

# KIC 004556468

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004556468-01	OBS	4491.01	114.335091	216.801130	240.6	13.991	10.4	10.5	1.32	5802	2.19	8.04

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004556468-01	OBS	PC	0.94	0	0	0	0	NO_COMMENT

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

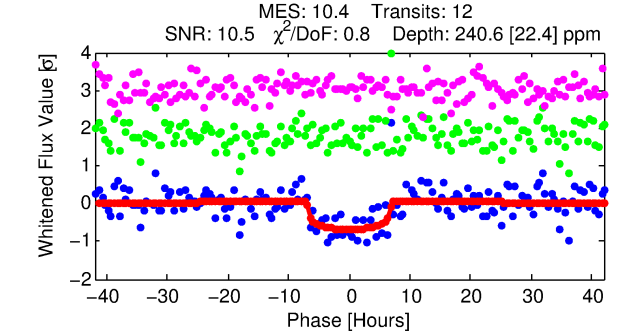
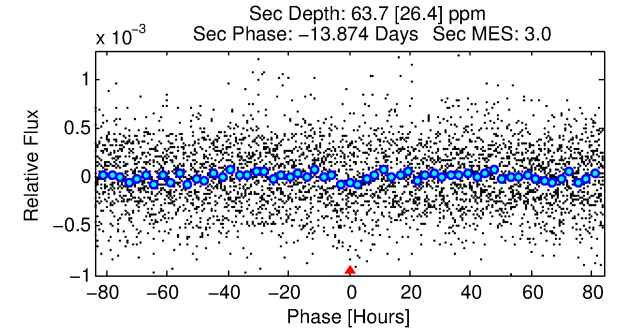
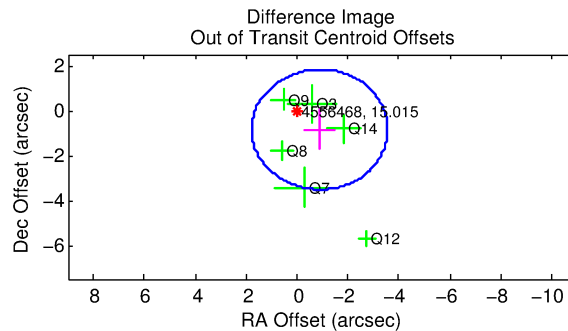
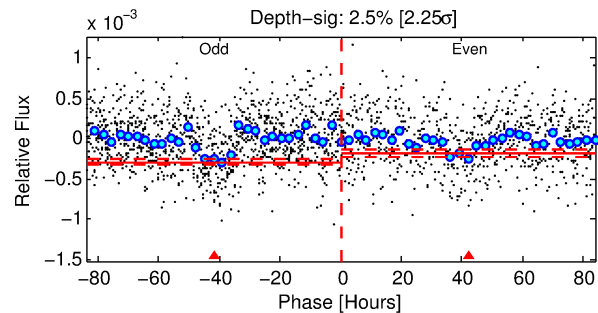
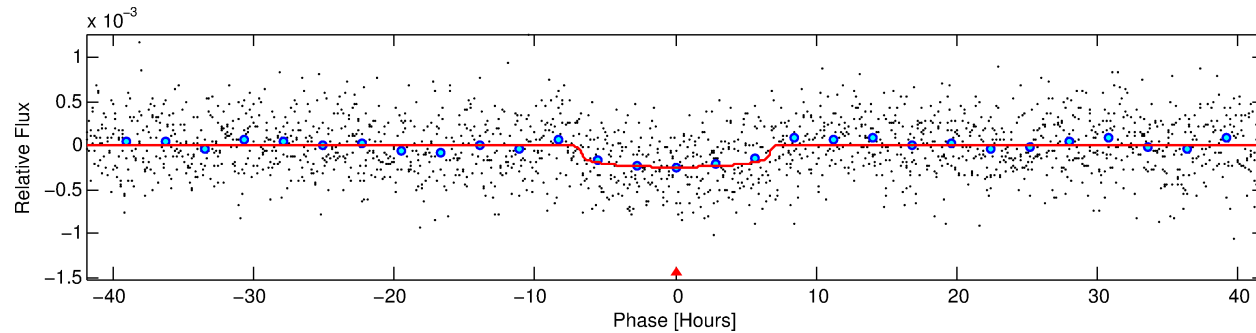
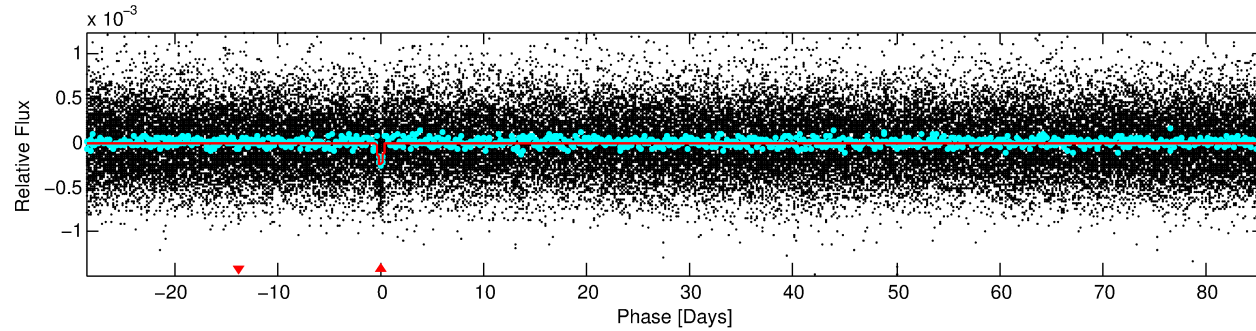
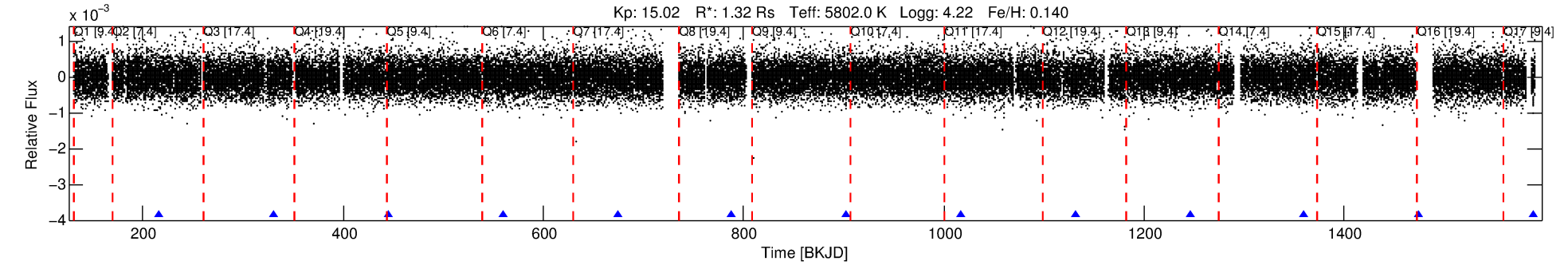
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004556468-01

No Significant Match Found

# DV One-Page Summary

KIC: 4556468 Candidate: 1 of 1 Period: 114.335 d  
KOI: K04491.01 Corr: 0.946



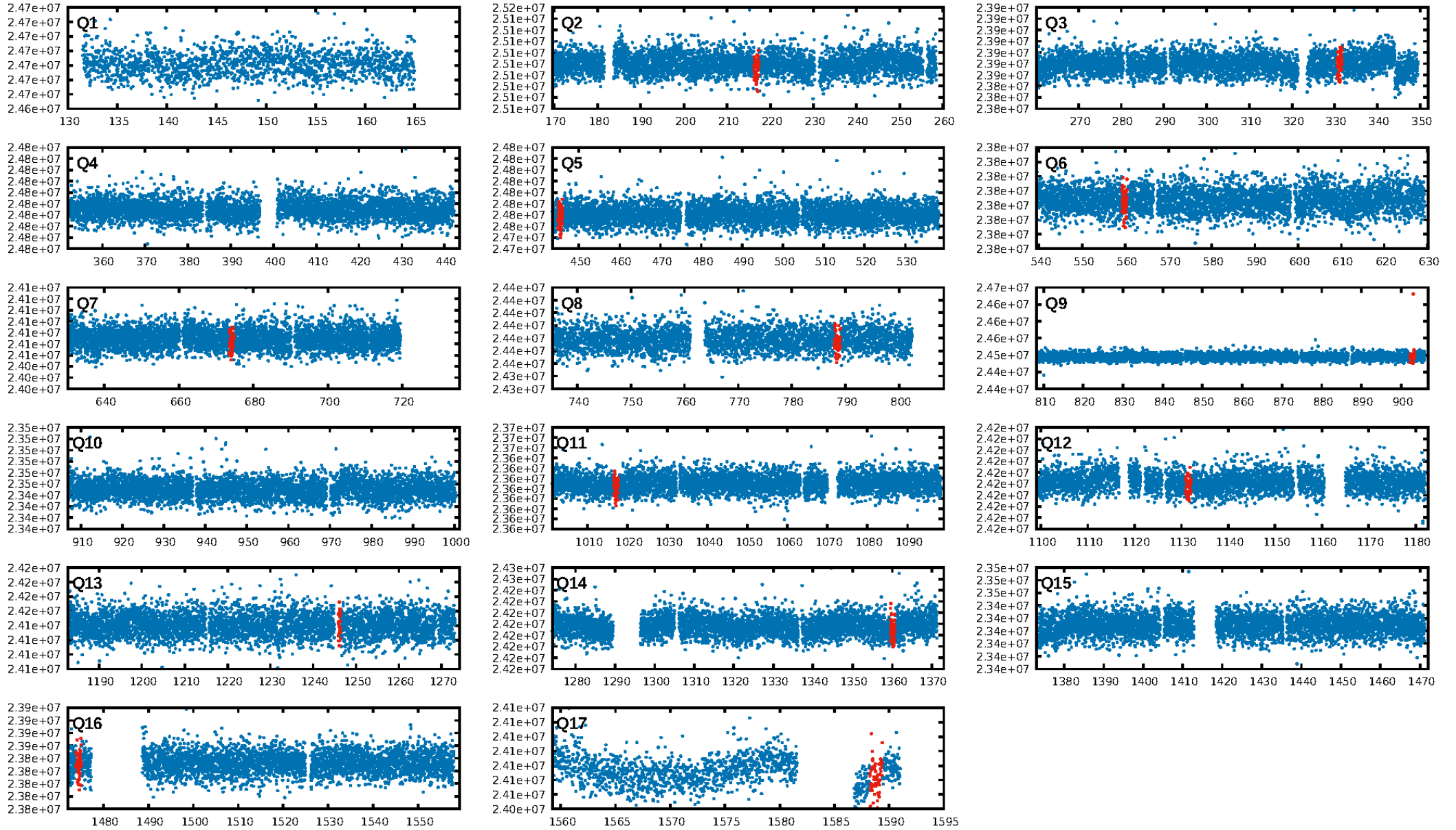
## DV Fit Results:

Period = 114.33509 [0.00282] d  
Epoch = 216.8011 [0.0185] BKJD  
Rp/R\* = 0.0152 [0.0064]  
a/R\* = 45.01 [83.16]  
b = 0.71 [1.28]  
Seff = 8.04 [2.24]  
Teq = 429 [30] K  
Rp = 2.19 [0.99] Re  
a = 0.4677 [0.0784] AU  
Ag = 1600.27 [1561.57] [1.02 $\sigma$ ]  
Teff = 4199 [985] K [3.82 $\sigma$ ]

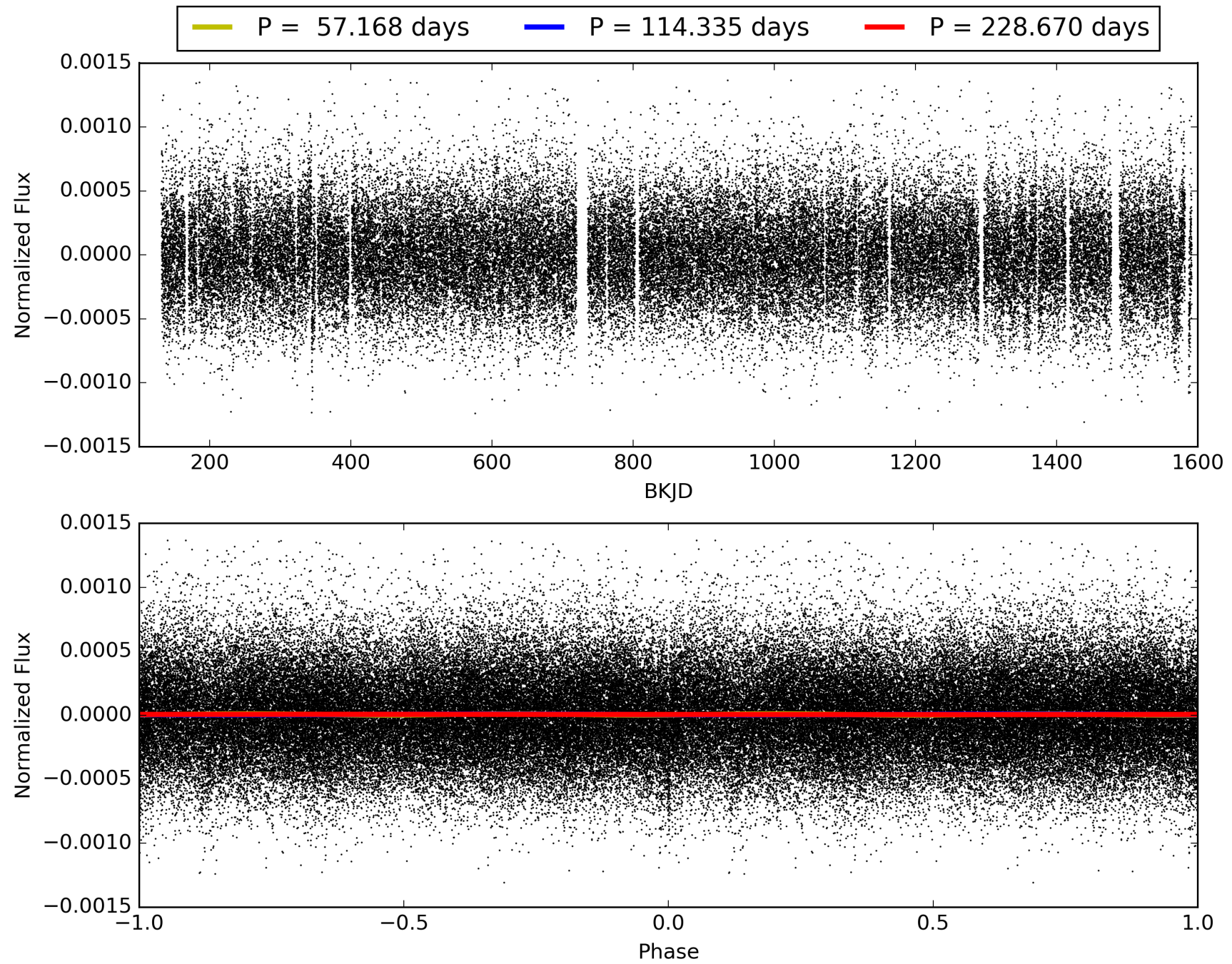
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 92.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.16e-22  
RollingBand-fgt: 1.00 [11/11]  
GhostDiagnostic-chr: 2.921  
Centroid-sig: 76.6%  
Centroid-so: 0.702 arcsec [0.56 $\sigma$ ]  
OotOffset-rm: 1.229 arcsec [1.38 $\sigma$ ]  
KicOffset-rm: 1.344 arcsec [1.40 $\sigma$ ]  
OotOffset-st: 1/2/2/1 [6]  
KicOffset-st: 1/2/2/1 [6]  
DiffImageQuality-fgm: 0.50 [3/6]  
DiffImageOverlap-fno: 1.00 [11/11]

