

ERRATA

Erratum: Two-dimensional magneto-optical trap as a source for cold strontium atoms [Phys. Rev. A 96 , 053415 (2017)] (2 pages).....	039901(E)
Ingo Nosske, Luc Couturier, Fachao Hu, Canzhu Tan, Chang Qiao, Jan Blume, Y. H. Jiang, Peng Chen, and Matthias Weidemüller	
Erratum: Cryptographic quantum bound on nonlocality [Phys. Rev. A 95 , 022108 (2017)] (1 page).....	039902(E)
Satoshi Ishizaka	
Erratum: Metrology of high- n Rydberg states of molecular hydrogen with $\Delta\nu/\nu = 2 \times 10^{-10}$ accuracy [Phys. Rev. A 97 , 012501 (2018)] (1 page).....	039903(E)
Maximilian Beyer, Nicolas Hölsch, Josef A. Agner, Johannes Deiglmayr, Hansjürg Schmutz, and Frédéric Merkt	
Erratum: Quantum imaging as an ancilla-assisted process tomography [Phys. Rev. A 94 , 042102 (2016)] (2 pages)	039904(E)
M. Ghalaii, M. Afsary, S. Alipour, and A. T. Rezakhani	
Publisher's Note: Operational quasiprobabilities for continuous variables [Phys. Rev. A 96 , 042121 (2017)] (1 page).....	039905(E)
Jeongwoo Jae, Junghee Ryu, and Jinhyoung Lee	
Erratum: Kapitza stabilization of a repulsive Bose-Einstein condensate in an oscillating optical lattice [Phys. Rev. A 97 , 023607 (2018)] (2 pages).....	039906(E)
J. Martin, B. Georgeot, D. Guéry-Odelin, and D. L. Shepelyansky	
Erratum: Noise correlations of the ultracold Fermi gas in an optical lattice [Phys. Rev. A 77 , 053602 (2008)] (1 page).....	039907(E)
T. Paananen, T. K. Koponen, P. Törmä, and J.-P. Martikainen	

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 97, NUMBER 3

MARCH 2018

Magnetic coherent population trapping in a single ion (7 pages).....	033838
S. Das, P. Liu, B. Grémaud, and M. Mukherjee	
Electromagnetic stress tensor for an amorphous metamaterial medium (9 pages)	033839
Neng Wang, Shubo Wang, and Jack Ng	
Asymmetric lasing at spectral singularities (7 pages).....	033840
L. Jin	
Demultiplexing of photonic temporal modes by a linear system (11 pages).....	033841
Shuang Xu, H. Z. Shen, and X. X. Yi	
Analytic random-walk model for the coherence of a frequency comb (7 pages).....	033842
R. Eramo, P. Cancio Pastor, and S. Cavalieri	
Electromagnetic wave propagating along a space curve (6 pages)	033843
Meng-Yun Lai, Yong-Long Wang, Guo-Hua Liang, Fan Wang, and Hong-Shi Zong	
Radial carpet beams: A class of nondiffracting, accelerating, and self-healing beams (14 pages)	033844
Saifollah Rasouli, Ali Mohammad Khazaei, and Davud Hebri	
Demonstration of spin and extrinsic orbital-angular-momentum interaction using a few-mode optical fiber (8 pages).....	033845
Xincheng Huang, Shecheng Gao, Binsen Huang, Weiping Liu, and Zhaohui Li	
Coherent and radiative couplings through two-dimensional structured environments (10 pages).....	033846
F. Galve and R. Zambrini	
Transmission and correlation of a two-photon pulse in a one-dimensional waveguide coupled with quantum emitters (10 pages)	033847
Qingmei Hu, Bingsuo Zou, and Yongyou Zhang	
Elliptical vortex necklaces in Mathieu lattices (5 pages).....	033848
Jadranka M. Vasiljević, Alessandro Zannotti, Dejan V. Timotijević, Cornelia Denz, and Dragana M. Jović Savić	
Crisis route to chaos in semiconductor lasers subjected to external optical feedback (5 pages).....	033849
Michael J. Wishon, Alexandre Locquet, C. Y. Chang, D. Choi, and D. S. Citrin	
Optomechanical approach to controlling the temperature and chemical potential of light (9 pages).....	033850
Chiao-Hsuan Wang and Jacob M. Taylor	
Phase amplification in optical interferometry with weak measurement (6 pages).....	033851
Li Li, Yuan Li, You-Lang Zhang, Sixia Yu, Chao-Yang Lu, Nai-Le Liu, Jun Zhang, and Jian-Wei Pan	

COMMENTS

Comment on “Protecting bipartite entanglement by quantum interferences” (2 pages).....	036301
Anjali N. Nair and R. Arun	
Reply to “Comment on ‘Protecting bipartite entanglement by quantum interferences’ ” (1 page).....	036302
Sumanta Das and G. S. Agarwal	

(Continued)

