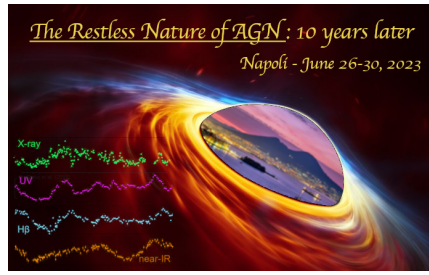


## The restless nature of AGN: 10 years later



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### The timescale and flux dependent lags of Mrk 110

Recent intensive reverberation mapping campaigns of AGN are opening a new window in the studies of the accretion geometry around super massive black holes. Here we present the X- ray/UV/optical lag spectrum of the high accretion rate AGN Mrk 110 during three epochs between 2017 and 2019. We monitored the source using Swift, Las Cumbres Observatory and the Zowada Observatory. During the first epoch we find a clear evidence for timescale dependent lags: on short timescales the consistent the system shows delays consistent with a disk-reverberation scenario; on longer timescales instead, the optical lags become of the order of several days, indicating the contribution from an extended reprocessor (most probably the broad line region). When looking at the following epochs, we also discover for the first time an evolution of the X-ray and the U band excess in a single source. The presence of correlation between these lags and the X-ray luminosity strongly suggests that a significant contribution from the broad line region to the whole lag spectrum. These result shed new light on the origin of the X-ray excess and demonstrate the need of new multi-epoch observations in order to fully constrain on the geometry on these systems.

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