Bernoullis Tafelrunde

Graduate Student Seminar

Monday, 22 April 2024, 12:15-13:00
Seminarraum 05.002, Spiegelgasse 5

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Self-similar solutions for the forced 3D Navier–Stokes Equations

Abstract

We consider the 3D Navier–Stokes equations with a self-similar forcing, and construct forward self-similar Leray solutions arising from such a force. The category of solutions that we analyze has a special relevance, thanks to their natural link with the steady Navier–Stokes system, for which interesting insights on non-uniqueness emerged. Our strategy is a combination of the arguments proposed by Jia–Šverák and Bradshaw–Tsai, consisting in decomposing the solution into a component with finite energy and an auxiliary term with known behavior. Our method consists in the establishment of the necessary a priori estimates to apply topological fixed point theorems on suitably defined operator.