

Heavy-Ion Beam Probe for NSTX?

- Only HIBP can measure fluctuating potential and electric field; complements \tilde{n} diagnostics. Multiple sample volumes; get correlation lengths without complicated interpretation. Sample volumes can be moved in minor radius (and poloidal angle). GAMs are very easily seen. Time-average potential gives a check on rotation-based E_r . B_{tor} up to 0.5 T is fine, is an upgrade contemplated?
- RPI group (Paul Schoch, et al.) has a de-commissioned 500 keV HIBP (from TEXT?). the accelerator is in a cylinder 5 feet in diameter, 10 feet long. They have ion trajectories in NSTX, so capability assessment could begin soon.
- NIFS wants to give an HIBP system to NCSX (one of twin systems from CHS). The RPI group would operate the HIBP on NCSX. The CHS system is available now, but NCSX doesn't need an HIBP until 201x. Could put the NIFS system on NSTX (for SOL/pedestal studies?), then replace it?
- Schedule and Budget estimate (based on de-commissioned system, not NIFS system)
 - 1 year to design (design based on a 2002 study might be faster than 1 year)
 - 2 years to build and install
 - Not including PPPL costs: in round figures, \$1M (estimate in 1998 study)