GGL WP status

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Purpose of the GGL WP

- Crystallise the tasks of the WP, and act as a means of communication

- Primary projects:
  - Cosmology with GGL
  - Halo and galaxy assembly bias with GGL
  - Dark matter stripping with GGL
  - Halo shapes with GGL
  - Intrinsic Alignment model calibration

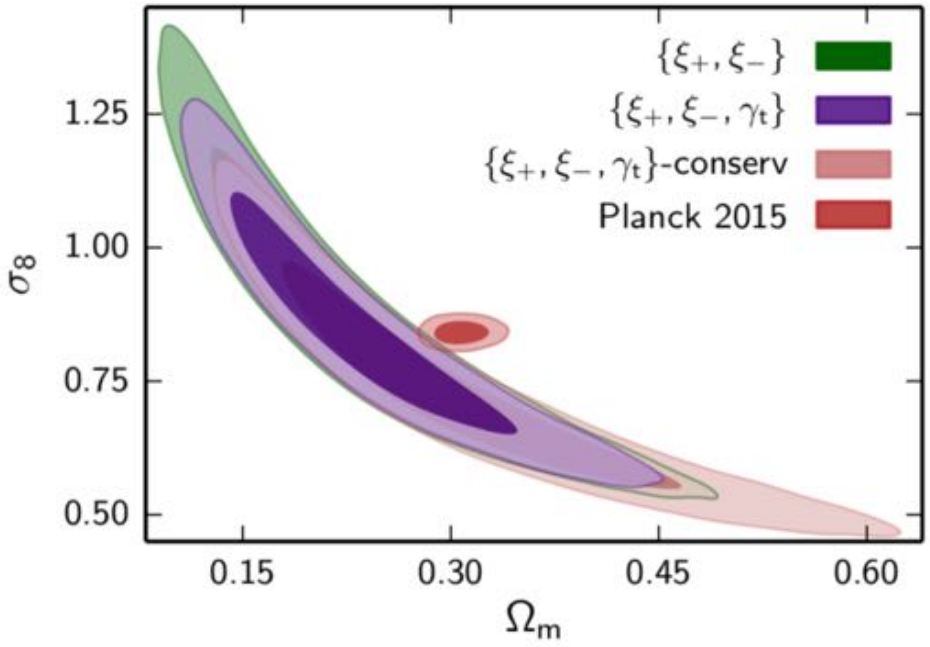
- So far: 11 members (3 from France)

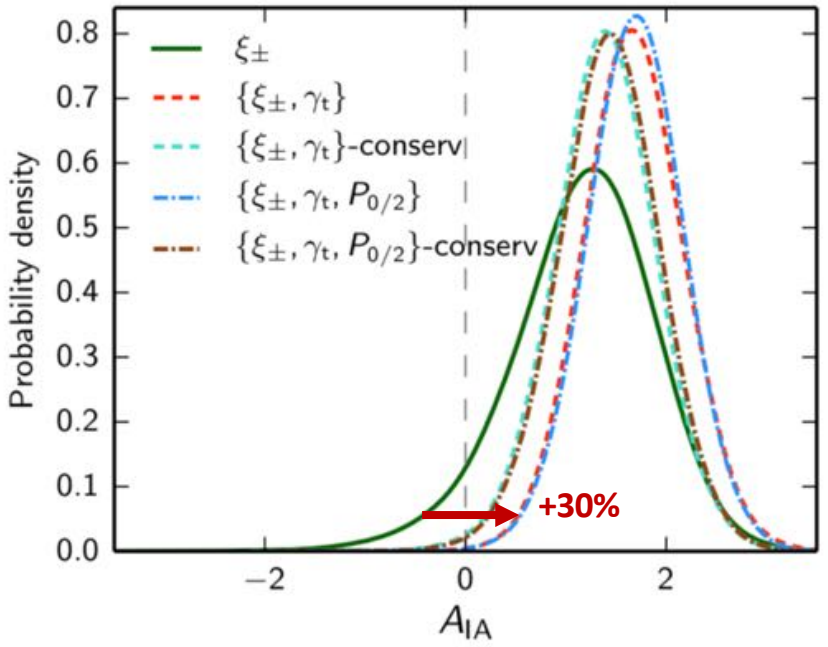
Improvement with γ_t on cosmo. params.

