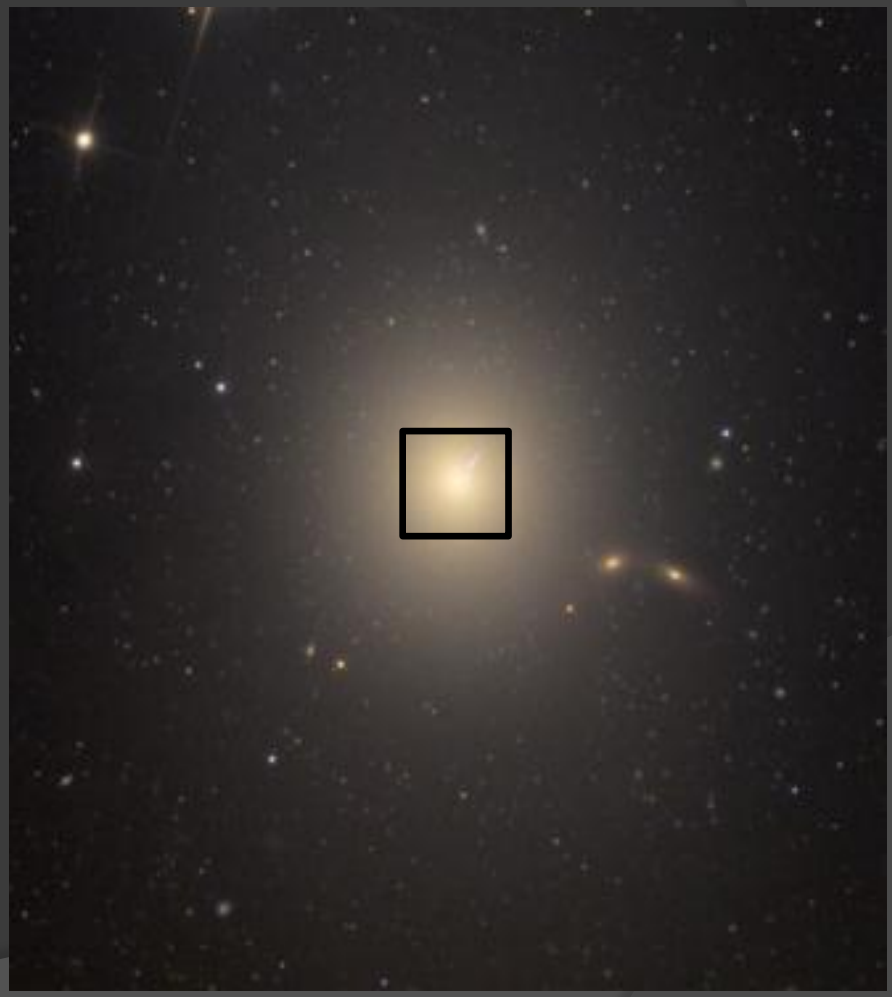
Undressing M87 by exposing its most private globulars

Mireia Montes, José A. Acosta-Pulido,
M. Almudena Prieto, Juan A. Fernández-Ontiveros

ESO@50, 5 Sept. 2012

The Antiques Store

- Central part of massive galaxies relic of the early stages of formation (e.g. Trujillo et al 2011)
- Properties of GCs correlated with their host galaxy (Brodie & Strader 2006)
- Holding important clues about GC and host galaxy formation
- Useful tool to track the nature of the merging mechanism (dry vs. wet)



