



**Chandra X-Ray  
Observatory Center**

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**Abell 2597:** A cluster of galaxies about a billion light years from Earth, located in the constellation Aquarius.  
**Credit:** NASA/CXC/Ohio U/B.McNamara et al.

The Chandra image of Abell 2597 revealed a vast cloud of hot gas with two dark cavities - upper left and lower right - about 100,000 light years from the bright center of the cluster. These so-called ghost cavities are thought to be 100 million-year-old relics of an ancient eruption that originated around a supermassive black hole in the core of a centrally located galaxy. Though dim, the cavities contain a mixture of very hot gas, high-energy particles, and magnetic fields - otherwise they would have collapsed under the pressure of the surrounding hot gas. If dozens of these cavities were created over the life of the cluster, they could explain the surprisingly strong magnetic field of the multimillion degree Celsius gas that pervades the cluster.

**Scale:** Image is 1.6 arcmin on a side.  
*Chandra X-ray Observatory ACIS Image*

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*CXC operated for NASA by the Smithsonian Astrophysical Observatory*