

starphysics observatory

An Astronomical Retirement

**Small
Telescope
Science = Time Series
Astronomy**

Time Series Observing Requirements

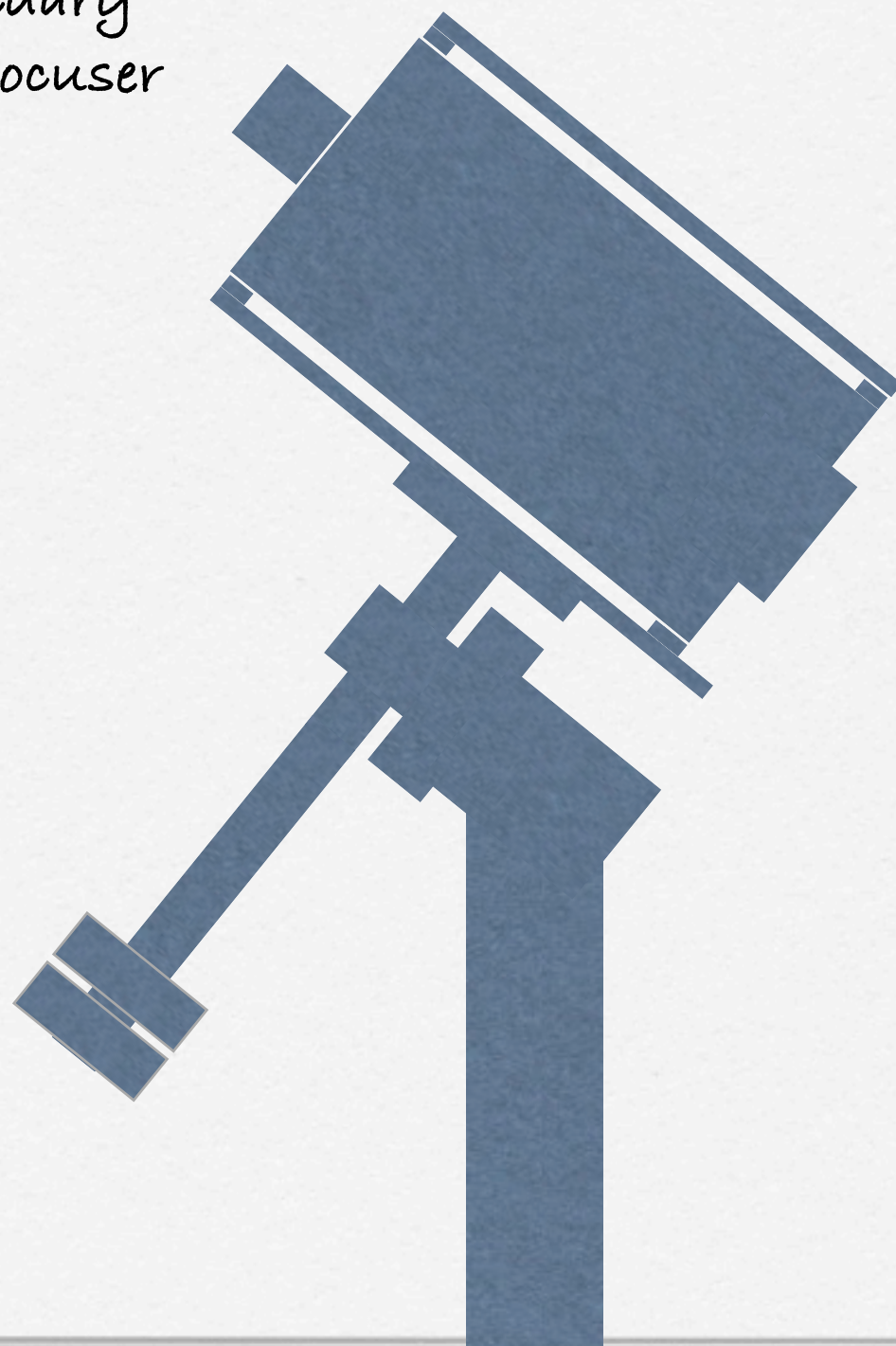
- ❑ Automated Operation
- ❑ Switchable observing modes
- ❑ Real Time Evaluation & Tasking



