



## The second National meeting on Quantum, Atomic, Molecular and Plasma Physics will be held at the Open University, Milton Keynes, September 19<sup>th</sup> - 22<sup>nd</sup> 2005



**Registration now open! (closes on Fri 19th August)**

### Related Links



Institute of Physics

DAMOPP



**Bursaries available! See below for more information.**

In 2001 the EPSRC organised a Forward Look at Atomic and Molecular Physics Research in the UK. The final report (now available on the EPSRC Physics Programme web site at <http://www.epsrc.ac.uk/>) stated that in order to reintegrate the UK atomic and molecular physics community, and to promote alliances with other related communities, it reinstated a national conference in AM and related physics. In addition it suggested that a Summer School in Atomic and Molecular

Physics for all newly starting PhD students would be highly beneficial in addressing quality issues, and offer excellent use of advanced teaching resources.

The [Institute of Physics Division of Atomic Molecular Optical and Plasma Physics \(DAMOPP\)](#) has therefore now undertaken the task of organising a biannual National meeting and summer school.

The DAMOPP division includes the following affiliated IoP Groups:-

Atomic and Molecular Interactions Group (AMIG)

Chemical Physics Group (Molecular Physics Group)

Plasma Physics Group (PPG)

Quantum Electronics and Photonics Group (QEPG)

Spectroscopy Group (SG)

Each of these Groups at present hold their own individual National Meetings of varying size and duration. However in cognisance of the Look Forward recommendation above to reinstate a National Meeting, they agreed to co-ordinate their conference activities to form one weeklong meeting on Quanta, Atoms, Molecules Ions and Plasmas (QuAMP) in September 2003. This was attended by nearly 200 participants at the Open University, September 7 - 11 2003 (see the post-conference version of the [QuAMP I web site](#) here)

In 2005 QuAMP II is being organised as a 'summer school' with a series of lectures being given by selected UK academics on topical areas of current research in atomic, molecular, optical, plasma and quantum physics. The school will run from 1400 on Monday September 19<sup>th</sup> (registration from 1200) to 1730 on Thursday September 22<sup>nd</sup> and in addition to lectures, will contain a poster session on Tuesday. A conference dinner will be held on Wednesday evening September 21<sup>st</sup>. A full programme is available via the menu. For further details, contact

**[The Conference Secretary \(click here\)](#)**

**Sponsorship supporting accommodation and travel is available for delegates to attend QuAMP II.**

### Student Bursaries

Students attending may receive financial support from the EPSRC to attend the meeting. Numbers are however limited to ~100 and preference will be given to those who register early to attend the meeting. A condition of such support is that they must attend the whole meeting and are strongly encouraged to present a poster on their work (however preliminary). Students must send a signed letter from their supervisor (or other appropriate authority) confirming their student status and their means of support (e.g. EPSRC student, institution studentship, EU award etc) to the Conference Secretary.

### Support for non student participants:

Other participants (PDRAs and Staff), not in receipt of EPSRC Network support, may also receive support. Again numbers are limited and early registration is advised. Should you wish to apply for support please write to the Conference Secretary with a formal request. You should be prepared to present a poster or short presentation (so called Hot Topics) and should give an estimate of your travel and accommodation expenses together with any partial support you have received. The organisers wish to provide support to as many attendees as possible so will preferentially provide partial support to a larger number of attendees in contrast to full support for a small number of attendees.



Related Links



Institute of Physics

DAMOPP



## Posters



The Open University



POSTERS &  
DISPLAY BOARDS

Posters should be A0 Landscape (118cm wide and 84cm tall).

The poster session is on Tuesday 20<sup>th</sup> from 1730 to approximately 2000 in the Old Lecture Theatre with a buffet in the neighbouring Theatre Bar.

Prizes of £50 will be awarded for the best posters. Velcro fasteners will be available.

