



MIRC Upgrade

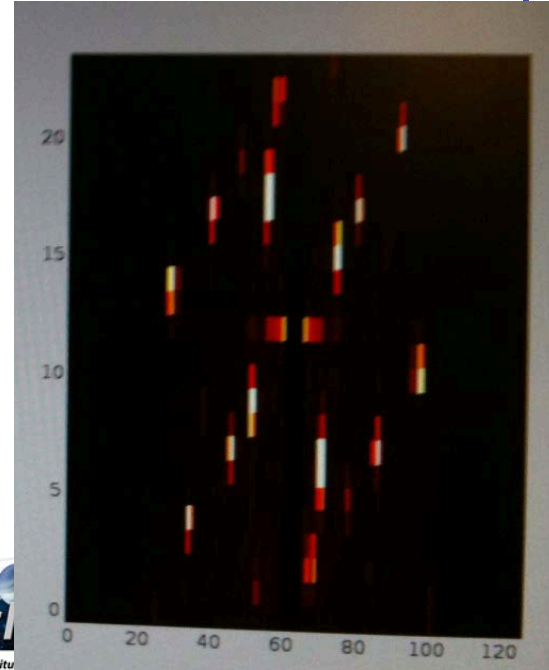
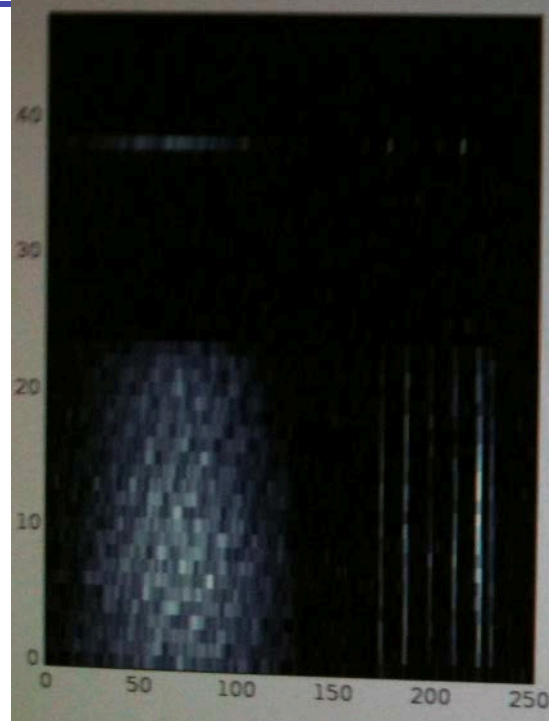
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LESIA



