

Title Continued development of the HEAT telescope at Ridge A
Organization The University of Arizona
PI, Co-PI Craig A. Kulesa, Christopher K. Walker
Sponsor/Program NSF Office of Polar Programs (PLR), solicitation 13-527
Performance Period 1/1/2015 - 12/31/2017

	YEAR 1			YEAR 2			YEAR 3			3 YEAR TOTALS
	Year 1 Rate	Labor Hrs.	TOTAL YEAR 1	Year 2 Rate	Labor Hrs.	TOTAL YEAR 2	Year 3 Rate	Labor Hrs.	TOTAL YEAR 3	
PERSONNEL										
Appointed Personnel										
Kulesa, Craig - PI	\$ 27.84	1,044	\$ 29,065	\$ 28.76	1,044	\$ 30,024	\$ 29.71	1,044	\$ 31,015	\$ 90,104
Walker, Christopher - Co-I	\$ 66.66	160	\$ 10,666	\$ 68.86	160	\$ 11,018	\$ 71.13	160	\$ 11,381	\$ 33,064
Abram Young - systems lead	\$ 34.87	1,044	\$ 36,404	\$ 36.02	1,044	\$ 37,606	\$ 37.21	320	\$ 11,907	\$ 85,917
Appointed Personnel Subtotal		2,248	\$ 76,135		2,248	\$ 78,647		1,524	\$ 54,303	\$ 209,085
Classified Staff Subtotal										
Electrical Engineer (1 mo, Y1&Y2)	\$ 31.13	160	\$ 4,981	\$ 32.16	160	\$ 5,145	\$ 33.22	-	\$ -	\$ 10,126
Mechanical Engineer (1 mo, Y1 &Y2)	\$ 31.13	160	\$ 4,981	\$ 32.16	160	\$ 5,145	\$ 33.22	-	\$ -	\$ 10,126
Classified Staff Subtotal		320	\$ 9,962		320	\$ 10,290		-	\$ -	\$ 20,252
Undergraduate Student										
Undergrad (summer)	\$ 12.00	200	\$ 2,400	\$ 12.40	200	\$ 2,479	\$ 12.81	200	\$ 2,561	\$ 7,440
Undergraduate Student Subtotal		200	\$ 2,400		200	\$ 2,479		200	\$ 2,561	\$ 7,440
Graduate Students										
Graduate Research Assistant - AY (1 semester) @ 50% FTE	\$ 22.61	400	\$ 9,044	\$ 23.36	400	\$ 9,343	\$ 24.13	400	\$ 9,651	\$ 28,038
Graduate Research Assistant - summer (1.5-months) @ full-time	\$ 26.05	232	\$ 6,043	\$ 26.91	232	\$ 6,242	\$ 27.79	232	\$ 6,448	\$ 18,734
Graduate Students Subtotal		632	\$ 15,087		632	\$ 15,585		632	\$ 16,099	\$ 46,772
Labor Subtotal		3,400	\$ 103,584		3,400	\$ 107,002		2,356	\$ 72,964	\$ 283,549
FRINGE BENEFITS - Rates effective 7/1/13 and beyond										
Faculty and Appointed Personnel @ 30.0%		\$ 76,135	\$ 22,840		\$ 78,647	\$ 23,594		\$ 54,303	\$ 16,291	\$ 62,726
Classified Staff @ 48%		\$ 4,981	\$ 2,391		\$ 5,145	\$ 2,470		\$ -	\$ -	\$ 4,860
Undergraduate Student @ 3.5%		\$ 2,400	\$ 84		\$ 2,479	\$ 87		\$ 2,561	\$ 90	\$ 260
Graduate Students @ 59.5% (50.0% IDC exempt)		\$ 15,087	\$ 8,977		\$ 15,585	\$ 9,273		\$ 16,099	\$ 9,579	\$ 27,829
Fringe Benefits Subtotal			\$ 34,292			\$ 35,424			\$ 25,960	\$ 95,676
Personnel Labor + ERE Totals			\$ 137,876			\$ 142,426			\$ 98,923	\$ 379,225
OTHER DIRECT COSTS										
OPERATIONS										
Instrument/facility/data archive maintenance and repairs		\$ 11,000			\$ 11,000			\$ 1,000		\$ 1,000
Electronics upgrades to accommodate new receivers		\$ 5,000			\$ 2,500			-		-
Conference Registration (2/year)		\$ 450			\$ 465			\$ 480		\$ 480
Publication costs charges (3 papers x 8 pages x \$110 in each year)		\$ 2,640			\$ 2,727			\$ 2,817		\$ 2,817
Machining of mixer blocks & lenses for 1.9 THz receiver		\$ 7,500			\$ 7,500			\$ -		\$ -
Shipping costs to Antarctica and back		\$ 3,000			\$ 3,000			\$ 1,500		\$ 1,500
TRAVEL			\$ 3,400			\$ 3,512			\$ 3,628	\$ 10,540
2 person: domestic conference, annual Antarctic deployment										
		Domestic	International		Domestic	International		Domestic	International	
Airfare (\$400 roundtrip)	\$	800		\$	826		\$	854		-
Lodging (\$100/night x 4 nights)	\$	800	\$ 800	\$	826	\$ 826	\$	854	\$ 854	
Per diem (\$50/day x 5 days)	\$	500	\$ 500	\$	517	\$ 517	\$	534	\$ 534	
Total per trip	\$	2,100	\$ 1,300	\$	2,169	\$ 1,343	\$	2,241	\$ 1,387	
CAPITAL EQUIPMENT			\$ 116,500			\$ 155,000			\$ -	\$ 271,500
4K dual closed-cycle cryostat, 1 per telescope		\$ 45,000			\$ 45,000			-		-
1.5 THz LO source, Virginia Diodes Inc		-			\$ 80,000			-		-
ROACH2 FFT spectrometer plus 10Gbit ethernet & ADC boards		\$ 7,500			-			-		-
PLATO-R annual replacement modules		\$ 30,000			\$ 30,000			-		-
Diamond-turned THz mirrors for existing 2nd telescope		\$ 34,000			-			-		-
Total Other Direct Costs			\$ 149,490			\$ 185,704			\$ 9,425	\$ 344,620
TOTAL DIRECT COSTS			\$ 287,366			\$ 328,130			\$ 108,349	\$ 723,844
INDIRECT COSTS - 51.5%, effective 7/1/10										
MTDC BASE = Total Direct Costs (TDC) less capital equipment, less Tuition Remission (50.0% of Graduate Student fringe), and on first \$25K of EACH subcontract										
		MTDC Base	IDC		MTDC Base	IDC		MTDC Base	IDC	
Base (on salaries, operations, travel)	\$	163,322	\$ 84,111	\$	165,337	\$ 85,149	\$	100,299	\$ 51,654	
Total Indirect Costs			\$ 84,111			\$ 85,149			\$ 51,654	\$ 220,914
TOTAL PROJECT COSTS			\$ 371,477			\$ 413,279			\$ 160,003	\$ 944,758