

PHYSICAL REVIEW A

For editorial and subscription correspondence,
please see inside front cover
(ISSN: 1050-2947)

PERIODICALS
Postmaster send address changes to:
APS Subscription Services
Suite 1NO1
2 Huntington Quadrangle
Melville, NY 11747-4502

THIRD SERIES, VOLUME 80, NUMBER 1
PARTS A AND B

CONTENTS

JULY 2009

The Table of Contents is a total listing of Parts A and B.
Part A consists of pages 010101(R)-012716, and Part B pages 012901-019903(E).

PART A

<i>Physical Review A</i> Editorial Policies	iii
<i>Physical Review A</i> Information for Contributors	vii
Guidelines for PRA Section Selection	x

RAPID COMMUNICATIONS

Fundamental concepts

Equation of motion for the process matrix: Hamiltonian identification and dynamical control of open quantum systems (<i>4 pages</i>)	010101(R)
M. Mohseni and A. T. Rezakhani	
Quantum de Finetti theorem in phase-space representation (<i>4 pages</i>)	010102(R)
Anthony Leverrier and Nicolas J. Cerf	
Maximal violation of tight Bell inequalities for maximal high-dimensional entanglement (<i>4 pages</i>)	010103(R)
Seung-Woo Lee and Dieter Jaksch	

Quantum information

Three-tangle does not properly quantify tripartite entanglement for Greenberger-Horne-Zeilinger-type states (<i>4 pages</i>)	010301(R)
Eylee Jung, DaeKil Park, and Jin-Woo Son	
Experimental quantum private queries with linear optics (<i>4 pages</i>)	010302(R)
Francesco De Martini, Vittorio Giovannetti, Seth Lloyd, Lorenzo Maccone, Eleonora Nagali, Linda Sansoni, and Fabio Sciarrino	
Time-delayed entanglement from coherently coupled nonlinear cavities (<i>4 pages</i>)	010303(R)
Terry G. McRae and Warwick P. Bowen	
Scaling of entanglement between separated blocks in spin chains at criticality (<i>4 pages</i>)	010304(R)
H. Wichterich, J. Molina-Vilaplana, and S. Bose	

Atomic and molecular structure and dynamics

Measurement of the <i>D</i> -line doublet in high- <i>Z</i> highly charged sodiumlike ions (<i>4 pages</i>)	010501(R)
J. D. Gillaspy, I. N. Draganić, Yu. Ralchenko, J. Reader, J. N. Tan, J. M. Pomeroy, and S. M. Brewer	



Copyright 2009 by The American Physical Society

(Continued)



1050-2947(200907)80:1:A;1-2

Hyperfine transitions in ultracold hydrogen-antihydrogen collisions (<i>4 pages</i>)	010502(R)
A. Yu. Voronin and P. Froelich	
Clusters (including fullerenes)	
Reflective and collateral photoionization of an atom inside a fullerene: Confinement geometry from reciprocal spectra (<i>4 pages</i>)	011201(R)
Matthew A. McCune, Mohamed E. Madjet, and Himadri S. Chakraborty	
Atomic and molecular processes in external fields, including interactions with strong fields and short pulses	
Carrier-envelope phase-dependent field-free molecular orientation (<i>4 pages</i>)	011401(R)
Chuan-Cun Shu, Kai-Jun Yuan, Wen-Hui Hu, and Shu-Lin Cong	
Asymmetric electron angular distributions in resonant dissociative photoionization of H ₂ with ultrashort xuv pulses (<i>4 pages</i>)	011402(R)
J. F. Pérez-Torres, F. Morales, J. L. Sanz-Vicario, and F. Martín	
Multielectron effects on the orientation dependence and photoelectron angular distribution of multiphoton ionization of CO ₂ in strong laser fields (<i>4 pages</i>)	011403(R)
Sang-Kil Son (손상길) and Shih-I Chu (朱時宜)	
Phase-resolved attosecond near-threshold photoionization of molecular nitrogen (<i>4 pages</i>)	011404(R)
S. Haessler, B. Fabre, J. Higuette, J. Caillat, T. Ruchon, P. Breger, B. Carré, E. Constant, A. Maquet, E. Mével, P. Salières, R. Taïeb, and Y. Mairesse	
Matter waves and collective properties of cold atoms and molecules	
Finite-temperature behavior of an interspecies fermionic superfluid with population imbalance (<i>4 pages</i>)	011601(R)
Hao Guo, Chih-Chun Chien, Qijin Chen, Yan He, and K. Levin	
Rotational fluxons of Bose-Einstein condensates in coplanar double-ring traps (<i>4 pages</i>)	011602(R)
J. Brand, T. J. Haigh, and U. Zülicke	
Dynamics of a one-dimensional spinor Bose liquid: A phenomenological approach (<i>4 pages</i>)	011603(R)
A. Kamenev and L. I. Glazman	
Observing quantum gases in real time: Single-atom detection on a chip (<i>4 pages</i>)	011604(R)
A. Günther, H. Bender, A. Stibor, J. Fortágh, and C. Zimmermann	
Quantum optics, physics of lasers, nonlinear optics, classical optics	
Bistable Mott-insulator-to-superfluid phase transition in cavity optomechanics (<i>4 pages</i>)	011801(R)
W. Chen, K. Zhang, D. S. Goldbaum, M. Bhattacharya, and P. Meystre	
Quasieigenstate evolution in open chaotic billiards (<i>4 pages</i>)	011802(R)
Sang-Bum Lee, Juhee Yang, Songky Moon, Soo-Young Lee, Jeong-Bo Shim, Sang Wook Kim, Jai-Hyung Lee, and Kyungwon An	
Optical precursors in transparent media (<i>4 pages</i>)	011803(R)
Bruno Macke and Bernard Ségard	
Phase tunability of group velocity by modulated-pump-forced coherent population oscillations (<i>4 pages</i>)	011804(R)
Francisco Arrieta-Yañez, Sonia Melle, Oscar G. Calderón, M. A. Antón, and F. Carreño	

