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**Abner J Salgado\*** (asalgad1@utk.edu), Department of Mathematics, The University of Tennessee, Knoxville, TN 37996. *A PDE approach to the fractional obstacle problem.* Preliminary report.

We study solution techniques for the elliptic and parabolic obstacle problem with fractional diffusion. The fractional diffusion operator is realized as the Dirichlet-to-Neumann map of a nonuniformly elliptic problem posed on a semi-infinite cylinder. This allows us to localize the problem and consider instead a thin obstacle problem. We present, for the elliptic case, optimal error estimates based on recent regularity results. For the parabolic case we present an error analysis with minimal smoothness and one using the best regularity results available to date. (Received January 30, 2015)