

Abstract Submitted
for the DFD15 Meeting of
The American Physical Society

Squirming through shear thinning fluids CHARU DATT, The University of British Columbia, Vancouver, LAILAI ZHU, Ecole Polytechnique Federale de Lausanne, GWYNN J. ELFRING, The University of British Columbia, Vancouver, ON SHUN PAK, Santa Clara University, Santa Clara, California — Many microorganisms find themselves surrounded by fluids which are non-Newtonian in nature; human spermatozoa in female reproductive tract and motile bacteria in mucosa of animals are common examples. These biological fluids can display shear-thinning rheology whose effects on the locomotion of microorganisms remain largely unexplored. Here we study the self-propulsion of a squirmer in shear-thinning fluids described by the Carreau-Yasuda model. The squirmer undergoes surface distortions and utilizes apparent slip-velocities around its surface to swim through a fluid medium. In this talk, we will discuss how the nonlinear rheological properties of a shear-thinning fluid affect the propulsion of a swimmer compared with swimming in Newtonian fluids.

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Date submitted: 23 Jul 2015

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