

Interlopers for the $z \sim 7$ galaxies and their nature



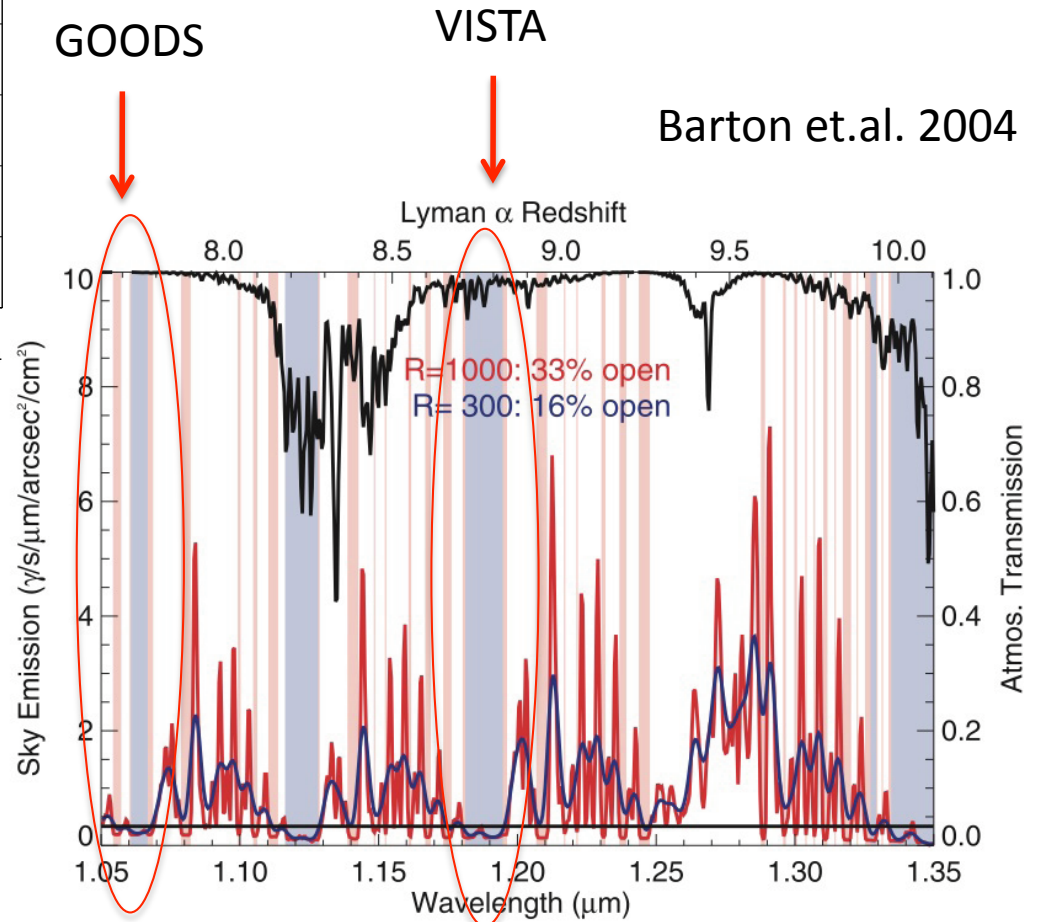
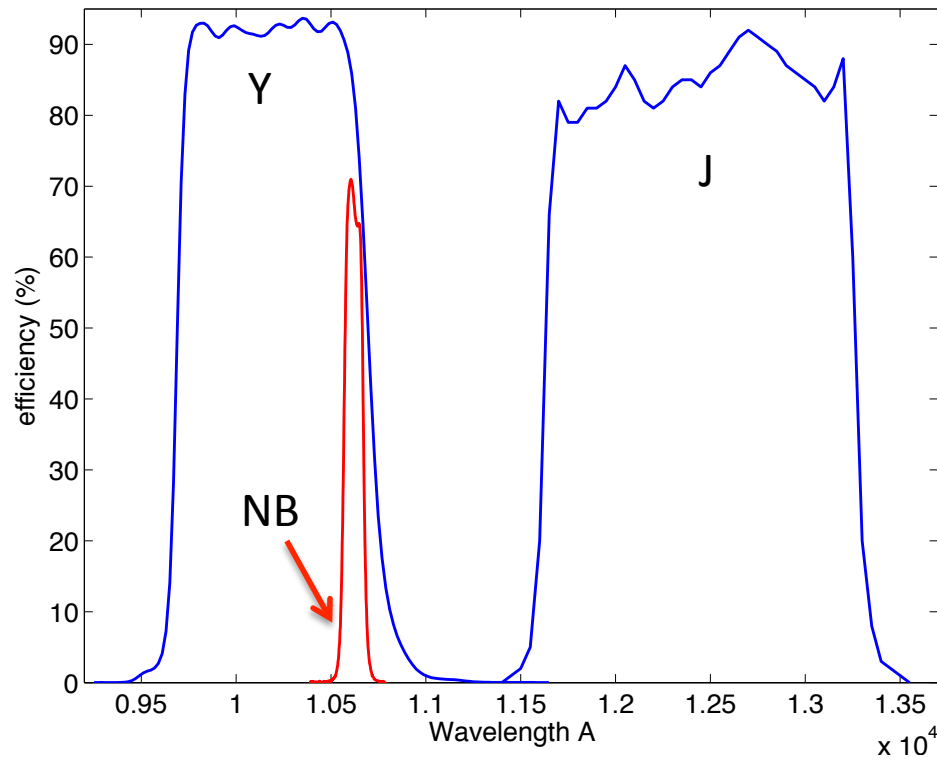
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Johan Fynbo
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University of Copenhagen

