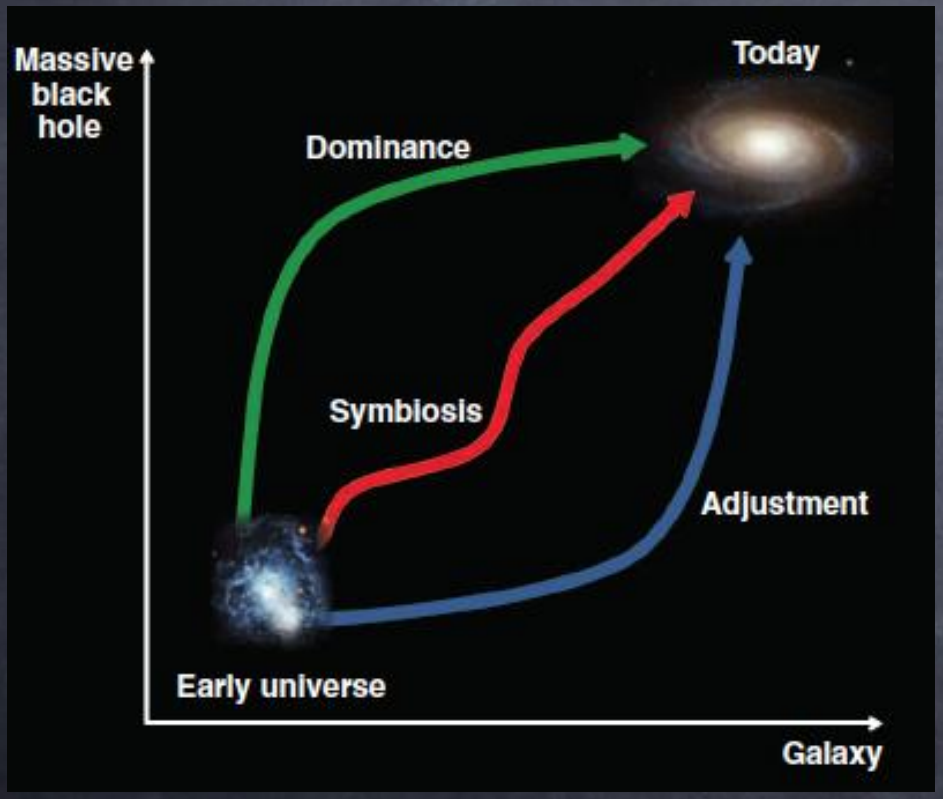
Light from first stars: GRBs!

- X-ray all sky monitor is light and cheap. It can greatly enhance high-z science (expecially if associated to a reasonably fast repointing, high sensitivity and high resolution

High angular resolution, local Universe (thanks P. Fabbiano)

