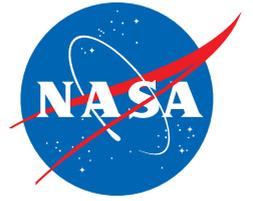


Jets from a young star, Herbig-Haro 24

National Aeronautics and
Space Administration



The dramatic awakening of an infant star

In this Hubble Space Telescope image, an infant star awakens by blasting twin jets of material into space as a sort of birth announcement to the universe.

The developing star resides in a turbulent birthing ground for new stars known as the Orion B molecular cloud complex, located 1,350 light-years away, in our Milky Way galaxy. The star and its jets are called Herbig-Haro 24 (HH 24).

The star cannot be seen in the image because it is surrounded by dust. This material is left over from the gravitational collapse of the giant gas cloud that formed the star. Hubble observed HH 24 in near-infrared light, which penetrates some of the material cocooning the newly forming star and captures a view of the jets.

Planets may later form in a disk of gas and dust encircling the star. However, at this early stage, gas from the disk is raining down onto the star. Some of the superheated material is shot outward from the star. The material is confined to two narrow jets of material. The jets travel in opposite directions along uncluttered escape routes — the directions perpendicular to the disk. The HH 24 jets are the long, thin columns of gas that slice through the center of the image.

These energetic jets are blasting across space at more than 100,000 miles per hour. Each jet collides with dense gas and dust along its path, clearing vast spaces, like a stream of water plowing into a hill of sand. The collision produces shock fronts, which heat the surrounding gas to thousands of degrees Fahrenheit. Tangled, knotted clumps of gas are formed at the shock fronts.

Image Credit: NASA and ESA, the Hubble Heritage (STScI/AURA)/ Hubble-Europe (ESA) Collaboration, D. Padgett (GSFC), T. Megeath (University of Toledo), and B. Reipurth (University of Hawaii)

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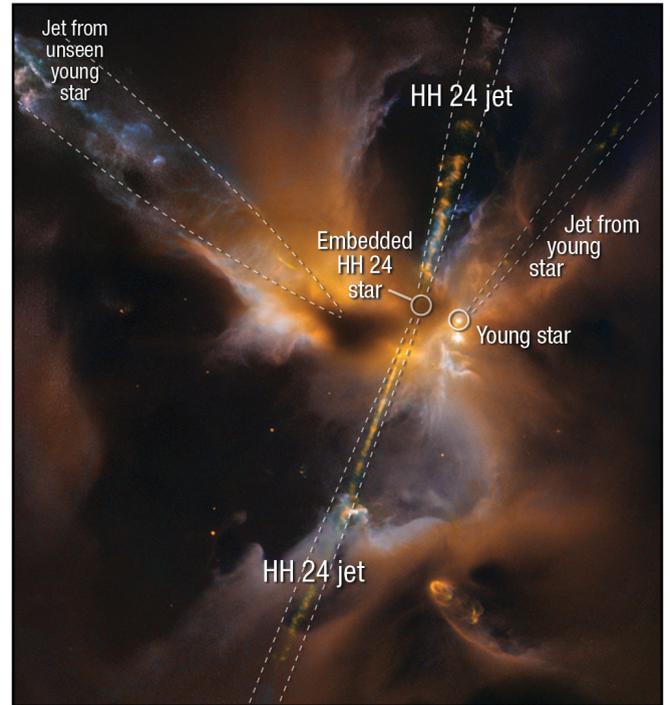
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Detailed view of Herbig-Haro 24 and its neighbors

This Hubble image points out important features of Herbig-Haro 24 (HH 24) and its surrounding gaseous environment. HH 24, consisting of a young star and twin jets of material, is located in the center of the image. The star cannot be seen because it is surrounded by dust. As the star's jets blast across space, they are carving out cavities in the gaseous cloud that makes up the stellar nursery.

Jets from other Herbig-Haro objects are also visible in the image. The blue, funnel-shaped feature stretching from the center of the image to the top-left corner is one such jet. The star creating the jet cannot be seen. Another jet from a nearby young star has bored a tunnel through the cloud toward the upper-right side of the picture.

VOCABULARY

Shock front: A high-pressure wave moving at supersonic speeds. When a jet of gas from a young star plows into dense material, a shock front is created.

Herbig-Haro objects: Small, bright nebulae that form when narrow jets of gas ejected by newly born stars plow through clouds of gas and dust.



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