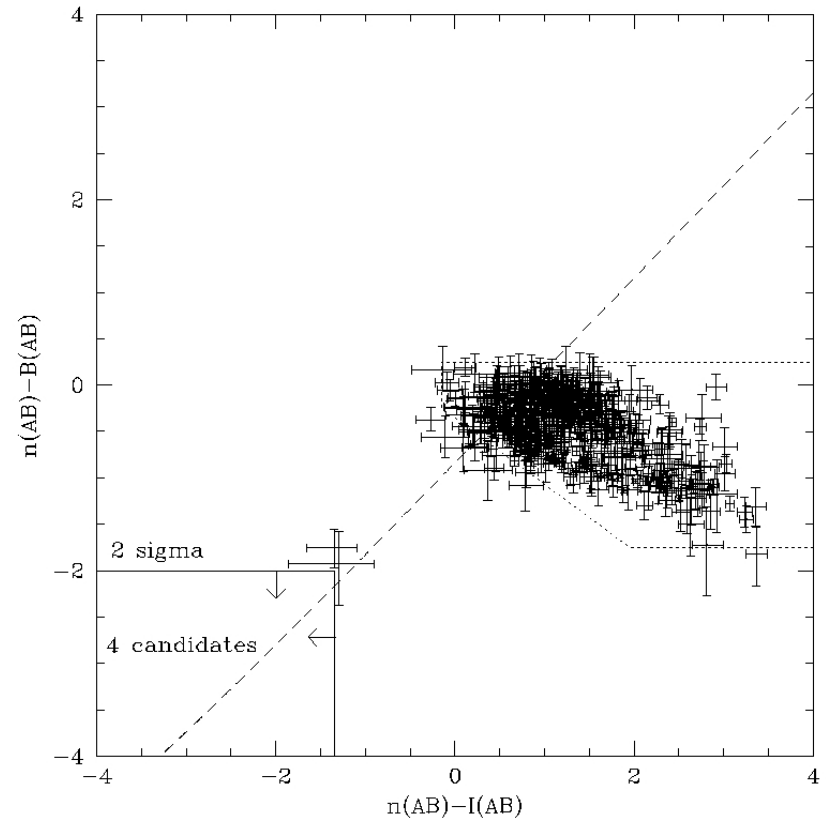
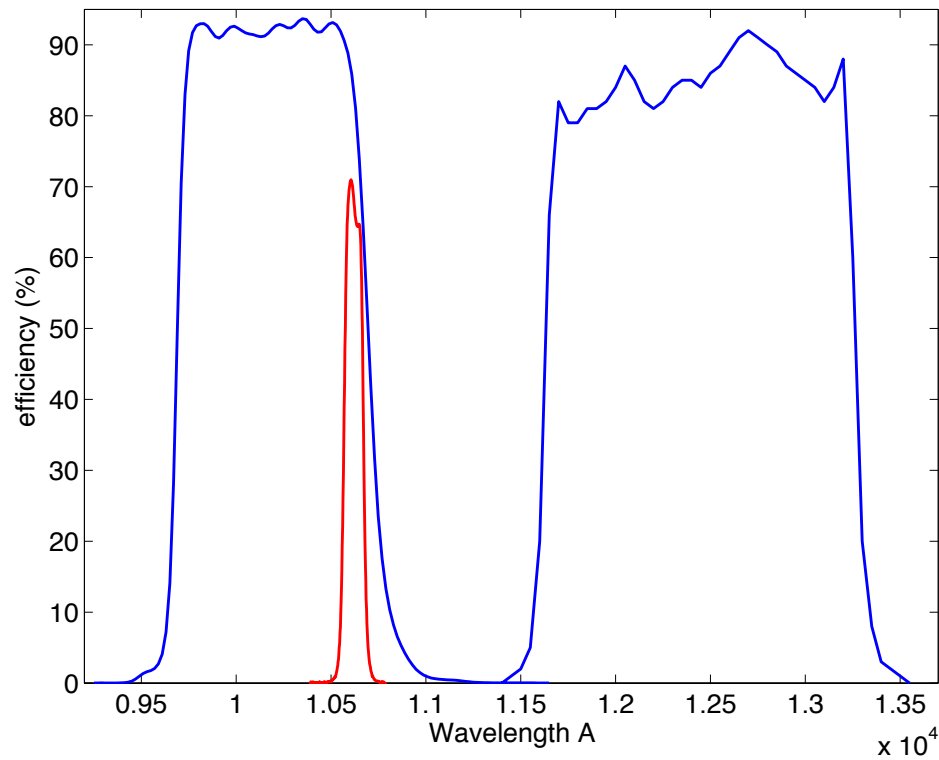
Overview

- What is the Narrow-Band selection technique and why to use it?
- Photo-z method
- Interlopers – what are they and why to care?
- Our project
 - GOODS S field in NB1060 filter and broadband data
 - Selection and study
 - The objects and their nature
- What to be aware of...

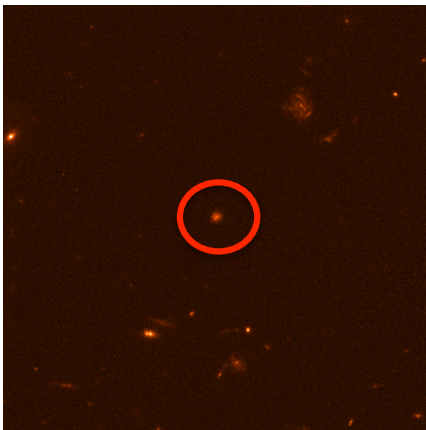
The NB selection technique



The NB selection technique



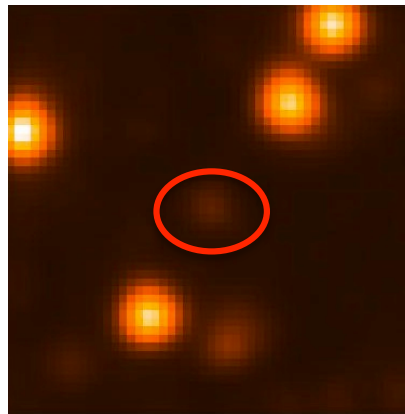
HST V



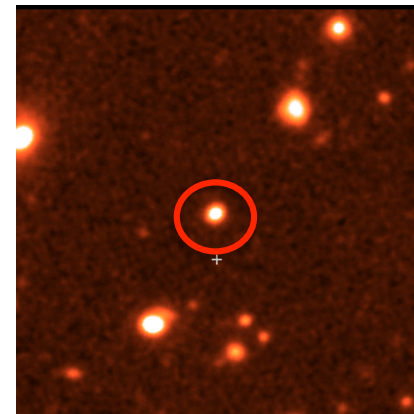
ISAAC H



SPITZER 5.8 μm



NB 1060



Photometric redshift – method pros and cons

Pros

- Cheap
- Fast
- Astrophysical properties (Age, metallicity, SFR, dust content, etc...)

cons

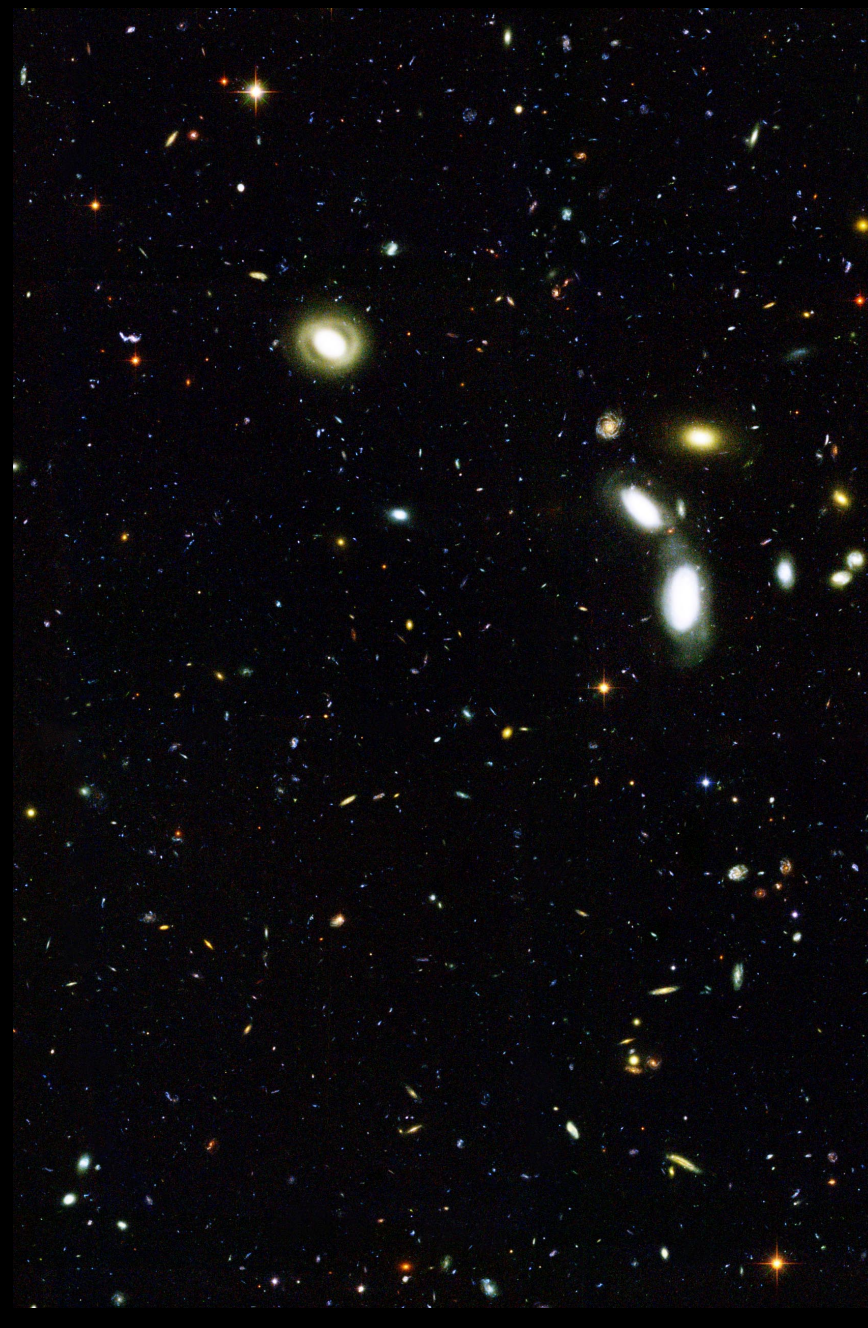
- Not very precise
- Catastrophic outliers

