

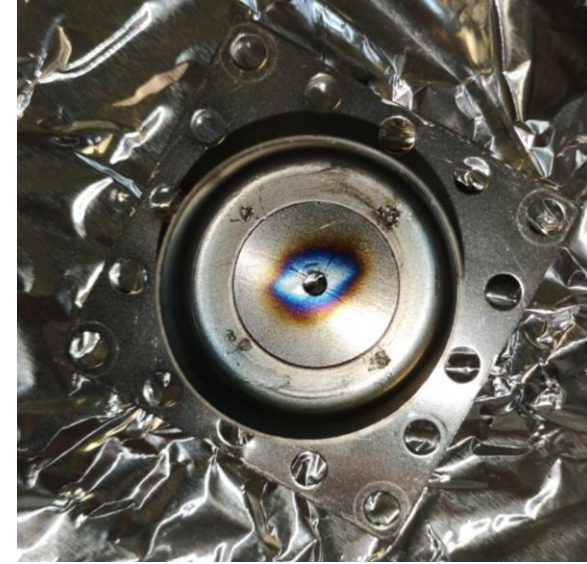
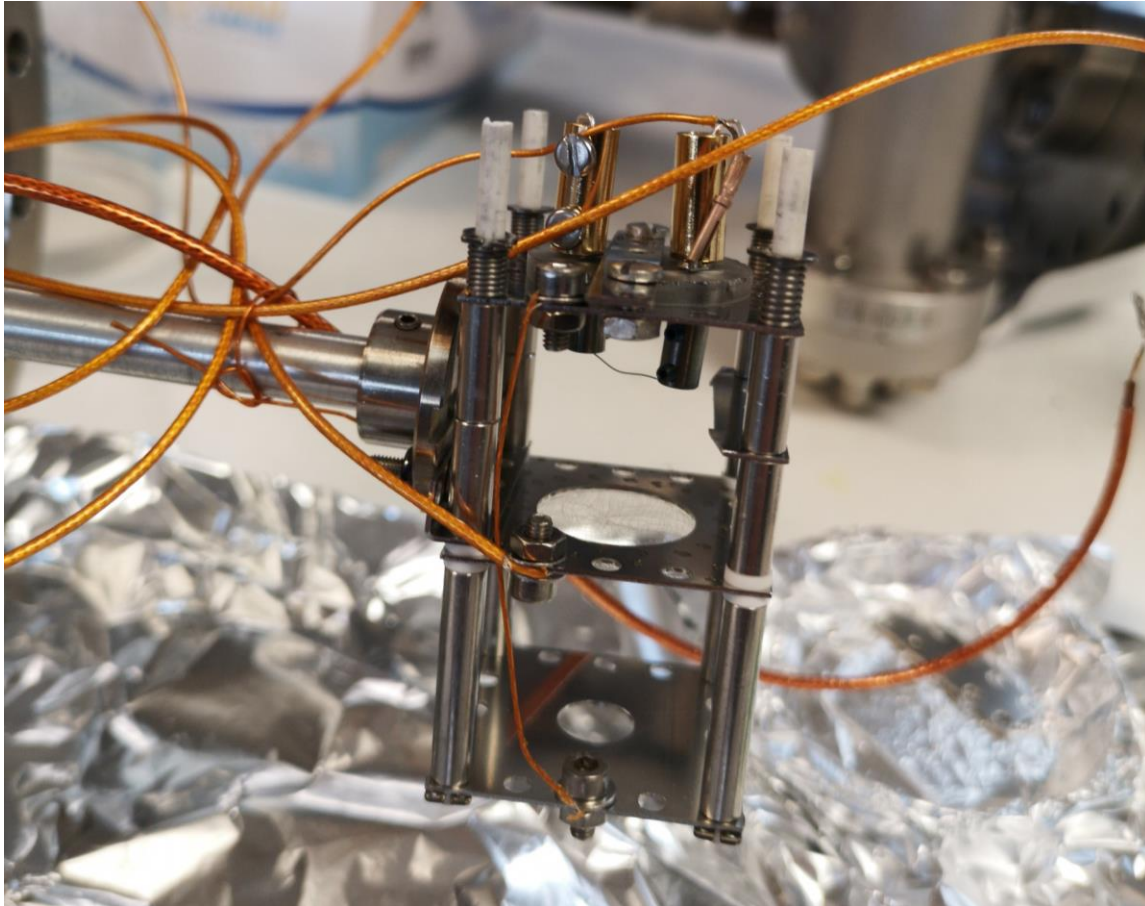
# LhARA Capture Meeting

