

X-ray Spectral Variability in the Ultraluminous X-ray Source Holmberg

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We use *XMM-Newton* and *Swift* data to study spectral variability in the ultraluminous X-ray source (ULX), Holmberg IX X-1. The source luminosity varies by a factor 3 – 4, giving rise to corresponding spectral changes which are significant, but subtle, and not well tracked by a simple hardness ratio. Instead, we co-add the *Swift* data in intensity bins and do full spectral fitting with disc plus thermal Comptonisation models. All the data are well-fitted by a low temperature, optically thick Comptonising corona, and the variability can be roughly characterised by decreasing temperature and increasing optical depth as the source becomes brighter, as expected if the corona is becoming progressively mass loaded by material blown off the super-Eddington inner disc. This variability behaviour is seen in other ULX which have similar spectra, but is opposite to the trend seen in ULX with much softer spectra. This supports the idea that there are two distinct physical regimes in ULXs, where the spectra go from being dominated by a disc-corona to being dominated by a wind.