



Chandra Science Highlight

DLSC1 J0916.2+2951:

Discovery of the Musket Ball Cluster

Credit:

X-ray: NASA/CXC/UCDavis/W.Dawson et al.;

Optical: NASA/STScI/UCDAVIS/W.Dawson et al.



Distance estimate 5.23 billion light years ($z=0.53$)
Scale: Image is 6.4 arcmin across (about 8 billion light years)

Chandra ACIS Image

In this composite image of a violent collision between two galaxy clusters, the hot gas observed with Chandra is colored red, the galaxies in the optical image from Hubble appear as mostly white and yellow, and the location of the majority of the matter in the cluster (dominated by dark matter) is colored blue.

- The matter distribution is determined by using optical data from the Subaru, Hubble and Mayall telescopes that reveal the effects of gravitational lensing through the distortion of light from background galaxies.
- The data show that the hot gas, which contains most of the normal, or baryonic matter, has been separated from the collisionless dark matter by the merger.
- The collision is estimated to have occurred about 700 million years ago, in the cluster's time frame, so the Musket Ball cluster provides a picture of cluster mergers 2-5 times further progressed than similar systems observed to date.

Reference : Dawson, W. et al, 2012, ApJ 747, 41;
[arXiv:1110.4391](https://arxiv.org/abs/1110.4391)