

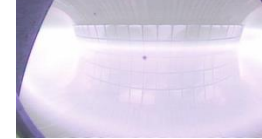
Aims of the experiment performed:

1. To study EC assisted start-up with impurities (Ne) to benchmark BKD0 code: simulations to be completed
2. To study influence in the position of null field wrt EC resonance

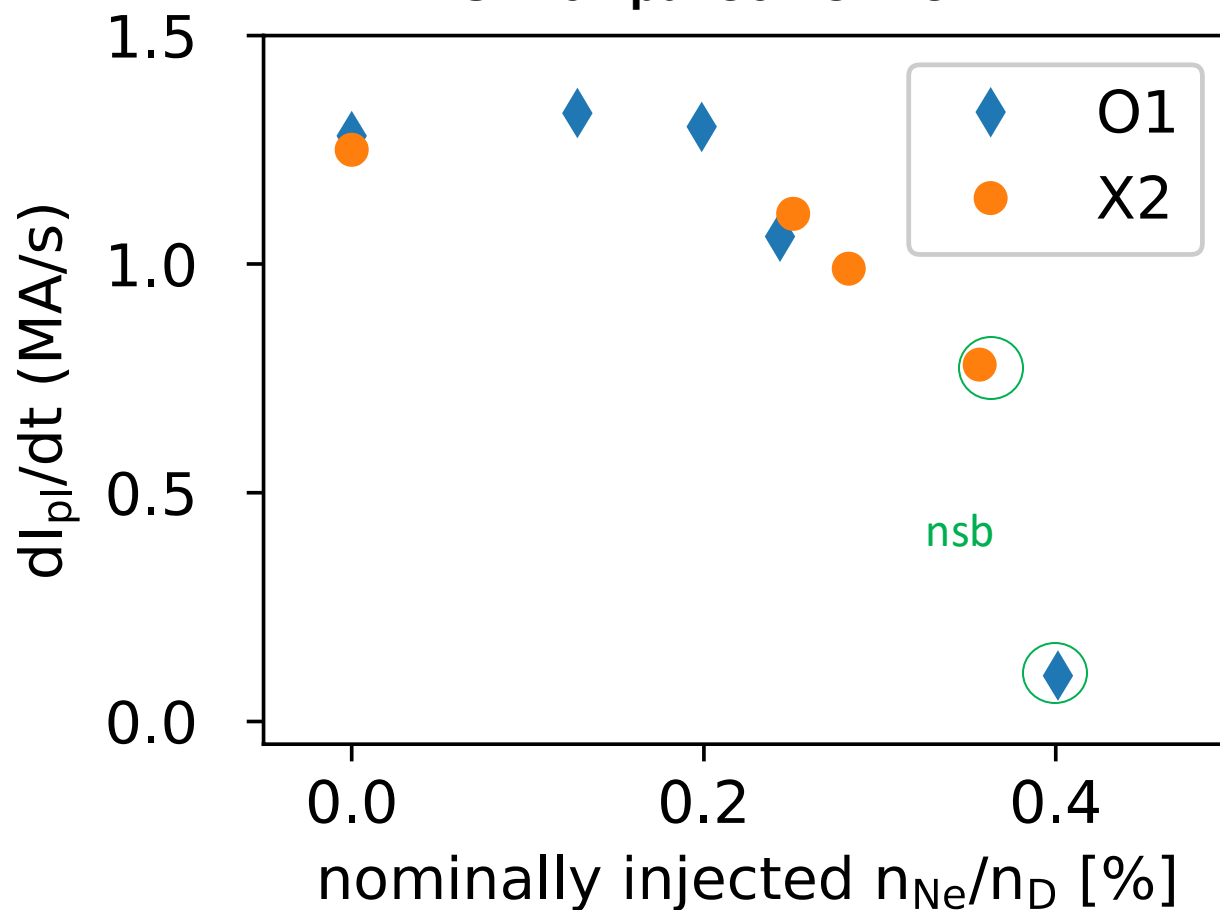
Results:

1. Confirmed the positive action of EC power for burn trough in presence of impurities. BKD0 reproduces results, systematic analysis should be completed
2. Apparently it is not necessary to align EC resonance and null position. In case of misalignment internal inductance is lower with beneficial effects.

