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 84, NUMBER 4
PARTS A AND B

CONTENTS

OCTOBER 2011

The Table of Contents is a total listing of Parts A and B.
Part A consists of pages 040101(R)-043434, and Part B pages 043601-049905(E).

PART A

RAPID COMMUNICATIONS

Fundamental concepts

Experimental study of active *LRC* circuits with $\mathcal{PT}$ symmetries *(5 pages)* . . . . . 040101(R)
Joseph Schindler, Ang Li, Mei C. Zheng, F. M. Ellis, and Tsampikos Kottos

Atomic and molecular collisions and interactions

Ultracold spin-polarized mixtures of $^2\Sigma$ molecules with *S*-state atoms: Collisional stability and implications for sympathetic cooling *(5 pages)* . . . . . 040701(R)
T. V. Tscherbul, J. Kłos, and A. A. Buchachenko

Matter waves and collective properties of cold atoms and molecules

Expansion dynamics of the Fulde-Ferrell-Larkin-Ovchinnikov state *(4 pages)* . . . . . 041601(R)
J. Kajala, F. Massel, and P. Törmä

Elementary excitations and universal interaction in Bose-Einstein condensates at large scattering lengths *(4 pages)* . . . . . 041602(R)
R. Sarjonen, M. Saarela, and F. Mazzanti

Measuring spin correlations in optical lattices using superlattice potentials *(4 pages)* . . . . . 041603(R)
K. G. L. Pedersen, B. M. Andersen, G. M. Bruun, O. F. Syljuåsen, and A. S. Sørensen

Quantum fluctuations in dipolar Bose gases *(4 pages)* . . . . . 041604(R)
Aristeu R. P. Lima and Axel Pelster

Dark-dark solitons and modulational instability in miscible two-component Bose-Einstein condensates *(4 pages)* . . . . . 041605(R)
M. A. Hoefer, J. J. Chang, C. Hamner, and P. Engels

Controllable manipulation and detection of local densities and bipartite entanglement in a quantum gas by a dissipative defect *(4 pages)* . . . . . 041606(R)
Peter Barmettler and Corinna Kollath

Copyright 2011 by American Physical Society

(Continued)

1050-2947(201110)84:4:B;1-0

PHYSICAL REVIEW A THIRD SERIES, VOLUME 84, NUMBER 4 OCTOBER 2011

Amplifying single impurities immersed in a gas of ultracold atoms *(4 pages)* . . . . . 041607(R)
B. Olmos, W. Li, S. Hofferberth, and I. Lesanovsky

Dynamical critical exponent of the Jaynes-Cummings-Hubbard model *(4 pages)* . . . . . 041608(R)
M. Hohenadler, M. Aichhorn, S. Schmidt, and L. Pollet

Detecting paired and counterflow superfluidity via dipole oscillations *(4 pages)* . . . . . 041609(R)
Anzi Hu, L. Mathey, Eite Tiesinga, Ippei Danshita, Carl J. Williams, and Charles W. Clark

Mass-imbalanced Fermi gases with spin-orbit coupling *(4 pages)* . . . . . 041610(R)
M. Iskin and A. L. Subaşı

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

Ghost imaging of phase objects with classical incoherent light *(4 pages)* . . . . . 041801(R)
Tomohiro Shirai, Tero Setälä, and Ari T. Friberg

Quantum path control in harmonic generation by temporal shaping of few-optical-cycle pulses in ionizing media *(5 pages)* . . . . . 041802(R)
F. Calegari, M. Lucchini, K. S. Kim, F. Ferrari, C. Vozzi, S. Stagira, G. Sansone, and M. Nisoli

Light emission of a scarlike mode with assistance of quasiperiodicity *(4 pages)* . . . . . 041803(R)
Chang-Hwan Yi, Sang Hun Lee, Myung-Woon Kim, Jinhang Cho, Jinhyung Lee, Soo-Young Lee, Jan Wiersig, and Chil-Min Kim

Heralded amplification for precision measurements with spin ensembles *(3 pages)* . . . . . 041804(R)
Nicolas Brunner, Eugene S. Polzik, and Christoph Simon

Photon correlations in multimode waveguides *(4 pages)* . . . . . 041805(R)
Eilon Poem and Yaron Silberberg

Hanbury Brown and Twiss correlations of Anderson localized waves *(4 pages)* . . . . . 041806(R)
Y. Lahini, Y. Bromberg, Y. Shechtman, A. Szameit, D. N. Christodoulides, R. Morandotti, and Y. Silberberg

Realization of discrete quantum billiards in a two-dimensional optical lattice *(5 pages)* . . . . . 041807(R)
Dmitry O. Krimer and Ramaz Khomeriki

ARTICLES

Fundamental concepts

Geometric momentum: The proper momentum for a free particle on a two-dimensional sphere *(7 pages)* 042101
Q. H. Liu, L. H. Tang, and D. M. Xun

Scattering-matrix approach to Casimir-Lifshitz force and heat transfer out of thermal equilibrium between arbitrary bodies *(22 pages)* 042102
Riccardo Messina and Mauro Antezza

Casimir-Polder-like force on an atom outside a Schwarzschild black hole *(6 pages)* 042103
Jialin Zhang and Hongwei Yu

Non-Markovian decay and dynamics of decoherence in private and public environments *(13 pages)* 042104
A. D. Dente, P. R. Zangara, and H. M. Pastawski

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 84, NUMBER 4** **OCTOBER 2011**

Upper bounds on quantum uncertainty products and complexity measures *(8 pages)* 042105
Ángel Guerrero, Pablo Sánchez-Moreno, and Jesús S. Dehesa

Engineering arbitrary pure and mixed quantum states *(6 pages)* 042106
Alexander Pechen

Time-dependent Kohn-Sham approach to quantum electrodynamics *(7 pages)* 042107
M. Ruggenthaler, F. Mackenroth, and D. Bauer

Statistical estimation of the quality of quantum-tomography protocols *(19 pages)* 042108
Yu. I. Bogdanov, G. Brida, I. D. Bukeev, M. Genovese, K. S. Kravtsov, S. P. Kulik, E. V. Moreva, A. A. Soloviev, and A. P. Shurupov

Global quantum discord in multipartite systems *(6 pages)* 042109
C. C. Rulli and M. S. Sarandy

Symmetric rotating-wave approximation for the generalized single-mode spin-boson system *(9 pages)* 042110
Victor V. Albert, Gregory D. Scholes, and Paul Brumer

Angular-momentum nonclassicality by breaking classical bounds on statistics *(7 pages)* 042111
Alfredo Luis and Ángel Rivas

Bipartite units of nonlocality *(14 pages)* 042112
Manuel Forster and Stefan Wolf

Purity as a witness for initial system-environment correlations in open-system dynamics *(5 pages)* 042113
D. Z. Rossatto, T. Werlang, L. K. Castelano, C. J. Villas-Boas, and F. F. Fanchini

