

# CURRICULUM VITAE OF IOANNIS LIONTOS (AS OF SEPTEMBER 2018)

Date of birth 18.10.1975  
Nationality GREEK  
Marital status MARRIED  
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## ACADEMIC STUDIES

03/2002 – 10/2007 **PhD degree in experimental Physics**, Atomic & Molecular Physics Laboratory, University of Ioannina, Ioannina, Greece  
Dissertation title: *'Single and Double Multiphoton Ionization of Alkaline-Earth Atoms via Autoionizing States'*

10/1999 - 12/2001 **Postgraduate courses** at Physics Department, University of Ioannina, (Greece):  
- Quantum Mechanics (two semesters)  
- Electrodynamics (one semester)  
- Mathematical Methods for Physics (two semesters)  
- Atomic and Molecular Physics (two semesters)

06/1999 **B. Sc. in Physics**, Physics Department, University of Ioannina (Greece)

## WORKING EXPERIENCE

09/2018 – present **Postdoctoral research associate**, Institute of Electronic Structure and Laser, Foundation for Research and Technology – Hellas, Heraklion, Greece ([www.iesl.forth.gr](http://www.iesl.forth.gr))

09/2016 – 08/2018 **Assistant Professor**, Attosecond Science Laboratory (ASL), King Saud University, Riyadh 11451, Saudi Arabia ([www.attoworld.sa](http://www.attoworld.sa))

03/2013 – 10/2015 **Postdoctoral Research Fellow**, Center for Plasma Physics & Lasers (CPPL), sub-10fs CEP-stabilized Laser Laboratory, Rethymno (Crete), Greece  
Research subject: *'Ultrafast non-linear optical processes on metallic surfaces'*  
(<http://www.cppl.teicrete.gr/>)

04/2015 – 08/2015 **Research Fellow**, University of Ioannina and Aristotle University of Thessaloniki; work carried out at the Central Laser Facility, Physics

Department, University of Ioannina  
Research subject: '*Characterization of the Nanocoatings & Testing of the Razors and the Lenses (Nanohybrid)*'

03/2008 – 02/2013

**Postdoctoral Research Fellow**, VUV/XUV Spectroscopy and Frontier Coherent Sources Laboratory, LENS Institute, University of Florence, Italy

Research subject: '*Development of coherent laser sources in the eXtreme UltraViolet (XUV) and application on innovative spectroscopic techniques in the XUV*'

<http://www.lens.unifi.it/> & <http://www.ino.it/home/QOG/>

11/2007 - 02/2008

**Visiting Researcher**, LENS, Florence, Italy, via an accepted research proposal submitted in LASERLAB Europe with code#: *lens001388* Title: '*XUV Ramsey spectroscopy of high-lying bound atomic states*'

## EXPERIMENTAL SKILLS

- High-order Harmonic Generation (HHG) techniques on gaseous mediums and on metallic surfaces using intense femtosecond laser fields
- Isolated attosecond pulse (SAP) generation and characterization
- Optical interferometric techniques in the visible and VUV/XUV spectral regions
- Pump/probe experimental schemes
- Time-of-flight mass spectrometry (collecting ions & electrons)
- Multi-photon ionization techniques:
  - Atomic beam experimental setups
  - Static ionization cells
  - Laser Induced Fluorescence (LIF) setups
  - Stimulated Emission detection experiments
- Hands on experience, maintenance and troubleshooting of:
  - ~25 femtosecond laser systems (experience gained at LENS, CPPL and Max-Planck ASL)
  - ~5 femtosecond laser systems (experience gained at CPPL and Max-Planck ASL)
- Implementation of dispersion-scan (D-scan) technique
- Hands on experience, maintenance and troubleshooting of *picosecond and nanosecond* laser systems (experience gained during PhD years)
- Experience on metrological frequency comb laser (experience gained at LENS)
- Time-of-flight mass spectrometry (collecting ions & electrons)
- Vacuum techniques

