



Ola Hassouneh

Personal Details

Date of Birth May 14, 1987
Place of Birth Amman
Sex Female
Marital Status Single
Nationality Jordanian

Academic Qualifications

2012–2015 Doctor of Philosophy in Physics, Queen's University Belfast, United Kingdom.
2009–2012 Master in Physics, The University of Jordan, Faculty of Science, Department of Physics, Amman, Jordan, *GPA – 3.94/4.0*, First Class Honours.
2005–2009 Bachelor of Physics, The University of Jordan, Faculty of Science, Department of Physics, Amman, Jordan, *GPA – 3.91/4.0*, First Class Honours.
2004–2005 General Secondary Education Certificate Examination, Scientific Stream. 2004, Ministry of Education, Amman, Jordan, With an average of 89.0/100.

Thesis Descriptions

Masters Thesis

Title *Modelling Condensational Growth of Indoor Aerosol Particles*
Supervisor Prof. Tareq Hussein
Description The primary objective of this thesis was to proof the validation of the Multi- Compartment and Size-resolved Indoor Aerosol Model (MC-SIAM) by comparing the simulation results with measurements. The secondary objective is to estimate the aerosol particles condensational growth based on both the particle size and the condensable vapor source rates.

Ph.D Thesis

Title *Harmonic Generation in the IR Regime Using Ab-Initio Time-Dependent R-matrix Theory*
Supervisors Prof. Hugo Van Der Hart and Dr. Daniel Dundas

Description Attosecond ($1\text{as} = 10^{-18}\text{ s}$) science stands as a frontier in ultrafast optical science. Within this area, developing our understanding of how the interaction between electrons affects multi-electron dynamics is one of the basic questions of ultrafast atomic physics. Theoretically, it is a huge task to treat the exact time-dependent response of a multi-electron system subject to a strong electromagnetic field by ab initio methods. In this thesis, the time-dependent R-matrix (TDRM) theory and the R-matrix including time dependence (RMT) approach, have been applied to different atomic systems, to investigate how multi-electron dynamics affects a variety of atomic processes in intense ultra-short light fields. The results provided in this thesis demonstrate the capability within TDRM theory to investigate harmonic generation at a wavelength of 390 nm, emphasizing on the details of atomic structure which can play a significant role in harmonic generation. We also demonstrate the capability of the RMT approach to describe the single-atom harmonic response of general multi-electron atoms in the near-IR regime from first principles. We also demonstrate that the code can be applied to re-scattering processes.

Experience

2015–Present Assistant Professor, The University of Jordan.

2009–2012 Teaching Assistant, The University of Jordan.

Taught Courses

Modern Physics–(0302261)

Atomic and Molecular Physics–(0302462)

General Physics for Biological Sciences Students–(0342103)

Practical Physics-1–(0302111)

Practical Physics-2–(0302112)

Practical Physics for Dentistry Students–(0302115)

Practical Physics for Biological Sciences Students–(0302113)

Awards

2005 Higher Education Grant for the Top Students in Tawjihi Exam, Ministry of Higher Education and Scientific Research, Jordan/Amman.

2006-2009 Grant for the Top Bachelor Students in Physics Department, The University of Jordan, Jordan/Amman.

2009 University's President's Honor List for Academic Distinction, The University of Jordan, Jordan/Amman.

2010-2012 Grant for the Top Master Students in Physics Department, The University of Jordan, Jordan/Amman.

2012-2015 Ph.D Grant from the School of Physics at the University of Jordan, Queen's University Belfast, United Kingdom.

Research Grant

Project Title: Cooper Minimum in the High Harmonic Generation Spectrum of Ar^+ .

Date: From Aug. 2016– Aug. 2018.

Sponsors: The University of Jordan, Deanship of Academic Research.

Quantity-Jordanian-Dinar: 5000.0 JD.

