Concentric Ripples of Galaxy Concentrations

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Hartnett and Hirano (2008) presented a Fourier analysis galaxy survey data showing evident periodicity in number of galaxies as a function of distance. The analysis was of obvious lumpiness in the SDSS redshift data shown in figure 1 taken from their paper. That pattern entails a huge number of galaxies grouped around a particular redshift with a dearth before and beyond; this phenomenon is repeated throughout the data. The 'Great Wall' super cluster of galaxies at about 200 Mpc from the Milky Way is an obvious feature in the data. It is not alone. There do seem to be ripples of extreme density as one proceeds deeper into in the data even as the amount of data dissipates due to insufficient resolving power of telescopes. A rough periodicity is apparent through all slices of the SDSS data, but their plots were less than compelling.

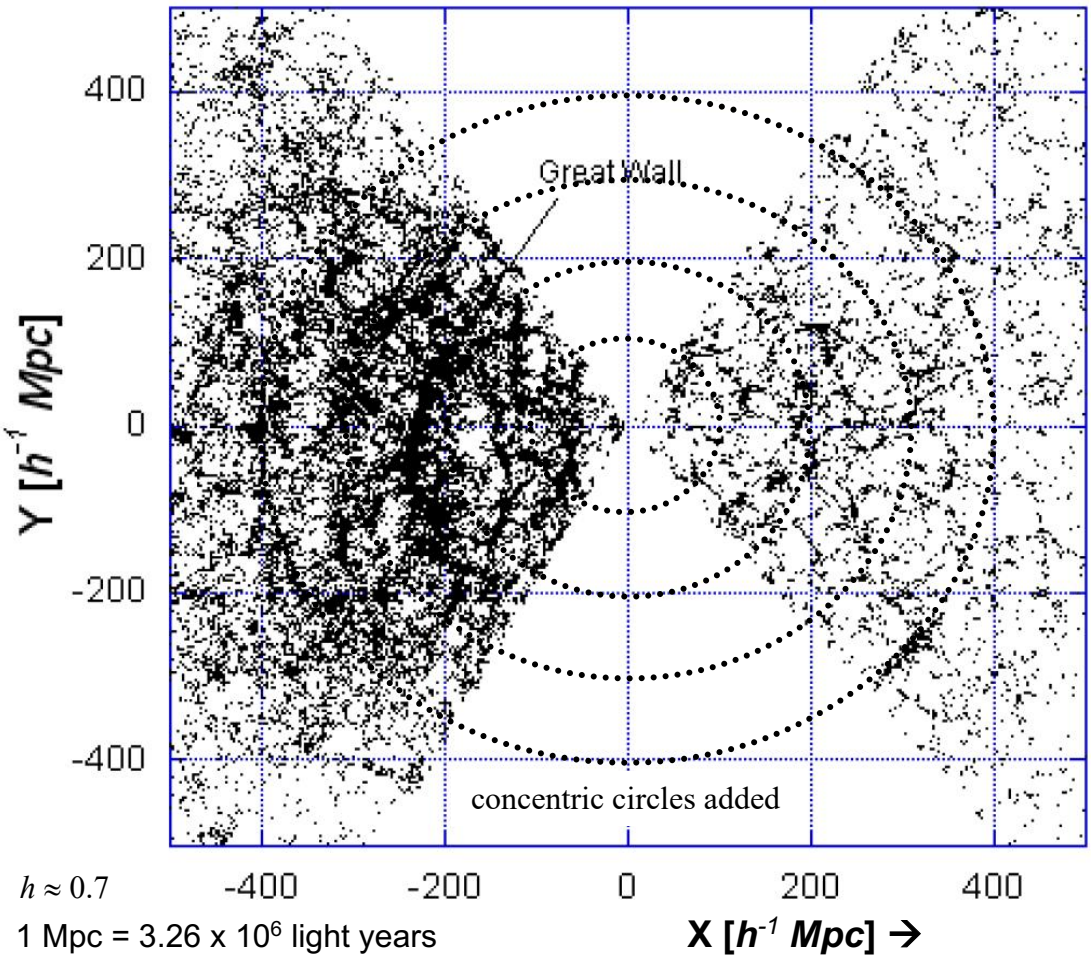

Figure 1: Density ripples in the SDSS redshift survey from 0 < Dec < 6

As telescopes have been developed with tremendously increased resolving power, the sdF survey shown in figure 2 and later in figure 3 have revealed that the periodicity is undeniable fact. Ripples of galaxy concentration are centered on our position here in the Milky Way. See figure 4 where the periodicity of these ripples in density are extremely obvious. Cosmologists make no attempt to explain using the standard cosmological model. A plasma scattering model provides a clear explanation. So… 'fingers of god' spokes (see figure 5) and spherical shells surround us.

