Aiming to develop the algebraic topology of digraphs

吴杰 北京雁栖湖应用数学研究院

Detecting and interpreting high-order interactions is the most challenging in complex network. So far, there are limited mathematical tools for studying high-order interactions, comparing with that there are a lot of well-developed mathematical tools (from graph theory) on studying pairwise interaction networks. Algebraic topology could provide ideas for developing mathematical tools on studying high-order interactions, which might lead to the next revolution in high-order complex network science. In this talk, we will discuss the higher dimensional topological structures on (di-)graphs. Particularly, we will give an introduction to the GLMY theory on digraphs introduced by S. T. Yau et al, which is a new-born(emerging) research area in algebraic topology with successful applications to control flow in complex networks, the design of materials and molecules, and the identification of diagnostic features of complex diseases.

报告人简介：吴杰教授，系北京雁栖湖应用数学研究院研究员，1995 年获美国罗切斯特大学博士学位，1995-96 年美国加州大学伯克利分校博士后，前新加坡国立大学终身教授，曾任河北师范大学全职特聘教授，2021 年入职北京雁栖湖应用数学研究院；其研究兴趣为代数拓扑与应用拓扑，曾获新加坡国家科学奖，在高质量期刊发表学术论文 100 余篇。