



A comparison of CLASSIC/CLIMB pipeline reductions of young stellar objects.

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Stefan Kraus, Rafael Millan-Gabet
Alicia Aarnio

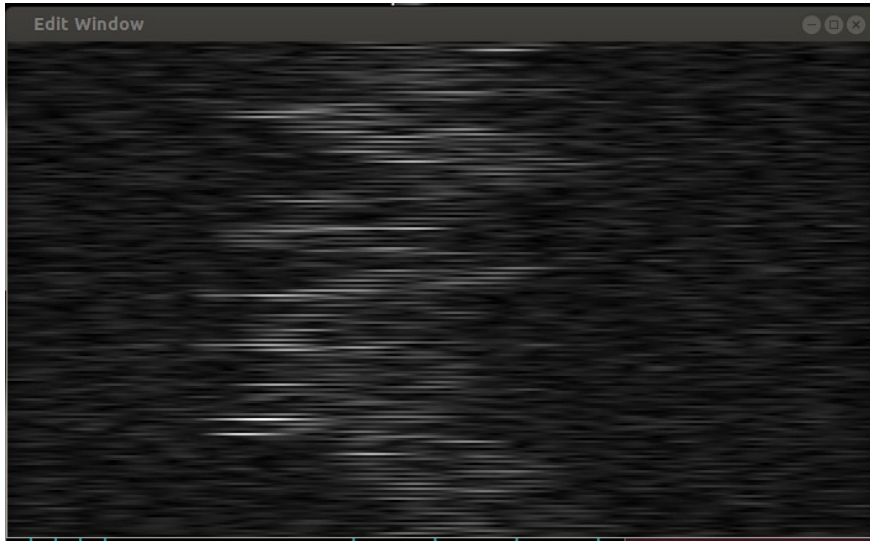


Want to test:

- Evaluate usability and available diagnostics
- Intra-night consistency
 - Use observations on the same baseline throughout the night
- Night-to-night consistency
 - Use observations on the same baseline between nights.
- Compare pipeline nominal value and uncertainty estimates
- Verify reliability of reductions



TTB CLASSIC pipeline



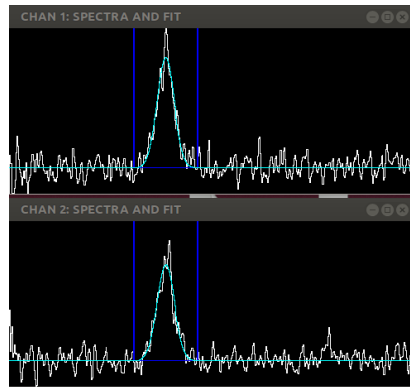
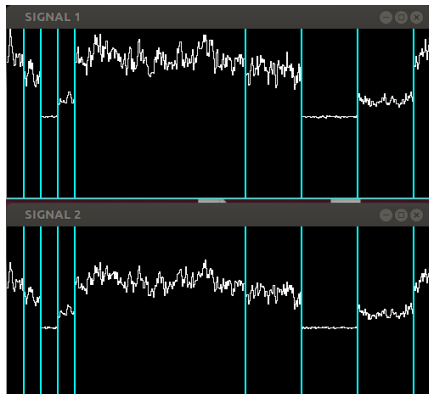
```
bkloppenborg@epsilon: /home/data/CHARA-NIRO
File Edit View Search Terminal Tabs Help

joy x bkloppenborg@epsilon: /home/data/CHARA-... x

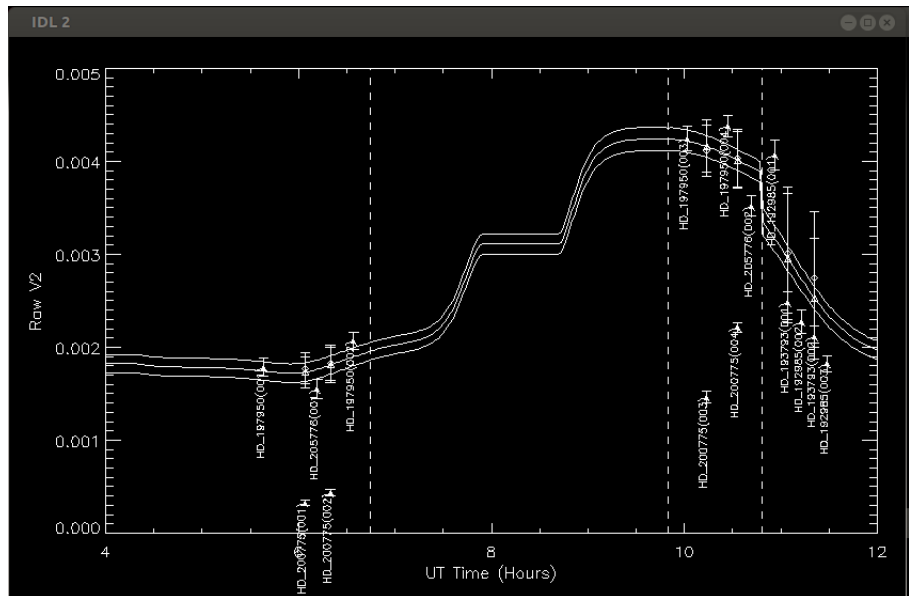
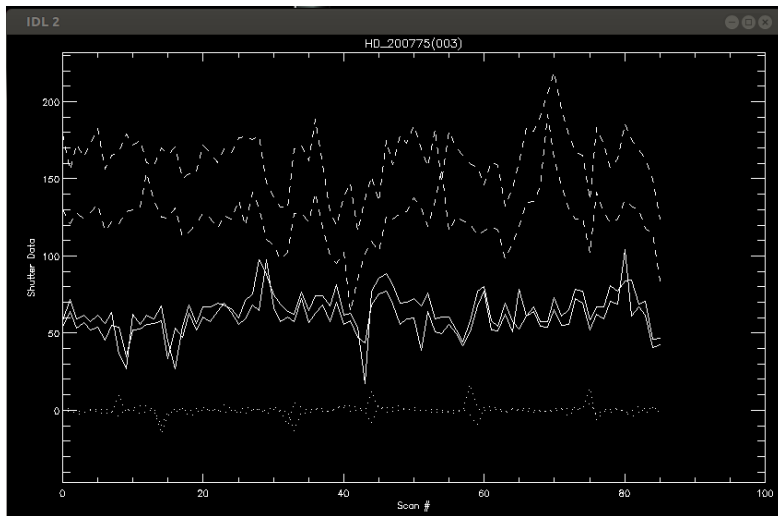
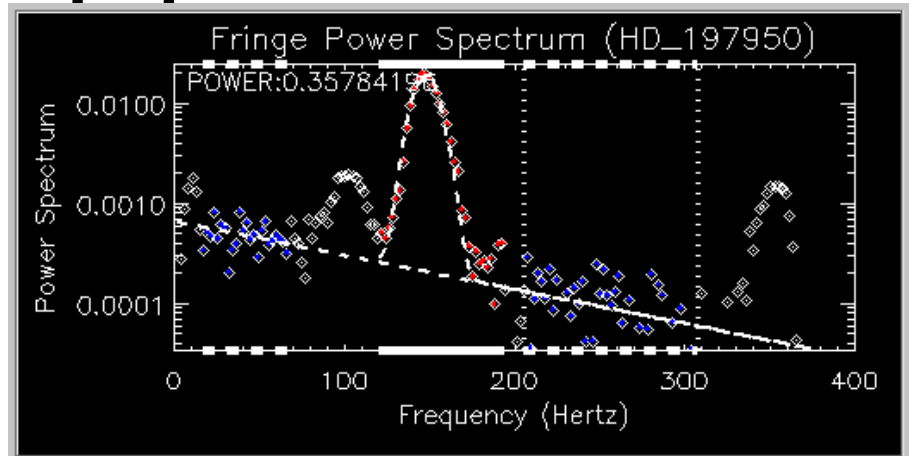
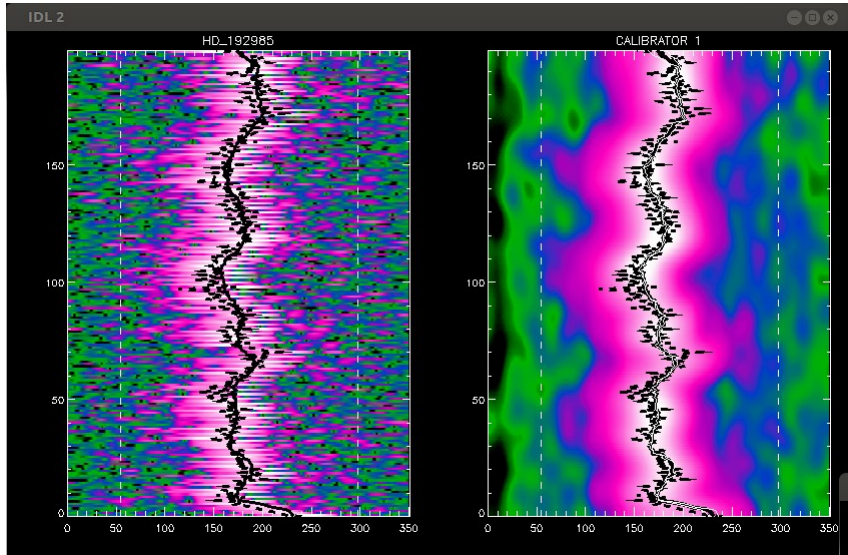
Last login: Fri Mar 21 21:56:06 2014 from astro.gsu.edu
bkloppenborg@epsilon:~$ cd /home/data/CHARA-NIRO/
bkloppenborg@epsilon:~/home/data/CHARA-NIRO$ ~/workspace/pychara/bin/redclassic-
ir ./2008_06_12/
Warning! File 2008_06_12_NOSTAR_ird_001.fit is missing a star identifier!
```

