# 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 102, NUMBER 6**
**PARTS A AND B**

*CONTENTS*

**DECEMBER 2020**

***The Table of Contents is a total listing of Parts A and B.***
***Part A consists of pages 060201(R)–062826, and Part B pages 063101–069905(E).***

## PART A

## RAPID COMMUNICATIONS

### Fundamental concepts

Floquet engineering to reactivate a dissipative quantum battery *(6 pages)* . . . . . 060201(R)
Si-Yuan Bai and Jun-Hong An

### Atomic and molecular structure and dynamics; high-precision experiments

Radiative double-electron capture for oxygen and fluorine ions colliding with thin-foil C: Effects of multiple collisions *(6 pages)* . . . . . 060801(R)
D. S. La Mantia, P. N. S. Kumara, C. P. McCoy, and J. A. Tanis

### Light-induced processes in atomic-scale systems

Timing angular momentum transfer for parity-unfavored transitions in multiphoton ionization *(6 pages)* . . . . . 061101(R)
Meng Han, Hao Liang, Peipei Ge, Yiqi Fang, Zhenning Guo, Xiaoyang Yu, Yongkai Deng, Liang-You Peng, Qihuang Gong, and Yunquan Liu

### Ultracold systems and matter waves

Fermi polaron revisited: Polaron-molecule transition and coexistence *(5 pages)* . . . . . 061301(R)
Xiaoling Cui

Bloch oscillations with a metastable helium Bose-Einstein condensate *(6 pages)* . . . . . 061302(R)
R. F. H. J. van der Beek, O. Onishchenko, W. Vassen, K. S. E. Eikema, and H. L. Bethlem

### Photonics, nonlinear optics, and optomechanics

Quantum nondemolition photon counting with a hybrid electromechanical probe *(7 pages)* . . . . . 061501(R)
Junjie Liu, Hsing-Ta Chen, and Dvira Segal

## ARTICLES

### Fundamental concepts

Floquet engineering and simulating exceptional rings with a quantum spin system *(9 pages)* . . . . . 062201
Peng He and Ze-Hao Huang

**Copyright 2020 by American Physical Society**

*(Continued)*

2469-9926(202012)102:6:B;1-#

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

**PHYSICAL REVIEW A** **THIRD SERIES, VOLUME 102, NUMBER 6** **DECEMBER 2020**

Bulk-edge correspondence in nonunitary Floquet systems with chiral symmetry *(11 pages)* . . . . . 062202
Ken Mochizuki, Dakyeong Kim, Norio Kawakami, and Hideaki Obuse

Space-time-resolved quantum electrodynamics description of Compton scattering *(9 pages)* . . . . . 062203
Scott Glasgow and Michael J. Ware

℘ Wigner-friend scenarios with noninvasive weak measurements *(10 pages)* . . . . . 062204
A. Matzkin and D. Sokolovski

Method for driven-dissipative problems: Keldysh-Heisenberg equations *(9 pages)* . . . . . 062205
Yuanwei Zhang and Gang Chen

State distinguishability under weak measurement and postselection:
A unified system and device perspective *(11 pages)* . . . . . 062206
Philipp Stammer

Detectors interacting through quantum fields: Non-Markovian effects, nonperturbative generation of correlations, and apparent noncausality *(15 pages)* . . . . . 062207
Theodora Kolioni and Charis Anastopoulos

Experimental realization of high-fidelity teleportation via a non-Markovian open quantum system *(6 pages)* . . . . . 062208
Zhao-Di Liu, Yong-Nan Sun, Bi-Heng Liu, Chuan-Feng Li, Guang-Can Guo, Sina Hamedani Raja, Henri Lyyra, and Jyrki Piilo

Non-Markovian channel from the reduced dynamics of a coin in a quantum walk *(9 pages)* . . . . . 062209
Javid Naikoo, Subhashish Banerjee, and C. M. Chandrashekar

Necessity of negative Wigner function for tunneling *(14 pages)* . . . . . 062210
Yin Long Lin and Oscar C. O. Dahlsten

Quantum states as observables: Their variance and nonclassicality *(6 pages)* . . . . . 062211
Yue Zhang and Shunlong Luo

Absolute fraction of emitted Ps determined by GEANT4-supported analysis of gamma spectra *(8 pages)* . . . . . 062212
B. Rienäcker, T. Gigl, G. Nebbia, F. Pino, and C. Hugenschmidt

Superexponential diffusion in nonlinear non-Hermitian systems *(6 pages)* . . . . . 062213
Wen-Lei Zhao, Longwen Zhou, Jie Liu, Peiqing Tong, and Kaiqian Huang

Probing quantum coherence at a distance and Aharonov-Bohm nonlocality *(10 pages)* . . . . . 062214
Sebastian Horvat, Philippe Allard Guérin, Luca Apadula, and Flavio Del Santo

Contextuality of quantum fluctuations characterized by conditional weak values of entangled states *(7 pages)* . . . . 062215
Holger F. Hofmann

Quantum dynamics under simultaneous and continuous measurement of noncommutative observables *(11 pages)* 062216
Chao Jiang and Gentaro Watanabe

℘ Physics-inspired forms of the Bayesian Cramér-Rao bound *(13 pages)* . . . . . 062217
Mankei Tsang

Angular momentum quantum backflow in the noncommutative plane *(9 pages)* . . . . . 062218
Valentin Daniel Paccoia, Orlando Panella, and Pinaki Roy

*(Continued)*

℘ The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

**PHYSICAL REVIEW A** **THIRD SERIES, VOLUME 102, NUMBER 6** **DECEMBER 2020**

Entanglement-preserving limit cycles from sequential quantum measurements and feedback *(14 pages)* . . . . . 062219
Philippe Lewalle, Cyril Elouard, and Andrew N. Jordan

Long-time semiclassical evolution of spinlike systems from Majorana sampling *(10 pages)* . . . . . 062220
Iván F. Valtierra and Andrei B. Klimov

Instantaneous angular velocity of quantum evolution *(8 pages)* . . . . . 062221
Jie-Hui Huang, Li-Yun Hu, and Fu-Yao Liu

Quantum cellular automata and quantum field theory in two spatial dimensions *(11 pages)* . . . . . 062222
Todd A. Brun and Leonard Mlodinow

