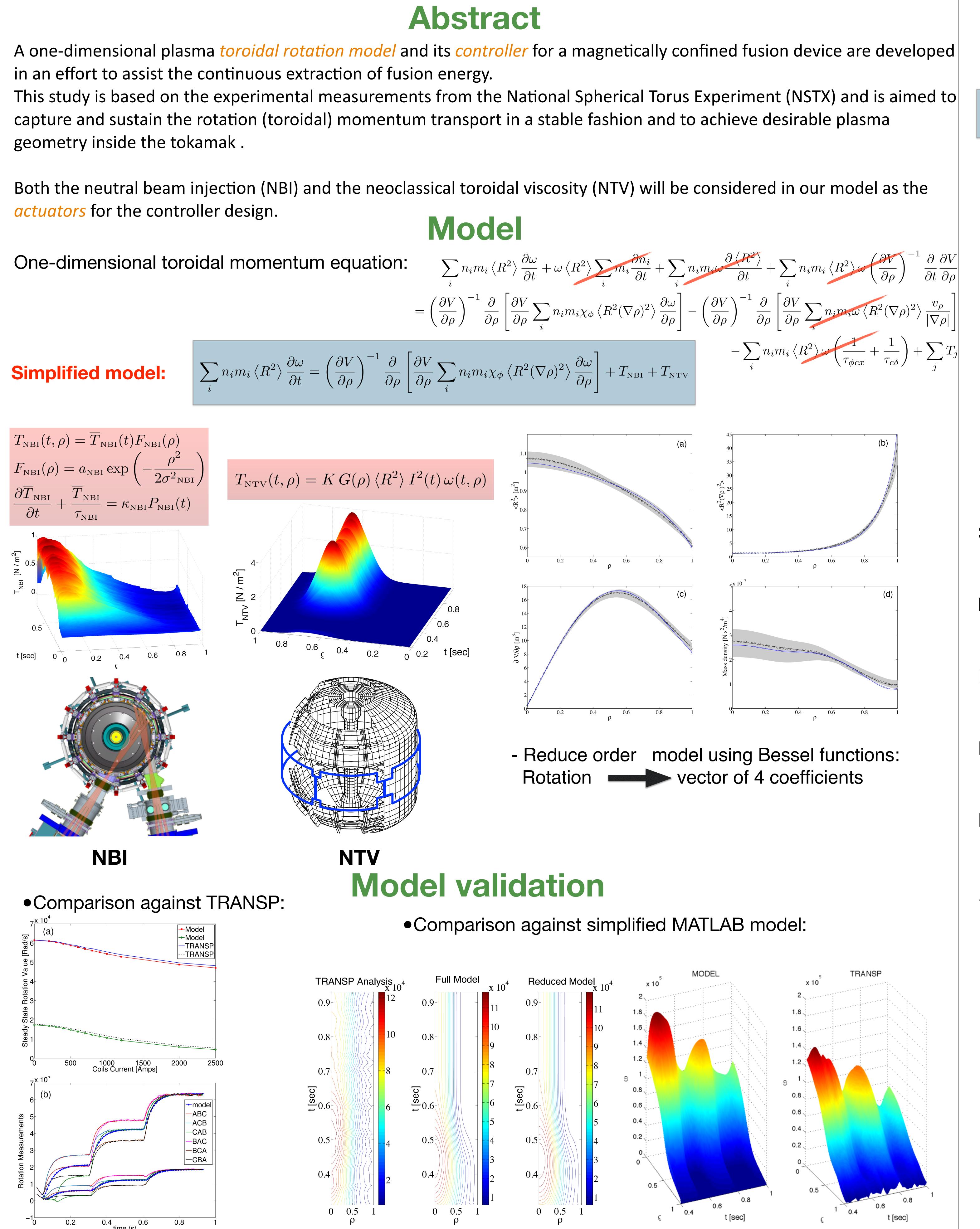
