

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 73, NUMBER 3
PARTS A AND B

CONTENTS

MARCH 2006

The Table of Contents is a total listing of Parts A and B.
Part A consists of pages 030301(R)-032903, and Part B pages 033201-039909(E).

PART A

RAPID COMMUNICATIONS

Quantum information

- Practical limitations in optical entanglement purification (*4 pages*) 030301(R)
Peter P. Rohde, Timothy C. Ralph, and William J. Munro
- Control of inhomogeneous quantum ensembles (*4 pages*) 030302(R)
Jr-Shin Li and Navin Khaneja
- Direct measurement of the quantum state of the electromagnetic field in a superconducting transmission line
(*4 pages*) 030303(R)
F. de Melo, L. Aolita, F. Toscano, and L. Davidovich

Atomic and molecular collisions and interactions

- Efimov resonances in atomic three-body systems (*3 pages*) 030701(R)
J. Zs. Mezei and Z. Papp
- Mass dependence of ultracold three-body collision rates (*4 pages*) 030702(R)
J. P. D’Incao and B. D. Esry
- Enhancing the observability of the Efimov effect in ultracold atomic gas mixtures (*4 pages*) 030703(R)
J. P. D’Incao and B. D. Esry

Clusters (including fullerenes)

- Structure and dynamics of cluster plasmas created by ultrashort intense laser fields (*4 pages*) 031201(R)
Yuji Fukuda, Yasuaki Kishimoto, Tomohiro Masaki, and Koichi Yamakawa
- Ion and electron emission from silver nanoparticles in intense laser fields (*4 pages*) 031202(R)
T. Döppner, Th. Fennel, P. Radcliffe, J. Tiggesbäumker, and K.-H. Meiwes-Broer

Atomic and molecular processes in external fields

- Adaptive control of molecular alignment (*4 pages*) 031401(R)
C. Horn, M. Wollenhaupt, M. Krug, T. Baumert, R. de Nalda, and L. Bañares



Copyright 2006 by The American Physical Society

(Continued)



1050-2947(200603)73:3;1-K

Dynamic manipulation of Bose-Einstein condensates with a spatial light modulator (<i>4 pages</i>)	031402(R)
V. Boyer, R. M. Godun, G. Smirne, D. Cassettari, C. M. Chandrashekar, A. B. Deb, Z. J. Laczik, and C. J. Foot	

Matter waves

Thermometry of fermionic atoms in an optical lattice (<i>4 pages</i>)	031601(R)
Michael Köhl	
Stability of quasi-two-dimensional Bose-Einstein condensates with dominant dipole-dipole interactions (<i>4 pages</i>)	031602(R)
Uwe R. Fischer	
Metastable helium Bose-Einstein condensate with a large number of atoms (<i>4 pages</i>)	031603(R)
A. S. Tychkov, T. Jeltsov, J. M. McNamara, P. J. J. Tol, N. Herschbach, W. Hogervorst, and W. Vassen	
Trapped fermions across a Feshbach resonance with population imbalance (<i>4 pages</i>)	031604(R)
W. Yi and L.-M. Duan	

Quantum optics, physics of lasers, nonlinear optics

Experimental demonstration of high two-photon time-energy entanglement (<i>4 pages</i>)	031801(R)
Irfan Ali Khan and John C. Howell	
Unidirectional light emission from high- <i>Q</i> modes in optical microcavities (<i>4 pages</i>)	031802(R)
Jan Wiersig and Martina Hentschel	
Measurement of the separation between atoms beyond diffraction limit (<i>4 pages</i>)	031803(R)
Jun-Tao Chang, Jörg Evers, Marlan O. Scully, and M. Suhail Zubairy	
Contribution of thermal noise to frequency stability of rigid optical cavity via Hertz-linewidth lasers (<i>4 pages</i>)	031804(R)
Mark Notcutt, Long-Sheng Ma, Andrew D. Ludlow, Seth M. Foreman, Jun Ye, and John L. Hall	

ARTICLES

Fundamental concepts

Control of the quantum open system via quantum generalized measurement (<i>5 pages</i>)	032101
Ming Zhang, Hong-Yi Dai, Xiao-Cai Zhu, Xing-Wei Li, and Dewen Hu	
Hardy's criterion of nonlocality for mixed states (<i>5 pages</i>)	032102
GianCarlo Ghirardi and Luca Marinatto	
Anomalous diffusion in quantum Brownian motion with colored noise (<i>6 pages</i>)	032103
G. W. Ford and R. F. O'Connell	
Maps for Lorentz transformations of spin (<i>6 pages</i>)	032104
Thomas F. Jordan, Anil Shaji, and E. C. G. Sudarshan	
Possibility for precise Weinberg-angle measurement in centrosymmetric crystals with axis (<i>7 pages</i>)	032105
T. N. Mukhamedjanov and O. P. Sushkov	
Aharonov-Bohm effect without closing a loop (<i>4 pages</i>)	032106
A. Retzker, Y. Aharonov, A. Botero, S. Nussinov, and B. Reznik	
Optimal unambiguous discrimination of two subspaces as a case in mixed-state discrimination (<i>7 pages</i>)	032107
János A. Bergou, Edgar Feldman, and Mark Hillery	