Interlopers

- EL sources other than Lyman- α relatively nearby
- More and more abundant when increasing the z
- Come in different angular sizes and shapes
 - Point-like, double-blob, multi-blob, low EW, high EW (easy to mix with high redshift Ly- α ELGs)

Our project...

The Great Observatories Origins Deep Survey (GOODS)



Data Products

Access to reduced data products from:

- [Spitzer IRAC+MIPS](#)
- [Hubble ACS](#)

2008-05-22: [ACS v2.0 data products](#)

- [Chandra Deep Fields North and South](#)

2008-11-01: [2 Msec Chandra CDF-S](#)

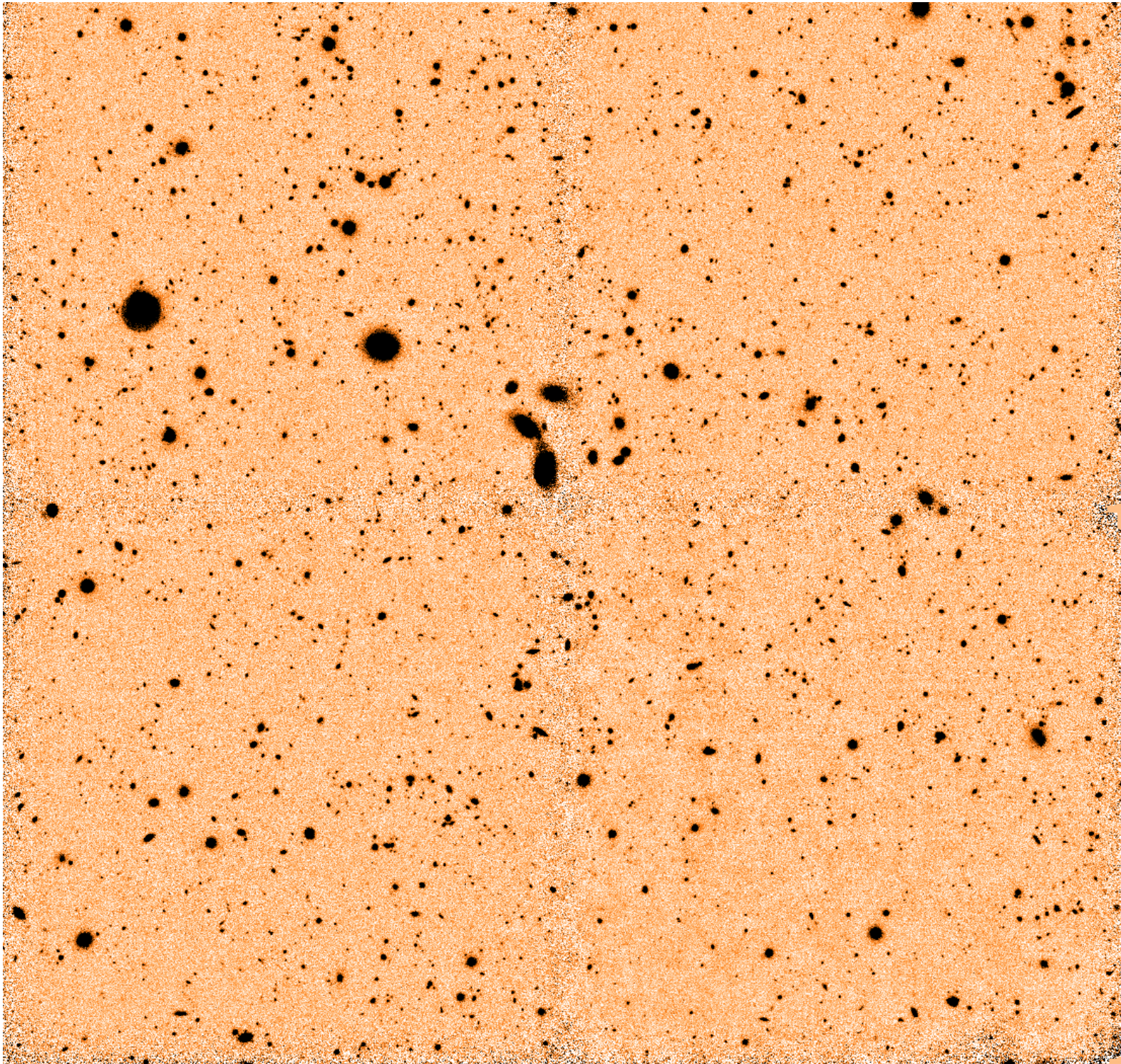
- [ESO imaging & spectroscopy \(GOODS-S\)](#)

NEW 2009-12-15: [VIMOS spectroscopy v2.0](#)

