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Laboratoire PMMH
10 rue Vauquelin, 75231 Paris Cedex 05



Séminaire PMMH

Salle de réunion du PMMH, Campus Jussieu, Bâtiment Cassan A, 1^{er} étage

Vendredi 8 février 2019, 11h00-12h00

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Flow and surfactant dynamics in bubble rearrangements in foams

Liquid foams are assemblies of gas bubbles in a soapy solution, found in many applications from cosmetics to oil drilling. The nature of surfactants changes the properties of the liquid-gas interfaces, and consequently the macroscopic properties of the foam like its stability and rheology. However, the flow mechanisms at the scale of the bubble and soap films are not yet fully understood.

We here focus on the dynamics of bubble rearrangements, which are the elementary processes of shear flow in foams. After reviewing existing experimental results on this model situation, I will present numerical simulations of sheared bubble layers based on the level-set method (Titta et al. *JFM* 2018). We here fully account for both flow and surfactant dynamics and their coupling through the stress boundary conditions at the liquid-gas interfaces. In particular, I will discuss the role of Péclet number, which compares advection and diffusion dynamics, on the dissipation mechanisms, which may be dominated by bulk or surface viscosity.

