



Abstract. This poster shows a NeXus tool developed at SNS, named NXtraverse, that traverses and displays NeXus files. Various aspects of NeXus datasets are optionally read and displayed. File traversal is achieved by using a recursive algorithm: NeXus datasets are displayed, NeXus groups are recursively iterated.

Written in C++, NXtraverse is integrated in the Event NeXus Creation Tool development framework developed at SNS (see poster).

**Algorithm.** File iteration is achieved by recursively calling the following NeXus API functions, starting at the HDF5 root group:

1. NXgetgroupinfo; returns the number of objects (HDF5 groups and datasets).
2. Iterate the objects obtained in 1); in each step the following functions are called
3. NXgetnextentry; returns the object type (dataset or group). A selection is made: If the object is a dataset type, its contents are read. If the object is a group type, the group is opened with the NeXus API function NXopengroup, then the same sequence in 1) to 3) is recursively called, and then the group is closed with NXclosegroup.

**Usage.** Usage of the tool is

```
./nxtraverse -f <filename> [-h] [-r] [-a] [-n N]
```

**[-f]** traverse file <filename>  
**[-h]** print this usage message and exit  
**[-r]** do not read data  
**[-a]** do not read attributes  
**[-n]** print only N number of elements; N defaults to 5, \* for all elements

**Output example**

```
./nxtraverse -f BSS_5663_histo.nxs
```

prints all objects (datasets, attributes, groups) in the file named "BSS\_5663\_histo.nxs". For arrays, the default first 5 elements are printed. Each object is displayed in 1 line. First the object path is displayed, after that, if the object is a dataset, data is displayed after an equal sign "=" . Attributes are distinguished from datasets by printing the symbol "#" after the dataset name they belong to.

```
/entry  
/entry/DASlogs  
/entry/DASlogs/frequency  
/entry/DASlogs/frequency/average_value=0.013787  
/entry/DASlogs/frequency/average_value#units=Hz  
/entry/DASlogs/frequency/time=0 0.016667 0.033333 0.05 0.066666 ...
```

**Examples of use.**

- As a front-end to build a file browser tool
- To parse NeXus files and obtain the metadata tags and values for automatically building catalogs to search NeXus files
- Can be integrated with visualization tools to help users identify data to select for visualization. The left image, show a screenshot of the tool SNS Explorer, a GUI front end that uses the similar code as NXtraverse does to display a NeXus file tree structure;

**Status.** Integrated into NeXus



Links

<http://www.nexusformat.org/>  
<http://www.hdfgroup.org/>  
<http://www.space-research.org/>

