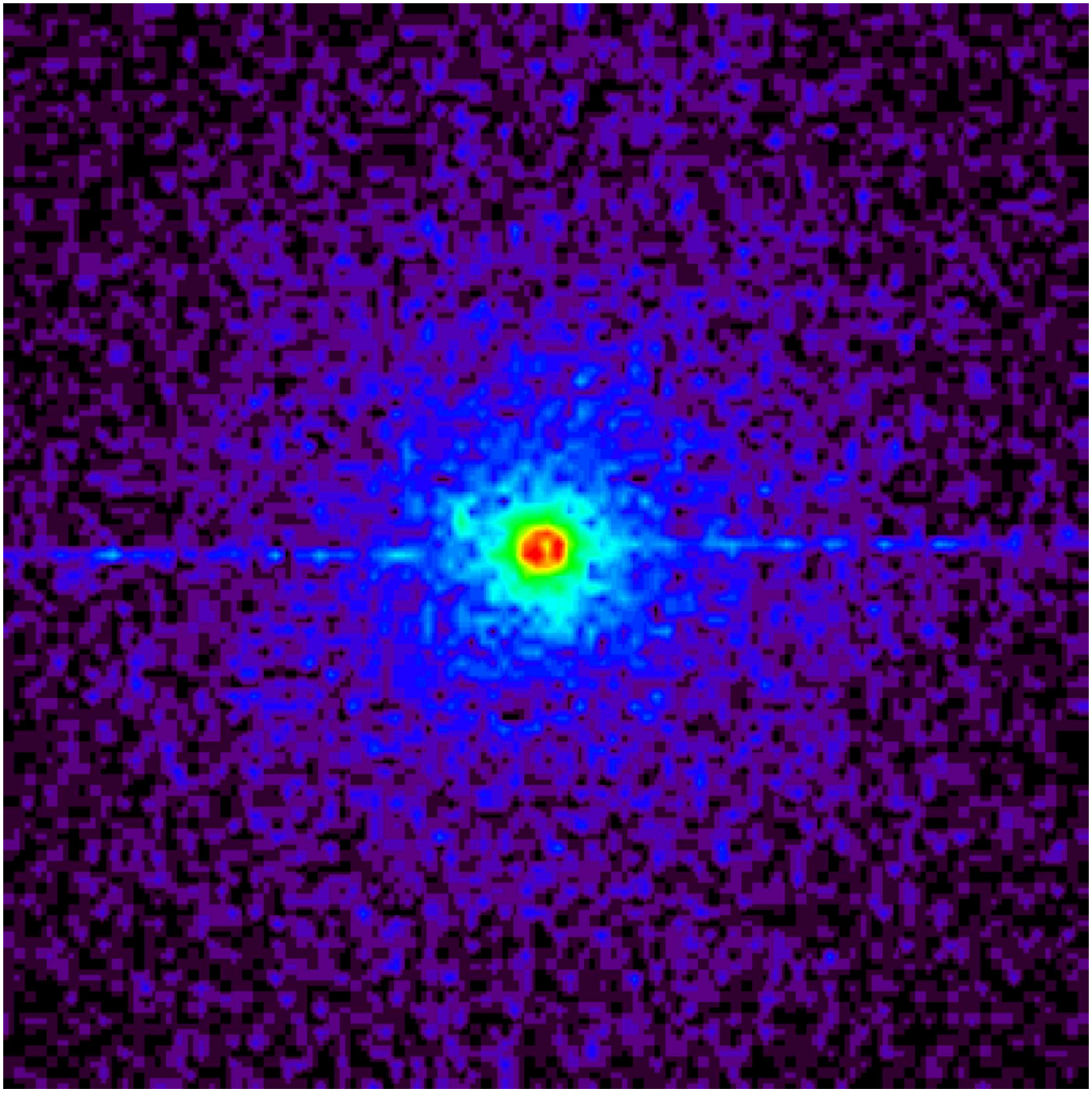

Chandra X-Ray Observatory Center

Harvard-Smithsonian Center for Astrophysics
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Cygnus X-3: A binary X-ray source and scattering halo.
Credit: NASA/SRON/MPE

The Chandra image of Cygnus X-3 shows the X-ray source (red) and a halo (green & blue). The halo is due to scattering by interstellar dust grains along the line of sight to the source. The sharp horizontal line is an instrument effect. Scientists have used the radiation from the halo as a new way to measure cosmic distances. The X-ray emission from Cygnus X-3 varies regularly with a 4.8 hour period, as the compact star circles a companion star. By observing the delays and smearing at different parts of the halo, the distance to the X-ray source is found to be 30,000 light years.

Scale: Image is 200 arcsec on a side.

Chandra X-ray Observatory ACIS/HETG image