

Some wellposedness results for 3D axisymmetric Navier-Stokes system

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Abstract

Abstract: In this talk, we study the three-dimensional axisymmetric Navier-Stokes system with nonzero swirl. By establishing a new key inequality for the pair $(\frac{\omega^r}{r}, \frac{\omega^\theta}{r})$, we obtain several Prodi-Serrin type regularity criteria based on the angular velocity, u^θ . Moreover, we obtain the global well-posedness result if the initial angular velocity u_0^θ is appropriately small in the critical space $L^3(\mathbb{R}^3)$. (Based on joint works with Hui Chen and Daoyuan Fang)