

Abstract Submitted
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Mechanoregulation of molecular motors in flagella HERMES

GADELHA, University of Oxford — Molecular motors are nano-biological machines responsible for exerting forces that drive movement in living organisms, from cargo transport to cell division and motility. Interestingly, despite the inherent complexity of many interacting motors, order and structure may arise naturally, as exemplified by the harmonic, self-organized undulatory motion of the flagellum. The real mechanisms behind this collective spontaneous oscillation are still unknown, and it is challenging task to measure experimentally the molecular motor dynamics within the flagellar structure in real time. In this talk we will explore different competing hypotheses that are capable of generating flagellar bending waves that “resemble” in-vitro observations, emphasizing the need for further mathematical analysis and model validation. It also highlight that this is a fertile and challenging area of interdisciplinary research for applied mathematicians and demonstrates the importance of future observational and theoretical studies in understanding the underlying mechanics of these motile cell appendages.

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