Variations on the p-Laplacian

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Abstract

In this talk I address several issues involving Dirichlet problems for the classical p–Laplacian operator $\Delta_p u := \mathrm{div}(|\nabla u|^{p-2}\nabla u)$ for $p \in (1,\infty)$. First I look at p harmonic functions as $p \to \infty$ and $p \to 1$. Then I compare the p–Laplacian with its normalized version $\Delta_p^N u := \frac{1}{p}|\nabla u|^{2-p}\Delta_p u$ and study equations like $-\Delta_p u = 1$ or $-\Delta_p^N u = 1$. Finally I present results and open problems on the eigenvalue problem $-\Delta_p u = \lambda |u|^{p-2}u$.