



**Chandra X-ray  
Observatory Center**

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

**Abell 2029:** A cluster of galaxies one billion light years from Earth in the constellation Virgo.  
(Credits: X-ray: NASA/CXC/UCI/A.Lewis et al.; Optical: Pal.Obs. DSS)

**Caption:** Abell 2029 is composed of thousands of galaxies (optical image, right) enveloped in a gigantic cloud of hot gas (X-ray image, left), and an amount of dark matter equivalent to more than a hundred trillion Suns. Both the gas and the galaxies are confined to the cluster primarily by the gravity of the dark matter. If this galaxy cluster is a representative sample of the universe, the Chandra observation indicates that 70 to 90 percent of the mass of the universe consists of dark matter - mysterious particles left over from the dense early universe that interact with each other and "normal" matter only through gravity.

**Scale:** Each image is 4 arcmin on a side.  
*Chandra X-ray Observatory ACIS Image*

*CXC operated for NASA by the Smithsonian Astrophysical Observatory*