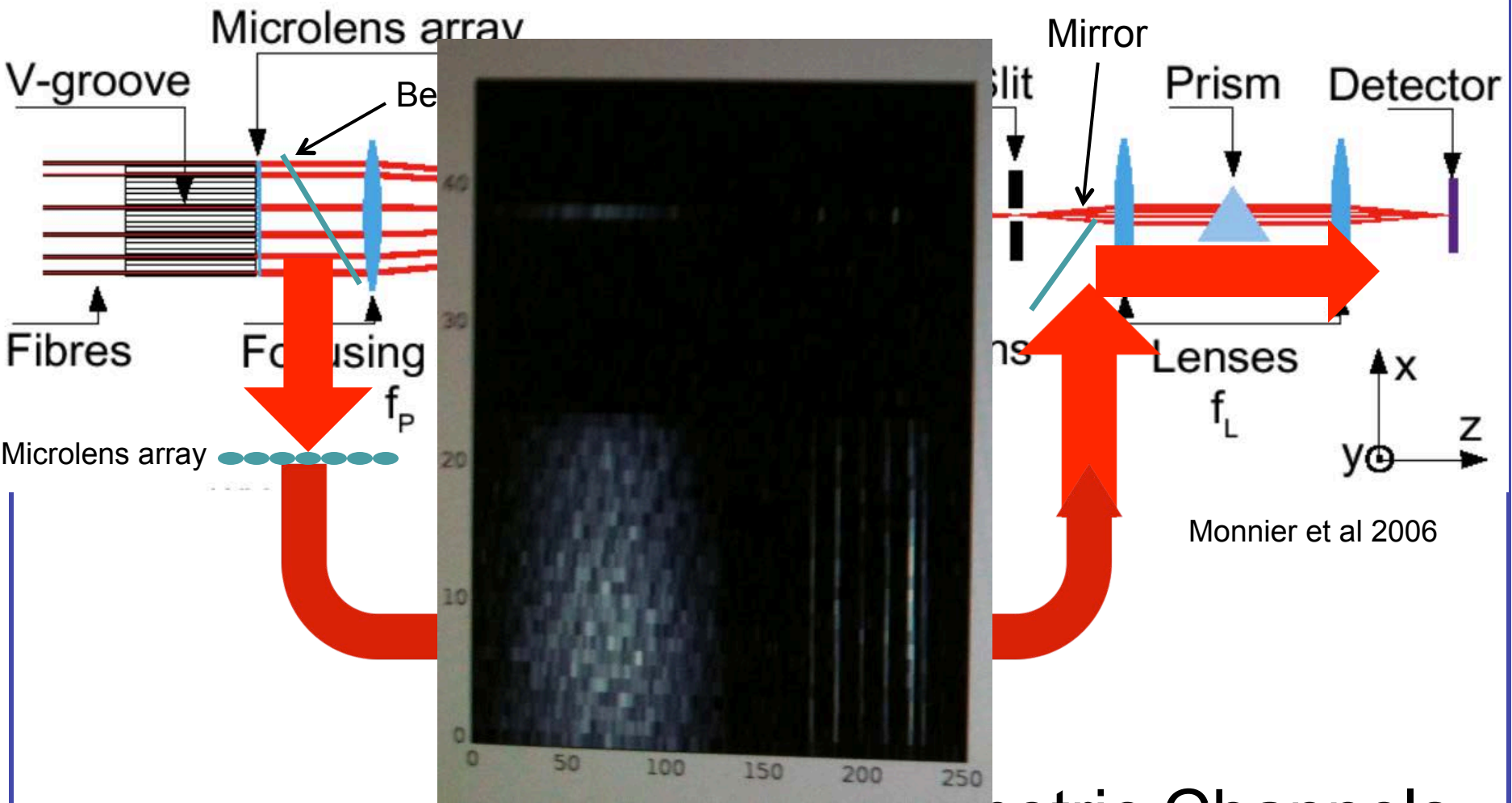


Motivations

- To increase uv coverage for imaging more complicated objects
 - MIRC 6T upgrade
- To improve flux calibration of each beam for better data quality
 - Photometric Channels (PCs) upgrade
- Engineering and commissioning in 2011 July, and the new MIRC has been fully functioning since then



MIRC Optics



Monnier et al 2006

Photometric Channels



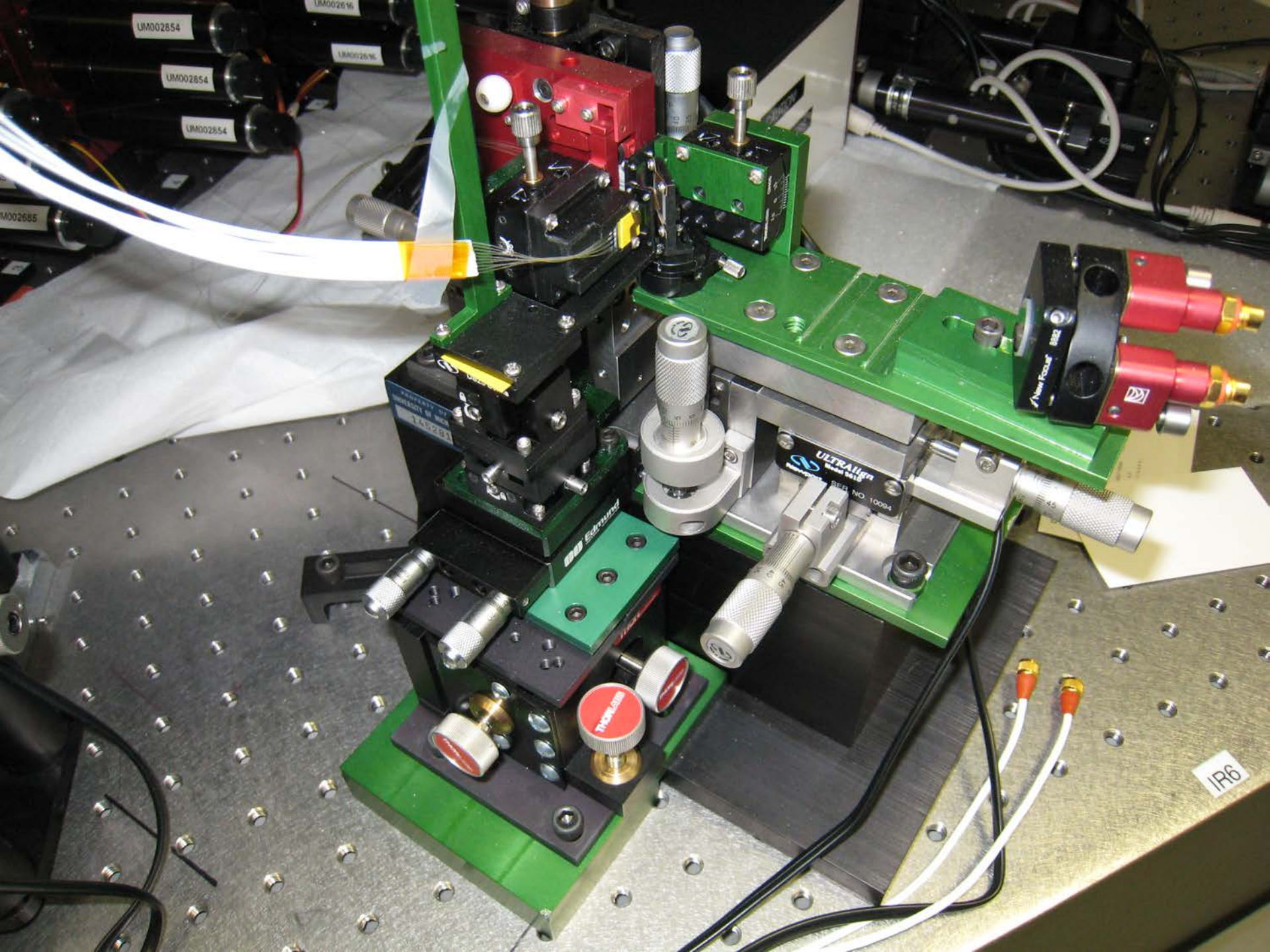
CAUTION!

