

Low-mass X-ray Binary Transients in the RXTE era: Outbursts Properties and Challenges to Accretion Theory

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Low-mass X-ray binary transients (LMXBs) offer a significant advantage to study accretion regimes and non-stationary accretion due to the large range and strong variation of the accretion rate on timescale of days to months. We have performed a statistical study of the outburst properties of 110 X-ray outbursts in 36 LMXBs seen with the All-Sky Monitor (ASM; 2–12 keV) on board the Rossi X-ray Timing Explorer (RXTE) during 1996–2011. Among these sources, we found statistical evidence that longer orbital period systems have more massive accretion disc, which tends to generate brighter outburst and causes larger e-folding rise/decay timescale. So we highly suggest the disc mass plays a leading role in non-stationary accretion process. However, in some individual sources with multiple outbursts, there is no statistical correlation, which needs further investigation.

Primary author: Dr YAN, Zhen (SHAO)

Co-author: Prof. YU, Wenfei (SHAO)

Presenter: Dr YAN, Zhen (SHAO)