

A TRACE THEOREM FOR BESOV FUNCTIONS IN SPACES OF HOMOGENEOUS TYPE

MIGUEL ANDRÉS MARCOS

Abstract: The aim of this paper is to prove a trace theorem for Besov functions in the metric setting, generalizing a known result from A. Jonsson and H. Wallin in the Euclidean case. We show that the trace of a Besov space defined in a ‘big set’ X is another Besov space defined in the ‘small set’ $F \subset X$. The proof is divided in three parts. First we see that Besov functions in F are restrictions of functions of the same type (but greater regularity) in X , that is we prove an *extension theorem* and mention examples where this theorem holds. Next, as an auxiliary result that can also be interesting on its own, we show that the interpolation between certain potential spaces gives a Besov space. Finally, to obtain that Besov functions in X can in fact be restricted to F , a *restriction theorem*, we first prove that this result holds for functions in the potential space, and then by the interpolation result previously shown, it must hold in the Besov case. For the interpolation and restriction theorems, we make additional assumptions on the spaces X and F , and on the order of regularity of the functions involved. We include an interesting example of our trace theorem, not covered by the classical one.

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