PHYSICAL REVIEW A **THIRD SERIES, VOLUME 108, NUMBER 1** **JULY 2023**

Time-frequency metrology with two single-photon states: Phase-space picture and the Hong-Ou-Mandel interferometer *(11 pages)* 013707
Éloi Descamps, Arne Keller, and Pérola Milman

Emission of an atom inside a one-dimensional atomic cavity *(7 pages)* 013708
Chaofan Zhou, Yusef Maleki, Zeyang Liao, and M. Suhail Zubairy

Quantum holography with single-photon states *(8 pages)* 013709
Denis Abramović, Nazif Demoli, Mario Stipčević, and Hrvoje Skenderović

Remote distribution of the quantum coherence resource through optical fiber *(7 pages)* 013710
Juan Yu, Yinhua Wu, Wangyun Liu, Zhihui Yan, and Xiaojun Jia

Intensity effects of light coupling to one- or two-atom arrays of infinite extent *(11 pages)* 013711
F. Robicheaux and Deepak A. Suresh

Dissipative preparation and stabilization of many-body quantum states in a superconducting qutrit array *(16 pages)* 013712
Yunzhao Wang, Kyrylo Snizhko, Alessandro Romito, Yuval Gefen, and Kater Murch

ERRATA

Erratum: Extensions of Hardy-type true-implies-false gadgets to classically obtain indistinguishability [Phys. Rev. A **103**, 022204 (2021)] *(1 page)* . . . . . 019901(E)
Karl Svozil

Erratum: Relation between quantum tunneling times for relativistic particles [Phys. Rev. A **70**, 052112 (2004)] *(1 page)* . . . . . 019902(E)
Herbert G. Winful, Moussa Ngom, and Natalia M. Litchinitser

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 108, NUMBER 1** **JULY 2023**

Dislocated vector asymmetric soliton molecules in birefringence-managed fiber lasers *(8 pages)* 013514
Zhiwen He, Yueqing Du, Yufeng Zhang, Qun Gao, Chao Zeng, Dong Mao, and Jianlin Zhao

Fractionality and $\mathcal{PT}$ symmetry in an electrical transmission line *(6 pages)* 013515
Mario I. Molina

Controllable generation of mechanical quadrature squeezing via dark-mode engineering in cavity optomechanics *(11 pages)* 013516
Jian Huang, Deng-Gao Lai, and Jie-Qiao Liao

Paraxial diffusion-field retrieval *(29 pages)* 013517
David M. Paganin, Daniele Pelliccia, and Kaye S. Morgan

Retardation-induced exceptional point *(8 pages)* 013518
Alexey A. Dmitriev and Mikhail V. Rybin

Propagation of spatiotemporal optical vortex beams in linear, second-order dispersive media *(7 pages)* 013519
Milo W. Hyde, IV and Miguel A. Porras

Walk-off-induced dissipative breathers and dissipative breather gas in microresonators *(9 pages)* 013520
A. Villois, D. N. Puzyrev, D. V. Skryabin, and M. Onorato

Dual-frequency Doppler-free spectroscopy for simultaneous laser stabilization in compact atomic physics experiments *(11 pages)* 013521
Nathan Cooper, Somaya Madkhaly, David Johnson, Benjamin Hopton, Daniele Baldolini, and Lucia Hackermüller

Multipolar perspective on unidirectional guided resonances *(9 pages)* 013522
Maohua Gong, Jie Liu, Lixin Ge, Hong Xiang, and Dezhuan Han

Quantum optics

Enhancement of the Goos-Hänchen shift via chiral quantum-dot molecule systems *(7 pages)* 013701
Muhammad Idrees, Muhib Ullah, and Li-Gang Wang

Controlling frequency-domain Hong-Ou-Mandel interference via electromagnetically induced transparency *(9 pages)* 013702
Zi-Yu Liu, Jiun-Shiuan Shiu, Chin-Yao Cheng, and Yong-Fan Chen

Effects of environment correlations on the onset of collective decay in waveguide QED *(10 pages)* 013703
A. Del Ángel, P. Solano, and P. Barberis-Blostein

Quantum interference and controllable magic cavity QED via a giant atom in a coupled resonator waveguide *(10 pages)* 013704
Xiaojun Zhang, Chengge Liu, Zhirui Gong, and Zhihai Wang

Multiphoton correlations between quantum images *(11 pages)* 013705
Serge Massar, Fabrice Devaux, and Eric Lantz

Enhancement of broadband entangled two-photon absorption by resonant spectral phase flips *(9 pages)* 013706
Baihong Li (李百宏) and Holger F. Hofmann

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 108, NUMBER 1** **JULY 2023**

Series expansions in closed and open quantum many-body systems with multiple quasiparticle types *(11 pages)* 013323
Lea Lenke, Andreas Schellenberger, and Kai Phillip Schmidt

