

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 76, NUMBER 4
PARTS A AND B

CONTENTS

OCTOBER 2007

The Table of Contents is a total listing of Parts A and B.
Part A consists of pages 040301(R)-042902, and Part B pages 043201-049907(E).

PART A

RAPID COMMUNICATIONS

Quantum information

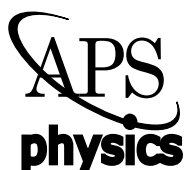
- Prior entanglement between senders enables perfect quantum network coding with modification (*4 pages*) 040301(R)
Masahito Hayashi
- Distributed quantum-information processing with minimal local resources (*4 pages*) 040302(R)
Earl T. Campbell
- High-fidelity ion-trap quantum computing with hyperfine clock states (*4 pages*) 040303(R)
L. Aolita, K. Kim, J. Benhelm, C. F. Roos, and H. Häffner

Atomic and molecular structure and dynamics

- Exchange and correlation in open systems of fluctuating electron number (*4 pages*) 040501(R)
John P. Perdew, Adrienn Ruzsinszky, Gábor I. Csonka, Oleg A. Vydrov, Gustavo E. Scuseria,
Viktor N. Staroverov, and Jianmin Tao
- Local-density-functional theory for superfluid fermionic systems: The unitary gas (*4 pages*) 040502(R)
Aurel Bulgac
- Grid-based numerical Hartree-Fock solutions of polyatomic molecules (*4 pages*) 040503(R)
Toru Shiozaki and So Hirata
- Investigations of Ra^+ properties to test possibilities for new optical-frequency standards (*4 pages*) 040504(R)
B. K. Sahoo, B. P. Das, R. K. Chaudhuri, D. Mukherjee, R. G. E. Timmermans, and K. Jungmann

Atomic and molecular collisions and interactions

- Classical calculation of ionization and electron-capture total cross sections in $\text{H}^+ + \text{H}_2\text{O}$ collisions
(*4 pages*) 040701(R)
L. F. Errea, Clara Illescas, L. Méndez, B. Pons, I. Rabadán, and A. Riera
- Geometric phase effects in H_3 predissociation (*4 pages*) 040702(R)
Bruno Lepetit, Ravinder Abrol, and Aron Kuppermann
- Relativistic plane-wave Born theory and its application to electron-impact excitation (*4 pages*) 040703(R)
Christopher J. Fontes and Hong Lin Zhang



Copyright 2007 by The American Physical Society

(Continued)



1050-2947(20071000)76:4:B;1-L

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

- Stopping power of fluorides for low-velocity protons (*4 pages*) 040901(R)
 L. N. Serkovic, E. A. Sánchez, O. Grizzi, J. C. Eckardt, G. H. Lantschner, and N. R. Arista

Atomic and molecular processes in external fields

- Bright source of cold ions for surface-electrode traps (*4 pages*) 041401(R)
 Marko Cetina, Andrew Grier, Jonathan Campbell, Isaac Chuang, and Vladan Vuletić

Matter waves

- Dynamical instability and dispersion management of an attractive condensate in an optical lattice
 (*4 pages*) 041601(R)
 G. Barontini and M. Modugno
- Magnetic and superfluid phases of confined fermions in two-dimensional optical lattices (*4 pages*) 041602(R)
 Brian M. Andersen and G. M. Bruun

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

- Exact mapping of the 2+1 Dirac oscillator onto the Jaynes-Cummings model: Ion-trap experimental proposal
 (*4 pages*) 041801(R)
 A. Bermudez, M. A. Martin-Delgado, and E. Solano
- Nanoscale resolution fluorescence microscopy using electromagnetically induced transparency (*4 pages*) 041802(R)
 D. D. Yavuz and N. A. Proite

ARTICLES

Fundamental concepts

- Quantum decoherence modulated by special relativity (*4 pages*) 042101
 Jian-Ming Cai, Zheng-Wei Zhou, Ye-Fei Yuan, and Guang-Can Guo
- Thermal symmetry of the Markovian master equation (*9 pages*) 042102
 B. A. Tay and T. Petrosky
- Quantum superpositions and entanglement of thermal states at high temperatures and their applications to
 quantum-information processing (*11 pages*) 042103
 Hyunseok Jeong and Timothy C. Ralph
- Role of the slope of realistic potential barriers in preventing relativistic tunneling in the Klein zone
 (*8 pages*) 042104
 Paolo Christillin and Emilio d'Emilio
- Local commutativity versus Bell inequality violation for entangled states and versus non-violation for
 separable states (*6 pages*) 042105
 Michael Seevinck and Jos Uffink
- Change in propagation constant and propagation velocity in a dielectric: A microscopic approach
 (*7 pages*) 042106
 P. R. Berman
- Observing the evolution of a quantum system that does not evolve (*4 pages*) 042107
 Simone De Liberato

