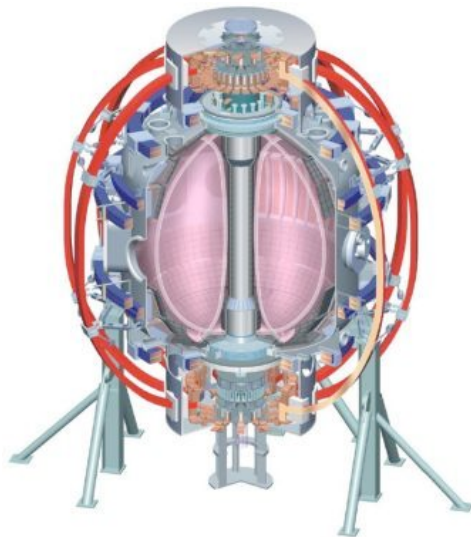


XP 923 – thermal transport in the SOL (FY10 Joint Research Target)

College W&M
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 U Rochester
 U Washington
 U Wisconsin

R. Maingi, 
 J.A. Surany (Princeton Univ.)

NSTX Results Review
Princeton, NJ
Sept. 15-16, 2009

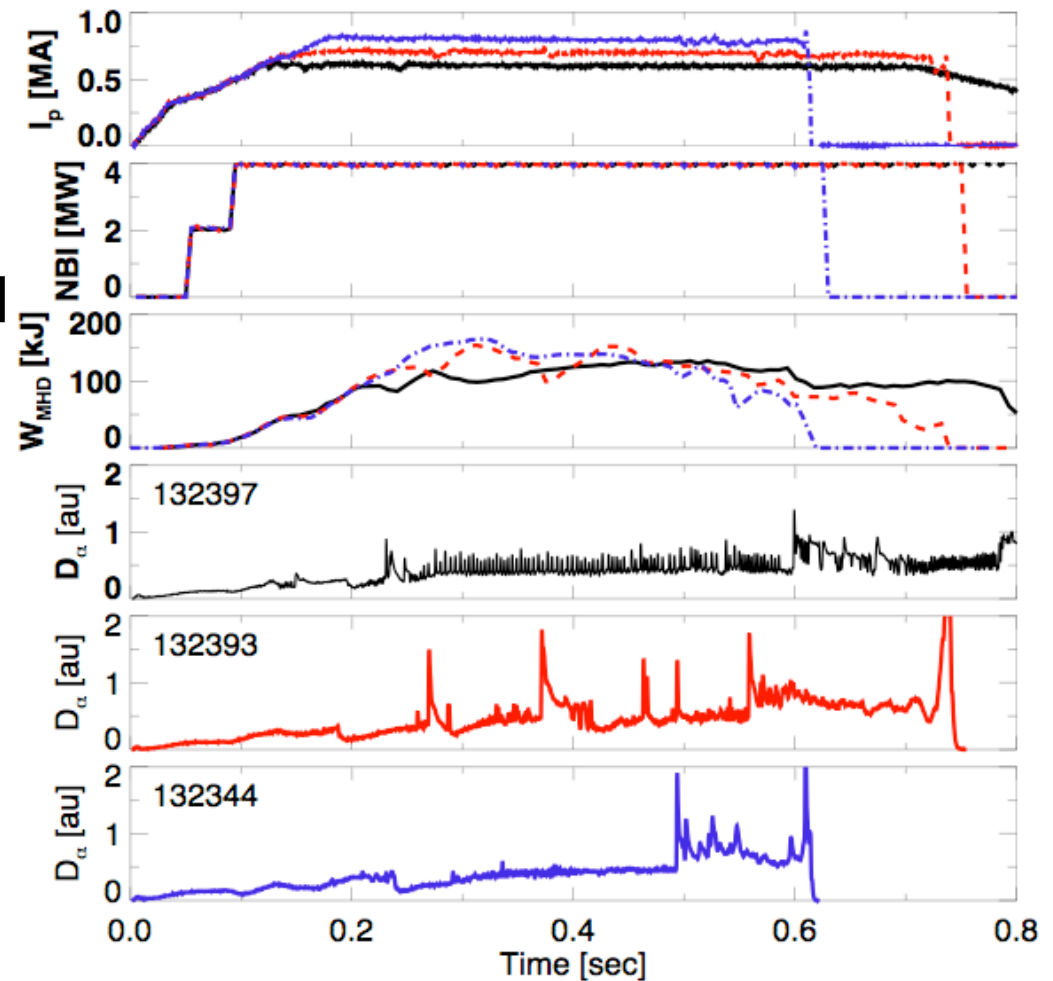


Culham Sci Ctr
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 IPP, Jülich
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 ASCR, Czech Rep
 U Quebec