Energy-momentum balance in quantum dielectrics (5 pages) Ulf Leonhardt	032108
Coherent-state analysis of the quantum bouncing ball (9 pages) William H. Mather and Ronald F. Fox	032109
Neutron wave-packet tomography (6 pages) G. Badurek, P. Facchi, Y. Hasegawa, Z. Hradil, S. Pascazio, H. Rauch, J. Řeháček, and T. Yoneda	032110
Potential barrier classification by short-time measurement (5 pages) Er'el Granot and Avi Marchewka	032111
Quantum information	
Optimal full estimation of qubit mixed states (18 pages) E. Bagan, M. A. Ballester, R. D. Gill, A. Monras, and R. Muñoz-Tapia	032301
Cloning and optimal Gaussian individual attacks for a continuous-variable quantum key distribution using coherent states and reverse reconciliation (6 pages) Ryo Namiki, Masato Koashi, and Nobuyuki Imoto	032302
Entanglement dynamics modified by an effective atomic environment (6 pages) I. Sainz, A. B. Klimov, and Luis Roa	032303
Reduced randomness in quantum cryptography with sequences of qubits encoded in the same basis (8 pages) L.-P. Lamoureux, H. Bechmann-Pasquinucci, N. J. Cerf, N. Gisin, and C. Macchiavello	032304
Photon-number-resolving decoy-state quantum key distribution (5 pages) Qing-yu Cai and Yong-gang Tan	032305
Perfect state transfer: Beyond nearest-neighbor couplings (7 pages) Alastair Kay	032306
Experimental investigation of planar ion traps (12 pages) C. E. Pearson, D. R. Leibbrandt, W. S. Bakr, W. J. Mallard, K. R. Brown, and I. L. Chuang	032307
Simple proof of fault tolerance in the graph-state model (6 pages) Panos Aliferis and Debbie W. Leung	032308
Accessible information in three pure mirror-symmetric qubit states (7 pages) Michael R. Frey	032309
Maximizing nearest-neighbor entanglement in finitely correlated qubit chains (11 pages) Beatrix C. Hiesmayr, Mátyás Koniorczyk, and Heide Narnhofer	032310
Quantum bit commitment with misaligned reference frames (5 pages) Aram Harrow, Roberto Oliveira, and Barbara M. Terhal	032311
Nonseparable Werner states in spontaneous parametric down-conversion (8 pages) Marco Caminati, Francesco De Martini, Riccardo Perris, Fabio Sciarrino, and Veronica Secondi	032312
Usefulness of classical communication for local cloning of entangled states (6 pages) Rafał Demkowicz-Dobrzański, Maciej Lewenstein, Aditi Sen(De), Ujjwal Sen, and Dagmar Bruß	032313
Classification of tripartite entanglement with one qubit (9 pages) Marcio F. Cornelio and A. F. R. de Toledo Piza	032314

Another convex combination of product states for the separable Werner state (5 pages)	032315
Hiroo Azuma and Masashi Ban	
Greenberger-Horne-Zeilinger nonlocality in arbitrary even dimensions (5 pages)	032316
Jinhyoung Lee, Seung-Woo Lee, and M. S. Kim	
Realization of an n -qubit controlled- U gate with superconducting quantum interference devices or atoms in cavity QED (11 pages)	032317
Chui-Ping Yang and Siyuan Han	
Continuous-variable Gaussian analog of cluster states (5 pages)	032318
Jing Zhang and Samuel L. Braunstein	
Quantum-information transport to multiple receivers (5 pages)	032319
Andrew D. Greentree, Simon J. Devitt, and Lloyd C. L. Hollenberg	
Variable-bias coin tossing (11 pages)	032320
Roger Colbeck and Adrian Kent	
Potential errors in a scheme of universal quantum gates in Kane's model (10 pages)	032321
Yukihiro Ota, Shuji Mikami, and Ichiro Ohba	
Existence criterion of genuine tripartite entanglement (6 pages)	032322
Chang-shui Yu and He-shan Song	
Time-reversal formalism applied to maximal bipartite entanglement: Theoretical and experimental exploration (9 pages)	032323
M. Laforest, J. Baugh, and R. Laflamme	
Quantum governor: Automatic quantum control and reduction of the influence of noise without measuring (8 pages)	032324
S. Kallush and R. Kosloff	
Error tolerance of two-basis quantum-key-distribution protocols using qudits and two-way classical communication (9 pages)	032325
Georgios M. Nikolopoulos, Kedar S. Ranade, and Gernot Alber	
Theory and experiment of entanglement in a quasi-phase-matched two-crystal source (12 pages)	032326
Daniel Ljunggren, Maria Tengner, Philip Marsden, and Matthew Pelton	
Heralded single-photon generation using imperfect single-photon sources and a two-photon-absorbing medium (9 pages)	032327
Thomas Konrad, Artur Scherer, Michael Nock, and Jürgen Audretsch	
Family of generalized "pretty good" measurements and the minimal-error pure-state discrimination problems for which they are optimal (8 pages)	032328
Carlos Mochon	
Scheme for atomic-state teleportation between two bad cavities (5 pages)	032329
Shi-Biao Zheng and Guang-Can Guo	
Implications of qudit superselection rules for the theory of decoherence-free subsystems (13 pages)	032330
Mark S. Byrd	
Decoy state quantum key distribution with a photon number resolved heralded single photon source (5 pages)	032331
Tomoyuki Horikiri and Takayoshi Kobayashi	

