Supervisor: Marie Anne Bizouard

Brief description:

So far, LIGO-Virgo-KAGRA have discovered ~90 astrophysical sources emitting gravitational waves corresponding to the merger of two compact objects, black holes or neutron stars. Discovering new types of transient gravitational wave sources (core collapse supernova, magnetar, cosmic string, …) is a goal for the next observing run that will start in 2023. When that happens, one needs to be able to test different signal waveform models to assess the nature of the source. The goal of the intership is to build a Bayesian inference pipeline that provides model comparison between different types of sources. If time permits, the study may involve to develop methods based on machine learning to interpolate between waveforms in the case of sources for which the waveforms are available from sparse catalogue of waveforms.

The student will use the O3 and O4 LIGO-Virgo-KAGRA observing run data and will work at the Artemis laboratory, Observatoire de la Cote d'Azur, Nice, France.

Requested skills: motivation for academic research & python language programming.