
BIFURCATION DIAGRAMS OF ONE-DIMENSIONAL NONLOCAL ELLIPTIC EQUATIONS

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We study the one-dimensional nonlocal elliptic equation

$$\begin{aligned} - \left(\int_0^1 |u(x)|^p dx + b \right)^q u''(x) &= \lambda u(x)^p, \quad x \in I := (0, 1), \quad u(x) > 0, \quad x \in I, \\ u(0) &= u(1) = 0, \end{aligned}$$

where $b \geq 0, p \geq 1, q > 1 - \frac{1}{p}$ are given constants and $\lambda > 0$ is a bifurcation parameter. We establish the global behavior of bifurcation curves and precise asymptotic formulas for $u_\lambda(x)$ as $\lambda \rightarrow \infty$.

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