UNIQUENESS QUESTIONS FOR THE NAVIER-STOKES EQUATION IN THE HYPERBOLIC SETTING

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Abstract

The smoothness and uniqueness of the Leray-Hopf solutions to the Navier-Stokes equation is well-known in $2D$. Contrary to what is known in the Euclidean setting, in our previous work we showed that there is non-uniqueness in $2D$ for simply connected, complete manifolds with negative sectional curvature. The goal of this talk is to show how we can restore uniqueness. In the process, we develop the theory of weak solutions to the Navier-Stokes equations on the $2D$ hyperbolic space. This is joint work with Chi Hin Chan.