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21<sup>st</sup> March 2022

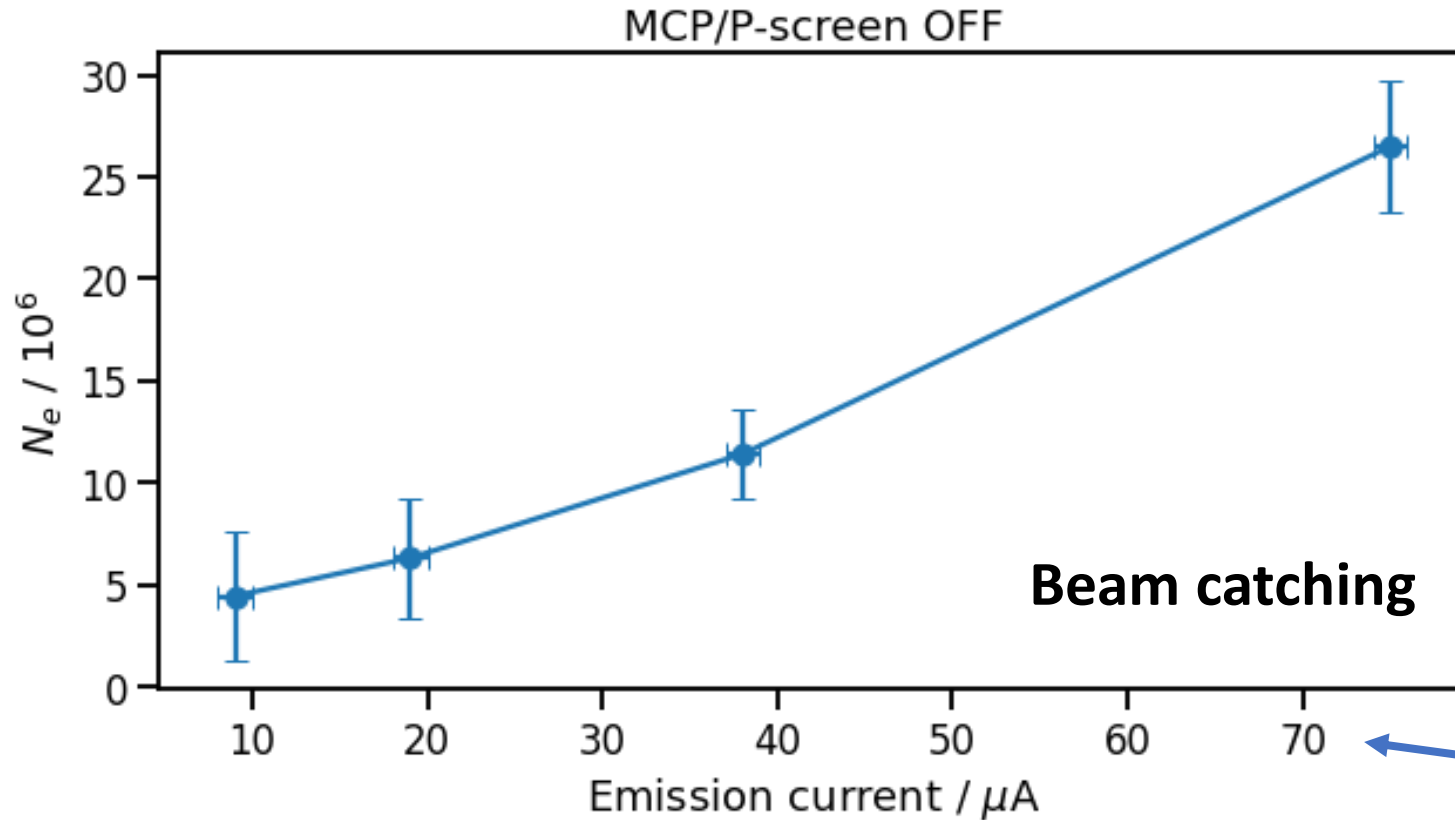
Titus Dascalu

$e^-$  source modified



- Removed the collimator from the original source
- Maximum emission currents registered
  - Oct21:  $\sim 13 \mu\text{A}$  (for 3 A filament current)
  - **Apr22:  $\sim 320 \mu\text{A}$**  (for 3.3A filament current)