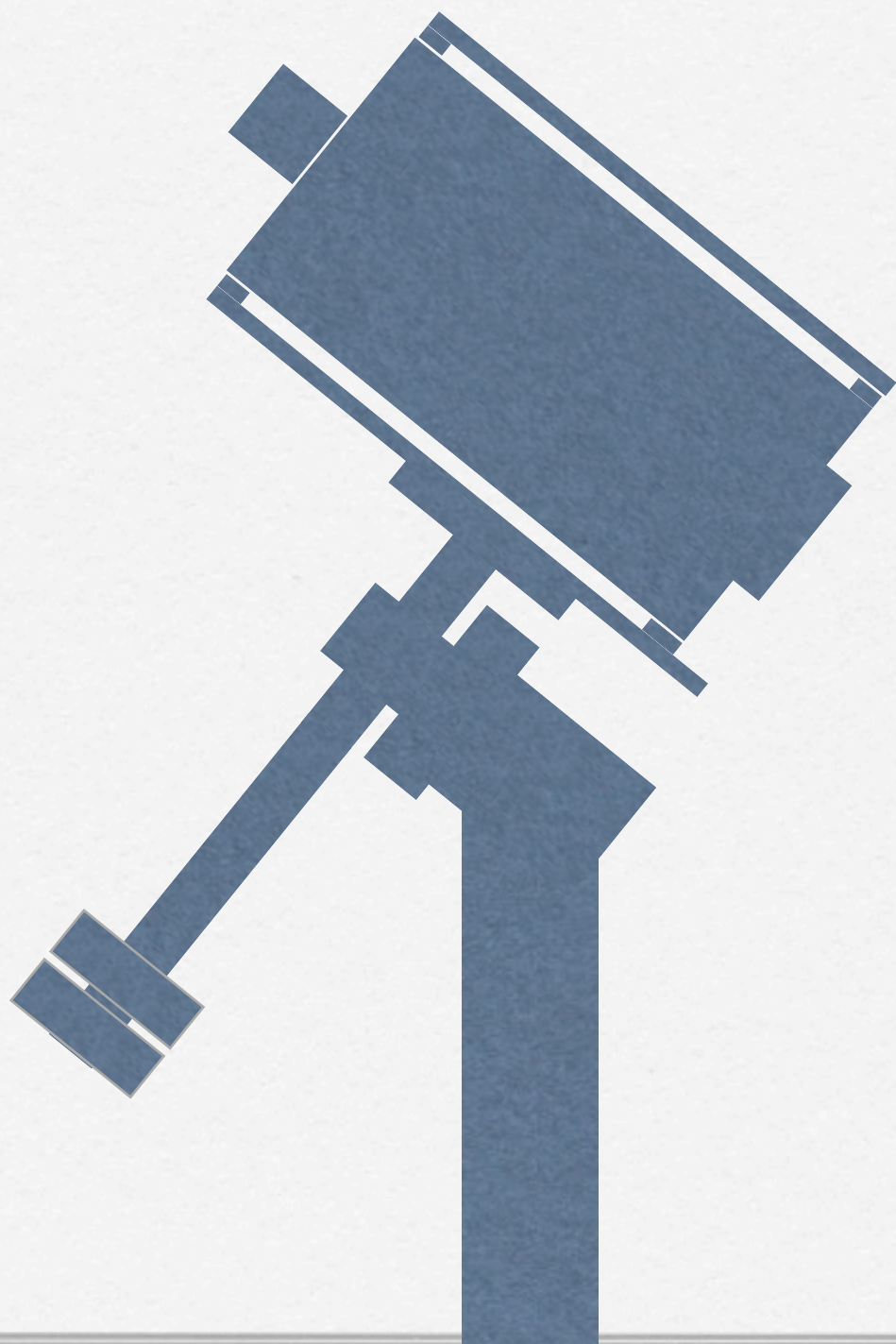
C14 Telescope

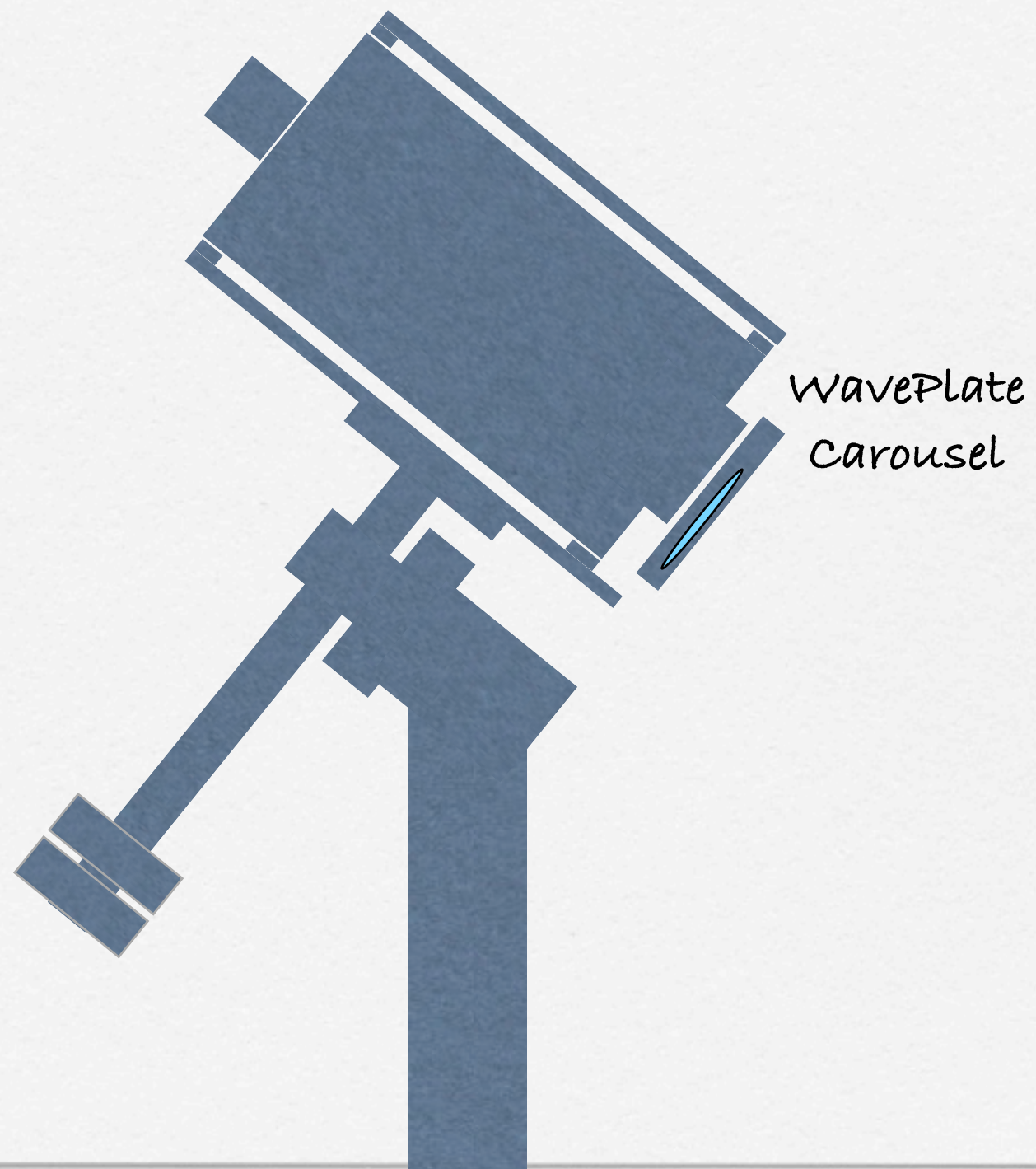
AP 1200 Mount

Secondary
MicroFocuser



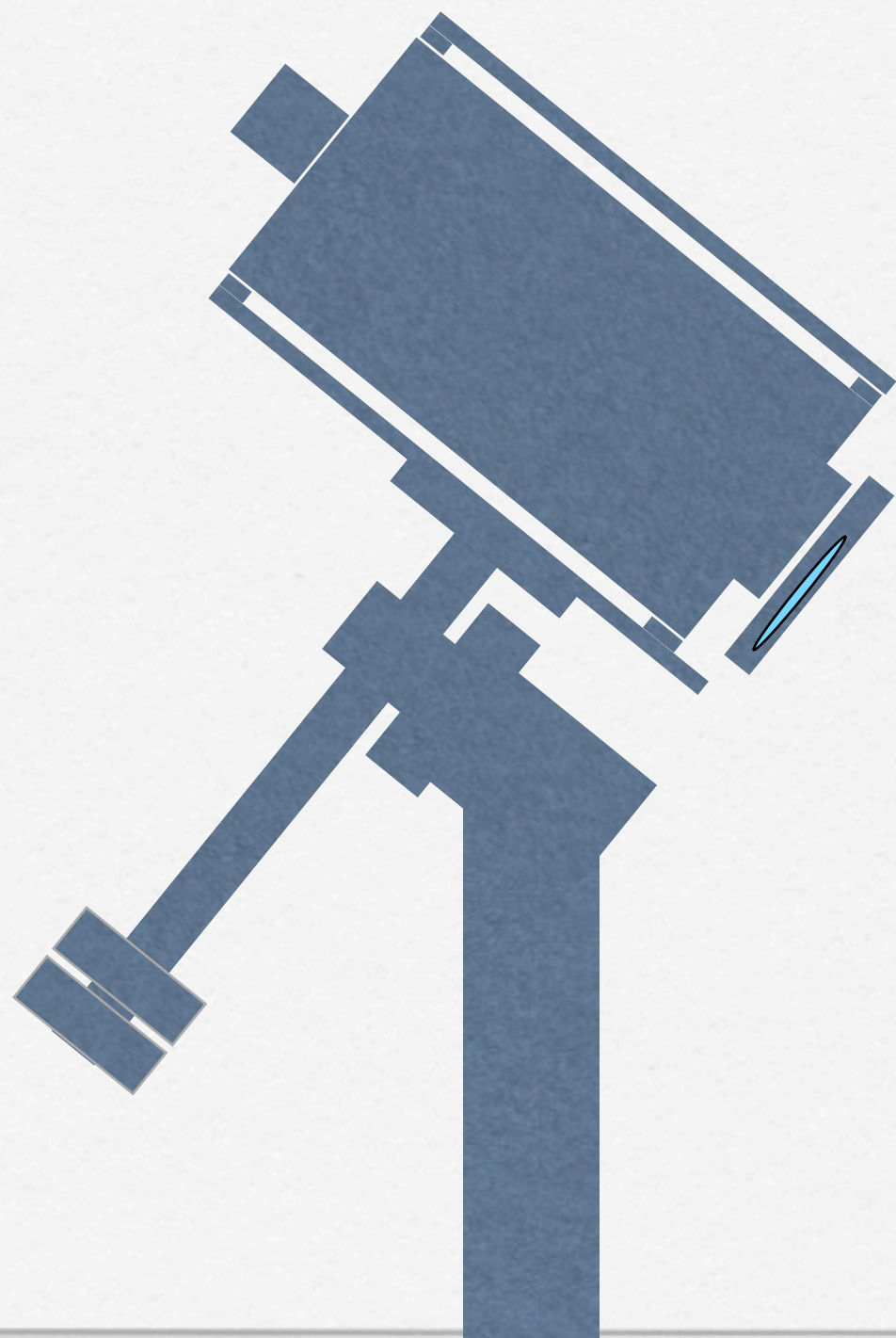


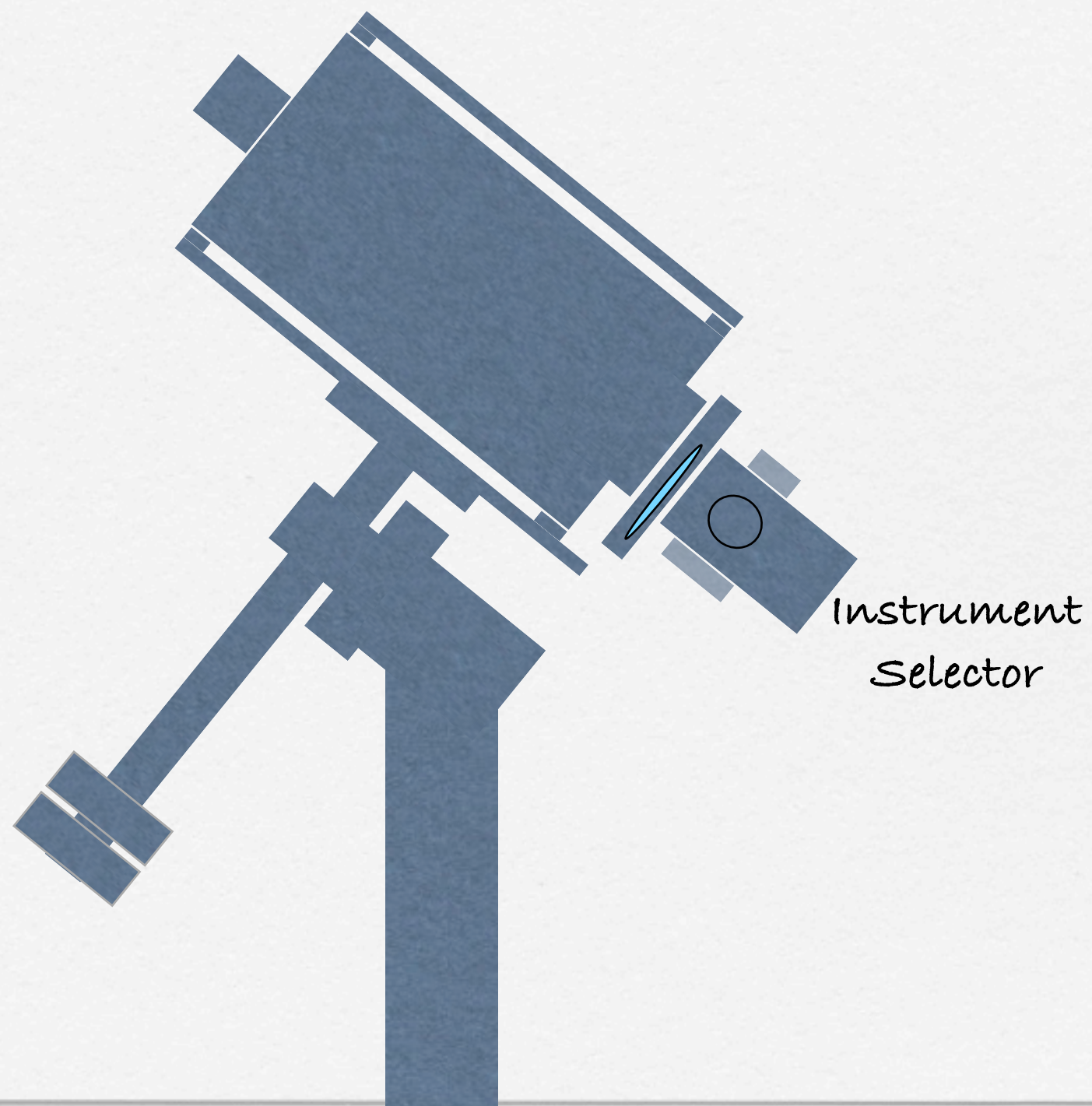












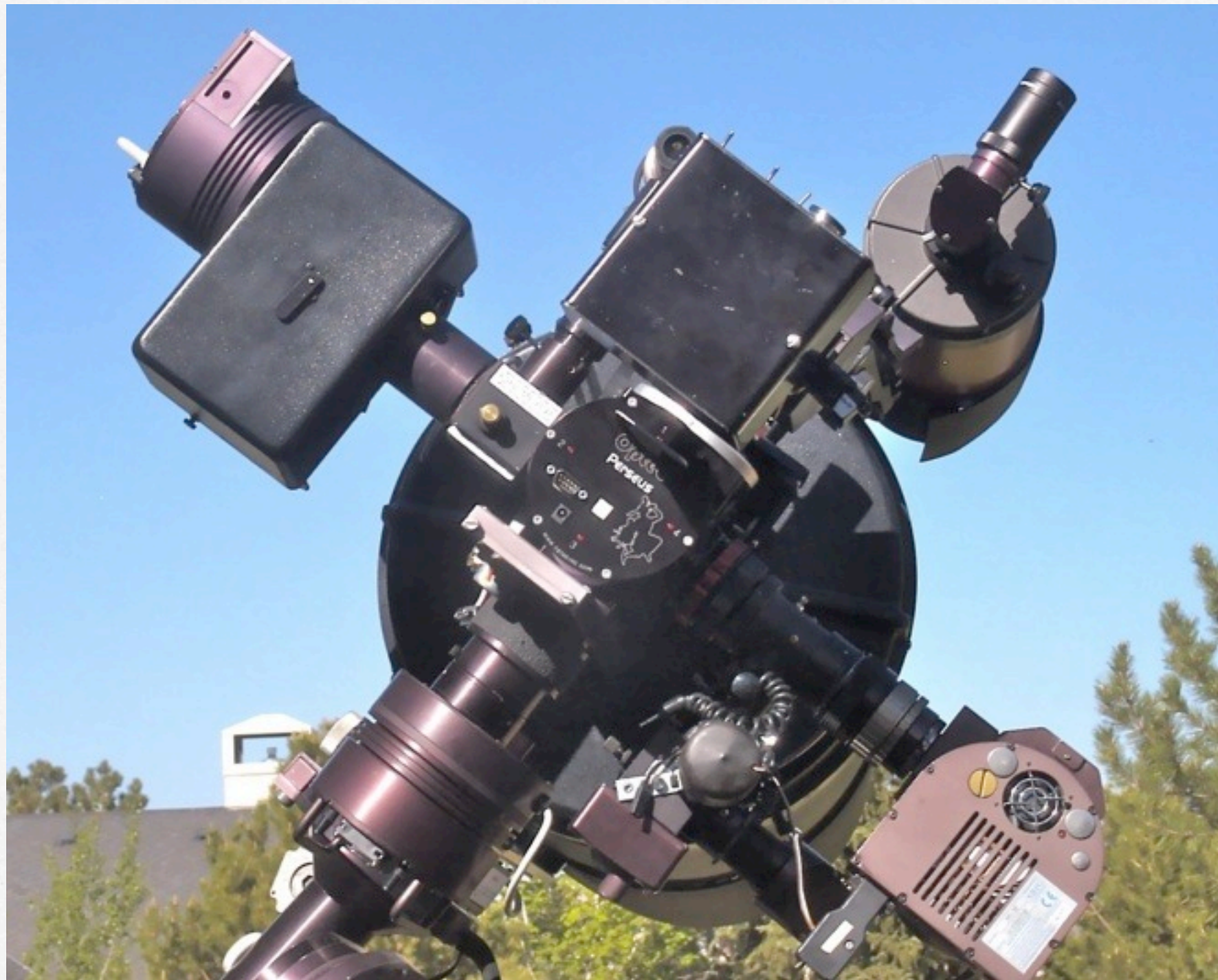
Instrument Selector - Spec



Instrument Selector - Prototype



Instrument Selector - First Unit



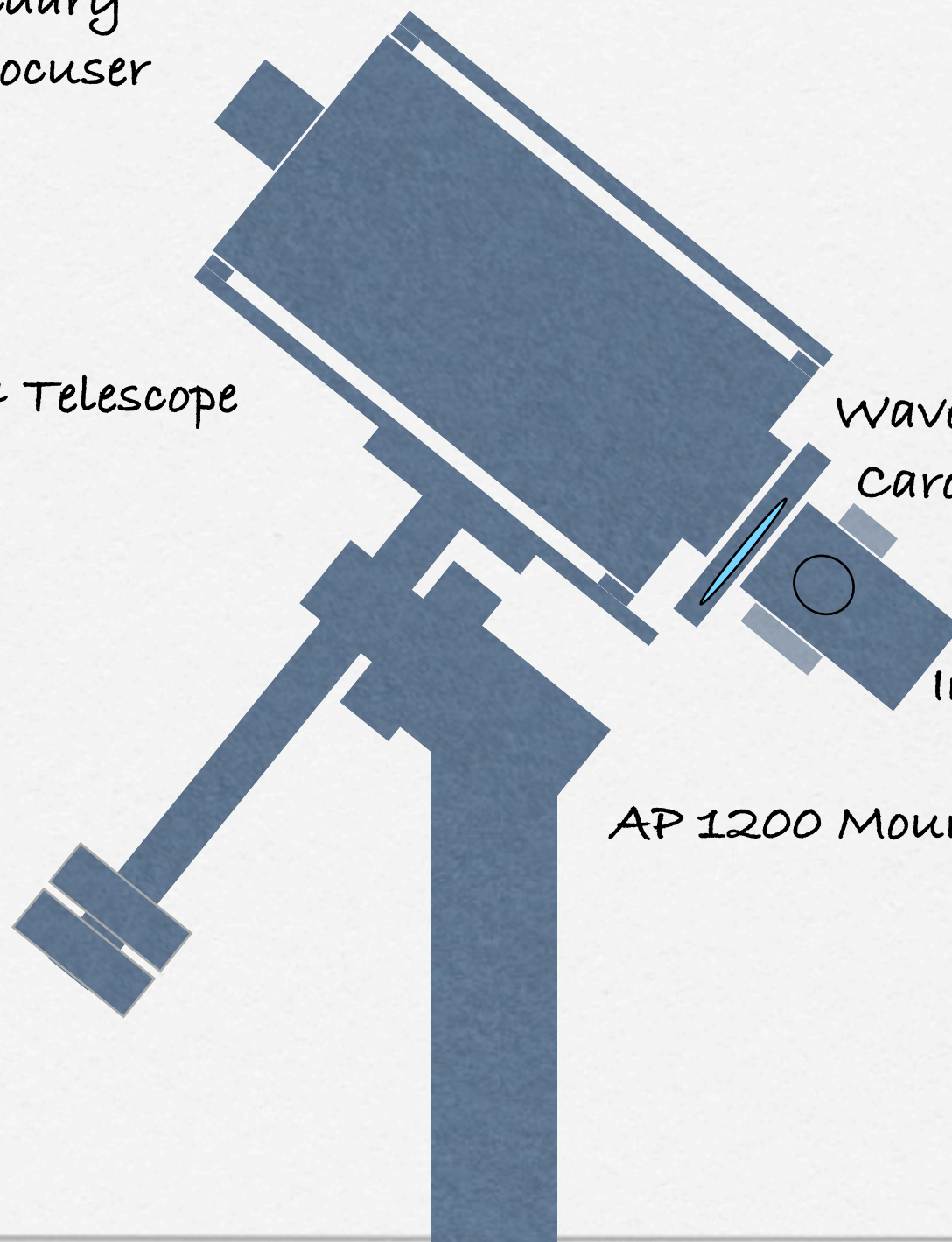
Secondary
MicroFocuser

C14 Telescope

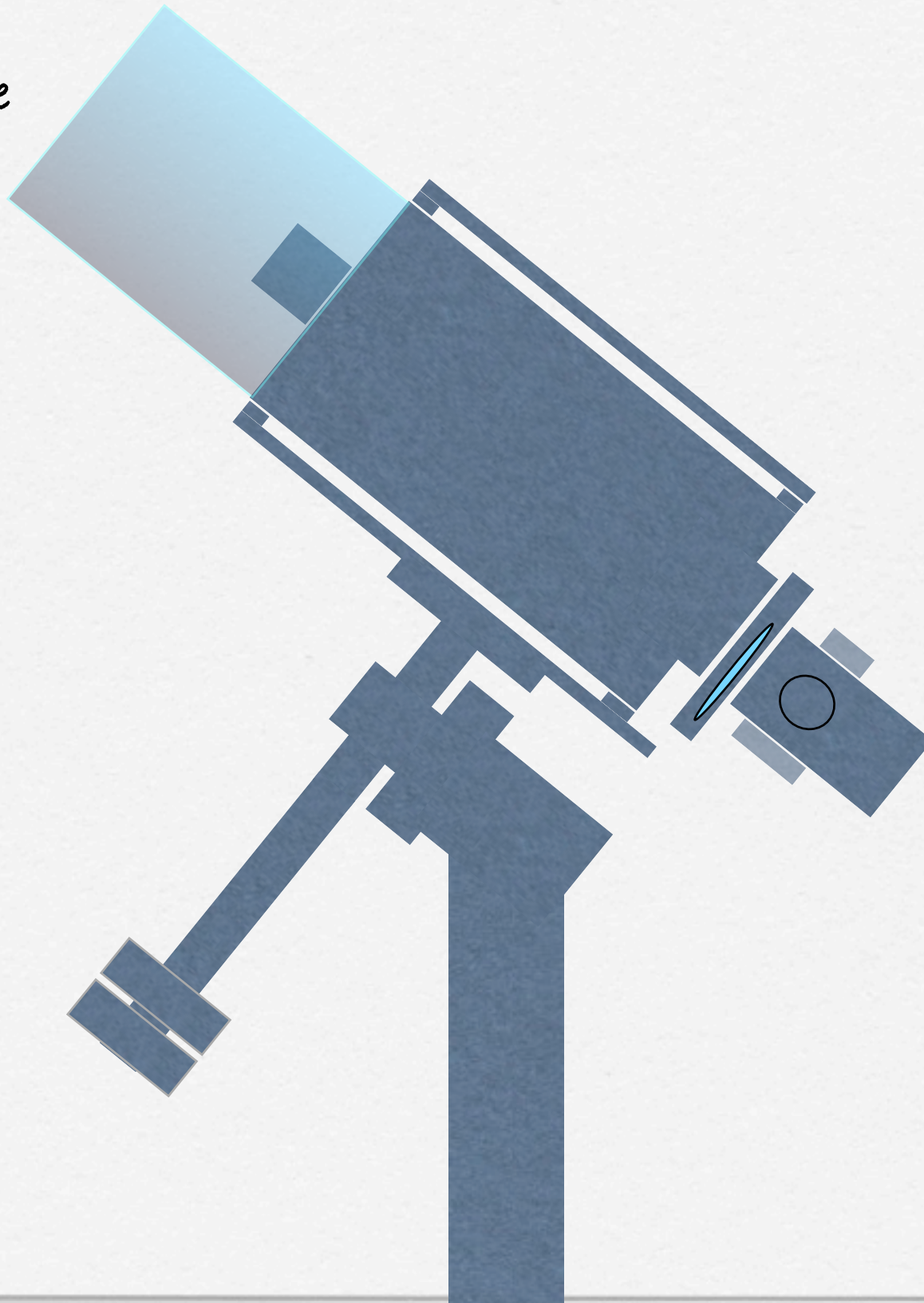
WavePlate
Carousel

Instrument
Selector

AP 1200 Mount

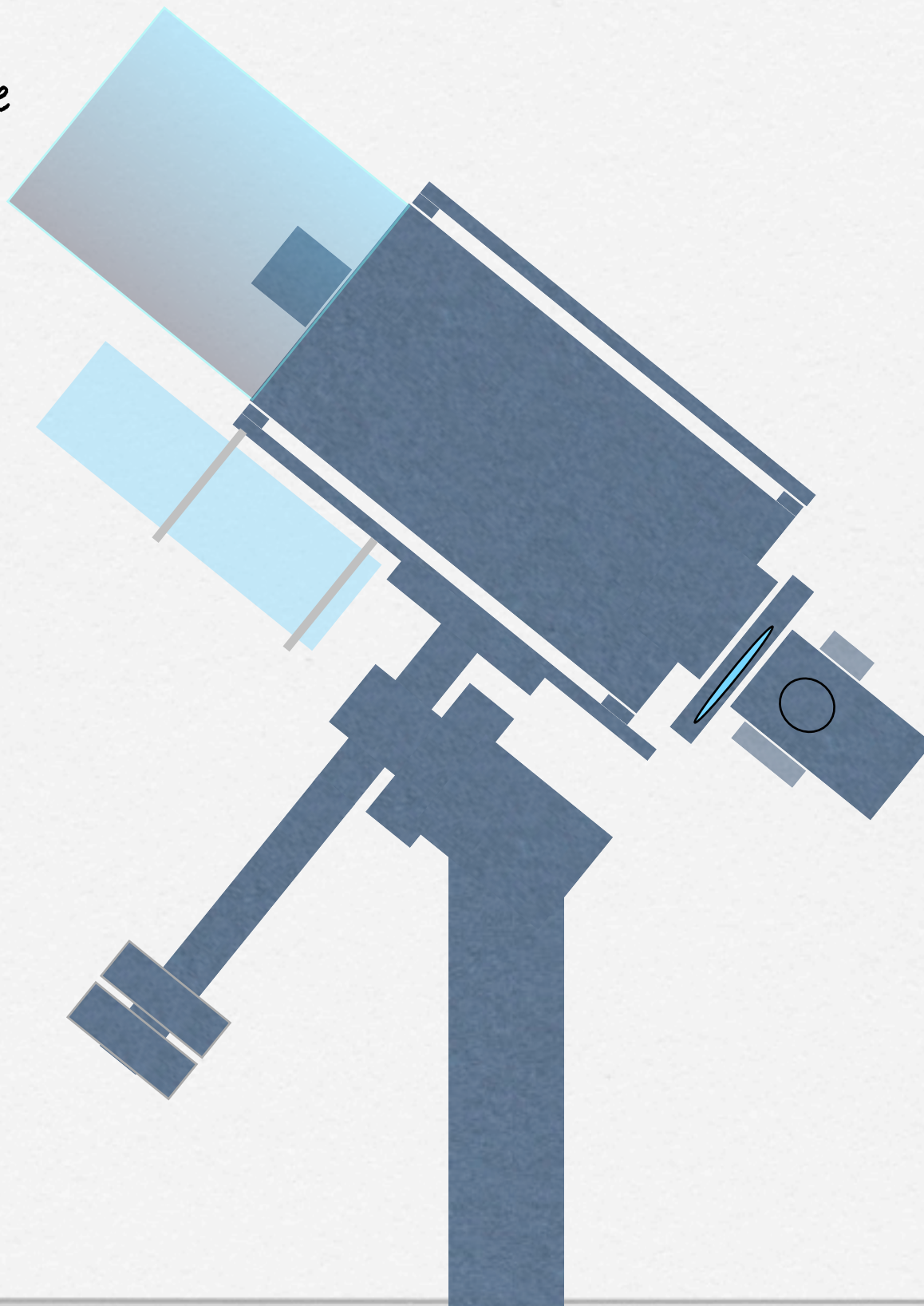


Dew Shade



Dew Shade

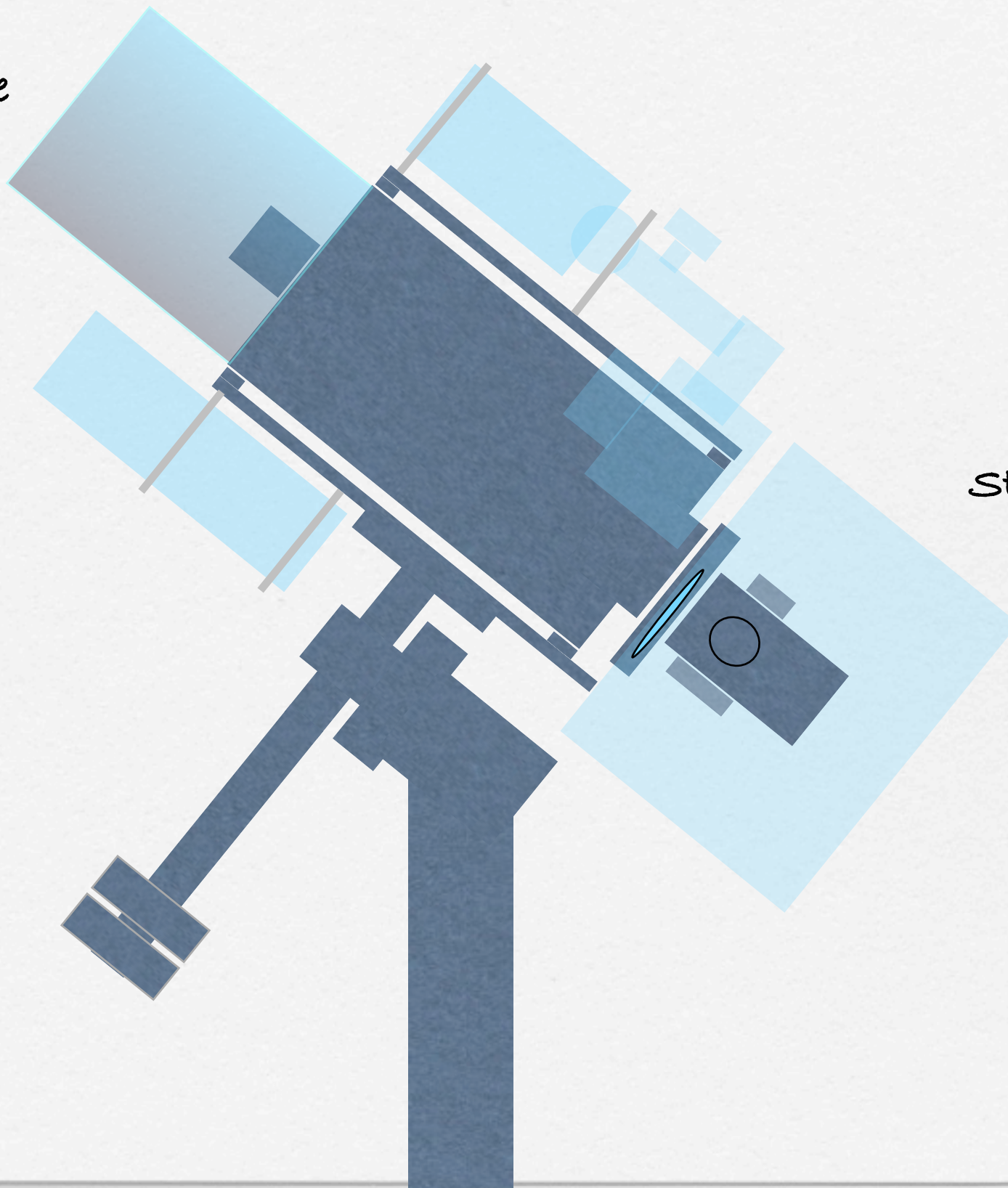
Schmidt
camera

