

Stellar archaeology of the LINER type 1 nucleus in NGC 4736

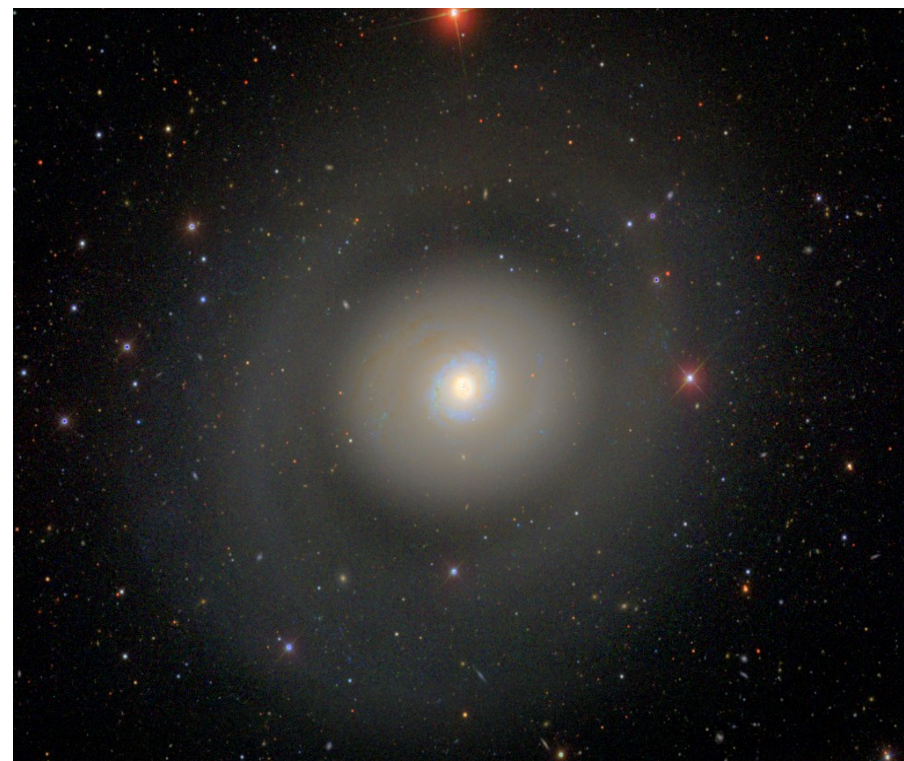
João E. Steiner
University of São Paulo

***Collaborators: R.B. Menezes, T.V. Ricci,
A.S. Oliveira, R. Cid Fernandes***

Central Massive objects
ESO Garching, 22-25 June 2010

NGC 4736 (M 94)

- (R)SA(r)ab
- D = 5 Mpc
- Spectral synthesis :



Pritchett (1977); Keel (1983); Taniguchi et al (1996); Rodriguez et al (1998); Cid Fernandes et al (2004); Gonzalez Delgado et al (2004); Cid Fernandes et al (2005)

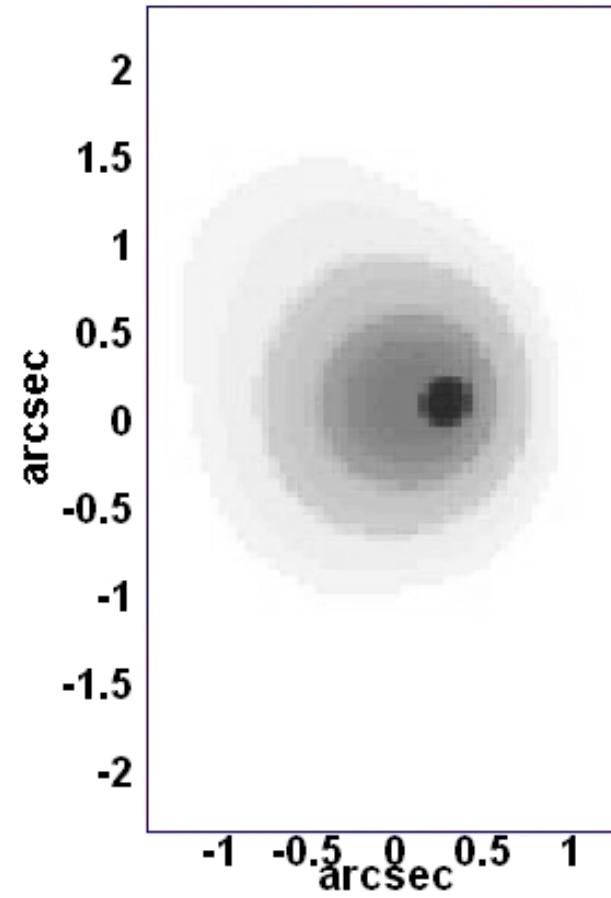
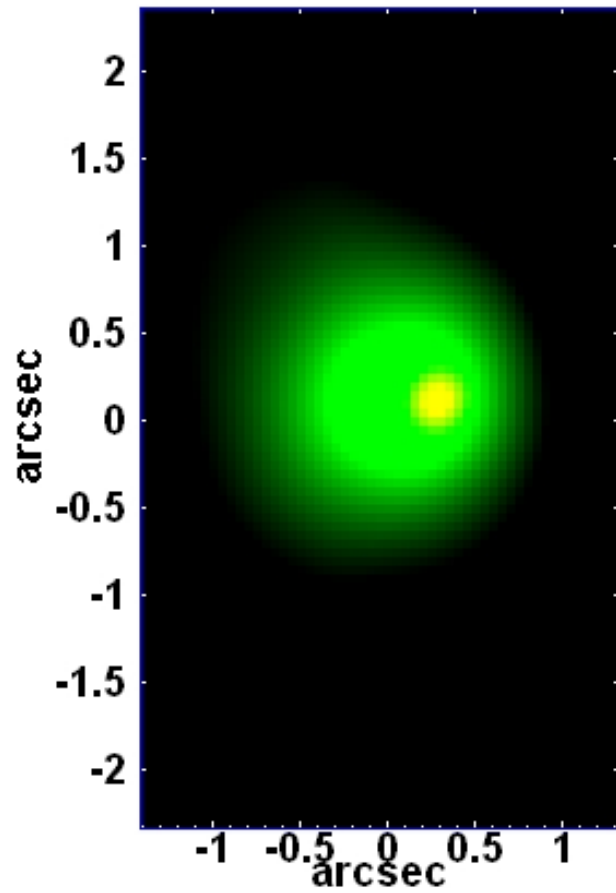
- Intermediate age population?

