

Séminaire de physique des particules et de cosmologie

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(voir dans annonce)

Perturbing binary black holes with effective field theory

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Effective field theories (EFTs) facilitate what might otherwise be completely untenable calculations by helping us focus on only the most relevant physics at hand. Applied to general relativity, these techniques allow us to study not only how binary black holes evolve when isolated in pure vacuum, but also how they respond to perturbations from external fields. After discussing some of the key ideas that underpin its construction, I will illustrate the capabilities of this EFT approach by using it to make novel predictions about how binary systems of Kerr black holes interact with ambient, light scalar fields. Despite being subject to the usual no-hair theorems, we will find that these systems can still exhibit interesting phenomenology due to the interplay between absorption at the horizons and momentum transfer in the bulk of the space-time. These include the appearance of dynamically induced scalar charges, an emergent “fifth” force, and a superradiance-like mechanism fuelled by the binary’s orbital motion.

The seminar is online only (<https://bbb.ipht.fr/b/raf-ffq-uzd>)
