



**Chandra X-ray  
Observatory Center**

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

---

**4C+00.58:** A galaxy harboring a giant black hole about 780 million light years away.  
(Credit: X-ray (NASA/CXC/UMD/Hodges-Kluck et al); Radio (NSF/NRAO/VLA/UMD/Hodges-Kluck et al); Optical (SDSS))

**Caption:** The close-up view in the inset shows a composite image of the galaxy 4C +00.58 in X-rays from Chandra (gold) and radio waves from the Very Large Array (blue). New data suggest the giant black hole has been flipped around, causing its spin axis to point in a different direction from before. The deep Chandra X-ray image shows hot gas in and around 4C +00.58 and reveals four different cavities -- regions of lower than average X-ray emission -- around the black hole. The X-ray data when combined with the radio information suggests that collisions with other galaxies may have caused the black hole to shift the direction it was spinning.

**Scale:** Wide field image is 15 arcmin across (3.4 million light years), inset image is 1.6 arcmin across (363,000 light years).

*Chandra X-ray Observatory ACIS Image*

*CXC operated for NASA by the Smithsonian Astrophysical Observatory*

---