北京理工大學

数学与统计学院学术报告

Classification of atmospheric traveling waves at cloud level

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时　间：2026年4月9日 10:00--11:00

地　点：腾讯会议号：175150492

邀请人：边东芬

摘　要： We classify within the quasi-geostrophic framework all types of traveling waves in zonal bands of the planetary atmosphere at cloud level according to their wave speeds. This classification pertains to waves of all amplitudes, going beyond the small-amplitude perturbative regime. It provides a structurally robust criterion for determining which traveling-wave profiles are dynamically possible and we show that each wave classification type was observed on Jupiter or Saturn. Building on this classification, we also investigate the related rigidity issue for large-amplitude traveling waves and waves propagating near shear flows. Our study offers a unified quantitative characterization of the intrinsic constraints for traveling waves in the quasi-geostrophic regime of planetary atmospheric flow. This is a joint work with Adrian Constantin and Hao zhu.

个人简介：林治武，北京大学本科，东京大学硕士，布朗大学博士（2003）。曾任佐治亚理工学院教授，2024年起任复旦大学教授，相辉学者，入选国家高层次人才。研究方向为偏微分方程与动力系统及其应用，近年主要关注天体物理与流体中的稳定性与长期行为。