
[GC03] Cluster-Supercluster Alignments

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We study correlations in spatial orientation between galaxy clusters and their host superclusters using a Hubble Volume N-body realization of a concordance cosmology and an analytic model for tidally-induced alignments. We derive an analytic form for distributions of the alignment angle as functions of halo mass (M), ellipticity (ϵ), distance (r) and velocity (v) and show that the model, after tuning of three parameters, provides a good fit to the numerical results. The parameters indicate a high degree of alignment along anisotropic, collapsed filaments. The degree of alignment increases with mass and ellipticity while it decreases with distance and is independent of velocity. We note the possibility of using the cluster-supercluster alignment effect as a cosmological probe to constrain the slope of the initial power spectrum.

[GC04] The Intrinsic Three Dimensional Shape of the Virgo cluster

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We reconstruct the intrinsic three dimensional shape of the virgo cluster dark matter halo with the similar ways of the Lee & Lee (2006) about the local group. the virgo cluster is extremely rich but so far. we can only use two dimensional information about individual 73 member galaxies. the virgo's member galaxies are preferentially aligned with the line connecting virgo to the rich cluster Abell 1367 (West 2000). Taking this direction as the major principal axis of the virgo cluster dark matter halo , we estimate the two axial ratios of the halo adapting the reconstruction algorithm in Lee & Kang (2006). We expect our result provide more precise virgo cluster's mass with triaxial shape.