# Preliminary measurements



- Number of trapped electrons by “beam-catching” technique:

- Oct21:  $10^5 - 10^6$

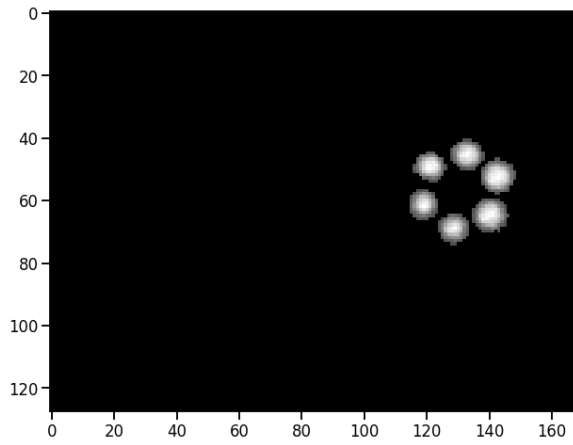
- Apr22:  $10^6 - 10^7$

Before replacing the current source for the filament

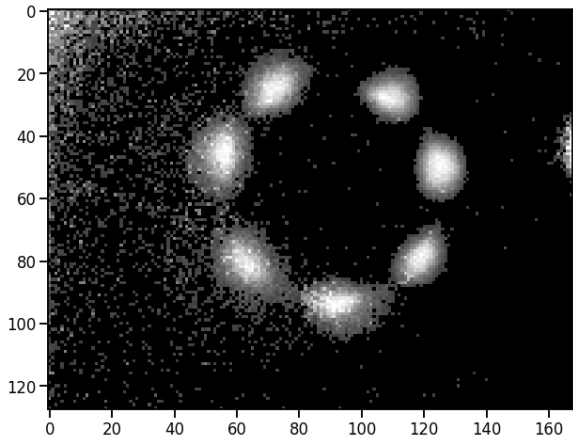
- Can be pushed higher by a factor of 3 or 4