One-particle density matrix and momentum distribution of the out-of-equilibrium one-dimensional Tonks-Girardeau gas: Analytical results at large *N (12 pages)* 013324
S. Scopa, P. Ruggiero, P. Calabrese, and J. Dubail

Photonics, nonlinear optics, and optomechanics

Harmonic active mode locking in terahertz quantum cascade lasers *(14 pages)* 013501
Carlo Silvestri, Xiaoqiong Qi, Thomas Taimre, and Aleksandar D. Rakić

Manipulating quantum emission by interface states between a multicomponent moiré lattice and a metasurface *(8 pages)* 013502
Z. N. Liu, X. Q. Zhao, Y. L. Zhao, S. N. Zhu, and H. Liu

Radial-angular coupling in self-phase-modulation with structured light *(8 pages)* 013503
M. Gil de Oliveira, L. J. Pereira, A. S. Santos, K. Dechoum, A. Bramati, and A. Z. Khoury

High-order harmonic generation in a liquid-crystal-like model *(8 pages)* 013504
Ling-Jie Lü and Xue-Bin Bian

Experimental observation of longer trajectories than previously observed in high-order harmonic generation *(9 pages)* 013505
S. Bengtsson, E. R. Simpson, N. Ibrakovic, S. Ek, A. Olofsson, T. Causer, and J. Mauritsson

Unified model for a nonlinear pulse propagation in composites and optimization of THz generation *(8 pages)* 013506
A. Husakou, O. Fedotova, R. Rusetsky, O. Khasanov, T. Smirnova, A. Fedotov, T. Apostolova, I. Babushkin, and U. Sapaev

Entanglement properties of a quantum-dot biexciton cascade in a chiral nanophotonic waveguide *(11 pages)* 013507
Eva M. González-Ruiz, Freja T. Østfeldt, Ravitej Uppu, Peter Lodahl, and Anders S. Sørensen

Circuit realization of Möbius insulators *(9 pages)* 013508
Shuo Bao, Jie Chang, Jien Wu, and Zhixia Xu

Gap solitons with quadratic and quartic dispersion competition in one-dimensional nonlinear periodic systems *(11 pages)* 013509
Y. Cao and T. F. Xu

Group and energy velocities of electromagnetic waves in bianisotropic superlattices *(6 pages)* 013510
A. N. Darinskii

Recoil momentum of an atom absorbing light in a gaseous medium and the Abraham-Minkowski debate *(6 pages)* 013511
João G. L. Condé and Pablo L. Saldanha

Topological amplification and frequency conversion in a photonic lattice with a two-photon driving *(12 pages)* . . . 013512
Ling-Xia Guo, Liang-Liang Wan, Liu-Gang Si, and Ying Wu

Pythagoras superposition principle for localized eigenstates of two-dimensional moiré lattices *(8 pages)* 013513
Zixuan Gao, Zhenli Xu, Zhiguo Yang, and Fangwei Ye

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 108, NUMBER 1** **JULY 2023**

Wannier solitons in spin-orbit-coupled Bose-Einstein condensates in optical lattices with a flat band *(9 pages)* . . . 013307
Chenhui Wang, Yongping Zhang, and V. V. Konotop

Multiphoton hyperfine Raman transitions with different quantization axes *(8 pages)* 013308
Jia-Wei Chang, Yu-Chieh Huang, Zhen-Wei Xu, Yuan-Hung Kan, Hsing-Han Huang, Jia-Zhun Huang, Kai-Jun Fu, Xu-Dong Liu, and Pei-Chen Kuan

Ground-state properties of multicomponent bosonic mixtures: A Gutzwiller mean-field study *(11 pages)* 013309
Chenrong Liu, Po Chen, Linli He, and Fangfang Xu

Bose-Einstein condensate as a diagnostic tool for an optical lattice formed by 1064-nm laser light *(8 pages)* 013310
V. V. Tsyganok, D. A. Pershin, V. A. Khlebnikov, D. A. Kumpilov, I. A. Pyrkh, A. E. Rudnev, E. A. Fedotova, D. V. Gaifudinov, I. S. Cojocaru, K. A. Khoruzhii, P. A. Aksentsev, A. K. Zykova, and A. V. Akimov

Stable molecular state under dissipative spin-orbit coupling *(5 pages)* 013311
Xi Zhao and Lihong Zhou

Caustics in the sine-Gordon model from quenches in coupled one-dimensional Bose gases *(27 pages)* 013312
Aman Agarwal, Manas Kulkarni, and D. H. J. O'Dell

Tunable momentum pair creation of spin excitations in dipolar bilayers *(11 pages)* 013313
Thomas Bilitewski, G. A. Domínguez-Castro, David Wellnitz, Ana Maria Rey, and Luis Santos

