Grupos de Galaxias

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Galaxy Groups

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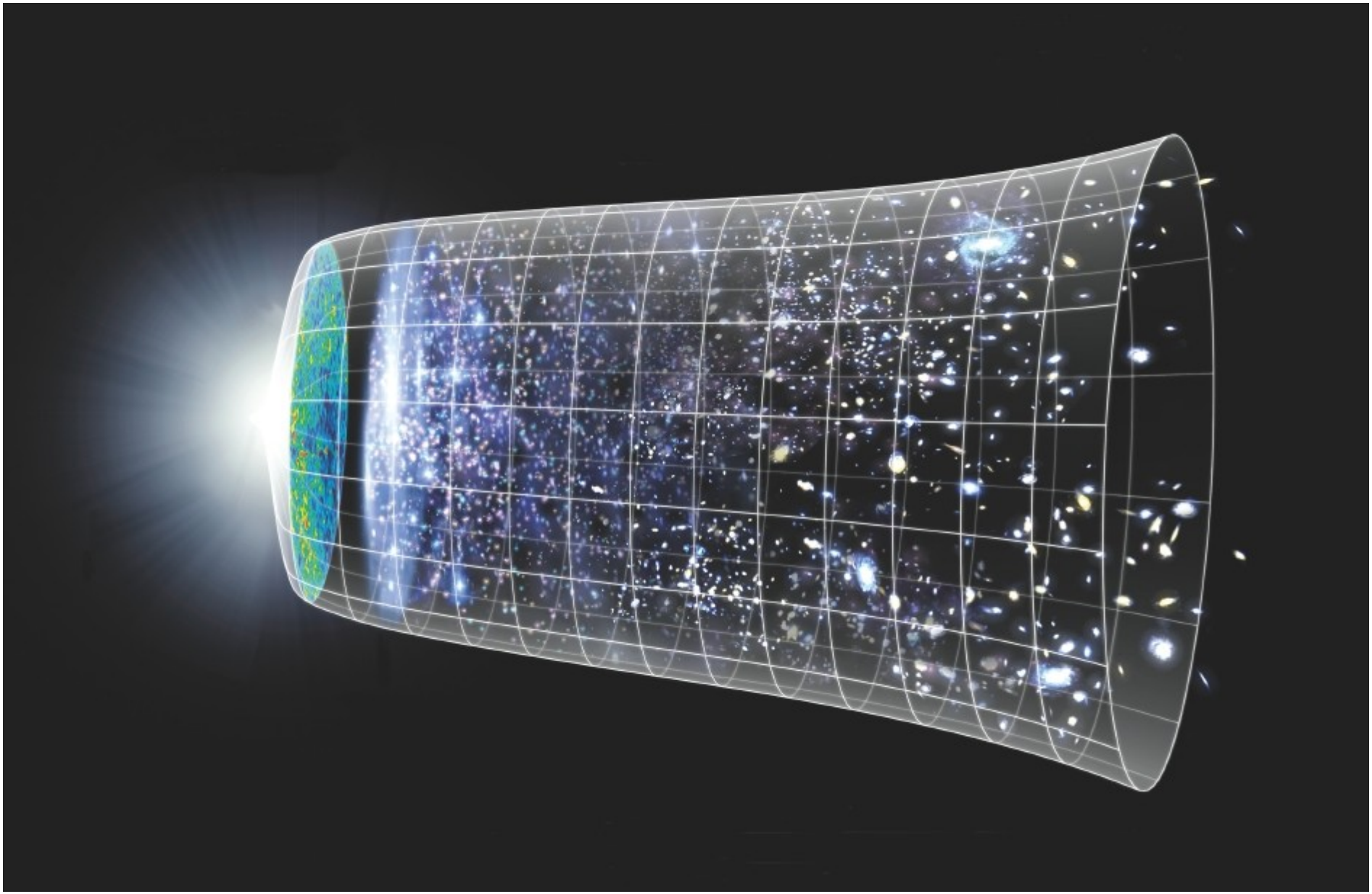
ABSTRACT

