

# Astronomers find the biggest known batch of planet ingredients swirling around young star

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This composite radio and optical image provided by researchers in May 2024 shows IRAS 23077, center, a planet-forming disk, and several surrounding stars. The star at the center of IRAS 23077 is not visible because its light is blocked by its surrounding disk, which is viewed from the side. The diameter of this colossal disk is roughly 3,300 times the distance between Earth and the sun, with enough gas and dust to form super-sized planets in far-flung orbits, the U.S. and German researchers reported in May 2024. Credit: Radio: SAO/ASIAA/SMA/K. Monsch et al; Optical: Pan-STARRS via AP

Astronomers have discovered what they believe is the biggest known batch of planet-making ingredients swirling around a young star.

The diameter of this colossal disk is roughly 3,300 times the [distance](#) between Earth and the sun, with enough gas and dust to form super-sized planets in far-flung orbits, the U.S. and German researchers reported this week.

First spotted in 2016, the disk around a star 1,000 light-years away was not confirmed to be a hotbed for new, emerging planets until recent observations by telescopes in Hawaii. A light-year is 5.8 trillion miles.

It's so massive and rich in [dust](#) and gas, the building blocks of planets, that scientists can learn more about "the birth and evolution of worlds beyond our own," said lead author Kristina Monsch of the Harvard-Smithsonian Center for Astrophysics.

This so-called protoplanetary disk looks like a butterfly in the images, according to Monsch. The dark, dusty strip in the middle resembles the elongated body of a butterfly, she said, while the blue and white lobes seem like wings and the two narrow filaments on top the antennae.

Findings [were described](#) in Monday's *Astrophysical Journal Letters*. Another paper by some of the same researchers also has been accepted for publication.

The disk, designated as IRAS 23077, is about double the size of the previous record-holder, Monsch said.

NASA's Hubble and Webb space telescopes may be able to discern whether planets the size of Jupiter or even bigger are already forming,

Monsch said. Any [rocky planets](#) like our own would likely be too small to see and even bigger planet-forming systems are probably out there.

"We just have to look for them," she said.

**More information:** Kristina Monsch et al, High-resolution Pan-STARRS and SMA Observations of IRAS 23077+6707: A Giant Edge-on Protoplanetary Disk, *The Astrophysical Journal Letters* (2024). [DOI: 10.3847/2041-8213/ad3bb0](#)

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