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VERITAS Observations of Galactic Binary Systems

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Only a handful of High Mass X-ray Binaries (HMXB) in our galaxy are known emitters of TeV gamma rays. The variable VHE emission from these sources are generally attributed to modulation by their orbital periods but the particle acceleration and gamma-ray production processes in these HMXBs are not well understood. In its 10 years of operation, VERITAS has observed 2 of these TeV emitting HMXBs, LS I +61 303 and HESS J0632+057 for more than 450 hours, conducting many multi-wavelength campaigns. The results from recent observations, long-term monitoring and multi-wavelength study with X-ray (Swift-XRT) and GeV (Fermi-LAT) for LS I +61 303 and HESS J0632+057 are discussed. Besides these two TeV binaries, an outline of the binary discovery program by VERITAS is presented with particular emphasis on PSR J2032+4127, the long period (45-50 years) binary in a highly eccentric orbit with the Be star MT91 213. This system could be the origin of very high energy emission from the unidentified source TeV J2032+4130. We present the status of observations of PSR J2032+4127, preliminary results and the plan for continued monitoring through periastron in 2017.

Author: KAR, Payel (University of Utah, VERITAS Collaboration)

Co-author: COLLABORATION, The VERITAS

Presenter: KAR, Payel (University of Utah, VERITAS Collaboration)

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