

PHYSICAL REVIEW ATM

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 103, NUMBER 1
PARTS A AND B

CONTENTS

JANUARY 2021

*The Table of Contents is a total listing of Parts A and B.
Part A consists of pages L010201–012812, and Part B pages 013101–019903(E).*

PART A

LETTERS

Fundamental concepts

General quantum-mechanical solution for twisted electrons in a uniform magnetic field (7 pages) L010201
Liping Zou, Pengming Zhang, and Alexander J. Silenko

⌘ Nonlinear Bell inequality for macroscopic measurements (7 pages) L010202
Adam Bene Watts, Nicole Yunger Halpern, and Aram Harrow

Quantum information science

Spin-exchange collisions in hot vapors creating and sustaining bipartite entanglement (5 pages) L010401
K. Mouloudakis and I. K. Kominis

Quantum technologies

Non-Markovian sensing of a quantum reservoir (6 pages) L010601
Wei Wu, Si-Yuan Bai, and Jun-Hong An

Light-induced processes in atomic-scale systems

⌘ RABBITT phase transition across the ionization threshold (6 pages) L011101
Anatoli S. Kheifets and Alexander W. Bray

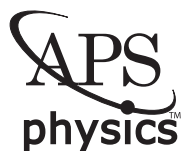
Ultracold systems and matter waves

Multiring, stripe, and superlattice solitons in a spin-orbit-coupled spin-1 condensate (6 pages) L011301
S. K. Adhikari

Anderson localization transition in a robust $\mathcal{PT}$ -symmetric phase of a generalized Aubry-André model (7 pages) L011302
Sebastian Schiffer, Xia-Ji Liu, Hui Hu, and Jia Wang

Photonics, nonlinear optics, and optomechanics

Oscillatory motion of a counterpropagating Kerr soliton dimer (6 pages) L011501
Chengying Bao, Boqiang Shen, Myoung-Gyun Suh, Heming Wang, Kemal Şafak,
Anan Dai, Andrey B. Matsko, Franz X. Kärtner, and Kerry Vahala



Copyright 2021 by American Physical Society



2469-9926(202101)103:1:B;1-6

(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).

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 1

JANUARY 2021

Threshold of complexity and Arnold tongues in Kerr-ring microresonators (<i>6 pages</i>)	L011502
D. V. Skryabin, Z. Fan, A. Villois, and D. N. Puzyrev	

ARTICLES

Fundamental concepts

Toward simulation of topological phenomena with one-, two-, and three-dimensional quantum walks (<i>18 pages</i>)	012201
S. Panahiyan and S. Fritzsche	
Positivity of entropy production for the three-level maser (<i>6 pages</i>)	012202
Alex Arash Sand Kalaei and Andreas Wacker	
Hidden non-Markovianity in open quantum systems (<i>9 pages</i>)	012203
Daniel Burgarth, Paolo Facchi, Marilena Ligabò, and Davide Lonigro	
Floquet dynamical phase transition and entanglement spectrum (<i>8 pages</i>)	012204
R. Jafari and Alireza Akbari	
Dynamical-decoupling-protected nonadiabatic holonomic quantum computation (<i>6 pages</i>)	012205
P. Z. Zhao, X. Wu, and D. M. Tong	
Quantum adiabatic brachistochrone for open systems (<i>9 pages</i>)	012206
Alan C. Santos, C. J. Villas-Boas, and R. Bachelard	
Non-Markovian dynamics of a two-level system in a bosonic bath and a Gaussian fluctuating environment with finite correlation time (<i>14 pages</i>)	012208
V. A. Mikhailov and N. V. Troshkin	
Decay rates and decoherence of an interstitial two-level spin impurity in a ferromagnetic lattice (<i>17 pages</i>)	012209
Yamen Hamdouni	
Exact and Gerchberg-Saxton solutions of the one-dimensional Pauli problem with Gaussian probability densities (<i>9 pages</i>)	012210
Murillo R. Silva and Alexys Bruno-Alfonso	
Quantum complementarity through entropic certainty principles (<i>10 pages</i>)	012211
Javier M. Magan and Diego Pontello	
Averaged fidelity-based steering criteria (<i>12 pages</i>)	012212
Xiaohua Wu, Bo You, and Tao Zhou	
Linear Gaussian quantum state smoothing: Understanding the optimal unravelings for Alice to estimate Bob's state (<i>15 pages</i>)	012213
Kiarn T. Laverick, Areeya Chantasri, and Howard M. Wiseman	
Nonlinear quantum effects in electromagnetic radiation of a vortex electron (<i>12 pages</i>)	012214
D. V. Karlovets and A. M. Pupasov-Maksimov	
Unveiling the transverse formation length of nonlinear Compton scattering (<i>10 pages</i>)	012215
A. Di Piazza	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 1

