

CONTENTS - Continued

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 111, NUMBER 2

FEBRUARY 2025

Tunable photon scattering by an atom dimer coupled to a band edge of a photonic crystal waveguide (<i>13 pages</i>)	023707
Guo-Zhu Song, Lin-Xiong Wang, Jing-Xue Zhang, and Hai-Rui Wei	
Controlling the superradiant phase transition in the quantum Rabi model (<i>11 pages</i>)	023708
Xuan Xie, Cheng Liu, Lin-Lin Jiang, and Jin-Feng Huang	
Quantum correlations in integrated waveguide structures with disorder and next-nearest-neighbor coupling (<i>13 pages</i>)	023709
Ankan Das Roy, Amit Rai, and Gautam Vemuri	
Entanglement and steering in a three-dimensional cavity magnomechanics system (<i>8 pages</i>)	023710
Xin Ge, Jia-Xin Peng, and Yue-Yue Chen	
Single-photon scattering in giant-atom topological-waveguide-QED systems (<i>17 pages</i>)	023711
Hai Zhu, Xian-Li Yin, and Jie-Qiao Liao	
Simulating and probing many-body quantum states in waveguide-QED systems with giant atoms (<i>11 pages</i>)	023712
C. L. Yang and W. Z. Jia	
On-demand acoustic shaping of Mössbauer γ -ray photons (<i>10 pages</i>)	023713
I. R. Khairulin and Y. V. Radeonychev	
Efficient characterization of spatial Schmidt modes of multiphoton entangled states produced from high-gain parametric down-conversion (<i>8 pages</i>)	023714
Mahtab Amooei, Girish Kulkarni, Jeremy Upham, and Robert W. Boyd	
Measuring state-multipole moments in coherent-population-trapping experiments (<i>12 pages</i>)	023715
Andrew Householder, Nate Ristoff, and James Camparo	

ERRATA

Erratum: Deorbitalization strategies for meta-generalized-gradient-approximation exchange-correlation functionals [Phys. Rev. A 96 , 052512 (2017)] (<i>1 page</i>)	029901(E)
Daniel Mejía-Rodríguez and S. B. Trickey	
Erratum: Spin-noise-induced synchronization between non-overlapping laser beams [Phys. Rev. A 110 , 033105 (2024)] (<i>2 pages</i>)	029902(E)
Shiming Song, Min Jiang, Yushu Qin, Ze Wu, Haowen Su, Ren-bao Liu, Dieter Suter, and Xinhua Peng	

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 111, NUMBER 2

FEBRUARY 2025

Cross-phase-modulation-induced nonlinear diffraction wave (<i>9 pages</i>)	023515
Yuanyuan Liu, Lihong Hong, and Zhi-Yuan Li	
Theoretical framework for enhancing or enabling cooling of a mechanical resonator via the anti-Stokes or Stokes interaction and zero-photon detection (<i>15 pages</i>)	023516
Jack Clarke, Evan A. Cryer-Jenkins, Arjun Gupta, Kyle D. Major, Jinglei Zhang, Georg Enzian, Magdalena Szczykulska, Anthony C. Leung, Harsh Rathee, Andreas Ø. Svela, Anthony K. C. Tan, Almut Beige, Klaus Mølmer, and Michael R. Vanner	
Multiple temporal compression as a method to control the generation of bright and dark solitons (<i>9 pages</i>)	023517
André C. A. Siqueira, Palacios G., Mario B. Monteiro, Albert S. Reyna, Boris A. Malomed, Edilson L. Falcão-Filho, and Cid B. de Araújo	
Geometric phase self-focusing from optical spin angular momentum transfer to matter (<i>10 pages</i>)	023518
Samlan Chandran Thodika and Etienne Brasselet	
Spontaneous \mathcal{PT} -symmetry-breaking transitions under the influence of noise in an optomechanical system (<i>7 pages</i>)	023519
A. R. Mukhamedyanov, E. S. Andrianov, and A. A. Zyablovsky	
Observing the influence of second-harmonic tangential surface source in gold plasmonic nanostructures (<i>9 pages</i>)	023520
Sandy Mathew, Maëliis Ethis de Corny, Nicolas Chauvet, Laureen Moreaud, Erik Dujardin, Gilles Noguees, and Guillaume Bachelier	
Optimizing attosecond-pulse generation in solids by modulating electronic dynamics with a monochromatic laser field (<i>10 pages</i>)	023521
Xinyuan Zhang, Shiqi Hu, Mengxue Guan, and Sheng Meng	
Entanglement characteristics of levitated magnomechanical systems (<i>11 pages</i>)	023522
Huiya Zhan, Aixi Chen, and Wenjie Nie	
Quantum optics	
Directional emission of a broadband squeezed microwave field (<i>10 pages</i>)	023701
Rong-teng Cao, Ji-kun Xie, Ya-long Ren, Shao-yan Gao, and Sheng-li Ma	
Chiral-cat-state generation via the Sagnac-Fizeau effect (<i>11 pages</i>)	023702
Yu-Hong Liu, Xian-Li Yin, Hui Jing, Le-Man Kuang, and Jie-Qiao Liao	
☞ Local-photon model of the momentum of light (<i>14 pages</i>)	023703
Gabriel Waite, Daniel Hodgson, Ben Lang, Varghese Alapatt, and Almut Beige	
Correlations in circular quantum cascades (<i>12 pages</i>)	023704
Miguel Ángel Palomo Marcos, Eduardo Zubizarreta Casalengua, Elena del Valle, and Fabrice P. Laussy	
Photon-pair generation via down-conversion in III-V semiconductor microrings: Modal dispersion and quasi-phase-matching (<i>16 pages</i>)	023705
Samuel E. Fontaine, Colin Vendromin, Trevor J. Steiner, Amirali Atrli, Lillian Thiel, Joshua Castro, Galan Moody, John Bowers, Marco Liscidini, and J. E. Sipe	
Quantum-optimal hypothesis testing for discriminating partially coherent optical sources (<i>9 pages</i>)	023706
Jian-Dong Zhang, Mei-Ming Zhang, Fan Jia, Chuang Li, and Shuai Wang	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 111, NUMBER 2

