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Detection of Quasi-Periodic Eruptions in Extragalactic X-Ray Sources with Machine Learning

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Quasi-periodic eruptions (QPEs) are a novel phenomenon in high-energy astrophysics, and to date have only been confirmed to be observed in a small number of AGN. Characterised by high amplitude variability over relatively short timescales, QPEs have the potential to provide insights into the strong gravity regimes in the innermost regions of the accretion disks around AGN. To provide robust predictions of the physical mechanisms involved we need to find more QPE sources to broaden the understanding of the parameter space they inhabit. We use known observations of QPEs and simulated lightcurves to determine whether machine learning approaches can detect QPE sources, and then apply these trained networks to the latest release of the XMM Serendipitous Source Catalogue in the hunt for further candidates.

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