



**Co-
evolution of
galaxy and
haloes in
CFHTLenS**

Preliminary

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Galaxies and Dark Matter Halos

- What is the relationship between dark matter halos and their stellar content?
- How do the dark and stellar components evolve?

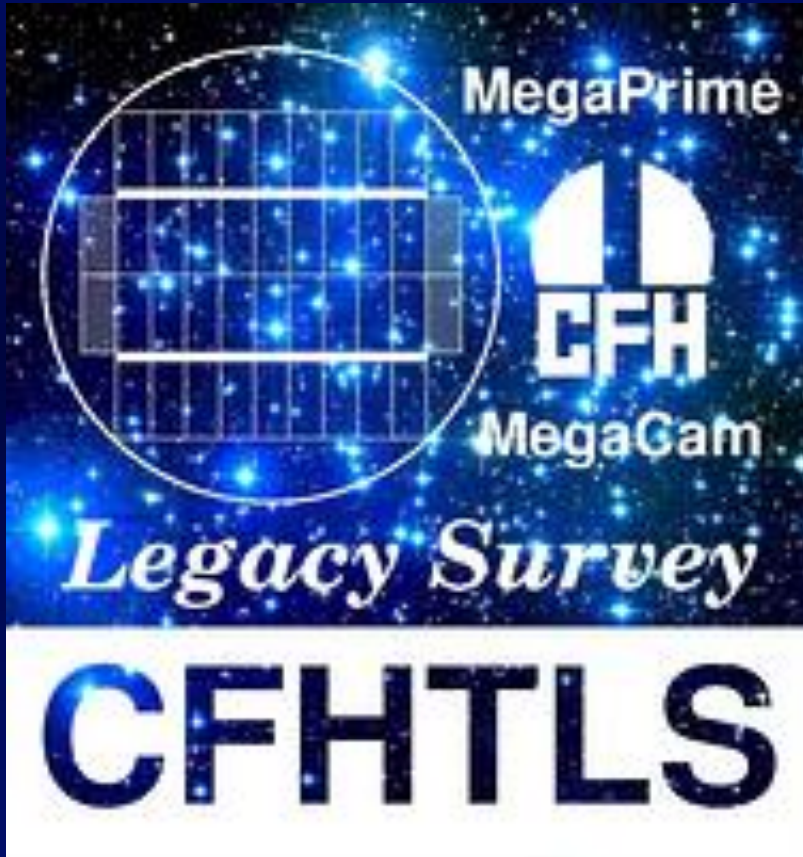


Weak Lensing

- Gravitational lensing leads to weak tangential distortion.
- *Background* galaxies are randomly oriented but not circular
- S/N per *foreground* lens galaxy $\ll 1$
- Need to *stack* many thousands of lens galaxies
- Independent of dynamical state



