

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 79, NUMBER 3

MARCH 2009

- Scheme for generating coherent-state superpositions with realistic cross-Kerr nonlinearity (*4 pages*) 035802
 Bing He, Mustansar Nadeem, and János A. Bergou

COMMENTS

- Comment on “General relation between the transformation operator and an invariant under stochastic local operations and classical communication in quantum teleportation” (*3 pages*) 036301
 Xiu-Bo Chen, Qiao-Yan Wen, Gang Xu, Yi-Xian Yang, and Fu-Chen Zhu
- Reply to “Comment on ‘General relation between the transformation operator and an invariant under stochastic local operations and classical communication in quantum teleportation’ ” (*2 pages*) 036302
 Xin-Wei Zha and Kuan Fang Ren

ERRATA

- Publisher’s Note: Sub-Rayleigh-diffraction-bound quantum imaging [Phys. Rev. A **79**, 013827 (2009)] (*1 page*) 039901(E)
 Vittorio Giovannetti, Seth Lloyd, Lorenzo Maccone, and Jeffrey H. Shapiro
- Erratum: Entanglement in a bright light source via Raman-driven coherence [Phys. Rev. A **79**, 013831 (2009)] (*1 page*) 039902(E)
 Sajid Qamar, M. Al-Amri, and M. Suhail Zubairy
- Erratum: Ground-state cooling of a micromechanical oscillator: Comparing cold damping and cavity-assisted cooling schemes [Phys. Rev. A **77**, 033804 (2008)] (*1 page*) 039903(E)
 C. Genes, D. Vitali, P. Tombesi, S. Gigan, and M. Aspelmeyer
- Publisher’s Note: Theory of single-photon transport in a single-mode waveguide. II. Coupling to a whispering-gallery resonator containing a two-level atom [Phys. Rev. A **79**, 023838 (2009)] (*1 page*) 039904(E)
 Jung-Tsung Shen (沈榮聰) and Shanhui Fan (范汕洄)
- Erratum: Resonant dimer relaxation in cold atoms with a large scattering length [Phys. Rev. A **75**, 052710 (2007)] (*1 page*) 039905(E)
 Eric Braaten and H.-W. Hammer

Generation of periodic filament arrays by self-focusing of highly elliptical ultrashort pulsed laser beams (6 pages)	033843
Donatas Majus, Vytautas Jukna, Gintaras Valiulis, and Audrius Dubietis	
Momentum conservation in partially coherent wave fields (6 pages)	033844
S. M. Kim and Greg Gbur	
Method to measure off-axis displacements based on the analysis of the intensity distribution of a vortex beam (5 pages)	033845
G. Anzolin, F. Tamburini, A. Bianchini, and C. Barbieri	
Energy and information flow in superlensing (6 pages)	033846
E. Fourkal, I. Velchev, and A. Smolyakov	
Discrete diffraction and shape-invariant beams in optical waveguide arrays (13 pages)	033847
Stefano Longhi	
Subwavelength atom localization via coherent manipulation of the Raman gain process (6 pages)	033848
Sajid Qamar, Asad Mehmood, and Shahid Qamar	

BRIEF REPORTS**Quantum information**

Nongeometric multiqubit conditional phase gates by adiabatic evolution for trapped ions (4 pages)	034301
X. L. Zhang, Xun-Li Feng, Chunfeng Wu, and C. H. Oh	
Quantum phase transition in easy-axis antiferromagnetic Heisenberg spin-1 chain (4 pages)	034302
Jie Ren and Shiqun Zhu	

Atomic and molecular structure and dynamics

Measurement of the spin-forbidden decay rate $(3s3d)^1D_2 \rightarrow (3s3p)^3P_{2,1}$ in ^{24}Mg (4 pages)	034501
K. T. Therkildsen, B. B. Jensen, C. P. Ryder, N. Malossi, and J. W. Thomsen	

Atomic and molecular collisions and interactions

Comparative study of quantal and semiclassical treatments of charge transfer between O^+ and He (4 pages)	034701
L. B. Zhao, D. C. Joseph, B. C. Saha, H. P. Liebermann, P. Funke, and R. J. Buenker	

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

Cold atoms on a two-dimensional square optical lattice with an alternating potential (4 pages)	035401
Huaiming Guo, Yuchuan Wen, and Shiping Feng	
Transfer of population between Rydberg states using a train of half-cycle pulses (4 pages)	035402
T. Kopyciuk and R. Parzyński	
Energy- and angle-resolved electron distribution in the photodetachment of F^- (4 pages)	035403
S. Bivona, G. Bonanno, R. Burlon, and C. Leone	

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

Coherence measures for heralded single-photon sources (4 pages)	035801
E. Bocquillon, C. Couteau, M. Razavi, R. Laflamme, and G. Weihs	

(Continued)

