

On the spectral-timing properties of Cygnus X-1 in its hard state.

During an outburst, Black Hole X-Ray Binaries (BHXRBS) present two main spectral states: the soft and the hard. The geometry of the system is thought to change throughout the outburst but its exact evolution is unknown. In particular, for the hard state, there is still no agreement on its exact geometry. In Cygnus X-1, the spectral components observed in the hard state can be explained in terms of multiple Comptonisation components associated with a non homogeneous Comptonisation region and/or high density disc reflection.

We study the contribution of different spectral components to the observed intrinsic variability at different time scales using spectral-timing techniques. Due to the size of its companion, Cyg X-1 is a High Mass X-ray Binary and it accretes via wind, which plays an important role when determining the intrinsic spectral-timing properties of the source.

I will present the results of the ongoing spectral-timing analysis of the XMM-Newton long monitoring of Cyg X-1 during its hard state covering more than one entire orbit of the binary system (7.22 d).

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