

FACILITIES, EQUIPMENT & OTHER RESOURCES

University of Arizona: Steward Observatory

Steward Observatory (SO) has a large technical staff with many years of experience in the design and construction of state-of-the-art telescopes and instrumentation for use from optical (e.g. MMT, Magellan, and Large Binocular Telescope -- LBT) to millimeter/submillimeter wavelengths (e.g. Heinrich Hertz Telescope -- HHT). This expertise will be utilized during the continued operation of the Pre-HEAT telescope and continued preparation for HEAT. An environmental chamber is available at Arid Lands Management to test replacement telescope electronics and drive system components under conditions similar to that expected at Dome A.

In 1992, PI Walker established a laboratory (the Steward Observatory Radio Astronomy Laboratory, SORAL) for the development of state-of-the-art submillimeter-wave receiver systems. The PI-Kulesa, was trained in this group. SORAL possess all the equipment (spectrum analyzers, network analyzer's, vacuum pumps, cryogenic support facilities, etc.) needed for the development of receivers. We also have ^4He , ^3He , and closed-cycle cryostats, a full receiver testbed, local oscillator sources (including a Coherent/DEOS FIR laser), and an antenna test range which allows us to characterize a wide range of receiver systems. A Kern micromilling machine with 5 micron machining accuracy is available in the lab for precision machining work. In addition, the receiver systems built by the PI's group in collaboration with the University of Cologne for AST/RO (a 492/810 GHz receiver and PoleSTAR a 4 pixel 810 GHz receiver) was returned to SORAL after AST/RO was decommissioned in 2005-6. Recently, a HEB THz test receiver has been built for SORAL in a collaborative effort between SRON and the PI's group.

SORAL has licenses for Hewlett Packards High Frequency Structure Simulator (HFSS) and Advanced Design System (ADS) software packages, as well as Agilent HFSS and CST Microwave Studio. These programs are used to accurately model and optimize mixers and other crucial receiver components. In addition, we have licenses for optical design packages such as Zemax and Code V.