



Numerical optimization of the actuator trajectories in ITER hybrid scenario

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Review



Extra constraint:

- ▶ Normalize inductance $L_i^{(3)} = \frac{2V \int B_p^2 dV}{\mu_0^2 I_p^2 R}$
- ▶ $0.65 \leq L_i^{(3)} \leq 1.2$

Updated constraint:

- ▶ $-0.4 MA/s \leq \frac{dI_p}{dt} \leq 0.25 MA/s$

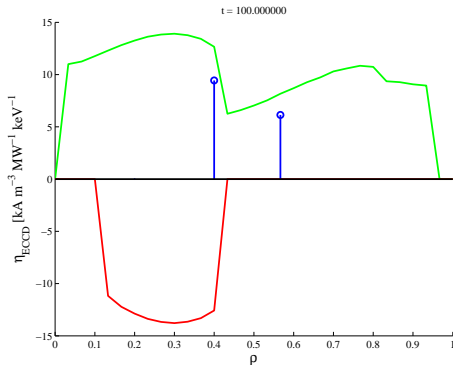
Updated model:

- ▶ Improved the simple model for P_{rad}



Additional check:

- ▶ Check current drive efficiency against data from *C. Zucca, Thesis EPFL 4360* using GRAY simulation data





Implement H-mode: couple L-H transition to power threshold

Optimization scenarios:

- ▶ Different L-H transition times
- ▶ Different NBI switch on times wrt L-H transition
- ▶ I_p constraint: $I_p \leq 12, 13 \& 15 MA$ while still fix $I_p(t = 100s) = 12MA$
- ▶ 3 different densities



Thank you

Thanks to everybody for their input and contributions

Any new input/questions are very welcome