Contribution ID: **32** Type: **not specified**

A visual journey into some Carter-Penrose diagrams

Wednesday, July 6, 2022 3:30 PM (30 minutes)

Although it looks simple, the Schwarzschild metric describes a complicated spacetime that is endowed with two asymptotic regions and two singularities. The situation is even more complicated for charged or spinning black holes. Grasping the complexity of these metrics can fortunately be achieved thanks to the celebrated Carter-Penrose diagrams. However, such diagrams do not allow to guess the complexity of the actual visual aspect of these metrics, that is, how a set of celestial spheres are distorted in the presence of strong gravitational fields. Conversely, addressing this issue necessitates to propagate geodesics in metrics that, most of the time, cannot be covered by a unique coordinate system and for which locating photons and oneself in a causal diagram is mandatory. In this talk, I will show a few movies of what an observer would see when travelling within a few black hole metric maximal analytic extensions: Schwarzschild, Reissner-Nordström and, of course, Kerr.

Presenter: RIAZUELO, Alain (IAP, CNRS, Sorbonne Université)