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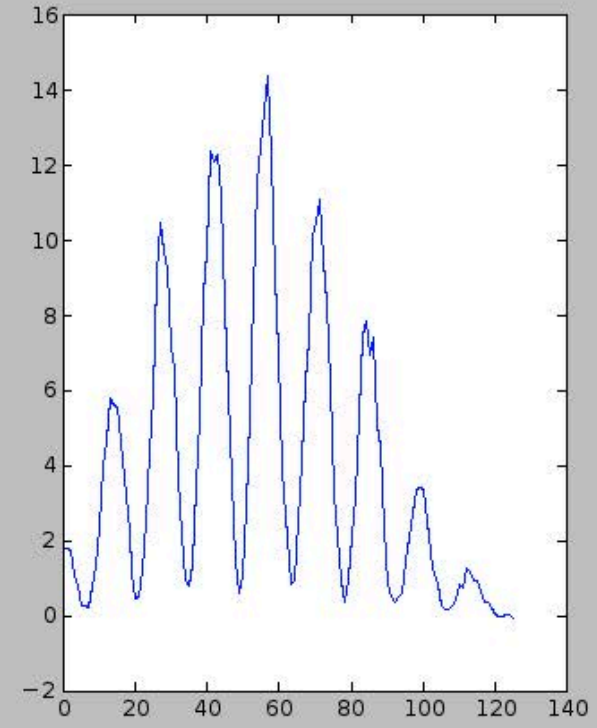
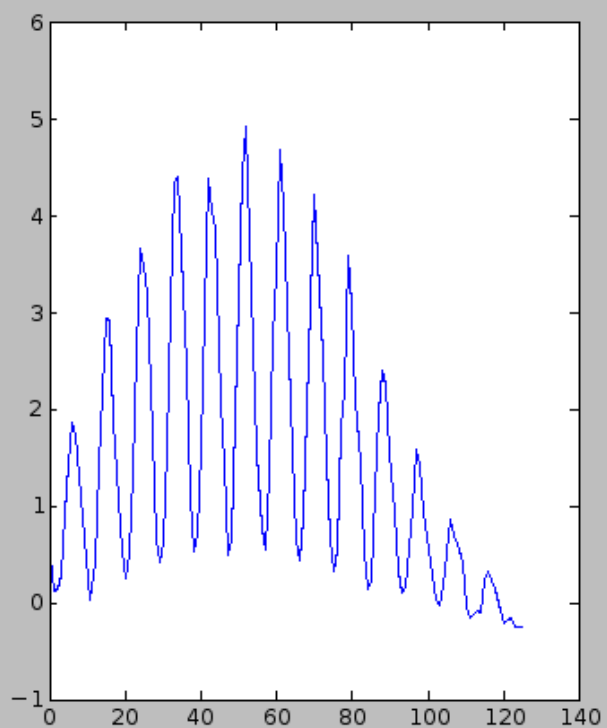
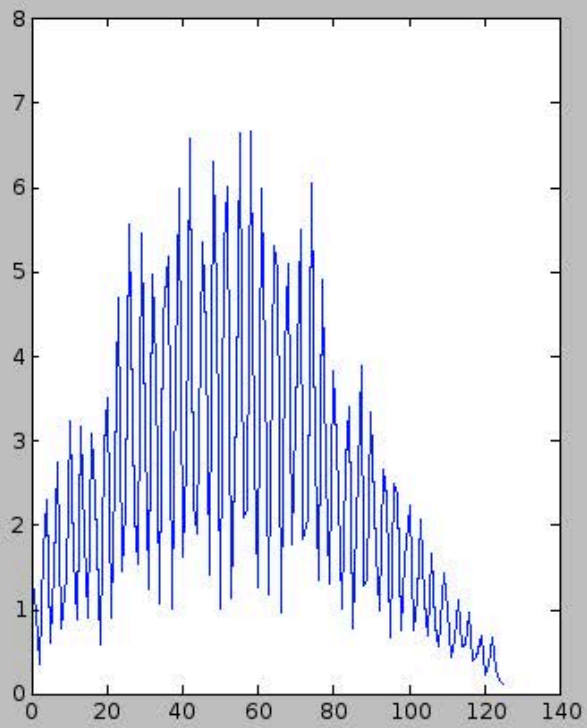
New Focus