Quantum key distribution using entangled-photon trains with no basis selection (<i>4 pages</i>)	032332
Kyo Inoue and Hiroki Takesue	
Exact solution of qubit decoherence models by a transfer matrix method (<i>10 pages</i>)	032333
Diu Nghiem and Robert Joynt	
Robust logic gates and realistic quantum computation (<i>5 pages</i>)	032334
Li Xiao and Jonathan A. Jones	
Minimal disturbance measurement for coherent states is non-Gaussian (<i>7 pages</i>)	032335
Ladislav Miřta, Jr.	
Universal quantum data compression via nondestructive tomography (<i>4 pages</i>)	032336
Charles H. Bennett, Aram W. Harrow, and Seth Lloyd	
Efficient implementation of controlled rotations by using entanglement (<i>5 pages</i>)	032337
Ming-Yong Ye, Yong-Sheng Zhang, and Guang-Can Guo	
Dynamics of a pulsed continuous-variable quantum memory (<i>6 pages</i>)	032338
A. Dantan, J. Cviklinski, M. Pinard, and Ph. Grangier	
High-dimensional mode analyzers for spatial quantum entanglement (<i>7 pages</i>)	032339
S. S. R. Oemrawsingh, J. A. de Jong, X. Ma, A. Aiello, E. R. Eliel, G. W. 't Hooft, and J. P. Woerdman	
Propagation of spatially entangled qudits through free space (<i>5 pages</i>)	032340
G. Lima, Leonardo Neves, Ivan F. Santos, J. G. Aguirre Gómez, C. Saavedra, and S. Pádua	
Hitting time for quantum walks on the hypercube (<i>8 pages</i>)	032341
Hari Krovi and Todd A. Brun	
Fidelities for transformations of unknown quantum states (<i>8 pages</i>)	032342
Lars Bojer Madsen and Klaus Mølmer	
Dark-state polaritons for quantum memory in a five-level M -type atomic ensemble (<i>5 pages</i>)	032343
Pengbo Li, Ying Gu, Kai Wang, and Qihuang Gong	
Strong-driving-assisted unconventional geometric logic gate in cavity QED (<i>7 pages</i>)	032344
Chang-Yong Chen, Mang Feng, Xiao-Long Zhang, and Ke-Lin Gao	
Multipartite entanglement in three-mode Gaussian states of continuous-variable systems: Quantification, sharing structure, and decoherence (<i>19 pages</i>)	032345
Gerardo Adesso, Alessio Serafini, and Fabrizio Illuminati	
Entanglement of a qubit coupled to a resonator in the adiabatic regime (<i>6 pages</i>)	032346
Giuseppe Liberti, Rosa Letizia Zaffino, Franco Piperno, and Francesco Plastina	
Atomic and molecular structure and dynamics	
Photoassociation spectroscopy of $^{87}\text{Rb}_2$ ($5s_{1/2}+5p_{1/2}$) 0_g^- long-range molecular states: Analysis by Lu-Fano graph and improved LeRoy-Bernstein formula (<i>7 pages</i>)	032501
H. Jelassi, B. Viaris de Lesegno, and L. Pruvost	
Doubly excited $^{1,3}P^o$ resonance states of Ps^- in weakly coupled plasmas (<i>9 pages</i>)	032502
Sabyasachi Kar and Y. K. Ho	
Calculations of energy levels and lifetimes of low-lying states of barium and radium (<i>8 pages</i>)	032503
V. A. Dzuba and J. S. M. Ginges	

