
Daniel D. Baumann

Department of Applied Mathematics and Theoretical Physics

University of Cambridge

Wilberforce Road, Cambridge, CB3 0WA

EMPLOYMENT	Cambridge University, DAMTP ◇ Assistant Professor	from 2010
	Institute for Advanced Study ◇ Long-term Member (5 year position)	2009 - 2011
	Harvard University, Department of Physics ◇ Postdoctoral Researcher (5 year position)	2008 - 2009
EDUCATION	Princeton University, Department of Physics ◇ Ph.D. in Theoretical Physics	2004 - 2008
	Princeton University, Department of Physics ◇ M.A. in Physics	2003 - 2004
	Cambridge University, DAMTP ◇ Certificate of Advanced Study in Mathematics	2002 - 2003
	California Institute of Technology, Theoretical Astrophysics ◇ Summer Undergraduate Research Fellowship	2002
	Cambridge University, Department of Physics ◇ B.A. in Physics and Mathematics	1999 - 2002
HONORS AND AWARDS	◇ ERC Starting Grant, 2012-2017. ◇ Long-term Member, IAS, 2009-2013. ◇ Five-year Postdoctoral Fellowship, Harvard, 2008-2013. ◇ ITC Fellowship, Harvard, 2008-2013. ◇ Pappalardo Fellowship, MIT (declined), 2008-2011. ◇ Miller Fellowship, Berkeley (declined), 2008-2011. ◇ Stephen Hawking Fellowship, Cambridge (declined), 2008-2013. ◇ Prize Fellowship, Caltech (declined), 2008-2011. ◇ BCCP Fellowship, Berkeley (declined), 2008-2013. ◇ KITP Fellowship, Santa Barbara (declined), 2008-2011. ◇ Five-year Postdoctoral Fellowship, Stanford (declined), 2008-2013. ◇ Senior Research Fellowship, Perimeter Institute (declined), 2008-2013.	

- ◇ Centennial Fellowship, Princeton, 2003-2008.
- ◇ Joseph Henry Prize, Princeton, 2003.
- ◇ Isaac Newton Studentship, Cambridge (declined), 2003.
- ◇ UK-Germany Millenium Scholarship, Cambridge, 2002-2003.
- ◇ Jörg Weisse Association Scholarship, 2001-2003.
- ◇ Cambridge European Trust Bursary, 1999-2002.

- ◇ Princeton University Teaching Award, 2005.
Princeton University Award for Excellence in Teaching
- ◇ AAPT Teaching Award, 2005.
American Association of Physics Teachers Award for Excellence in Teaching

- ◇ St. Edmund's College Tutorial Awards, 2000 & 2001 & 2002 & 2003.
Award for the highest exam score in St. Edmund's College

- ◇ Distinguished Visitor, University of Texas at Austin, 2008.

STUDENTS

◇ **PhD**

Valentin Assassi

◇ **MA**

2011: Max Shepherd, Jessie Muir, Joseph Roussos, Alex Hristov, Nathaniel Thomas

POSTDOCS

Anatoly Dymarsky

Neil Barnaby

PUBLICATIONS

S. Ferraro, K. Smith, D. Green, and D. Baumann,
"On the Equivalence of Barrier Crossing, Peak-Background Split, and Local Biasing",
in preparation.

