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Title: HÉNON TYPE EQUATIONS WITH ONE-SIDED EXPONENTIAL GROWTH

Authors: Eudes Mendes Barboza, Bruno Ribeiro and João Marcos do Ó

Abstract: In this work, we prove existence of at least two solutions for the Ambrosetti-Prodi problem to a Hénon type equation with exponential growth using variational methods. In this study, we consider $0 \leq \lambda < \lambda_1$. We get a first solution Φ using the Fredholm alternative. A second solution is obtained via the Mountain Pass Theorem. Thus, we need to prove some geometric conditions satisfied by the associated functional J_λ. We work two cases: the subcritical and the critical cases. In the subcritical case, the Palais-Smale condition is satisfied by J_λ for all $c \in \mathbb{R}$. On the other hand, in the critical case, if J_λ satisfies the Palais-Smale condition for the level c, then c is in above interval bounded. Under certain condition, we can see that we obtain a first solution that is radially symmetric, so we can get a second solution that is radially symmetric as well. In the subcritical case, this fact does not change the proof to obtain a second solution. However, in the critical case, we can increase the level for a (PS_c) condition and thus we need to modify the proof to obtain a second radially symmetric solution for the problem.