



Evidences of cold flow accretion in nearby starbursts in COSMOS

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- *Jairo Méndez-Abreu (ST Andrews- UK)*

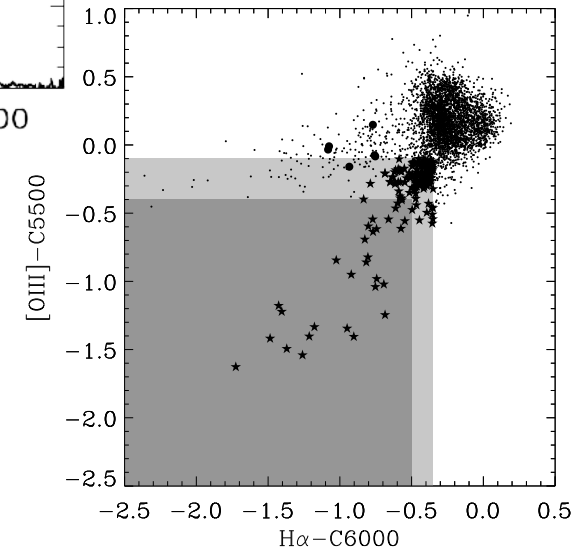
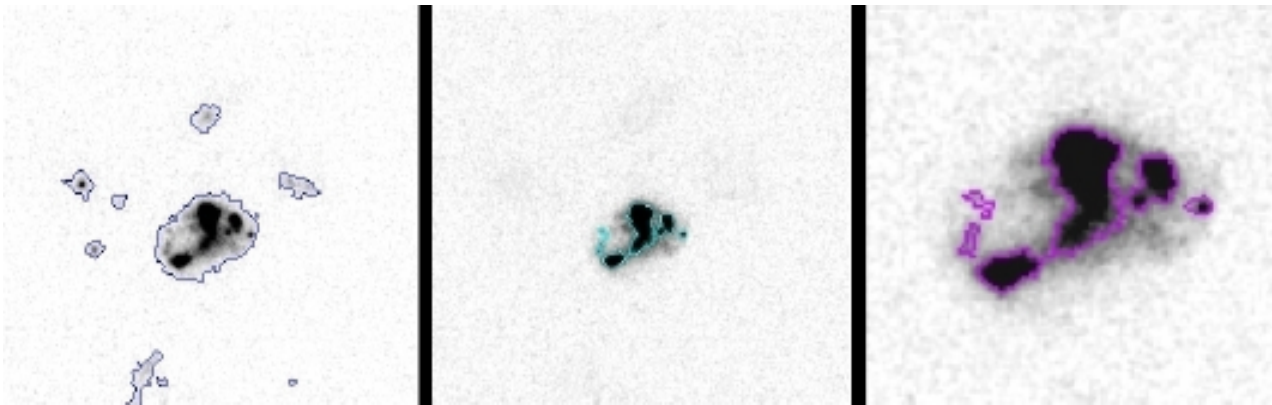
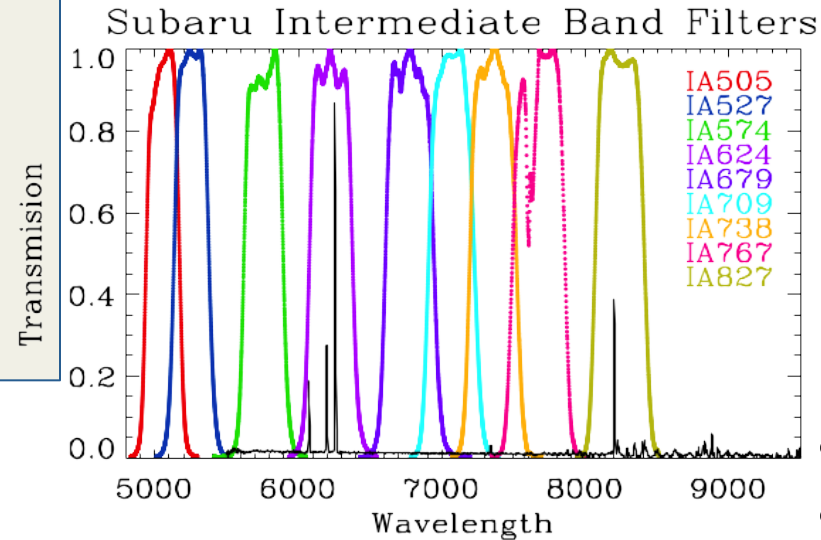
And also Jorge Sánchez Alméida (IAC) & B/D Elmegreen

COSMOS

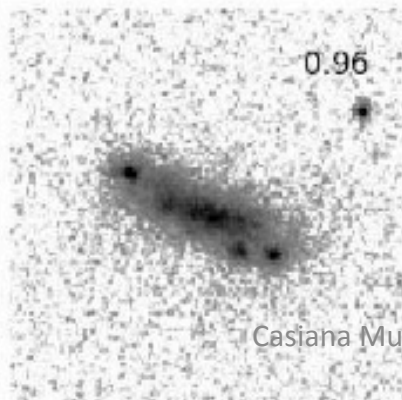
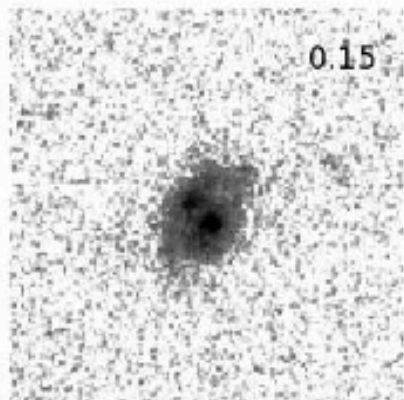
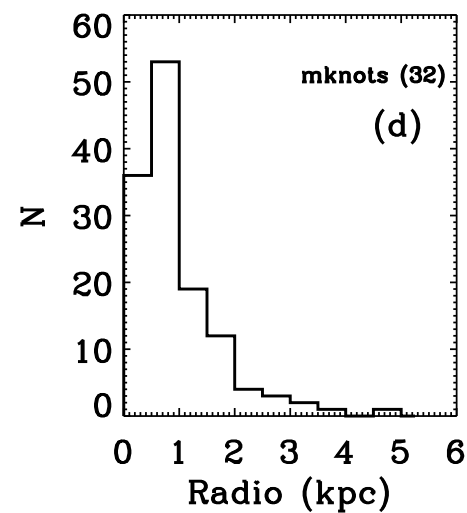
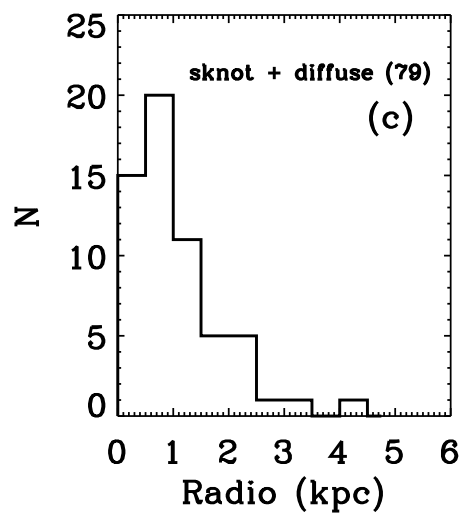
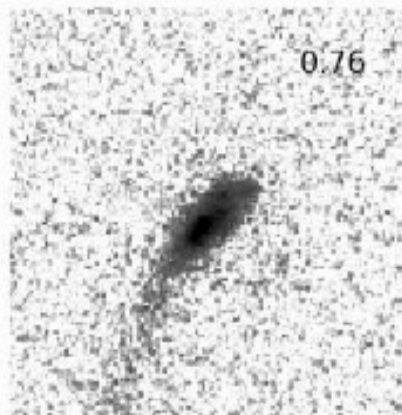
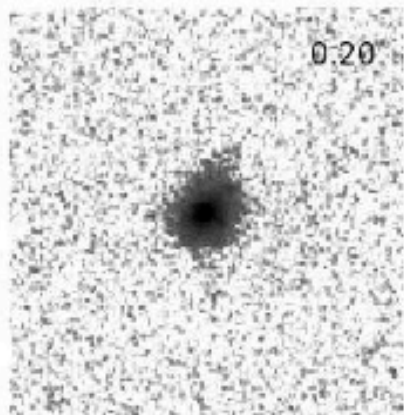
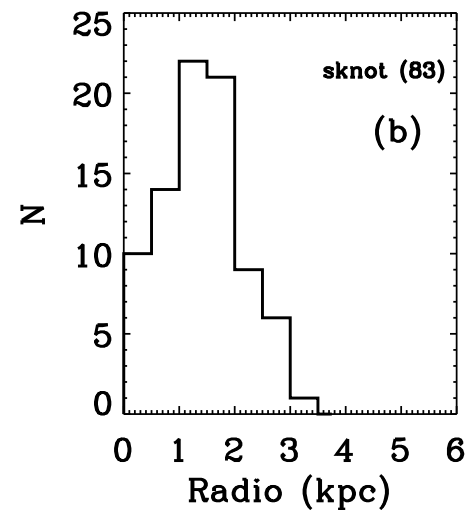
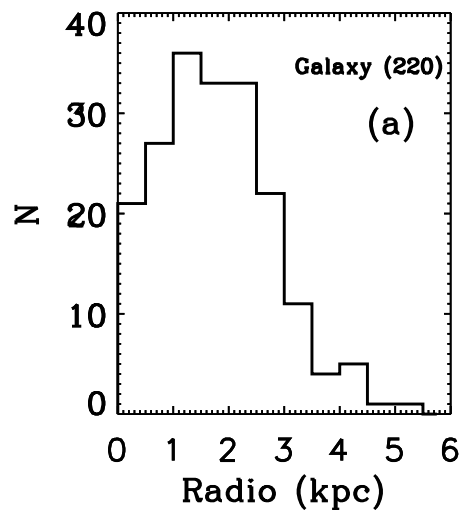
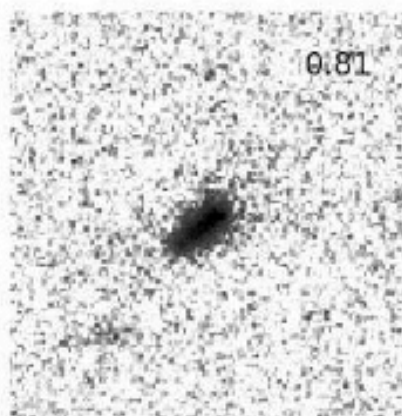
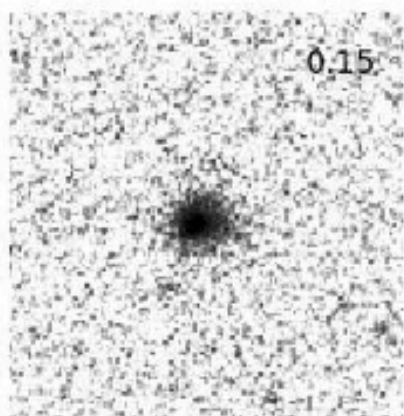
- COSMOS BB catalogue (Capak et al, 2007, ApJS, 172, 99).
- ZCOSMOS (Lilly et al., 2007, ApJS, 172, 70).
- SUBARU.

