

# VLT/GIRAFFE IFU

## Observations of Galaxies in an Assembling Galaxy Cluster

Emily Freeland (TAMU)

Kim-Vy Tran (TAMU)

Trevor Irwin (TAMU)

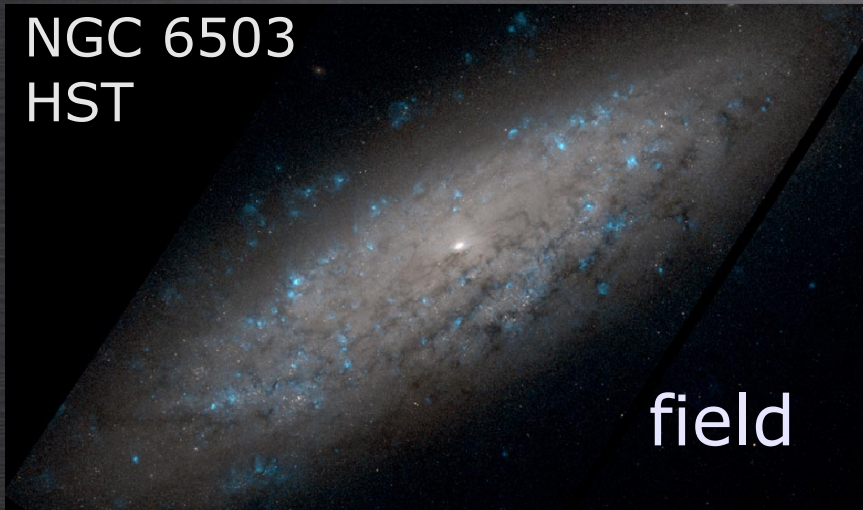
Lea Giordano (UZH)

Amélie Saintonge (MPE)

