

Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Theory of locomotion in complex fluids GWYNN ELFRING, University of British Columbia, ERIC LAUGA, University of Cambridge — Microorganisms often swim in environments that cannot be classified as Newtonian. Biological fluids can contain polymers or other heterogeneities which may yield complex rheology. For a given set of boundary conditions flows can be substantially different in complex fluids, while non-Newtonian stresses can alter the gait of the microorganisms themselves. Heterogeneities in the fluid may also occur on length scales on the order of the swimmer leading to additional complexity. In this talk we will discuss a theoretical description of the effects on locomotion of a non-Newtonian constitutive relation and discuss our current understanding of the interplay between swimming kinematics and the nonlinear response of the fluid.

Gwynn Elfring
University of British Columbia

Date submitted: 31 Jul 2014

Electronic form version 1.4