Colliding Galaxies

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Stellar Fireworks

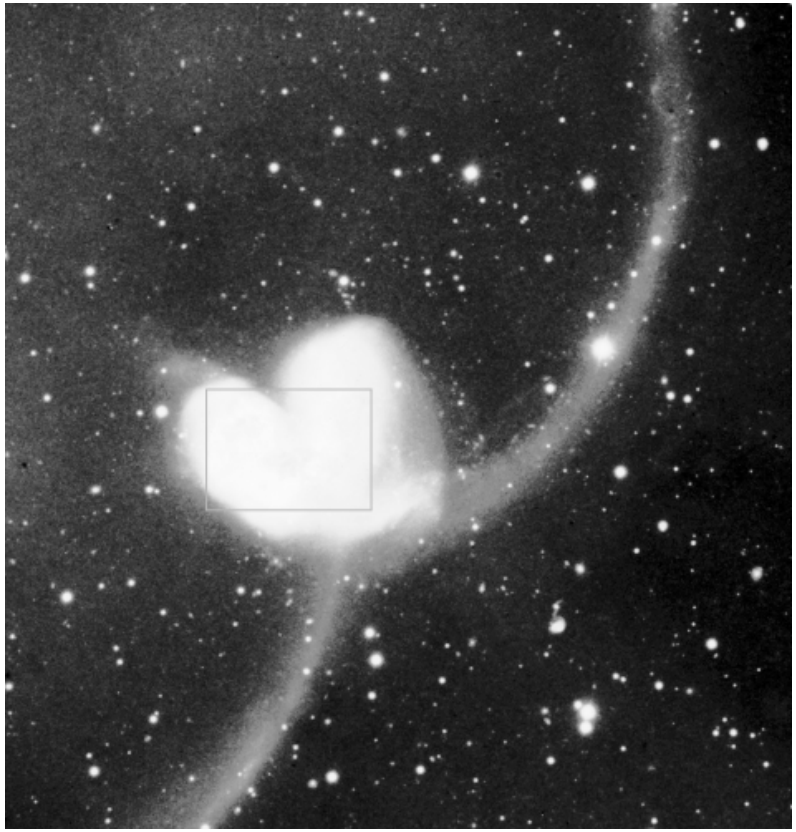
More than 1,000 bright young star clusters, each containing thousands and sometimes even millions of stars, burst to life as a result of a head-on collision of two spiral galaxies in the southern constellation Corvus. The discovery of the brilliant "fireworks" display at the heart of the colliding galaxies will help astronomers assemble a chronology of how colliding galaxies evolve and help them understand one of the fundamental questions in astronomy today: why are some galaxies spiral-shaped while others are elliptical?

Rethinking Star Clusters

By studying the Antennae galaxies — so named because the galactic collision produced two long tails of luminous matter that resemble an insect's antennae — astronomers are able to learn more about the formation of globular star clusters. Previously, scientists thought that they represented the earliest generations of stars. This observation and others indicate, however, that some actually form out of huge clouds of cold hydrogen gas that are squeezed during the collision of two galaxies. The titanic forces trigger the star formation.

Clues to the Milky Way's Fate

Other Hubble images show that nearly a third of the galaxies that existed in the early history of the universe also have collided. Many are odd-shaped, disrupted-looking, which give astronomers direct evidence that collisions were the rule and not the exception in the early universe. The Antennae, at 63 million light-years away, gives scientists a relatively close view of galactic smashups and provides hints to the fate of our Milky Way Galaxy if it either sideswipes or plows head-on into the neighboring Andromeda galaxy.



About this image

The image above is a ground-based view of the Antennae galaxies (formally known as NGC 4038/4039). The box indicates the area observed by Hubble's Wide Field Planetary Camera 2 on January 20, 1996. The Hubble image (front) shows the cores of the twin galaxies (shown as orange blobs), crisscrossed by filaments of dark dust. The sweeping spiral-like patterns, traced by bright blue star clusters, show the firestorm of star birth activity triggered by the collision.

Definitions

Spiral Galaxy: *A disk-shaped galaxy having a spiral or pinwheel pattern.*

Elliptical Galaxy: *A galaxy having an elliptical or nearly spherical shape.*

Globular Star Clusters: *A tight-knit collection of many thousands, sometimes even millions, of stars born at almost the same time and place. A cluster can remain as a unit for billions of years because of the mutual gravitational attraction of its member stars.*

Fast Facts

Location
In the southern constellation Corvus.

Distance from Earth
63 million light-years

Sizes
Distance between the centers of galaxies — 30,000 light-years

Distance from tail to tail in the ground-based image — 350,000 light-years

Electronic Addresses

You can get images and other information about the Hubble Space Telescope using the Internet.

Using the World Wide Web (Netscape Navigator, Microsoft Internet Explorer, and other browsers), use URL `http://oposite.stsci.edu/public.html` and follow links from there.

Using ftp, connect to ftp.stsci.edu and find files and directories in `/pubinfo`.

LG-1997(11)-015-GSFC / STScI L-97-05