

A space ant fires its lasers!



The Ant Nebula! Does it look like an ant to you?
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25 May 2018

"Ants in space" might sound like the name of a science fiction film, but astronomers know of one cosmic ant out there – the Ant Nebula! Looking a bit like an insect, the Ant Nebula is actually a huge collection of gas and dust, which is an incredible 8000 light-years from Earth. Normally you would use a magnifying glass to get a good look at an ant, but for this one you definitely need a telescope.

Astronomers already knew that the Ant Nebula was once a star, perhaps a little like our own Sun, but was ancient and had exhausted its supply of hydrogen fuel. The star's outer layers were cast off, leading to the shape of the Ant Nebula that we see from Earth, and leaving behind a white dwarf star at its centre.

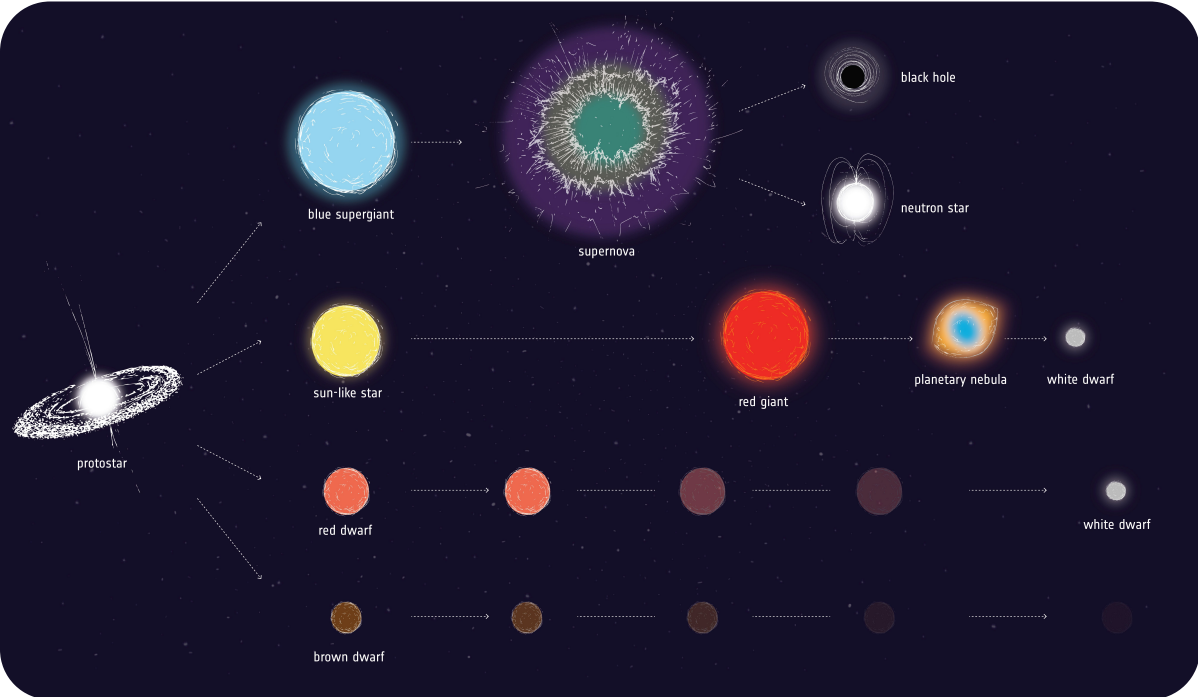


The Herschel telescope, before it was launched into space
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Now stargazers have studied observations of the Ant Nebula taken by ESA's Herschel space observatory. This special tool does not see the type of light that our eyes naturally detect, but rather a different kind of light called infrared. They found something no-one was expecting: lasers!

"Lasers in space" also sounds like a science fiction film, but they do happen for real! The laser effect found in the Ant Nebula has a scientific name: hydrogen recombination line laser emission. This is very rare, and is helping us to find out more about the Ant Nebula's inner regions.

Astronomers think that the laser is being produced by a disc of gas close to the white dwarf star. Normally there would be no gas this close to a white dwarf, so how did it get there? A possible explanation is that another star is nearby, meaning that the white dwarf is part of a binary star system. This second star could be keeping the gas disc orbiting the white dwarf, and producing the laser.



Stars have different stages throughout their lives. The Ant Nebula's central star is now a white dwarf.
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So now we know there really is an ant in space, firing lasers – in a way! Perhaps one day a film will be made about it...

Cool fact: The discoverer of the Ant Nebula, Donald Menzel, was also the first astronomer to suggest that nebulae could produce natural lasers – long before we knew the Ant Nebula did, and even before scientists had made lasers in labs. What a coincidence!