

Blue centre early-type dwarf galaxies and forming young nucleus

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Motivation

Early-type dwarf galaxies (dE)



dE / spheroidal
"early-type dwarf"

cE

E

Non star-forming low mass galaxies

Have low surface brightness and extended size

Mostly found in cluster or group environment

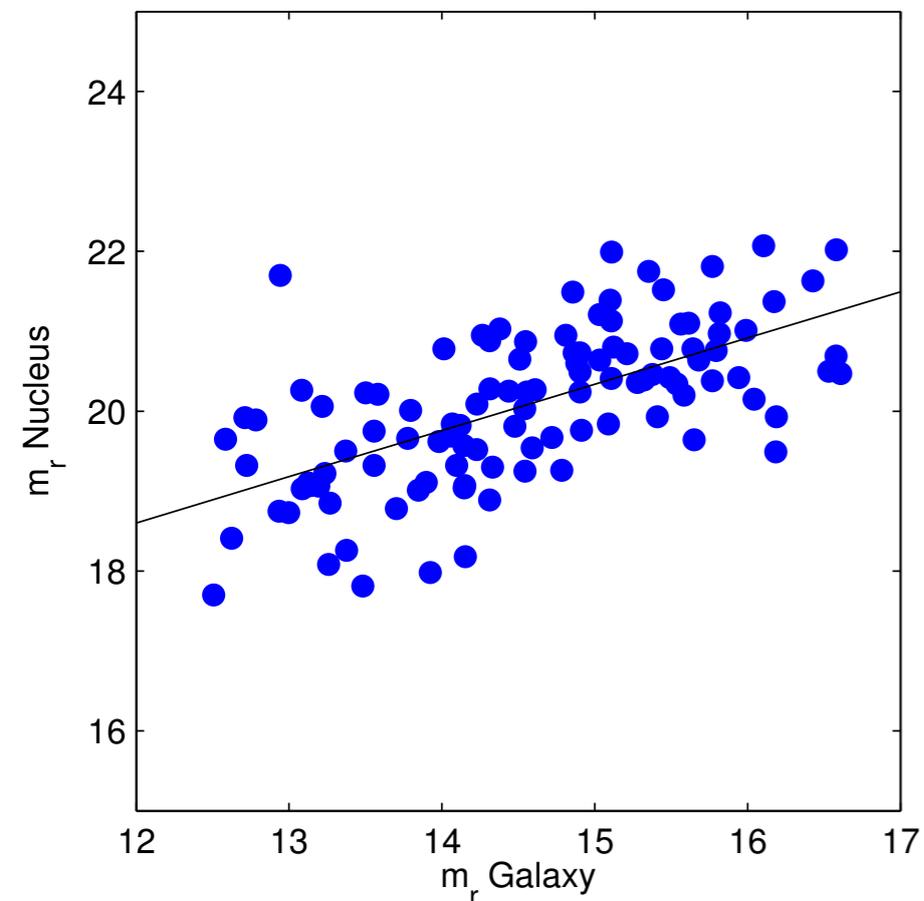
A significant majority of them have a central nucleus

