

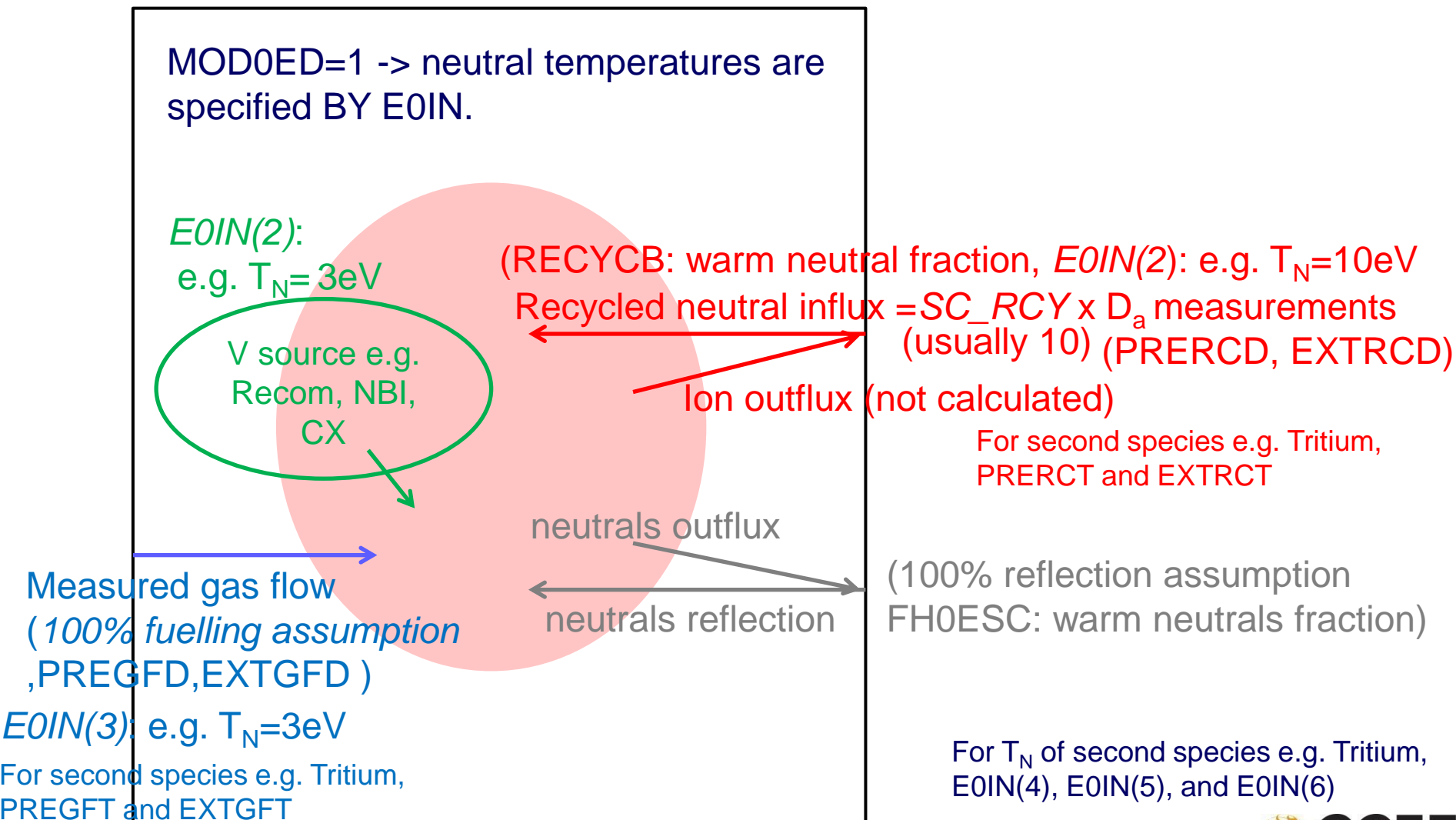
Neutral models in TRANSP

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1. The total number of neutral influx into the plasma volume is measured by GASM/MAJR (Gas puffing) and EDG7/FLW (Recycling i.e. D_a).
2. Neutral distribution in the plasma is calculated by FRANTIC.
i.e. neutral profile calculated
3. The neutral profile is used to calculate atomic reactions such as ionization, recombination, and CX. This is the ion and electron source term in particle balance (important for particle diffusion coefficient D).