**Quantum information science**

Optimal extensions of resource measures and their applications *(13 pages)* . . . . . 062401
Gilad Gour and Marco Tomamichel

Minimal distances for certain quantum product codes and tensor products of chain complexes *(15 pages)* . . . . . 062402
Weilei Zeng and Leonid P. Pryadko

Quantum subspace alignment for domain adaptation *(8 pages)* . . . . . 062403
Xi He

Polynomial scaling of the quantum approximate optimization algorithm for ground-state preparation of the fully connected *p*-spin ferromagnet in a transverse field *(10 pages)* . . . . . 062404
Matteo M. Wauters, Glen B. Mbeng, and Giuseppe E. Santoro

Quantum adiabatic machine learning by zooming into a region of the energy surface *(8 pages)* . . . . . 062405
Alexander Zlokapa, Alex Mott, Joshua Job, Jean-Roch Vlimant, Daniel Lidar, and Maria Spiropulu

Implementable hybrid entanglement witness *(12 pages)* . . . . . 062406
Gaël Massé, Thomas Coudreau, Arne Keller, and Perola Milman

Data-driven inference, reconstruction, and observational completeness of quantum devices *(13 pages)* . . . . . 062407
Michele Dall'Arno, Francesco Buscemi, Alessandro Bisio, and Alessandro Tosini

Fast parametric two-qubit gates with suppressed residual interaction using the second-order nonlinearity of a cubic transmon *(11 pages)* . . . . . 062408
Atsushi Noguchi, Alto Osada, Shumpei Masuda, Shingo Kono, Kentaro Heya, Samuel Piotr Wolski, Hiroki Takahashi, Takanori Sugiyama, Dany Lachance-Quirion, and Yasunobu Nakamura

Localization of rung pairs in a hard-core Bose-Hubbard ladder *(9 pages)* . . . . . 062409
Shang-Shu Li, Zi-Yong Ge, and Heng Fan

Complete and nondestructive distinguishment of many-body Rydberg entanglement via robust geometric quantum operations *(14 pages)* . . . . . 062410
F.-Q. Guo, J.-L. Wu, X.-Y. Zhu, Z. Jin, Y. Zeng, S. Zhang, L.-L. Yan, M. Feng, and S.-L. Su

Continuous-variable gate teleportation and bosonic-code error correction *(19 pages)* . . . . . 062411
Blayney W. Walshe, Ben Q. Baragiola, Rafael N. Alexander, and Nicolas C. Menicucci

Capacity-approaching quantum repeaters for quantum communications *(9 pages)* . . . . . 062412
Masoud Ghalaii and Stefano Pirandola

*(Continued)*

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

**PHYSICAL REVIEW A** **THIRD SERIES, VOLUME 102, NUMBER 6** **DECEMBER 2020**

Calculating Rényi entropies with neural autoregressive quantum states *(11 pages)* . . . . . 062413
Zhaoyou Wang and Emily J. Davis

Tensor-network-based machine learning of non-Markovian quantum processes *(8 pages)* . . . . . 062414
Chu Guo, Kavan Modi, and Dario Poletti

Sufficient conditions and constraints for reversing general quantum errors *(10 pages)* . . . . . 062415
Alvin Gonzales, Daniel Dilley, and Mark Byrd

Generation and distribution of atomic entanglement in coupled-cavity arrays *(8 pages)* . . . . . 062416
J. P. Mendonça, F. A. B. F. de Moura, M. L. Lyra, and G. M. A. Almeida

Decoding holographic codes with an integer optimization decoder *(6 pages)* . . . . . 062417
Robert J. Harris, Elliot Coupe, Nathan A. McMahon, Gavin K. Brennen, and Thomas M. Stace

Locally optimal measurement-based quantum feedback with application to multiqubit entanglement generation *(17 pages)* . . . . . 062418
Song Zhang, Leigh S. Martin, and K. Birgitta Whaley

Entanglement and quantum discord in optically coupled coherent Ising machines *(15 pages)* . . . . . 062419
Yoshitaka Inui and Yoshihisa Yamamoto

Blurred quantum Darwinism across quantum reference frames *(22 pages)* . . . . . 062420
Thao P. Le, Piotr Mironowicz, and Paweł Horodecki

Fast computation of spherical phase-space functions of quantum many-body states *(12 pages)* . . . . . 062421
Bálint Koczor, Robert Zeier, and Steffen J. Glaser

Entanglement generation in quantum thermal machines *(8 pages)* . . . . . 062422
Milton Aguilar, Nahuel Freitas, and Juan Pablo Paz

Open quantum systems integrable by partial commutativity *(10 pages)* . . . . . 062423
Artur Czerwinski

Quantification and observation of genuine three-party coherence: A solution based on classical optics *(9 pages)* . . . . . 062424
X.-F. Qian, S. A. Wadood, A. N. Vamivakas, and J. H. Eberly

Computation of molecular excited states on IBM quantum computers using a discriminative variational quantum eigensolver *(9 pages)* . . . . . 062425
Jules Tilly, Glenn Jones, Hongxiang Chen, Leonard Wossnig, and Edward Grant

Improving qubit readout with hidden Markov models *(9 pages)* . . . . . 062426
Luis A. Martinez, Yaniv J. Rosen, and Jonathan L. DuBois

Increasing the dimension of the maximal pure coherent subspace of a state via incoherent operations *(7 pages)* . . . 062427
C. L. Liu and D. L. Zhou

Monogamy and polygamy for generalized $W$-class states using Rényi-$\alpha$ entropy *(14 pages)* . . . . . 062428
Yanying Liang, Zhu-Jun Zheng, and Chuan-Jie Zhu

Dynamics of spatially indistinguishable particles and quantum entanglement protection *(15 pages)* . . . . . 062429
Farzam Nosrati, Alessia Castellini, Giuseppe Compagno, and Rosario Lo Franco

*(Continued)*

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

**PHYSICAL REVIEW A** **THIRD SERIES, VOLUME 102, NUMBER 6** **DECEMBER 2020**

Modified graph-state codes for single-node recovery in quantum distributed storage *(12 pages)* . . . . . 062430
Priya J. Nadkarni, Ankur Raina, and Shayan Srinivasa Garani

Growth of genuine multipartite entanglement in random unitary circuits *(10 pages)* . . . . . 062431
Anindita Bera and Sudipto Singha Roy

