Validation of M3D-K code for beam-driven TAE modes

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- Validation of M3D-K code against experiments requires detailed knowledge of TAE mode structure
- New/upgraded diagnostics available in 2010:
  - 16-channel reflectometer allows to extend TAE studies to higher density
  - BES allows to resolve fine mode structure

NSTX milestone for 2010

"Experimental validation of predictive capabilities for the transport of fast-ions by super-Alfvenic-ion driven modes"

Detailed measurements of TAE structure are required to validate M3D-K code

- Plan:
  - Reproduce baseline discharge from 2009 (e.g. sh#135388)
    - L-mode, D_2 plasma, center-stack limited
  - Use BES and reflectometer for detailed reconstruction of mode structure
- NB voltage scan to identify "marginally stable" conditions
- Increase density to ~8×10^{19} m^{-3}
- Apply rotation braking (if time permits)
- *If feasible: fine NB current scan (+/- 10%) to separate dependencies upon beam voltage/current - under discussion...*

- Required diagnostics:
  - BES, upgraded 16-channel reflectometer
  - All fast ion diagnostics (FIDA, NPA, ssNPA, sFLIP)
  - Plasma profiles (MPTS, CHERS, MSE) & magnetics

Estimated run time: 1 day