



**Chandra X-Ray  
Observatory Center**

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

**M82:** A starburst galaxy (central region) in the constellation Ursa Major.  
**Credit:** NASA/SAO/CXC

Using Chandra's superior resolution, astronomers have discovered a new type of black hole. The bright source near the center of the image is associated with the black hole. It is located 600 light years away from the dynamical center (small green +) of M82 and has a mass of more than 500 suns. This mid-mass black hole may represent the missing link between smaller stellar black holes and the supermassive variety found at the centers of most galaxies. The source was seen to increase dramatically in intensity over a period of three months (compare left and right panels). Short-term flickering of the intensity with a period of ten minutes was also observed. This fast flickering and the peak intensity of the source are strong evidence that the X-rays are produced by matter falling into a large black hole.

**Scale:** Image is 30 arcsec on a side.  
*Chandra X-ray Observatory HRC Images*

*CXC operated for NASA by the Smithsonian Astrophysical Observatory*