

The Table of Contents is a total listing of Parts A and B.
Part A consists of pages 030001–032618, and Part B pages 032801–036201.

PART A

EDITORIALS AND ANNOUNCEMENTS

Editorial: Eight Journals Introduce Letters (1 page) 030001

LETTERS

Quantum information science

☞ Universal variational quantum computation (7 pages) L030401
Jacob Biamonte

Quantum technologies

Optimal measurement of field properties with quantum sensor networks (6 pages) L030601
Timothy Qian, Jacob Bringewatt, Igor Boettcher, Przemyslaw Bienias, and Alexey V. Gorshkov

Atomic and molecular structure and dynamics; high-precision experiments

Nuclear deformation as a source of the nonlinearity of the King plot in the Yb⁺ ion (5 pages) L030801
Saleh O. Allehabi, V. A. Dzuba, V. V. Flambaum, and A. V. Afanasjev

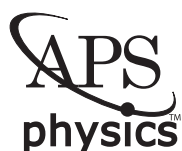
Two-loop virtual light-by-light scattering corrections to the bound-electron *g* factor (6 pages) L030802
V. Debieerre, B. Sikora, H. Cakir, N. S. Oreshkina, V. A. Yerokhin, C. H. Keitel, and Z. Harman

Single- and double-ionization processes using Gaussian-type orbitals: Benchmark on antiproton-helium collisions in the keV-energy range (6 pages) L030803
J. W. Gao, T. Miteva, Y. Wu, J. G. Wang, A. Dubois, and N. Sisourat

Light-induced processes in atomic-scale systems

☞ Direct double ionization of the Ar⁺ *M* shell by a single photon (5 pages) L031101
A. Müller, A. L. D. Kilcoyne, R. A. Phaneuf, K. Holste, S. Schippers, and A. S. Kheifets

Experimental confirmation of electron figure-8 motion in a strong laser field (6 pages) L031102
Brittini Pratt, Nicholas Atkinson, Daniel Hodge, Mahonri Romero, Christoph Schulzke,
Yance Sun, Michael Ware, and Justin Peatross



CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 3

MARCH 2021

Ultracold systems and matter waves

Flat-band-induced non-Fermi-liquid behavior of multicomponent fermions (<i>7 pages</i>)	L031301
Pramod Kumar, Sebastiano Peotta, Yosuke Takasu, Yoshiro Takahashi, and Päivi Törmä	
Coherent seeding of the dynamics of a spinor Bose-Einstein condensate: From quantum to classical behavior (<i>6 pages</i>)	L031302
Bertrand Evrard, An Qu, Jean Dalibard, and Fabrice Gerbier	
Two-atom interferometer (<i>5 pages</i>)	L031303
M. F. Locke and Y. H. Shih	

Photonics, nonlinear optics, and optomechanics

Kelvin's chirality of optical beams (<i>6 pages</i>)	L031501
Sergey Nechayev, Jörg S. Eismann, Rasoul Alaee, Ebrahim Karimi, Robert W. Boyd, and Peter Banzer	
Mean path length inside nonscattering refractive objects (<i>6 pages</i>)	L031502
Matt Majic, Walter R. C. Somerville, and Eric C. Le Ru	
Fully deterministic analysis on photonic whispering-gallery modes of irregular polygonal microcavities with testing in hexagons (<i>6 pages</i>)	L031503
Xiaoxuan Luo, Yin Cai, Yongsheng Wang, Zaoyu Chen, Fu Liu, Lei Zhang, Yanpeng Zhang, and Feng Li	

ARTICLES

Fundamental concepts

Non-Markovianity and the Landauer principle in composite thermal environments (<i>12 pages</i>)	032201
Qi Zhang, Zhong-Xiao Man, and Yun-Jie Xia	
Temperature-controlled open-quantum-system dynamics using a time-dependent variational method (<i>6 pages</i>) . . .	032202
Mantas Jakučionis and Darius Abramavičius	
Symmetry-induced nonlocal divergence-free currents in two-dimensional quantum scattering (<i>10 pages</i>)	032203
M. A. Metaxas, P. Schmelcher, and F. K. Diakonos	
Open quantum systems in thermal nonergodic environments (<i>12 pages</i>)	032204
Carlos A. Parra-Murillo, Max Bramberger, Claudius Hubig, and Inés De Vega	
Discrete-time quantum walk with time-correlated noise (<i>12 pages</i>)	032205
Y. F. Peng, W. Wang, and X. X. Yi	
Choice of mutually unbiased bases and outcome labeling affecting measurement outcome secrecy (<i>8 pages</i>)	032206
Mirdit Doda, Matej Pivoluska, and Martin Plesch	
Effective decoherence of realistic clocks: General theory and application to a topological insulator (<i>9 pages</i>)	032207
Shuang Xu, Wei-Jiang Gong, H. Z. Shen, and X. X. Yi	
Qubit-environment-entanglement generation and the spin echo (<i>9 pages</i>)	032208
Katarzyna Roszak and Łukasz Cywiński	
Coherence-based characterization of macroscopic quantumness (<i>11 pages</i>)	032209
Moein Naseri and Sadegh Raeisi	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 3