id	filename	frequency	mode	obs_time
0	2008_06_12_NOSTAR_ird_001.fit	150.0	NORM	2008-06-12 04:54:02.490
1	2008_06_12_HD_197950_ird_001.fit	150.0	NORM	2008-06-12 05:38:13.304
2	2008_06_12_HD_200775_ird_001.fit	150.0	NORM	2008-06-12 06:03:59.547
3	2008_06_12_HD_205776_ird_001.fit	150.0	NORM	2008-06-12 06:11:48.978
4	2008_06_12_HD_200775_ird_002.fit	150.0	NORM	2008-06-12 06:19:33.866
5	2008_06_12_HD_197950_ird_002.fit	150.0	NORM	2008-06-12 06:34:15.860
6	2008_06_12_HD_164031_ird_001.fit	66.0	NORM	2008-06-12 07:00:42.248
7	2008_06_12_HD_164031_ird_002.fit	100.0	NORM	2008-06-12 07:11:03.199
8	2008_06_12_HD_163296_ird_001.fit	100.0	NORM	2008-06-12 07:30:51.624
9	2008_06_12_HD_156365_ird_001.fit	100.0	NORM	2008-06-12 07:51:00.522
10	2008_06_12_HD_163296_ird_002.fit	100.0	NORM	2008-06-12 08:01:24.350
11	2008_06_12_HD_164031_ird_003.fit	100.0	NORM	2008-06-12 08:10:37.212
12	2008_06_12_HD_163296_ird_003.fit	100.0	NORM	2008-06-12 08:20:09.403
13	2008_06_12_HD_156365_ird_002.fit	100.0	NORM	2008-06-12 08:30:17.514
14	2008_06_12_HD_156365_ird_003.fit	100.0	NORM	2008-06-12 08:40:54.240
15	2008_06_12_HD_163296_ird_004.fit	100.0	NORM	2008-06-12 08:51:39.558
16	2008_06_12_HD_164031_ird_004.fit	100.0	NORM	2008-06-12 09:00:13.934
17	2008_06_12_HD_163296_ird_005.fit	100.0	NORM	2008-06-12 09:09:47.506
18	2008_06_12_HD_156365_ird_004.fit	100.0	NORM	2008-06-12 09:25:43.871
19	2008_06_12_HD_197950_ird_003.fit	150.0	NORM	2008-06-12 10:01:29.604
20	2008_06_12_HD_200775_ird_003.fit	150.0	NORM	2008-06-12 10:13:45.386
21	2008_06_12_HD_197950_ird_004.fit	150.0	NORM	2008-06-12 10:26:35.516
22	2008_06_12_HD_200775_ird_004.fit	150.0	NORM	2008-06-12 10:33:22.269
23	2008_06_12_HD_205776_ird_002.fit	150.0	NORM	2008-06-12 10:41:19.584
24	2008_06_12_HD_192985_ird_001.fit	150.0	NORM	2008-06-12 10:55:55.105
25	2008_06_12_HD_193793_ird_001.fit	150.0	NORM	2008-06-12 11:04:49.188
26	2008_06_12_HD_192985_ird_002.fit	150.0	NORM	2008-06-12 11:12:56.283
27	2008_06_12_HD_193793_ird_002.fit	150.0	NORM	2008-06-12 11:20:22.964
28	2008_06_12_HD_192985_ird_003.fit	150.0	NORM	2008-06-12 11:29:13.719

```
None
Choose range of IDs to reduce (e.g. 1-5): 1-5
```

