

The effect of domain shape on reaction-diffusion equations

Henri Berestycki

EHESS Paris
h.beres@gmail.com

I will discuss some reaction-diffusion equations motivated by biology and medicine of bistable type. The aim is to understand the effect of the shape of the domain on propagation or on blocking of advancing waves. I will first describe the motivations of these questions and present a result about the existence of generalized transition waves. I will then discuss various geometric conditions that lead to either blocking, or partial propagation, or complete propagation. These questions involve new qualitative results for some non-linear elliptic and parabolic partial differential equations. I report here on joint work with Juliette Bouhours and Guillemette Chapuisat.