

## **Eleonora Veronica Lai - An X-ray spectral-timing analysis of Cygnus X-1 during its hard state.**

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The X-ray spectrum of a black hole binary is very complex and even if there is a relative consensus regarding the nature of the soft state, there is an ongoing dispute concerning the hard state. In Cygnus X-1, the hard state spectrum cannot be described only by the well known “disk plus power law” model. The observed spectral complexity can be explained in terms of multiple comptonisation components associated with a non homogeneous comptonization region and/or high density disc reflection.

I will present the ongoing analysis of new XMM-Newton observations of Cygnus X-1 in the hard state using X-ray spectral-timing techniques. This approach can be used to break spectral degeneracies and better constrain the physical origin of spectral components, by studying their contribution to the variability observed at different time scales.

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