CMAS(S) o CMENOS?!

MultiDark SAMs *meet* THE BOSS

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What?!

Galacticus
Benson+12

BOSS-CMASS
DR 12 Alam+15

BOSS-CMASS GALAXIES

- most luminous red galaxies
- $0.43 < z < 0.75$
- centres of clusters/superclusters (Lietzen+12)
- constant mass, passive evolution!?
- tracing large scale structure, probing cosmology …
- galaxy formation and evolution … etc.

SDSS-III **B**aryon **O**scillation **S**pectroscopic **S**urvey

Schlegel+09, Eisenstein+11, Anderson+12, Dawson+13/+16 ++

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System of Colour Cuts*

$$d_\perp > 0.55$$
$$m_{AB_i} < 19.86 + 1.6(d_\perp - 0.8)$$
$$17.5 < m_{AB_i} < 19.9$$
$$m_{AB_r} - m_{AB_i} < 2$$

where

$$d_\perp = (m_{AB_r} - m_{AB_i}) - (m_{AB_g} - m_{AB_r})/8.0$$

*http://www.sdss.org/dr12/algorithms/boss_galaxy_ts/

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composite color

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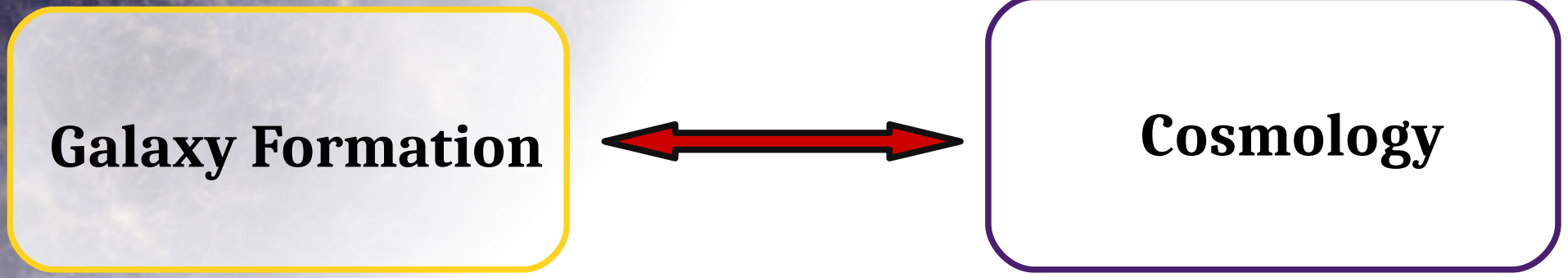
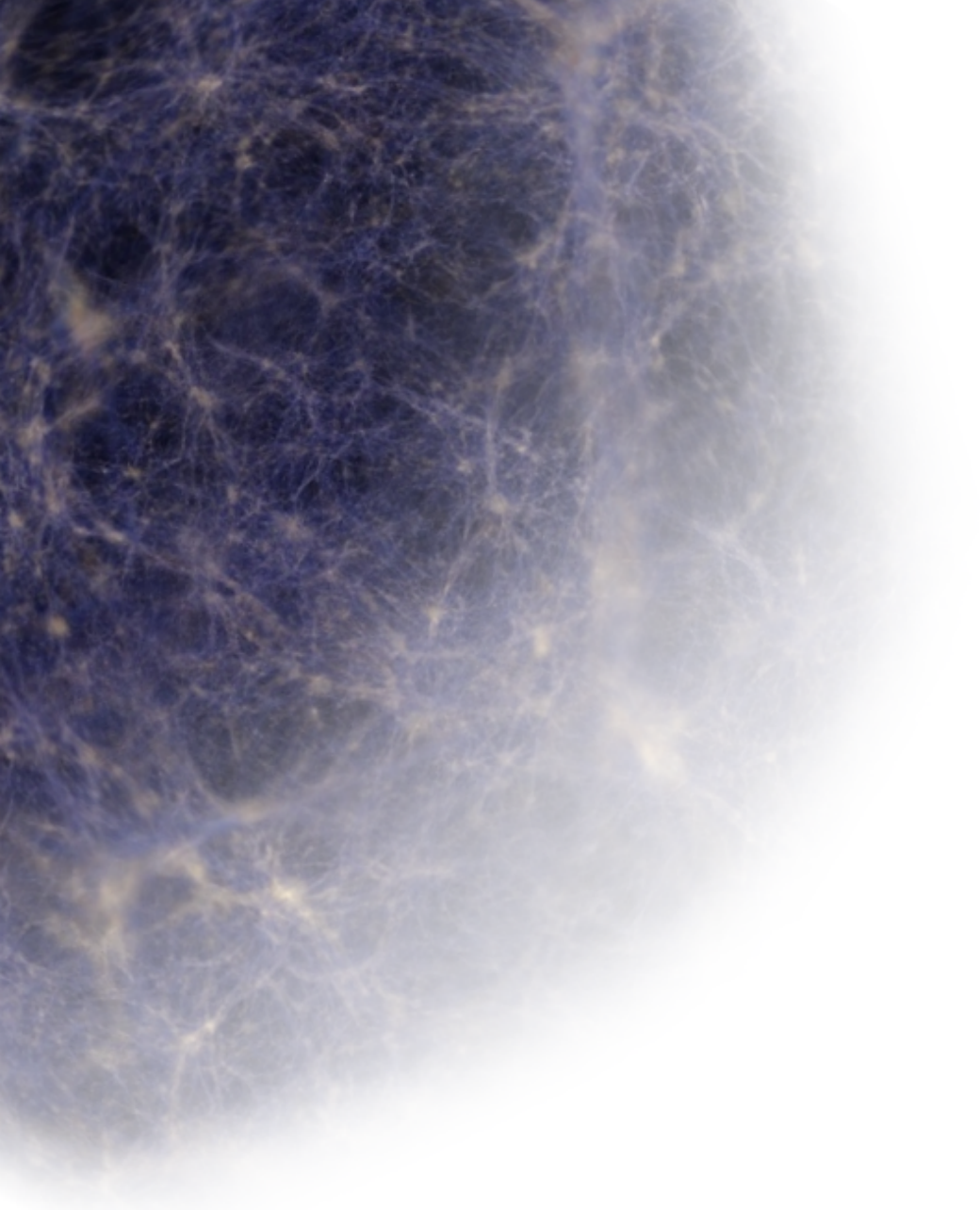
Why?!





How?!

Studying Galaxy Catalogues

BOSS DR12

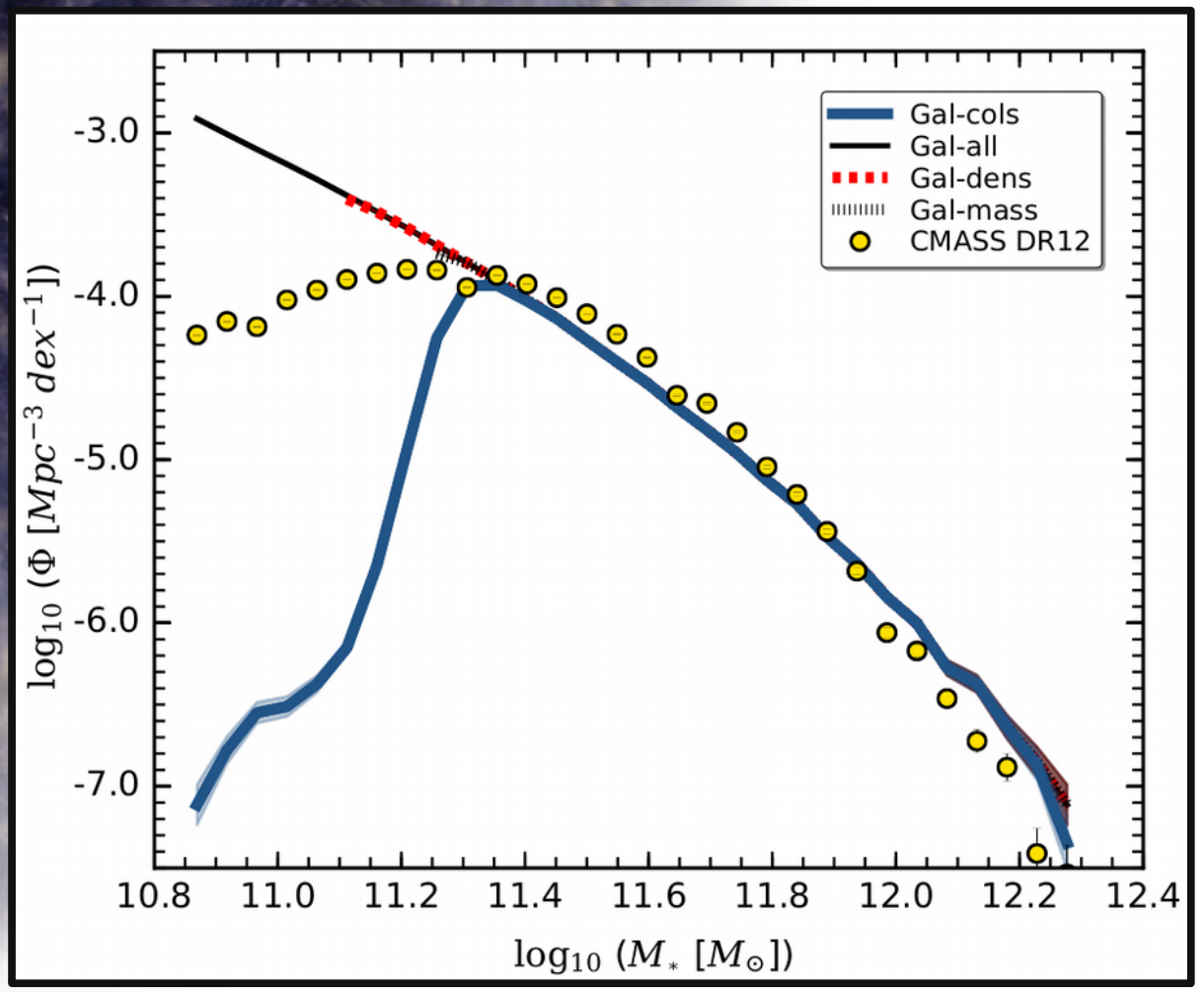
LSS catalog*
Reid+16

Portsmouth**
- **Merged (starforming+passive)**
- **Maraston+13**

Galacticus → Apply CMASS color-cut algorithm

*https://data.sdss.org/sas/dr12/boss/lss/
**http://www.sdss.org/dr12/spectro/galaxy_portsmouth/

