1154-76-1403 **A P Hoover***, ahoover1@uakron.edu, and **R Cortez**. *A Regularized Stokeslet Approach to the Motion and Behavior of Microscopic Swimmers.*

In the world of bacterial locomotion, motile organisms generate wakes and eddies that affect their local fluid environment. When many of them are present around each other, they interact with the flows generated by other organisms and form active suspensions whose complex flow structures play a significant role in fluid transport and mixing. In this talk, we present a reduced model for bacterial locomotion that describes their self-propelled motion in a low Reynolds number viscous incompressible fluid. The model is based on a particular limit of regularized Stokeslets with built-in asymmetry in order to produce a swimming direction. The result is a single-particle model of a swimmer that does not require special treatment of the self velocity due to the regularization, while allowing us to efficiently study the collective motion of bacteria. With this model, we are able to model pusher and puller organisms in a straightforward manner for both free-space and periodic domains. We will characterize the particle dynamics and discuss the diffusion of these particles as a function of the concentration density. We will then take advantage of the regularized Stokeslets framework to understand how active suspensions interact with viscoelastic structures, such as biofilms. (Received September 15, 2019)