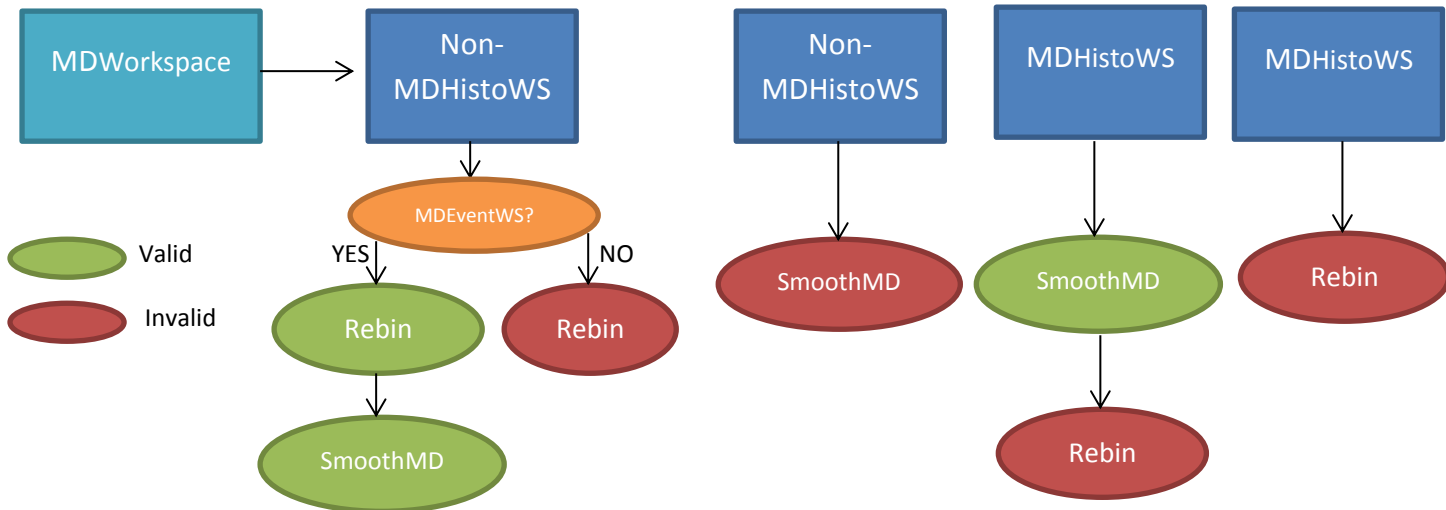


SmoothMD in SliceViewer

Aim: To enable the use of SmoothMD on MDHistogramWorkspaces in SliceViewer.

Basic Possible Cases with Workspaces:



The above diagram indicates what workspace types can be used with each algorithm. This logic helps to dictate in what order the algorithms can be run and whether or not they can be run sequentially.