# Preliminary measurements

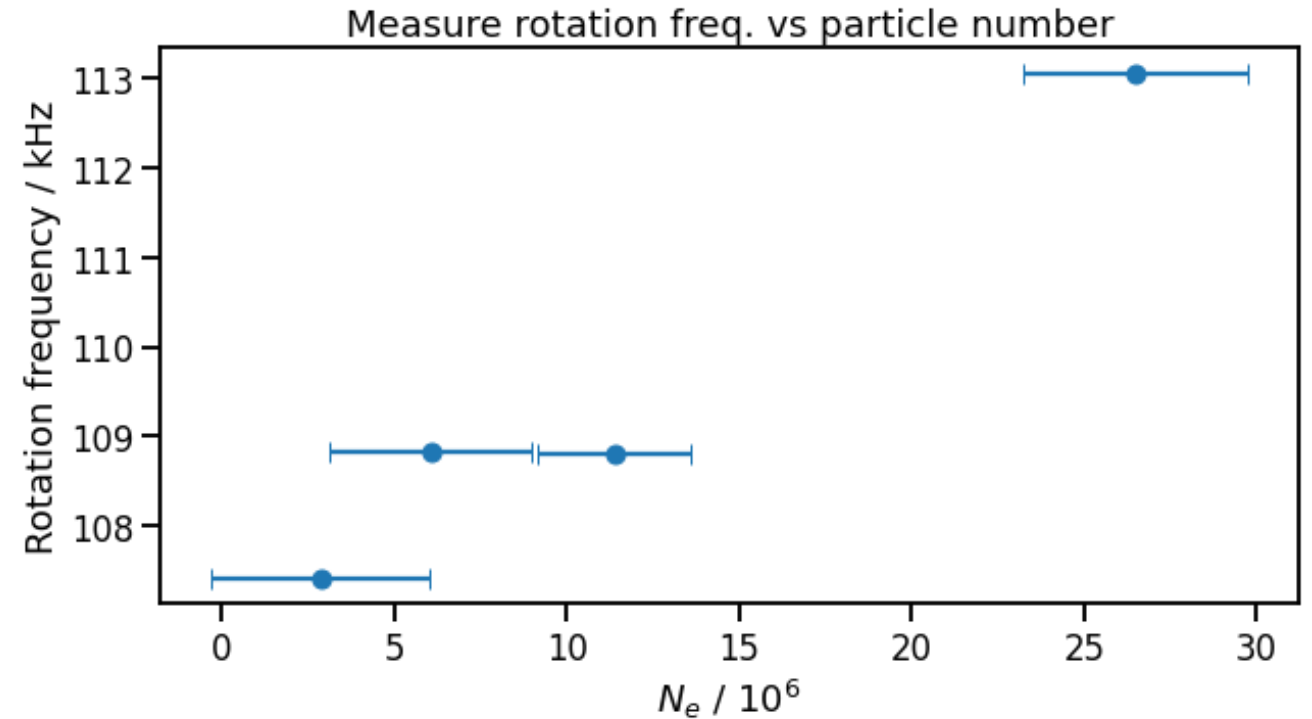
- Similar rotation of the 'plasma' on the P-screen can be observed
- Transverse beam size is larger



