Troyon scaling at high I_N

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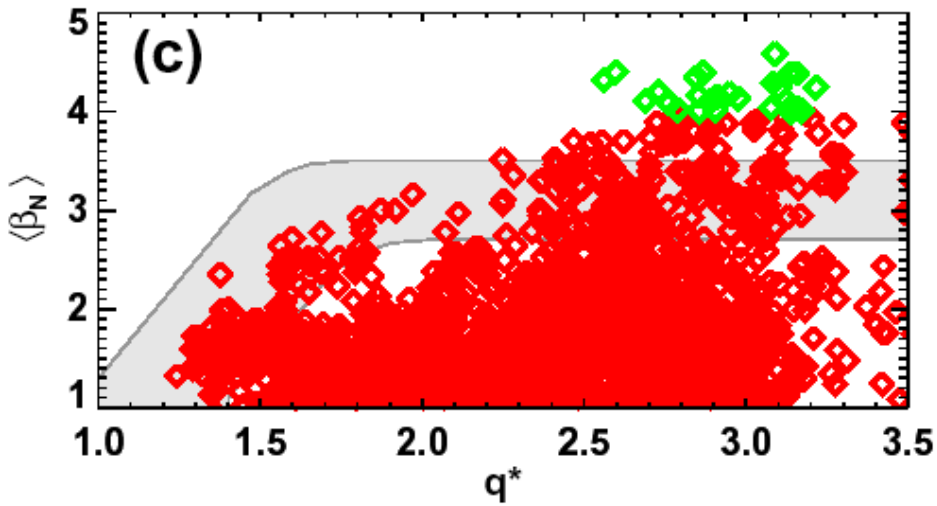
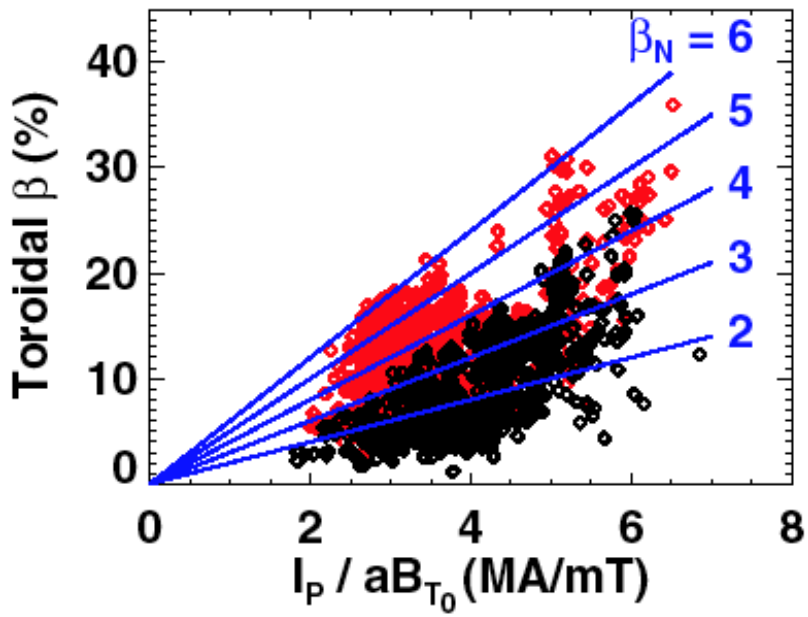
New scaling of β limit proposed

(J. Menard, et al. PoP)

