## APPLIED AND NUMERICAL ANALYSIS SEMINAR

Date: Sep 1, 2021

**Speaker:** Wenrui Hao, Assistant Professor, Penn State University **Title:** Homotopy Methods for Solving Nonlinear Systems and Beyond Abstract: This talk will cover some recent progress on homotopy methods to solve nonlinear systems. I will start with homotopy methods for solving nonlinear PDEs with multiple solutions and bifurcations by coupling with domain decomposition and reduced basis methods. Then a homotopy method will be introduced for solving maximum entropy problem to reconstruct probability density functions based on empirical data. I will also talk about a homotopy training algorithm for nonlinear optimization arising from machine learning.