HST images
Equatorial field

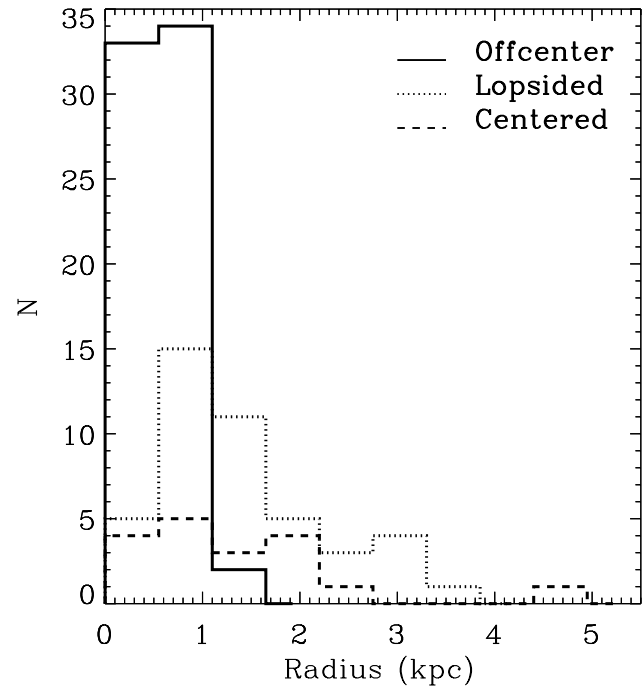
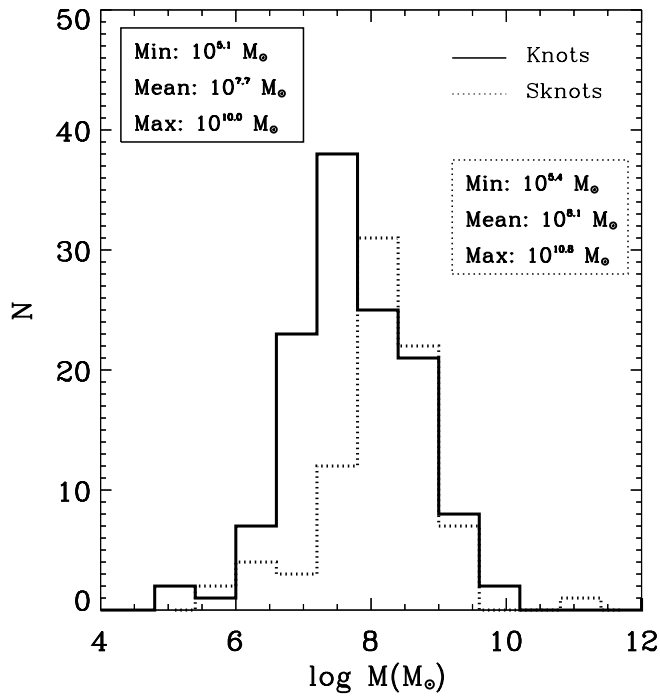
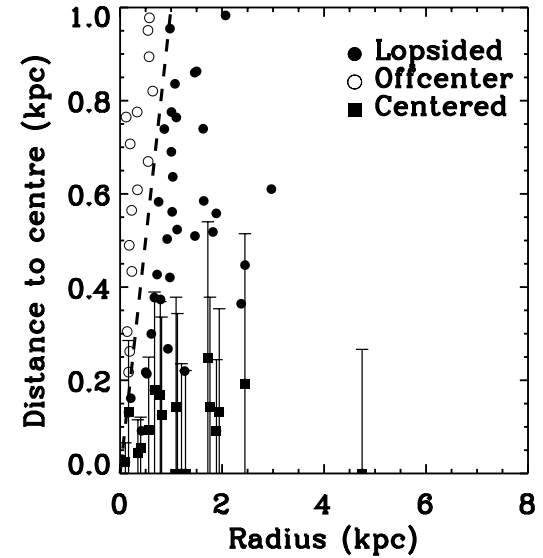
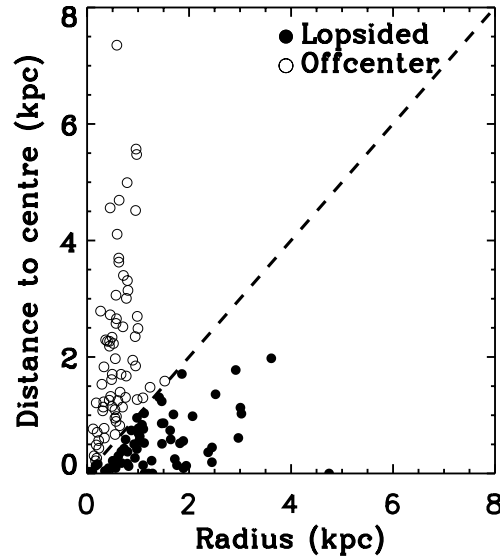
- Search for starburst galaxies
- Systems with EW in $H\alpha$ / $OIII$ $> 80 \text{ \AA}$. (Cairós et al., 2007, 2009).
- $0 < z < 0.5$