CONTENTS - Continued

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 97, NUMBER 3

MARCH 2018

Real-time Kalman filter: Cooling of an optically levitated nanoparticle (8 pages)	033822
Ashley Setter, Marko Toroš, Jason F. Ralph, and Hendrik Ulbricht	
Long-lasting quantum memories: Extending the coherence time of superconducting artificial atoms in the ultrastrong-coupling regime (9 pages)	033823
Roberto Stassi and Franco Nori	
Directionality fields generated by a local Hilbert transform (8 pages)	033824
W. W. Ahmed, R. Herrero, M. Botey, Z. Hayran, H. Kurt, and K. Staliunas	
Coherent generation of photonic fractional quantum Hall states in a cavity and the search for anyonic quasiparticles (13 pages)	033825
Shovan Dutta and Erich J. Mueller	
Intrinsic retrieval efficiency for quantum memories: A three-dimensional theory of light interaction with an atomic ensemble (14 pages)	033826
Tanvi P. Gujarati, Yukai Wu, and Luming Duan	
Classical imaging with undetected light (5 pages)	033827
A. C. Cardoso, L. P. Berruezo, D. F. Ávila, G. B. Lemos, W. M. Pimenta, C. H. Monken, P. L. Saldanha, and S. Pádua	
Rare quantum metastable states in the strongly dispersive Jaynes-Cummings oscillator (15 pages)	033828
Th. K. Mavrogordatos, F. Barratt, U. Asari, P. Szafulski, E. Ginossar, and M. H. Szymańska	
Enhanced cooperativity for quantum-nondemolition-measurement-induced spin squeezing of atoms coupled to a nanophotonic waveguide (11 pages)	033829
Xiaodong Qi, Yuan-Yu Jau, and Ivan H. Deutsch	
Controllable nonlinearity in a dual-coupling optomechanical system under a weak-coupling regime (9 pages)	033830
Gui-Lei Zhu, Xin-You Lü, Liang-Liang Wan, Tai-Shuang Yin, Qian Bin, and Ying Wu	
Dual-comb spectroscopy of molecular electronic transitions in condensed phases (10 pages)	033831
Byungmoon Cho, Tai Hyun Yoon, and Minhaeng Cho	
Control of polarization rotation in nonlinear propagation of fully structured light (8 pages)	033832
Christopher J. Gibson, Patrick Bevington, Gian-Luca Oppo, and Alison M. Yao	
Quantum nondemolition measurement of optical field fluctuations by optomechanical interaction (14 pages)	033833
A. Pontin, M. Bonaldi, A. Borrielli, L. Marconi, F. Marino, G. Pandraud, G. A. Prodi, P. M. Sarro, E. Serra, and F. Marin	
Nearly bound states in the radiation continuum in a circular array of dielectric rods (8 pages)	033834
Evgeny N. Bulgakov and Almas F. Sadreev	
Ionization waves of arbitrary velocity driven by a flying focus (9 pages)	033835
J. P. Palastro, D. Turnbull, S.-W. Bahk, R. K. Follett, J. L. Shaw, D. Haberberger, J. Bromage, and D. H. Froula	
Fundamental limits to single-photon detection determined by quantum coherence and backaction (9 pages)	033836
Steve M. Young, Mohan Sarovar, and François Léonard	
Probability of radiation of twisted photons by classical currents (27 pages)	033837
O. V. Bogdanov, P. O. Kazinski, and G. Yu. Lazarenko	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 97, NUMBER 3

MARCH 2018

Multimode four-wave mixing in an unresolved sideband optomechanical system (6 pages)	033806
Zongyang Li, Xiang You, Yongmin Li, Yong-Chun Liu, and Kunchi Peng	
Entanglement and quantum superposition induced by a single photon (6 pages)	033807
Xin-You Lü, Gui-Lei Zhu, Li-Li Zheng, and Ying Wu	
Versatile engineering of multimode squeezed states by optimizing the pump spectral profile in spontaneous parametric down-conversion (13 pages)	033808
Francesco Arzani, Claude Fabre, and Nicolas Treps	
Optical nonclassicality test based on third-order intensity correlations (12 pages)	033809
L. Rigovacca, W. S. Kolthammer, C. Di Franco, and M. S. Kim	
Wave-optical treatment of the shadow cast by a large sphere (9 pages)	033810
Slava G. Turyshev and Viktor T. Toth	
Femtosecond pulse with THz repetition frequency based on the coupling between quantum emitters and a plasmonic resonator (7 pages)	033811
Shilei Li, Yinxing Ding, Rongzhen Jiao, Gaoyan Duan, and Li Yu	
Multiple electromechanically-induced-transparency windows and Fano resonances in hybrid nano-electro-optomechanics (9 pages)	033812
Kamran Ullah, Hui Jing, and Farhan Saif	
Elliptic-type soliton combs in optical ring microresonators (12 pages)	033813
Rodrigues D. Dikandé Bitha and Alain M. Dikandé	
Two-photon absorption by spectrally shaped entangled photons (6 pages)	033814
Hisaki Oka	
⚡ Attosecond control of electron beams at dielectric and absorbing membranes (23 pages)	033815
Yuya Morimoto and Peter Baum	
Achieving a high- Q response in metamaterials by manipulating the toroidal excitations (6 pages)	033816
Yuancheng Fan, Fuli Zhang, Nian-Hai Shen, Quanhong Fu, Zeyong Wei, Hongqiang Li, and Costas M. Soukoulis	
Multiphoton-resonance-induced fluorescence of a strongly driven two-level system under frequency modulation (17 pages)	033817
Yiying Yan, Zhiguo Lü, JunYan Luo, and Hang Zheng	
Adiabatic wavelength redshift by dynamic carrier depletion using p - i - n -diode-loaded photonic crystal waveguides (5 pages)	033818
K. Kondo and T. Baba	
Asymmetric diffraction by atomic gratings with optical $\mathcal{PT}$ symmetry in the Raman-Nath regime (14 pages)	033819
Tao Shui, Wen-Xing Yang, Shaopeng Liu, Ling Li, and Zhonghu Zhu	
Third-harmonic entanglement and Einstein-Podolsky-Rosen steering over a frequency range of more than an octave (8 pages)	033820
M. K. Olsen	
Subharmonic resonances in high-order wave mixing in the quantized atomic motion in a one-dimensional optical lattice (5 pages)	033821
J. P. Lopez, A. J. F. de Almeida, and J. W. R. Tabosa	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 97, NUMBER 3

