



北京理工大学

数学与统计学院学术报告

Deep-water and shallow-water limits of statistical equilibria for the intermediate long wave equation

报告人: 李国鹏 University of Edinburgh

时间: 2023年10月17日, 15:00-16:00

地点: 北京理工大学良乡校区文萃楼E909

摘要: The intermediate long wave equation (ILW) models the internal wave propagation of the interface in a stratified fluid of finite depth, providing a natural connection between the deep-water regime (= the Benjamin-Ono (BO) regime) and the shallow-water regime (= the KdV regime). In this talk, I will discuss convergence problems for ILW from a statistical viewpoint, at different energy levels.

By exploiting both Hamiltonian and completely integrable structure of ILW (and also of BO and KdV), I will discuss convergence of Hamiltonian/higher order conservation laws for ILW, their associated measures and their associated dynamics. In particular, our results give two interesting phenomenons: (i) modes of convergence of the measures in the deep water and shallow-water limits are different. (ii) KdV, appearing in the shallow-water limit, possesses half as many conservation laws as ILW and BO and thus there is an 2-to-1 collapse of ILW conservation laws to those of KdV.

This talk is based on joint works with Tadahiro Oh, Andreia Chapouto (both Edinburgh) and Guangqu Zheng (Liverpool).

个人简介: Guopeng Li, completed my PhD (February 2023) at the University of Edinburgh under the supervision of Prof. Tadahiro Oh and Yuzhao Wang. I am currently a Maxwell Institute Postdoctoral Research Fellow in Edinburgh.