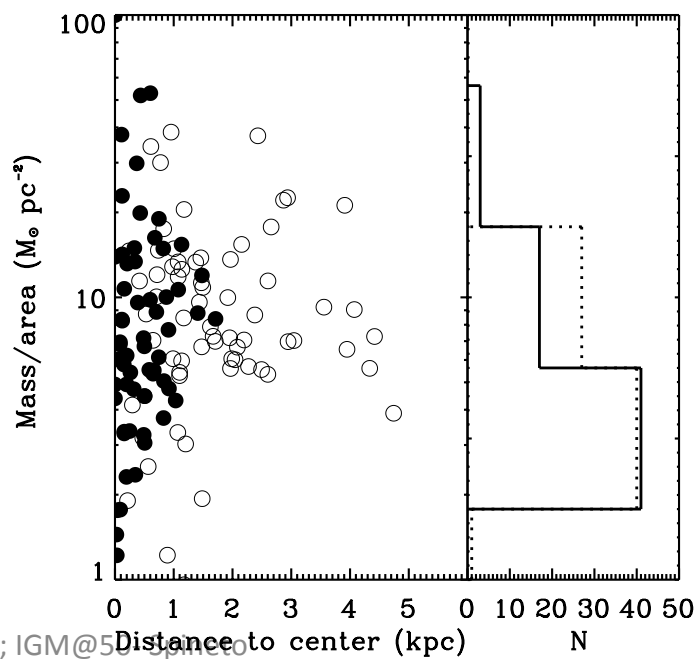
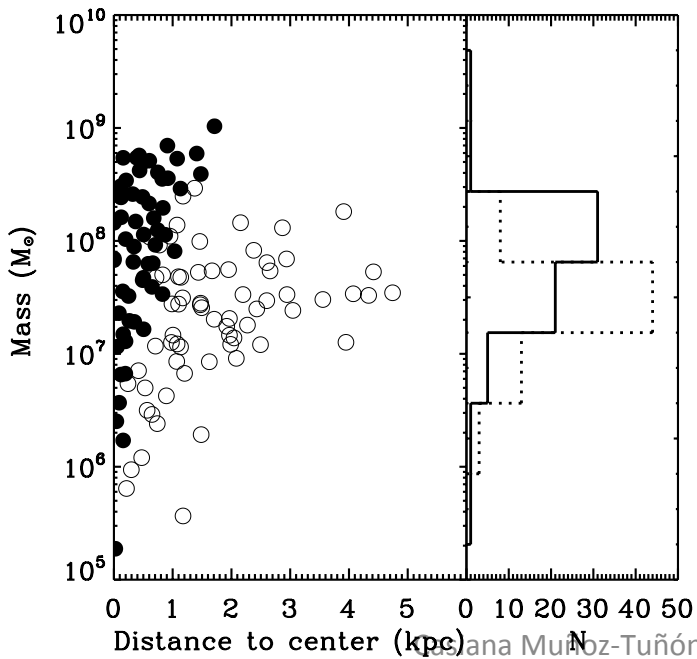
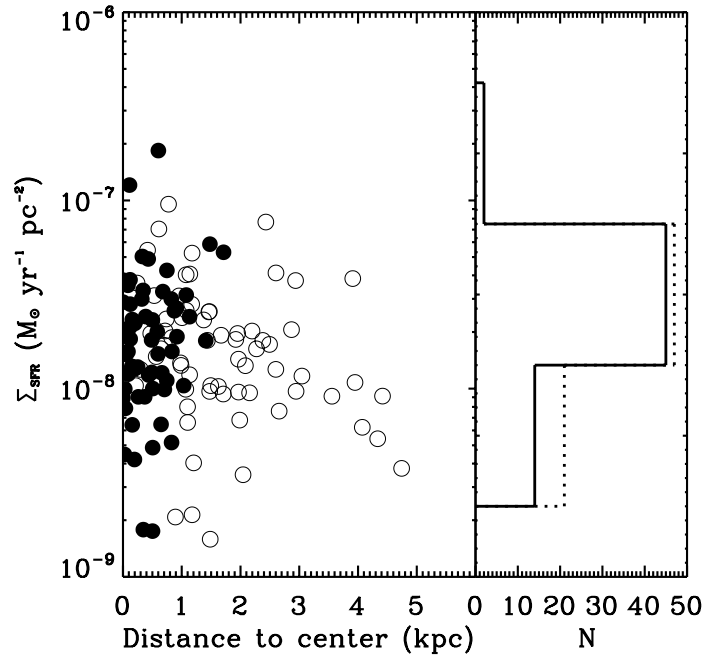
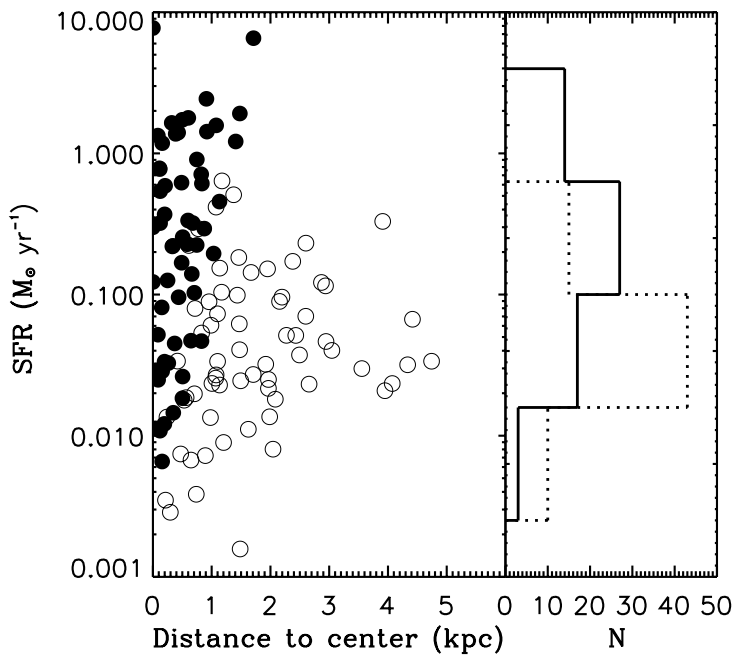


The Galaxies and the clumps

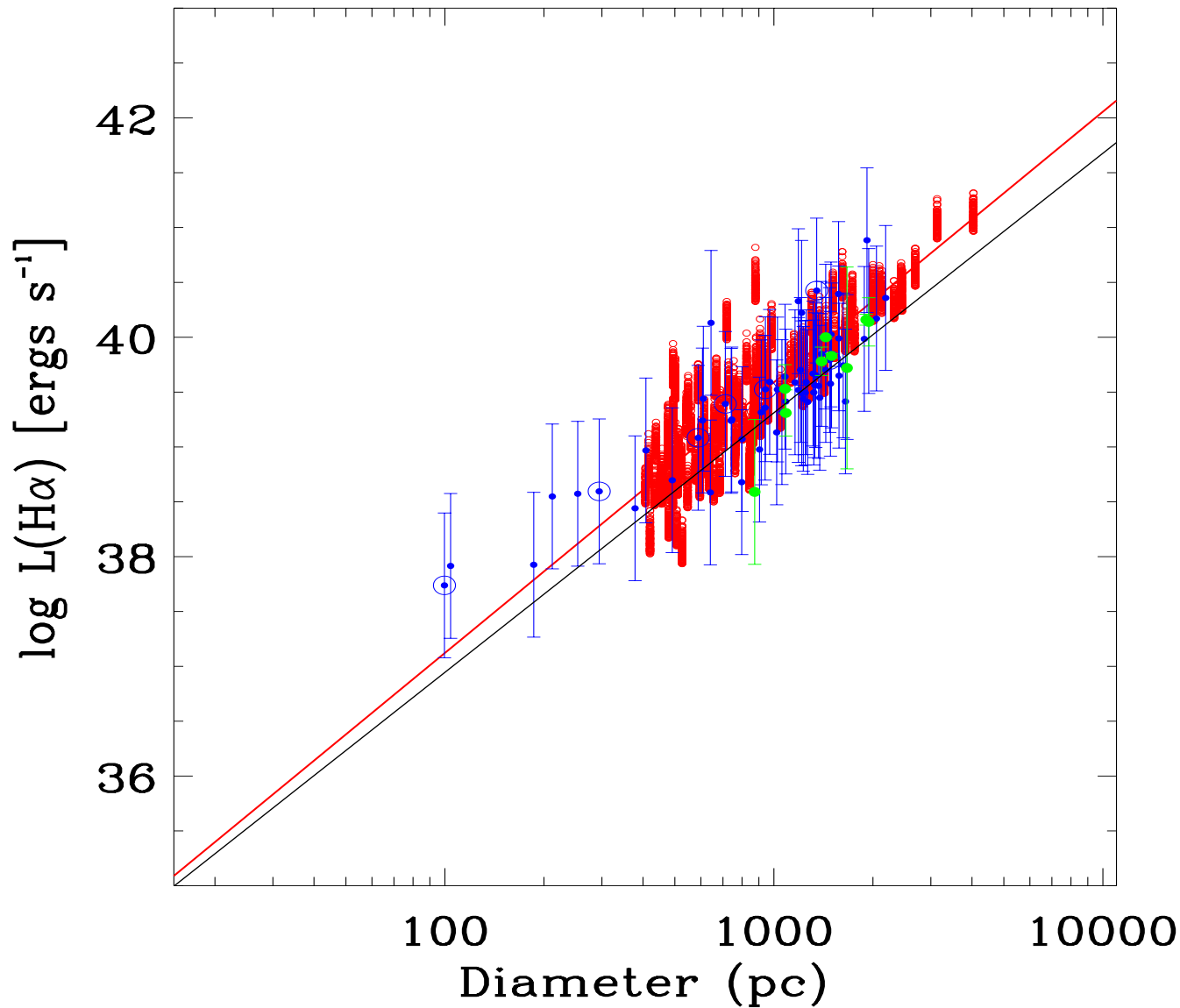


The Knots





Scaling relations



Slope = 2.48 ± 0.05 .