# TCE 004556468-01, PDC Light Curves

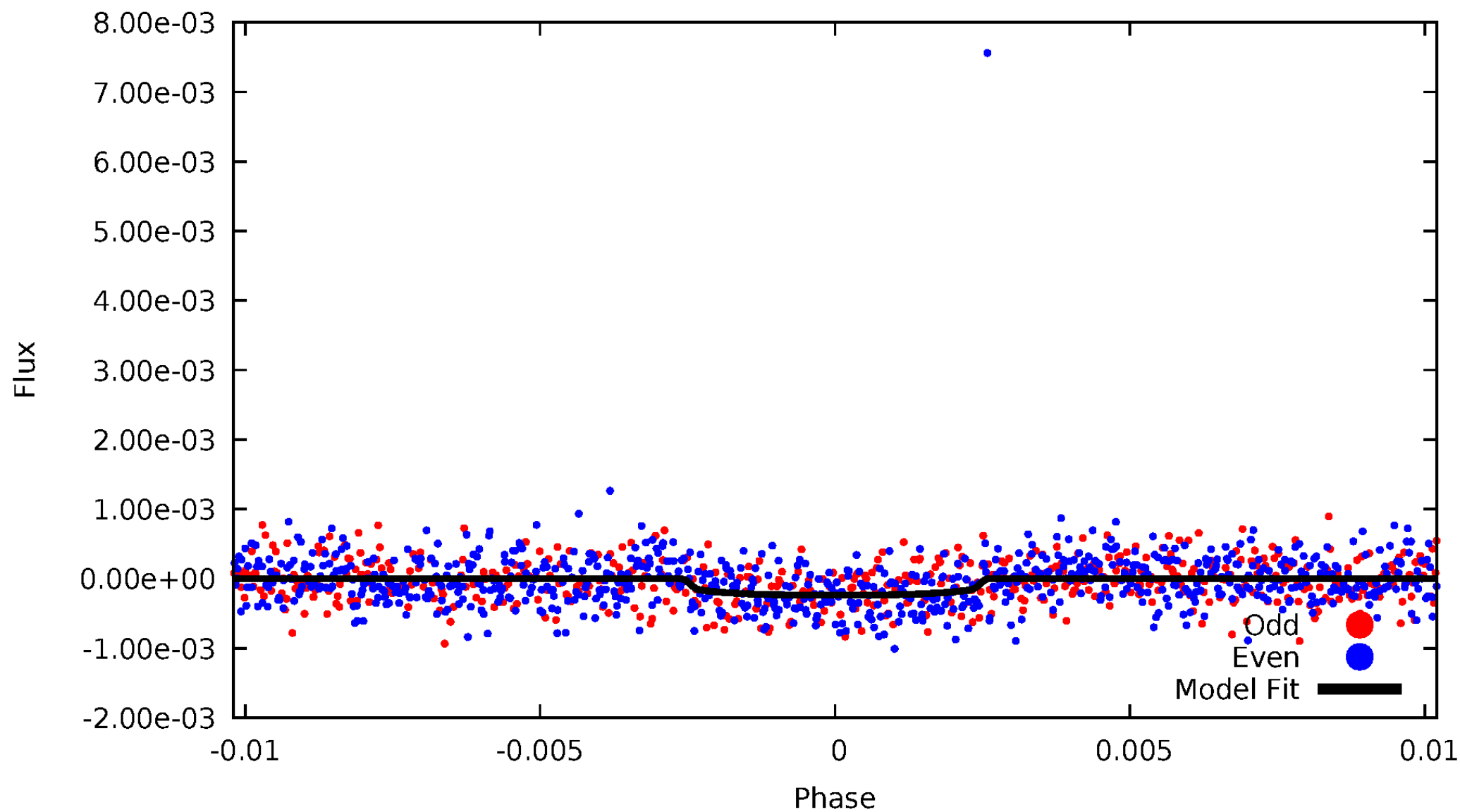


TCE 004556468-01



# DV Odd/Even

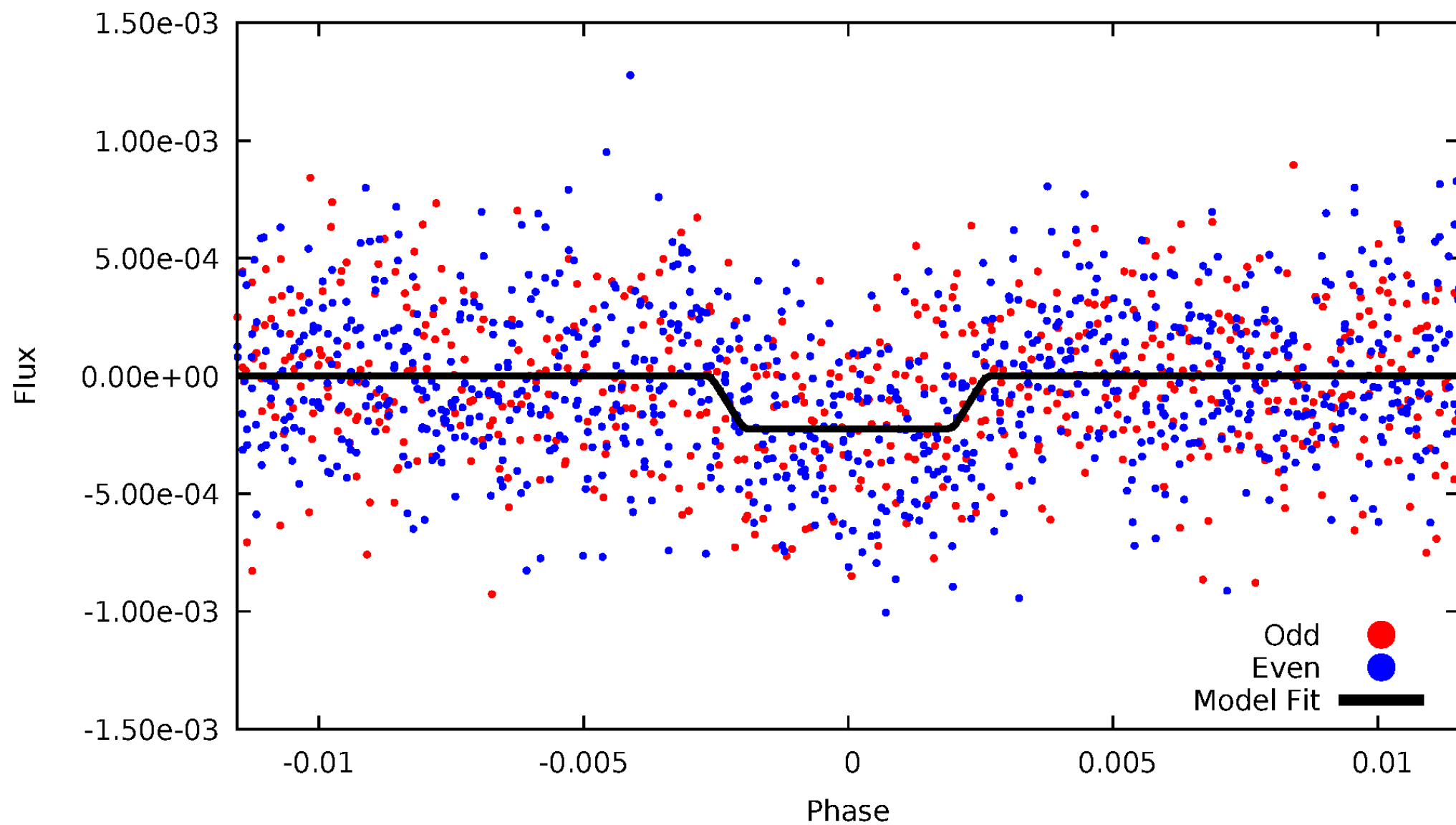
TCE 004556468-01





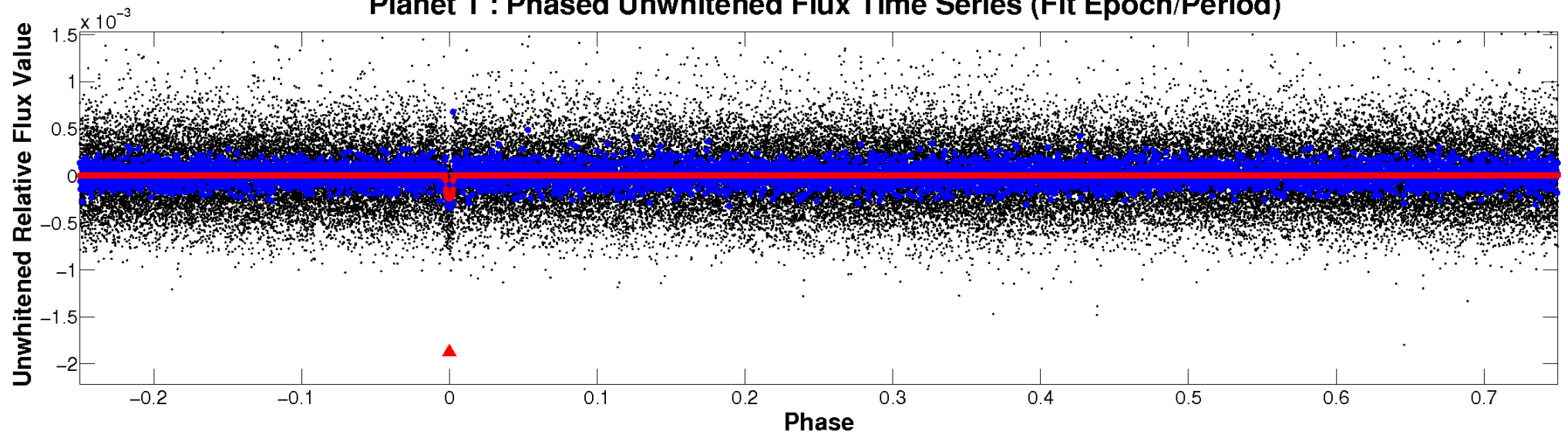
# ALT Odd/Even

TCE 004556468-01

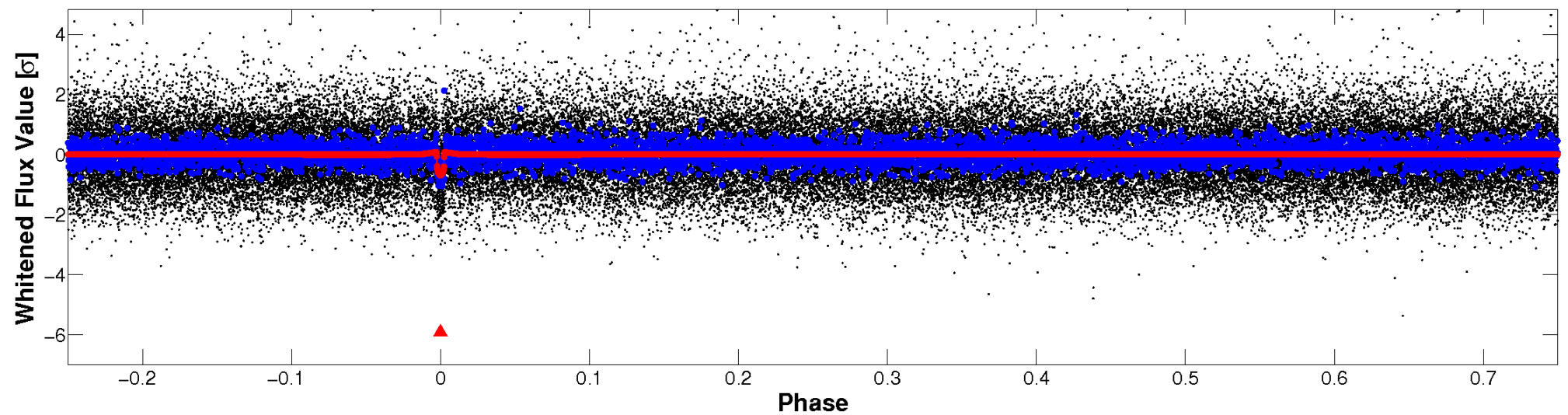


# Non-Whitened Vs. Whitened Light Curve

**Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**

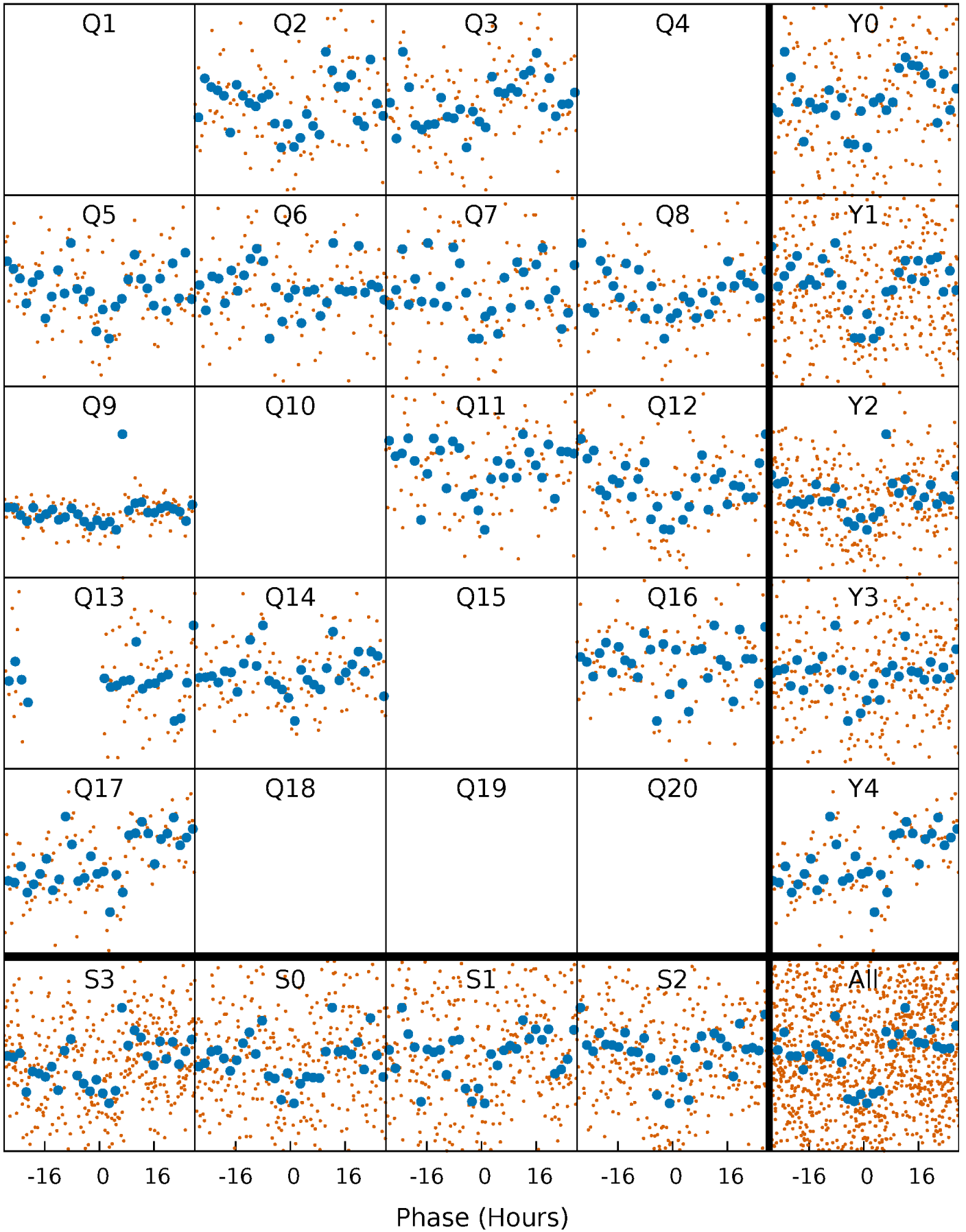


