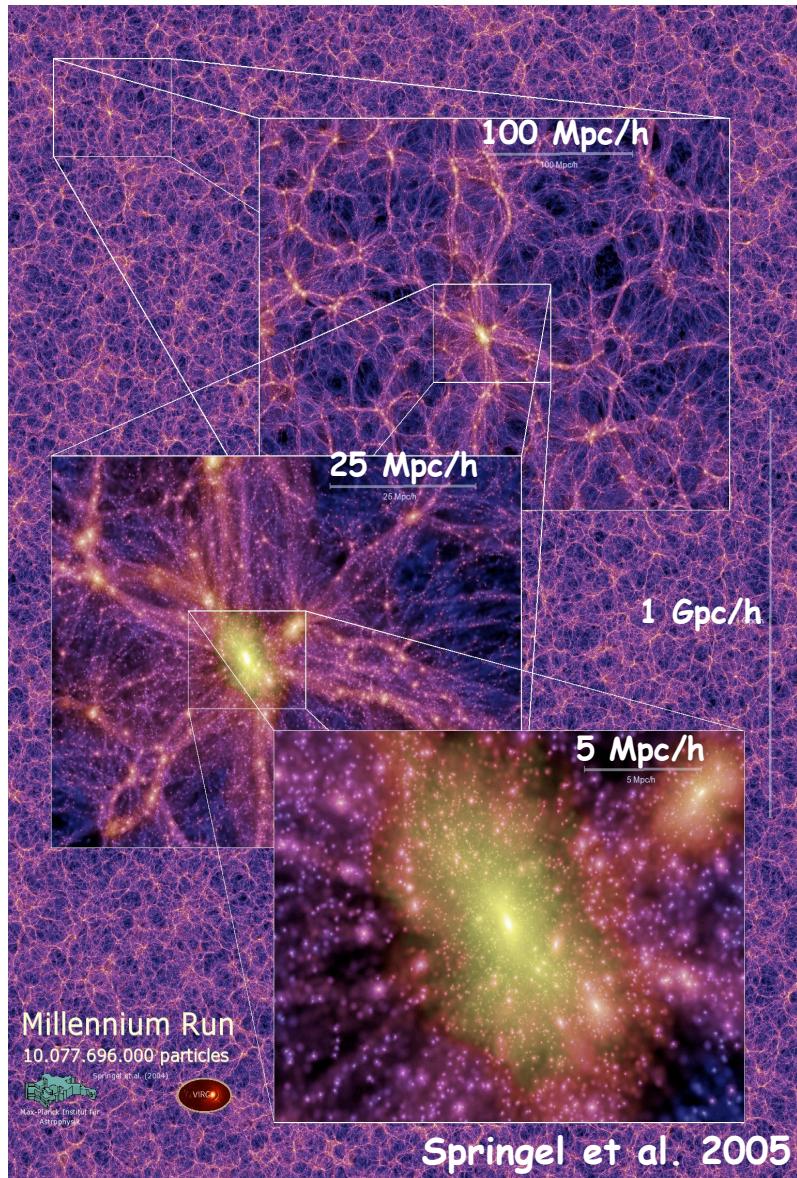


Galaxies in large scale structures

State of the art of SAMs using the Millennium simulation
Some projects and observations
Can a hydro cosmological simulation help ?

Jeremy Blaizot (MPA)

