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Local Sobolev Constant Estimate for Integral Ricci Curvature Bounds

We obtain a local Sobolev constant estimate for integral Ricci curvature, which enable us to extend several important tools like maximal principle, gradient estimate, heat kernel estimate and L^2 Hessian estimate to manifolds with integral Ricci lower bounds, including the collapsed case. This is joint work with Xianzhe Dai and Zhenlei Zhang.