The relation between GOLEM's parameter to the plasma

The 4th ASEAN School on Plasma and Nuclear Fusion 2018
At Chiang Mai University

Presented by Group 4

Mentor Rèmy GUIRLET

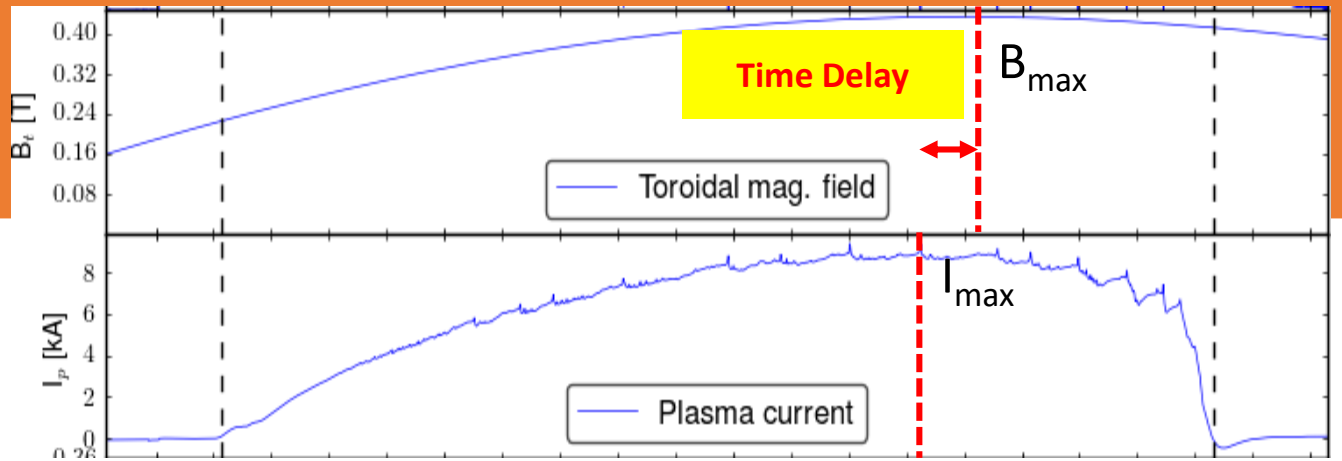
Outline

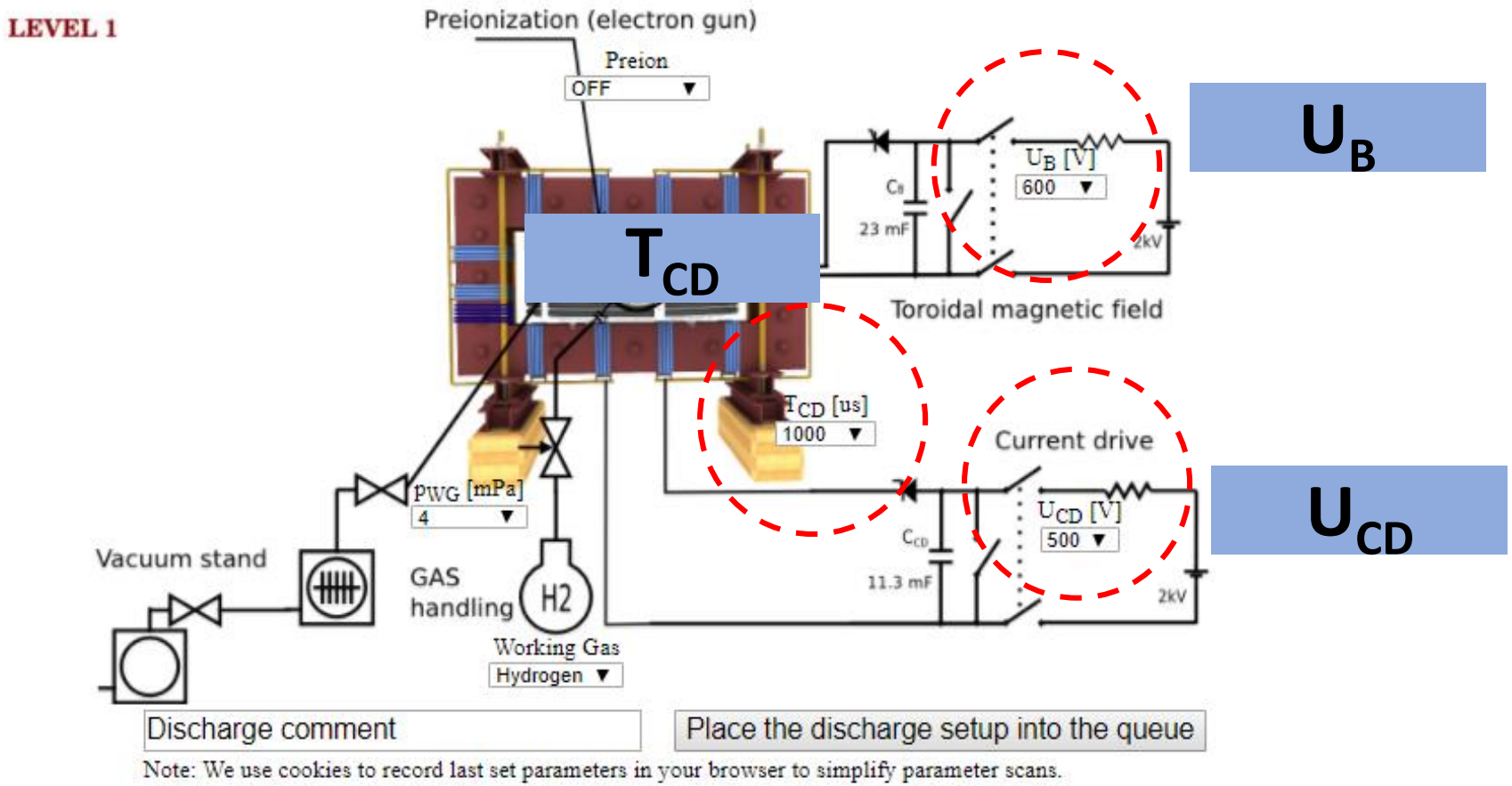
- Objectives
- Introduction
- Result & Discussion

