

# Hubble sees new star proclaiming its presence with cosmic light show

March 25 2024, by Bethany Downer

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Jets emerge from the cocoon of a newly forming star to blast across space, slicing through the gas and dust of a shining nebula, in this new image from the NASA/ESA Hubble Space Telescope. Credit: European Space Agency

FS Tau is a multi-star system made up of FS Tau A, the bright star-like object near the middle of the image, and FS Tau B (Haro 6-5B), the bright object to the far right that is partially obscured by a dark, vertical lane of dust. These young objects are surrounded by the softly illuminated gas and dust of this stellar nursery. The system is only about 2.8 million years old, very young for a star system. Our sun, by contrast, is about 4.6 billion years old.

FS Tau B is a newly forming star, or protostar, and is surrounded by a [protoplanetary disk](#), a pancake-shaped collection of dust and gas left over from the formation of the star that will eventually coalesce into planets. The thick dust lane, seen nearly edge-on, separates what are thought to be the illuminated surfaces of the disk.

FS Tau B is likely in the process of becoming a T Tauri star, a type of young variable star that hasn't begun [nuclear fusion](#) yet but is beginning to evolve into a hydrogen-fueled star similar to our sun. Protostars shine with the heat energy released as the gas clouds from which they are forming collapse and from the accretion of material from nearby gas and dust. Variable stars are a class of stars whose brightness changes noticeably over time.

FS Tau A is itself a T Tauri binary system consisting of two stars orbiting each other.

Protostars are known to eject fast-moving, column-like streams of energized material called jets, and FS Tau B provides a striking example of this phenomenon. The protostar is the source of an unusual asymmetric, double-sided jet, visible here in blue. Its asymmetrical structure may be because mass is being expelled from the object at different rates.

FS Tau B is also classified as a Herbig-Haro object. Herbig-Haro objects form when jets of ionized gas ejected by a young star collide with nearby clouds of gas and dust at high speeds, creating bright patches of nebulosity.

FS Tau is part of the Taurus-Auriga region, a collection of dark molecular clouds that are home to numerous newly forming and [young stars](#), roughly 450 light-years away in the constellations of Taurus and Auriga. Hubble has previously observed this region, whose star-forming

activity makes it a compelling target for astronomers. Hubble made these observations as part of an investigation of edge-on dust disks around young stellar objects.

Provided by European Space Agency

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