Using MDHistogramWorkspace

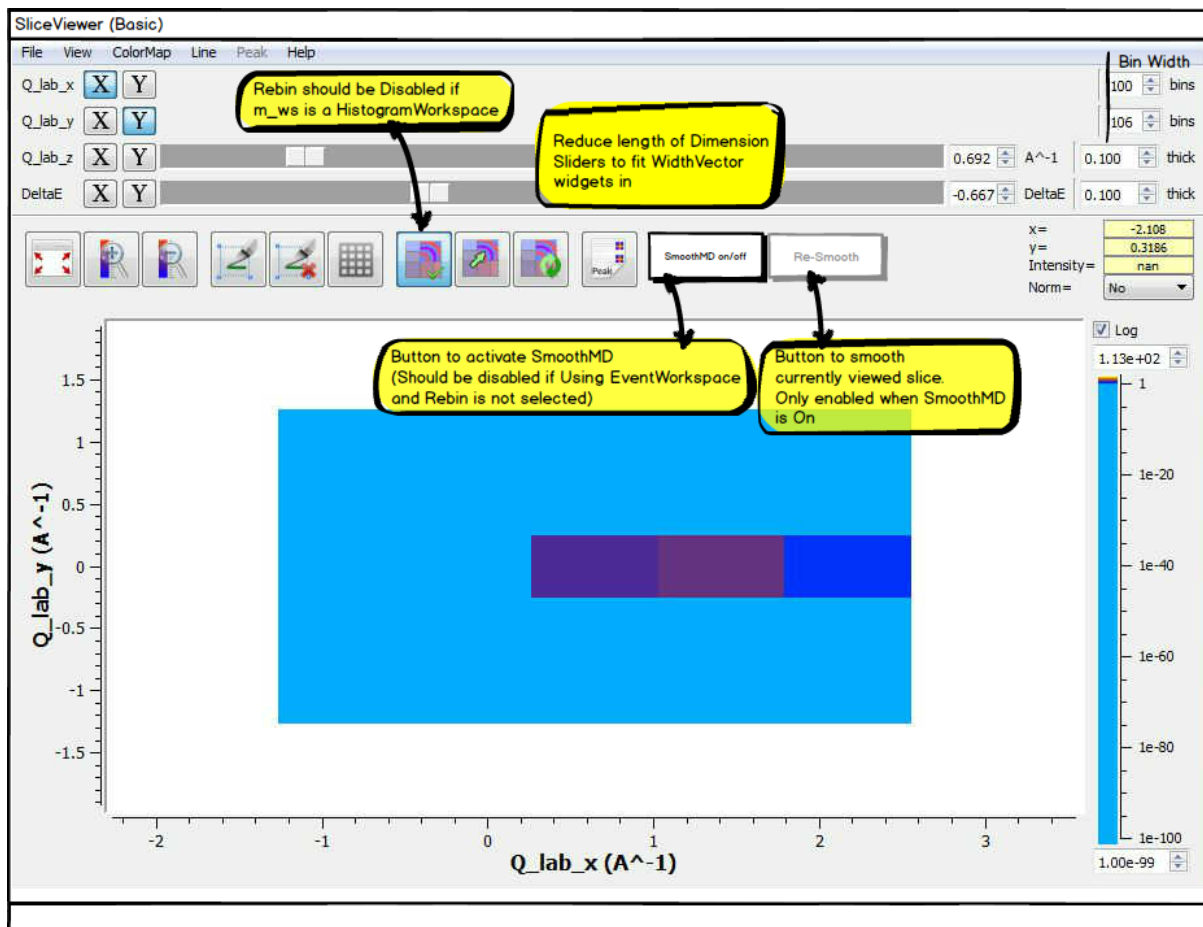
When using an MDHistogramWorkspace we can only run SmoothMD. Since SmoothMD does not produce an MDEventWorkspace it will not be possible to run Rebin after smoothing.

Using Non-MDHistogramWorkspace

Smoothing functionality should not be available at all when viewing a Non-MDHistogramWorkspace unless that MDWorkspace is an MDEventWorkspace. In which case using SmoothMD on an MDEventWorkspace is not possible unless Rebin has been selected.

Once Rebin has been selected and consequently ran on the MDEventWorkspace, an MDHistogramWorkspace is created. As well as `m_overlayWS` pointing to this, a second smart-pointer (`m_rebinnedWS`) should point to it. `m_rebinnedWS` should be used as the input workspace for SmoothMD and then `m_overlayWS` can point to the output of SmoothMD if the user wishes to smooth their Rebinned workspace. However, if `RebinParamsChanged` is called after smoothing, then we essentially undo any smoothing and Rebin into an MDHistogramWorkspace which can then have smoothing applied on it.

Mock-up of SliceViewer with SmoothMD



Changes:

1. Add toggle (on/off) button for SmoothMD:

This button will only be enabled when there is an existing MDHistogram workspace available for smoothing.

This only occurs in 2 cases:

- Our Initial Workspace is an MDEventWorkspace and it has been Rebinned.
- Our Initial Workspace is a MDHistogramWorkspace.

2. Add Re-Smooth button:

This button will simply smooth the data corresponding to the current slice. If any parameters for Rebin are changed and Rebin is called again, all smoothing will be lost because RebinParamsChanged uses the original MDEventWorkspace.

3. (For Next Iteration) Add Dynamic Smooth button:

This button will allow smoothing to be called automatically whenever any parameters in SliceViewer are changed (much like Dynamic Rebinning).

4. Add WidthVector Input widgets: Allow user to specify WidthVector for SmoothMD

5. Reduce length of Dimension Slider: From an Aesthetic point of view the reducing the length of the dimension sliders will free up some space for the WidthVector widgets.