

The X-ray spectrum of a new QSO at z=4.21

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Abstract

We present the discovery of the X-ray selected QSO **XMMU J221601.2-173935** at z=4.21 in the deep XMM observation centered on LBQS 2212-1759. Since the total EPIC exposure in this field is 250 ksec, we were able to extract a good quality X-ray spectrum of the QSO. The spectrum can be modelled by a single power law with Γ = 1.7 and shows no evidence for intrinsic absorption.



Fig 1: Combined XMM EPIC image with the position of the new QSO.



Fig 2: Discovery spectrum of XMMU J2216-1739 revealing the redshift of z=4.21. The QSO has a magnitude of r=21, the radio flux upper limit at 1.4 Ghz from the NVSS is ~2.5 mJy.



Fig 3: Combined EPIC MOS + PN spectra with single power law fit. Within the limits set by the SNR the spectrum appears featureless, the 6.4 keV iron fluorescence line is not detected. The 2-10 keV luminosity derived from this spectrum is $1.0 \cdot 10^{45}$ erg/s.



Fig 4: 68% (black) and 90% confidence contours for the parameters photon index and intrinsic absorbtion column density. With Γ =1.7 the spectral index is consistent with typical values of local QSOs. The 90% upper limit for intrinsic absorption is n_H=3.8 $\cdot 10^{21}$ cm⁻².