IR6



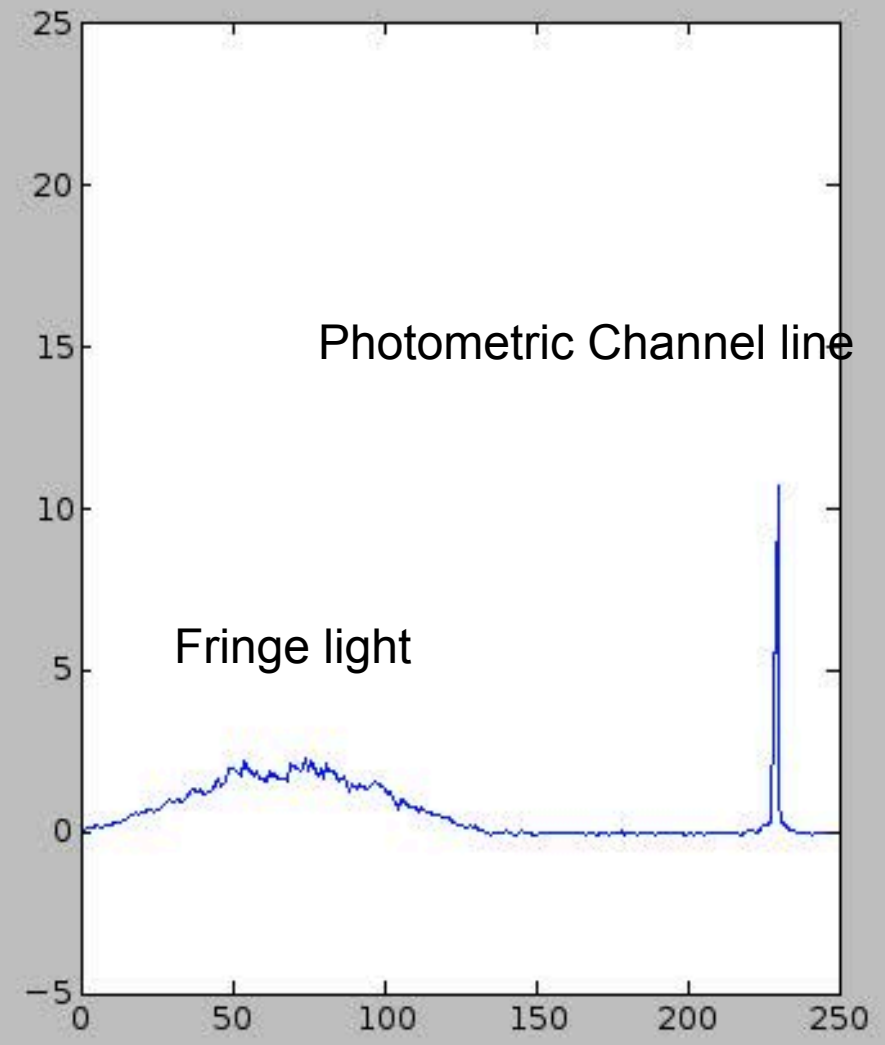
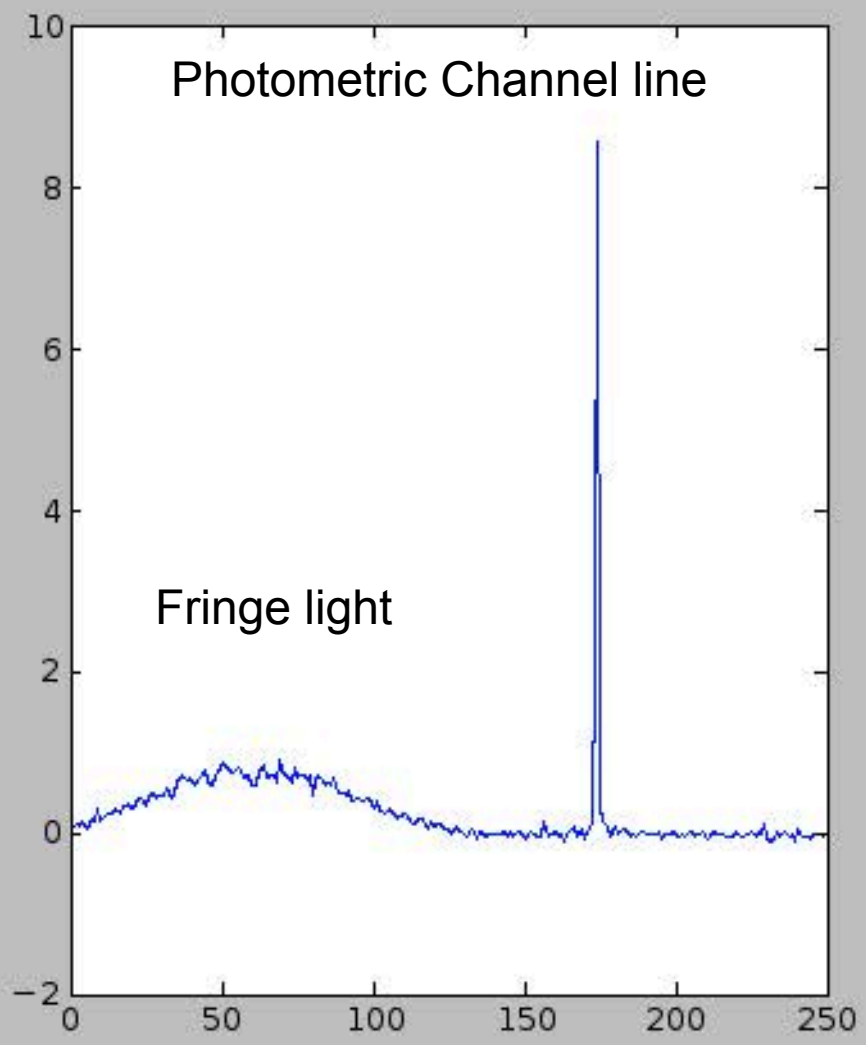
Fringes with lab source

