

## 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
- Tsys monitoring

## Potential extra work

- Linear→circular conversion (optionally)
  - including calibration of x-y phase correction
- Single stage filter design (not the current “high resolution” filter followed by a reverse filter.

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