



# PARKES

## Where we're at and where we're going

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CSIRO ASTRONOMY AND SPACE SCIENCE  
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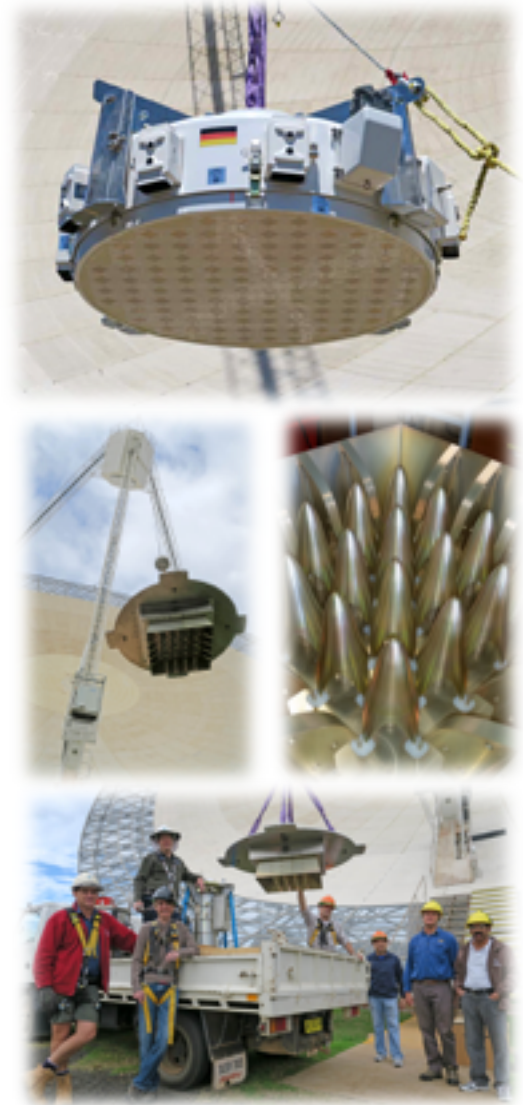
# Overview

- Status Update
- Breakthrough Listen
- HIPSR movement
- User Support
- Future plans
  - Front ends
  - Back ends



# Status Update

- Parkes granted SKA Pathfinder Status
  - PAF and wideband feed development
- MPI PAF
  - Pulsar/FRB – single beam through, no realtime GPU dedispersion yet, but otherwise system looking good now, challenge going to multiple beams
  - HI/spectral line – firmware spectrometer available (18kHz), some RFI related beam forming issues, commissioning style observations likely soon
- Rocket PAF
  - On dish testing (plus aperture tests) late May
  - Measurements encouraging for a purpose built version



# Status Update

- MBCORR
  - Removed from racks late 2015
- DFB 3
  - In process of removal (unstable/unusable)
  - DFB4 moving to DFB3 location, timing impact
- RFI Monitor updated to FITS format
- Updating of user support documentation
  - Work in progress – assessing current limitations



# Breakthrough Listen



- 5-year programme
- Begin observing 4<sup>th</sup> October 2016
- ~5 hr observing blocks each day, stepping in time (LST) through the week
- Observing plan, targets and strategy to be determined
- Dedicated backend managed by Berkeley
  - Initial test system installed Feb/Mar 2016
  - Single beam system to be installed September 2016
  - Multibeam system to be installed late 2016/early 2017
- Open access to data planned, storage still under discussion



# HIPSR Movement

- Aiming to move functionality to new GPU cluster
- Plan to stage process, implementing code on cluster before switching across
- May update digitisers as part of process (moving to ROACH2s or SNAP, under discussion)



# User Support



- Remote model with project experts
  - Works well with existing/experienced observers
  - Some difficulty for new observers
- Moving towards simplified online structure – single observers page of links and documents, removing duplication and outdated information
- Updated users guide in progress
- Updated portal in line with ASKAP portal in progress
- Bite-size dated update pdf documents periodically released
- Potential move to ASKAP control software (under discussion)

## PARKES Observing Information

### Recent News

**27 May 2016**

- New style webpages trialled



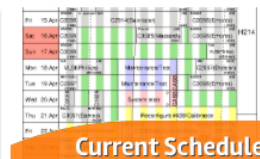
**PARKES Portal**



**FROG**



**Users Guide**



**Current Schedule**



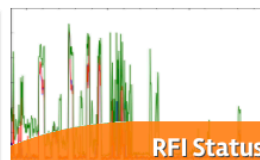
**Frontend Status**



**Backend Status**



**Support Status**



**RFI Status**

### General Observing Information

#### Status Updates

This provides easily digestible information on the current status of Parkes systems, to aid planning for proposals and observations:

- Brief pdf on the status of the Parkes **backends**.
- Brief pdf on the status of the Parkes **frontends**.
- Brief pdf on the status of the Parkes **user support**.
- Brief pdf on the status of the Parkes **RFI**.