Optical frequency measurements of $6s\ ^2S_{1/2}-6p\ ^2P_{1/2}$ (D_1) transitions in ^{133}Cs and their impact on the fine-structure constant (10 pages)	032504
V. Gerginov, K. Calkins, C. E. Tanner, J. J. McFerran, S. Diddams, A. Bartels, and L. Hollberg	
Recoil corrections in the hydrogen isoelectronic sequence (12 pages)	032505
G. S. Adkins and J. Sapirstein	
Properties of short-range and long-range correlation energy density functionals from electron-electron coalescence (9 pages)	032506
Paola Gori-Giorgi and Andreas Savin	
Large-dimension configuration-interaction calculations of positron binding to the group-II atoms (7 pages)	032507
M. W. J. Bromley and J. Mitroy	
Hyperfine structure in the $4p^55d$ states of ^{83}Kr (5 pages)	032508
Rupesh Silwal and J. R. Brandenberger	
Reliable measurement of the Li-like $^{48}_{22}\text{Ti}\ 1s2s2p\ ^4P_{5/2}$ level lifetime by beam-foil and beam-two-foil experiments (5 pages)	032509
T. Nandi, Nissar Ahmad, A. A. Wani, and P. Marketos	
Estimate of the $\sigma_{KN}^{(I=1)}(0)$ -term value from the energy-level shift of kaonic hydrogen in the ground state (4 pages)	032510
A. N. Ivanov, M. Faber, V. A. Ivanova, J. Marton, and N. I. Troitskaya	
Microwave spectroscopy of autoionizing Ba $5d_{3/2}n\ell$ states (8 pages)	032511
E. S. Shuman and T. F. Gallagher	
Atomic and molecular collisions and interactions	
Trap-induced resonances in controlled collisions of cesium atoms (10 pages)	032701
René Stock and Ivan H. Deutsch	
Ultra low-energy behavior of an ionic replacement reaction $^3\text{He}^4\text{He}^+ + ^4\text{He} \rightarrow ^4\text{He}_2^+ + ^3\text{He}$ (4 pages)	032702
Enrico Bodo and Franco A. Gianturco	
Two-step single-ionization mechanisms (10 pages)	032703
R. W. van Boeyen, N. Watanabe, J. W. Cooper, J. P. Doering, J. H. Moore, and M. A. Coplan	
Exact solution for three particles interacting via zero-range potentials (14 pages)	032704
J. H. Macek, S. Yu Ovchinnikov, and G. Gasaneo	
Radiative lifetimes of metastable states of negative ions (8 pages)	032705
Pontus Andersson, Karin Fritioff, Joakim Sandström, Gerard Collins, Dag Hanstorp, Anna Ellmann, Peter Schef, Peter Lundin, Sven Mannervik, Peder Royen, K. Charlotte Froese Fischer, Fabian Österdahl, Danijela Rostohar, David J. Pegg, N. D. Gibson, Håkan Danared, and Anders Källberg	
Thermalization in mixtures of ultracold gases (6 pages)	032706
M. Anderlini and D. Guéry-Odelin	
Measurement of K -shell photoelectric absorption parameters of Hf, Ta, Au, and Pb by an alternative method using a weak β -particle source (5 pages)	032707
S. V. Nayak and N. M. Badiger	
Electron correlation of one-dimensional H_2 in intense laser fields: Time-dependent extended Hartree-Fock and time-dependent density-functional-theory approaches (7 pages)	032708
Nam A. Nguyen and André D. Bandrauk	

Absolute cross section for $C^{2+}(2s2p\ ^3P^o \rightarrow 2p^2\ ^3P)$ electron-impact excitation (7 pages)	032709
A. Daw, L. D. Gardner, P. H. Janzen, and J. L. Kohl	
Updated single-electron-capture cross-section scaling rule for $A^{q+} + H_2$ collisions (8 pages)	032710
Kevin R. Cornelius	
<i>s</i> -wave elastic scattering of antihydrogen off atomic alkali-metal targets (6 pages)	032711
Prabal K. Sinha and A. S. Ghosh	
Line-resolved <i>M</i> -shell x-ray production cross sections of Pb and Bi induced by highly charged C and F ions (7 pages)	032712
Y. P. Singh, D. Misra, U. Kadhane, and Lokesh C. Tribedi	
Homonuclear ionizing collisions of laser-cooled metastable helium atoms (14 pages)	032713
R. J. W. Stas, J. M. McNamara, W. Hogervorst, and W. Vassen	
Charge-transfer cross sections in collisions of ground-state Ca and H^+ (7 pages)	032714
C. M. Dutta, C. Oubre, P. Nordlander, M. Kimura, and A. Dalgarno	
Characteristic x rays from multiple-electron capture by slow highly charged Ta^{q+} ions from He and Xe atoms (7 pages)	032715
S. Madzunkov, D. Fry, E. Lindroth, and R. Schuch	
Radiative electron capture into high- <i>Z</i> few-electron ions: Alignment of the excited ionic states (8 pages)	032716
Andrey Surzhykov, Ulrich D. Jentschura, Thomas Stöhlker, and Stephan Fritzsche	
Absolute photoionization cross sections for Xe^{4+} , Xe^{5+} , and Xe^{6+} near 13.5 nm: Experiment and theory (10 pages)	032717
A. Aguilar, J. D. Gillaspay, G. F. Gribakin, R. A. Phaneuf, M. F. Gharaibeh, M. G. Kozlov, J. D. Bozek, and A. L. D. Kilcoyne	
Resonant Auger spectroscopy of metastable molecular oxygen (8 pages)	032718
Hossein Farrokhpour, Michele Alagia, Marcello Coreno, Monica de Simone, Kevin C. Prince, Robert Richter, Stefano Stranges, and Mahmoud Tabrizchi	
Internal conversion and the photoelectric effect (11 pages)	032719
Allan H. Sørensen	
Dissociative recombination of Ne_2^+ molecular ions (11 pages)	032720
V. Ngassam and A. E. Orel	
Numerically solvable model for resonant collisions of electrons with diatomic molecules (12 pages)	032721
Karel Houfek, T. N. Rescigno, and C. W. McCurdy	
Excitations of light atoms during nuclear reactions with fast neutrons (9 pages)	032722
James D. Talman and Alexei M. Frolov	
Asymptotic properties of the three-Coulomb-center problem eZ_1ZZ (15 pages)	032723
V. Yu. Lazur, M. V. Khoma, and R. K. Janev	
Exact diagrammatic approach for dimer-dimer scattering and bound states of three and four resonantly interacting particles (14 pages)	032724
I. V. Brodsky, M. Yu. Kagan, A. V. Klaptsov, R. Combescot, and X. Leyronas	
Many-body interactions in a sample of ultracold Rydberg atoms with varying dimensions and densities (5 pages)	032725
Thomas J. Carroll, Shubha Sunder, and Michael W. Noel	