FEBRUARY 2025

Floquet scattering resonances in two dimensions (<i>9 pages</i>)	023328
Cai-Xia Zhang, Shi-Guo Peng, Guo-Qing Zhang, and Hui Yan	
Transport of vector solitons in spin-dependent nonlinear Thouless pumps (<i>14 pages</i>)	023329
Xuzhen Cao, Chunyu Jia, Hao Lyu, Ying Hu, and Zhaoxin Liang	
Photonics, nonlinear optics, and optomechanics	
Polarization-entanglement dynamics in optical fibers: Mitigating decay in the non-Markovian regime with dynamical decoupling (<i>9 pages</i>)	023501
Pratik J. Barge, Arshag Danageozian, Manish K. Gupta, Brian T. Kirby, and Hwang Lee	
Magnetic quadrupole dichroism in an isotropic medium (<i>9 pages</i>)	023502
A. A. Fomin, G. G. Kozlov, M. Yu. Petrov, D. S. Smirnov, M. V. Petrenko, and V. S. Zapasskii	
Theoretical description and experimental observation of multisoliton attractors (<i>10 pages</i>)	023503
Ning Mao, Xiankun Yao, Chong Liu, Zhan-Ying Yang, Wen-Li Yang, and Li-Chen Zhao	
Ground-state cooling of mechanical motion via phase-controlled dissipative optomechanical coupling (<i>11 pages</i>)	023504
Ye Liu, Guang-Zheng Ye, Chang-Sheng Hu, Yong Li, and Huaizhi Wu	
Generation of ultracollimated polarized attosecond γ -rays via beam instabilities (<i>12 pages</i>)	023505
Li-Jie Cui, Ke-Jia Wei, Chong Lv, Feng Wan, Yousef I. Salamin, Lei-Feng Cao, and Jian-Xing Li	
Orbital-angular-momentum-controlled laser pulses with near-relativistic intensity (<i>9 pages</i>)	023506
Jiajun Li, Xianzhi Wang, Zhaohua Wang, and Zhiyi Wei	
 Unitary control of multiport wave transmission (<i>13 pages</i>)	023507
Cheng Guo, David A. B. Miller, and Shanhui Fan	
Spectral asymmetry effect in terahertz generation by two-color ionizing femtosecond pulses (<i>16 pages</i>)	023508
Zhiwen Zhang, Vasily A. Kostin, Alexander A. Silaev, Zefu Liu, Shixiang Wang, Chenhui Lu, Zhengquan Fan, and Yi Liu	
Filamentation of femtosecond vector beams (<i>13 pages</i>)	023509
Amirreza Sadehpour and Daryoush Abdollahpour	
Optical nonreciprocity using light shifts (<i>7 pages</i>)	023510
Yifan Zhan, Shicheng Zhang, Shangqing Gong, and Yueping Niu	
Optical bistability and Rabi oscillations in a driven two-level semiconductor quantum dot: Effect of dynamical Coulomb interaction between two electrons (<i>10 pages</i>)	023511
İbrahim Karabulut	
Transient coherent phase modulation of nuclear states via a high-repetition-rate laser (<i>8 pages</i>)	023512
Nan Xue, Haohan Shi, Kailin Zhang, and Zuoye Liu	
Laser beam tight focusing: Optimal algorithm for focal-region field computation within a plane perpendicular to the objective axis (<i>14 pages</i>)	023513
Stepan Boichenko	
Spatiotemporal force-density evolution in resonant structures with ultrafast optics (<i>14 pages</i>)	023514
Farhan I. Zahin, Adam W. Behnke, Thomas J. Pollei, and Kevin J. Webb	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 111, NUMBER 2

FEBRUARY 2025

Excitations of a supersolid annular stripe phase in a spin-orbital-angular-momentum-coupled spin-1 Bose-Einstein condensate (<i>10 pages</i>)	023311
Paramjeet Banger, Rajat, and Sandeep Gautam	
Bounds on the detection of Bell correlations with entangled ultracold atoms in optical lattices under occupation defects (<i>16 pages</i>)	023312
T. Hernández Yanes, Y. Bamaara, A. Sinatra, and E. Witkowska	
Analytically solvable quasi-one-dimensional Kronig-Penney model (<i>13 pages</i>)	023313
Marta Sroczynska, Tomasz Wasak, and Zbigniew Idziaszek	
Shear-induced decaying turbulence in Bose-Einstein condensates (<i>9 pages</i>)	023314
S. Simjanovski, G. Gauthier, H. Rubinsztein-Dunlop, M. T. Reeves, and T. W. Neely	
Two-dimensional correlation propagation dynamics with a cluster discrete phase-space method (<i>9 pages</i>)	023315
Kazuma Nagao and Seiji Yunoki	
Effect of glancing collisions in the cold-atom vacuum standard (<i>11 pages</i>)	023317
Stephen P. Eckel, Daniel S. Barker, James A. Fedchak, Julia Scherschligt, Jacek Kłos, and Eite Tiesinga	
Dynamical probing of high-order spin coherence in one-dimensional mixtures (<i>11 pages</i>)	023318
S. Musolino, G. Aupetit-Diallo, M. Albert, P. Vignolo, and A. Minguzzi	
Macroscopic Borromean and anti-Borromean states of quantized vortices (<i>8 pages</i>)	023319
Wei-Can Yang, Makoto Tsubota, Muneto Nitta, and Hua-Bi Zeng	
Dynamics of an atomic Bose-Einstein condensate in an interaction-induced twisted-bilayer lattice (<i>6 pages</i>)	023320
Rui Tian, Yue Zhang, Tianhao Wu, Yong-Chang Zhang, Shuai Li, and Bo Liu	
Unbalanced droplets of one-dimensional mixtures of fermions (<i>7 pages</i>)	023321
M. C. Gordillo	
Duality breaking, mobility edges, and the connection between topological Aubry-André and quantum Hall insulators in atomic wires with fermions (<i>14 pages</i>)	023322
Bar Alluf and C. A. R. Sá de Melo	
Chiral Raman coupling for spin-orbit coupling in ultracold atomic gases (<i>11 pages</i>)	023323
Biao Shan, Lianghui Huang, Yuhang Zhao, Guoqi Bian, Pengjun Wang, Wei Han, and Jing Zhang	
Out-of-equilibrium dynamics in the two-component Bose-Hubbard model (<i>24 pages</i>)	023324
Florian R. Bär and Malcolm P. Kennett	
Solitons in Bose-Einstein condensates with attractive self-interaction on a Möbius strip (<i>11 pages</i>)	023325
Huan-Bo Luo, Guilong Li, Fu-Quan Dou, Bin Liu, Boris A. Malomed, Josep Batle, and Yongyao Li	
Impurities in a trapped one-dimensional Bose gas of arbitrary interaction strength: Localization-delocalization transition and absence of self-localization (<i>12 pages</i>)	023326
Dennis Breu, Eric Vidal Marcos, Martin Will, and Michael Fleischhauer	
Feshbach spectroscopy of ultracold mixtures of ${}^6\text{Li}$ and ${}^{164}\text{Dy}$ atoms (<i>7 pages</i>)	023327
Ke Xie, Xi Li, Yu-Yang Zhou, Ji-Hong Luo, Shuai Wang, Yu-Zhao Nie, Hong-Chi Shen, Yu-Ao Chen, Xing-Can Yao, and Jian-Wei Pan	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 111, NUMBER 2

