Impact of Resonant Magnetic Perturbations (RMPs) on Turbulence Drives, Damping, and Transport

by
R.A.Moyer
University of California, San Diego

In collaboration with
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E.J. Doyle *(UCLA)*, T.E. Evans *(GA)*,
K. Gentle *(UT-Austin)*, G.R. McKee *(UW-Madison)*,
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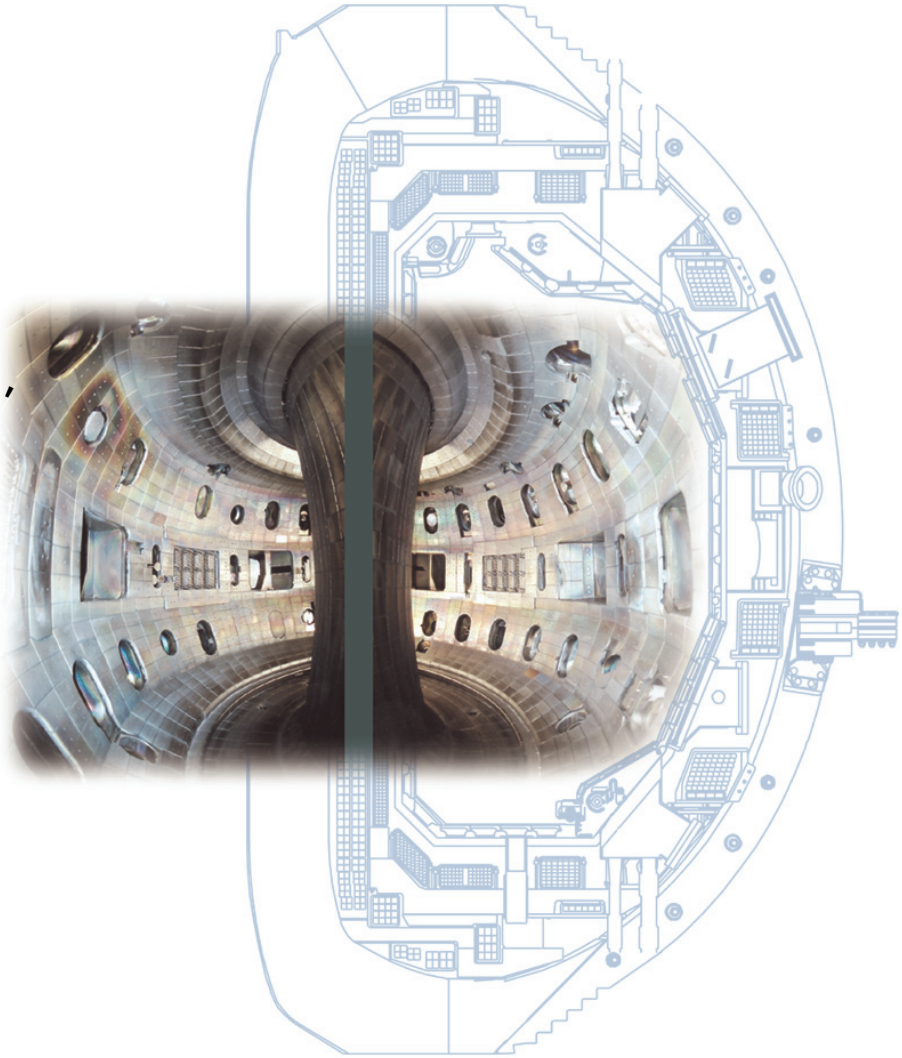

Presented at the
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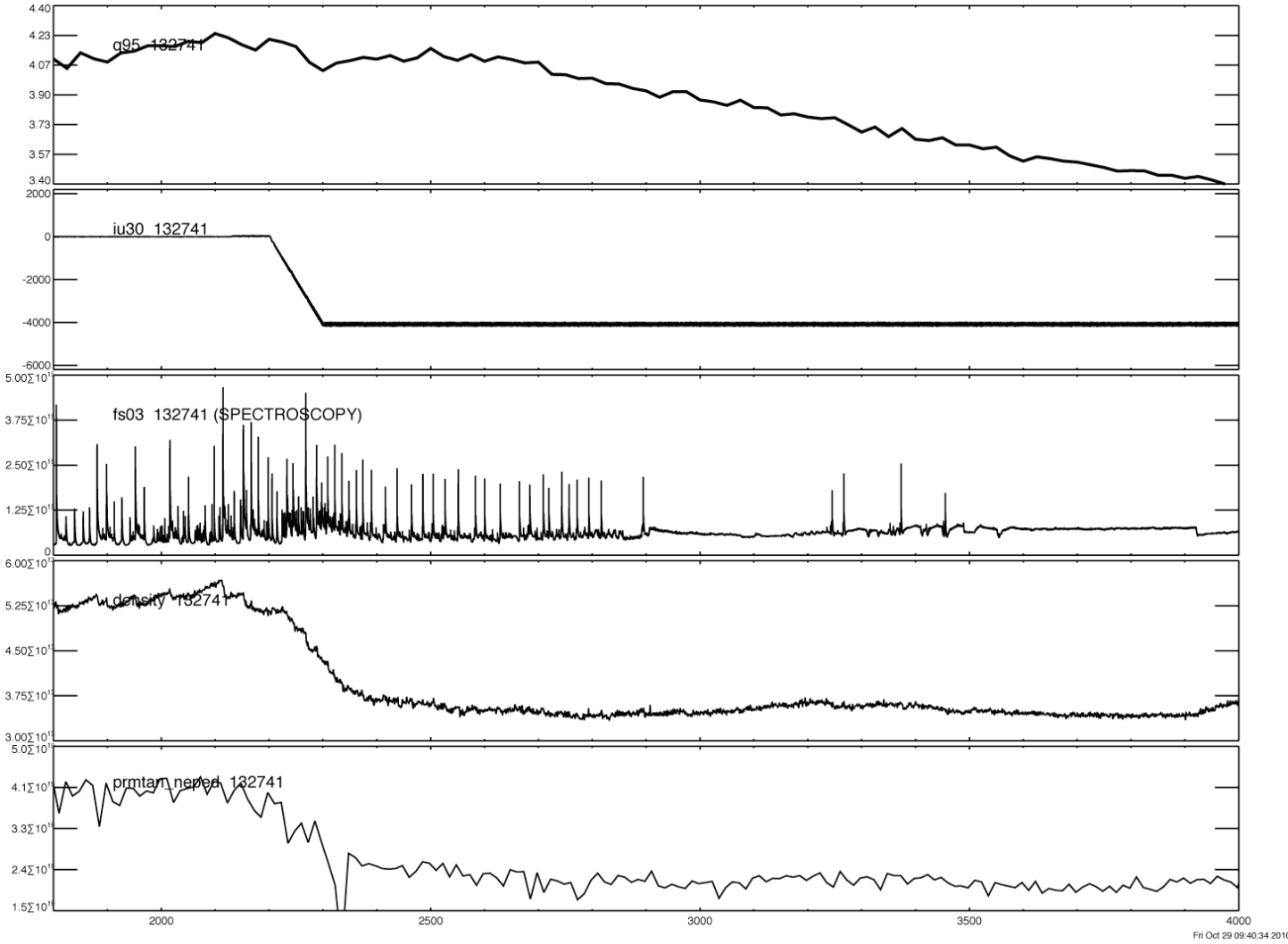

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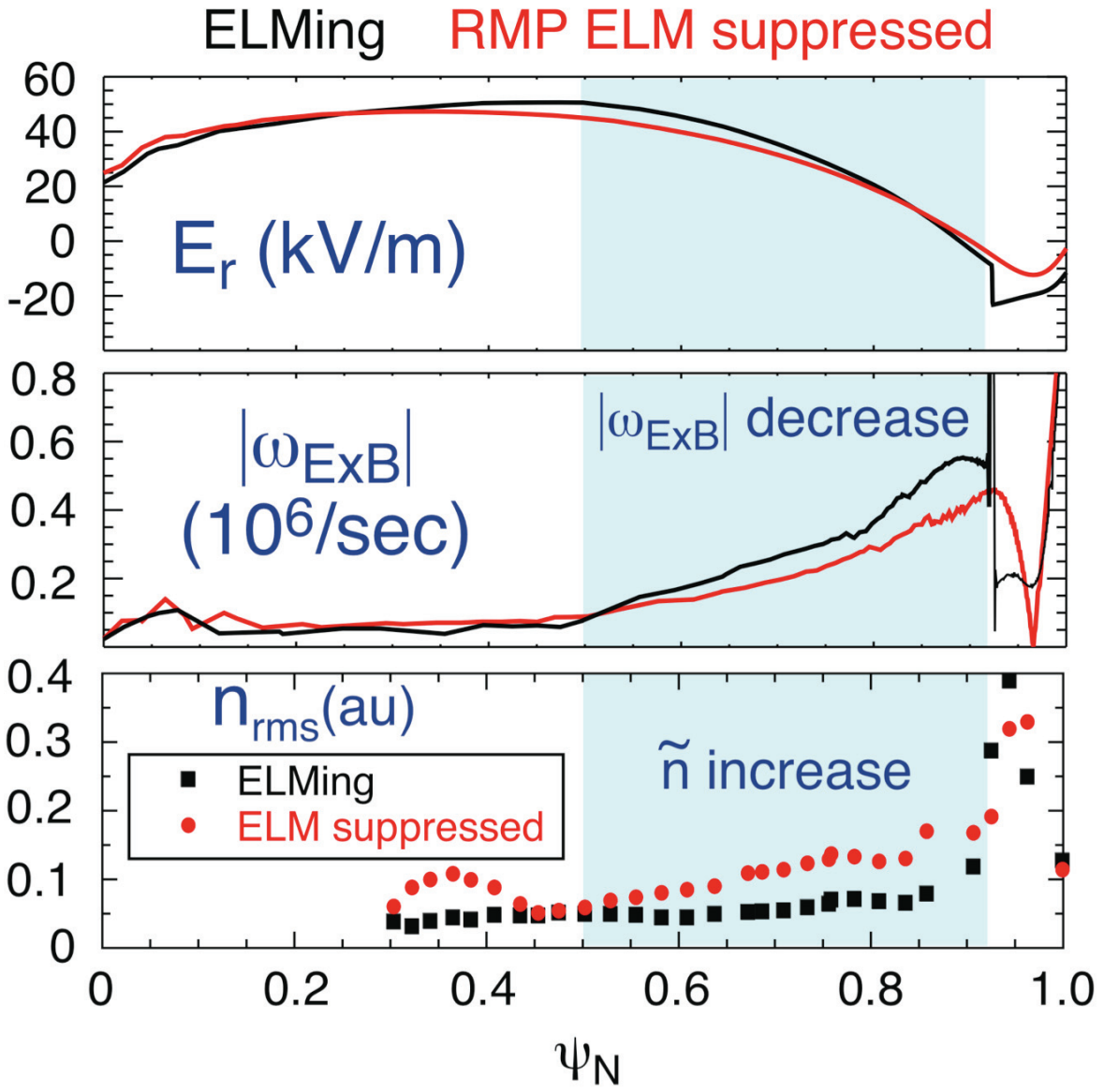

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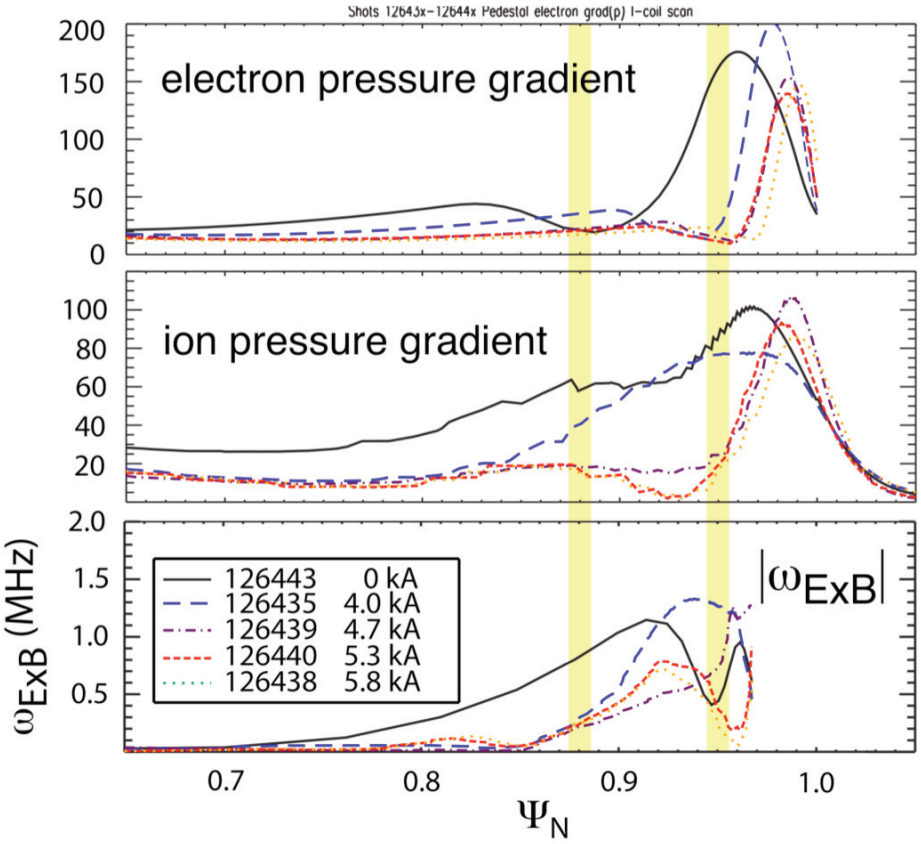

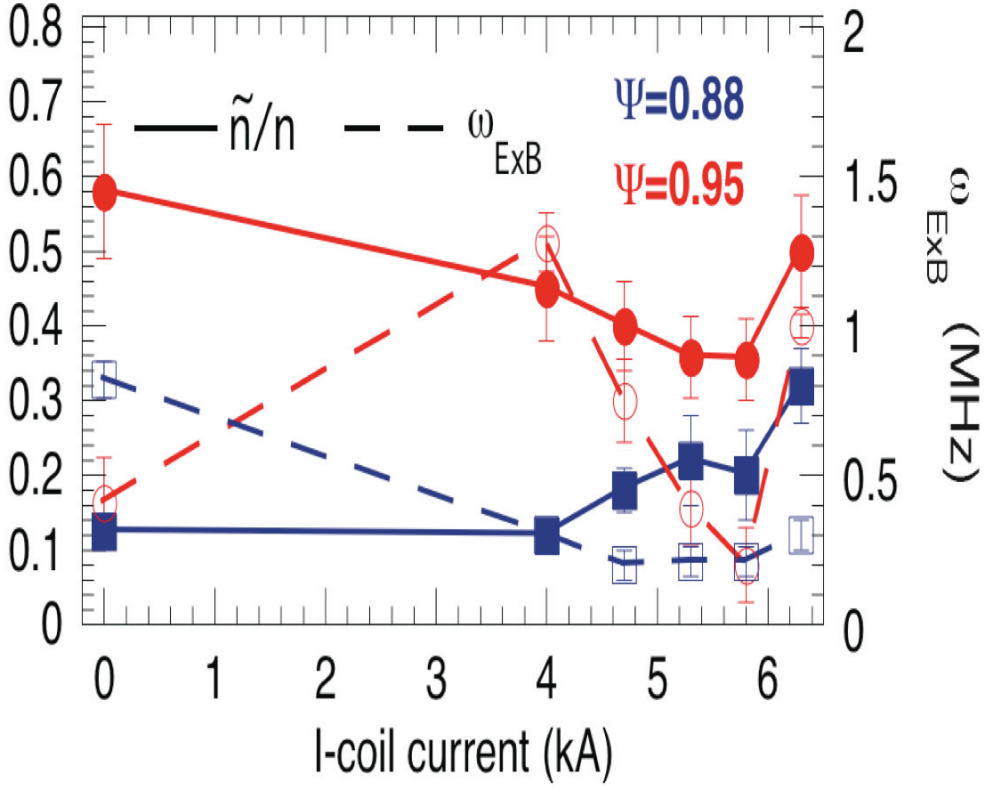

S. Mordijck et al. PSI 2010

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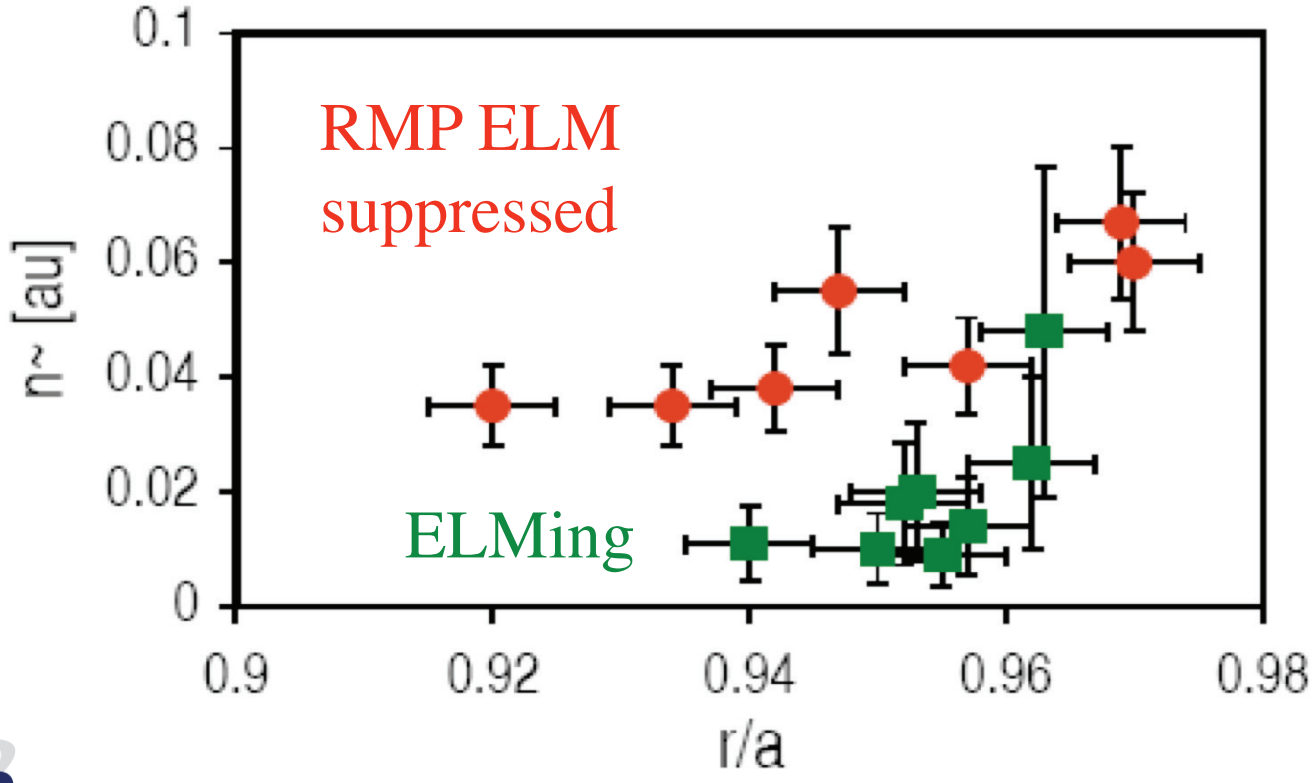

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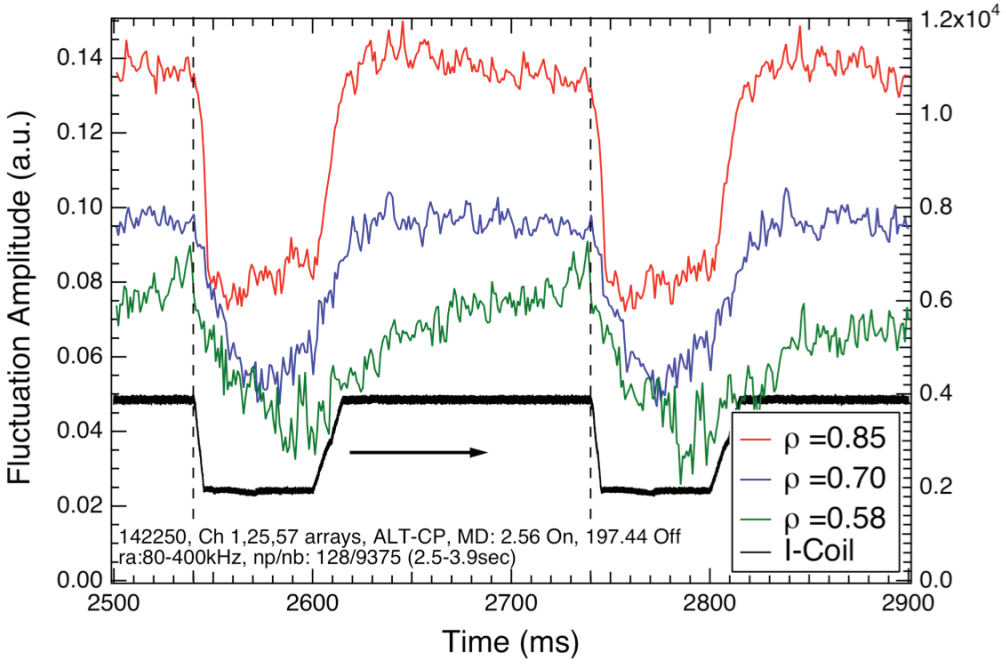

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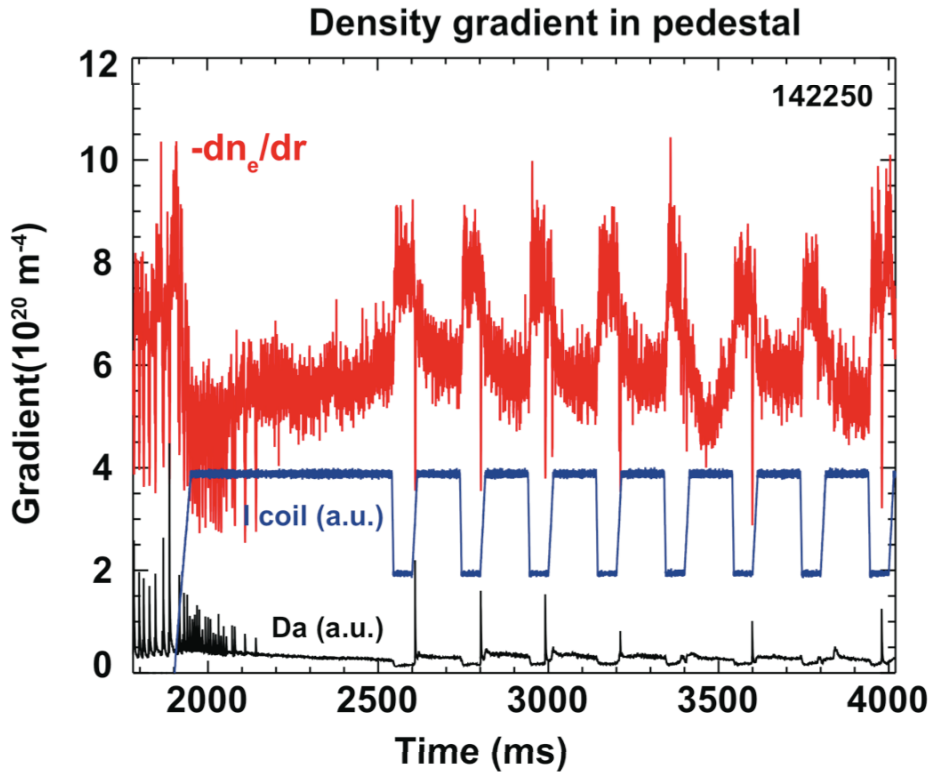

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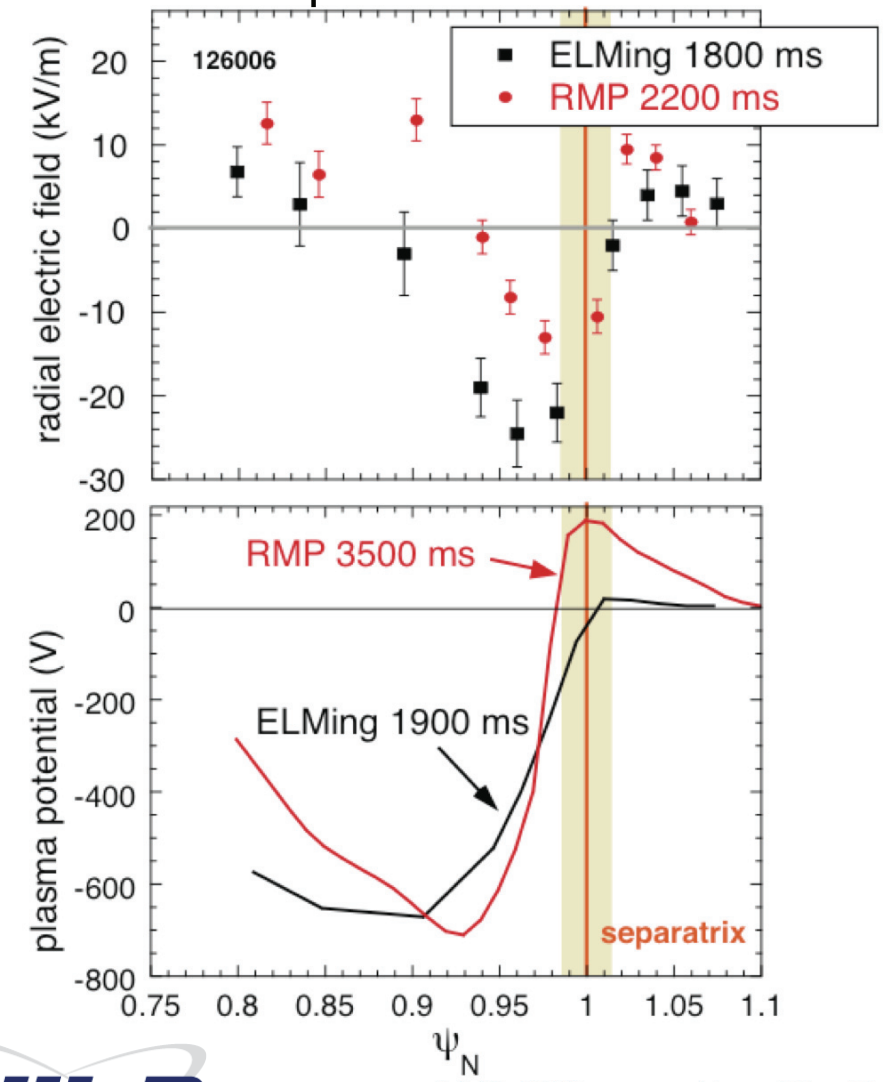

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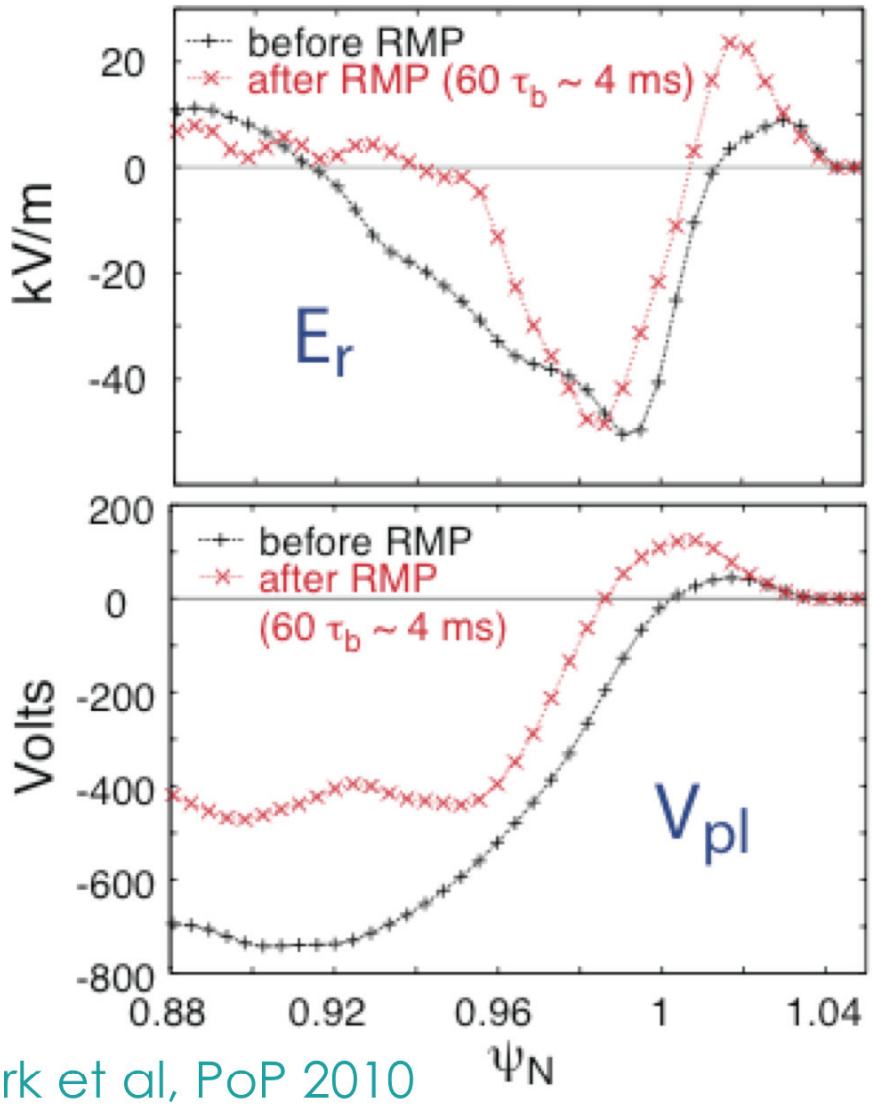

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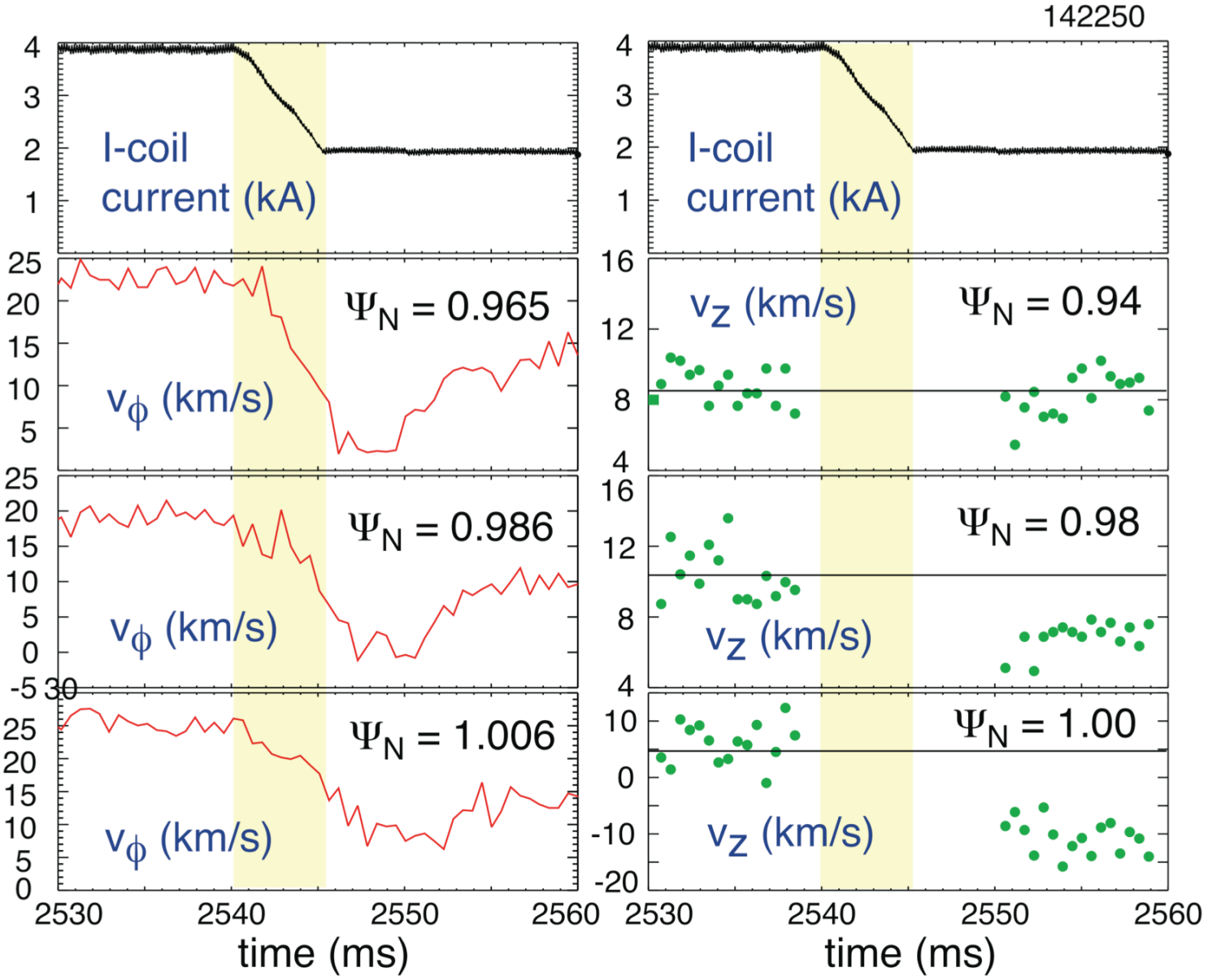

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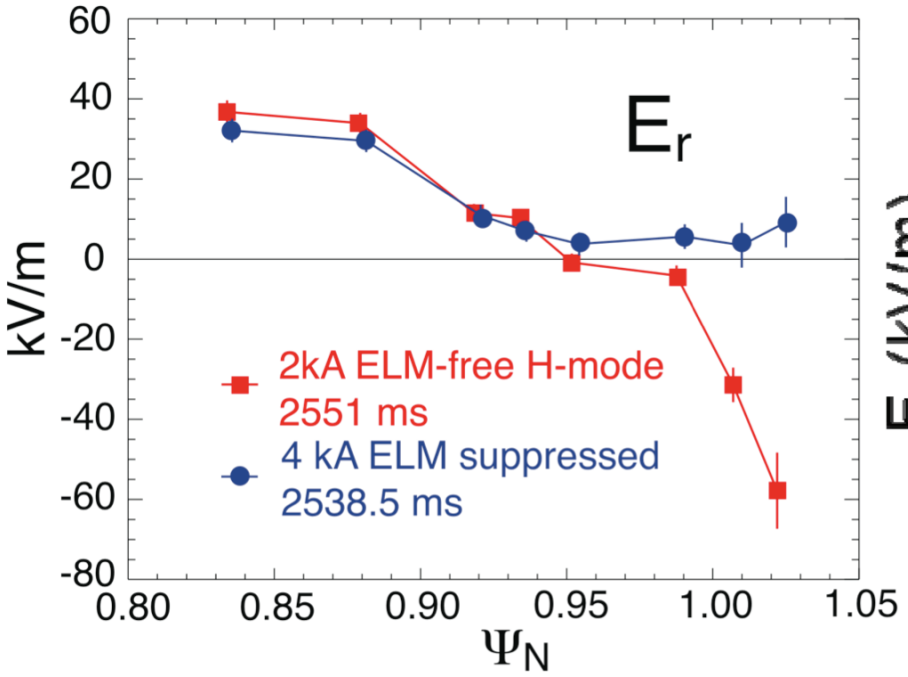

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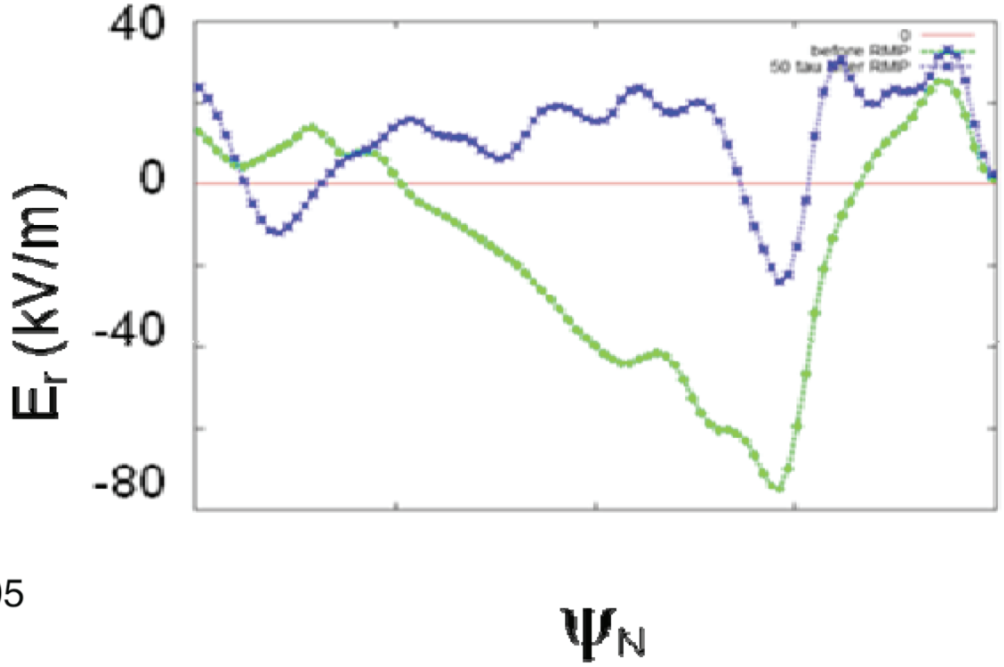

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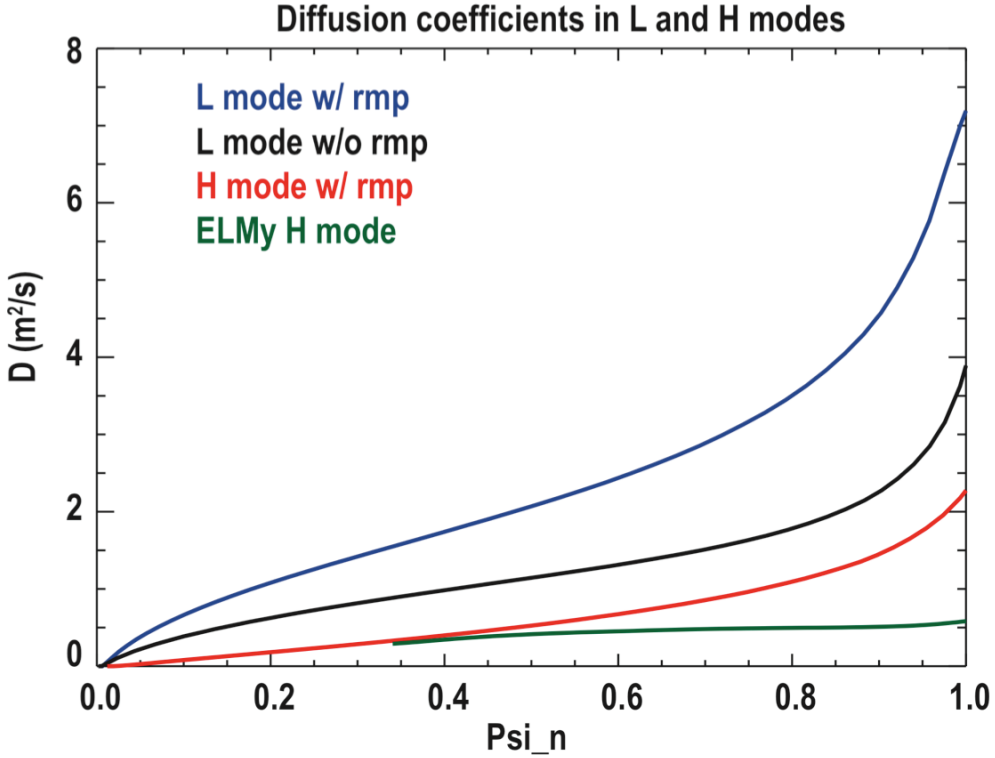

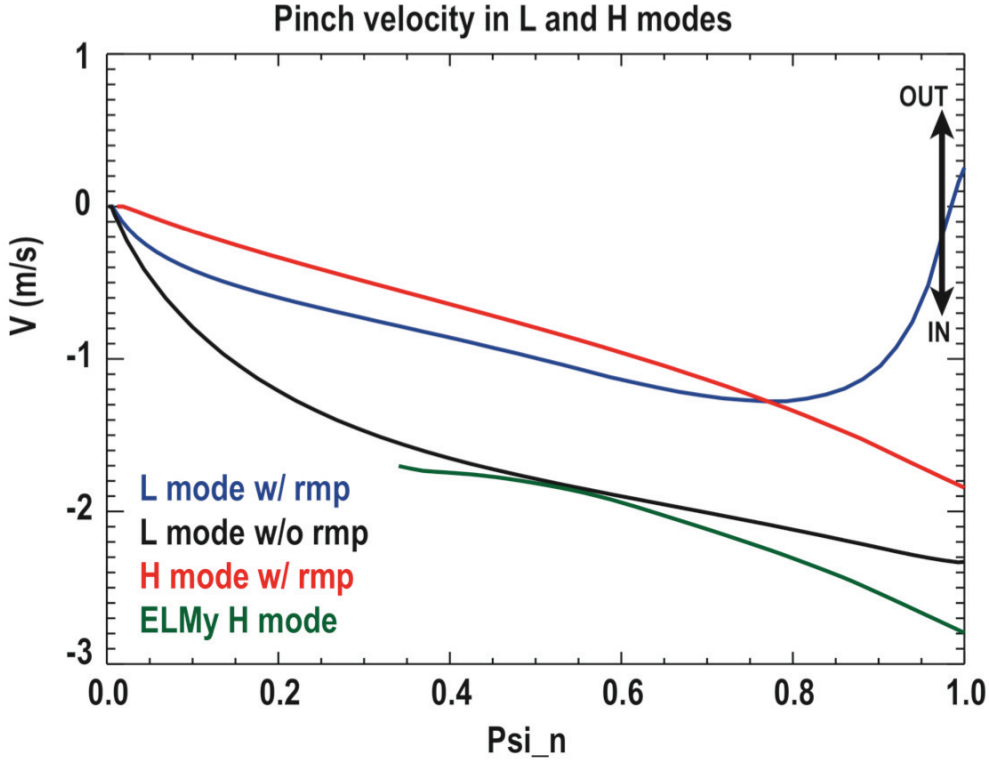

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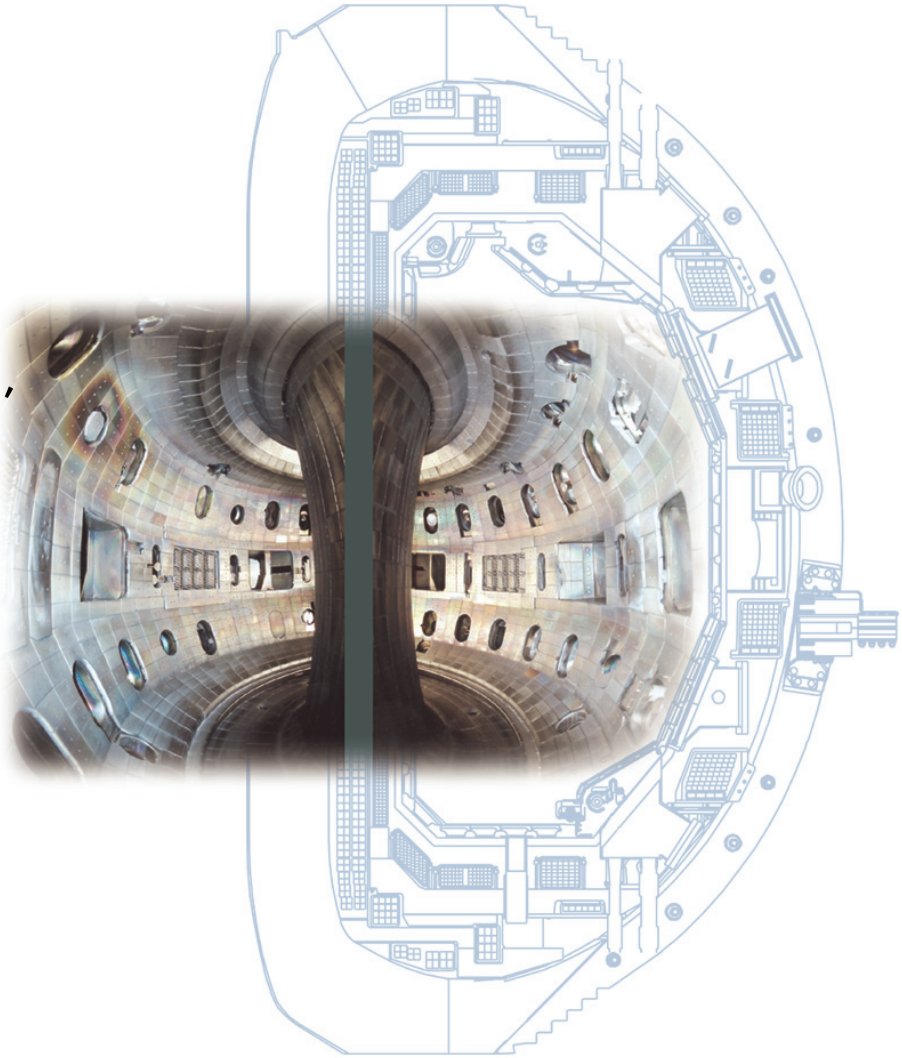

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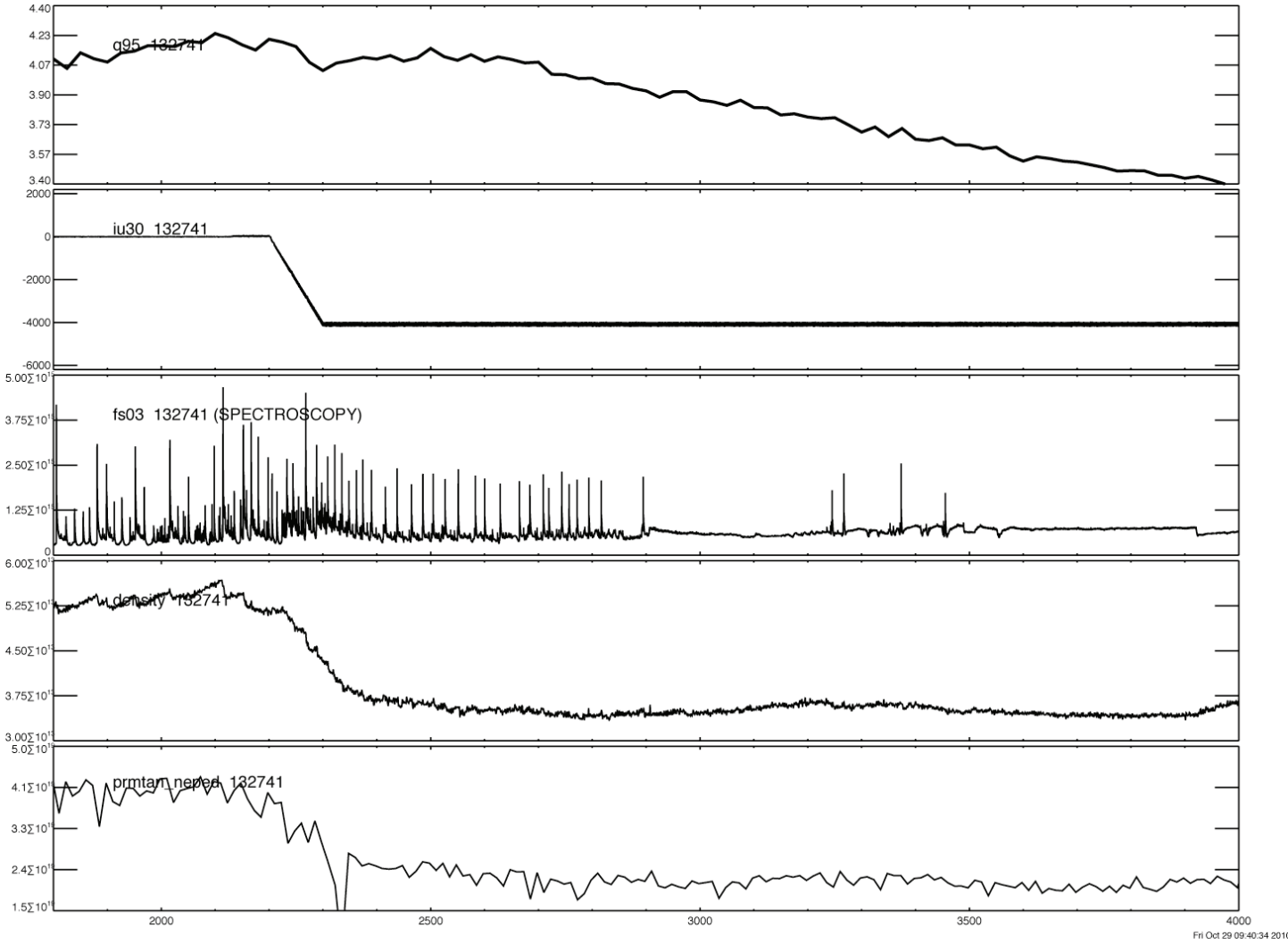

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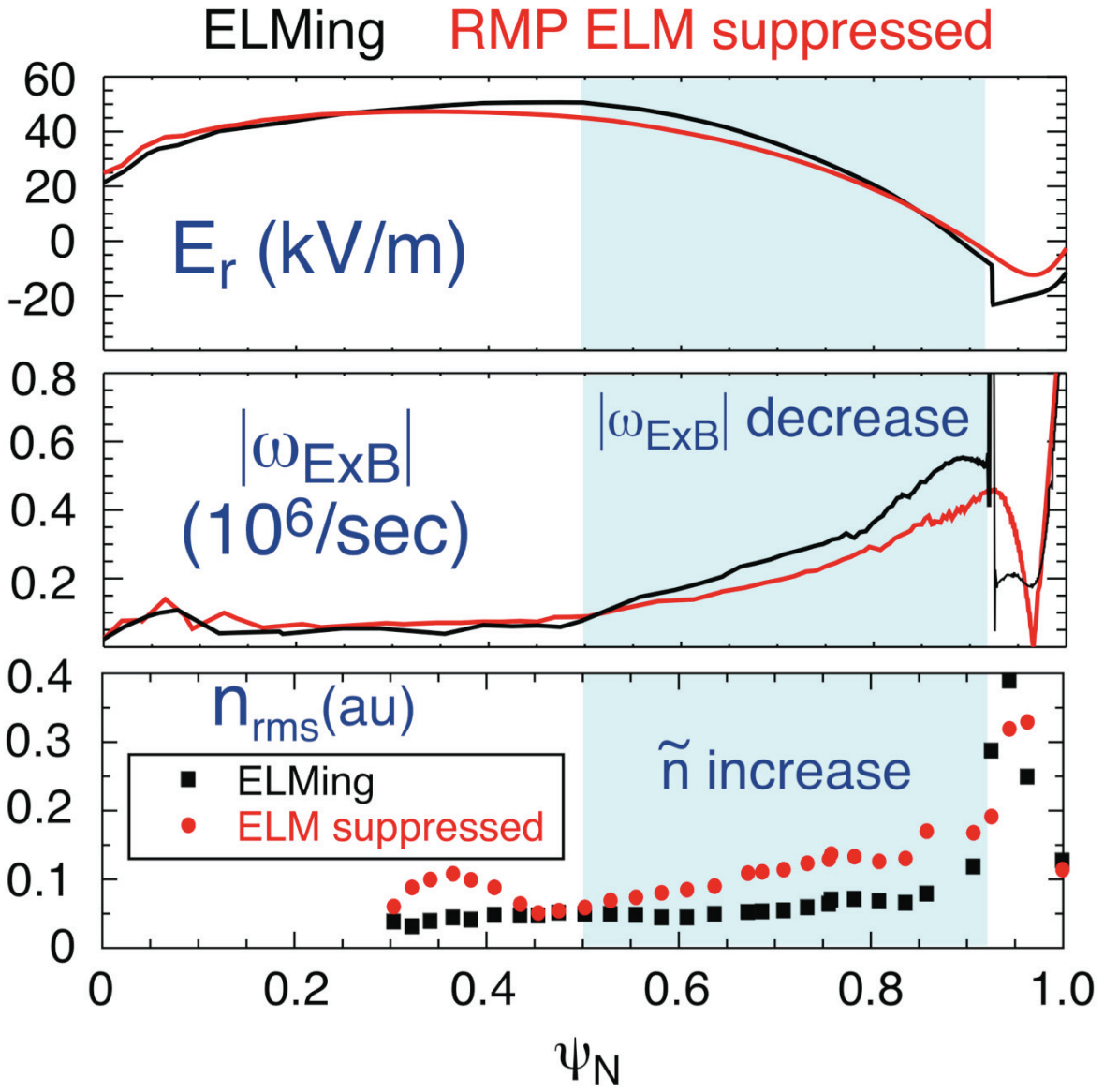

