1127-35-124 **Sze-Bi Hsu** and **King-Yeung Lam*** (`lam.184@math.ohio-state.edu`), Department of Mathematics, The Ohio State University, Columbus, OH 43210, and **Feng-Bin Wang**. *Analysis of a PDE Model of Phytoplankton with Ratio Dependence.*

We study a PDE system modeling the growth of a single population consuming two forms of inorganic carbon in an unstirred chemostat. The resource uptake rate depends on the internal carbon storage and introduces a ratio dependence in the model. We first discuss the appropriate space for existence of solution that is motivated by the underlying biology. We will then proceed to apply a recent generalization of Krein-Rutman Theorem involving two different positive cones, due to Mallet-Paret and Nussbaum, to determine the threshold phenomena regarding persistence and extinction. This is joint work with Feng-Bin Wang (Chang Gung University, Taiwan) and Sze-Bi Hsu (National Tsing-Hua University, Taiwan). (Received January 29, 2017)