Galaxy groups can be characterized by the radius of decoupling from cosmic expansion, the radius of the caustic of second turnaround, and the velocity dispersion of galaxies within this latter radius. These parameters can be a challenge to measure, especially for small groups with few members. In this study, results are gathered pertaining to particularly well studied groups over four decades in group mass. Scaling relations anticipated from theory are demonstrated and coefficients of the relationships are specified. There is an update of the relationship between light and mass for groups, confirming that groups with mass of a few times $10^{12} M_\odot$ are the most lit up while groups with more and less mass are darker. It is demonstrated that there is an interesting one-to-one correlation between the number of dwarf satellites in a group and the group mass. There is the suggestion that small variations in the slope of the luminosity function in groups are caused by the degree of depletion of intermediate luminosity systems rather than variations in the number per unit mass of dwarfs. Finally, returning to the characteristic radii of groups, the ratio of first to second turnaround depends on the dark matter and dark energy content of the universe and a crude estimate can be made from the current observations of $\Omega_{matter} \sim 0.15$ in a flat topology, with a 68% probability of being less than 0.44.

Keywords: Galaxies: groups; mass and luminosity functions; dark matter

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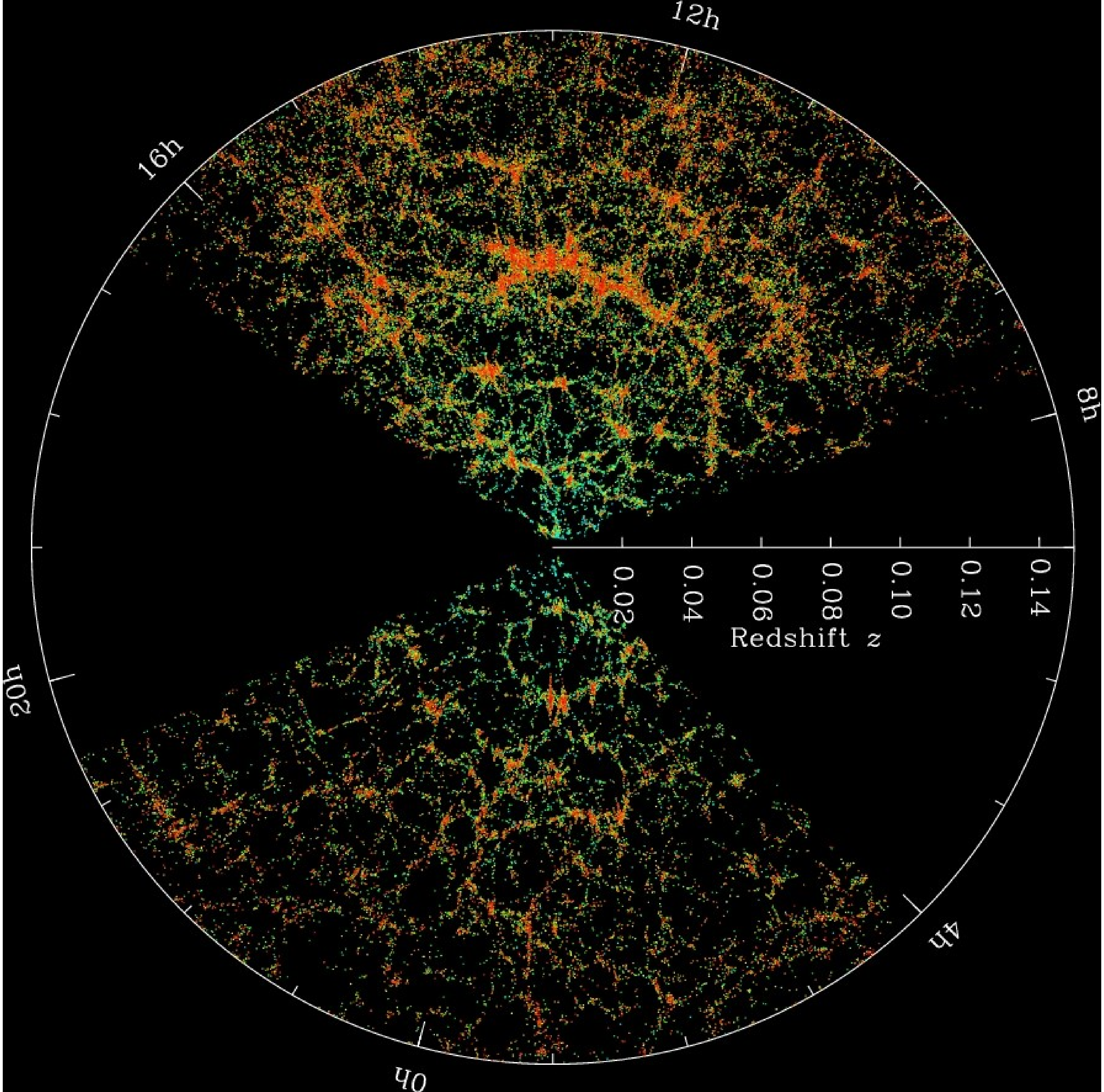
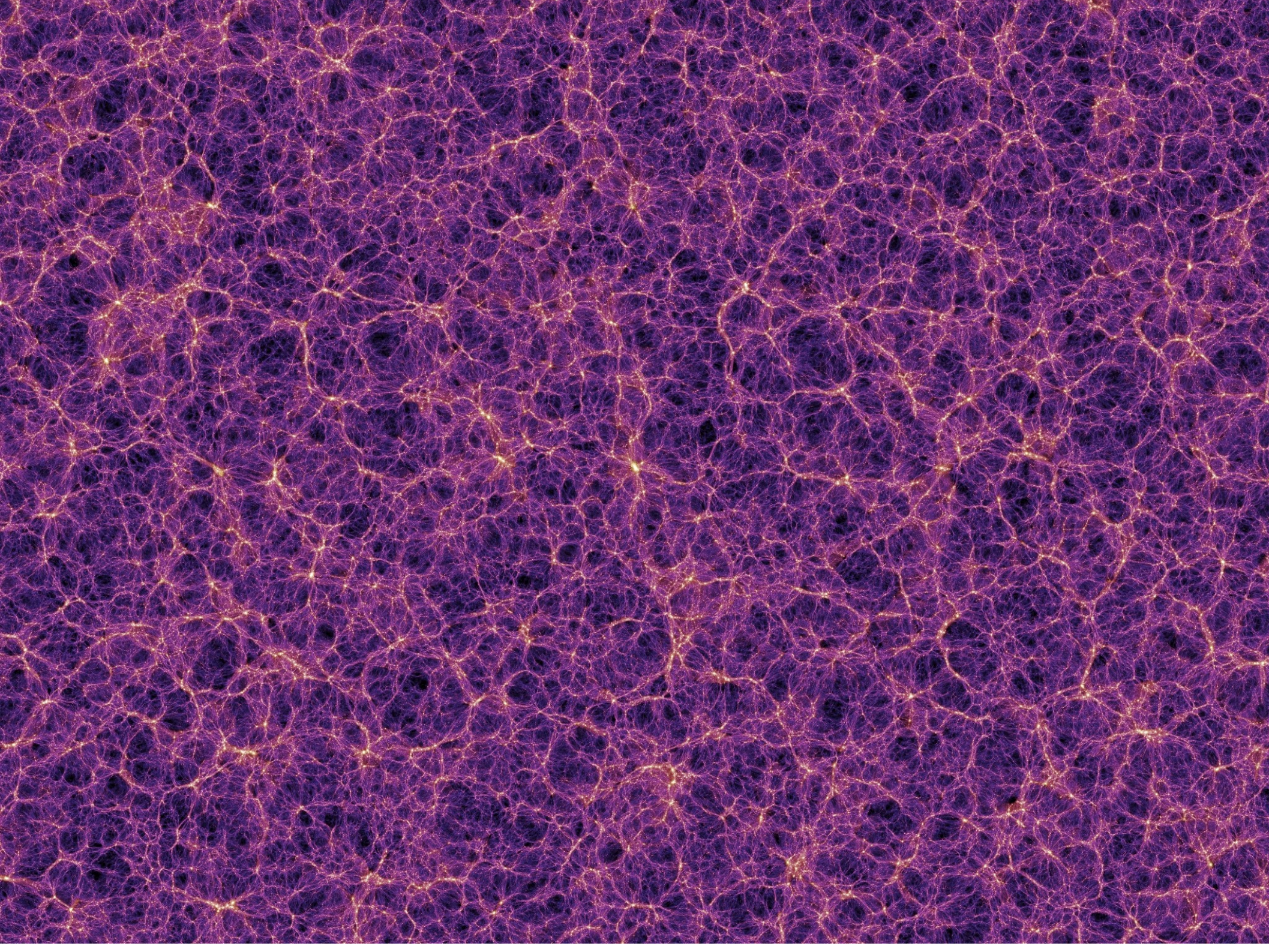
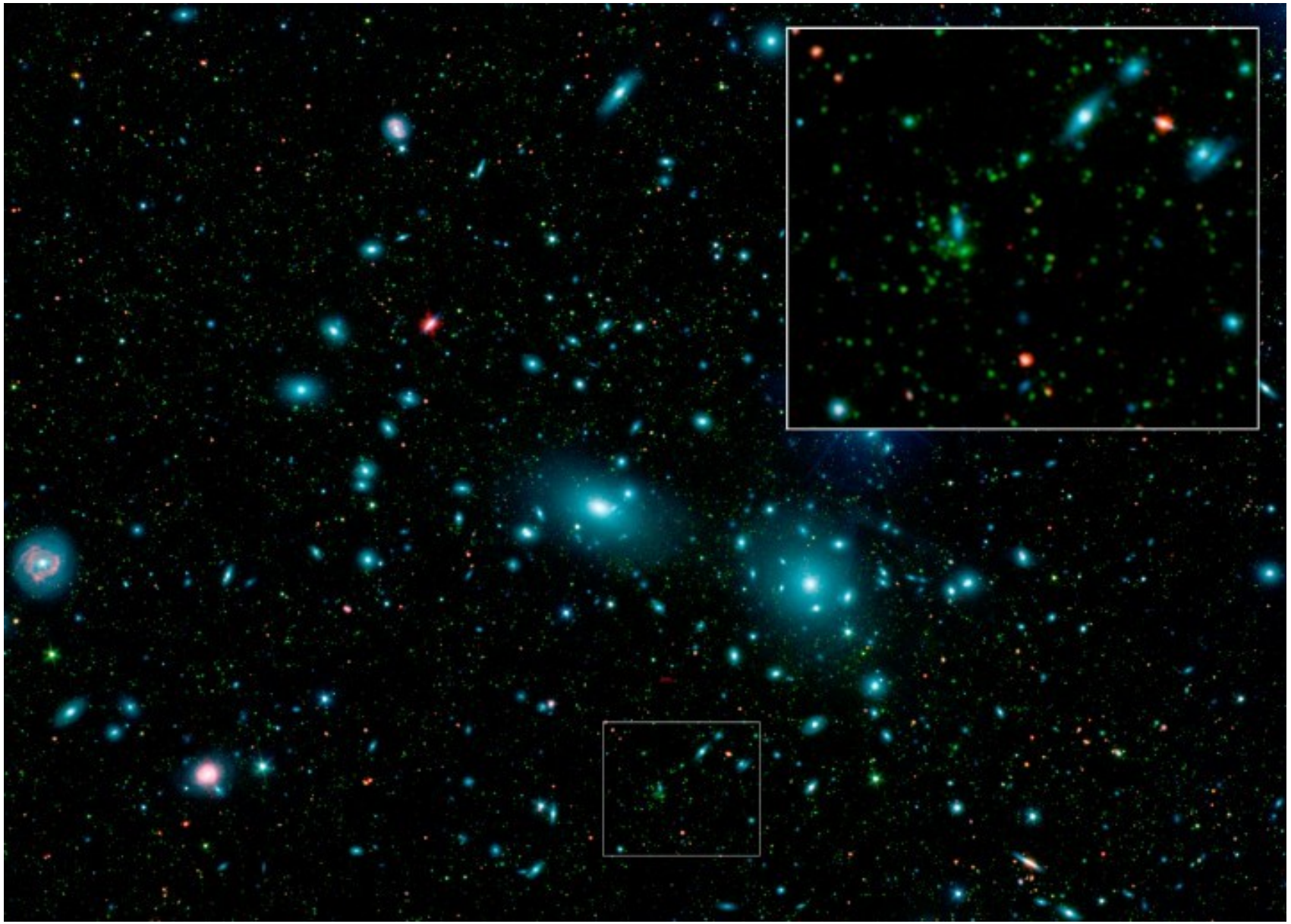


