

Welcome to the first ASKAP Commissioning Update. This will be a regular e-mail reporting on activities of interest to the astronomical community including the progress of ASKAP commissioning, new results and challenges, bugs in the system, releases of new software and availability of test data files. It will not replace any of the formal communications about ASKAP or SKA, but aims to be a more “earthy” dissemination of information about ASKAP’s progress from the astronomer’s perspective.

The initial distribution list for the ASKAP Commissioning Update is not yet complete. As the teams are open collaborations, we do not attempt to maintain a current list of your team members. For this first edition, please can we ask the PIs of the survey science teams to forward this to your SST distribution list? Please also feel free to send this any other astronomers who may be interested. If this edition has been forwarded to you, please sign up to the exploder by sending an e-mail to ‘askap-commissioning-request@atnf.csiro.au’ with the subject text: ‘anything’ and the message text: ‘subscribe’. We hope you enjoy receiving this regular update on the progress of ASKAP commissioning. Do not hesitate to contact us if you have any questions about the project.

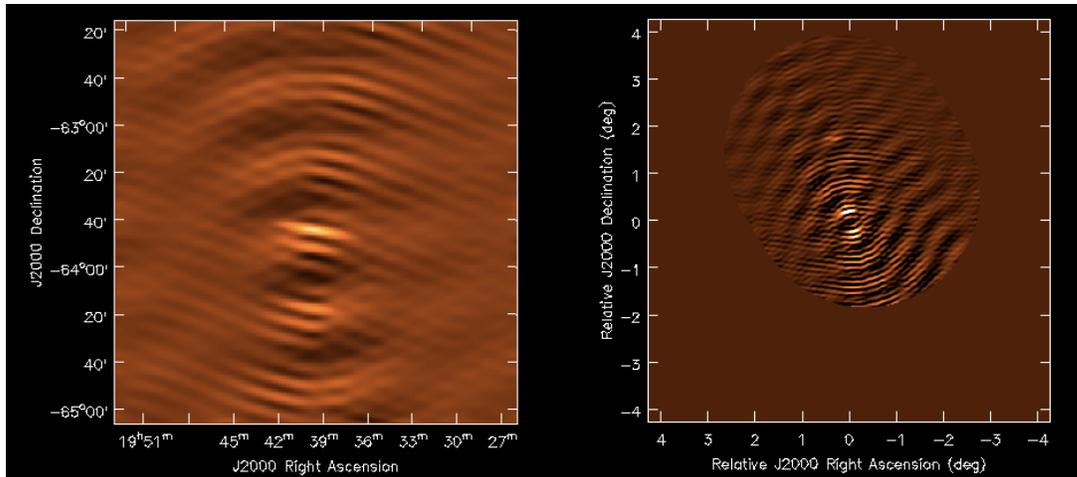
Ant Schinckel
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BETA Commissioning

The ASKAP commissioning team is working through a detailed plan for integrating and testing the Boolardy Engineering Test Array (BETA). When completed, BETA will comprise 6 antennas equipped with first generation phased array feeds and a hardware correlator (300 MHz bandwidth, 36 beams). We aim to have BETA fully assembled by July 2013. The current interim system has 3 antennas with first-generation PAFs and an interim software correlator (16 x 1 MHz channels, up to 4 independent beams).

In November 2012, a commissioning team comprising Aidan Hotan, Maxim Voronkov and Lisa Harvey-Smith demonstrated the first single- and multi-beam observations using 3 PAFs, with a 16 MHz bandwidth software correlator. These images look as expected from short integrations (<4hr) and using three baselines.

