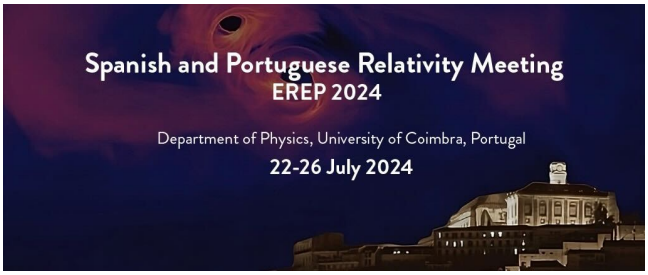

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Evolution of creases on the event horizon of a black hole merger

Friday 26 July 2024 10:10 (20 minutes)

The event horizon of a dynamical black hole is generically nonsmooth. The types of nonsmooth structures that can arise on the event horizon of a dynamical black hole have been recently classified 2303.15512. The most important type of nonsmooth structures were found to be crease points and caustics. In this talk, I will discuss how creases and caustics arise and evolve on the event horizon of a black hole merger. The study is carried out in the (strict) extreme mass ratio limit, for which constructing the event horizon reduces to finding a null hypersurface that asymptotes to a Rindler horizon in the Kerr spacetime. The construction allows for a quantitive study of geometrical properties of the crease set and a comparison with the predictions of an exact local model. Based on work with Maxime Gadioux and Harvey Reall.

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