Admire the magical beauty of the Rho Ophiuchi star system through the eyes of the James Webb . telescope

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Since the late 1990s, NASA has worked with the European Space Agency to develop James Webb, at a cost of about 10 billion USD. James Webb is the most powerful and modern telescope ever created by man, and is expected to provide unprecedented detailed images of the universe, helping scientists explore and learn about the universe and life beyond Earth.

July 15 marks the one-year anniversary of the first successful images sent back to Earth by the James Webb Space Telescope. And to celebrate this important event, NASA has shared another stunning image of space also recently taken by James Webb.

The new image reveals the spooky beauty of the Rho Ophiuchi star system, a busy region where countless new stars are being born amid dense swirls of dust and gas. The Rho Ophiuchi star system is located just 390 light-years from Earth, so it was not difficult for James Webb to capture this region in great detail with the state-of-the-art NIRCam system.

In fact, this region consists of many star systems, with large amounts of gases such as molecular hydrogen, shown in red in the image. As stars form in swirls of dust and gas, they emit light and radiation in a phenomenon called stellar wind. This wind blows away material around young stars, both preventing other stars from forming too close, and creating dust and gas into distinctive shapes.

The supermassive bursts of energy released by the young stars form exceptionally bright jets, hurling matter from both poles and creating red streaks of molecular hydrogen at the top and right of the image.

However, the stars are the main subject in this image. Some stars have halos around them. This indicates the presence of protoplanetary disks. These disks of dust and gas form around a star, growing over time due to the star's gravity. Clumps form inside the disc, starting as small particles and accumulating larger and larger over time. Eventually, the blocks could gain enough mass to form a solid core, thereby forming the basis of a new planet.

There are a total of about 50 young stars shown in the image. Each star is similar to our sun. The dust clouds around these stars are heated by their radiation, all evident in infrared wavelengths.