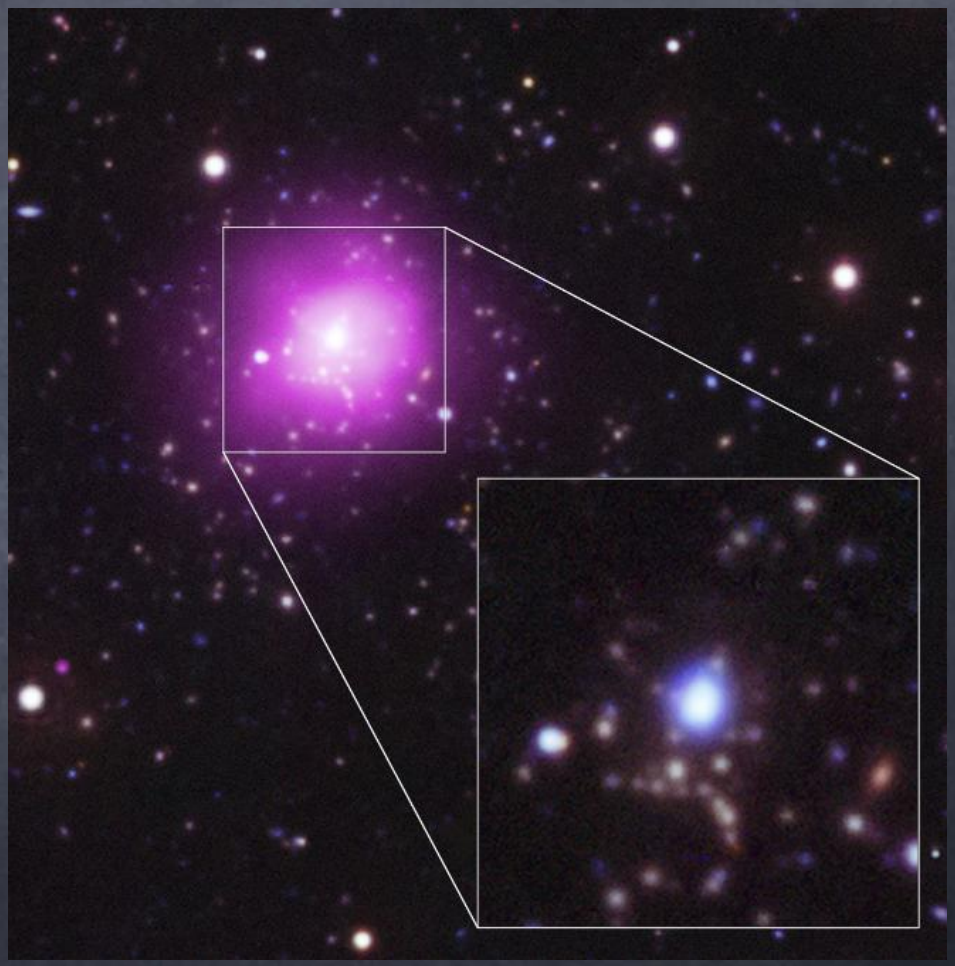


- Collapse
  - Galaxy Formation
  - MBH Formation
    - accretion
- Merging
  - Galaxy
  - MBH
    - accretion
- Feedback
  - Stellar / SN
  - AGN

High angular resolution, local Universe: *Collapse*

- Phoenix cluster - *z~0.6*
  - *L_X ~ 8 × 10^{45} erg/s*
  - *dM/dt = 3820 ± 530 $M_\odot$/yr*

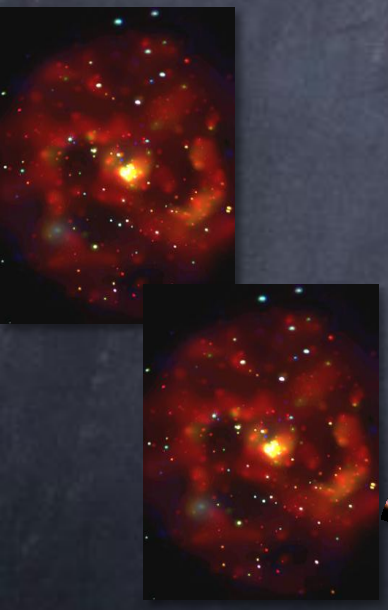
- Starburst ~ *740 $M_\odot$/yr*
- AGN *dM/dt ~ 58 $M_\odot$/yr*
- M_{BH} ~ *2 × 10^{10} $M_\odot$*



▪Chandra press release (McDonald et al 2012, Nature)

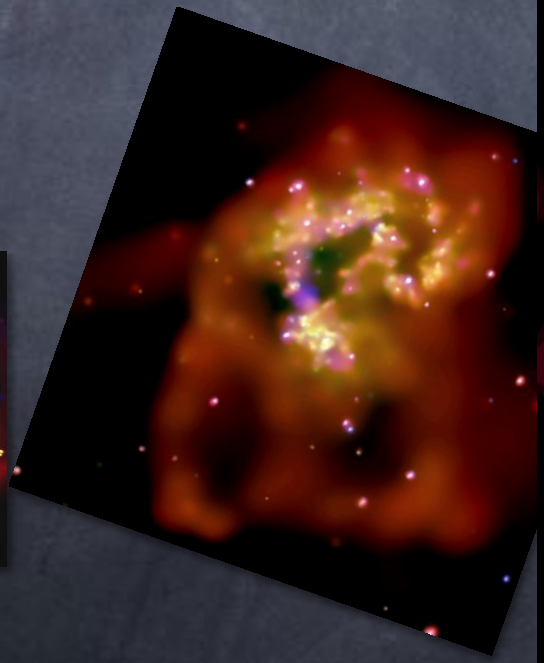
High angular resolution, local Universe: *Merging*