NGC 4736 (M 94)

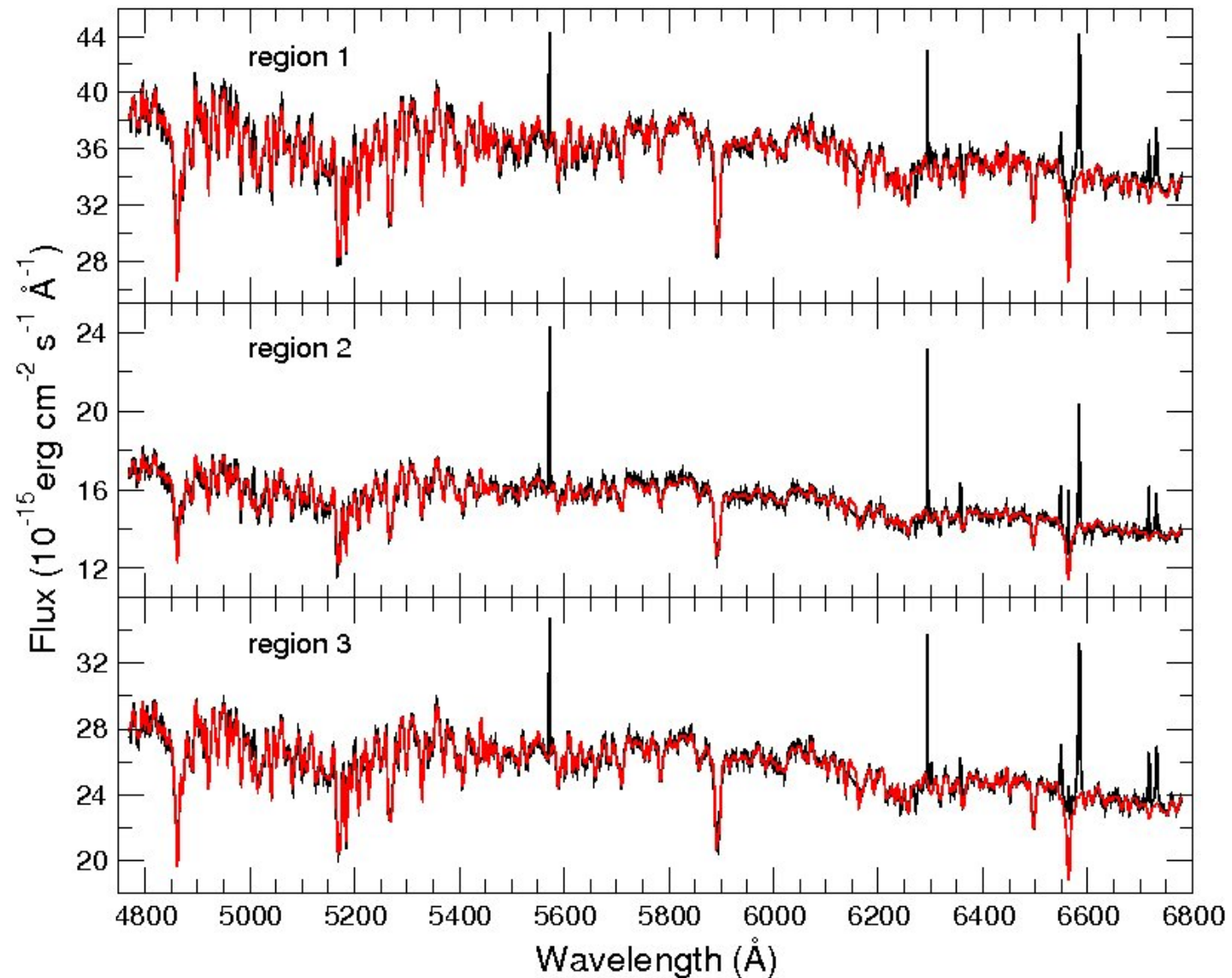
- HST observations show two compact and variable sources (Maoz et al, 1995; 1996; 2005)
- Three arcs (2, 4, 6 arcsec): final stage of a merger? (Maoz et al 1995).
- Off-centered type 1 AGN (Steiner et al 2009)
- Could we find additional evidence for merging?
- Gemini North: GMOS -IFU

NGC 4736 = M94

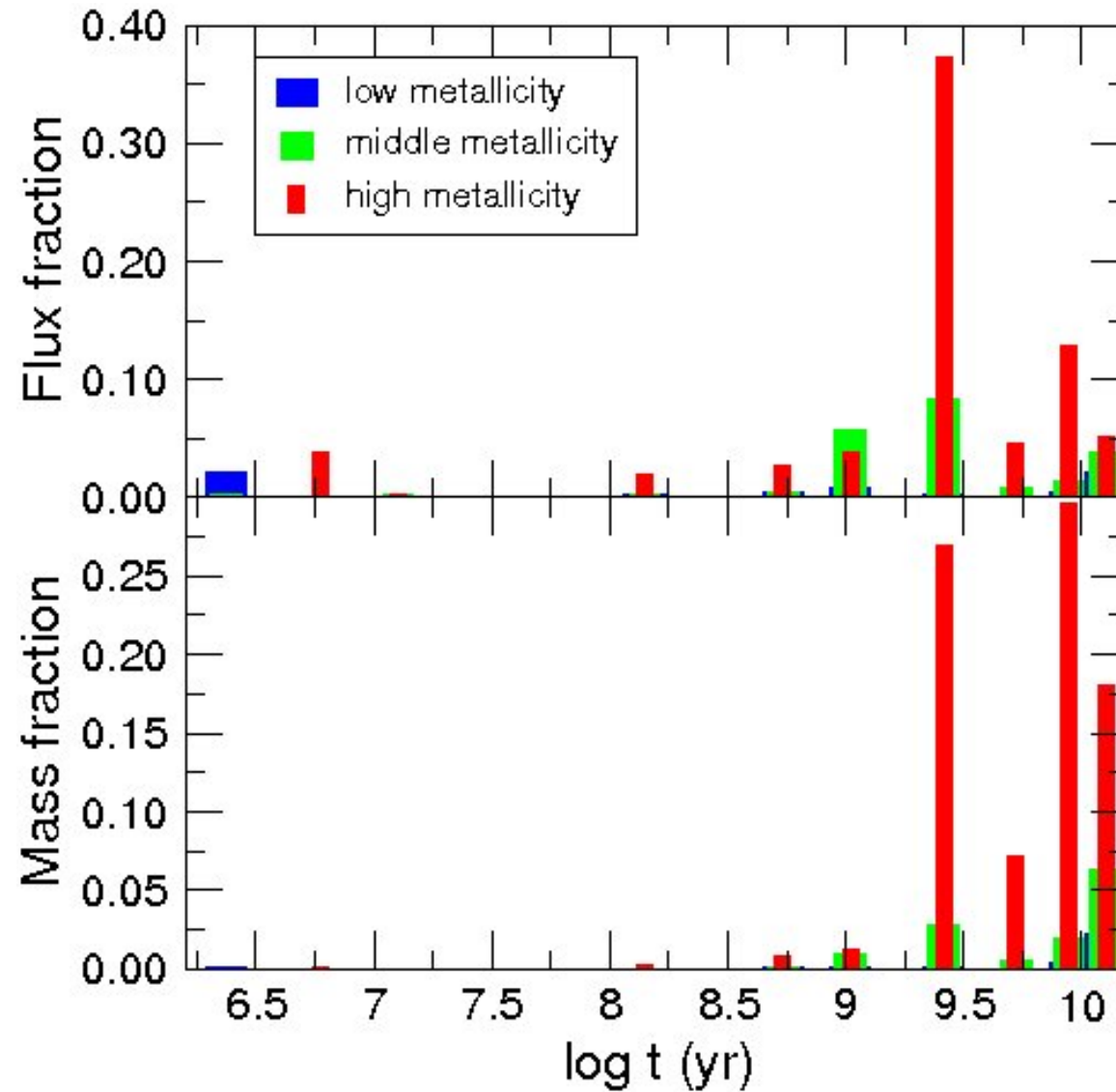
Steiner et al 2009, MNRAS 395, 64



Stellar spectral synthesis: Starlight (Cid Fernandes et al 2005) 25 ages + 6 metallicities