Adding γ_t to $\xi_\pm$ improves precision:

1) 30% on A_{IA}
2) 10% on σ_8, Ω_m

Joudaki et al. 2017





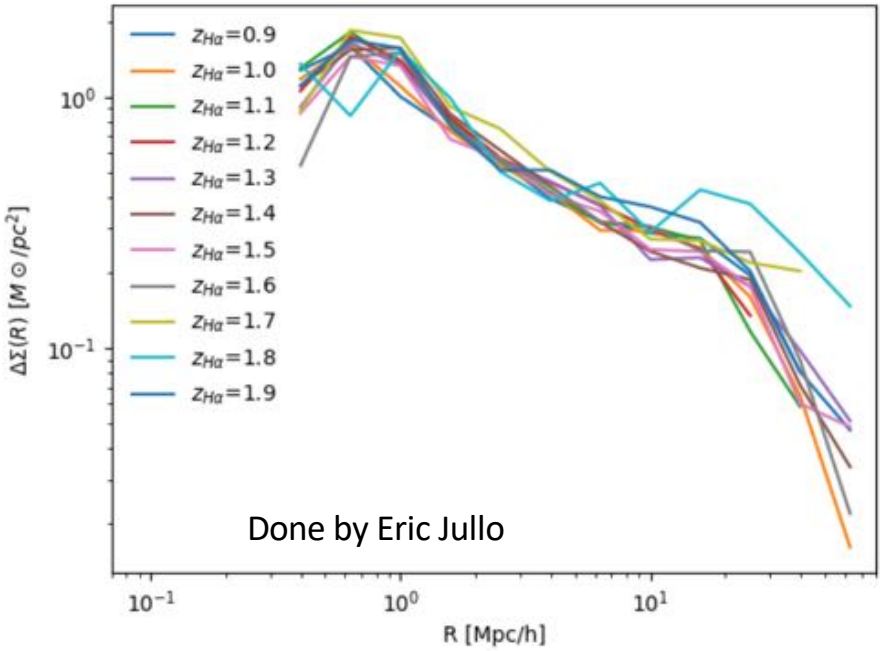
Flagship validation with Euclid Hα emitters

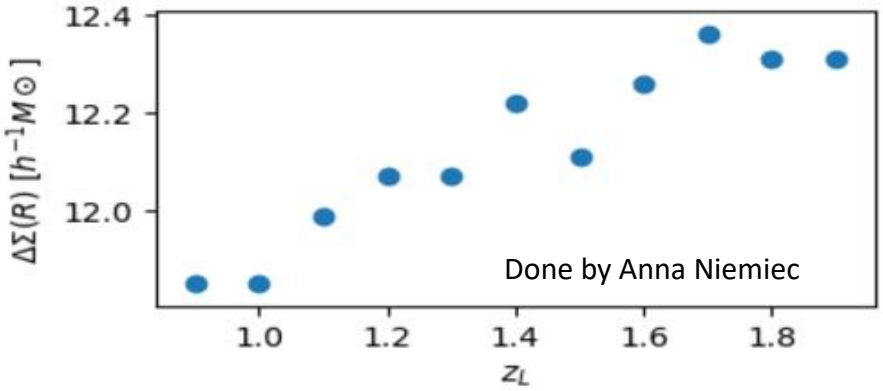
- In 2017, measurements done with
  - Flaghip 1.5.2
  - No shape/zphot noise

⇒There is GG signal

Hα are in halos of mass ~10^{12} $h^{-1}M_{\odot}$

(Masses measured with halo model)



