

Lensed Supernova in Abell 370

This is a five-panel graphic with a large panel on the left and four smaller panels on the right.

Context Image

The first and largest panel of this 5-panel graphic appears on the left side of the screen. It is double the size of the other four panels. At the bottom left corner is the label “Galaxy Cluster Abell 370.” The image is a field of many dozens of white, yellow, red, and blue galaxies of various sizes and shapes. Some of the galaxies appear as streaks or arcs. A box in the top, left corner of this image highlights the portion of the galaxy cluster where the supernova was multiply imaged. To its left are four smaller panels, stacked two by two on top of each other. Each of the four panels is a version of the field contained in the small box within the first, large panel to the left.

Panel A

Panel A, the top left of the four smaller panels, has a label on its top left that reads “A: Combined Image (2011 to 2016).” On the next line is “F814W,” which describes the filter used to produce this image. Panel A shows a large, fuzzy, circular galaxy in the center with many smaller galaxies surrounding it. Three of the galaxies are circled and numbered, left to right: 3, 1, and 2. These are multiple images of the same galaxy. On the bottom right is the label “Lensed Galaxy.”

Panel B

To the right of Panel A is Panel B. The label on the top left of this panel reads “B: Supernova Detection (December 2010).” On the next line is “F814W,” which describes the filter used to produce this image. The image in Panel B is very similar to that of Panel A, except that on the side of each of the three circled galaxies is a bright dot. On the bottom right is the label “Lensed Galaxy and Supernova.”

Panel C

Beneath Panel A is Panel C. The label on the top left of this panel reads “C: Difference Image. On the next line is the label, “Image B minus Image A.” In this image, the large, fuzzy, circular galaxy in the center is removed, as are the other galaxies, including the three multiply imaged galaxies containing the supernova. Three small, white dots are circled and numbered, left to right: 3, 1, and 2. These are the multiple images of the supernova. On the bottom right is the label “Supernova.”

Panel D

Panel D is beneath Panel B and to the right of Panel C. The label on the top left of this panel reads "D: Color Difference Image." On the next line is the label "F814W+F110W+F160W." This information describes the filters used to produce this image. The characters F814W appear in blue, the characters F110W appear in green, and the characters F160W appear in red. These describe the filters used to produce this image. At the center of the image is a blue, red, yellow, and green blob, which is the central galaxy shown in different filters. Panel D shows an image subtraction process similar to the subtraction process for Panel C, but uses multiple filters of data. Three, smaller, differently colored blobs are circled and labeled. The left circle contains a reddish orange blob labeled "3 (day 8)." The middle blob is blue and labeled "1 (day 0)." The right blob is turquoise and labeled "2 (day 0)." These show the different colors of the cooling supernova at three different stages in its evolution. At the bottom right is the label "Supernova."