F13: Role of impurity



FTU: Comparison O1 vs X2



$P_{EC} = 350\text{kW}$

$E_t = 0.5 \text{ V/m}$

Ne injection

D_2 pre-fill = 1 mPa

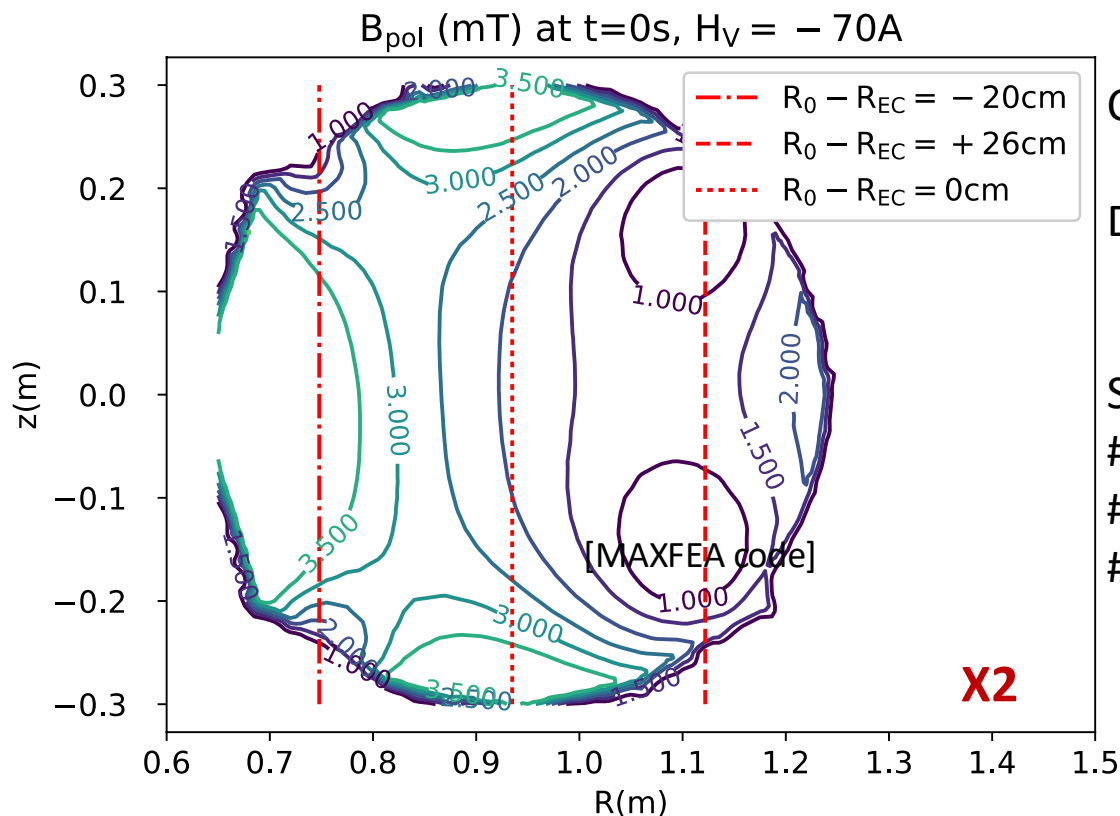
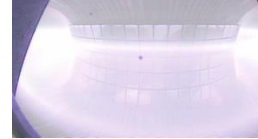
Warning:

O1: 20° toroidal

X2: 0° toroidal

- dl_p/dt doesn't depend on polarization
- Plasma resistivity increases with Ne content

F13: Influence of EC resonance vs null position



Constant field null position

$E_{loop} = 0.5 \text{ V/m}$

D_2 pre-fill = 1 mPa

Scan of EC resonance position:

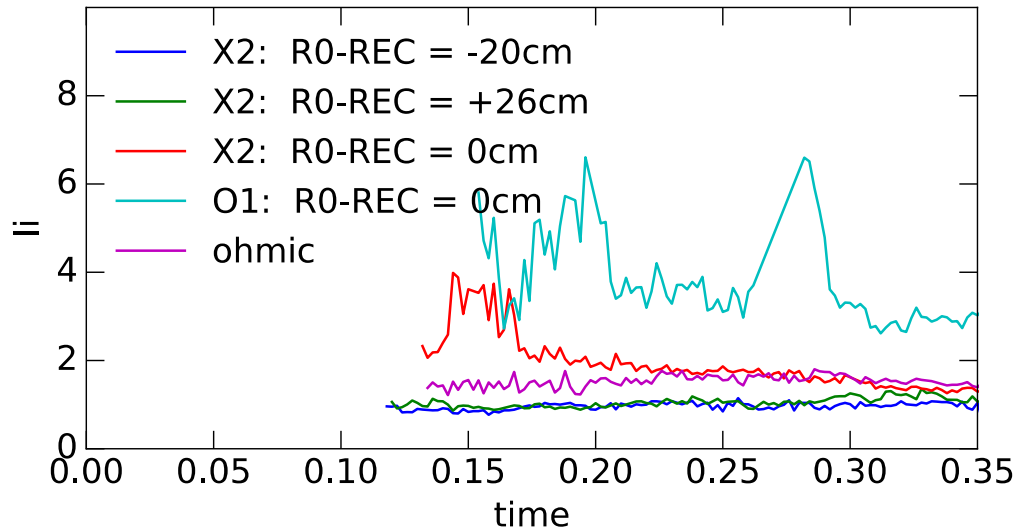
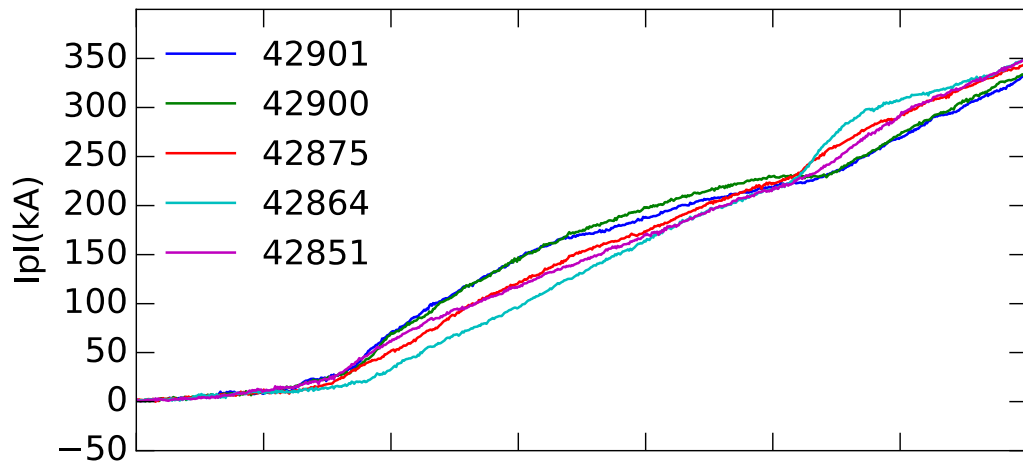
#42900 $B_T = 3T$

#42901 $B_T = 2T$

#42875 $B_T = 2,5T$

Start-up on FTU non influenced by the relative position of field null and resonance in X2

F13: Effect on Current Profile



I_i calculated from ODIN code

[Alladio F. and Crisanti F. NF 1986]

reduction of internal inductance (I_i) for:

- ECRH off-axis (X2)
- ECRH on-axis (O1) with Ne impurity
- Broadening of the current profile

To be done: verify if the broadening of the current density profile reduces MHD activity.

Warning: no Te profiles