MIMS/CMMA Seminar on Self - Organization

第20回 自己組織化セミナー

2017年2月9日（木）　15:30～17：30
明治大学中野キャンパス　６階　研究セミナー室

February 9, 15:30-16:20　Jan Elias (Paris-Sud Univ., France)

On a Reaction-Diffusion-ODE Model for Farmers and Hunter-Gatherers

In this talk we summarize our theoretical knowledge of a newly proposed reaction-diffusion-ODE system for the spreading of farmers into a region occupied by hunter-gatherers. We will address mathematical problems of existence and uniqueness of solutions, large time behavior and a singular limit problem.

February 9, 16:30-17:20　Danielle Hilhorst (CNRS/Paris-Sud Univ., France)

Dispersal towards Food: The Singular Limit of an Allen-Cahn equation

The effect of dispersal under heterogeneous environment is studied in terms of the singular limit of an Allen-Cahn equation. Since biological organisms often slowdown their dispersal if food is abundant, a food metric diffusion is taken to include such a phenomenon. The migration effect of the problem is approximated by a mean curvature flow after taking the singular limit which now includes an advection term produced by the spatial heterogeneity of food distribution. It is shown that the interface moves towards a local maximum of the food distribution. In other words, the dispersal taken in the paper is not a trivialization process anymore, but an aggregation one towards food.