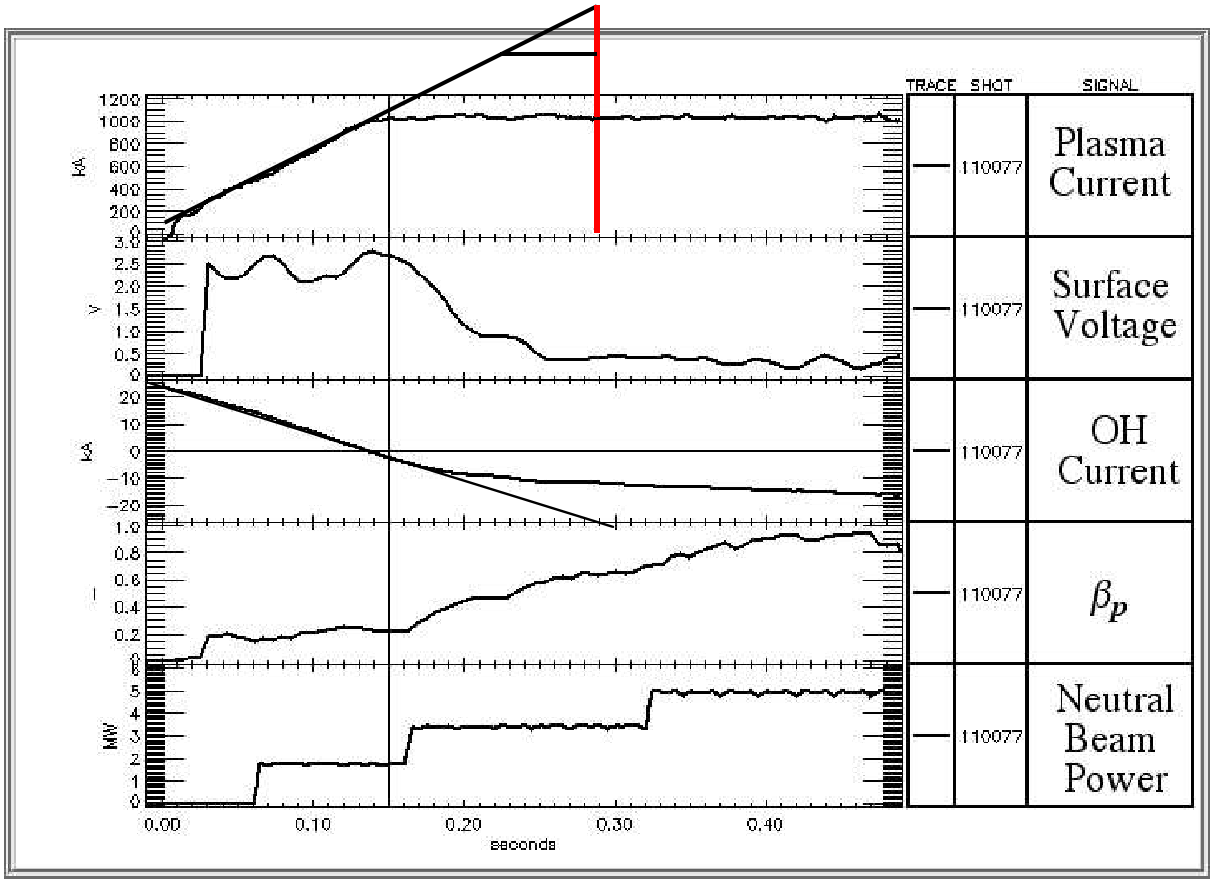
- Suggests degradation of β-limit with decreasing q^*
- Verified over a reasonable range
- Higher plasma current range to be investigated
- Very high β_t possible





