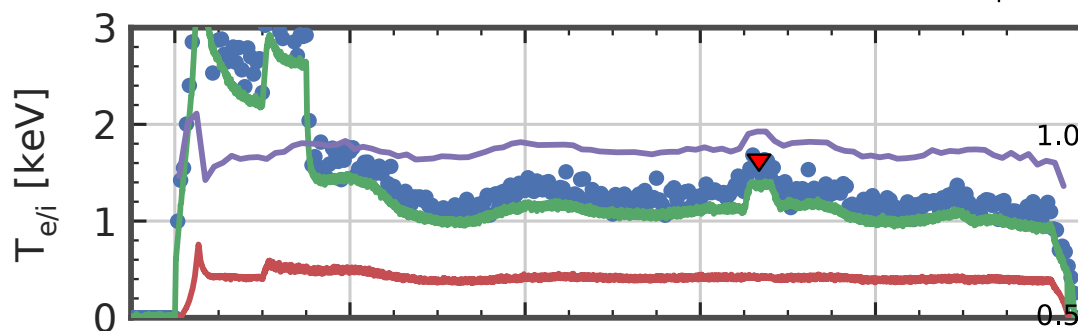
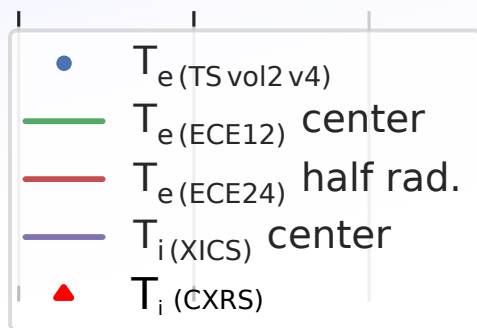


# XICS vs CXRS

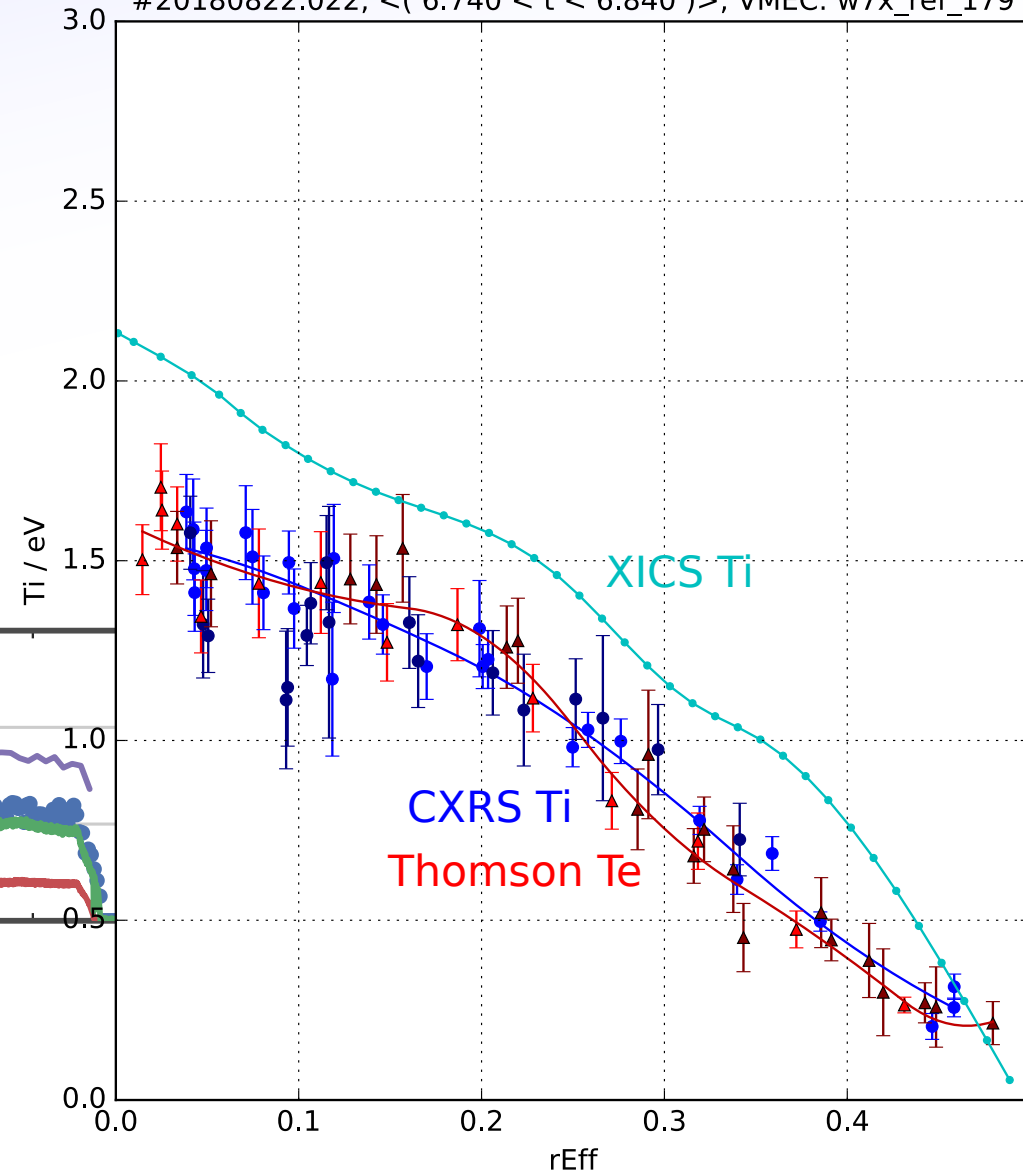
Typical examples.