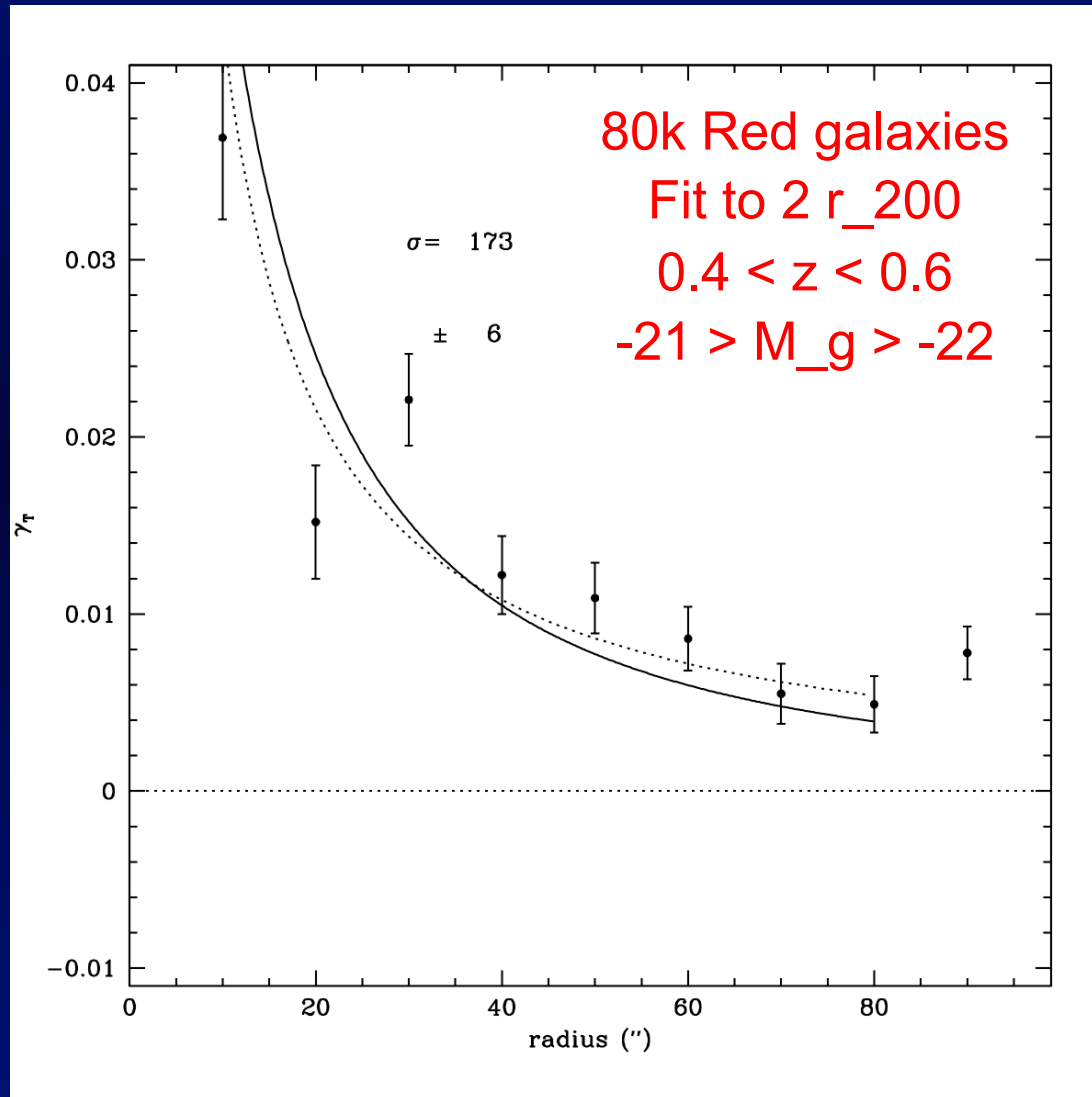
CFHTLS-Wide



- 170 sq degree
 u^*griz
- Photo- z good to
 ~ 0.05 in z down to
 $i=24.5$ for $0.15 < z < 1.4$. Outliers $< 5\%$
- Shapes derived by
CFHTLenS team