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

Photoelectron emission from metal surfaces by ultrashort laser pulses (<i>7 pages</i>)	032901
M. N. Faraggi, M. S. Gravielle, and V. M. Silkin	
Spatial decoherence near metallic surfaces (<i>9 pages</i>)	032902
R. Fermani, S. Scheel, and P. L. Knight	
Charge-transfer rates for xenon Rydberg atoms at a metal surface (<i>5 pages</i>)	032903
S. Wetekam, H. R. Dunham, J. C. Lancaster, and F. B. Dunning	

PART B**Clusters (including fullerenes)**

Cluster explosion investigated by linearly chirped spectral scattering of an expanding plasma sphere (<i>8 pages</i>)	033201
Jiansheng Liu, Cheng Wang, Bingchen Liu, Bin Shuai, Wentao Wang, Yi Cai, Hongyu Li, Guoquan Ni, Ruxin Li, and Zhizhan Xu	
Coulomb explosions and stopping of molecular ions channeled through carbon nanotubes (<i>8 pages</i>)	033202
Da-Peng Zhou, Yuan-Hong Song, You-Nian Wang, and Z. L. Mišković	
Coulomb explosion induced by intense ultrashort laser pulses in two-dimensional clusters (<i>12 pages</i>)	033203
Vincent Mijoule, Laurent J. Lewis, and Michel Meunier	

Atomic and molecular processes in external fields

Three-body recombination for electrons in a strong magnetic field: Magnetic moment (<i>5 pages</i>)	033401
F. Robicheaux	
Inelastic scattering of light by a cold trapped atom: Effects of the quantum center-of-mass motion (<i>10 pages</i>)	033402
Marc Bienert, Wolfgang Merkel, and Giovanna Morigi	
Coherent creation and annihilation of rotational wave packets in incoherent ensembles (<i>6 pages</i>)	033403
Kevin F. Lee, E. A. Shapiro, D. M. Villeneuve, and P. B. Corkum	
Coherent manipulation of atoms by copropagating laser beams (<i>10 pages</i>)	033404
Yuri B. Ovchinnikov	
Alignment enhancement by the combination of a short and a long laser pulse (<i>7 pages</i>)	033405
Mikael D. Poulsen, Tine Ejdrup, Henrik Stapelfeldt, Edward Hamilton, and Tamar Seideman	
S-matrix theory of inelastic vibronic ionization of molecules in intense laser fields (<i>9 pages</i>)	033406
A. Requate, A. Becker, and F. H. M. Faisal	
Geometrical dependence in photoionization of H_2^+ in high-intensity, high-frequency, ultrashort laser pulses (<i>8 pages</i>)	033407
S. Selstø, J. F. McCann, M. Førre, J. P. Hansen, and L. B. Madsen	
Making ultracold molecules in a two-color pump-dump photoassociation scheme using chirped pulses (<i>13 pages</i>)	033408
Christiane P. Koch, Eliane Luc-Koenig, and Françoise Masnou-Seeuws	
Coherent amplification in laser cooling and trapping (<i>9 pages</i>)	033409
Tim Freegarde, Geoff Daniell, and Danny Segal	

