ID de Contribution: **16** Type: **Non spécifié**

Integrability Aspects of Perturbed Black Holes: a Lax Pair Hyperboloidal Approach

mercredi 25 juin 2025 15:30 (30 minutes)

Black hole (BH) perturbation theory allows to decouple Einstein perturbative equations into wave-like master equations. In the spirit of a "wave-mean flow"description of the dynamics, the background potential and master functions would be respectively cast as "slow"and "fast"degrees of freedom (DoF): the "slow"DoF would underlie a nonlinear integrable dynamics (in the sense of isospectral deformations) on which the "fast"DoF evolve according to a linear dynamics. We address such gravitational scattering problem by using a hyperboloidal scheme for the spacetime. In such a framework, the infinitesimal time generator of the dynamics turns into a non-selfadjoint operator and the related master equations become neatly separated between bulk and asymptotic contributions. Our focus is on identifying a Lax-pair formulation with the associated Hamiltonian structure(s) that underpin the integrability features, starting from a (weak) adjoint spectral problem that is formulated in terms of an energy dependent Schrödinger operator.

Orateur: VITEL, Corentin