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 78, NUMBER 5
PARTS A AND B

CONTENTS

NOVEMBER 2008

The Table of Contents is a total listing of Parts A and B.
Part A consists of pages 050301, and Part B pages 052902.

PART A

RAPID COMMUNICATIONS

Quantum information

Purification of single-photon entanglement with linear optics *(4 pages)* . . . . . 050301(R)
Nicolas Sangouard, Christoph Simon, Thomas Coudreau, and Nicolas Gisin

Atomic and molecular structure and dynamics

Atomic parity nonconservation in Ra^+ *(4 pages)* . . . . . 050501(R)
L. W. Wansbeek, B. K. Sahoo, R. G. E. Timmermans, K. Jungmann, B. P. Das, and D. Mukherjee

Atomic and molecular collisions and interactions

Quantum-fluctuation-driven coherent spin dynamics in small condensates *(4 pages)* . . . . . 050701(R)
Xiaoling Cui, Yupeng Wang, and Fei Zhou

Magnetic trapping of atomic nitrogen (^{14}N) and cotrapping of NH ($X\,^3\Sigma^-$) *(4 pages)* . . . . . 050702(R)
Matthew T. Hummon, Wesley C. Campbell, Hsin-I Lu, Edem Tsikata, Yihua Wang, and John M. Doyle

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

Three-body fragmentation of CO_2^{2+} upon *K*-shell photoionization *(4 pages)* . . . . . 051401(R)
Z. D. Pešić, D. Rolles, R. C. Bilodeau, I. Dimitriu, and N. Berrah

Comparison of *R*-dependent ionization and bond softening as mechanisms for creating vibrational coherence in hot molecules *(4 pages)* . . . . . 051402(R)
L. Fang and G. N. Gibson

Rayleigh superradiance and dynamic Bragg gratings in an end-pumped Bose-Einstein condensate *(4 pages)* . . . . . 051403(R)
A. Hilliard, F. Kaminski, R. le Targat, C. Olausson, E. S. Polzik, and J. H. Müller

Matter waves

Macroscopic superpositions of phase states with Bose-Einstein condensates *(4 pages)* . . . . . 051601(R)
F. Piazza, L. Pezzé, and A. Smerzi

Copyright 2008 by The American Physical Society

(Continued)

1050-2947(200811)78:5:A;1-D

PHYSICAL REVIEW A THIRD SERIES, VOLUME 78, NUMBER 5 NOVEMBER 2008

Enhancement of on-site interactions of tunneling ultracold atoms in optical potentials using radio-frequency dressing *(4 pages)* . . . . . 051602(R)
Martin Shotter, Dimitrios Trypogeorgos, and Christopher Foot

Radio-frequency-induced ground-state degeneracy in a Bose-Einstein condensate of chromium atoms *(4 pages)* . . . . . 051603(R)
Q. Beaufils, T. Zanon, R. Chicireanu, B. Laburthe-Tolra, E. Maréchal, L. Vernac, J.-C. Keller, and O. Gorceix

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

Numerically exact solution to the finite-size Dicke model *(4 pages)* . . . . . 051801(R)
Qing-Hu Chen, Yu-Yu Zhang, Tao Liu, and Ke-Lin Wang

Four-wave mixing enhanced white-light cavity *(4 pages)* . . . . . 051802(R)
Robert Fleischhaker and Jörg Evers

Backaction noise produced via cavity-aided nondemolition measurement of an atomic clock state *(4 pages)* . . . . . 051803(R)
Igor Teper, Geert Vrijsen, Jongmin Lee, and Mark A. Kasevich

Polarized light bursts from kicked quantum rings *(4 pages)* . . . . . 051804(R)
A. S. Moskalenko and J. Berakdar

ARTICLES

Fundamental concepts

Collective processes of an ensemble of spin-1/2 particles *(14 pages)* 052101
Bradley A. Chase and J. M. Geremia

Casimir-effect instabilities and phase transitions *(7 pages)* 052102
M. Pradeep Ganesh, A. Widom, S. Sivasubramanian, and Y. N. Srivastava

Multisetting Bell inequality for qudits *(7 pages)* 052103
Se-Wan Ji, Jinhyoung Lee, James Lim, Koji Nagata, and Hai-Woong Lee

Quantum brachistochrone evolution of systems of two identical particles: The role of entanglement *(7 pages)* 052104
A. Borras, A. R. Plastino, M. Casas, and A. Plastino

Exchange symmetry and multipartite entanglement *(8 pages)* 052105
Tsubasa Ichikawa, Toshihiko Sasaki, Izumi Tsutsui, and Nobuhiro Yonezawa

Phase-space-region operators and the Wigner function: Geometric constructions and tomography *(9 pages)* 052106
Demosthenes Ellinas and Anthony J. Bracken