dE with a central nucleus



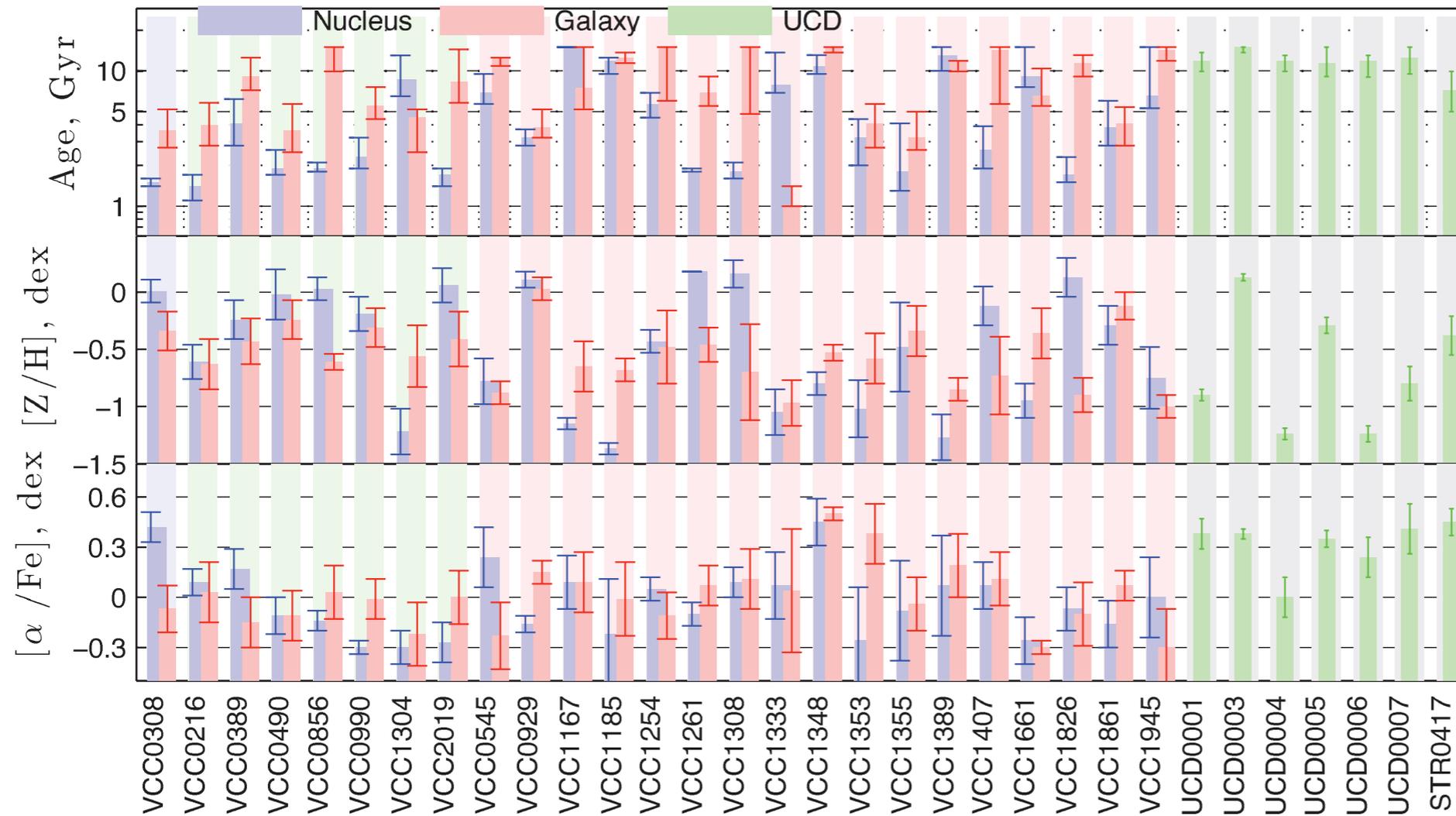
Nucleated

Non-nucleated

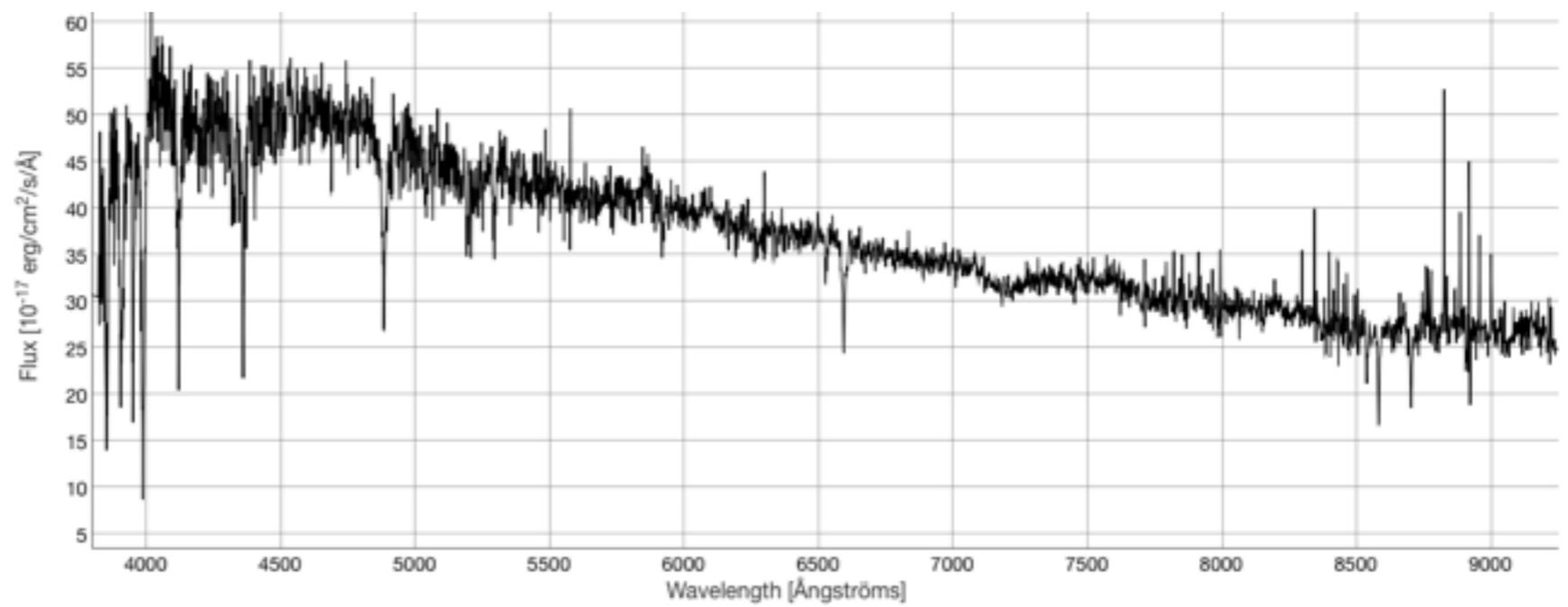


