

Thursday, September 15th, 2022

Refreshments at 3:45pm in PSF 186
Colloquium from 4:00 PM – 5:00 PM in PSF 101

CSI Gravity: Investigating fundamental Physics with gravitational waves

Professor Helvi Witek

University of Illinois Urbana-Champaign



Abstract:

The detection of nearly 100 gravitational wave signals produced by coalescing black holes or neutron stars have opened a rich discovery space for astrophysics, fundamental physics and cosmology. In particular, they enable qualitatively new tests of gravity in its most extreme regime that unfolds when black holes collide. To link gravitational wave observations to extensions of general relativity, and to infer parameters of the underlying theory of gravity, we need accurate waveform models in and beyond general relativity. In this talk, I will give an overview of recent advances in numerically modelling binary black holes and I will highlight new dynamical phenomena that are absent in GR.

Biography:

Dr. Helvi Witek is an expert on gravitational wave physics, numerical relativity and strong-field tests of gravity. She obtained her PhD at the University of Lisbon. From there she moved on to postdoc positions at the University of Cambridge and the University of Nottingham. Helvi was a Marie-Curie Fellow at the University of Barcelona and a Royal Society University Research Fellow in London, before joining the faculty at the University of Illinois Urbana Champaign in 2020.

Host: Prof. Cindy Keeler

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