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BLOW-UP SOLUTIONS FOR A p-LAPLACIAN ELLIPTIC EQUATION OF LOGISTIC TYPE WITH SINGULAR NONLINEARITY

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Abstract. In this paper, we deal with existence, uniqueness and exact rate of boundary behavior of blow-up solutions is for a class of logistic type quasilinear problems in a smooth bounded domain involving the p-Laplacian operator, where the nonlinearity can have a singular behavior. In the proof of the existence of solution, we have used the sub and super solution method in conjunction with variational techniques and comparison principles. Related to the rate on boundary and uniqueness, we combine comparison principle with our result of existence of solution.

1. Introduction

In this paper, we consider existence, uniqueness and exact rate of boundary behavior of blow-up (large or explosive) solutions for the following class of quasilinear problem of logistic type

$$(\mathrm{P})_\lambda \qquad \begin{cases} -\Delta_p u = \lambda a(x)g(u) - b(x)f(u) & \text{in } \Omega, \\ u > 0 & \text{in } \Omega, \\ u = +\infty & \text{on } \partial\Omega, \end{cases}$$

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