Correlation between nuclei mass and host galaxy mass

Stellar population properties of Nucleus



Nuclei are younger compare to host galaxy main body



What makes nucleus young

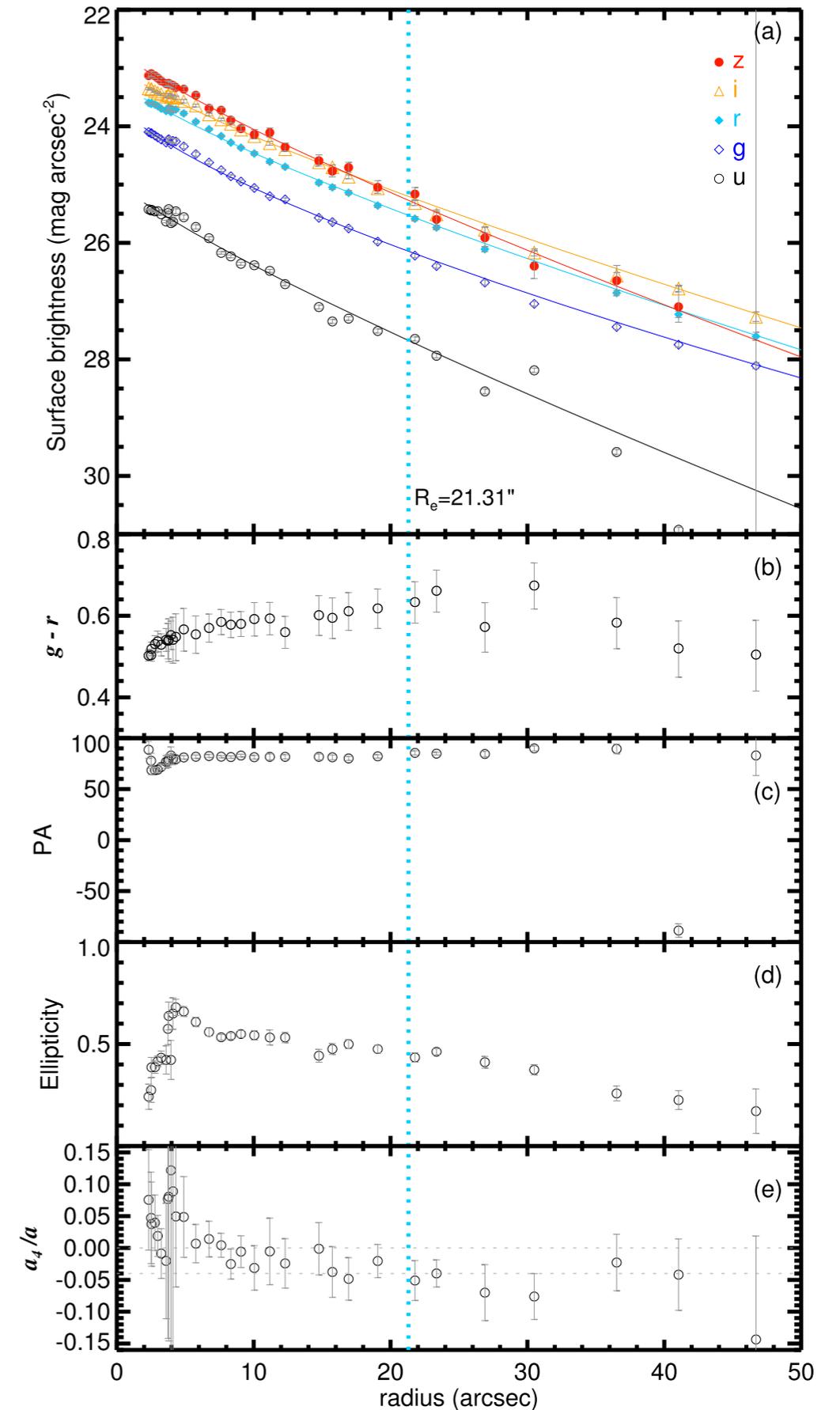
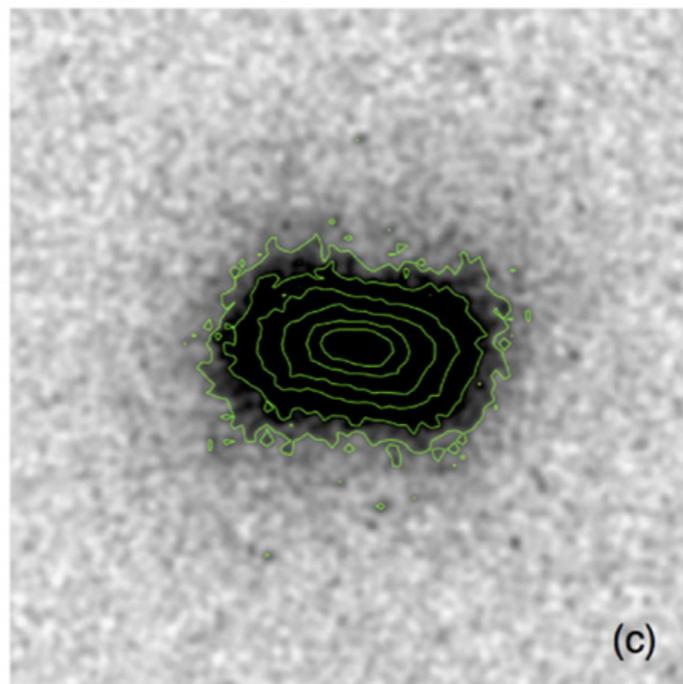