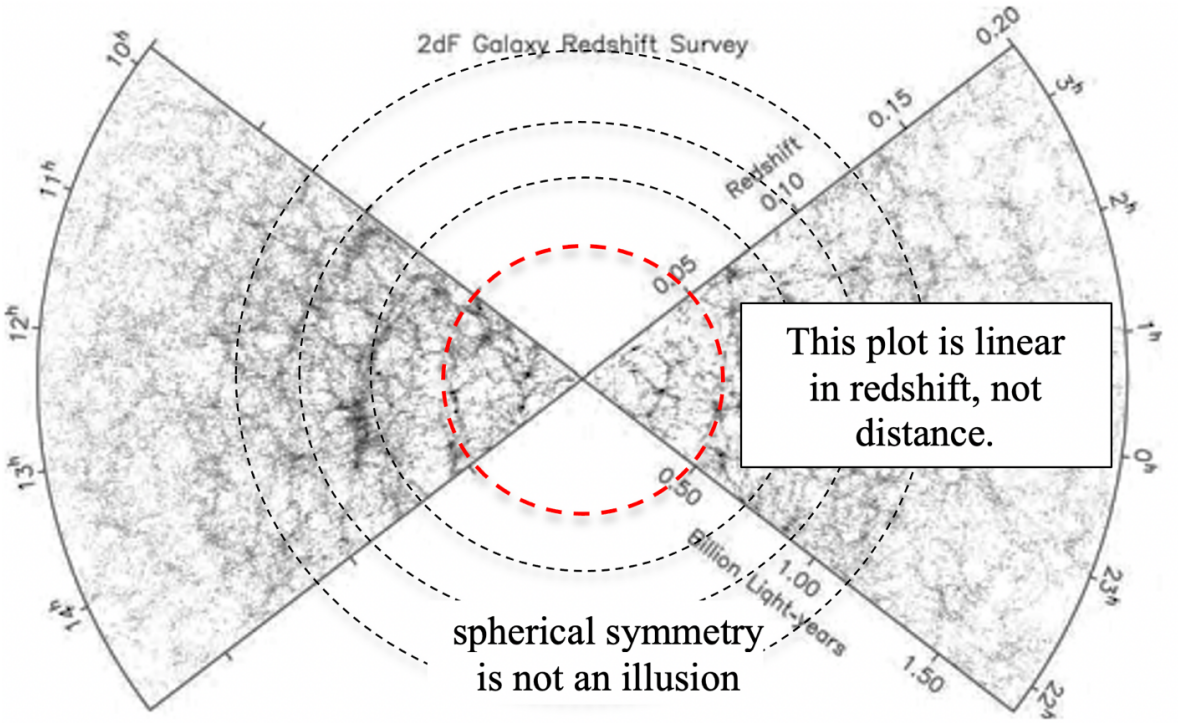

Figure 2: Portion of the SdF survey of galaxies by angle and redshift

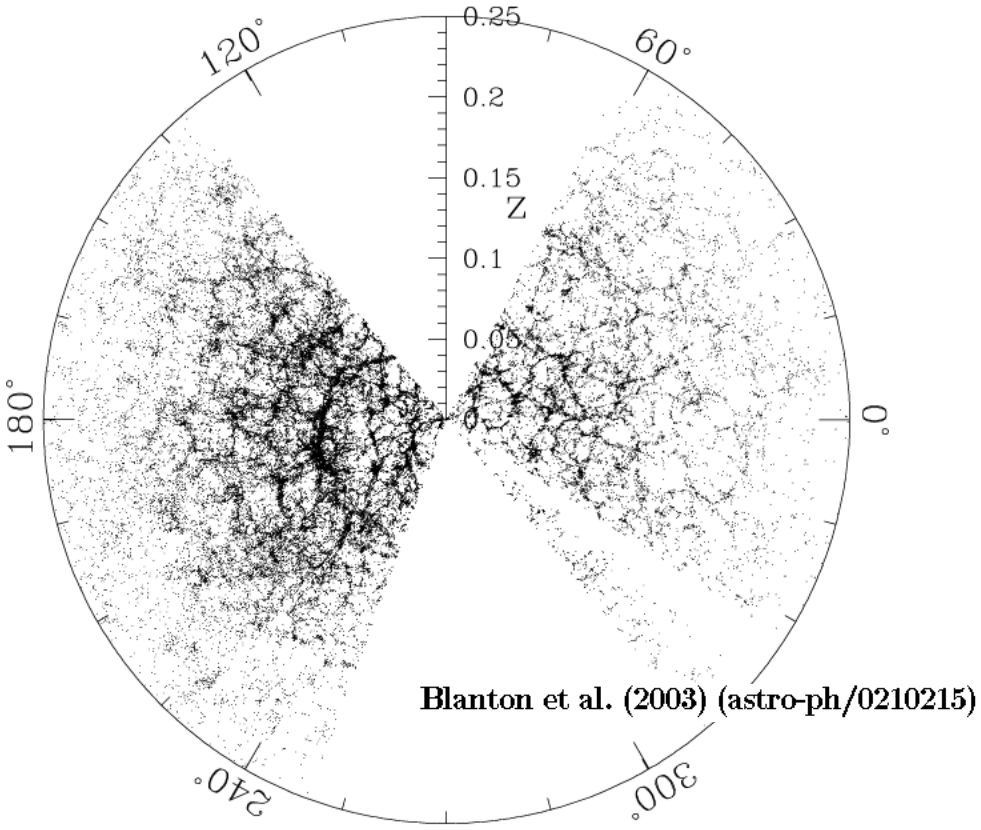

Figure 3: Slightly more recent survey of galaxies

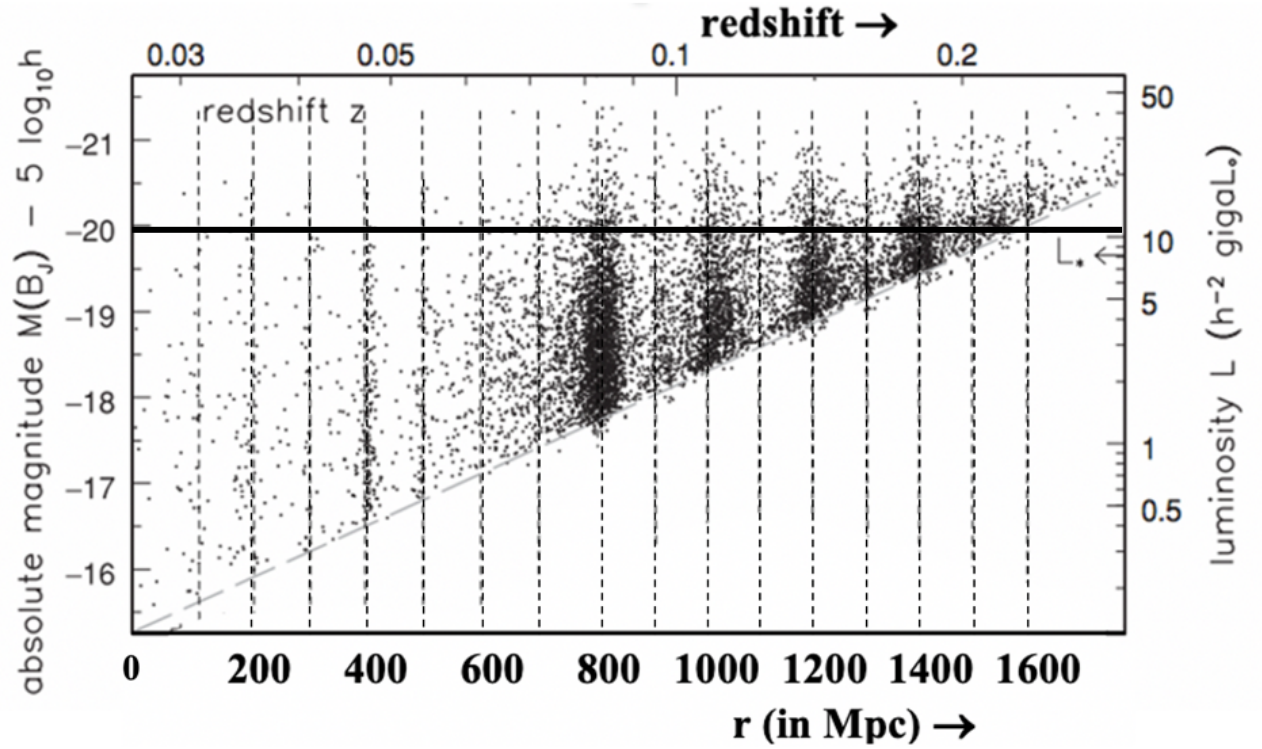

Figure 4: Luminosity of 8,438 galaxies near 13^h20^m from the 2dF data shown in figure 2 (data missing below the diagonal is due to instrumentation limitations that results in less density at greater redshifts in the survey data) – modified from Sparke and Gallagher (2010)

