

Title: A gentle introduction to Rubio de Francia extrapolation

Speaker: David Cruz-Uribe, Dept. of Mathematics, University of Alabama

Abstract: The Rubio de Francia theory of extrapolation is a powerful tool from harmonic analysis that has multiple important applications. The basic idea is simple: if an operator T is bounded on a family of weighted L^2 spaces:

$$\int_{\mathbb{R}^n} |Tf(x)|^2 w(x) dx \leq C \int_{\mathbb{R}^n} |f(x)|^2 w(x) dx,$$

then T is bounded on every L^p space, $1 < p < \infty$:

$$\int_{\mathbb{R}^n} |Tf(x)|^p dx \leq C \int_{\mathbb{R}^n} |f(x)|^p dx.$$

In fact, much stronger conclusions hold: T is bounded on a large family of weighted L^p spaces, and is bounded on any Banach function space that satisfies some natural conditions.

In this talk we will give a more or less complete proof of a basic version of the extrapolation theorem, and then, as time permits, talk about various generalizations and extrapolations.