- Two Spirals



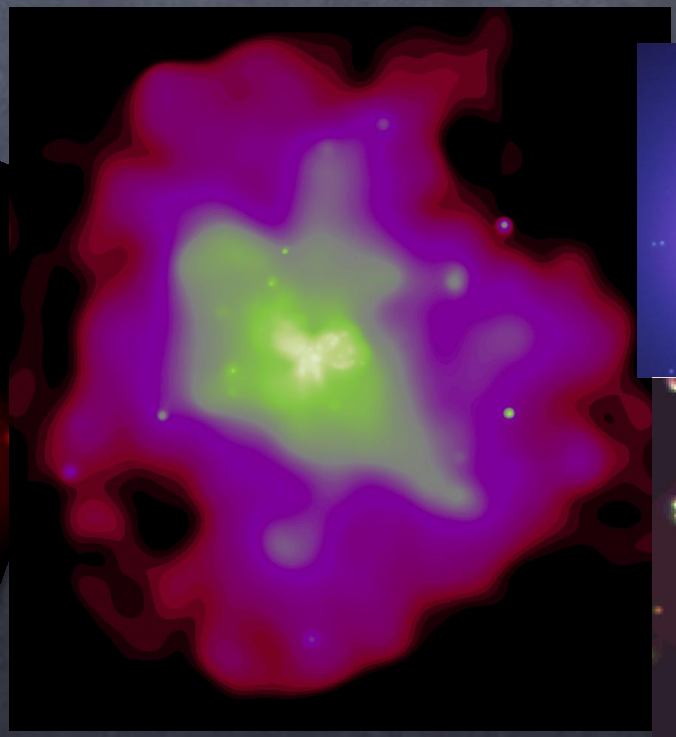
The Antennae

- Hot gas
- XRB

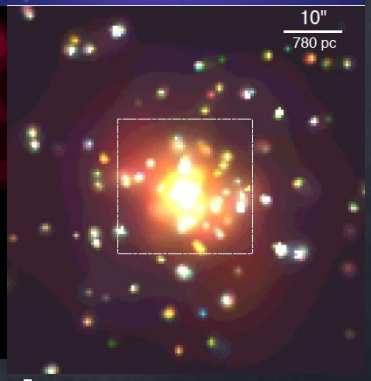


NGC 6240:

- double nucleus
- Hot Gas halos



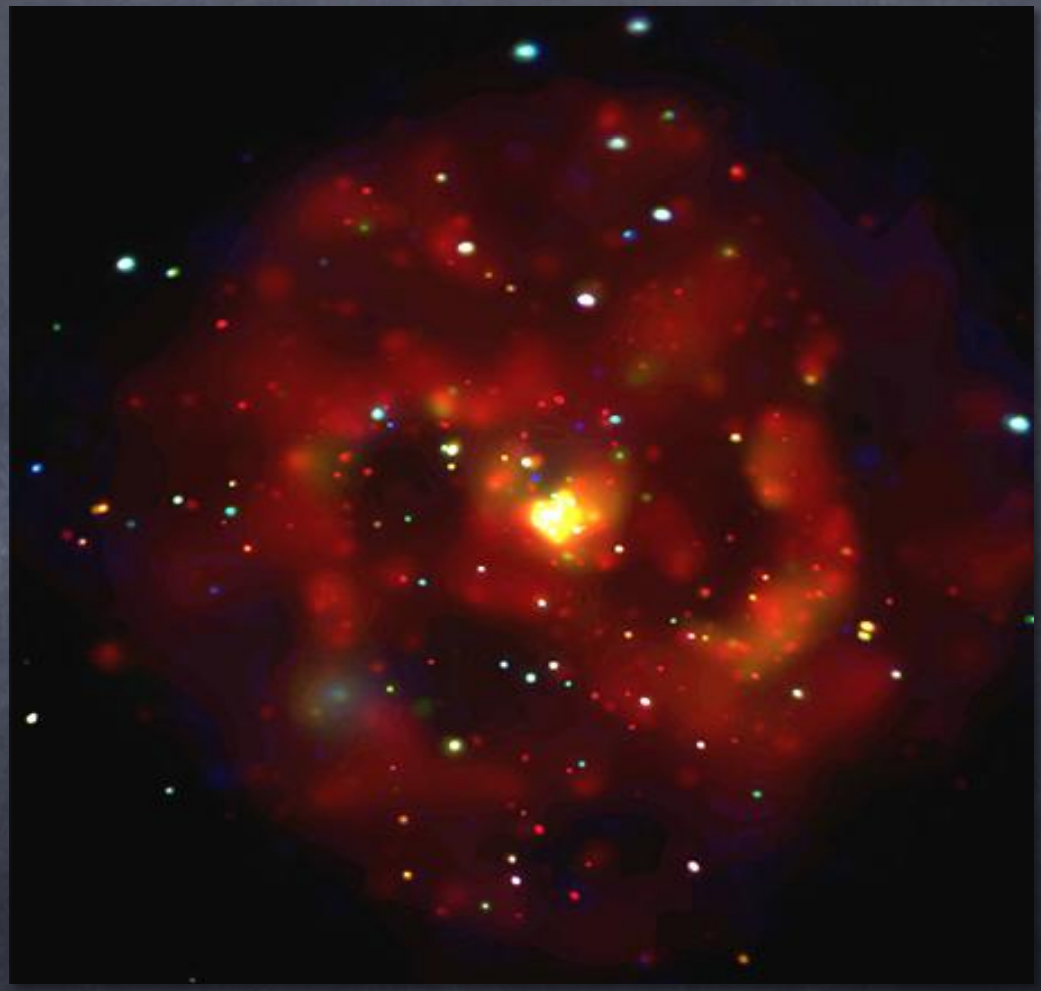
- Elliptical Galaxy



Direct view of merging scenarios!

High angular resolution, local Universe

- Spectroscopy of different galaxy components:
  - Nuclei
  - Hot gas
  - X binaries
  - Hot halos



High angular resolution, local Universe: *Feedbacks*

- Nuclear Feedback stops cooling flows – Perseus Cluster

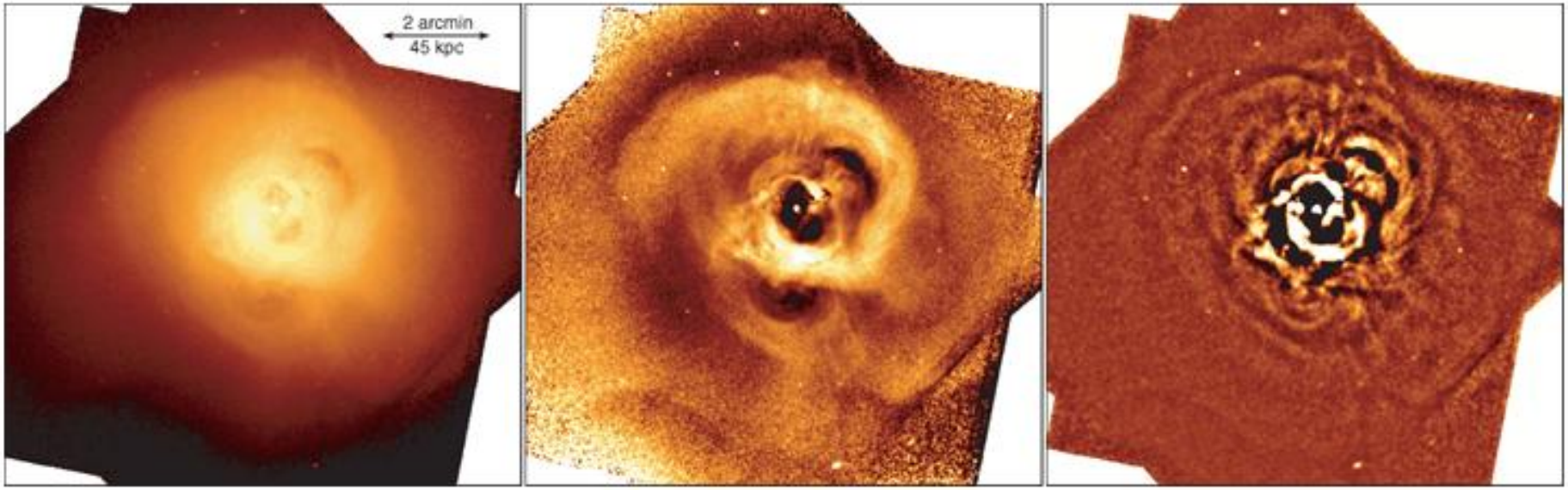


Figure 1. Surface brightness images of the cluster. Left-hand panel: 0.3–7 keV full-band X-ray exposure-map-corrected image, smoothed with a Gaussian of 1.5 arcsec. Middle panel: Image after subtracting King model fits to 40 sectors, smoothed with a Gaussian of 1.75 arcsec. Right-hand panel: Original image after high-pass filtering, then smoothing with a Gaussian of 1.5 arcsec.