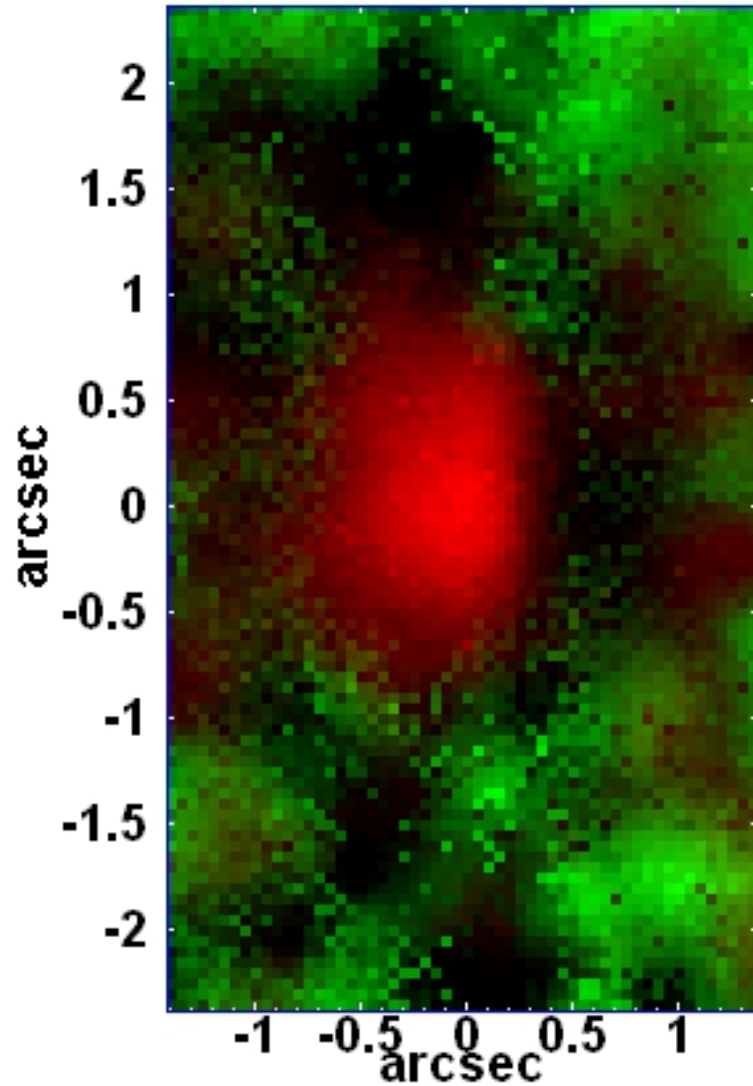
Age distribution for distinct metallicities



