The embeddings of Jawerth and Franke for Besov and Triebel-Lizorkin spaces with variable exponents

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This talk is based on a joint work with H. Kempka and J. Vybíral. Embeddings of Jawerth and Franke for the scale of Besov and Triebel-Lizorkin spaces with variable exponents

$$F^{s_0(\cdot)}_{p_0(\cdot),q(\cdot)}(\mathbb{R}^n) \hookrightarrow B^{s_1(\cdot)}_{p_1(\cdot),p_0(\cdot)}(\mathbb{R}^n) \quad \text{and} \quad B^{s_0(\cdot)}_{p_0(\cdot),p_1(\cdot)}(\mathbb{R}^n) \hookrightarrow F^{s_1(\cdot)}_{p_1(\cdot),q(\cdot)}(\mathbb{R}^n),$$

respectively, for

$$s_0(\cdot) - \frac{n}{p_0(\cdot)} = s_1(\cdot) - \frac{n}{p_1(\cdot)}, \quad x \in \mathbb{R}^n,$$

will be presented. Since the tools used in the proofs of the classical results are not available for the scale of spaces with variable exponents (such as interpolation theory and non-increasing rearrangements), we have to deal with this problem in a different way.

Moreover, we see that these results do also hold for 2-microlocal function spaces $B^{\boldsymbol{w}}_{p(\cdot),q(\cdot)}(\mathbb{R}^n)$ and $F^{\boldsymbol{w}}_{p(\cdot),q(\cdot)}(\mathbb{R}^n)$, which are a slight generalization of spaces with variable smoothness.