
HOW MUCH ICL WILL THE VERA RUBIN TELESCOPE REVEAL?

[Spoiler: not good news so far]

What's the IntraCluster Light (ICL)?

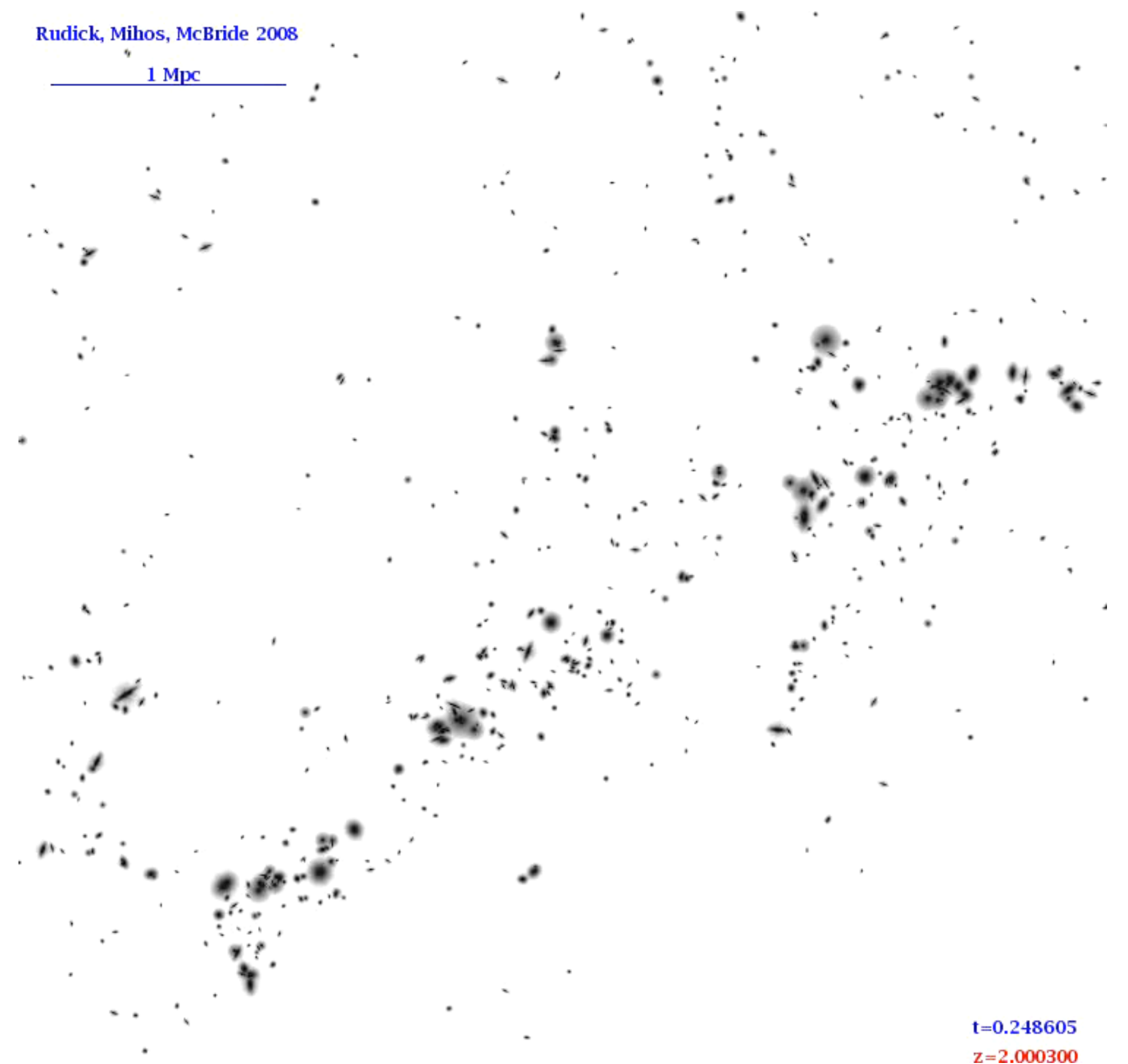
Diffuse light that spreads across the centres of galaxy clusters, coming from stars ripped out from their host galaxy due to interactions



Credit: M. Montes

Why Is the ICL Important?