Objectives

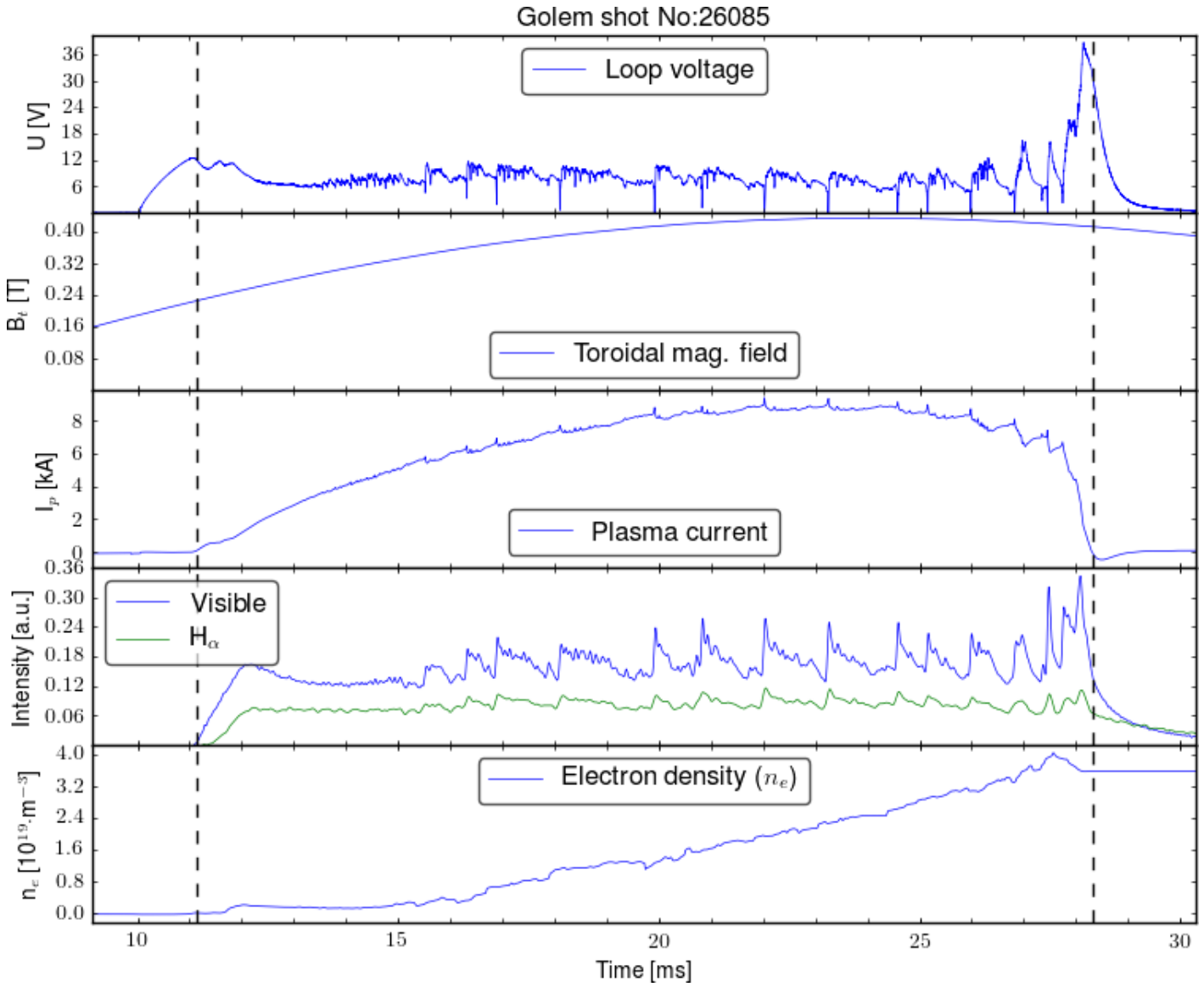
- To analyze how delayed time affect the confinement time.
- To analyze how adjustable voltages (U_{CD}) affect the confinement time,n_e and T_e.
- To analyze how adjustable voltages (U_B) affect the confinement time,n_e and T_e.

