

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 92, NUMBER 1

JULY 2015

Nondegenerate multimode optomechanics (<i>11 pages</i>)	013851
L. F. Buchmann and D. M. Stamper-Kurn	
Mechanical $\mathcal{PT}$ symmetry in coupled optomechanical systems (<i>12 pages</i>)	013852
Xun-Wei Xu, Yu-xi Liu, Chang-Pu Sun, and Yong Li	

COMMENTS

Comment on “Bose-Einstein condensation with a finite number of particles in a power-law trap” (<i>3 pages</i>)	017601
José M. B. Noronha	
Reply to “Comment on ‘Bose-Einstein condensation with a finite number of particles in a power-law trap’ ” (<i>3 pages</i>)	017602
A. Jaouadi, M. Telmini, and Eric Charron	
Comment on “Thermal phase noise in Fabry-Pérot resonators and fiber Bragg gratings” (<i>2 pages</i>)	017801
Scott Foster and Geoffrey A. Cranch	
Reply to “Comment on ‘Thermal phase noise in Fabry-Pérot resonators and fiber Bragg gratings’ ” (<i>4 pages</i>)	017802
George Skolianos and Michel Dignonnet	
Comment on “Deducing radiation pressure on a submerged mirror from the Doppler shift” (<i>2 pages</i>)	017803
V. P. Torchigin and A. V. Torchigin	
Reply to “Comment on ‘Deducing radiation pressure on a submerged mirror from the Doppler shift’ ” (<i>2 pages</i>)	017804
Masud Mansuripur	

ERRATA

Erratum: Low-energy electron-impact ionization of argon: Three-dimensional cross section [Phys. Rev. A 85 , 032702 (2012)] (<i>1 page</i>)	019901(E)
X. Ren, T. Pflüger, J. Ullrich, O. Zatsarinny, K. Bartschat, D. H. Madison, and A. Dorn	
Erratum: Isotope shifts in francium isotopes $^{206-213}\text{Fr}$ and ^{221}Fr [Phys. Rev. A 90 , 052502 (2014)] (<i>2 pages</i>)	019902(E)
R. Collister, G. Gwinner, M. Tandecki, J. A. Behr, M. R. Pearson, J. Zhang, L. A. Orozco, S. Aubin, and E. Gomez	
Publisher’s Note: Enhancing quantum entanglement and quantum teleportation for two-mode squeezed vacuum state by local quantum-optical catalysis [Phys. Rev. A 92 , 012318 (2015)] (<i>1 page</i>)	019903(E)
Xue-xiang Xu	
Erratum: Synthetic magnetic fluxes and topological order in one-dimensional spin systems [Phys. Rev. A 91 , 063612 (2015)] (<i>1 page</i>)	019904(E)
Tobias Graß, Christine Muschik, Alessio Celi, Ravindra W. Chhajlany, and Maciej Lewenstein	