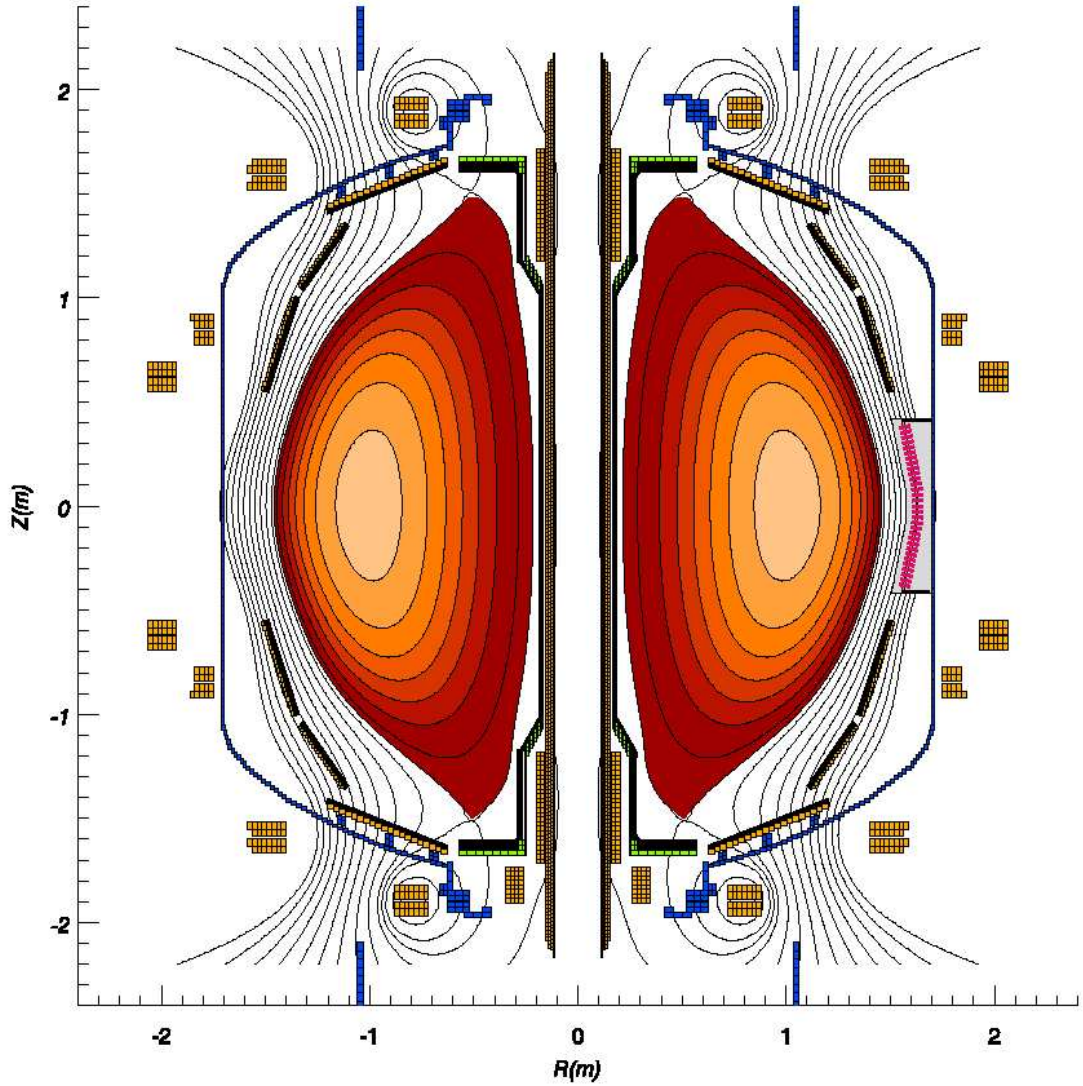
Fast current ramp projects to high plasma current

- New higher κ capability will enable fast ramp at lower toroidal field
- Could achieve I_p flat-top at ~1.7MA, $I_N = I_p/aB \sim 9$



High current equilibrium has q(0) ~ 1

- Interesting equilibrium identified
  - $\kappa = 2.4$
  - $\delta = 0.6$
  - $\beta_t = 53\%$
  - $\beta_N = 6$
  - $q_{95} = 3.5$
  - $I_p = 1.7\text{MA}$
  - $B_t = 3\text{kG}$



XP requirements

- 2-3 run days
- XP 228 (ISD approved last year) fast current ramp - prerequisite
- rtEFIT high κ control development - prerequisite
- Publications - PRL