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Type: **Invited Talk**

Quasi-periodic eruptions and tidal disruptions: transients illuminating the environments of massive black holes

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Quasi-periodic eruptions (QPEs) are high-amplitude, soft X-ray flares that repeat on timescales of hours-days, and have been discovered recently in the nuclei of some galaxies. These remarkable and mysterious repeating transients are thought to be associated with the supermassive black holes in these galaxies. QPEs have could provide powerful new constraints on accretion physics (if caused by disk instabilities) or on orbital dynamics within the central ~ 1 AU (if caused by interactions with nearby stars). Several lines of evidence, both observational and theoretical, have suggested a connection with tidal disruption events (TDEs), where stars within the black hole loss cone are destroyed by tidal forces. In this talk I will give an overview of the observational properties of QPEs, and the reasons to suspect a connection with TDEs. I will then show the first definitive proof of this connection, the implications for QPE emission mechanisms, and the promise for upcoming gravitational wave detectors including LISA.

Collaboration(s)

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