

Joel M. Weller

Nationality: British

DOB: 29/07/1985

app07jmw@shef.ac.uk

<http://particle-theory.group.shef.ac.uk/Joel>

Dept. of Applied Mathematics,

University of Sheffield

Hounsfield Road, Sheffield,

S3 7RH, UK

(+44) 0114 222 3835

Education

- **University of Sheffield** Sheffield, UK
PhD Applied Mathematics 2007 - present
 - Supervisor: Dr. Carsten van de Bruck
 - Thesis title: “Models of Inflation and Dark Energy with Coupled Scalar Fields”
 - Expected completion in early 2011
- **University of Reading** Reading, UK
MPhys Theoretical Physics 2003-2007
 - Graduated 6/7/2007 with First-class honours
 - Masters Project: “Investigating Gravitational waves” (Supervisor: Prof John Blackman)

Research Interests

Inflationary Cosmology,

Scalar Fields with Non-Canonical Kinetic Terms,

Preheating and Reheating

Dark Energy and Quintessence

Publications

- **“Embedding DBI inflation in Scalar-tensor theory”**
Carsten van de Bruck, David F. Mota and Joel M. Weller
(arXiv:1012.1567 [astro-ph.CO])
- **“A Quintom scenario with mixed kinetic terms”**
Emmanuel N. Saridakis and Joel M. Weller
Phys. Rev. D 81, 123523 (2010) (arXiv:0912.5304 [hep-th])
- **“Quintessence Dynamics with Two Scalar Fields and Mixed Kinetic Terms”**
Carsten van de Bruck and Joel M. Weller
Phys. Rev. D 80, 123014 (2009) (arXiv:0910.1934 [astro-ph.CO])
- **“Slow-Roll Inflation in the Presence of a Dark Energy Coupling”**
Philippe Brax, Carsten van de Bruck, Lisa M. H. Hall and Joel M. Weller
Phys. Rev. D 79, 103508 (2009) (arXiv:0812.2843 [gr-qc])

Recent Talks and Visits

- **“Embedding DBI inflation in Scalar-tensor theory”** invited seminar at Queen Mary University of London, *24th November 2010*
- **“Coupled DBI Cosmology”** invited seminar at the University of Oslo, *20th May 2010*
- Extended collaborative visits to the Institute for Theoretical Astrophysics, University of Oslo, Norway, *2nd October - 14th November 2009* and *11th May - 13th June 2010*
- **“A two-field model of dark energy with a kinetic coupling”** talk given at *UK Cosmology Meeting*, King’s College London, *14th November 2009*
- **“Non-Canonical Scalar Fields in Cosmology”** invited seminar at the University of Oslo, *8th October 2009*
- **“Scalar Fields in Cosmology”** invited seminar at the University of York, *14th May 2009*
- **“Dark Energy in the Early Universe”** talk given at *Beyond Part III* (Cambridge, *16th-18th April 2009*)

Meetings and Schools Attended

- **The 4th UniverseNet School - Frontiers of Particle Cosmology**, *12th - 18th September 2010*, Lecce, Italy
- **UK Cosmo Meetings** *24th Jun 2010*, Imperial College, London; *24th Feb 2010*, Lancaster; *14th Nov 2009* King’s College London; *16th Dec 2008*, QMUL; *10th April 2008*, Cambridge; *28th Nov 2007*, UCL
- **TRR33 Winter School on Cosmology**, *6th - 11th December 2010*, Tonale, Italy
- **COSMO ’09**, *7th-11th September 2009*, CERN, Switzerland
- **Beyond Part III**, *16th-18th April 2009*, University of Cambridge
- **Interactions in the dark: physics of Dark Energy-Dark Matter interactions**, *6th-9th April 2009*, University of Leiden, Holland
- **BUSSTEPP 2008**, *25th August - 6th September 2008*, DAMTP, University of Cambridge
- **New Trends in Particle Physics and Cosmology**, *30th June - 3rd July 2008*, University of Sheffield
- **GradCATS**, *6th May 2008*, King’s College London
- **The Very Early Universe: 25 Years On**, *17th - 20th December 2007*, DAMTP, Cambridge

Academic Awards and Prizes

Yggdrasil Scholarship , <i>The Research Council of Norway</i> (NOK 46,000)	2009-2010
J. J. Thompson Scholarship , <i>The University of Reading</i> (£1000pa)	2003-2007
Foresters Scholarship (£500pa)	2003-2007

Computing Skills

Numeric computation: **Matlab, Scilab**

Symbolic computation: **Mathematica, Maple**

Languages: **Fortran, C++, HTML, LaTeX**

Operating systems: **Linux, MacOS X, Windows**

Teaching Experience

- *BTEC & CIV Refresher Workshops* (Undergraduate courses on entry-level mathematics for engineering students), blackboard teaching, University of Sheffield, 2010
- MASH (Drop-in centre offering one-to-one undergraduate mathematics tuition), Tutor, University of Sheffield, 2008-2010
- International Undergraduate Summer School (IUSS), Project supervisor for three students, University of Sheffield, June/July 2009
- MAS165 *Mathematics for Physicists* (Undergraduate course on vector analysis), Teaching Assistant, University of Sheffield, 2008-2010
- AMA262 *Applied Differential Equations* (Undergraduate course on numerical methods and PDEs), Teaching Assistant, University of Sheffield, 2008-2010
- MAS147 *Mathematics A* (Undergraduate maths course for engineering students), Teaching Assistant, University of Sheffield, 2007-2008

Referees

- **Dr. Carsten van de Bruck**

Dept. of Applied Mathematics,
University of Sheffield,
Hounsfield Road, Sheffield,
S3 7RH, UK

Email: c.vandebruck@shef.ac.uk
Tel: (+44) 0114 2223790

- **Dr. David Mota**

Institute of Theoretical Astrophysics,
University of Oslo,
0315, Oslo,
Norway

Email: D.F.Mota@astro.uio.no
Tel: +47 22 85 75 81

- **Dr. Philippe Brax**

Institut de Physique Théorique,
Orme des Merisiers batiment 774,
Point courrier 136,
CEA/DSM/IPhT, CEA/Saclay,
F-91191 Gif-sur-Yvette Cedex,
FRANCE

Email: philippe.brax@cea.fr
Tel: +33 1 69 08 74 71