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# Obscured AGN in the field of J1030+0524: the X-ray and optical/infrared perspective

*Friday, 13 September 2019 18:28 (2 minutes)*

I will present the X-ray spectral analysis of a sample of obscured AGN candidates in the 17'x17' field surrounding the bright $z = 6.31$ QSO SDSS J1030+0524, observed for 500ks with *Chandra* ACIS-I.
The sample objects are selected to have an hardness ratio $HR > -0.1$, suggestive of the presence of moderate to heavy obscuration ($10^{22} \leq N_H \leq 10^{24}\ cm^{-2}$), and a range of net counts (i.e. background subtracted) from a few tens to hundreds, with a median of $\sim 80$.

The main goal is to place constraints on the redshifts of the sources, using a multiwavelength approach. Firstly, the analysis has been carried out using X-ray spectroscopy, searching for strong features like the iron $K\alpha$ 6.4 keV emission line and/or the 7.1 keV absorption edge, that is expected to be very deep in obscured objects. Because of the low photon statistics, the resulting X-ray redshift solutions have also been verified using state-of-the-art simulations. Then, using the large photometric coverage in optical/NIR/MIR bands (LBT, CFHT, CTIO and *Spitzer* data), independent solutions are calculated performing photometric redshifts.
The comparison between the X-ray and photometric methods can be an efficient tool to estimate redshifts of high-$z$ obscured AGN, which are usually weak in optical/NIR, possibly making the spectroscopic identification challenging. The obtained redshifts are used to identify the physical properties of the sample, such as the intrinsic luminosity and the absorption column density, as well as the properties of the host galaxies in which the obscured AGN candidates reside.

Furthermore, based on an ongoing optical spectroscopic campaign at the LBT, I am confirming the goodness of this method, which will be useful for future X-ray mission like *eRosita* and *Athena*, but also in other deep fields like the CDF-S, where a fraction of X-ray sources ($\sim 5\%$) are still not detected in other bands.

## Topic

Active Galactic Nuclei: accretion physics and evolution across cosmic time

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