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TUTORIAL

Motility at small scales:quantitative modeling using a control-theoretic point of view

Abstract

We will discuss the mechanical bases of cellular motility by swimming and crawling. Starting from observations of biological self-propulsion, we will analyze the geometric structure underlying motility at small scales.We will then study in detail the swimming strategies available to microscopic swimmers and recipes to optimize their strokes using a control theoretic approach in some simple but relevant case studies.