

Department of Physics and Astronomy Colloquium Series

Tuesday, April 2nd, 2024, 2:30pm in PSE 317

Speaker: Renee Hlozek

Institution: University of Toronto

Title: Flashes of light from the sky to the brain

Abstract:

In the sky: the Legacy Survey of Space and Time (LSST) on the Vera C. Rubin Observatory will generate a data deluge: millions of astronomical transients and variable sources will need to be classified from their light curves. I'll discuss the efforts within the Dark Energy Science Collaboration (DESC) to get ready for transient classification through efforts like public Photometric LSST Astronomical Time-series Classification Challenge (PLAsTiCC) and the Extended LSST Astronomical Time-series Classification Challenge (ELAsTiCC) was an expert challenge to LSST broker teams themselves to classify alert streams. I'll place this work in the context of pushing from detections to cosmology. I'll also describe the Canadian Data Intensive Astrophysics Platform (CanDIAPL) -- our recently funded CFI proposal to build a data centre that will process the millions of gigabytes of raw data from Rubin and SKA's pathfinders, and the development of specialised software to process telescope data into manageable data products in near real time so that astronomers can react quickly to rapidly-changing astronomical events, enabling researchers across Canada to make new discoveries.

Looking to the brain: I'll present AstroBEATS, a pipeline derived from astronomical image analysis techniques and designed for high-resolution images of the brain. I'll describe how AstroBEATS can be used to study the synaptic firing in the brain and to search for signs of neurodegeneration and describe the processes that generated this interdisciplinary research.