**SPEAKER**:

Maxime Van de Moortel, Princeton University

**TITLE**:

The Cauchy problem for the ternary interaction of impulsive gravitational waves

**ABSTRACT:**

In General Relativity, an impulsive gravitational wave is a localized and singular solution of the Einstein equations modeling the spacetime distortions created by a strongly gravitating source. I will present a comprehensive theory allowing for ternary interactions of such impulsive gravitational waves in translation-symmetry, offering the first examples of such an interaction.

The proof combines new techniques from harmonic analysis, Lorentzian geometry, and hyperbolic PDEs that are helpful to treat highly anisotropic low-regularity questions beyond the considered problem.