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NUCLEAR EMBEDDINGS IN FUNCTION SPACES – SOME RECENT RESULTS

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ABSTRACT. We study nuclear embeddings for spaces of Besov and Triebel-Lizorkin type. We mainly concentrate on a special weighted setting, where at least compactness is guaranteed: here the weight belongs to some Muckenhoupt class and is essentially of polynomial type. The concept of nuclearity goes back to Grothendieck (1955) and was the basis for many fundamental developments in functional analysis. Recently we noticed a refreshed interest to study such questions in special situations. This motivated our investigations. We obtain complete characterisations for the nuclearity of the corresponding embeddings in almost all cases. Essential tools are a discretisation in terms of wavelet bases, operator ideal techniques, as well as a very useful result of Tong (1969) about the nuclearity of diagonal operators acting in sequence spaces.

In the end we briefly deal with embeddings of spaces on quasi-bounded domains. Here we can extend our previous results on the compactness of corresponding embeddings.

This is joint work with Leszek Skrzypczak (Adam Mickiewicz University Poznań, Poland) and Hans-Gerd Leopold (Friedrich Schiller University Jena, Germany).

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