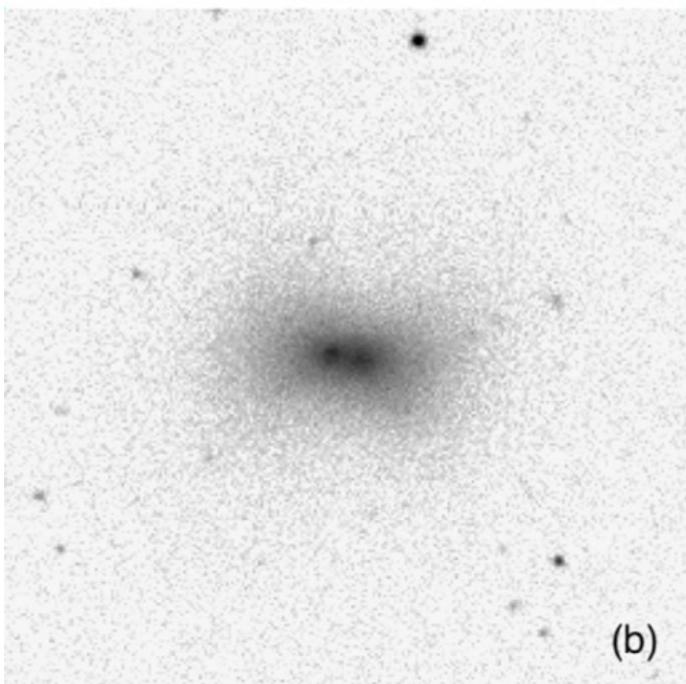
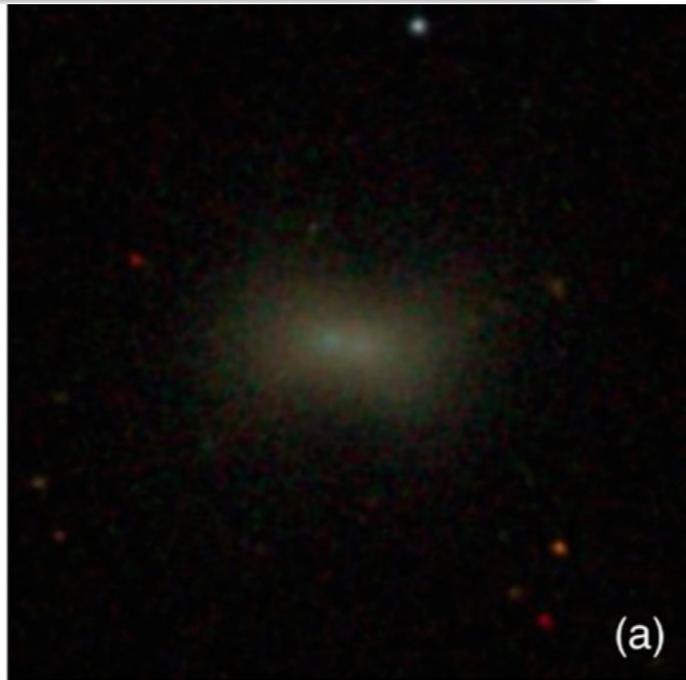
They formed later than galaxy main body