<b>MAIN RESEARCH INTERESTS</b>	<ul style="list-style-type: none"> <li>• Attosecond pulse generation and applications</li> <li>• Implementation of an ultrastable Michelson interferometer for VUV/XUV spectroscopic studies</li> <li>• High-resolution XUV spectroscopy using Ti:sapphire harmonics</li> <li>• Laser-atom interaction with nanosecond laser pulses <ul style="list-style-type: none"> <li>- Single and double multiphoton ionization of Alkaline-Earth atoms with ns laser pulses</li> <li>- Phase-sensitive coherent control of ionization processes</li> <li>- Atomic spectroscopy / Rydberg-states spectroscopy</li> </ul> </li> <li>• Ultrafast non-linear processes on metallic surfaces</li> </ul>
<b>SIDE RESEARCH PROJECTS</b>	<ul style="list-style-type: none"> <li>• Laser-molecule interaction with strong femtosecond laser fields</li> <li>• Laser-made electrodes for 3D-diamond detectors</li> </ul>
<b>REVIEWER IN SCIENTIFIC JOURNALS</b>	Optics Express, Journal of the Optical Society of America B, Applied Optics
<b>PRINCIPLE INVESTIGATOR ON SUBMITTED RESEARCH GRANTS</b>	Three submitted research proposals, currently under evaluation review, in the framework of the Grants Programs for Universities and Research Centers (GPURC)- Basic Research Programs of the King Abdullah Institute of Science and Education (KACST). Total budget: ~450k€
<b>TEACHING EXPERIENCE</b>	10/2002 – 06/2006 Teaching assistant in undergraduate Laboratory Courses (>300hours): - Mechanics - Electromagnetism - Optics, Waves & Acoustics Department of Physics and Department of Materials Science & Engineering, University of Ioannina, Ioannina, Greece
<b>SEMINARS - SCHOOLS</b>	18/02 – 02/03/2001 'Winter School on Laser Spectroscopy and Applications' International Center for Theoretical Physics (ICTP), Trieste – Italy  02/07 – 06/07/2001 'Ultrafast Processes, Methods and Applications', The Onassis Foundation Science Lecture Series, The 2001 Lectures in Chemistry and Physics, IESL-FORTH, Heraklion, Greece

18/08 – 23/08/2008

Summer School 'Basics on Quantum Control', Institut d'Etudes Scientifiques de Cargèse, Cargese (Corsica), France

**FOREIGN LANGUAGES** Greek (native)  
English (fluent)  
Italian (fluent)

**GRANTS** Recipient of a 3-year scholarship (2002 – 2005); programme HERAKLITOS; Operational Programme for Education and Initial Vocational Training of the Hellenic Ministry of Education; 3<sup>rd</sup> Community Support Framework and the European Social Fund

**PUBLICATIONS IN  
PEER-REVIEWED JOURNALS**

1. 'Ultimate Limit in the Spectral Resolution of Extreme Ultraviolet Frequency Combs'

*C. Corsi, I. Liontos, M. Bellini, S. Cavalieri, P. Cancio Pastor, M. Siciliani de Cumis, and R. Eramo*

*Phys. Rev. Lett.* **118**, 143201 (2017)

2. 'An ultrastable Michelson interferometer for high-resolution spectroscopy in the XUV'

*C. Corsi, I. Liontos, S. Cavalieri, M. Bellini, G. Venturi, and R. Eramo*

*Opt. Express* **23**(4), pp. 4114–4124 (2015)

3. 'Electrical and Raman-imaging characterization of laser-made electrodes for 3D diamond detectors'

*S. Lagomarsino, M. Bellini, C. Corsi, S. Fanetti, F. Gorelli, I. Liontos, G. Parrini, M. Santoro, S. Sciortino*

*Diamonds & Related Materials* **43**, 23-28 (2014)

4. 'Strong laser-induced coupling between autoionizing states: the case of the four-photon-excited  $3p^2\ ^1S_0$  state of magnesium'

*A. Dimitriou, S. Cohen, A. Lyras and I. Liontos*

*J. Phys. B: At. Mol. Opt. Phys.* **45**, 205003 (2012)

5. 'Method for high-resolution frequency measurements in the extreme-ultraviolet regime: Random-sampling Ramsey spectroscopy'

*R. Eramo, S. Cavalieri, C. Corsi, I. Liontos, and M. Bellini*

*Phys. Rev. Lett.* **106**, 213003 (2011)

6. 'Split-pulse spectrometer for absolute XUV frequency measurements'

*I. Liontos, C. Corsi, S. Cavalieri, M. Bellini, and R. Eramo*

*Opt. Lett.* **36**, 2047 (2011)

7. 'Improving Ramsey spectroscopy in the extreme-ultraviolet region with a random-sampling approach'

*R. Eramo, M. Bellini, C. Corsi, I. Liontos, and S. Cavalieri*

*Phys. Rev. A* **83**, 041402(R) (2011)