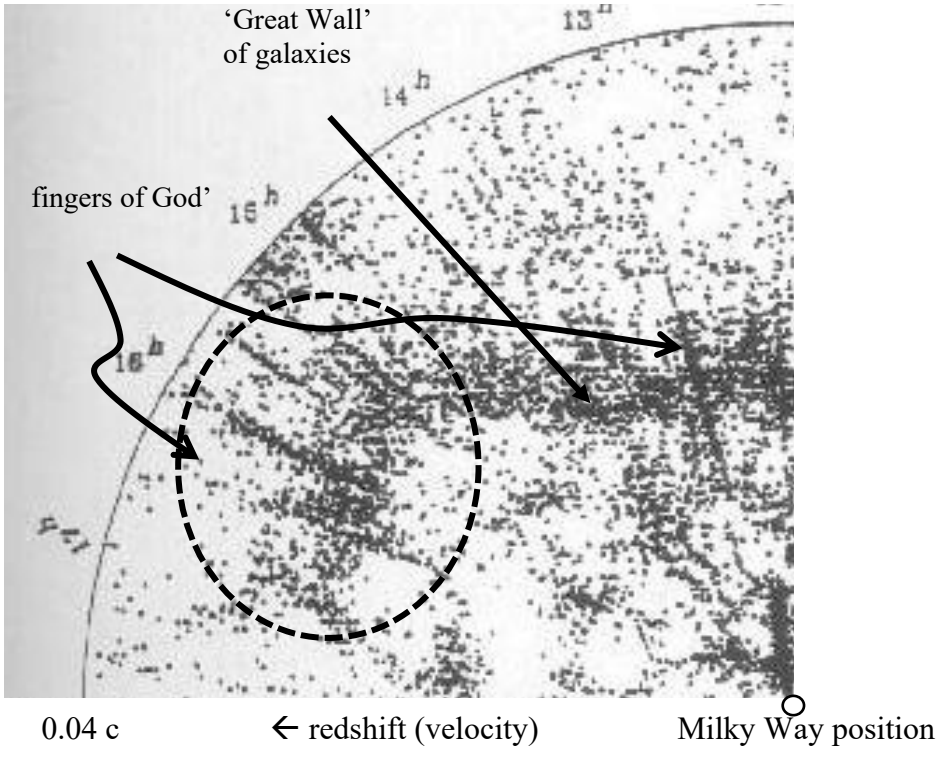

Figure 5: Portion of the SDSS distribution of galaxies by angle and redshift

Prior to an explanation of this data using the plasma pressure redshift interpretation, one must understand figure 4. The distances at bottom are determined using the exponential relationship of redshift vs distance. The triangular white area is where there are no data points because the low luminosities of galaxies at these distances were too faint to be observed. The explanation involves:

1)
2) the preponderance of galaxies in the cores at the centers of galaxy clusters,
3) the distribution of the plasma gases in and around cluster cores where pressure produces the majority of observed redshift. See figures 6 and 7.
4) the redshift of the vast number of galaxies in and around the cluster cores are spread over a stretch of redshift equivalent to about 150 Mpc (0.01 c velocity). See figures 5, 7 and 8.
5) the average size of the cluster cores relative to the size of the representative galaxy clusters determines the distance of a line of sight between cluster cores – about 200 Mpc. (This is based on representative baryonic cluster mass averaging universal density.) See figure 9.

6)
That is the data and summary explanation based on my plasma scattering model of redshift. It's all good methinks but the data is aging. Cosmologists seem to have no interest the ripples problem (if they have even noticed) so far as I can tell from scanning a lot of papers that brag about explaining galaxy distributions without even mentioning this so obvious feature. This is quite mysterious to me what with the many decades old 'fingers of god' hullabaloo that precipitated the invention of dark matter that is still treated as perhaps the predominant aspect of cosmology. The intervening decades have been spent in trying to figure out what in the hell dark matter is. But can Sparke and Gallagher be the only ones to have noticed it?

