

The self-similar solutions to the fractional Navier-Stokes equations

郑孝信 北京航空航天大学

In this talk, we show the global regularity and the optimal decay of weak solutions to the generalized Leray problem with critical dissipation. Our method is based on the maximal smoothing effect, elliptic-type theory of linearization, and the action of the heat semigroup generated by the fractional powers of Laplace operator on distributions with Fourier transforms supported in an annulus. As a by-product, we shall construct a self-similar solution to the three-dimensional Navier-Stokes equations, and more importantly, prove the global regularity and the optimal decay without additional requirement. These works are joint with Baishun Lai and Changxing Miao.

报告人简介：郑孝信，北京航空航天大学数学科学学院教授，博士生导师。2013年博士毕业于中国科学院数学与系统科学研究院，波兰 Wroclaw University 大学博士后。研究方向：调和分析、Navier-Stokes、SQG、Boussinesq、chemotaxis-Navier-Stokes 等流体力学方程。主持了 3 项国家自然科学基金项目，相关研究成果发表在包括在 Adv. Math.、Arch. Ration. Mech. Anal.、Comm. Math. Phys.、Trans. AMS、J. Math. Pures Appl.、Rev. Mat. Iberoan、SIAM J. Math. Anal.等在内的重要学术期刊。