

# Partial Regularity for an unstable elliptic free boundary problem

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## Abstract

I will focus on a result obtained in collaboration with Régis Monneau (CERMICS, Paris) concerning the stationary equation

$$\Delta u = -\chi_{\{u>0\}}$$

arising as first order approximation in solid combustion: partial regularity holds for maximal solutions of this equation in  $n$  dimensions. In particular, in two space dimensions the interface consists locally of a finite number of  $C^1$ -arcs ( $C^1$  up to the singularity) meeting in quadruple junctions.