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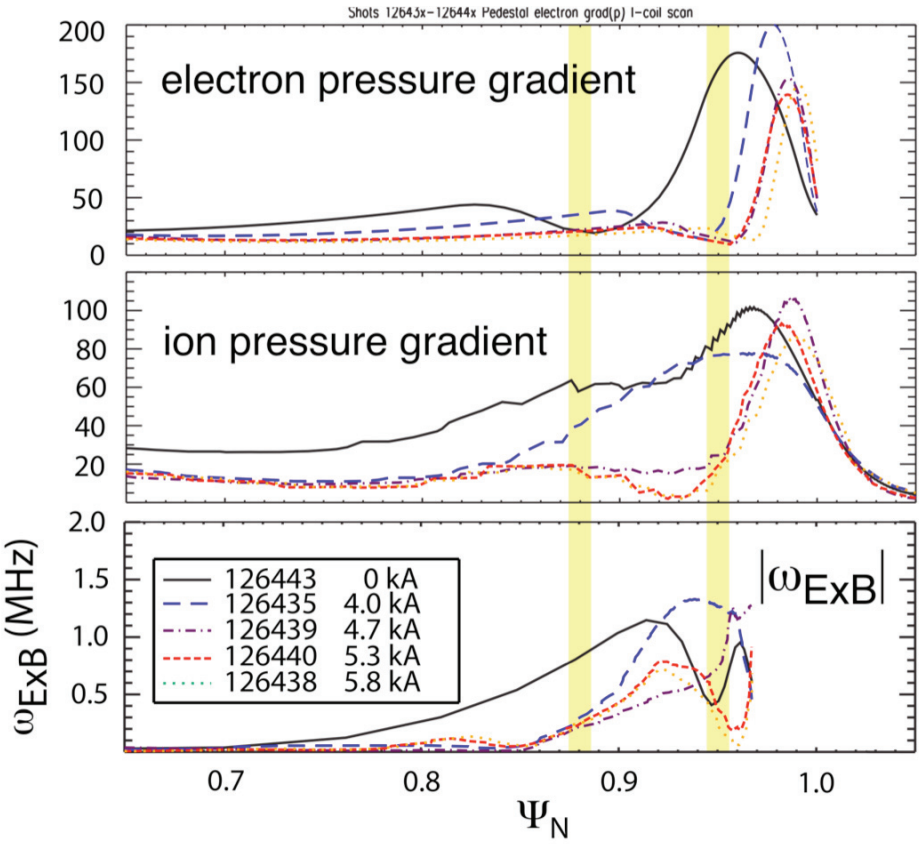

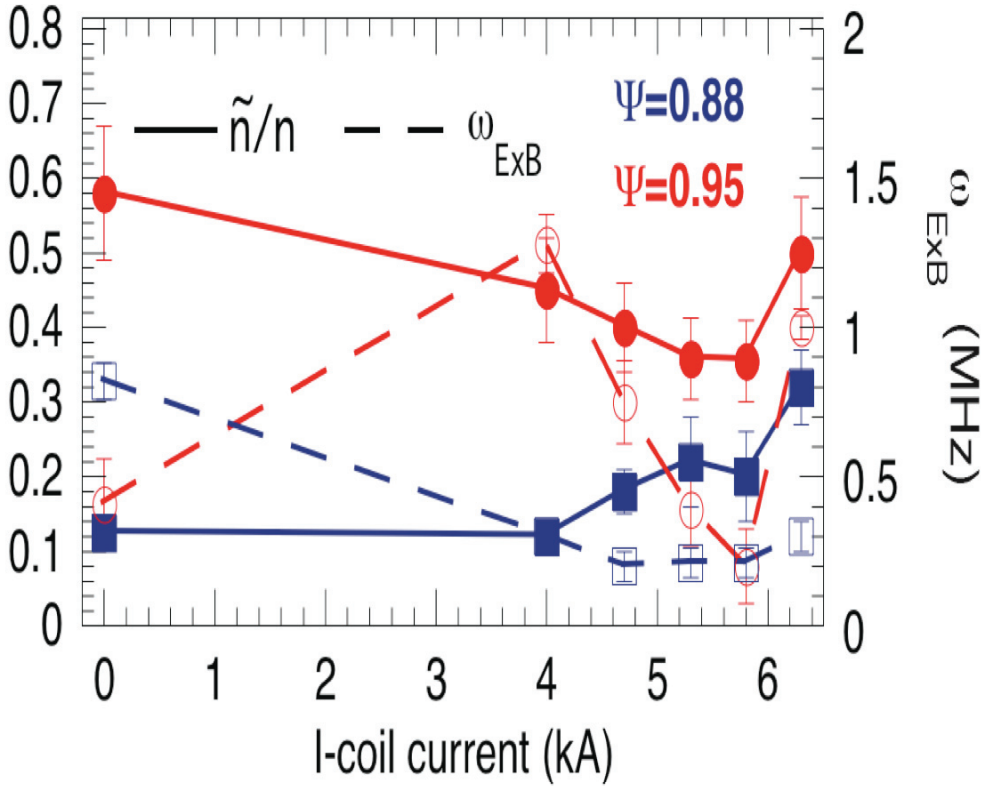

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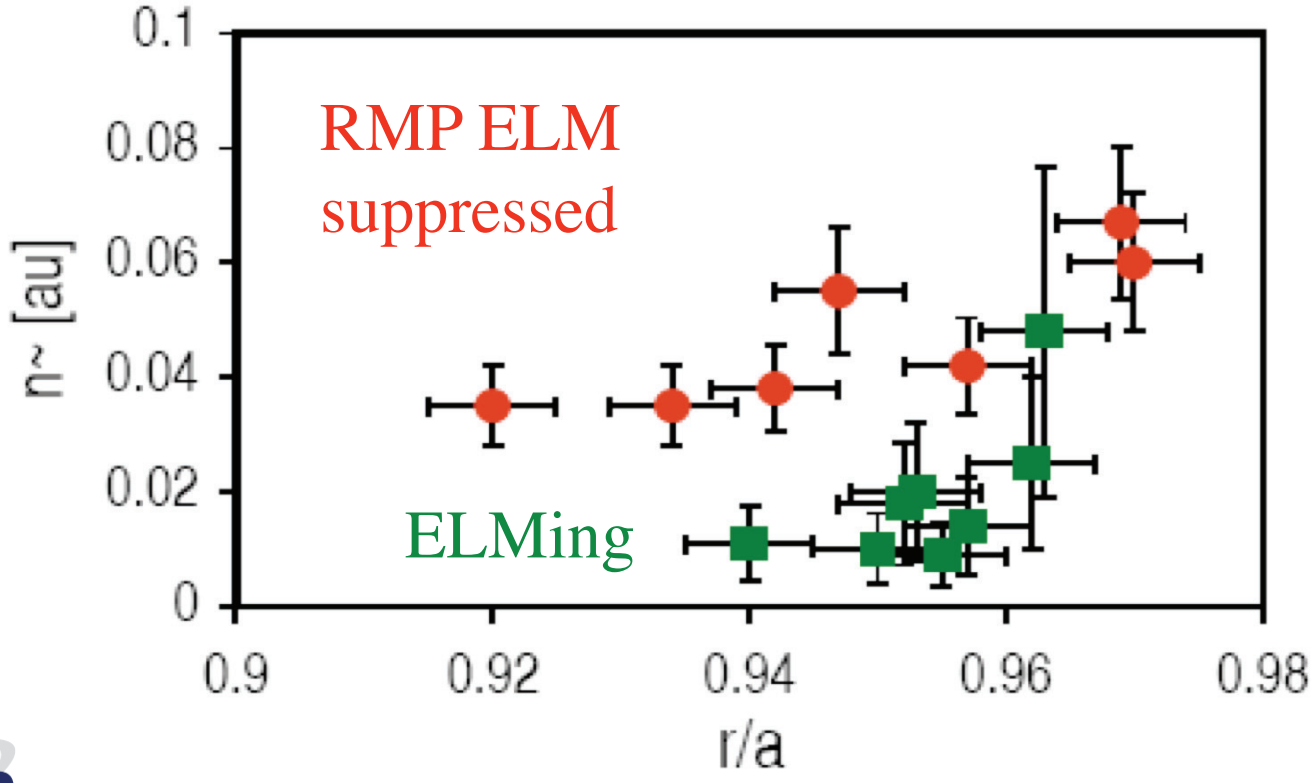

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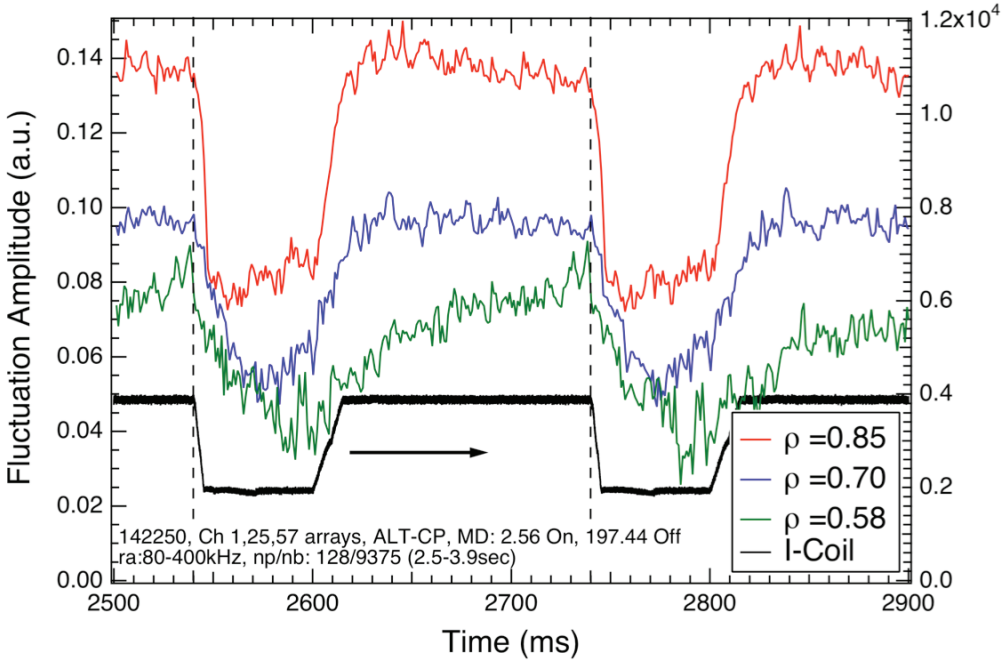

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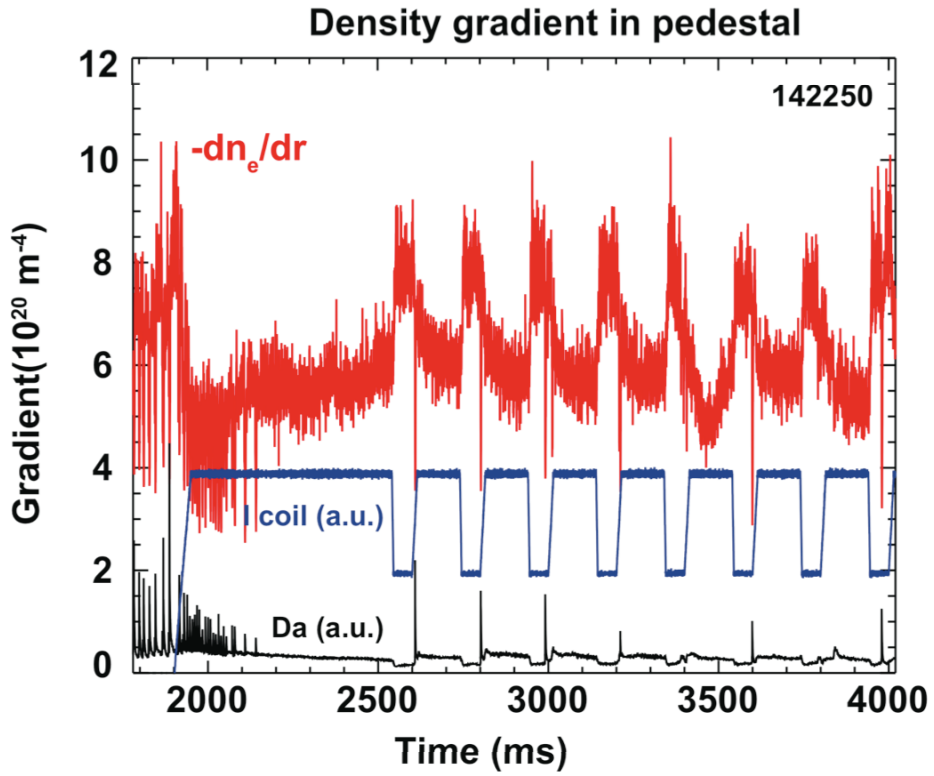

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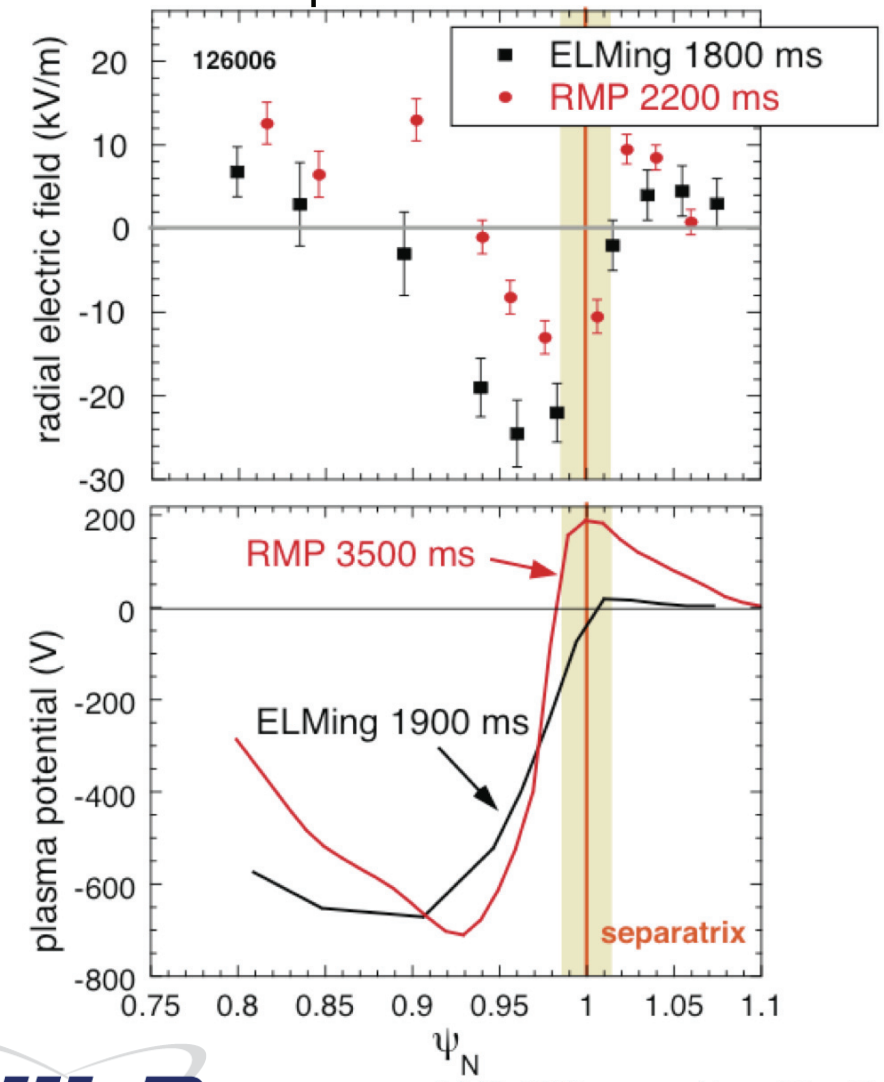

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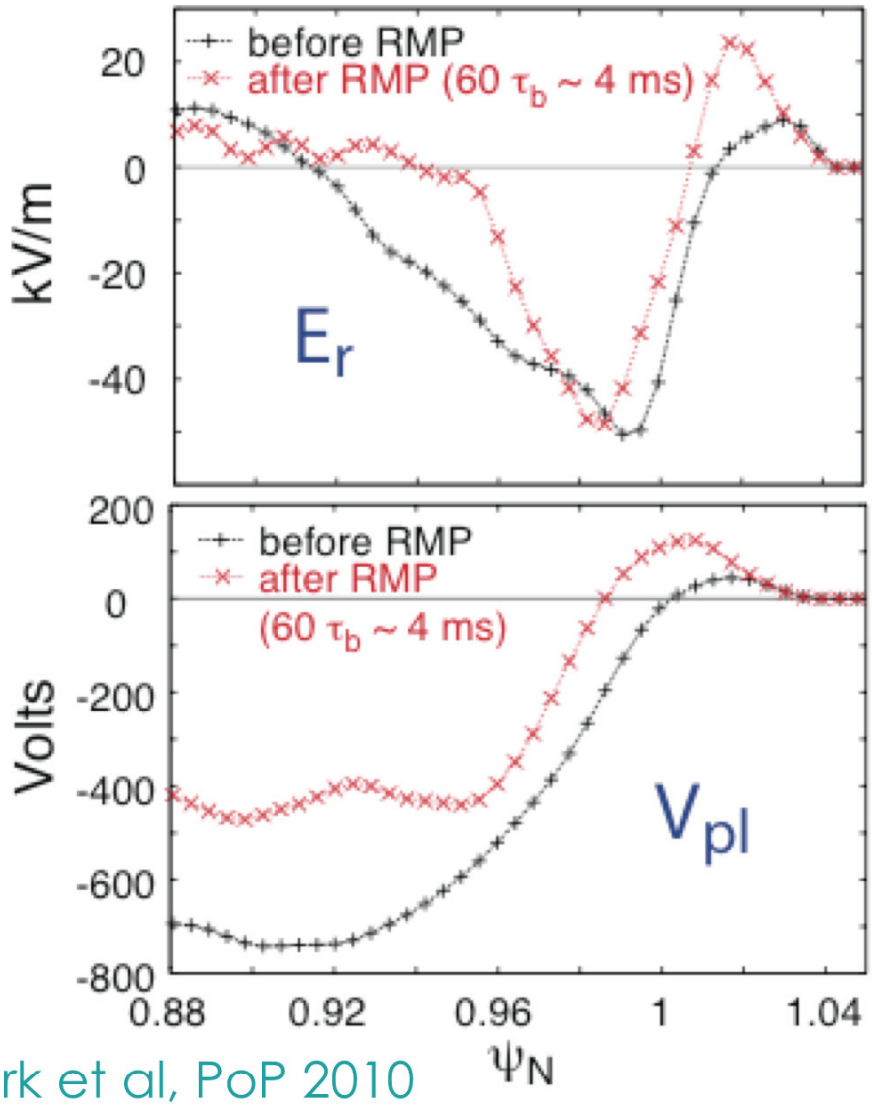

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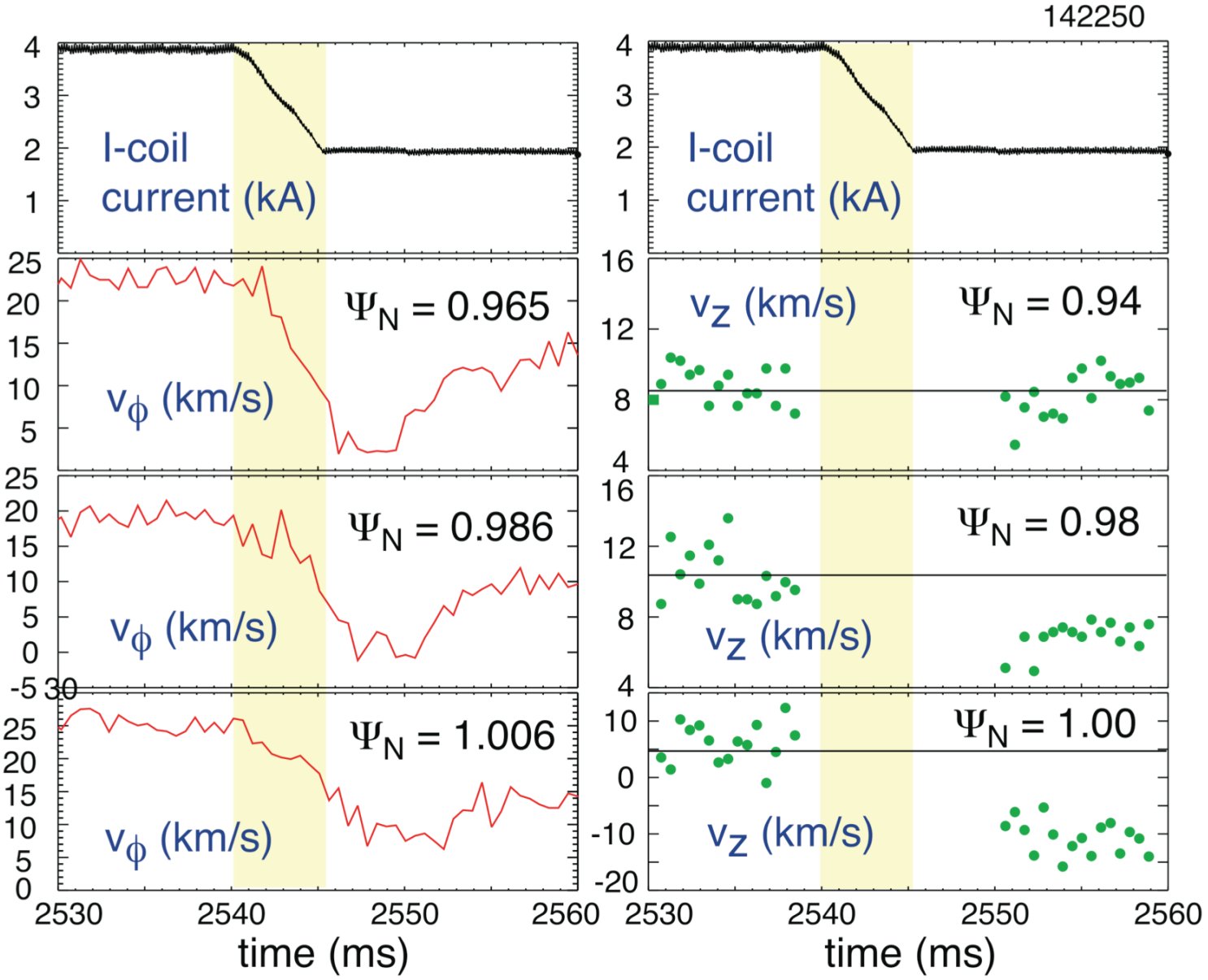

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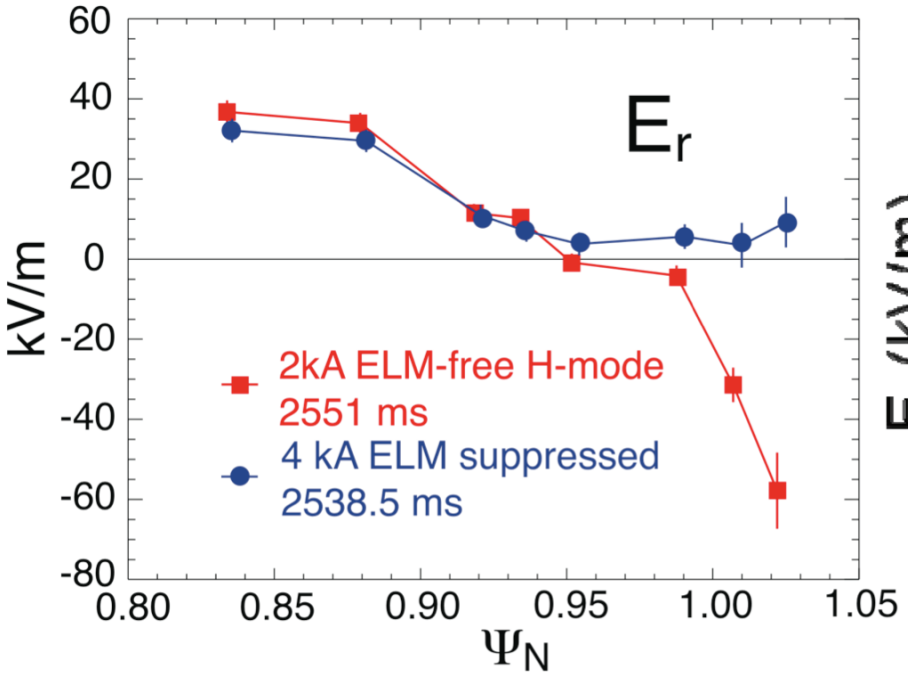

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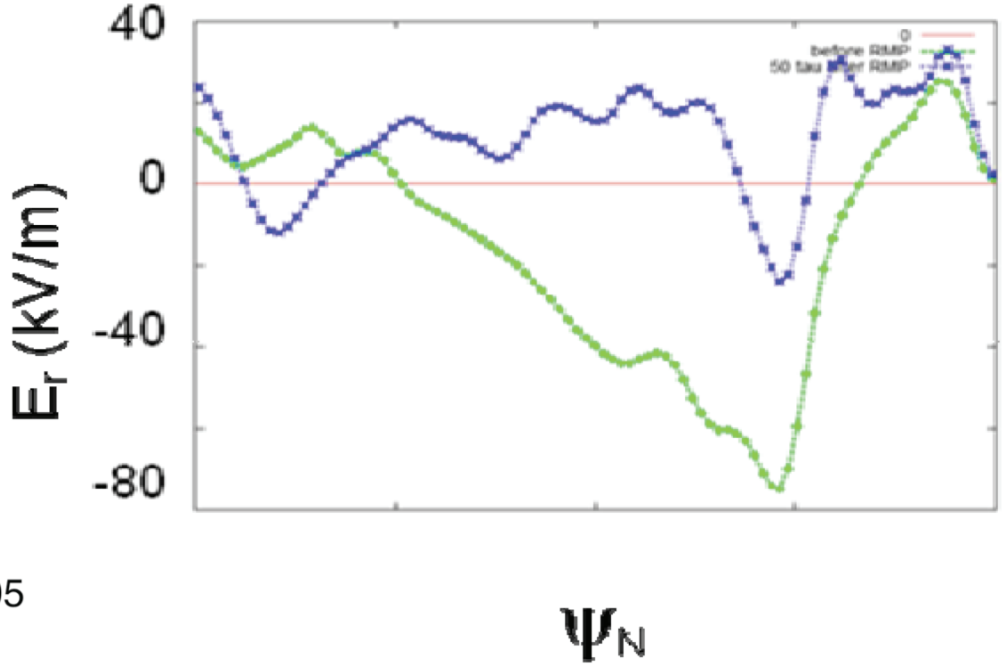

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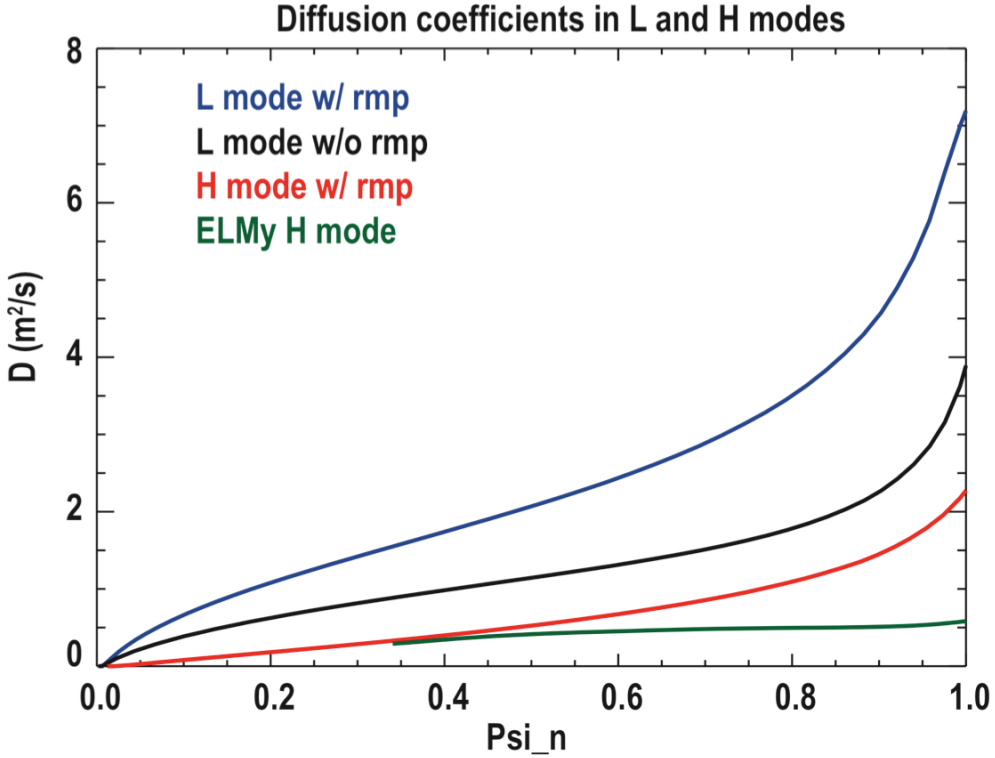

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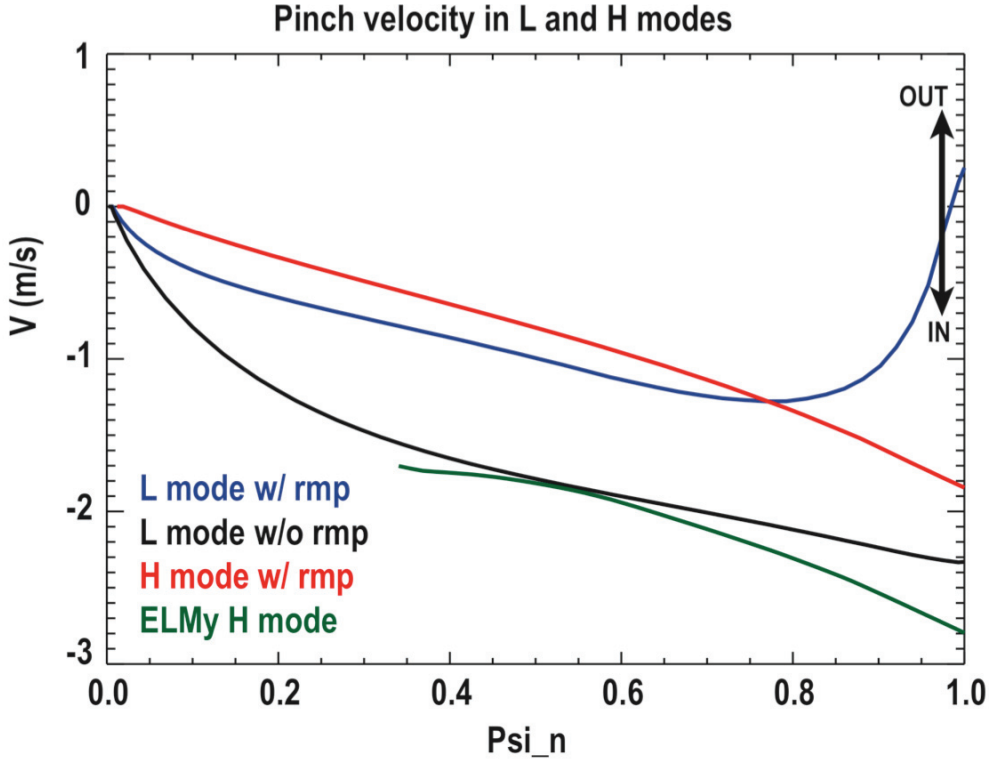

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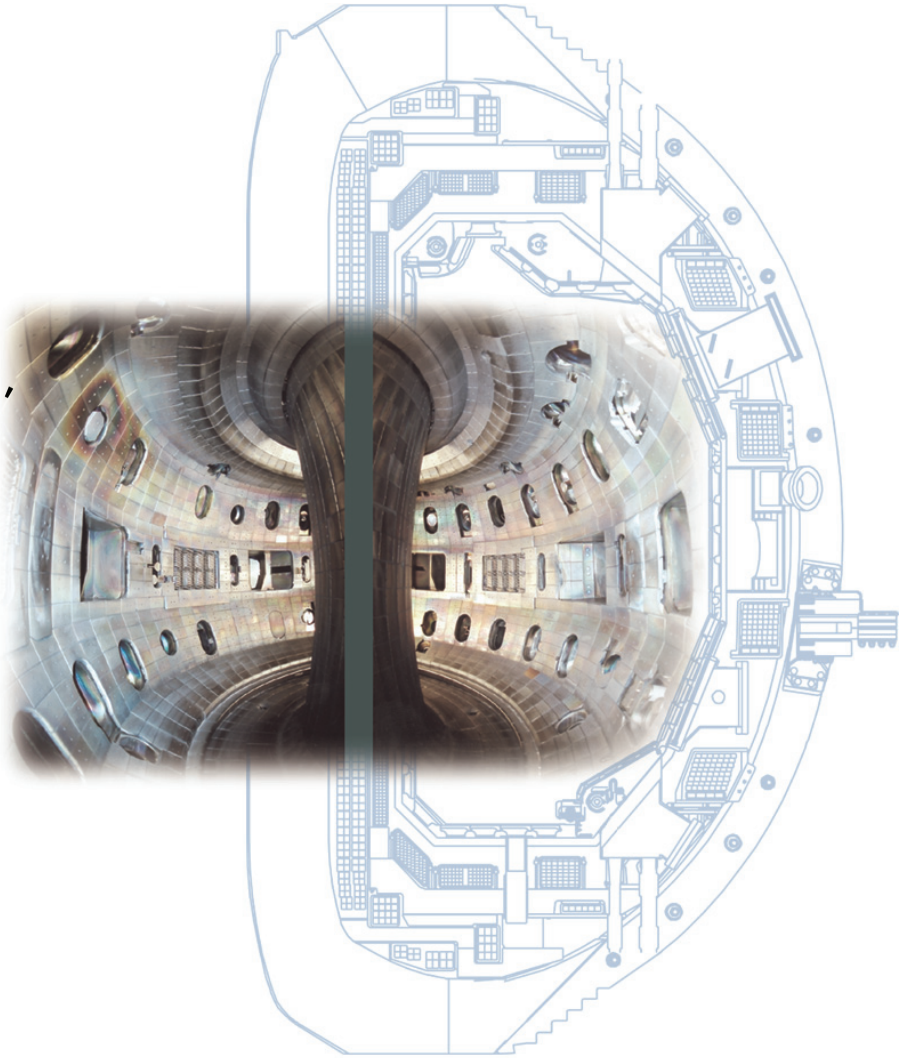

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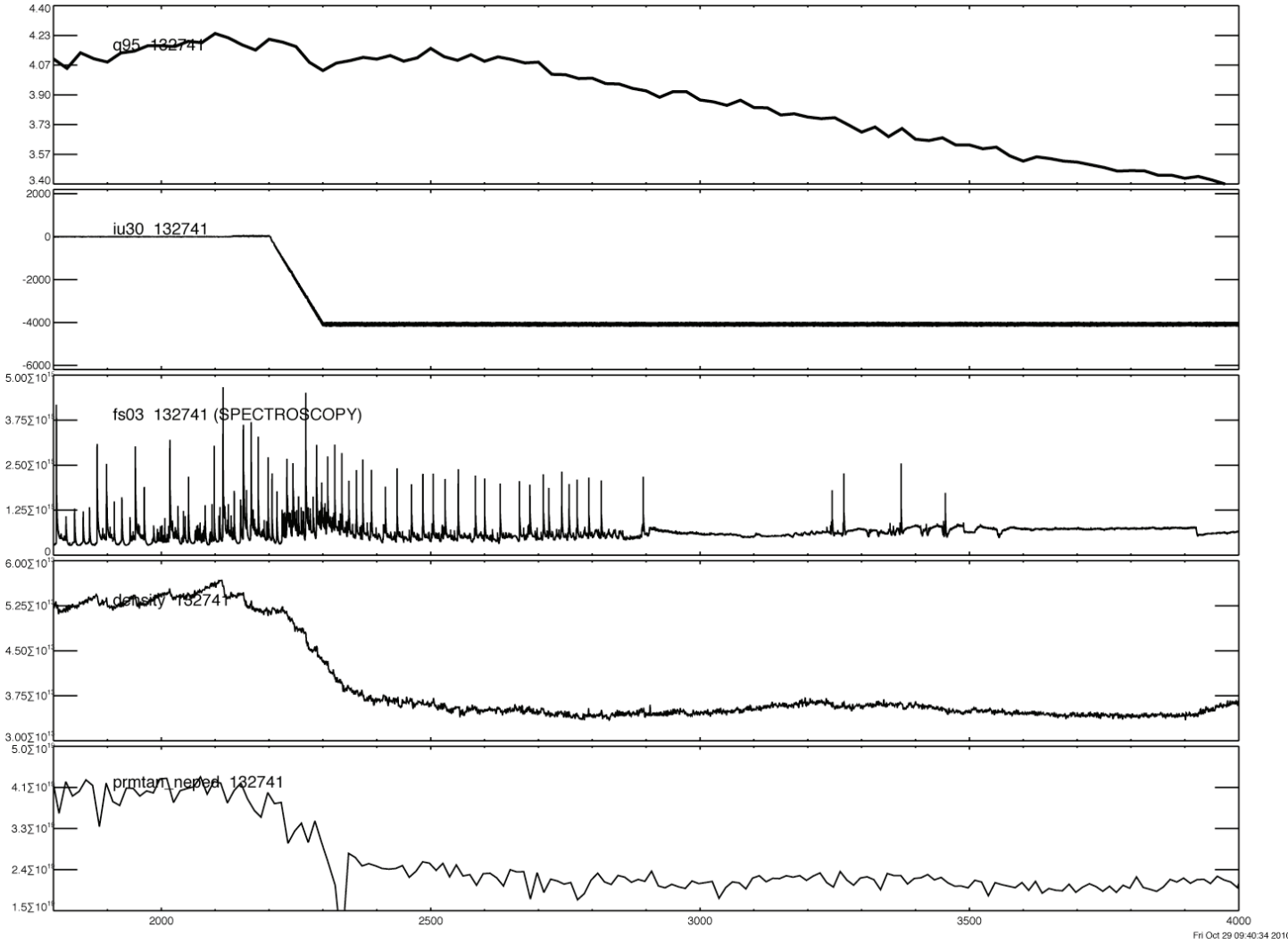

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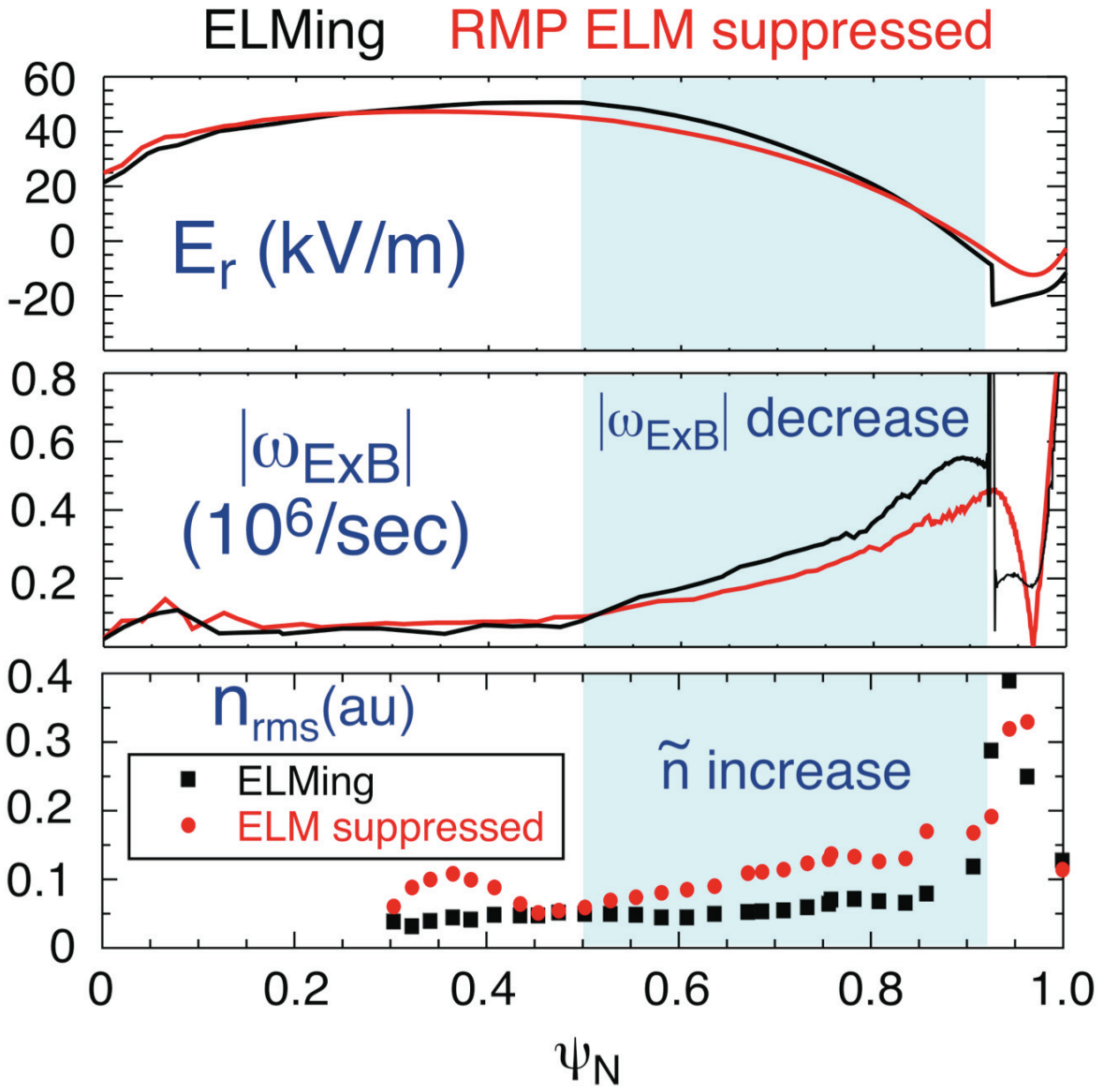

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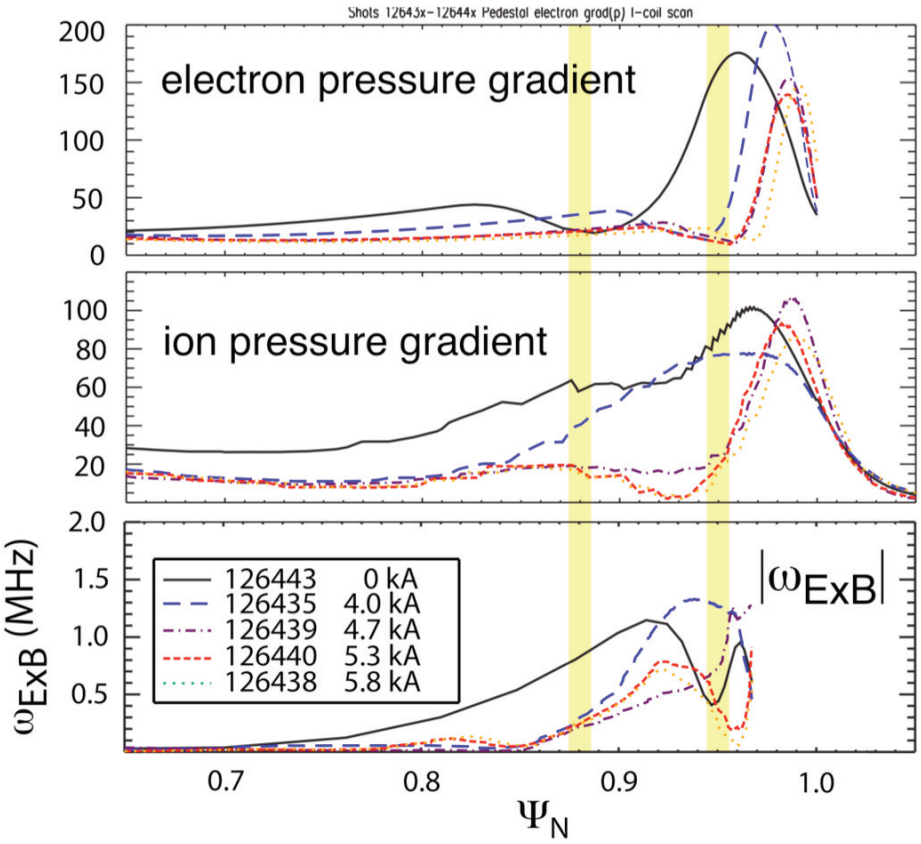

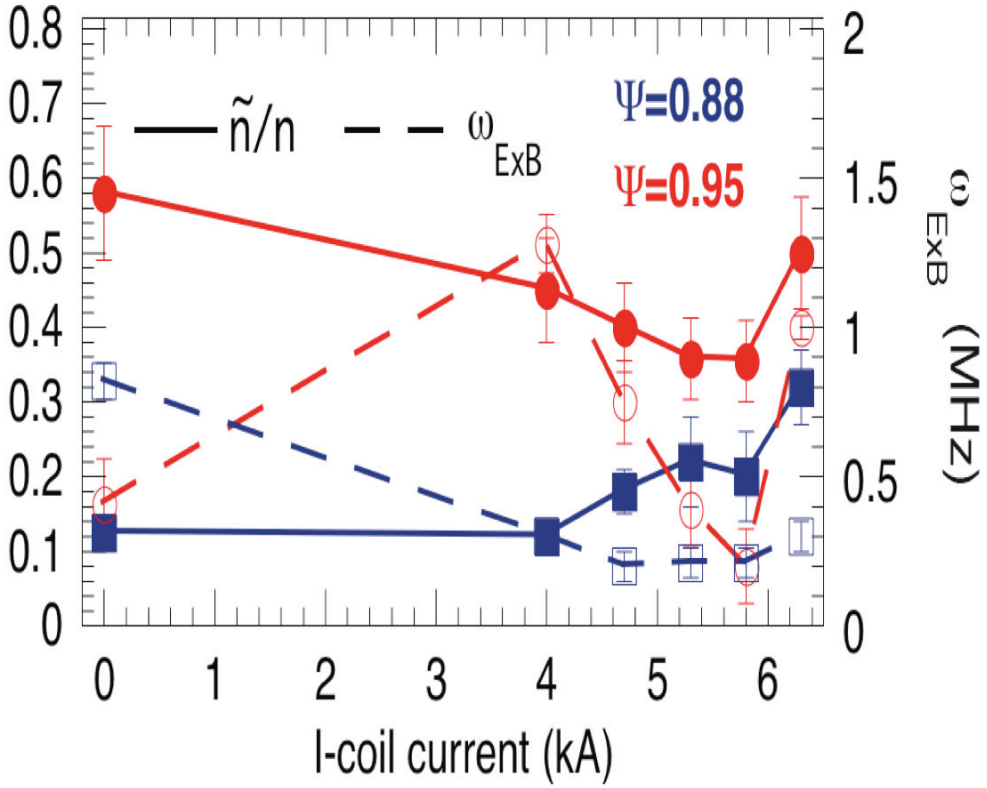

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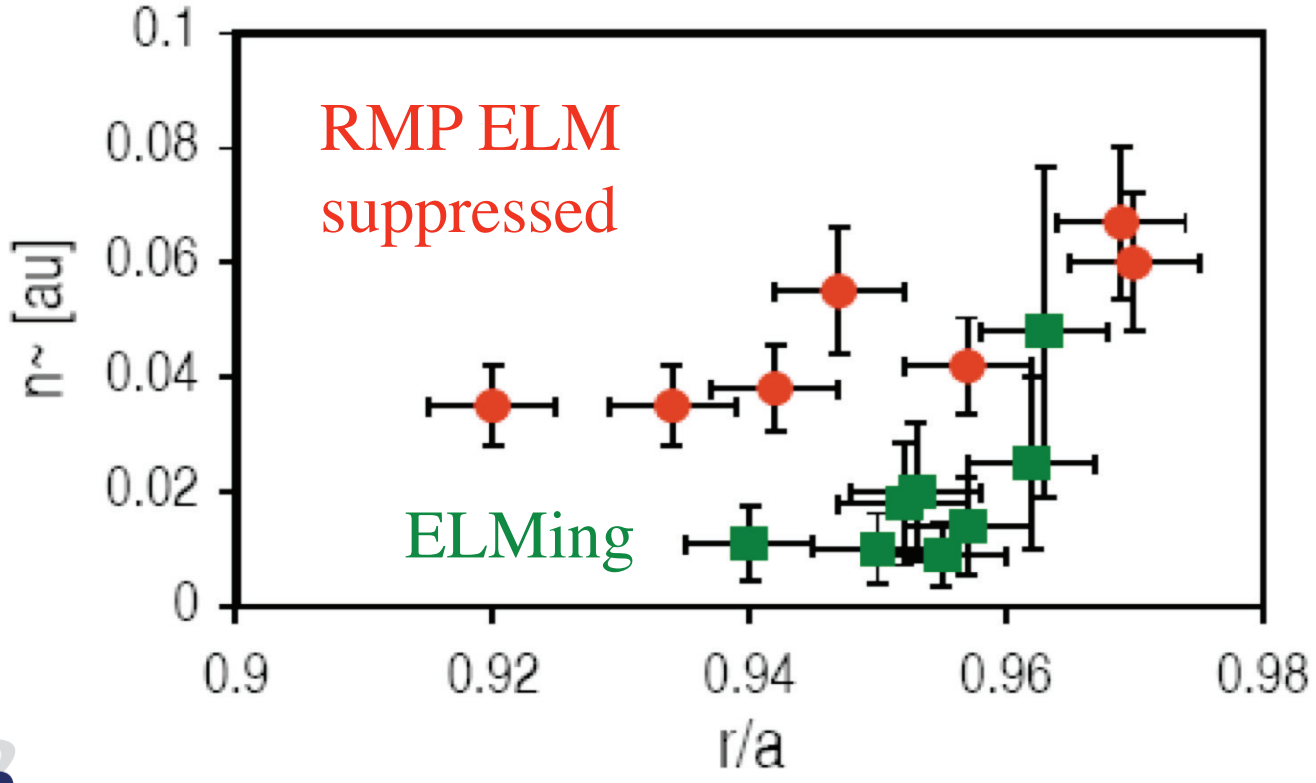

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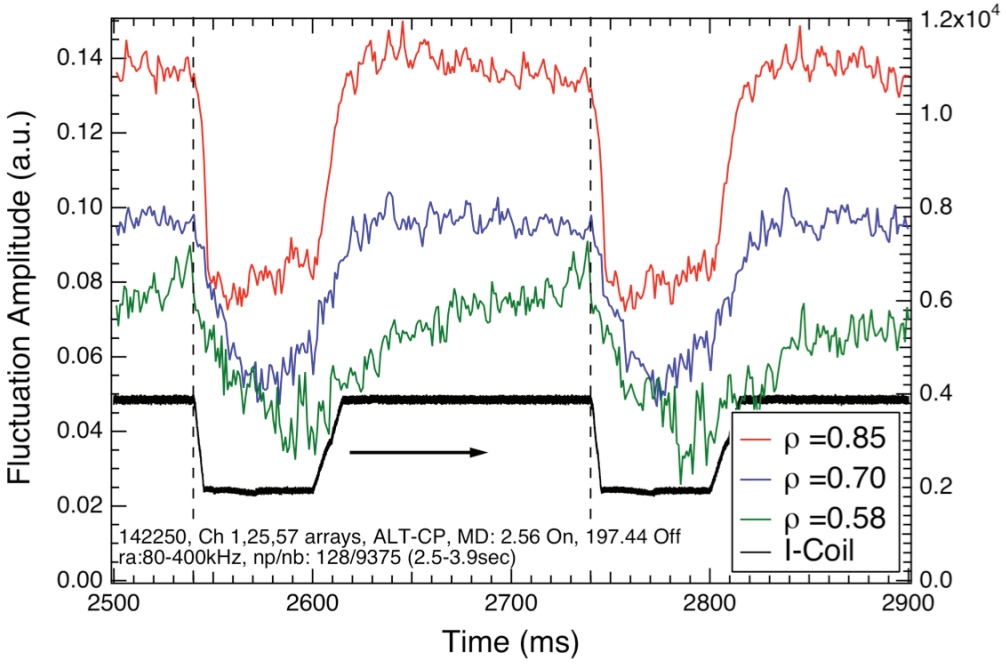