Similar to the 2.5 obtained by Fuentes-Masip et al. (2000) for local, resolved GHII regions measured with FP technique

Intermezzo

- Catalogue with the 220 Starbursts Galaxies in COSMOS ($EW > 80 \text{ \AA}$) // $z < 0.5$
- $\langle \text{Mass} \rangle = 10^{8.2} M_{\text{sun}}$.
- Catalogue with the clumps in each galaxy.
- 83/220 are Sknot // 79/220 are sknot+ diffuse light // 32/220 are mknots
- The galaxies are about 10 times more massive than the knots.
- The more massive Knots are bigger and they are in the centre of their host galaxy.
- The knots are “similar” (Surface SFR, Surface Mass)
- Their scaling relation $L(\text{H}\alpha)$ vs size similar to GHII Regions.

Hinojosa Goñi, R., Muñoz-Tuñón C. & Méndez Abreu, J. A&A, 2015-

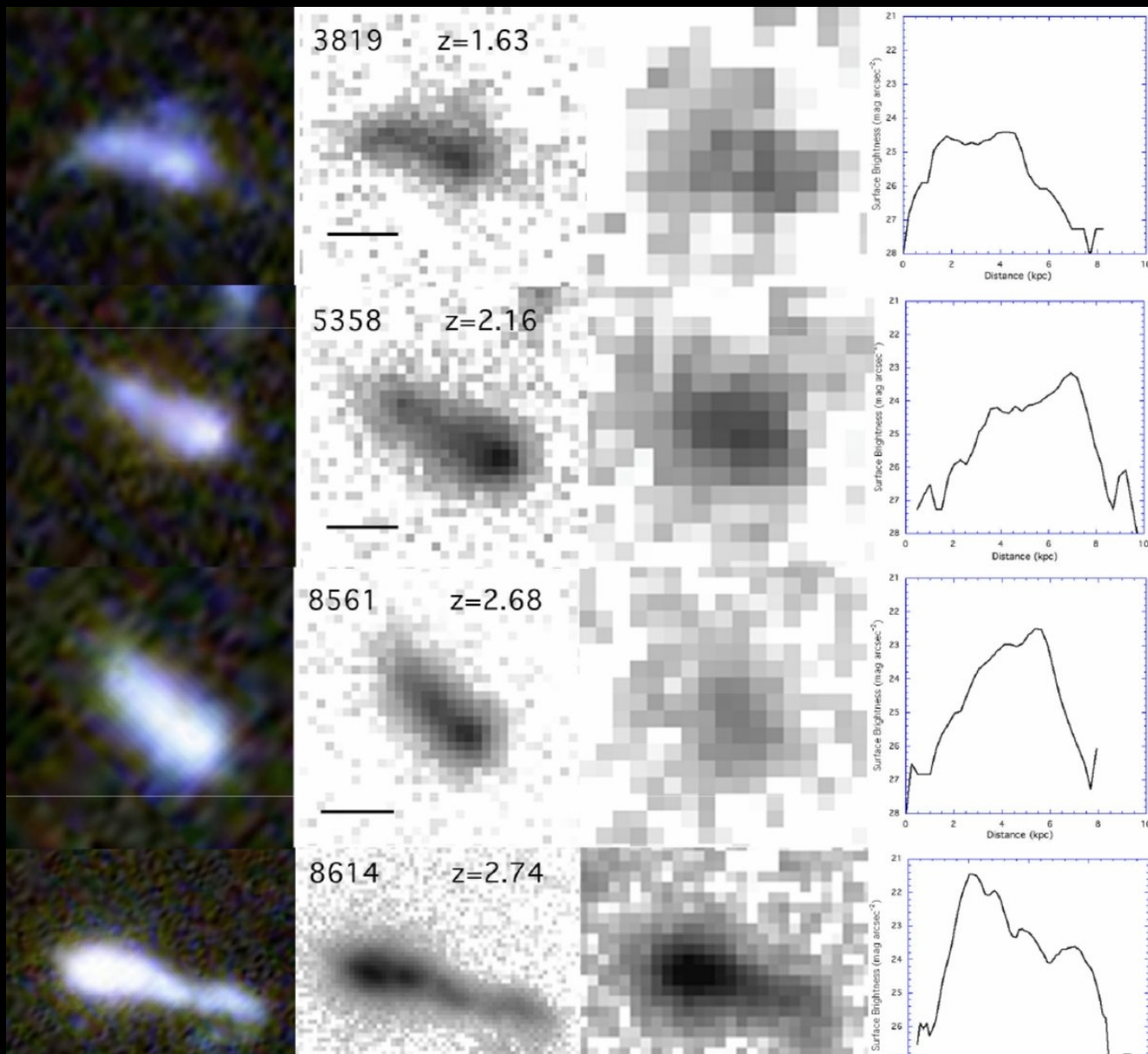
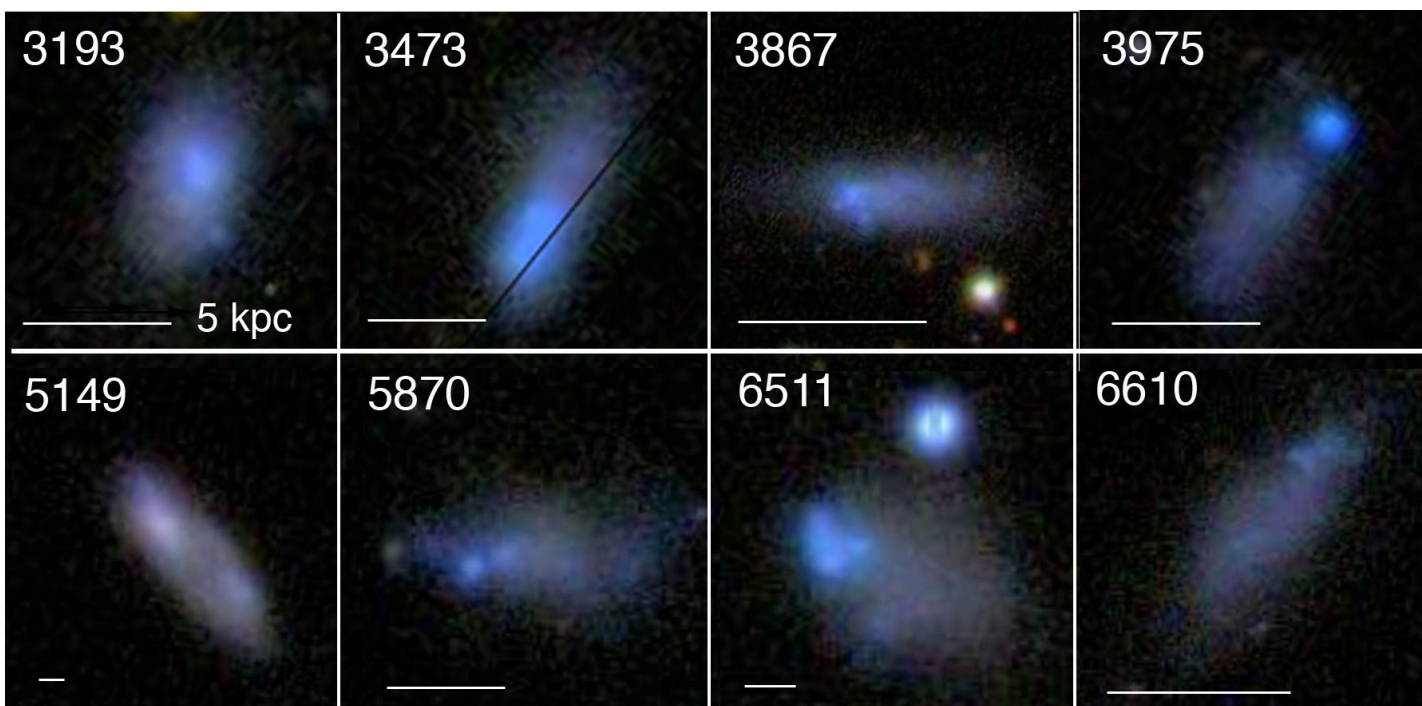
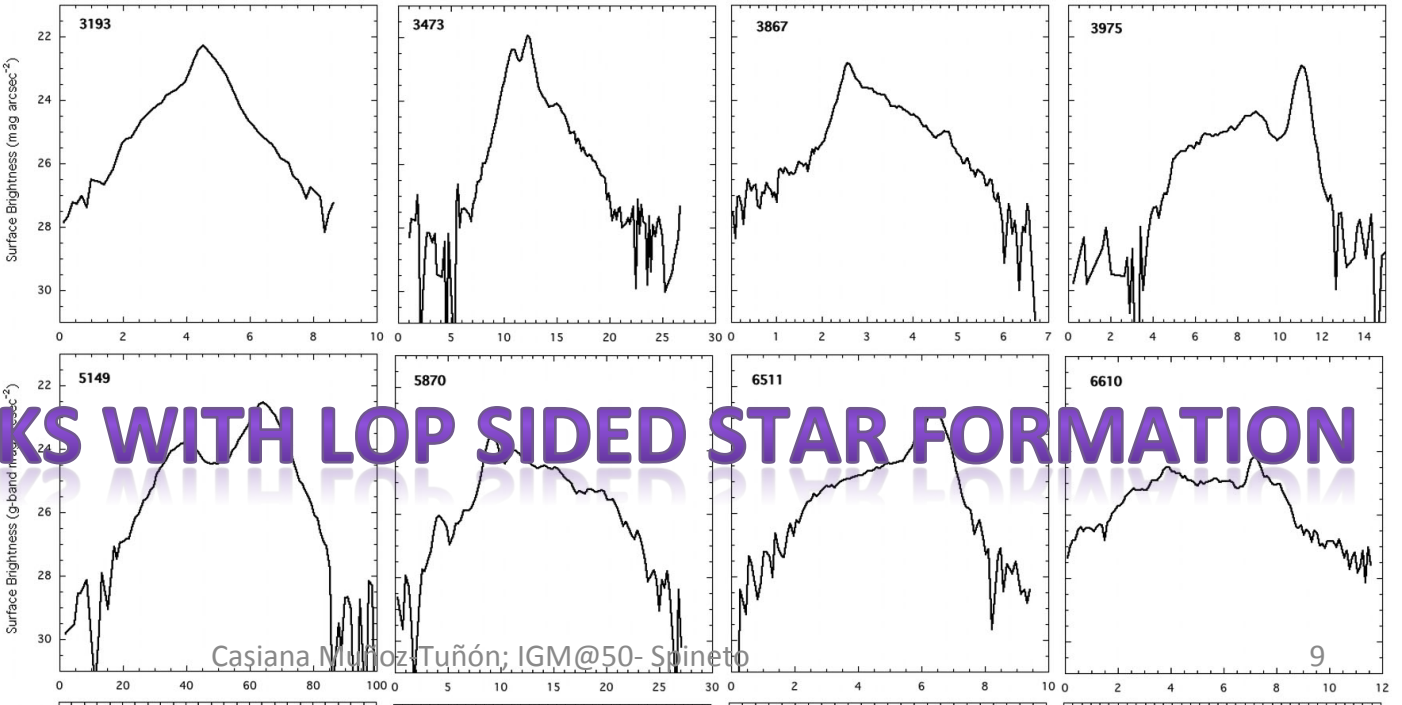
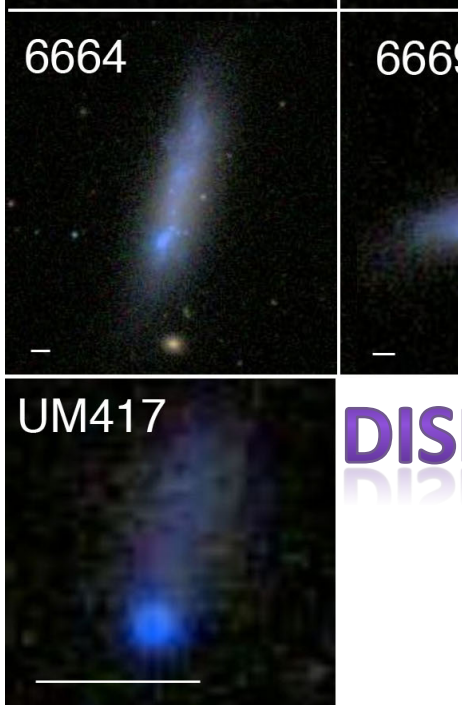