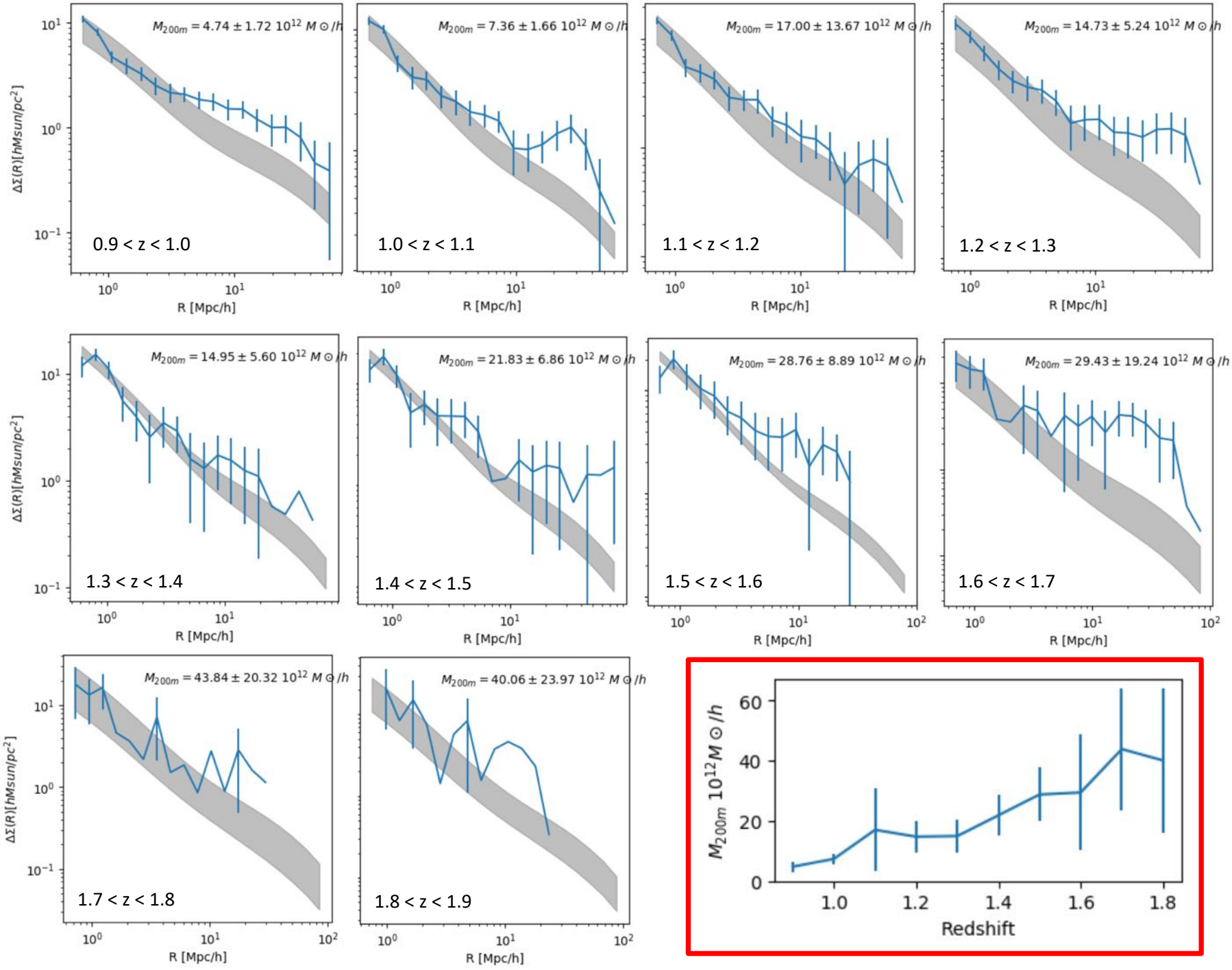


Flagship validation with Euclid Hα emitters

Mohammadjavad Vakili (Postdoc in Leiden) + Eric Jullo

In 2018

