MAFIA seminář

Exploring the mechanics of swimming flagellates

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Abstract: Mammalian spermotozoa motility is a subject of growing importance, due to rising human infertility and the possibility of improving animal breeding for livestock and conservation, while understanding how bacterial motility contributes to colonisation and biofilm initiation is of fundamental concern in numerous fields. Fluid and continuum dynamics offers many opportunities to provide novel insights concerning the mechanics of such swimming cells. Examples of the information that can be extracted by combining imaging and fluid dynamics will be highlighted together with its mechanical interpretation. In addition, we will explore the influence of sperm cell flagellar compliance in highly viscous media and its impact on swimming behaviours as well as investigating how the rotating bacterial flagellar helix influences prokaryotic cell behaviours near surfaces.