Linear entropy in quantum phase space *(11 pages)* 042114
Laura E. C. Rosales-Zárate and P. D. Drummond

Trace distance in stochastic dephasing with initial correlation *(6 pages)* 042115
Masashi Ban, Sachiko Kitajima, and Fumiaki Shibata

Hermitian dynamics in a class of pseudo-Hermitian networks *(6 pages)* 042116
L. Jin and Z. Song

Effect of α variation on a prospective experiment to detect variation of m_e/m_p in diatomic molecules *(5 pages)* 042117
K. Beloy, A. Borschevsky, V. V. Flambaum, and P. Schwerdtfeger

Unified analytical description of the time evolution of decay for initial states formed by wave-packet scattering and by initial decaying states in quantum systems *(11 pages)* 042118
Sergio Cordero, Gastón García-Calderón, Roberto Romo, and Jorge Villavicencio

Goos-Hänchen shift in complex crystals *(12 pages)* 042119
Stefano Longhi, Giuseppe Della Valle, and Kestutis Staliunas

Sensitivity of microwave transitions in H_2O_2 to variation of the electron-to-proton mass ratio *(3 pages)* 042120
M. G. Kozlov

Uncertainty relation revisited from quantum estimation theory *(7 pages)* 042121
Yu Watanabe, Takahiro Sagawa, and Masahito Ueda

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 84, NUMBER 4** **OCTOBER 2011**

Nonclassicality threshold for the three-qubit Greenberger-Horne-Zeilinger state *(8 pages)* 042122
Tamás Vértesi and Károly F. Pál

Witnessing nonclassical multipartite states *(6 pages)* 042123
A. Saguia, C. C. Rulli, Thiago R. de Oliveira, and M. S. Sarandy

Classical and quantum correlative capacities of quantum systems *(4 pages)* 042124
Nan Li and Shunlong Luo

Quantum information

Strategies for measurement-based quantum computation with cluster states transformed by stochastic local operations and classical communication *(14 pages)* 042301
Adam G. D'Souza and David L. Feder

Quantum entanglement and quantum phase transition in the XY model with staggered Dzyaloshinskii-Moriya interaction *(6 pages)* 042302
Fu-Wu Ma, Sheng-Xin Liu, and Xiang-Mu Kong

Dynamical entanglement purification using chains of atoms and optical cavities *(13 pages)* 042303
Denis Gonţa and Peter van Loock

Preservation of loss in linear-optical processing *(7 pages)* 042304
Dominic W. Berry and A. I. Lvovsky

Quantum repeaters based on deterministic storage of a single photon in distant atomic ensembles *(6 pages)* 042305
D. Aghamalyan and Yu. Malakyan

Unextendible maximally entangled bases *(3 pages)* 042306
Sergei Bravyi and John A. Smolin

Approximate simulation of entanglement with a linear cost of communication *(7 pages)* 042307
A. Montina

Entanglement bound for multipartite pure states based on local measurements *(7 pages)* 042308
Li-zhen Jiang, Xiao-yu Chen, and Tian-yu Ye

Optimal superdense coding over memory channels *(8 pages)* 042309
Z. Shadman, H. Kampermann, D. Bruß, and C. Macchiavello

Remote information concentration and multipartite entanglement in multilevel systems *(8 pages)* 042310
Xin-Wen Wang, Deng-Yu Zhang, Guo-Jian Yang, Shi-Qing Tang, and Li-Jun Xie

Operator-sum representation for bosonic Gaussian channels *(26 pages)* 042311
J. Solomon Ivan, Krishna Kumar Sabapathy, and R. Simon

Experimental demonstration of the Deutsch-Jozsa algorithm in homonuclear multispin systems *(7 pages)* 042312
Zhen Wu, Jun Li, Wenqiang Zheng, Jun Luo, Mang Feng, and Xinhua Peng

Quantum discord of two-qubit X states *(5 pages)* 042313
Qing Chen, Chengjie Zhang, Sixia Yu, X. X. Yi, and C. H. Oh

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 84, NUMBER 4** **OCTOBER 2011**

Quantum-state storage and processing for polarization qubits in an inhomogeneously broadened Λ-type three-level medium *(8 pages)* 042314
D. Viscor, A. Ferraro, Yu. Loiko, J. Mompart, and V. Ahufinger

Optimizing entangling quantum gates for physical systems *(8 pages)* 042315
M. M. Müller, D. M. Reich, M. Murphy, H. Yuan, J. Vala, K. B. Whaley, T. Calarco, and C. P. Koch

Entanglement classes of symmetric Werner states *(3 pages)* 042316
David W. Lyons and Scott N. Walck

Convergence of quantum random walks with decoherence *(8 pages)* 042317
Shimao Fan, Zhiyong Feng, Sheng Xiong, and Wei-Shih Yang

Invalidity of a strong capacity for a quantum channel with memory *(6 pages)* 042318
Tony Dorlas and Ciara Morgan

Information causality and noisy computations *(7 pages)* 042319
Li-Yi Hsu, I-Ching Yu, and Feng-Li Lin

Fermionic entanglement extinction in noninertial frames *(6 pages)* 042320
Miguel Montero, Juan León, and Eduardo Martín-Martínez

Quantum walk of light in frequency space and its controlled dephasing *(7 pages)* 042322
Deepak Pandey, Nandan Satapathy, M. S. Meena, and Hema Ramachandran

Information causality from an entropic and a probabilistic perspective *(6 pages)* 042323
Sabri W. Al-Safi and Anthony J. Short

Ground-state preparation of arbitrarily multipartite Dicke states in the one-dimensional ferromagnetic spin-$\frac{1}{2}$ chain *(4 pages)* 042324
Jing Zhou, Yong Hu, Xu-Bo Zou, and Guang-Can Guo

Unextendible product bases and extremal density matrices with positive partial transpose *(10 pages)* 042325
Per Øyvind Sollid, Jon Magne Leinaas, and Jan Myrheim

Asymptotically perfect discrimination in the local-operation-and-classical-communication paradigm *(6 pages)* . . . 042326
M. Kleinmann, H. Kampermann, and D. Bruß

Construction of mutually unbiased bases with cyclic symmetry for qubit systems *(4 pages)* 042327
Ulrich Seyfarth and Kedar S. Ranade

Quadratic dynamical decoupling with nonuniform error suppression *(17 pages)* 042328
Gregory Quiroz and Daniel A. Lidar

Quadratic dynamical decoupling: Universality proof and error analysis *(17 pages)* 042329
Wan-Jung Kuo and Daniel A. Lidar

Cloning of a quantum measurement *(10 pages)* 042330
Alessandro Bisio, Giacomo Mauro D'Ariano, Paolo Perinotti, and Michal Sedlák

Arbitrarily complete Bell-state measurement using only linear optical elements *(6 pages)* 042331
W. P. Grice