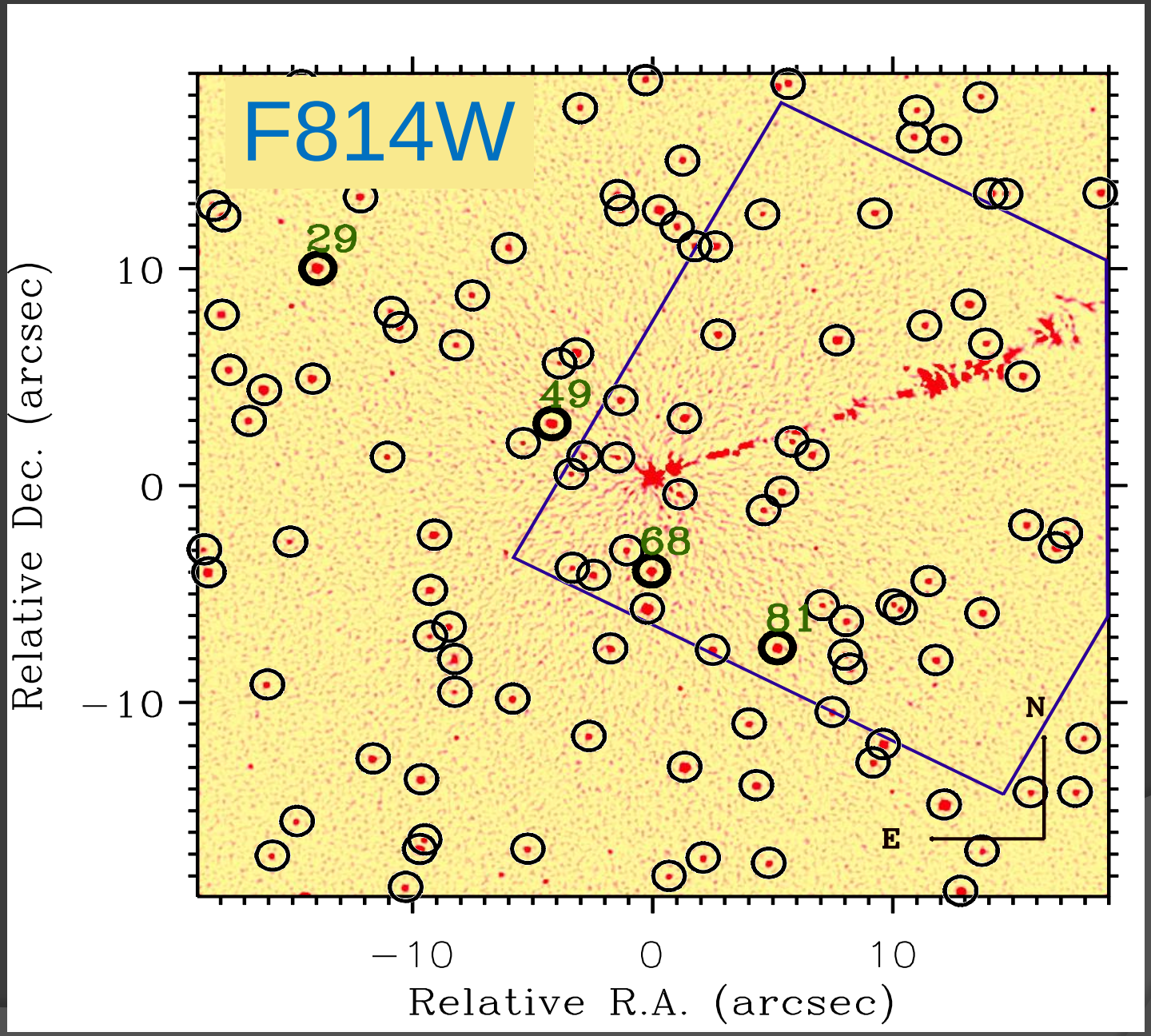
A NIR Window

- NIR gives better constraints on the SEDs (Anders et al 2004)
- IR imaging with AO (NaCo) allow us to measure the GCs in the central kpc of galaxies
- The numerous GCs of M87 and its proximity makes it a perfect target for understanding galaxy formation

What about M87 GCs?