The millennium simulation



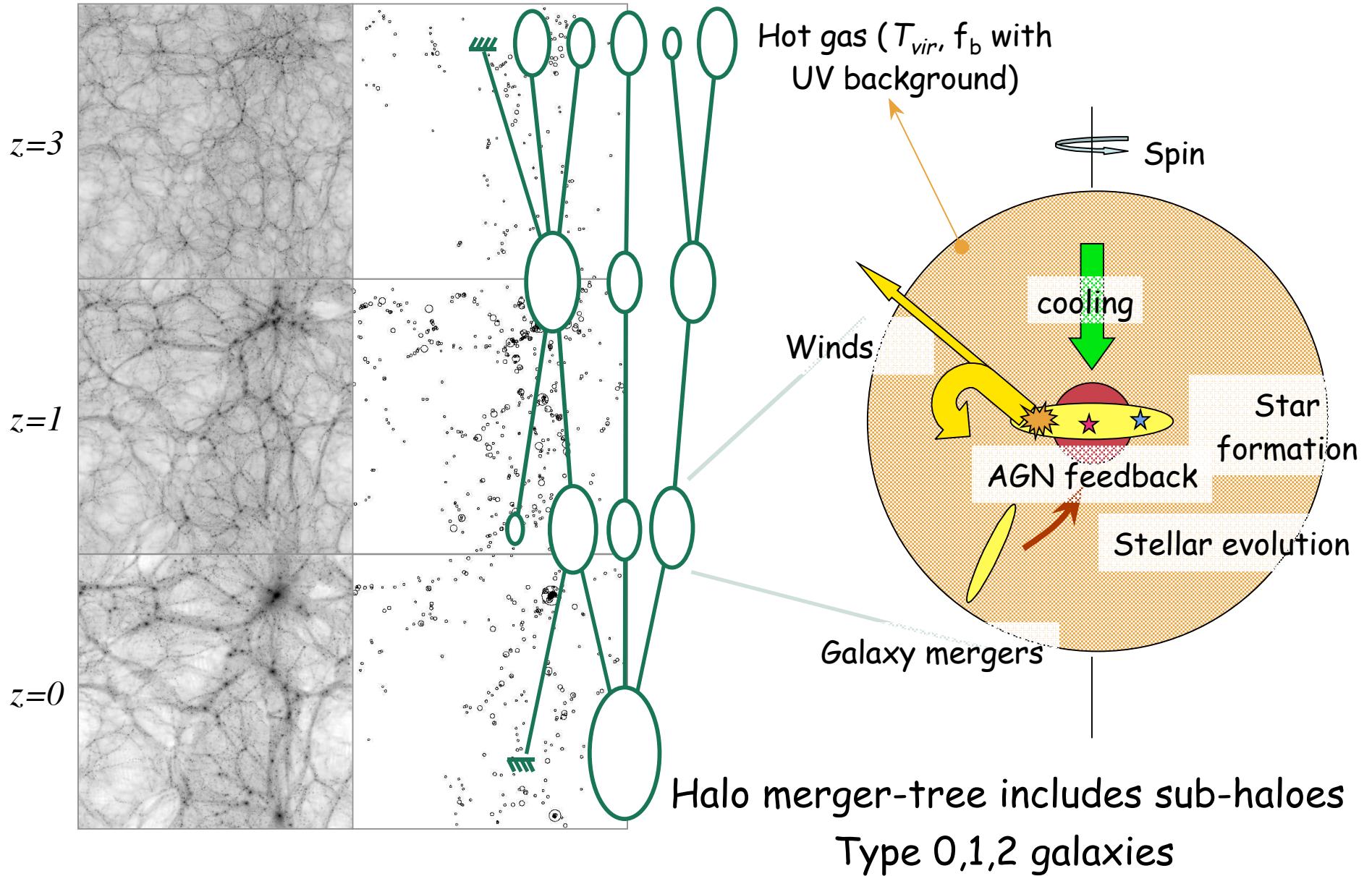
$(500 \text{ Mpc}/\text{h})^3$
 $\sim 10^{10}$ particles
 $M_{\text{part}} \sim 8 \cdot 10^8 M_{\text{sun}}$

