

Abstract Submitted
for the TSF19 Meeting of
The American Physical Society

Investigating state transition luminosities of Galactic black hole transients in the outburst decay ARMIN VAHDAT MOTLAGH, Texas Tech University, EMRAH KALEMCI, Sabanci University, THOMAS MACCARONE, Texas Tech University — We have performed a comprehensive spectral and timing analyses of Galactic black hole transients (GBHTs) during outburst decay in order to obtain the distribution of state transition luminosities. Using the archival data of the Rossi X-ray Timing Explorer (RXTE), we have calculated the weighted mean for state transition luminosities of 11 BH sources in 19 different outbursts and for disk and power-law luminosities separately. We also produced histograms of these luminosities in terms of Eddington luminosity fraction (ELF) and fitted them with a Gaussian. Our results show the tightest clustering in bolometric power-law luminosity with a mean logarithmic ELF of -1.70 ± 0.21 during the index transition (as the photon index starts to decrease towards the hard state). We obtained mean logarithmic ELF of -1.80 ± 0.25 during the transition to the hard state (as the photon index reaches the lowest value) and -1.50 ± 0.32 for disk blackbody luminosity (DBB) during the transition to the hard-intermediate state (HIMS). We discussed the reasons for clustering and possible explanations for sources that show a transition luminosity significantly below or above the general trends.

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Date submitted: 30 Sep 2019

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