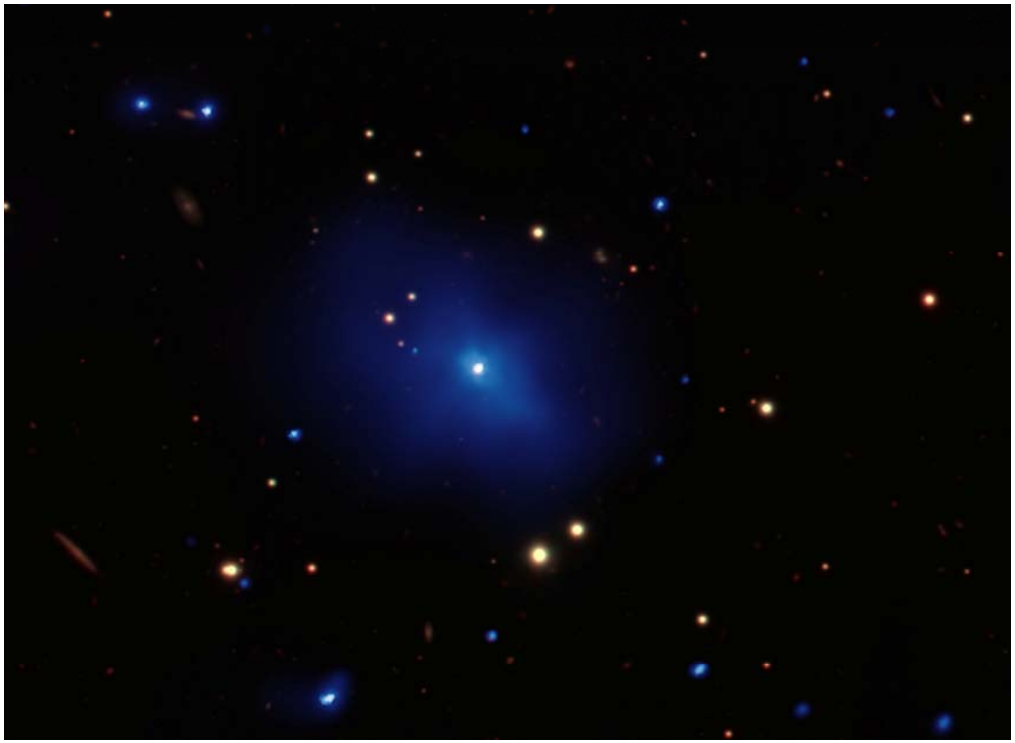
Chandra Science Highlight

3C186: A LUMINOUS QUASAR ASSOCIATED WITH A DISTANT COOLING-CORE GALAXY CLUSTER



Chandra X-ray Observatory ACIS image

Scale: Image is 4.6 by 3.4 arcmin (10.7 by 7.9 million light years).

Distance Estimate: About 8 billion light years (red shift z=1.067)

This composite image reveals X-ray emission (blue) from a galaxy cluster surrounding the quasar 3C 186. Optical data from the Gemini telescope (yellow) show stars and galaxies in the field of view.

- Chandra X-ray spectra show that the temperature of the gas drops from 80 million degrees on the outskirts of the cluster to 30 million in the core because of radiative cooling.
- This galaxy cluster is the most distant ever seen to contain a prominent cooling core.
- It is also the most distant observed to contain a quasar
- In principle, the cooling gas can supply enough fuel to support the growth of a supermassive black hole and to power the luminous quasar associated with the black hole.
- The cluster provides a rare opportunity to study the development of clusters and the formation of supermassive black holes.

References: Siemiginowska, A. Et al, 2010, ApJ 722:102-111

Credit: X-ray: NASA/CXC/SAO/A.Siemiginowska et al, Optical: AURA/Gemini Obs.

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