

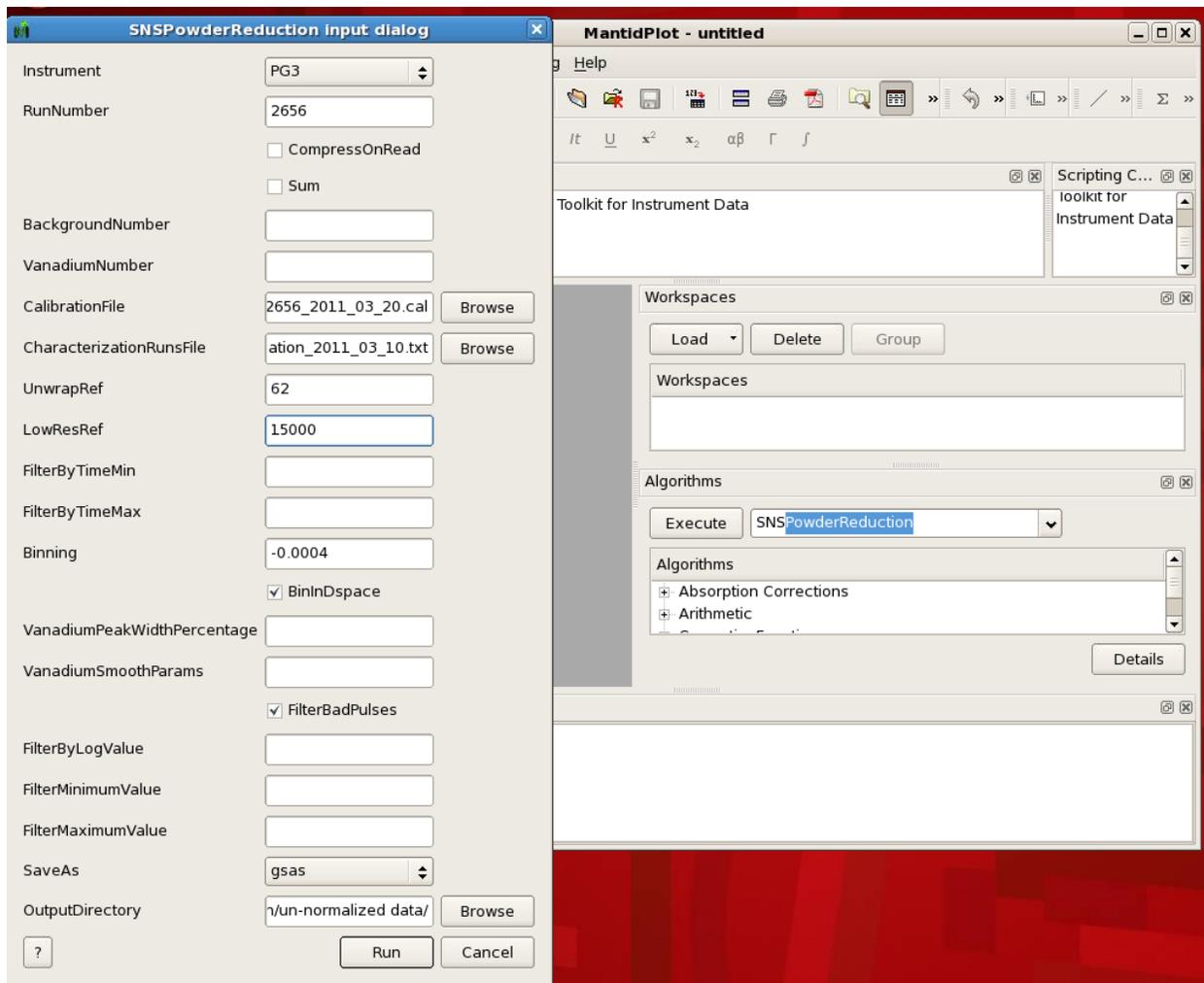
POWGEN User Manual for Data Reduction:

The reduction of data from powgen is done using MantidPlot.

To start the program type “MantidPlot” in a terminal window on either of the two analysis computers (these are on the right side of the hutch).

The machines are called powgen (powgen.sns.gov) and powgenviz (powgenviz.sns.gov).

SNSPowderReduction:



In the Algorithms pane type in “SNSPowderReduction” and hit return. This will launch the script (see screenshot above). Once the fields are all specified, hit Run to reduce data. Fields to enter in this script are as follows

- Instrument : PG3
- RunNumber: This can be a single number or a range of numbers separated by comma. Multiple ranges can also be entered via comma separation. For example “2300-2350, 2355, 2360-2365”

is a valid entry. When the Sum box is checked, the '-' means range of data to be summed together.

- BackgroundNumber and VanadiumNumber should be added only if you chose to not use the default run numbers set in the CharacterizationRunsFile.
- CalibrationFile: This data is stored in the folder: SNS/PG3/'run_cycle_11A_CAL' and has an extension .cal for example the calibration file for run cycle 2011_A is SNS/PG3/2011_2_11A_CAL/PG3_FERNS_2656_2011_03_20.cal
- CharacterizationRunsFile: This is a simple text file that lists all the instrument standard Vanadium and Background data collected for various different center wavelengths at Powgen. The default file lists appropriate V and Empty run #s for FERNS. For other sample environments if users want to do background subtraction a new characterization file should be created or the BackgroundNumber should be specified in the main GUI.
- UnwrapRef: Enter 62 (this corrects frame overlap due to variation in secondary flight path on powgen)
- LowResRef: Enter 15000 (this generates a resolution mask so that data from all detectors can be combined in one single histogram)
- FilterbyTimeMin & FilterbyTimeMax: This allows users to chop the data (making use of event mode data) by specifying the start time and end time.
- Binning: This is the bin width. For linear binning, enter binwidth in microseconds for time or angstrom for d. For logarithmic binning enter a -ve sign before the value of $\delta t/t$. "-0.0004" is a good starting point and works for most datasets. However, the users can choose this value based on what is needed for their individual samples.
- The next two fields are associated with cutting out the V peaks from the V spectrum and a smoothing operation and should be left empty (default).
- FilterBadPulse should be checked. This takes out any background collected during accelerator faults and down periods.
- FilterByLogValue: This is a variable of the log to be filtered e.g. chopper, temperature etc. Since we have an event based data collection mode it is possible to define strict filter values for soft controls such as sample environment after the data is collected.
- FilterMinimumValue and FilterMaximumValue: Min and max value for the filter variable.
- Saveas: This is a pulldown menu which allows the data to be save as gsas, fullprof or both. All are three column normalized intensity files.
- OutputDirectory: Directory in which the reduced file should be saved. Users can use the Browse to select desired location.

nxsummarytable: This is a very useful command which can be entered at the command prompt to find a summary of run files with some logs to keep track of the experiment. The run sequence should be entered the same way as is stated for the Mantid script. Like any other Unix command the output can be piped into a txt file and this will produce a csv file of the summary, e.g.

```
nxsummarytable 1370-1400, 1450-1455 > summaryPTS1582-PG3.txt
```

will create a file in the current directory with the summary information of runs 1370 to 1400 and 1450 to 1455.