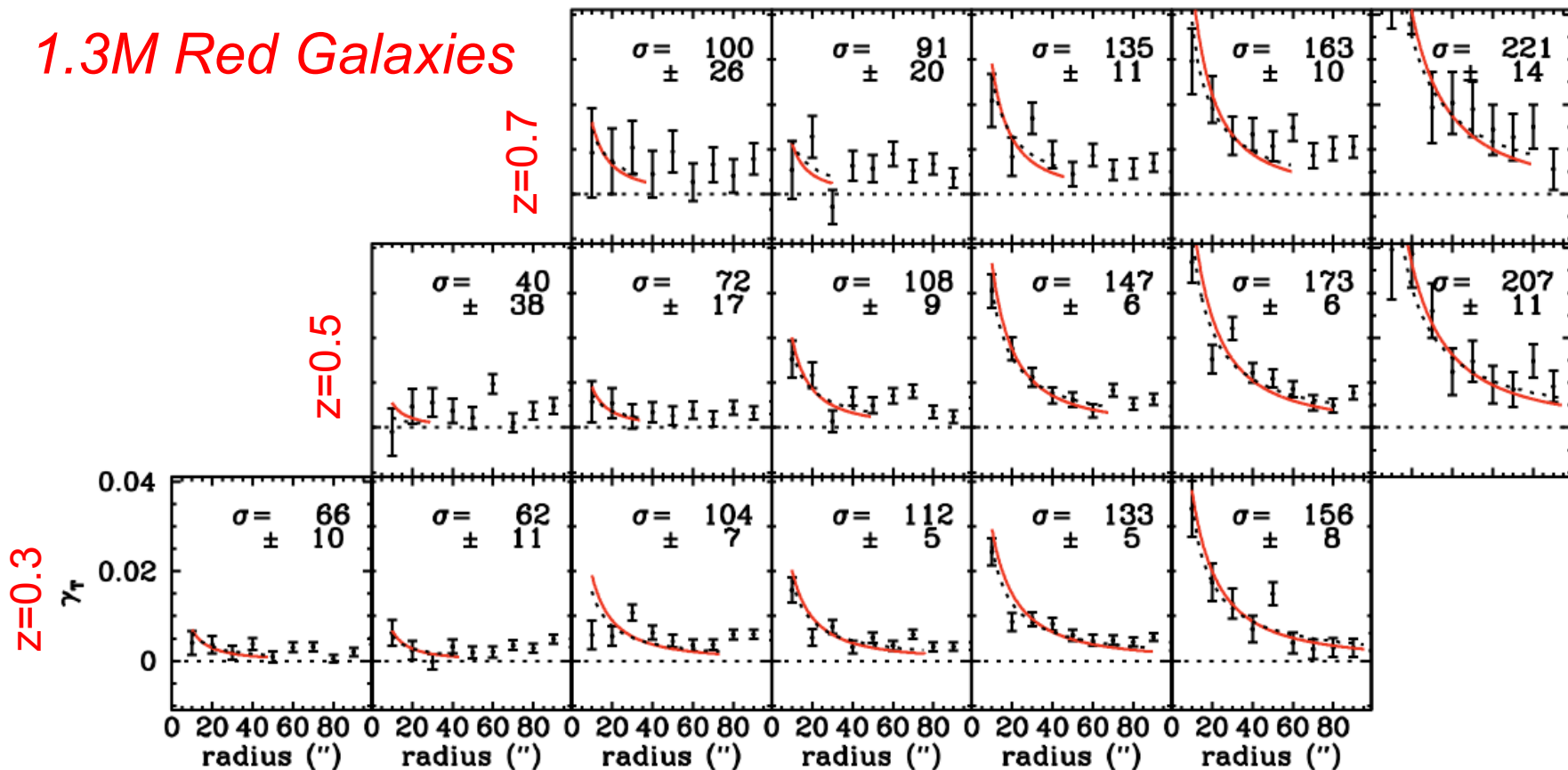


CFHTLS-WIDE with photo-z



CFHTLS-WIDE with photo-z

1.3M Red Galaxies