JANUARY 2021

Transition radiation from a Dirac-particle wave packet traversing a mirror (<i>16 pages</i>)	012216
P. O. Kazinski and G. Yu. Lazarenko	
Discrimination of Ohmic thermal baths by quantum dephasing probes (<i>9 pages</i>)	012217
Alessandro Candeloro and Matteo G. A. Paris	
Measuring non-Markovianity via incoherent mixing with Markovian dynamics (<i>24 pages</i>)	012218
Dario De Santis and Vittorio Giovannetti	
Quantum formalism for events and how time can emerge from its foundations (<i>16 pages</i>)	012219
Eduardo O. Dias	
Controlling and exploring quantum systems by algebraic expression of adiabatic gauge potential (<i>8 pages</i>)	012220
Takuya Hatomura and Kazutaka Takahashi	
Detection of bidirectional system-environment information exchanges (<i>11 pages</i>)	012221
Adrián A. Budini	
Bloch-like superoscillations and unidirectional motion of phase-driven quantum walkers (<i>7 pages</i>)	012222
A. R. C. Buarque, M. L. Lyra, and W. S. Dias	
Low-temperature breakdown of many-body perturbation theory for thermodynamics (<i>14 pages</i>)	012223
So Hirata	
Spectral Green's-function method in driven open quantum dynamics (<i>8 pages</i>)	012224
A. Karabanov and W. Köckenberger	
Determination of the tunneling flight time as the reflected phase time (<i>19 pages</i>)	012225
Tom Rivlin, Eli Pollak, and Randall S. Dumont	
Correlational quantum theory and correlation constraints (<i>10 pages</i>)	012226
Ding Jia (贾丁)	
Interatomic interaction of two ground-state atoms in vacuum: Contributions of vacuum fluctuations and radiation reaction (<i>13 pages</i>)	012227
Wenting Zhou, Shijing Cheng, and Hongwei Yu	
Delayed choice of paths in the quantum paradox of separating different properties of a photon (<i>5 pages</i>)	012228
Debmalya Das and Ujjwal Sen	
Electron-positron pair creation induced by two sequential short pulses (<i>8 pages</i>)	012229
X. X. Zhou, C. K. Li, N. S. Lin, and Y. J. Li	
Quantum information science	
Quantum coherence measures based on Fisher information with applications (<i>7 pages</i>)	012401
Lei Li, Qing-Wen Wang, Shu-Qian Shen, and Ming Li	
Higher key rate of measurement-device-independent quantum key distribution through joint data processing (<i>10 pages</i>)	012402
Cong Jiang, Zong-Wen Yu, Xiao-Long Hu, and Xiang-Bin Wang	
Generalized coherence vector applied to coherence transformations and quantifiers (<i>14 pages</i>)	012403
G. M. Bosyk, M. Losada, C. Massri, H. Freytes, and G. Sergioli	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 1