$\sim 20 \cdot 10^6$ galaxies
@ $z=0$

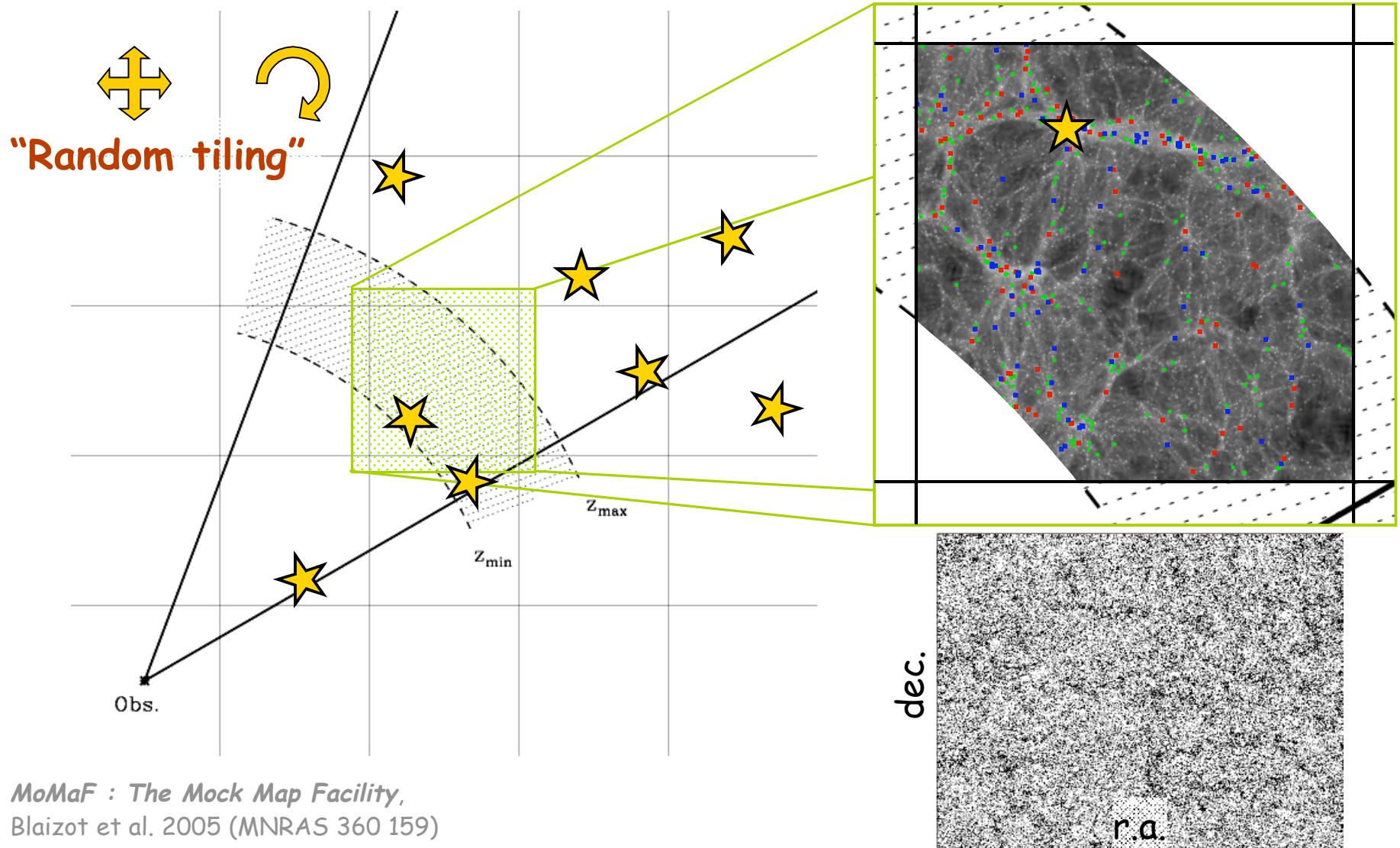
Ideal for SAM vs. SDSS, 2dF,
GALEX, Spitzer (,Planck)