- Different beam pairs
- Space frequency
- Polarization phase alignment



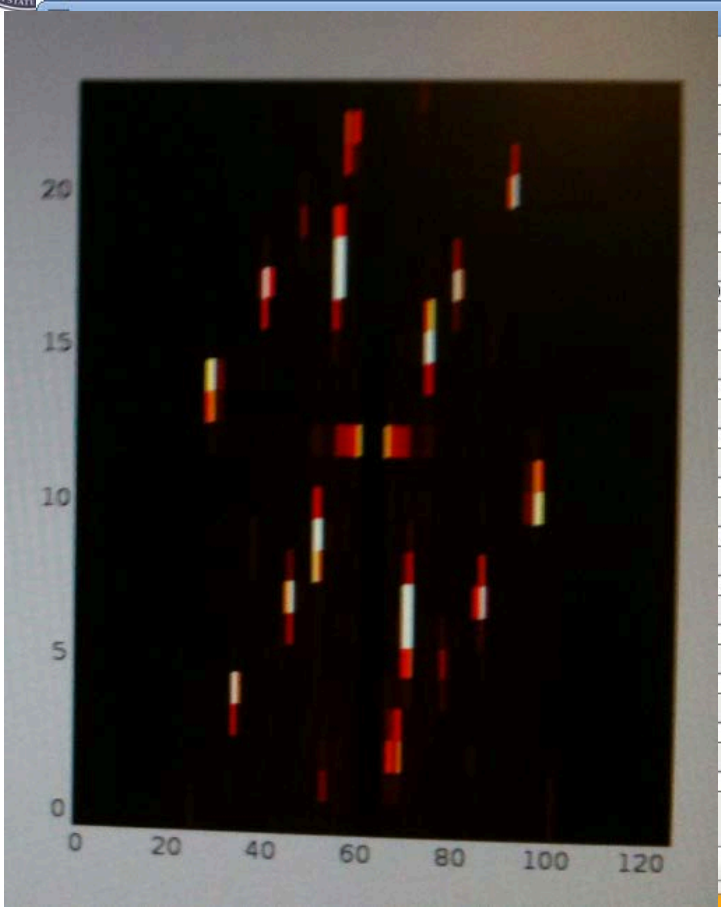


Photometric Channels





Software upgrade



gdtControl2

OPD	WEIGHT	THRESHOLD	LOCK
1470	11	CALC THRESH	<input checked="" type="checkbox"/>
553	10	CALC THRESH	<input checked="" type="checkbox"/>
1861	3	CALC THRESH	<input checked="" type="checkbox"/>
227	4	CALC THRESH	<input checked="" type="checkbox"/>
5173	10	CALC THRESH	<input checked="" type="checkbox"/>
11	15	CALC THRESH	<input checked="" type="checkbox"/>
106	12	CALC THRESH	<input checked="" type="checkbox"/>
41	8	CALC THRESH	<input type="checkbox"/>
386	6	CALC THRESH	<input checked="" type="checkbox"/>
15	7	CALC THRESH	<input checked="" type="checkbox"/>
29	5	CALC THRESH	<input checked="" type="checkbox"/>
61	5	CALC THRESH	<input checked="" type="checkbox"/>
