

EXPERIMENTAL AND THEORETICAL CHALLENGES TO PROBING DARK ENERGY

An International Workshop

December 1 - Public evening lecture

December 2-3 - Workshop

December 4 - Informal follow up meetings

Main Venue: Paul Brest Hall – Munger Residence
555 Salvatierra Walk, Stanford

Sponsored by

The France-Stanford Center
for Interdisciplinary Studies

Most sessions are free and open to the public.

Round Table discussions are open to invited
workshop participants only.

Lunches and dinners are provided for invited
workshop participants only.

<http://francestanford.stanford.edu/conferences/darkenergy>

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WEDNESDAY, DECEMBER 1, 2010

7:30 pm – 9:00 pm Public Lecture
Cubberley Auditorium

Dark Energy and the Preposterous Universe
Sean Carroll

THURSDAY, DECEMBER 2, 2010

WHAT ARE THE CHALLENGES?

8:00 am – 8:30 am Registration and Breakfast

8:30 am – 8:45 am Welcome and goals of the
workshop

Keith Baker, Gérard Bonneaud and Patricia Burchat

8:45 am – 10:15 am Status of Dark Energy: What do
we know and how do we know it?

Chair: Gérard Bonneaud

- 8:45 am – 9:30 am

Observation and measurement Chris Hirata

- 9:30 am – 10:15 am

Theory Eva Silverstein

10:15 am – 10:45 am Break

10:45 am – 12:15 pm How can theory and experiment
work together to disentangle this mystery?

Panel Discussion – Moderator: Roger Blandford ;

Panelists: Andreas Albrecht, Pierre Astier, Sarah
Church, Henk Hoekstra, Patrick Petitjean

12:15 pm – 1:15 pm Lunch

Questions for Round Tables 1 to 4

- How does our understanding of astrophysics most
limit our ability to extract precision cosmology using
this probe?
- How does instrumentation most limit our ability to
extract cosmology using this probe?
- How can the uncertainties be reduced through
new efforts or collaborations?
- How can uncertainties be reduced with
measurements from other probes?

1:15 pm – 2:15 pm Round Table discussions (a)

- RT 1a, Clusters

Pierre Binetruy (moderator), Marusa Bradac (scribe)

- RT 2a, Supernovae

Robert Cahn (moderator), Pierre Astier (scribe)

- RT 3a, Lensing

Uros Seljak (moderator), Roger Blandford (scribe)

- RT 4a, BAO

Andreas Albrecht (moderator), Steve Kahn (scribe)

2:15 pm – 3:15 pm Round Table discussions (b)

- RT 1b, Clusters
Steve Allen (moderator), Henk Hoekstra (scribe)
- RT 2b, Supernovae
Philippe Brax (moderator), Alex Kim (scribe)
- RT 3b, Lensing
Chris Hirata (moderator), James Bartlett (scribe)
- RT 4b, BAO
Patrick Petitjean (moderator), Risa Wechsler (scribe)

3:15 pm – 3:45 pm Break (Scribes prepare summaries)

3:45 pm – 5:45 pm Reports of the scribes and discussions

Chair: Patricia Burchat

- Scribes RT 1(a&b), Marusac Bradac – Henk Hoekstra
7'+7'+16' (30')
- Scribes RT 2(a&b), Pierre Astier – Alex Kim
7'+7'+16' (30')
- Scribes RT 3(a&b), Roger Blandford – James Bartlett
7'+7'+16' (30')
- Scribes RT 4(a&b), Steve Kahn – Risa Wechsler
7'+7'+16' (30')

6:30 pm Dinner

FRIDAY DECEMBER 3, 2010

8:00 am – 8:30 am Breakfast

Questions for Round Table 5

- How does our understanding of astrophysics most limit our ability to extract precision cosmology using this probe?
- How does instrumentation most limit our ability to extract cosmology using this probe?
- How can the uncertainties be reduced through new efforts or collaborations?
- How can uncertainties be reduced with measurements from other probes?

8:30 am – 9:30 am Round Table discussions (a) & (b)

- RT 5a, CMB
Daniel Holz (moderator), David Schlegel (scribe)
- RT 5b, CMB
Sarah Church (moderator), Philip Marshall (scribe)
- RT 6a, Role of blind analyses in precision cosmology
Aaron Roodman (moderator), Saul Perlmutter (scribe)
- RT 6b, Role of blind analyses in precision cosmology
Reynald Pain (moderator), Patricia Burchat (scribe)

9:30 am – 10:00 am Break

10:00 am – 11:00 am Reports of the scribes and discussions

Chair: Robert Cahn

- Scribes RT 5(a&b), David Schlegel – Philip Marshall
7'+7'+16' (30')
- Scribes RT 6(a&b), Saul Perlmutter – Patricia Burchat
7'+7'+16' (30')

HOW TO TACKLE THE CHALLENGES?

11:00 am – 12:30 pm Near term issues – How do we tackle the challenges? What's on the horizon?

Chair: Steve Allen

- 11:00 am – 11:45 am
Observation and measurement David Schlegel (BigBOSS), Saul Perlmutter (WFIRST)
- 11:45 am – 12:30 pm
Theory Philippe Brax

12:30 pm – 1:30 pm - Lunch

1:30 pm – 3:00 pm What range of $w(z)$ would be interesting to exclude? Why?

Panel Discussion – Moderator: Gabriele Veneziano ;
Panelists: François Bouchet, Stan Brodsky, Renata Kallosh, Saul Perlmutter, Leonardo Senatore

3:00 pm – 3:30 pm Break

3:30 pm – 5:00 pm Long term vision - Beyond the horizon, what may lie ahead?

Chair: Reynald Pain

- 3:30 pm – 4:15 pm
Observation and measurement Steve Kahn
- 4:15 pm – 5:00 pm
Theory Andrei Linde

5:00 pm – 6:00 pm Summary of the workshop

Michael Turner

SATURDAY, DECEMBER 4, 2010

Venue: Fred Kavli Building - SLAC

9:00 am – 12:00 pm Informal meetings