

INTERNSHIP PROPOSAL

(One page maximum)

Laboratory name: Laboratoire des 2 infinis - Toulouse (L2IT)

CNRS identification code: UMR5033

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Internship location: L2IT, 75 course des sciences, 31062 Toulouse

Thesis possibility after internship: NO

Funding: YES

If YES, which type of funding: gratification de stage

Title: How do black holes merge together?

Summary (half a page maximum)

Gravitational waves offer us an extraordinary way to answer this question. These ripples in spacetime allow us to trace the lives of black holes, from their birth to their dramatic collisions. Different astrophysical processes are expected to leave unique signatures in the population we observe today, giving us valuable clues about how these extremes objects form and evolve. With the growing number of gravitational-wave detections, we now have enough data to begin uncovering these hidden patterns.

In this project, the student will learn the state-of-the-art tools used by the gravitational-wave community to study black hole populations and will work on developing new methods to distinguish between different subpopulations using current observations. This research lies at the intersection of gravitational-wave physics, black hole astrophysics, and Bayesian data analysis, offering an exciting opportunity to dive into one of the most dynamic areas of modern astrophysics.

Please, indicate which speciality(ies) seem(s) to be more adapted to the subject:

Condensed Matter Physics: YES/NO Soft Matter and Biological Physics: YES/NO
Quantum Physics: YES/NO Theoretical Physics: YES/NO