MARCH 2018

Role of thermal two-phonon scattering for impurity dynamics in a low-dimensional Bose-Einstein condensate (7 pages)	033620
Tobias Lausch, Artur Widera, and Michael Fleischhauer	
Harmonically trapped four-boson system (12 pages)	033621
D. Blume, M. W. C. Sze, and J. L. Bohn	
Detecting many-body-localization lengths with cold atoms (7 pages)	033622
Xuefei Guo and Xiaopeng Li	
Efimov states near a Feshbach resonance and the limits of van der Waals universality at finite background scattering length (15 pages)	033623
Christian Langmack, Richard Schmidt, and Wilhelm Zwerger	
Zeros of Loschmidt echo in the presence of Anderson localization (5 pages)	033624
Honghao Yin, Shu Chen, Xianlong Gao, and Pei Wang	
Quantum-metric contribution to the pair mass in spin-orbit-coupled Fermi superfluids (6 pages)	033625
M. Iskin	
Dynamics of a quantum phase transition in the Bose-Hubbard model: Kibble-Zurek mechanism and beyond (8 pages)	033626
Keita Shimizu, Yoshihito Kuno, Takahiro Hirano, and Ikuo Ichinose	
Quantum and thermal fluctuations in two-component Bose gases (10 pages)	033627
Abdelâali Boudjemâa	
Thermodynamics and structural transition of binary atomic Bose-Fermi mixtures in box or harmonic potentials: A path-integral study (10 pages)	033628
Tom Kim and Chih-Chun Chien	
Dynamic hysteresis from bistability in an antiferromagnetic spinor condensate (5 pages)	033629
Tomasz Świśłocki, Andrzej Zembrzusi, Michał Matuszewski, and Emilia Witkowska	
Virial expansion for the Tan contact and Beth-Uhlenbeck formula from two-dimensional SO(2,1) anomalies (8 pages)	033630
W. Daza, J. E. Drut, C. Lin, and C. Ordóñez	
Quantum optics, physics of lasers, nonlinear optics, classical optics	
Influence of wave-front curvature on supercontinuum energy during filamentation of femtosecond laser pulses in water (7 pages)	033801
F. V. Potemkin, E. I. Mareev, and E. O. Smetanina	
Generalized classes of continuous symmetries in two-mode Dicke models (9 pages)	033802
Ryan I. Moodie, Kyle E. Ballantine, and Jonathan Keeling	
Collective behavior of light in vacuum (7 pages)	033803
Fabio Briscese	
Classical emergence of intrinsic spin-orbit interaction of light at the nanoscale (9 pages)	033804
J. Enrique Vázquez-Lozano and Alejandro Martínez	
Designing non-Hermitian dynamics for conservative state evolution on the Bloch sphere (7 pages)	033805
Sunkyu Yu, Xianji Piao, and Namkyoo Park	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 97, NUMBER 3

MARCH 2018

Global optimization for quantum dynamics of few-fermion systems (<i>8 pages</i>)	033602
Xikun Li, Daniel Pęcak, Tomasz Sowiński, Jacob Sherson, and Anne E. B. Nielsen	
Pseudothermization in driven-dissipative non-Markovian open quantum systems (<i>20 pages</i>).....	033603
José Lebreuilly, Alessio Chiocchetta, and Iacopo Carusotto	
☞ Second sound in a two-dimensional Bose gas: From the weakly to the strongly interacting regime (<i>7 pages</i>).....	033604
Miki Ota and Sandro Stringari	
Effect of boson on-site repulsion on the superfluidity in the boson-fermion-Hubbard model (<i>13 pages</i>).....	033605
A. S. Sajna and R. Micnas	
Hidden multiparticle excitation in a weakly interacting Bose-Einstein condensate (<i>6 pages</i>)	033606
Shohei Watabe	
$\mathcal{PT}$ -symmetric gain and loss in a rotating Bose-Einstein condensate (<i>7 pages</i>).....	033607
Daniel Haag, Dennis Dast, Holger Cartarius, and Günter Wunner	
Hyperspherical lowest-order constrained-variational approximation to resonant Bose-Einstein condensates (<i>14 pages</i>).....	033608
M. W. C. Sze, A. G. Sykes, D. Blume, and J. L. Bohn	
Quantum quench in a harmonically trapped one-dimensional Bose gas (<i>14 pages</i>).....	033609
Mario Collura, Márton Kormos, and Pasquale Calabrese	
High-momentum tail and universal relations of a Fermi gas near a Raman-dressed Feshbach resonance (<i>9 pages</i>).....	033610
Fang Qin (覃昉), Jianwen Jie (揭建文), Wei Yi, and Guang-Can Guo	
Tan's contact in a cigar-shaped dilute Bose gas (<i>6 pages</i>).....	033611
Jean Decamp, Mathias Albert, and Patrizia Vignolo	
Strong-coupling Bose polarons out of equilibrium: Dynamical renormalization-group approach (<i>22 pages</i>).....	033612
Fabian Grusdt, Kushal Seetharam, Yulia Shchadilova, and Eugene Demler	
Collective modes of an imbalanced unitary Fermi gas (<i>8 pages</i>).....	033613
Johannes Hofmann, Frédéric Chevy, Olga Goulko, and Carlos Lobo	
Dynamical resonances and stepped current in an attractive quantum pump (<i>7 pages</i>)	033614
Kunal K. Das, Joshua Garner, and Kevin Ruppert	
Coupled dynamics of interacting spin-1 bosons in a double-well potential (<i>6 pages</i>).....	033615
D. W. S. Carvalho, A. Foerster, and M. A. Gusmão	
Survival resonances in an atom-optics system driven by temporally and spatially periodic dissipation (<i>5 pages</i>) ...	033616
Shijie Chai, Julia Fekete, Peter McDowall, Simon Coop, Thue Lindballe, and Mikkel F. Andersen	
Thermal transitions, pseudogap behavior, and BCS-BEC crossover in Fermi-Fermi mixtures (<i>20 pages</i>).....	033617
Madhuparna Karmakar	
Tuning the relaxation dynamics of ultracold atoms in a lattice with an optical cavity (<i>9 pages</i>)	033618
E. I. Rodríguez Chiacchio and A. Nunnenkamp	
☞ Quantum phases of strongly interacting bosons on a two-leg Haldane ladder (<i>12 pages</i>).....	033619
S. Greschner and F. Heidrich-Meisner	