Three Samples for Galacticus



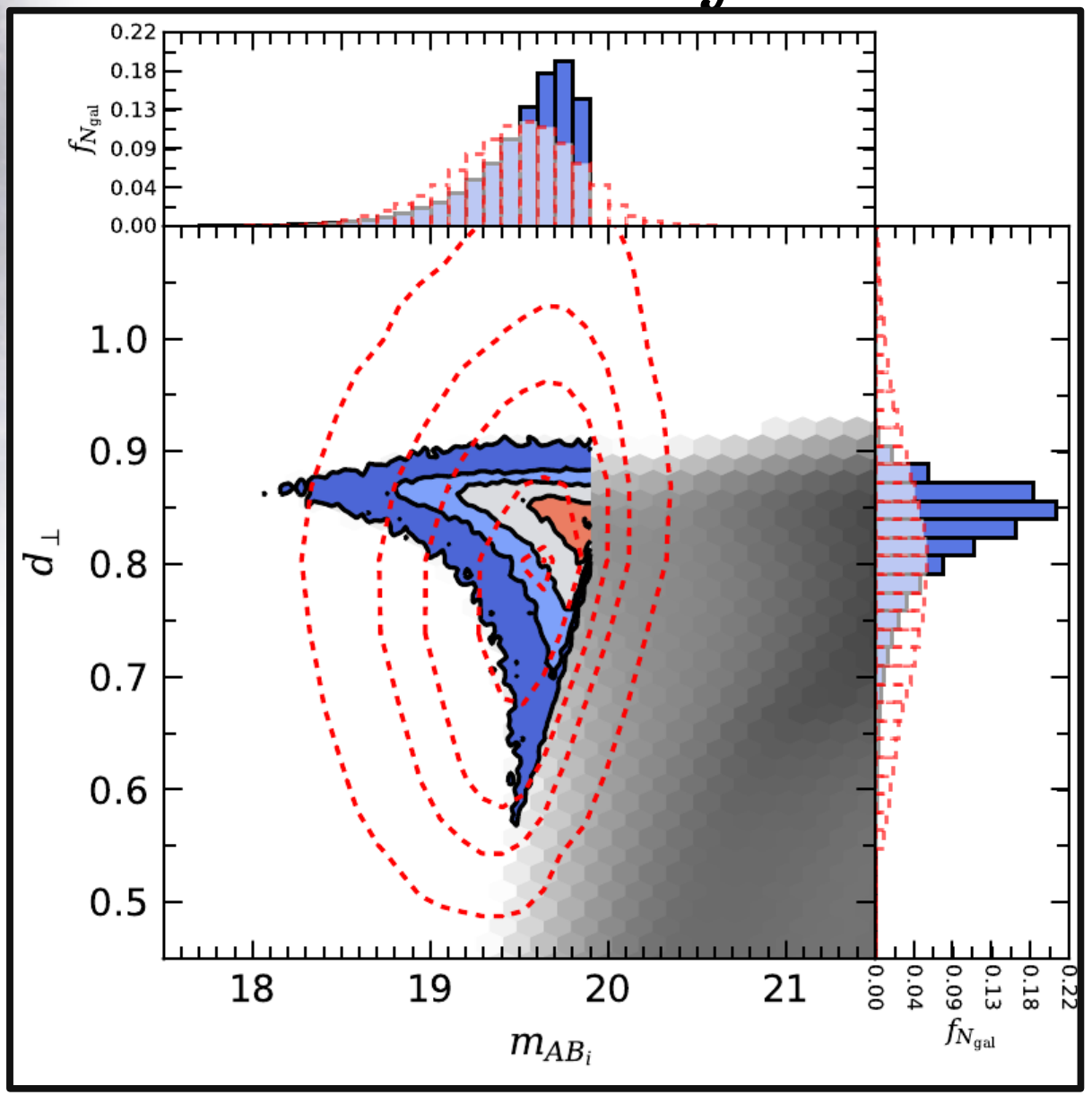
stellar mass function

CMASS color-cut algorithm "Gal-col"

number density $3.4 \times 10^{-4}\ h^{-3}Mpc^{-3}$ "Gal-dens"

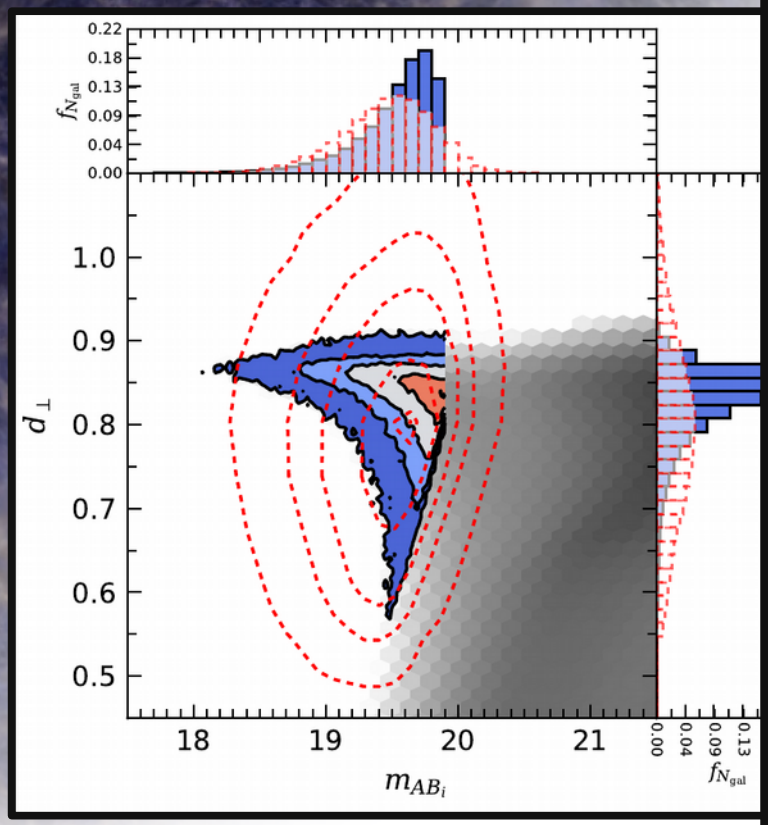
stellar mass > $1.31 \times 10^{11}\ h^{-1}Msun$ "Gal-mass"

