SPACE DISTRIBUTION OF THE RICHEST ABELL CLUSTERS OF GALAXIES

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We discuss four samples from the Abell (1958) catalog of clusters of galaxies. Our samples are drawn out from the Abell sample and all clusters have richness 2 and 3. With H_o = 100 km/s/Mpc and q_o = +1, we examine the following volumes, defined for both galactic hemispheres:

(i) RG 3: $b \geqslant 40^o$ for $0^o < l \leqslant 360^o$ and $b \geqslant 30^o$ for $90^o < l \leqslant 240^o$, distance $300 < R < 750$ Mpc, N = 35 clusters, 30 of which with known redshift;

(ii) RG 3: $b \leqslant -35^o$ for $15^o < l \leqslant 232^o$, $150 < R < 600$ Mpc, N = 15 (13);

(iii) RG 2: b and l as (i), $60 < R < 525$ Mpc, N = 110 (55);

(iv) RG 2: b and l as (ii), $120 < R < 600$ Mpc, N = 102(14).

For clusters without radial velocity we obtained redshift estimates according to multivariate regression relations as in Kalinkov and Kuneva (1985), but improved for new redshifts.

The correlation function of the richest A-clusters is computed with N points, following the observed distribution on the sky and the observed distribution in the depth. The bootstrap resampling method is applied to associate the standard deviation with the spatial cluster-cluster correlation function (Kalinkov and Kuneva, 1986).

The correlation functions have the following features:

- There is no significant distinction for both hemispheres for RG 2 clusters.
- RG 3 clusters show negative correlations for $R \approx 100$ Mpc. and high positive correlations for $R > 200$ Mpc.
- For $150 \leqslant R < 450$ Mpc, the correlation function is significant higher than the formulae, given by Klypin and Kopylov (1983), Bahcall and Soneira (1983), Kalinkov and Kuneva (1985).

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