1147-35-253   **Mark Allen** and **Mariana Smit Vega Garcia***, Mariana.SmitVegaGarcia@wwu.edu. *The fractional unstable obstacle problem.*

We consider a model for combustion on a boundary. More specifically, we study certain generalized solutions of a fractional unstable obstacle problem. We study the behavior of the free boundary and prove an upper bound for the Hausdorff dimension of the singular set. We also show that certain symmetric solutions are either stable or unstable depending on the parameter s, for the fractional Laplacian. This is joint work with Mark Allen. (Received January 14, 2019)