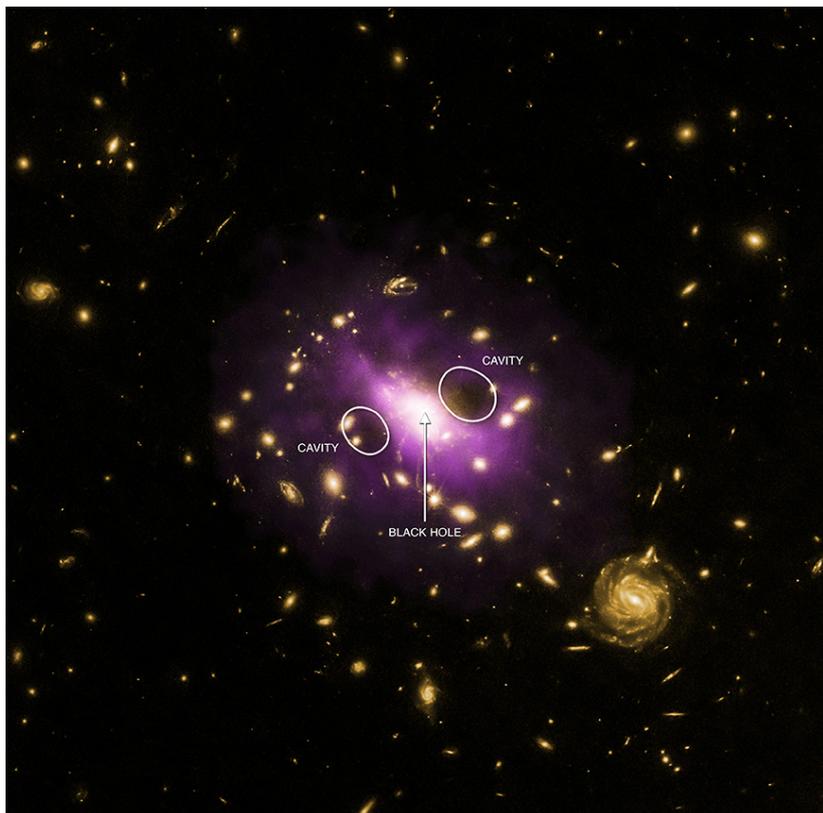




Chandra Science Highlight

RX J1532.9+3021: An Extreme Case of Black Hole Feedback



Composite image showing multimillion hot gas detected by Chandra data in purple, and galaxies detected by the Hubble Space Telescope in yellow. The locations of two large cavities in the hot gas on either side of the central galaxy, which contains a supermassive black hole, are also shown.

- ❑ Feedback from centrally located supermassive black holes plays a fundamental role in shaping the properties of massive galaxies, by injecting energy into the surrounding medium in the form of jets of high energy particles.
- ❑ The intracluster gas in galaxy clusters is dense enough to retain an imprint of the feedback, in the form of regions of reduced X-ray surface brightness (X-ray cavities).
- ❑ The cavities in the cluster RX J1532.9+3021 are about 100,000 light years across.
- ❑ The jet power required to form the X-ray cavities is enormous (equivalent to the power generated by 600 billion suns) and is sufficient to prevent the hot gas from cooling to form stars.

Reference: Hlavacek-Larrondo, J. et al. 2013, ApJ, 777, 163; arXiv:1306.0907

Credit: : X-ray: NASA/CXC/Stanford/J.Hlavacek-Larrondo et al, Optical: NASA/ESA/STScI/M.Postman & CLASH team)

Instrument: Chandra ACIS Observation

Scale:

Image is 1.6 arcmin (about 1.6 million light years) on a side

Distance Estimate:

About 3.9 billion light years (redshift $z = 0.361$)



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