

# **MHD Modeling of CHI on NSTX**

Xianzhu Tang

*Los Alamos National Laboratory*

A.H. Boozer

*Columbia University*

and NSTX Research Team

We will summarize the recent theory and modeling effort of co-axial helicity injection (CHI) for non-inductive current drive on spherical tori such as NSTX. These include the interpretation and (re)construction of MHD equilibria, the modifications in a resistive steady state description, the onset of non-axisymmetric MHD instability, and the nonlinear saturation of these instabilities. Numerical demonstration of plasma startup using transient CHI plasma as a target for secondary current drive will also be shown.