ID de Contribution: **8** Type: **Non spécifié**

# J.-M. Roquejoffre : Large time dynamics in the Fisher-KPP equation

*jeudi 12 septembre 2024 10:10 (40 minutes)*

The Fisher-KPP equation (the acronym KPP stands for Kolmogorov, Petrovskii and Piskunov) is an ubiquitous model that arises in the applied sciences, such as ecology or combustion science. It aslo arises in probability theory, as its solution starting from an appropriate initial datum accounts for the behaviour of the rightmost particle in the one-dimensional Branching Brownian Motion.

In a fundamental work of 1937, KPP proved that the level sets of the solutions at asymptotically constant speed. With the aid of elaborate probabilistic arguments, Bramson (circa 1980) discovered an asymptotically logarithmic in time correction. This fostered an important activity in the study of the Branching Brownian Motion .

Viewed from the PDE side, this logarithmic behaviour has remained intriguing for a long time, as many models for front propagation do not exhibit it.The goal of the talk is to explain the mechanism leading to this type of behaviour with purely analytical arguments, and to present asymptotics of the solutions beyond Bramson's correction. Further insights into the Branching Brownian Motion, allowed by the PDE ideas that we have developped, will also be discussed.

Joint works with L. Mytnik, J. Nolen, L. Ryzhik.