5735	8	CALC THRESH	<input checked="" type="checkbox"/>
634	5	CALC THRESH	<input checked="" type="checkbox"/>
2443	9	CALC THRESH	<input checked="" type="checkbox"/>

GET FRINGE INFO **START LOOP** SEARCH THRESH. FACTOR: CALC ALL

LOCK FRINGES SEND GDT INFO UPDATE THRESH

0.008 LOOP - LOOP + threshold check

DELAY LINE W2: beam use this tel reference tel

ZERO << < > >>

STEP SIZE LOOP - LOOP + threshold check

QUERY TIPTILT GET OFFSETS SLEEP TIME

CLOSE

	S1	S2	E1	E2	W1	W2
Clear Matrix						
2.59/0.94/-8.14/	S1	-4.678	-0.691	0.139	-0.755	1.214
7.27/5.89/7.27/4	S2	0.1	-5.368	-4.539	3.924	-3.464
-8.83/0.53/-8.83	E1	0.4	1.7	0.826	-1.444	1.901
-8.00/1.35/-8.01	E2	1.0	1.0	129.1	-0.617	1.075
-7.39/1.97/-7.39	W1	10.1	26.1	94.5	10.4	0.460
	W2	2.3	11.2	24.1	51.7	97.9

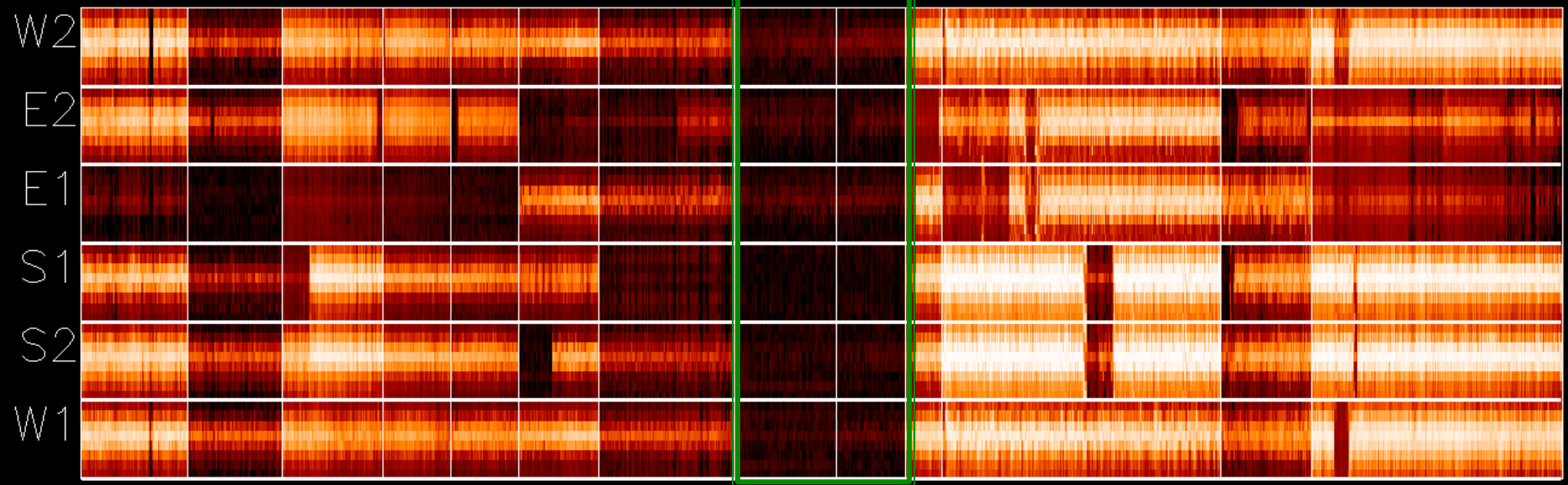
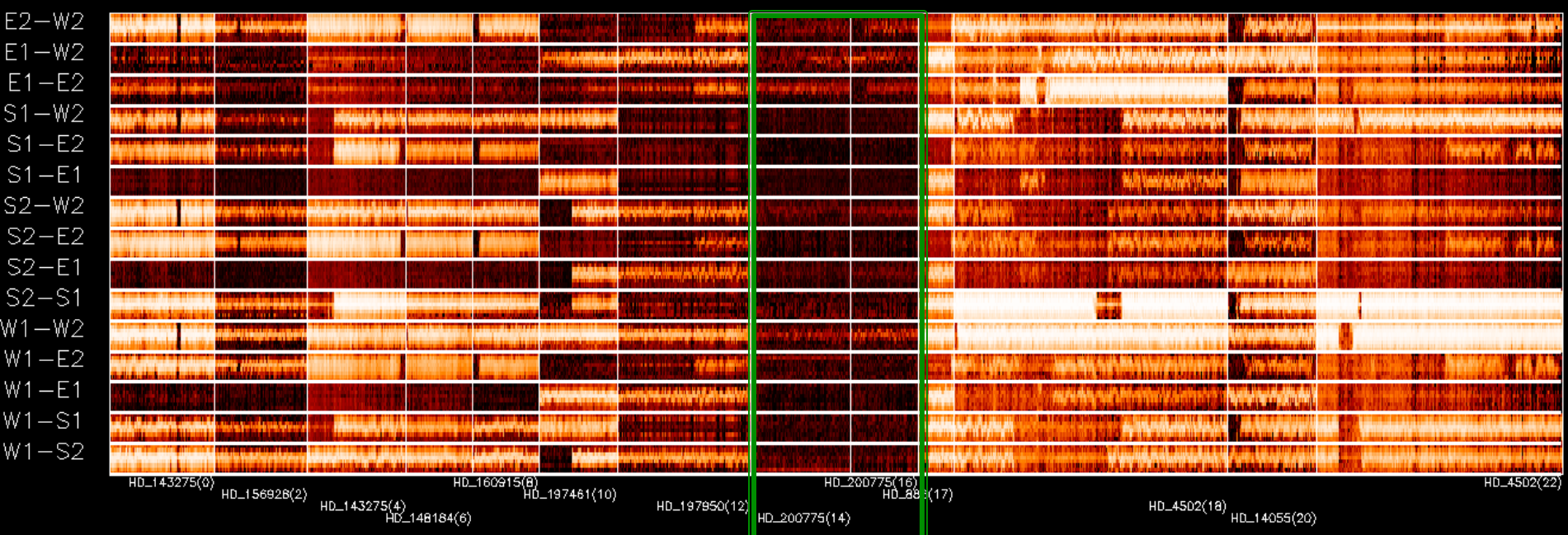


