

# KIC 003732972

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003732972-01	OBS	7664.01	1.540411	131.982590	61.6	1.649	7.9	8.2	14.68	4971	13.89	0.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003732972-01	OBS	FP	0.00	0	0	1	1	PLANET_IN_STAR—HALO_GHOST—EPHEM_MATCH

**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.

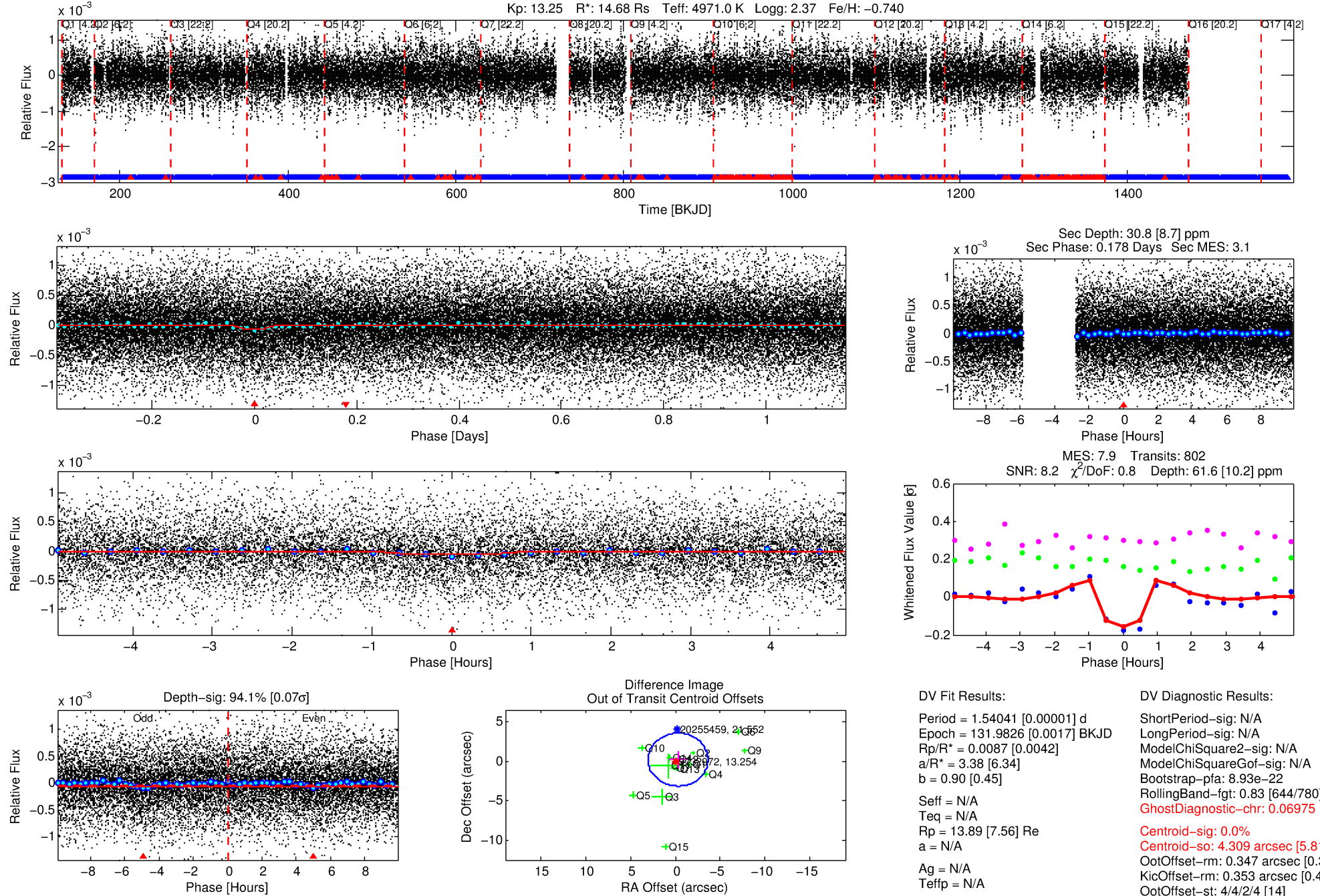
## Ephemeris Match Information For 003732972-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
003732972-01	3732972	6364.01	3836439	1:1	133.6	-1	-33	7.57	13.25	1141.00	Direct-PRF	0	0.78	0.87

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 3732972 Candidate: 1 of 1 Period: 1.540 d



