

Singular radial entire solutions and weak solutions with prescribed singular set for a biharmonic equation

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Abstract: Positive singular radial entire solutions of a biharmonic equation with subcritical exponent are obtained via the entire radial solutions of the equation with supercritical exponent and the Kelvin transformation. The expansions of such singular radial solutions at the singular point 0 are presented. Using these singular radial entire solutions, we construct solutions with a prescribed singular set for the Navier boundary value problem

$$\Delta^2 u = u^p \quad \text{in } \Omega, \quad u = \Delta u = 0 \quad \text{on } \partial\Omega$$

where Ω is a smooth open set of \mathbb{R}^n with $n \geq 5$.

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