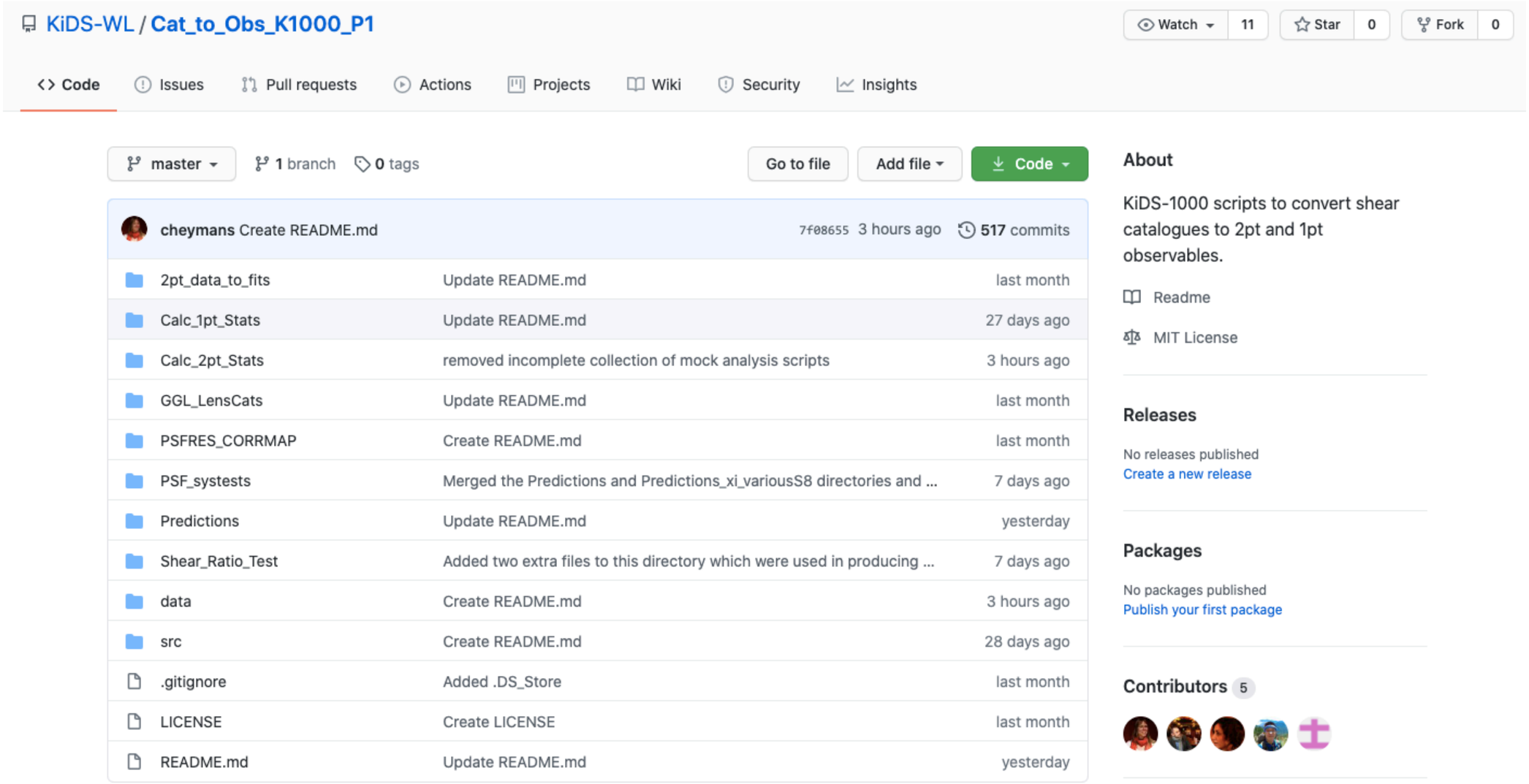
Cat_to_Obs_K1000_P1

A quick guide to the KiDS-1000 repo

B. Giblin, 18/11/2020

The Repo - now public!

