



<http://kicp-workshops.uchicago.edu/inflation2014/>

WORKSHOP MATERIALS

The Kavli Institute for Cosmological Physics (KICP) at the University of Chicago is hosting a workshop this summer on inflationary theory. The goal is to gather a small group of researchers working in inflationary cosmology for several days of informal presentations and discussion relating to the status of theories of the inflationary universe. Topics of particular focus are model building, challenges for inflationary theories, connections to fundamental physics, and prospects for refining our understanding with future datasets. This meeting is a satellite conference of COSMO 2014. The meeting will be complementary to the COSMO conference in that it will be small, informal, and relatively narrow in scope.

Invited Speakers

Raphael Bousso

University of California, Berkeley

Robert Brandenberger

McGill University

Cora Dvorkin

Institute for Advanced Study

Richard Easther

University of Auckland

Raphael Flauger

Institute for Advanced Study

Daniel Green

CITA

Rich Holman

Carnegie Mellon

Anna Ijjas

Princeton University

Justin Khoury

University of Pennsylvania

Will Kinney

SUNY, Buffalo

Matt Kleban

New York University

Albion Lawrence

Brandeis University

Eugene Lim

King's College London

Emil Martinec

University of Chicago

Liam McAllister

Cornell University

Hiranya Peiris

University College London

Leonardo Senatore

Stanford University

Eva Silverstein

Stanford University

Paul Steinhardt

Princeton University

Mark Trodden

University of Pennsylvania

Organizing Committee

Peter Adshead

University of Illinois at Urbana
Champaign

Wayne Hu

University of Chicago

Austin Joyce

University of Chicago

Marilena LoVerde

University of Chicago

Emil Martinec

University of Chicago

List of Participants

1. Peter J. Adshead University of Illinois at Urbana-Champaign
2. Mustafa A Amin Kavli Institute for Cosmology at Cambridge
3. Raphael Bousso University of California, Berkeley
4. Robert Brandenberger McGill University
5. Mafalda Dias University of Sussex
6. Emanuela Dimastrogiovanni University of Minnesota
7. Cora Dvorkin Institute for Advanced Study
8. Richard Easther University of Auckland
9. Matteo Fasiello Case Western
10. Michael A. Fedderke University of Chicago
11. Raphael Flauger Institute for Advanced Study
12. Jonathan Frazer UPV/EHU
13. Katie Freese University of Michigan
14. Joshua Frieman Fermilab/UChicago
15. Pierre Gratia University of Chicago
16. Daniel Green CITA
17. Daniel Grin University of Chicago
18. Chen He University of Chicago
19. Kurt Hinterbichler Perimeter Institute
20. Rich Holman Carnegie Mellon
21. Bart Horn Columbia University
22. Wayne Hu University of Chicago
23. Anna Ijjas Princeton University
24. Rajeev K Jain CP3-Origins, University of Southern Denmark, Odense, Denmark
25. Austin Joyce University of Chicago
26. Zimu Khakhaleva-Li University of Chicago
27. Justin Khoury University of Pennsylvania
28. Will Kinney SUNY, Buffalo
29. Matt Kleban New York University
30. Rocky Kolb University of Chicago
31. Albion Lawrence Brandeis University
32. Boris Leistedt University College London
33. Yin Li KICP
34. Eugene Lim King's College London

35.	Tongyan Lin	KICP
36.	Marilena LoVerde	University of Chicago
37.	Matthew Low	University of Chicago
38.	Alessandro Manzotti	The University of Chicago
39.	Emil J. Martinec	University of Chicago
40.	Travis Maxfield	University of Chicago
41.	Liam McAllister	Cornell University
42.	Vinicius Miranda	University of Chicago
43.	Wynton Moore	Chicago
44.	Pavel Motloch	University of Chicago
45.	Hayato Motohashi	University of Chicago
46.	Tomohiro Nakama	University of Tokyo
47.	Hiranya Peiris	University College London
48.	Riccardo Penco	Columbia University
49.	Miguel Quartin	Instituto de Física, Univ. Federal do Rio de Janeiro (UFRJ), Brasil
50.	Raquel H. Ribeiro	Case Western Reserve University
51.	Rachel A Rosen	Columbia University
52.	Leonardo Senatore	Stanford University
53.	Savdeep Sethi	University of Chicago
54.	Christopher Sheehy	University of Chicago
55.	Eva Silverstein	Stanford University
56.	Tristan L Smith	Swarthmore College
57.	Paul Steinhardt	Princeton University
58.	Andrew Tolley	Case Western Reserve University
59.	Mark Trodden	University of Pennsylvania
60.	Joaquin D Vieira	University of Illinois at Urbana-Champaign
61.	Robert Wald	University of Chicago
62.	Chaolun Wu	University of Chicago
63.	Jun'ichi Yokoyama	RESCEU, The University of Tokyo
64.	Claire Zukowski	UC Berkeley