Enhancement of motional entanglement of cold atoms by pairwise scattering of photons *(6 pages)* 052107
Rui Guo, Xiaoji Zhou, and Xuzong Chen

Qubit phase space: SU(n) coherent-state P representations *(13 pages)* 052108
D. W. Barry and P. D. Drummond

Quantal phase factors accompanying adiabatic changes in the case of continuous spectra *(9 pages)* 052109
M. Maamache and Y. Saadi

(Continued)

PHYSICAL REVIEW A THIRD SERIES, VOLUME 78, NUMBER 5 NOVEMBER 2008

Possible entanglement detection with the naked eye *(5 pages)* 052110
Nicolas Brunner, Cyril Branciard, and Nicolas Gisin

Simulation of partial entanglement with nonsignaling resources *(5 pages)* 052111
Nicolas Brunner, Nicolas Gisin, Sandu Popescu, and Valerio Scarani

Effect of feedback on the control of a two-level dissipative quantum system *(6 pages)* 052112
L. C. Wang, X. L. Huang, and X. X. Yi

Completely positive Markovian quantum dynamics in the weak-coupling limit *(15 pages)* 052113
David Taj and Fausto Rossi

Repeatable quantum memory channels *(5 pages)* 052114
Tomáš Rybár and Mário Ziman

Comparison theorems for the Klein-Gordon equation in d dimensions *(3 pages)* 052115
Richard L. Hall and M. D. Aliyu

Photon wave function: A covariant formulation and equivalence with QED *(5 pages)* 052116
F. Tamburini and D. Vicino

Classical and quantum fold catastrophe in the presence of axial symmetry *(13 pages)* 052117
G. Dhont and B. I. Zhilinskií

Noise-induced interference fringes in trapped ultracold bosonic gases *(7 pages)* 052118
S. Anderloni, F. Benatti, R. Floreanini, and G. G. Guerreschi

Heisenberg's uncertainty principle for simultaneous measurement of positive-operator-valued measures *(5 pages)* 052119
Takayuki Miyadera and Hideki Imai

Information-geometric reconstruction of quantum theory *(17 pages)* 052120
Philip Goyal

Anyon statistics with continuous variables *(6 pages)* 052121
Jing Zhang, Changde Xie, Kunchi Peng, and Peter van Loock

Choice of measurement sets in qubit tomography *(15 pages)* 052122
Mark D. de Burgh, Nathan K. Langford, Andrew C. Doherty, and Alexei Gilchrist

Quantum information

Spatial entanglement of paired photons generated in cold atomic ensembles *(5 pages)* 052301
Clara I. Osorio, Sergio Barreiro, Morgan W. Mitchell, and Juan P. Torres

Entanglement of two blocks of spins in the critical Ising model *(9 pages)* 052302
P. Facchi, G. Florio, C. Invernizzi, and S. Pascazio

Entanglement of solitons in the Frenkel-Kontorova model *(15 pages)* 052303
S. Marcovitch and B. Reznik

Teleportation using squeezed single photons *(8 pages)* 052304
Agata M. Brańczyk and T. C. Ralph

Entangling characterization of $\mathrm{SWAP}^{1/m}$ and controlled unitary gates *(5 pages)* 052305
S. Balakrishnan and R. Sankaranarayanan

Scalable ellipsoidal classification for bipartite quantum states *(6 pages)* 052306
David A. Herrera-Martí

(Continued)

PHYSICAL REVIEW A **THIRD SERIES, VOLUME 78, NUMBER 5** **NOVEMBER 2008**

Graphical description of local Gaussian operations for continuous-variable weighted graph states *(5 pages)* 052307
Jing Zhang (张靖)

Comparison of the relative entropy of entanglement and negativity *(8 pages)* 052308
Adam Miranowicz, Satoshi Ishizaka, Bohdan Horst, and Andrzej Grudka

Generic quantum walk using a coin-embedded shift operator *(5 pages)* 052309
C. M. Chandrashekar

Architectures for a quantum random access memory *(9 pages)* 052310
Vittorio Giovannetti, Seth Lloyd, and Lorenzo Maccone

Construction of bilinear control Hamiltonians using the series product and quantum feedback *(5 pages)* 052311
J. E. Gough

Experimental continuous-variable cloning of partial quantum information *(5 pages)* 052312
Metin Sabuncu, Gerd Leuchs, and Ulrik L. Andersen

Environment-assisted creation and enhancement of two-mode entanglement in a joint decoherent model *(8 pages)* 052313
Shao-Hua Xiang, Bin Shao, and Ke-Hui Song

Entanglement swapping between spacelike-separated atoms *(4 pages)* 052314
Juan León and Carlos Sabín

