Periodic solutions of pendulum-like perturbations of singular and bounded ϕ-Laplacians

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In this paper we present existence and multiplicity results for the periodic problem

$$\Big(\frac{u'}{\sqrt{1 \pm u'^2}}\Big)' + \mu \sin u = h(t), \quad u(0) - u(T) = 0 = u'(0) - u'(T),$$

where $\mu > 0$ and h is continuous on $[0, T]$.

Our approach relies on the Leray-Schauder degree and the upper and lower solutions method.

This is a join work with Petru Jebelean and Jean Mawhin [1].

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References

[1] C. Bereanu, P. Jebelean, J. Mawhin, *Periodic solutions of pendulum-like perturbations of singular and bounded ϕ-Laplacians*, J. Dyn. Diff. Equat., 22 (2010), 463-471.