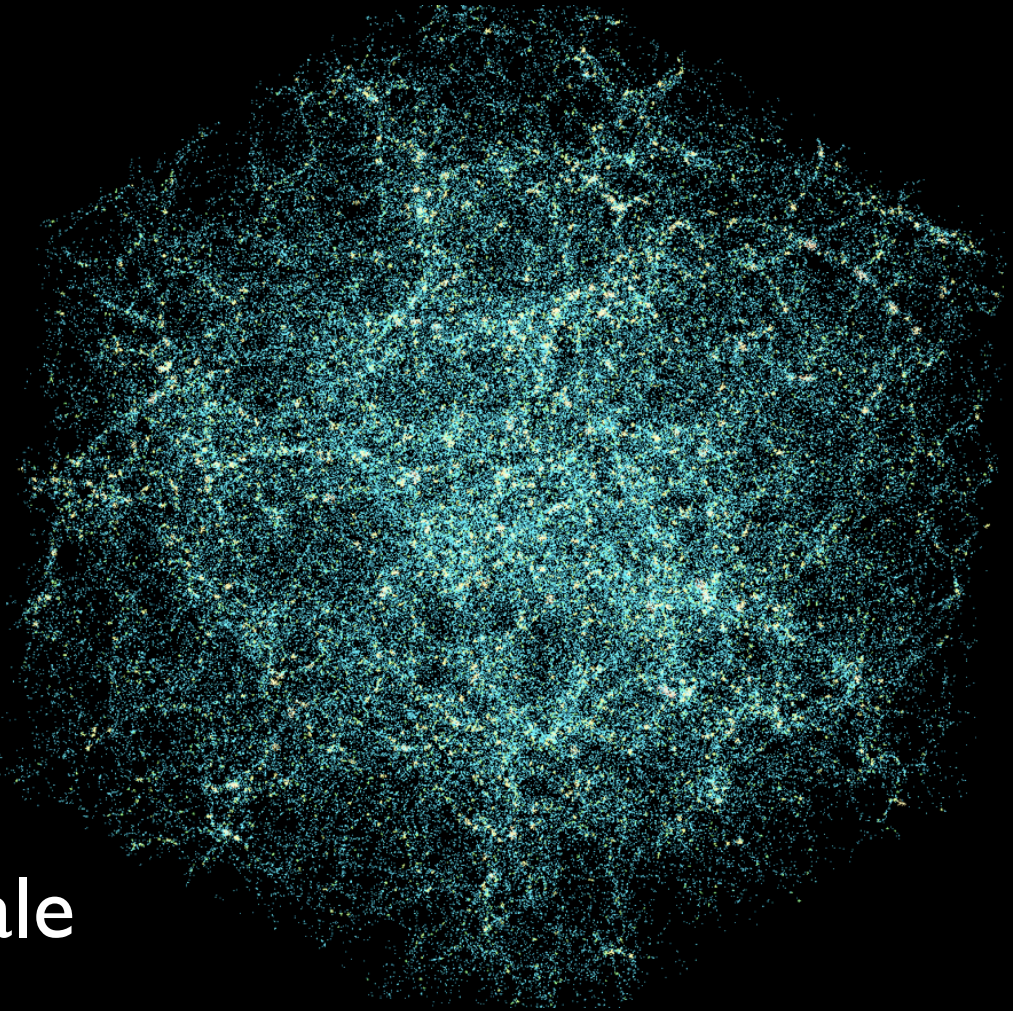


# Simulation/Subhalo Comparison

Bolshoi

vs.