Nonequilibrium steady states and critical slowing down in the dissipative Bose-Hubbard model *(8 pages)* 013314
Robbe Ceulemans and Michiel Wouters

Universality of isolated N-body resonances at large scattering length *(10 pages)* 013315
Ludovic Pricoupenko

Quantum phases of constrained bosons on a two-leg Bose-Hubbard ladder *(11 pages)* 013316
Ashirbad Padhan, Rajashri Parida, Sayan Lahiri, Mrinal Kanti Giri, and Tapan Mishra

Fate of the vacuum point and of gray solitons in dispersive quantum shock waves in a one-dimensional Bose gas *(18 pages)* 013317
S. A. Simmons, J. C. Pillay, and K. V. Kheruntsyan

Spin-driven stationary turbulence in spinor Bose-Einstein condensates *(8 pages)* 013318
Deokhwa Hong, Junghoon Lee, Jongmin Kim, Jong Heum Jung, Kyuhwan Lee, Seji Kang, and Y. Shin

$Z_2 \times Z_2$ symmetry and Z_4 Berry phase of bosonic ladders *(12 pages)* 013319
Yoshihito Kuno and Yasuhiro Hatsugai

Rayleigh-Taylor instability in a phase-separated three-component Bose-Einstein condensate *(11 pages)* 013320
Arpana Saboo, Soumyadeep Halder, Subrata Das, and Sonjoy Majumder

Stable nonequilibrium Fulde-Ferrell-Larkin-Ovchinnikov state in a spin-imbalanced driven-dissipative Fermi gas loaded on a three-dimensional cubic optical lattice *(19 pages)* 013321
Taira Kawamura, Daichi Kagamihara, and Yoji Ohashi

Viscous dynamics of a quenched trapped dipolar Fermi gas *(12 pages)* 013322
Reuben R. W. Wang and John L. Bohn

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 108, NUMBER 1** **JULY 2023**

Spheroidal-wave analysis of time delay in molecular reconstruction of attosecond beating by interference of two-photon transitions around a Cooper-like minimum *(10 pages)* 013112
Qinghua Ke, Yueming Zhou, Yijie Liao, Min Li, Kunlong Liu, and Peixiang Lu

Role of molecular alignment in attosecond photoionization of N_2 *(8 pages)* 013113
Ru Zhang, Feng Wang, Qing Liao, and Peixiang Lu

Two-photon double ionization with finite pulses: Application of the virtual sequential model to helium *(13 pages)* 013114
Siddhartha Chattopadhyay, Carlos Marante, Barry I. Schneider, and Luca Argenti

Coulomb-corrected quantum-trajectories method for recollision-impact double ionization in an intense laser field *(7 pages)* 013115
Yuxing Bai, Xiaolei Hao, Weidong Li, Weifeng Yang, and Jing Chen

High-harmonic-generation spectra of HCN: A time-dependent density-functional-theory study *(8 pages)* 013116
Xi Chu

Floquet interpretation of attosecond RABBITT traces *(10 pages)* 013117
Matteo Lucchini

Second-order imaginary differential operator for effective absorption in the numerical solution of the time-dependent Schrödinger equation *(11 pages)* 013118
A. A. Silaev, A. A. Romanov, M. V. Silaeva, and N. V. Vvedenskii

Extracting the central positions and widths of Fano-type tunneling channels in a spectrum from the ionization rate *(8 pages)* 013119
Lijuan Jia, Wei-Chao Jiang, Haijun Xing, and Libin Fu

Highly excited neutral molecules and fragment atoms of H_2 induced by strong laser fields *(8 pages)* 013120
Tian Sun, Lei Zhao, Yang Liu, Jing Guo, Hang Lv, and Haifeng Xu

Ultracold systems and matter waves

Vibrational ladder-descending photostabilization of a weakly bound molecule: Quantum optimal control with a genetic algorithm *(9 pages)* 013301
Mateo Londoño and Julio C. Arce

Chiral state transfer under dephasing *(9 pages)* 013302
Konghao Sun and Wei Yi

Bosonic Weyl excitations induced by *p*-orbital interactions in a cubic optical lattice *(8 pages)* 013303
Guang-Quan Luo, Guan-Hua Huang, and Zhi-Fang Xu

Spin-tensor Meissner currents of ultracold bosonic gases in an optical lattice *(9 pages)* 013304
Xiaofan Zhou, Suotang Jia, and Xi-Wang Luo

Effects of higher-order fluctuations on the bulk and surface properties of quantum droplets in a heteronuclear Bose-Bose mixture *(7 pages)* 013305
Abdelâali Boudjemâa and Nadia Guebli

Metastable ferromagnetic clusters in dissipative many-body systems of polar molecules *(12 pages)* 013306
Naoki Hara and Masaya Nakagawa

