

Internship 2026/2027

Year: M2

Laboratory : Centre de Physique Théorique (CPT)

Research Team : Physique Statistique et Systèmes Complexes

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Project Title : Dynamical patterns of opinion dynamics models

Keywords : Complex networks, opinion dynamics, adaptive networks

Description: Numerous models have been proposed to describe the evolution of opinions in a population [1,2]. These models are built from 2 parts: one describes the evolution of the opinions of two agents when they interact (with the underlying hypothesis that interactions tend to make opinions closer); the second describes the structure of interactions in the population, generally described by a network.

While many studies have focused on the impact of the network structure on how the opinions evolve, and on the possibility to reach a global consensus, few examine dynamical differences between models, for a fixed interaction structure. Studying such differences is however important to compare models to experiments, in order to discriminate between models and validate models.

The goal of the internship will thus be to define measures to describe the patterns of opinion evolution in a population, in a similar spirit as [3] in the case of spreading, and to investigate several models to show the discriminative power of these measures.

References:

[1] Castellano, Fortunato, Loreto, Statistical Physics of Social Dynamics, Reviews of Modern Physics 2009, <https://arxiv.org/abs/0710.3256>

[2] Starnini et al, Opinion dynamics: statistical physics and beyond, <https://arxiv.org/abs/2507.11521>

[3] Contreras et al, Infection patterns in simple and complex contagion processes on networks, [PLoS Comput Biol 20\(6\): e1012206 \(2024\)](https://doi.org/10.1371/journal.pcbi.1012206)