Implementation of holonomic quantum gates by an isospectral deformation of an Ising dimer chain *(5 pages)* 052315
Yukihiro Ota, Masamitsu Bando, Yasusi Kondo, and Mikio Nakahara

Symmetry-noise interplay in a quantum walk on an *n*-cycle *(5 pages)* 052316
Subhashish Banerjee, R. Srikanth, C. M. Chandrashekar, and Pranaw Rungta

Multipartite entanglement criterion from uncertainty relations *(5 pages)* 052317
J. Gillet, T. Bastin, and G. S. Agarwal

Increasing entanglement of local qubits by applying electron current *(6 pages)* 052318
Ye Xiong

Unifying several separability conditions using the covariance matrix criterion *(17 pages)* 052319
O. Gittsovich, O. Gühne, P. Hyllus, and J. Eisert

Quantum networks on cubelike graphs *(5 pages)* 052320
Anna Bernasconi, Chris Godsil, and Simone Severini

Generating entanglement between quantum dots with different resonant frequencies based on dipole-induced transparency *(10 pages)* 052321
Deepak Sridharan and Edo Waks

Quantum adaptation of noisy channels *(6 pages)* 052322
Miroslav Gavenda and Radim Filip

Experimental asymmetric phase-covariant quantum cloning of polarization qubits *(7 pages)* 052323
Jan Soubusta, Lucie Bartůšková, Antonín Černoch, Miloslav Dušek, and Jaromír Fiurášek

Exact solution of a Yang-Baxter spin-1/2 chain model and quantum entanglement *(6 pages)* 052324
Ming-Guang Hu, Kang Xue, and Mo-Lin Ge

(Continued)

PHYSICAL REVIEW A THIRD SERIES, VOLUME 78, NUMBER 5 NOVEMBER 2008

Quantum simulation of interacting high-dimensional systems: The influence of noise *(31 pages)* 052325
Wolfgang Dür, Michael J. Bremner, and Hans J. Briegel

Generalized parity measurements *(8 pages)* 052326
Radu Ionicioiu, Anca E. Popescu, William J. Munro, and Timothy P. Spiller

Gate complexity using dynamic programming *(6 pages)* 052327
Srinivas Sridharan, Mile Gu, and Matthew R. James

Symmetric construction of reference-frame-free qudits *(5 pages)* 052328
Jun Suzuki, Gelo Noel Macuja Tabia, and Berthold-Georg Englert

Dynamical properties across a quantum phase transition in the Lipkin-Meshkov-Glick model *(7 pages)* 052329
Paolo Solinas, Pedro Ribeiro, and Rémy Mosseri

Alternative fidelity measure between quantum states *(11 pages)* 052330
Paulo E. M. F. Mendonça, Reginaldo d. J. Napolitano, Marcelo A. Marchiolli, Christopher J. Foster, and Yeong-Cherng Liang

Fault-tolerant quantum computation against biased noise *(9 pages)* 052331
Panos Aliferis and John Preskill

Parameters of pseudorandom quantum circuits *(16 pages)* 052332
Yaakov S. Weinstein, Winton G. Brown, and Lorenza Viola

Optimal state for keeping reference frames aligned and the platonic solids *(5 pages)* 052333
Piotr Kolenderski and Rafal Demkowicz-Dobrzanski

Heisenberg chains cannot mirror a state *(5 pages)* 052334
Marcin Wieśniak

Atomic and molecular structure and dynamics

Chiral asymmetry in the angle-resolved O and C $1s^{-1}$ core photoemissions of the *R* enantiomer of glycidol *(7 pages)* 052501
Ivan Powis, Chris J. Harding, Silko Barth, Sanjeev Joshi, Volker Ulrich, and Uwe Hergenhahn

In silico prediction of atomic static electric-dipole polarizabilities of the early tetravalent actinide ions: Th^{4+} ($5f^0$), Pa^{4+} ($5f^1$), and U^{4+} ($5f^2$) *(8 pages)* 052502
Florent Réal, Valérie Vallet, Carine Clavaguéra, and Jean-Pierre Dognon

Electric dipole rovibrational transitions in the HD molecule *(7 pages)* 052503
Krzysztof Pachucki and Jacek Komasa

High-accuracy calculation of energies, lifetimes, hyperfine constants, multipole polarizabilities, and blackbody radiation shift in ^{39}K *(12 pages)* 052504
U. I. Safronova and M. S. Safronova

Relativistic fluorescence yields for hollow atoms in the range $12 \leqslant Z \leqslant 56$ *(8 pages)* 052505
L. Natarajan

Relativistic and electron correlation effects in static dipole polarizabilities for the group-14 elements from carbon to element $Z=114$: Theory and experiment *(7 pages)* 052506
Christian Thierfelder, Behnam Assadollahzadeh, Peter Schwerdtfeger, Sascha Schäfer, and Rolf Schäfer