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

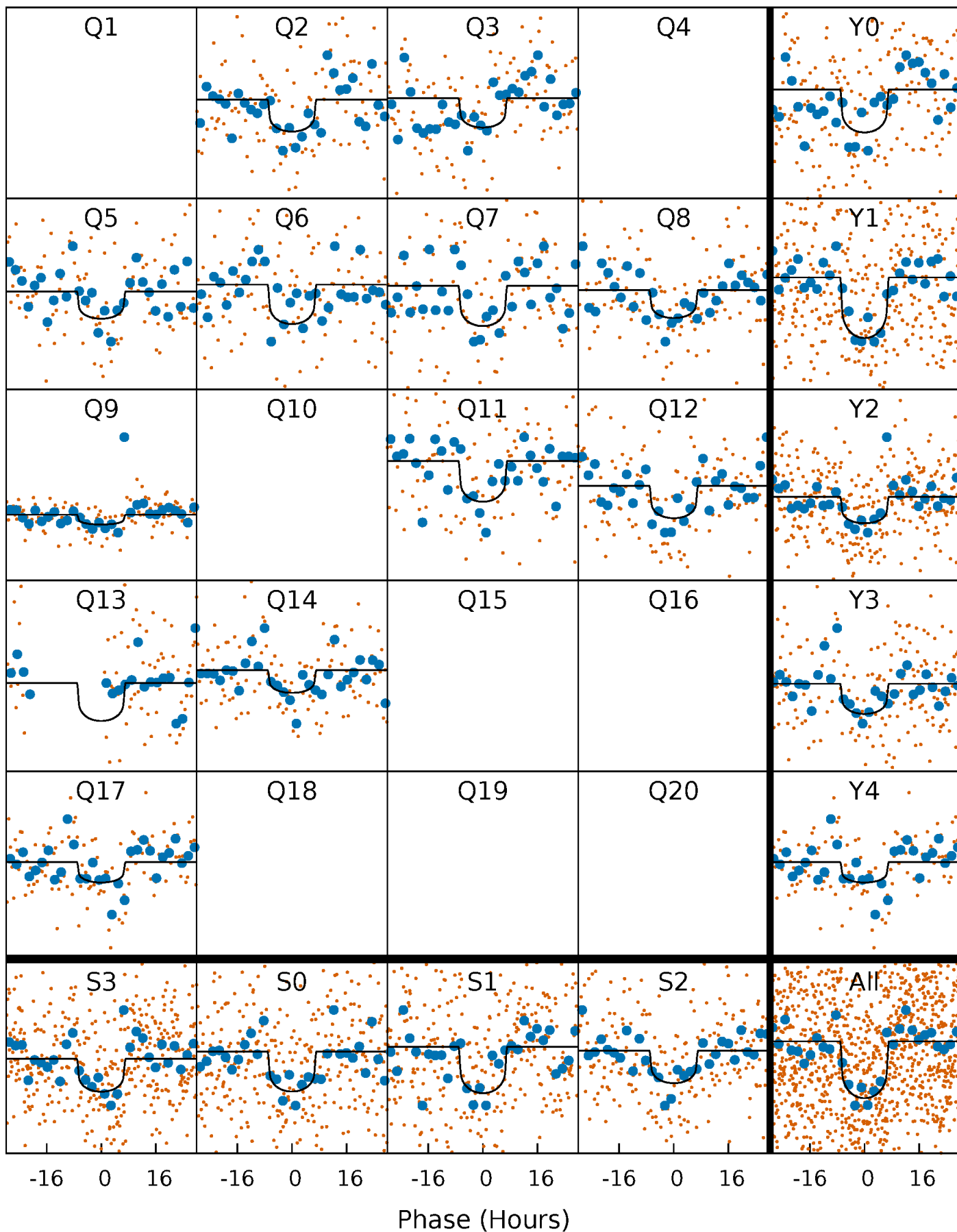
TCE 004556468-01 P=114.335091 Days  $T_0=216.801130$  (BKJD)





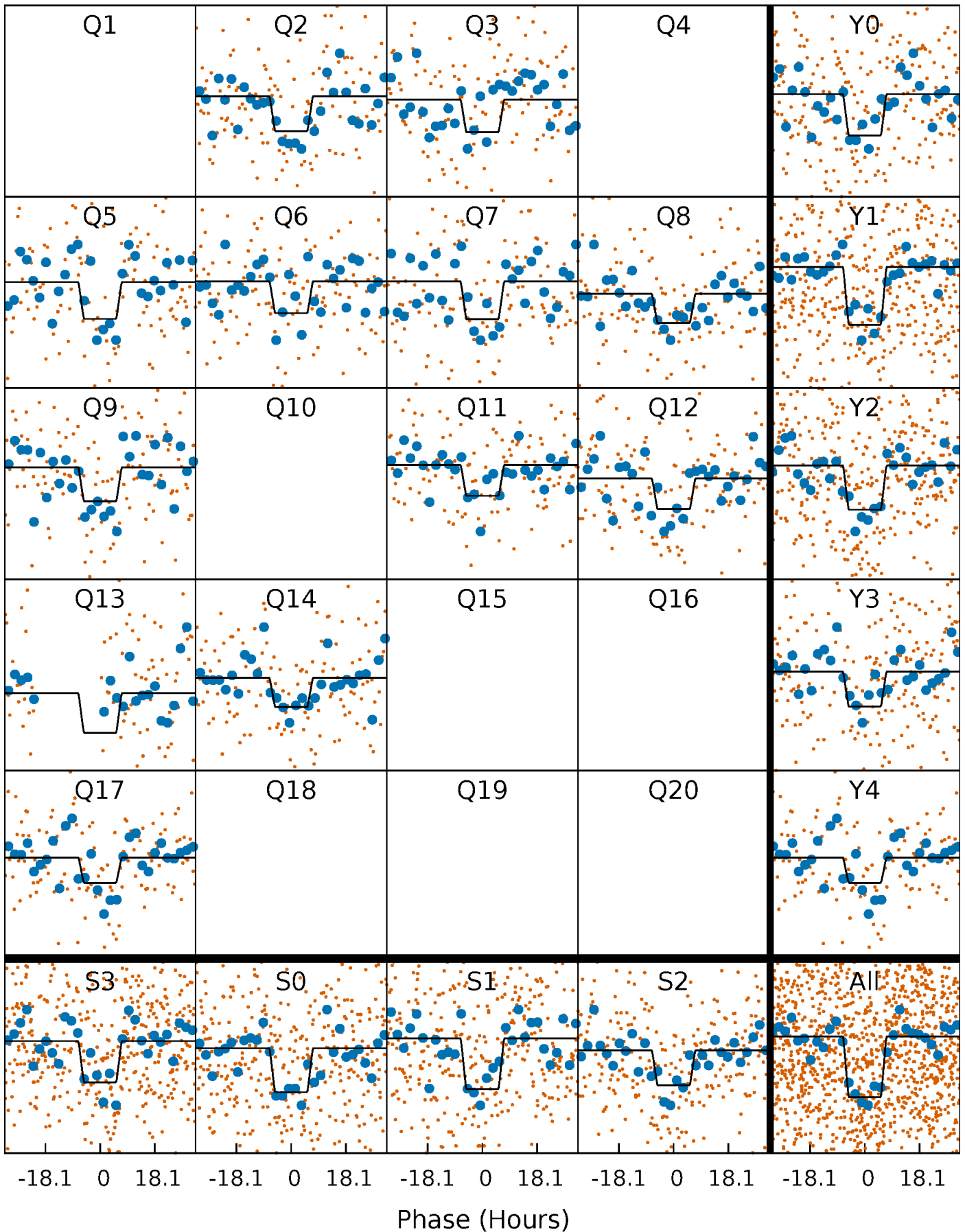
# DV Quarter-Phased Transit Curves

TCE 004556468-01 P=114.335091 Days  $T_0=216.801130$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

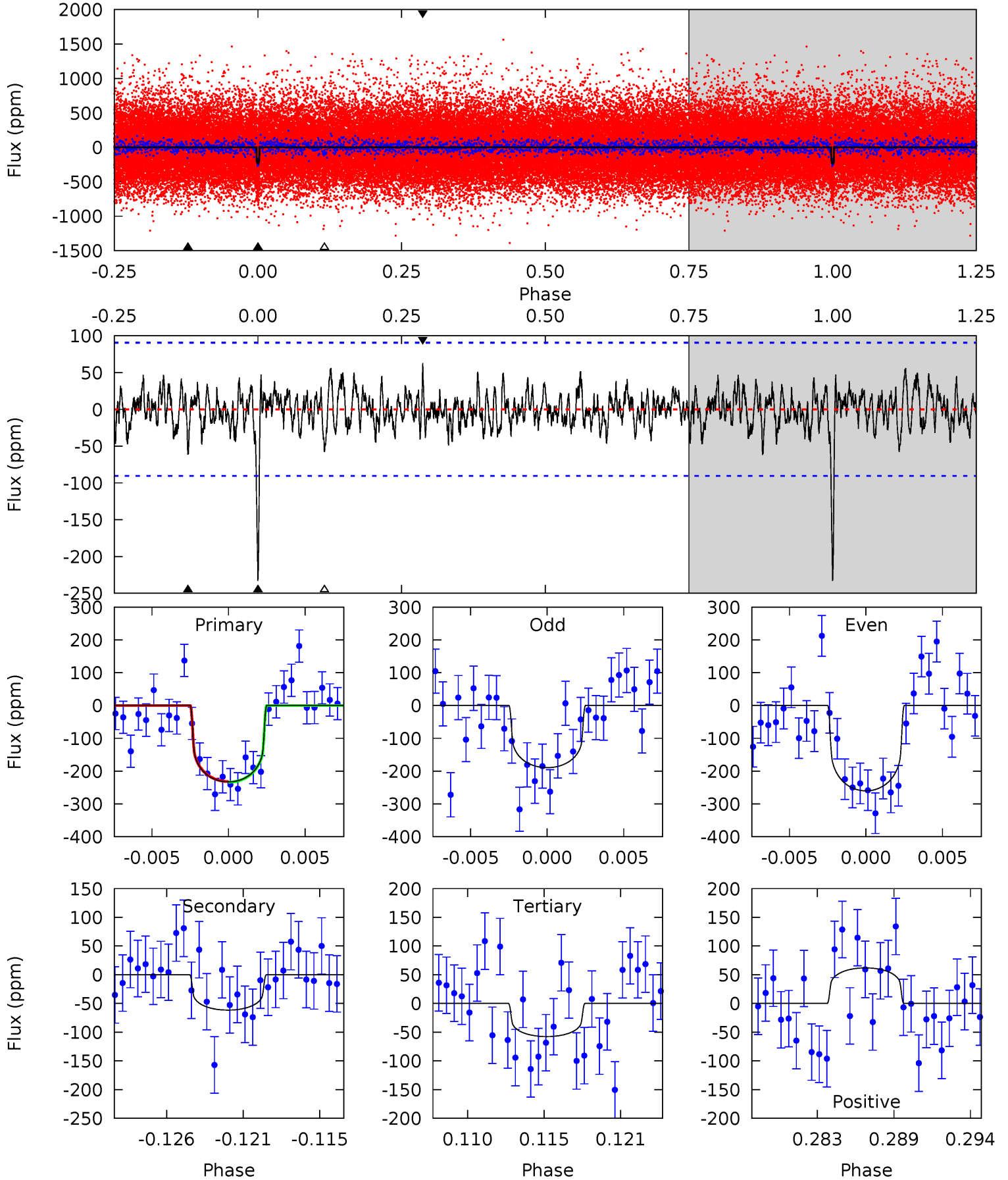
TCE 004556468-01 P=114.339391 Days  $T_0=216.783891$  (BKJD)



