

Robert
Quimby [PS]

Andreas
Ritter [DRP]

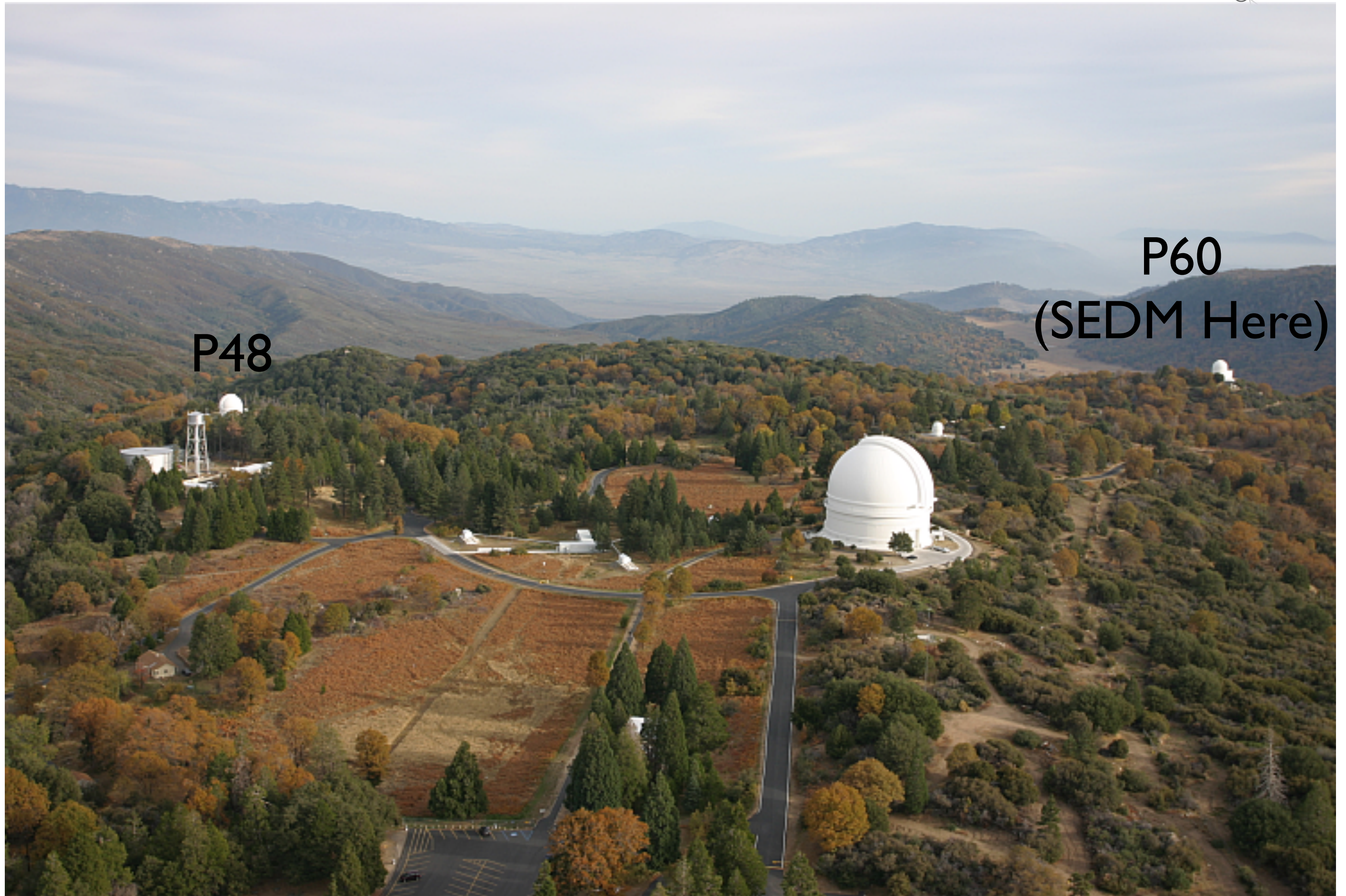
Nick
Konidakis [PI]

Choong
Ngeow [DRP]

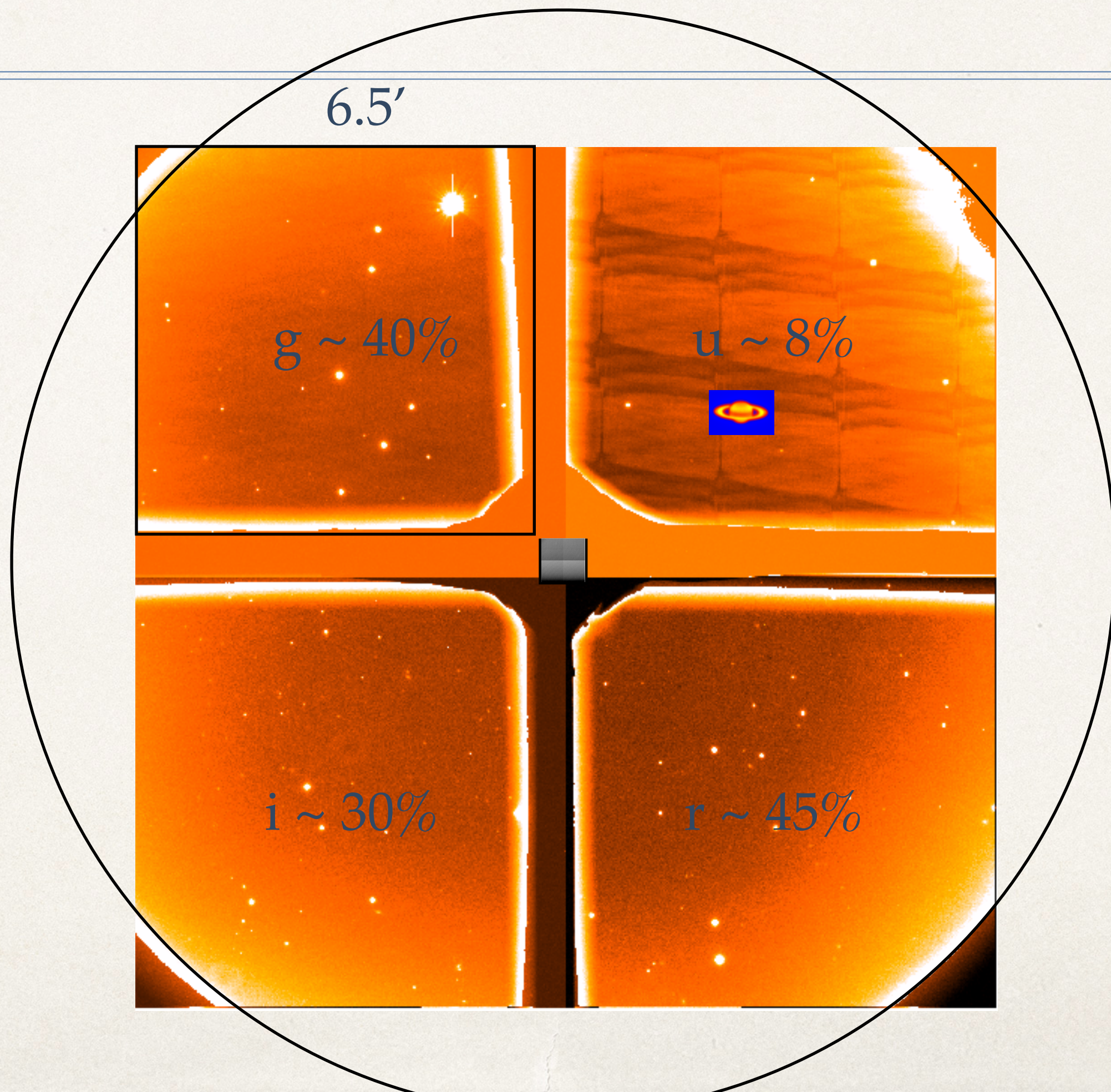
Sagi
Ben-Ami [RC]

P48

P60
(SEDM Here)

