

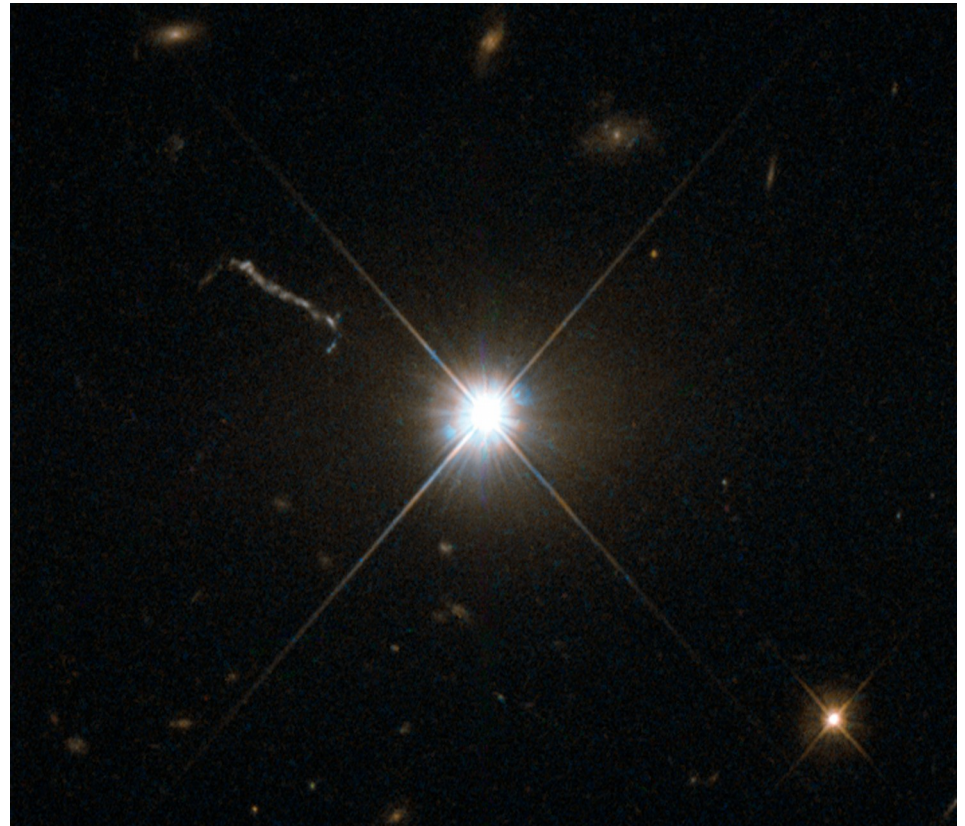
Modeling AGN Feedback

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Active Galactic Nuclei

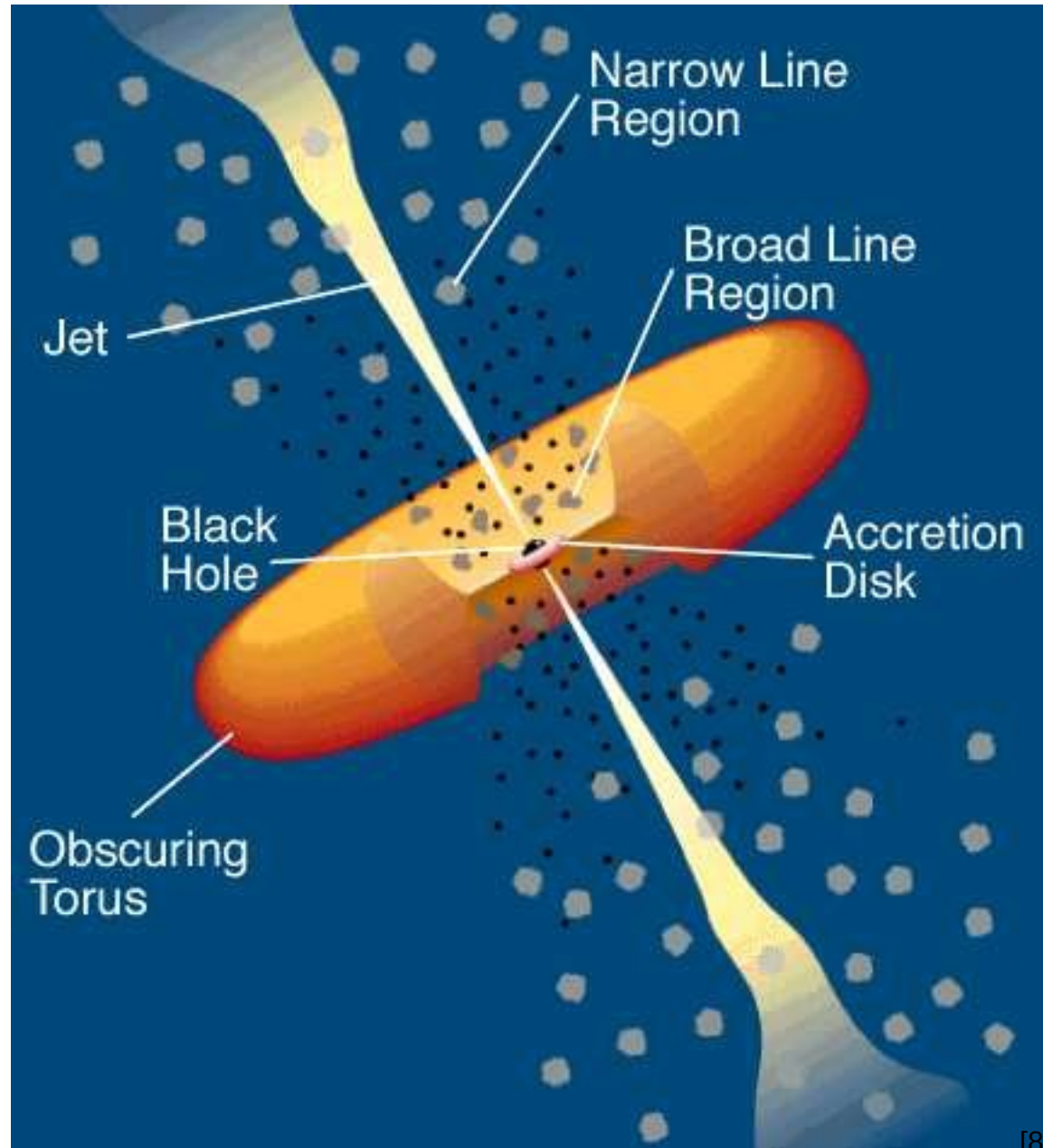
- Among the most luminous objects in the universe.
- Engines of galactic feedback mechanisms.
- Cannot be resolved optically; geometry is inferred using reverberation mapping.



