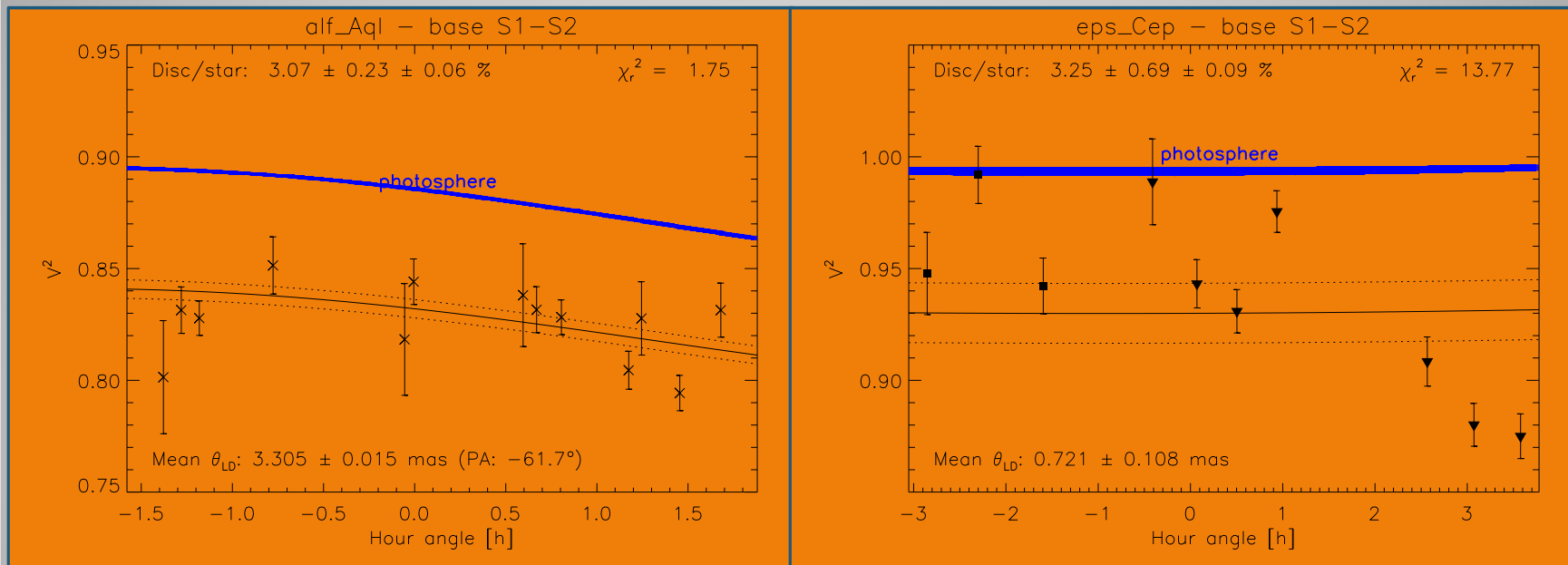


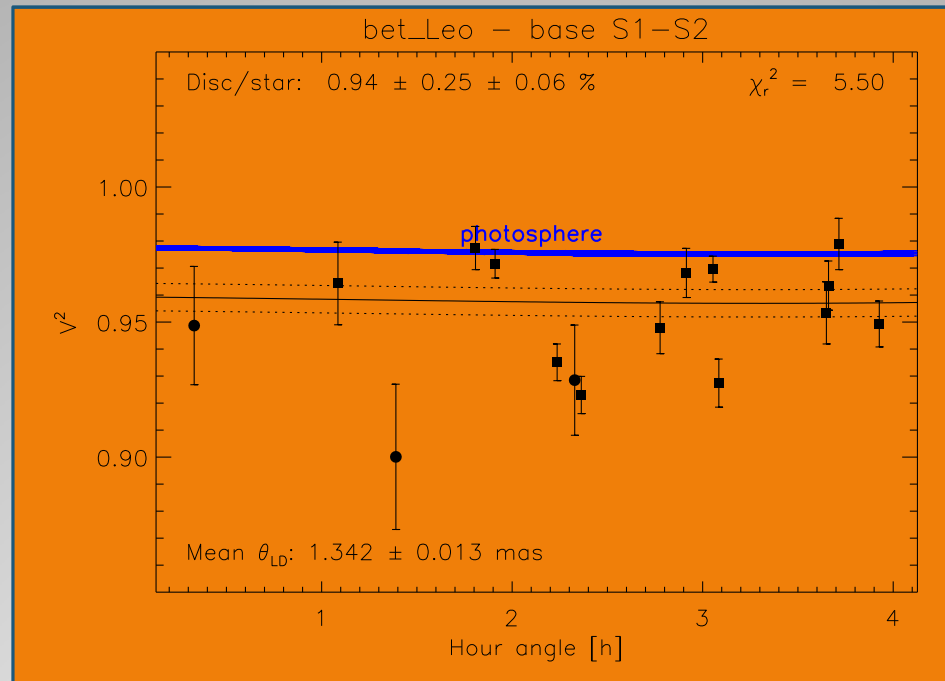
Unveiling new stellar companions from the EXOZODI survey

