

SIGN CHANGING SOLUTIONS OF p -FRACTIONAL EQUATIONS WITH CONCAVE-CONVEX NONLINEARITIES

MOUSOMI BHAKTA — DEBANGANA MUKHERJEE

ABSTRACT. We study the existence of sign changing solutions to the following p -fractional problem with concave-critical nonlinearities:

$$\begin{aligned} (-\Delta)_p^s u &= \mu |u|^{q-1} u + |u|^{p_s^*-2} u && \text{in } \Omega, \\ u &= 0 && \text{in } \mathbb{R}^N \setminus \Omega, \end{aligned}$$

where $s \in (0, 1)$ and $p \geq 2$ are fixed parameters, $0 < q < p - 1$, $\mu \in \mathbb{R}^+$ and $p_s^* = Np/(N - ps)$. Ω is an open, bounded domain in \mathbb{R}^N with smooth boundary, $N > ps$.

1. Introduction

Let us consider the following fractional p -Laplace equation with concave-critical nonlinearities:

$$(\mathcal{P}_\mu) \quad \begin{cases} (-\Delta)_p^s u = \mu |u|^{q-1} u + |u|^{p_s^*-2} u & \text{in } \Omega, \\ u = 0 & \text{in } \mathbb{R}^N \setminus \Omega, \end{cases}$$

where $s \in (0, 1)$, $p > 1$ are fixed, $N > ps$, Ω is an open, bounded domain in \mathbb{R}^N with smooth boundary, $0 < q < p - 1$, $p_s^* = Np/(N - ps)$ and $\mu \in \mathbb{R}^+$. The

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