JANUARY 2021

Quantum optimal control of multilevel dissipative quantum systems with reinforcement learning (<i>10 pages</i>)	012404
Zheng An, Hai-Jing Song, Qi-Kai He, and D. L. Zhou	
Estimating the gradient and higher-order derivatives on quantum hardware (<i>15 pages</i>)	012405
Andrea Mari, Thomas R. Bromley, and Nathan Killoran	
Quantum system compression: A Hamiltonian guided walk through Hilbert space (<i>16 pages</i>)	012406
Robert L. Kosut, Tak-San Ho, and Herschel Rabitz	
Quantum networking with short-range entanglement assistance (<i>8 pages</i>)	012407
Siddhartha Santra and Vladimir S. Malinovsky	
Squeezed comb states (<i>9 pages</i>)	012408
Namrata Shukla, Stefan Nimmrichter, and Barry C. Sanders	
Detecting and estimating coherence based on coherence witnesses (<i>7 pages</i>)	012409
Zhao Ma, Zhou Zhang, Yue Dai, Yuli Dong, and Chengjie Zhang	
Multibit quantum digital signature with continuous variables using basis encoding over insecure channels (<i>11 pages</i>)	012410
Wei Zhao, Ronghua Shi, Jinjing Shi, Peng Huang, Ying Guo, and Duan Huang	
Quantum illumination via quantum-enhanced sensing (<i>6 pages</i>)	012411
Su-Yong Lee, Yong Sup Ihn, and Zaeill Kim	
Asymptotic security of discrete-modulation protocols for continuous-variable quantum key distribution (<i>20 pages</i>)	012412
Eneet Kaur, Saikat Guha, and Mark M. Wilde	
Hybrid quantum-classical algorithms for solving quantum chemistry in Hamiltonian–wave-function space (<i>8 pages</i>)	012413
Zhan-Hao Yuan, Tao Yin, and Dan-Bo Zhang	
Noiseless linear amplifiers for multimode states (<i>11 pages</i>)	012414
Mingjian He, Robert Malaney, and Benjamin A. Burnett	
Supersymmetry-assisted high-fidelity ground-state preparation of a single neutral atom in an optical tweezer (<i>9 pages</i>)	012415
Xi-Wang Luo, Mark G. Raizen, and Chuanwei Zhang	
Unambiguous discrimination of fermionic states through local operations and classical communication (<i>10 pages</i>)	012416
Matteo Lugli, Paolo Perinotti, and Alessandro Tosini	
Wavelength attack on atmospheric continuous-variable quantum key distribution (<i>12 pages</i>)	012417
Xin Tan, Ying Guo, Ling Zhang, Jingzheng Huang, Jinjing Shi, and Duan Huang	
Quantum algorithms for hedging and the learning of Ising models (<i>14 pages</i>)	012418
Patrick Reberntrost, Yassine Hamoudi, Maharshi Ray, Xin Wang, Siyi Yang, and Miklos Santha	
Machine learning topological invariants of non-Hermitian systems (<i>11 pages</i>)	012419
Ling-Feng Zhang, Ling-Zhi Tang, Zhi-Hao Huang, Guo-Qing Zhang, Wei Huang, and Dan-Wei Zhang	
Lowering tomography costs in quantum simulation with a symmetry projected operator basis (<i>8 pages</i>)	012420
Scott E. Smart and David A. Mazziotti	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 1

JANUARY 2021

Quantum technologies

Resilient quantum gates on periodically driven Rydberg atoms (<i>12 pages</i>)	012601
Jin-Lei Wu, Yan Wang, Jin-Xuan Han, Shi-Lei Su, Yan Xia, Yongyuan Jiang, and Jie Song	
Experimental demonstration of the advantage of using coherent measurements for phase estimation in the presence of depolarizing noise (<i>7 pages</i>)	012602
R. S. Piera, S. P. Walborn, and G. H. Aguilar	
High-fidelity light-shift gate for clock-state qubits (<i>7 pages</i>)	012603
C. H. Baldwin, B. J. Bjork, M. Foss-Feig, J. P. Gaebler, D. Hayes, M. G. Kokish, C. Langer, J. A. Sedlacek, D. Stack, and G. Vittorini	
Pinned quantum Merlin-Arthur: The power of fixing a few qubits in proofs (<i>12 pages</i>)	012604
Daniel Nagaj, Dominik Hangleiter, Jens Eisert, and Martin Schwarz	
Composable finite-size effects in free-space continuous-variable quantum-key-distribution systems (<i>17 pages</i>)	012605
Nedasadat Hosseini-dehaj, Nathan Walk, and Timothy C. Ralph	
Bennett-Brassard 1984 quantum key distribution using conjugate homodyne detection (<i>11 pages</i>)	012606
Bing Qi	
Parallel selective nuclear-spin addressing for fast high-fidelity quantum gates (<i>11 pages</i>)	012607
Benedikt Tratzmiller, Jan F. Haase, Zhenyu Wang, and Martin B. Plenio	
Experimental verification of anti-Kibble-Zurek behavior in a quantum system under a noisy control field (<i>6 pages</i>)	012608
Ming-Zhong Ai, Jin-Ming Cui, Ran He, Zhong-Hua Qian, Xin-Xia Gao, Yun-Feng Huang, Chuan-Feng Li, and Guang-Can Guo	
Local gradient optimization of leakage-suppressing entangling sequences (<i>7 pages</i>)	012609
A. A. Setser and J. P. Kestner	
Character of motional modes for entanglement and sympathetic cooling of mixed-species trapped-ion chains (<i>9 pages</i>)	012610
K. Sosnova, A. Carter, and C. Monroe	
Relationship between costs for quantum error mitigation and non-Markovian measures (<i>7 pages</i>)	012611
Hideaki Hakoshima, Yuichiro Matsuzaki, and Suguru Endo	
Blockade of phonon hopping in trapped ions in the presence of multiple local phonons (<i>6 pages</i>)	012612
Ryutaro Ohira, Shota Kume, Kyoichi Takayama, Silpa Muralidharan, Hiroki Takahashi, and Kenji Toyoda	

