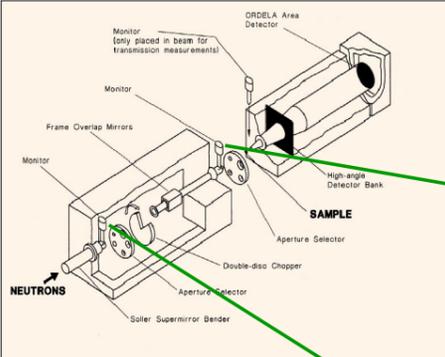




Generating, Converting & Interrogating HDF Files



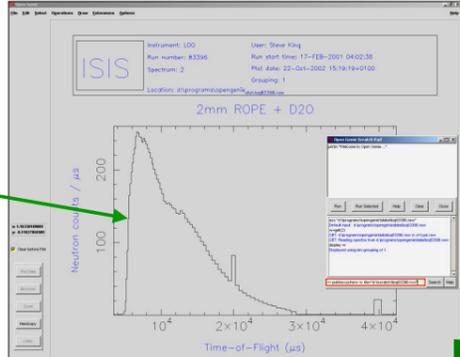
LOQ SANS instrument at ISIS: 3 monitors, a 128x128 wire ORCELA gas detector, 4 high-angle acrit/flit or detector banks each with 350 pixels, and 5 diagnostic channels. Total: 17792 spectra, each associated with 102 geometrically-disposed time channels in normal operation. Raw file size (inc. header, mapping tables & SF metadata): 184 Mb.

```
OpenDensite: here displaying the OpenDensite XML data file. XML file size: 2.33 Mb. For further details see: http://www.sicrsoft.com/windows/18/default.asp
```

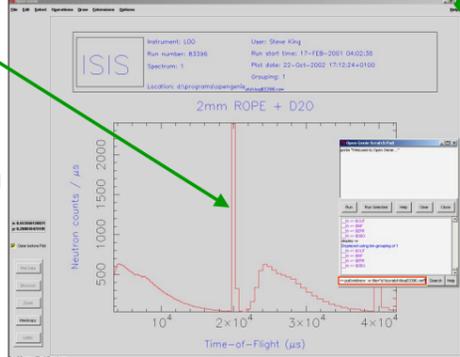
Internet Explorer: here displaying the OpenDensite XML data file. XML file size: 2.33 Mb. For further details see: http://www.sicrsoft.com/windows/18/default.asp

```
Here the character data is correctly interpreted and translated into character strings because OpenDensite lists what to look for in the original raw data file (it was, after all, written to read ISIS data files). Compare this with the next frame right where the XML has been generated by a more circuitous route.
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OpenDensite: sof here for the manipulation and display of time-of-flight neut on scattering data. Free to academic establishments & user facilities. Available under Windows, OpenVMS, Digital Unix, Linux & IRIX (HPUX & Solaris on request). For further details see: http://www.isis.rl.ac.uk/OpenDensite/



OpenDensite: here being used to directly output data in XML format (see the next frame left).

```
compare
```

Nexus is in the process of formalizing the definition of Nexus files using XML (hopefully to avoid the sort of error that can be seen far right), and providing conversion tools. For further details see: http://www.neutron.anl.gov/nexus/Nexus_metaFormat.html

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```
JHV: software for viewing the contents of HDF4-compatible data files, in this case an OpenGenie (Level 0) Nexus file. Nexus file size: 2.13 Mb. For further details see: http://hdf.ncsa.uiuc.edu/index.html
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```
Internet Explorer: here displaying the data file (after translation from Nexus to HDF4 to HDF5) in XML form. XML file size: 2.76 Mb. For further details see: http://www.sicrsoft.com/windows/18/default.asp
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Examining the file we can see that the number of spectra ("spec") is 17792. At the bottom is the start of the spectrum mapping table; spectra #1 & #2 are monitors, the ORCELA detector starts at spectrum #3.
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The bottom of the spectrum mapping table shows that the spectra from the ORCELA detector have been grouped (to improve counting statistics) in X & Y so the 16384 "pixels" are reduced to 64x64x4096. To this must be added, the 1400 "pixels" of the high-angle detectors (from spectrum #4099, 3 monitors & 5 diagnostic spectra. Total: 5504.
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h5tools: software for translating HDF4 data files into HDF5 data files, in this case being called from H5View. HDF5 file size: 3.18 Mb. For further details see: http://hdf.ncsa.uiuc.edu/hdf5tools.html
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"Large Facility" instruments do not just generate a lot of data, they generate a lot of metadata. This metadata can be useful, but not if it is buried deep inside a proprietary format known only to the facility or the manufacturer. Hierarchical Data Formats (HDF) seek to overcome this. This poster examines some of the ways ISIS data can be translated into HDF data with simple, easily available, software tools.

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