



**Chandra X-Ray
Observatory Center**

Harvard-Smithsonian Center for Astrophysics
60 Garden Street, Cambridge, MA 02138
<http://chandra.harvard.edu>

Cassiopeia A: The 320 year old remnant of a massive star that exploded. Located in the constellation Cassiopeia, it is 10 light years across and 10,000 light years from Earth.

Credit: NASA/CXC/SAO

This X-ray image of the Cassiopeia A (Cas A) supernova remnant is the official first light image of the Chandra X-ray Observatory. The 5,000 second image was made with the Advanced CCD Imaging Spectrometer (ACIS). Two shock waves are visible: a fast outer shock and a slower inner shock. The inner shock wave is believed to be due to the collision of the ejecta from the supernova explosion with a circumstellar shell of material, heating it to a temperature of ten million degrees Celsius. The outer shock wave is analogous to an awesome sonic boom resulting from this collision. The bright object near the center may be the long sought neutron star or black hole that remained after the explosion that produced Cas A.

Scale: Image is 6 arcmin on a side.
Chandra X-ray Observatory ACIS Image

CXC operated for NASA by the Smithsonian Astrophysical Observatory