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**Experimental study of the quasi 1d motion of a “robot bacterium” within a tube** KAILIU, YUSHENG JIAO, SHUTONG LI, YANG DING, XINLIANG XU, Beijing Computational Science Research Center, COMPLEX FLUIDS TEAM — Understanding how solid boundary influences the motion of a microswimmer can be quite important. Here we experimentally study the problem with a system of centi-meter size “robot bacterium” immersed in the solvent silicon oil. Equipped with build-in battery and motor, the robot mimics a free swimmer and the overall Reynolds number of the system is kept very small as we use silicon oil with very high viscosity. The motion of centi-meter size “robot bacterium” within cylindrical tube is experimentally studied in detail. Our results show that robot bacteria with different shapes respond very different to the solid boundary. For certain shapes the swimmers actually swim much faster within a tube, when compared to their motions without any confinement, in good agreement with our numerical evaluations of the hydrodynamics of the system.

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