TreePM



Andrew Wetzel  
UC Berkeley → Yale

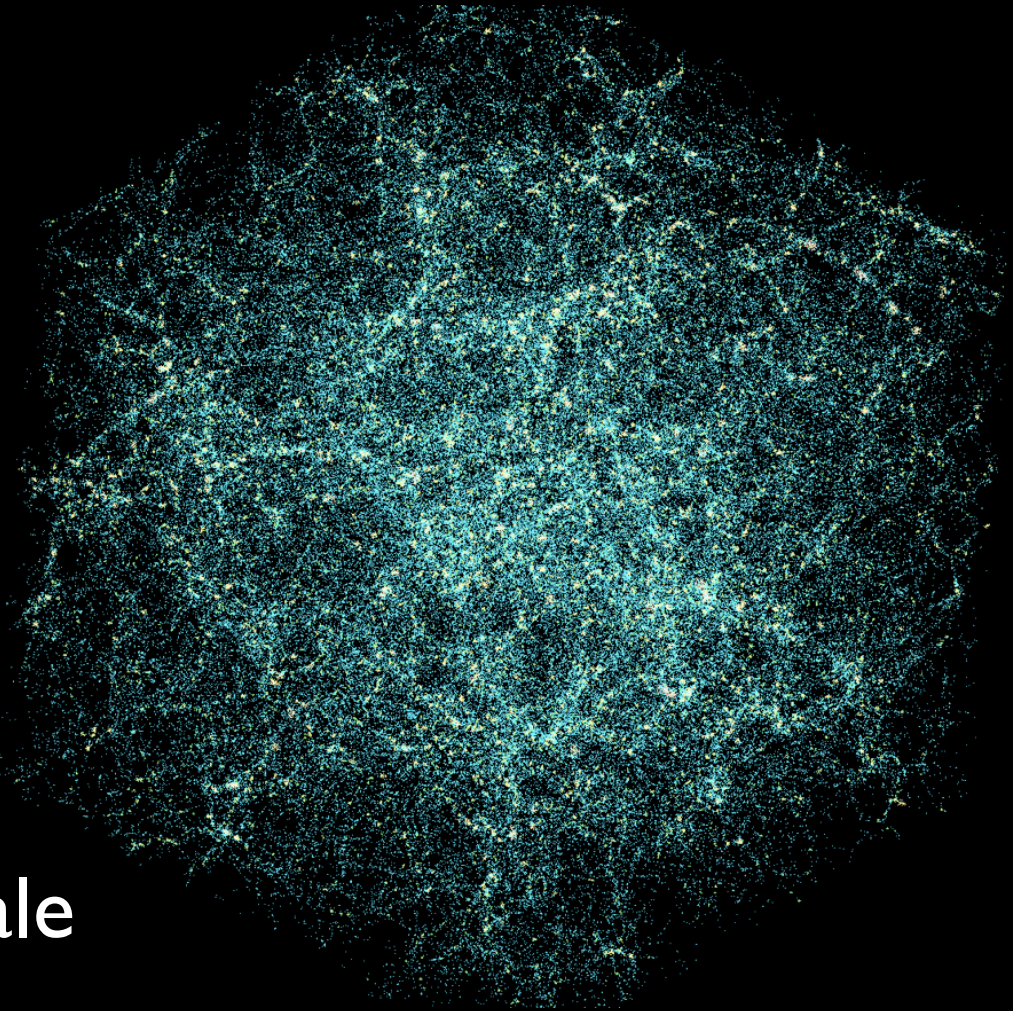
# Simulation/Subhalo Comparison

Bolshoi

vs.

~~TreePM~~

Nemo



Andrew Wetzel  
UC Berkeley → Yale

# Simulation Parameters

## **Bolshoi (ART)**

### **Cosmology**

$$\Omega_m = 0.27$$

$$\Omega_\Lambda = 0.73$$

$$\Omega_b = 0.0469$$

$$\sigma_8 = 0.82$$

$$h = 0.70$$

$$n = 0.95$$

### **Numerics**

$$\varepsilon = 1 \text{ kpc (physical)}$$

$$m_{\text{particle}} = 1.35e8 h^{-1} M_\odot$$

Halo finder: BDM

Subhalo finder: BDM

$$\Delta_{\text{vir}}(z=0) = 360x \text{ matter}$$

## **Nemo (TreePM)**

### **Cosmology**

$$\Omega_m = 0.274$$

$$\Omega_\Lambda = 0.726$$

$$\Omega_b = 0.0457$$

$$\sigma_8 = 0.80$$

$$h = 0.70$$

$$n = 0.95$$

### **Numerics**

$$\varepsilon = 2.5 \text{ kpc (comoving)}$$

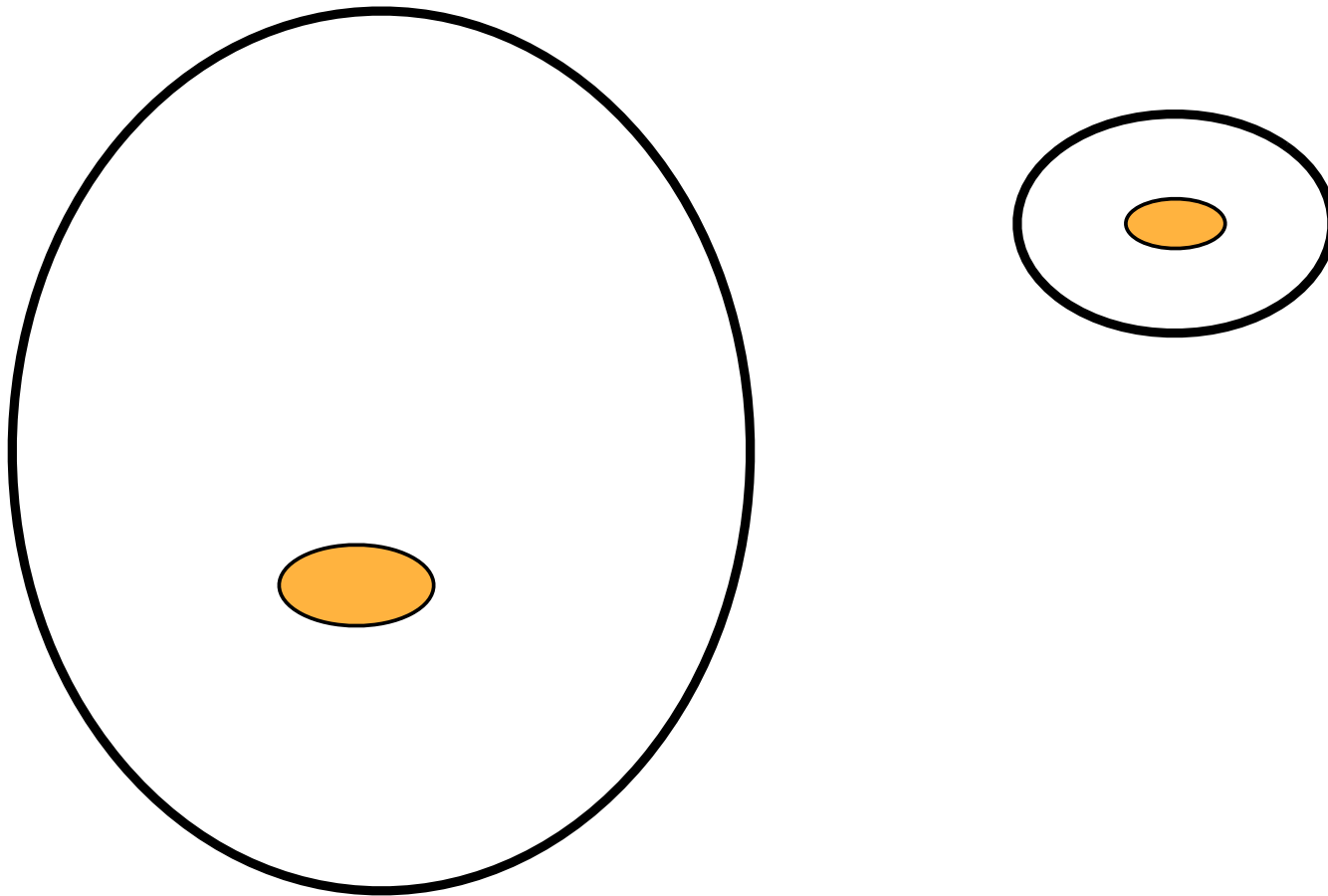
$$m_{\text{particle}} = 1.38e8 h^{-1} M_\odot$$