NSOMOD=1 to select FRANTIC analytic neutral transport model.



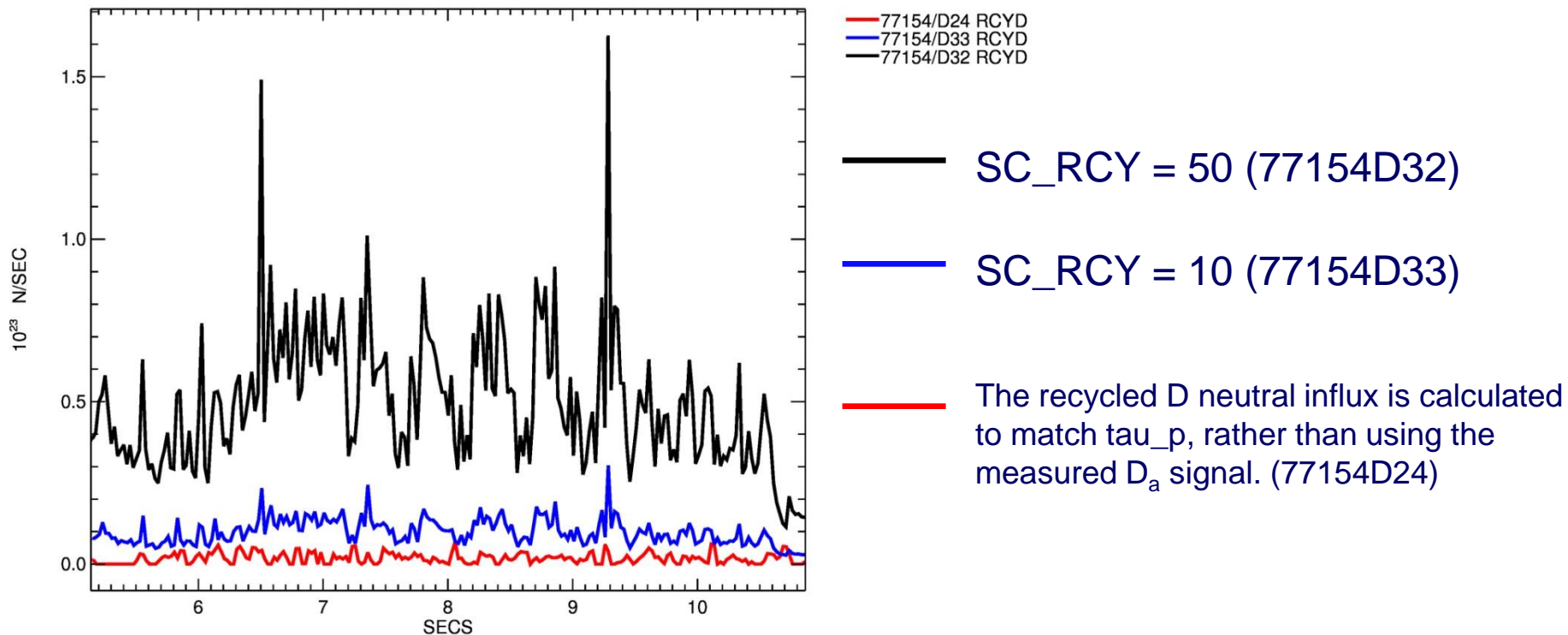
Robert Budny's comments in the core transport meeting week.

- Total recycled D neutral influx = Convergence factor * Measured D_a

$$\Gamma_{D \text{ neutral}}^{\text{Influx}} = \text{SC_RCY} \times \Gamma_{D\alpha}^{\text{measured}} [\# / \text{sec}]$$

where SC_RCY is typically assumed to be 10 based on TFTR experiments.