Well coupled high-ne off-axis ECRH

--> Should have  $T_i = T_e$



$T_i, T_e$  profiles. CX: ILS\_Green-21\_DualGauss, TSVer=31  
#20180822.022,  $\langle (6.740 < t < 6.840) \rangle$ , VMec: w7x\_ref\_179

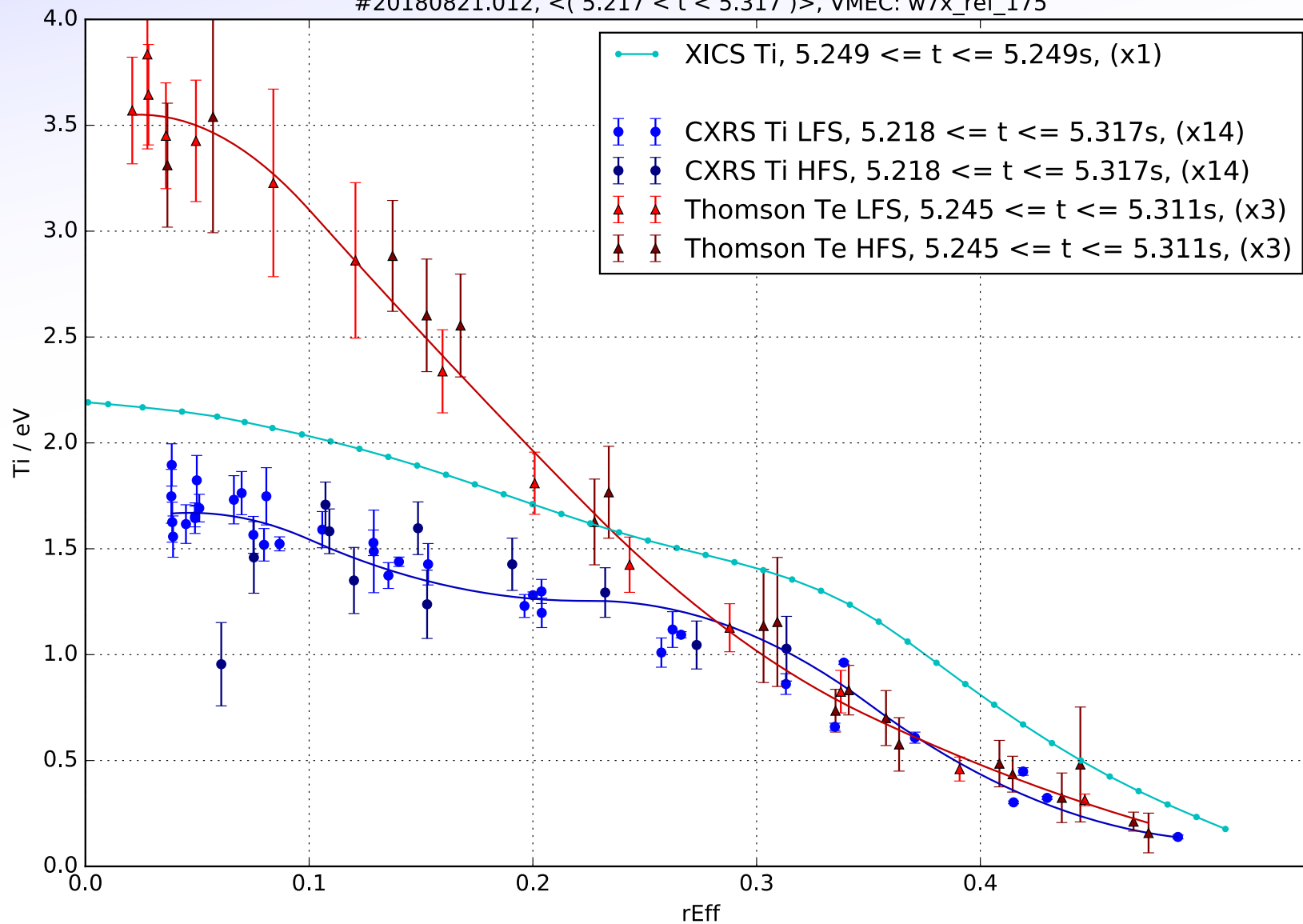




# XICS vs CXRS

Typical examples.  
On-axis ECRH

$T_i, T_e$  profiles. CX: ILS\_Green-21\_DualGauss, TSVer=5  
#20180821.012,  $\langle (5.217 < t < 5.317) \rangle$ , VMEC: w7x\_ref\_175



