Monochromatic GISANS reduction

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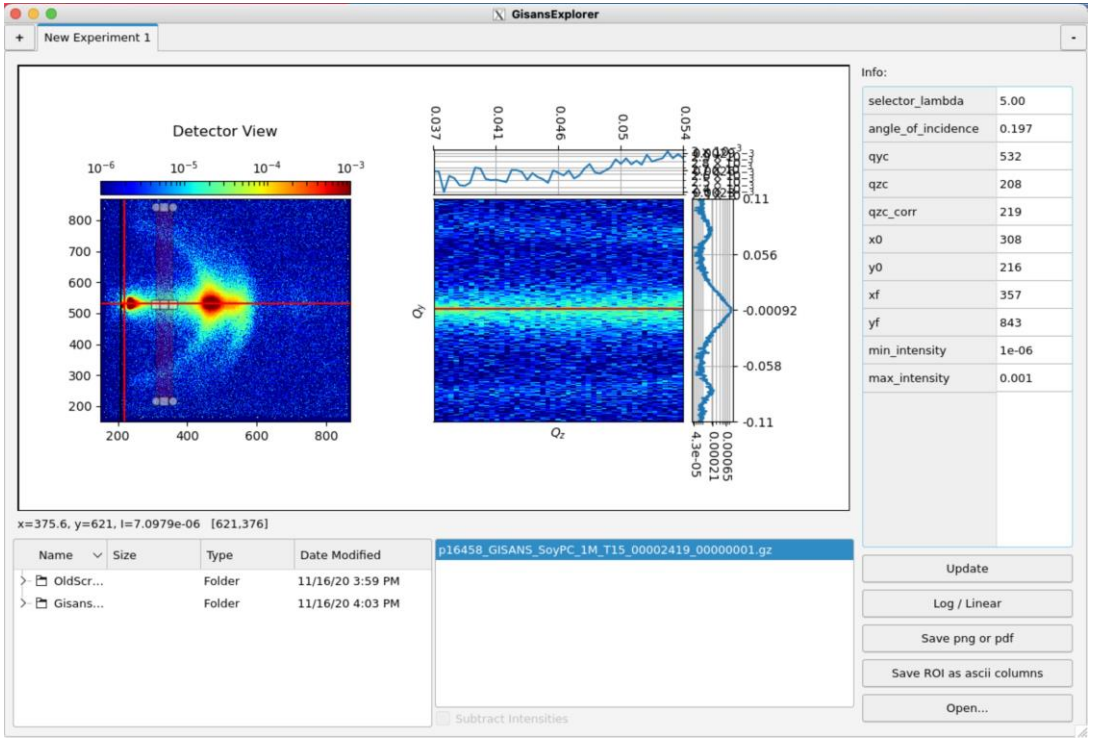
Our past practice at MARIA

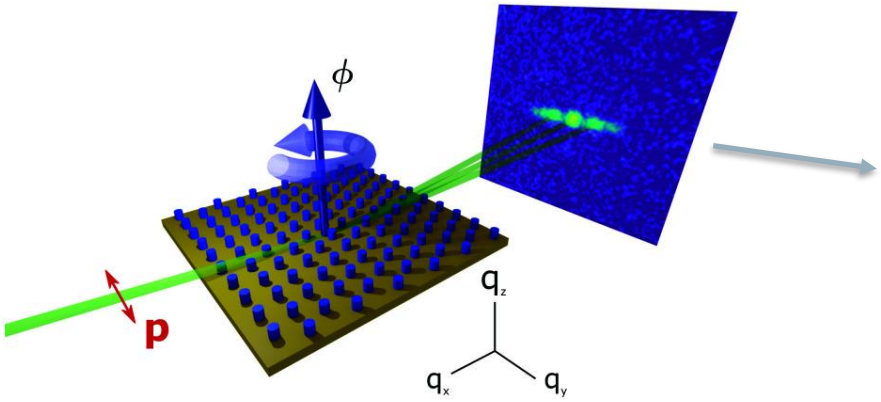
A very basic python GUI giving the ability to:

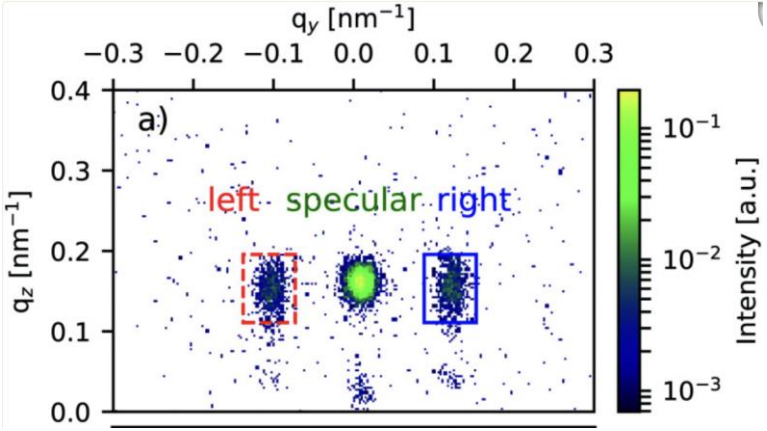
- → Transform detector images to Qy vs Qz maps
- → Primary beam monitor normalization
- → Apply detector sensitivity corrections
- → Subtract spin up/down images
- → Perform and display line cuts
- → Save data to an “easily” readable format



Our past practice at MARIA

→ No absolute intensity normalization (probably only attenuated direct beam measurent)
→ Very basic handling of background corrections
→ Resolution information etc. (Δλ/λ, slit settings, footprint) in output file





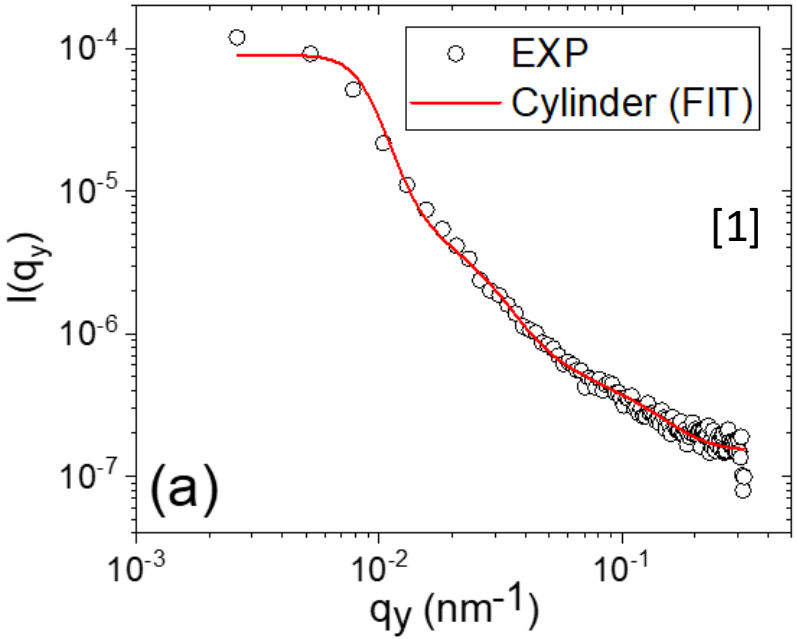
Pip, Glavic et al. *Nanoscale Horiz.* **2021** 6(6):474–481.

Absolute intensity in GISANS - it matters?

Often, horizontal GISANS linecuts are displayed in arbitrary units ("a.u.") –Is it the end of the story?