Spatial solitons and instabilities of light beams in a three-level atomic medium with a standing-wave control field (9 pages)	033826
Chao Hang, V. V. Konotop, and Guoxiang Huang	
Generation of pure continuous-variable entangled cluster states of four separate atomic ensembles in a ring cavity (9 pages)	033827
Gao-xiang Li, Sha-sha Ke, and Zbigniew Ficek	
Correlation measurement of squeezed light (6 pages)	033828
Leonid A. Krivitsky, Ulrik L. Andersen, Ruifang Dong, Alexander Huck, Christoffer Wittmann, and Gerd Leuchs	
Spatial distribution of the emission intensity in a photonic crystal: Self-interference of Bloch eigenwaves (9 pages)	033829
Dmitry N. Chigrin	
Angular momentum of focused beams: Beyond the paraxial approximation (10 pages)	033830
Paula B. Monteiro, Paulo A. Maia Neto, and H. Moysés Nussenzveig	
Continuous monitoring can improve indistinguishability of a single-photon source (6 pages)	033831
Shesha Raghunathan and Todd Brun	
Nonlinear spectroscopy with entangled photons: Manipulating quantum pathways of matter (5 pages)	033832
Oleksiy Roslyak, Christoph A. Marx, and Shaul Mukamel	
Generation of total angular momentum eigenstates in remote qubits (4 pages)	033833
A. Maser, U. Schilling, T. Bastin, E. Solano, C. Thiel, and J. von Zanthier	
Phase estimation for thermal Gaussian states (12 pages)	033834
M. Aspachs, J. Calsamiglia, R. Muñoz-Tapia, and E. Bagan	
Hanbury Brown–Twiss effect and thermal light ghost imaging: A unified approach (6 pages)	033835
Li-Gang Wang, Sajid Qamar, Shi-Yao Zhu, and M. Suhail Zubairy	
Theory versus experiment for vacuum Rabi oscillations in lossy cavities (18 pages)	033836
Marcin Wilczewski and Marek Czachor	
Optical solitary waves escaping a wide trapping potential in nematic liquid crystals: Modulation theory (5 pages)	033837
Gaetano Assanto, Antonmaria A. Minzoni, Marco Peccianti, and Noel F. Smyth	
Self-recompression of laser filaments exiting a gas cell (11 pages)	033838
L. Bergé, S. Skupin, and G. Steinmeyer	
Control, measurement, and propagation of entanglement in photon pairs generated through type-II parametric down-conversion (14 pages)	033839
Yasser Jeronimo-Moreno and Alfred B. U'Ren	
Dissipative soliton resonances in the anomalous dispersion regime (5 pages)	033840
W. Chang, J. M. Soto-Crespo, A. Ankiewicz, and N. Akhmediev	
Interactions of spatiotemporal solitons and vortices in fiber bundles (8 pages)	033841
Hervé Leblond, Boris A. Malomed, and Dumitru Mihalache	
Coherent continuum generation above 100 eV driven by an ir parametric source in a two-color scheme (6 pages)	033842
C. Vozzi, F. Calegari, F. Frassetto, L. Poletto, G. Sansone, P. Villoresi, M. Nisoli, S. De Silvestri, and S. Stagira	

(Continued)

Long coherence lifetime and electromagnetically induced transparency in a highly-spin-concentrated solid (5 pages)	033809
Ph. Goldner, O. Guillot-Noël, F. Beaudoux, Y. Le Du, J. Lejay, T. Chanelière, J.-L. Le Gouët, L. Rippe, A. Amari, A. Walther, and S. Kröll	
Role of dephasing in modifying the evolution of the cavity radiation of a coherent beat laser (8 pages)	033810
Sintayehu Tesfa	
Lasers with nonlocal feedback, diffraction, and diffusion (8 pages)	033811
Francesco Papoff and Roberta Zambrini	
Polaritonic gap-soliton propagation through a wide defect in a resonantly absorbing Bragg grating (7 pages)	033812
Elena V. Kazantseva and Andrei I. Maimistov	
Large cross-phase-modulation between two slow pulses by coupled double dark resonances (7 pages)	033813
B. P. Hou, L. F. Wei, G. L. Long, and S. J. Wang	
Four-wave mixing in the diamond configuration in an atomic vapor (6 pages)	033814
R. T. Willis, F. E. Becerra, L. A. Orozco, and S. L. Rolston	
Quantum-dot exciton dynamics with a surface plasmon: Band-edge quantum optics (6 pages)	033815
Y. N. Chen, G. Y. Chen, D. S. Chuu, and T. Brandes	
Effects of coupled bichromatic atom-cavity interaction in the cavity-QED microlaser (7 pages)	033816
Hyun-Gue Hong, Wontaek Seo, Moonjoo Lee, Younghoon Song, Wonshik Choi, Christopher Fang-Yen, Ramachandra R. Dasari, Michael S. Feld, Jai-Hyung Lee, and Kyungwon An	
All-fiber source of frequency-entangled photon pairs (9 pages)	033817
Xiaoying Li, Lei Yang, Xiaoxin Ma, Liang Cui, Zhe Yu Ou, and Daoyin Yu	
Optical-parametric-generation process driven by femtosecond pulses: Timing and carrier-envelope phase properties (10 pages)	033818
C. Manzoni, G. Cirimi, D. Brida, S. De Silvestri, and G. Cerullo	
Stationary localized structures and pulsing structures in a cavity soliton laser (8 pages)	033819
P. Genevet, S. Barland, M. Giudici, and J. R. Tredicce	
Phase-dependent photoionization in the oversaturation regime (5 pages)	033820
Pengfei Lan, Peixiang Lu, Qing Liao, Qingbin Zhang, and Zhenyu Yang	
Poynting singularities in optical dynamic systems (12 pages)	033821
A. V. Novitsky and L. M. Barkovsky	
All path-symmetric pure states achieve their maximal phase sensitivity in conventional two-path interferometry (4 pages)	033822
Holger F. Hofmann	
Three-dimensional numerical model of the dynamics of photorefractive beam self-focusing in InP:Fe (7 pages)	033823
Fabrice Devaux and Mathieu Chauvet	
Long-term spatiotemporal dynamics of solid-state lasers and vertical-cavity surface-emitting lasers (13 pages)	033824
G.-L. Oppo, A. M. Yao, F. Prati, and G. J. de Valcárcel	
Detuning management of optical solitons in coupled quantum wells (8 pages)	033825
Wen-Xing Yang, Jing-Min Hou, YuanYao Lin, and Ray-Kuang Lee	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 79, NUMBER 3

