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PRESS RELEASE

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Large Binocular Telescope brings the Universe into Sharper Focus

World's Most Powerful Optical Telescope Uses New Technology to Make Groundbreaking Discoveries

Tucson, Ariz. – Today astronomers from the Large Binocular Telescope (LBT) released the first series of scientific results showing its best-in-the-world performance in canceling the blur of the Earth's atmosphere. Included in these first findings are previously impossible discoveries about extrasolar planets and their environments and new insights into how stars are formed.

The LBT is the first in the new generation of extraordinary large ground-based telescopes that uses advanced adaptive secondary mirrors to see more clearly than ever before. The LBT utilizes two giant 8.4 meter mirrors (27.5 feet) and is located on Mt. Graham in southeastern Arizona.

"With this unrivaled new technology, we can now probe the close-in environments of nearby stars with a clarity that was previously not possible," said Richard Green, Director of the LBT. *"We expect these to be the first of many amazing new discoveries as we are now able to observe in unique detail the formation of stars and their systems of planets."*

- Exoplanets observed close to their host star: LBT has measured in unprecedented detail the fourth, innermost planet in the HR8799 planetary system, located more than 128 light-years from Earth. These LBT observations

significantly revise previous understanding of the atmospheres of the four planets.

- A better look at star formation: LBT observations of the Trapezium region in Orion were able to determine the positions of young stars in their orbits around each other with seven times greater accuracy than any previous study. These results confirm a long-suspected theory about the nature of star formation.

- A new view of an intriguing debris disk: The LBT was able for the first time to probe more deeply into the interior of the debris disk surrounding the star HD 15115, revealing a symmetrical structure quite different from previous observations by other telescopes, including the Hubble Space Telescope.

More on the LBT: The LBT is an international collaboration among institutions in the United States, Italy and Germany. Partners include:

- The University of Arizona on behalf of the Arizona university system
- Istituto Nazionale di Astrofisica, Italy
- LBT Beteiligungsgesellschaft, Germany, representing the Max Planck Society, the Astrophysical Institute Potsdam, and Heidelberg University
- The Ohio State University
- The Research Corporation, on behalf of The University of Notre Dame, University of Minnesota and University of Virginia

EDITOR'S NOTE: For images and additional information on the discoveries, please visit www.lbto.org.

IMAGES

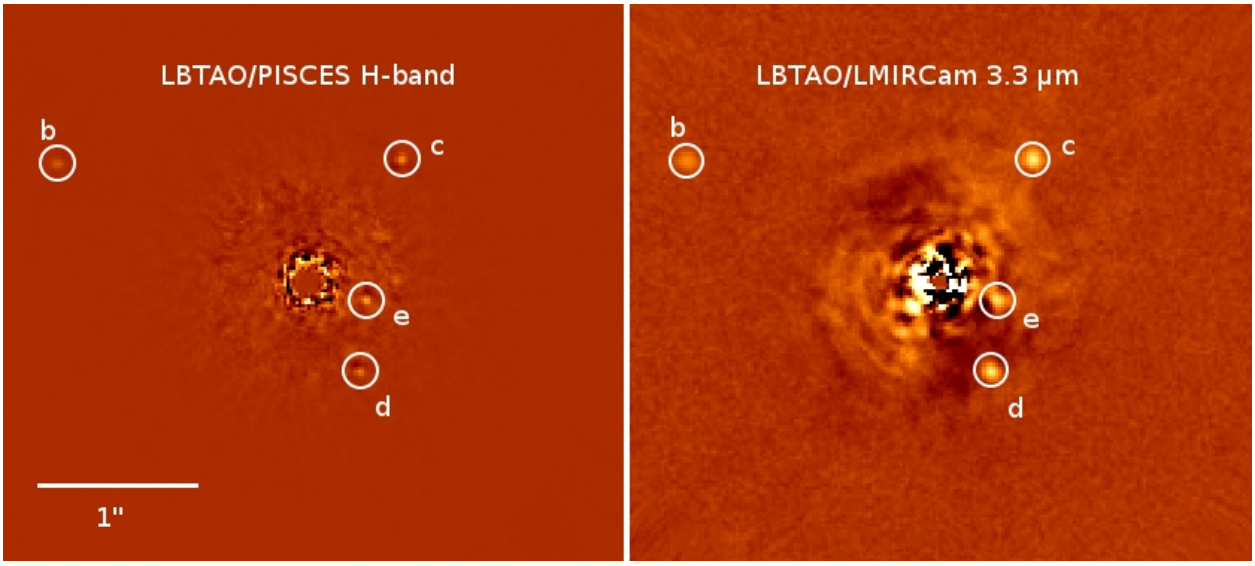

Image 1: A look at the HR8799 planetary system from two different infrared wavelengths; on the left is the system seen in the *H* band (1.65 microns) and on the right is the system in a narrow band centered on 3.3 microns which is sensitive to absorption by methane. All four planets are visible. This is the first time the innermost planet, HR8799e, has been imaged at either wavelength.

