MULTIPLICITY AND CONCENTRATION
FOR KIRCHHOFF TYPE EQUATIONS
AROUND TOPOLOGICALLY CRITICAL POINTS
IN POTENTIAL

Yu Chen — Yanheng Ding

ABSTRACT. We consider the multiplicity and concentration of solutions for the Kirchhoff Type Equation

$$-\varepsilon^2 M\left(\varepsilon^{2-N}\int_{\mathbb{R}^N}|\nabla v|^2\,dx\right)\Delta v + V(x)v = f(v) \quad \text{in } \mathbb{R}^N.$$

Under suitable conditions on functions M, V and f, we obtain the existence of positive solutions concentrating around the local maximum points of V, which gives an affirmative answer to the problem raised in [21]. Moreover, we also obtain multiplicity of solutions which are affected by the topology of critical points set of potential V.

1. Introduction

In this paper, we focus on the following Kirchhoff type equations:

$$(1.1) \quad \begin{cases} -\varepsilon^2 M\left(\varepsilon^{2-N}\int_{\mathbb{R}^N}|\nabla v|^2\,dx\right)\Delta v + V(x)v = f(v) & \text{in } \mathbb{R}^N, \\ v \in H^1(\mathbb{R}^N), \quad v > 0, \end{cases}$$