Accuracy limits on the description of the lowest *S* excitation in the Li atom using explicitly correlated Gaussian basis functions *(8 pages)* 052507
Monika Stanke, Jacek Komasa, Dariusz Kędziera, Sergiy Bubin, and Ludwik Adamowicz

(Continued)

PHYSICAL REVIEW A THIRD SERIES, VOLUME 78, NUMBER 5 NOVEMBER 2008

Beyond the quantum adiabatic approximation: Adiabatic perturbation theory *(24 pages)* 052508
Gustavo Rigolin, Gerardo Ortiz, and Victor Hugo Ponce

Double-quantum-coherence attosecond x-ray spectroscopy of spatially separated, spectrally overlapping core-electron transitions *(9 pages)* 052509
Igor V. Schweigert and Shaul Mukamel

Adaptive analytical mapping procedure for efficiently solving the radial Schrödinger equation *(11 pages)* 052510
Vladimir V. Meshkov, Andrey V. Stolyarov, and Robert J. Le Roy

Relativistic, QED, and finite nuclear mass corrections for low-lying states of Li and Be^+ *(10 pages)* 052511
Mariusz Puchalski and Krzysztof Pachucki

Efficient positronium laser excitation for antihydrogen production in a magnetic field *(7 pages)* 052512
F. Castelli, I. Boscolo, S. Cialdi, M. G. Giammarchi, and D. Comparat

Density functional with full exact exchange, balanced nonlocality of correlation, and constraint satisfaction *(13 pages)* 052513
John P. Perdew, Viktor N. Staroverov, Jianmin Tao, and Gustavo E. Scuseria

Measurement of light shifts at two off-resonant wavelengths in a single trapped Ba^+ ion and the determination of atomic dipole matrix elements *(11 pages)* 052514
J. A. Sherman, A. Andalkar, W. Nagourney, and E. N. Fortson

Polarizability of the Si^{2+} ion *(7 pages)* 052515
J. Mitroy

Atomic and molecular collisions and interactions

Young-type interference effect on angular distribution of secondary electrons emitted from H_2 in collisions with fast electrons *(5 pages)* 052701
Shyamal Chatterjee, D. Misra, A. H. Kelkar, Lokesh C. Tribedi, C. R. Stia, O. A. Fojón, and R. D. Rivarola

R-matrix treatment of high-energy electron-impact excitation processes: The generalized oscillator strengths for the Na $3s$-$3p$ and $2p$-$3s$ transitions *(8 pages)* 052702
Xiaoying Han, Yueming Li, Hong Zhang, Jun Yan, JiaMing Li, and Lan Voky

Avoided crossings between bound states of ultracold cesium dimers *(10 pages)* 052703
Jeremy M. Hutson, Eite Tiesinga, and Paul S. Julienne

Indirect dissociative recombination of $LiH_2^+ + e^-$ *(10 pages)* 052704
Daniel J. Haxton and Chris H. Greene

Ionization of the He, Ne, Ar, Kr, and Xe isoelectronic series by proton impact *(7 pages)* 052705
J. E. Miraglia and M. S. Gravielle

Inelastic processes in collisions of $Na(3s,3p)$ with He at thermal energies *(7 pages)* 052706
C. Y. Lin, P. C. Stancil, H.-P. Liebermann, P. Funke, and R. J. Buenker

Creating ultracold molecules by collisions with ultracold rare-gas atoms in an optical trap *(4 pages)* 052707
P. Barletta, J. Tennyson, and P. F. Barker

Electron-impact ionization of C^+ in both ground and metastable states *(7 pages)* 052708
J. A. Ludlow, S. D. Loch, M. S. Pindzola, C. P. Ballance, D. C. Griffin, M. E. Bannister, and M. Fogle

Long-range potentials and $(n-1)d+ns$ molecular resonances in an ultracold Rydberg gas *(11 pages)* 052709
J. Stanojevic, R. Côté, D. Tong, E. E. Eyler, and P. L. Gould

(Continued)

PHYSICAL REVIEW A THIRD SERIES, VOLUME 78, NUMBER 5 NOVEMBER 2008

Electron scattering from H_2O: Elastic scattering *(10 pages)* 052710
M. A. Khakoo, H. Silva, J. Muse, M. C. A. Lopes, C. Winstead, and V. McKoy

Near-threshold scattering, quantum reflection, and quantization in two dimensions *(20 pages)* 052711
Florian Arnecke, Harald Friedrich, and Patrick Raab

Collision-induced fragmentation cross sections of CO_2^+ on He: Experiment and theory *(8 pages)* 052712
Olmo González-Magaña, R. Cabrera-Trujillo, and Guillermo Hinojosa

Multiphoton scattering in a one-dimensional waveguide with resonant atoms *(10 pages)* 052713
V. I. Yudson and P. Reineker