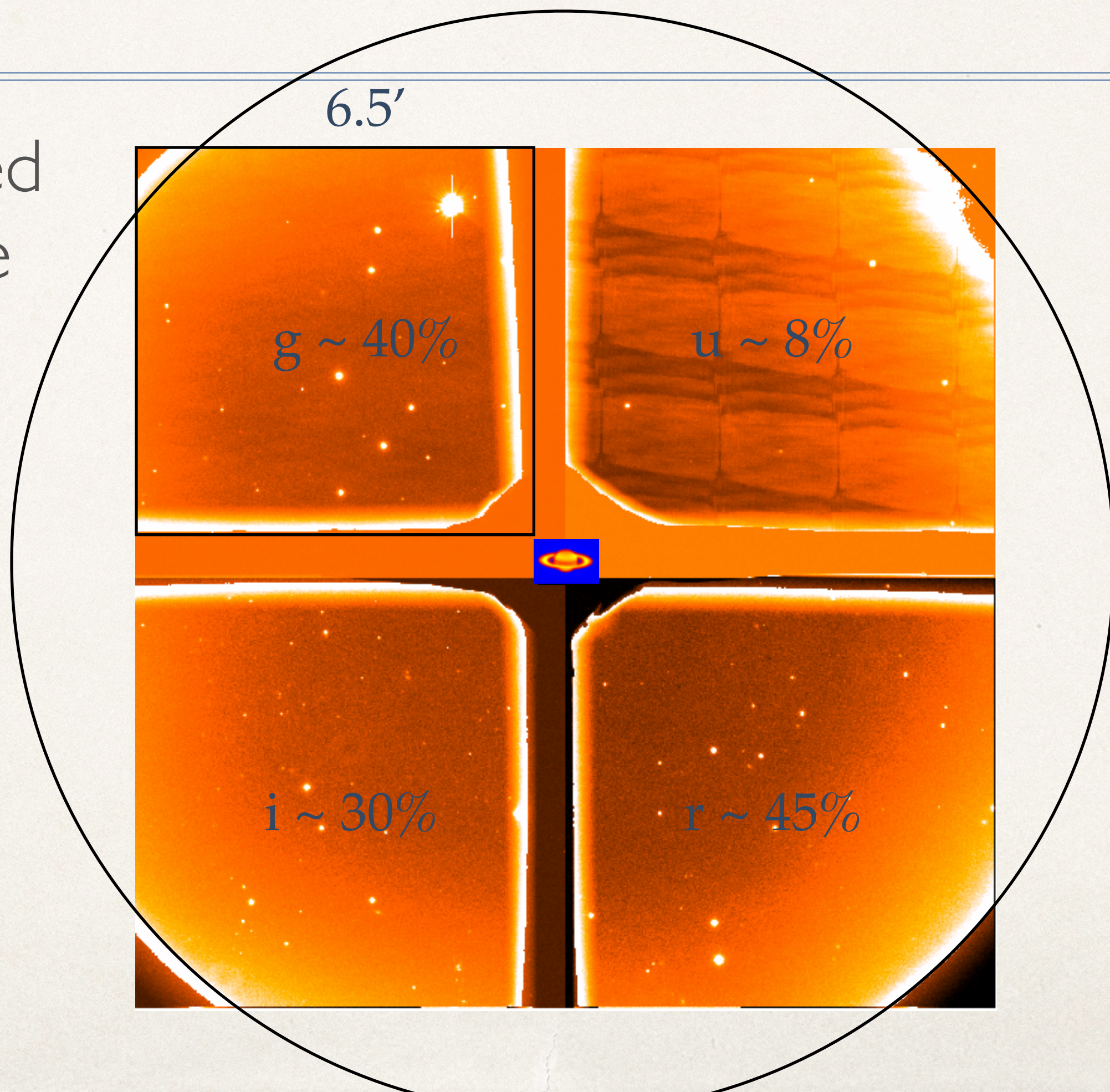


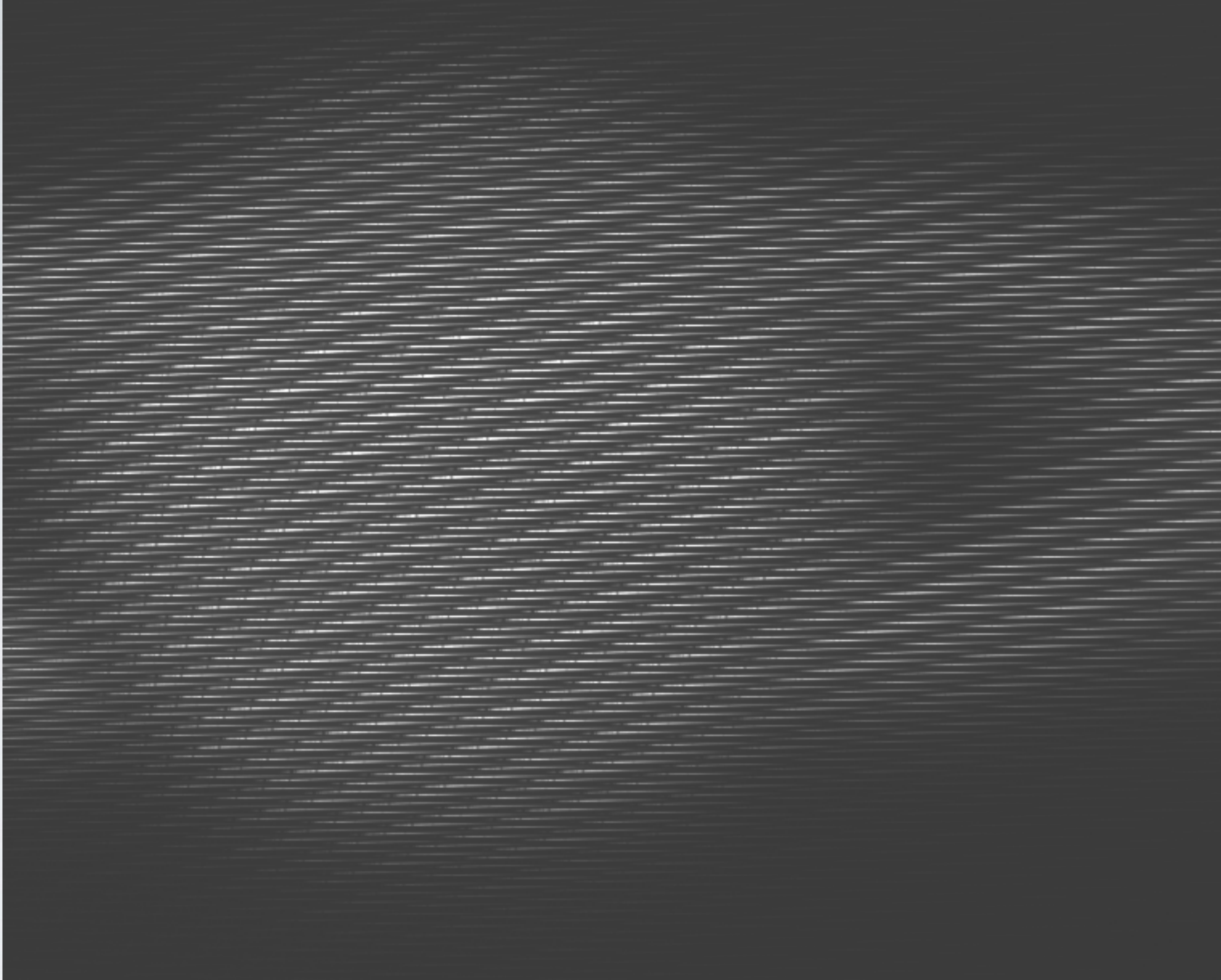
Rainbow camera imager

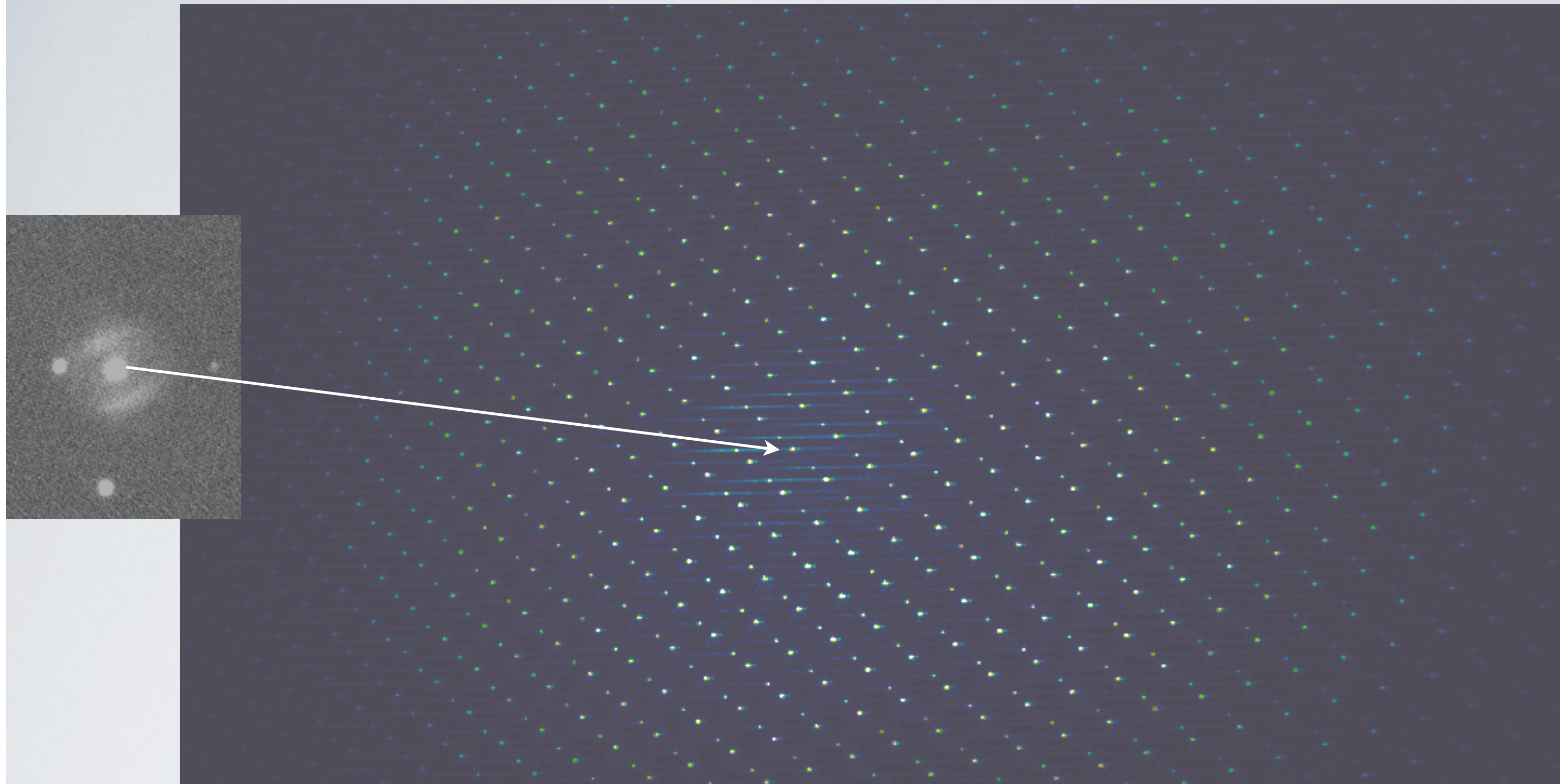


Rainbow camera imager

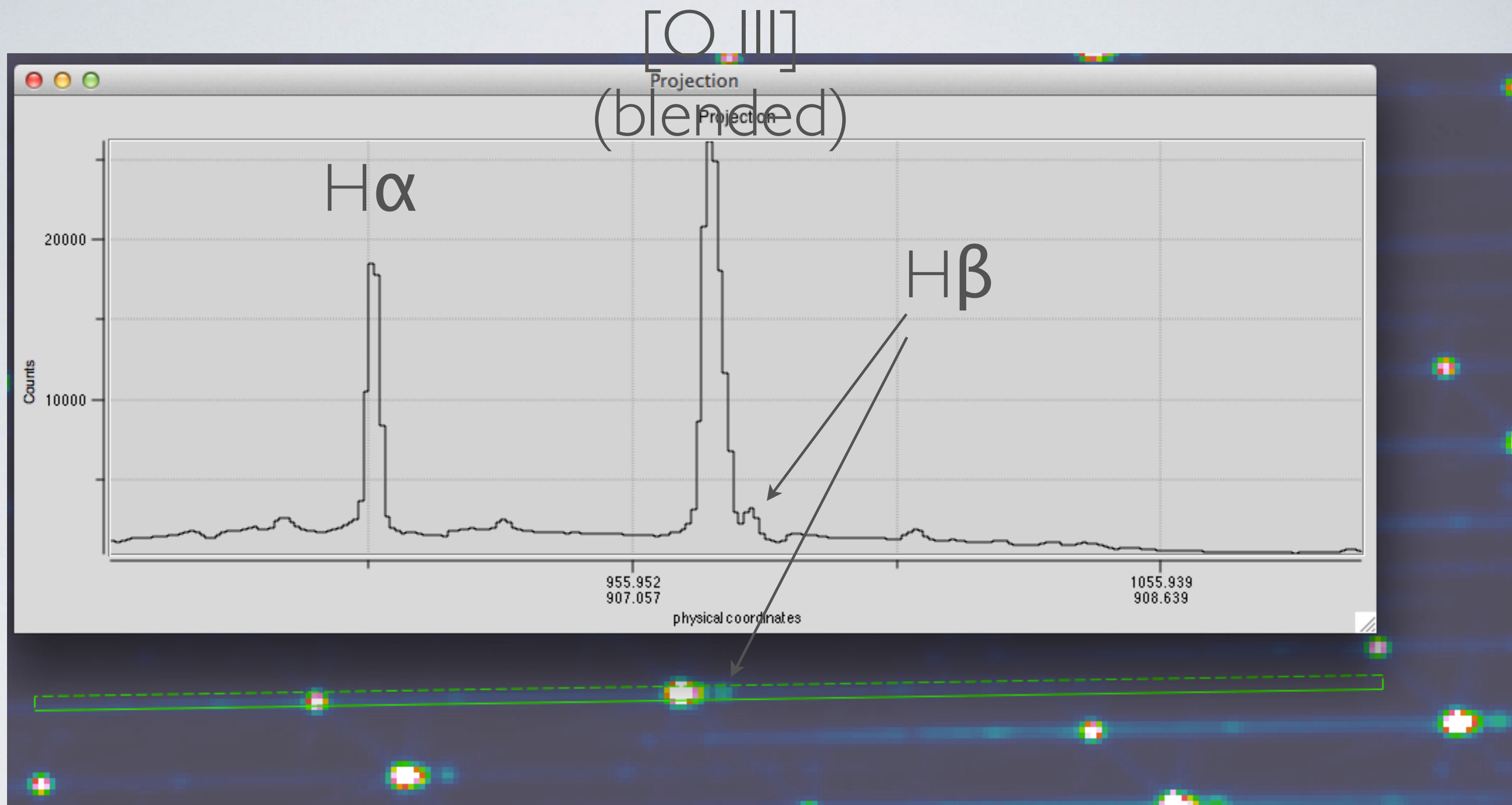
Unvignetted