Atomic and molecular structure and dynamics; high-precision experiments

Polarization studies on Rayleigh scattering of hard x rays by closed-shell atoms (<i>7 pages</i>)	012801
S. Strnat, V. A. Yerokhin, A. V. Volotka, G. Weber, S. Fritzsche, R. A. Müller, and A. Surzhykov	
Prompt and delayed dissociation of N_2O^{2+} induced by highly-charged-ion collisions (<i>9 pages</i>)	012802
Xi Zhao, Xu Shan, Xiaolong Zhu, Lei Chen, Zhenjie Shen, Wentian Feng, Dalong Guo, Dongmei Zhao, Ruitian Zhang, Yong Gao, Zhongkui Huang, Shaofeng Zhang, Xinwen Ma, and Xiangjun Chen	
Radiative $\alpha^7 m$ QED contribution to the helium Lamb shift (<i>26 pages</i>)	012803
Vojtěch Patkóš, Vladimir A. Yerokhin, and Krzysztof Pachucki	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 1

JANUARY 2021

Elastic positron-uracil scattering cross sections (<i>8 pages</i>)	012804
Giseli M. Moreira, Romarly F. da Costa, and Márcio H. F. Bettega	
Hyperfine structure and electric quadrupole transitions in the deuterium molecular ion (<i>16 pages</i>)	012805
P. Danev, D. Bakalov, V. I. Korobov, and S. Schiller	
Exact exchange-correlation potentials for calculating the fundamental gap with a fixed number of electrons (<i>9 pages</i>)	012806
M. J. P. Hodgson, J. Wetherell, and Emmanuel Fromager	
$\mathcal{P}$, $\mathcal{T}$ -odd interactions in atomic ^{129}Xe and phenomenological applications (<i>12 pages</i>)	012807
Timo Fleig and Martin Jung	
Fano interferences in environment-enabled electron capture (<i>5 pages</i>)	012808
Axel Molle, Alain Dubois, Jimena D. Gorfinkiel, Lorenz S. Cederbaum, and Nicolas Sisourat	
Hydrogen-molecule spectrum by the many-body <i>GW</i> approximation and the Bethe-Salpeter equation (<i>6 pages</i>)	012809
Jing Li and Valerio Olevano	
Delayed fragmentation of ethylene and allene induced by electron impact (<i>8 pages</i>)	012810
Long Wei, Baihui Ren, Yu Zhang, Jiarong Wang, Bo Wang, Jie Han, Wandong Yu, Yaming Zou, Li Chen, and Baoren Wei	
Stabilization method with the relativistic configuration-interaction calculation applied to two-electron resonances (<i>10 pages</i>)	012811
P. Amaro, J. P. Santos, S. Bhattacharyya, T. K. Mukherjee, and J. K. Saha	
Absorption and analysis of unbound quantum particles one by one (<i>14 pages</i>)	012812
Sølve Selstø	

PART B

Light-induced processes in atomic-scale systems

Transitions between Rydberg states in two-color corotating circularly polarized laser pulses (<i>7 pages</i>)	013101
Y. Gebre, J. Venzke, A. Jaron-Becker, and A. Becker	
Molecular potential anisotropy probed by electron rescattering in strong-field ionization of molecules (<i>14 pages</i>)	013102
C. Cornaggia	
Distinguishing two mechanisms for enhanced ionization of H_2^+ using orthogonal two-color laser fields (<i>7 pages</i>)	013103
Kunlong Liu and Ingo Barth	
Controlling polarization of attosecond pulses with plasmonic-enhanced bichromatic counter-rotating circularly polarized fields (<i>8 pages</i>)	013104
Irfana N. Ansari, Cornelia Hofmann, Lukas Medišauskas, Maciej Lewenstein, Marcelo F. Ciappina, and Gopal Dixit	
Optical pumping schemes for nuclear spin polarization of ^{35}Ar (<i>11 pages</i>)	013105
F. Lenaers, R. D. Glover, and T. Bastin	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 1

