

difx2ms

**Convert DiFX correlator output data to AIPS++ (CASA)
MeasurementSet**

VERSION 1.0-ALPHA

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Summary

This software – difx2ms – is a utility for converting intermediate DiFX correlator output data into the portable AIPS++ (CASA) MeasurementSet format. Once in MS format, data can be onward-converted to the standard UVFITS format, with optional compression.

Technical details & compilation

difx2ms is a C++ program – **difx2ms.cc** – that must be compiled and linked against the AIPS++ (CASA) system libraries.

difx2ms was developed on a system with the following (Glish-based) AIPS++ system:

```
19.1746.00 Fri 2007/06/08 00:00:11 UTC
```

The following compiler version was used in development:

```
Target: x86_64-redhat-linux  
Configured with: ../gcc-4.1.2/configure --  
prefix=/usr/local/gcc-4.1.2 --enable-shared --enable-  
threads=posix --enable-checking=release --with-system-zlib  
--enable-__cxa_atexit --disable-libunwind-exceptions --  
disable-dssi --enable-plugin --host=x86_64-redhat-linux  
Thread model: posix  
gcc version 4.1.2
```

The same compiler was used to build the system AIPS++ libraries.

A very basic build script – **buildit2.csh** – is included with the program. This may need modification to build difx2ms at different sites.

Usage

difx2ms is simple to use. Here follows a sample use, followed by a description of the available command-line arguments.

```
./difx2ms -h data2/v190g.input -u data2/v190g.uvw -b
data2/binary/DIFX_54181_004825.50004,data2/binary/DIFX_5418
1_005099.14796 -o fred2.ms -w 1 -z
```

Argument	Default	Meaning
-h	None	Name of .input file used / created by DiFX correlator
-u	None	Name of .uvw file used / created by DiFX correlator
-b	None	Comma-separated list of binary files created by DiFX correlator
-o	None	Name of output MeasurementSet (recommend .ms extension)
-w	1	How to write weights: (0) set all weights to 1.0, (1) write channel-averaged weights, (2) write spectral weights
-v		Verbose output – include additional warnings / diagnostics
-x		Attempt to onward-convert to UVFITS using ms2uvfits binary
-z		Attempt to onward-convert to UVFITS using ms2uvfits binary and then compress using gzip binary

Manual conversion

As indicated above, difx2ms will attempt to convert the output MeasurementSet to (optionally compressed) UVFITS if directed to do so. The ms2uvfits binary – available in a standard AIPS++ (CASA) installation – is required to do this. Manual conversion is of course possible, and in some cases may be preferable. The suggested incantation of ms2uvfits is:

```
Ms2uvfits in=difxdata.ms out=difxdata.uvf writesyscal=F
```

Please note that ms2uvfits will ordinarily fail on MeasurementSets created by difx2ms unless the writesyscal option is set to F.

Warnings and caveats

This first release has been tested somewhat less than I would prefer. In particular, very little testing has been applied to the following features:

1. pulsar binning support
2. spectral weights mode

Furthermore, autocorrelation data is presently ignored, awaiting a modification to the DiFX output format.

The code needs some further tidying and refinement.

Finally, testing has not been applied to substantially large data sets.