

Graphical User Interfaces for ILL users in Mantid



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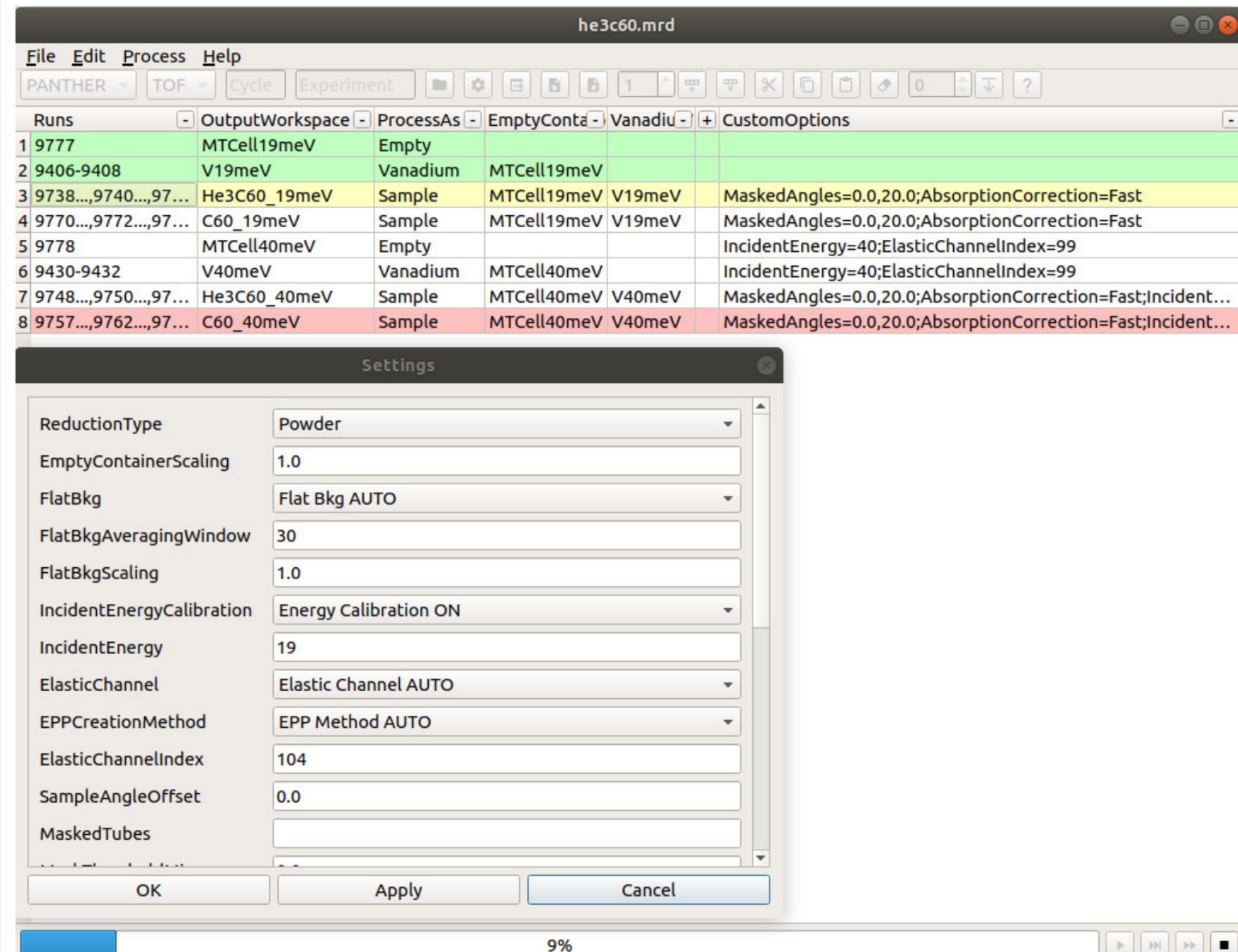
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Introduction

Graphical user interfaces (GUI) are extremely useful tools for interacting with data and allowing for simplified workflows where users with minimal coding experience can obtain meaningful results, thus bringing the software to a wider audience.

