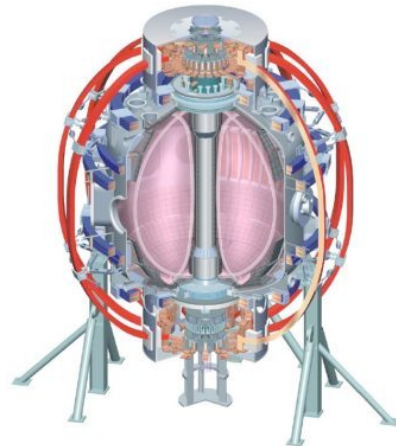
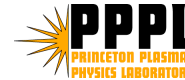


## Recent NSTX experiments on PEP-6

Rajesh Maingi, 

and the NSTX Research Team

ITPA PEP Meeting  
Seoul, Rep. of Korea  
18-20 Oct 2010



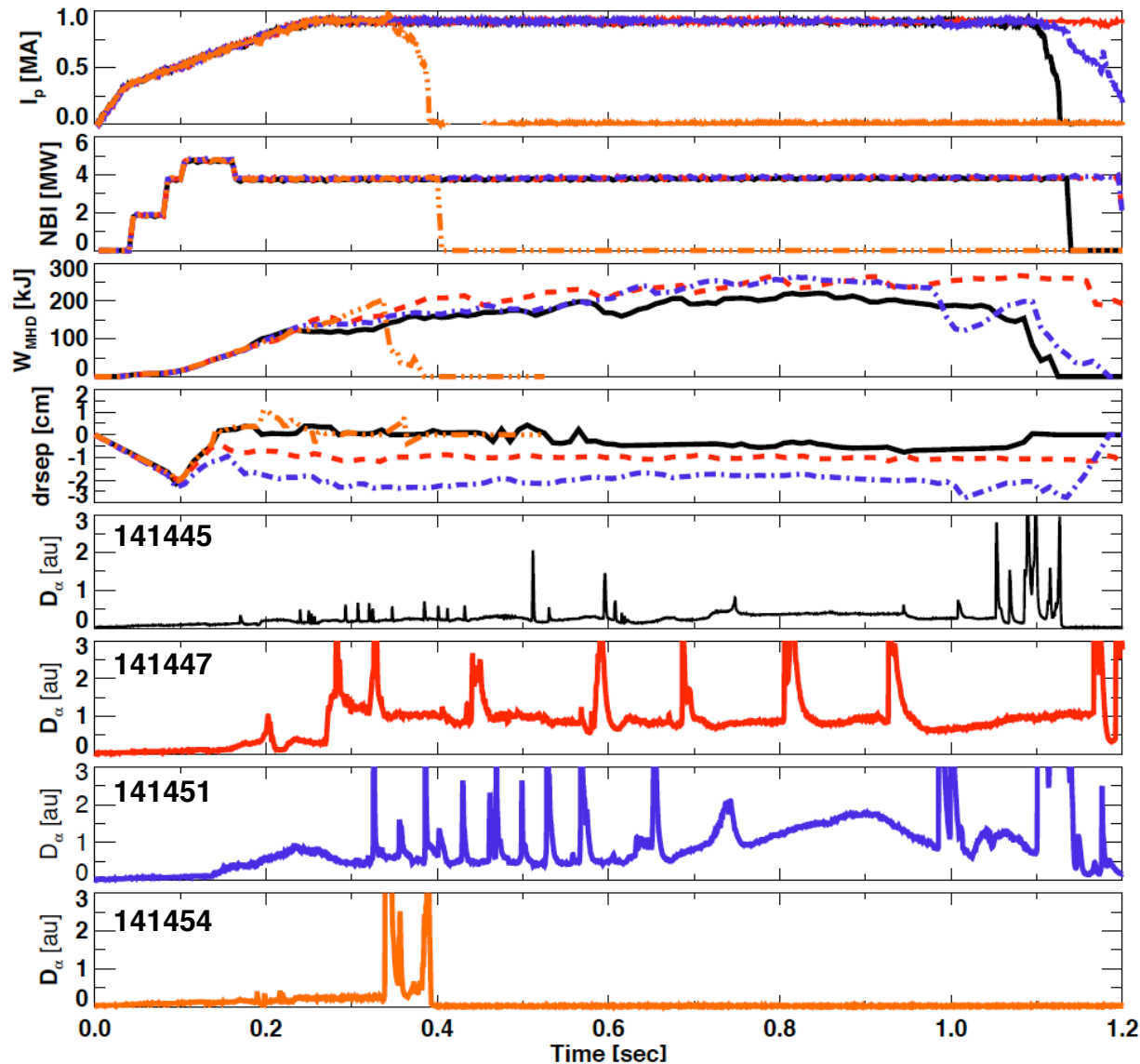
College W&M  
Colorado Sch Mines  
Columbia U  
Comp-X  
General Atomics  
INL  
Johns Hopkins U  
LANL  
LLNL  
Lodestar  
MIT  
Nova Photonics  
New York U  
Old Dominion U  
ORNL  
PPPL  
PSI  
Princeton U  
Purdue U  
SNL  
Think Tank, Inc.  
UC Davis  
UC Irvine  
UCLA  
UCSD  
U Colorado  
U Maryland  
U Rochester  
U Washington  
U Wisconsin

Culham Sci Ctr  
U St. Andrews  
York U  
Chubu U  
Fukui U  
Hiroshima U  
Hyogo U  
Kyoto U  
Kyushu U  
Kyushu Tokai U  
NIFS  
Niigata U  
U Tokyo  
JAEA  
Hebrew U  
Ioffe Inst  
RRC Kurchatov Inst  
TRINITI  
KBSI  
KAIST  
POSTECH  
ASIPP  
ENEA, Frascati  
CEA, Cadarache  
IPP, Jülich  
IPP, Garching  
ASCR, Czech Rep  
U Quebec

