

FIRST RESULTS ON HSC CLUSTERING

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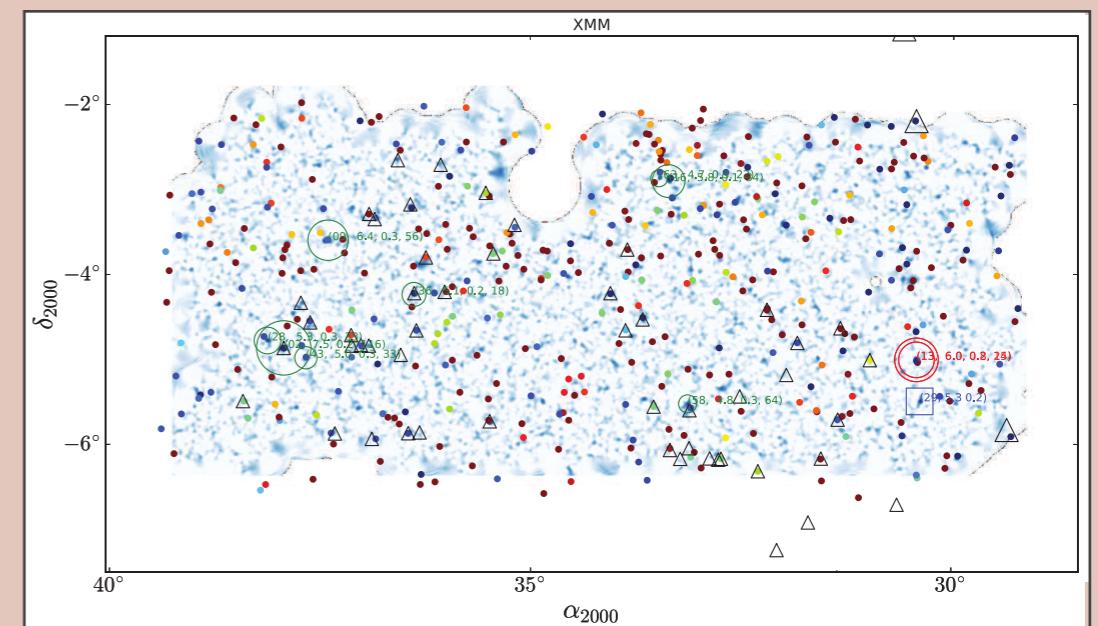
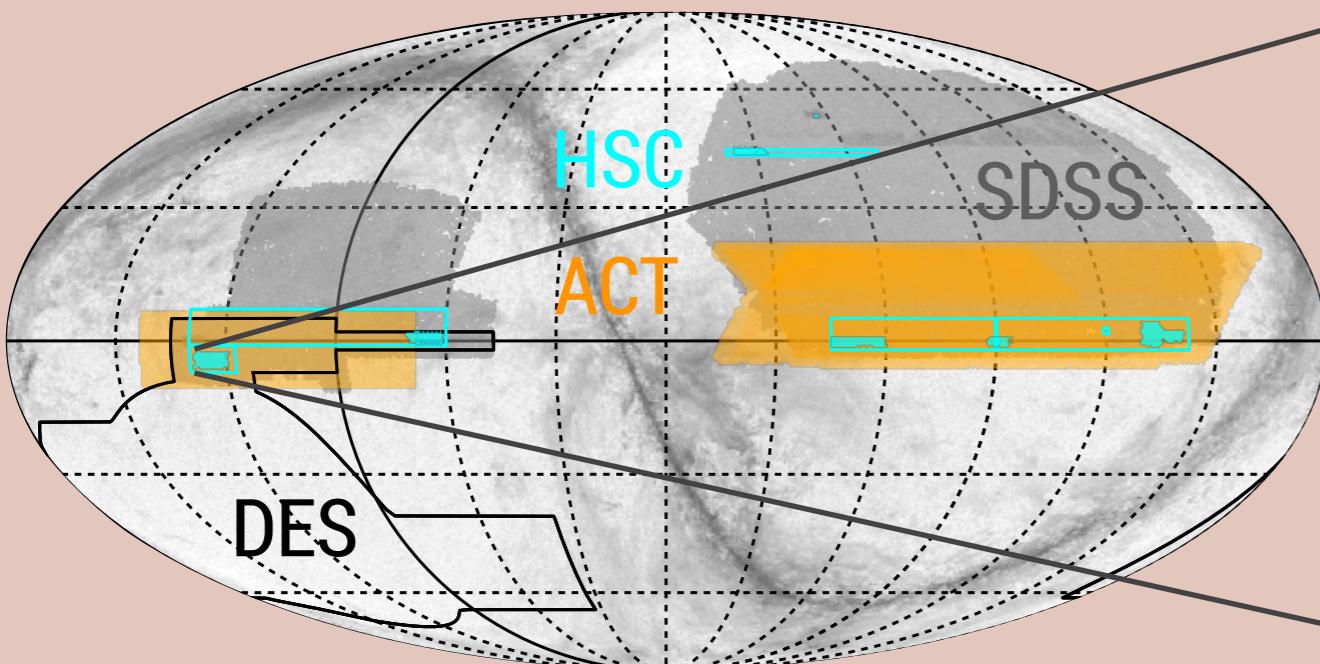
Kyoto, March 7th, 2019

