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A Few Observations on Global Particle Balance During XP-1000

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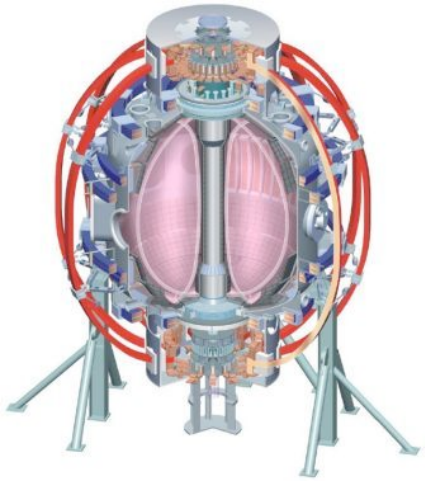
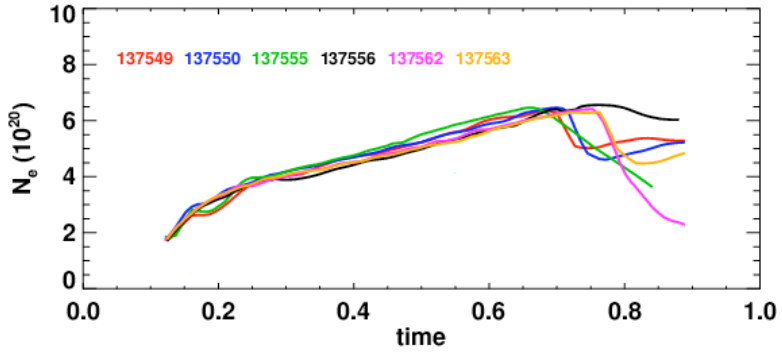
NSTX Monday Physics Meeting
April 12th, 2010

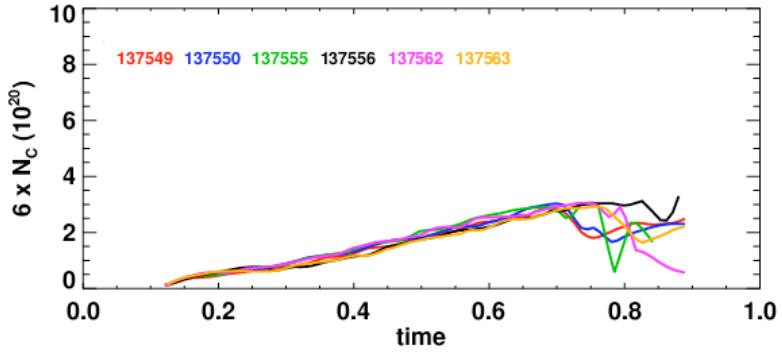


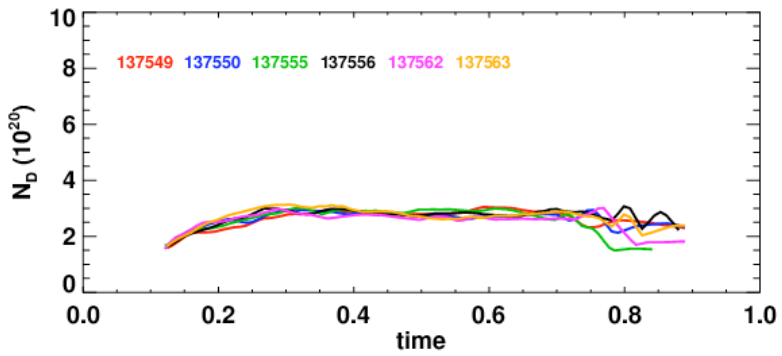
Comments

- First look at a few scans.
  - Doesn't even qualify as "analysis".
- Look at global profiles and particle content.
  - No divertor diagnostics in this presentation.
- Data shows no large changes in plasma performance when the LLD is "used".
  - Not a statement about LLD pumping.
  - Need to think about LLD surface chemistry, Deuterium out-gassing, Lithium accounting,…***and try again!***
- I have a spreadsheet with the power levels, LLD temperatures, OSP radii,…for the last three days of XP-1000. Am happy to share.

