



# Isolated Singularities of Nonlinear Polyharmonic Inequalities

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We obtain results for the following question where  $m \geq 1$  and  $n \geq 2$  are integers. **Question.** For which continuous functions  $f: [0, \infty) \rightarrow [0, \infty)$  does there exist a continuous function  $\phi: (0, 1) \rightarrow (0, \infty)$  such that every  $C^{2m}$  nonnegative solution  $u(x)$  of  $0 \leq -\Delta^m u \leq f(u) \quad \text{in} \quad B_2(0) \setminus \{0\} \subset \mathbb{R}^n$  satisfies  $u(x) = O(\phi(|x|)) \quad \text{as} \quad x \rightarrow 0$  and what is the optimal such  $\phi$  when one exists?

Comments: 31 pages

Subjects: **Analysis of PDEs (math.AP)**

MSC classes: 35B09, 35B33, 35B40, 35B44, 35B45, 35R45, 35J30, 35J91

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