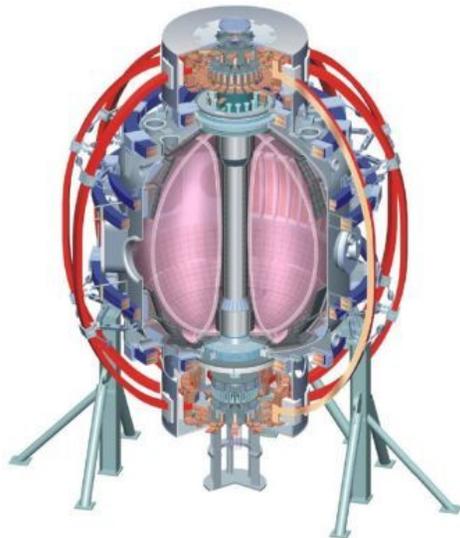


Commissioning The RWM Proportional Control Algorithms with Six Sub-Units

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**2011-12 NSTX Research Forum, ASC Session
B318, PPPL
Wednesday, March 16th**

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Proportional RWM Control is Being Restored, and Expanded, in Two Steps

- First restore simple pre-programmed SPA control from PCS.
 - Call this the “ssp” algorithm, replacing “spa” algorithm.
 - Will test and qualify the PCS to PSRTC communication process, train new programmers in PCS programming.
 - This is being worked on right now.
 - We can commission this during ISTP.
- Add proportional control of both n=1 and n=0 modes.
 - Call this the “tmf” algorithm, replacing “smf”.
 - Will of course allow pre-programmed current in 6 separate coils.
 - Restore proportional control of n=1 modes. $I_{PID} = I_{pre-program} + I_{n=1,B_R} + I_{n=1,B_Z} + I_{n=0} + I_{OH \times TF}$
 - Add code for feedback as $I_{n=0} = Dd(I_P Z)/dt$.
 - Get measurement from improved dZ/dt estimator.
 - Easy to add this capability now (even if never used), more difficult to add it later.
 - Modify the OHxTF algorithm for 6 SPAs.
 - Still need to assess the scope of required changes to mode-id code (SPG).
 - Will do off-line debugging as much as possible, but need XMP (~1/3 day):
 - XMP to develop new “standard” RWM control algorithm be loaded into shots in 2011.
- Upgraded state-space RWM controller calls “tmf”, adds additional current request.