(Continued)

Atomic and molecular processes in external fields, including interactions with strong fields and short pulses

Photoabsorption of the molecular IH cation at the iodine $3d$ absorption edge (7 pages).....	033401
Stephan Klumpp, Alexander A. Guda, Kaja Schubert, Karolin Mertens, Jonas Hellhund, Alfred Müller, Stefan Schippers, Sadia Bari, and Michael Martins	
Ellipticity-dependent fragmentation of acetylene dications (4 pages).....	033402
Atia-tul-noor, Nida Haram, Han Xu, U. Satya Sainadh, R. T. Sang, and I. V. Litvinyuk	
Method for preparation and readout of polyatomic molecules in single quantum states (10 pages).....	033403
David Patterson	
Improving sensitivity to magnetic fields and electric dipole moments by using measurements of individual magnetic sublevels (9 pages).....	033404
Cheng Tang, Teng Zhang, and David S. Weiss	
Stability analysis of a magnetic waveguide with self-generated offset field (5 pages).....	033405
C. L. Garrido Alzar	
Control of molecular breakup by an infrared pulse and a femtosecond pulse train (6 pages).....	033406
Kamal P. Singh, A. Kenfack, Jan M. Rost, and Thomas Pfeifer	
Pulse design for multilevel systems by utilizing Lie transforms (13 pages).....	033407
Yi-Hao Kang, Ye-Hong Chen, Zhi-Cheng Shi, Bi-Hua Huang, Jie Song, and Yan Xia	
Bound and continuum energy distributions of nuclear fragments resulting from tunneling ionization of molecules (14 pages).....	033408
Jens Svensmark, Oleg I. Tolstikhin, and Lars Bojer Madsen	
Optimizing the 391-nm lasing intensity from ionized nitrogen molecules in 800-nm femtosecond laser fields (7 pages).....	033409
Xunqi Zhong, Zhiming Miao, Linlin Zhang, Hongbing Jiang, Yunquan Liu, Qihuang Gong, and Chengyin Wu	
Microwave-optical two-photon excitation of Rydberg states (5 pages).....	033410
D. A. Tate and T. F. Gallagher	
Basic mechanisms in the laser control of non-Markovian dynamics (10 pages).....	033411
R. Puthumpally-Joseph, E. Mangaud, V. Chevet, M. Desouter-Lecomte, D. Sugny, and O. Atabek	
Nonunique and nonuniform mapping in few-body Coulomb-explosion imaging (7 pages).....	033412
A. M. Sayler, E. Eckner, J. McKenna, B. D. Esry, K. D. Carnes, I. Ben-Itzhak, and G. G. Paulus	
Stokes-attenuated tunneling ionization of molecules (9 pages).....	033413
Aleksei S. Kornev and Boris A. Zon	
Simulating magnetic fields in Rydberg-dressed neutral atoms (14 pages).....	033414
Xiao-Feng Shi and T. A. B. Kennedy	
Above-threshold ionization in multicenter molecules: The role of the initial state (18 pages).....	033415
Noslen Suárez, Alexis Chacón, Emilio Pisanty, Lisa Ortmann, Alexandra S. Landsman, Antonio Picón, Jens Biegert, Maciej Lewenstein, and Marcelo F. Ciappina	

Matter waves and collective properties of cold atoms and molecules

Decay of homogeneous two-dimensional quantum turbulence (5 pages).....	033601
Andrew W. Bagdaley and Carlo F. Barenghi	

(Continued)

Repulsive vacuum-induced forces on a magnetic particle (<i>13 pages</i>).....	032513
Kanupriya Sinha	
Microscopic dynamical Casimir effect (<i>9 pages</i>).....	032514
Reinaldo de Melo e Souza, François Impens, and Paulo A. Maia Neto	
Application of the finite-field coupled-cluster method to calculate molecular properties relevant to electron electric-dipole-moment searches (<i>9 pages</i>).....	032515
M. Abe, V. S. Prasanna, and B. P. Das	
Frequency measurement of the $2^1S_0-3^1D_2$ two-photon transition in atomic ^4He (<i>5 pages</i>).....	032516
Yi-Jan Huang, Yu-Chan Guan, Yao-Chin Huang, Te-Hwei Suen, Jin-Long Peng, Li-Bang Wang, and Jow-Tsong Shy	
High-precision measurements of $n = 2 \rightarrow n = 1$ transition energies and level widths in He- and Be-like argon ions (<i>18 pages</i>).....	032517
J. Machado, C. I. Szabo, J. P. Santos, P. Amaro, M. Guerra, A. Gumberidze, Guojie Bian, J. M. Isac, and P. Indelicato	
K-shell ionization of heavy hydrogenlike ions (<i>7 pages</i>).....	032518
O. Novak, R. Kholodov, A. Surzhykov, A. N. Artemyev, and Th. Stöhlker	