XP923: SOL thermal transport (target heat flux and radiation profiles, turbulence characteristics)



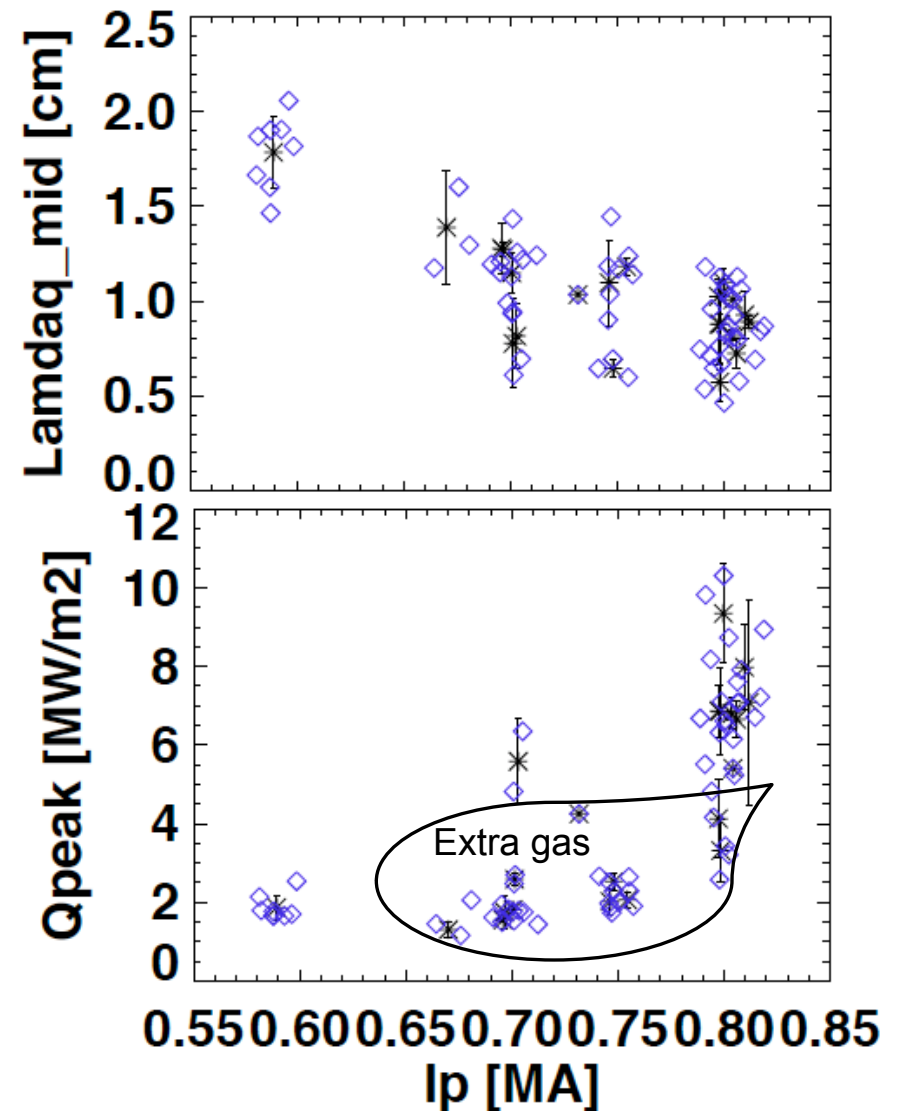
- Run early in year pre-Li
 - Obtained slow IR, fast IR (low δ), D_α cameras, GPI
 - New divertor bolometer channels unavailable
- Obtained a nice I_p scan and P_{NBI} scan at low $\delta_{\text{bot}} \sim 0.4$
 - ELMs change
 - SOL heat flux width clearly contracts with I_p



XP923: SOL thermal transport (target heat flux and radiation profiles, turbulence characteristics)



