Matrix $A_p$ weights, degenerate Sobolev spaces, and mappings of finite distortion.

Abstract

We study degenerate Sobolev spaces where the degeneracy is controlled by a matrix $A_p$ weight. We prove that the classical Meyers-Serrin theorem, $H = W$, holds in this setting. As applications we prove partial regularity results for weak solutions of degenerate p-Laplacian equations, and in particular for mappings of finite distortion.

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