Optical observations of [U]LIRGs from Akari Deep Field - South

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[U]LIRGs

[Ultra] Luminous InfraRed Galaxies

normal	$L_{IR} < 10^{11} L_{\odot}$
LIRG	$L_{IR} = (10^{11}\text{-}10^{12}) L_{\odot}$
ULIRG	$L_{IR} = (10^{12}\text{-}10^{13}) L_{\odot}$
HLIRG	$L_{IR} > 10^{13} L_{\odot}$?

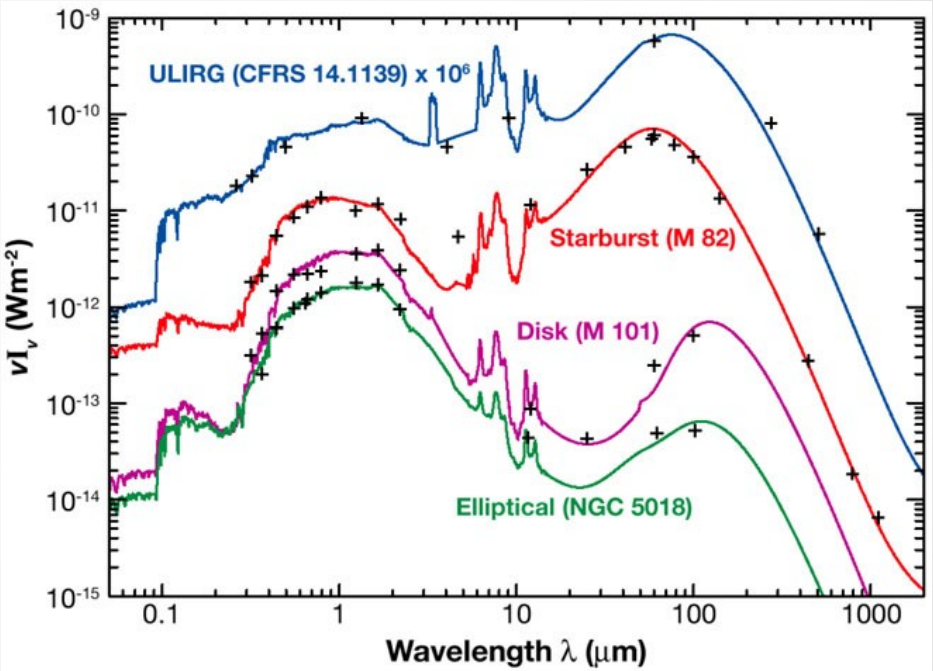

Figure 1: Spectral Energy Distribution comparison (Galliano 2004)

Data

AKARI Deep Field – South

$\alpha = 04^h44^m00^s$

$\delta = -53°20'00''$

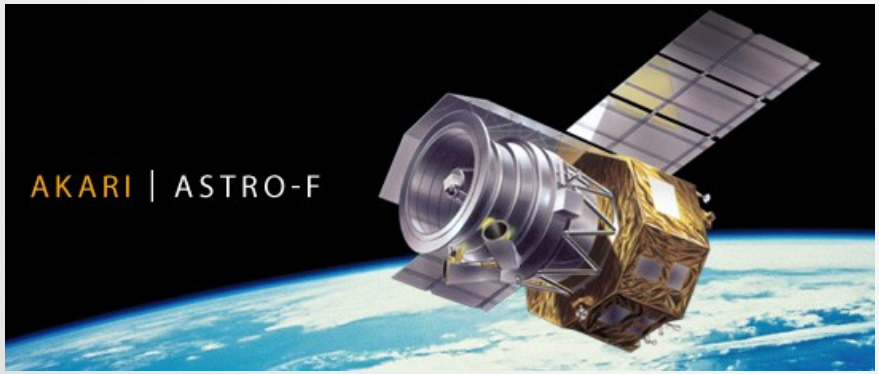

Figure 2: JAXA ASTRO-F satellite

- Sample of objects composed in work Małek et al. 2017
- enriched with Herschel observatory data
- mainly UV and IR observations
- optical from scanned DSS plates

DSS vs SAAO telescopes

- We submitted an observational proposal at SAAO
- We were granted two weeks' observational time at 2m telescope
- Second week on 1m telescope
- We observed 30 objects with their immediate neighbourhood
- Better astrometry for MOS observations
- One pilot pointing on MOS on SALT