Drilling into the AGN



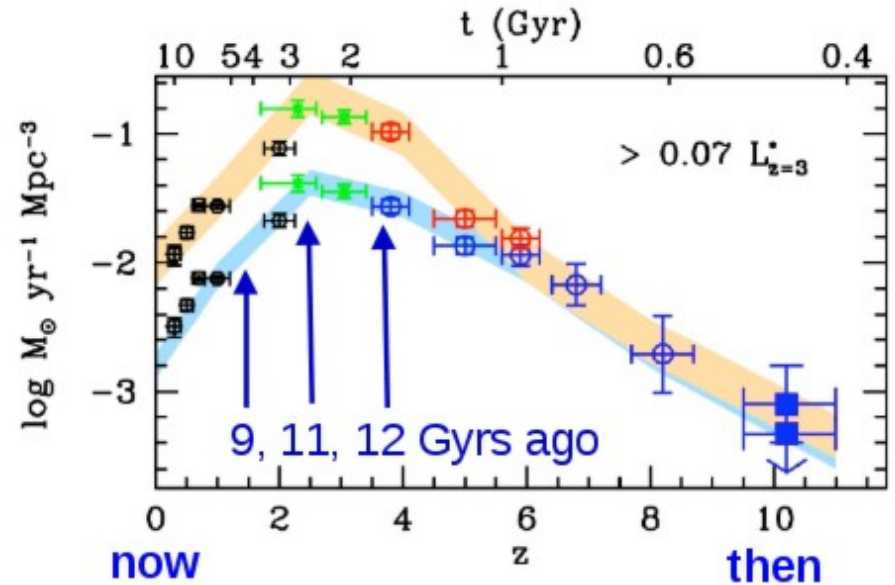
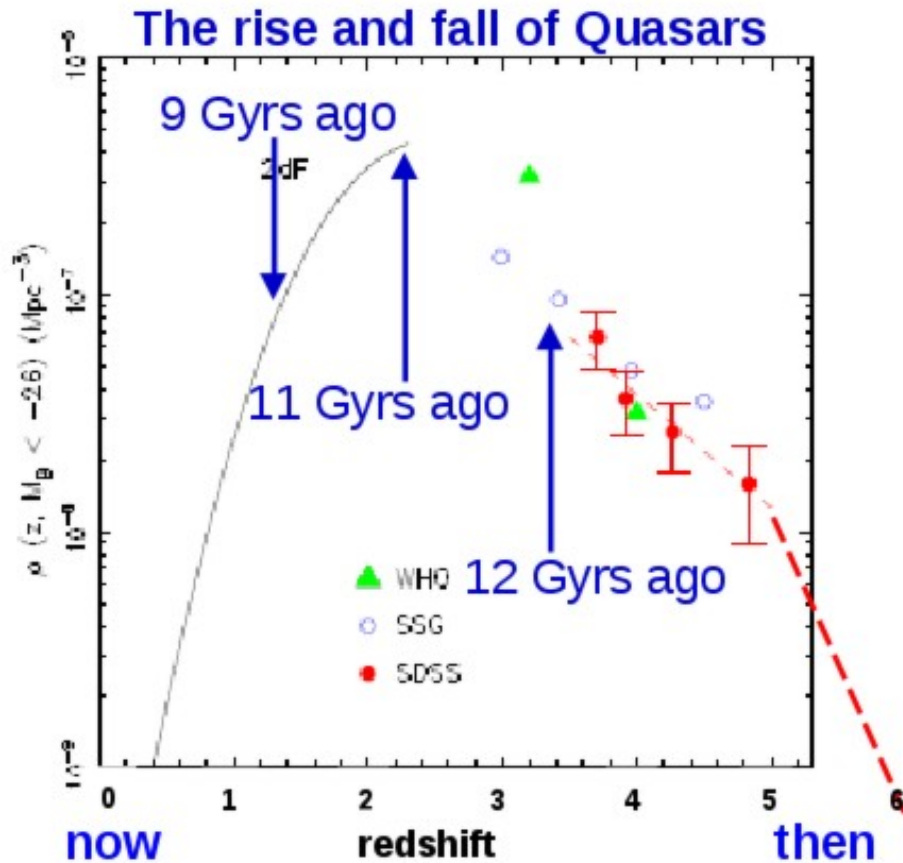
AGN Structure