Resolution too low for deeper
surveys

SAM + N-body

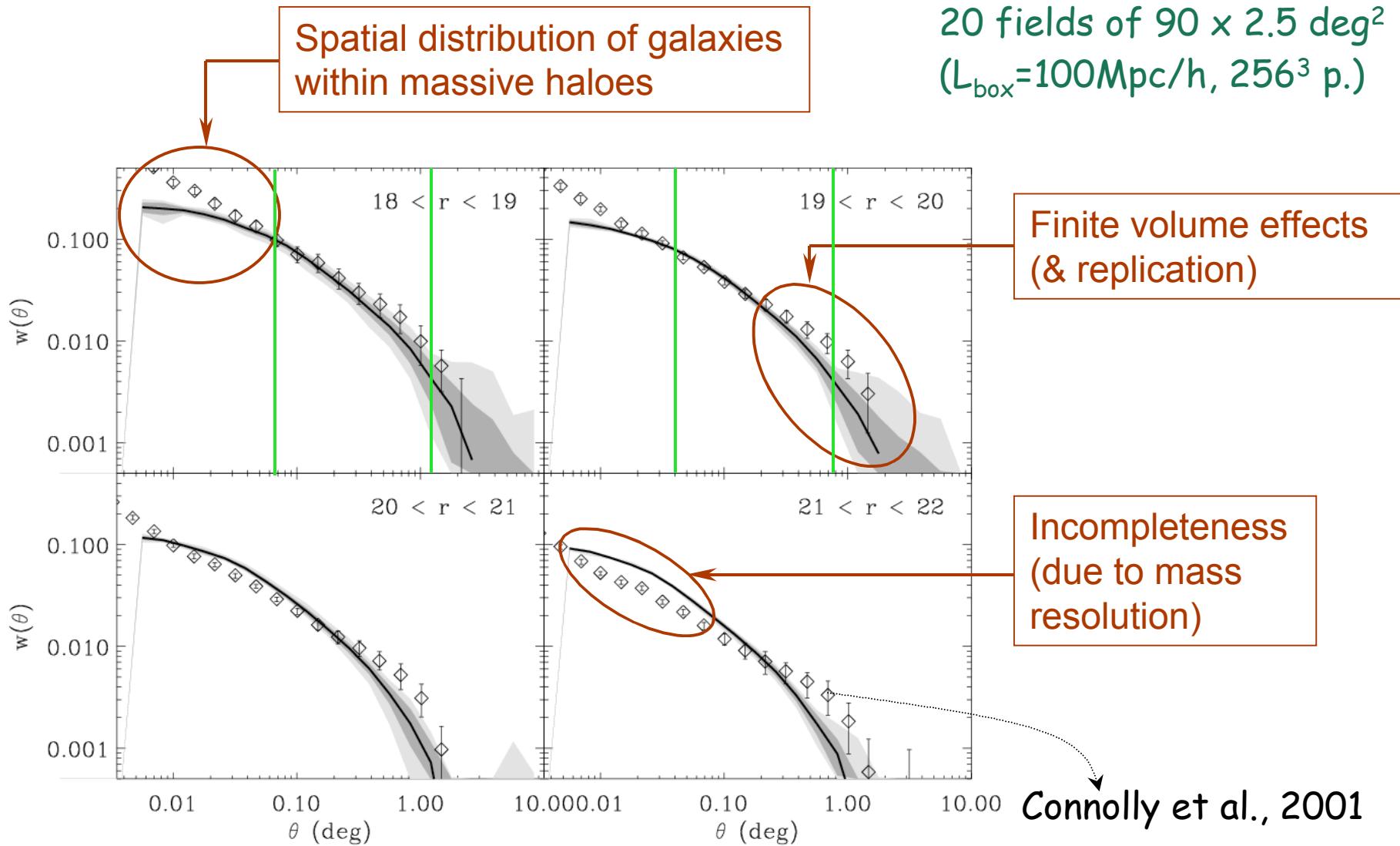


Mock catalogs

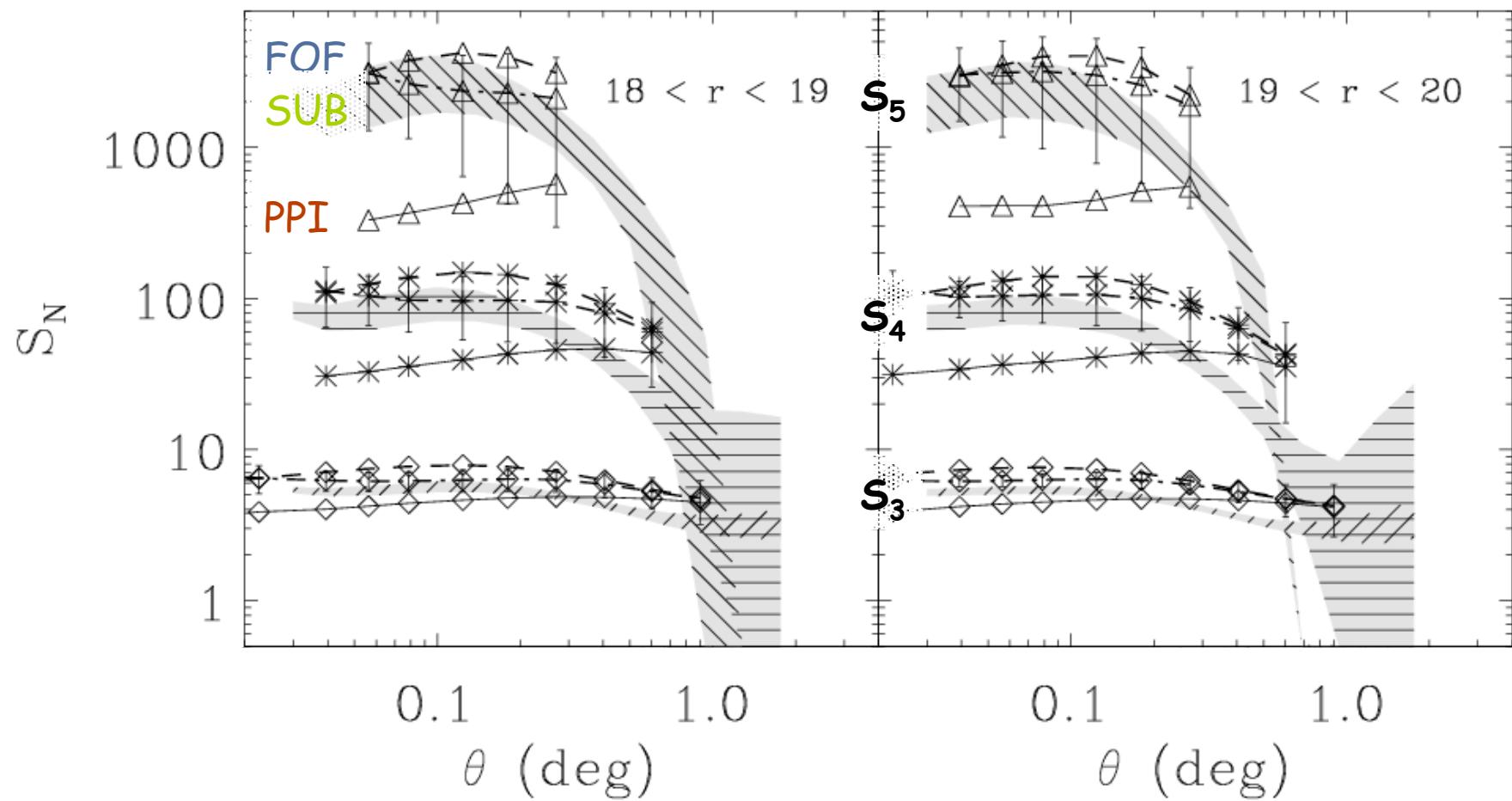


MoMaF : The Mock Map Facility,
Blaizot et al. 2005 (MNRAS 360 159)

