

On certain local and nonlocal (p, q) systems in \mathbb{R}^N with critical and Hardy terms

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Motivated by important applications in nonlinear elasticity, recently great attention has been devoted to the study of local and nonlocal nonlinear problems with (p, q) growth conditions.

We present existence results for a class of parametric (p, q) systems with critical and Hardy terms in \mathbb{R}^N , provided that the parameter is sufficiently large. The interest is twofold: on one hand, the simultaneous presence of critical terms, Hardy terms and the fact that the systems are studied in the whole \mathbb{R}^N cause, roughly speaking, a *triple loss of compactness* which dramatically affects the applicability of standard variational methods. On the other hand, since we treat both the local and the nonlocal version of the system, the comparison of the results obtained for fractional Laplacian operators with their local counterpart is noteworthy.

The results of the talk are obtained jointly with *Letizia Temperini*.