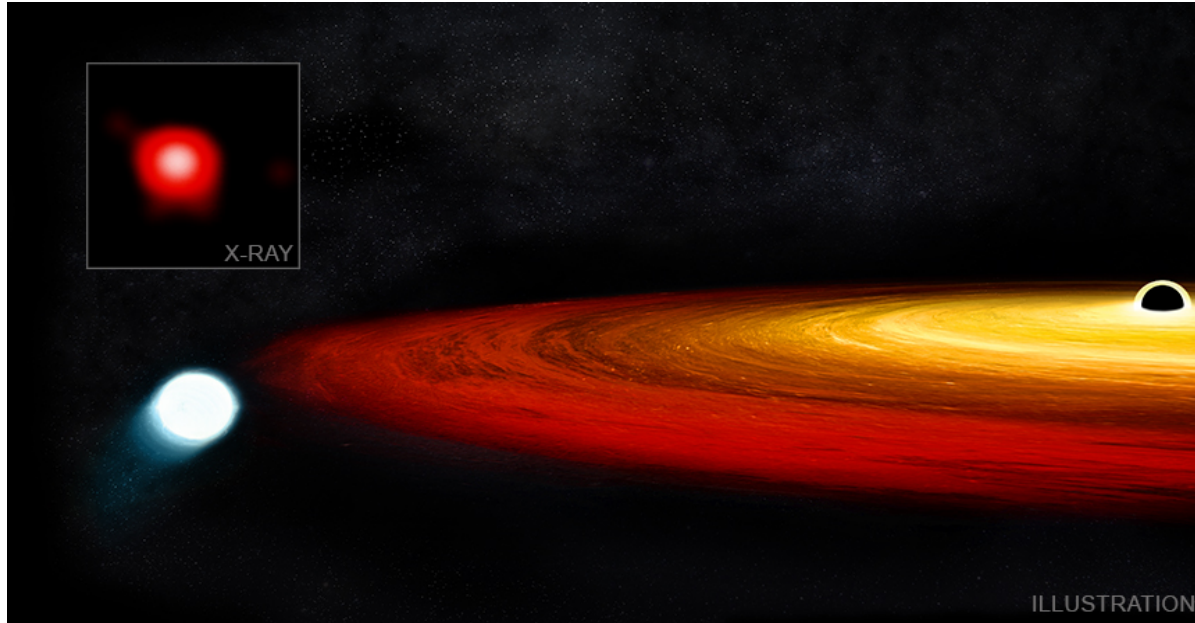




Chandra Science Highlight ' 1

A Tidal Disruption Near Miss



- Observations with Chandra and XMM-Newton have detected bursts of X-rays from the galaxy GSN 069 every nine-hours.
- To explain these observations the following scenario was developed: a red giant star approached a supermassive black hole in GSN 069, and the star's outer layers were stripped off.
- This left behind the core of the star – a white dwarf – in a 9-hour long, elliptical orbit around the black hole.
- At closest approach to the black hole, material is pulled off the white dwarf into a surrounding disk, giving a burst of X-rays every nine-hours.

Distance estimate: About 250 million light years

Scale: X-ray image is about 11 arcsec (13,000 light years) across.

Caption: The artist's illustration shows a white dwarf star orbiting a supermassive black hole in the galaxy GSN 069. The orbit is highly elliptical, so that at closest approach, just after the moment depicted in the artist's illustration, the black hole pulls matter from the white dwarf onto a surrounding disk. The inset shows a Chandra observation of the burst of X-rays caused by the transfer of this material every nine-hours.

Credit: X-ray; NASA/CXO/CSIC-INTA/G.Miniutti et al.;
Illustration: NASA/CXC//M.Weiss.

Instrument: ACIS

Reference: King, A., 2020, MNRAS, 493, L120;
[arXiv:2002.00970](https://arxiv.org/abs/2002.00970)

**CXC Operated for NASA by the Smithsonian ' 1
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