

Abstract Submitted  
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**Understanding the detailed motion of a model bacterium**

AKANKSHA THAWANI, MAHESH TIRUMKUDULU, Indian Inst of Tech-Bombay — Inspired by the motion of flagellated bacteria such as *Escherichia coli* and *Bacillus subtilis*, we have built a macroscopic model bacterium, in order to investigate the intricate aspects of their motion which cannot be visualized under a microscope. The flagellated rod shaped cells were approximated with a spherical head attached to a rigid metal helix, via a plastic hook. The motion of model bacterium was observed in a high viscosity silicone oil to replicate the low Reynolds number flow conditions. A significant wobble was observed even in the absence of an off-axis flagellum. We suspect that the flexibility in the hook connecting the head and flagellum is the cause for wobble, since wobble was observed to increase significantly with hook-flexibility. The motion of the model bacterium was predicted using the Slender Body theory of Lighthill, and was compared with the measured trajectories.

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