WORKSHOP PROGRAM

August 22-24, 2014 @ University of Chicago

Friday - August 22, 2014

9:00 AM - 9:10 AM

Welcome

MORNING SESSION*Chair: Marilena LoVerde*

9:10 AM - 9:35 AM

Eva Silverstein, Stanford University
Systematics of Axion Monodromy

9:45 AM - 10:10 AM

Albion Lawrence, Brandeis University
The effective field theory of axion monodromy

10:20 AM - 11:00 AM

Coffee break

11:00 AM - 11:25 AM

Raphael Flauger, Institute for Advanced Study
Toward an Understanding of Foreground Emission in the BICEP2 Region

11:35 AM - 12:00 PM

Cora Dvorkin, Institute for Advanced Study
Probing fundamental physics with CMB B-modes

12:10 PM - 2:10 PM

LUNCH

AFTERNOON SESSION*Chair: Wayne Hu*

2:10 PM - 2:35 PM

Eugene Lim, King's College London
Quantifying quantum vs classical correlations in the primordial perturbations

2:45 PM - 3:10 PM

Richard Easther, University of Auckland
Multifield Inflation -- Consequences and Possibilities

3:20 PM - 4:00 PM

Coffee break

4:00 PM - 4:25 PM

Paul Steinhardt, Princeton University
TBA

4:35 PM - 5:00 PM

Anna Ijjas, Princeton University
Primordial perturbations around non-inflationary backgrounds

5:10 PM - 7:00 PM

Welcome Reception

Saturday - August 23, 2014

MORNING SESSION*Chair: Emil Martinec*

- 10:00 AM - 10:25 AM Liam McAllister, Cornell University
Axion Alignment Mechanisms for Large-Field Inflation
- 10:35 AM - 11:00 AM Matt Kleban, New York University
Superplanckian Field Ranges
- 11:10 AM - 11:50 AM Coffee break
- 11:50 AM - 12:15 PM Daniel Green, CITA
Disorder in the Early Universe
- 12:25 PM - 12:50 PM Rich Holman, Carnegie Mellon
EFT Beyond the Horizon: Stochastic Inflation and how Primordial Fluctuations go Classical
- 1:00 PM - 3:00 PM Lunch

AFTERNOON SESSION*Chair: Peter Adshead*

- 3:00 PM - 3:25 PM Raphael Bousso, University of California, Berkeley
Why Now, and Why Comparable: A Multiverse Explanation of the Dark Matter-Baryon Coincidence
- 3:35 PM - 4:00 PM Hiranya Peiris, University College London
Constraints on primordial non-Gaussianity from 800,000 photometric quasars
- 4:10 PM - 4:50 PM Coffee Break
- 4:50 PM - 5:15 PM Robert Brandenberger, McGill University
Challenges for Inflationary Cosmology
- 5:25 PM - 5:50 PM Justin Khoury, University of Pennsylvania
Ward Identities in Cosmology

Sunday - August 24, 2014

MORNING SESSION

Chair: Austin Joyce

- 10:00 AM - 10:25 AM Leonardo Senatore, Stanford University
The Effective Field Theory of Large Scale Structures: how to find more modes to probe Inflation
- 10:35 AM - 11:00 AM Emil J. Martinec, University of Chicago
Quantum gravity and inflation -- lessons from 2d toy models
- 11:10 AM - 11:50 AM Coffee Break
- 11:50 AM - 12:15 PM Will Kinney, SUNY, Buffalo
BICEP, Inflation, and Alternatives to Inflation
- 12:25 PM - 12:50 PM Mark Trodden, University of Pennsylvania
Holographic Cosmology Beyond Inflation
- 1:00 PM - 1:10 PM Closing