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 108, NUMBER 1** **JULY 2023**

M_F-dependent hyperfine-induced $5s5p\ ^3P_0^o$–$5s^2\ ^1S_0$ clock transition rates in an external magnetic field for ^{87}Sr *(9 pages)* 012820
Xiaotong Lu, Feng Guo, Yebing Wang, Min Feng, Ting Liang, Benquan Lu, and Hong Chang

Two-photon excitation and absorption spectroscopy of gaseous and supercritical xenon *(7 pages)* 012821
Thilo vom Hövel, Franz Huybrechts, Eric Boltersdorf, Christian Wahl, Frank Vewinger, and Martin Weitz

Dielectric approaches for interactions of protons, positrons, and electrons in cold matter and plasmas *(16 pages)* 012822
C. D. Archubi, C. C. Montanari, and N. R. Arista

Calculation of the hyperfine structure of Er and Fm *(5 pages)* 012823
V. A. Dzuba and V. V. Flambaum

Light-induced processes in atomic-scale systems

Rotational dynamics of the asymmetric-top H_2O molecule induced by an intense laser field *(6 pages)* 013101
Isamu Kikuchi, Shinichi Fukahori, and Hirokazu Hasegawa

Signatures beyond the rotating-wave approximation in retrieving the photoionization time delay from an ω-2ω interferometric method *(8 pages)* 013102
Mingqing Liu, Xin-Qiang Wang, Lijuan Jia, Pei-Guang Yan, and Wei-Chao Jiang

Frequency shift caused by the line-shape asymmetry of the resonance of coherent population trapping *(6 pages)* 013103
V. I. Yudin, M. Yu. Basalaev, A. V. Taichenachev, O. N. Prudnikov, D. A. Radnatarov, S. M. Kobtsev, S. M. Ignatovich, and M. N. Skvortsov

Mapping molecular potentials using pump-probe spectroscopy of vibrational wave packets' revival *(12 pages)* . . . 013104
Svyatoslav N. Blinov, Victor V. Kimberg, Pavel O. Krasnov, Faris Kh. Gelmukhanov, and Sergey P. Polyutov

Wave-front curvature in optical atomic beam clocks *(12 pages)* 013105
A. Strathearn, R. F. Offer, A. P. Hilton, E. Klantsataya, A. N. Luiten, R. P. Anderson, B. M. Sparkes, and T. M. Stace

Manipulating slow photoelectron wave packets by rotation of the linear laser polarization *(11 pages)* 013106
P. Kalaitzis, S. Danakas, C. Bordas, and S. Cohen

Time-optimized atomic lensing mechanism for the source preparation of dual-species atomic gases in an atom-interferometric test of the weak equivalence principle *(9 pages)* 013107
Qi Wang, Junjie Jiang, Rundong Xu, Lin Zhou, Shi-Guo Peng, Jin Wang, and Mingsheng Zhan

Adiabatically controlled motional states of a CaO^+ and Ca^+ trapped-ion chain cooled to the ground state *(9 pages)* 013108
Lu Qi (亓鲁), Evan C. Reed, and Kenneth R. Brown

Thermal bistability in laser-cooled trapped ions *(6 pages)* 013109
A. Poindron, J. Pedregosa-Gutierrez, and C. Champenois

Effective description of cooling and thermal shifts in quantum systems coupled to bosonic modes *(10 pages)* 013110
Simon B. Jäger and Ralf Betzholz

Influence of polarization ellipticity on N_2^+ lasing in a strong laser field *(8 pages)* 013111
Zoumingyang Zhu, Shan Xue, Yupeng Zhang, Yuxuan Zhang, Renjun Yang, Shaohua Sun, Zuoye Liu, Pengji Ding, and Bitao Hu

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 108, NUMBER 1** **JULY 2023**

Core-excited states of SF_6 probed with soft-x-ray femtosecond transient absorption of vibrational wave packets *(8 pages)* 012805
Lou Barreau, Andrew D. Ross, Victor Kimberg, Pavel Krasnov, Svyatoslav Blinov, Daniel M. Neumark, and Stephen R. Leone

Improved modeling of dynamic quantum systems using exact Lindblad master equations *(11 pages)* 012806
Jacob R. Lindale, Shannon L. Eriksson, and Warren S. Warren

Expansion of scattering length in *S*-matrix poles and the phenomenon of resistant virtual states *(12 pages)* 012807
Roman Čurík, Michal Tarana, and Jiří Horáček

Calculating the many-potential vacuum polarization density of the Dirac equation in the finite-basis approximation *(13 pages)* 012808
Maen Salman and Trond Saue

Nonadiabatic interaction effects in the spectra of ultralong-range Rydberg molecules *(12 pages)* 012809
Rohan Srikumar, Frederic Hummel, and Peter Schmelcher