https://github.com/KiDS-WL/Cat_to_Obs_K1000_P1



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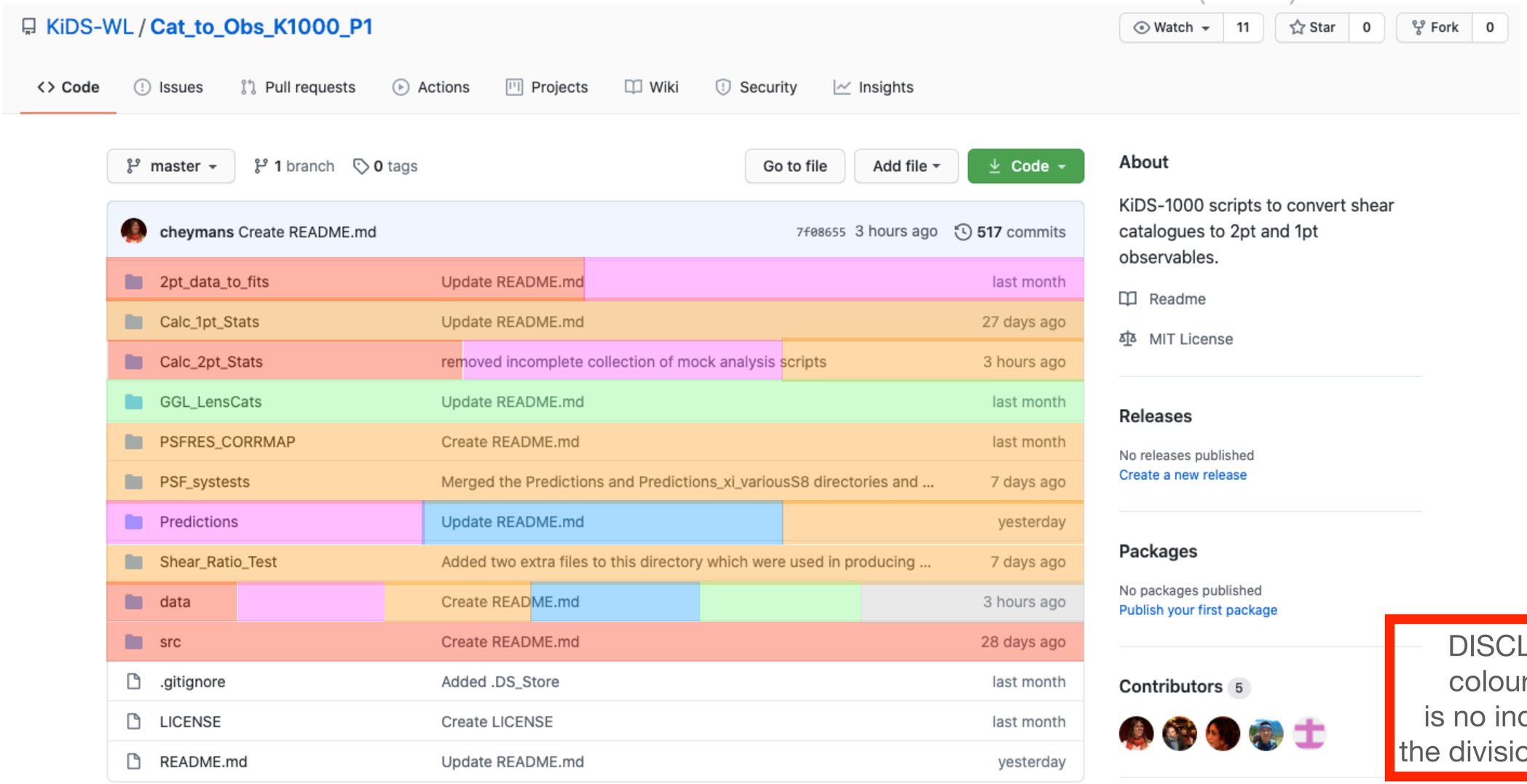
https://github.com/KiDS-WL/Cat_to_Obs_K1000_P1

Asgari et al. (2020) - cosmic shear
Heymans et al. (2020) - 3x2pt
Giblin et al. (2020) - shear catalogue null-tests
Blake et al. (2020) - GGL
Joachimi et al. (2020) - methodology
Hildebrandt et al. (2020) - redshift calibration

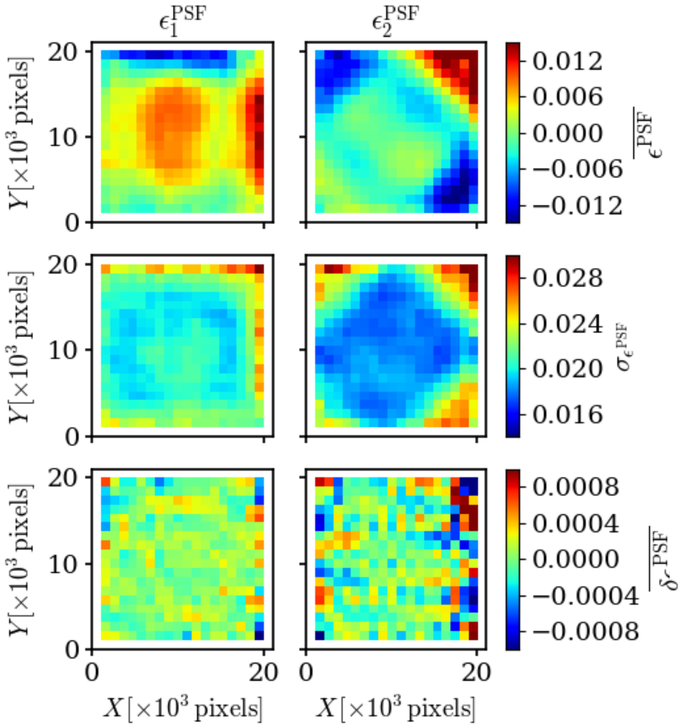


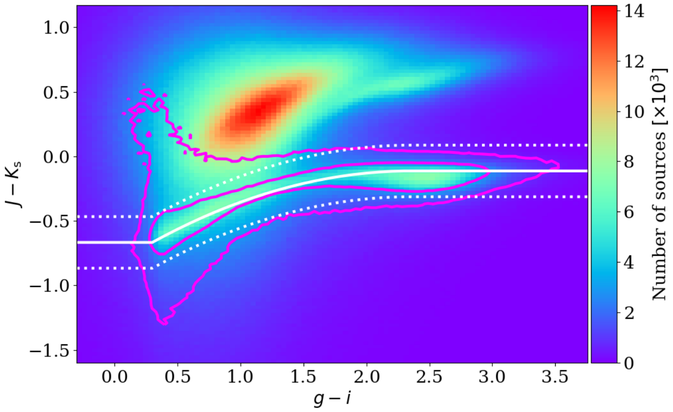
DISCLAIMER:
colour-coding
is no indication of
the division of labour!