 $\varnothing 17'$ circle







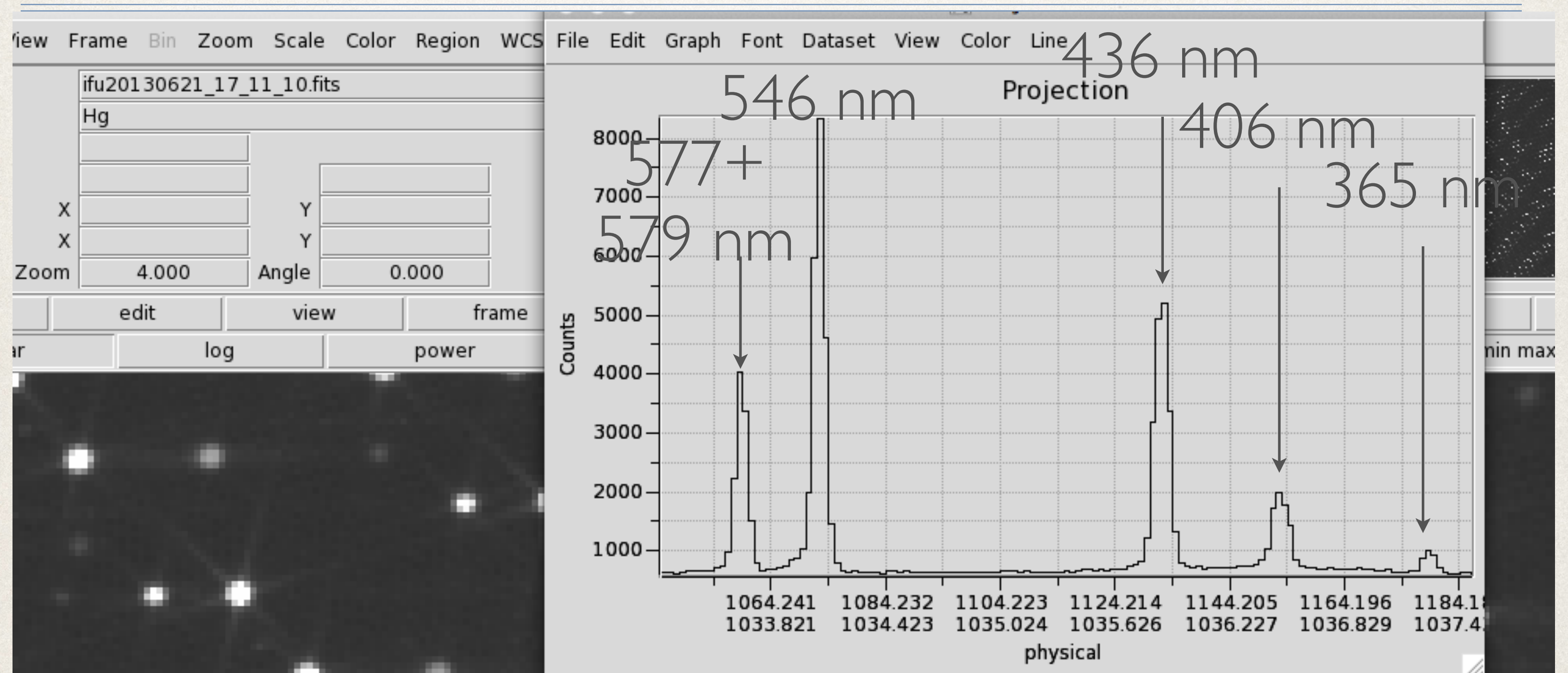
PN



PLANETARY NEBULA SPECTRA

(blue to the right)

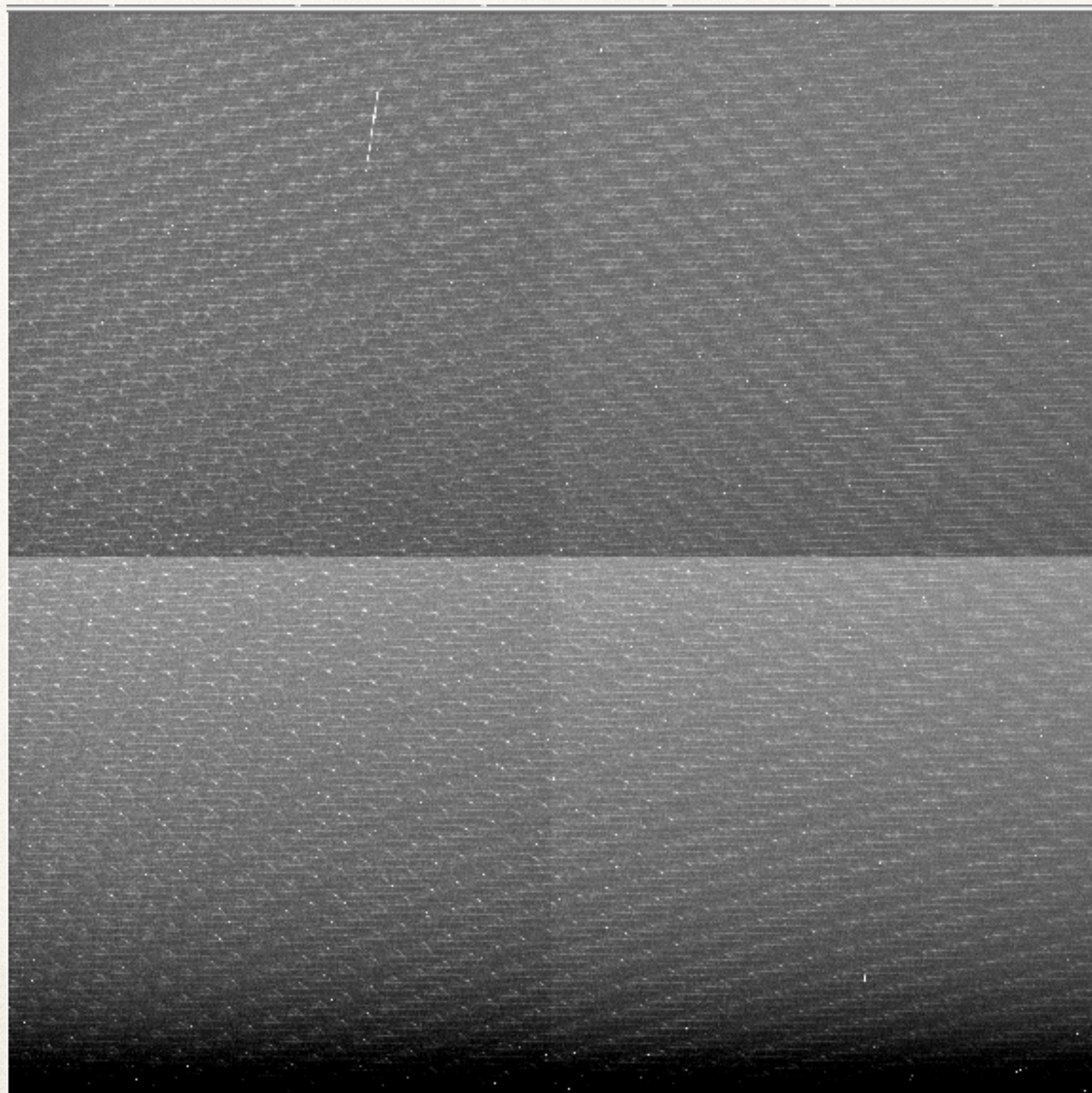
Spectral range [980 - 365] nm
at $R = \lambda / \Delta\lambda \sim 100$