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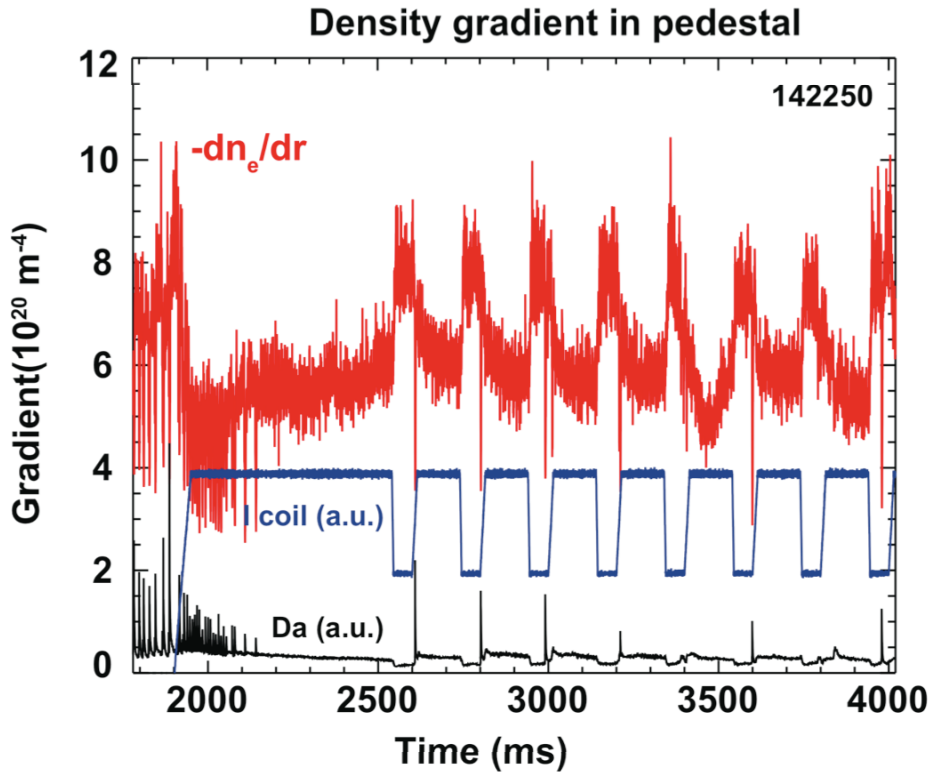

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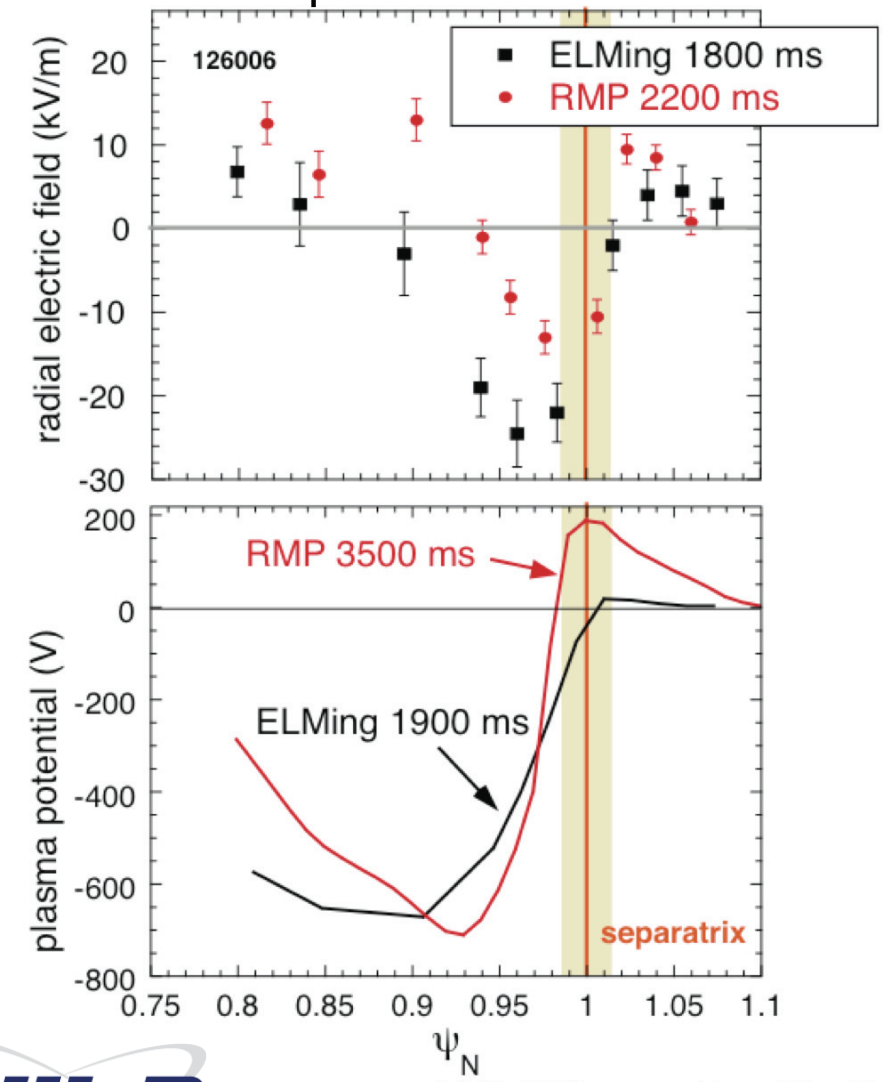

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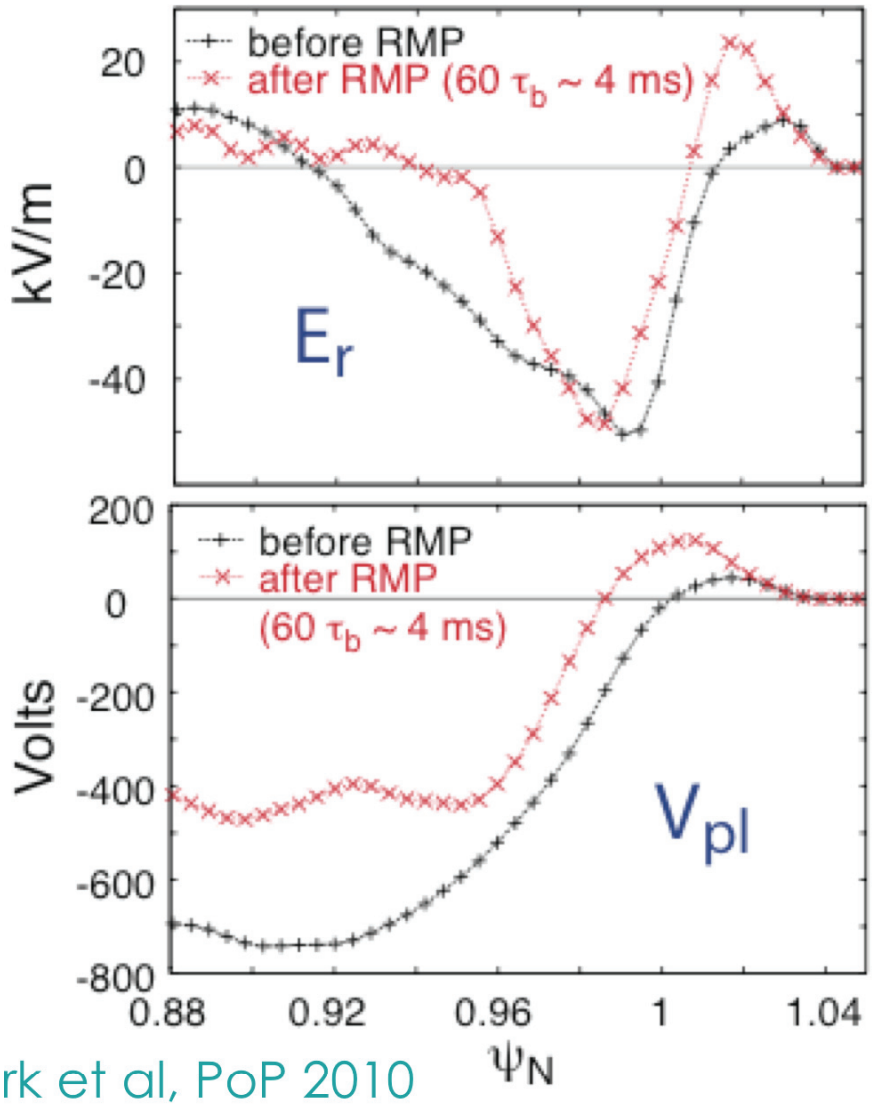

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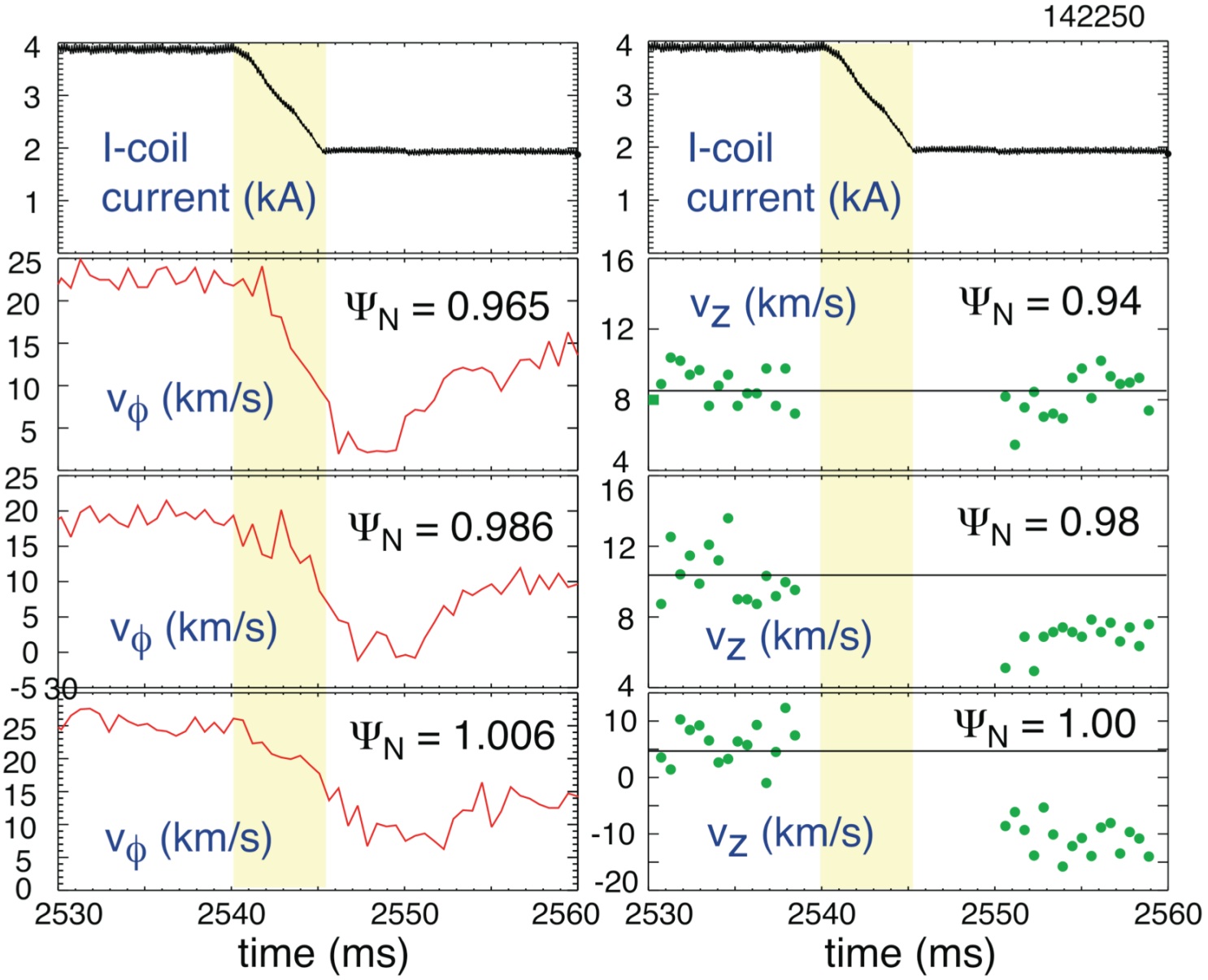

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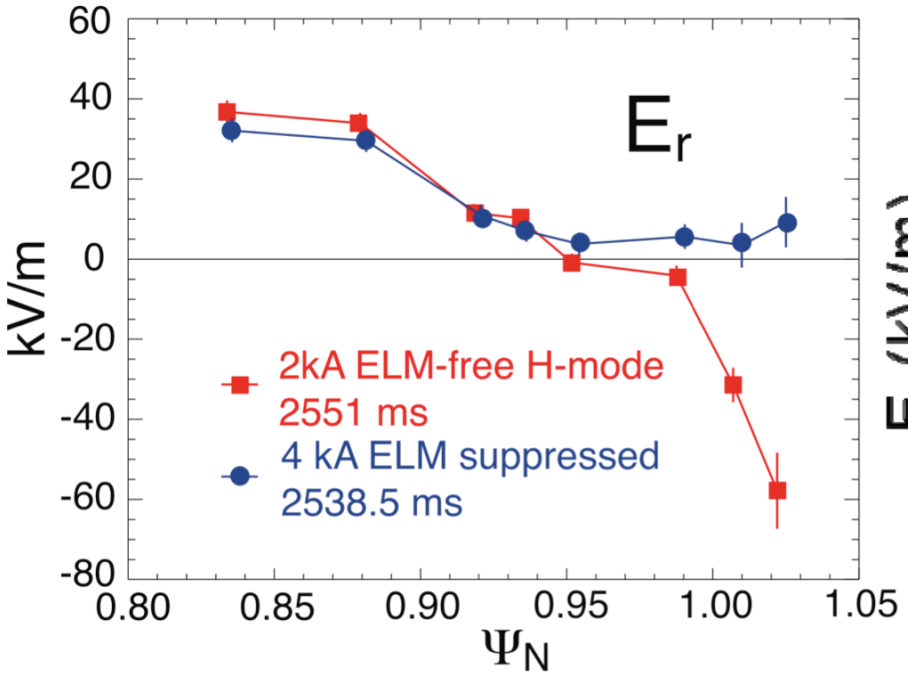

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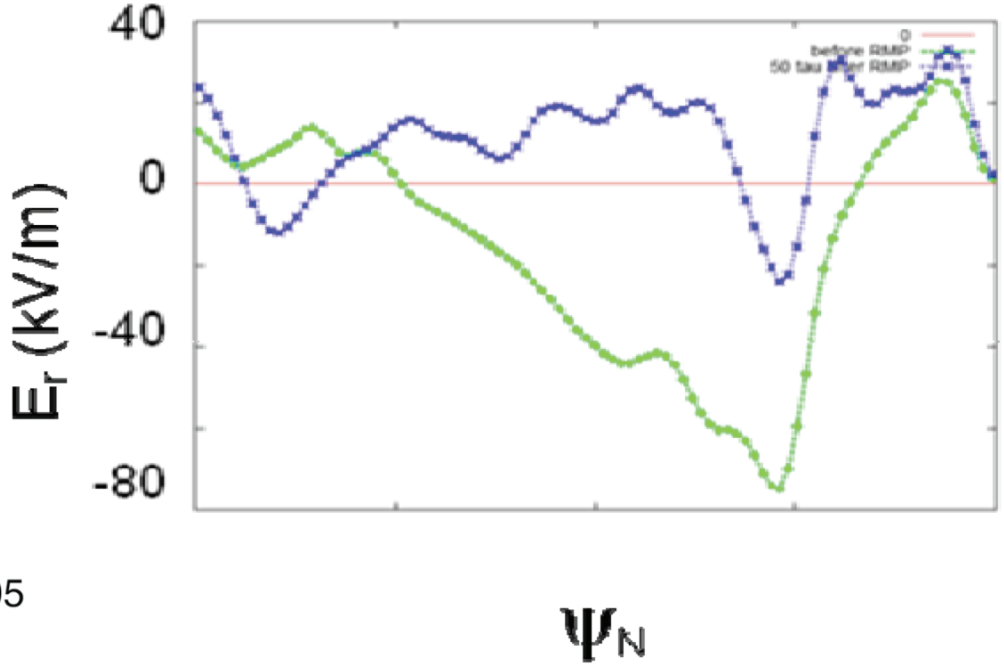

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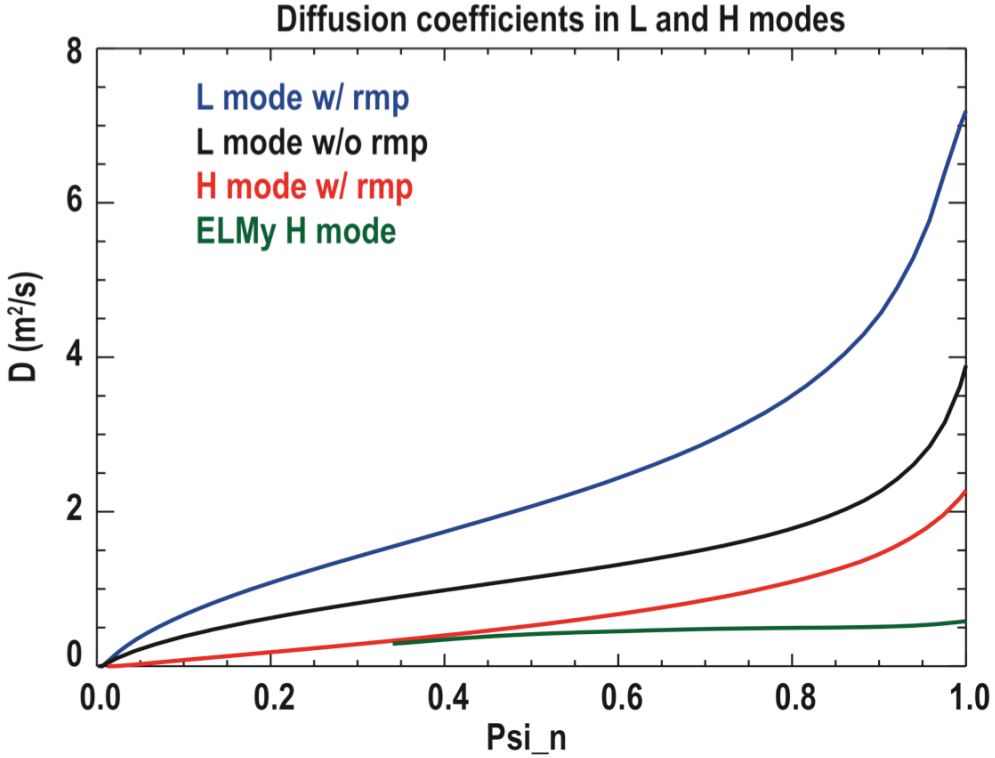

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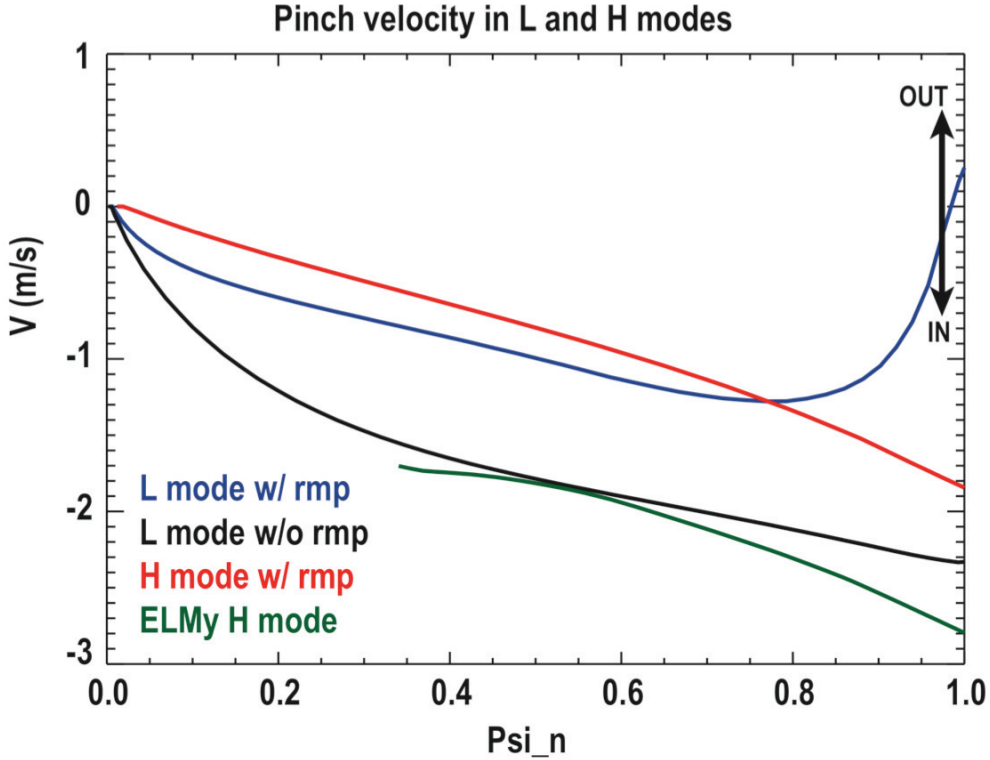

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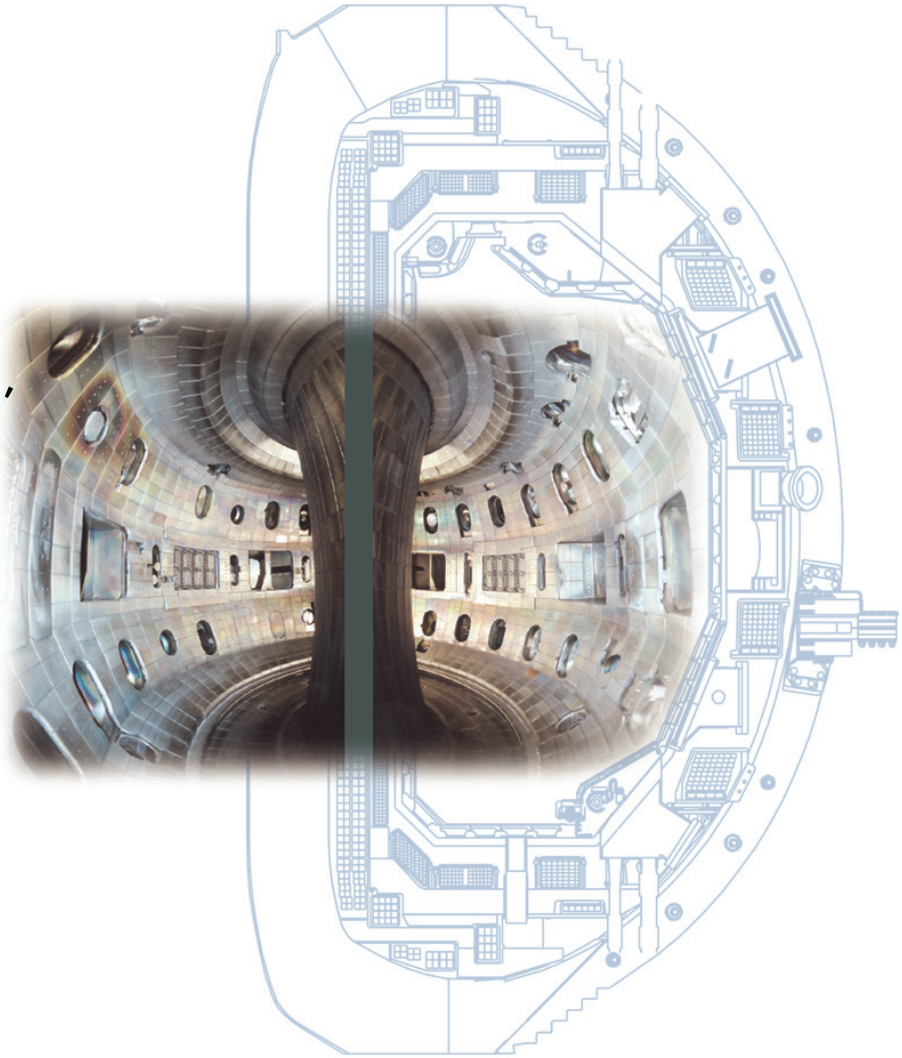

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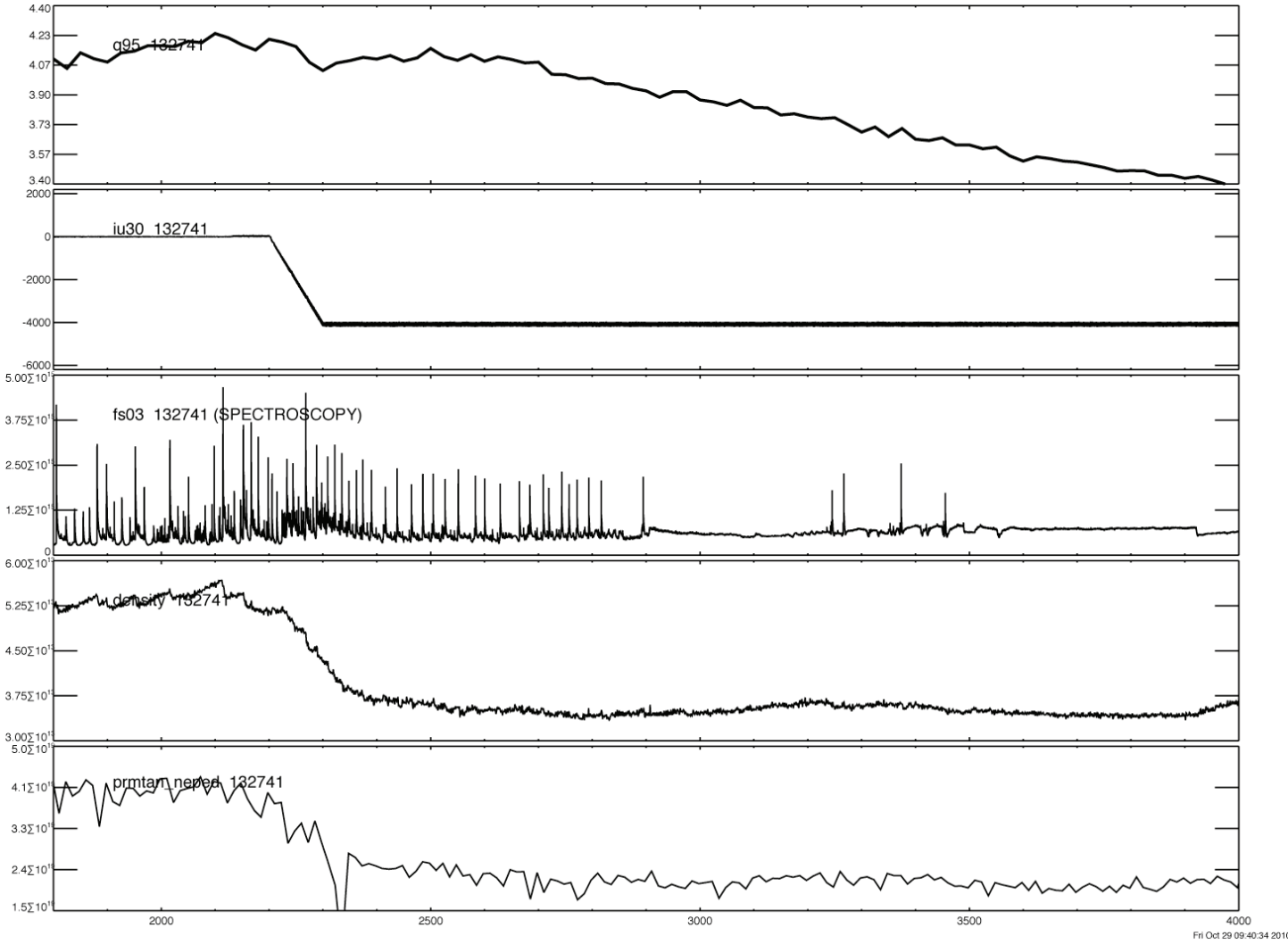

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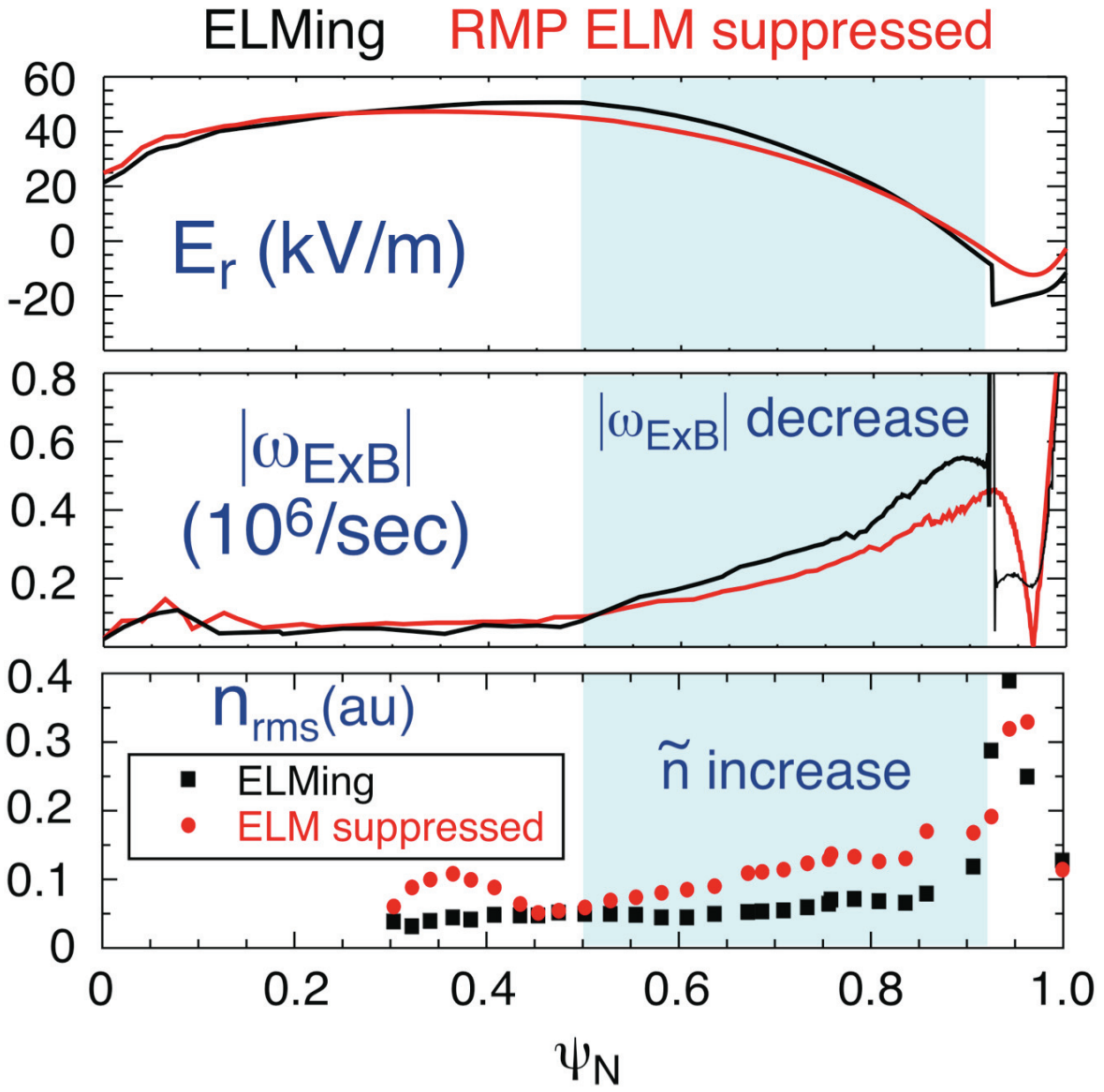

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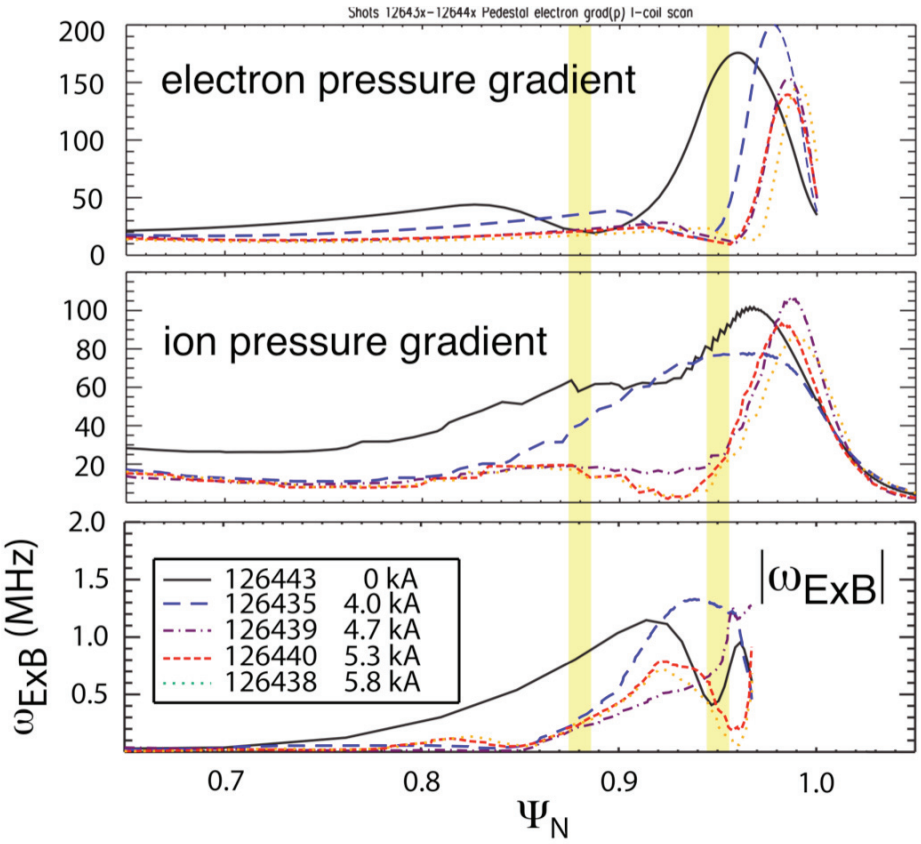

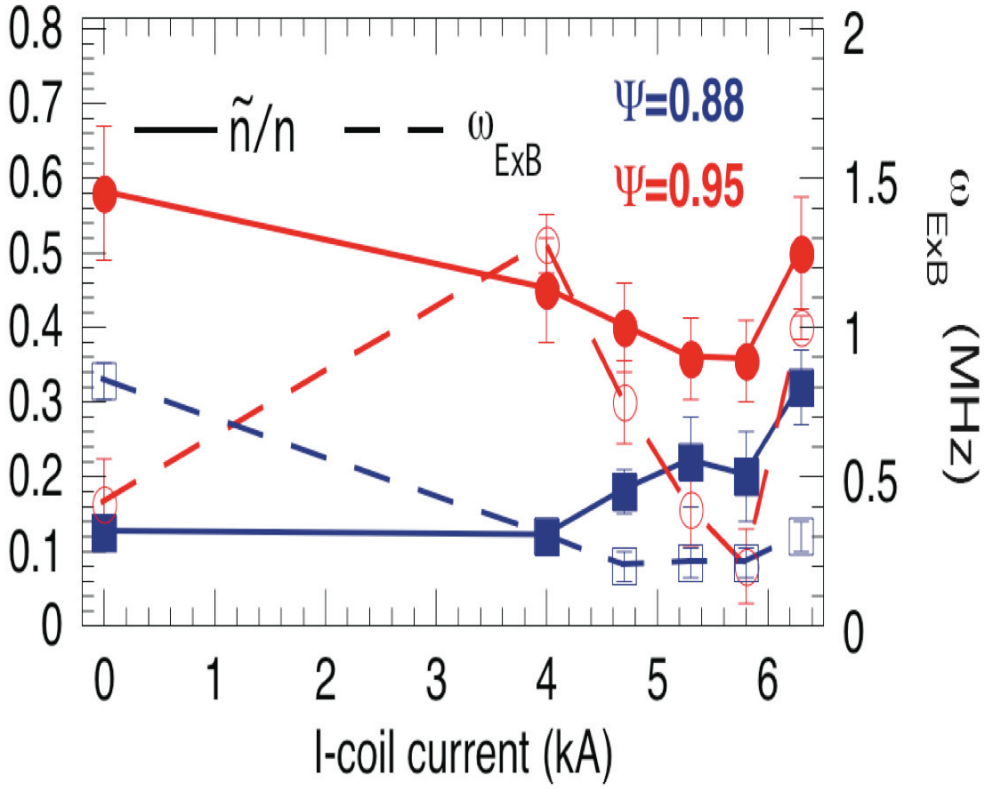

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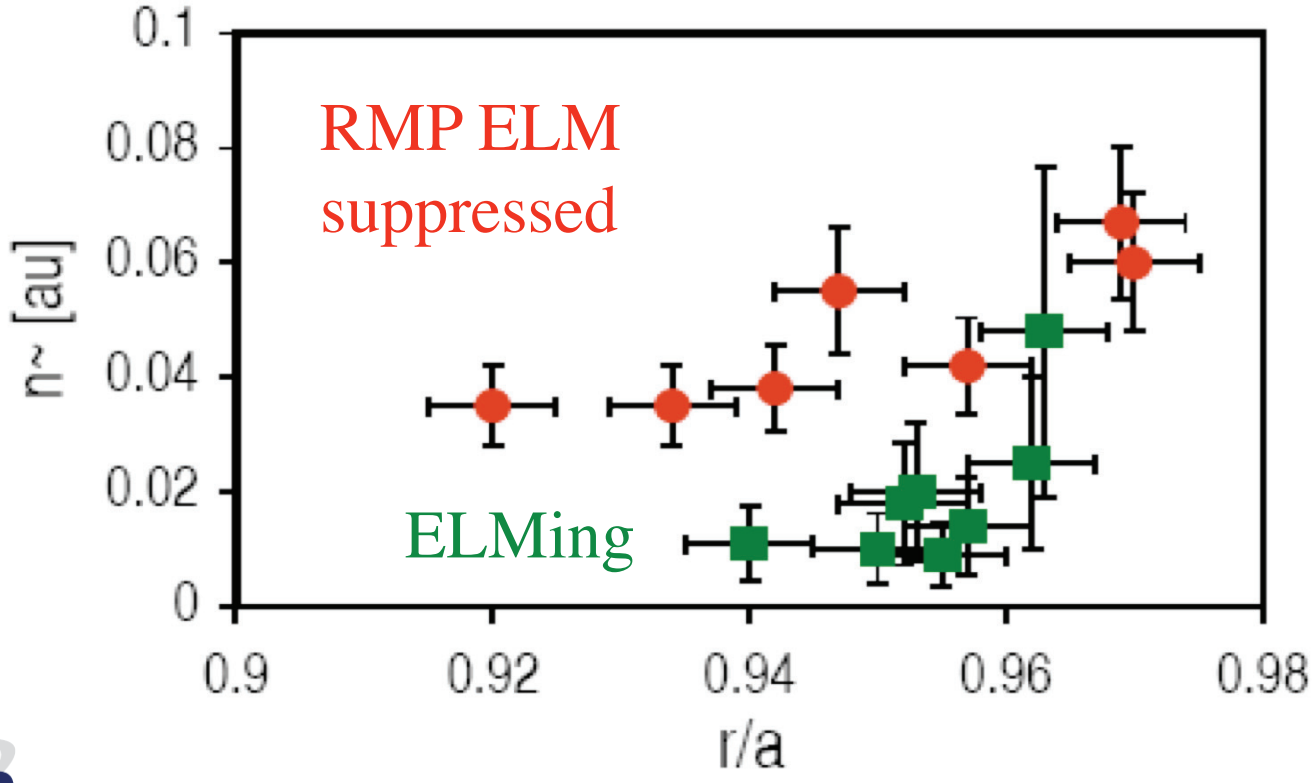

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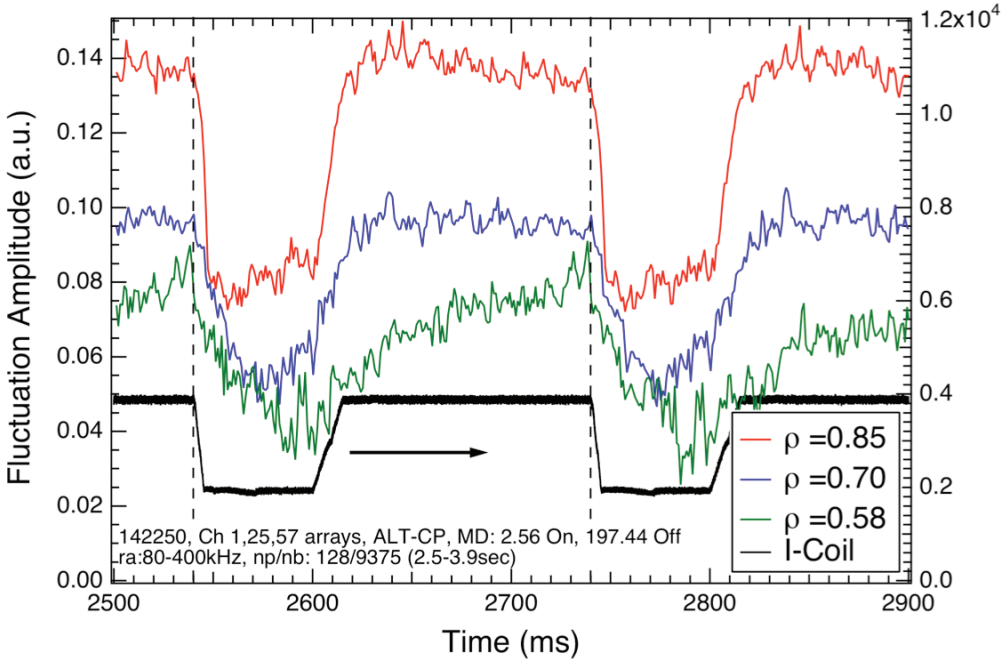

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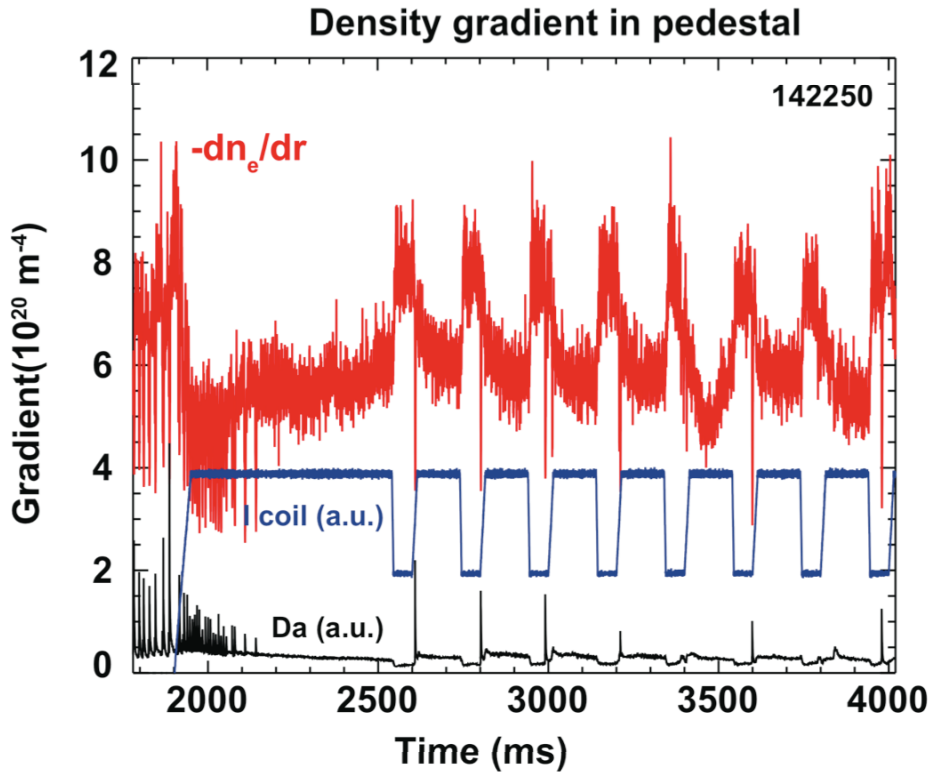

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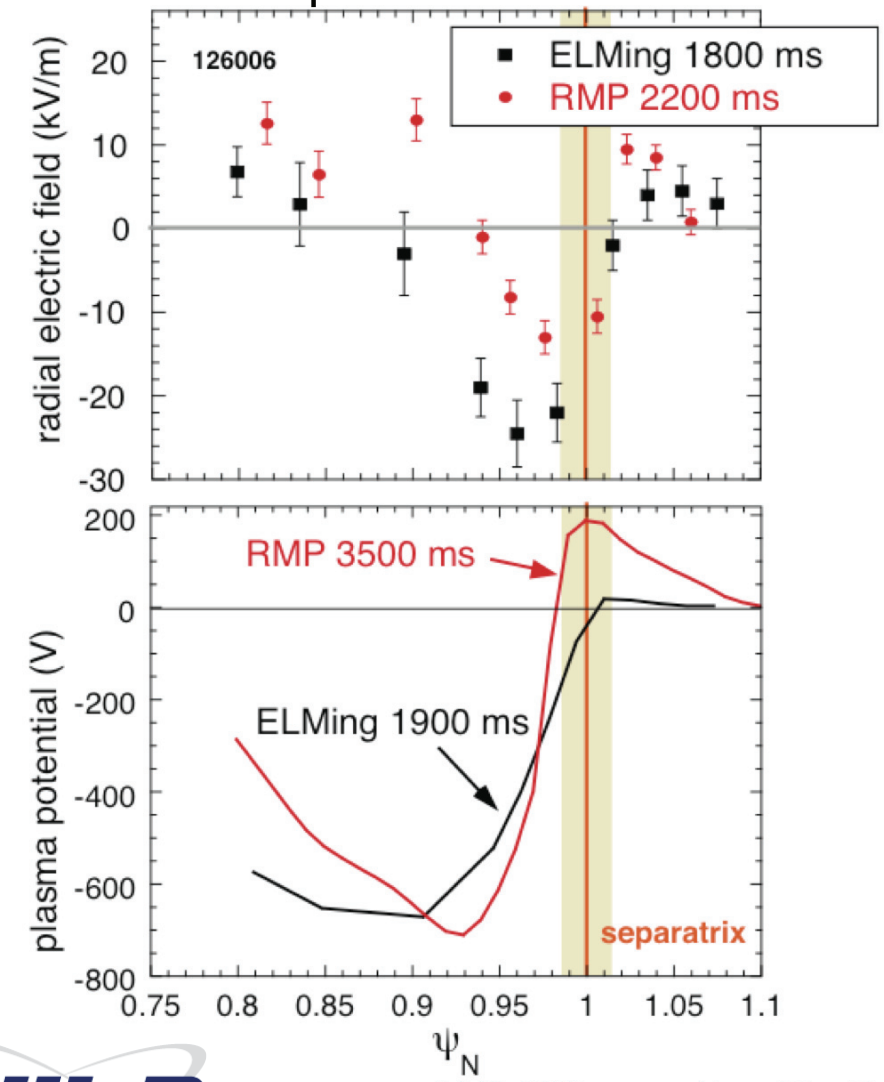

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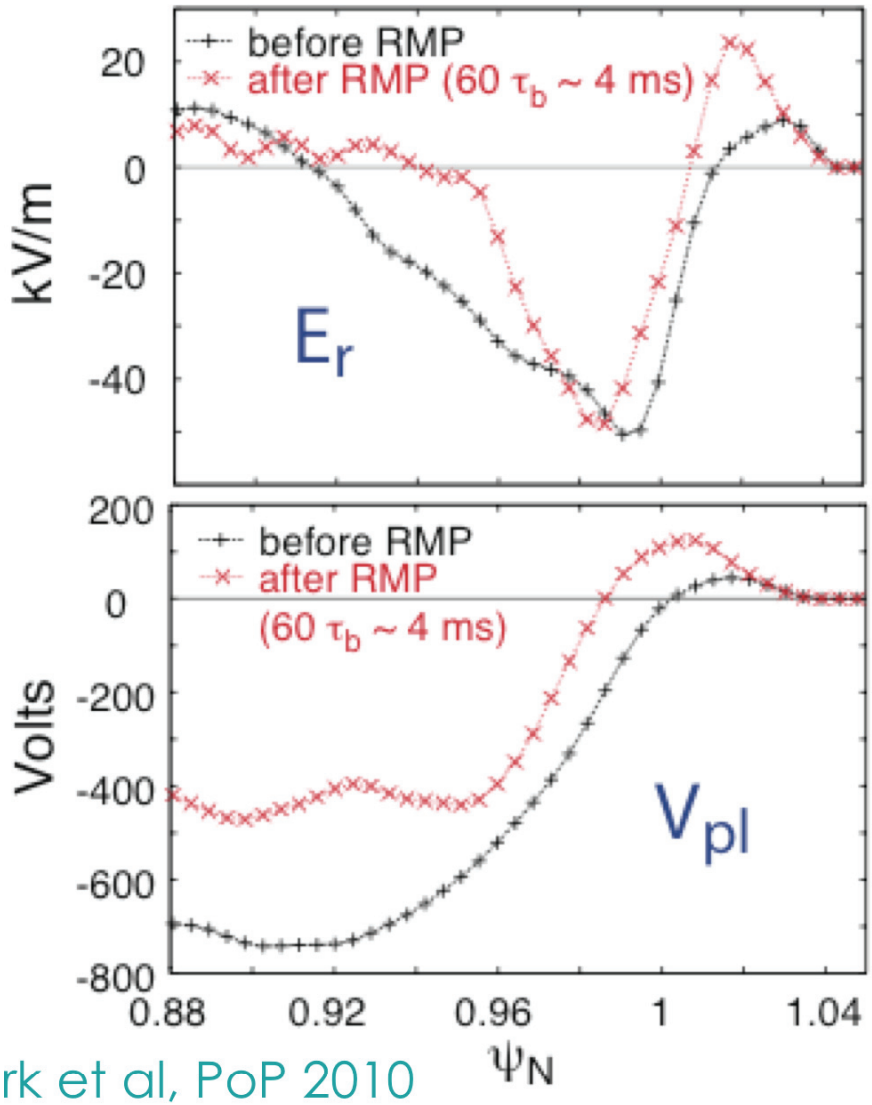

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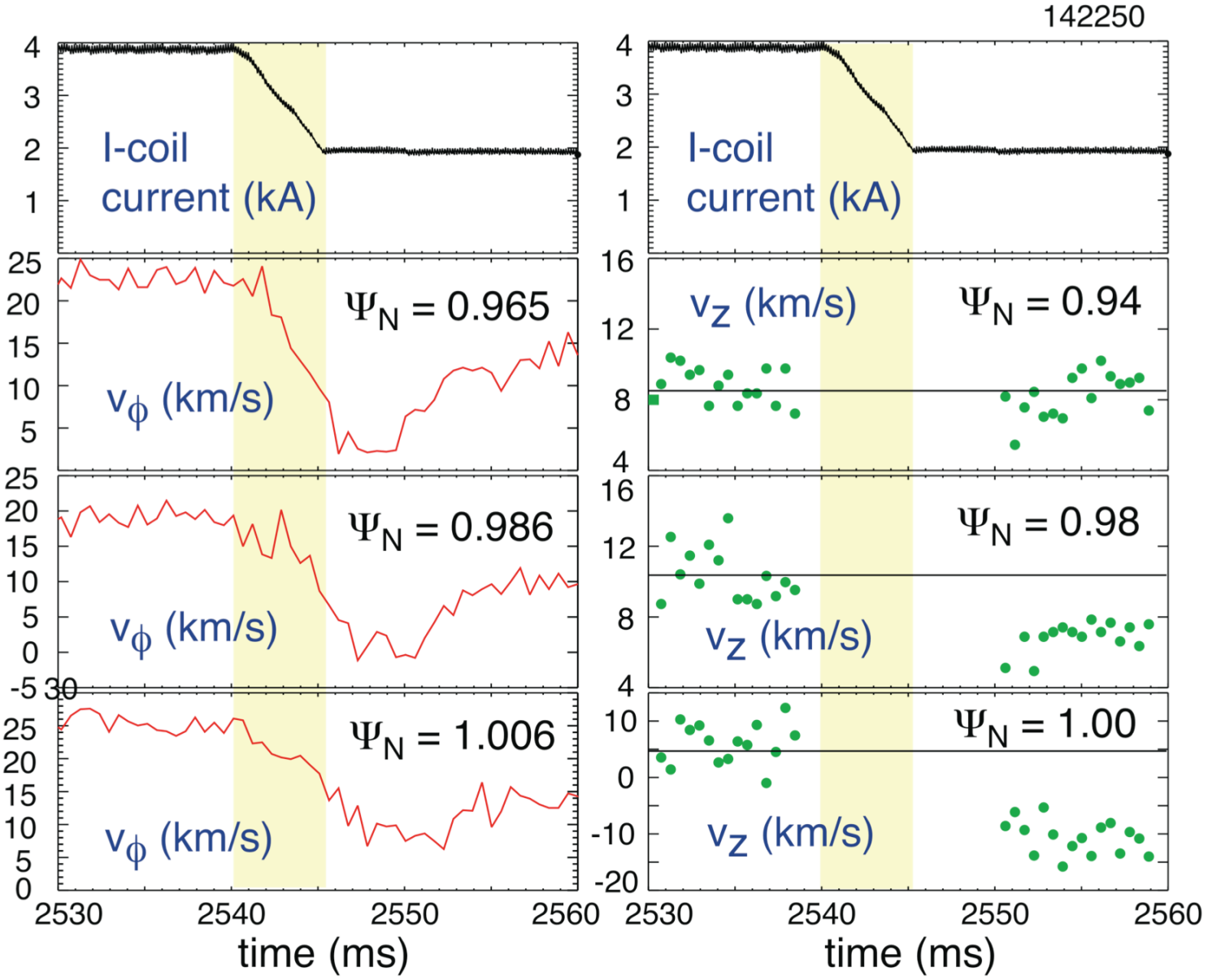