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 84, NUMBER 4** **OCTOBER 2011**

Realization of universal adiabatic quantum computation with fewer physical resources *(4 pages)* 042332
Qian-Heng Duan and Ping-Xing Chen

Quantum computational universality of the Cai-Miyake-Dür-Briegel two-dimensional quantum state from Affleck-Kennedy-Lieb-Tasaki quasichains *(7 pages)* 042333
Tzu-Chieh Wei, Robert Raussendorf, and Leong Chuan Kwek

Disorder overtakes order in information concentration over quantum networks *(11 pages)* 042334
R. Prabhu, Saurabh Pradhan, Aditi Sen(De), and Ujjwal Sen

Robustness of single-qubit geometric gate against systematic error *(6 pages)* 042335
J. T. Thomas, Mahmoud Lababidi, and Mingzhen Tian

Symmetry-enhanced performance of dynamical decoupling *(8 pages)* 042336
S. Pasini and G. S. Uhrig

Alternate two-dimensional quantum walk with a single-qubit coin *(8 pages)* 042337
C. Di Franco, M. Mc Gettrick, T. Machida, and Th. Busch

Complete characterization of the ground-space structure of two-body frustration-free Hamiltonians for qubits *(5 pages)* 042338
Zhengfeng Ji, Zhaohui Wei, and Bei Zeng

All-optical quantum computing with a hybrid solid-state processing unit *(8 pages)* 042339
Pei Pei (裴培), Feng-Yang Zhang (张凤阳), Chong Li (李崇), and He-Shan Song (宋鹤山)

Symmetric mixed states of *n* qubits: Local unitary stabilizers and entanglement classes *(8 pages)* 042340
David W. Lyons and Scott N. Walck

Optomechanical transducers for quantum-information processing *(23 pages)* 042341
K. Stannigel, P. Rabl, A. S. Sørensen, M. D. Lukin, and P. Zoller

Entangling optical and microwave cavity modes by means of a nanomechanical resonator *(6 pages)* 042342
Sh. Barzanjeh, D. Vitali, P. Tombesi, and G. J. Milburn

Green-function approach for scattering quantum walks *(12 pages)* 042343
F. M. Andrade and M. G. E. da Luz

Unconditional security proof of a deterministic quantum key distribution with a two-way quantum channel *(5 pages)* 042344
Hua Lu, Chi-Hang Fred Fung, Xiongfeng Ma, and Qing-yu Cai

Atomic and molecular structure and dynamics

Universality versus material dependence of fluctuation forces between metallic wires *(4 pages)* 042501
E. Noruzifar, T. Emig, and R. Zandi

Casimir force between a microfabricated elliptic cylinder and a plate *(9 pages)* 042502
R. S. Decca, E. Fischbach, G. L. Klimchitskaya, D. E. Krause, D. López, and V. M. Mostepanenko

Dilution and resonance-enhanced repulsion in nonequilibrium fluctuation forces *(4 pages)* 042503
Giuseppe Bimonte, Thorsten Emig, Matthias Krüger, and Mehran Kardar

Prospects of laser cooling in atomic thallium *(6 pages)* 042504
Isaac Fan, Tzu-Ling Chen, Yu-Sheng Liu, Yu-Hung Lien, Jow-Tsong Shy, and Yi-Wei Liu

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 84, NUMBER 4** **OCTOBER 2011**

Pseudospectral calculation of helium wave functions, expectation values, and oscillator strength *(11 pages)* 042505
Paul E. Grabowski and David F. Chernoff

Multiconfiguration Dirac-Fock calculations on multi-valence-electron systems: Benchmarks on Ga-like ions *(11 pages)* 042506
Feng Hu, Jiamin Yang, Chuanke Wang, Longfei Jing, Shubo Chen, Gang Jiang, Hao Liu, and Lianghuan Hao

Local control theory in trajectory-based nonadiabatic dynamics *(9 pages)* 042507
Basile F. E. Curchod, Thomas J. Penfold, Ursula Rothlisberger, and Ivano Tavernelli

Equation satisfied by the energy-density functional for electron-electron mutual Coulomb repulsion *(4 pages)* 042508
Daniel P. Joubert

Effect of pH treatment on K-shell x-ray intensity ratios and K-shell x-ray-production cross sections in ZnCo alloys *(10 pages)* 042509
N. Kup Aylikci, V. Aylikci, A. Kahoul, E. Tiraşoğlu, İ. H. Karahan, and E. Cengiz

Search for variation of fundamental constants and violations of fundamental symmetries using isotope comparisons *(6 pages)* 042510
J. C. Berengut, V. V. Flambaum, and E. M. Kava

Absolute frequencies of the ^{6,7}Li $2S\ ^2S_{1/2} \rightarrow \mathbf{3}S\ ^2S_{1/2}$ transitions *(5 pages)* 042511
Yu-Hung Lien, Kuan-Ju Lo, Hsuan-Chen Chen, Jun-Ren Chen, Jyun-Yu Tian, Jow-Tsong Shy, and Yi-Wei Liu

Fock-space multireference coupled-cluster calculations of the hyperfine structure of isoelectronic $^{33}S^-$ and ^{35,37}Cl *(7 pages)* 042512
Madhulita Das, Rajat K. Chaudhuri, Sudip Chattopadhyay, and Uttam Sinha Mahapatra

Atomic and molecular collisions and interactions

Dissociative-ionization cross sections for 12-keV-electron impact on CO_2 *(6 pages)* 042701
Pragya Bhatt, Raj Singh, Namita Yadav, and R. Shanker

Collisions of low-energy electrons with isopropanol *(5 pages)* 042702
M. H. F. Bettega, C. Winstead, V. McKoy, A. Jo, A. Gauf, J. Tanner, L. R. Hargreaves, and M. A. Khakoo

Multichannel quantum defect theory for cold molecular collisions *(9 pages)* 042703
James F. E. Croft, Alisdair O. G. Wallis, Jeremy M. Hutson, and Paul S. Julienne

Effectiveness of projectile screening in single and multiple ionization of Ne by B^{2+} *(7 pages)* 042704
W. Wolff, H. Luna, A. C. F. Santos, E. C. Montenegro, R. D. DuBois, C. C. Montanari, and J. E. Miraglia

Wall-collision line broadening of molecular oxygen within nanoporous materials *(4 pages)* 042705
Can T. Xu, Märta Lewander, Stefan Andersson-Engels, Erik Adolfsson, Tomas Svensson, and Sune Svanberg

Single- and double-electron capture processes in low-energy collisions of N^{3+} with He *(7 pages)* 042706
X. J. Liu, J. G. Wang, Y. Z. Qu, and R. J. Buenker

Elastic electron scattering from the DNA bases cytosine and thymine *(5 pages)* 042707
C. J. Colyer, S. M. Bellm, F. Blanco, G. García, and B. Lohmann

