

Clustering dependence of Chandra COSMOS Legacy AGN on host galaxy properties

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Abstract. The presence of a super massive BH in almost all galaxies in the Universe is an accepted paradigm in astronomy. How these BHs form and how they co-evolve with the host galaxy is one of the most intriguing unanswered problems in modern Cosmology and of extreme relevance to understand the issue of galaxy formation. Clustering measurements can powerfully test theoretical model predictions of BH triggering scenarios and put constraints on the typical environment where AGN live in, through the connection with their host dark matter halos. In this talk, I will present some recent results on the AGN clustering dependence on host galaxy properties, such as galaxy stellar mass, star formation rate and specific BH accretion rate, based on X-ray selected Chandra COSMOS Legacy Type 2 AGN. We found no significant AGN clustering dependence on galaxy stellar mass and specific BHAR for Type 2 COSMOS AGN at mean $z \sim 1.1$, with a stellar - halo mass relation flatter than predicted for non active galaxies in the Mstar range probed by our sample. We also observed a negative clustering dependence on SFR, with AGN hosting halo mass increasing with decreasing SFR. Mock catalogs of active galaxies in hosting dark matter halos with $\log M_h [M_{\text{sun}}] > 12.5$, matched to have the same X-ray luminosity, stellar mass and BHAR of COSMOS AGN predict the observed Mstar - Mh, BHAR - Mh and SFR-Mh relations, at $z \sim 1$.

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