1146-92-68   **Liancheng Wang** and **Min Wang*** (`mwang23@kennesaw.edu`). *Optimal control to a facultative mutualistic model with harvesting.* Preliminary report.

In this talk, we propose a general facultative mutualistic model with harvesting and investigate an associated optimal control problem. The sufficient and the necessary conditions for the existence of the optimal control are studied. Numerical simulations are carried out to demonstrate the applications. (Received January 07, 2019)