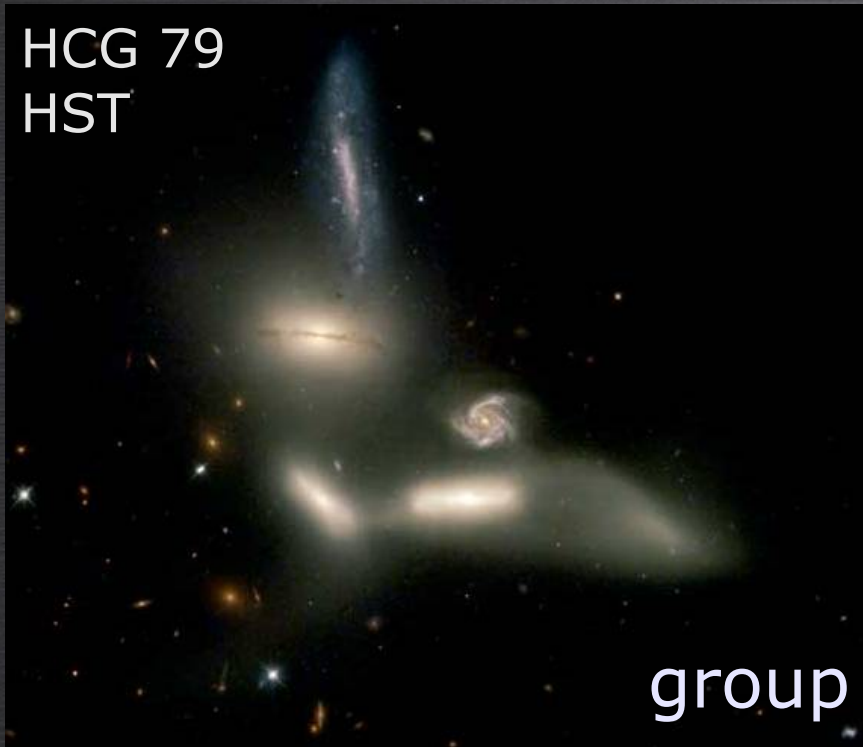


# Galaxy Evolution & Environment

NGC 6503  
HST



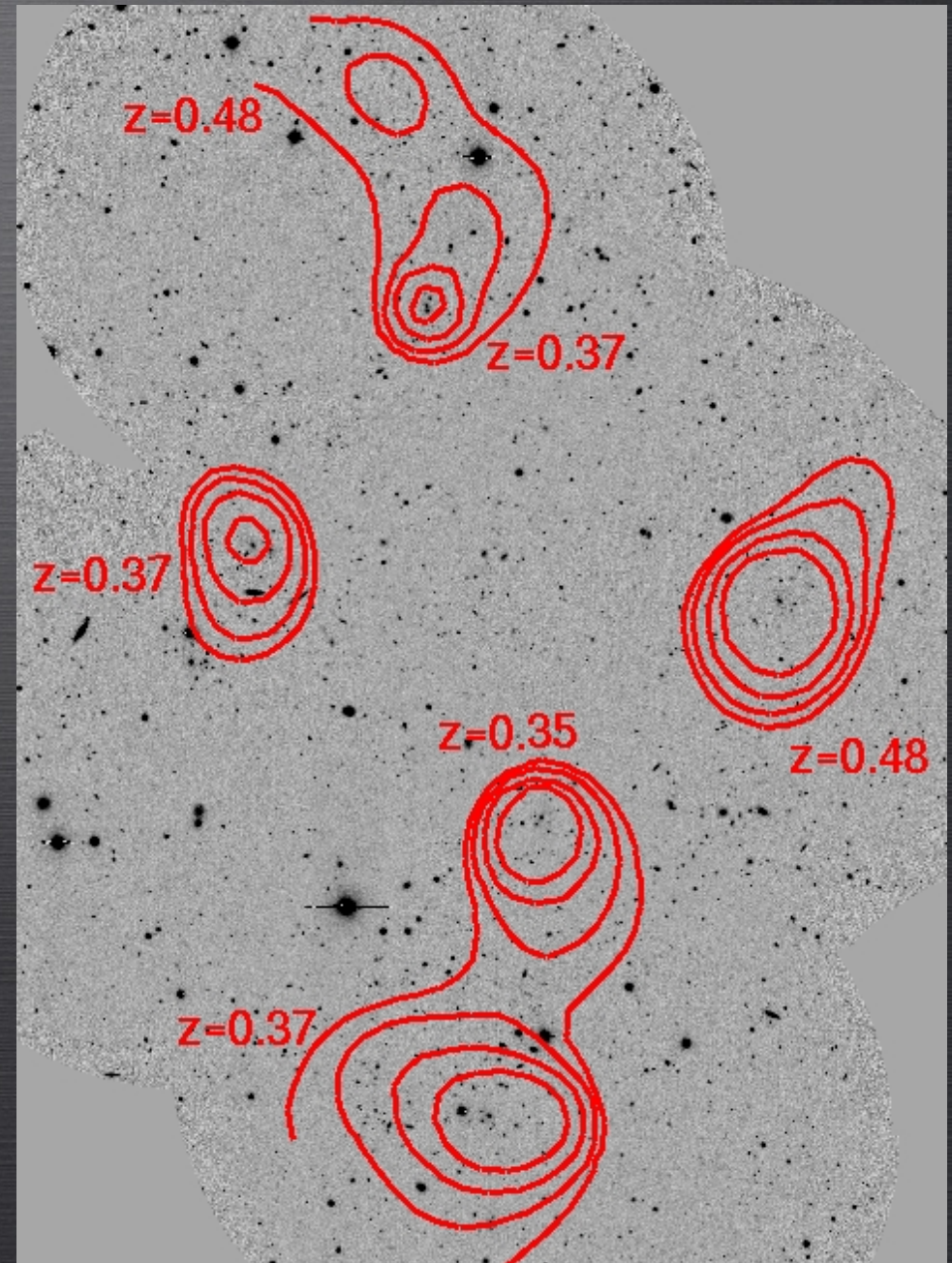
HCG 79  
HST





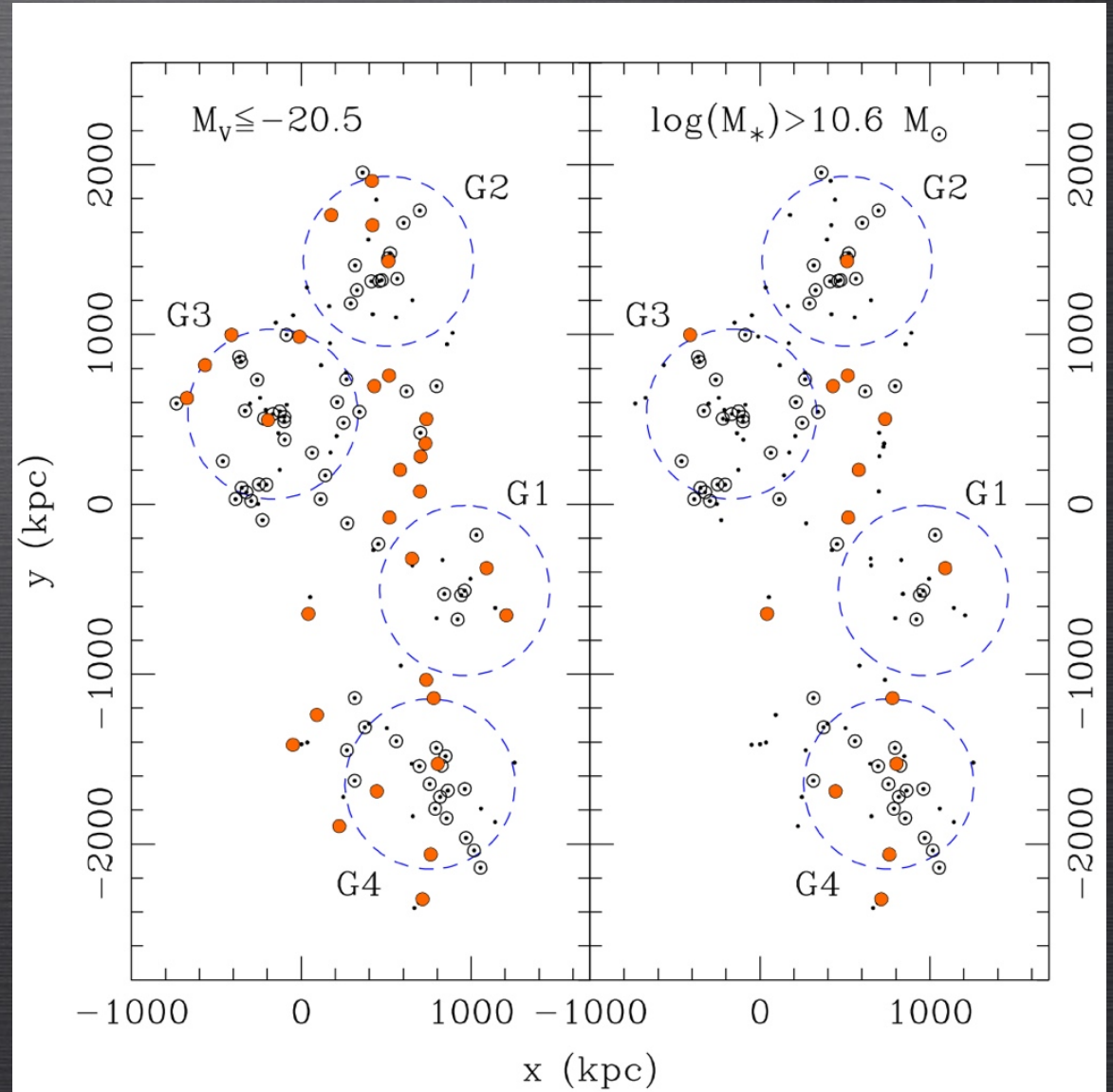
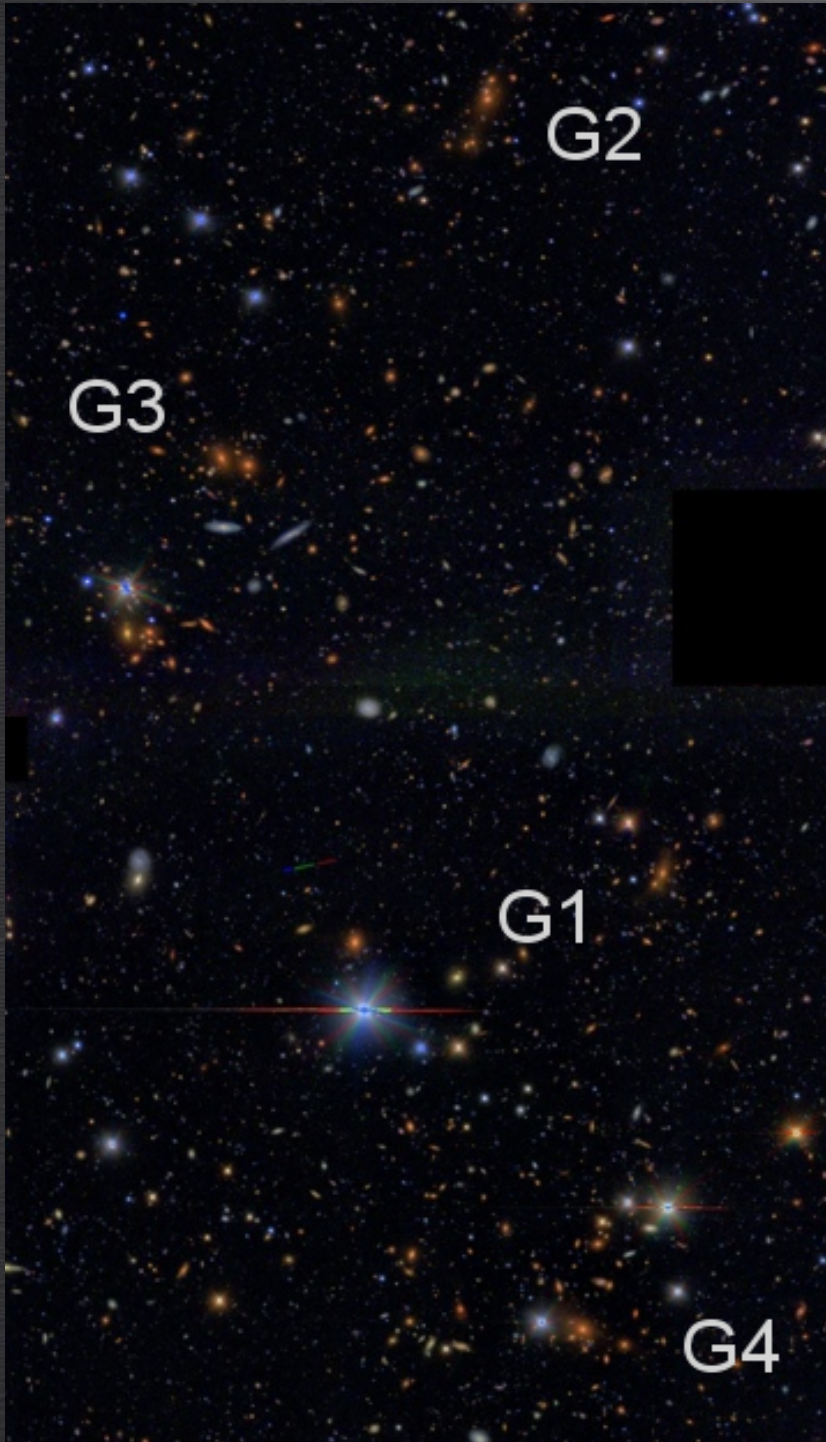
# A Merging System of Groups

- ★ 4 groups w/in 4 Mpc
- ★ Will merge to form a Coma sized cluster
- ★ Individual groups are virialized with  $T_x = 1.7-3$  keV
- ★ Group velocity dispersions from 300-600 km/s
- ★ Early-type fraction already consistent with local galaxy clusters





