

**PhD position in applied mathematics at Le Havre Normandie
University :**

**Propagation dynamics for a non local reaction-diffusion problem
in population genetics**

The aim of this PhD project is to study spatial propagation phenomena for a non local reaction-diffusion problem modelling the spatial spread of a population by taking into account genetic components to describe its adaptation to the environment.

The adaptation of individuals to an environment is an important ingredient to understand the dynamics of complex systems of interacting populations in ecology. It can play a major role to describe the success of the survival and of the establishment of populations. The objective of this PhD program is to study the spatio-temporal dynamical behaviour of a non local reaction-diffusion problem modelling the spatial invasion of the population able to adapt to a new environment. The problem that will be considered reads as a non local Fisher-KPP like equation.

Based on a small parameter, that roughly describes the variance of the dispersion for phenotypes due to mutation, we shall study the global dynamics for the spatial spread of the solution. We expect in particular to sharply describe transient spatio-temporal patterns for such problems and exhibiting polymorphism in the population.

This PhD program will be accomplished at the Applied Mathematics laboratory of Le Havre, LMAH EA 3821 - FR CNRS 3335, at the University of Le Havre Normandie under the supervision of Arnaud Ducrot and David Manceau. This PhD project is funded by the University of Le Havre Normandie and will start in September 2019.

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