

11-14 November 2025
Opatija, Croatia



Contribution ID: 51

Type: **talk**

Beyond GR tests with Einstein Telescope

Tuesday 11 November 2025 15:50 (17 minutes)

Gravitational waves from compact binary coalescences (CBCs) have become a robust and powerful tool for testing General Relativity (GR), in fact, to date, the LIGO-Virgo-KAGRA collaboration has provided significant consistency tests of GR.

In this talk, I will present forecasts for the precision with which GR can be tested using third-generation interferometers, such as the Einstein Telescope. The anticipated large number of detected sources makes full Bayesian analyses computationally infeasible. To address this, we employ the newly released GWJulia code, which enables studies of large CBC populations using the Fisher information formalism.

Using this framework, we explore the constraints the Einstein Telescope could place on post-Newtonian (PN) coefficients within a hierarchical Bayesian approach. In addition, we will discuss the number of events required to identify deviations from GR at various PN orders and under different detector configurations.

Author: BEGNONI, Andrea

Co-authors: RICCIARDONE, Angelo; POMPER, Joachim; PEGORIN, Matteo; DEL POZZO, walter

Presenter: BEGNONI, Andrea

Session Classification: Observational Science (OSB)

Track Classification: OSB: Div1