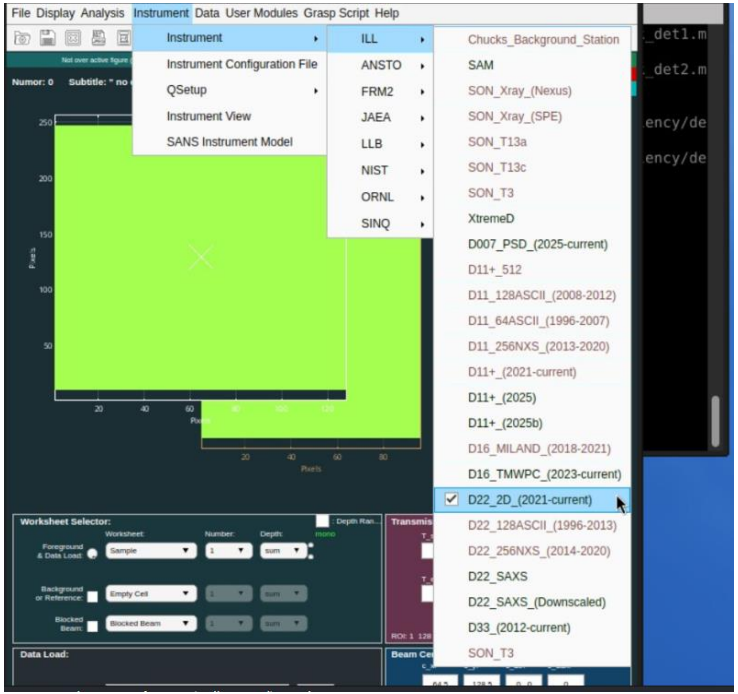
→ There is the possibility to bypass the arbitrary units, by **normalizing to the monitor corrected direct beam intensity**

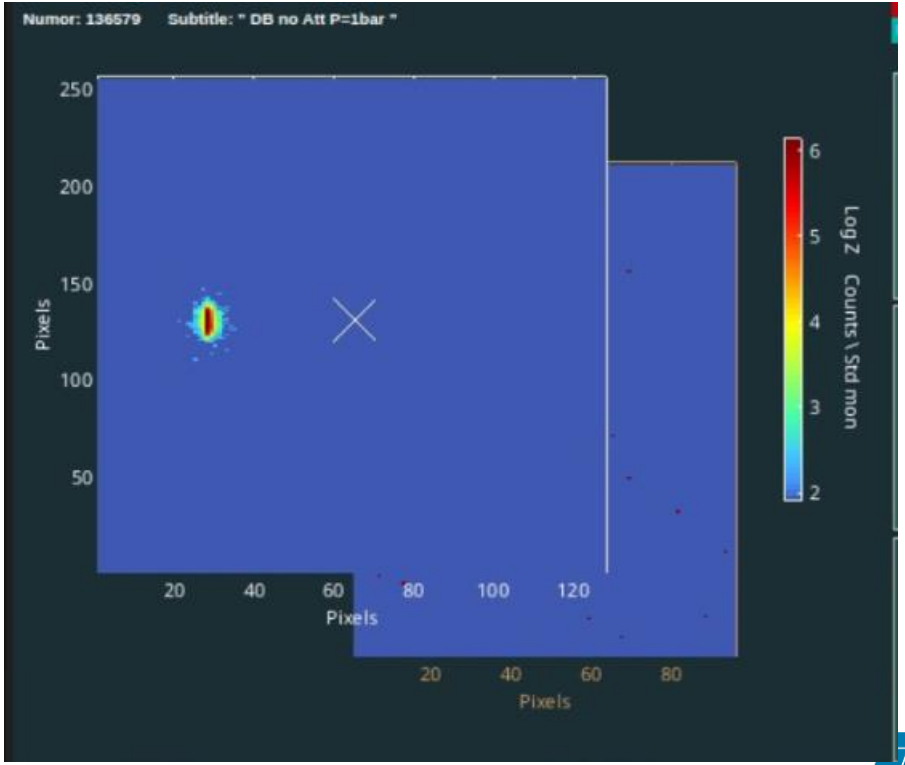
→ **An approach using GRASP software is shown next**