**Quantum technologies**

Spin-orbit implementation of the Solovay-Kitaev decomposition of single-qubit channels *(13 pages)* . . . . . 062601
M. H. M. Passos, A. de Oliveira Junior, M. C. de Oliveira, A. Z. Khoury, and J. A. O. Huguenin

Improving the performance of reference-frame-independent quantum key distribution through a turbulent atmosphere *(8 pages)* . . . . . 062602
Yang Xue, Lei Shi, Wei Chen, Zhenqiang Yin, Guan-jie Fan-Yuan, Haiyang Fu, Qihang Lu, and Jiahua Wei

Accelerated adiabatic quantum search algorithm via pulse control in a non-Markovian environment *(8 pages)* . . . . 062603
Feng-Hua Ren, Zhao-Ming Wang, and Lian-Ao Wu

Assessing three closed-loop learning algorithms by searching for high-quality quantum control pulses *(8 pages)* . . . . . 062605
Xiao-dong Yang, Christian Arenz, Istvan Pelczer, Qi-Ming Chen, Re-Bing Wu, Xinhua Peng, and Herschel Rabitz

Fluctuation-guided search in quantum annealing *(14 pages)* . . . . . 062606
Nicholas Chancellor

Loss-tolerant quantum key distribution with mixed signal states *(11 pages)* . . . . . 062607
J. Eli Bourassa, Ignatius William Primaatmaja, Charles Ci Wen Lim, and Hoi-Kwong Lo

Optical quantum communication complexity in the simultaneous-message-passing model *(8 pages)* . . . . . 062608
Ashutosh Marwah and Dave Touchette

Perfect state transfer on hypercubes and its implementation using superconducting qubits *(9 pages)* . . . . . 062609
Siddhant Singh, Bibhas Adhikari, Supriyo Dutta, and David Zueco

Squeezing as a resource to counteract phase diffusion in optical phase estimation *(7 pages)* . . . . . 062610
G. Carrara, M. G. Genoni, S. Cialdi, M. G. A. Paris, and S. Olivares

Time-resolved tomography of a driven adiabatic quantum simulation *(5 pages)* . . . . . 062611
Gian Salis, Nikolaj Moll, Marco Roth, Marc Ganzhorn, and Stefan Filipp

Efficient quantum circuits for quantum computational chemistry *(7 pages)* . . . . . 062612
Yordan S. Yordanov, David R. M. Arvidsson-Shukur, and Crispin H. W. Barnes

Measure of the density of quantum states in information geometry and quantum multiparameter estimation *(13 pages)* . . . . . 062613
Haijun Xing and Libin Fu

Simple heuristics for efficient parallel tensor contraction and quantum circuit simulation *(11 pages)* . . . . . 062614
Roman Schutski, Taras Khakhulin, Ivan Oseledets, and Dmitry Kolmakov

Geometry of symmetric and noninvertible Pauli channels *(9 pages)* . . . . . 062615
Katarzyna Siudzińska

*(Continued)*

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

**PHYSICAL REVIEW A** **THIRD SERIES, VOLUME 102, NUMBER 6** **DECEMBER 2020**

Generalized Hamiltonian to describe imperfections in ion-light interaction *(12 pages)* . . . . . 062616
Ming Li, Kenneth Wright, Neal C. Pisenti, Kristin M. Beck, Jason H. V. Nguyen, and Yunseong Nam

**Atomic and molecular structure and dynamics; high-precision experiments**

Energy levels of radium monofluoride RaF in external electric and magnetic fields to search for $P$- and $T$, $P$-violation effects *(6 pages)* . . . . . 062801
A. N. Petrov and L. V. Skripnikov

Long-range Rydberg molecule $Rb_2$: Two-electron $R$-matrix calculations at intermediate internuclear distances *(14 pages)* . . . . . 062802
Michal Tarana

Trajectory-dependent electronic excitations by light and heavy ions around and below the Bohr velocity *(8 pages)* 062803
S. Lohmann, R. Holeňák, and D. Primetzhofer

$K$-shell ionization and characteristic x-ray radiation by high-energy electrons in multifoil targets *(10 pages)* . . . . . 062804
S. V. Trofymenko

Magic wavelengths of the Yb ($6s^2\ {}^1S_0$–$6s6p\ {}^3P_1$) intercombination transition *(4 pages)* . . . . . 062805
T. A. Zheng, Y. A. Yang, M. S. Safronova, U. I. Safronova, Zhuan-Xian Xiong, T. Xia, and Z.-T. Lu

Potential-energy curve for the $a\,{}^3\Sigma_u^+$ state of a lithium dimer with Slater-type orbitals *(11 pages)* . . . . . 062806
Michał Lesiuk, Monika Musiał, and Robert Moszynski

Quantum gravity witness via entanglement of masses: Casimir screening *(12 pages)* . . . . . 062807
Thomas W. van de Kamp, Ryan J. Marshman, Sougato Bose, and Anupam Mazumdar

Delayed fragmentation of propyne and allene in collisions with highly charged ions *(6 pages)* . . . . . 062808
Hang Yuan, Shenyue Xu, Taotao Li, Yu Liu, Dongbin Qian, Dalong Guo, Xiaolong Zhu, and Xinwen Ma

Photoelectron spectroscopy of laser-dressed atomic helium *(6 pages)* . . . . . 062809
Severin Meister, Aaron Bondy, Kirsten Schnorr, Sven Augustin, Hannes Lindenblatt, Florian Trost, Xinhua Xie, Markus Braune, Rolf Treusch, Bastian Manschwetus, Nora Schirmel, Harald Redlin, Nicolas Douguet, Thomas Pfeifer, Klaus Bartschat, and Robert Moshammer

Rovibrational quenching of $C_2^-$ anions in collisions with He, Ne, and Ar atoms *(12 pages)* . . . . . 062810
Barry P. Mant, Franco A. Gianturco, Roland Wester, Ersin Yurtsever, and Lola González-Sánchez

Radiobiological effectiveness of iodouracil and the influence of atomic giant resonance *(7 pages)* . . . . . 062811
Anuvab Mandal, Madhusree Roy Chowdhury, Chandan Bagdia, Juan M. Monti, Roberto D. Rivarola, P. F. Weck, and Lokesh C. Tribedi

Reflection of Rydberg antihydrogen by surfaces *(7 pages)* . . . . . 062812
D. Comparat