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

Surface-induced heating of cold polar molecules *(17 pages)* 052901
Stefan Yoshi Buhmann, M. R. Tarbutt, Stefan Scheel, and E. A. Hinds

Measurements of the x-ray mass-attenuation coefficient and imaginary component of the form factor of copper *(13 pages)* 052902
J. L. Glover, C. T. Chantler, Z. Barnea, N. A. Rae, C. Q. Tran, D. C. Creagh, D. Paterson, and B. B. Dhal

PART B

Clusters (including fullerenes)

Effect of pulse duration on the x-ray emission from Ar clusters in intense laser fields *(12 pages)* 053201
Christophe Prigent, Cornelia Deiss, Emily Lamour, Jean-Pierre Rozet, Dominique Vernhet, and Joachim Burgdörfer

Multiple ionization of C_{60} by fast Si^{q+} ions *(6 pages)* 053202
T. Mizuno, H. Tsuchida, T. Majima, Y. Nakai, and A. Itoh

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

Quantum beating in uv radiation generation by ultrashort laser pulses via four-wave mixing *(8 pages)* 053401
A. Gogyan and Yu. Malakyan

Time-dependent *R*-matrix calculations for multiphoton ionization of argon atoms in strong laser pulses *(8 pages)* 053402
Xiaoxu Guan, C. J. Noble, O. Zatsarinny, K. Bartschat, and B. I. Schneider

Effects of narrow-band pulse shaping on a resonant multilevel system *(7 pages)* 053403
A. S. Meijer, A. V. Kimel, Th. Rasing, and W. J. van der Zande

Chirped fields for Rb+Cs photoassociation *(17 pages)* 053404
A. Homer and G. Roberts

Photoionization of doubly-charged scandium ions *(10 pages)* 053405
A. M. Sossah, H.-L. Zhou, and S. T. Manson

Resonant enhancement of generation of harmonics *(9 pages)* 053406
I. A. Ivanov and A. S. Kheifets

Four-wave mixing in a Λ system *(7 pages)* 053407
P. R. Berman and Xiaodong Xu

(Continued)

PHYSICAL REVIEW A THIRD SERIES, VOLUME 78, NUMBER 5 NOVEMBER 2008

Ionization dynamics of linear molecular ion H_3^{2+} in dc and low-frequency laser fields *(9 pages)* 053408
Xue-Bin Bian, Liang-You Peng, and Ting-Yun Shi

Theory of x-ray diffraction from laser-aligned symmetric-top molecules *(14 pages)* 053409
Phay J. Ho and Robin Santra

Adiabatic fidelity for atom-molecule conversion in a nonlinear three-level Λ system *(5 pages)* 053410
Shao-Ying Meng, Li-Bin Fu, and Jie Liu

Outer-shell photodetachment of the metastable Mg^- [core]$3s3p^2$ and Ca^- [core]$4s4p^2\ ^4P^e$ states *(12 pages)* 053411
José Luis Sanz-Vicario, Juan Carlos Cardona, and Eva Lindroth

Raman coupling of Zeeman sublevels in an alkali-metal Bose-Einstein condensate *(11 pages)* 053412
K. C. Wright, L. S. Leslie, and N. P. Bigelow

Generation of higher-order harmonics upon the addition of high-frequency XUV radiation to IR radiation: Generalization of the three-step model *(13 pages)* 053413
Avner Fleischer

Probing H_2^+ vibrational motions with high-order harmonic generation *(5 pages)* 053414
Jing Zhao and Zengxiu Zhao

Manipulation of dark states and control of coherent processes with spectrally broad light *(10 pages)* 053415
M. Auzinsh, N. N. Bezuglov, and K. Miculis

Matter waves

Spontaneous symmetry breaking in a nonlinear double-well structure *(12 pages)* 053601
Thawatchai Mayteevarunyoo, Boris A. Malomed, and Guangjiong Dong

Free expansion of a Lieb-Liniger gas: Asymptotic form of the wave functions *(9 pages)* 053602
D. Jukić, R. Pezer, T. Gasenzer, and H. Buljan

Stability of bosonic atomic and molecular condensates near a Feshbach resonance *(6 pages)* 053603
Sourish Basu and Erich J. Mueller

Vortex waves in trapped Bose-Einstein condensates *(7 pages)* 053604
T. P. Simula, T. Mizushima, and K. Machida

Pair correlations of scattered atoms from two colliding Bose-Einstein condensates: Perturbative approach *(9 pages)* 053605
J. Chwedeńczuk, P. Ziń, M. Trippenbach, A. Perrin, V. Leung, D. Boiron, and C. I. Westbrook

Universal relations for a strongly interacting Fermi gas near a Feshbach resonance *(19 pages)* 053606
Eric Braaten, Daekyoung Kang, and Lucas Platter