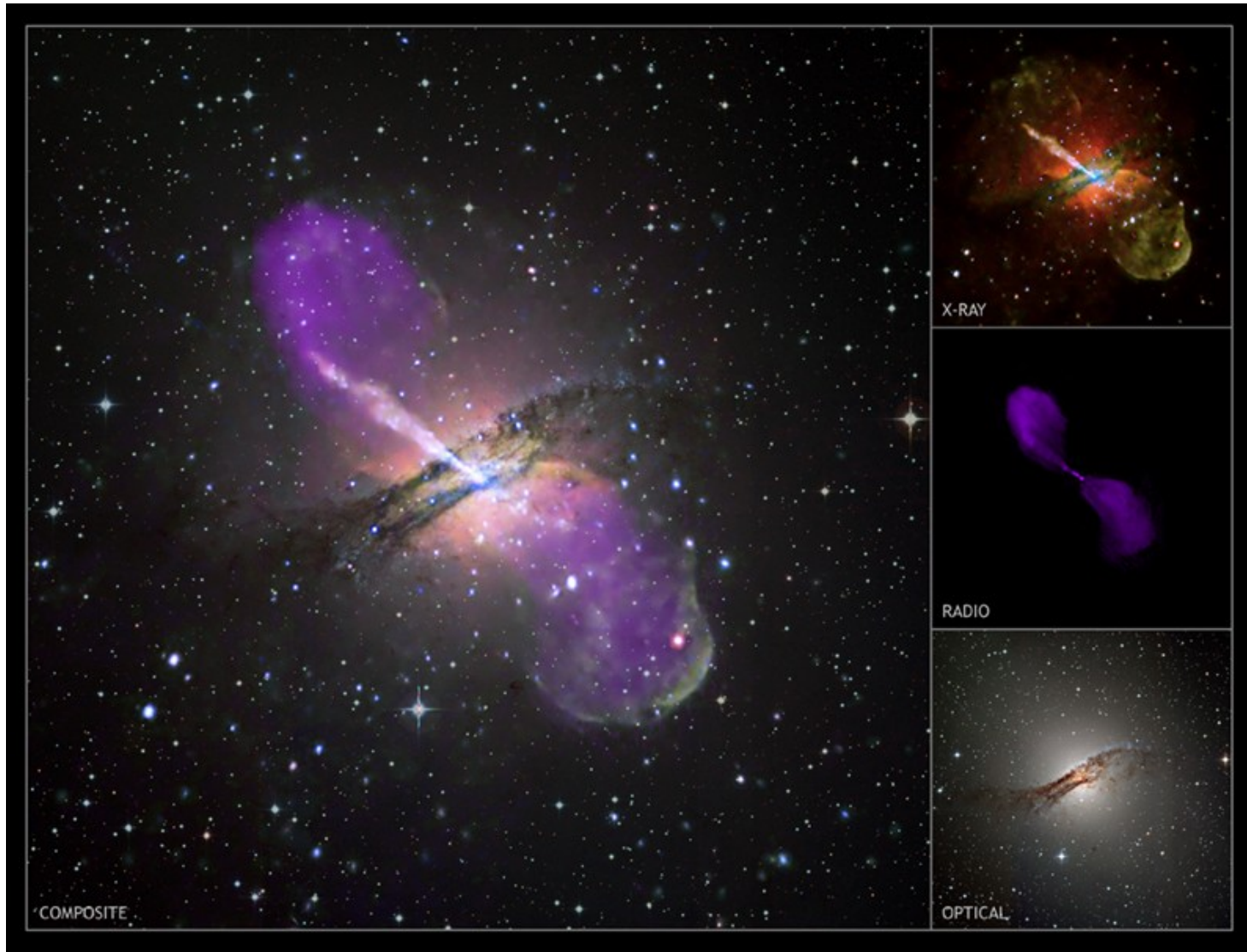
Importance of AGN Research

- Use as standard candle.
- Understand feedback processes in galaxies.
- Incredibly interesting.