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 84, NUMBER 4** **OCTOBER 2011**

Interference effects in bound-free pair production in relativistic collisions of nuclei with molecules *(6 pages)* 042708
A. B. Voitkiv and B. Najjari

Coulomb excitation of highly charged projectile ions in relativistic collisions with diatomic molecules *(7 pages)* 042709
A. N. Artemyev, S. R. McConnell, A. Surzhykov, B. Najjari, and A. B. Voitkiv

Magnetic-sublevel population and alignment for the excitation of H- and He-like uranium in relativistic collisions *(6 pages)* 042710
A. Gumberidze, S. Fritzsche, S. Hagmann, C. Kozhuharov, X. Ma, M. Steck, A. Surzhykov, A. Warczak, and Th. Stöhlker

Electron-impact study of the S_2 molecule using the R-matrix method *(11 pages)* 042711
Jasmeet Singh Rajvanshi and K L Baluja

Multichannel effects near confinement-induced resonances in harmonic waveguides *(7 pages)* 042712
Vladimir S. Melezhik and Peter Schmelcher

Charge-exchange EUV spectroscopy in collisions of Xe^{q+} ($q = 7$–9) with rare gases *(8 pages)* 042713
H. Tanuma, H. Ohashi, N. Yamamoto, D. Kato, I. Murakami, S. Fujioka, H. Nishimura, and K. Nishihara

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

Highly-charged-ion-induced electron emission from C_{60} thin films *(6 pages)* 042901
E. Bodewits, R. Hoekstra, G. Kowarik, K. Dobes, and F. Aumayr

Clusters (including fullerenes)

Ionization and fragmentation of polycyclic aromatic hydrocarbon clusters in collisions with keV ions *(9 pages)* 043201
H. A. B. Johansson, H. Zettergren, A. I. S. Holm, F. Seitz, H. T. Schmidt, P. Rousseau, A. Ławicki, M. Capron, A. Domaracka, E. Lattouf, S. Maclot, R. Maisonny, B. Manil, J.-Y. Chesnel, L. Adoui, B. A. Huber, and H. Cederquist

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

Tune-out wavelengths of alkali-metal atoms and their applications *(6 pages)* 043401
Bindiya Arora, M. S. Safronova, and Charles W. Clark

Optical force on two-level atoms by few-cycle-pulse Gaussian laser fields beyond the rotating-wave approximation *(6 pages)* 043402
Parvendra Kumar and Amarendra K. Sarma

Quantum motor: Directed wave-packet motion in an optical lattice *(5 pages)* 043403
Quentin Thommen, Jean Claude Garreau, and Véronique Zehnlé

Ultrafast coherent control of angular momentum during a one-photon excitation *(5 pages)* 043404
D. A. Malik, A. T. J. B. Eppink, W. L. Meerts, A. V. Kimel, A. Kirilyuk, Th. Rasing, and W. J. van der Zande

Coherent population transfer and quantum entanglement generation involving a Rydberg state by stimulated Raman adiabatic passage *(6 pages)* 043405
Dong Yan, Cui-Li Cui, Mei Zhang, and Jin-Hui Wu

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 84, NUMBER 4** **OCTOBER 2011**

Classical model of the upper bounds of the cascading contribution to the second hyperpolarizability *(12 pages)* 043406
Nathan J. Dawson, Benjamin R. Anderson, Jennifer L. Schei, and Mark G. Kuzyk

Quantum mechanical model of the upper bounds of the cascading contribution to the second hyperpolarizability *(11 pages)* 043407
Nathan J. Dawson, Benjamin R. Anderson, Jennifer L. Schei, and Mark G. Kuzyk

Magic-wavelength optical traps for Rydberg atoms *(8 pages)* 043408
S. Zhang, F. Robicheaux, and M. Saffman

Two-photon double ionization of helium: Evolution of the joint angular distribution with photon energy and two-electron energy sharing *(11 pages)* 043409
Zheng Zhang, Liang-You Peng, Ming-Hui Xu, Anthony F. Starace, Toru Morishita, and Qihuang Gong

Following dynamic nuclear wave packets in N_2,O_2, and CO with few-cycle infrared pulses *(13 pages)* 043410
S. De, M. Magrakvelidze, I. A. Bocharova, D. Ray, W. Cao, I. Znakovskaya, H. Li, Z. Wang, G. Laurent, U. Thumm, M. F. Kling, I. V. Litvinyuk, I. Ben-Itzhak, and C. L. Cocke

Generation of isolated attosecond pulses in the far field by spatial filtering with an intense few-cycle mid-infrared laser *(12 pages)* 043411
Cheng Jin, Anh-Thu Le, Carlos A. Trallero-Herrero, and C. D. Lin

Probing the spatial distribution of high-angular-momentum Rydberg wave packets *(9 pages)* 043412
B. Wyker, S. Ye, F. B. Dunning, S. Yoshida, C. O. Reinhold, and J. Burgdörfer

Dissociation of doubly and triply charged N_2 in strong laser fields *(5 pages)* 043413
Wei Lai, Linsen Pei, and Chunlei Guo

Optimal trajectories for efficient atomic transport without final excitation *(9 pages)* 043415
Xi Chen, E. Torrontegui, Dionisis Stefanatos, Jr-Shin Li, and J. G. Muga

Light-narrowed optically pumped M_x magnetometer with a miniaturized Cs cell *(6 pages)* 043416
T. Scholtes, V. Schultze, R. IJsselsteijn, S. Woetzel, and H.-G. Meyer

Extracting the information of scattering potential using angular distributions of rescattered photoelectrons *(4 pages)* 043418
Yan Wu, Huiliang Ye, and Jingtao Zhang

Coherent control of molecular rotational state populations by periodic phase-step modulation *(5 pages)* 043419
Shian Zhang, Meizhen Wu, Chenhui Lu, Tianqing Jia, and Zhenrong Sun

Subcycle interference dynamics of time-resolved photoelectron holography with midinfrared laser pulses *(8 pages)* 043420
Xue-Bin Bian, Y. Huismans, O. Smirnova, Kai-Jun Yuan, M. J. J. Vrakking, and André D. Bandrauk

Quantum control of electron wave packets in bound molecules by trains of half-cycle pulses *(10 pages)* 043421
Emil Persson, Markus Pichler, Georg Wachter, Thomas Hisch, Werner Jakubetz, Joachim Burgdörfer, and Stefanie Gräfe

Azimuthal Sisyphus effect for atoms in a toroidal all-optical trap *(5 pages)* 043422
V. E. Lembessis, D. Ellinas, and M. Babiker

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 84, NUMBER 4** **OCTOBER 2011**

Dynamic of rescattering-electron wave packets in strong and short-wavelength laser fields: Roles of Coulomb potential and excited states *(7 pages)* 043423
Yanjun Chen

