Using X-ray variability to estimate the nature of the compact objects powering ULXs

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It is not very clear if the spectral transitions in the Ultra-luminous X-ray sources (ULXs) are due to stochastic variability in the wind or orbital modulation in the accretion rate or in the source geometry. In this talk I will compare the results obtained on two different variable ULXs: NGC 55 ULX-1 and HOLMBERG II X-1. The XMM-Newton satellite collected data that were modelled with a double thermal component, adding a power-law component especially for the latter source that presents an harder spectrum. The Luminosity-Temperature relation for both thermal components broadly agrees with the results expected from theoretical models of thin discs. However, at higher luminosities significant deviations are present. If such deviations are due to the accretion rate exceeding the Eddington limit or the supercritical rate, a stellar-mass black hole is forecasted in both accreting sources.