

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 1N01
2 Huntington Quadrangle
Melville, NY 11747-4502

THIRD SERIES, VOLUME 77, NUMBER 4
PARTS A AND B

CONTENTS

APRIL 2008

The Table of Contents is a total listing of Parts A and B.
Part A consists of pages 040301(R)-043202, and Part B pages 043401-049904(E).

PART A

RAPID COMMUNICATIONS

Quantum information

- Proposal for direct measurement of concurrence via visibility in a cavity QED system (*4 pages*) 040301(R)
Sang Min Lee, Se-Wan Ji, Hai-Woong Lee, and M. Suhail Zubairy
- Nonlinear coupling of continuous variables at the single quantum level (*4 pages*) 040302(R)
C. F. Roos, T. Monz, K. Kim, M. Riebe, H. Häffner, D. F. V. James, and R. Blatt
- Quantum pseudorandomness from cluster-state quantum computation (*4 pages*) 040303(R)
Winton G. Brown, Yaakov S. Weinstein, and Lorenza Viola

Atomic and molecular collisions and interactions

- Absolute cross sections for dissociative electron attachment to acetylene and diacetylene (*4 pages*) 040701(R)
Olivier May, Juraj Fedor, Bogdan C. Ibănescu, and Michael Allan

Clusters (including fullerenes)

- Energy absorption of xenon clusters in helium nanodroplets under strong laser pulses (*4 pages*) 041201(R)
Alexey Mikaberidze, Ulf Saalmann, and Jan M. Rost

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

- Alignment dependence of the structural deformation of CO₂ molecules in an intense femtosecond laser field (*4 pages*) 041401(R)
Shinichirou Minemoto, Tsuneto Kanai, and Hirofumi Sakai
- Observing molecular structures by using high-order harmonic generation in mixed gases (*4 pages*) 041402(R)
Tsuneto Kanai, Eiji J. Takahashi, Yasuo Nabekawa, and Katsumi Midorikawa
- Intrinsic channel closing in strong-field single ionization of H₂ (*4 pages*) 041403(R)
Stefan Pieper and Manfred Lein
- Ultimate field-free molecular alignment by combined adiabatic-impulsive field design (*4 pages*) 041404(R)
S. Guérin, A. Rouzée, and E. Hertz



Copyright 2008 by The American Physical Society

(Continued)



1050-2947(200804)77:4;1-G

CONTENTS - Continued

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 77, NUMBER 4

APRIL 2008

Matter waves

Optical control of the internal and external angular momentum of a Bose-Einstein condensate (<i>4 pages</i>)	041601(R)
K. C. Wright, L. S. Leslie, and N. P. Bigelow	
Collective excitations of trapped imbalanced fermion gases (<i>4 pages</i>)	041602(R)
Achilleas Lazarides and Bert Van Schaeybroeck	
Determination of the equation of state of a polarized Fermi gas at unitarity (<i>4 pages</i>)	041603(R)
Yong-il Shin	
Correlations in an expanding gas of hard-core bosons (<i>4 pages</i>)	041604(R)
D. M. Gangardt and M. Pustilnik	
Phase coherence and fragmentation in weakly interacting bosonic gases (<i>4 pages</i>)	041605(R)
G. S. Paraoanu	
Engineering many-body quantum dynamics by disorder (<i>4 pages</i>)	041606(R)
Pierfrancesco Buonsante and Sandro Wimberger	
Trapped p -wave superfluids: A local-density approach (<i>4 pages</i>)	041607(R)
M. Iskin and C. J. Williams	
Quantum Monte Carlo study of the visibility of one-dimensional Bose-Fermi mixtures (<i>4 pages</i>)	041608(R)
C. N. Varney, V. G. Rousseau, and R. T. Scalettar	

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

Ghost-imaging experiment by measuring reflected photons (<i>4 pages</i>)	041801(R)
Ron Meyers, Keith S. Deacon, and Yanhua Shih	
Image storage in hot vapors (<i>4 pages</i>)	041802(R)
L. Zhao, T. Wang, Y. Xiao, and S. F. Yelin	

ARTICLES

Fundamental concepts

Detecting photon-photon scattering in vacuum at exawatt lasers (<i>7 pages</i>)	042101
Daniele Tommasini, Albert Ferrando, Humberto Michinel, and Marcos Seco	
Delbrück scattering in combined Coulomb and laser fields (<i>10 pages</i>)	042102
A. Di Piazza and A. I. Milstein	
Variational Jastrow coupled-cluster theory of quantum many-body systems (<i>8 pages</i>)	042103
Y. Xian	
Relativistic n -fermion wave equations in quantum electrodynamics (<i>13 pages</i>)	042104
Mohsen Emami-Razavi	
Efficiency of higher-dimensional Hilbert spaces for the violation of Bell inequalities (<i>9 pages</i>)	042105
Károly F. Pál and Tamás Vértesi	
Generalized Clauser-Horne-Shimony-Holt inequalities maximally violated by higher-dimensional systems (<i>8 pages</i>)	042106
T. Vértesi and K. F. Pál	
Casimir force calculations near the insulator-conductor transition in gold thin films (<i>6 pages</i>)	042107
R. Esquivel-Sirvent	