MARCH 2009

Wave patterns generated by a supersonic moving body in a binary Bose-Einstein condensate (<i>10 pages</i>)	033623
Yu. G. Gladush, A. M. Kamchatnov, Z. Shi, P. G. Kevrekidis, D. J. Frantzeskakis, and B. A. Malomed	
Scale-invariant thermodynamics of a toroidally trapped Bose gas (<i>10 pages</i>)	033624
A. S. Bradley	
Vortex replication in Bose-Einstein condensates trapped in double-well potentials (<i>6 pages</i>)	033625
José R. Salgueiro, M. Zacarés, H. Michinel, and A. Ferrando	
Quasicondensation and coherence in the quasi-two-dimensional trapped Bose gas (<i>8 pages</i>)	033626
R. N. Bisset, M. J. Davis, T. P. Simula, and P. B. Blakie	
dc Josephson effect with Fermi gases in the Bose-Einstein regime (<i>6 pages</i>)	033627
F. Ancilotto, L. Salasnich, and F. Toigo	
Bose-Einstein condensation of interacting gases in traps with and without optical lattice (<i>5 pages</i>)	033628
S. Chatterjee and A. E. Meyerovich	
Preparation of atomic Fock states by trap reduction (<i>5 pages</i>)	033629
M. Pons, A. del Campo, J. G. Muga, and M. G. Raizen	
Vector solitons in two-component Bose-Einstein condensates with tunable interactions and harmonic potential (<i>6 pages</i>)	033630
Xiao-Fei Zhang, Xing-Hua Hu, Xun-Xu Liu, and W. M. Liu	
Bose statistics and classical fields (<i>4 pages</i>)	033631
Emilia Witkowska, Mariusz Gajda, and Kazimierz Rzążewski	
Quantum optics, physics of lasers, nonlinear optics, classical optics	
Propagation of transverse intensity correlations of a two-photon state (<i>9 pages</i>)	033801
D. S. Tasca, S. P. Walborn, P. H. Souto Ribeiro, F. Toscano, and P. Pellat-Finet	
Discriminating orthogonal single-photon images (<i>4 pages</i>)	033802
Curtis J. Broadbent, Petros Zerom, Heedeuk Shin, John C. Howell, and Robert W. Boyd	
Bistability and mode interaction in microlasers (<i>15 pages</i>)	033803
Sergei V. Zhukovsky, Dmitry N. Chigrin, and Johann Kroha	
Generating correlated (2+1)-photon pairs in an active-Raman-gain medium (<i>11 pages</i>)	033804
Chun-Hua Yuan, Cui-Ping Lu, Weiping Zhang, and L. Deng	
Coherence singularities in the field generated by partially coherent sources (<i>5 pages</i>)	033805
T. van Dijk, H. F. Schouten, and T. D. Visser	
Resonators with manipulated diffraction due to two- and three-dimensional intracavity photonic crystals (<i>6 pages</i>)	033806
M. Peckus, R. Rogalskis, M. Andrulevicius, T. Tamulevicius, A. Guobiene, V. Jarutis, V. Sirutkaitis, and K. Staliunas	
Quantization of binding energy of structural solitons in passive mode-locked fiber lasers (<i>7 pages</i>)	033807
Andrey Komarov, Konstantin Komarov, and François Sanchez	
Two-color ghost imaging (<i>6 pages</i>)	033808
Kam Wai Clifford Chan, Malcolm N. O'Sullivan, and Robert W. Boyd	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 79, NUMBER 3

