http://kicp-workshops.uchicago.edu/Neutrino2012/

WORKSHOP TALKS

The 4th Neutrino workshop will take place from Friday May 18th to Saturday May 19th in Chicago, IL. The workshop is being hosted by the Kavli Institute for Cosmological Physics (KICP) in the Laboratory for Astrophysics and Space Research (LASR) building at the University's of Chicago main campus in Hyde Park.

The main topics of the workshop are:
* Neutrino and Cosmic Microwave Background
* Neutrino and Big Bang Nucleosynthesis
* Current bounds on N_nu and Sum m_nu from cosmology
* Sterile Neutrinos in the Early Universe
* Sterile Neutrinos in Astrophysics
* Terrestrial "hints" for sterile neutrinos: short-baseline anomalies
* Reactor Neutrino Experiments
* Theoretical understanding of neutrinos from nuclear reactors
* Theoretical Models of neutrino mass

Scientific Organizing Committee

Kevork Abazajian
University of California, Irvine

Andre de Gouvea
Northwestern University

Local Organizing Committee

Bradford Benson
University of Chicago

Angela Olinto
Kavli Institute for Cosmological Physics

Lian-Tao Wang
Kavli Institute for Cosmological Physics

1. **Edward Blucher**, University of Chicago
    Reactor Neutrino Experiments

    May 19, 2012 (9:00 AM - 9:40 AM)

2. **Sudeep Das**, University of California, Berkeley
    Results from the ACT

    May 18, 2012 (9:40 AM - 10:20 AM)

3. **JiJi Fan**, Princeton University
    Theory of Sterile Neutrinos

    May 19, 2012 (3:20 PM - 4:00 PM)

4. **George M. Fuller**, Physics Professor-CASS Director/UC San Diego
    Sterile Neutrinos in the Early Universe

    May 18, 2012 (3:20 PM - 4:00 PM)

5. **Steve Geer**, FNAL
    Putting the short-baseline anomalies to the test

    May 19, 2012 (2:00 PM - 2:40 PM)

6. **Gil Holder**, McGill University
    The CMB Neutrino Connection

    May 18, 2012 (11:30 AM - 12:10 PM)

7. **Patrick Huber**, Virginia Polytechnic Institute & State University
    Theoretical understanding of neutrinos from nuclear reactors

    May 19, 2012 (11:30 AM - 12:10 PM)

8. **Shahab Joudaki**, University of California, Irvine
    CMB+LSS recent global results

    May 18, 2012 (10:50 AM - 11:30 AM)

9. **Ryan Keisler**, University of Chicago
    Results from the SPT

    May 18, 2012 (9:00 AM - 9:40 AM)

10. **Joachim Kopp**, Fermilab
    Fitting short-baseline anomalies

    May 19, 2012 (10:50 AM - 11:30 AM)

11. **William Louis**, LANL
     Summary of terrestrial "hints" for sterile neutrinos: short-baseline anomalies

     May 19, 2012 (9:40 AM - 10:20 AM)

12. **Ken Nollett**, Argonne National Laboratory
     BBN and Neutrinos

     May 18, 2012 (2:00 PM - 2:40 PM)

13. **Carlos E.M. Wagner**, University of Chicago and Argonne National Laboratory
     Sterile neutrinos and long baseline neutrino experiments

     May 19, 2012 (2:40 PM - 3:20 PM)

     Co-authors: Arun Thalapilil, Bhubanjyoti Bhattacharya
     We revisit some of the recent neutrino observations and anomalies in the context of sterile neutrinos. Based on a general parametrization motivated in the presence of sterile neutrinos, the consistency of the MINOS disappearance data with additional sterile neutrinos is discussed. We also explore the implications of sterile neutrinos for the measurement of $|U_{mu3}|$ in this case. Regarding the determination of $|U_{e3}|$, we observe that the existence of sterile neutrinos may induce a significant modification of the $theta_{13}$ angle in neutrino appearance experiments like T2K and MINOS, over and above the ambiguities and degeneracies that are already present in 3-neutrino parameter extractions. The modification is less significant in reactor neutrino experiments like Double-CHOOZ, Daya Bay and RENO and therefore the extracted $|U_{e3}|$ value when sterile neutrinos are present is close to the one that would be obtained in the 3-neutrino case. We also conclude that the results from T2K imply a 90% C.L. lower-bound on $|U_{e3}|$, in the "$,3+2$" neutrino case, which is still within the sensitivity of future reactor neutrino experiments like Daya Bay, and consistent with the one-$sigma$ range of $sin^22theta_{13}$ recently reported by the Double-CHOOZ experiment. Finally, we argue that for the recently determined best-fit parameters, the results in the "$,3+1$" scenario would be very close to the medium/long baseline results obtained in the "$,3+2$" case analyzed in this work.

14. **Yvonne Wong**, RWTH-AACHEN University
     CMB and Large Scale Structure Overview

     May 18, 2012 (2:40 PM - 3:20 PM)