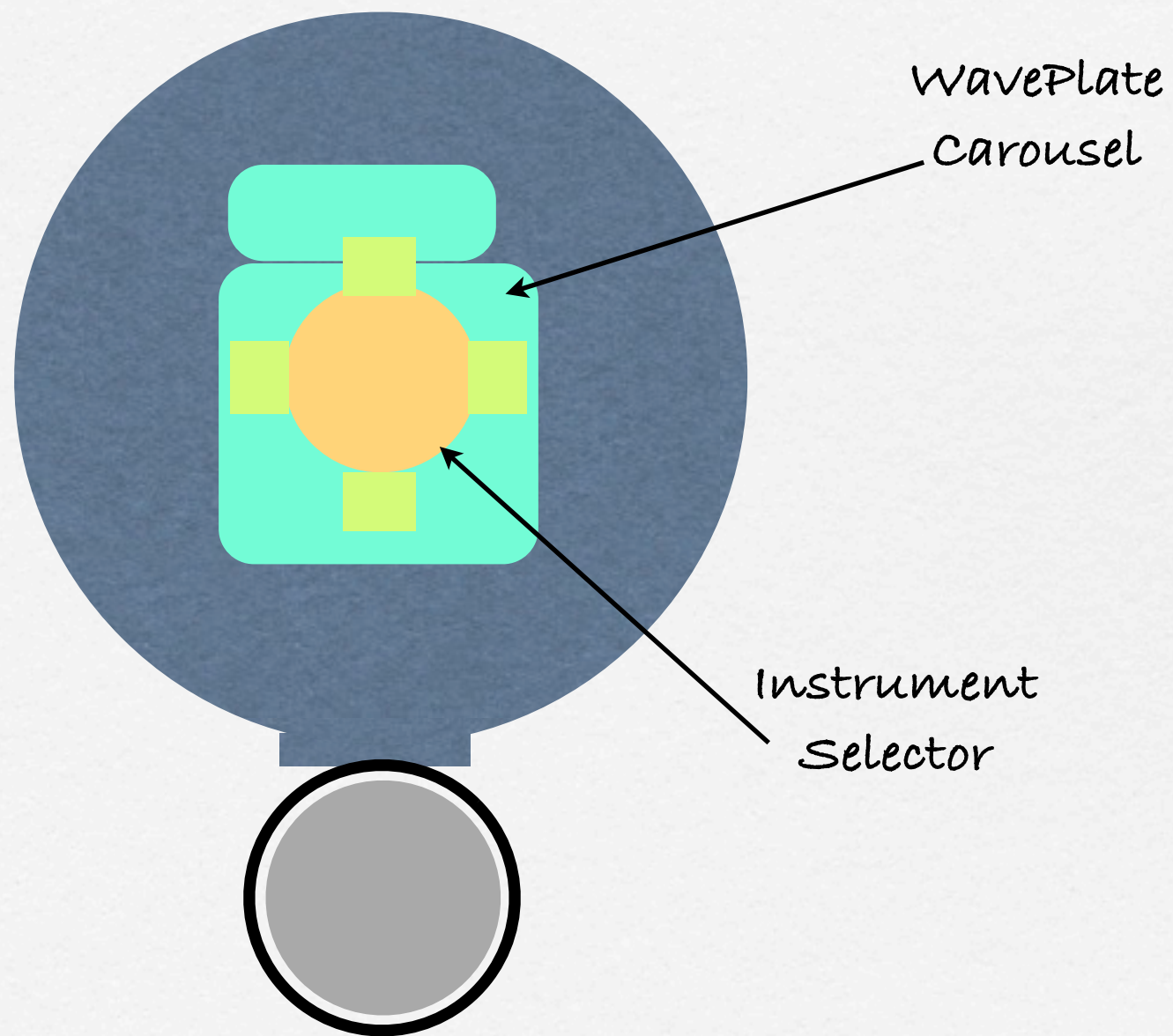


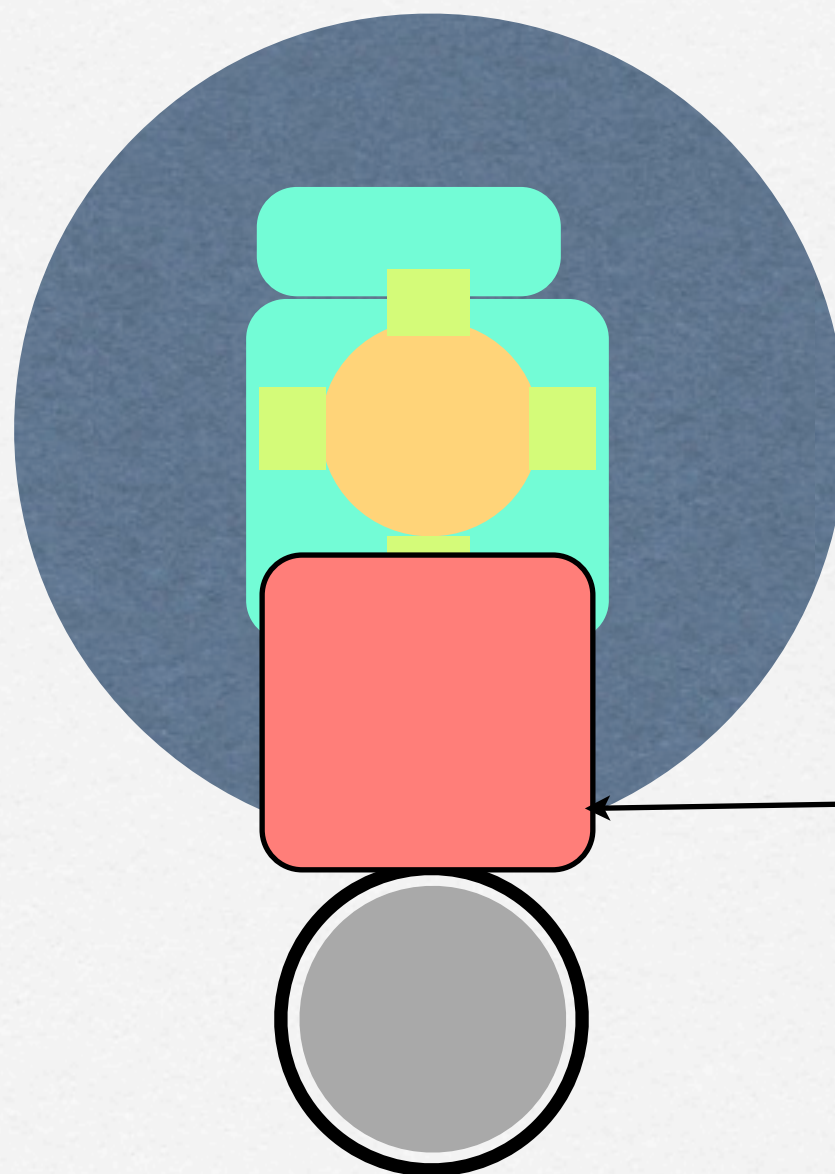
Dew Shade

Schmidt
camera

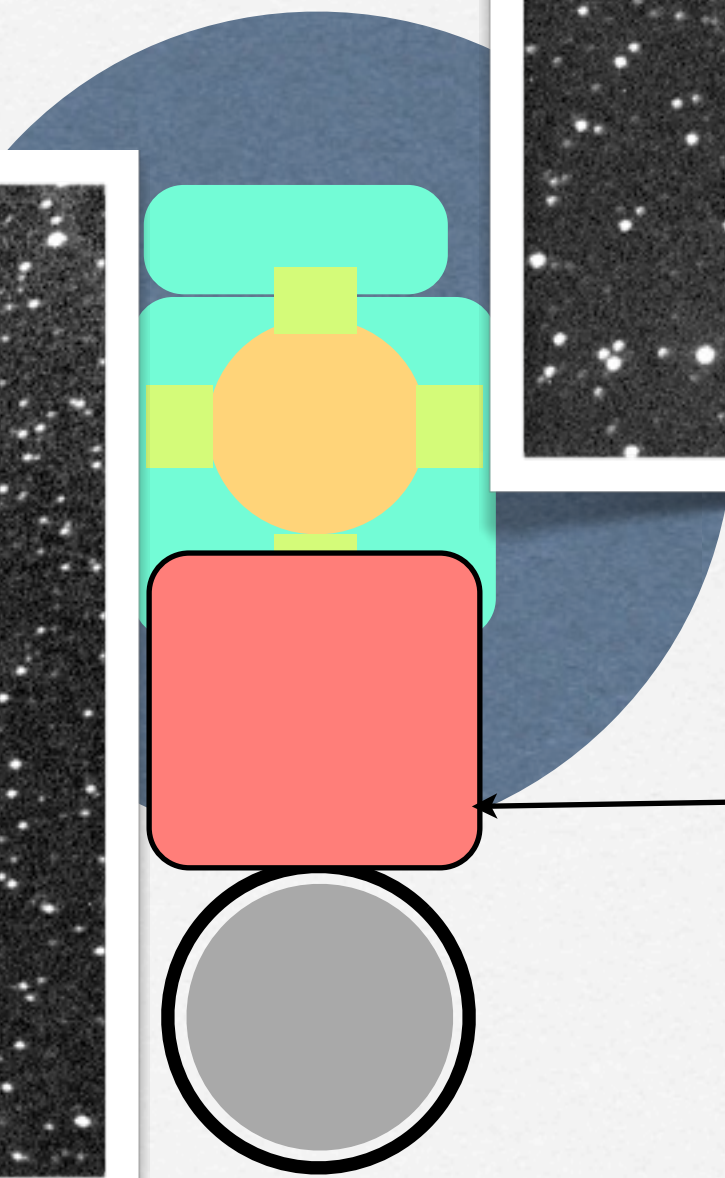
stuff





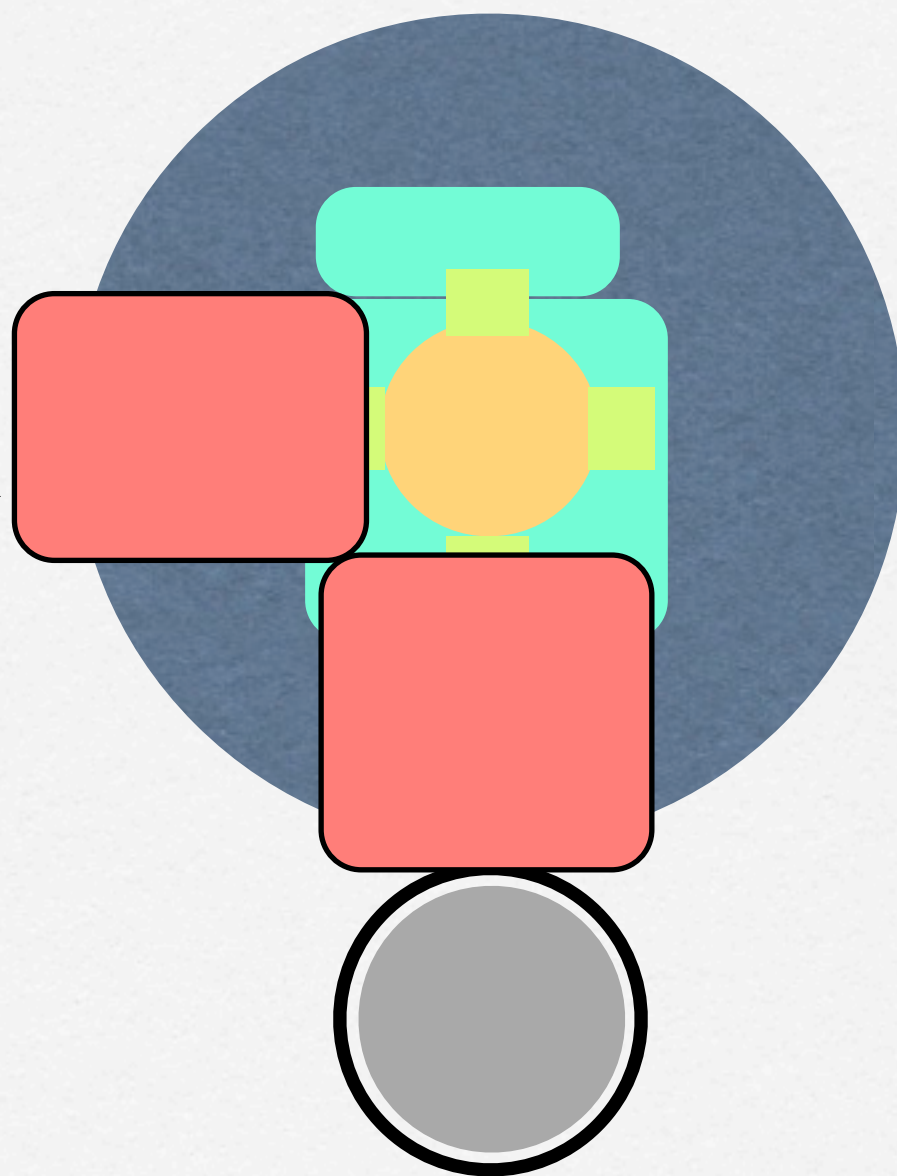


Primary Imager



Primary Imager

Low Resolution
Spectropolarimeter →



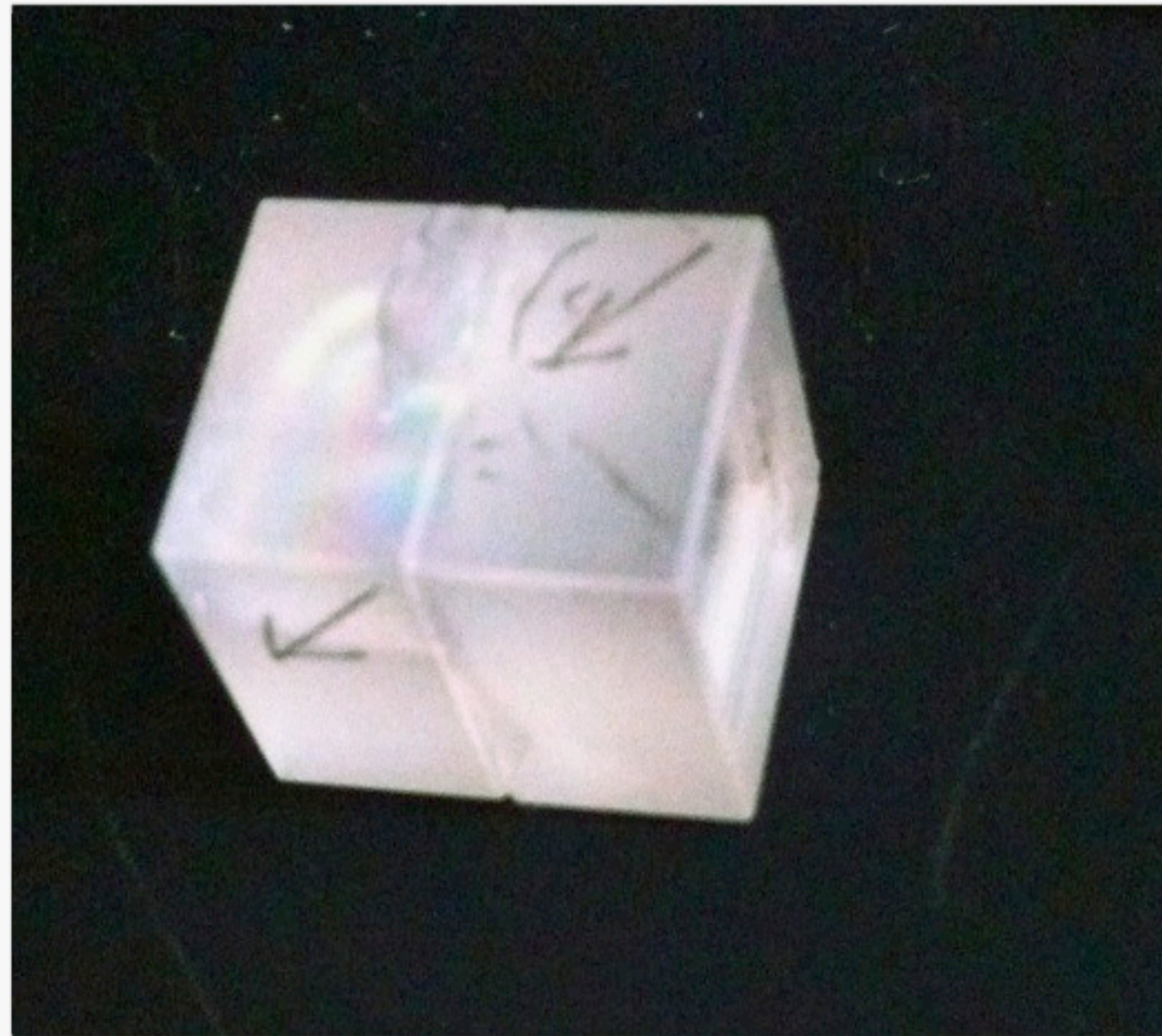
MOVEABLE
SLIT

CAL LAMP

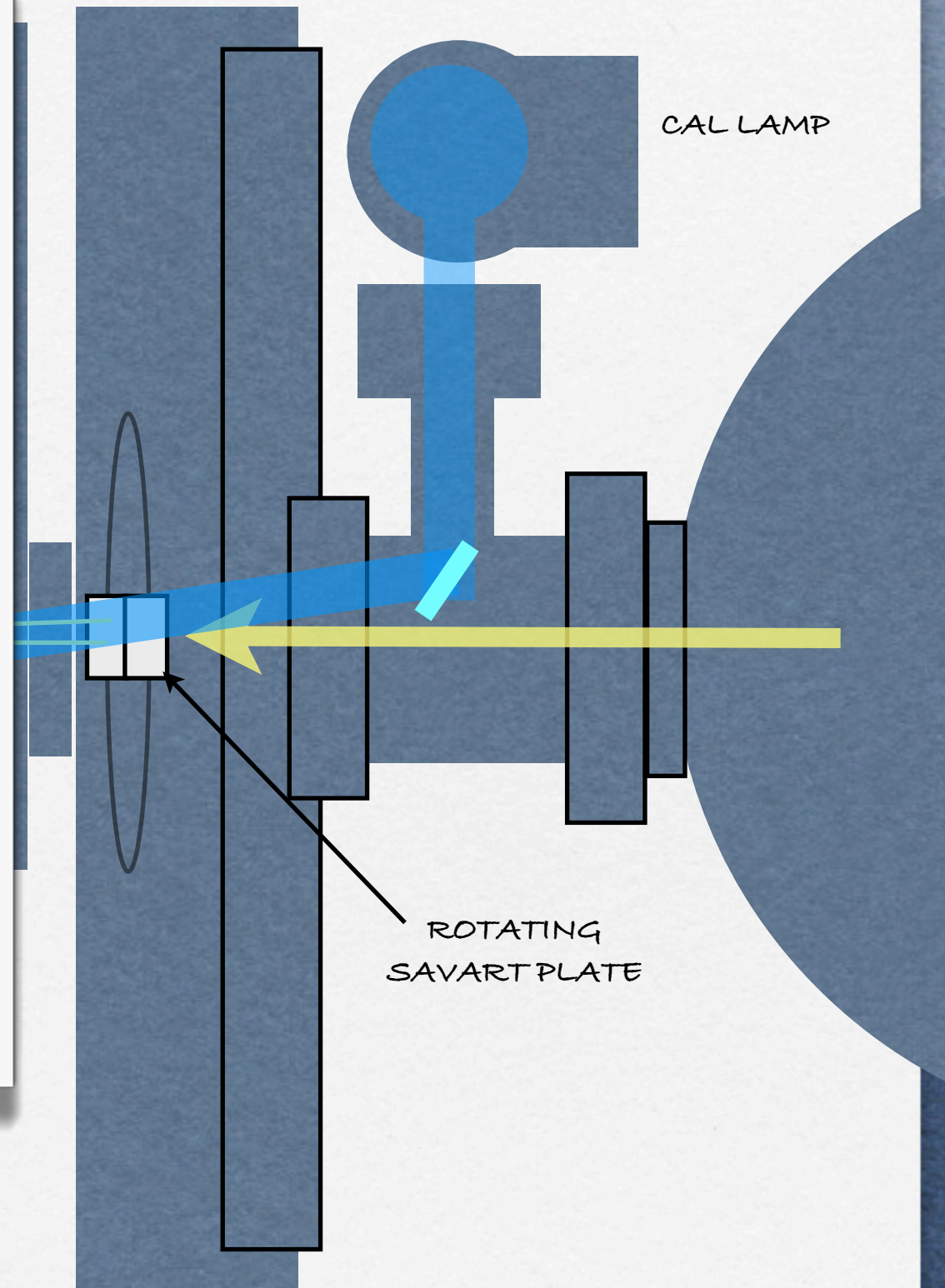
ROTATING SAVART PLATE

ROTATING SAVART PLATE

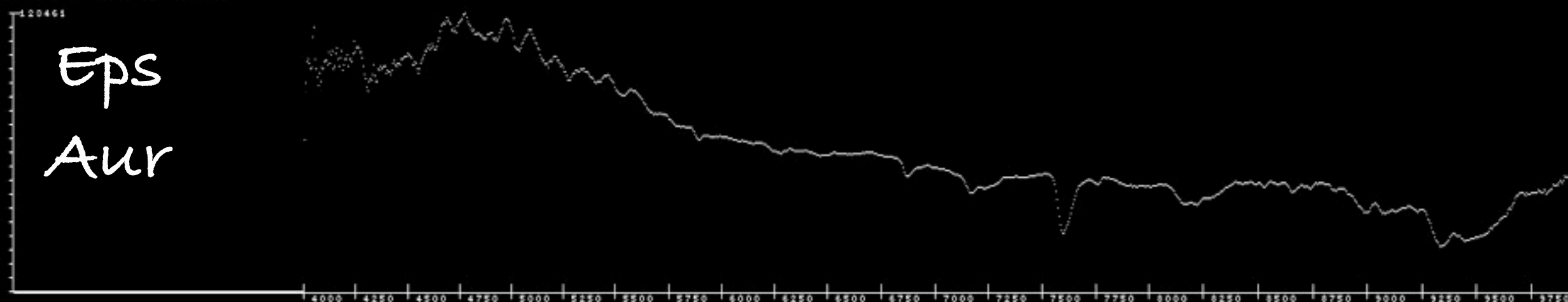
SRIC DSS SPECTROGRAPH



OPTEC ROTATOR

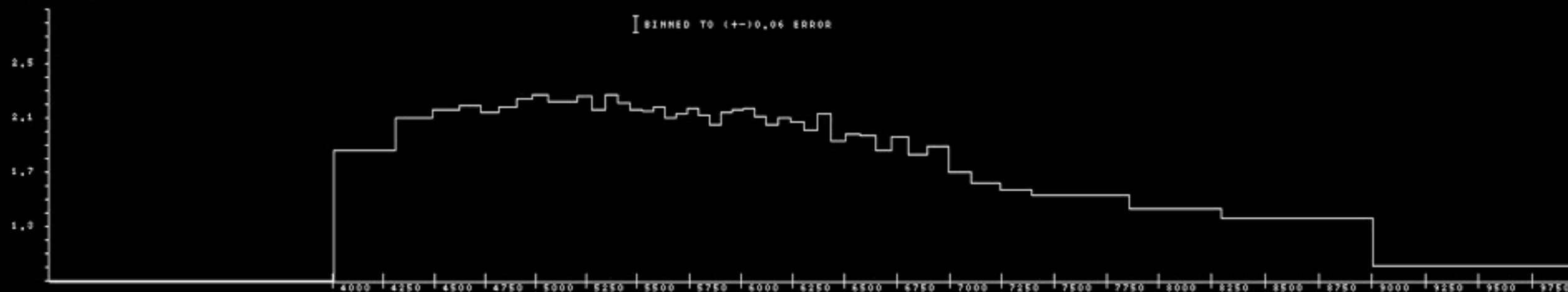


INSTRUMENTAL 1 DATASETS 120 SECONDS

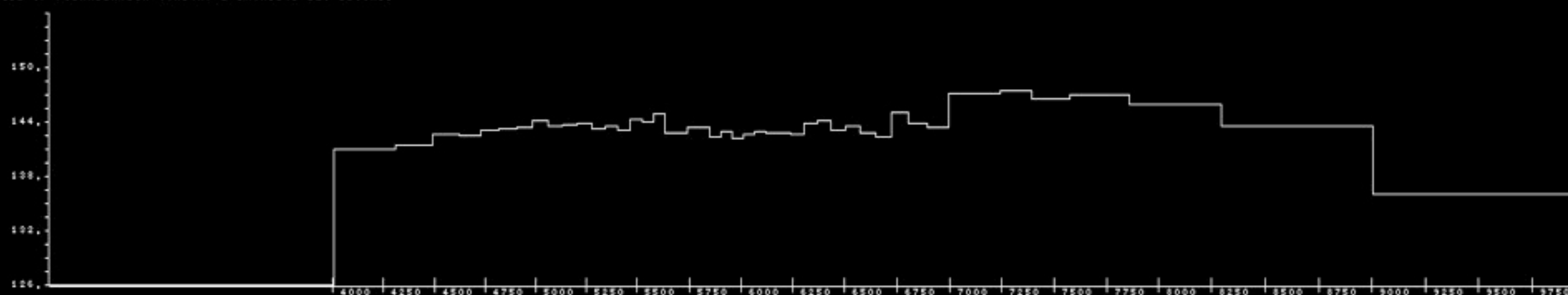


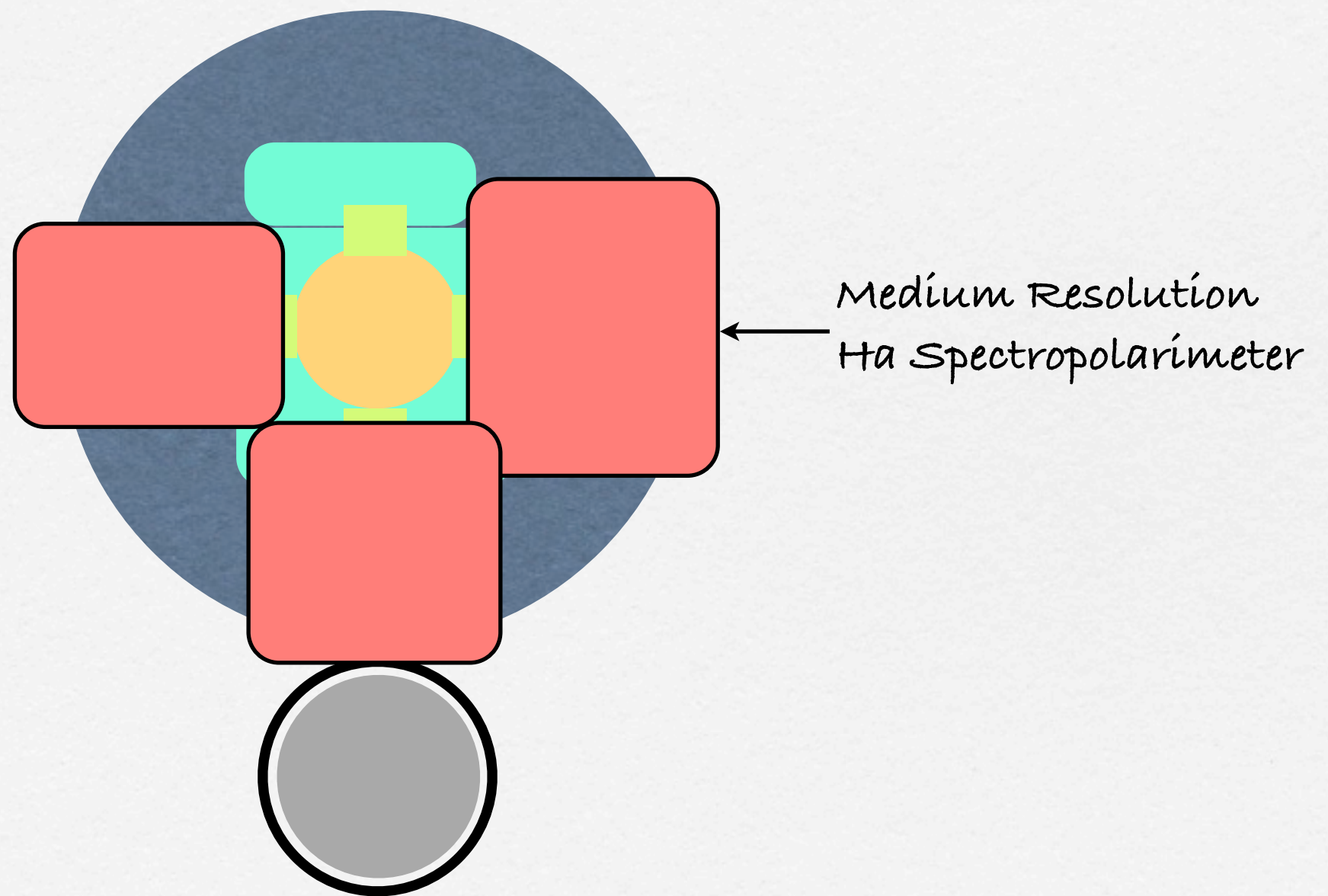
POLARIZATION (PCT)

