

An optimal design problem with fractional diffusion

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(this is a joint work with Eduardo V. Teixeira)

Abstract

We study an optimization problem ruled by α -fractional diffusion operator with volume constraint. By means of penalization techniques we prove existence of solutions. We also show that every solution is locally of class $C^{0,\alpha}$, and that the free boundary is a $C^{1,\alpha}$ surface, up to a \mathcal{H}^{n-1} -negligible set.