## DV Fit Results:

Period = 1.54041 [0.00001] d  
Epoch = 131.9826 [0.0017] BKJD  
Rp/R\* = 0.0087 [0.0042]  
a/R\* = 3.38 [6.34]  
b = 0.90 [0.45]  
Seff = N/A  
Teq = N/A  
Rp = 13.89 [7.56] Re  
a = N/A  
Ag = N/A  
Teffp = N/A

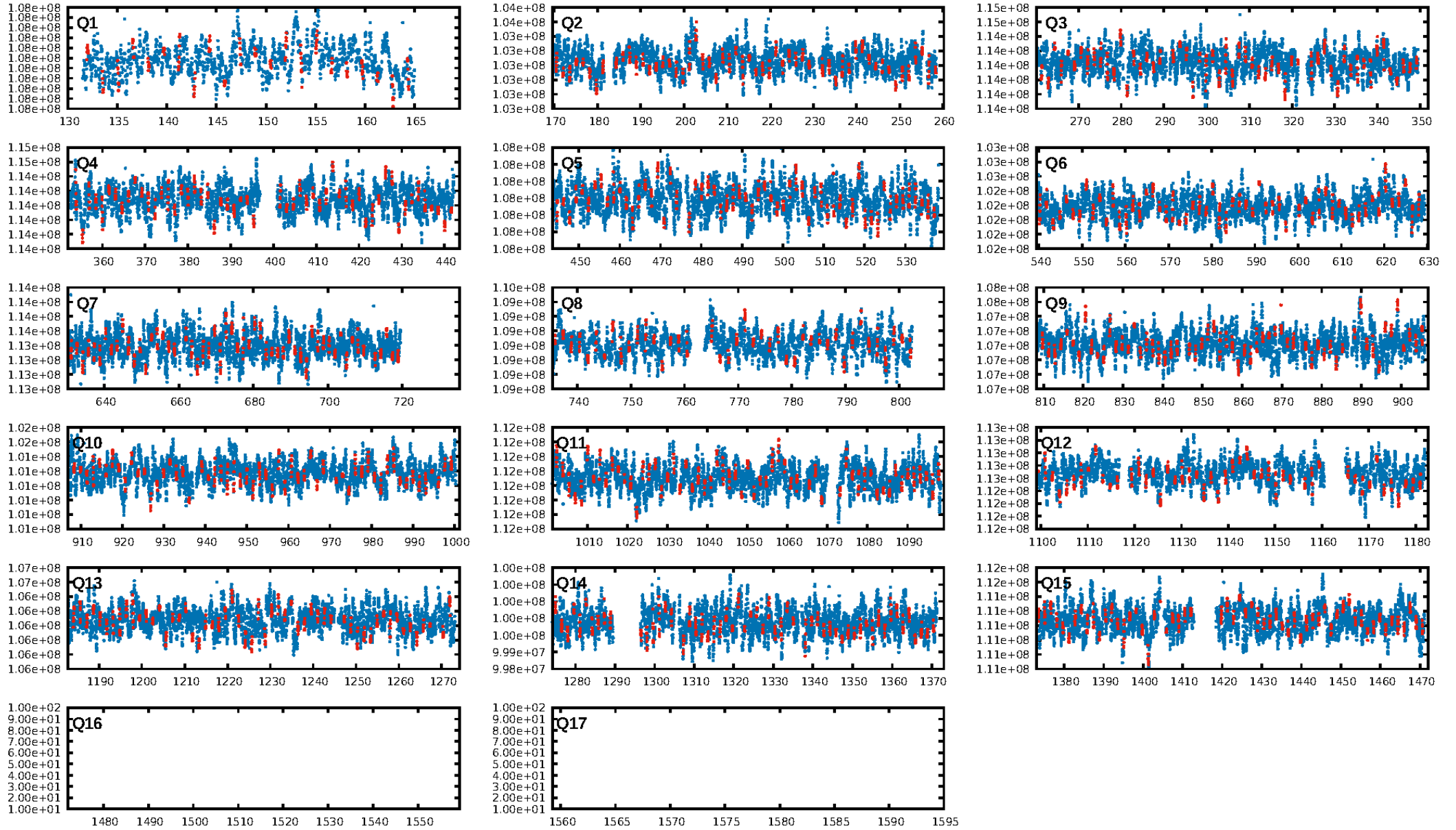
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 8.93e-22  
RollingBand-fgt: 0.83 [644/780]  
GhostDiagnostic-chr: 0.06975  
Centroid-sig: 0.0%  
Centroid-so: 4.309 arcsec [5.81 $\sigma$ ]  
OotOffset-rm: 0.347 arcsec [0.31 $\sigma$ ]  
KicOffset-rm: 0.353 arcsec [0.41 $\sigma$ ]  
OotOffset-st: 4/4/2/4 [14]  
KicOffset-st: 4/4/2/4 [14]  
DiffImageQuality-fgm: 0.36 [5/14]  
DiffImageOverlap-fno: 1.00 [15/15]