(Continued)

PHYSICAL REVIEW A	THIRD SERIES, VOLUME 77, NUMBER 4	APRIL 2008
Weak measurement: Effect of the detector dynamics (5 pages)		042108
Antonio Di Lorenzo and J. Carlos Egues		
Oscillations of the purity in the repeated-measurement-based generation of quantum states (5 pages)		042109
B. Militello, K. Yuasa, H. Nakazato, and A. Messina		
Improved bounds on entropic uncertainty relations (5 pages)		042110
Julio I. de Vicente and Jorge Sánchez-Ruiz		
Quantum state discrimination: A geometric approach (9 pages)		042111
Damian Markham, Jarosław Adam Miszczak, Zbigniew Puchała, and Karol Życzkowski		
Local and nonlocal content of bipartite qubit and qutrit correlations (6 pages)		042112
Valerio Scarani		
Dynamics beyond completely positive maps: Some properties and applications (8 pages)		042113
Hilary A. Carteret, Daniel R. Terno, and Karol Życzkowski		
Estimation of the repeatedly projected reduced density matrix under decoherence (12 pages)		042114
H. Nakazato, K. Yuasa, B. Militello, and A. Messina		
Generalized tomographic maps (7 pages)		042115
M. Asorey, P. Facchi, V. I. Man'ko, G. Marmo, S. Pascazio, and E. C. G. Sudarshan		
State determination: An iterative algorithm (9 pages)		042116
Dardo M. Goyeneche and Alberto C. de la Torre		
Quantum coherences, K -way negativities and multipartite entanglement (6 pages)		042117
S. Shelly Sharma and N. K. Sharma		
Bell inequalities and density matrix for polarization-entangled photons out of a two-photon cascade in a single quantum dot (8 pages)		042118
M. Larqué, I. Robert-Philip, and A. Beveratos		
Quantum information		
Broadcasting of continuous-variable entanglement (5 pages)		042301
Satyabrata Adhikari, A. S. Majumdar, and N. Nayak		
Relativistically covariant state-dependent cloning of photons (6 pages)		042302
K. Brádler and R. Jáuregui		
Quantum discord for two-qubit systems (6 pages)		042303
Shunlong Luo		
Unambiguous comparison of ensembles of quantum states (8 pages)		042304
Michal Sedlák, Mário Ziman, Vladimír Bužek, and Mark Hillery		
Environment-induced two-mode entanglement in quantum Brownian motion (9 pages)		042305
Christian Hörhammer and Helmut Büttner		
Optimal control landscape for the generation of unitary transformations (5 pages)		042306
Michael Hsieh and Herschel Rabitz		
Graphical description of the action of Clifford operators on stabilizer states (13 pages)		042307
Matthew B. Elliott, Bryan Eastin, and Carlton M. Caves		

Efficient polarization-entanglement purification based on parametric down-conversion sources with cross-Kerr nonlinearity (8 pages)	042308
Yu-Bo Sheng, Fu-Guo Deng, and Hong-Yu Zhou	
Effect of spin-orbit interaction on entanglement of two-qubit Heisenberg XYZ systems in an inhomogeneous magnetic field (9 pages)	042309
Fardin Kheirandish, S. Javad Akhtarshenas, and Hamidreza Mohammadi	
Entanglement generation in the scattering of one-dimensional particles (9 pages)	042310
N. L. Harshman and G. Hutton	
General theory of decoy-state quantum cryptography with source errors (8 pages)	042311
Xiang-Bin Wang, Cheng-Zhi Peng, Jun Zhang, Lin Yang, and Jian-Wei Pan	
Mixing times in quantum walks on the hypercube (8 pages)	042312
F. L. Marquezino, R. Portugal, G. Abal, and R. Donangelo	
Semi-Clifford operations, structure of $\mathcal{C}_k$ hierarchy, and gate complexity for fault-tolerant quantum computation (12 pages)	042313
Bei Zeng, Xie Chen, and Isaac L. Chuang	
Optimal unambiguous discrimination of quantum states (12 pages)	042314
M. A. Jafarizadeh, M. Rezaei, N. Karimi, and A. R. Amiri	
Efficient strategy for sharing entanglement via noisy channels with doubly entangled photon pairs (5 pages)	042315
Li Xiao, Chuan Wang, Wei Zhang, Yidong Huang, Jiangde Peng, and Guilu Long	
Non-Markovian entanglement evolution of two uncoupled qubits (8 pages)	042316
J. Dajka, M. Mierzejewski, and J. Łuczka	
Generation of arbitrary four-photon polarization-entangled decoherence-free states (5 pages)	042317
Yan-Xiao Gong, Xu-Bo Zou, Xiao-Ling Niu, Jian Li, Yun-Feng Huang, and Guang-Can Guo	
Generalized flying-qudit scheme in arbitrary dimensions (8 pages)	042318
Thomas Durt, L. C. Kwek, and Dagomir Kaszlikowski	
Adiabatic theorem in the presence of noise (20 pages)	042319
Michael J. O'Hara and Dianne P. O'Leary	
Direct estimation of single- and two-qubit Hamiltonians and relaxation rates (5 pages)	042320
M. Mohseni, A. T. Rezakhani, and A. Aspuru-Guzik	
Discrimination of quantum observables using limited resources (7 pages)	042321
Mario Ziman and Teiko Heinosaari	
Statistical mechanical models and topological color codes (10 pages)	042322
H. Bombin and M. A. Martin-Delgado	
Effect of frequency-mismatched photons in quantum-information processing (14 pages)	042323
J. Metz and S. D. Barrett	
Multiphase matching in the Grover algorithm (8 pages)	042324
F. M. Toyama, W. van Dijk, Y. Nogami, M. Tabuchi, and Y. Kimura	
Multidimensional reconciliation for a continuous-variable quantum key distribution (8 pages)	042325
Anthony Leverrier, Romain Alléaume, Joseph Boutros, Gilles Zémor, and Philippe Grangier	