MARCH 2021

Complete complementarity relations in curved spacetimes (<i>12 pages</i>)	032210
Marcos L. W. Basso and Jonas Maziero	
Power maximization of two-stroke quantum thermal machines (<i>15 pages</i>)	032211
Nicolò Piccione, Gabriele De Chiara, and Bruno Bellomo	
Weak measurement with the peak-contrast-ratio pointer (<i>8 pages</i>)	032212
Junfan Zhu, Zhaoxue Li, Yurong Liu, Yucheng Ye, Qian Ti, Zhiyou Zhang, and Fuhua Gao	
Quasiclassical approach to quantum quench dynamics in the presence of an excited-state quantum phase transition (<i>14 pages</i>)	032213
Michal Kloc, Daniel Šimsa, Filip Hanák, Petra Ruth Kaprálová-Žďánská, Pavel Stránský, and Pavel Cejnar	
Eternal adiabaticity in quantum evolution (<i>23 pages</i>)	032214
Daniel Burgarth, Paolo Facchi, Hiromichi Nakazato, Saverio Pascazio, and Kazuya Yuasa	
Analytic semi-device-independent entanglement quantification for bipartite quantum states (<i>7 pages</i>)	032215
Zhaohui Wei and Lijinzh Lin	
Sharing quantum nonlocality and genuine nonlocality with independent observables (<i>7 pages</i>)	032216
Tingui Zhang and Shao-Ming Fei	
Femtosecond synchronization of clocks (<i>4 pages</i>)	032217
Don Koks	
Leggett-Garg tests for macrorealism: Interference experiments and the simple harmonic oscillator (<i>11 pages</i>)	032218
J. J. Halliwell, A. Bhatnagar, E. Ireland, H. Nadeem, and V. Wimalaweera	
Standard quantum mechanics without observers (<i>14 pages</i>)	032219
Ovidiu Cristinel Stoica	
Perturbative algorithm for rotational decoherence (<i>8 pages</i>)	032220
Matteo Carlesso, Hamid Reza Naeij, and Angelo Bassi	
Quantum dynamics under continuous projective measurements: Non-Hermitian description and the continuum-space limit (<i>17 pages</i>)	032221
Varun Dubey, Cédric Bernardin, and Abhishek Dhar	
Enhancement of quantum correlations and a geometric phase for a driven bipartite quantum system in a structured environment (<i>14 pages</i>)	032222
Paula I. Villar and Alejandro Soba	
Interferometric approach to open quantum systems and non-Markovian dynamics (<i>6 pages</i>)	032223
Olli Siltanen, Tom Kuusela, and Jyrki Piilo	
Coarse-grained quantum cellular automata (<i>8 pages</i>)	032224
O. Duranthon and Giuseppe Di Molfetta	
Quantum information science	
Resource theory of imaginarity: Quantification and state conversion (<i>13 pages</i>)	032401
Kang-Da Wu, Tulja Varun Kondra, Swapan Rana, Carlo Maria Scandolo, Guo-Yong Xiang, Chuan-Feng Li, Guang-Can Guo, and Alexander Streltsov	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 3

MARCH 2021

Large-scale Greenberger-Horne-Zeilinger states through a topologically protected zero-energy mode in a superconducting qutrit-resonator chain (<i>12 pages</i>)	032402
Jin-Xuan Han, Jin-Lei Wu, Yan Wang, Yan Xia, Yong-Yuan Jiang, and Jie Song	
Lanczos recursion on a quantum computer for the Green's function and ground state (<i>9 pages</i>)	032404
Thomas E. Baker	
Neural-network-based multistate solver for a static Schrödinger equation (<i>16 pages</i>)	032405
Hong Li, Qilong Zhai, and Jeff Z. Y. Chen	
Time-dependent atomic magnetometry with a recurrent neural network (<i>8 pages</i>)	032406
Maryam Khanahmadi and Klaus Mølmer	
Relationship between first-order coherence and the maximum violation of the three-setting linear steering inequality for a two-qubit system (<i>6 pages</i>)	032407
Ming-Ming Du and D. M. Tong	
Sequential measurement-device-independent entanglement detection by multiple observers (<i>9 pages</i>)	032408
Chirag Srivastava, Shiladitya Mal, Aditi Sen(De), and Ujjwal Sen	
Unsuitability of cubic phase gates for non-Clifford operations on Gottesman-Kitaev-Preskill states (<i>6 pages</i>)	032409
Jacob Hastrup, Mikkel V. Larsen, Jonas S. Neergaard-Nielsen, Nicolas C. Menicucci, and Ulrik L. Andersen	
Quantum secret sharing using discretely modulated coherent states (<i>9 pages</i>)	032410
Qin Liao, Haijie Liu, Lingjin Zhu, and Ying Guo	
☞ Designing a physical quantum agent (<i>7 pages</i>)	032411
M. J. Kewming, S. Shrapnel, and G. J. Milburn	
Gaussian state entanglement witnessing through lossy compression (<i>6 pages</i>)	032412
Waldemar Kłobus, Paweł Cieśliński, Lukas Knips, Paweł Kurzyński, and Wiesław Laskowski	
Implementing a quantum search algorithm with nonorthogonal states (<i>5 pages</i>)	032413
Shi-Chao Wang, Yan Chi, Li Yu, Zhe Sun, Qi-Ping Su, and Chui-Ping Yang	
☞ Quantum unary approach to option pricing (<i>19 pages</i>)	032414
Sergi Ramos-Calderer, Adrián Pérez-Salinas, Diego García-Martín, Carlos Bravo-Prieto, Jorge Cortada, Jordi Planagumà, and José I. Latorre	
Detection loophole in measurement-device-independent entanglement witnesses (<i>7 pages</i>)	032415
Kornikar Sen, Chirag Srivastava, Shiladitya Mal, Aditi Sen(De), and Ujjwal Sen	
Resource theory of superposition: State transformations (<i>13 pages</i>)	032416
Gökhan Torun, Hüseyin Talha Şenyaşa, and Ali Yıldız	
Quantum-Fourier-transform-based quantum arithmetic with qudits (<i>12 pages</i>)	032417
Archimedes Pavlidis and Emmanuel Floratos	
Sudden freezing and thawing of entanglement sharing in a shrunken volume (<i>6 pages</i>)	032418
Yi Ding, Songbo Xie, and Joseph H. Eberly	
Quantum sensing of intermittent stochastic signals (<i>6 pages</i>)	032419
Sara L. Mouradian, Neil Glikin, Eli Megidish, Kai-Isaak Ellers, and Hartmut Haeffner	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 3