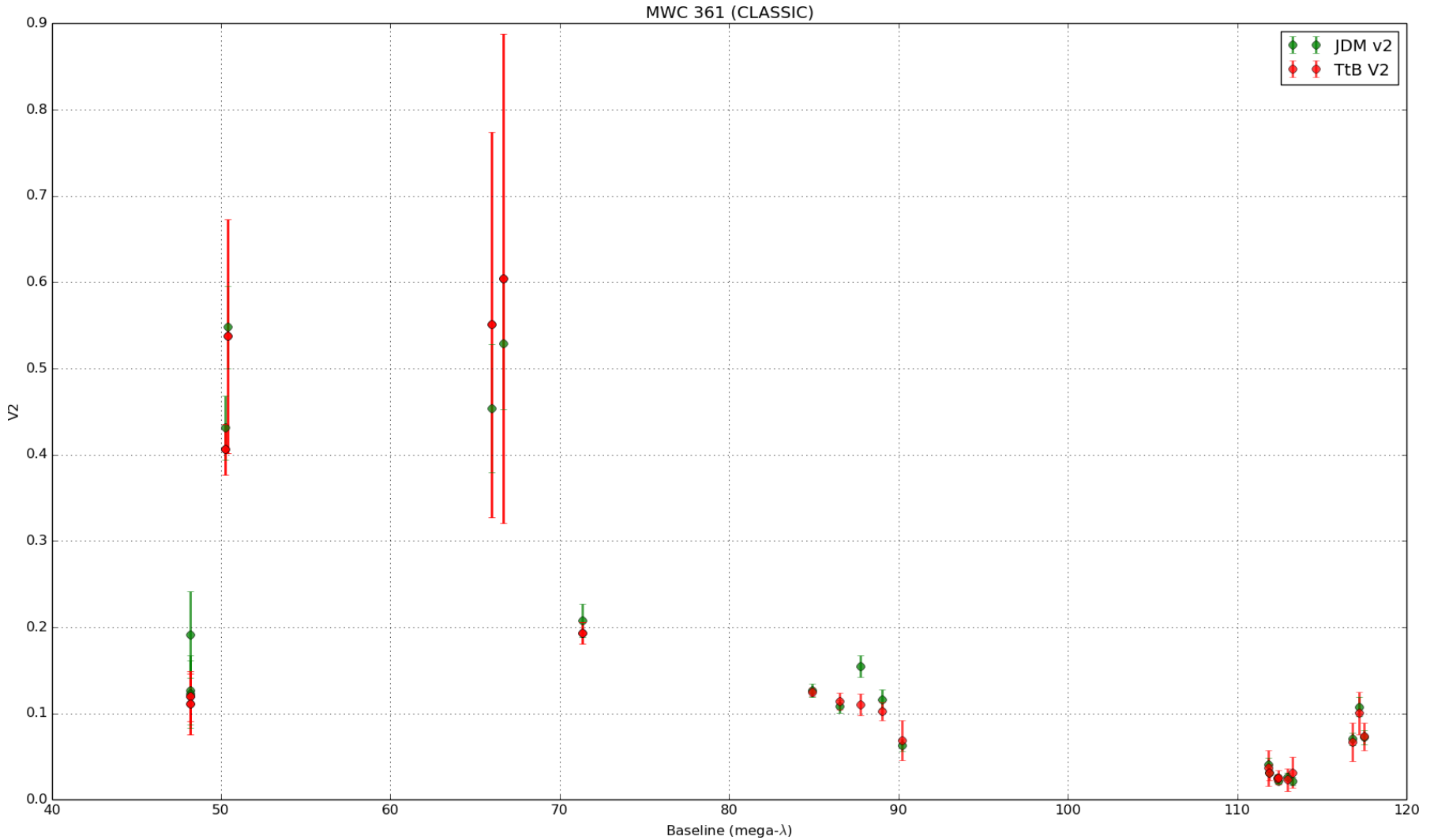


JDM CLASSIC pipeline



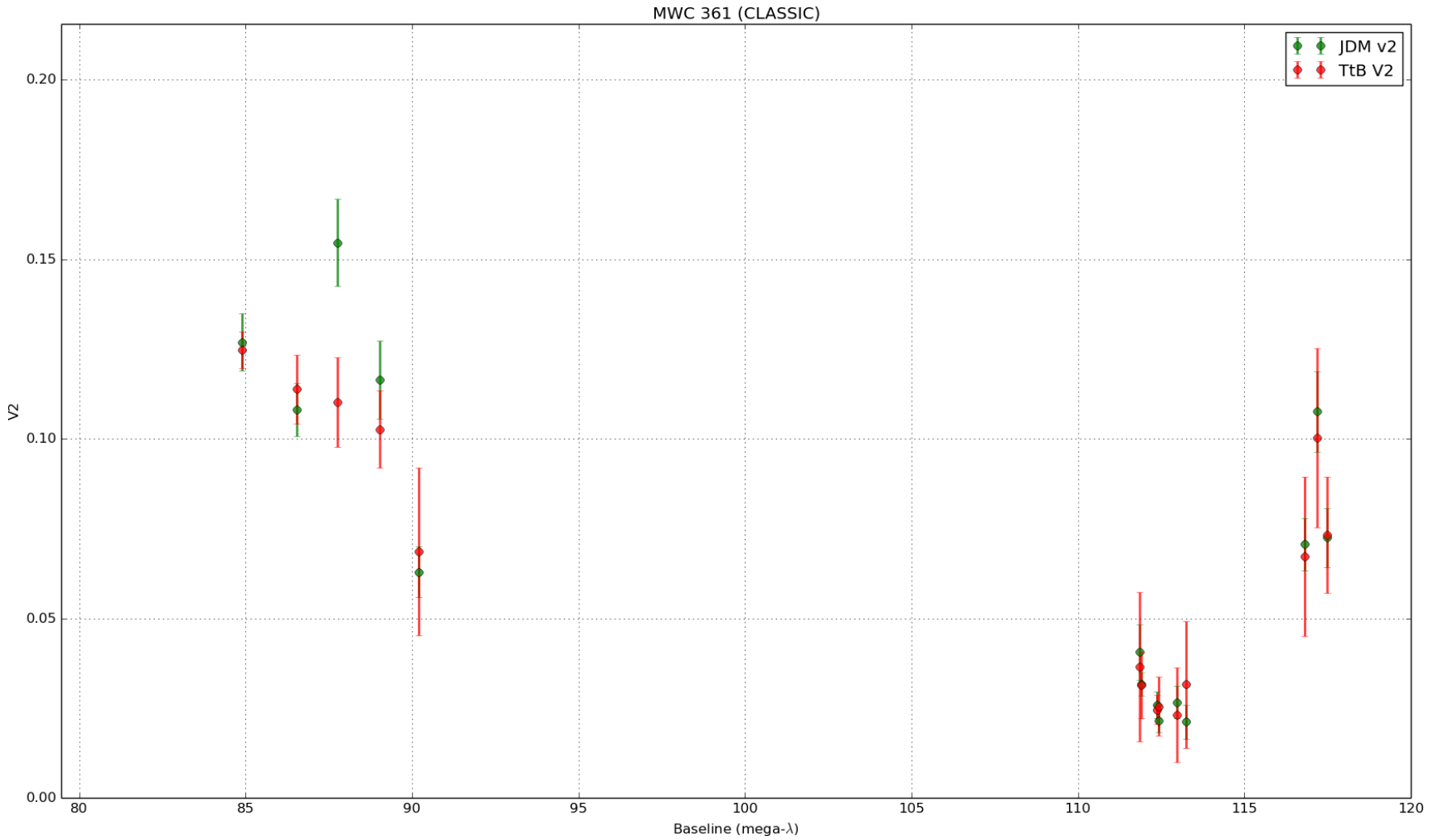


MWC 361 (K = 4.6)