Name Miss Mihaela Ghita  
Title Hydrogen diffusion in silicon  
[Open abstract in a new window](#)

---

Name Prof Bob McCullough  
Title Hydrogen Diffusion in Silicon using a Reactive Atom source  
[Open abstract in a new window](#)

---

Name Mr Matt Pritchard  
Title Single-site addressability in 3D optical lattices  
[Open abstract in a new window](#)

---

Name Dr Eoin Phillips  
Title Cavity QED with trapped ions  
[Open abstract in a new window](#)

---

Name Mr Adam Hunniford  
Title DNA Damage induced by Low Energy Ions  
[Open abstract in a new window](#)

---

Name Mr Niels Strohmaier  
Title Electron Scattering from a Bose Einstein Condensate Niels Strohmaier, Matthew Harvey & Andrew Murray. School of Physics and Astronomy, University  
[Open abstract in a new window](#)

---

Name Mr Michael Lengden  
Title TWO-COLOUR PHOTON STEPWISE SPECTROSCOPY OF ELECTRON EXCITED METASTABLE KRYPTON ATOMS Michael Lengden and Andrew Murray Schuster  
Laboratory, Universi  
[Open abstract in a new window](#)

---

Name Mr Matthew Harvey  
Title LOW ENERGY ELECTRON SCATTERING FROM ULTRA-COLD POTASSIUM  
Matthew Harvey, Niels Strohmaier, Paul Cooper and Andrew Murray  
[Open abstract in a new window](#)

---

Name Mr Christopher Hammond  
Title Photoelectron Spectra as a Probe of Intramolecular Vibrational Redistribution in Di-substituted Benzene Derivatives  
[Open abstract in a new window](#)

---

Name Mr Charlie Starrett  
Title Ionizing collisions for Positronium  
[Open abstract in a new window](#)

---

Name Mr Lamine Bougueroua  
Title Towards an improved measurement of the Rydberg constant by optical excitation of atomic hydrogen  
[Open abstract in a new window](#)

---

Name Mr Henry Ashworth  
Title An improved measurement of the electric dipole moment of the electron  
[Open abstract in a new window](#)

---

Name Mr Robert Sewell  
Title Splitting cold atomic clouds using an atom chip.  
[Open abstract in a new window](#)

---

Name Mr Stephen Hogan  
Title Aspects of the crossed-field double-minimum potential well  
[Open abstract in a new window](#)

---

Name Mr Allan Todd  
Title Examination of quasi-bound states of He p-bar and possible existence of a bound state  
[Open abstract in a new window](#)

---

Name Mr Michael Trupke  
Title Optical Devices for Atom Chips  
[Open abstract in a new window](#)

---

Name Mr David Gherardi  
Title OPTICAL GUIDING USING HOLOGRAPHICALLY GENERATED LAGUERRE-GAUSSIAN LIGHT BEAMS AND HOLLOW-CORE PHOTONIC CRYSTAL FIBRES  
[Open abstract in a new window](#)

---

Name Miss ISABEL LLORENTE-GARCIA  
Title Permanent-magnet atom chips for the study of long, thin atom clouds.  
[Open abstract in a new window](#)

---

Name Mr Rafael Castrejon  
Title A new proposal for a Planar Penning trap  
[Open abstract in a new window](#)

---

Name Mr Jeremy Metz  
Title Robust entanglement through dissipation  
[Open abstract in a new window](#)

---

Name Mr Nick Jones  
Title The spectroscopy and dynamics of Rydberg states converging to the  $v=0$  ionization limit of NO  
[Open abstract in a new window](#)

---

Name Mr Dorian Parker  
Title Controlling benzene photochemistry  
[Open abstract in a new window](#)

---

Name Mr Fernando Ramirez-Martinez  
Title Microtraps for atoms using magneto-optical thin films  
[Open abstract in a new window](#)

---

Name Mr Douglas Murray  
Title Elementary Excitations of a Bose-Einstein Condensate in the Presence of an Effective Magnetic Field  
[Open abstract in a new window](#)

---

Name Mr gary hayes  
Title Fuel cell and battery powered electric hybrid vehicle  
[Open abstract in a new window](#)

---

Name Mr Richard Darnley  
Title The Stark deceleration of ground-state polar molecules as a route to cold and ultra-cold molecular physics R. V. Darnley, M. R. Tarbutt, J. J. Hudson  
[Open abstract in a new window](#)

---

Name Miss Karola Graupner  
Title Dissociative Electron Attachment in ERIC, a New Spectrometer for Unstable Molecules  
[Open abstract in a new window](#)