MARCH 2021

Leggett-Garg inequalities and temporal correlations for a qubit under $\mathcal{PT}$ -symmetric dynamics (9 pages)	032420
H. S. Karthik, H. Akshata Shenoy, and A. R. Usha Devi	
Perturbative tomography of small errors in quantum gates (10 pages)	032421
Ruyu Yang and Ying Li	
Computing partition functions in the one-clean-qubit model (13 pages)	032422
Anirban N. Chowdhury, Rolando D. Somma, and Yiğit Subaşı	
Generation of Bures-Hall mixed states using coupled kicked tops (15 pages)	032423
Ayana Sarkar and Santosh Kumar	
Framework for resource quantification in infinite-dimensional general probabilistic theories (30 pages)	032424
Ludovico Lami, Bartosz Regula, Ryuji Takagi, and Giovanni Ferrari	
Efficient entanglement distillation for quantum channels with polarization mode dispersion (11 pages)	032425
Liangzhong Ruan, Brian T. Kirby, Michael Brodsky, and Moe Z. Win	
Two-orbital quantum discord in fermion systems (9 pages)	032426
Javier Faba, Vicente Martín, and Luis Robledo	
Conversion from W to Greenberger-Horne-Zeilinger states in the Rydberg-blockade regime of neutral-atom systems: Dynamical-symmetry-based approach (10 pages)	032427
Thorsten Haase, Gernot Alber, and Vladimir M. Stojanović	
Entanglement of assistance in three-qubit systems (7 pages)	032428
Kl��e Pollock, Ge Wang, and Eric Chitambar	
Quantifying coherence with respect to general quantum measurements (12 pages)	032429
Felix Bischof, Hermann Kampermann, and Dagmar Bru��	
Effect of data encoding on the expressive power of variational quantum-machine-learning models (12 pages)	032430
Maria Schuld, Ryan Sweke, and Johannes Jakob Meyer	
Gate-set tomography of fermionic systems using Majorana-fermion operations (9 pages)	032431
Gang Zhang, Mingxia Huo, and Ying Li	
Analysis of necessary and sufficient conditions for quantum teleportation with non-Gaussian resources (5 pages)	032432
Soumyakanti Bose and M. Sanjay Kumar	
� Two quantum Ising algorithms for the shortest-vector problem (12 pages)	032433
David Joseph, Adam Callison, Cong Ling, and Florian Mintert	
Flavor-vacuum entanglement in boson mixing (9 pages)	032434
Massimo Blasone, Fabrizio Illuminati, Giuseppe Gaetano Luciano, and Luciano Petruzzello	
Single-mode multiphoton polarization states under random Pauli noises (7 pages)	032435
Ran Yang, Cheng-Jie Zhang, Jian Li, Yan-Xiao Gong, and Shi-Ning Zhu	
Entanglement detection in triangle-free quantum states (7 pages)	032436
Satvik Singh	
Determining the mixed high-dimensional Bell state of a photon pair through the measurement of a single photon (7 pages)	032437
Xiang Zhan	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 3

