

Ali Mozaffari

Theoretical Physics Group
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Education

Imperial College, London:

10/2009 – 09/2013 **PhD Theoretical Physics**

Thesis: *Theoretical and Experimental Constraints on Modified Gravity*

Supervisor: Prof João Magueijo

Date of PhD Award: 1st February 2014

10/2005 – 06/2009 **MSci Physics with Theoretical Physics: 1st Class Degree**

Dissertation: *Friedman Universes and Anti de Sitter Spaces* with Prof João Magueijo

Open University:

01/2014 – present **MEd, Masters in Education**, (part time)

Investigating science teaching, learning and educational research methods

Professional and Teaching Experience

Open University

01/2014 – present **Associate Lecturer**, (part time)

- Tutoring on a distance learning project module in physics, with students preparing a bachelors level project, marking of students work and providing in depth feedback

Imperial College

10/2013 - present **Global Horizons Tutor**, Centre for Co-Curricular Studies, (part time)

- Tutoring on humanities courses, bringing together groups undergraduates from mixed disciplines, enhancing their communication and project management skills
- Role involves marking and providing feedback

10/2013 – 12/2013 **Assistant Teaching Fellow**, Department of Physics, (part time)

- Tutored on weekly undergraduate physics tutorial sessions, discussed the lecturers' problem sheets, marked and provided feedback to assessed problems

10/2009 – 09/2013 **Graduate Teaching Assistant**, Department of Physics, (part time)

- Taught physics undergraduates, in a variety of roles involving problem solving, feedback and teaching assistant duties

Outside Responsibilities

Outreach Work

2006 – present **Royal Institution (RI): Masterclass Coordinator**

- Coordinate and help out at London mathematics (and previously science) masterclasses for ‘Gifted and Talented’ students, school year groups 9 – 12, with weekly sessions from a range of different mathematicians and scientists role
- Involved on-the-day running of classes, directing undergraduate helpers and helping students with understanding the problems presented

2006 – 2008 **Physics Society: Outreach Coordinator**

- Organised weekly placements for undergraduates to teach in schools and help further promote physics and science
- Fundraised and negotiated to secure sponsorship, as well as organised a day of activities for schools students, with a big final event and networking with other event organisers

Pastoral Experience

2008 – 2010 **Imperial College Union**

- Union council member and later responsible for representing all graduate students
- Primarily was a point of call for students and working with other members of the student union to liaise with senior members of the college and provide representation for taught and research postgraduates
- Attended monthly graduate school management committee meetings and served as a student representative at disciplinary hearings

Research Interests

Modified theories of gravity, inhomogeneous cosmology, perturbation theory, inflationary cosmology, large scale structure formation, numerical cosmology and astrophysics, physics of the early universe, Lorentz violation in matter and gravity

Research Highlights

I currently (May 2014) have **8** papers on INSPIRES, **5** in peer reviewed journals PRD and CQG, overall with *h index* of **3**.

Professional bodies and affiliation Membership in research consortia

- Associate Member, Institute of Physics
- Member of LISA Pathfinder Alternative Theories of Gravity (AToG) working group

Recent Talks and Presentations

1. *MOND - Transition or Bust*, IberiCos, Iberian Cosmology meeting, Centro de Astrofísica, Porto, March 2010
2. *Testing Modified Gravity in the Solar System*, Gravity, Cosmology and Strings, Institut Henri Poincaré, Paris, November 2010
3. *Obstacles to Observing Modified Gravity in the Solar System*, Rencontres de Moriond, Gravitational Waves and Experimental Gravity, La Thuile, Italy, March 2011
4. *Complementing the Search for Modified Gravity with Cosmology*, UK Cosmology Meeting, Sussex, March 2012
5. *The Case for Testing Modified Gravity in the Solar System (Invited Talk)*, IoP Gravitational Physics Meeting: Gravity Beyond Einstein, Institute of Physics, London, September 2012
6. *The Case for Testing Modified Gravity in the Solar System (Invited Talk)*, London Cosmology Meeting, Queen Mary, March 2013
7. *Testing Modified Gravity in the Solar System*, Oxford University; Nottingham University; Institute of Cosmology and Gravitation, Portsmouth University; Queen Mary, University of London; Swansea University; Helsinki University; Albert Einstein Institute, Hannover, January – April 2013
8. *Testing Gravity in the Solar System (Public Talk, Invited)*, European AstroFest 2014 Conference, February 2014

Computing Skills

- Microsoft Office, LaTeX
- Knowledge of working in C++ and Fortran,
- MATLAB, Mathematica

Profile

I am an enthusiastic and well driven individual with a natural curiosity for physics and how the universe works. I am a flexible worker and an independent thinker, having had to adopt in both leadership and team working capacities in my various different roles and responsibilities, in addition to my research. My passion is for original thinking in science, trying to understand the universe we live in, as well as communicating these ideas to many different audiences, as effectively as possible.

Summary of Teaching Experience:

01/2014 – present **Associate Lecturer, Open University**

- Tutoring on a distance learning project module in physics, with students researching, planning and preparing a bachelors level project and report over the course of nine months.
- Marking of students work, providing in depth feedback as well as having submissions second marked and checked as part of on-going professional development.
- Students are contacted regularly, via telephone, email and e-learning group discussions.

10/2013 - present **Global Horizons Tutor, Centre for Co-Curricular Studies**

- Tutoring on two humanities courses, bringing together undergraduates from different disciplines, working in groups.
- Helped groups of student work on different of topics (previously included poverty, the financial crisis and global warming) using a variety of materials during weekly sessions, enhancing their communication and project management skills.
- Students had continuous assessment as well as marking and feedback on their final posters, portfolios and presentations.

10/2013 – 12/2013 **Assistant Teaching Fellow, Department of Physics**

- Tutoring on weekly undergraduate physics tutorial sessions, eight weekly sessions totally 160 students
- Prepared solutions to and discussed the lecturers' problem sheets and associated material, covering course core physics topics, including Fourier methods, differential equations, quantum mechanics, electromagnetism, thermodynamics and nuclear and atomic physics
- Marked assessed problem sheets that were utilised during the term, requiring individual assessment and feedback time.
- Additionally was a point on contact with other tutors and PG's for assessment and marking issues, often liaising with senior teaching fellows in department.

05/2013 **MSc Special Topics Lecturer**

06/2014

- Presented a short series of lectures on the subject of "Inflation and Non-Gaussianity" to students on the Quantum Fields and Fundamental Forces MSc.
- Conception, preparation and development of material, quite challenging given the time constraints and the pedagogical level required given the background in cosmology students had from the MSc.

10/2009 – 06/2013 **Graduate Teaching Assistant, Department of Physics**

- Teaching first to final year undergraduates, in a variety of roles in problem solving, feedback and teaching assistant classes, involving marking and feedback.
- Student numbers varied between roles, ranging from an entire year group (250 students) to fewer than ten students in a session.
- Teaching assistant on a condensed matter physics (falling very much outside my area of study and research), for final year and masters students.

Invigilator for undergraduate and postgraduate examinations