start adaptive-bias quantum approximate optimization algorithm *(18 pages)* 012422
Yunlong Yu, Xiang-Bin Wang, Nic Shannon, and Robert Joynt

Quantum nested search for the shortest vector problem *(20 pages)* 012423
Runxi Cao, Baocang Wang, and Juntao Gao

Performance analysis of different photon-mediated entanglement generation schemes under optical dephasing and spectral diffusion *(8 pages)* 012424
Kinfung Ngan and Shuo Sun

Nonstabilizerness entanglement entropy: A measure of hardness in the classical simulation of quantum many-body systems with tensor network states *(11 pages)* 012425
Jiale Huang, Xiangjian Qian, and Mingpu Qin

Separable ellipsoids around multipartite states *(7 pages)* 012426
Robin Y. Wen, Gilles Parez, Liuke Lyu, William Witczak-Krempa, and Achim Kempf

Complementarity relations in a multipath interferometer with quantum memory *(10 pages)* 012427
Yue Sun, Ming-Jing Zhao, and Peng-Tong Li

Experimental robust certification of the maximally entangled state via nonprojective measurements *(8 pages)* 012428
Meng-Yun Ma, Chao-Jie Sun, Xu Xu, Kai-Mei Zheng, Han-Yu Cheng, Qi-Ping Su, Chui-Ping Yang, and Yong-Nan Sun

Nonreciprocal charging in a quantum battery via a mediator *(11 pages)* 012429
Cheng-Ze Sun, Zai-Kun Wang, Wei-Bin Yan, Ying-Jie Zhang, Zhong-Xiao Man, and Qing-Yu Cai

Detecting spacelike vacuum entanglement at all distances and promoting negativity to a necessary and sufficient entanglement measure in many-body regimes *(13 pages)* 012430
Boyu Gao and Natalie Klco

Transfer learning for a deep-unfolded combinatorial optimization solver with quantum annealer *(10 pages)* 012431
Ryo Hagiwara, Shunta Arai, and Satoshi Takabe

(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 112, NUMBER 1 JULY 2025

Quantum information science

Interfacing Gottesman-Kitaev-Preskill qubits to quantum memories *(16 pages)* 012401
Prajit Dhara, Liang Jiang, and Saikat Guha

Quantum *XYZ* cyclic codes for biased noise *(14 pages)* 012402
Zhipeng Liang, Fusheng Yang, Zhengzhong Yi, and Xuan Wang

Revealing quantum operator scrambling via measuring Holevo information on digital quantum simulators *(8 pages)* 012403
Bin Sun, Geng-Bin Cao, Xi-Dan Hu, and Dan-Bo Zhang

Unconditionally superposition-robust entangled state in all multiparty quantum systems *(10 pages)* 012404
Swati Choudhary, Ujjwal Sen, and Saronath Halder

Performance of quantum annealing for 2-satisfiability problems with multiple satisfying assignments *(15 pages)* 012405
Vrinda Mehta, Hans De Raedt, Kristel Michielsen, and Fengping Jin

Non-Markovian noise mitigation: Practical implementation, error analysis, and the role of spectral properties of the environment *(14 pages)* 012406
Ke Wang and Xiantao Li

Quantum determinant estimation *(6 pages)* 012407
J. Agerskov and K. Splittorff

Application of zero-noise-extrapolation-based quantum error mitigation to a silicon spin qubit *(9 pages)* 012408
Hanseo Sohn, Jaewon Jung, Jaemin Park, Hyeongyu Jang, Lucas E. A. Stehouwer, Davide Degli Esposti, Giordano Scappucci, and Dohun Kim

Quantum active learning *(14 pages)* 012409
Yongcheng Ding, Yue Ban, Mikel Sanz, José D. Martín-Guerrero, and Xi Chen

Detecting high-dimensional time-bin entanglement in fiber-loop systems *(17 pages)* 012410
Niklas Euler, Monika Monika, Ulf Peschel, and Martin Gärttner

Multipartite entanglement structures in quantum stabilizer states *(10 pages)* 012411
Vaibhav Sharma and Erich J. Mueller

Quasi-inverse of qubit channels for mixed states *(6 pages)* 012412
Muhammad Faizan and Muhammad Faryad

Reducing complexity of shadow process tomography with generalized measurements *(11 pages)* 012413
Haigang Wang and Kan He

Unraveling reverse annealing: A study of D-Wave quantum annealers *(14 pages)* 012414
Vrinda Mehta, Hans De Raedt, Kristel Michielsen, and Fengping Jin

