

MULTIPLE CONSTANT SIGN AND NODAL SOLUTIONS FOR THE FRACTIONAL p -LAPLACIAN

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In this talk we study a pseudo-differential equation driven by the degenerate fractional p -Laplacian, under Dirichlet type conditions in a smooth domain. First we show that the solution set within the order interval given by a sub-supersolution pair is nonempty, directed, and compact in a suitable fractional Sobolev space, hence endowed with extremal elements. Then, assuming that the reaction term is $(p - 1)$ -sublinear at infinity and asymptotically linear near the origin without resonance on the first eigenvalue, we prove the existence of a smallest positive and a biggest negative solution, combining variational methods with truncation techniques. Finally, under more restrictive assumptions on the behavior of the reaction term near the origin, we will show the existence of a nodal solution between the smallest positive and biggest negative solution.

This is a joint work with Antonio Iannizzotto.

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