

Hidden Universe | Gallery Explorer

The Galactic Center Revisited

Hiding behind the constellations Sagittarius and Scorpius is the center of our own Milky Way galaxy, over 25,000 light years away. This patch of sky is mostly dark in visible light, shrouded by dust clouds that lie between us and the Galactic center. But the infrared vision of NASA's Spitzer Space Telescope sees through the dust showing us this strange and tumultuous region.

The image spans about 5 degrees of sky, which is about half the width of your outstretched palm, but encompasses over 2,000 light years across our galaxy's core.

Infrared light at 3.6 microns, which is mostly from stars, appears blue in the Spitzer image. Dust clouds glowing at 8 and 24 microns are rendered in green and red. The stars dramatically increase in numbers towards the center, swirling around a supermassive black hole astronomers think lies at the heart of it all.

Infant stars pop out as glowing red dots, lit up by their warm dusty shrouds. They highlight the regions where stars are vigorously forming.

These red shells and arcs show us where solar winds, flowing out from massive stars, light up as they slam into the surrounding interstellar gas.

Dust clouds that are opaque even to Spitzer begin to glow as we shift our view to even longer infrared wavelengths. The European Space Agency's Herschel Space Observatory reveals the galaxy's dust clouds at wavelengths of 70 to 250 microns, about 10 times longer than what we saw in the Spitzer image.

In this far infrared view, the colors we see indicate the overall temperature of the dust. Blue regions are the warmest, reaching typical room temperatures, while red indicates frigid dust only tens of degrees above absolute zero.

Herschel has helped astronomers identify a spectacular structure, a dust ring that is over 600 light years across, encircling our galaxy's center. Viewed edge-on, its strange warped shape takes on the appearance of an infinity symbol, perhaps reminding us of how much we have yet to discover in our galaxy and beyond.