AGN and Star Formation Appear Connected

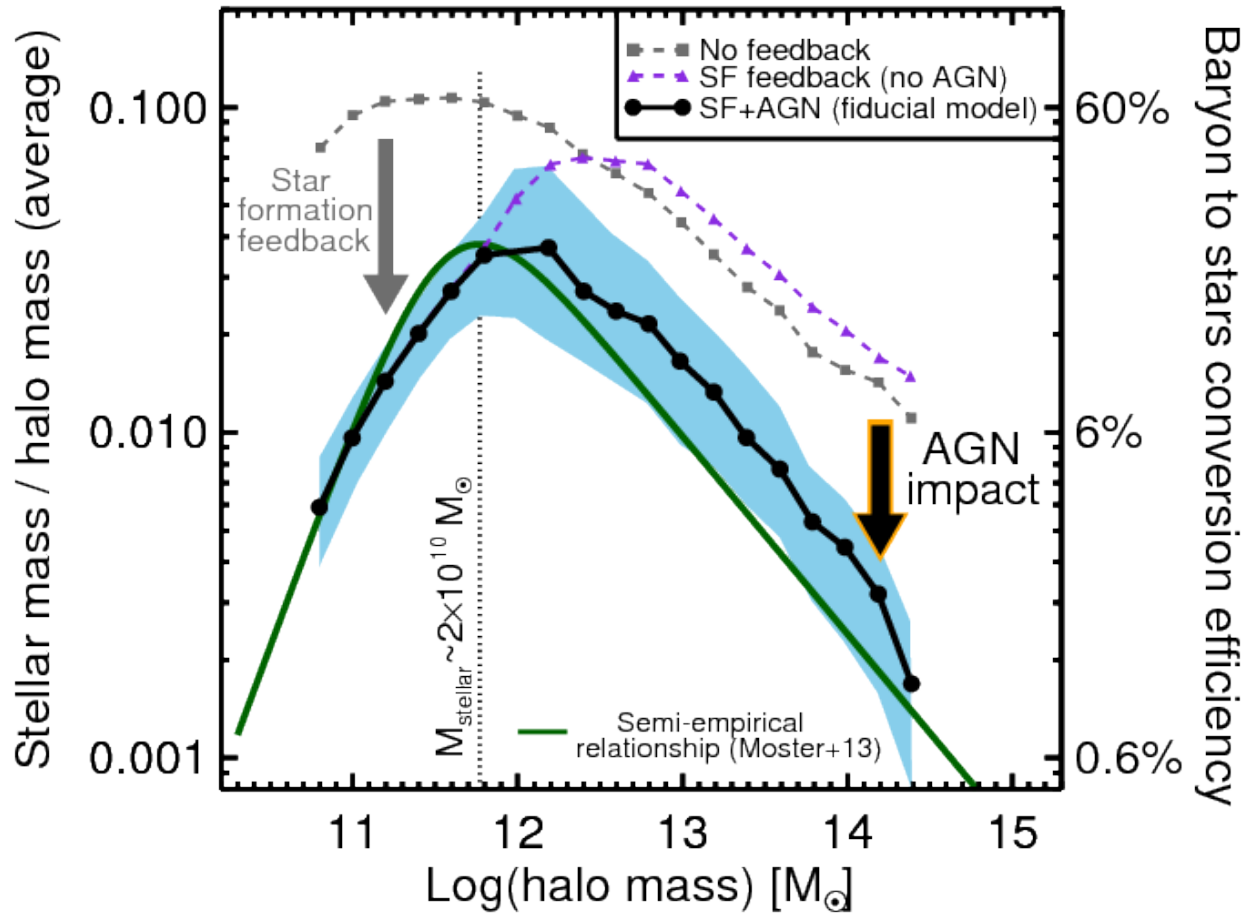


Centaurus A



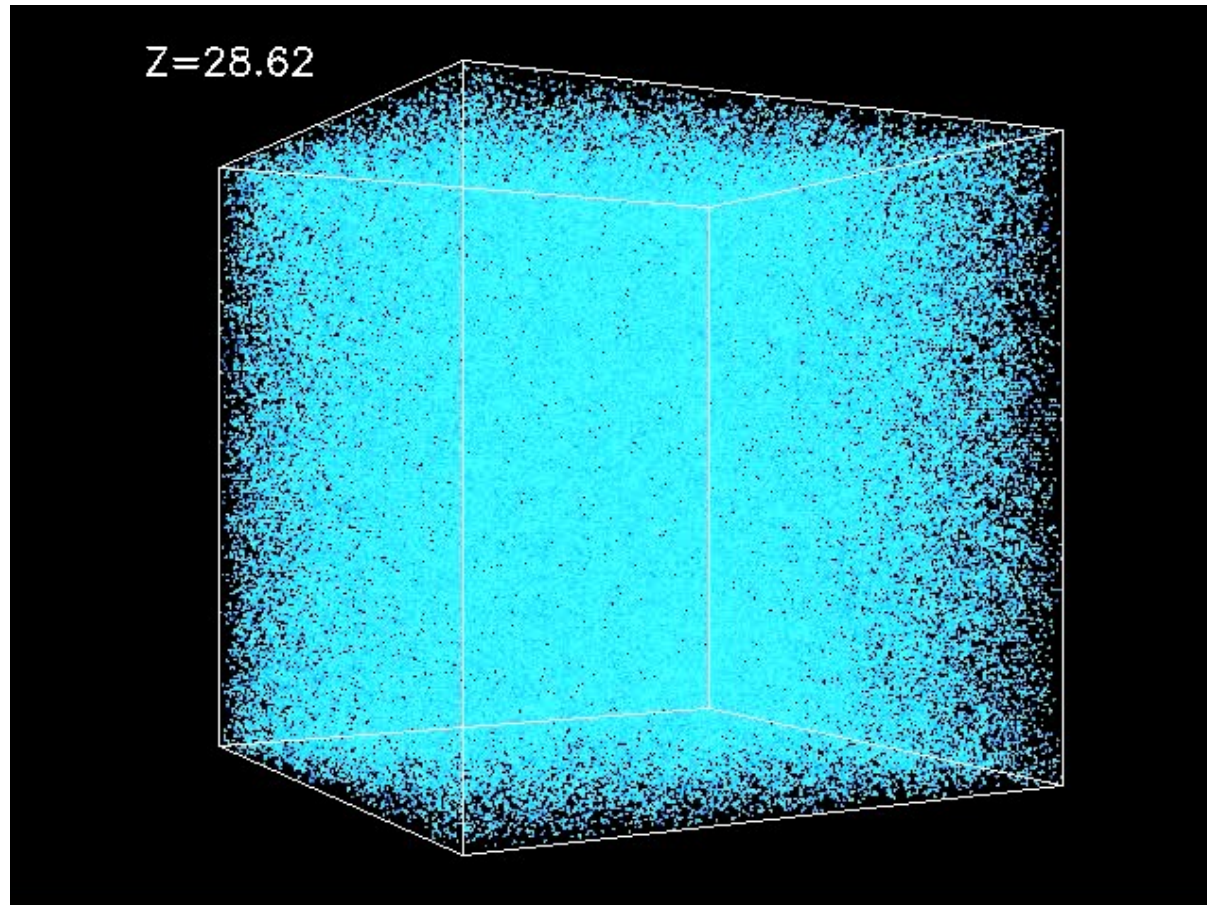
Nasa, APOD (2008, Jan. 10)

AGN Feedback Necessary?