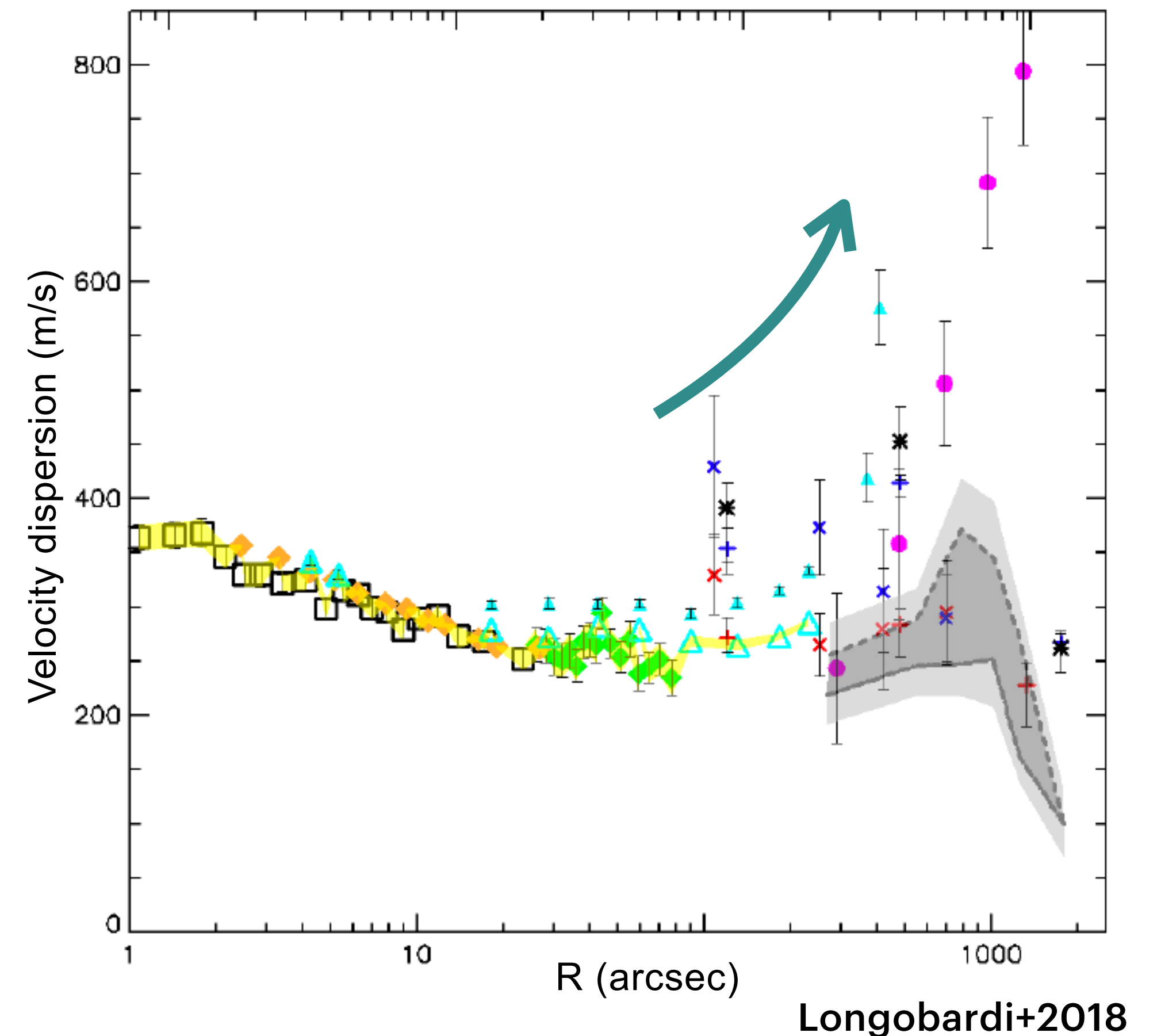
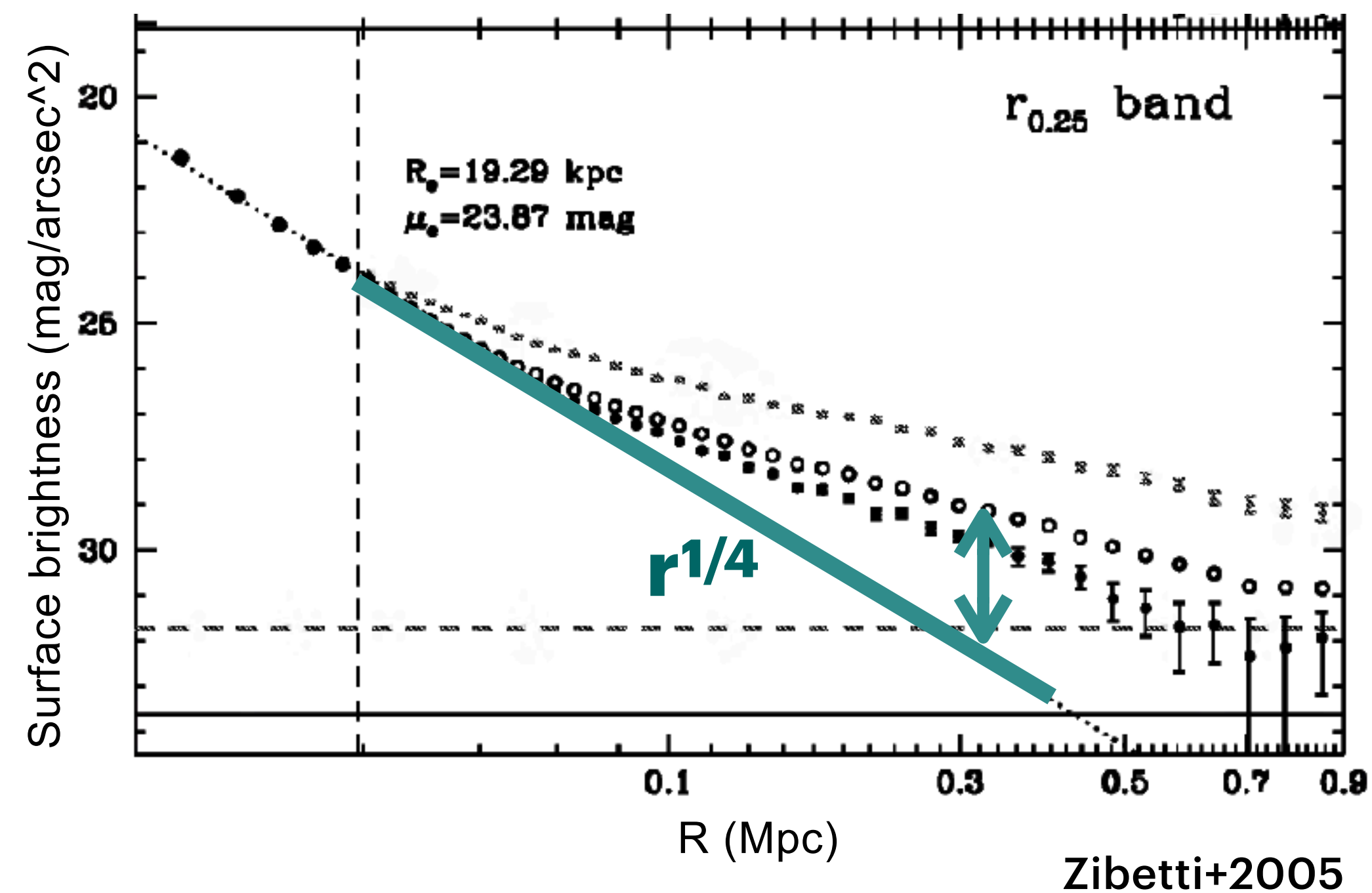
ICL records the mass assembly history of galaxy clusters



Rudick, Mihos, McBride 2008

Hard To Detect!

