



<http://kicp-workshops.uchicago.edu/cmb-s4-2016/>

WORKSHOP PROGRAM

This is the fourth of a series of biannual "Cosmology with CMB-S4" workshops dedicated to developing the next generation ground-based Cosmic Microwave Background program, CMB-S4. The first two days of the workshop are dedicated to CMB-S4. The third day will be an overlap day with the "Futures Cosmic Surveys", which is being held at Chicago September 21-23.

The CMB-S4 workshop will start with a review of the science case presented in the recently completed first edition of the CMB-S4 Science Book, followed by sessions dedicated to working on refining the science driven requirements for the CMB-S4 instrumental configuration.

We will review the set of instrumentation white papers, now being drafted, that summarize the current state of relevant technologies for CMB-S4 and identify R&D efforts to advance them for evaluation for possible use in CMB-S4. We will work on the road map to determine the instrumental configuration of CMB-S4.

The goal of the overlap day (Wednesday September 21) with the "Cosmic Surveys" workshop is for the two communities to update each other on their future plans and to explore the synergistic and joint analysis of the combined data sets.

Organizing Committee

Francois Bouchet
IAP, CNRS

John Carlstrom
Chicago/KICP, Argonne National Lab

Tom Crawford
Chicago/KICP

Scott Dodelson
Fermilab/UC

Kent Irwin
SLAC and Stanford

Lloyd Knox
UC Davis

Adrian Lee
U.C. Berkeley, LBNL

Jeff McMahon
University of Michigan

Amber Miller
University of Southern California

Clement Pryke
University of Minnesota

Suzanne Staggs
Princeton University

Monday - September 19, 2016

Note: All Plenaries in KPTC 106

FACTS ON THE GROUND

- 8:00 AM Light Breakfast, Coffee
KPTC (5720 S. Ellis Avenue, 1st floor)
- 8:45 AM Welcome, announcements
- 9:00 AM Workshop overview, CMB-S4 status, Open Q&A
- SCIENCE BOOK CHAPTER PRESENTATIONS**
15min + 15 min
- 9:40 AM SB Chapter 2 - Inflation (Lloyd Knox and Sarah Shandera)
- 10:10 AM SB Chapter 3 - Neutrinos (Joel Meyers)
- 10:40 AM Break
- 11:10 AM SB Chapter 4 - Light Relics (Raphael Flauger)
- 11:40 AM SB Chapter 5 - Dark Matter (Cora Dvorkin)
- 12:10 PM Lunch (provided)
GCIS (929 E. 57th Street, 3rd floor Atrium)
- 1:20 PM SB Chapter 6 - Dark Energy (Marco Raveri)
- 1:50 PM SB Chapter 7 - CMB lensing (Neelima Sehgal)
- INSTRUMENT WHITE PAPER PRESENTATIONS**
15 min + 15 min
- 2:20 PM Optics: modulators, lenses, anti-reflection (Jeff McMahon)
- 2:50 PM Detector-RF: feed to detectors (Toki Suzuki)
- 3:20 PM Break
- 3:50 PM Detector-readout: detector to computer (Zeeshan Ahmed)
- 4:20 PM Telescope (Mike Niemack and Nils Halverson)
- 4:50 PM **NEXT STEPS IN FORECASTING**
moderator: Julian Borrill
- 5:45 PM Reception: drinks and light food
GCIS (929 E. 57th Street, 3rd floor Atrium)

Tuesday - September 20, 2016

Note: All Plenaries in KPTC 106

TOWARD CONCEPT DESIGN

8:00 AM Light Breakfast, Coffee
KPTC (5720 S. Ellis Avenue, 1st floor)

8:45 AM Updates, announcements

RESOLUTION DISCUSSION

moderator: Jo Dunkley

9:00 AM Short (2-slide) presentations on high-ell science opportunities and open discussion on resolution needs

10:30 AM Break

DISCUSSION OF STRAWMAN CONFIGURATION CONCEPTS

moderator: John Ruhl

11:00 AM Single-slide presentations of individual concepts or issues for concepts followed by open discussion

12:10 PM Lunch (provided)
GCIS (929 E. 57th Street, 3rd floor Atrium)

PARALLEL SESSIONS***Large/medium/small Telescope Discussion and Next-generation Forecast Planning***

1:20 PM **Sessions: 1abcd**

1a: RED TEAM: Homogeneous array of medium (~5m) dishes (KPTC 106, Moderator Nils Halverson)

1b: BLUE TEAM: Mixed array of small (~1m) and large (5m and up) dishes (KPTC 105, Moderator Akito Kusaka)

1c: Next-generation "r" forecast planning (moderator: Raphael Flauger, KPTC 103)

1d: Next-generation "non-r" forecast planning (moderator: Renee Hlozek, KPTC 120)

2:05 PM **Sessions: 2abcd**

2ab: RED+BLUE TEAM mini-plenary on array configurations (moderator: Steve Padin, KPTC 106)

2cd: Next-generation forecast planning: coordinating "r" and "non-r" (moderator: Tom rawford, KPTC 120)

2:50 PM Break/ Plenary Preparation

WRAP-UP

3:20 PM Reports from parallel sessions

4:15 PM Final Discussion / Next Steps / Homework / Working groups ...

5:30 PM Reception: drinks and light food
GCIS (929 E. 57th Street, 3rd floor Atrium)

Wednesday - September 21, 2016

- 8:00 AM Breakfast
KPTC (5720 S. Ellis Avenue, 1st floor)
- 9:00 AM Future Surveys Summary
- 9:15 AM CMB-S4 Summary
- 9:30 AM **BREAKING PARAMETER DEGENERACIES**
S4+DESI/LSST: m_nu , w , n' , N_{eff} , f_{nl} ; systematic checks/complementarity
Joel Meyers
- how much more can you do with 21 cm/spectroscopy
Anze Slosar
- 10:15 AM Break
- 10:30 AM **CROSS-CORRELATION OF FUTURE SURVEYS WITH CMB KAPPA**
Moderator: Gil Holder
Science case for doing CMB lensing+LSS
Blake Sherwin
- Additional calibration of shear
Emanuel Schaan
- photo-z calibration
Eric Baxter+Pat McDonald
- E_G and other cross-signals
Anthony Pullen
- sampling variance cancellations
Marcel Schmittfull
- 1:00 PM Lunch (provided)
ERC (5640 S. Ellis Avenue, room 401)
- 2:00 PM **CLUSTERS**
kSZ
Simone Ferraro + TBD
- Cluster counts and mass calibration: photo-z for WL masses; CMB cluster lensing; velocity dispersion
Adam Mantz + Jim Bartlett
- 4:00 PM Break
- 4:30 PM Creative Ideas; Consistency Tests: Challenges beyond getting the same parameters: identifying joint null tests, generalized B-modes, e.g. de-lensing, ISW maps TBD
- 5:00 PM Discussion