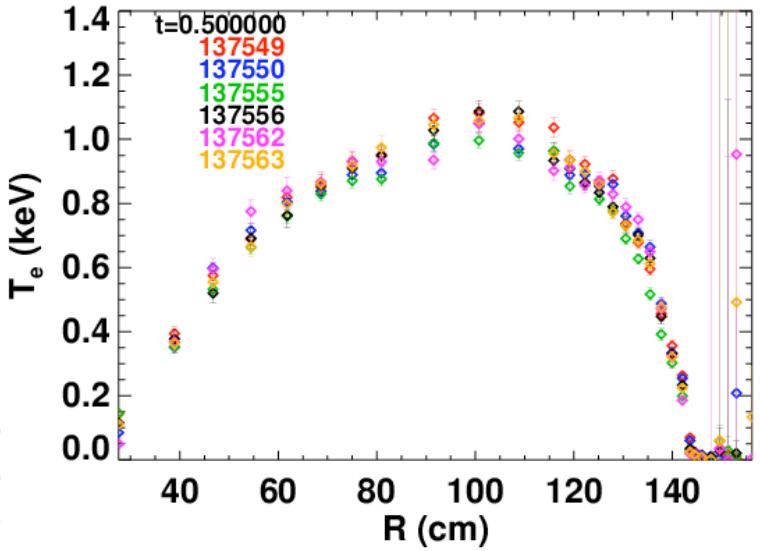
Increasing The LLD Temperature Was Inconclusive (R=63 cm) (ELM change makes downward T_{LLD} Scan Challenging)

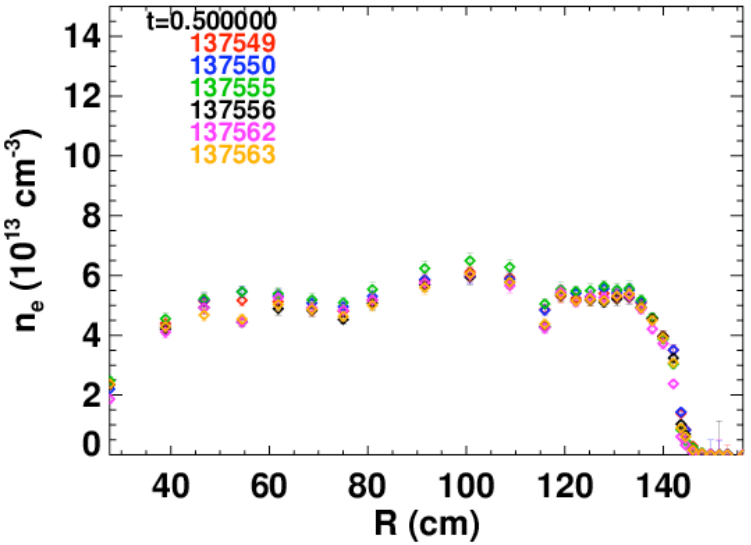




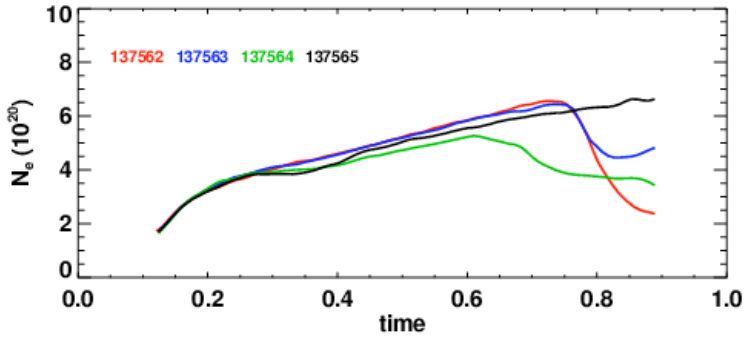


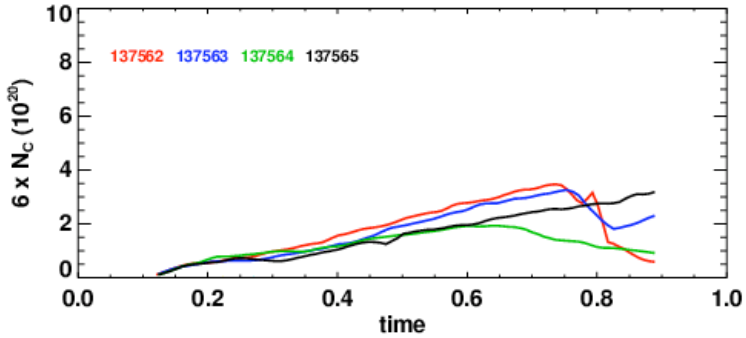
137549: T_{LLD}=250
137550: T_{LLD}=320
137555: T_{LLD}=273
137556: T_{LLD}=295
137562: T_{LLD}=315
137563: T_{LLD}=315



