



Meiji University  
Center for Mathematical Modeling and Applications



## Mathematical approach of the individual and collective decision process in social networks

-A continuous PDE modelling idealizing the spread of the decision in discrete social networks. Application to the alimentary choice in obesity spread.-

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2015, September 24th, 25th 14:00- 16:10

明治大学中野キャンパス6階 研究セミナー室603

24th Wednesday

14:00-15:00 講義1 (Part 1)

15:10-16:10 演習 (Problem session)

25th Thursday

14:00-15:00 講義2 (Part 2)

15:10-16:10 演習 (Problem session)

### Abstract

The talk deals with the effect of the social transmission of nutrition habits in a social context on obesity, and accordingly on its main complication, the type II diabetes. The evolution of social networks and inside a network the healthy weight of a person are depending on the context in which this person has contacts and exchanges concerning his alimentation, physical activity and sedentary habits, inside the dominant social network in which the person lives (e.g., scholar for young, professional for adult, home or institution for elderly people). Three successive steps of evolution will be considered for social networks (like for neural one's): i) initial random connectivity, ii) destruction and consolidation of links following a new transition rule of nutrition choice called homophilic until iii) an asymptotic architectural organization and configuration of states. The individual decision is modelled following a differential model and the spread of the alimentary choices is idealized by a PDE equation, and simulated on a discrete graph in concrete cases. The application of such a network dynamics concerns the sequence overweight/obesity/type II diabetes.

