

## Dependence of clustering of X-ray AGN on obscuration

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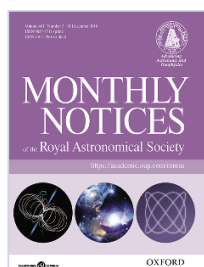
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### ABSTRACT

Recent studies which select active galactic nucleus (AGN) in the mid-infrared (IR) part of the spectrum find that obscured AGNs reside in more massive dark matter haloes compared to unobscured ones. In contrast, X-ray AGN surveys do not find a difference in the dark matter haloes of these two populations. We revisit this issue by examining the clustering properties of a large X-ray sample distributed over five deep fields. These are the CDF-N, CDF-S, ECDF-S, COSMOS, and AEGIS *Chandra* fields spanning the redshift interval  $0.6 < z < 1.4$ . In particular, we present the clustering properties of 736 and 720 unobscured and obscured X-ray-selected AGNs (0.5–8 keV) with column densities higher and lower than  $N_{\text{H}} = 10^{22} \text{ cm}^{-2}$ , respectively. We perform a spatial correlation function analysis for the two samples, and we find a weak ( $2\sigma$ ) difference in the

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Furthermore, we compare our findings with recent results that base the obscured and unobscured AGN classification on the optical/IR colour ( $R - [4.5] = 6.1$ ). We find that the optical/IR criterion fails to identify a purely AGN sample. In particular, reddened AGNs with  $R - [4.5] > 6.1$  are divided almost equally between X-ray obscured and unobscured AGNs. Derivation of the spectral energy distributions reveals that in many cases the host galaxy contaminates the mid-IR bands thus affecting the optical/mid-IR obscured AGN classification.

**Keywords:** [galaxies: active](#), [X-rays: galaxies](#)

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