

Massachusetts Institute of Technology
Center for Theoretical Physics
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Research Positions

Massachusetts Institute of Technology Cambridge, MA
Senior Postdoctoral Associate, Center for Theoretical Physics 9/2008-present

Institute for Advanced Study Princeton, NJ
Postdoctoral Fellow, School of Natural Sciences 8/2005-9/2008
Marvin L. Goldberger member

Education

California Institute of Technology Pasadena, CA
Ph.D., Theoretical Physics 6/2005
Dissertation Topic: "Superstring holography and integrability in $AdS_5 \times S^5$ "
Advisor: John H. Schwarz

The College of William and Mary Williamsburg, VA
B.S., Physics 5/2000
Summa Cum Laude, with Highest Honors in Physics

Honors and Awards

James A. Cullen Memorial Fellowship 2004
California Institute of Technology

Thomas E. Everhart Distinguished Graduate Student Lecturer 2003
Awarded lecture with honorarium
California Institute of Technology

Thomas Jefferson Prize in Natural Philosophy 2000
College of William and Mary

Ann Callahan Chappell Award for academics and undergraduate research 1999
College of William and Mary

Phi Beta Kappa, Alpha chapter of Virginia 1999
College of William and Mary

Barry M. Goldwater Scholarship 1999
College of William and Mary

James Monroe Research Scholarship 1999
College of William and Mary

William and Mary research symposium 1999
Awarded lecture with honorarium
College of William and Mary

Papers

“Cosmology of the closed string tachyon”

I. Swanson

Phys. Rev. D **78**, 066020 (2008) [arXiv:0804.2262 [hep-th]]**“A stable vacuum of the tachyonic E_8 string”**

S. Hellerman and I. Swanson

arXiv:0710.1628 [hep-th]

“Supercritical $\mathcal{N} = 2$ string theory”

S. Hellerman and I. Swanson

arXiv:0709.2166 [hep-th]

“Charting the landscape of supercritical string theory”

S. Hellerman and I. Swanson

Phys. Rev. Lett. **99**, 171601 (2007) [arXiv:0705.0980 [hep-th]]**“A review of integrable deformations in AdS/CFT”**

I. Swanson

Mod. Phys. Lett. A **22**, 915 (2007) [arXiv:0705.2844 [hep-th]]**“Cosmic 21-cm Fluctuations as a Probe of Fundamental Physics”**

M. Kleban, K. Sigurdson and I. Swanson

JCAP **0708**, 009 (2007) [arXiv:hep-th/0703215]**“Cosmological unification of string theories”**

S. Hellerman and I. Swanson

JHEP **0807**, 022 (2008) [arXiv:hep-th/0612116]**“Connecting giant magnons to the pp-wave: An interpolating limit of $AdS_5 \times S^5$ ”**

J. Maldacena and I. Swanson

Phys. Rev. D **76**, 026002 (2007) [arXiv:hep-th/0612079]**“Dimension-changing exact solutions of string theory”**

S. Hellerman and I. Swanson

JHEP **0709**, 096 (2007) [arXiv:hep-th/0612051]**“Cosmological solutions of supercritical string theory”**

S. Hellerman and I. Swanson

Phys. Rev. D **77**, 126011 (2008) [arXiv:hep-th/0611317]**“Integrable twists in AdS/CFT”**

T. McLoughlin and I. Swanson

JHEP **0608**, 084 (2006) [arXiv:hep-th/0605018]**“Superstring holography and integrability in $AdS_5 \times S^5$ ”**

I. Swanson

(Ph.D. Thesis)

arXiv:hep-th/0505028

UMI-31-76097(2005)

Papers (cont.)

“Open string integrability and AdS/CFT”

T. McLoughlin and I. Swanson
 Nucl. Phys. B **723**, 132 (2005) [arXiv:hep-th/0504203]

“Quantum string integrability and AdS/CFT”

I. Swanson
 Nucl. Phys. B **709**, 443 (2005) [arXiv:hep-th/0410282]

“N-impurity superstring spectra near the pp-wave limit”

T. McLoughlin and I. Swanson
 Nucl. Phys. B **702**, 86 (2004) [arXiv:hep-th/0407240]

“Lattice super Yang-Mills: A virial approach to operator dimensions”

C. G. Callan, Jr., J. Heckman, T. McLoughlin and I. Swanson
 Nucl. Phys. B **701**, 180 (2004) [arXiv:hep-th/0407096]

“On the integrability of string theory in $AdS_5 \times S^5$ ”