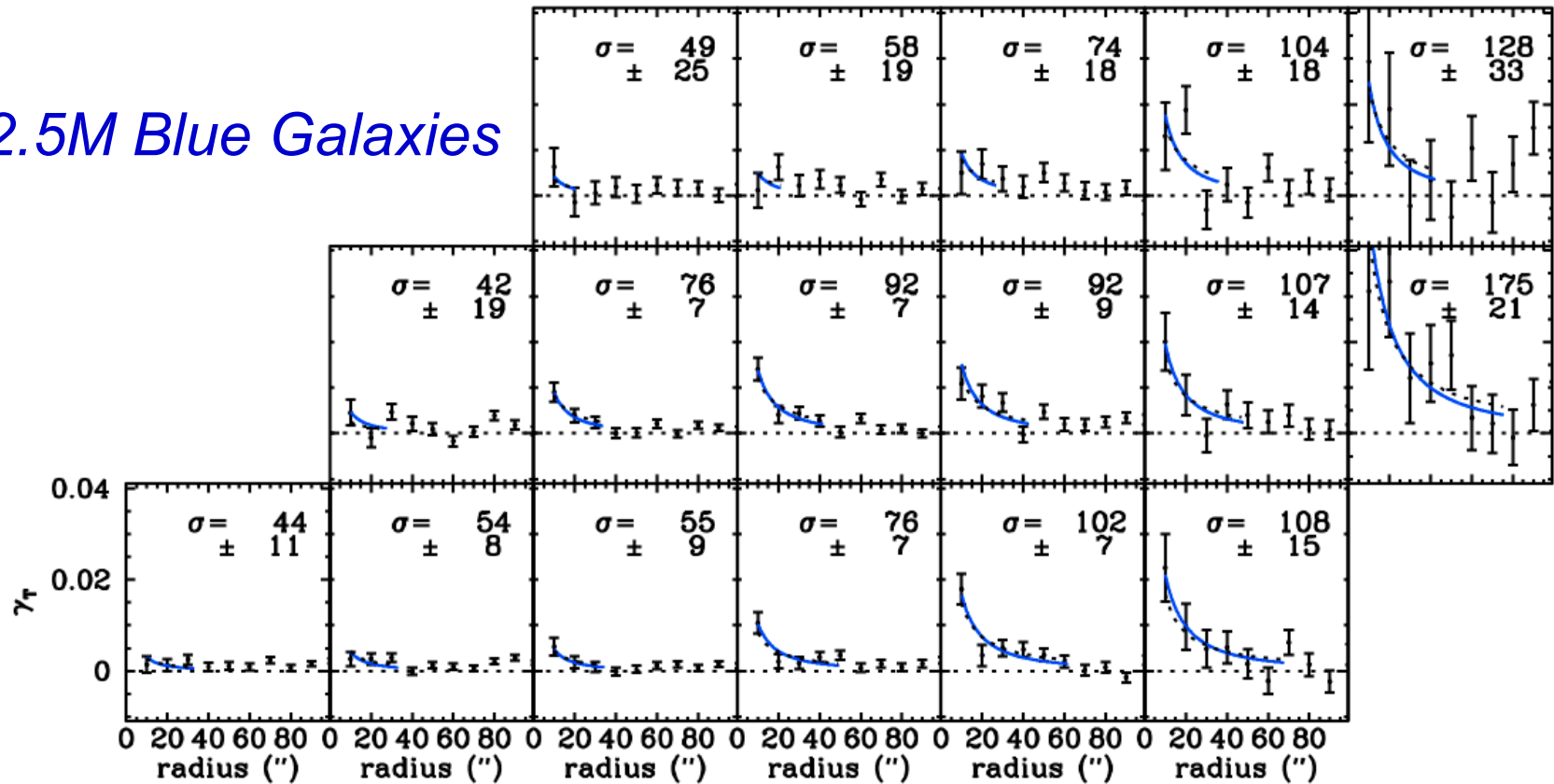


Brighter ->

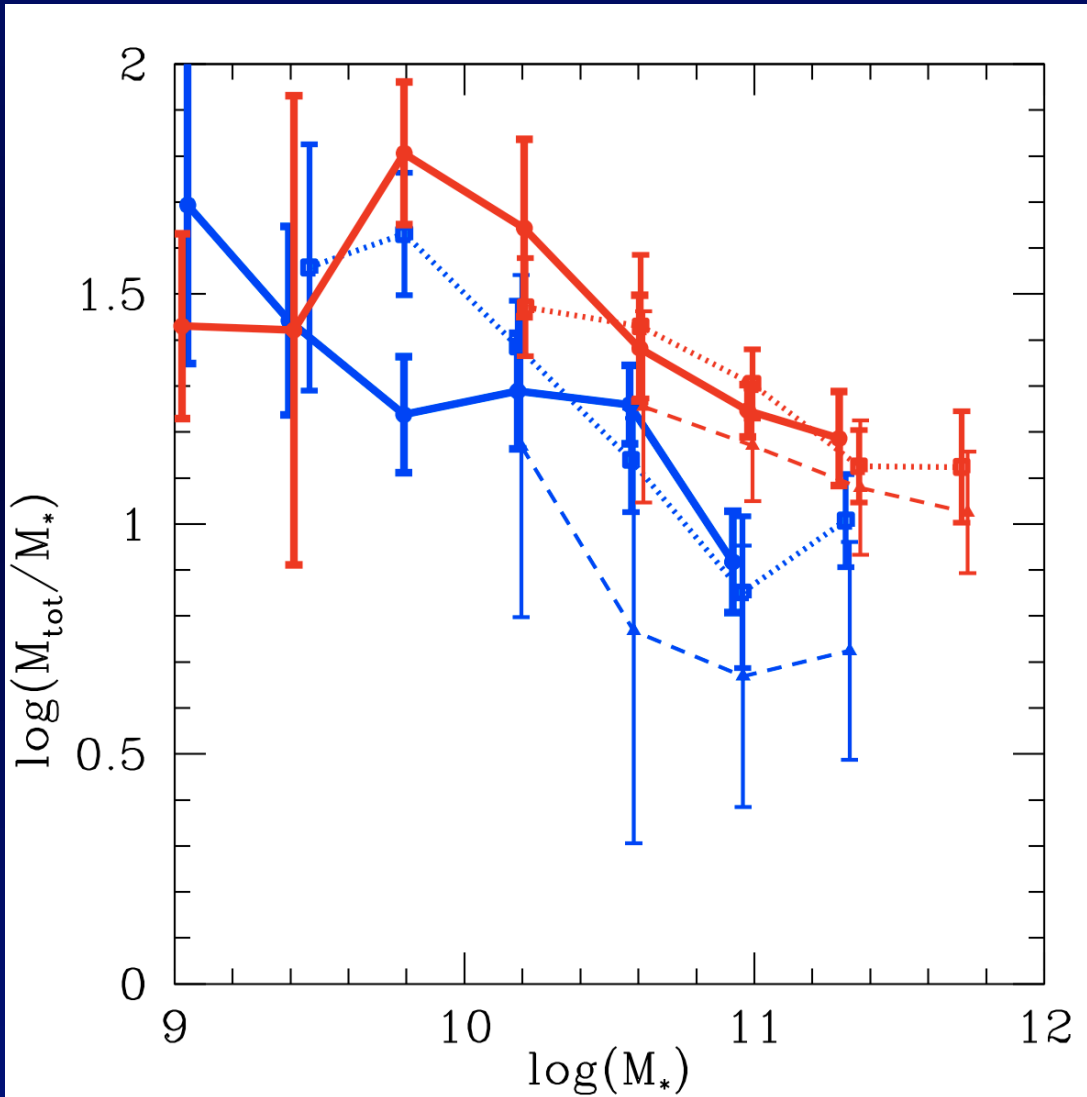


CFHTLS-WIDE with photo-z

