

Webb captures spiral galaxy LEDA 2046648 among thousands of others

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Many stars and galaxies lie on a dark background, in a variety of colors but mostly shades of orange. Some galaxies are large enough to make out spiral arms. Along the bottom of the frame is a large, detailed spiral galaxy seen at an oblique angle, with another galaxy about one-quarter the size just beneath it. Both have a brightly glowing core, and areas of star formation which light up their spiral arms. Credit: ESA/Webb, NASA & CSA, A. Martel

A crowded field of galaxies throngs this image from the NASA/ESA/CSA James Webb Space Telescope, along with bright stars crowned with Webb's signature six-pointed diffraction spikes.

The large spiral galaxy at the base of this image is accompanied by a profusion of smaller, more distant galaxies which range from fully-fledged spirals to mere bright smudges. Named LEDA 2046648, it is situated a little over a billion light-years from Earth, in the constellation Hercules.

One of Webb's principle science goals is to observe distant—and hence ancient—galaxies to understand the details of their formation, evolution, and composition. Webb's keen infrared vision helps the telescope peer back in time, as the light from older, more distant galaxies is redshifted towards [infrared wavelengths](#).

Comparing these galactic fossils to modern galaxies will help [astronomers](#) understand how galaxies grew to form the structures we see in the universe today. Webb will also probe the [chemical composition](#) of thousands of galaxies to shed light on how [heavy elements](#) were formed and built up as galaxies evolved.

To take full advantage of Webb's potential for galaxy archeology, astronomers and engineers must first calibrate the telescope's instruments and systems. Each of Webb's instruments contains a labyrinthine array of mirrors and other optical elements that redirect and focus starlight gathered by Webb's main mirror.

This particular observation was part of the commissioning campaign for Webb's Near-InfraRed Imager and Slitless Spectrograph (NIRISS). As well as performing science in its own right, NIRISS supports parallel observations with Webb's Near-InfraRed Camera (NIRCam). NIRCam captured this galaxy-studded image while NIRISS was observing the

white dwarf WD1657+343, a well-studied star. This allows astronomers to interpret and compare data from the two different instruments, and to characterize the performance of NIRISS.

Provided by European Space Agency

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