

Dawn of a galactic collision

December 14 2017



NGC 5256 is a pair of galaxies in its final stage of merging. It was previously

observed by Hubble as part of a collection of 59 images of merging galaxies, released on Hubble's 18th anniversary on April 24, 2008. The new data make the gas and dust being whirled around inside and outside the galaxy more visible than ever before. Credit: ESA/Hubble, NASA

A riot of colour and light dances through this peculiarly shaped galaxy, NGC 5256. Its smoke-like plumes are flung out in all directions and the bright core illuminates the chaotic regions of gas and dust swirling through the galaxy's centre. Its odd structure is due to the fact that this is not one galaxy, but two—in the process of a galactic collision.

NGC 5256, also known as Markarian 266, is about 350 million light-years away from Earth, in the constellation of Ursa Major (The Great Bear). It is composed of two disc galaxies whose nuclei are currently just 13 000 light-years apart. Their constituent gas, dust, and stars are swirling together in a vigorous cosmic blender, igniting newborn stars in bright [star formation](#) regions across the galaxy.

Interacting galaxies can be found throughout the Universe, producing a variety of intricate structures. Some are quiet, with one galaxy nonchalantly absorbing another. Others are violent and chaotic, switching on quasars, detonating supernovae, and triggering bursts of star formation.

While these interactions are destructive on a galactic scale, stars very rarely collide with each other in this process because the distances between them are so vast. But as the galaxies entangle themselves, strong tidal effects produce new structures—like the chaotic-looking plumes of NGC 5256—before settling into a stable arrangement after millions of years.

In addition to the bright and chaotic features, each merging galaxy of NGC 5256 contains an [active galactic nucleus](#), where gas and other debris are fed into a hungry [supermassive black hole](#). Observations from NASA's Chandra X-ray Observatory show that both of these nuclei—and the region of hot gas between them—have been heated by shock waves created as gas clouds collide at high velocities.

Galaxy mergers, like the one NGC 5256 is currently experiencing, were more common early in the Universe and are thought to drive galactic evolution. Today most galaxies show signs of past mergers and near-collisions. Our own Milky Way too has a long history of interaction: it contains the debris of many smaller galaxies it has absorbed in the past; it is currently cannibalising the Sagittarius Dwarf Spheroidal Galaxy; and in a kind of cosmic payback, the Milky Way will merge with our neighbour, the Andromeda Galaxy in about two billion years.

Also in this Hubble image is another pair of probably interacting galaxies—they are hiding to the right of NGC 5256 in the far distance, and have not yet been explored by any astronomer. From our perspective here on Earth, NGC 5256 is also just a few degrees away from another famous pair of interacting galaxies, Messier 51, which was observed by Hubble in 2005.

Provided by ESA/Hubble Information Centre

Citation: Dawn of a galactic collision (2017, December 14) retrieved 23 April 2024 from <https://phys.org/news/2017-12-dawn-galactic-collision.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--