Astronomy

Master of Arts
Doctor of Philosophy

For More Information

Campus address: Physics, Math, and Astronomy (PMA) 15.204, phone (512) 471-0481, fax (512) 471-6016; campus mail code: C1400

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URL: https://astronomy.utexas.edu/

Facilities for Graduate Work

Facilities for research in astronomy are located on the campus in Austin and at McDonald Observatory in West Texas. Equipment in Austin includes a 16-inch reflector and several smaller telescopes. In addition to the many workstations, desktop, and laptop computers owned by the Department of Astronomy and McDonald Observatory for use in data reduction and analysis, image processing, and other computer needs, Texas astronomers have privileged access to the Texas Advanced Computing Center, a nationally prominent supercomputer facility with cutting-edge computational systems and a state-of-the-art visualization laboratory. The department operates an electronics shop, engineering and instrumentation laboratories, and a well-stocked research library. The Kuehne Physics Mathematics Astronomy Library is located in the Physics, Math, and Astronomy building.

Facilities for research at McDonald Observatory include the 2.7-m reflector, which has a variety of auxiliary instruments, including optical Cassegrain and coudé spectrometers and an imager as well as a novel high-resolution near-infrared spectrometer. The 2.1-m Struve reflector is used at the Cassegrain focus. Its instrumentation includes a low-resolution optical spectrograph and camera, high-speed photometers, a polarimeter, and a high resolution optical spectrometer.

The 10-m class Hobby-Eberly Telescope (HET), co-located with the above facilities in west Texas, is equipped for and dedicated to spectroscopic work. A low-resolution spectrograph, a medium-resolution spectrograph, and a high-resolution spectrograph are available. The HETDEX (HET Dark Energy Experiment), a survey employing blank-field spectroscopy to discover high-redshift Lyman alpha emitters and probe the nature of cosmological dark energy, is currently in progress. The data collected in this survey will also be used to study galaxy evolution. The location in west Texas also hosts the only 1-m telescope node of the Las Cumbres Observatory (LCO) in the continental U.S.

Areas of Study

Graduate instruction and research are conducted in observational astronomy, and theoretical astrophysics including analytical and computational methods. Observational opportunities are available in conventional photometry, polarimetry, and fast photometry of stellar oscillations; spectroscopy and spectrophotometry of planets, stars, nebulae, galaxies, and quasars; galactic and extragalactic research; optical and infrared instrument development; planetary and cometary studies; extrasolar planets; and infrared, millimeter, submillimeter, and radio astronomy. There are also instruction and research opportunities in theoretical astrophysics, including the origin of the elements, cosmology, stellar structure and evolution, star and planet formation, and high-energy astrophysics. There are opportunities for cooperative interdepartmental research with groups in the Department of Physics and the Department of Aerospace Engineering and Engineering Mechanics.

Graduate Studies Committee

The following faculty members served on the Graduate Studies Committee (GSC) in the spring 2024 semester.

Taft E Armandroff	Keith Hawkins
Danielle Amanda Berg	Gary J Hill
Brendan Peter Bowler	Daniel T Jaffe
Michael Boylan-Kolchin	Shardha Jogee
Volker Bromm	Adam Levi Kraus
Caitlin M Casey	Pawan Kumar
John Chisholm	Caroline V Morley
Harriet L Dinerstein	Julian B Munoz
Keely Delain Finkelstein	Stella S Offner
Steven Lyle Finkelstein	Paul R Shapiro
Karl Gebhardt	Don Winget

Admission Requirements

Prerequisites for graduate work in astronomy are at least 15 to 18 semester hours of upper-division coursework in astronomy and physics, including courses in mechanics, electricity and magnetism, statistical physics, and quantum mechanics. The General GRE and GRE Physics tests are not considered in selecting applicants to the PhD program. A detailed evaluation is made of each new student's physics and astronomy background to identify any deficiencies that should be addressed in order to ensure success in the program.