Robert A. McNees

Curriculum Vitae
Fall 2008

Perimeter Institute for Theoretical Physics
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Research

Theoretical Physics, focusing on topics in String Theory, Cosmology, General Relativity, and Particle Physics.

Education

University of Texas, Austin, TX
Ph.D. in Physics, 2002
- Dissertation: "String Theory, Holography, and UV-IR Mixing"
- Advisor: Willy Fischler

University of North Carolina, Chapel Hill, NC
B.S. in Physics, 1995

Research Positions

Perimeter Institute for Theoretical Physics, 2007 - Present
Postdoctoral Researcher

Brown University, 2005 - 2007
Postdoctoral Research Associate, Department of Physics

University of Michigan, 2002 - 2005
Postdoctoral Fellow, Department of Physics

University of Texas, 1998 - 2002
Graduate Research Assistant, Theory Group

Teaching Experience

University of Waterloo, 2008 - Present
Lecturer, Department of Physics
- Introduction to Physics, Fall 2008
- Modern Particle Physics, Winter 2008
- Mechanics and Waves 2, Winter 2009 and Spring 2009
- Mathematical Physics, Spring 2009

Perimeter Institute for Theoretical Physics, Summer 2008
International Summer School for Young Physicists
- Lectures and mentoring sessions on "The Expanding Universe"

EinsteinPlus Workshop for High School Teachers
- Lectures on "Big Questions" in Theoretical Physics

Brown University, 2006 - 2007
Graduate Reading Group
- Supervised reading courses on Black Holes, AdS/CFT

Michigan Center for Theoretical Physics, 2003 - 2005
Special Topics Lectures for Graduate Students
- Lectures on Black Hole Thermodynamics, AdS/CFT, Inflation

University of Texas at Austin, 1996 - 2002
Teaching Assistant, Department of Physics
- Honors Modern Physics: Fall 1996, 1997, 1999; Spring 1998
- Electricity and Magnetism Lab: Spring 1997
- Waves and Optics Lab: Fall 1998
- Graduate Cosmology: 2000 - 2002

Teaching Assistant, Department of Mathematics
- Calculus: Summer 1998

Departmental Service

Perimeter Institute, 2007 - Present
Advisory Committee, Perimeter Institute Recorded Seminar Archive

Brown University, 2005 - 2007
Organizer, High Energy Theory Seminar

University of Michigan, 2002 - 2004
Organizer, High Energy Theory Seminar

University of Texas at Austin, 1997 - 2002
Graduate Student Review Committee, 2002
- Reported to the Department's External Review Committee

Graduate Welfare Committee, 1997 - 1999
- Represented student concerns to the administration

Graduate Recruitment Committee, 1997 - 1999
- Organized talks and activities for graduate recruitment

Professional Service

Referee for Physical Review Letters, Physical Review D, Journal of High Energy Physics, Journal of Cosmology and Astroparticle Physics

Reviewer for American Mathematical Society

Professional Affiliations

American Physical Society
- Division of Particles and Fields
- Topical Group on Gravitation

National Center for Science Education

Society of Physics Students, 1992-95
- President, UNC Chapter, 1994-95

Outreach

Perimeter Institute for Theoretical Physics
- Question and answer sessions for visiting students
- Produced and edited materials for outreach website
- Multiple interviews for popular media

Department of Energy National Science Bowl
- Moderator and Speaker, 2007 - Present

Career Day participant in Rhode Island middle schools

College Board National Forum
- Panelist and Invited Speaker, Fall 1996 and Fall 2000

Honors

University of Texas School of Natural Sciences Tuition Fellowships, 1996-98

Rotary International Ambassadorial Scholar, 1995-96

Phi Beta Kappa

Computer Experience

Systems Administrator, 1999-2002
- Experienced Linux administrator; maintained a secure network of 20 Linux machines for the UT Theory Group
- Familiar with Windows and Mac administration

Symbolic Computing: Mathematica, Maple, Form, Cadabra

Programming Languages: C, C++, Python

Technical Publishing: LaTeX, TeX, MathML

Online Publishing: HTML, CSS, Wordpress, Movable Type,, SVG

Course Management: Angel LMS

Selected Talks

"On Quark Masses in Holographic QCD"
Theory Canada 4, University of Montreal, June 2008

"Boundary Terms Unbound! Variational Principles for Gravitational Theories"
University of Chicago, December 2007

"Everything You Ever Wanted to Know about 2-D Black Holes"
Syracuse University, April 2007

"Actions, Boundary Terms, and AdS/CFT"
Massachusetts Institute of Technology, March 2006

"Inflation, Holography, and Diffeomorphisms"
Columbia University, March 2004

"Inflation as a Holographic RG Flow"
University of Pennsylvania, October 2003

"Inflation and Broken Scale Invariance"
Perimeter Institute for Theoretical Physics, June 2003

