

### Invited Talk //

X-ray and Gamma-Ray Binaries (XRBs)



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### Session 1 //

Wednesday, 6 September @ 08:45 SAST

The different X-ray states of accreting black holes have been investigated for decades, but the descriptive characterizations remain disconnected from the underlying physics. Of significant importance is the question of truncation in the inner accretion disk during the hard and intermediate states, but this issue remains mired in controversy. The NICER X-ray Timing Instrument promises to provide observational progress on this question, with its soft X-ray sensitivity, high throughput, and near immunity from deadtime effects. This talk will briefly summarize the controversy and then outline the steps necessary to gain constraints on the temperature vs. inner radius relationship using NICER observations of black hole binaries in different X-ray states. For each target, attention must be given to the chemistry of the interstellar medium along the line of sight. One must also consider corrections for radiative transfer effects when inferring the inner disk temperature and radius from X-ray spectral analyses. Results for 4U1543-47, AT2019wey, MAXI J1820+070, and MAXI J1348-630 suggest that truncation is limited to factors of a few, and some sources show truncation in the intermediate state rather than the hard state.

#### NAME OF COLLABORATION

**NICER Observatory Science Working Group**

#### ADDITIONAL AUTHORS

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