Calc_1pt_Stats

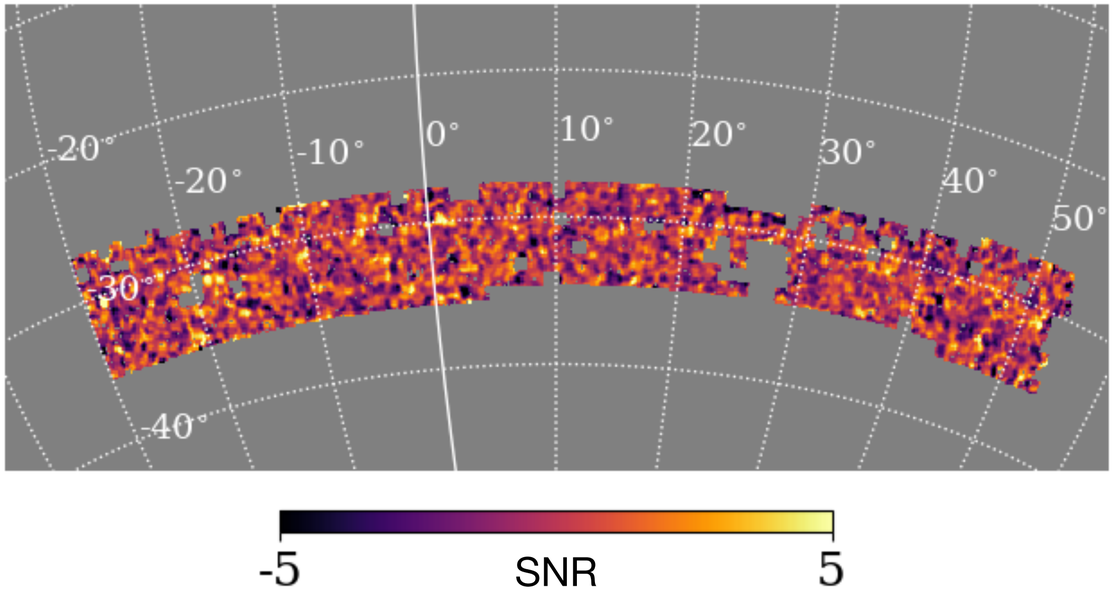
Contacts: Giblin, Heymans

- Codes to simply plot quantities X vs Y from the K1000 catalogues, e.g.:
    - e1/e2 VS ZB or mag.
    - e1^PSF/e2^PSF VS (X,Y) chip position.
- Histogram in colour-colour space.
- Produce & plot K1000 mass maps.





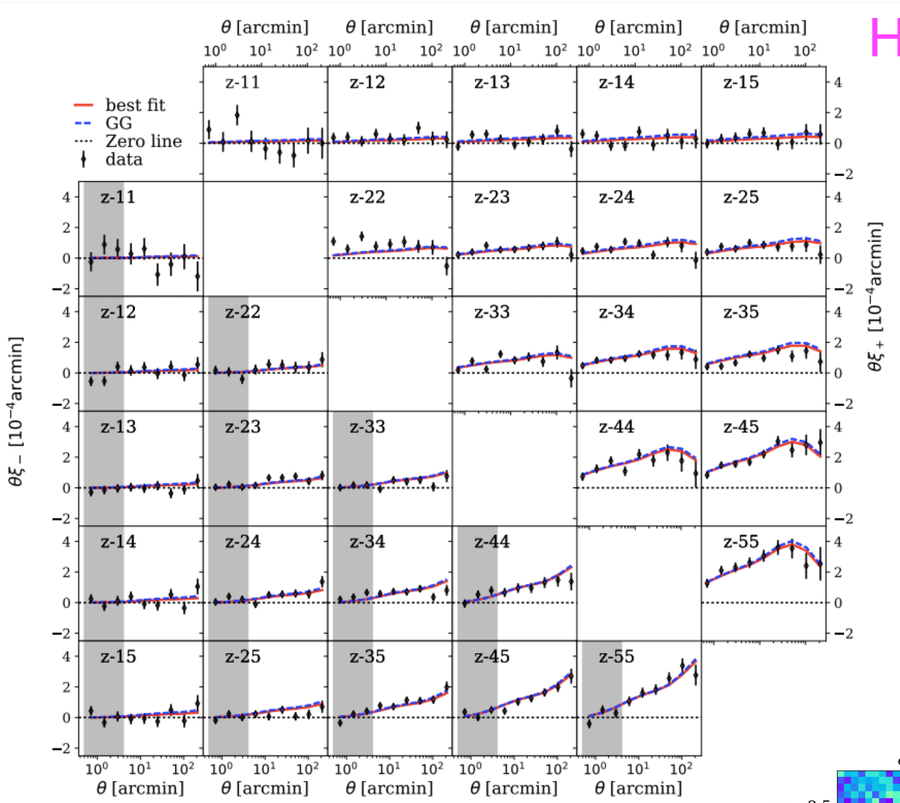
Giblin et al. (2020)



Calc_2pt_Stats

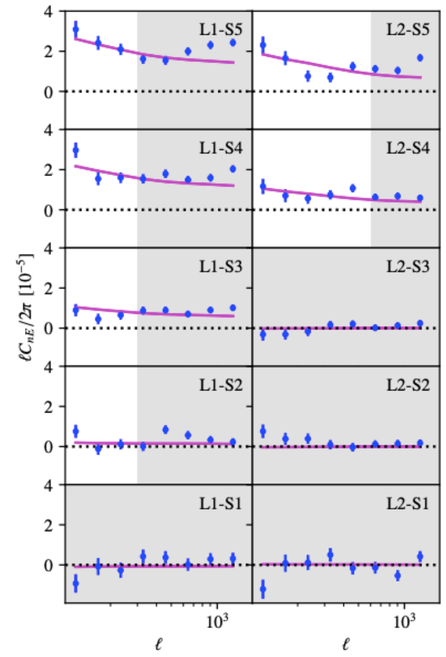
Contacts: Asgari, Heymans, Giblin

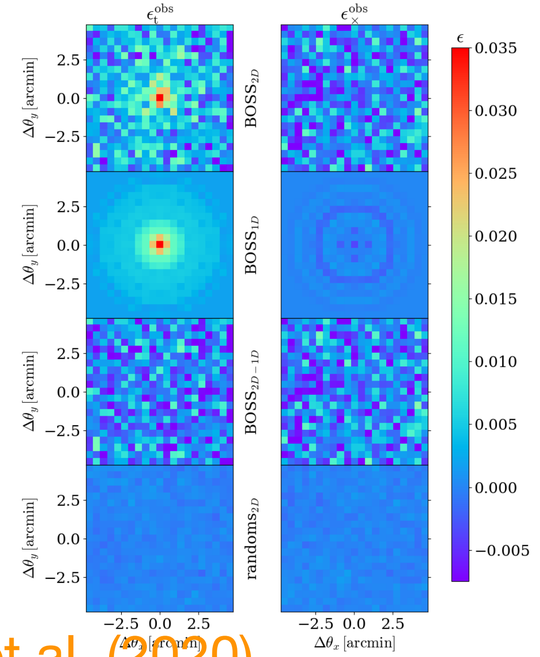
- Codes to measure two-point stats from the data: ξ_+/-, γ_t, C(ell).
- Codes to calculate the 2D γ_t(X,Y).