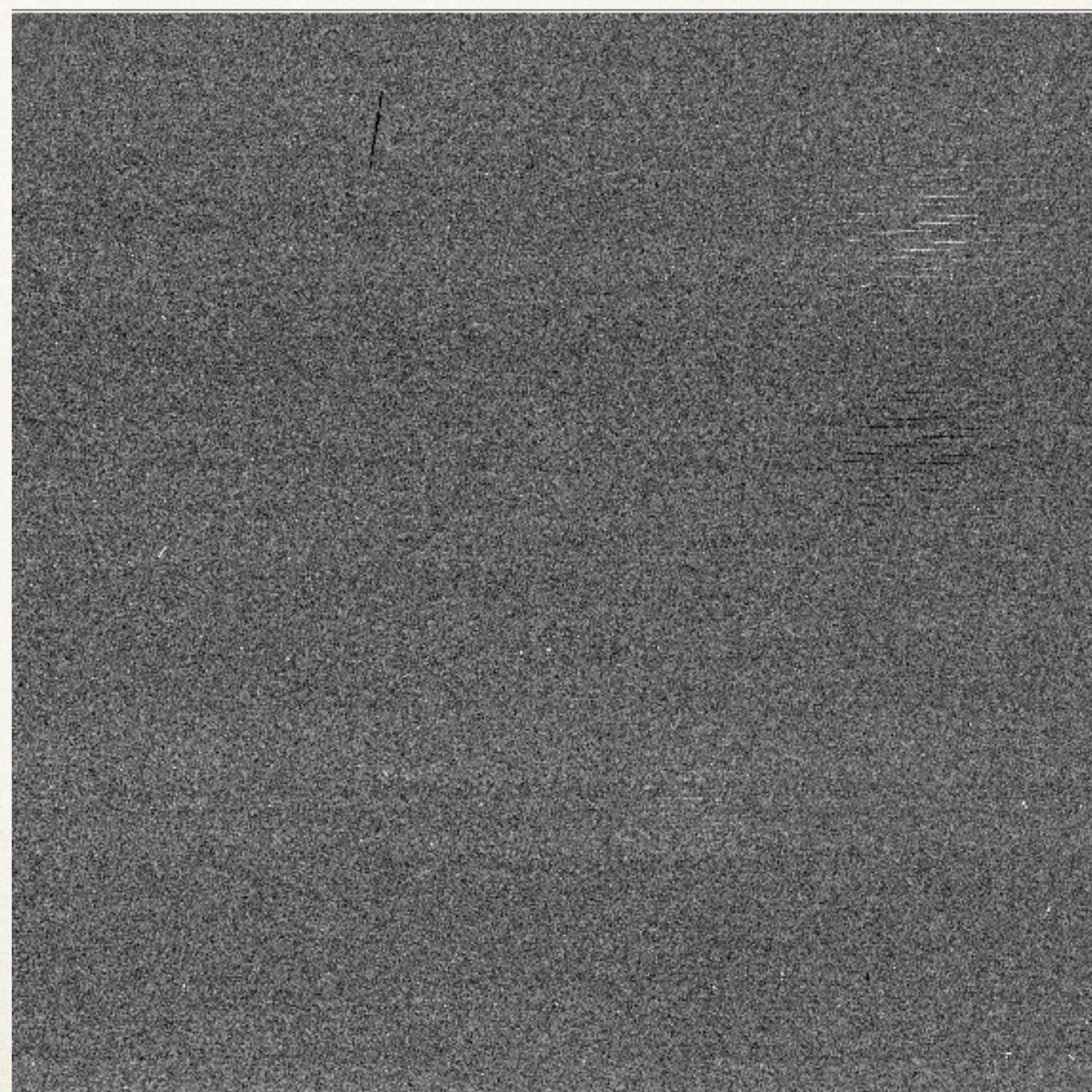


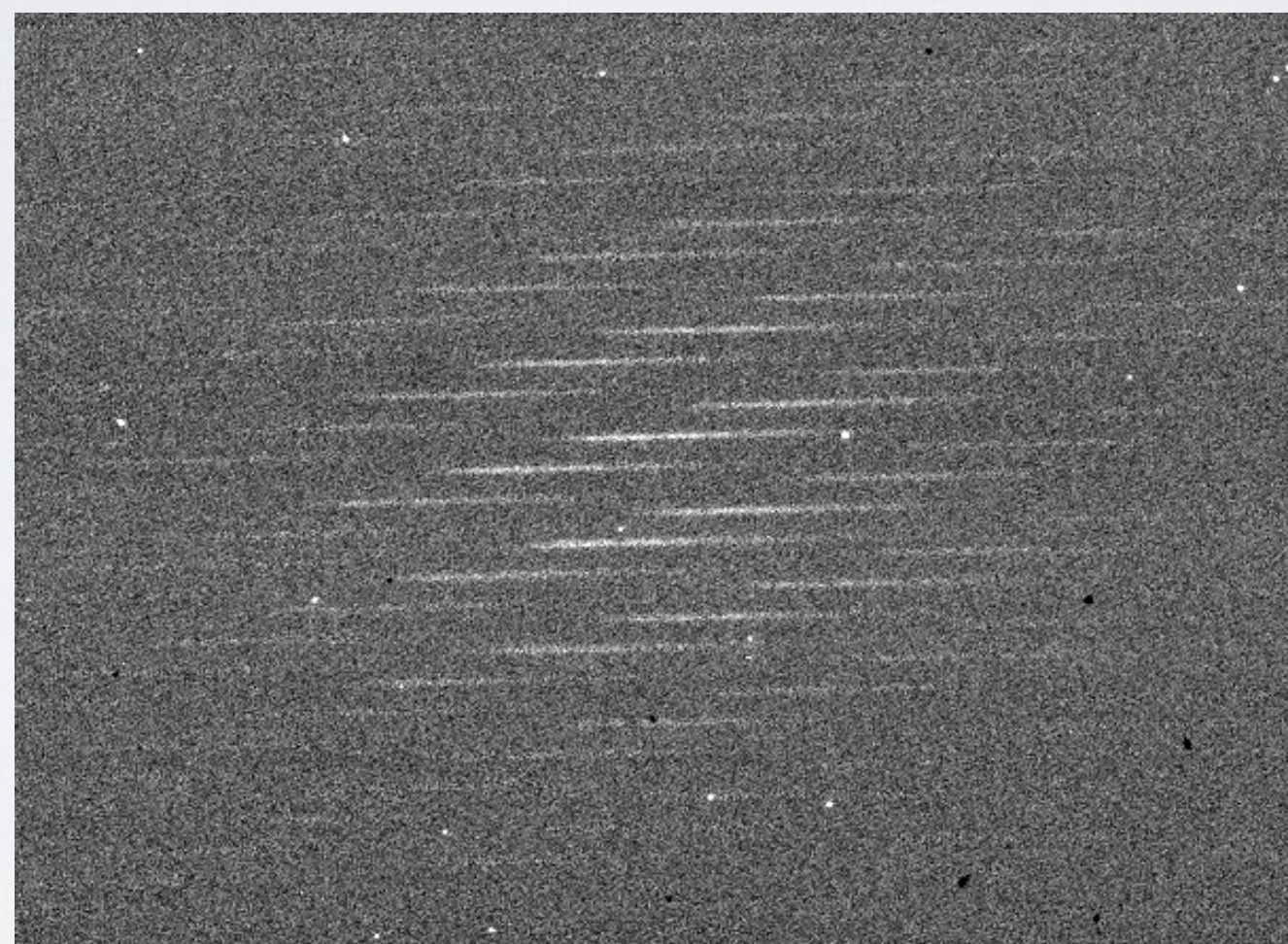
Is as designed: ~2.4 pixel FWHM (width depends on anamorphic magnification). Spectrum of mercury lamp