2.5M Blue Galaxies



Co-evolution of stellar and total mass



Red galaxies

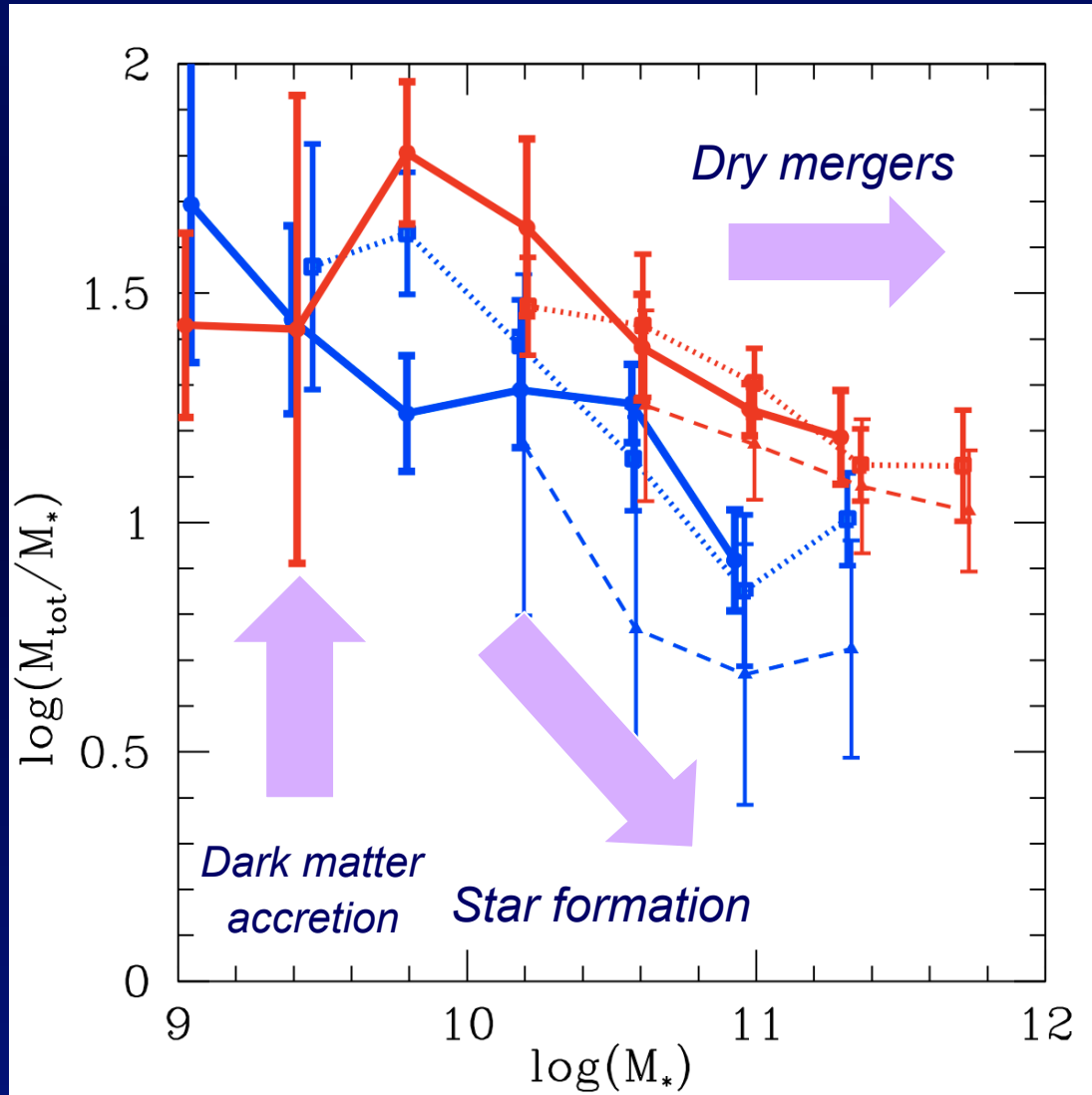
Blue galaxies :

