应用数学讲座

Научный Семинар по Прикладной Математике

Research Seminar on Applied Mathematics

应用数学报告（63）

报告人 / Докладчик / Speaker: 董国志 副教授（中南大学）

题目 / Название / Title: First-order conditions for the optimal control of learning-informed nonsmooth PDEs

时间 / Время / Time：24 Jul. 2022, 16:20-16:50

地点 / Место / Venue: 图书馆1楼报告厅

摘要 / Аннотация / Abstract:

In this talk we study the optimal control of a class of semilinear elliptic partial differential equations which have nonlinear constituents that are only accessible by data and are approximated by nonsmooth ReLU neural networks. The optimal control problem is studied in detail. In particular, the existence and uniqueness of the state equation are shown, and continuity as well as directional differentiability properties of the corresponding control-to-state map are established. Based on approximation capabilities of the pertinent networks, we address fundamental questions regarding approximating properties of the learning-informed control-to-state map and the solution of the corresponding optimal control problem. Finally, several stationarity conditions are derived based on different notions of generalized differentiability.