# Example script to load and plot ISIS neutron training course data on MnF2 using Horace

## Table of Contents



Assumes that you have already installed Horace and SpinW!

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# Get data into format that can be plotted and fitted with Horace routines

```
%Data file
spe_file='C:\Russell\Software\ExcitationPowderPublish\data_files
\MAR18301_Ei12.00meV.nxspe';

%If in nxspe format should not need "par" file, which specifies
 detector
%positions, as already contained in the data file. Use blank string
 here
par_file='';

%Name of your choice for Horace sqw file
sqw_mnf2='C:\Russell\Software\ExcitationPowderPublish\data_files
\MnF2.sqw';

%Tell Horace we are using a direct geometry spectrometer
emode=1;

%Set incident energy
efix=12.0;

%Make the sqw file that we then work with later
gen_sqw_powder_test (spe_file, par_file, sqw_mnf2, efix, emode);

%=====
```

```
--------------------------------------------------------------------------------
Calculating limits of data for 1 spe files...
Time to compute limits:
Elapsed time is 0.019997 seconds
```

```
    CPU time is 0.015625 seconds
-------------------------------------------------------------------------------
Creating output sqw file:
Time to read spe and detector data:
Elapsed time is 0.015999 seconds
    CPU time is 0.015625 seconds

Calculating projections...
Time to convert from spe to sqw data:
Elapsed time is 0.0059967 seconds
    CPU time is 0.0625 seconds

-------------------------------------------------------------------------------
Taking cut from sqw object...
Have data from 83790 pixels - now processing data...
Sorting pixel information for 83790 pixels
```

# Take a cut that encompasses the entire data range to show (Q,E) map

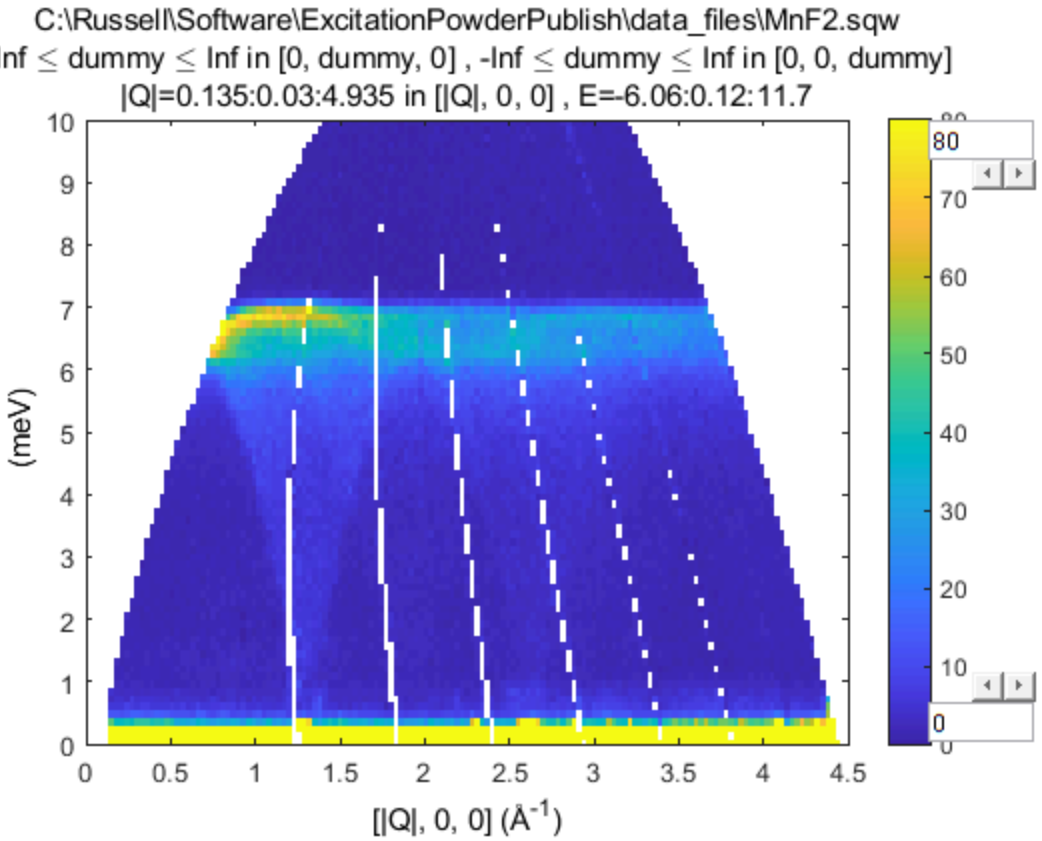
Notice the non-standard (for Horace) method of **not** specifying a projection axis

```
mnf2_cut=cut_sqw(sqw_mnf2,0.03,0.12,'-nopix');
%In the above, 0.03 specifies the bin width in |Q|, 0.12 specifies the
 bin
%width in energy transfer. '-nopix' means we don't bother retaining
%detector pixel information (see Horace documentation for further
 details)

%Plot this:
plot(mnf2_cut);

%Use Horace commands to change colour scale and axes limits (see
 Horace
%manual for further plotting options)
lz 0 80;%colour scale
lx 0 4.5;%x-axis limits
ly 0 10;%y-axis limits

Taking cut from data in file C:\Russell\Software
\ExcitationPowderPublish\data_files\MnF2.sqw...
Step   1 of    1; Have read data for 83790 pixels -- now processing
 data... -----> retained 83790 pixels
```