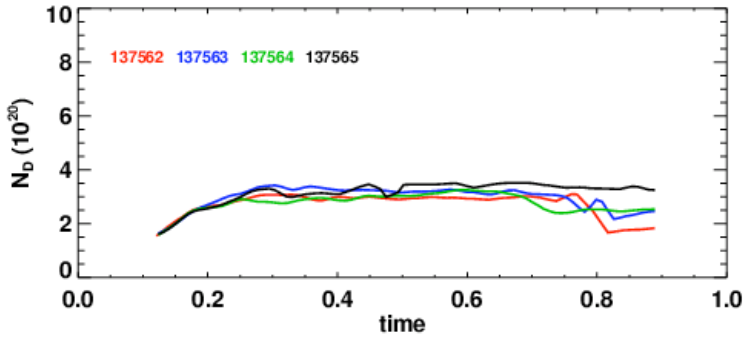


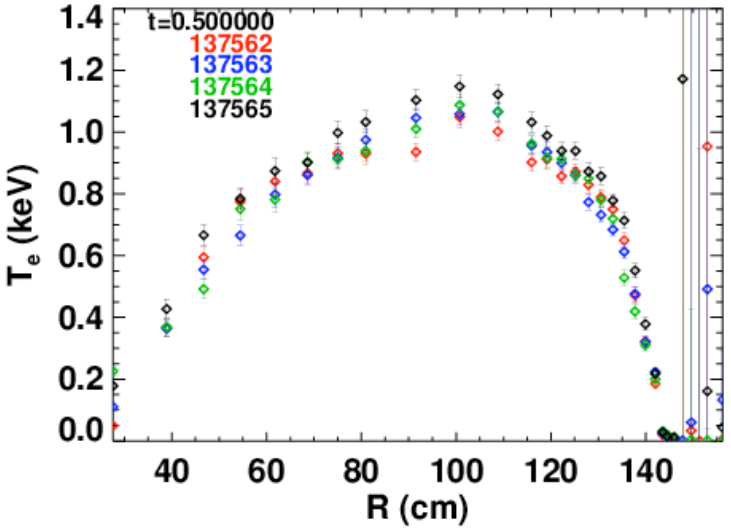
Shifting OSP Inward Lead To a Very Nice Shot (137564)