JANUARY 2021

Chirality-enabled optical dipole potential energy for two-level atoms (<i>6 pages</i>)	013106
V. E. Lembessis, K. Koksas, J. Yuan, and M. Babiker	
Resolving closely spaced levels for Doppler mismatched double resonance (<i>13 pages</i>)	013107
Elijah Ogaro Nyakang'o and Kanhaiya Pandey	
Exploring recollision of ultrafast electrons from photoelectron momentum distributions using single-cycle near-infrared laser pulses (<i>9 pages</i>)	013108
Ming-Hu Yuan, André D. Bandrauk, and Xue-Bin Bian	
Electric dipole and quadrupole properties of the Cd atom for atomic-clock applications (<i>9 pages</i>)	013109
X. T. Guo, Y. M. Yu, Y. Liu, B. B. Suo, and B. K. Sahoo	
Path integrals and nonlinear optical tweezers (<i>16 pages</i>)	013110
B. Suassuna, B. Melo, and T. Guerreiro	
Interference in nonlinear Compton scattering using a Schrödinger-equation approach (<i>10 pages</i>)	013111
Akilesh Venkatesh and F. Robicheaux	
Trapping, shaping, and isolating of an ion Coulomb crystal via state-selective optical potentials (<i>8 pages</i>)	013112
Pascal Weckesser, Fabian Thielemann, Daniel Hoenig, Alexander Lambrecht, Leon Karpa, and Tobias Schaetz	
Theoretical investigation of the Freeman resonance in the dissociative ionization of H_2^+ (<i>6 pages</i>)	013113
Jinzhen Zhu	
Quantitative retrieval of the angular dependence of laser-induced electron rescattering in molecules (<i>7 pages</i>)	013114
Hongtao Hu, Sarayoo Kangaparambi, Martin Dörner-Kirchner, Václav Hanus, Andrius Baltuška, Markus Kitzler-Zeiler, and Xinhua Xie (谢新华)	
Determination of the photoemission position in single-photon ionization with attosecond streaking spectroscopy (<i>7 pages</i>)	013115
Feng Wang, Qing Liao, Kai Liu, Meiyang Qin, Xiaofan Zhang, Qingbin Zhang, Wei Cao, Liang-Wen Pi, Yueming Zhou, and Peixiang Lu	
Ultracold systems and matter waves	
Quantum simulation of the Unruh effect with a Rydberg-dressed Bose-Einstein condensate (<i>7 pages</i>)	013301
Tianze Sheng, Jun Qian, Xiaolin Li, Yueping Niu, and Shangqing Gong	
Position- and momentum-space two-body correlations in a weakly interacting trapped condensate (<i>12 pages</i>)	013302
Salvatore Butera, David Clément, and Iacopo Carusotto	
Drag force of an exciton-polariton condensate under nonresonant pumping (<i>7 pages</i>)	013303
Pei-Song He and Zhaoxin Liang	
Two Rydberg-dressed atoms escaping from an open well (<i>14 pages</i>)	013304
Jacek Dobrzyniecki and Tomasz Sowiński	
Dark-state sideband cooling in an atomic ensemble (<i>5 pages</i>)	013305
Chang Huang, Shijie Chai, and Shau-Yu Lan	
Dissipative phase transitions in the fully connected Ising model with p -spin interaction (<i>13 pages</i>)	013306
Pei Wang and Rosario Fazio	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A	THIRD SERIES, VOLUME 103, NUMBER 1	JANUARY 2021
Majorana corner pairs in a two-dimensional s -wave cold atomic superfluid (9 pages)		013307
Ya-Jie Wu, Xi-Wang Luo, Junpeng Hou, and Chuanwei Zhang		
Squeezing-induced topological gap opening on bosonic Bogoliubov excitations (9 pages)		013308
Liang-Liang Wan, Zixian Zhou, and Zhi-Fang Xu		
Modulation instability in the nonlinear Schrödinger equation with a synthetic magnetic field: Gauge matters (9 pages)		013309
Karlo Lelas, Ozana Čelan, David Prelogović, Hrvoje Buljan, and Dario Jukić		
Application of the inhomogeneous Kibble-Zurek mechanism to quench dynamics in the transition from a Mott insulator to a superfluid in a finite system (10 pages)		013310
Yoshihiro Machida and Kenichi Kasamatsu		
Structural superfluid–Mott-insulator transition for a Bose gas in multirods (6 pages)		013311
Omar Abel Rodríguez-López, M. A. Solís, and J. Boronat		
Revisiting a stability problem of two-component quantum droplets (8 pages)		013312
Paweł Zin, Maciej Pylak, and Mariusz Gajda		
Persistent currents in toroidal dipolar supersolids (7 pages)		013313
M. Nilsson Tengstrand, D. Boholm, R. Sachdeva, J. Bengtsson, and S. M. Reimann		
Universal Landau-Zener regimes in dynamical topological phase transitions (12 pages)		013314
Yang Ge and Marcos Rigol		
NOON states with ultracold bosonic atoms via resonance- and chaos-assisted tunneling (10 pages)		013315
G. Vanhaele and P. Schlagheck		
Effective spin models for spinor lattice gases with gauge fields (8 pages)		013316
Tongyue Sun, Yi Zheng, Shi-jie Yang, and Shuo Yang		
Mobile impurity in a Bose-Einstein condensate and the orthogonality catastrophe (8 pages)		013317
Nils-Eric Guenther, Richard Schmidt, Georg M. Bruun, Victor Gurarie, and Pietro Massignan		
Functional renormalization for repulsive Bose-Bose mixtures at zero temperature (13 pages)		013318
Felipe Isaule, Ivan Morera, Artur Polls, and Bruno Juliá-Díaz		
Bogoliubov–de Gennes theory of the snake instability of gray solitons in higher dimensions (20 pages)		013319
Alexej Gaidoukov and James R. Anglin		
Dark matter-wave gap solitons in dense ultracold atoms trapped by a one-dimensional optical lattice (9 pages) . . .		013320
Jiawei Li and Jianhua Zeng		
Destabilization of dark states in MgF molecules (7 pages)		013321
Meng Xia, Ruoxi Gu, Kang Yan, Di Wu, Liang Xu, Yong Xia, and Jianping Yin		
Rotation-sensitive quench and revival of coherent oscillations in a ring lattice (10 pages)		013322
Caelan Brooks, Allison Brattley, and Kunal K. Das		
Optical lattice platform for the Sachdev-Ye-Kitaev model (9 pages)		013323
Chenan Wei and Tigran A. Sedrakyan		