Lindsay Marion
Université de Liège

Disk or companion?



Absil et al. 2013






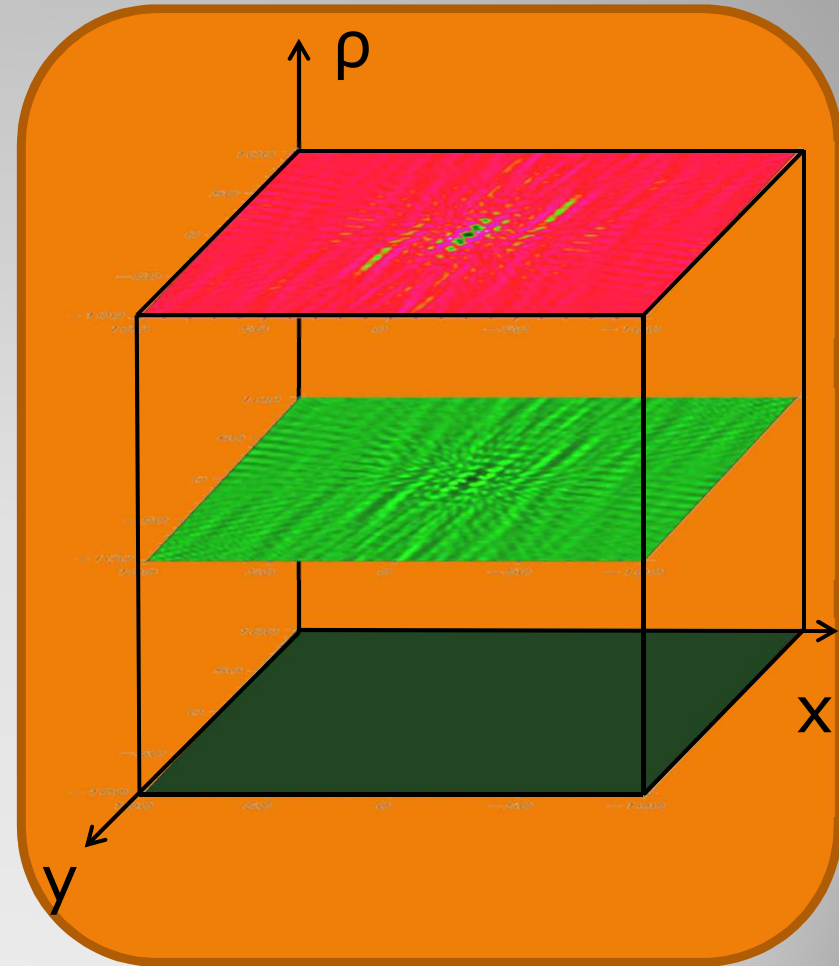
Absil et al. 2013

- Hard to conclude using only V^2
- Ways to discriminate companions?
 - Spectroscopic data
 - AO/coronagraphic data
 - Other interferometric data