Grants and Awards

NSF Grant PHY-0714747 in support of "Northeast Regional String Theory Conference Program" (PI: David Lowe, Brown University)

Selected Conferences (Organizer)

"The Second New England String Meeting"
Brown University, November 2007

"The First New England String Meeting"
Brown University, November 2006

"Time Dependent Backgrounds In String Theory"
Michigan Center for Theoretical Physics, April 2003

Selected Conferences (Participant)

"Gravitational Thermodynamics and the Quantum Nature of Space Time"
International Center for Mathematical Physics, Edinburgh, June 2008

"PASCOS 2008"
Perimeter Institute for Theoretical Physics, June 2008

"The Sowers Theoretical Physics Workshop 2007"
Virginia Tech, May 2007

"Northeast String Cosmology Meeting"
Columbia University, December 2006, May 2006, May 2005, December 2004, May 2004

"Cosmo 2006"
University of California, Davis, September 2006

"Strings"
University of Toronto, July 2005
Collège de France, June-July 2004

"Quantum Theory of Black Holes"
The Ohio State University, September 2004

"Superstring Cosmology"
Kavli Institute for Theoretical Physics, November-December 2003

"QCD and Strings"
Michigan Center for Theoretical Physics, May 2003

"Great Lakes Cosmology"
Michigan Center for Theoretical Physics, May 2003

"The Davis Meeting on Cosmic Inflation"
University of California, Davis, March 2003

"TASI-99: Strings, Branes, and Gravity"
University of Colorado, June 1999

Publications

"Holographic Description of AdS_2 Black Holes," with Alejandra Castro, Daniel Grumiller, and Finn Larsen, arXiv:0809.4264 [hep-th].

"On Quark Masses in Holographic QCD," with Robert C. Myers and Aninda Sinha. To appear in JHEP, arXiv:0807.5127 [hep-th].

"On the Stress Tensor for Asymptotically Flat Gravity," with Robert Mann, Donald Marolf, and Amitabh Virmani. To appear in in Class. Quant. Grav., arXiv:0804.2079 [hep-th]

"Dirichlet Boundary Value Problem for Chern-Simons Modified Gravity," with Robert Mann and Daniel Grumiller. Published in Phys. Rev. D **78**, 081502 (R) (2008), arXiv:0803.1485 [gr-qc]

"Black Hole Thermodynamics and Hamilton-Jacobi Counterterm," with Luzi Bergamin, Daniel Grumiller, and Rene Meyer. Proceedings contribution to *Quantum Field Theory Under the Influence of External Conditions*. Published in J. Phys. A 41:164068, 2008, arXiv:0710.4140 [hep-th].

"The Thermodynamics of Black Holes in Two (and Higher) Dimensions," with Daniel Grumiller. Published in JHEP **0704**, 074 (2007), hep-th/0703230.

"A New Boundary Counterterm for Asymptotically AdS Spacetimes," hep-th/0512297.

"Boundary Counterterms and the Thermodynamics of 2-D Black Holes," with J. Davis. Published in JHEP **0509**, 072 (2005), hep-th/0411121.

"Black Hole Mass and Hamilton-Jacobi Counterterms," with A. Batrachenko, J.T. Liu, W.A. Sabra, and W.Y. Wen. Published in JHEP **0505**, 034 (2005), hep-th/0408205.

"Holography, Diffeomorphisms, and Scaling Violations in the CMB," with F. Larsen. Published in JHEP **0407**, 062 (2004), hep-th/0402050.

"Inflation and De Sitter Holography," with F. Larsen. Published in JHEP **0307**, 051 (2003), hep-th/0307026.

"Entropy of the Stiffest Stars," with T. Banks, W. Fischler, A. Kashani-Poor, and S. Paban. Published in Class. Quant. Grav. 19:4717-4728,2002, hep-th/0206096.

"String Theory, Holography, and UV-IR Mixing," Ph.D. Dissertation, University of Texas, UMI Publication AAT 3115501 (2002).

"The Acceleration of the Universe, A Challenge for String Theory," with W. Fischler, A. Kashani-Poor, and S. Paban. Published in JHEP **0107**, 003 (2001), hep-th/0104181.

"The Interplay Between θ and T," with W. Fischler, E. Gorbatov, A. Kashani-Poor, S. Paban, and P. Pouliot. Published in JHEP **0006**, 032 (2000), hep-th/0003216.

"Correlation Functions of Operators and Wilson Surfaces in the d=6, (0,2) Theory in the Large N Limit," with R. Corrado and B. Florea. Published in Phys. Rev. D **60**, 085011 (1999), hep-th/9902153.

"Cryptosystems Based on Chaotic Dynamics," with V. Protopopescu, R.T. Santoro, and J.S. Tolliver. Oak Ridge National Laboratory Report ORNL/TM-12440.

References

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