#### Scheduling

- See **scheduled observations**.
- Login to the **PARKES Portal** to see recent changes to the schedule.

#### Organising your observing

- **Book accommodation at the Marsfield lodge**.
- Read the **Marsfield visitors guide**.
- Read the **procedures for remote observing**.

### Tools

#### Preparing a schedule

- Use the **Spectral-line Position Switching Schedule Creator** to create a TCS schedule file with multiple sources using position-switching.
- Use the **Spectral-line OTF Schedule Creator** to create on-the-fly (OTF) schedule files for use by TCS.
- Use the **Spectral-line Scanning Schedule Creator** to create map schedule files (frequency-switching optional) for use by TCS.
- Use the **Spectral-line MX/Frequency Switching Schedule Creator** to create a TCS schedule file with multiple sources using MX mode or Tracking mode with frequency switching enabled.
- Use the **SPOT Schedule Generator** to create a SPOT observation calibration schedule.
- Use the **TCS Pulsar Schedule Generator** to create digital filter bank pulsar schedules.

#### Choosing a calibrator

- Use the **calibrator database**



# Future plan for front-ends

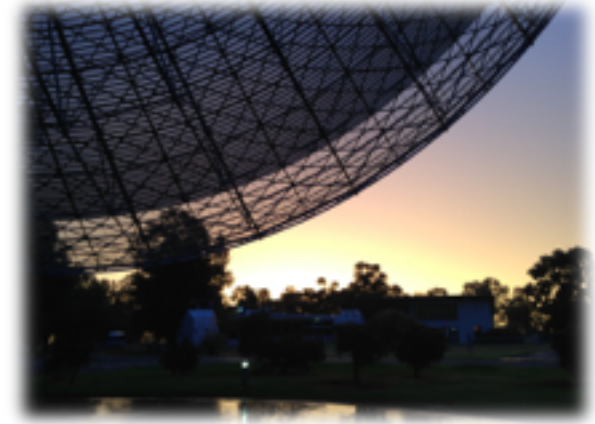
- Ultra-Wideband Low Frequency Single Pixel Feed (0.7—4.0 GHz)
  - Status: Funded, prototyped, scheduled for completion and installation late 2017
- Full sized cryo-cooled Rocket PAF
  - Status: Uncooled 5x4 prototype tested, planning stage, funding investigations (LIEF?), external interest
- Ultra-Wideband High Frequency Single Pixel Feed(s)
  - Status: Early planning



➡ Focus cabin with 1 PAF + single pixel coverage 0.7 -> ~25 GHz

# Future plan for back-ends

- New 4 channel digitiser/sampler by end of year
- Replacement of MBCORR higher spectral resolution modes (as new spectrometer and/or additional mode to HIPSR)
- New pulsar digital filterbank and spectrometer on single (currently used for MPI PAF) GPU cluster
- Ideal Goal: one GPU cluster serving all needs
- Likely to need to retain some current functionality to provide redundancy/backup



# Parkes Vision

- Parkes has key long term role to play in SKA technology development, proving PAF and wideband feeds for the full SKA deployment ('SKA1.5, SKA2')
- Parkes is evolving towards a lean & efficient state-of-the-art radio telescope, with a future of:
  - Uninterrupted and always available frequency coverage from 0.7 to ~25 GHz
  - Survey capability with world leading MKIII PAF (& beyond?)
- Currently, as with ATCA, open skies, merit based proposal system, providing opportunity for PI projects in large survey driven era
- Teaching instrument (PhDs, pulse@parkes)
- Development instrument (new technologies, ASKAP/SKA systems)

**National icon – inspires interest (public & politic) in radio astronomy**



# Thank you

**CSIRO Astronomy and Space Science**

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