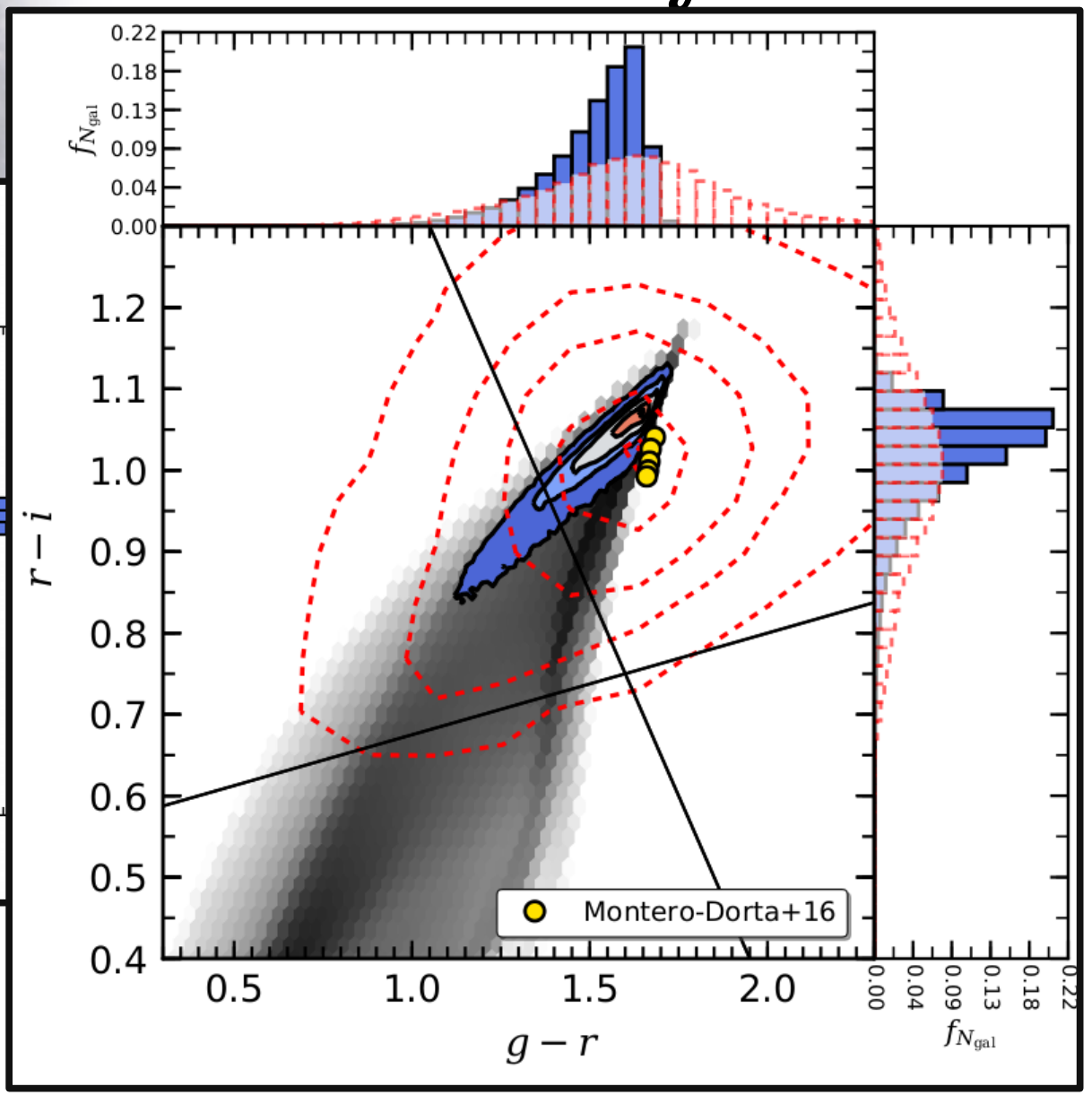
Sanity Check I



color vs. color

Sanity Check II





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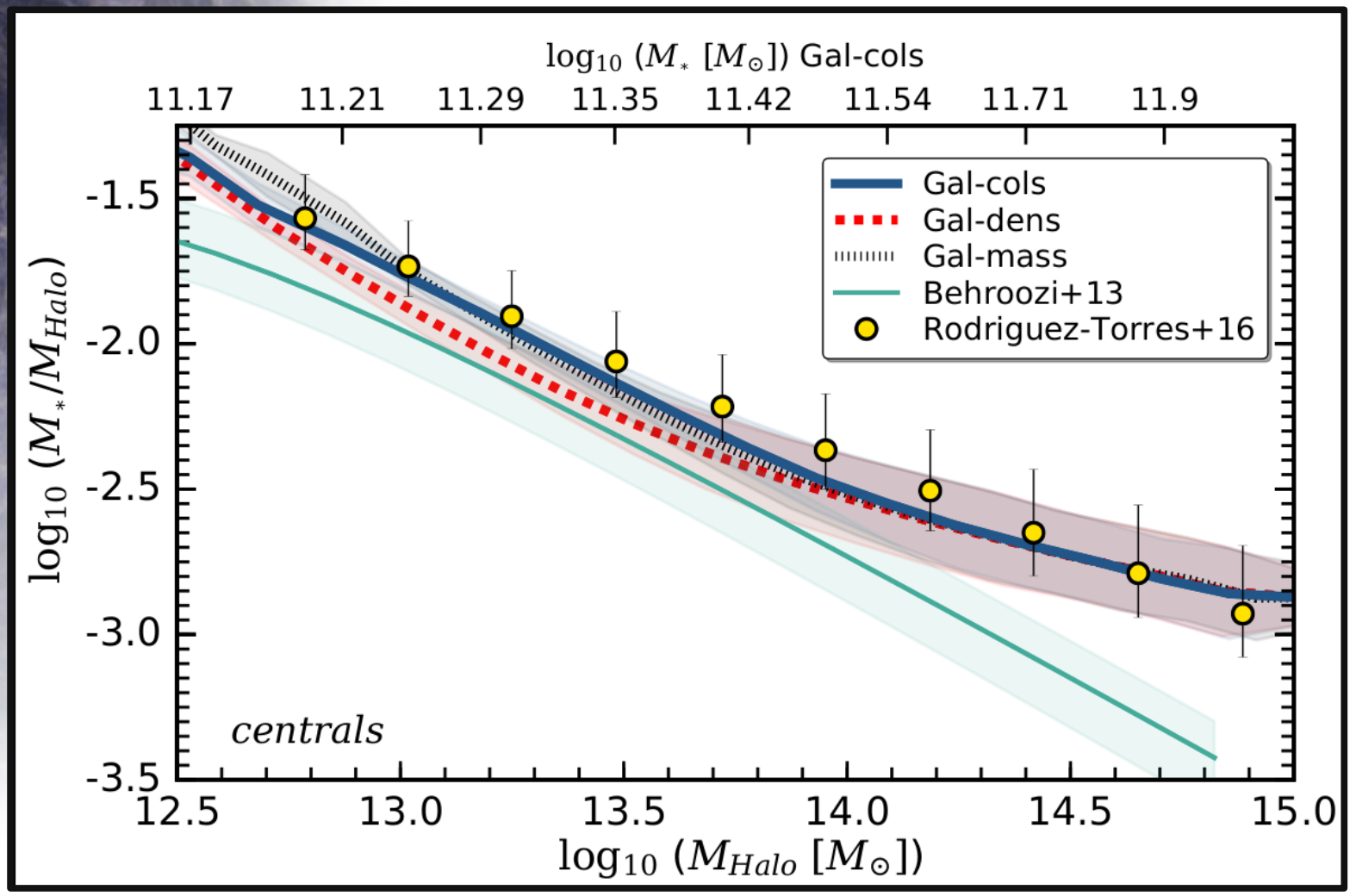
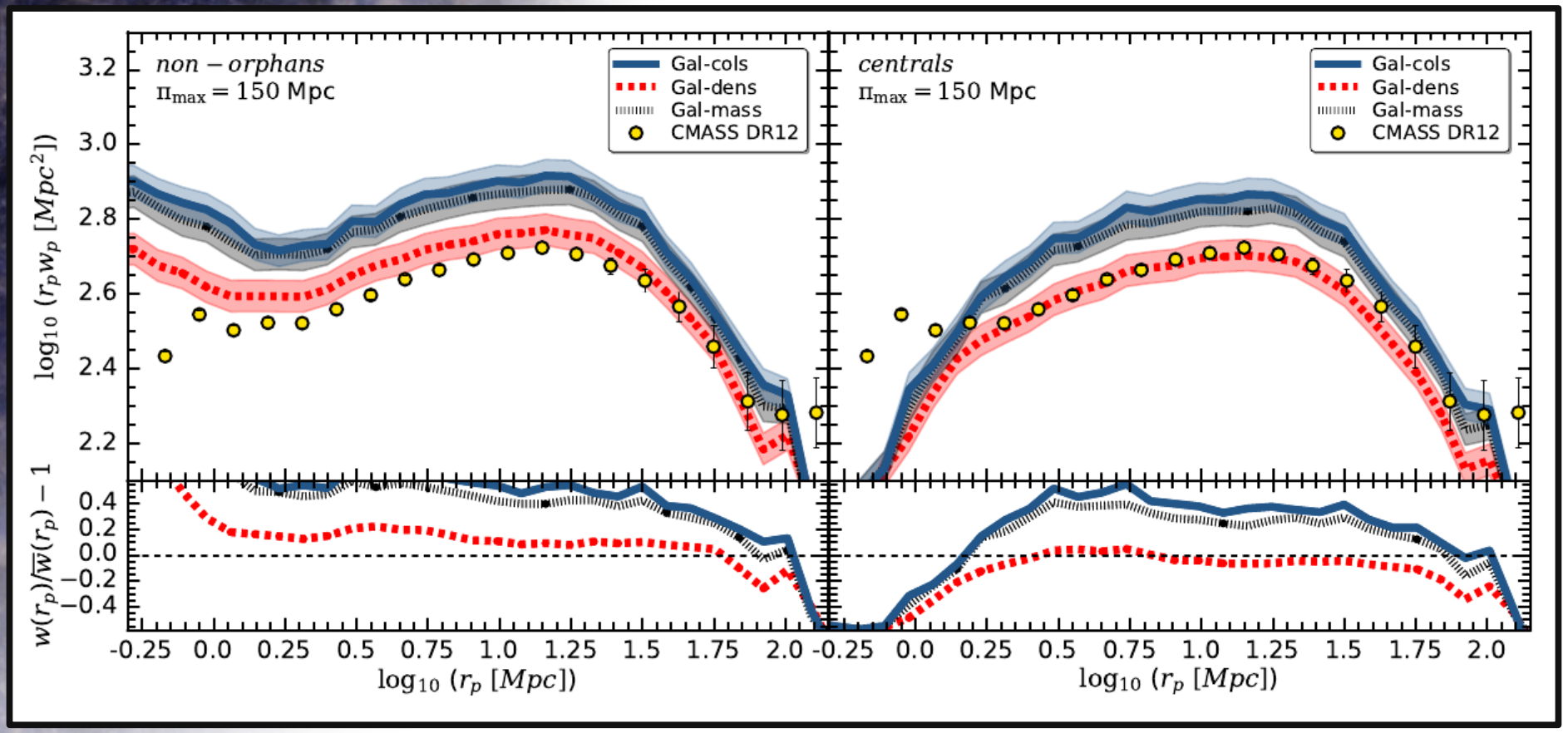
Sanity Check III



stellar mass to halo mass function

2-point Correlation Functions



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CORRFUNC Shinha et al. (2017)

