

THE LOWELL DISCOVERY TELESCOPE

by the numbers

Photo: Joe Llama

Aluminum is traditionally used to commemorate 10-year anniversaries, a fitting designation as the Lowell Discovery Telescope (LDT) turns 10. April 3, 2012 was the date of "first light" for the LDT, when scientists and engineers first used the fully assembled telescope to image the sky. And why is aluminum appropriate? Because it composes the critical coating on the massive primary mirror used for collecting photons of light.

In its 10 groundbreaking years, the LDT has enabled countless discoveries by researchers from all over the world, studying everything from nearby asteroids to far-distant galaxies.

To celebrate its aluminum anniversary, here is the LDT by the numbers, one for each year of operation.

109

The Messier Catalogue number of the object selected for the LDT's first light image. M109 is a barred spiral galaxy in the Ursa Major galaxy cluster. The image stack was taken in 2012 with the NASA42 camera, which was borrowed from Lowell Observatory's 42inch Hall telescope.

73

The height of the LDT's dome, in feet, which measures 62 feet in diameter. The dome is visible from 30+ miles away.

4.3

The measure, in meters, of the LDT's primary mirror. The LDT is the 5th largest optical telescope in the continental United States.

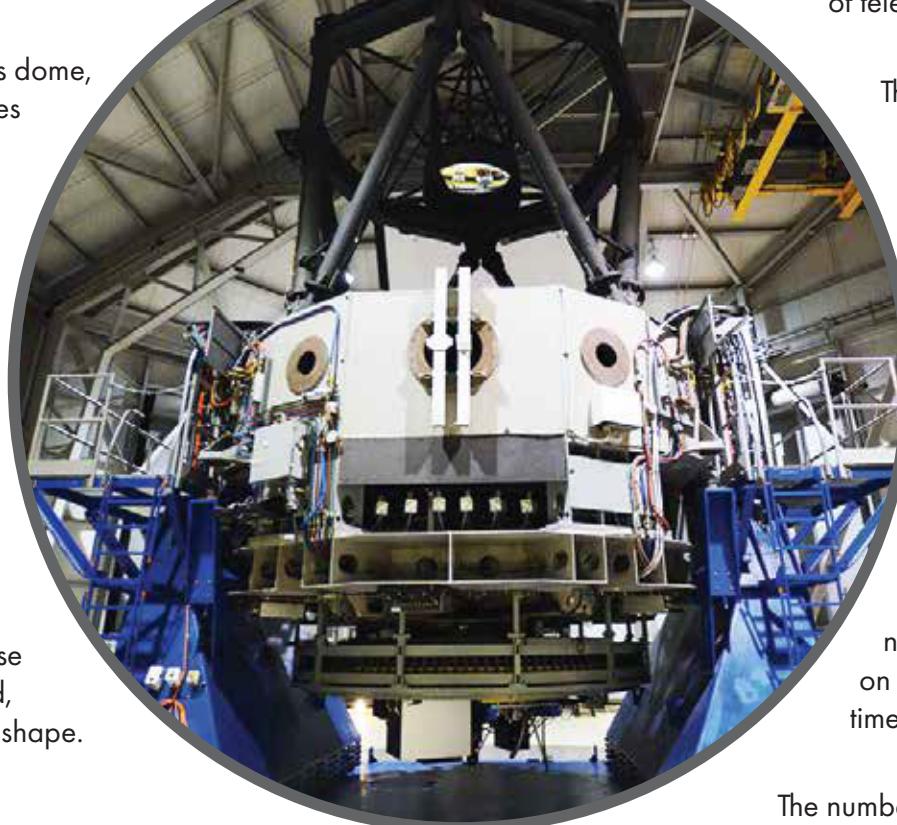
120

The number of devices, called actuators, spread around the bottom of the primary mirror. These are attached to sensors and hold, support, and control the mirror's shape.

6,700

The weight, in pounds, of the primary mirror. Why doesn't this extremely thin mirror bend under its own weight? See 120 above.

The telescope's secondary mirror measures 1.4 meters in diameter and weighs 500 pounds.



5

The number of instruments that the LDT's instrument cube can hold at one time, allowing for use of all the instruments, making the LDT one of the most versatile telescopes in the world.

As former Lowell Observatory Director Dr. Bob Millis said, the LDT is the "Swiss Army Knife" of telescopes.

7,740

The elevation, in feet, of the terrain on which the LDT facility sits.

170

The number of published professional research papers using LDT data. The number has now surpassed this, and the papers have been authored by scientists from around the world.

100

The average thickness, in nanometers, of the aluminum coating on the primary mirror. This is 1,000 times thinner than typical copy paper!

36

The number of megapixels in the massive CCD of the Large Monolithic imager, which is the LDT's workhorse camera. This is the largest CCD that can be made with current manufacturing techniques. CCD stands for charged-coupled device; such mechanisms are used for high-quality image sensing in digital cameras and video recorders.

RECENT DISCOVERIES USING THE LDT

YOUNGEST PAIR OF ASTEROIDS IN SOLAR SYSTEM DETECTED

An international team of astronomers, including Lowell Observatory's Nick Moskovitz, has discovered a pair of asteroids that split off from their parent body a mere 300 years ago.

The duo is exceptional because it is the youngest known "asteroid pair" by at least a factor of ten, it passes close to Earth's orbit, and it has properties that are hard to explain given its young age.



UC Berkeley/SETI Institute

LOWELL DISCOVERY TELESCOPE OBSERVATIONS HELP CONFIRM SECOND EARTH TROJAN ASTEROID

Supported by observations made with the 4.3-meter Lowell Discovery Telescope (LDT) in northern Arizona, an international team of scientists

confirmed the existence of the second-known Earth Trojan Asteroid (ETA), 2020 XL5. The findings culminate a ten-year search for such an object and was led by Toni Santana-Ros of the University of Alicante and the Institute of Cosmos Sciences of the University of Barcelona.



CTIO/NOIRLab/NSF/AURA/J. da Silva/Spaceengine



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OBSERVATORY**

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