MULTIPLICITY OF SOLUTIONS FOR A FRACTIONAL $p-$ KIRCHHOFF TYPE PROBLEM WITH SIGN–CHANGING WEIGHTS FUNCTION

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Abstract. In this paper, we consider the existence of multiple solutions for the following fractional $p-$ Kirchhoff type problem

$$\begin{aligned}
&\left(\int_{\mathbb{R}^n} \frac{|u(x)-u(y)|^p}{|x-y|^{n+ps}} \, dx \, dy\right)^{\frac{\theta}{p}} (-\Delta)_s^p u = f(x)|u|^{q-1}u + g(x)|u|^{r-1}u, \\
&u = 0,
\end{aligned}$$

(0.1)

in $\Omega$, $u = 0$, in $\mathbb{R}^n \setminus \Omega$,

where $\Omega$ is an open bounded set in $\mathbb{R}^n$, $p > 1$, $\theta \geq 0$, $0 < q < \theta + p - 1 < r < p_s^* - 1$ with $p_s^* = \frac{np}{n-ps}$ for $n > ps$ and $s \in (0,1)$ fixed, $f(x)$ and $g(x)$ are sign-changing continuous functions in $\Omega$, $(-\Delta)_s^p u$ denotes the fractional $p-$Laplacian operator. We obtain the multiplicity of solutions to (0.1) by using fibering map analysis and the Nehari manifold approach.


Keywords and phrases: Kirchhoff type problem, fractional $p-$Laplacian, fibering map analysis, Nehari manifold approach.

REFERENCES