# DV Model-Shift Uniqueness Test

004556468-01, P = 114.335091 Days, E = 102.466039 Days

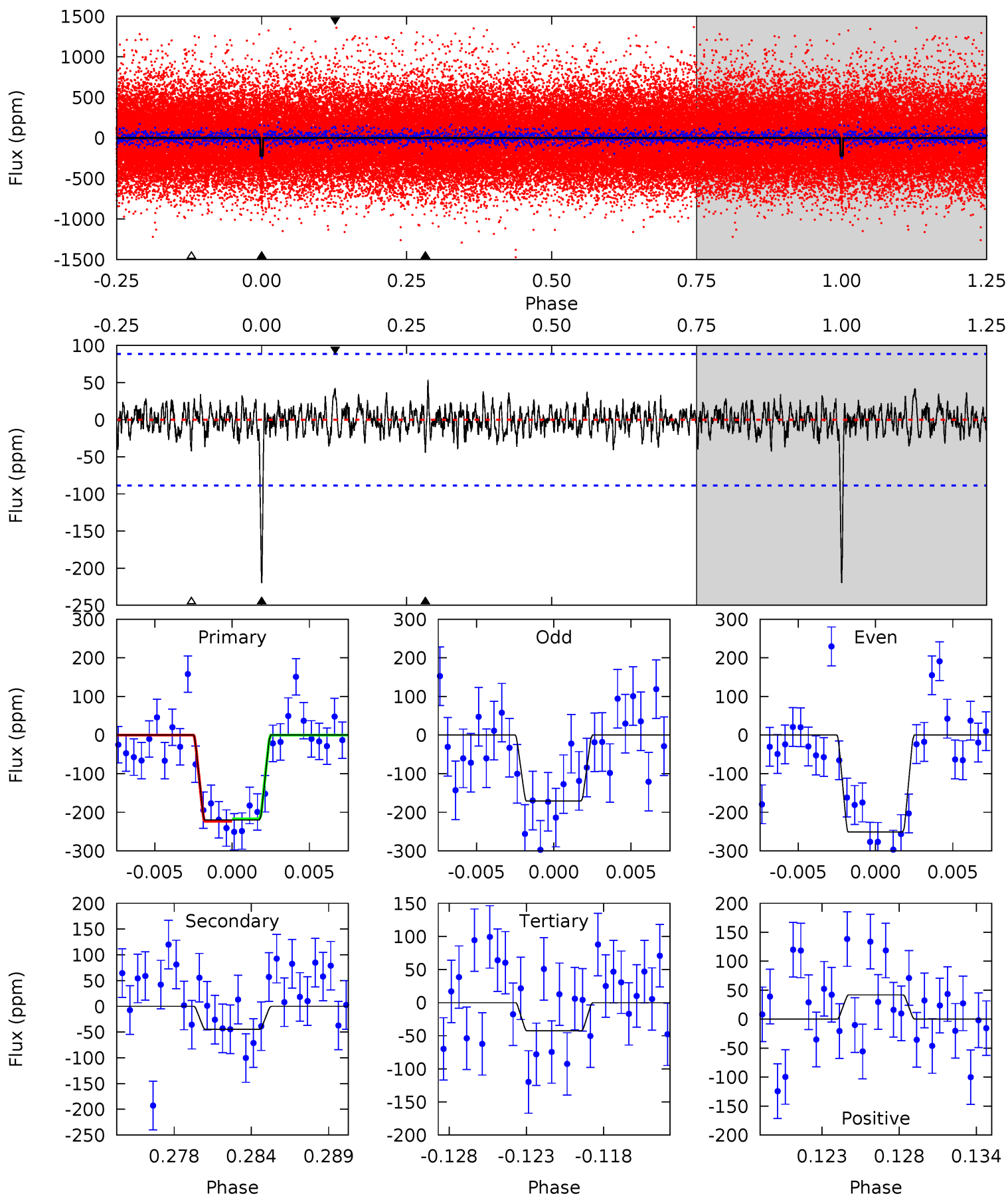
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	3.50	3.28	3.52	5.15	2.79	1.07	9.96	9.72	0.22	-0.02	1.97	0.97	0.21	0.06



# Alt Model-Shift Uniqueness Test

004556468-01, P = 114.339391 Days, E = 102.444500 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.8	2.59	2.47	2.43	5.15	2.79	0.79	10.3	10.3	0.12	0.16	2.28	0.93	0.19	0.16



### Stellar Parameters For KIC 004556468

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5802^{+78}_{-78}$	$4.218^{+0.162}_{-0.108}$	$0.140^{+0.150}_{-0.150}$	$1.316^{+0.222}_{-0.222}$	$1.044^{+0.094}_{-0.063}$	$0.644^{+0.499}_{-0.203}$
	+1%/-1%	+4%/-3%	+107%/-107%	+17%/-17%	+9%/-6%	+77%/-32%
Source	SPE90	SPE90	SPE90	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 004556468-01 / KOI 4491.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	-62±18	$2.12^{+1.03}_{-0.89}$	$596^{+27}_{-29}$	$4393^{+1100}_{-616}$	$1636^{+3380}_{-934}$
Alt.	-45±17	$2.09^{+1.00}_{-0.85}$	$598^{+26}_{-30}$	$4158^{+1023}_{-620}$	$1212^{+2602}_{-736}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming A=0.3)

$A_{\text{obs}}$  = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$



## DV Centroid Data

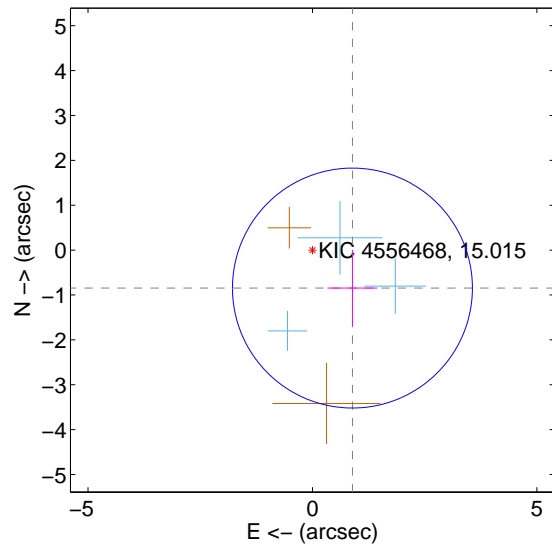
Supplemental centroid analysis for 004556468-01. Kepler magnitude: 15.02. Transit SNR 10.50

There are 3 quarters with good PRF difference image offsets

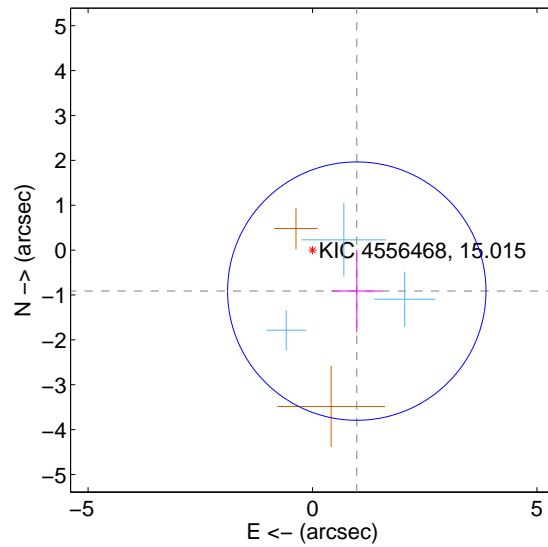
The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.229 \pm 0.891$	1.38	$-0.891 \pm 0.555$	$-0.846 \pm 0.849$
PRF-fit source offset from KIC position	$1.344 \pm 0.959$	1.40	$-0.986 \pm 0.567$	$-0.914 \pm 0.924$
photometric centroid source offset	$0.70 \pm 1.26$	0.56	$-0.69 \pm 1.26$	$-0.14 \pm 1.28$

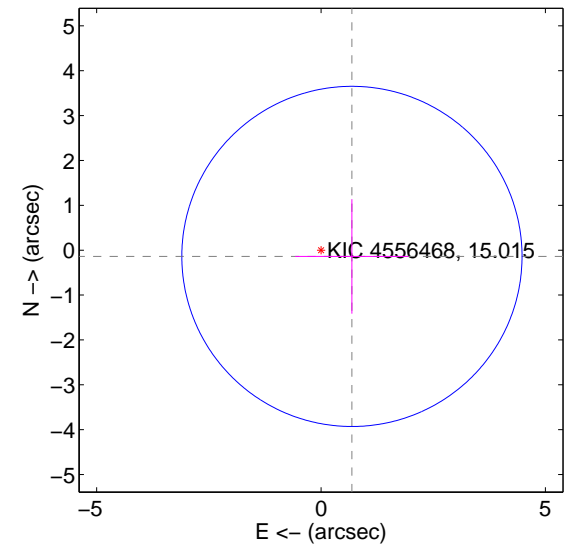
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

