

# IAN HUSTON

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## Research Interests

- Inflationary cosmology, analytical and numerical constraints from observations,
  - Non-linear cosmological perturbation theory and its applications,
  - Non-Gaussianity and its generation in multi-field systems,
  - Numerical analysis of inflationary potentials and their predictions.
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## Publications

- I. Huston & A. Christopherson, “Calculating Non-adiabatic Pressure Perturbations during Multi-field Inflation”, arXiv:1111.6919.
  - E. Nalson, A. Christopherson, I. Huston, K. A. Malik, “Quantifying the behaviour of curvature perturbations during inflation”, arXiv:1111.6940.
  - I. Huston & K. A. Malik, “Second Order Perturbations During Inflation Beyond Slow-roll”, JCAP **1110** (2011) 028, arXiv:1103.0912.
  - L. Alabidi & I. Huston, “An update on single field models of inflation in light of WMAP7”, JCAP **1008** (2010) 037, arXiv:1004.4794.
  - I. Huston & K. A. Malik, “Numerical calculation of second order perturbations”, JCAP **0909** (2009) 019, arXiv:0907.2917.
  - I. Huston, J. E. Lidsey, S. Thomas and J. Ward, “Gravitational Wave Constraints on Multi-Brane Inflation,” JCAP **0805** (2008) 016, arXiv:0802.0398.
  - J. E. Lidsey & I. Huston, “Gravitational wave constraints on Dirac-Born-Infeld inflation,” JCAP **0707** (2007) 002, arXiv:0705.0240.
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## Research Experience

- Jan 2010 – Now: Postdoctoral Research Assistant at Queen Mary, University of London
    - Project title: “Cosmological Perturbation Theory”
  - Oct 2006 – May 2010: PhD research at Queen Mary, University of London
    - Thesis Title: “Constraining Inflationary Scenarios with Braneworld Models and Second Order Cosmological Perturbations”, arXiv:1006.5321.
    - Supervisors: James E. Lidsey and Reza Tavakol
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## Technical Skills

- Fully proficient in Python programming language, including NumPy, SciPy and Matplotlib.
- Creator of Pyflation numerical package for Python (<http://pyflation.ianhuston.net>).
- Fluent in LaTeX usage and skilled in Java, Matlab, C/C++, Fortran, Mathematica.
- Basic conversational French, German and Irish language skills.

## Meetings Organised

- Joint organiser of Vorticity on Different Scales, July 2011, in Royal Astronomical Society.
- Joint organiser of UK Particle Cosmology national meeting in December 2008.
- Joint founder of the Strings, Cosmology and Gravity Student Conference in May 2008, now held alternately in London or Paris each year.

## Recent External Presentations

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August 2011	Speaker at COSMO'11 conference in Porto
June 2011	Invited seminar in the University of Sussex
April 2011	Speaker and session chair at National Astronomy Meeting 2011
May 2010	Invited seminar in the University of Southampton
April 2010	Talk at BritGrav 2010 meeting
September 2009	Parallel session talk at COSMO 09 conference in CERN
June 2009	Invited seminar in the University of Portsmouth
June 2008	Parallel session talk at PASCOS08 conference at Perimeter Institute
Various Dates	Speaker at UK Cosmology Network Meetings

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## Academic Activities

- Supervisor for MSc student in the Astronomy Unit over Summer 2011.
  - Replacement lecturer for Astronomy MSc course in October 2011.
  - London Relativity and Cosmology Seminar series organiser from October 2010.
  - Tutor and marker for undergraduate courses in School of Mathematical Sciences from 2006.
  - Reviewer for the Journal of Cosmology and Astroparticle Physics, Physics Review Letters and Classical and Quantum Gravity from 2008.
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## Education

- Oct 2006 – May 2010: PhD, Queen Mary, University of London (see above)
  - Oct 2005 – Sept 2006: MSc (with distinction), Imperial College London  
Dissertation topic: “Inflation in the slow roll approximation”
  - Sept 2001 – June 2005: BSc (4yr Hons) University College Dublin (NUI Dublin), Ireland  
Subject: Mathematical Physics, Classification: First Class Honours (first in year)
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## Outreach Activities

- Lecturer at July 2011 Goldsmiths' Company Astrophysics course for school teachers.
- Interviewed on Dublin South FM science show in August 2011 about cosmology and current research.
- I am a member of the STEMNET Ambassador program and regularly attend school career fairs and networking sessions.
- I participate as guest scientist in school tours of the QMUL Centre of the Cell exhibit.
- I took part in the Big Bang Science Fair in 2009 as an expert guide for visiting groups and in the 2011 event as a participant in speed-networking sessions.