

Clustering of AGNs in All-Sky X-ray Surveys

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ABSTRACT

We present results from two recent projects on the correlation function analysis of AGNs from all-sky surveys to investigate the low-redshift clustering properties of AGNs. We have used ROSAT All-Sky Survey sources identified with broad line AGNs with the Sloan Digital Sky Survey (SDSS). By investigating the cross-correlation function (CCF) between these AGNs and SDSS galaxies, we have overcome the statistical limitation caused by the small number of AGNs. This has allowed us to investigate the luminosity-dependence of AGN clustering, where luminous AGNs (with $\text{Log } L_{\text{X}} > 44$) cluster more strongly, like red galaxies, than lower luminosity ones, which cluster like blue galaxies. With a novel method of applying Halo Occupation Distribution modeling to the CCF, we found, not only the mean mass of $\sim 10^{13} \text{ M}_{\odot}$ of DMHs occupied by the AGNs, but also the occupation distribution of the AGNs among the DMHs. As a separate project, we used AGNs in the Swift BAT Survey, which contains both un-obscured (type I) and obscured (type II) AGNs to investigate its auto-correlation function, finding similar results. We discuss the improvements on low-redshift AGN clustering studies expected from MAXI.