

RADIO TELESCOPES IN THE UNDERGRADUATE CLASSROOM

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MIT Haystack Observatory has been involved in bringing radio astronomy to the undergraduate classroom. To this end, we have developed a small radio telescope (SRT) kit that is currently available commercially. The SRT provides a hands-on introduction to the basics of radio telescopes. The SRT kit consists of a 2-m antenna with a digital receiver spanning the 1420 MHz line of hydrogen. There are over a 100 SRT units around the world.

Students wishing to extend their research are provided remote or local access to a 37-m telescope at Haystack Observatory. Projects on the telescope, using the 22 and 44 GHz receiver bands, are designed to take advantage of the capabilities of the telescope. The telescope has been used in projects such as classroom demonstrations, laboratory exercises and independent research projects.

Current developments in the program have focused on a VLBI-mode observing with two or more SRTs. A new digital receiver for the SRT containing a GPS timing system has been designed and tested. Early results have shown that this system is capable of detecting radio flares toward active regions on the sun.

College teachers wishing to use the Haystack resources have the opportunity to attend an NSF Chautauqua short course that is taught annually at the Observatory. This course introduces the faculty to the instrumentation and provides them with materials that they can use in the classroom. These materials along with other supporting materials for the 37-m and the SRT are available on the Haystack Observatory web site at <http://www.haystack.mit.edu>.

The SRT is now also being used in the high school classroom. Several lesson plans incorporating radio astronomy into the high school curriculum have been developed by teachers participating in a Research Experiences for teachers program.

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