

Fingers of God in an Expanding Universe

If one looks in the Southern Sky at about 13h 06m -33d 04m one encounters the richest cluster of galaxies known - The Shapley Supercluster. Recently spectra of many galaxies in the cluster have been measured (Proust et al. 2006). They vary from a few thousand to at least 60,000 km/sec. (The latter velocity would be close to 1/5 the speed of light!)

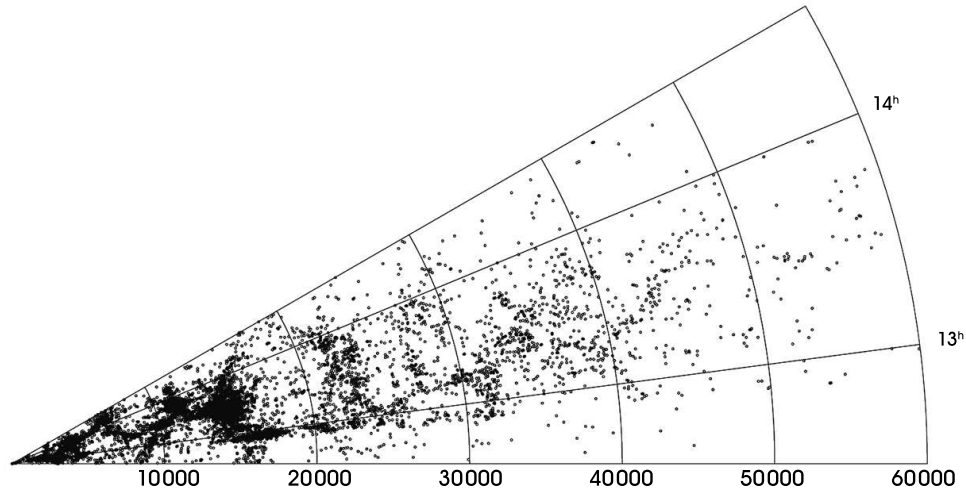


Fig. 1.— Cone diagram (right ascension) of the galaxies observed in the area of the Shapley supercluster up to a recession velocity of 60,000 km/sec. (From Proust et al. 2006)

The prevailing current assumption in astronomy today is that the amount of redshift is directly a measure of distance. So the higher redshifts in this cluster would be at a distance of the order of 20% of the radius of the Universe.

It is truly remarkable that authoritative astronomers and physicists can measure galaxies in a well defined cluster and accept without question that some of the members are 1,000 Mpc from other members (that is, over 3,000,000,000 light years distant from other members).

What do they think this cluster is? In fact they are forced to say it is a structure that I would compare to a great sausage stretching out from us toward the outer reaches of the Universe. The miraculous aspect is that this sausage is pointing directly at us, the observer.

But perhaps an even stranger aspect is that the far end would be receding from us at an appreciable fraction of the speed of light. Quick, the mustard!

These cluster elongations toward the observer have been noticed in other regions of the sky and, causing some inquietude, been dubbed "Fingers of God". The reason for unease is obvious. The fingers are pointing to the conclusion that we live in some special place in the Universe. Very anti-Copernican.

Is there any way out of this embarrassing situation? Yes. As a last resort, one can look at the observations. For 40 years now evidence has been building that bright parent galaxies are surrounded by younger, companion galaxies which have higher intrinsic redshifts. When plotted in a cone diagram, as shown in Arp 1998, p.71, the younger galaxies are at higher redshift and stretch out behind the brighter, low redshift parents.

Halton Arp
Max-Planck-Institut für Astrophysik,
D-85741 Garching, Germany
email:arp@mpa-garching.mpg.de

References

Arp, H. 1998, Seeing Red: Redshifts, Cosmology and Academic Science, Apeiron, Montreal

Arp, H. 2003, Catalogue of Discordant Redshift Associations, Apeiron, Montreal

Proust, D., Quintana, H., Carrasco, E., et al. 2006, The Shapley Supercluster: The Largest Matter Concentration in the Local Universe, ESO Messenger 124, p30