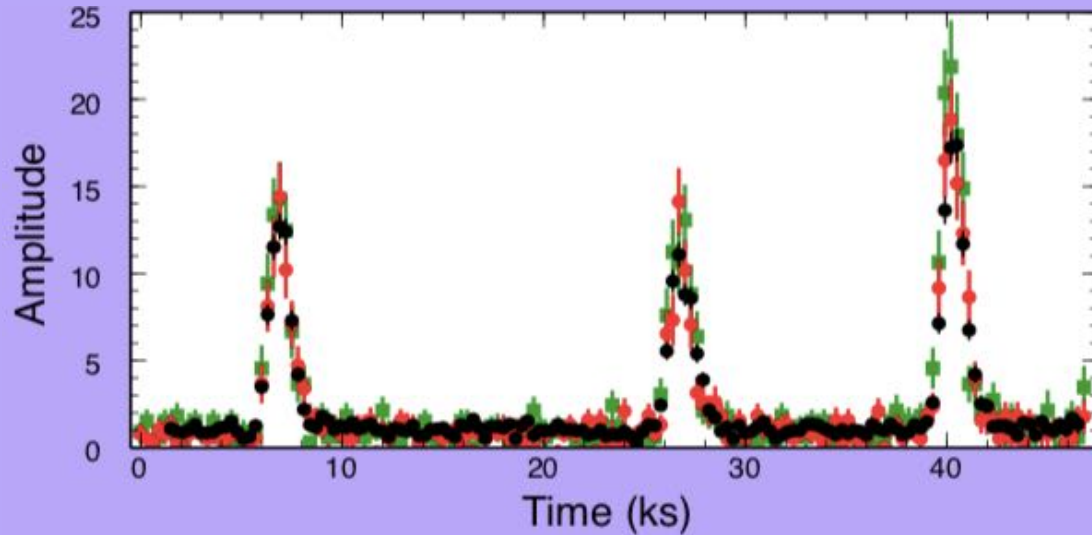


Discovery of X-ray quasi-periodic eruptions (QPEs) in a second galactic nucleus



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Top panel: intensity of the X-ray light received from the nucleus of the galaxy RX J1301.9+2747 during the May 2019 observation with XMM-Newton. Bottom panel: optical image of the galaxy RX J1301.9+2747.

New XMM-Newton observations, made in May 2019, have revealed the presence of three intense X-ray quasi-periodic eruptions (**QPEs**) in the nucleus of the galaxy **RX J1301.9+2747**.

QPEs are a new cosmic signal recently discovered in the nucleus of the galaxy **GSN 069** (*Miniutti et al. 2019, Nature 573, 381*). While the intensity of X-ray light received by active galaxies is typically erratic, the X-ray light received during QPEs has incredibly regular temporal properties.

The QPEs detected in RX J1301.9+2747 are similar to those detected in GSN 069, but with notable differences: the QPEs in RX J1301.9+2747 are **shorter**, lasting only half an hour, about a half of the duration of the QPEs in GSN 069. Furthermore, in RX J1301.9+2747 the QPEs are **repeated more frequently**, although their pattern of recurrence is not clear, with repetitions after 5h30m and after 3h45m; while in GSN 069 they recur every about 9h.

Longer X-ray observations have been scheduled to try to elucidate the exact pattern of recurrence of the QPEs in RX J1301.9+2747.

The detection of QPEs in a second galactic nucleus after GSN 069 rules out contamination by a galactic source in both cases, so that QPEs should be considered a genuinely extra-galactic novel phenomenon associated with **supermassive black hole accretion**.