T=12 Gyr

Red: $Z=1.4 Z_{\odot}$

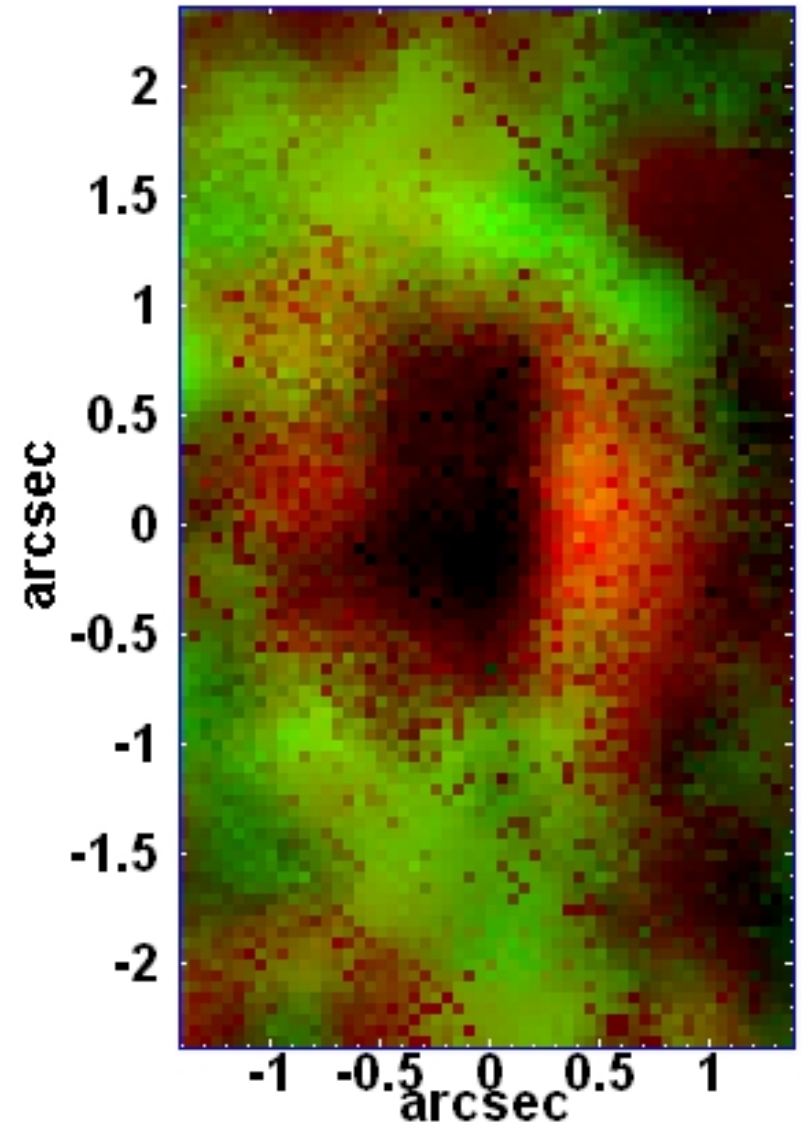
Green: $Z=0.25 Z_{\odot}$



T=2.5 Gyr

$Z=2.5 Z_{\odot}$

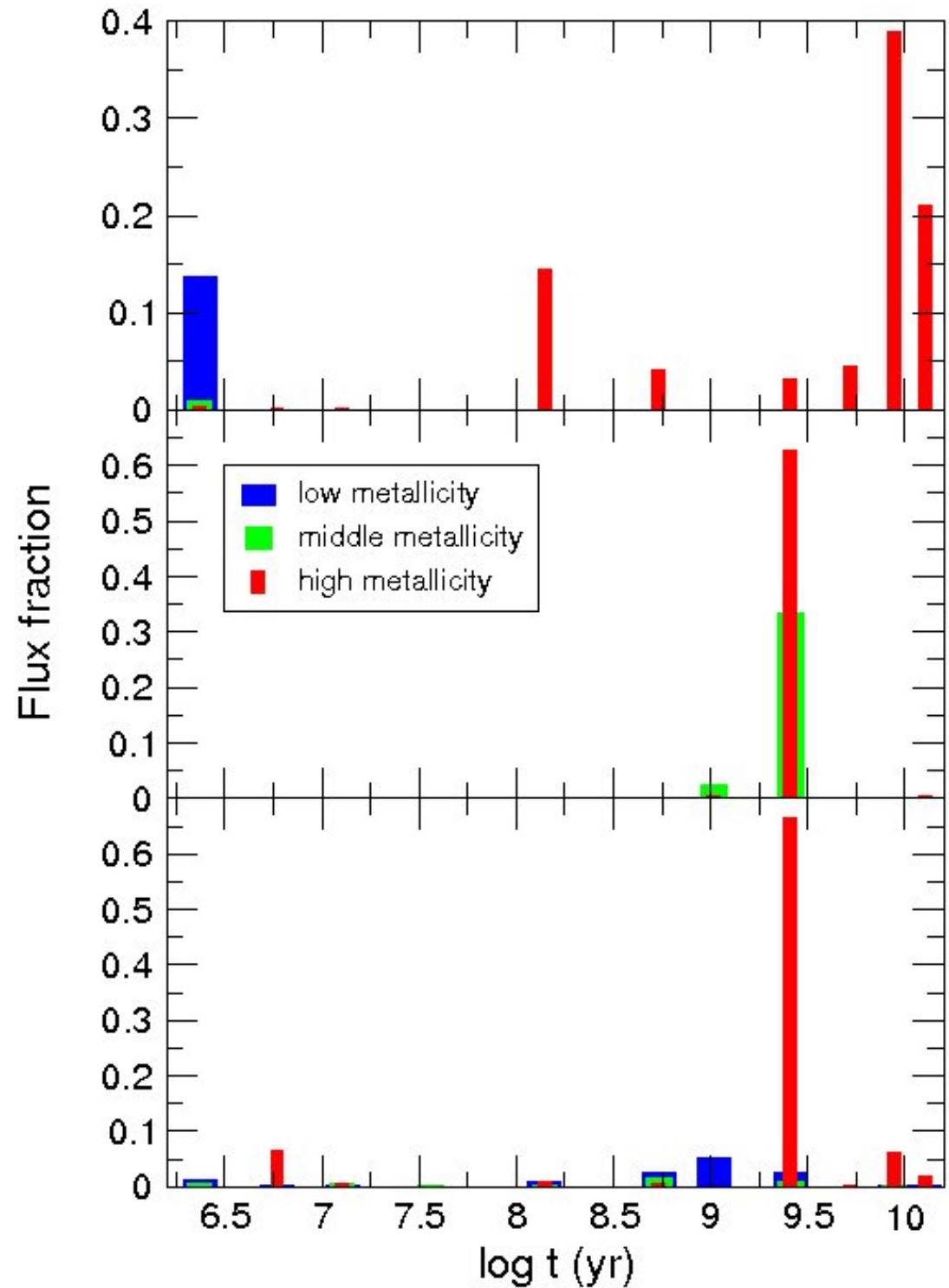