Atomic and molecular structure and dynamics

- Many-body calculations of relativistic energy shifts for single- and double-valence atoms and ions important for α -variation search (5 pages) 042501
I. M. Savukov and V. A. Dzuba
- Hyperfine structure of the ground state of para-D₂⁺ by high-resolution Rydberg-state spectroscopy and multichannel quantum defect theory (8 pages) 042502
H. A. Cruse, Ch. Jungen, and F. Merkt
- Investigating interaction-induced chaos using time-dependent density-functional theory (7 pages) 042503
Adam Wasserman, Neepa T. Maitra, and Eric J. Heller
- Proposed definitions of the correlation energy density from a Hartree-Fock starting point: The two-electron Moshinsky model atom as an exactly solvable model (7 pages) 042504
N. H. March, A. Cabo, F. Claro, and G. G. N. Angilella
- Fragmentation of positronium with excitation and ionization of the target (12 pages) 042505
C. Starrett, Mary T. McAlinden, and H. R. J. Walters
- Calculation of transitions between metastable states of antiprotonic helium including relativistic and radiative corrections of order $R_\infty\alpha^4$ (5 pages) 042506
Vladimir I. Korobov
- Relativistic calculation of the two-photon decay rate of highly excited ionic states (5 pages) 042507
Ulrich D. Jentschura and Andrey Surzhykov
- Controlling the N - and S -representability of the second-order reduced density matrix: The doublet-state case (12 pages) 042508
D. R. Alcoba, C. Valdemoro, L. M. Tel, and E. Pérez-Romero
- Hyperfine-state-dependent lifetimes along the Ni-like isoelectronic sequence (12 pages) 042509
M. Andersson, K. Yao, R. Hutton, Y. Zou, C. Y. Chen, and T. Brage
- Electric-dipole $5s$ - $5p$ transitions in promethiumlike ions (9 pages) 042510
M. J. Vilkas, Y. Ishikawa, and E. Träbert
- Broadening and intensity redistribution in the Na($3p$) hyperfine excitation spectra due to optical pumping in the weak excitation limit (10 pages) 042511
I. Sydoryk, N. N. Bezuglov, I. I. Beterov, K. Miculis, E. Saks, A. Janovs, P. Spels, and A. Ekers

Atomic and molecular collisions and interactions

- Calculations of inner-shell ionization by electron impact with the distorted-wave and plane-wave Born approximations (24 pages) 042701
David Bote and Francesc Salvat
- Inverse problem in the thick-target method of measurements of inner-shell ionization cross sections by electron or positron impact (5 pages) 042702
Zhu An and Qing Hou
- Random-phase approximation with exchange for the photoionization of an atom with an inner open shell (7 pages) 042703
Zhifan Chen and Alfred Z. Msezane
- Nuclear-resonant electron scattering (11 pages) 042704
Adriana Pálffy and Zoltán Harman

(Continued)

