Uniqueness and nondegeneracy for Dirichlet fractional problems in bounded domains via asymptotic methods

Abdelrazek Dieb.
Department of Mathematics, Faculy of Mathematics and computer science
University Ibn Khaldoun of Tiaret
Tiaret 14000, Algeria
and
Laboratoire d'Analyse Nonlinéaire et Mathématiques Appliquées
Université Abou Bakr Belkaïd,Tlemcen, Algeria.

Abstract

We consider positive solutions of a fractional Lane-Emden-type problem in a bounded domain with Dirichlet conditions. We show that uniqueness and nondegeneracy hold for the asymptotically linear problem in general domains. Furthermore, we also prove that all the known uniqueness and nondegeneracy results in the local case extend to the nonlocal regime when the fractional parameter s is sufficiently close to 1.