1112-35-361 **Andrej Zlatos*** (az@math.wisc.edu). *Reactive Processes in Inhomogeneous Media.*

We study fine details of spreading of reactive processes (e.g., combustion) in multi-dimensional inhomogeneous media. In the real world, one often observes a transition from one equilibrium (e.g., unburned fuel) to another (e.g., burned fuel) to happen on short spatial as well as temporal scales. We demonstrate that this phenomenon also occurs in one of the simplest models for reactive processes, reaction-diffusion equations with ignition reaction functions, under very general hypotheses.

Specifically, we show that in up to three spatial dimensions, the width (both in space and time) of the zone where reaction occurs stays uniformly bounded in time for some fairly general classes of initial data, and this bound even becomes independent of the initial datum as well as of the reaction function, after an initial time interval. Such results have recently been obtained in one dimension but are new in higher dimensions. As one indication of the added difficulties, we also show that three dimensions is indeed the borderline case, and the result is false for general inhomogeneous media in four and more dimensions. (Received August 09, 2015)