Happily dancing fringes from July 2011

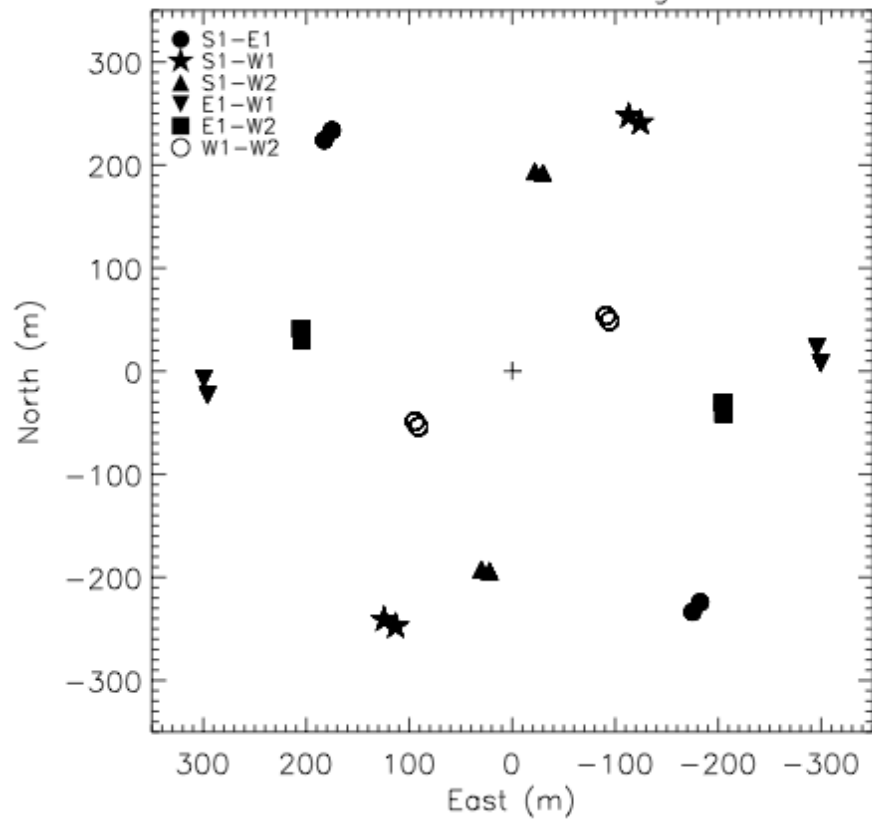




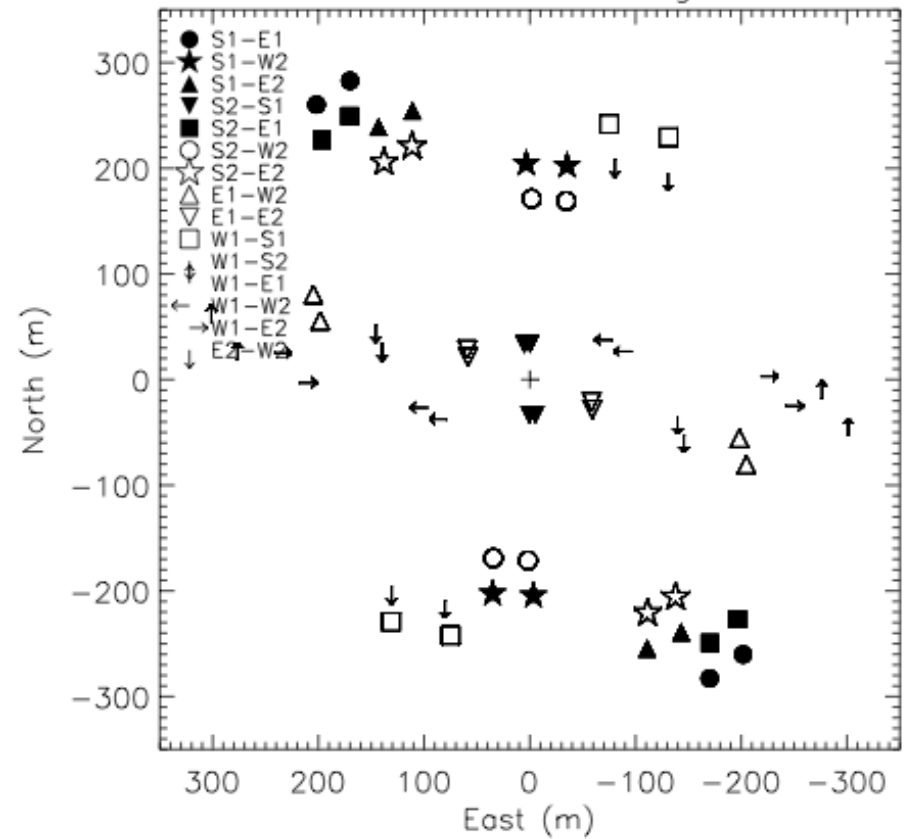
Fringes during data pipeline



CHARA UV Coverage



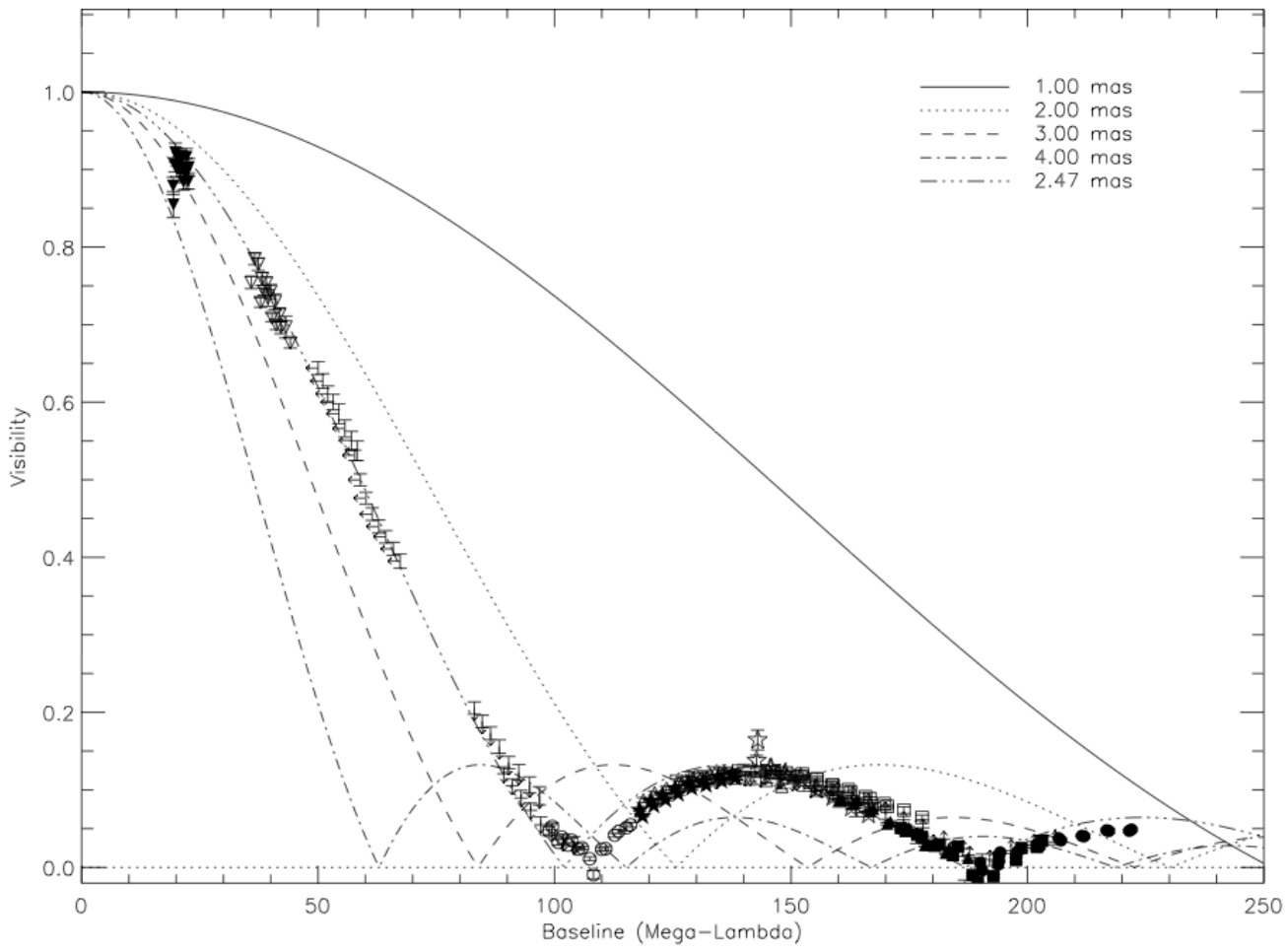
CHARA UV Coverage



	MIRC 4T	MIRC 6T
Baselines	6	15
Triangles	4	20



- Improve the light throughput of Photometric Channels by a factor of ~ 5
- Better data quality