12h
16h
8h
20h
4h
0h
0.02
0.04
0.06
0.08
0.10
0.12
0.14
Redshift z



Grupo Coma



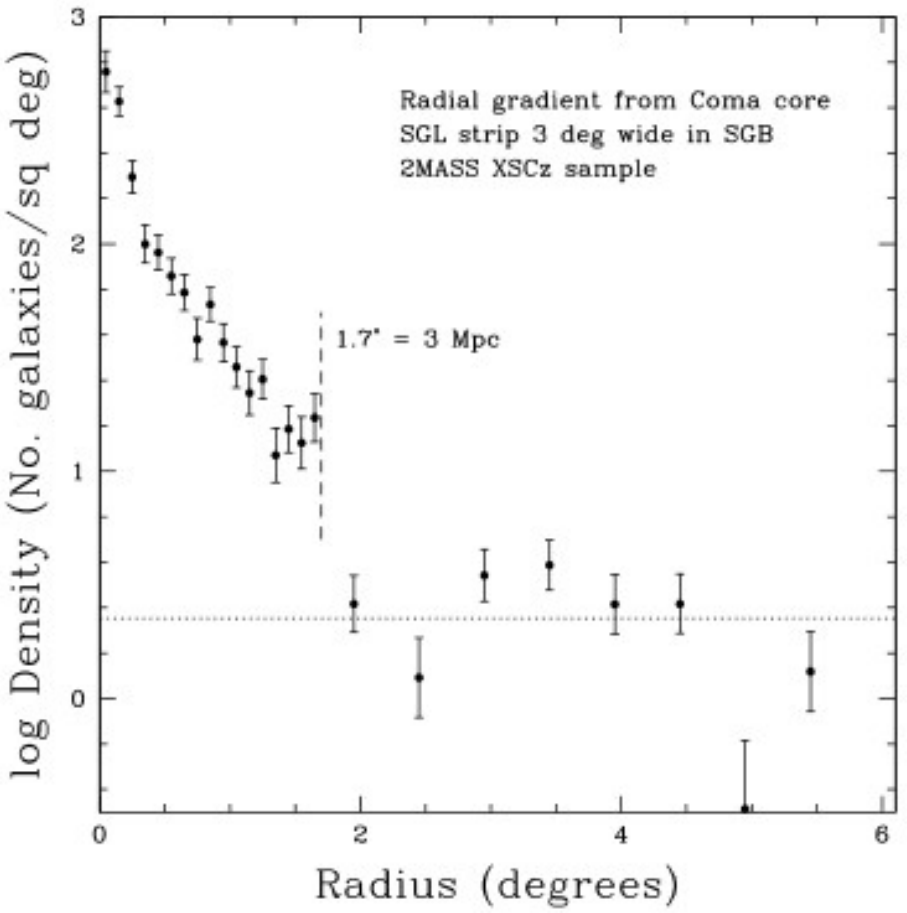
¿Como un observador puede *definir* un grupo de galaxias?