Internuclear-separation-resolved asymmetric dissociation of I_2 in a two-color laser field *(10 pages)* 043424
V. Tagliamonti, H. Chen, and G. N. Gibson

Frustrated tunneling ionization during laser-induced D_2 fragmentation: Detection of excited metastable D^* atoms *(9 pages)* 043425
J. McKenna, S. Zeng, J. J. Hua, A. M. Sayler, M. Zohrabi, Nora G. Johnson, B. Gaire, K. D. Carnes, B. D. Esry, and I. Ben-Itzhak

Above-threshold ionization of diatomic molecules by few-cycle laser pulses *(8 pages)* 043426
A. Gazibegović-Busuladžić, E. Hasović, M. Busuladžić, D. B. Milošević, F. Kelkensberg, W. K. Siu, M. J. J. Vrakking, F. Lépine, G. Sansone, M. Nisoli, I. Znakovskaya, and M. F. Kling

Angle-resolved and internuclear-separation-resolved measurements of the ionization rate of the B state of I_2 by strong laser fields *(6 pages)* 043427
H. Chen, L. Fang, V. Tagliamonti, and G. N. Gibson

Laser cooling of the vibrational motion of Na_2 combining the effects of zero-width resonances and exceptional points *(9 pages)* 043428
R. Lefebvre, A. Jaouadi, O. Dulieu, and O. Atabek

Orientation dependence of the ionization of CO and NO in an intense femtosecond two-color laser field *(7 pages)* 043429
H. Li, D. Ray, S. De, I. Znakovskaya, W. Cao, G. Laurent, Z. Wang, M. F. Kling, A. T. Le, and C. L. Cocke

Coherent manipulation of spin-wave vector for polarization of photons in an atomic ensemble *(5 pages)* 043430
Shujing Li, Zhongxiao Xu, Haiyan Zheng, Xingbo Zhao, Yuelong Wu, Hai Wang, Changde Xie, and Kunchi Peng

Ultrafast photoionization dynamics at high laser intensities in the xuv regime *(9 pages)* 043431
B. Kaiser, A. Vagov, V. M. Axt, and U. Pietsch

Sub-Doppler laser cooling of potassium atoms *(6 pages)* 043432
M. Landini, S. Roy, L. Carcagní, D. Trypogeorgos, M. Fattori, M. Inguscio, and G. Modugno

Pump-probe photoelectron velocity-map imaging of autoionizing singly excited $4s^14p^6np^1(n = 7,8)$ and doubly excited $4s^24p^45s^16p^1$ resonances in atomic krypton *(8 pages)* 043433
Benjamin Doughty, Louis H. Haber, and Stephen R. Leone

Acceleration of adiabatic quantum dynamics in electromagnetic fields *(11 pages)* 043434
Shumpei Masuda and Katsuhiro Nakamura

PART B

Matter waves and collective properties of cold atoms and molecules

SU(N) magnetism in chains of ultracold alkaline-earth-metal atoms: Mott transitions and quantum correlations *(17 pages)* 043601
Salvatore R. Manmana, Kaden R. A. Hazzard, Gang Chen, Adrian E. Feiguin, and Ana Maria Rey

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 84, NUMBER 4** **OCTOBER 2011**

Nonlinear dynamics of continuously measured Bose-Einstein condensates in one-dimensional harmonic traps *(8 pages)* 043602
T. Yu. Ivanova, M. S. Samoylova, and D. A. Ivanov

Current response, structure factor and hydrodynamic quantities of a two- and three-dimensional Fermi gas from the operator-product expansion *(13 pages)* 043603
Johannes Hofmann

Condensation of two-dimensional harmonically confined bosons with Bessel-type interactions *(6 pages)* 043604
A. I. Mese, P. Capuzzi, S. Aktas, Z. Akdeniz, and S. E. Okan

Robustness of fractional quantum Hall states with dipolar atoms in artificial gauge fields *(5 pages)* 043605
T. Graß, M. A. Baranov, and M. Lewenstein

Cavity-induced switching between localized and extended states in a noninteracting Bose-Einstein condensate *(7 pages)* 043606
Lu Zhou, Han Pu, Keye Zhang, Xing-Dong Zhao, and Weiping Zhang

Dissipative hydrodynamic equation of a ferromagnetic Bose-Einstein condensate: Analogy to magnetization dynamics in conducting ferromagnets *(14 pages)* 043607
Kazue Kudo and Yuki Kawaguchi

Trapped ultracold bosons in periodically modulated lattices *(7 pages)* 043608
Jia-Wei Huo, Fu-Chun Zhang, Weiqiang Chen, M. Troyer, and U. Schollwöck

Bose-Einstein condensate in a light-induced vector gauge potential using 1064-nm optical-dipole-trap lasers *(5 pages)* 043609
Zhengkun Fu (付正坤), Pengjun Wang (王鹏军), Shijie Chai (柴世杰), Lianghui Huang (黄良辉), and Jing Zhang (张靖)

Expansion of Bose-Hubbard Mott insulators in optical lattices *(11 pages)* 043610
Mark Jreissaty, Juan Carrasquilla, F. Alexander Wolf, and Marcos Rigol

Detection and manipulation of nuclear spin states in fermionic strontium *(7 pages)* 043611
Simon Stellmer, Rudolf Grimm, and Florian Schreck

Finite-momentum superfluidity and phase transitions in a p-wave resonant Bose gas *(27 pages)* 043612
Sungsoo Choi and Leo Radzihovsky

Coherent population trapping in Raman-pulse atom interferometry *(8 pages)* 043613
David L. Butts, Joseph M. Kinast, Krish Kotru, Antonije M. Radojevic, Brian P. Timmons, and Richard E. Stoner

Feshbach-resonant Raman photoassociation in a Bose-Einstein condensate *(8 pages)* 043614
Matt Mackie, Pierre Phou, Heather Boyce, Mannix Shinn, and Lev Katz

Instabilities of bosonic spin currents in optical lattices *(10 pages)* 043615
Hoi-Yin Hui, Ryan Barnett, Rajdeep Sensarma, and S. Das Sarma

Manipulating the momentum state of a condensate by sequences of standing-wave pulses *(6 pages)* 043616
Wei Xiong, Xuguang Yue, Zhongkai Wang, Xiaoji Zhou, and Xuzong Chen

Quantum ratchet transport with minimal dispersion rate *(6 pages)* 043617
Fei Zhan, S. Denisov, A. V. Ponomarev, and P. Hänggi

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 84, NUMBER 4** **OCTOBER 2011**

Guided-atom laser: Transverse mode quality and longitudinal momentum distribution *(8 pages)* 043618
F. Vermersch, C. M. Fabre, P. Cheiney, G. L. Gattobogio, R. Mahevet, and D. Guéry-Odelin

Confinement-induced resonances in anharmonic waveguides *(13 pages)* 043619
Shi-Guo Peng, Hui Hu, Xia-Ji Liu, and Peter D. Drummond

