



复旦大学数学科学学院 数学综合报告会

报告题目: On 3D Hall-MHD equations with fractional Laplacians:
global well-posedness

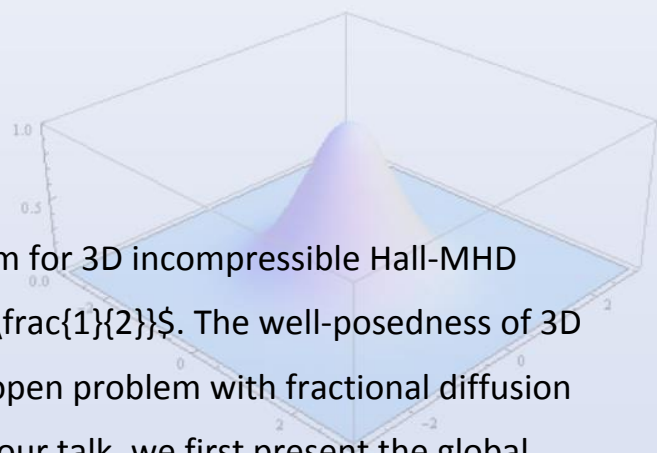
报告人: 张华丽 (长沙理工大学)

时间: 2021-01-12 星期二 10:30

地点: HGD2001

报告摘要:

In this talk, we will study the Cauchy problem for 3D incompressible Hall-MHD equations with fractional Laplacians $(-\Delta)^{\frac{1}{2}}$. The well-posedness of 3D incompressible Hall-MHD equations remains an open problem with fractional diffusion $(-\Delta)^{\beta}$, $\beta \in (0, \frac{1}{2}]$. In our talk, we first present the global well-posedness of small-energy solutions with general initial data in H^s , $s > \frac{5}{2}$. Second, a special class of large-energy initial data is constructed, with which the Cauchy problem is globally well-posed. The proofs rely upon a new global bound of energy estimates involving Littlewood-Paley decomposition and Sobolev inequalities, which enables one to overcome the $\frac{1}{2}$ -order derivative loss of the magnetic field. This is a joint work with Kun Zhao.



非线性数学模型与方法教育部重点实验室
中法应用数学国际联合实验室
上海市现代应用数学重点实验室
复旦大学数学研究所