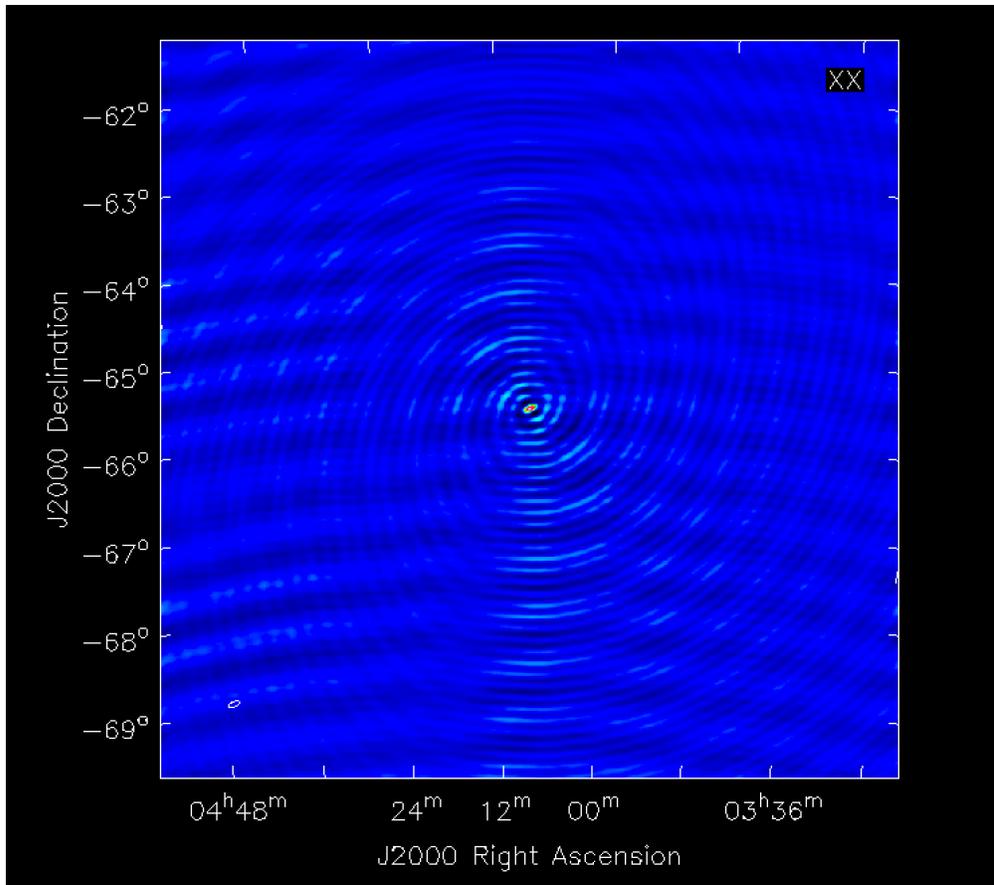


Left: Image of 1934-638 (single beam, single polarisation, 16 x 1 MHz channels MFS'd together, CLEANed in ASKAPsoft) Right: Dual-beam image of the 1934-638 and an offset source, 4 hours of integration.

Since then, the beamformers for BETA have been moved from their temporary home in a shipping container adjacent to the ASKAP core to the more salubrious surroundings of the MRO control building, with its two layers of RFI shielding, each in excess of 90 dB.

To test the new system, the same team with the addition of ASKAP commissioning scientist Tim Shimwell visited the MRO in mid-late January. They carried out a range of system tests and uncovered hardware bugs including some recurring issues with the cooling systems for the digital racks within the BETA antenna pedestals, which have yet to be fully solved. Despite these challenges, they were able to make this long-track image (10 hours integration) with a single PAF beam of the radio source PKS 0407-658 in a single polarization and a total bandwidth of 16 MHz.

The commissioning team was once again able to demonstrate remote observing from the Boolardy homestead, which was enabled by the installation of a remote monitoring of weather data on site. The next steps for the commissioning team include making a multi-beam image with this 3-PAF system and setting up a remote observing capability at the new Science Operations Centre in Marsfield.



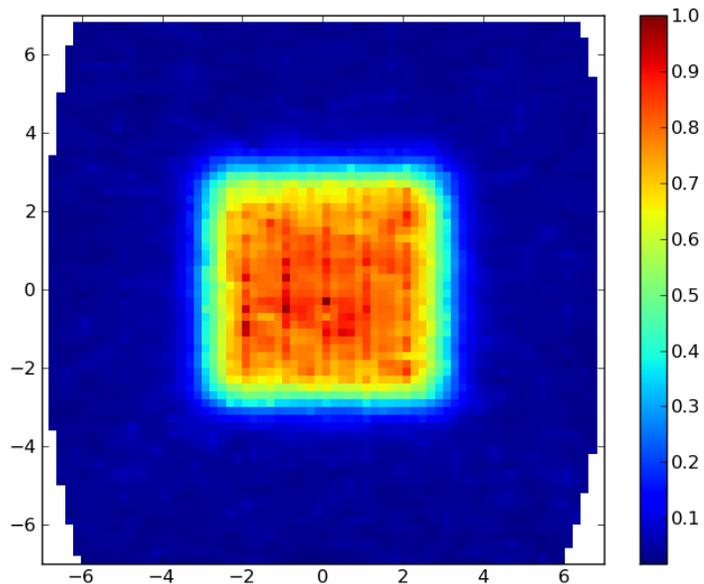
Above: Image of PKS 0407-658 with 3 ASKAP phased array feeds. We used the BETA software correlator with a single beam, single polarization and a total bandwidth of 16 MHz.

Over the next few months, commissioning milestones include:

- Software correlation of 6 BETA antennas (April 2013)
- Testing first version of hardware correlator at Marsfield (Feb-March 2013)
- Installation and testing of the hardware correlator (May 2013)
- Hardware correlation of 6 BETA phased array feeds (July 2013)

Phased Array Feed Testing

A team including Aaron Chippendale, Doug Hayman, Aidan Hotan are testing prototype phased array feeds using a 12m antenna and Parkes as a reference. This is a valuable testbed for PAF beamforming investigations.



Above: The measured sensitivity of an ASKAP phased array feed mounted on the Parkes testbed over a 30 square degree field of view.

CSIRO vacation student Sarah Hegarty (University of Queensland) is carrying out a project to study survey strategies with ASKAP phased array feeds and to conduct the first sky survey using the full-sized ASKAP PAF at the Parkes testing facility. We hope to show you some results from the survey in the next ASKAP Commissioning Update.

To find out more

The next ASKAP survey science team co-ordination and management meeting will be held on February the 14th in Marsfield.

ASKAP Working Group 4b (Commissioning) meets every month – the next meeting will be on February 19th in Marsfield. At this meeting we will discuss the most suitable antennas on which to deploy phased array feeds #6 to #18.

Videoconference links are available for all ASKAP meetings.

We welcome expressions of interest to assist with BETA commissioning, including calibration and imaging studies for BETA. Please contact lisa.harvey-smith@csiro.au to discuss projects and how to get involved.

CSIRO acknowledges the Wajarri Yamatji people as the traditional owners of the land on which the observatory lies.