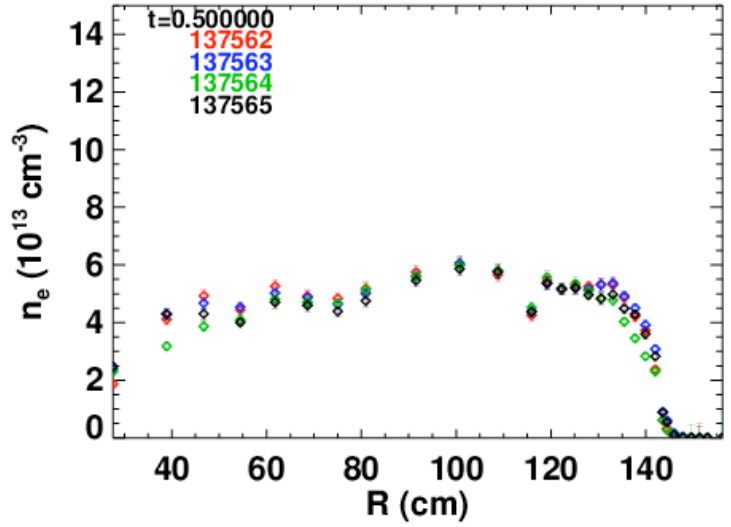




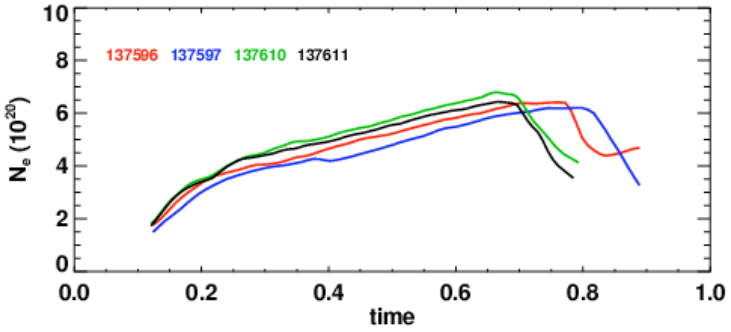
Out
Out
In
In

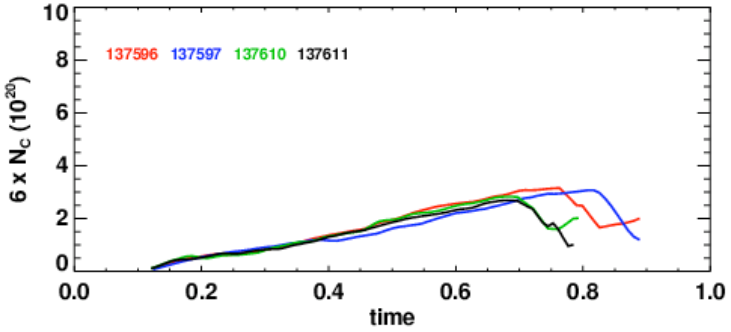


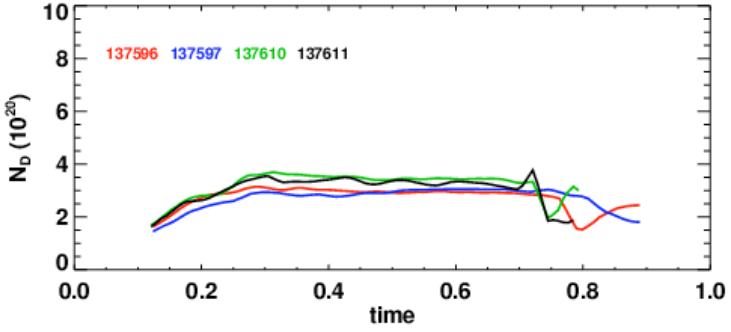




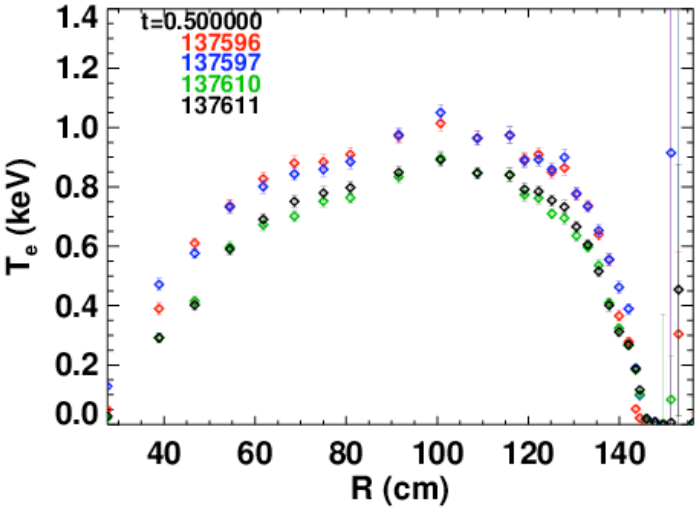
Moving S.P. Onto LLD Increased the *Deuterium* Density

