

Seminário de Análise (Defesa)

Obtaining and breaking uniqueness of positive solutions to strong singular problems

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Abstract. In this work, we study uniqueness, multiplicity and also existence of *continuum* of positive solutions in *loc*-sense both for quasilinear elliptic problems on bounded domains in \mathbb{R}^N ($N \geq 2$) with homogeneous operator and non-homogeneous ones perturbed by strongly-singular reaction terms both for local and non-local cases.

From information about existence and uniqueness of positive solutions for local singular problems, we show how to break this uniqueness by either introducing non-local terms or by considering appropriate perturbations of this singular problem. Our approach is based on bifurcation techniques, comparison principle for sub and supersolutions in *loc*-sense and Mountain Pass Theorem for Szulkin functionals.

References

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- [4] T. S. Figueiredo-Sousa, C. Morales-Rodrigo, and A. Suárez. A non-local non-autonomous diffusion problem: linear and sublinear cases. *Z. Angew. Math. Phys.* 68 (5):108, 2017.