Low-energy electron scattering from methanol and ethanol (10 pages)	042705
M. A. Khakoo, J. Blumer, K. Keane, C. Campbell, H. Silva, M. C. A. Lopes, C. Winstead, V. McKoy, R. F. da Costa, L. G. Ferreira, M. A. P. Lima, and M. H. F. Bettega	
Electron-induced resonant dissociation and excitation of NeH^+ and NeD^+ (8 pages)	042706
V. Ngassam, A. I. Florescu-Mitchell, and A. E. Orel	
Production of long-lived atomic vapor inside high-density buffer gas (6 pages)	042707
A. O. Sushkov and D. Budker	
Low-energy elastic scattering of positrons by N_2O (6 pages)	042708
F. Arretche, K. T. Mazon, S. E. Michelin, M.-T. Lee, and M. A. P. Lima	
Dissociative electron attachment to acetylene (10 pages)	042709
S. T. Chourou and A. E. Orel	
Resonant double Auger decay in carbon K -shell excitation of CO (14 pages)	042710
L. Journal, R. Guillemin, A. Haouas, P. Lablanquie, F. Penent, J. Palaudoux, L. Andric, M. Simon, D. Céolin, T. Kaneyasu, J. Viehhaus, M. Braune, W. B. Li, C. Elkharrat, F. Catoire, J.-C. Houver, and D. Doweck	
Multi-ionization of helium by slow highly charged ions (6 pages)	042711
J. X. Shao, X. M. Chen, Z. Y. Liu, R. Qi, and X. R. Zou	
Dynamics of $\text{He}^{2+} + \text{H}(1s)$ ionization with screened Coulomb interactions (9 pages)	042712
L. Liu, J. G. Wang, and R. K. Janev	
Occupation of fine-structure states in electron capture and transport (5 pages)	042713
Marek Seliger, Carlos O. Reinhold, Tatsuya Minami, David R. Schultz, Shuhei Yoshida, Joachim Burgdörfer, Emily Lamour, Jean-Pierre Rozet, and Dominique Vernhet	
Relativistic time dilation and the spectrum of electrons emitted by 33-TeV lead ions penetrating thin foils (5 pages)	042714
B. Najjari, A. Surzhykov, and A. B. Voitkiv	
Electron scattering in ethene: Excitation of the $\tilde{a}^3B_{1u}$ state, elastic scattering, and vibrational excitation (7 pages)	042715
M. Allan, C. Winstead, and V. McKoy	
Ultralow-energy vibrational quenching in ionic collisions: Isotope effects in $\text{Li}^+ + \text{D}_2$ encounters (7 pages)	042716
S. Bovino, E. Bodo, and F. A. Gianturco	
Electron and positron scattering cross sections for propene and cyclopropane (10 pages)	042717
C. Makochekanwa, M. Hoshino, H. Kato, O. Sueoka, M. Kimura, and H. Tanaka	
Spin depolarization of N_2^+ ($^2\Sigma^+$) in collisions with ^3He and ^4He in a magnetic field (6 pages)	042718
G. Guillon, T. Stoecklin, and A. Voronin	
Long-time deviations from exponential decay for inverse-square potentials (9 pages)	042719
J. Martorell, J. G. Muga, and D. W. L. Sprung	
Extension of the exact trajectory model to the case of asymmetric tops and its application to infrared nitrogen-broadened linewidths of ethylene (10 pages)	042720
Jeanna Buldyreva and Linh Nguyen	
Multichannel atomic scattering and confinement-induced resonances in waveguides (15 pages)	042721
Shahpoor Saeidian, Vladimir S. Melezhik, and Peter Schmelcher	

Alignment of heavy few-electron ions following excitation by relativistic Coulomb collisions (8 pages)	042722
Andrey Surzhykov, Ulrich D. Jentschura, Thomas Stöhlker, Alexandre Gumberidze, and Stephan Fritzsche	
Polarization effects on electronic excitation of the $\tilde{a}^3B_{1u}$ state of ethylene by low-energy electron impact (4 pages)	042723
Romarly F. da Costa, Márcio H. F. Bettega, and Marco A. P. Lima	
Electron attachment to SF ₆ and lifetimes of SF ₆ ⁻ negative ions (15 pages)	042724
L. G. Gerchikov and G. F. Gribakin	
Photon, electron, atom, and molecule interactions with solids and surfaces	
Theoretical and experimental study of energy loss of Li ions in Zn (6 pages)	042901
C. C. Montanari, J. E. Miraglia, M. Behar, P. F. Duarte, N. R. Arista, J. C. Eckardt, and G. H. Lantschner	
Proposed method for measuring the duration of electron pulses by attosecond streaking (5 pages)	042902
P. Reckenthaeler, M. Centurion, V. S. Yakovlev, M. Lezius, F. Krausz, and E. E. Fill	
Position distribution of cold thermal atoms in the vicinity of a dielectric surface (6 pages)	042903
Fam Le Kien and K. Hakuta	
Clusters (including fullerenes)	
Fragmentation patterns of multicharged C ₆₀ ^{r+} (r=3–5) studied with well-controlled internal excitation energy (10 pages)	043201
S. Martin, L. Chen, A. Salmoun, B. Li, J. Bernard, and R. Brédy	
Photoelectron spectroscopy study of free potassium clusters: Core-level lines and plasmon satellites (5 pages)	043202
A. Rosso, G. Öhrwall, I. L. Bradeanu, S. Svensson, O. Björneholm, and M. Tchapyguine	

PART B

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

Twisted optical molasses for all-optical atomic cooling and trapping (6 pages)	043401
A. R. Carter and M. Babiker	
Radiating dipoles near curved interfaces (5 pages)	043402
Steve Pressé and Robert J. Silbey	
Effect of dressing on high-order harmonic generation in vibrating H ₂ molecules (9 pages)	043403
C. C. Chirilă and M. Lein	
Manipulating molecular rotational wave packets with strong femtosecond laser pulses (5 pages)	043404
Yunan Gao, Chengyin Wu, Nan Xu, Guiping Zeng, Hongbing Jiang, Hong Yang, and Qihuang Gong	
Symmetry-forbidden x-ray Raman scattering induced by a strong infrared-laser field (9 pages)	043405
Ji-Cai Liu, Yassen Velkov, Zilvinas Rinkevicius, Hans Ågren, and Faris Gel'mukhanov	
Modifying atom-surface interactions with optical fields (8 pages)	043406
John D. Perreault, M. Bhattacharya, Vincent P. A. Lonij, and Alexander D. Cronin	
Semiclassical guided optimal control of molecular processes of many degrees of freedom (8 pages)	043407
Alexey Kondorskiy and Hiroki Nakamura	

