1 Calibrations

We will take bias, flat, and arc calibrations in the afternoon. We will use the same instrument settings we will be using for the observations at night. We will take dome flats with the mirror cover open and the dome dark. We will then do 10 30 second arc exposures of a ArKrNeXe lamp with it on and that 10 30s exposure with the lamp off. This will take 10 minutes.

HD 162208 is the standard star that will be up closest to the time we plan to do our observations. It has RA 17:47:58.55 and Declination +39:58:50.96. It will rise around 22:00 PDT and will not set before the sun rises. We will take 5 30 second observations of this star at the beginning of our observing time.

2 Science Observations

Table 1 lists the 5 objects we plan to observe.

The exposure times and number of exposures for each object are listed in table 1. The total clock time for exposures, adding all the time listed in table 1, is 84 minutes.

ID	Object	α	δ	H Mag	# of exp.	Exp. time	Priority
A	WISE J184951.48-134033.9	282.464525	-13.676090	13.879	5 ($\times$2)	60s	3
B	WISE J183118.58+265612.1	277.827425	26.936718	15.671	3 ($\times$2)	120s	3
C	WISE J204638.15+514735.8	311.658969	51.793292	15.293	3 ($\times$3)	120s	1
D	WISE J163045.46+180120.4	247.689430	18.022360	16.136	5	300s	4
F	ZTF J2130+4420	322.72178	44.34069	15.339	5	300s	2

Table 1: Table of objects we plan to observe. Magnitudes are in the H band for all 6 objects, which spans 1.5-2 μm. We plan to observe three of the objects at multiple times in the binary orbit.

ID	Primary	Secondary	Transit Time (Min)
A	02:58	05:20	25
B	22:22	04:01	40
C	02:47	01:42	7
D	02:44	23:01	26

Table 2: A table of the primary and secondary transit start times in PDT of objects A, B, C, and D. Also included, is the transit duration.

3 Overheads

Slewing and acquisition As a reasonable time estimate for this is 5-7 minutes, we plan to build in 8 minutes between changing sources, just in case, especially since we plan to change targets many times throughout the night and we plan to observe the targets at specific times in their orbits.

Readout time Readout time is small by comparison, and the extra minute we have added for slewing and acquisition should cover this.

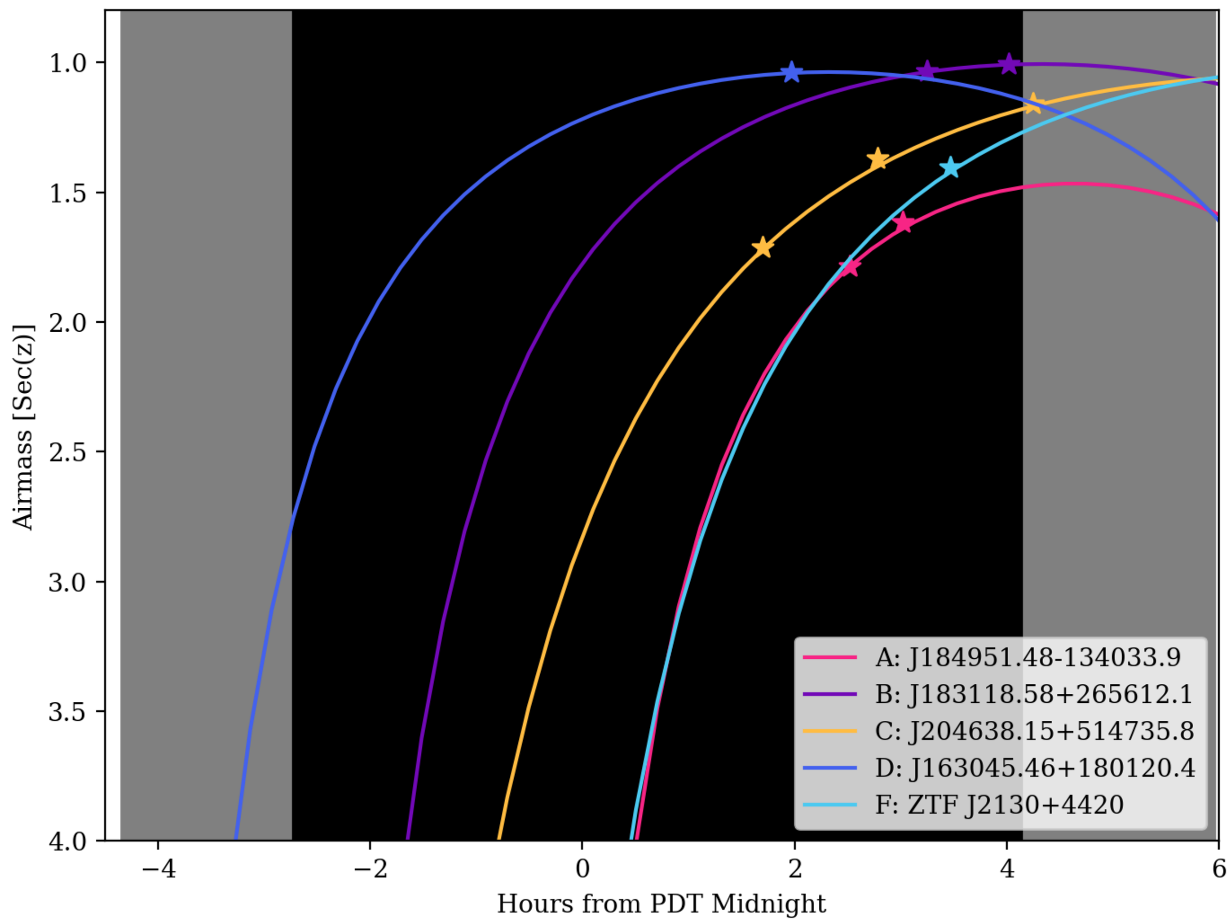

Figure 1: Airmass plot of the five objects on the night of 2023-05-06. Time on x-axis is in PDT (local time). Astronomical twilight is shaded in black. Stars denote the points at which we plan to observe each object.

Dithering Because we are taking multiple exposures of each target, overhead time for dithering is included in our time estimates.

4 Observing plan for the night of 2023-05-06

Our full observing plan for the night of 2023-05-06 is shown in table 3. We request 3 hours, between 01:22 and 04:21 on that night, to carry out these observations. We also have a backup plan that could be carried out on the night of 2023-05-05 from 02:02 to 05:30, but this would far less ideal and we would not be able to complete observations of both transits of our high priority object.

PDT time estimate	Time (min)	Target	Task
01:22	8		Slew to standard star HD 162208
01:30	2.5		Calibrations: observe standard star
01:34	8		Slew and acquisition for target C
01:42	6	C	Observe secondary eclipse of target C
01:50	8		Slew and acquisition for target D
01:58	25	D	Observe target D
02:23	8		Slew and acquisition for target A
02:31	6	A	Observe target A
02:37	8		Slew and acquisition for target C
02:47	6	C	Observe primary eclipse of target C
02:53	8		Slew and acquisition for target A
03:01	6	A	Observe primary eclipse of target A
03:07	8		Slew and acquisition for target B
03:15	6	B	Observe target B
03:21	8		Slew and acquisition for target F
03:28	25	F	Observe target F
03:53	8		Slew and acquisition for target B
04:01	6	B	Observe secondary eclipse for target B
04:07	8		Slew and acquisition for target C
04:15	6	C	Observe target C not during an eclipse

Table 3: Detailed plan for observing time, the night of 2023-05-06. Specific observing times are scheduled to fit the orbits of these objects, prioritize our higher-priority objects, and minimize airmass.