



College of
Science
Department of Physics
& Astronomy

202 Nicholson Hall
Louisiana State University
Baton Rouge, LA 70803
TEL: 225-578-2261
FAX: 225-578-5855
<http://www.phys.lsu.edu>

Weekly Calendar

February 20-26, 2016

Departmental Colloquium

"New Frontiers in Simulating Black Hole Accretion and Jets"

3:30 PM Thursday, February 25, 2016

109 Nicholson Hall

Alexander Tchekhovskoy

University of California at Berkeley

HOST: Juhan Frank

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

Black holes are responsible for a wide variety of astrophysical phenomena. They devour stars, eject relativistic jets, affect star formation and galaxy evolution, and enrich the Universe with heavy elements. In the next several years, the Event Horizon Telescope will produce resolved images of infalling gas and jets on the event horizon scale that promise to revolutionize our understanding of black hole physics. However, until recently, no first-principles models to quantitatively interpret these observations existed. I will present the first such models, the simulated spectra and images, and the constraints on the near event horizon physics coming from the comparison to the observations of the supermassive black hole at the center of our galaxy. I will then use simulations to constrain black hole physics in several other astrophysical contexts. I will finish by making connections to my future research plans.

Publications:

1. **Newhauser Wayne D**, Schulte Reinhard, Berrington de Gonzalez Amy, Lee Choonsik "A Review of Radiotherapy-Induced Late Effects Research after Advanced Technology Treatments". *Frontiers in Oncology* V.6 2016
2. Margaret Hernandez, **Rui Zhang**, Mary Sanders, **Wayne Newhauser**. "A treatment planning comparison of volumetric modulated arc therapy and proton therapy for a sample of breast cancer patients treated with post-mastectomy radiotherapy". *Journal of Proton Therapy*. 2015; 1:119

3. **Wayne D. Newhauser**, Annelise Giebeler, Ronald Zhu, Uwe Titt, Andrew Lee, **Rui Zhang**. "Uncertainty in dose per monitor unit estimates for passively scattered proton therapy: The role of compensator and patient scatter in prostate cases". *Journal of Proton Therapy*. 2015; 1:119

4. Kenneth Homann, Rebecca Howell, John Eley, Dragan Mirkovic, Carol Etzel, Annelise Giebeler, Anita Mahajan, **Rui Zhang**, **Wayne Newhauser**. "The need for individualized studies to compare radiogenic second cancer (RSC) risk in proton versus photon Hodgkin Lymphoma patient treatments" *Journal of Proton Therapy*. 2015; 1:119

LSU Physics & Astronomy in the News

1. An entrepreneur created Magnetic Cool LLC strictly for the purpose of licensing and commercializing professor **Shane Stadler**'s invention, which eliminates the use of harmful fluorocarbons and reduces energy usage by 20% to 50% in both residential and commercial heating and cooling systems. The magnetocaloric material uses a magnetic field to heat itself and removes the magnetic field to cool the material below its ambient temperature. Read more in the [Business Report](#).

2. LIGO Livingston staff praised for finding gravitational waves:
http://www.nola.com/weather/index.ssf/2016/02/ligo_livingston_staff_praised.html#incart_river_home

3. LSU Physics & Astronomy's Dr. Gaby Gonzalez on [Sciencefriday](#) with Ira
<http://www.sciencefriday.com/episodes/february-12-2016/>

4. Dr. Joe Giaime interview on 107.3. Dr. Joe Giaime talks about the major scientific discovery [LIGO - Livingston](#) <http://talk1073.com/.../science-breakthrough-discovery-made-.../>

5. Astrophysical Implications of the Binary Black Hole Merger GW150914:
<http://aasnova.org/2016/02/11/ligo-discovers-the-merger-of-two-black-holes/>

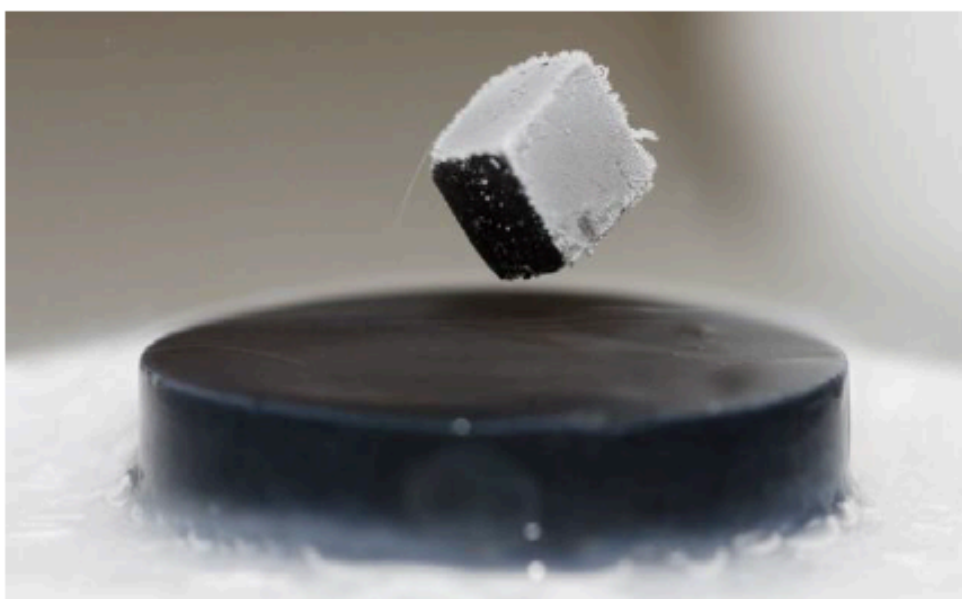


College of
Science
Department of Physics
& Astronomy

SATURDAY SCIENCE

AT LOUISIANA STATE UNIVERSITY

Magnetic Materials and Solid State Cooling



A public lecture by

Dr. Shane Stadler

LSU Department of Physics
& Astronomy



20 February 2016, 10-11:00 a.m.

Room 130 Nicholson Hall, LSU

LSUSaturdayScience@gmail.com