R_{200} : Radio en el que la densidad es 200 veces la densidad del Universo.

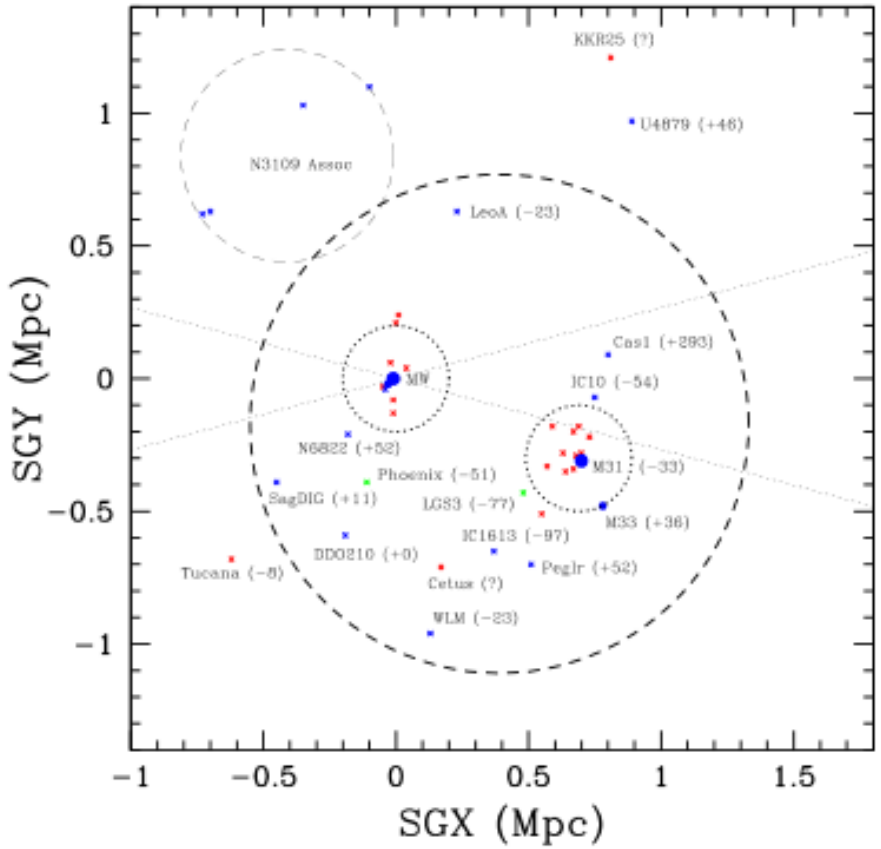
R_{1t} : Radio donde las galaxias se separán de la expansion.

