SWEDNESS/LINXS Doctoral-level course on neutron imaging

Exercise: Investigation of Time of Flight Imaging Data – Diffraction Contrast

Note: You need at least >8GB of RAM for this exercise. Use the data set labelled "_small" if you don't have enough RAM.

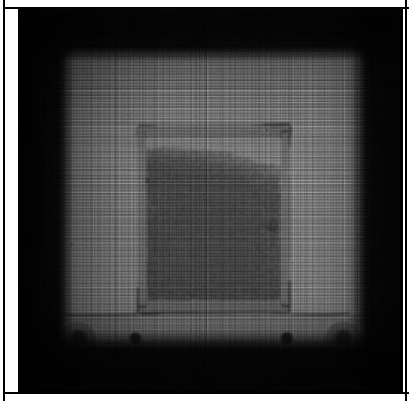
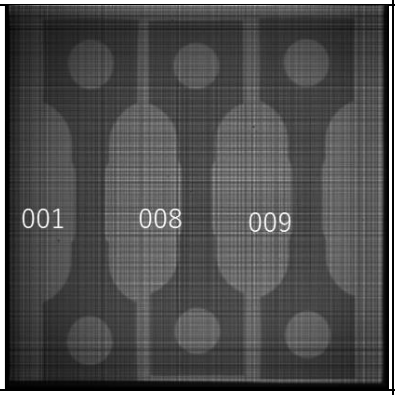
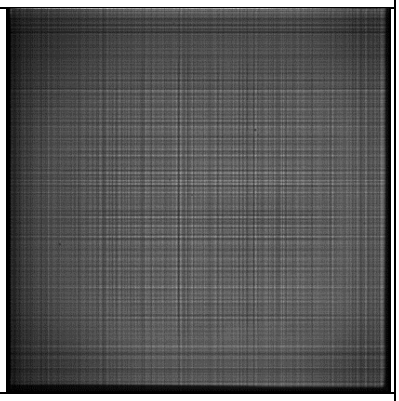
Step 1: Install ImageJ/Fiji

- FIJI(Fiji is a distribution of ImageJ which includes many useful plugins) : https://imagej.net/Fiji/Downloads
- ImageJ: https://imagej.nih.gov/ij/download.html

Step 2: Download the data

https://project.esss.dk/owncloud/index.php/s/KoTmUDZUB7VPMaa

- There are 3 dats sets (see below; use „_small.tiff"if you have trouble with the file size)
- There is also a pre-prepared excel spreadsheet for you (ToF to Wavelength Conversion)

- CalibrationSample_FE-BCC.tiff	- Samples_A.tiff	- OpenBeam.tiff
		

Step 3: Watch YouTube tutorial 1

- https://youtu.be/BXAygH3xLHE
- **Questions to answer:**
  Q1: What can you say about the incident neutron spectrum? Where is the peak of the spectrum? Does the peak of the spectrum correspond to a cold, thermal or epithermal spectrum?
  Q2: Can you find out what is the flight path (what detector distance that was used)?

Step 4: Watch the YouTube tutorial 2

- https://youtu.be/cUvai7pssy8
- **Questions to answer:**
  Q3: Where do samples 001, 008 and 009 show most differences of diffraction contrast? Show this in an image (images).
- Q4: Which of the three samples is a lot different from the other two? What differences do you observe?

Step 5: Prepare your answers in a short report

- Type the answers to the questions in a document (e.g. word, powerpoint). You can also include screenshots
- Send the small report to robin.woracek@ess.eu by Friday, 21 May at 12.00 (noon). We will reveal the answers to the questions in the afternoon.