Triple-differential cross sections for $(e, 2e)$ electron-impact ionization dynamics of tetrahydrofuran at low projectile energy *(8 pages)* . . . . . 062813
Enliang Wang, Xueguang Ren, Maomao Gong, Esam Ali, Zhenpeng Wang, Chao Ma, Don Madison, Xiangjun Chen, and Alexander Dorn

Cold-atom–dimer reaction rates with $^4$He, $^{6,7}$Li, and $^{23}$Na *(20 pages)* . . . . . 062814
M. A. Shalchi, M. T. Yamashita, T. Frederico, and Lauro Tomio

*(Continued)*

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

**PHYSICAL REVIEW A** **THIRD SERIES, VOLUME 102, NUMBER 6** **DECEMBER 2020**

Strengthening the case for interatomic Coulomb decay as a subdominant reaction channel in slow $O^{3+}$-$Ne_2$ collisions with independent-atom-model coupled-channel calculations *(9 pages)* . . . . . 062816
Dyuman Bhattacharya and Tom Kirchner

Measurement of the Rb *g*-series quantum defect using two-photon microwave spectroscopy *(9 pages)* . . . . . 062817
K. Moore, A. Duspayev, R. Cardman, and G. Raithel

Core polarizability of rubidium using spectroscopy of the *ng* to *nh*, *ni* Rydberg transitions *(10 pages)* . . . . . 062818
S. J. Berl, C. A. Sackett, T. F. Gallagher, and J. Nunkaew

Photodissociation of long-range Rydberg molecules *(8 pages)* . . . . . 062819
Michael Peper and Johannes Deiglmayr

Energy interval $3S$-$1S$ in muonic hydrogen *(16 pages)* . . . . . 062820
A. E. Dorokhov, R. N. Faustov, A. P. Martynenko, and F. A. Martynenko

Thermal effects on helium scattering from LiF(001) at grazing incidence *(8 pages)* . . . . . 062821
L. Frisco and M. S. Gravielle

Electron-impact vibrational excitation of isocyanic acid HNCO *(6 pages)* . . . . . 062822
Ragesh Kumar T. P., P. Nag, M. Ranković, R. Čurík, A. Knížek, S. Civiš, M. Ferus, J. Trnka, K. Houfek, M. Čížek, and J. Fedor

Absolute rate coefficients for dielectronic recombination of Na-like $Kr^{25+}$ *(11 pages)* . . . . . 062823
Z. K. Huang, W. Q. Wen, S. X. Wang, N. Khan, H. B. Wang, C. Y. Chen, C. Y. Zhang, S. P. Preval, N. R. Badnell, W. L. Ma, X. Liu, D. Y. Chen, X. L. Zhu, D. M. Zhao, L. J. Mao, X. M. Ma, J. Li, M. T. Tang, R. S. Mao, D. Y. Yin, W. Q. Yang, J. C. Yang, Y. J. Yuan, L. F. Zhu, and X. Ma

Ground-state $g_j$ factors of the $Cd^+$, $Yb^+$, and $Hg^+$ ions *(7 pages)* . . . . . 062824
Y. M. Yu, B. K. Sahoo, and B. B. Suo

Low-lying $^2S$ states of the singly charged carbon ion *(10 pages)* . . . . . 062825
István Hornyák, Ludwik Adamowicz, and Sergiy Bubin

Systematic study of Coulomb confinement resonances of atoms trapped inside charged fullerenes *(10 pages)* . . . . 062826
Afsal Thuppilakkadan, Jobin Jose, and Hari R. Varma

## PART B

### Light-induced processes in atomic-scale systems

Knotted trajectories of neutral and charged particles in Gaussian light beams *(9 pages)* . . . . . 063101
Tomasz Radożycki

Terahertz-field-induced near-cutoff even-order harmonics in a femtosecond laser *(10 pages)* . . . . . 063102
Bing-Yu Li, Jincang Zhang, Yizhu Zhang, Tian-Min Yan, and Y. H. Jiang

Time-dependent electronic current densities in chiral molecules *(9 pages)* . . . . . 063103
Sucharita Giri, Alexandra Maxi Dudzinski, Jean Christophe Tremblay, and Gopal Dixit

General characterization of partially oriented polar molecules by the time-frequency profile of high-order harmonic generation *(12 pages)* . . . . . 063104
Ngoc-Loan Phan, Kim-Ngan H. Nguyen, Cam-Tu Le, DinhDuy Vu, Khang Tran, and Van-Hoang Le

*(Continued)*

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

**PHYSICAL REVIEW A** **THIRD SERIES, VOLUME 102, NUMBER 6** **DECEMBER 2020**

Electrons in intense laser fields with local phase, polarization, and skyrmionic textures *(15 pages)* . . . . . 063105
Jonas Wätzel and Jamal Berakdar

Transporting cold atoms using an optically compensated zoom lens *(9 pages)* . . . . . 063106
Jae Hoon Lee, Haejun Jung, Jae-yoon Choi, and Jongchul Mun

Enhanced atom-by-atom assembly of arbitrary tweezer arrays *(10 pages)* . . . . . 063107
Kai-Niklas Schymik, Vincent Lienhard, Daniel Barredo, Pascal Scholl, Hannah Williams, Antoine Browaeys, and Thierry Lahaye

Relativistic effects in photoionizing a circular Rydberg state in the optical regime *(7 pages)* . . . . . 063108
Tor Kjellsson Lindblom, Morten Førre, Eva Lindroth, and Sølve Selstø

Relativistic ionization dynamics of hydrogenlike ions in strong electromagnetic fields: Generalized pseudospectral method for the time-dependent Dirac equation *(13 pages)* . . . . . 063109
Dmitry A. Telnov and Shih-I Chu

Locally monochromatic approximation to QED in intense laser fields *(17 pages)* . . . . . 063110
T. Heinzl, B. King, and A. J. MacLeod

Multielectron effects in strong-field ionization of the oriented OCS molecule *(7 pages)* . . . . . 063111
Mahmoud Abu-samha and Lars Bojer Madsen

Invariant-based inverse engineering of time-dependent, coupled harmonic oscillators *(7 pages)* . . . . . 063112
A. Tobalina, E. Torrontegui, I. Lizuain, M. Palmero, and J. G. Muga

