Evolution in the clustering strength of radio galaxies

S. Fine, T. Shanks, N. Nikoloudakis, U. Sawangwit

(Submitted on 28 Jul 2011)

We cross match the NVSS and FIRST surveys with three large photometric catalogues of luminous red galaxies (LRGs) to define radio-loud samples. These have median redshifts 0.35, 0.55 and 0.68 and, by matching rest-frame optical and radio properties, we construct uniform samples across the three surveys. This paper is concerned with the clustering properties of these samples derived from the angular correlation function. The primary aim is to characterise any evolution in the clustering amplitude of radio galaxies bellow z~0.68.

We find no evidence for evolution in the large-scale (~1-50h^{-1}Mpc) clustering amplitude. Our radio galaxy autocorrelations are consistent with previous findings indicating little-to-no evolution in the redshift range 0.68 to 0 (~6Gyr of time). We also cross correlate radio galaxies with the parent LRG samples to increase the precision of our results and again find no evidence for evolution. Our results are inconsistent with a long-lived model for the clustering evolution that assumes radio sources randomly sample the LRG population. A model where the halo mass is constant with redshift is consistent with the data. This is similar to QSOs that have clustering amplitudes consistent with a single halo mass at all redshifts. Given that the brightest radio sources show stronger evolution in space density compared to fainter radio sources we restrict our samples to include only objects with L>10^{26}W/Hz and repeat the analysis. Again we find no evidence for evolution in the comoving correlation amplitude. These radio sources appear to inhabit the same mass halos as fainter radio galaxies (~9x10^{13}h^{-1}M_\odot). These halos are ~twice as massive as those of the general LRG population and ~30 times as massive as optical AGN/QSOs.

Comments: 9 pages, 8 figures, accepted MNRAS
Subjects: **Cosmology and Extragalactic Astrophysics (astro-ph.CO)**
Cite as: **arXiv:1107.5666 [astro-ph.CO]**
(or **arXiv:1107.5666v1 [astro-ph.CO]** for this version)

Submission history

From: Stephen Fine [view email]
[v1] Thu, 28 Jul 2011 10:11:18 GMT (60kb)

Which authors of this paper are endorsers?