Astronomy Open Night, Friday, October 6, 2017
ESS 001; 7:30PM
For more information: http://www.astro.sunysv.edu/openight/opennite.html
Doug Swesty
“Man-made Space Weather: A Catastrophe for Modern Civilization?”

In the 20th century humankind began to influence the magnetic field in space surrounding the Earth. Sources of this influence include high altitude chemical releases, high-frequency ionospheric heating experiments, and nuclear tests. The results of this influence have, at times, been unexpected. This talk will discuss these influences and the consequences of this man-made space weather. In at least one case man-made space weather poses a catastrophic threat to modern civilization.

Prof. Swesty received his PhD in Physics from SUNY, Stony Brook in 1993. He spent six years at the University of Illinois as a postdoctoral researcher and as a Visiting Assistant Professor. He returned to Stony Brook in 1999 where he is currently a Research Associate Professor. His work focuses on nuclear astrophysics and computational astrophysics.

Living World Open Night, Friday, October 13, 2017
ESS 001; 7:30PM
For more information: http://life.bio.sunysb.edu/marinebio/livingworld/
Krishna Veeramah
“Using Ancient DNA to Understand the Wolf in your Living Room”

Dogs were the first animal to be domesticated, but where, when and how this process occurred is a matter of fierce debate. Analysis of genetic data from modern dogs has proved difficult, in large part because of breeding practices implemented in the Victorian Era that have erased much of the past dog genetic diversity. Therefore we sequenced the genomes of two prehistoric Neolithic dogs found at archaeological sites in Germany, one of which is the oldest dog specimen to be sequenced to date. We found that the dogs living amongst the first European Neolithic farmers 7,000 years ago are the ancestors of the vast majority of breed dogs people across the world keep as pets today. We also argue that dog domestication took place only once during human history, with this event occurring between 20,000 and 40,000 years ago. Finally, we have found evidence that natural selection for genes involved neural crest development were key for this process of dog domestication.

Krishna Veeramah joined the faculty in the Department of Ecology and Evolution at Stony Brook as an Assistant Professor in January 2014 as part of the new initiative in human evolutionary biology. He received both his B.Sc. in 2003, and Ph.D. in 2008 from University College London. His Ph.D., conducted under the supervision of Mark Thomas, examined the distribution of genetic variation in Africans. He then moved to UCLA as part of John Novembre’s lab where he looked at the genetic architecture of European population isolates. In 2010 he joined Michael Hammer’s lab at the University of Arizona in order to lead a project comparing patterns of genomic variation on the autosomes and X chromosome in apes. At Stony Brook his lab’s research is focused on using genomic-scale data to understand the evolutionary genetics of human and non-human primates, contemporary evolution in three-spined stickleback, the paleogenomics of Migration Period Europe and the genetic basis of epilepsy.
An Electron-Ion Collider facility (EIC), a major new research facility to advance the long-term vision for Nuclear Physics in the United States, is under consideration at the Brookhaven National Laboratory (BNL) in Long Island. An EIC is designed to collide an electron beam with the currently existing RHIC hadron beam (protons and nuclei), capable of largely varying the energy produced in the collision and the species of nuclei accelerated. This new particle collider will be the ideal “microscope” for investigating, with an unprecedented precision, the three-dimensional picture of the internal structure of protons and nuclei. I will highlight the large impact that such machine can have versus the current knowledge of quarks and gluons (the building blocks of the visible matter) and thus how they contribute to all the basic properties that characterize a single nucleon, such as mass, charge and spin. An EIC will investigate the depths of the matter with an unprecedented precision and accuracy. It will open a new window through which we can gaze onto the universe around us and the matter inside us. It will be a world-class research facility, a prime source of knowledge and applications.

Dr. Fazio is a research scientist at the STAR experiment, installed at the Relativistic Heavy-Ion Collider (RHIC), at Brookhaven National Laboratory. He works on the study the formation and characteristics of the quark-gluon plasma (QGP), a deconfined state of matter that is believed to exist at an energy density sufficiently high. Its understanding will provide information on the evolution the universe in its first moments of life immediately after the Big Bang. He received his Ph.D. at the University of Calabria in 2007. Before coming the BNL he worked at the ZEUS experiment at the HERA accelerator (DESY Lab, Hamburg, Germany) and at the ATLAS experiment at the LHC accelerator (CERN Lab, Geneva, CH).

Kirsten Siebach

“Five Years of Exploring Mars with the Curiosity Rover”

The Mars Science Laboratory rover Curiosity is a car-sized robotic explorer that landed on Mars in August 2012 to investigate layered sedimentary rocks in Gale Crater. These rocks record the story of a time more than 3 billion years ago when Mars, like Earth, had liquid water in lakes and rivers at the surface. Curiosity’s investigations have revolutionized our understanding of Mars: the planet had more volcanic diversity than predicted, long-lived liquid water in rivers and lakes at the surface, environments that would have been habitable for life, multiple episodes of groundwater, and repeating cycles of crater fill and erosion. The instrument suite onboard Curiosity has enabled the highest resolution ever achieved in situ imaging of planetary surface samples, the first age date on another planet, multiple scales of compositional measurements, and mineralogy of fifteen rock samples. In this talk, I will summarize key results including what we have learned from Curiosity about the history of the Gale crater basin and Mars in general, and the work I have done to understand the components influencing the chemistry of sedimentary rocks by separating effects from volcanic diversity, sediment transport, and water chemistry.
Kirsten Siebach is a Postdoctoral Research Associate in the Department of Geosciences at Stony Brook University working with Professor Scott McLennan. She is a member of the Mars Science Laboratory Curiosity Science and Operations team and her work is centered around understanding the history of water interacting with sediments on Mars through analysis of sedimentary rock textures and chemistry. She will be moving to Houston, TX in January to become an Assistant Professor in the Rice University Department of Earth, Environmental, and Space Sciences.

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/](http://www.stonybrook.edu/sb/map/)

**TEACHER IN SERVICE CREDITS**

NYS teachers who wish to receive CTLE credit for any of these lectures must register here: [https://goo.gl/forms/pfdNLevMTO8VfbJ02](https://goo.gl/forms/pfdNLevMTO8VfbJ02). You must register for each lecture you attend and sign-in at the lecture. The Graduate School will send a CTLE certificate about six weeks after each lecture.