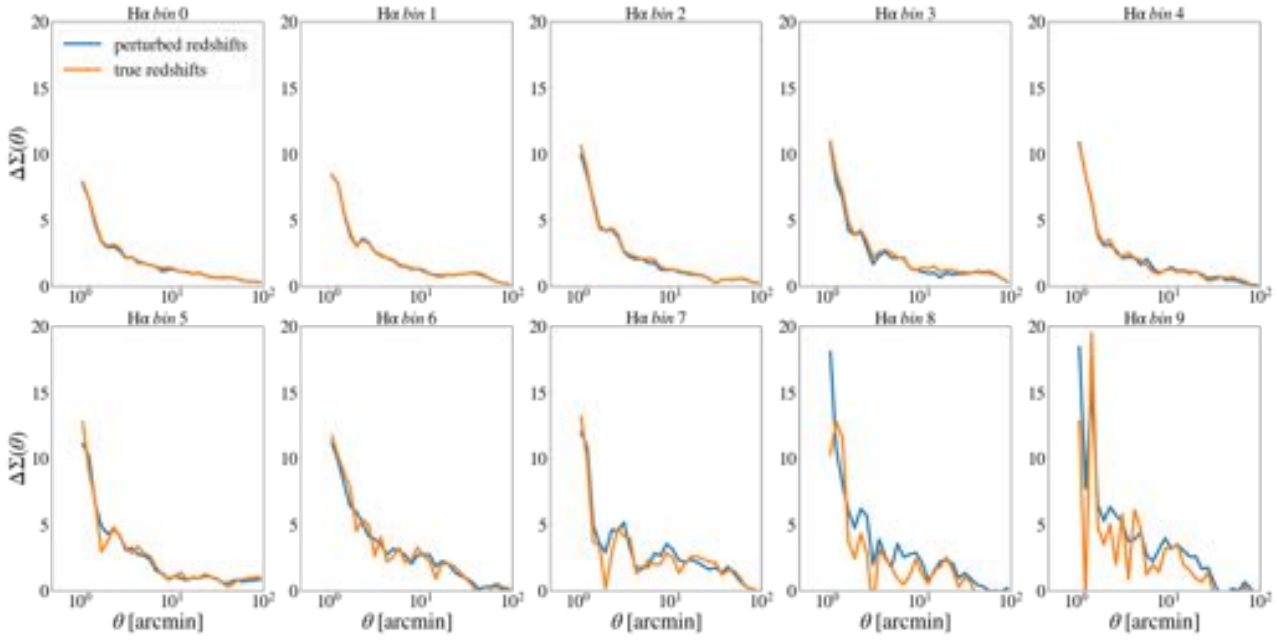
- Flagship 1.6.18 (ext_model_1 worst case)
- 10x10 deg^2
- No shape/zphot noise
- Model : NFW + Non-linear bias model (de la Torre+17)