MARCH 2021

Dynamic generation of Greenberger-Horne-Zeilinger states with coupled charge qubits (<i>11 pages</i>)	032438
J. Nogueira, P. A. Oliveira, F. M. Souza, and L. Sanz	
Quantum technologies	
Generation and storage of spin squeezing via learning-assisted optimal control (<i>11 pages</i>)	032601
Qing-Shou Tan, Mao Zhang, Yu Chen, Jie-Qiao Liao, and Jing Liu	
Highly photon-loss-tolerant quantum computing using hybrid qubits (<i>12 pages</i>)	032602
S. Omkar, Y. S. Teo, Seung-Woo Lee, and H. Jeong	
Virtual channel of multidimensional reconciliation in a continuous-variable quantum key distribution (<i>10 pages</i>)	032603
Yan Feng, Yun-Jie Wang, Runhe Qiu, Kun Zhang, Huayong Ge, Zhiyong Shan, and Xue-Qin Jiang	
Passive continuous-variable quantum key distribution using a locally generated local oscillator (<i>11 pages</i>)	032604
Xiaodong Wu, Yijun Wang, Ying Guo, Hai Zhong, and Duan Huang	
Simulating quantum chemistry in the seniority-zero space on qubit-based quantum computers (<i>11 pages</i>)	032605
Vincent E. Elfving, Marta Millaruelo, José A. Gámez, and Christian Gogolin	
Probing many-body localization on a noisy quantum computer (<i>7 pages</i>)	032606
D. Zhu, S. Johri, N. H. Nguyen, C. Huerta Alderete, K. A. Landsman, N. M. Linke, C. Monroe, and A. Y. Matsuura	
Abrupt transitions in variational quantum circuit training (<i>9 pages</i>)	032607
Ernesto Campos, Aly Nasrallah, and Jacob Biamonte	
Performance of dense coding and teleportation for random states: Augmentation via preprocessing (<i>16 pages</i>) . . .	032608
Rivu Gupta, Shashank Gupta, Shiladitya Mal, and Aditi Sen(De)	
Nonadiabatic geometric quantum gates that are insensitive to qubit-frequency drifts (<i>9 pages</i>)	032609
Jian Zhou, Sai Li, Guo-Zhu Pan, Gang Zhang, Tao Chen, and Zheng-Yuan Xue	
Optimizing repeater schemes for the quantum internet (<i>31 pages</i>)	032610
Kenneth Goodenough, David Elkouss, and Stephanie Wehner	
Practical security of a chip-based continuous-variable quantum-key-distribution system (<i>10 pages</i>)	032611
Lang Li, Peng Huang, Tao Wang, and Guihua Zeng	
Unconventional quantum annealing methods for difficult trial problems (<i>12 pages</i>)	032612
Zhijie Tang and Eliot Kapit	
Gaussian phase sensitivity of boson-sampling-inspired strategies (<i>18 pages</i>)	032613
Antonio A. Valido and Juan José García-Ripoll	
Experimental decoy-state Bennett-Brassard 1984 quantum key distribution through a turbulent channel (<i>9 pages</i>)	032614
Eleftherios Moschandreou, Brian J. Rollick, Bing Qi, and George Siopsis	
Noisy quantum metrology with the assistance of indefinite causal order (<i>18 pages</i>)	032615
François Chapeau-Blondeau	

(Continued)

Implementing conventional and unconventional nonadiabatic geometric quantum gates via SU(2) transformations (<i>7 pages</i>)	032616
Jian-jian Cheng and Lin Zhang	
Phase sensitivity approaching the quantum Cramér-Rao bound in a modified SU(1,1) interferometer (<i>7 pages</i>)	032617
Jian-Dong Zhang, Chenglong You, Chuang Li, and Shuai Wang	
Diagrammatic technique for simulation of large-scale quantum repeater networks with dissipating quantum memories (<i>17 pages</i>)	032618
Viacheslav V. Kuzmin and Denis V. Vasilyev	

PART B

Atomic and molecular structure and dynamics; high-precision experiments

Pseudo-Jahn-Teller interaction among electronic resonant states of H ₃ (<i>9 pages</i>)	032801
Patrik Hedvall and Åsa Larson	
Convergent close-coupling calculations of electrons scattering on electronically excited molecular hydrogen (<i>17 pages</i>)	032802
Liam H. Scarlett, Jeremy S. Savage, Dmitry V. Fursa, Igor Bray, Mark C. Zammit, and Barry I. Schneider	
Tune-out and magic wavelengths of Ba ⁺ ions (<i>11 pages</i>)	032803
Jun Jiang, Yun Ma, Xia Wang, Chen-Zhong Dong, and Z. W. Wu	
Toward a description of electron-induced dissociative excitation in H ₂ O ⁺ : Investigation of three resonances above the $\tilde{B}$ state (<i>11 pages</i>)	032804
I. Rabadán and J. D. Gorfinkiel	
 High-energy-resolution measurements of an ultracold-atom-ion collisional cross section (<i>8 pages</i>)	032805
Ruti Ben-shlomi, Meirav Pinkas, Ziv Meir, Tomas Sikorsky, Or Katz, Nitzan Akerman, and Roei Ozeri	
Beam energy determination via collinear laser spectroscopy (<i>7 pages</i>)	032806
Kristian König, Kei Minamisono, Jeremy Lantis, Skyy Pineda, and Robert Powel	
Effect of angular momentum transfer on the angular distribution of Auger electrons following atomic inner ns^2 -shell photoionization (<i>6 pages</i>)	032807
L. Gerchikov and S. Sheinerman	
Cross sections for the electron-impact excitations $\tilde{A}^1B_1$ and $\tilde{B}^1A_1$ of H ₂ O determined by high-energy electron scattering (<i>8 pages</i>)	032808
Wei-Qing Xu, Zi-Ru Ma, Yi-Geng Peng, Xiao-Jiao Du, Yuan-Chen Xu, Li-Han Wang, Bo Li, Hao-Ran Zhang, Bei-Yuan Zhang, Jian-Hui Zhu, Shu-Xing Wang, Yong Wu, Jian-Guo Wang, and Lin-Fan Zhu	
Enhanced decoherence for a neutral particle sliding on a metallic surface in vacuum (<i>10 pages</i>)	032809
Ludmila Viotti, Fernando C. Lombardo, and Paula I. Villar	
Magic wavelengths for the helium $2^3S_1 \rightarrow 2^1P_1$ forbidden transition (<i>7 pages</i>)	032810
Yong-Hui Zhang, Li-Yan Tang, Jun-Yi Zhang, and Ting-Yun Shi	
 Nuclear polarization effects in atoms and ions (<i>15 pages</i>)	032811
V. V. Flambaum, I. B. Samsonov, H. B. Tran Tan, and A. V. Viatkina	

(Continued)