BINNED TO (+/-)0.06 ERROR



ANGLE OF POLARIZATION (THETA) 1 DATASETS 120 SECONDS



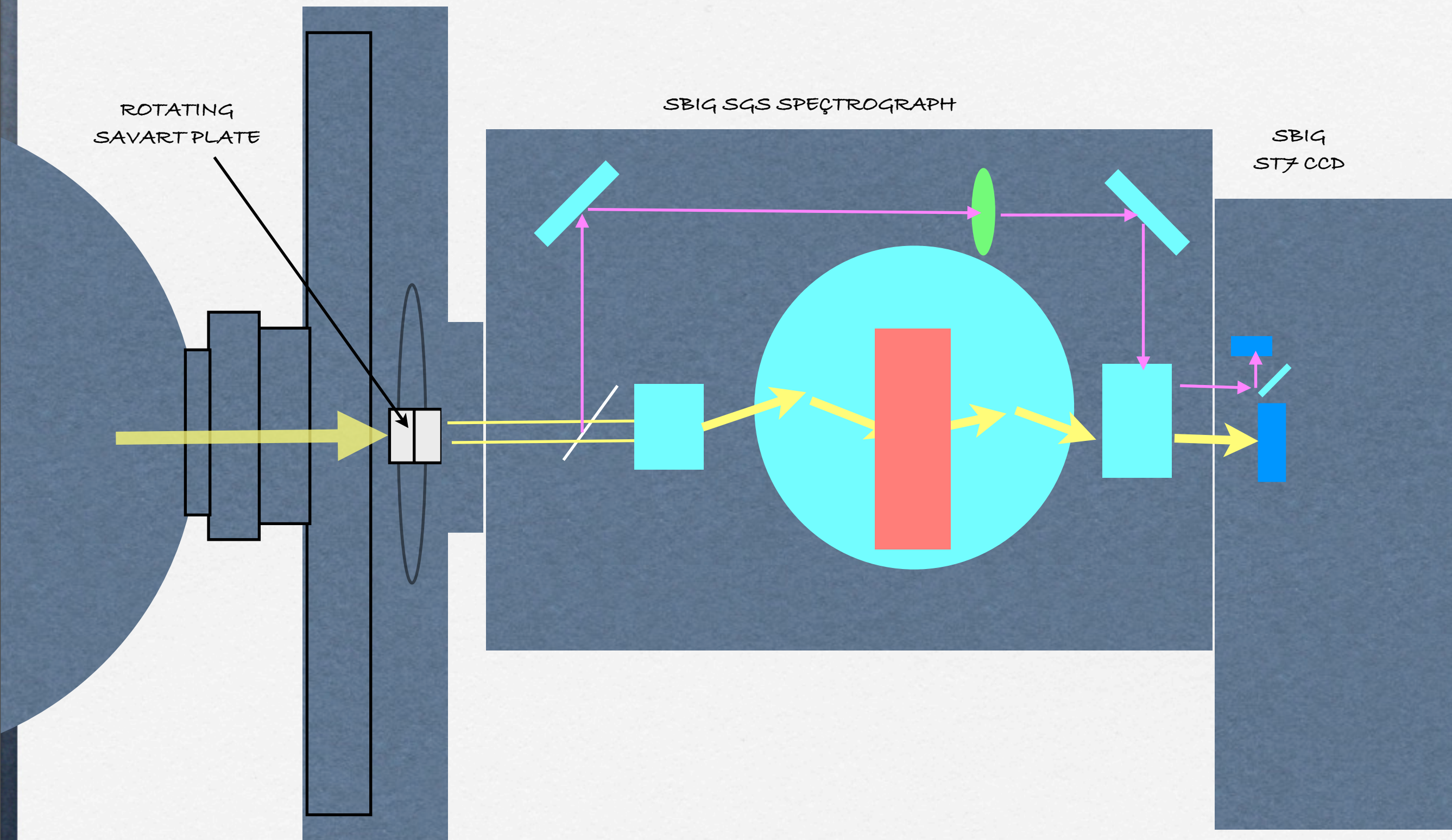


OPTEC ROTATOR

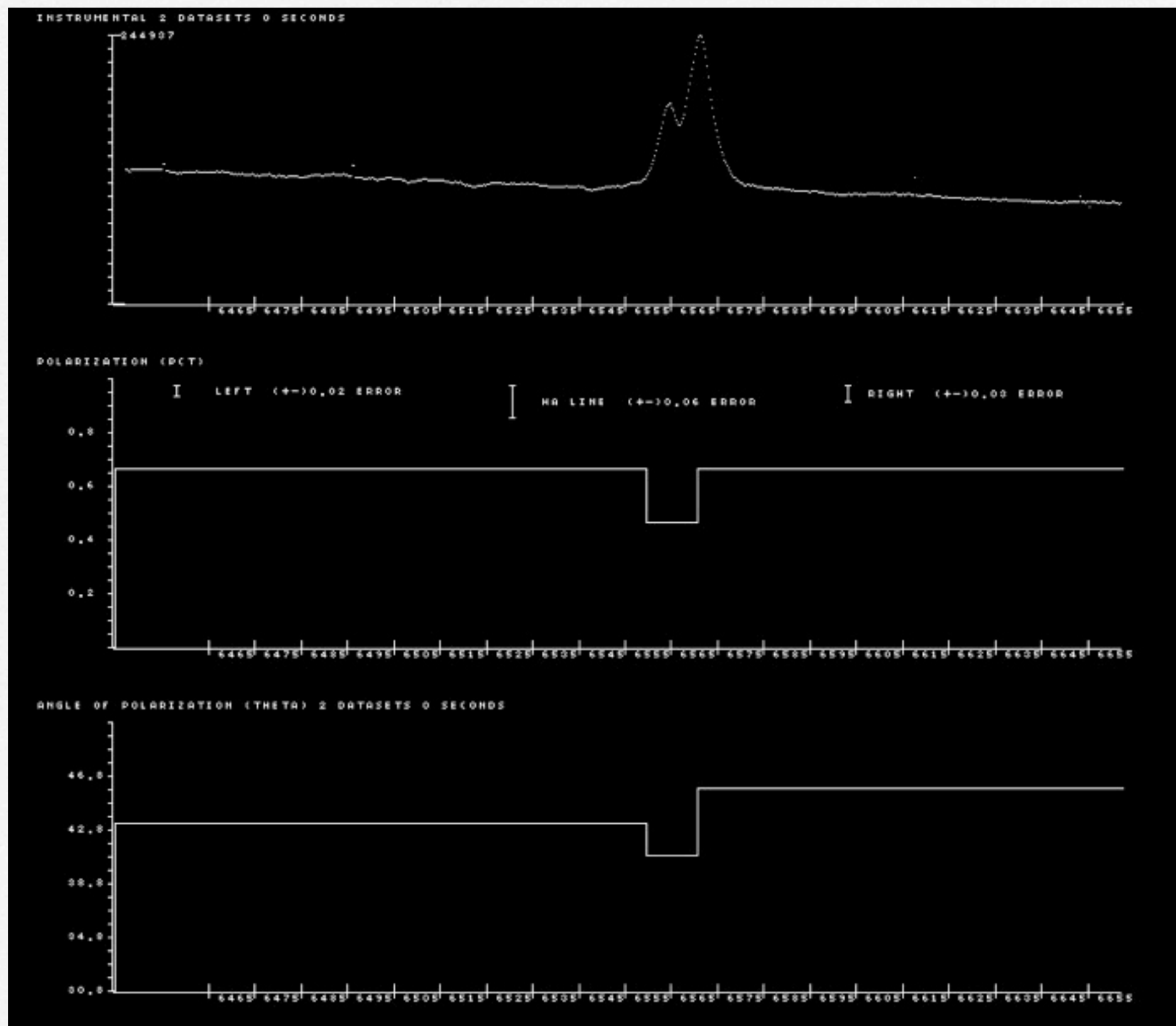
ROTATING
SAVART PLATE

SBIG SGS SPECTROGRAPH

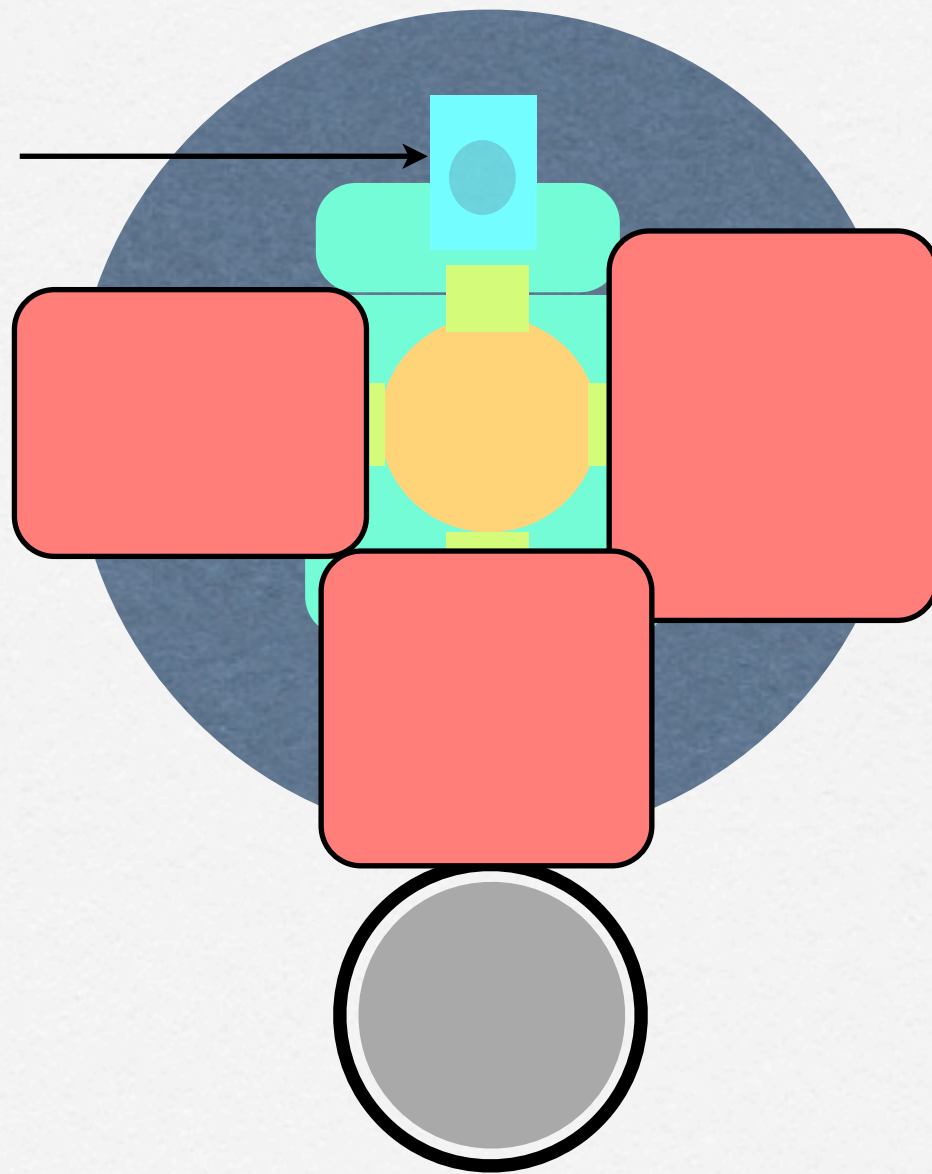
SBIG
ST7 CCD

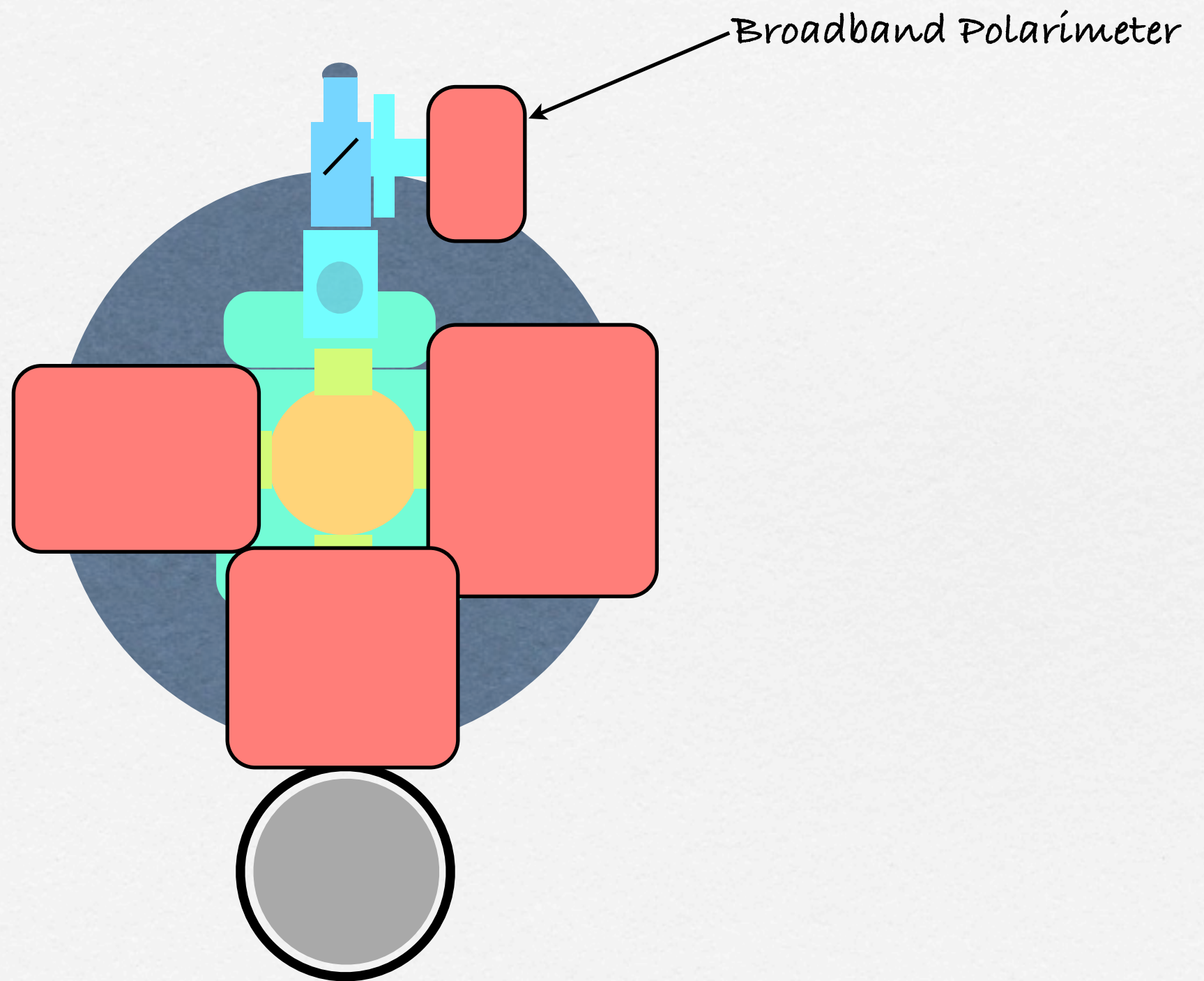


Beta
Lyr

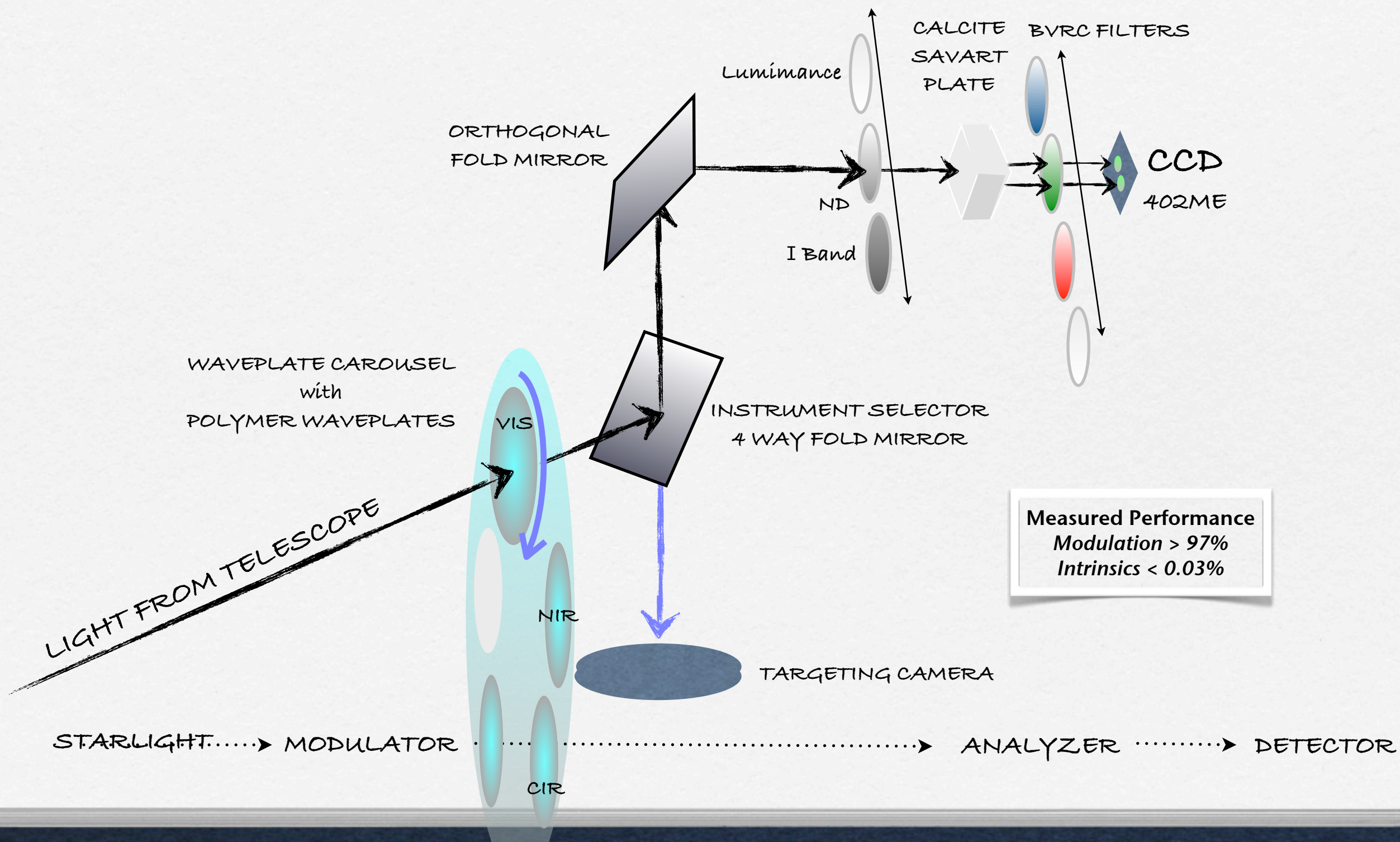


Flip Mirror

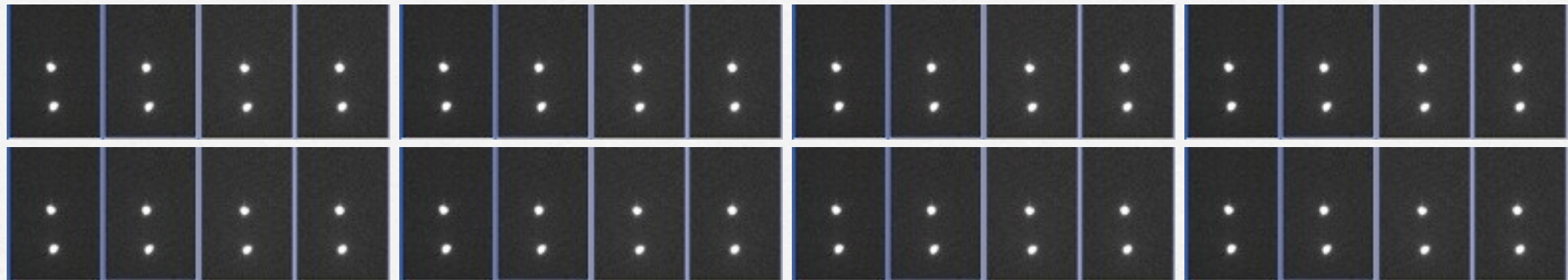




Dual Beam Double Fold CCD Polarimeter

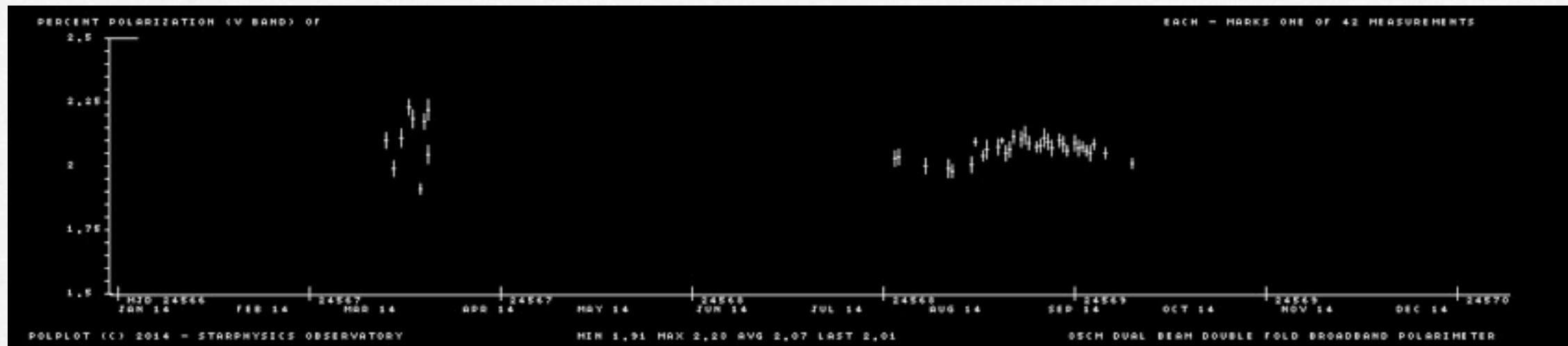


Target Observation