Self-consistent calculations for atomic electron capture *(14 pages)* 012810
V. A. Sevestrean, O. Niţescu, S. Ghinescu, and S. Stoica

Deflection of barium monofluoride molecules using the bichromatic force: A density-matrix simulation *(8 pages)* 012811
A. Marsman, M. Horbatsch, and E. A. Hessels (EDM^3 Collaboration)

Fine structure of the ^2P energy levels of singly ionized carbon (C II) *(6 pages)* 012812
Monika Stanke, Andrzej Kędziorski, Saeed Nasiri, Ludwik Adamowicz, and Sergiy Bubin

Optical cycling in polyatomic molecules with complex hyperfine structure *(9 pages)* 012813
Yi Zeng, Arian Jadbabaie, Ashay N. Patel, Phelan Yu, Timothy C. Steimle, and Nicholas R. Hutzler

Interplay between finite thickness and chirality effects on the Casimir-Lifshitz torque with nematic cholesteric liquid crystals *(10 pages)* 012814
Wijnand Broer and Rudolf Podgornik

Logarithmic terms in atom-surface potentials: Limited applicability of rational approximations for intermediate distance *(15 pages)* 012815
U. D. Jentschura and C. Moore

Autoionization of high-l core-excited Rydberg states of alkaline-earth-metal atoms *(15 pages)* 012816
E. Marin-Bujedo and M. Génévriez

Ionization, excitation, protonium formation, and energy loss of antiprotons colliding with atomic hydrogen *(9 pages)* 012817
R. Cabrera-Trujillo, C. E. de la C. Roman, and C. E. Teran-Cisneros

Implementation of a model potential in the Schwinger multichannel method to describe polarization in positron-atom and -molecule scattering: Studies for the noble-gas atoms, H_2, and N_2 *(13 pages)* 012818
F. F. Frighetto, A. Souza Barbosa, and S. d'A. Sanchez

Nuclear T-violation search using octopole-deformed nuclei in a crystal *(8 pages)* 012819
H. D. Ramachandran and A. C. Vutha

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 108, NUMBER 1** **JULY 2023**

Atomic indirect measurement for efficient quantum optical communication using a squeezed binary phase-shift-keying signal *(6 pages)* 012611
Min Namkung and Jeong San Kim

Efficient Dicke-state distribution in a network of lossy channels *(10 pages)* 012612
Wojciech Roga, Rikizo Ikuta, Tomoyuki Horikiri, and Masahiro Takeoka

Protocol for global multiphase estimation *(13 pages)* 012613
Giovanni Chesi, Alberto Riccardi, Roberto Rubboli, Lorenzo Maccone, and Chiara Macchiavello

Integrated optical quantum memory controlled by the electro-optic effect *(7 pages)* 012614
Xia-Xia Li, Pai Zhou, Yu-Hui Chen, and Xiangdong Zhang

Efficient adiabatic rapid passage in the presence of noise *(7 pages)* 012615
Kehui Li, David C. Spierings, and Aephraim M. Steinberg

Comparing bipartite entropy growth in open-system matrix-product simulation methods *(15 pages)* 012616
Guillermo Preisser, David Wellnitz, Thomas Botzung, and Johannes Schachenmayer

Sufficient conditions for quantum advantage in random access code protocols with two-qubit states *(7 pages)* 012617
Som Kanjilal, Chellasamy Jebarathinam, Tomasz Paterek, and Dipankar Home

Superresolution of Green's functions on noisy quantum computers *(11 pages)* 012618
Diogo Cruz and Duarte Magano

Nonadiabatic holonomic quantum computation based on a commutation relation *(6 pages)* 012619
P. Z. Zhao and D. M. Tong

Control of a qubit under Markovian and non-Markovian noise *(14 pages)* 012620
G. J. Delben, M. W. Beims, and M. G. E. da Luz

Sudden death of entanglement with a Hamiltonian ensemble assisted by auxiliary qubits *(8 pages)* 012621
Congwei Lu, Wanting He, Jun Wang, Haibo Wang, and Qing Ai

PART B

Atomic and molecular structure and dynamics; high-precision experiments

Distortion dipole effect in symmetric molecules *(17 pages)* 012801
Konstantin V. Kazakov

State-specific ion mobilities of Lr^+ ($Z = 103$) in helium *(7 pages)* 012802
Harry Ramanantoanina, Anastasia Borschevsky, Michael Block, Larry Viehland, and Mustapha Laatiaoui

Magic-zero and magic wavelengths of the Ca atom *(11 pages)* 012803
Ru-Kui Zhang, Jun Jiang, Chen-Zhong Dong, and Yong-Bo Tang