Halo finder: FoF(b=0.168)

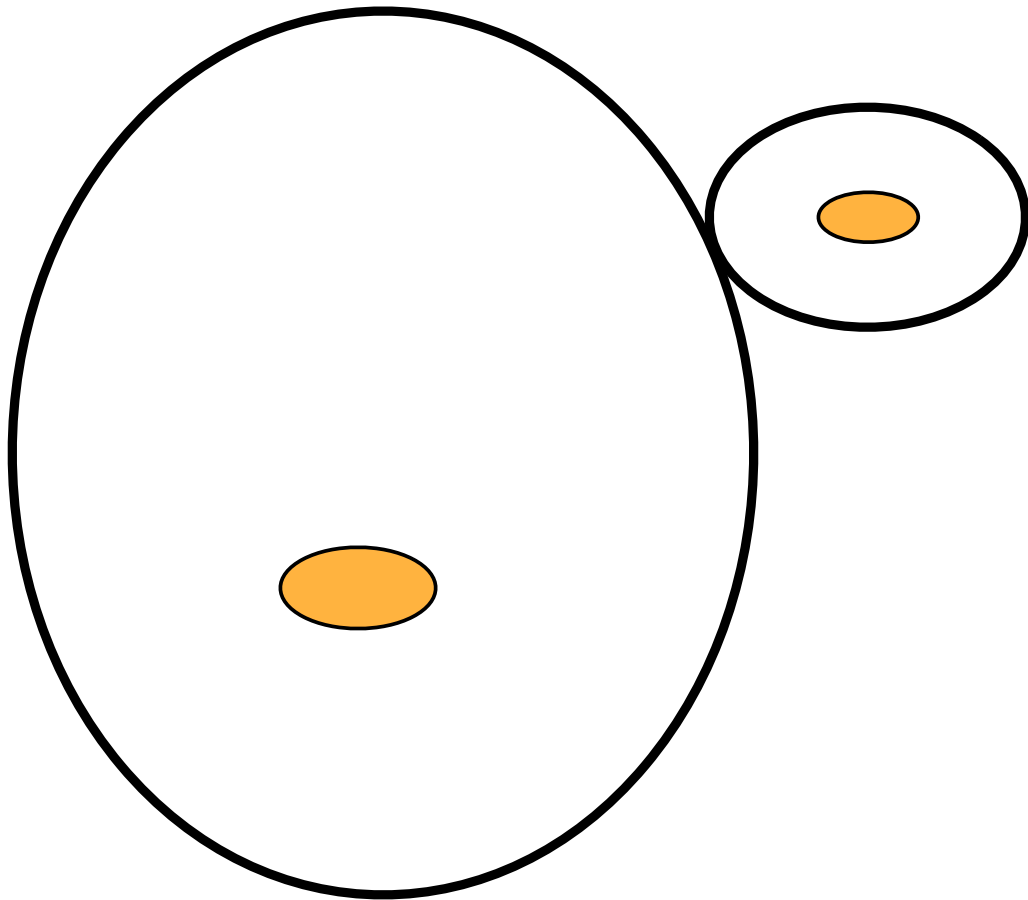
Subhalo finder: FoF6D(adaptive)

