POSITIVE SOLUTIONS
FOR SINGULAR IMPULSIVE DIRICHLET
BOUNDARY VALUE PROBLEMS

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ABSTRACT. In this paper, a class of singular impulsive Dirichlet boundary value problems is considered. By using variational method and critical point theory, different parameter ranges are obtained to guarantee existence and multiplicity of positive classical solutions of the problem when nonlinearity exhibits different growths.

1. Introduction

The main purpose of this paper is to study positive classical solutions of the following singular impulsive Dirichlet boundary value problem

$$
\begin{cases}
-u''(t) - \dfrac{1}{u^{\alpha}(t)} = \lambda f(t, u(t)), & t \in \Omega, \\[2mm]
\Delta(u'(t_i)) := u'(t_i^+) - u'(t_i^-) = I_i(u(t_i)), & i = 1, \ldots, p, \\[2mm]
u(0) = u(1) = 0,
\end{cases}
$$

(1.1a)

(1.1b)

(1.1c)