FEBRUARY 2025

Entanglement in $2p$ atom pairs in H_2 photodissociation as studied by measuring the angular correlation function of Lyman- α photon pairs on a whole sphere (<i>17 pages</i>)	023116
Yutaro Torizuka, Kouichi Hosaka, Philipp Schmidt, Takeshi Odagiri, Arno Ehresmann, Masashi Kitajima, and Noriyuki Kouchi	
Observation of terahertz-field-induced coherent control of high-order harmonic generation in a noble gas (<i>8 pages</i>)	023117
B. V. Rumiantsev, E. A. Migal, A. V. Pushkin, and F. V. Potemkin	
Nonlinear dynamics in an artificial feedback spin maser (<i>6 pages</i>)	023118
Mingjun Feng, Lan Wu, and Guobin Liu	
Suppression of heading errors in Bell-Bloom optically pumped free-induction-decay alkali-metal atomic magnetometers (<i>8 pages</i>)	023119
S.-Q. Liu, X.-K. Wang, X.-D. Zhang, W. Xiao, and D. Sheng	
Photon momentum transfer in one-photon single ionization of helium: The influence of electron correlation (<i>11 pages</i>)	023120
Yong-Kang Fang, Wei-Chao Jiang, Lei Geng, Iva Březinová, Laura Sommerlad, Alexander Tsertsvadze, Max Kircher, Jan Kruse, Till Jahnke, Noelle Walsh, Reinhard Dörner, Joachim Burgdörfer, and Liang-You Peng	
Ultracold systems and matter waves	
Roadmap to vortex nucleation below the critical rotation frequency in a dipolar Bose-Einstein condensate (<i>12 pages</i>)	023301
Soumyadeep Halder, Hari Sadhan Ghosh, Arpana Saboo, Andy M. Martin, and Sonjoy Majumder	
Kelvin–Bogoliubov-phonon interaction dynamics in a superfluid quantum vortex (<i>12 pages</i>)	023302
Kazunari Ochi, Junichi Takahashi, and Eiji Nakano	
Localization transitions of correlated particles in nonreciprocal quasicrystals (<i>11 pages</i>)	023303
Lei Wang, Juan Kang, Ni Liu, Chaohua Wu, and Gang Chen	
Vortex-lattice melting and critical temperature shift in rotating Bose-Einstein condensates (<i>7 pages</i>)	023304
Julián Amette Estrada, Marc E. Brachet, and Pablo D. Mininni	
Enhanced strong-interaction effect in synthetic spin-orbit coupling with mixed spin symmetry (<i>10 pages</i>)	023305
Ayaka Usui, Abel Rojo-Francàs, James Schloss, and Bruno Juliá-Díaz	
Energy conservation and quantum backreaction in Bose-Einstein condensates (<i>11 pages</i>)	023306
Caio C. Holanda Ribeiro	
Continuously varying critical exponents in an exactly solvable long-range cluster XY model (<i>9 pages</i>)	023307
Tian-Cheng Yi, Chengxiang Ding, Maoxin Liu, Liangsheng Li, and Wen-Long You	
☞ Regimes of steady-state turbulence in a quantum fluid (<i>14 pages</i>)	023308
Tommy Z. Fischer and Ashton S. Bradley	
Breakdown of the single-mode description of ultradilute quantum droplets in binary Bose mixtures: A perspective from a microscopic bosonic pairing theory (<i>11 pages</i>)	023309
Hui Hu, Jia Wang, Han Pu, and Xia-Ji Liu	

(Continued)