D. Baumann, S. Ferraro, D. Green, and K. Smith,
"Stochastic Bias from Non-Gaussian Initial Conditions",
in preparation.

V. Assassi, D. Baumann, and D. Green,
"On Soft Limits of Inflationary Correlation Functions",
arXiv:1204.4207 [hep-th].

D. Baumann and D. Green,
"A Field Range Bound in Single-Field Inflation",
arXiv:1111.3040 [hep-th].

D. Baumann and D. Green,
"Signatures of Supersymmetry from the Early Universe",
arXiv:1109.0292 [hep-th].

D. Baumann and D. Green,
"Supergravity for Effective Theories",
JHEP **1203**, 001 (2012).

- D. Baumann and D. Green,
"Equilateral Non-Gaussianity and New Physics on the Horizon",
JCAP **09**, 014 (2011).
- D. Baumann, L. Senatore, and M. Zaldarriaga,
"Scale-Invariance and the Strong Coupling Problem",
JCAP **1105**, 004 (2011).
- D. Baumann and D. Green,
"Inflating with Baryons",
JHEP **1104**, 071 (2011).
- D. Baumann and D. Green,
"Desensitizing Inflation from the Planck Scale,"
JHEP **1009**, 057 (2010).
- D. Baumann, A. Nicolis, L. Senatore, and M. Zaldarriaga,
"Cosmological Non-Linearities as an Effective Fluid,"
arXiv:1004.2488 [astro-ph].
- D. Baumann, A. Dymarsky, I. Klebanov, and L. McAllister,
"D3-brane Potentials from Fluxes in AdS/CFT,"
JHEP **1006**, 072 (2010)
- D. Baumann, A. Dymarsky, I. Klebanov, and L. McAllister,
"Compactification Effects in D-brane Inflation,"
Phys. Rev. Lett. **104**, 251602 (2010).
- D. Baumann,
"TASI Lectures on Inflation,"
arXiv:0907.5424.
- Bock et al. (EPIC Collaboration),
"Study of the Experimental Probe of Inflationary Cosmology,"
arXiv:0906.1188.
- S. Bird, H. Peiris, and D. Baumann,
"Brane Inflation and the Overshoot Problem,"
Phys. Rev. D **80**, 023534 (2009).
- D. Baumann and L. McAllister,
"Advances in Inflation in String Theory,"
Annual Review of Nuclear and Particle Science, Volume 59 (2009).
- D. Baumann and M. Zaldarriaga,
"Causality and Primordial Tensor Modes,"
JCAP **06** (2009) 013.
- D. Baumann, et al.,
"CMBPol Mission Concept Study: A Mission to Map our Origins,"
arXiv:0811.3911.
- D. Baumann, et al.,
"Probing Inflation with CMB Polarization,"
AIP Conf. Proc. **1141**, 10 (2009)

- D. Baumann and H. Peiris,
"Cosmological Inflation: Theory and Observations,"
Adv. Sci. Lett. **2**, 105 (2009),
Special Issue on Quantum Gravity, Cosmology and Black Holes.
- D. Baumann, A. Dymarsky, S. Kachru, I. Klebanov, and L. McAllister,
"Holographic Systematics of D-brane Inflation,"
JHEP **0903**, 093 (2009).
- D. Baumann,
"Aspects of Inflation in String Theory,"
Ph.D. Thesis (2008).
- A. Cooray, D. Sarkar, P. Serra, K. Ichiki, and D. Baumann,
"Cosmic Shear from Scalar-Induced Gravitational Waves,"
Phys. Rev. D **77**, 103515 (2008).
- D. Baumann,
"On the Quantum Origin of Structure in the Inflationary Universe,"
arXiv:0710.3187 [hep-th];
contribution to M. Longair, *Galaxy Formation*, (Springer 2007).
- D. Baumann, A. Dymarsky, I. Klebanov, and L. McAllister,
"Towards an Explicit Model of D-brane Inflation,"
JCAP **0801**, 024 (2008).
- D. Baumann, A. Dymarsky, I. Klebanov, L. McAllister, and P. Steinhardt,
"A Delicate Universe: Compactification Obstacles to D-brane Inflation,"
Phys. Rev. Lett. **99**, 141601 (2007).
- D. Baumann and L. McAllister,
"A Microscopic Limit on Gravitational Waves from D-brane Inflation,"
Phys. Rev. D **75**, 123508 (2007).
- D. Baumann, A. Dymarsky, I. Klebanov, J. Maldacena, L. McAllister, and A. Murugan,
"On D3-brane Potentials in Compactifications with Fluxes and Wrapped D-branes,"
JHEP **11** (2006) 031.
- H. Peiris, D. Baumann, B. Friedman, and A. Cooray,
"Phenomenology of D-brane Inflation with General Speed of Sound,"
Phys. Rev. D **76**, 103517 (2007).
- D. Baumann, P. Steinhardt, K. Takahashi, and K. Ichiki,
"Gravitational Wave Spectrum Induced by Primordial Scalar Perturbations,"
Phys. Rev. D **76**, 084019 (2007).
- D. Baumann, P. Steinhardt, and N. Turok,
"Primordial Black Hole Baryogenesis,"
arXiv:hep-th/0703250.
- A. Cooray, D. Baumann, and K. Sigurdson,
"Statistical Imprints of SZ Effects in the Cosmic Microwave Background,"
contribution to *Microwave Background Radiation and Intracluster Cosmology*,
ed. F. Melchiorri & Y. Rephaeli (Amsterdam: IOS), 309 (2005).
- D. Baumann and A. Cooray,
"CMB-induced Cluster Polarization as a Cosmological Probe,"
New Astron. Rev. **47**, 839 (2003).

A. Cooray, D. Huterer, and D. Baumann,
 "Growth Rate of Large Scale Structure as a Powerful Probe of Dark Energy,"
 Phys. Rev. D **69**, 027301 (2004).

A. Cooray and D. Baumann,
 "CMB Polarization towards Clusters as a Probe of the Integrated Sachs-Wolfe Effect,"
 Phys. Rev. D **67**, 063505 (2003).

D. Baumann, A. Cooray, and M. Kamionkowski,
 "Small-Scale Cosmic Microwave Background Polarization from Reionization,"
 New Astron. **8**, 565 (2003).

D. Baumann, B. Leong, and W. Saslaw,
 "A Universe that Changes its Global Symmetry,"
 MNRAS, **345**, 552-560 (2003).

INVITED REVIEWS D. Baumann and L. McAllister,
 "Inflation in String Theory", Physics Reports.

