

## DiFX 2.0.1 Countdown List (started 2011 Mar 15, WFB)

- ~~mpifxcorr: fix zoom band autocorrelations~~
- ~~vex2difx: reconsider defaults for tone extraction~~
- ~~vex2difx: reconsider default channel averaging, or issue warning~~
- ~~vex2difx: smarter defaulting of xmacStride~~
- ~~vex2difx: properly handle out-of-order and negative tone indices in the vex file~~
- ~~difx2fits: weed out clearly bad mpifxcorr-generated Tsys data~~
- ~~difx2fits: option to average pulse cal tones derived from difx~~
- ~~mpifxcorr (nativemk5) and mk5daemon: support > 1024 scans in module directory~~
- ~~mpifxcorr (nativemk5) and mk5daemon: test and upgrade to SDK 9.1~~
- ~~fix pulse cal extraction in case that offset\_hz = 0~~
- ~~ensure pcal interval of 5 MHz works and doesn't generate warnings (I'm pretty sure it fails now)~~
- ~~fix pulse cal phase jitter bug~~
- ~~Fix occasional bug (<1% of time?): FATAL Mk5DataStream::calculateControlParams: vlbaoffset<0: vlbaoffset=-4 bufferindex=42577916 atsegment=2 readbytes=21288960, framebytes=80640, payloadbytes=80000~~
- ~~vex2difx: set appropriate defaults for pcal extraction~~
- ~~vex2difx and oms2v2d: verify guardNS and subintNS are set appropriately with good defaults~~
- ~~difx2mark4: Get current code from difx2mark4 branch copied over and in~~
- ~~difx2mark4: Normalisation of amplitudes using autocorrelations~~
- ~~difx2fits: crashing when there was no default rule..? (Bonn) (not a bug)~~
- ~~mpifxcorr (datastream): Mutex deadlock on scan boundaries~~
- ~~documentation: update/write docs on utilities~~
- ~~documentation: generate changelog~~
- ~~test, test, test~~

## New Features

- checkmpifxcorr (mpifxcorr)
- switched power detection in mpifxcorr
- improvements to support infiniband speeds with native Mark5 (mpifxcorr)
- early multi-thread VDIF format support
- RedHat RPM file generation for some packages (can extend to others on request)
- improvements to method of selecting which pulse cal tones get propagated to FITS
- initial complex sampling support
- mk5dir sorts by scan time (useful for modules assembled from e-transferred data)
- support underscores in source names

## Bug Fixes

- fix model accountability bug in difx2fits when combining jobs
- numerous fixes for zoom bands (mpifxcorr, vex2difx, difxio, difx2fits)
- native Mark5 has improved stability for cranky modules
- numerous fixes for DiFX-based phase cal extraction (mostly in difx2fits, mostly for multi-job)
- fractional bit correction for lower sideband got broken in difx 2.0.0. Fixed.
- migrate difxcalculator to DiFX 2; was not complete for DiFX 2.0.0
- clock offsets > 1/2 second were not handled properly for Mark5 module playback due to ignoring of `intclockseconds`
- vex2difx no longer rounds down to zero the subintegration time when adjustment is needed for the highest spectral resolutions
- the amount of extra data sent to the cores to account for geometric delays was incorrectly

scaled by number of channels. Fixed.

### Caveats and other information

- sign of DiFX-extracted pcal phase has swapped since DiFX 2.0.0
- sometimes a sorting bug in vex2difx causes a .flag file to delete entire jobs' data when difx2fits is run; fixed in trunk
- default tones to put in the FITS file are the two tones in each sub-band that are nearest the edge, but if possible not those within the edge 1/8 of the band
- vex2difx SETUP parameter nChan changed to refer to the number of output channels; nFFTCChan replaces functionality of specAvg
- While supported at some level, support for decimation of oversampled data is not documented and is not known to work correctly; use at your own risk
- This release includes version 3.4 of the Haystack Observatory Postprocessing System (HOPS) for analyzing DiFX output that has been converted to the Mark4 correlator format with difx2mark. For more details, consult the documentation pages:
  - <http://cira.ivec.org/dokuwiki/doku.php/difx/difx2mark4>
  - <http://cira.ivec.org/dokuwiki/doku.php/difx/hops>
- Please file bug reports and feature requests through the ATNF trac system
- High level wish list items for future DiFX releases should be added to the [DiFX2.0.2 wish list](#)

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