CONTENTS - Continued

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 77, NUMBER 4

APRIL 2008

ac electric trapping of neutral atoms (9 pages)	043408
Sophie Schlunk, Adela Marian, Wieland Schöllkopf, and Gerard Meijer	
Laser-frequency locking using light-pressure-induced spectroscopy in a calcium beam (5 pages)	043409
A. K. Mollema, L. W. Wansbeek, L. Willmann, K. Jungmann, R. G. E. Timmermans, and R. Hoekstra	
Physics of a two-dimensional electron gas with cold atoms in non-Abelian gauge potentials (11 pages)	043410
Indubala I. Satija, Daniel C. Dakin, J. Y. Vaishnav, and Charles W. Clark	
Above-threshold ionization and high-order harmonic generation by mid-infrared and far-infrared laser pulses (8 pages)	043411
Chengpu Liu, Takashi Nakajima, Tetsuo Sakka, and Hideaki Ohgaki	
Field-free molecular alignment of asymmetric top molecules using elliptically polarized laser pulses (8 pages)	043412
A. Rouzée, S. Guérin, O. Faucher, and B. Lavorel	
Intense-field zero-width resonances and control of molecular photodissociation (12 pages)	043413
O. Atabek, R. Lefebvre, C. Lefebvre, and T. T. Nguyen-Dang	
Configuration-interaction method with Hylleraas-Gaussian-type basis functions in cylindrical coordinates: Helium atom in a strong magnetic field (7 pages)	043414
Xiaofeng Wang and Haoxue Qiao	
Understanding the role of representation in controlled quantum-dynamical mechanism analysis (15 pages) . . .	043415
Abhra Mitra, Ignacio R. Sola, and Herschel Rabitz	
Focusing of light following a 4- <i>f</i> pulse shaper: Considerations for quantum control (11 pages)	043416
Benjamin J. Sussman, Rune Lausten, and Albert Stolow	
Influence of Coulomb potential for photoionization of H atoms in an elliptically polarized laser field: Velocity gauge versus length gauge (12 pages)	043417
Jingtao Zhang and Takashi Nakajima	
Trapped-atom cooling beyond the Lamb-Dicke limit using electromagnetically induced transparency (8 pages)	043418
Maryam Roghani and Hanspeter Helm	
Observation of superfluorescent emissions from laser-cooled atoms (7 pages)	043419
E. Paradis, B. Barrett, A. Kumarakrishnan, R. Zhang, and G. Raithel	
Nonsequential two-photon double ionization of helium (13 pages)	043420
J. Feist, S. Nagele, R. Pazourek, E. Persson, B. I. Schneider, L. A. Collins, and J. Burgdörfer	
Dynamics of two-photon double ionization of helium in short intense xuv laser pulses (12 pages)	043421
Xiaoxu Guan, K. Bartschat, and B. I. Schneider	
Semiclassical theory of the structure of the hydrogen spectrum in near-perpendicular electric and magnetic fields: Derivations and formulas for Einstein-Brillouin-Keller-Maslov quantization and description of monodromy (28 pages)	043422
Christopher R. Schleif and John B. Delos	
Matter waves	
Condition for emergence of complex eigenvalues in the Bogoliubov-de Gennes equations (6 pages)	043601
Y. Nakamura, M. Mine, M. Okumura, and Y. Yamanaka	

(Continued)