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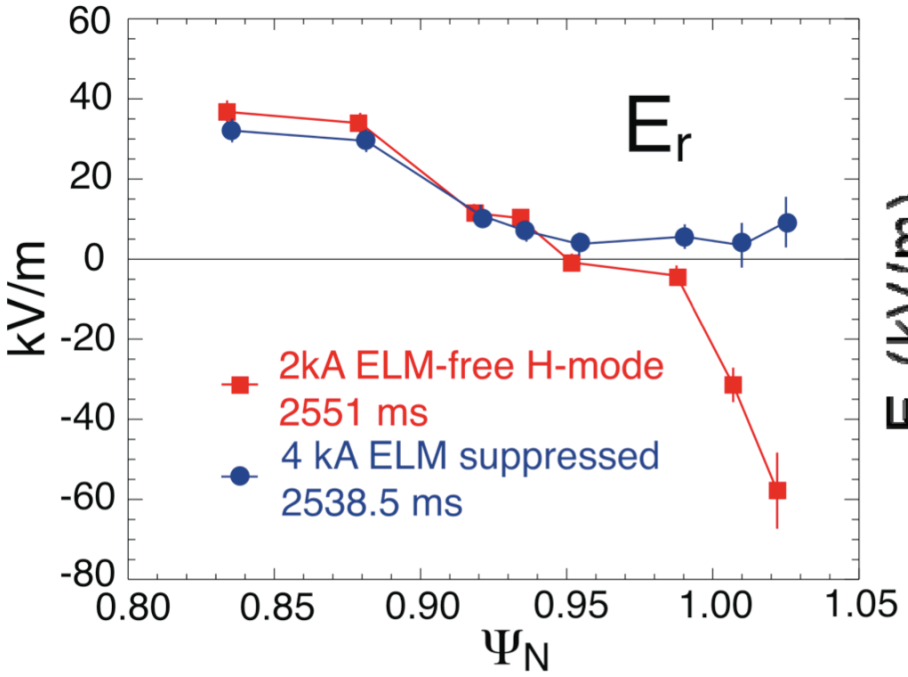

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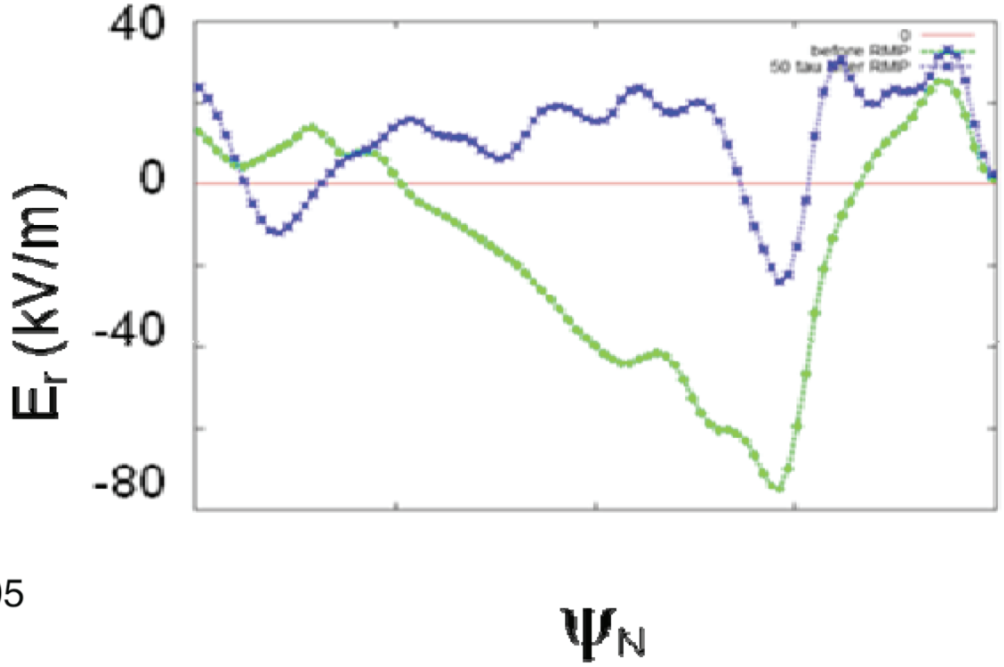

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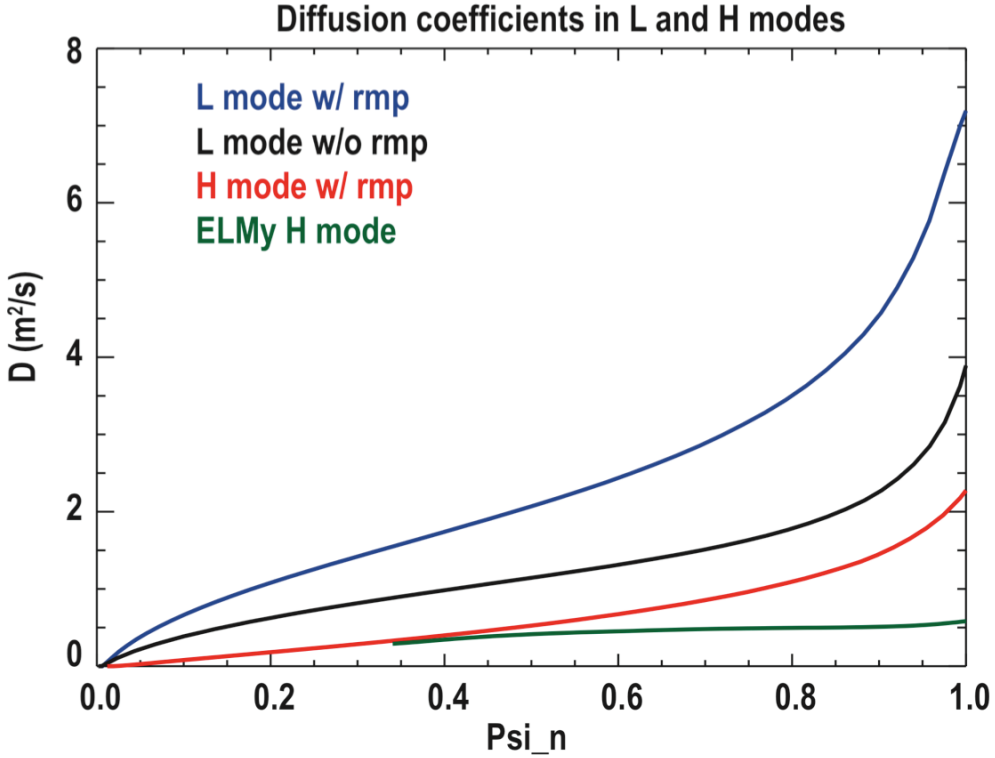

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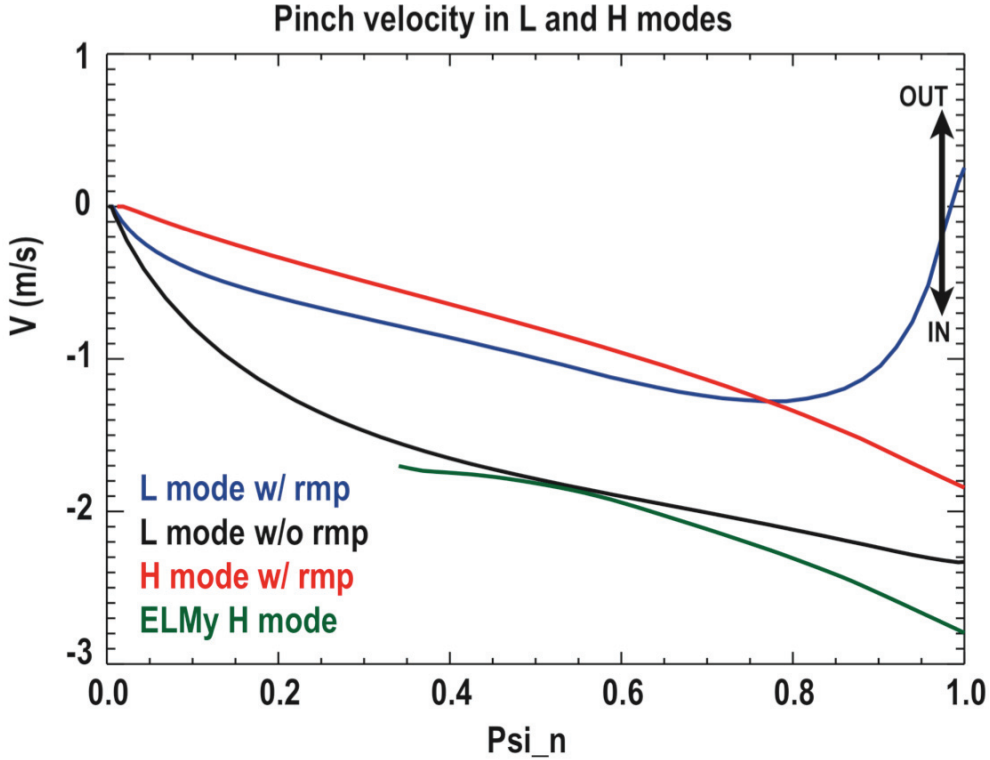

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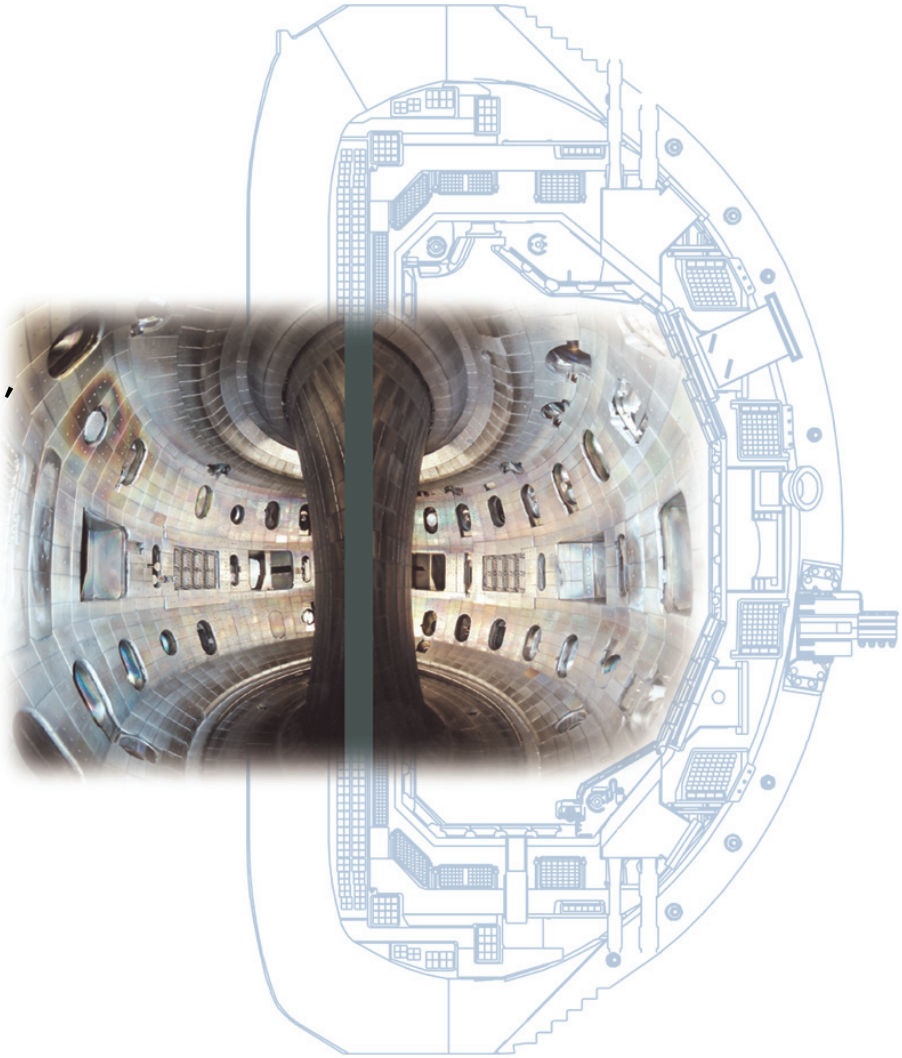

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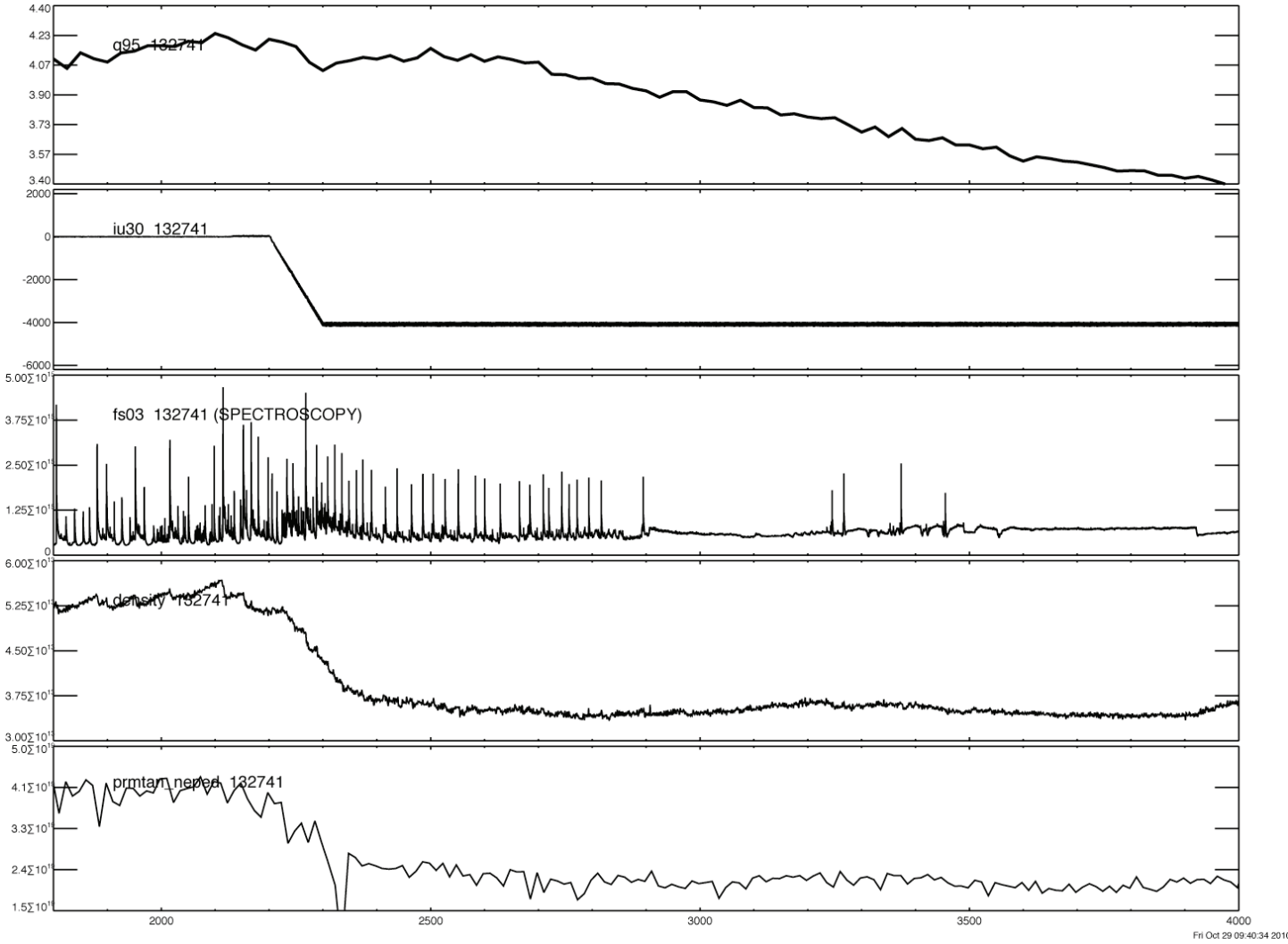

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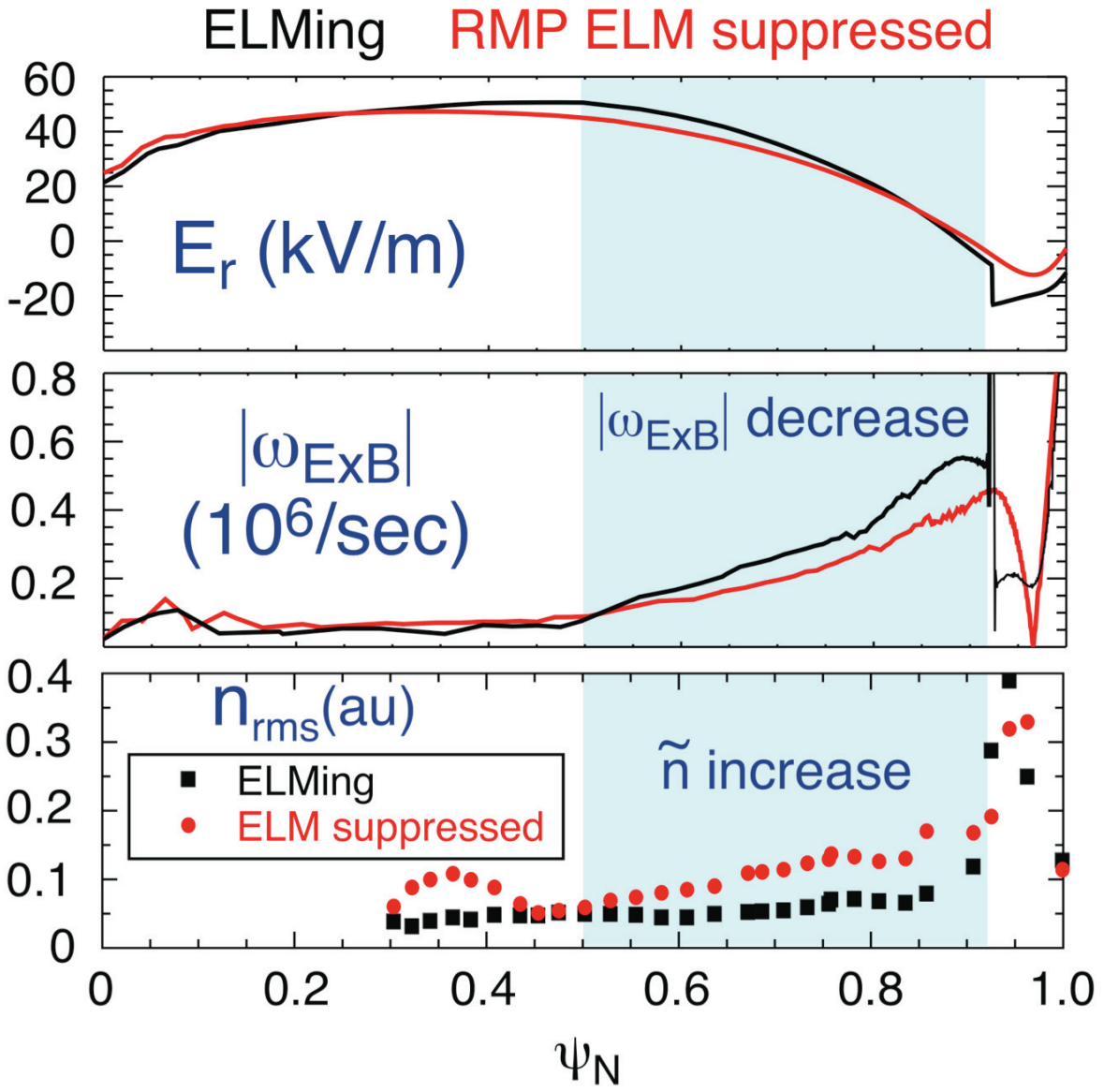

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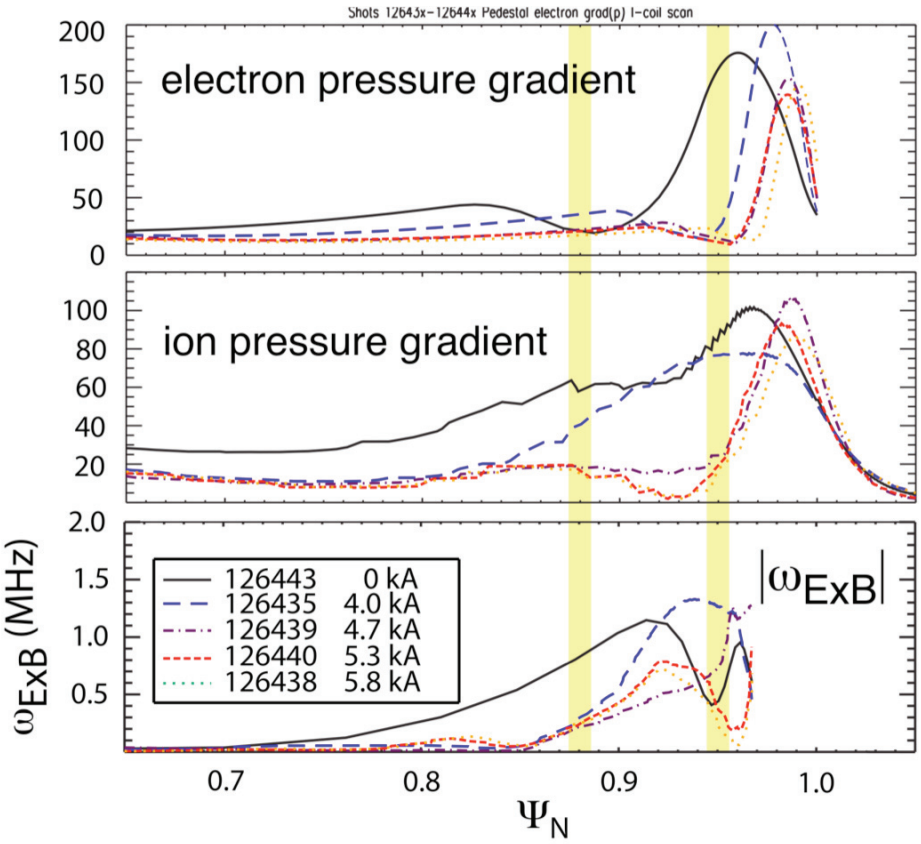

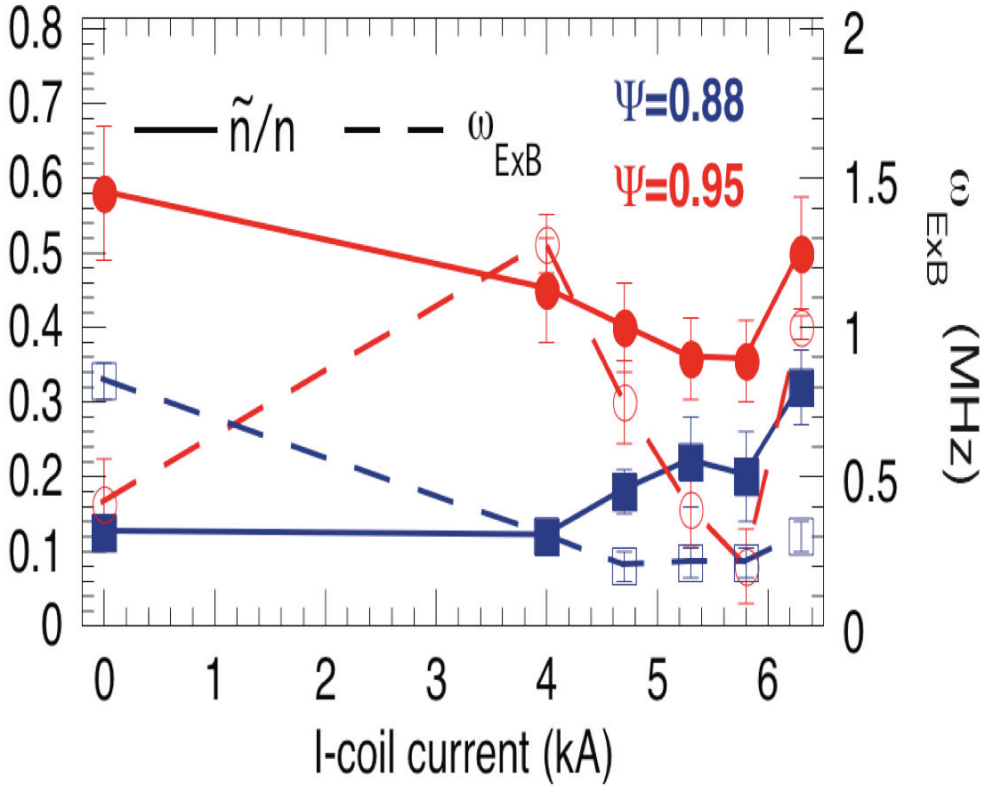

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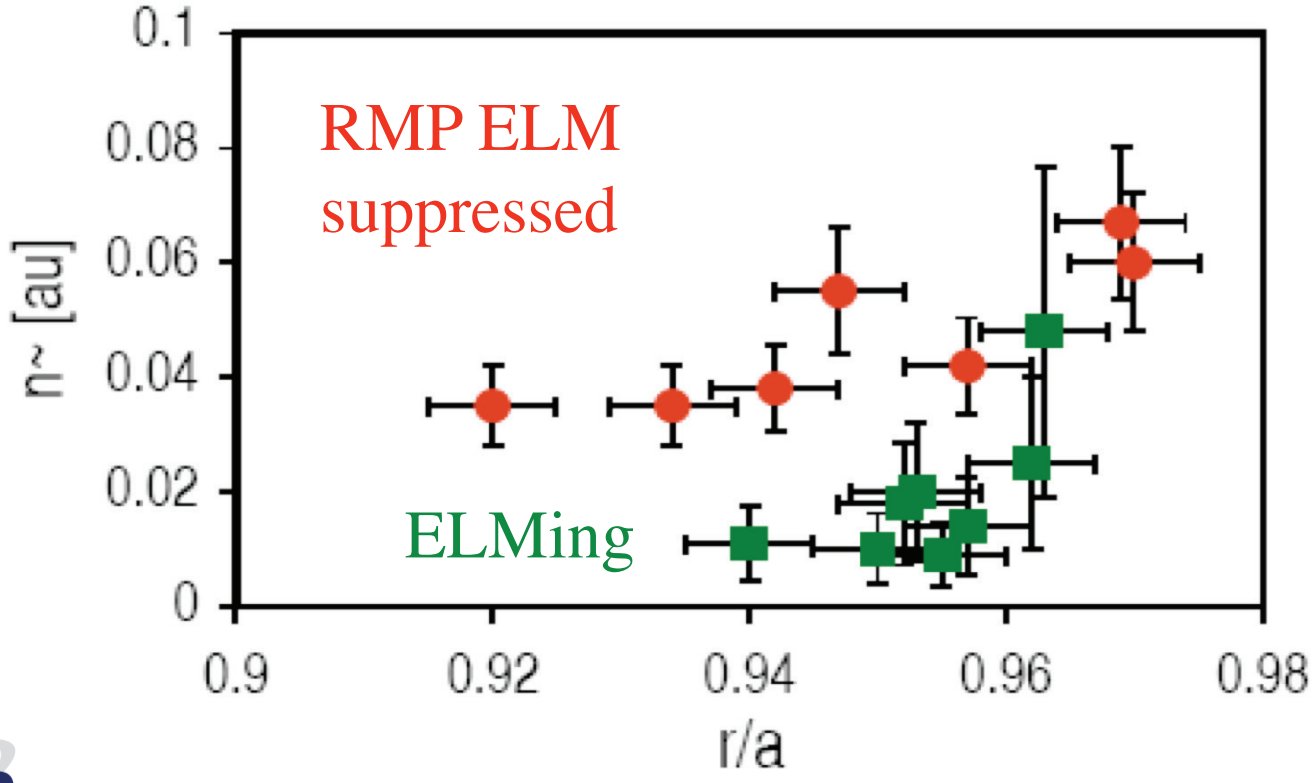

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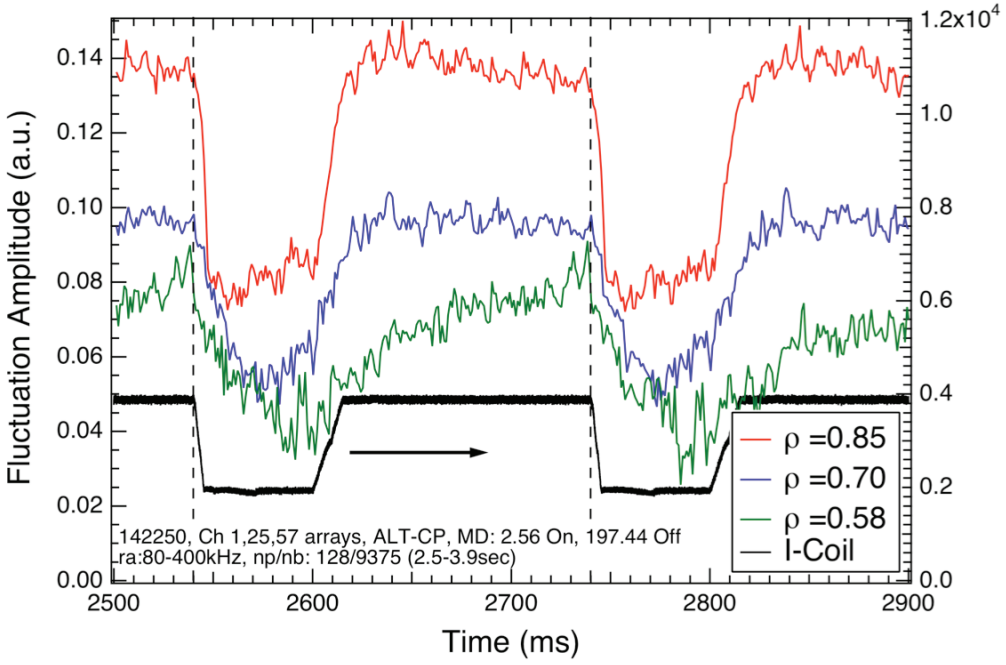

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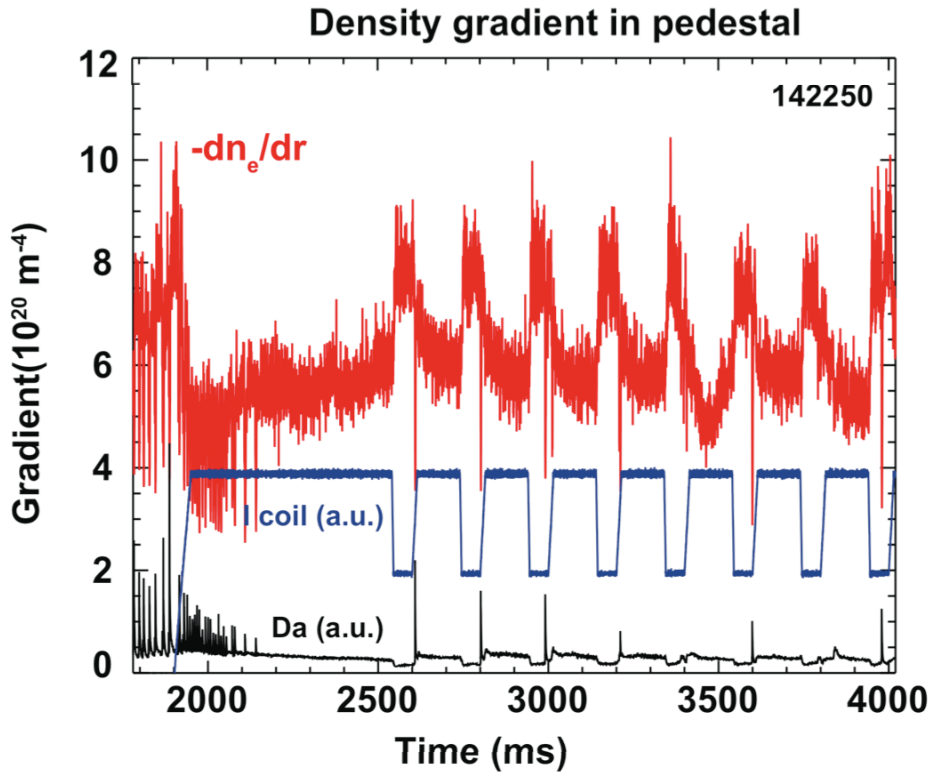

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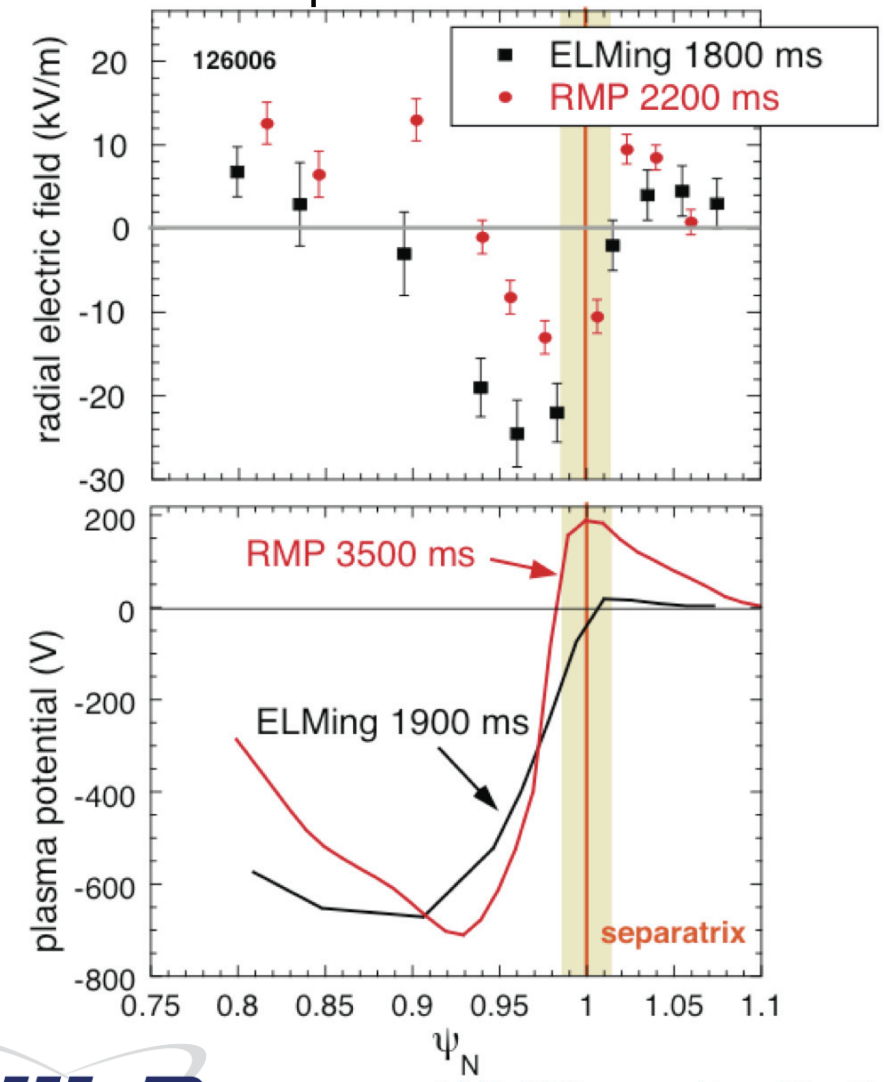

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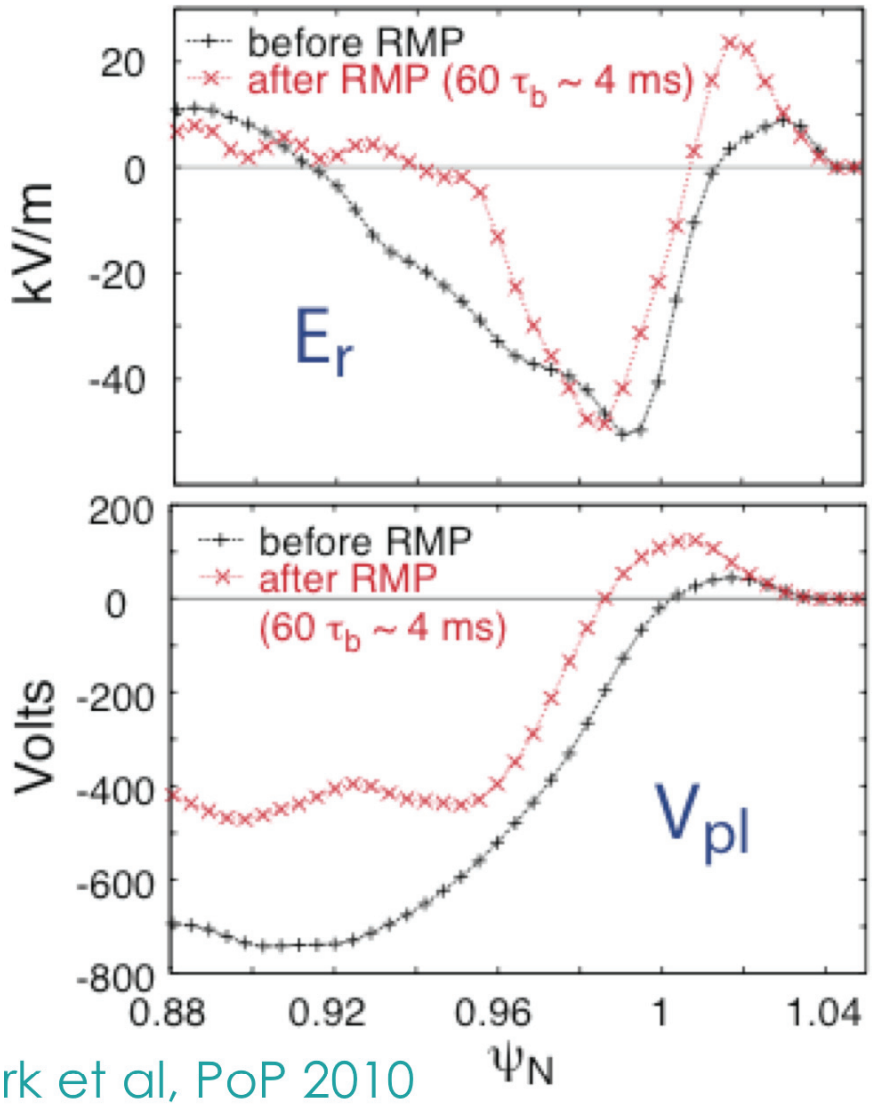

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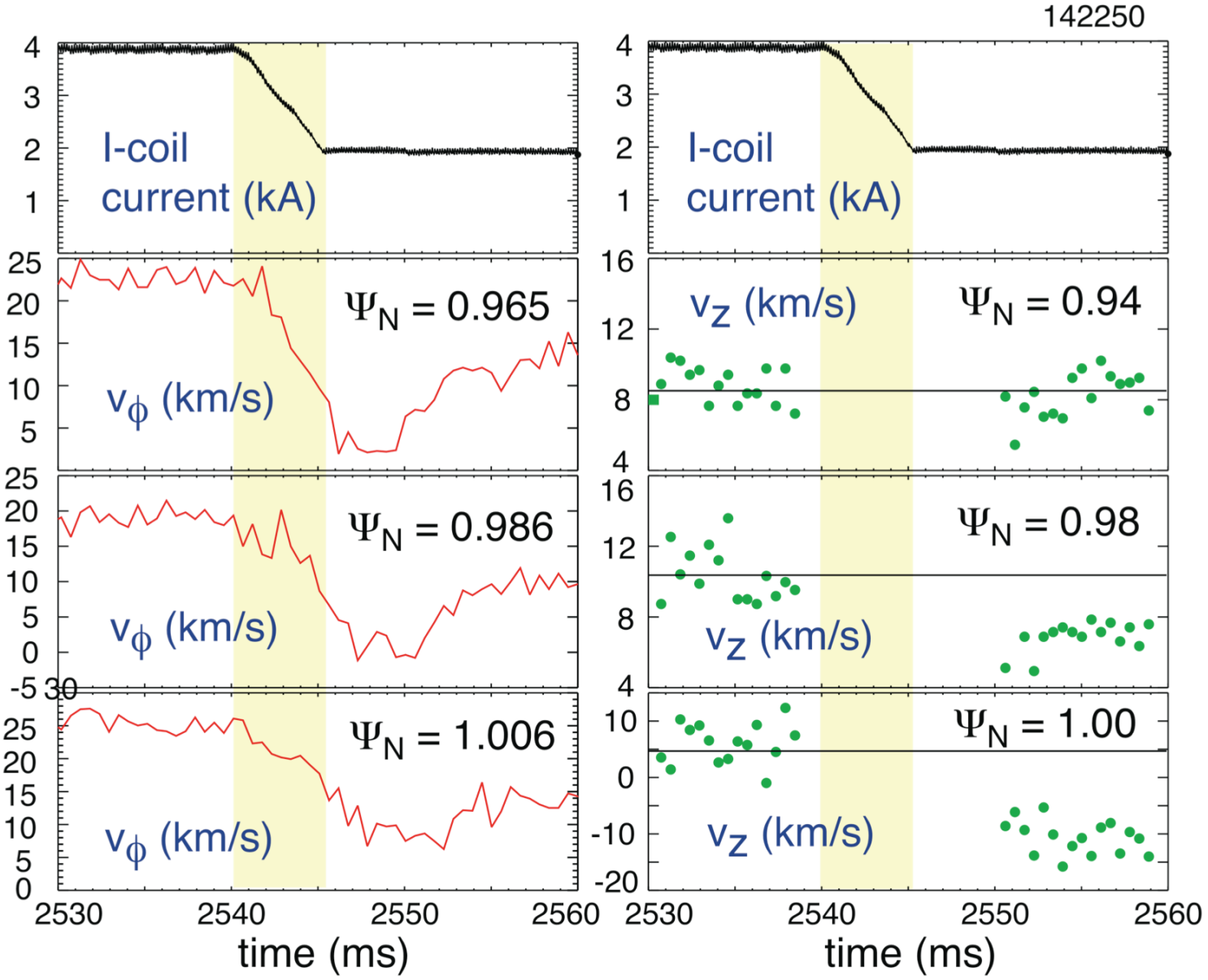

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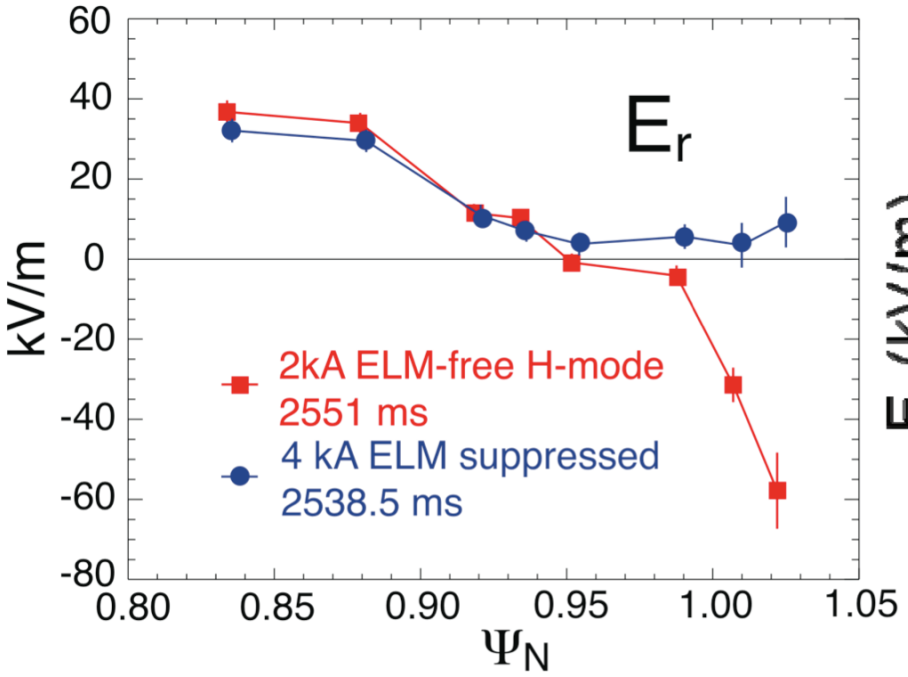

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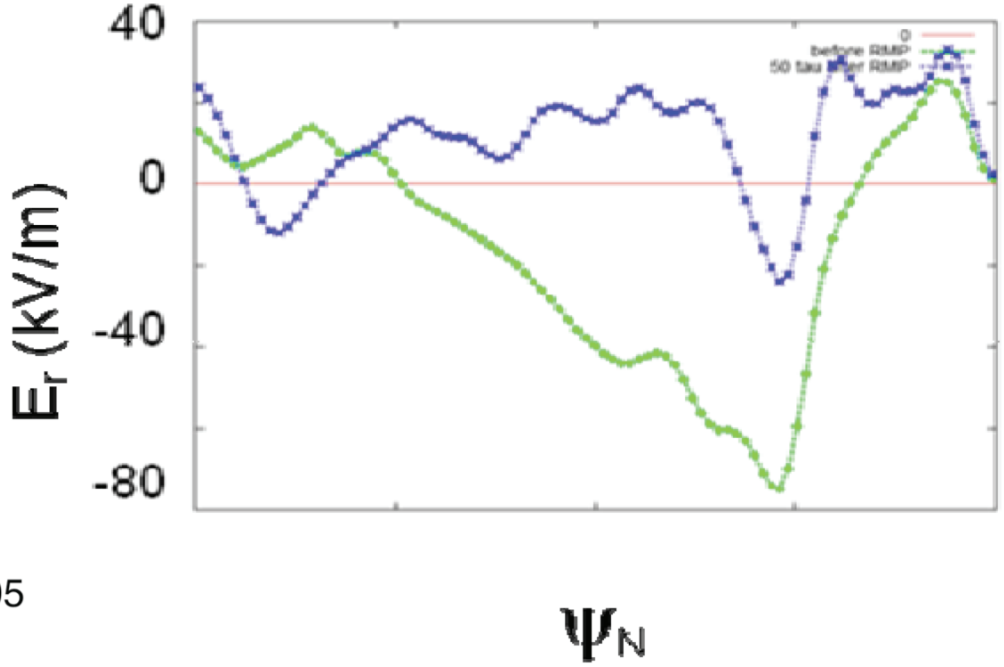

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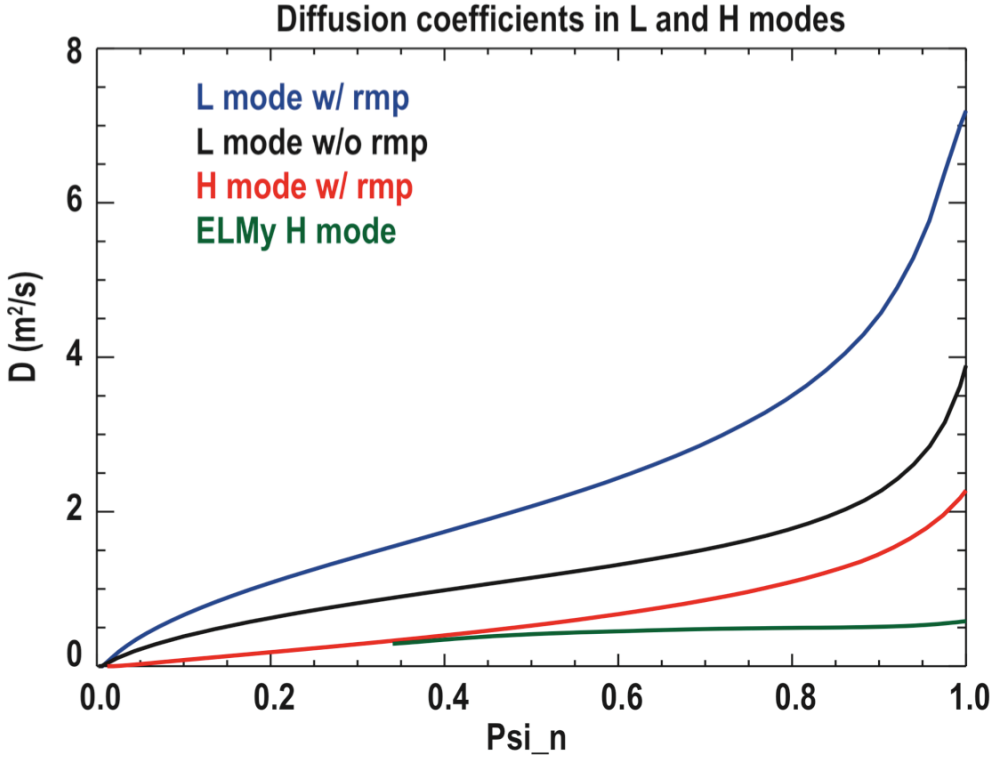

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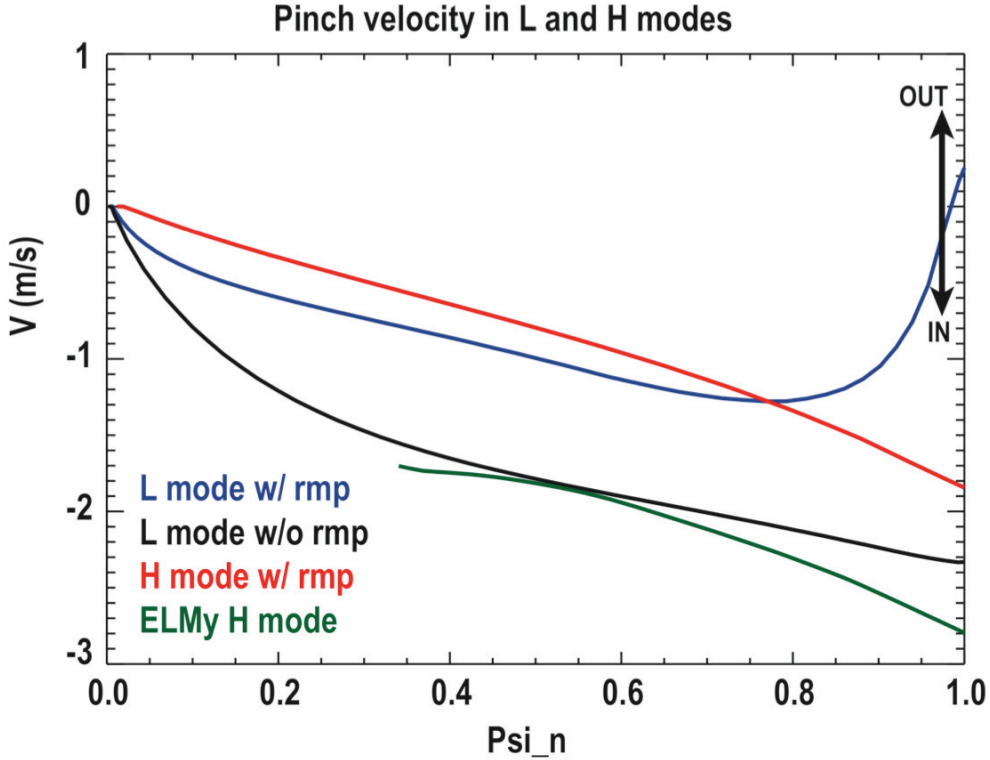

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University of California, San Diego

