

Hubble takes gigantic image of the Triangulum Galaxy

January 7 2019



This gigantic image of the Triangulum Galaxy -- also known as Messier 33 -- is a composite of about 54 different pointings with Hubble's Advanced Camera for Surveys. With a staggering size of 34 372 times 19 345 pixels, it is the second-largest image ever released by Hubble. It is only dwarfed by the image of the Andromeda Galaxy, released in 2016. Credit: NASA, ESA, and M. Durbin, J. Dalcanton, and B. F. Williams (University of Washington)

The NASA/ESA Hubble Space Telescope has captured the most detailed

image yet of a close neighbour of the Milky Way—the Triangulum Galaxy, a spiral galaxy located at a distance of only three million light-years. This panoramic survey of the third-largest galaxy in our Local Group of galaxies provides a mesmerising view of the 40 billion stars that make up one of the most distant objects visible to the naked eye.

This new image of the Triangulum Galaxy—also known as Messier 33 or NGC 598—has a staggering 665 million pixels and showcases the central region of the galaxy and its inner spiral arms. To stitch together this gigantic mosaic, Hubble's Advanced Camera for Surveys needed to create 54 separate images.

Under excellent dark-sky conditions, the Triangulum Galaxy can be seen with the [naked eye](#) as a faint, blurry object in the constellation of Triangulum (the Triangle), where its ethereal glow is an exciting target for [amateur astronomers](#).

At only three million light-years from Earth, the Triangulum Galaxy is a notable member of the Local Group—it is the group's third-largest galaxy, but also the smallest [spiral galaxy](#) in the group. It measures only about 60 000 light-years across, compared to the 200 000 light-years of the Andromeda Galaxy; the Milky Way lies between these extremes at about 100 000 light-years in diameter.

The Triangulum Galaxy is not only surpassed in size by the other two spirals, but by the multitude of stars they contain. The Triangulum Galaxy has at least an order of magnitude less stars than the Milky Way and two orders of magnitude less than Andromeda. These numbers are hard to grasp when already in this image 10 to 15 million individual stars are visible.



This image shows NGC 604, located within the Triangulum Galaxy. Some 1500 light-years across, this is one of the largest, brightest concentrations of ionised hydrogen (H II) in our Local Group of galaxies, and it is a major centre of star formation. The gas in NGC 604, around nine-tenths of which is hydrogen, is gradually collapsing under the force of gravity to create new stars. Once these stars have formed, the energetic ultraviolet radiation they emit excites the remaining gas in the cloud. This image is only a tiny part of the large wide-field image of the Triangulum Galaxy created by the NASA/ESA Hubble Space Telescope. Hubble has observed this object before, with different cameras: In 2003, using the WFPC2 and in 2010, using the ACS. The different colours in the

images have their origin in the different filters being used. Credit: NASA, ESA, and M. Durbin, J. Dalcanton, and B. F. Williams (University of Washington)

In contrast to the two larger spirals, the Triangulum Galaxy doesn't have a bright bulge at its centre and it also lacks a bar connecting its spiral arms to the centre. It does, however, contain a huge amount of gas and dust, giving rise to rapid star formation. New stars form at a rate of approximately one solar mass every two years.

The abundance of gas clouds in the Triangulum Galaxy is precisely what drew astronomers to conduct this detailed survey. When stars are born, they use up material in these clouds of gas and dust, leaving less fuel for new [stars](#) to emerge. Hubble's image shows two of the four brightest of these regions in the galaxy: [NGC 595](#) and [NGC 604](#). The latter is the second most luminous region of ionised hydrogen within the Local Group and it is also among the largest known star formation regions in the Local Group.

These detailed observations of the Triangulum Galaxy have tremendous legacy value—combined with those of the Milky Way, the Andromeda Galaxy and the irregular Magellanic Cloud [galaxies](#), they will help astronomers to better understand star formation and stellar evolution.

Provided by ESA/Hubble Information Centre

Citation: Hubble takes gigantic image of the Triangulum Galaxy (2019, January 7) retrieved 18 April 2024 from <https://phys.org/news/2019-01-hubble-gigantic-image-triangulum-galaxy.html>

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