$Z=0.25 Z_{\odot}$



Center

Position 2

Position 3

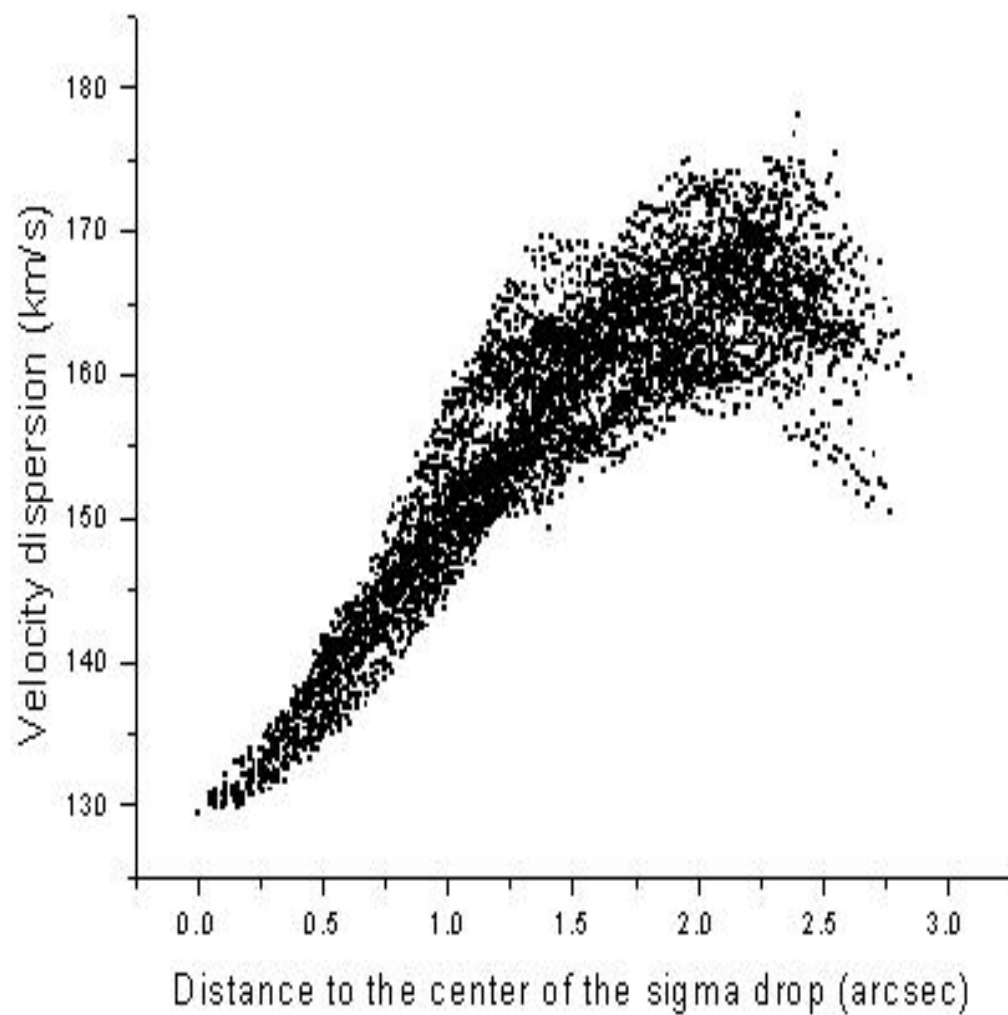
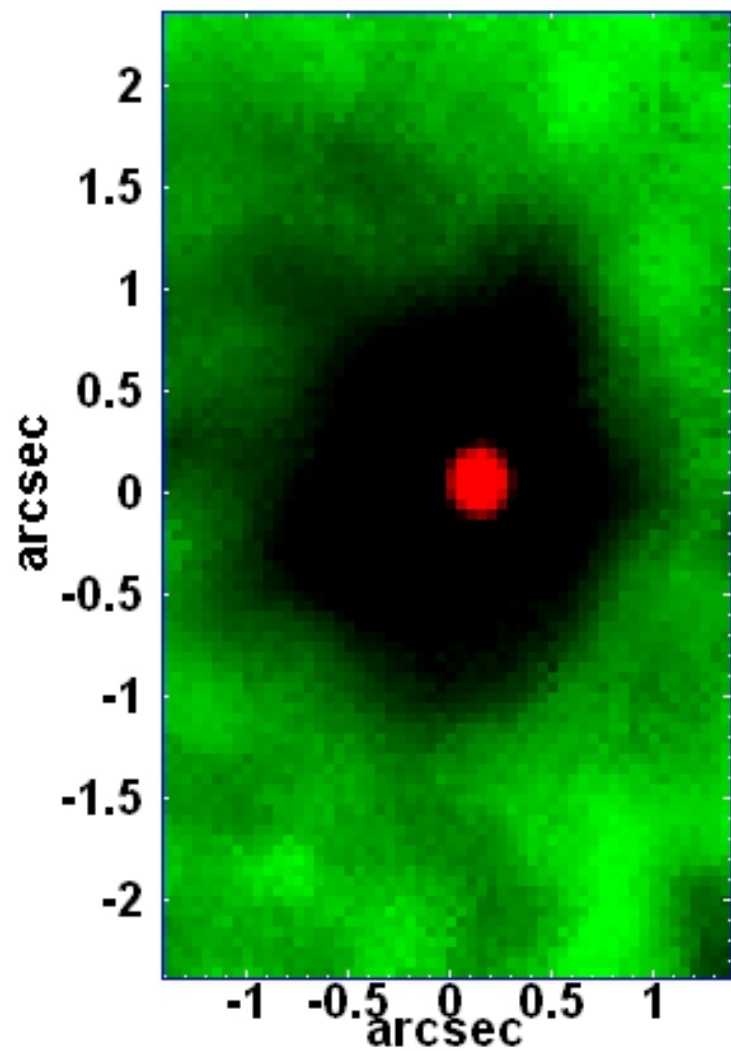


