*Co-Evolution of Central Black Holes and Galaxies*
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# The Clustering Properties of Intermediate X-ray Luminosity AGN at $z \sim 3$

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We present clustering results for AGN jointly selected to have optical and X-ray data at $z \sim 3$ in the ECDF-S field. Using *Chandra* X-ray imaging and *UVR* optical colors from MUSYC photometry, we selected a sample of 58 $z \sim 3$ AGN candidates. From the optical data we also selected 1385 Lyman break galaxies (LBG) in the range $2.8 < z < 3.8$ with $R < 25.5$ mag. From optical spectroscopy, we have also determined redshifts and AGN types and estimated the UV and X-ray luminosities for the set of active galaxies selected by this method. We performed autocorrelation and cross-correlation analyses and present here our results for the clustering amplitudes and dark matter (DM) halo masses of each sample. The clustering analysis yields median DM halo masses of $\log M/M_\odot = 11.9 \pm 0.2$ for the LBG sample, and $\log M/M_\odot = 12.9^{+0.4}_{-0.9}$ for the sample of AGN. This shows that the active supermassive black holes (SMBHs) targeted by this selection method tend to sit in galaxies more massive than the typical population of UV–continuum selected galaxies, although showing much less clustering than SDSS quasars at the same redshift. Additionally, the expected evolution of the DM halos in ΛCDM cosmology implies that today these $z \sim 3$ SMBHs are hosted by group-sized halos, with masses $\log M/M_\odot = 14.1^{+0.3}_{-0.2}$, at the high-mass end of the distribution of LBG DM halo descendants at $z = 0$.

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