



6 IPHONE PLANETARIUM APPS TRIED & TESTED



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Sky at Night

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BULLETIN

JWST focused on the job ahead

The space telescope is nearly ready to begin scanning the infrared Universe

After weeks of alignment, NASA finished focusing the primary mirror of the James Webb Space Telescope (JWST) on 11 March, achieving a precision that exceeds the original goal.

The milestone marks the end of a procedure known as 'fine phasing'. JWST's main mirror is made up of 18 hexagonal segments; to focus these the team pointed the telescope at a lonely star chosen to be easily identified, with few nearby companions. They then adjusted each panel so that when combined, the 18 separate images were aligned into a single point of light, focused to within an accuracy of 50 nanometres – a fraction of the wavelengths of infrared light it will observe in.

Next, the team imaged the star with the Near Infrared Camera. Even though this was only meant to pick up the focused star, the telescope captured a scattering of background galaxies as well.

"We have aligned and focused the telescope on a star, and the performance is beating specifications," says Ritva Keski-Kuha, Deputy Optical Telescope Element Manager for JWST.

The JWST team will now continue aligning the remaining optical elements of the telescope, aiming to conclude preparations in early May, before moving on to align the telescope's major science instruments.

"More than 20 years ago, the JWST team set out to build the most powerful telescope that anyone has ever put in space and they came up with an optical design to meet the science goals," says Thomas Zurbuchen, Associate Administrator for NASA's Science Mission Directorate. "Today we can say that design is going to deliver."

www.nasa.gov

The Webb Telescope's 18 primary mirror segments (inset) are now adjusted to capture unified, focused images. Its test image of the bright star here also picked up background galaxies



Comment

by Chris Lintott



The first in-focus image from one of JWST's cameras (above) is tantalising, tempting astronomers with the promise of future riches. Compared to the previous infrared image of the region, from the Spitzer and WISE telescopes, Webb's image shows sharply focused galaxies that reveal

structure in even these distant background sources. With the exceptional resolution of JWST, we can piece together the life stories of these obscure galaxies.

Although we only have access to this single image, we know the camera will have imaged the field through many filters. Looking at a galaxy's brightness in each of

these would allow us to make a good guess at its distance, and hence how far back in the Universe's history we are seeing.

That's not the point of these images, as more will be coming soon, but it's a tempting idea!

Chris Lintott co-presents
The Sky at Night