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 92, NUMBER 1

JULY 2015

Observation of diffraction cancellation for nonparaxial beams in the scale-free-optics regime (5 pages)	013835
F. Di Mei, D. Pierangeli, J. Parravicini, C. Conti, A. J. Agranat, and E. DelRe	
Stimulated Brillouin scattering in integrated photonic waveguides: Forces, scattering mechanisms, and coupled-mode analysis (13 pages)	013836
C. Wolff, M. J. Steel, B. J. Eggleton, and C. G. Poulton	
☞ Near-field speckle-scanning-based x-ray imaging (8 pages)	013837
Sebastien Berujon and Eric Ziegler	
Coherent effect of vacuum fluctuations on driven atoms (13 pages)	013838
M. Donaire and A. Lambrecht	
☞ Spin separations in the spin Hall effect of light (7 pages)	013839
Jin-Li Ren, Bo Wang, Meng-Meng Pan, Yun-Feng Xiao, Qihuang Gong, and Yan Li	
Inverse Vernier effect in coupled lasers (6 pages)	013840
Li Ge and Hakan E. Türeci	
Predicting the evolutionary dynamic behavior of a laser with injected signal using Lyapunov exponents (11 pages)	013841
D. K. Bandy, J. R. Hall, and M. E. Denker	
Theory of nanoparticle-induced frequency shifts of whispering-gallery-mode resonances in spheroidal optical resonators (13 pages)	013842
L. Deych and V. Shuvayev	
Modified atomic decay rate near absorptive scatterers at finite temperature (16 pages)	013843
L. G. Suttorp and A. J. van Wonderen	
Thermodynamics of trajectories of a quantum harmonic oscillator coupled to N baths (5 pages)	013844
Simon Pigeon, Lorenzo Fusco, André Xuereb, Gabriele De Chiara, and Mauro Paternostro	
$\omega - k_x$ Fano line shape in photonic crystal slabs (8 pages)	013845
Dmitry A. Bykov and Leonid L. Doskolovich	
Population inversion in two-level systems possessing permanent dipoles (5 pages)	013846
Mihai Macovei, Mayank Mishra, and Christoph H. Keitel	
Steady-state <i>ab initio</i> laser theory for fully or nearly degenerate cavity modes (10 pages)	013847
Stephan Burkhardt, Matthias Liertzer, Dmitry O. Krimer, and Stefan Rotter	
Synchronous-asynchronous laser mode-locking transition (8 pages)	013848
Shang-Ying Wu, Wei-Wei Hsiang, and Yinchieh Lai	
Enhanced harmonic generation and carrier-envelope phase-dependent effects in cavity quantum electrodynamics (8 pages)	013849
Jiahua Li, Rong Yu, Chunling Ding, Duo Zhang, and Ying Wu	
☞ Photon-correlation measurements of atomic-cloud temperature using an optical nanofiber (7 pages)	013850
J. A. Grover, P. Solano, L. A. Orozco, and S. L. Rolston	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A	THIRD SERIES, VOLUME 92, NUMBER 1	JULY 2015
Laser stabilization using saturated absorption in a cavity-QED system (7 pages)		013817
D. A. Tieri, J. Cooper, Bjarke T. R. Christensen, J. W. Thomsen, and M. J. Holland		
Fifth-order nonlinear susceptibility: Effect of third-order resonances in a classical theory (10 pages)		013818
Valentin Besse, Hervé Leblond, and Georges Boudebs		
Speckle-intensity correlations of photons scattered by cold atoms (8 pages)		013819
Cord A. Müller, Benoît Grémaud, and Christian Miniatura		
Optical pattern formation with a two-level nonlinearity (5 pages)		013820
A. Camara, R. Kaiser, G. Labeyrie, W. J. Firth, G.-L. Oppo, G. R. M. Robb, A. S. Arnold, and T. Ackemann		
Two polarization-entangled sources from the same semiconductor chip (7 pages)		013821
Dongpeng Kang, Minseok Kim, Haoyu He, and Amr S. Helmy		
Enhancement of mechanical effects of single photons in modulated two-mode optomechanics (7 pages)		013822
Jie-Qiao Liao, C. K. Law, Le-Man Kuang, and Franco Nori		
Wavelength-multiplexing ghost imaging (3 pages)		013823
De-Jian Zhang, Hong-Guo Li, Qiu-Li Zhao, Sen Wang, Hai-Bo Wang, Jun Xiong, and Kaige Wang		
Random laser of dye-injected holey photonic-crystal fiber (8 pages)		013824
Yaado Yonenaga, Ryushi Fujimura, Masayuki Shimojo, Atsushi Kubono, and Kotaro Kajikawa		
Phonon-induced spin squeezing based on geometric phase (5 pages)		013825
Yan-Lei Zhang, Chang-Ling Zou, Xu-Bo Zou, Liang Jiang, and Guang-Can Guo		
Enhancement and state tomography of a squeezed vacuum with circuit quantum electrodynamics (6 pages)		013826
Matthew Elliott and Eran Ginossar		
Field renormalization in photonic crystal waveguides (10 pages)		013827
Pierre Colman		
Quantum plasmonic excitation in graphene and loss-insensitive propagation (13 pages)		013828
George W. Hanson, S. A. Hassani Gangaraj, Changhyoup Lee, Dimitris G. Angelakis, and Mark Tame		
Dark state in a nonlinear optomechanical system with quadratic coupling (8 pages)		013829
Yue-Xin Huang, Xiang-Fa Zhou, Guang-Can Guo, and Yong-Sheng Zhang		
Quantum control and long-range quantum correlations in dynamical Casimir arrays (9 pages)		013830
Roberto Stassi, Simone De Liberato, Luigi Garziano, Bernardo Spagnolo, and Salvatore Savasta		
Energy circulations in singular beams diffracted through an isosceles right triangular aperture (6 pages)		013831
Monika Bahl and P. Senthilkumaran		
Theory of quantum imaging with undetected photons (8 pages)		013832
Mayukh Lahiri, Radek Lapkiewicz, Gabriela Barreto Lemos, and Anton Zeilinger		
Coherence and dimensionality of intense spatio-spectral twin beams (14 pages)		013833
Jan Peřina, Jr.		
Shrinking cloaks in expanding space-times: The role of coordinates and the meaning of transformations in transformation optics (17 pages)		013834
Robert T. Thompson and Mohsen Fathi		