CONTENTS - Continued

PHYSICAL REVIEW A	THIRD SERIES, VOLUME 80, NUMBER 1	JULY 2009
Phase noise of dispersion-managed solitons (<i>4 pages</i>)		011805(R)
Elaine T. Spiller and Gino Biondini		
Subcycle spatial mapping of recollision dynamics (<i>4 pages</i>)		011806(R)
N. Dudovich, J. L. Tate, Y. Mairesse, D. M. Villeneuve, P. B. Corkum, and M. B. Gaarde		
Wavelength dependence of high-order harmonic generation with independently controlled ionization and ponderomotive energy (<i>4 pages</i>)		011807(R)
Kenichi L. Ishikawa, Eiji J. Takahashi, and Katsumi Midorikawa		
Lorentz force and radiation pressure on a spherical cloak (<i>4 pages</i>)		011808(R)
Hongsheng Chen, Baile Zhang, Yu Luo, Brandon A. Kemp, Jingjing Zhang, Lixin Ran, and Bae-Ian Wu		
Enhanced sensitivity of a passive optical cavity by an intracavity dispersive medium (<i>4 pages</i>)		011809(R)
David D. Smith, Krishna Myneni, Jamiu A. Odutola, and J. C. Diels		
Broadband waveguide QED system on a chip (<i>4 pages</i>)		011810(R)
Qimin Quan, Irfan Bulu, and Marko Lončar		
Optical delay control of large-spectral-bandwidth laser pulses (<i>4 pages</i>)		011811(R)
E. Ignesti, S. Cavalieri, L. Fini, E. Sali, R. Eramo, M. V. Tognetti, and R. Buffa		
Ultrafast atomic phase modulation (<i>4 pages</i>)		011812(R)
Uvo C. Hölscher, Stephen D. Clow, and Thomas Weinacht		
Single structured light beam as an atomic cloud splitter (<i>4 pages</i>)		011813(R)
B. M. Rodríguez-Lara and R. Jáuregui		

ARTICLES

Fundamental concepts

Use of Lambert's theorem for the n -dimensional Coulomb problem (<i>9 pages</i>)		012101
Vassiliki Kanellopoulos, Manfred Kleber, and Tobias Kramer		
Compact set of invariants characterizing graph states of up to eight qubits (<i>7 pages</i>)		012102
Adán Cabello, Antonio J. López-Tarrida, Pilar Moreno, and José R. Portillo		
Two-step approach to the dynamics of coupled anharmonic oscillators (<i>8 pages</i>)		012103
N. N. Chung and L. Y. Chew		
Pseudomodes as an effective description of memory: Non-Markovian dynamics of two-state systems in structured reservoirs (<i>5 pages</i>)		012104
L. Mazzola, S. Maniscalco, J. Piilo, K.-A. Suominen, and B. M. Garraway		
Necessity of macroscopic operation for the creation of superpositions of macroscopically distinct states (<i>6 pages</i>)		012105
Tomoyuki Morimae		
General conditions for quantum adiabatic evolution (<i>7 pages</i>)		012106
Daniel Comparat		
Quantum localization due to mirror plane symmetry (<i>5 pages</i>)		012107
Ming Zhang, Stephen K. Gray, and Stuart A. Rice		

(Continued)