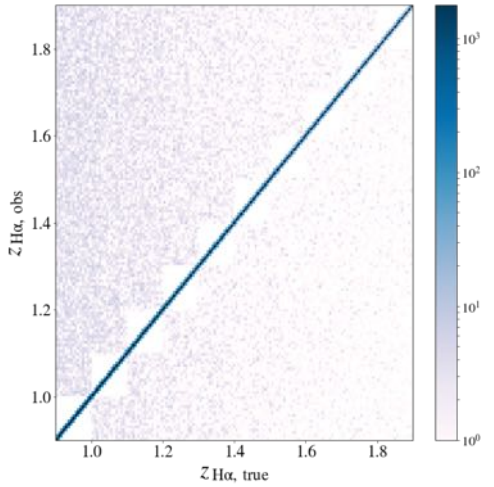

$M_{200m} = 4.74 \pm 1.72\ 10^{12}\ M\odot/h$
0.9 < z < 1.0
$M_{200m} = 7.36 \pm 1.66\ 10^{12}\ M\odot/h$
1.0 < z < 1.1
$M_{200m} = 17.00 \pm 13.67\ 10^{12}\ M\odot/h$
1.1 < z < 1.2
$M_{200m} = 14.73 \pm 5.24\ 10^{12}\ M\odot/h$
1.2 < z < 1.3
$M_{200m} = 14.95 \pm 5.60\ 10^{12}\ M\odot/h$
1.3 < z < 1.4
$M_{200m} = 21.83 \pm 6.86\ 10^{12}\ M\odot/h$
1.4 < z < 1.5
$M_{200m} = 28.76 \pm 8.89\ 10^{12}\ M\odot/h$
1.5 < z < 1.6
$M_{200m} = 29.43 \pm 19.24\ 10^{12}\ M\odot/h$
1.6 < z < 1.7
$M_{200m} = 43.84 \pm 20.32\ 10^{12}\ M\odot/h$
1.7 < z < 1.8
$M_{200m} = 40.06 \pm 23.97\ 10^{12}\ M\odot/h$
1.8 < z < 1.9
$\Delta\Sigma(R)[hMsun/pc^2]$
R [Mpc/h]
$M_{200m}\ 10^{12} M\odot/h$
Redshift

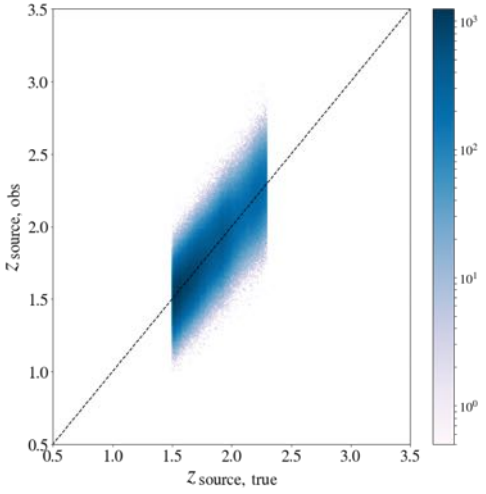
Effect of zphot error & purity

Measurement of w($\boldsymbol{\theta}$) and GGL signal in Flagship (100 deg^2) around

- Halpha lenses 0.9 < z < 1.9, flux > 2x10^{15} erg/s/cm2/A
- Trying to reproduce the Completeness/Purity of Halpha lenses (20%)
- sources mVIS < 25, z > 1.5
- Implement Gaussian noise in the redshift of sources