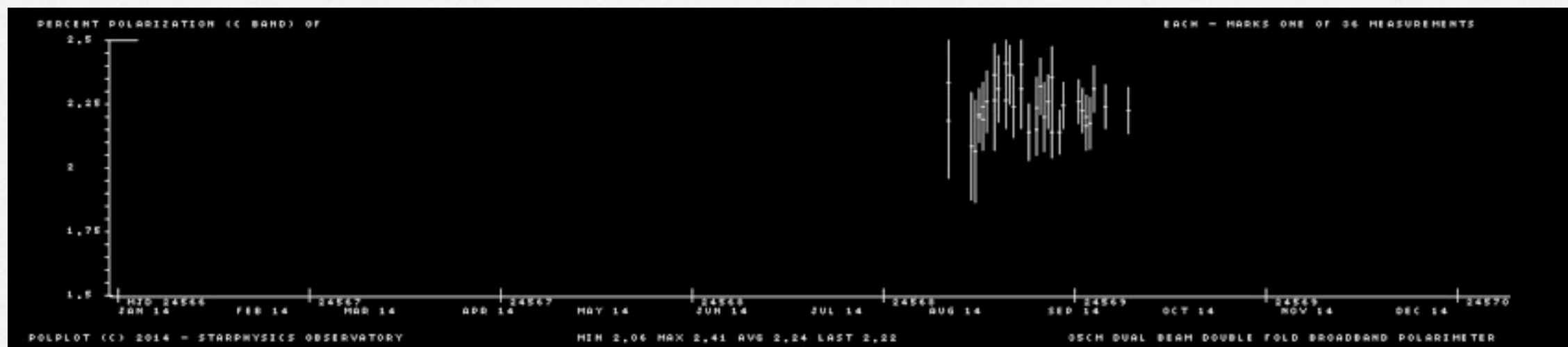


- 15 minutes
- 32 Frames (two waveplate rotations)
- 200M photons
- Total Error $\sim 0.03\%$

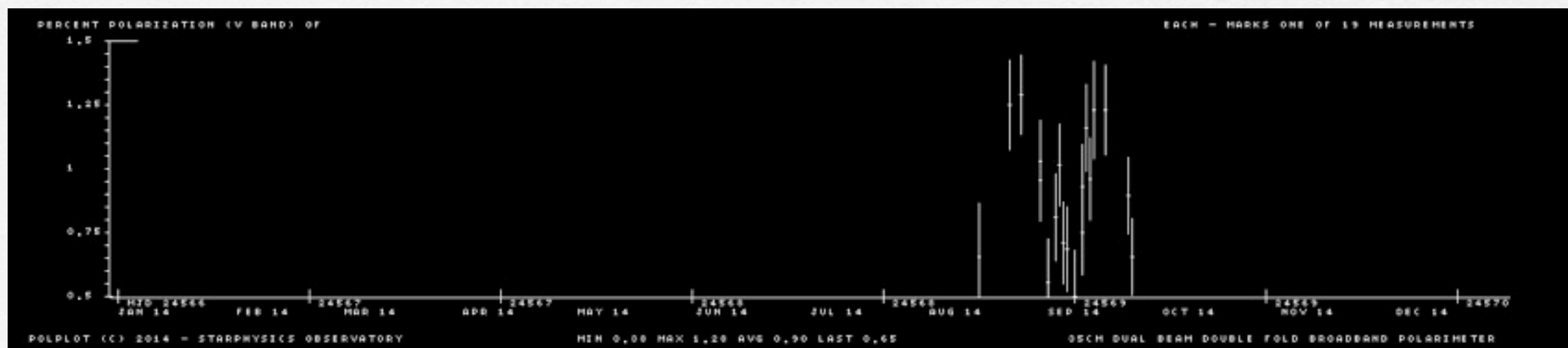
Eps
Aur



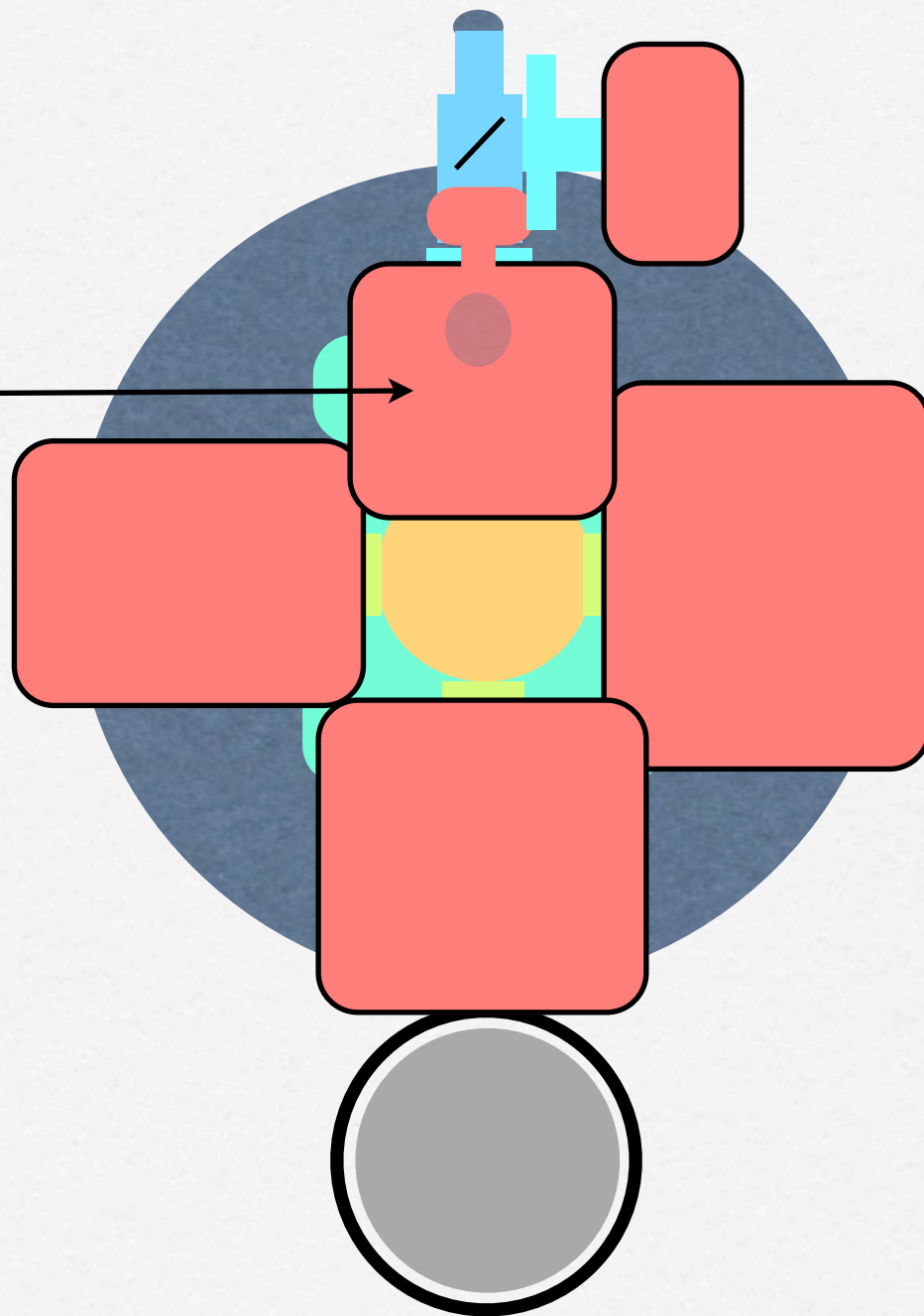
EE
Cep

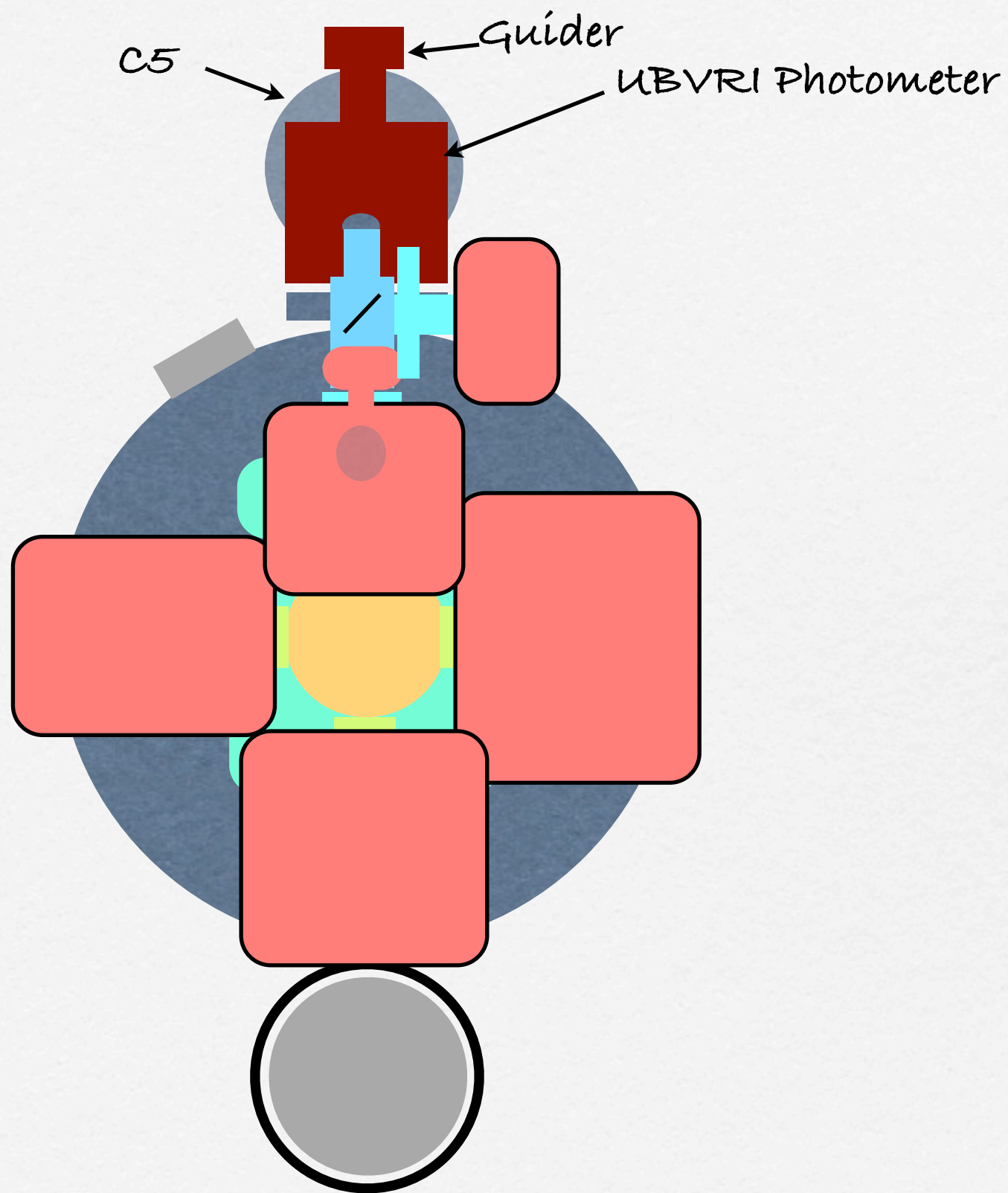


RY
Tau



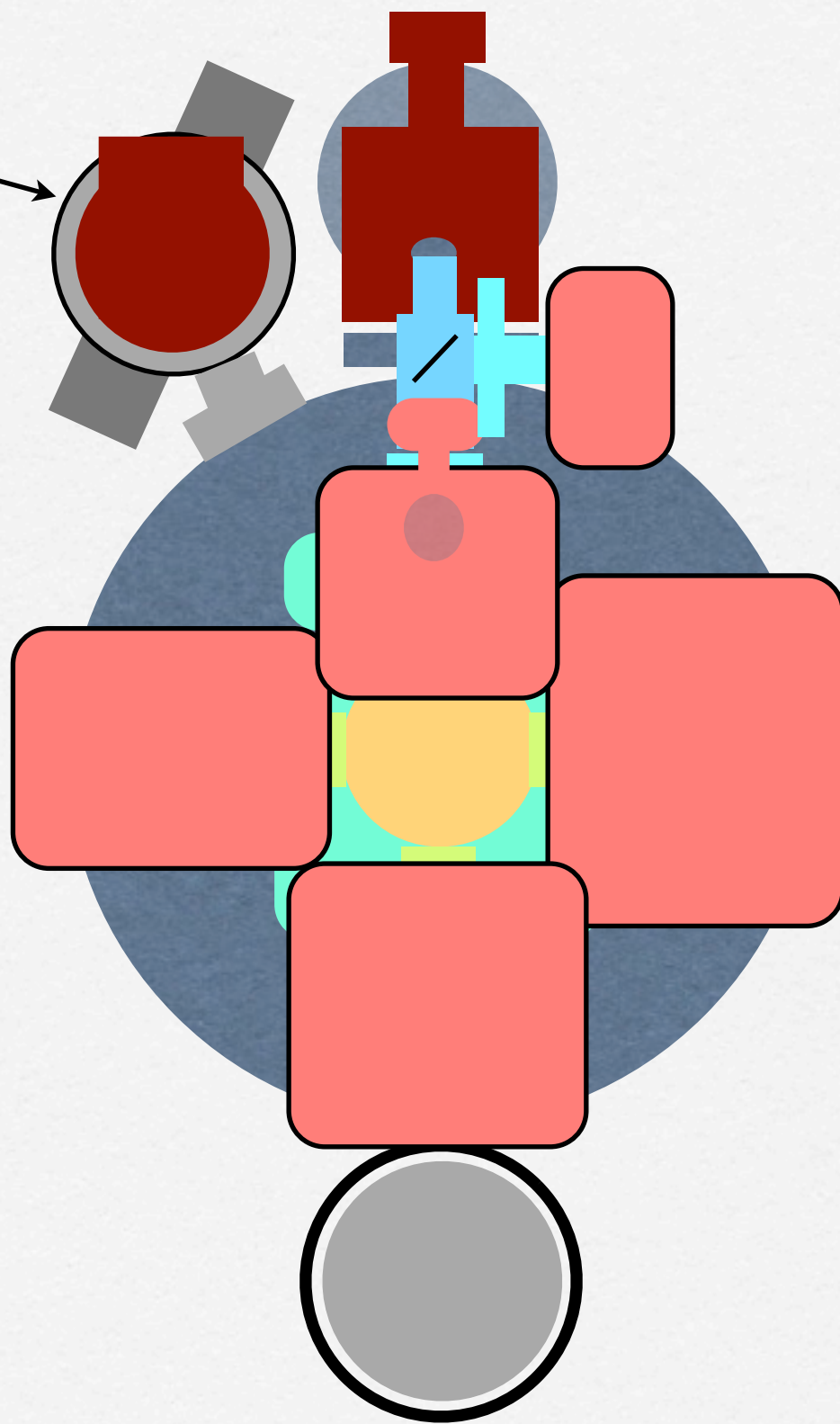
JH Photometer



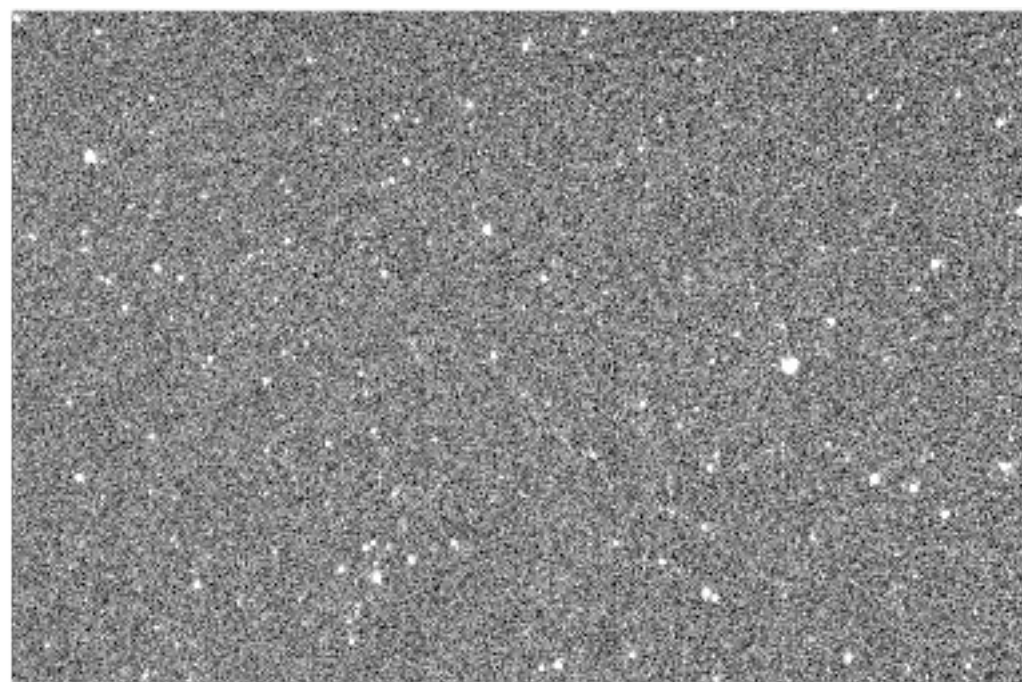
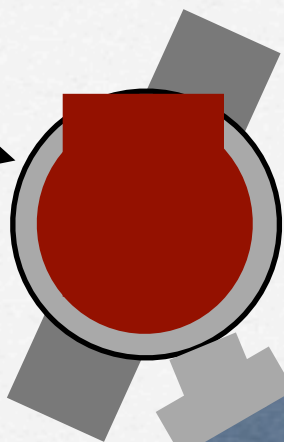




Sky Monitor/
wide field camera

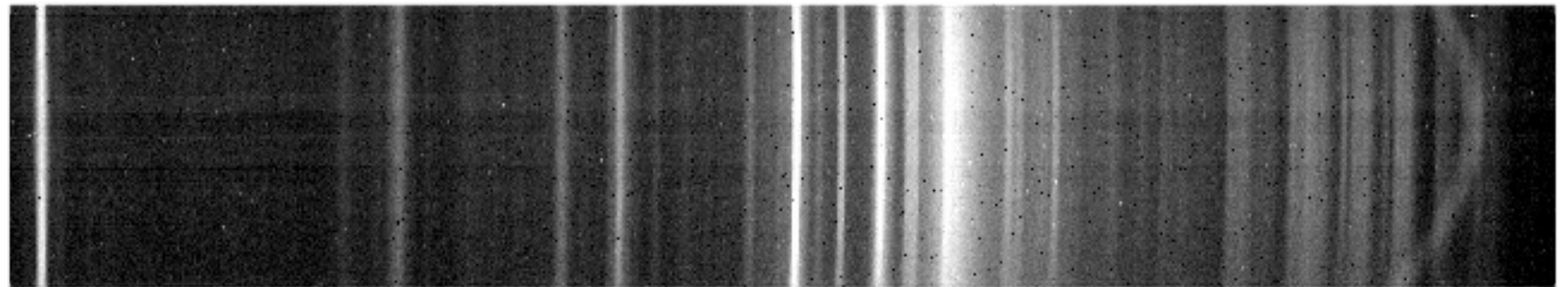
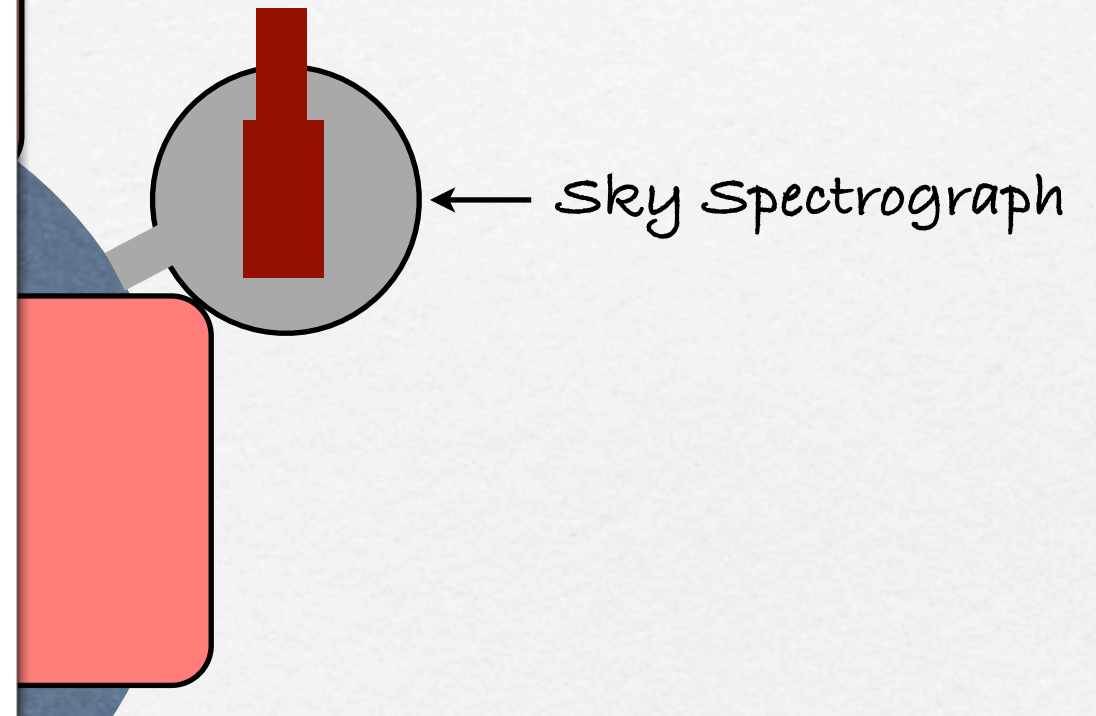