Numerical and analytical approach to the quantum dynamics of two coupled spins in bosonic baths (7 pages)	012108
Alessandro Sergi, Ilya Sinayskiy, and Francesco Petruccione	
Confined Dirac fermions in a constant magnetic field (8 pages)	012109
Ahmed Jellal, Abdulaziz D. Alhaidari, and Hocine Bahlouli	
Detection of parity violation in chiral molecules by external tuning of electroweak optical activity (5 pages)	012110
Pedro Bargeño, Isabel Gonzalo, and Ricardo Pérez de Tudela	
Barrier interaction time and the Salecker-Wigner quantum clock: Wave-packet approach (7 pages)	012111
Chang-Soo Park	
Weak values and the quantum phase space (6 pages)	012112
A. C. Lobo and C. A. Ribeiro	
Measurement of Pancharatnam's phase by robust interferometric and polarimetric methods (9 pages)	012113
J. C. Loredó, O. Ortíz, R. Weingärtner, and F. De Zela	
Quantum measurements of coupled systems (7 pages)	012114
L. Fedichkin, M. Shapiro, and M. I. Dykman	
Casimir forces in the time domain: Theory (11 pages)	012115
Alejandro W. Rodríguez, Alexander P. McCauley, John D. Joannopoulos, and Steven G. Johnson	
Non-Markovian dynamics for a free quantum particle subject to spontaneous collapse in space: General solution and main properties (18 pages)	012116
Angelo Bassi and Luca Ferialdi	
Quantum information	
Measurements satisfying the quantum Cramér-Rao equality (13 pages)	012301
Andrzej Łuczak	
Theoretical investigations of quantum walks by cold atoms in a double optical lattice (10 pages)	012302
Nandan Satapathy, Henning Hagman, Martin Zelán, Anders Kastberg, and Hema Ramachandran	
Ground-state fidelity in the BCS-BEC crossover (6 pages)	012303
Ayan Khan and Pierbiagio Pieri	
Exact and approximate unitary 2-designs and their application to fidelity estimation (6 pages)	012304
Christoph Dankert, Richard Cleve, Joseph Emerson, and Etera Livine	
Quantum phase gates for two atoms trapped in separate cavities within the null- and single-excitation subspaces (7 pages)	012305
Zhen-Biao Yang, Huai-Zhi Wu, Wan-Jun Su, and Shi-Biao Zheng	
Exploiting geometric degrees of freedom in topological quantum computing (5 pages)	012306
Haitan Xu and Xin Wan	
Measuring the quality of a quantum reference frame: The relative entropy of frameness (11 pages)	012307
Gilad Gour, Iman Marvian, and Robert W. Spekkens	
Relationship between quantum repeating devices and quantum seals (6 pages)	012308
Guang Ping He	
Maps for general open quantum systems and a theory of linear quantum error correction (11 pages)	012309
Alireza Shabani and Daniel A. Lidar	

Entanglement generation by qubit scattering in three dimensions (<i>18 pages</i>)	012310
Yuichiro Hida, Hiromichi Nakazato, Kazuya Yuasa, and Yasser Omar	
Entanglement enhances security in quantum communication (<i>8 pages</i>)	012311
Rafał Demkowicz-Dobrzański, Aditi Sen(De), Ujjwal Sen, and Maciej Lewenstein	
Generalized Toffoli gates using qudit catalysis (<i>5 pages</i>)	012312
Radu Ionicioiu, Timothy P. Spiller, and William J. Munro	
Entanglement cost of nonlocal measurements (<i>12 pages</i>)	012313
Somshubhro Bandyopadhyay, Gilles Brassard, Shelby Kimmel, and William K. Wootters	
Spin and occupation number entanglement of Dirac fields for noninertial observers (<i>13 pages</i>)	012314
Juan León and Eduardo Martín-Martínez	
Separability criteria for continuous-variable systems (<i>8 pages</i>)	012315
Kazuo Fujikawa	
Quantum data bus in dipolar coupled nuclear spin qubits (<i>5 pages</i>)	012316
Jingfu Zhang, Michael Ditty, Daniel Burgarth, Colm A. Ryan, C. M. Chandrashekar, Martin Laforest, Osama Moussa, Jonathan Baugh, and Raymond Laflamme	
Experimental superradiance and slow-light effects for quantum memories (<i>7 pages</i>)	012317
A. Walther, A. Amari, S. Kröll, and A. Kalachev	
Fisher information and spin squeezing in the Lipkin-Meshkov-Glick model (<i>6 pages</i>)	012318
Jian Ma and Xiaoguang Wang	
N -qubit W states are determined by their bipartite marginals (<i>4 pages</i>)	012319
Preeti Parashar and Swapan Rana	
Raman scheme for adjustable-bandwidth quantum memory (<i>9 pages</i>)	012320
J.-L. Le Gouët and P. R. Berman	
Finite-temperature topological order in two-dimensional topological color codes (<i>17 pages</i>)	012321
Mehdi Kargarian	
Second law of thermodynamics and quantum feedback control: Maxwell's demon with weak measurements (<i>4 pages</i>)	012322
Kurt Jacobs	
Thermal entanglement in one-dimensional Heisenberg quantum spin chains under magnetic fields (<i>5 pages</i>)	012323
Shou-Shu Gong and Gang Su	
Polygamy of distributed entanglement (<i>8 pages</i>)	012324
Francesco Buscemi, Gilad Gour, and Jeong San Kim	
Critical and noncritical long-range entanglement in Klein-Gordon fields (<i>4 pages</i>)	012325
S. Marcovitch, A. Retzker, M. B. Plenio, and B. Reznik	
Robustness of channel-adapted quantum error correction (<i>10 pages</i>)	012326
Gábor Balló and Péter Gurin	
Decoy-state quantum key distribution using homodyne detection (<i>4 pages</i>)	012327
S. H. Shams Mousavi and P. Gallion	
NMR Loschmidt echoes as quantifiers of decoherence in interacting spin systems (<i>7 pages</i>)	012328
C. M. Sánchez, P. R. Levstein, R. H. Acosta, and A. K. Chattah	