Figure 1 from Tadpole Galaxies in the Hubble Ultra Deep Field B G. Elmegreen and D.M. Elmegreen 2010 ApJ 722 1895.

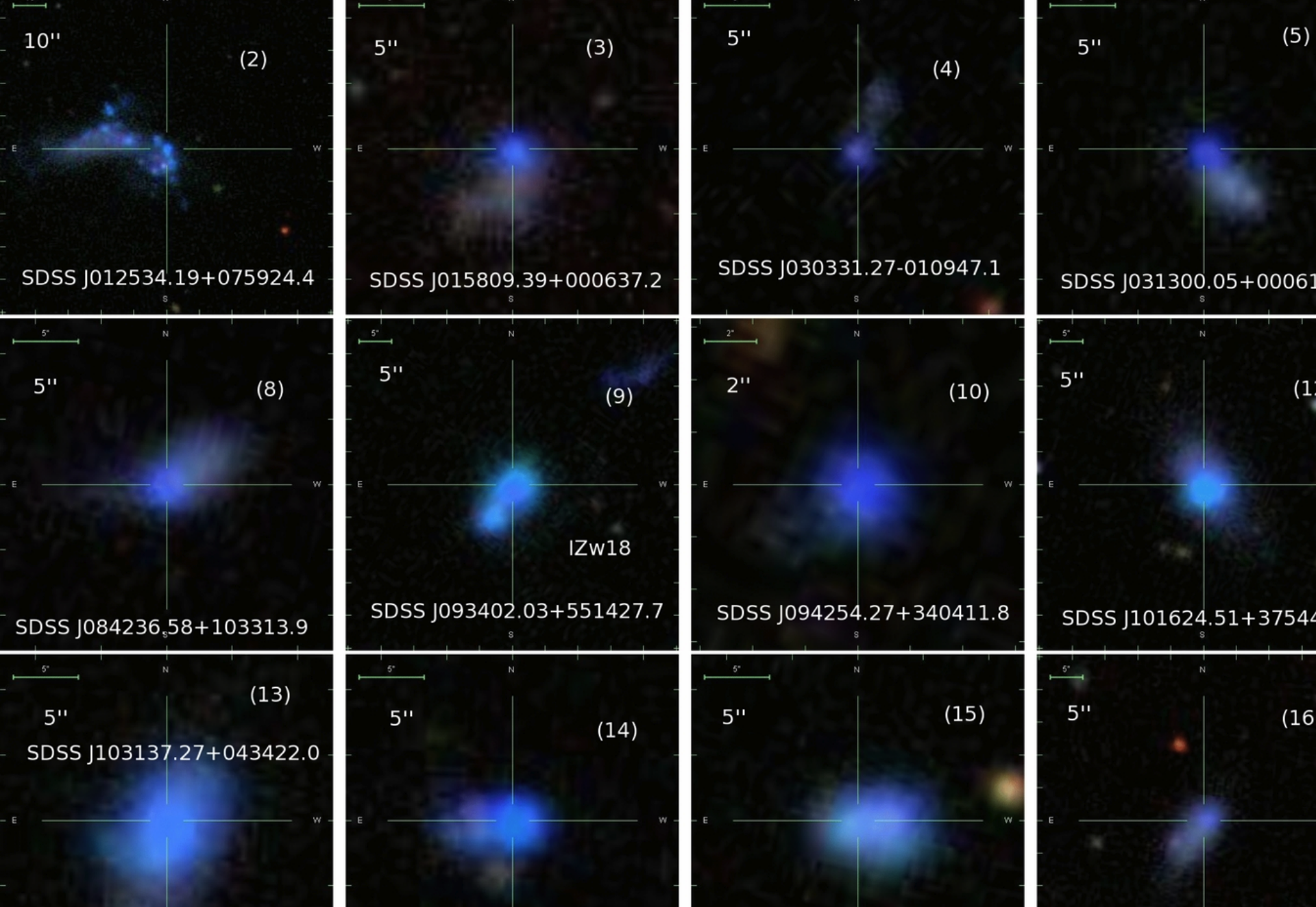


Elmegreen, D. et al.,
2012, Ap.J., 750, 95.

