



ASTRONOMY

Pushing back the boundaries

The opening of the Detroit Observatory in 1856 marked the beginning of research at the University of Michigan, with astronomers studying our solar system and the stars around us. Today, we are unmasking heavenly phenomena never imagined by those pioneers—black holes, stellar birth, the nature of the Milky Way, and gravitational lensing by massive galaxy clusters. Although Michigan’s research observatory was one of the first established in the Midwest, the Department of Astronomy is young and vibrant because we’ve spent the last decade hiring exceptional faculty and investing in world-class telescopes, surveys, and computing resources. Faculty and students have made a variety of important discoveries that received international attention—such findings include the birth of stars, planet-forming disks, and life-supporting chemistry; measurements of dark matter from small dwarf galaxies to massive galaxy clusters; finding and peering into black holes, which unleash plasma jets that profoundly modify their environments.

The Department of Astronomy operates three research telescopes at two different sites. We also use the most advanced ground-based and space observatories, including the Hubble Space Telescope and the James Webb Space Telescope. As a result, faculty and students have excellent access to some of the best facilities in the world. Students gain a hands-on understanding of methods and techniques for studying the universe. The training that undergraduate astronomy majors receive in computer programming, statistics, and analytical thinking prepares them to apply their skills readily to fields like computer science, industrial research, and image processing. Graduates also frequently build careers in areas such as teaching, public outreach, science writing, and the aerospace industry. In fact, according to a recent study, astronomy and astrophysics majors have a near-zero percent unemployment rate.

In Michigan's third century, our mission is to continue pushing back the boundaries of this amazing field. In the future, we expect to study planets around other stars, searching for Earth-like planets that support life and to look far into the depths of space to witness the formation of the first stars and galaxies when the universe was young. These and many other discoveries await, and we ask you to join us to ensure the continued leadership that the University of Michigan began more than 150 years ago. To meet these ambitious goals, we will draw upon the broad intellectual strengths of U-M through a novel think-tank center. Discoveries will be shared with the entire Michigan community, enlivening classes and stimulating public activities.

THE "DOC" LOSH UNDERGRADUATE STUDENT SUPPORT FUND

Professor Hazel "Doc" Losh was a legendary teacher who inspired generations of undergraduates. Following her legacy, we strive to bring our undergraduates special opportunities of lasting value. For example, Astro 461 is an undergraduate course that takes students to the Kitt Peak National Observatory in Arizona. The students spend a month at the observatory getting hands-on experience with our 2.4-meter and 1.3-meter telescopes. They work closely with Michigan faculty and Kitt Peak staff to learn how to operate the equipment and perform research. It is an invaluable experience. We would like to remove barriers to participation in this experience for our undergraduate students, which can be done with an endowed gift of \$1M or \$50,000 annually.



"Spending a month at Kitt Peak National Observatory for Astro 461 was an invaluable experience for an undergraduate student that solidified my choice to pursue a career in astronomy and astrophysics. The experience very efficiently taught me real observational research procedures while being immersed in the astronomical community and its surroundings.

As part of the coursework, students had the freedom to devise any research project and use the two MDM telescopes to complete it. The opportunity to fully and independently develop a research project and be granted the resources to complete it is very rare and just as exciting.

In addition, the course focused on understanding the larger contexts in which astronomy lives. In particular, we learned about and spoke with members of the indigenous Tohono O'odham nation on whose land the observatory lies. I believe that this experience of learning about the history and how to improve relationships between astronomers and indigenous communities was necessary and key to a group of upcoming scientists."

—Michelle Jecmen, LSA '24

INSTRUMENTATION AND EQUIPMENT FUND

Our excellent ground-based telescope facilities are making leading discoveries in several branches of astronomy, from dark matter in galaxies to the formation of new stars. These discoveries point the way toward some of the greatest questions of our time, including the nature of planets around other stars, how galaxies like the Milky Way came into being, or the mystery of dark energy. Answering these challenges requires even more powerful and sophisticated instruments. Cutting-edge research demands that innovative instruments be designed and built to meet the new and ever-changing needs of scientists. Such instruments require prototype designs and testing before application to national agencies for full funding. Currently, we are exploring investments that will allow us access to the European Extremely Large Telescope (ELT). The European ELT will be the largest optical/near-infrared telescope in the world, capable of gathering 13 times more light than today's largest telescopes. The European ELT will greatly advance our astrophysical knowledge and provide a window through which we can study other planets, examine the first galaxies in the universe, and better understand super-massive black holes and the nature of the Universe's dark sector. At present, the University of Michigan is the only U.S. partner in this premier faculty, which will be world-leading. That places our faculty and students on the front line for discovery. This will be the biggest opportunity for astronomers in decades, and U-M will play a role. This instrumentation and equipment fund supported by endowed gifts of \$2M - \$5M or \$100,000 annually will greatly improve our ability to obtain federal funding for the forefront instrumentation and equipment that we need to remain leaders in astronomy and astrophysics.

WAYS TO FUND YOUR GIFT

Your gifts of cash, pledges, or appreciated securities change lives. Wills, estate, and planned gifts allow you to create a lasting legacy that will enable the best and brightest minds to experience a liberal arts education, solve problems in a changing world, and yield ideas and innovations that will make a difference in Michigan and around the globe.

CONTACT INFO

LSA Advancement // College of Literature, Science, and the Arts
309 Maynard Street, Suite 200 // Ann Arbor, MI 48104

P. 734.615.6333 // F. 734.647.3061 // lsa.umich.edu/astro