Light-induced processes in atomic-scale systems

Theory of resonant x-ray scattering with ultrafast intense pulses (<i>17 pages</i>)	023101
Akilesh Venkatesh and Phay J. Ho	
Energy levels and transition rates of the laser-cooling candidate Th^- (<i>8 pages</i>)	023102
Rui Zhang, Yuzhu Lu, Shuaiting Yan, and Chuangang Ning	
Complete classification and additional saddle-point solutions for high-order above-threshold ionization induced by a strong laser field (<i>14 pages</i>)	023103
D. Habibović and D. B. Milošević	
Controlling temporal triple-slit interference by two-color circularly polarized laser fields (<i>6 pages</i>)	023104
Xiaoxiao Long, Peizeng Li, Yankun Dou, Jing Li, and Yunquan Liu	
Broadened coherent destruction of tunneling (<i>11 pages</i>)	023105
Liping Li, Quanwei Zhao, Qing He, Jiahui Zhang, and Bo Wang	
Control of Autler-Townes spectra by counter-rotating circularly polarized pulses (<i>8 pages</i>)	023106
Yutong Deng, Yijie Liao, Xu Zhang, Miao Yu, Peixiang Lu, and Yueming Zhou	
Energy-conservation conditions in the saddle-point approximation for the strong-field ionization of atoms (<i>13 pages</i>)	023107
T. Rook, D. Habibović, and C. Figueira de Morisson Faria	
☞ Modeling the laser-pulse-induced helium trimer dynamics (<i>19 pages</i>)	023108
Q. Guan, J. Kruse, M. Kunitski, R. Dörner, and D. Blume	
Breakup of positronium by Compton scattering of high-energy photons (<i>10 pages</i>)	023109
B. Najjari, C. Pedain, C. Müller, and A. B. Voitkiv	
Asymmetric polarization gating for spectral tuning and temporal confinement of high-order harmonics (<i>10 pages</i>)	023110
C. Picot, J. Vábek, T. Němec, S. Skupin, E. Constant, and F. Catoire	
Dissociative Rydberg-state excitation of H_2 and CO molecules induced by a femtosecond laser pulse (<i>7 pages</i>)	023111
Junyang Ma, Shuqi Li, Xueying Li, Yan Yang, and Zhenrong Sun	
Zepto- to attosecond core-level photoemission time delays in homonuclear diatomic molecules and nondipole effects in the framework of multiple scattering theory (<i>14 pages</i>)	023112
Yoshiaki Tamura, Kaoru Yamazaki, Kiyoshi Ueda, and Keisuke Hatada	
Alternating circular dichroism in the photoelectron spectra of the ionization of polarized atoms by ultrashort pulses (<i>11 pages</i>)	023113
Ph. A. Davydiak, A. V. Meremianin, and N. L. Manakov	
Near-zero-energy electron attachment to SF_6 using Rydberg excitation and two-color resonance-enhanced multiphoton ionization of NO (<i>8 pages</i>)	023114
Irina Jana, Eric J. Smoll Jr., Jonathan H. Frank, and David W. Chandler	
Direct double ionization of the He-like B^{3+} ion by a single photon (<i>9 pages</i>)	023115
A. Müller, P.-M. Hillenbrand, S.-X. Wang, S. Schippers, I. Bray, A. S. Kheifets, E. Lindroth, S. Reinwardt, M. Martins, J. Seltmann, and F. Trinter	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 111, NUMBER 2

FEBRUARY 2025

Convergent close-coupling approach to electron scattering on H_3^+ : Scattering dynamics and dissociative processes (<i>20 pages</i>)	022802
Reese K. Horton, Michael V. Pak, Igor Bray, and Dmitry V. Fursa	
Precision measurement of the last bound states in H_2 and determination of the $H + H$ scattering length (<i>10 pages</i>)	022803
K.-F. Lai, W. Ubachs, and M. Beyer	
Accuracy estimation of the Hartree-Fock-Slater method for calculating average atomic transition energies of ions in warm dense plasmas (<i>15 pages</i>)	022804
Yair Kurzweil	
Laser-assisted positronium formation in positron collisions with Rydberg hydrogen (<i>7 pages</i>)	022805
M. K. Matfunjwa, H. B. Ambalampitiya, and I. I. Fabrikant	
Physical assessment of vibrationally induced magnetic-dipole transitions in polyatomic molecules (<i>7 pages</i>)	022806
Konstantin V. Kazakov	
Prolongation of electronic coherence for ultralong-lived charge migration anchored by a continuous-wave laser (<i>11 pages</i>)	022807
Dongming Jia, Chunmei Liu, Jörn Manz, Yunhui Wang, and Yonggang Yang	
X-ray-absorption spectrum of O_2^+ (<i>8 pages</i>)	022808
Lucas M. Cornetta, Ludvig Kjellsson, Rafael C. Couto, Hans Ågren, Vincenzo Carravetta, Stacey L. Sørensen, Markus Kubin, Christine Bülow, Vicente Zamudio-Bayer, Bernd von Issendorff, J. Tobias Lau, Johan Söderström, Marcus Agåker, Jan-Erik Rubensson, and Rebecka Lindblad	
Elastic and inelastic electron scattering cross sections of trichlorofluoromethane (<i>9 pages</i>)	022809
M. Dinger, Y. Park, and W. Y. Baek	
Convergent close-coupling calculations of electron scattering on LiH (<i>16 pages</i>)	022810
Haadi Umer, Liam H. Scarlett, Adam J. C. Singor, Igor Bray, Mark C. Zammit, and Dmitry V. Fursa	
Realizing a mechanical dynamical Casimir effect with a low-frequency oscillator (<i>9 pages</i>)	022811
Tian-hao Jiang and Jun Jing	
Numerical tensor method for atomic and exotic three-particle systems (<i>14 pages</i>)	022812
Kammegne Tcheugam Brice, Michael Melgaard, Marilia Pavlidou, and Hazel Cox	
Investigating the $4D_{3/2} 3, \pm 2\rangle - 4D_{5/2} 3, \pm 2\rangle$ transition in Nb^{4+} for a THz atomic clock (<i>10 pages</i>)	022813
Jyoti, A. Chakraborty, Zhiyang Wang, Jia Zhang, Jingbiao Chen, Bindiya Arora, and B. K. Sahoo	
Nonrelativistic expansion of the Dirac-Coulomb energy and the nonretarded Breit-interaction correction up to order α^8 (<i>12 pages</i>)	022814
Wanping Zhou, Sanjiang Yang, and Haoxue Qiao	
Spontaneous torque on an inhomogeneous chiral body out of thermal equilibrium (<i>14 pages</i>)	022815
Kimball A. Milton, Nima Pourtolami, and Gerard Kennedy	
Self-energy correction to the $E1$ transition amplitudes in hydrogenlike ions (<i>9 pages</i>)	022816
M. G. Kozlov, M. Y. Kaygorodov, Yu. A. Demidov, and V. A. Yerokhin	
Relativistic variational-quantum-eigensolver calculations of molecular electric dipole moments on quantum hardware (<i>9 pages</i>)	022817
Palak Chawla, Shweta, K. R. Swain, Tushti Patel, Renu Bala, Disha Shetty, Kenji Sugisaki, Sudhindu Bikash Mandal, Jordi Riu, Jan Nogué, V. S. Prasanna, and B. P. Das	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 111, NUMBER 2

