

# Large time behaviour in multi-dimensional Fisher-KPP equations

Jean-Michel Roquejoffre <sup>1</sup>

<sup>1</sup> Institut de Mathématiques, Université Paul Sabatier, Toulouse, France

The question dealt with in this talk is the large time behaviour of the solutions of the Fisher-KPP (Kolmogorov, Petrovskii, Piskunov) equation, one of the simplest looking reaction-diffusion equations. In one space dimension the level sets of the solution starting from a Heaviside initial datum will converge, in some Galilean reference frame, and up to an additional nontrivial logarithmic time delay, to constants. This result was proved by Bramson in the early 80's, using elaborate probabilistic arguments.

A little later, Gärtner provided the following multi-dimensional extension: in every direction, the level sets of an initially compactly supported solution will spread linearly in time, modulo a dimension dependent correction, that is asymptotically logarithmic.

In this talk, we will explain the following more precise result: in every direction, the level sets will stabilise, in the Gärtner reference frame, to a constant position that will, in general, depend on the direction. Joint work with L. Rossi and V. Roussier.