Asgari et al. (2020)

Heymans et al. (2020)





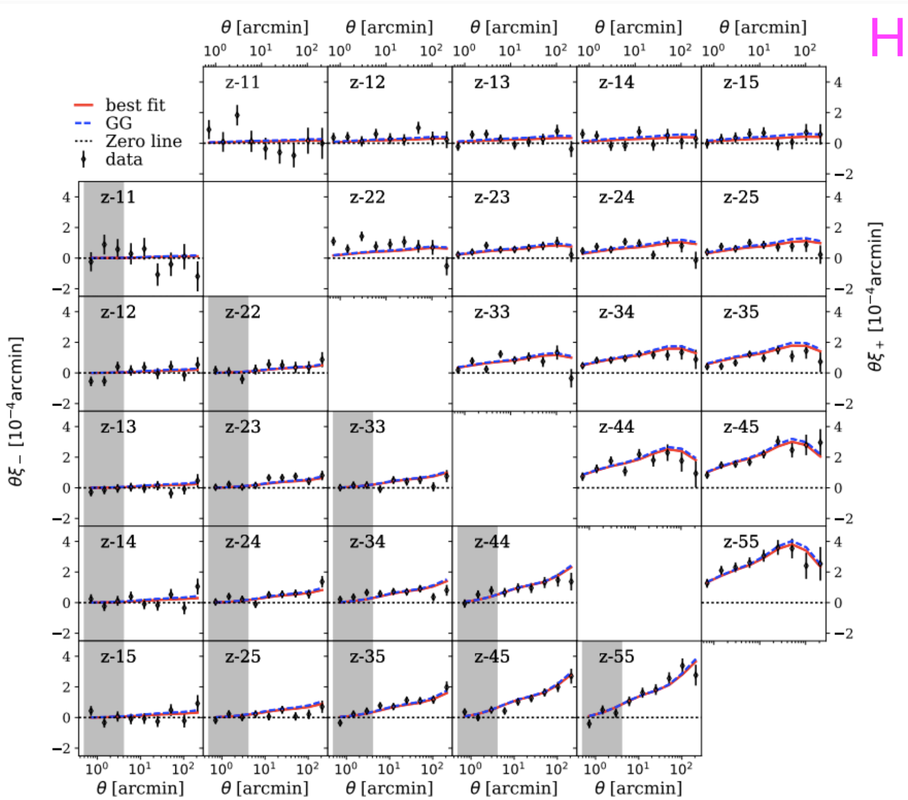
Giblin et al. (2020)

2pt_data_to_fits

Contacts: Asgari, Heymans

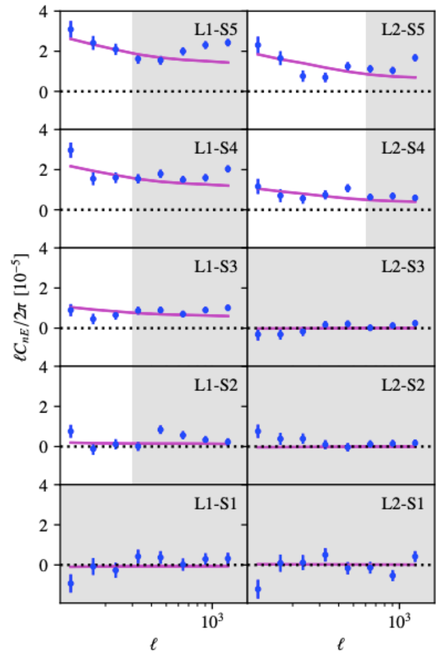
- Takes the two-point stats produced in Calc_2pt_Stats and saved in ascii format, and converts them into a single fits table, containing all z-bin combinations. Also includes the covariance & n(z).

- fits table is for use in KCAP pipelines to produce cosmological constraints.



Asgari et al. (2020)