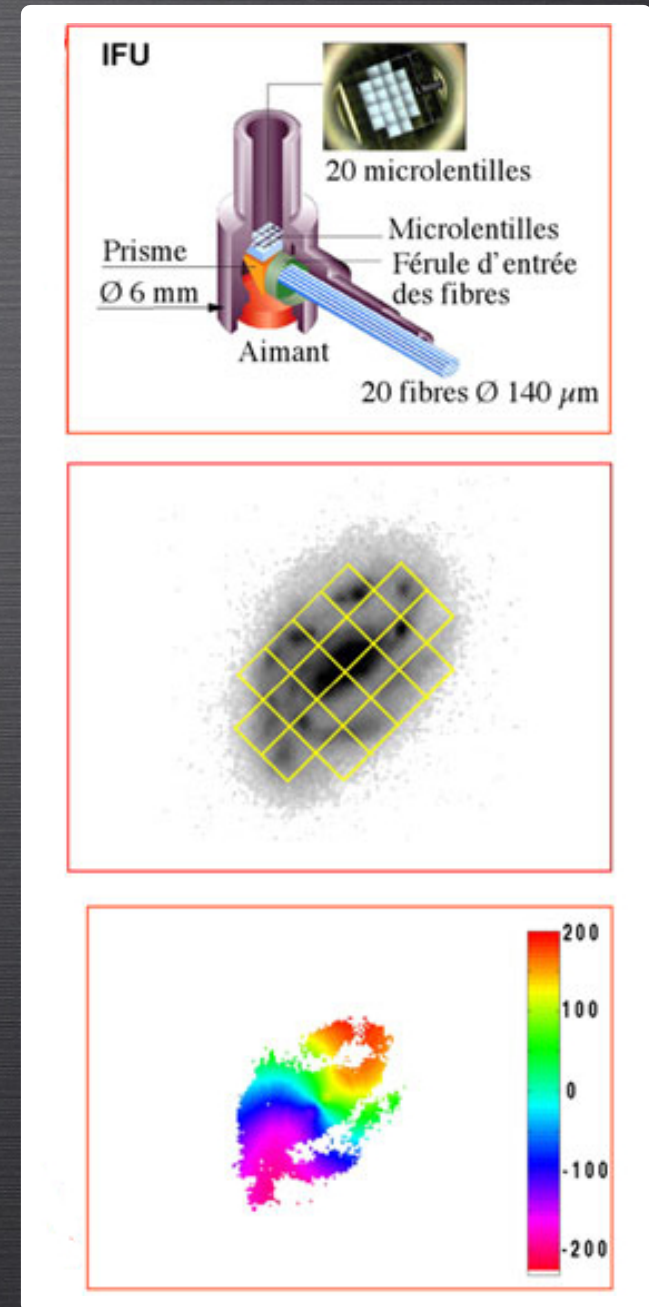
# Star-Forming Galaxies





# Instrument

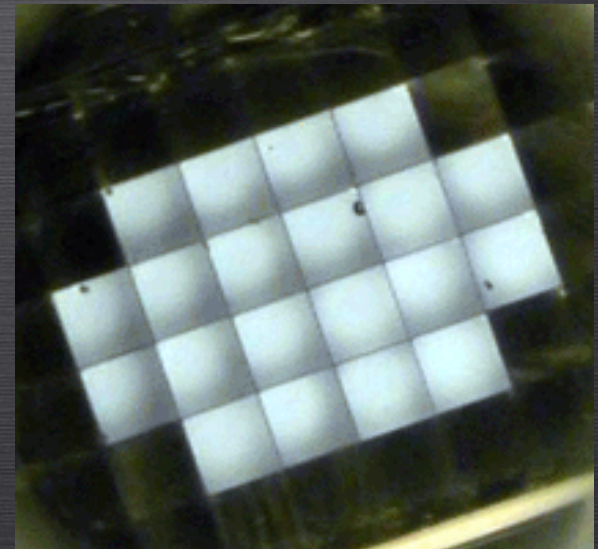
- ★ 15 deployable IFUs each 3" x 2" with 20 0.52" square microlenses over a 25' field of view
- ★ GIRAFFE spectrograph provides medium-high resolution from 370-900nm
- ★ VLT 8.2m on Cerro Paranal in Chile





