

Guest lecture

**Maxime Van De Moortel
(Rutgers University)**

“Late-time asymptotics for the Klein-Gordon equation on a Schwarzschild black hole”

Abstract:

It has long been conjectured that the Klein-Gordon equation on a Schwarzschild black hole behaves very differently from the wave equation at late-time, due to the presence of stable (timelike) trapping and the involvement of long-range scattering. We will present our recent resolution of this problem, establishing that, contrary to previous expectations, solutions with sufficiently localized initial data decay polynomially in time. Time permitting, we will explain how the proof uses, at a crucial step, results from analytic number theory for bounding exponential sums. The talk is based on joint work(s) with Federico Pasqualotto and Yakov Shlapentokh-Rothman.

March 16th, 2026
15:30

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