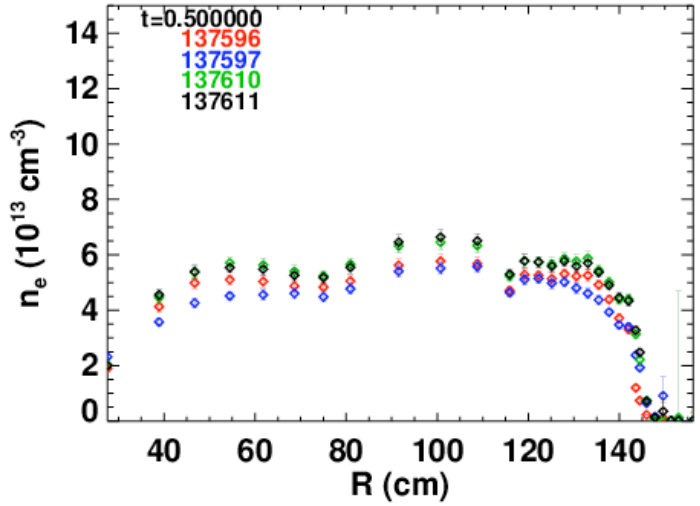




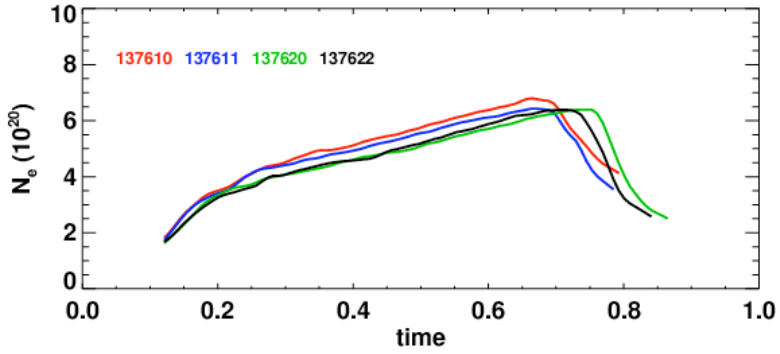


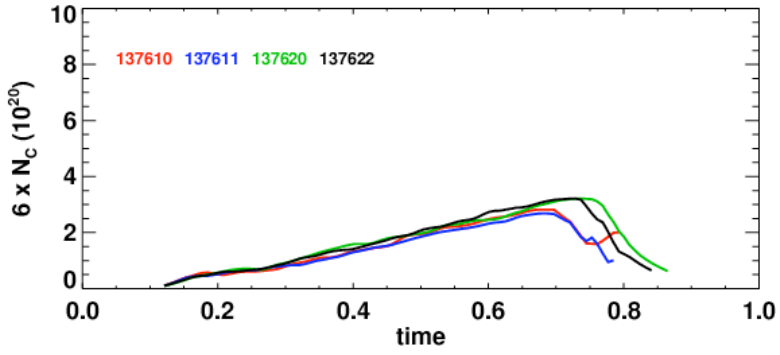
137596: R_{OSP}=0.62
137597: R_{OPS}=0.63
137610: R_{OSP}=0.67
137611: R_{OSP}=0.67

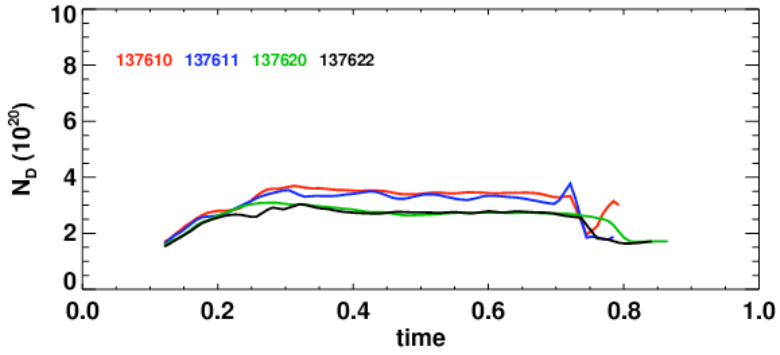




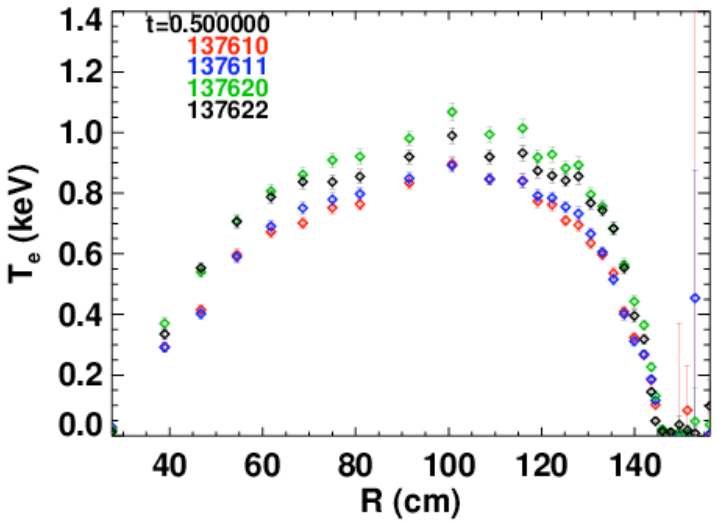
Then Decreasing T_{LLD} at large R_{OSP} Reduced the Density (but $T_{L->H}$ was also a bit delayed…)