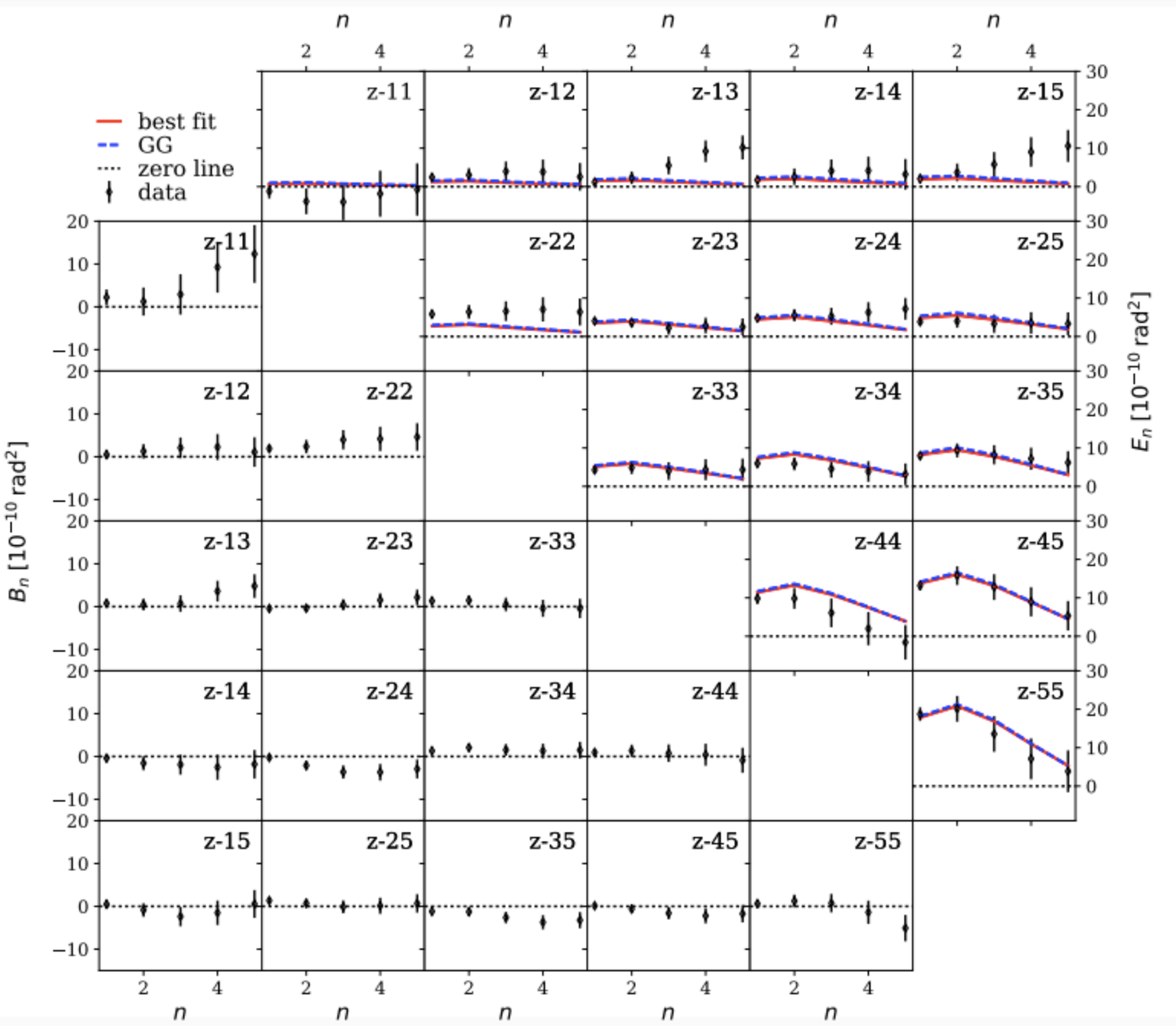
Heymans et al. (2020)



src

Contacts: Asgari, Joachimi

- Codes to simply convert the finely-binned ξ_+/- measurements from Calc_2pt_Stats into COSEBIs.

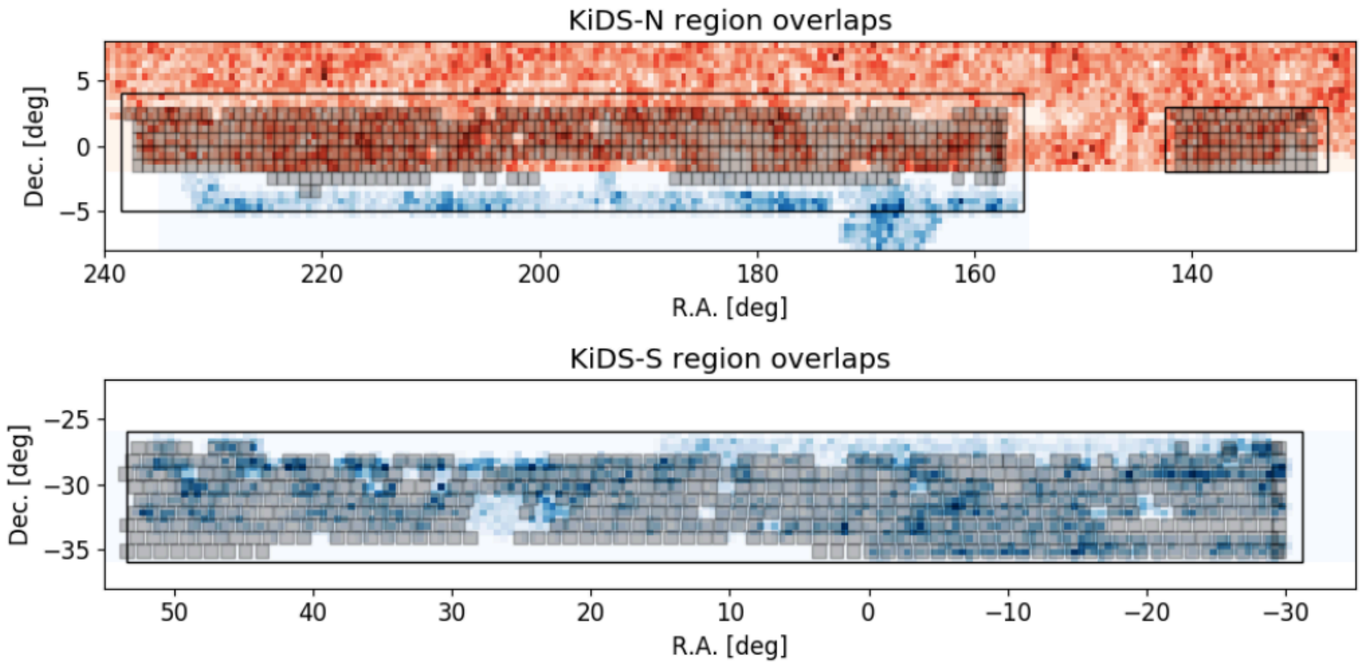


Asgari et al. (2020)

GGL_LensCats

Contacts: Blake, Heymans

- Codes for identifying the overlap between KiDS and BOSS/ 2dFLenS.
- Produces lens/randoms catalogues for input to Calc_2pt_Stats.