- Compute a binary model & compare it to data both for CP & V2 using a χ^2 test

$$\chi_{comb}^2 = \sum_k \frac{(V_{modk,\lambda}^2 - V_{datak,\lambda}^2)^2}{\sigma_{V^2,k,\lambda}^2} + \sum_k \frac{(CP_{modk,\lambda} - CP_{datak,\lambda})^2}{\sigma_{CP,k,\lambda}^2}$$

- Same method as O. Absil in 2011, but...
- Discriminate between companion & disk
 - Detection in V2 only  disk
 - Detection in CP only  to be checked
 - Detection in CP+V2  companion
- Provide better systematic rejection of false positive detection
- 3σ criterion of detection



Results according to 2012 data

Name	Date	Significance (cp+v2) -- σ	Spectral type	Best position In the FoV		Best fit Contrast -- (%)
				$\delta\theta$ (mas)	α (deg)	
HD4150	17-12-12	7.7	A0IV	90.5	-84.0	2.3 \pm 0.4
	08-08-13	29.3		96.8	-99.2	4.1 \pm 0.4
HD16555	18-12-12	105.3	A6V	78.7	-40.9	51.3 \pm 4.3
HD29388	16-12-12	111.9	A6V	11.1	-71.6	3.0 \pm 0.2
HD202730	24-07-12	12.2	A5V	61.7	21.4	87.4 \pm 14.1

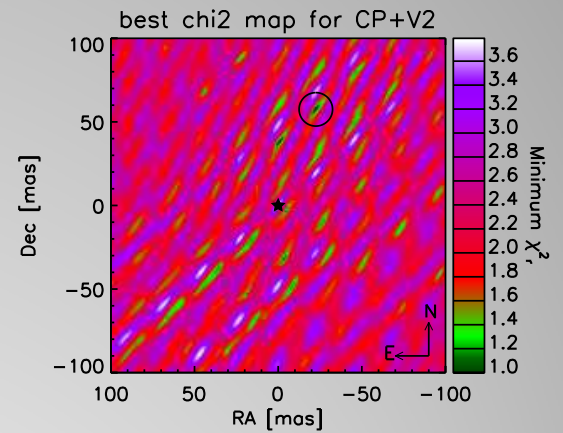
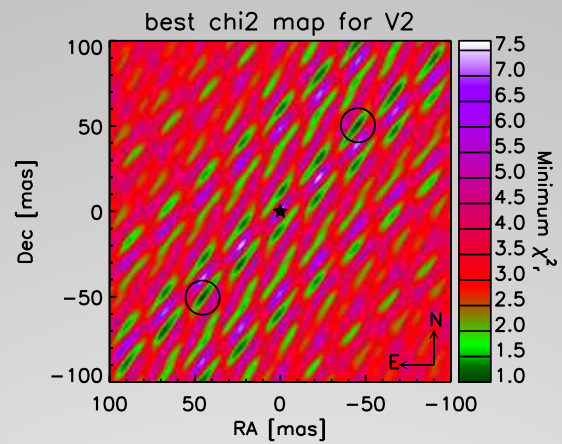
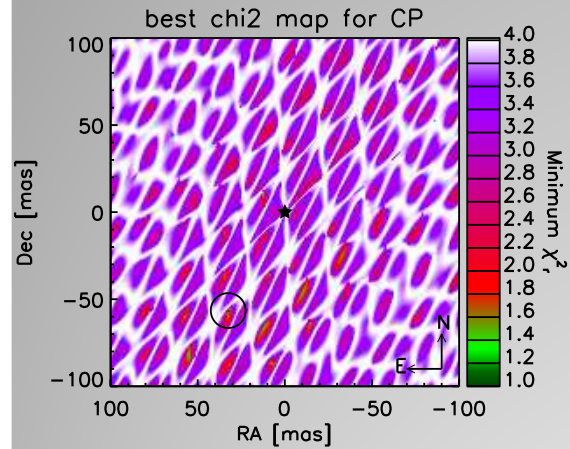


Follow up in october 2014 and...

