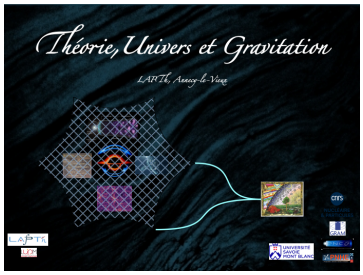

ID de Contribution: **37** Type: **Non spécifié**

An Eikonal Approach to Gravitational Bremsstrahlung

jeudi 7 novembre 2024 14:00 (30 minutes)

In this talk, I will discuss recent developments in the calculation of the gravitational waveform emitted during a scattering of two compact objects, considering two complementary regimes. The first is the post-Minkowskian (PM) approximation, where one focuses on widely separated objects, i.e. scatterings at large impact parameters. In this setup, interactions are weak and can be treated perturbatively. A particularly natural approach to attack this problem is to exploit the connection with scattering amplitudes, for which the eikonal framework offers a systematic way to describe the classical limit. I will discuss in particular how the next-to-leading PM waveform can be extracted from a one-loop 2->3 amplitude. The second approximation consists in focusing on low-frequency emissions, which are governed by universal soft theorems. These are simple relations that dictate in particular the structure of leading log-enhanced pieces of the type $\omega^{n-1}(\log\omega)^n$ for $n = 0, 1, 2\ldots$ in the low-frequency expansion, as $\omega \to 0$. I will present a recent proposal for a resummation of all such terms and discuss their contribution to the energy emission spectrum.

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