MARCH 2009

Spectroscopy of superradiant scattering from an array of Bose-Einstein condensates (<i>5 pages</i>)	033605
Xu Xu, Xiaoji Zhou, and Xuzong Chen	
Polarized superfluids near their tricritical point (<i>8 pages</i>)	033606
Daniel E. Sheehy	
Ground-state properties of interacting two-component Bose gases in a hard-wall trap (<i>8 pages</i>)	033607
Yajiang Hao, Yunbo Zhang, Xi-Wen Guan, and Shu Chen	
Splitting a Bose-Einstein condensate in two translating traps (<i>5 pages</i>)	033608
B. Sun, M. S. Pindzola, and L. You	
Pairing in ultracold Fermi gases in the lowest Landau level (<i>9 pages</i>)	033609
G. Möller, Th. Jolicoeur, and N. Regnault	
Motion of an impurity particle in an ultracold quasi-one-dimensional gas of hard-core bosons (<i>5 pages</i>)	033610
M. D. Girardeau and A. Minguzzi	
Critical properties of a trapped interacting Bose gas (<i>9 pages</i>)	033611
A. Bezett and P. B. Blakie	
Momentum distribution of a freely expanding Lieb-Liniger gas (<i>8 pages</i>)	033612
D. Jukić, B. Klajn, and H. Buljan	
Collective modes of trapped Fermi gases with in-medium interaction (<i>16 pages</i>)	033613
S. Chiacchiera, T. Lepers, D. Davesne, and M. Urban	
Spinor dynamics of quantum accelerator modes near higher-order resonances (<i>13 pages</i>)	033614
Laura Rebuzzini, Italo Guarneri, and Roberto Artuso	
Creating vortices in dipolar spinor condensates via rapid adiabatic passage (<i>5 pages</i>)	033615
J.-N. Zhang, L. He, H. Pu, C.-P. Sun, and S. Yi	
Symmetry-breaking and symmetry-restoring dynamics of a mixture of Bose-Einstein condensates in a double well (<i>8 pages</i>)	033616
Indubala I. Satija, Radha Balakrishnan, Phillip Naudus, Jeffrey Heward, Mark Edwards, and Charles W. Clark	
Atom-pair tunneling and quantum phase transition in the strong-interaction regime (<i>8 pages</i>)	033617
J.-Q. Liang, J.-L. Liu, W.-D. Li, and Z.-J. Li	
Trapped phase-segregated Bose-Fermi mixtures and their collective excitations (<i>6 pages</i>)	033618
Bert Van Schaeybroeck and Achilleas Lazarides	
Spontaneous radiation and amplification of Kelvin waves on quantized vortices in Bose-Einstein condensates (<i>5 pages</i>)	033619
Hiromitsu Takeuchi, Kenichi Kasamatsu, and Makoto Tsubota	
Quantum simulation of the Hubbard model: The attractive route (<i>11 pages</i>)	033620
A. F. Ho, M. A. Cazalilla, and T. Giamarchi	
 Dissipation-induced coherence and stochastic resonance of an open two-mode Bose-Einstein condensate (<i>11 pages</i>)	033621
D. Witthaut, F. Trimborn, and S. Wimberger	
Stability of two-dimensional radial excited states of a Bose-Einstein condensate in an anharmonic trap (<i>7 pages</i>)	033622
Dmitry A. Zezyulin	

(Continued)

Photoionization of the Ne-like Si^{4+} ion in ground and metastable states in the 110–184-eV photon energy range (6 pages)	033407
J.-M. Bizau, J.-P. Mosnier, E. T. Kennedy, D. Cubaynes, F. J. Wuilleumier, C. Blancard, J.-P. Champeaux, and F. Folkmann	
Angular dependence of the strong-field ionization measured in randomly oriented hydrogen molecules (4 pages)	033408
Maia Magrakvelidze, Feng He, Sankar De, Irina Bocharova, Dipanwita Ray, Uwe Thumm, and I. V. Litvinyuk	
Quantitative rescattering theory for laser-induced high-energy plateau photoelectron spectra (18 pages)	033409
Zhangjin Chen, Anh-Thu Le, Toru Morishita, and C. D. Lin	
Quantum-beat imaging of the nuclear dynamics in D_2^+ : Dependence of bond softening and bond hardening on laser intensity, wavelength, and pulse duration (8 pages)	033410
Maia Magrakvelidze, Feng He, Thomas Niederhausen, Igor V. Litvinyuk, and Uwe Thumm	
Fine-scale oscillations in the wavelength and intensity dependence of high-order harmonic generation: Connection with channel closings (10 pages)	033411
K. L. Ishikawa, K. Schiessl, E. Persson, and J. Burgdörfer	
Signatures of the classical transition state in atomic quantum spectra (5 pages)	033412
Holger Cartarius, Jörg Main, and Günter Wunner	
High-order above-threshold ionization beyond the first-order Born approximation (12 pages)	033413
A. Čerkić, E. Hasović, D. B. Milošević, and W. Becker	
Transient dynamics and momentum redistribution in cold atoms via recoil-induced resonances (7 pages)	033414
Joel A. Greenberg and Daniel J. Gauthier	
Photoionization cross sections of iron isonuclear sequence ions: Fe^{2+} to Fe^{6+} (8 pages)	033415
N. El Hassan, J. M. Bizau, C. Blancard, P. Cossé, D. Cubaynes, G. Faussurier, and F. Folkmann	
Local phase space control and interplay of classical and quantum effects in dissociation of a driven Morse oscillator (12 pages)	033416
Astha Sethi and Srihari Keshavamurthy	
Creation of nondispersive Bohr-like wave packets (5 pages)	033417
J. J. Mestayer, B. Wyker, F. B. Dunning, S. Yoshida, C. O. Reinhold, and J. Burgdörfer	
Optical pumping dynamics and near-resonance light scattering in an ultracold sample of ^{87}Rb atoms (7 pages)	033418
S. Balik, M. D. Havey, I. M. Sokolov, and D. V. Kupriyanov	
Matter waves	
Quantum fluctuations in trapped time-dependent Bose-Einstein condensates (12 pages)	033601
Michael Uhlmann	
Spontaneous emission in ultracold spin-polarized anisotropic Fermi seas (7 pages)	033602
Brian O'Sullivan and Thomas Busch	
Multiband bosons in optical lattices (7 pages)	033603
J. Larson, A. Collin, and J.-P. Martikainen	
Thermodynamics and finite-size scaling of homogeneous weakly interacting Bose gases within an exact canonical statistics (8 pages)	033604
Jian-hui Wang and Yong-li Ma	

