Instructions for Loading McStas Simulation

- Use the latest version of VirtualBox to launch the Ubuntu 16.04 virtual machine provided.
- The username and password are both `vagrant`.
- Launch a terminal window (CTRL/CMD+ALT+T)
- Launch McStas GUI Controls `mcgui &`
- In the MCGUI go to `File->Open instrument` and select `/home/vagrant/Desktop/LOKI/loki_master-model.instr`
- To view the contents of the instrument file select `Edit/New`.
- To run the simulation "as-is", just hit `Run` which launched the run dialog.
- Click `Start` and the simulation will commence.
- When the simulation is complete hit `Plot` to see the results.

N.B The version of the loki-master-model.instr being used was developed by Andrew Jackson of the ESS. The ESS have a bitbucket repository with regular revisions to the loki instrument. These files represent a snapshot in this development with a few minor changes.

Modifying the instrument file

Source

The source currently being used in the loki instrument file is the ESS butterfly moderator (Line 283). To switch between this moderator and the basic ESS moderator, comment `//` Lines 283-287 and remove the comments from Lines 289-296. The paramaters for these moderators can be found here:

- ESS_butterfly
- ESS_moderator

Monitors

Lines 732-750 of the instrument file contains three simple 2x2m detectors which measure intensity, time-of-flight and wavelength respectively. The positions of these detectors are set to be ~1m along the beamline with respect to the sample using the mcstas `AT (x, y, z) RELATIVE SAMPLE` formalism, where z is along the beam direction. Once can easily modify this position by changing the `z` value. The TOF detector is currently set to detect time of flight values between 0 - 0.1seconds (tmin and tmax). The Lambda detector is set to detect wavelengths between l_min_source and l_max_source which are calculated based on the instrument parameters lmin=3.0AA and lmax=9.7AA.