

ATNF ATUC Memorandum

To: ATUC
From: Bob Sault
Date: 23 November 2004
Subject: 3mm scheduling issues

Background

With frequency range from 1.2 to 106 GHz, the ATCA is in principle capable of observing and producing good science in almost all weather conditions. Less than 1% of 20cm observing time would be lost to bad weather. However about 20-30% of observing conditions in the 3mm season are likely to be unsuitable for 3mm observing.

Over the winters of 2002-2004, the so-called “swap” scheme has been used to give 3mm observers some robustness to poor weather. With this scheme, a pair of 3mm and centimetre proposals are partnered and scheduled typically a few days apart. At the discretion of the 3mm observer, the order of the 3mm and centimetre proposal can be swapped to give the 3mm observer the best chance at good weather.

To improve the attractiveness of this scheme to centimetre observers, and to attract additional projects, service observing has been offered to the centimetre proposals involved. To date no centimetre proposals have made use of this option.

A prerequisite for the swap scheme to function is that there is a pool of well-rated centimetre projects that can be used as swap partners. Fulfilling this is becoming more difficult as the popularity of the 3mm system grows. For example, in 2004 there were virtually no centimetre proposals that could be used for swapping. The swap scheme, as originally intended, was unworkable.

The lack of swap partners is a consequence of the array configurations popular with 3mm astronomers (H75, H168, EW214, H214) being unattractive to centimetre proposals. To put these configurations in perspective, these give a few times the resolution of Parkes, but with 60% of the raw collection area. Centimetre observing in the most compact arrays is likely to be attractive only to somewhat specialised experiments.

Proposal for 2005

We have increased the ways in which the swap scheme was advertised for 2005. Large backup projects have also been invited. By the ATUC meeting, it should be apparent whether the swap scheme is workable in winter 2005.

If there is an undersupply of swap partners, two alternative ways of “generating” them have been suggested:

1. Have a second mini call for proposals to find partners. This is more likely to succeed once the specific time slots and success of other requests are known.
2. Use Directors Time as swap time.

An aim of the swap scheme has been to ensure the telescope is always being used for well-rated observations. The above two schemes are likely to fail to achieve this. The first

approach will attract lower quality proposals that were not awarded time in the first round of offers. The second approach leaves the use of the swap time even less well defined.

Where a well-rated swap partner is not available, then the ATCA is more akin to an optical telescope or a pure millimetre telescope, i.e. there is no good science fallback in poor weather. In this regime, the approaches of these telescopes are relevant to the ATCA. Some of their approaches are:

- Bad weather time is time lost to the scheduled observer.
- Full queue scheduling is used.

Queue scheduling has been considered on several occasions, and rejected. It would need operators which would require the reassignment of some ATNF resources. Additionally given the lack of maturity of the 3mm systems and 3mm observing community it is questionable whether this is wise move at this stage. It would also be a major change in the ATNF policy that proposing astronomers do the observing. Even if implemented on just the most compact arrays, I do not consider this as a serious option.

A specific proposal for 2005 is as follows:

- Swap scheduling will be used where possible, with the better ranked 3mm projects being awarded swap partners.
- Where a swap partner is not available, and where a 3mm project encounters poor weather, the time will revert back to the observatory. This time would then be treated as standard Director's time.
- The ATNF will continue to encourage interest in centimetre proposals in the most compact arrays.
- Objective measures to determine when the weather is unsuitable will need to be developed. Such measures would depend on the output of the seeing monitor and other observatory monitoring equipment.

Advice sought

- ATUC is invited to comment on the proposal, and to offer concrete approaches which address maximising the science output and giving robustness to 3mm observers.