Left-over star-forming gas

Gas accretion

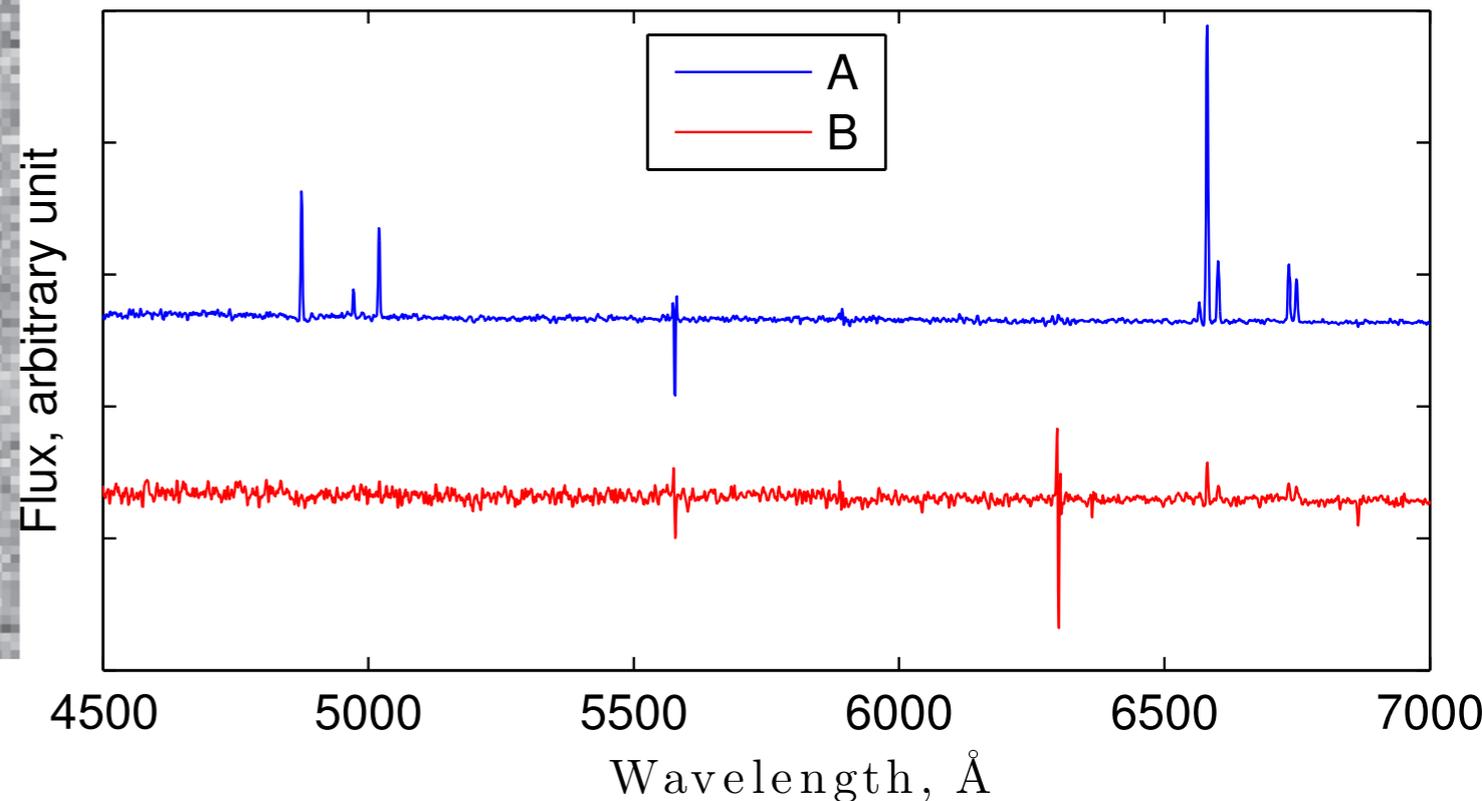
