

NONLINEAR BOUNDARY VALUE PROBLEM FOR QUADRATIC NONLINEARITY WITH STEPWISE FUNCTION

ANITA KIRICHUKA

Daugavpils University

Vienības 13, Daugavpils LV-5401, Latvia

E-mail: anita.kiricuka@du.lv

The boundary value problem

$$x'' = -ax + \alpha(t)x^2, \quad a > 0, \quad (1)$$

$$x(0) = 0, \quad x(1) = 0 \quad (2)$$

is considered. We assume that $\alpha(t)$ is a step-wise function with two jumps

$$\alpha(t) = \begin{cases} b, & t \in [0, \delta), \\ 0, & t \in [\delta, 1 - \delta], \\ b, & t \in (1 - \delta, 1], \end{cases}$$

where $b > 0$, $0 < \delta < 0.5$.

We provide estimates of solutions to the boundary value problem (1), (2) in terms of the parameters a , δ . The phase plane method and continuous dependence of solution on parameters are used.

REFERENCES

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