On new scales of function spaces characterizing homogeneous Besov-Triebel-Lizorkin spaces

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In this talk, we introduce two new scales of function spaces that characterize homogeneous Besov and Triebel-Lizorkin spaces via extensions onto the upper half-space $\mathbb{R}^{d+1}_+$. These scales unify and extend existing spaces, including the (weighted) tent spaces of Coifman, Meyer, and Stein, as well as the weighted Z-spaces introduced by Barton and Mayboroda and systematically studied by Amenta. We will discuss their functional analytic properties and establish their relationship to the classical Besov-Triebel–Lizorkin theory. Finally, we will briefly indicate how these spaces provide a natural framework for the study of PDEs with rough data and coefficients. This talk is based on joint work with Pascal Auscher and Sebastian Bechtel.