Vortex velocity field in inhomogeneous media: A numerical study in Bose-Einstein condensates (<i>5 pages</i>)	043602
D. M. Jezek and H. M. Cataldo	
Trapping cold atoms by quantum reflection (<i>7 pages</i>)	043603
Alexander Jurisch and Jan-Michael Rost	
Theoretical analysis of a single- and double-reflection atom interferometer in a weakly confining magnetic trap (<i>9 pages</i>)	043604
James A. Stickney, Rudra P. Kafle, Dana Z. Anderson, and Alex A. Zozulya	
Effects of boundaries and density inhomogeneity on states of vortex matter in Bose-Einstein condensates at finite temperature (<i>13 pages</i>)	043605
S. Kragset, E. Babaev, and A. Sudbø	
Quantum-limited position measurements of a dark matter-wave soliton (<i>5 pages</i>)	043606
Antonio Negretti, Carsten Henkel, and Klaus Mølmer	
Matter waves in anharmonic periodic potentials (<i>9 pages</i>)	043607
Tristram J. Alexander, Mario Salerno, Elena A. Ostrovskaya, and Yuri S. Kivshar	
Fermions out of dipolar bosons in the lowest Landau level (<i>9 pages</i>)	043608
B. Chung and Th. Jolicœur	
Macroscopic periodic tunneling of Fermi atoms in the BCS-BEC crossover (<i>5 pages</i>)	043609
L. Salasnich, N. Manini, and F. Toigo	
Nonlinear dynamical instabilities of a condensate system in an atom-molecule dark state (<i>10 pages</i>)	043610
A. P. Itin, S. Watanabe, and V. V. Konotop	
Three fully polarized fermions close to a p -wave Feshbach resonance (<i>29 pages</i>)	043611
M. Jona-Lasinio, L. Pricoupenko, and Y. Castin	
Bright and dark solitary waves in a one-dimensional spin-polarized gas of fermionic atoms with p -wave interactions in a hard-wall trap (<i>5 pages</i>)	043612
M. D. Girardeau and E. M. Wright	
Adiabatic melting of two-component Mott-insulator states (<i>11 pages</i>)	043613
M. Rodríguez, S. R. Clark, and D. Jaksch	
Coherent generation of triatomic molecules from ultracold atoms (<i>8 pages</i>)	043614
H. Jing, J. Cheng, and P. Meystre	
Bogoliubov theory of quantum correlations in the time-dependent Bose-Hubbard model (<i>10 pages</i>)	043615
Uwe R. Fischer, Ralf Schützhold, and Michael Uhlmann	
Mean-field stationary state of a Bose gas at a Feshbach resonance (<i>15 pages</i>)	043616
Andrew Carmichael and Juha Javanainen	
Perturbation theory for bright spinor Bose-Einstein condensate solitons (<i>11 pages</i>)	043617
Evgeny V. Doktorov, Jiandong Wang, and Jianke Yang	
Ultracold bosons in disordered superlattices: Mott insulators induced by tunneling (<i>9 pages</i>)	043618
D. Muth, A. Mering, and M. Fleischhauer	
Energetics and structural properties of trapped two-component Fermi gases (<i>20 pages</i>)	043619
J. von Stecher, Chris H. Greene, and D. Blume	
Atom lasers are not monochromatic (<i>4 pages</i>)	043620
S. Choi, D. Strömberg, and B. Sundaram	

Dynamical instability in kicked Bose-Einstein condensates (<i>8 pages</i>)	043621
J. Reslen, C. E. Creffield, and T. S. Monteiro	
Manipulation of the quantum state by the Majorana transition in spinor Bose-Einstein condensates (<i>5 pages</i>)	043622
Lin Xia, Xu Xu, Rui Guo, Fan Yang, Wei Xiong, Juntao Li, Qianli Ma, Xiaoji Zhou, Hong Guo, and Xuzong Chen	
Lateral effects in fermion antibunching (<i>18 pages</i>)	043623
K. Yuasa, P. Facchi, H. Nakazato, I. Ohba, S. Pascazio, and S. Tasaki	
Multiband-driven superfluid-insulator transition of fermionic atoms in optical lattices: A dynamical mean-field-theory study (<i>4 pages</i>)	043624
Takuji Higashiyama, Kensuke Inaba, and Sei-ichiro Suga	
Evolution of the average populations of spin components of spin-1 Bose-Einstein condensates beyond mean-field theory (<i>5 pages</i>)	043625
Ma Luo, Chengguang Bao, and Zhibing Li	
Characteristics of Bose-Einstein condensation in an optical lattice (<i>11 pages</i>)	043626
G.-D. Lin (林俊達), Wei Zhang (張威), and L.-M. Duan (段路明)	
Condensate depletion in two-species Bose gases: A variational quantum Monte Carlo study (<i>18 pages</i>)	043627
A. R. Sakhel, J. L. DuBois, and H. R. Glyde	
Kicked-rotor quantum resonances in position space (<i>10 pages</i>)	043628
Maxence Lepers, Véronique Zehnlé, and Jean Claude Garreau	
<i>p</i> -wave superfluid and phase separation in atomic Bose-Fermi mixtures (<i>7 pages</i>)	043629
Kazunori Suzuki, Takahiko Miyakawa, and Toru Suzuki	
Phase diagram of a Bose gas near a wide Feshbach resonance (<i>5 pages</i>)	043630
Lan Yin	
Exact number-conserving phase-space dynamics of the <i>M</i> -site Bose-Hubbard model (<i>11 pages</i>)	043631
F. Trimborn, D. Witthaut, and H. J. Korsch	
Off-diagonal ground-state properties of a one-dimensional gas of Fermi hard rods (<i>7 pages</i>)	043632
F. Mazzanti, G. E. Astrakharchik, J. Boronat, and J. Casulleras	
Quantum optics, physics of lasers, nonlinear optics, classical optics	
Effects of dispersion on squeezing and photon statistics of down-converted light (<i>6 pages</i>)	043801
Yuta Takahashi, Jonas Söderholm, Keiichi Hirano, Naoto Namekata, Susumu Machida, Shigehiko Mori, Sunao Kurimura, Shinichi Komatsu, and Shuichiro Inoue	
Spectral evolution of angularly resolved third-order harmonic generation by infrared femtosecond laser-pulse filamentation in air (<i>4 pages</i>)	043802
Hui Xiong, Han Xu, Yuxi Fu, Ya Cheng, Zhizhan Xu, and See Leang Chin	
Experimental and theoretical study of dynamical hysteresis and scaling laws in the polarization switching of vertical-cavity surface-emitting lasers (<i>8 pages</i>)	043803
Jon Paul, Cristina Masoller, Paul Mandel, Yanhua Hong, Paul S. Spencer, and K. Alan Shore	
Long-range interaction in waveguide lattices (<i>9 pages</i>)	043804
Alexander Szameit, Thomas Pertsch, Stefan Nolte, Andreas Tünnermann, and Falk Lederer	