Systematic and statistical uncertainty evaluation of the HfF^+ electron electric dipole moment experiment *(34 pages)* 012804
Luke Caldwell, Tanya S. Roussy, Trevor Wright, William B. Cairncross, Yuval Shagam, Kia Boon Ng, Noah Schlossberger, Sun Yool Park, Anzhou Wang, Jun Ye, and Eric A. Cornell

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 108, NUMBER 1** **JULY 2023**

Operational interpretation and estimation of quantum trace-norm asymmetry based on weak-value measurement and some bounds *(12 pages)* 012431
Agung Budiyono

Generation of entanglement via squeezing on a tripartite-optomechanical system *(12 pages)* 012432
Kevin Araya-Sossa and Miguel Orszag

Embedded quantum correlations in thermalized quantum Rabi systems *(12 pages)* 012433
M. Ahumada, F. A. Cárdenas-López, G. Alvarado Barrios, F. Albarrán-Arriagada, and J. C. Retamal

Verification of quantum-gate teleportation based on Bell nonlocality in a black-box scenario *(12 pages)* 012434
Zi-Qi Wang and Tie-Jun Wang

Detecting Einstein-Podolsky-Rosen steering in non-Gaussian spin states from conditional spin-squeezing parameters *(7 pages)* 012435
Jiajie Guo, Feng-Xiao Sun, Daoquan Zhu, Manuel Gessner, Qiongyi He, and Matteo Fadel

Coupled three-mode squeezed vacuum: Gaussian steering and remote generation of Wigner negativity *(15 pages)* 012436
Zi-wei Zhan, Bo Lan, Jian Wang, and Xue-xiang Xu

Quantum technologies

Artificial key fingerprints for continuous-variable quantum key distribution *(14 pages)* 012601
Yao Yan, Duan Huang, Pengzhi Yin, Haisen Luo, Jianfeng Chen, Yiyu Mao, and Ronghua Shi

Fundamental limit of bandwidth-extrapolation-based superresolution *(12 pages)* 012602
Yunkai Wang and Virginia O. Lorenz

Gaussian conversion protocol for heralded generation of generalized Gottesman-Kitaev-Preskill states *(10 pages)* 012603
Yu Zheng, Alessandro Ferraro, Anton Frisk Kockum, and Giulia Ferrini

Transmission distance in the space of quantum channels *(15 pages)* 012604
Diego G. Bussandri, Pedro W. Lamberti, and Karol Życzkowski

Parity-detection-based Mach-Zehnder interferometry with coherent and non-Gaussian squeezed vacuum states as inputs *(10 pages)* 012605
Chandan Kumar, Rishabh, Mohak Sharma, and Shikhar Arora

Fiber-integrated quantum memory for telecom light *(8 pages)* 012606
K. A. G. Bonsma-Fisher, C. Hnatovsky, D. Grobnic, S. J. Mihailov, P. J. Bustard, D. G. England, and B. J. Sussman

Steered discrete-time quantum walks for engineering of quantum states *(17 pages)* 012607
Gururaj Kadiri

Dicke-state preparation through global transverse control of Ising-coupled qubits *(16 pages)* 012608
Vladimir M. Stojanović and Julian K. Nauth

Heralded gate search with genetic algorithms for quantum computation *(10 pages)* 012609
A. Chernikov, S. S. Sysoev, E. A. Vashukevich, and T. Yu. Golubeva

Electron-spin double resonance of nitrogen-vacancy centers in diamond under a strong driving field *(11 pages)* 012610
Takumi Mikawa, Ryusei Okaniwa, Yuichiro Matsuzaki, Norio Tokuda, and Junko Ishi-Hayase

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 108, NUMBER 1** **JULY 2023**

Visualization of all two-qubit states via partial-transpose moments *(13 pages)* 012414
Lin Zhang, Yi Shen, Hua Xiang, Quan Qian, and Bo Li

Computational characteristics of the random-field Ising model with long-range interaction *(7 pages)* 012415
Fangxuan Liu and L.-M. Duan

Partial coherence versus entanglement *(12 pages)* 012416
Sunho Kim, Chunhe Xiong, Shunlong Luo, Asutosh Kumar, and Junde Wu

Catalysis always degrades external quantum correlations *(10 pages)* 012417
Seok Hyung Lie and Nelly H. Y. Ng

Locally stable sets with minimum cardinality *(9 pages)* 012418
Hai-Qing Cao, Mao-Sheng Li, and Hui-Juan Zuo

Fisher information of sequential measurements and the optimization in composite systems *(8 pages)* 012419
Jianning Li and Dianzhen Cui

Emergence of monogamy under static and dynamic scenarios *(13 pages)* 012420
Rivu Gupta, Saptarshi Roy, Shiladitya Mal, and Aditi Sen(De)

Quantum state transfer and input-output theory with time reversal *(12 pages)* 012421
Kevin Randles and S. J. van Enk