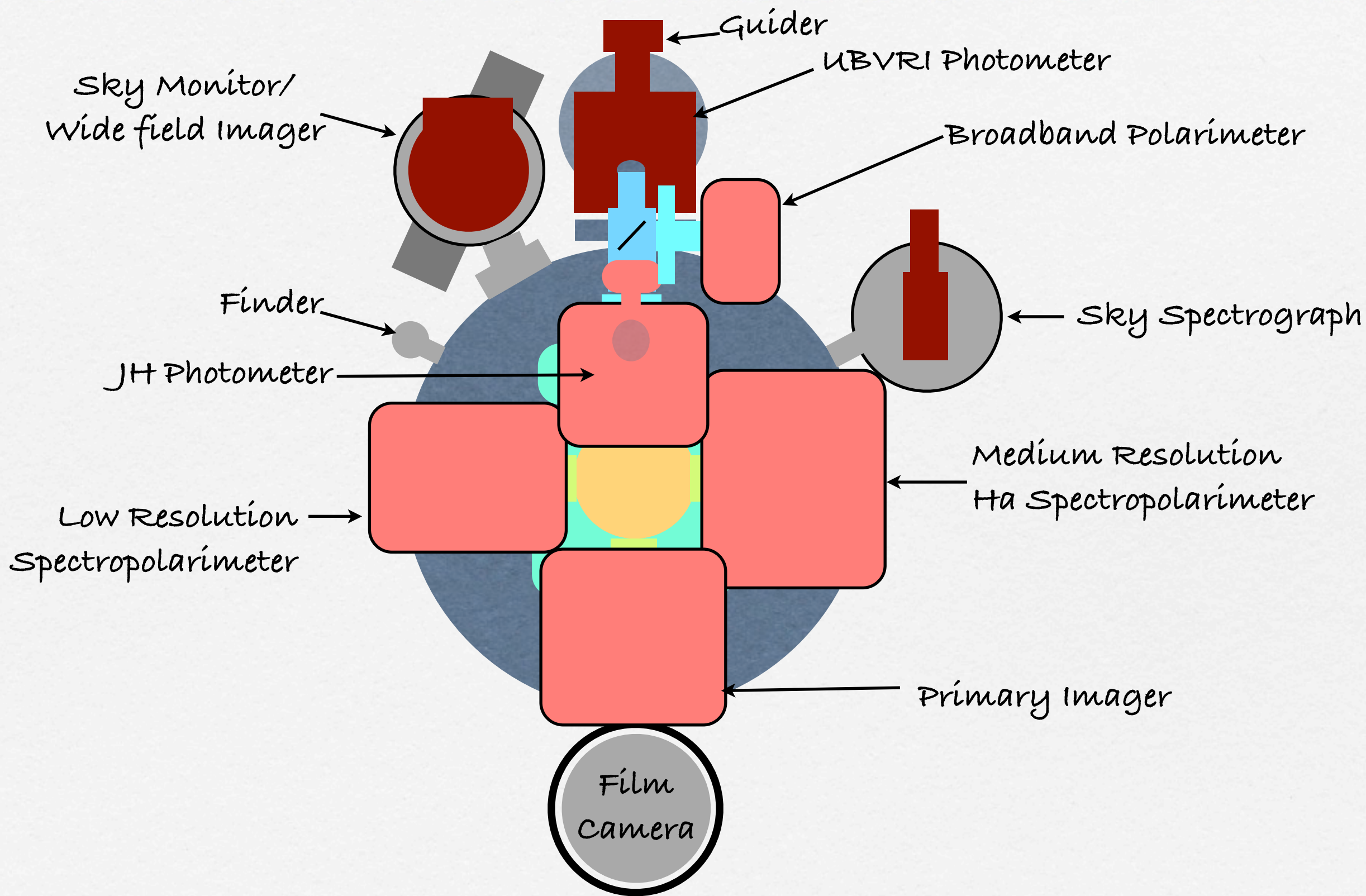
Sky Monitor/
wide field camera

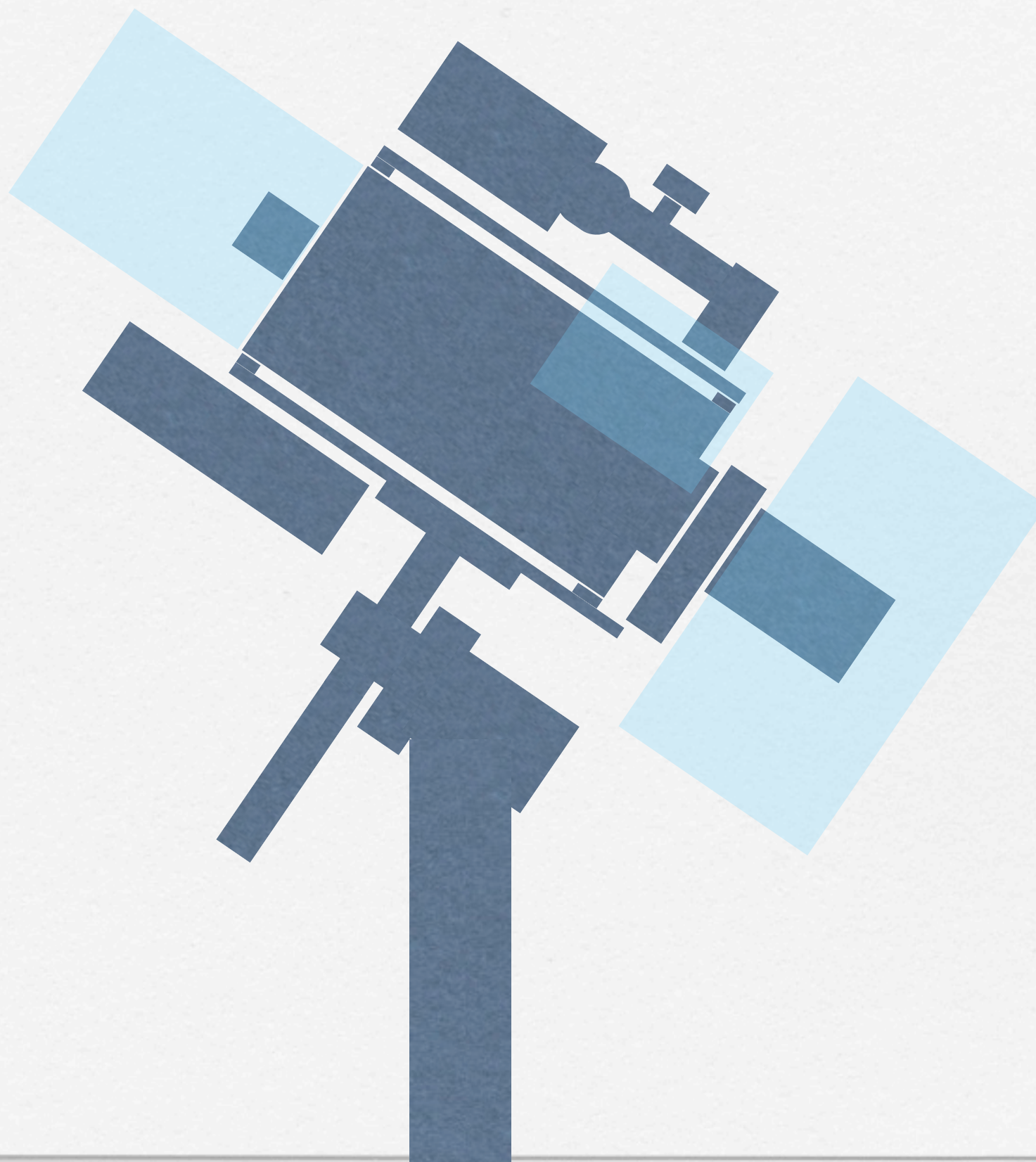


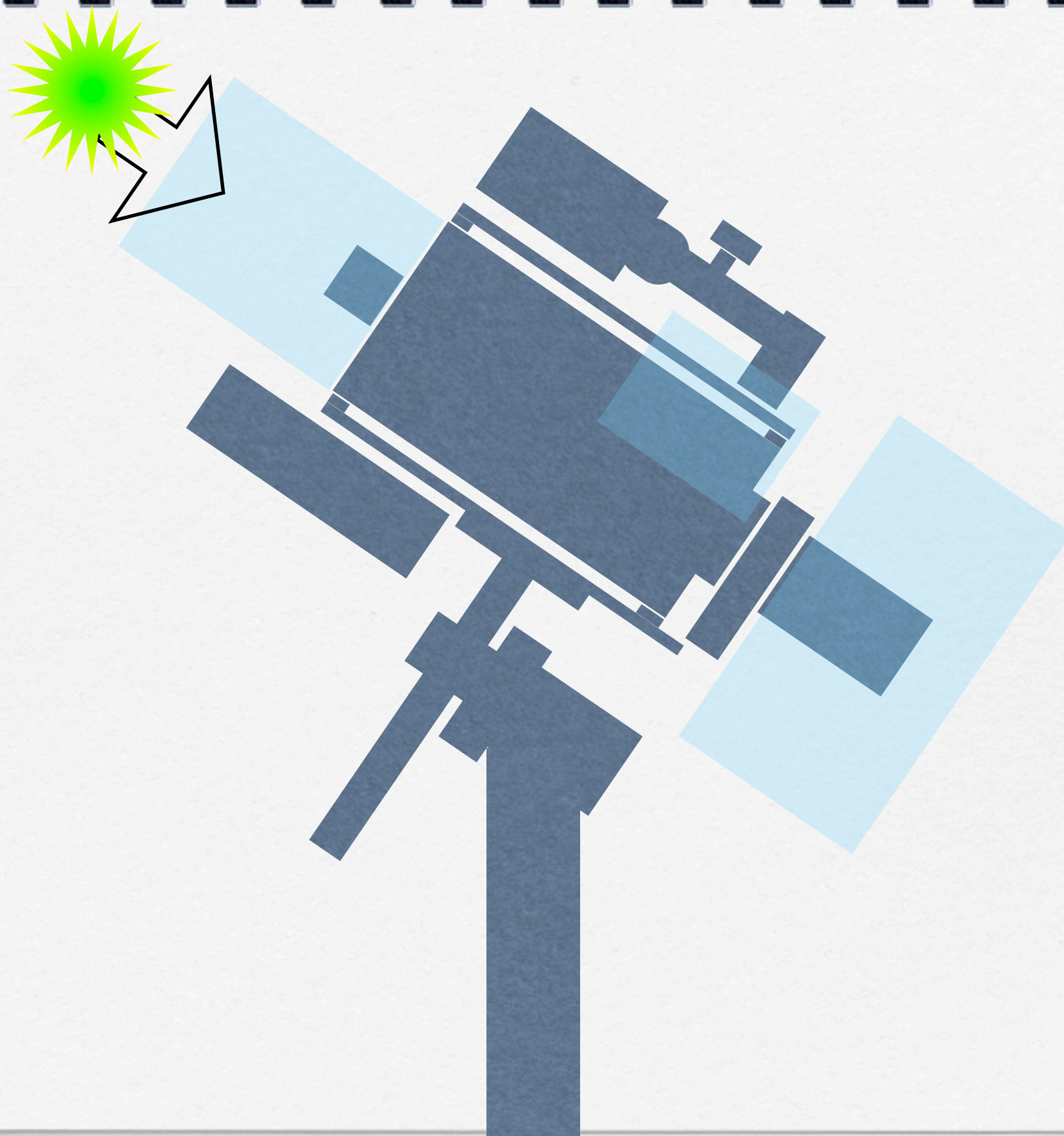


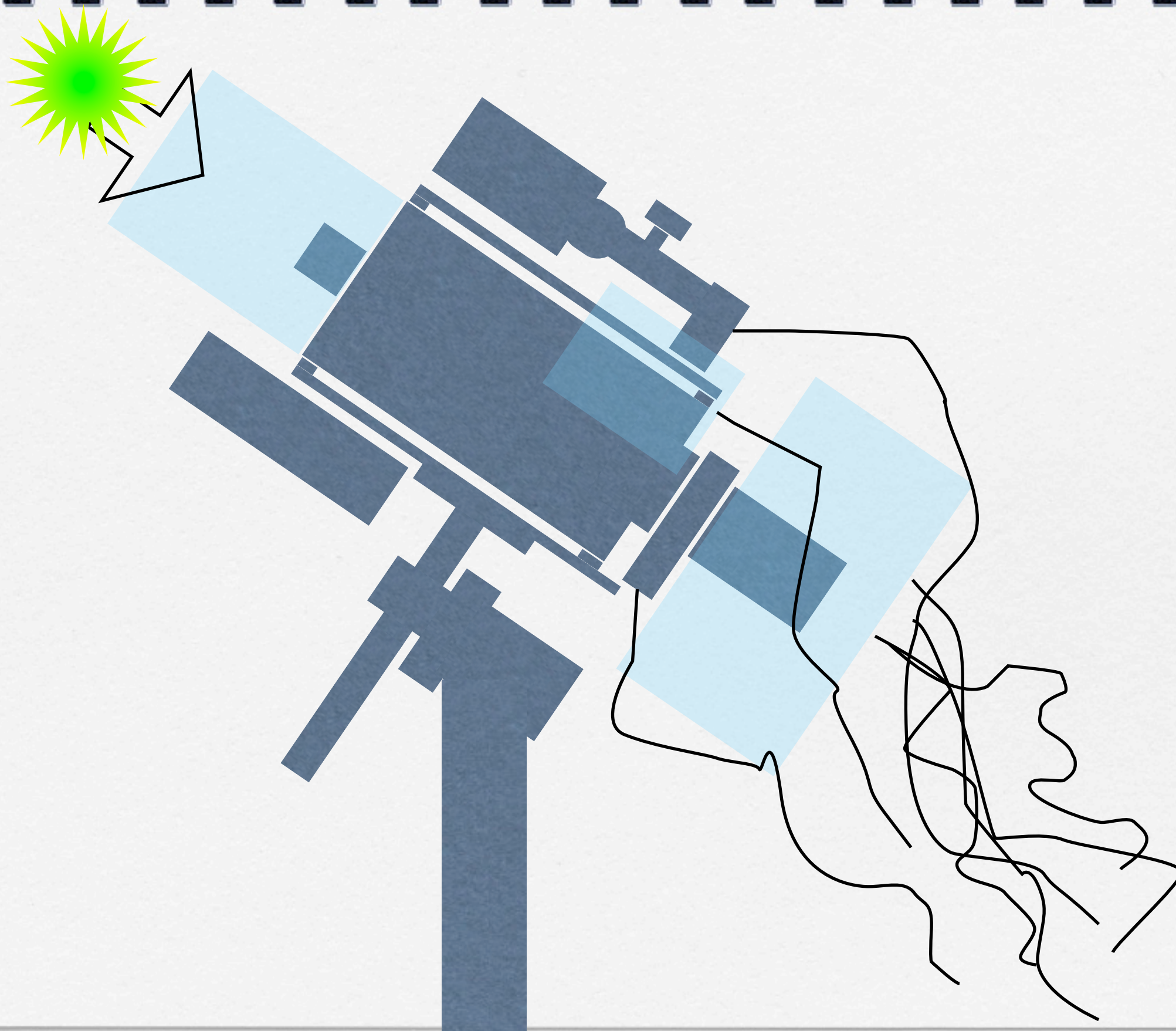
FLC



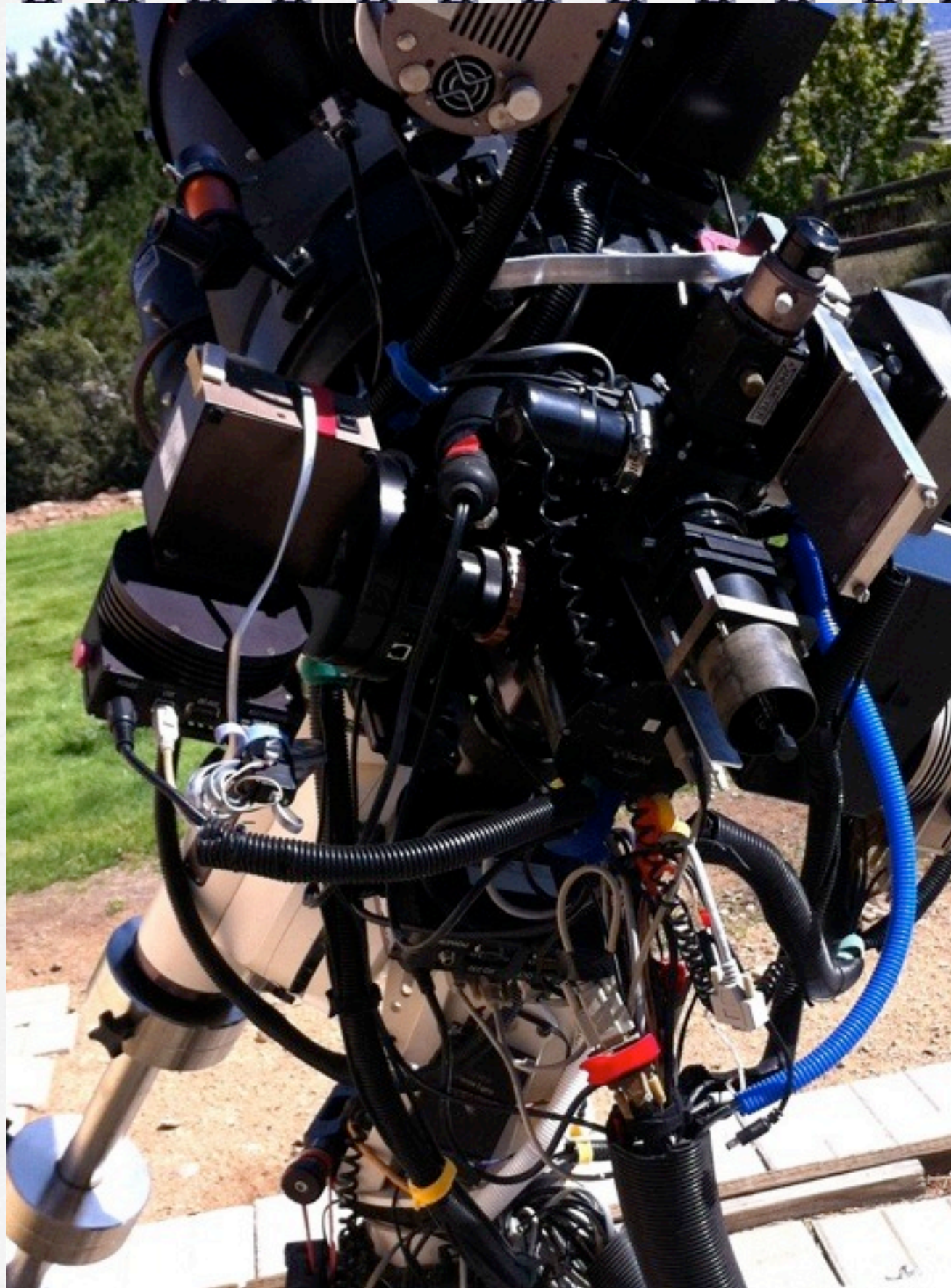














Ap VLP Persi Focus WPC WPR Pyxis IRP Sky WFC



ST402



ST9/
RGH



ST8



STi



video



WFC/
ST7



SGS/
ST7

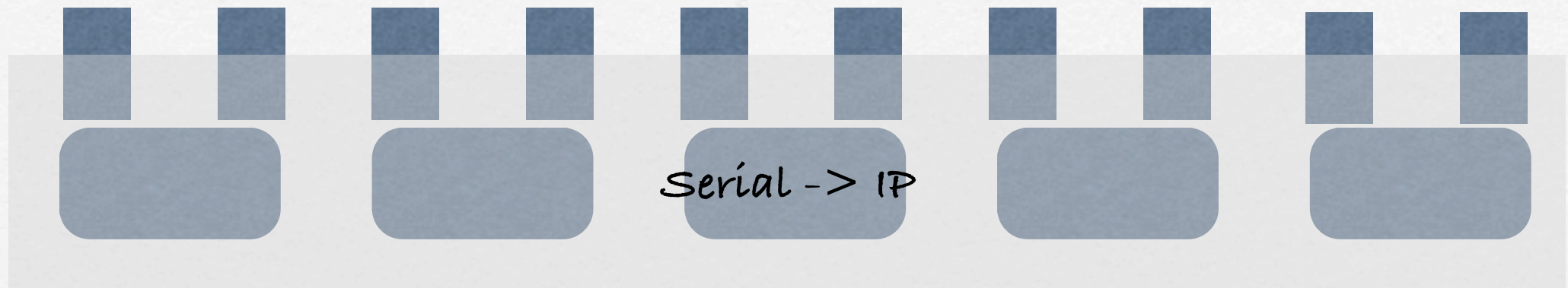


CAL



FM

Ap VLP Persi Focus WPC WPR Pyxis IRP Sky WFC



ST402

ST9/
RGH

ST8

STi

video

USB over RJ14 -> USB

Parallel -> IP

WFC/
ST7

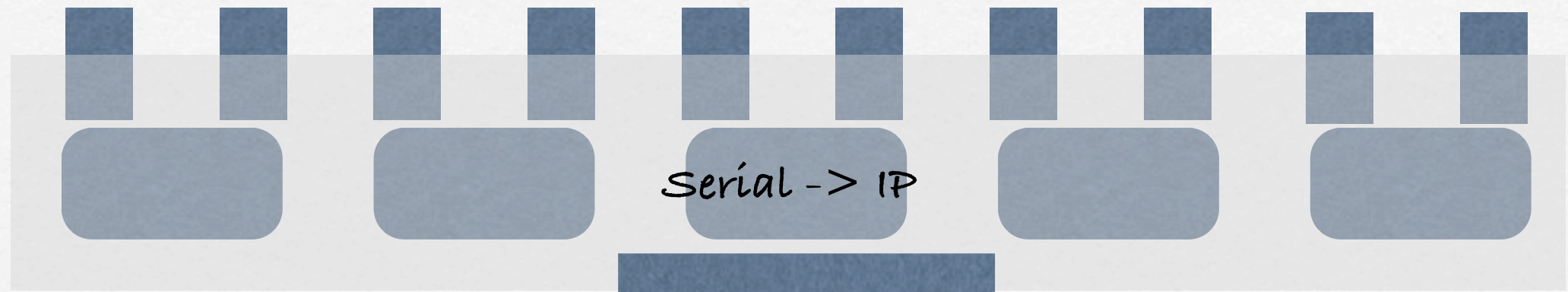
SGS/
ST7

XIO -> USB

CAL

FM

Ap VLP Persi Focus WPC WPR Pyxis IRP Sky WFC



ST402

ST9/
RGH

ST8

STi

video

USB over RJ14 -> USB



Parallel -> IP

WFC/
ST7

SGS/
ST7

XIO -> USB

CAL

FM

Software Environment

OS X

Mail, Applescript, TextEdit, Finder, Preview, Parallels, Equinox

Parallels VM - Windows XP SP2

Orchestrate, CCDSoft5, TheSkyX, Observing Scripts

Parallels VM - Windows XP SP2

Orchestrate, CCDSoft5, ActiveHome, Observing Scripts

Task Library

“Scope Projects/Night” Folder