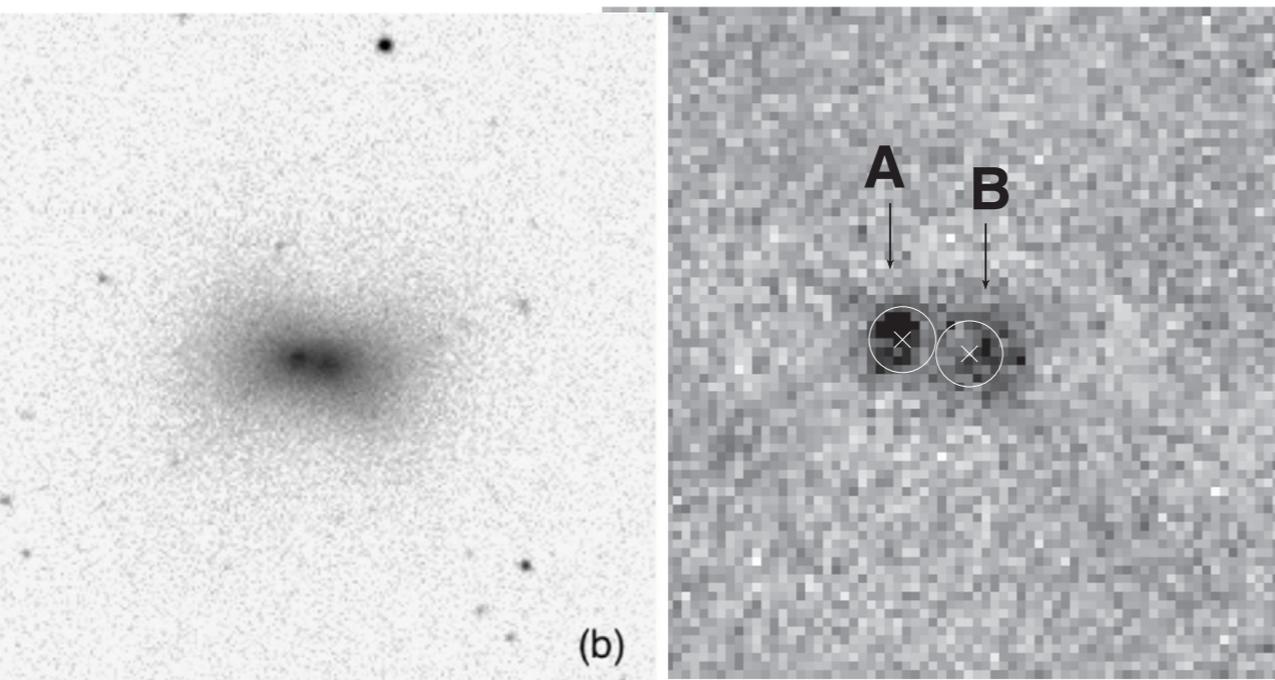
Dwarf galaxy merging