HYPER SUPRIME CAM (HSC) SURVEY

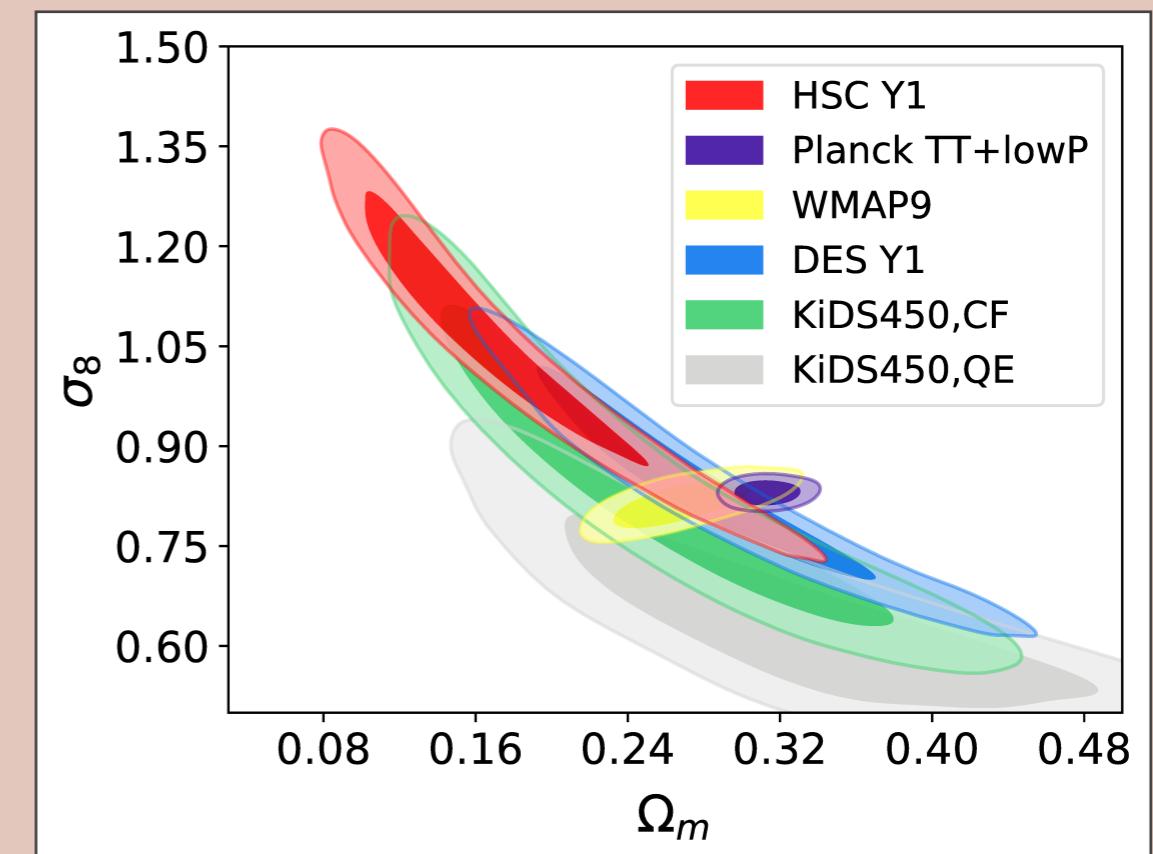
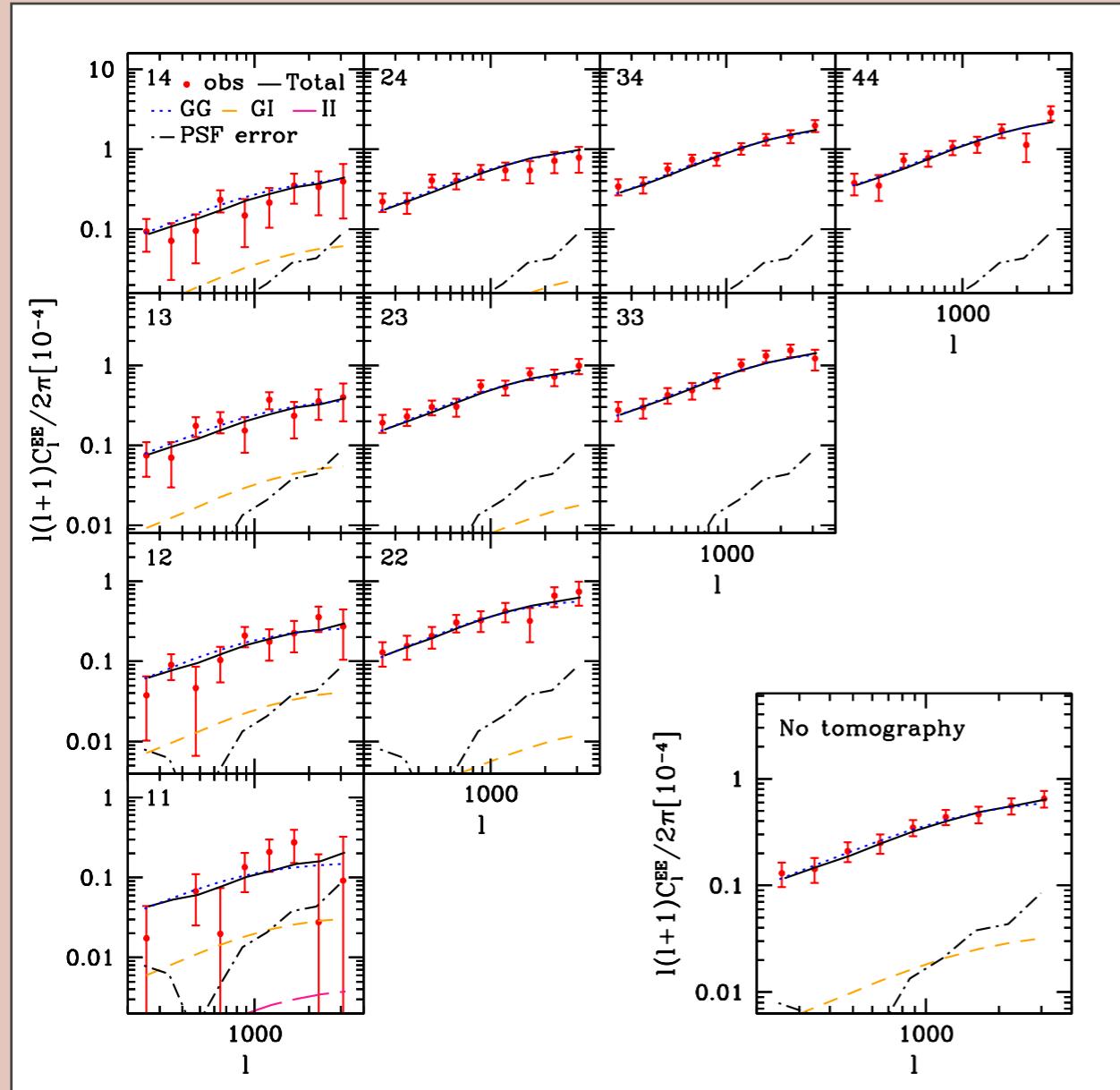
HSC: 5-year survey, covering 1400 sq. deg.