I. Swanson
 arXiv:hep-th/0405172
 CALT-68-2500(2004)

“Higher impurity AdS/CFT correspondence in the near-BMN limit”

C. G. Callan, Jr., T. McLoughlin and I. Swanson
 Nucl. Phys. B **700**, 271 (2004) [arXiv:hep-th/0405153]

“Holography beyond the Penrose limit”

C. G. Callan, Jr., T. McLoughlin and I. Swanson
 Nucl. Phys. B **694**, 115 (2004) [arXiv:hep-th/0404007]

“Quantizing string theory in $AdS_5 \times S^5$: Beyond the pp-wave”

C. G. Callan, Jr., H. K. Lee, T. McLoughlin, J. H. Schwarz, I. Swanson and X. Wu
 Nucl. Phys. B **673**, 3 (2003) [arXiv:hep-th/0307032]

“Casimir Energy In Astrophysics: Gamma-Ray Bursts From QED Vacuum Transitions”

C. E. Carlson and I. Swanson
 Found. Phys. **30**, 775 (2000)

Lectures and Seminars

Massachusetts Institute of Technology
 “Closed string tachyon condensation: An overview”
 Cambridge, MA
 October 20, 2008

University of Michigan, Michigan Center for Theoretical Physics
 “Closed string tachyon condensation: An overview”
 Ann Arbor, MI
 October 8, 2008

Institute for Advanced Study
 “Closed string tachyon condensation: An overview”
 Princeton, NJ
 May 2, 2008

University of Chicago
 “Novel transitions from closed-string tachyon condensation”
 Chicago, IL
 January 23, 2008

Lectures and Seminars (cont.)

Duke University “A stable vacuum of the tachyonic E_8 string”	Durham, NC November 16, 2007
University of North Carolina “Novel transitions from closed-string tachyon condensation”	Chapel Hill, NC November 15, 2007
Penn State University “Dimension quenching and c-duality in string theory”	State College, PA August 10, 2007
Cambridge University “Connecting Giant Magnons to the pp-wave”	Cambridge, England May 17, 2007
Universiteit van Amsterdam “Dimension quenching and c-duality ” & “Connecting Giant Magnons to the pp-wave”	Amsterdam, Netherlands May 8-10, 2007
University of California, Berkeley “Dimension quenching and c-duality”	Berkeley, CA May 1, 2007
California Institute of Technology “Dimension quenching and c-duality”	Pasadena, CA April 27, 2007
California Institute of Technology “Connecting Giant Magnons to the pp-wave”	Pasadena, CA April 25, 2007
SUNY Stony Brook “Connecting Giant Magnons to the pp-wave”	Stony Brook, NY April 19, 2007
Massachusetts Institute of Technology “New Transitions and Dualities in Supercritical String Theory”	Cambridge, MA April 18, 2007
Columbia University “Dimension quenching and c-duality”	New York, NY April 6, 2007
Stanford University “Connecting Giant Magnons to the pp-wave”	Stanford, CA April 2, 2007
Perimeter Institute for Theoretical Physics “Supercritical String Transitions, and the Near-flat-space Limit of $AdS_5 \times S^5$ ”	Waterloo, ON March 27, 2007
Harvard University “New Transitions and Dualities via String Cosmology”	Cambridge, MA March 16, 2007
The City College of New York “Aspects of integrability in AdS/CFT”	New York, NY November 3, 2006
Brown University “Aspects of Factorized Scattering in Ads/CFT”	Providence, RI October 25, 2006
California Institute of Technology “Deformed AdS/CFT and Integrability”	Pasadena, CA May 10, 2006

Lectures and Seminars (cont.)

Institute for Advanced Study “Integrable twists in AdS/CFT”	Princeton, NJ April, 2006
École Normale Supérieure “Open string integrability and AdS/CFT”	Paris, France August 10, 2005
University of California, Santa Cruz “Aspects of AdS/CFT Near the BMN/pp-wave Limits”	Santa Cruz, CA January 31, 2005
University of California, Berkeley “Aspects of AdS/CFT Near the BMN/pp-wave Limits”	Berkeley, CA December 21, 2004
Harvard University “Quantum string integrability and AdS/CFT”	Cambridge, MA November 19, 2004
Institute for Advanced Study “Aspects of AdS/CFT Near the BMN/pp-wave Limits”	Princeton, NJ November 8, 2004
The Ohio State University “Integrability and AdS/CFT”	Columbus, OH October 22, 2004
University of Southern California “Integrability and AdS/CFT”	Los Angeles, CA September 29, 2004
Harvard University “Aspects of Integrability in Ads/CFT”	Cambridge, MA December 4, 2003
Rutgers University “Superstring Integrability in Ads/CFT”	Piscataway, NJ November, 2003
The College of William and Mary “Curvature corrections to string theory in the pp-wave background”	Williamsburg, VA November, 2003
Alumni Seminar, California Institute of Technology, “Superstring Theory and the AdS/CFT Conjecture”	Pasadena, CA May, 2003
Thomas E. Everhart Distinguished Graduate Student Lecture, California Institute of Technology, “Tangled Physics: Superstring Theory and the AdS/CFT Conjecture”	Pasadena, CA April 24, 2003
Graduate Student Seminar Series, California Institute of Technology, “Superstring theory and the AdS/CFT correspondence”	Pasadena, CA 2003
College of William and Mary Research Symposium “Casimir energy in astrophysics”	Williamsburg, VA 1999

