

Analytical work

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1 Observed Associations

1.1 Associations density

The observed associations have densities in the range: $[0.02 - 0.13 \frac{10^{11} M_{\odot}}{Mpc^3}]$ (Tully et.al 2006 table 2)

1.2 Volume Observed

The observations were in the range of, $r = [1.1 - 3.2 Mpc]$ and $b > |30|$
this means a volume of:

$$V = \frac{-2\pi r^3 \cos(\theta)}{3} \Big|_{1.1}^{3.2} \Big|_{\pi/6}^{5\pi/6} = \frac{-2\pi 31.437 \cos(\theta)}{3} \Big|_{\pi/6}^{5\pi/6} = \frac{-2\pi 31.437 (-\sqrt{3})}{3} = 114.04 Mpc^3 \quad (1)$$

1.3 Expected associations in simulations?

There where 7 associations in the volume computed before. Which leads to infer the expected number of associations in our volume:

$$\frac{7}{114.04} = \frac{3N_{sim}}{4\pi(7Mpc/h)^3} = \frac{N_{sim}}{4188.79 Mpc^3} \quad (2)$$

$$N_{sim} = \frac{7 \times 4188.79}{114.04} = 257.11 \quad (3)$$