# Data Handling

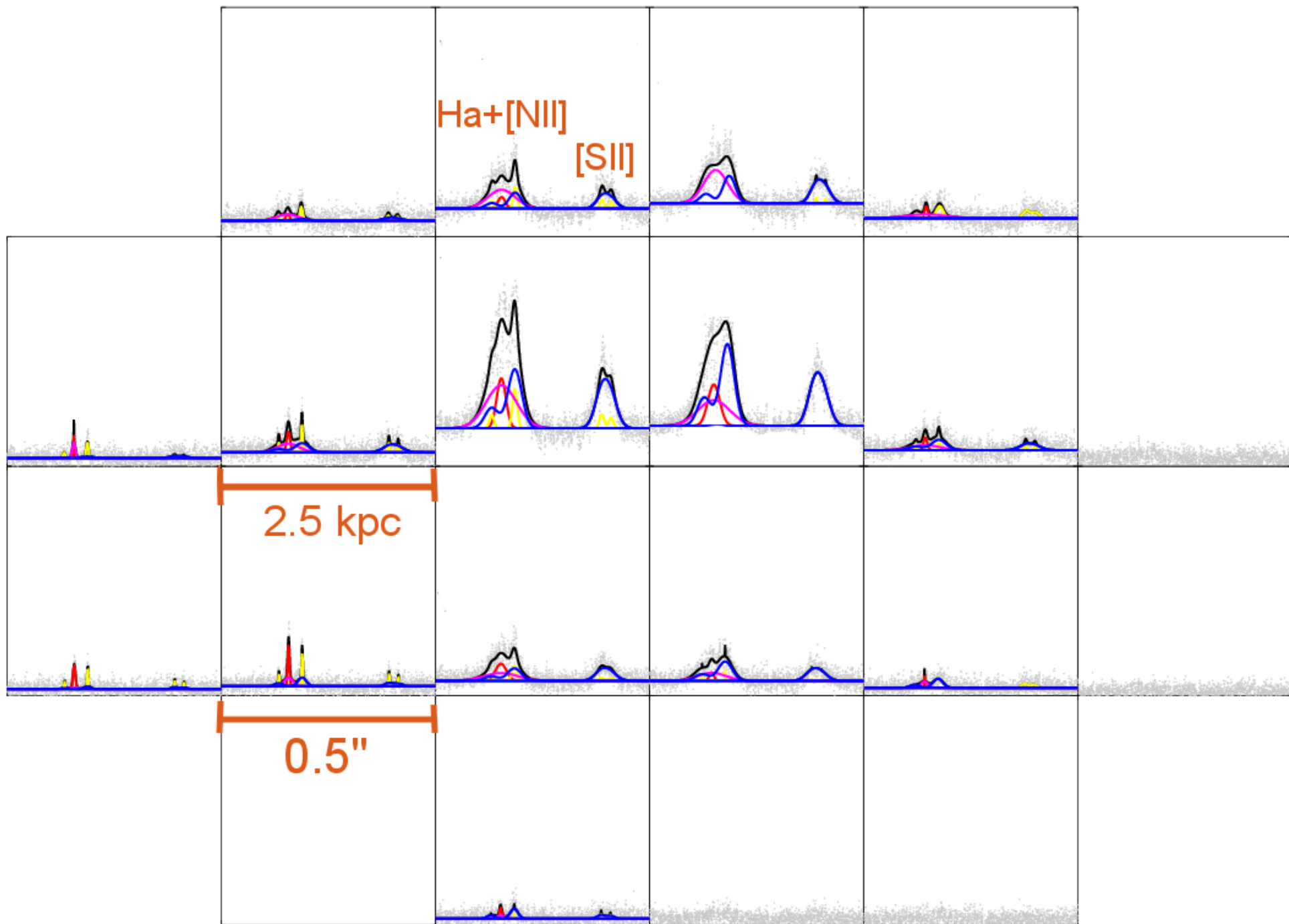
- ★ Bias, flatfielding, wavelength calibration, spectrum extraction all done by GIRAFFE pipeline
- ★ Flux calibration in IRAF
- ★ Sky subtraction and analysis (line profile fitting) using IDL scripts



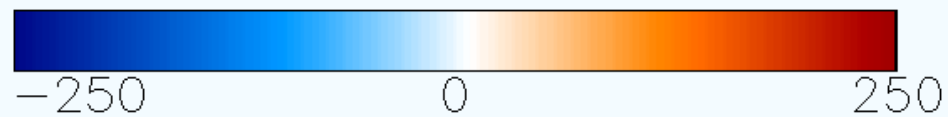
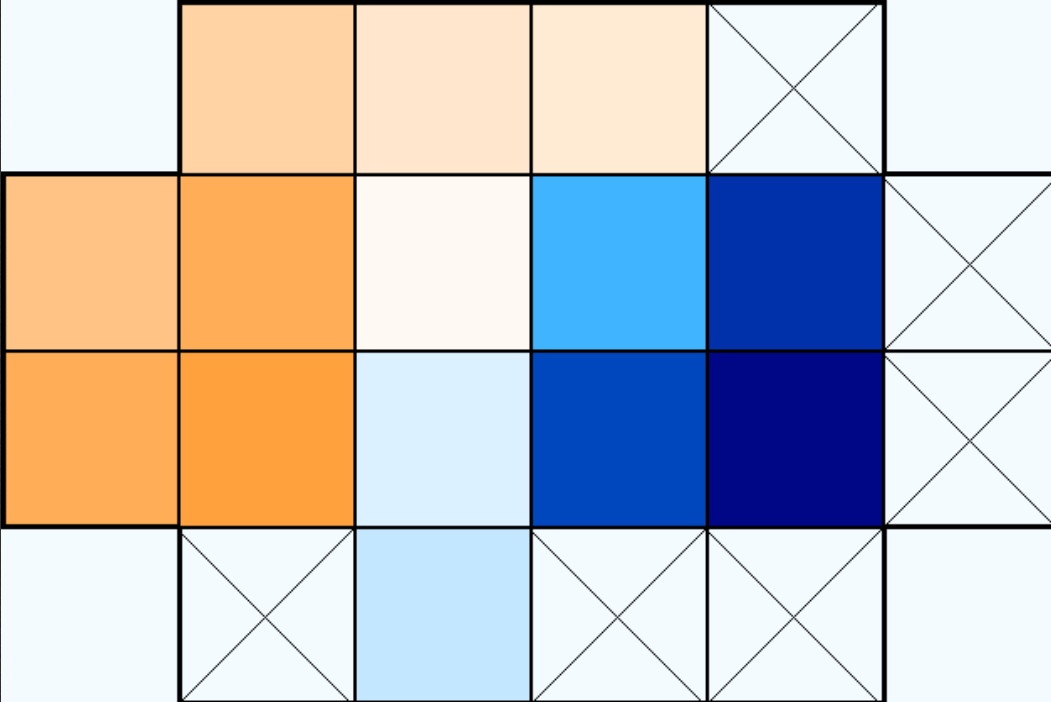