DSS vs SAAO 1m

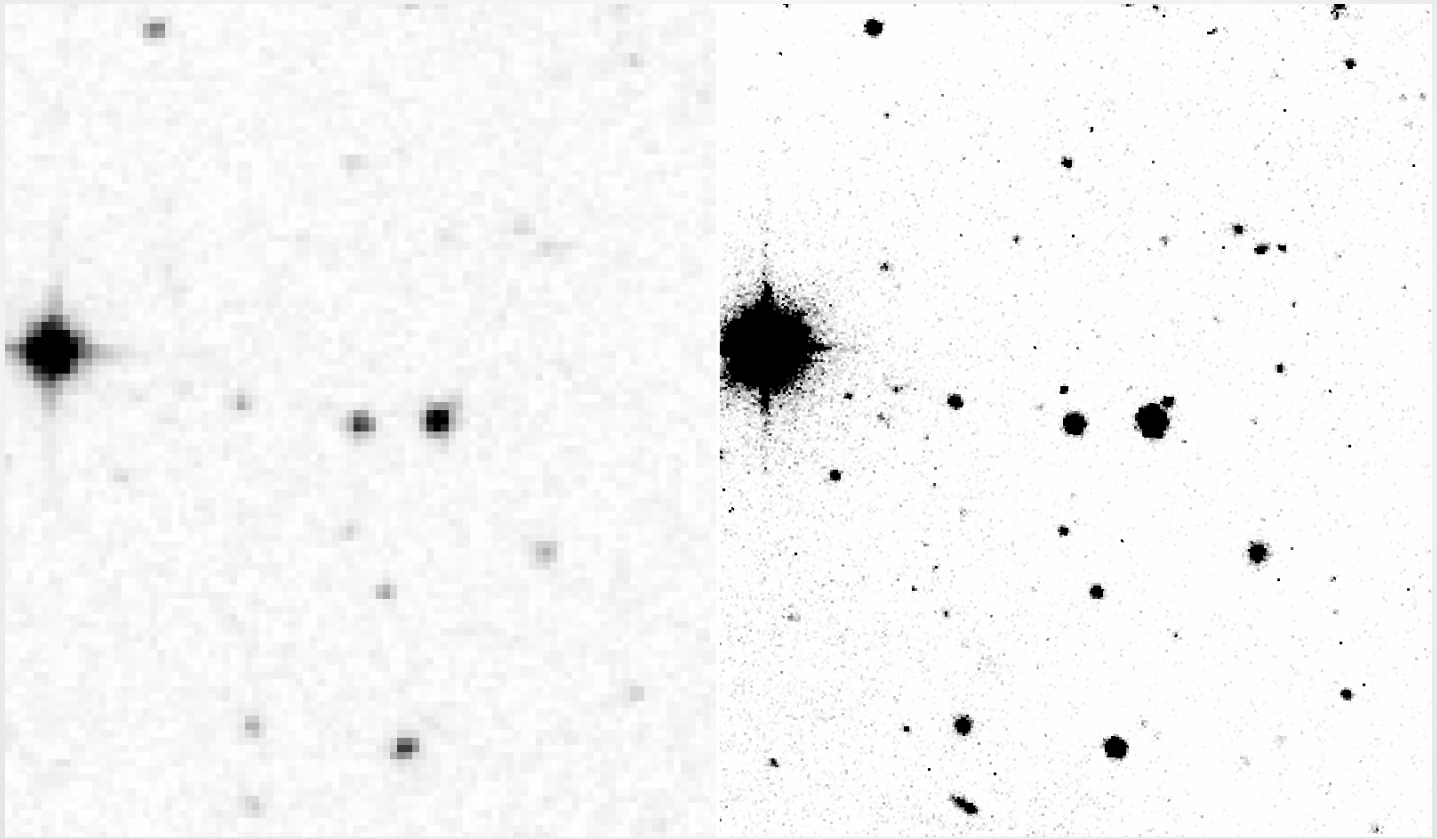

Figure 3: Example of 837 HE 0435-5304 from DSS and SAAO 1m

Astrometrical problems

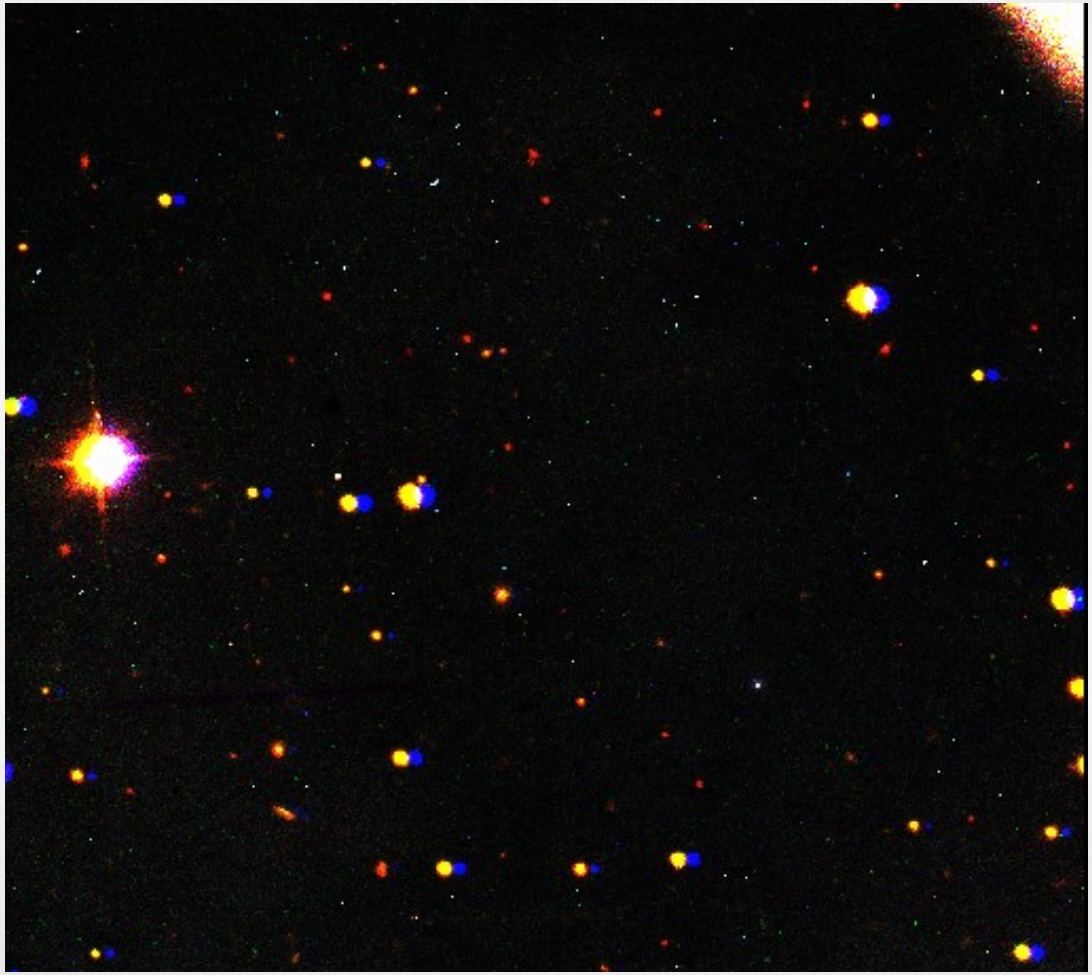

Figure 4: Astrometrical difficulties show discrepancies

Automatization

- Working by hand is not right
- Source Extraction with repetitive parameters
- Astrometrical calibrations with lists from catalogues and images from SAAO

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A PATTERN-MATCHING ALGORITHM FOR TWO-DIMENSIONAL COORDINATE LISTS

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ABSTRACT

A pattern-matching algorithm for two-dimensional coordinate lists is described. The algorithm matches pairs of coordinates in two lists based on the triangles that can be formed from triplets of points in each list. The algorithm is insensitive to coordinate translation, rotation, magnification, or inversion and can tolerate random errors or distortions.