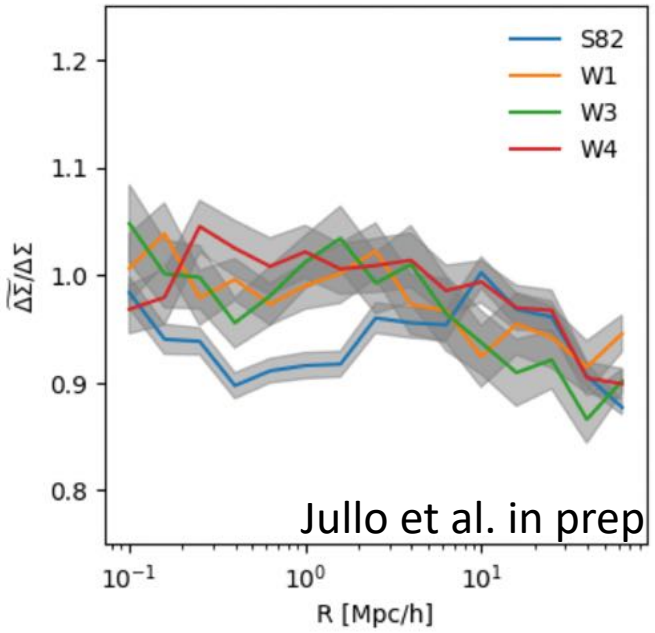


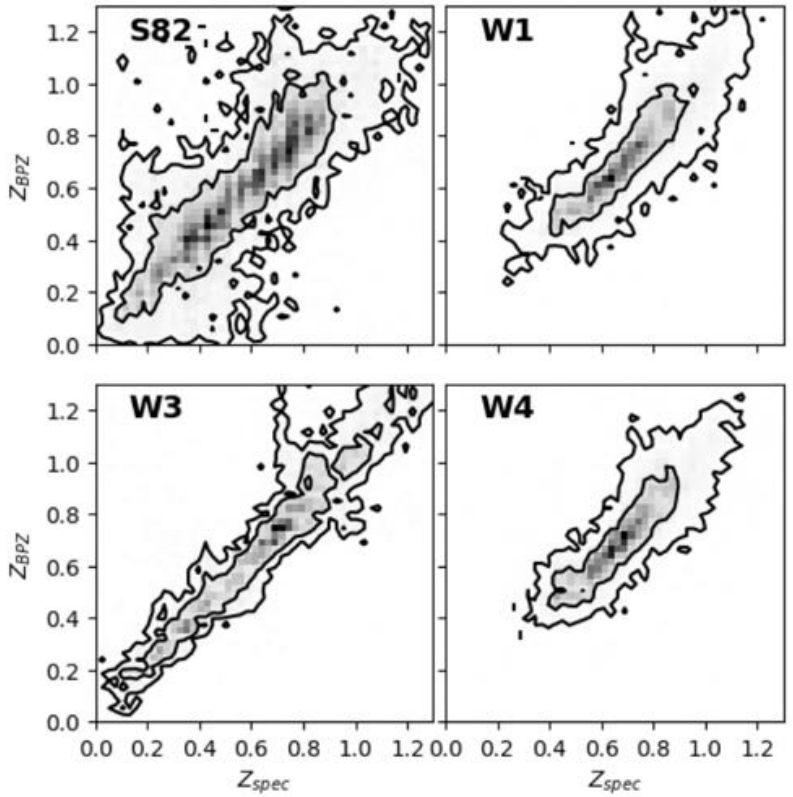
Case with real data: CMASS & CFHT-S82/LS

Measurement of GGL in 250 deg2 of CFHT-S82/LS fields
zSpec from

- VVDS $i_{AB} < 22.5$,
- DEEP2 $R_{AB} < 24.1$,
- PRIMUS $i_{AB} < 23.5$,
- VIPERS $i_{AB} < 22.5$,
- SDSS-DR13

90% spectro complete in S82 at $i_{AB} < 22.5$
90% spectro complete in CFHTLS at $i_{AB} < 24$





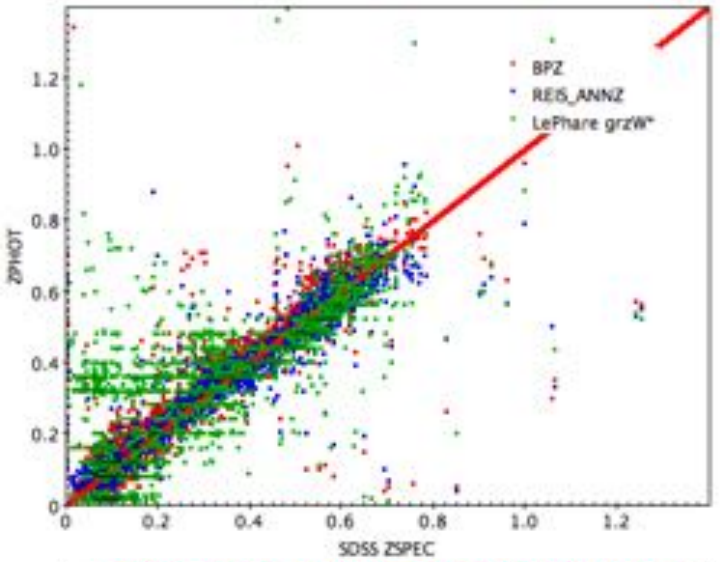
Still 10% bias due to zphot in CS82 with 22.5 cut