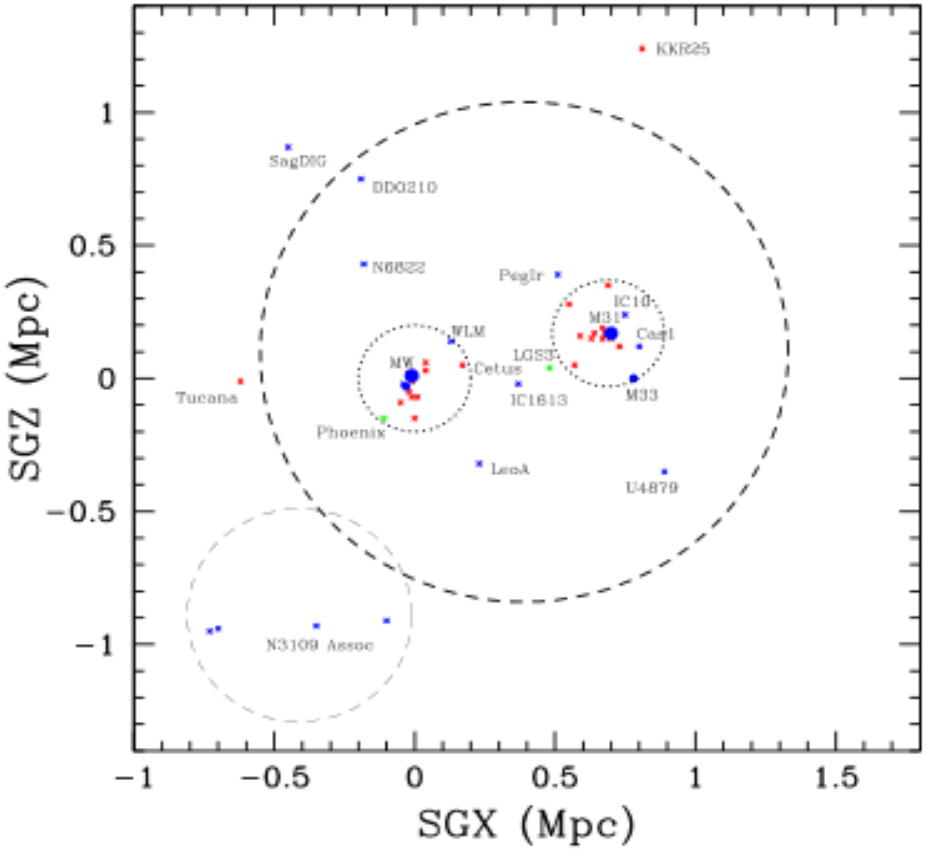
R_{2t} : En el universo joven. Radio donde las galaxias se separán de la expansion y se vuelven a expandir.

Como se mide R_{2t}

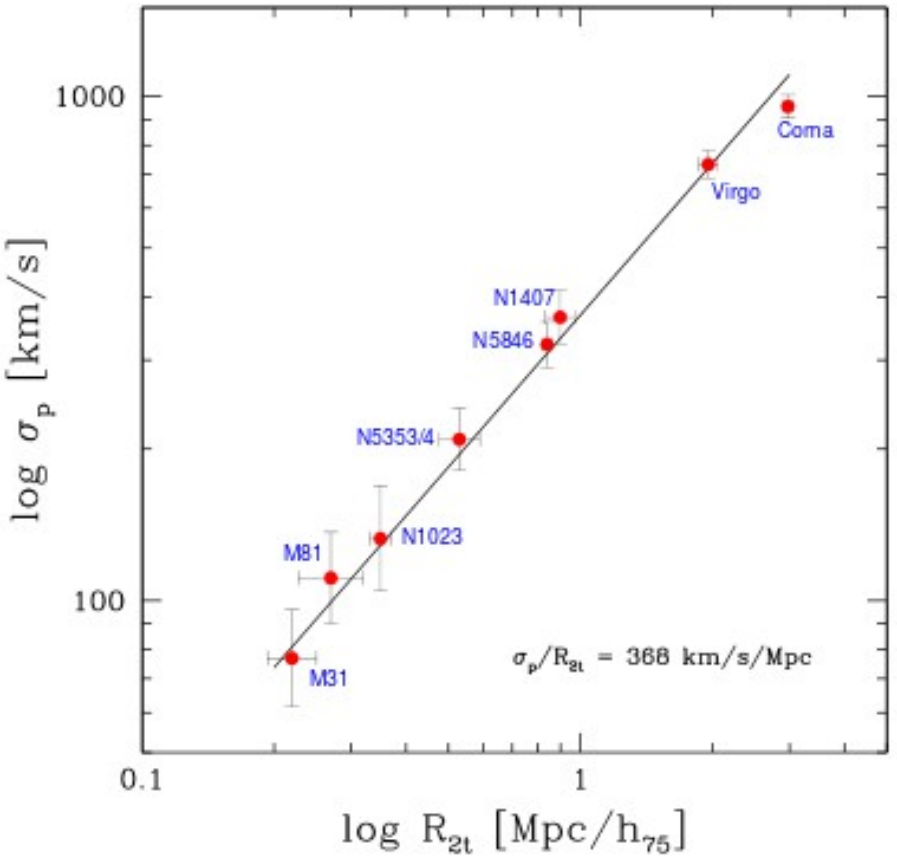


R_{1t} y R_{2t} en el “grupo local”

