北京理工大學

数学与统计学院学术报告

Finite-dimensional control of infinite-dimensional systems without spillover

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时间： 2025.03.10 (Monday), 9:00 UK time (17:00 China time)

地点： 腾讯会议　565-733-854

摘要： Modal decomposition is a popular way of designing easy-to-implement controllers for systems described by Partial Differential Equations (PDEs). The idea of modal decomposition is to break the PDE into a set of ODEs that describe the dynamics of infinitely many Fourier modes. By focusing on the first few modes, a finite-dimensional approximation is obtained, which can be analysed and controlled using standard techniques from control engineering. However, when a controller designed for this approximation is applied to the original PDE, the neglected residual modes can significantly degrade system performance — a phenomenon known as spillover. This talk will show how spillover can be avoided using a new technique called the L2 residue separation method.

报告人简介：

Anton Selivanov, Department of Automatic Control & Systems Engineering, University of Sheffield, UK. He is an associate editor for IFAC Journal Automatica, associate editor for IEEE CDC 2023-2026, and member of IEEE-CSS TC Distributed Parameter Systems. His research is dedicated to robust control of dynamical systems described by partial differential equations and delay differential equations. Application areas include swarm robotics, traffic flows, and nuclear fusion.

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