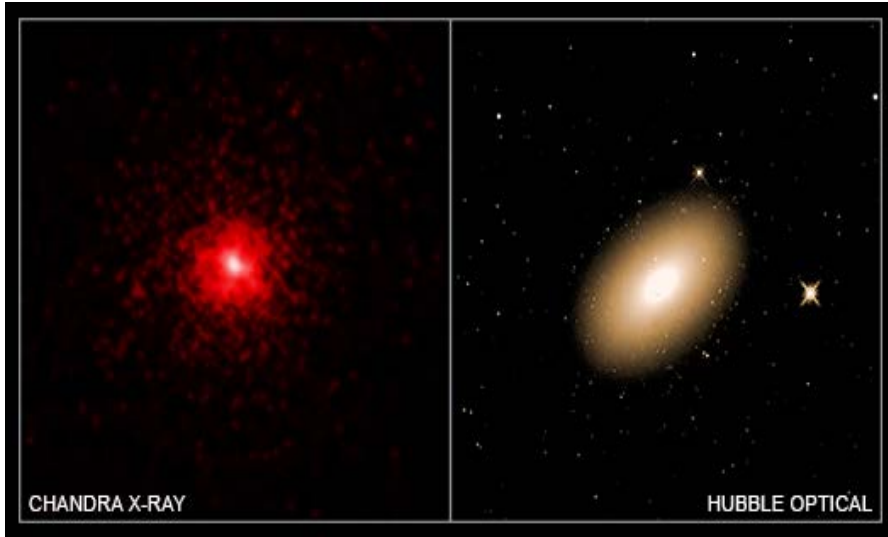


# Chandra Science Highlight

## Mrk 1216: A Compact Elliptical Galaxy with Extremely High Dark Matter Concentration



Caption: Chandra X-ray Observatory (left) and Hubble Space Telescope (right) images of the galaxy Markarian 1216 :

Distance estimate: 295 million light years

Image is 1 arcmin (about 85,000 light years) across.

- Astronomers believe that most massive elliptical galaxies formed in a two-stage process involving collapse about 12 billion years ago to form a compact galaxy, followed by mergers that increase the size of the galaxy.
- Mrk 1216 belongs to a family of compact elliptical galaxies that appear to have evolved without the merger phase. As such they provide a window to the early phase of galaxy formation.
- Chandra observations of hot gas trapped in a massive halo of dark matter confirm this picture. They indicate that the dark matter halo of Mrk 1216 has also evolved without merging with other halos.

Credit: NASA/CXC/Univ. of CA Irvine/D. Buote; Optical: NASA/STScI

Instrument: ACIS

Reference: Buote, D. and Barth, A. 2019 ApJ 877,91  
[arXiv:1902.02938](https://arxiv.org/abs/1902.02938)

**CXC Operated for NASA by the  
Smithsonian Astrophysical Observatory**

**June 2019**