Universal character of the discrete nonlinear Schrödinger equation (<i>6 pages</i>)	042108
Andrea Fratalocchi and Gaetano Assanto	
Vector potential and Berry-phase-induced force in dissipative systems (<i>5 pages</i>)	042109
X. X. Yi and W. Wang	
Influence of dissipation on the extraction of quantum states via repeated measurements (<i>10 pages</i>)	042110
B. Militello, K. Yuasa, H. Nakazato, and A. Messina	
Relativistic tunneling through two successive barriers (<i>6 pages</i>)	042111
José T. Lunardi and Luiz A. Manzoni	
Casimir-Polder interatomic potential between two atoms at finite temperature and in the presence of boundary conditions (<i>5 pages</i>)	042112
R. Passante and S. Spagnolo	
How state preparation can affect a quantum experiment: Quantum process tomography for open systems (<i>12 pages</i>)	042113
Aik-meng Kuah, Kavan Modi, César A. Rodríguez-Rosario, and E. C. G. Sudarshan	
Uncertainty relations for positive-operator-valued measures (<i>5 pages</i>)	042114
Serge Massar	
Cheon's anholonomies in Floquet operators (<i>9 pages</i>)	042115
Manabu Miyamoto and Atushi Tanaka	
Hydrogenic Lamb shift in iron Fe^{25+} and fine-structure Lamb shift (<i>19 pages</i>)	042116
C. T. Chantler, J. M. Laming, D. D. Dietrich, W. A. Hallett, R. McDonald, and J. D. Silver	
Measuring complete quantum states with a single observable (<i>12 pages</i>)	042117
Xinhua Peng, Jiangfeng Du, and Dieter Suter	
Disentanglement of two qubits coupled to an XY spin chain: Role of quantum phase transition (<i>7 pages</i>)	042118
Zi-Gang Yuan, Ping Zhang, and Shu-Shen Li	
Single-qubit tests of Bell-like inequalities (<i>10 pages</i>)	042119
F. De Zela	
Quantum estimation via the minimum Kullback entropy principle (<i>7 pages</i>)	042120
Stefano Olivares and Matteo G. A. Paris	
Experimental observation of a topological phase in the maximally entangled state of a pair of qubits (<i>5 pages</i>)	042121
Jiangfeng Du, Jing Zhu, Mingjun Shi, Xinhua Peng, and Dieter Suter	
Measured quantum probability distribution functions for Brownian motion (<i>21 pages</i>)	042122
G. W. Ford and R. F. O'Connell	
How to detect a possible correlation from the information of a subsystem in quantum-mechanical systems (<i>6 pages</i>)	042123
Gen Kimura, Hiromichi Ohno, and Hiroyuki Hayashi	
Interference of Fock states in a single measurement (<i>4 pages</i>)	042124
Andrzej Dragan and Paweł Ziń	
Weak values, "negative probability," and the uncertainty principle (<i>13 pages</i>)	042125
D. Sokolovski	

Experimental realization of macroscopic coherence by phase-covariant cloning of a single photon (6 pages)	042126
Eleonora Nagali, Tiziano De Angelis, Fabio Sciarrino, and Francesco De Martini	
Non-Markovian entanglement dynamics of noisy continuous-variable quantum channels (9 pages)	042127
Jun-Hong An and Wei-Min Zhang	
Quantum information	
Characterization of separability and entanglement in $(2 \times D)$ - and $(3 \times D)$ -dimensional systems by single-qubit and single-qutrit unitary transformations (8 pages)	042301
Salvatore M. Giampaolo and Fabrizio Illuminati	
Orbital angular momentum analysis of high-dimensional entanglement (11 pages)	042302
W. H. Peeters, E. J. K. Verstegen, and M. P. van Exter	
Quantum error correction of observables (9 pages)	042303
Cédric Bény, Achim Kempf, and David W. Kribs	
Entanglement versus entropy for a class of mixed two-qutrit states (5 pages)	042304
Łukasz Derkacz and Lech Jakóbczyk	
Quantum key distribution over 25 km with an all-fiber continuous-variable system (10 pages)	042305
Jérôme Lodewyck, Matthieu Bloch, Raúl García-Patrón, Simon Fossier, Evgueni Karpov, Eleni Diamanti, Thierry Debuisschert, Nicolas J. Cerf, Rosa Tualle-Broui, Steven W. McLaughlin, and Philippe Grangier	
Quantum speedup of classical mixing processes (8 pages)	042306
Peter C. Richter	
Error-resistant distributed quantum computation in a trapped ion chain (9 pages)	042307
Sibylle Braungardt, Aditi Sen(De), Ujjwal Sen, and Maciej Lewenstein	
Molecular dipolar crystals as high-fidelity quantum memory for hybrid quantum computing (23 pages)	042308
P. Rabl and P. Zoller	
Entanglement of subspaces and error-correcting codes (8 pages)	042309
Gilad Gour and Nolan R. Wallach	
Universal dephasing control during quantum computation (5 pages)	042310
Goren Gordon and Gershon Kurizki	
Fault-tolerant linear optics quantum computation by error-detecting quantum state transfer (9 pages)	042311
Jaeyoon Cho	
Controlled dynamics of qubits in the presence of decoherence (9 pages)	042312
D. D. Bhaktavatsala Rao	
Entanglement invariant for the double Jaynes-Cummings model (6 pages)	042313
Isabel Sainz and Gunnar Björk	
Entanglement purification for high-dimensional multipartite systems (7 pages)	042314
Yong Wook Cheong, Seung-Woo Lee, Jinhyoung Lee, and Hai-Woong Lee	
Entanglement magnification induced by local manipulations (6 pages)	042315
Raffaele Romano	
Information-flux approach to multiple-spin dynamics (8 pages)	042316
C. Di Franco, M. Paternostro, G. M. Palma, and M. S. Kim	