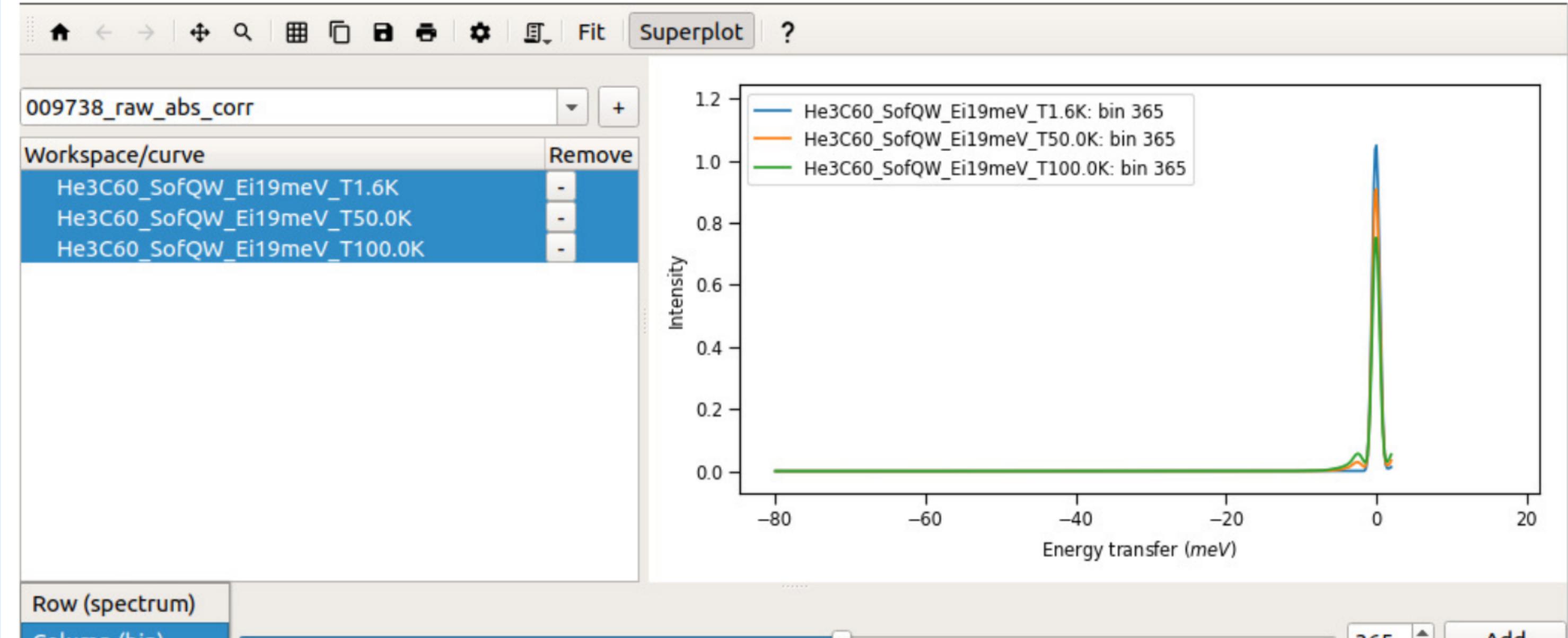
Data reduction framework Mantid already contains a number of interfaces allowing for data processing and visualization, with the most important point of entry being the workbench. A number of additional interfaces has been identified as crucial and recently implemented for the smooth processing of data at the Institut Laue-Langevin (ILL), which streamline raw data exploration (Raw-data explorer), simultaneous plotting of many curves (Superplot), interaction with reduction algorithms in the background (DrILL), aiding data reduction and analysis at ILL instrument D16 (Scanexplorer), and workspace binary operations (Workspace calculator). All interfaces are developed using MVP approach and are written in PyQt5.

DrILL



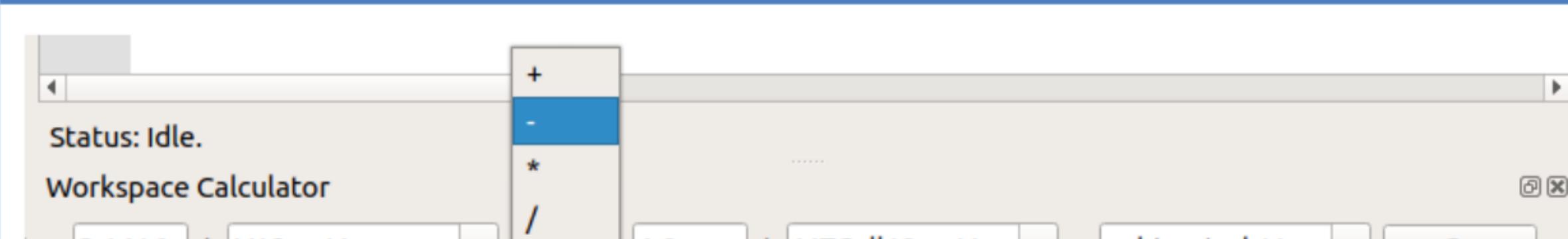
- Spreadsheet GUI to reduce large number of samples
- Interfaces to autoprocess algorithms
- Supports ILL SANS, direct-geometry TOF, and reflectometry
- Found under Interfaces->ILL->drill