Physical realization of realignment criteria using the structural physical approximation *(13 pages)* 012422
Shruti Aggarwal, Anu Kumari, and Satyabrata Adhikari

Sequential sharing of two-qudit entanglement based on the entropic uncertainty relation *(11 pages)* 012423
Ming-Liang Hu and Heng Fan

Qubit picture of virtual particles *(9 pages)* 012424
Gonçalo M. Quinta

Approximate reconstructability of quantum states and noisy quantum secret sharing schemes *(5 pages)* 012425
Yingkai Ouyang, Kaumudibikash Goswami, Jacquiline Romero, Barry C. Sanders, Min-Hsiu Hsieh, and Marco Tomamichel

Accessing the full capabilities of filter functions: Tool for detailed noise and quantum control susceptibility analysis *(8 pages)* 012426
Ingvild Hansen, Amanda E. Seedhouse, Andre Saraiva, Andrew S. Dzurak, and Chih Hwan Yang

Approximate quantum error correction, covariance symmetry, and their relation *(9 pages)* 012427
Hao Dai

Sequential device-independent certification of indefinite causal order *(10 pages)* 012428
Zhu Cao

Entanglement structures in quantum field theories. II. Distortions of vacuum correlations through the lens of local observers *(16 pages)* 012429
Natalie Klco and D. H. Beck

Direct generation of one-way Einstein-Podolsky-Rosen steering with a self-phase-locked optical parametric oscillator *(14 pages)* 012430
Zhan Zheng, Mingyan Yao, Jianping Tong, Qiang Lin, and Yin Cai

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 108, NUMBER 1** **JULY 2023**

Non-Hermitian quantum Fermi accelerator *(6 pages)* 012222
Andreas Fring and Takanobu Taira

Entropy and entanglement in a bipartite quasi-Hermitian system and its Hermitian counterparts *(14 pages)* 012223
Abed Alsalam Abu Moise, Graham Cox, and Marco Merkli

Quantum Bayes' rule affirming consistency in measurement inferences in quantum mechanics *(9 pages)* 012224
Mohit Lal Bera and Manabendra Nath Bera

Classicality, Markovianity, and local detailed balance from pure-state dynamics *(22 pages)* 012225
Philipp Strasberg, Andreas Winter, Jochen Gemmer, and Jiaozi Wang

Quantum information science

Quantum hypothesis testing between qubit states with parity *(15 pages)* 012401
Yi Shen, Carlo Maria Scandolo, and Lin Chen

Inflated graph states refuting communication-assisted local-hidden-variable models *(10 pages)* 012402
Uta Isabella Meyer, Frédéric Grosshans, and Damian Markham

Optimizing the information extracted by a single qubit measurement *(14 pages)* 012403
Stefano Polla, Gian-Luca R. Anselmetti, and Thomas E. O'Brien

Quantum algorithm for the microcanonical thermal pure quantum state method *(10 pages)* 012404
Kaito Mizukami and Akihisa Koga

Information locking and its resource-efficient extraction *(6 pages)* 012405
Suchetana Goswami and Saronath Halder

Deep reinforcement learning for key distribution based on quantum repeaters *(25 pages)* 012406
Simon D. Reiß and Peter van Loock

Designing dynamically corrected gates robust to multiple noise sources using geometric space curves *(11 pages)* 012407
Hunter T. Nelson, Evangelos Piliouras, Kyle Connelly, and Edwin Barnes

Breaking the speed limit for perfect quantum state transfer *(7 pages)* 012408
Weichen Xie, Alastair Kay, and Christino Tamon

Estimating distinguishability measures on quantum computers *(36 pages)* 012409
Soorya Rethinasamy, Rochisha Agarwal, Kunal Sharma, and Mark M. Wilde

Quantum machine learning of graph-structured data *(9 pages)* 012410
Kerstin Beer, Megha Khosla, Julius Köhler, Tobias J. Osborne, and Tianqi Zhao

Classical analogs of generalized purities, entropies, and logarithmic negativity *(15 pages)* 012411
Bogar Díaz, Diego Gonzalez, Marcos J. Hernández, and J. David Vergara

Signature of quantumness in pure decoherence control *(11 pages)* 012412
Bartosz Rzepkowski and Katarzyna Roszak

Chain rules for a mutual information based on Rényi zero-relative entropy *(8 pages)* 012413
Yuan Zhai, Bo Yang, and Zhengjun Xi

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 108, NUMBER 1** **JULY 2023**

Deriving lower bounds on the efficiency of near-degenerate thermal machines via synchronization *(11 pages)* 012205
Taufiq Murtadho, Juzar Thingna, and Sai Vinjanampathy