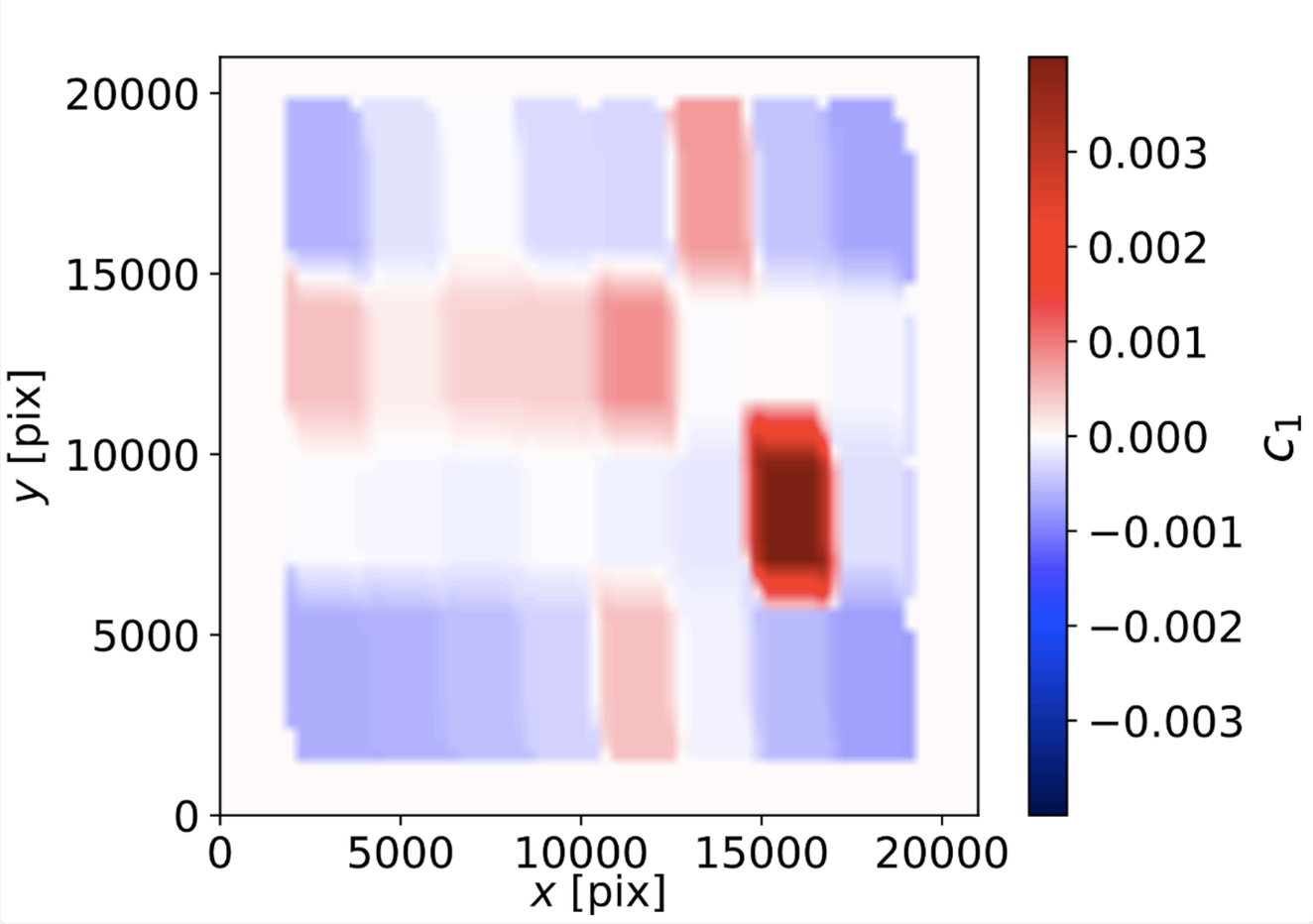


Blake et al. (2020)

PSFRES_CORRMAP

Contacts: Heymans, Giblin

- Codes to calculate the PSF residual ellipticity (c-term) as a function of magnitude for each chip in the CCD.
- This involves extrapolating the residual ellipticity to faint magnitudes.

