

NASA's Webb catches Tarantula Nebula

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Officially known as 30 Doradus, the region of space is characterized by its dusty filaments that resemble the legs of a hairy spider, and has long been a favorite for astronomers interested in star formation.

A stellar nursery nicknamed the Tarantula Nebula has been captured in crisp detail by NASA's Webb telescope, revealing hitherto unseen features that deepen scientific understanding, the agency said Tuesday.

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Thousands of young stars, distant background galaxies, and the detailed structure of the nebula's gas and dust structures were viewable for the first time thanks to Webb's high resolution infrared instruments.

Webb operates primarily in the [infrared spectrum](#), because light from objects in the distant cosmos has been stretched into this wavelength over the course of the universe's expansion.

The telescope's primary imager, Near-Infrared Camera (NIRCam), found the cavity in the center of the nebula was hollowed out by radiation carried on stellar winds emanating from a cluster of massive young stars, which appear as pale blue dots.

Webb's Near-Infrared Spectrograph (NIRSpec), which analyzes light patterns to determine the composition of objects, caught one young star in the act of shedding a cloud of dust from around itself.



The region was also imaged using the Mid-infrared Instrument (MIRI), which uses longer wavelengths of infrared to pierce through dust grains that absorb or scatter shorter wavelengths.

The same star was previously thought to be at a later stage of formation, already well on the way to clearing its dusty bubble.

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This faded the hot stars and clarified the cooler regions, revealing never-

before-seen points of light within the [stellar nursery](#), which indicate protostars that are still gaining mass.

Astronomic interest in the Tarantula Nebula stems from its similar chemical composition to gigantic star-forming regions observed a few billion years after the Big Bang, a period called the "cosmic noon" when [star formation](#) peaked.

At just 161,000 light-years away, Tarantula is a readily viewable example of this flourishing period of cosmic creation.

Webb should also provide scientists the opportunity to gaze at distant galaxies from the actual era of cosmic noon, and compare it to observations of Tarantula, to understand similarities and differences.

Operational since July, Webb is the most powerful space telescope ever built, with astronomers confident it will herald a new era of discovery.

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