Entanglement generation in a two-mode quantum beat laser (6 pages)	042317
Manzoor Ikram, Gao-xiang Li, and M. Suhail Zubairy	
Several experimental realizations of symmetric phase-covariant quantum cloners of single-photon qubits (8 pages)	042318
Jan Soubusta, Lucie Bartůšková, Antonín Černoč, Jaromír Fiurášek, and Miloslav Dušek	
Charge-insensitive qubit design derived from the Cooper pair box (19 pages)	042319
Jens Koch, Terri M. Yu, Jay Gambetta, A. A. Houck, D. I. Schuster, J. Majer, Alexandre Blais, M. H. Devoret, S. M. Girvin, and R. J. Schoelkopf	
Entanglement in general two-mode continuous-variable states: Local approach and mapping to a two-qubit system (5 pages)	042320
H.-C. Lin and A. J. Fisher	
Efficient classical simulation of the approximate quantum Fourier transform (5 pages)	042321
Nadav Yoran and Anthony J. Short	
Discrimination between evolution operators (6 pages)	042322
T. Vértesi and R. Englman	
Optimal estimation of an unknown maximally entangled state with local operations and classical communication (5 pages)	042323
ShengLi Zhang, XuBo Zou, Ke Li, ChenHui Jin, and GuangCan Guo	
Braiding transformation, entanglement swapping, and Berry phase in entanglement space (6 pages)	042324
Jing-Ling Chen, Kang Xue, and Mo-Lin Ge	
Teleportation of qubit states through dissipative channels: Conditions for surpassing the no-cloning limit (12 pages)	042325
Şahin Kaya Özdemir, Karol Bartkiewicz, Yu-xi Liu, and Adam Miranowicz	
Implementation of quantum operations on single-photon qudits (4 pages)	042326
Bing He, János A. Bergou, and Zhiyong Wang	
Measure of the non-Gaussian character of a quantum state (6 pages)	042327
Marco G. Genoni, Matteo G. A. Paris, and Konrad Banaszek	
Tight bounds on the concurrence of quantum superpositions (7 pages)	042328
J. Niset and N. J. Cerf	
Multipartite entanglement of superpositions (4 pages)	042329
D. Cavalcanti, M. O. Terra Cunha, and A. Acín	
Modular multiplication operator and quantized baker's maps (9 pages)	042330
Arul Lakshminarayan	
Qubit quantum channels: A characteristic function approach (10 pages)	042331
Filippo Caruso and Vittorio Giovannetti	
Entanglement sharing in $E \otimes \epsilon$ Jahn-Teller model in the presence of a magnetic field (9 pages)	042332
Giuseppe Liberti, Rosa Letizia Zaffino, Francesco Piperno, and Francesco Plastina	
Entanglement of localized states (6 pages)	042333
O. Giraud, J. Martin, and B. Georgeot	
Geometric characterization of separability and entanglement in pure Gaussian states by single-mode unitary operations (6 pages)	042334
Gerardo Adesso, Salvatore M. Giampaolo, and Fabrizio Illuminati	

Combating dephasing decoherence by periodically performing tracking control and projective measurement (7 pages)	042335
Ming Zhang, Hong Yi Dai, Zairong Xi, Hong Wei Xie, and Dewen Hu	
Entangling a nanomechanical resonator and a superconducting microwave cavity (6 pages)	042336
D. Vitali, P. Tombesi, M. J. Woolley, A. C. Doherty, and G. J. Milburn	
Separability of a family of one-parameter W and Greenberger-Horne-Zeilinger multiqubit states using the Abe-Rajagopal q -conditional-entropy approach (6 pages)	042337
R. Prabhu, A. R. Usha Devi, and G. Padmanabha	
Atomic and molecular structure and dynamics	
Parametric approach to variational two-electron reduced-density-matrix theory (7 pages)	042501
A. Eugene DePrince, III and David A. Mazziotti	
Ground state of the H_2^+ molecule in oblique magnetic fields (6 pages)	042502
David M. Larsen	
Alternative derivation of an exchange-only density-functional optimized effective potential (8 pages)	042503
D. P. Joubert	
Excitation energies, polarizabilities, multipole transition rates, and lifetimes of ions along the francium isoelectronic sequence (15 pages)	042504
U. I. Safronova, W. R. Johnson, and M. S. Safronova	
<i>Ab initio</i> calculations of forbidden transition amplitudes and lifetimes of the low-lying states in V^{4+} (8 pages)	042505
Gopal Dixit, Bijaya K. Sahoo, Rajat K. Chaudhuri, and Sonjoy Majumder	
One-parameter optimization of a nonempirical meta-generalized-gradient-approximation for the exchange-correlation energy (6 pages)	042506
John P. Perdew, Adrienn Ruzsinszky, Jianmin Tao, Gábor I. Csonka, and Gustavo E. Scuseria	
Fully relativistic study of forbidden transitions of O II: Electron density diagnosis for planetary nebulae (5 pages)	042507
Shaohao Chen, Bo Qing, and Jiaming Li	
Recoil corrections in highly charged ions (27 pages)	042508
G. S. Adkins, S. Morrison, and J. Sapirstein	
Comparison between semiclassical and quantum mechanical calculations for collisional broadening and shift of HCO^+ rotational lines (8 pages)	042509
G. Buffa	
Noniterative accurate algorithm for the exact exchange potential of density-functional theory (4 pages)	042510
M. Cinal and A. Holas	
X-ray atomic scattering factors of low- Z ions with a core hole (5 pages)	042511
Stefan P. Hau-Riege	
Calculation of the hyperfine constants for the low-lying excited ^2S states of the lithium atom (9 pages)	042512
Frederick W. King	
R -matrix calculation of antiproton capture by helium ions (11 pages)	042513
Kazuhiro Sakimoto	

