

# Comparison of H-mode Discharges with High-Field Side and Low-Field Side Fueling

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Integrated Scenario Development Group Session

NSTX Research Forum FY 2002

Princeton, NJ

Nov. 28-30, 2001

## New inner wall gas puffing could improve performance of NSTX H-modes

- ELMy H-mode and L-mode duration in lower-single nulls limited by locked modes in NSTX
  - Error field reduction should reduce occurrence
- Fix of TF coils will allow longer flattop at  $B_t \sim 0.45$  T
- H-mode reliability improved with inner wall gas fueling in MAST (Akers, APS 2001)
- Proposal: compare H-mode duration and performance with inner wall puffing vs. low-field side fueling
  - Both ELM-free and ELMy discharges



## H-mode access greatly improved

2000 - refuelling from low field side gas puff + a previous high density shot was needed to load the walls

2001 - refuelling from high field side through a 3mm tube fed from 0-10 bar D2 supply, running under the centre column graphite.

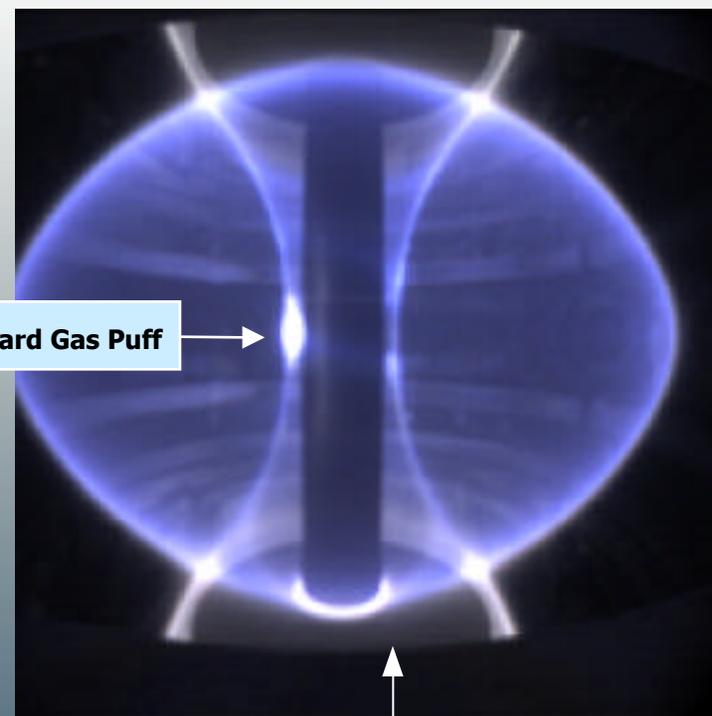
Together with improved understanding of influence of strike point positioning (access improves when divertor legs miss the P2 coil plates)



**H-mode access now routine**

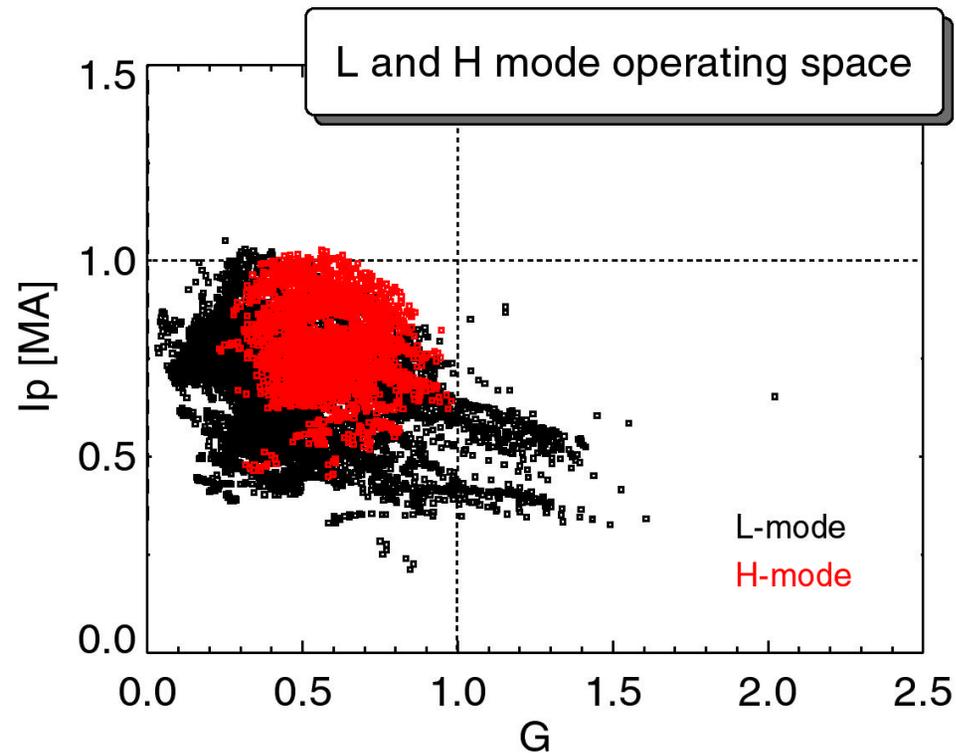
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Maingi



courtesy of R. Akers, APS 2001

# H-mode access



Shots 4100-4600  
(Summer 01)

- Approximately 35% of all 'shots' in MAST Summer 2001 campaign contained a long H-mode phase
- H-mode operating space extended up to  $I_p > 1$ ,  $G \sim 1$

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courtesy of R. Akers, APS 2001

## NBI ELMy H-mode duration in NSTX limited by locked modes