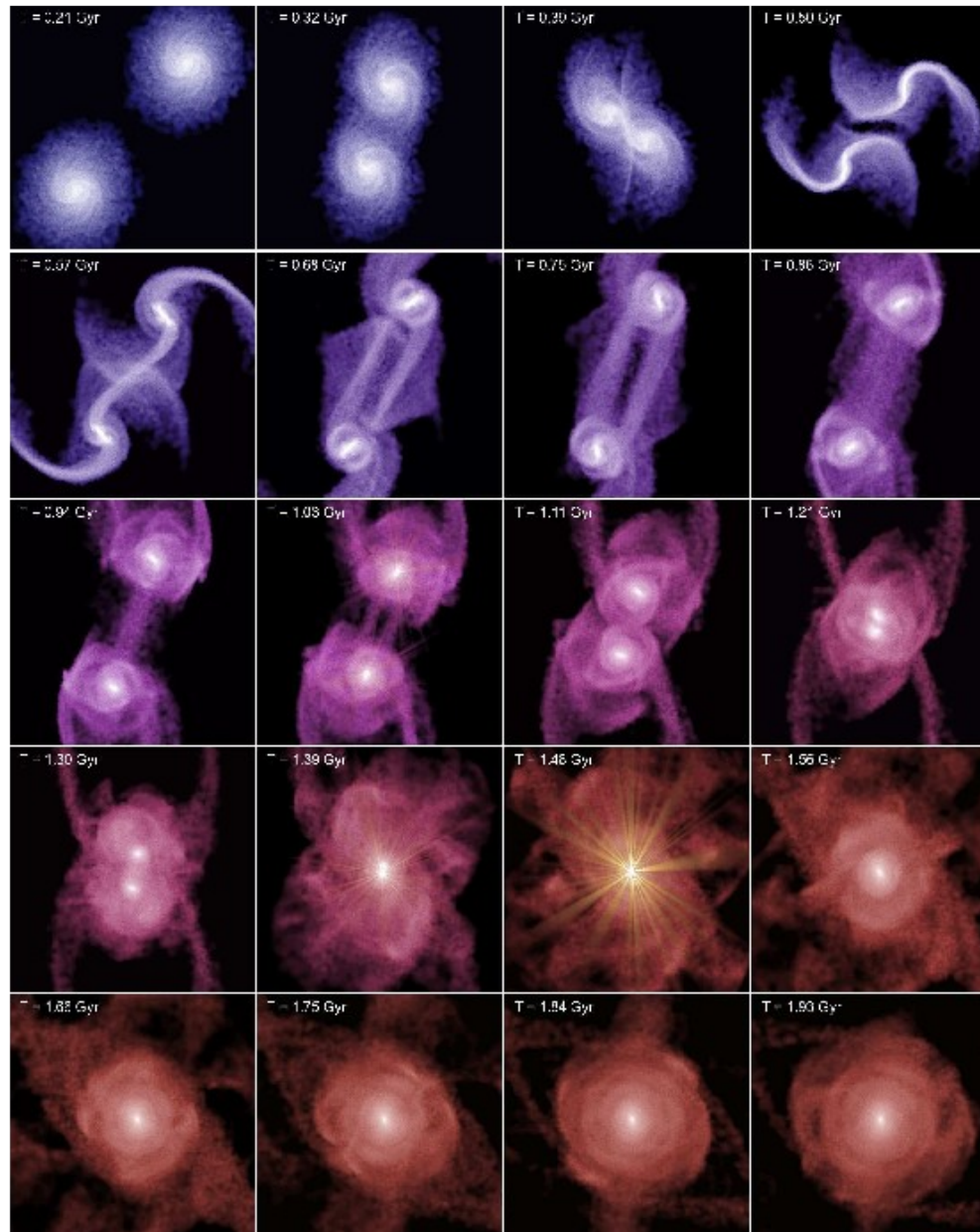
Current State of Modeling

Modeling Universe Structure Evolution



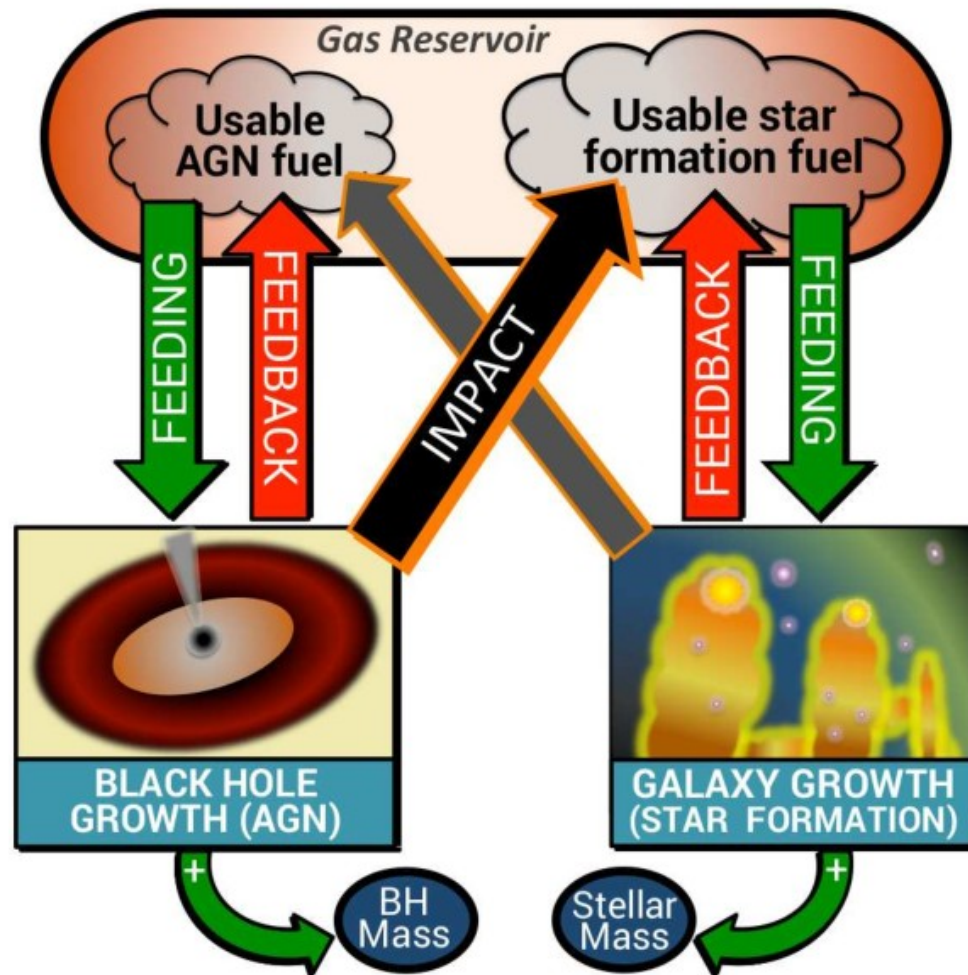
Springel et al. (2006)

AGN Feedback Modeled in Mergers

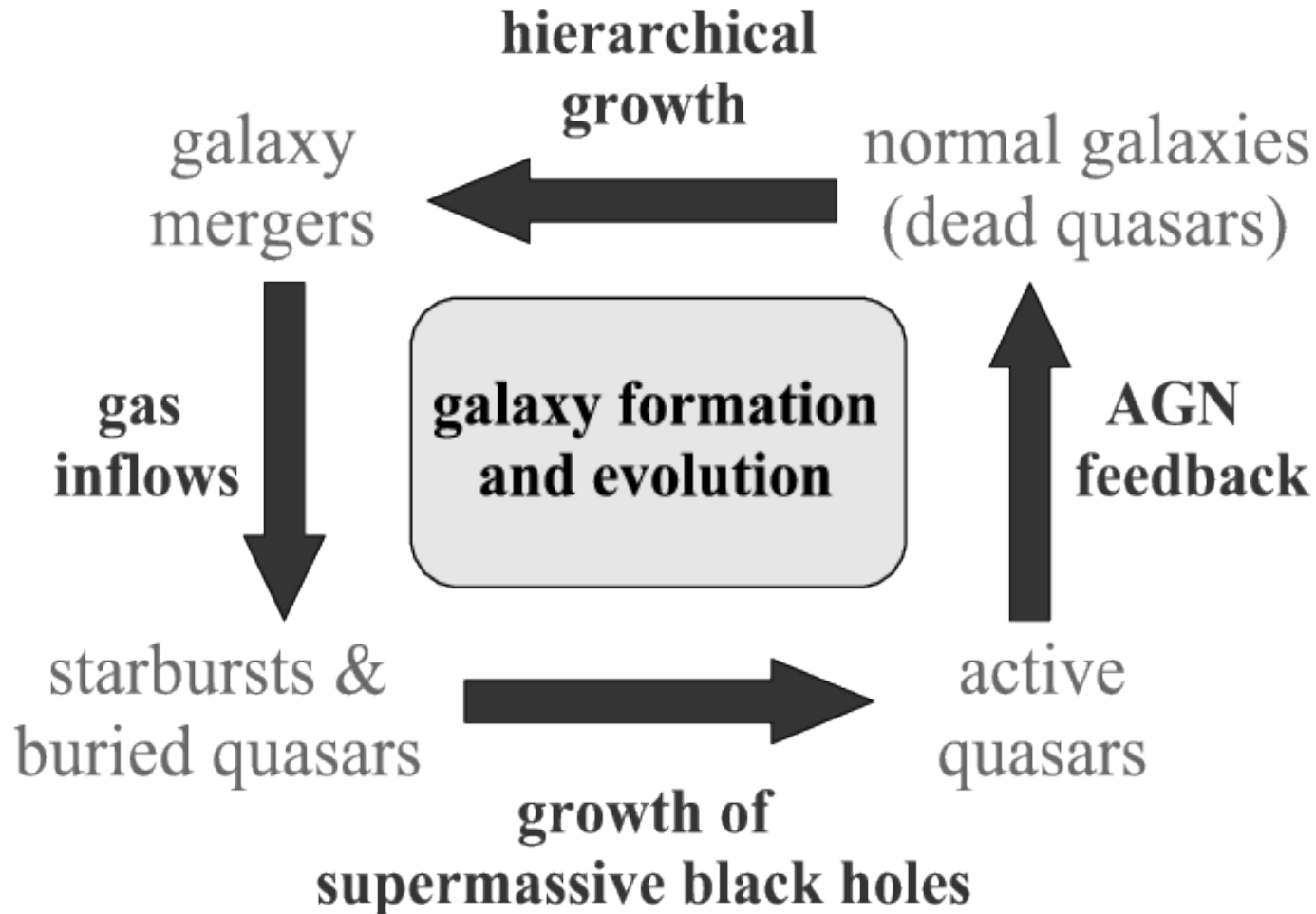


Hopkins et al. (2006)