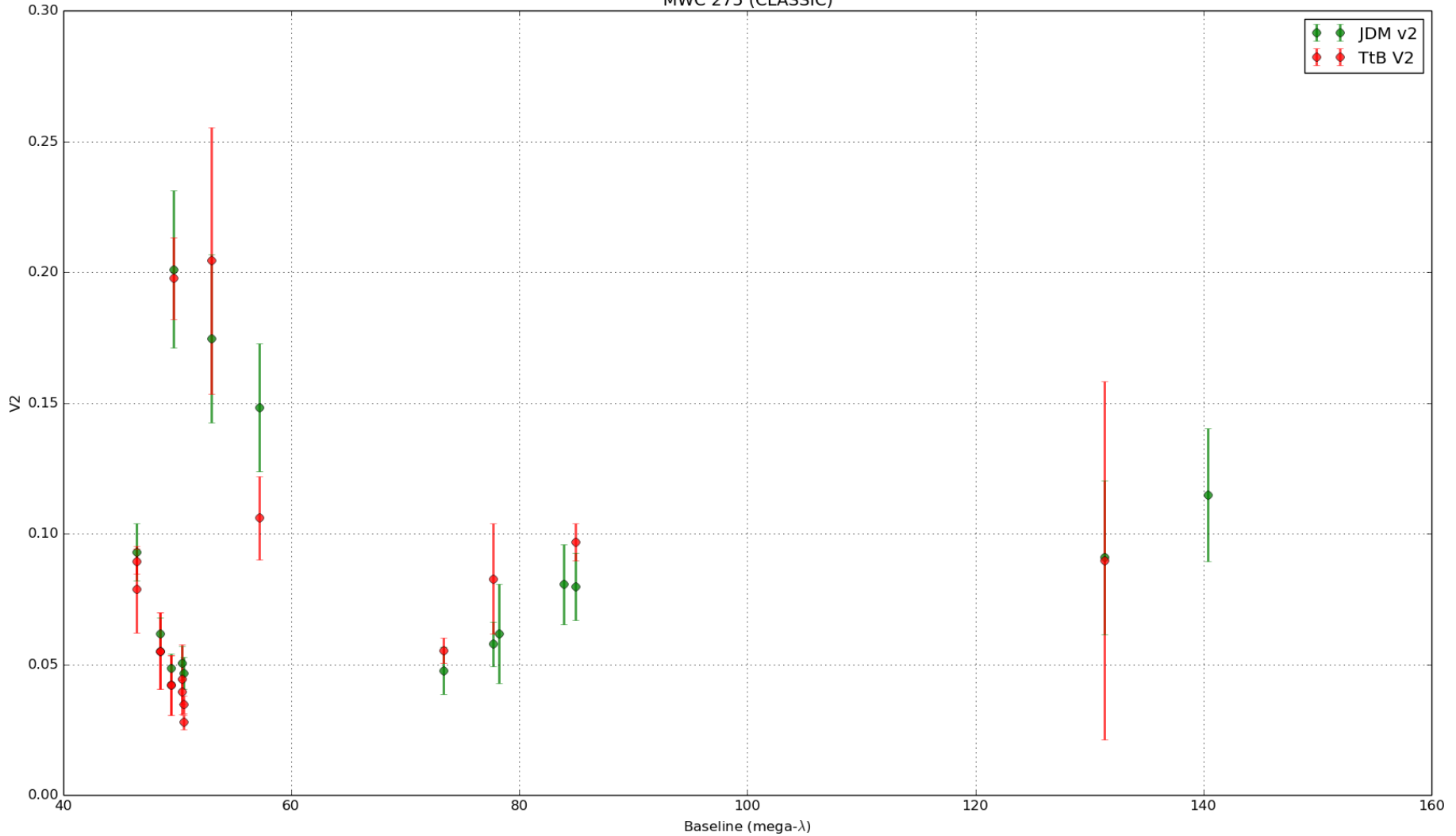
MWC 361 (K = 4.6) - zoomed





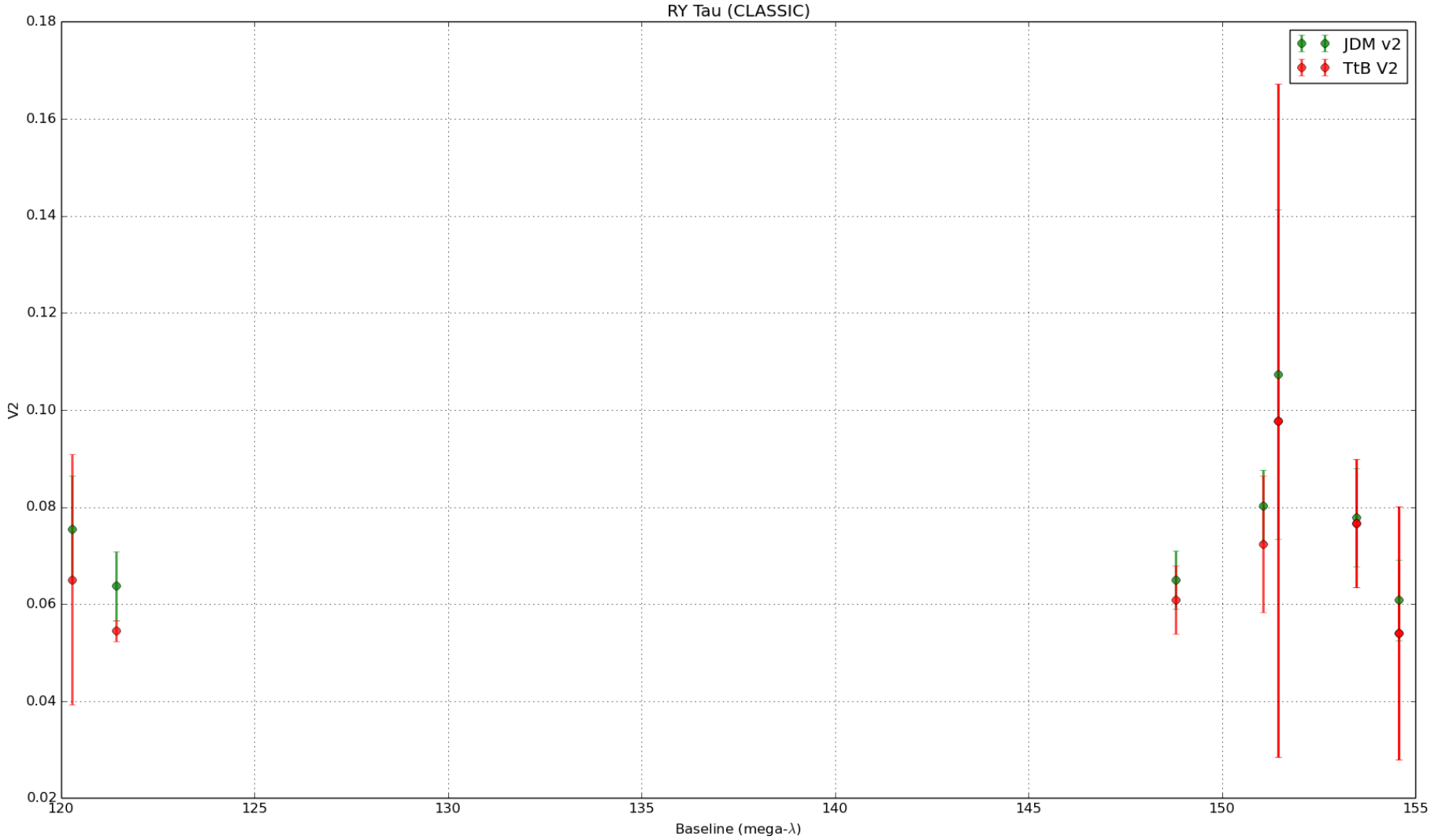