(Continued)

Photonics, nonlinear optics, and optomechanics

Electromagnetic theory of helicoidal dichroism in reflection from magnetic structures (22 pages)	013501
Mauro Fanciulli, David Bresteau, Mekha Vimal, Martin Luttmann, Maurizio Sacchi, and Thierry Ruchon	
Scattering theory for stationary materials with $\mathcal{PT}$ symmetry (8 pages)	013502
P. A. Brandão and O. Korotkova	
N -channel comb filtering and lasing in $\mathcal{PT}$ -symmetric superstructures (16 pages)	013503
S. Vignesh Raja, A. Govindarajan, A. Mahalingam, and M. Lakshmanan	
Negative superluminal velocity and violation of Kramers-Kronig relations in causal optical systems (16 pages)	013504
Mehmet Emre Tasgin	
Landau levels in strained two-dimensional photonic crystals (16 pages)	013505
J. Guglielmon, M. C. Rechtsman, and M. I. Weinstein	
Amplification and spectral evidence of squeezing in the response of a strongly driven nanoresonator to a probe field (11 pages)	013506
J. S. Ochs, M. Seitner, M. I. Dykman, and E. M. Weig	
Influence of stimulated Raman scattering on Kerr domain walls and localized structures (13 pages)	013507
P. Parra-Rivas, S. Coulibaly, M. G. Clerc, and M. Tlidi	
Finesse and four-wave mixing in microresonators (11 pages)	013508
D. N. Puzyrev and D. V. Skryabin	
Knotted nodal lines in superpositions of Bessel-Gaussian light beams (11 pages)	013509
Tomasz Radożycki	
Generic optical singularities in Brewster-reflected postparaxial beam fields (8 pages)	013510
Anirban Debnath and Nirmal K. Viswanathan	
Strategies for wideband light generation in nonlinear multimode integrated waveguides (7 pages)	013511
Yohann Franz, Jack Haines, Cosimo Lacava, and Massimiliano Guasoni	
Thermal instabilities, frequency-comb formation, and temporal oscillations in Kerr microresonators (12 pages)	013512
Amir Leshem, Zhen Qi, Thomas F. Carruthers, Curtis R. Menyuk, and Omri Gat	
Switching dynamics of dark-pulse Kerr frequency comb states in optical microresonators (9 pages)	013513
Elham Nazemosadat, Attila Fülöp, Óskar B. Helgason, Pei-Hsun Wang, Yi Xuan, Dan E. Leaird, Minghao Qi, Enrique Silvestre, Andrew M. Weiner, and Victor Torres-Company	
Enhancement of Stokes–anti-Stokes correlations by the classical incoherent incident light (9 pages)	013514
V. Yu. Shishkov, E. S. Andrianov, A. A. Pukhov, and A. P. Vinogradov	
Conductor’s elastic response to the vacuum-field radiation pressure (4 pages)	013515
Ted Silva Santana	
Excitation-energy transfer under strong laser drive (12 pages)	013516
Xuanhua Wang, Zhedong Zhang, and Jin Wang	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 1