Complexity of entanglement embezzlement *(10 pages)* 012415
Tal Schwartzman

Higher-dimensional-entanglement detection and quantum-channel characterization using moments of generalized positive maps *(12 pages)* 012416
Bivas Mallick, Ananda G. Maity, Nirman Ganguly, and A. S. Majumdar

(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 112, NUMBER 1** **JULY 2025**

Role of non-Markovian dissipation in quantum phase transitions: Tricriticality, spin squeezing, and directional symmetry breaking *(15 pages)* 012210
Baptiste Debecker, Lukas Pausch, Jonathan Louvet, Thierry Bastin, John Martin, and François Damanet

Input-output hierarchical equations of motion *(34 pages)* 012211
Mauro Cirio, Pengfei Liang, and Neill Lambert

Exploring the effects of mass dependence in spontaneous collapse models *(24 pages)* 012212
Nicolò Piccione and Angelo Bassi

Quantum interference of force with entangled photons *(6 pages)* 012213
Gabriela S. Militani, Artur Matoso, Denise F. Ávila, Raul Corrêa, Reinaldo O. Vianna, Pablo L. Saldanha, and Sebastião Pádua

Advantage of Greenberger-Horne-Zeilinger correlation in communication complexity: A step beyond the conventional Greenberger-Horne-Zeilinger paradox *(7 pages)* 012214
Ananya Chakraborty, Kunika Agarwal, Sahil Gopalkrishna Naik, and Manik Banik

Generation of the complete Bell basis via Hong-Ou-Mandel interference of vector modes *(6 pages)* 012215
Xiaoqin Gao, Dilip Paneru, Francesco Di Colandrea, Yingwen Zhang, and Ebrahim Karimi

Real-time instanton approach to quantum activation *(15 pages)* 012216
Chang-Woo Lee, Paul Brookes, Kee-Su Park, Marzena H. Szymańska, and Eran Ginossar

Impact of a tunneling particle on the quantum state of a barrier: Two-particle wave-packet model *(10 pages)* 012217
Roman Michelko and Peter Bokes

Powering a quantum clock with a nonequilibrium steady state *(6 pages)* 012218
Daniele Nello and Alessandro Silva

Unbounded sharing of network nonlocality in the two-forked tree-shaped scenario *(10 pages)* 012219
Hao Sun, Fenzhuo Guo, Haifeng Dong, Sujuan Qin, and Fei Gao

Enhanced frequency and temperature estimation by a $\mathcal{PT}$-symmetric quantum oscillator *(10 pages)* 012220
Jonas F. G. Santos

Adiabatic perturbation theory invariant under the unitary transformations *(11 pages)* 012221
Hsiang-Shun Chou

Wave-particle duality in multipath interferometers via quantum Fisher information *(8 pages)* 012222
Xue Wang and Shuangshuang Fu

Quantum synchronization blockade induced by nonreciprocal coupling *(12 pages)* 012223
Tobias Kehrer and Christoph Bruder

Riemannian approach to the Lindbladian dynamics of a locally purified tensor network *(19 pages)* 012224
Emiliano Godinez-Ramirez, Richard M. Milbradt, and Christian B. Mendl

Quantum walks on a network based on a dual Sierpinski gasket and a dendrimer *(21 pages)* 012225
Geyson Maquiné Batalha and Mircea Galiceanu

Dissipative quantum phase transitions monitored by current fluctuations *(12 pages)* 012226
Masataka Matsumoto, Zi Cai, and Matteo Baggioli

(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 112, NUMBER 1** **JULY 2025**

Engineering the Bogoliubov modes through geometry and interaction: From collective edge modes to flat-band excitations *(6 pages)* L011302
Maryam Darvishi, Fatemeh Pouresmaeeli, and Saeed H. Abedinpour

Area laws and thermalization from classical entropies in a Bose-Einstein condensate *(7 pages)* L011303
Yannick Deller, Martin Gärttner, Tobias Haas, Markus K. Oberthaler, Moritz Reh, and Helmut Strobel

Scattering resonances and pairing in a Rabi-coupled Fermi gas *(8 pages)* L011304
Olivier Bleu, Brendan C. Mulkerin, Cesar R. Cabrera, Jesper Levinsen, and Meera M. Parish

Correlated-hopping-induced topological order in an atomic mixture *(8 pages)* L011305
Ashirbad Padhan, Luca Barbiero, and Tapan Mishra