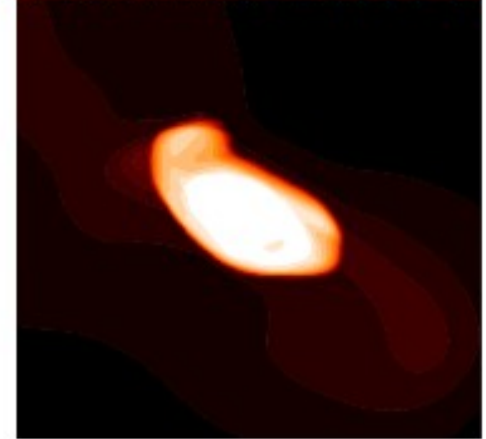
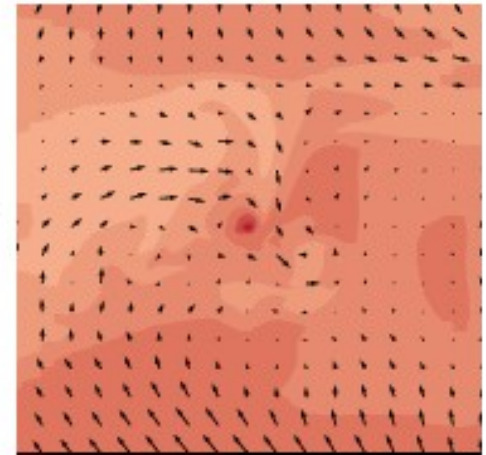
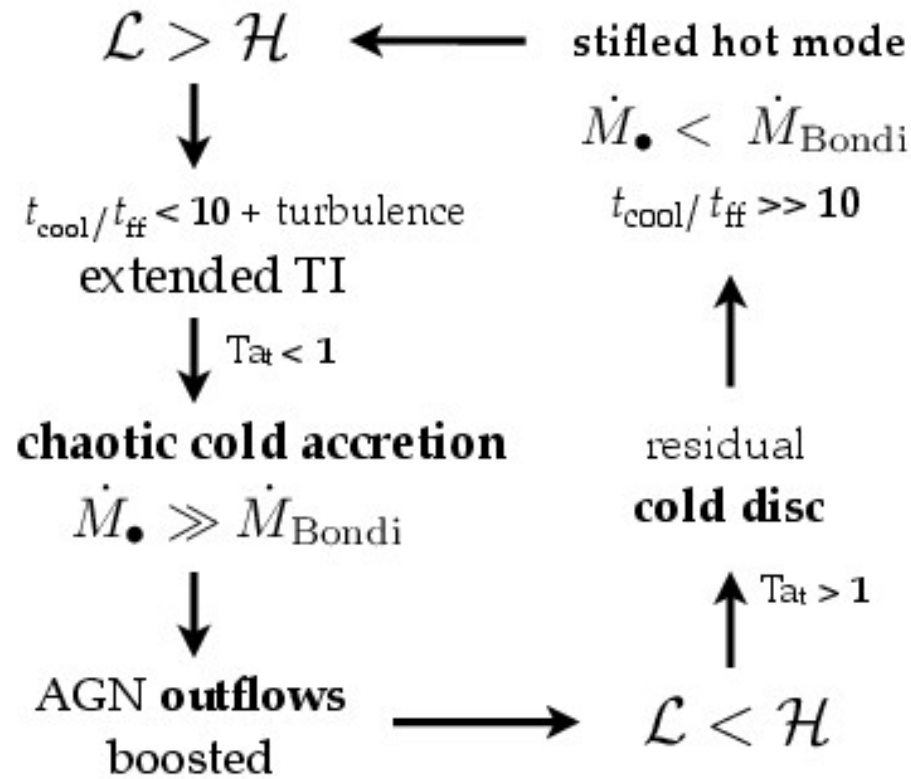
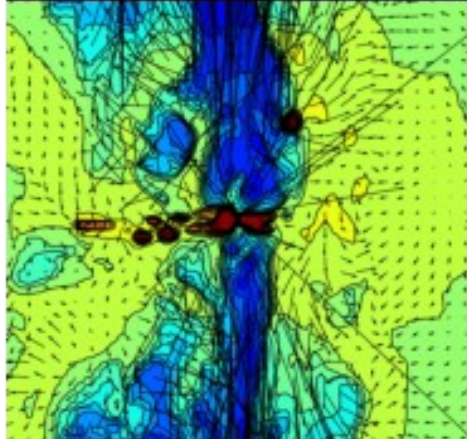
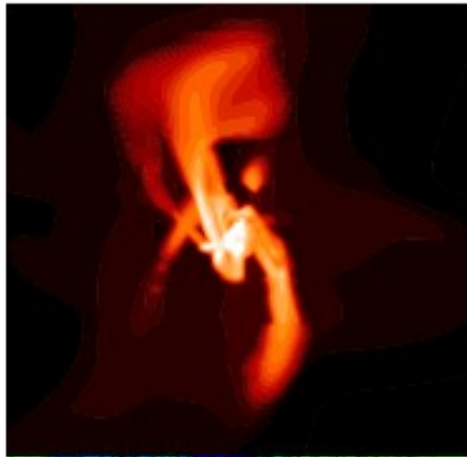
Fuel Reservoir and Exchange