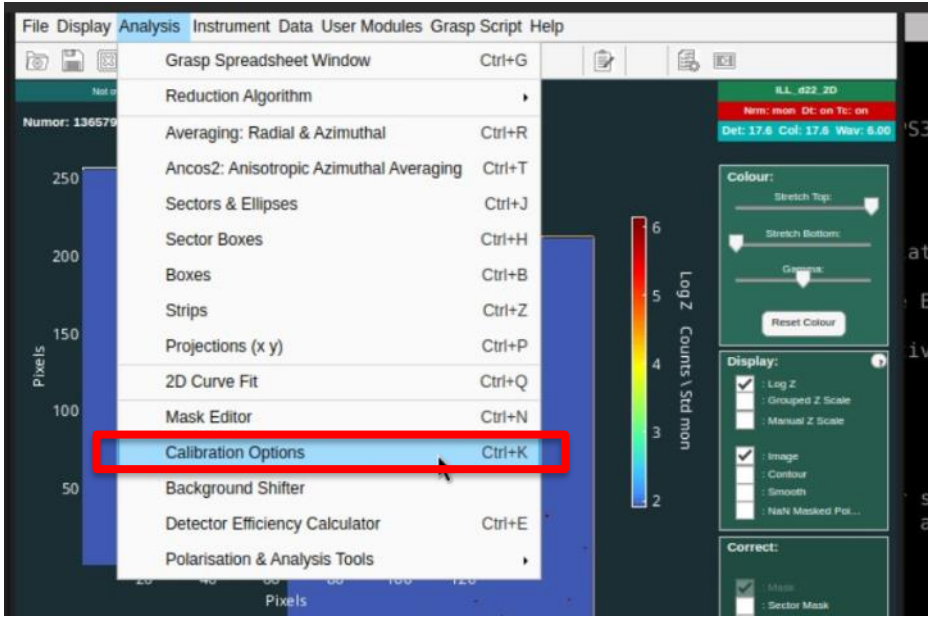
[1] Vagias, A. et al., submitted

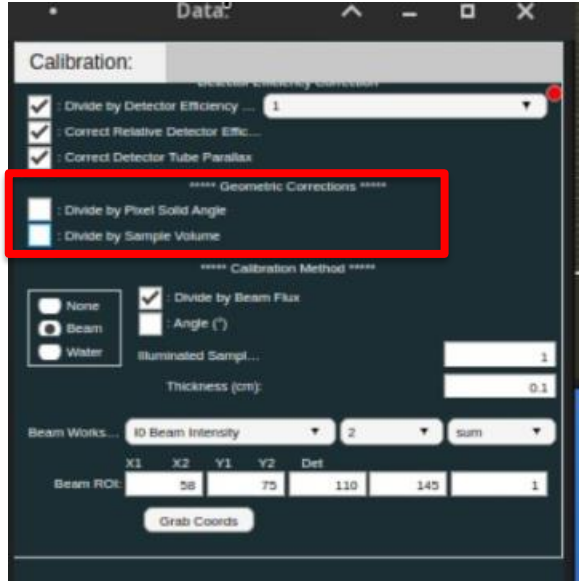
We browse to the instrument / file path of the proposal