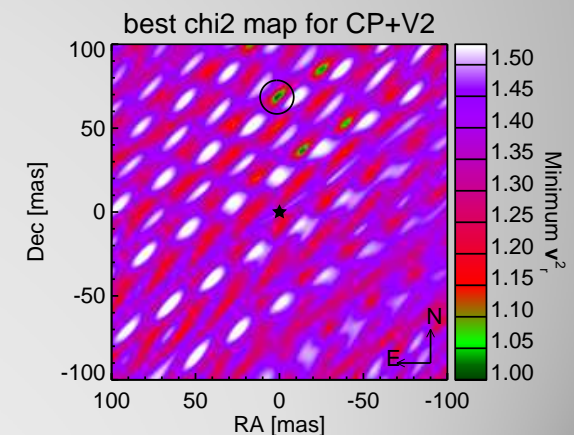
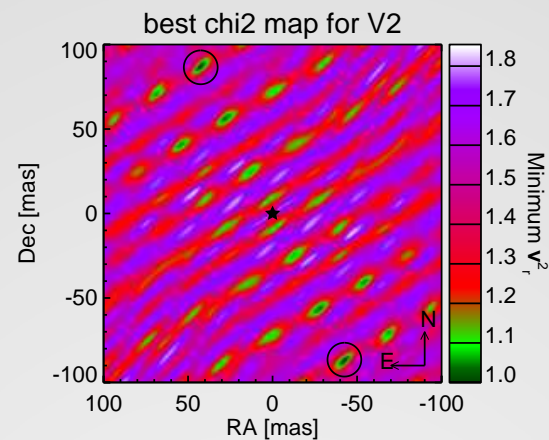
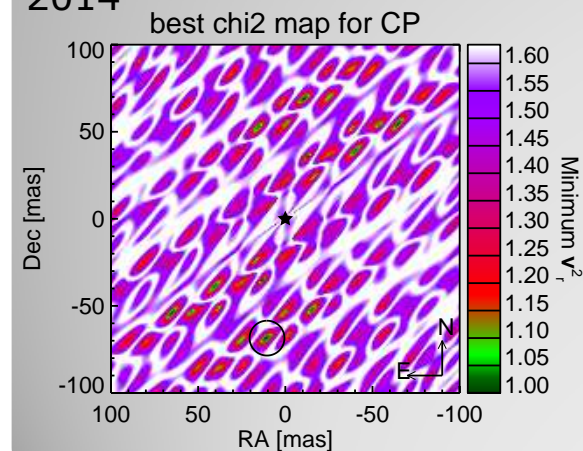
Name	Date	Significance (cp+v2) -- σ	Spectral type	Best position In the FoV		Best fit Contrast -- (%)
				$\delta\theta$ (mas)	α (deg)	
HD4150	17-12-12	7.7	A0IV	90.5	-84.0	2.3±0.4
	08-08-13	29.3		96.8	-99.2	4.1±0.4
	12-10-14	15.0		98.5	68.2	4.1±0.5
HD16555	18-12-12	105.3	A6V	78.7	-40.9	51.3±4.3
	12-10-14	843.9		-53.9	154.1	64.8±5.0
HD29388	16-12-12	111.9	A6V	11.1	-71.6	3.0±0.2
	12-10-14	65.3		12.7	48.2	2.7±0.3
HD202730	24-07-12	12.2	A5V	61.7	21.4	87.4±14.1
	12-10-14	3.1		68.5	1.2	0.4±0.1
HD219402	13-10-14	8.6	A3V	59.5	-74.9	20.9±4.8

What happened with HD202730 ?

