The Milky Way

This is an infrared portrait of dust and stars radiating in the inner Milky Way. More than 800,000 frames from NASA’s Spitzer Space Telescope were stitched together to create the full image, capturing more than 50 percent of our entire galaxy.

Credit: NASA/JPL-Caltech/University of Wisconsin

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Invisible colors of light

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The image of the Milky Way on the front of this poster is a composite of four images from four different telescopes. The Spitzer Space Telescope, which made this image, detects light in the infrared part of the spectrum. Although a human can’t detect infrared light, the Spitzer’s camera can. By “capturing” a picture of the Milky Way, the Spitzer can show us parts of the universe that are hidden from our eyes and some surfaces that are invisible to our telescopes. But, what does this image tell us about our Milky Way galaxy?

From extremes to shades of gray

Colors are the way that our eyes interpret wavelengths of light, but these wavelengths are really just numbers. The three primary colors are red, green, and blue. The Spitzer also sees infrared light, so it needs to “see” the image in a different way. Specifically, the Spitzer uses its infrared array camera, which is sensitive to infrared light.

In this Spitzer IRAC image of the same galaxy, M101, red, green, and blue wavelengths are assigned to different parts of the galaxy. Yellow shows the visible starlight from the Hubble telescope. Blue represents 3.6-micron light and green shows 8-micron light, both from Spitzer’s infrared array camera. Red indicates infrared light from objects in the galaxy. X-ray energy detected by the Chandra X-ray Observatory, indicating incredibly hot activity, like accretion around black holes. And magenta is the galaxy’s molecular hydrogen.

The color translated image is a three-color composite. Normally, the three primary colors are assigned to three stages of color, from red to blue. In this image, the three stages are assigned to three detectors in the Spitzer's infrared array camera. Blue represents 3.6-micron light and green shows 8-micron light, both from Spitzer's infrared array camera. Red indicates infrared light from objects in the galaxy. X-ray energy detected by the Chandra X-ray Observatory, indicating incredibly hot activity, like accretion around black holes. And magenta is the galaxy’s molecular hydrogen.

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