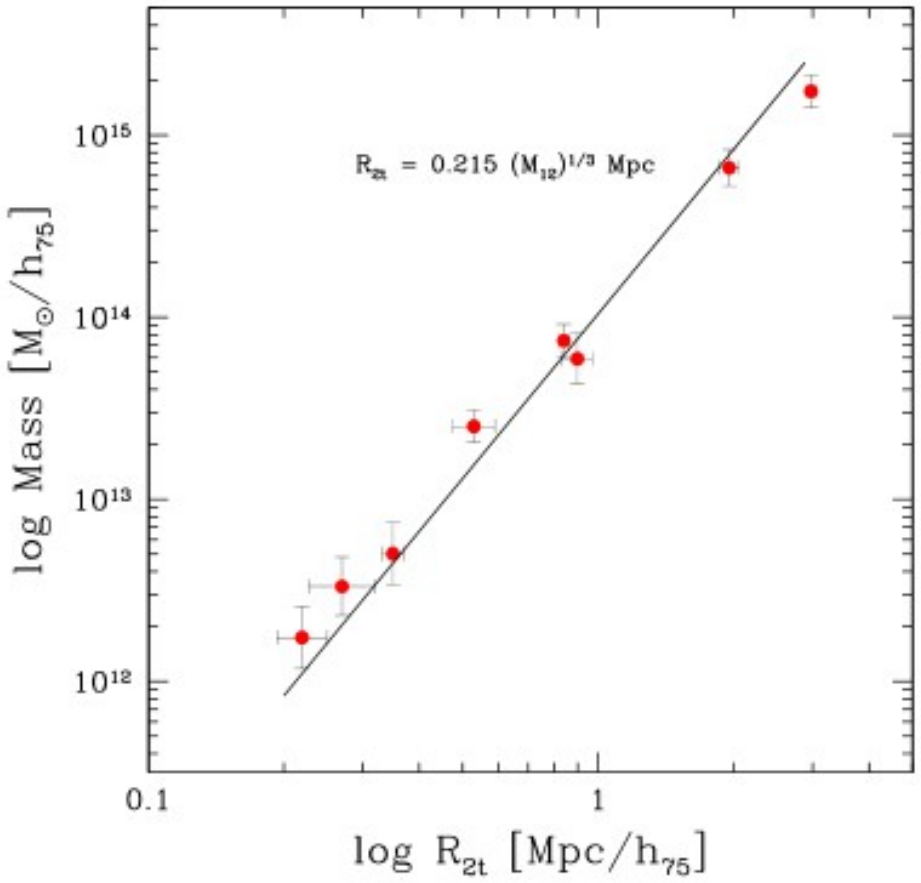




Correlacion entre R_{2t} y las velocidades.



Correlacion entre R_{2t} y la Masa.



Conclusiones:

- Se encontro correlación entre R_{2t} con σ y M.
- Un grupo se puede definir como todo lo que este dentro de R_{2t}
- Centauros A tiene distribución de satelites en forma de plano.
- Galaxias Enanas sirven para definir halos, Enanas viejas estan dentro de los halos mientras que las jovenes estan fuera.

Conclusiones:

- El grupo local que conocemos son es en realidad dos grupos locales que vivien dentro una Asociacion local (Definida por R_{1t}).
- Para galaxias cercanas se pudo hallar R_{1t}, y se encontro que esta relacionado con M.