It's a distinct stellar component from the BCG



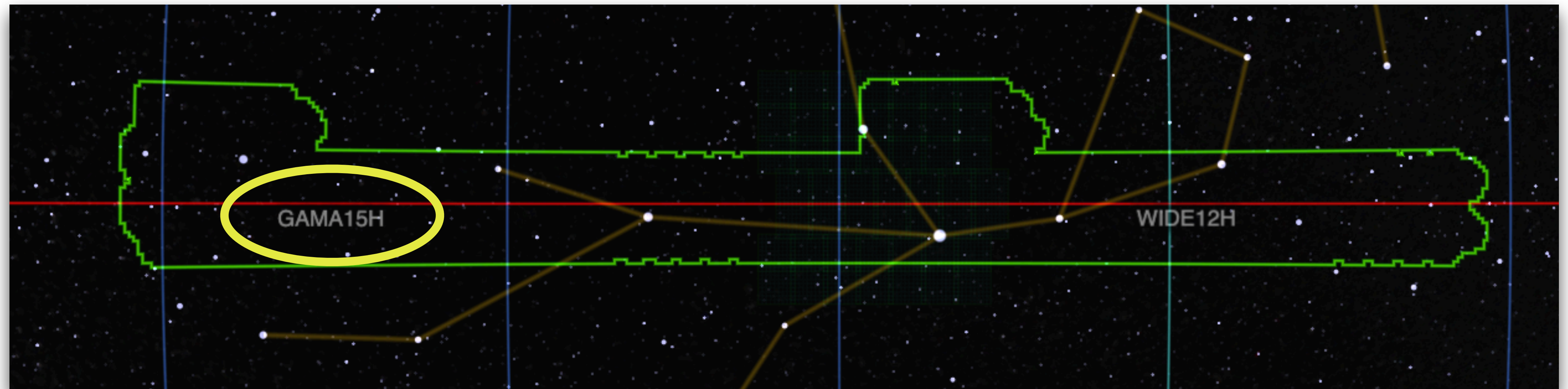
ICL Review: Montes 2019 (arXiv: 1912.01616)

How?

Using regularly reprocessed HSC PDR2 data of GAMA groups from the LSP

REPO: /datasets/hsc/repo/rerun/RC/w_2020_14/DM-24359

[deepCoadd; tract=9615]

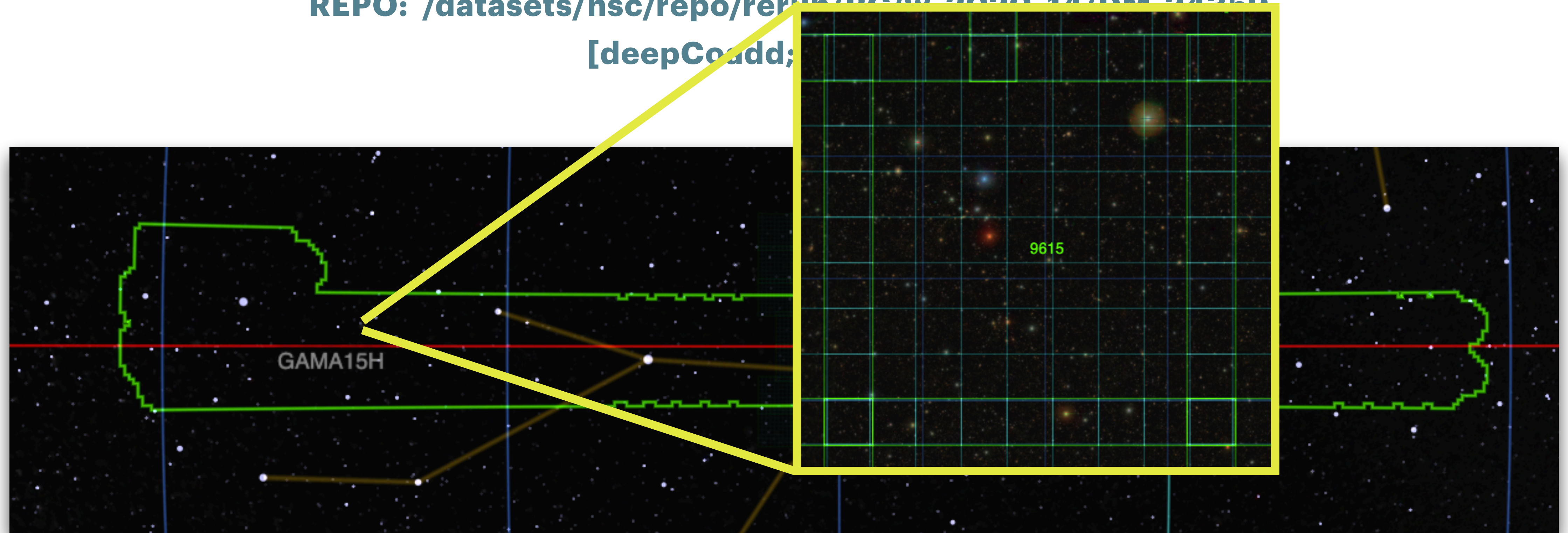


How?