Quantum optics

℘ Magic-wavelength nanofiber-based two-color dipole trap with sub-$\lambda/2$ spacing *(6 pages)* L011701
Lucas Pache, Martin Cordier, Hector Letellier, Max Schemmer, Philipp Schneeweiss, Jürgen Volz, and Arno Rauschenbeutel

Tailoring indistinguishability of photons using longitudinal spatial coherence *(6 pages)* L011702
Preeti Sharma, Gaytri Arya, and Bhaskar Kanseri

ARTICLES

Fundamental concepts

Classical analog of entanglement for a kicked top *(10 pages)* 012201
Bilal Khalid and Sabre Kais

Quantum Schrödinger bridges: Large deviations and time-symmetric ensembles *(13 pages)* 012202
Olga Movilla Miangolarra, Ralph Sabbagh, and Tryphon T. Georgiou

℘ Generalized entropic quantum speed limits *(17 pages)* 012203
Jucelino Ferreira de Sousa and Diego Paiva Pires

Dynamical non-Hermitian systems: Fingerprints and pure-dephasing-induced protection effect *(14 pages)* 012204
Wanchen Ma, Hao Zhang, and Junjie Liu

Reliable quantum advantage in quantum battery charging *(11 pages)* 012205
Davide Rinaldi, Radim Filip, Dario Gerace, and Giacomo Guarnieri

Accuracy of a time-dependent generalized Gibbs ensemble approach under weak dissipation *(16 pages)* 012206
Luca Lumia, Gianni Aupetit-Diallo, Jérôme Dubail, and Mario Collura

℘ Open quantum systems with particle and bath driven by time-dependent fields *(9 pages)* 012207
Daniele Gamba, Bingyu Cui, and Alessio Zaccone

Nonsecular thermalization dynamics of multilevel quantum systems: Complete positivity and insights from Kossakowski matrix spectra *(11 pages)* 012208
Timur V. Tscherbul

Random non-Hermitian Hamiltonian framework for symmetry-breaking dynamics *(15 pages)* 012209
Pei Wang

(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™

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 112, NUMBER 1
PARTS A AND B

CONTENTS

JULY 2025

The Table of Contents is a total listing of Parts A and B.
Part A consists of pages L010401–012825, and Part B pages 013101–019906(E).

PART A

LETTERS

Quantum information science

Quantum algorithm for the advection-diffusion equation by direct block encoding of the time-marching operator *(6 pages)* L010401
Paul Over, Sergio Bengoechea, Peter Brearley, Sylvain Laizet, and Thomas Rung

Local entanglement transfer from an entanglement source to multiple pairs of spatially separated observers *(6 pages)* L010402
Tanmoy Mondal, Kornikar Sen, Chirag Srivastava, and Ujjwal Sen

Quantum technologies

Extra cost of erasure due to quantum lifetime broadening *(6 pages)* L010601
Joe Dunlop, Federico Cerisola, Juliette Monsel, Sofia Sevitz, Jorge Tabanera-Bravo, Jonathan Dexter, Federico Fedele, Natalia Ares, and Janet Anders

Atomic and molecular structure and dynamics; high-precision experiments

Direct extraction of nuclear structure information using precision lithium-ion spectroscopy *(7 pages)* L010801
Hua Guan, Xiao-Qiu Qi, Jian-Guo Li, Peng-Peng Zhou, Wei Sun, Shao-Long Chen, Xu-Rui Chang, Yao Huang, Pei-Pei Zhang, Zong-Chao Yan, G. W. F. Drake, Ai-Xi Chen, Zhen-Xiang Zhong, Jia-Li Wang, Nicolas Michel, Ting-Yun Shi, and Ke-Lin Gao

Light-induced processes in atomic-scale systems

Tuning the terahertz response of liquids by creating polar many-body excitations *(7 pages)* L011101
Gerard McCaul, Matthias Runge, Michael Woerner, Diyar Talbayev, Thomas Elsaesser, and Denys I. Bondar

Attosecond pulse synthesis from high-order harmonic generation in intense squeezed light *(8 pages)* L011102
ShiJun Wang, XuanYang Lai, and XiaoJun Liu

Ultracold systems and matter waves

Topological quantum floating phase of dipolar bosons in an optical ladder *(6 pages)* L011301
Henning Korbmacher, Gustavo A. Domínguez-Castro, Mateusz Łącki, Jakub Zakrzewski, and Luis Santos

(Continued)

2469-9926(202507)112:1:B;1-V

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).