

1137-53-47

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The singular free boundary in the thin obstacle problem.

In this talk I will overview the thin obstacle problem for a divergence form elliptic operator, and I will describe a few methods used to tackle two fundamental questions: what is the optimal regularity of the solution, and what can be said about the singular free boundary in the case of zero thin obstacle, a problem that is related to the study of nodal sets of solutions to various equations. The proofs are based on Weiss and Monneau type monotonicity formulas. This is joint work with Nicola Garofalo and Arshak Petrosyan. (Received January 19, 2018)