**PUBLICATIONS IN  
PEER-REVIEWED JOURNALS  
(CONTINUE)**

- 8.** 'Multiphoton  $\text{Ca}^{2+}$  production occurring before the onset of  $\text{Ca}^+$  saturation: is it a fingerprint of direct double ionization?'  
*I. Liontos, S. Cohen and A. Lyras*  
J. Phys. B: At. Mol. Opt. Phys. **43**, 095602 (2010)
- 9.** 'Ramsey spectroscopy of bound atomic states with extreme-ultraviolet laser harmonics'  
*I. Liontos, S. Cavalieri, C. Corsi, R. Eramo, S. Kaziannis, A. Pirri, E. Sali and M. Bellini*  
Opt. Lett. **35**, 832 (2010)
- 10.** 'The ejection of triatomic molecular hydrogen ions  $\text{H}_3^+$  produced by the interaction of benzene molecules with ultrafast laser pulses'  
*S. Kaziannis, I. Liontos, G. Karras, C. Corsi, M. Bellini and C. Kosmidis*  
J. Chem. Phys. **131**, 144308 (2009)
- 11.** 'Single and double multiphoton ionization of Sr via the doubly excited  $5p^2 \ ^1S_0$  state'  
*I. Liontos, S. Cohen and A. Bolovinos*  
J. Phys. B: At. Mol. Opt. Phys. **41**, 045601 (2008)
- 12.** 'One & two photon coherent control of total ionization yields in the presence of a DC electric field'  
*A. Bolovinos, S. Cohen and I. Liontos*  
Phys. Rev. A **77**, 023413 (2008)
- 13.** 'Two – photon ionization spectra of Calcium above the  $4s_{1/2}$  threshold'  
*S. Cohen, I. Liontos, A. Bolovinos, A. Lyras, S. Benec'h and H. Bachau*  
J. Phys. B: At. Mol. Opt. Phys. **39**, 2693-2708 (2006)
- 14.** 'Single and double ionization of Mg via four-photon excitation of the  $3p^2 \ ^1S_0$  autoionizing state: Experimental and theoretical analysis'  
*I. Liontos, A. Bolovinos, S. Cohen and A. Lyras*  
Phys. Rev. A **70**, 033403 (2004)

**MANUSCRIPTS  
UNDER PREPARATION**

- 1.** 'Attosecond photoemission delays around iodine-4d giant resonance in ethyl iodide  
B. Förg, J. Schötz, W. Schweinberger, L. Ortmann, T. Zimmerman, L. Pi, D. Baykusheva, A. Masood, I. Liontos, A. Kamal, N.G. Kling, M. Alharbi, F. Krausz, H.-J. Wörner, A. Landsman, A.M. Azzeer, S. Biswas and M.F. Kling
- 2.** 'Ionization induced transient phase-matching in isolated attosecond pulse generation with few-cycle pulses in argon"  
J. Schötz, B. Förg, W. Schweinberger, I. Liontos, A. Masood, C. Jakubeit, N. G. Kling, T. Paasch-Colberg, M. Hogner, M. Alharbi, F. Krausz, M.F. Kling and A.M. Azzeer

