

**Welcome to the
43rd SLAC SUMMER INSTITUTE !**



Hopefully everything you need to know is on the SSI webpage..

but let's go through a few things.....

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SSI 2015

SLAC SUMMER INSTITUTE

SLAC NATIONAL ACCELERATOR LABORATORY

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Welcome to the 43rd SLAC Summer Institute

The Universe of Neutrinos

August 10-21, 2015

**SLAC National Accelerator Laboratory
Menlo Park, California**

The 2015 SLAC Summer Institute will focus on the physics of neutrinos. Although they were discovered almost 60 years ago, neutrinos remain in some ways the most mysterious part of the Standard Model--we don't even know their masses or whether they are their own anti-particles. The neutrino sector may be responsible for the baryon-antibaryon asymmetry of the universe and some form of neutrinos might be the gravitationally observed Dark Matter. The development of a variety of probes to illuminate the detailed nature of the neutrino sector has made this one of the most exciting and today, inspiring a plethora of new experimental and theoretical efforts. Morning lectures will cover all aspects of neutrino physics, including their multiple roles in both astrophysics and cosmology, to how the properties of neutrinos may be extracted from experiments in the future: reactor, long- and short-baseline measurements, searches for neutrinoless double beta decay, lepton flavor violation and direct production of heavy neutrinos at the LHC. In the afternoons, topical conference talks will alternate with discussion sessions, student projects, tours, and poster sessions.

Please connect with SSI on Facebook: <https://www.facebook.com/SLACSummerInstitute>

The schedule is available in 2 forms: as a spreadsheet & in full detail on indico

- The morning lectures & the afternoon 'topical conference' talks will all be here in the Kavli Auditorium
- The afternoon Q&A and Project sessions will be held in the Redwood room in the ROB behind this building (map next slide)
- The reception & dinners will also be held just outside ROB

43rd SLAC Summer Institute

chaired by Thomas Rizzo (SLAC), Dong Su (SLAC National Accelerator Laboratory (US)), Richard Partridge (SLAC National Accelerator Laboratory), Risa Wechsler (SLAC National Accelerator Laboratory), Mark Convery (SLAC National Accelerator Laboratory)

from Monday, 10 August 2015 at 08:30 to Friday, 21 August 2015 at 21:45 (US/Pacific)

SLAC (Kavli Auditorium)

Manage ▾

Description The SLAC Summer Institute (SSI) is an annual event held at the SLAC National Accelerator Laboratory in July-August. The Institute is a two-week-long Summer School. Lectures are given Monday through Friday each morning. The afternoons contain a mixture of topical talks, discussion sessions, student projects and tours. In the evenings, there are social activities and student poster sessions. The attendance is typically a mixture from graduate students to senior researchers.

The theme of the 2015 SLAC Summer Institute will be **The Universe of Neutrinos**. Although they were discovered almost 60 years ago, neutrinos remain in some ways the most mysterious part of the Standard Model. Morning lectures will cover all aspects of neutrino physics, including their multiple roles in both astrophysics and cosmology, to how the properties of neutrinos may be extracted from experiments in the future. In the afternoons, topical conference talks will alternate with discussion sessions, student projects, tours, and poster sessions.

All lectures and Topical Conference sessions will be held in the Kavli Auditorium. For other locations of events, please check the Indico Time Table room assignment.

SSI-2015 Home Page

Support Email: sudong@slac.stanford.edu

Go to day ▾

Monday, 10 August 2015

08:30 - 09:00 Registration and Light Refreshments (Kavli patio)

09:00 - 12:45 Lectures

09:00 **Why are Neutrinos important ? 1h0'**
Speaker: Francis Halzen (University of Wisconsin)

10:00 **Morning Break 30'**

10:30 **Neutrino Basics (I) 1h0'**

SSI 2015: The Physics of Neutrinos											
Time / Date	10-Aug Monday	11-Aug Tuesday	12-Aug Wednesday	13-Aug Thursday	14-Aug Friday	15-Aug Monday	16-Aug Tuesday	17-Aug Wednesday	18-Aug Thursday	19-Aug Friday	20-Aug Saturday
9:00-10:00	Why are neutrinos important? (Halzen)	Neutrino Basics II (deGouvea)	Neutrino Basics III (deGouvea)	Reactor Neutrinos (Heeger)	Supernova Neutrinos (Friedland)	Short Baseline Neutrinos I (Loue)	Short Baseline Neutrinos II (Loue)	Neutrinos as Dark Matter (Abazajian)	GeoNeutrinos (Gratta)	BSM Searches Using Neutrino Detectors (Babu)	
10:00-10:30	Morning Break										
10:30-11:30	Neutrino Basics I (deGouvea)	Neutrino Detectors I (Svoboda)	Neutrino Detectors II (Svoboda)	Neutrino Cross Sections: Outstanding Issues (McFarland)	Direct Mass Measurements (Formaggio)	Lepton Flavor Violation (Grossman)	Leptogenesis (Grossman)	Neutrino Floor in DM Detection (Figueroa-Feliciano)	Neutrino Astronomy (Hoffman)	Future Neutrino Facilities (Thomson)	
11:45-12:45	Neutrino Sources (Hais)	Neutrino Cosmology (Merdin)	Neutrino Cosmology II (Meichrim)	Long Baseline Neutrinos I (Foldman)	Long Baseline Neutrinos II (Foldman)	Neutrinoless Double Beta Decay: Theory (Rodriguez)	Neutrinoless Double Beta Decay: Experiments (Kaufman)	Neutrinos at the LHC (Iran)	Global Fit to the Neutrino Data (Concha)	The View Ahead (Lykken)	
12:45-14:00	Lunch										
14:00-14:45											
14:45-15:15	CMB (R. Fliszek)		SM+Higgs / ATLAS (G. Gaycken)		BaBar (M. Graham)	FERMI (A. Albert)		Nova (P. Vahle)		Project Presentations	
15:15-15:45	DES (M. Becker)	Q&A	BSM Search / CMS (J. Heintz)	Q&A	AMS-02 (P. Zuccon)	HPS (T. Maruyama)	Q&A	Borexino (A. Pocar)			
15:45-16:05	Afternoon Break					CASPER (J. Alameddini)	Afternoon Break				
16:05-16:35	BICEP/Keck (S. Komatsu)		LHCb (B. Dey)					DUORE (B. Fujikawa)		Project Presentations	
16:35-17:05	BOSS/DESI (N. Palanque-Desabrouille)	Projects	ALICE (M. Ploskon)	Projects	Projects			T2K/Super-K (Y. Hayato)			
17:05-18:00											
18:00	Reception	Dinner	Poster Social			Dinner	Poster Social	Soccer	Dinner		



