

IOPscience

2007 Highlights

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2007 has once again been an exciting year for Journal of Physics B: Atomic, Molecular and Optical Physics (*J. Phys. B*). We have worked behind the scenes to lay the basis of a new article numbering scheme that has in turn enabled us to present our research papers in eight subject categories. These production and editorial changes have been accompanied by 'cosmetic' changes which had been long awaited: the change of format and a new journal cover. We hope you will appreciate our continued efforts to try and respond to your needs and requests. We look forward to meeting you at various conferences throughout the year and to receiving your feedback on the journal and the status of your research.

J. Phys. B's 2007 Highlights are the result of a personal selection of the Editorial Board Members, who wanted to present the breadth of the research that the journal publishes. On behalf of the Editorial Board Members, I hope that you enjoy reading this selection of articles. If you have any questions about these Highlights or about *J. Phys. B*, please contact the journal team at jphysb@iop.org.

With best wishes, Isabelle Auffret-Babak Publisher, Journal of Physics B: Atomic, Molecular and Optical Physics

You can also view the Highlights of 2005 (<http://iopscience.iop.org/0953-4075/page/2005%20highlights>) and of 2006 (<http://iopscience.iop.org/0953-4075/page/2006%20highlights>)

FAST TRACK COMMUNICATIONS

B-Spline R-matrix calculations for the spin asymmetry function in electron-impact excitation of argon and krypton (<http://iopscience.iop.org/0953-4075/40/4/F01>)

Klaus Bartschat and Oleg Zatsarinny
J. Phys. B: At. Mol. Opt. Phys. **40** No 4 (28 February 2007) F43-F49

Input–output relations for multiport ring cavities (<http://iopscience.iop.org/0953-4075/40/4/F03>)

Matteo G A Paris
J. Phys. B: At. Mol. Opt. Phys. **40** No 4 (28 February 2007) F63-F68

Loading chromium atoms in a magnetic guide (<http://iopscience.iop.org/0953-4075/40/5/F01>)

A Greiner, J Sebastian, P Rehme, A Aghajani-Talesh, A Griesmaier and T Pfau
J. Phys. B: At. Mol. Opt. Phys. **40** No 5 (14 March 2007) F77-F84

Attosecond photoelectron interference in the separable Coulomb–Volkov continuum (<http://iopscience.iop.org/0953-4075/40/5/F03>)

G L Yudin, S Patchkovskii, P B Corkum and A D Bandrauk
J. Phys. B: At. Mol. Opt. Phys. **40** No 5 (14 March 2007) F93-F103

Strongly enhanced high-harmonic generation via antisymmetric ionic states (<http://iopscience.iop.org/0953-4075/40/6/F02>)

R Fischer, M Lein and C H Keitel
J. Phys. B: At. Mol. Opt. Phys. **40** No 6 (28 March 2007) F113-F119

Evidence of triple collision dynamics in partial photo-ionization cross sections of helium (<http://iopscience.iop.org/0953-4075/40/8/F01>)

Gregor Tanner, Nark Nyul Choi, Min-Ho Lee, Achim Czasch and Reinhard Dörner
J. Phys. B: At. Mol. Opt. Phys. **40** No 8 (28 April 2007) F157-F165

Direct evidence for channel-coupling effects in molecules: electron impact excitation of the $a''\ 1\Sigma^+g$ state of N_2 (<http://iopscience.iop.org/0953-4075/40/10/F01>)

M A Khakoo, S Wang, R Laher, P V Johnson, C P Malone and I Kanik
J. Phys. B: At. Mol. Opt. Phys. **40** No 10 (28 May 2007) F167-F173

Coulomb–laser coupling in laser-assisted photoionization and molecular tomography (<http://iopscience.iop.org/0953-4075/40/13/F01>)

O Smirnova, A S Mouritzen, S Patchkovskii and M Yu Ivanov
J. Phys. B: At. Mol. Opt. Phys. **40** No 13 (14 July 2007) F197-F206

Radio frequency field-induced persistent long-range ordered structures in two-species ion Coulomb crystals (<http://iopscience.iop.org/0953-4075/40/15/F01>)

A Mortensen, E Nielsen, T Matthey and M Drewsen
J. Phys. B: At. Mol. Opt. Phys. **40** No 15 (14 August 2007) F223-F229

Mean-field description of ultracold bosons on disordered two-dimensional optical lattices (<http://iopscience.iop.org/0953-4075/40/17/F02>)

Pierfrancesco Buonsante, Francesco Massel, Vittorio Penna and Alessandro Vezzani
J. Phys. B: At. Mol. Opt. Phys. **40** No 17 (14 September 2007) F265-F273

