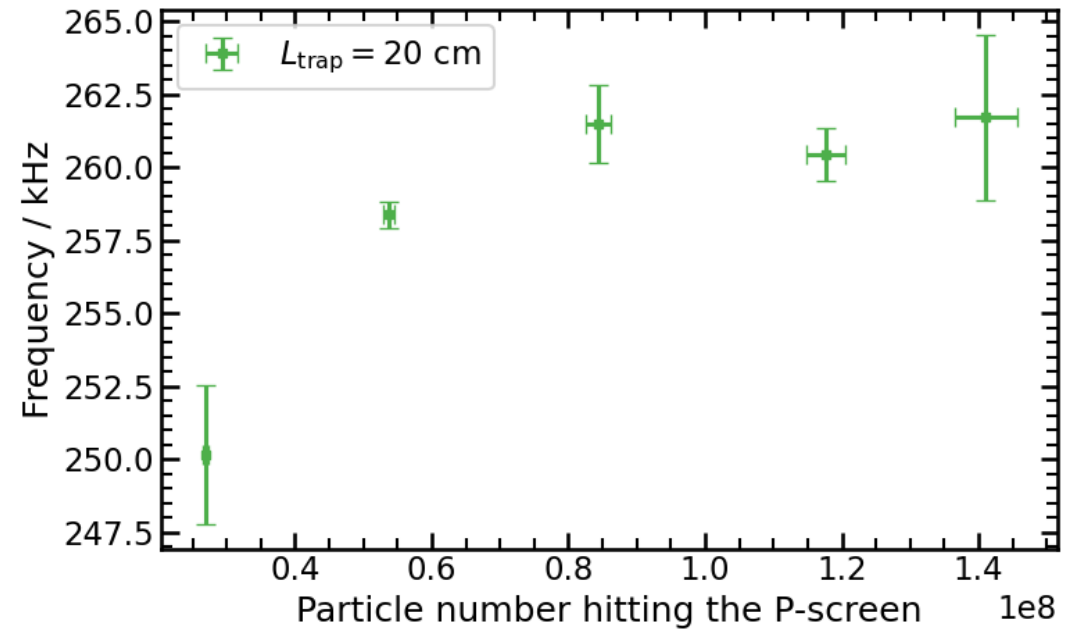
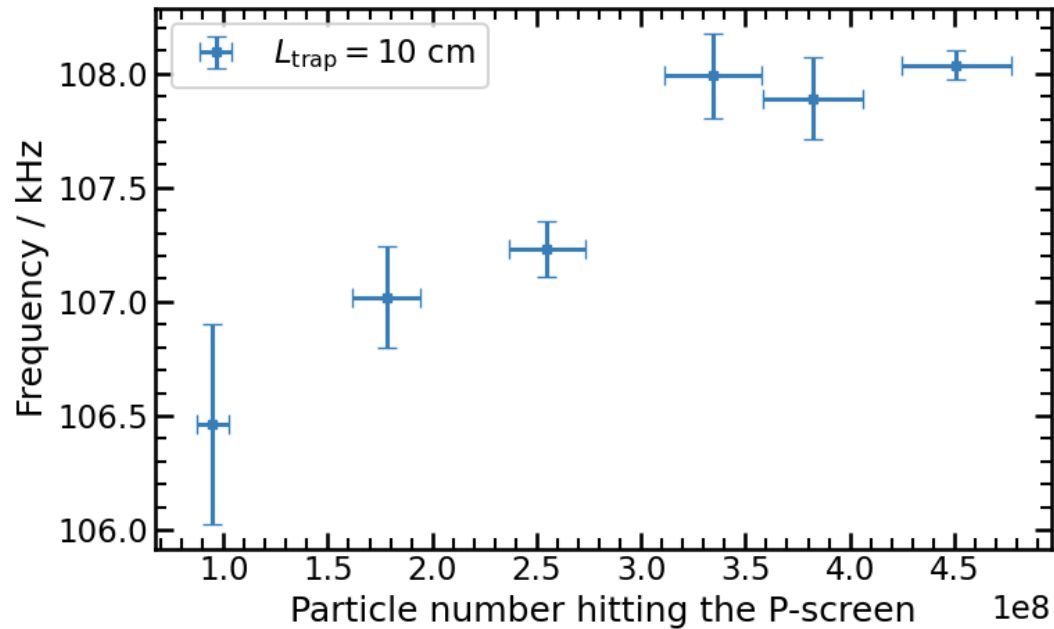


