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Laboratoire PMMH
10 rue Vauquelin, 75231 Paris Cedex 05



Séminaire PMMH

Bureau d'Études, Bâtiment L, 2^{ème} étage

Vendredi 10 juin 2016, 11h00-12h00

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Bacteria self-assemblies lead to hydrodynamic instabilities

The mechanisms of the bacterial motility and chemotaxis are now quite well known at the single cell level; however the way a whole cell population moves at a macroscopic scale still raises some fundamental questions. The study of the behavior of a population of *Escherichia coli* in oxygen gradients in the bulk of solutions shows that bacteria are able to adapt their motility and exhibit a collective behavior to self-assemble and form patterns. When subjected to gravity, these patterns become unstable and can be studied as Rayleigh-Taylor instabilities. In the same manner, when observing the morphogenesis of *Bacillus subtilis* floating biofilms, we detect some kinds of bacteria self-assemblies at the liquid-air interface that further undergo a bioconvection process. Thus, the presence of the bacteria in the solution locally modifies the properties of the environment that in turn act on the cells behavior. This interplay between the population of bacteria and the heterogeneities of the environment play an important role in conditioning the biofilm development as well as its structure.

Prochain séminaire : vendredi 17 juin, Alberto Fernandez-Nieves (Georgia Tech, USA)

Programme des séminaires : www.pmmh.espci.fr, onglet *Séminaires PMMH*

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