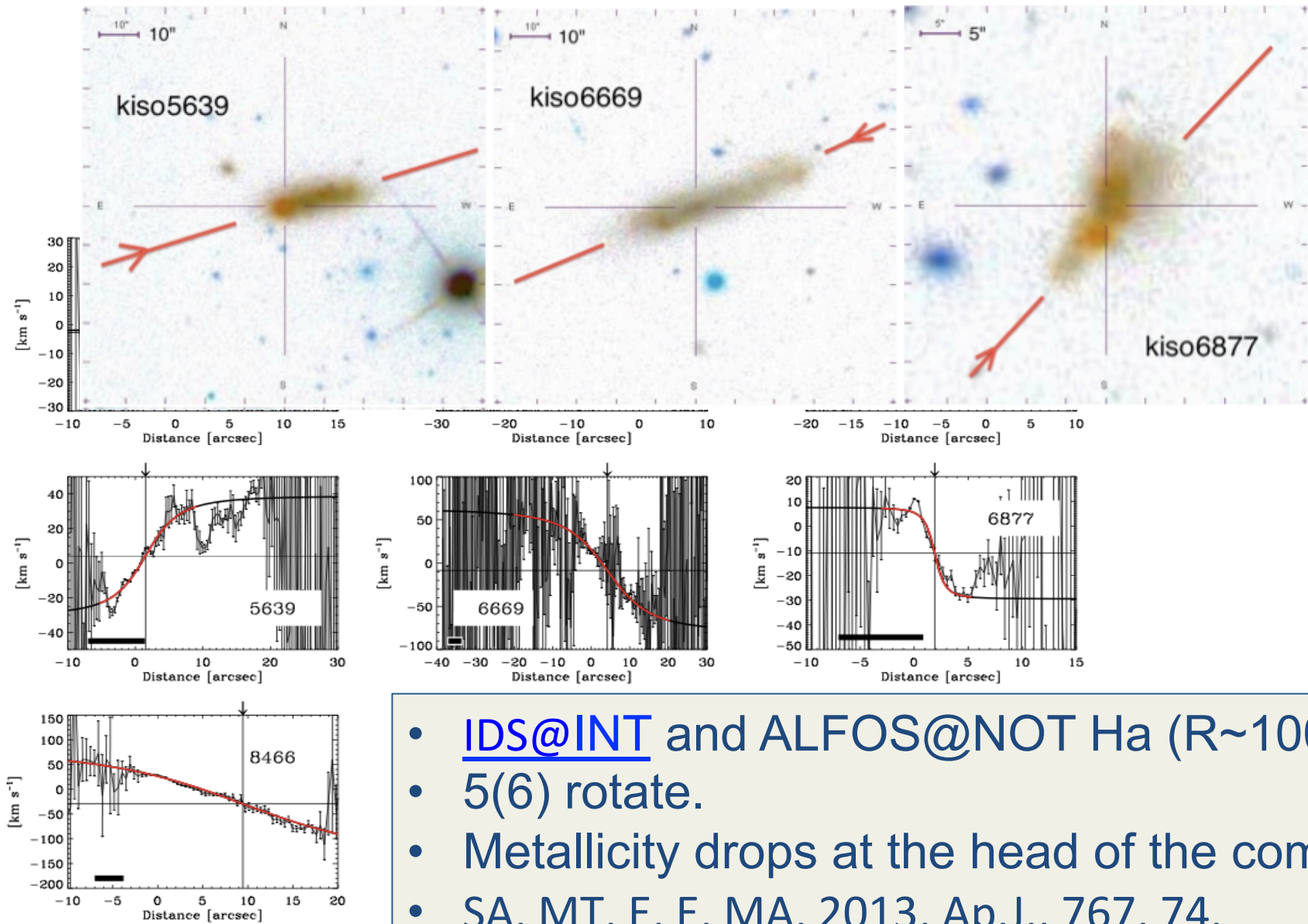


DISKS WITH LOP SIDED STAR FORMATION

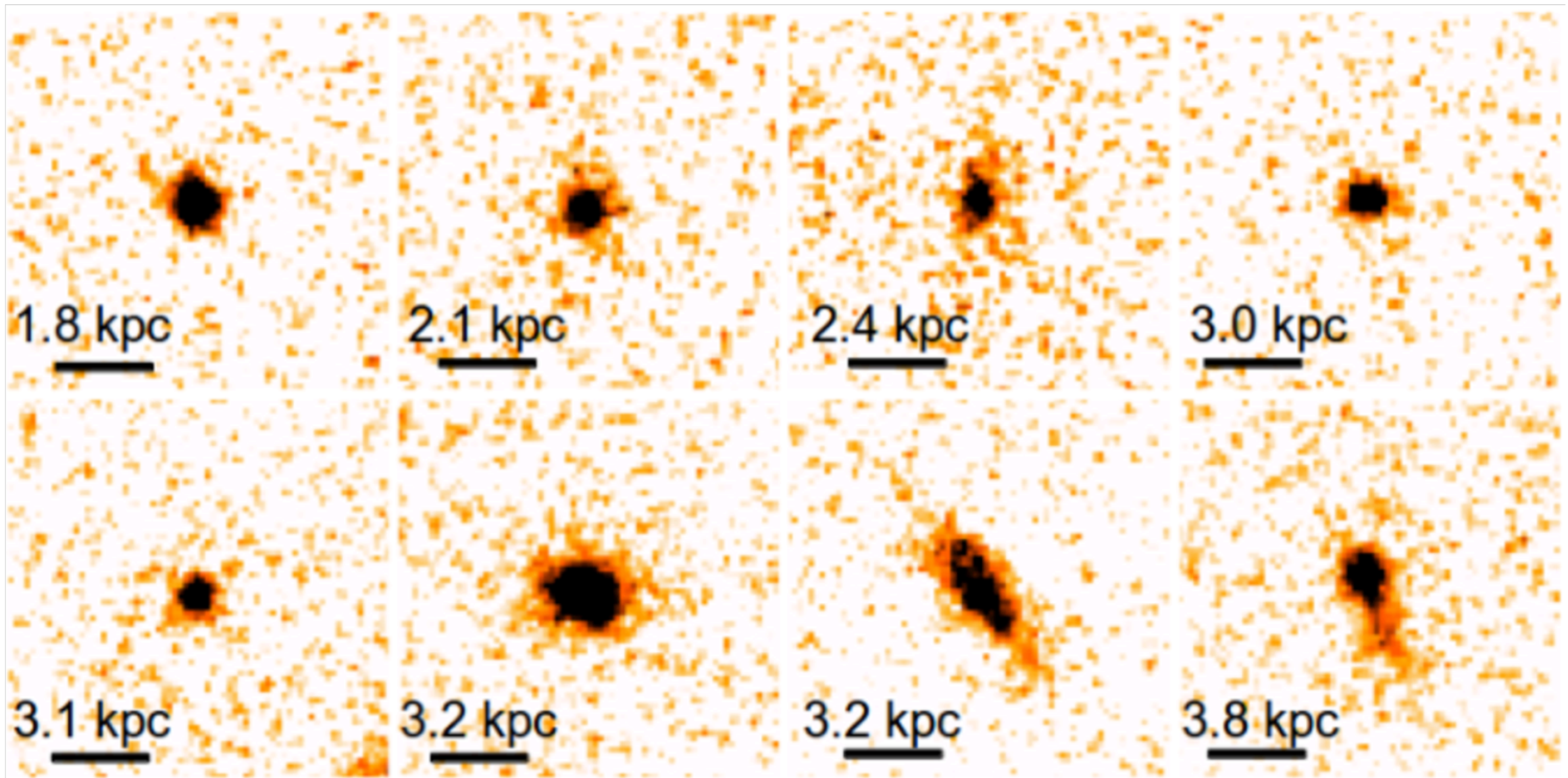
Caşiana Muñoz-Tuñón; IGM@50- Srineto



Morales-Luis et al. 2011 ApJ 743 77.; see also Papaderos et al, 2008.



