ASCA OBSERVATIONS OF THE SUPERLUMINAL JET SOURCE GRS1915+105

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1. Introduction

GRS1915+105 is an extraordinary X-ray transient which exhibits superluminal radio jets. In this paper, ASCA observations of the GRS1915+105 conducted from 1994 to 1997 are reported. Observations are carried out on the following dates each for $\sim$ 20 ksec exposure; Sep 27 1994, April 20 1995, Oct 23 1996 and Apr 25 1997.

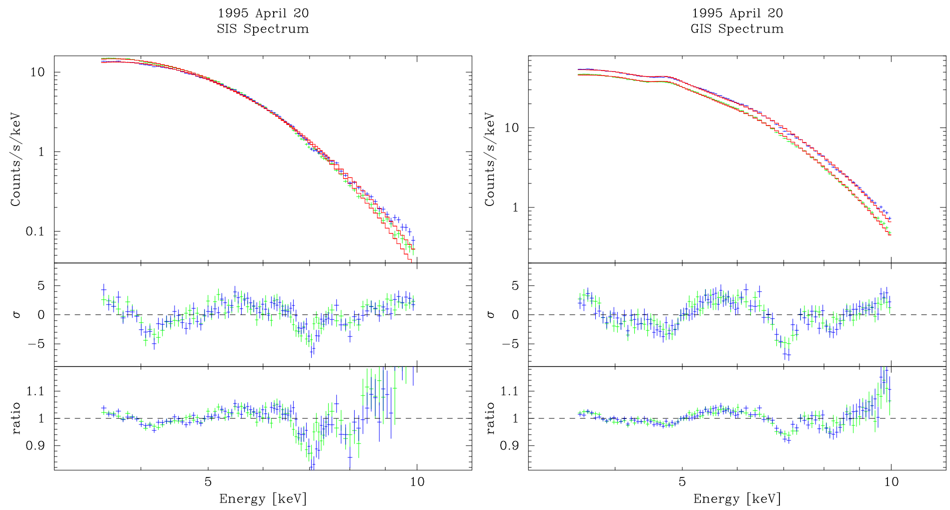

Figure 1. SIS (left) and GIS (right) energy spectra in April 1995 fitted with an absorbed cut-off power-law model. Absorption line features are clearly seen in the residuals.

2. Results

Main results may be summarized as follows:

1. The source is highly variable at various time scales, and in particular characteristic burst/dip structures were observed in October 1996 and April 1997. The flux variation is larger above 3 keV, and the spectral change is most simply described by the reduction of the cut-off energy when the X-ray flux becomes lower.
2. The continuum energy spectra are approximately fitted by an absorbed cut-off power-law with the form $AE^{-\alpha}e^{-E/E_c}$. Overall, there is not a clear correlation between the cut-off energy and the X-ray flux. The hydrogen column densities are always within the range of 3.5 – 4.1 $\times 10^{22}$ cm^{-2}.
3. Characteristic absorption line features are seen in September 1994 and April 1995 at $\sim$ 6.7 keV, 7.0 keV and 8.0 keV (figure 1). The former two may be identified as the $K\alpha$ lines from He-like and H-like irons and the last one may be the $K\beta$ line from He-like iron. These features are vaguely seen in October 1996, and in April 1997, an emission line-like feature is seen at $\sim$ 6.7 keV. These absorption line features are reminiscent of the similar spectral features in the other Galactic super-luminal jet source GRO J1655–40 (Ueda et al. 1997, ApJ Letter, in print).

The postscript file of the poster paper presented at the conference can be found at ftp://lheaftp.gsfc.nasa.gov/pub/ebisawa/kyoto.ps.gz.