

DFB3 for VLBI

Technical Notes

Current State

The Parkes Pulsar backend DFB3 has a baseband mode, used with APSR. This instrument fulfills the basic requirements of a broadband VLBI backend.

- 1 GHz or 256 MHz front end bandwidth
- Divide by 16 filterbank (ie 64 MHz channels with 1 GHz front end).
 - 16 MHz channels with 256 MHz front end
- Bits selectable from 1-8
- UDP data transport with simple 24 byte timing header

Requirements

To convert to system suitable for VLBI the following changes are needed

- More filterbank options (divide by 32 and divide by 64 have filters already designed)
 - Giving 32/16 MHz channels with 1 GHz front end or 8/4 MHz with 256 MHz front end)
- VDIF packet headers
- Packet sizes to conform to VDIF requirements, specifically an integral number of packets/sec
- (Optional) Linear→circular conversion
 - including calibration of x-y phase correction
- Tsys monitoring

Potential extra work

- Fringe rotation
- Complex sampling
- “Zoom modes”, ie full channelization

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<https://www.atnf.csiro.au/vlbi/dokuwiki/> - **ATNF VLBI Wiki**

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Last update: **2015/12/18 16:38**

