

**Weekly Calendar & News**

*February 24- March 2, 2018*

**Departmental Colloquium**

**[Understanding Massive Stellar Death: Predictive Simulation of Core-collapse Supernovae](#)**

**[Sean Couch](#)**

Michigan State University

**Host: Manos Chatzopoulos**

3:30 PM Thursday, March 1 in 119 Nicholson Hall

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

Core-collapse supernovae are the luminous explosions that herald the death of massive stars. While core-collapse supernovae are observed on a daily basis in nature, the details of the mechanism that reverses stellar collapse and drives these explosions remain unclear. While the most recent high-fidelity simulations show promise at explaining the explosion mechanism, there remains tension between theory and observation. I will discuss the recent developments in the study of the supernova mechanism that could lead to a predictive theory of massive stellar death. In particular, I will discuss the important role turbulence is playing in the supernova mechanism and what might be required for accurately modeling turbulence in our simulations. I will also describe our efforts to develop more realistic initial conditions for supernova simulations with fully 3D massive stellar evolution calculations. Such realistic 3D initial conditions turn out to be favorable for successful explosions, in large part because they result in stronger turbulence behind the stalled supernova shock. We are also studying the role of ubiquitous rotation and magnetic fields in altering the character of supernova explosions. As the realism of our supernova simulations improves, it is crucial to make connection with observational and experimental data. I will conclude with a discussion of the impacts of improved physics on observational features of supernovae, including on the gravitational wave emission from these stellar explosions.

**LSU Physics & Astronomy in the News**

- [LSU Students Receive Distinguished SPS Chapter Award](#)

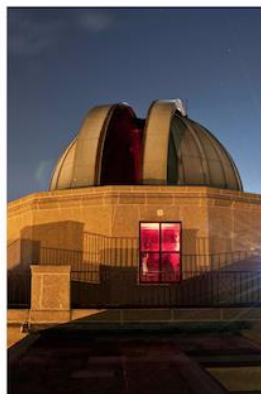
# Publications

- [Resonantly-initiated quantum trajectories and their role in the generation of near-threshold harmonics](#)
- [Continuous-variable quantum Gaussian process regression and quantum singular value decomposition of nonsparse low-rank matrices](#)
- [Orientation dependence of temporal and spectral properties of high-order harmonics in solids](#)

# Events

- [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

**PUBLIC VIEWING NIGHT**  
**Landolt Observatory**  
**Nicholson Hall**  
**Saturday Feb. 24**  
**7-8 pm**



**Rain Day: Sunday, Feb 25, 7-8 pm**



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

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.

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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