

INTERDISCIPLINARY RESEARCH & OUTREACH PROGRAMS
AT SORAL

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Instrument Development Experience at SORAL

The training of students in the development of state-of-the-art instrumentation is essential to the future of science. This is particularly true in mm/submm astronomy where technological advances are happening so rapidly. Ironically, there are only a handful of laboratories in the world where students gain hands-on experience in the design, fabrication, and fielding of radio astronomy instrumentation. Over the past decade the Steward Observatory Radio Astronomy Lab (SORAL) has served as a training ground for a number of students (both graduate and undergraduate) who have participated in the design and construction of submm-wave instrumentation for Antarctica (i.e. AST/RO) and the Heinrich Hertz Telescope (HHT) on Mt. Graham, Arizona. This work, and the astronomy that has come from it, has been a major component of 5 Ph.D. dissertations and numerous undergraduate research projects. Due to the interdisciplinary nature of radio astronomy instrumentation, SORAL attracts students from a variety of majors. Currently we have 6 graduate and 4 undergraduate researchers representing Physics, Astronomy, Optical Sciences, and Electrical Engineering. We are using SORAL as a model for developing a larger interdisciplinary program in astronomical instrumentation. Links between graduate and undergraduate programs in participating departments will be strengthened. Students participating in the astronomical instrumentation program will work toward a major in their home departments while being encouraged to seek minors in sister departments. A mentoring committee composed of faculty from participating departments will be convened for each student to help ensure sustained progress along the student's chosen research path.

Outreach at SORAL: Student Radio Telescope

In support of education and public outreach activities SORAL students have constructed a remotely operable, steerable, 3.5 m Student Radio Telescope (SRT) for observing the HI line in the Milky Way. The SRT has been used as a instructional tool in undergraduate courses (both major and nonmajor). Students from on and off campus will soon be able to monitor and control observations with the SRT. Unlike optical telescopes, the SRT can be used day and night, making it well suited for classroom instruction. Complementary classroom modules are being developed that will aid students in gaining a hands-on, intuitive understanding of underlying physical concepts.

Abstract Submission Form

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