https://pypi.python.org/pypi/Corrfunc
https://manodeep.github.io/Corrfunc/

MultiDark Goes SAMs

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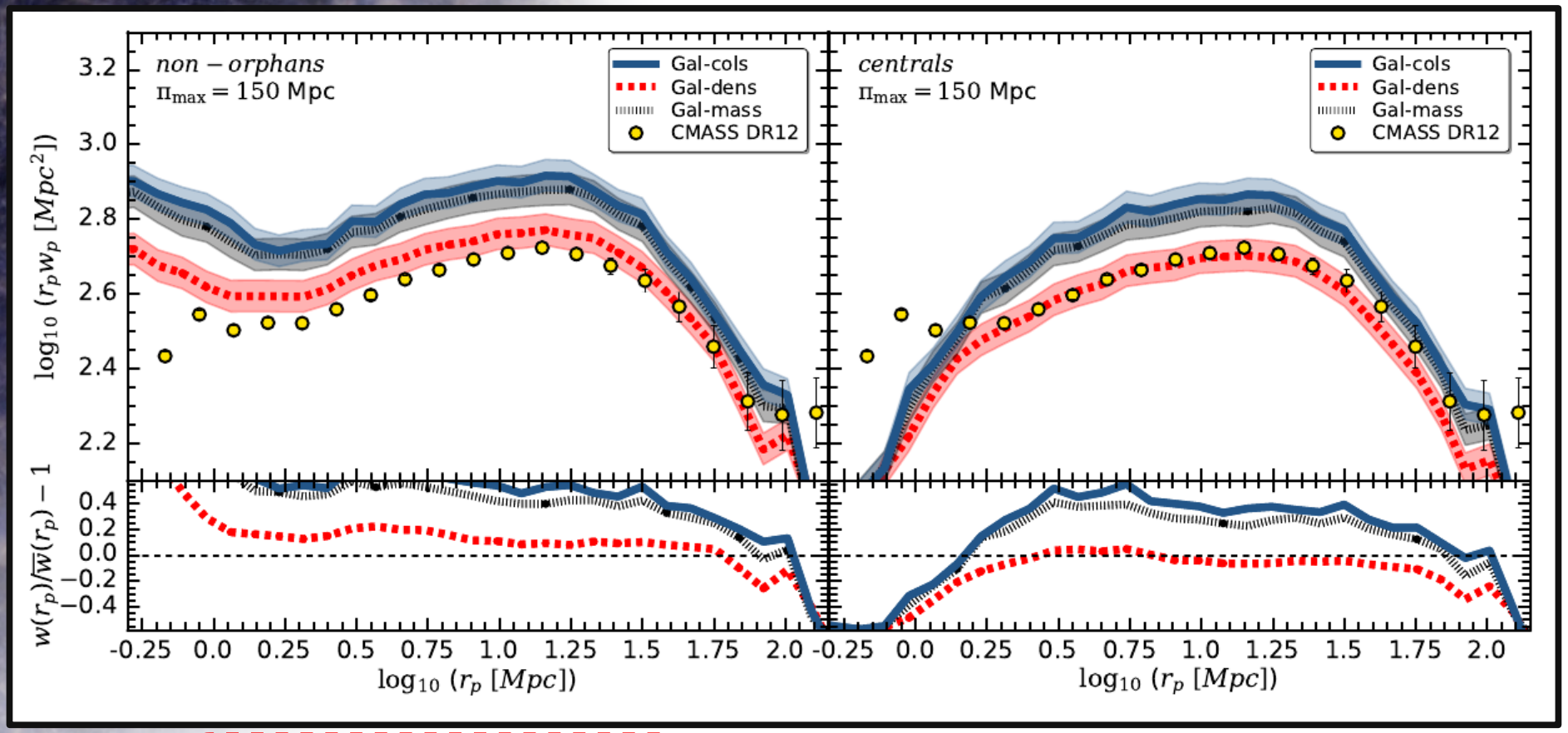

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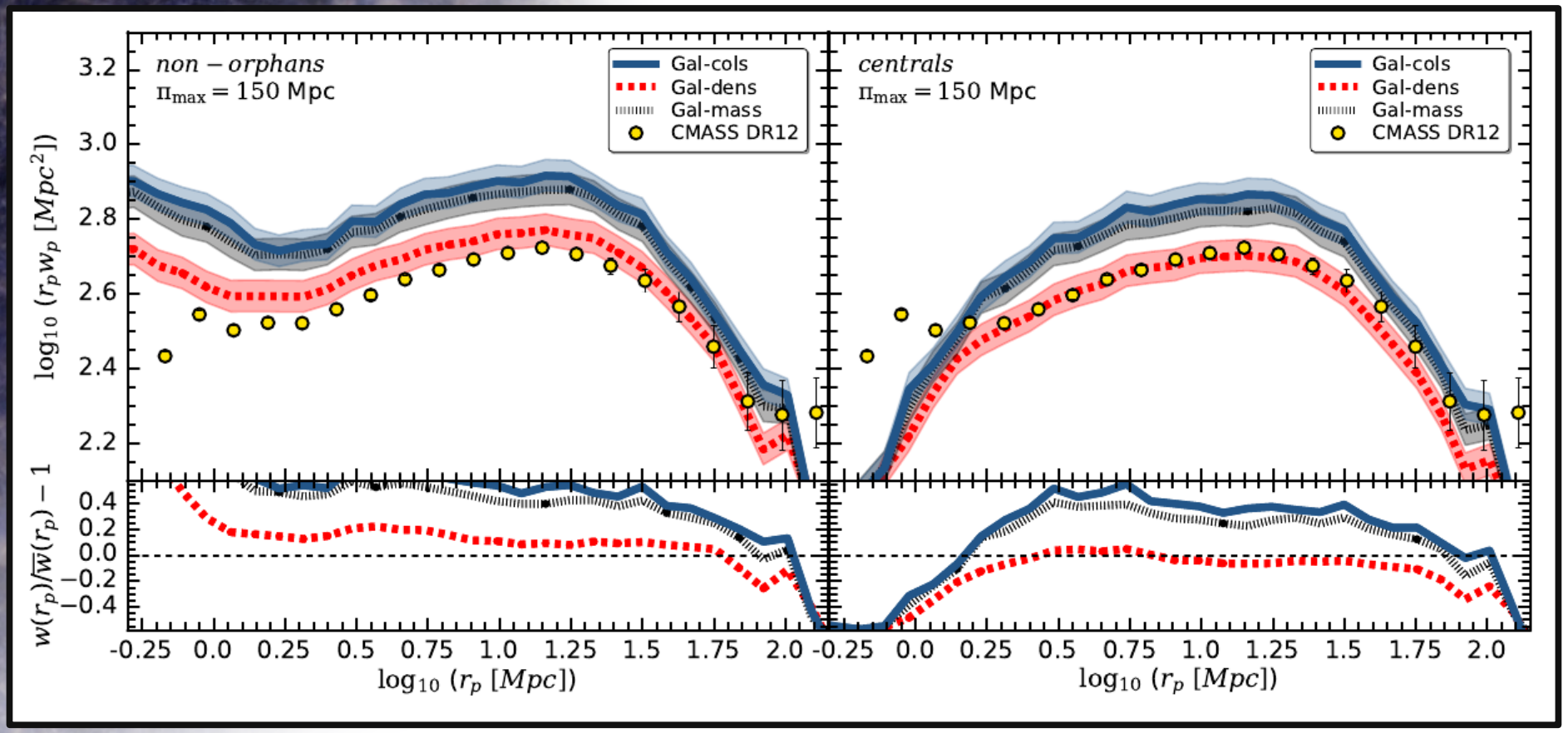

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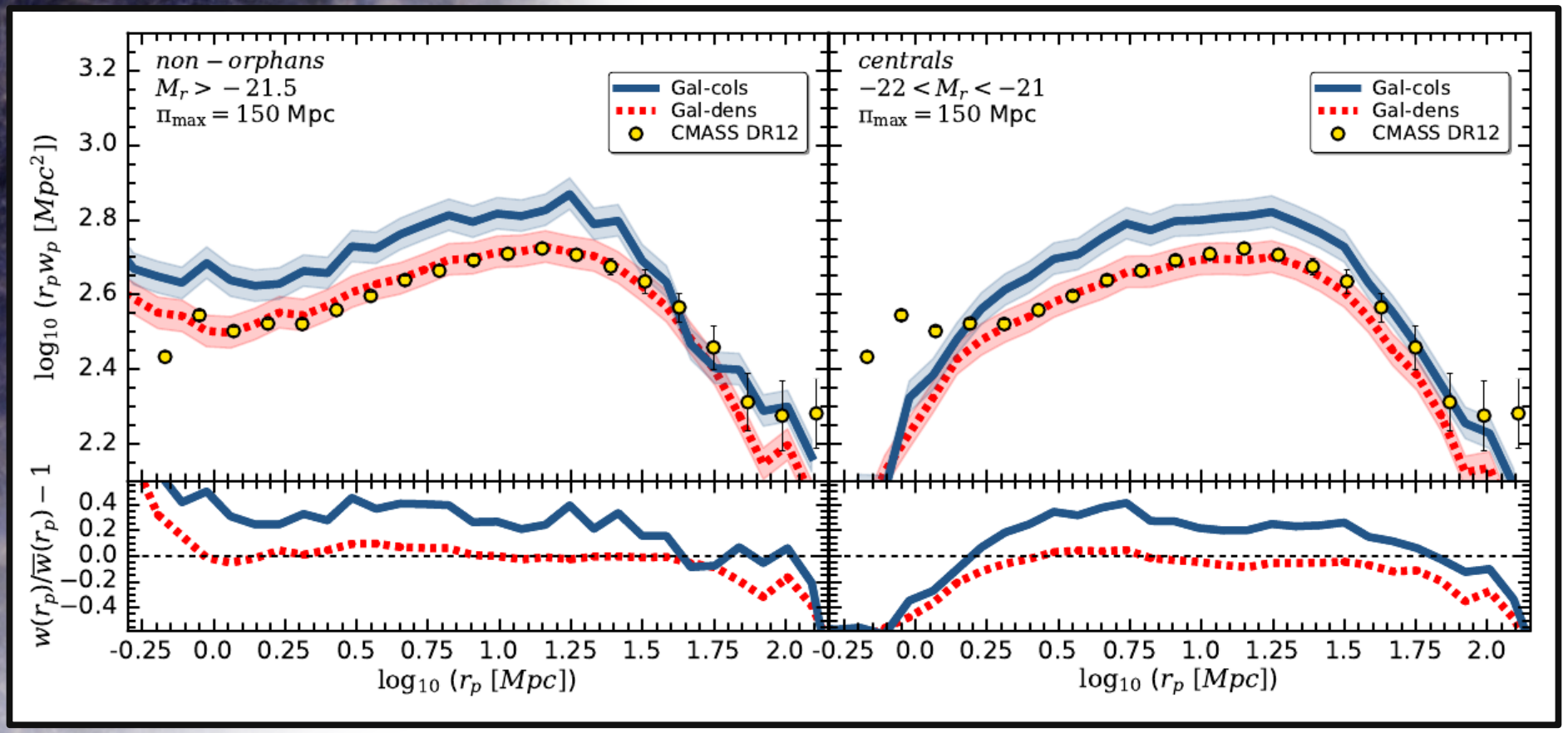
r-band Magnitude