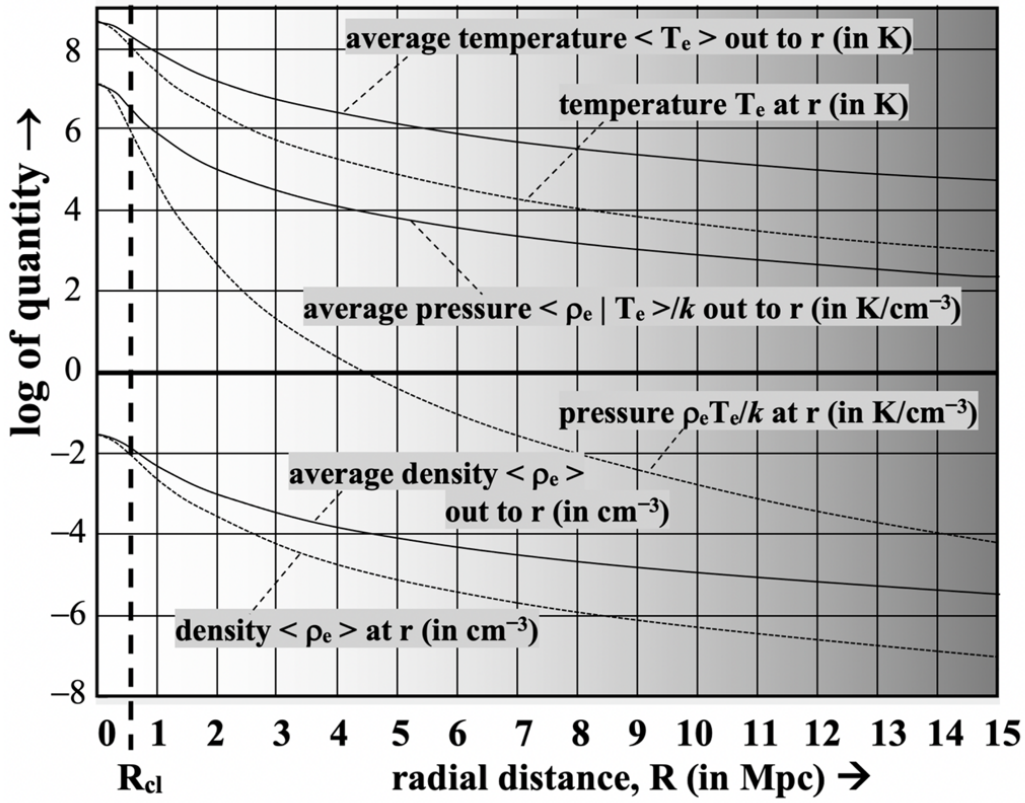

Figure 6: Typical temperature, pressure, and density of intergalactic plasma gases as functions of the distances from the centers of galaxy clusters