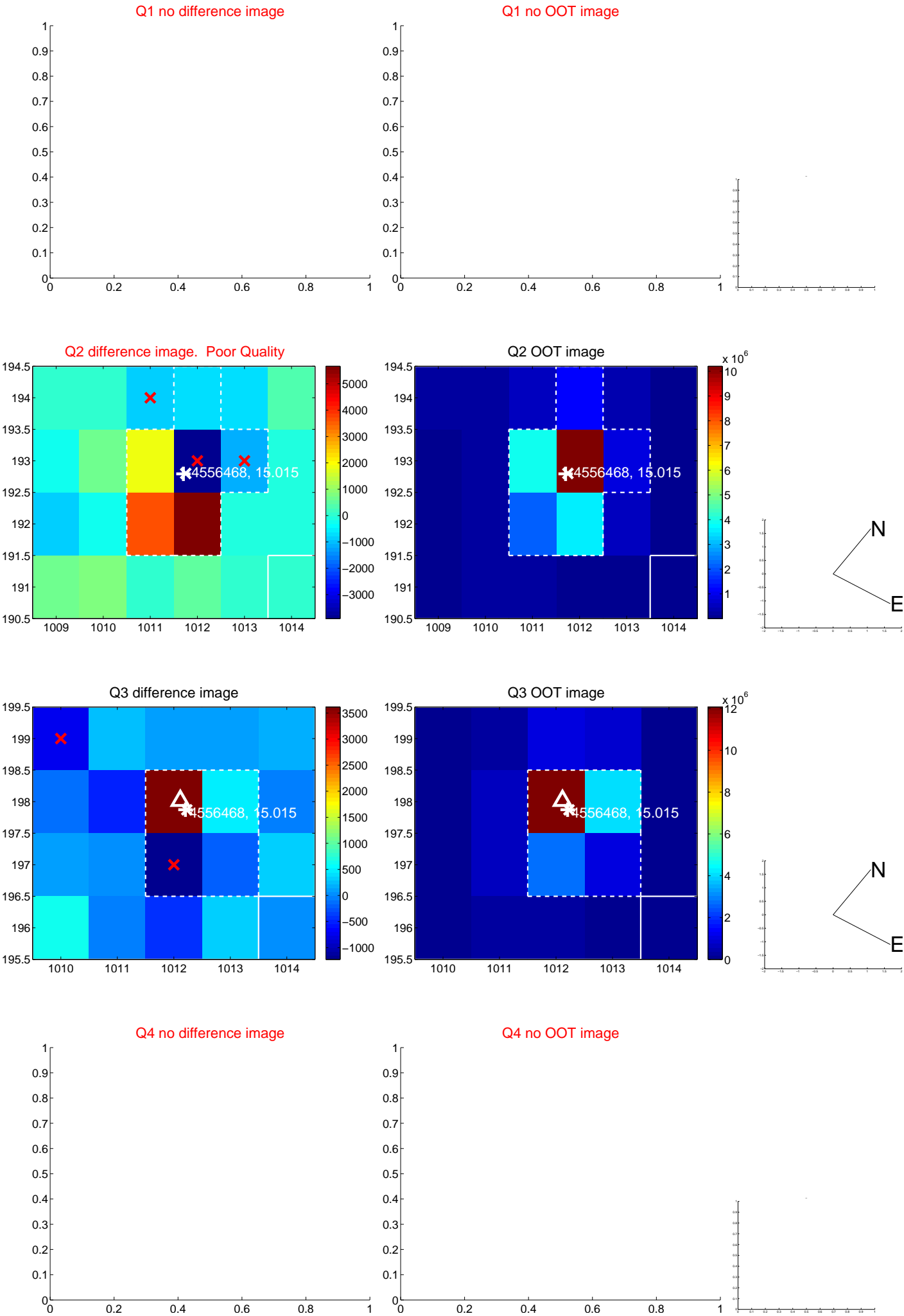


offset from photometric centroids

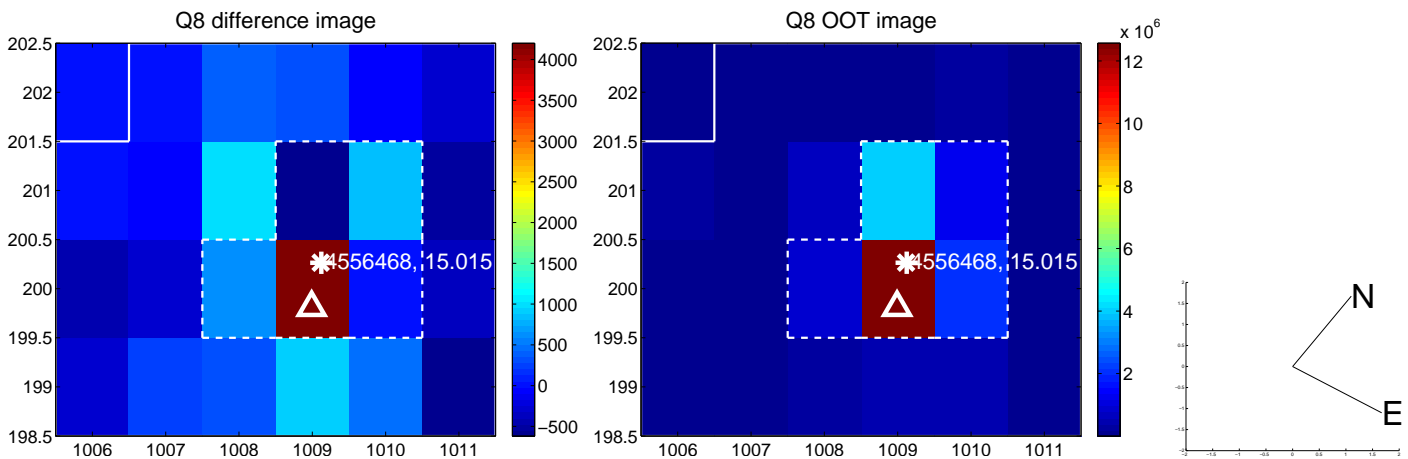
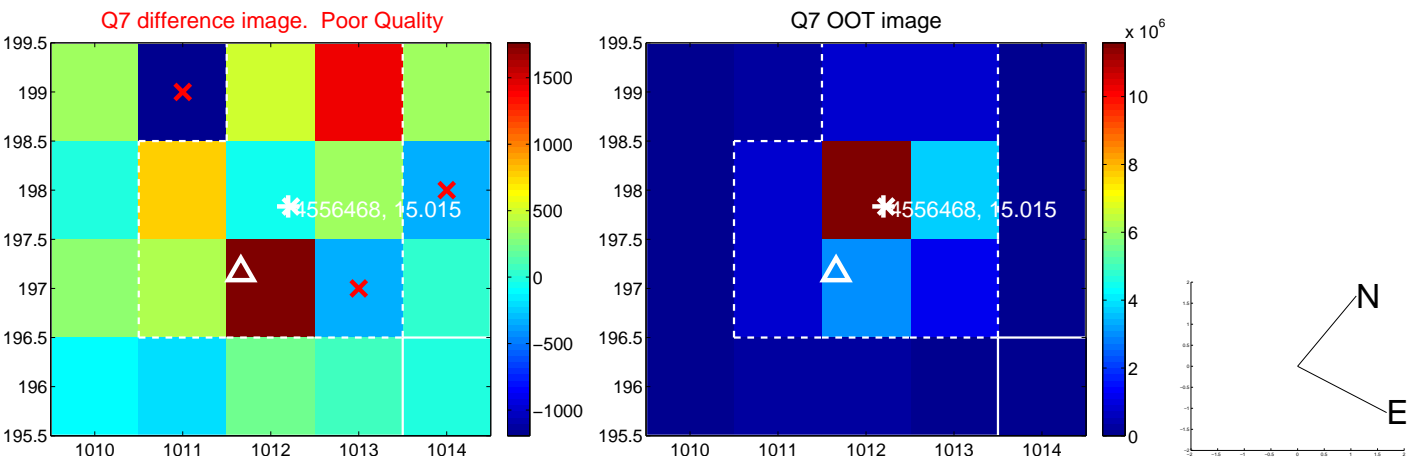
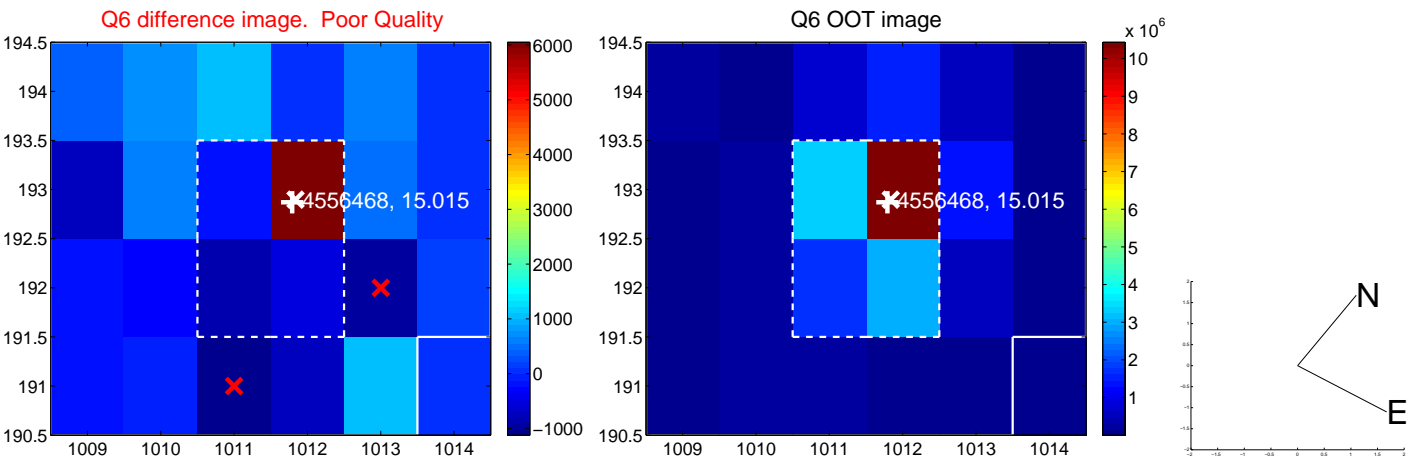
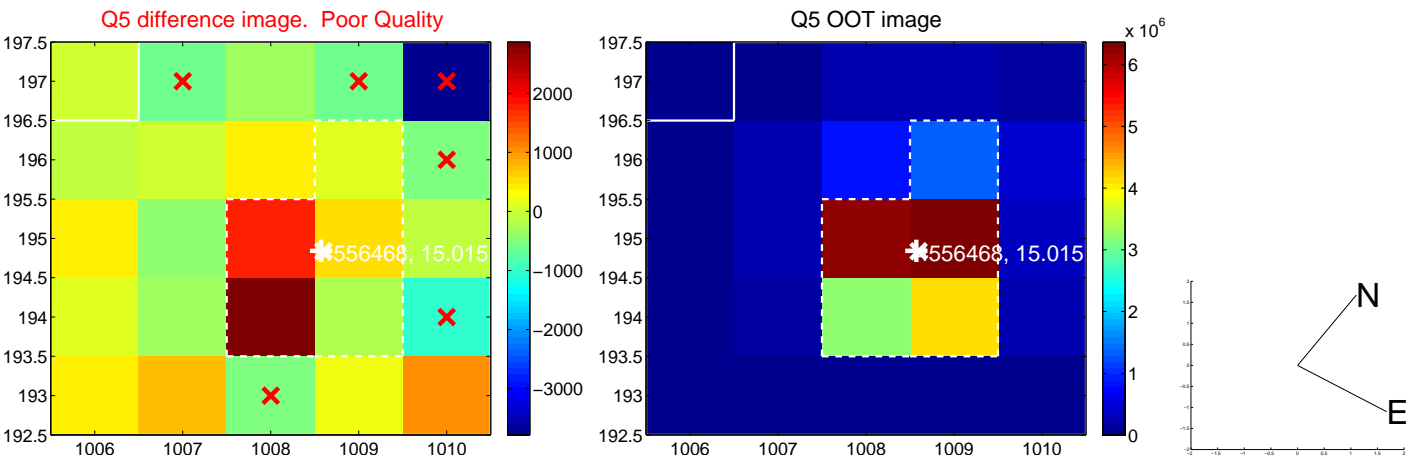