Using regularly reprocessed HSC PDR2 data of GAMA groups from the LSP

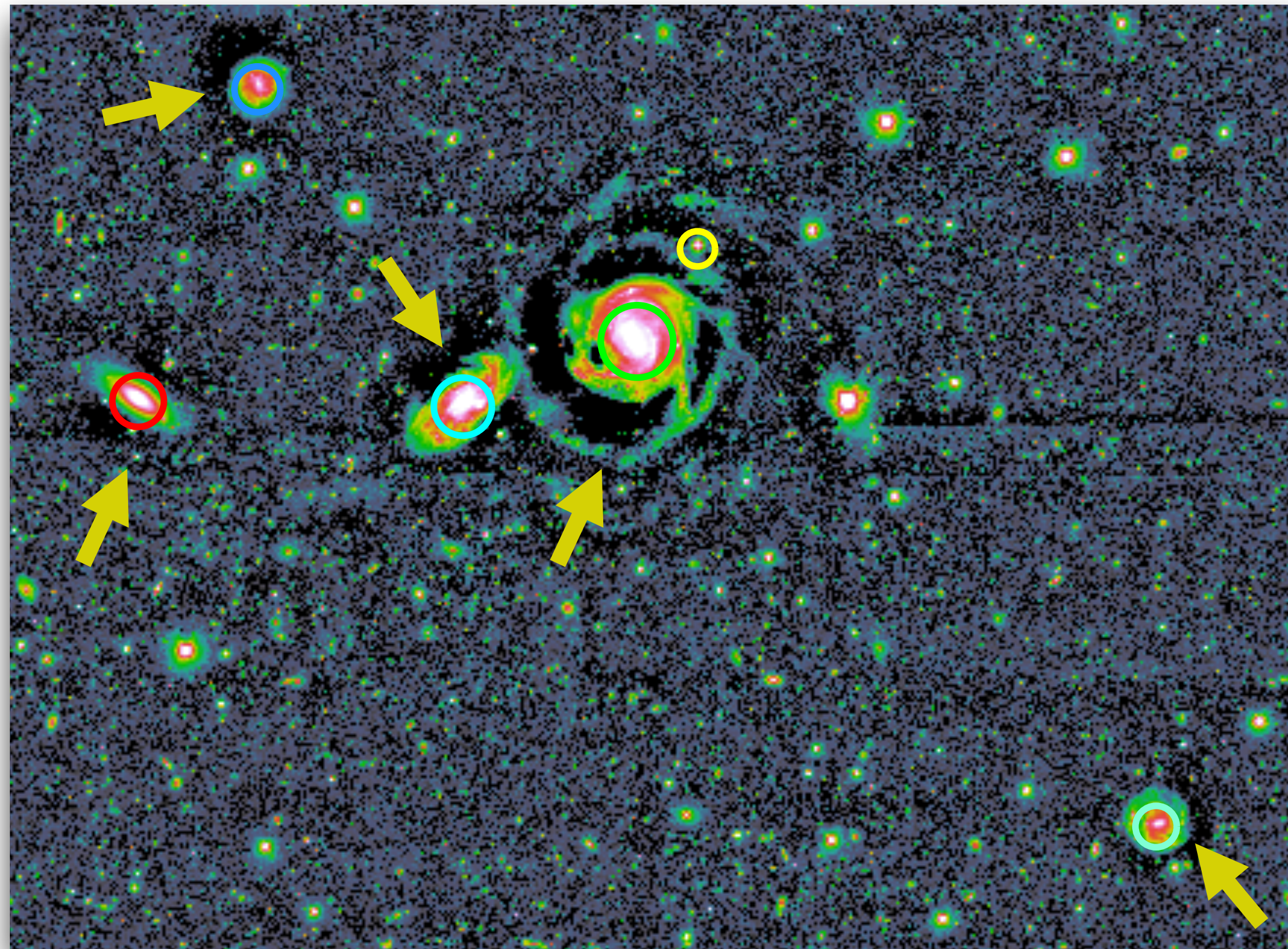
REPO: /datasets/hsc/repo/repup/PC/w/2020_14/DM_24250

[deepCoadd;