Non-Markovian open quantum dynamics in squeezed environments: Coherent-state unraveling *(12 pages)* 012206
Wufu Shi, Quanzhen Ding, and Yusui Chen

Matrix permanent and determinant from a spin system *(13 pages)* 012207
Abhijeet Alase, Owen Doty, and David L. Feder

Experimental proposal to probe the extended Pauli principle *(12 pages)* 012208
Lucas Hackl, Dayang Li, Nika Akopian, and Matthias Christandl

Time-crystal phase emerging from a qubit network under unitary random operations *(12 pages)* 012209
He Wang and Jin Wang

Analytical evaluation of the coefficients of the Hu-Paz-Zhang master equation: Ohmic spectral density, zero temperature, and consistency check *(15 pages)* 012210
G. Homa, J. Z. Bernád, and A. Csordás

Entropic uncertainty relations with quantum memory in a multipartite scenario *(6 pages)* 012211
Qing-Hua Zhang and Shao-Ming Fei

Extremal points of the quantum set in the Clauser-Horne-Shimony-Holt scenario: Conjectured analytical solution *(18 pages)* 012212
Antoni Mikos-Nuszkiewicz and Jędrzej Kaniewski

Stationary quantum memory effects induced by a periodic time-dependent system-environment coupling *(9 pages)* 012213
Yong-Nan Sun, Kimmo Luoma, Zhao-Di Liu, Jyrki Piilo, Chuan-Feng Li, and Guang-Can Guo

Disfavoring the Schrödinger-Newton equation in explaining the emergence of classicality *(6 pages)* 012214
João V. B. da Silva, Gabriel H. S. Aguiar, and George E. A. Matsas

Controlling and measuring a superposition of position and momentum *(6 pages)* 012215
Takafumi Ono, Nigam Samantarray, and John G. Rarity

Shareability of steering in 2-producible states *(11 pages)* 012216
Qiu-Cheng Song, Travis J. Baker, and Howard M. Wiseman

Emergent quantum mechanics at the boundary of a local classical lattice model *(23 pages)* 012217
Kevin Slagle and John Preskill

Exact dynamics of the spin-boson model at the Toulouse limit *(12 pages)* 012218
Yun-An Yan and Jiushu Shao

Unitary equivalence of twisted quantum states *(13 pages)* 012219
N. V. Filina and S. S. Baturin

Quantum Stirling heat engine operating in finite time *(10 pages)* 012220
Debmalya Das, George Thomas, and Andrew N. Jordan

Synthetic mechanical lattices with synthetic interactions *(14 pages)* 012221
Ritika Anandwade, Yaashnaa Singhal, Sai Naga Manoj Paladugu, Enrico Martello, Michael Castle, Shraddha Agrawal, Ellen Carlson, Cait Battle-McDonald, Tomoki Ozawa, Hannah M. Price, and Bryce Gadway

(Continued)

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 1
PARTS A AND B

CONTENTS

JULY 2023

The Table of Contents is a total listing of Parts A and B.
Part A consists of pages 010101–012621, and Part B pages 012801–019902(E).

PART A

Perspectives

Probing fundamental physics with spin-based quantum sensors *(23 pages)* 010101
Derek F. Jackson Kimball, Dmitry Budker, Timothy E. Chupp, Andrew A. Geraci, Shimon Kolkowitz, Jaideep T. Singh, and Alexander O. Sushkov

LETTERS

Fundamental concepts

Conductance transition with interacting bosons in an Aharonov-Bohm cage *(5 pages)* L010201
A. R. Kolovsky, P. S. Muraev, and S. Flach

Quantum information science

Advancing hybrid quantum-classical algorithms via mean operators *(5 pages)* L010401
Donggyu Kim, Pureum Noh, Hyun-Yong Lee, and Eun-Gook Moon

Quantum technologies

Quantum acoustic Fano interference of surface phonons *(6 pages)* L010601
J. M. Kitzman, J. R. Lane, C. Undershute, N. R. Beysengulov, C. A. Mikolas, K. W. Murch, and J. Pollanen

ARTICLES

Fundamental concepts

Effects of non-Markovianity on daemonic ergotropy in the quantum switch *(17 pages)* 012201
Jian Wei Cheong, Andri Pradana, and Lock Yue Chew

Linear-friction many-body equation for dissipative spontaneous wave-function collapse *(8 pages)* 012202
Giovanni Di Bartolomeo, Matteo Carlesso, Kristian Piscicchia, Catalina Curceanu, Maaneli Derakhshani, and Lajos Diósi

Partial-wave expansion of the Uehling potential *(16 pages)* 012203
Peter J. Mohr and J. Sapirstein

Quantum speed limit from a quantum-state-diffusion method *(10 pages)* 012204
Wei Wu and Jun-Hong An

(Continued)

2469-9926(202307)108:1:B;1-U