



EXISTENCE OF POSITIVE SOLUTION FOR  
AN ELASTIC BEAM EQUATION

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Abstract

In this paper, we investigate the existence of positive solution for boundary value problem

$$u''''(t) = f(t, u(t), u'(t), u''(t), u'''(t)), \quad 0 < t < 1,$$

$$u(0) = u'(0) = u''(1) = u'''(1) = 0.$$

The boundary value problem describes the deformation of an elastic beam fixed at the left and freed at the right. By using Leray-Schauder fixed point theorem, we establish some results on the existence of positive solution to the boundary value problem.

**Keywords and phrases:** positive solutions, existence, fixed point theorem, elastic beam equation.

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