LhARA Capture Meeting

11th November 2021

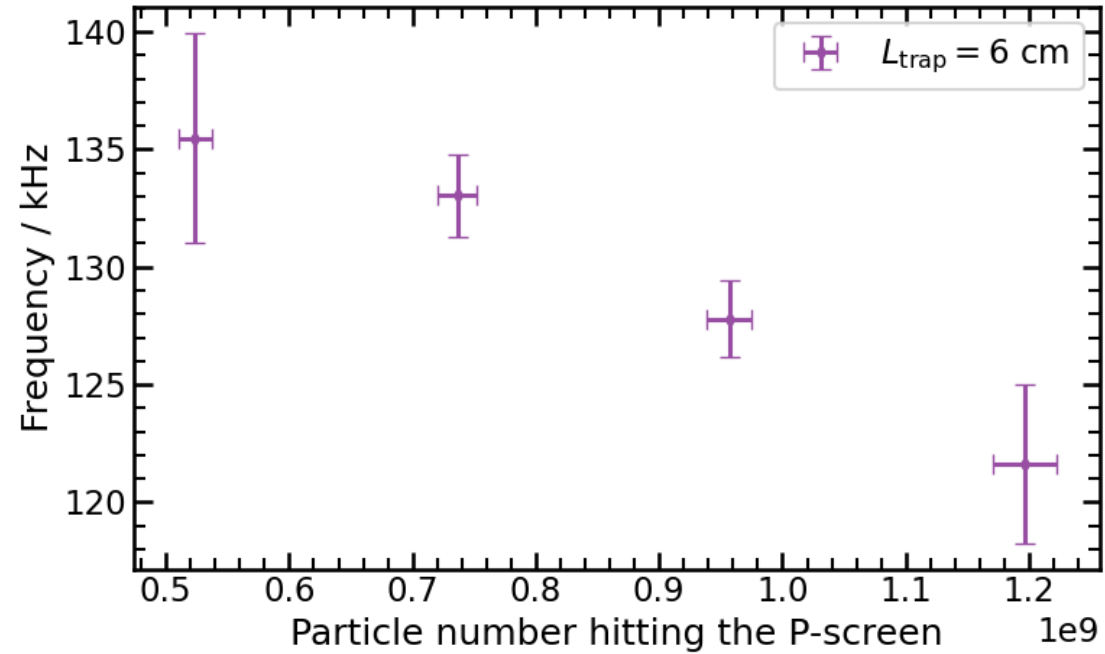
Titus Dascalu

Magnetron motion – results (4)



- Small relative increase in magnetron frequency for larger numbers of confined electrons
- $< 10\%$ change in frequency compared to $> 400\%$ change in the accumulated charge