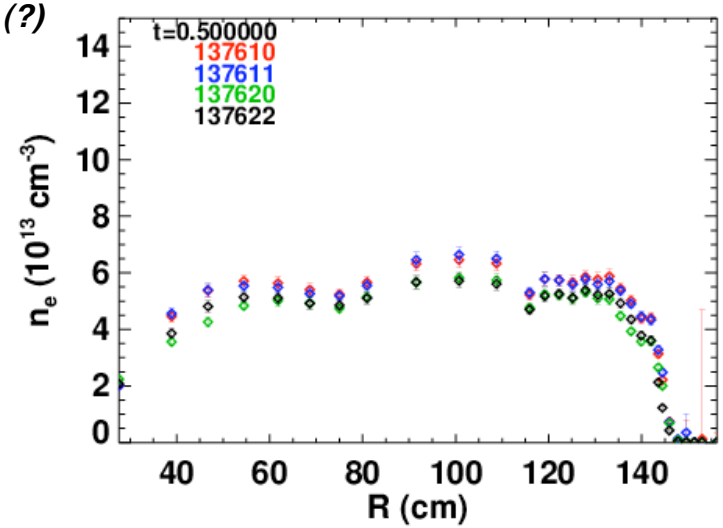




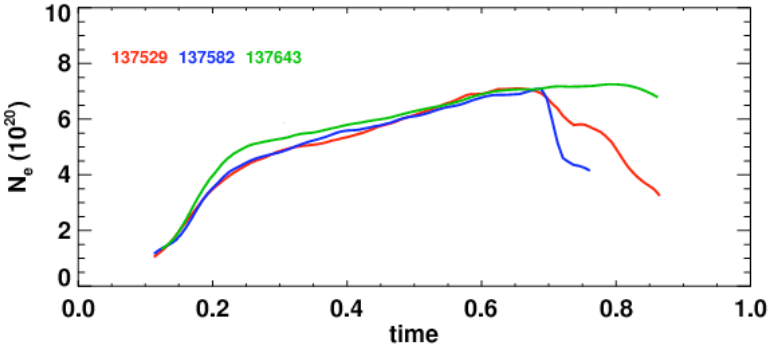


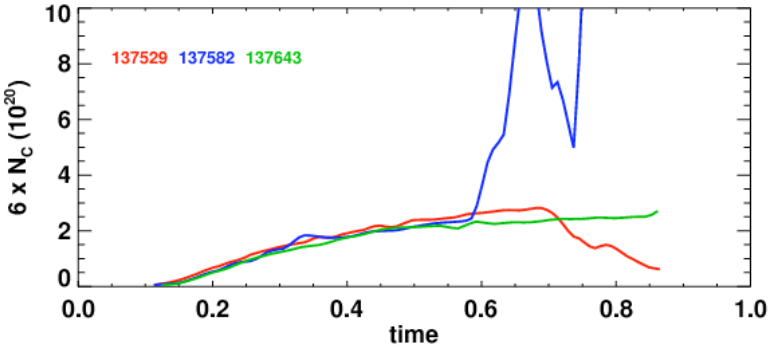
137610: T_{LLD}=320
137611: T_{LLD}=320
137620: T_{LLD}=250
137622: T_{LLD}=200 (?)

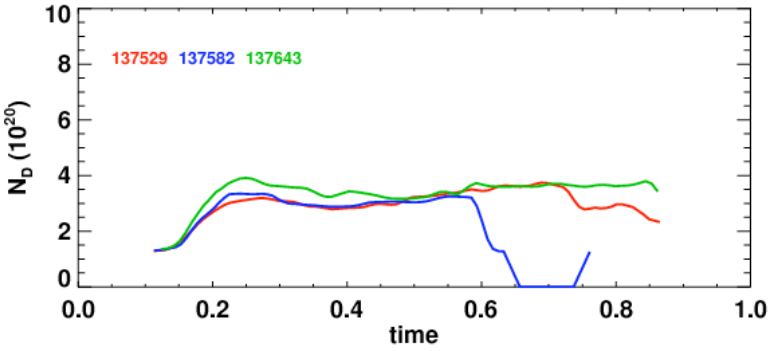




Behavior of High-Delta Fiducials With Various LLD Temps
Best of the Year (137643) at 220 C







137529: T_{LLD}=250
137582: T_{LLD}=320
137643: T_{LLD}=220