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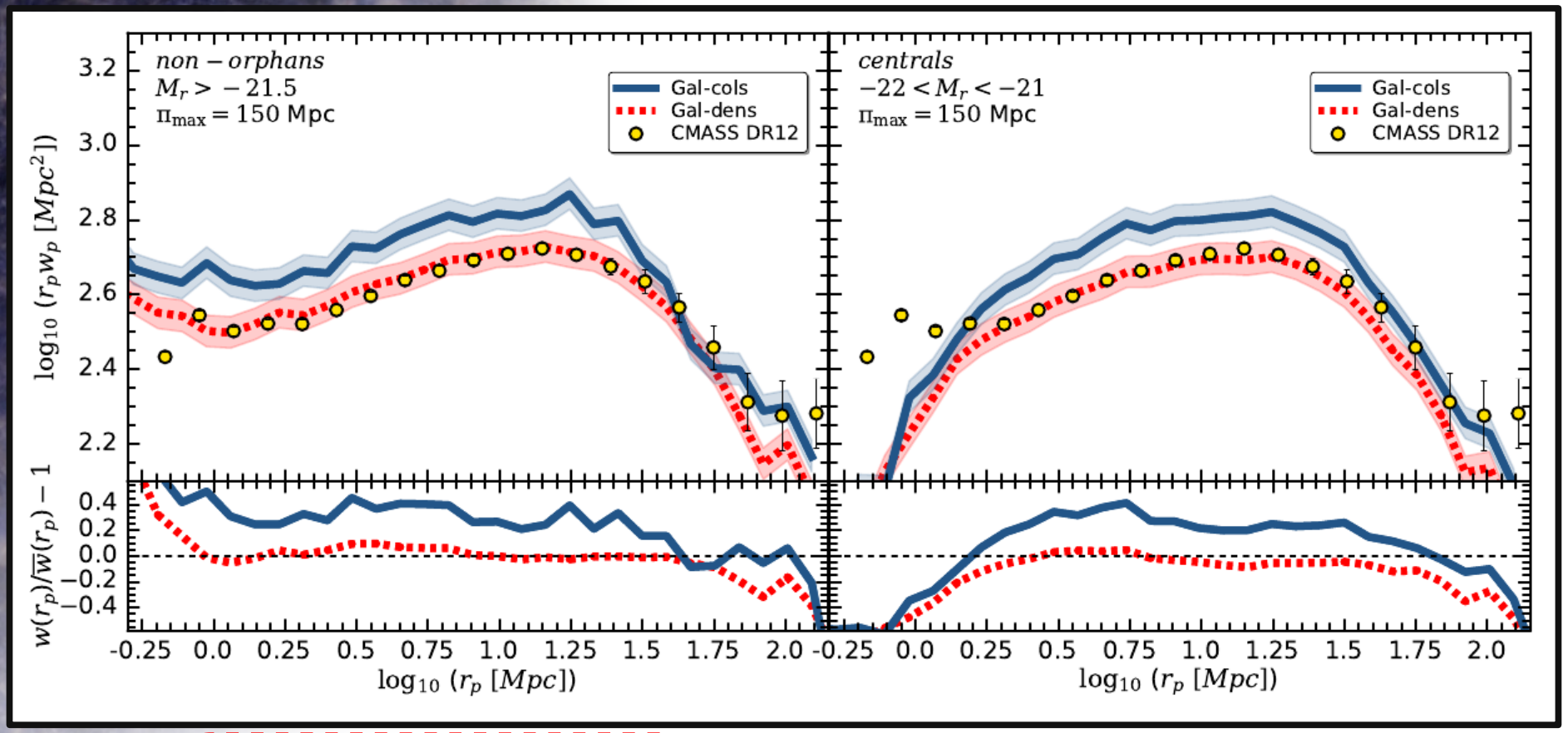

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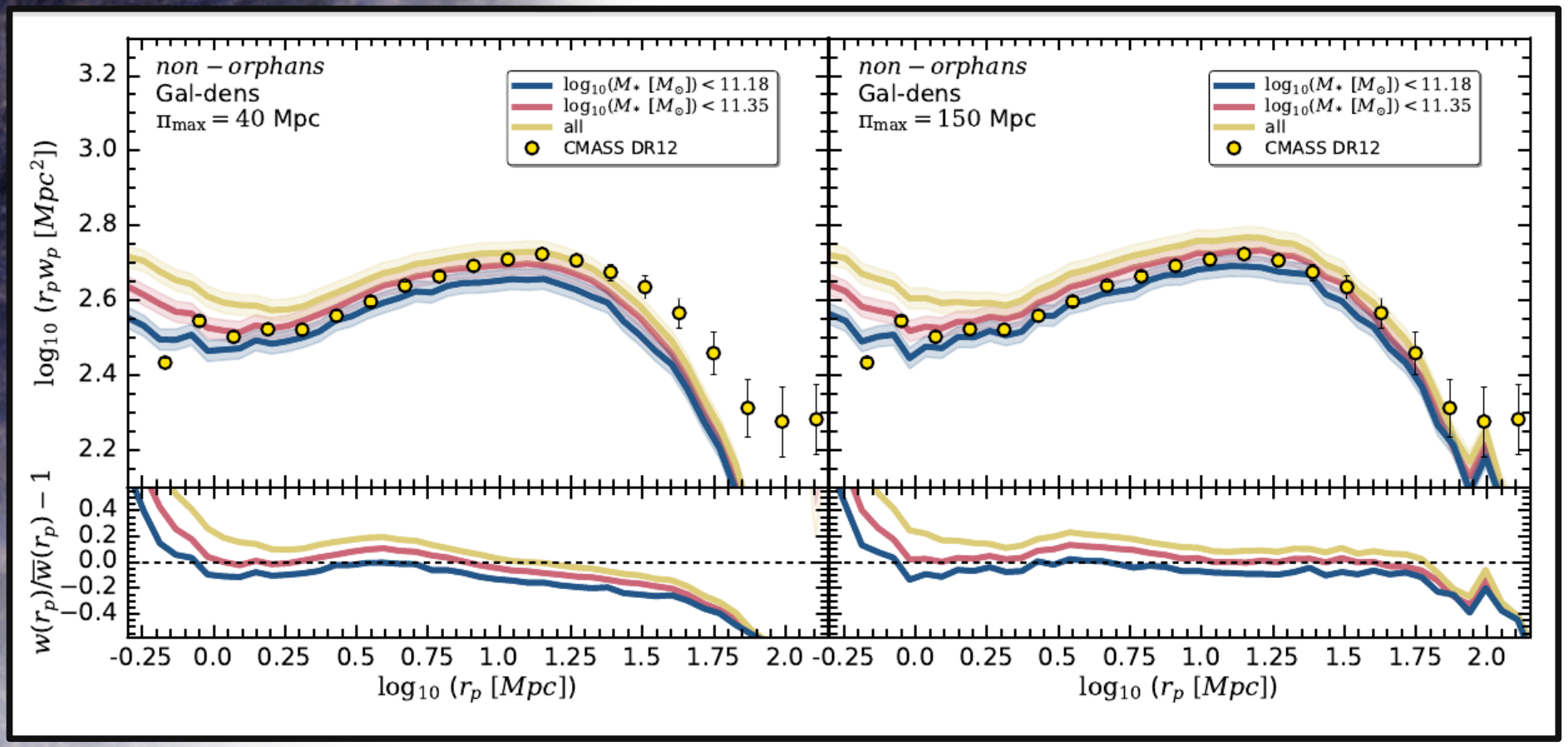
MultiDark Goes SAMs