2012

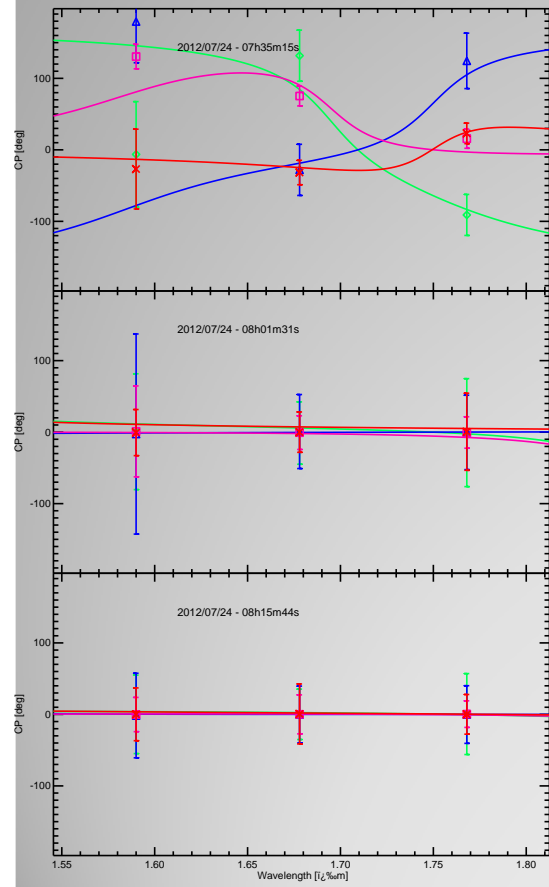


2014

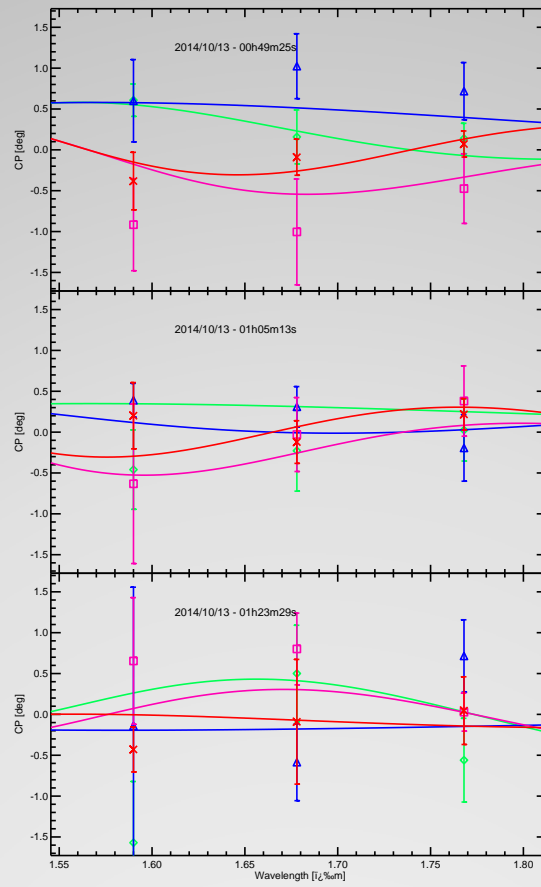


➔ We asked for another observation in december 2014...Still nothing

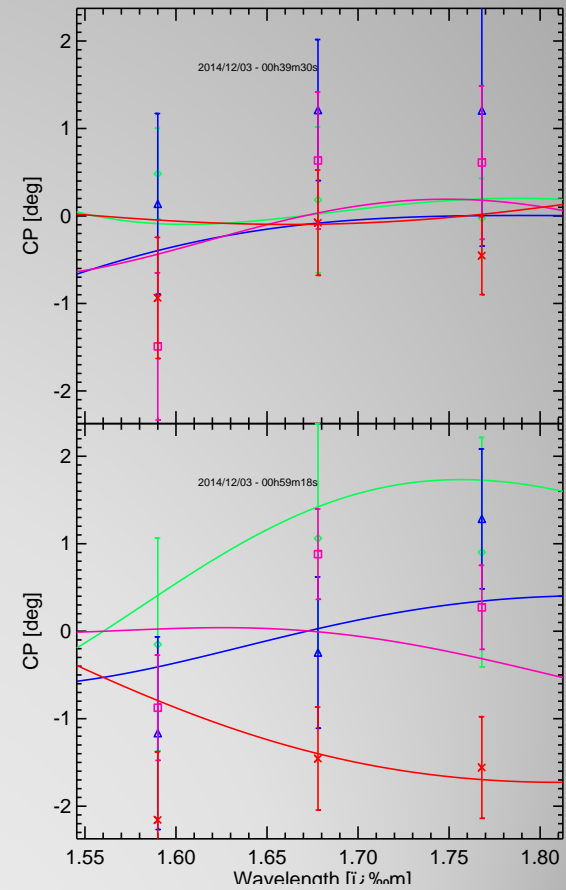
Dec 2012



