

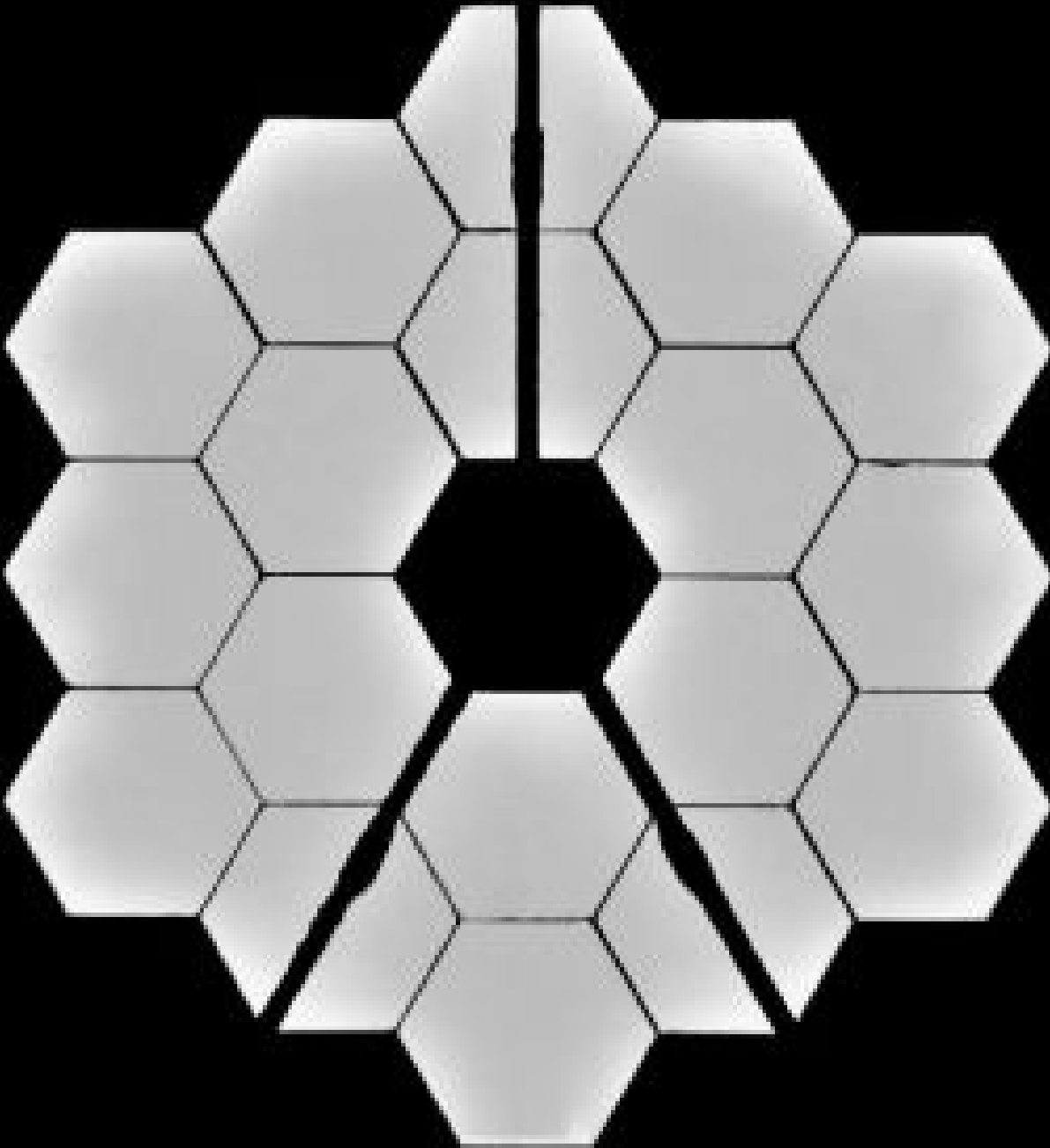
New James Webb Space Telescope photo showcases single star in key mission milestone

By [Meghan Bartels](#) published March 16, 2022

The observatory's view of the universe is coming together.