StarProject.txt

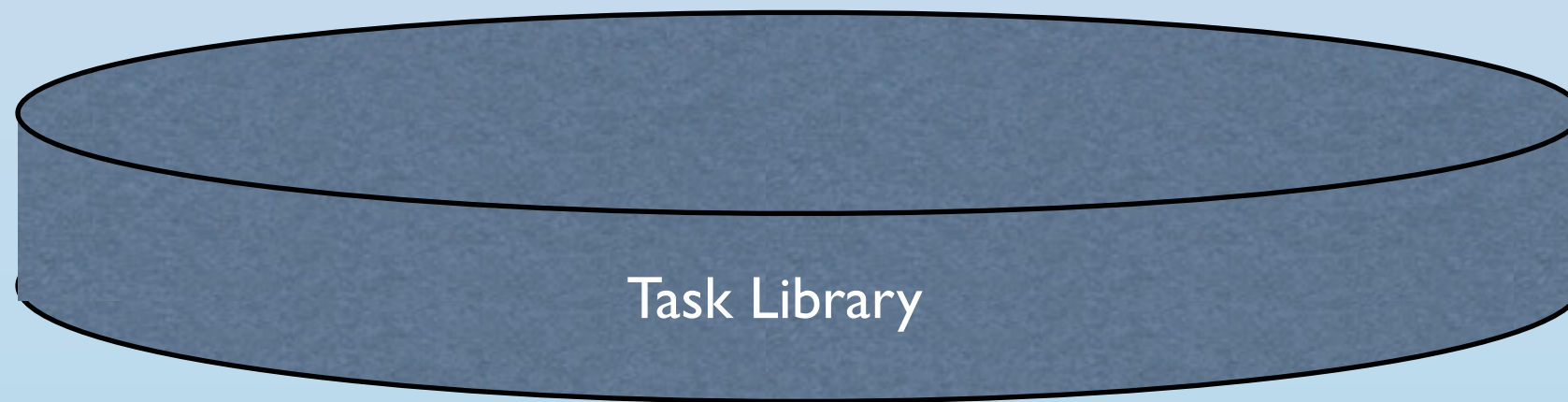
Target	;	Interval	;	Measurements
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Beta Lyr	;	20	;	POL@VBRI:I*8{?V_POL>0.8 SPOL@V:60*2}
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HD 598	;	4@20	;	IRP@JH[HD 358, HD 1632]:I*3	SGS:300
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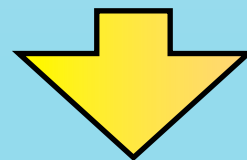
NovaProject.txt

MStars.txt

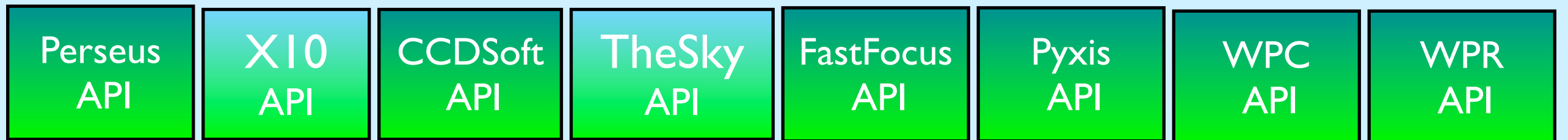
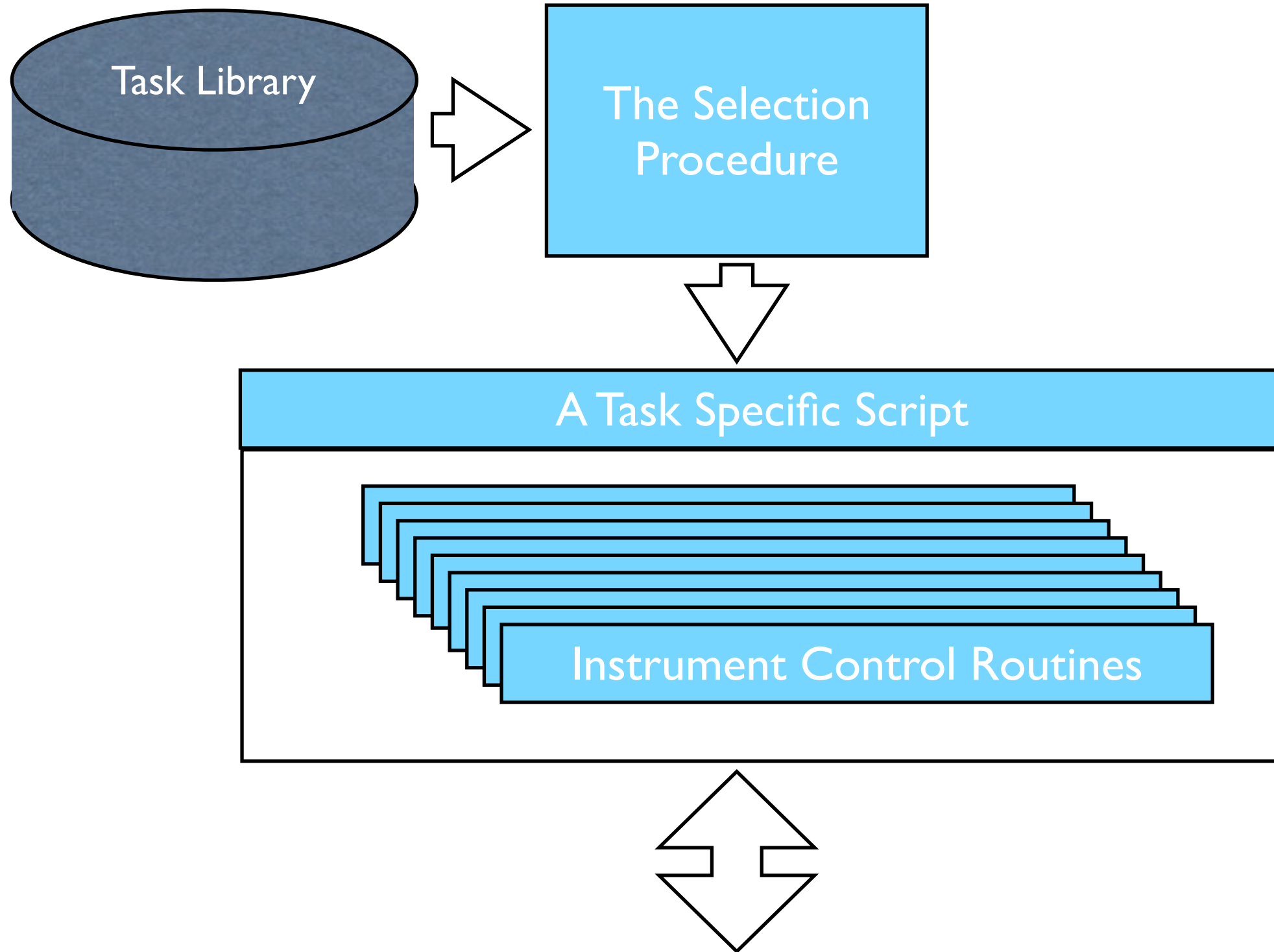


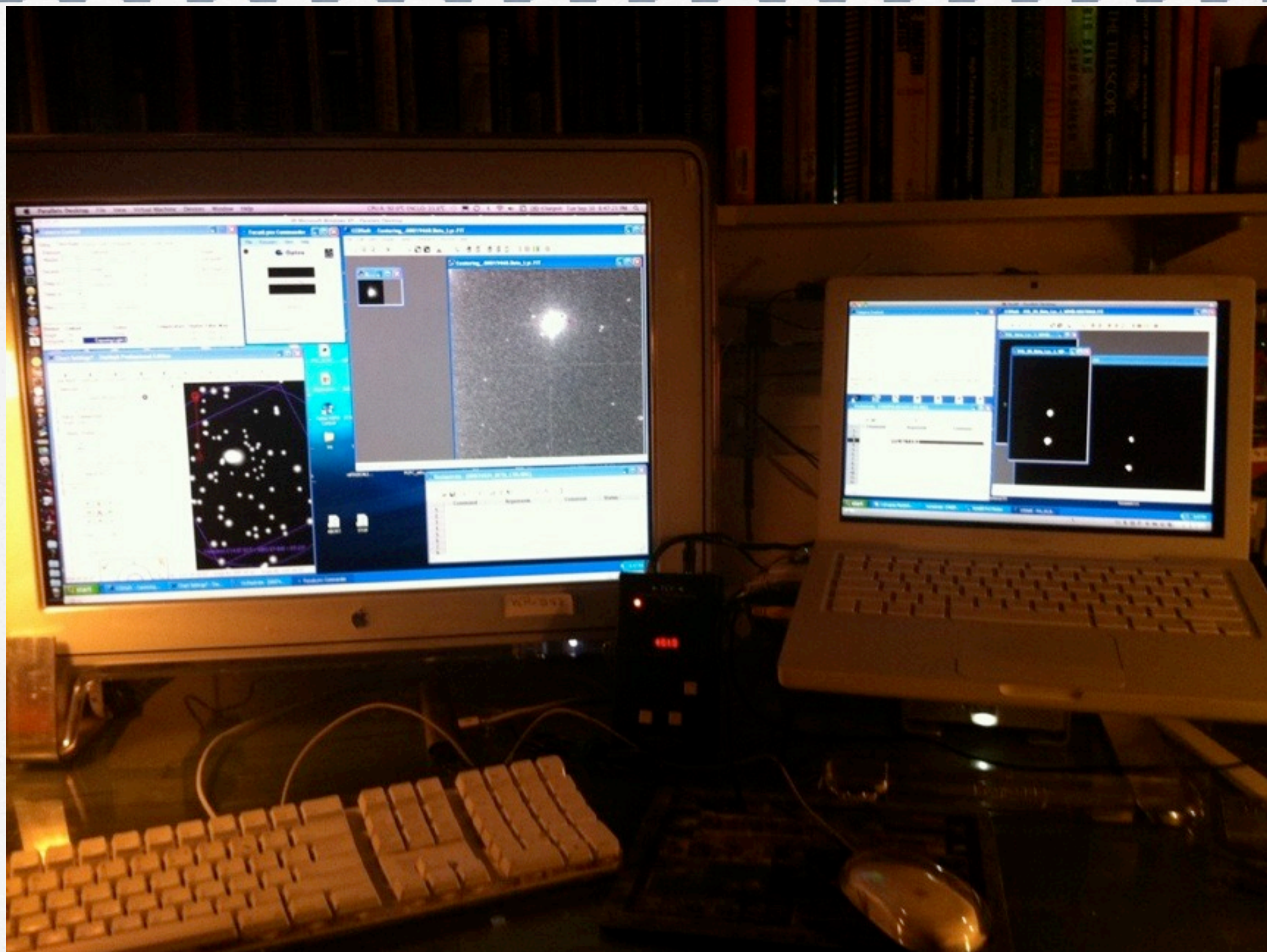
- ☒ Has sufficient time elapsed since last observation?
- ☒ Within East & West Hour Angle Limits?
- ☒ Far enough from Moon?
- ☒ Can observation be completed before Flip or Horizon?
- ☒ Are Required Instruments Available?

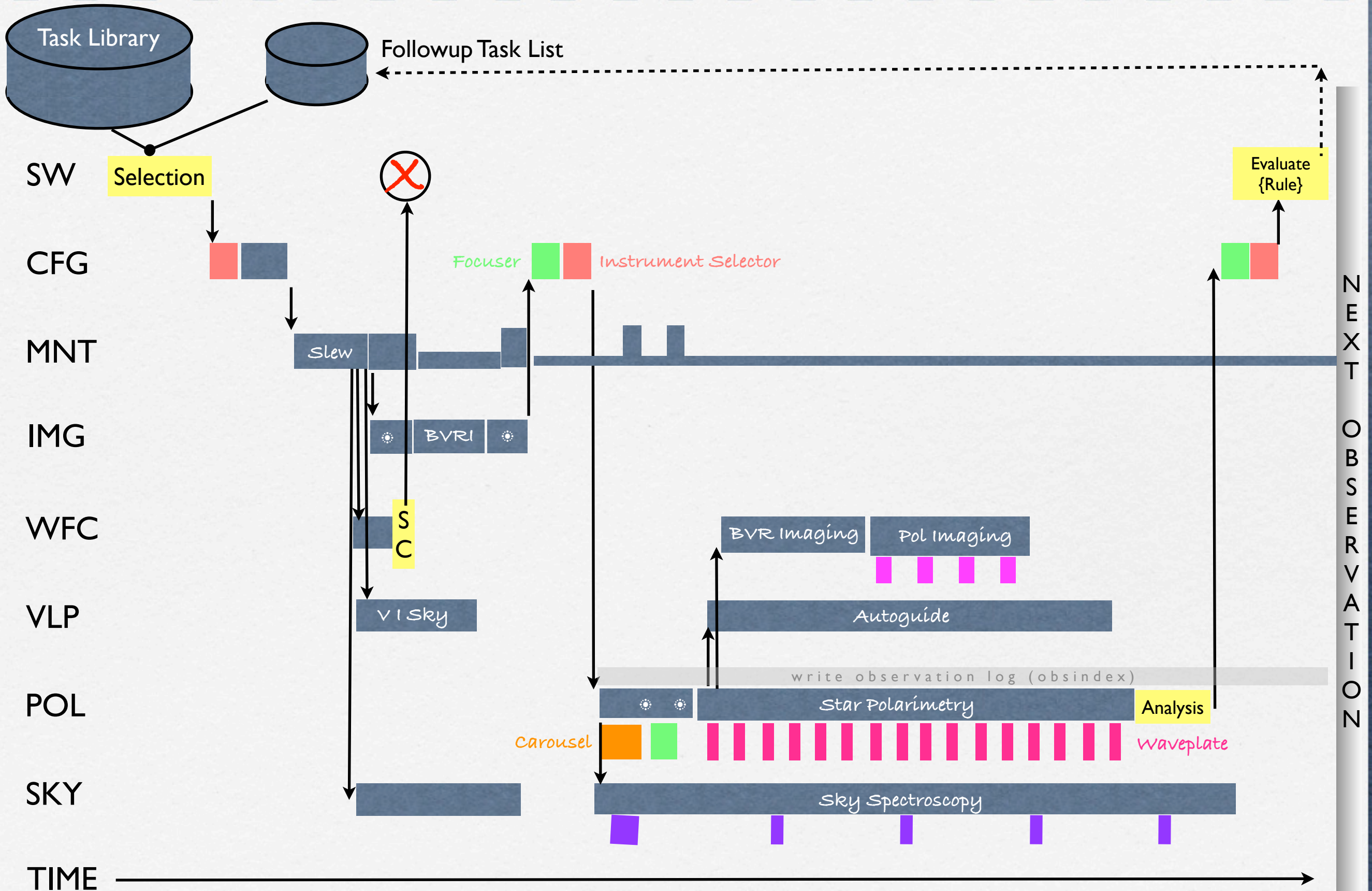
- ★ Time waiting
- ★ Number of chances remaining tonight
- ★ Airmass bonus
- ★ First time object bonus
- ★ Project Priority



Selection

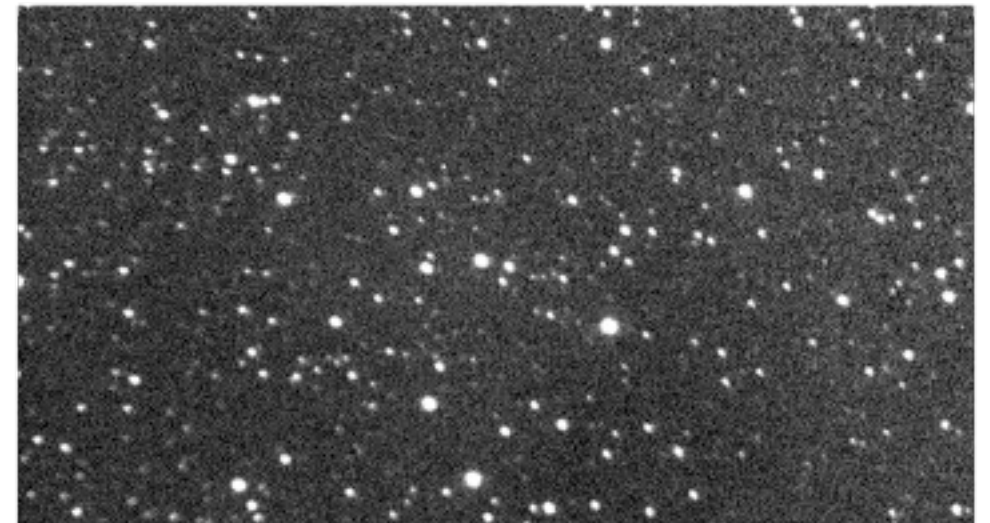
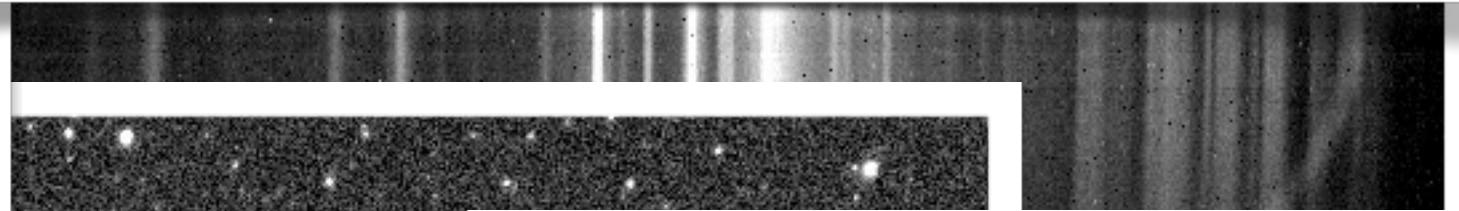
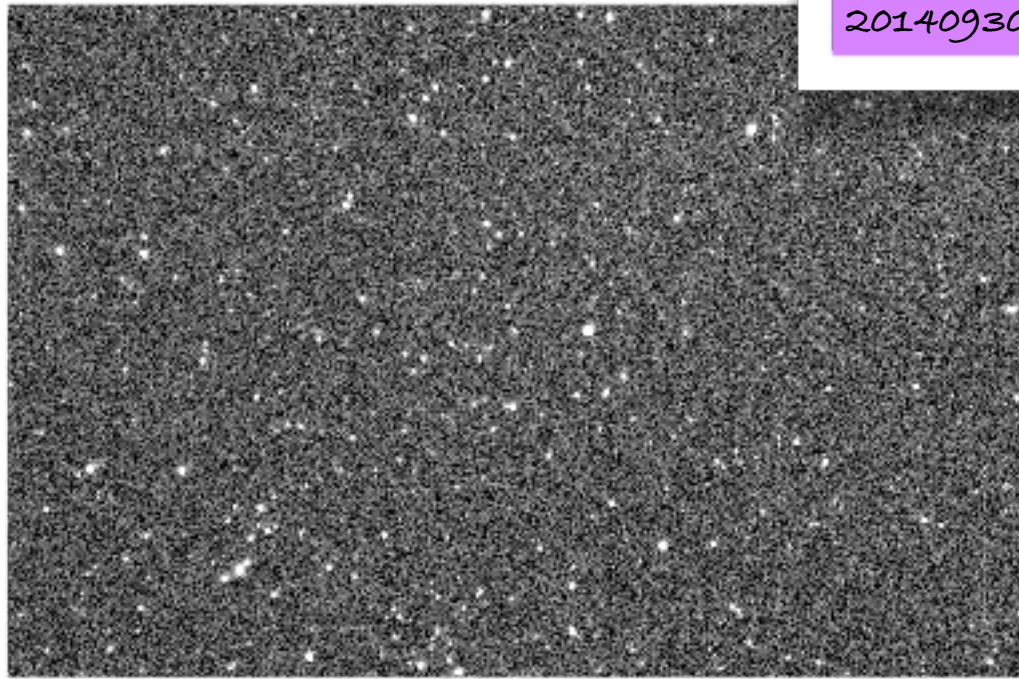