OUR TARGETS

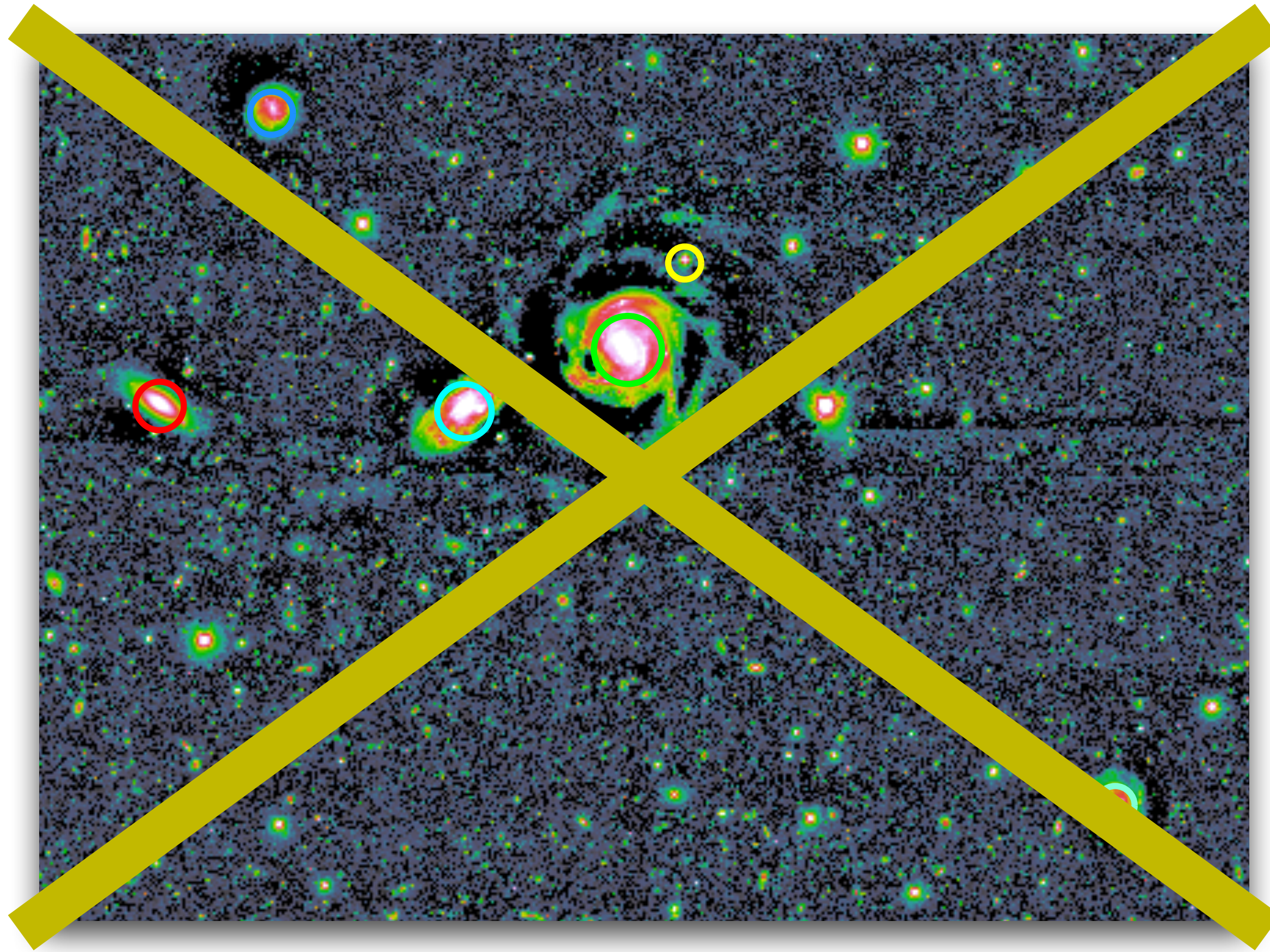
1st attempt: any GAMA group



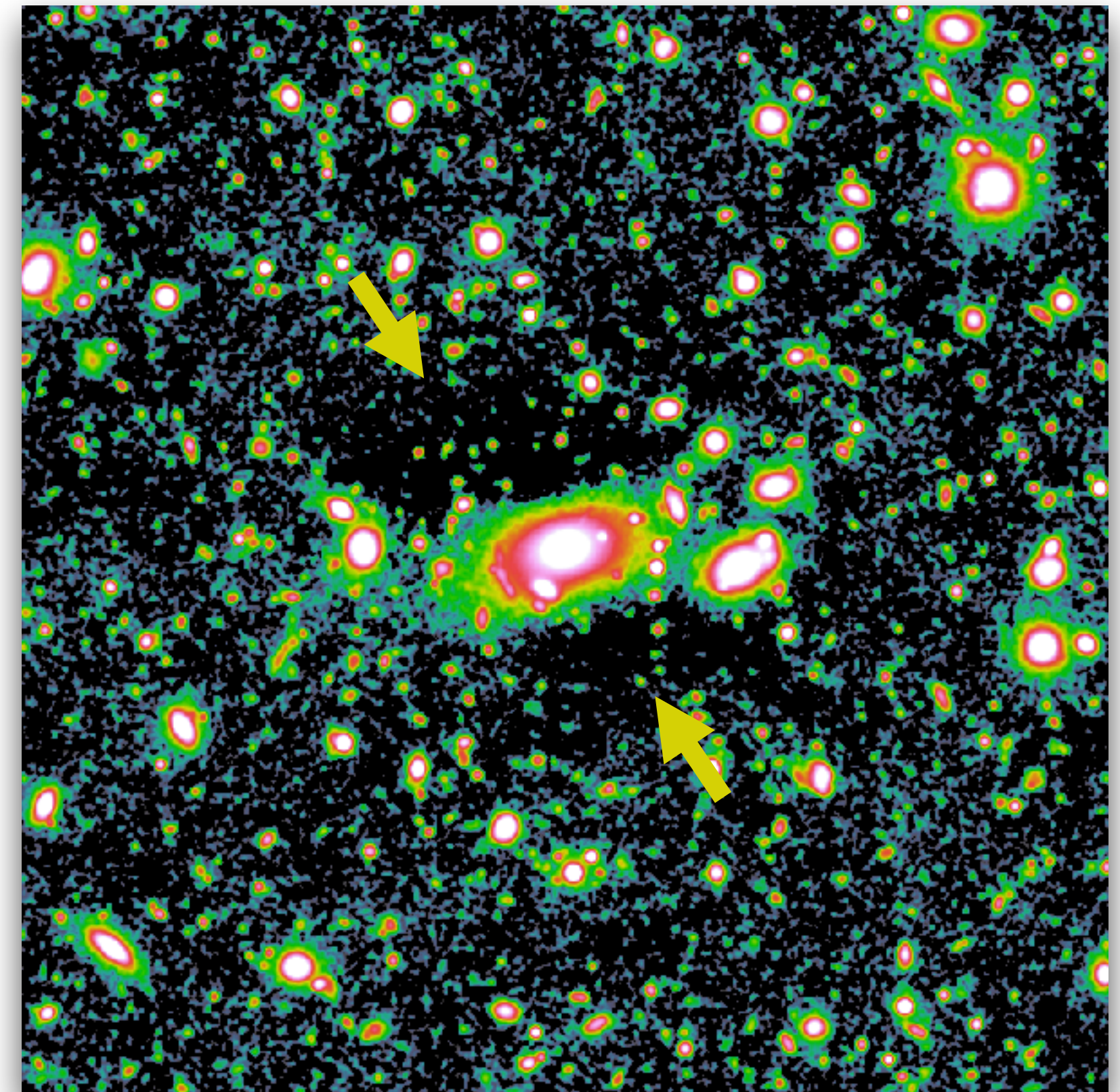
Over-subtraction
around galaxies!!

