Mathematical Modeling of Squirming Micro-organisms
at Low-Reynolds Numbers
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Abstract: Artificial and/or biological micro-swimmers that can move and interact with each
other at the microscopic scale show great promise in biomedical applications such as drug
delivery and microsurgery. Successful application of these interacting swimmers to biomedical
tasks relies on their ability to traverse biological fluids with challenging background flow fields.
The seminal work by Lighthill [Commun. Pure Appl. Math., 109, (1952)] on the propulsion of
ciliated micro-organisms serves as a reference for many modern studies on swimming of micro-organisms at low Reynolds numbers. In this talk, we discuss mathematical models capturing the
swimming characteristics of microbes in various fluid environments.