



3D PRINTING: PRINT YOUR OWN HELIX NEBULA

When a star like our Sun runs out of fuel, it expands and its outer layers puff off, and then the core of the star shrinks. This phase is known as a “planetary nebula,” and astronomers expect our Sun will experience this in about 5 billion years. Though they are a phase of stellar evolution, they are called “planetary nebulas” because historically, some of them resembled a planet when viewed through a small telescope.

Creating Your Own Helix Nebula



*Helix Nebula 3D
model credit: INAF/
Sal Orlando*

As the planetary nebula is formed, the leftover stellar core eventually becomes a white dwarf star (see bright white spot at center, front page). The Helix nebula, also known as NGC 7293, is located in the constellation Aquarius. It is one of the closest planetary nebulas to Earth, being less than 700 light-years away from us. This 3D model is an impression derived from data obtained with several optical filters by NASA's Hubble Space Telescope.

This printable file was created by the Chandra team from the 3D model by Sal Orlando (INAF). The outer layers of the Sun-like star have been puffed off, and the stellar

material is shown looking like a fried egg in the 3D print. The stellar core or white dwarf is too small to be visible in the 3D print but would be tucked inside at the center of the model. The structure around the edges depicts the material ejected as the star transitioned to its planetary nebula stage. This is a simple one-part model. In our printing tests, this model did not need any support structures as the angle is gradual enough to build up onto itself.



3D files and instructions
are available at
chandra.si.edu/3dprint