

## Master 2 Internships Complex networks

**Title:** Comparison of the structure of high and low activity periods in face-to-face contact networks.

**Summary:** Face-to-face contacts between individuals are at the foundation of social systems. Understanding their mechanics is thus crucial to know how the properties of social dynamics emerge. We propose to use empirical data from conferences as a model for interactions in the physical space. Previous results have shown that in such contexts interactions can be considered as less constrained, and that the presence of a schedule allows to virtually “tune” the activity of the individuals from low to high, analogous to tuning an effective “temperature” of the system.

The goal of the internship is to study how the structure of the network changes when the activity intensity changes: Are links added and removed at random? Does the network exhibit aging? Are there particular structures that are kept fixed or appear and disappear in cycles? Depending on the findings, we would then be able to build a model for the microscopic dynamics of human interactions to reproduce the observed results. The project fits in the field of quantitative study of human behaviour, and requires both numerical analyses of empirical data and theoretical modeling.

**Contact:**

Mathieu Génois, MCF

Centre de Physique Théorique, Univ. Aix-Marseille.

[mathieu.genois@cpt.univ-mrs.fr](mailto:mathieu.genois@cpt.univ-mrs.fr)