An attosecond time-resolved study of strong-field atomic photoionization (<http://iopscience.iop.org/0953-4075/40/21/F02>)

A K Kazansky and N M Kabachnik
J. Phys. B: At. Mol. Opt. Phys. **40** No 21 (14 November 2007) F299-F305

TOPICAL REVIEWS

Classical fields approximation for bosons at nonzero temperatures (<http://iopscience.iop.org/0953-4075/40/2/R01>)

Mirosław Benczyk, Mariusz Gajda and Krzysztof Rzążewski
J. Phys. B: At. Mol. Opt. Phys. **40** No 2 (28 January 2007) R1-R37

The time-dependent close-coupling method for atomic and molecular collision processes (<http://iopscience.iop.org/0953-4075/40/7/R01>)

M S Pindzola, F Robicheaux, S D Loch, J C Berengut, T Topcu, J Colgan, M Foster, D C Griffin, C P Ballance, D R Schultz, T Minami, N R Badnell, M C Witthoef, D R Plante, D M Mitnik, J A Ludlow and U Kleiman
J. Phys. B: At. Mol. Opt. Phys. **40** No 7 (14 April 2007) R39-R60

A bosonic Josephson junction

(<http://iopscience.iop.org/0953-4075/40/10/R01>) R Gati and M K Oberthaler
J. Phys. B: At. Mol. Opt. Phys. **40** No 10 (28 May 2007) R61-R89

Molecular imaging using recolliding electrons (<http://iopscience.iop.org/0953-4075/40/16/R01>)

Manfred Lein
J. Phys. B: At. Mol. Opt. Phys. **40** No 16 (28 August 2007) R135-R173

High-order harmonic generation in a laser plasma: a review of recent achievements (<http://iopscience.iop.org/0953-4075/40/22/R01>)

R A Ganeev
J. Phys. B: At. Mol. Opt. Phys. **40** No 22 (28 November 2007) R213-R253

TUTORIALS

Generation of a dipolar Bose–Einstein condensate (<http://iopscience.iop.org/0953-4075/40/14/R01>)

Axel Griesmaier
J. Phys. B: At. Mol. Opt. Phys. **40** No 14 (28 July 2007) R91-R134

Quantum optimal control theory (<http://iopscience.iop.org/0953-4075/40/18/R01>)

J Werschnik and E K U Gross
J. Phys. B: At. Mol. Opt. Phys. **40** No 18 (28 September 2007) R175-R211

SPECIAL ISSUE ARTICLES

Universal dynamical decoherence control of noisy single- and multi-qubit systems (<http://iopscience.iop.org/0953-4075/40/9/S04>)

Goren Gordon, Noam Erez and Gershon Kurizki
J. Phys. B: At. Mol. Opt. Phys. **40** No 9 (14 May 2007) S75-S93

Optimal control of quantum gates and suppression of decoherence in a system of interacting two-level particles (<http://iopscience.iop.org/0953-4075/40/9/S06>)

Matthew Grace, Constantin Brif, Herschel Rabitz, Ian A Walmsley, Robert L Kosut and Daniel A Lidar
J. Phys. B: At. Mol. Opt. Phys. **40** No 9 (14 May 2007) S103-S125

Implementing a neutral atom Rydberg gate without populating the Rydberg state (<http://iopscience.iop.org/0953-4075/40/9/S09>)

E Brion, L H Pedersen and K Mølmer
J. Phys. B: At. Mol. Opt. Phys. **40** No 9 (14 May 2007) S159-S166

Transient nanoplasmonics inside dielectrics (<http://iopscience.iop.org/0953-4075/40/11/S03>)

P P Rajeev, M Gertsvolf, C Hnatovsky, E Simova, R S Taylor, P B Corkum, D M Rayner and V R Bhardwaj
J. Phys. B: At. Mol. Opt. Phys. **40** No 11 (14 June 2007) S273-S282

PAPERS

Ultrafast imaging of multielectronic dissociative ionization of CO₂ in an intense laser field (<http://iopscience.iop.org/0953-4075/40/1/011>)

J P Brichta, S J Walker, R Helsten and J H Sanderson
J. Phys. B: At. Mol. Opt. Phys. **40** No 1 (14 January 2007) 117-129

Alignment-dependent above-threshold ionization of molecules (<http://iopscience.iop.org/0953-4075/40/1/022>)

Thomas Kim Kjeldsen and Lars Bojer Madsen
J. Phys. B: At. Mol. Opt. Phys. **40** No 1 (14 January 2007) 237-245

Solution of the radial Schrödinger equation for the potential family using the asymptotic iteration method (<http://iopscience.iop.org/0953-4075/40/3/009>)

M Aygun, O Bayrak and I Boztosun
J. Phys. B: At. Mol. Opt. Phys. **40** No 3 (14 February 2007) 537-544