PART B

Atomic and molecular collisions and interactions

Adiabatic passage of radio-frequency-assisted Förster resonances in Rydberg atoms for two-qubit gates and the generation of Bell states (<i>8 pages</i>).....	032701
I. I. Beterov, G. N. Hamzina, E. A. Yakshina, D. B. Tretyakov, V. M. Entin, and I. I. Ryabtsev	
Thick-target-method study of $M_{\alpha\beta}$ x-ray production cross sections of Pb and Bi impacted by positrons up to 9 keV (<i>7 pages</i>).....	032702
Y. Wu, Y. Liang, M. X. Xu, Y. Yuan, C. H. Chang, Z. C. Qian, B. Y. Wang, P. Kuang, and P. Zhang	
Absence of reionization in low-energy Na^+ scattering from Al surfaces (<i>5 pages</i>).....	032703
P. Riccardi, F. Cosimo, and A. Sindona	
Optimized cell geometry for buffer-gas-cooled molecular-beam sources (<i>6 pages</i>).....	032704
Vijay Singh, Amit K. Samanta, Nils Roth, Daniel Gusa, Tim Ossenbrüggen, Igor Rubinsky, Daniel A. Horke, and Jochen Küpper	
Influence of basis-set size on the $X^2\Sigma_{1/2}^+$, $A^2\Pi_{1/2}$, $A^2\Pi_{3/2}$, and $B^2\Sigma_{1/2}^+$ potential-energy curves, $A^2\Pi_{3/2}$ vibrational energies, and D_1 and D_2 line shapes of $\text{Rb}+\text{He}$ (<i>8 pages</i>).....	032705
L. Aaron Blank, Amit R. Sharma, and David E. Weeks	
Collision cross sections of N_2 by H^+ impact at keV energies within time-dependent density-functional theory (<i>10 pages</i>).....	032706
W. Yu, C.-Z. Gao, Y. Zhang, F. S. Zhang, R. Hutton, Y. Zou, and B. Wei	
Wave-packet continuum-discretization approach to ion-atom collisions including rearrangement: Application to differential ionization in proton-hydrogen scattering (<i>13 pages</i>).....	032707
I. B. Abdurakhmanov, J. J. Bailey, A. S. Kadyrov, and I. Bray	

(Continued)

Anonymous broadcasting of classical information with a continuous-variable topological quantum code (21 pages) Nicolas C. Menicucci, Ben Q. Baragiola, Tommaso F. Demarie, and Gavin K. Brennen	032345
Performance and structure of single-mode bosonic codes (30 pages) Victor V. Albert, Kyungjoo Noh, Kasper Duivenvoorden, Dylan J. Young, R. T. Brierley, Philip Reinhold, Christophe Vuillot, Linshu Li, Chao Shen, S. M. Girvin, Barbara M. Terhal, and Liang Jiang	032346
Atomic and molecular structure and dynamics	
Reducing detrimental electrostatic effects in Casimir-force measurements and Casimir-force-based microdevices (7 pages) Jun Xu, G. L. Klimchitskaya, V. M. Mostepanenko, and U. Mohideen	032501
Homogenization of Doppler broadening in spin-noise spectroscopy (9 pages) M. Yu. Petrov, I. I. Ryzhov, D. S. Smirnov, L. Yu. Belyaev, R. A. Potekhin, M. M. Glazov, V. N. Kulyasov, G. G. Kozlov, E. B. Aleksandrov, and V. S. Zapasskii	032502
Comparative study of inelastic squared form factors of the vibronic states of $B\ ^1\Sigma_u^+$, $C\ ^1\Pi_u$, and $EF\ ^1\Sigma_g^+$ for molecular hydrogen: Inelastic x-ray and electron scattering (8 pages) Long-Quan Xu, Xu Kang, Yi-Geng Peng, Xin Xu, Ya-Wei Liu, Yong Wu, Ke Yang, Nozomu Hiraoka, Ku-Ding Tsuei, Jian-Guo Wang, and Lin-Fan Zhu	032503
Influence of the chemical potential on the Casimir-Polder interaction between an atom and gapped graphene or a graphene-coated substrate (12 pages) C. Henkel, G. L. Klimchitskaya, and V. M. Mostepanenko	032504
 Laser-stimulated electric quadrupole transitions in the molecular hydrogen ion H_2^+ (8 pages) V. I. Korobov, P. Danev, D. Bakalov, and S. Schiller	032505
Theoretical hyperfine structures of $^{19}\text{F I}$ and $^{17}\text{O I}$ (10 pages) Nouria Aourir, Messaoud Nemouchi, Michel Godefroid, and Per Jönsson	032506
Lateral Casimir-Polder forces by breaking time-reversal symmetry (6 pages) Ricardo R. Q. P. T. Oude Weernink, Pablo Barcellona, and Stefan Yoshi Buhmann	032507
Lifetime of the $5d\ ^2D_{5/2}$ level of $^{138}\text{Ba}^+$ from quantum jumps with single and multiple Ba^+ ions (12 pages) Elwin A. Dijck, Amita Mohanty, Nivedya Valappol, Mayerlin Nuñez Portela, Lorenz Willmann, and Klaus Jungmann	032508
Spectral asymmetry of atoms in the van der Waals potential of an optical nanofiber (8 pages) B. D. Patterson, P. Solano, P. S. Julienne, L. A. Orozco, and S. L. Rolston	032509
Isotope shift, nonlinearity of King plots, and the search for new particles (12 pages) V. V. Flambaum, A. J. Geddes, and A. V. Viatkina	032510
Spectroscopy of the $^2S_{1/2} \rightarrow ^2P_{3/2}$ transition in Yb II: Isotope shifts, hyperfine splitting, and branching ratios (6 pages) T. Feldker, H. Fürst, N. V. Ewald, J. Joger, and R. Gerritsma	032511
Resonance oscillations of nonreciprocal long-range van der Waals forces between atoms in electromagnetic fields (8 pages) Yury Sherkunov	032512