Oct21



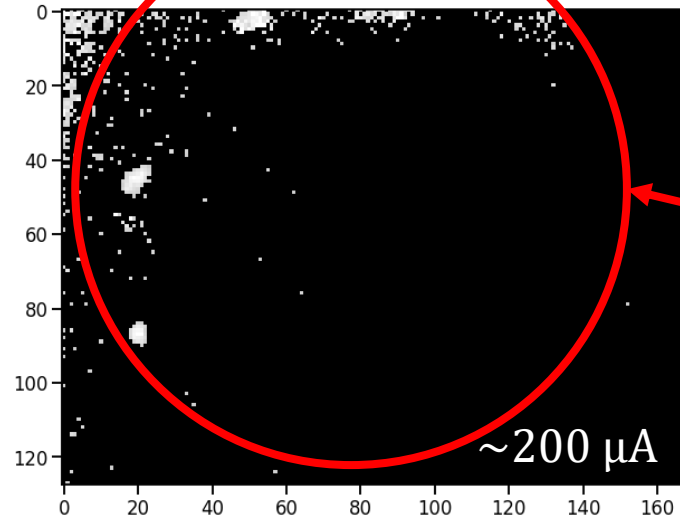
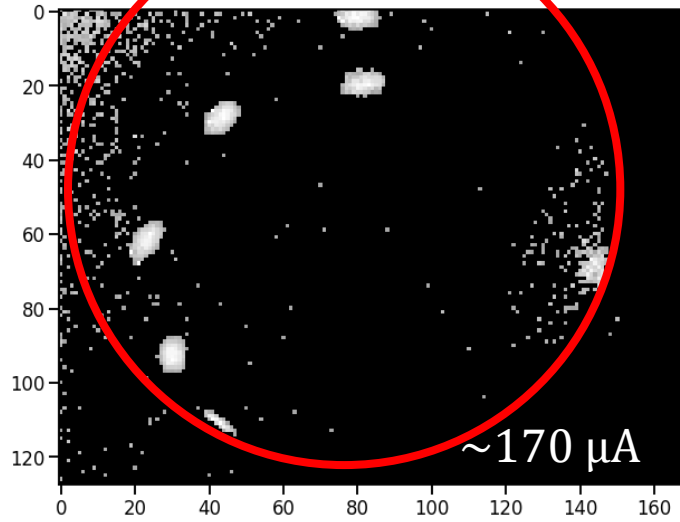
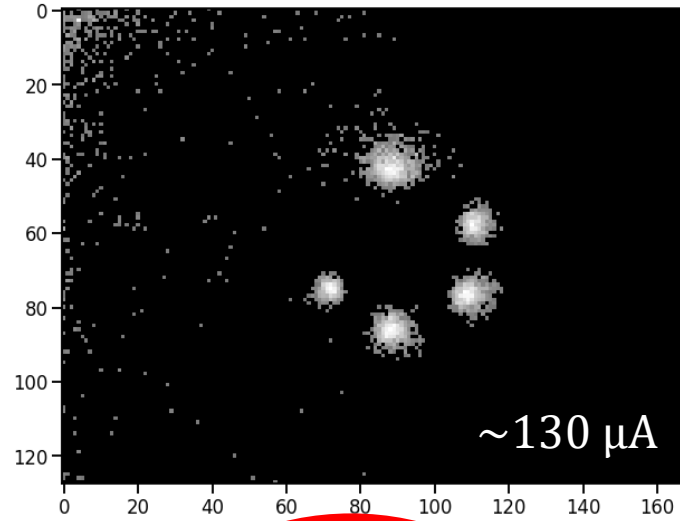
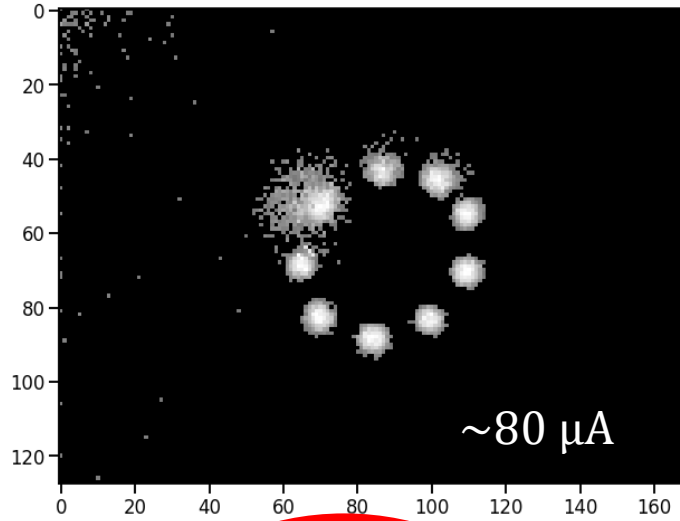
Apr22



Still in the single-particle regime  
(i.e. magnetron not diocotron rotation)

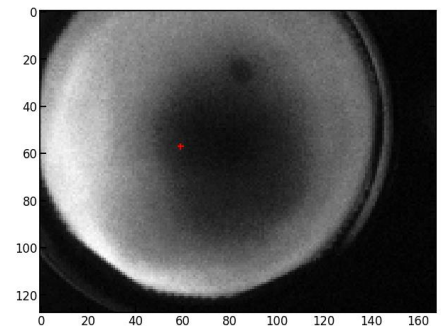
# Preliminary measurements

## Beam catching



Due to a new current source for the filament, higher emission currents can be reached