Introduction



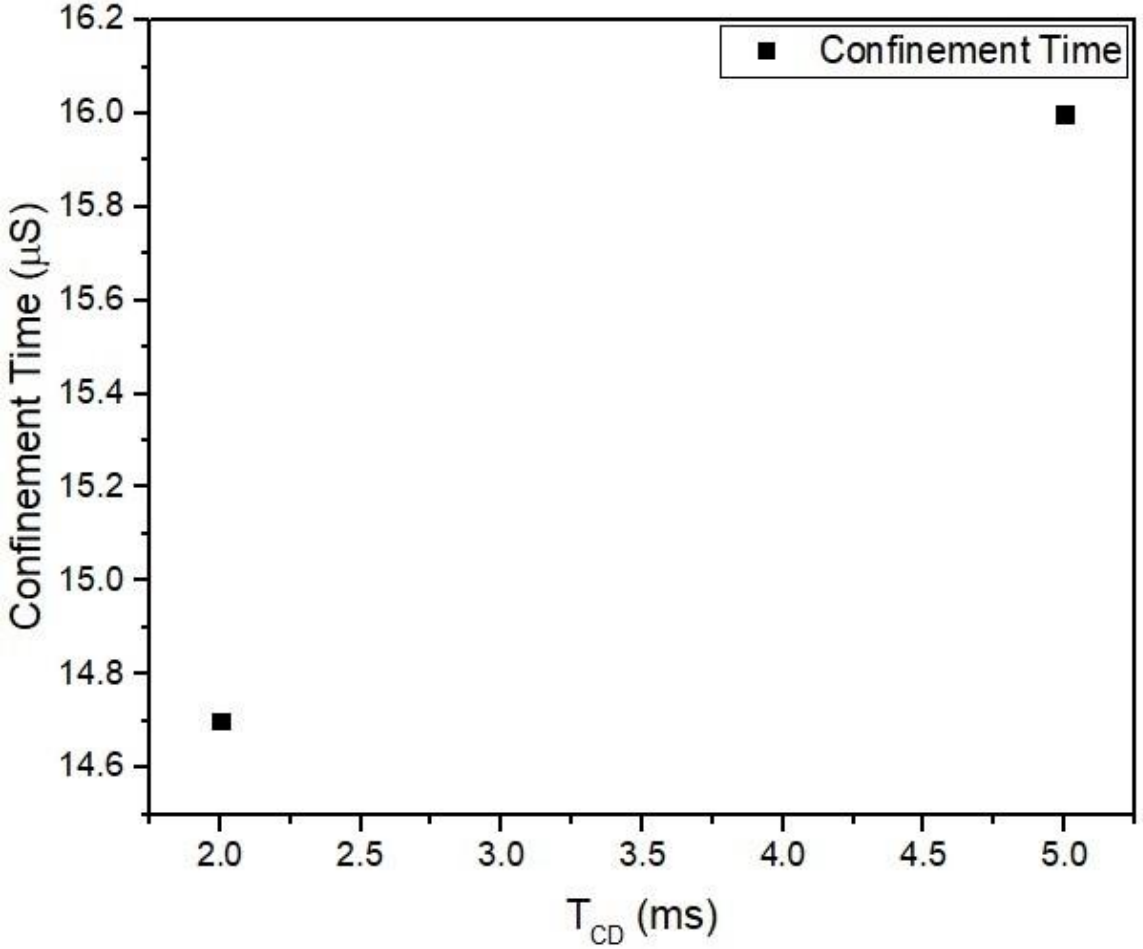


Result & Discussion

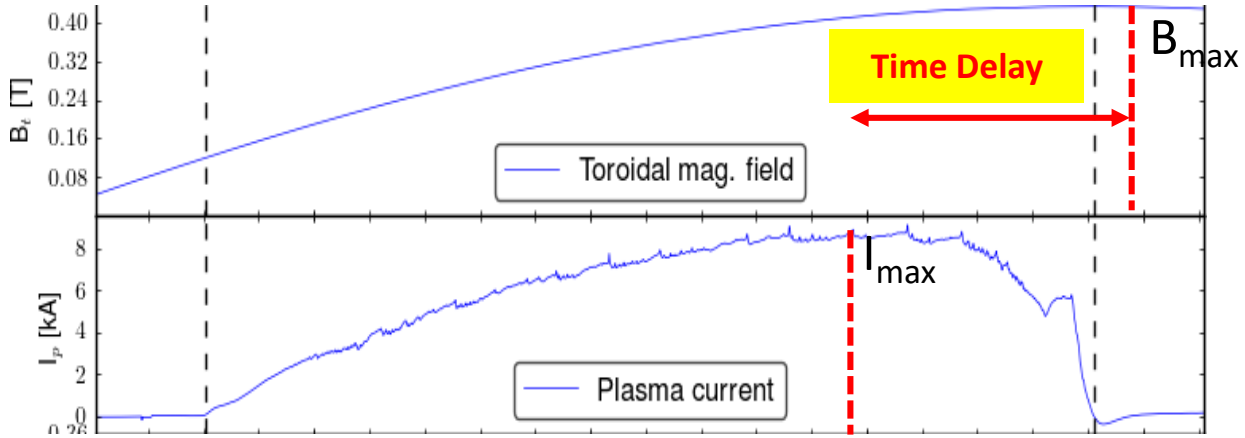


Result & Discussion

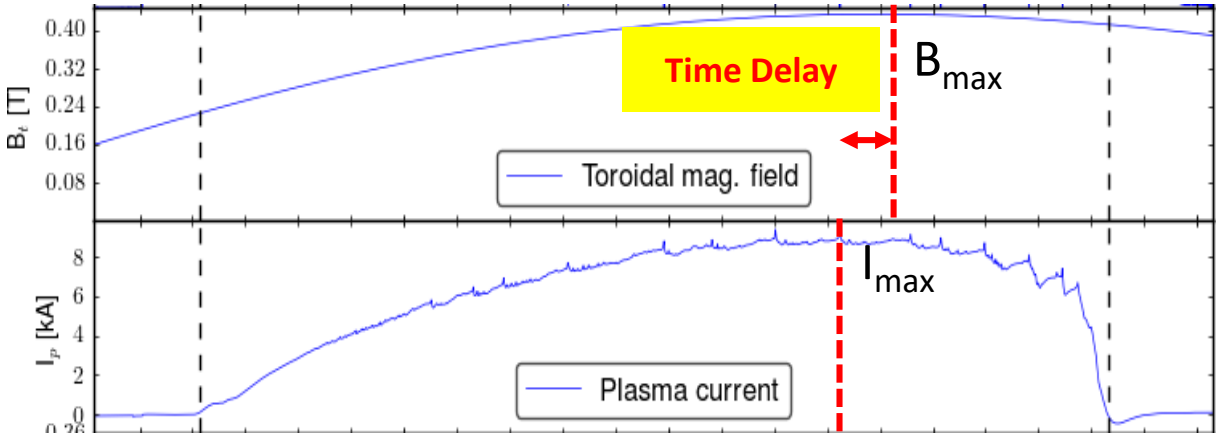
Time-Delay



T_{CD} = 2 ms

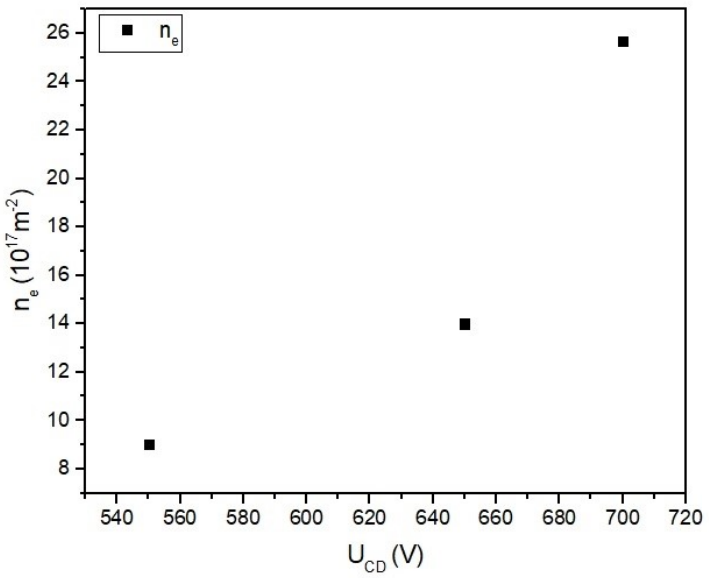


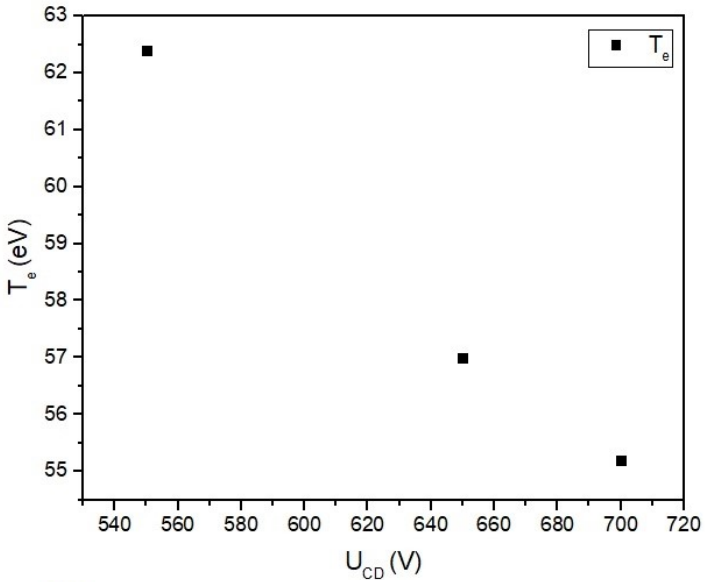
T_{CD} = 5 ms