# Our Data

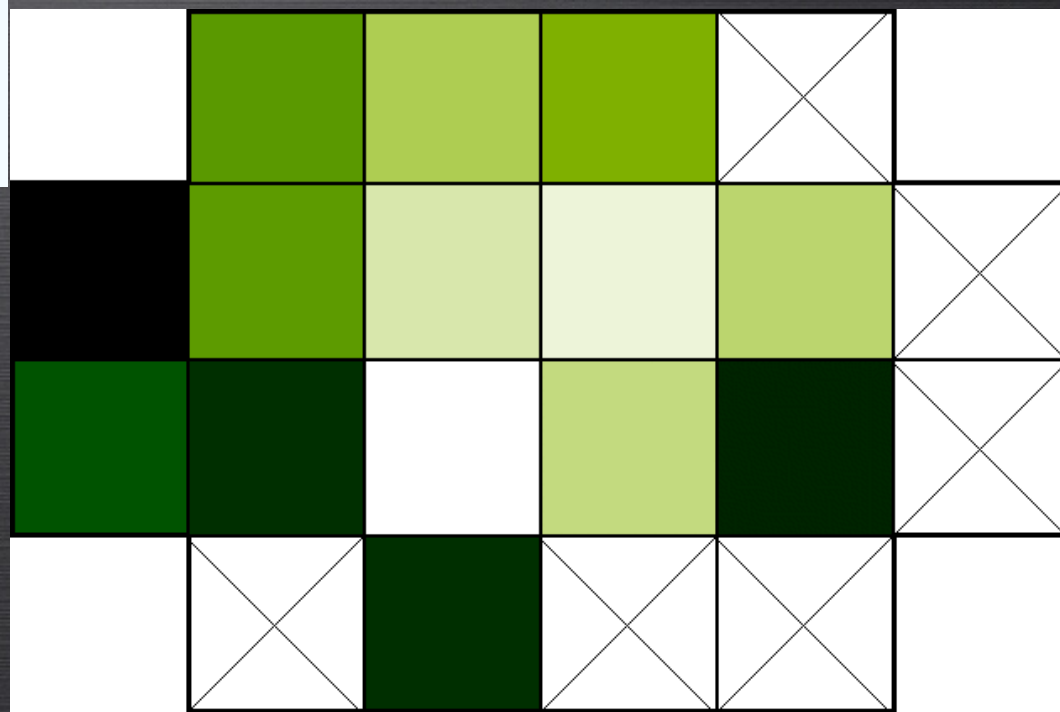
- \* 60 sources (out of  $\sim 200$  spectroscopically confirmed members) chosen with a preference toward star-forming galaxies
- \* Covers 800-930 nm which includes [OI], Ha, [NII], [SII] at  $z \sim 0.37$
- \* Spectral resolution of 45 km/s
- \* Issues : Pointing & Continuum