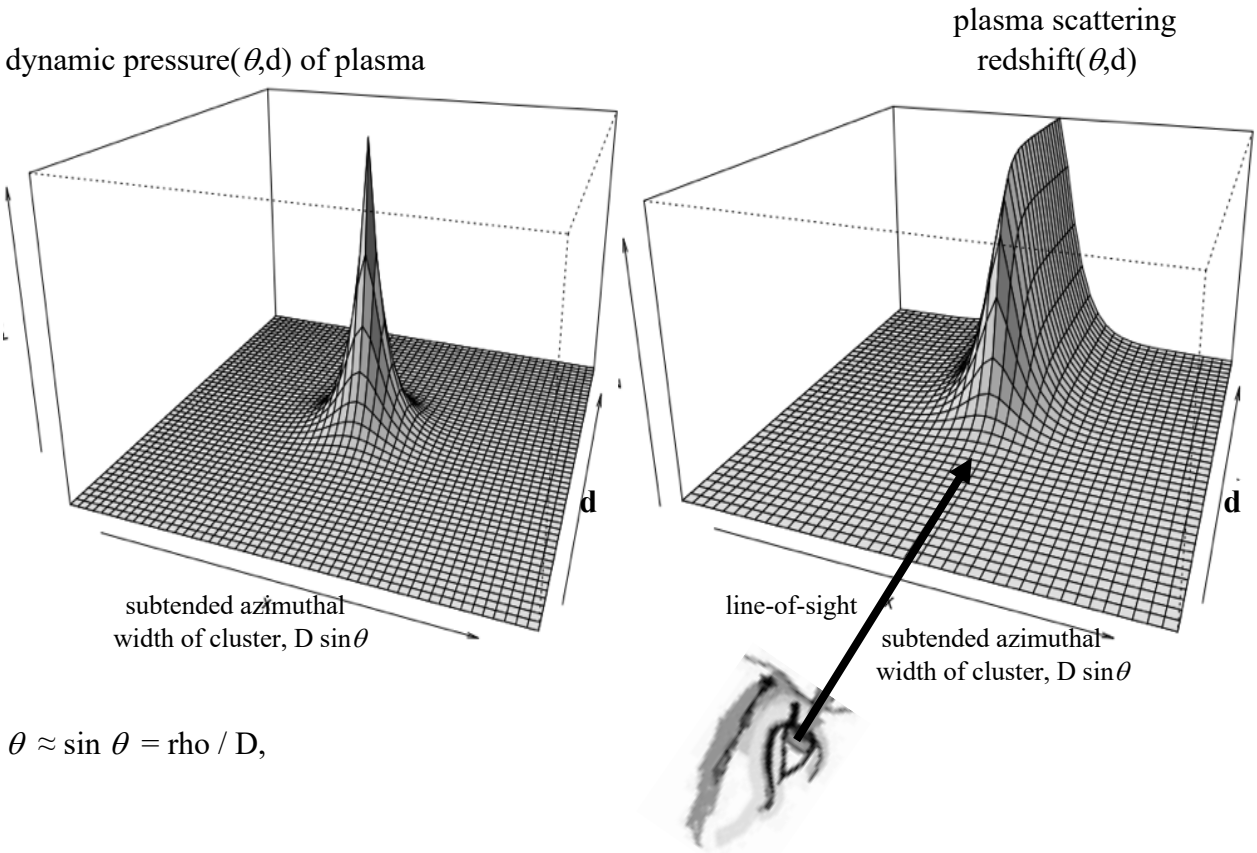

Figure 7: Plasma pressure in and around cluster core (on a linear rather than the logarithmic scale of figure 6) and the resulting redshift centered in and around galaxy clusters

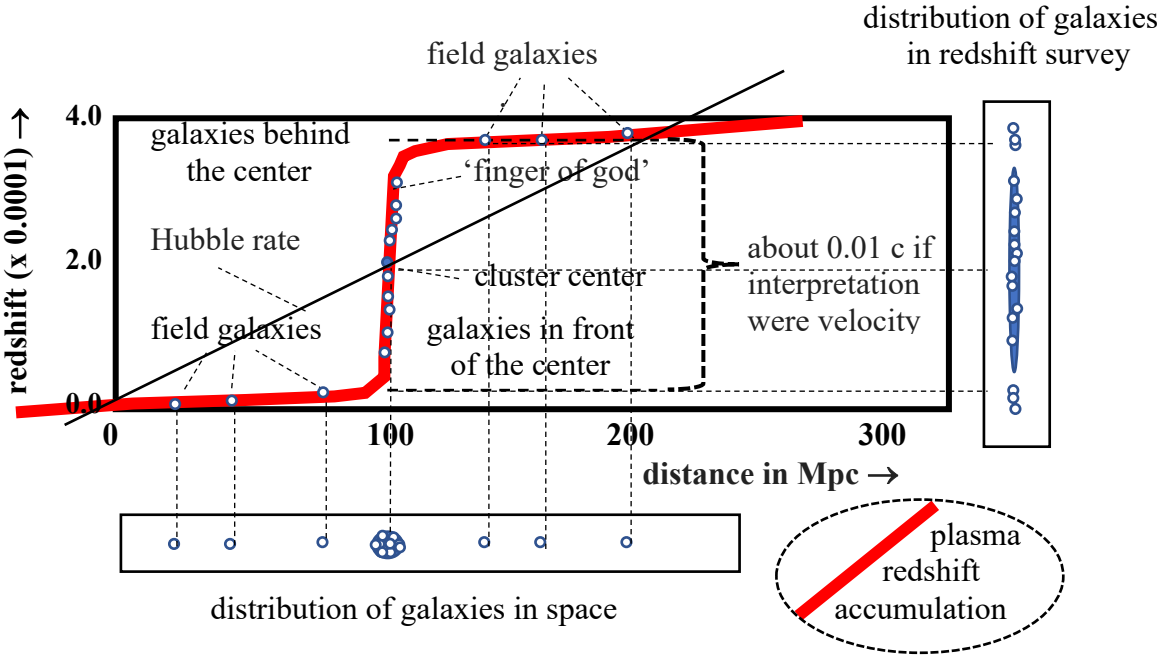

Figure 8: Alternative model treatment of distributions of galaxies along a line of sight

There is a wealth of (more) recent data that would extend the chart in figure 4 to 2500 Mpc – "The second and final data release (PDR-2) of the VIMOS Public Extragalactic Redshift Survey (VIPERS). The PDR-2 includes spectroscopic measurements for 91507 objects." See figure 10.

