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Function spaces via hyperbolic fillings

We discuss an approach to first-order smoothness spaces (Sobolev, Triebel-Lizorkin and Besov) in the setting of a metric measure space obtained using a *hyperbolic filling* of the metric space. Time permitting, we also discuss applications to topics such as quasiconformal invariance, interpolation and trace theorems. The talk is based on joint work with M. Bonk and E. Saksman.