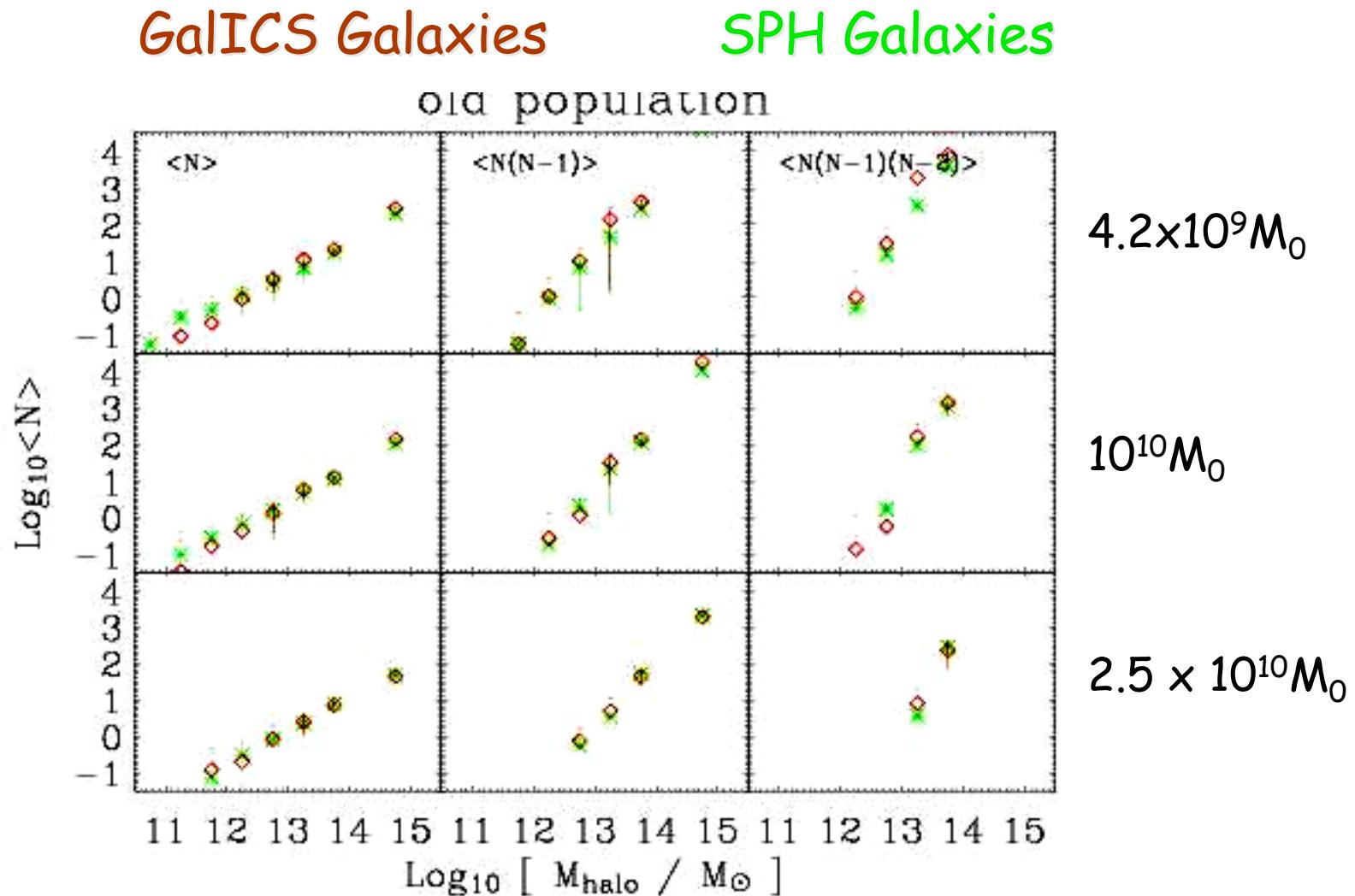
Comparison to SDSS : $w(\theta)$



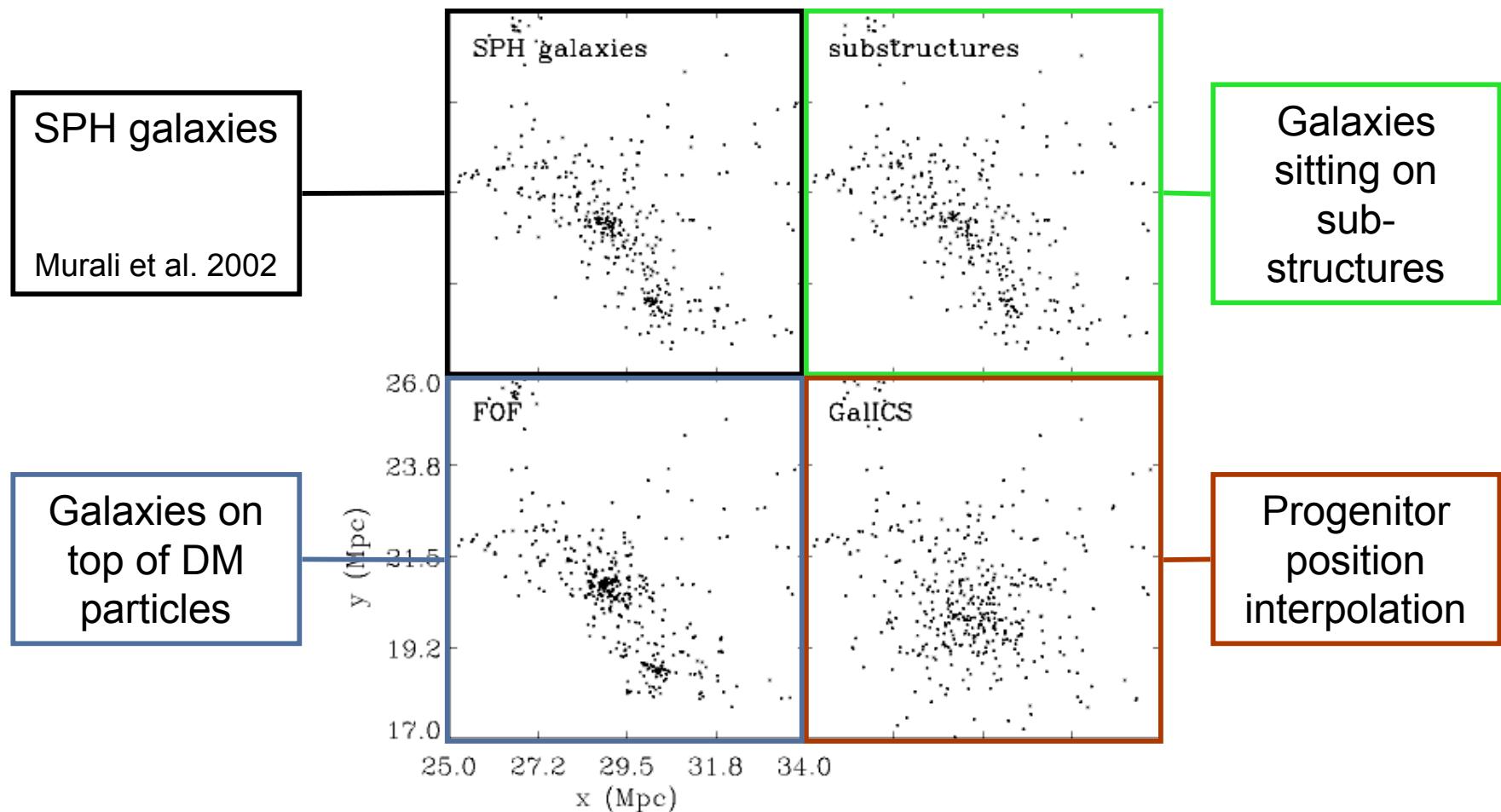