In collaboration with
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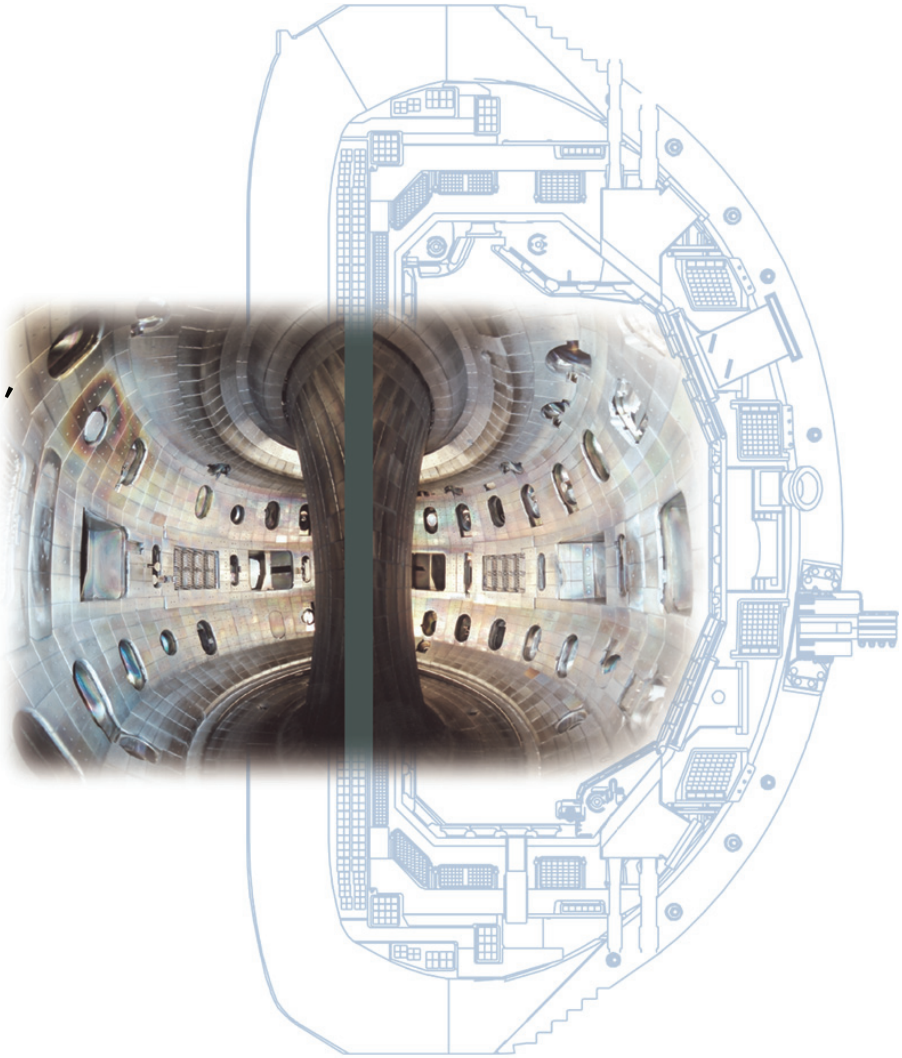

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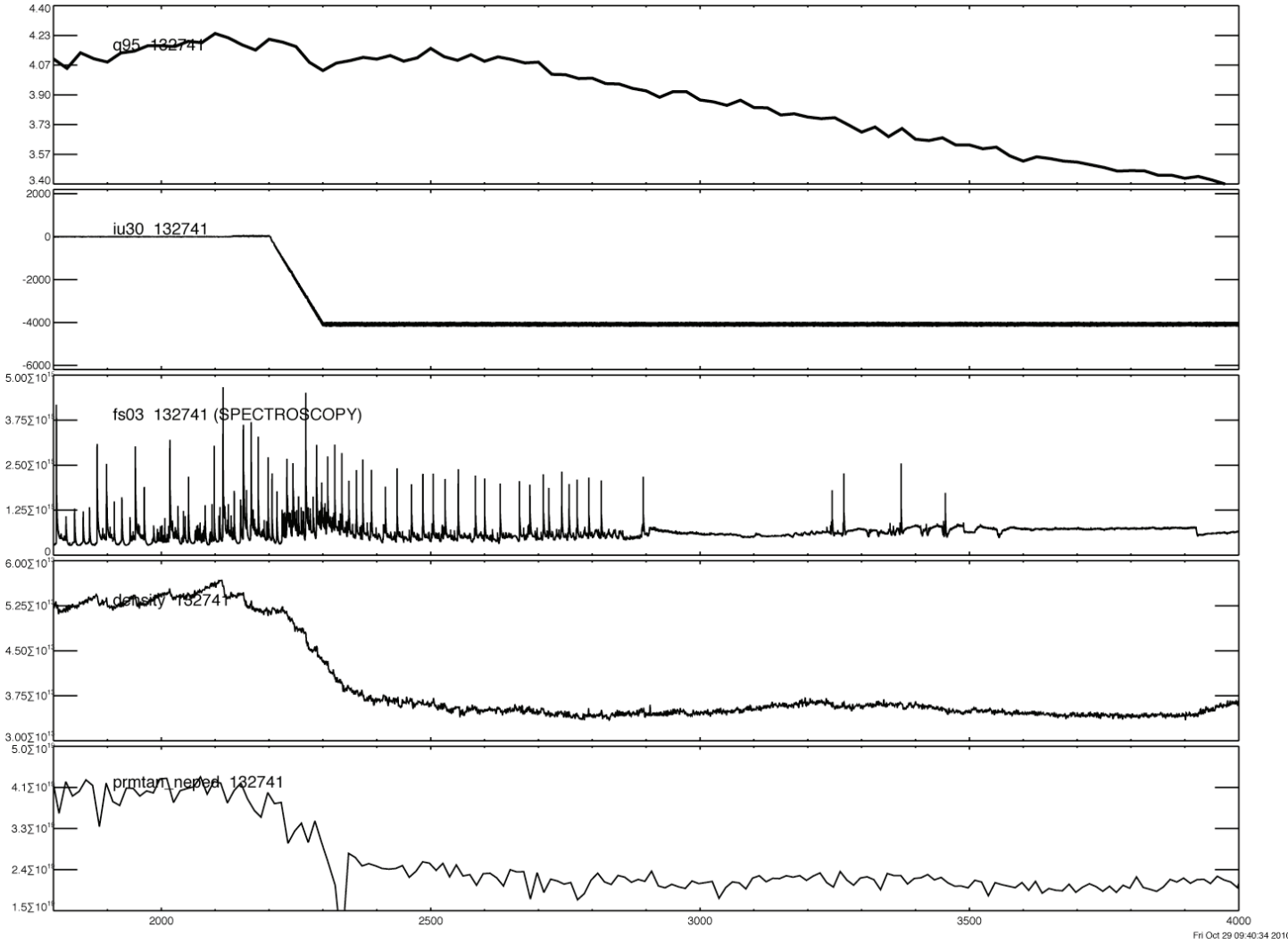

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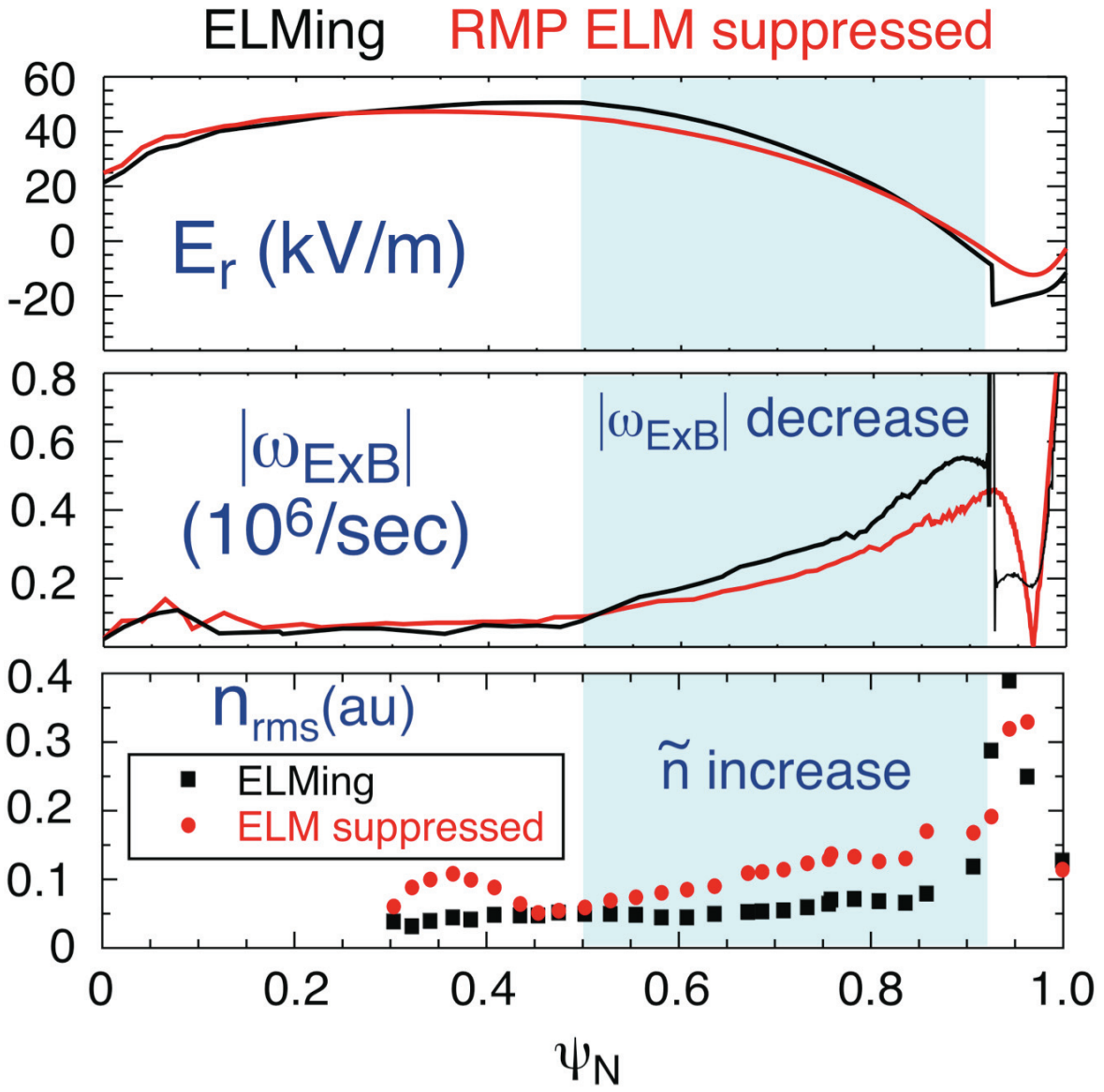

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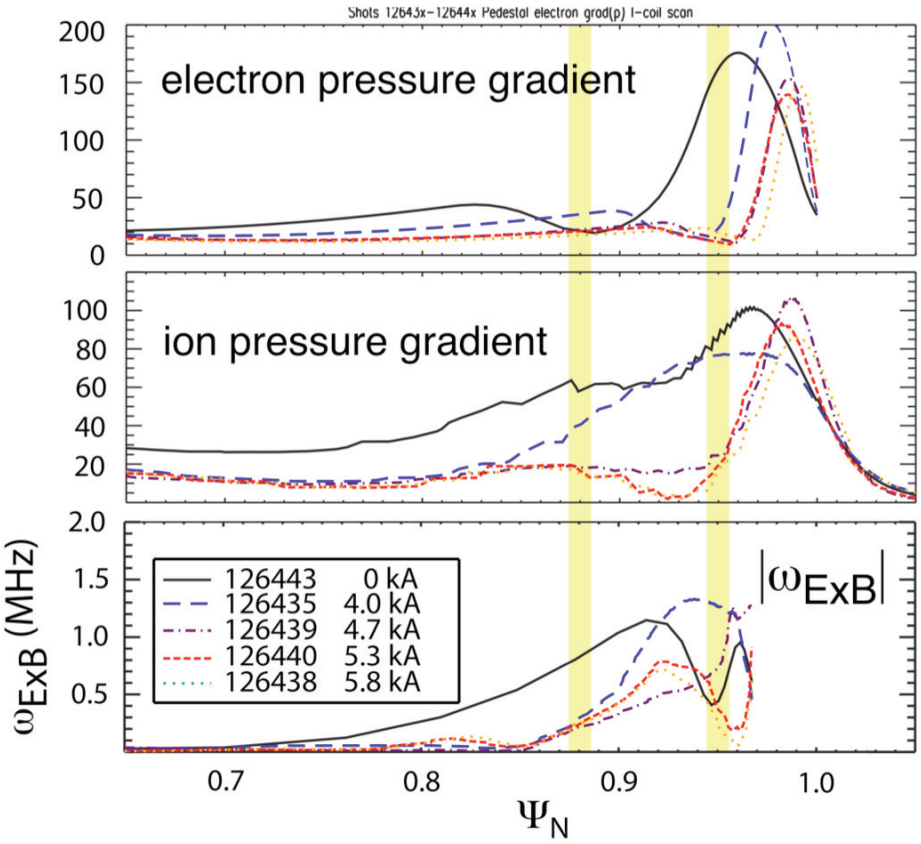

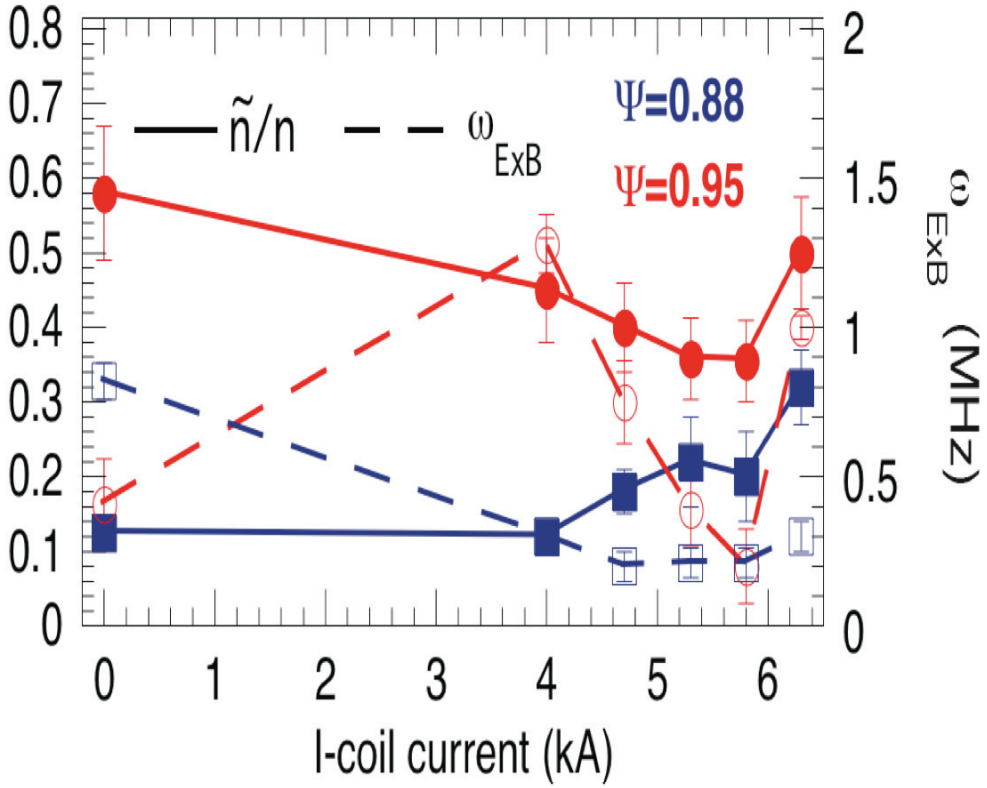

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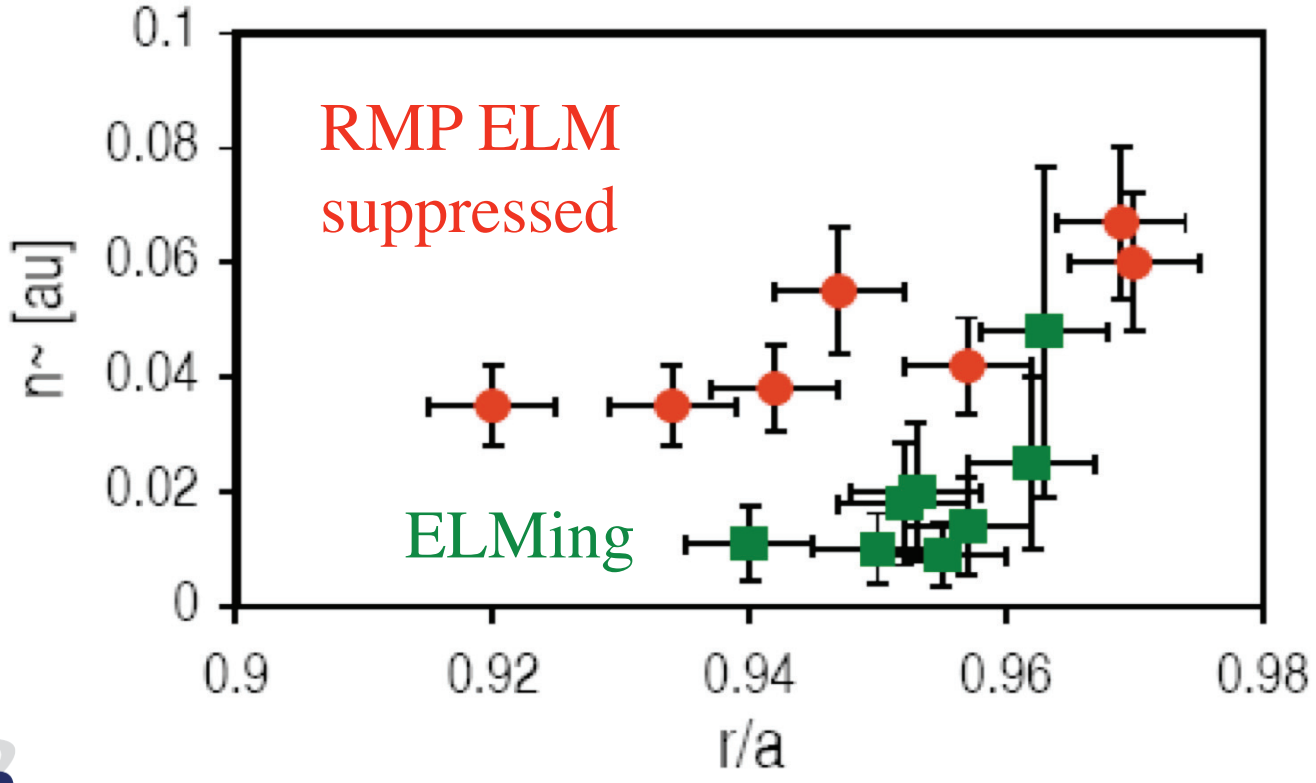

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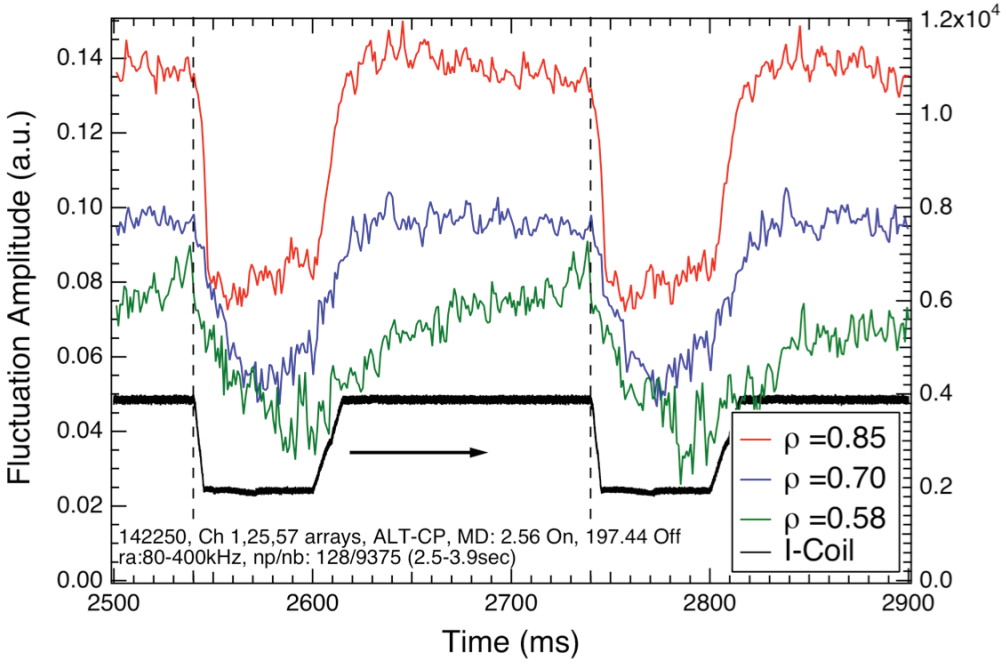

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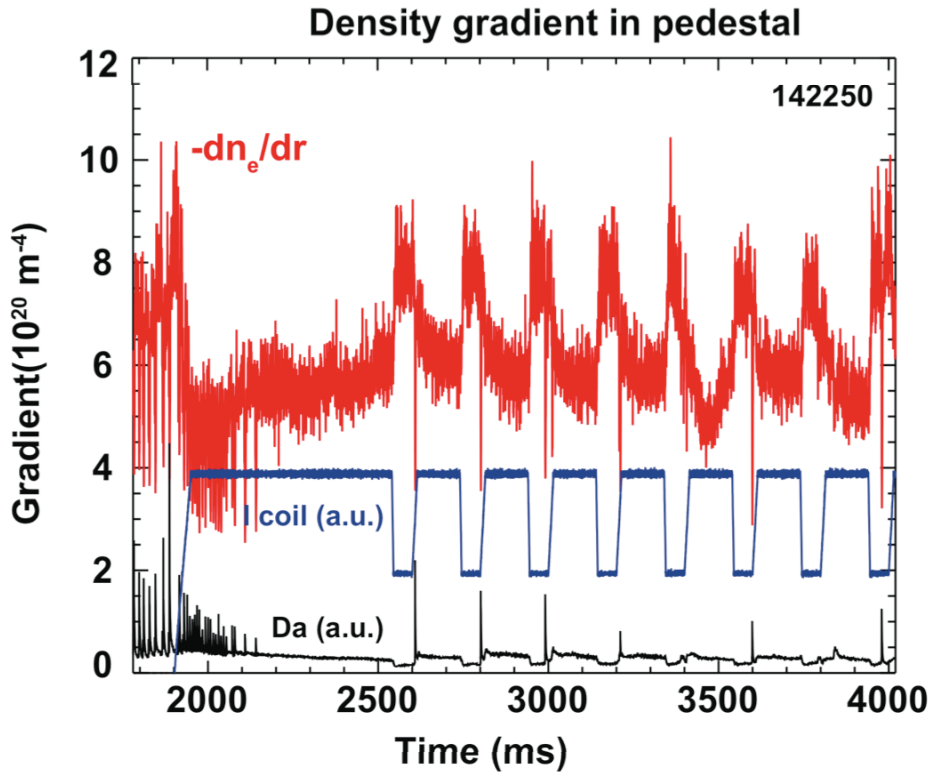

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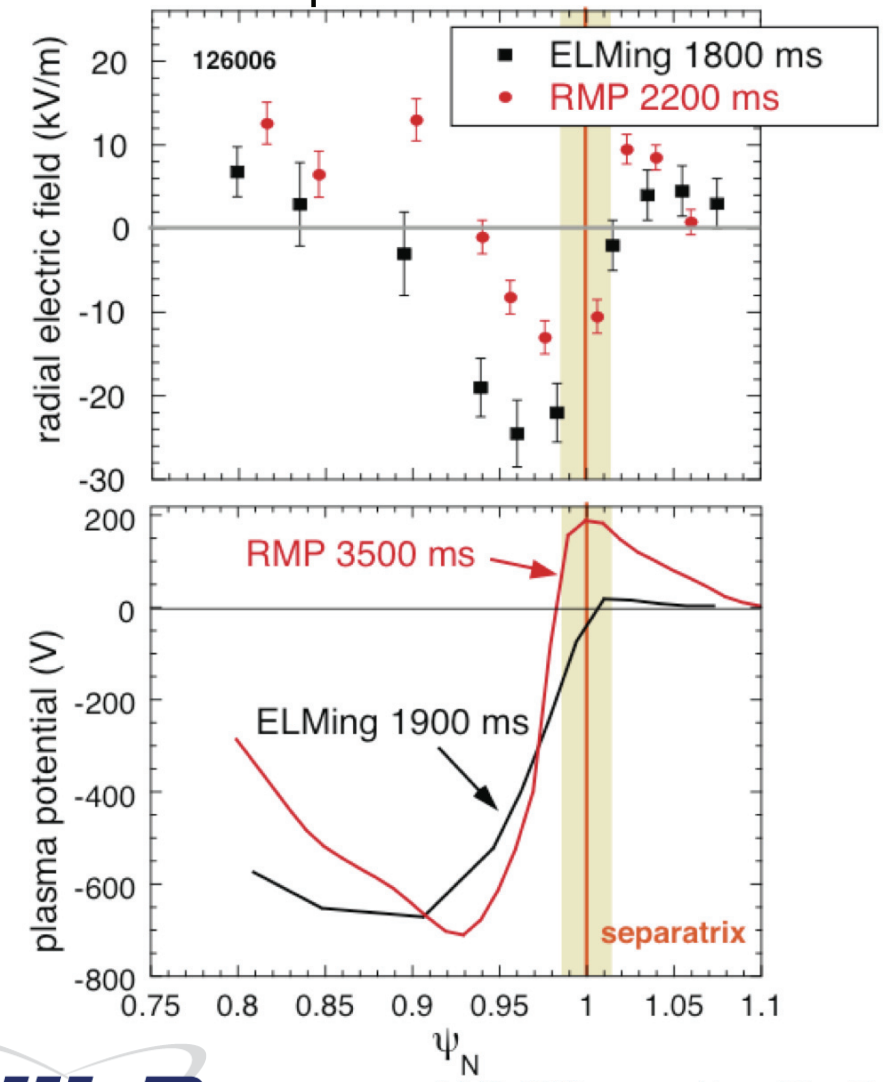

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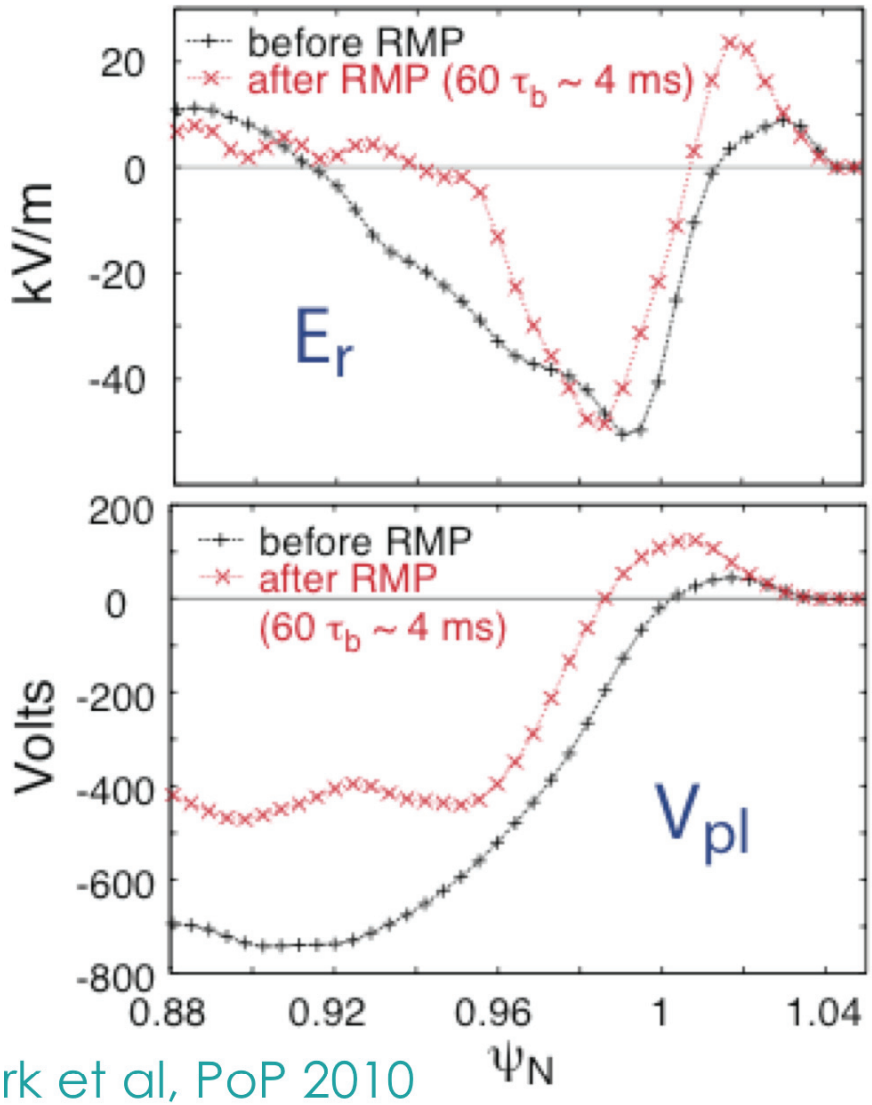

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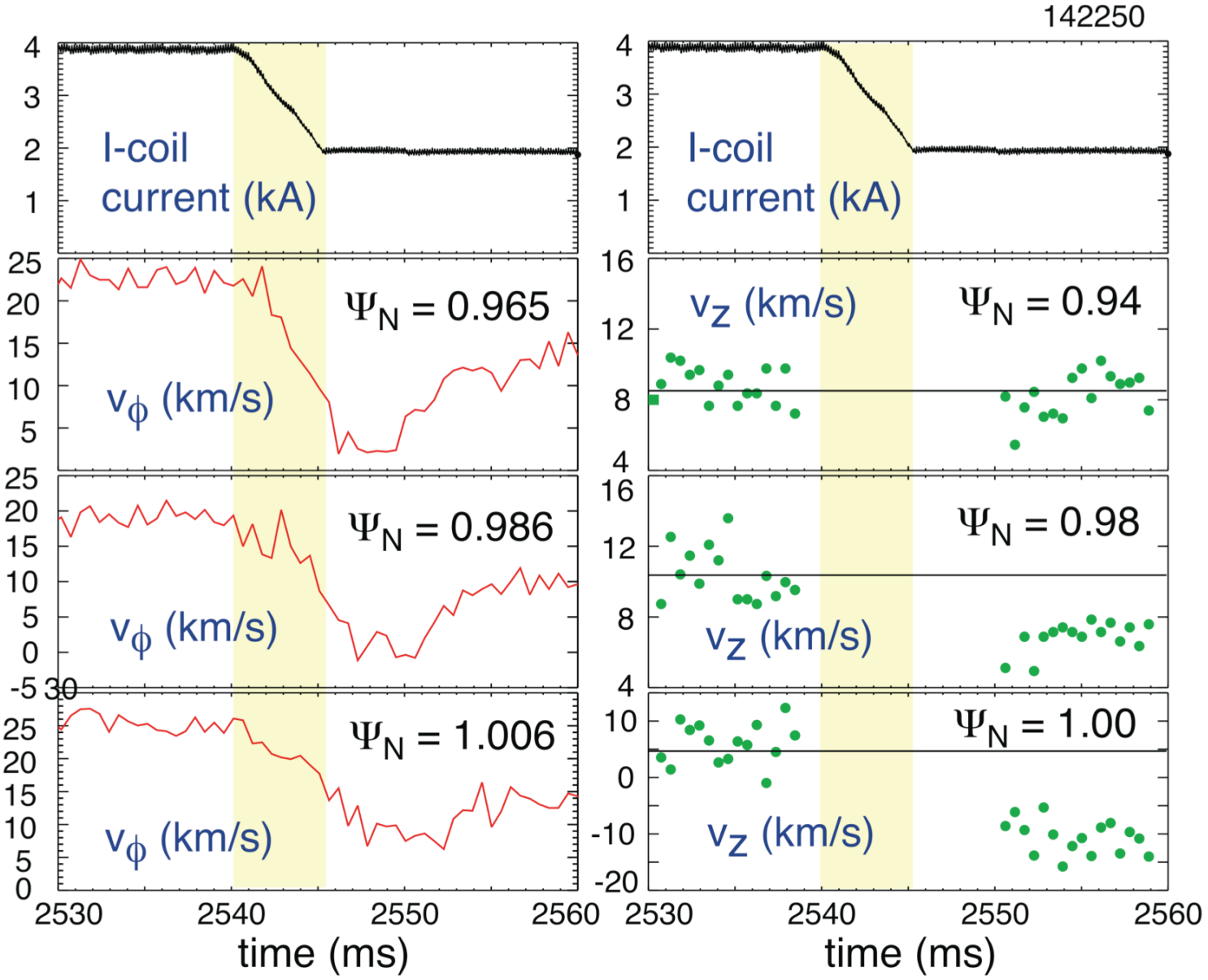

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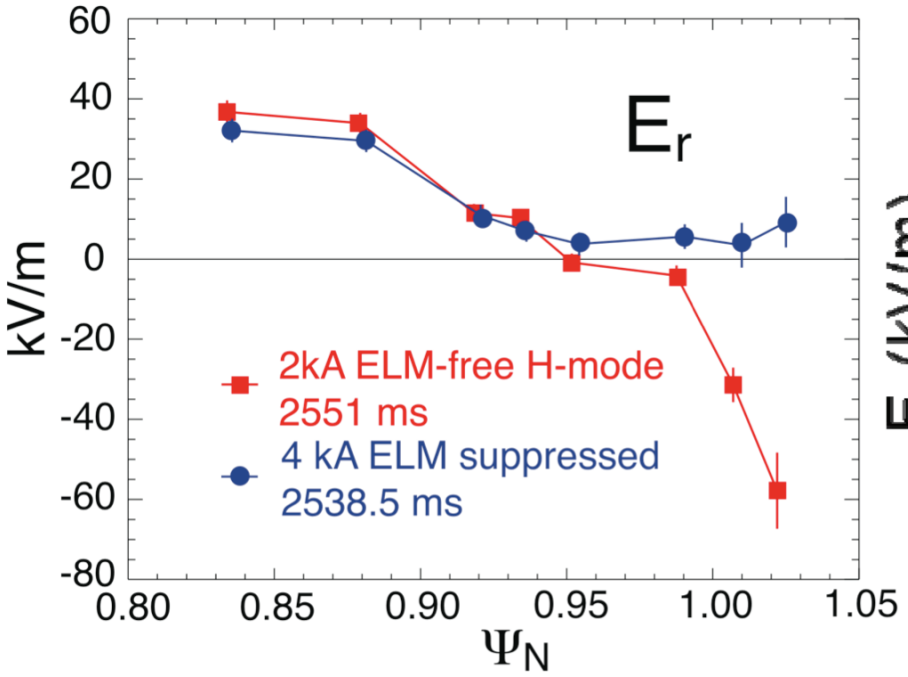

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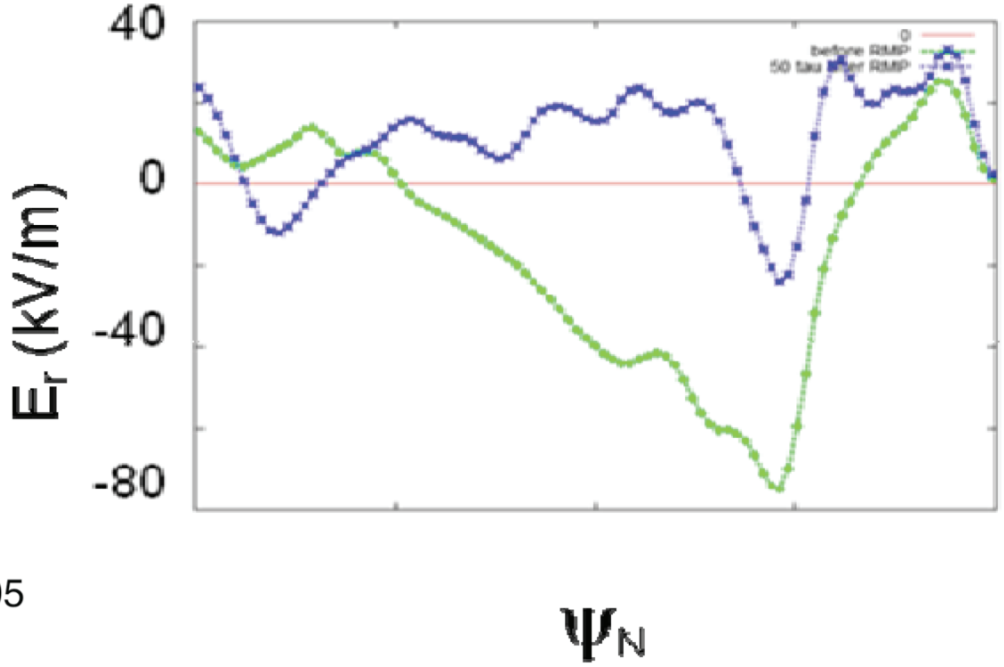

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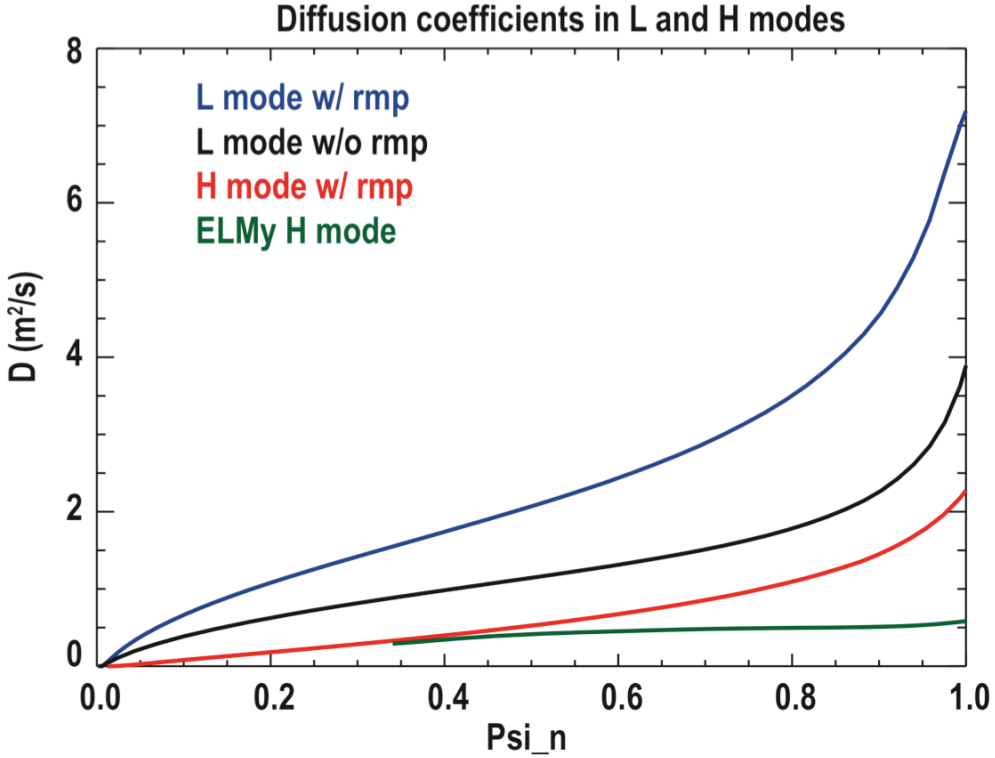

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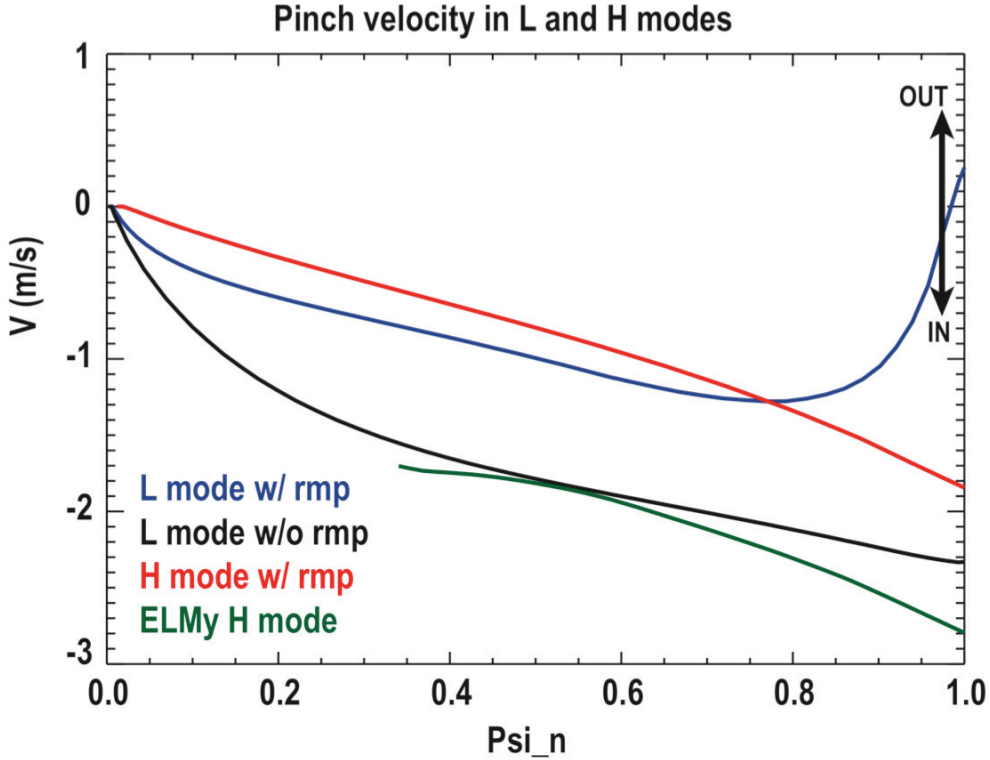

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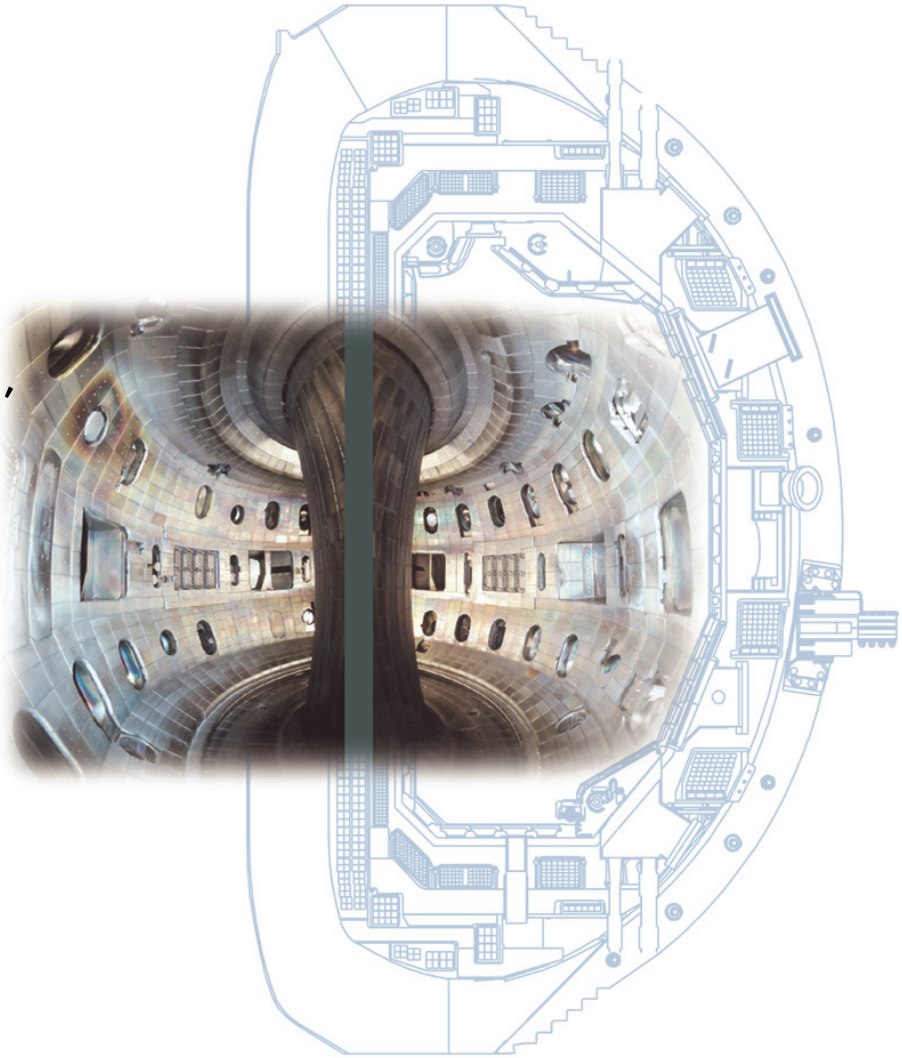

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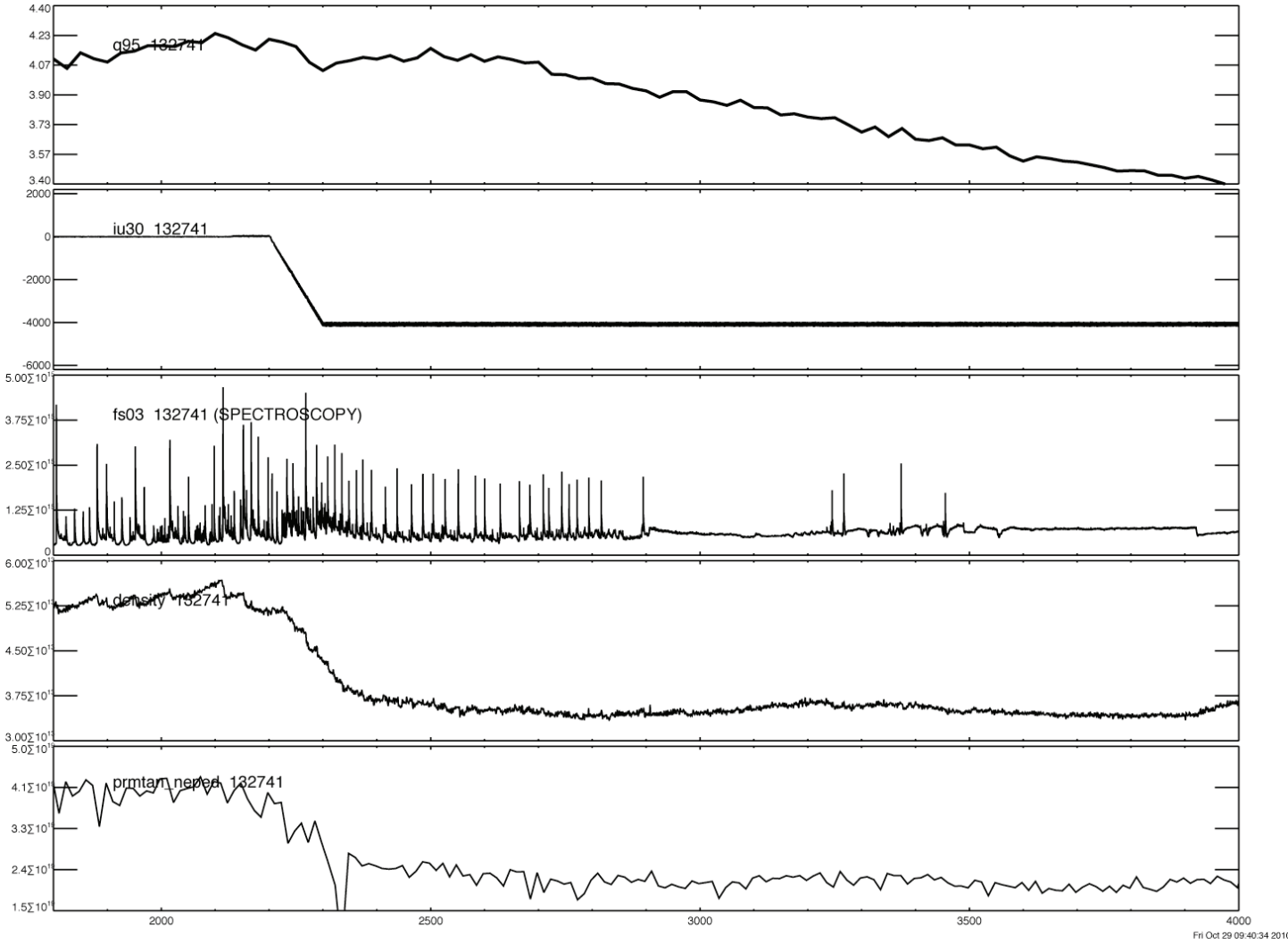

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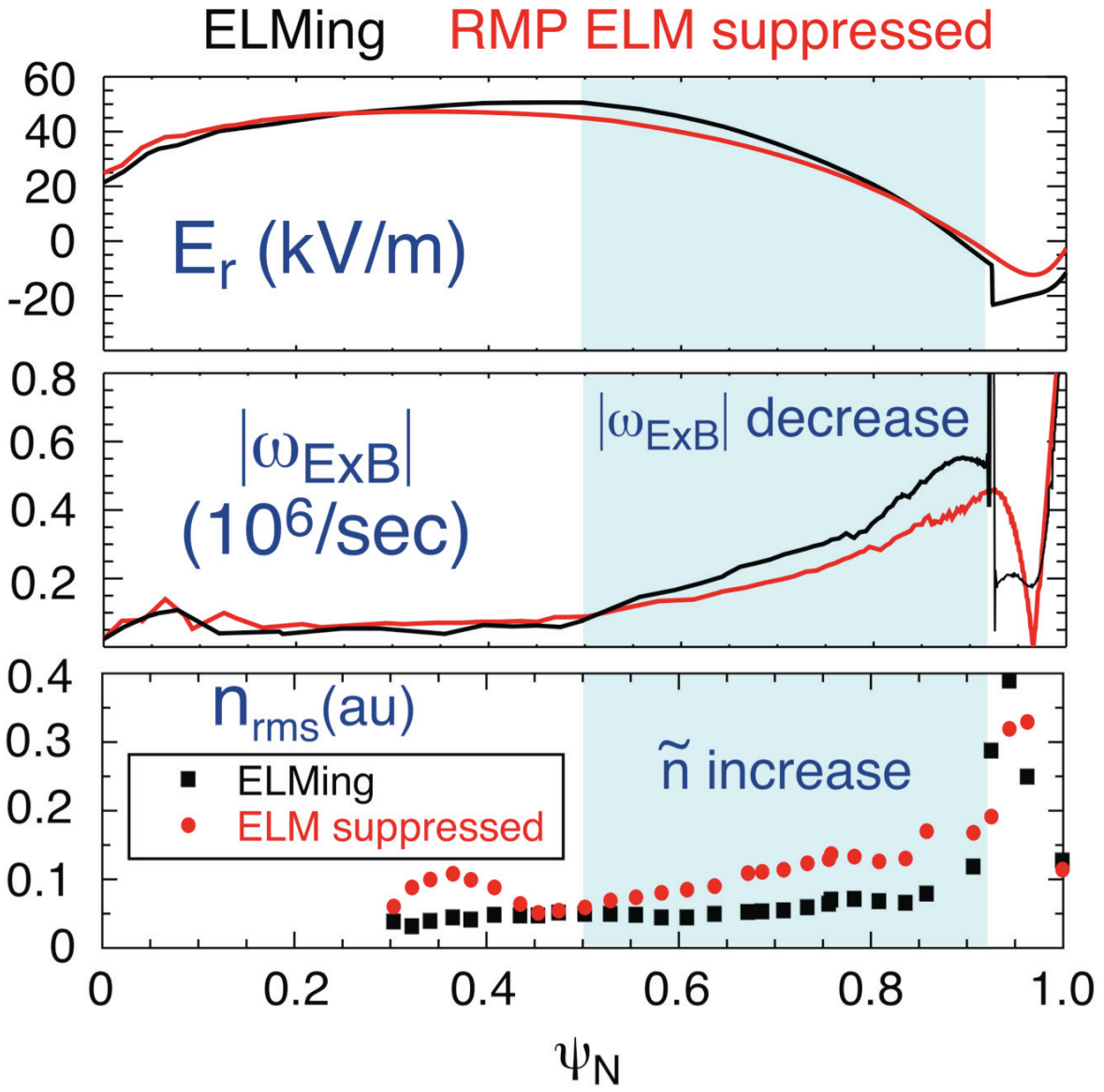