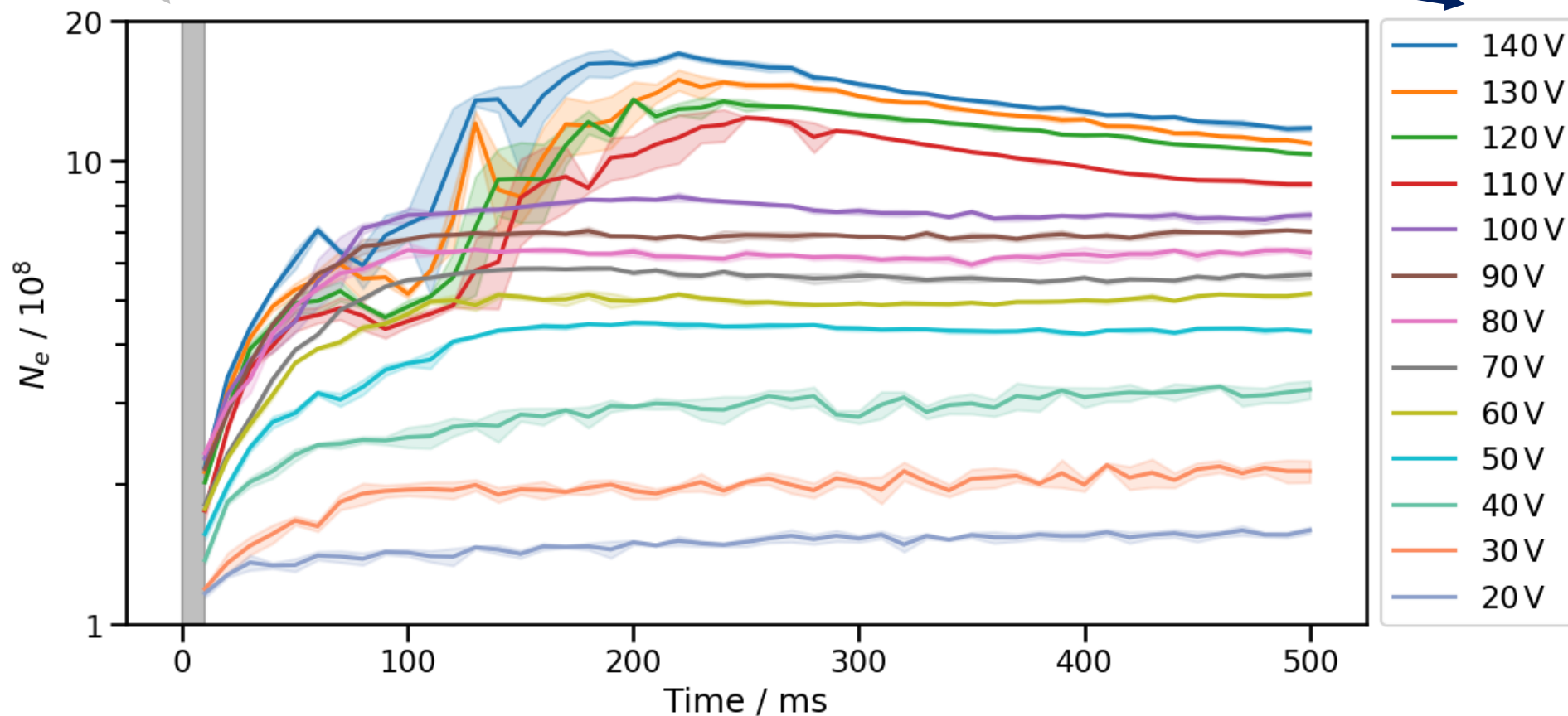
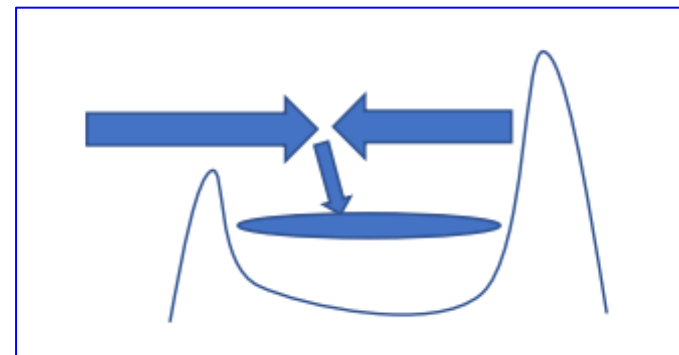
- Higher number of electrons trapped leads to an increase in the amplitude of the rotation