$$\Delta_{\text{vir}}(z=0) = 500-600x \text{ matter}$$

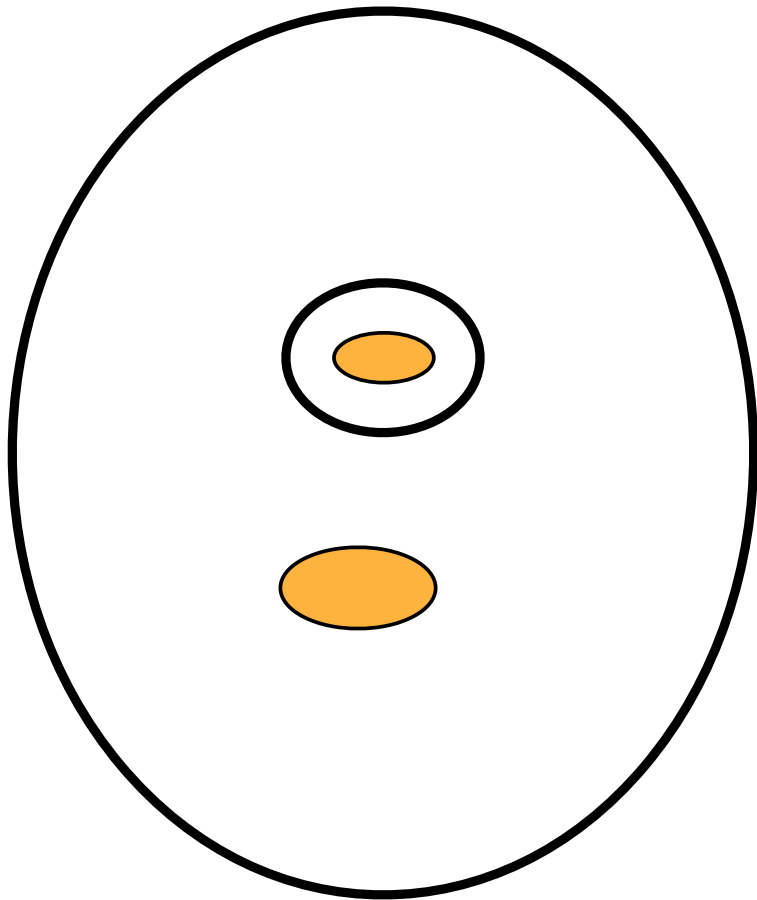
# Halo Merger $\rightarrow$ Subhalo



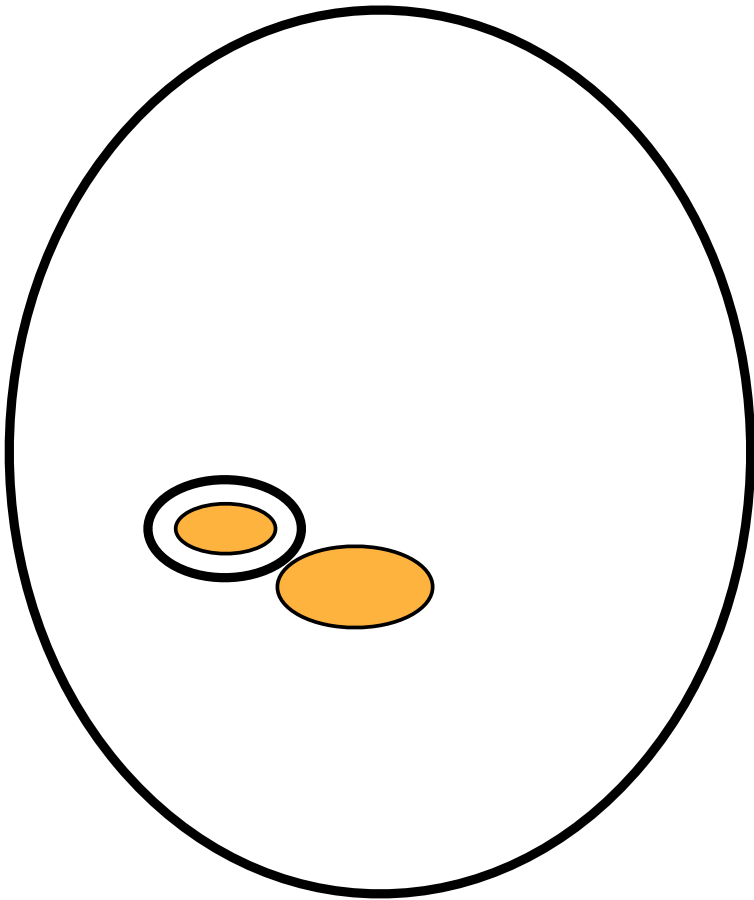
# Halo Merger $\rightarrow$ Subhalo



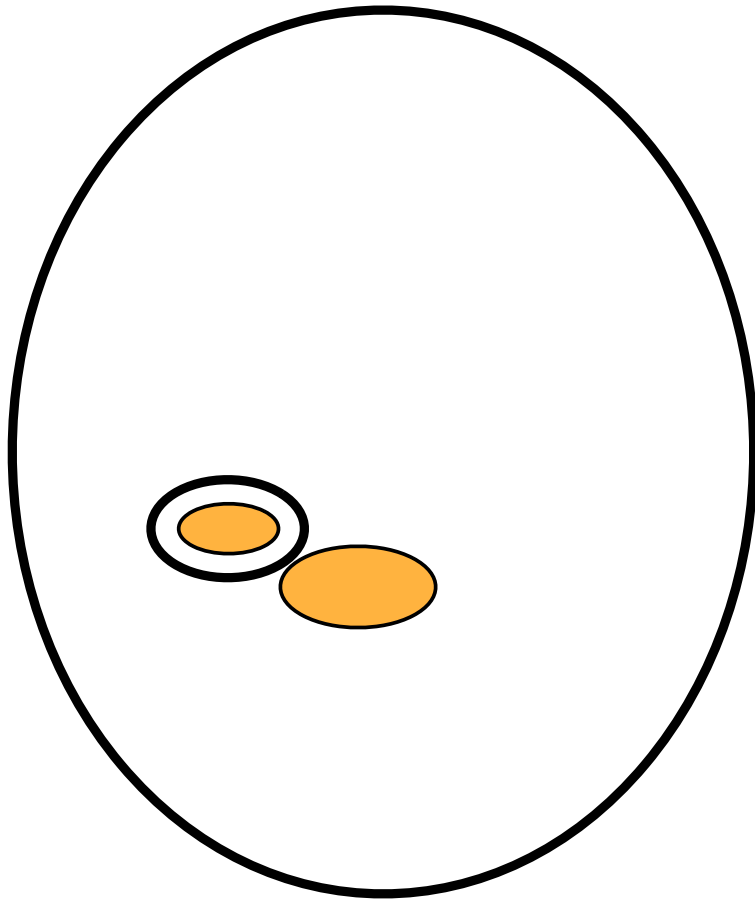
