

Image: Hubble captures the Egg Nebula

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Credit: NASA/ESA/Hubble Heritage Team (STScI/AURA). Acknowledgment: W. Sparks (STScI) & R. Sahai (JPL)

This colourful image shows a cosmic lighthouse known as the Egg Nebula, which lies around 3000 light-years from Earth. The image, taken with the NASA/ESA Hubble Space Telescope, has captured a brief but dramatic phase in the life of a Sun-like star.

The Egg Nebula is a 'preplanetary nebula'. These objects occur as a [dying star](#)'s hot remains briefly illuminates material it has expelled, lighting up the gas and dust that surrounds it.

These objects will one day develop into planetary nebulas which, despite the name, have nothing at all to do with planets. They gained their rather misleading title because when they were discovered in the 18th century they resembled planets in our Solar System when viewed through a telescope.

Although the dying star is hidden behind the thick dust lane that streaks down the centre of this image, it is revealed by the four lighthouse-like beams clearly visible through the veil of dust that lies beyond the central lane.

The light beams were able to penetrate the central dust lane due to paths carved out of the thick cloud by powerful jets of material expelled from the star, although the cause of these jets is not yet known.

The concentric rings seen in the less dense cloud surrounding the star are due to the star ejecting material at regular intervals – typically every hundred years – during a phase of the star's evolution just prior to this preplanetary nebula phase. These dusty shells are not usually visible in these nebulas, but when they are it provides astronomers with a rare opportunity to study their formation and evolution.

The fleeting nature of this phase in a star's life – which occupies only a few thousand of the star's few billion years of existence – and the fact that they are fairly faint make it rare to capture them in action. In fact, the Egg Nebula, the first of its kind to be identified, was discovered only 40 years ago.

This image was taken with Hubble's Advanced Camera for Surveys. Artificial colours are used to represent how the light from the star reflects off the dust – this can tell scientists about the physical properties of the [dust](#).

The image combines observations with three different polarising filters, each showing light vibrating at a specific orientation. The three filters have been coloured red, blue and green, and all three observations were made at a wavelength of 0.606 microns. The image spans 1.2 light-years. North is to the right and east is up.

Provided by European Space Agency

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