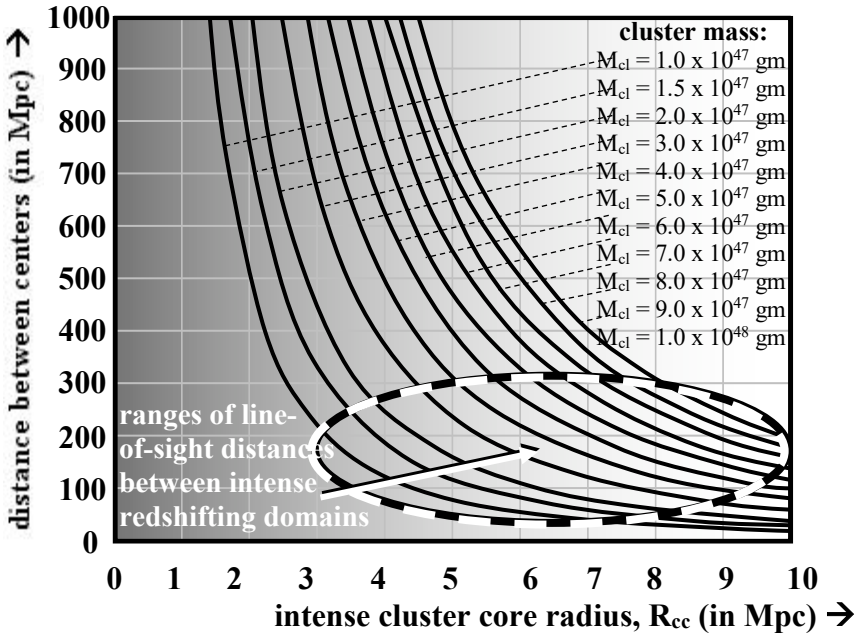

Figure 9: Determination of average line-of-sight separation of galaxy clusters

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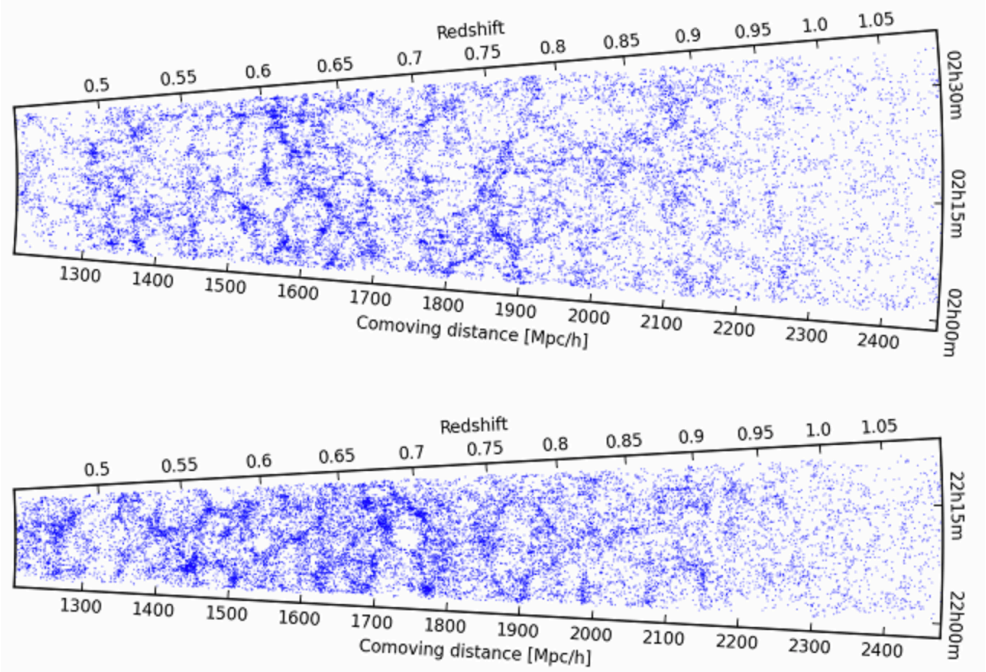

Figure 10: More recent VIPERS distribution of galaxies by angle and redshift
http://vipers.inaf.it/rel-pdr2.html

They explain at the website how to access the data. My son and I are attempting to filter the data for redshift and luminosity and plotting it like the data in figure 4.