

Abstract Submitted
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Undulatory Swimming in Viscoelastic Fluids at Low Reynolds Number¹ XIAONING SHEN, PAULO ARRATIA, University of Pennsylvania — In this talk, we present an experimental investigation on the swimming behavior of the worm nematode *C. elegans* in viscoelastic fluids at low Reynolds number. The *C. elegans*' swimming behavior is characterized by tracking the nematode's body postures and using particle image velocimetry. Results show that the nematode responds to the fluid elastic stresses by adjusting its beating frequency and waveform. Overall, low levels of elasticity tend to hinder swimming speed by 30% when compared to a Newtonian fluid with similar viscosity. These results, however, are only valid for Wissenberg numbers below unit ($Wi < 1$) where Wi is defined as the product of the fluid relaxation time and the fluid flow shear-rate.

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