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

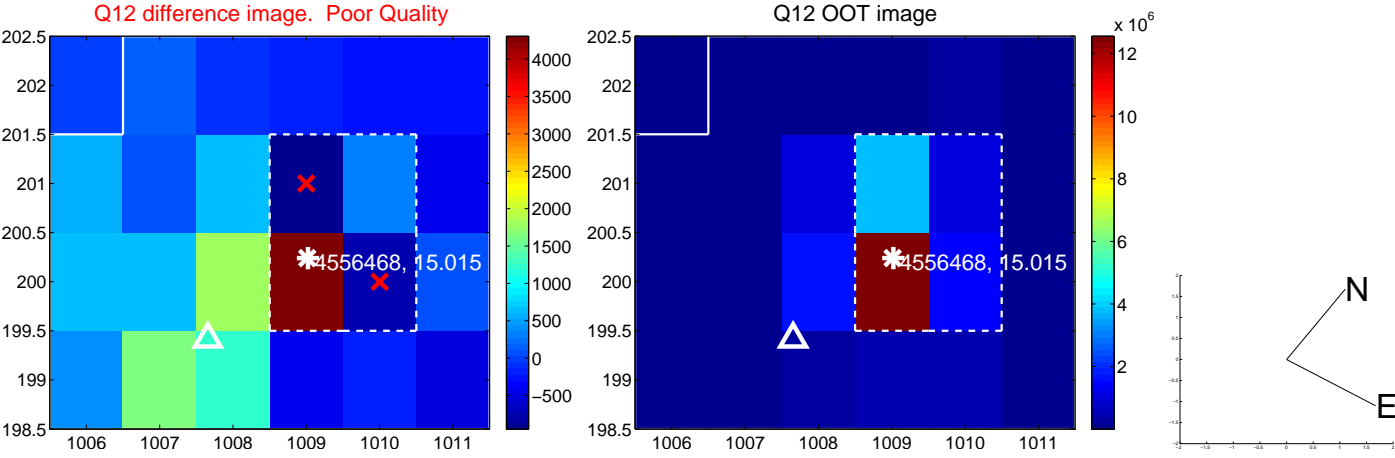
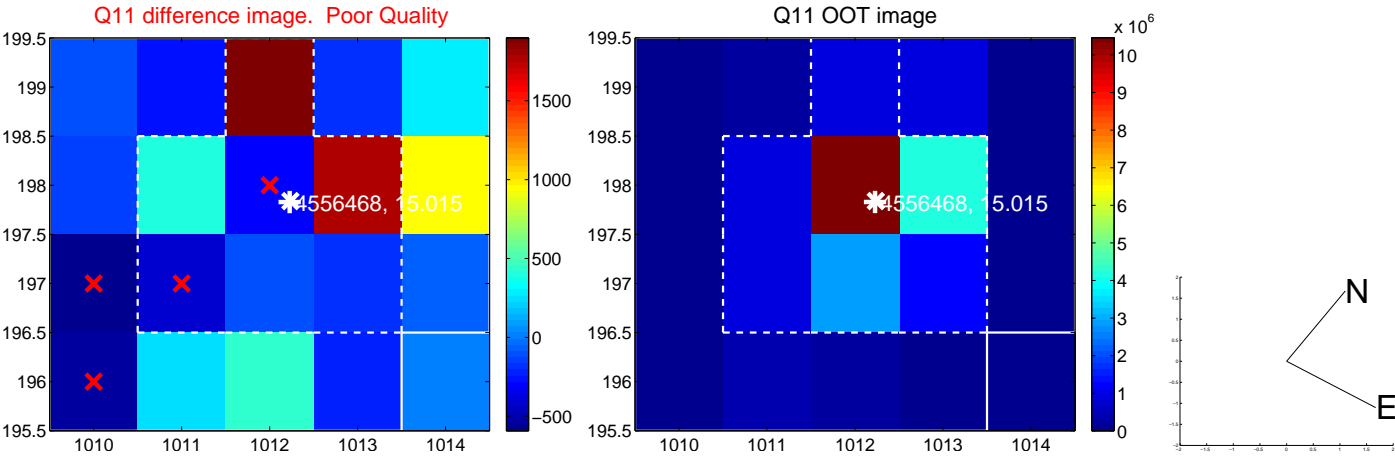
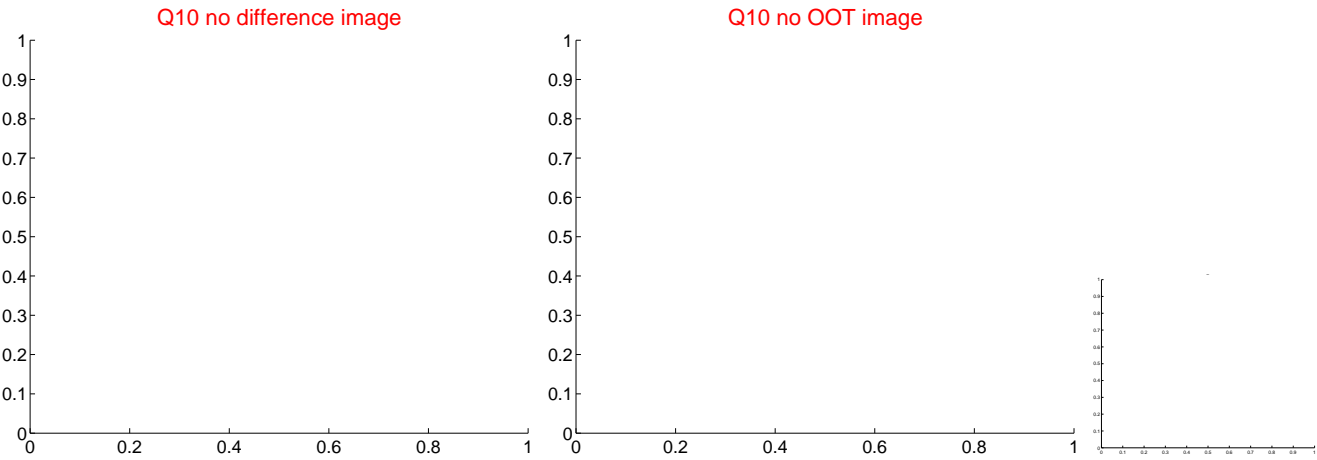
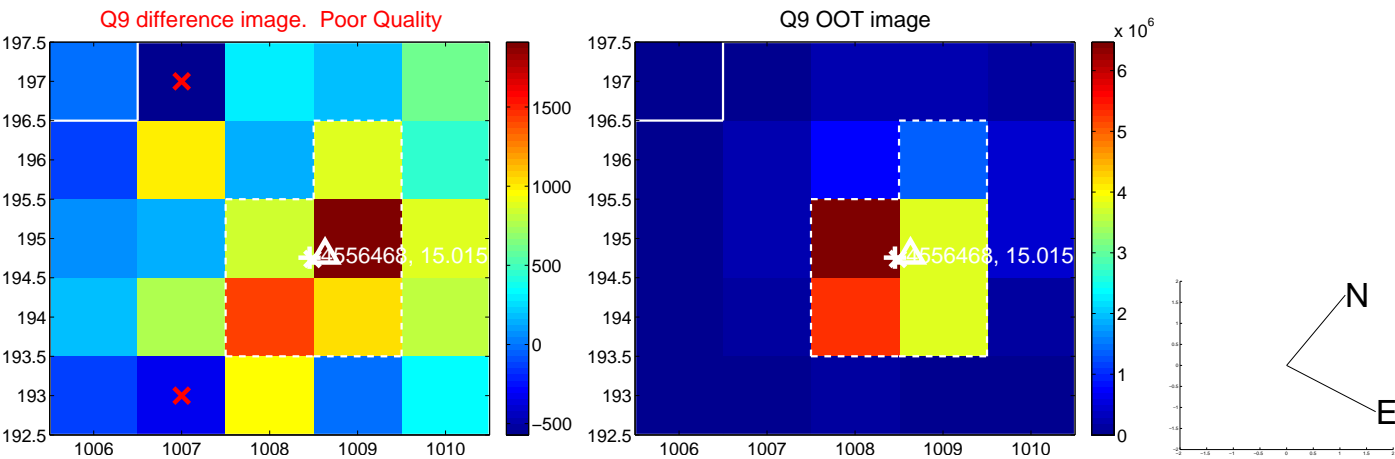
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

