Seminar: Perturbative Computations from Curved Spacetimes

Friday 4 July 2025 15:45 (45 minutes)

Given the impressive results for classical observables obtained by field theoretic approaches to gravitational systems, we can ask if these tools can help us in other regimes and problems of interest. Amplitude tools are particularly well suited to derive observables for the binary system in a post-Minkowskian expansion, where they have achieved complete results to fourth order in Newton's constant. From the perspective of perturbative quantum field theory, classical solutions in general relativity are remarkable objects; they make manifest a resummation of an infinite series of Feynman diagrams encoding information to all orders in Newton's constant. I will describe an effective field theory formalism tailored for computations about nontrivial classical backgrounds, and present the potential, and hurdles, in combining advantages from classical gravitational and field theoretic techniques to address questions related to the binary inspiral problem.

Presenter: SHAH, Nabha