

Hobart, Mt. Pleasant, Station Report for 2005

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Abstract

This is a brief report on the activities carried out at the Mt. Pleasant Radio Astronomy Observatory at Hobart, Tasmania. During 2005, the Observatory participated in 43 VLBI observing sessions with IVS.

1. Introduction

The Mt. Pleasant Observatory is located about 15 km north-east of Hobart at longitude 147.5 degrees East and latitude 43 degrees South. Hobart is the capital city of Tasmania, the island state of Australia located to the south of the mainland. The station is operated by the School of Mathematics and Physics at the University of Tasmania with financial support from the University and with the aid of an Australian Research Council (ARC) Linkage grant in conjunction with Geoscience Australia. The station has participated in geodetic VLBI programs since 1988 but only joined IVS in 2002 when we were able to secure funding support for geodetic observations for a five year period. The station has a co-located GPS receiver and a site which is used for absolute gravity measurements. The Grote Reber Memorial Conference, "New Techniques and Results in Low Frequency Radio Astronomy", was held at the University of Tasmania, Hobart, from 6-10 December. The meeting attracted 89 participants, almost half from overseas.

2. Brief Description of VLBI Facilities

The antenna is a 26m prime focus instrument with an X-Y mount. The focus cabin has recently been upgraded to include a feed translator with provision for four different receiver packages which enables rapid change over between geodetic and astronomical requirements. Standard receiver packages provide for operation at L band, S, C, X and K bands. There is also the dual frequency S/X geodetic receiver. All of these receivers are cryogenically cooled. The antenna has a maximum slew rate of 40 degrees per minute about each axis. The station is equipped with a Mark IV electronics rack and a Mark 5 VLBI recording system as well as S2 recorder. There is also another disk based recording system as used by other Australian VLBI antennas.

3. Staff

Staff at the observatory consisted of academics, Prof. John Dickey (director), Dr. Simon Ellingsen, Dr. Melanie Johnston-Hollitt and Prof. Peter McCulloch who has had a large input into the receiver design and implementation. Dr. Giuseppe Cimó and Dr. Jamie Stevens are research fellows and have had input into the Linux systems at the observatory. Jamie is also working on the fiber optic link to Mount Pleasant which is due for commissioning in the 3rd quarter of 2006. Mr. Brett Reid is the Observatory Manager whose position is funded by the university. In addition we have an electronics technical officer, Mr. Eric Baynes funded through the ARC grant and a half time mechanical technical officer, Mr. Geoff Tonta. For operation of the observatory



Figure 1. The Mt Pleasant 26m antenna

during geodetic observations we rely heavily on support from astronomy PhD and post-graduate students.

4. Geodetic VLBI Observations

Hobart participated in 43 geodetic VLBI experiments during 2005. These were divided between the R1, OHIG, CRF, CRDS, T2, and APSG programs. All experiments were recorded using Mark 5. The MET3 sensor has been implemented and will give improved accuracy over the station's previous sensor.

5. Future Plans

Funding has been secured under ARC LEIF (Large Equipment and Infrastructure Funding) for a 10 Gb/s fibre optic link between the Mt. Pleasant VLBI site and the university campus. The expected completion date for this project is third quarter 2006.