"A Blow Up Procedure for Functions with Bounded Laplacian"

Abstract:
We consider a pair of problems where the solutions have bounded Laplacians and vanishing gradients across an interface, and show a blowup procedure to obtain information about the geometry of the interface. The mathematical interest here lies in the fact that a quadratic rescaling will preserve the bounds on the Laplacians, but because functions with bounded Laplacian do not necessarily have bounded second derivatives, there is a difficulty with compactness under a typical quadratic blowup procedure.