1132-35-233 **Junping Shi** and **Yixiang Wu*** (yixiang.wu@vanderbilt.edu), Nashville, TN 37212, and **Xingfu Zou**. *Coexistence of competing species for intermediate dispersal rates in a reaction-diffusion chemostat model.*

In this talk, we consider a diffusive chemostat model with two competing species. We first present various results on the single species model, and show that small diffusion rate is beneficial to the species. We then prove the existence of stable steady states of the two species model within certain parameter ranges. We explore the dynamics of the model, including proving that there is no coexistence steady state when the diffusion rate is small. Our result demonstrates that coexistence is possible only for intermediate diffusion rates. (Received July 23, 2017)