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 97, NUMBER 3

MARCH 2018

Accelerated and noise-resistant generation of high-fidelity steady-state entanglement with Rydberg atoms (<i>9 pages</i>)	032328
Ye-Hong Chen, Zhi-Cheng Shi, Jie Song, Yan Xia, and Shi-Biao Zheng	
Distributed quantum sensing using continuous-variable multipartite entanglement (<i>6 pages</i>)	032329
Quntao Zhuang, Zheshen Zhang, and Jeffrey H. Shapiro	
Coarse graining of entanglement classes in $2 \times m \times n$ systems (<i>24 pages</i>)	032330
M. Hebenstreit, M. Gachechiladze, O. Gühne, and B. Kraus	
Efficient preparation of large-block-code ancilla states for fault-tolerant quantum computation (<i>24 pages</i>)	032331
Yi-Cong Zheng, Ching-Yi Lai, and Todd A. Brun	
Optimal control of hybrid qubits: Implementing the quantum permutation algorithm (<i>6 pages</i>)	032332
C. M. Rivera-Ruiz, E. F. de Lima, F. F. Fanchini, V. Lopez-Richard, and L. K. Castelano	
Noise-dependent optimal strategies for quantum metrology (<i>7 pages</i>)	032333
Zixin Huang, Chiara Macchiavello, and Lorenzo Maccone	
Channel discrimination power of bipartite quantum states (<i>9 pages</i>)	032334
Matteo Caiaffa and Marco Piani	
Quantum error correction of continuous-variable states with realistic resources (<i>8 pages</i>)	032335
Josephine Dias and T. C. Ralph	
Tighter monogamy relations in multiqubit systems (<i>7 pages</i>)	032336
Zhi-Xiang Jin, Jun Li, Tao Li, and Shao-Ming Fei	
Prefixed-threshold real-time selection method in free-space quantum key distribution (<i>13 pages</i>)	032337
Wenyuan Wang, Feihu Xu, and Hoi-Kwong Lo	
Experimental preparation and verification of quantum money (<i>6 pages</i>)	032338
Jian-Yu Guan, Juan Miguel Arrazola, Ryan Amiri, Weijun Zhang, Hao Li, Lixing You, Zhen Wang, Qiang Zhang, and Jian-Wei Pan	
Interferometric sensitivity and entanglement by scanning through quantum phase transitions in spinor Bose-Einstein condensates (<i>10 pages</i>)	032339
P. Feldmann, M. Gessner, M. Gabbrielli, C. Klempt, L. Santos, L. Pezzè, and A. Smerzi	
Families of quantum fingerprinting protocols (<i>13 pages</i>)	032340
Benjamin Lovitz and Norbert Lütkenhaus	
Faithful state transfer between two-level systems via an actively cooled finite-temperature cavity (<i>6 pages</i>)	032341
Lőrinc Sárkány, József Fortágh, and David Petrosyan	
Asymmetry and coherence weight of quantum states (<i>10 pages</i>)	032342
Kaifeng Bu, Namit Anand, and Uttam Singh	
Optimization of ultrafine entanglement witnesses (<i>4 pages</i>)	032343
Shu-Qian Shen, Ti-Run Xu, Shao-Ming Fei, Xianqing Li-Jost, and Ming Li	
Quantum speedup in solving the maximal-clique problem (<i>8 pages</i>)	032344
Weng-Long Chang, Qi Yu, Zhaokai Li, Jiahui Chen, Xinhua Peng, and Mang Feng	

(Continued)

CONTENTS - Continued

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 97, NUMBER 3

MARCH 2018

Universal Barenco quantum gates via a tunable noncollinear interaction (<i>10 pages</i>)	032310
Xiao-Feng Shi	
Continuous-variable quantum key distribution in uniform fast-fading channels (<i>7 pages</i>).....	032311
Panagiotis Papanastasiou, Christian Weedbrook, and Stefano Pirandola	
Layered quantum key distribution (<i>10 pages</i>).....	032312
Matej Pivoluska, Marcus Huber, and Mehul Malik	
Mutual information of optical communication in phase-conjugating Gaussian channels (<i>5 pages</i>).....	032313
Clemens Schäfermeier and Ulrik L. Andersen	
✂ Analytical results for a conditional phase shift between single-photon pulses in a nonlocal nonlinear medium (<i>10 pages</i>)	032314
Balakrishnan Viswanathan and Julio Gea-Banacloche	
Squeezing-enhanced phase-shift-keyed binary communication in noisy channels (<i>6 pages</i>).....	032315
Giovanni Chesi, Stefano Olivares, and Matteo G. A. Paris	
Coprocessors for quantum devices (<i>11 pages</i>).....	032316
Alastair Kay	
Perfect coding for dephased quantum state transfer (<i>8 pages</i>).....	032317
Alastair Kay	
Entanglement witnesses from mutually unbiased bases (<i>7 pages</i>).....	032318
Dariusz Chruściński, Gniewomir Sarbicki, and Filip Wudarski	
✂ Simple class of bound entangled states based on the properties of the antisymmetric subspace (<i>5 pages</i>)	032319
Enrico Sindici and Marco Piani	
One-way quantum computing in superconducting circuits (<i>6 pages</i>)	032320
F. Albarrán-Arriagada, G. Alvarado Barrios, M. Sanz, G. Romero, L. Lamata, J. C. Retamal, and E. Solano	
Entanglement production in bosonic systems: Linear and logarithmic growth (<i>19 pages</i>).....	032321
Lucas Hackl, Eugenio Bianchi, Ranjan Modak, and Marcos Rigol	
Entanglement sharing via qudit channels: Nonmaximally entangled states may be necessary for one-shot optimal singlet fraction and negativity (<i>5 pages</i>)	032322
Rajarshi Pal and Somshubhro Bandyopadhyay	
✂ Hardware-efficient bosonic quantum error-correcting codes based on symmetry operators (<i>21 pages</i>).....	032323
Murphy Yuezhen Niu, Isaac L. Chuang, and Jeffrey H. Shapiro	
Local randomness: Examples and application (<i>7 pages</i>).....	032324
Honghao Fu and Carl A. Miller	
Quantum simulation of the integer factorization problem: Bell states in a Penning trap (<i>8 pages</i>).....	032325
Jose Luis Rosales and Vicente Martin	
Characterizing nonclassical correlations via local quantum Fisher information (<i>8 pages</i>).....	032326
Sunho Kim, Longsuo Li, Asutosh Kumar, and Junde Wu	
Noise-tolerant parity learning with one quantum bit (<i>6 pages</i>)	032327
Daniel K. Park, June-Koo K. Rhee, and Soonchil Lee	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 97, NUMBER 3