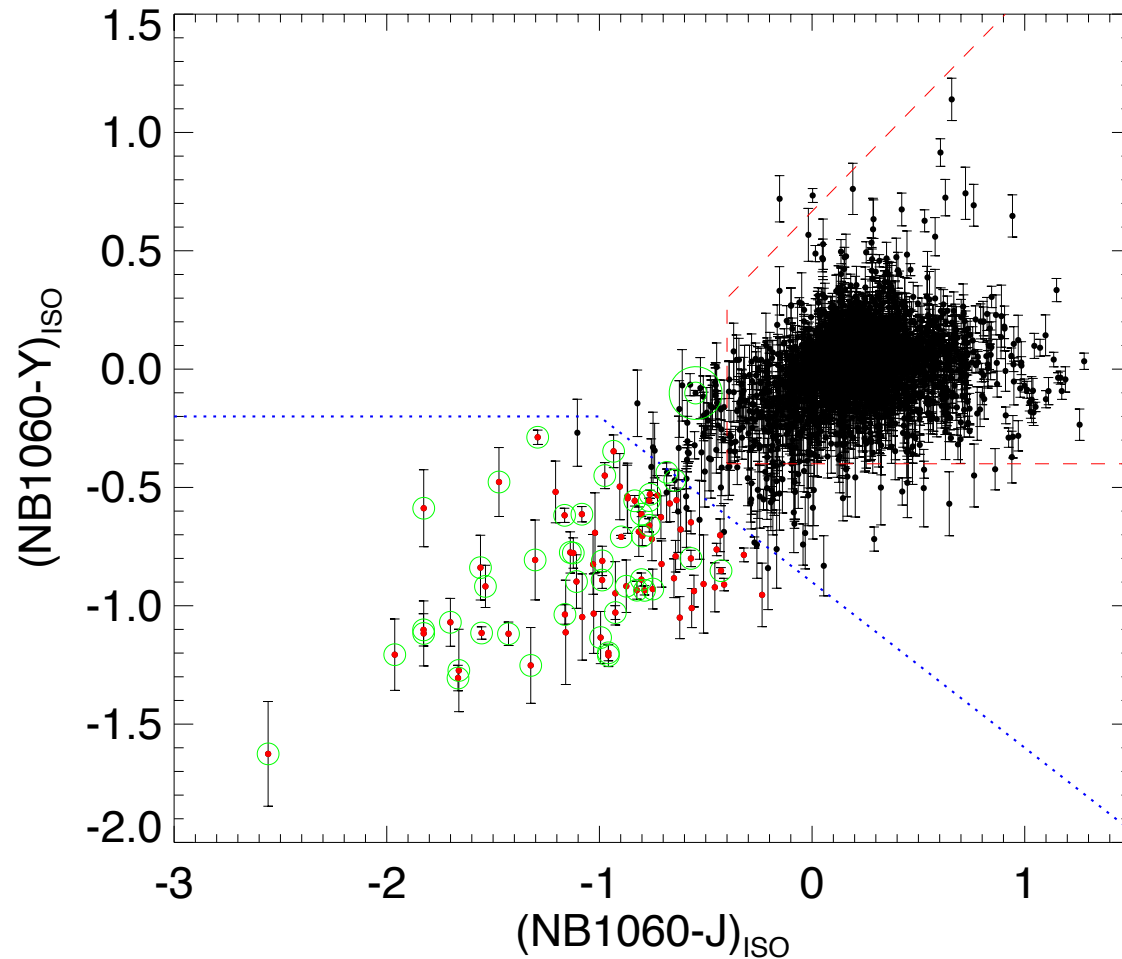
NEW 2009-12-07: [ISAAC data paper](#)

NEW 2009-04-24: [VIMOS U+R imaging](#)

Hawk-I N1060
Image of the
GOODS field



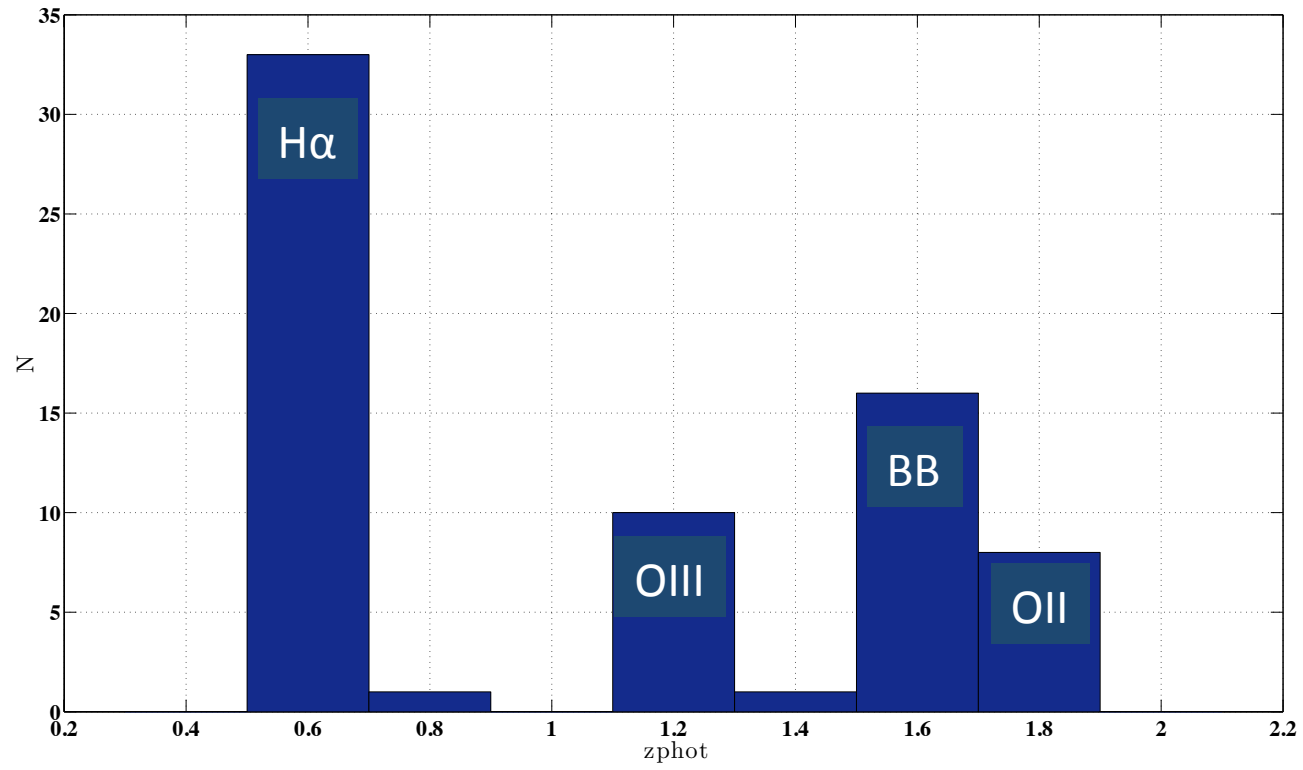
Candidate selection



76 sources selected
7 rejected for being spurious
objects

Kochiashvili, et.al. (in prep)