**INTERNATIONAL  
CONFERENCES  
PARTICIPATION**

- 1.** 4<sup>th</sup> Intense field, Short Wavelength Atomic and Molecular Processes (ISWAMP-4), July 22-24, 2017, Ship Inn, South Bank, Brisbane, Australia  
'Attosecond photoemission delays for *broadband* resonances in molecules' (invited talk)  
B. Förg, J. Schötz, W. Schweinberger, L. Ortmann, T. Zimmerman, A. Masood, I. Liontos, A. Kamal, N.G. Kling, H. J. Wörner, M. Alharbi, F. Krausz, A. Landsman, A.M. Azzeer, and M.F. Kling
- 2.** 'High-precision frequency measurements in the extreme-ultraviolet regime using high-order laser harmonics'  
August 2, 2014, LENS, Florence, Italy (Invited talk)
- 3.** 11th Super Intense Laser-Atom Physics conference (SILAP 2015), Bordeaux – France, 3 – 10 September 2015  
'Finite electron relaxation times effects on the temporal characterization of sub-15fs pulses based on second harmonic generation on a gold surface" (poster)  
I. Liontos, M. Bakarezos, M. Tatarakis, and N.A. Papadogiannis
- 4.** 12° Convegno Nazionale delle Tecnologie Fotoniche (Fotonica 2012), Pisa – Italy, 15 – 17 May 2012  
'Random-sampling Ramsey-like spectroscopy in the XUV' (poster)  
R. Eramo, I. Liontos, S. Cavalieri, C. Corsi and M. Bellini
- 5.** 20<sup>th</sup> International Conference on Laser Spectroscopy (ICOLS 20), Hameln – Germany, May 30<sup>th</sup> – June 3<sup>rd</sup> 2011  
'Random-sampling Ramsey-like spectroscopy in the XUV' (poster)  
R. Eramo, I. Liontos, S. Cavalieri, C. Corsi and M. Bellini
- 6.** 10<sup>th</sup> European Conference on Atoms, Molecules and Photons (ECAMP 10), Salamanca – Spain, 4 – 9 July 2010  
'Random sampling Fourier-transform spectroscopy in the extreme ultraviolet' (poster)  
R. Eramo, M. Bellini, S. Cavalieri, C. Corsi and I. Liontos
- 7.** 12° Convegno Nazionale delle Tecnologie Fotoniche (Fotonica 2010), Pisa – Italy, 25 – 27 May 2010  
'Ramsey spectroscopy of bound atomic states with extreme ultraviolet laser harmonics' (poster)  
I. Liontos, S. Kaziannis, C. Corsi, R. Eramo, S. Cavalieri, A. Pirri and M. Bellini
- 8.** 8<sup>th</sup> International Symposium on Ultrafast Intense Laser Science (ISUILS 8), Heraklion, Crete – Greece, 3 – 7 October 2009  
'Ramsey spectroscopy of bound atomic states with extreme ultraviolet laser harmonics' (poster)  
I. Liontos, S. Kaziannis, C. Corsi, R. Eramo, S. Cavalieri, A. Pirri and M. Bellini

**INTERNATIONAL  
CONFERENCES  
PARTICIPATION  
(CONTINUE)**

**9.** 7<sup>th</sup> UltraFast Optics and 13<sup>th</sup> High Field Short Wavelength Conference (UFO VII/HFSW XIII), Arcachon – France, August 31<sup>st</sup> – September 4<sup>th</sup> 2009

‘Ramsey spectroscopy of bound atomic states with extreme ultraviolet laser harmonics’ (poster)

I. Liontos, S. Kaziannis, C. Corsi, R. Eramo, S. Cavalieri, A. Pirri and M. Bellini

**10.** Summer School ‘Basics on Quantum Control’, Institut d’Etudes Scientifiques de Cargèse, Cargese – Corsica, France, 18–23 August 2008

‘XUV Ramsey-type spectroscopy of high-lying bound atomic states’ (poster)

I. Liontos, S. Kaziannis, C. Corsi, R. Eramo, S. Cavalieri, A. Pirri and M. Bellini

**11.** 20<sup>th</sup> International Conference on Atomic Processes (ICAP2006), Innsbruck – Austria, 16 – 22 July 2006

‘Single and double ionization of Sr via the doubly excited  $5p^2\ ^1S_0$  state’ (poster)

A. Bolovinos, I. Liontos, S. Cohen and A. Lyras

**12.** 37<sup>th</sup> Conference of the European Group for Atomic Systems (EGAS37), Dublin – Ireland, 3 – 6 August 2005

‘Stimulated emission in Calcium vapor pumped by UV laser radiation’ (poster)

S. Cohen, I. Liontos, A. Bolovinos and A. Lyras

**13.** 8<sup>th</sup> European Conference on Atomic and Molecular Physics (ECAMP8), Rennes – France, 6 – 10 July 2004

‘Two-photon ionization of Ca above the  $4s_{1/2}$  threshold’ (oral)

I. Liontos, A. Bolovinos, S. Cohen, A. Lyras, S. Benec’h and H. Bachau

**14.** 8<sup>th</sup> European Conference on Atomic and Molecular Physics (ECAMP8), Rennes – France, 6 – 10 July 2004

‘Single and double ionization of Calcium via four-photon excitation of the  $4p^2\ ^1S_0$  autoionizing state’ (poster)

A. Bolovinos, I. Liontos, S. Cohen and A. Lyras

**15.** 35<sup>th</sup> Conference of the European Group for Atomic Spectroscopy (EGAS35), Brussels – Belgium, 15 – 18 July 2003

‘Single and double ionization of Mg in the vicinity of the doubly excited  $3p^2\ ^1S_0$  state’ (oral)

I. Liontos, A. Bolovinos, S. Cohen and A. Lyras