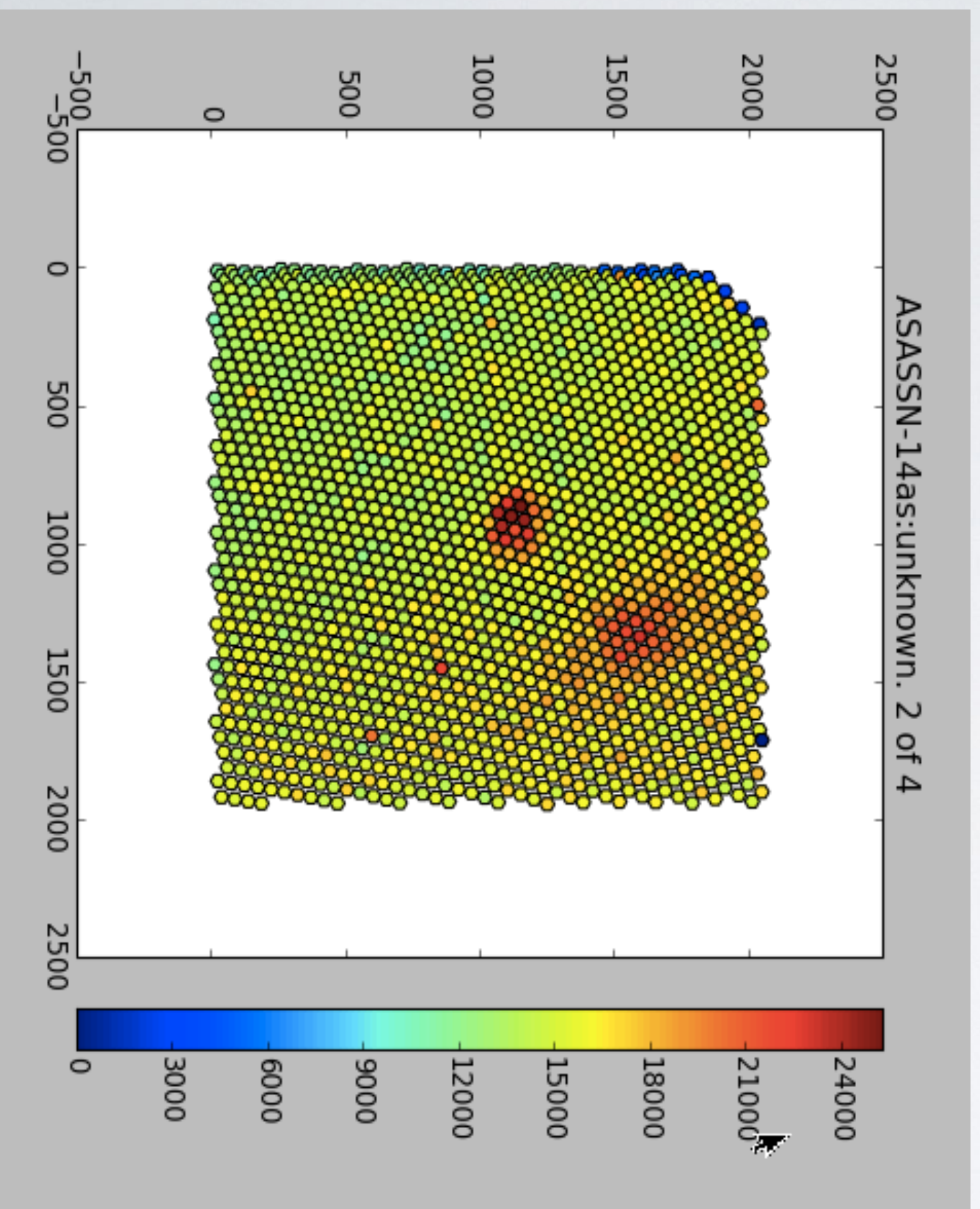
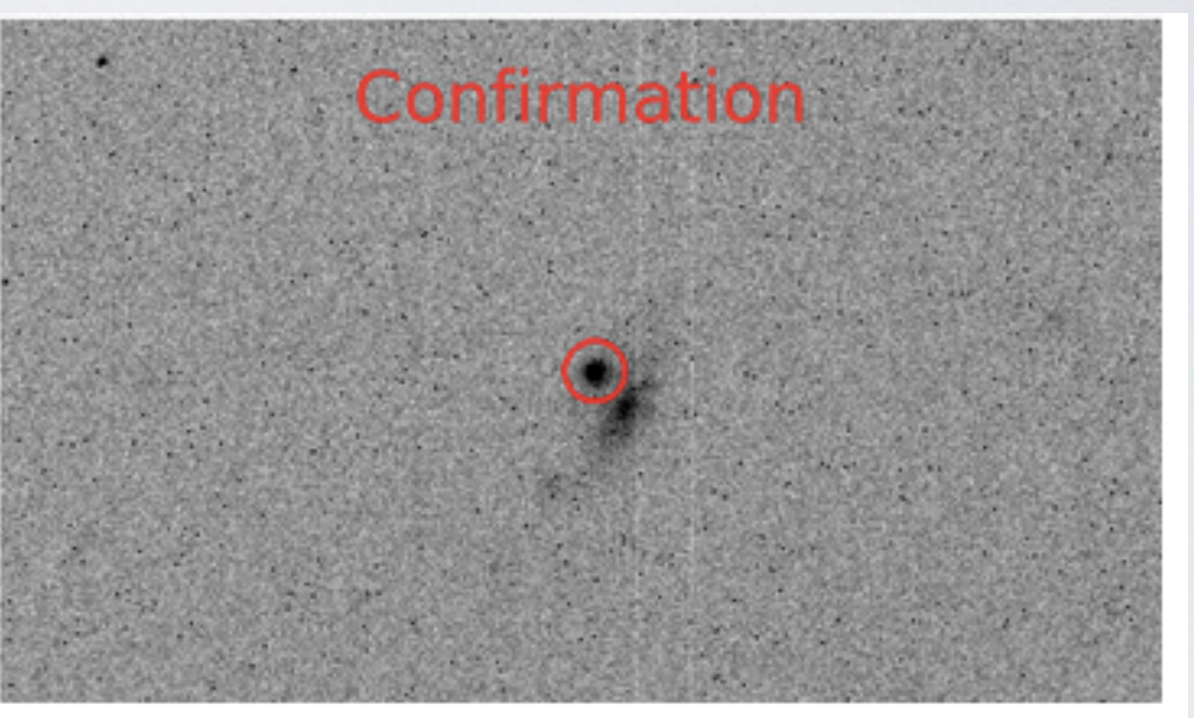
Integral field spectrograph

27.7"









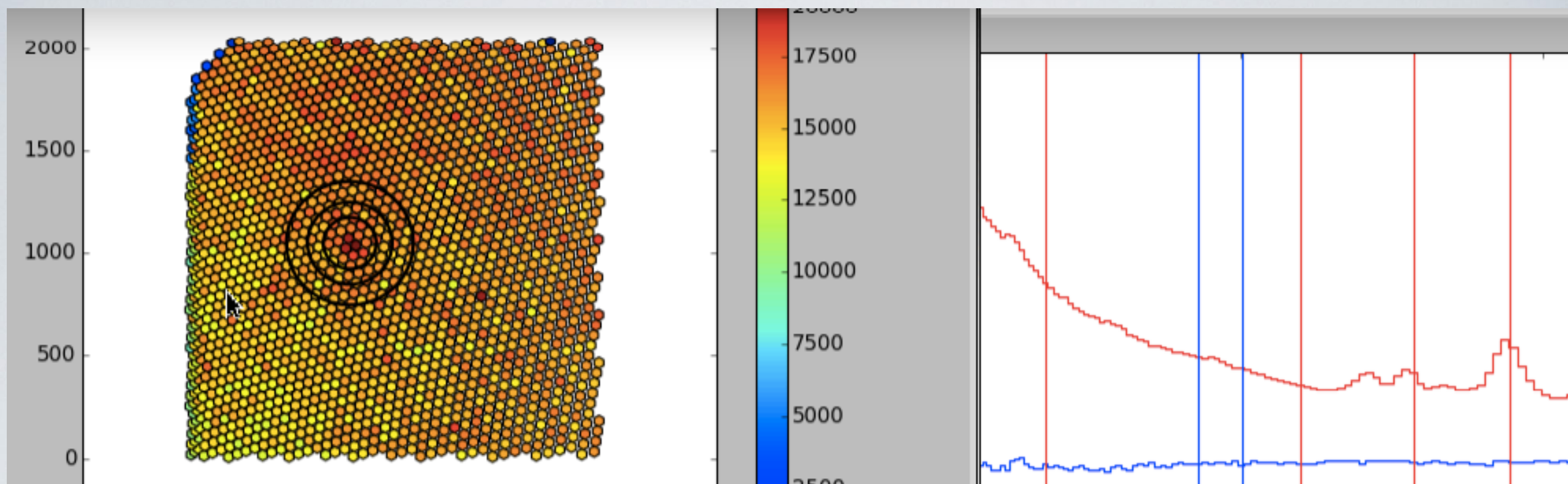
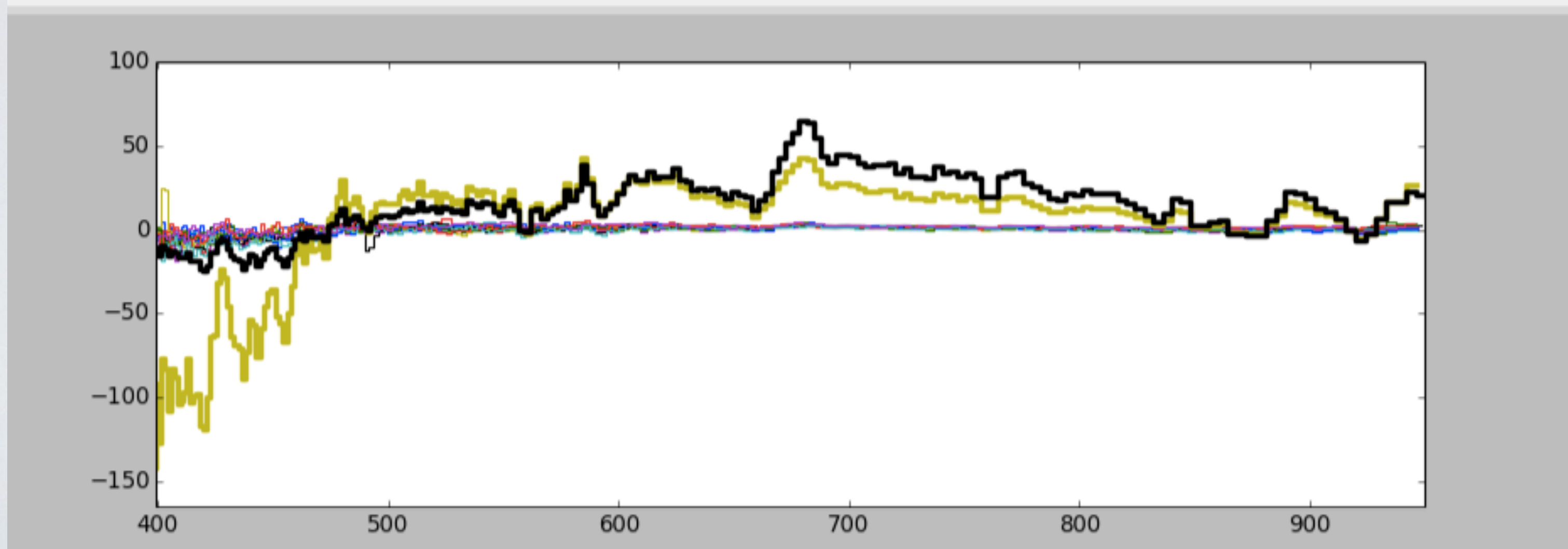
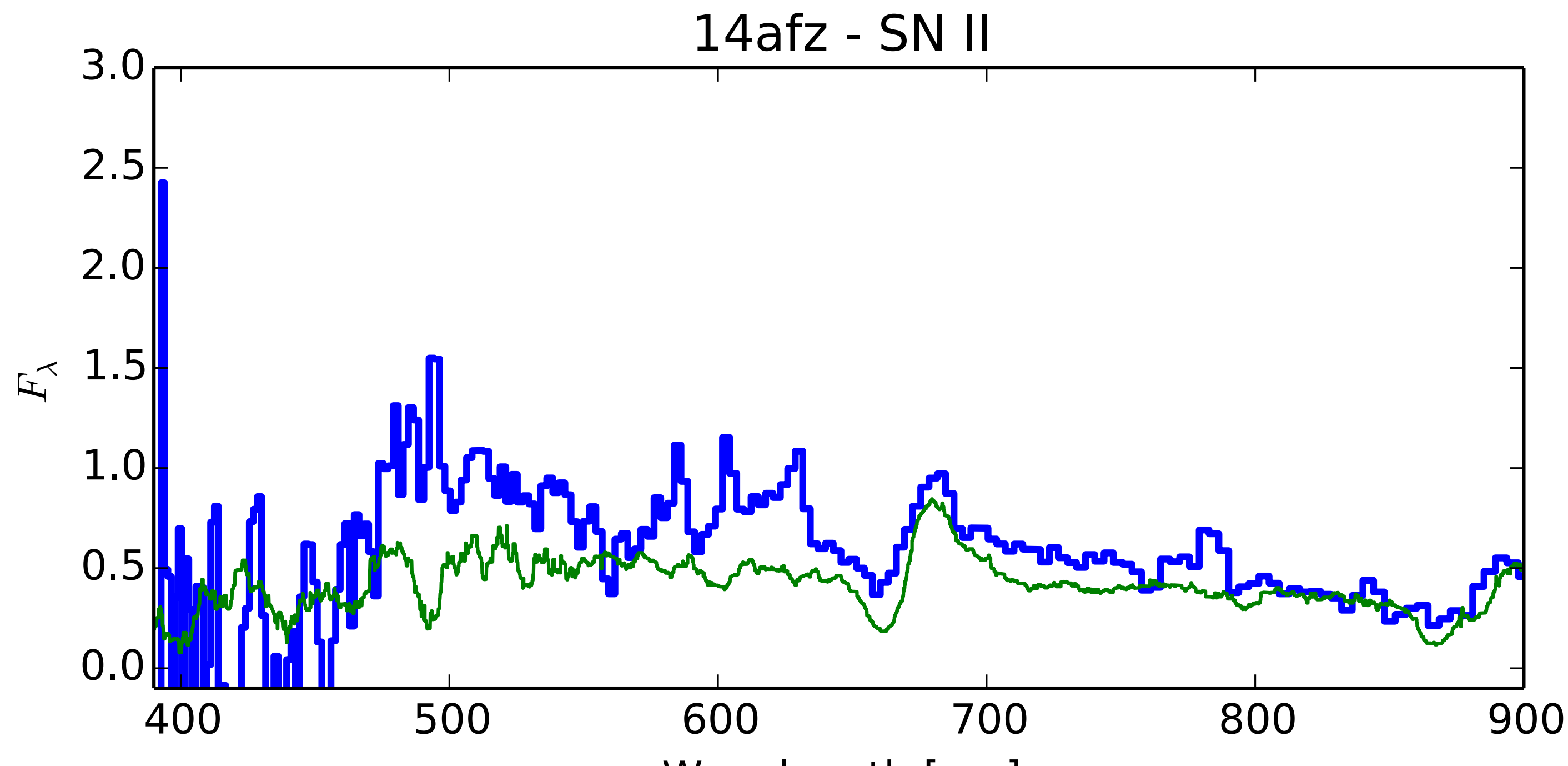