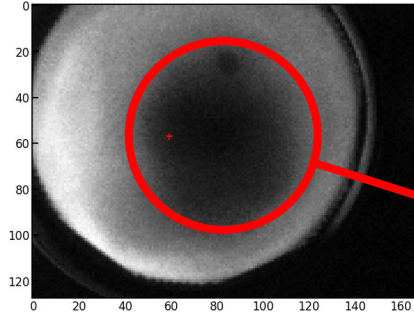
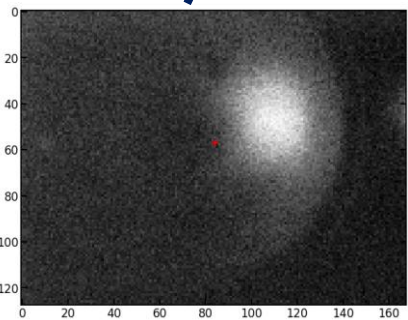
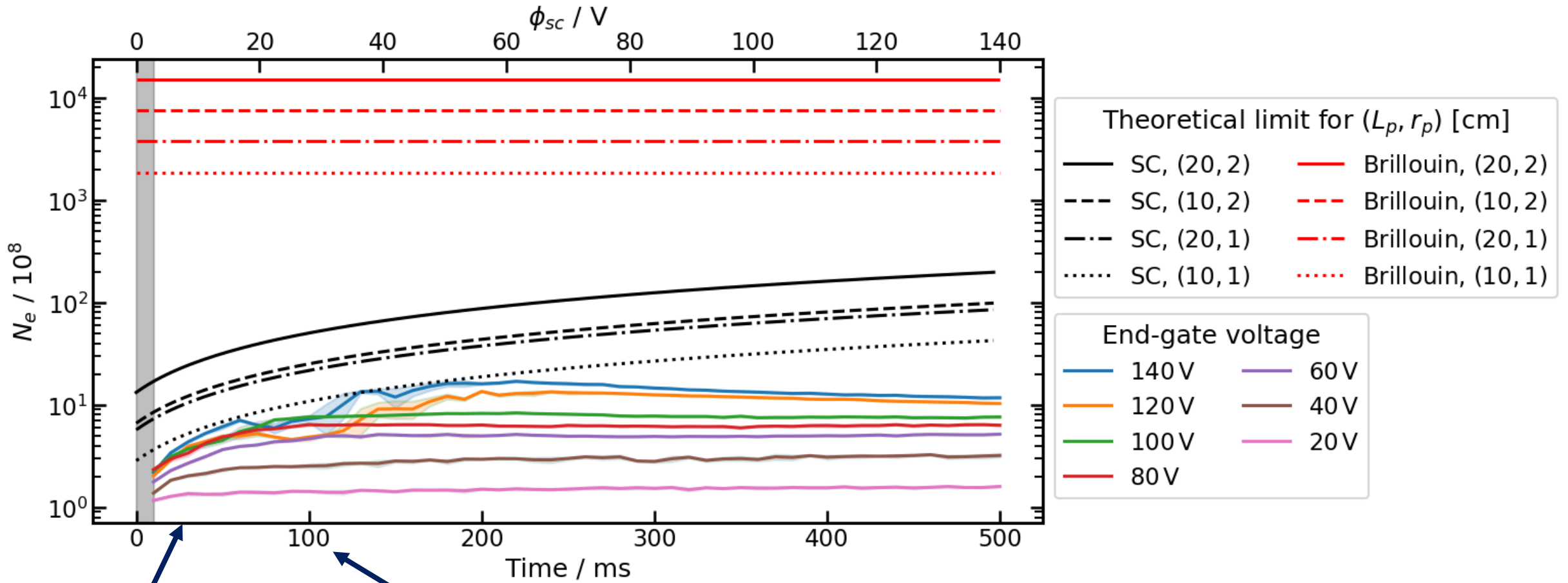


Approx. active region of the P-screen

## Preliminary measurements

- Longer accumulation stage
- First 10ms to increase the “depth” of the potential well

