



复旦大学数学科学学院 数学综合报告会

报告题目: Global well-posedness of viscous surface waves

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报告摘要:

Consider a viscous incompressible fluid below the air and above a fixed bottom. The fluid dynamics is governed by the gravity-driven incompressible Navier-Stokes equations, and the effect of surface tension is neglected on the free surface. The global well-posedness and long-time behavior of solutions near equilibrium have been intriguing questions since Beale (1981). It was proved by Guo and Tice (2013) that with certain additional low horizontal frequency assumption of the initial data in 3D an integrable decay rate of the velocity is obtained so that the global unique solution can be constructed, while the global well-posedness in 2D was left open. We prove the global well-posedness in both 2D and 3D, without any low frequency assumption of the initial data. The key ingredients are a nonlinear cancellation by using Alinhac good unknowns and the improved anisotropic decay rates of the velocity, which are even not integrable.

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