MWC 275 (K = 4.8)

MWC 275 (CLASSIC)



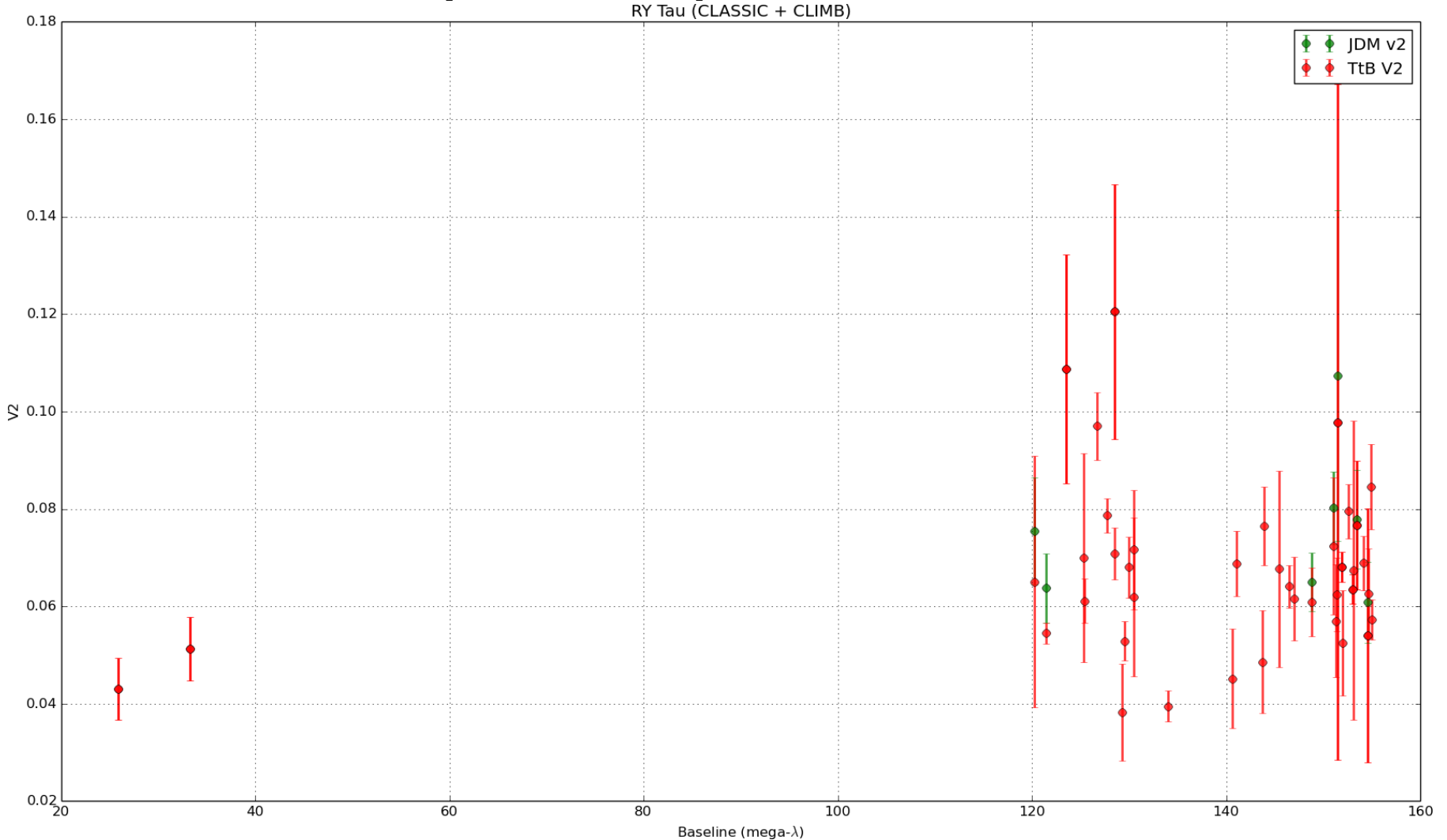


RY Tau (K = 5.4)