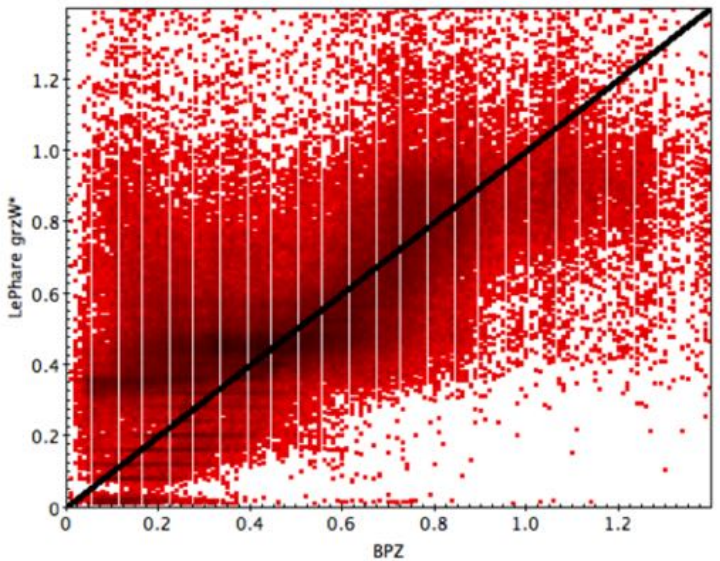
DECaLS photometric redshifts

- We use the *GAZPAR* webservice provided by LAM to compute the *z*-phot of DECaLS galaxies using *grzW* bands

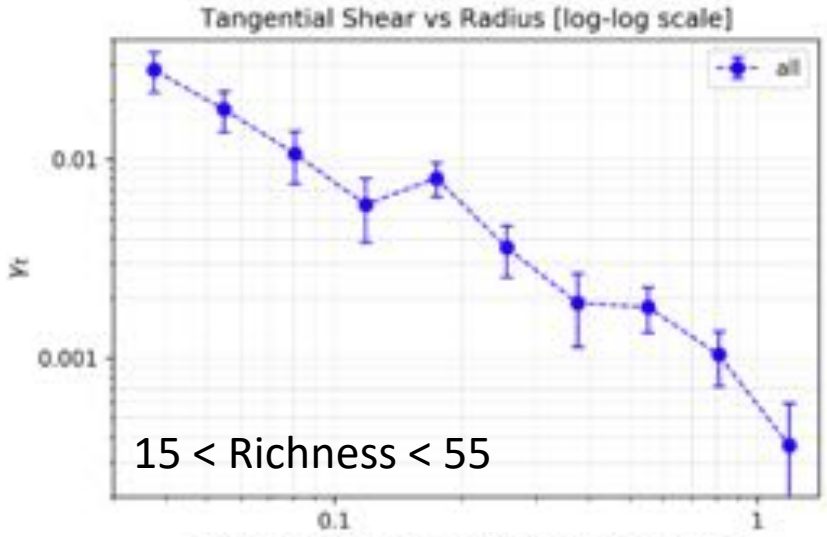
- We compare to CS82 zphots

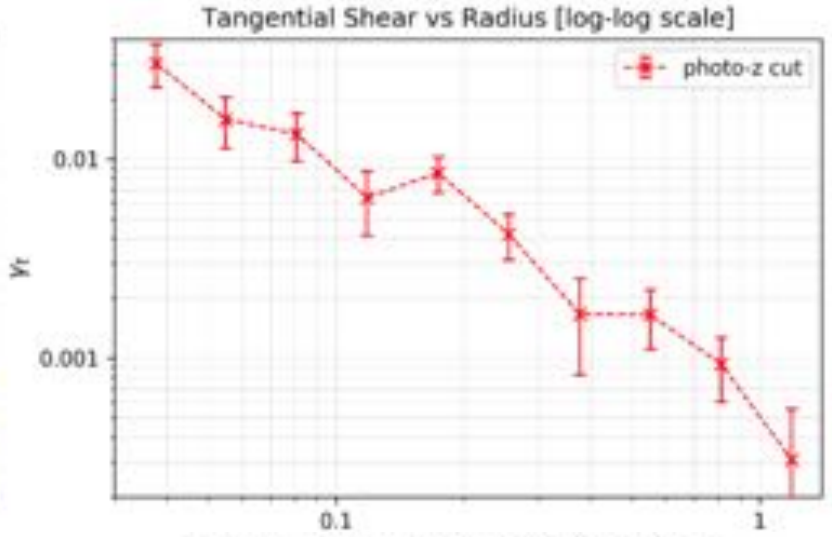
➔No particular systematic error, but a *large scatter*