GALICS vs. SDSS : S_n



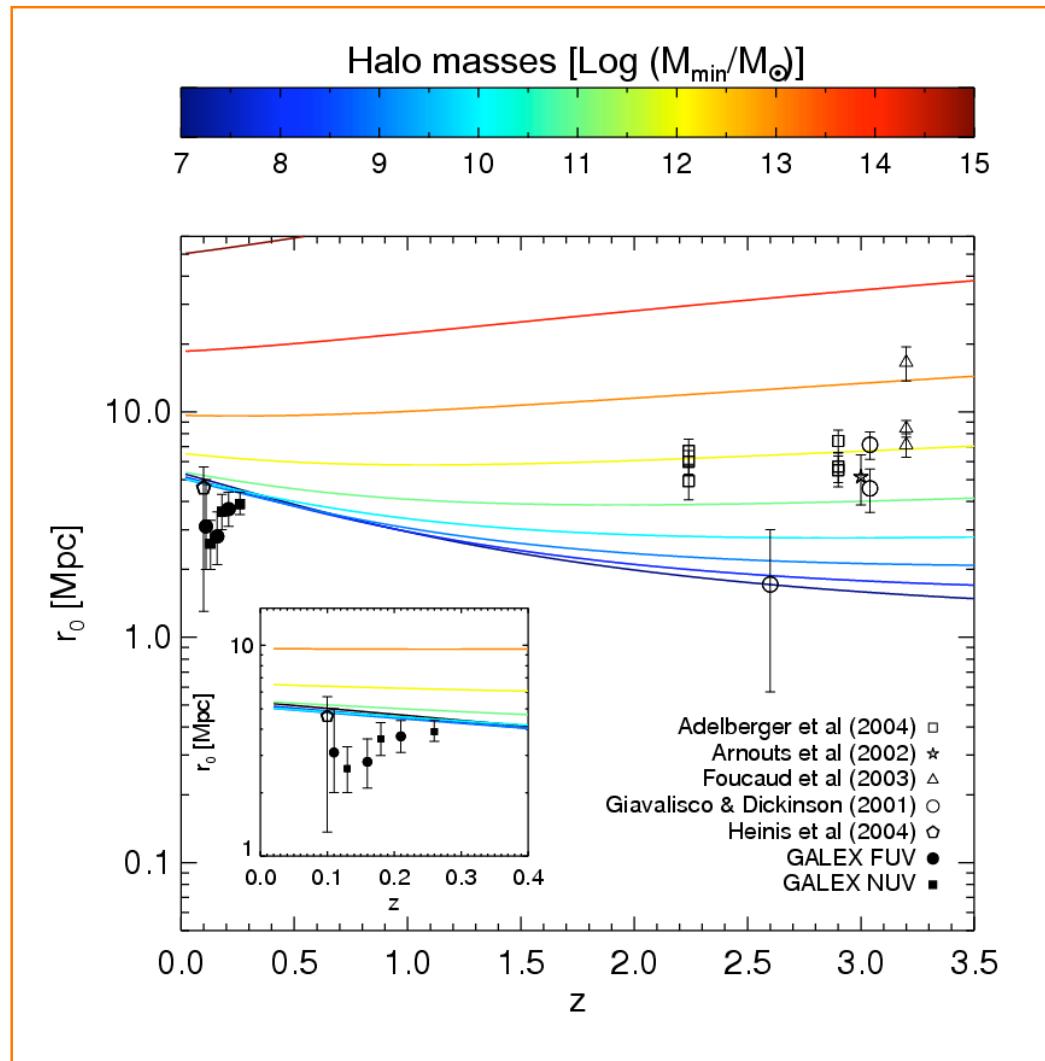
How many galaxies fit in a halo ?