Computer skills

Basic MATLAB

Intermediate \LaTeX , OpenOffice, Linux, Fortran

Training School and Conferences Attendance

- 2017 Attending to the International School "The Frontiers of Attosecond and Ultrafast X-ray Science", (19-28 March 2017, Erice, Italy) organized by Louis Di Mauro, Alicja Domaracka and Mauro Nisoli in collaboration with the "Ettore Majorana Foundation and Centre for Scientific Culture".
- 2016 Visiting Scientist to the School of Mathematics and Physics, Queen's University Belfast/ United Kingdom to work with Dr Andrew Brown and Professor Hugo van der Hart during the period 14 July –12 September.
- 2015 Training Course of New Computational Methods for Attosecond Molecular Processes, Theoretical School of XLIC COST Action (CM1204), Zaragoza, Spain.
- 2014 Oral Presentation at the Christmas High Power Laser Science Community Meeting, STFC, Title: Harmonic generation of noble-gas atoms in the Near IR regime using ab-initio time-dependent R-matrix theory, Central Laser Facility, Rutherford Appleton Laboratory, Harwell Oxford, Oxfordshire, UK.
- 2014 Poster at the AttoFEL, Conference at University College London, June 30th–July 2nd 2014.
- 2014 Oral Presentation at XLIC WG1 meeting, Title: High-harmonic spectroscopy: achievements, challenges and perspectives, University College London, UK.
- 2013 Poster at the Quantum, Atomic, Molecular and Plasma Physics (QuAMP) Conference, Title: Harmonic generation in Ne^+ using time-dependent R-matrix theory, Swansea University, Swansea, United Kingdom.
- 2013 Attending Fortran 95 Course at the Culham Centre for Fusion Energy, United Kingdom.

Publications

- 2012 Optical and dielectric properties of nanocomposites systems based on epoxy resins and reactive polyhedral oligosilsquioxanes, Radiation Effects and Defects in Solids, Authors: H. Eeda, O. Hassouneh, Y. Ramadina, A. Zihlifa, G. Ragostab and Z. M. Elimate.
- 2014 Multichannel interference in high-order-harmonic generation from Ne^+ driven by an ultrashort intense laser pulse. Phys. Rev. A 89, 033409, Authors: Hassouneh, O., Brown, A. C., and Van Der Hart, H. W.
- 2014 Harmonic generation by noble-gas atoms in the near-IR regime using ab-initio time dependent R-matrix theory. Phys. Rev. A 90, 043418, Authors: Hassouneh, O., Brown, A. C., and Van Der Hart, H. W.
- 2014 Exploration of ultra-fast electron dynamics using time-dependent R-matrix theory. APS Division of Atomic, Molecular and Optical Physics Meeting Abstracts, Volume 1, Pages 1129. Authors: Hugo van der Hart, Hector Rey, Ola Hassouneh, Andrew Brown.
- 2015 Electron rescattering in strong-field photodetachment of F^- . Phys. Rev. A 91 (2015), 031404, Authors: Hassouneh, O., Laws, S., Shearer, S.F.C., Brown, A. C., and Van Der Hart, H. W.
- 2016 Spectroscopic Parameters of Neutral Argon Atom. ACTA PHYSICA POLONICA A 130 (2016), Authors: W. Salah, and O. Hassouneh.

2017 Multi configuration Dirac-Hartree-Fock energy levels, oscillator strengths, transition probabilities, hyperfine constants and Landè g-factor of intermediate Rydberg series in neutral argon atom. Eur. Phys. J. Plus (2017) 132: 160.
Authors: W. Salah, and O. Hassouneh.

Languages

Arabic Mother tongue
English Excellent, both written and spoken.

References

Prof. Hugo Van Der Hart

Professor of Atomic Physics, School of Mathematics and Physics, Centre for Theoretical Atomic, Molecular and Optical Physics (CTAMOP), Queen's University Belfast. United Kingdom.

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Prof. Tareq Hussein

Professor of Atmospheric and Environmental Physics, Department of Physics/University of Jordan.

E-mail: t.hussein@ju.edu.jo, Phone: +96265355000 Ext. 22060.

Dr. Daniel Dundas

Doctor of Atomic Physics, School of Mathematics and Physics. Atomistic Simulation Centre (ASC), Centre for Advanced and Interdisciplinary Radiation Research, Queen's University Belfast. United Kingdom.

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