RY Tau (K = 5.4) CLASSIC + CLIMB



Observatoire de la COTE d'AZUR

Max-Planck-Institut für Radioastronomie





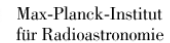
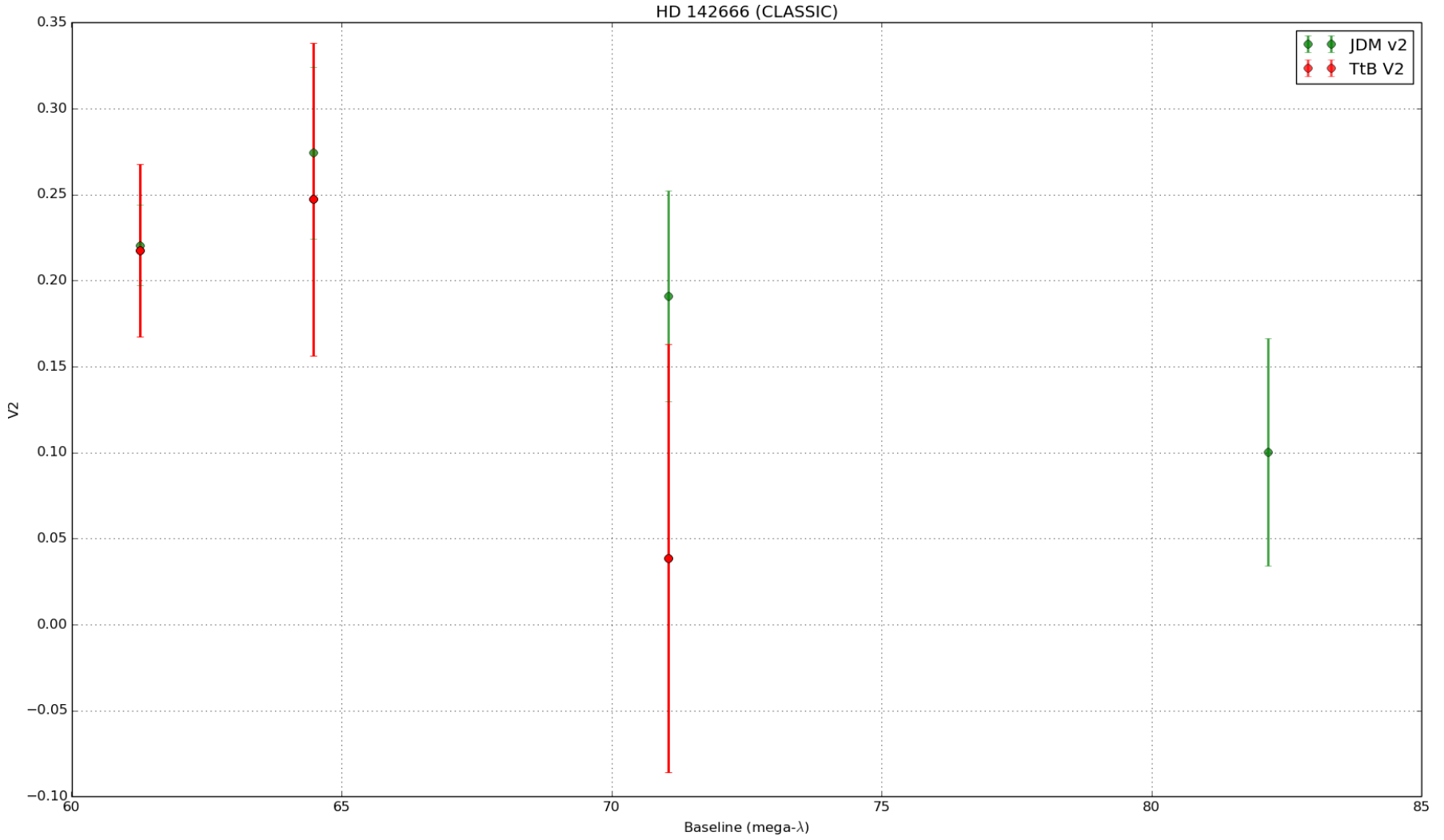
V1295 Aql (K=5.9)

v1295 Aql (CLASSIC)