Time-dependent theoretical description of molecular autoionization produced by femtosecond xuv laser pulses (12 pages)	033410
José Luis Sanz-Vicario, Henri Bachau, and Fernando Martín	
Influence of a dc offset field on kicked quasi-one-dimensional Rydberg atoms: Stabilization and frustrated field ionization (7 pages)	033411
S. Yoshida, C. O. Reinhold, J. Burgdörfer, W. Zhao, J. J. Mestayer, J. C. Lancaster, and F. B. Dunning	
Fluorescence profiles and cooling dynamics of laser-cooled Mg^+ ions in a linear rf ion trap (6 pages)	033412
XianZhen Zhao, Vladimir L. Ryjkov, and Hans A. Schuessler	
Interferences of real trajectories and the emergence of quantum features in electron-atom scattering in a strong laser field (7 pages)	033413
A. Čerkić and D. B. Milošević	
Spin-exchange frequency shift in alkali-metal-vapor cell frequency standards (5 pages)	033414
Salvatore Micalizio, Aldo Godone, Filippo Levi, and Jacques Vanier	
Intense slow beams of bosonic potassium isotopes (9 pages)	033415
J. Catani, P. Maioli, L. De Sarlo, F. Minardi, and M. Inguscio	
Mode-selective excitation using ultrafast chirped laser pulses (4 pages)	033416
S. A. Malinovskaya	
Coupled dynamics of atoms and radiation-pressure-driven interferometers (10 pages)	033417
D. Meiser and P. Meystre	
Field-free one-dimensional alignment of ethylene molecule (9 pages)	033418
A. Rouzée, S. Guérin, V. Boudon, B. Lavorel, and O. Faucher	
Impact of the laser magnetic field on recombination and bremsstrahlung radiation from atomic ionization rescattering in ultraintense fields (6 pages)	033419
I. Ghebregziabiher, S. Palaniyappan, J. MacDonald, and B. C. Walker	
Realization of the kicked atom at high scaled frequencies (6 pages)	033420
C. O. Reinhold, S. Yoshida, J. Burgdörfer, W. Zhao, J. J. Mestayer, J. C. Lancaster, and F. B. Dunning	
Predictions of laser-cooling temperatures for multilevel atoms in three-dimensional polarization-gradient fields (9 pages)	033421
Josh W. Dunn and Chris H. Greene	
Matter waves	
Splitting and merging an elongated Bose-Einstein condensate at finite temperature (7 pages)	033601
A. Mebrahtu, A. Sanpera, and M. Lewenstein	
Elastic scattering losses from colliding Bose-Einstein condensates (10 pages)	033602
Paweł Ziń, Jan Chwedeńczuk, and Marek Trippenbach	
Instability-induced localization of matter waves in moving optical lattices (6 pages)	033603
Beata J. Dąbrowska, Elena A. Ostrovskaya, and Yuri S. Kivshar	
Superradiance from hydrodynamic vortices: A numerical study (5 pages)	033604
F. Federici, C. Cherubini, S. Succi, and M. P. Tosi	
Lattice of double wells for manipulating pairs of cold atoms (9 pages)	033605
J. Sebby-Strabley, M. Anderlini, P. S. Jessen, and J. V. Porto	

Finite-temperature properties of quasi-two-dimensional Bose-Einstein condensates (<i>6 pages</i>)	033606
Kwangsik Nho and D. P. Landau	
Properties of trapped Bose gas with vortices in large-gas-parameter regime (<i>9 pages</i>)	033607
Arup Banerjee and Manoranjan P. Singh	
Analytical study of resonant transport of Bose-Einstein condensates (<i>12 pages</i>)	033608
K. Rapedius, D. Witthaut, and H. J. Korsch	
Density-functional theory of strongly correlated Fermi gases in elongated harmonic traps (<i>10 pages</i>)	033609
Gao Xianlong, Marco Polini, Reza Asgari, and M. P. Tosi	
Measurement of atomic diffraction phases induced by material gratings (<i>5 pages</i>)	033610
John D. Perreault and Alexander D. Cronin	
Critical fluctuations in a soliton formation of attractive Bose-Einstein condensates (<i>13 pages</i>)	033611
Rina Kanamoto, Hiroki Saito, and Masahito Ueda	
One-dimensional gas of bosons with Feshbach-resonant interactions (<i>20 pages</i>)	033612
V. Gurarie	
Rotating Bose-Einstein condensates confined in an anharmonic potential (<i>7 pages</i>)	033613
S. Bargi, G. M. Kavoulakis, and S. M. Reimann	
Dynamical selection in developing fermionic pairing (<i>16 pages</i>)	033614
R. A. Barankov and L. S. Levitov	
Universality in phase transitions for ultracold fermionic atoms (<i>31 pages</i>)	033615
S. Diehl and C. Wetterich	
Tunneling of ultracold Bose gases in multiple wells (<i>10 pages</i>)	033616
Rosario Paredes	
Itinerant-localized dual character of a strongly correlated superfluid Bose gas in an optical lattice (<i>5 pages</i>)	033617
Y. Ohashi, M. Kitaura, and H. Matsumoto	
Recurrence tracking microscope (<i>4 pages</i>)	033618
Farhan Saif	
Adiabatic radio-frequency potentials for the coherent manipulation of matter waves (<i>5 pages</i>)	033619
I. Lesanovsky, T. Schumm, S. Hofferberth, L. M. Andersson, P. Krüger, and J. Schmiedmayer	
Sound velocity and dimensional crossover in a superfluid Fermi gas in an optical lattice (<i>8 pages</i>)	033620
T. Koponen, J.-P. Martikainen, J. Kinnunen, and P. Törmä	
Laser probing of the single-particle energy gap of a Bose gas in an optical lattice in the Mott-insulator phase (<i>12 pages</i>)	033621
S. Konabe, T. Nikuni, and M. Nakamura	
Continuous propagation and energy filtering of a cold atomic beam in a long high-gradient magnetic atom guide (<i>12 pages</i>)	033622
Spencer E. Olson, Rahul R. Mhaskar, and Georg Raithel	
Quantum optics, physics of lasers, nonlinear optics	
Characterization of the collisionally pumped optical-field-ionized soft-x-ray laser at 41.8 nm driven in capillary tubes (<i>12 pages</i>)	033801
B. Cros, T. Mocek, I. Bettaibi, G. Vieux, M. Farinet, J. Dubau, S. Sebban, and G. Maynard	