 - Further indication that rotation is not the diocotron mode

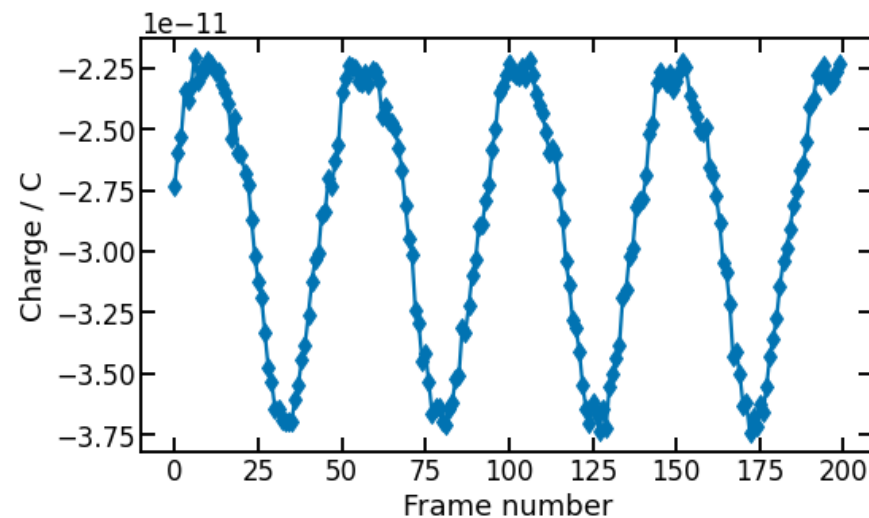
Magnetron motion – results (4)



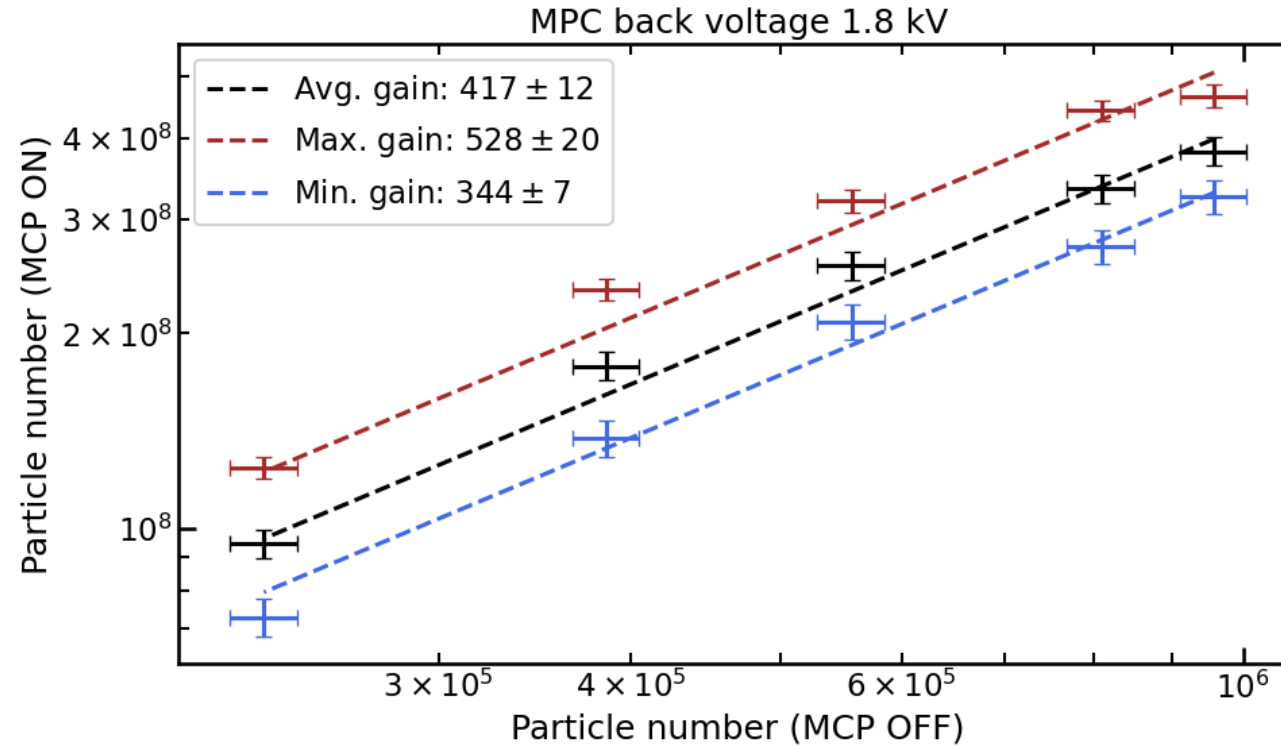
- Shorter electron column shows a decreasing trend