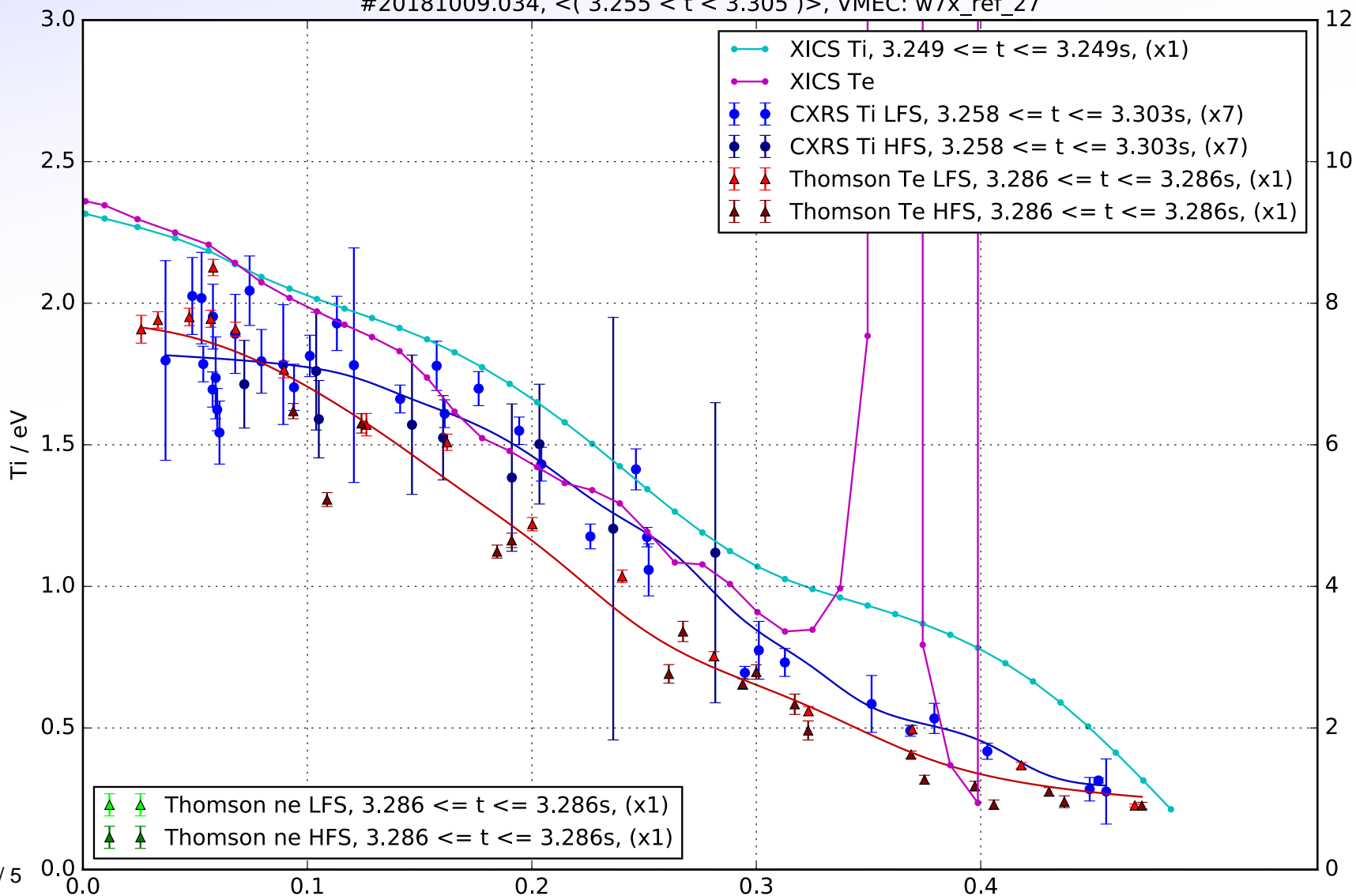


# XICS vs CXRS

Typical examples.

NBI --> Ion heating -->  $T_i > T_e$

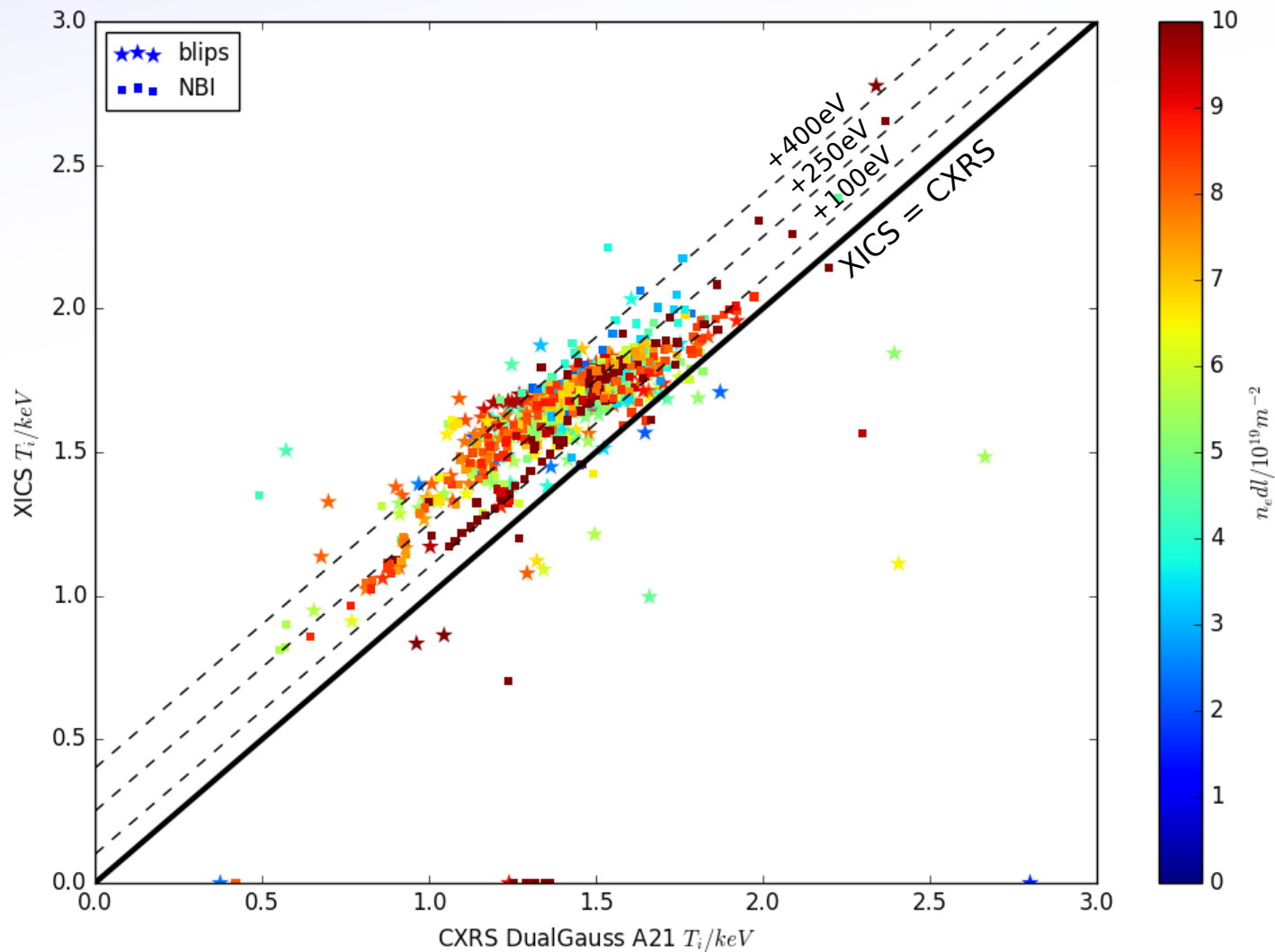
$T_i, T_e$  profiles. CX: ILS\_Green-21\_DualGauss/21, TSVer=28  
#20181009.034,  $(3.255 < t < 3.305)$ , VMEC: w7x\_ref\_27