Entanglement entropy and mutual information in Bose-Einstein condensates (<i>9 pages</i>)	012329
Wenxin Ding and Kun Yang	
End-to-end entanglement in Bose-Hubbard chains (<i>7 pages</i>)	012330
Jose Reslen and Sougato Bose	
Sudden death of distillability in qutrit-qutrit systems (<i>6 pages</i>)	012331
Wei Song (宋伟), Lin Chen (陈霖), and Shi-Liang Zhu (朱诗亮)	
Perfect function transfer and interference effects in interacting boson lattices (<i>5 pages</i>)	012332
Lian-Ao Wu, Adam Miranowicz, XiangBin Wang, Yu-xi Liu, and Franco Nori	
Atomic and molecular structure and dynamics	
Dissociative recombination of BeH^+ (<i>9 pages</i>)	012501
J. B. Roos, M. Larsson, Å. Larson, and A. E. Orel	
5 <i>d</i> photoionization and Auger decay in atomic Pb (<i>5 pages</i>)	012502
S. Urpelainen, S. Heinämäki, M.-H. Mikkela, M. Huttula, S. Osmekhin, H. Aksela, and S. Aksela	
Dynamical Casimir effect for a massless scalar field between two concentric spherical shells with mixed boundary conditions (<i>6 pages</i>)	012503
F. Pascoal, L. C. Céleri, S. S. Mizrahi, M. H. Y. Moussa, and C. Farina	
Retarded Casimir-Polder force on an atom near reflecting microstructures (<i>11 pages</i>)	012504
Claudia Eberlein and Robert Zietal	
Divergence analysis of atomic ionization processes and isoelectronic series (<i>9 pages</i>)	012505
S. López-Rosa, J. Antolín, J. C. Angulo, and R. O. Esquivel	
Dispersion interaction between crossed conducting wires (<i>5 pages</i>)	012506
John F. Dobson, Timothy Gould, and Israel Klich	
Charge-transfer excitation energies with a time-dependent density-functional method suitable for orbital-dependent exchange-correlation kernels (<i>6 pages</i>)	012507
Andreas Heßelmann, Andrey Ipatov, and Andreas Görling	
Time-independent (static) density-functional theories for pure excited states: Extensions and unification (<i>16 pages</i>)	012508
Paul W. Ayers and Mel Levy	
Improving approximate-optimized effective potentials by imposing exact conditions: Theory and applications to electronic statics and dynamics (<i>12 pages</i>)	012509
Yair Kurzweil and Martin Head-Gordon	
Quantum dynamics of a plane pendulum (<i>16 pages</i>)	012510
Monika Leibscher and Burkhard Schmidt	
Scattering and bound-state solutions to the wave equation for one electron in the presence of a physical dipole (<i>10 pages</i>)	012511
G. A. Gallup	
<i>L</i> -subshell Coster-Kronig yields of palladium determined via synchrotron-radiation-based high-resolution x-ray spectroscopy (<i>9 pages</i>)	012512
W. Cao, J. Hoszowska, J.-Cl. Dousse, Y. Kayser, M. Kavčič, M. Žitnik, K. Bučar, A. Mihelič, J. Szlachetko, and K. Ślabkowska	

Multiconfiguration Dirac-Hartree-Fock calculations of the electric dipole moment of radium induced by the nuclear Schiff moment (<i>10 pages</i>)	012513
Jacek Bieroń, Gediminas Gaigalas, Erikas Gaidamauskas, Stephan Fritzsche, Paul Indelicato, and Per Jönsson	
Reconstructing the adiabatic exchange-correlation kernel of time-dependent density-functional theory (<i>12 pages</i>)	012514
M. Thiele and S. Kümmel	
Nuclear quadrupole moment of ^{43}Ca and hyperfine-structure studies of its singly charged ion (<i>8 pages</i>)	012515
B. K. Sahoo	
Development of a configuration-interaction plus all-order method for atomic calculations (<i>10 pages</i>)	012516
M. S. Safronova, M. G. Kozlov, W. R. Johnson, and Dansha Jiang	
<i>R</i> -matrix calculation of negative muon capture by helium ions (<i>10 pages</i>)	012517
Kazuhiro Sakimoto	
Decay properties and photodetachment of the diatomic oxygen ion O_2^- in a constant electric field (<i>9 pages</i>)	012518
Jin-Wook Jung, Kyungsun Na, and Linda E. Reichl	
Casimir-Lifshitz interaction between dielectrics of arbitrary geometry: A dielectric contrast perturbation theory (<i>9 pages</i>)	012519
Ramin Golestanian	
Atomic and molecular collisions and interactions	
Simultaneous electron capture and bound-free pair production in relativistic collisions of heavy nuclei with atoms (<i>7 pages</i>)	012701
B. Najjari, A. B. Voitkiv, A. Artemyev, and A. Surzhykov	
Analytic description of atomic interaction at ultracold temperatures: The case of a single channel (<i>12 pages</i>)	012702
Bo Gao	
Enhanced observability of quantum postexponential decay using distant detectors (<i>8 pages</i>)	012703
E. Torrontegui, J. G. Muga, J. Martorell, and D. W. L. Sprung	
Noble-gas quenching of rovibrationally excited H_2 (<i>10 pages</i>)	012704
N. Balakrishnan, Bradley C. Hubartt, Luke Ohlinger, and Robert C. Forrey	
Low-energy electron scattering from DNA including structural water and base-pair irregularities (<i>6 pages</i>)	012705
Laurent Caron, Léon Sanche, Stefano Tonzani, and Chris H. Greene	
Isotope effect in dissociative electron attachment to acetylene (<i>5 pages</i>)	012706
O. May, J. Fedor, and M. Allan	
Neutral and charged photofragment coincidence imaging with soft x rays on molecular ion beams: Breakup of H_3O^+ at 13.5 nm (<i>16 pages</i>)	012707
H. B. Pedersen, S. Altevogt, B. Jordon-Thaden, O. Heber, L. Lammich, M. L. Rappaport, D. Schwalm, J. Ullrich, D. Zajfman, R. Treusch, N. Guerassimova, M. Martins, and A. Wolf	
Three-body scattering theory without knowledge of exact asymptotic boundary conditions (<i>18 pages</i>)	012708
Robin Shakeshaft	