Role of the mean field in Bloch oscillations of a Bose-Einstein condensate in an optical lattice and harmonic trap *(7 pages)* 053607
R. Zhang, R. E. Sapiro, R. R. Mhaskar, and G. Raithel

Phase locking of two weakly coupled Bose-Einstein condensates under a high-frequency driving field *(5 pages)* 053608
Qiongtao Xie and Wenhua Hai

(Continued)

PHYSICAL REVIEW A THIRD SERIES, VOLUME 78, NUMBER 5 NOVEMBER 2008

Collective oscillations of a Fermi gas in the unitarity limit: Temperature effects and the role of pair correlations *(7 pages)* 053609
S. Riedl, E. R. Sánchez Guajardo, C. Kohstall, A. Altmeyer, M. J. Wright, J. Hecker Denschlag, R. Grimm, G. M. Bruun, and H. Smith

Topologically trapped vortex molecules in Bose-Einstein condensates *(5 pages)* 053610
R. Geurts, M. V. Milošević, and F. M. Peeters

Quantum nucleation and macroscopic quantum tunneling in cold-atom boson-fermion mixtures *(12 pages)* . . . 053611
Dmitry Solenov and Dmitry Mozyrsky

Phase separation in a two-species atomic Bose-Einstein condensate with an interspecies Feshbach resonance *(8 pages)* 053612
Lu Zhou, Jing Qian, Han Pu, Weiping Zhang, and Hong Y. Ling

Dynamical pattern formation during growth of a dual-species Bose-Einstein condensate *(8 pages)* 053613
Shai Ronen, John L. Bohn, Laura Elisa Halmo, and Mark Edwards

Wigner-transform phase-space densities of a two-dimensional harmonically confined charged quantum gas subjected to a magnetic field *(9 pages)* 053614
K. Bencheikh and L. M. Nieto

Genuine phase diffusion of a Bose-Einstein condensate in the microcanonical ensemble: A classical field study *(10 pages)* 053615
A. Sinatra and Y. Castin

Stationary rings of vortices in nonrotating Bose-Einstein condensates *(7 pages)* 053616
D. M. Jezek, P. Capuzzi, M. Guilleumas, and R. Mayol

Simulation of the quantum Hall effect in a staggered modulated magnetic field with ultracold atoms *(6 pages)* 053617
Fuxiang Li, L. B. Shao, L. Sheng, and D. Y. Xing

Magnetization of a half-quantum vortex in a spinor Bose-Einstein condensate *(6 pages)* 053618
Shoichi Hoshi and Hiroki Saito

Radial quadrupole and scissors modes in trapped Fermi gases across the BCS phase transition *(6 pages)* 053619
Michael Urban

Josephson physics mediated by the Mott insulating phase *(6 pages)* 053620
Smitha Vishveshwara and Courtney Lannert

Superfluid equation of state of cold fermionic gases in the Bose-Einstein regime *(19 pages)* 053621
R. Combescot and X. Leyronas

Green-function method in the theory of ultraslow electromagnetic waves in an ideal gas with Bose-Einstein condensates *(14 pages)* 053622
Yurii Slyusarenko and Andrii Sotnikov

Atom-chip diffraction of Bose-Einstein condensates: The role of interatomic interactions *(5 pages)* 053623
T. E. Judd, R. G. Scott, and T. M. Fromhold

Problem with the single-particle description and the spectra of intrinsic modes of degenerate boson-fermion systems *(12 pages)* 053624
P. A. Andreev and L. S. Kuzmenkov

Selective manipulation of degenerate interferometer loops by an atom-optics kicked rotor *(7 pages)* 053625
A. Tonyushkin and M. Prentiss

(Continued)

PHYSICAL REVIEW A THIRD SERIES, VOLUME 78, NUMBER 5 NOVEMBER 2008

Extended Thomas-Fermi density functional for the unitary Fermi gas *(7 pages)* 053626
Luca Salasnich and Flavio Toigo

Ground-state energy of a low-density Bose gas: A second-order upper bound *(10 pages)* 053627
László Erdős, Benjamin Schlein, and Horng-Tzer Yau

Finite-temperature coherence of the ideal Bose gas in an optical lattice *(10 pages)* 053628
Gevorg Muradyan and James R. Anglin

Superfluid-to-insulator phase transition in a unitary Fermi gas *(7 pages)* 053629
Nir Barnea

Photosolitonic effect *(8 pages)* 053630
M. Khodas, A. Kamenev, and L. I. Glazman

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

Group-velocity-matching relationship in the process of third-harmonic generation *(6 pages)* 053801
Yisheng Yang, Wei Han, Wanguo Zheng, Jichun Tan, Fuquan Li, Fang Wang, Yong Xiang, Keyu Li, Bin Feng, Huaiting Jia, Dingxiang Cao, and Jun Dong