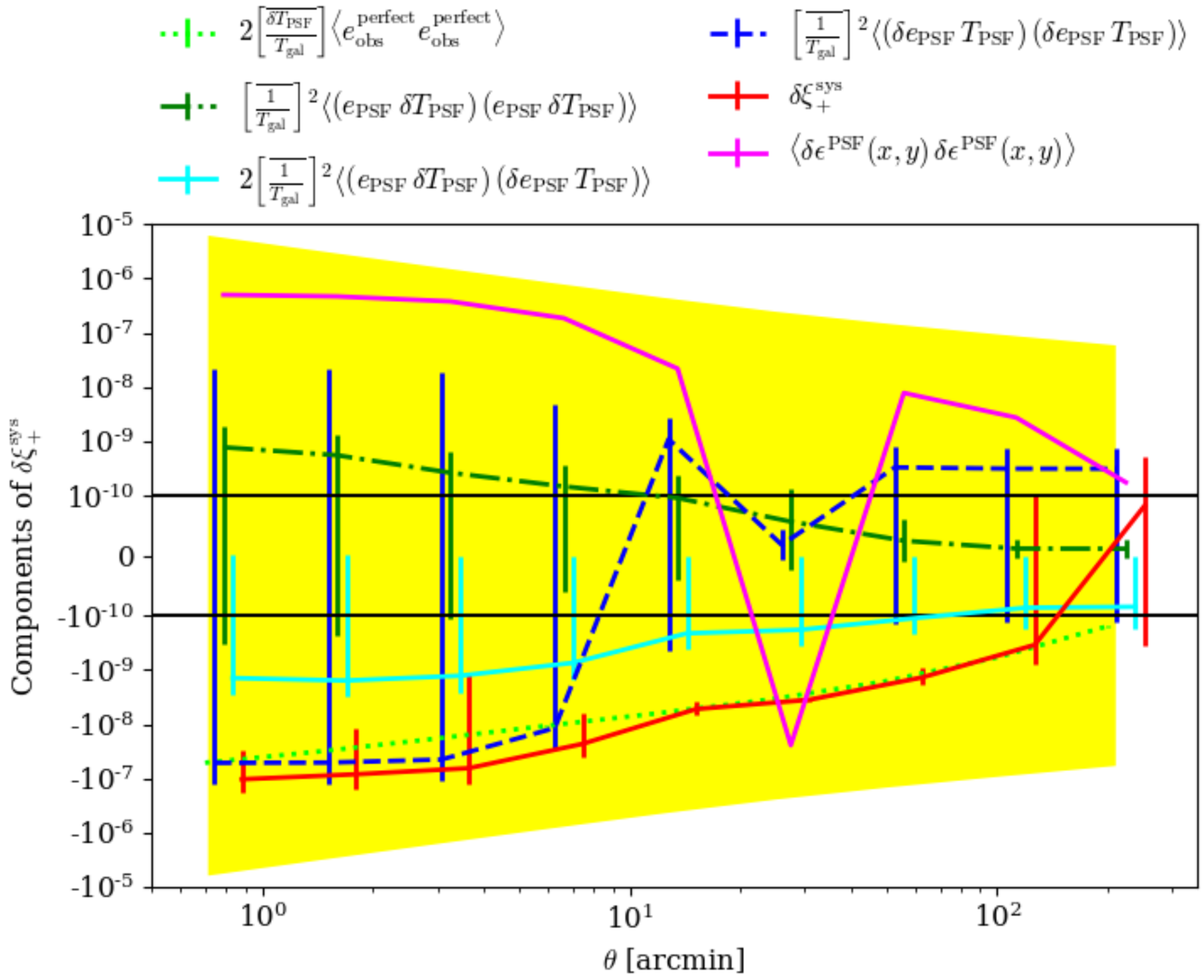


—>Results used in Giblin et al. (2020)

PSF_systests

Contacts: Giblin, Heymans

- Codes to calculate the bias to ξ_+ caused by different PSF systematic models.
- Also calculates the impact of these biases on inferred S_8.



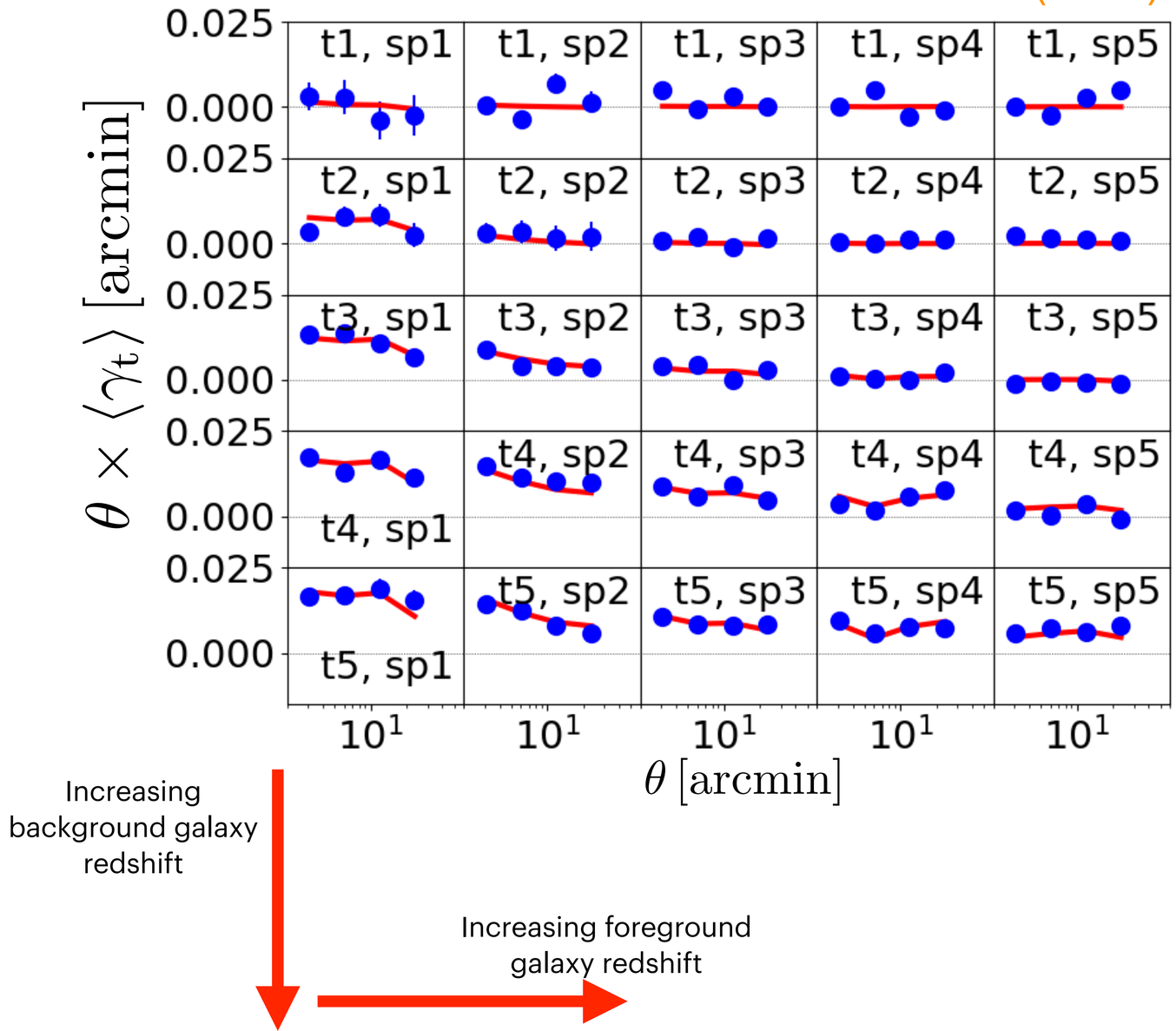
Giblin et al. (2020)