(Continued)

Computed vibrational excitation of CF ₄ by low-energy electrons and positrons: Comparing calculations and experiments (8 pages)	012709
J. Franz, I. Baccarelli, S. Caprasecca, and F. A. Gianturco	
Combining electric and magnetic static fields for the tuning of the lifetime of zero energy Feshbach resonances: Application to ³ He+NH(³ Σ) collisions (6 pages)	012710
T. Stoecklin	
Charge transfer in collisions of C ²⁺ carbon ions with CO and OH targets (8 pages)	012711
E. Bene, P. Martínez, G. J. Halsáz, Á. Vibók, and M. C. Bacchus-Montabonel	
Cross sections for 14-eV <i>e</i> -H ₂ resonant collisions: Dissociative electron attachment (5 pages)	012712
R. Celiberto, R. K. Janev, J. M. Wadehra, and A. Laricchiuta	
Ionization of highly charged relativistic ions by neutral atoms and ions (6 pages)	012713
G. Baur, I. L. Beigman, V. P. Shevelko, I. Yu. Tolstikhina, and Th. Stöhlker	
Light-particle single ionization of argon: Influence of the projectile charge sign (5 pages)	012714
S. Otranto and R. E. Olson	
Line shapes of optical Feshbach resonances near the intercombination transition of bosonic ytterbium (14 pages)	012715
M. Borkowski, R. Ciuryło, P. S. Julienne, S. Tojo, K. Enomoto, and Y. Takahashi	
Energy distributions of H ⁺ fragments ejected by fast proton and electron projectiles in collision with H ₂ O molecules (6 pages)	012716
A. L. F. de Barros, J. Lecointre, H. Luna, M. B. Shah, and E. C. Montenegro	

PART B

Photon, electron, atom, and molecule interactions with solids and surfaces

Energy loss of protons in W using fully relativistic calculations and mean excitation energies of W, Au, Pb, and Bi (6 pages)	012901
C. C. Montanari, D. M. Mitnik, C. D. Archubi, and J. E. Miraglia	

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

Quantitative rescattering theory for high-order harmonic generation from molecules (23 pages)	013401
Anh-Thu Le, R. R. Lucchese, S. Tonzani, T. Morishita, and C. D. Lin	
Grid-based methods for diatomic quantum scattering problems. II. Time-dependent treatment of single- and two-photon ionization of H ₂ ⁺ (7 pages)	013402
Liang Tao, C. W. McCurdy, and T. N. Rescigno	
Theoretical description of two ultracold atoms in a single site of a three-dimensional optical lattice using realistic interatomic interaction potentials (17 pages)	013403
Sergey Grishkevich and Alejandro Saenz	
<i>Ab initio</i> determination of Bose-Hubbard parameters for two ultracold atoms in an optical lattice using a three-well potential (13 pages)	013404
Philipp-Immanuel Schneider, Sergey Grishkevich, and Alejandro Saenz	
Explanation for the smoothness of the phase in molecular high-order harmonic generation (5 pages)	013405
C. C. Chirilă and M. Lein	

(Continued)

Partial cancellation of correlations in the nonrelativistic high-energy asymptotics of the photoeffect (11 pages)	013406
E. G. Drukarev and R. H. Pratt	
Few-cycle attosecond pulse chirp effects on asymmetries in ionized electron momentum distributions (5 pages)	013407
Liang-You Peng, Fang Tan, Qihuang Gong, Evgeny A. Pronin, and Anthony F. Starace	
Experimental quantum control landscapes: Inherent monotonicity and artificial structure (9 pages)	013408
Jonathan Roslund and Herschel Rabitz	
High-flux two-dimensional magneto-optical-trap source for cold lithium atoms (12 pages)	013409
T. G. Tiecke, S. D. Gensemer, A. Ludewig, and J. T. M. Walraven	
Creation of multiple electron-positron pairs in arbitrary fields (10 pages)	013410
T. Cheng, Q. Su, and R. Grobe	
Quantum control in a double well with symmetric or asymmetric driving (6 pages)	013411
Gengbiao Lu, Wenhua Hai, and Honghua Zhong	
Signatures of bound-state-assisted nonsequential double ionization (6 pages)	013412
Suren Sukiasyan, Chris McDonald, Cole Van Vlack, Carlos Destefani, Thomas Fennel, Misha Ivanov, and Thomas Brabec	
Laser-induced multiphoton dissociation branching ratios for H_2^+ and D_2^+ (9 pages)	013413
J. J. Hua and B. D. Esry	
High-resolution study of K 3 <i>p</i> photoabsorption and resonant Auger decay in KF (7 pages)	013414
M. Patanen, S. Urpelainen, M. Huttula, R. Sankari, V. Kisand, E. Nömmiste, E. Kukk, H. Aksela, and S. Aksela	
Microtraps for atoms outside a fiber illuminated perpendicular to its axis: Numerical results (6 pages)	013415
Fam Le Kien and K. Hakuta	
Spin-exchange relaxation-free magnetometry using elliptically polarized light (6 pages)	013416
V. Shah and M. V. Romalis	
Optimum pulse shapes for stimulated Raman adiabatic passage (7 pages)	013417
G. S. Vasilev, A. Kuhn, and N. V. Vitanov	
Multiphoton single ionization of two-electron systems in intense laser fields (9 pages)	013418
S. Bhattacharyya, Mahua Mukherjee, Mina Mazumder, J. Chakrabarti, and F. H. M. Faisal	
Theory for direct frequency-comb spectroscopy (15 pages)	013419
Daniel Felinto and Carlos E. E. López	
Strong-field approximation for ionization of a diatomic molecule by a strong laser field. III. High-order above-threshold ionization by an elliptically polarized field (8 pages)	013420
M. Busuladžić, A. Gazibegović-Busuladžić, and D. B. Milošević	
Matter waves and collective properties of cold atoms and molecules	
Excitation spectrum and effective interactions of a highly elongated Fermi gas (8 pages)	013601
D. Blume and D. Rakshit	
Breakdown of adiabaticity when loading ultracold atoms in optical lattices (5 pages)	013602
Jakub Zakrzewski and Dominique Delande	