Most analyses focused on 150 sq. deg. (DR1)

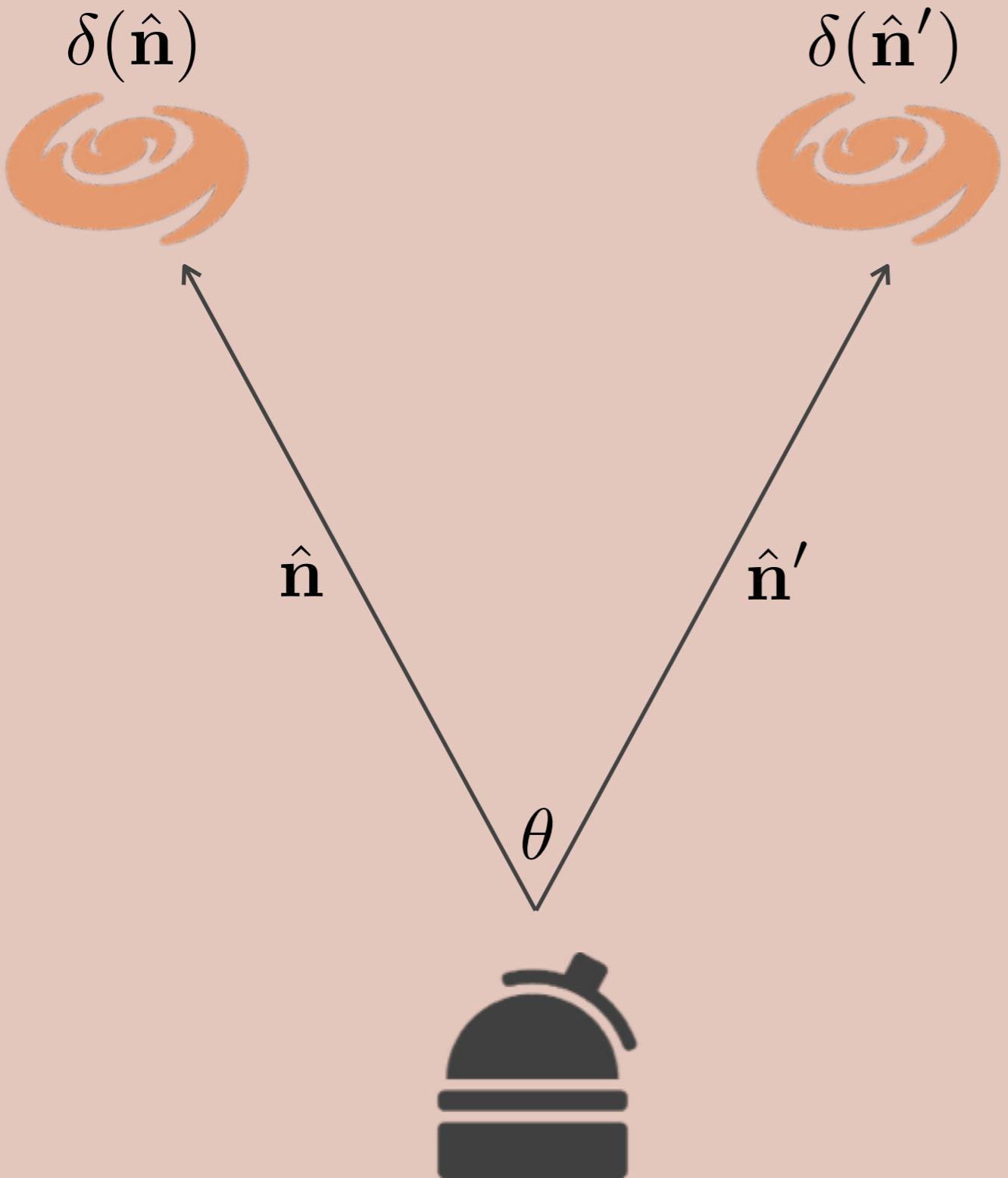
Deep, very good seeing



HSC COSMIC SHEAR



GALAXY CLUSTERING



$$w(\theta) = \langle \delta(\hat{\mathbf{n}})\delta(\hat{\mathbf{n}}') \rangle$$

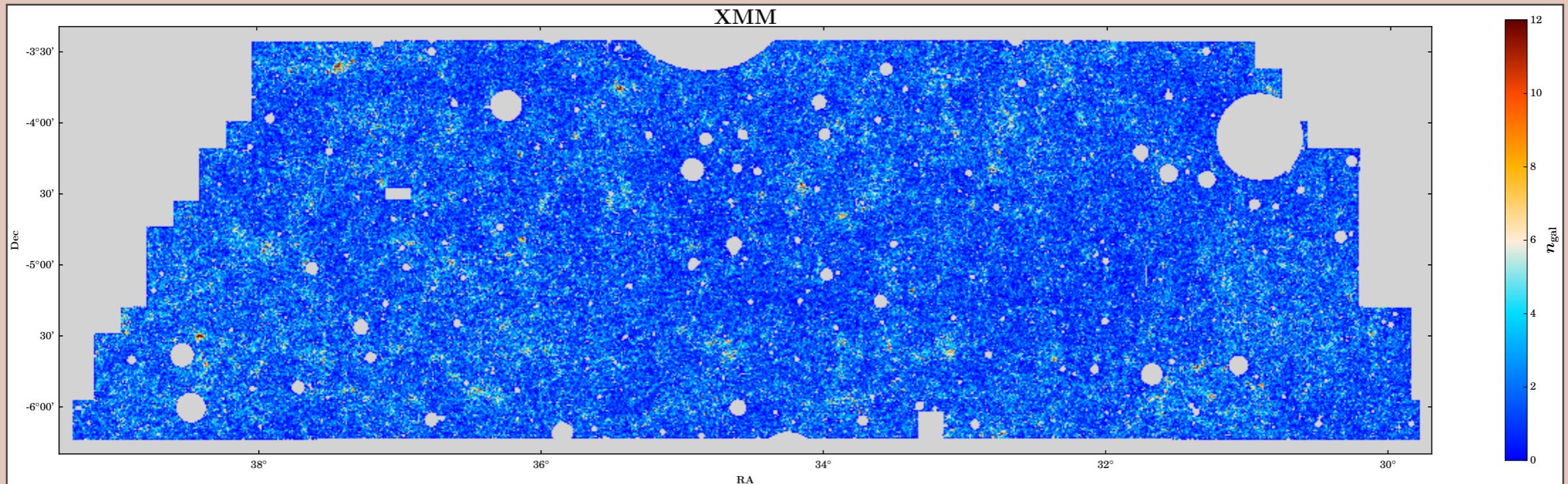
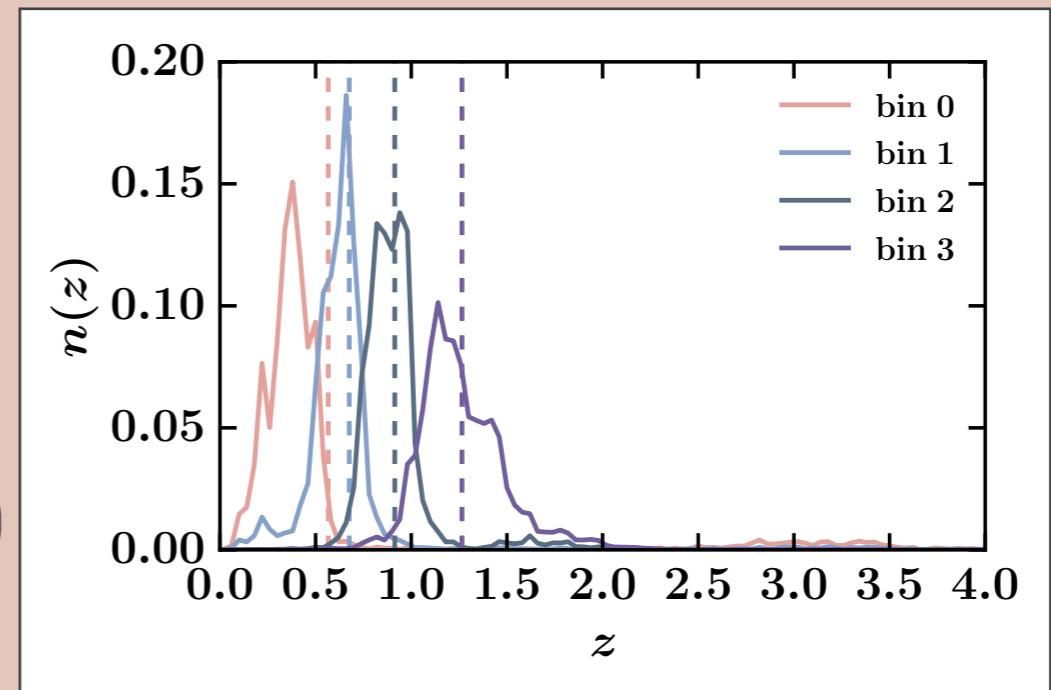
$$C_\ell = \langle \delta_{\ell m} \delta_{\ell m} \rangle$$

