

---

**HAO WANG**, University of Alberta

*Global analysis of a stoichiometric producer-grazer model with Holling-type functional responses*

Cells, the basic units of organisms, consist of multiple essential elements such as carbon, nitrogen, and phosphorus. The scarcity of any of these elements can strongly restrict cellular and organismal growth. During recent years, ecological models incorporating multiple elements have been rapidly developed in many studies, which form a new research field of mathematical and theoretical biology. Among these models, the one proposed by Loladze et al. (Bull Math Biol 62:1137-1162, 2000) is prominent and has been highly cited. However, the global analysis of this nonsmooth model has never been done. In this talk, I will provide the complete global analysis for the model with Holling type I functional response and a bifurcation analysis for the model with Holling type II functional response.