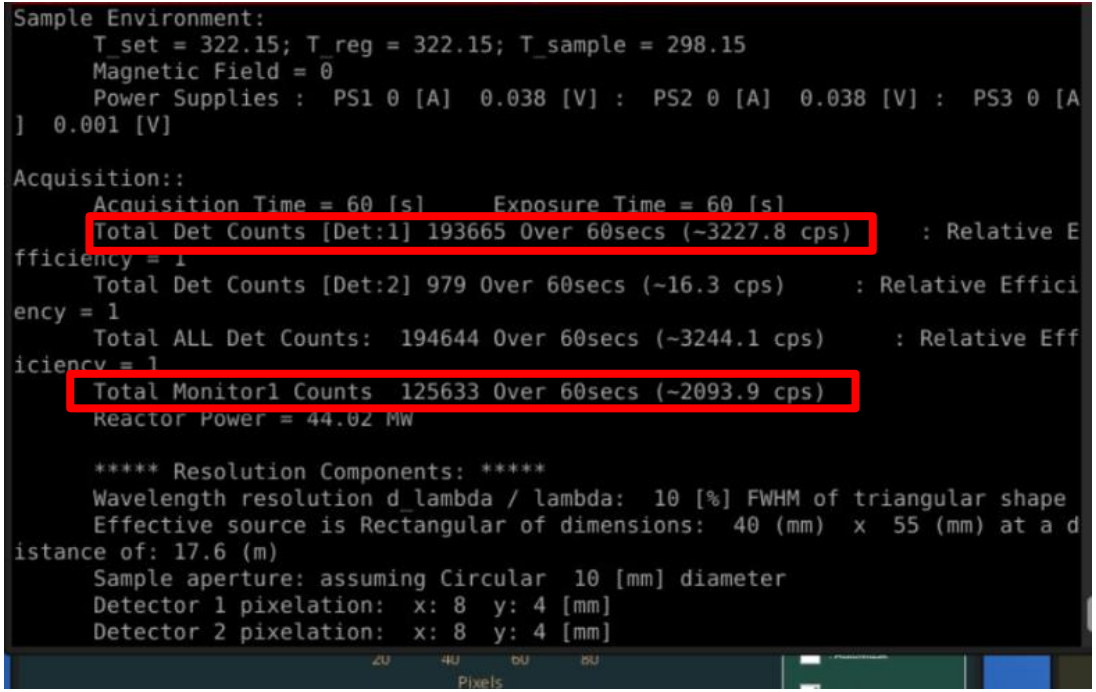


Identify the count rates from the Direct Beam (Detector and monitor)

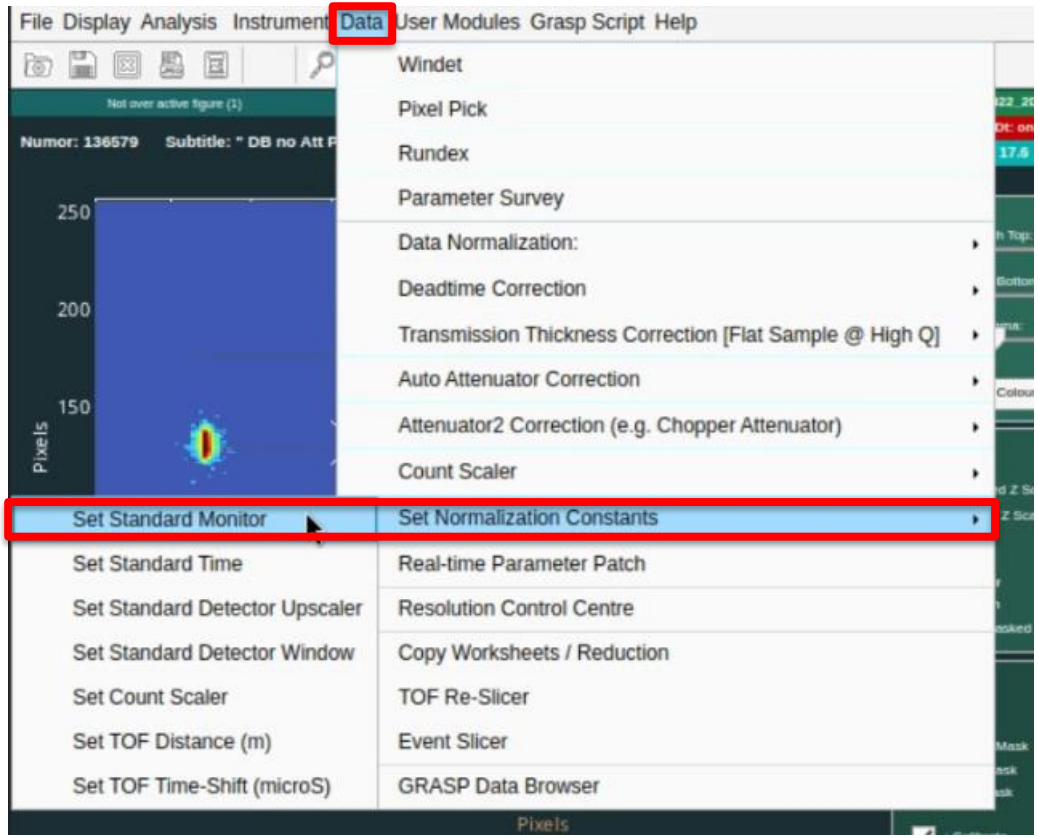




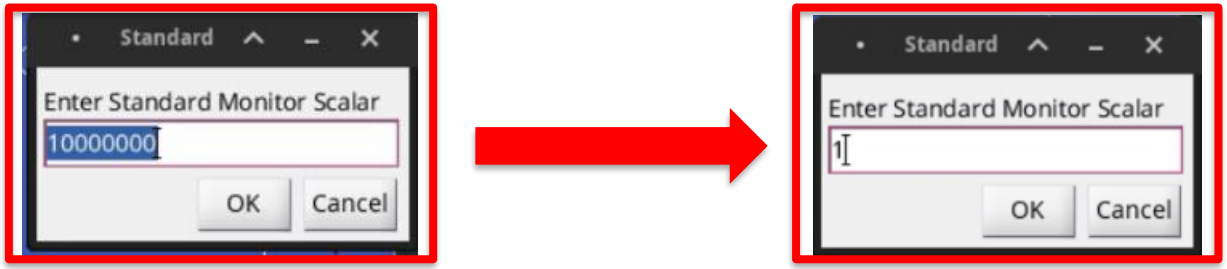
Direct Beam: Identify the count rates (Detector and monitor)