---

Name Miss Jean Wyer  
Title Atomic and Molecular Physics in Radiotherapy  
[Open abstract in a new window](#)

---

Name Mr Ian Linington  
Title Control of atomic decay rates via manipulation of reservoir mode frequencies  
[Open abstract in a new window](#)

---

Name Mr Patrick Tierney  
Title A two-species mixture of quantum degenerate Bose gases  
[Open abstract in a new window](#)

---

Name Dr Mansukh Shah  
Title Already as submitted by student: 1) Jean Wyer and 2) V Senthil  
[Open abstract in a new window](#)

---

Name Mr Peter Watkeys  
Title Positrons in a two-stage buffer gas accumulator  
[Open abstract in a new window](#)

---

Name Mrs Sanja Milisavljevic  
Title Electron scattering by Ca atom  
[Open abstract in a new window](#)

---

Name Mr Velauthampillai Senthil  
Title Electron impact double ionization of the C<sub>3</sub>H<sub>4</sub> isomers  
[Open abstract in a new window](#)

---

Name Miss Claire Ricketts  
Title Experimental studies of dication-neutral reactions of relevance to planetary atmospheres  
[Open abstract in a new window](#)

---

Name Mr Mark Gregory  
Title ANTI-PROTON ANNIHILATION IN LOW-ENERGY ANTIHYDROGEN SCATTERING BY SIMPLE ATOMS AND MOLECULES  
[Open abstract in a new window](#)

---

Name Mr Ralf Gommers  
Title Resonant Activation and Dissipation Induced Symmetry Breaking in a Brownian Motor  
[Open abstract in a new window](#)

---

Name Mr Peter Douglas  
Title Levy Flights in an optical lattice of caesium atoms  
[Open abstract in a new window](#)

---

Name Miss Carla McGrath  
Title The Stokes Phenomenon and Quantum Defects  
[Open abstract in a new window](#)

---

Name Mr Philip Thomason  
Title Computational Modelling of the Pulsed Magnetron System  
[Open abstract in a new window](#)

---

Name Mr Srinivasarao Kumpatla  
Title SOLUTIONS TO OPTOELECTRONIC INTERCONNECT PROBLEMS  
[Open abstract in a new window](#)

---

Name Dr Kevin Ronald  
Title A laboratory experiment to investigate the mechanism of Auroral Kilometric Radiation Emission  
[Open abstract in a new window](#)

---

Name Dr Mark Stapleton  
Title Multi-Fluid Simulations of Colliding Plasmas  
[Open abstract in a new window](#)



## Abstract

[close](#)

Name Mrs Sanja Milisavljevic

Title Electron scattering by Ca atom

Abstract Measurements of absolute cross sections for the elastic electron scattering by Ca atom as well as differential cross sections for excitation of the 4 1P state will be presented and compared with new theoretical calculations. Normalization procedure will be discussed in terms of forward scattering function and optical oscillator strength. Integrated cross sections are derived from differential ones.

# ELECTRON SCATTERING BY Ca ATOM

S. Milisavljević, D. Šević, V. Pejčev\*, D. M. Filipović\*\*, B. P. Marinković

*Institute of Physics, P. O. Box 68, 11080 Belgrade, SCG*

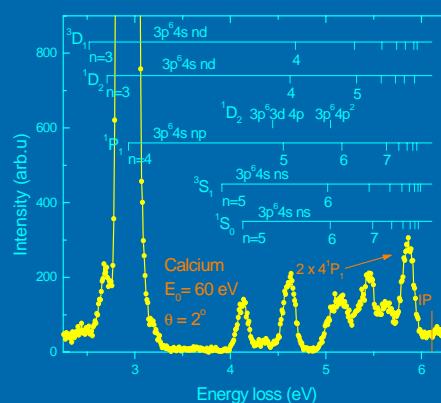
*\*Faculty of Natural Sciences, University of Kragujevac, SCG*

*\*\*Faculty of Physics, University of Belgrade, P. O. Box 368, 11001 Belgrade, SCG*