Stellar Masses



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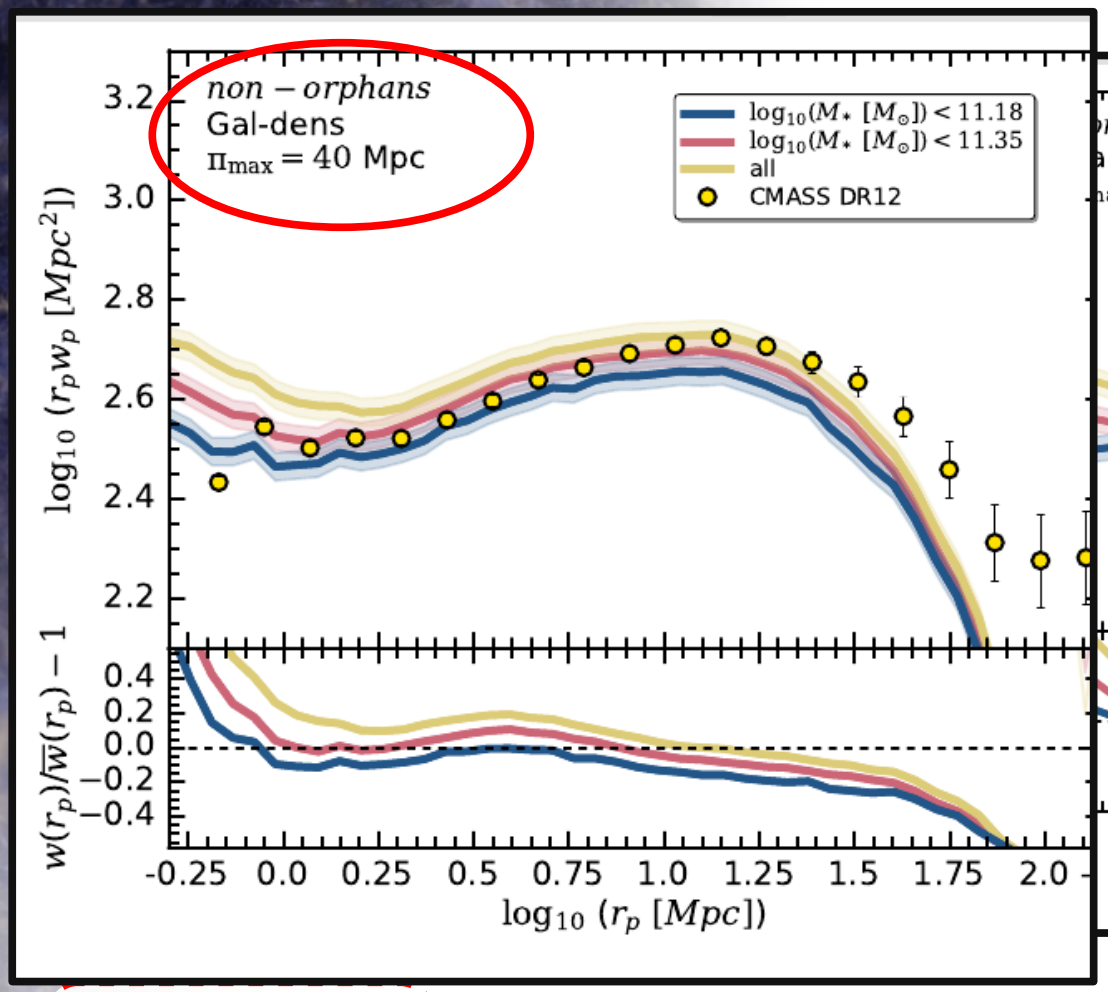
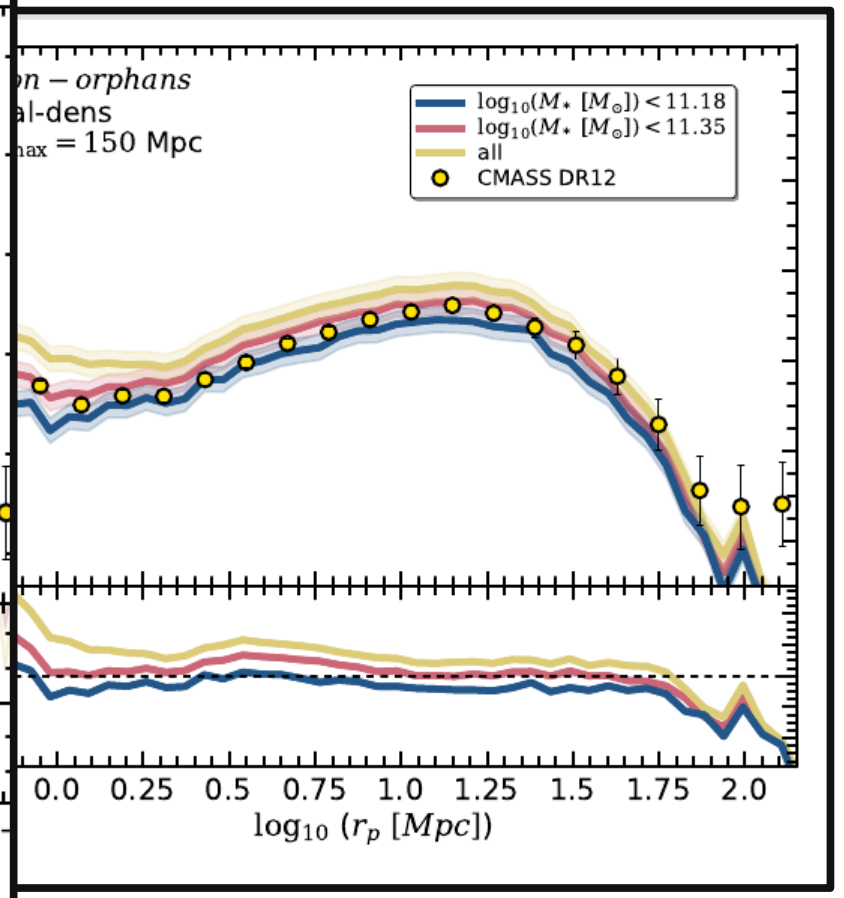
$11.01 < \log10\ M_* < 12.35$

MultiDark Goes SAMs

Stellar Masses





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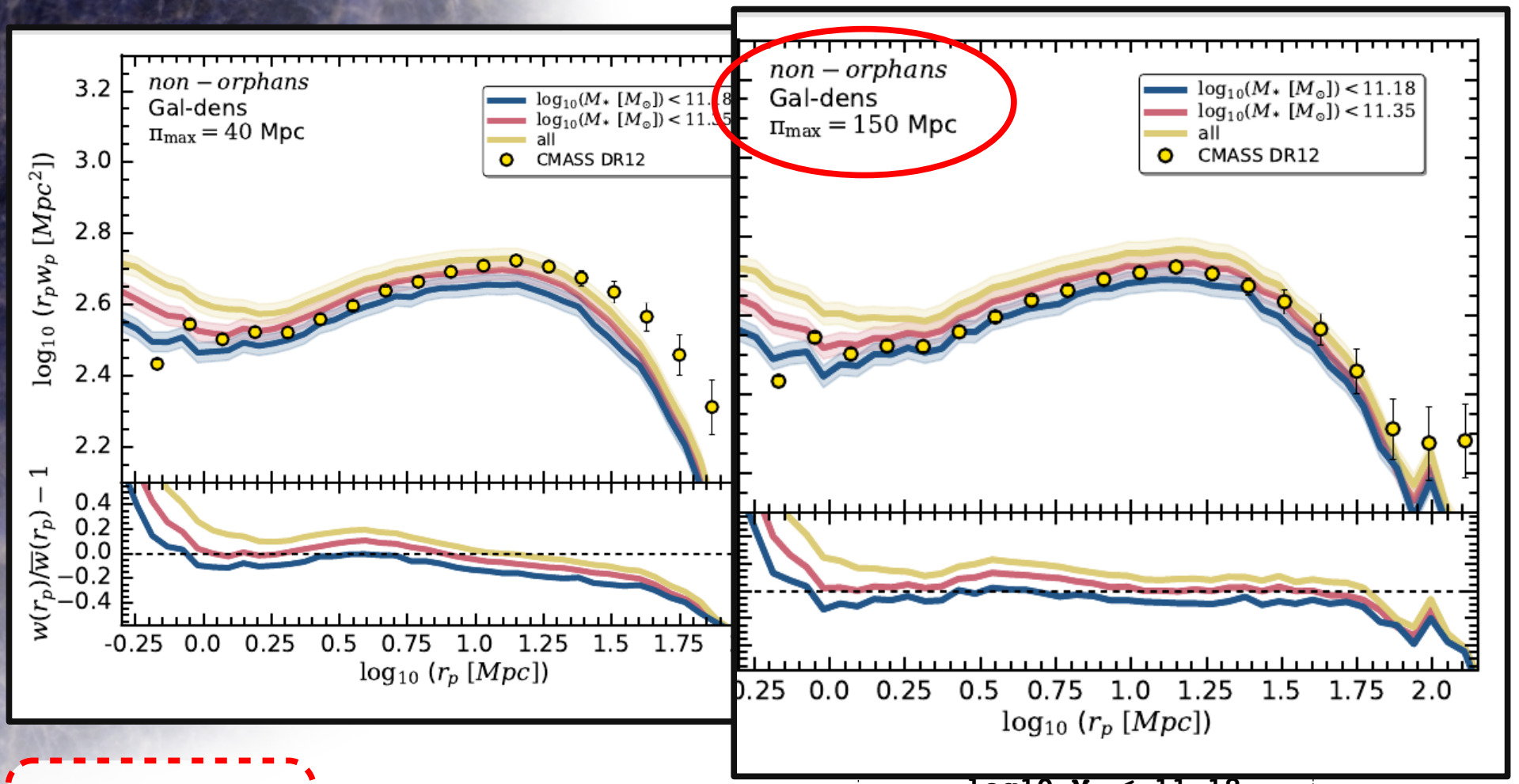