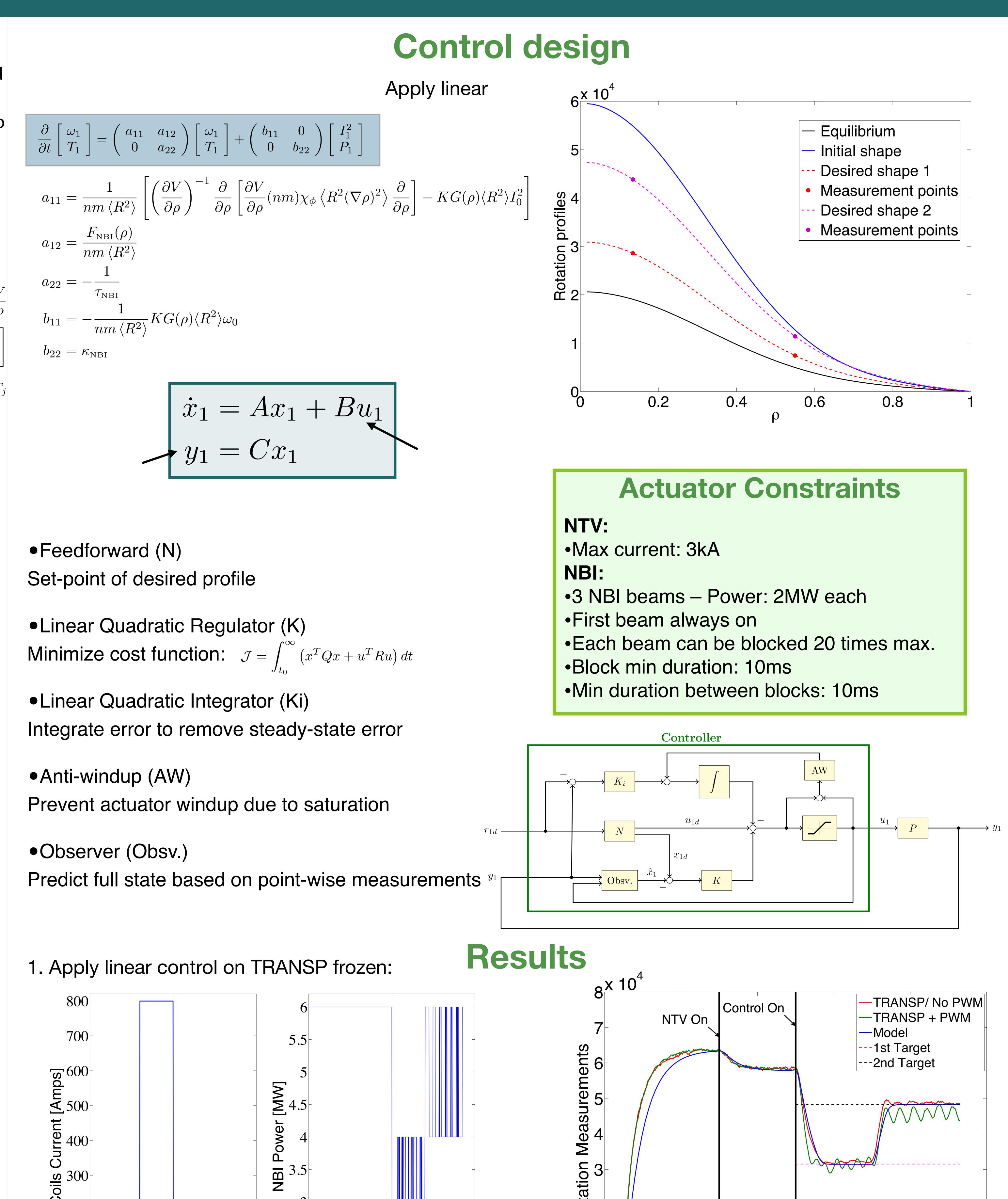


