1151-35-20 **Theodore D Drivas*** (tdrivas@math.princeton.edu) and **Theodoroe La**. *The Navier-Stokes-End-Functionalized polymer system.*

The problem of minimizing energy dissipation and wall drag in turbulent pipe and channel flows is a classical one which is of great importance in practical engineering applications. Remarkably, the addition of trace amounts of polymer into a turbulent flow has a pronounced effect on reducing friction drag. To study this mathematically, we introduce a new boundary condition for Navier-Stokes equations which models the situation where polymers are irreversibly grafted to the wall. This boundary condition is time-dependent and generalizes the classical Navier-Friction condition. Global well-posedness is established in 2D and the boundary conditions are shown to lead to the strong inviscid limit and exhibit drag reduction. (Received July 11, 2019)