U.S. DEPARTMENT OF ENERGY | Office of Science

NSTX-U

Investigation of CAE/GAE stability in NSTX-U similar plasmas

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Core Science Group Meeting
PPPL
10/13/2016 1-3:30PM

UCLA

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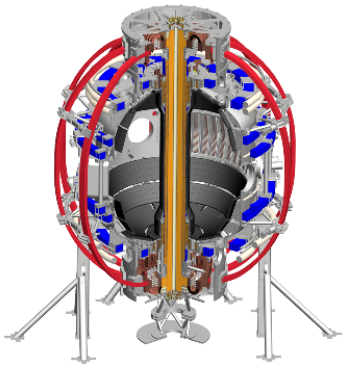

Investigation of CAE stability

- NSTX-U similar plasma
- Injection angle scan
  - Better understanding of parallel resonance condition and perpendicular instability condition
- Compare CAE activity for left/right sources, off-axis beam
  - Left source more tangential- larger Doppler shift
  - Right source more perpendicular- larger gyroradius
  - Off-axis beam for variable v||/vperp

CAE threshold study

- NSTX-U similar plasma
- Finding Te threshold for instability
- Beam power threshold
- CAEs not yet observed on NSTX-U
  - CAEs predicted to appear at higher beam power
  - Making projections for CAE activity during NSTX-U operation

GAE Identification

- GAEs not yet observed or identified on DIII-D
- Improved tools for identification
  - q-profile scan, density scan
    - GAEs known to be sensitive to qmin
  - Examine spectrum for crossing/merging
  - Mode number capability from ICE giving better understanding of k|| and parallel resonance condition
- Using CAE3B and HYM to aid in classification and prediction of GAE stability