FEBRUARY 2025

Phenomenon of a stronger trapping behavior in Λ -type quantum systems with symmetry (<i>13 pages</i>) Boris Volkov, Anastasia Myachkova, and Alexander Pechen	022617
Validity condition for high-fidelity digitized quantum annealing (<i>10 pages</i>) Alan C. Santos	022618
☞ Quantum state estimation of multipartite single-photon path entanglement via local measurements (<i>7 pages</i>) Hikaru Shimizu, Joe Yoshimoto, Kazufumi Tanji, Aruto Hosaka, Junko Ishi-Hayase, Tomoyuki Horikiri, Rikizo Ikuta, and Masahiro Takeoka	022619
Nonadiabatic holonomic quantum gates in a decoherence-insensitive space (<i>8 pages</i>) Fangzhou Jin, Jianpei Geng, and Hui Zhou	022620
Higher-order protection of quantum gates: Hamiltonian engineering coordinated with dynamical decoupling (<i>10 pages</i>) P. Z. Zhao, Tianqi Chen, Sirui Liu, and Jiangbin Gong	022621
Realizing two-qubit gates through mode engineering on a trapped-ion quantum computer (<i>9 pages</i>) Ming Li, Nhung H. Nguyen, Alaina M. Green, Jason Amini, Norbert M. Linke, and Yunseong Nam	022622
Deterministic single-phonon-to-photon quantum transducer for distributed quantum networks (<i>10 pages</i>) Zhengyi Yue, Tao Li, Zhenhua Li, and Keyu Xia	022623
Simple loss-tolerant protocol for Greenberger-Horne-Zeilinger-state distribution in a quantum network (<i>10 pages</i>) Hikaru Shimizu, Wojciech Roga, David Elkouss, and Masahiro Takeoka	022624
Compressive quantum waveform estimation (<i>10 pages</i>) Alex Tritt, Joshua Morris, Christopher C. Bounds, Hamish A. M. Taylor, James Saunderson, and L. D. Turner	022625
Enhancing the performance of quantum radar with zero-photon subtraction (<i>8 pages</i>) ShengLi Zhang, Liangsheng Li, Maoxin Liu, JinChun Li, Wang Sun, and QuanChun Yu	022627
Entangling distant systems via universal nonadiabatic passage (<i>14 pages</i>) Zhu-yao Jin and Jun Jing	022628
Efficient particle-conserving symmetric quantum circuits (<i>16 pages</i>) Babatunde M. Ayeni	022629
Learning to learn with an evolutionary strategy applied to variational quantum algorithms (<i>15 pages</i>) Lucas Friedrich and Jonas Maziero	022630
Quantum Chernoff divergence in advantage distillation for quantum key distribution and device-independent quantum key distribution (<i>12 pages</i>) Mikka Stasiuk, Norbert Lütkenhaus, and Ernest Y.-Z. Tan	022631

PART B

Atomic and molecular structure and dynamics; high-precision experiments

Serially improved Gaussian-type orbitals for molecular calculations containing third-row atoms (<i>14 pages</i>) Ignacio Ema López, Guillermo Ramírez Moreno, Rafael López Fernández, and José Manuel García de la Vega	022801
---	--------

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 111, NUMBER 2

FEBRUARY 2025

Error mitigation of BQP computations using measurement-based verification (<i>12 pages</i>) Joseph Harris and Elham Kashefi	022602
Scalable and verifiable quantum secret sharing with photonic efficiency via quasicausal cones in the multiscale entanglement renormalization ansatz framework (<i>14 pages</i>) Hong Lai, Zhongrui Huang, Li Ren, Josef Pieprzyk, Qibin Zhao, and Leongchuan Kwek	022603
Simulation of the dissipative dynamics of strongly interacting nitrogen-vacancy centers with tensor networks (<i>9 pages</i>) Jirawat Saiphet and Daniel Braun	022604
Molecular nanomagnet $\text{Cu}^{2+}\text{Ni}^{2+}\text{Cu}^{2+}$ as a resource for bipartite and tripartite quantum entanglement and coherence (<i>13 pages</i>) Azadeh Ghannadan, Hamid Arian Zad, Saeed Haddadi, Jozef Strečka, Zhirayr Adamyan, and Vadim Ohanyan	022605
Ambiguous resonances in multipulse quantum sensing with nitrogen-vacancy centers (<i>12 pages</i>) Lucas Tsunaki, Anmol Singh, Kseniia Volkova, Sergei Trofimov, Tommaso Pregnolato, Tim Schröder, and Boris Naydenov	022606
Two-photon Hong-Ou-Mandel-based sensor with N -fold maximal precision (<i>14 pages</i>) Qian Li, Yifan Sun, and Xiangdong Zhang	022607
Enhanced detection of time-dependent dielectric structure: Rayleigh limit and quantum vacuum (<i>12 pages</i>) V. E. Mkrtchian, H. S. Avetisyan, and A. E. Allahverdyan	022608
Quantum next-generation reservoir computing and its quantum optical implementation (<i>13 pages</i>) Longhan Wang, Peijie Sun, Ling-Jun Kong, Yifan Sun, and Xiangdong Zhang	022609
Improved finite-size key rates for discrete-modulated continuous-variable quantum key distribution under coherent attacks (<i>18 pages</i>) Carlos Pascual-García, Stefan Bäuml, Mateus Araújo, Rotem Liss, and Antonio Acín	022610
Pump-efficient Josephson parametric amplifiers with high saturation power (<i>19 pages</i>) Nicholas M. Hougland, Zhuan Li (李專), Ryan Kaufman, Boris Mesits, Roger S. K. Mong (蒙紹璣), Michael Hatridge, and David Pekker	022611
Trotter error timescaling separation via commutant decomposition (<i>7 pages</i>) Yi-Hsiang Chen	022612
Modeling error correction with Lindblad dynamics and approximate channels (<i>22 pages</i>) Zohar Schwartzman-Nowik, Liran Shirizly, and Haggai Landa	022613
Demonstration of system-bath physics on a gate-based quantum computer (<i>17 pages</i>) Pascal Stadler, Matteo Lodi, Andisheh Khedri, Rolando Reiner, Kirsten Bark, Nicolas Vogt, Michael Marthaler, and Juha Leppäkangas	022614
Efficiency of Feynman's quantum computer (<i>9 pages</i>) R. J. Costales, A. Gunning, and T. Dorlas	022615
Stabilizing entanglement of boron-vacancy defects in a hexagonal boron-nitride membrane by two-phonon driving (<i>12 pages</i>) Yi-Fan Qiao, Xue-Feng Pan, Xiao-Yu Yao, Xin-Lei Hei, and Peng-Bo Li	022616