Workshop Presentations

1. **Raphael Bousso**, University of California, Berkeley
Invited Talk: Why Now, and Why Comparable: A Multiverse Explanation of the Dark Matter-Baryon Coincidence

August 23, 2014 (3:00 PM - 3:25 PM)
2. **Robert Brandenberger**, McGill University
Invited Talk: Challenges for Inflationary Cosmology

August 23, 2014 (4:50 PM - 5:15 PM)
3. **Cora Dvorkin**, Institute for Advanced Study
Invited Talk: Probing fundamental physics with CMB B-modes

August 22, 2014 (11:35 AM - 12:00 PM)
4. **Richard Easther**, University of Auckland
Invited Talk: Multifield Inflation -- Consequences and Possibilities

August 22, 2014 (2:45 PM - 3:10 PM)
5. **Raphael Flauger**, Institute for Advanced Study
Invited Talk: Toward an Understanding of Foreground Emission in the BICEP2 Region

August 22, 2014 (11:00 AM - 11:25 AM)
6. **Daniel Green**, CITA
Invited Talk: Disorder in the Early Universe

August 23, 2014 (11:50 AM - 12:15 PM)
7. **Rich Holman**, Carnegie Mellon
Invited Talk: EFT Beyond the Horizon: Stochastic Inflation and how Primordial Fluctuations go Classical

August 23, 2014 (12:25 PM - 12:50 PM)
8. **Anna Ijjas**, Princeton University
Invited Talk: Primordial perturbations around non-inflationary backgrounds

August 22, 2014 (4:35 PM - 5:00 PM)
9. **Justin Khoury**, University of Pennsylvania
Invited Talk: Ward Identities in Cosmology

August 23, 2014 (5:25 PM - 5:50 PM)
10. **Will Kinney**, SUNY, Buffalo
Invited Talk: BICEP, Inflation, and Alternatives to Inflation

August 24, 2014 (11:50 AM - 12:15 PM)
11. **Matt Kleban**, New York University
Invited Talk: Superplanckian Field Ranges

August 23, 2014 (10:35 AM - 11:00 AM)

12. **Albion Lawrence**, Brandeis University
Invited Talk: The effective field theory of axion monodromy

August 22, 2014 (9:45 AM - 10:10 AM)
13. **Eugene Lim**, King's College London
Invited Talk: Quantifying quantum vs classical correlations in the primordial perturbations

August 22, 2014 (2:10 PM - 2:35 PM)
14. **Emil J. Martinec**, University of Chicago
Invited Talk: Quantum gravity and inflation -- lessons from 2d toy models

August 24, 2014 (10:35 AM - 11:00 AM)
15. **Liam McAllister**, Cornell University
Invited Talk: Axion Alignment Mechanisms for Large-Field Inflation

August 23, 2014 (10:00 AM - 10:25 AM)
16. **Hiranya Peiris**, University College London
Invited Talk: Constraints on primordial non-Gaussianity from 800,000 photometric quasars

August 23, 2014 (3:35 PM - 4:00 PM)
17. **Leonardo Senatore**, Stanford University
Invited Talk: The Effective Field Theory of Large Scale Structures: how to find more modes to probe Inflation

August 24, 2014 (10:00 AM - 10:25 AM)
18. **Eva Silverstein**, Stanford University
Invited Talk: Systematics of Axion Monodromy

August 22, 2014 (9:10 AM - 9:35 AM)
19. **Paul Steinhardt**, Princeton University
Invited Talk: TBA

August 22, 2014 (4:00 PM - 4:25 PM)
20. **Mark Trodden**, University of Pennsylvania
Invited Talk: Holographic Cosmology Beyond Inflation

August 24, 2014 (12:25 PM - 12:50 PM)