# Take a 1d cut and plot it:

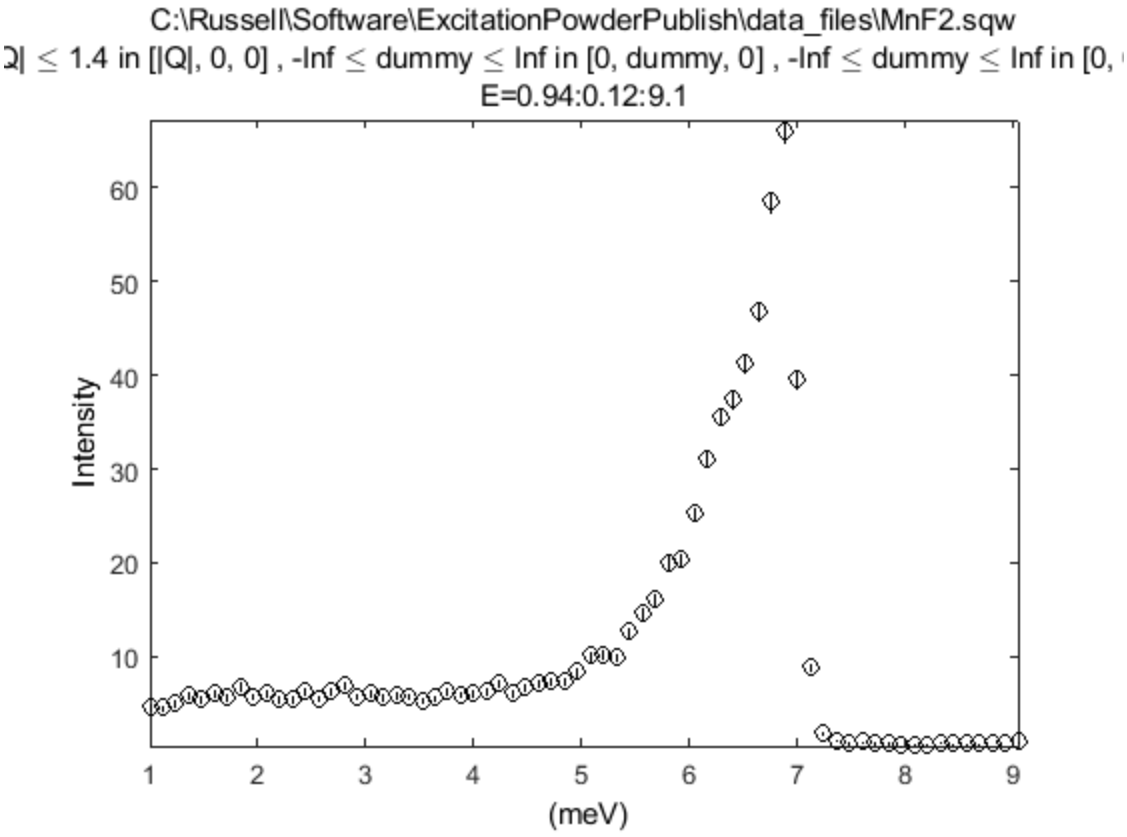
```
%Uses the same syntax as for a 2d slice

mnf2_cut2=cut_sqw(sqw_mnf2,[1.2,1.4],[1,0.12,9],'-nopix');
%Here we've specified to integrate the signal between 1.2<Q<1.4, and
 make a
%cut along the energy axis from 1 to 9 in steps of 0.12meV

plot(mnf2_cut2)

%If all you wish to do is plot the data, this should be enough to get
 you
%started.

Taking cut from data in file C:\Russell\Software
\ExcitationPowderPublish\data_files\MnF2.sqw...
Step   1 of    1; Have read data for 5671 pixels -- now processing
 data... -----> retained 2103 pixels
```

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