Quantum control of dispersion in electromagnetically induced transparency via interacting dressed ground states *(10 pages)* 053802
James Owen Weatherall and Christopher P. Search

Analysis of enhanced two-photon absorption in tapered optical fibers *(5 pages)* 053803
Hao You, S. M. Hendrickson, and J. D. Franson

Consequences of optical pumping and interference for excitation spectra in a coherently driven molecular ladder system *(9 pages)* 053804
N. N. Bezuglov, R. Garcia-Fernandez, A. Ekers, K. Miculis, L. P. Yatsenko, and K. Bergmann

Rabi model beyond the rotating-wave approximation: Generation of photons from vacuum through decoherence *(7 pages)* 053805
T. Werlang, A. V. Dodonov, E. I. Duzzioni, and C. J. Villas-Bôas

Controlling quasibound states in a one-dimensional continuum through an electromagnetically-induced-transparency mechanism *(8 pages)* 053806
Z. R. Gong, H. Ian, Lan Zhou, and C. P. Sun

Similariton interactions in nonlinear graded-index waveguide amplifiers *(7 pages)* 053807
Lei Wu (吴雷), Jie-Fang Zhang, Lu Li, C. Finot, and K. Porsezian

Induced transparency in an ensemble of Λ atoms *(12 pages)* 053808
M. D. Tokman, M. A. Erukhimova, and D. O. D'yachenko

Asymmetric scattering and nonorthogonal mode patterns in optical microspirals *(8 pages)* 053809
Jan Wiersig, Sang Wook Kim, and Martina Hentschel

Entanglement of the orbital angular momentum states of the photon pairs generated in a hot atomic ensemble *(4 pages)* 053810
Qun-Feng Chen, Bao-Sen Shi, Yong-Sheng Zhang, and Guang-Can Guo

Noise in refractive index enhancement *(4 pages)* 053811
D. D. Yavuz and N. A. Proite

(Continued)

PHYSICAL REVIEW A THIRD SERIES, VOLUME 78, NUMBER 5 NOVEMBER 2008

Propagation-induced transition from slow to fast light in highly doped erbium fibers *(8 pages)* 053812
Oscar G. Calderón, Sonia Melle, M. A. Antón, F. Carreño, Francisco Arrieta-Yañez, and E. Cabrera-Granado

Memory in the photon statistics of multilevel quantum systems *(5 pages)* 053813
Felipe Caycedo Soler, Ferney J. Rodriguez, and Gert Zumofen

Laserlike and atomlike regimes in a one-atom laser *(7 pages)* 053814
A. D. Boozer

Second-order interference with orthogonally polarized pseudothermal beams *(5 pages)* 053815
I. Vidal, D. P. Caetano, C. Olindo, E. J. S. Fonseca, and J. M. Hickmann

Collective generation of quantum states of light by entangled atoms *(14 pages)* 053816
D. Porras and J. I. Cirac

Nonlinear magneto-optic polarization rotation with intense laser fields *(6 pages)* 053817
Paul S. Hsu, Anil K. Patnaik, and George R. Welch

Second-harmonic generation of narrow beams in subdiffractive photonic crystals *(4 pages)* 053818
C. Nistor, C. Cojocaru, Yu. Loiko, J. Trull, R. Herrero, and K. Staliunas

Determination of the total angular momentum of a paraxial beam *(5 pages)* 053819
Gabriel Molina-Terriza

Quantum theory of optical temporal phase and instantaneous frequency *(15 pages)* 053820
Mankei Tsang, Jeffrey H. Shapiro, and Seth Lloyd

Effects of a localized beam on the dynamics of excitable cavity solitons *(9 pages)* 053821
Adrian Jacobo, Damià Gomila, Manuel A. Matías, and Pere Colet

Ring-laser gyroscope without the lock-in phenomenon *(8 pages)* 053822
Satoshi Sunada, Shuichi Tamura, Keizo Inagaki, and Takahisa Harayama

Light-induced orientational effects in periodic photonic structures with pure and dye-doped nematic liquid crystal defects *(11 pages)* 053823
Andrey E. Miroshnichenko, Etienne Brasselet, and Yuri S. Kivshar

Dispersion-enhanced laser gyroscope *(9 pages)* 053824
David D. Smith, Hongrok Chang, L. Arissian, and J. C. Diels

Single-mode coupling efficiencies of type-II spontaneous parametric down-conversion: Collinear, noncollinear, and beamlike phase matching *(4 pages)* 053825
Osung Kwon, Young-Wook Cho, and Yoon-Ho Kim

