

## **Astronomy Open Night, Friday, March 4, 2016**

ESS 001; 7:30 P.M.

For more information: <http://www.astro.sunysb.edu/openight/opennite.html>

**Doug Swesty**

### **“New Clues About the Origins of Core-Collapse Supernovae”**

In recent years a wealth of new observational data has given astrophysicists an unprecedented look at the variety of outcomes that can arise from the collapse of the core of a massive star. With new observational techniques providing more data we have come to realize that there are many types of supernovae that arise from a stellar core-collapse. Prof. Swesty will discuss how our picture of what happens when a stellar core collapses has evolved with time and the recent observational evidence that is leading us to this new viewpoint.

Dr. Swesty is a Research Associate Professor in the Department of Physics and Astronomy here at SUNY Stony Brook University. His research is in the fields of nuclear astrophysics and computational physics. He is currently working on a number of problems: highly parallel algorithms for radiation hydrodynamics, numerical models of binary neutron star system mergers, the explosion mechanism of core collapse supernovae, the neutrino signature & gravitational wave signature of supernovae, general relativistic radiation hydrodynamics, and the equation of state of hot, dense matter.

## **World of Physics Open Night, Friday, March 11, 2016**

ESS 001; 7:30 P.M.

For more information: <http://www.physics.sunysb.edu/Physics/WorldsOfPhysics/2015/>

**Richard Lefferts**

### **“Hot Ice and Wondrous Strange Snow: Some Recreational Science at the Extremes of Temperature” \***

Concealed by a thin facade of science education, we will have some fun exploring the range of properties that materials can take under extreme conditions. We will see that some apparently complex phenomena are simple and fit our intuition, while some apparently simple phenomena are deep and challenging. Mostly, however, we will try to take an entertaining look at uncommon behaviors of uncommon materials under uncommon conditions.

Richard Lefferts is a member of the technical staff of the Stony Brook University Department of Physics and Astronomy. He has enjoyed a 20 year career supporting research in nuclear physics, fundamental interactions, accelerator technology and, briefly, while at Binghamton University, organic chemistry. His current responsibilities include adapting the Stony Brook Nuclear Structure Lab accelerator to an instructional facility (under Dr. Thomas K. Hemmick) as part of CASE, working with Mariachi and supporting detector development activity in the Van de Graaff building (Phenix).

## **Geology Open Night, Friday, March 25, 2016**

ESS 001; 7:30 P.M.

For more information: <http://www.geo.sunysb.edu/openight/index.html>

**Donald J. Weidner**

### **“How Seismic Wave Speeds are Affected by Partial Melting”**

Seismic waves thoroughly sample the Earth’s interior. By extracting the speed that these waves travel, we recover information about the material at that place in the Earth. Our ability to infer further information about such a region relies on our understanding how the possible characteristics of that region such as chemical composition or crystal structure affect these sound speeds. One important issue that requires such understanding is how does partial melting affect these sound speeds? Using synchrotron based high pressure research and thermodynamic models, we feel that we have uncovered a new twist on this half – century old question. We postulate that the melting itself interacts with the seismic wave to slow it down. In the talk we will revisit some of the experimental and thermodynamics that has led to this conclusion.

Dr. Weidner received his undergraduate education from Harvard University and PhD from Massachusetts Institute of Technology. He is a SUNY Distinguished Professor in the Department of Geosciences where he has been a faculty member for over 40 years. He is currently Director of the Mineral Physics Institute. Dr. Weidner’s research focuses on understanding the deep Earth by understanding the rocks and minerals that make up this inaccessible region. He has developed several new experimental tools to this end. He currently is involved in synchrotron research on samples at high pressure and temperature. His group runs a beamline at the Advanced Light Source in Argonne National Laboratory near Chicago and is building one at the National Synchrotron Light Source II at Brookhaven National Laboratory. He is winner of two international awards; the James B. Macelwane award of the American Geophysical Union in 1981 “For significant contributions to the geophysical sciences by an outstanding early career scientist” and the Inga Lehmann award, also of the American Geophysical Union in 2011 “For outstanding contributions to the understanding of the structure, composition, and dynamics of the Earth’s mantle and core”.

### *Directions to SUNY Stony Brook and ESS Building*

- ⇒ From exit 62 of the Long Island Expressway (LIE, I-495) follow Nicolls Road (Route 97) north for nine miles. Pass the South and Main entrances to the University.
- ⇒ Enter the North entrance which will be on your left.
- ⇒ At the top of the small hill, turn right on Circle Road.
- ⇒ Proceed about 1 mile.
- ⇒ Turn left onto Campus Drive and then immediately turn left again onto John S. Toll Drive.
- ⇒ Proceed about 50 yards then turn right into the large paved parking lot.
- ⇒ The Earth and Space Sciences building is the large concrete building at the northeast end of the parking lot.

Map of campus is on the web at: <http://www.stonybrook.edu/sb/map/>

### **TEACHER IN SERVICE CREDITS**

If your school requires you to have a sequence of educational opportunities in order to receive in-service credit, please advise them that during the Spring 2016 semester we will provide attendance certification for each of the lectures attended.

Please contact the respective department for more information.