

# Study of stability boundaries for CAE modes

E. Fredrickson, N. Gorelenkov,  
F. Cheng, D. Darrow, S. Kubota,  
S. Medley, ...

# Summary of results:

- Alfvénic character of modes confirmed.
- Frequency spectrum consistent with CAE.
- Dependence of fast ions confirmed; modes are undetectable below beam energies of a 70kV.
- Beam energy threshold not apparently a  $V_{\text{beam}}/V_{\text{Alfvén}}$  threshold.
- Mode presence in plasma confirmed; absolute amplitude not measured.
- First indications of mode numbers.

# Proposed experiment:

- Vary  $V_{\text{beam}}/V_{\text{Alfvén}}$ ; use density, toroidal field and beam voltage scans.
- Look for dependence of  $V_{\text{beam}}/V_{\text{Alfvén}}$  threshold on pitch angle; use different sources, density (beam deposition profile).
- Look for threshold dependence on plasma current.
- Elongation scan? Look for effect on spectrum.

# New diagnostics:

- Toroidal fluctuation coil; are modes really compressional?
- Higher bandwidth systems; more modes above  $f_{ci}$ ?
- Improved reflectometer; absolute mode amplitude.
- Poloidal arrays; poloidal wavelength estimates, poloidal localization measurements?