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 92, NUMBER 1

JULY 2015

Isothermal compressibility determination across Bose-Einstein condensation (5 pages)	013638
F. J. Poveda-Cuevas, P. C. M. Castilho, E. D. Mercado-Gutierrez, A. R. Fritsch, S. R. Muniz, E. Lucioni, G. Roati, and V. S. Bagnato	
Split and overlapped binary solitons in optical lattices (9 pages)	013639
Golam Ali Sekh, Francesco V. Pepe, Paolo Facchi, Saverio Pascazio, and Mario Salerno	
Quantum optics, physics of lasers, nonlinear optics, classical optics	
Quantum versus semiclassical description of light interaction with atomic ensembles: Revision of the Maxwell-Bloch equations and single-photon superradiance (9 pages)	013801
Anatoly A. Svidzinsky, Xiwen Zhang, and Marlan O. Scully	
Conical refraction healing after partially blocking the input beam (6 pages)	013802
Alex Turpin, Yury V. Loiko, Todor K. Kalkandjiev, Ramón Corbalán, and Jordi Mompart	
 Phase-selective quantum eraser (5 pages)	013803
A. Heuer, G. Pieplow, and R. Menzel	
Nonlocality of coupling and the retrieval of field correlations with arrays of waveguides (6 pages)	013804
Stefano Minardi	
Dynamic control of light scattering using spatial coherence (5 pages)	013806
Yangyundou Wang, Shenggang Yan, David Kuebel, and Taco D. Visser	
Three-photon coherence in a ladder-type atomic system (7 pages)	013807
Heung-Ryoul Noh and Han Seb Moon	
Spectral and carrier transfer characteristics of 1.55- μm InAs/InP coupled-quantum-dot lasers (6 pages)	013808
Zhiyuan Lin, Zhuoran Wang, and Guohui Yuan	
Radio-frequency-assisted electromagnetically induced transparency (9 pages)	013809
Carl Basler, Jonas Grzesiak, and Hanspeter Helm	
Modulational instability in dispersion-kicked optical fibers (9 pages)	013810
S. Rota Nodari, M. Conforti, G. Dujardin, A. Kudlinski, A. Mussot, S. Trillo, and S. De Bièvre	
Experimental exploration of the optomechanical attractor diagram and its dynamics (5 pages)	013811
F. M. Buters, H. J. Eerkens, K. Heeck, M. J. Weaver, B. Pepper, S. de Man, and D. Bouwmeester	
Mirrorless lasing from light emitters in percolating clusters (7 pages)	013812
Gennadiy Burlak and Y. G. Rubo	
Femtosecond filamentation by intensity clamping at a Freeman resonance (7 pages)	013813
Michael Hofmann and Carsten Brée	
Optical tunneling by arbitrary macroscopic three-dimensional objects (8 pages)	013814
Lei Bi, Ping Yang, George W. Kattawar, and Michael I. Mishchenko	
Giant Goos-Hänchen shift using $\mathcal{PT}$ symmetry (7 pages)	013815
Ziauddin, You-Lin Chuang, and Ray-Kuang Lee	
Giant anomalous self-steepening in photonic crystal waveguides (7 pages)	013816
Chad Husko and Pierre Colman	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A	THIRD SERIES, VOLUME 92, NUMBER 1	JULY 2015
Numerical model for atomtronic circuit analysis (8 pages)		013621
Weng W. Chow, Cameron J. E. Straatsma, and Dana Z. Anderson		
Quantum kinetic theory of localized system-reservoir interaction leading to a description of superfluid internal convection (21 pages)		013622
Lukas Gilz and James R. Anglin		
Quantum dynamics generated by the two-axis counter twisting Hamiltonian (8 pages)		013623
Dariusz Kałtoch and Emilia Witkowska		
Rabi lattice models with discrete gauge symmetry: Phase diagram and implementation in trapped-ion quantum simulators (10 pages)		013624
Pedro Nevado and Diego Porras		
Population-imbalance instability in a Bose-Hubbard ladder in the presence of a magnetic flux (13 pages)		013625
Shun Uchino and Akiyuki Tokuno		
Second-order response theory of radio-frequency spectroscopy for cold atoms (16 pages)		013626
C. Berthod, M. Köhl, and T. Giamarchi		
Generating, dragging, and releasing dark solitons in elongated Bose-Einstein condensates (9 pages)		013627
I. Hans, J. Stockhofe, and P. Schmelcher		
Many-body formalism for fermions: Enforcing the Pauli principle on paper (5 pages)		013628
D. K. Watson		
Heralded W -state preparation using laser-designed superatoms (6 pages)		013629
Martin Gärttner		
Localizing spin dynamics in a spin-1 Bose-Einstein condensate via magnetic pulses (5 pages)		013630
Huanbin Li, Zhengguo Pu, M. S. Chapman, and Wenxian Zhang		
Few-fermion systems in one dimension: Ground- and excited-state energies and contacts (7 pages)		013631
L. Rammelmüller, W. J. Porter, A. C. Loheac, and J. E. Drut		
Simulating and exploring Weyl semimetal physics with cold atoms in a two-dimensional optical lattice (9 pages)		013632
Dan-Wei Zhang, Shi-Liang Zhu, and Z. D. Wang		
Bright solitons in a two-dimensional spin-orbit-coupled dipolar Bose-Einstein condensate (9 pages)		013633
Yong Xu, Yongping Zhang, and Chuanwei Zhang		
Intrinsic-to-extrinsic supersolid transition and fractionally modulated states in a lattice ultracold Bose gas with long-range interaction (6 pages)		013634
C.-H. Hsueh, Y.-C. Tsai, and W. C. Wu		
Dynamical spin-density waves in a spin-orbit-coupled Bose-Einstein condensate (7 pages)		013635
Yan Li, Chunlei Qu, Yongsheng Zhang, and Chuanwei Zhang		
Scattering of two-dimensional dark solitons by a single quantum vortex in a Bose-Einstein condensate (19 pages)		013636
Lev A. Smirnov and Alexander I. Smirnov		
Two-dimensional bright solitons in dipolar Bose-Einstein condensates with tilted dipoles (7 pages)		013637
Meghana Raghunandan, Chinmayee Mishra, Kazimierz Łakomy, Paolo Pedri, Luis Santos, and Rejish Nath		