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 - ELMs change
 - SOL heat flux width clearly contracts with I_p
- Obtained small I_p and P_{NBI} scan at high $\delta_{\text{bot}} \sim 0.7$
 - Slow IR data confusing
 - No fast IR data
- To do: analyze fast IR, turbulence, D_α data

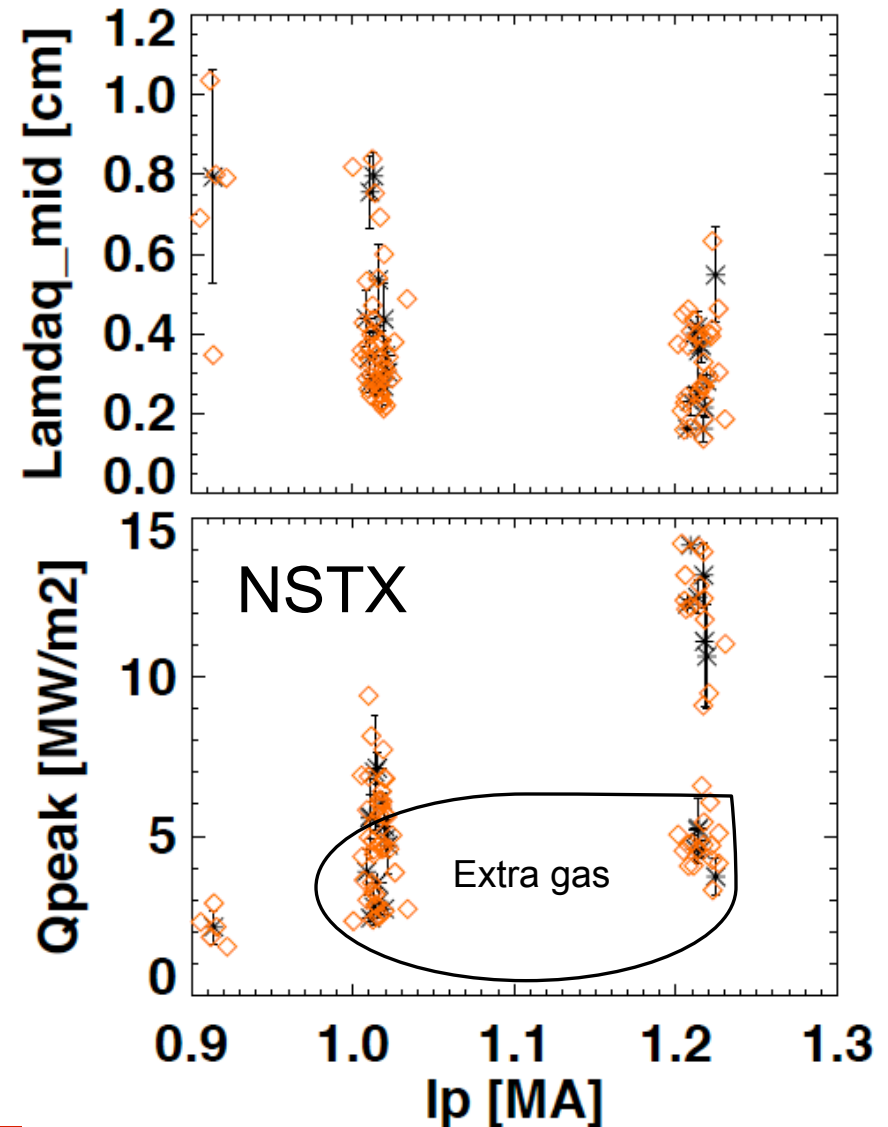


XP814: Peak heat flux (width) varies directly (inversely) with plasma current at high δ



- λ_q^{mid} dependence on I_p seems to connect to the low δ data from XP 923 smoothly(!)
 - λ_q^{mid} down to 2mm observed in these conditions, with q_{\parallel} up to 300 MW/m²

✓ *Peak heat flux and detachment reported at IAEA 2008 in Soukhanovskii's paper (NF 2009)*



XP816: Peak heat flux (width) varies inversely (directly) with flux expansion



- λ_q^{mid} stays approximately constant during the scan
- Large variability – need to refine analysis to see if error bars can be reduced
- ✓ Partly reported at EPS 2009 in Vlad's paper

