ABSTRACT NO: 470

TITLE: Clustering Scales in the Universe

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This project explores the clustering of objects at different scales in the universe. On the small scale of the universe such as in lyman α clouds, stars and galaxies to the larger scale of super clusters, quasars and even voids the general trend of the a relationship, the two point correlation function was determined to be supportive of clustering for the various bodies. This relationship presents that the clustering progression is determined by the distance of the radius between to celestial bodies given by the power law $\xi(r) = (r/r_0)^{-\gamma}$ such that $-1.1 \leq \gamma \leq 2.04 \pm 0.3$. For the various bodies such that for lyman α clouds with strongly related clustering on the small scale at redshift values of $z \approx 2.2$, star clustering based on the two micron galactic survey supportive of the application of the two point correlation function in comparison to data showing star clustering around Herbig stars as a random process with a spectrum of membership number N. This was in addition to the supportive data collected that the galaxy/galaxies clustering on both small and large scales with $\gamma = -1.8$ and voids with $\gamma = -1.1$. The respective correlation scale lengths are supported as quantized values for the respective extragalactic bodies such as in for quasars which appear to cluster at high red shift values such that the two point correlation function has fitted parameters in commoving coordinates of $r_0 = 15.2 \pm 2.7\ h^{-1}$ Mpc and $\gamma = 2.0 \pm 0.3$ over a scale range of $4 \leq r_p \leq 150\ h^{-1}$ Mpc which relates to a possible quantization as : n (log $r_0$) with log $r_0 = 0.36\ h^{-1}$ Mpc for $2 < n < 6$ for galaxies, rich (APM) clusters (including radio and x-ray clusters of galaxies), poor (Abell) clusters and quasars, superclusters and voids.