ID de Contribution: **44** Type: **Contributed talk**

Kinetic Modelling of Colonies of Myxobacteria

mercredi 17 novembre 2021 15:15 (30 minutes)

Myxobacteria are rod-shaped, social bacteria that are able to move on flat surfaces by 'gliding'and form a fascinating example of how simple cell-cell interaction rules can lead to emergent, collective behavior.

In this talk a new kinetic model of Boltzmann-type for such colonies of myxobacteria will be introduced and investigated. For the spatially homogeneous case an existence and uniqueness result will be shown, as well as exponential decay to an equilibrium for the Maxwellian collision operator. Furthermore, a model extension including Brownian forcing in velocity direction during the free flight phase of bacteria as well as insights in its asymptotic behavior will be presented.

The methods used for the analysis combine several tools from kinetic theory, entropy methods, hypocoercivity as well as optimal transport. The talk will be concluded with numerical simulations for the spatially homogeneous case, which are confirming the analytical results.

Orateur: KANZLER, Laura (Laboratoire Jacques-Louis Lions)