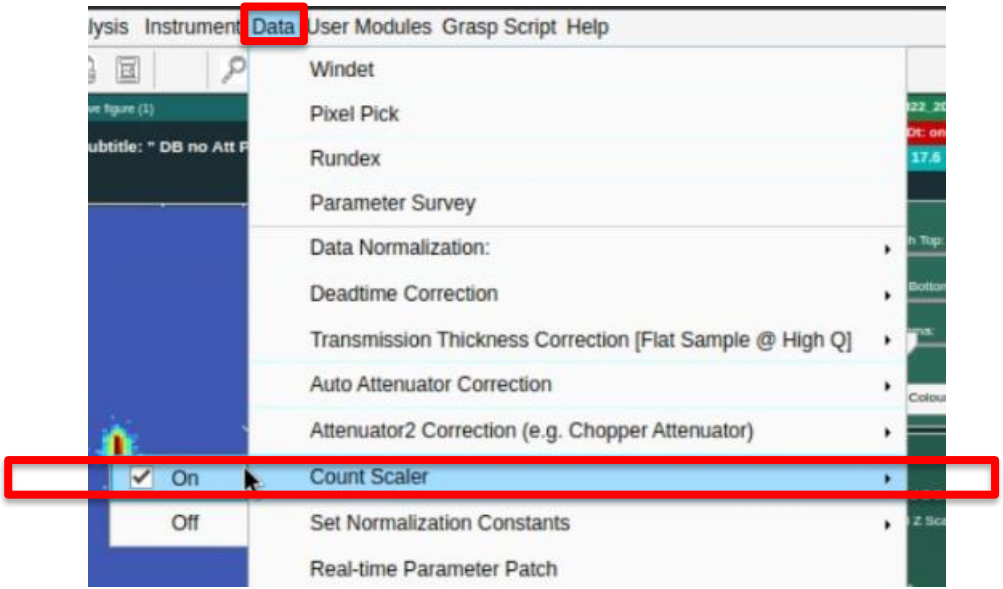
Select “Set Standard Monitor”