- Colour Bimodality ⇨ Bimodality in metallicity? (e.g. Peng et al 2006)
- Red clusters centrally concentrated (Harris et al. 2009)
- NO Age difference red and blue GCs (Jordán et al. 2002)
- Old Ages ~13 Gyr (Cohen et al. 1998)

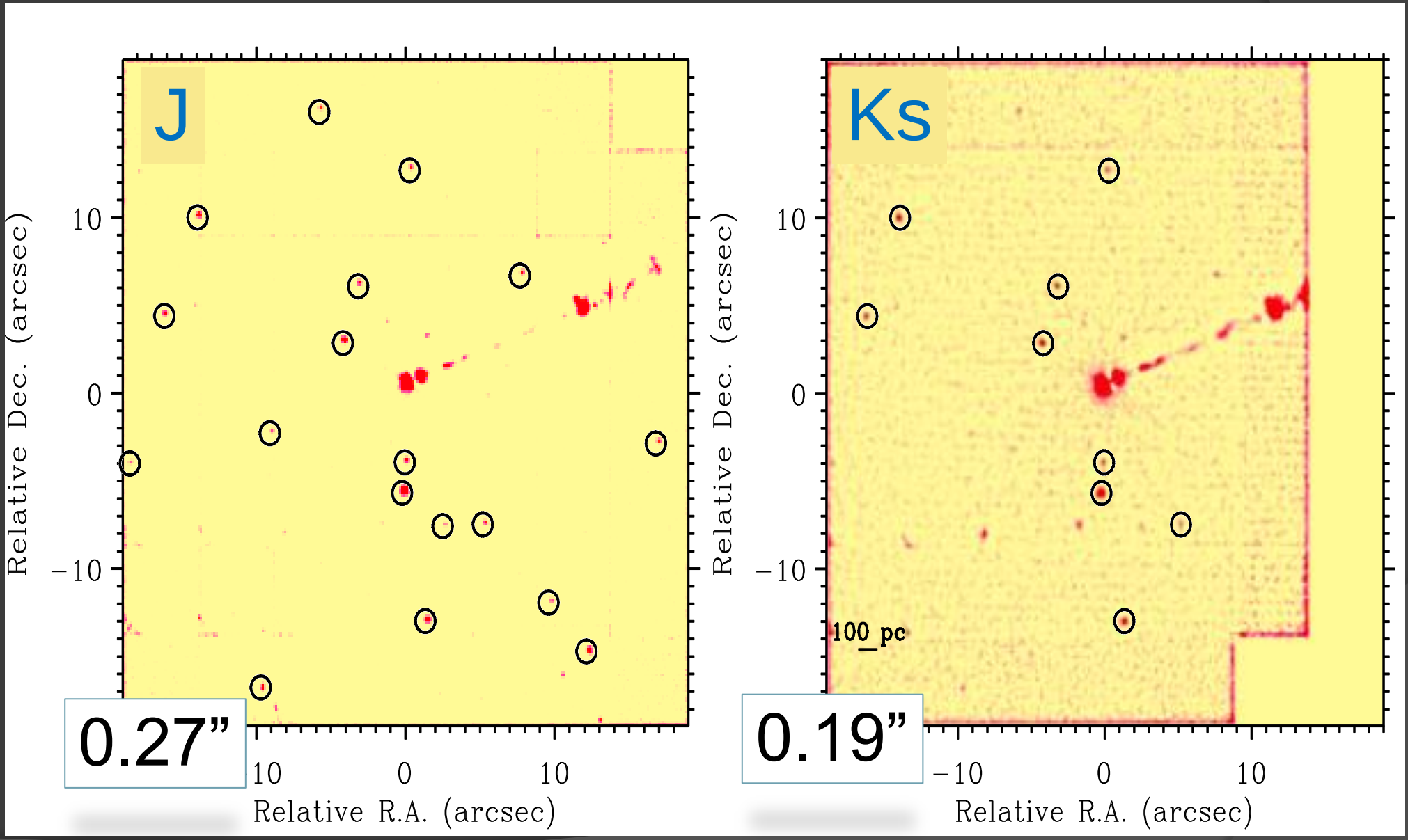
