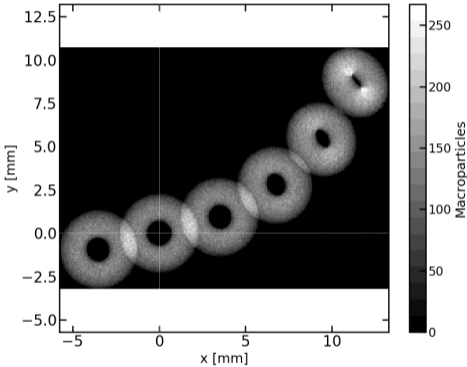


Updates on simulation of the "IC" lens

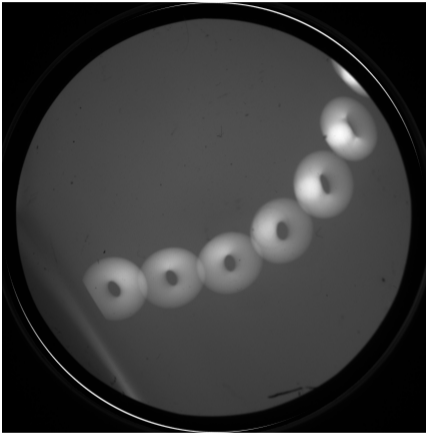
Titus Dascalu

October 15, 2020

Simulation vs experiment

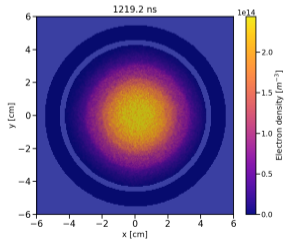
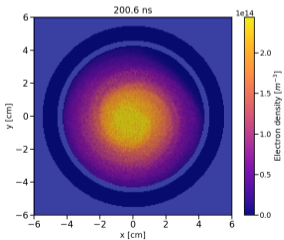
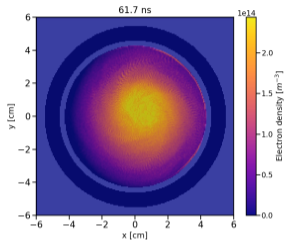
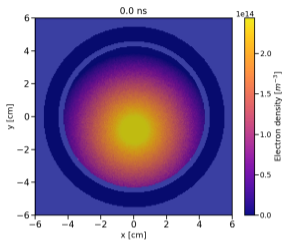


BDSIM simulation

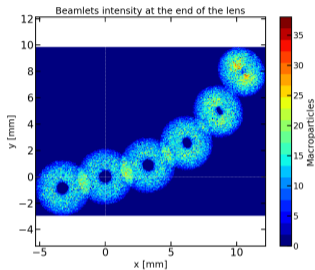


Experiment

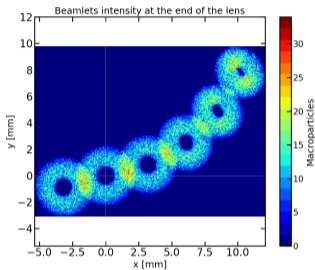
Plasma dynamics



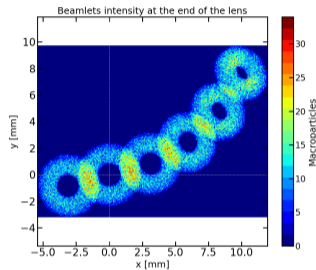
Study of plasma parameters



$$n_e = 0.8 \times 10^{14} m^{-3}$$



$$n_e = 0.9 \times 10^{14} m^{-3}$$



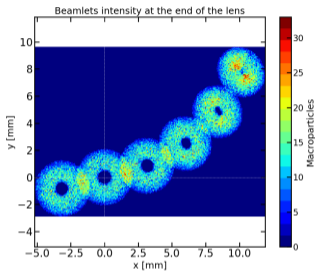
$$n_e = 1 \times 10^{14} m^{-3}$$

→ increasing electron density →

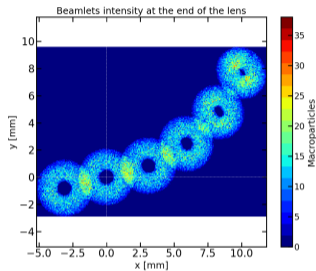
n_e has an influence on

- ▶ relative positions of the rings
- ▶ width of each ring

Study of plasma parameters



$a = 0.5\text{ cm}$



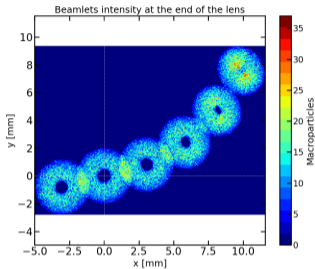
$a = 0.8\text{ cm}$

→ increasing peak width in the electron distribution →

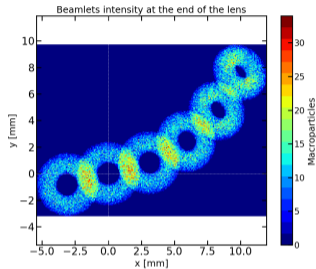
a has an influence on

- ▶ width of each ring

Study of plasma parameters



$$r_{rot} = 0.6\text{cm}$$



$$r_{rot} = 0.8\text{cm}$$

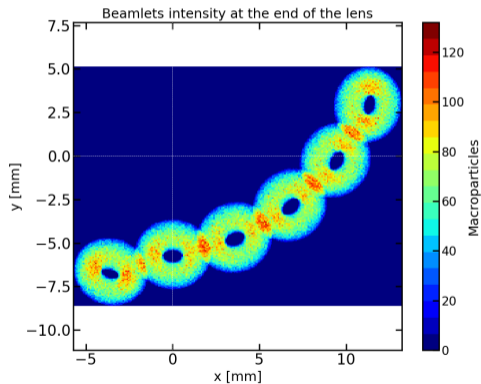
→ increasing radius of rotation →

r_{rot} has an influence on

- ▶ radius of the rings
- ▶ width of each ring

Influence of misalignment

- ▶ The 'central' beamlet is not observed to be a perfectly circular ring → misalignment between the central axis of the lens and the 'central' beamlet



Last missing feature

- ▶ One feature missing from the simulations: non-uniform intensity along each ring

