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Origin of TDE and evolution of QPEs in GSN 069

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The tidal disruption event(TDE) in GSN 069 is associated with X-ray quasi-periodic eruptions(QPEs) and re-brightened about 10 years after the first flare. The QPEs is probably produced by the mass transfer of a star in a high eccentric orbit around a central supermassive black hole(SMBH), which is captured by SMBH from a binary by the Hills mechanism. In this scenario, the TDE cannot be explained by the disruption of a single star because the timescales of the QPEs are much smaller than the characteristic timescales of the TDE. I will talk about that the tidal disruption of a common envelope can naturally explain the timescale issue, and it also explains the second flare. And I will also talk about the possibility that drag of the disk can stabilise mass transfer to explain the contradiction between the unstable mass transfer predicted by previous theories and observations.

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