Optical identification of XMM-Newton detected sources in the Lockman Hole

In surveys with low X-ray flux limits, low activity AGN and star forming galaxies begin to constitute a substantial fraction of the X-ray sources. These sources have a high optical to X-ray flux ratio and have not yet been studied in detail. We present the results of spectroscopic optical follow-up survey of faint X-ray sources detected with XMM-Newton. The spectroscopy of these R < 22 mag sources has been obtained with the Low Resolution Resolution Spectrograph (LRS) on the Hobby Eberly Telescope (HET), Texas. This Survey allows us to determine redshifts as well as classify these sources. This work is important for the calibration of the photometric redshifts from a deep photometric survey of the Lockman hole that we are obtaining with Large Binocular Camera (LBC) on the Large Binocular Telescope (LBT), Arizona (see Poster G. 43 Rovilos et al. 2008). These results flow into the detailed catalogue of the inner 20 arcmin of Lockman Hole in order to improve the completeness of the sample.

XMMJ105229.9+572947
log $L_X \sim 41.7$
log $f_{\text{X}}/f_{\text{opt}} \sim -1.2$ (typical for AGN)
no broad lines
soft X-ray spectrum
untypical line ratios for Seyfert

Galaxy $@ z=0.336$

XMMJ105239.4+572842
log $L_X \sim 41.44$
log $f_{\text{X}}/f_{\text{opt}} \sim -2$
no broad lines
soft X-ray spectrum

Galaxy $@ z=0.339$

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