D. Baumann,
 "TASI Lectures on Inflation," (2009).

D. Baumann and L. McAllister,
 "Advances in Inflation in String Theory,"
 Annual Review of Nuclear and Particle Science, Volume 59 (2009).

D. Baumann and H. Peiris,
 "Cosmological Inflation: Theory and Observations,"
 Advanced Science Letters (2008).

INVITED TALKS

◇ **2012**

"Non-Gaussianity as a Particle Detector"
 Leiden, Plenary Talk
 Workshop on EFT of Inflation.

"Non-Gaussianity as a Particle Detector"
 Cambridge, Relativity Seminar.

"Non-Gaussianity as a Particle Detector"
 Sussex, Astronomy Seminar.

"Non-Gaussianity as a Particle Detector"
 Groningen, Plenary Talk
 Quantum Universe Symposium.

"Signatures of Supersymmetry from the Early Universe"
 Edinburgh, Particle Physics Seminar

"Supersymmetry in the Sky"
 London, Colloquium at University College London

◇ 2011

"Three Lectures on Inflation"
IUCCA Winter School

"Signatures of Supersymmetry from the Early Universe"
Oxford, Astrophysics Seminar

"Signatures of Supersymmetry from the Early Universe"
Cambridge, Plenary Talk
Fundamental Physics UK Conference

"Signatures of Supersymmetry from the Early Universe"
Portsmouth, Plenary Talk
UK Particle Cosmology Meeting

"String Inflation"
Cornell, Discussion Session

"Non-Gaussianity as a Probe of New Physics"
Cornell, Plenary Talk
"String Theory and Precision Cosmology" Workshop

"Equilateral Non-Gaussianity and New Physics on the Horizon"
Paris, Plenary Talk
APC Workshop

"Lectures on Inflation for String Theorists"
Stockholm, Pre-Strings 2011

"Primordial Non-Gaussianity and New Physics on the Horizon"
Cambridge, HEP-GR Colloquium

"Open Problems in Inflationary Cosmology"
Benasque, Plenary Talk

"Inflating with Baryons"
Cornell, High Energy Seminar

◇ 2010

"Inflation and Planck-Scale Physics"
ITP, Madrid
X-mas Workshop

"Explanations for the Small Inflaton Mass"
IPMU, Tokyo
Workshop on String Cosmology

"Four Lectures on Inflation"
ICTP Summer School, Trieste

"Cosmological Perturbations as an Effective Fluid"
IAS, Princeton

"D3-brane Potentials from Fluxes in AdS/CFT"
Texas A&M

◇ 2009

"D3-brane Potentials from AdS/CFT Spectroscopy"
UMass, McGill, Stony Brook, Princeton

"Probing Inflation with CMB Polarization"
Cambridge, Chicago

"TASI Lectures on Inflation"
Colorado

"The First 10^{-10} Seconds"
Colloquium at the Aspen Center for Physics

"Advances in Inflation in String Theory"
Harvard, Princeton, Yale

"Causality and Primordial Tensor Modes"
Harvard

◇ **2008**

"Microscopic Aspects of String Inflation"
MIT, CITA, Austin, Perimeter Institute

"The First 10^{-10} Seconds"
Colloquium at the Jiao Tong University, Shanghai

◇ **2007**

"Compactification Obstacles to D-brane Inflation"
Columbia, Berkeley, Princeton

"Primordial Gravitational Waves from String Theory?"
Stanford

"Aspects of Inflation in String Theory"
Caltech, Irvine, Cornell

"String Inflation and the Planck Distance"
Chicago

◇ **2006**

"A Microscopic Limit on Gravitational Waves from D-brane Inflation"
Perimeter Institute, Princeton

PROFESSIONAL
ACTIVITIES

◇ *Referee for Physical Reviews Letters (PRL), the Journal of Cosmology and Astroparticle Physics (JCAP) and the Journal of High Energy Physics (JHEP).*

◇ *Referee for NSF, STFC, Netherlands Organisation for Scientific Research (NOSR).*

◇ *Organizing Committee Member for CMB Polarization Workshop at Fermilab.*

◇ *Working Group Leader of the Inflation Working Group of the CMBPol Mission.*

◇ *Member of the EPIC Science Team.*

◇ *Member of the CORE Science Team.*

◇ *Conference Organizer of PASCOS 2011, String Pheno 2012, COSMO 2013.*

TEACHING
EXPERIENCE◇ **Graduate Teaching**

"Cosmology" (Part III Mathematics)
 "The Physics of Inflation" (PhD Lectures)

◇ **Undergraduate Teaching**

"Concept in Theoretical Physics" (Part IA Mathematics)

◇ **Graduate Schools**

- Mexico, Winter School (2012),
- IUCCA, Winter School (2011),
- Nordita, Pre-Strings (2011),
- ICTP, Summer School (2010),
- TASI, Summer School (2009).

REFERENCES

Prof. Paul Steinhardt

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