 Analytical expression for the electronic stopping cross section of atomic gas targets for hydrogen projectiles (14 pages) R. Cabrera-Trujillo	032812
Final-state-resolved mutual neutralization of Na^+ and D^- (7 pages) Gustav Eklund, Jon Grumer, Paul S. Barklem, Stefan Rosén, MingChao Ji, Ansgar Simonsson, Richard D. Thomas, Henrik Cederquist, Henning Zettergren, and Henning T. Schmidt	032814
Chirality-dependent scattering of an electron vortex beam by a single atom in a magnetic field (9 pages) Changyong Lei and Guangjiong Dong	032815
Single and double charge transfer in the $\text{Ne}^{2+} + \text{He}$ collision within time-dependent density-functional theory (12 pages) Wandong Yu, Cong-Zhang Gao, Shunsuke A. Sato, Alberto Castro, Angel Rubio, and Baoren Wei	032816
Three-body recombination calculations with a two-body mapped grid method (11 pages) T. Secker, J.-L. Li, P. M. A. Mestrom, and S. J. J. M. F. Kokkelmans	032817
Isotope shifts in the metastable a^5F and excited y^5G° terms of atomic titanium (7 pages) Andrew O. Neely, Kayleigh Cassella, Scott Eustice, and Dan M. Stamper-Kurn	032818
$\mathcal{P}$, $\mathcal{T}$ -odd effects for the RaOH molecule in the excited vibrational state (6 pages) Anna Zakharova and Alexander Petrov	032819
Two-body neutral Coulomb system in a magnetic field at rest: From hydrogen atom to positronium (22 pages) J. C. del Valle, A. V. Turbiner, and A. M. Escobar Ruiz	032820
Fragmentation dynamics of CO_2^{4+} : Contributions of different electronic states (8 pages) Sumit Srivastav, Arnab Sen, Deepak Sharma, and Bhas Bapat	032821
Laser-driven fluorescence emission in a nitrogen gas jet at 100 MHz repetition rate (7 pages) Jin Zhang, LinQiang Hua, ShaoGang Yu, YanLan Wang, MuFeng Zhu, ZhengRong Xiao, Cheng Gong, and XiaoJun Liu	032822
Observation of subnatural-linewidth spectra in cold ^6Li atoms (6 pages) Rui Li, Yuelong Wu, Yang Rui, and Haibin Wu	032823
Atomic calculations of the hyperfine-structure anomaly in gold (7 pages) Yu. A. Demidov, E. A. Konovalova, R. T. Imanbaeva, M. G. Kozlov, and A. E. Barzakh	032824
Effect of secondary electrons on the patch formation in insulating capillaries by ion beams (8 pages) E. Giglio and T. Le Cornu	032825
Magnetic octupole moment of ^{173}Yb using collinear laser spectroscopy (9 pages) R. P. de Groote, S. Kujanpää, Á. Koszorus, J. G. Li, and I. D. Moore	032826
State-selective single-electron capture in intermediate-energy $\text{C}^{4+} + \text{He}$ collisions (8 pages) D. L. Guo, J. W. Gao, S. F. Zhang, X. L. Zhu, Y. Gao, D. M. Zhao, R. T. Zhang, Y. Wu, J. G. Wang, A. Dubois, and X. Ma	032827
Auger decay of the $3d$ hole in the isoelectronic series of Br , Kr^+ , and Rb^{2+} (8 pages) J. Keskinen, K. Jänkälä, S.-M. Huttula, T. Kaneyasu, Y. Hikosaka, E. Shigemasa, H. Iwayama, K. Soejima, K. Ito, L. Andric, M. A. Khalal, J. Palaudoux, F. Penent, and P. Lablanquie	032828

(Continued)

Resonant collisions of electrons with O ₂ via the lowest-lying $^2\Pi_g$ state of O ₂ ⁻ (11 pages)	032829
Václav Alt and Karel Houfek	
Effects of π^* - σ^* coupling on dissociative-electron-attachment angular distributions in vinyl, allyl, and benzyl chloride and in chlorobenzene (8 pages)	032830
Pamir Nag, Michal Tarana, and Juraj Fedor	
Magnetically induced transition in the spectrum of Sr IV (5 pages)	032831
M. C. Li, K. Wang, T. Brage, and R. Hutton	
Light-induced processes in atomic-scale systems	
Impact of laser polarization on q -exponential photon tails in nonlinear Compton scattering (11 pages)	033101
B. Kämpfer and A. I. Titov	
Weak-field asymptotic theory of tunneling ionization of the hydrogen molecule including core polarization, spectator nucleus, and internuclear motion effects (14 pages)	033102
Hirokazu Matsui, Oleg I. Tolstikhin, and Toru Morishita	
Two-photon above-threshold ionization of helium (10 pages)	033103
Yimeng Wang and Chris H. Greene	
Effects of quantum interferences among crystal-momentum-resolved electrons in solid high-order harmonic generation (10 pages)	033104
Xi Liu, Yujie Li, Dongdong Liu, Xiaosong Zhu, Xiaofan Zhang, and Peixiang Lu	
Electronic quantum coherence encoded in temporal structures of N ₂ ⁺ lasing (7 pages)	033105
Jinming Chen, Jinping Yao, Zhihao Zhang, Zhaoxiang Liu, Bo Xu, Yuexin Wan, Fangbo Zhang, Wei Chu, Lingling Qiao, Haisu Zhang, Zhenhua Wang, and Ya Cheng	
Subcycle control of the photoelectron angular distribution using two-color laser fields having different kinds of polarization (8 pages)	033106
Xufei Sun, Denhi Martinez, Patrick Froß, Nicolas Camus, Yonghao Mi, Weiyu Zhang, Zhanghai Chen, Thomas Pfeifer, and Robert Moshhammer	
Modeling the time-dependent electron dynamics in dielectric materials induced by two-color femtosecond laser pulses: Applications to material modifications (15 pages)	033107
P. González de Alaiza Martínez, E. Smetanina, I. Thiele, B. Chimier, and G. Duchateau	
Photoelectron angular distributions in photodetachment from P ⁻ (9 pages)	033108
O. Windelius, J. Welander, A. Aleman, D. J. Pegg, K. V. Jayaprasad, S. Ali, and D. Hanstorp	
Localized-plasma-assisted rotational transitions in the terahertz region (12 pages)	033109
Yindong Huang, Zuoxian Xiang, Xing Xu, Jing Zhao, Jinlei Liu, Ruixing Wang, Ziyi Zhang, Zhihui Lü, Dongwen Zhang, Chao Chang, Jianmin Yuan, and Zengxiu Zhao	
Coherent control techniques for two-state quantum systems: A comparative study (9 pages)	033110
Boyan T. Torosov, Bruce W. Shore, and Nikolay V. Vitanov	
Quantum interferences between rescattering orbits with multiexcitation channels in the recollision excitation process of nonsequential double ionization (9 pages)	033111
Yuna Yang, Mingqing Liu, Xiaolei Hao, and Jing Chen	
Photoionization of H ₂ ⁺ beyond the dipole approximation with zeptosecond time resolution (6 pages)	033112
Zhao-Han Zhang and Feng He	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 3