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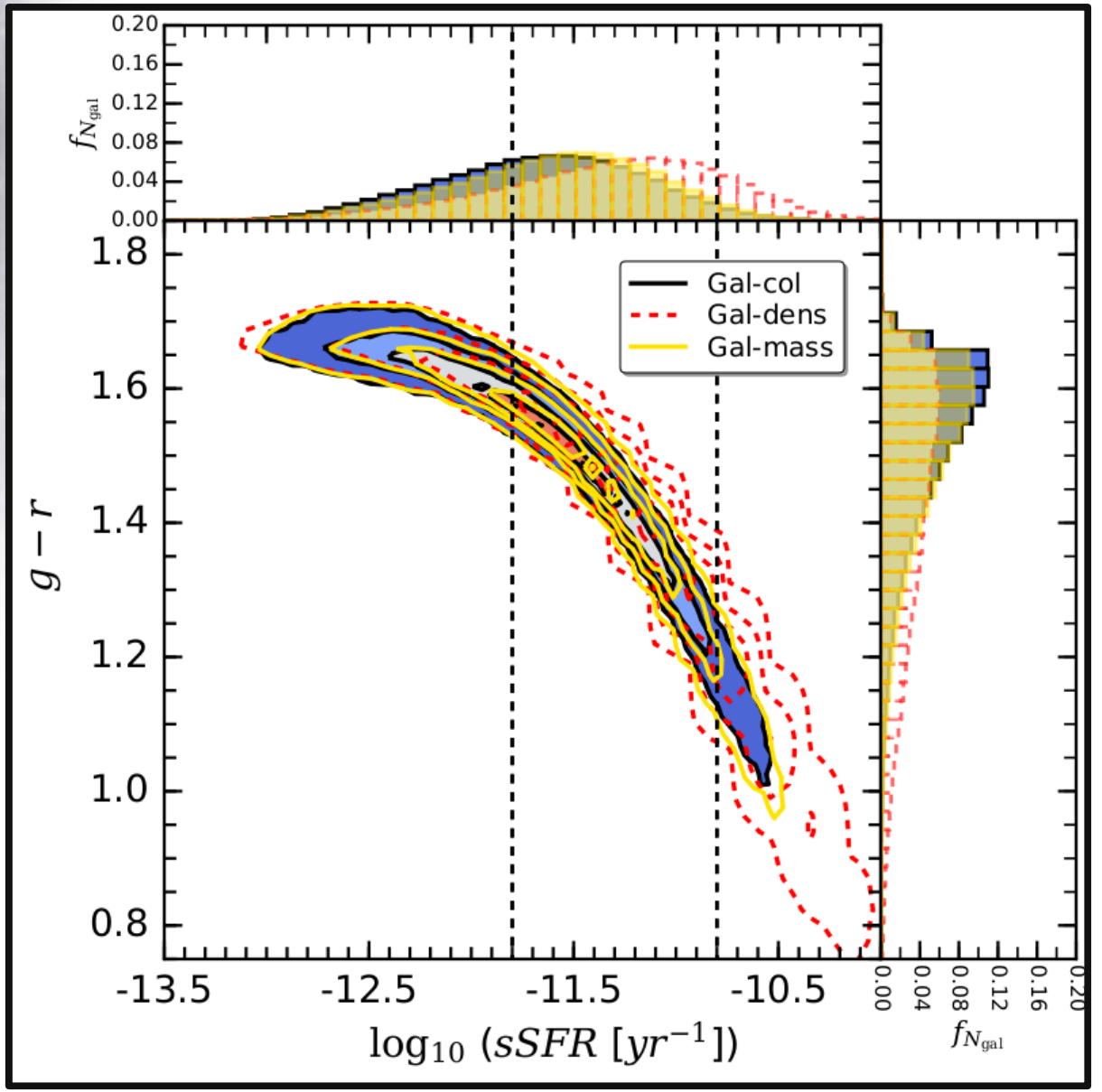
MultiDark Goes SAMs

What else?!

Study galaxy formation

Galaxy types

Populations

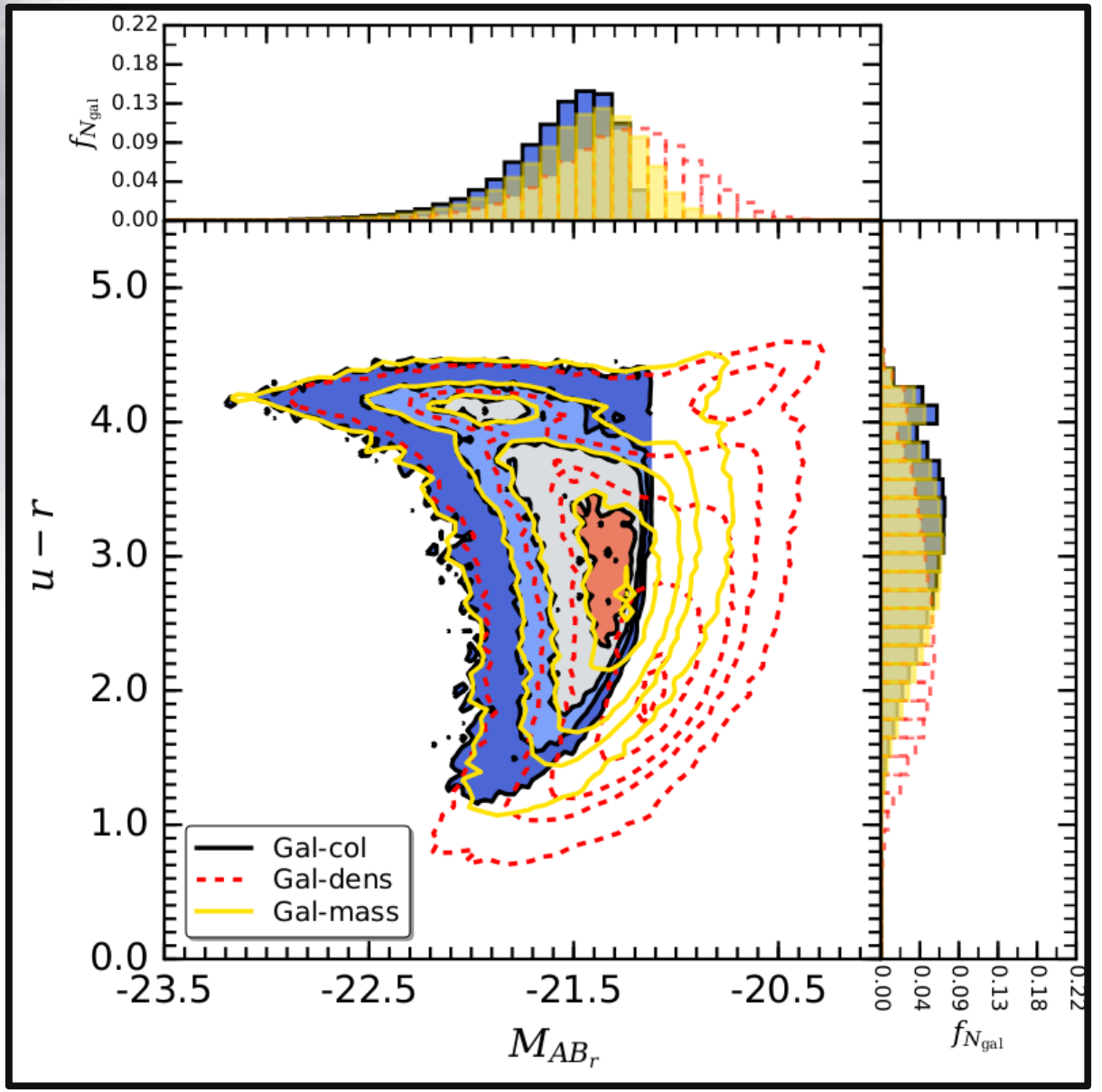


color vs. specific starformation rate

What else?!

Centrals

Satellites



MultiDark Goes SAMs

color vs. r-band

What else?!

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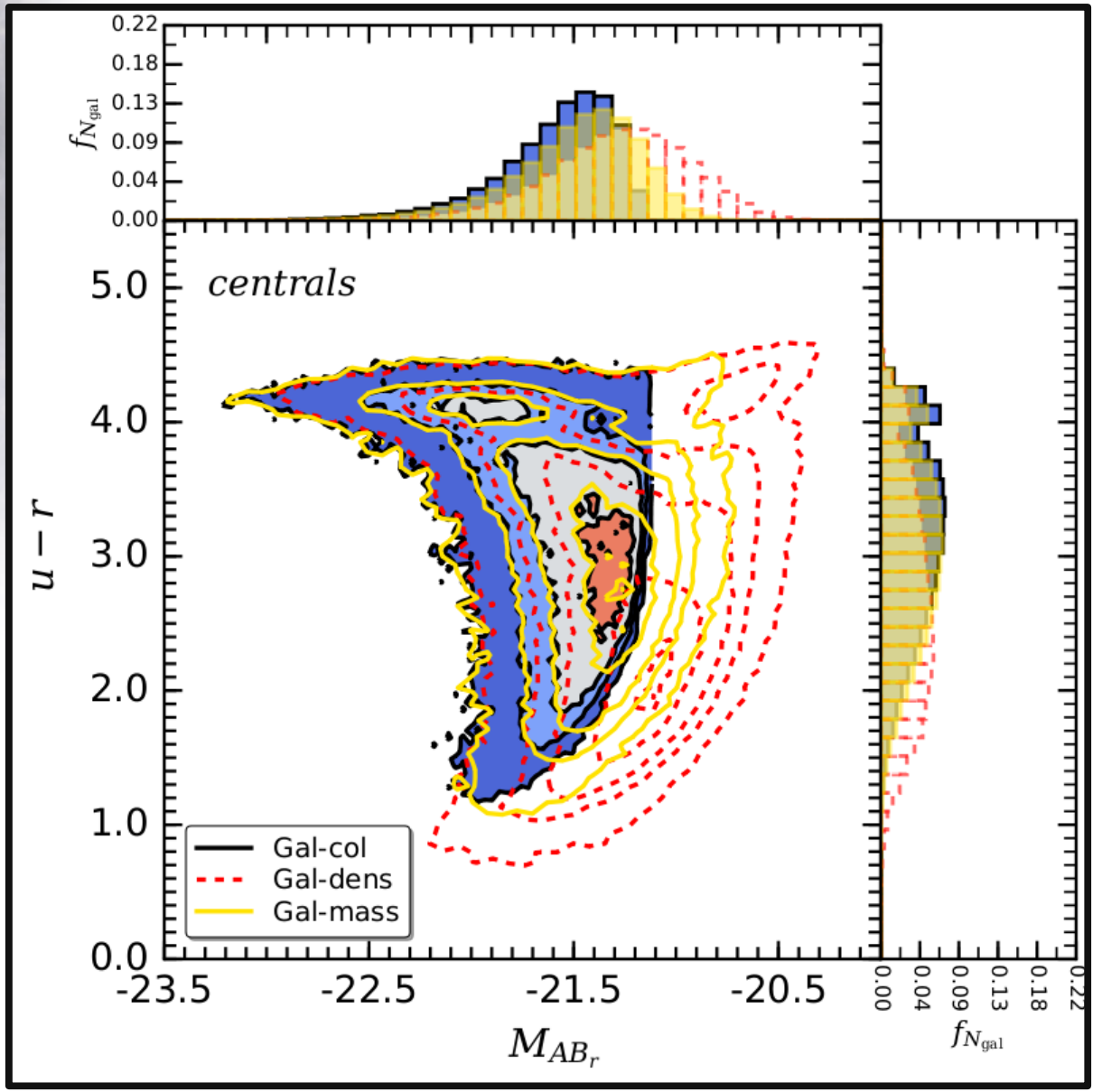