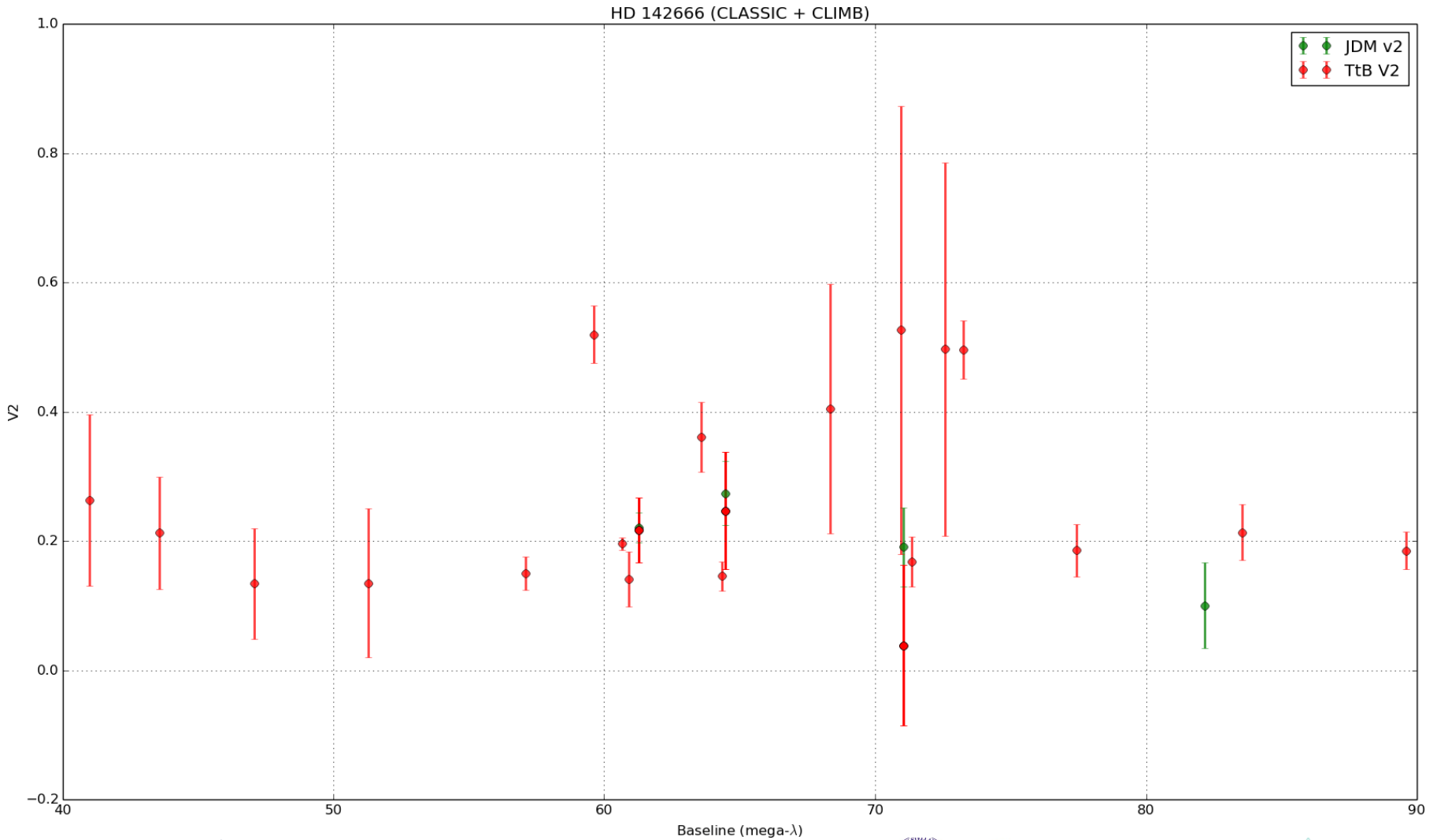


HD 142666 (K=6.1)



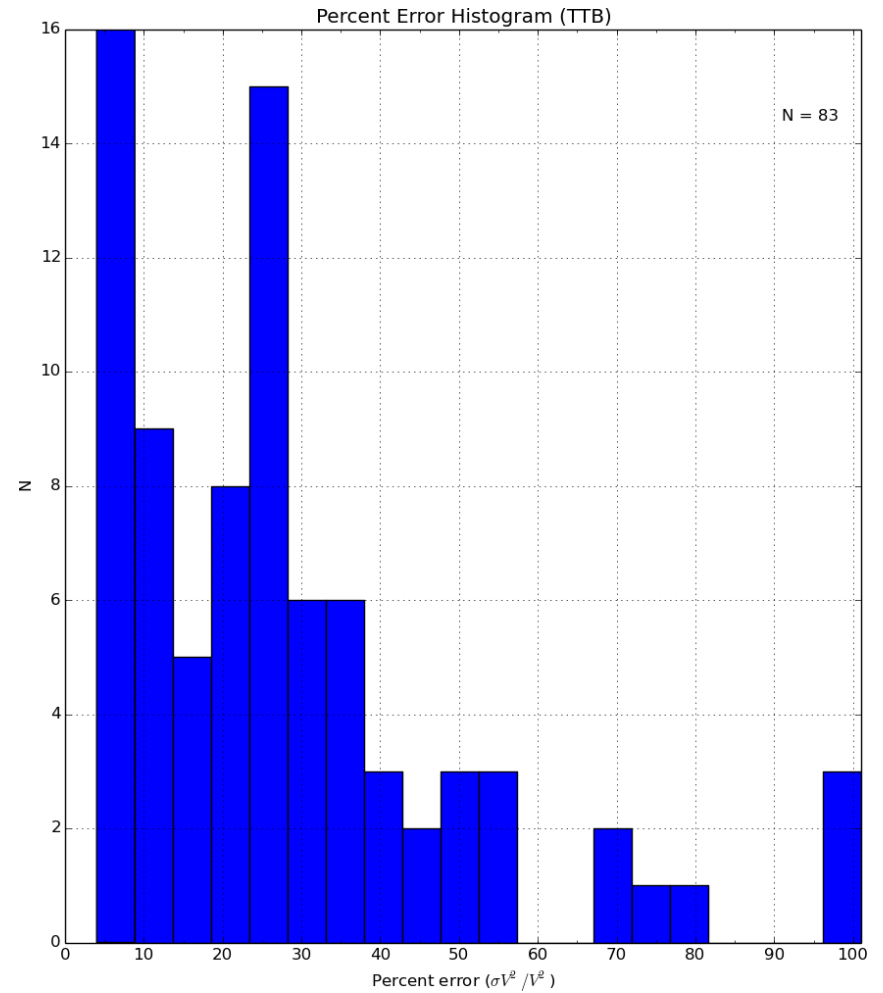
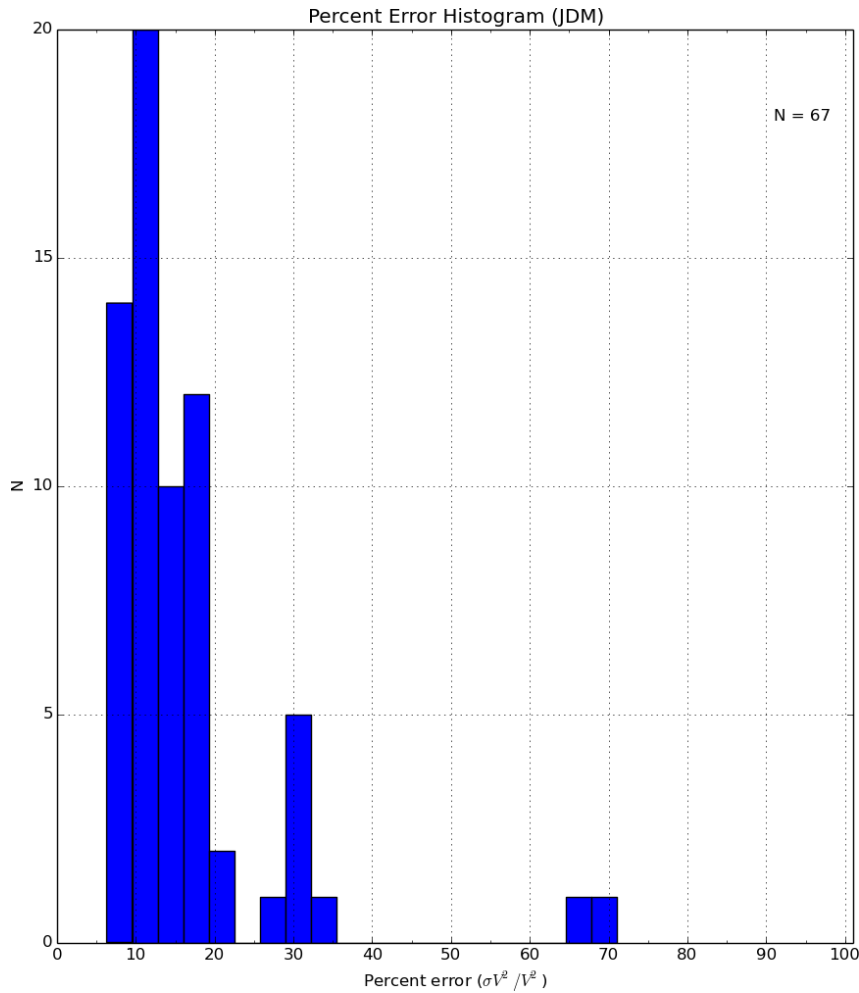