Modeling and control of plasma rotation for NSTX using Neoclassical Toroidal Viscosity (NTV) and Neutral Beam Injection (NBI)

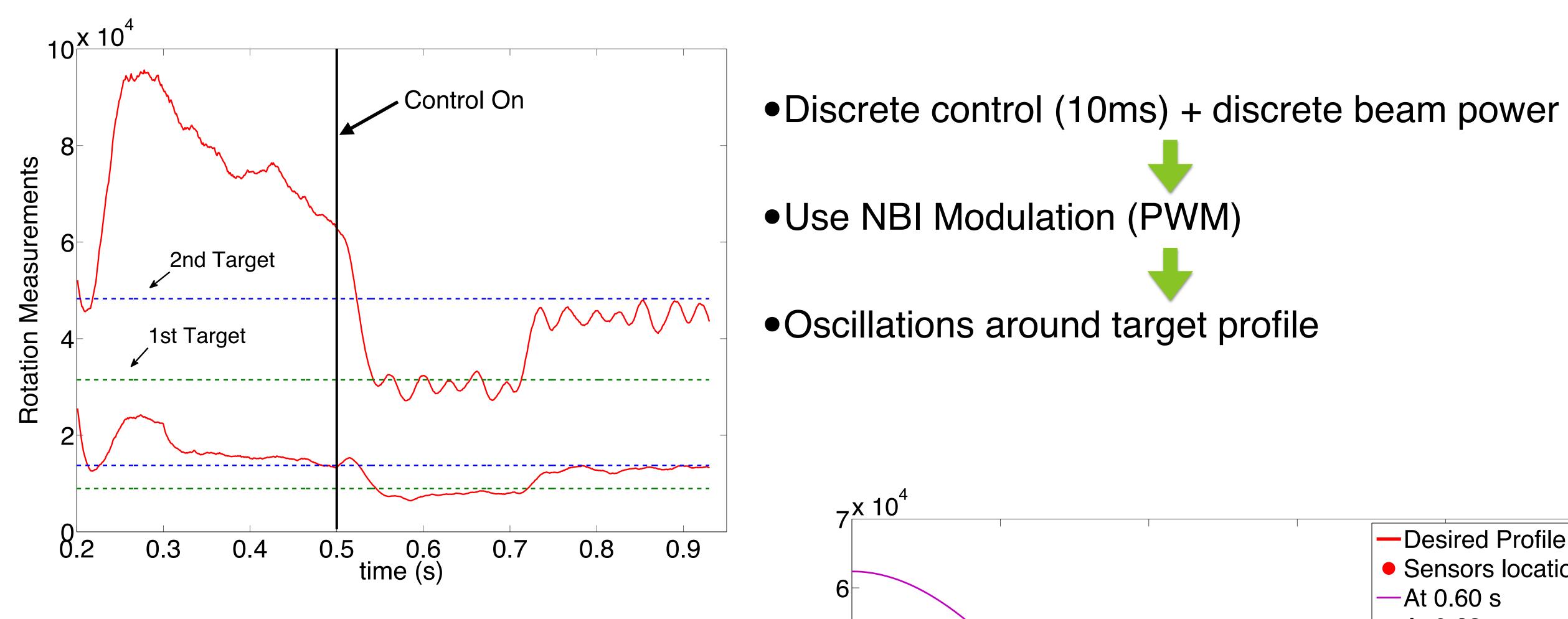
Imène R. Goumiri, Clarence W. Rowley, Steven A. Sabbagh, David A. Gates, Stefan P. Gerhardt, Egemen Kolemen and Kunihiko Taira