PHYSICAL REVIEW A	THIRD SERIES, VOLUME 80, NUMBER 1	JULY 2009
Caustic formation in expanding condensates of cold atoms (<i>10 pages</i>)		013603
J. T. Chalker and B. Shapiro		
Quantum optics with quantum gases: Controlled state reduction by designed light scattering (<i>15 pages</i>)		013604
Igor B. Mekhov and Helmut Ritsch		
Pair tunneling of bosonic atoms in an optical lattice (<i>6 pages</i>)		013605
Xiang-Fa Zhou, Yong-Sheng Zhang, and Guang-Can Guo		
Scalable quantum field simulations of conditioned systems (<i>5 pages</i>)		013606
M. R. Hush, A. R. R. Carvalho, and J. J. Hope		
Repulsive Fermi gas in a harmonic trap: Ferromagnetism and spin textures (<i>10 pages</i>)		013607
L. J. LeBlanc, J. H. Thywissen, A. A. Burkov, and A. Paramekanti		
Conditions for Efimov physics for finite-range potentials (<i>4 pages</i>)		013608
M. Thøgersen, D. V. Fedorov, A. S. Jensen, B. D. Esry, and Yujun Wang		
Induced interaction and crystallization of self-localized impurity fields in a Bose-Einstein condensate (<i>13 pages</i>)		013609
Sergio Rica and David C. Roberts		
Generalized purity and quantum phase transition for Bose-Einstein condensates in a symmetric double well (<i>5 pages</i>)		013610
T. F. Viscondi, K. Furuya, and M. C. de Oliveira		
Hybrid multisite excitations in dipolar condensates in optical lattices (<i>5 pages</i>)		013611
M. Klawunn and L. Santos		
Role of fermion exchanges in statistical signatures of composite bosons (<i>6 pages</i>)		013612
M. Combescot, F. Dubin, and M. A. Dupertuis		
Shell-model Monte Carlo simulations of the BCS-BEC crossover in few-fermion systems (<i>5 pages</i>)		013613
N. T. Zinner, K. Mølmer, C. Özen, D. J. Dean, and K. Langanke		
Continuous measurement feedback control of a Bose-Einstein condensate using phase-contrast imaging (<i>11 pages</i>)		013614
S. S. Szigeti, M. R. Hush, A. R. R. Carvalho, and J. J. Hope		
Vector azimuthons in two-component Bose-Einstein condensates (<i>6 pages</i>)		013615
Volodymyr M. Lashkin, Elena A. Ostrovskaya, Anton S. Desyatnikov, and Yuri S. Kivshar		
Crystallization of trions in SU(3) cold-atom gases trapped in optical lattices (<i>4 pages</i>)		013616
Rafael A. Molina, Jorge Dukelsky, and Peter Schmitteckert		
Dark soliton beats in the time-varying background of Bose-Einstein condensates (<i>9 pages</i>)		013617
Lei Wu (吴雷), Lu Li, and Jie-Fang Zhang		
Atom-interferometric studies of light scattering (<i>12 pages</i>)		013618
S. Beattie, B. Barrett, I. Chan, C. Mok, I. Yavin, and A. Kumarakrishnan		
Adiabatic Rosen-Zener interferometry with ultracold atoms (<i>5 pages</i>)		013619
Li-Bin Fu, De-Fa Ye, Chaohong Lee, Weiping Zhang, and Jie Liu		
Three-component fermion pairing in two dimensions (<i>6 pages</i>)		013620
Theja N. De Silva		

