1106-A0-168 **Ricardo Cortez***, Tulane University, Center for Computational Science, New Orleans, LA.
Advances in Computational Modeling of Microorganism Motility

Biological fluid flows, like those surrounding moving bacteria and spermatozoa, are generated by viscous forces, which completely dominate inertial effects, so that their dynamics may be modeled as a sequence of steady-state snapshots. Microorganism motility has been an active area of research for the last 60 years motivated by questions like: What are effective= locomotion strategies of microorganisms? How do they interact with the surrounding environment? How do microorganisms combine to create patterns of collective motion? What force-generating mechanisms do the organisms use to propel themselves and to attract nutrients in the fluid? The only way to answer these questions is through a combination of theory, experiments, mathematical modeling and simulation. We will present recent collaborative mathematical work, some of it done with undergraduate students, that sheds light on these biological systems and challenges ahead. (Received August 04, 2014)