

数学与系统科学研究院
计算数学所网络学术报告

报告人: **Assistant Prof. Wenrui Hao**

(*Penn State Univ*)

报告题目:

**Numerical methods for solving
nonlinear differential equations**

邀请人: 张晨松 副研究员

报告时间: 2021 年 4 月 30 日 (周五)

下午 19:30-20:30

报告工具: 腾讯会议 (ID: 996 8244 7806)

会议链接:

<https://meeting.tencent.com/s/Tix3ynsZ3PZH>

Abstract:

Many systems of nonlinear differential equations are arising from engineering and biology and have attracted research scientists to study the multiple solution structure such as pattern formation. In this talk, I will present several methods to compute the multiple solutions of nonlinear differential equations. First, I will introduce the homotopy continuation technique to compute the multiple steady states of nonlinear differential equations and also to explore the relationship between the number of steady-states and parameters. Then I will use the machine learning techniques to solve nonlinear differential equations and learn the multiple solutions by developing a randomized Newton's method for the neural network discretization. Several benchmark problems will be used to illustrate these ideas.

欢迎大家参加！