The Center of M87



~2.3 kpc

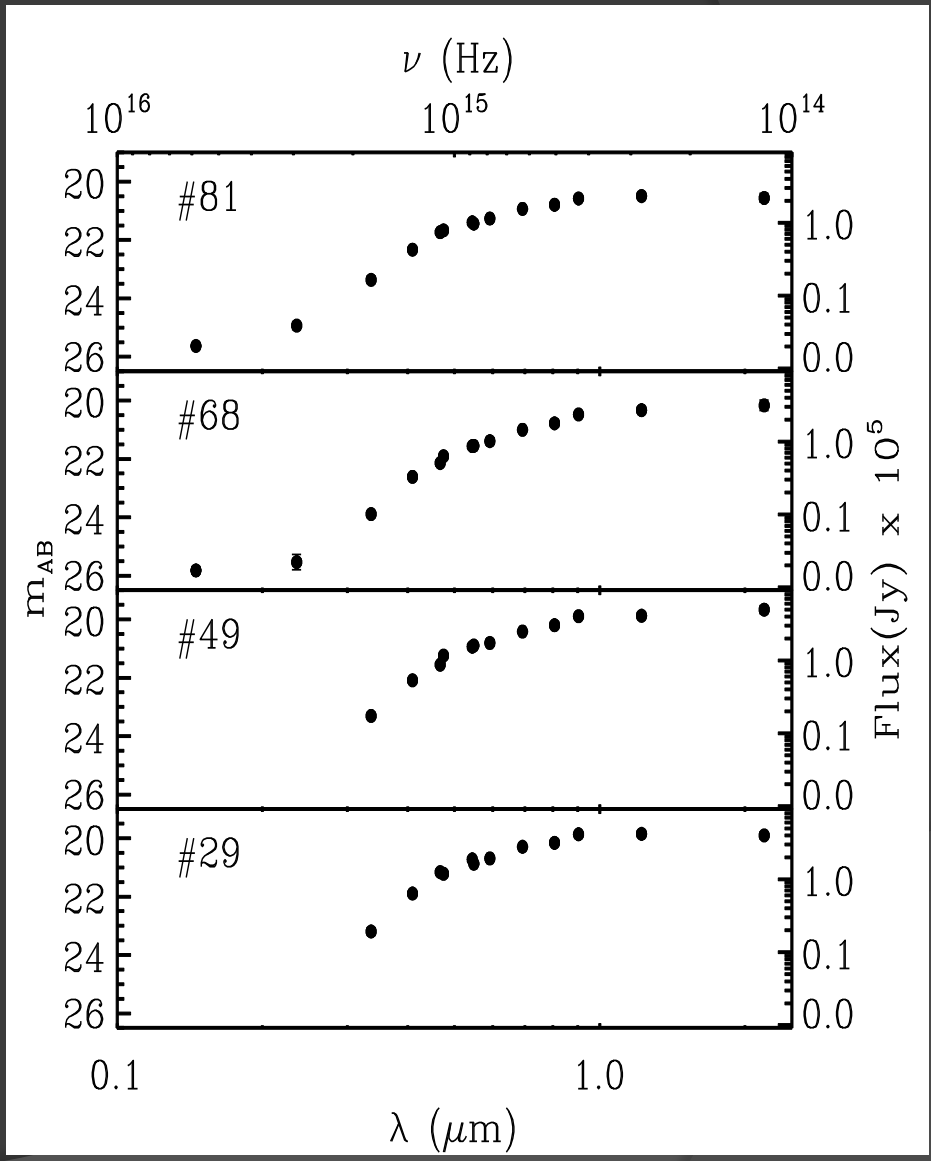
110 GCs

The NIR imaging

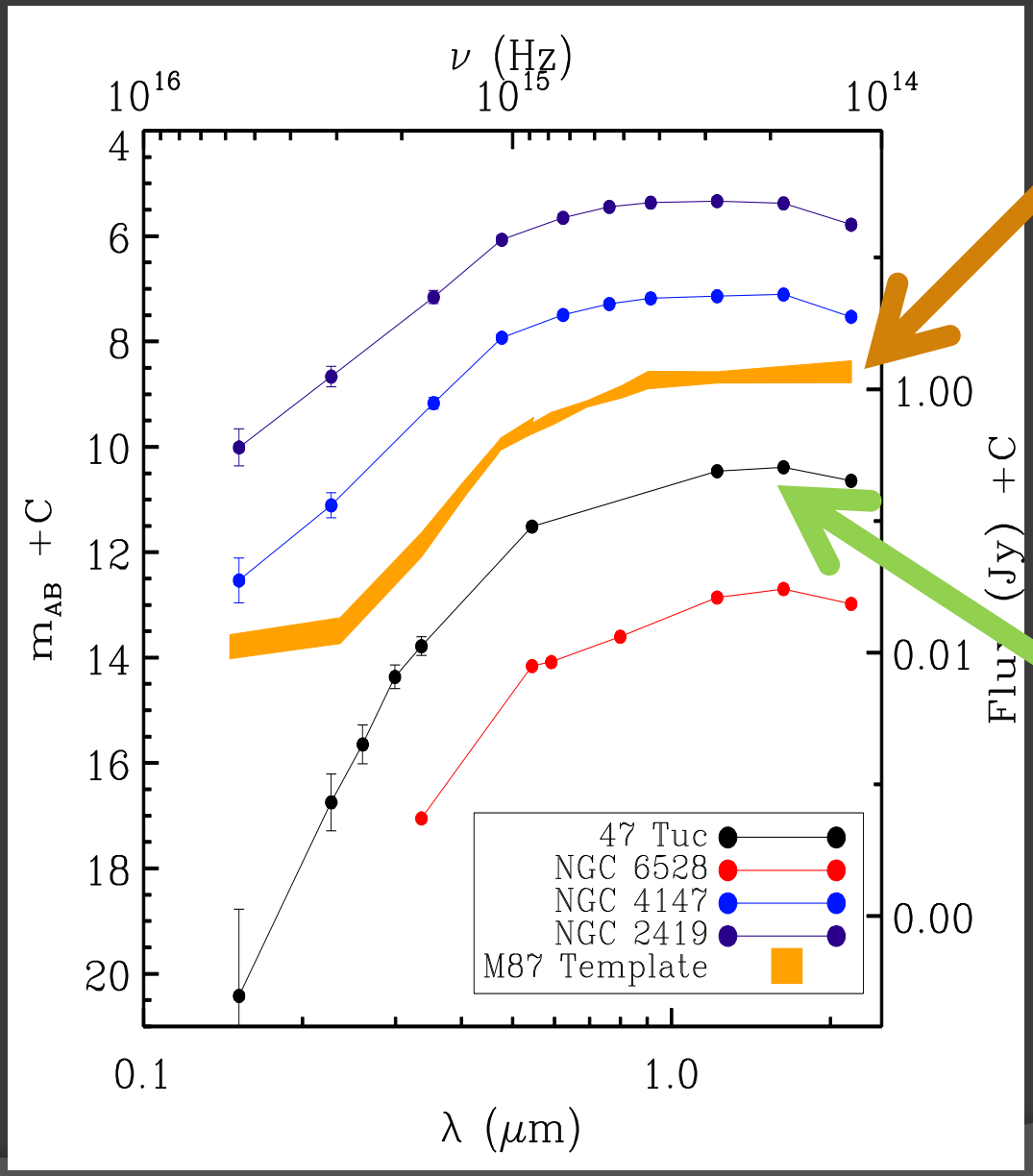


Spectral Energy Distributions

- SEDs from the UV to NIR
- NIR (NaCo) + Optical-UV (HST)
- Similarity of the SEDs
- $-12<M_I<-8$
- UV enhanced fluxes (Sohn et al 2006)



Age and Metallicity. Galactic GCs



- A representative cluster SED for M87 GCs
- 4 GGCs wide range of metallicities
- Best reproduces Optical-NIR: 47 Tuc ([Fe/H]=-0.71, Age=13Gyr)
- Higher UV fluxes. He enriched pop?