Conclusions

- Two age populations :
- **12 Gyr** $Z=1.4 Z_0$ central concentration ($+Z=0.25Z_0$)
- **2.5 Gyr** $Z=2.5Z_0 +0.25Z_0$ circumnuclear distribution
- Composite bulge: Classical + pseudobulge ($n=1.2$)
- Or, else,: Central cluster (10 pc)+ pseudobulge
- Pseudobulge+Classical do not show active star formation (Fisher&Drory, june 2010).
- The pseudobulge population drifted inward by secular process(?)

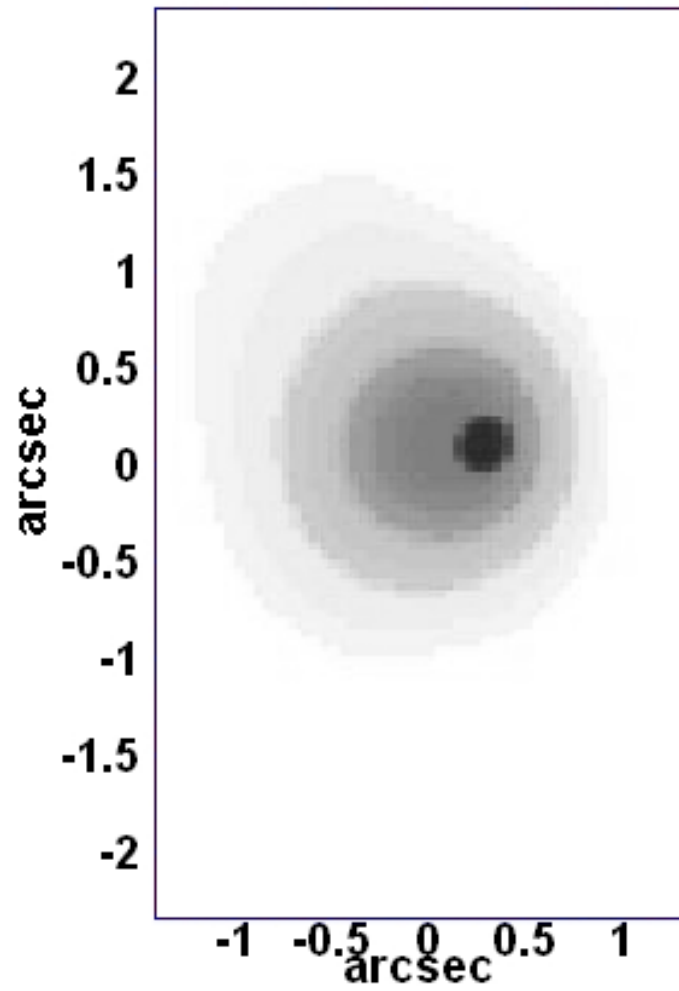
NGC 4736

Sigma-drop

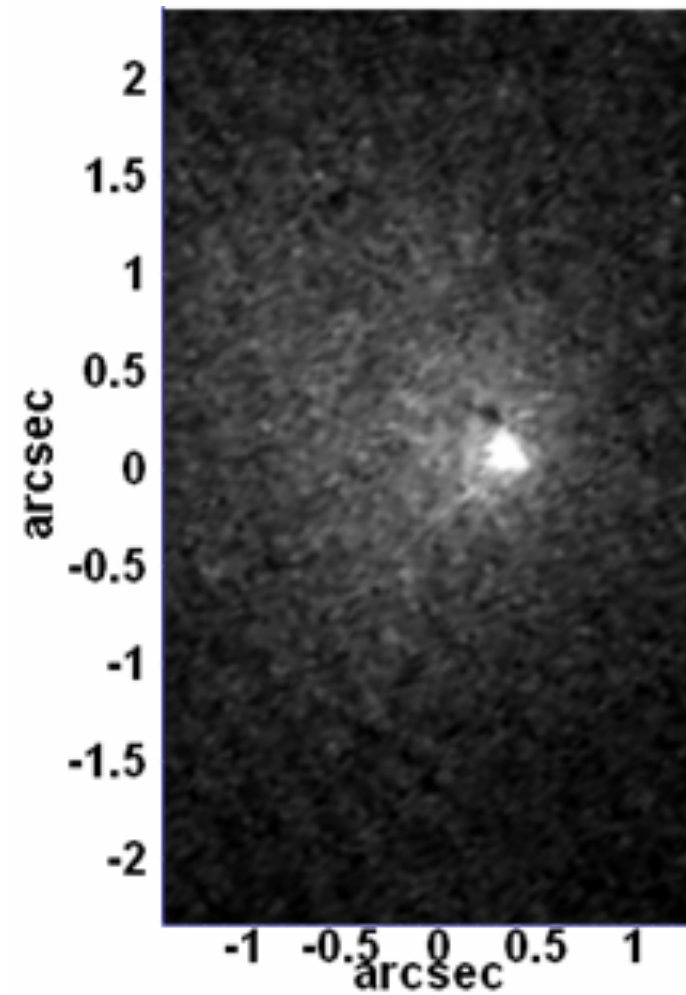


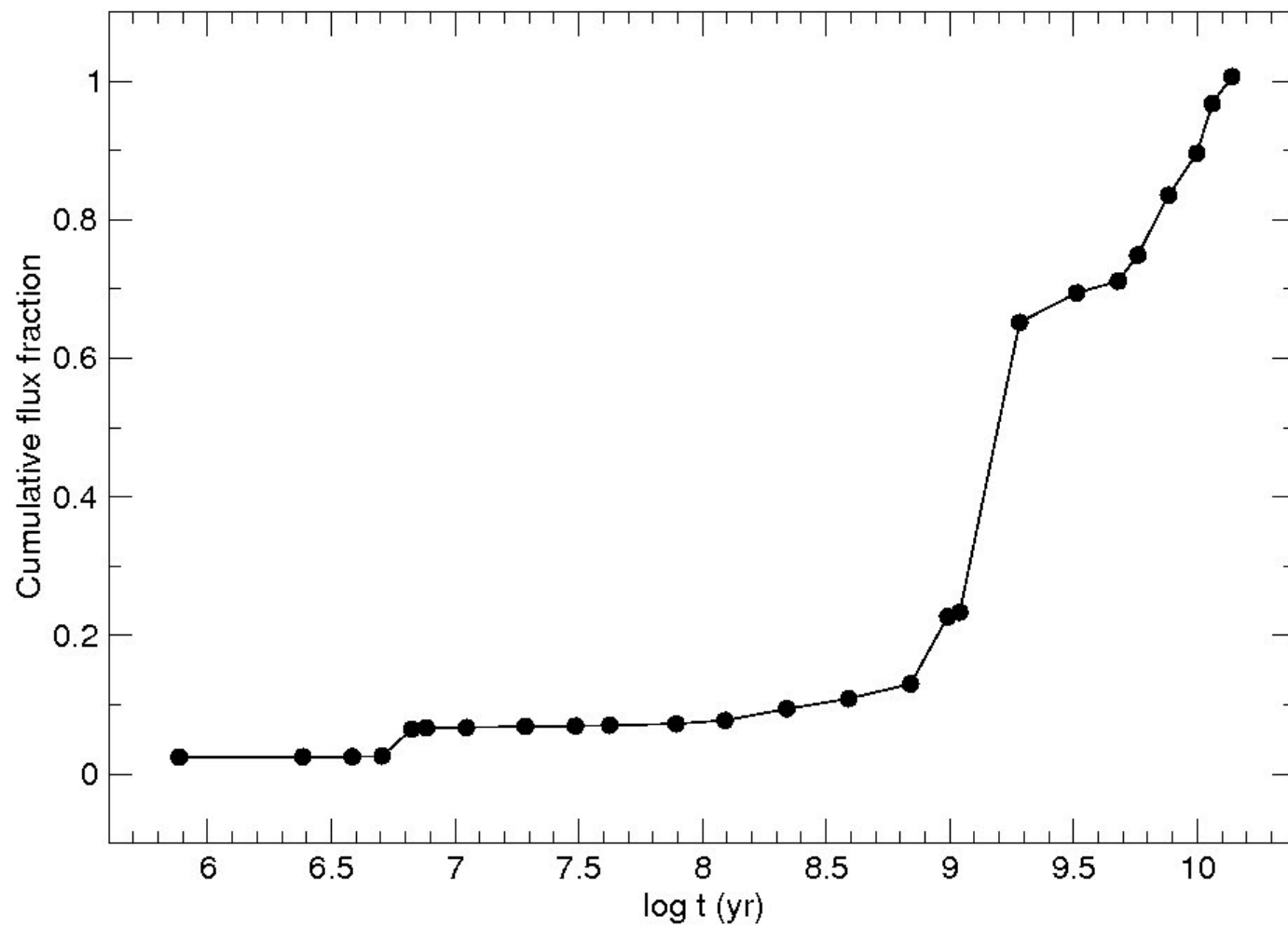
NGC 4736

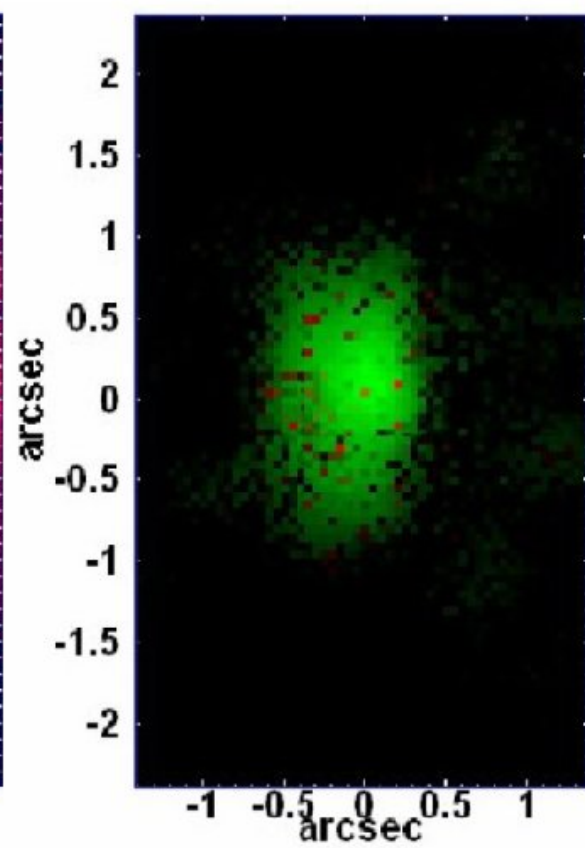
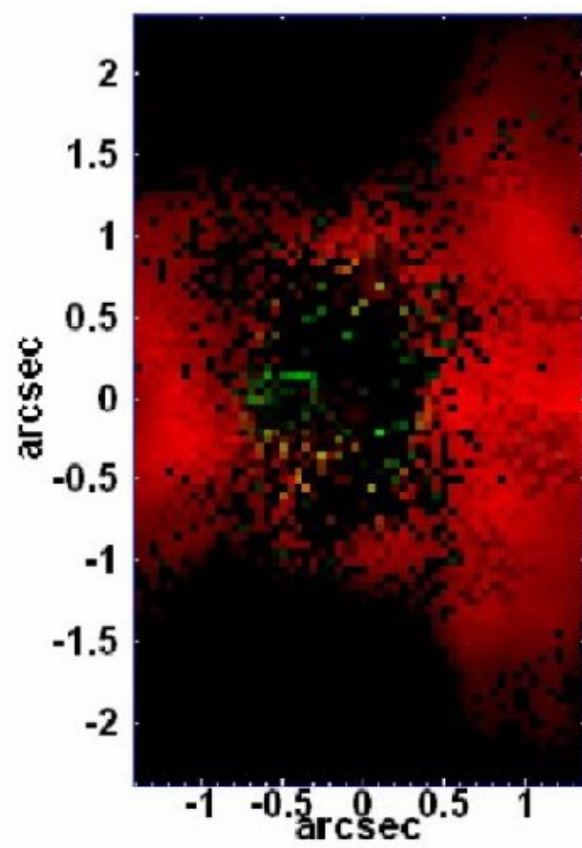
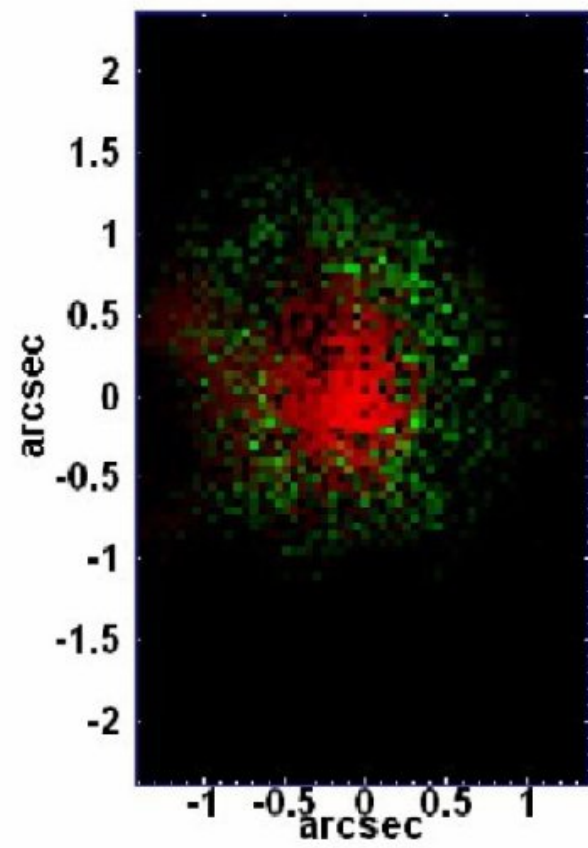
GMOS-IFU

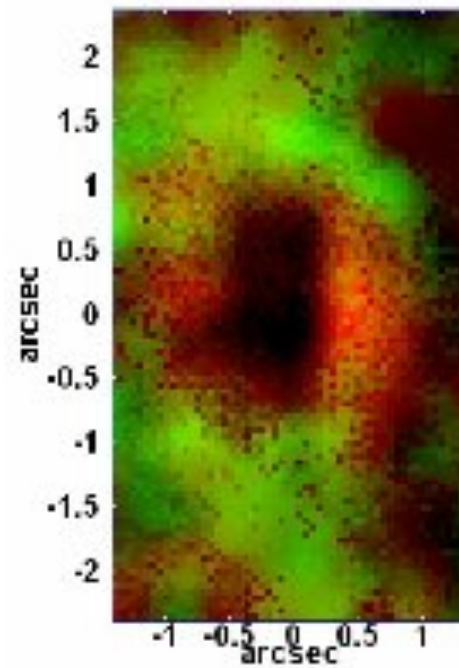
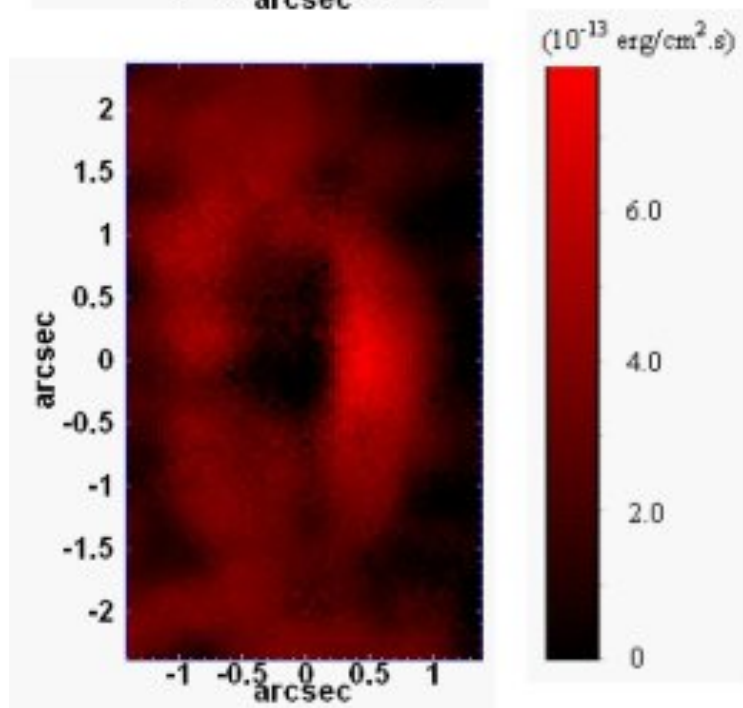
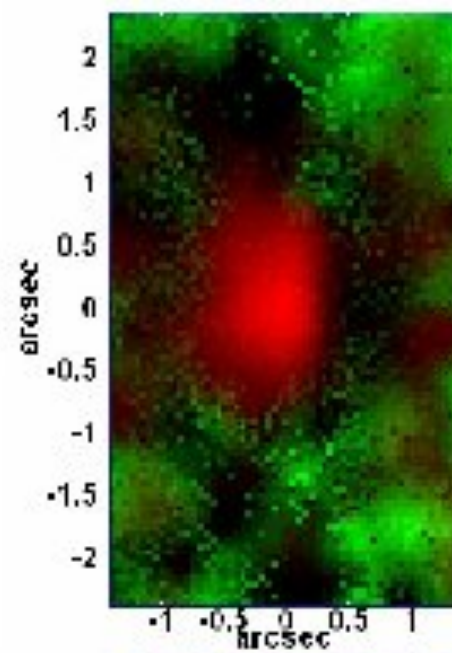
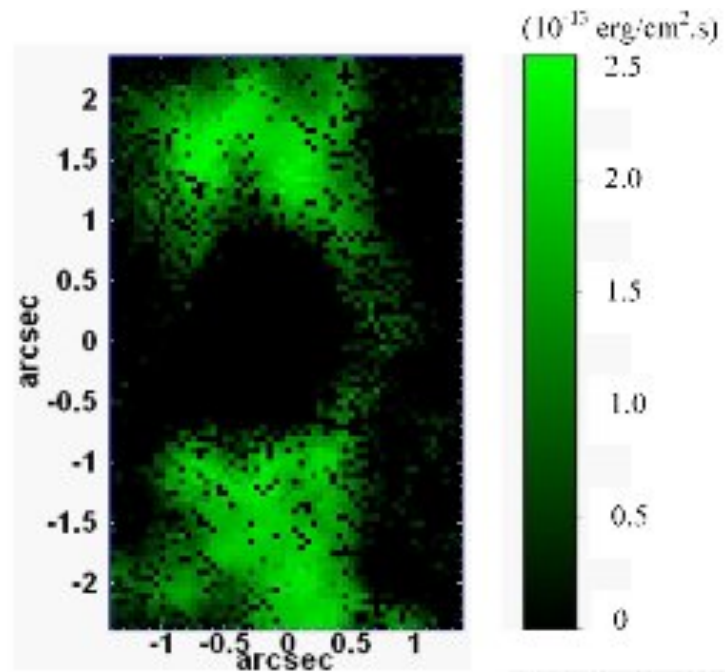