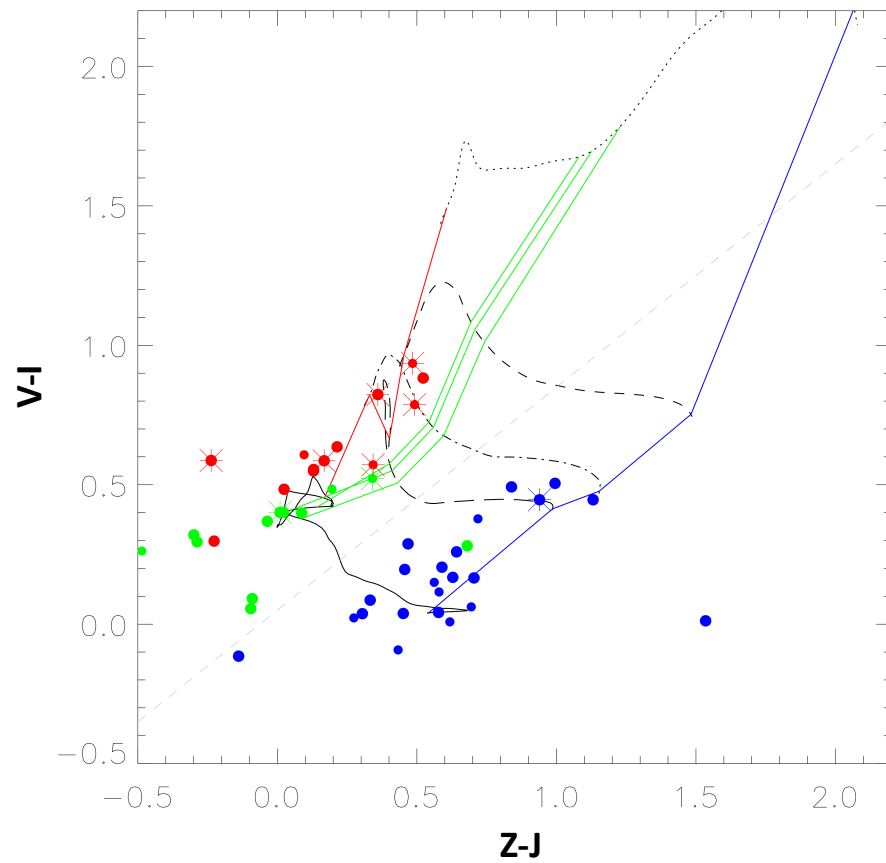
Statistics



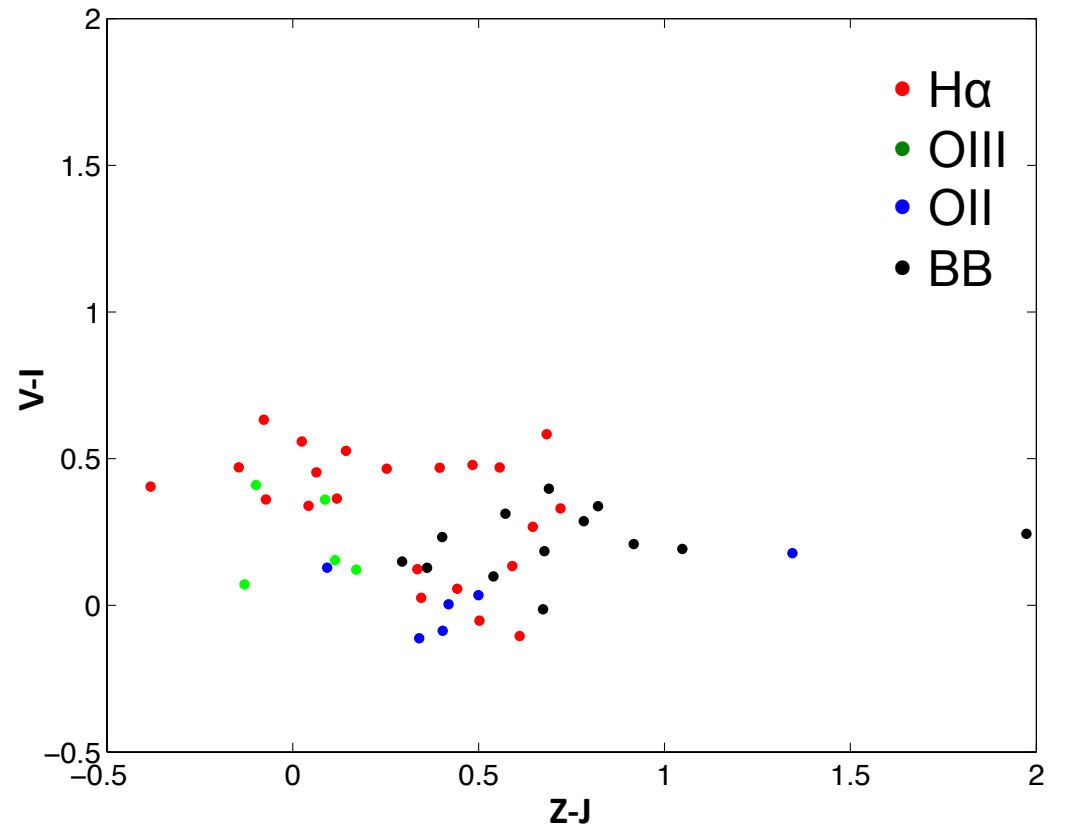
We found: $H\alpha$ emitters at the $z=0.61$ are the most abundant

Some interesting results...

