

# Numerical Simulations of Astrophysical Transients

## PROJECT DESCRIPTION

The project aims at studying the properties of explosive astrophysical transients: compact object mergers and core-collapse supernovae. These systems are candidates for direct detection in gravitational waves by instruments such as Advanced LIGO. Simultaneous detection of electromagnetic emission (gamma-ray, X-ray, optical, infrared, or radio) from these systems will greatly enhance the quality of the information that can be extracted from the combined signal. A good knowledge of the expected electromagnetic signal will therefore facilitate observational follow-up of gravitational wave detections and the likelihood of such a simultaneous measurement. The project involves running simulations on supercomputers, and the analysis of the resulting data. The student will acquire knowledge of high-performance scientific computing and data analysis techniques, including visualization.

## FACULTY-DEPARTMENT

Science- Physics

## DESIRED FIELD OF (STUDENT) STUDY

At least third year Physics undergraduate level (Statistical Mechanics & Fluid Dynamics), knowledge of Stellar Astrophysics (stellar structure and evolution), and good programming proficiency (ideally knowledge of Fortran and Python)

## INTERNSHIP LOCATION

University of Alberta Main Campus - Edmonton

## NUMBER OF INTERNSHIP POSITIONS

1

## INTERNSHIP START DATE

July 3, 2018

## INTERNSHIP END DATE

October 3, 2018

Contact: Brendan Cavanagh, Internship Coordinator (Inbound)  
University of Alberta International  
intern@ualberta.ca

## ARE THE DATES FLEXIBLE?

Yes, I am flexible regarding the internship dates. Selected students can contact me to request a date change.