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 92, NUMBER 1

JULY 2015

Topological condensate in an interaction-induced gauge potential (<i>7 pages</i>)	013604
Jun-hui Zheng, Bo Xiong, Gediminas Juzeliūnas, and Daw-Wei Wang	
Coherence and linewidth of a continuously pumped atom laser at finite temperature (<i>6 pages</i>)	013605
Geoffrey M. Lee, Simon A. Haine, Ashton S. Bradley, and Matthew J. Davis	
Quantum fluctuation-driven first-order phase transitions in optical lattices (<i>7 pages</i>)	013606
Boyang Liu and Jiangping Hu	
Spin diffusion in ultracold spin-orbit-coupled ^{40}K gas (<i>18 pages</i>)	013607
T. Yu and M. W. Wu	
Trapped unitary two-component Fermi gases with up to ten particles (<i>10 pages</i>)	013608
X. Y. Yin and D. Blume	
Anomalous charge pumping in a one-dimensional optical superlattice (<i>6 pages</i>)	013609
Ran Wei and Erich J. Mueller	
☞ Effective many-body parameters for atoms in nonseparable Gaussian optical potentials (<i>18 pages</i>)	013610
Michael L. Wall, Kaden R. A. Hazzard, and Ana Maria Rey	
Suppression of relative flow by multiple domains in two-component Bose-Einstein condensates (<i>5 pages</i>)	013611
Yujiro Eto, Masaya Kunimi, Hidekatsu Tokita, Hiroki Saito, and Takuya Hirano	
Simulation and measurement of the fractional particle number in one-dimensional optical lattices (<i>8 pages</i>)	013612
Dan-Wei Zhang, Feng Mei, Zheng-Yuan Xue, Shi-Liang Zhu, and Z. D. Wang	
Probing matter-field and atom-number correlations in optical lattices by global nondestructive addressing (<i>7 pages</i>)	013613
W. Kozłowski, S. F. Caballero-Benitez, and I. B. Mekhov	
Density-functional-theory approach to the thermodynamics of the harmonically confined one-dimensional Hubbard model (<i>19 pages</i>)	013614
V. L. Campo	
Proposed method to realize the p -wave superfluid state using an s -wave superfluid Fermi gas with a synthetic spin-orbit interaction (<i>12 pages</i>)	013615
T. Yamaguchi and Y. Ohashi	
☞ Phase shift due to atom-atom interactions in a light-pulse atom interferometer (<i>9 pages</i>)	013616
Raphaël Jannin, Pierre Cladé, and Saïda Guellati-Khélifa	
Dicke superradiance as a nondestructive probe for quantum quenches in optical lattices (<i>5 pages</i>)	013617
Nicolai ten Brinke and Ralf Schützhold	
Interaction-induced persistent-current enhancement in frustrated bosonic systems (<i>5 pages</i>)	013618
Vipin Kerala Varma and Ramsés J. Sánchez	
Stability and anomalous compressibility of Bose gases near resonance: The scale-dependent interactions and thermal effects (<i>5 pages</i>)	013619
Shao-Jian Jiang and Fei Zhou	
Polarons in ultracold Fermi superfluids (<i>7 pages</i>)	013620
Wei Yi and Xiaoling Cui	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A	THIRD SERIES, VOLUME 92, NUMBER 1	JULY 2015
Isolating resonant excitation from above-threshold ionization (5 pages)		013415
Yun Shao, Min Li, Ming-Ming Liu, Xufei Sun, Xiguo Xie, Peng Wang, Yongkai Deng, Chengyin Wu, Qihuang Gong, and Yunquan Liu		
Spatial-temporal control of interferences of multiple tunneling photoelectron wave packets (5 pages)		013416
Min Li, Ji-Wei Geng, Ming-Ming Liu, Xu Zheng, Liang-You Peng, Qihuang Gong, and Yunquan Liu		
Multiphoton inner-shell ionization of the carbon atom (7 pages)		013417
H. F. Rey and H. W. van der Hart		
Spatial distribution on high-order-harmonic generation of an H_2^+ molecule in intense laser fields (7 pages)		013418
Jun Zhang, Xin-Lei Ge, Tian Wang, Tong-Tong Xu, Jing Guo, and Xue-Shen Liu		
Enhanced trapping of cold ^6Li using multiple-sideband cooling in a two-dimensional magneto-optical trap (6 pages)		013419
Kai Li, Dongfang Zhang, Tianyou Gao, Shi-Guo Peng, and Kaijun Jiang		
Effects of nuclear motion on the ionization-induced terahertz radiation of H_2^+ in intense few-cycle laser pulses (6 pages)		013420
Shan Xue, Hongchuan Du, Yue Xia, and Bitao Hu		
Photoproduction of N_2^{2+} from threshold to 400 eV (5 pages)		013421
T. Hartman and R. Wehlitz		
Analysis of electron trajectories with two-color strong-field ionization (5 pages)		013422
Jost Henkel and Manfred Lein		
Laser-assisted inelastic scattering of electrons by helium atoms (9 pages)		013423
H. Agueny, A. Makhoute, A. Dubois, I. Ajana, and G. Rahali		
Phase differences in the photoemission from krypton in the fine-structure-split ionization channels $^2P_{3/2}$ and $^2P_{1/2}$ (6 pages)		013424
M. Baggash and H. Rottke		
Harmonic and subharmonic association of universal dimers in a thermal gas (16 pages)		013425
Abhishek Mohapatra and Eric Braaten		
Energy- and angle-resolved ionization of H_2^+ interacting with xuv subfemtosecond laser pulses (9 pages)		013426
R. E. F. Silva, F. Catoire, P. Rivière, T. Niederhausen, H. Bachau, and F. Martín		
Auger resonant-Raman decay after Xe <i>L</i> -edge photoexcitation (8 pages)		013427
R. K. Kushawaha, K. Jänkälä, T. Marchenko, G. Goldsztejn, R. Guillemin, L. Journal, D. Céolin, J.-P. Rueff, A. F. Lago, R. Püttner, M. N. Piancastelli, and M. Simon		
Matter waves and collective properties of cold atoms and molecules		
Mott-insulator-to-superconductor transition in a two-dimensional superlattice (6 pages)		013601
Rubem Mondaini, Predrag Nikolić, and Marcos Rigol		
Ground-state and finite-temperature properties of correlated ultracold bosons on optical lattices (11 pages)		013602
A. S. Sajna, T. P. Polak, R. Micnas, and P. Rožek		
Nonequilibrium universality in the heating dynamics of interacting Luttinger liquids (11 pages)		013603
Michael Buchhold and Sebastian Diehl		

(Continued)

- Theoretical study of the mechanism of H_2O^+ dissociative recombination (*10 pages*) 012708
Sifiso M. Nkambule, Åsa Larson, Samantha Fonseca dos Santos, and Ann E. Orel

