CHARACTERIZATION OF TRACES OF WEIGHTED FUNCTION SPACES ON FRACTALS

Iwona Piotrowska (FSU Jena)

BĘDLEWO, JULY, 4 2006

Abstract

In the first part of this talk we present a solution of the trace problem for Besov and Triebel-Lizorkin spaces with a weight function which measures a distance to a certain fractal set. The corresponding trace operator shall map weighted function spaces of Besov and Triebel-Lizorkin type into suitable function spaces on a fractal set. In particular we characterize traces of Sobolev spaces on $n-1$ dimensional hyperplanes with the special weight that measures the distance to a hyperplane. The main tool in proving these results is an atomic decomposition of the underlying function spaces.

The second part of this talk is devoted to study of the "quality" of the compactness of the trace operator. More precisely, we investigate the behaviour of entropy numbers of the compact map

$$\mathrm{tr}_\Gamma : \; B^s_{p_1,q}(\mathbb{R}^n, w^\Gamma_\varkappa) \longrightarrow L_{p_2}(\Gamma),$$

where Γ is a d-set with $0 < d < n$.