Non-Markovian decay of a three-level Λ -type atom in a photonic-band-gap reservoir (6 pages)	033802
Xiangqian Jiang, Yongyuan Jiang, Yunliang Wang, and Xiudong Sun	
Dark-line atomic resonances in a submicron-thin Rb vapor layer (7 pages)	033803
A. Sargsyan, D. Sarkisyan, and A. Papoyan	
Transverse oscillation in laser cavities (6 pages)	033804
Gin-yih Tsaur and Jyhpyng Wang	
Validity of adiabaticity in cavity QED (11 pages)	033805
J. Larson and S. Stenholm	
Storage and retrieval of light pulses in atomic media with “slow” and “fast” light (5 pages)	033806
A. Lezama, A. M. Akulshin, A. I. Sidorov, and P. Hannaford	
Theoretical and experimental study of stochastic effects on polarization rotation in a vectorial bistable laser (13 pages)	033807
Kamal P. Singh, Guy Ropars, Marc Brunel, and Albert Le Floch	
Homodyne measurement of the average photon number (7 pages)	033808
J. G. Webb, T. C. Ralph, and E. H. Huntington	
Optimizing the performance of nickel-like collisionally pumped x-ray lasers (10 pages)	033809
G. J. Pert	
Quadrature entanglement and photon-number correlations accompanied by phase-locking (9 pages)	033810
H. H. Adamyan, N. H. Adamyan, S. B. Manvelyan, and G. Yu. Kryuchkyan	
Coherent phenomena due to double-dark states in a system with decay interference (8 pages)	033811
Antonios Fountoulakis, Andreas F. Terzis, and Emmanuel Paspalakis	
Quantum manipulation of two-color stationary light: Quantum wavelength conversion (9 pages)	033812
S. A. Moiseev and B. S. Ham	
Photon frequency-mode matching using acousto-optic frequency beam splitters (5 pages)	033813
Nick S. Jones and T. M. Stace	
Highly nonclassical photon statistics in parametric down-conversion (4 pages)	033814
Edo Waks, Barry C. Sanders, Eleni Diamanti, and Yoshihisa Yamamoto	
Asymmetric properties between the forward and backward stimulated emission generated by ultrafast three- and four-photon excitation (10 pages)	033815
Guang S. He, Changgui Lu, Qingdong Zheng, Alexander Baev, Marek Samoc, and Paras N. Prasad	
Simulations of the output of the Ne-like Ti x-ray laser at 32.6 nm driven by the grazing-incidence pumping scheme (5 pages)	033816
J. Zhao, Q. L. Dong, F. Yan, and J. Zhang	
Frequency conversion of an entangled state (6 pages)	033817
Aihong Tan, Xiaojun Jia, and Changde Xie	
Generation of cluster states (6 pages)	033818
Ping Dong, Zheng-Yuan Xue, Ming Yang, and Zhuo-Liang Cao	
Beating quantum limits in an optomechanical sensor by cavity detuning (8 pages)	033819
O. Arcizet, T. Briant, A. Heidmann, and M. Pinard	
All-optical digital logic: Full addition or subtraction on a three-state system (7 pages)	033820
F. Remacle and R. D. Levine	

Optimal phase measurements with pure Gaussian states (<i>8 pages</i>)	033821
Alex Monras	
Coherent generation of EPR-entangled light pulses mediated by a single trapped atom (<i>11 pages</i>)	033822
Giovanna Morigi, Jürgen Eschner, Stefano Mancini, and David Vitali	
Properties of entangled photon pairs generated in one-dimensional nonlinear photonic-band-gap structures (<i>13 pages</i>)	033823
Jan Peřina, Jr., Marco Centini, Concita Sibilila, Mario Bertolotti, and Michael Scalora	

BRIEF REPORTS**Fundamental concepts**

Enhanced effect of temporal variation of the fine-structure constant in diatomic molecules (<i>2 pages</i>)	034101
V. V. Flambaum	
Possibility of 0-g-factor paramagnetic molecules for measurement of the electron's electric dipole moment (<i>3 pages</i>)	034102
Neil E. Shafer-Ray	

Quantum information

Feed-forward and its role in conditional linear optical quantum dynamics (<i>4 pages</i>)	034301
S. Scheel, W. J. Munro, J. Eisert, K. Nemoto, and P. Kok	
Loss of purity by wave-packet scattering at low energies (<i>3 pages</i>)	034302
Jia Wang, C. K. Law, and M.-C. Chu	
Entangled-state cryptographic protocol that remains secure even if nonlocal hidden variables exist and can be measured with arbitrary precision (<i>2 pages</i>)	034303
Diederik Aerts, Marek Czachor, and Marcin Pawłowski	
Unitary evolution from the static structure of quantum theory and the no-signaling condition (<i>3 pages</i>)	034304
M. Ferrero, D. Salgado, and J. L. Sánchez-Gómez	
Superposition and entanglement of mesoscopic squeezed vacuum states in cavity QED (<i>4 pages</i>)	034305
Chang-yong Chen, Mang Feng, and Ke-Lin Gao	
Characterization of multiqubit pure-state entanglement (<i>3 pages</i>)	034306
Zeqian Chen and Quanhua Xu	
Boundary effect of deterministic dense coding (<i>3 pages</i>)	034307
Zhengfeng Ji, Yuan Feng, Runyao Duan, and Mingsheng Ying	