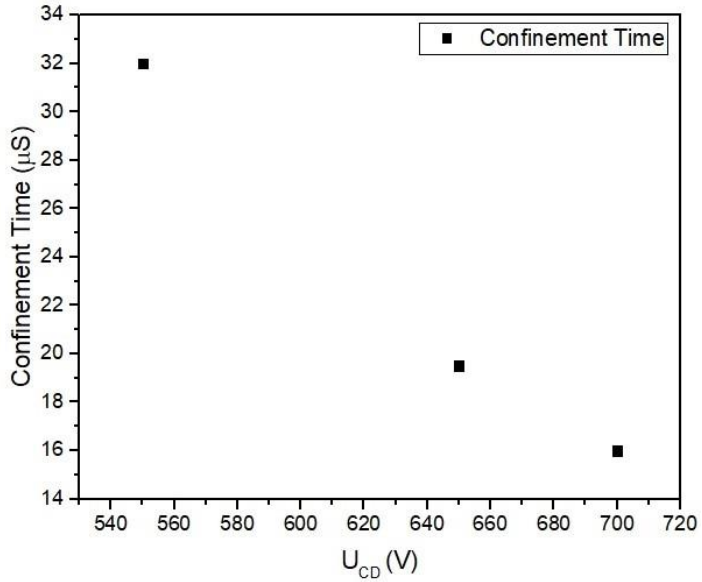


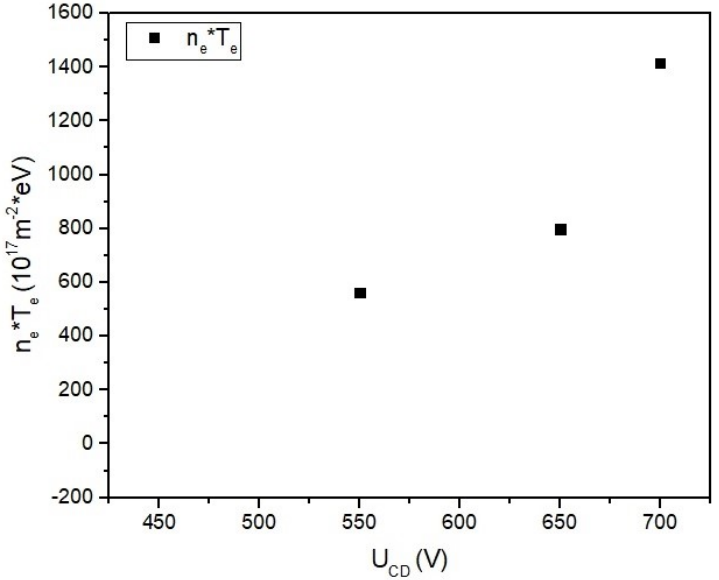
Result & Discussion

U_{cd} Current Drive









$$P_\Omega \alpha \frac{V^2}{\eta}$$

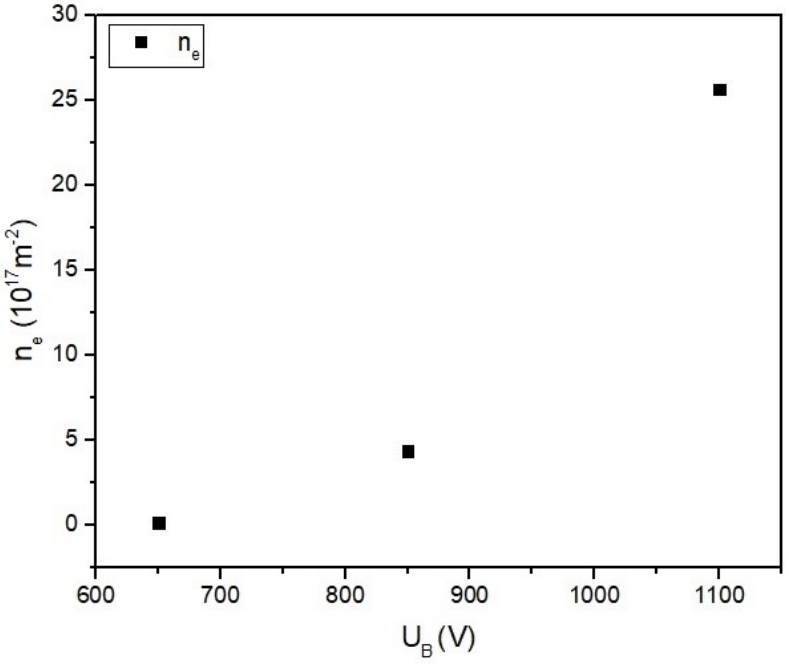
$$P_\Omega \alpha \eta I^2$$

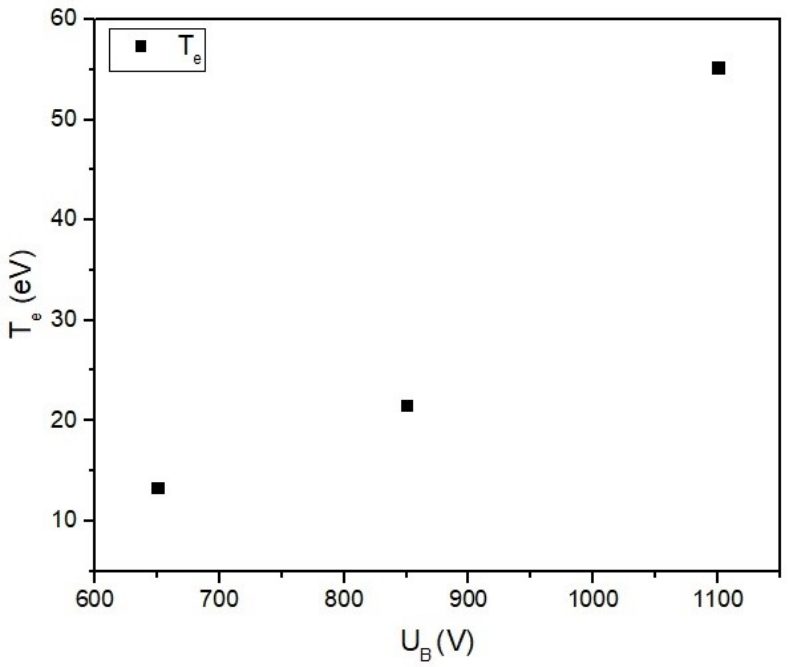
$$\eta = \frac{\pi Z e^2 m^{1/2} ln\Lambda}{(4\pi\varepsilon_0)^2 (k_B T)^{3/2}}$$

