PHYSICS & ASTRONOMY COLLOQUIUM

Date: Thursday, 23 April 2020  
Time: 1:30 p.m.  
Location: Physics & Astronomy Seminar Room 100

Dr. Abigail Stevens  
Department of Astronomy  
Michigan State University/University of Michigan

“Mapping matter in strong gravity: Spectral-timing of black holes and neutron stars”

ABSTRACT

One of the best laboratories to study strong-field gravity is the inner 100s of kilometers around black holes and neutron stars in binary systems with low-mass stars like our Sun. The X-ray light curves of these binary systems show variability on timescales from milliseconds to months—the shorter (sub-second) variability can appear as quasi-periodic oscillations (QPOs), which may be produced by general relativistic effects. My research looks at QPOs from black holes and neutron stars (as well as coherent X-ray pulsations from neutron stars) by fitting the phase-resolved energy spectra of these signals to constrain their physical origin and track their evolution in time. In this talk, I will introduce why black holes and neutron stars are interesting and discuss state-of-the-art “spectral-timing” analysis techniques for understanding more about them. I will also highlight open-source astronomy research software and the importance of mental wellbeing among students and early-career researchers.

HOST: P. Barmby

COFFEE + light snacks will be available in the Atrium, 2nd floor, at 1:15 p.m.