Spectroscopy of ultracold trapped cesium Feshbach molecules (<i>14 pages</i>)	042514
M. Mark, F. Ferlaino, S. Knoop, J. G. Danzl, T. Kraemer, C. Chin, H.-C. Nägerl, and R. Grimm	
Atomic and molecular collisions and interactions	
Collisions of electrons with trimethylphosphine $[P(CH_3)_3]$ molecules (<i>7 pages</i>)	042701
Alicja Domaracka, Paweł Możejko, Elżbieta Ptasńska-Denga, and Czesław Szmytkowski	
Wave-packet approach to Rydberg resonances in dissociative recombination (<i>5 pages</i>)	042702
Sabine Morisset, Lukáš Pichl, Ann E. Orel, and Ioan F. Schneider	
Electron collisions with H_3^+ : Ion-pair formation (<i>9 pages</i>)	042703
J. B. Roos, Å. Larson, and A. E. Orel	
Electron-impact ionization of the boron atom (<i>4 pages</i>)	042704
J. C. Berengut, S. D. Loch, M. S. Pindzola, C. P. Ballance, and D. C. Griffin	
Multiply inner-shell excited states produced through multiple x-ray absorption relevant to x-ray pulses (<i>6 pages</i>)	042705
Kengo Moribayashi	
Theoretical study on electron collisions with SiF and SiF ₂ radicals in the low- and intermediate-energy range (<i>9 pages</i>)	042706
G. L. C. de Souza, E. A. y Castro, L. E. Machado, L. M. Brescansin, I. Iga, and M.-T. Lee	
Photoionization of hydrogenlike ions surrounded by a charged spherical shell (<i>6 pages</i>)	042707
A. S. Baltenkov, S. T. Manson, and A. Z. Msezane	
Triple-differential cross sections for target ionization with simultaneous projectile detachment in 200-keV $H^- + He$ collisions (<i>6 pages</i>)	042708
T. Ferger, M. Schulz, D. Fischer, B. Najjari, R. Moshhammer, and J. Ullrich	
Shape resonances in K -shell photodetachment of small size-selected clusters: Experiment and theory (<i>6 pages</i>)	042709
N. Berrah, R. C. Bilodeau, J. D. Bozek, I. Dumitriu, D. Toffoli, and R. R. Lucchese	
Finite-temperature phase diagram of trapped Fermi gases with population imbalance (<i>8 pages</i>)	042710
Wei Zhang and L.-M. Duan	
Vibrational effect on charge-transfer processes in collisions of H^+ and O^+ ions with C_2H_4 molecules at energies below 10 keV/u (<i>7 pages</i>)	042711
Toshio Kusakabe, Kazushi Gotanda, Mineo Kimura, Sachchida N. Rai, Heinz-Peter Liebermann, and Robert J. Buenker	
H_2 dissociation due to collisions with He (<i>8 pages</i>)	042712
L. Ohlinger, R. C. Forrey, Teck-Ghee Lee, and P. C. Stancil	
<i>Ab initio</i> correlated calculations of rare-gas dimer quadrupoles (<i>5 pages</i>)	042713
Alexander G. Donchev	
Probing final-state interactions in the photodetachment from OH^- (<i>6 pages</i>)	042714
G. Aravind, A. K. Gupta, M. Krishnamurthy, and E. Krishnakumar	
Application of linear density response theory to electron-impact autoionizing resonances (<i>5 pages</i>)	042715
Xiao-Min Tong and Tsutomu Watanabe	
Inelastic guiding of electrons in polymer nanocapillaries (<i>5 pages</i>)	042716
S. Das, B. S. Dassanayake, M. Winkworth, J. L. Baran, N. Stolterfoht, and J. A. Tanis	

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

Dynamic-polarization forces on fast ions and molecules moving over supported graphene (9 pages)	042901
I. Radović, Lj. Hadžievski, N. Bibić, and Z. L. Mišković	
Intermediate stages of the Rydberg-level population of multiply charged ions escaping solid surfaces (16 pages)	042902
N. N. Nedeljković and M. D. Majkić	

PART B**Clusters (including fullerenes)**

Shape dynamics during deposit of simple metal clusters on rare-gas matrices (7 pages)	043201
P. M. Dinh, F. Fehrer, G. Bousquet, P.-G. Reinhard, and E. Suraud	
Luminescence evidence for bulk and surface excitons in free xenon clusters (6 pages)	043202
O. G. Danylchenko, Yu. S. Doronin, S. I. Kovalenko, M. Yu. Libin, V. N. Samovarov, and V. L. Vakula	
Clusters under strong vuv pulses: A quantum-classical hybrid description incorporating plasma effects (8 pages)	043203
Ionuț Georgescu, Ulf Saalman, and Jan M. Rost	
Surface location of alkaline-earth-metal-atom impurities on helium nanodroplets (3 pages)	043204
Yanfei Ren and Vitaly V. Kresin	
First- and second-electron affinities of C_{60} and C_{70} isomers (7 pages)	043205
Henning Zettergren, Manuel Alcamí, and Fernando Martín	

Atomic and molecular processes in external fields

Attosecond pulse carrier-envelope phase effects on ionized electron momentum and energy distributions (8 pages)	043401
Liang-You Peng and Anthony F. Starace	
Analysis of two-dimensional high-energy photoelectron momentum distributions in the single ionization of atoms by intense laser pulses (10 pages)	043402
Zhangjin Chen, Toru Morishita, Anh-Thu Le, and C. D. Lin	
Scheme for preparation of nonclassical motional states of trapped ions (4 pages)	043403
Zhongjie Wang	
Far-off-resonant ring trap near the ends of optical fibers (5 pages)	043404
Frank Moscatelli, Charles Sackett, Shengwang Du, and Eun Oh	
Time-dependent multielectron dynamics of Ar in intense short laser pulses (5 pages)	043405
H. W. van der Hart, M. A. Lysaght, and P. G. Burke	
Optical quenching of metastable magnesium (7 pages)	043406
Nils Rehbein, Tanja E. Mehlstäubler, Jochen Keupp, Karsten Moldenhauer, Ernst M. Rasel, Wolfgang Ertmer, Albane Douillet, Volker Michels, Sergey G. Porsev, Andrei Derevianko, Charlotte Froese Fischer, Georgio I. Tachiev, and Vitaly G. Pal'chikov	
High-order harmonic generation in diatomic molecules: A quantum-orbit analysis of the interference patterns (12 pages)	043407
C. Figueira de Morisson Faria	