MCP gain calculation

- Method:
 - Run a single shot/sequence with the bias voltage applied to the back plate of the MCP
 - Run the same shot/sequence with no bias applied to the MCP
 - Connect amplifier (gain x10-200) when the charge is too low to be picked-up by the digitiser
- The movement of the electrons across the screen led to different total charges being measured by up to 50%

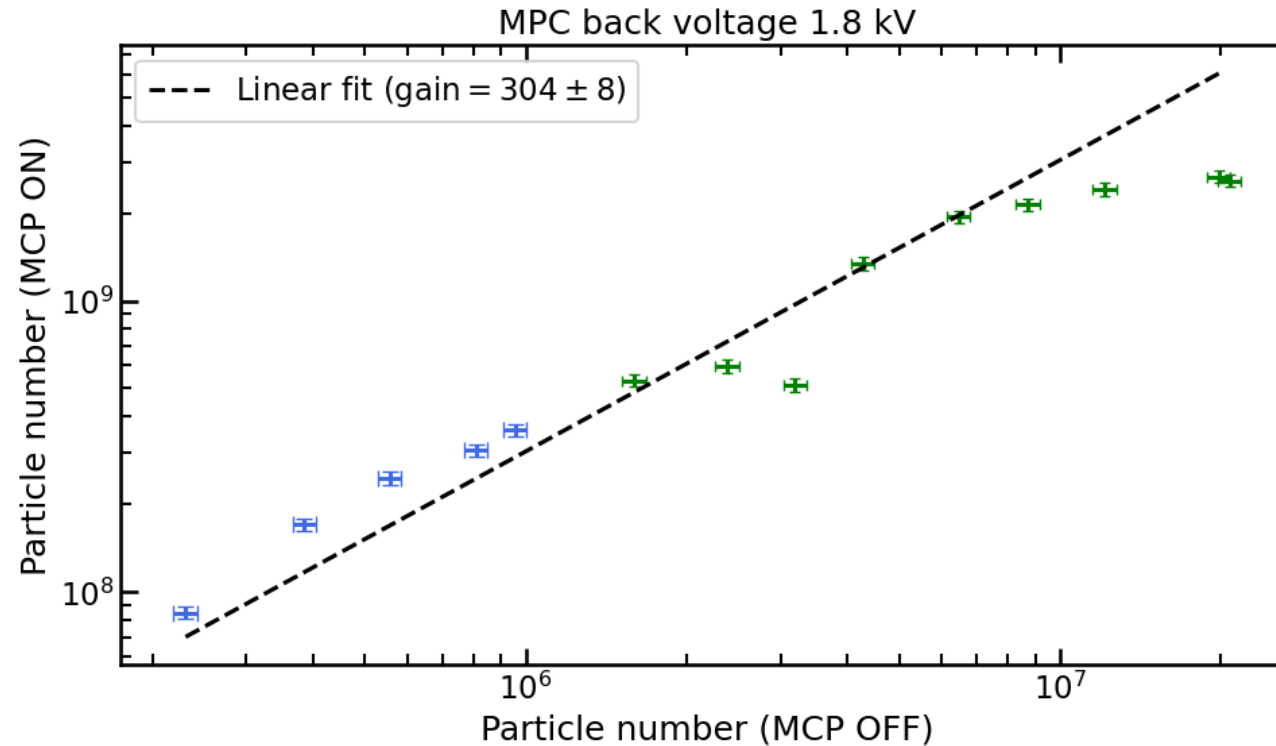


MCP gain calculation



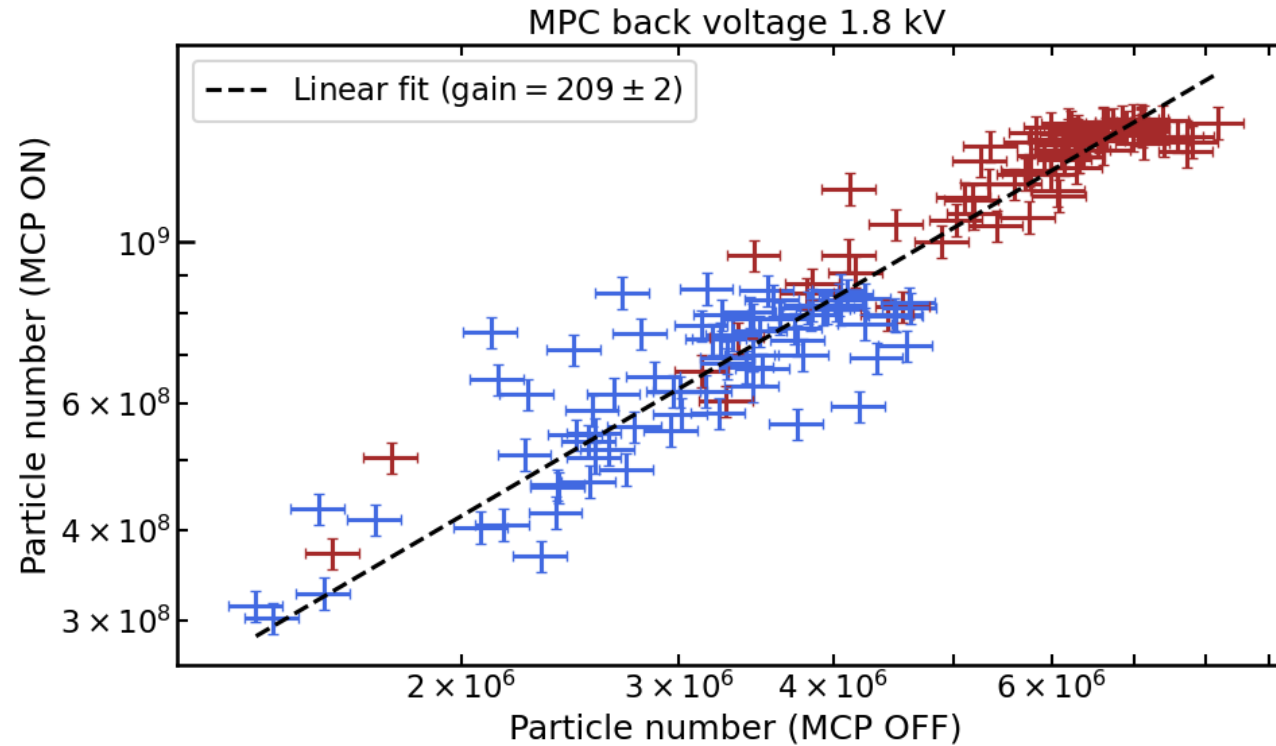
- Each set of data points (avg., min., max.) represents a sequence during which the electrons rotate around the P-screen

MCP gain calculation



- Each point represents a single shot on the same position on the P-screen
- Wider range of total electron number
- Signs of saturation above $\approx 10^7$ electrons