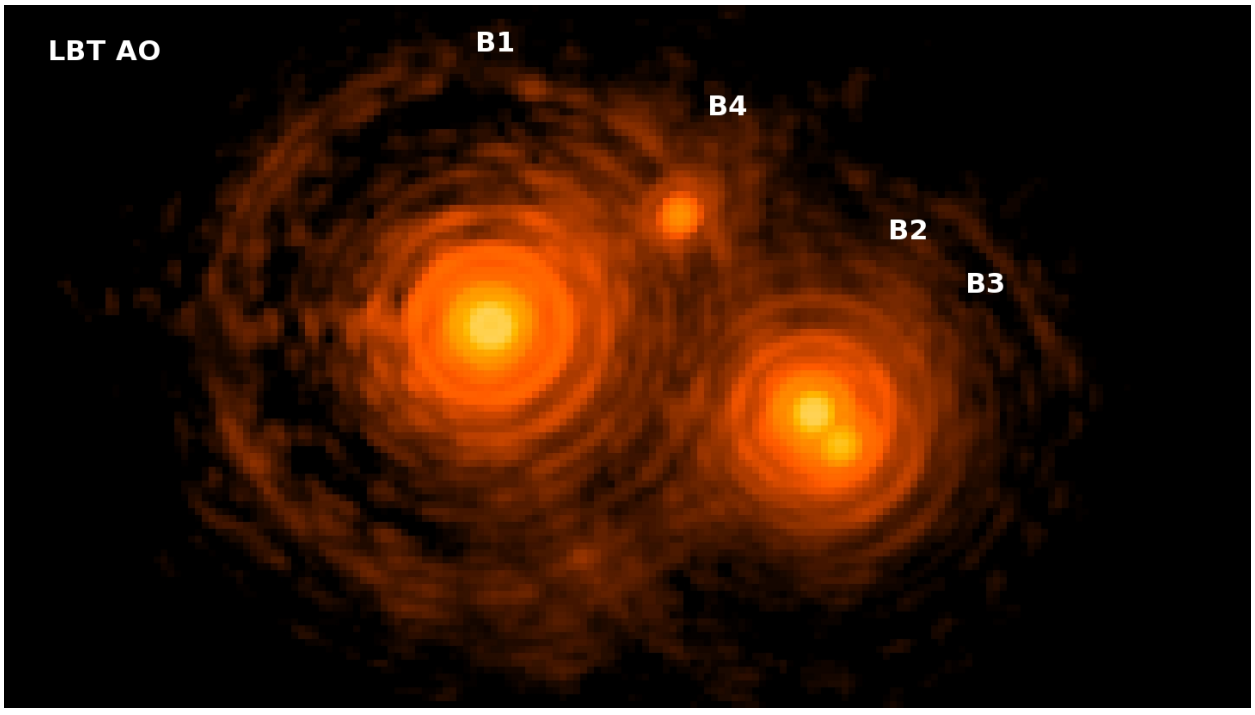

Image 2: A view of four young stars in the Orion Trapezium cluster 1,350 light-years away, as seen through the LBT's Adaptive Optics (AO). This is the best image ever taken of these stars, which are all tightly located within 1 arcsecond of each other. By comparing this 2.16 micron infrared image to past images of this group over the last 15 years, astronomers can now see the motion of each star with respect to the others. The movements show that the mini-cluster of young stars were born together, but will likely fall apart as the stars age and interact with each other.

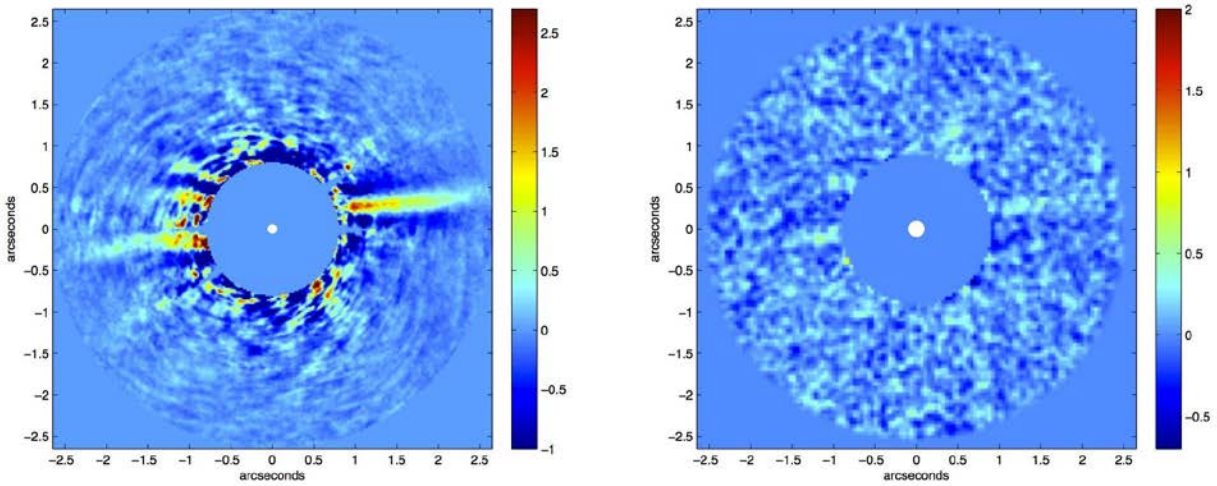

Image 3: The HD 15115 debris disk is displayed at two different infrared wavelengths. On the left is the debris disk in the *Ks* color band (2.16 microns), with an asymmetrical disk similar to previous observations, while on the right is an *L'* band (3.8 microns) view of the symmetrical disk of large dust grains first detected by LBT. In both versions, the white dot marks the location of the star. The central region of each image has been masked out in post-processing.