

Stratification of hot accretion flow of MAXI J1820+070

Spectral and timing results show that the inner accretion flow in the hard state of black hole X-ray binaries (BHXRb) appears more inhomogeneous than assumed in standard spectral fits.

These studies hint at a stratified hot medium, with the inner parts being hotter and emitting a harder spectrum. Such complex structure implies that time-averaged energy spectra cannot be fitted with simple models which assume a single Comptonization region.

We present a study of the recently discovered BHXRb, MAXI J1820+070 during its hard and bright hard state, observed by NICER. We have performed a X-ray spectral-timing analysis which aims at disentangling the spectral components contributing to variability on different timescales, and thus originating at different distances from the BH. The results confirm the stratified structure of the inner hot flow in this source, with the high energy photons contributing to the fastest variability and originating in the innermost regions. We show that this behavior cannot be easily observed from the analysis of time-averaged spectra alone.

Primary author: Ms DZIELAK, Marta (Nicolaus Copernicus Astronomical Center)

Co-authors: Dr DE MARCO, Barbara (Nicolaus Copernicus Astronomical Center); Prof. ZDZIARSKI, Andrzej (Nicolaus Copernicus Astronomical Center)

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