- The poster sessions will also be held in the ROB



The Contest Question: Every year we ask the students to answer a broad-based ‘light’ question depending on the SSI subject. This year the question is:

“Given the existing and planned facilities to study them, what are we NOT doing that we should be to understand neutrinos better?”

Place your answers in the **big box (by 5PM 8/20)** & a winner will be chosen during the last nights dinner (**after dinner wine**).. the winner gets a bottle of fine CA bubbly signed by Nobel Prize winner Burton Richter on the last day.

To get the flavor, see , eg, <https://indico.cern.ch/event/200595/#preview:418603>

Q&A Sessions



- These are intended for extensive questions so those during the lectures & immediately afterward should be kept short & to the point.. of course, other questions can also be addressed to the speakers directly during breaks
- Note that questions can also be submitted (anonymously) with GoogleDocs via a link on the webpage & will be addressed in the Q&A sessions

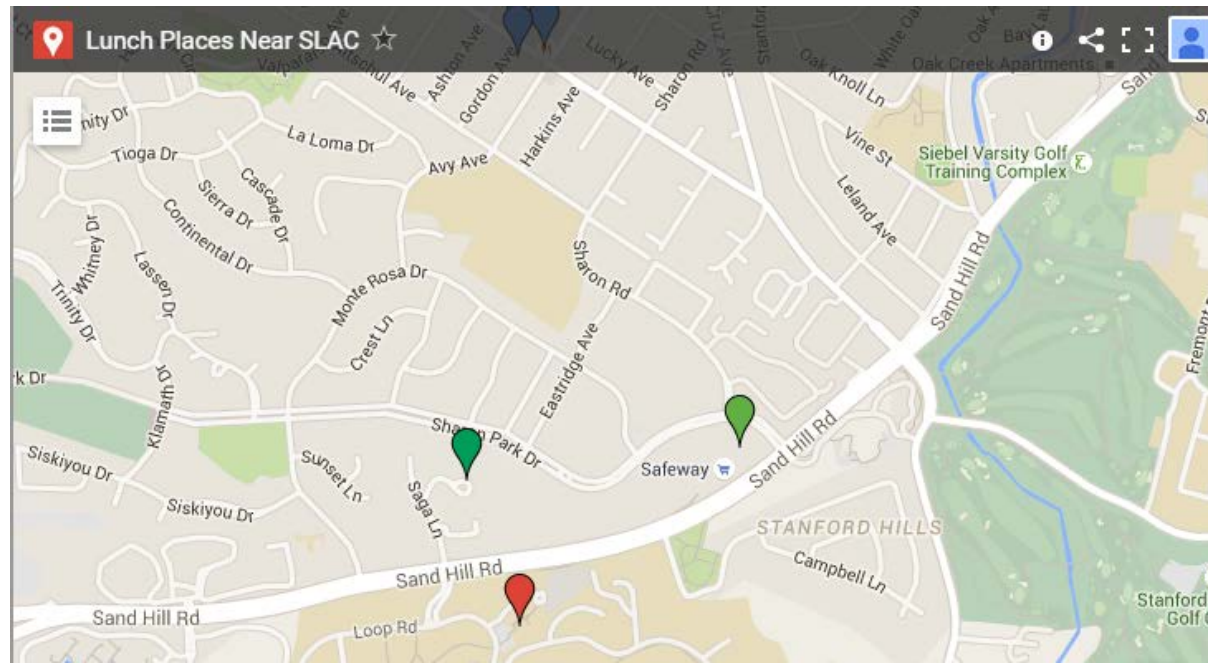
Projects:



- Since 2012 we have incorporated projects conducted by teams of students into SSI
- We will provide a list of projects (to be posted later today on the SSI website -- so keep your eyes open!) & you pick what looks interesting to you.. again, sign up using GoogleDocs on the SSI website
- Teams form around a given project & try to address the issues
- Teams present their results on the final TH afternoon (8/20) & the best team wins a prize
- More details tomorrow afternoon

Lunch: the building w/ the new cafeteria is under construction so opportunities are limited...check the webpage!

- **Starbuck's by the Guest House**
- **Eric's Gourmet Deli + Safeway supermarket**
- **Quadrus Café**
- **"Eat Club" by which lunches can be ordered on-line & then delivered to Kavli (upstairs)**



Odds & Ends

- Sign up for tours at the registration desk (see schedule for times)
- Be aware of next week's soccer game between the SSI students & the SLAC team...sign up to play or watch
- Check the SSI "SLAC campus" page for info wrt printing, ATMs, after hours access, etc
- Extra dinner tickets are available on a very limited basis



