

<p>Hubblecast Episode 31: Sky merger yields sparkling dividends EMBARGOED UNTIL 10:00 (CEST)/04:00 am EST 13 Oct, 2009</p>	
<p>00:00 [Visual starts]</p> <p>00:01 [Dr. J narration] A recent NASA/ESA Hubble Space Telescope image captures what appears to be one very bright and bizarre galaxy, but is actually the result of a pair of spiral galaxies, like our own Milky Way, smashing together at incredible speeds. This object was a target of Hubble's and a handful of its "sibling" spacecraft as part of a massive comprehensive sky survey called GOALS.</p> <p>00:23 Standard Hubblecast Sequence</p> <p>00:36 [Woman] This is the Hubblecast!</p> <p>News and images from the NASA/ESA Hubble Space Telescope — travelling through time and space with our host Dr. J, a.k.a. Dr. Joe Liske.</p> <p>00:52 [Dr. J narration] Hi and welcome to the Hubblecast. This new image of NGC 2623, which is located in the constellation of Cancer, was taken by Hubble's Advanced Camera for Surveys, or ACS, before the recent Hubble Servicing Mission. Once two distinct galaxies, NGC 2623 is a nearly complete merger, with elements of both original galaxies affecting its appearance and behaviour.</p> <p>Colliding galaxies engage in a powerful exchange of material — they literally throw matter and gas toward one another as they race together.</p>	   

01:28

[Dr. J narration]

Stretching out from the centre of NGC 2623 are two tidal tails of young stars showing that a merger has taken place. The dramatic exchange of mass and gases initiates star formation, seen there in both the tails.

The prominent lower tail is richly populated with bright star clusters. These star clusters may have formed as part of a loop of stretched material associated with the northern tail, or they may have formed from debris falling back onto the nucleus. In addition to this active star-forming region, both galactic arms harbour very young stars in the early stages of their evolutionary journey.

02:04

[Dr. J narration]

The core, or nucleus, of this merged galaxy is exceedingly bright. Often these mergers (including this case) result in an active galactic nucleus, where one of the supermassive black holes found at the centres of the two original galaxies is stirred into action. Matter is pulled toward the black hole, forming an accretion disc. The energy released by the frenzied motion heats up the disc, causing it to emit across a wide range of the electromagnetic spectrum.

02:33

[Dr. J narration]

Although rare in our solar neck of the woods, extremely bright galaxies like NGC 2623 exist at higher redshifts or, in other words, at an earlier stage of the Universe's evolution when these systems were dominant. Their brightness signals furious activity – new star formation and a rambunctious core.

The aim of the GOALS project is to use the combined powers of multiple space telescopes to characterise their local counterparts and give us clues as to what is happening in more distant galaxies while educating us about galaxy formation. Each telescope in the GOALS project brings different strengths.

Hubble's incredible resolution in the visible allows us to scrutinise the galaxy's morphology, or structure.

In these images, astronomers can determine the stage of the merger – for example, has the union produced tidal tails? Have the individual galaxies' cores melded together as one?

Chandra's X-ray capabilities allow the astronomers to detect the flurry of activity around the black holes and to monitor new star formation.

Spitzer contributes in the infrared, penetrating dust, allowing astronomers to see what lurks behind the eerie dust lanes.



GALEX is powerful in the ultraviolet, gathering the light of developing stars.

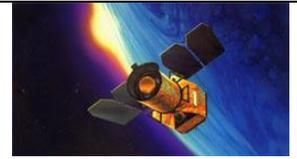
Data from ESA's X-ray Multi-Mirror Telescope (or XMM-Newton) also helped astronomers gain more information about NGC 2623. The joint efforts of these powerful observing facilities have provided a clearer picture of these standout galaxies.

04:07

[Dr. J narration]

Galaxy evolution is a hot topic in astronomy because it is fundamental to our understanding of the Universe. Studying merging galaxies such as NGC 2623, allows astronomers to witness the shaping of new, combined galaxies and the subsequent birth of stars. This could even provide essential information about our own Milky Way that has cannibalised other small galaxies and could, one day, collide with our neighbour, the Andromeda Galaxy.

This is Dr. J signing off for the Hubblecast. Once again, nature has surprised us beyond our wildest imagination.



Hubblecast is produced by ESA/Hubble at the European Southern Observatory in Germany.

The Hubble mission is a project of international cooperation between NASA and the European Space Agency.

Credits

04:59

[Woman]

Now that you've caught up with Hubble, make sure to get the latest from the ground, too. The ESOcast highlights the best of the European Southern Observatory and its powerful telescopes that observe from high in the Chilean Andes, at the southern hemisphere's best known sites for astronomical observations.

END 05:25