MARCH 2018

Two- and four-dimensional representations of the $\mathcal{PT}$ - and $\mathcal{CPT}$ -symmetric fermionic algebras (6 pages).....	032128
Alireza Beygi, S. P. Klevansky, and Carl M. Bender	
Trade-off between information and disturbance in qubit thermometry (12 pages).....	032129
Luigi Seveso and Matteo G. A. Paris	
Generalized formalism for information backflow in assessing Markovianity and its equivalence to divisibility (9 pages).....	032130
Sagnik Chakraborty	
Quantum predictions for an unmeasured system cannot be simulated with a finite-memory classical system (5 pages).....	032131
Armin Tavakoli and Adán Cabello	
Thirring quantum cellular automaton (8 pages).....	032132
Alessandro Bisio, Giacomo Mauro D'Ariano, Paolo Perinotti, and Alessandro Tosini	
Thermodynamic fingerprints of non-Markovianity in a system of coupled superconducting qubits (8 pages).....	032133
Sina Hamedani Raja, Massimo Borrelli, Rebecca Schmidt, Jukka P. Pekola, and Sabrina Maniscalco	
Computing eigenfunctions and eigenvalues of boundary-value problems with the orthogonal spectral renormalization method (10 pages).....	032134
Holger Cartarius, Ziad H. Musslimani, Lukas Schwarz, and Günter Wunner	
Quantum information	
Unified picture for spatial, temporal, and channel steering (6 pages).....	032301
Roope Uola, Fabiano Lever, Otfried Gühne, and Juha-Pekka Pellonpää	
Universal quantum computation with temporal-mode bilayer square lattices (12 pages).....	032302
Rafael N. Alexander, Shota Yokoyama, Akira Furusawa, and Nicolas C. Menicucci	
Quantum-to-quantum Bernoulli factory problem (6 pages).....	032303
Jiaqing Jiang, Jialin Zhang, and Xiaoming Sun	
Coherence-generating power of quantum dephasing processes (14 pages).....	032304
Georgios Styliaris, Lorenzo Campos Venuti, and Paolo Zanardi	
Experimental ancilla-assisted phase estimation in a noisy channel (7 pages).....	032305
Marco Sbroscia, Ilaria Gianani, Luca Mancino, Emanuele Roccia, Zixin Huang, Lorenzo Maccone, Chiara Macchiavello, and Marco Barbieri	
Quantification and characterization of leakage errors (17 pages).....	032306
Christopher J. Wood and Jay M. Gambetta	
Understanding quantum tunneling using diffusion Monte Carlo simulations (9 pages).....	032307
E. M. Inack, G. Giudici, T. Parolini, G. Santoro, and S. Pilati	
Quantum sensing of the phase-space-displacement parameters using a single trapped ion (7 pages).....	032308
Peter A. Ivanov and Nikolay V. Vitanov	
Device-independent point estimation from finite data and its application to device-independent property estimation (15 pages).....	032309
Pei-Sheng Lin, Denis Rosset, Yanbao Zhang, Jean-Daniel Bancal, and Yeong-Cherng Liang	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 97, NUMBER 3