(Continued)

Electron-impact single ionization of Mg and Al ⁺ (6 pages)	032715
J. A. Ludlow, C. P. Ballance, S. D. Loch, M. S. Pindzola, and D. C. Griffin	
Method for producing ultracold molecular ions (9 pages)	032716
Eric R. Hudson	

PART B

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

Electric-field-induced change of the alkali-metal vapor density in paraffin-coated cells (14 pages)	032901
D. F. Jackson Kimball, Khoa Nguyen, K. Ravi, Arijit Sharma, Vaibhav S. Prabhudesai, S. A. Rangwala, V. V. Yashchuk, M. V. Balabas, and D. Budker	
Modification of energy shifts of atoms by the presence of a boundary in a thermal bath and the Casimir-Polder force (12 pages)	032902
Zhiying Zhu and Hongwei Yu	
Energy loss of protons in Au, Pb, and Bi using relativistic wave functions (9 pages)	032903
C. C. Montanari, C. D. Archubi, D. M. Mitnik, and J. E. Miraglia	

Clusters (including fullerenes)

Comparative study on the geometric and energetic properties, absorption spectra, and polarizabilities of charged and neutral Cu@Si _n clusters ($n=9-14$) (9 pages)	033201
You-Zhao Lan and Yun-Long Feng	
Energy gap between highest occupied molecular orbital and lowest unoccupied molecular orbital in multiwalled fullerenes (5 pages)	033202
M. Pudlak and R. Pincak	

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

Nonlinear dynamics of a cigar-shaped Bose-Einstein condensate in an optical cavity (8 pages)	033401
J. M. Zhang, F. C. Cui, D. L. Zhou, and W. M. Liu	
Time-dependent treatment of two-photon resonant single and double ionization of helium by ultrashort laser pulses (12 pages)	033402
A. Palacios, T. N. Rescigno, and C. W. McCurdy	
Frequency measurement of the $^2S_{1/2}-^2F_{7/2}$ electric octupole transition in a single $^{171}\text{Yb}^+$ ion (8 pages)	033403
K. Hosaka, S. A. Webster, A. Stannard, B. R. Walton, H. S. Margolis, and P. Gill	
Comparison and real-time monitoring of high-order harmonic generation in different sources (6 pages)	033404
J.-P. Brichta, M. C. H. Wong, J. B. Bertrand, H.-C. Bandulet, D. M. Rayner, and V. R. Bhardwaj	
Intensity dependence of intramolecular interference from a full quantum analysis of high-order harmonic generation (5 pages)	033405
Y. J. Chen, J. Liu, and Bambi Hu	
Analytic formulas for above-threshold ionization or detachment plateau spectra (17 pages)	033406
M. V. Frolov, N. L. Manakov, and Anthony F. Starace	

(Continued)