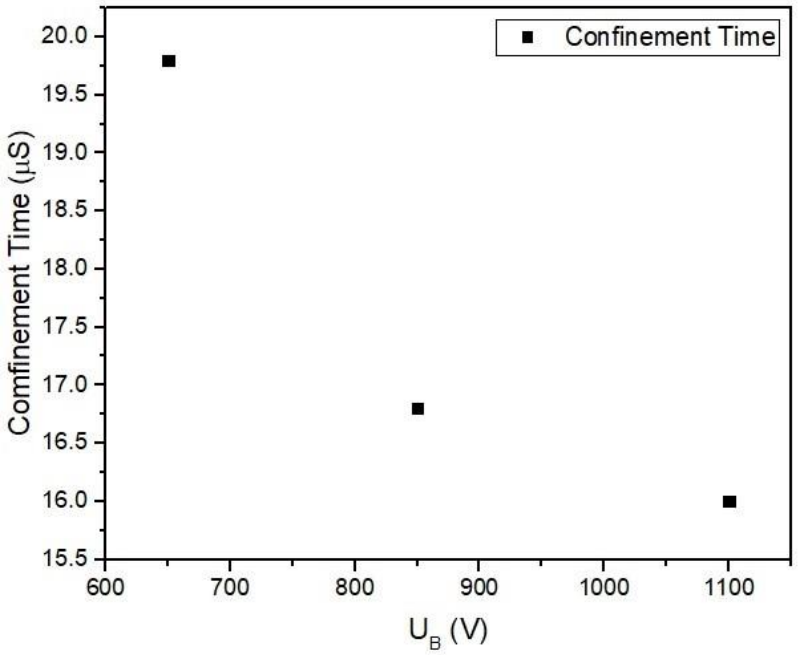
$$\tau_E = \frac{W}{P_\Omega}$$

Result & Discussion

U_B Toroidal Magnetic Field







$$P_\Omega \alpha \frac{V^2}{\eta}$$

$$P_\Omega \alpha \eta I^2$$

$$\eta = \frac{\pi Z e^2 m^{1/2} ln\Lambda}{(4\pi\varepsilon_0)^2 (k_B T)^{3/2}}$$

