Matthew C. Johnson

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Education

Ph.D. in Physics, 2007
UC Santa Cruz, Santa Cruz, CA, USA
Advisor: Anthony Aguirre
Thesis: *Vacuum transitions and eternal inflation.*

B.S. in Liberal Arts, specializing in Physics, 2002
The Evergreen State College, Olympia, WA, USA

Research and Teaching Experience

2007-present Postdoctoral scholar: California Institute of Technology
Research in cosmology and high energy theory. Affiliated with S. Carroll and M. Kamionkowski.

2004-2007 Research assistant: UC Santa Cruz
Research in cosmology and high energy theory with A. Aguirre and T. Banks.

2006-2007 Head teaching assistant: UC Santa Cruz
TA training and TA representative for the physics department.

2002-2006 Teaching assistant: UC Santa Cruz
TA for lower division lab courses (8 quarters), upper division lab (1 quarter), upper division E&M (1 quarter), and upper division thermodynamics (1 quarter).

2003 Research assistant: UC Santa Cruz
Research in silicon strip detector design for the ILC with B. Schumm.

2001-2002 Research assistant: The Evergreen State College
Research in Solar Physics with E.J. Zita and T. Bogdan.

2000-2002 Teaching Assistant: The Evergreen State College
TA for the Matter and Motion program (included introductory physics, calculus, and chemistry) with J. Bulloc and D. McAvety. TA for the Physical Systems program (included modern physics, mechanics, and E&M) with D. Mittendorf.

Awards

- Postdoctoral prize fellowship, Caltech, 2007.
- Research grant, Hierarchical Systems Research Foundation, 2007.
- ARCS scholar, 2006.
- Marilyn Stevens Scholarship, 2005.
- TA sabbatical, 2005.

Activities

- Caltech Greenhouse Gas Reduction committee, 2009.
- Board Member, Caltech Postdoctoral Association, 2008 - present.
- Cosmology presentations, Pacific Collegiate High School, 2006 and 2007.
- Judge, MESA competition for young scientists and engineers, 2006.
- Referee for IOP journals.

Publications

A. Aguirre, M. C. Johnson, and M. Larfors, *Runaway dilatonic domain walls*, (2009), arXiv:0911.4342 [hep-th].

A. Aguirre and M. C. Johnson, *A status report on the observability of cosmic bubble collisions*, (2009), arXiv:0908.4105 [hep-th] (submitted to Reports on Progress in Physics).

S. M. Carroll, M. C. Johnson, and L. Randall, *Dynamical compactification from de Sitter space*, JHEP 11, 094 (2009), [arXiv:0904.3115 [hep-th]].

S. M. Carroll, M. C. Johnson, and L. Randall, *Extremal limits and black hole entropy*, JHEP 11, 109 (2009), [arXiv:0901.0931 [hep-th]].

A. Aguirre, M. C. Johnson, and M. Tysanner *Surviving the crash: assessing the aftermath of cosmic bubble collisions*, Phys. Rev. **D79**, 123514 (2008), [arXiv:0811.0866 [hep-th]].

M. C. Johnson and M. Larfors, *An obstacle to populating the string theory landscape*, Phys. Rev. **D78**, 123513 (2008), [arXiv:0809.2604 [hep-th]].

M. C. Johnson and M. Larfors, *Field Dynamics and tunneling in a flux landscape*, Phys. Rev. **D78**, 083534 (2008), arXiv:0805.3705 [hep-th].

M. C. Johnson and M. Kamionkowski, *Dynamical and Gravitational Instability of Oscillating-Field Dark Energy and Dark Matter*, Phys. Rev. **D78**, 063010 (2008), [arXiv:0805.1748].

A. Aguirre and M. C. Johnson *Towards observable signatures of other bubble universes II: Exact solutions for thin-wall bubble collisions*, Phys. Rev. **D77**, 123536 (2007), [arXiv:0712.3038].

A. Aguirre, M. C. Johnson, and A. Shomer, *Towards observable signatures of other bubble universes*, Phys. Rev. **D76**, 063509 (2007) [arxiv:0704.3473].

A. Aguirre, S. Gratton, and M. C. Johnson, *Measures on Transitions for Cosmology in the Landscape*, Phys. Rev. Lett. **98**, 131301 (2007), [hep-th/0612195].

A. Aguirre, S. Gratton, and M. C. Johnson, *Hurdles for Recent Measures in Eternal Inflation*, Phys. Rev. **D75**, 123501 (2007), [hep-th/0611221].

T. Banks, A. Shomer, and M. C. Johnson, *A Note on Gauge Theories Coupled to Gravity*, JHEP 09, 049 (2006), [hep-th/0606277].

A. Aguirre, T. Banks, and M. C. Johnson, *Regulating Eternal Inflation II: The Great Divide*, JHEP 08, 065 (2006), [hep-th/0603107].

A. Aguirre and M. C. Johnson, *Two Tunnels to Inflation*, Phys. Rev. **D73**, 123529 (2006), [gr-qc/0512034].

T. Banks and M. C. Johnson, *Regulating Eternal Inflation*, (2005), [hep-th/0512141].

A. Aguirre and M. C. Johnson, *Dynamics and Instability of False Vacuum Bubbles*, Phys. Rev. **D70**, 103525 (2005), [gr-qc/0508093].

T. Bogdan et al., *Waves in the magnetized solar atmosphere II: Waves from localized sources in magnetic flux concentrations*, ApJ, 599, 626 (2003).

T. Bogdan et al., *Waves in magnetic flux concentrations*, Astronomische Nachrichten, 323, 196 (2002).

Seminars

Columbia University, December 2009.

Caltech, October 2009.

Los Alamos National Lab, October 2009.

UT Austin, October 2009.

UC Berkeley, September 2009.

UCLA, April 2009.

Uppsala Universitet, April 2008.

SLAC, September 2007.

MCTP, December 2007.

Stanford, January 2007.

Princeton, December 2006.

UC Santa Barbara, November 2006.

UC Berkeley, September 2006.

UC Davis, November 2005.

UC Santa Cruz, October 2005.

Conferences and Workshops

Challenges in Theoretical Cosmology, Talloires, September 2009.

Holographic Cosmology, Perimeter Institute, June 2009.

Confronting Challenges in Theoretical Physics, UC Santa Cruz, June 2009.

Eternal Inflation, ICTP, June 2009.

Fingerprints of the Early Universe , Aspen Center for Theoretical Physics, May 2009.

COSMO 08, Madison, August 2008.

TASC Conference, UCLA, November 2007.

Les Houches 2007: String Theory and the Real World, June 2007.

Santa Barbara Gravity Workshop, May 2007.

Young Researchers Conference, Perimeter Institute, December 2006.

COSMO 06, Lake Tahoe, September 2006.

22nd IAP Colloquium: Inflation+25, IAP, June 2006.