SED fitting

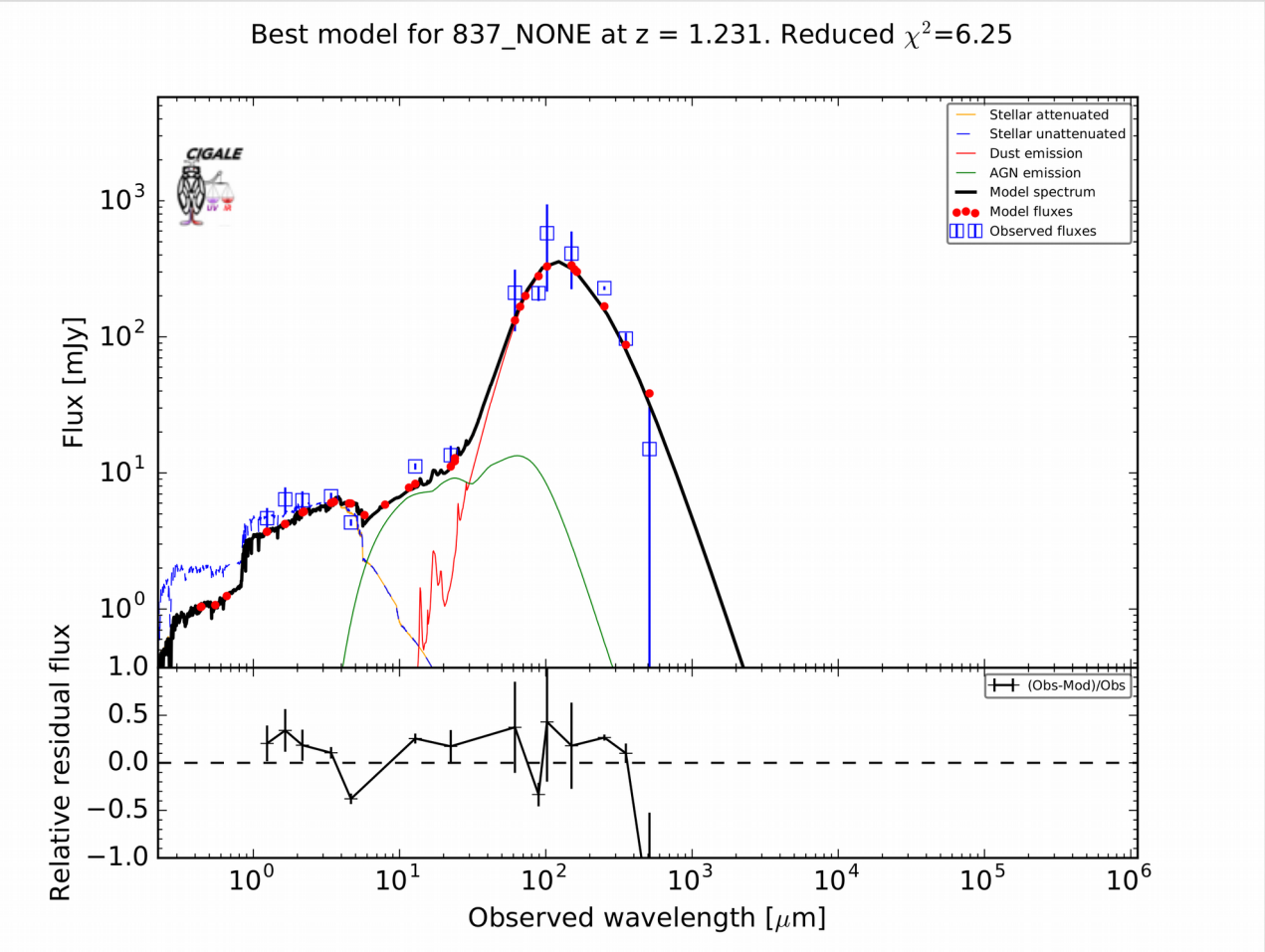

Figure 5: Spectrall energy distribution for HE 0435-5304

MOS spectrum z=0.425

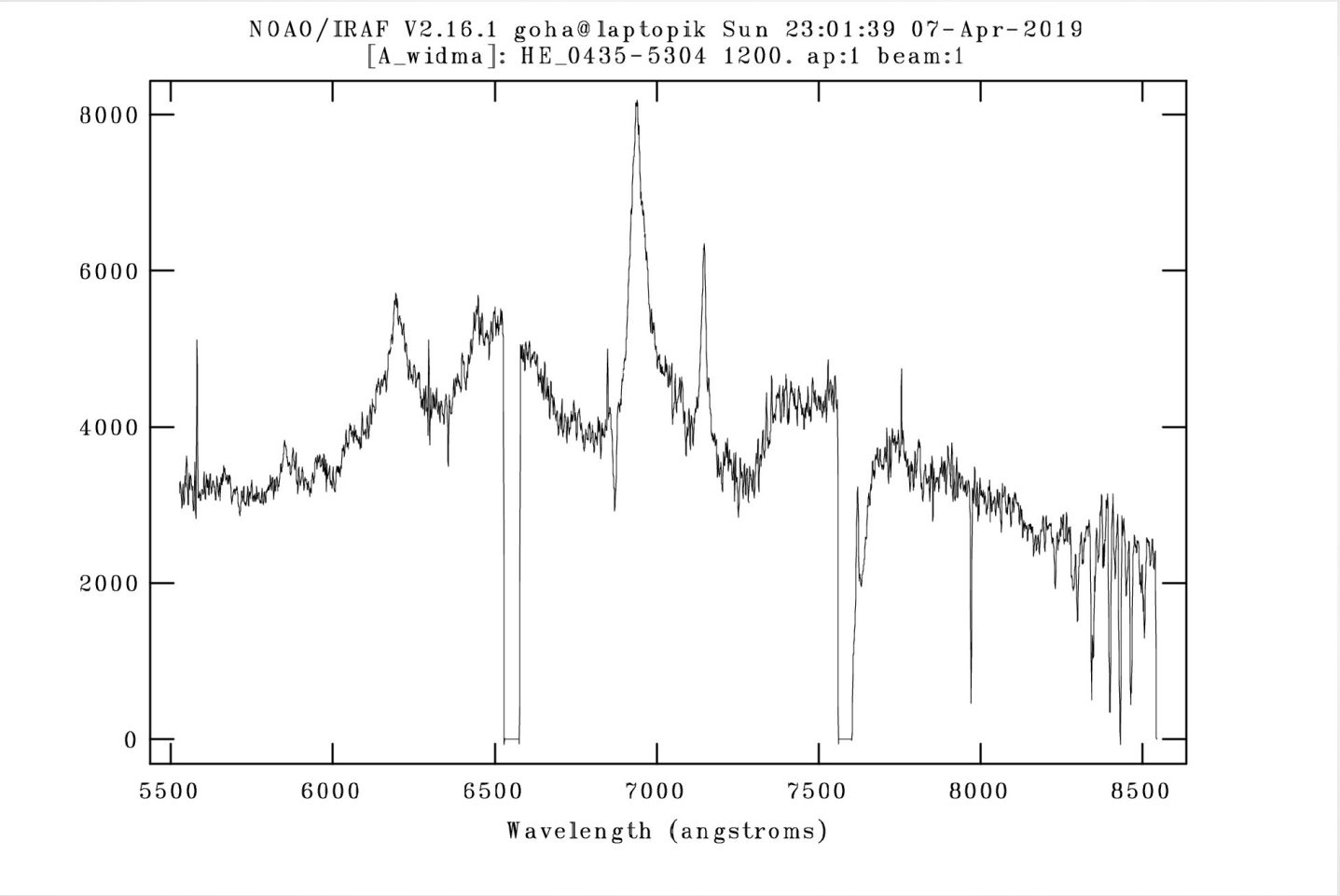

Figure 6: Spectra of HE 0435-5304 from the SALT MOS

Conclusions

- SAAO telescope images provide better resolution then DSS
