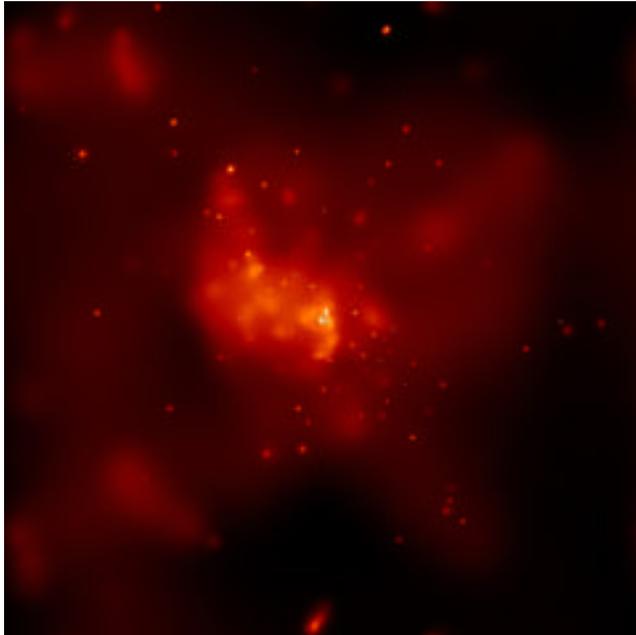




Chandra Science Highlights

Sagittarius A*: Chandra Discovers X-ray Flare from Direction of Supermassive Black Hole at the Galactic Center



This image shows the central region of our Milky Way Galaxy as seen by Chandra. The bright, point-like source (indicated by the circle) at the center of the image was produced by a huge X-ray flare that occurred in the vicinity of the supermassive black hole at the center of our galaxy.

(Credit: NASA/MIT/F. Baganoff et al.)

Reference: F. Baganoff et al., Nature 413, 45 (6 September 2001)

Chandra X-ray Observatory ACIS image; total exposure time: 35,400 seconds

Scale: 8 arc minutes on a side

- Rapid rise and decay time of a few hundred seconds for the flare suggest that it occurred near - about the distance of the Earth from the Sun - to the event horizon of the supermassive black hole in the galactic center.
- This is the first such flare observed, and represents important evidence that a supermassive black hole is responsible for the activity observed at the galactic center at other wavelengths.
- The peak luminosity of the flare was 1×10^{35} erg/s, and the total energy release corresponded to the mass equivalent of a comet falling into the black hole.
- The high resolution and high sensitivity of Chandra was essential for making this observation in such a crowded region of the sky.
- A flare of this luminosity could not have been detected in M31, the nearest large galaxy, so the galactic center black hole is a uniquely valuable object for studying accretion by a supermassive black hole. **September 2001**