

Asteroids in Abell 370

Asteroids steal the show in cosmic portrait

The Hubble Space Telescope encountered a local group of photobombers while capturing this breathtaking image of a galaxy cluster known as Abell 370. A swarm of white streaks appears to have invaded the sea of gravitationally bound galaxies that make up the distant cluster.

The curved and s-shaped streaks seem to glide through the cluster of several hundred galaxies. In reality, these objects are trails left on the image by nearby asteroids, located only about 160 million miles away in our own solar system. In contrast, Abell 370 is around 4 billion light-years distant.

The curved appearance of the asteroid trails is caused by an observational effect called parallax. Due to Hubble's orbit around Earth, the asteroids appear to move along an arc when captured at a series of different vantage points against the galaxies in the distance.

The asteroid trails shouldn't be confused with a different astronomical phenomenon also visible here. Abell 370 contains so much mass that its gravity magnifies, bends, and distorts the light of even more-distant objects behind it. This "gravitational lens" effect warps the glow of these farther galaxies into curved, often bluish arcs and allows astronomers to see galaxies that would otherwise be beyond the reach of telescopes.

Hubble captured a total of 22 asteroid trails through multiple exposures of Abell 370 and combined them into this singular image. Of the total asteroids found, five were so faint that they had not previously been identified.

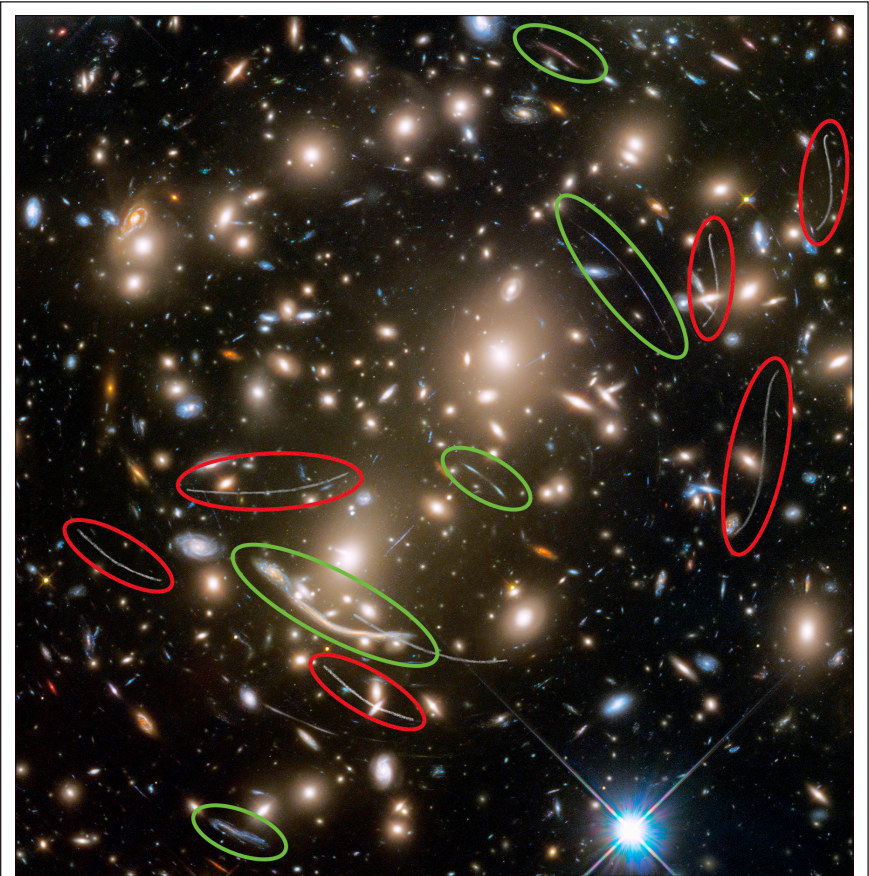
This image of Abell 370 is part of NASA's Frontiers Field program, which surveyed six of these massive galaxy clusters to understand their effects.

VOCABULARY

Gravitational lensing: A phenomenon that occurs when the immense mass of a galaxy cluster produces a gravitational effect that warps and magnifies light from farther objects behind the cluster, creating a natural telescope in space.

Parallax: An observational effect that causes an apparent shift in position of a nearby celestial object when viewed from two different viewpoints against objects in the distance.

Image Credit: NASA, ESA, and B. Sunnquist and J. Mack (STScI)



In this image of Abell 370, several of the relatively nearby asteroid trails are circled in red, and a selection of warped and magnified background galaxies — located behind the galaxy cluster but visible due to its lensing properties — are circled in green.

Image Credit: NASA, ESA, and B. Sunnquist and J. Mack (STScI); Annotations: Michael Marosy (GSFC)

For images and information on the Hubble mission, go to www.nasa.gov/hubble and hubblesite.org. Follow the Hubble mission on social media: @NASA_Hubble.

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