JANUARY 2021

Modulational instability in a non-Kerr photonic Lieb lattice with metamaterials (<i>9 pages</i>)	013517
A. K. Shafeeque Ali, Andrei I. Maimistov, K. Porsezian, A. Govindarajan, and M. Lakshmanan	
Engineering helical phase via four-wave mixing in the ultraslow propagation regime (<i>6 pages</i>)	013518
Chao Yu and Zhiping Wang	
Dynamics of self-accelerating electron beams in a homogeneous magnetic field (<i>7 pages</i>)	013519
Michael Goutsoulas and Nikolaos K. Efremidis	
Focused linearly-polarized-light scattering from a silver nanowire: Experimental characterization of the optical spin-Hall effect (<i>8 pages</i>)	013520
Diptabrata Paul, Deepak K. Sharma, and G. V. Pavan Kumar	
Periodic and solitary waves in an inhomogeneous optical waveguide with third-order dispersion and self-steepening nonlinearity (<i>14 pages</i>)	013521
Vladimir I. Kruglov and Houria Triki	
Theory of filter-induced modulation instability in driven passive optical resonators (<i>10 pages</i>)	013522
Auro M. Perego, Arnaud Mussot, and Matteo Conforti	
Quantum optics	
Spatiotemporal effects on squeezing measurements (<i>10 pages</i>)	013701
Filippus S. Roux	
Dark-state and loss-induced phenomena in the quantum-optical regime of Λ -type three-level systems (<i>13 pages</i>)	013702
H. Rose, D. V. Popolitova, O. V. Tikhonova, T. Meier, and P. R. Sharapova	
Quantum delocalization, gauge, and quantum optics: Light-matter interaction in relativistic quantum information (<i>20 pages</i>)	013703
Richard Lopp and Eduardo Martín-Martínez	
Non-Gaussian nature and entanglement of spontaneous parametric nondegenerate triple-photon generation (<i>7 pages</i>)	013704
Da Zhang, Yin Cai, Zhan Zheng, David Barral, Yanpeng Zhang, Min Xiao, and Kamel Bencheikh	
Improved phase sensitivity in a quantum optical interferometer based on multiphoton catalytic two-mode squeezed vacuum states (<i>13 pages</i>)	013705
Huan Zhang, Wei Ye, Chaoping Wei, Ying Xia, Shoukang Chang, Zeyang Liao, and Liyun Hu	
Inverse design of environment-induced coherence (<i>10 pages</i>)	013706
Robert Bennett	
Direct approach to realizing quantum filters for high-precision measurements (<i>9 pages</i>)	013707
Joe Bentley, Hendra Nurdin, Yanbei Chen, and Haixing Miao	
Dynamics and control of entangled electron-photon states in nanophotonic systems with time-variable parameters (<i>18 pages</i>)	013708
Qianfan Chen, Yongrui Wang, Sultan Almutairi, Maria Erukhimova, Mikhail Tokman, and Alexey Belyanin	
Dissipation-assisted preparation of steady spin-squeezed states of SiV centers (<i>10 pages</i>)	013709
Jia-Qiang Chen, Yi-Fan Qiao, Xing-Liang Dong, Xin-Lei Hei, and Peng-Bo Li	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 1