Figure 3



zoom rect

I 4AFZ - 19.5 MAG

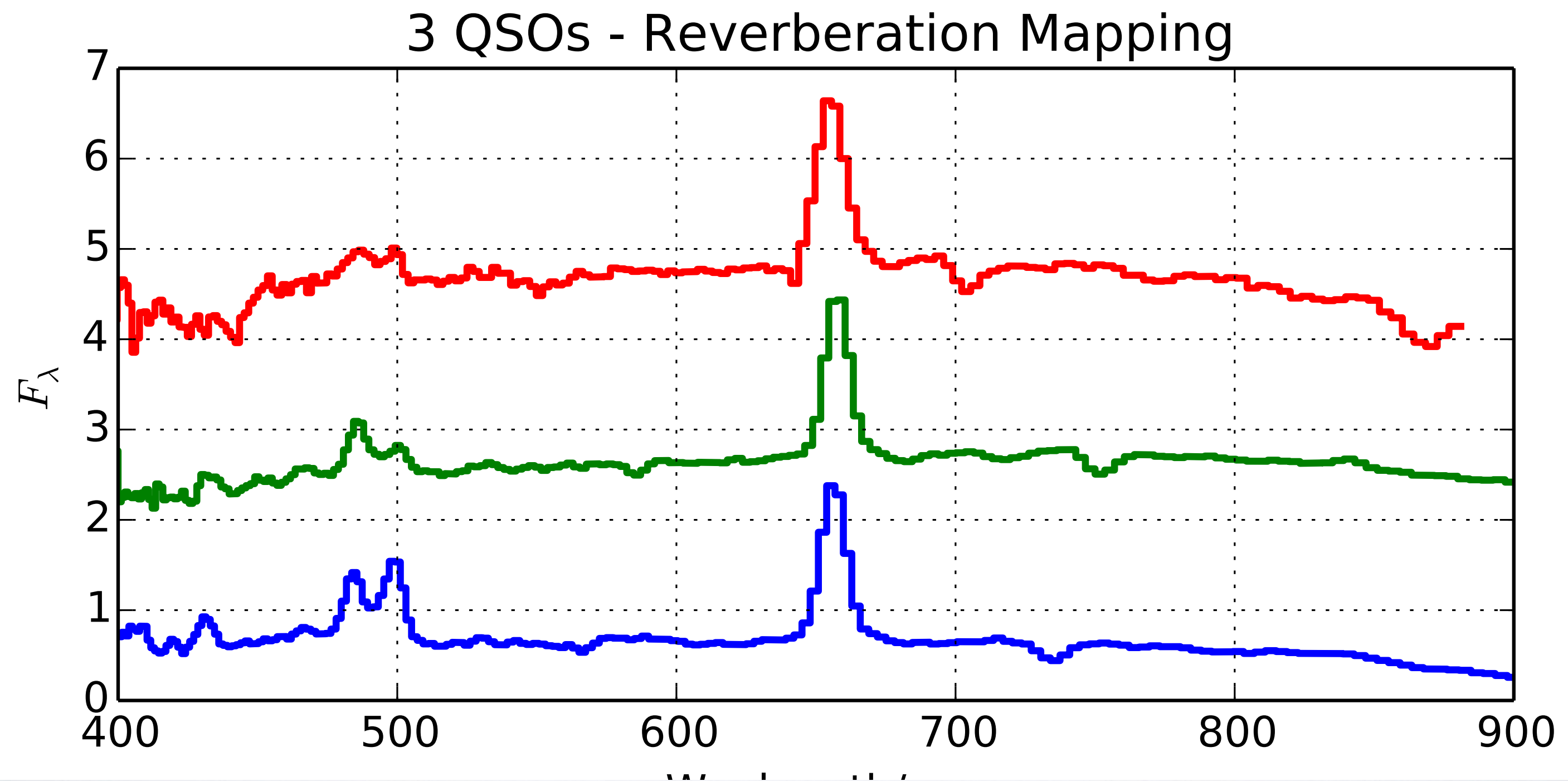


Expected 10 sigma magnitudes (spectroscopy)

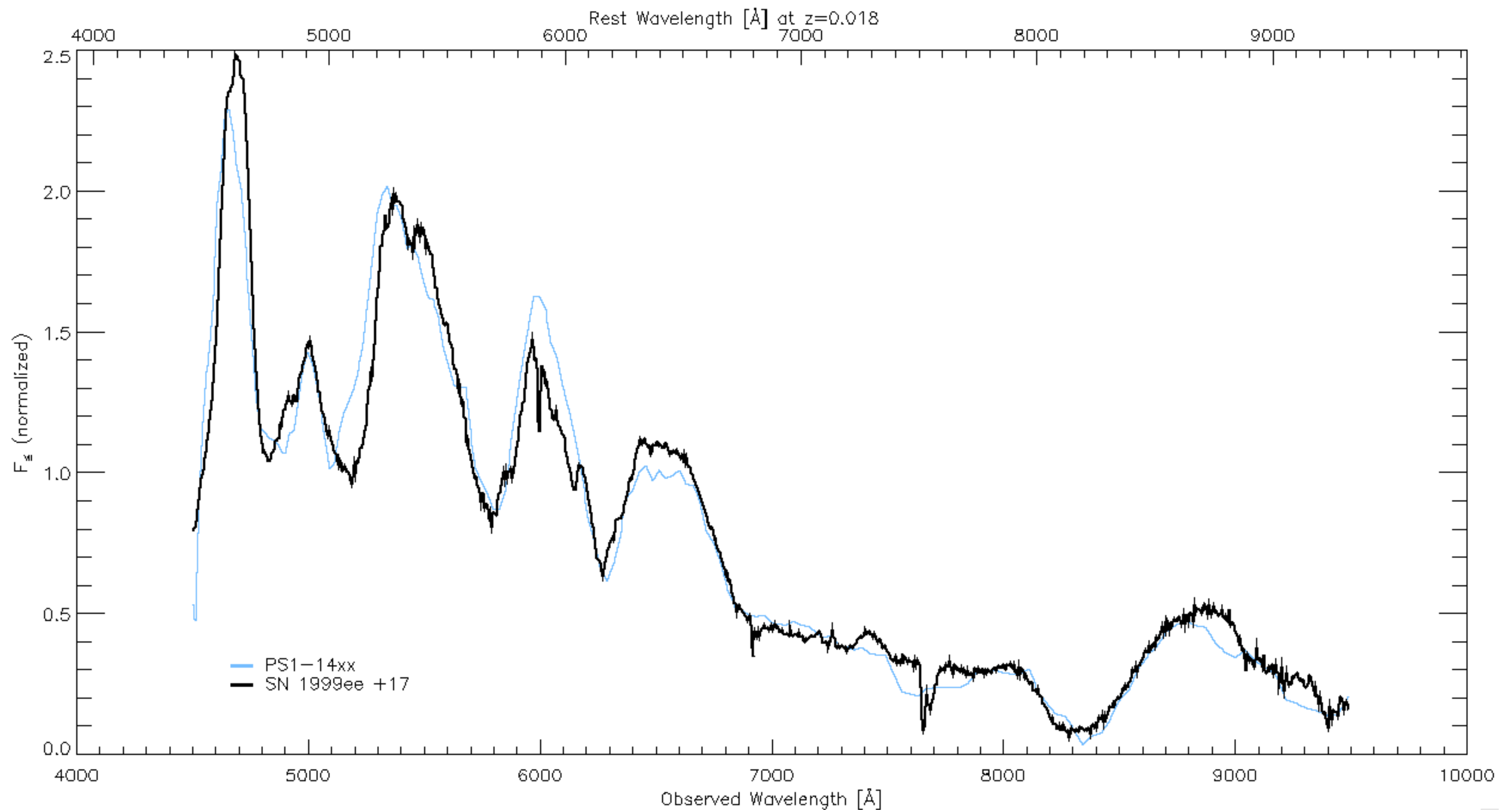
photometric limit - spread + t_{exp} - QE - ff

