

**A MULTIPLICITY RESULT
FOR CRITICAL ELLIPTIC PROBLEMS
INVOLVING DIFFERENCES
OF LOCAL AND NONLOCAL OPERATORS**

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ABSTRACT. We study some critical elliptic problems involving the difference of two nonlocal operators, or the difference of a local operator and a nonlocal operator. The main result is the existence of two nontrivial weak solutions, one with negative energy and the other with positive energy, for all sufficiently small values of a parameter. The proof is based on an abstract result recently obtained in [22].

1. Introduction

Elliptic problems involving sums of nonlocal operators have been recently studied in the literature (see, e.g. [1]–[3], [5], [6], [9], [11], [12], [17] and their references). The purpose of the present paper is to consider critical elliptic problems involving differences of such operators. Here a new phenomenon appears: there exist two nontrivial weak solutions, one with negative energy and the other with positive energy, for all sufficiently small values of a parameter.

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