Topological **M**ethods in **N**onlinear **A**nalysis
Volume 54, No. 2A, 2019, 773–791
DOI: 10.12775/TMNA.2019.069

EXISTENCE OF SOLUTIONS FOR FRACTIONAL p-KIRCHHOFF TYPE EQUATIONS WITH A GENERALIZED CHOQUARD NONLINEARITY

Wenjing Chen

Abstract. In this article, we establish the existence of solutions to the fractional p-Kirchhoff type equations with a generalized Choquard nonlinearity without assuming the Ambrosetti–Rabinowitz condition.

1. Introduction and statement of main result

In this work, we consider the following fractional p-Laplacian generalized Choquard equation

$$M(\|u\|_W^p)\big[(-\Delta)_p^s u + V(x)|u|^{p-2}u\big] = \lambda(\mathcal{I}_\mu * F(u))f(u), \quad \text{in } \mathbb{R}^N, \tag{1.1}$$

where $1 < ps < N$, $M\colon \mathbb{R}_0^+ \to \mathbb{R}^+$ is a Kirchhoff function,

$$\|u\|_W = \left([u]_{s,p}^p + \int_{\mathbb{R}^N} V(x)|u|^p\,dx\right)^{1/p} \tag{1.2}$$

with

$$[u]_{s,p} = \left(\iint_{\mathbb{R}^{2N}} \frac{|u(x)-u(y)|^p}{|x-y|^{N+ps}}\,dx\,dy\right)^{1/p},$$

2010 *Mathematics Subject Classification.* 35J20, 35J60, 47G20.
Key words and phrases. Fractional p-Kirchhoff type equations; Choquard equation; without the (AR) condition.
The author has been supported by National Nature Science Foundation of China 11971392, Natural Science Foundation of Chongqing, China cstc2018jcyjAX0196 and cstc2019jcyjjqX0022.