

On the trace space of a Sobolev space with a radial weight

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(Communicated by Fernando Cobos)

2000 Mathematics Subject Classification. Primary 46E35; Secondary 46E30.
Keywords and phrases. weighted Sobolev spaces, Muckenhoupt weights, trace spaces.

Abstract. Our concern in this paper lies with trace spaces for weighted Sobolev spaces, when the weight is a power of the distance to a point at the boundary. For a large range of powers we give a full description of the trace space.

1. Introduction

We consider integer order weighted Sobolev spaces with weights equal to a power of the distance to a point of the boundary and more general weights modelled upon such weights. Our concern in this paper lies with a characterization of trace spaces of these weighted Sobolev spaces. Rather surprisingly there are not too many trace theorems for weighted Sobolev spaces even though traces belong to the fundamental concepts both in the theory and applications, and they have been studied for a very long time. One of the major reasons is that there are no straightforward analogs of methods known from the non-weighted theory, which allow a description of values on manifolds of lower dimensions. Note in passing that the study