HSC CLUSTERING

Preliminary
HSC DR1 data

Galaxies with $\text{mag}_i < 24.5$

4 redshift bins: 0.15-0.50, 0.50-0.75,
0.75-1.00, 1.00-1.50

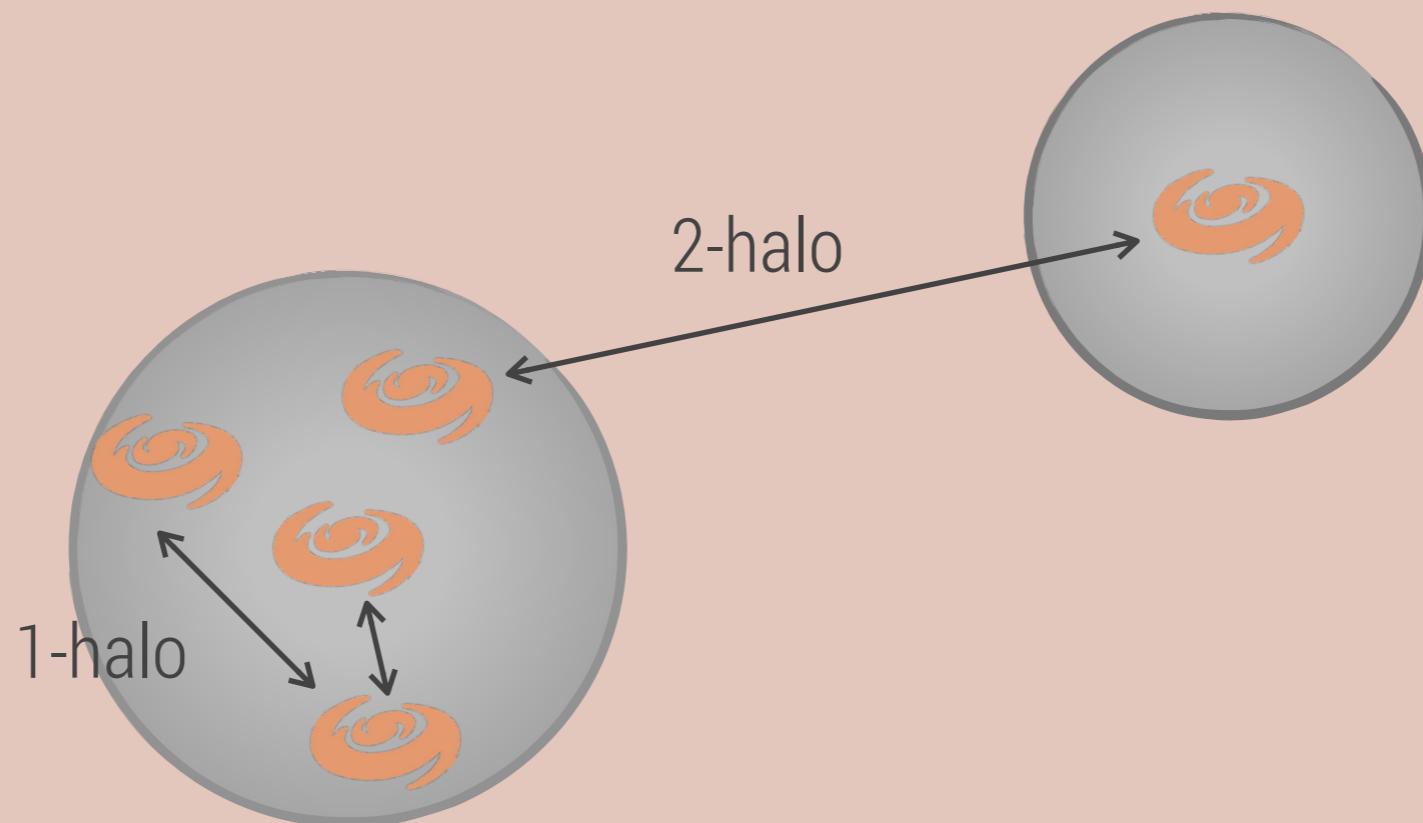