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

Phase matching in three-dimensional nonlinear photonic crystals (<i>4 pages</i>)	013801
Junjie Chen and Xianfeng Chen	
Theory versus experiment for vacuum Rabi oscillations in lossy cavities. II. Direct test of uniqueness of vacuum (<i>15 pages</i>)	013802
Marcin Wilczewski and Marek Czachor	
Dynamics of four-wave-mixing oscillators with quasi-phase-matching (<i>10 pages</i>)	013803
Riadh Rebhi, Pierre Mathey, Hans-Rudolf Jauslin, Gary Cook, Dean R. Evans, Daniel Rytz, and Serguey Odoulov	
Effective cavity dispersion shift induced by nonlinearity in a fiber laser (<i>6 pages</i>)	013804
X. Wu, D. Y. Tang, L. M. Zhao, and H. Zhang	
Quantum feedback by discrete quantum nondemolition measurements: Towards on-demand generation of photon-number states (<i>8 pages</i>)	013805
I. Dotsenko, M. Mirrahimi, M. Brune, S. Haroche, J.-M. Raimond, and P. Rouchon	
Multimode model for projective photon-counting measurements (<i>14 pages</i>)	013806
Rosa Tualle-Brouiri, Alexei Ourjoumtsev, Aurelien Dantan, Philippe Grangier, Martijn Wubs, and Anders S. Sørensen	
Exact property of the nonequilibrium photon Green function for bounded media (<i>9 pages</i>)	013807
K. Henneberger and F. Richter	
Non-Rayleigh limit of the Lorenz-Mie solution and suppression of scattering by spheres of negative refractive index (<i>6 pages</i>)	013808
Andrey E. Miroshnichenko	
Atomic inner-shell x-ray laser pumped by an x-ray free-electron laser (<i>5 pages</i>)	013809
Nina Rohringer and Richard London	
Single-photon nonlinearities using arrays of cold polar molecules (<i>9 pages</i>)	013810
R. M. Rajapakse, T. Bragdon, A. M. Rey, T. Calarco, and S. F. Yelin	
Modeling and optimization of photon pair sources based on spontaneous parametric down-conversion (<i>12 pages</i>)	013811
Piotr Kolenderski, Wojciech Wasilewski, and Konrad Banaszek	
Birefringence lens effects of an atom ensemble enhanced by an electromagnetically induced transparency (<i>5 pages</i>)	013812
H. R. Zhang, Lan Zhou, and C. P. Sun	
Numerical reconstruction of photon-number statistics from photocounting statistics: Regularization of an ill-posed problem (<i>4 pages</i>)	013813
V. N. Starkov, A. A. Semenov, and H. V. Gomonay	
Localized modes in defective multilayer structures (<i>6 pages</i>)	013814
S. Roshan Entezar and A. Namdar	
Effect of an external periodic potential on pairs of dissipative solitons (<i>5 pages</i>)	013815
Wonkeun Chang, Nail Akhmediev, and Stefan Wabnitz	
Fano-Hopfield model and photonic band gaps for an arbitrary atomic lattice (<i>11 pages</i>)	013816
Mauro Antezza and Yvan Castin	

(Continued)

Interface solitons in quadratic nonlinear photonic lattices (<i>5 pages</i>)	013817
Zhiyong Xu, Mario I. Molina, and Yuri S. Kivshar	
Stationary light in cold-atomic gases (<i>5 pages</i>)	013818
Gor Nikoghosyan and Michael Fleischhauer	
Photon statistics in the macroscopic realm measured without photon counters (<i>5 pages</i>)	013819
Alessandra Andreoni and Maria Bondani	
Sub-Rayleigh quantum imaging using single-photon sources (<i>5 pages</i>)	013820
C. Thiel, T. Bastin, J. von Zanthier, and G. S. Agarwal	
Subdiffraction and spatial filtering due to periodic spatial modulation of the gain-loss profile (<i>6 pages</i>)	013821
K. Staliunas, R. Herrero, and R. Vilaseca	
Pulse-shape effects on photon-photon interactions in nonlinear optical quantum gates (<i>8 pages</i>)	013822
Holger F. Hofmann and Hitoshi Nishitani	
Asymptotic approach to the analysis of mode-hopping in semiconductor ring lasers (<i>7 pages</i>)	013823
S. Beri, L. Gelens, G. Van der Sande, and J. Danckaert	
Influence of the least-squares phase on optical vortices in strongly scintillated beams (<i>5 pages</i>)	013824
Mingzhou Chen and Filippus S. Roux	
Quantum phase estimation with lossy interferometers (<i>10 pages</i>)	013825
R. Demkowicz-Dobrzanski, U. Dorner, B. J. Smith, J. S. Lundeen, W. Wasilewski, K. Banaszek, and I. A. Walmsley	
Modes of symmetric composite defects in two-dimensional photonic crystals (<i>14 pages</i>)	013826
K. B. Dossou, C. G. Poulton, L. C. Botten, S. Mahmoodian, R. C. McPhedran, and C. Martijn de Sterke	
Gap solitons in rocking optical lattices and waveguides with undulating gratings (<i>13 pages</i>)	013827
Thawatchai Mayteevarunyoo and Boris A. Malomed	
Few-cycle shock X-wave generation by filamentation in prealigned molecules (<i>7 pages</i>)	013828
Jian Wu, Hua Cai, Arnaud Couairon, and Heping Zeng	
Cavity-soliton laser with frequency-selective feedback (<i>9 pages</i>)	013829
A. J. Scroggie, W. J. Firth, and G.-L. Oppo	
Modeling a semiconductor laser with an intracavity atomic absorber (<i>12 pages</i>)	013830
C. Masoller, M. Oria, and R. Vilaseca	
Enhancement of radiation trapping for quasiresonant scatterers at low temperature (<i>15 pages</i>)	013831
Romain Pierrat, Benoît Grémaud, and Dominique Delande	
Influence of propagation on the coherent accumulation of excitation induced by an ultrashort pulse train (<i>7 pages</i>)	013832
A. A. Soares and Luís E. E. de Araujo	
Mie resonances to tailor random lasers (<i>6 pages</i>)	013833
P. D. García, M. Ibisate, R. Sapienza, D. S. Wiersma, and C. López	
Fidelity and fidelity susceptibility of pulses in dispersive media (<i>7 pages</i>)	013834
Li-Gang Wang and Shi-Jian Gu	
Electromagnetically induced spatial nonlinear dispersion of four-wave mixing (<i>4 pages</i>)	013835
Yanpeng Zhang, Zhiqiang Nie, Huaibin Zheng, Changbiao Li, Jianping Song, and Min Xiao	