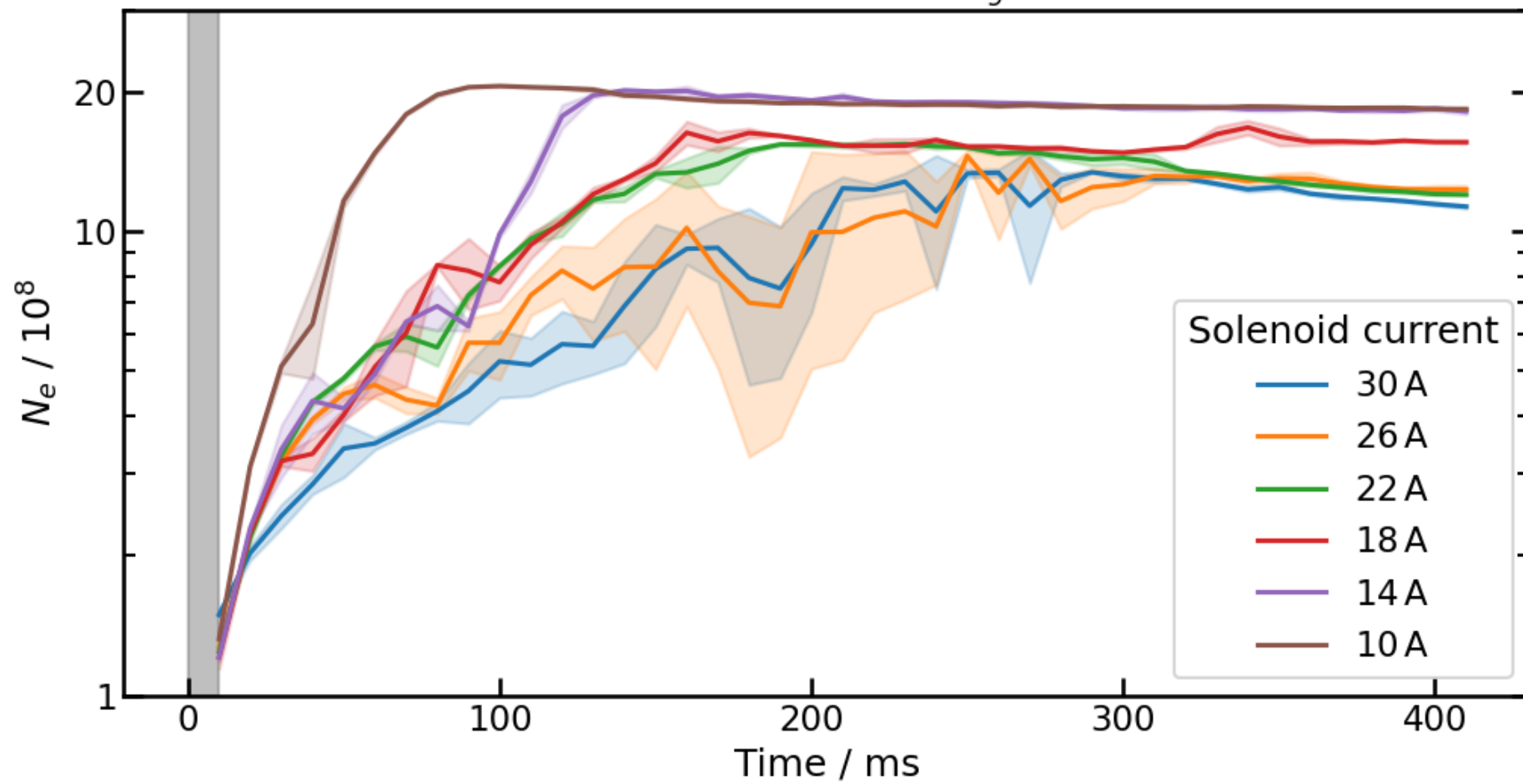




The “plasma” expands in a few 10s of ms and fills the entire volume of the trap.

Damaged area on the screen

Accumulation of electrons ( $V_{gate} = 120\text{ V}$ )





# Lifetime measurements