MARCH 2021

Floquet description of optically pumped magnetometers (<i>19 pages</i>)	033113
Hans Marin Florez and Tadas Pyragius	
Generation of elliptically polarized attosecond pulses in mixed gases (<i>9 pages</i>)	033114
Chunyang Zhai, Xiaosong Zhu, Jie Long, Renzhi Shao, Yinfu Zhang, Lixin He, Qingbin Tang, Yingbin Li, Pengfei Lan, Benhai Yu, and Peixiang Lu	
Signatures of magnetic-field effects in nonsequential double ionization manifesting as backscattering for molecules versus forward scattering for atoms (<i>13 pages</i>)	033115
G. P. Katsoulis, M. B. Peters, A. Staudte, R. Bhardwaj, and A. Emmanouilidou	
Optimal control over high-order-harmonic ellipticity in two-color cross-linearly-polarized laser fields (<i>7 pages</i>)	033116
Yiqi Fang and Yunquan Liu	
Populations of $B^2\Sigma_u^+$ and $X^2\Sigma_g^+$ electronic states of molecular nitrogen ions in air determined by fluorescence measurement (<i>6 pages</i>)	033117
Quanjun Wang, Rao Chen, Yuxuan Zhang, Xiaozhen Wang, Chunlin Sun, Pengji Ding, Zuoye Liu, and Bitao Hu	
Rotational dynamics of O_2 in the electronic ground $X^3\Sigma_g^-$ state induced by an intense femtosecond laser field (<i>9 pages</i>)	033118
Kotaro Sonoda, Shinichi Fukahori, and Hirokazu Hasegawa	
Ultracold systems and matter waves	
Laser control of ultracold molecule formation: The case of RbSr (<i>13 pages</i>)	033301
Adrien Devolder, Michèle Desouter-Lecomte, Osman Atabek, Eliane Luc-Koenig, and Olivier Dulieu	
Modeling Rydberg gases using random sequential adsorption on random graphs (<i>22 pages</i>)	033302
Daan Rutten and Jaron Sanders	
Spectral properties of a three-body atom-ion hybrid system (<i>16 pages</i>)	033303
Daniel J. Bosworth, Maxim Pyzh, and Peter Schmelcher	
Saddle-point scrambling without thermalization (<i>7 pages</i>)	033304
R. A. Kidd, A. Safavi-Naini, and J. F. Corney	
Two-dimensional non-Hermitian topological phases induced by asymmetric hopping in a one-dimensional superlattice (<i>9 pages</i>)	033305
Junpeng Hou, Ya-Jie Wu, and Chuanwei Zhang	
 Quantum degenerate mixtures of Cs and Yb (<i>12 pages</i>)	033306
Kali E. Wilson, Alexander Guttridge, Jack Segal, and Simon L. Cornish	
Drag in Bose-Fermi mixtures (<i>9 pages</i>)	033307
Kai Yen Jee and Erich Mueller	
Single-atom counting in a two-color magneto-optical trap (<i>6 pages</i>)	033308
Martin Schlederer, Alexandra Mozdzen, Thomas Lompe, and Henning Moritz	
Entropy production for quasiadiabatic parameter changes dominated by hydrodynamics (<i>12 pages</i>)	033309
Philipp S. Weiß, Dennis Hardt, and Achim Rosch	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 3