Bayliss et.al 2011

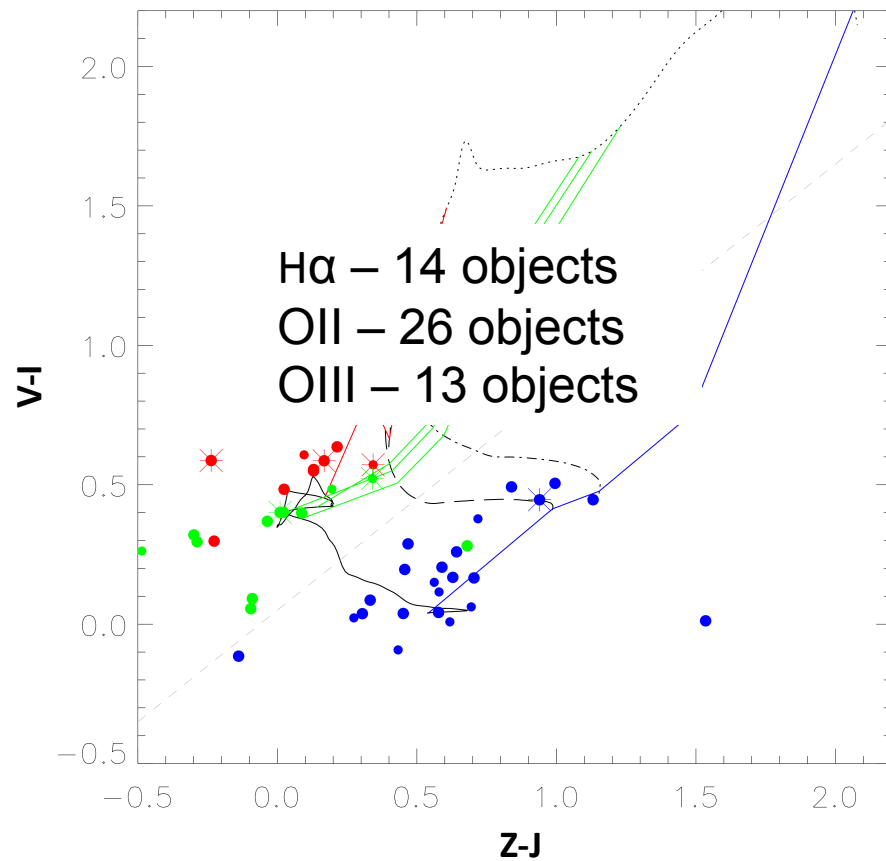


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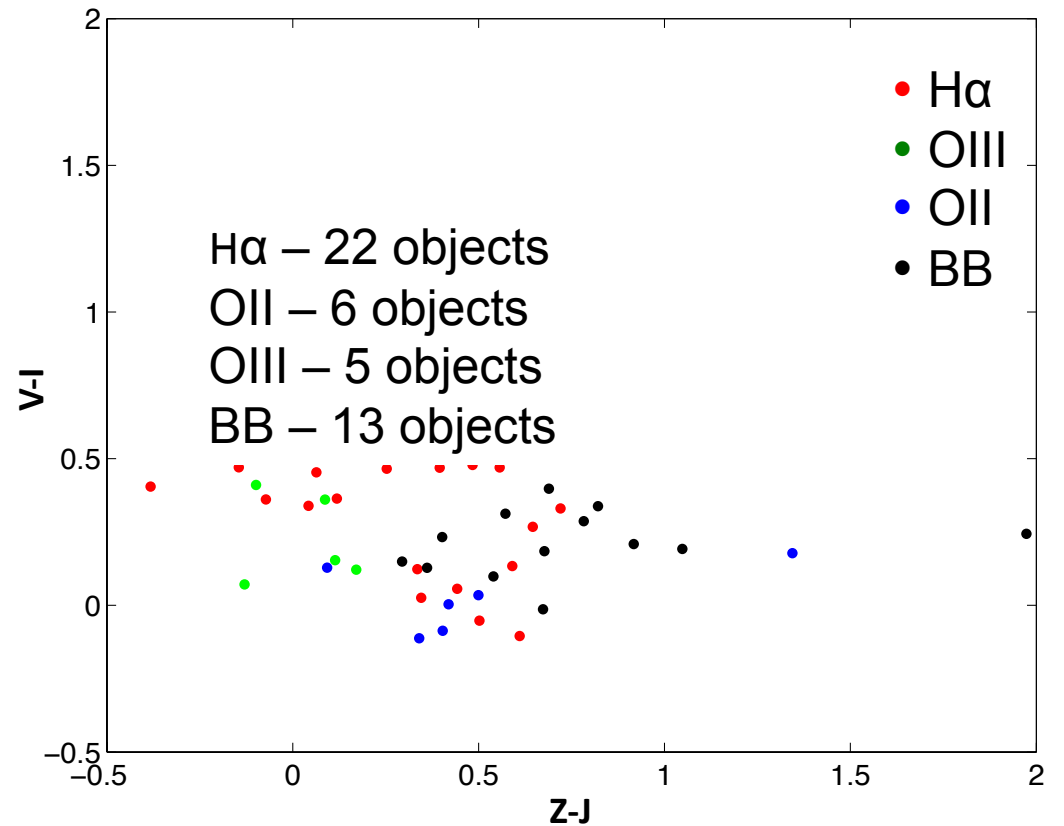


Some interesting results...

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Comparing the results with other catalogues

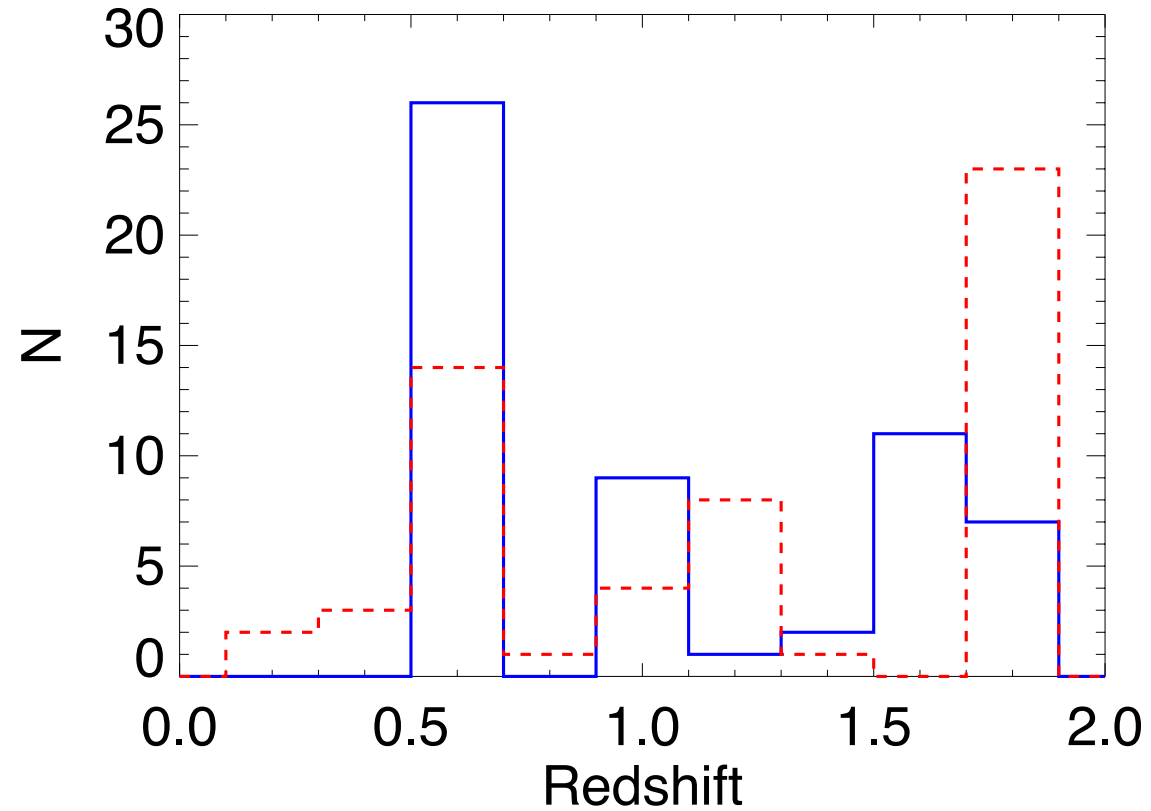
MUSYC

- 63 out of 69 are present
- MUSYC photo-zs are in a very strong disagreement
- SEDs retrieved by us
 - Our photometry
 - MUSYC photometry



Still disagree

Some statistics...



We compare our photo-zs with MUSYC ones.

They disagree a lot...

Kochiashvili et.al (In prep)

