应用数学讲座

Научный Семинар по Прикладной Математике

Research Seminar on Applied Mathematics

应用数学报告（88）

报告人 / Докладчик / Speaker: 许志钦 副教授（上海交通大学）

题 目 / Название / Title: AI for Combustion: model reduction and simulation acceleration

时间 / Время / Time：2023.11.06 15:00-18:00

地点 / Место / Venue: 主楼336会议室

摘要 / Аннотация / Abstract:

   The development of detailed chemistry mechanisms of hydrocarbon fuels paves the way to realistic simulations of practical combustors. However, due to chemistry stiffness, the simulation of large-size detailed mechanisms become forbiddingly expensive, especially for very large-scale simulation. In this talk, I will introduce a deep learning based model reduction method for simplifying chemical kinetics. We also use a deep learning based method to overcome the limitation of using small step-size in simulating the combustion ODE systems.

许志钦副教授简介：

   Zhi-Qin John Xu is an associate professor at Shanghai Jiao Tong University (SJTU). Zhi-Qin obtain B.S. in Physics (2012) and a Ph.D. degree in Mathematics (2016) from SJTU. Before joining SJTU, Zhi-Qin worked as a postdoc at NYUAD and Courant Institute from 2016 to 2019. He is interested in studying deep learning theory and AI for Science. In deep learning theory, he discovered frequency principle, parameter condensation and embedding principles in deep learning, and developed multi-scale neural networks; In AI for Science, he developed AI-based algorithms for solving high dimensional ODEs. He is one of the managing Editors of Journal of Machine Learning.