Superplot



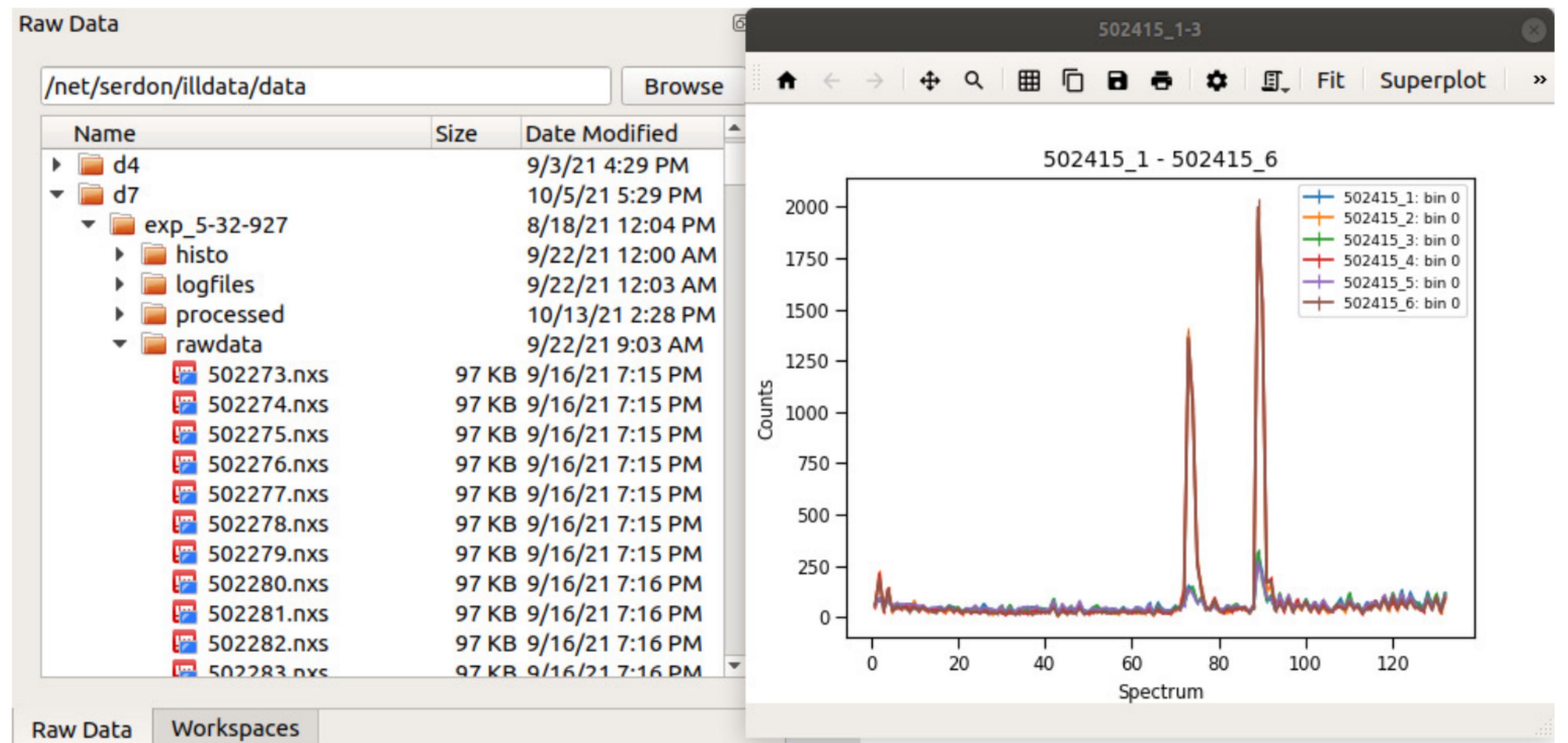
- Allows for easy overlaying multiple distributions
- Quick data exploration of spectrum or bin distributions
- Superplot is another visualisation option, next to the Fit button in plot widget