Nonlinear effects in pulse propagation through Doppler-broadened closed-loop atomic media (<i>9 pages</i>)	043805
Robert Fleischhaker and Jörg Evers	
Photon storage in Λ -type optically dense atomic media. IV. Optimal control using gradient ascent (<i>15 pages</i>)	043806
Alexey V. Gorshkov, Tommaso Calarco, Mikhail D. Lukin, and Anders S. Sørensen	
Spectral properties of entangled photon pairs generated via frequency-degenerate type-I spontaneous parametric down-conversion (<i>7 pages</i>)	043807
So-Young Baek and Yoon-Ho Kim	
Transverse nonlinear optics in heavy-metal-oxide glass (<i>6 pages</i>)	043808
Alessia Pasquazi, Salvatore Stivala, Gaetano Assanto, José Gonzalo, and Javier Solis	
Unified theory of ghost imaging with Gaussian-state light (<i>13 pages</i>)	043809
Baris I. Erkmen and Jeffrey H. Shapiro	
Collective spin systems in dispersive optical cavity QED: Quantum phase transitions and entanglement (<i>17 pages</i>)	043810
S. Morrison and A. S. Parkins	
Ghost interference with classical partially coherent light pulses (<i>4 pages</i>)	043811
V́ctor Torres-Company, Hanna Lajunen, Jesús Lancis, and Ari T. Friberg	
Sensitivity of terahertz photonic receivers (<i>5 pages</i>)	043812
A. B. Matsko, D. V. Strekalov, and N. Yu	
Photons as quasicharged particles (<i>7 pages</i>)	043813
K.-P. Marzlin, Jürgen Appel, and A. I. Lvovsky	
Filamentation in Kerr media from pulsed Bessel beams (<i>11 pages</i>)	043814
P. Polesana, M. Franco, A. Couairon, D. Faccio, and P. Di Trapani	
Diffusion-induced decoherence of stored optical vortices (<i>4 pages</i>)	043815
T. Wang, L. Zhao, L. Jiang, and S. F. Yelin	
Nonreciprocal diffraction through dielectric gratings with two-dimensional chirality (<i>14 pages</i>)	043816
A. Potts, W. Zhang, and D. M. Bagnall	
Whispering-gallery-mode phase matching for surface second-order nonlinear optical processes in spherical microresonators (<i>10 pages</i>)	043817
G. Kozyreff, J. L. Dominguez Juarez, and Jordi Martorell	
Theory and experiments for multiple four-wave-mixing processes with multifrequency pumps in optical fibers (<i>10 pages</i>)	043818
X.-M. Liu	
Electromagnetic forces in negative-refractive-index metamaterials: A first-principles study (<i>4 pages</i>)	043819
Vassilios Yannopapas and Pavlos G. Galiatsatos	
Stochastic sensing of relative anisotropic polarizabilities (<i>8 pages</i>)	043820
S. Sukhov, D. Haefner, and A. Dogariu	
Stabilization of dipole solitons in nonlocal nonlinear media (<i>7 pages</i>)	043821
Fangwei Ye, Yaroslav V. Kartashov, and Lluís Torner	
Photon emission by an atom in a lossy cavity (<i>10 pages</i>)	043822
C. Di Fidio, W. Vogel, M. Khanbekyan, and D.-G. Welsch	

CONTENTS - Continued

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 77, NUMBER 4

APRIL 2008

Extreme nonlinear optics in a Kerr medium: Exact soliton solutions for a few cycles (6 pages)	043823
A. V. Kim, S. A. Skobelev, D. Anderson, T. Hansson, and M. Lisak	
Optical parametric amplification of chirped X pulses (7 pages)	043824
G. Valiulis, A. Dubietis, and A. Piskarskas	
Optical vortices during a superresolution process in a metamaterial (4 pages)	043825
G. D'Aguanno, N. Mattiucci, M. Bloemer, and A. Desyatnikov	
Spinning bearing-shaped solitons in strongly nonlocal nonlinear media (5 pages)	043826
Y. J. He, Boris A. Malomed, Dumitru Mihalache, and H. Z. Wang	
Population trapping due to cavity losses (4 pages)	043827
M. Scala, B. Militello, A. Messina, S. Maniscalco, J. Piilo, and K.-A. Suominen	
Spatiotemporal surface Ginzburg-Landau solitons (6 pages)	043828
Dumitru Mihalache, Dumitru Mazilu, Falk Lederer, and Yuri S. Kivshar	
Characterizing temporal distinguishability of an N -photon state by a generalized photon bunching effect with multiphoton interference (10 pages)	043829
Z. Y. Ou	
Theory of thermal motion in electromagnetically induced transparency: Effects of diffusion, Doppler broadening, and Dicke and Ramsey narrowing (13 pages)	043830
O. Firstenberg, M. Shuker, R. Pugatch, D. R. Fredkin, N. Davidson, and A. Ron	
Geometrical optics limit of stochastic electromagnetic fields (6 pages)	043831
Robert W. Schoonover, Adam M. Zysk, P. Scott Carney, John C. Schotland, and Emil Wolf	
Comparing quantum imaging with classical second-order incoherent imaging (7 pages)	043832
Ivan F. Santos, J. G. Aguirre-Gómez, and S. Pádua	
Cooperative spontaneous emission as a many-body eigenvalue problem (4 pages)	043833
Anatoly Svidzinsky and Jun-Tao Chang	
Absolute emission rates of spontaneous parametric down-conversion into single transverse Gaussian modes (7 pages)	043834
Alexander Ling, Antía Lamas-Linares, and Christian Kurtsiefer	
Linear polarizabilities of two- and three-level atoms (12 pages)	043835
Peter W. Milonni, Rodney Loudon, Paul R. Berman, and Stephen M. Barnett	
Emission spectra of atoms with non-Markovian interaction: Fluorescence in a photonic crystal (11 pages)	043836
Inés de Vega and Daniel Alonso	