OUR TARGETS

1st attempt: low z groups

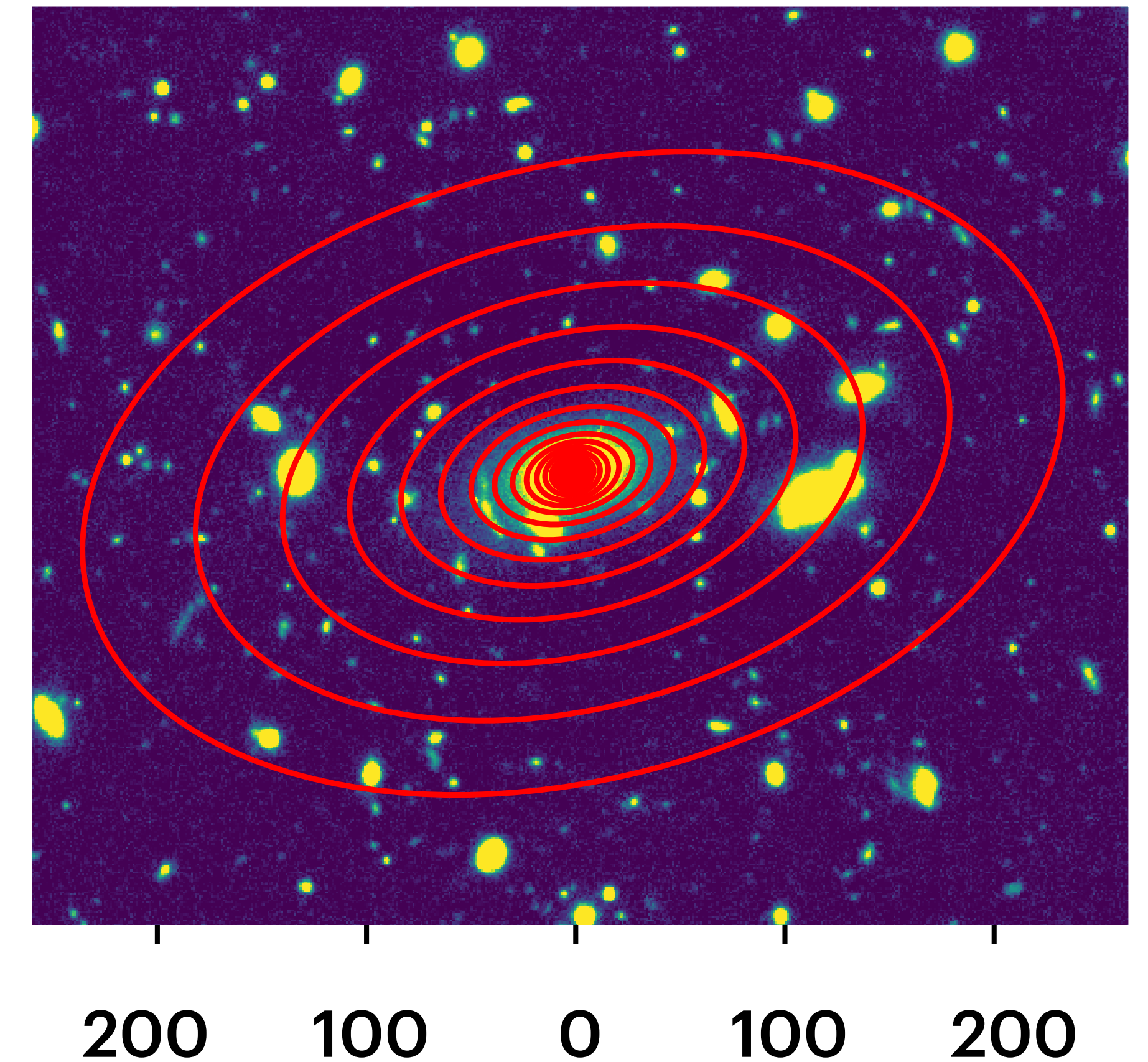
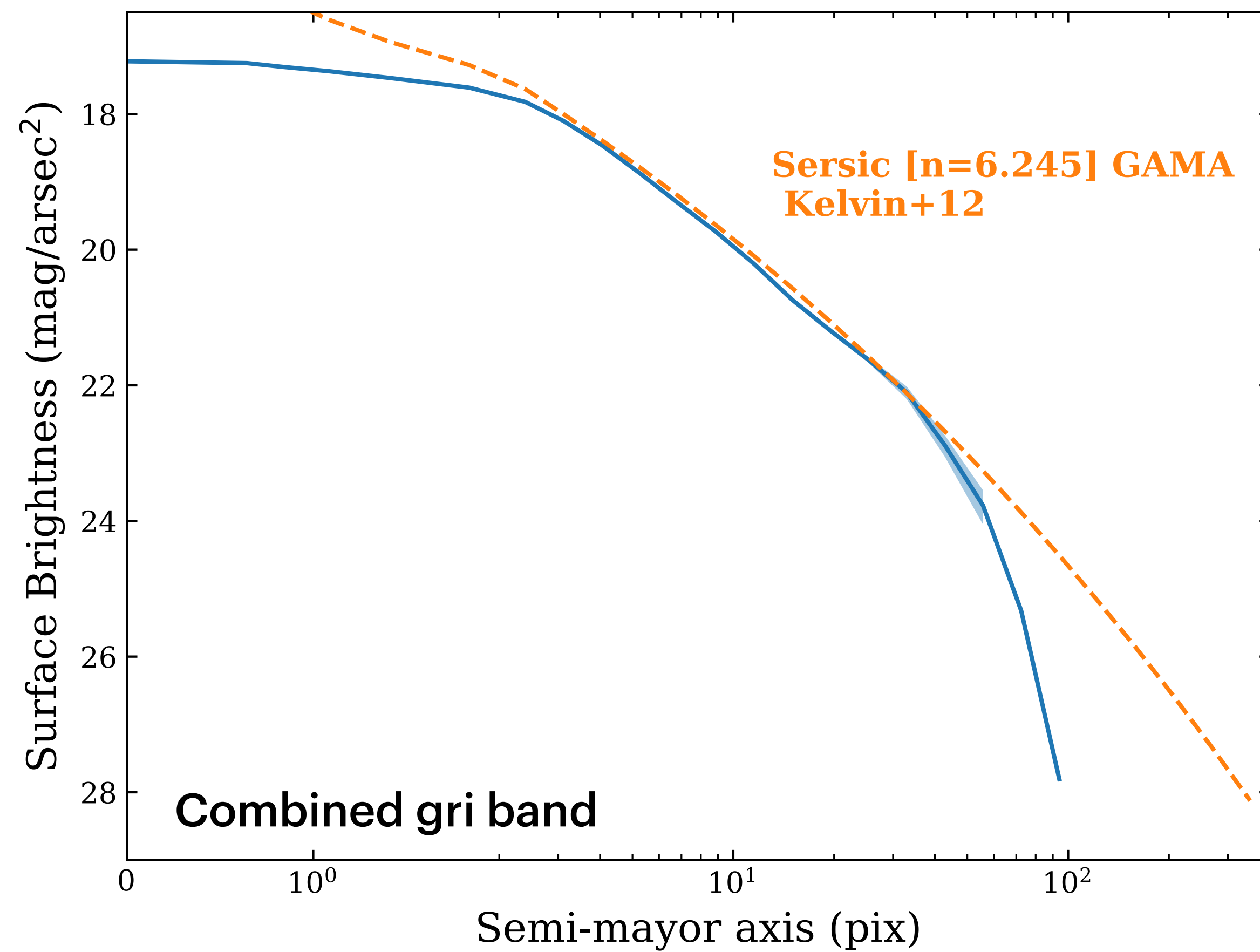


