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Localization of solutions for a problem arising in the theory of adiabatic tubular chemical reactors

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ABSTRACT. We consider the boundary value problem

$$\begin{cases} \mu u'' - u' + f(u) = 0, \text{ on } [0,1] \\ \mu u'(0) - u(0) = 0 \\ u'(1) = 0 \end{cases}$$

where μ is a positive real number and $f : \mathbb{R} \to \mathbb{R}$ is continuous.

For this problem, via Krasnoselskii expansion-compression theorem, we establish an existence result for positive solutions and we use the localization provided by the Theorem 2.3 to give an aproximation of the solution for some particular cases.

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