SKAMP Newsletter

SKAMP HARDWARE

The final prototype SKAMP receiver boards have recently been delivered to Molonglo and are now in parts placement. Following testing, these boards will then be ready for production. The SKAMP project has commissioned local suppliers to manufacture the receiver boards – Lintek Pty Ltd are located in Queanbeyan (just outside Canberra) and have been manufacturing printed circuit boards since 1986; Nexus Electrical Pty Ltd, also located in Queanbeyan, will populate the PCBs.

A two-channel radio frequency interference (RFI) system has been added to the SKAMP_1 correlator. The correlator is detecting terrestrial interference, evidenced by the fast phase wrapping and reasonably large correlated signal in the observations. The lessons learned from these experiments will be applied to the SKAMP_2 system design. The bottom figure shows the results from the RFI system.

Duncan Campbell-Wilson and Darshan Thakkar have been working closely with David Emrich of the MWA project on the digital system hardware integration. The heat sinks are currently being tested by CSIRO on the finished Correlator and PFB boards. Upon successful testing, CSIRO will be delivering the SKAMP boards to the Molonglo Observatory during the first week of 2011.

Molonglo's vintage telescope control computer has recently been brought back to life. The fault, traced to a high resistance joint in the power supply module, caused an intermittent loss of connection to the memory module. New patches have allowed observations on SKAMP_1 and MOST (Molonglo Observatory Synthesis Telescope) to resume.

The start of the Australian summer has seen particularly poor weather across NSW. The "La Niña" conditions have brought significant rain, and the Molonglo site has been flooded for several weeks. Installation and maintenance of telescope operations has been hampered by limited access to the telescope. The top image shows our water-logged instrument.

Floods at the telescope - December 2010.

MOST Telescope Control Computer.

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PHASE
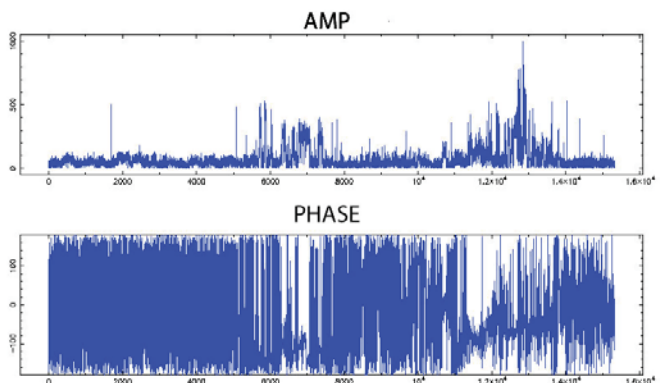
Correlator output combining one antenna with RFI antennas (single channel, 4MHz wide) - December 2010. Horizontal axis - time in seconds.

SKAMP SOFTWARE

In early November, the SKAMP software team and science advisors met to discuss progress on the Telescope Control Computer and the Software Pipeline. SKAMP's scientific goals drive the software development and will be the focus of several people over the coming months.

The team has reviewed how the SKAMP_2 single board control system can be extended to the full 24-board system. A basic control program has been written and some extended testing is now being undertaken. The requirements of a robust system design are being determined and will form the basis of the development plan.

Staff at Molonglo enjoying a well-deserved Festive lunch. Left to right: Darshan Thakkar, Duncan Campbell-Wilson, John Wills & Lindsay Harkness.

PERSONNEL

Ludi de Souza

Ludi has been involved with the SKAMP project for a number of years and has played a key role in the development of the SKAMP digital system, as part of our collaboration with CSIRO. In particular, he developed the firmware for the polyphase filterbank. More recently, the University of Sydney seconded his services from CSIRO to work with Darshan on the correlator firmware.

Ludi recently resigned from his position at CSIRO and, as a result, the SKAMP project has also lost a valuable colleague. We would like to thank Ludi for his significant contributions and wish him well in his future career.

Software

As our focus begins to shift from the SKAMP hardware to the SKAMP software and science, 2011 will see the introduction of new team members to the SKAMP project. They will work closely with Mike Kesteven, Duncan Campbell-Wilson and Darshan Thakkar, as well as our science advisors, Tara Murphy and Bryan Gaensler. We would like to thank Mike Birchall from the AAO for the work he has done to date on the SKAMP TCC and Software Pipeline.

We would like to thank everyone who contributed to the SKAMP project in 2010 and wish you all the best for the holiday season. We look forward to working with you in 2011.

SKAMP FIRMWARE

Following the departure of Ludi de Souza from the SKAMP project a detailed firmware review was undertaken by Duncan and Darshan to identify the critical areas of the PFB and correlator that still required design, coding and testing.

The reviews are now complete and the development team has a clear strategy for future work. Correlator work will focus on developing test-ready VHDL firmware for the long-term accumulator, and much time has been spent gaining a sound understanding of the optimum implementation requirements.

Correlator

The functional testing of the correlation cells along with the cell control system resident in the CMAC is now complete. The LTA-CMAC input path interface has also been successfully implemented and tested along with the output from the cells. This is a significant milestone in the firmware design process, confirming that the ambitious design approach taken by the SKAMP team has led to a highly optimised, fully functional correlation engine.

PFB

The remaining PFB work includes the Phase Rotator and the delay control. These tasks will be undertaken by CSIRO as part our collaborative research agreement.