



On Mappings Generating Embedding Operators in Sobolev Classes on Metric Measure Spaces

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Let $X = (X, \rho, \mu)$ be a doubling metric measure space which supports the weak p -Poincaré inequality. We consider bi-measurable homeomorphisms $\varphi : \Omega \rightarrow \tilde{\Omega}$, of bounded domains $\Omega, \tilde{\Omega} \subset X$, which generate bounded composition operators on Newtonian–Sobolev spaces $N^{1,p}(\tilde{\Omega}) \rightarrow N^{1,q}(\Omega)$, $1 < q \leq p < \infty$. We prove the Luzin N^{-1} -property of such mappings with respect to capacities and obtain necessary and sufficient conditions on bi-measurable homeomorphisms that generate bounded composition operators on Newtonian–Sobolev spaces. We prove this by using special test functions generated by distance functions. On the base of the composition operators we consider Sobolev type embedding theorems in weak (p, q) -quasiconformal α -regular domains.
