

Astronomy Open Night, Friday, October 2, 2020

Virtual; 7:30PM

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

Frederick Walter

“The Sun in Time: Solar Irradiance and Climate Change”

The temperature of the Earth is set by an equilibrium between the Solar energy absorbed and the heat radiated away by the Earth. For the past 4.4 billion years this precarious equilibrium has held even as the Solar irradiance has increased by about 30%. Today, as the Earth is noticeably growing warmer, some claim that an increase in Solar irradiance is to blame for global warming, while others point to a decrease in Solar magnetic activity as presaging a coming "Maunder minimum" and a global cooling.

I shall review the evidence that the temperature of the Earth has remained stable for the past 4.4 billion years. I shall discuss what we know of solar and stellar variability, and discuss how stable temperatures have been maintained even as the Sun has brightened. The evidence shows that none of the rapid change in global temperature over the past century can be attributed to the Sun. Furthermore, I shall argue that even a prolonged activity minimum is unlikely to start an episode of global cooling.

We have only ourselves to blame for bringing on climate change and global warming and all their associated ills.

Prof. Walter, a resident of East Setauket, studies star birth, stellar weather, and star death using the *Chandra* and *XMM-Newton* X-ray observatories, the Hubble Space Telescope, and telescopes in Arizona, Hawaii and Chile. He has been a professor of Astronomy at Stony Brook since 1989.

Physics Open Night, Friday, October 9, 2020

ESS 001; 7:30PM

For more information: <http://www.physics.sunysb.edu/Physics/WorldsOfPhysics/2020-21/>

Sasha Abanov

“Emergence of geometry and topology in physics”

Nothing is really as it seems. We feel hot and cold but in reality, these are billions of billions of atoms jiggling with higher or lower velocities. The properties of physical systems we observe are emerging from the behavior of their tiny parts. Is it possible that the geometry of space and time as we perceive it also emerges from some microscopic gears and cogs? To see how it can be done in principle, I will consider a few examples ranging from

mechanics of bodies rotating in space to quantum solids. I will show how the geometry and topology appear as a result of underlying physics laws in these examples.

Alexander (Sasha) Abanov is a professor in the Department of Physics and Astronomy and Simons Center for Geometry and Physics in Stony Brook. He is known for his contributions to theoretical condensed matter physics using topological and hydrodynamic methods. He applied these methods to studies of superconductivity, quantum magnetism and quantum Hall effect. Abanov has received his Ph.D. in 1997 from the University of Chicago. After a postdoc at MIT he joined Stony Brook University in 2000. He is a fellow of American Physical Society. Currently he is a deputy director of the Simons Center for Geometry and Physics in Stony Brook. Alexander enjoys teaching physics and mathematics at different levels. He has a lot of experience in teaching school students in various summer camps and math circles including teaching for over more than 30 years in Krasnoyarsk Summer School for gifted high school students.

To register for the zoom meeting go to: <https://you.stonybrook.edu/opennights/2020/09/10/oct-9-emergence-of-geometry-and-topology-in-physics/> and click on REGISTRATION at the bottom of the page.

Living World Open Night, Friday, October 16, 2020

ESS 001; 7:30PM

For more information: <http://life.bio.sunysb.edu/marinebio/livingworld/>

Joe Warren

“Whale Watching from the Beach: How are New York Whales Reacting to a Changing Environment?”

Whales have a long history in New York, even before it became a state. However, numerous factors over the past several centuries have caused their local populations to vary considerably. In recent years, humpback whales have become more frequent visitors to New York’s waters. This talk will discuss: what types of whales can be seen (and heard) locally, where to go to see them, reasons why sightings may be increasing, and what scientists are doing to better understand the challenges that affect these creatures here and around the world.

Joseph Warren is an oceanographer who has spent over 1000 days at sea studying marine organisms ranging from the tiny (mm-long copepods) to the gigantic (blue whale). He uses advanced technology including underwater sound to study where animals are located and the physical and biological processes that affect their lives. He has participated in more than 50 research cruises ranging from the shallow bays of New York, the deep pelagic ocean, tropical coral reefs, and both polar regions (and many other places in between including a few lakes). He is an Associate Professor in the School of Marine and Atmospheric Sciences at Stony Brook University.

More information to follow.

Geology Open Night, Friday, October 23, 2020

Virtual; 7:30PM

For more information: <https://www.stonybrook.edu/commcms/geosciences/about/GeologyOpenNight>

Marine Frouin

“An introduction to Luminescence Dating”

Measuring time in the geological record is fundamental to the study of the evolution of life, and the geomorphic processes occurring on the Earth’s surface. In human origins research, past advances in radiometric and relative dating techniques have fundamentally changed our capacity to piece together our evolutionary past over millions of years.

My research is focused on the development and application of luminescence dating techniques, an absolute chronometer that is almost universally applicable to any sediment that has been exposed to daylight during transport. It is a major chronometric tool for late Quaternary studies, with a wide age range from a few years up to about 0.5 Ma, with some indication that this limit can be further extended.

In this presentation, we will go over the basics of luminescence dating, its advantages and enduring challenges. I will also give you an overview on the latest developments and applications, with a special focus on archeological studies.

Dr. Frouin received her Ph.D. in Geochronology from the University of Bordeaux (France) in 2014. Following that she was a Postdoctoral Fellow at the Research Laboratory of Archaeology and the History of Art (Oxford University, UK) from 2014-2019, and then joined the National Laboratory for Sustainable Energy at the Technical University of Denmark. She joined the faculty in the Department of Geosciences at Stony Brook University in 2020. She is also a faculty in the Interdepartmental Program in Anthropological Sciences and an affiliated faculty with the Turkana Basin Institute. She runs the luminescence dating laboratory on campus and has >14 years of experience working in the field in Eurasia, Africa as well as in America.

Please note that all lectures for Fall 2020 will be delivered via ZOOM. Please visit the new Open Night Website at: <https://you.stonybrook.edu/opennights/news/> and click on the respective links below each Open Night Event for more information on how to join or register.

TEACHER IN SERVICE CREDITS:

NYS teachers who wish to receive CTLE credit for any of these lectures must register here:

<https://docs.google.com/forms/d/e/1FAIpQLSdAufjveLIXG - 3T1ehnXOAvnAPwVMvx53NoHjyzishIwiyYA/viewform>

You must register for each lecture you attend. The Graduate School will send a CTLE certificate about six weeks after each lecture.