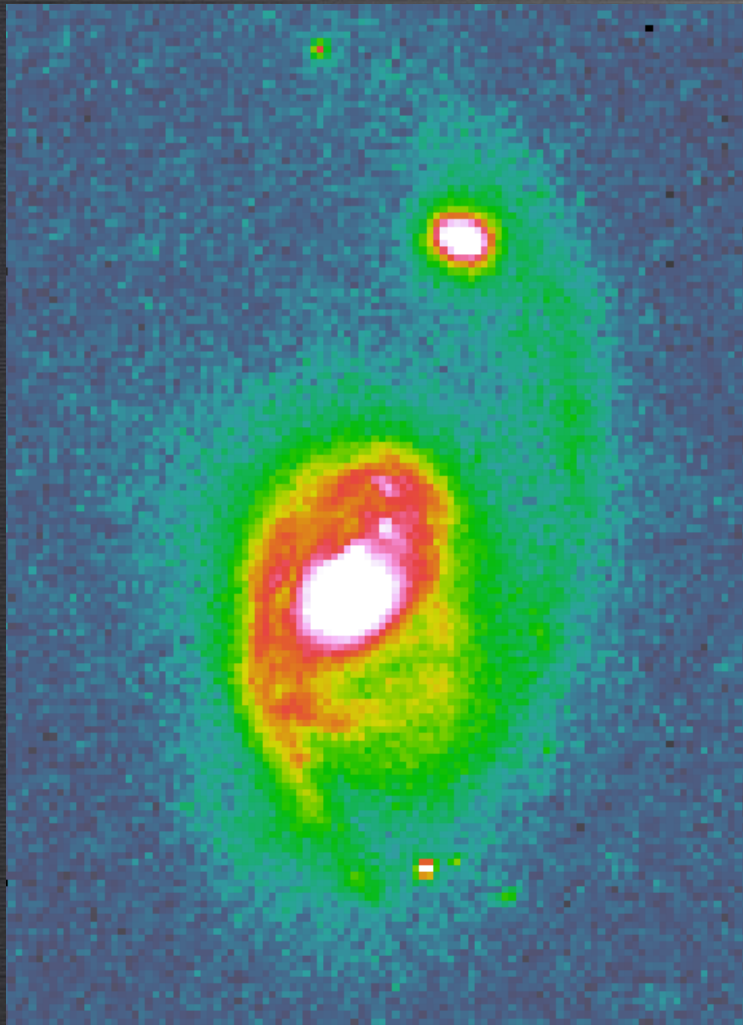


Line shifts in km/s



Line widths in km/s

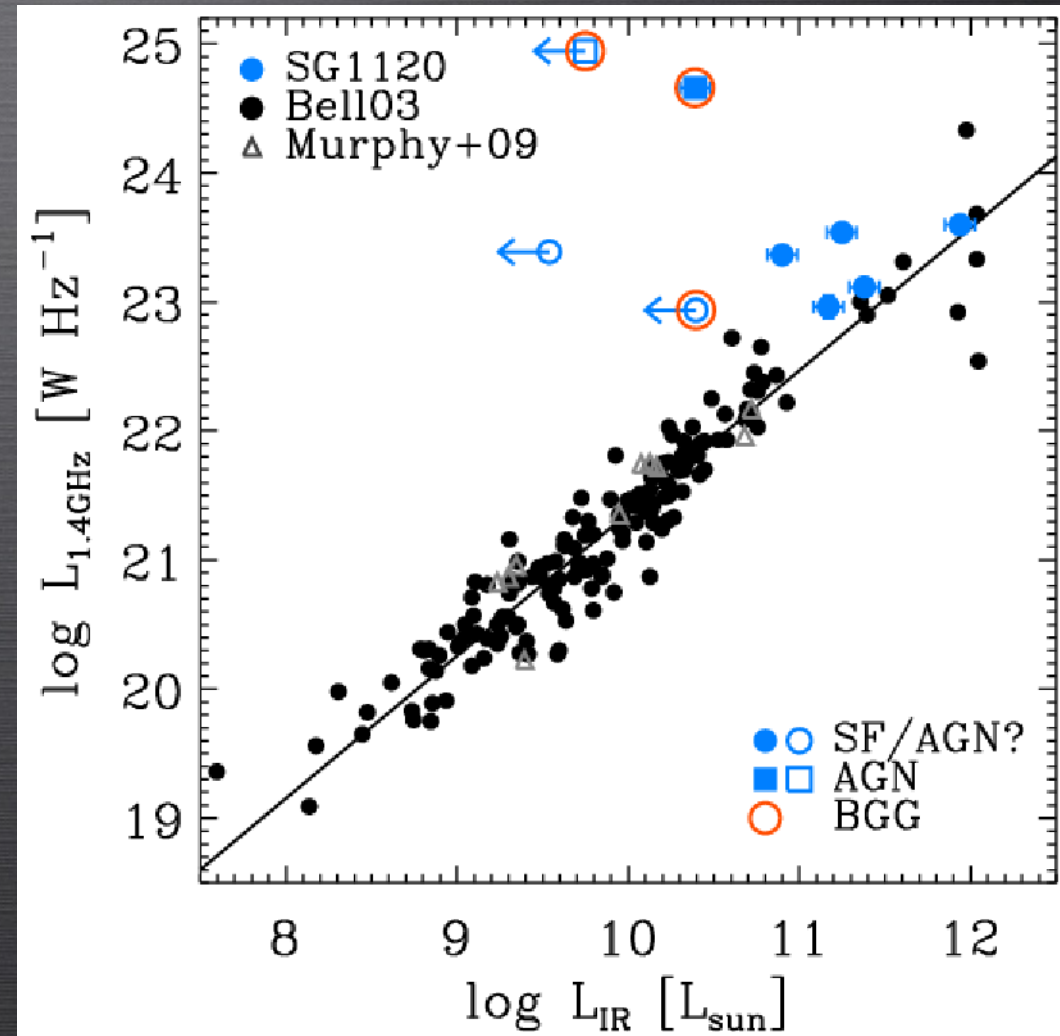
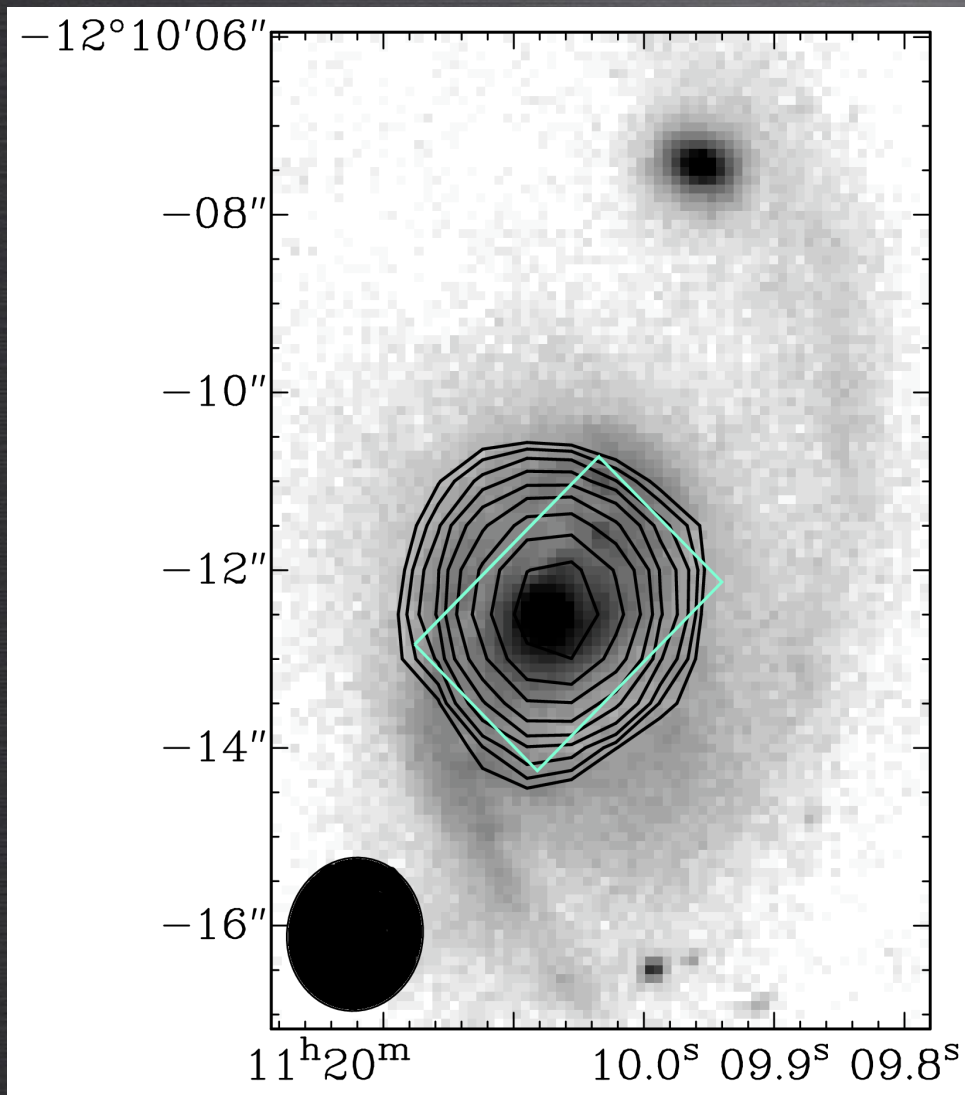