Recoil correction to the decay rate of $2p$ states in hydrogenlike atoms (10 pages)	032518
V. G. Ivanov and S. G. Karshenboim	
Transition frequency shifts with fine-structure constant variation for Fe I and isotope-shift calculations in Fe I and Fe II (7 pages)	032519
S. G. Porsev, M. G. Kozlov, and D. Reimers	
Atomic and molecular collisions and interactions	
Feshbach resonances in ultracold atom-molecule collisions (6 pages)	032701
Andrea Simoni, Jean-Michel Launay, and Pavel Soldán	
Cooper minima and Young-type interferences in photoionization of one-electron molecular ions (7 pages) . . .	032702
R. Della Picca, P. D. Fainstein, M. L. Martiarena, N. Sisourat, and A. Dubois	
Final-state probability distribution for atomic fragments arising in the ($^3\text{He}, n; p, t$) reaction with slow neutrons (12 pages)	032703
Alexei M. Frolov and David M. Wardlaw	
Electron-impact excitation of molecular nitrogen. I. Excitation of the $C^3\Pi_u$, $E^3\Sigma_g^+$, and $a''^1\Sigma_g^+$ states (16 pages)	032704
C. P. Malone, P. V. Johnson, I. Kanik, B. Ajdari, and M. A. Khakoo	
Electron-impact excitation of molecular nitrogen. II. Vibrationally resolved excitation of the $C^3\Pi_u(v')$ state (9 pages)	032705
C. P. Malone, P. V. Johnson, I. Kanik, B. Ajdari, S. S. Rahman, S. S. Bata, A. Emigh, and M. A. Khakoo	
Feshbach resonance in d -wave collisions (8 pages)	032706
Q. Beaufils, A. Crubellier, T. Zanon, B. Laburthe-Tolra, E. Maréchal, L. Vernac, and O. Gorceix	
Electron attachment to Cl_2 from 300 to 1100 K: Experiment and theory (6 pages)	032707
Jeffrey F. Friedman, Thomas M. Miller, Linda C. Schaffer, A. A. Viggiano, and Ilya I. Fabrikant	
Double K -shell ionization of Al induced by photon and electron impact (14 pages)	032708
K. Fennane, J.-Cl. Dousse, J. Hoszowska, M. Berset, W. Cao, Y.-P. Maillard, J. Szlachetko, M. Szlachetko, and M. Kavčič	
Two interacting atoms in an optical lattice site with anharmonic terms (9 pages)	032709
Johan Mentink and Servaas Kokkelmans	
X-ray study of M -shell ionization of heavy atoms by 8.0–35.2-MeV O^{q+} ions: The role of the multiple-ionization effects (14 pages)	032710
M. Czarnota, D. Banaś, J. Braziewicz, J. Semaniak, M. Pajek, M. Jaskóła, A. Korman, D. Trautmann, W. Kretschmer, G. Lapicki, and T. Mukoyama	
Predicting scattering properties of ultracold atoms: Adiabatic accumulated phase method and mass scaling (11 pages)	032711
B. J. Verhaar, E. G. M. van Kempen, and S. J. J. M. F. Kokkelmans	
Electron collisions with the NO_2 radical using the R -matrix method (8 pages)	032712
Hema Munjal, K. L. Baluja, and Jonathan Tennyson	
Negative-continuum dielectronic recombination into excited states of highly charged ions (7 pages)	032713
A. N. Artemyev, V. M. Shabaev, Th. Stöhlker, and A. S. Surzhykov	
Three-photon transitions in the hydrogen atom immersed in Debye plasmas (7 pages)	032714
S. Paul and Y. K. Ho	

(Continued)

Atomic and molecular structure and dynamics

Hyperfine-dependent lifetimes in Be-like ions (<i>15 pages</i>)	032501
M. Andersson, Y. Zou, R. Hutton, and T. Brage	
Kohn-Sham scheme for frequency-dependent linear response (<i>10 pages</i>)	032502
Ryan Requist and Oleg Pankratov	
Nickel L_{III} fluorescence and satellite transition probabilities determined with an alternative methodology for soft-x-ray emission spectrometry (<i>10 pages</i>)	032503
M. Müller, B. Beckhoff, R. Fliegau, and B. Kanngießer	
Reverse engineering in many-body quantum physics: Correspondence between many-body systems and effective single-particle equations (<i>5 pages</i>)	032504
J. P. Coe, K. Capelle, and I. D'Amico	
Spectrum of scandium in the energy region 52 625–54 046 cm^{-1} (<i>9 pages</i>)	032505
Feng-Dong Jia, Zhi-Ping Zhong, Wei Sun, Ping Xue, and Xiang-Yuan Xu	
Molecular polarizability in quantum defect theory: Nonpolar molecules (<i>9 pages</i>)	032506
E. V. Akindinova, V. E. Chernov, I. Yu. Kretinin, and B. A. Zon	
Non-Born-Oppenheimer calculations of the lowest vibrational energy of HD including relativistic corrections (<i>8 pages</i>)	032507
Monika Stanke, Sergiy Bubín, Marcin Molski, and Ludwik Adamowicz	
Stability diagrams of plasma-embedded three-unit-charge systems: Borromean states and the Efimov effect (<i>8 pages</i>)	032508
Federico Pont and Pablo Serra	
Entanglement in resonances of two-electron quantum dots (<i>6 pages</i>)	032509
Alejandro Ferrón, Omar Osenda, and Pablo Serra	
Fine and hyperfine splitting of the $2P$ state in Li and Be^+ (<i>8 pages</i>)	032510
Mariusz Puchalski and Krzysztof Pachucki	
Correlation and relativistic effects for the $4f\text{-}nl$ multipole transitions in Yb III ions (<i>11 pages</i>)	032511
U. I. Safronova and M. S. Safronova	
Effect of relativity and electron correlation in static dipole polarizabilities of ytterbium and nobelium (<i>4 pages</i>)	032512
Christian Thierfelder and Peter Schwerdtfeger	
Harmonic hyperspherical basis for identical particles without permutational symmetry (<i>10 pages</i>)	032513
M. Gattobigio, A. Kievsky, M. Viviani, and P. Barletta	
X-ray absorption in atomic iodine in the K -edge region (<i>7 pages</i>)	032514
J. Padežnik Gomilšek, I. Arčon, S. de Panfilis, and A. Kodre	
QED calculation of transition probabilities in two-electron ions (<i>28 pages</i>)	032515
Oleg Yu. Andreev, Leonti N. Labzowsky, and Günter Plunien	
General local and rectilinear vibrational coordinates consistent with Eckart's conditions (<i>11 pages</i>)	032516
Iván Scivetti, Jorge Kohanoff, and Nikitas I. Gidopoulos	
Recurrence formulas for fully exponentially correlated four-body wave functions (<i>8 pages</i>)	032517
Frank E. Harris	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 79, NUMBER 3

