

2dF luminosity density

$$J_B = 2.5 \pm 0.2 \times 10^8 h L_{\odot} Mpc^{-3}$$

$$M^* = -19.75$$

$$\Phi^* = 2 \times 10^{-2}$$

The Local Group & Virgo - a worked example

$$\frac{\delta V}{V} = -\frac{1}{3} \frac{\Omega_m^{0.6}}{b} \frac{\delta \rho_g}{\rho_g}$$

$$\frac{\delta \rho_g}{\rho_g} \approx 2$$

from clustering
galaxies -
~ twice ^{average} density

so

$$V_{\text{virgo}} \approx 1500$$

in Virgo out
to LG

$$\delta V_{\text{virgo}} \approx -300$$

$$\beta = \frac{\Omega_m^{0.6}}{b} \approx -3 \frac{(-300/1500)}{2} \approx 0.3$$

$$\text{for } 1 < b < 2, \quad 0.13 < \Omega_m < 0.43$$

only $b > 1$ makes physical sense in CDM picture:
need a smooth component of mass to make δ big,
baryons dissipate and become more concentrated than CDM
(which is dissipationless).