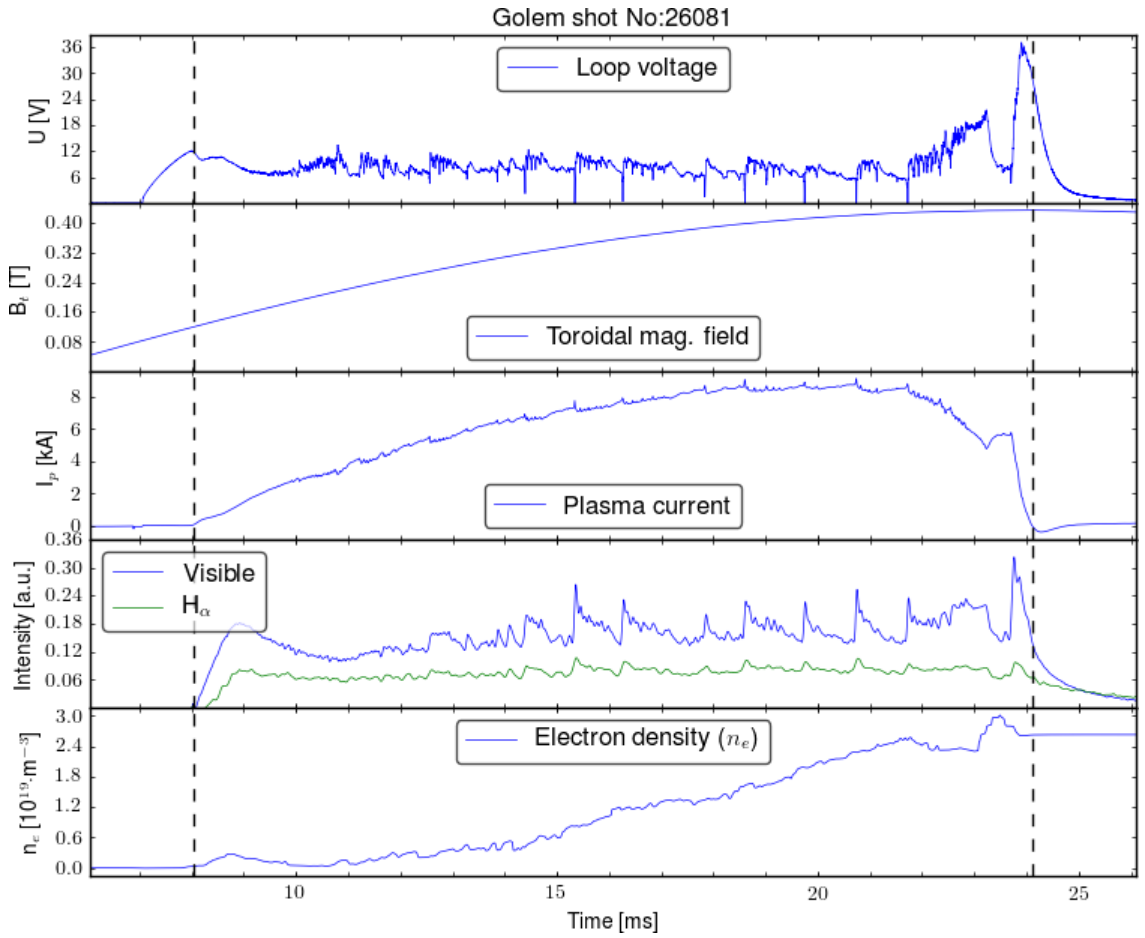
$$\tau_E = \frac{W}{P_\Omega}$$

Thank you for your attention

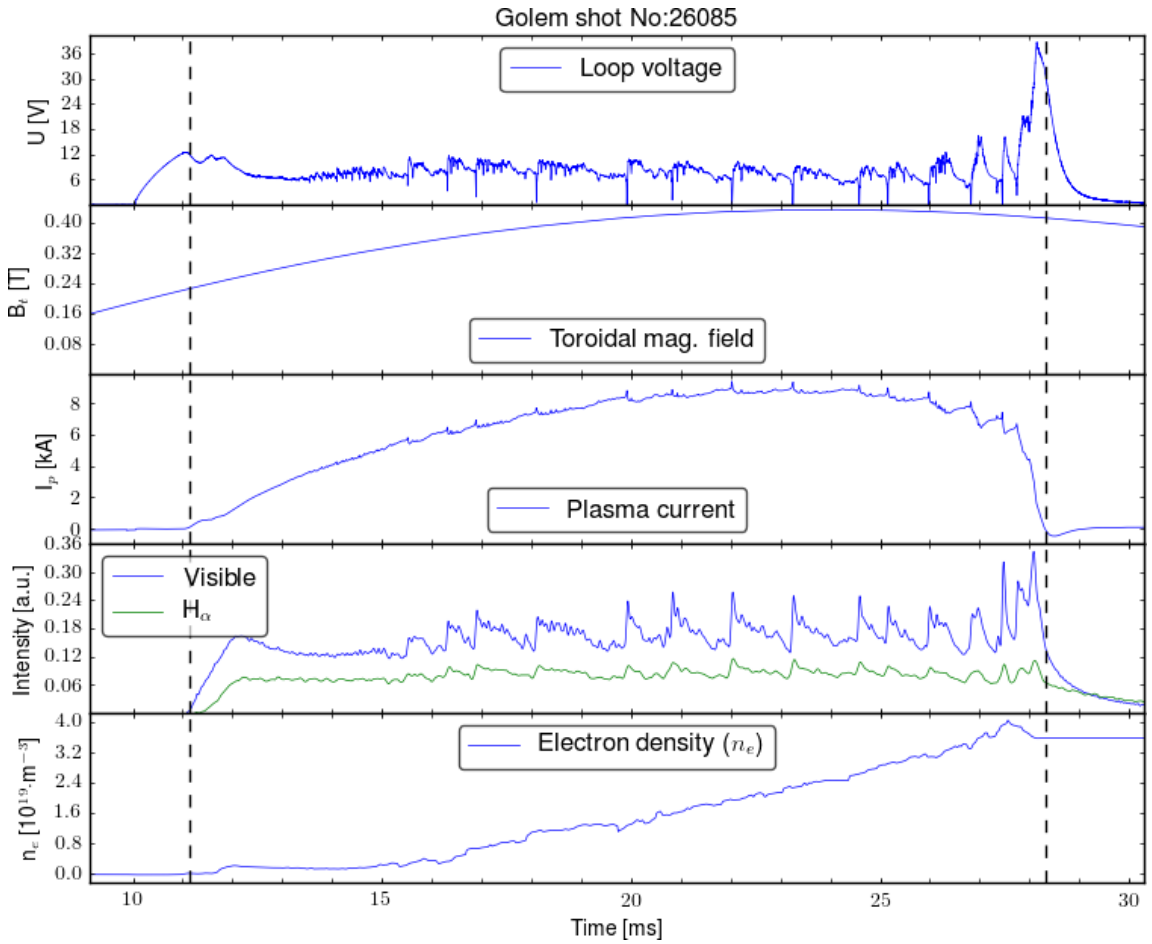
Q&A

Compared T_{cd}

T_{cd} = 2 ms

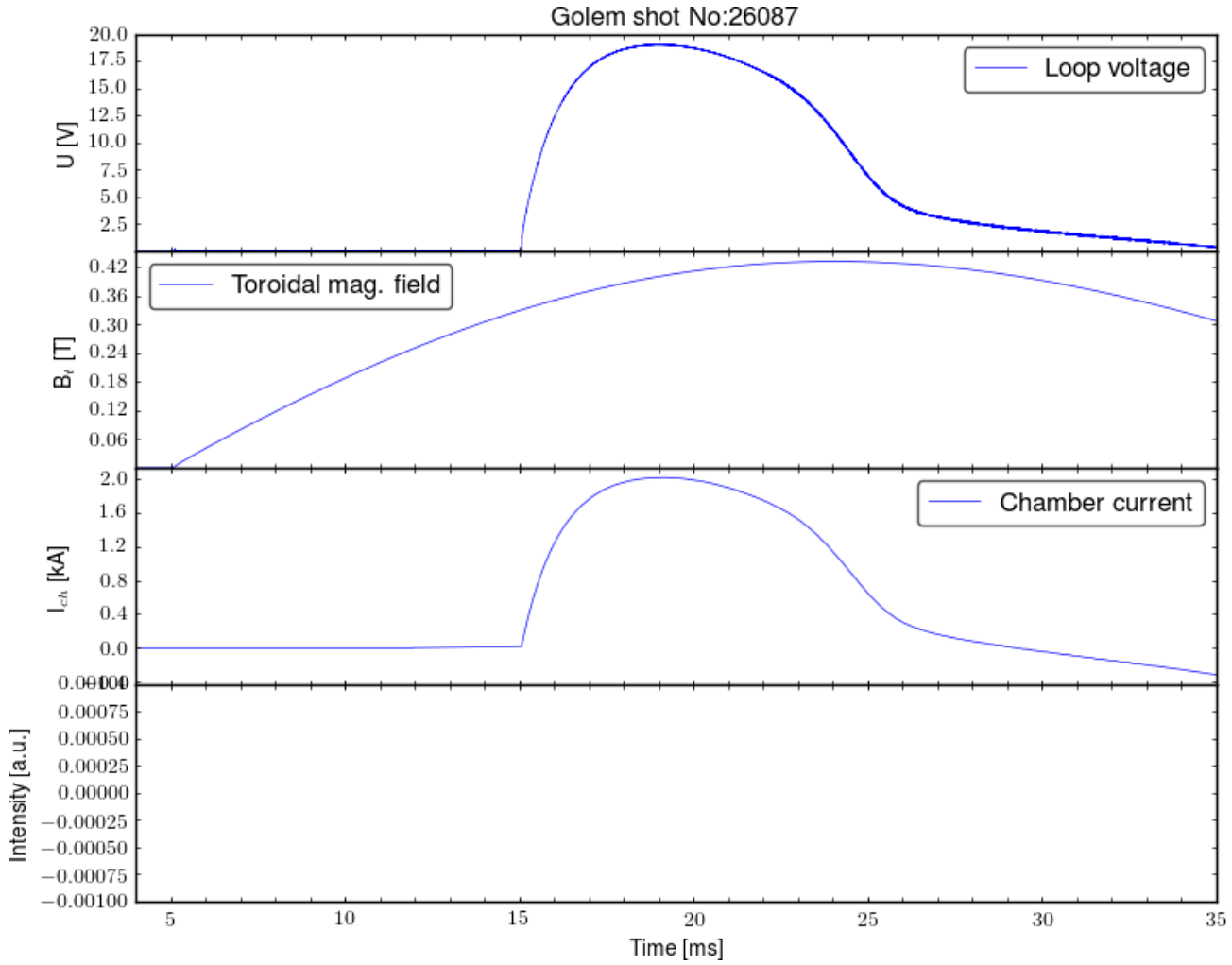