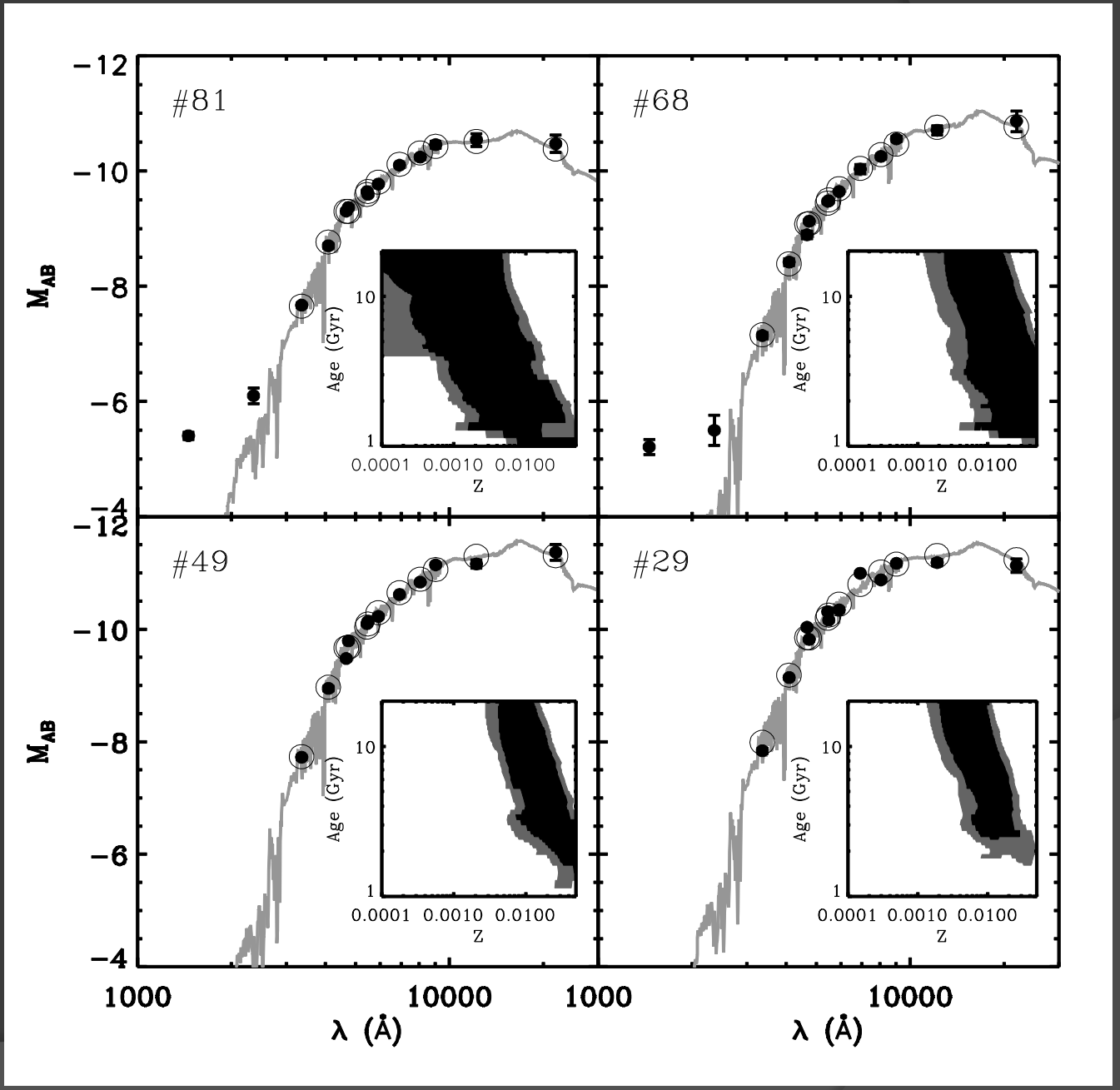
Mireia Montes

Age and Metallicity. SSP fitting

SSP fits

Charlot & Bruzual 2007

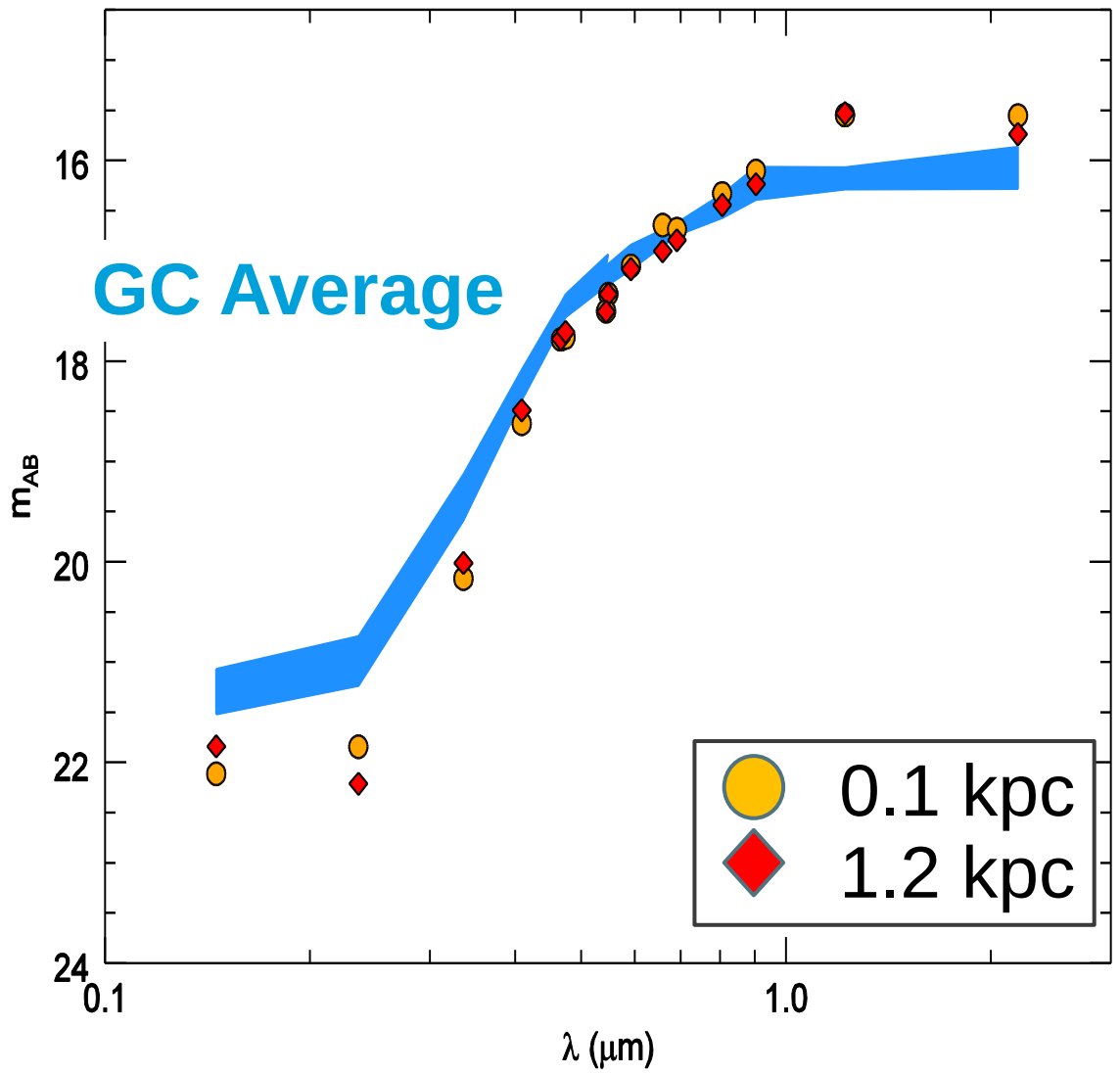
<[Fe/H]>=-0.7
<Age>=10.2 Gyr



Offset GC-Galaxy

Galaxy more metallic than its GCs

Confirmation of:
SAURON
(Kuntschner et al 2010)
+ our results



Conclusions

- NEW! NIR photometry of innermost GCs of M87.
- The mean metallicity of our GC sample is [Fe/H]~-0.7, ~ 47 Tuc. (Kundu et al 1999)
- The mean age of the GCs is ≥10 Gyr. (e.g. Cohen et al 1998)
- The metallicity is 8 times lower than that of the galaxy itself. (Kuntschner et al 2010). Offset is natural.
- No recent GC formation: compatible with dry merger scenario

Thank you!