Very High Energy Gamma-ray Emission from The Binary System LS 1 +61 303

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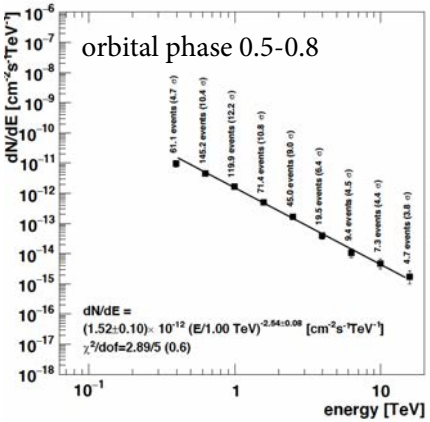
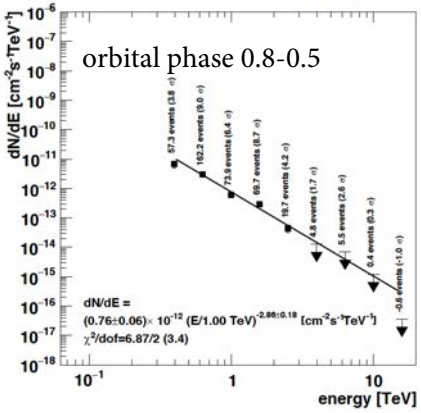
What is this contribution about?

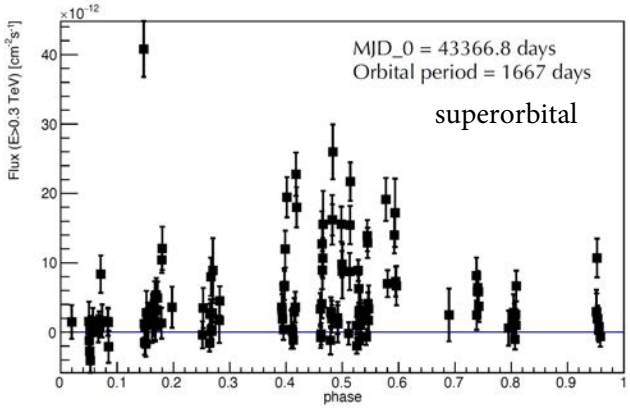
This talk reports on a combined orbital/super-orbital analysis of twelve Years of VERITAS observation of the TeV emission from High mass X-Ray Binary LSI +61 303.





Why is it relevant / interesting?

The complete 12-year VERITAS data set on LSI +61 303 (163 hr) begins to span all combination of orbital phase and super-orbital phase for LSI +61 303. Linkages between the orbital and super-orbital modulation begin to be revealed.



What have we done?

We provide phase-resolved light curves and spectral fits to VERITAS observations.

Orbital Phases	Live time (min)	Significance (σ)	Live time (min)	Significance (σ)
(0 to 0.1)	378.08	3.2	30.02	1.0
(0.1 to 0.2)	280.53	3.4	60.03	0.9
(0.2 to 0.3)	348.28	1.8	180.10	1.3
(0.3 to 0.4)	160.22	1.6	260.17	-1.0
(0.4 to 0.5)	20.05	2.2	484.38	**5.6**
(0.5 to 0.6)	30.02	0.5	732.87	**13.6**
(0.6 to 0.7)	481.58	**15.3**	1227.93	**31.7**
(0.7 to 0.8)	210.43	0.6	653.25	**10.9**
(0.8 to 0.9)	150.30	1.4	491.42	**5.5**
(0.9 to 1)	185.27	1.8	220.37	2.5
	Superorbital phase (0.1 – 0.3)		Superorbital phase (0.4 – 0.6)	

What is the result?

VERITAS sees peaked TeV emission in certain combinations of orbital and super-orbital phase.

There are also some indications for potential photon absorption in the VERITAS data for non-apastron parts of the orbital phase due to hints of a spectral steeping during these phases.