Optimal estimates for semilinear elliptic equations

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Abstract. In this work we study the distribution function of the solutions to the Dirichlet problem

$$\begin{cases} -\Delta_p u &= f(u) & \text{in } \Omega \\ u &> 0 & \text{in } \Omega \\ u &= 0 & \text{on } \partial\Omega, \end{cases}$$

where is an open bounded set of $\mathbb{R}^n$ and f is a nonnegative Lipschitz function with a suitable growth. Our main concern is to compare the distribution function of a solution associated to Ω with the maximal one associated to the ball B with same measure, obtaining results similar to some Talenti estimates. We apply these results to estimate the maximum of an eigenfunction by its L^2 norm and by the corresponding eigenvalue. This is a joint work with José Fábio Bezerra Montenegro.