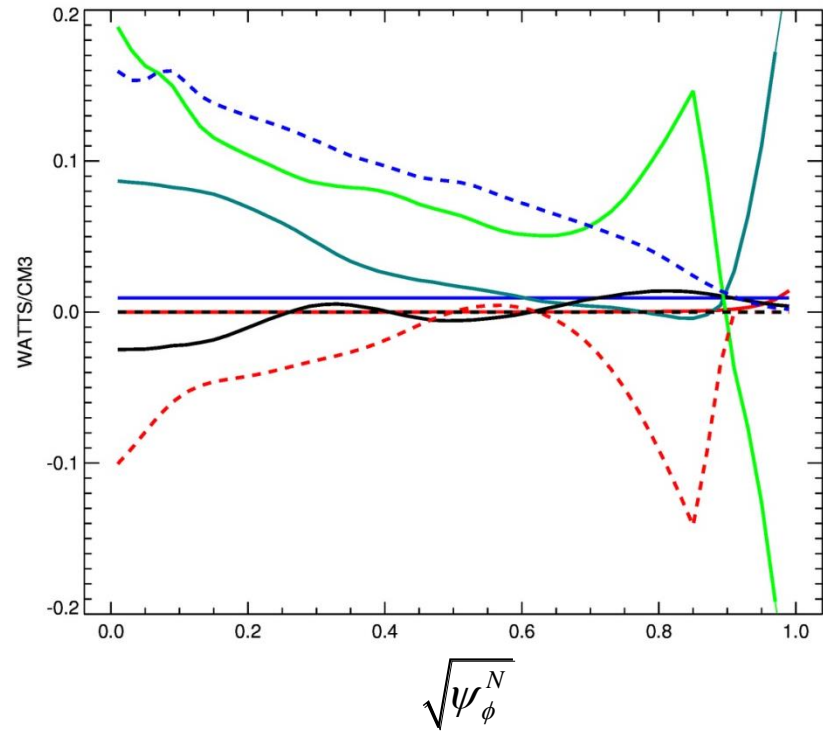
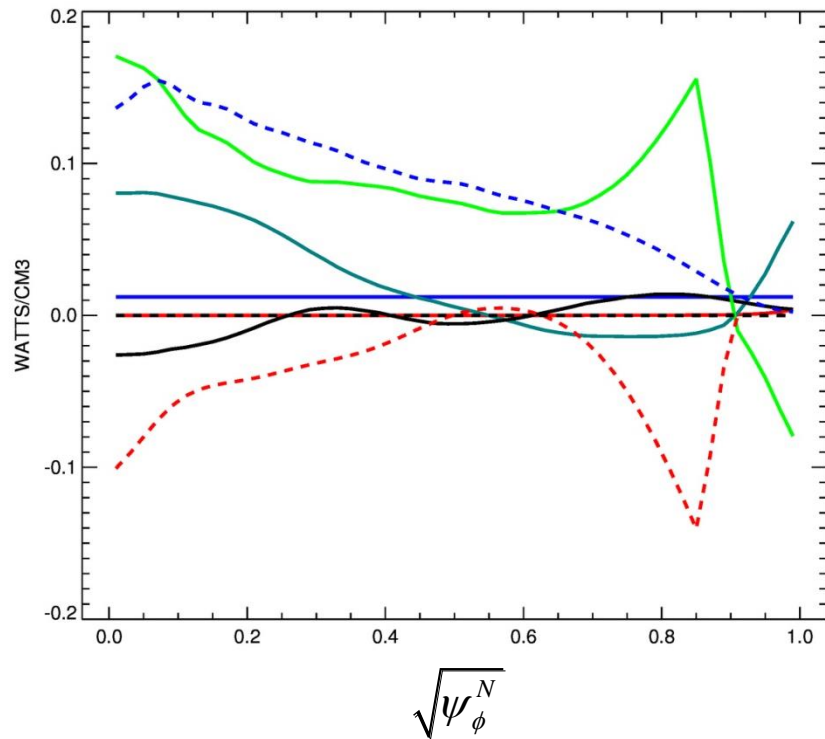
- There is uncertainty in SC_RCY. What if we use different value ?



- ■ ■ Total electron heating
- Radiated power loss
- ■ ■ Equilibration power loss
- Convective power loss
- Conductive power loss
- Power Balance (=0 if correct.)
- Ionization power loss
- $\frac{3}{2} \frac{d(n_e T_e)}{dt}$

SC_RCY = 10

SC_RCY = 50



- 77154/D32 PION
T=6.00200
- 77154/D32 PRAD
T=6.00200
- 77154/D32 PCNVE
T=6.00200
- 77154/D32 GAINE
T=6.00200
- 77154/D32 PCNDE
T=6.00200
- 77154/D32 QIE
T=6.00200
- 77154/D32 EHEAT
T=6.00200
- 77154/D32 TEBAL
T=6.00200