

University of Illinois Observatory

Open House

Thank you for visiting the Astronomical Observatory at the University of Illinois. Since the 1930's the Astronomy department has welcomed visitors to come and look through the 12-inch telescope. We hope you enjoy your view and invite you to come again. Open houses are scheduled for the first Friday evening of each month that school is in session.

The Observatory was built in 1896 at a cost of just under \$15,000. Research began the following year when director George W. Myers observed the variable star Beta Lyrae, which coincidentally happens to be the most studied star in the night time -sky. Through the 12-inch telescope Myers observed how the star changes in brightness and mathematically ascertained that Beta Lyrae actually consists of two stars, each revolving around a common center of gravity.

A decade later the new director, Dr. Joel Stebbins, undertook a photometric project in which he primarily searched for eclipsing binary systems. Stebbins attached a selenium photometer to the telescope and measured the magnitude (brightness) of various stars at regular time intervals, checking each one for variability. His discoveries include the stars Spica, Cor Caroli, and Mintaka. Assisted by Jacob I. unz, "the father of the photoelectric cell", Stebbins constructed photometers of ever-increasing sensitivity before leaving the U of I in 1922. Because of their diligent efforts, the U of I is recognized as the institution that pioneered astronomical photoelectric photometry.

After years of neglect, the telescope was refurbished in 1953 under Professor McVittie. It was last used for professional research in 1967 when Dr. Olson observed the variable star RZ Cassiopeiae. Today the telescope is used for astronomy class observing sessions and by the Astronomical Society.

The telescope is called a refractor because its 12-inch lens gathers starlight and refracts, or bends it into a point at the end of the tube, where the image is magnified and focused. The 12-inch, two-element lens, which was ground by John A. Brashear, gathers 1843 times as much light as the human eye. The refractor's 13.5 foot rolled steel tube rests on an equatorial mount. This particular design allows the tracking of a star along a single axis (right ascension). To accomplish this, an electric motor drive in the pier slews the scope at the rate of one degree every four minutes. Originally the clock drive was gravity-driven, analogous to an old-fashioned cuckoo clock. The equatorial mount is supported by a massive pier that extends some 50 feet into the bedrock below.

The refractor can reveal three of Saturn's rings, six of its moons, and an occasional belt or two on its surface when seeing permits. The telescope is capable of observing 13th, 14th, and some 15th magnitude galaxies in the distant Abell cluster, as well as the planet Pluto. Recently, however, the light pollution from Champaign/Urbana has increased so significantly that these faint objects are lost in the sky glow. The telescope's resolving power of 0.4 arc seconds allows the keen-eyed observer to discern details about half a mile across on the surface of the moon. With a focal ratio of f/15, the refractor easily resolves individual stars in the globular clusters and small planetary nebulae using high magnification. When equipped with a Hydrogen- α filter, the telescope will show numerous features on the solar disk, including granulation, prominences, and sunspots. The telescope's magnification varies with each individual eyepiece, but the practical range is 83x to 508x.