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 111, NUMBER 2

FEBRUARY 2025

Architecture for fast implementation of quantum low-density parity-check codes with optimized Rydberg gates (<i>11 pages</i>)	022433
C. Poole, T. M. Graham, M. A. Perlin, M. Otten, and M. Saffman	
Genuine multipartite entanglement in quantum optimization (<i>13 pages</i>)	022434
Gopal Chandra Santra, Sudipto Singha Roy, Daniel J. Egger, and Philipp Hauke	
Quantum metrology of rotations with mixed spin states (<i>14 pages</i>)	022435
Eduardo Serrano-Ensástiga, Chryssomalis Chryssomalakos, and John Martin	
Optimal local measurements in single-parameter quantum metrology (<i>9 pages</i>)	022436
Jia-Xuan Liu, Jing Yang, Hai-Long Shi, and Sixia Yu	
Detecting quasidegenerate ground states in topological models via the variational quantum eigensolver (<i>12 pages</i>)	022437
Carola Ciaramelletti, Martin Beseda, Mirko Consiglio, Luca Lepori, Tony J. G. Apollaro, and Simone Paganelli	
Attainability of quantum state discrimination bounds with collective measurements on finite copies (<i>15 pages</i>) . . .	022438
Lorcán O. Conlon, Jin Ming Koh, Biveen Shajilal, Jasminder Sidhu, Ping Koy Lam, and Syed M. Assad	
Characterizing the set of quantum correlations in prepare-and-measure quantum multichain-shaped networks (<i>11 pages</i>)	022439
Yanning Jia, Fenzhuo Guo, Yukun Wang, Haifeng Dong, and Fei Gao	
Finite-size catalysis in quantum resource theories (<i>11 pages</i>)	022440
Ptryk Lipka-Bartosik and Kamil Korzekwa	
Deviations from geodesic evolutions and energy waste on the Bloch sphere (<i>17 pages</i>)	022441
Leonardo Rossetti, Carlo Cafaro, and Paul M. Alsing	
Progress towards neutron-scattering simulation on an analog quantum processor (<i>10 pages</i>)	022442
Nora Bauer, Victor Ale, Pontus Laurell, Serena Huang, Seth Watabe, David Alan Tennant, and George Siopsis	
Quantum information flow in impurity qubits interacting with Bose-Bose mixtures (<i>10 pages</i>)	022443
Abdelâali Boudjemâa, Lan Xu, and Qing-Shou Tan	
Genuine tripartite entanglement in graviton-matter interactions (<i>6 pages</i>)	022444
Pablo Guillermo Carmona Rufo, Anupam Mazumdar, and Carlos Sabín	
Quantum speed limit on the production of quantumness of observables (<i>11 pages</i>)	022445
Divyansh Shrimali, Swapnil Bhowmick, and Arun Kumar Pati	
Quantum advantage in a unified scenario and secure detection of resources (<i>9 pages</i>)	022446
Saronath Halder and Alexander Streltsov	
One-shot manipulation of coherence in dynamic quantum resource theory (<i>13 pages</i>)	022447
Yu Luo	
Quantum technologies	
Reconstruction of quantum states by applying an analytical optimization model (<i>6 pages</i>)	022601
Rohit Prasad, Pratyay Ghosh, Ronny Thomale, and Tobias Huber-Loyola	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 111, NUMBER 2

FEBRUARY 2025

Minimal nonlocality in multipartite quantum systems (<i>13 pages</i>)	022416
Guang-Bao Xu, Yong-Qi Zhang, and Dong-Huan Jiang	
Lower bounds for the Trotter error (<i>15 pages</i>)	022417
Alexander Hahn, Paul Hartung, Daniel Burgarth, Paolo Facchi, and Kazuya Yuasa	
Symmetry-informed transferability of optimal parameters in the quantum approximate optimization algorithm (<i>15 pages</i>)	022418
Isak Lyngfelt and Laura García-Álvarez	
Strategies for simulating the time evolution of Hamiltonian lattice field theories (<i>27 pages</i>)	022419
Siddharth Hariprakash, Neel S. Modi, Michael Kreshchuk, Christopher F. Kane, and Christian W. Bauer	
Parity-controlled gate in a two-dimensional neutral-atom array (<i>13 pages</i>)	022420
F. Q. Guo, Shi-Lei Su, Weibin Li, and X. Q. Shao	
Noise-resilient and resource-efficient hybrid algorithm for robust quantum gap estimation (<i>17 pages</i>)	022421
Woo-Ram Lee, Nathan M. Myers, and V. W. Scarola	
Dynamical resource theory of incompatibility preservability (<i>10 pages</i>)	022422
Chung-Yun Hsieh, Benjamin Stratton, Chao-Hsien Wu, and Huan-Yu Ku	
High-dimensional subspace expansion using classical shadows (<i>12 pages</i>)	022423
Gregory Boyd, Bálint Koczor, and Zhenyu Cai	
Retrieving maximum information of symmetric states from their corrupted copies (<i>10 pages</i>)	022424
Zhao-Yi Zhou and Da-Jian Zhang	
Fractals and spontaneous symmetry breaking with type- <i>B</i> Goldstone modes: A perspective from entanglement (<i>23 pages</i>)	022425
Huan-Qiang Zhou, Qian-Qian Shi, John O. Fjærestad, and Ian P. McCulloch	
Avoiding barren plateaus with entanglement (<i>11 pages</i>)	022426
Yuhan Yao and Yoshihiko Hasegawa	
Entanglement and operator correlation signatures of many-body quantum Zeno phases in inefficiently monitored noisy systems (<i>12 pages</i>)	022427
Chun Y. Leung and Alessandro Romito	
Practicality of a quantum adiabatic algorithm for chemistry applications (<i>17 pages</i>)	022428
Etienne Granet, Khaldoon Ghanem, and Henrik Dreyer	
Expressivity of deterministic quantum computation with one qubit (<i>11 pages</i>)	022429
Yujin Kim and Daniel K. Park	
Adiabatic modulation of driving protocols in periodically driven quantum systems (<i>9 pages</i>)	022430
Ashwin Murali, Tapomoy Guha Sarkar, and Jayendra N. Bandyopadhyay	
Effective quantum feature maps in quantum extreme reservoir computation from the <i>XY</i> model (<i>11 pages</i>)	022431
Aoi Hayashi, Akitada Sakurai, William J. Munro, and Kae Nemoto	
Bosonic quantum error correction with neutral atoms in optical dipole traps (<i>19 pages</i>)	022432
Leon H. Bohnmann, David F. Locher, Johannes Zeiher, and Markus Müller	