Polarization-induced torque in optical traps (<i>14 pages</i>)	043408
Stephen H. Simpson, David C. Benito, and Simon Hanna	
Possibility of using Zn as the quantum absorber for a laser-cooled neutral atomic optical frequency standard (<i>12 pages</i>)	043409
Guangfu Wang and Anpei Ye	
Cancellation of the coherent accumulation in rubidium atoms excited by a train of femtosecond pulses (<i>9 pages</i>)	043410
T. Ban, D. Aumiler, H. Skenderović, S. Vdović, N. Vujičić, and G. Pichler	
Magneto-optical trapping of cadmium (<i>8 pages</i>)	043411
K.-A. Brickman, M.-S. Chang, M. Acton, A. Chew, D. Matsukevich, P. C. Haljan, V. S. Bagnato, and C. Monroe	
<i>Ab initio</i> study of the orientation effects in multiphoton ionization and high-order harmonic generation from the ground and excited electronic states of H_2^+ (<i>10 pages</i>)	043412
Dmitry A. Telnov and Shih-I Chu	
Rotational-state-selective field ionization of molecular Rydberg states (<i>6 pages</i>)	043413
R. Patel, N. J. A. Jones, and H. H. Fielding	
Stimulated Raman adiabatic passage into continuum (<i>8 pages</i>)	043414
A. A. Rangelov, N. V. Vitanov, and E. Arimondo	
Manifestation of quantum resonances and antiresonances in a finite-temperature dilute atomic gas (<i>15 pages</i>)	043415
M. Saunders, P. L. Halkyard, K. J. Challis, and S. A. Gardiner	
Finite-bandwidth effects in strong-field ionization of atoms by few-cycle circularly polarized laser pulses (<i>6 pages</i>)	043416
C. P. J. Martiny and L. B. Madsen	
Observation of temporal quantum interference via two collision-assisted two-step excitations (<i>5 pages</i>)	043417
Xihua Yang, Zhenrong Sun, and Zugeng Wang	
Siebert-state expansion in the Kramers-Henneberger frame: Interference substructure of above-threshold ionization peaks in the stabilization regime (<i>8 pages</i>)	043418
Koudai Toyota, Oleg I. Tolstikhin, Toru Morishita, and Shinichi Watanabe	
Theoretical studies of high-order harmonic generation: Effects of symmetry, degeneracy, and orientation (<i>9 pages</i>)	043419
C. B. Madsen and L. B. Madsen	
Extracting amplitudes for single and double ionization from a time-dependent wave packet (<i>10 pages</i>)	043420
A. Palacios, C. W. McCurdy, and T. N. Rescigno	
<i>K</i> -edge x-ray-absorption spectroscopy of laser-generated Kr^+ and Kr^{2+} (<i>9 pages</i>)	043421
S. H. Southworth, D. A. Arms, E. M. Dufresne, R. W. Dunford, D. L. Ederer, C. Höhr, E. P. Kanter, B. Krässig, E. C. Landahl, E. R. Peterson, J. Rudati, R. Santra, D. A. Walko, and L. Young	
Dynamics of multilevel molecules and pulse propagation beyond rotating wave approximation near two-photon resonance (<i>9 pages</i>)	043422
Ji-Cai Liu, Chuan-Kui Wang, and Faris Gel'mukhanov	
Field-free molecular alignment induced by elliptically polarized laser pulses: Noninvasive three-dimensional characterization (<i>5 pages</i>)	043423
E. Hertz, D. Daems, S. Guérin, H. R. Jauslin, B. Lavorel, and O. Faucher	

NOT gate in a <i>cis-trans</i> photoisomerization model (8 pages)	043424
M. Ndong, L. Bomble, D. Sugny, Y. Justum, and M. Desouter-Lecomte	
Matter waves	
Hall effects in Bose-Einstein condensates in a rotating optical lattice (11 pages)	043601
Rajiv Bhat, M. Krämer, J. Cooper, and M. J. Holland	
Dynamics of vortices in weakly interacting Bose-Einstein condensates (7 pages)	043602
Alexander Klein, Dieter Jaksch, Yanzhi Zhang, and Weizhu Bao	
Spectroscopy of strong-pulse superradiance in a Bose-Einstein condensate (5 pages)	043603
Nir Bar-Gill, Eitan E. Rowen, and Nir Davidson	
Cold polar molecules in two-dimensional traps: Tailoring interactions with external fields for novel quantum phases (25 pages)	043604
A. Micheli, G. Pupillo, H. P. Büchler, and P. Zoller	
Fulde-Ferrell-Larkin-Ovchinnikov states in one-dimensional spin-polarized ultracold atomic Fermi gases (21 pages)	043605
Xia-Ji Liu, Hui Hu, and Peter D. Drummond	
Quantum phases of bosons in double-well optical lattices (7 pages)	043606
I. Danshita, J. E. Williams, C. A. R. Sá de Melo, and C. W. Clark	
Dipolar Bose-Einstein condensates at finite temperature (7 pages)	043607
Shai Ronen and John L. Bohn	
Condition for the existence of complex modes in a trapped Bose-Einstein condensate with a highly quantized vortex (11 pages)	043608
E. Fukuyama, M. Mine, M. Okumura, T. Sunaga, and Y. Yamanaka	
Single-particle density matrix and the momentum distribution of dark “solitons” in a Tonks-Girardeau gas (9 pages)	043609
H. Buljan, K. Lelas, R. Pezer, and M. Jablan	
Dark solitons in a superfluid Fermi gas (4 pages)	043610
Mauro Antezza, Franco Dalfovo, Lev P. Pitaevskii, and Sandro Stringari	
Dissipative dynamics of matter-wave solitons in a nonlinear optical lattice (9 pages)	043611
F. Kh. Abdullaev, A. Gammal, H. L. F. da Luz, and Lauro Tomio	
Time-dependent quantum many-body theory of identical bosons in a double well: Early-time ballistic interferences of fragmented and number entangled states (15 pages)	043612
David J. Masiello and William P. Reinhardt	
Kibble-Zurek mechanism in a quenched ferromagnetic Bose-Einstein condensate (10 pages)	043613
Hiroki Saito, Yuki Kawaguchi, and Masahito Ueda	
Spatial noise correlations of a chain of ultracold fermions: A numerical study (12 pages)	043614
Andreas Lüscher, Andreas M. Läuchli, and Reinhard M. Noack	
Association of heteronuclear molecules in a harmonic oscillator well (9 pages)	043615
Jesper Fevre Bertelsen and Klaus Mølmer	
Coherence lifetimes of excitations in an atomic condensate due to the thin spectrum (9 pages)	043616
T. Birol, T. Dereli, Ö. E. Müstecaplıoğlu, and L. You	

