Overview of the Survey

- A large XMM survey covers ~25 deg^2 sky region
- ~8000 point-like X-ray sources
- With the dedicated ancillary SDSS-III/BOSS survey, ~2400 sources have reliable spectroscopic redshift (Menzel et al. in prep.)

Conclusion

- Neutral Fe K line is ubiquitously found
- EW(6.4keV) and the 2-10 keV X-ray luminosity follows the IT relation (Iwasawa & Taniguchi 1993; Bianchi et al. 2007) within 90% uncertainty
- A potential correlation between the photon index and luminosity and/or redshift
- Highly ionized Fe K lines are found in the median or high luminosity sample

Method

X-ray spectral stacking

- Select sources with rest-frame 2-10 keV net photon counts >20
- Divided into subsamples according to the redshift and luminosity (Figure 1)
- Stack the X-ray spectra in each subsample

X-ray spectral modeling

- Select a completeness subsample from the survey
- Modeling the X-ray spectra with Bayesian X-ray Analysis method (BXA, Buchner et al. 2014)

Preliminary Result

X-ray spectral stacking

- Figure 2: The stacked X-ray spectrum for each sample. The best-fit power-law (excluded the 5.5-7.5 keV energy range) for each sample are also shown. The rest-frame 6.4 and 6.9 keV are indicated by vertical lines.

X-ray spectral modeling

- Figure 3: The equivalent width of the neutral Fe K line and photon index versus the 2-10 keV X-ray luminosity and redshift.

Figure 4: Left panel: The best-fit column density and photon index of sources in the completeness sample using the BXA software. Right panel: distribution of the photon index for each sub-samples in the completeness sample.

Reference

Buchner J. et al., 2014, A&A 564, 125

Table 1: Properties of each sample.