

Dr. Katherine Drew Marvel

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Education

DAMTP, University of Cambridge

PhD in Applied Mathematics and Theoretical Physics

Cambridge, UK

2005-2008

Dept. of Applied Mathematics and Theoretical Physics, University of Cambridge

Certificate of Advanced Study in Mathematics with Distinction

2003-2004

University of California

B.A. Astrophysics and Physics

Berkeley, CA

1999-2003

Work Experience

Center for International Security and Cooperation, Stanford University Stanford, CA

William J. Perry Fellow

September 2010-present

Center for International Security and Cooperation, Stanford University Stanford, CA

Postdoctoral Science Fellow

January 2009-present

Department of Applied Mathematics and Theoretical Physics, University of Cambridge

Graduate Supervisor

2004-2008

AIMS Winter School in GNU/Linux as a Tool for Science, Muizenberg, South Africa

Lecturer

June 2005-August 2005

African Institute for Mathematical Sciences, Muizenberg, South Africa

Tutor

Sept. 2004-June 2005

UC Berkeley Astronomy Department

Teaching Assistant

2002

Galactic Emission Mapping Project, Lawrence Berkeley Laboratory

Researcher

2001-2003

Publications

- Marvel, Kate. "Downscaling Global Climate Models: the Case of California". In preparation
- Marvel, Kate, and Michael May. "Game Changers for Nuclear Energy," AAAS

Occasional Paper, in preparation

- Marvel, Kate, and Undraa Avalungsaan. "Random Matrix Theory Models of the Electric Grid". *Physica A*, Volume 389, Issue 24, Pages 5838-5851
- Marvel, Kate, and Daniel Wesley. "Tunneling with Negative Tension." *JHEP* 0812 (034), 2008
- Marvel, Kate, and Neil Turok. "Horizons and Tunneling in the Euclidean False Vacuum." *High Energy Theory Archive*, <http://arxiv.org/abs/0712.2719>
- Marvel, Kate. "A New Model for Science Education in Africa." *Science and World Affairs*, January 2007.

Conferences

Union of Concerned Scientists Summer Symposium: Shanghai, China

Participant: July 2009

The 58th Pugwash Conference on Science and World Affairs: The Hague, The Netherlands

Chair, ISYP Working Group A (Nuclear Energy and Climate Change): April 2009

The 57th Pugwash Conference on Science and World Affairs: Bari, Italy

International Student/Young Pugwash Board Member November 2007

Cosmology and Particle Physics Beyond the Standard Model: Cargese, France

Student: August 2007

Union of Concerned Scientists Summer Symposium: Oslo, Norway

Participant: July 2007

IPM Cosmology School and Conference: Tehran, Iran

Invited Speaker: June 2007

The 56th Pugwash Conference on Science and World Affairs: Cairo, Egypt

International Student/Young Pugwash Delegate: November 2006

Modern Cosmology Workshop: Benasque, Spain

Workshop Participant August 2006

New Trends in Particle Physics and Cosmology: Sheffield, UK

Participant and Speaker: June 2006

FBSA Conference on International Development: Paris, France

UK Delegate: October 2005

Talks

CISAC Research Seminar, Stanford University

Game Changers for Nuclear Energy June 2010

Center for Nonlinear Sciences, Los Alamos National Laboratory

Random Matrix Theory and the Electric Grid February 2010

Union of Concerned Scientists Summer Symposium. Shanghai, China

Random Matrix Theory and the Electric Grid May 2009

CISAC Fellows Forum, Stanford University

Nuclear Energy for Africa? May 2009

Gravity and Particles Seminar, University of Nottingham

Tunneling with Negative Tension October 2008

Friday General Relativity Seminar, University of Cambridge

Horizons and Tunneling in the Euclidean False Vacuum November 2007

Union of Concerned Scientists Summer Symposium, Oslo, Norway

Nuclear Issues in the Democratic of Congo July 2007

IPM Cosmology School and Conference IPM, Tehran, Iran

Bubbles and Tunneling June 2007

UK Cosmology Network Meeting, University of Nottingham

The Uses of Bubbles April 2007

New Trends in Particle Physics and Cosmology, University of Sheffield

Vacuum Decay and the Cosmological Constant June 2006

Monday Cosmology Lunch, University of Cambridge

The Redshift of Vacuum Decay May 2006

Awards

Rayleigh-Knight Prize for Mathematics 2007

Cambridge International Trust Scholarship (honorary) 2006

Trinity College Internal Research Scholarship 2005

Trinity College Senior Scholarship 2004

Gates Cambridge Scholarship 2003

Departmental Citation (for the outstanding graduating senior in Astrophysics) 2003

UC Berkeley Physical Sciences Commencement Speaker 2003

Phi Beta Kappa Honor Society 2003

Highest Honors in Physics 2003

Dean's Honor List 1999-2003

Undergraduate Research Summer Stipend 2002

Berkeley Physics Undergraduate Research Scholarship 2001-2003

National Merit Finalist 1999

Voluntary Activities

The Prison University Project at San Quentin

Mathematics lecturer: May 2010- present

International Student/Young Pugwash

Executive Board Member: July 2007- present

Cambridge University Student Pugwash

Chair: October 2006- October 2008

Oranjekloof Primary School: Mandela Park Township, South Africa

Tutor: Sept. 2004-Aug. 2005

Washington Elementary School: Berkeley, CA

Tutor: Sep. 2000 - May 2001

Society for Women in the Physical Sciences: UC Berkeley

Coordinator: Nov. 2001- Apr. 2002

Interests and Skills

Academic: Physical climatology and climate models. Mathematical models of energy and transportation systems. Energy systems. Nuclear energy as a low-carbon electricity source. Human security.

Programming Languages: C, IDL, Python, FORTRAN, HTML, Octave (Matlab), Latex, Mathematica, Maple

Other: Mountaineering, rock climbing, writing, surfing

Languages: Native: English. Advanced: German and Italian. Intermediate: French. Basic: Portuguese