# Halo Merger $\rightarrow$ Subhalo



# Halo Merger $\rightarrow$ Subhalo



# Halo Merger $\rightarrow$ Subhalo



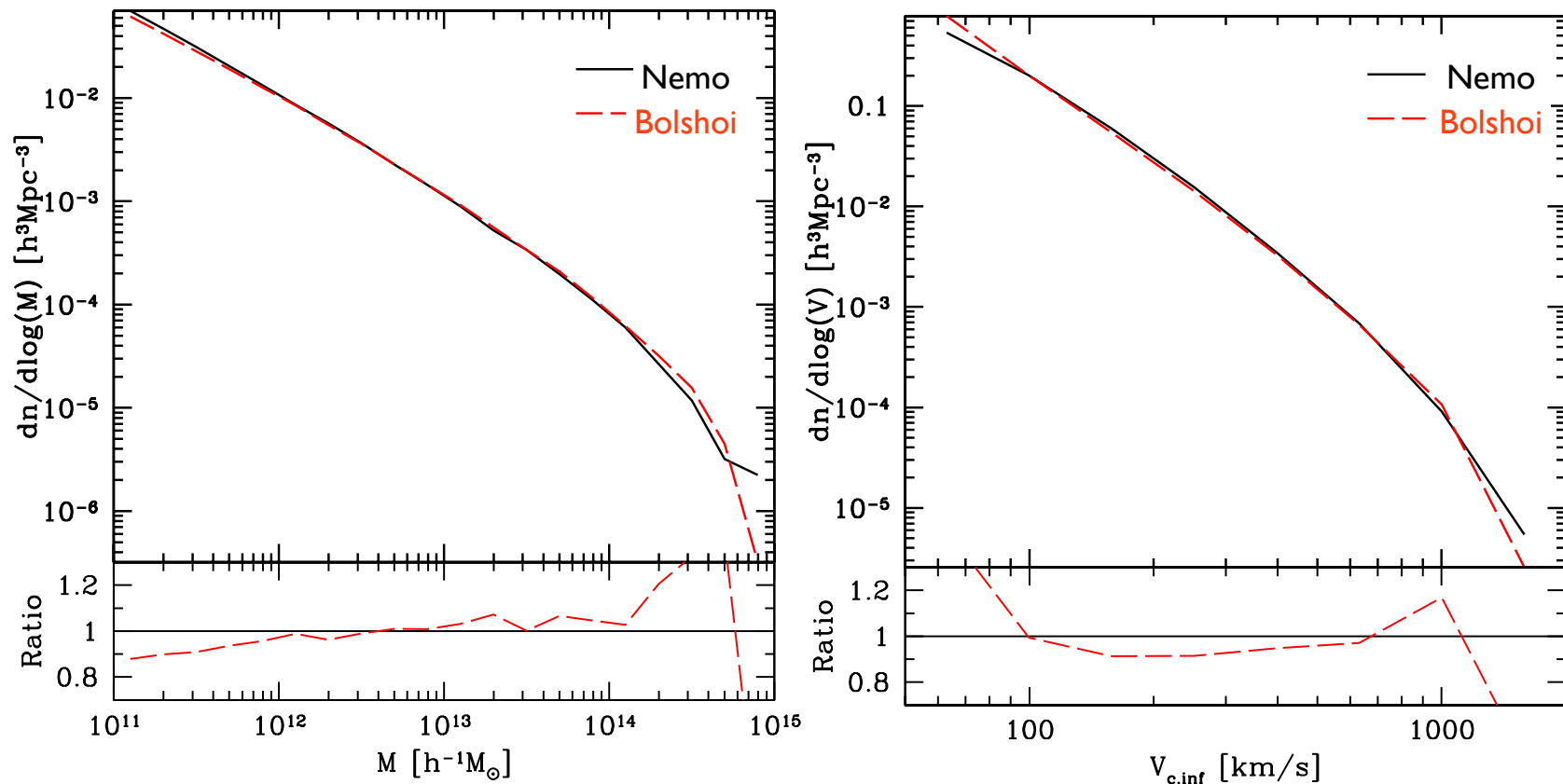
Subhalos experience rapid mass stripping after infall