BRIEF REPORTS

Fundamental concepts

Decoherent-history approach to the probability distribution of tunneling time (4 pages)	044101
S. Boonchui and V. Sa-yakanit	

Quantum information

Efficient measurement-based quantum computation with cluster states in quantum-bit fixed systems (3 pages)	044301
Da-Sheng Diao, Yong-Sheng Zhang, Xiang-Fa Zhou, and Guang-Can Guo	

(Continued)

CONTENTS - Continued

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 77, NUMBER 4

APRIL 2008

Minimal disturbance discrimination of symmetric pure states on the Bloch sphere's equator (<i>4 pages</i>)	044302
ShengLi Zhang, XuBo Zou, Ke Li, ChenHui Jin, and GuangCan Guo	
State-independent teleportation of an atomic state between two cavities (<i>4 pages</i>)	044303
Shi-Biao Zheng	

Atomic and molecular structure and dynamics

Relativistic Hylleraas configuration-interaction method projected into positive-energy space (<i>4 pages</i>)	044501
M. Bylicki, G. Pestka, and J. Karwowski	
Description of positron-hydrogen resonances using the stochastic variational method (<i>4 pages</i>)	044502
K. Varga, J. Mitroy, J. Zs. Mezei, and A. T. Kruppa	

Atomic and molecular collisions and interactions

Vinylidene dissociation following the Auger-electron decay of inner-shell ionized acetylene (<i>4 pages</i>)	044701
R. Flammini, E. Fainelli, F. Maracci, and L. Avaldi	

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

Investigation of loading of pulsed and continuous-wave optical dipole force traps (<i>4 pages</i>)	045401
M. Shiddiq, E. M. Ahmed, M. D. Havey, and C. I. Sukenik	
<i>Zitterbewegung</i> by quantum field-theory considerations (<i>2 pages</i>)	045402
Zhi-Yong Wang and Cai-Dong Xiong	

Matter waves

Solitons in two-dimensional Bose-Einstein condensates (<i>4 pages</i>)	045601
Shunji Tsuchiya, Franco Dalfovo, and Lev Pitaevskii	
Nonlinear Schrödinger equation for a superfluid Fermi gas in the BCS-BEC crossover (<i>4 pages</i>)	045602
S. K. Adhikari	

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

Optimal estimation of the magnetic field in atomic magnetometry with arbitrary shape of the probe light beam (<i>4 pages</i>)	045801
Jaromír Fiurášek	
Jaynes-Cummings model with a collective atomic mode (<i>4 pages</i>)	045802
Shi-Biao Zheng	
Critical power of collapsing vortices (<i>4 pages</i>)	045803
Gadi Fibich and Nir Gavish	
Fast-responding nonlinear phase shifter using a signal-wave gain medium (<i>3 pages</i>)	045804
K. J. Jiang, L. Deng, E. W. Hagley, and M. G. Payne	

COMMENTS

Comment on "Arbitrated quantum-signature scheme" (<i>4 pages</i>)	046301
Marcos Curty and Norbert Lütkenhaus	

(Continued)

ERRATA

Erratum: Dynamical suppression of decoherence by phase kicks: Master equation approach [Phys. Rev. A 76 , 022307 (2007)] (<i>1 page</i>)	049901(E)
Masashi Ban, Sachiko Kitajima, and Fumiaki Shibata	
Publisher's Note: Conditional preparation of states containing a definite number of photons [Phys. Rev. A 77 , 023804 (2008)] (<i>1 page</i>)	049902(E)
Malcolm N. O'Sullivan, Kam Wai Clifford Chan (陳錦為), Vasudevan Lakshminarayanan, and Robert W. Boyd	
Erratum: Effects of diffusion and surface interactions on the line shape of electron paramagnetic resonances in the presence of a magnetic field gradient [Phys. Rev. A 76 , 062502 (2007)] (<i>1 page</i>)	049903(E)
M. Schaden, K. F. Zhao, and Z. Wu	
Publisher's Note: Attosecond light-pulse-induced photoassociation [Phys. Rev. A 77 , 033421 (2008)] (<i>1 page</i>)	049904(E)
Paula Rivi�re, Camilo Ruiz, and Jan-Michael Rost	