

1154-AG-1856 **Forest O Mannan*** (fmannan@western.edu), **Karin Leiderman** and **Miika Jarvela**. *Volvox: Modeling the Synchronization of Flagella on the Exterior of a Sphere.*

Flagella are hair-like appendages attached to microorganisms that allow the organisms to traverse their fluid environment. The algae *Volvox* are spherical swimmers with thousands of individual flagella on their surface and their coordination is not fully understood. In this work, a previously developed minimal model of flagella synchronization is extended to the outer surface of a sphere submerged in a fluid. Each beating flagella tip is modelled as a small rotating sphere, elastically attached to a point just above the spherical surface and a regularized image system for Stokes flow outside of a sphere is used to enforce the no-slip condition. Biologically relevant distributions of rotors results in a rapidly developing and robust symplectic metachronal wave traveling from the anterior to the posterior of the spherical *Volvox* body. (Received September 16, 2019)