Comparing the results with other catalogues

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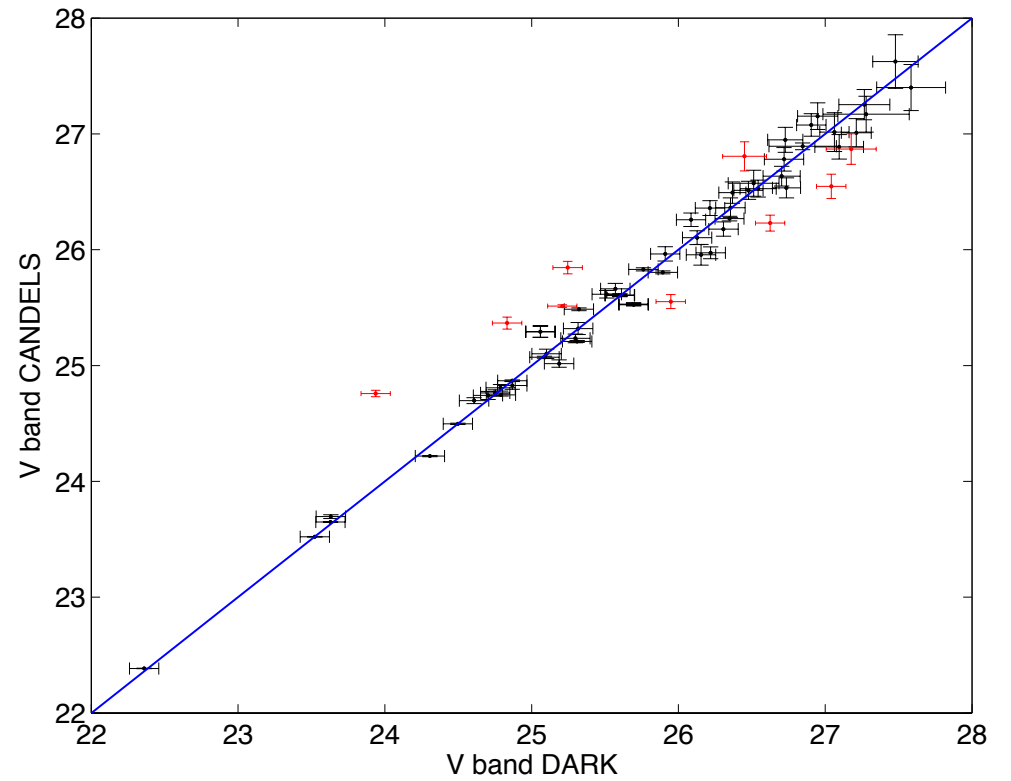
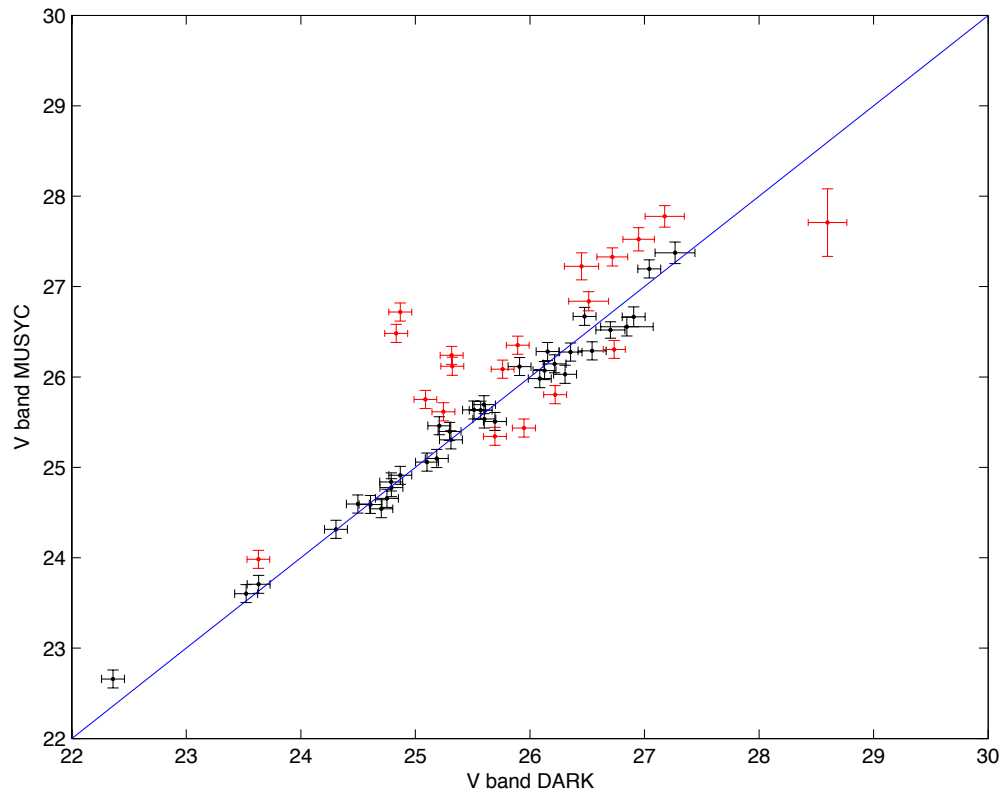


Still disagree

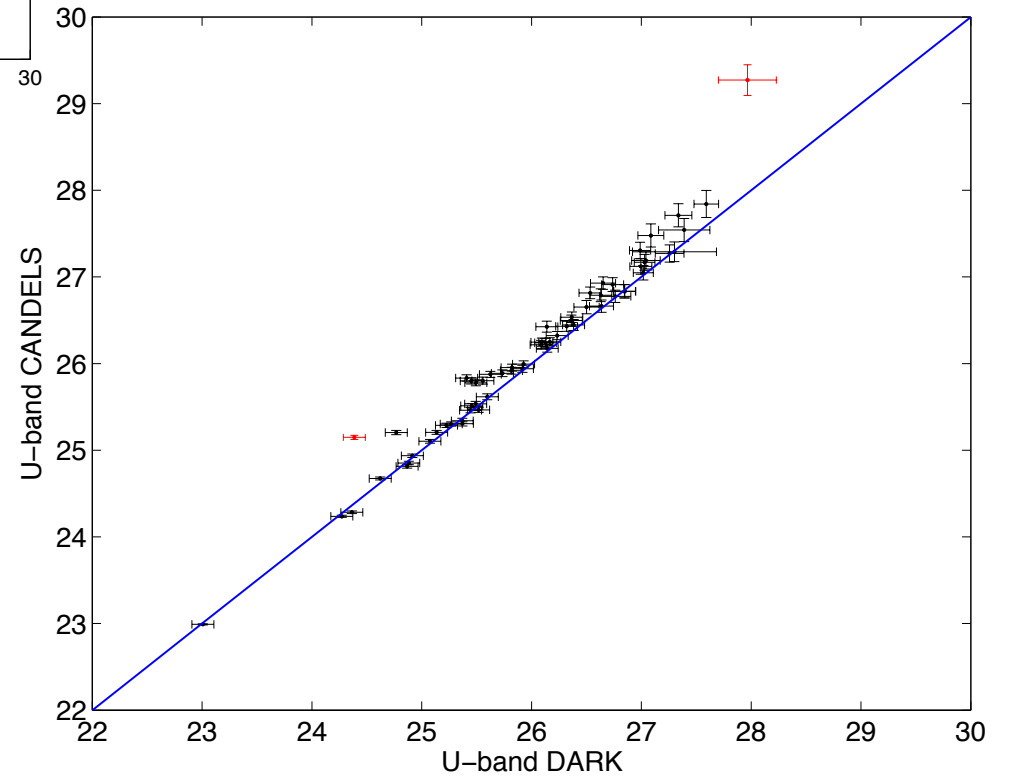
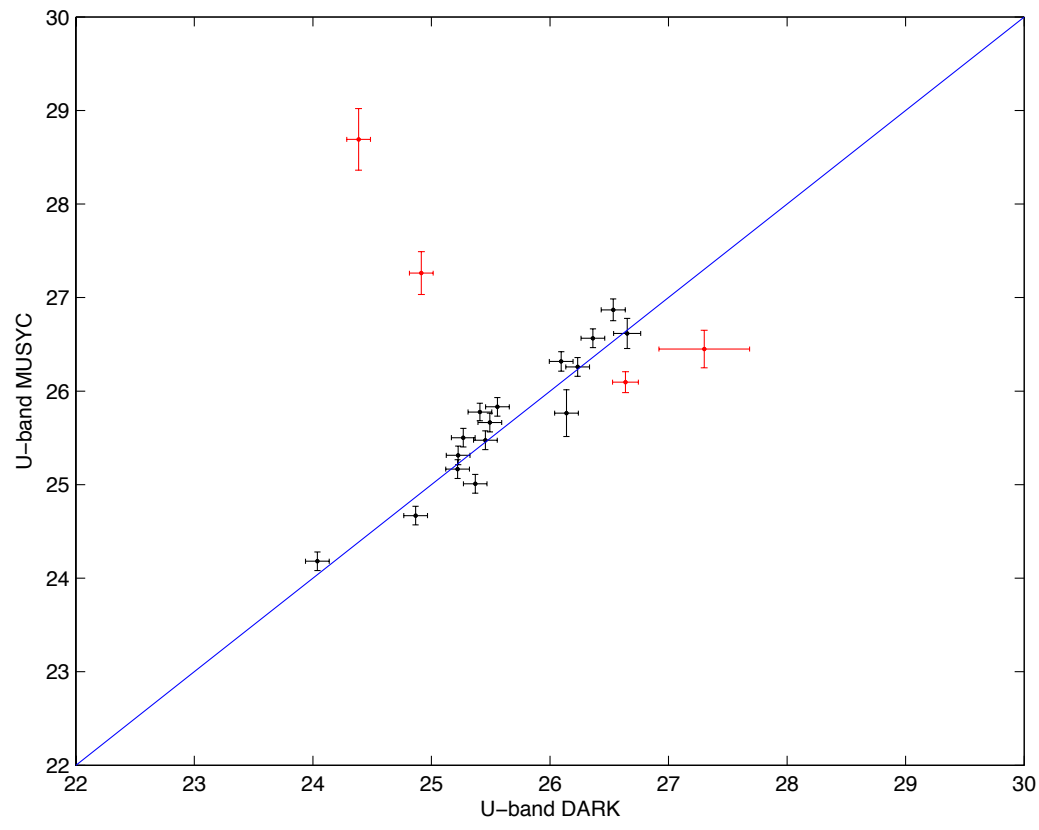
CANDELS