Ferromagnetic behavior in the strongly interacting two-component Bose gas (<i>11 pages</i>)	043617
Xi-Wen Guan, Murray T. Batchelor, and Minoru Takahashi	
Magnetic quantum phase transition of cold atoms in an optical lattice (<i>5 pages</i>)	043618
Peng-Bin He, Qing Sun, Peng Li, Shun-Qing Shen, and W. M. Liu	
Mott insulators and correlated superfluids in ultracold Bose-Fermi mixtures (<i>4 pages</i>)	043619
F. Hébert, F. Haudin, L. Pollet, and G. G. Batrouni	
Collapse in boson-fermion mixtures with all-repulsive interactions (<i>5 pages</i>)	043620
Vladyslav I. Prytula, Vladimir V. Konotop, Víctor M. Pérez-García, and Vadym E. Vekslerchik	
Spin squeezing and maximal-squeezing time (<i>6 pages</i>)	043621
Guang-Ri Jin and Sang Wook Kim	
Nonlinear Floquet solutions of two periodically driven Bose-Einstein condensates (<i>6 pages</i>)	043622
Qiongtao Xie	
Spontaneous soliton symmetry breaking in two-dimensional coupled Bose-Einstein condensates supported by optical lattices (<i>15 pages</i>)	043623
Arthur Gubeskys and Boris A. Malomed	
Atom trapping with a thin magnetic film (<i>5 pages</i>)	043624
Micah Boyd, Erik W. Streed, Patrick Medley, Gretchen K. Campbell, Jongchul Mun, Wolfgang Ketterle, and David E. Pritchard	
Dynamics of localization phenomena for hard-core bosons in optical lattices (<i>12 pages</i>)	043625
Birger Horstmann, J. Ignacio Cirac, and Tommaso Roscilde	
Gap solitons in superfluid boson-fermion mixtures (<i>9 pages</i>)	043626
Sadhan K. Adhikari and Boris A. Malomed	
Metastability of persistent currents in trapped gases of atoms (<i>6 pages</i>)	043627
K. Kärkkäinen, J. Christensson, G. Reinisch, G. M. Kavoulakis, and S. M. Reimann	
Superfluid-insulator and roughening transitions in domain walls (<i>5 pages</i>)	043628
Ş. G. Söyler, B. Capogrosso-Sansone, N. V. Prokof'ev, and B. V. Svistunov	
Quantum optics, physics of lasers, nonlinear optics, classical optics	
Square-wave switching by crossed-polarization gain modulation in vertical-cavity semiconductor lasers (<i>10 pages</i>)	043801
J. Mulet, M. Giudici, J. Javaloyes, and S. Balle	
Quantum interference near a photonic band edge beyond the weak-field approximation (<i>14 pages</i>)	043802
P. M. Alsing, D. A. Cardimona, and D. H. Huang	
Solitons in the midst of chaos (<i>8 pages</i>)	043803
Vlad Seghete, Curtis R. Menyuk, and Brian S. Marks	
Theoretical analysis of the self-frequency shift near zero-dispersion points: Soliton spectral tunneling (<i>9 pages</i>)	043804
Eduard N. Tsoy and C. Martijn de Sterke	
Direct measurement of the temporal profile of the amplification gain of the transient collisional excitation neonlike manganese x-ray laser medium (<i>5 pages</i>)	043805
N. Hasegawa, T. Kawachi, A. Sasaki, M. Kishimoto, K. Sukegawa, M. Tanaka, R. Z. Tai, Y. Ochi, M. Nishikino, K. Nagashima, and Y. Kato	