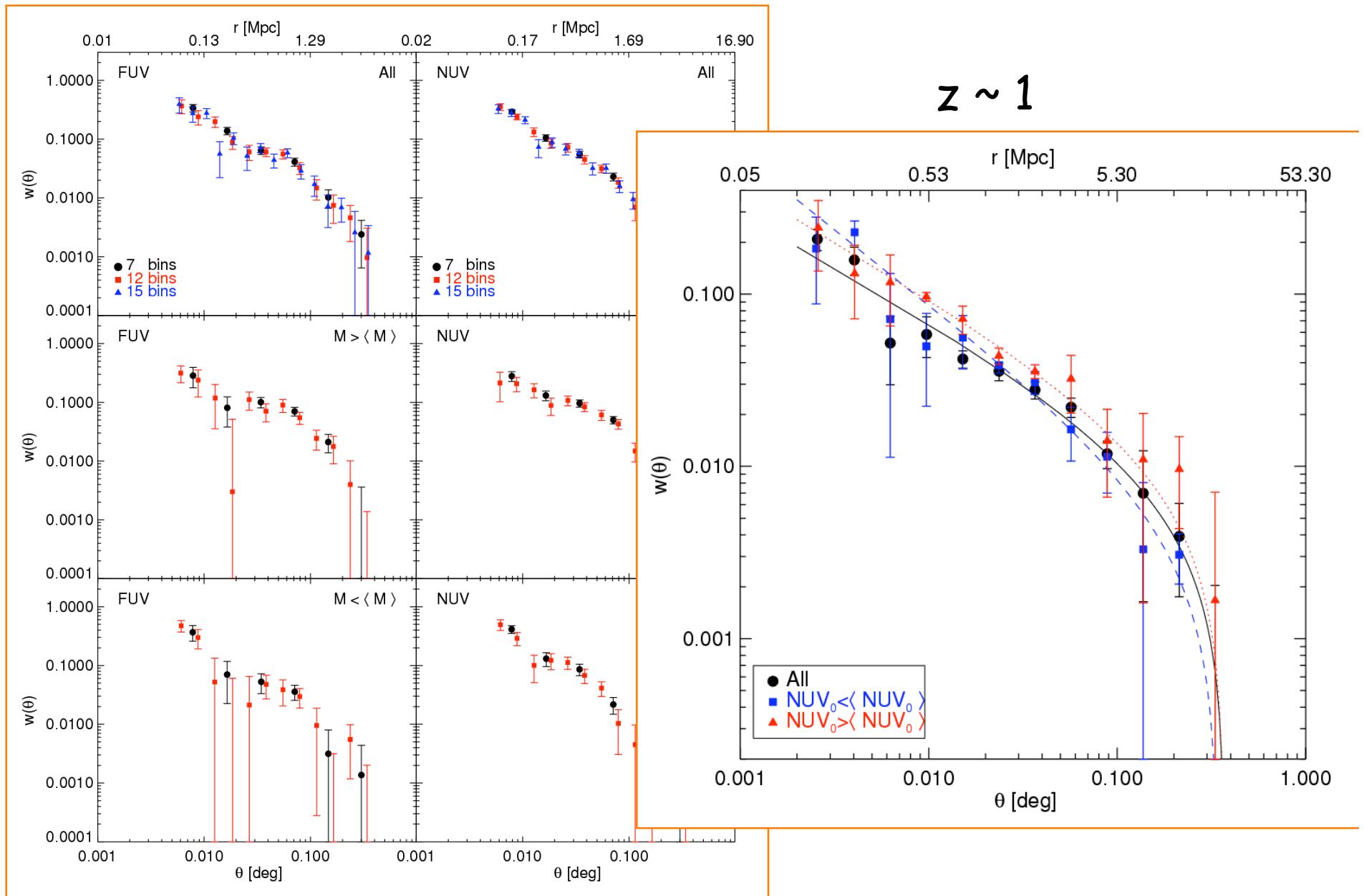
Small scale distribution of galaxies



Distribution of UV galaxies (GALEX/SDSS/CFHTLS)



