George R. Wallace, Jr., Astrophysical Observatory

Located in Westford, Massachusetts, the George R. Wallace, Jr., Astrophysical Observatory (WAO) is MIT's local teaching and research optical observatory. Ms. Chelsey Logan, who served as the observatory specialist since 2001, left MIT this year. Dr. Stephen Slivan '84 has assumed the observatory specialist position. Other staff, usually undergraduate student observers and graduate students, are coordinated through research programs. Undergraduates working on the various projects are funded by UROP, an NSF Research Experiences for Undergraduates program, and by NASA and NSF research grants to Professor James Elliot '65.

Facilities

The site observing facilities consist of a 24-inch reflecting telescope and a 16-inch reflecting telescope, each in their own domes, and a four-bay shed with roll-off roof that houses three Celestron 14-inch Cassegrain telescopes and a computer-controlled Celestron 11-inch telescope. Several portable telescopes, including an Alvin Clark 5-inch refractor, are available for visual observations. Further infrastructure includes a building with an electronics workshop, data-analysis computer facilities, and an office for the observatory specialist. Upgrades to the 24-inch by Dr. Slivan and Mr. John Tappan included a redesign and replacement of the right ascension drive to remove the backlash and relocation of the control electronics to an environmentally controlled area. Dr. Amanda Gulbis and Heather McEwen '04 began work on a new camera for the observatory, which will be an operational clone of the Raymond and Beverly Sackler Magellan Instant Camera (MagIC). MagIC was built for the Magellan telescopes in 2001 by Professor Elliot's group and the Center for Space Research, in collaboration with Harvard University. The new camera will allow students and others to become familiar with the operation of MagIC for astronomical observations prior to using it at the Las Campanas Observatory in Chile.

Research and Student Work

A new research initiative is a program to observe stellar occultations by Kuiper belt objects in order to measure their diameters, search for nearby companions, and probe for tenuous atmospheres. Pilot observations to search for candidate stars were initiated by Tucker Jones '07 and Sam Cole '07. Amali Vaz '07 and Tucker Jones worked on software needed by the project. Once the candidate stars have been identified, observations of these occultations can be carried out with SOFIA, NASA's new airborne observatory, which will become operational in 2005.

Fourteen students in Professor Elliot's fall laboratory course, 8.287J/12.410J Observational Techniques of Optical Astronomy, used the WAO facilities for a variety of astronomical projects, including the measurement of the colors of galaxies and the orbits of planetary satellites. During IAP, student observations were carried out, and an open observing night was held for the MIT community. Other observing opportunities for students were led by Dr. Slivan, one of which was sponsored by the campus chapter of

Students for the Exploration and Development of Space. Subject 12.409 Observing the Stars and Planets was taught in the spring semester by Professor Elliot and graduate students Susan Kern and Josh Neubert; 43 students used the observatory for laboratory work.

James L. Elliot
Director
Professor of Planetary Astronomy

More information about the George R. Wallace, Jr., Astrophysical Observatory can be found on the web at http://web.mit.edu/wallace/.