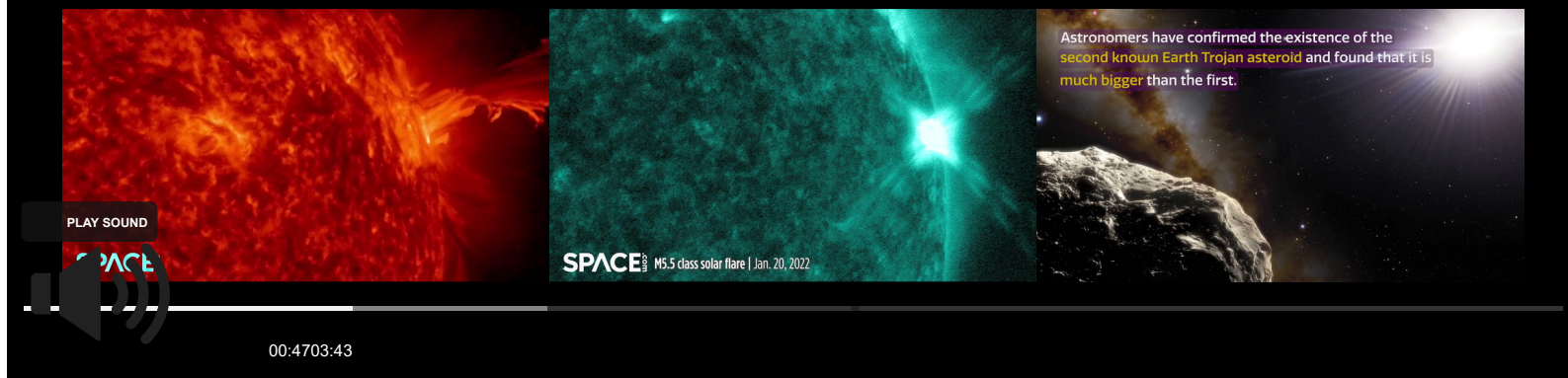
NIRCAM ALIGNMENT SELFIE



NASA [statement](#). "We now know we have built the right telescope."

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The new image centers on a [star](#) called 2MASS J17554042+6551277, according to the statement. That represents a new target for the observatory: Previous steps of the commissioning process centered on [HD 84406](#), a star in the constellation Ursa Major that is located about 241 light-years from Earth.

Also visible in the background are other stars and galaxies that the agency did not identify.

JWST's observing power comes in part from the telescope's massive mirror, which stretches 21 feet across (6.5 meters). But a mirror of that size can't be launched as-is, so the observatory's designers split the golden surface into 18 individually adjustable hexagonal segments.

For weeks, engineers on the mission have been fine-tuning the alignment of those segments to bring the universe into focus for the massive observatory. That process isn't yet complete, NASA emphasized, but the hardest, most anxiety-inducing steps are now behind the team.

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

The agency also released a "selfie" image using a lens tailored to photograph the primary mirror to assist engineers during alignment.

A "selfie" taken by the James Webb Space Telescope's NIRCarn instrument during the alignment process. (Image credit: NASA/STScI)

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Once mirror alignment is complete — perhaps by early May, NASA said — the team's other major preparatory step is to calibrate the instruments aboard the observatory. That work is expected to be complete by this summer, when JWST will be able to begin its science observations.

The observatory's science agenda includes tackling topics like understanding the earliest days of the universe, assessing the habitability of exoplanets and identifying the impact that mysterious dark matter has on the cosmos.

Email Meghan Bartels at mbartels@space.com or follow her on Twitter [@meghanbartels](https://twitter.com/meghanbartels). Follow us on Twitter [@Spacedotcom](https://twitter.com/Spacedotcom) and on [Facebook](https://www.facebook.com/spacedotcom).

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Meghan Bartels

Senior Writer



Meghan is a senior writer at Space.com and has more than five years' experience as a science journalist based in New York City. She joined Space.com in July 2018, with previous writing published in outlets including Newsweek and Audubon. Meghan earned an MA in science journalism from New York University and a BA in classics from Georgetown University, and in her free time she enjoys reading and visiting museums. Follow her on Twitter at [@meghanbartels](https://twitter.com/meghanbartels).