PART B

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

- Compton scattering of twisted light: Angular distribution and polarization of scattered photons (*12 pages*) 013401
S. Stock, A. Surzhykov, S. Fritzsche, and D. Seipt
- Selective charge asymmetric distribution in heteronuclear diatomic molecules in strong laser fields (*5 pages*) 013402
Wei Lai and Chunlei Guo
- Frequency shift between coherent superposition states induced by the Berry phase evolving linearly in time (*4 pages*) 013403
Atsuo Morinaga and Yasushi Hasegawa
- Interplay between resonant enhancement and quantum path dynamics in harmonic generation in helium (*8 pages*) 013404
Seth Camp, Kenneth J. Schafer, and Mette B. Gaarde
- Magnetic-field-induced enhancement of atomic stabilization in intense high-frequency laser fields (*7 pages*) 013405
Aleksander Skjerlie Simonsen and Morten Førre
-  Spectrum of quasistable states in a strong infrared field (*5 pages*) 013406
Changchun Zhong and F. Robicheaux
- Laser pulses for coherent xuv Raman excitation (*7 pages*) 013407
Loren Greenman, Christiane P. Koch, and K. Birgitta Whaley
- Auger decay and subsequent fragmentation pathways of ethylene following *K*-shell ionization (*13 pages*) 013408
B. Gaire, D. J. Haxton, F. P. Sturm, J. Williams, A. Gatton, I. Bocharova, N. Gehrken, M. Schöffler, H. Gassert, S. Zeller, J. Voigtsberger, T. Jahnke, M. Zohrabi, D. Reedy, C. Nook, A. L. Landers, A. Belkacem, C. L. Cocke, I. Ben-Itzhak, R. Dörner, and Th. Weber
- Dynamical localization in molecular alignment of kicked quantum rotors (*5 pages*) 013409
A. Kamalov, D. W. Broege, and P. H. Bucksbaum
- Visualizing molecular unidirectional rotation (*8 pages*) 013410
Kang Lin, Qiying Song, Xiaochun Gong, Qinying Ji, Haifeng Pan, Jingxin Ding, Heping Zeng, and Jian Wu
- Complete photoionization experiments via ultrafast coherent control with polarization multiplexing. II. Numerics and analysis methodologies (*15 pages*) 013411
P. Hockett, M. Wollenhaupt, C. Lux, and T. Baumert
- Maximum-information photoelectron metrology (*14 pages*) 013412
P. Hockett, C. Lux, M. Wollenhaupt, and T. Baumert
- Photoionization and photofragmentation of multiply charged $\text{Lu}_3\text{N}@C_{80}$ ions (*9 pages*) 013413
J. Hellhund, A. Borovik, Jr., K. Holste, S. Klumpp, M. Martins, S. Ricz, S. Schippers, and A. Müller
- Polarization of electric-field noise near metallic surfaces (*6 pages*) 013414
Philipp Schindler, Dylan J Gorman, Nikos Daniilidis, and Hartmut Häffner

(Continued)

CONTENTS - Continued

PHYSICAL REVIEW A	THIRD SERIES, VOLUME 92, NUMBER 1	JULY 2015
Ionization energies along beryllium isoelectronic sequence (10 pages)		012514
A. V. Malyshev, A. V. Volotka, D. A. Glazov, I. I. Tupitsyn, V. M. Shabaev, and G. Plunien		
Dynamic dipole polarizabilities for the low-lying triplet states of helium (11 pages)		012515
Yong-Hui Zhang, Li-Yan Tang, Xian-Zhou Zhang, and Ting-Yun Shi		
Polarizabilities of the ^{87}Sr clock transition (7 pages)		012516
C. Shi, J.-L. Robyr, U. Eismann, M. Zawada, L. Lorini, R. Le Targat, and J. Lodewyck		
All-optical measurement of Rydberg-state lifetimes (5 pages)		012517
Markus Mack, Jens Grimm, Florian Karlewski, Lőrinc Sárkány, Helge Hattermann, and József Fortágh		
Linear interpolation method in ensemble Kohn-Sham and range-separated density-functional approximations for excited states (19 pages)		012518
Bruno Senjean, Stefan Knecht, Hans Jørgen Aa. Jensen, and Emmanuel Fromager		
Method for detecting the isomeric state $I = (3/2)^+$ in ^{229}Th with laser-induced fluorescence (19 pages)		012519
J. Dembczyński, M. Elantkowska, and J. Ruczkowski		
Nonuniqueness of algebraic first-order density-matrix functionals (5 pages)		012520
Jian Wang and Peter J. Knowles		
TaN molecule as a candidate for the search for a T,P -violating nuclear magnetic quadrupole moment (6 pages)		012521
L. V. Skripnikov, A. N. Petrov, N. S. Mosyagin, A. V. Titov, and V. V. Flambaum		
Repulsive Casimir-Polder potential by a negative reflecting surface (8 pages)		012522
Qi-Zhang Yuan		
Atomic and molecular collisions and interactions		
Electron-impact ionization of Xe^{24+} ions: Theory versus experiment (9 pages)		012701
Pengfei Liu, Jiaolong Zeng, Alexander Borovik, Jr., Stefan Schippers, and Alfred Müller		
Fraunhofer-type diffraction patterns of matter-wave scattering of projectiles: Electron transfer in energetic ion-atom collisions (8 pages)		012702
Hicham Agueny		
Elastic and inelastic transmission of electrons through insulating polyethylene terephthalate nanocapillaries (11 pages)		012703
D. Keerthisinghe, B. S. Dassanayake, S. J. Wickramarachchi, N. Stolterfoht, and J. A. Tanis		
Quantized nonadiabatic coupling terms of H_3^+ (9 pages)		012704
Alexander Alijah, Julien Fremont, and Vladimir G. Tyuterev		
Scattering of twisted relativistic electrons by atoms (12 pages)		012705
V. Serbo, I. P. Ivanov, S. Fritzsche, D. Seipt, and A. Surzhykov		
Resonances with natural and unnatural parities in positron-sodium scattering (9 pages)		012706
Muhammad Umair and Svante Jonsell		
Infrared light on molecule-molecule and molecule-surface collisions (5 pages)		012707
H. Tran, J. Vander Auwera, X. Landsheere, N. H. Ngo, E. Pangui, S. B. Morales, H. El Hamzaoui, B. Capoen, M. Bouazaoui, C. Boulet, and J.-M. Hartmann		

