Existence and localization results for the second order periodic boundary value problem

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We will discuss the existence, localization and stability of positive solutions for the second order differential equation

$$x''(t) + ax'(t) = r(t)x^\alpha(t) - s(t)x^\beta(t)$$

subject to the periodic boundary conditions

$$x(0) = x(T), \ x'(0) = x'(T).$$

The main tool is the fixed point index for positive operators. The talk is based on the joint paper with José Ángel Cid, Gennaro Infante and Milan Tvrdý [1].

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References

[1] J. A. Cid, G. Infante, M. Tvrdý and M. Zima, *New results for the Liebau phenomenon via fixed point index*, Nonlinear Anal. RWA **35** (2017) 457-469.