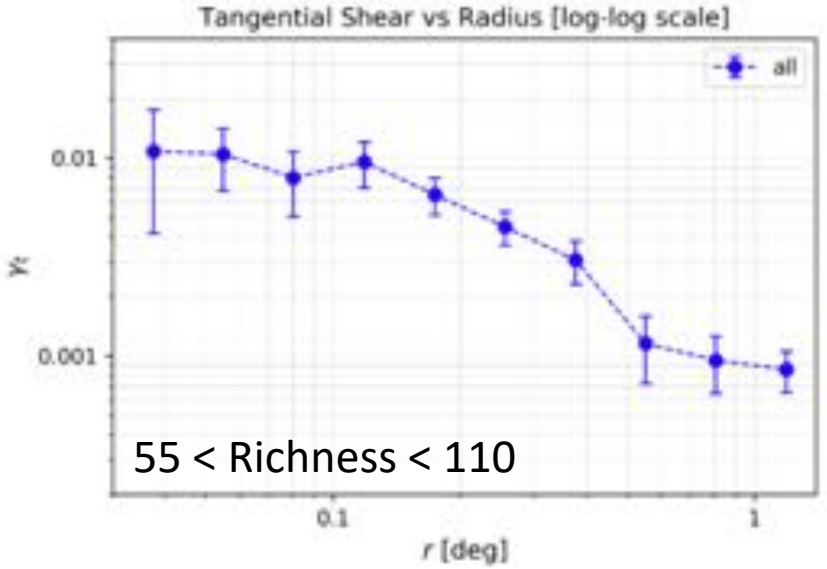


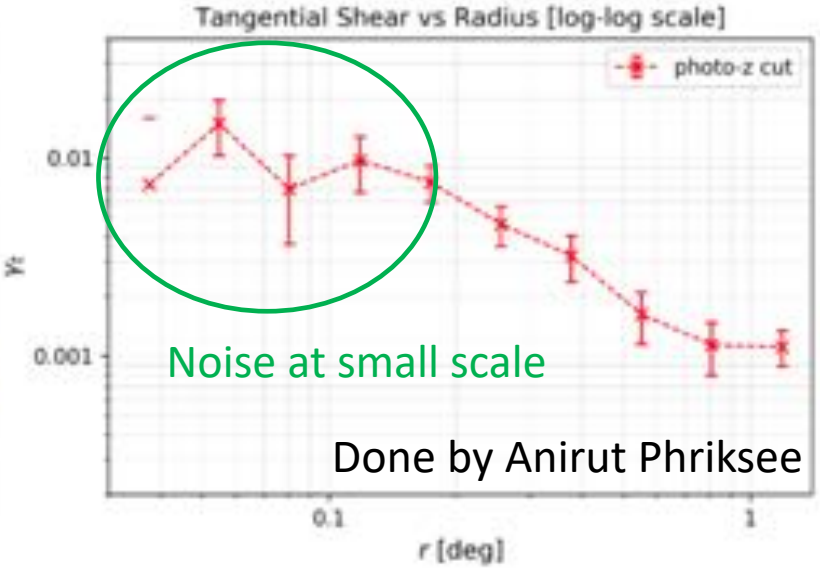


Cut vs No z-cut with CODEX clusters









Conclusions

- GGL around Halpha sources $0.9 < z < 1.9$
  - Mass is recovered with precision 30% - 50%
  - Still a lot of cosmic variance
- Simulation of purity and zphot noise
  - Systematic bias < Statistical noise
- Possible limitation of zphot precision
  - More important bias at small scale
  - Stringent requirements on the 90% zspec completeness

Proposal for Milan meeting in Dec, 2018

- Extend $\gamma_t(\theta)$ measurements to 5000 deg^2
- Distribute measurements in the WP for fitting with other models
- Perform measurements of S8 and bias in $0.9 < z < 1.9$

Future actions

- Confirm impact of shape and z-phot noise at other redshifts
- Quantify improvements from z<1 zphot and/or external zspectro
- Team up with transverse GC+WL SWG and combine constraints
- Include conclusion from SPV (shape & zphot noise)