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 92, NUMBER 1

JULY 2015

Deterministic quantum computation with one photonic qubit (<i>6 pages</i>)	012337
M. Hor-Meyll, D. S. Tasca, S. P. Walborn, P. H. Souto Ribeiro, M. M. Santos, and E. I. Duzzioni	
Fighting noise with noise in realistic quantum teleportation (<i>10 pages</i>)	012338
Raphael Fortes and Gustavo Rigolin	
Atomic and molecular structure and dynamics	
Measurement of absolute frequencies and hyperfine structure constants of $4D_{5/2}$ and $4D_{3/2}$ levels of ^{87}Rb and ^{85}Rb using an optical frequency comb (<i>7 pages</i>)	012501
Won-Kyu Lee and Han Seb Moon	
Decoupling electrons and nuclei without the Born-Oppenheimer approximation: The electron-nucleus mean-field configuration-interaction method (<i>15 pages</i>)	012502
Patrick Cassam-Chenaï, Bingbing Suo, and Wenjian Liu	
Postcollision interaction effects in KLL Auger spectra following argon $1s$ photoionization (<i>8 pages</i>)	012503
R. Guillemin, S. Sheinerman, R. Püttner, T. Marchenko, G. Goldsztejn, L. Journal, R. K. Kushawaha, D. Céolin, M. N. Piancastelli, and M. Simon	
Spectra of $\text{W}^{19+} - \text{W}^{32+}$ observed in the EUV region between 15 and 55 Å with an electron-beam ion trap (<i>6 pages</i>)	012504
H. A. Sakaue, D. Kato, N. Yamamoto, N. Nakamura, and I. Murakami	
van der Waals coefficients for positronium interactions with atoms (<i>6 pages</i>)	012505
A. R. Swann, J. A. Ludlow, and G. F. Gribakin	
Experimental and theoretical studies of the coupled $A^1\Sigma^+$ and $b^3\Pi$ states of NaK (<i>12 pages</i>)	012506
Heather Harker, Patrick Crozet, Amanda J. Ross, Kara Richter, Joshua Jones, Carl Faust, John Huennekens, Andrey V. Stolyarov, Houssam Salami, and Thomas Bergeman	
Relativistic configuration-interaction calculation of the $1s2s^2\ ^2S_{1/2}$ state of Li-like ions (<i>9 pages</i>)	012507
L. Natarajan	
<i>Ab initio</i> estimations of the isotope shift for the first three elements of the K isoelectronic sequence (<i>13 pages</i>)	012508
Sourav Roy and Sonjoy Majumder	
Coulomb-gauge calculation of the combined effect of correlation and QED for heliumlike highly charged ions (<i>10 pages</i>)	012509
J. Holmberg, S. Salomonson, and I. Lindgren	
Valence Auger decay following $3s$ photoionization in potassium (<i>8 pages</i>)	012510
J. Palaudoux, S. Sheinerman, J. Soronen, S.-M. Huttula, M. Huttula, K. Jänkälä, L. Andric, K. Ito, P. Lablanquie, F. Penent, J.-M. Bizau, S. Guilbaud, and D. Cubaynes	
Special features of the thermal Casimir effect across a uniaxial anisotropic film (<i>8 pages</i>)	012511
V. M. Mostepanenko	
Quasipinning and selection rules for excitations in atoms and molecules (<i>12 pages</i>)	012512
Carlos L. Benavides-Riveros and Michael Springborg	
Quantum electrodynamics $m\alpha^6$ and $m\alpha^7$ $\ln\alpha$ corrections to the fine splitting in Li and Be^+ (<i>9 pages</i>)	012513
Mariusz Puchalski and Krzysztof Pachucki	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A	THIRD SERIES, VOLUME 92, NUMBER 1	JULY 2015
Tunable coupler for superconducting Xmon qubits: Perturbative nonlinear model (9 pages)		012320
Michael R. Geller, Emmanuel Donate, Yu Chen, Michael T. Fang, Nelson Leung, Charles Neill, Pedram Roushan, and John M. Martinis		
Communication between general-relativistic observers without a shared reference frame (5 pages)		012321
Agata Chęcińska and Andrzej Dragan		
Group structures and representations of graph states (19 pages)		012322
Jun-Yi Wu, Hermann Kampermann, and Dagmar Bruß		
Ramsauer effect in a one-dimensional quantum walk with multiple defects (6 pages)		012323
Ho Tat Lam and Kwok Yip Szeto		
Experimental test of robust quantum detection and restoration of a qubit (5 pages)		012324
M. Mićuda, I. Straka, M. Miková, M. Dušek, M. Ježek, J. Fiurášek, and R. Filip		
Quantum theory of a bandpass Purcell filter for qubit readout (13 pages)		012325
Eyob A. Sete, John M. Martinis, and Alexander N. Korotkov		
Entanglement evolution of twisted photons in strong atmospheric turbulence (8 pages)		012326
Filippus S. Roux, Thomas Wellens, and Vyacheslav N. Shatokhin		
Quantum learning robust against noise (5 pages)		012327
Andrew W. Cross, Graeme Smith, and John A. Smolin		
Hierarchy of bounds on accessible information and informational power (6 pages)		012328
Michele Dall'Arno		
Entanglement swapping with quantum-memory-compatible photons (6 pages)		012329
J. Jin, M. Grimaud Puigibert, L. Giner, J. A. Slater, M. R. E. Lamont, V. B. Verma, M. D. Shaw, F. Marsili, S. W. Nam, D. Oblak, and W. Tittel		
Superconducting circuit probe for analog quantum simulators (8 pages)		012330
Liang-Hui Du, J. Q. You, and Lin Tian		
Violations of Bell inequalities from random pure states (6 pages)		012331
Max R. Atkin and Stefan Zohren		
Nonlocality of orthogonal product states (4 pages)		012332
Zhi-Chao Zhang, Fei Gao, Su-Juan Qin, Ying-Hui Yang, and Qiao-Yan Wen		
Measurement-device-independent quantum communication with an untrusted source (11 pages)		012333
Feihu Xu		
Simulating the Haldane phase in trapped-ion spins using optical fields (10 pages)		012334
I. Cohen, P. Richerme, Z.-X. Gong, C. Monroe, and A. Retzker		
Progress towards a unified approach to entanglement distribution (14 pages)		012335
Alexander Streltsov, Remigiusz Augusiak, Maciej Demianowicz, and Maciej Lewenstein		
Adiabatic topological quantum computing (20 pages)		012336
Chris Cesare, Andrew J. Landahl, Dave Bacon, Steven T. Flammia, and Alice Neels		

