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## HOMOGENEOUS EIGENVALUE PROBLEMS IN ORLICZ–SOBOLEV SPACES

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ABSTRACT. In this article we consider a homogeneous eigenvalue problem ruled by the fractional  $g$ -Laplacian operator whose Euler–Lagrange equation is obtained by minimization of a quotient involving Luxemburg norms. We prove existence of an infinite sequence of variational eigenvalues and study its behavior as the fractional parameter  $s \uparrow 1$  among other stability results.

### 1. Introduction and main results

Eigenvalue problems are among the most widely studied problems in Partial Differential Equations; this stems in part for their natural appearance in the description of numerous natural phenomena (from vibrating membranes to quantum physics, passing through signal processing and many others) and in part from their intrinsic mathematical interest. In that sense, a rather natural question that arises when dealing with a class of operators is that of existence of eigenvalues.

The aim of this paper is precisely to (affirmatively) answer the question of existence for a class of homogeneous eigenvalue problems posed in fractional Orlicz–Sobolev spaces, more precisely to prove the existence of a sequence of

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