JANUARY 2021

Generation of optical Schrödinger cat states by generalized photon subtraction (<i>8 pages</i>)	013710
Kan Takase, Jun-ichi Yoshikawa, Warit Asavanant, Mamoru Endo, and Akira Furusawa	
Nonorthogonal-qubit-state expansion for the asymmetric quantum Rabi model (<i>8 pages</i>)	013711
Zi-Min Li, Devid Ferri, and Murray T. Batchelor	
Limit cycle phase and Goldstone mode in driven dissipative systems (<i>15 pages</i>)	013712
H. Alaëian, G. Giedke, I. Carusotto, R. Löw, and T. Pfau	
Interplay between quantum Zeno and anti-Zeno effects in a nondegenerate hyper-Raman nonlinear optical coupler (<i>10 pages</i>)	013713
Moumita Das, Kishore Thapliyal, Biswajit Sen, Jan Peřina, and Anirban Pathak	
Non-Markovian decoherence dynamics of strong-coupling hybrid quantum systems: A master equation approach (<i>18 pages</i>)	013714
Kai-Ting Chiang and Wei-Min Zhang	
Enhancement of mesoscopic fluctuations in transmission of light through a disordered medium at grazing angles (<i>11 pages</i>)	013715
K. A. Kondrat'ev, V. V. Marinyuk, D. B. Rogozkin, and S. V. Sheberstov	
Unconventional time-bandwidth performance of resonant cavities with nonreciprocal coupling (<i>11 pages</i>)	013716
Ivan Cardea, Davide Grassani, Jeremy Upham, Sebastian A. Schulz, Kosmas L. Tsakmakidis, and Camille-Sophie Brès	
Echoes in a single quantum Kerr-nonlinear oscillator (<i>12 pages</i>)	013717
I. Tutunnikov, K. V. Rajitha, and I. Sh. Averbukh	
Single-atom maser with an engineered circuit for population inversion (<i>9 pages</i>)	013718
A. A. Sokolova, G. P. Fedorov, E. V. Il'ichev, and O. V. Astafiev	
Surface-acoustic-wave-controlled optomechanically induced transparency in a hybrid piezo-optomechanical planar distributed Bragg-reflector-cavity system (<i>8 pages</i>)	013719
Shi-Chao Wu, Li Zhang, Jian Lu, Li-Guo Qin, and Zhong-Yang Wang	
Regular and bistable steady-state superradiant phases of an atomic beam traversing an optical cavity (<i>12 pages</i>)	013720
Simon B. Jäger, Haonan Liu, Athreya Shankar, John Cooper, and Murray J. Holland	
Transverse optical binding for a dual dipolar dielectric nanoparticle dimer (<i>15 pages</i>)	013721
Xiao-Yong Duan, Graham D. Bruce, Kishan Dholakia, Zhi-Guo Wang, Feng Li, and Ya-Ping Yang	
Simulation of a quantum jump in three-level systems using photonic Gaussian modes (<i>7 pages</i>)	013722
A. C. Cardoso, J. G. L. Condé, B. Marques, J. S. Cabral, and S. Pádua	
Two-photon superbunching effect of broadband chaotic light at the femtosecond timescale based on a cascaded Michelson interferometer (<i>8 pages</i>)	013723
Sheng Luo, Yu Zhou, Huaibin Zheng, Jianbin Liu, Hui Chen, Yuchen He, Wanting Xu, Shuanghao Zhang, Fuli Li, and Zhuo Xu	
Non-Hermitian BCS-BEC evolution with a complex scattering length (<i>6 pages</i>)	013724
M. Iskin	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 1

JANUARY 2021

Enhancement of nonclassical Raman light intensity by plasmonic nanoantenna (<i>10 pages</i>)	013725
V. Yu. Shishkov, E. S. Andrianov, A. A. Pukhov, and A. P. Vinogradov	
Heisenberg-limited quantum interferometry with multiphoton-subtracted twin beams (<i>16 pages</i>)	013726
Miller Eaton, Rajveer Nehra, Aye Win, and Olivier Pfister	
Topological quantum optical states in quasiperiodic cold atomic chains (<i>14 pages</i>)	013727
B. X. Wang and C. Y. Zhao	

ERRATA

Erratum: Emergent and broken symmetries of atomic self-organization arising from Gouy phase shifts in multimode cavity QED [Phys. Rev. A 99 , 053818 (2019)] (<i>2 pages</i>)	019901(E)
Yudan Guo, Varun D. Vaidya, Ronen M. Kroeze, Rhiannon A. Lunney, Benjamin L. Lev, and Jonathan Keeling	
Erratum: Generalized quantum state discrimination problems [Phys. Rev. A 91 , 052304 (2015)] (<i>1 page</i>)	019902(E)
Kenji Nakahira, Kentaro Kato, and Tsuyoshi Sasaki Usuda	
Erratum: Minimax strategy in quantum signal detection with inconclusive results [Phys. Rev. A 88 , 032314 (2013)] (<i>1 page</i>)	019903(E)
Kenji Nakahira, Kentaro Kato, and Tsuyoshi Sasaki Usuda	