Compact galaxy remains intact longer

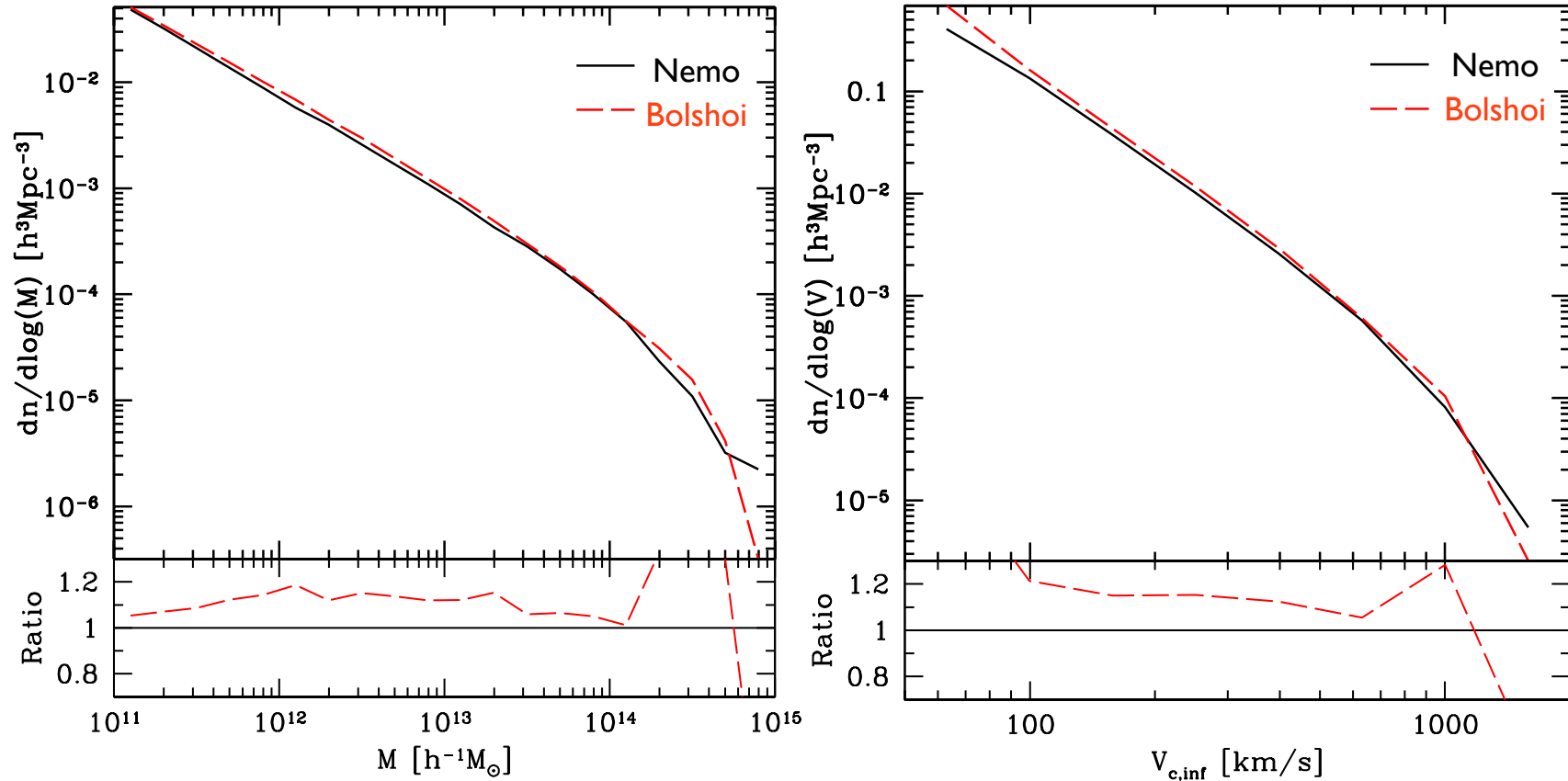
Galaxy properties ( $L$ ,  $M_{\text{star}}$ ) correlate with subhalo properties ( $M_{\text{vir}}$ ,  $V_{\text{c,max}}$ ) prior to infall



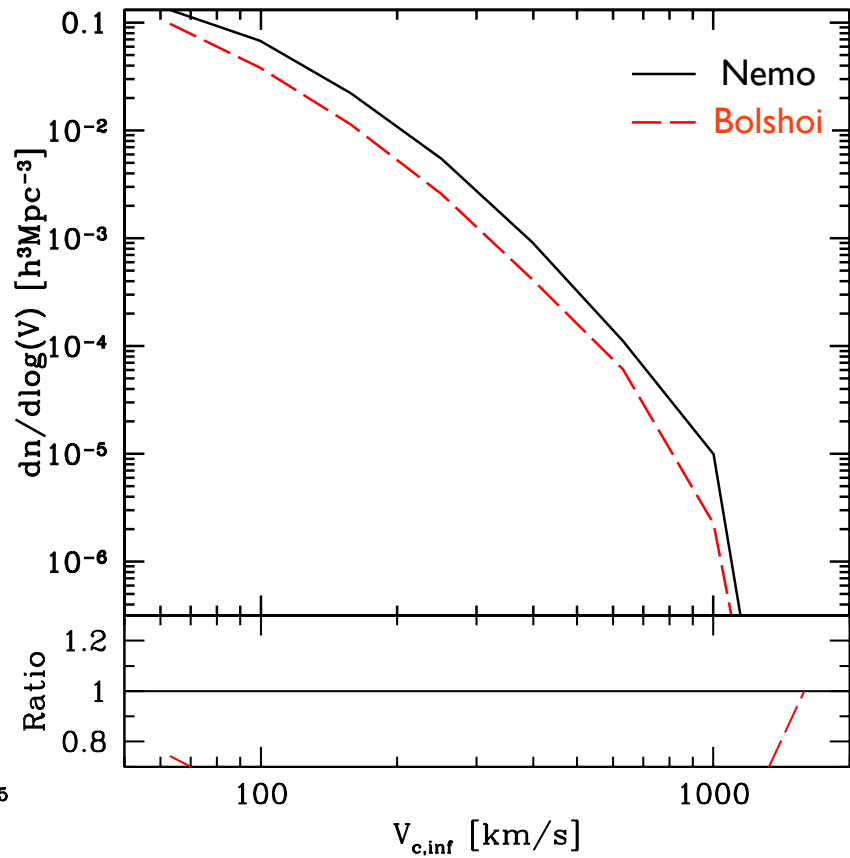
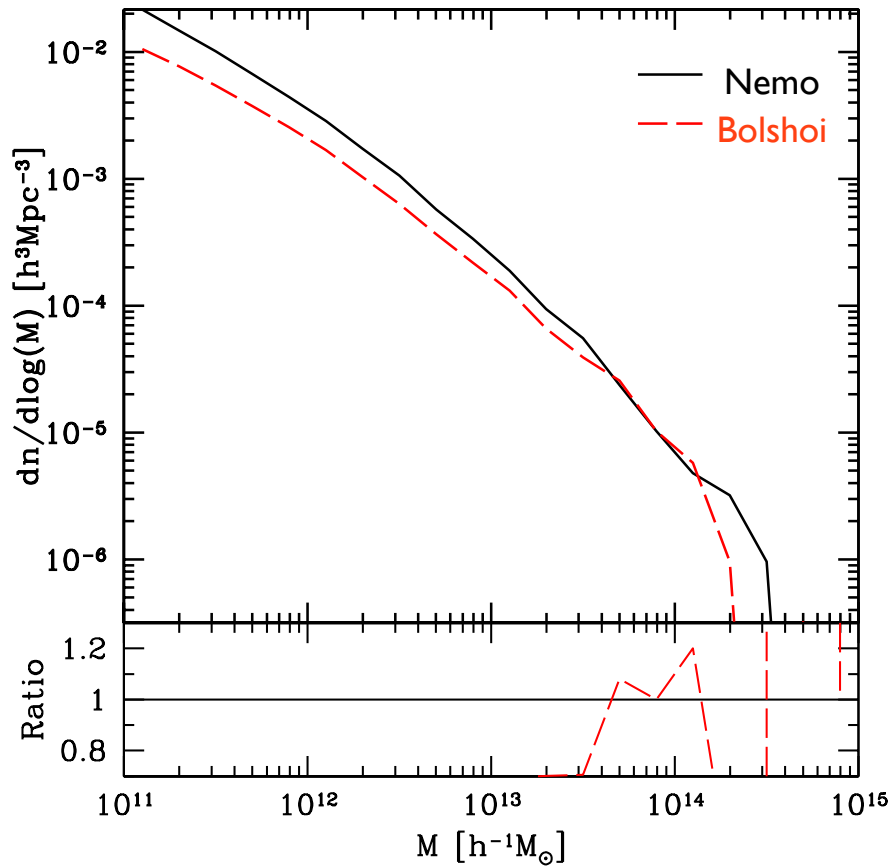
# Subhalo $M_{\text{inf}} / V_{\text{c,inf}}$ Function: All Subhalos (centrals + satellites)