MARCH 2021

Time- and frequency-domain two-particle correlations of a driven dissipative Bose-Hubbard model (<i>10 pages</i>) . . .	033310
Kingshuk Adhikary, Anushree Dey, Arpita Pal, Subhanka Mal, and Bimalendu Deb	
Expansion dynamics in two-dimensional Bose-Hubbard lattices: Bose-Einstein condensate and thermal cloud (<i>12 pages</i>)	033311
Mauricio Trujillo-Martinez, Anna Posazhennikova, and Johann Kroha	
Beyond-mean-field crossover from one dimension to three dimensions in quantum droplets of binary mixtures (<i>7 pages</i>)	033312
L. Lavoine and T. Bourdel	
Bose-Hubbard model on polyhedral graphs (<i>18 pages</i>)	033313
Santi Prestipino	
Vortex properties in the extended supersolid phase of dipolar Bose-Einstein condensates (<i>12 pages</i>)	033314
Francesco Ancilotto, Manuel Barranco, Martí Pi, and Luciano Reatto	
Interorbital interactions in an $SU(2) \otimes SU(6)$ -symmetric Fermi-Fermi mixture (<i>8 pages</i>)	033315
B. Abeln, K. Sponselee, M. Diem, N. Pintul, K. Sengstock, and C. Becker	
Topological nodal chains in optical lattices (<i>8 pages</i>)	033316
Bei-Bei Wang, Jia-Hui Zhang, Chuanjia Shan, Feng Mei, and Suotang Jia	
Quench Dynamics of the Ideal Bose Polaron at Zero and Nonzero Temperatures (<i>13 pages</i>)	033317
Moritz Drescher, Manfred Salmhofer, and Tilman Enss	
Artificial magnetic field for synthetic quantum matter without dynamical modulation (<i>10 pages</i>)	033318
Tomoki Ozawa	
Inversion of coherent backscattering with interacting Bose-Einstein condensates in two-dimensional disorder: A truncated Wigner approach (<i>16 pages</i>)	033319
Renaud Chrétien and Peter Schlagheck	
Dimensional crossover in ultracold Fermi gases from functional renormalization (<i>19 pages</i>)	033320
Bruno M. Faigle-Cedzich, Jan M. Pawłowski, and Christof Wetterich	
Multilayered density profile for noninteracting fermions in a rotating two-dimensional trap (<i>15 pages</i>)	033321
Manas Kulkarni, Satya N. Majumdar, and Grégory Schehr	
Arbitrary-angle rotation of the polarization of a dipolar Bose-Einstein condensate (<i>17 pages</i>)	033322
S. B. Prasad, B. C. Mulkerin, and A. M. Martin	
Dynamical formation of polarons in a Bose-Einstein condensate: A variational approach (<i>8 pages</i>)	033323
L. A. Peña Ardila	
Ground state of the polaron in an ultracold dipolar Fermi gas (<i>11 pages</i>)	033324
Kazuya Nishimura, Eiji Nakano, Kei Iida, Hiroyuki Tajima, Takahiko Miyakawa, and Hiroyuki Yabu	
Localization and topological transitions in non-Hermitian quasiperiodic lattices (<i>9 pages</i>)	033325
Ling-Zhi Tang, Guo-Qing Zhang, Ling-Feng Zhang, and Dan-Wei Zhang	
Higher-order effective interactions for bosons near a two-body zero crossing (<i>10 pages</i>)	033326
A. Pricoupenko and D. S. Petrov	

(Continued)

Photonics, nonlinear optics, and optomechanics

Surface electromagnetic waves in bianisotropic superlattices and homogeneous media (<i>6 pages</i>)	033501
A. N. Darinskii	
Plasma-assisted temporal shifts of bichromatic femtosecond laser pulses in air (<i>9 pages</i>)	033502
V. Tamulienė, D. Buožius, and V. Vaičaitis	
Inherent dose-reduction potential of classical ghost imaging (<i>20 pages</i>)	033503
Andrew M. Kingston, Wilfred K. Fullagar, Glenn R. Myers, Daishi Adams, Daniele Pelliccia, and David M. Paganin	
Observation of optical feedback dynamics in single-mode terahertz quantum cascade lasers: Transient instabilities (<i>7 pages</i>)	033504
Xiaoqiong Qi, Karl Bertling, Thomas Taimre, Gary Agnew, Yah Leng Lim, Tim Gillespie, Ashley Robinson, Michael Brünig, Aleksandar Damić, Paul Dean, Lian He Li, Edmund H. Linfield, A. Giles Davies, Dragan Indjin, and Aleksandar D. Rakić	
Majorana bosonic quasiparticles from twisted photons in free space (<i>7 pages</i>)	033505
Fabrizio Tamburini, Bo Thidé, Ignazio Licata, Frédéric Bouchard, and Ebrahim Karimi	
Exploding paraxial beams, vortex beams, and cylindrical beams of light with finite power in linear media, and their enhanced longitudinal field (<i>7 pages</i>)	033506
Miguel A. Porras	
Dynamics of transmission in disordered topological insulators (<i>15 pages</i>)	033507
Yuhao Kang, Yiming Huang, and Azriel Z. Genack	
Double-mechanical-oscillator cooling by breaking the restrictions of quantum backaction and frequency ratio via dynamical modulation (<i>19 pages</i>)	033508
Cheng-Hua Bai, Dong-Yang Wang, Shou Zhang, Shutian Liu, and Hong-Fu Wang	
Dynamic and nonlinear properties of epitaxial quantum-dot lasers on silicon operating under long- and short-cavity feedback conditions for photonic integrated circuits (<i>9 pages</i>)	033509
Bozhang Dong, Jun-Da Chen, Fan-Yi Lin, Justin C. Norman, John E. Bowers, and Frédéric Grillot	
Transition between coupled-resonator-induced transparency and absorption (<i>6 pages</i>)	033510
Shu-Ting Guo, Yu-Hong Zhang, Liu-Le Wu, Ming-Yong Ye, and Xiu-Min Lin	
Light-matter interactions near photonic Weyl points (<i>16 pages</i>)	033511
Iñaki García-Elcano, Jorge Bravo-Abad, and Alejandro González-Tudela	
Focused fields of ultrashort radially polarized laser pulses having low-order spatiotemporal couplings (<i>13 pages</i>)	033512
Spencer W. Jolly	
Topological input-output theory for directional amplification (<i>16 pages</i>)	033513
Tomás Ramos, Juan José García-Ripoll, and Diego Porras	
Broadband frequency control of light using synthetic frequency lattices formed by four-wave-mixing Bragg scatterings (<i>8 pages</i>)	033514
Wenwan Li, Ningning Yang, Hao Chen, Bing Wang, Chengzhi Qin, Tianwen Han, Yicong Zhang, Weiwei Liu, Chi Zhang, Xinliang Zhang, and Peixiang Lu	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 3