- [IDS@INT](#) and ALFOS@NOT Ha (R~10000)
 - 5(6) rotate.
 - Metallicity drops at the head of the comet.
 - SA, MT, E, E, MA, 2013, Ap.J., 767, 74.
- Search for patterns/structures nearby
(see Amanda Del Olmo poster)*

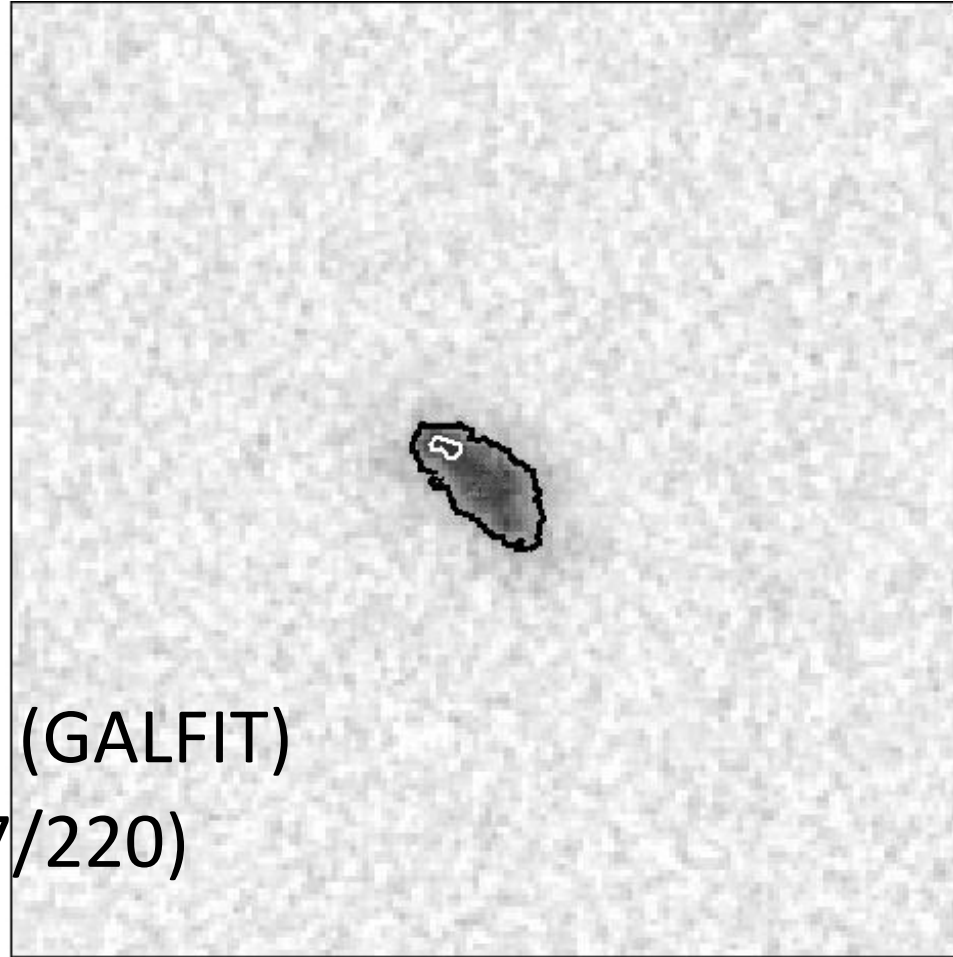


Amorin et al, 2014 A&A...568L...

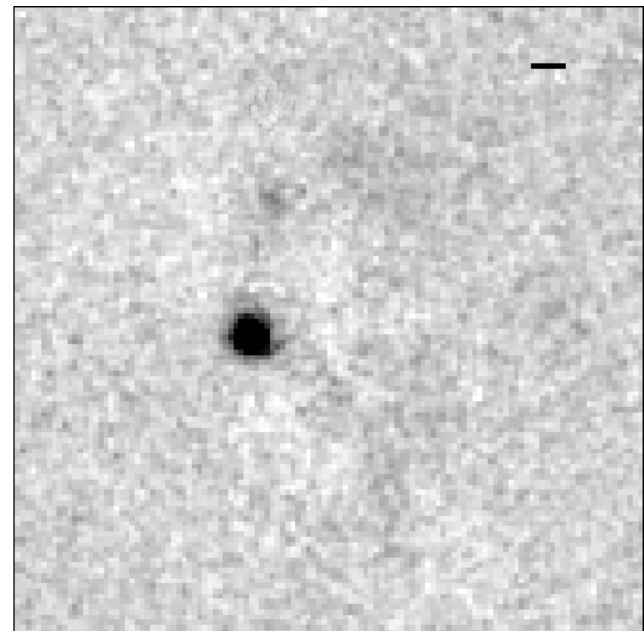
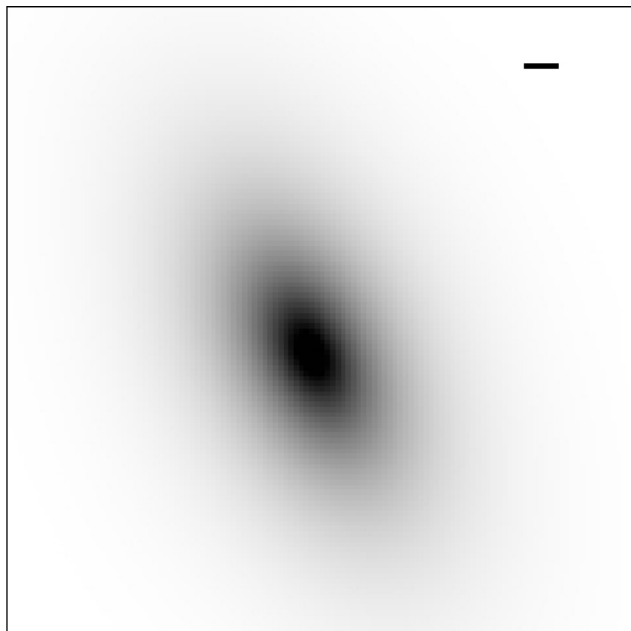
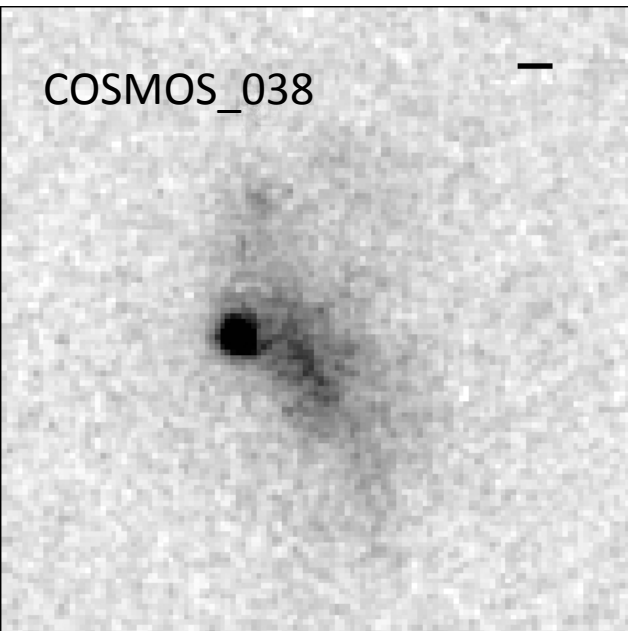
Extremely compact and metal poor at $z=0.9$ in the VIMOS Ultra deep Survey...

COSMOS- the Cometary subsample

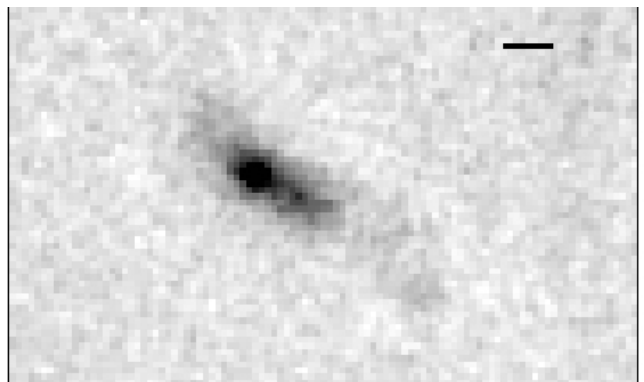
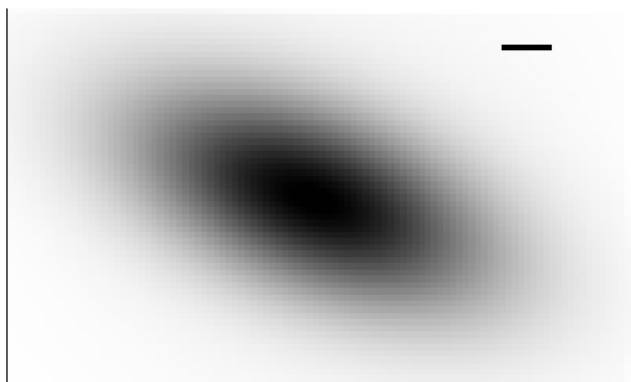
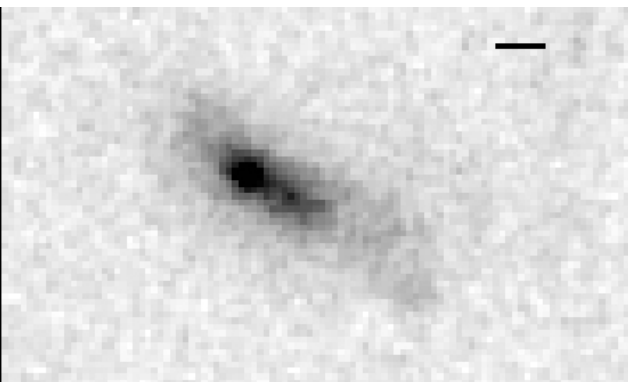
- 2D fit to the host galaxy (GALFIT)
- Sknot + diffuse light. (57/220)
 - Offcenter (17)
 - Lopsided (40)

