A FINITE ELEMENT APPROXIMATION OF AN OBSTACLE PROBLEM FOR A CLASS OF INTEGRO–DIFFERENTIAL OPERATORS

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ABSTRACT. We propose a non-conforming finite element method to approximate the solution to obstacle problems involving integro–differential operators consisting of second order elliptic operators and the integral fractional Laplacian. In this talk, we discuss the regularity of the corresponding variational inequality as well as the validity of the complementarity conditions. Using these properties, we deduce an *a priori* error estimate for the proposed numerical scheme. Numerical simulations on smooth and non-smooth domains are provided to illustrate the performances of the algorithm.

Keywords: Obstacle problem; free boundaries; integro–differential operators; finite elements; Dunford–Taylor integral.

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