Pak et al (2015)



Boxy isophote dE with blue centre

A young Nucleus



Core	M_r (mag)	$g - r$ (mag)	M_* ($10^6 M_\odot$)	SFR ($10^{-3} M_\odot$)	$12 + \log(\text{O}/\text{H})$ (dex)	v_r (km s^{-1})
A	-11.08	-0.22	0.5	0.7	8.4	781 ± 2.6
B	-10.97	0.10	1	0.1	8.6	778 ± 8.8

**With presence of boxy-isophote and young cores
we propose this galaxy is forming a nucleus by merger**

A survey of dE

By visual classification of spectrum and the SDSS color image

~800 dE in $z < 0.01$

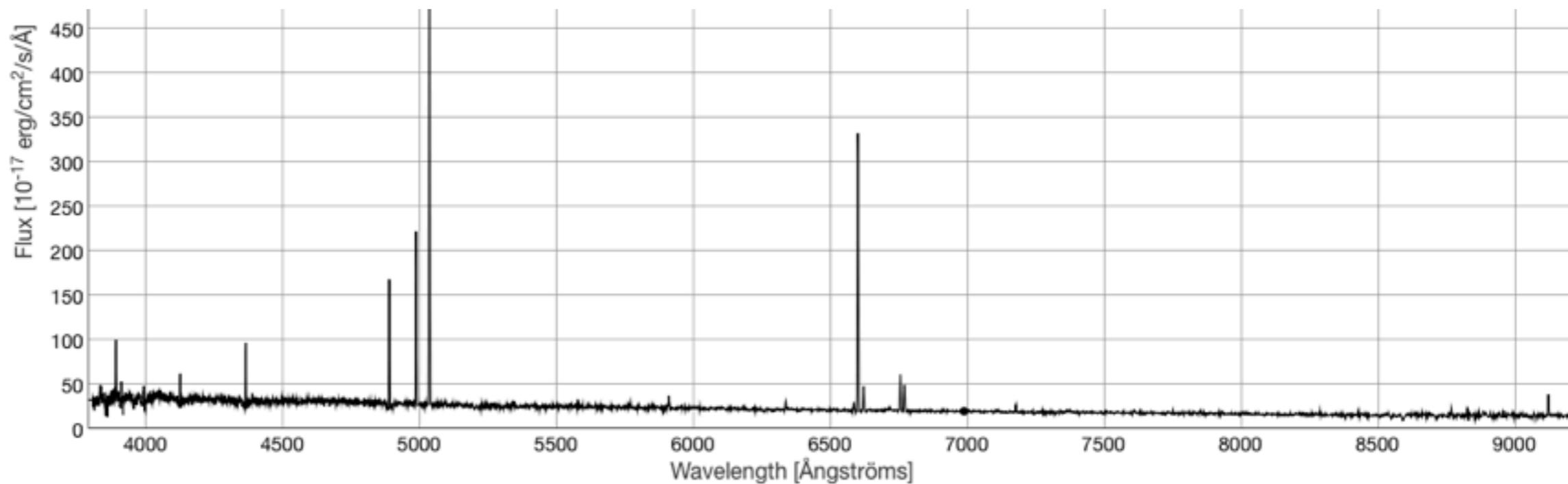
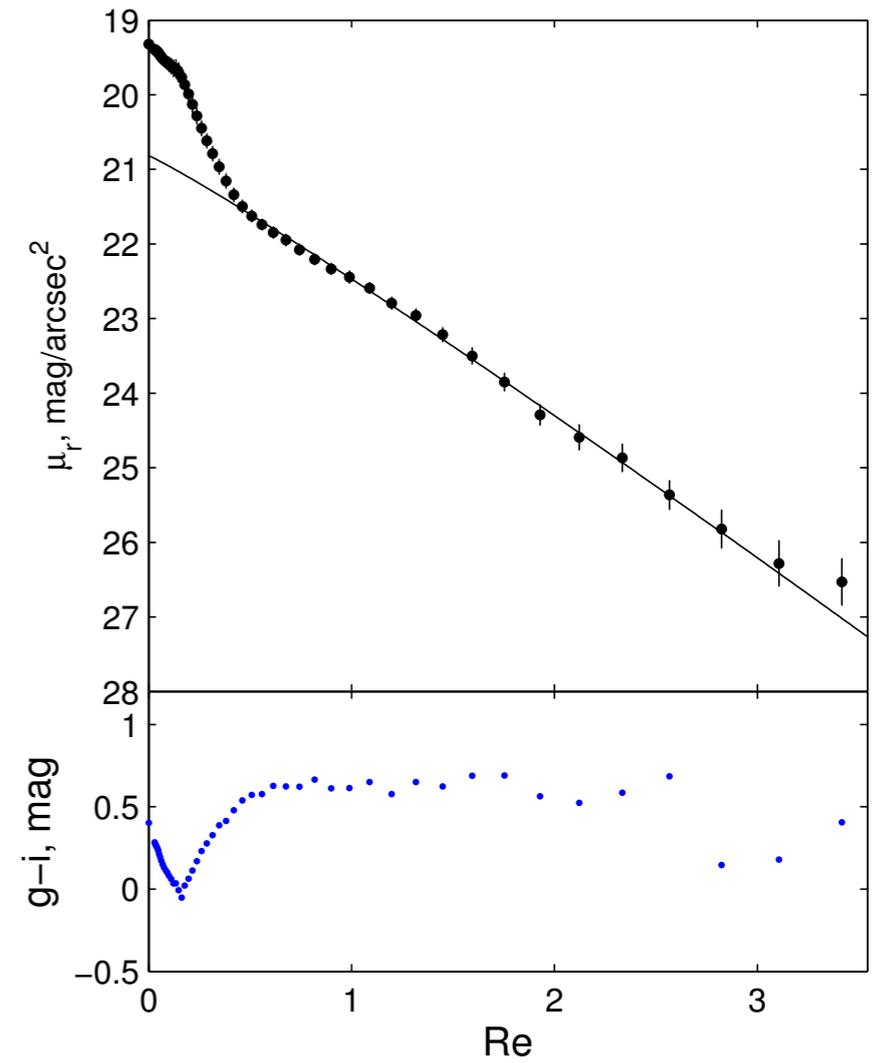
Central star burst dE



Central star burst dE



$M_r = -15.9$ mag
 $g-r = 0.44$



Conclusion and Future Work

We find 14 dEs with central star-burst

They are located in low dens environment out-skirts of group
or in field

**What is different between central star and off-central
star forming dEs ?**

Thanks