

Weekly Calendar & News

February 17-24, 2018

Special Colloquium

**Multiphoton Quantum Interference:
Pushing the Limits of Quantum Photonic Technologies**

Omar Magaña-Loaiza

National Institute Standards and Technology

Host: Mark Wilde

3:30 PM **Tuesday**, February 20 at 119 Nicholson Hall
• Refreshments served at 3:10 PM in 232 (Library) Nicholson Hall •

The control of photons represents a pillar for our modern technological society. The emerging field of quantum photonics exploits quantum properties of light to dramatically improve the performance of protocols for metrology, communication and information processing. However, modern applications exploit very little of the enormous potential of the photon. Unfortunately, the extremely low probability of generating quantum states with multiple photons, from conventional spontaneous parametric down-conversion sources, imposes severe limitations to realistic photonic technologies. The unfeasible time involved in the preparation of these precious states of light render unrealizable the manipulation and characterization of multiphoton high-dimensional entangled states. In this talk, I will discuss our recent results on the preparation, manipulation and characterization of mesoscopic states of light. These capabilities have allowed us to explore exotic conditions under which light is forced to manifest novel interference properties. In this context, I will describe the first experimental observation of looped trajectories of light in three-slit interference. This effect, that the physics community would have thought impossible a few years ago, elucidates new properties of light that will potentially enrich protocols for information processing that rely on interference effects.

LSU Physics & Astronomy in the News

- [Alumni Spotlight: Leslie Austin](#)
- [LSU researchers define, for fun, the Law of Attraction](#)

Departmental Colloquium

Multi-messenger Signals from Merging Neutron Stars

Stephan Rosswog

Stockholm University

Host: Peter Diener

3:30 PM Thursday, February 22 at 119 Nicholson Hall

- Refreshments served at 3:10 PM in 232 (Library) Nicholson Hall •

Neutron star mergers had long been suspected to produce gravitational wave "chirps", gamma ray bursts and produce r-process elements. While overall convincing, all these conjectures were based on indirect arguments and none was proven directly. This changed on August 17, 2017: a gravitational wave signal from a merging neutron star binary was detected, closely followed by a short gamma-ray burst and week-long transients across the electromagnetic spectrum coming from the radioactive decay of freshly synthesised r-process elements. In this talk I will give an overview over these recent, very exciting developments.

Events

- Saturday Science: [Exercise and the Role of Mitochondria in Health and Disease](#) (Flyer is attached)
 - **When:** Saturday, February 17, 10:00 - 11:15 AM
 - **Where:** 130 Nicholson Hall
- [LSU celebrates NanoDays: the biggest event for the tiniest of science](#) (Flyer is attached)
 - **When:** Saturday, February 24, 2018 2:00 PM - 6:00 PM
 - **Where:** Highland Road Park Observatory
- [Landolt Astronomical Observatory Public Viewing Night](#): View the Moon, getting close-up views of the 'lunar seas,' craters and mountains.
 - **When:** Saturday, February 24, 7-8 pm, (*Rain date is Sunday, February 25 7-8 pm*)
 - **Where:** LAO on the roof of Nicholson Hall

SATURDAY SCIENCE

Exercise and the Role of Mightychondria in Health and Disease

A free public lecture by
Dr. Nick Broskey



CNRI/Science Photo Library/Getty Images

About the Lecture

Dr. Nick Broskey is a postdoctoral fellow in the Reproductive Endocrinology and Women's Health Laboratory of the Pennington Biomedical Research Center in Baton Rouge.

Regular exercise is always said to be good for your health. Not only is it good for the heart and other body organs, it is also healthy for our muscles. Changes to our muscles through exercise may prevent negative health outcomes. Mitochondria, the powerhouse of the cell, play a large role in this prevention through their involvement in our metabolism. Athletes, or those who regularly exercise, have a greater number of mitochondria. However, during the aging process, we observe a reduction in mitochondrial amount and function. Not only are mitochondria involved in health during the later years, but also during the in utero period of our development.

This talk will focus on mitochondrial metabolism and how it may be beneficially altered with exercise throughout the lifespan.

17 February 2018, 10-11:00 a.m.

Room 130 Nicholson Hall, LSU

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The observatory will have this month's solar viewing session from 2:00-3:30 p.m. through HRPO's Coronado Solar Max II.

Lunar viewing will take place from 3:14-4:45 p.m. showing a magnified daytime waxing crescent moon, and Venus will be viewed from 5-6 p.m.



Small Science Wiends ***BIG IDEAS*** NanoDays 2018

Join LSU for the 9th annual NanoDays at the Highland Road Park Observatory on Saturday, February 24, from 2-6 p.m. The free family-friendly event is open to the public and will feature several hands-on activities for guests of all ages:

- Learn first-hand how a Scanning Probe Microscope explores the nanoworld
- See how nanomaterials are used to make stain-free clothes
- Play with liquid crystals and magnets
- Make an Oobleck, a liquid with both liquid and solid properties

At 6:15 p.m., get inside the mind of physicist David Young, a professor in the LSU Department of Physics & Astronomy, who will present "Alternative Energy! Using nanotechnology to improve the performance of thermoelectric materials."

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