T_{cd} = 5 ms



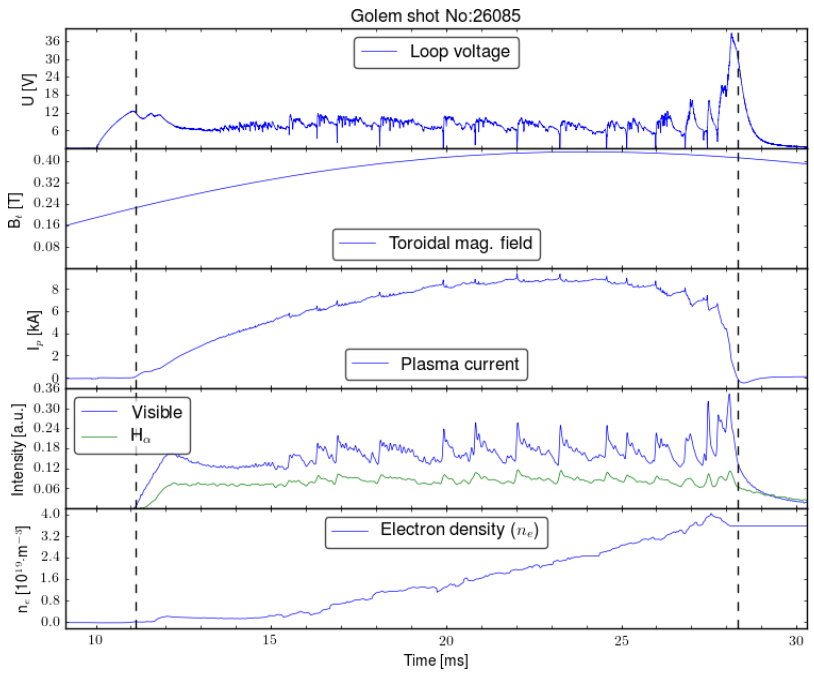
T_{cd} without plasma

T_{cd} = 10 ms

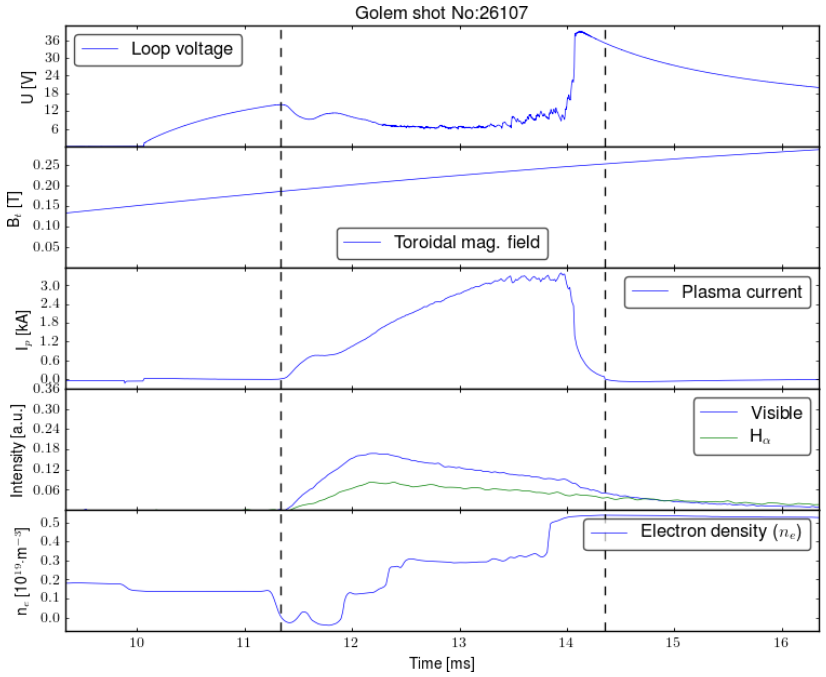


Compared U_B

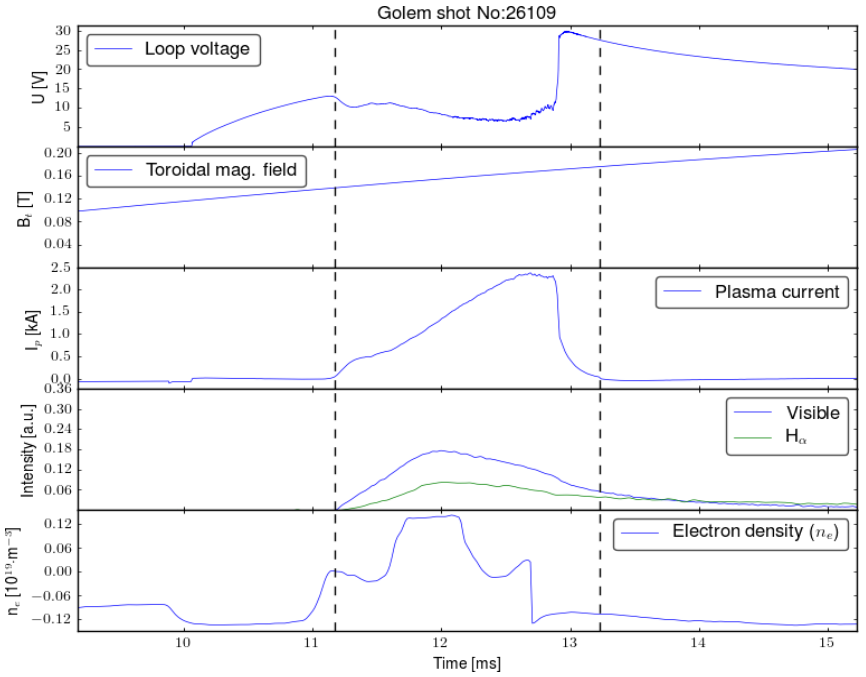
U_B = 1100 V



U_B = 850 V

