Introduction

This part will be devoted to several fundamental results regarding the dynamics of homogeneous reaction-diffusion equations. I will first show the hair-trigger effects for positive non-linearities and discuss conditions of invasion for other types of nonlinearities. Then I will explain how one can determine the asymptotic speeds as well as the asymptotic shapes of spreading. I will also discuss related geometrical properties of propagation. Lastly, if time permits, I will discuss how these results can be extended to non-homogeneous frameworks.

For this part, some basic knowledge of partial differential equations such as the maximum principle would be useful. However, I will indicate in detail the results that I will use. I will also recall when needed the results regarding travelling waves that I presented in parts 1 and 2.