color vs. r-band

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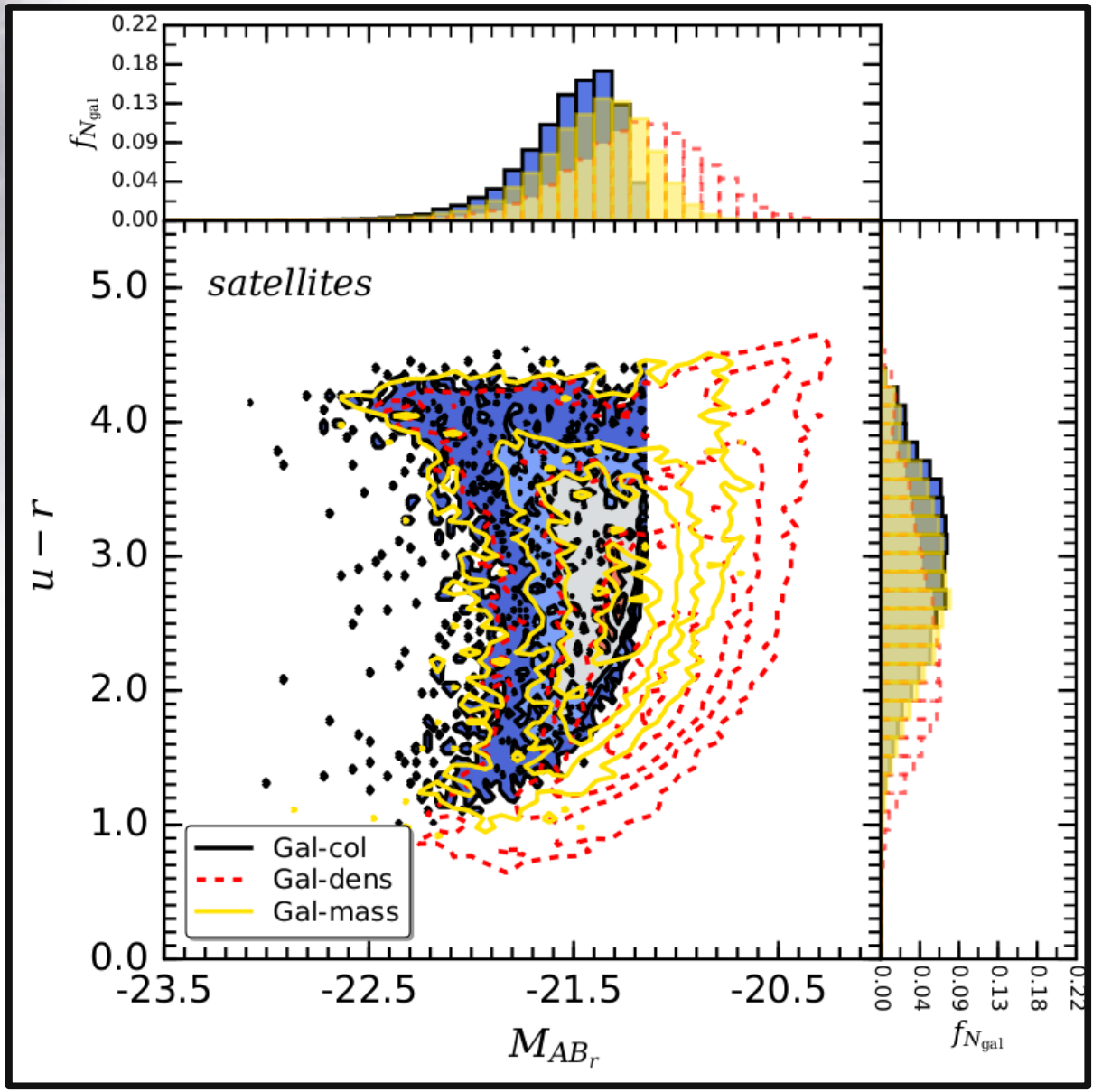

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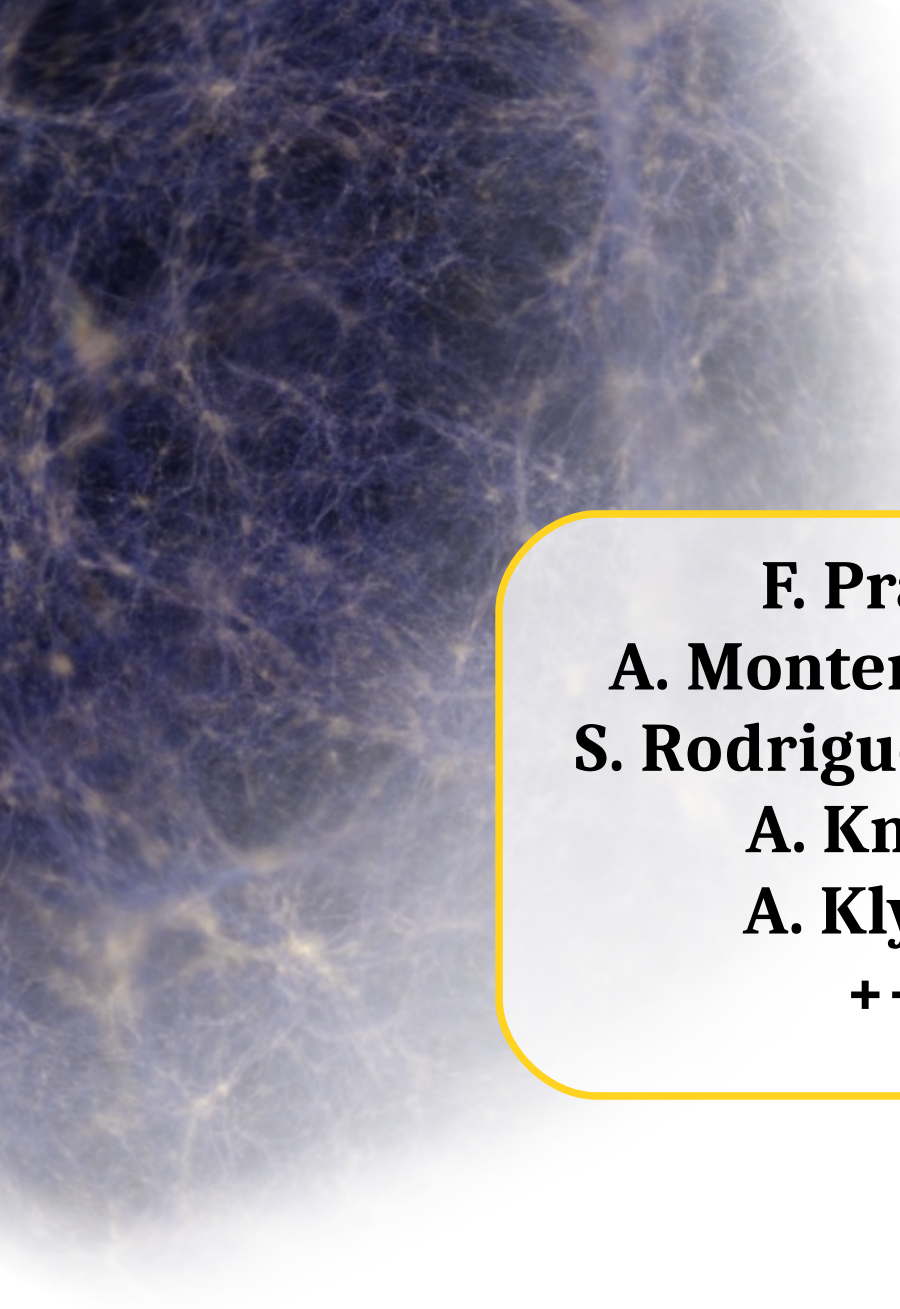

Who?!

F. Prada
A. Montero-Dorta
S. Rodriguez-Torres
A. Knebe
A. Klypin
++

Galacticus

A. Benson
C. Behrens
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