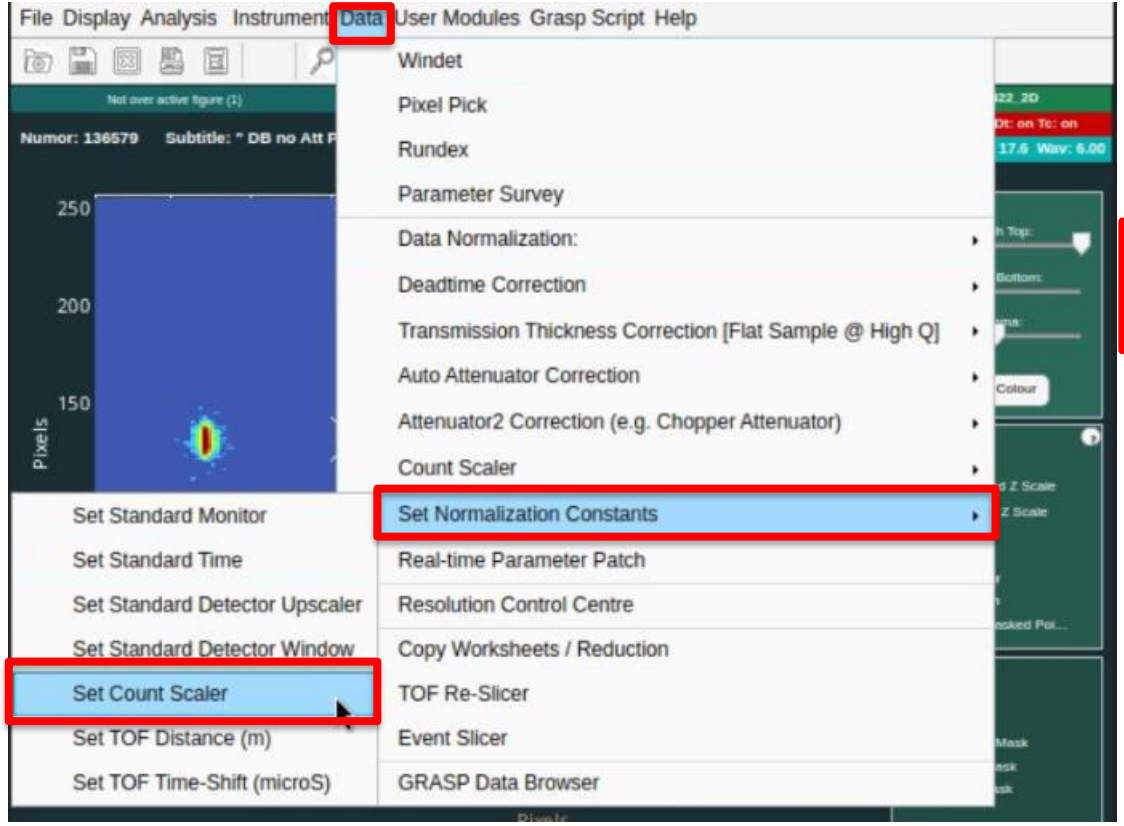
Set the “Standard Monitor” constant



Set the “Count Scaler” ON

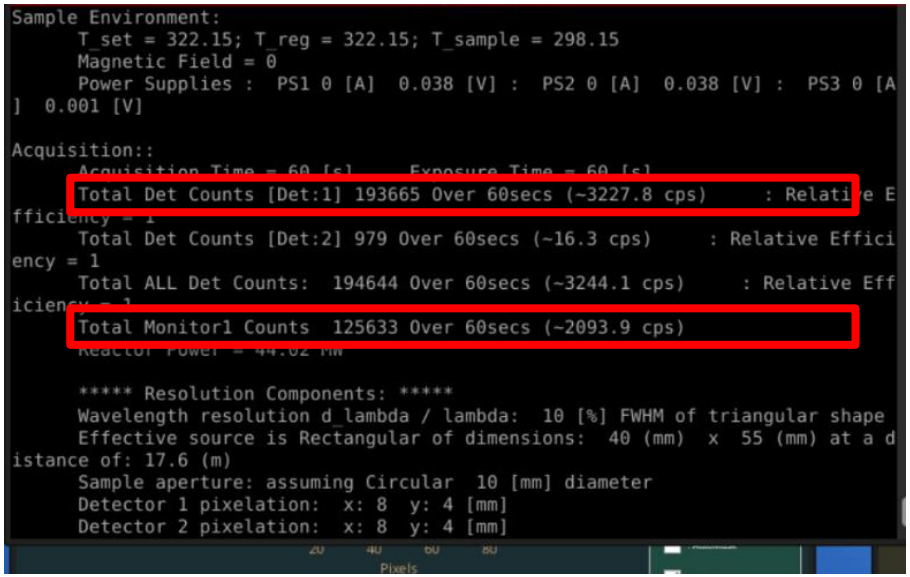


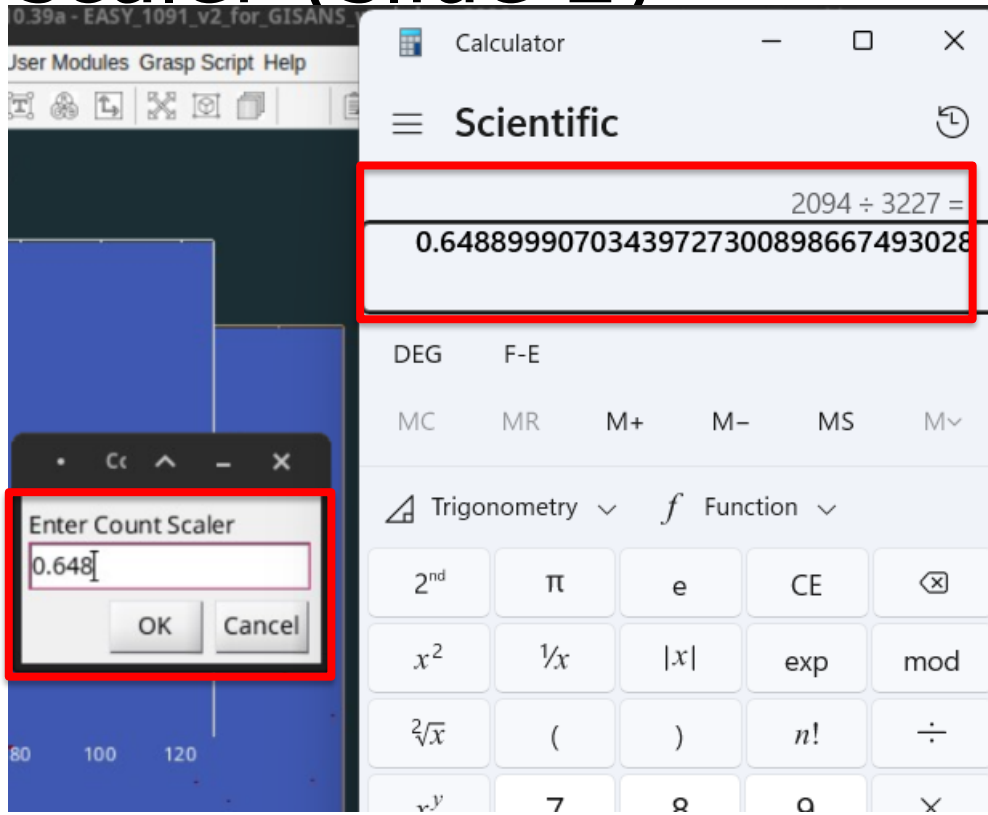
Set the count scaler (slide 1)



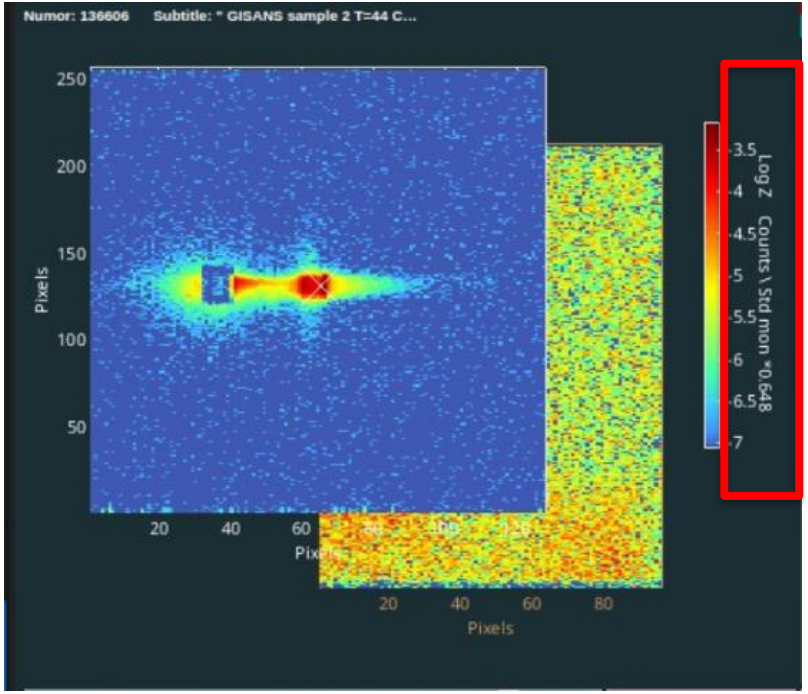
$$Count\ scaler = \frac{Monitor\ rate}{Detector\ rate}$$

Set the count scaler (slide 2)





2D GISANS data displayed in absolute intensity



Open questions (for breakout groups)

- **Software capabilities**: Necessary manipulations related to normalization (absolute?), background, polarization etc..

- **Metadata?:** Minimal info to be exported in the final metadata (beam geometry, resolution etc...)

- **Software for reduction**: can GRASP and other softwares all provide all necessary features needed for proper GISANS data reduction?