- 68 out of 69 are present
- No photo-zs present
- Photometry agrees quite well

Comparing with MUSYC & CANDELS surveys



Comparing with CANDELS survey



Comparing the results with other catalogues

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Still disagree

CANDELS

- 68 out of 69 are present
- No photo-zs present
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- **Our work seems to be reasonably precise**

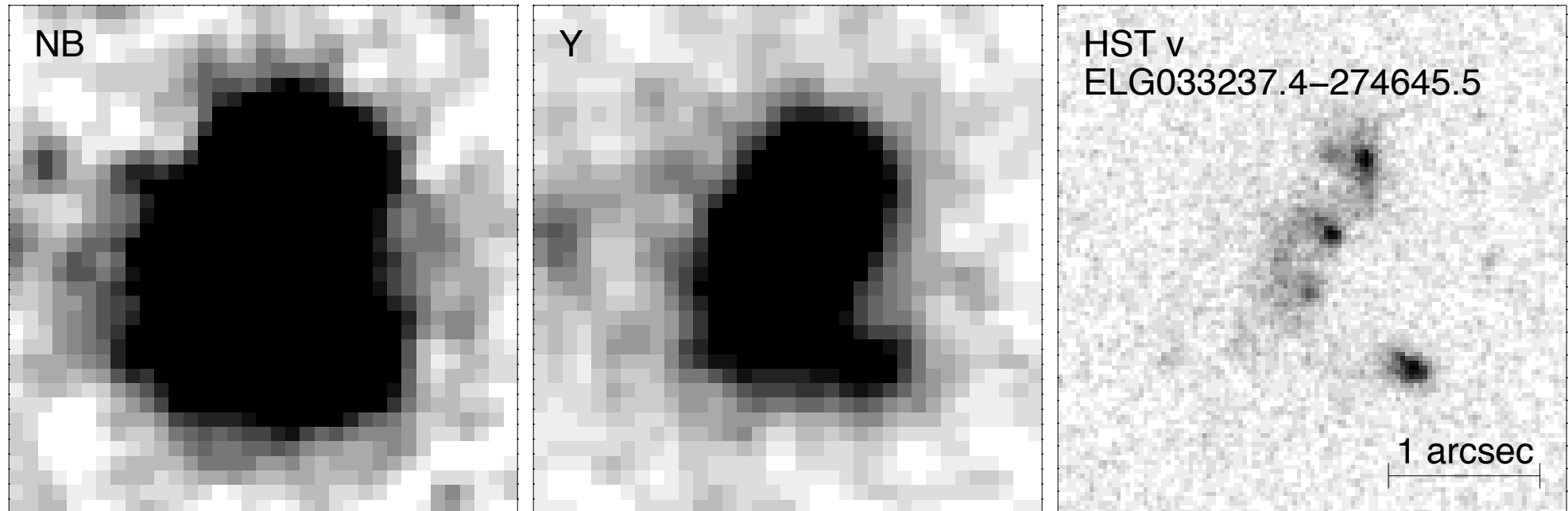
Aperture photometry, source shapes and what to be aware of...



Aperture photometry, source shapes and what to be aware of....

- Be careful with the non point-like sources
 - Aperture sizes for these kind of sources have to be carefully selected
- Bright objects nearby the target can be strong source of contamination
- Photometry is never as precise as spectroscopy.
- SED fitting \Leftrightarrow Magnitude errors

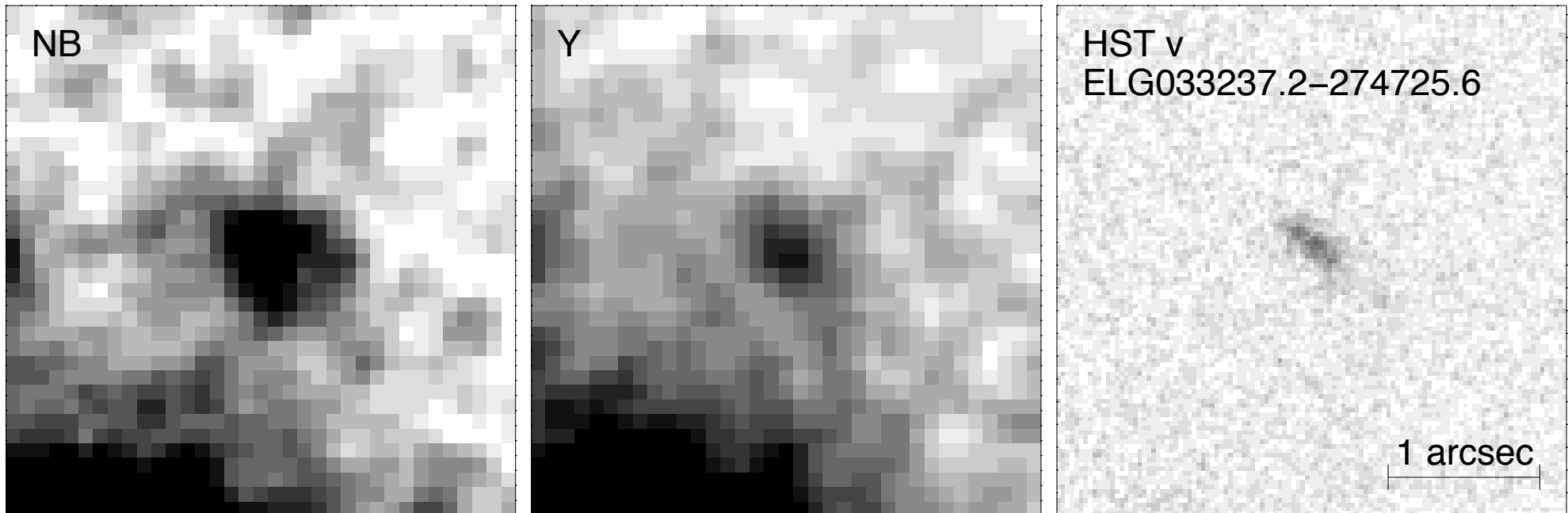
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Thank you very much for your
attention!

GTC – The biggest
<Optical>
Telescope! 😊

THANK YOU!

