

Island Universes with a twist

July 26 2006



The Starburst Galaxy NGC 908
(FORS/VLT)

ESO Press Photo 27a/06 (26 July 2006)



ESO PR Photo 27a/06 is based on data obtained with FORS2 on ESO's Very Large Telescope in the night of 13 to 14 August 2000, using images through B, V, and R filters, for a total exposure time of 4 minutes only. North is up and East is to the left. The data were extracted from the ESO Science Archive and further processed by Henri Boffin (ESO). Credit: ESO

If life is like a box of chocolates – you never know what you will get – the Universe, with its immensely large variety of galaxies, must be a real candy store! ESO's Very Large Telescope has taken images of three different 'Island Universes', each amazing in their own way, whose curious shapes testify of a troubled past, and for one, of a foreseeable

doomed future.

The first galaxy pictured is NGC 908, located 65 million light-years towards the constellation of Cetus (the Whale). This spiral galaxy, discovered in 1786 by William Herschel, is a so-called starburst galaxy, that is, a galaxy undergoing a phase where it spawns stars at a frantic rate. Clusters of young and massive stars can be seen in the spiral arms. Two supernovae, the explosions of massive stars, have been recorded in the near past: one in 1994 and another in May of this year. The galaxy, which is about 75 000 light-years long, also clearly presents uneven and thick spiral arms, the one on the left appearing to go upwards, forming a kind of ribbon. These properties indicate that NGC 908 most probably suffered a close encounter with another galaxy, even though none is visible at present.

The second galaxy featured constitutes another wonderful sight yet of a more timid nature: it does not belong to the NGC catalogue, like so many of its more famous brethren. Its less well-known designation, ESO 269-G57, refers to the ESO/Uppsala Survey of the Southern Sky in the 1970's during which over 15,000 southern galaxies were found with the ESO Schmidt telescope and catalogued.

Located about 155 million light-years away towards the southern constellation Centaurus (the Centaur), ESO 269-G57 is a spectacular spiral galaxy of symmetrical shape that belongs to a well-known cluster of galaxies seen in this direction. An inner 'ring', of several tightly wound spiral arms, surrounded by two outer ones that appear to split into several branches, are clearly visible. Many blue and diffuse objects are seen - most are star-forming regions. ESO 269-G57 extends over about 4 arc minutes in the sky, corresponding to nearly 200,000 light-years across. Resembling a large fleet of spaceships, many other faint, distant galaxies are visible in the background.

Finally, ESO 27c/06 provides a view of a more tormented organism, a so-called irregular galaxy, known as NGC 1427A. Located about 60 million light-years away, in the direction of the constellation Fornax (the Furnace), NGC 1427A is about 20,000 light-years long and shares some resemblances with our neighbouring Large Magellanic Cloud. NGC 1427A is in fact plunging into the Fornax cluster of galaxies at a speed of 600 km/s, and takes an arrowhead shape. Moving so rapidly, the galaxy is compressed by the intracluster gas, and this compression gives birth to many new stars.

Using these and other VLT observations, astronomer Iskren Y. Georgiev from the Argelander Institute for Astronomy at Bonn (Germany) and his colleagues were able to find 38 candidates globular clusters that are about 10 billion years old. The scientists also inferred that NGC 1427A is about 10 million light-years in front of the central dominant elliptical galaxy in the Fornax cluster of galaxies, NGC 1399. It seems certain that under such circumstances, the future of NGC 1427A looks bleak, as the galaxy will finally be disrupted, dispersing its content of gas and stars in the intracluster regions. Just next to NGC 1427A, but 25 times further away, a more typical, beautiful face-on spiral galaxy is looking rather unperturbed at the dramatic spectacle.

The multi-mode FORS instrument, on ESO's Very Large Telescope, was used to take the images of these three galaxies.

Source: European Southern Observatory (ESO)

Citation: Island Universes with a twist (2006, July 26) retrieved 25 April 2024 from <https://phys.org/news/2006-07-island-universes.html>

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