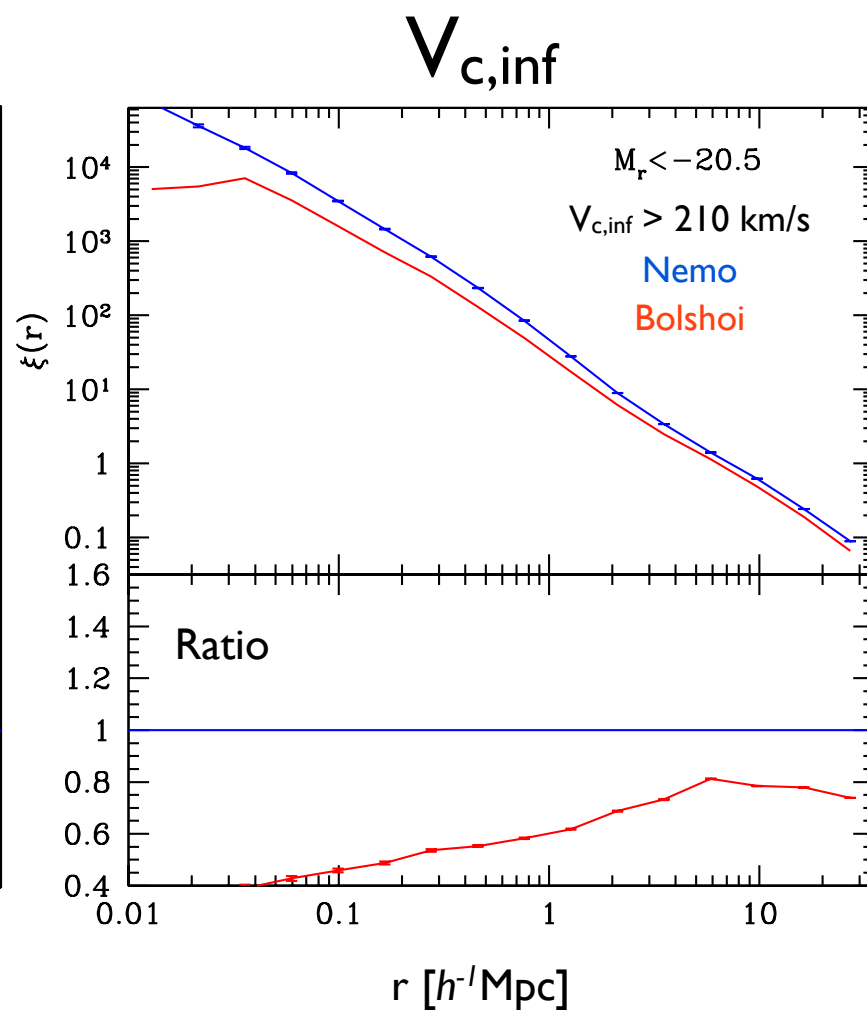
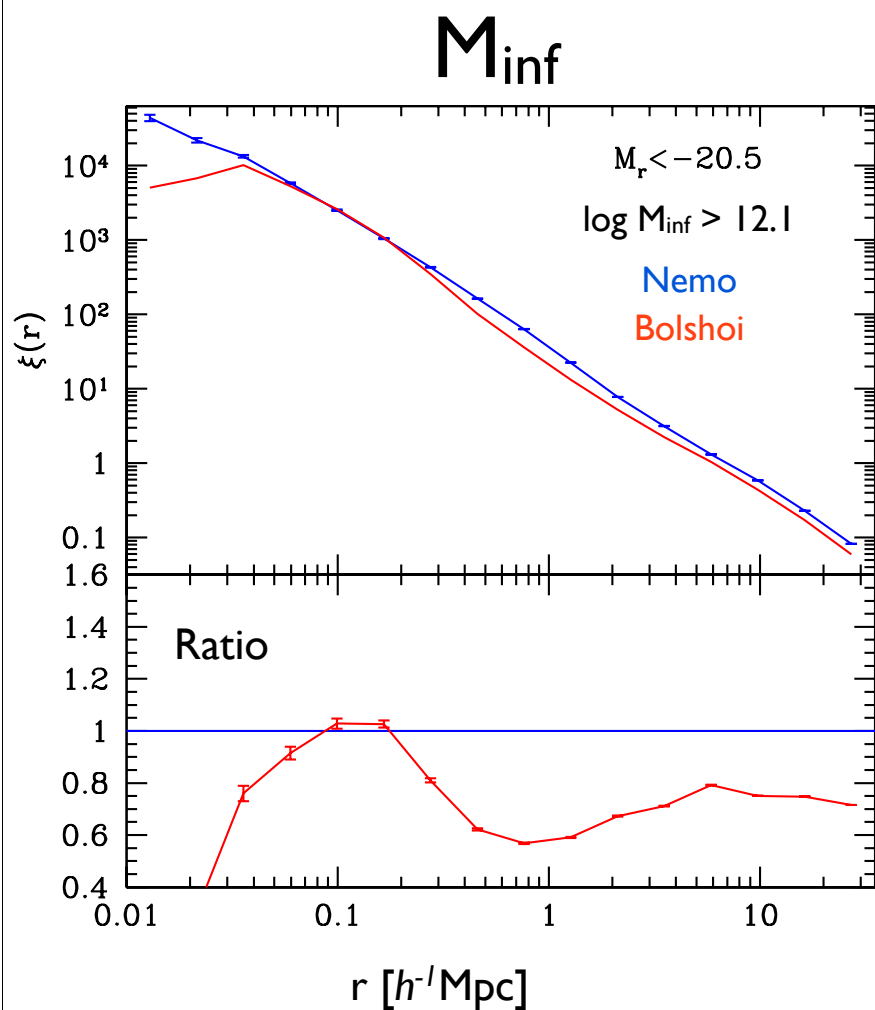
# Subhalo $M_{\text{inf}} / V_{\text{c,inf}}$ Function: Central Subhalos