HST

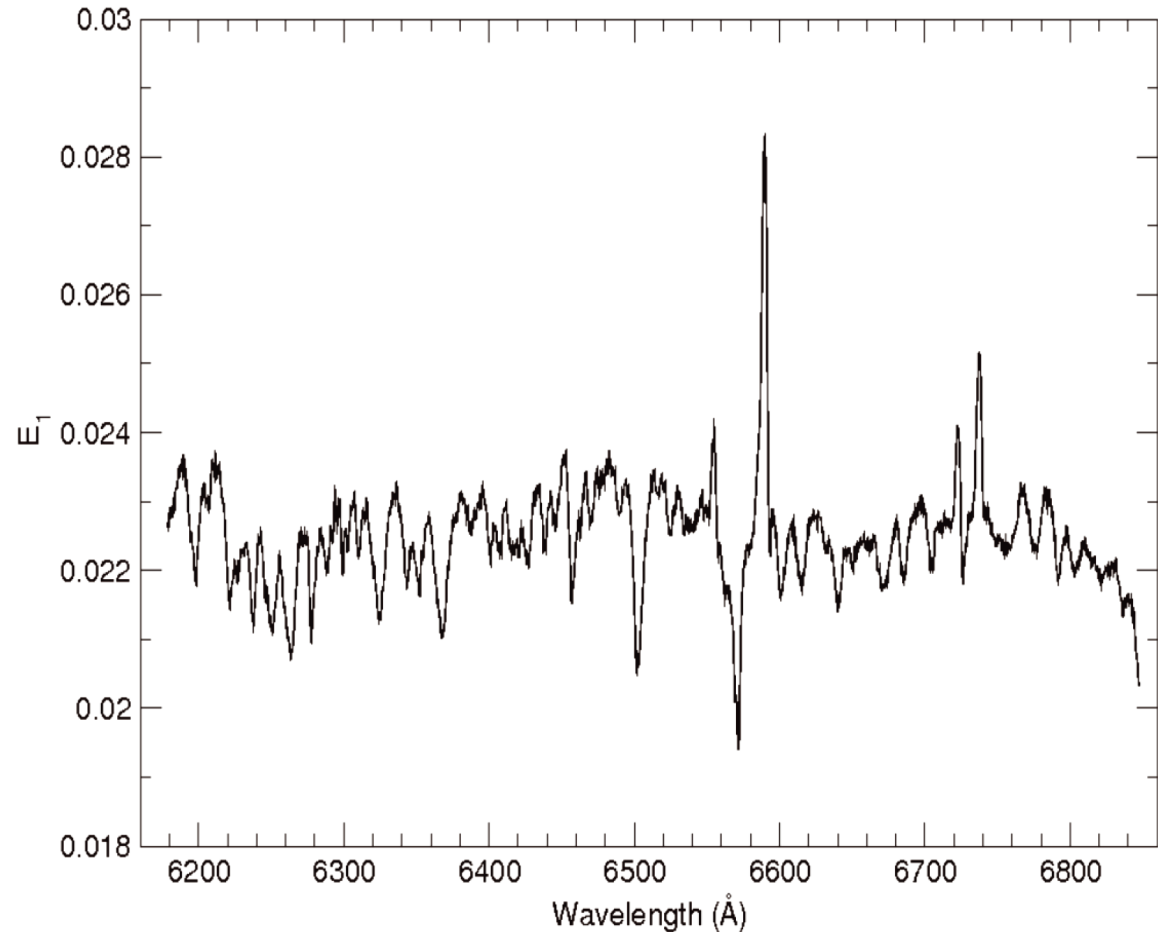
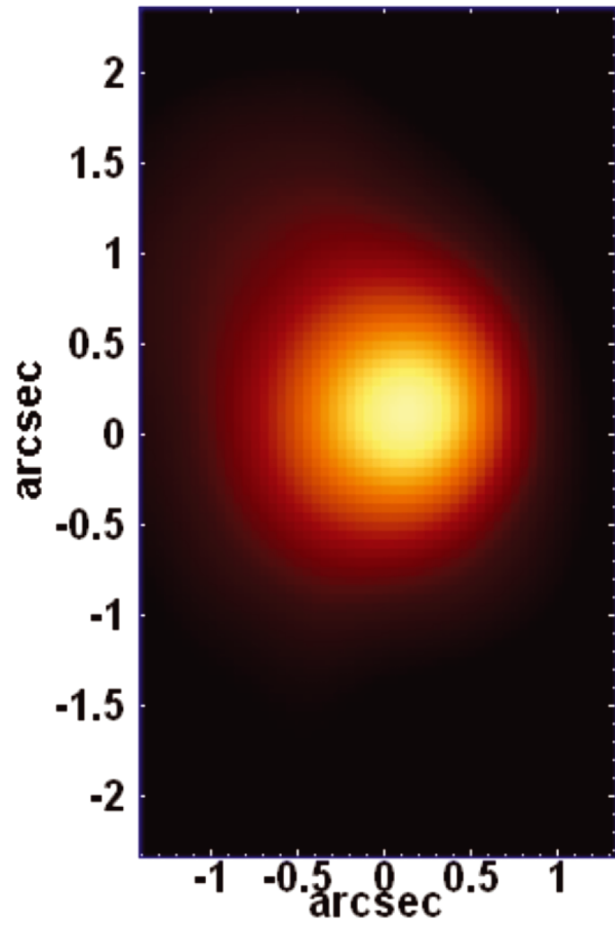








NGC 4736 – Av 1



NGC 4736 – Av 3