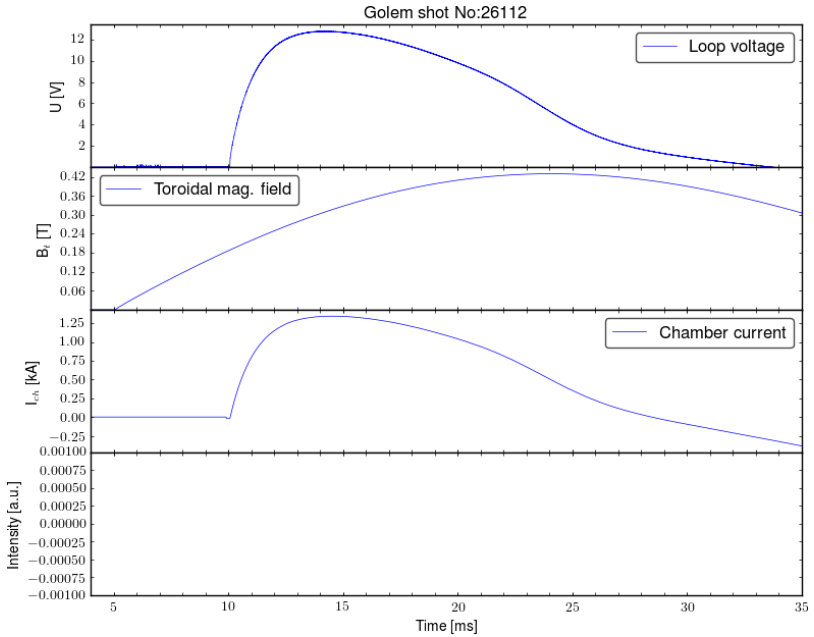


U_B = 650 V

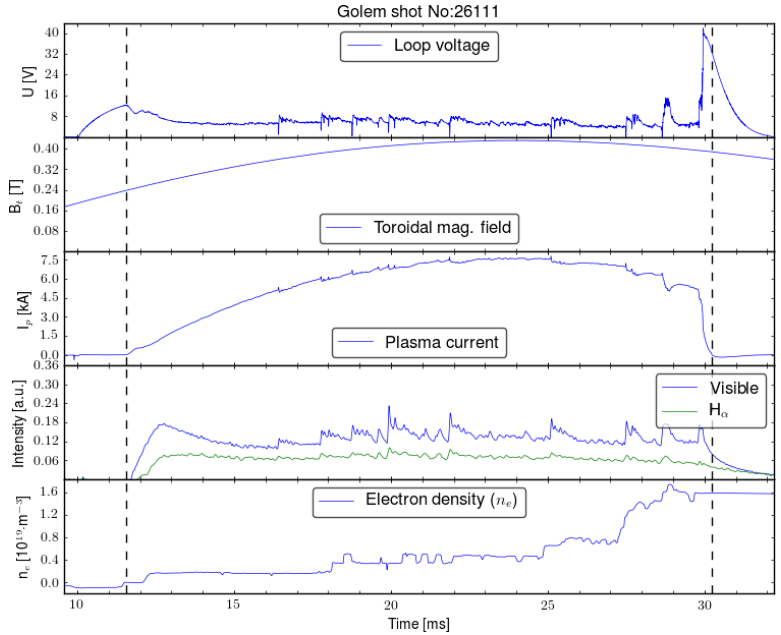


Compared U_{cd}

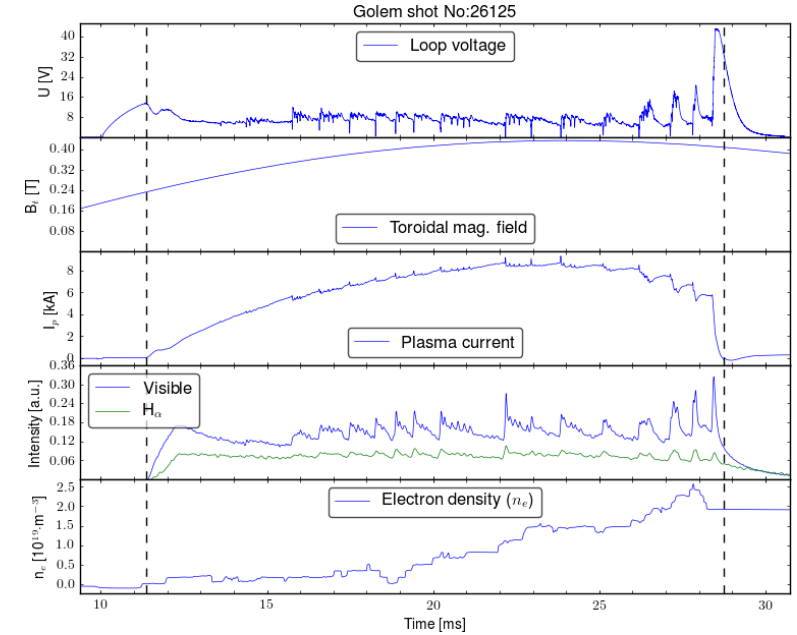
U_{cd} = 450 V



U_{cd} = 550 V



U_{cd} = 650 V



U_{cd} = 700 V