# XICS --> CXRS

Rough statistical view for all NBI plasmas.

- Improper treatment of mapping (Vacuum field only)
- Appears to give  $\sim 250 \pm 150 \text{ eV}$





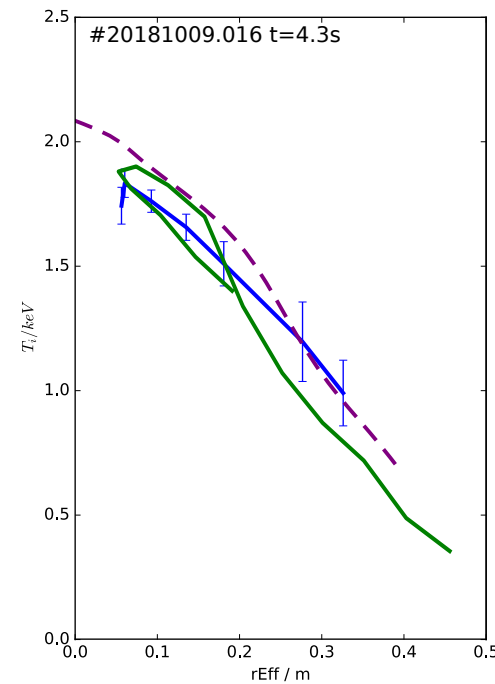
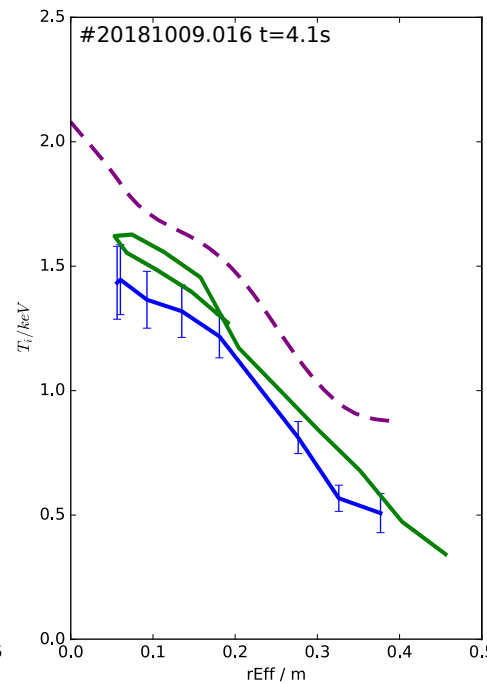
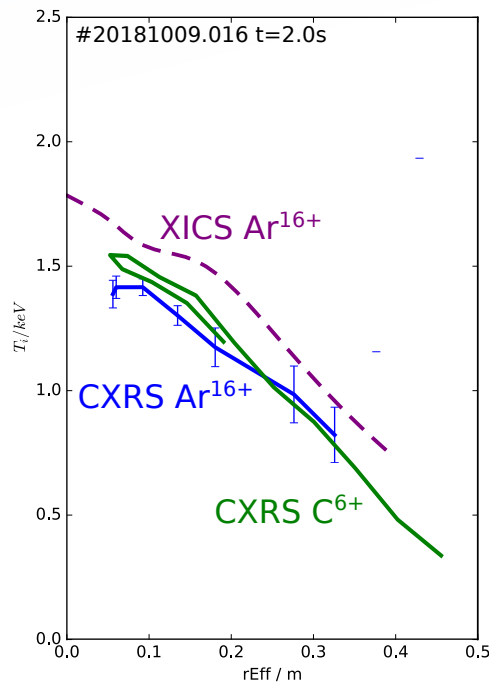
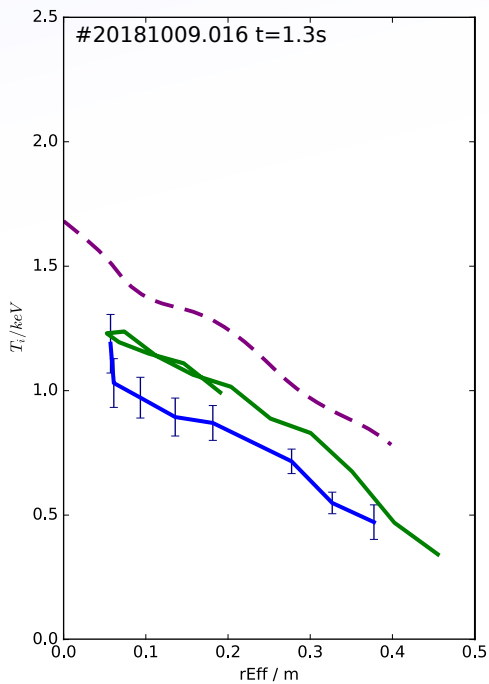
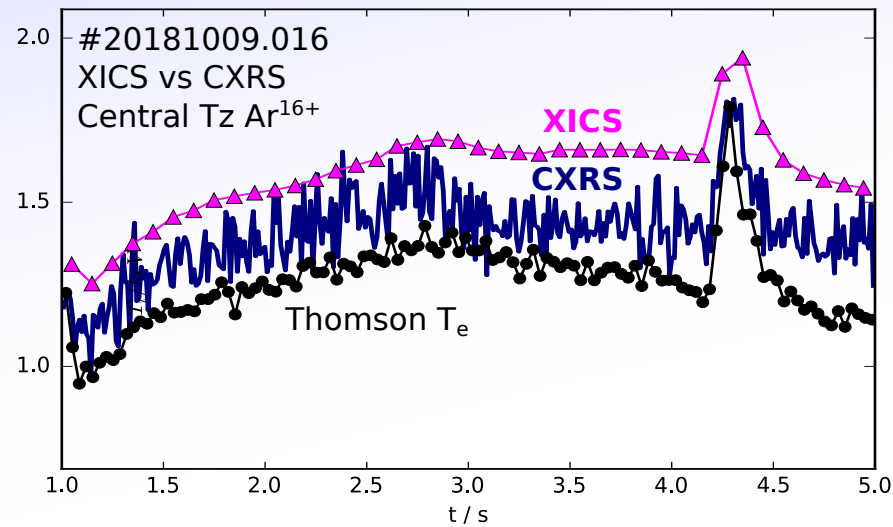
# XICS cross-calibration

Argon ( $\text{Ar}^{15+}$ ) for cross-calibration with XICS.

( $\text{Ar}^{16+} + \text{H} \rightarrow \text{Ar}^{15+*} + \text{p}$ ,  $n=14-13$ ,  $436.6\text{nm}$ )

- Investigate CXRS XICS  $T_i$  discrepancies -  
Is it  $T_C$  vs  $T_{\text{Ar}^{16+}}$ ? or diagnostic?

- Absolute  $\text{Ar}^{16+}$  intensity to support XICS calibration (if CX cross-sections are OK)



Argon<sup>16+</sup> CXRS measurements more consistent with Carbon<sup>6+</sup>. XICS Ar<sup>16+</sup> usually higher. Gradients always consistent --> Supports XICS inversions.