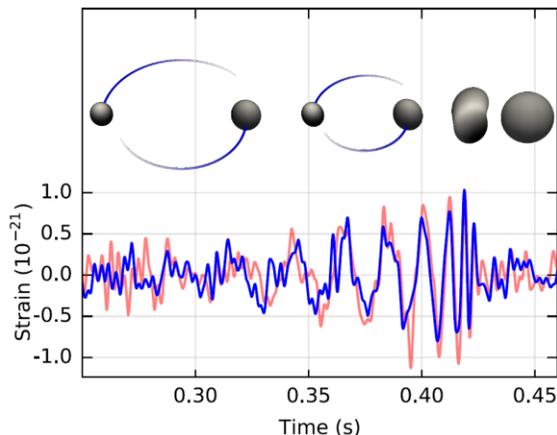


## Using optics and precision metrology in LIGO to measure black hole mergers from across the universe

Dr. Joshua Smith, Department of Physics, Cal State Fullerton

On September 14, 2015 the two detectors of the Laser Interferometer Gravitational Wave Observatory (LIGO) detected gravitational waves from the coalescence of a binary system of black holes. This discovery could not have been made without a century of advances in optical technology and precision metrology. I will give an overview of gravitational waves and LIGO, describe the optics involved and current optical challenges, discuss the discovery of gravitational waves from a merging binary black hole system, and end with prospects for future gravitational-wave observations.



**About our speaker:** Joshua Smith directs the Gravitational-Wave Physics and Astronomy Center (GWPAAC) and is an associate professor of physics at California State University, Fullerton. He was born in Indian Lake, NY and attended Syracuse University, graduating with a BSc in 2002. He earned his doctorate in 2006 from the University of Hannover's Max Planck Institute for Gravitational Physics / Albert Einstein Institute for his work on the GEO600 gravitational-wave detector. Prior to joining Fullerton in 2010, he was a postdoctoral research associate at Syracuse University. Currently, Smith is active in gravitational research, astronomy education research, and teaching physics and astronomy. His research is focused on detecting gravitational waves from astronomical sources using LIGO in collaboration with colleagues in GWPAAC and in the international LIGO Scientific Collaboration.

For Directions: <https://goo.gl/maps/t2uYrFdAzvM2>



**Wednesday, April 13<sup>th</sup>, 2016**

**Reception: 6:00; Dinner: 6:45; Talk: 8:00**  
**Meal: Buffett Style Dinner and Bar available**  
**Cost: \$40 if registered by April 8, \$45 after.**  
**(OSSC Student Members are Free if registered by April 8, \$15 after)**

**Spring Field Banquet Center**  
501 N Harbor Blvd  
Fullerton, CA 92832 714-447-0579

On-line Registration: [www.osscc.org](http://www.osscc.org)

or

Contact OSSC Arrangements Chair Bo Wang  
[Events@osscc.org](mailto:Events@osscc.org), 714-420-8234

Please Register by April 8, 2016

**Please post this notice and invite your friends & colleagues to attend!**