

# SEMINARIO DE ANÁLISIS Y APLICACIONES

Viernes 03 de Noviembre 2023,

11:30-13:00, Aula Naranja, ICMAT

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### Weighted Gagliardo-Nirenberg interpolation inequalities

#### Resumen:

In this talk, we explore Gagliardo-Nirenberg inequalities with the Lebesgue measure modified by a weight. The classical Gagliardo-Nirenberg inequality generalizes the Sobolev inequality and is an absolutely central tool in the study of PDEs. The first results using weighted norms were given by Caffarelli, Kohn and Nirenberg, and they were subsequently improved by Chang-Shou Lin, who settled the inequality with homogeneous radial weights and integer derivatives. Here we will explain how to make use of the modern methods of weighted inequalities in Harmonic Analysis to extend Lin's inequality to the fractional derivatives setting. Moreover, these methods are flexible enough to give rise to similar inequalities with other weights, including non-homogeneous weights. This talk is based on joint work with Jorge Drumond Silva (IST).

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