

James Webb telescope captures stunning cosmic hourglass moment

The James Webb Space Telescope has just revealed the secret of the dead star that created the crystal nebula 'hourglass'.

The James Webb Space Telescope (JWST) has sent back a stunning new image of the Crystal Ball Nebula, also known as NGC 1514, located 1,500 light-years away. The unprecedentedly detailed image reveals a complex structure resembling a giant hourglass, created during the 'last act' of a dying star.

The nebula was actually observed by NASA's WISE infrared telescope in 2010. However, with the super-sensitive mid-infrared "eye" of the MIRI instrument on James Webb, scientists can now see details that were previously only guessed at or completely undetectable.



The Crystal Ball Nebula is shaped like a giant hourglass.

'Before Webb, we couldn't detect most of this material, let alone see it so clearly,' said researcher Mike Ressler (NASA JPL), who studied NGC 1514 with WISE. The new data clearly shows faint rings of gas and dust and mysterious voids near the nebula's center.

NGC 1514's unique hourglass shape is thought to be the result of interactions within a central binary star system. One of the stars, after running out of fuel, ballooned and blew away its outer shell of gas and dust, leaving behind a hot core, a white dwarf. Powerful stellar winds (outflows of matter) from the white dwarf interacted with the ejected material. Scientists believe that the presence and interactions of the other companion star "shaped" the cloud of material into an hourglass shape and created the characteristic two bright rings, instead of a normal spherical shell.

Webb's observations also show that the two bright rings are not solid structures, but rather rather fuzzy and of varying thickness. "We think the rings are mostly made up of very small dust grains," Ressler explains. Interestingly, these dust grains become "visible" to Webb's MIRI instrument because they absorb ultraviolet light from the white dwarf, heat up a bit, and emit mid-infrared radiation.

The latest image of NGC 1514 once again affirms the outstanding power of the James Webb Space Telescope in discovering the magical beauty and deciphering the complex mysteries of the universe, providing insight into the dramatic final stages of the lives of stars.

You finished reading the article "**James Webb telescope captures stunning cosmic hourglass moment**" edited by the [TipsMake](#) team. We hope this article has provided you with many useful tech tips and tricks. You can search for similar articles on tips and guides. Thank you for reading and for following us regularly.