Abstract Submitted
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On the interactions of micro-swimmers with surfaces ENKELEIDA LUSHI, Brown University — Solid boundaries alter both motion and spatial distribution of microorganisms in ways that are currently not completely understood. We present novel micro-swimmer models and simulations able to display correct features seen in experiments such as bacteria circling near surfaces or micro-algae scattering from them. For pushers like bacteria we show that the correct flow singularity is more complex than a force dipole. For bi-flagellates like micro-algae we show that their behavior at surfaces results from a nuanced interplay of flagellar contact, hydrodynamics, noise and cell spinning, with the swimmer geometry being a crucial component. Our results compare well with the most recent experimental data and suggest ways of designing multi-swimmer simulations that capture the correct physics.

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