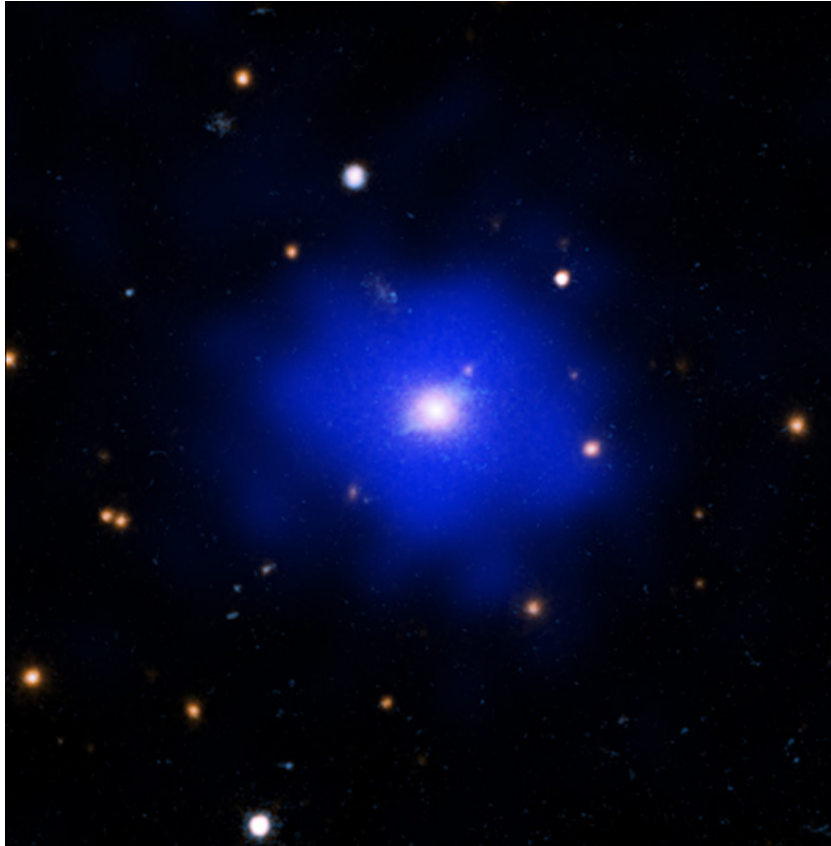




Chandra Science Highlight '23

Unexpectedly Calm and Remote Galaxy Cluster Discovered



- A galaxy cluster with an important characteristic – being “relaxed” – has been discovered about 8.4 billion light years from Earth.
- Relaxed galaxy clusters show no signs of violent collisions with other clusters or groups of galaxies.
- This is the most distant relaxed galaxy cluster yet seen. It was unclear if relaxed clusters could exist so early in the universe because they are usually still merging with other clusters at such times.
- This discovery was made possible by NASA’s Chandra X-ray Observatory along with optical and infrared telescopes.

Distance estimate: About 8.4 billion light-years

Credits: X-ray: NASA/CXC/MIT/M. Calzadilla; UV/Optical/Near-IR/IR: NASA/STScI/HST; Image processing: N. Wolk.

Instrument: ACIS

Reference: Calzadilla, M., et al, [2023, ApJ, 947, 44](#)

***Caption:** SPT-CL J2215-3537 (SPT2215 for short) is the most distant “relaxed” cluster of galaxies ever found. This composite image of SPT2215 contains X-rays from Chandra (blue) showing hot gas in the cluster, and data from Hubble (cyan and orange) showing galaxies in the cluster. The smooth appearance of the hot gas, without signs of asymmetries or sharp features, indicates that the cluster is relaxed, as does the lack of large galaxies around the massive galaxy in the center of the cluster.*

(The photo album is at: <https://chandra.harvard.edu/photo/2023/spt2215/>)

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