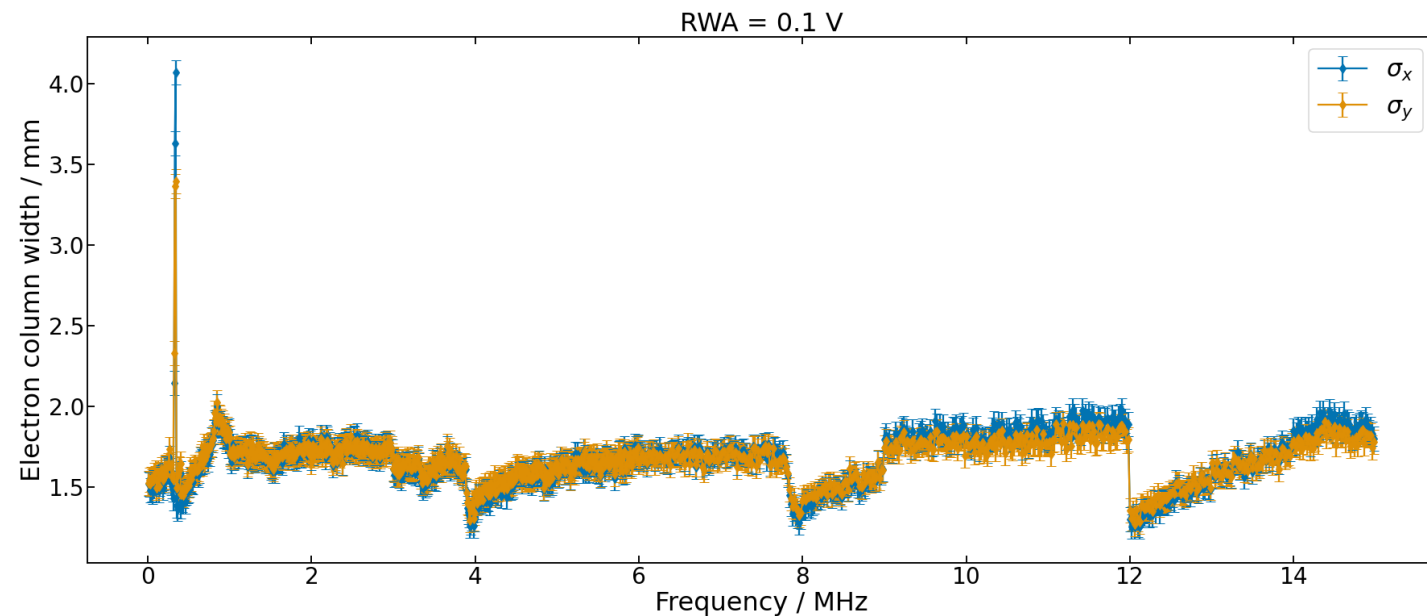
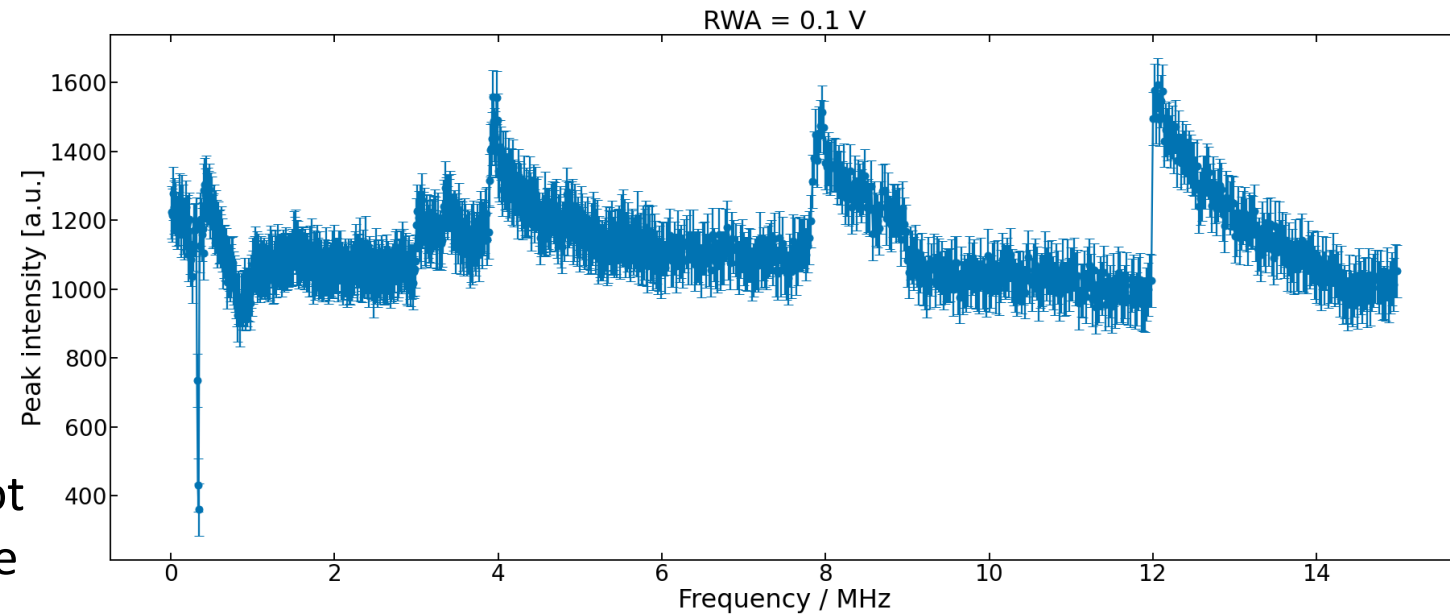
MCP gain calculation