## Very detailed $\delta_r^{\text{sep}}$ scan done in NSTX 9/20/10

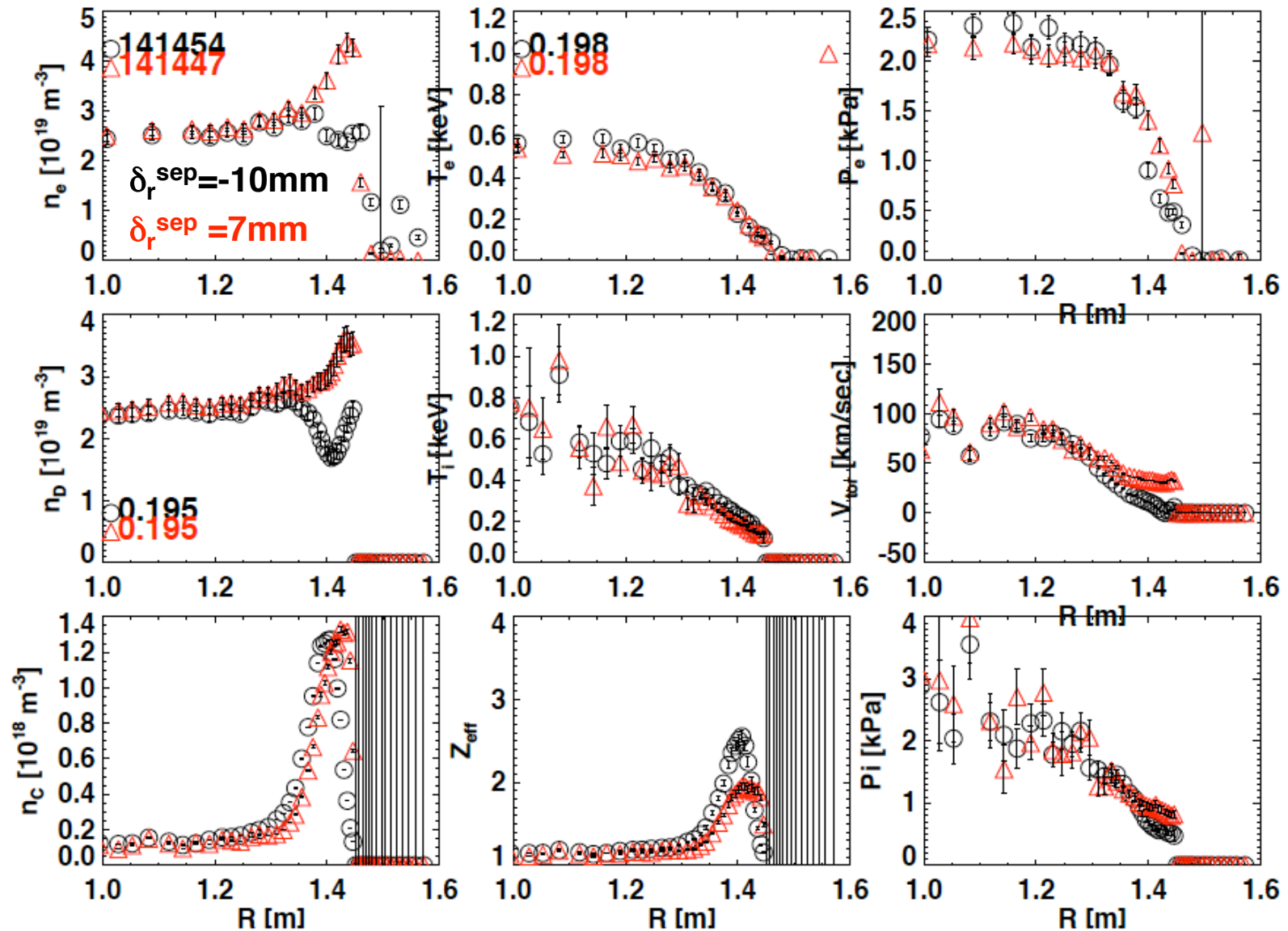
- Started from our “standard discharge” shape
- $I_p=0.9$  MA,  $B_t=0.45$  T,  $\kappa=2.2$ ,  $\delta_L=0.8$ ,  $q_{95}=8$ ,  $P_{\text{NBI}}=4$  MW
- $\delta_r^{\text{sep}}$  varied in flat-top:
  - 0, -2.5, -5, -7.5, -10, -13, -15, -20mm, all in H-mode
    - ELMs smallest at  $\delta_r^{\text{sep}}=0$  : Type II or small Type I; but  $W_{\text{MHD}}$  lowest!?
  - Ramp from 0-> +10mm: L-mode, but got  $\beta_N$  up to  $\sim 4$  before discharge terminated
    - Suspect ideal MHD limit, but usually observed at lower  $\beta_N$  in L-mode; maybe some profile broadening due to I-mode like profiles
- Will perform +  $\delta_r^{\text{sep}}$  variation next week, i.e. I-mode search, as part of DoE Joint Research Milestone in FY11

# Comparable performance and ELMs in all discharges except when $\delta_r^{\text{sep}} \geq 0$



- “standard” shape
- $P_{\text{NBI}}=4$  MW
- Comparable  $W_{\text{MHD}}$
- $\delta_r^{\text{sep}}$  varied
- Small ELMs!
- Bigger ELMs
- Big ELMs
- EP H transition during  $\delta_r^{\text{sep}}$  ramp

# Edge density profiles different when $dr_{sep} > 0$



# “Enhanced Pedestal” H-mode observed with $\delta r_{sep} > 0$ ; Coincidence? Some I-mode like properties