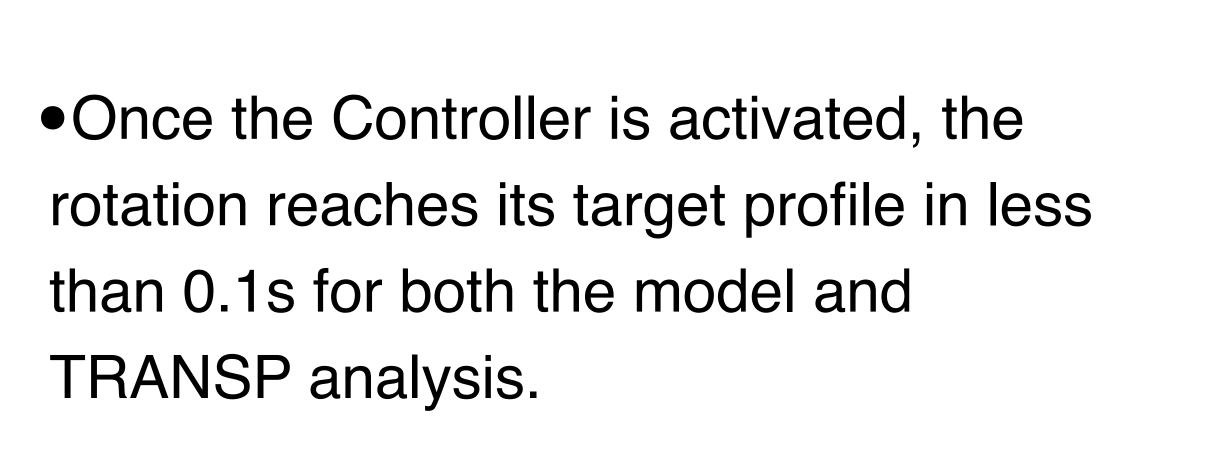


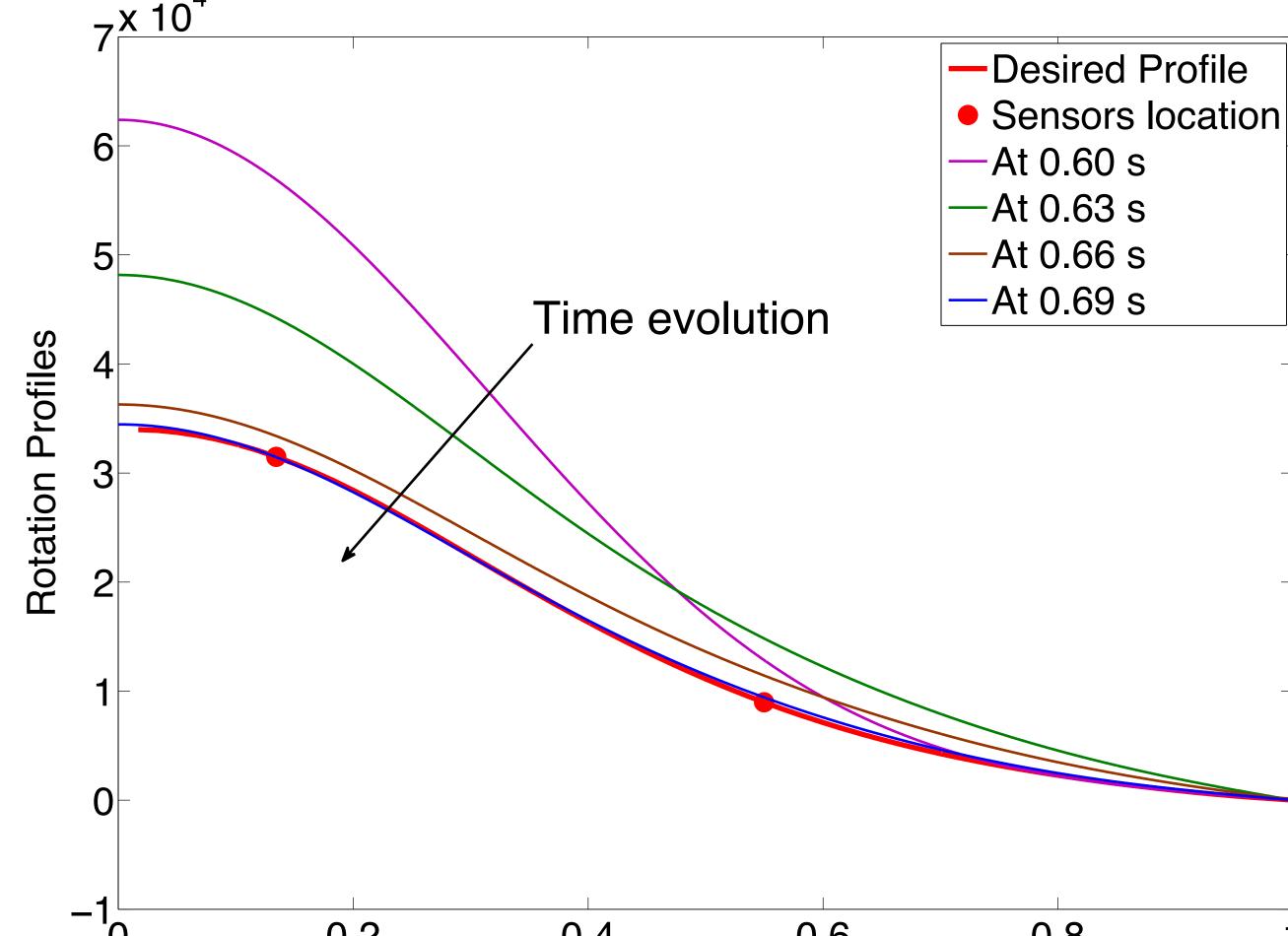
2. Apply linear control on TRANSP with varying background:



Use NBI Modulation (PWM)

Oscillations around target profile





Discussion

- Satisfactory control
- Linear control tools
- Based on reduced order model
- Only two measurement points Strict constraints on the actuators
- Implemented in TRANSP
- Future plans: NSTX Upgrade
- Second line of three neutral beams, spatially more extended
- Need for new reduced order model
- •No data available, 100% model based approach

Imène Goumiri, Ph.D. student

I am a fifth year Ph.D. student at PPPL and Princeton in the department of Mechanical and Aerospace Engineering. I am co-advised by Clancy Rowley and David Gates. I am interested in applying the tools of Control Theory to plasma in tokamaks.