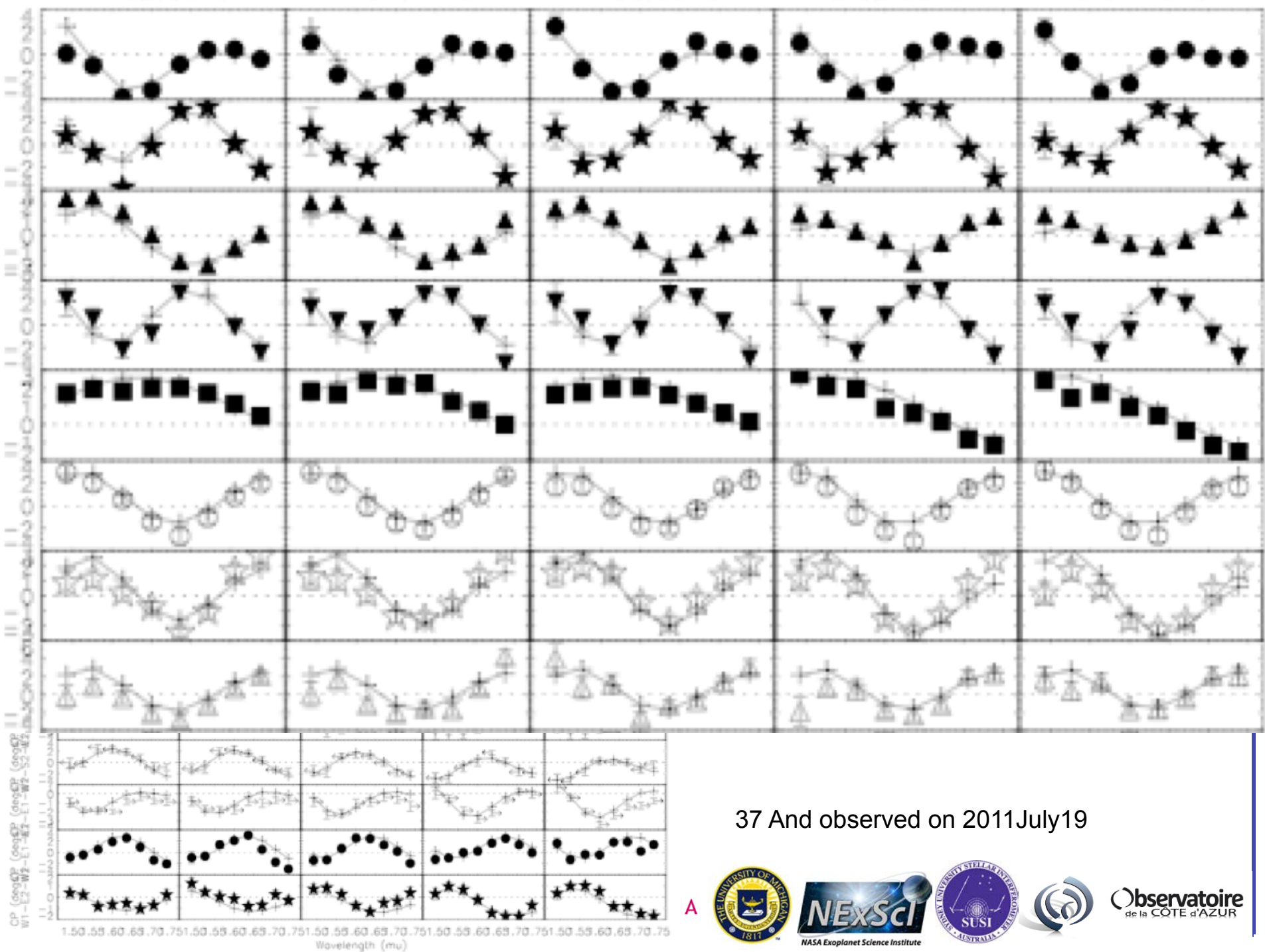
Zet And observed on 2011 July 19



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Observatoire de la CÔTE d'AZUR



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Observatoire de la CÔTE d'AZUR



MIRC upgrade Summary

- MIRC 6T with improved Photometric Channels system has been functioning well since 2011 July
- The uv coverage and data quality have been significantly improved
- MIRC sensitivity limit has been improved from $H=4.5$ to 5.5 (MIRC 1st YSO MWC 361 $H_{\text{mag}}=5.5$)



MIRC: Year 6 (2011) Summary

- Observing
 - 2011: 59 nights in total, 9 joint observations, 10 engineering nights, 36 nights of data, lost 12 nights to bad weather, lost 3 nights to other technical issues.
 - 38 nights were Michigan time
 - 2010: 62 nights in total/8 shared with 50 nights of data (81% clear!!)
 - 20/62 nights were “Michigan” time
 - 2009: 51 nights in total with 34 nights of data (66% clear)
 - 17/51 nights were “Michigan” time, the rest from other CHARA collaborations
 - 2008: 42 nights in total with 30 nights of data (66% clear)
 - 2007: 57 nights in total with 24 nights of data (42% clear)



MIRC: Year 6 (2011) Summary

- Publications:

1. Monnier et al. 2011, WR 140
2. Kraus et al. 2012. Beta CMi
3. Smith et al. 2012, Gam Cas
4. Che et al., 2011, ApJ, Beta Cas and Regulus
5. Zhao et al. 2011, PASP, Hot Jupiter Ups And
6. Baron et al. 2012, ALGOL (submitted)
7. Stee et al. 2012, Gam Cas (submitted)

Some papers expected in 2012:

1. Pedretti et al. 2012 “Zet And”
2. Monnier et al. 2012, “MWC 361”
3. Baron et al. 2012, “Hotspots on Red Supergiants”
4. Baron et al. 2012, “MWC 275 imaging”
5. Che et al. 2012, “Delta Sco disk”
6. Che et al. 2012, “Be star disks”
7. Kraus et al. 2012, “Herbig disks”
8. Kloppenborg et al. 2012, “more on eps Aur”
9. Roettenbacher et al. 2012, “sigma Gem”
10. Parks et al. 2012, “lam And”