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A	THIRD SERIES, VOLUME 92, NUMBER 1	JULY 2015
Quantum communication complexity using the quantum Zeno effect (6 pages)	Armin Tavakoli, Hammad Anwer, Alley Hameedi, and Mohamed Bourennane	012303
Exploring boundaries of quantum convex structures: Special role of unitary processes (7 pages)	Zbigniew Puchała, Anna Jenčová, Michal Sedlák, and Mário Ziman	012304
Determination of stabilizer states (6 pages)	Xia Wu, Ying-hui Yang, Yu-kun Wang, Qiao-yan Wen, Su-juan Qin, and Fei Gao	012305
Topological and nematic ordered phases in many-body cluster-Ising models (9 pages)	S. M. Giampaolo and B. C. Hiesmayr	012306
Long-distance entanglement distribution using individual atoms in optical cavities (15 pages)	J. Borregaard, P. Kómár, E. M. Kessler, M. D. Lukin, and A. S. Sørensen	012307
Manipulating the Majorana qubit with Landau-Zener-Stückelberg interference (6 pages)	Wen-Chao Huang, Qi-Feng Liang, Dao-Xin Yao, and Zhi Wang	012308
Switching effect of the side chain on quantum walks on triple graphs (6 pages)	Yi-Mu Du, Li-Hua Lu, and You-Quan Li	012309
Universal measurement-based quantum computation with spin-2 Affleck-Kennedy-Lieb-Tasaki states (15 pages)	Tzu-Chieh Wei and Robert Raussendorf	012310
Geometric representation of two-qubit entanglement witnesses (7 pages)	Antony Milne, David Jennings, and Terry Rudolph	012311
Maximal quantum Fisher information for general su(2) parametrization processes (6 pages)	Xiao-Xing Jing, Jing Liu, Heng-Na Xiong, and Xiaoguang Wang	012312
Entanglement dynamics of quantum oscillators nonlinearly coupled to thermal environments (8 pages)	Aurora Voje, Alexander Croy, and Andreas Isacsson	012313
Quantum discord in the dynamical Casimir effect (4 pages)	Carlos Sabín, Ivette Fuentes, and Göran Johansson	012314
Harnessing non-Markovian quantum memory by environmental coupling (8 pages)	Zhong-Xiao Man, Yun-Jie Xia, and Rosario Lo Franco	012315
Strong micro-macro entanglement from a weak cross-Kerr nonlinearity (6 pages)	Tian Wang, Hon Wai Lau, Hamidreza Kaviani, Roohollah Ghobadi, and Christoph Simon	012316
Quantum phase communication channels in the presence of static and dynamical phase diffusion (7 pages)	Jacopo Trapani, Berihu Teklu, Stefano Olivares, and Matteo G. A. Paris	012317
Enhancing quantum entanglement and quantum teleportation for two-mode squeezed vacuum state by local quantum-optical catalysis (12 pages)	Xue-xiang Xu	012318
Simple implementation of quantum key distribution based on single-photon Bell-state measurement (4 pages)	Wen-Ye Liang, Mo Li, Zhen-Qiang Yin, Wei Chen, Shuang Wang, Xue-Bi An, Guang-Can Guo, and Zheng-Fu Han	012319

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A	THIRD SERIES, VOLUME 92, NUMBER 1	JULY 2015
Coherently tracking the covariance matrix of an open quantum system (<i>10 pages</i>)		012115
Zibo Miao, Michael R. Hush, and Matthew R. James		
Spontaneous $\mathcal{PT}$ -symmetry breaking in non-Hermitian Kitaev and extended Kitaev models (<i>6 pages</i>)		012116
Xiaohui Wang, Tingting Liu, Ye Xiong, and Peiqing Tong		
Amplitude control of a quantum state in a non-Hermitian Rice-Mele model driven by an external field (<i>8 pages</i>)		012117
S. Lin, X. Z. Zhang, and Z. Song		
Duality of quantum coherence and path distinguishability (<i>6 pages</i>)		012118
Manabendra Nath Bera, Tabish Qureshi, Mohd Asad Siddiqui, and Arun Kumar Pati		
Weak values in continuous weak measurements of qubits (<i>9 pages</i>)		012119
Lupei Qin, Pengfei Liang, and Xin-Qi Li		
Suppressing technical noise in weak measurements by entanglement (<i>20 pages</i>)		012120
Shengshi Pang and Todd A. Brun		
Semiclassical quantization for a bosonic atom-molecule conversion system (<i>9 pages</i>)		012121
Eva-Maria Graefe, Maria Graney, and Alexander Rush		
Quantum-mechanical diffraction theory of light from a small hole: Extinction-theorem approach (<i>15 pages</i>)		012122
Jesper Jung and Ole Keller		
Muonic bound systems, virtual particles, and proton radius (<i>10 pages</i>)		012123
U. D. Jentschura		
Adiabatic elimination of Gaussian subsystems from quantum dynamics under continuous measurement (<i>16 pages</i>)		012124
Ondřej Černotík, Denis V. Vasilyev, and Klemens Hammerer		
Einstein-Podolsky-Rosen-entangled motion of two massive objects (<i>12 pages</i>)		012126
Roman Schnabel		
Entangling power and operator entanglement of nonunitary quantum evolutions (<i>6 pages</i>)		012127
Fan-Zhen Kong, Jun-Long Zhao, Ming Yang, and Zhuo-Liang Cao		
Exploring quantum phases by driven dissipation (<i>12 pages</i>)		012128
Nicolai Lang and Hans Peter Büchler		
Wigner representation of the rotational dynamics of rigid tops (<i>14 pages</i>)		012129
Dmitry V. Zhdanov and Tamar Seideman		
Fisher information versus signal-to-noise ratio for a split detector (<i>6 pages</i>)		012130
George C. Knee and William J. Munro		
Quantum information		
Universal gates via fusion and measurement operations on $SU(2)_4$ anyons (<i>17 pages</i>)		012301
Claire Levaillant, Bela Bauer, Michael Freedman, Zhenghan Wang, and Parsa Bonderson		
Universal two-qubit interactions, measurement, and cooling for quantum simulation and computing (<i>7 pages</i>)		012302
Eliot Kapit		

