National Aeronautics and Space Administration

Galaxy UGC 2885 (Rubin's Galaxy)

Massive Spiral Galaxy Dwarfs Our Milky Way

The majestic galaxy UGC 2885, shown on the front, is one of the largest known spiral galaxies ever seen in the universe. Spanning 250,000 light-years, it is more than twice the diameter of our Milky Way and contains 10 times as many stars.

To astronomers, it's puzzling how a spiral galaxy could grow that big without any evidence that it has bulked up by "eating" other galaxies. Astronomers think that galaxies build themselves up over time through collisions with other nearby galaxies in sort of an intergalactic corporate merger.

UGC 2885, however, shows no signs of a major collision with another galaxy. Its spiral arms appear smoothly wrapped around its bright core. The supermassive black hole residing inside the center is dormant, because it is starved of fuel in the form of infalling material from snatched-up galaxies.

Using Hubble's exceptionally sharp vision, researchers are trying to solve the mystery of UGC 2885's size by counting the number of globular star clusters in the galaxy's outer regions. Globular clusters are among a galaxy's first stellar inhabitants. An excess of clusters would yield forensic evidence that they were captured from smaller galaxies over many billions of years.

Astronomers suggest that the mammoth galaxy may now be sipping on hydrogen gas from space. The modest amount of gas fuels ongoing starbirth at half the rate found in our Milky Way, which churns out a star a year.

Several foreground stars can be seen in the image, identified by their cross-shaped appearance (a telescope imaging artifact). The brightest one photobombs Hubble's snapshot by appearing in front of the galaxy's disk. The star is in the Milky Way; Rubin's galaxy is roughly one million times farther away.

UGC 2885 is nicknamed "Rubin's galaxy" after astronomer Vera Rubin. Her observations of UGC 2885 and other similar galaxies provided the first evidence for dark matter, the invisible gravitational glue that holds a galaxy's stars, gas, and dust together.

The giant galaxy is located roughly 232 million light-years away in the northern constellation Perseus.

Image credit: NASA, ESA, and B. Holwerda (University of Louisville)

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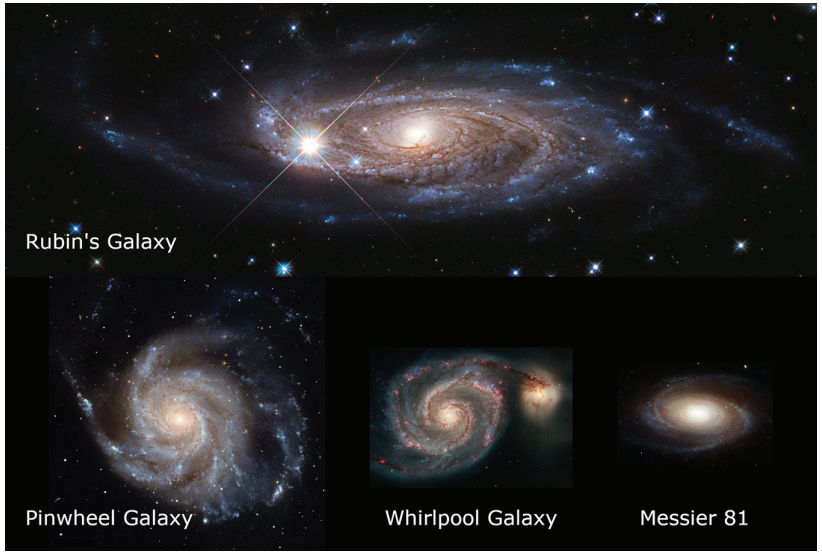

A Spiral Galaxy Showcase

The spiral galaxies in the Hubble images above are to scale, with the largest, Rubin's galaxy, at the top. Rubin's galaxy (UGC 2885) spans 250,000 light-years across, which is more than twice the diameter of the Milky Way galaxy. At bottom left is M101, nicknamed the Pinwheel galaxy. This large spiral disk of stars, dust, and gas is 100,000 light-years across. The medium-size spiral galaxy M51, known as the Whirlpool galaxy, is at bottom center, and is 60,000 light-years across. Red, gaseous, star-forming clouds and blue clusters of newborn stars dot the galaxy's spiral arms. A companion galaxy resides behind M51. The galaxy M81 at bottom right is another typical spiral galaxy, with long, sweeping arms that wind all the way down in the core. The galaxy is roughly 50,000 light-years wide. While nearby spiral galaxies may appear big, and distant ones small, the galaxies must be carefully examined to gauge their true size.

Image credit: NASA, ESA, and STScI

VOCABULARY

Globular star cluster: a tight-knit collection of many thousands, sometimes even millions, of stars born at almost the same time and place.
Supermassive black hole: a black hole possessing as much mass as millions or billions of suns. Supermassive black holes reside in the centers of galaxies and are the engines that power active galaxies.