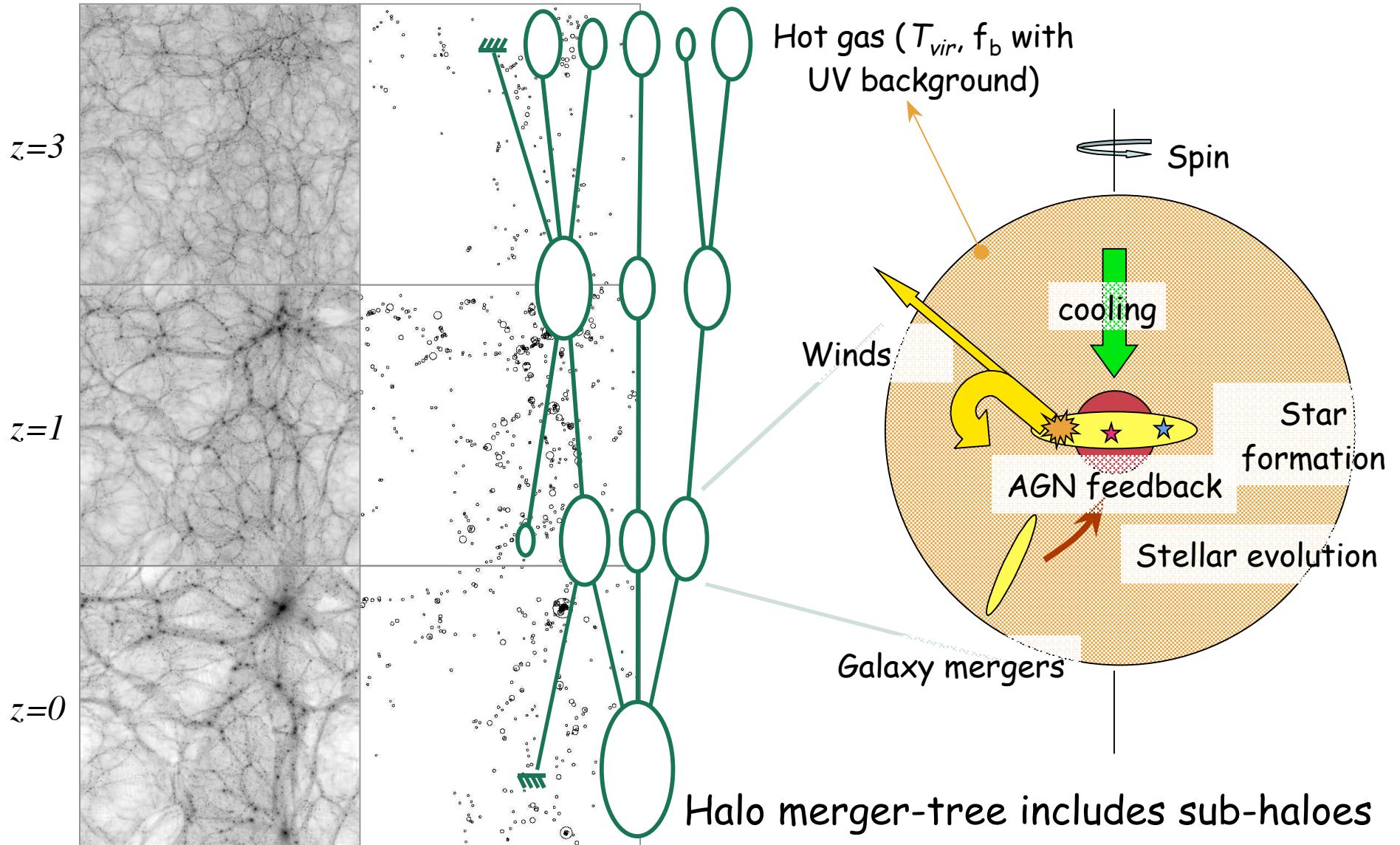
Sebastien Heinis



$z \sim 0$

Sebastien Heinis

SAM + N-body



How can cosmo. hydro. simulations help ?

- Hydro simulations cannot (yet!) be used for a direct quantitative comparison to observations : no need for a representative volume ?
- They can be used to calibrate SAMs (or HODs or other)
 - very small volume (many times) : understand a given phenomenon (e.g. end-products of mergers, cooling, gx-gx tidal interactions, AGNs ...)
 - medium-large volume (~ 50 Mpc/h) : sample the variety of situations

Gravity dominates clustering on both large and small scales (Kravstov, private interpretation ...). Galaxy properties vs. environment also possibly explained by halo properties (Gao et al.). Do we need hydro simulations larger than a halo ?