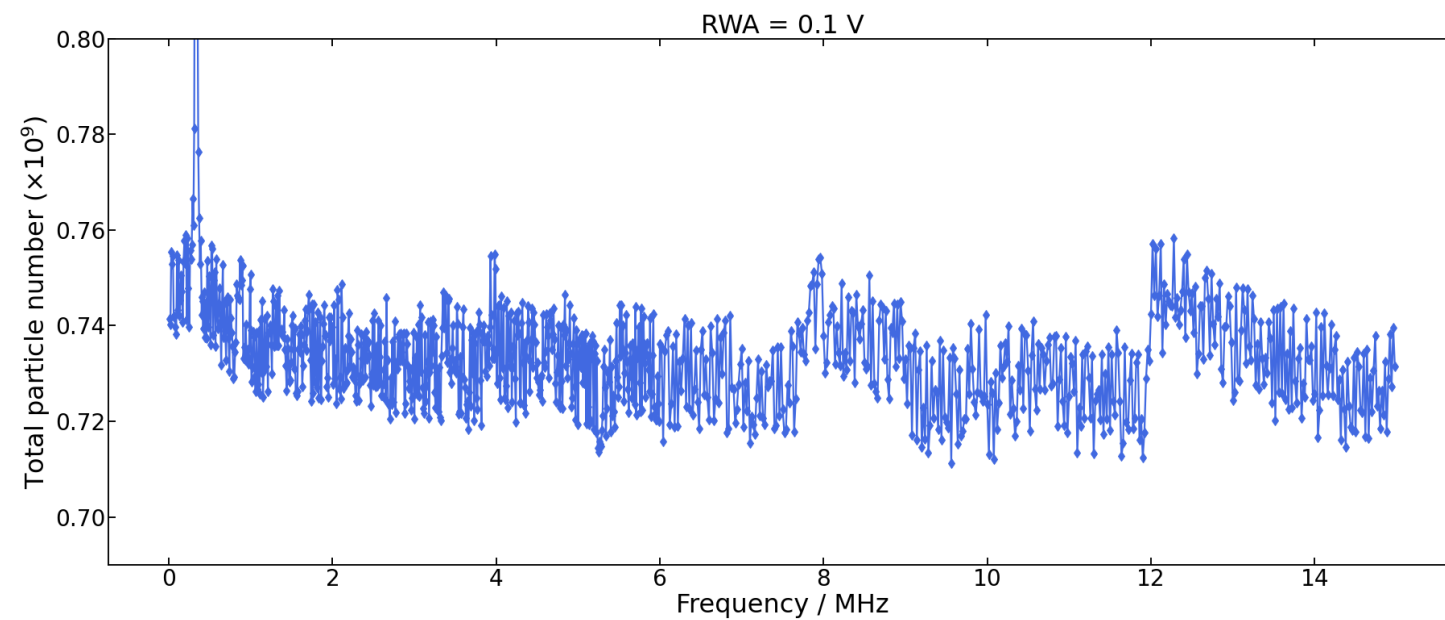
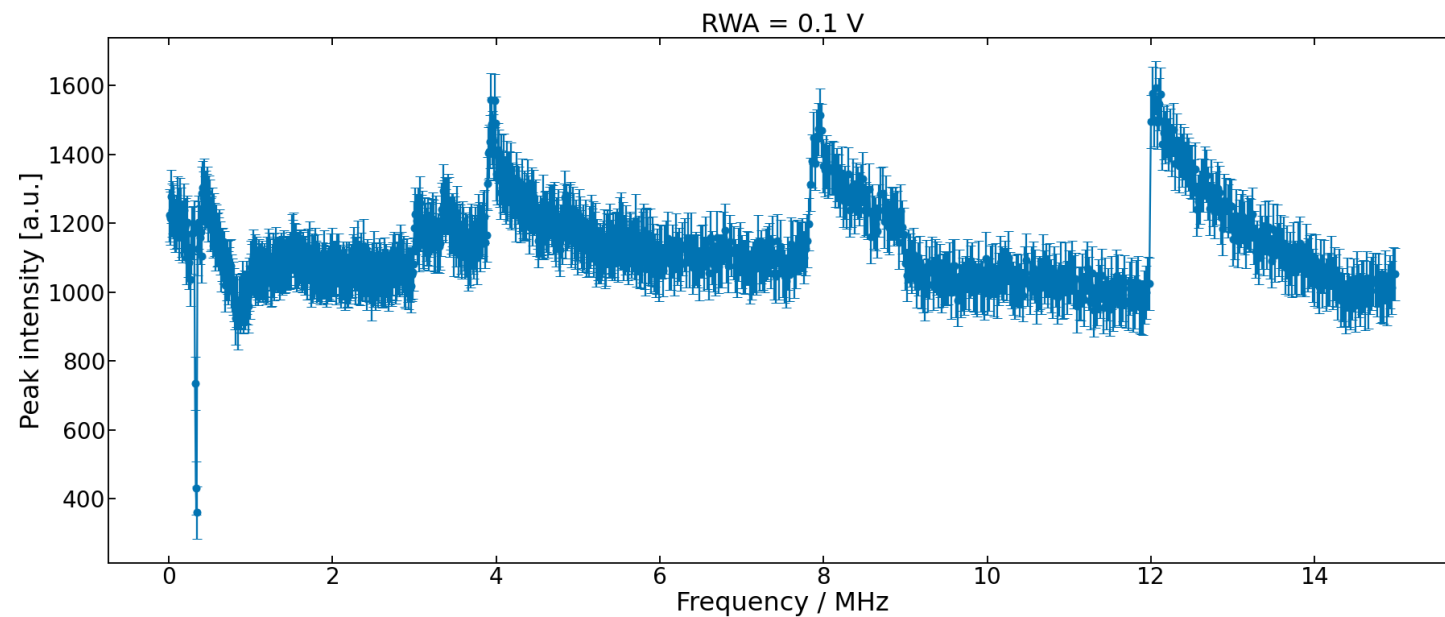
- Each point represents a single shot on the same position on the P-screen
- Two different sequences were used with different accumulation schemes

Rotating-wall (1)

- Peaks at ~ 4 , ~ 8 and ~ 12 MHz observed in two consecutive days
- However, the peaks were not observed when changing the accumulation sequence