2nd attempt: 'high' z groups
[inspired by Huang+18]



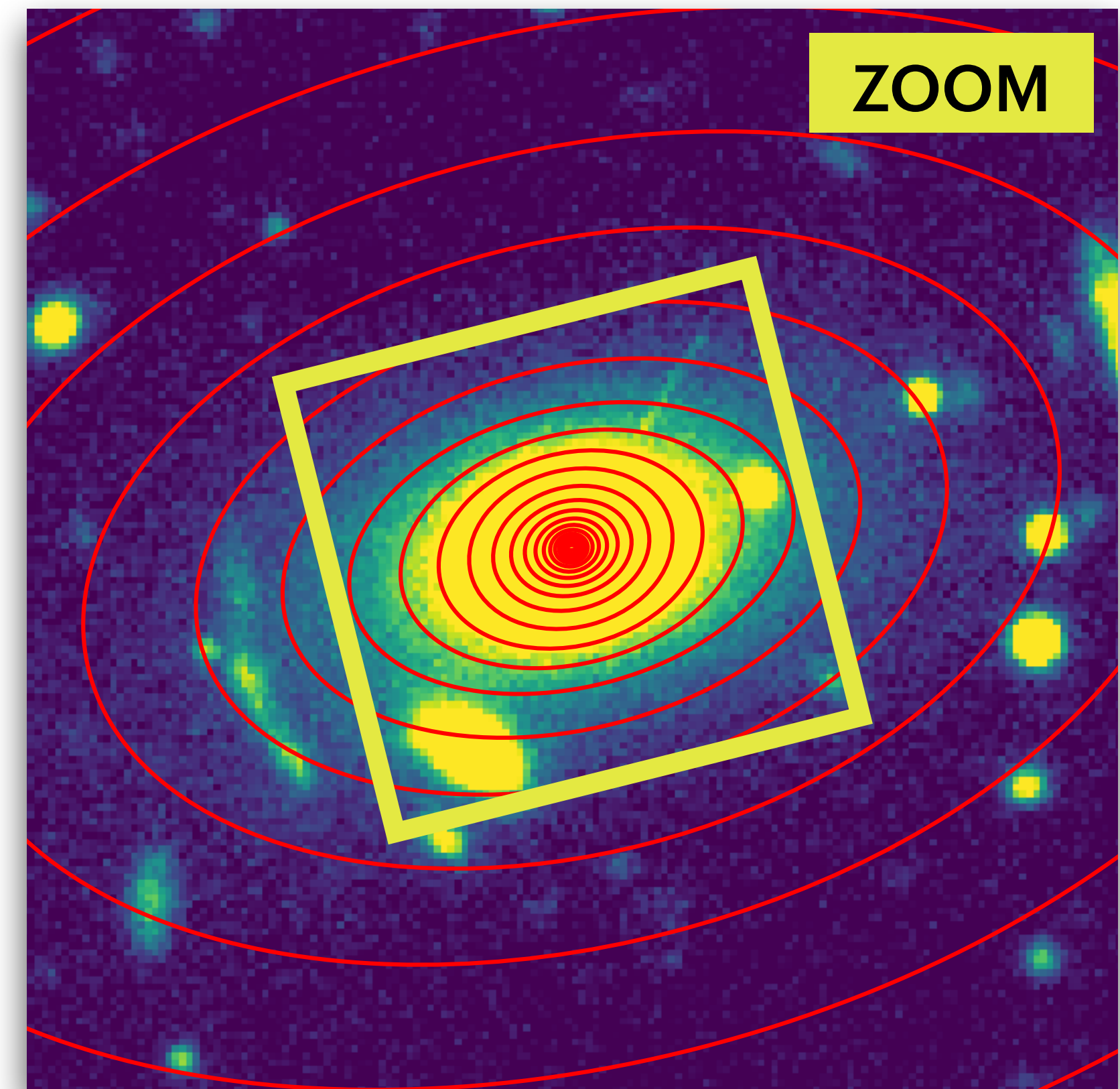
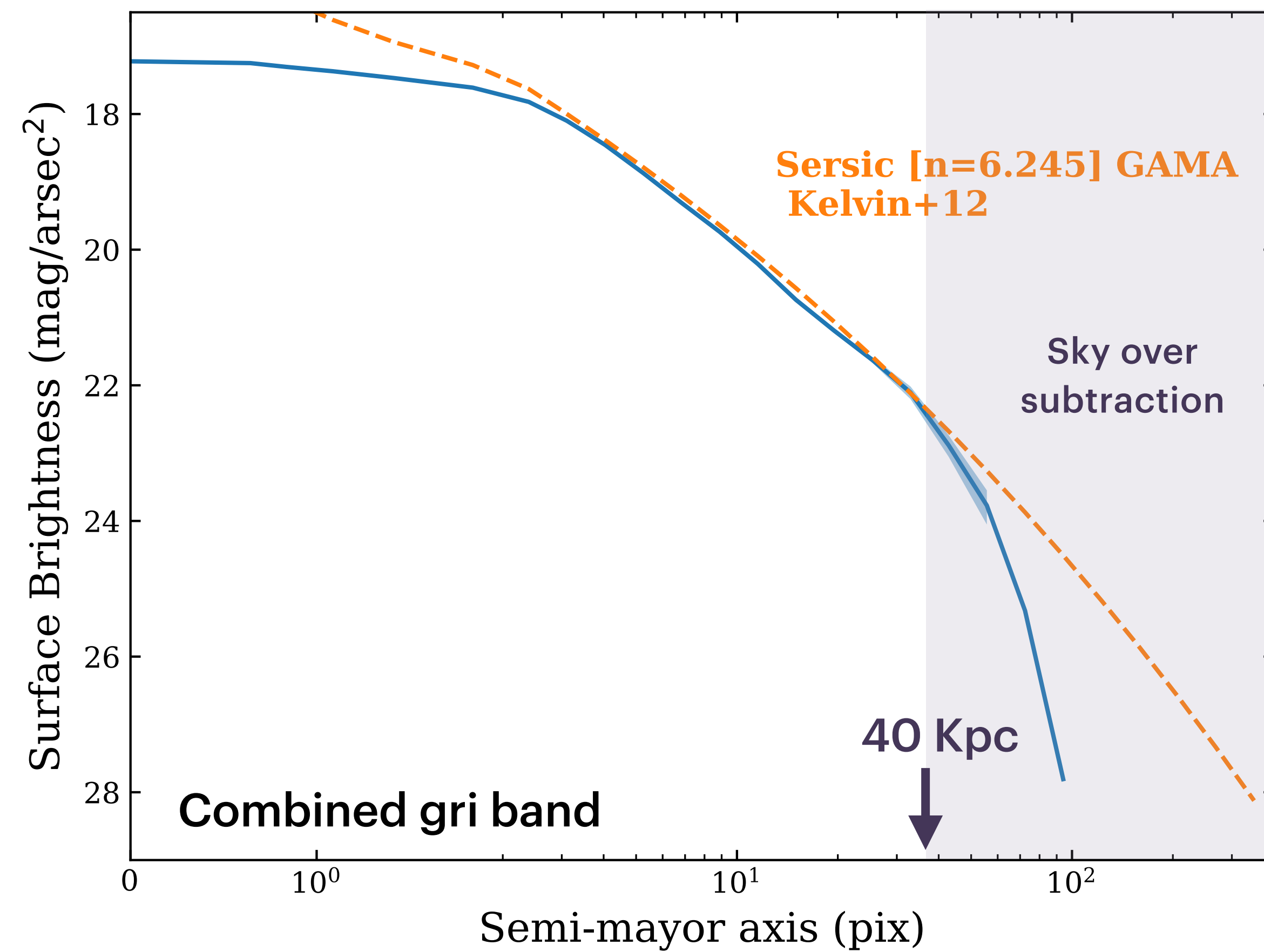
SOME RESULTS

