

Jolyon Keith Bloomfield

Curriculum Vitae

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Education

- 2007–2012 | **Cornell University**, Ithaca, New York, USA
Doctor of Philosophy in Theoretical Physics, January 2013
Thesis: “*Cosmological Models of Modified Gravity*”
Master of Science in Physics, February 2010
- 2003–2006 | **Australian National University**, Acton, ACT, Australia
Bachelor of Philosophy with Honors in Theoretical Physics, December 2006
Thesis: “*The Thermodynamics and Fractional Statistics of the Spinor Bose Gas*”

Professional Experience

- 2012– | **Cornell University**, Ithaca, New York, USA
Postdoctoral Associate, Center for Radiophysics and Space Research, October 2012 to present

Awards/Honors

- 2011–2012 | Boochever Prize Fellowship in Fundamental Theoretical Physics
- 2011 | Best Student Presentation Prize (Eastern Gravity Meeting)
- 2007–2008 | Cornell Graduate Fellowship
- 2007 | Australian Postgraduate Award
- 2006 | University Medal in Theoretical Physics
- 2006 | Defense Science and Technology Organization Australian Institute of Physics Scholarship

2003–2006	National Achievement Scholarship
2003–2006	Australian National University Distinguished Scholar
2002	Australian Students Prize
2002	Silver Medal, International Physics Olympiad
2002	Bronze Medal, Asian Physics Olympiad

Research Interests

- Modifications of gravity, including higher-dimensional gravity
- Gravitational behavior of cosmic strings
- Cosmology, dark energy in particular

Research Experience

Postdoctoral Research: Center for Radiophysics and Space Research, Cornell University (with Prof. Eanna Flanagan, Prof. Rachel Bean, Prof. Ira Wasserman, Prof. David Chernoff)

- Continuing development of general models of dark energy and techniques for applying observational constraints to such models
- Investigation of cosmic string lensing, and the effects of gravitational backreaction on cosmic string evolution

Doctoral Research: Physics Department, Cornell University (with Prof. Eanna Flanagan)

- Developed general categorizations for single field dark energy models
- Investigated 5-dimensional braneworld models involving multiple branes
- Investigated analytic forms of black hole initial data for numerical simulations

Undergraduate Research: Research School of Physical Sciences and Engineering, Australian National University (with Prof. Murray Batchelor)

- Investigated the thermodynamic and statistical properties of a one-dimensional spinor gas

Teaching Experience

Cornell University

Spring 2013	Guest lecturer, Relativity and Astrophysics (intermediate undergraduate, one guest lecture)
Spring 2012	Teaching assistant, Electricity and Magnetism (intermediate undergraduate, recitation sections, six guest lectures, designed component on special relativity)
Spring 2011	Grader, General Relativity II (advanced graduate) Grader, Symbolic & Numerical Computing (advanced undergraduate)
Spring 2010	Teaching assistant and guest lecturer, Intermediate Mechanics (intermediate undergraduate, recitation sections, three guest lectures)

	Grader, Basics of Quantum Mechanics (intermediate undergraduate)
Fall 2009	Teaching assistant, Physics II: Heat and Electromagnetism (introductory undergraduate, recitation sections, labs)
	Grader, Solid State Physics I (graduate)
Spring 2009	Teaching assistant, Electricity and Magnetism (intermediate undergraduate, recitation sections)
Fall 2008	Teaching assistant, General Relativity (graduate, recitation sections)
	Grader, Solid State Physics I (graduate)
Spring 2008	Teaching assistant, Physics I: Mechanics (introductory undergraduate, recitation sections)
Fall 2007	Lab assistant, Electricity and Magnetism (intermediate undergraduate, labs)

Australian National University

Spring 2007	Teaching assistant, Theoretical Physics (advanced undergraduate, recitation sections)
Spring 2006	Teaching assistant, Advanced Physics (introductory undergraduate, recitation sections, labs)

Presentations

April 2013	APS April Meeting, “Dark Energy or Modified Gravity? An Effective Field Theory Approach”
Feb 2013	Cornell University, “The Cosmological Constant: 124 Orders of Magnitude”
Sep 2012	Workshop on Cosmic Acceleration (CMU), “Matter interactions in effective field theories of dark energy”
Jul 2012	Thirteenth Marcel Grossmann Meeting, “Matter interactions in effective field theories of dark energy”
Apr 2012	East Coast Gravity Meeting, “Categorizing Models of Cosmic Acceleration”
Dec 2011	Australian National University, “What we know about gravity, and how we can modify it”
Dec 2011	California Institute of Technology, “Categorizing Models of Cosmic Acceleration”
Nov 2011	University of Pennsylvania, “Categorizing Models of Cosmic Acceleration”
Nov 2011	Princeton University, “Categorizing Models of Cosmic Acceleration”
Nov 2011	Cornell University, “Categorizing Models of Cosmic Acceleration”
Oct 2011	Syracuse University, “Categorizing Models of Cosmic Acceleration”
Jun 2011	Eastern Gravity Meeting, Princeton, “Effective Field Theories for Dark Energy”
May 2011	American Physical Society April Meeting, Anaheim, “Effective Field Theories for Dark Energy”

Jan 2011	Rust Belt Cosmology Workshop, Buffalo, “Four-Dimensional Effective Theories from Multibrane Worlds”
Nov 2010	Cornell University, “Is Gravity an Emergent Force?”
Jun 2010	Australian National University, “Extra Dimensions in a Nutshell”
May 2010	Eastern Gravity Meeting, North Carolina State University, “The Four-Dimensional Effective Action of a Multibrane World in Five Dimensions”
Feb 2010	American Physical Society April Meeting, Washington, “The Four-Dimensional Effective Action of a Multibrane World in Five Dimensions”
Sep 2009	Cornell University, “The Phenomenology of Extra Dimensions”
Jun 2009	Eastern Gravity Meeting, Rochester, “Effective Four-Dimensional Actions in Braneworld Scenarios”
May 2009	American Physical Society April Meeting, Denver, “Effective Four-Dimensional Actions in Braneworld Scenarios”

Service

Committee	Cornell University Physics Department Colloquium Committee, 2010–2011 Organized colloquium speakers for the Physics Department
Outreach	Expanding Your Horizons Conference, 2010–2012 Coordinated a day-long conference for 300 middle school girls to excite them about science Volunteered 2010, served on organizing committee 2011, 2012
Outreach	Ask An Astronomer at Cornell University Served as panelist on forum to answer astronomy questions from the public, May 2010 Responded to questions submitted online to the Ask an Astronomer program, ongoing
Service	Lights Off Cornell, 2009–2012 Founded and administered public service organization that aims to mobilize volunteers to turn lights off on campus at night
Committee	Graduate and Professional Student Assembly, Cornell University, 2009–2012 Represented Physics Department and graduate students
President	Physics Graduate Society, Cornell University, 2008–2009 Organized social events for graduate students in physics Organized research information events for undergraduates and first-year graduate students

Professional Development

2012	The Practice of Teaching and Learning in Higher Education – Pedagogy course
2012	Physics Department Teaching Assistant Training – Observed and reviewed other graduate teaching assistants
2008	Teaching and Learning Physics – Pedagogy course

Membership in Professional Societies

– American Physical Society, 2009–present