

ESS Diffraction STAP 19-21 October 2020

– initial comments

- Thanks to ESS and instrument teams for clear reports and presentations.
- Excellent progress despite covid.
- From Monday Q&A session;
 - Important to update key dates like SOUP to the user community as start of ESS neutrons becomes closer. Perhaps do this after rebaselining in Q1/Q2 2021.
 - Focus in on FS programme following initial wide consultations. Who takes charge for each instrument?
- From Tuesday DMSC session;
 - STAP supports use of scipp to replace mantid
 - Diffraction software plans seem on track. Smooth transfer from ESS data reduction programs to standard external packages like Fullprof, Jana, GSAS-II will be important to FS (DREAM) and should be checked in good time.
 - Remote and scripting options for instrument control.
- Experimental tests of Jalousie detectors – very encouraging from POWTEX detector @SNS.

DREAM

- STAP notes excellent progress across all areas of the instrument project.
- Collimation needed?
- Second sample station and a reasonable detector coverage are high priority upgrades, with polarisation also potentially worthwhile.
- Cryofurnace with 20 sample changer desirable, but fallback using gas blowers may be needed.
- FS expts
 - Initially without SE – RT analysis of simple standards, energy materials, magnetic structures, MOF/complex structure.
 - 1D and 2D data fittings.
 - Then variable T, low T for magnetism, high T for phase transitions, chemistry.
 - Other SE, high B, P, in situ batteries, catalysis, reaction cells.

MAGIC

- STAP notes excellent progress across all areas of the instrument project.
- Solid state bender change noted.
- Analyser coverage of 120 deg challenging but important for science case. Solid state device appears best solution but misalignment is critical issue. Otherwise alternative solutions like bender may be needed. Staging of segments desirable. Critical issue!
- Cave tender needs to be sorted out.
- FS expts likely to require very low T and high B.

HEIMDAL

- STAP notes good progress across the instrument project.
- Slight delay due to Swiss Govt budget approval for PSI part in 2021.
- Change of scope needs progress by HEIMDAL team and ESS to give clarity over instrument build, ideally by April 2021 STAP. [STAP would prefer original science case of Diffraction + SANS + Imaging being achieved early].
- PhD project on 2D Rietveld welcome.
- Polarisation will have to be considered later alongside other upgrade options.