MARCH 2021

Revisiting the anomalous spin-Hall effect of light near the Brewster angle (7 pages)	033515
Xiaohui Ling, Weilai Xiao, Shizhen Chen, Xinxing Zhou, Hailu Luo, and Lei Zhou	
Sympathetic cooling of a radio-frequency <i>LC</i> circuit to its ground state in an optoelectromechanical system (12 pages)	033516
Nicola Malossi, Paolo Piergentili, Jie Li, Enrico Serra, Riccardo Natali, Giovanni Di Giuseppe, and David Vitali	
Phase-sensitive modulation instability in asymmetric coupled quantum wells (17 pages)	033517
Rohit Mukherjee, S. Konar, and Puspashree Mishra	
Transfer of information through waveguides near an exceptional point (13 pages)	033518
Nimrod Moiseyev and Milan Šindelka	
Information-theoretical resolution limit of a far-field subwavelength diffraction system (8 pages)	033519
Yan-ming Gao, Chuan-jin Zu, Xiang-sheng Xie, and Xiang-yang Yu	
Quantum transport in non-Markovian dynamically disordered photonic lattices (11 pages)	033520
Ricardo Román-Ancheyta, Barış Çakmak, Roberto de J. León-Montiel, and Armando Perez-Leija	
Quantum optics	
Energy-time-entangled two-photon molecular absorption (5 pages)	033701
D. Tabakaev, M. Montagnese, G. Haack, L. Bonacina, J.-P. Wolf, H. Zbinden, and R. T. Thew	
Two-dimensional chiral-waveguide quantum electrodynamics: Long-range qubit correlations and flat-band dark polaritons (9 pages)	033702
Y. Marques, I. A. Shelykh, and I. V. Iorsh	
Simulating the escape of entangled photons from the event horizon of black holes in nonuniform optical lattices (9 pages)	033703
Chong Sheng, Chunyu Huang, Runqiu Yang, Yanxiao Gong, Shining Zhu, and Hui Liu	
Strongly entangled system-reservoir dynamics with multiphoton pulses beyond the two-excitation limit: Exciting the atom-photon bound state (9 pages)	033704
Kisa Barkemeyer, Andreas Knorr, and Alexander Carmele	
Macroscopic quantum electrodynamics approach to nonlinear optics and application to polaritonic quantum-vacuum detection (18 pages)	033705
Frieder Lindel, Robert Bennett, and Stefan Yoshi Buhmann	
Bistable optical transmission through arrays of atoms in free space (16 pages)	033706
C. D. Parmee and J. Ruostekoski	
Sorkin parameter for type-I spontaneous parametric down-conversion biphotons and matter waves (18 pages)	033707
F. C. V. de Brito, C. H. S. Vieira, I. G. da Paz, J. B. Araujo, and M. Sampaio	
Ideal pairing of the Stokes and anti-Stokes photons in the Raman process (16 pages)	033708
Kishore Thapliyal and Jan Peřina Jr.	
Cavity-enhanced broadband photonic Rabi oscillation (5 pages)	033709
Rikizo Ikuta, Toshiki Kobayashi, Tomohiro Yamazaki, Nobuyuki Imoto, and Takashi Yamamoto	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 103, NUMBER 3

MARCH 2021

Collective spontaneous emission of two entangled atoms near an oscillating mirror (<i>11 pages</i>)	033710
Marta Reina, Michelangelo Domina, Alessandro Ferreri, Giuseppe Fiscelli, Antonio Noto, Roberto Passante, and Lucia Rizzuto	
Driven-dissipative phase transition in a Kerr oscillator: From semiclassical $\mathcal{PT}$ symmetry to quantum fluctuations (<i>12 pages</i>)	033711
Xin H. H. Zhang and Harold U. Baranger	
Switchability of multimodal optical phases in a leaky and nonlinear quantum cavity (<i>10 pages</i>)	033712
S. Samimi and M. M. Golshan	
Radiation eigenmodes of Dicke superradiance (<i>8 pages</i>)	033713
Benjamin Lemberger and Klaus Mølmer	
van der Waals dephasing for Dicke subradiance in cold atomic clouds (<i>8 pages</i>)	033714
Ana Cipris, Romain Bachelard, Robin Kaiser, and William Guerin	
Quantum battery of interacting spins with environmental noise (<i>8 pages</i>)	033715
Fang Zhao, Fu-Quan Dou, and Qing Zhao	

COMMENTS

Comment on “Aharonov-Bohm effect for bound states from the interaction of the magnetic quadrupole moment of a neutral particle with axial fields” (<i>4 pages</i>)	036201
Francisco M. Fernández	