HD 142666 (K=6.1) CLASSIC+CLIMB



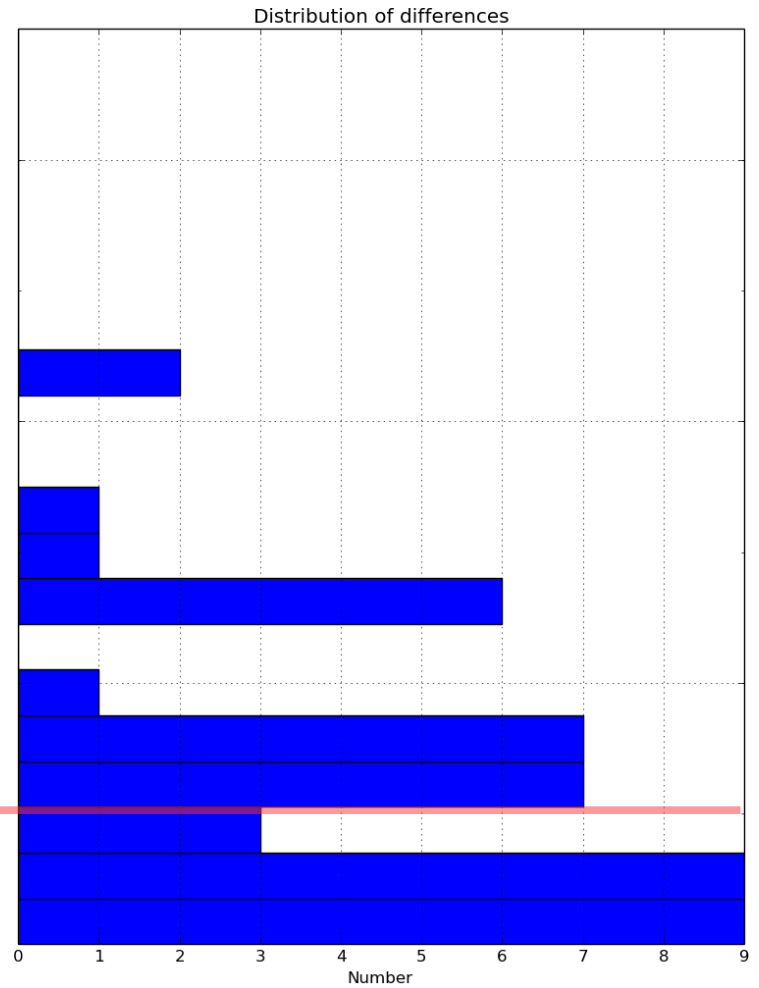
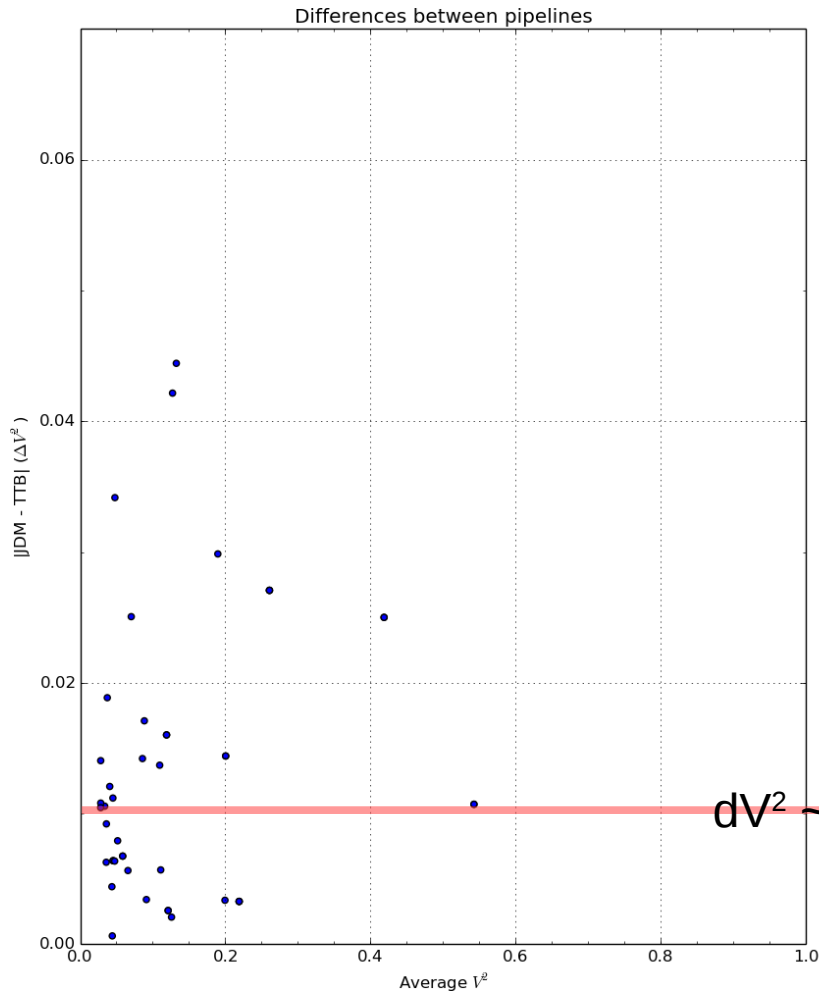


Pipeline error predictions





Differences between pipelines





Conclusions

- Both pipelines produce similar nominal values for low flux objects.
- TTB pipeline:
 - Uncertainties extremely scattered, often conservative
 - Minimum uncertainties seem too good
 - Needs a few improvements, easily scripted, easy to use
 - Pipelines working for both CLASSIC and CLIMB
- JDM pipeline:
 - Uncertainties similar throughout a night
 - Minimum uncertainties clearly enforced
 - Many more diagnostic screens, easy to use
 - No CLIMB pipeline (yet)
- Comparison suggests minimum $\sigma V^2 \sim 0.01 - 0.02$ for $V^2 < 0.3$