

Proposal for ASTRO-E2 Observations
Cover Page

Cycle 1

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Proposal Title THE MAGNETIC O STAR THETA 1 ORIONIS C							
Subject Category STARS AND STAR FORMING REGIONS							
Number of Targets	2	Total Time	100.00	TOO Proposal?	N	Merging?	Y

Co-Investigator(s)			
First Name	Last Name	Institute	Country
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Abstract

Theta 1 Orionis C, the O7 V star at the heart of the Orion Nebula, is the prototypical magnetic OB star with a massive wind. 2D MHD simulations show that the wind distorts the initially dipolar field geometry, creating an open field region above the poles, a magnetosphere and cooling disk in the magnetic equatorial plane from 1-2 R*. Magnetically channeled material from opposing hemispheres collides near the magnetic equator, leading to 30 MK shocks and strong, rotationally modulated X-ray emission. We propose to obtain two 50-ks XRS spectra at opposite rotational phases of this star to test the Magnetically Channeled Wind Shock model and to explore new X-ray emission-line diagnostics.

Institute Endorsement	
Name of Administrator	LINDA L. LAMWERS
Administrative Authority	PROVOST, VP ACADEMIC AFFAIRS
Institute	WEST CHESTER UNIVERSITY
Signature:	Date:

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Target Form

PI <p style="text-align: center;">MARC R. GAGNE</p>
Proposal Title <p style="text-align: center;">THE MAGNETIC O STAR THETA 1 ORIONIS C</p>

Target Summary

Tar No	Target Name	R.A.	Dec	Obs Time (ksec)	Num obs	Time crit	XRS Filter	CAL Y/N	Est. XRS CR	XIS Mode. Clock/W/B	Est. XIS CR	Rem Y/N
1	HD 37022	05 35 16.47	-05 23 23.1	50.00	1	Y	OPEN	N	2.40000	NORM N N	7.20000	N
2	HD 37022	05 35 16.47	-05 23 23.1	50.00	1	Y	OPEN	N	2.40000	NORM N N	7.20000	N

Target Constraints

Tar No	Coordinated Observations										Monitoring Obs		Phase Dependent Observations				Roll Depend Obs					
	Y/N	Start Time					Stop Time					Y/N	Intervals (ksec)		Y/N	Epoch	Period	Min	Max	Y/N	Min	Max
		Year	Mo	Day	Hr	Min	Year	Mo	Day	Hr	Min		Min	Max		MJD	(days)	Phase	Phase		Roll	Roll
1	N											N			Y	48832.5000	15.42200000	0.9500	0.0500	N		
2	N											N			Y	48832.5000	15.42200000	0.4500	0.5500	N		

Target Remarks

Tar No	Remarks
1	
2	