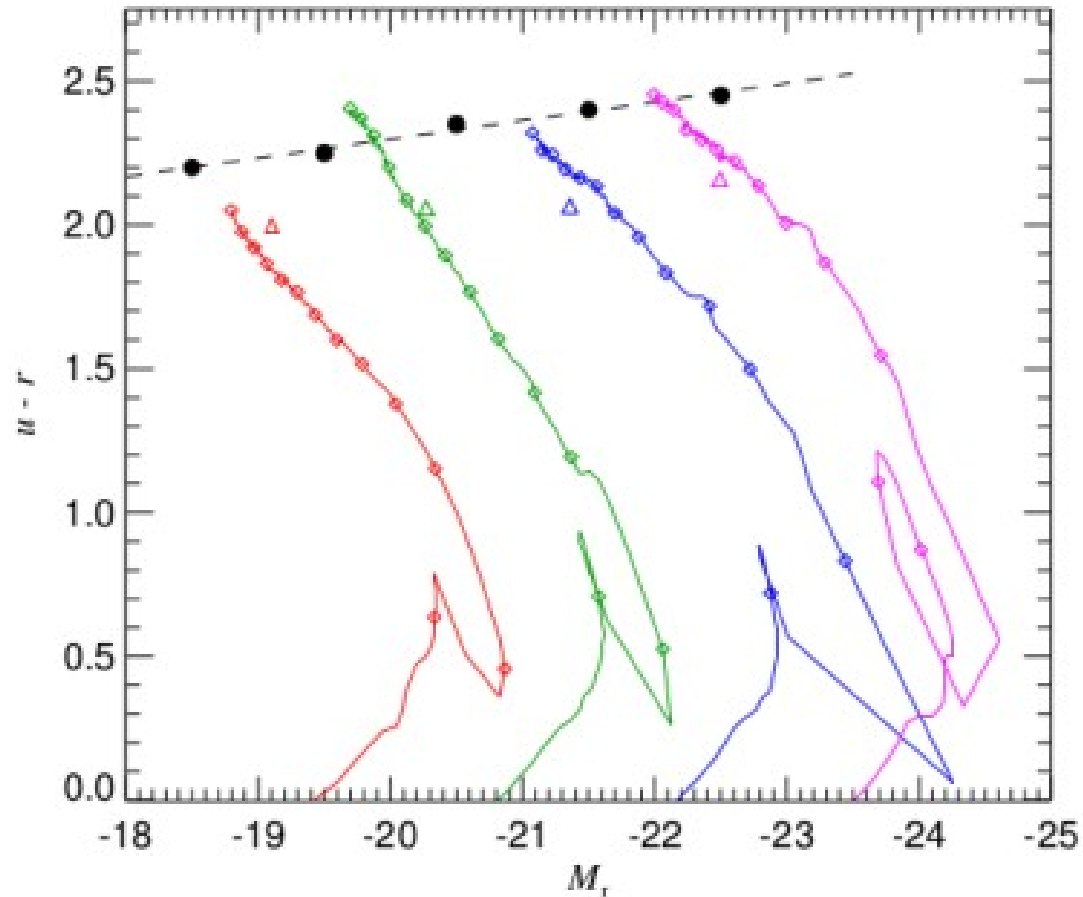
Cosmic Cycle



Cold Chaotic Accretion

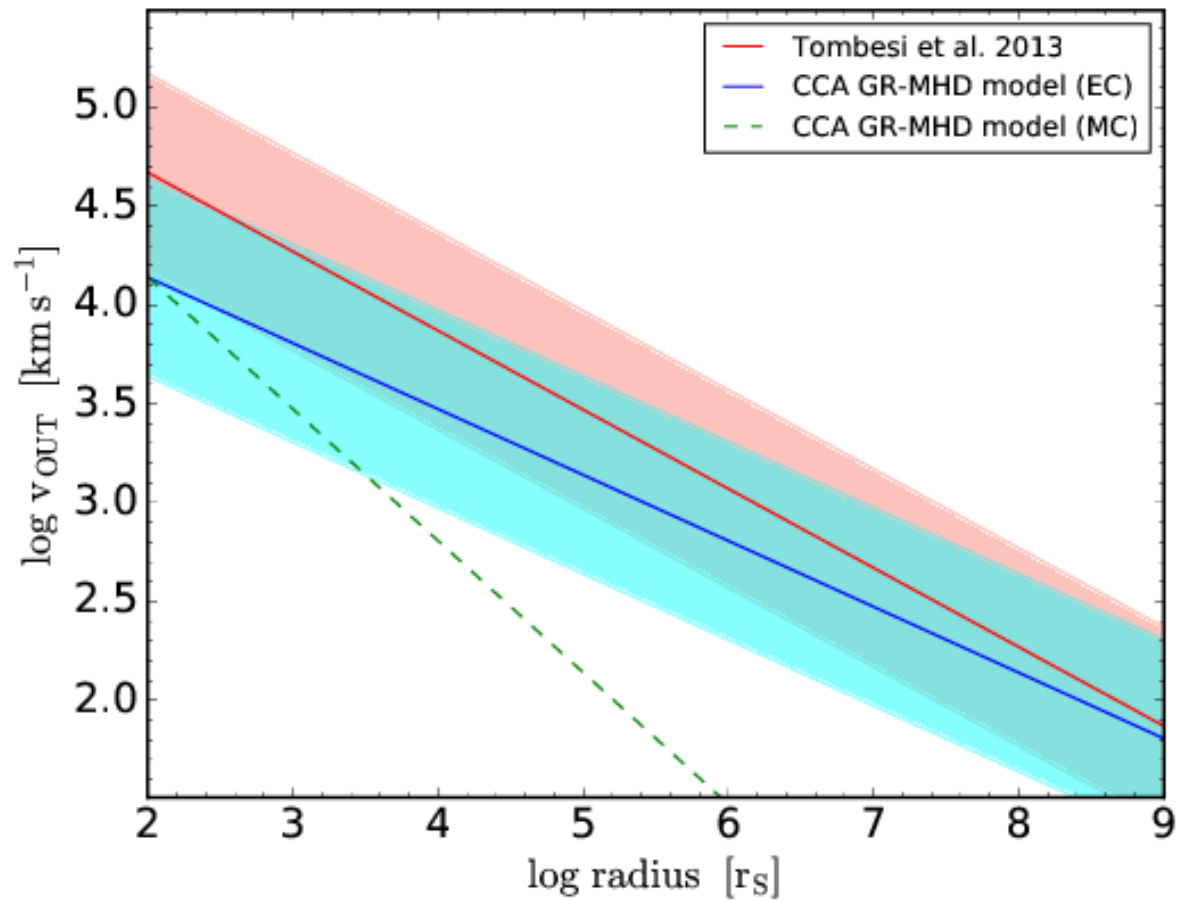


Color Evolution Using Feedback



Toward a Better Model

CCA Expanded

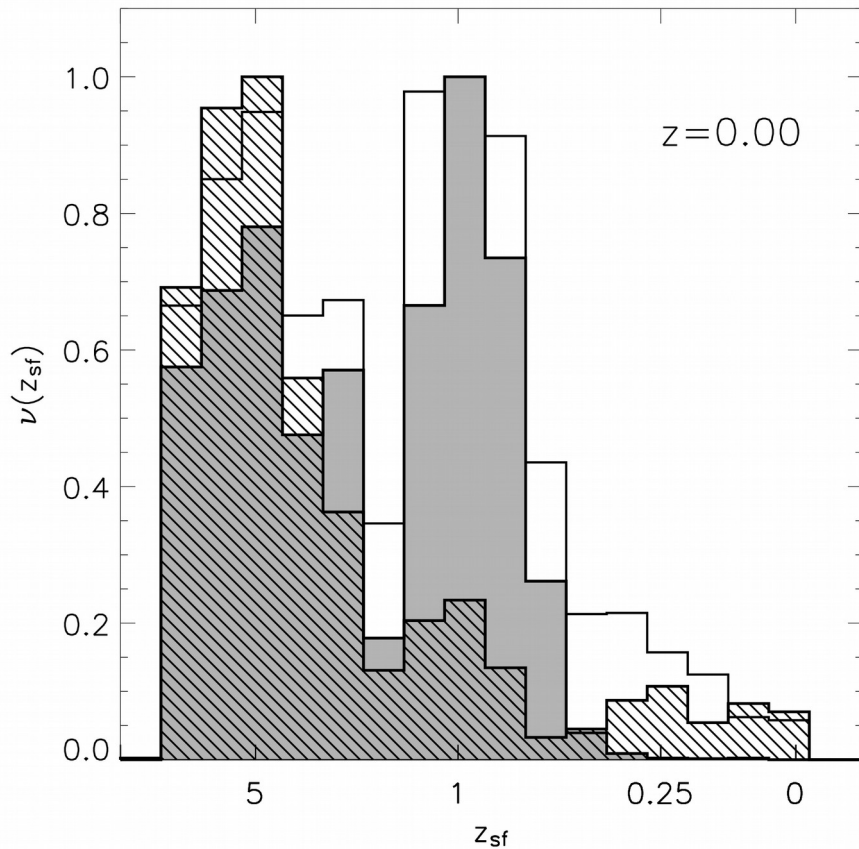


AGN Heating with Bubbles