Experimental joint signal-idler quasidistributions and photon-number statistics for mesoscopic twin beams (7 pages)	043806
Jan Peřina, Jaromír Křepelka, Jan Peřina, Jr., Maria Bondani, Alessia Allevi, and Alessandra Andreoni	
Goldstone mode of optical parametric oscillators in planar semiconductor microcavities in the strong-coupling regime (9 pages)	043807
Michiel Wouters and Iacopo Carusotto	
Efficient generation of an isolated single-cycle attosecond pulse (5 pages)	043808
Pengfei Lan, Peixiang Lu, Wei Cao, and Xinlin Wang	
Highly efficient four-wave mixing in a coherent six-level system in ultraslow propagation regime (6 pages)	043809
Hui-jun Li and Guoxiang Huang	
Effects of the vacuum state on the statistics of nonclassical states (10 pages)	043810
N. Alioui, A. Amroun-Frahi, and C. Bendjaballah	
Currents and fields reveal the propagation of nuclear polaritons through a resonant target (12 pages)	043811
G. V. Smirnov, U. van Bürck, J. Arthur, G. S. Brown, A. I. Chumakov, A. Q. R. Baron, W. Petry, and S. L. Ruby	
Quantum storage on subradiant states in an extended atomic ensemble (7 pages)	043812
Alexey Kalachev	
Theory of two-photon interactions with broadband down-converted light and entangled photons (19 pages) ...	043813
Barak Dayan	
Modeling multi-longitudinal-mode semiconductor lasers with incoherent feedback (8 pages)	043814
C. Masoller, C. Serrat, and R. Vilaseca	
Numerical analysis of polarization gratings using the finite-difference time-domain method (8 pages)	043815
Chulwoo Oh and Michael J. Escuti	
Spontaneous emission and scattering in a two-atom system: Conservation of probability and energy (8 pages)	043816
P. R. Berman	
Quantum correlated pulse-pair generation during pulse-trapping propagation in optical fibers (5 pages)	043817
Kenichi Hirosawa, Fumihiko Kannari, Masahiro Takeoka, and Masahide Sasaki	
Coherent accumulation of excitation in the electromagnetically induced transparency of an ultrashort pulse train (6 pages)	043818
A. A. Soares and Luís E. E. de Araujo	
Multiple-period dispersion-managed solitons (7 pages)	043819
O. Y. Schwartz and S. K. Turitsyn	
Maximally polarized states for quantum light fields (8 pages)	043820
Luis L. Sánchez-Soto, Eulogio C. Yustas, Gunnar Björk, and Andrei B. Klimov	
Effect of atomic beam alignment on photon correlation measurements in cavity QED (15 pages)	043821
L. Horvath and H. J. Carmichael	
Two-photon correlation in a cascade amplifier: Propagation effects via a simple model, nonclassical regimes, and validity of neglecting Langevin noise (9 pages)	043822
C. H. Raymond Ooi and Marlan O. Scully	

Subcritical patterns and dissipative solitons due to intracavity photonic crystals (7 pages)	043823
Damià Gomila and Gian-Luca Oppo	
Analytical theory for the propagation of laser beams in nonlinear media (8 pages)	043824
Larisa L. Tatarinova and Martin E. Garcia	
Effects of frequency correlation in linear optical entangling gates operated with independent photons (7 pages)	043825
M. Barbieri	
Competition between attractive and repulsive interactions in two-component Bose-Einstein condensates trapped in an optical lattice (5 pages)	043826
Michal Matuszewski, Boris A. Malomed, and Marek Trippenbach	
Polarization ray picture of coherence for vectorial electromagnetic waves (6 pages)	043827
Alfredo Luis	
Ghost imaging with thermal light by third-order correlation (4 pages)	043828
Yanfeng Bai and Shensheng Han	
Parametric down-conversion with optimized spectral properties in nonlinear photonic crystals (10 pages)	043829
María Corona and Alfred B. U'Ren	
Quantum path control in few-optical-cycle regime (4 pages)	043830
Xiaohong Song, Zhinan Zeng, Yuxi Fu, Bo Cai, Ruxin Li, Ya Cheng, and Zhizhan Xu	
Dynamics of laser-induced magnetization in Ce-doped yttrium aluminum garnet (8 pages)	043831
Roman Kolesov	
Spectrum of coherently backscattered light from two atoms (13 pages)	043832
Vyacheslav Shatokhin, Thomas Wellens, Benoît Grémaud, and Andreas Buchleitner	
Pulsating behavior of an optical beam induced by initial phase-front curvature in strongly nonlocal media (8 pages)	043833
Huafeng Zhang, Lu Li, and Suotang Jia	
Light scattering by an ensemble of interacting dipolar particles with both electric and magnetic polarizabilities (12 pages)	043834
O. Merchiers, F. Moreno, F. González, and J. M. Saiz	
Longitudinal fields in interactions between atoms and absorptive dielectrics (13 pages)	043835
A. Tip	
Bright phase-stable broadband fiber-based source of polarization-entangled photon pairs (4 pages)	043836
J. Fan, M. D. Eisaman, and A. Migdall	
Four-wave-mixing parametric oscillations in dispersion-compensated high- Q silica microspheres (4 pages)	043837
Imad H. Agha, Yoshitomo Okawachi, Mark A. Foster, Jay E. Sharping, and Alexander L. Gaeta	
Controlling pulse propagation in optical fibers through nonlinearity and dispersion management (5 pages)	043838
Rajneesh Atre and Prasanta K. Panigrahi	
Two-dimensional discrete Ginzburg-Landau solitons (6 pages)	043839
Nikolaos K. Efremidis, Demetrios N. Christodoulides, and Kyriakos Hizanidis	
Transforming squeezed light into a large-amplitude coherent-state superposition (5 pages)	043840
Anne E. B. Nielsen and Klaus Mølmer	

CONTENTS - Continued

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 76, NUMBER 4

OCTOBER 2007

Frequency conversion in aperiodic quasi-phase-matched structures (<i>9 pages</i>)	043841
G. Kh. Kitaeva	
Spacing statistics in two-mode random lasing (<i>4 pages</i>)	043842
Oleg Zaitsev	
Observable coherence theory for statistically periodic fields (<i>14 pages</i>)	043843
Brynmor J. Davis	
Floquet perturbation theory: Applicability of the finite level approximation in different gauges (<i>5 pages</i>)	043844
Milan Šindelka and Nimrod Moiseyev	
Azimuthal correlation of photon pairs generated in spontaneous parametric down-conversion (<i>4 pages</i>)	043845
Vygandas Jarutis, Saulius Juodkazis, Vygantas Mizeikis, and Hiroaki Misawa	