Morris-Shore transformation for nondegenerate systems *(8 pages)* . . . . . 063113
K. N. Zlatanov, G. S. Vasilev, and N. V. Vitanov

Simultaneous preparation of two initial clock states in a thulium optical clock *(9 pages)* . . . . . 063114
E. Fedorova, A. Golovizin, D. Tregubov, D. Mishin, D. Provorchenko, V. Sorokin, K. Khabarova, and N. Kolachevsky

Resonant two-photon ionization of atoms by twisted and plane-wave light *(8 pages)* . . . . . 063115
V. P. Kosheleva, V. A. Zaytsev, R. A. Müller, A. Surzhykov, and S. Fritzsche

Vector polarizability of an atomic state induced by a linearly polarized vortex beam: External control of magic, tune-out wavelengths, and heteronuclear spin oscillations *(10 pages)* . . . . . 063116
Anal Bhowmik, Narendra Nath Dutta, and Sonjoy Majumder

Adiabatic elimination in strong-field light-matter coupling *(7 pages)* . . . . . 063117
Brian Kaufman, Tamás Rozgonyi, Philipp Marquetand, and Thomas Weinacht

Role of dipole-forbidden autoionizing resonances in nonresonant one-color two-photon single ionization of $N_2$ *(10 pages)* . . . . . 063118
Kirk A. Larsen, Roger Y. Bello, Robert R. Lucchese, Thomas N. Rescigno, C. William McCurdy, Daniel S. Slaughter, and Thorsten Weber

Analytic description of the above-threshold detachment in the adiabatic limit *(17 pages)* . . . . . 063119
A. V. Flegel, N. L. Manakov, A. V. Sviridov, M. V. Frolov, Lei Geng, and Liang-You Peng

Optimal field-free molecular orientation with nonresonant two-color adiabatic-turn-on and sudden-turn-off laser pulses *(10 pages)* . . . . . 063120
Shuo Wang and Niels E. Henriksen

*(Continued)*

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

**PHYSICAL REVIEW A** **THIRD SERIES, VOLUME 102, NUMBER 6** **DECEMBER 2020**

Controlled melting of a Wigner ion crystal with atomic resolution *(11 pages)* . . . . . 063121
Y.-Z. Xu, W.-D. Zhao, Y.-H. Hou, Q.-X. Mei, J.-Y. Ma, J. Wang, L. He, Z.-C. Zhou, Y.-K. Wu, and L.-M. Duan

Radio frequency field-induced electron mobility in an ultracold plasma state of arrested relaxation *(12 pages)* . . . . 063122
R. Wang, M. Aghigh, K. L. Marroquín, K. M. Grant, J. Sous, F. B. V. Martins, J. S. Keller, and E. R. Grant

Two-color-driven enhanced high-order harmonic generation in solids *(15 pages)* . . . . . 063123
Francisco Navarrete and Uwe Thumm

Orientational quantum revivals induced by a single-cycle terahertz pulse *(8 pages)* . . . . . 063124
Chuan-Cun Shu, Qian-Qian Hong, Yu Guo, and Niels E. Henriksen

Laser-induced Coulomb-explosion imaging of the $CS_2$ dimer: The effect of non-Coulombic interactions *(8 pages)* 063125
Constant A. Schouder, Adam S. Chatterley, Lars Bojer Madsen, Frank Jensen, and Henrik Stapelfeldt

Minimizing the duration of isolated attosecond pulses *(14 pages)* . . . . . 063126
Dian Peng (彭典), Anthony F. Starace, Hua-Chieh Shao, and Jean Marcel Ngoko Djiokap

Quantum rotor atoms in light beams with orbital angular momentum: Highly accurate rotation sensor *(9 pages)* . . . . . 063127
Igor Kuzmenko, Tetyana Kuzmenko, and Yehuda B. Band

Towards atom-scale spin-selective electron emitters based on strong-field Freeman resonant ionization *(7 pages)* . . . . . 063128
Shengliang Xu, Qingbin Zhang, Xianglong Fu, Xiang Huang, Xu Han, Min Li, Wei Cao, and Peixiang Lu

**Ultracold systems and matter waves**

Topological phases of spinless *p*-orbital fermions in zigzag optical lattices *(6 pages)* . . . . . 063301
Gaoyong Sun, Wen-Long You, and Tao Zhou

Current production in ring condensates with a weak link *(9 pages)* . . . . . 063302
Axel Pérez-Obiol, Juan Polo, and Taksu Cheon

Thermodynamics of dilute Bose gases: Beyond mean-field theory for binary mixtures of Bose-Einstein condensates *(16 pages)* . . . . . 063303
Miki Ota and Stefano Giorgini

Trapped Bose-Bose mixtures at finite temperature: A quantum Monte Carlo approach *(7 pages)* . . . . . 063304
K. Dželalija, V. Cikojević, J. Boronat, and L. Vranješ Markić

Polariton-polariton interaction beyond the Born approximation: A toy model study *(11 pages)* . . . . . 063305
Hui Hu, Hui Deng, and Xia-Ji Liu

Tan's contact as an indicator of completeness and self-consistency of a theory *(8 pages)* . . . . . 063306
Abdulla Rakhimov

Vortex structures in a rotating Rydberg-dressed Bose-Einstein condensate with the Lee-Huang-Yang correction *(9 pages)* . . . . . 063307
Che-Hsiu Hsueh, Ching-Wei Wang, and Wen-Chin Wu

Measurement of a one-dimensional matter-wave quantum breather *(9 pages)* . . . . . 063308
Piotr Staroń, Andrzej Syrwid, and Krzysztof Sacha

*(Continued)*

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

**PHYSICAL REVIEW A** **THIRD SERIES, VOLUME 102, NUMBER 6** **DECEMBER 2020**

Self-trapped atomic matter wave in a ring cavity *(9 pages)* . . . . . 063309
Jieli Qin and Lu Zhou

Finite-momentum condensate brought on by a Zeeman field *(9 pages)* . . . . . 063310
Stephen Keeling and Predrag Nikolić

Dynamical Zeeman resonance in spin-orbit-coupled spin-1 Bose gases *(9 pages)* . . . . . 063311
Jingtao Fan, Gang Chen, and Suotang Jia

Bound states of an ultracold atom interacting with a set of stationary impurities *(11 pages)* . . . . . 063312
Marta Sroczyńska and Zbigniew Idziaszek