THEORETICAL MODELING

Small-scale clustering ($k_{\max} \sim 1 \text{ Mpc}^{-1}$)

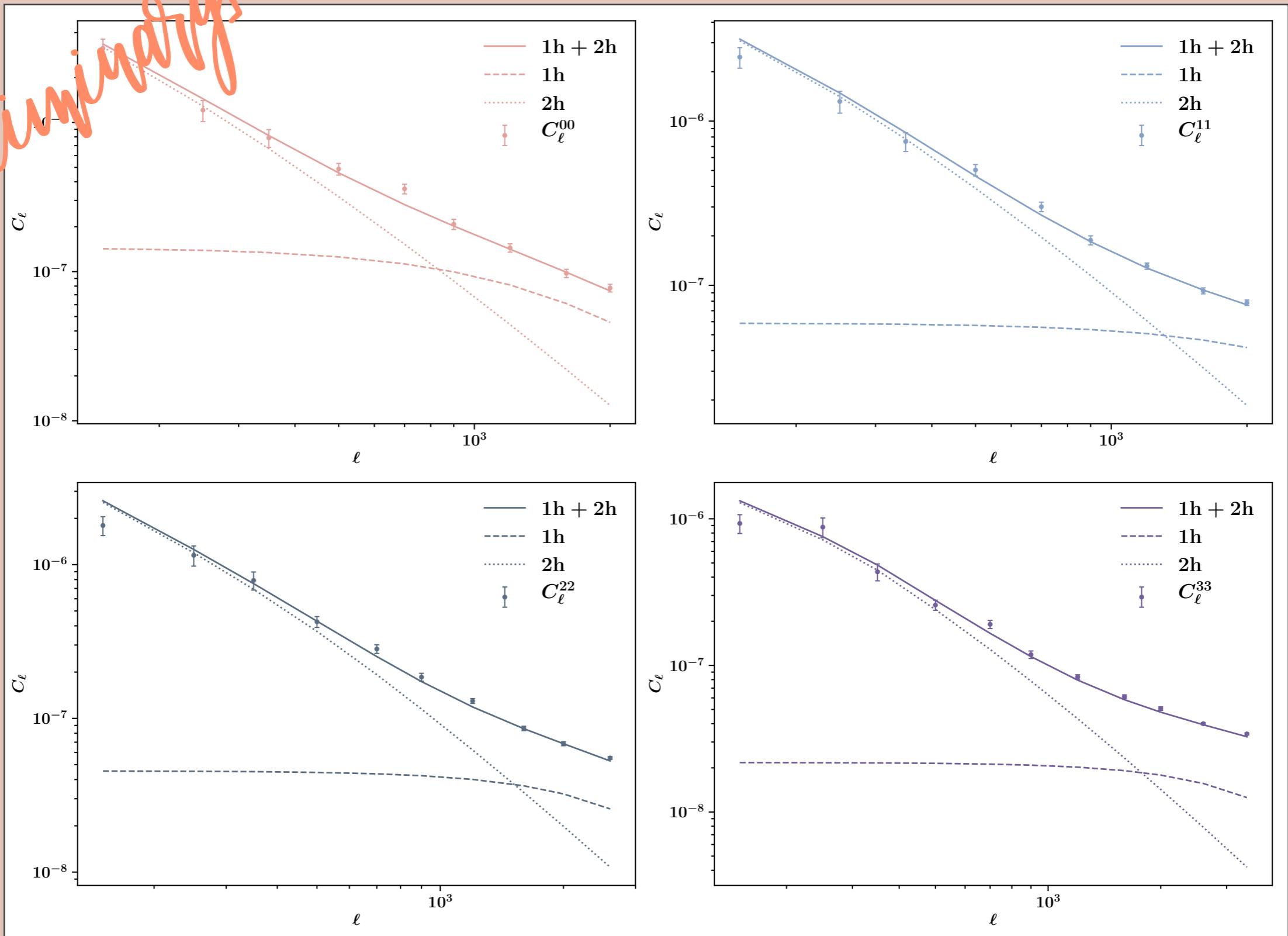
Halo model (e.g. Seljak 2000, Peacock *et al.*, 2000, Ma *et al.*, 2000)

