



Chandra Science Highlight

Abell 1033: Chandra Data Suggest Giant Collision Triggered "Radio Phoenix"



Multiwavelength image of the galaxy cluster Abell 1033 (A1033). X-rays are shown in pink, and radio data in green. The background image shows optical observations from the SDSS. A map of the number density of galaxies, made from the analysis of galaxy distances (redshifts), is in blue. The radio phoenix is the white horizontal bar at the 6 o'clock position. The boomerang-shaped object at the 9 o'clock position is due to radio emission from jets of high-energy particles produced by a supermassive black hole in a galaxy in the cluster that is moving rapidly to the left in the image.

- Optical and X-ray data indicate that A1033 is composed of the merger of two subclusters of galaxies.
- The shape and spectrum of radio emission from the radio phoenix suggest that shock waves associated with this merger could have re-accelerated, or brought back to life, a faded cloud of high-energy electrons produced by a supermassive black hole in the past.

Reference: de Gasperin, F. et al, 2015, MNRAS (accepted); arXiv:1501.00043

Credit: X-ray: NASA/CXC/Univ of Hamburg/F. de Gasperin et al; Optical: Sloan Digital Sky Survey; Radio: NRAO/Very Large Array

Instrument: Chandra ACIS Observation

Scale:
Image is about 17 arcmin across
(about 7.5 million light years)

Distance Estimate:
1.62 billion light years
($z=0.1259$)

**CXC Operated for NASA by the
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