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Mechanics of biomimetic systems propelled by actin comet tails HYERAN KANG, Department of Physics, Brown University, DHANANJAY TAMBE, School of Public Health, Harvard University, VIVEK SHENOY, Division of Engineering, Brown University, JAY TANG, Department of Physics, Brown University — The motility of intracellular bacterial pathogens such as *Listeria monocytogenes* is driven by filamentous actin comet tails in a variety of trajectories. Here, we present the *in vitro* study on the actin-based movements using spherical beads of different sizes coated with VCA protein, a partial domain of N-Wasp, in platelet extracts. Long term two-dimensional trajectories of the spherical beads motility show characteristic difference than those observed for bacteria, which have both elongated shape and asymmetric expression of the polymerization inducing enzyme. The trajectories also vary sensitively with the bead size and shape. These results provide a useful test to our new analytical model including the rotation of the bead relative to the tail.

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