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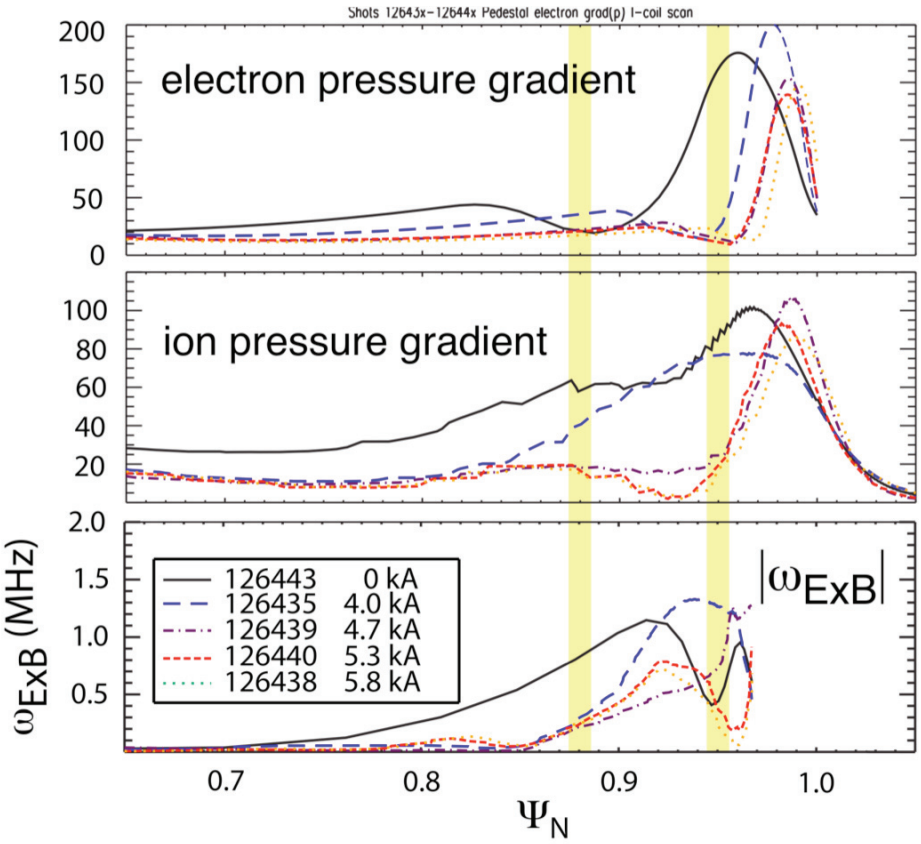

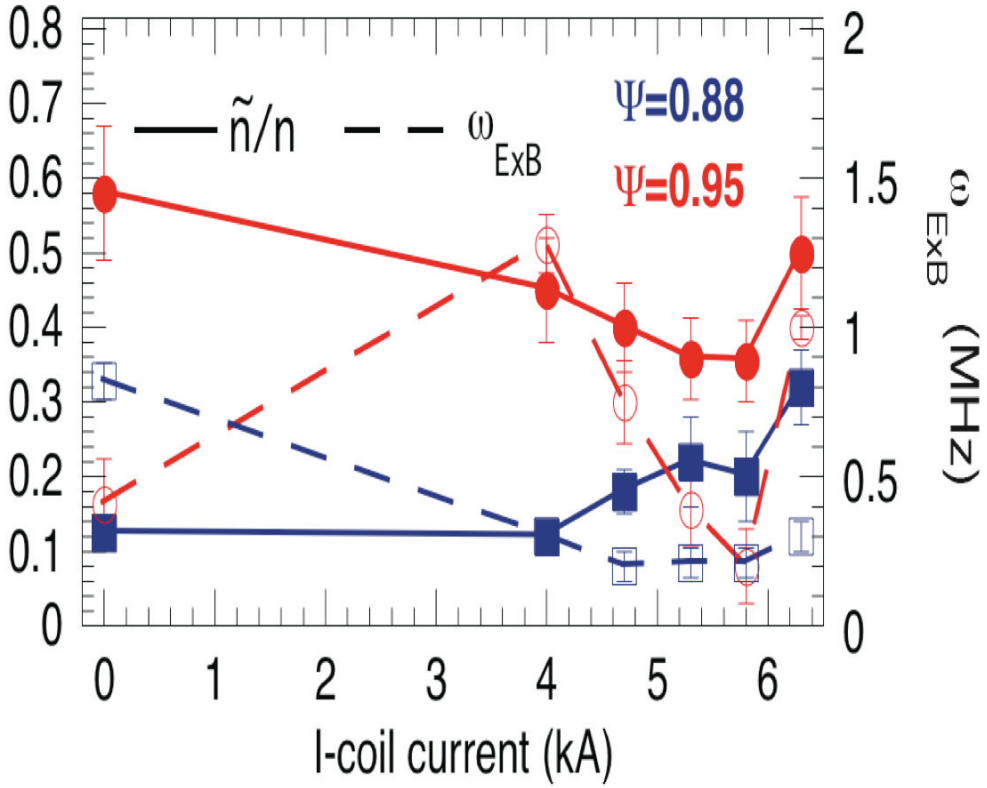

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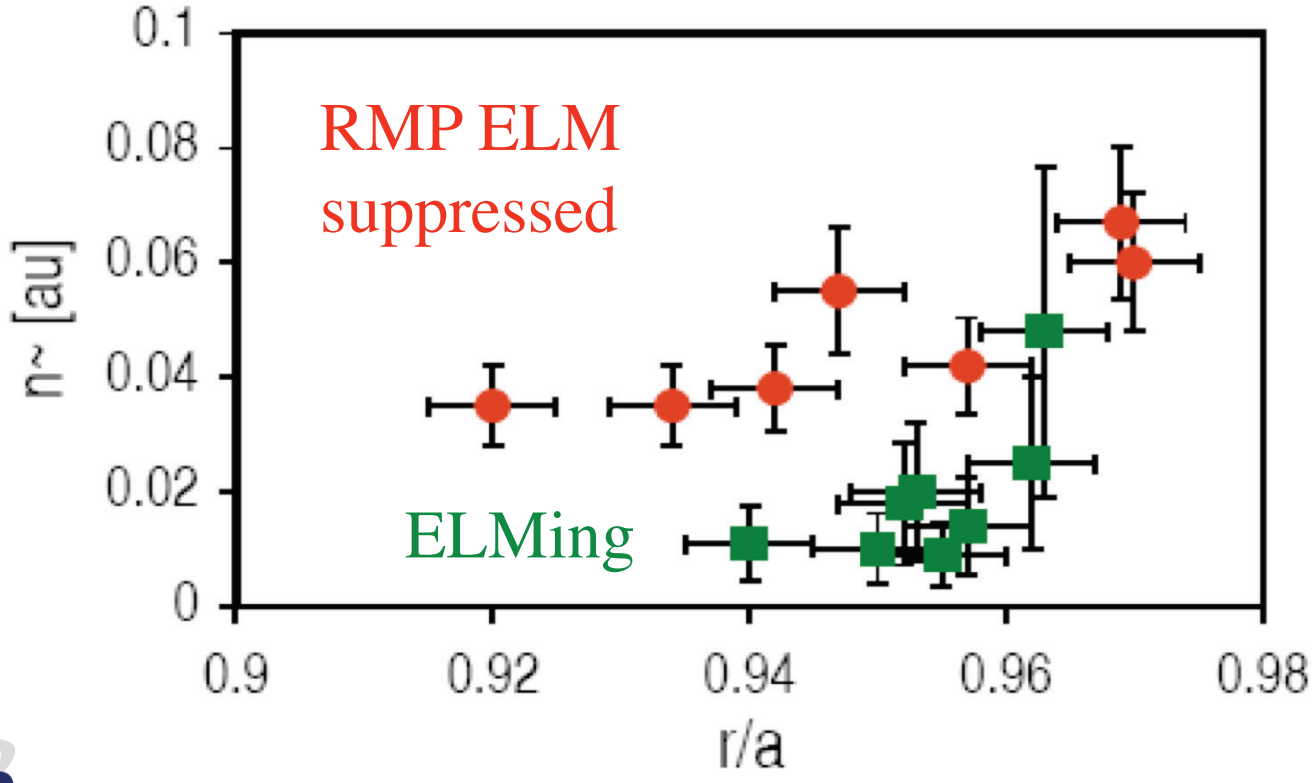

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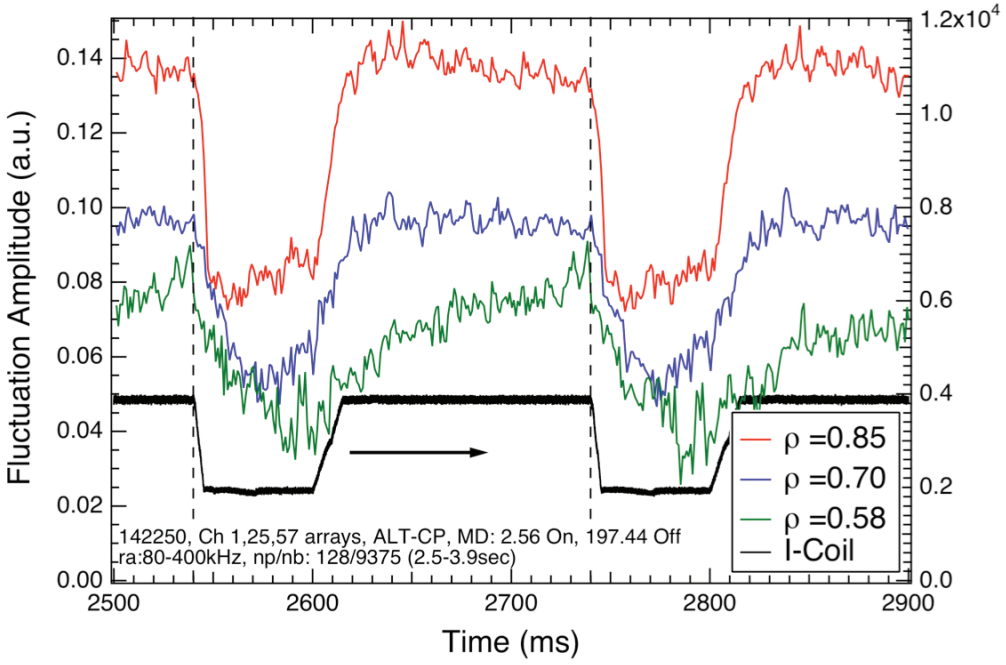

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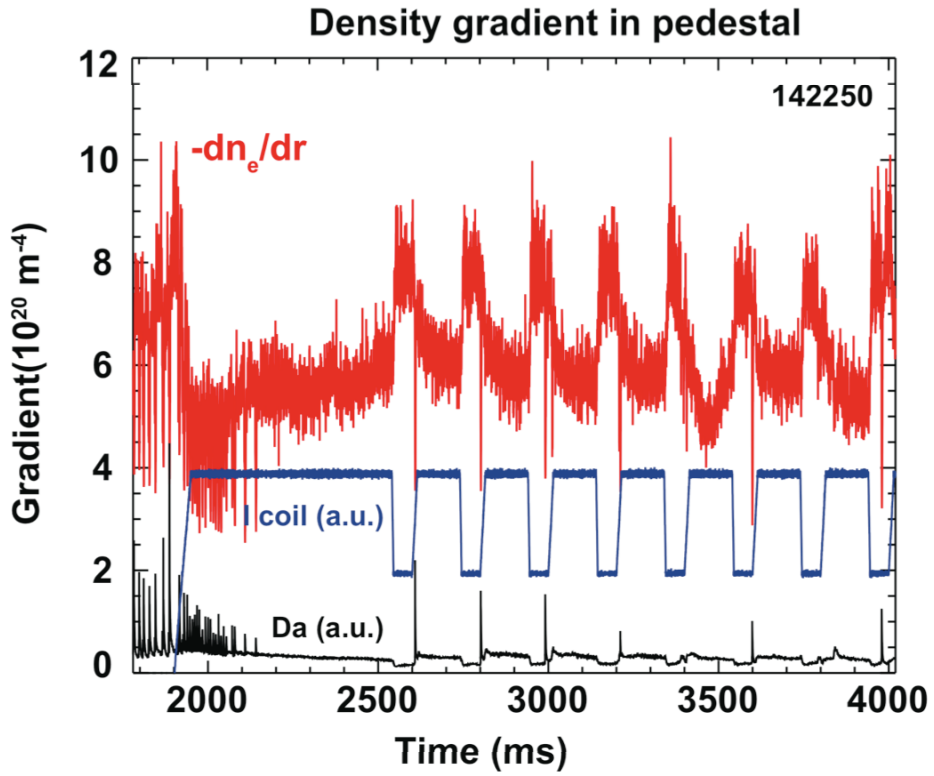

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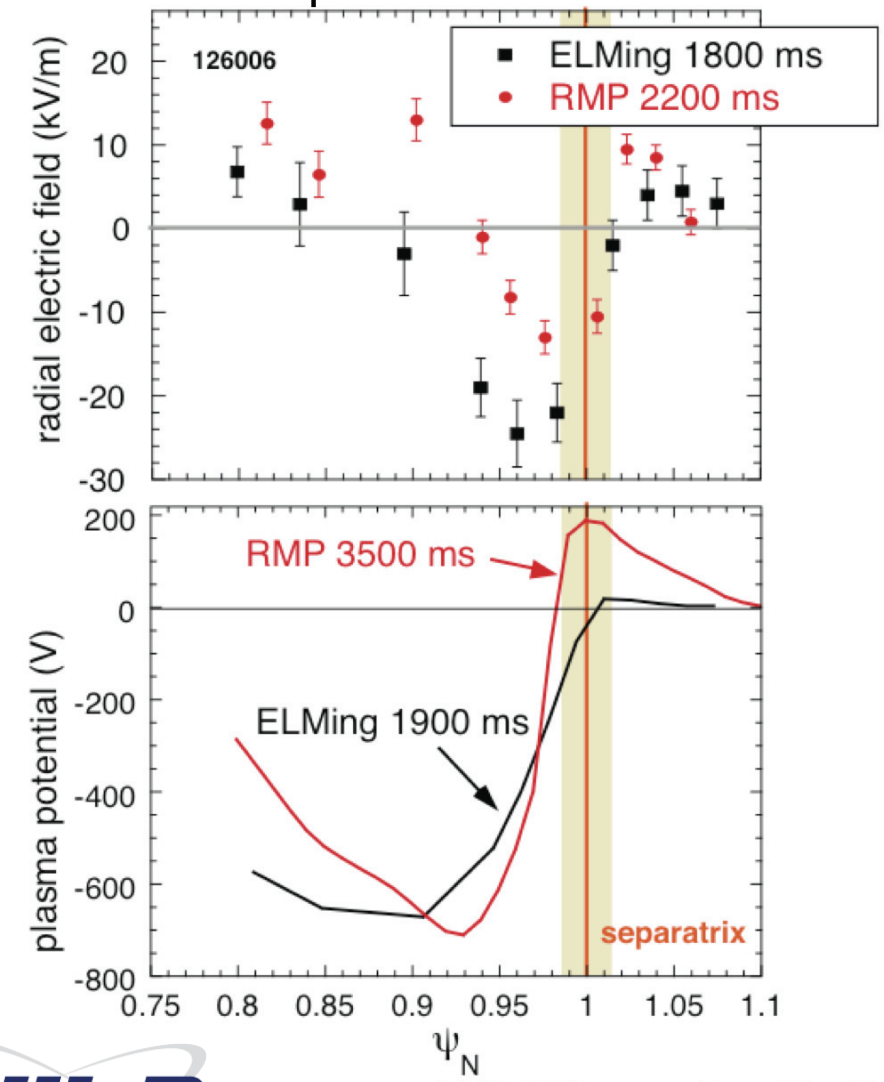

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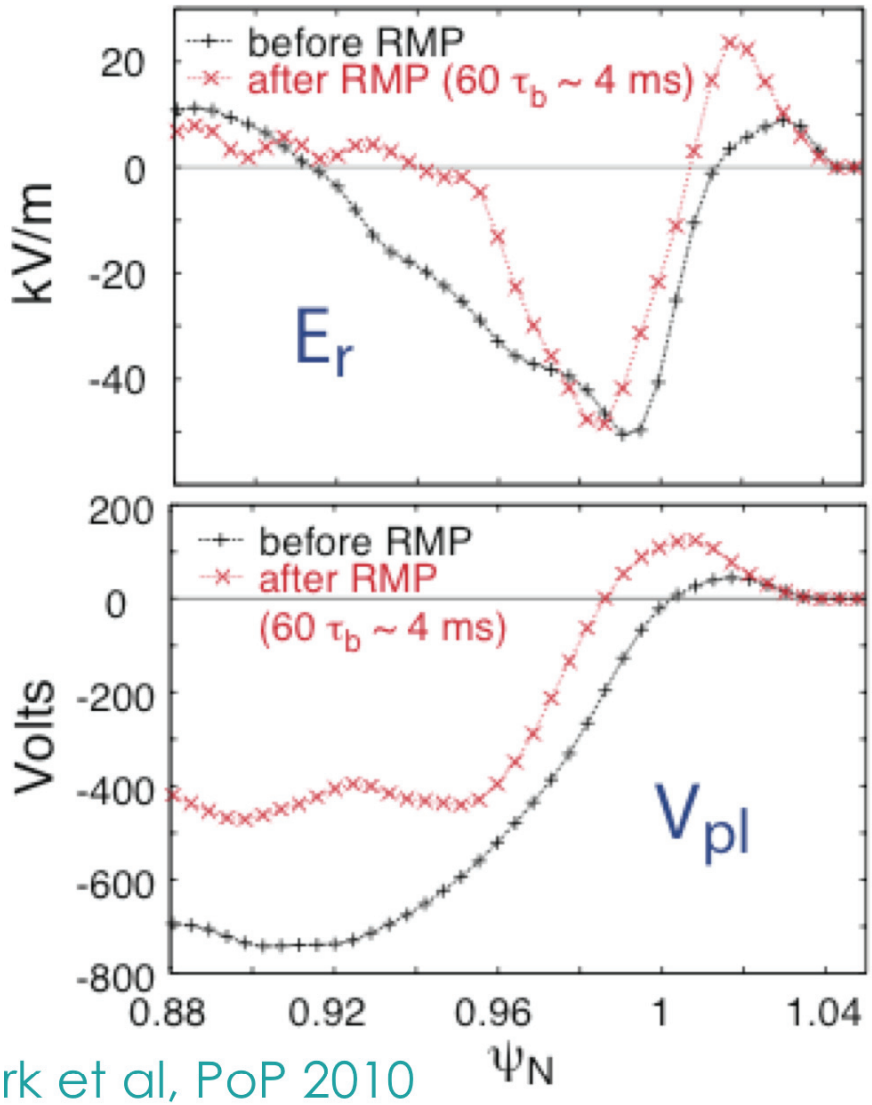

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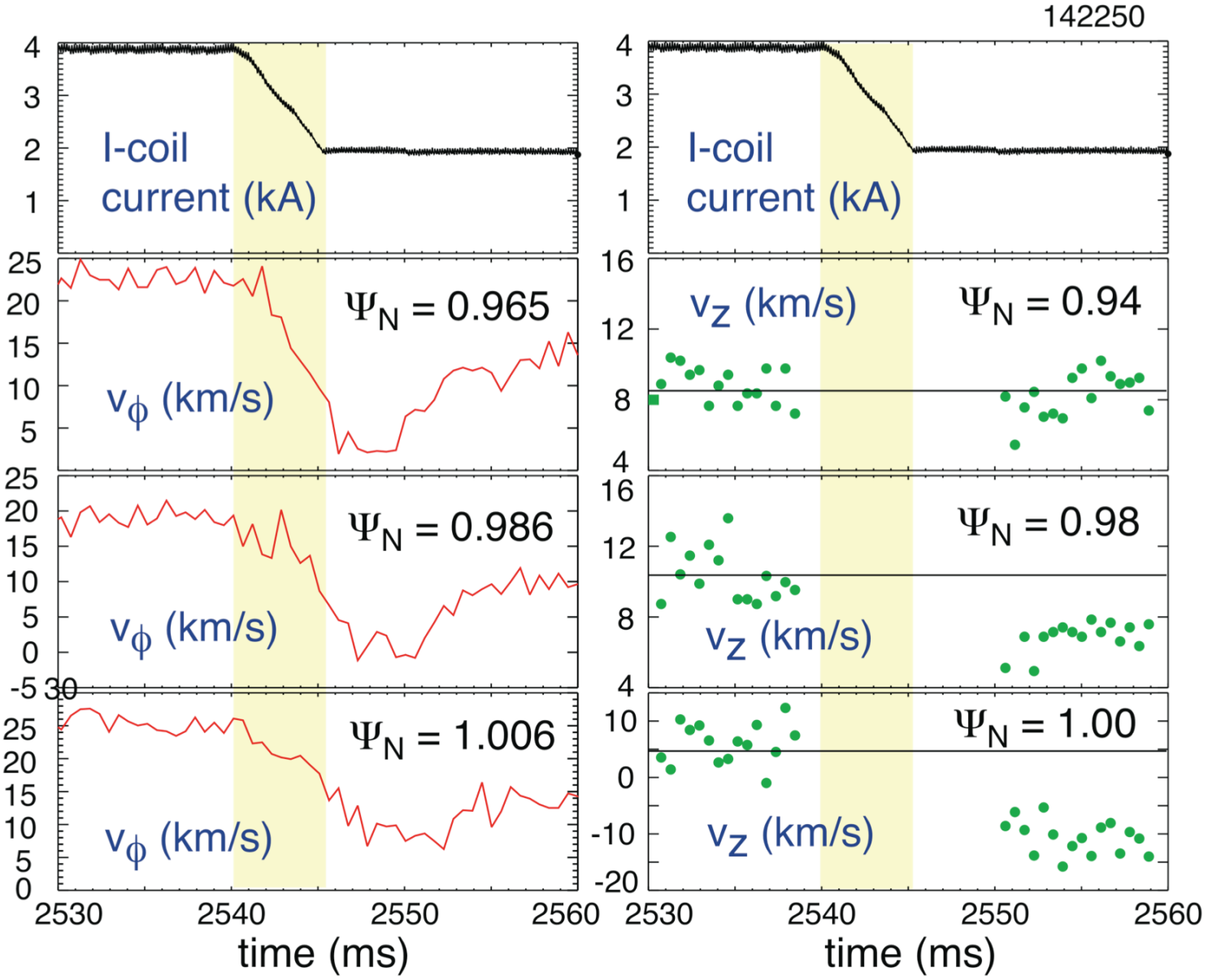

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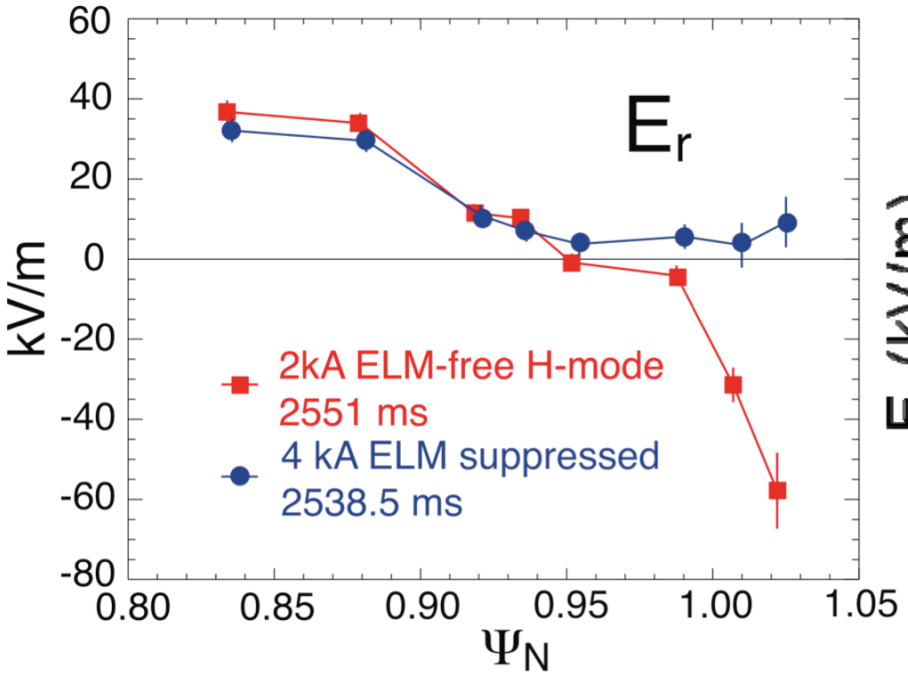

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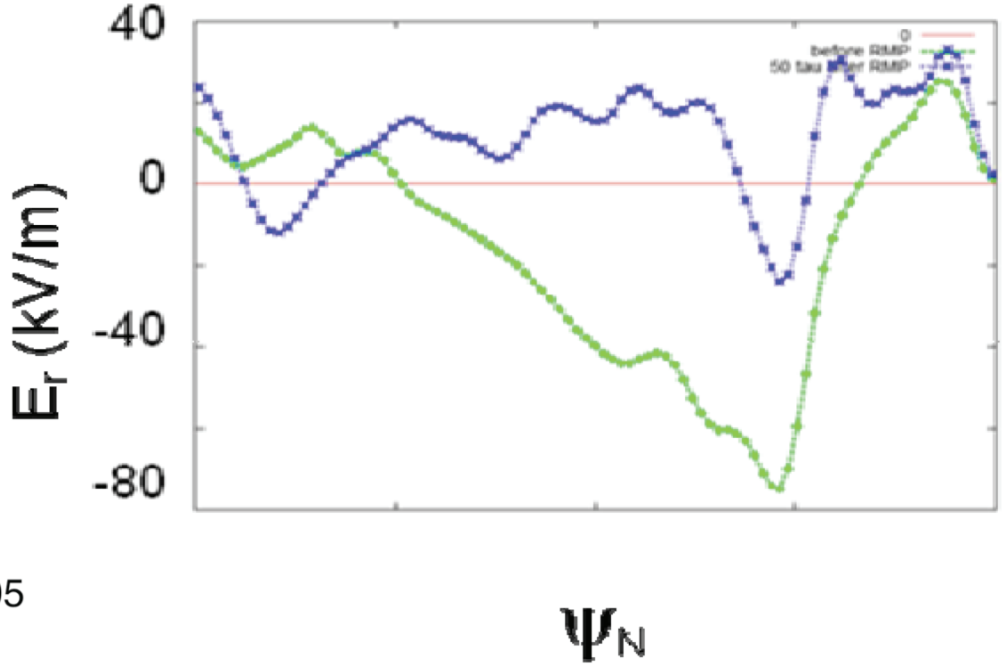

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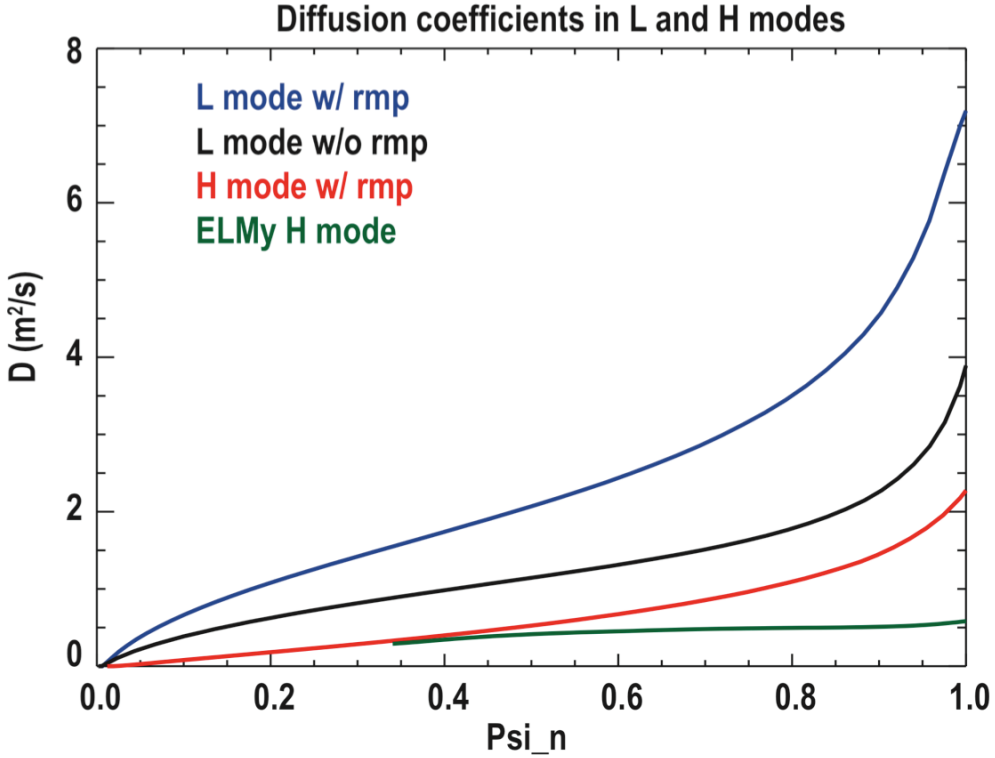

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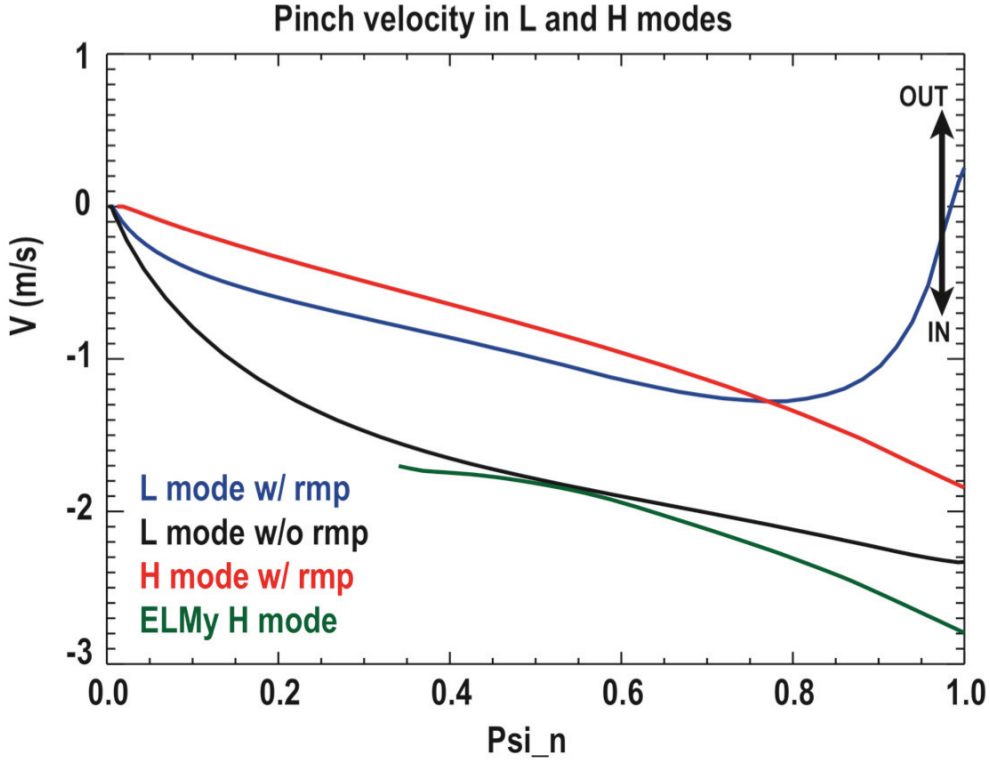

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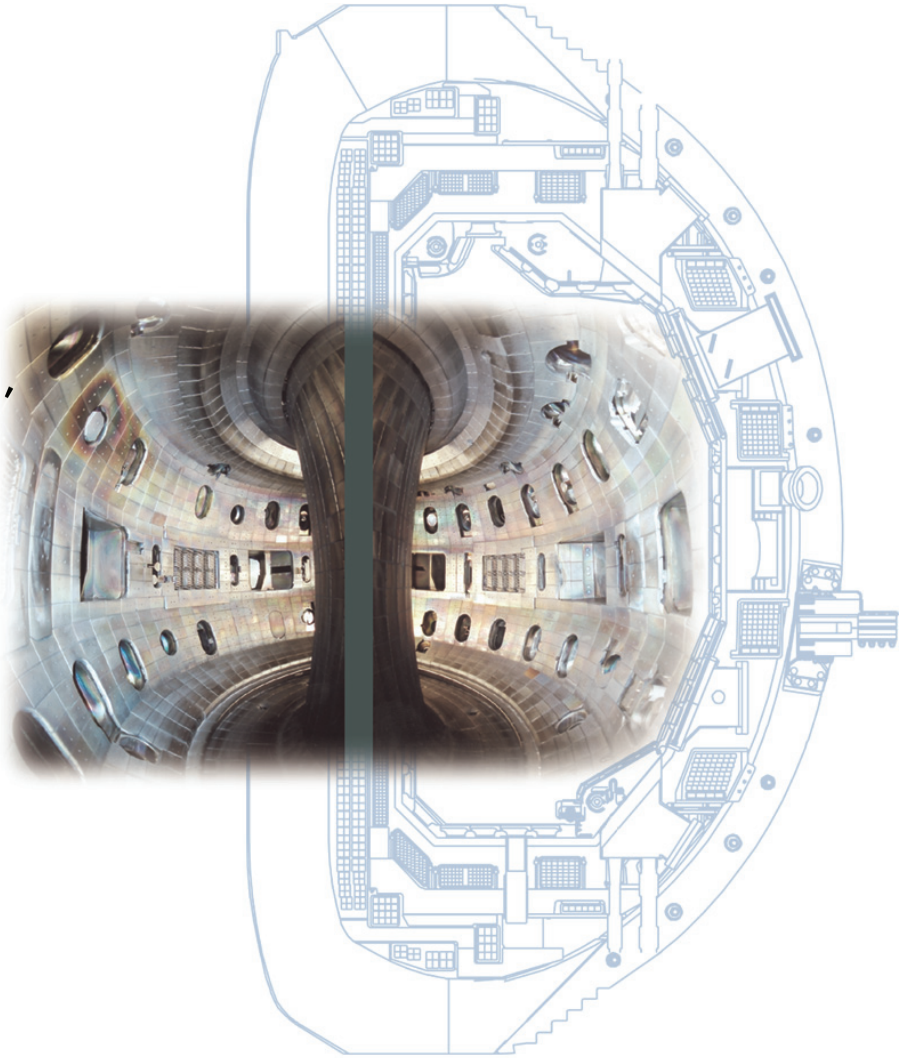

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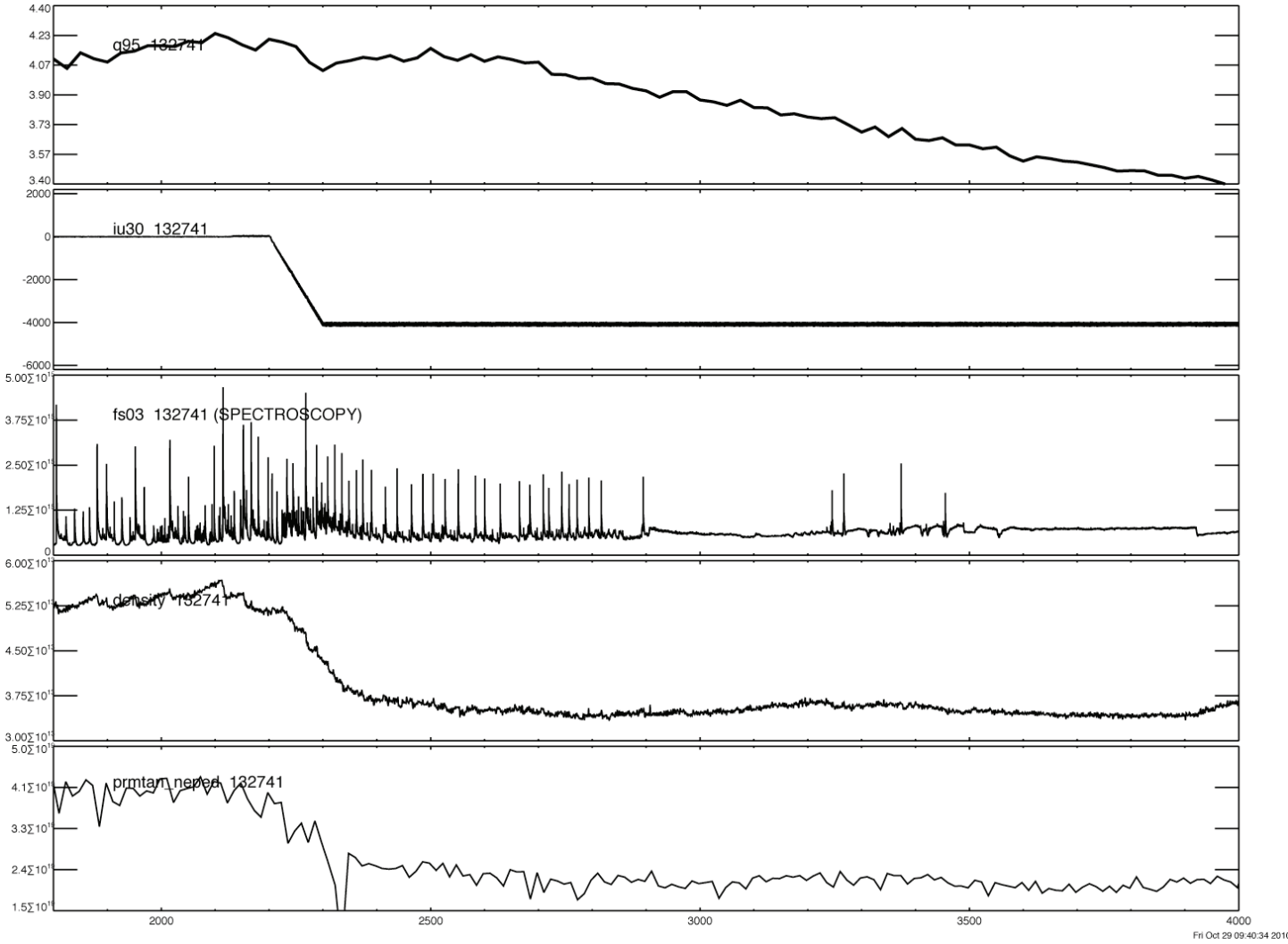

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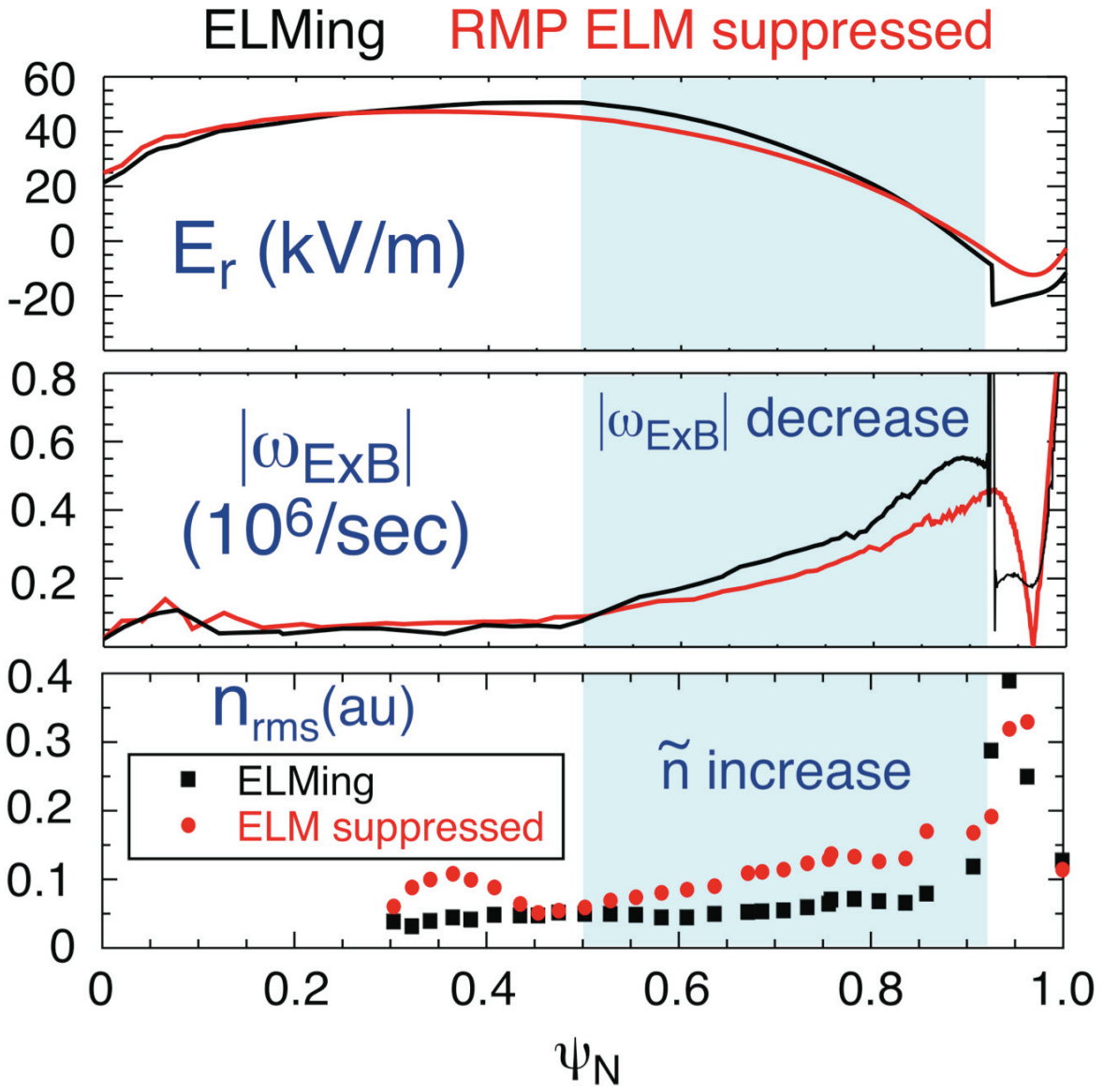

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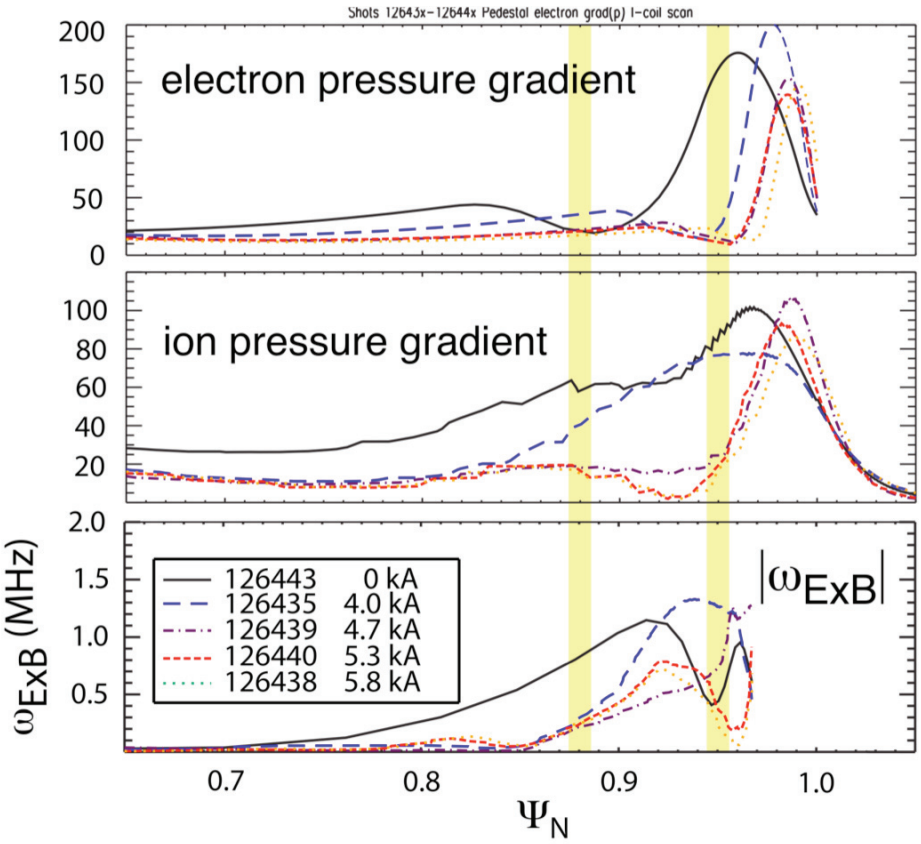

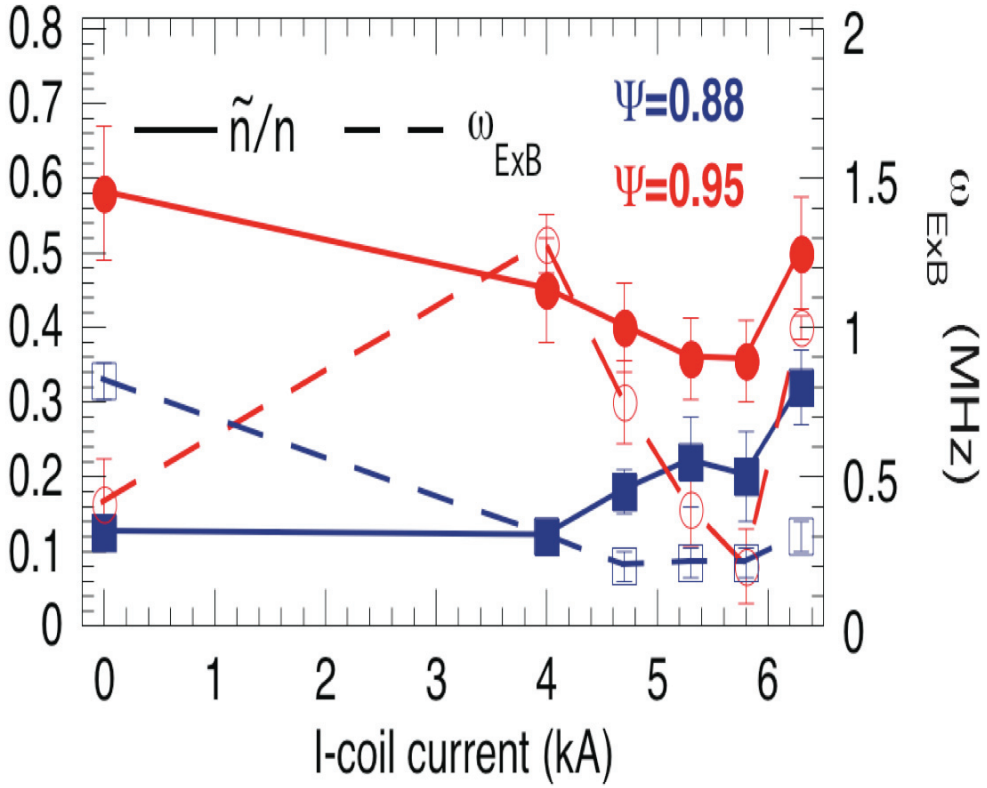

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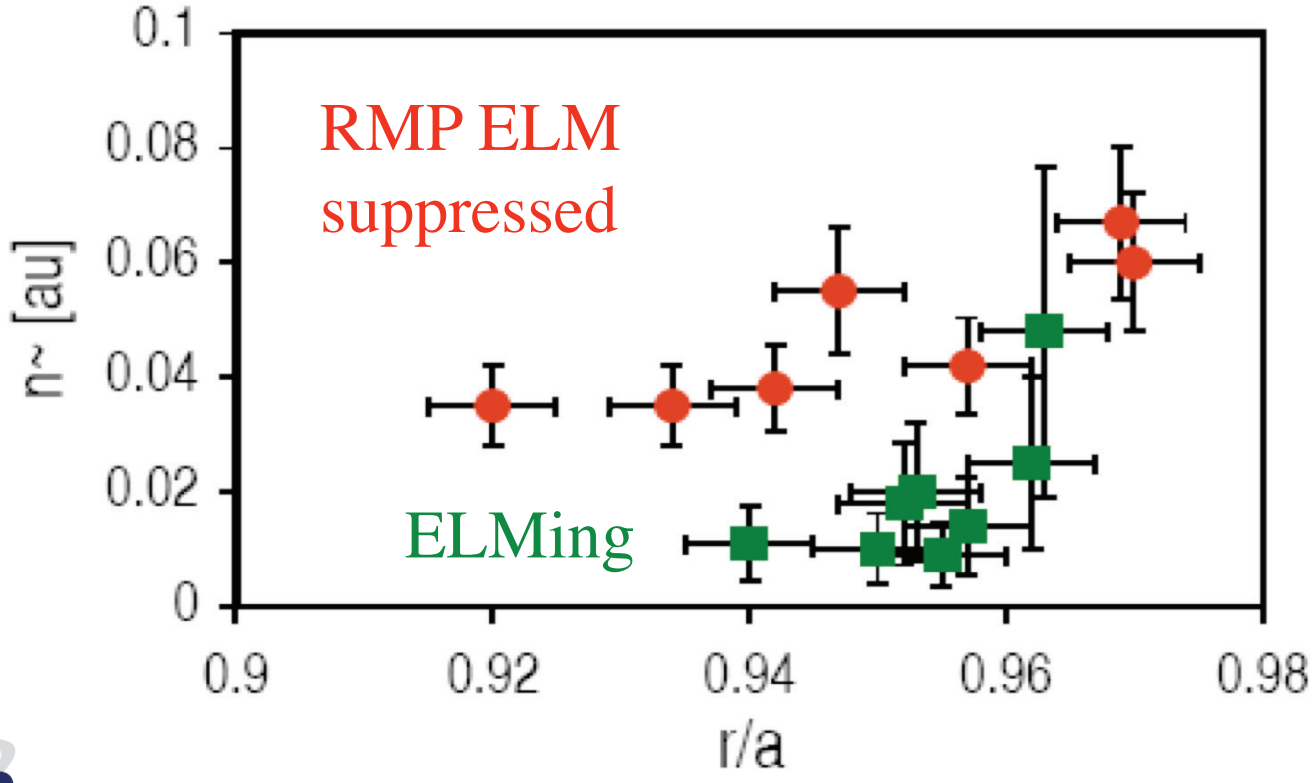

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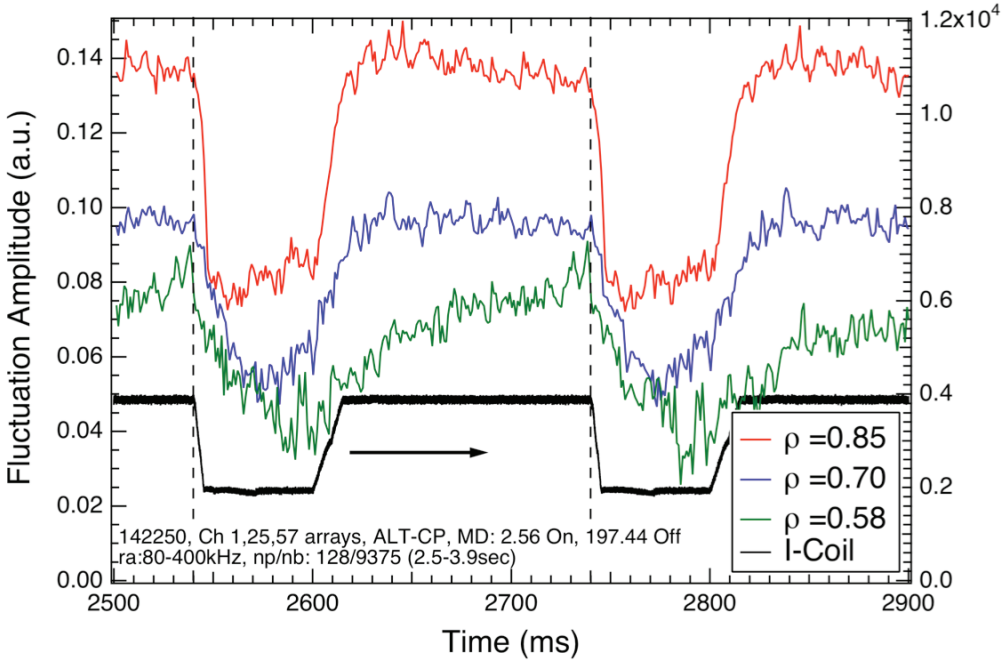

