



**Chandra X-ray  
Observatory Center**

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**M101:** Four images of galaxies that have been made using data from both amateur and professional telescopes.

(Credit: X-ray: NASA/CXC/SAO; Optical: Detlef Hartmann; Infrared: NASA/JPL-Caltech)

**Caption:** This quartet of galaxies comes from a collaboration of professional and amateur astronomers that combines optical data from amateur telescopes with data from the archives of NASA missions. Starting in the upper left and moving clockwise, the galaxies are M101 (the "Pinwheel Galaxy"), M81, Centaurus A, and M51 (the "Whirlpool Galaxy"). In these images, X-rays from Chandra are in purple, infrared data from Spitzer are red, and the optical data are in red, green, and blue. The two astrophotographers who donated their images for these four images -- Detlef Hartmann and Rolf Olsen -- used their personal telescopes of 17.5 inches and 10 inches in diameter respectively.

**Scale:** Image is 24 arcmin on a side (about 1.5 million light years)

*Chandra X-ray Observatory ACIS Image*

*CXC operated for NASA by the Smithsonian Astrophysical Observatory*