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An experimental implementation of a two-sphere swimmer at low Reynolds numbers OLIVER SILVERBERG, BRENT HOSOUME, NIKHIL TRIVEDI, CONNOR TISCH, Mechanical Engineering, Santa Clara University, DANIEL PLASCENCIA, Bioengineering, Santa Clara University, MATTHEW HOLMES, ON SHUN PAK, Mechanical Engineering, Santa Clara University, EMRE ARACI, Bioengineering, Santa Clara University — Locomotion at low Reynolds numbers encounters stringent constraints due to the dominance of viscous over inertial forces. Various elegant designs have been proposed to escape from the constraints of the scallop theorem and generate self-propulsion. In this talk, we present a macroscopic experimental implementation of the Pushmepullyou swimmer (J. E. Avron, O. Kenneth, D. H. Oaknin, New J. Phys., 7, 234, 2005), which consists of a pair of expandable spheres connected by an extensible link. We characterized the propulsion performance of the swimmer in the low Reynolds number regime with the use of highly viscous silicone oil and compared the results with theoretical predictions.

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