(Continued)

Progress toward high- Q perfect absorption: A Fano antilaser (<i>6 pages</i>)	011802(R)
Sunkyu Yu, Xianji Piao, Jiho Hong, and Namkyoo Park	

ARTICLES

Fundamental concepts

Ultrarelativistic decoupling transformation for generalized Dirac equations (<i>9 pages</i>)	012101
J. H. Noble and U. D. Jentschura	
Tighter quantum uncertainty relations following from a general probabilistic bound (<i>6 pages</i>)	012102
Florian Fröwis, Roman Schmied, and Nicolas Gisin	
Search for the variation of fundamental constants: Strong enhancements in $X^2\Pi$ cations of dihalogens and hydrogen halides (<i>9 pages</i>)	012103
L. F. Pašteka, A. Borschevsky, V. V. Flambaum, and P. Schwerdtfeger	
Quantum contextuality of a qutrit state (<i>5 pages</i>)	012104
Zhen-Peng Xu, Hong-Yi Su, and Jing-Ling Chen	
Quantum Brownian magneto-oscillator: Role of environmental spectrum and external magnetic field in decoherence and decay processes (<i>16 pages</i>)	012105
Asam Rajesh and Malay Bandyopadhyay	
☞ Stability of a trapped-atom clock on a chip (<i>11 pages</i>)	012106
R. Szmuk, V. Dugrain, W. Mainault, J. Reichel, and P. Rosenbusch	
☞ Compatibility of state assignments and pooling of information (<i>10 pages</i>)	012107
Todd A. Brun, Min-Hsiu Hsieh, and Christopher Perry	
Determining which quantum measurement performs better for state estimation (<i>7 pages</i>)	012108
Jaroslav Řeháček, Yong Siah Teo, and Zdeněk Hradil	
Uncertainty control and precision enhancement of weak measurements in the quadratic regime (<i>6 pages</i>)	012109
Bertúlio de Lima Bernardo, Weliton S. Martins, Sérgio Azevedo, and Alexandre Rosas	
Analyzing the Gaussian character of the spectral quantum state of light via quantum noise measurements (<i>11 pages</i>)	012110
A. S. Coelho, F. A. S. Barbosa, K. N. Cassemiro, M. Martinelli, A. S. Villar, and P. Nussenzveig	
All-versus-nothing violation of local realism from the Hardy paradox under no-signaling (<i>5 pages</i>)	012111
Some Sankar Bhattacharya, Arup Roy, Amit Mukherjee, and Ramij Rahaman	
Statistical hypothesis testing by weak-value amplification: Proposal and evaluation (<i>13 pages</i>)	012112
Yuki Susa and Saki Tanaka	
Optimal number of terms in QED series and its consequence in condensed-matter implementations of QED (<i>4 pages</i>)	012113
Eugene B. Kolomeisky	
Role of quantum non-Gaussian distance in entropic uncertainty relations (<i>6 pages</i>)	012114
Wonmin Son	

(Continued)

The Table of Contents is a total listing of Parts A and B.
Part A consists of pages 010101(R)–012708, and Part B pages 013401–019904(E).

PART A

RAPID COMMUNICATIONS

Fundamental concepts

Decoherence from classically undetectable sources: Standard quantum limit for diffusion (6 pages) 010101(R)
C. Jess Riedel

Zeno limit in frequency estimation with non-Markovian environments (5 pages) 010102(R)
Katarzyna Macieszczak

Quantum information

Bounds on quantum nonlocality via partial transposition (5 pages) 010301(R)
Karol Horodecki and Głaućia Murta

Entangled quantum probes for dynamical environmental noise (5 pages) 010302(R)
Matteo A. C. Rossi and Matteo G. A. Paris

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

Suppression of the ac-Stark-shift scattering rate due to non-Markovian behavior (6 pages) 011401(R)
Muzaffar Q. Lone and Tim Byrnes

Probing interactions between Rydberg atoms with large electric dipole moments in amplitude-modulated electric fields (5 pages) 011402(R)
V. Zhelyazkova and S. D. Hogan

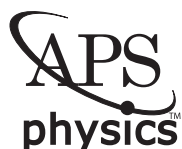
Matter waves and collective properties of cold atoms and molecules

Thermal suppression of phase separation in condensate mixtures (5 pages) 011601(R)
Arko Roy and D. Angom

Thermalization kinetics of light: From laser dynamics to equilibrium condensation of photons (5 pages) 011602(R)
Julian Schmitt, Tobias Damm, David Dung, Frank Vewinger, Jan Klaers, and Martin Weitz

Quantum optics, physics of lasers, nonlinear optics, classical optics

Unified nonclassicality criteria (5 pages) 011801(R)
S. Ryl, J. Sperling, E. Agudelo, M. Mraz, S. Köhnke, B. Hage, and W. Vogel



Copyright 2015 by American Physical Society



1050-2947(201507)92:1:B;1-7

(Continued)