Engineering mesoscopic superpositions of superfluid flow *(9 pages)* 043620
D. W. Hallwood and J. Brand

Quantum phases of atomic Fermi gases with anisotropic spin-orbit coupling *(10 pages)* 043621
M. Iskin and A. L. Subaşı

Renormalization of interactions of ultracold atoms in simulated Rashba gauge fields *(4 pages)* 043622
Tomoki Ozawa and Gordon Baym

Controlling the pair momentum of the Fulde-Ferrell-Larkin-Ovchinnikov state in a three-dimensional Fermi gas through a one-dimensional periodic potential *(8 pages)* 043623
Jeroen P. A. Devreese, Michiel Wouters, and Jacques Tempere

Surpassing the standard quantum limit in an atom interferometer with four-mode entanglement produced from four-wave mixing *(7 pages)* 043624
S. A. Haine and A. J. Ferris

Ultracold atoms in U(2) non-Abelian gauge potentials preserving the Landau levels *(18 pages)* 043625
Michele Burrello and Andrea Trombettoni

Persistent currents in dipolar Bose-Einstein condensates confined in annular potentials *(6 pages)* 043626
F. Malet, G. M. Kavoulakis, and S. M. Reimann

Phase separation of Bose-Einstein condensates of trapped atoms and molecules with a homonuclear Feshbach resonance *(11 pages)* 043627
Ryosuke Shibato, Takushi Nishimura, Takayuki Watanabe, and Toru Suzuki

Effect of phase noise on quantum correlations in Bose-Josephson junctions *(18 pages)* 043628
G. Ferrini, D. Spehner, A. Minguzzi, and F. W. J. Hekking

Multiple-scale approach for the expansion scaling of superfluid quantum gases *(5 pages)* 043629
I. L. Egusquiza, M. Modugno, and M. A. Valle Basagoiti

Antiferromagnetism and superfluidity of a dipolar Fermi gas in a two-dimensional optical lattice *(5 pages)* 043630
Bo Liu and Lan Yin

Destruction of attractive bosonic cloud due to high spatial coherence in tight trap *(9 pages)* 043631
Anindya Biswas, Barnali Chakrabarti, Tapan Kumar Das, and Luca Salasnich

Noise correlations in the expansion of an interacting one-dimensional Bose gas from a regular array *(4 pages)* . . . 043632
Austen Lamacraft

Anomalous density for Bose gases at finite temperature *(8 pages)* 043633
A. Boudjemâa and M. Benarous

Role of fourth-order phase-space moments in collective modes of trapped Fermi gases *(9 pages)* 043634
Silvia Chiacchiera, Thomas Lepers, Dany Davesne, and Michael Urban

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 84, NUMBER 4** **OCTOBER 2011**

Atom counting in expanding ultracold clouds *(9 pages)* 043635
Sibylle Braungardt, Mirta Rodríguez, Aditi Sen(De), Ujjwal Sen, and Maciej Lewenstein

Quantum phase-space analysis of population equilibration in multiwell ultracold atomic systems *(7 pages)* 043636
C. V. Chianca and M. K. Olsen

Critical exponent of a quantum-noise-driven phase transition: The open-system Dicke model *(7 pages)* 043637
D. Nagy, G. Szirmai, and P. Domokos

Elementary excitations in dipolar spin-1 Bose-Einstein condensates *(6 pages)* 043638
J. A. M. Huhtamäki and P. Kuopanportti

Finite-range effects in dilute Fermi gases at unitarity *(7 pages)* 043639
Stefano Simonucci, Giovanni Garberoglio, and Simone Taioli

Fluctuating and dissipative dynamics of dark solitons in quasicondensates *(16 pages)* 043640
S. P. Cockburn, H. E. Nistazakis, T. P.Horikis, P. G.Kevrekidis, N. P.Proukakis, and D. J.Frantzeskakis

Optimized Bose-Einstein-condensate production in a dipole trap based on a 1070-nm multifrequency laser: Influence of enhanced two-body loss on the evaporation process *(8 pages)* 043641
T. Lauber, J. Küber, O. Wille, and G. Birkl

Spectral properties of trapped one-dimensional ultracold fermions loaded on optical lattices *(5 pages)* 043642
Atsushi Yamamoto, Susumu Yamada, Masahiko Okumura, and Masahiko Machida

Atomic interactions in precision interferometry using Bose-Einstein condensates *(8 pages)* 043643
Alan O. Jamison, J. Nathan Kutz, and Subhadeep Gupta

Lattice Monte Carlo calculations for unitary fermions in a harmonic trap *(21 pages)* 043644
Michael G. Endres, David B. Kaplan, Jong-Wan Lee, and Amy N. Nicholson

Effects of thermal and quantum fluctuations on the phase diagram of a spin-1 ^{87}Rb Bose-Einstein condensate *(17 pages)* 043645
Nguyen Thanh Phuc, Yuki Kawaguchi, and Masahito Ueda

Stability of nonstationary states of spin-1 Bose-Einstein condensates *(11 pages)* 043646
H. Mäkelä, M. Johansson, M. Zelan, and E. Lundh

Pseudogap temperature and effects of a harmonic trap in the BCS-BEC crossover regime of an ultracold Fermi gas *(11 pages)* 043647
Shunji Tsuchiya, Ryota Watanabe, and Yoji Ohashi

Prototyping method for Bragg-type atom interferometers *(11 pages)* 043648
Brandon Benton, Michael Krygier, Jeffrey Heward, Mark Edwards, and Charles W. Clark

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

Light bullets in the spatiotemporal nonlinear Schrödinger equation with a variable negative diffraction coefficient *(8 pages)* 043801
Wei-Ping Zhong, Milivoj Belić, Gaetano Assanto, Boris A. Malomed, and Tingwen Huang

Numerical studies of the interaction of an atomic sample with the electromagnetic field in two dimensions *(10 pages)* 043802
Maxim Sukharev and Abraham Nitzan

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 84, NUMBER 4** **OCTOBER 2011**

Approach to accurately measuring the speed of optical precursors *(5 pages)* 043803
Chuan-Feng Li, Zong-Quan Zhou, Heejeong Jeong, and Guang-Can Guo

Artificial gauge field for photons in coupled cavity arrays *(8 pages)* 043804
R. O. Umucalılar and I. Carusotto

Semianalytical formulations for the surface modes of photonic woodpiles *(14 pages)* 043805
Dougal J. Kan, Lindsay C. Botten, Christopher G. Poulton, Ara A. Asatryan, and Kokou B. Dossou

Enhanced and switchable spin Hall effect of light near the Brewster angle on reflection *(4 pages)* 043806
Hailu Luo, Xinxing Zhou, Weixing Shu, Shuangchun Wen, and Dianyuan Fan