Universal and Efimov trimers in an alkaline-earth-metal and alkali-metal gas mixture with spin-orbit coupling *(11 pages)* . . . . . 063313
Qing Ji, Ren Zhang, and Wei Zhang

Cumulant theory of the unitary Bose gas: Prethermal and Efimovian dynamics *(29 pages)* . . . . . 063314
V. E. Colussi, H. Kurkjian, M. Van Regemortel, S. Musolino, J. van de Kraats, M. Wouters, and S. J. J. M. F. Kokkelmans

Topological Floquet engineering of a one-dimensional optical lattice via resonant shaking with two harmonic frequencies *(10 pages)* . . . . . 063315
Jin Hyoun Kang and Yong-il Shin

Fractional Chern insulators of few bosons in a box: Hall plateaus from center-of-mass drifts and density profiles *(12 pages)* . . . . . 063316
C. Repellin, J. Léonard, and N. Goldman

Loss rates for high-$n$, $49 \lesssim n \lesssim 150$, $5sns$ ($^3S_1$) Rydberg atoms excited in an $^{84}$Sr Bose-Einstein condensate *(8 pages)* . . . . . 063317
S. K. Kanungo, J. D. Whalen, Y. Lu, T. C. Killian, F. B. Dunning, S. Yoshida, and J. Burgdörfer

Topological transition from superfluid vortex rings to isolated knots and links *(11 pages)* . . . . . 063318
Wen-Kai Bai, Tao Yang, and Wu-Ming Liu

Far-away-from-equilibrium quantum-critical conformal dynamics: Reversibility, thermalization, and hydrodynamics *(10 pages)* . . . . . 063319
Jeff Maki and Fei Zhou

Few bosons to many bosons inside the unitary window: A transition between universal and nonuniversal behavior *(6 pages)* . . . . . 063320
A. Kievsky, A. Polls, B. Juliá-Díaz, N. K. Timofeyuk, and M. Gattobigio

Scattering of two heavy Fermi polarons: Resonances and quasibound states *(7 pages)* . . . . . 063321
Tilman Enss, Binh Tran, Michael Rautenberg, Manuel Gerken, Eleonora Lippi, Moritz Drescher, Bing Zhu, Matthias Weidemüller, and Manfred Salmhofer

Exploring chemical reactions in a quantum degenerate gas of polar molecules via complex formation *(12 pages)* . . . . . 063322
Peiru He, Thomas Bilitewski, Chris H. Greene, and Ana Maria Rey

Matter-wave fractional revivals in a ring waveguide *(6 pages)* . . . . . 063323
Jayanta Bera, Suranjana Ghosh, Luca Salasnich, and Utpal Roy

*(Continued)*

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

**PHYSICAL REVIEW A** **THIRD SERIES, VOLUME 102, NUMBER 6** **DECEMBER 2020**

Producing flow in racetrack atom circuits by stirring *(13 pages)* . . . . . 063324
Benjamin Eller, Olatunde Oladehin, Daniel Fogarty, Clayton Heller, Charles W. Clark, and Mark Edwards

Interaction-induced doublons and embedded topological subspace in a complete flat-band system *(10 pages)* . . . . 063325
Yoshihito Kuno, Tomonari Mizoguchi, and Yasuhiro Hatsugai

Atomic Raman scattering: Third-order diffraction in a double geometry *(12 pages)* . . . . . 063326
Sabrina Hartmann, Jens Jenewein, Sven Abend, Albert Roura, and Enno Giese

Tunable flux through a synthetic Hall tube of neutral fermions *(7 pages)* . . . . . 063327
Xi-Wang Luo, Jing Zhang, and Chuanwei Zhang

Symmetry breaking and phase transitions in Bose-Einstein condensates with spin–orbital-angular-momentum coupling *(9 pages)* . . . . . 063328
Y. Duan, Y. M. Bidasyuk, and A. Surzhykov

Nonlinear dynamics of Rydberg-dressed Bose-Einstein condensates in a triple-well potential *(12 pages)* . . . . . 063329
Gary McCormack, Rejish Nath, and Weibin Li

Breakup of rotating asymmetric quartic-quadratic trapped condensates *(13 pages)* . . . . . 063330
Leonardo Brito, Alex Andriati, Lauro Tomio, and Arnaldo Gammal

**Photonics, nonlinear optics, and optomechanics**

Manipulating the steady-state entanglement via three-level atoms in a hybrid levitated optomechanical system *(10 pages)* . . . . . 063501
Guoyao Li, Wenjie Nie, Yu Wu, Qinghong Liao, Aixi Chen, and Yueheng Lan

Rotating azimuthons in dissipative Kerr media excited by superpositions of Bessel beams *(10 pages)* . . . . . 063502
Carlos Ruiz-Jiménez, Hervé Leblond, Miguel A. Porras, and Boris A. Malomed

Non-Hermitian analysis of surface creeping waves in optical microcavities: Nature of external resonances *(8 pages)* . . . . . 063503
Chang-Hwan Yi, Hyeon-Hye Yu, and Chil-Min Kim

Discrete spectrum radiation from a charged particle moving in a medium with Maxwell's fish-eye refraction-index profile *(5 pages)* . . . . . 063504
Zhyrair Gevorkian and Mher Davtyan

Three-dimensional nonlinear optical holograms *(6 pages)* . . . . . 063505
Yujia Wu, Haigang Liu, and Xianfeng Chen

Improved coupled-mode theory for high-index-contrast photonic platforms *(9 pages)* . . . . . 063506
Qing Li, Gregory Moille, Hossein Taheri, Ali Adibi, and Kartik Srinivasan

Optimal correlation order in superresolution optical fluctuation microscopy *(13 pages)* . . . . . 063507
S. Vlasenko, A. B. Mikhalychev, I. L. Karuseichyk, D. A. Lyakhov, D. L. Michels, and D. Mogilevtsev

Scattering electromagnetic eigenstates of a two-constituent composite and their exploitation for calculating a physical field *(19 pages)* . . . . . 063508
David J. Bergman, Parry Y. Chen, and Asaf Farhi

Efficient spatiotemporal-vortex four-wave mixing in a semiconductor nanostructure *(8 pages)* . . . . . 063509
Zhiping Wang, Yufeng Zhang, Emmanuel Paspalakis, and Benli Yu