GAMA group at $z=0.336$



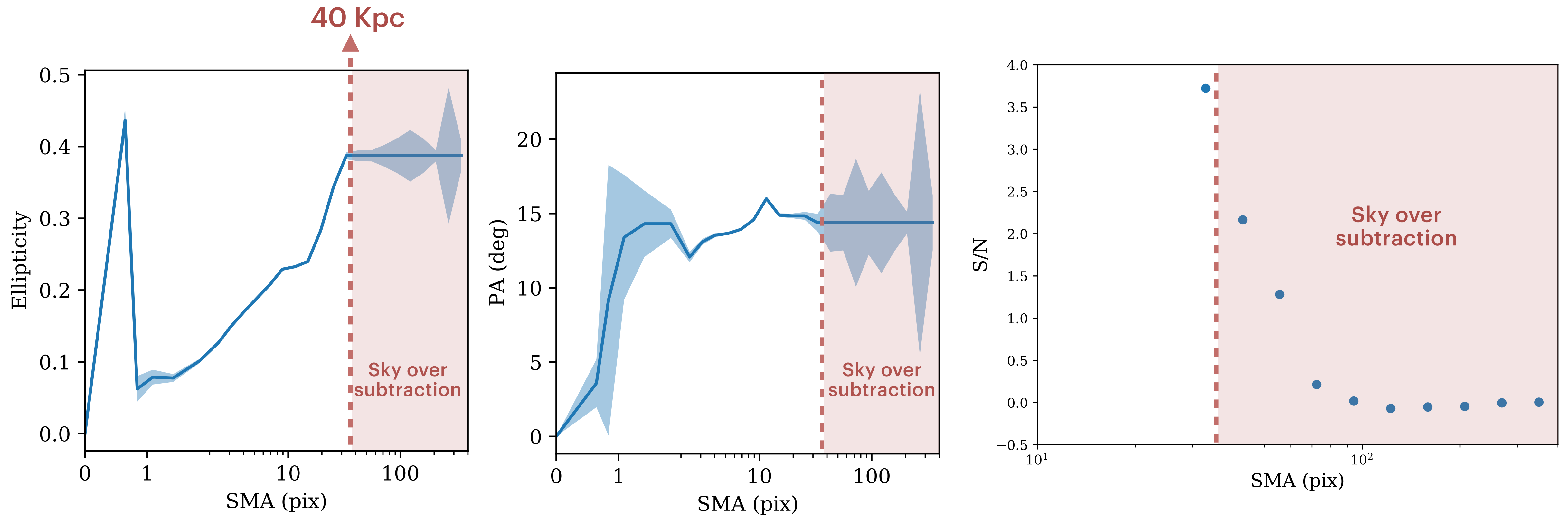
SOME RESULTS

GAMA group at $z=0.336$



SOME RESULTS

GAMA group at $z=0.336$



Q: HOW MUCH ICL WILL THE V. RUBIN TELESCOPE REVEAL?

- ✦ **In short... Nothing**

- ✦ Sky over-subtraction beyond 40 kpc at $z=0.336$

- ✦ ICL has physical scales of several hundreds of kpc [e.g., Dubinski 1998]

- ✦ **Unless...**

- ✦ Do not subtract in 120x120 pix sky-boxes

- ✦ Whole focal plane background subtraction -> PDR3??

- ✦ **Q:** What are we recovering when adding the background back to the single visits in the LSP? Is it all the background that has been removed, or is there any missing component?

- ✦ Looking at these issues in #lsb-challenge3 - Suggestions are welcome!

Q: HOW MUCH ICL WILL THE V. RUBIN TELESCOPE REVEAL?

- ✦ **In short... Nothing**

- ✦ **Sky over-subtraction beyond 40 kpc at $z=0.336$**

- ✦ **ICL has physical scales of several hundreds of kpc [e.g., Dubinski 1998]**

- ✦ **What can we do about?**

- ✦ **Do not subtract in 120x120 pix sky-boxes**

- ✦ **Whole focal plane background subtraction -> PDR3??**

- ✦ **Q:** What are we recovering when adding the background back to the single visits in the LSP? Is it all the background that has been removed, or is there any missing component

- ✦ **Looking at these issues in #lsb-challenge3 - Suggestions are welcome!**

Thank you!!