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X-ray Binaries: A Key Corollary Science with Crystal Eye

X-ray binaries (XRBs) are strong hard X-ray emitters and among the most common sources in the Galactic plane within the 20–100 keV energy range. A handful of XRBs, both transient and persistent, have also been detected as gamma-ray emitters by Fermi/LAT and AGILE-GRID above 30 MeV (e.g., Cyg X-3, Cyg X-1, and V404 Cyg), yet the origin of this gamma-ray emission remains largely unknown. Moreover, the energy band between approximately 500 keV and 30 MeV has remained substantially unexplored due to the limited sensitivity of current X-ray and gamma-ray telescopes.

Crystal Eye will continuously monitor the sky in search of Gamma Ray Bursts from about 10 keV to 30 MeV. It will also be capable of detecting bright hard X-ray transients, such as XRBs hosting black holes as compact objects. Here, we explore how Crystal Eye can contribute to the study of XRBs by monitoring transient events and tracking their evolution over time. Additionally, we investigate how it could enable continuous monitoring of persistent XRBs and extend the detectable energy range of these sources to 500 keV–30 MeV.

Collaboration(s)

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