

Paul Alphonse (Toulouse)

Title: Unique continuation estimates for the heat equation and the Baouendi-Grushin equation.

Abstract: In this talk, we will present quantitative null-controllability estimates for two dissipative equations, which we will relate to their null-controllability properties. We will begin by presenting the parabolic case of the fractional heat equation posed on the whole space R^n , whose null-controllability properties are related to the geometric notion of thickness. We will then consider the equation associated with a Baouendi-Grushin-type operator (a degenerate selfadjoint Laplacian) and considered on $R^n \times \mathbb{T}^n$, which presents new phenomena compared to the parabolic case (notably the existence of minimal times). The study of this model naturally requires establishing precise spectral inequalities for Baouendi-Grushin operators, but also for anharmonic oscillators, which we will present. These results are the product of a series of works with J. Martin (LJLL), A. Koenig (IMT) and A. Seelmann (TU Dortmund).