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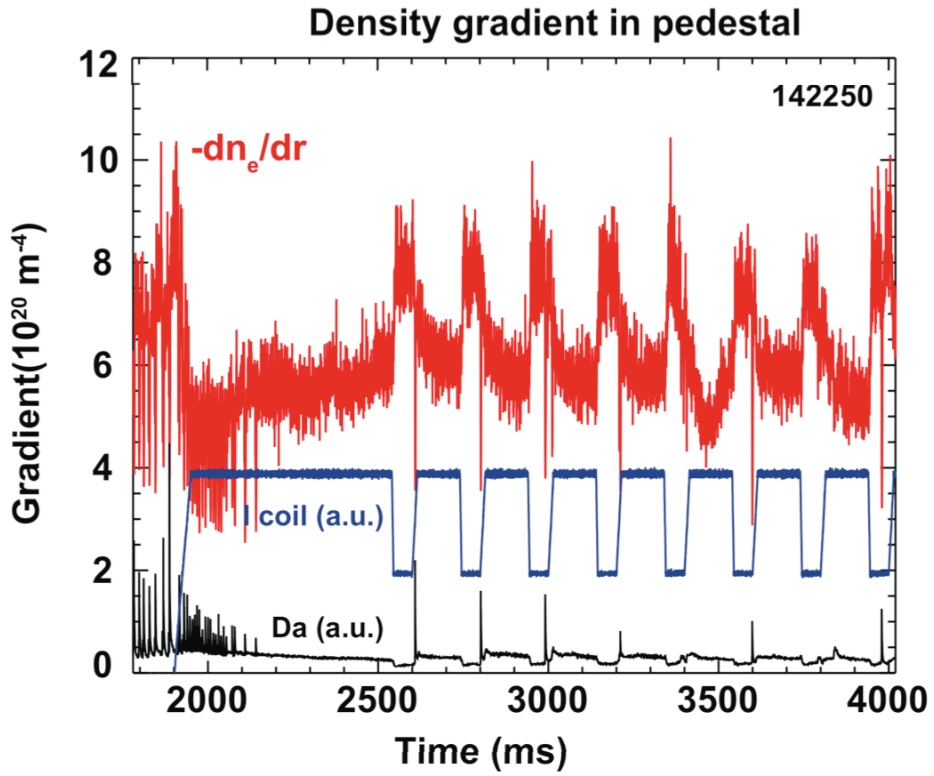

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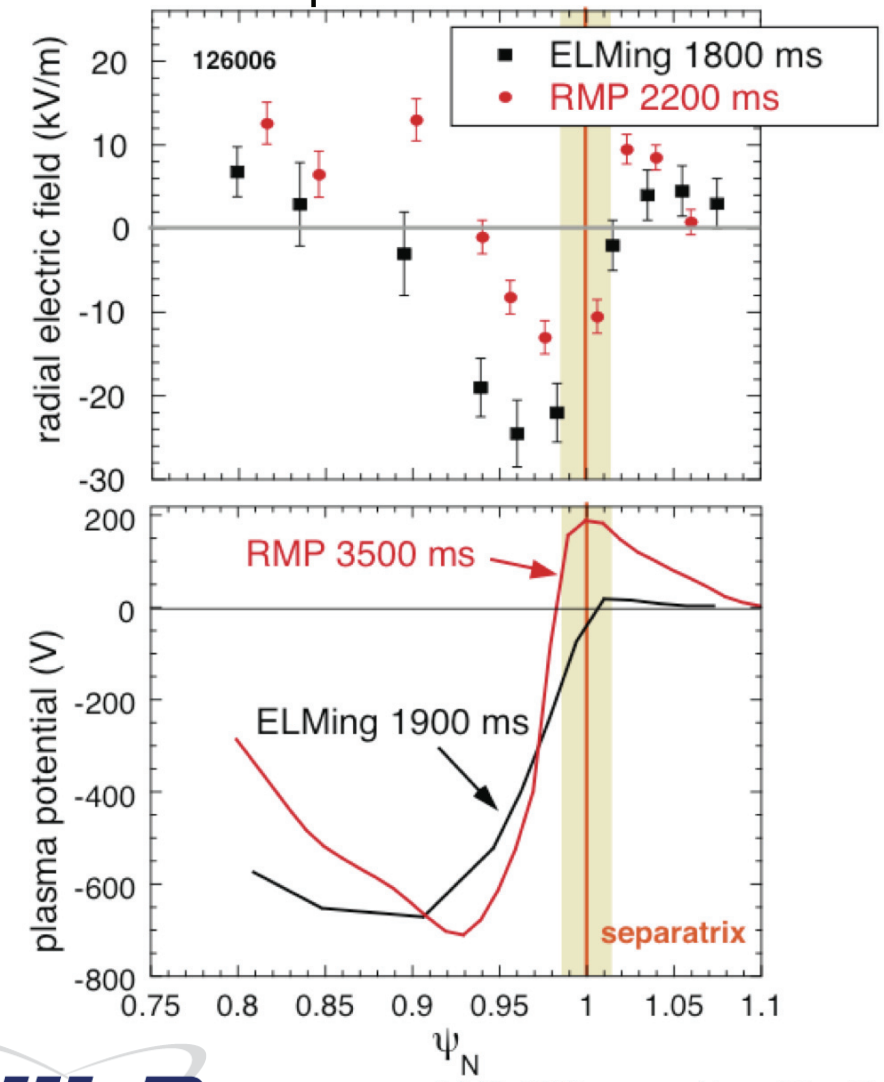

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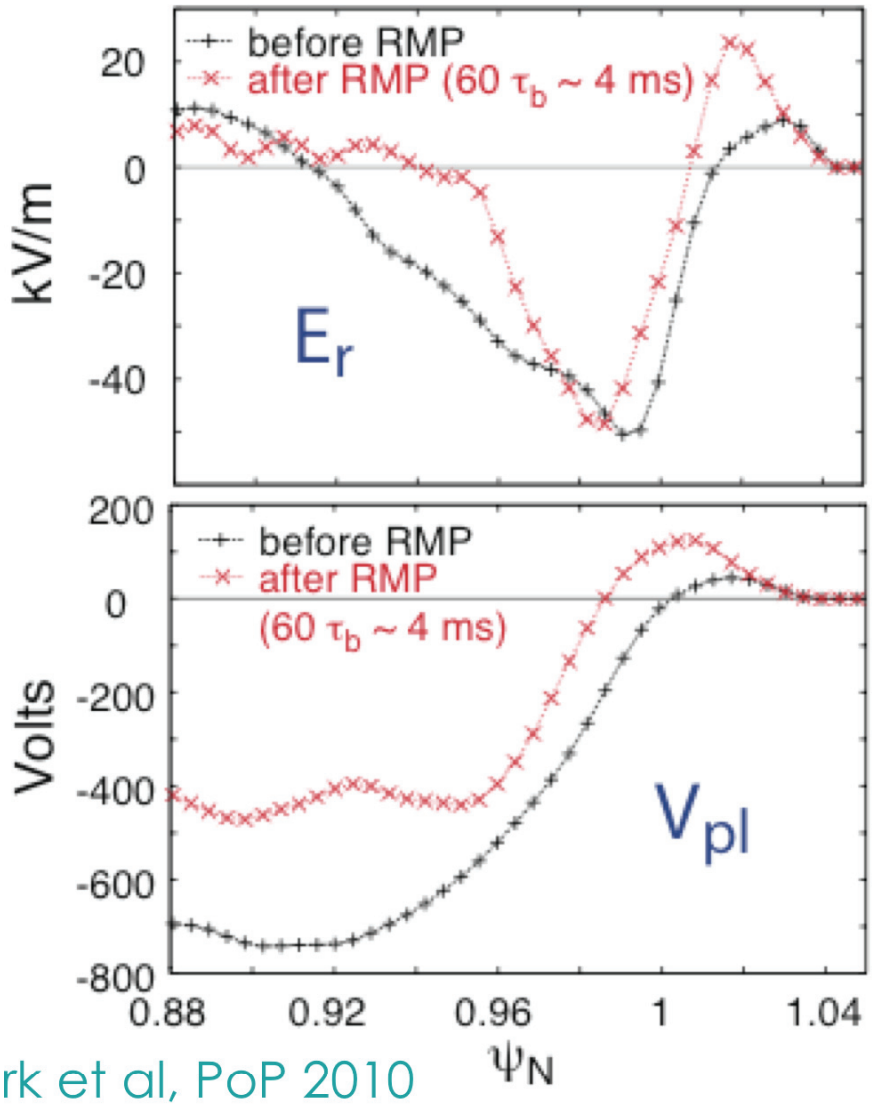

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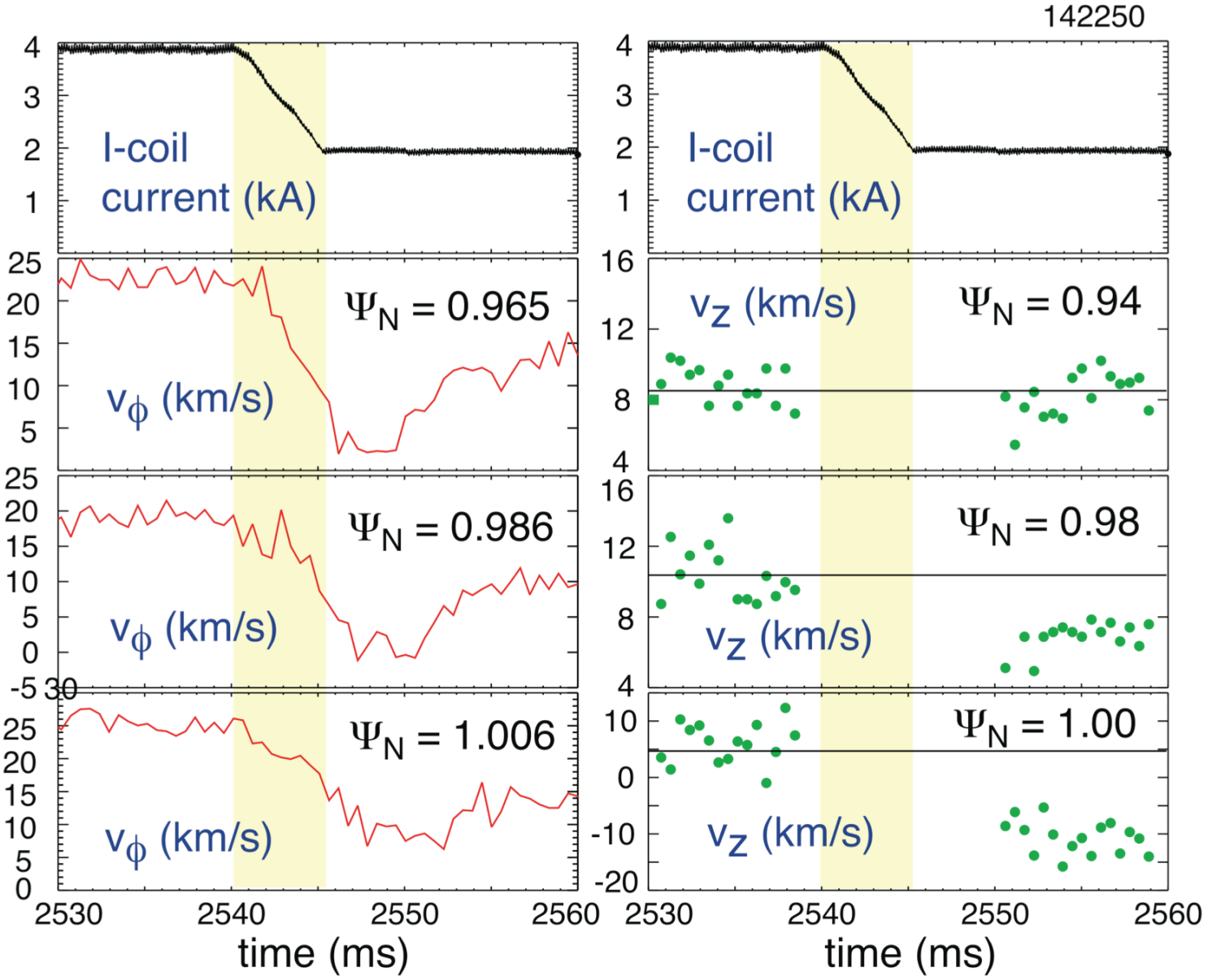

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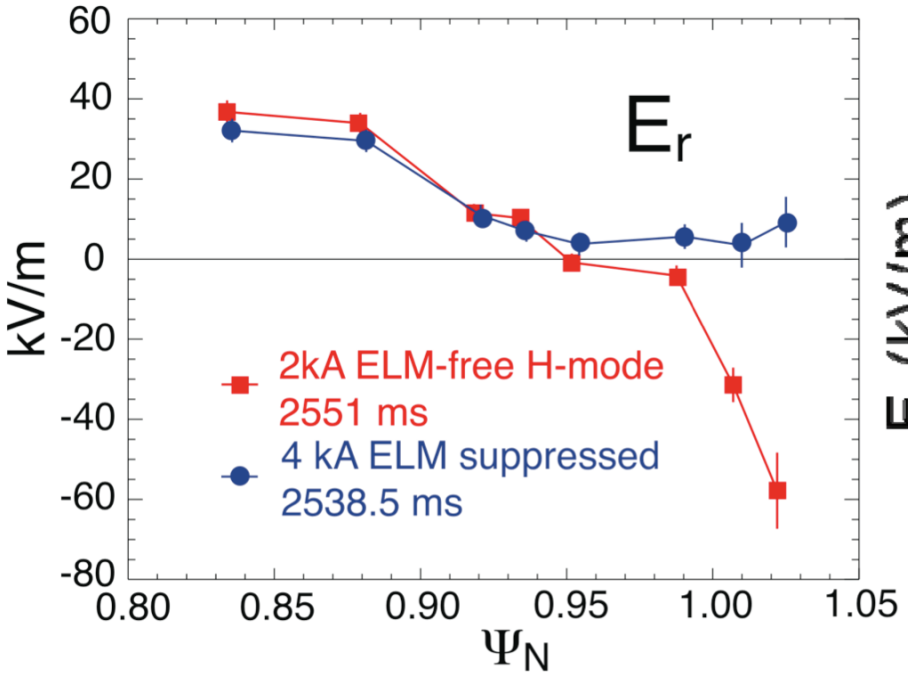

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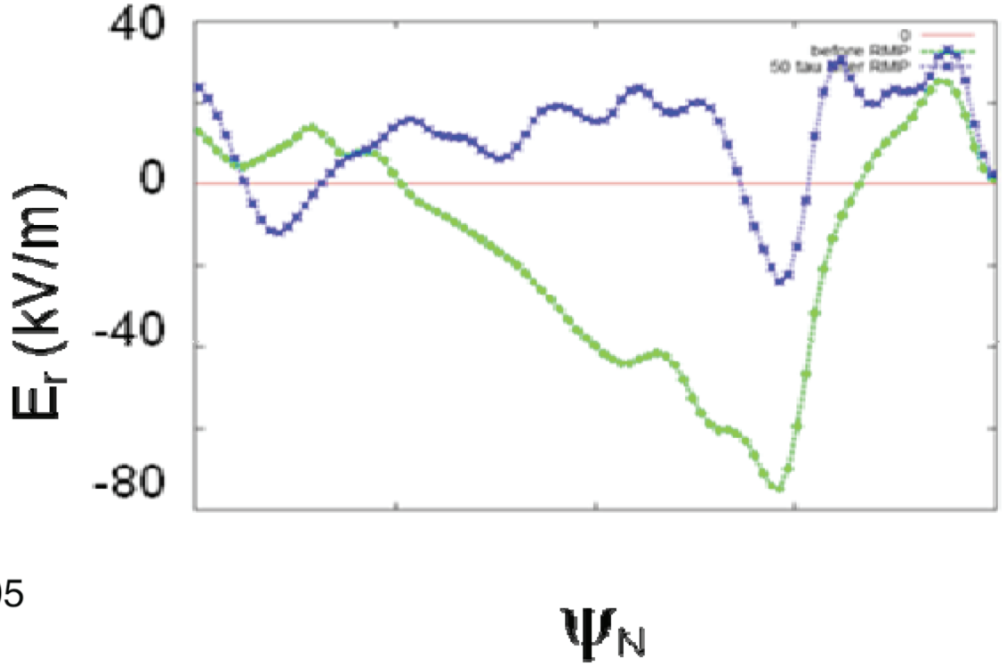

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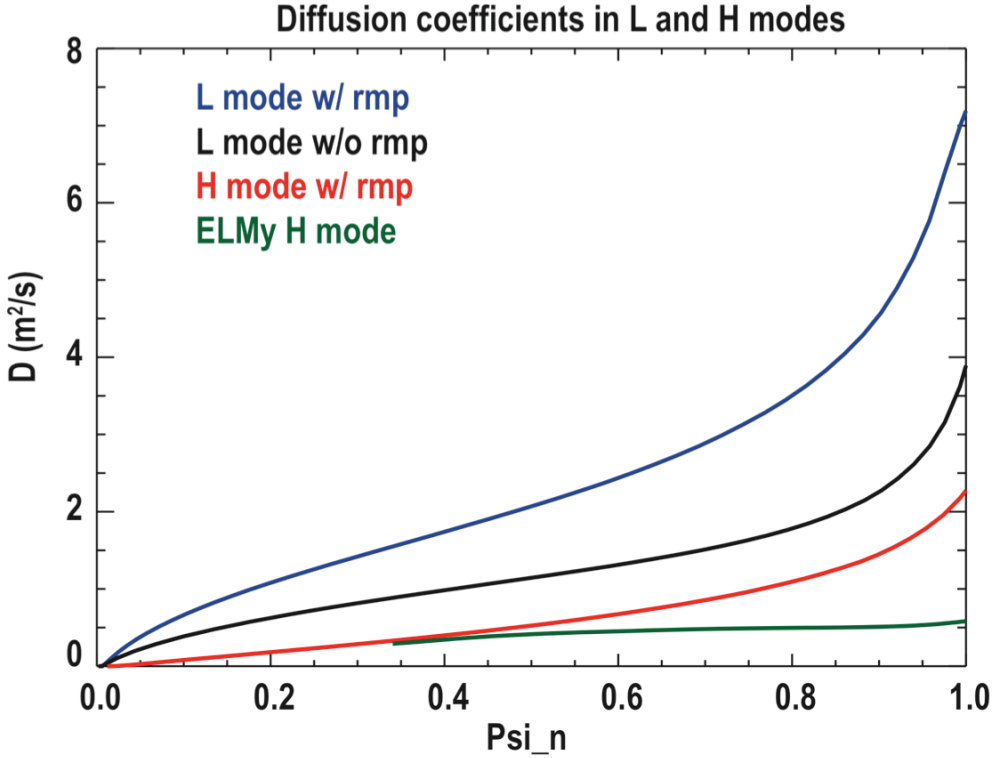

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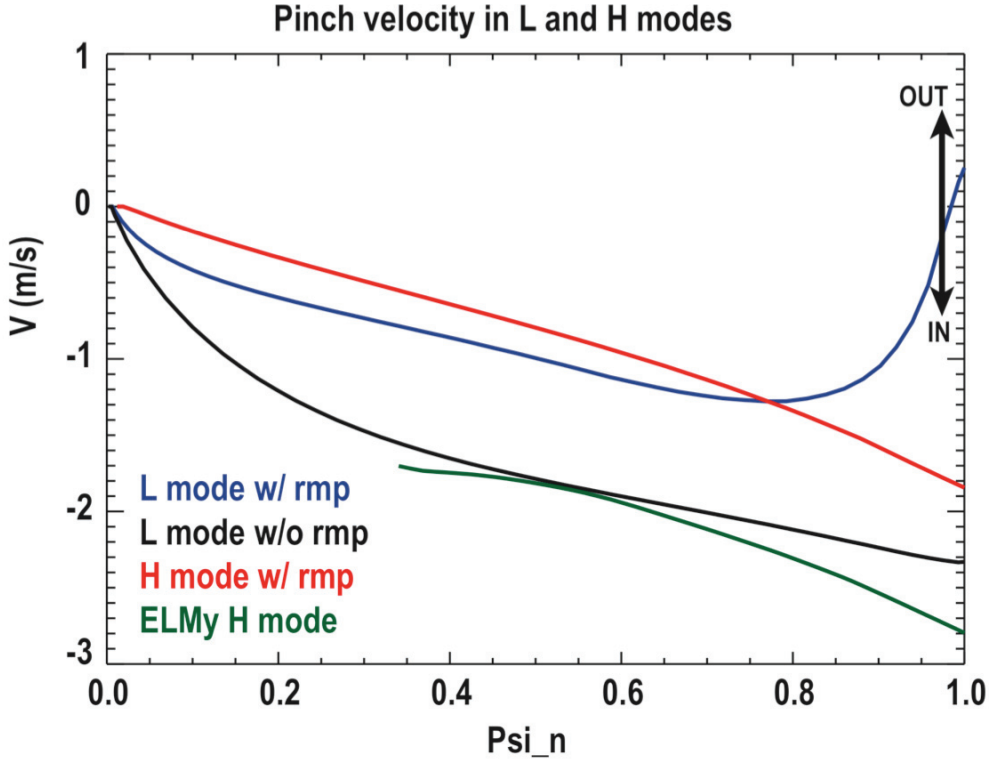

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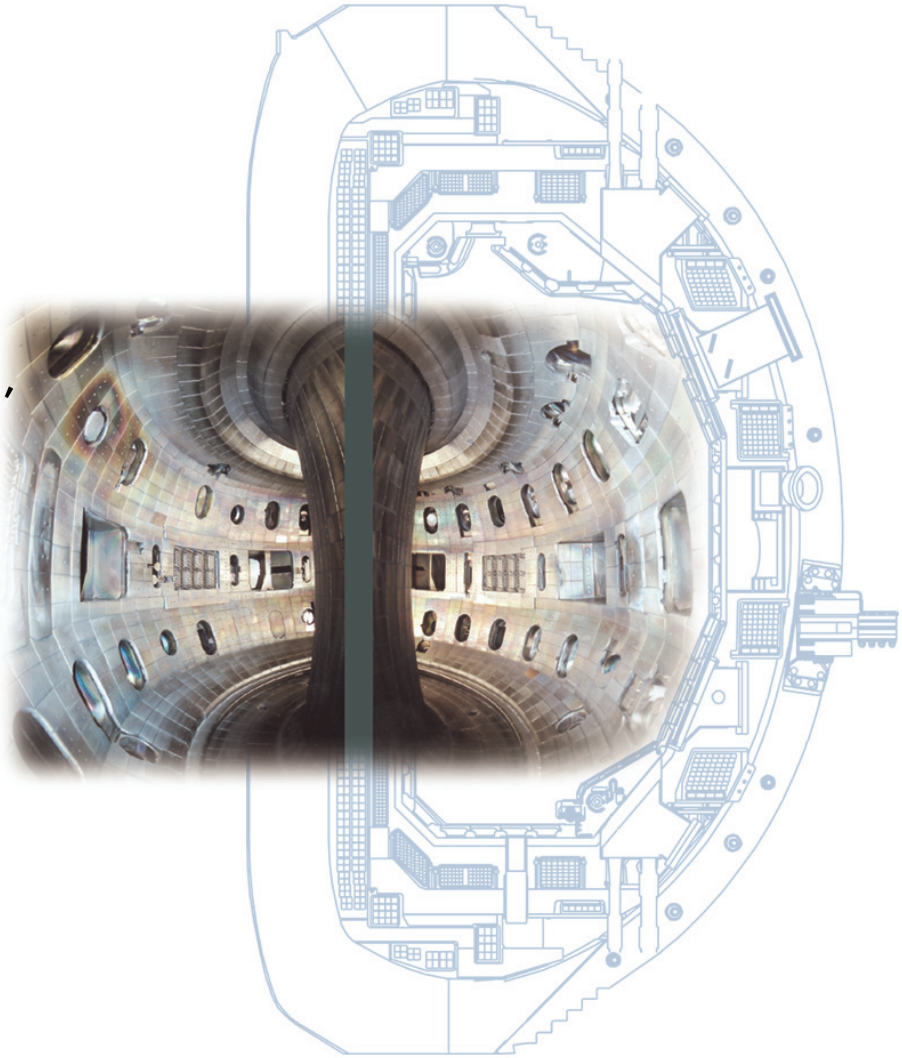

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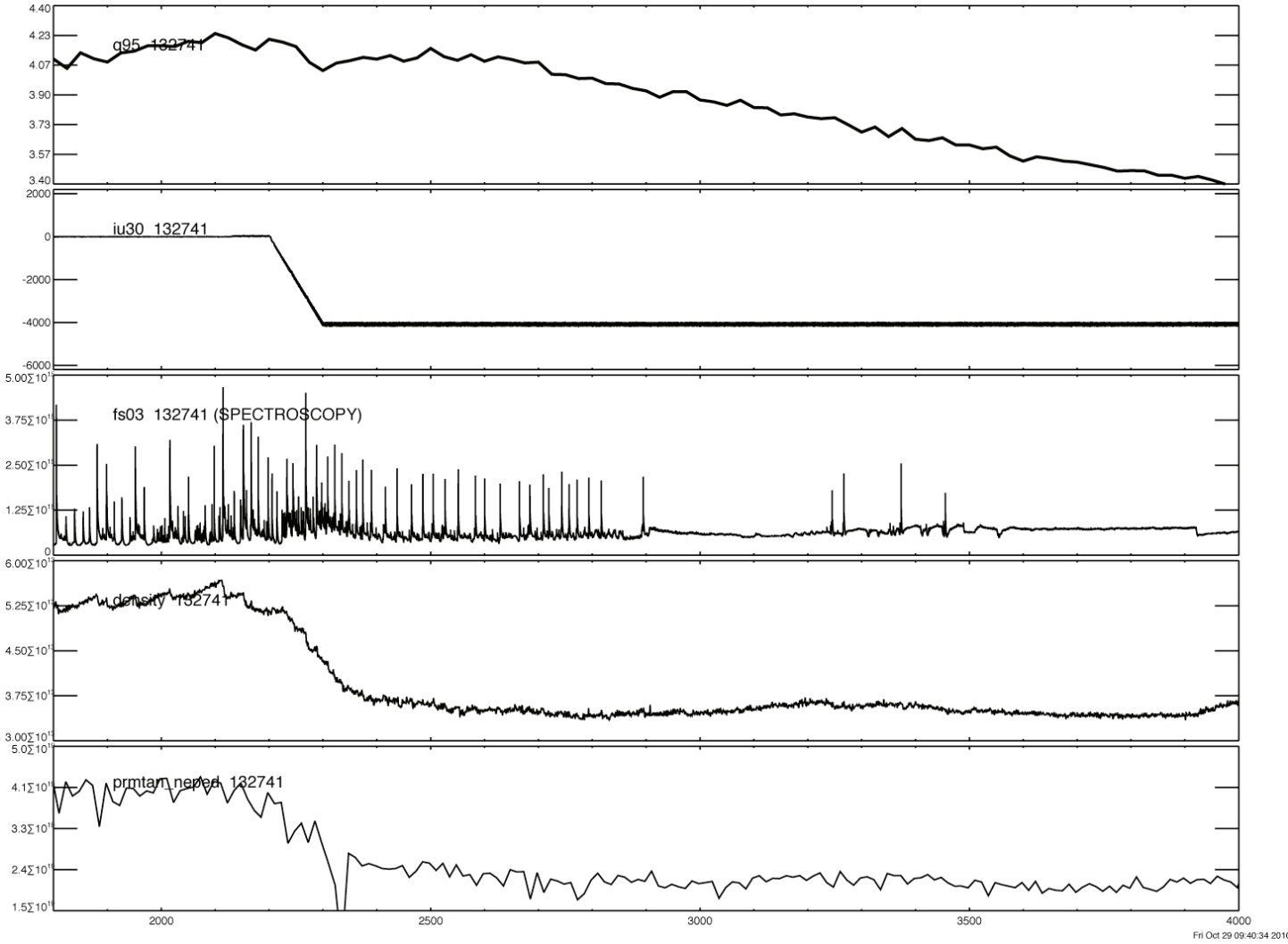

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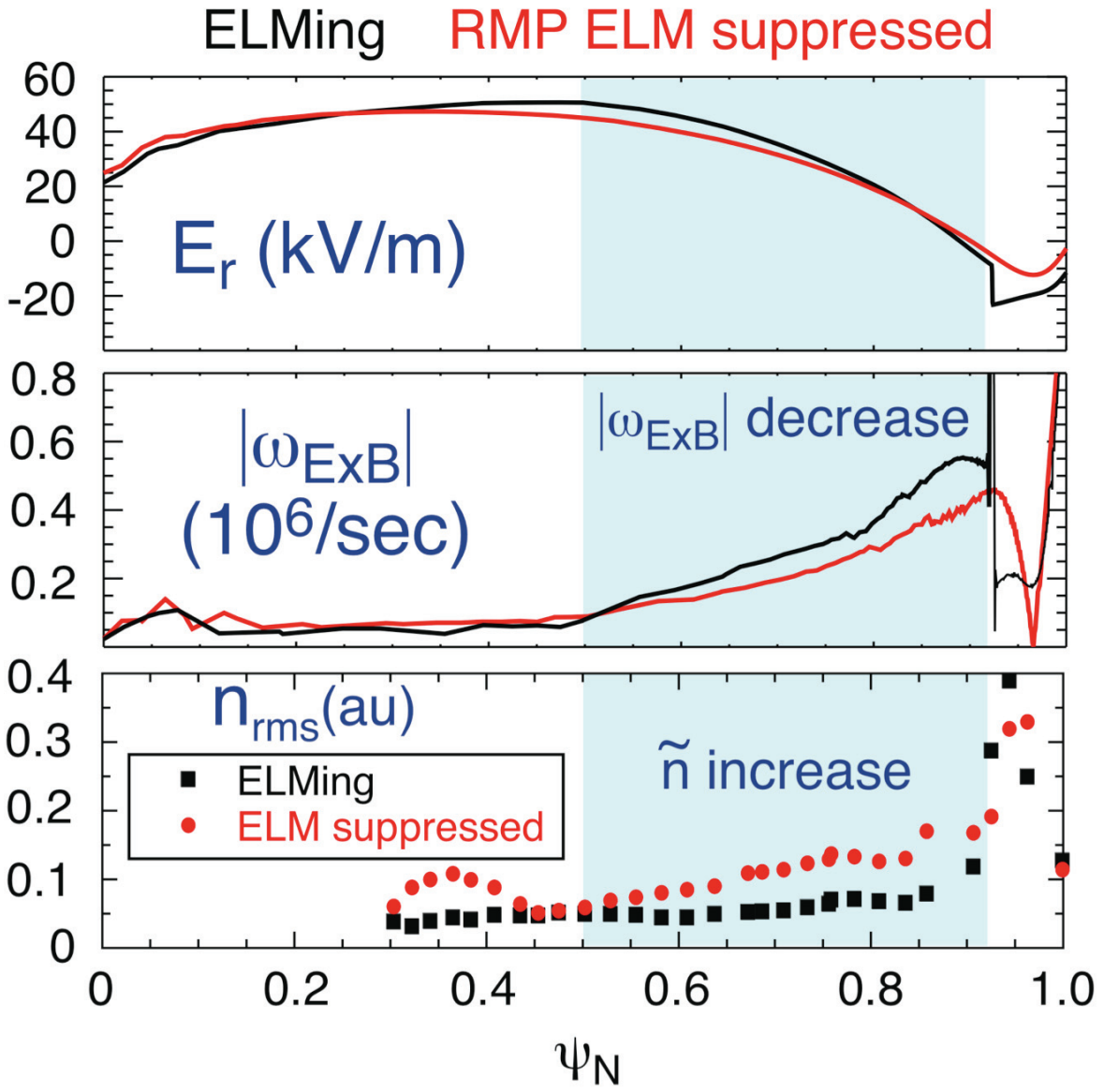

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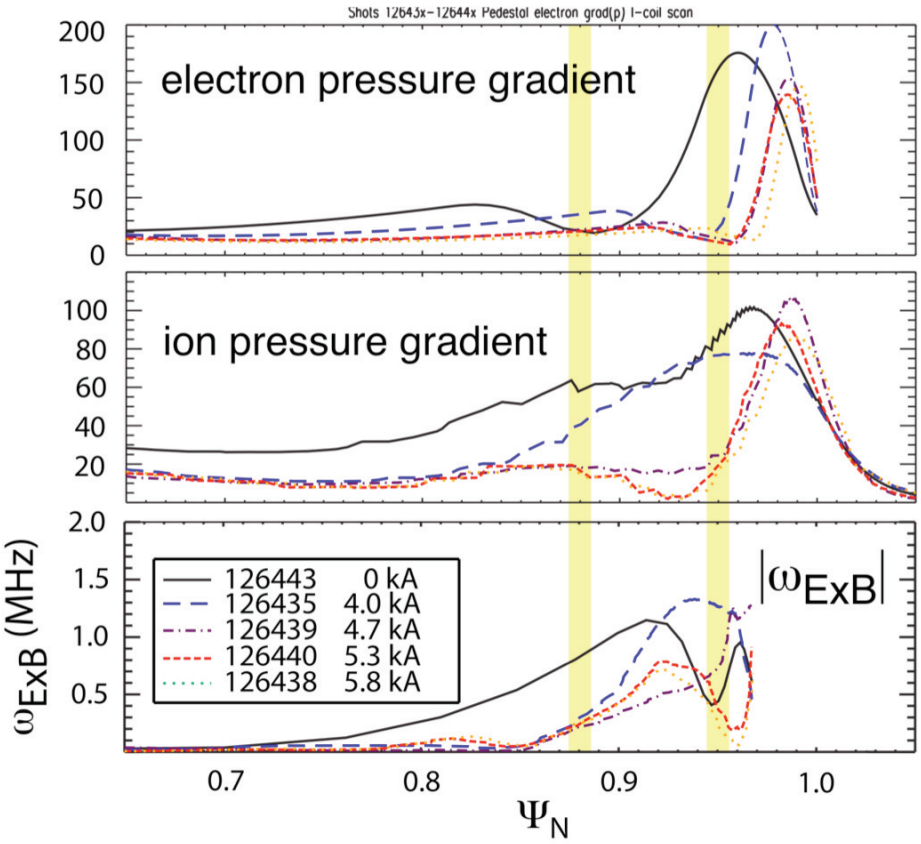

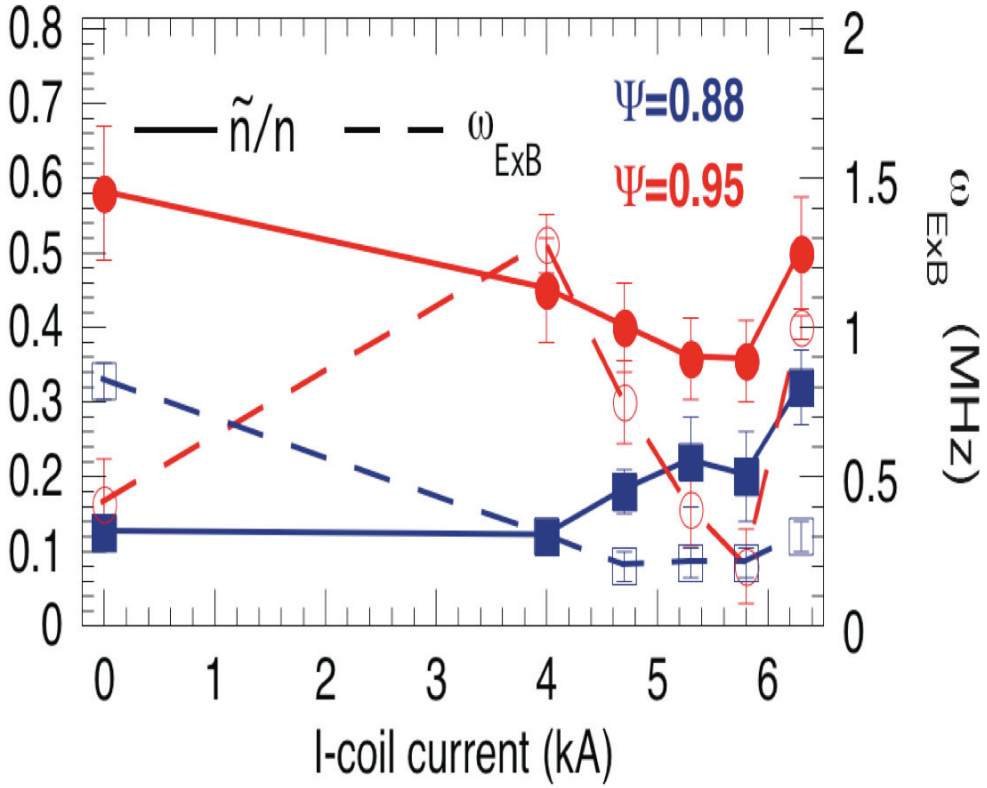

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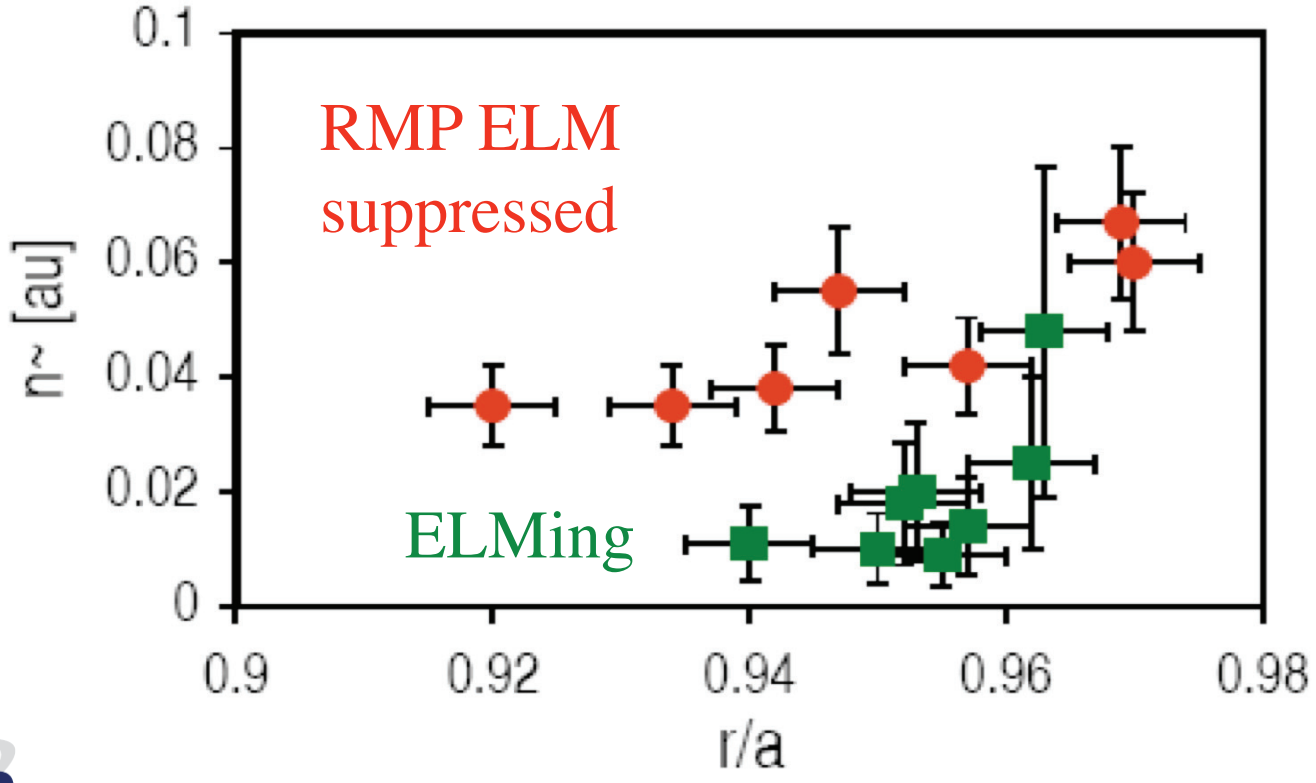

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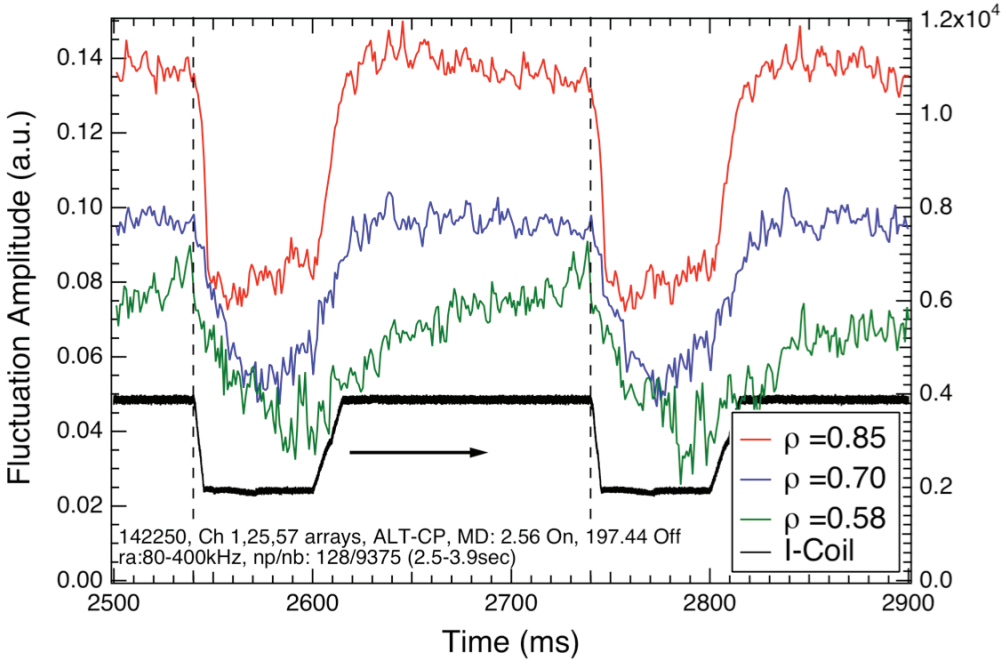

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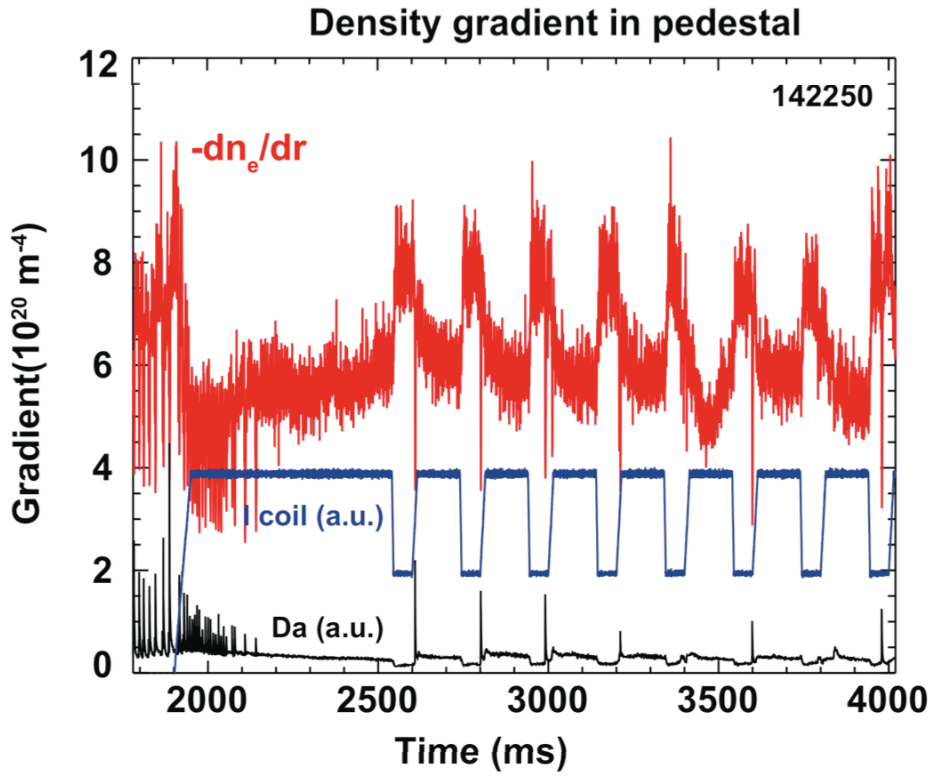

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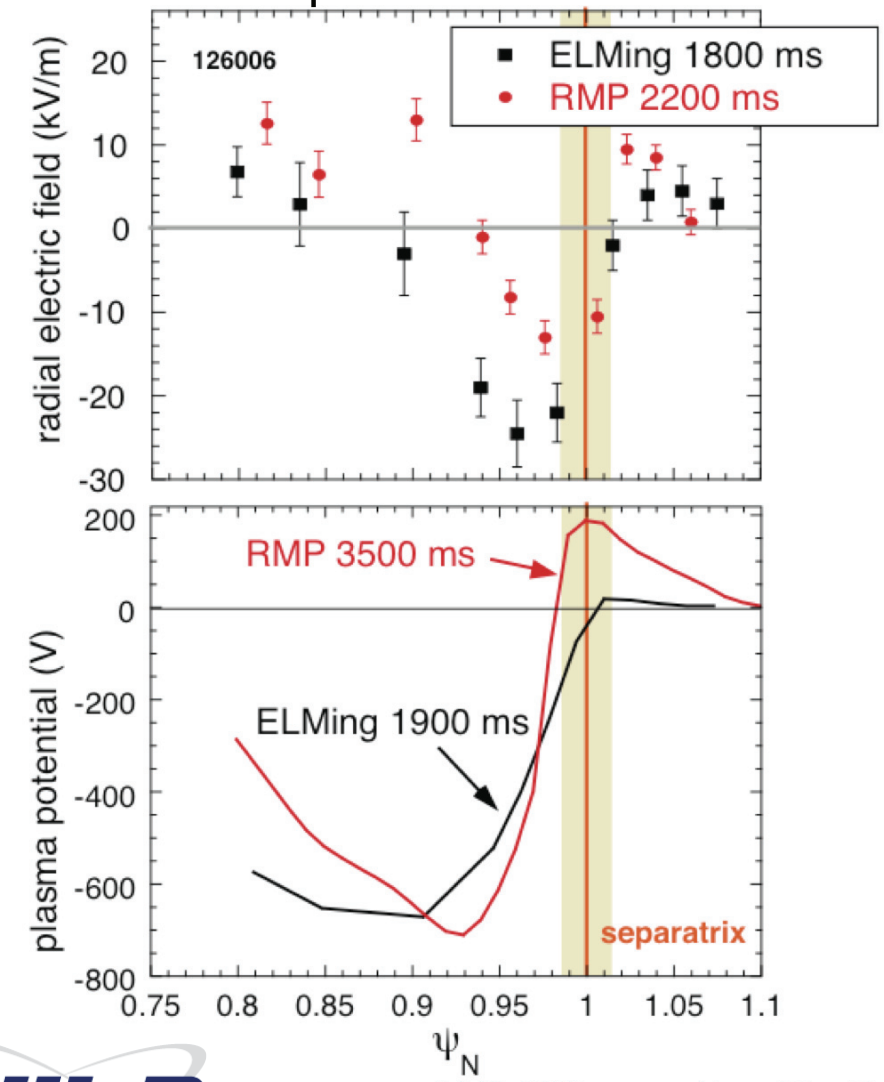

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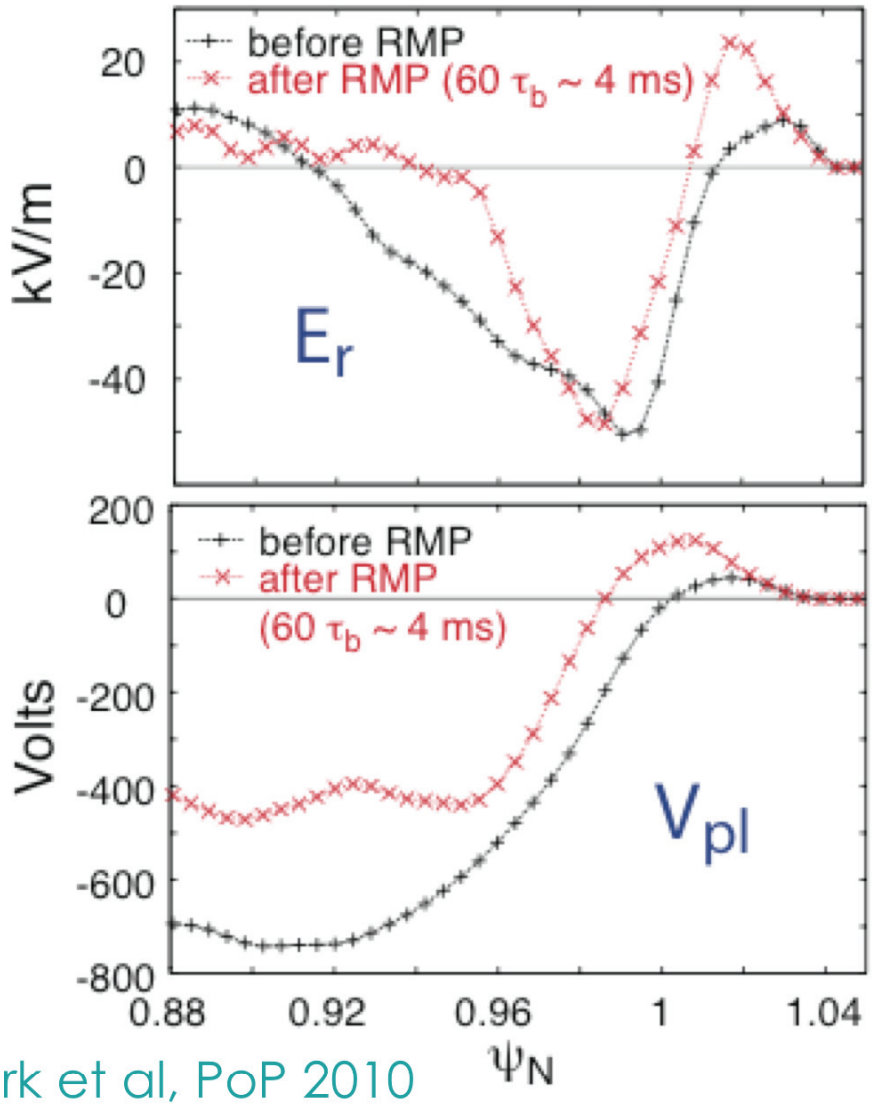

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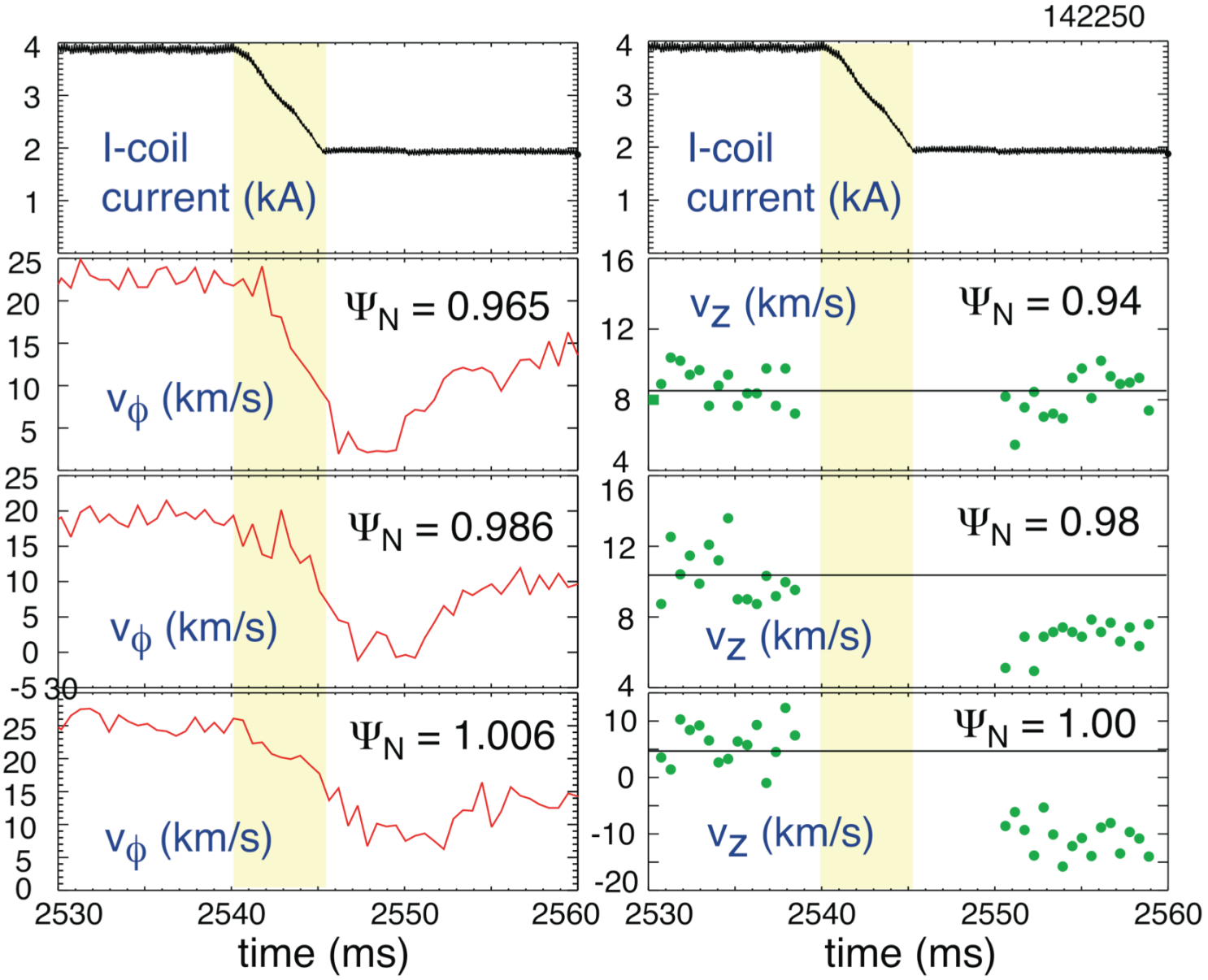