MARCH 2009

Quantum repeater with encoding (<i>10 pages</i>)	032325
Liang Jiang, J. M. Taylor, Kae Nemoto, W. J. Munro, Rodney Van Meter, and M. D. Lukin	
Only n -qubit Greenberger-Horne-Zeilinger states contain n -partite information (<i>4 pages</i>)	032326
Scott N. Walck and David W. Lyons	
Energy cost and optimal entanglement production in harmonic chains (<i>6 pages</i>)	032327
Fernando Galve and Eric Lutz	
Quantum-classical crossover of a field mode (<i>6 pages</i>)	032328
M. J. Everitt, W. J. Munro, and T. P. Spiller	
Entanglement patterns and pure quantum correlations in the Heisenberg XY model (<i>12 pages</i>)	032329
F. B. M. dos Santos, R. M. Dias, and A. M. S. Macêdo	
Subspaces without locally distinguishable orthonormal bases (<i>4 pages</i>)	032330
Wei Jiang, Xi-Jun Ren, Xingxiang Zhou, Zheng-Wei Zhou, and Guang-Can Guo	
Quadratic fermionic interactions yield Hamiltonians with large ground-state energy gaps (<i>10 pages</i>)	032331
Michael J. O'Hara and Dianne P. O'Leary	
Entanglement resonance in driven spin chains (<i>5 pages</i>)	032332
Fernando Galve, David Zueco, Sigmund Kohler, Eric Lutz, and Peter Hänggi	
Entanglement dynamics of multimode Gaussian states coupled to the same reservoir (<i>7 pages</i>)	032333
Shao-Hua Xiang, Bin Shao, Ke-Hui Song, and Jian Zou	
Analytic solution of the separability criterion for continuous-variable systems (<i>6 pages</i>)	032334
Kazuo Fujikawa	
Upper bounds for the secure key rate of the decoy-state quantum key distribution (<i>10 pages</i>)	032335
Marcos Curty, Tobias Moroder, Xiongfeng Ma, Hoi-Kwong Lo, and Norbert Lütkenhaus	
Distinguishability measures between ensembles of quantum states (<i>29 pages</i>)	032336
Ognyan Oreshkov and John Calsamiglia	
Scheme to generate continuous-variable quadripartite entanglement by intracavity down-conversion cascaded with double sum-frequency generations (<i>10 pages</i>)	032337
H. Y. Leng, J. F. Wang, Y. B. Yu, X. Q. Yu, P. Xu, Z. D. Xie, J. S. Zhao, and S. N. Zhu	
Quantum critical phenomena in the XY spin chain with the Dzyaloshinski-Moriya interaction (<i>5 pages</i>)	032338
Yan-Chao Li and Shu-Shen Li	
Attack of many eavesdroppers via optimal strategy in quantum cryptography (<i>8 pages</i>)	032339
Eylee Jung, Mi-Ra Hwang, DaeKil Park, Hungsoo Kim, Eui-Soon Yim, and Jin-Woo Son	
Entanglement-assisted quantum quasicyclic low-density parity-check codes (<i>7 pages</i>)	032340
Min-Hsiu Hsieh, Todd A. Brun, and Igor Devetak	
Semiquantum key distribution (<i>12 pages</i>)	032341
Michel Boyer, Ran Gelles, Dan Kenigsberg, and Tal Mor	
Upper bound on quantum stabilizer codes (<i>4 pages</i>)	032342
Zhuo Li and Li-Juan Xing	
Error rates of Belavkin weighted quantum measurements and a converse to Holevo's asymptotic optimality theorem (<i>6 pages</i>)	032343
Jon Tyson	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 79, NUMBER 3

