


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

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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.