Halo occupation distribution (e.g. Berlind & Weinberg, 2002)



POWER SPECTRA

Preliminary

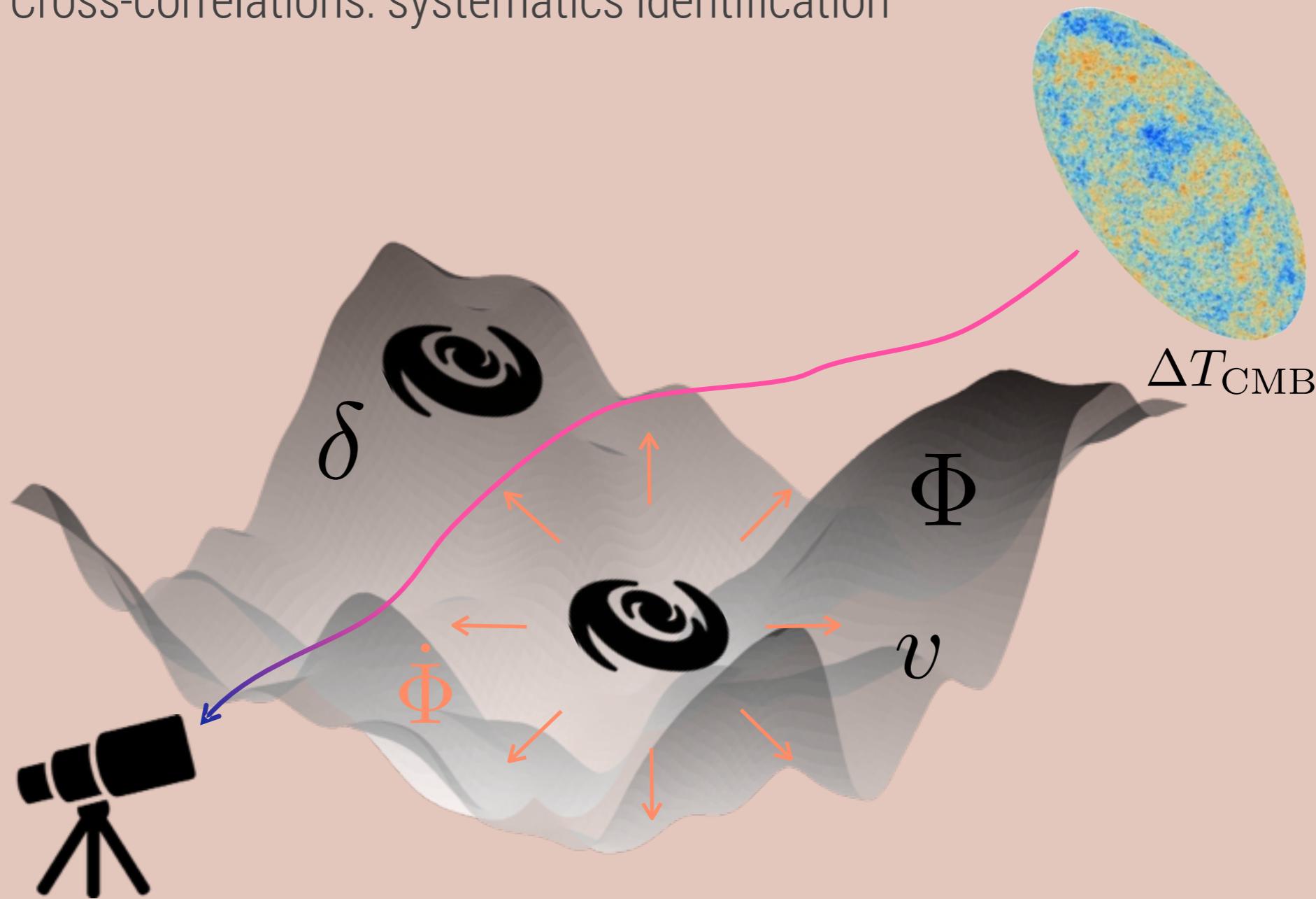


POTENTIAL OF INTEGRATED ANALYSES

Tighter constraints due to complementary information

Robust tests of cosmological model by comparing consistency of different tracers

Cross-correlations: systematics identification



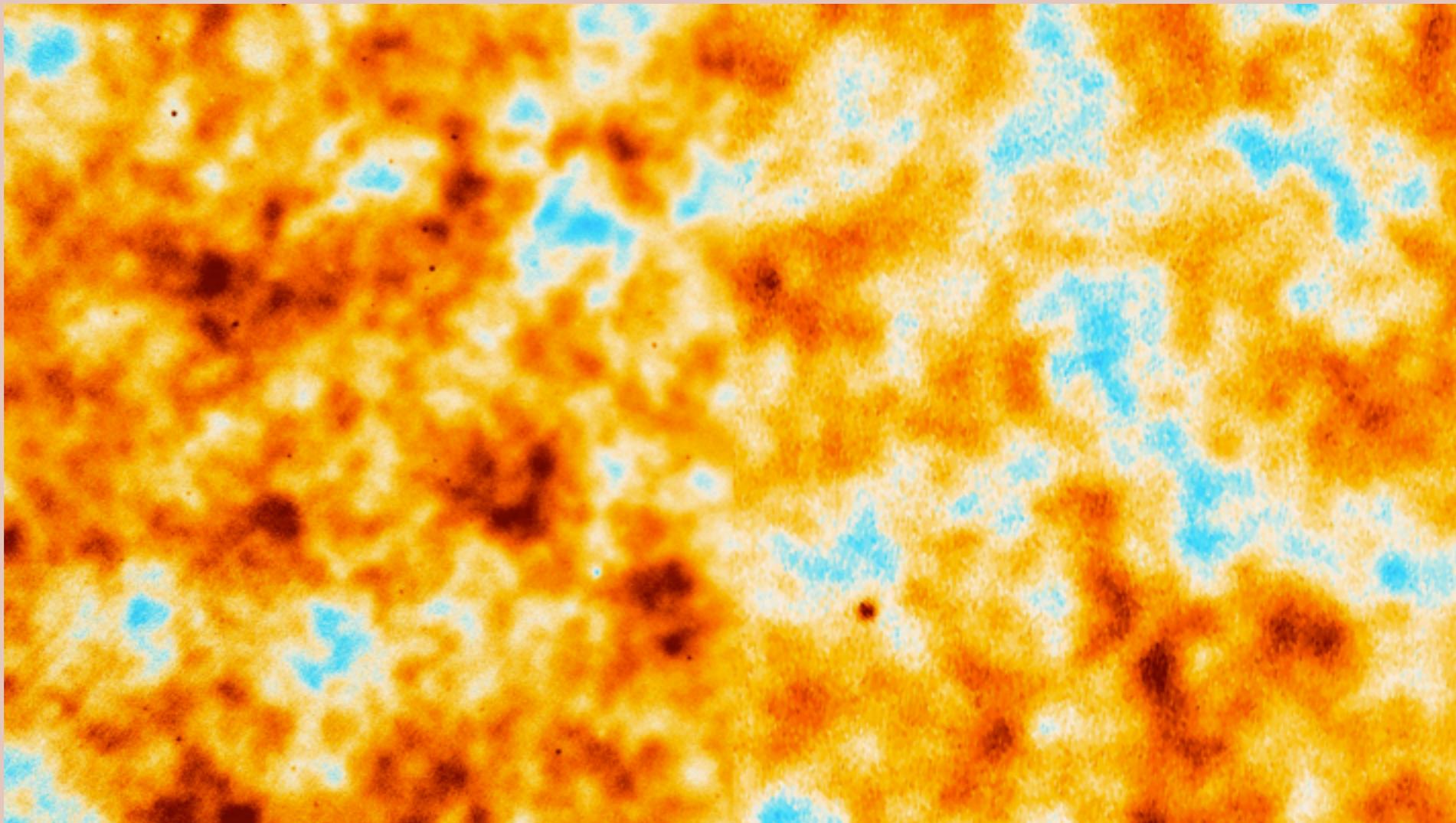
ATACAMA COSMOLOGY TELESCOPE (ACT)

ACT: 6-year survey, covering 20'000 sq. deg.

s13-s15/s16 data to be released soon

Current data: ~ 3000 sq. deg. at 90 & 150 GHz

Results on temperature, polarization and CMB lensing soon



Movie: Sigurd K. Næss

JOINT ANALYSIS HSC-ACT

Combination of HSC weak lensing and clustering with ACT CMB lensing

Investigation of impact of photometric redshift uncertainties

Internal HSC consistency check

External systematics calibration

SUMMARY

First results on measurement of photometric galaxy clustering with HSC DR1 data within LSST DESC

Constraints on Halo Occupation Distribution parameters

First step toward joint analysis of HSC clustering & weak lensing with CMB lensing from ACT



Messi vielwoll!

(for reference: Thank you in swiss german)