t_{exp} [min]	u	g	r	i
1 .	12 . 4	15 . 8	15 . 7	14 .
3 .	13 . 6	17 .	16 . 9	15 . 2
10 .	14 . 9	18 . 3	18 . 2	16 . 5
30 .	16 . 1	19 . 5	19 . 4	17 . 7
60 .	16 . 9	20 . 3	20 . 2	18 . 5
120 .	17 . 7	21 . 1	21 .	19 . 3

REVERBERATION MAPPING



PS1-14XX W/ SUPERFIT



iPTF SNe	Non-PTF SNe	QSOs	QSO candidates (Sumin project)	Stellar Project (Donal project)	Planetary Nebula	Asteroid	Template Galaxies
iPTF13bvn	sn2013dy	QSO-15.8-0.163	PTFS1100az	hd 228544 (F0IV)	pn-sb-k1-20	aquiania	SDSS elliptical
iPTF13bxw	sn2013dn	QSO 17.8-0.621	PTFS1300es	hd 227172 (K0III)	NGC6210	aurora	S0
iPTF13cpf	sn2013cj	QSO 17.8-0.621	PTFs 1200cq	hd 227290 (G0V)	NGC7026	nysa	Grand spiral
iPTF13cly	SN2013dr	QSO 15.2-0.372	PTFs 1200 ci	hd 227069 (M8III)		hygiea	Irregular
iPTF13cpb		QSO 17.9-0.227	PTFS1300dy	hd 197604 (R2)		eleanor	
iPTF13cpd		QSO 17.6-0.327	PTFS1300ce	hd195665 (S5,8)		9550	
iPTF13cln		QSO-16.7-0.469	PTFS1200cp	hd 193928 (WN)		21088	
iPTF13cpp		QSO-17.9-0.521	PTFS1300ea	hd 2678123 (
iPTF13cnk		qso 17.5 0.826	PTFS1300dz	hd 267389			
iPTF13bok		QSO-17.8-0	PTFS1300fg	hd 267098		Comets	
iPTF13bxw		QSO-17.1-0.624	PTFS1300fd	BD +31 3330 (K3V)		C/2011 L4	
iPTF13asv		QSO-16.8-0.418	PTFS1300hu	BD +36 3311 (F2III)		C/2011 F6	
iPTF13bkm		QSO-17.0-0.716	PTFS 1200en	BD +36 3783 (F8V)			
PTF10ccm		QSO-17.4-0.125		BD +29 3764			
iPTF13cjz		QSO-17.8-0.671		BD +36 3323 (G2V)			
iPTF13ckf		RXJ02040+4005		BD274378			
iPTF13bwv		Q0226-1024		2152-2323-1 (B8V)			
iPTF13ccm				2153-2192-1 (B8V)			
iPTF13cap				2681-1415-1 (F0V)			
iPTF13cjg				2153-567-1 (F1V)			
iPTF13cqt				2153-585-1 (F2IA)			
iPTF13bwj				3179-745-1 (F3V)			
iPTF13crp				2674-5706-1 (F4IA)			
iPTF13csu				3151-1627-1 (F5IAB)			
				2684-1686-1 (F6V)			
				2671-1381-1 (F7V)			
				2184-2090-1 (F8V)			

WHAT'S NEXT?

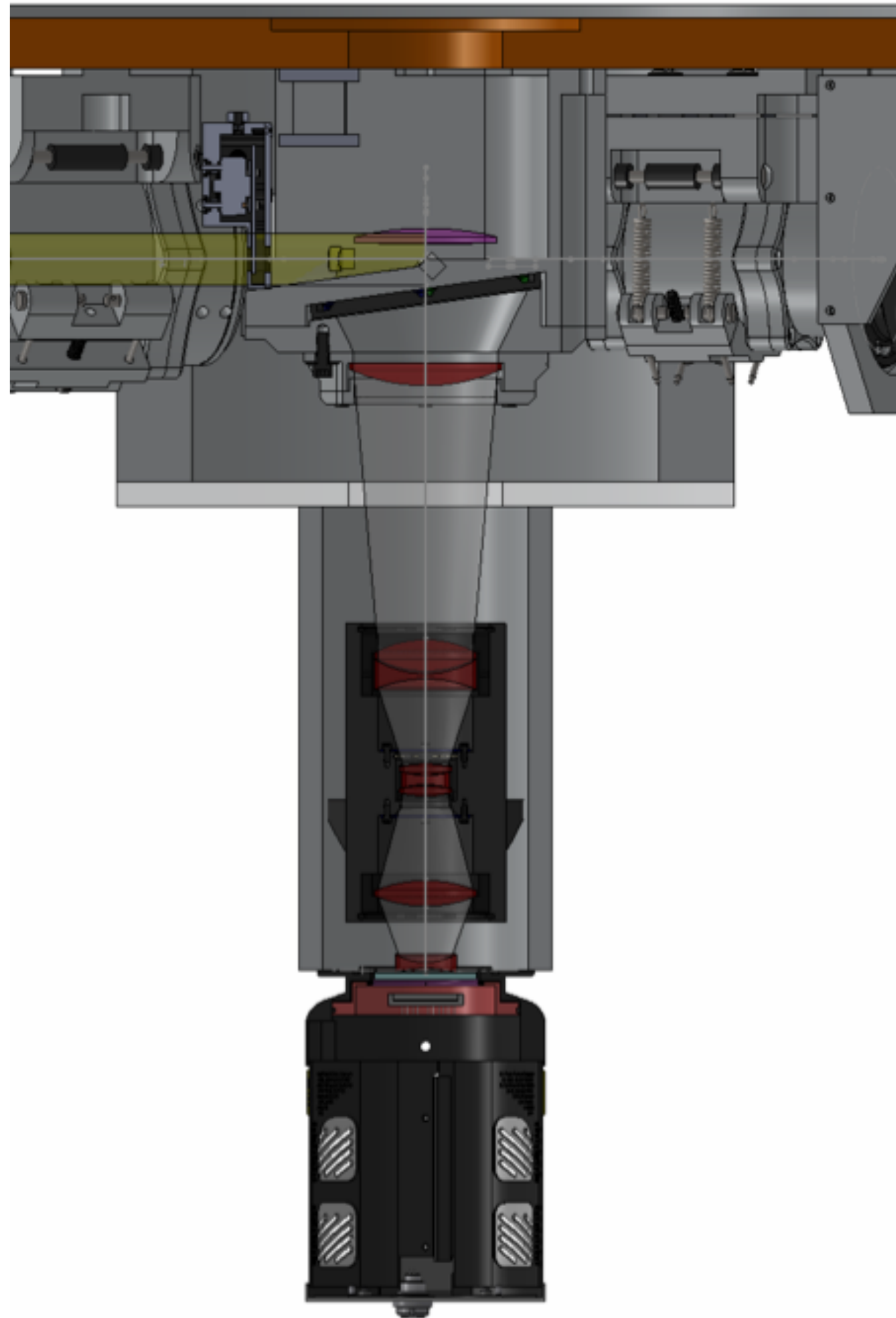
Data reduction ~ 100 science spectra + 50 calibration spectra

WHAT'S NEEDED?

- 1) Understand source of loss of throughput
- 2) Finish robotization of SEDM (6 nights in July)
- 3) Convert data reduction “pipeline” into a real pipeline

