

Crab Nebula



xchgre

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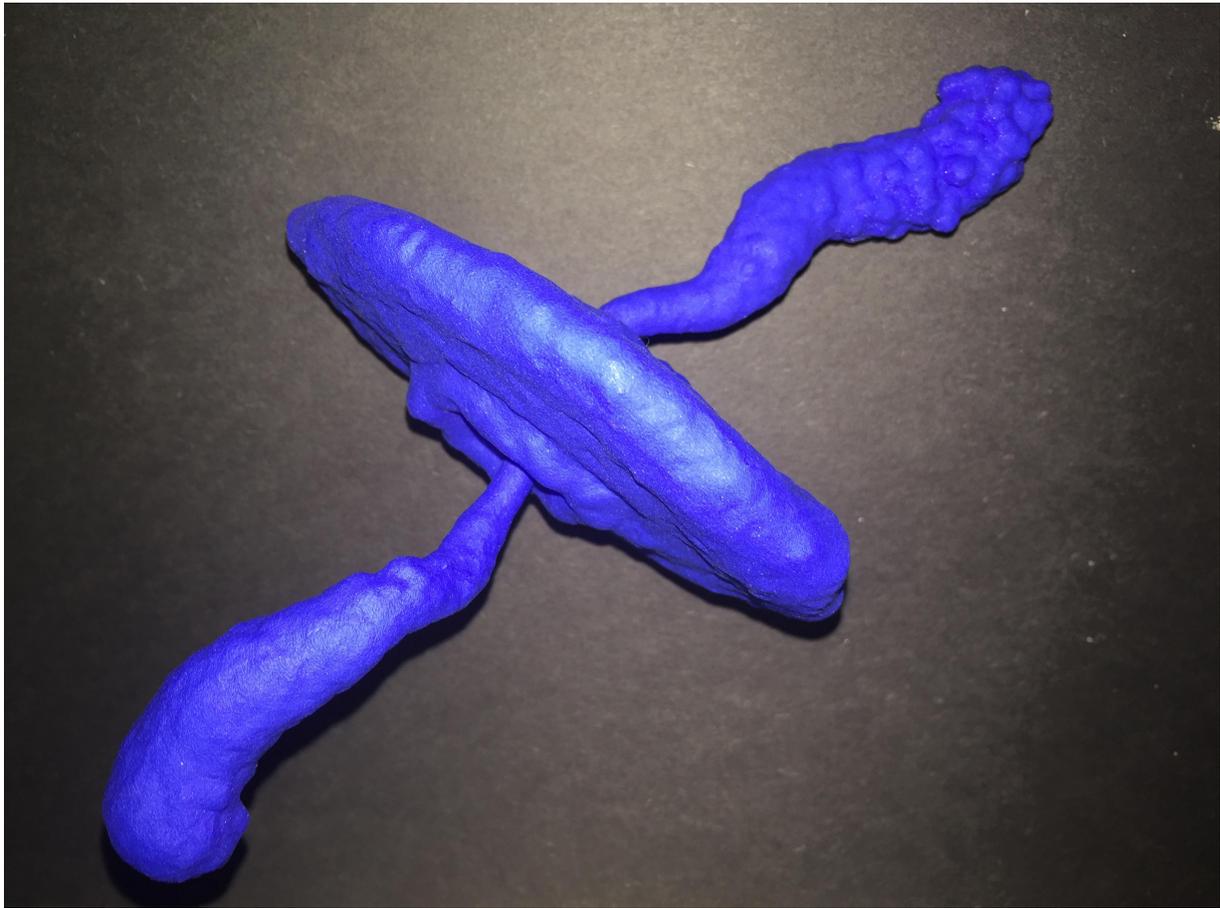
Summary

The Crab Nebula contains the remains of an exploded star located about 6,500 light years from Earth.

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The Crab Nebula contains the remains of an exploded star located about 6,500 light years from Earth. The powerhouse "engine" energizing the Crab system is a pulsar (a rapidly spinning neutron star), which is sending out bursts of radiation 30 times a second. Experts used X-ray data from NASA's Chandra X-ray Observatory to create a three-dimensional (3D) representation of the Crab for anyone to explore. The structures revealed by Chandra's X-rays include the pulsar and a ringed disk of energized material, with jets of particles that fire off from opposite ends of the energetic pulsar.



The 3D model serves as scientifically informed approximation for visualizing the nebula in X-ray light. The nested structures of the Crab show that the nebula is not a classic supernova remnant, but a pulsar wind nebula. A traditional supernova remnant consists of a blast wave, and debris from the supernova that has been heated to millions of degrees. In a pulsar wind nebula, the system's inner region consists of lower-temperature gas that is heated up to thousands of degrees by the high-energy synchrotron radiation.

Select the 3D printer of your choice to make your own Crab pulsar. Download the files below. For our 3D-printed example shown here, one color of PLA filament was used. Support structures were required and removed after printing.

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Model files



crab_x_ray_3d_modelreadyprint.stl

Other files



3d_print_cards_crab.pdf

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