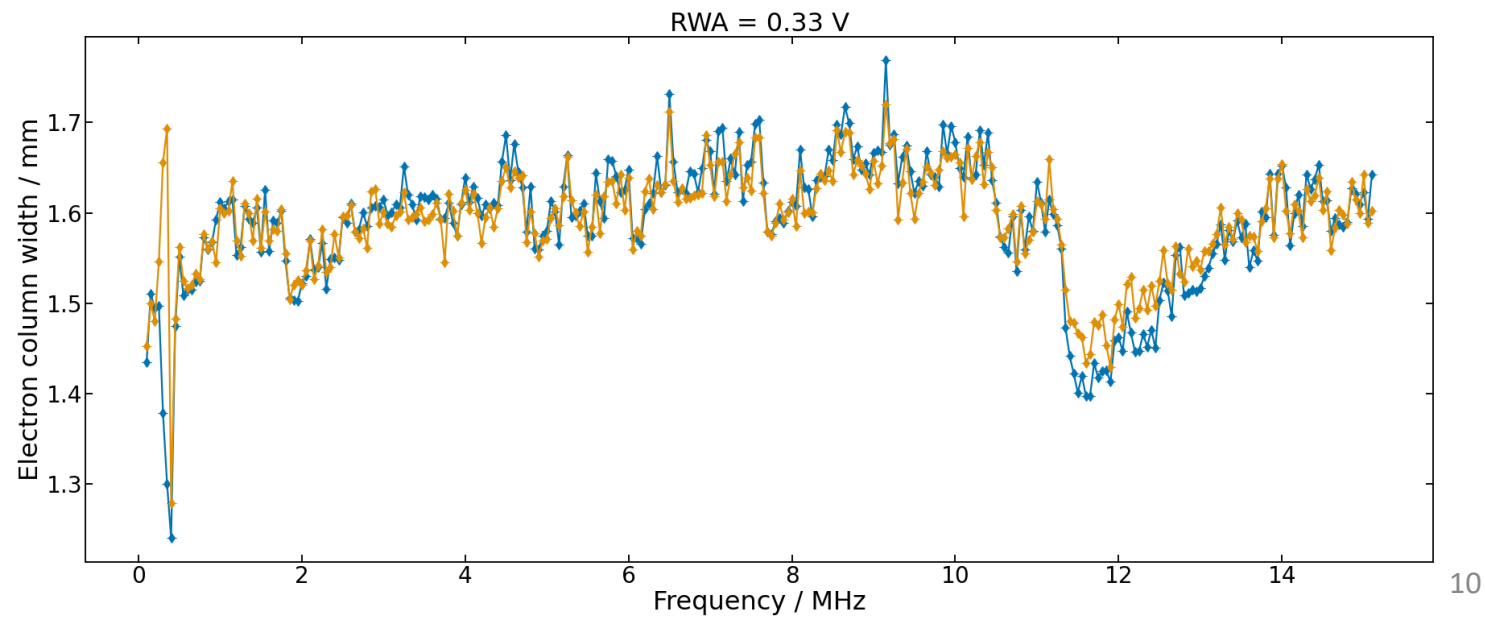
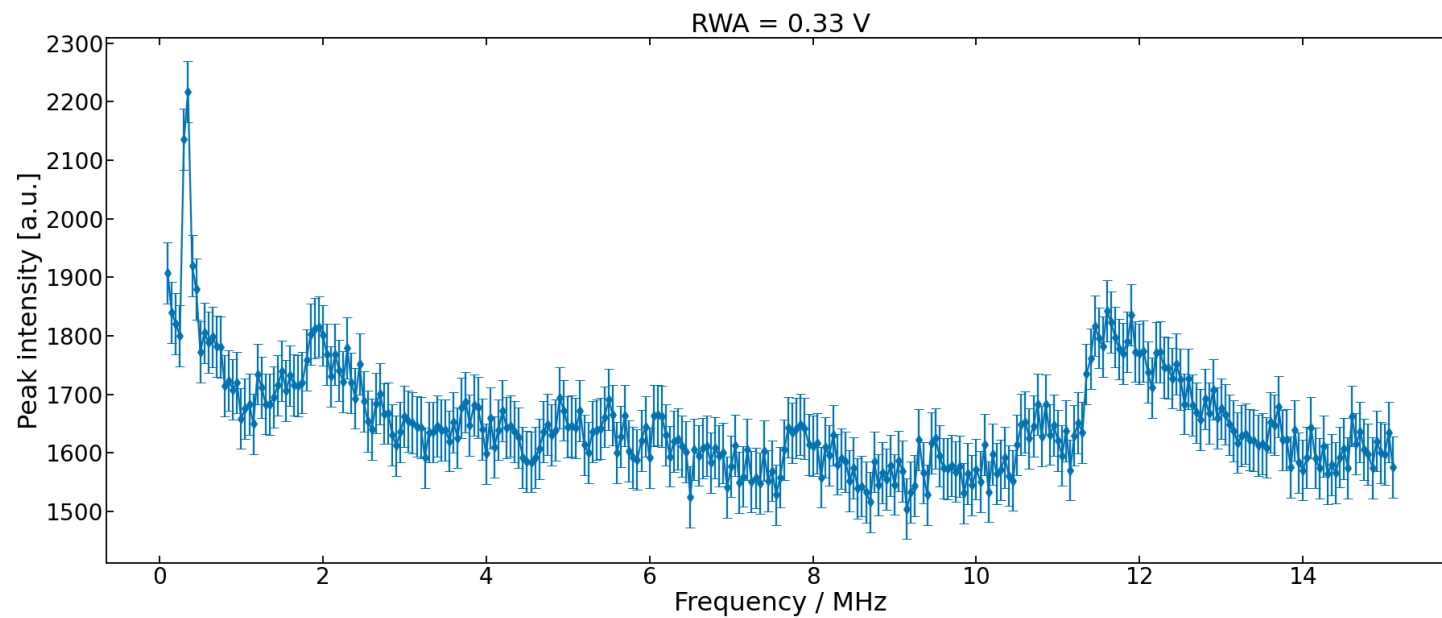


Rotating-wall (1)