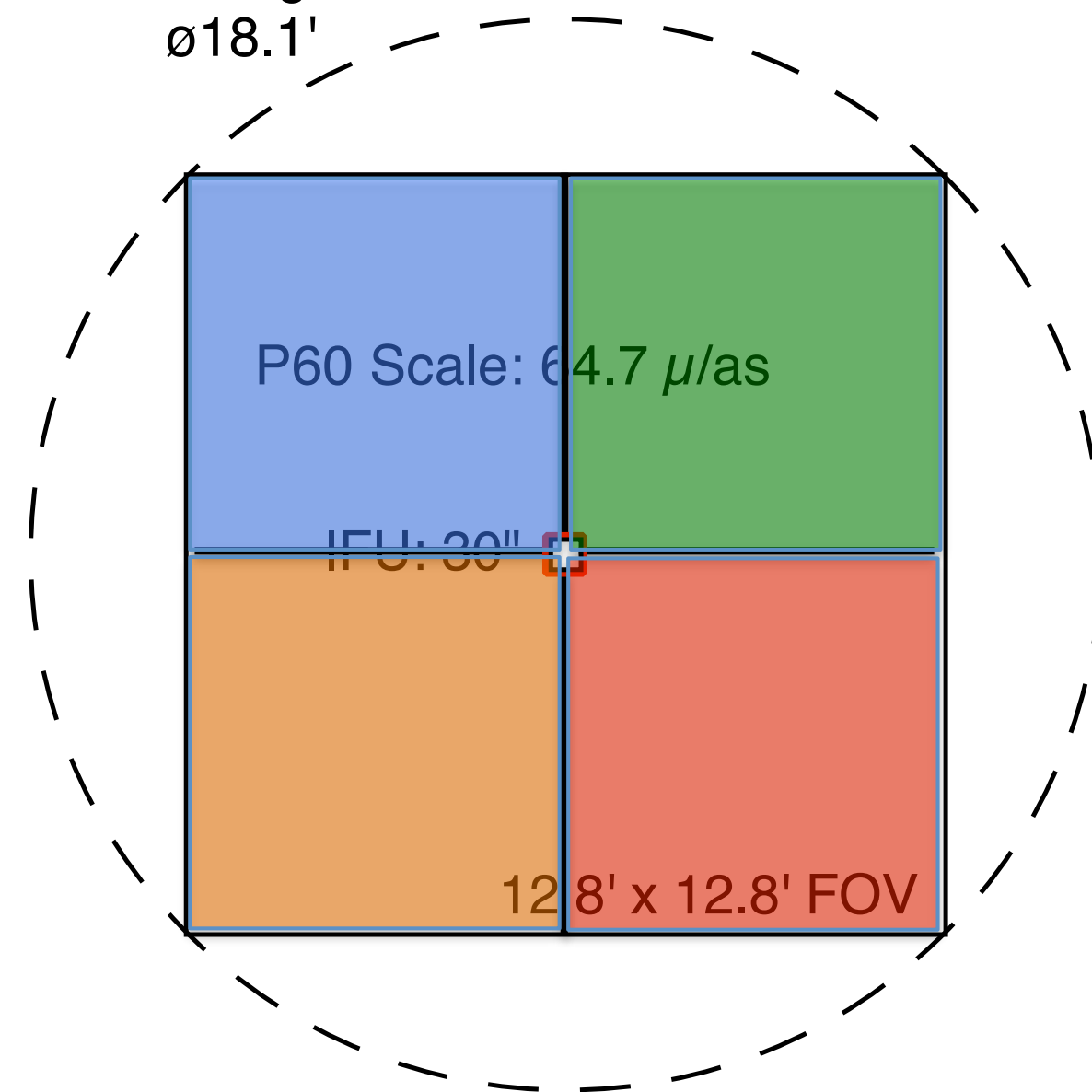
Conclusions

- ❖ SED Machine is a spectrograph designed to classify transients efficiently.
 - ❖ R~100 from 360 to 950 nm
- ❖ Please contact me (npk@astro.caltech.edu) if you're interested in using SED Machine.
- ❖ There are good opportunities upcoming for small and efficient instruments on underused telescopes.

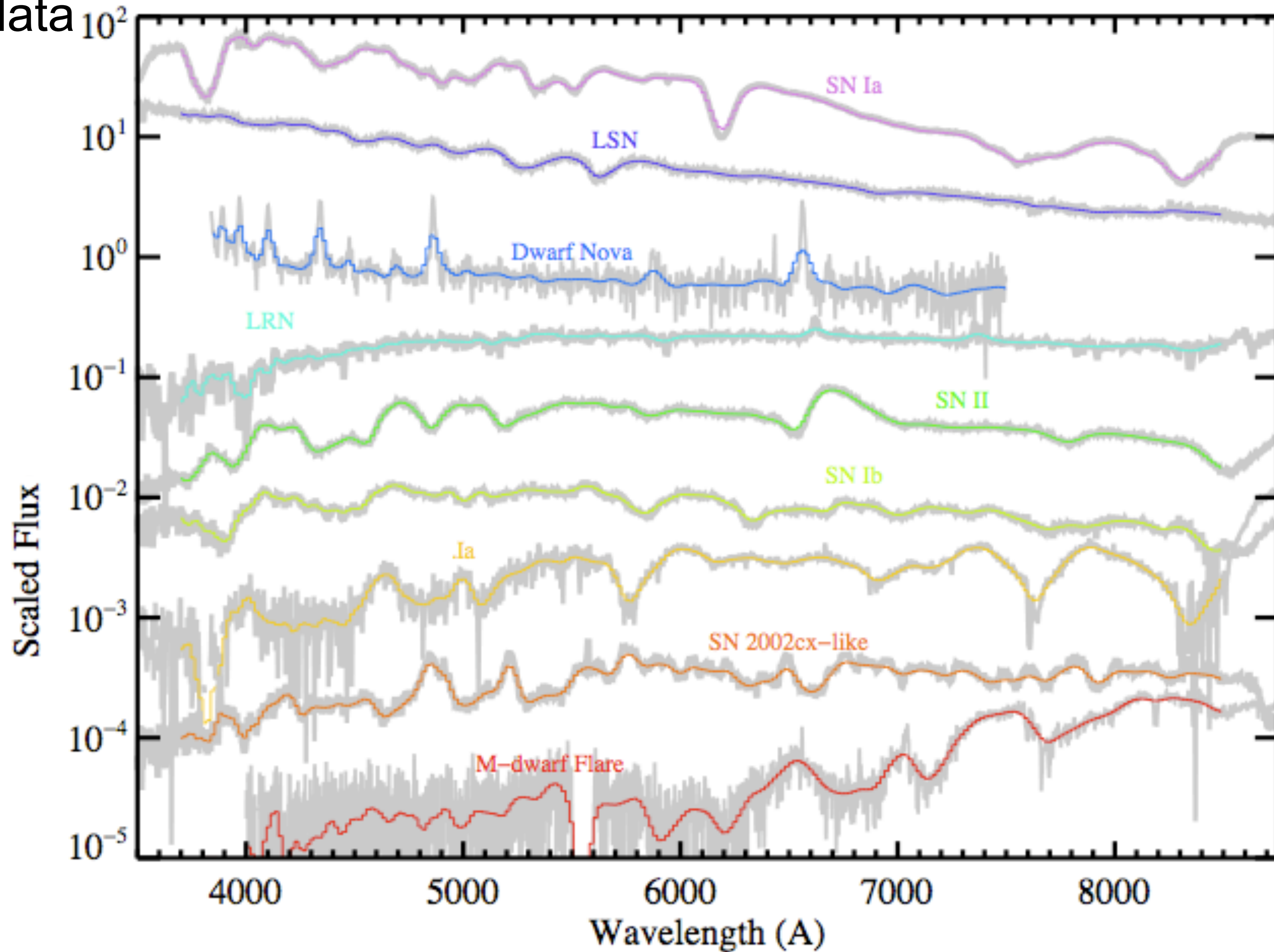


Palomar 60" Focal Plane

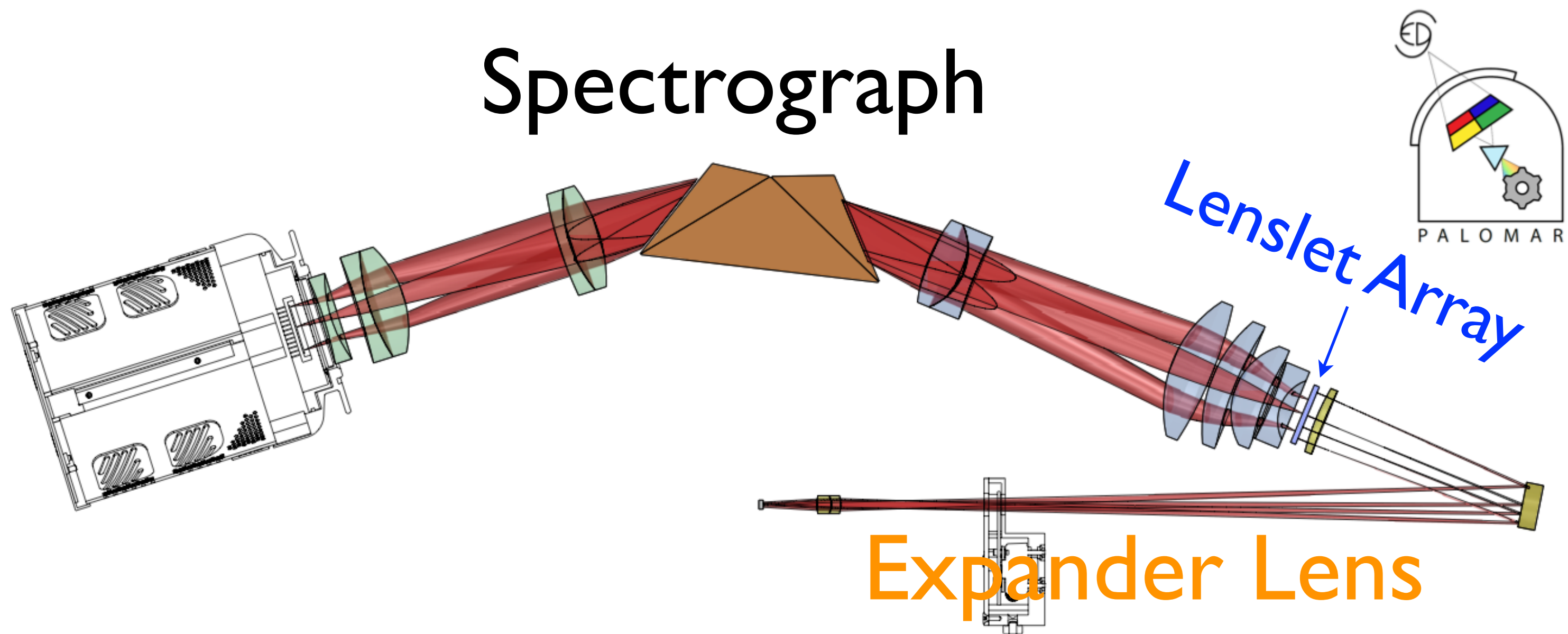
Unvignetted Field:
ø18.1'

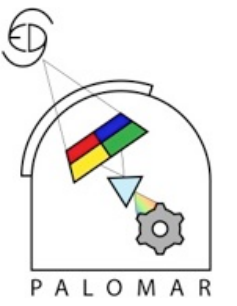


To classify with a single observation, $R=100$ is sufficient:
data



Hyperspectral imaging spectrograph





Efficiency

