Black Holes, Neutron Stars, and Gravitational Waves @ Black Sea



Contribution ID: 54

Type: Oral presentation

Free hyperboloidal evolution and strong field initial data

Monday 16 June 2025 12:00 (30 minutes)

Gravitational wave radiation is only unambiguously defined at future null infinity – the "location" where light rays arrive and where global properties of spacetimes can be measured. Reaching future null infinity is thus crucial for extracting correct waveforms from numerical relativity simulations of compact binaries. Hyperboloidal slices extend to null infinity while being spacelike and smooth everywhere. Among the current efforts to the hyperboloidal method, I will focus on free evolution of the conformally compactified BSSN / Z4 equations. After illustrating relevant aspects of the approach, I will focus on hyperboloidal initial data including black holes and neutron stars in spherical symmetry. I will finish with an update on the ongoing efforts towards hyperboloidal simulations in full 3D.

Author: VANO-VINUALES, Alex (IAC3, University of the Balearic Islands)

Presenter: VANO-VINUALES, Alex (IAC3, University of the Balearic Islands)