*(Continued)*

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

**PHYSICAL REVIEW A** **THIRD SERIES, VOLUME 102, NUMBER 6** **DECEMBER 2020**

Hidden momentum in continuous media and the Abraham-Minkowski debate *(10 pages)* . . . . . 063510
Raul Corrêa and Pablo L. Saldanha

Theory of reflectionless scattering modes *(20 pages)* . . . . . 063511
William R. Sweeney, Chia Wei Hsu, and A. Douglas Stone

Space-time nonseparable pulses: Constructing isodiffracting donut pulses from plane waves and single-cycle pulses *(13 pages)* . . . . . 063512
Apostolos Zdagkas, Nikitas Papasimakis, Vassili Savinov, and Nikolay I. Zheludev

Correlation-induced orbital angular momentum changes *(5 pages)* . . . . . 063513
Yongtao Zhang, Olga Korotkova, Yangjian Cai, and Greg Gbur

Bipolar-variant spin angular momentum and its evolution in a tight focusing process *(7 pages)* . . . . . 063514
Xu-Zhen Gao (高旭珍), Jia-Hao Zhao (赵嘉豪), Meng-Shuai Wang (王梦帅), Jin-Jin Liu (刘进进), Guang-Bo Zhang (张广博), and Yue Pan (潘岳)

Influence of fifth-order nonlinearities on the statistical fluctuations in emission intensities in a photonic open-cavity complex system *(6 pages)* . . . . . 063515
Iván R. R. González, Ernesto P. Raposo, Sandra J. Carreño, Antônio M. S. Macêdo, Melissa Maldonado, Leonardo de S. Menezes, Anderson S. L. Gomes, and Cid B. de Araújo

Trapping effect and trajectory control of surface plasmon polaritons in a metal-dielectric-metal waveguide *(10 pages)* . . . . . 063516
Yong Zhou, Qi Liu, Chuan-kui Wang, and Chaohua Tan

Cherenkov radiation and emission of surface polaritons from charges moving paraxially outside a dielectric cylindrical waveguide *(18 pages)* . . . . . 063517
A. A. Saharian, L. Sh. Grigoryan, A. Kh. Grigorian, H. F. Khachatryan, and A. S. Kotanjyan

Optomechanical entanglement at room temperature: A simulation study with realistic conditions *(7 pages)* . . . . . 063518
Kahlil Y. Dixon, Lior Cohen, Narayan Bhusal, Christopher Wipf, Jonathan P. Dowling, and Thomas Corbitt

Partially coherent quasi-Airy beams with controllable acceleration *(9 pages)* . . . . . 063519
Zihao Pang, Xiaoyan Zhou, Zhenglin Liu, and Daomu Zhao

Single-nanorod plasmon nanolaser: A route toward a three-dimensional ultraconfined lasing mode *(8 pages)* . . . . . 063520
Yixiao Gao, Hao Wu, Ning Zhou, Yuxin Yang, Xin Guo, Pan Wang, Jianqiang You, Ying Gu, Guowei Lu, Qihuang Gong, and Limin Tong

Implementation of generalized Harvey-Shack theory in light scattering from rough surfaces *(11 pages)* . . . . . 063521
M. Günöven, H. Nasser, M. Ünal, Ö. Aytekin, R. Turan, and A. Bek

Coherent control of boosted terahertz radiation from air plasma pumped by a femtosecond three-color sawtooth field *(7 pages)* . . . . . 063522
Shaojie Liu, Zhengquan Fan, Chenhui Lu, Jieyu Gui, Cheng Luo, Shixiang Wang, Qingqing Liang, Bin Zhou, Aurelién Houard, André Mysyrowicz, Vasily Kostin, and Yi Liu

Displacement sensing beyond the standard quantum limit with intensity-dependent optomechanical coupling *(8 pages)* . . . . . 063523
U. Satya Sainadh and M. Anil Kumar

Temporal phase-contrast ghost imaging *(5 pages)* . . . . . 063524
Antti Hannonen, Andriy Shevchenko, Ari T. Friberg, and Tero Setälä

*(Continued)*

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

**PHYSICAL REVIEW A** **THIRD SERIES, VOLUME 102, NUMBER 6** **DECEMBER 2020**

Transient perturbative nonlinear responses of plasmonic materials *(7 pages)* . . . . . 063525
Mikko J. Huttunen, Jussi Kelavuori, and Marco Ornigotti

Sub-Rayleigh resolution of two incoherent sources by array homodyning *(9 pages)* . . . . . 063526
Chandan Datta, Marcin Jarzyna, Yink Loong Len, Karol Łukanowski, Jan Kołodyński, and Konrad Banaszek

Enhanced spin Hall effect of light scattering on a meta-atom with bianisotropy *(6 pages)* . . . . . 063527
Wenjia Li, Jianlong Liu, Yang Gao, Keya Zhou, and Shutian Liu

Attosecond-pulse formation in the water-window range by an optically dressed hydrogen-like plasma-based $C^{5+}$ x-ray laser *(16 pages)* . . . . . 063528
V. A. Antonov, I. R. Khairulin, and Olga Kocharovskaya

Simple unidirectional finite-energy pulses *(6 pages)* . . . . . 063529
Irina A. So, Alexandr B. Plachenov, and Aleksei P. Kiselev

Stimulated rotational Raman scattering of arbitrarily polarized broadband light *(13 pages)* . . . . . 063530
R. H. Lehmberg, M. F. Wolford, J. L. Weaver, D. Kehne, S. P. Obenschain, D. Eimerl, and J. P. Palastro

Excited-state quantum phase transitions in Kerr nonlinear oscillators *(7 pages)* . . . . . 063531
Qing-Wei Wang and Sha Wu

Vector-spherical-harmonics representation of vector complex source beams carrying vortices *(10 pages)* . . . . . 063532
S. Orlov and J. Berškys

Spin and orbital angular momentum dynamics in counterpropagating vectorially structured light *(7 pages)* . . . . . 063533
Hang Li, Valeria Rodriguez-Fajardo, Peifeng Chen, and Andrew Forbes

**Quantum optics**

Phonon-induced interactions and entanglement formation between two microcavity modes mediated by two semiconductor quantum dots *(9 pages)* . . . . . 063701
J. K. Verma, Harmanpreet Singh, P. K. Pathak, and S. Hughes

