Topological **M**ethods in **N**onlinear **A**nalysis
DOI: 10.12775/TMNA.2023.026

MULTIPLICITY AND CONCENTRATION OF POSITIVE SOLUTIONS TO THE DOUBLE PHASE KIRCHHOFF TYPE PROBLEMS WITH CRITICAL GROWTH

Jie Yang — Lintao Liu — Fengjuan Meng

Abstract. The aim of this paper is to study the multiplicity and concentration of positive solutions to the (p, q) Kirchhoff-type problems involving a positive potential and a continuous nonlinearity with critical growth at infinity. Applying penalization techniques, truncation methods and the Lusternik–Schnirelmann theory, we investigate a relationship between the number of positive solutions and the topology of the set where the potential V attains its minimum values.

1. Introduction and statement of results

In this paper, we study the multiplicity and concentration of positive solutions to the following double phase Kirchhoff type equations involving the

2020 *Mathematics Subject Classification.* 35R11, 49J35.

Key words and phrases. (p, q) Kirchhoff type problems; concentration; Nehari manifold; Lusternik–Schnirelmann theory; critical growth.

J. Yang is supported by the Natural Science Foundation of Hunan Province of China (2023JJ30482, 2022JJ30463), the Research Foundation of Education Bureau of Hunan Province (23A0558,22A0540), and the Aid Program for Science and Technology Innovative Research Team in Higher Educational Institutions of Hunan Province.

F. Meng is supported by the National Natural Science Foundation of China (No. 12026431, 11701230), QingLan Project of Jiangsu Province.

Please cite this article as: Jie Yang, Lintao Liu, Fengjuan Meng, *Multiplicity and concentration of positive solutions to the double phase Kirchhoff type problems with critical growth*, Topol. Methods Nonlinear Anal. (2024).
DOI: 10.12775/TMNA.2023.026