- Dark Energy Survey is focused on deeper objects with magnitude < 15
- We will provide a fill in the gap for small redshifts to provide smooth coverage for environmental studies
- Enriching the sample with optical data will provide better parameters

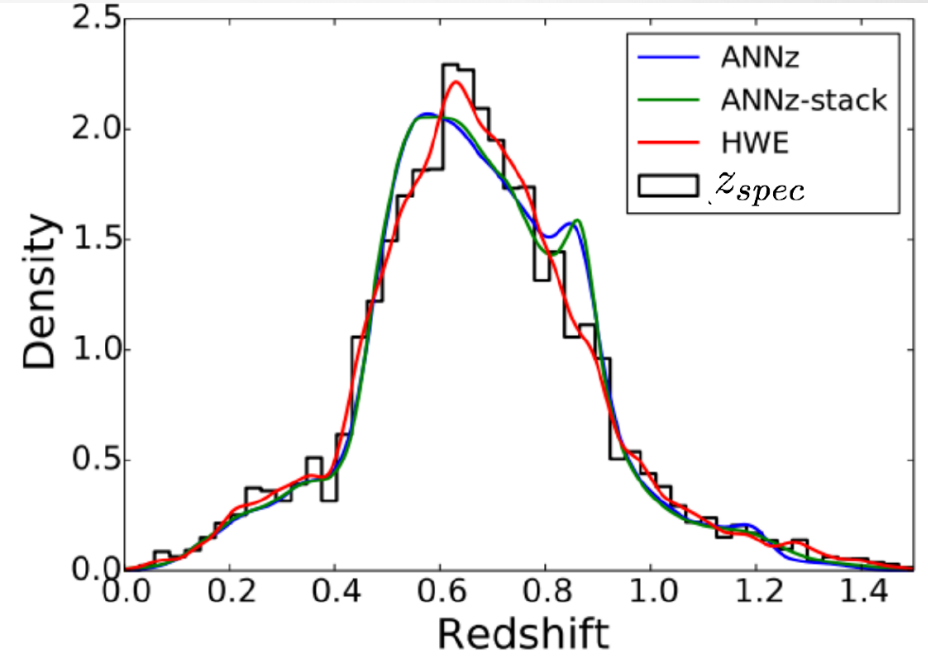

Figure 7: Redshift distribution from DES

Thank you for your attention