Solid: z = 0.3

Dotted: z=0.5

Dashed z=0.7

Co-evolution of stellar and total mass



Red galaxies

Blue galaxies :

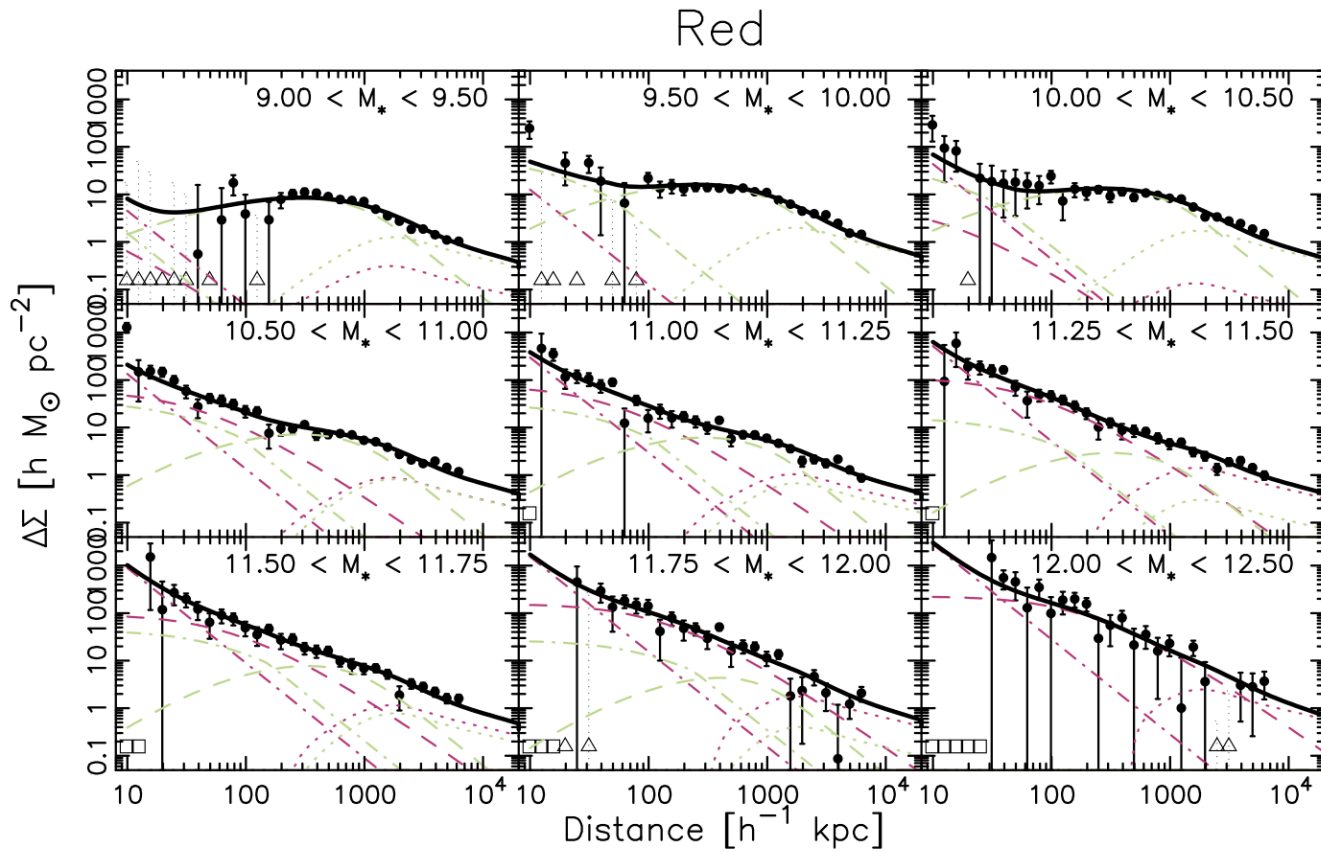
Solid: $z = 0.3$

Dotted: $z=0.5$

Dashed $z=0.7$



Halo Model fits



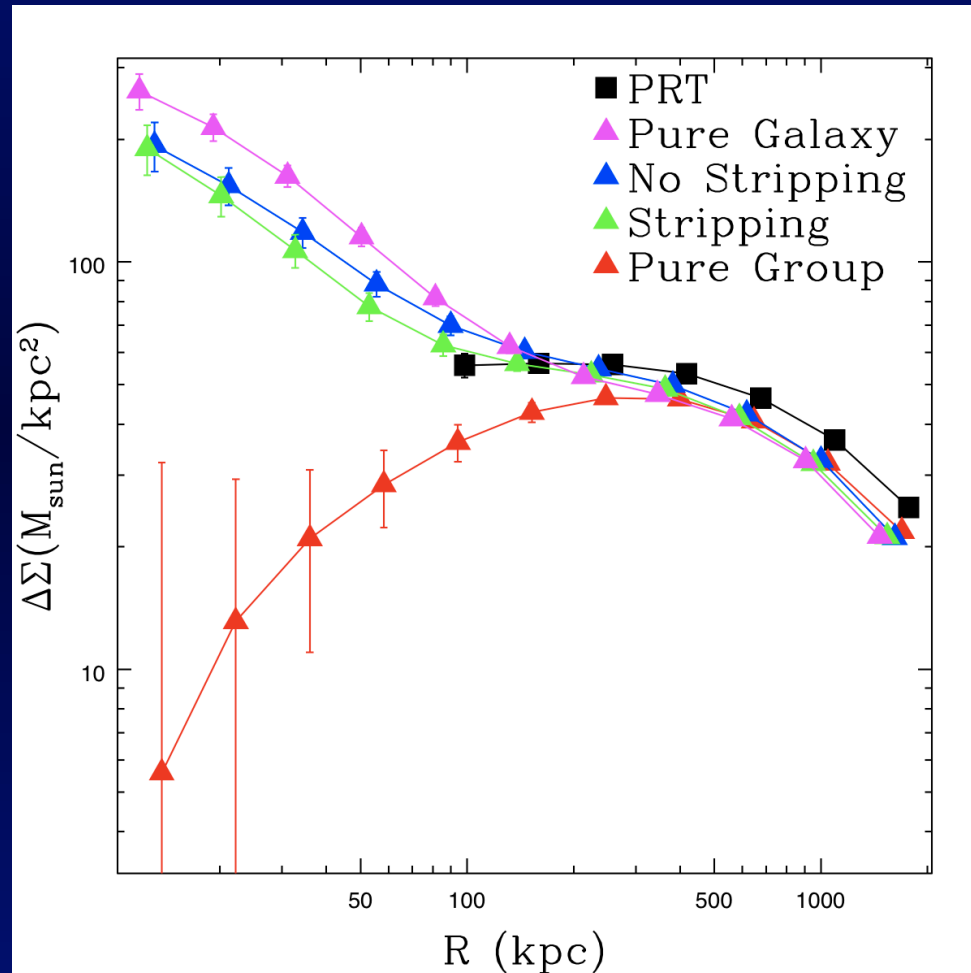
Velandar et al, in prep.



Larger-scale Environment

Stripping of
dark matter
haloes in
groups

See poster by
Bryan Gillis



Work in Progress

Full 170 sq deg of CFHTLS enables sub-samples by

- morphology
- luminosity and stellar mass
- redshift

Scaling relations and evolution of galaxy dark matter haloes

Critical for understanding galaxy evolution

- Halo shapes (T. Schrabback)
- **Environment (B. Gillis – Poster 5.13)**
- Clusters (M. Milkeraitis, K. Holmhem)
- Large-scale bias (C. Bonnett)
- Halo Occupation Distribution (HOD) models (M. Verlander)
- Galaxy-galaxy-galaxy lensing (P. Simon)

Stay tuned! Coming to a journal near you this summer



