

Periodic solutions for singular perturbations of the singular ϕ -Laplacian operator

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In this talk, using Leray-Schauder degree arguments and the method of lower and upper solutions, we give existence and multiplicity results for periodic problems with singular nonlinearities of the type

$$\left(\frac{u'}{\sqrt{1-u'^2}}\right)' + r(t)u + \frac{n(t)}{u^\lambda} = e(t), \quad u(0) - u(T) = 0 = u'(0) - u'(T),$$

where $r, n, e : [0, T] \rightarrow \mathbb{R}$ are continuous functions and $\lambda > 0$. We also consider some singular nonlinearities arising in nonlinear elasticity or of Rayleigh-Plesset type. This is a joint work with C. Bereanu and M. Zamora.

References

- [1] *C. Bereanu, D. Gheorghe, M. Zamora*: Periodic solutions for singular perturbations of the singular ϕ -Laplacian operator. To appear in *Commun. Contemp. Math.*
- [2] *C. Bereanu, D. Gheorghe, M. Zamora*: Non-resonant boundary value problems with singular ϕ -Laplacian operators. *NoDEA* 20 (2013), 1365–1377.