



**Chandra X-ray  
Observatory Center**

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**NGC 4258:** A spiral galaxy about 25 million light years from Earth, also known as M106.  
(Credit: X-ray: NASA/CXC/Univ. of Maryland/A.S. Wilson et al. Optical: Pal.Obs. DSS; IR: NASA/JPL-Caltech; VLA: NRAO/AUI/NSF)

**Caption:** For decades, astronomers have known about the so-called anomalous arms in NGC 4258. Visible (seen in gold) and infrared (red) light reveals two prominent arms. However, radio (purple) and X-ray data from Chandra (blue) show two additional, offset arms. By combining all of these data, scientists have found evidence that the mysterious X-ray arms are due to shock waves generated by the supermassive black hole in the nucleus of NGC 4258. The shock waves heat the gas in the disk, causing it to radiate brightly in X-rays and other wavelengths.

**Scale:** Image is 9.2 x 7.5 arcmin across.

*Chandra X-ray Observatory ACIS Image*

*CXC operated for NASA by the Smithsonian Astrophysical Observatory*

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