MARCH 2009

Phase boundaries in deterministic dense coding (<i>6 pages</i>)	032307
Michael R. Beran and Scott M. Cohen	
Entropy of entanglement and multifractal exponents for random states (<i>5 pages</i>)	032308
O. Giraud, J. Martin, and B. Georgeot	
Any multipartite entangled state violating the Mermin-Klyshko inequality can be distilled for almost all bipartite splits (<i>4 pages</i>)	032309
Soojoon Lee, Jinhyoung Lee, and Jaewan Kim	
Off-resonant entanglement generation in a lossy cavity (<i>10 pages</i>)	032310
F. Francica, S. Maniscalco, J. Piilo, F. Plastina, and K.-A. Suominen	
Implementation of Clifford gates in the Ising-anyon topological quantum computer (<i>16 pages</i>)	032311
André Ahlbrecht, Lachezar S. Georgiev, and Reinhard F. Werner	
One-dimensional quantum random walks with two entangled coins (<i>8 pages</i>)	032312
Chaobin Liu and Nelson Petulante	
Extra shared entanglement reduces memory demand in quantum convolutional coding (<i>7 pages</i>)	032313
Mark M. Wilde and Todd A. Brun	
Dissipative scheme to approach the boundary of two-qubit entangled mixed states (<i>8 pages</i>)	032314
S. Campbell and M. Paternostro	
Cloning of qubits with both the cloned state and the state orthogonal to it as inputs (<i>7 pages</i>)	032315
G. Kato	
Quantum circuits for strongly correlated quantum systems (<i>5 pages</i>)	032316
Frank Verstraete, J. Ignacio Cirac, and José I. Latorre	
Weak and strong measurement of a qubit using a switching-based detector (<i>18 pages</i>)	032317
S. Ashhab, J. Q. You, and Franco Nori	
Fault-tolerant quantum computation versus Gaussian noise (<i>20 pages</i>)	032318
Hui Khoon Ng and John Preskill	
Reexamination of decoherence in quantum walks on the hypercube (<i>8 pages</i>)	032319
Frederick W. Strauch	
Classical capacity of quantum channels with memory (<i>5 pages</i>)	032320
Tony Dorlas and Ciara Morgan	
New phase transitions in optimal states for memory channels (<i>6 pages</i>)	032321
Vahid Karimipour, Zohreh Meghdadi, and Laleh Memarzadeh	
Scalability of Greenberger-Horne-Zeilinger and random-state entanglement in the presence of decoherence (<i>8 pages</i>)	032322
Leandro Aolita, Daniel Cavalcanti, Antonio Acín, Alejo Salles, Markus Tiersch, Andreas Buchleitner, and Fernando de Melo	
Discrimination of two mixed quantum states with maximum confidence and minimum probability of inconclusive results (<i>7 pages</i>)	032323
Ulrike Herzog	
Effective one-body dynamics in multiple-quantum NMR experiments (<i>8 pages</i>)	032324
E. Rufeil-Fiori, C. M. Sánchez, F. Y. Oliva, H. M. Pastawski, and P. R. Levstein	

(Continued)

Polymer quantization, singularity resolution, and the $1/r^2$ potential (9 pages)	032104
Gabor Kunstatter, Jorma Louko, and Jonathan Ziprick	
Renormalized coordinate approach to the thermalization process (11 pages)	032105
G. Flores-Hidalgo, A. P. C. Malbouisson, J. M. C. Malbouisson, Y. W. Milla, and A. E. Santana	
Unusual decoherence in qubit measurements with a Bose-Einstein condensate (5 pages)	032106
D. Sokolovski and S. A. Gurvitz	
Semiclassical analysis of spin systems near critical energies (5 pages)	032107
Pedro Ribeiro and Thierry Paul	
Coherent shift of localized bound pairs in the Bose-Hubbard model (5 pages)	032108
L. Jin, B. Chen, and Z. Song	
Optimal reference states for maximum accessible entanglement under the local-particle-number superselection rule (13 pages)	032109
G. A. White, J. A. Vaccaro, and H. M. Wiseman	
Systematic perturbation theory for dynamical coarse-graining (16 pages)	032110
Gernot Schaller, Philipp Zedler, and Tobias Brandes	
Effective method to estimate multidimensional Gaussian states (7 pages)	032111
J. Řeháček, S. Olivares, D. Mogilevtsev, Z. Hradil, M. G. A. Paris, S. Fornaro, V. D'Auria, A. Porzio, and S. Solimeno	
Why photons cannot be sharply localized (8 pages)	032112
Iwo Bialynicki-Birula and Zofia Bialynicka-Birula	
Generalized model of the quantum measurement process in an environment (11 pages)	032113
Masashi Ban, Sachiko Kitajima, and Fumiaki Shibata	
Markov chain Monte Carlo estimation of quantum states (7 pages)	032114
James DiGuglielmo, Chris Messenger, Jaromír Fiurášek, Boris Hage, Aiko Samblowski, Tabea Schmidt, and Roman Schnabel	
Quantum information	
Floquet formulation for the investigation of multiphoton quantum interference in a superconducting qubit driven by a strong ac field (11 pages)	032301
Sang-Kil Son (손상길), Siyuan Han (韩思远), and Shih-I Chu (朱時宜)	
Fidelity in topological quantum phases of matter (6 pages)	032302
Silvano Garnerone, Damian Abasto, Stephan Haas, and Paolo Zanardi	
Quantum-information processing with a single photon by an input-output process with respect to low- Q cavities (7 pages)	032303
Jun-Hong An, M. Feng, and C. H. Oh	
Nonsecret correlations can be used to distribute secrecy (4 pages)	032304
Joonwoo Bae, Toby Cubitt, and Antonio Acín	
Complete teleportation of a paraxial single-photon field (8 pages)	032305
D. S. Ether, S. P. Walborn, and N. Zagury	
Dynamics of the bounds of squared concurrence (4 pages)	032306
Zhao Liu and Heng Fan	

(Continued)