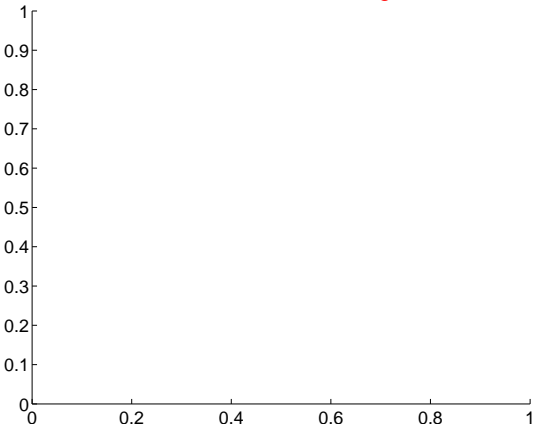


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

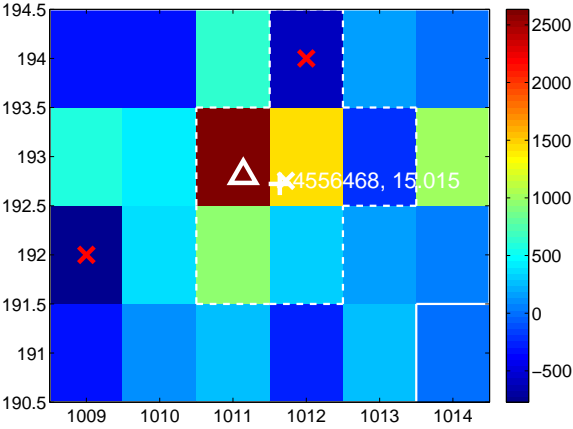
Q13 no difference image



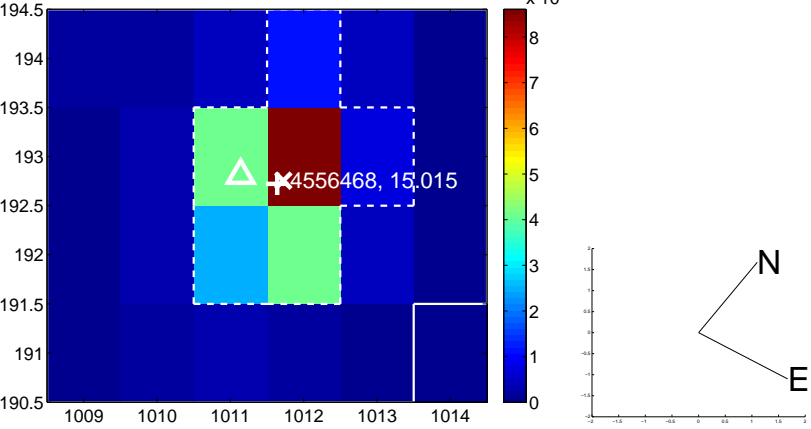
Q13 no OOT image



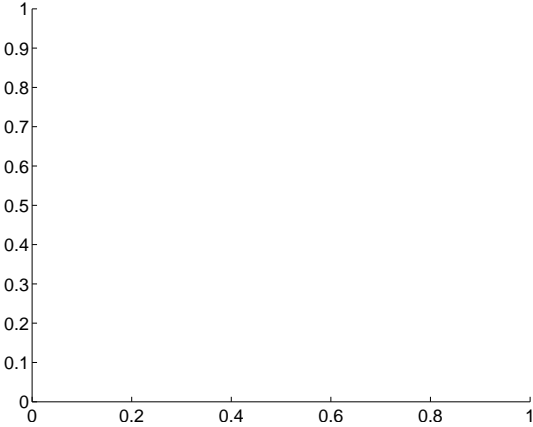
Q14 difference image



Q14 OOT image



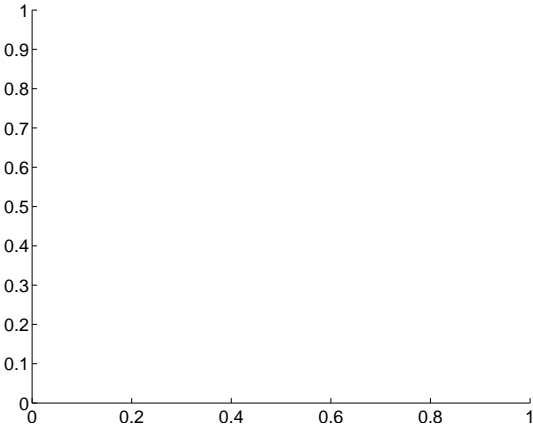
Q15 no difference image



Q15 no OOT image



Q16 no difference image

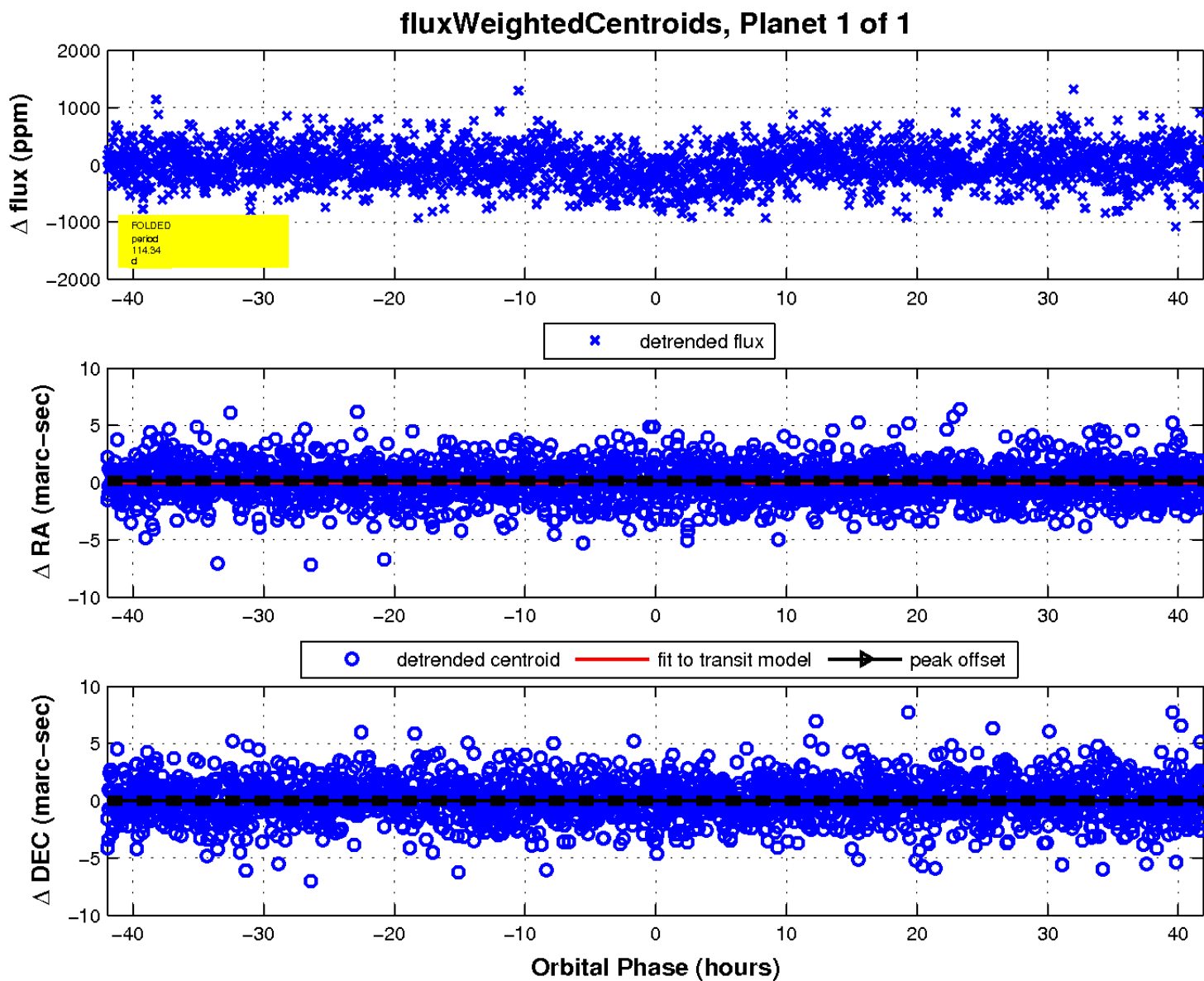
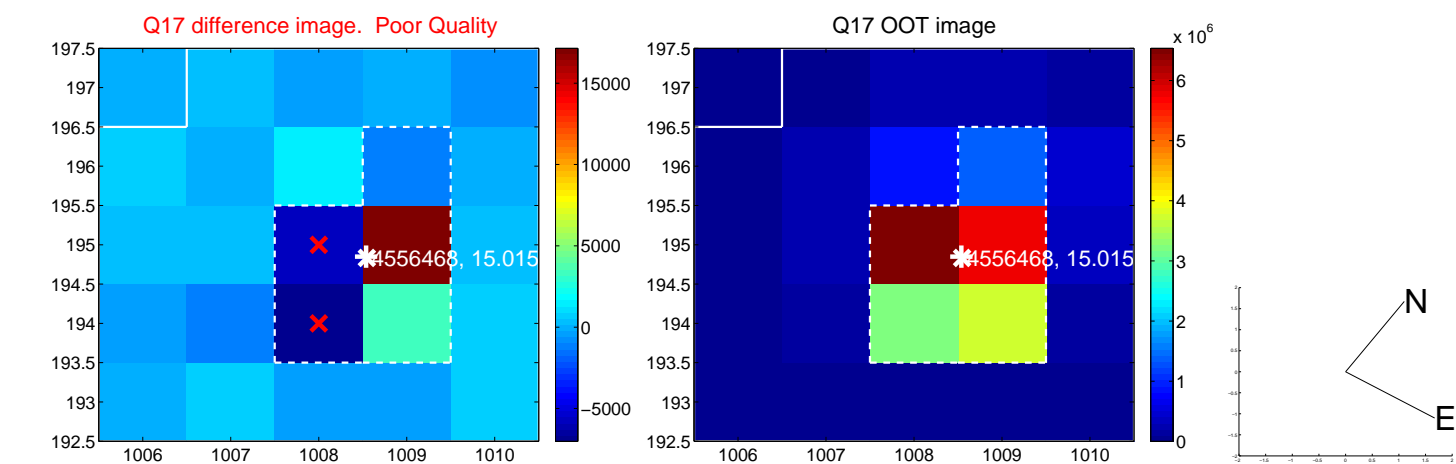


Q16 no OOT image





white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

