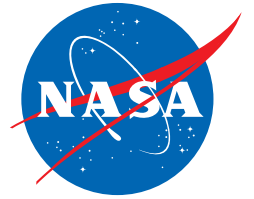


# Spiral Galaxies

## NGC 4302 and NGC 4298

National Aeronautics and  
Space Administration



# Different Angles on Two Galaxies

The Hubble Space Telescope image on the front of this lithograph shows two galaxies that appear significantly different from each other. But sometimes looks can be deceiving. Both galaxies are actually spiral galaxies that appear different because they are tilted at contrasting angles as viewed from Earth.

The edge-on galaxy on the left is called NGC 4302, and the slanted galaxy on the right is NGC 4298. Despite appearances, these galaxies are similar in terms of structure, contents, and distance from Earth.

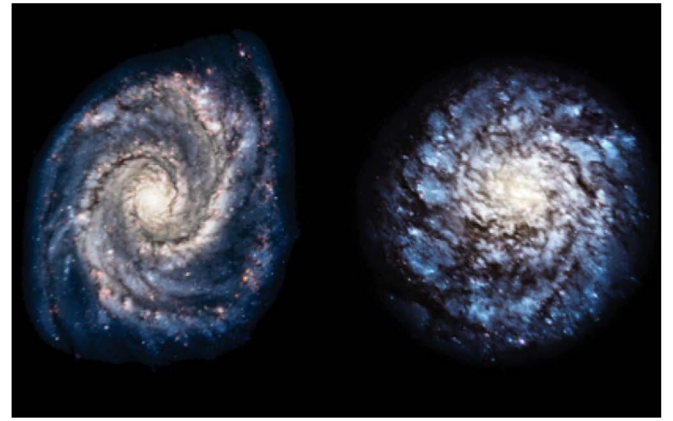
A telltale, pinwheel-like structure is visible in NGC 4298. The spiral arms are made up of gas, dust, and young stars that wind outward from the galaxy's center. Star formation along the arms has produced the many bright blue star clusters seen throughout the galaxy's outer disk. At the galaxy's core is a bright central bulge of older stars.

In contrast, the edge-on portrait of NGC 4302 hides the view of any pinwheel-shaped structure within its disk. Instead, it highlights the thin extent of the disk. Dust absorbs and scatters light, which makes the galaxy appear darker and yellower than its companion. A large blue patch at the bottom of the galaxy appears to be a giant region of recent star formation.

Unfortunately, astronomers cannot choose how they view a galaxy. Our home galaxy, the Milky Way, is also a spiral, but it appears as a band of light encircling the sky because we are located inside it. By studying numerous spiral galaxies at many orientations, astronomers gain insight into their shape, structure, and composition. Observing distant galaxies, therefore, helps us to better understand what our home galaxy would look like if viewed from far away.

Both NGC 4302 and NGC 4298 are approximately 55 million light-years away. They reside in the constellation Coma Berenices in the massive Virgo Cluster of galaxies.

*Image Credit: NASA, ESA, and M. Mutchler (STScI)*



## Perspectives on spiral galaxies

This image shows computer visualizations of NGC 4302 (left) and NGC 4298 (right). The computer models of both galaxies have been rotated to show a more face-on view. This perspective exposes the spiral galaxies' structures, including the central bulge of stars, spiral arms, dust clouds, and bright young star clusters. Spiral galaxies show great variation in the number of spiral arms, the amount of current star formation, and the relative size of the central bulge versus the disk.

*Credit: NASA, ESA, and F. Summers, J. DePasquale, Z. Levay, and G. Bacon (STScI)*

## VOCABULARY

**Galaxy:** A collection of stars, gas, and dust bound together by gravity. Galaxies are classified or grouped by their shape. Those showing a pinwheel structure are called spiral galaxies.

**Central Bulge:** The roughly spherical structure at the center of a spiral galaxy that is primarily made up of old stars, with some gas and dust.

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