Positive solutions of periodic boundary value problem at resonance

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We will study the existence of positive solutions for the following second-order equation

$$x''(t) + h(t)x'(t) + f(t, x(t), x'(t)) = 0,\ t \in [0, T]$$

subject to the boundary conditions

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

Our main tool is a Leggett-Williams norm-type theorem for coincidences due to O'Regan and Zima [1]. The talk is based on a joint paper [2].

References

[1] *D. O'Regan, M. Zima*: Leggett-Williams norm-type theorems for coincidences. Arch. Math. *87* (2006), 233–244.

[2] *M. Zima, P. Drygaś*: Existence of positive solutions for a kind of periodic boundary value problem at resonance. Bound. Value Probl. 2013, 2013:19.