$$\text{SFR} = 150 M_{\odot} / \text{yr}$$

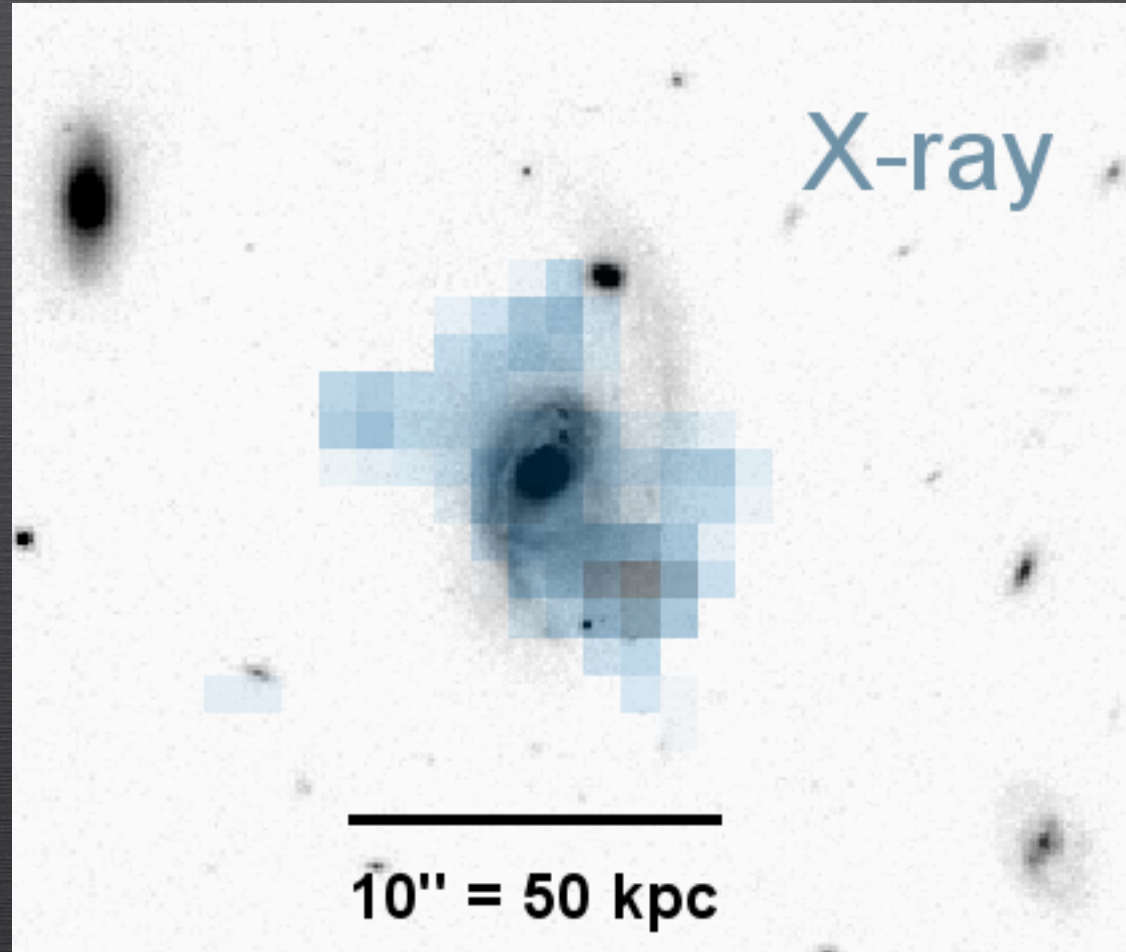


# What about an AGN?





There is definitely an outflow...



$M \sim 10^8 M_{\odot}$  in ionized gas

# Implications

- ★ Interactions are common in the group environment
- ★ Non-gravitational heating and metal enrichment of intergalactic gas
- ★ Impact on ISM of star-forming galaxy



Thank You