

The restless nature of AGN: 10 years later



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The universal shape of the X-ray variability power spectrum of AGN up to $z \sim 3$

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We present a study of the ensemble X-ray variability of Active Galactic Nuclei (AGN) over a large range of timescales ($20 \text{ ks} \leq T \leq 14 \text{ yrs}$), redshift ($0 \leq z \leq 3$), luminosities ($10^{40} \leq L_X \leq 10^{46} \text{ erg s}^{-1}$) and black hole (BH) masses ($10^6 M \leq 10^9 M$). Through the use of the “variance–frequency diagram”, as a viable alternative to the power spectral density (PSD), we show that the data collected from archival observations and previous literature studies are consistent with a universal PSD form which does not show evidence for systematic evolution of shape or amplitude with redshift or luminosity. We find new evidence that the PSD bend frequency depends on BH mass and, possibly, on accretion rate. We will discuss the implications for current and future AGN population and cosmological studies

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