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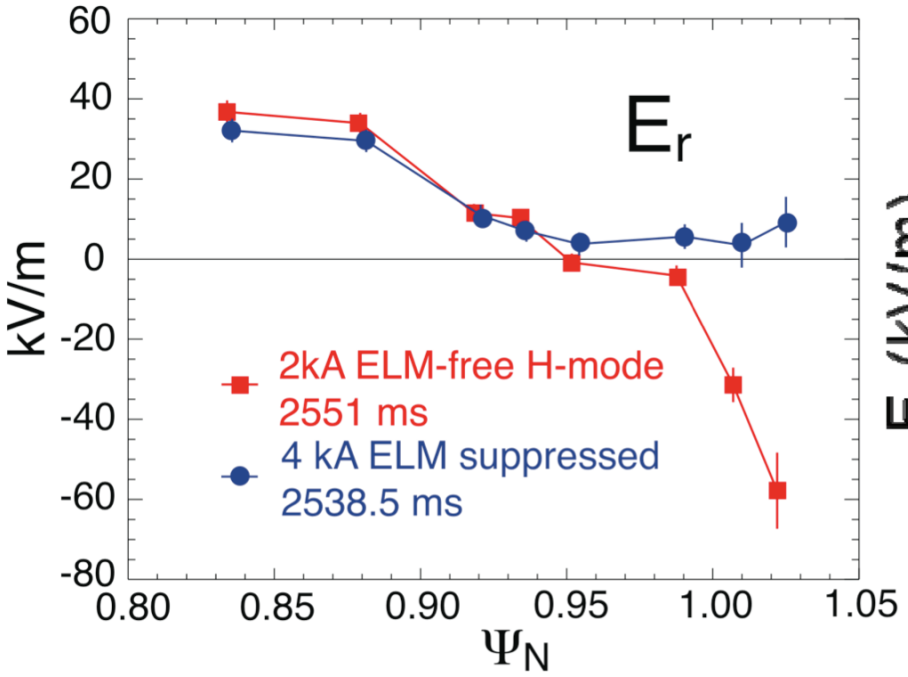

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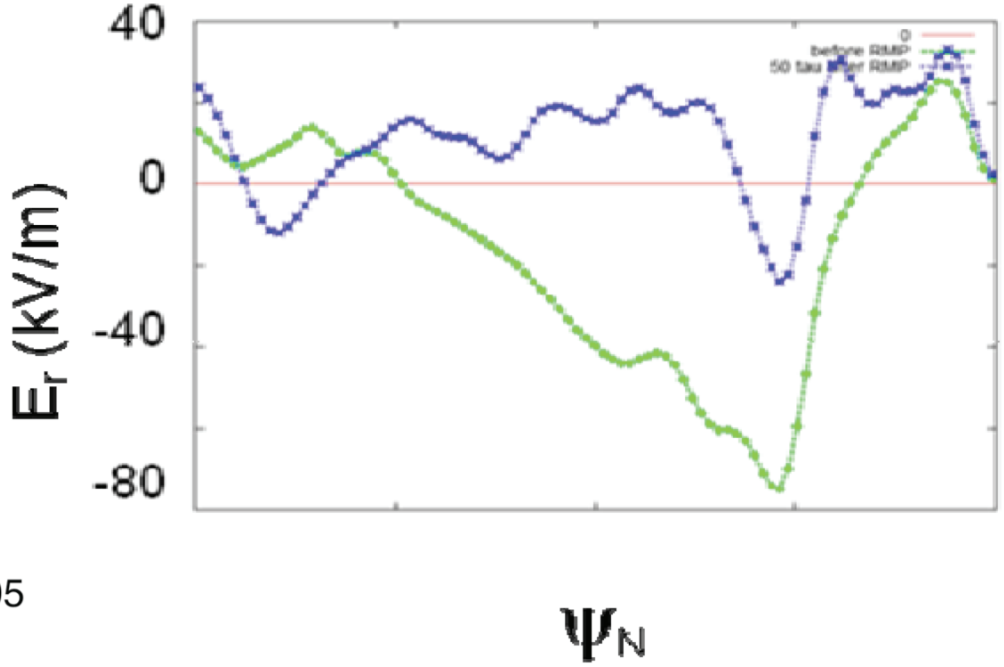

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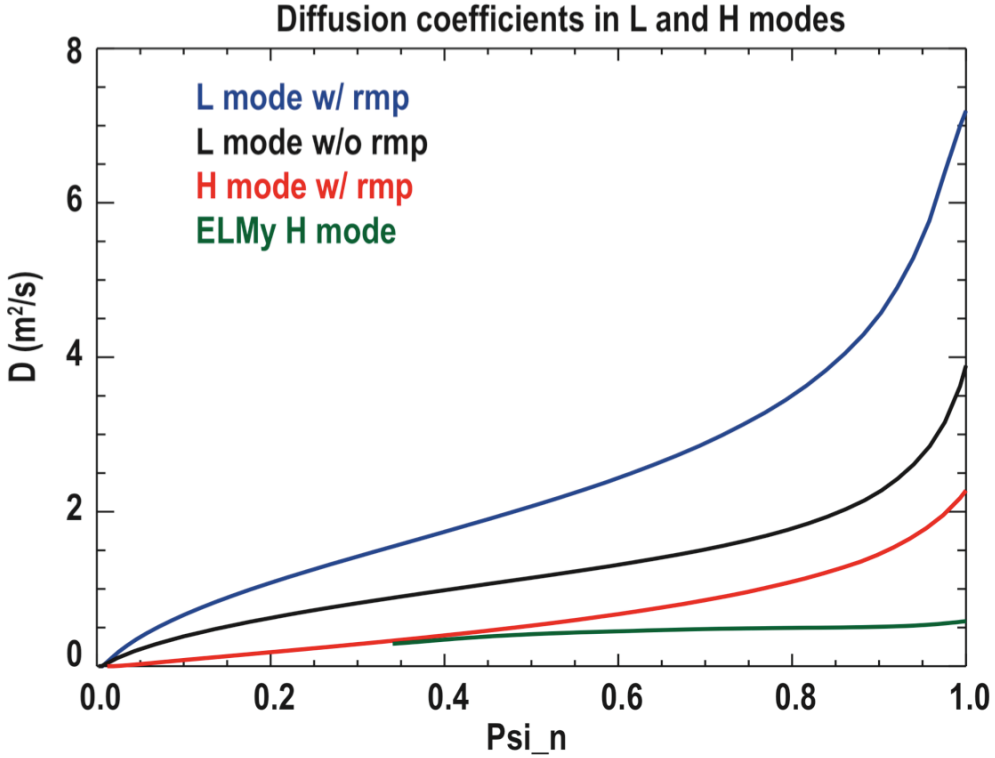

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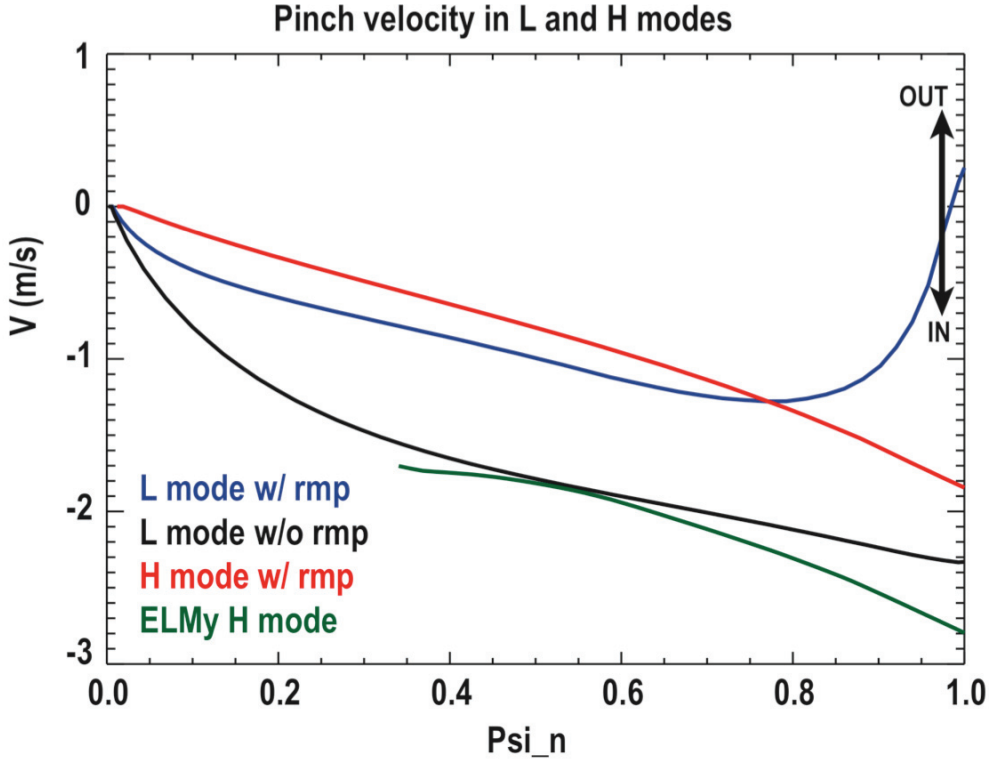

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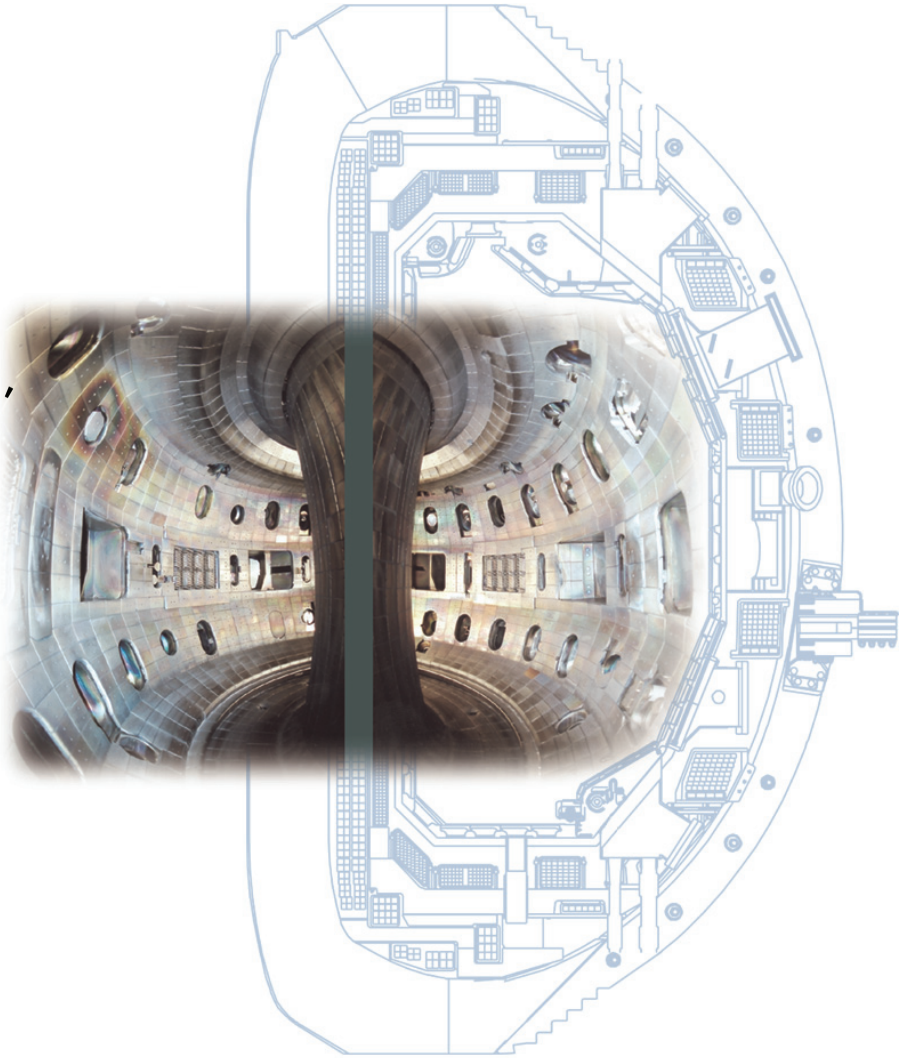

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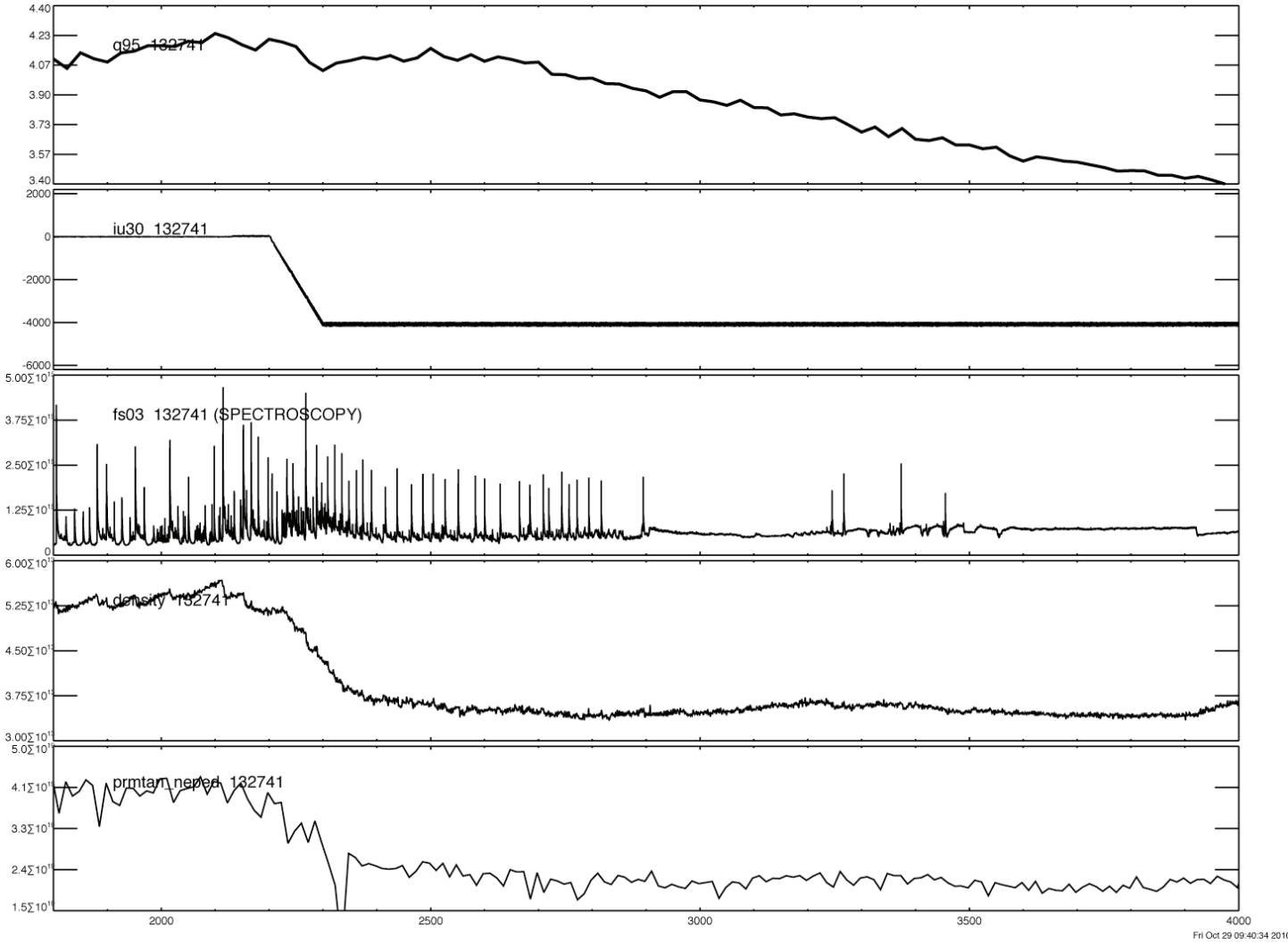

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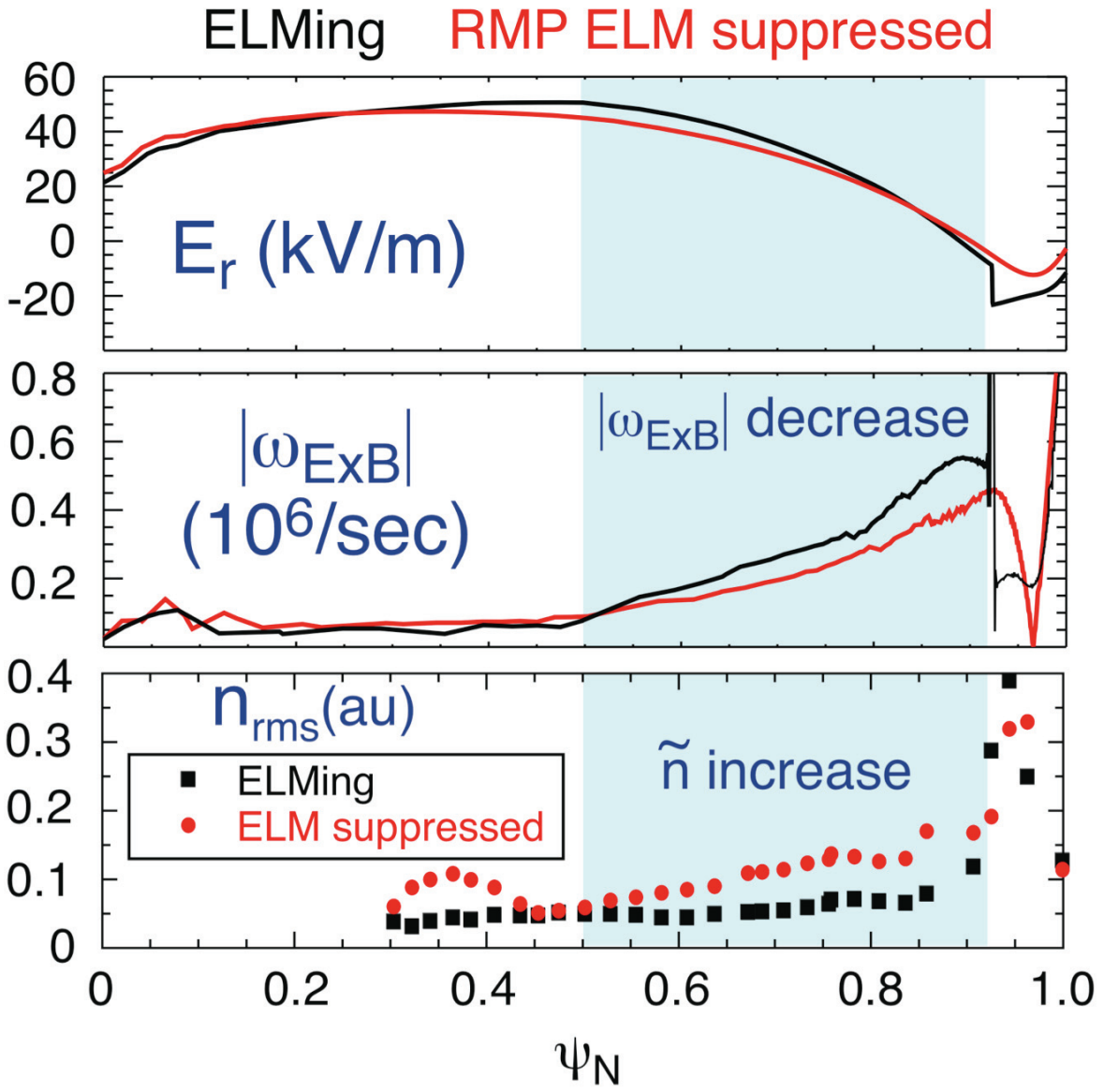

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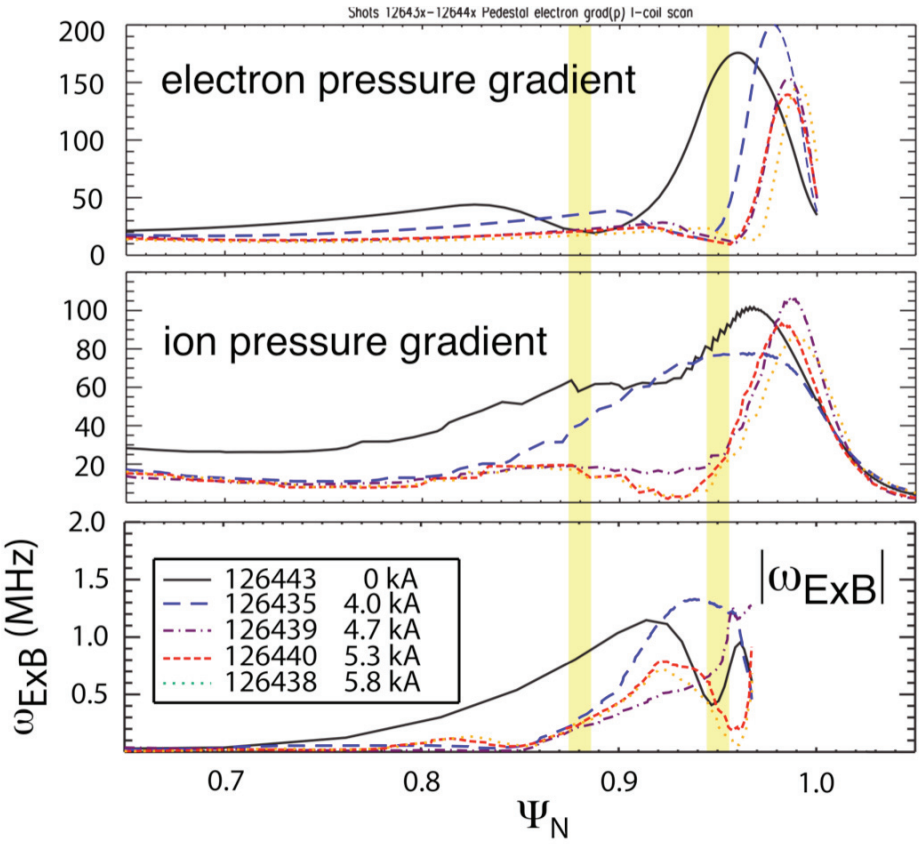

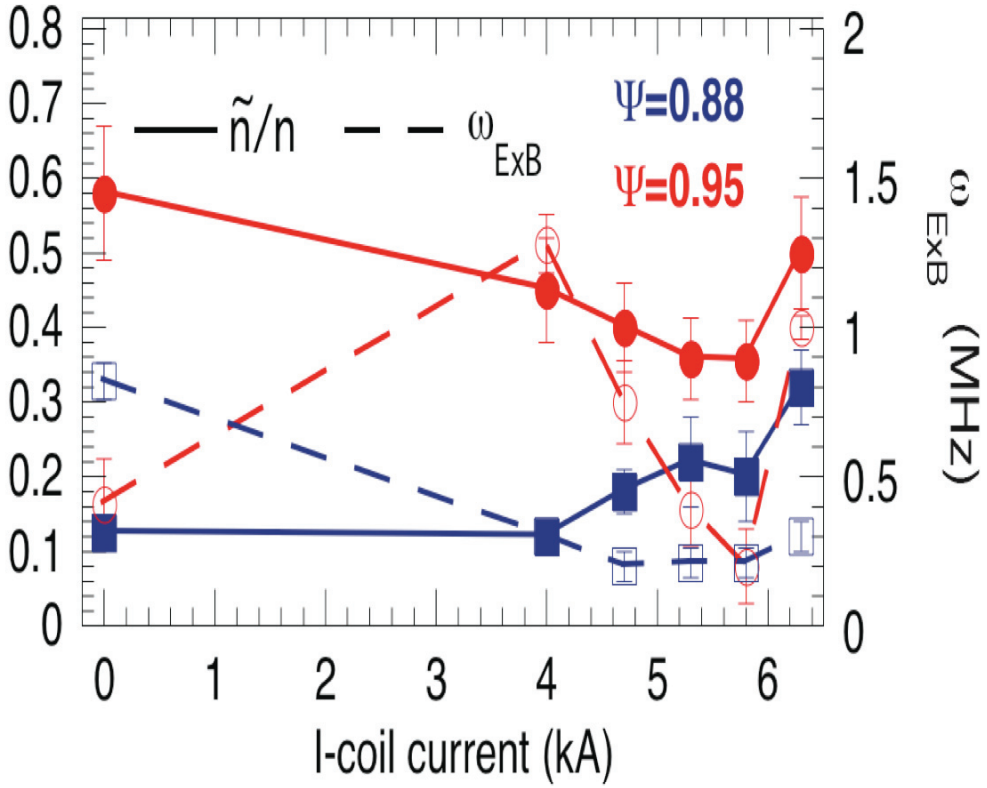

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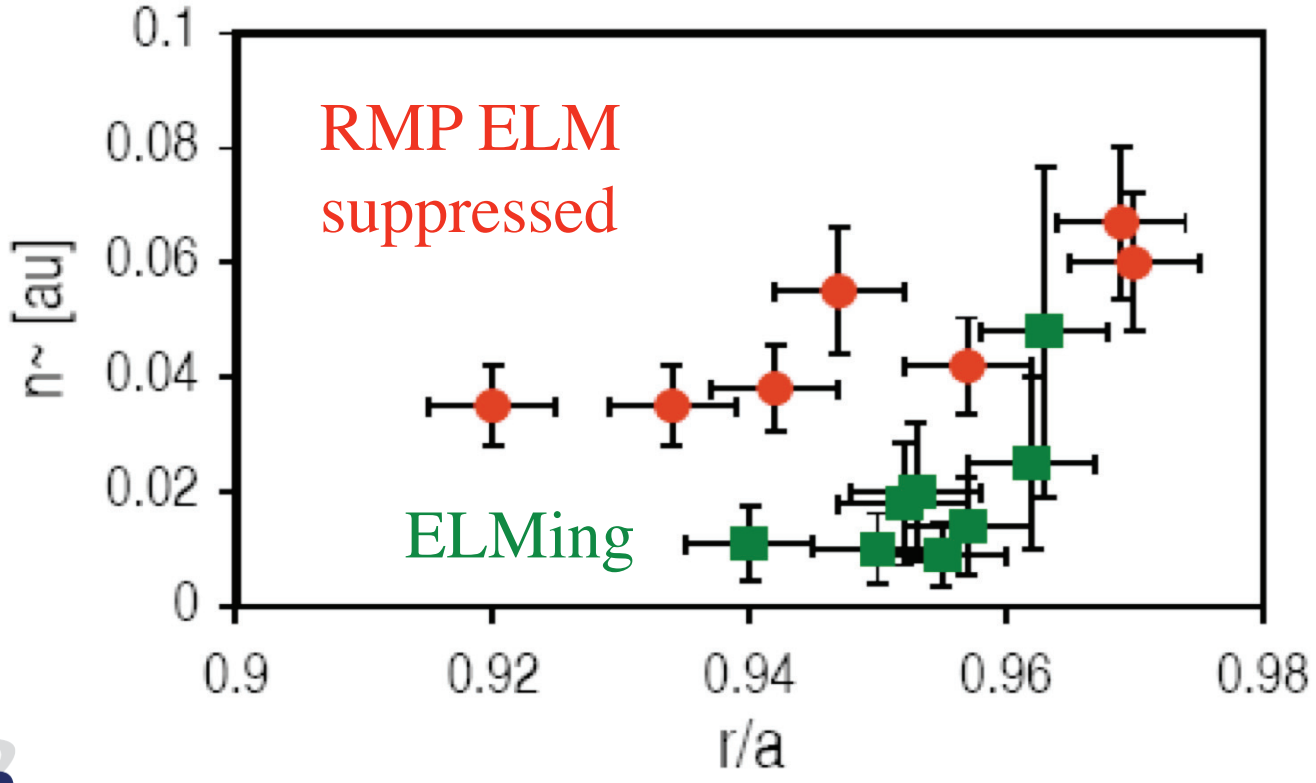

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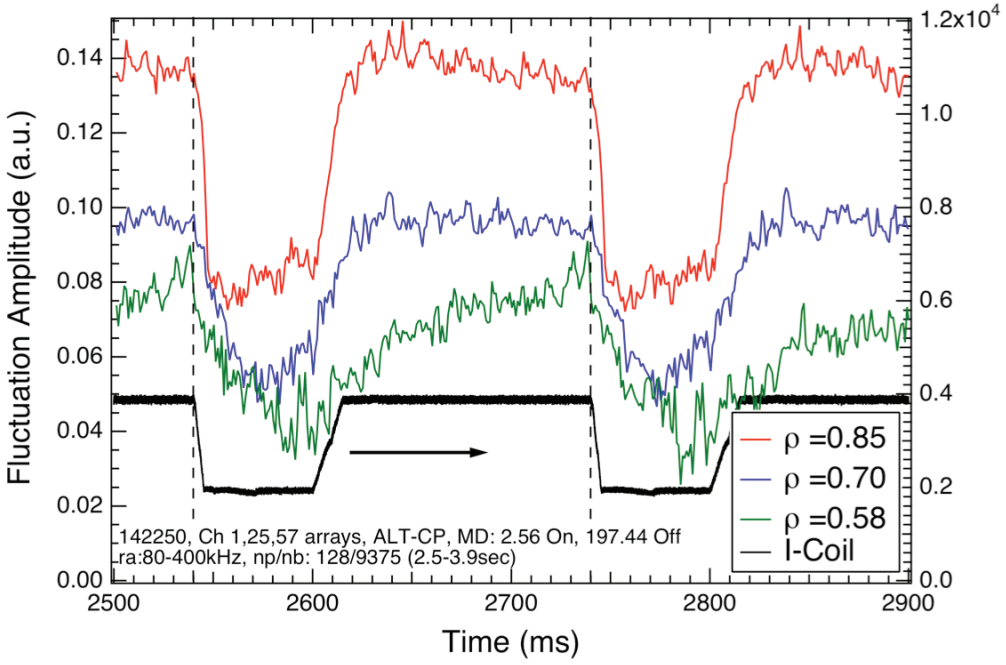

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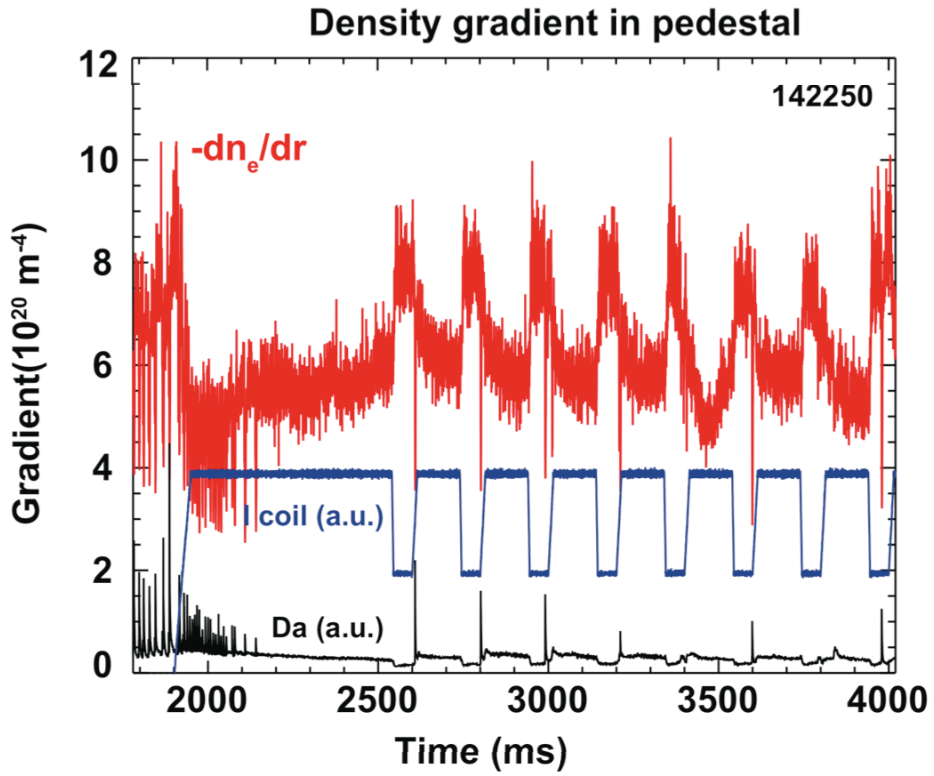

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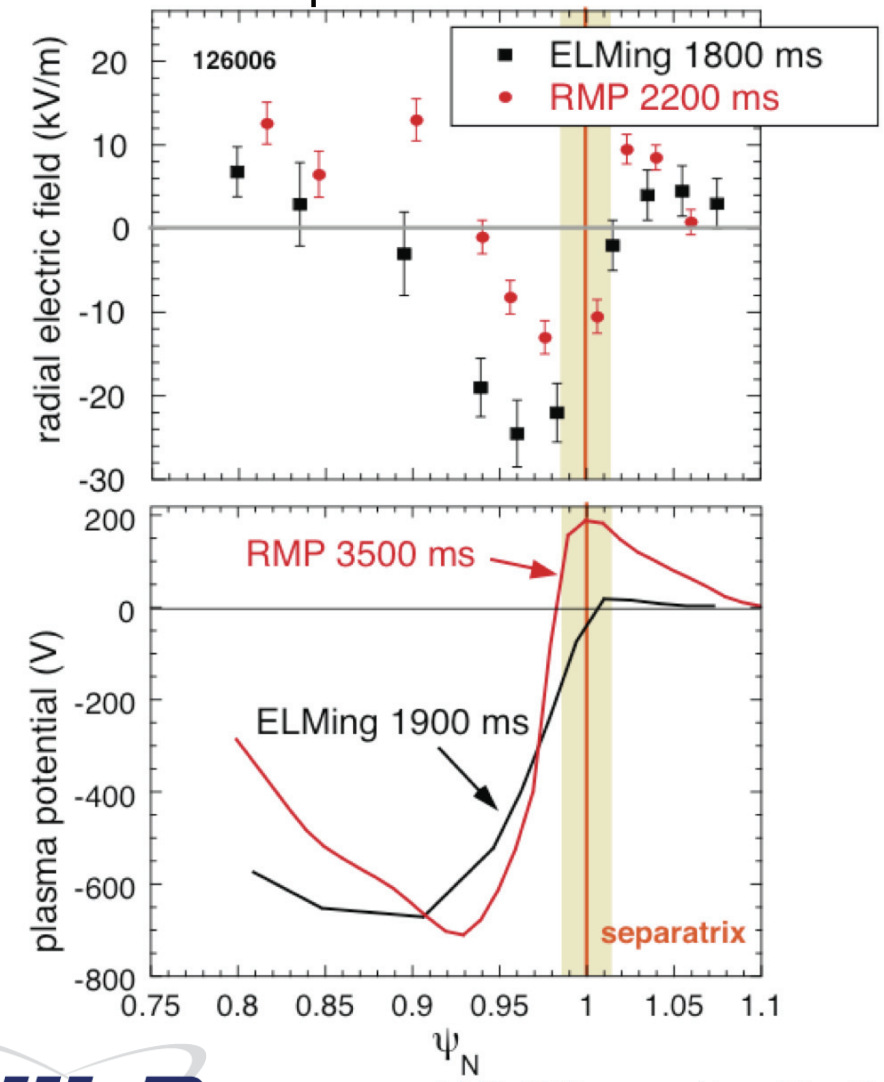

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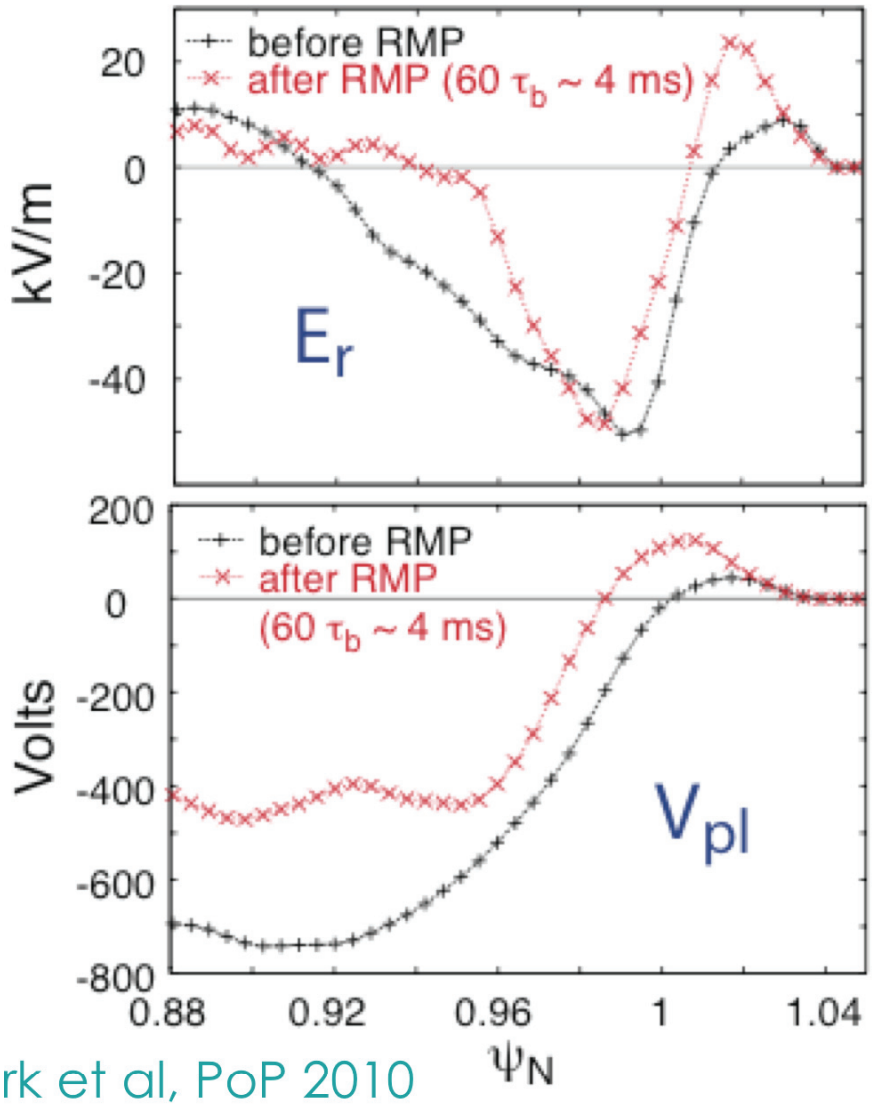

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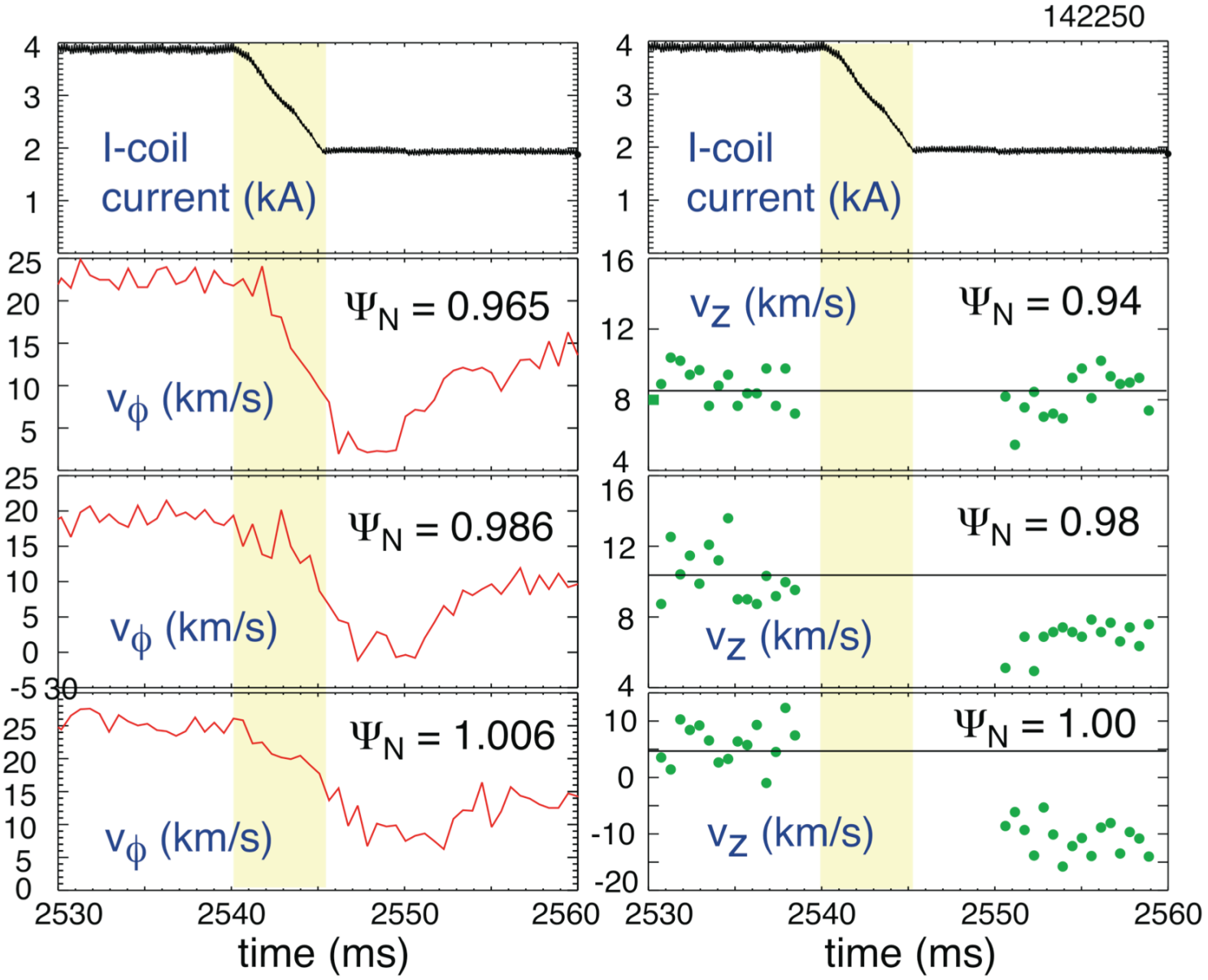

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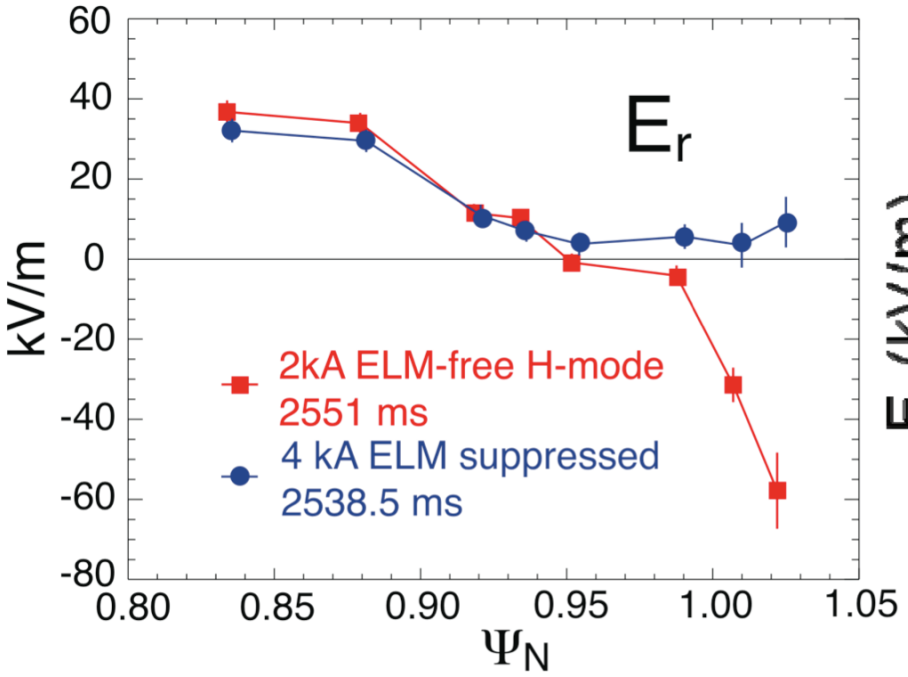

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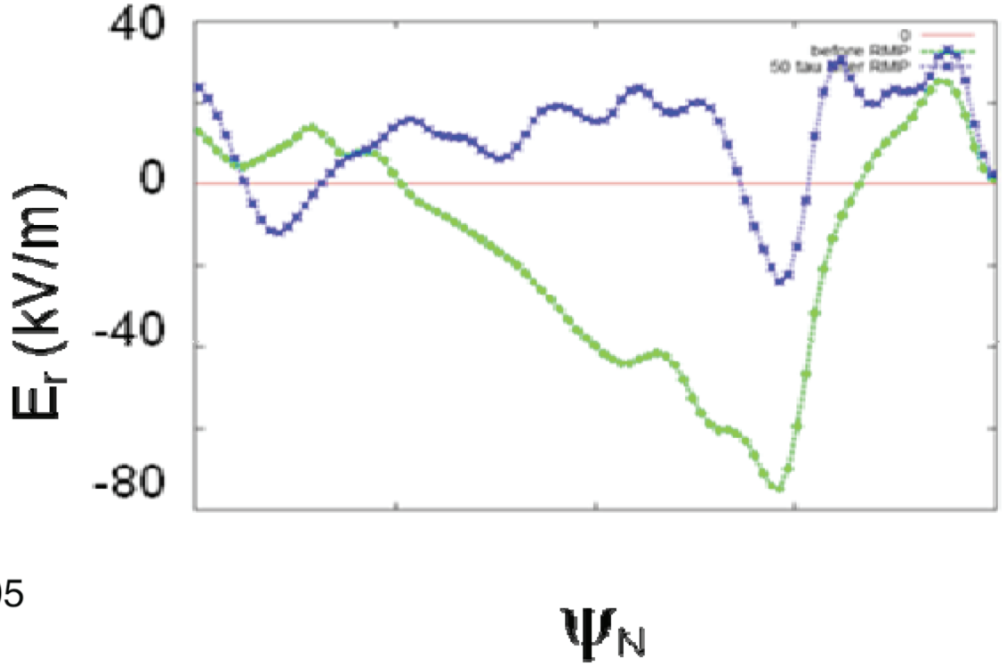

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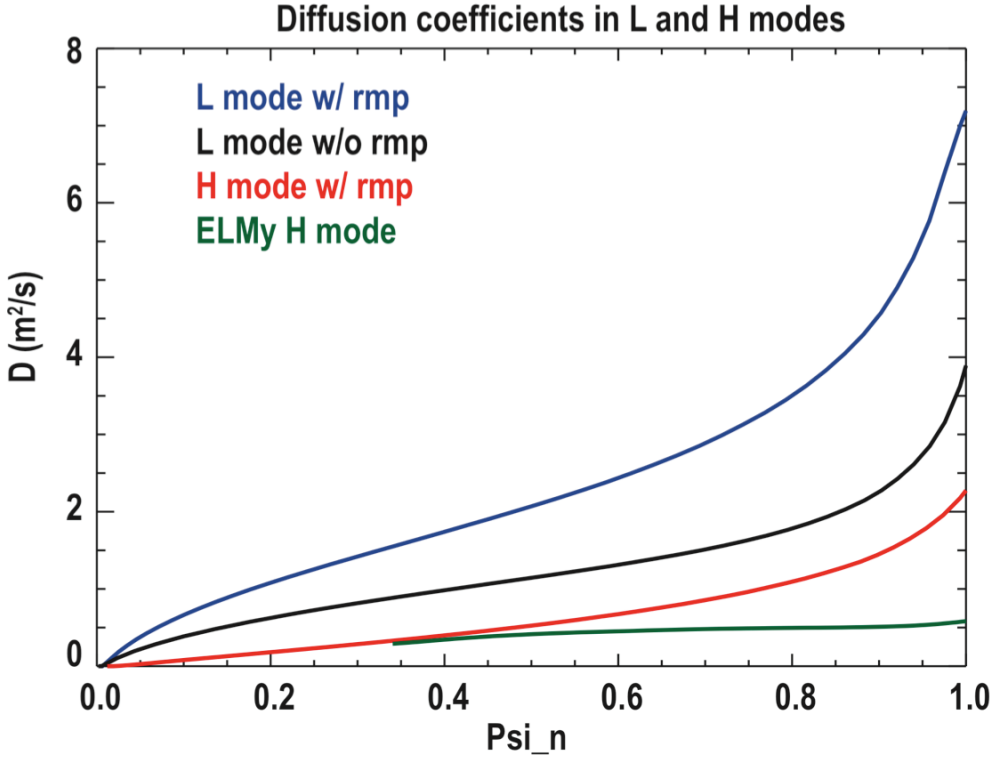

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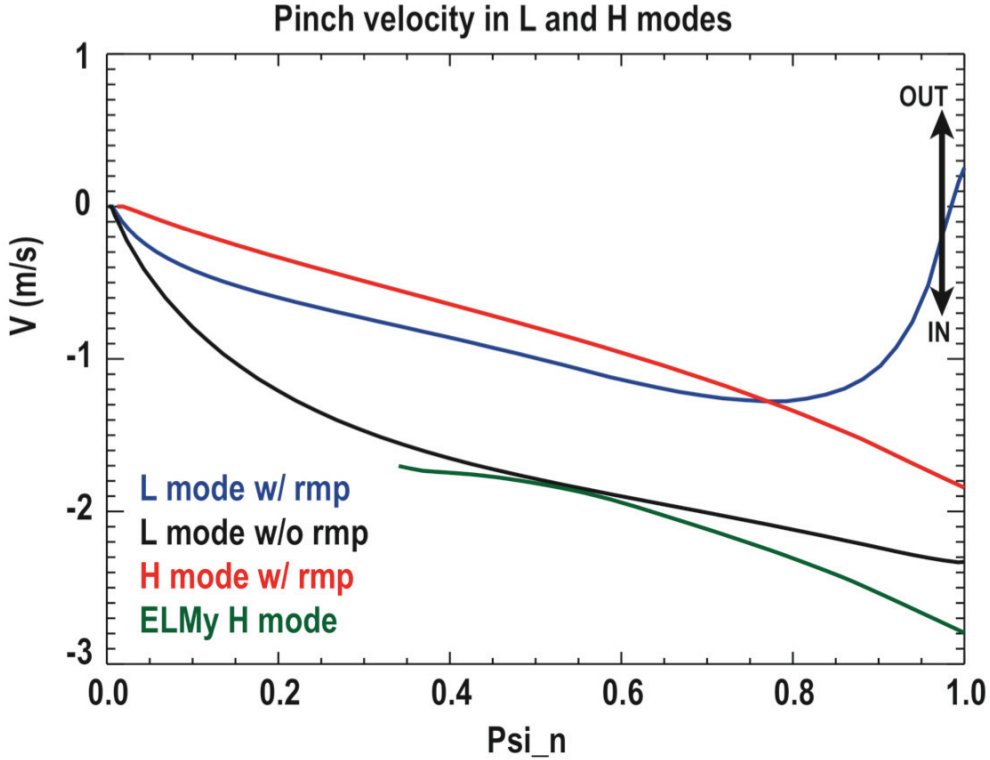

S. Mordijck et al. APS poster ……

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Measurements and Modeling Provide a Picture for RMP-induced Transport Changes

- **RMP induces electron loss on open field liens, modifying the ambipolar potential**
  - Good agreement with self-consistent XGC0 simulations requires some plasma modification of vacuum RMP field (ad hoc or first principles)
- **Neoclassical changes in E_r reduce the ExB shear and the saturated level of ion-scale turbulence over the outer half of the core plasma**
  - Suggests that an increase in anomalous transport due to ion-scale turbulence, which is sensitive to the ExB shearing rate, is important.
- **In the pedestal, the transport response depends on the details of the turbulence drives in addition to the ExB shearing rate**
  - Ion and electron pressure gradients increase in the outer half of the pedestal but decrease further in
  - ExB shear in the pedestal increases or stays the same
  - Shorter radial scale modes often increase in pedestal, but are expected to be less sensitive to ExB shear