Many-electron model for multiple ionization in atomic collisions

(<http://iopscience.iop.org/0953-4075/40/5/010>) C D Archubi, C C Montanari and J E Miraglia
J. Phys. B: At. Mol. Opt. Phys. **40** No 5 (14 March 2007) 943-954

Nodal structure of Schrödinger wavefunction: general results and specific models (<http://iopscience.iop.org/0953-4075/40/5/003>)

Arne Lüchow and Tony C Scott
J. Phys. B: At. Mol. Opt. Phys. **40** No 5 (14 March 2007) 851-867

Time-dependent theory of double ionization of helium under XUV radiation (<http://iopscience.iop.org/0953-4075/40/7/004>)

L A A Nikolopoulos and P Lambropoulos
J. Phys. B: At. Mol. Opt. Phys. **40** No 7 (14 April 2007) 1347-1357

Excitation of atoms by high-energy photons (<http://iopscience.iop.org/0953-4075/40/8/004>)

E G Drukarev, A I Mikhailov, I A Mikhailov and W Scheid
J. Phys. B: At. Mol. Opt. Phys. **40** No 8 (28 April 2007) 1501-1507

Narrow bandwidth electromagnetically induced transparency in optically trapped atoms

(<http://iopscience.iop.org/0953-4075/40/10/023>) Bernd Kaltenhäuser, Harald Kübler, Andreas Chromik, Jürgen Stuhler, Tilman Pfau and Atac Imamoglu
J. Phys. B: At. Mol. Opt. Phys. **40** No 10 (28 May 2007) 1907-1915

A simple parameter-free wavefunction for the ground state of two-electron atoms (<http://iopscience.iop.org/0953-4075/40/13/013>)

L U Ancarani, K V Rodriguez and G Gasaneo
J. Phys. B: At. Mol. Opt. Phys. **40** No 13 (14 July 2007) 2695-2702

Intense-field dissociation dynamics of D+2 molecular ions using ultrafast laser pulses (<http://iopscience.iop.org/0953-4075/40/13/007>)

J McKenna, M Suresh, D S Murphy, W A Bryan, L-Y Peng, S L Stebbings, E M L English, J Wood, B Srigengan, I C E Turcu, J L Collier, J F McCann, W R Newell and I D Williams
J. Phys. B: At. Mol. Opt. Phys. **40** No 13 (14 July 2007) 2607-2619

Thermalization of magnetized electrons from black body radiation

(<http://iopscience.iop.org/0953-4075/40/15/013>) F Robicheaux and J Fajans
J. Phys. B: At. Mol. Opt. Phys. **40** No 15 (14 August 2007) 3143-3152

Absolute angle-differential elastic and vibrational excitation cross sections for electron collisions with tetrahydrofuran

(<http://iopscience.iop.org/0953-4075/40/17/020>) M Allan
J. Phys. B: At. Mol. Opt. Phys. **40** No 17 (14 September 2007) 3531-3544

Quasi-angular momentum of Bose and Fermi gases in rotating optical lattices (<http://iopscience.iop.org/0953-4075/40/18/012>)

Brandon M Peden, Rajiv Bhat, Meret Krämer and Murray J Holland
J. Phys. B: At. Mol. Opt. Phys. **40** No 18 (28 September 2007) 3725-3744

Investigation of a radio-frequency inductive-coupled-plasma discharge afterglow in noble gases (<http://iopscience.iop.org/0953-4075/40/19/003>)

C A DeJoseph Jr, V I Demidov, J Blessington and M E Koepke
J. Phys. B: At. Mol. Opt. Phys. **40** No 19 (14 October 2007) 3823-3833

Molecular Bose-Einstein condensation in a versatile low power crossed dipole trap (<http://iopscience.iop.org/0953-4075/40/20/011>)

J Fuchs, G J Duffy, G Veeravalli, P Dyke, M Bartenstein, C J Vale, P Hannaford and W J Rowlands
J. Phys. B: At. Mol. Opt. Phys. **40** No 20 (28 October 2007) 4109-4118

Light transfer control and diffraction management in circular fibre waveguide arrays

(<http://iopscience.iop.org/0953-4075/40/23/008>) Stefano Longhi
J. Phys. B: At. Mol. Opt. Phys. **40** No 23 (14 December 2007) 4477-4492

Ground state and quadrupole excitations of anisotropically trapped Fermi superfluids with arbitrary atom numbers in the BCS-BEC crossover (<http://iopscience.iop.org/0953-4075/40/24/004>)

Li Zhou, C R Ma and Yong-li Ma
J. Phys. B: At. Mol. Opt. Phys. **40** No 24 (28 December 2007) 4591-4604