Shear_Ratio_Test

Contacts: Giblin, Hildebrandt

- Codes to perform the shear-ratio test on data (K1000xBOSS) or mocks (MICE) to verify the redshift calibration.
- Lots of options in here to add systematics into the analysis to see if the test can detect them, e.g.:
    - high-z outliers in n(z)
    - systematic mean shifts in the n(z)
    - magnification bias
    - IA uncertainty
    - multiplicative shear bias

Giblin et al. (2020)



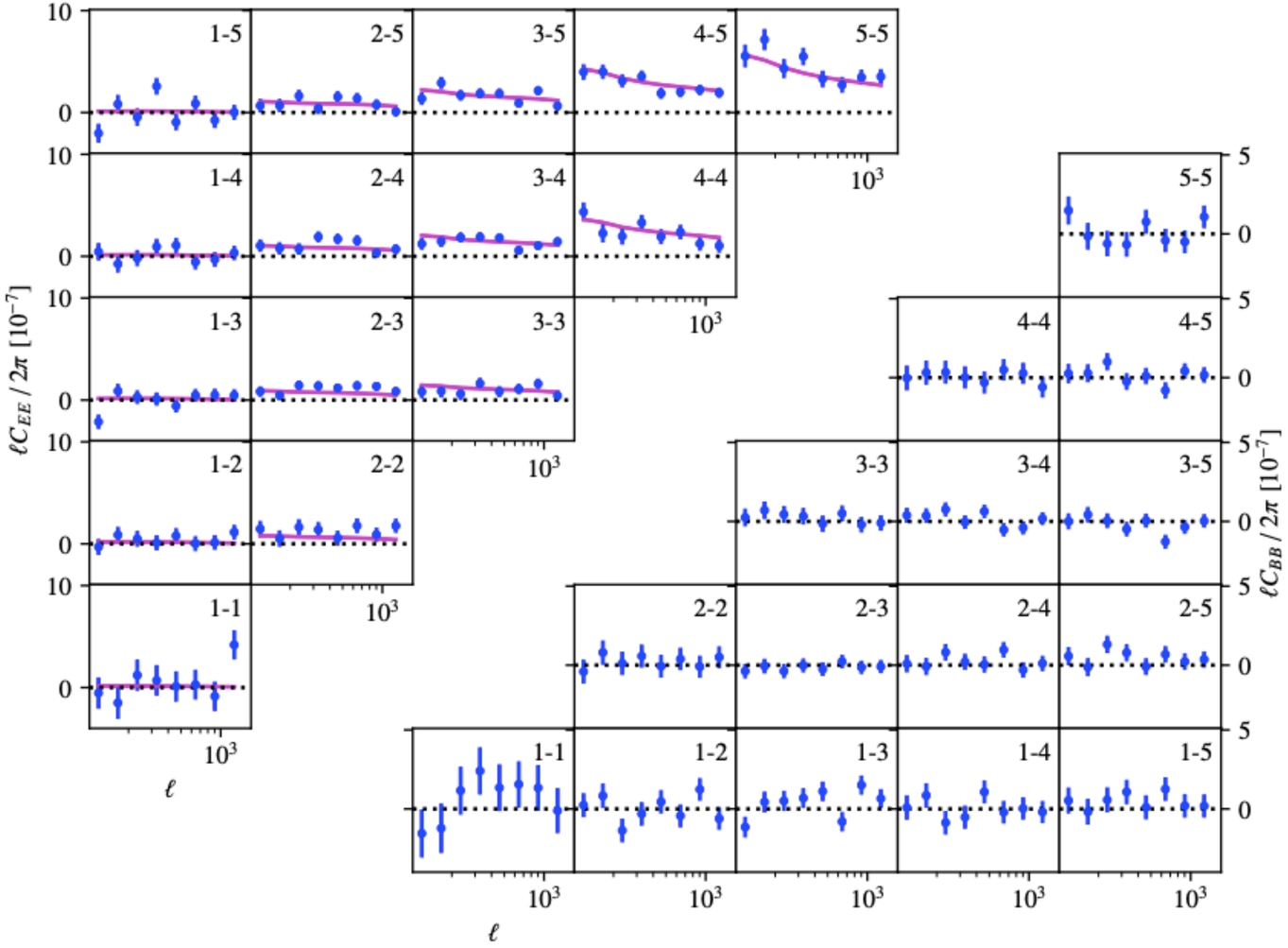
Predictions

Contacts: Asgari, Joachimi, Lin

Contains:

- Theoretical 3x2pt predictions for the best-fit cosmology of Heymans et al. (2020).
- Theoretical ξ_+/- predictions for various S_8 values for use in PSF systematics tests (Giblin et al. 2020).
- Theoretical predictions & KCAP input files for mock analysis in Joachimi et al. (2020).

Heymans et al. (2020)



data

Contacts: Asgari, Heymans, Joachimi

Contains:

- ξ_+/-, COSEBIs & C(ell) data vectors (Asgari+20) & covariance in fits table format (made by 2pt_stats_to_fits).
- Shear calibration corrections (Kannawadi+19) for various SOM samples (Wright+20).
- KiDS-1000 n(z)'s - Hildebrandt+20
- BOSS clustering data - Heymans+20.
- 3x2pt covariance - Joachimi+20.

Hildebrandt et al. (2020)