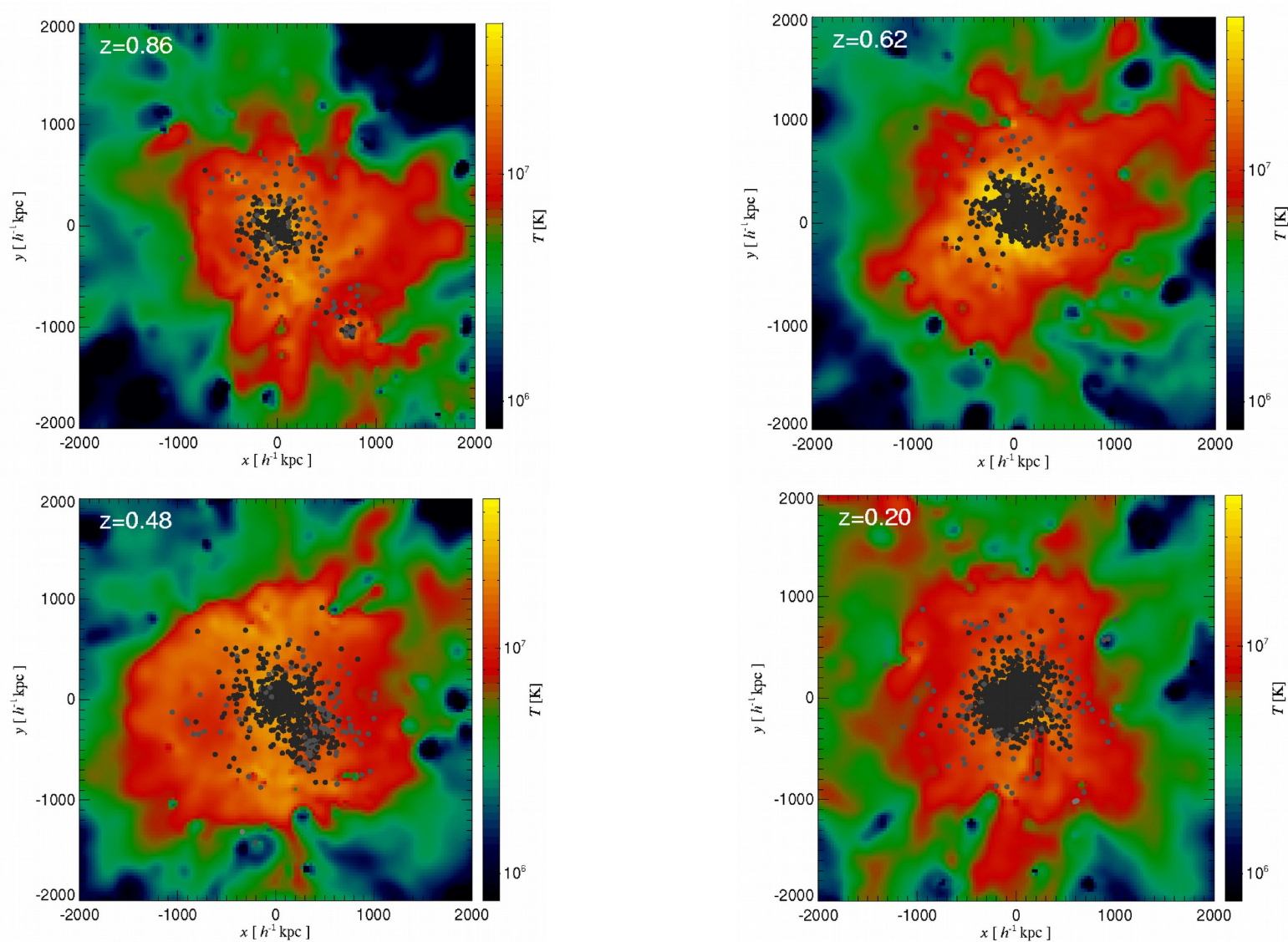
White: no feedback

Grey: “Magorrian Model” bubble heating

Hatched: “BHAR Model” bubble heating



Temp in Model Galaxy Merger Regulated by Heat Bubbles



Sijacki and Springel (2013)

Thank You

Questions