BRIEF REPORTS

Fundamental concepts

Local-dephasing-induced entanglement sudden death in two-component finite-dimensional systems (<i>4 pages</i>)	044101
Kevin Ann and Gregg Jaeger	
Validity of the adiabatic approximation in quantum mechanics (<i>4 pages</i>)	044102
R. MacKenzie, A. Morin-Duchesne, H. Paquette, and J. Pinel	
Complex weak values in quantum measurement (<i>3 pages</i>)	044103
Richard Jozsa	
Quantum thermalization with couplings (<i>4 pages</i>)	044104
H. Dong, S. Yang, X. F. Liu, and C. P. Sun	

Quantum information

Conditions for entanglement transformation between a class of multipartite pure states with generalized Schmidt decompositions (<i>3 pages</i>)	044301
Yu Xin and Runyao Duan	
Optimal generation of entanglement under local control (<i>4 pages</i>)	044302
Raffaele Romano and Alessio Del Fabbro	
Nonadiabatic geometric quantum computation (<i>4 pages</i>)	044303
Z. S. Wang, Chunfeng Wu, Xun-Li Feng, L. C. Kwek, C. H. Lai, C. H. Oh, and V. Vedral	
Limitation of decoy-state Scarani-Acin-Ribordy-Gisin quantum-key-distribution protocols with a heralded single-photon source (<i>4 pages</i>)	044304
ShengLi Zhang, XuBo Zou, Ke Li, ChenHui Jin, and GuangCan Guo	
Implementation of a nonlocal N -qubit conditional phase gate by single-photon interference (<i>4 pages</i>)	044305
Z. J. Deng, X. L. Zhang, H. Wei, K. L. Gao, and M. Feng	
Quantum computation in semiconductor quantum dots of electron-spin asymmetric anisotropic exchange (<i>4 pages</i>)	044306
Xiang Hao and Shiqun Zhu	

(Continued)

Atomic and molecular collisions and interactions

- Doppler tuning vuv spectroscopy of D^- over an extended photon-energy range around the $n=2$ threshold
(4 pages) 044701
P. Balling, M. K. Raarup, U. V. Elstrøm, R. Martinussen, V. V. Petrunin, and T. Andersen

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

- 3d-shell contribution to the energy loss of protons during grazing scattering from Cu(111) surfaces
(4 pages) 044901
M. S. Gravielle, M. Alducin, J. I. Juaristi, and V. M. Silkin

Matter waves

- Dark matter-wave solitons in the dimensionality crossover (4 pages) 045601
G. Theocharis, P. G. Kevrekidis, M. K. Oberthaler, and D. J. Frantzeskakis
- Frequency and damping of the scissors mode of a Fermi gas (3 pages) 045602
G. M. Bruun and H. Smith
- Quantum turbulence in a trapped Bose-Einstein condensate (4 pages) 045603
Michikazu Kobayashi and Makoto Tsubota

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

- Quantum tunneling in the adiabatic Dicke model (4 pages) 045801
Gang Chen, Zidong Chen, and Jiuqing Liang
- Transverse correlations in multiphoton entanglement (4 pages) 045802
Jianming Wen, Morton H. Rubin, and Yanhua Shih
- Stability limits for three-dimensional vortex solitons in the Ginzburg-Landau equation with the cubic-quintic nonlinearity (4 pages) 045803
D. Mihalache, D. Mazilu, F. Lederer, H. Leblond, and B. A. Malomed
- Polychromatic cone-beam phase-contrast tomography (4 pages) 045804
G. R. Myers, S. C. Mayo, T. E. Gureyev, D. M. Paganin, and S. W. Wilkins
- Influence of wave-packet dynamics on the medium gain of an atomic system (4 pages) 045805
J. C. Delagnes and M. A. Bouchene

ERRATA

- Publisher's Note: Bayesian estimation of differential interferometer phase [Phys. Rev. A **76**, 033613 (2007)]
(1 page) 049901(E)
John K. Stockton, Xinan Wu, and Mark A. Kasevich
- Erratum: Effect of finite detection efficiency on the observation of the dipole-dipole interaction of a few Rydberg atoms [Phys. Rev. A **76**, 012722 (2007)] (1 page) 049902(E)
I. I. Ryabtsev, D. B. Tretyakov, I. I. Beterov, and V. M. Entin
- Publisher's Note: Parametric approach to variational two-electron reduced-density-matrix theory [Phys. Rev. A **76**, 042501 (2007)] (1 page) 049903(E)
A. Eugene DePrince, III and David A. Mazziotti

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 76, NUMBER 4

OCTOBER 2007

Publisher's Note: Condition for the existence of complex modes in a trapped Bose-Einstein condensate with a highly quantized vortex [Phys. Rev. A 76 , 043608 (2007)] (<i>1 page</i>)	049904(E)
E. Fukuyama, M. Mine, M. Okumura, T. Sunaga, and Y. Yamanaka	
Erratum: Helmholtz solitons in power-law optical materials [Phys. Rev. A 76 , 033834 (2007)] (<i>1 page</i>)	049905(E)
J. M. Christian, G. S. McDonald, R. J. Potton, and P. Chamorro-Posada	
Erratum: "Dissociative electron attachment to the H ₂ O molecule. I. Complex-valued potential-energy surfaces for the ² B ₁ , ² A ₁ , and ² B ₂ metastable states of the water anion" [Phys. Rev. A 75 , 012710 (2007)] (<i>1 page</i>)	049906(E)
Daniel J. Haxton, C. W. McCurdy, and T. N. Rescigno	
Erratum: "Dissociative electron attachment to the H ₂ O molecule. II. Nuclear dynamics on coupled electronic surfaces within the local complex potential model" [Phys. Rev. A 75 , 012711 (2007)] (<i>1 page</i>)	049907(E)
Daniel J. Haxton, T. N. Rescigno, and C. W. McCurdy	