Workspace calculator



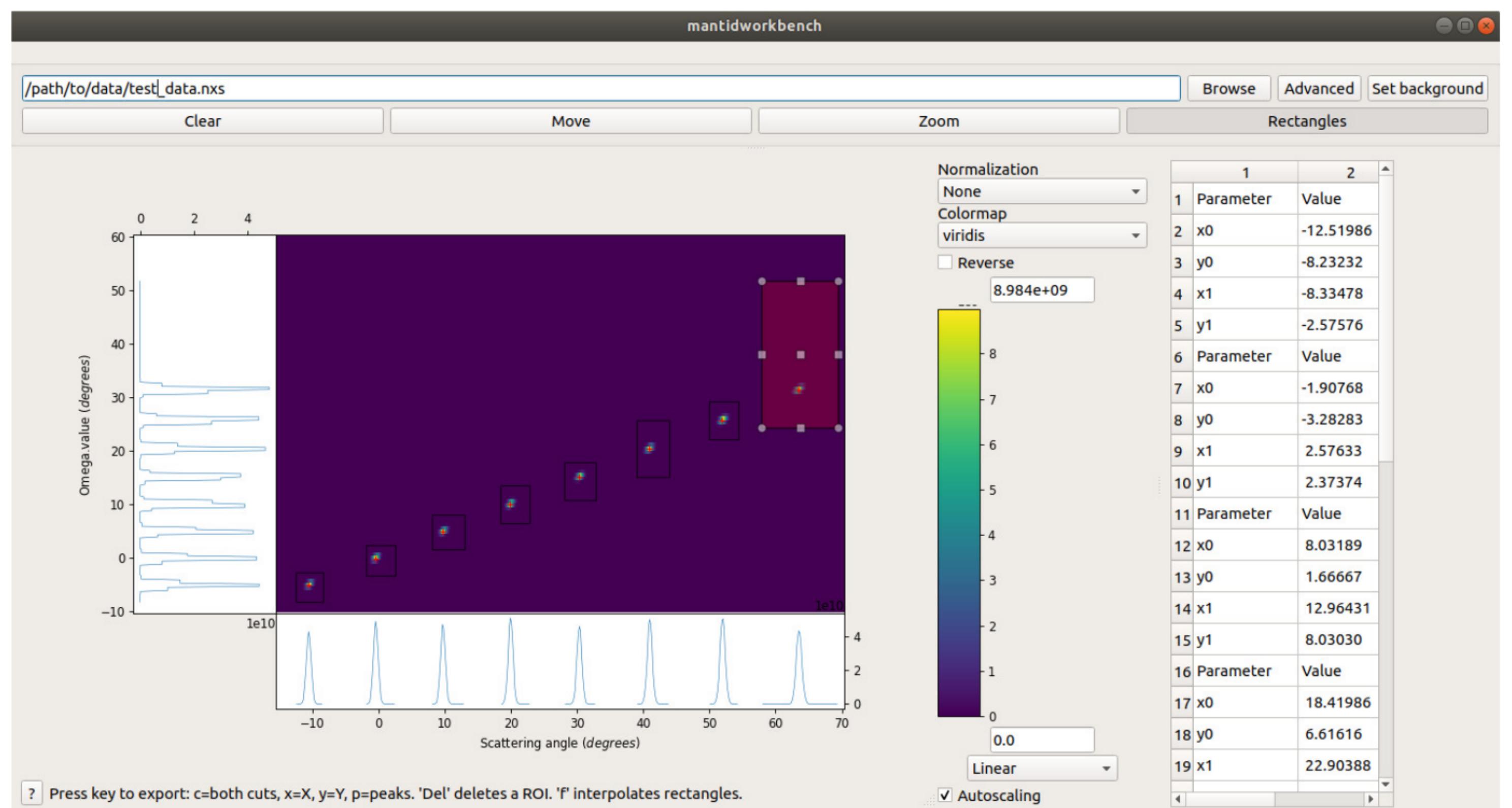
- Streamlines binary workspace operations
- Can be found under the Editor widget

Raw data explorer



- Allows browsing directory tree and visualise raw data with one click
- Visualisations used: 1D spectrum or bin plot, 2D colorfill maps, instrument view, and slice viewer
- Best adapted visualisation used for each instrument and technique
- Default is instrument view
- Will be located behind Workspace widget

Scan explorer



- Designed to support data reduction and analysis for D16
- Finds centre of mass in selected region for peak tagging
- View derived from Mantid slice viewer
- Will be located under Interfaces->ILL->scanexplorer

Conclusions

- A number of specific and general GUIs were developed at the ILL for Mantid
- Based on this experience, bespoke GUI for each ILL reduction technique are currently considered

