AN APPROXIMATION APPROACH TO EIGENVALUE INTERVALS FOR SINGULAR BOUNDARY VALUE PROBLEMS WITH SIGN CHANGING NONLINEARITIES

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Abstract. This paper presents new existence results for the singular boundary value problem

$$\begin{cases} -u'' = g(t,u) + \lambda h(t,u), \ t \in (0,1) \\ u(0) = 0 = u(1). \end{cases}$$

In particular our nonlinearity may be singular at $t = 0, 1$ and $u = 0$ and is allowed to change sign. Existence in this paper will be established by obtaining a sequence of upper and lower solutions which in turn will generate a sequence of approximate solutions.

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ⓒ ELEMENT, Zagreb
Paper MIA-11-05

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