EXISTENCE AND MULTIPLICITY OF POSITIVE SOLUTIONS FOR SECOND-ORDER SELF-ADJOINT BOUNDARY VALUE PROBLEM WITH INTEGRAL BOUNDARY CONDITIONS AT RESONANCE

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Abstract. In this paper, we are concerned with the second order self-adjoint boundary value problem at resonance

\[-(p(t)x'(t))' = f(t, x(t)), \quad t \in (0, 1),\]
\[x'(0) = 0, \quad x(1) = \int_0^1 x(s)g(s)ds.\]

A few new results are given for the existence of at least one, two, three and \(n\) positive solutions of the above boundary value problem by using the theory of a fixed point index for A-proper semilinear operators defined on cones, where \(n\) is an arbitrary natural number.

Key Words and Phrases: Boundary value problem, positive solution, resonance, multiplicity, A-proper, fixed point index.

2010 Mathematics Subject Classification: 34B10, 34B15, 47H10.

Acknowledgment. The work is supported financially by the National Natural Science Foundation of China (10971179), the Natural Science Foundation of Changzhou University (JS201008) and the Natural sciences Foundation of Nantong University (08Z05).

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Received: January 27, 2011; Accepted: November 22, 2011.