Conferences and Meetings

Strings 2008 CERN (European Organization for Nuclear Research)	Geneva, Switzerland August 18-23, 2008
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Conferences and Meetings (cont.)

Sixth Simons Workshop in Mathematics and Physics SUNY Stony Brook, sponsored by the Simons Foundation	Stony Brook, NY June 16 - July 12, 2008
Workshop on Cosmological Frontiers in Fundamental Physics Laboratoire APC, Université Paris 7	Paris, France May 19-23, 2008
Eleventh Northeast String Cosmology Meeting New York Academy of Sciences	New York, NY May 9, 2008
Tenth Northeast String Cosmology Meeting New York Academy of Sciences	New York, NY December 7, 2008
Second New England String Meeting Brown University	Providence, RI November 9, 2007
Fifth Simons Workshop in Mathematics and Physics SUNY Stony Brook, sponsored by the Simons Foundation	Stony Brook, NY July 30 - August 31, 2007
IGC Inaugural Conference Penn State University	State College, PA August 9-11, 2007
Prospects in Theoretical Physics: The Standard Model and Beyond Institute for Advanced Study	Princeton, NJ July 16 - July 27, 2007
Ninth Northeast String Cosmology Meeting New York Academy of Sciences	New York, NY May 4, 2007
Eighth Northeast String Cosmology Meeting New York Academy of Sciences	New York, NY December 15, 2006
New England String Meeting Brown University	Providence, RI November 10, 2006
Axions Institute for Advanced Study	Princeton, NJ October 20-22, 2006
Prospects in Theoretical Physics: Applications of String Theory Institute for Advanced Study	Princeton, NJ July 17-28, 2006
Integrability in Gauge and String Theory Max-Planck-Institut für Gravitationsphysik, (Albert Einstein Institut)	Potsdam, Germany July 24-28, 2006
Strings MCM, AMSS, ITP, Chinese Academy of Sciences	Beijing, China June 19-24, 2006
Théories Des Cordes Et Théories De Jauge Supersymétriques L'École Normale Supérieure	Paris, France August 8-19, 2005
Third Simons Workshop in Mathematics and Physics SUNY Stony Brook, sponsored by the Simons Foundation	Stony Brook, NY July 25 - August 26, 2005

Conferences and Meetings (cont.)

Strings, Gravity & Cosmology Perimeter Institute for Theoretical Physics	Waterloo, ON June 20 - July 8, 2005
Prospects in Theoretical Physics: String Theory Institute for Advanced Study	Princeton, NJ July 19 - July 30, 2004
Theoretical Advanced Study Institute (TASI) University of Colorado	Boulder, CO June 2-27, 2003

Professional Outreach and Service

Journal Referee: Physical Review D, Nuclear Physics B, Journal of High Energy Physics, Physics Letters B, Modern Physics Letters A	2004-present
Trinity School at Meadow View Falls Church, VA Guest lectures on physics, astrophysics and cosmology	2004-2006
National Space Society Los Angeles, CA Invited lecture for the National Space Society (NSS/OASIS)	October 18, 2003
Provided technical advice to Destination Imagination, Inc.	2003-present

References

Prof. Curtis G. Callan, Jr. Physics Department Princeton University Princeton, NJ 08544 USA	<i>Office:</i> (609) 258-4321 ccallan [at] princeton.edu
Prof. Juan Maldacena Institute for Advanced Study Einstein Drive Princeton, NJ 08540 USA	<i>Office:</i> (609) 734-8307 malda [at] ias.edu
Prof. John Schwarz (Thesis Advisor) Caltech Theory Group Mail Code 452-48 Pasadena, CA 91126 USA	<i>Office:</i> (626) 395-6642 jhs [at] theory.caltech.edu