MARCH 2018

Quantum decimation in Hilbert space: Coarse graining without structure (<i>10 pages</i>).....	032111
Ashmeet Singh and Sean M. Carroll	
Measurement-induced nonlocality in arbitrary dimensions in terms of the inverse approximate joint diagonalization (<i>9 pages</i>).....	032112
Li-qiang Zhang, Ting-ting Ma, and Chang-shui Yu	
Collision-model approach to steering of an open driven qubit (<i>10 pages</i>).....	032113
Konstantin Beyer, Kimmo Luoma, and Walter T. Strunz	
Admissible perturbations and false instabilities in $\mathcal{PT}$ -symmetric quantum systems (<i>13 pages</i>).....	032114
Miloslav Znojil	
Generalized speed and cost rate in transitionless quantum driving (<i>7 pages</i>).....	032115
Zhen-Yu Xu, Wen-Long You, Yu-Li Dong, Chengjie Zhang, and W. L. Yang	
Non-Gaussian precision metrology via driving through quantum phase transitions (<i>7 pages</i>).....	032116
Jiahao Huang, Min Zhuang, and Chaohong Lee	
Pechukas-Yukawa approach to the evolution of the quantum state of a parametrically perturbed system (<i>11 pages</i>).....	032117
Mumnuna A. Qureshi, Johnny Zhong, Zihad Qureshi, Peter Mason, Joseph J. Betouras, and Alexandre M. Zagoskin	
Classical and quantum rotation numbers of asymmetric-top molecules (<i>9 pages</i>).....	032118
K. Hamraoui, L. Van Damme, P. Mardešić, and D. Sugny	
Maximally steerable mixed state based on the linear steering inequality and the Clauser-Horne-Shimony-Holt-like steering inequality (<i>7 pages</i>).....	032119
Changliang Ren, Hong-Yi Su, Hao-fei Shi, and Jingling Chen	
Alternative method of quantum state tomography toward a typical target via a weak-value measurement (<i>8 pages</i>).....	032120
Xi Chen, Hong-Yi Dai, Le Yang, and Ming Zhang	
Accuracy of the adiabatic-impulse approximation for closed and open quantum systems (<i>15 pages</i>).....	032121
Michael Tomka, Lorenzo Campos Venuti, and Paolo Zanardi	
Scattering of accelerated wave packets (<i>11 pages</i>).....	032122
S. Longhi, S. A. R. Horsley, and G. Della Valle	
Weak measurements and quantum weak values for NOON states (<i>11 pages</i>).....	032123
L. Rosales-Zárate, B. Opanchuk, and M. D. Reid	
Quantized interlevel character in quantum systems (<i>7 pages</i>).....	032124
Chao Xu, Jianda Wu, and Congjun Wu	
Quantum state matching of qubits via measurement-induced nonlinear transformations (<i>10 pages</i>).....	032125
Orsolya Kálmán and Tamás Kiss	
Optimal no-go theorem on hidden-variable predictions of effect expectations (<i>9 pages</i>).....	032126
Andreas Blass and Yuri Gurevich	
Reference system and not completely positive open quantum dynamics (<i>9 pages</i>).....	032127
Lintu Joseph and Anil Shaji	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A	THIRD SERIES, VOLUME 97, NUMBER 3	MARCH 2018
Hyper-Ramsey spectroscopy with probe-laser-intensity fluctuations (<i>5 pages</i>).....		031406(R)
K. Beloy		
Attosecond transient absorption spectrum of argon at the $L_{2,3}$ edge (<i>6 pages</i>).....		031407(R)
Andrew Chew, Nicolas Douguet, Coleman Cariker, Jie Li, Eva Lindroth, Xiaoming Ren, Yanchun Yin, Luca Argenti, Wendell T. Hill III, and Zenghu Chang		
Matter waves and collective properties of cold atoms and molecules		
Spin-exchange-induced spin-orbit coupling in a superfluid mixture (<i>5 pages</i>).....		031601(R)
Li Chen, Chuanzhou Zhu, Yunbo Zhang, and Han Pu		
Quantum optics, physics of lasers, nonlinear optics, classical optics		
Photonic realization of a transition to a strongly driven Floquet topological phase (<i>5 pages</i>).....		031801(R)
Jonathan Guglielmon, Sheng Huang, Kevin P. Chen, and Mikael C. Rechtsman		
ARTICLES		
Fundamental concepts		
Accuracy of dynamical-decoupling-based spectroscopy of Gaussian noise (<i>18 pages</i>).....		032101
Piotr Szańkowski and Łukasz Cywiński		
Disturbance by optimal discrimination (<i>5 pages</i>).....		032102
Ryûitirô Kawakubo and Tatsuhiko Koike		
Universal quantum uncertainty relations between nonergodicity and loss of information (<i>8 pages</i>).....		032103
Natasha Awasthi, Samyadeb Bhattacharya, Aditi Sen(De), and Ujjwal Sen		
Cooling a quantum oscillator: A useful analogy to understand laser cooling as a thermodynamical process (<i>12 pages</i>).....		032104
Nahuel Freitas and Juan Pablo Paz		
Mixed quantum-classical electrodynamics: Understanding spontaneous decay and zero-point energy (<i>17 pages</i>).....		032105
Tao E. Li, Abraham Nitzan, Maxim Sukharev, Todd Martinez, Hsing-Ta Chen, and Joseph E. Subotnik		
Global Dirac bispinor entanglement under Lorentz boosts (<i>11 pages</i>).....		032106
Victor A. S. V. Bittencourt, Alex E. Bernardini, and Massimo Blasone		
Experimental verification of steerability via geometric Bell-like inequalities (<i>5 pages</i>).....		032107
Jian Li, Cen-Yang Wang, Tong-Jun Liu, and Qin Wang		
Rigorous quantum limits on monitoring free masses and harmonic oscillators (<i>6 pages</i>).....		032108
S. M. Roy		
Dynamical evolutions in non-Hermitian triple-well systems with a complex potential (<i>6 pages</i>).....		032109
Liping Guo, Lei Du, Chuanhao Yin, Yunbo Zhang, and Shu Chen		
Tensor products of process matrices with indefinite causal structure (<i>5 pages</i>).....		032110
Ding Jia (贾丁) and Nitica Sakharwade		

(Continued)

The Table of Contents is a total listing of Parts A and B.
Part A consists of pages 030101(R)–032518, and Part B pages 032701–039907(E).

PART A

RAPID COMMUNICATIONS

Fundamental concepts

- Relational time in anyonic systems (5 pages) 030101(R)
A. Nikolova, G. K. Brennen, T. J. Osborne, G. J. Milburn, and T. M. Stace
- Excluding joint probabilities from quantum theory (5 pages) 030102(R)
Armen E. Allahverdyan and Arshag Danageozian
- Out-of-time-ordered measurements as a probe of quantum dynamics (6 pages) 030103(R)
Pranjal Bordia, Fabien Alet, and Pavan Hosur

Quantum information

- Fault-tolerant quantum computation with nondeterministic entangling gates (5 pages) 030301(R)
James M. Auger, Hussain Anwar, Mercedes Gimeno-Segovia, Thomas M. Stace, and Dan E. Browne

Atomic and molecular processes in external fields, including interactions with strong fields and short pulses

- Rovibrational optical pumping of a molecular beam (5 pages) 031401(R)
A. Cournol, P. Pillet, H. Lignier, and D. Comparat
- Trajectory-free ionization times in strong-field ionization (5 pages) 031402(R)
Nicolas Eicke and Manfred Lein
- Cs 62D_J Rydberg-atom macrodimers formed by long-range multipole interaction (5 pages) 031403(R)
Xiaoxuan Han, Suying Bai, Yuechun Jiao, Liping Hao, Yongmei Xue, Jianming Zhao,
Suotang Jia, and Georg Raithel
- Many-body kinetics of dynamic nuclear polarization by the cross effect (6 pages) 031404(R)
A. Karabanov, D. Wiśniewski, F. Raimondi, I. Lesanovsky, and W. Köckenberger
- Experimental evidence for selection rules in multiphoton double ionization of helium and neon (4 pages) 031405(R)
K. Henrichs, S. Eckart, A. Hartung, D. Trabert, J. Rist, H. Sann, M. Pitzer, M. Richter, H. Kang,
M. S. Schöffler, M. Kunitski, T. Jahnke, and R. Dörner