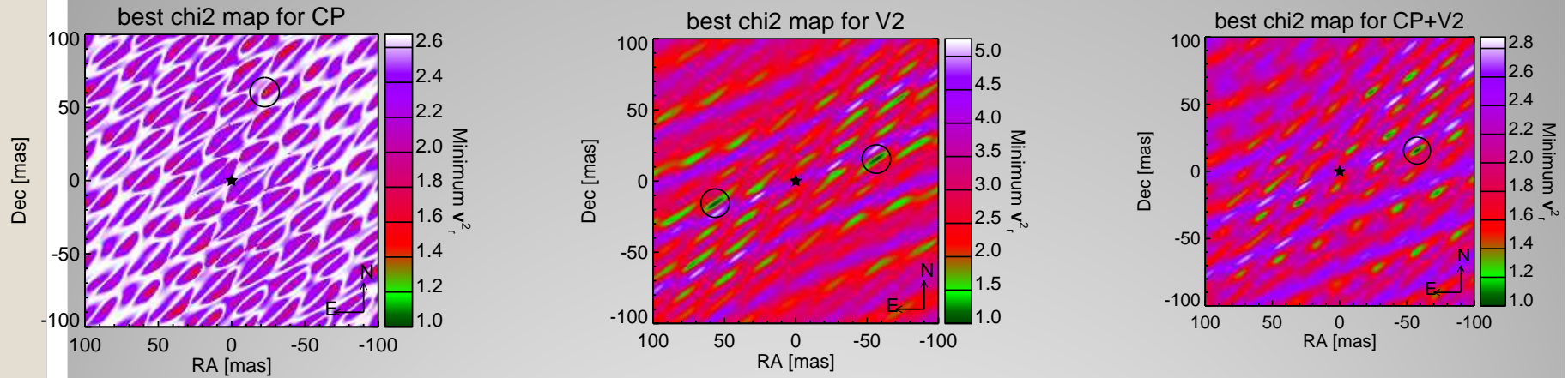
Oct 2014



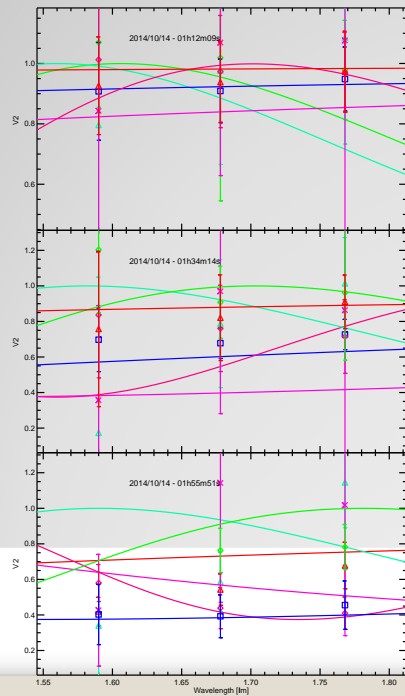
Dec 2014



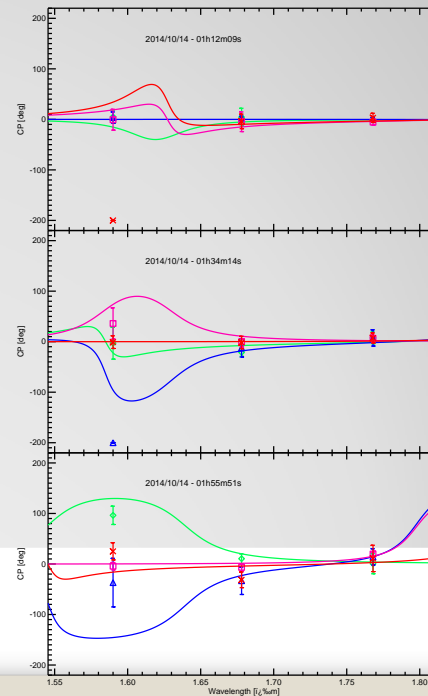
The new detection : HD219402



V2 =



CP =



Thank you for your attention!