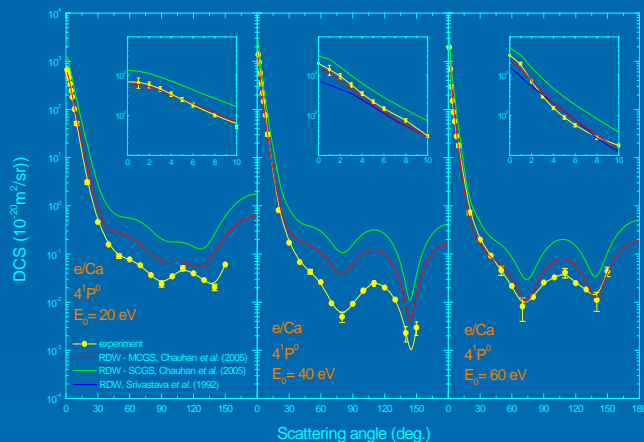
The measurements of differential cross section (DCS) for excitation of the  $4^1P$  state at 2.93 eV as well as DCSs for elastic electron scattering by Ca atom were carried out using a crossed electron-atom beam technique (Milisavljević *et al.* (2004, 2005)).

The measurements were performed at electron-impact energies ( $E_0$ ) of 10, 20, 40, 60 and 100 eV and scattering angles from  $1^\circ$  to  $150^\circ$  for excitation and from  $10^\circ$  up to  $150^\circ$  for elastic scattering.

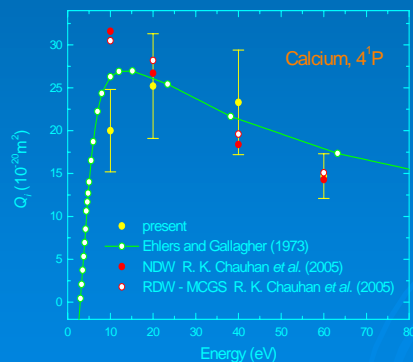
The absolute DCSs for excitation were determined through normalization to the optical oscillator strength (OOS) using the forward scattering function (FSF) method.



Energy-loss spectrum of Ca at 60 eV electron-impact energy and  $2^\circ$  scattering angle.

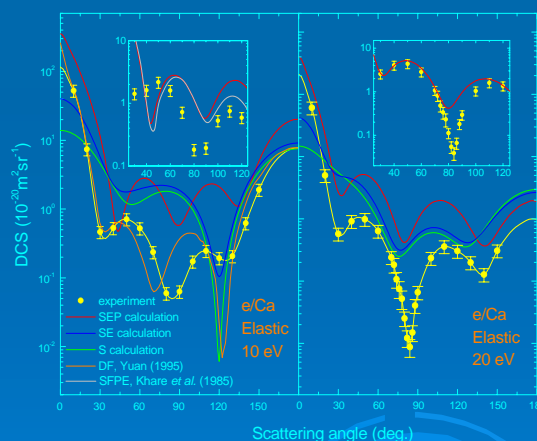


Differential cross sections for excitation of the  $4^1P$  state of calcium atom compared with theoretical calculations.



Integral cross sections for the  $4^1P$  state of the calcium atom.

The absolute DCSs for elastic scattering were obtained using absolute DCS values of the  $4^1P$  state and measured elastic-to-inelastic intensity ratios.



Differential cross sections for elastic electron scattering by calcium atom. In insets, present DCSs are normalized at  $10^\circ$  and  $20^\circ$  on present static-exchange-polarization calculation (SEP).

## References

- Chauhan R K, Srivastava R and Stauffer A D 2005 *J. Phys. B: At. Mol. Opt. Phys.* **38** 2385
- Ehlens V J and Gallagher A 1973 *Phys. Rev. A* **7** 1573
- Khare S P, Kumar Ashok and Vijayshri 1985 *J. Phys. B: At. Mol. Opt. Phys.* **18** 1827
- Milisavljević S, Šević D, Pejčev V, Filipović D M and Marinković B P 2004 *J. Phys. B: At. Mol. Opt. Phys.* **37** 3571
- Milisavljević S, Šević D, Chauhan R K, Pejčev V, Filipović D M, Srivastava R and Marinković B P 2005 *J. Phys. B: At. Mol. Opt. Phys.* **38** 2371
- Srivastava R, Zuo T, McEachran R P and Stauffer A D 1992 *J. Phys. B: At. Mol. Opt. Phys.* **25** 3709
- Yuan J 1995 *Phys. Rev. A* **52** 4647