

Another look at Sobolev Spaces

Abstract: Let Ω be a domain in \mathbb{R}^n with smooth boundary, it is well-known that the Sobolev spaces $W^{1,2}(\Omega)$ and $W^{s,2}(\Omega)$, $0 < s < 1$ are function spaces that are associated with the Laplacian Δ and the fractional Laplacian $(-\Delta)^s$ respectively. There are extensions of these concepts and setups on certain fractal sets K . In this seminar, we will discuss some of the developments; in particular we will consider a theorem of Bourgain, Brezis and Mironescu on the limit behavior of $W^{s,2}(\Omega)$, $s \rightarrow 1^-$ to $W^{1,2}$, and the possible extension of the theorem to K .