1162-35-176 **Braden Balentine*** (braden.balentine@colorado.edu), University of Colorado Boulder, Department of Mathematics, Campus Box 395, Boulder, CO 80302. *Well-Posedness and Global in Time Behavior for Mild Solutions to the Navier-Stokes Equation on the Hyperbolic Space with Initial Data in L^p.*

We discuss mild solutions to the Navier-Stokes equation on the n-dimensional hyperbolic space $\mathbb{H}^n$, $n \geq 2$. Substantial results have been already obtained by Pierfelice. In this talk, we show how to extend the rest of the Fujita-Kato theory of mild solutions from $\mathbb{R}^n$ to $\mathbb{H}^n$. This includes well-posedness results for L^p initial data in the range $1 < p < \infty$, global in time results for small initial data, and L^p norm decay results for both u and ∇u. As part of this, we discuss extending to the hyperbolic space $\mathbb{H}^n$ known facts in Euclidean space concerning the strong continuity and contractivity of the semigroup generated by the Laplacian. Also, we discuss necessary boundedness and commutation properties for a certain projection operator in the setting of $\mathbb{H}^n$. This work, together with Pierfelice's, contributes to providing a full theory for mild solutions on $\mathbb{H}^n$. (Received August 31, 2020)