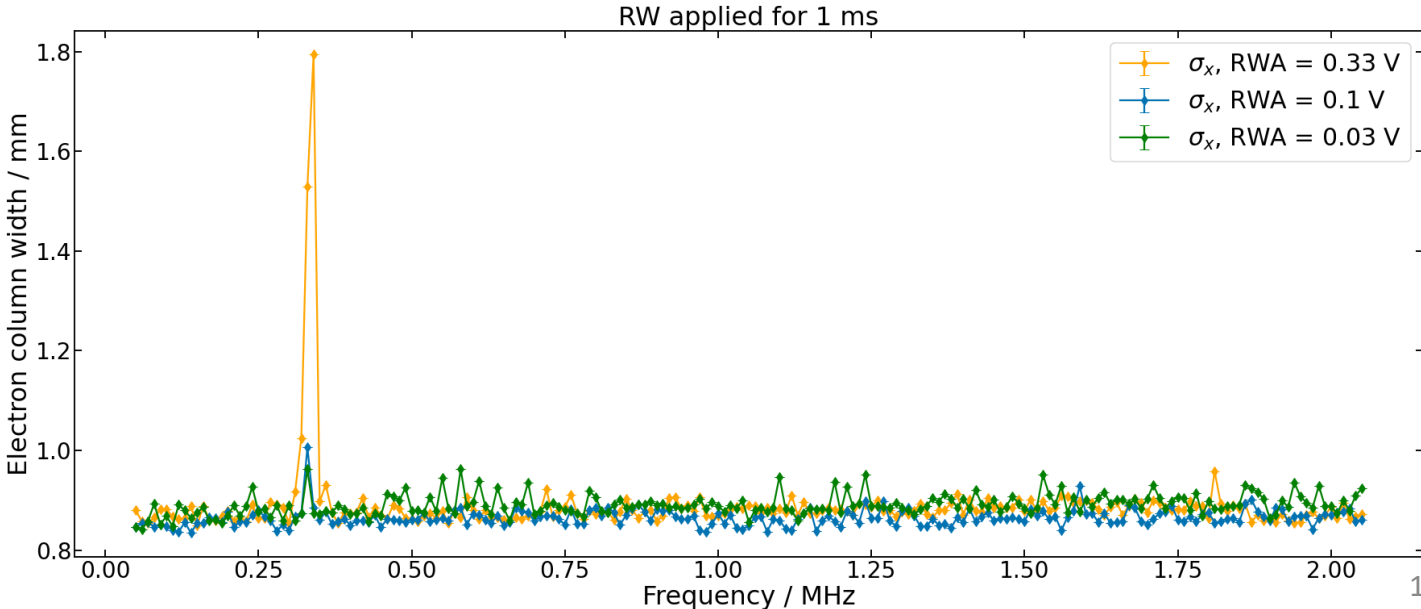
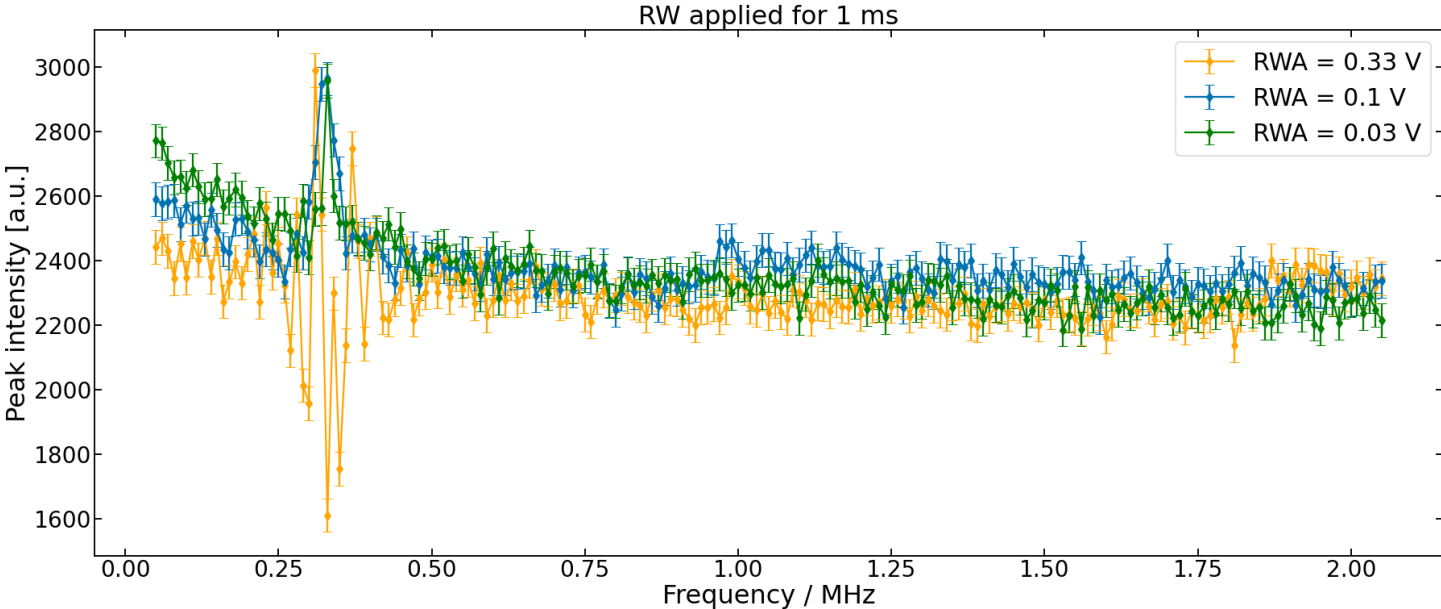
Rotating-wall (2)

- Different accumulation sequence
- Position of peaks > 1 MHz dependent on the accumulation sequence



Rotating-wall (3)

- Attempt to use the low-frequency resonance to compress the electron cloud



Rotating-wall (3)

- Attempt to use the low-frequency resonance to compress the electron cloud