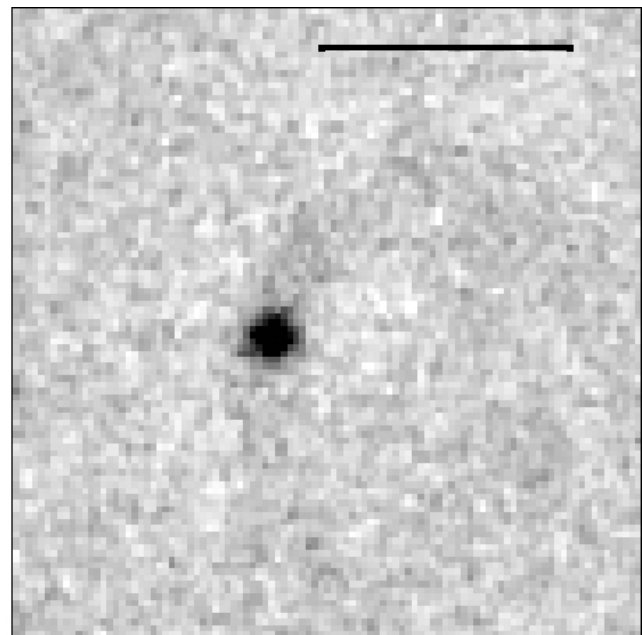
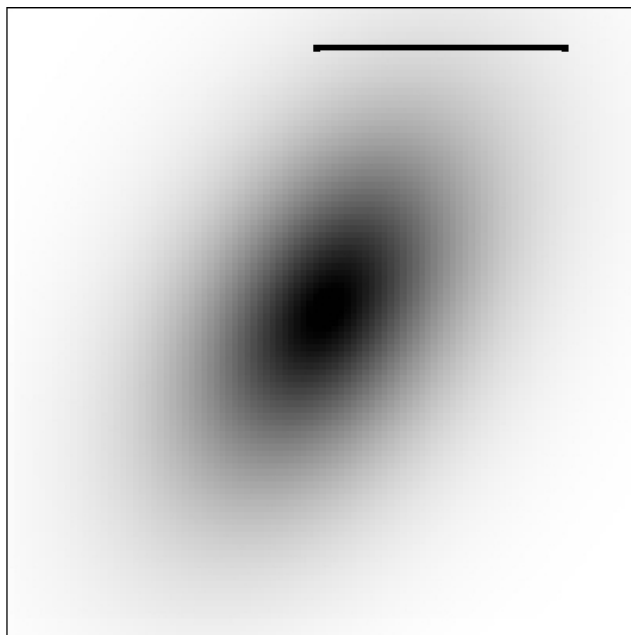
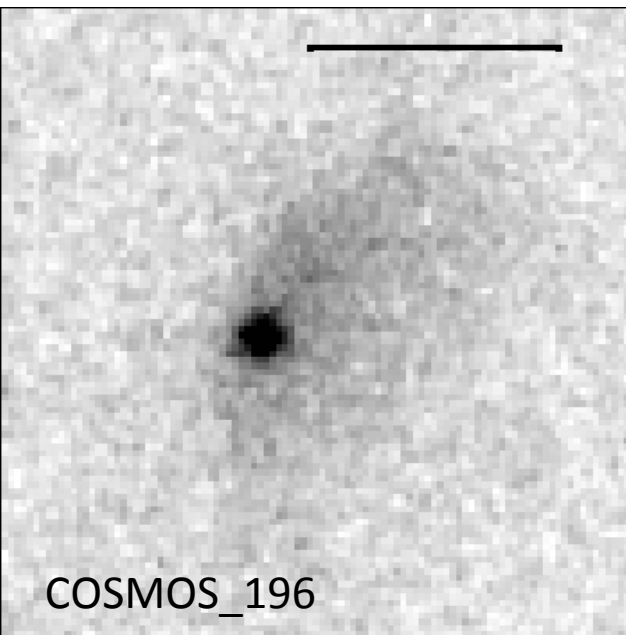


COSMOS_038



COSMOS_183

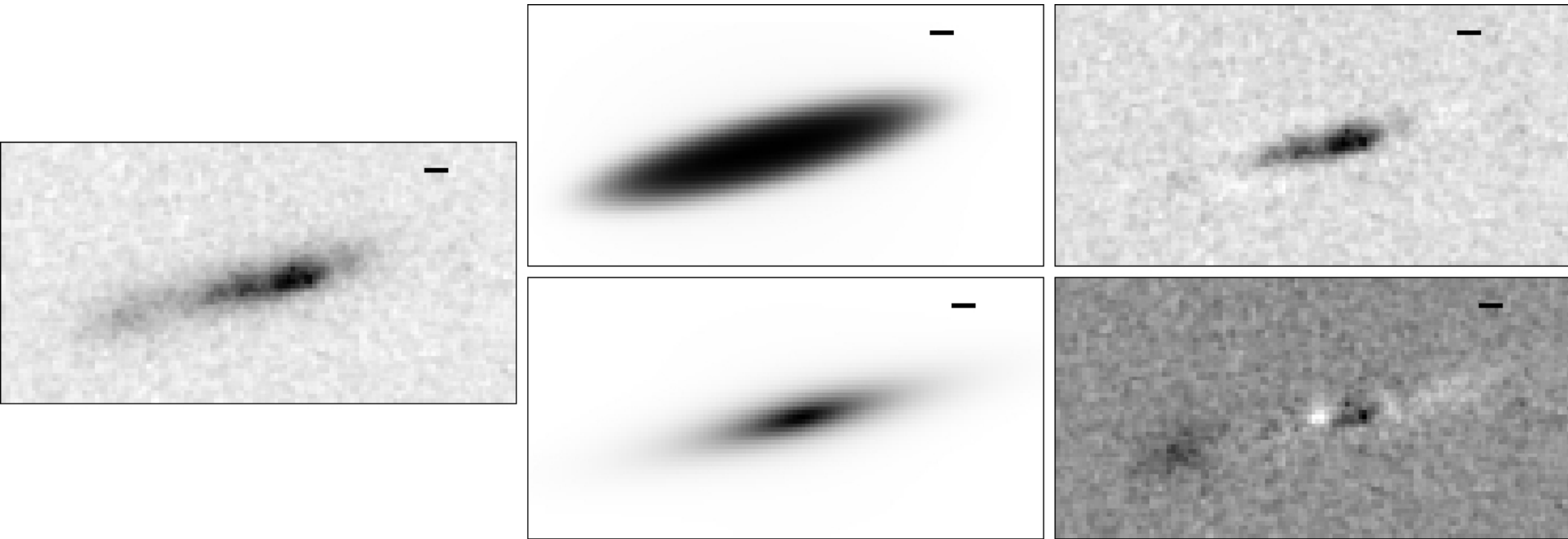




Results using GALFIT (Peng et al., 2010, Astron. J., 139, 2092)

COSMOS	038 (offcenter)	196 (offcenter)	197 (offcenter)	074 (lopsided)	183 (lopsided)	093 ←	093 →
r_e	29.22	28.82	25.50	29.63	23.96	27.79	21.16
n	1.03	0.7	0.9	0.7	0.5	0.18	0.96
b/a	0.54	0.58	0.32	0.38	0.45	0.19	0.16
PA	24.35	-32.10	45.31	-20.47	68.10	-75.18	-76.97

COSMOS_093



See Amorin, R., Muñoz-Tuñón, C. et al., A&A 467, 541–558 (2007)
“Two-dimensional fits of the stellar hosts in BCD galaxies”

Summary

- Single knot+ diffuse light galaxies (79/220) often show cometary appearance /
- In particular those with their knot offside (52) from the centre of the isophote that defines the galaxy.
- The 2D fit of the host (after masking the knot) with GALFIT gives Sersic indices close to 1.
- These cometary starburst galaxies are disks with their SF burst located in the disc but off center.
- They are candidates to be discs “rejuvenated” by SF driven by new gas from the IGM.

Thank you