Atomic and molecular structure and dynamics

Ramsauer-Townsend effect in muonic atom scattering (<i>4 pages</i>)	034501
F. Mulhauser, A. Adamczak, G. A. Beer, V. M. Bystritsky, M. Filipowicz, M. C. Fujiwara, T. M. Huber, O. Huot, R. Jacot-Guillarmod, P. Kammel, S. K. Kim, P. E. Knowles, A. R. Kunselman, G. M. Marshall, A. Olin, C. Petitjean, T. A. Porcelli, L. A. Schaller, V. A. Stolupin, J. Woźniak, and J. Zmeskal (TRIUMF Muonic Hydrogen Collaboration)	
Nuclear charge radius for ^3He (<i>3 pages</i>)	034502
Donald C. Morton, Qixue Wu, and G. W. F. Drake	

Atomic and molecular collisions and interactions

Photodetachment of He^- near the $1s$ threshold: Absolute cross-section measurements and postcollision interactions (<i>4 pages</i>)	034701
R. C. Bilodeau, J. D. Bozek, G. D. Ackerman, A. Aguilar, and N. Berrah	
Transmission effects in unfolding electronic-vibrational electron-molecule energy-loss spectra (<i>4 pages</i>)	034702
Shiyang Wang, Paul V. Johnson, Charles P. Malone, Isik Kanik, and Murtadha A. Khakoo	
Motion in an ultralong-range potential in cold-Rydberg-atom collisions (<i>3 pages</i>)	034703
V. A. Nascimento, M. Reetz-Lamour, L. L. Caliri, A. L. de Oliveira, and L. G. Marcassa	

Atomic and molecular processes in external fields

Half-cycle pulse ionization of Ba^+ Rydberg ions (<i>4 pages</i>)	035401
X. Zhang and R. R. Jones	
Evaporation of an atomic beam on a material surface (<i>3 pages</i>)	035402
G. Reinaudi, T. Lahaye, A. Couvert, Z. Wang, and D. Guéry-Odelin	

Matter waves

Stimulated Raman adiabatic passage from atomic to molecular Bose-Einstein condensates: Feedback laser-detuning control and suppression of dynamical instability (<i>4 pages</i>)	035601
Jing Cheng, Shensheng Han, and YiJing Yan	
Tunnelling dynamics of a Bose-Einstein condensate in a four-well loop-shaped system (<i>4 pages</i>)	035602
Simone De Liberato and Christopher J. Foot	

Quantum optics, physics of lasers, nonlinear optics

Spin-degenerate two-level atoms in on-resonance partially polarized light (<i>4 pages</i>)	035801
A. Shevchenko, M. Kaivola, and J. Javanainen	

ERRATA

Publisher's Note: Assumptions that imply quantum dynamics is linear [Phys. Rev. A 73 , 022101 (2006)] (<i>1 page</i>)	039901(E)
Thomas F. Jordan	
Publisher's Note: Quantum nondemolition measurements for quantum information [Phys. Rev. A 73 , 012113 (2006)] (<i>1 page</i>)	039902(E)
T. C. Ralph, S. D. Bartlett, J. L. O'Brien, G. J. Pryde, and H. M. Wiseman	
Erratum: Optically induced forces and torques: Interactions between nanoparticles in a laser beam [Phys. Rev. A 72 , 033816 (2005)] (<i>1 page</i>)	039903(E)
D. S. Bradshaw and D. L. Andrews	
Erratum: Vacuum force on an atom in a magnetodielectric cavity [Phys. Rev. A 72 , 034104 (2005)] (<i>1 page</i>)	039904(E)
M. S. Tomaš	
Erratum: Engineering vortex rings and systems for controlled studies of vortex interactions in Bose-Einstein condensates [Phys. Rev. A 72 , 063626 (2005)] (<i>1 page</i>)	039905(E)
Janne Ruostekoski and Zachary Dutton	

CONTENTS - *Continued*

PHYSICAL REVIEW A

THIRD SERIES, VOLUME 73, NUMBER 3

MARCH 2006

Erratum: UV light from the ground term of Ti-like ytterbium, tungsten, and bismuth [Phys. Rev. A 61 , 054501 (2000)] (<i>1 page</i>)	039906(E)
J. V. Porto, I. Kink, and J. D. Gillaspay	
Publisher's Note: Tsirelson bounds for generalized Clauser-Horne-Hold inequalities [Phys. Rev. A 73 , 022110 (2006)] (<i>1 page</i>)	039907(E)
Stephanie Wehner	
Publisher's Note: Stark-induced magnetic anapole moment in the ground state of the relativistic hydrogenlike atom: Application of the Sturmian expansion of the generalized Dirac-Coulomb Green function [Phys. Rev. A 73 , 022511 (2005)] (<i>1 page</i>)	039908(E)
Krzysztof Mielewczyk and Radosław Szmytkowski	
Publisher's Note: Stopping power for swift dressed ions [Phys. Rev. A 73 , 024901 (2006)] (<i>1 page</i>)	039909
C. C. Montanari and J. E. Miraglia	