(Continued)

Measuring the local efficiency of symmetric informationally complete positive operator-valued measures in two-level systems with the density of quantum states (<i>10 pages</i>)	022224
Hai-Jun Xing	
Quantum information science	
Cancellation of phonon hopping in trapped ions by modulation of the trap potential (<i>11 pages</i>)	022401
Takanori Nishi, Kaoru Yamanouchi, Ryoichi Saito, and Takashi Mukaiyama	
Continuous-variable quantum teleportation using a photon-subtracted and photon-added two-mode squeezed coherent state (<i>14 pages</i>)	022402
Shikhar Arora, Chandan Kumar, and Arvind	
Topological quantum state transfer via resonant adiabatic passage (<i>9 pages</i>)	022403
K. Z. Li, J. Z. Tian, and L. T. Xiao	
Quantum state discrimination via generalized bounds on Löwner partial order sets (<i>6 pages</i>)	022404
Amir Mohammad Yaghoobianzadeh and Jawad A. Salehi	
Quantifying imaginarity in terms of pure-state imaginarity (<i>9 pages</i>)	022405
Shuanping Du and Zhaofang Bai	
Channel-based framework for phase estimation of multiple eigenvalues (<i>17 pages</i>)	022406
Yuan-De Jin, Shi-Yu Zhang, and Wen-Long Ma	
Multipartite entangling power by von Neumann entropy (<i>18 pages</i>)	022407
Xinyu Qiu, Zhiwei Song, and Lin Chen	
Optimal conversion of Kochen-Specker sets into bipartite perfect quantum strategies (<i>16 pages</i>)	022408
Stefan Trandafir and Adán Cabello	
Bargmann invariants for quantum imaginarity (<i>10 pages</i>)	022409
Mao-Sheng Li and Yi-Xi Tan	
Shortcuts to adiabatic state transfer in time-modulated two-level non-Hermitian systems (<i>9 pages</i>)	022410
Qi-Cheng Wu, Jun-Long Zhao, Yan-Hui Zhou, Biao-Liang Ye, Yu-Liang Fang, Zheng-Wei Zhou, and Chui-Ping Yang	
Benchmarking adiabatic transformation by alternating unitaries (<i>9 pages</i>)	022411
Takuya Hatomura	
Entanglement estimation of Werner states with a quantum extreme learning machine (<i>7 pages</i>)	022412
Hajar Assil, Abderrahim El Allati, and Gian Luca Giorgi	
Noisy certification of continuous-variable graph states (<i>24 pages</i>)	022413
Éloi Descamps and Damian Markham	
Bounded light cone and robust topological order out of equilibrium (<i>11 pages</i>)	022414
Yu Zeng, Alioscia Hamma, Yu-Ran Zhang, Jun-Peng Cao, Heng Fan, and Wu-Ming Liu	
Class of codes correcting absorptions and emissions (<i>11 pages</i>)	022415
Arda Aydin and Alexander Barg	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 111, NUMBER 2

FEBRUARY 2025

Dynamical Landauer principle: Thermodynamic criteria of transmitting classical information (21 pages) Chung-Yun Hsieh	022207
Currents in nonequilibrium steady states of open inhomogeneous XX spin chains (12 pages) Pierre-Antoine Bernard, Ismaël Bussière, Roberto Floreanini, and Luc Vinet	022208
Strong symmetries in collision models and physical dilations of covariant quantum maps (20 pages) Marco Cattaneo	022209
Quantum and classical effects in system-bath correlations and optical line shapes (16 pages) Rajesh Dutta and Mike Reppert	022210
 Non-Hermitian generalization of Rayleigh-Schrödinger perturbation theory (7 pages) Wei-Ming Chen, Yen-Ting Lin, and Chia-Yi Ju	022211
Non-Markovian to Markovian decay in structured environments with correlated disorder (9 pages) Mariana O. Monteiro, Nadja K. Bernardes, Eugene M. Broni, Francisco A. B. F. de Moura, and Guilherme M. A. Almeida	022212
Multitype entanglement dynamics induced by exceptional points (15 pages) Zigeng Li, Xinyao Huang, Hongyan Zhu, Guofeng Zhang, Fan Wang, and Xiaolan Zhong	022213
Emergent topological re-entrant phase transition in a generalized quasiperiodic modulated Su-Schrieffer-Heeger model (10 pages) Xiao-Ming Wang, Shan-Zhong Li, and Zhi Li	022214
Quantum Mpemba effect of localization in the dissipative mosaic model (9 pages) J. W. Dong, H. F. Mu, M. Qin, and H. T. Cui	022215
Nonreciprocal quantum heat engine in a spinning optomechanical system (9 pages) Jing-Yu Zhang, Ke-Yu Shi, Zuan Meng, Rui Hou, Xue Han, Hong-Fu Wang, and Shou Zhang	022216
Robustness of contextuality under different types of noise as quantifiers for parity-oblivious multiplexing tasks (12 pages) Amanda M. Fonseca, Vinicius P. Rossi, Roberto D. Baldijão, John H. Selby, and Ana Belén Sainz	022217
Quantum equilibration under extended experimentally realistic conditions (8 pages) M. R. Passos and Thiago R. de Oliveira	022218
Localized states in monitored quantum walks (11 pages) K. Ziegler	022219
Precision measurement for open systems by the non-Hermitian linear response (9 pages) Peng Xu and Gang Chen	022220
Single-shot distinguishability and antidistinguishability of quantum measurements (18 pages) Satyaki Manna, Sneha Suresh, Manan Singh Kachhawaha, and Debashis Saha	022221
Single-atom dissipation and dephasing in Dicke and Tavis-Cummings quantum batteries (13 pages) Andrea Canzio, Vasco Cavina, Marco Polini, and Vittorio Giovannetti	022222
Quantum many-body theory for q -deformed fermions and bosons (29 pages) Habib Esmaili, Hosein Mohammadzadeh, Mehdi Biderang, and Morteza NattaghNajafi	022223