# Subhalo $M_{\text{inf}} / V_{\text{c,inf}}$ Function: Satellite Subhalos

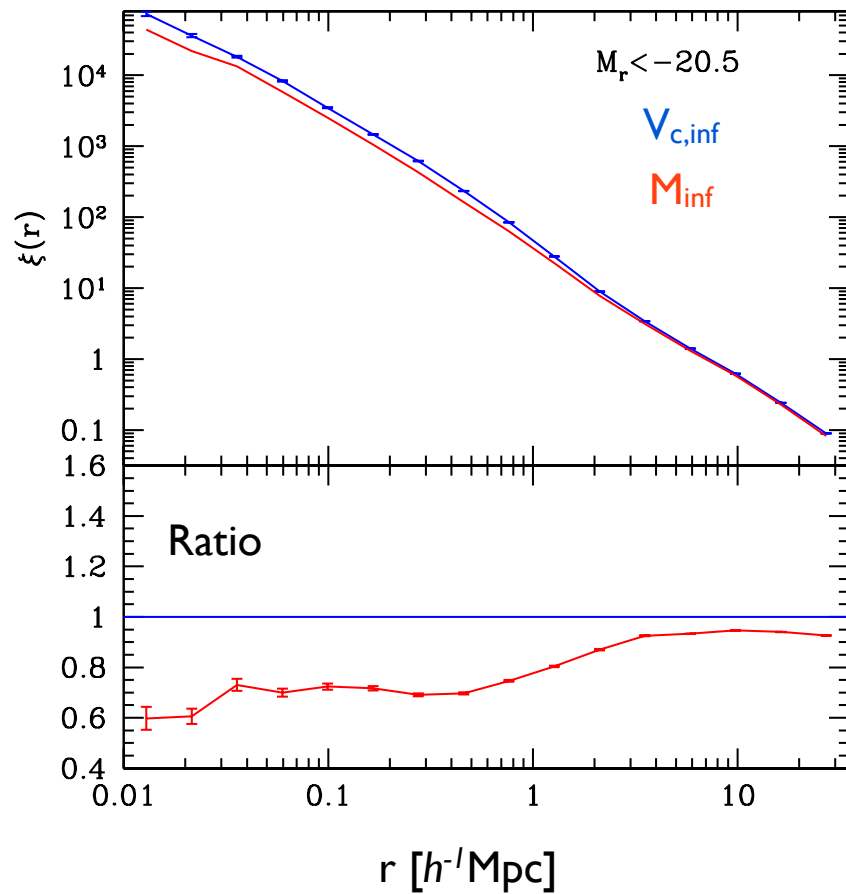


# 2-point correlation function



# 2-point correlation function: $M_{\text{inf}}$ vs. $V_{\text{c,inf}}$

## Nemo



## Bolshoi