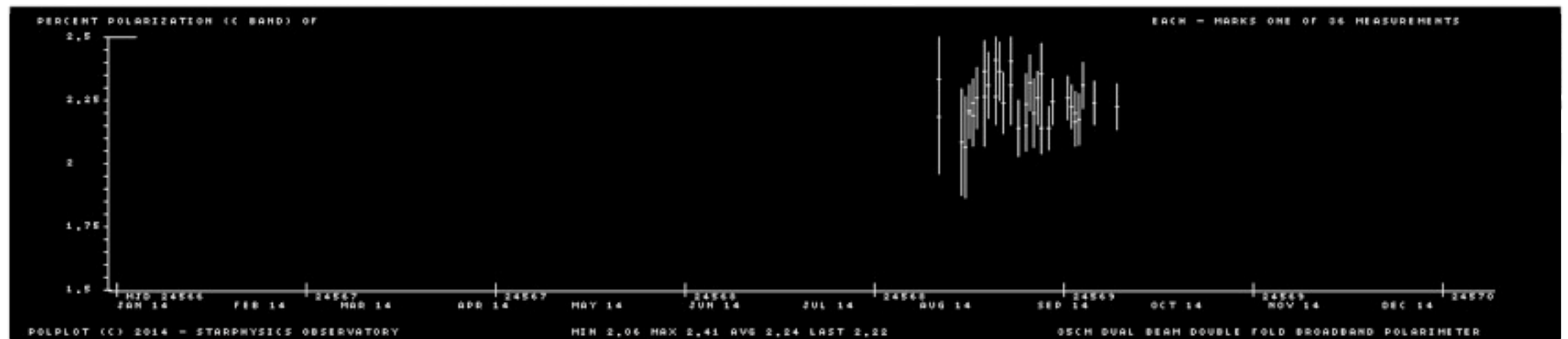


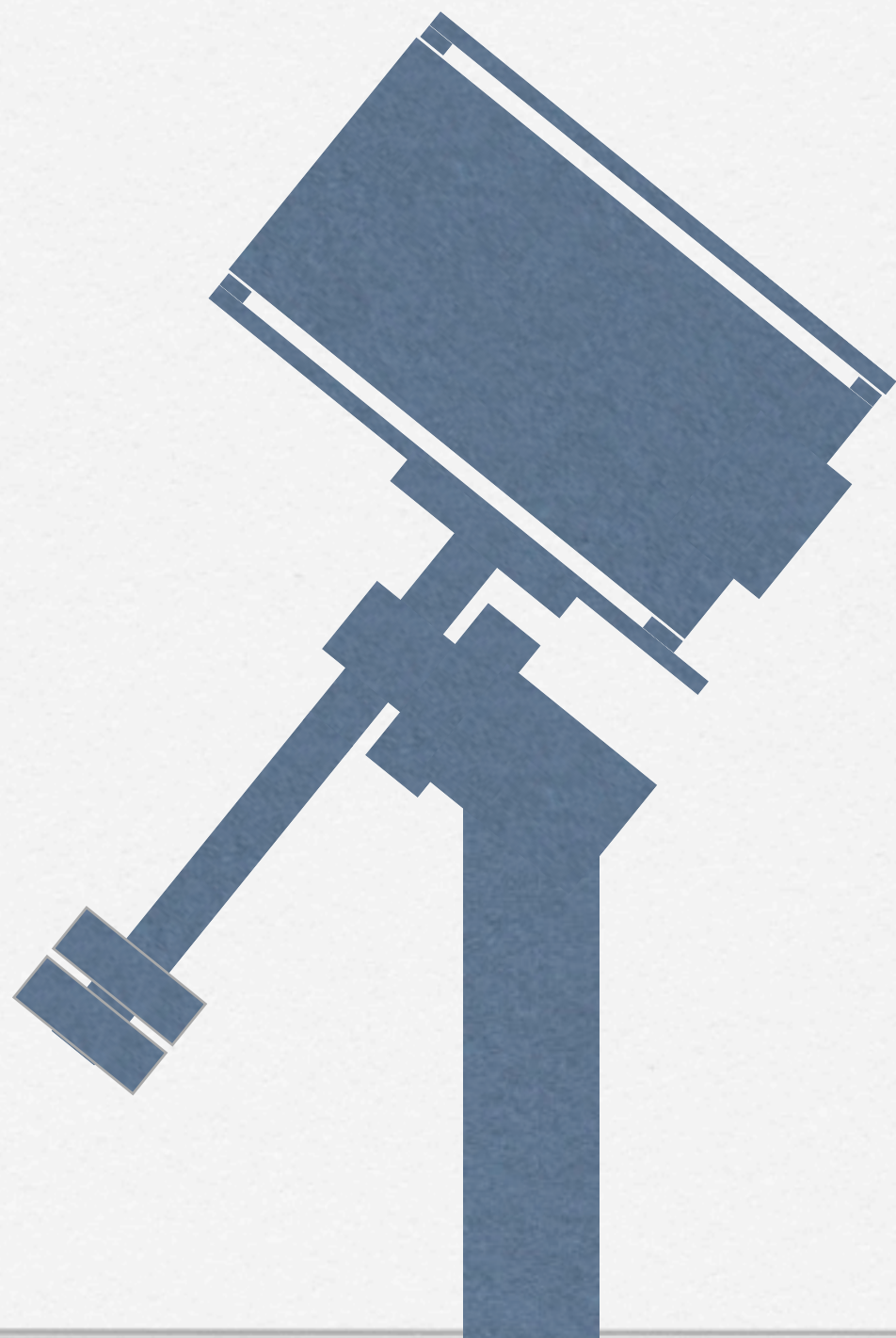
NEXT
OBSERVATION

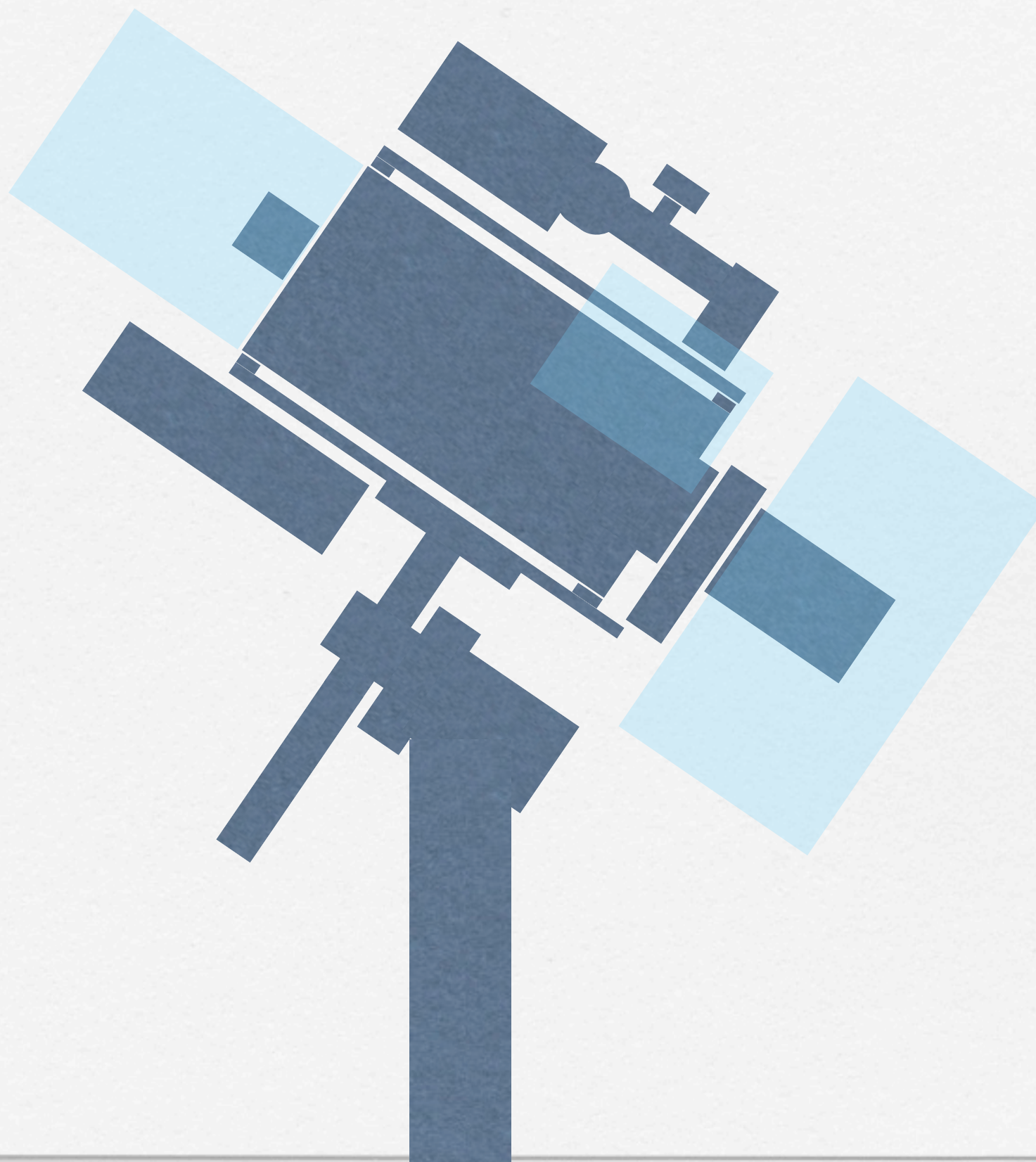
201409302116, V=112.67 I=360.67 JD=0 AM=0 EXP=10 DRK=6286.33 time=83.60938

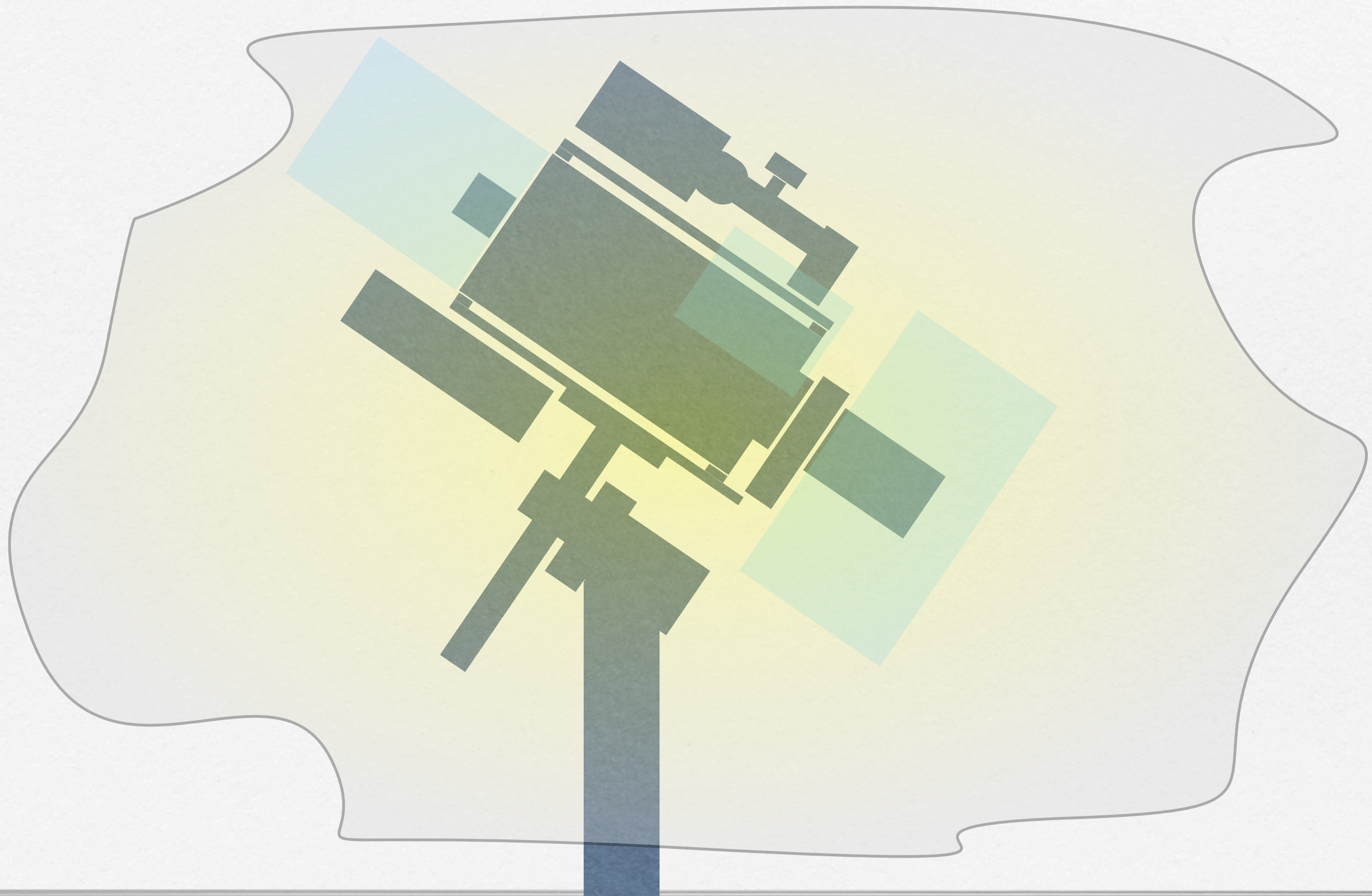


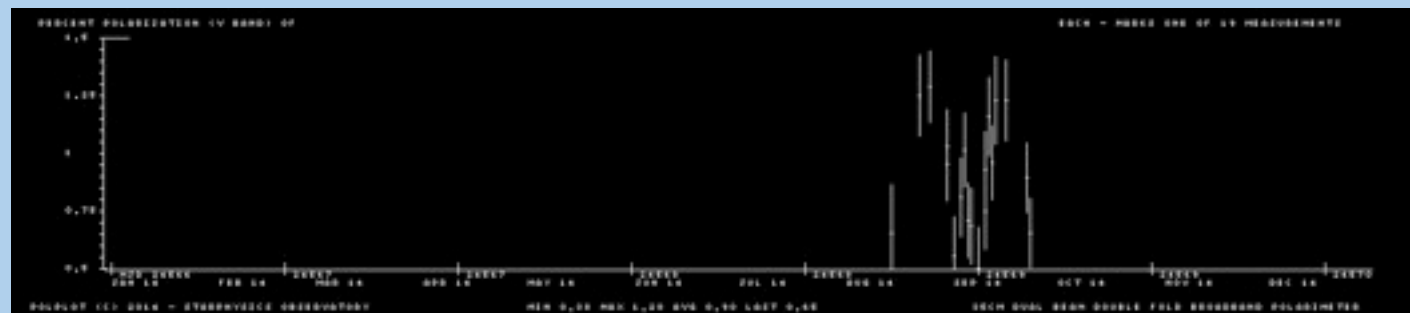
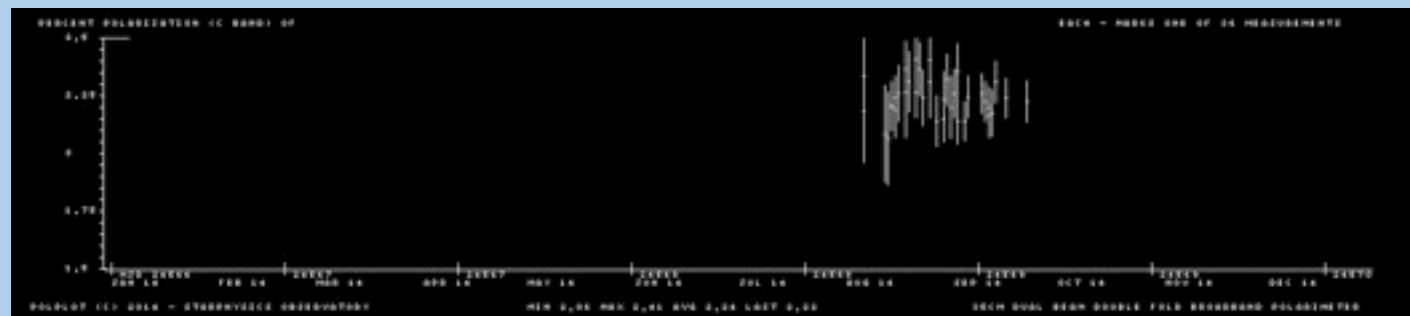
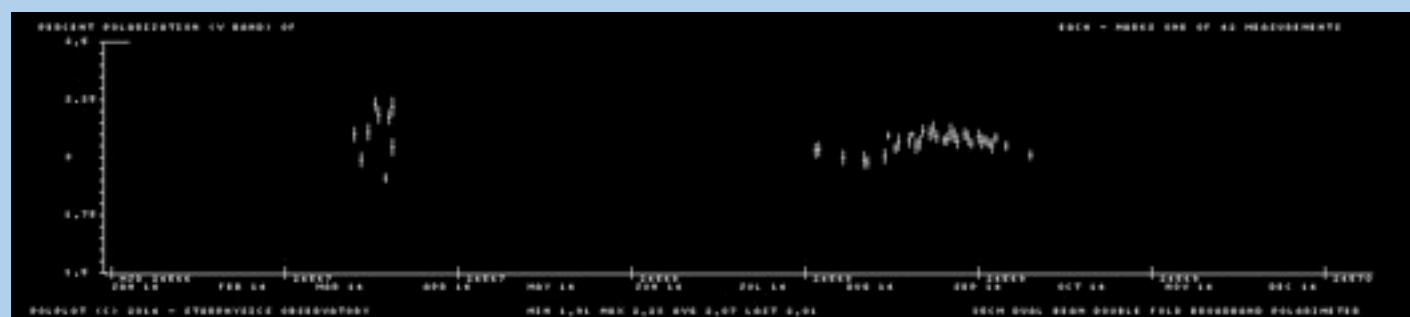
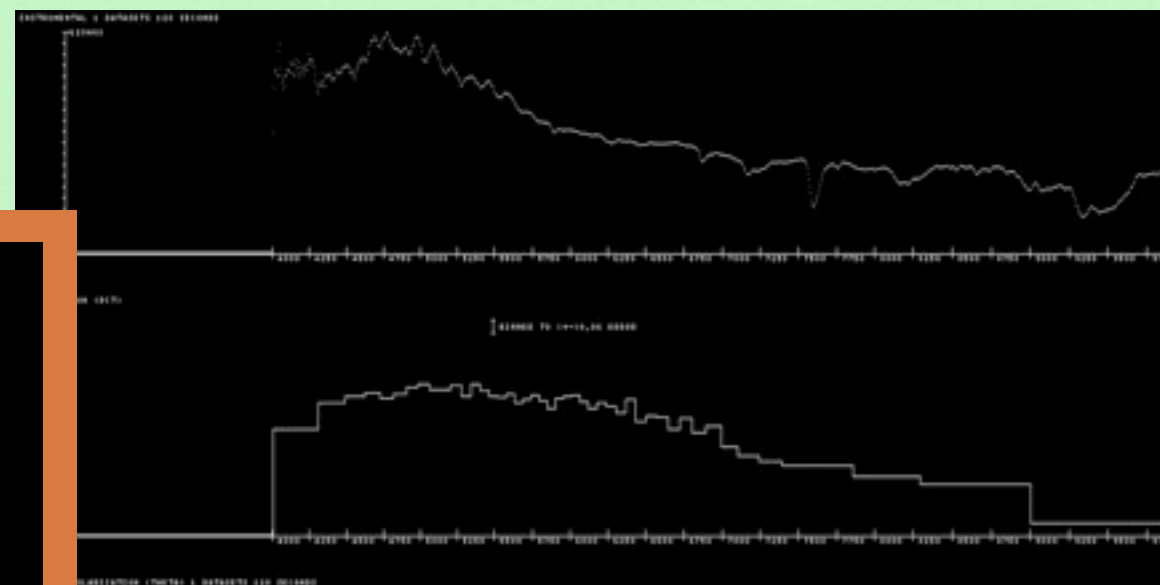
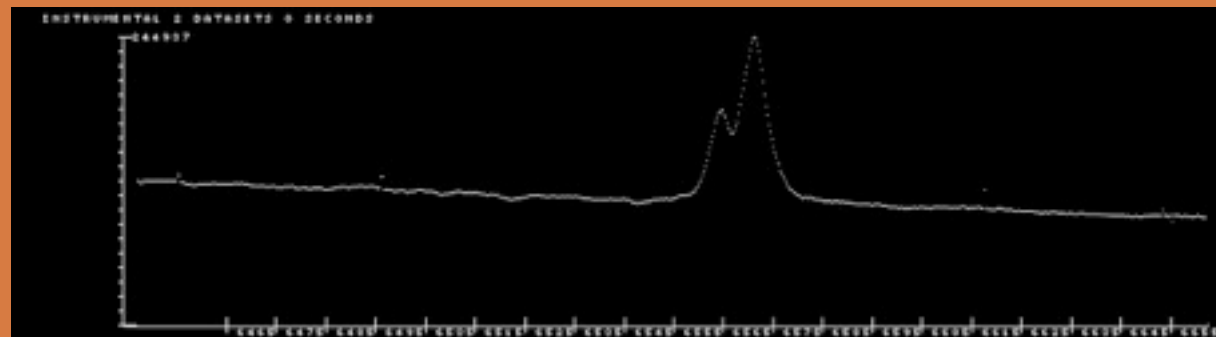
201409232055, C, Average 8 Observations: $P\% = 2.2248$ (0.0768) $PA = 47.03\text{deg}$ (0.9) $PQ(V) = -0.0016$ (0.0007) $PU(V) = 0.0222$ (0.0008)
 $LUM(V\%) = 394918$ (2.3) $PS(V) = 0.477$ (0.5129) $R = 5$ $BLR = 366/403$ $AM = 1.109$ $e = 0.046\%$ $ap = 2.2243\%$ **1















A blue spiral-bound notebook with silver rings at the top. The text is centered on the page.

Thank You

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