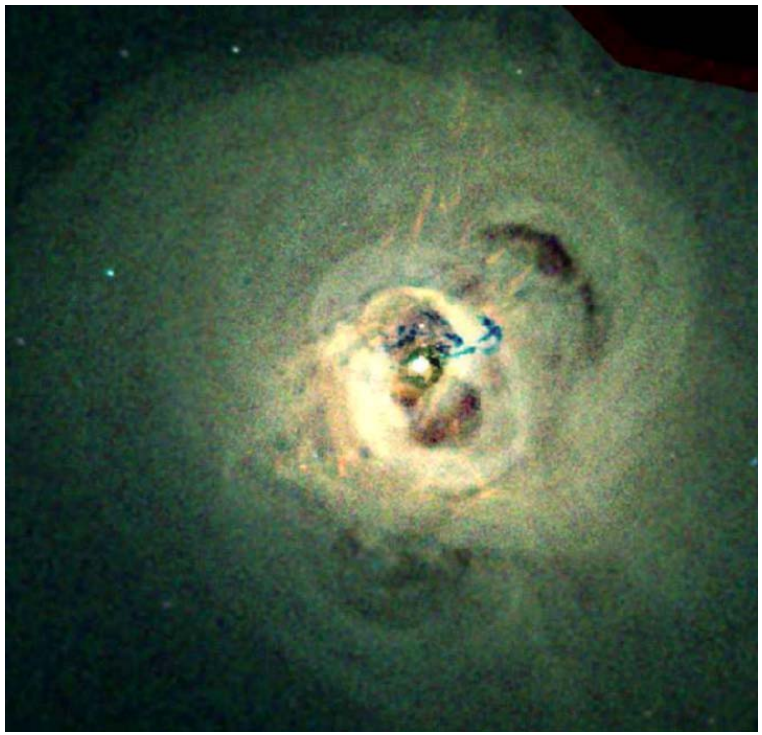
Chandra Science Highlight

Perseus Cluster of Galaxies

Chandra X-ray Observatory ACIS image.



Scale and Distance: the image is 284 arcseconds across, corresponding to 340,000 light years at the estimated distance of 250 million light years to the Perseus Cluster.

Credit: NASA/CXC/IoA/A.Fabian et al.

One of the most massive objects in the universe, the Perseus cluster contains thousands of galaxies immersed in a vast cloud of multimillion degree gas with the mass equivalent of trillions of suns. This hot gas is directly observable only with an X-ray telescope.

- An accumulation of 270 hours of Chandra observations of the central regions of the Perseus galaxy cluster reveals evidence of the turmoil that has wracked the cluster for hundreds of millions of years.
- The Enormous bright loops, ripples, and jet-like streaks apparent in the image can be linked to explosive activity generated by gas swirling toward the supermassive black hole (white spot) in the giant central galaxy, NGC 1275.
- Many of these features extend well beyond the galaxy where they heat the cluster gas and affect the evolution of the cluster.
- The dark blue filaments near the center are likely due to a galaxy that has been torn apart and is falling inward. Eventually, some of the gas from the doomed galaxy will be captured by the supermassive black hole in NGC 1275, fueling still more explosive activity.

Reference: A. Fabian et al. astro-ph/0510476

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