Atom cooling using the dipole force of a single retroflected laser beam (<i>9 pages</i>)	013836
André Xuereb, Peter Horak, and Tim Freegarde	
Twisted speckle entities inside wave-front reversal mirrors (<i>4 pages</i>)	013837
A. Yu Okulov	
Bragg solitons in nonlocal nonlinear media (<i>7 pages</i>)	013838
YuanYao Lin, Ray-Kuang Lee, and Boris A. Malomed	

BRIEF REPORTS**Fundamental concepts**

Uniquely defined geometric phase of an open system (<i>4 pages</i>)	014101
Nikola Burić and Milan Radonjić	
Conditions on systems of interacting qubits for classical behavior of their macroscopic variables (<i>4 pages</i>)	014102
Nikola Burić	

Quantum information

Quantum switch for single-photon transport in a coupled superconducting transmission-line-resonator array (<i>4 pages</i>)	014301
Jie-Qiao Liao, Jin-Feng Huang, Yu-xi Liu, Le-Man Kuang, and C. P. Sun	
Generalized Jaynes-Cummings model as a quantum search algorithm (<i>4 pages</i>)	014302
A. Romanelli	
Entanglement purification protocol for a mixture of a pure entangled state and a pure product state (<i>4 pages</i>)	014303
Mikołaj Czechlewski, Andrzej Grudka, Satoshi Ishizaka, and Antoni Wójcik	

Atomic and molecular structure and dynamics

Electron affinity of arsenic and the fine structure of As^- measured using infrared photodetachment threshold spectroscopy (<i>4 pages</i>)	014501
C. W. Walter, N. D. Gibson, R. L. Field, III, A. P. Snedden, J. Z. Shapiro, C. M. Janczak, and D. Hanstorp	
Annihilation of electron-positron pairs in the positronium ion Ps^- and bipostronium Ps_2 (<i>4 pages</i>)	014502
Alexei M. Frolov	
Asymmetric profiles observed in the recombination of Bi^{79+} : A benchmark for relativistic theories involving interference (<i>4 pages</i>)	014503
Nobuyuki Nakamura, Anthony P. Kavanagh, Hirofumi Watanabe, Hiroyuki A. Sakaue, Yueming Li, Daiji Kato, Fred J. Currell, Xiao-Min Tong, Tsutomu Watanabe, and Shunsuke Ohtani	

Atomic and molecular collisions and interactions

Role of Auger-type emission from diatomic molecular targets interacting with fast multicharged ions (<i>3 pages</i>)	014701
Carmen A. Tachino, Mariel E. Galassi, and Roberto D. Rivarola	

Photon, electron, atom, and molecule interactions with solids and surfaces

- Light-induced atomic desorption dynamics: Theory for a completely illuminated cell (*4 pages*) 014901
 Krzysztof Rębilas

Matter waves and collective properties of cold atoms and molecules

- Fermionic bound states on a one-dimensional lattice (*4 pages*) 015601
 Jean-Pierre Nguenang and Sergej Flach

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

- Derivation of the density matrix of a single photon produced in parametric down-conversion (*4 pages*) 015801
 Piotr Kolenderski and Wojciech Wasilewski
- Probing the ultrafast nonlinear-optical response of ionized atmospheric air by polarization-resolved four-wave mixing (*4 pages*) 015802
 I. V. Fedotov, P. A. Zhokhov, A. B. Fedotov, and A. M. Zheltikov
- Goos-Hänchen shifts in frustrated total internal reflection studied with wave-packet propagation (*4 pages*) 015803
 Xi Chen, Chun-Fang Li, Rong-Rong Wei, and Yan Zhang

ERRATA

- Erratum: Entanglement of multiparty-stabilizer, symmetric, and antisymmetric states [Phys. Rev. A **77**, 012104 (2008)] (*1 page*) 019901(E)
 Masahito Hayashi, Damian Markham, Mio Murao, Masaki Owari, and Shashank Virmani
- Publisher's Note: Reexamination of the helium fine structure [Phys. Rev. A **79**, 062516 (2009)] (*1 page*) 019902(E)
 Krzysztof Pachucki and Vladimir A. Yerokhin
- Retraction: Quantum critical phenomena in the *XY* spin chain with the Dzyaloshinski-Moriya interaction [Phys. Rev. A **79**, 032338 (2009)] (*1 page*) 019903(E)
 Yan-Chao Li and Shu-Shen Li