Measuring intensity correlations with a two-element superconducting nanowire single-photon detector *(4 pages)* 053826
Eric A. Dauler, Martin J. Stevens, Burm Baek, Richard J. Molnar, Scott A. Hamilton, Richard P. Mirin, Sae Woo Nam, and Karl K. Berggren

Comparison of quantum and classical local-field effects on two-level atoms in a dielectric *(10 pages)* 053827
Michael E. Crenshaw

van der Waals interaction and spontaneous decay of an excited atom in a superlens-type geometry *(10 pages)* 053828
Agnes Sambale, Dirk-Gunnar Welsch, Ho Trung Dung, and Stefan Yoshi Buhmann

Dispersion and fidelity in quantum interferometry *(12 pages)* 053829
D. S. Simon, A. V. Sergienko, and T. B. Bahder

(Continued)

PHYSICAL REVIEW A THIRD SERIES, VOLUME 78, NUMBER 5 NOVEMBER 2008

Investigation of temporal pulse splitting in a three-level cold-atom ensemble *(6 pages)* 053830
Yan Xue and B. S. Ham

BRIEF REPORTS

Quantum information

Bell-state preparation for fullerene-based electron spins in distant nanotubes *(4 pages)* 054301
W. L. Yang, H. Wei, X. L. Zhang, and M. Feng

Atomic and molecular structure and dynamics

Calculation of the spectrum of the superheavy element $Z=120$ *(4 pages)* 054501
T. H. Dinh, V. A. Dzuba, V. V. Flambaum, and J. S. M. Ginges

Experimental determination of the hyperfine constants of the X_1 and A states of $^{207}Pb^{19}F$ *(4 pages)* 054502
C. P. McRaven, P. Sivakumar, and N. E. Shafer-Ray

Atomic and molecular collisions and interactions

Calculation of cross sections for muonic atom scattering from hydrogenic molecules using the Morse potential *(4 pages)* 054701
Jakub Gronowski and Andrzej Adamczak

Magnetic-field-induced interference of scattering states in ultracold collisions *(4 pages)* 054702
Felipe Herrera

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

Controlling the orientation of polar molecules in a rovibrationally selective manner with an infrared laser pulse and a delayed half-cycle pulse *(4 pages)* 055401
Chuan-Cun Shu (束传存), Kai-Jun Yuan (元凯军), Wen-Hui Hu (胡文辉), Jing Yang (杨静), and Shu-Lin Cong (丛书林)

Direct versus sequential double ionization in atomic systems *(4 pages)* 055402
P. Lambropoulos, L. A. A. Nikolopoulos, M. G. Makris, and Andrej Mihelič

Isotopic pulse-length scaling of molecular dissociation in an intense laser field *(4 pages)* 055403
J. J. Hua and B. D. Esry

Raman satellites in optical scattering from a laser-ablated Mg plume *(4 pages)* 055404
A. Delserieys, F. Y. Khattak, S. Sahoo, G. F. Gribakin, C. L. S. Lewis, and D. Riley

Matter waves

Quantum squeezing effects in creating triatomic molecules from ultracold atoms *(4 pages)* 055601
H. Jing, F. Zheng, and Z. Geng

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

Self-similar parabolic pulses in optical fiber amplifiers with gain dispersion and gain saturation *(4 pages)* 055801
Jie-Fang Zhang, Lei Wu, and Lu Li

Quantitative single-image phase reconstruction using a shift-invariant linear imaging system *(4 pages)* 055802
Rotha P. Yu and David M. Paganin

(Continued)

PHYSICAL REVIEW A THIRD SERIES, VOLUME 78, NUMBER 5 NOVEMBER 2008

Detection of quantum light in the presence of noise *(4 pages)* 055803
A. A. Semenov, A. V. Turchin, and H. V. Gomonay

COMMENTS

Comment on "Critique of the foundations of time-dependent density-functional theory" *(4 pages)* 056501
Neepa T. Maitra, Robert van Leeuwen, and Kieron Burke

Reply to "Comment on 'Critique of the foundations of time-dependent density-functional theory' " *(4 pages)* 056502
J. Schirmer and A. Dreuw

ERRATA

Erratum: Uncertainty relations for positive-operator-valued measures [Phys. Rev. A **76**, 042114 (2007)] *(1 page)* . . . . . 059901(E)
Serge Massar

Erratum: Casimir force between left-handed-material slabs [Phys. Rev. A **77**, 015803 (2008)] *(1 page)* . . . . . 059902(E)
Yaping Yang, Ran Zeng, Jingping Xu, and Shutian Liu

Erratum: Analysis of experimental data for ion-impact single ionization of helium with Monte Carlo event generators based on quantum theory [Phys. Rev. A **75**, 062708 (2007)] *(1 page)* . . . . . 059903(E)
M. Dürr, B. Najjari, M. Schulz, A. Dorn, R. Moshammer, A. B. Voitkiv, and J. Ullrich