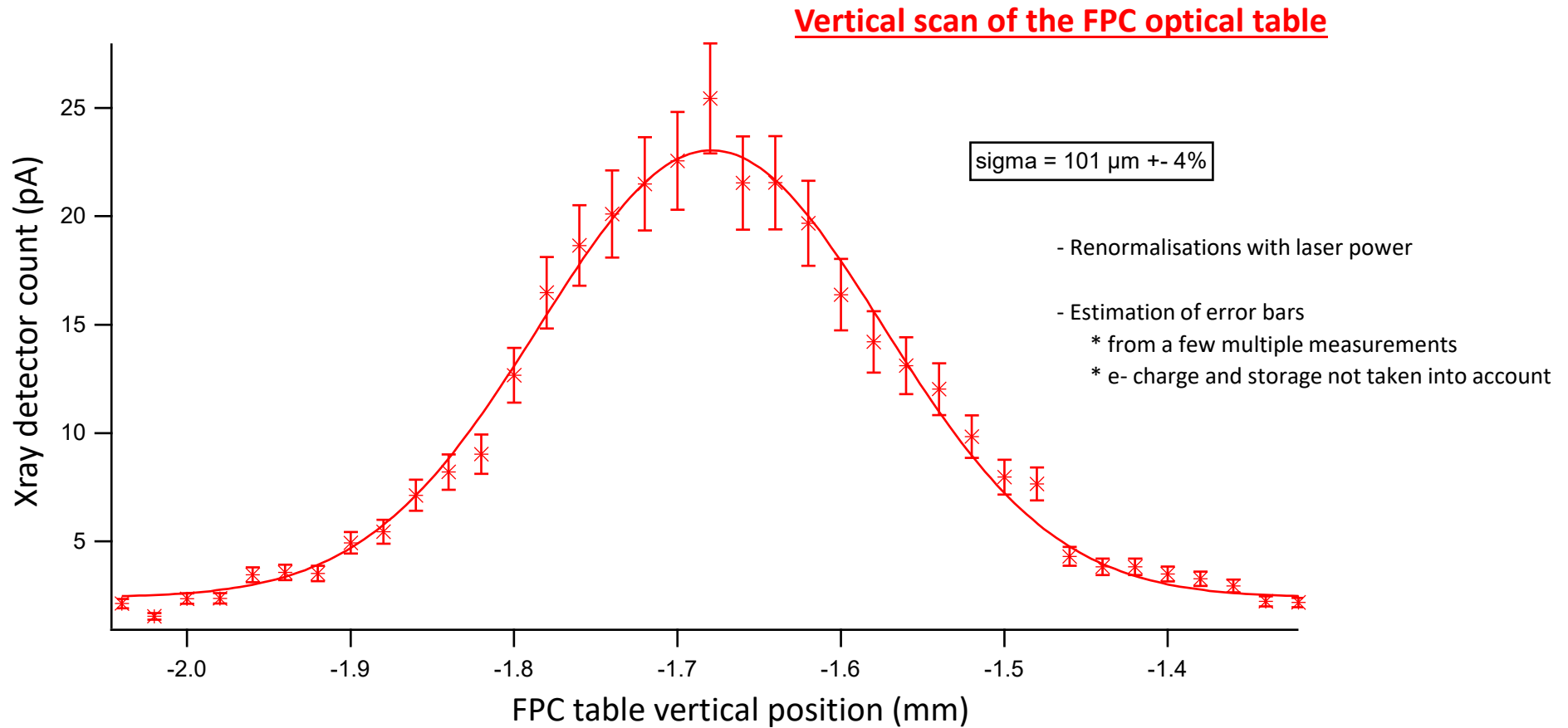


ThomX Meeting

03-07-2023

1 – Measurement of σ_{e^-} at IP



Measured laser Waist = 120 μm \rightarrow $\sigma_{\text{laser}} = 60 \mu\text{m}$ \rightarrow **$\sigma_{e^-} = 80 \mu\text{m}$**

2 - Flux measurement

1) Measured Flux with the fluo screen xline detector

25 pC at the peak → **2.7 10⁶ ph/s on the fluo screen** (ESRF calib)

Corrected from the available solid angle (~ 7 mrad)

→ **Total Flux = 5.8 10⁶ ph/s**
(about +10% -30% e- charge & storage)

2) Expected Total Flux

* Energy	50 MeV	
* Charge	70 pC/bunch	estimated de visu during the shift (charge + storage)
* Int. laser	435 μJ/pulse	measured (~ 14.5 kW stored in average, 33.3 MHz)
* Wavelength	λ = 1.03 μm	
* Laser length	12.5 ps rms	measured
* e- length	10 ps rms	supposed (→ calculated desynchro factor 1/1560)
* Cross angle	2°	
* Frep	16,67 MHz	
* σ _{laser}	60 μm	measured
* σ _{e-}	80 μm	extracted from the Xray data

→ **Expected Total Flux = 5.7 10⁶ ph/s**

Next short-term step :

Same measurement with, in addition, the recorded values of

- Power stored in the FPC
- Electron charge on the 3 TL ICT
- Value of the storage during the 100 ms

