

COMMISSIONING OF HARP-B - A HETERODYNE ARRAY RECEIVER FOR JCMT

Bell, G.S.<sup>1</sup>, Buckle, J.V.<sup>1</sup>, Dent, W.R.F.<sup>2</sup>, Hills, R.E.<sup>1</sup>, Redman, R.O.<sup>3</sup>, Richer, J.S.<sup>1</sup>, Smith, H.<sup>1</sup>

<sup>1</sup>MRAO, Cavendish Laboratory, Cambridge, England

<sup>2</sup> UK Astronomy Technology Centre, Edinburgh, Scotland

<sup>3</sup>National Research Council of Canada, HIA, Victoria, Canada

A new receiver for the James Clerk Maxwell Telescope, with sixteen SIS mixers forming a four by four array and covering the frequency range 325 to 375GHz, has been constructed and is presently under test. It is due to be installed and commissioned on the JCMT by the end of 2005. The instrument includes a cooled quasi-optical single-sideband filter and a highly efficient arrangement for coupling the local oscillator into the mixers. There is a very complete control and monitoring system which provides full operation and (in principle) fault diagnosis from a remote location. It will be operated with the JCMT's new backend, ACSIS, which provides 1.8GHz of bandwidth on each of the 16 pixels.

The presentation will include an outline of the design, but, given that the main elements of the instrument have been described at earlier conferences, the focus here will be on the recent work on testing and commissioning the receiver. In particular it is intended that there will be discussion of which things worked well and which caused the main problems.

At the time of writing a large amount of laboratory test data has been obtained. This includes detailed measurements of the beam patterns, both in the far field and at its transform (the pupil plane in optical terms), and of the spectral purity and stability, in addition to the conventional parameters like receiver noise temperature. The highlights from these results will be shown, together with a description of the techniques used to obtain them. The experiences at the telescope will also be described, and it is hoped that it will be possible to complete the report with some results from the initial astronomical observations.

Abstract Submission Form

2006 National Radio Science Meeting

Abstract: hills32221

Date Received: September 18, 2005

1. (a) Richard Hills  
Cavendish Lab  
Madingley Rd  
Cambridge, Cambs  
CB3 0HE England  
reh1@cam.ac.uk  
(b) +44-1223-337300  
(c) +44-1223-354599
2. J - Radio Astronomy
3. (a) S-J/B2
4. I - Invited Paper, Program chair:  
Chris Walker Y. Rahmat-Samii
5. (It may be necessary to change the presenting author in order to accommodate the schedule for operations with this instrument.)