Theoretical analysis of quantum ghost imaging through turbulence *(8 pages)* 043807
Kam Wai Clifford Chan, D. S. Simon, A. V. Sergienko, Nicholas D. Hardy, Jeffrey H. Shapiro, P. Ben Dixon, Gregory A. Howland, John C. Howell, Joseph H. Eberly, Malcolm N. O'Sullivan, Brandon Rodenburg, and Robert W. Boyd

Fano resonances in magnetic metamaterials *(6 pages)* 043808
Uta Naether and Mario I. Molina

Subwavelength optical spatial solitons and three-dimensional localization in disordered ferroelectrics: Toward metamaterials of nonlinear origin *(4 pages)* 043809
C. Conti, A. J. Agranat, and E. DelRe

Two-color continuous-variable quantum entanglement in a singly resonant optical parametric oscillator *(7 pages)* 043810
Domenico Cuozzo and Gian-Luca Oppo

Transverse localization of light in nonlinear photonic lattices with dimensionality crossover *(5 pages)* 043811
Dragana M. Jović, Milivoj R. Belić, and Cornelia Denz

Photon scattering from strongly driven atomic ensembles *(6 pages)* 043812
Luling Jin, Jörg Evers, and Mihai Macovei

Spectrum of second-harmonic radiation generated from incoherent light *(6 pages)* 043813
A. Stabinis, V. Pyragaite, G. Tamošauskas, and A. Piskarskas

Interferometric control of parametrically amplified waveforms *(4 pages)* 043814
Utsab Khadka, Huaibin Zheng, and Min Xiao

Spin-to-orbital momentum conversion via electro-optic Pockels effect in crystals *(11 pages)* 043815
Ihor Skab, Yurij Vasylkiv, Ihor Smaga, and Rostyslav Vlokh

Regimes of strong light-matter coupling under incoherent excitation *(21 pages)* 043816
E. del Valle and F. P. Laussy

Nonlocal compensation of pure phase objects with entangled photons *(6 pages)* 043817
Simone Cialdi, Davide Brivio, Enrico Tesio, and Matteo G. A. Paris

Solitons supported by complex $\mathcal{PT}$-symmetric Gaussian potentials *(6 pages)* 043818
Sumei Hu, Xuekai Ma, Daquan Lu, Zhenjun Yang, Yizhou Zheng, and Wei Hu

Importance of counter-rotating coupling in the superfluid-to-Mott-insulator quantum phase transition of light in the Jaynes-Cummings lattice *(8 pages)* 043819
Hang Zheng and Yasutami Takada

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 84, NUMBER 4** **OCTOBER 2011**

Radiation burst from a single γ-photon field *(15 pages)* 043820
R. N. Shakhmuratov, F. Vagizov, and O. Kocharovskaya

Efficient all-optical switch using a Λ atom in a cavity QED system *(8 pages)* 043821
Anne E. B. Nielsen and Joseph Kerckhoff

Adiabatic transfer of light in a double cavity and the optical Landau-Zener problem *(21 pages)* 043822
N. Miladinovic, F. Hasan, N. Chisholm, I. E. Linnington, E. A. Hinds, and D. H. J. O'Dell

Propagation of optical spatial solitary waves in bias-free nematic-liquid-crystal cells *(11 pages)* 043823
Antonmaria A. Minzoni, Luke W. Sciberras, Noel F. Smyth, and Annette L. Worthy

Full counting statistics of energy fluctuations in a driven quantum resonator *(10 pages)* 043824
A. A. Clerk

Spatial Pauli blocking of spontaneous emission in optical lattices *(11 pages)* 043825
R. M. Sandner, M. Müller, A. J. Daley, and P. Zoller

Dynamics, disorder effects, and $\mathcal{PT}$-symmetry breaking in waveguide lattices with localized eigenstates *(6 pages)* 043826
Harsha Vemuri, Vaibhav Vavilala, Theja Bhamidipati, and Yogesh N. Joglekar

Quantum phase transition of light in a one-dimensional photon-hopping-controllable resonator array *(7 pages)* . . . 043827
Chun-Wang Wu, Ming Gao, Zhi-Jiao Deng, Hong-Yi Dai, Ping-Xing Chen, and Cheng-Zu Li

Low-frequency self-pulsing in single-section quantum-dot laser diodes and its relation to optothermal pulsations *(10 pages)* 043828
A. Tierno, N. Radwell, and T. Ackemann

Highly efficient tabletop x-ray laser at $\lambda = 41.8$ nm in Pd-like xenon pumped by optical-field ionization in a cluster jet *(8 pages)* 043829
E. P. Ivanova

Higher-charged vortices in mixed linear-nonlinear circular arrays *(7 pages)* 043830
Liangwei Dong, Huijun Li, Changming Huang, Shunsheng Zhong, and Chunyan Li

Sensitivity of entangled photon holes to loss and amplification *(9 pages)* 043831
J. D. Franson

Dissipation and ultrastrong coupling in circuit QED *(15 pages)* 043832
Félix Beaudoin, Jay M. Gambetta, and A. Blais

Photonic band structure of the three-dimensional ^{88}Sr atomic lattice *(13 pages)* 043833
Deshui Yu

Dispersion of nonlinear group velocity determines shortest envelope solitons *(5 pages)* 043834
Sh. Amiranashvili, U. Bandelow, and N. Akhmediev

Momentum of light scattered from collections of particles *(7 pages)* 043835
Zhisong Tong and Olga Korotkova

Chaos crisis and bistability of self-pulsing dynamics in a laser diode with phase-conjugate feedback *(5 pages)* . . . 043836
Martin Virte, Andreas Karsaklian Dal Bosco, Delphine Wolfersberger, and Marc Sciamanna

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 84, NUMBER 4** **OCTOBER 2011**

Electromagnetically induced absorption via incoherent collisions *(5 pages)* 043837
Xihua Yang, Jiteng Sheng, and Min Xiao

Three-dimensional theory of quantum memories based on Λ-type atomic ensembles *(17 pages)* 043838
Emil Zeuthen, Anna Grodecka-Grad, and Anders S. Sørensen

Quasicompactons in inverted nonlinear photonic crystals *(9 pages)* 043839
Yongyao Li, Boris A. Malomed, Jianxiong Wu, Wei Pang, Sicong Wang, and Jianying Zhou

Proposal for efficient two-dimensional atom localization using probe absorption in a microwave-driven four-level atomic system *(9 pages)* 043840
Chunling Ding, Jiahua Li, Xiaoxue Yang, Duo Zhang, and Hao Xiong

Classical theory of cylindrical nonlinear optics: Sum- and difference-frequency generation *(6 pages)* 043841
Hao Xiong, Liu-Gang Si, Chunling Ding, Xiaoxue Yang, and Ying Wu

Nondiffracting optical beams in a three-level Raman system *(8 pages)* 043842
Tarak N. Dey and Jörg Evers

