Gravitational Geometry and Dynamics Group Seminar

Tue., Jun. 26th, 2024, at 11h00.

Room: Sousa Pinto and **Zoom ID:** 989 6252 0928
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Hyperboloidal evolution in Numerical Relativity: the case of Generalized Harmonic Gauge

The inclusion of future null infinity in the computational domain promises the clean extraction of the gravitational wave signal out of a numerical relativity simulation. The use of compactified hyperboloidal slices is a natural way to tackle this problem, allowing the use of standard methods in the strong field region and foliating the asymptotic region of spacetime simultaneously.

In this talk I will discuss the asymptotic properties of the metric in the Generalized Harmonic Gauge formulation of General Relativity (GR), and how these depend crucially in the choice of gauge. I will show numerical results of spherically symmetric evolutions with a massless scalar field as matter content, as well as 3+1 dimensional evolutions of a toy model of the previous system. These are all steps towards the application of hyperboloidal evolution in GR without symmetry assumptions.