

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

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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:

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

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