Superradiant switching, quantum hysteresis, and oscillations in a generalized Dicke model *(8 pages)* . . . . . 063702
Kevin C. Stitely, Stuart J. Masson, Andrus Giraldo, Bernd Krauskopf, and Scott Parkins

Nonexponential decay of a collective excitation in an atomic ensemble coupled to a one-dimensional waveguide *(15 pages)* . . . . . 063703
Jan Kumlin, Kevin Kleinbeck, Nina Stiesdal, Hannes Busche, Sebastian Hofferberth, and Hans Peter Büchler

Spontaneous emission in nanofibers doped with an ensemble of quantum dots and quantum emitters *(10 pages)* . . . . . 063704
Mahi R. Singh, Grant Brassem, and Patrick D. Persaud

Assumption-free measurement of the quantum state of light: Exploring the sidebands of intense fields *(14 pages)* . . . . . 063705
F. A. S. Barbosa, A. S. Coelho, K. N. Cassemiro, M. Martinelli, P. Nussenzveig, and A. S. Villar

Quadrupole absorption rate and orbital angular momentum transfer for atoms in optical vortices *(6 pages)* . . . . . 063706
Smail Bougouffa and Mohamed Babiker

High-fidelity and controllable cloning of high-dimensional optical beams with a Rydberg atomic gas *(13 pages)* . . . . . 063707
Lu Qin, Chao Hang, and Guoxiang Huang

*(Continued)*

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

**PHYSICAL REVIEW A** **THIRD SERIES, VOLUME 102, NUMBER 6** **DECEMBER 2020**

Bell-inequality violation by entangled single-photon states generated from a laser, an LED, or a halogen lamp *(15 pages)* . . . . . 063708
Matteo Pasini, Nicolò Leone, Sonia Mazzucchi, Valter Moretti, Davide Pastorello, and Lorenzo Pavesi

Single-photon switch controlled by a qubit embedded in an engineered electromagnetic environment *(13 pages)* . . . . . 063709
E. V. Stolyarov

Stabilization of adiabatic population transfer by strong coupling to a phonon bath *(8 pages)* . . . . . 063710
Michael Werther and Frank Grossmann

Superradiance, bosonic Peierls distortion, and lattice gauge theory in a generalized Rabi-Hubbard chain *(10 pages)* 063711
Axel Gagge and Jonas Larson

Higher-dimensional Hong-Ou-Mandel effect and state redistribution with linear-optical multiports *(11 pages)* . . . . 063712
Shuto Osawa, David S. Simon, and Alexander V. Sergienko

Optical Kerr nonlinearity in quantum-well microcavities: From polariton to dipolariton *(10 pages)* . . . . . 063713
H. Jabri and H. Eleuch

Multiphoton nonlinear frequency mixing effects on the coherent electromagnetically induced absorption spectra of $^{85}$Rb atoms under a longitudinal magnetic field: Theory and experiment *(9 pages)* . . . . . 063714
Zeeshan Ali Safdar Jadoon, Heung-Ryoul Noh, and Jin-Tae Kim

Generalized quantum scissors for noiseless linear amplification *(10 pages)* . . . . . 063715
Matthew S. Winnel, Nedasadat Hosseinidehaj, and Timothy C. Ralph

Estimating a fluctuating magnetic field with a continuously monitored atomic ensemble *(8 pages)* . . . . . 063716
Cheng Zhang and Klaus Mølmer

Measuring angular rotation via the rotatory dispersion effect *(7 pages)* . . . . . 063717
Chongqi Zhou, Suyi Zhong, Kaijie Ma, Yang Xu, Lixuan Shi, and Yonghong He

Theory of microwave-optical conversion using rare-earth-ion dopants *(9 pages)* . . . . . 063718
Peter S. Barnett and Jevon J. Longdell

Quantum limited superresolution of extended sources in one and two dimensions *(24 pages)* . . . . . 063719
Sudhakar Prasad

Broadband coherent optical memory based on electromagnetically induced transparency *(11 pages)* . . . . . 063720
Yan-Cheng Wei, Bo-Han Wu, Ya-Fen Hsiao, Pin-Ju Tsai, and Ying-Cheng Chen

Quantum criticality of the Rabi-Stark model at finite frequency ratios *(9 pages)* . . . . . 063721
Xiang-You Chen, You-Fei Xie, and Qing-Hu Chen

Resonant forward-scattered field in the high-saturation regime: Elastic and inelastic contributions *(10 pages)* . . . . 063722
C. C. Kwong, T. Wellens, K. Pandey, and D. Wilkowski

## ERRATA

Erratum: Quantum-tunneling isotope-exchange reaction $H_2 + D^- \rightarrow HD + H^-$ [Phys. Rev. A **97**, 022705 (2018)] *(1 page)* . . . . . 069901(E)
Chi Hong Yuen, Mehdi Ayouz, Eric S. Endres, Olga Lakhmanskaya, Roland Wester, and Viatcheslav Kokoouline

*(Continued)*

The editors and referees of PRA find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. A 88, 020001 (2013).

**PHYSICAL REVIEW A** **THIRD SERIES, VOLUME 102, NUMBER 6** **DECEMBER 2020**

Erratum: Simplified model to treat the electron attachment of complex molecules: Application to $H_2CN$ and the quest for the $CN^-$ formation mechanism [Phys. Rev. A **99**, 032701 (2019)] *(1 page)* . . . . . 069902(E)
C. H. Yuen, N. Douguet, S. Fonseca dos Santos, A. E. Orel, and V. Kokoouline

Erratum: Hacking Alice's box in continuous-variable quantum key distribution [Phys. Rev. A **98**, 062319 (2018)] *(1 page)* . . . . . 069903(E)
Jason Pereira and Stefano Pirandola

Erratum: Quantum metrology with imperfect states and detectors [Phys. Rev. A **83**, 063836 (2011)] *(1 page)* . . . . 069904(E)
Animesh Datta, Lijian Zhang, Nicholas Thomas-Peter, Uwe Dorner, Brian J. Smith, and Ian A. Walmsley

Erratum: Excitation effect of *d* electrons on the electronic energy loss of energetic protons colliding with a Zn atom [Phys. Rev. A **101**, 062705 (2020)] *(1 page)* . . . . . 069905(E)
Xu-Dong Zhao, Fei Mao, Sheng-An Tang, Cong-Zhang Gao, Feng Wang, and Feng-Shou Zhang