SEMPARIS – Séminaires en région parisienne

http ://string.lpthe.jussieu.fr/semparis/

Seminaires du LPTM , Universite de Cergy Pontoise

Jeudi 28 Octobre 2021, 14 :00
LPTM, Distanciel sur Teams
Domaines : qbio.MN

Titre : *Emergent excitability in populations of non-excitable units*

Orateur : **Simona Olmi (CNR-ISC, Sesto Fiorentino, Italie)**

Résumé : *Population bursts in a large ensemble of coupled elements result from the interplay between the local excitable properties of the nodes and the global network topology. Here, collective excitability and self-sustained bursting oscillations are shown to spontaneously emerge in globally coupled populations of nonexcitable units subject to adaptive coupling. The ingredients to observe collective excitability are the coexistence of states with different degrees of synchronization joined to a global feedback acting, on a slow timescale, against the synchronization (desynchronization) of the oscillators. These regimes are illustrated for two paradigmatic classes of coupled rotators, namely, the Kuramoto model with and without inertia. For the bimodal Kuramoto model we analytically show that the macroscopic evolution originates from the existence of a critical manifold organizing the fast collective dynamics on a slow timescale. Our results provide evidence that adaptation can induce excitability by maintaining a network permanently out of equilibrium.*