

Proposals for WPI-related XPs for FY11–FY12 NSTX campaign

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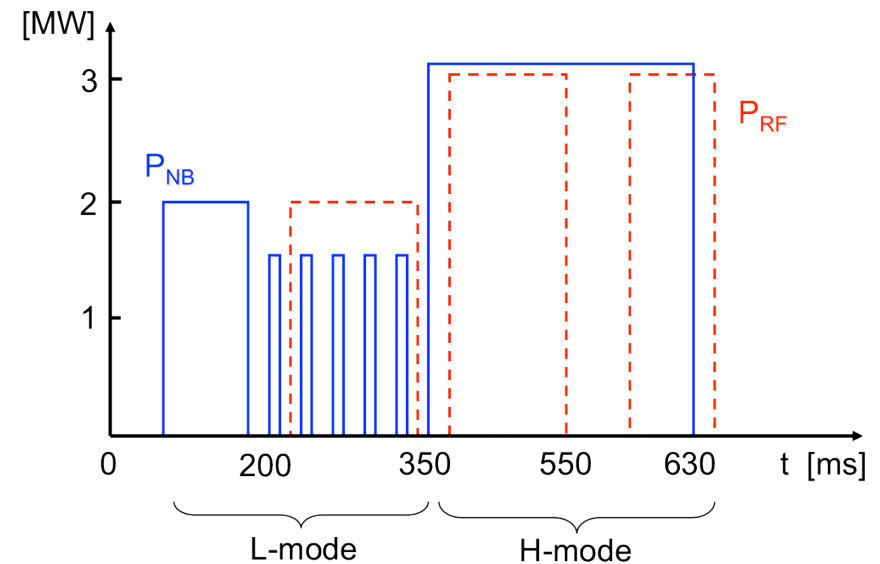
- Characterize fast ion acceleration in RF-heated plasmas
 - XP-1012 with B. LeBlanc, ready to go
- Effect of toroidal rotation on TAEs
 - XP written, WPI-TSG review OK, need NSTX group review

Characterize fast ion acceleration in RF-heated plasmas, XP-1012

Characterize RF absorption as a function of RF phasing,
L vs. H-mode plasmas, outer gap, magnetic field

Look at fast ion profile, spectrum to infer absorbed fraction - benefit from new t-FIDA

- L-mode until ~ 350 ms, optimized for FIDA measurements
 - Similar to 2008 FIDA experiment on RF absorption by fast ions
 - NB sources: A @90kV for MSE, C @75kV modulated 10/20ms ON/OFF
- H-mode after ~ 350 ms, low NB power ~ 3 MW
 - Two RF pulses, $P_{RF} \sim 3$ MW; timing: 400-550ms and 600-660ms
 - NB sources A @ 90kV + B @ 65-90kV
 - Adjust source B to minimize MHD but maintain good signal on CHERs



Study effects of toroidal rotation on the dynamics of TAEs

- Study of TAEs in L-mode providing good results
 - Collected data for detailed comparison theory/experiments
 - “Rotation” is an important element; missing element for detailed code validation
- NSTX (low aspect ratio) has large rotation frequency
 - Rotation comparable with TAE frequency (plasma frame)
 - Stability and structure of TAE modes may change as TAE gap varies for different rotation profiles
- **Need to assess dependence of TAE structure and dynamics on rotation profile**
 - Compare results with predictions from codes such as NOVA-K, M3D-K
 - Benefit from v_{tor} feedback control (FY-12)