Causal information velocity in fast and slow pulse propagation in an optical ring resonator *(4 pages)* 043843
Makoto Tomita, Hiroyuki Uesugi, Parvin Sultana, and Tohru Oishi

Evolution of dark state of an open atomic system in constant intensity laser field *(10 pages)* 043844
A. J. Krmpot, M. Radonjić, S. M. Ćuk, S. N. Nikolić, Z. D. Grujić, and B. M. Jelenković

Cavity quantum electro-optics. II. Input-output relations between traveling optical and microwave fields *(8 pages)* 043845
Mankei Tsang

Nonclassicality of vortex Airy beams in the Wigner representation *(5 pages)* 043846
Rui-Pin Chen and C. H. Raymond Ooi

Stability and time-domain analysis of the dispersive tristability in microresonators under modal coupling *(5 pages)* 043847
Yannick Dumeige and Patrice Féron

Relative stability of multipeak localized patterns of cavity solitons *(4 pages)* 043848
A. G. Vladimirov, R. Lefever, and M. Tlidi

Quantum dynamics and quantum state transfer between separated nitrogen-vacancy centers embedded in photonic crystal cavities *(10 pages)* 043849
W. L. Yang, Z. Q. Yin, Z. Y. Xu, M. Feng, and C. H. Oh

Electromagnetically induced grating with maximal atomic coherence *(5 pages)* 043850
Silvânia A. Carvalho and Luís E. E. de Araujo

Spin-noise spectroscopy under resonant optical probing conditions: Coherent and nonlinear effects *(7 pages)* 043851
H. Horn, G. M. Müller, E. M. Rasel, L. Santos, J. Hübner, and M. Oestreich

BRIEF REPORTS

Fundamental concepts

Experimental investigation of the robustness against noise for different Bell-type inequalities in three-qubit Greenberger-Horne-Zeilinger states *(5 pages)* 044101
Huai-Xin Lu, Jia-Qiang Zhao, Lian-Zhen Cao, and Xiao-Qin Wang

(Continued)

PHYSICAL REVIEW A THIRD SERIES, VOLUME 84, NUMBER 4 OCTOBER 2011

Hardy's paradox and the entanglementlike structure of forward-scattered waves *(4 pages)* 044102
Mátyás Koniorczyk, Levente Szabó, and Peter Adam

Convergence of repeated quantum nondemolition measurements and wave-function collapse *(4 pages)* 044103
Michel Bauer and Denis Bernard

Quantum information

Recursive encoding and decoding of the noiseless subsystem and decoherence-free subspace *(4 pages)* 044301
Chi-Kwong Li, Mikio Nakahara, Yiu-Tung Poon, Nung-Sing Sze, and Hiroyuki Tomita

Experimental detection of nonclassical correlations in mixed-state quantum computation *(4 pages)* 044302
G. Passante, O. Moussa, D. A. Trottier, and R. Laflamme

Behavior of entanglement and Cooper pairs under relativistic boosts *(4 pages)* 044303
Veiko Palge, Vlatko Vedral, and Jacob A. Dunningham

Robust quantum gates via a photon triggering electromagnetically induced transparency *(4 pages)* 044304
Y. L. Zhou and C. Z. Li

Atomic and molecular structure and dynamics

Analysis of Casimir forces with window functions: Kramers-Kronig general approach for real measured dielectric data *(4 pages)* 044501
O. Shpak and G. Palasantzas

Correction method for obtaining the variationally best ground-state pair density *(4 pages)* 044502
Masahiko Higuchi and Katsuhiko Higuchi

^1D states of the beryllium atom: Quantum mechanical nonrelativistic calculations employing explicitly correlated Gaussian functions *(3 pages)* 044503
Keeper L. Sharkey, Sergiy Bubin, and Ludwik Adamowicz

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

Magnetic-field effects in transitions of X Li molecules (X: even isotopes of group II atoms) *(4 pages)* 045401
Geetha Gopakumar, Minori Abe, Masahiko Hada, and Masatoshi Kajita

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

Controlling resonant photonic transport along optical waveguides by two-level atoms *(4 pages)* 045801
Cong-Hua Yan, Lian-Fu Wei, Wen-Zhi Jia, and Jung-Tsung Shen

Time evolution of entangled biatomic states in a cavity *(4 pages)* 045802
E. G. Figueiredo, C. A. Linhares, A. P. C. Malbouisson, and J. M. C. Malbouisson

Near-field phase singularity in subwavelength metallic microstructures *(4 pages)* 045803
Ming Kang (康明), Qing-Hua Guo (郭清华), Jing Chen, Bing Gu (顾兵), Yongnan Li (李勇男), and Hui-Tian Wang (王慧田)

Polarization properties of macroscopic Bell states *(4 pages)* 045804
Timur Sh. Iskhakov, Ivan N. Agafonov, Maria V. Chekhova, Georgy O. Rytikov, and Gerd Leuchs

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 84, NUMBER 4** **OCTOBER 2011**

Complex stationary-phase points in dynamical-tunneling emissions *(4 pages)* 045805
Soo-Young Lee and Yunchul Chung

Broadband cavity electromagnetically induced transparency *(4 pages)* 045806
Xiaogang Wei, Yanhua Wang, Jiepeng Zhang, and Yifu Zhu

COMMENTS

Comment on "Conditional generation of error syndromes in fault-tolerant error correction" *(1 page)* 046101
Kazuto Oshima

Comment on "Teleportation of two-mode squeezed states" *(2 pages)* 046301
Guangqiang He and Jingtao Zhang

Comment on "Casimir-Polder potential in a dielectric medium out of thermal equilibrium" *(2 pages)* 046501
Peter W. Milonni

ERRATA

Erratum: Superradiant phase in field-matter interactions [Phys. Rev. A **84**, 013819 (2011)] *(1 page)* . . . . . 049901(E)
O. Castaños, E. Nahmad-Achar, R. López-Peña, and J. G. Hirsch

Erratum: Perfect imaging with positive refraction in three dimensions [Phys. Rev. A **81**, 011804(R) (2010)] *(1 page)* . . . . . 049902(E)
Ulf Leonhardt and Thomas G. Philbin

Erratum: Electron-correlation-induced interchange of lifetime broadenings of $5s^{-1}$ multiplet states in atomic Cs [Phys. Rev. A **80**, 042518 (2009)] *(1 page)* . . . . . 049903(E)
L. Partanen, J. Schulz, M. Holappa, H. Aksela, and S. Aksela

Publisher's Note: Semiquantum secret sharing using entangled states [Phys. Rev. A **82**, 022303 (2010)] *(1 page)* . . . . . 049904(E)
Qin Li, W. H. Chan, and Dong-Yang Long

Erratum: Positron attachment to the $H_2(A\,^3\Sigma_u)$ state [Phys. Rev. A **83**, 064701 (2011)] *(1 page)* . . . . . 049905(E)
J. Mitroy and J. Y. Zhang