

# Heat Flux and Pulse Length in NSTX

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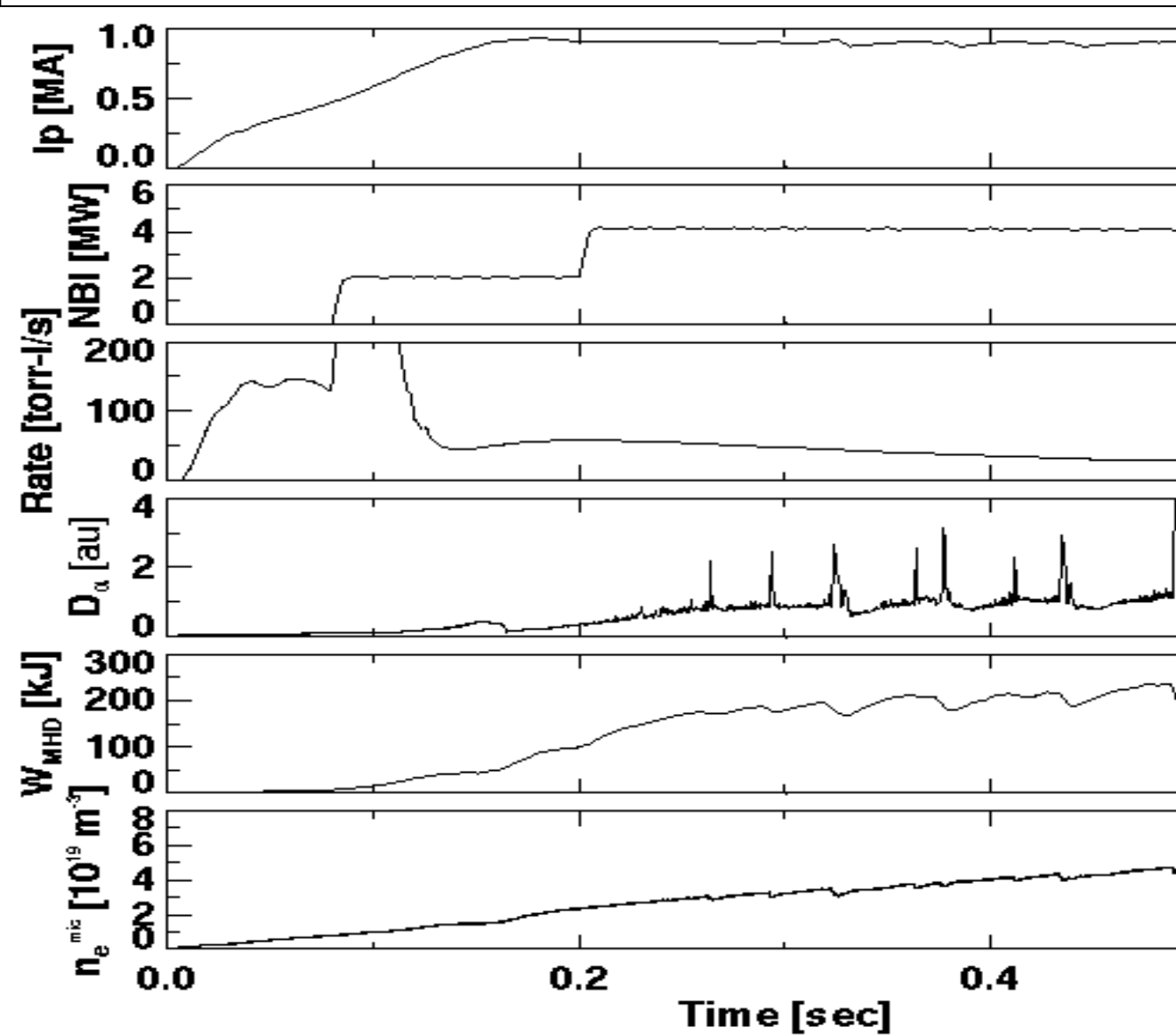
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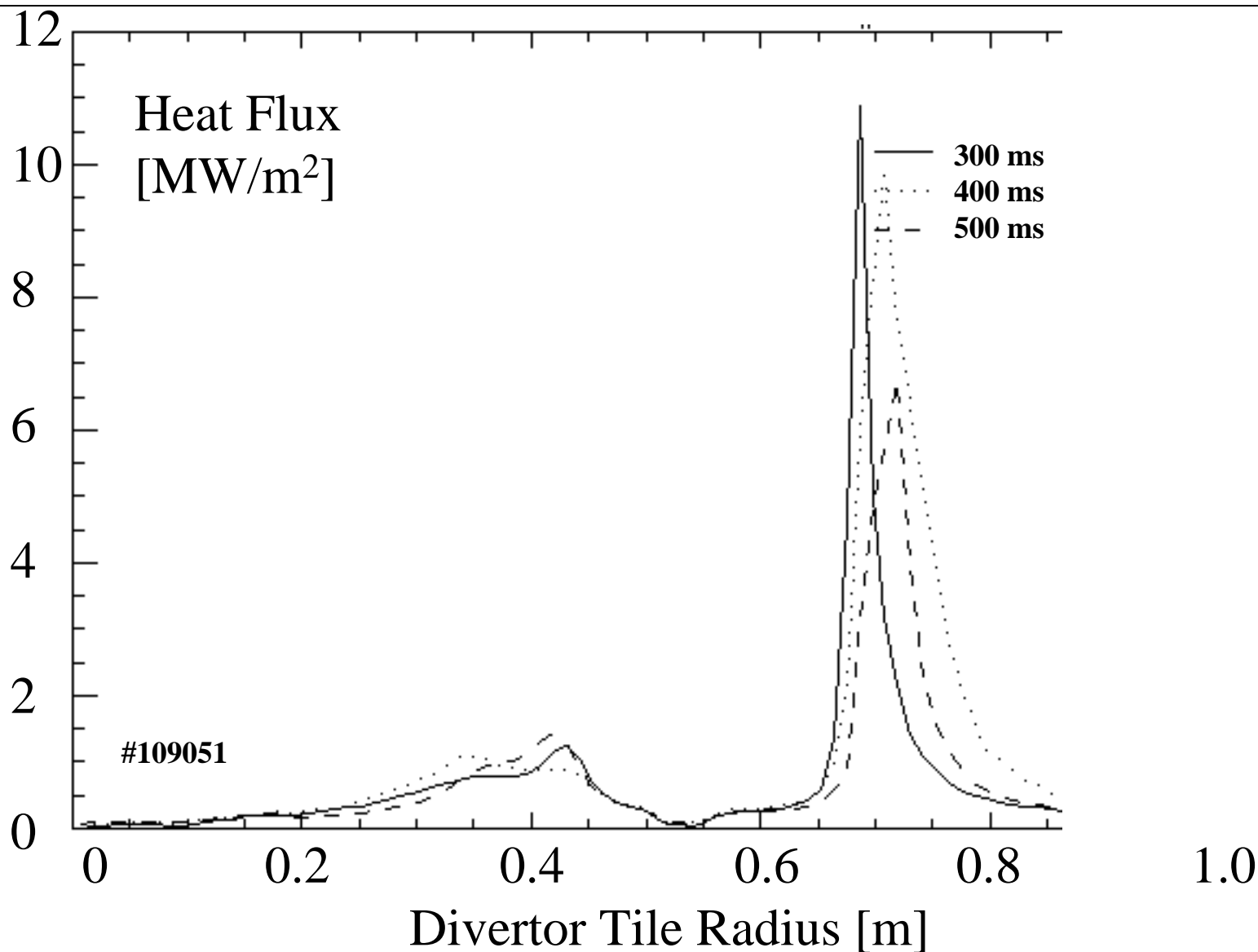
## Tile Temperature Rise in NSTX could limit pulse length at present peak heat flux values

- Peak tile temp exceeds 300 deg. C after  $\sim 0.2$ sec. of NBI in ELM-free H-mode
  - peak heat flux  $\sim 10$  MW/m<sup>2</sup>, width  $\leq 2$  cm during peak
  - $P_{\text{heat}} \sim 4.5$  MW,  $P_{\text{div heat flux}} \sim 2-3$  MW
  - natural strike point sweeping reduces concentration
  - natural density rise reduces peak heat flux, increases width
  - extrapolated to longer pulse [by sqrt(time) scaling] yields a limit of  $\sim$  sec on pulse length before exceeding 1200 °C
- Need faster, more reliable research grade cameras
  - present camera has baseline drift, intermittent failures
  - present camera failed twice in NSTX environment
- Quantum well camera (38 kHz) allows fast event investigation

# Discharge Characteristics of #109051



## Peak Heat Flux ~ 10 MW/m<sup>2</sup> in NSTX



## Tile Temperature Approaches 350 deg. C