(Continued)

Atomic and molecular structure and dynamics; high-precision experiments

- Spin dependence in core-valence double photoionization of neon (*5 pages*) L020801
 Takeshi Odagiri, Yuma Sugawara, Tatsuo Kaneyasu, Jun-ichi Adachi, Hirokazu Tanaka, Isao H. Suzuki,
 Sakura Suzuki, and Yasumasa Hikosaka
- Correlation between acid dissociation states and average dipole moments of HCl-water clusters realized
 by a strong electric field (*6 pages*) L020802
 Chuanfu Huang, Lei Zhuang, Jing Wang, and Jianguo Wan

Light-induced processes in atomic-scale systems

- Effect of Rabi dynamics in resonant x-ray scattering of intense attosecond pulses (*6 pages*) L021101
 Akilesh Venkatesh and Phay J. Ho

Ultracold systems and matter waves

- Anomalous Landau damping and algebraic thermalization in two-dimensional superfluids far
 from equilibrium (*6 pages*) L021301
 Clément Duval and Nicolas Cherroret
- Violation of the Leggett-Garg inequality for dynamics of a Bose-Einstein condensate in a double-well
 potential (*6 pages*) L021302
 Tsubasa Sakamoto, Ryosuke Yoshii, and Shunji Tsuchiya
- Raman-type absolute atom gravimeter assisted by a degenerate optical cavity (*6 pages*) L021303
 Liang Yuan, Bin Chen, Yu-Hang Li, Chen Yao, and Sheng-Jun Yang
- Velocimetry using free-induction decay of matter-wave lattices (*6 pages*) L021304
 Gehrig Carlse, Jaskaran Randhawa, Eduardo Ramos, Thomas Vacheresse,
 Alex Pouliot, and A. Kumarakrishnan

ARTICLES**Fundamental concepts**

- Network nonlocality sharing in the star-shaped scenario using only projective measurements (*7 pages*) 022201
 Hao Sun, Fenzhuo Guo, Haifeng Dong, Fei Gao, and Sujuan Qin
- Dirac brackets and the Lindblad equation: A correspondence (*12 pages*) 022202
 Aleek Maity and V. V. Sreedhar
- Characterizing entangled state update in different reference frames with weak measurements (*8 pages*) 022203
 J. Allam and A. Matzkin
- Consequences of the single-pair measurement of the Bell parameter (*6 pages*) 022204
 Marco Genovese and Fabrizio Piacentini
- Unraveling-induced entanglement phase transition in diffusive trajectories of continuously monitored
 noninteracting fermionic systems (*9 pages*) 022205
 Moritz Eissler, Igor Lesanovsky, and Federico Carollo
- Efficient and operational quantifier of nondivisibility in terms of channel discrimination (*14 pages*) 022206
 Ranieri Nery, Nadja K. Bernardes, Daniel Cavalcanti, Rafael Chaves, and Cristhiano Duarte

(Continued)

*The Table of Contents is a total listing of Parts A and B.
Part A consists of pages L020201–022631, and Part B pages 022801–029902(E).*

PART A

LETTERS

Fundamental concepts

SU(N) Fermi-Hubbard model on two sites: Bethe ansatz solution and quantum phase transition of the Lipkin-Meshkov-Glick model in the large- N limit (7 pages)	L020201
Pierre Nataf	
Crypto-nonlocality in arbitrarily dimensional systems (6 pages)	L020202
Jianqi Sheng, Dongkai Zhang, and Lixiang Chen	
Improved bounds on collapse models from rotational noise of the Laser Interferometer Space Antenna Pathfinder mission (6 pages)	L020203
Davide Giordano Ario Altamura, Andrea Vinante, and Matteo Carlesso	
Correlated and critical phenomena in multipartite quantum non-Markovianity (7 pages)	L020204
Ignacio González and Ángel Rivas	

Quantum information science

Optimal limits of continuously monitored thermometers and their Hamiltonian structure (6 pages)	L020401
Mohammad Mehboudi, Florian Meier, Marcus Huber, and Harry J. D. Miller	
Metrological usefulness of entanglement and nonlinear Hamiltonians (7 pages)	L020402
Satoya Imai, Augusto Smerzi, and Luca Pezzè	
Universal time scalings of sensitivity in Markovian quantum metrology (6 pages)	L020403
Arpan Das, Wojciech Górecki, and Rafał Demkowicz-Dobrzański	
Imprecision plateaus in quantum steering (6 pages)	L020404
Elna Svegborn, Nicola d'Alessandro, Otfried Gühne, and Armin Tavakoli	

Quantum technologies

Long-lived metastable-qubit memory (6 pages)	L020601
Xiaoyang Shi, Jasmine Sinanan-Singh, Kyle DeBry, Susanna L. Todaro, Isaac L. Chuang, and John Chiaverini	



(Continued)



2469-9926(202502)111:2:A;1-0