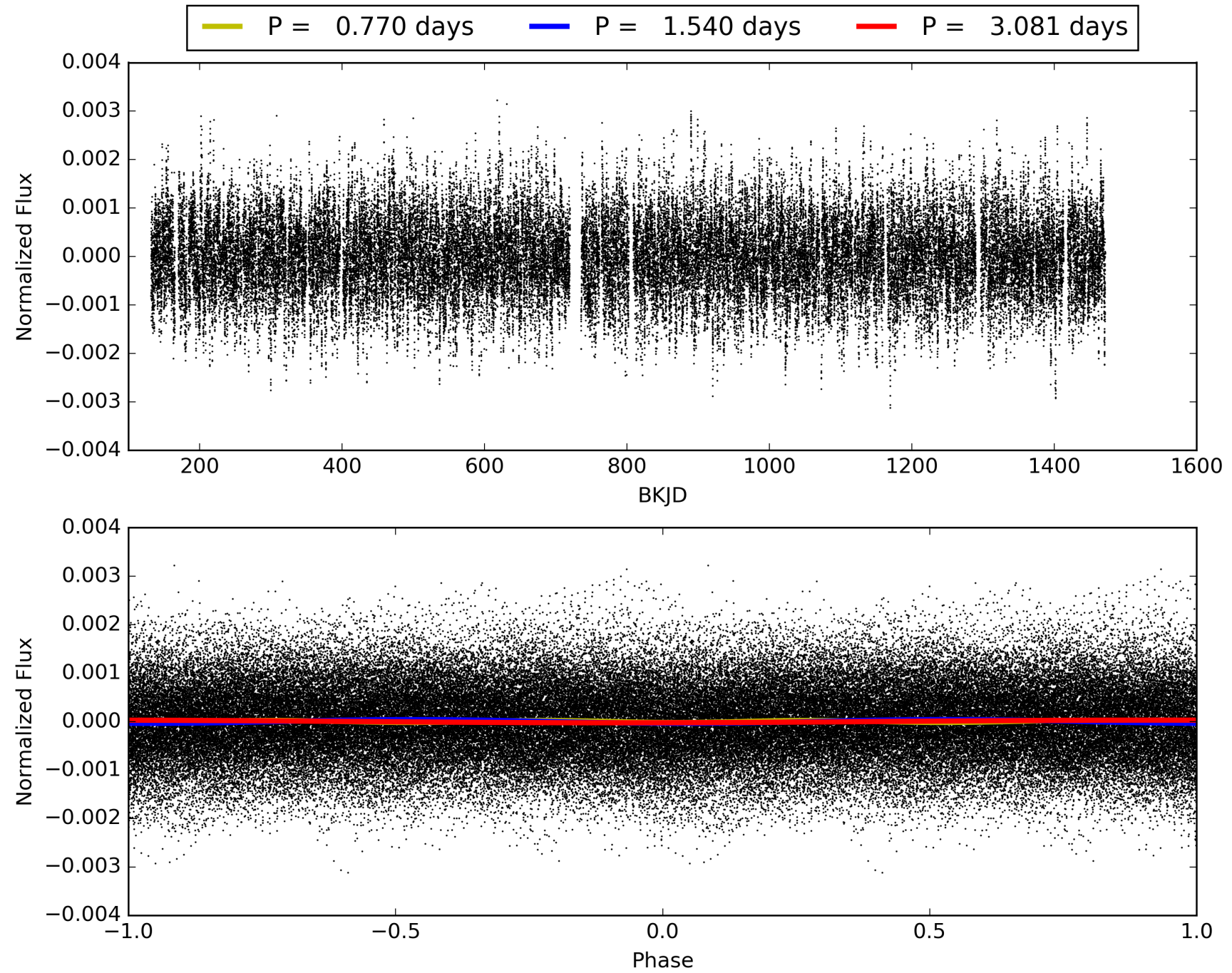
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:51:03 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003732972-01, PDC Light Curves



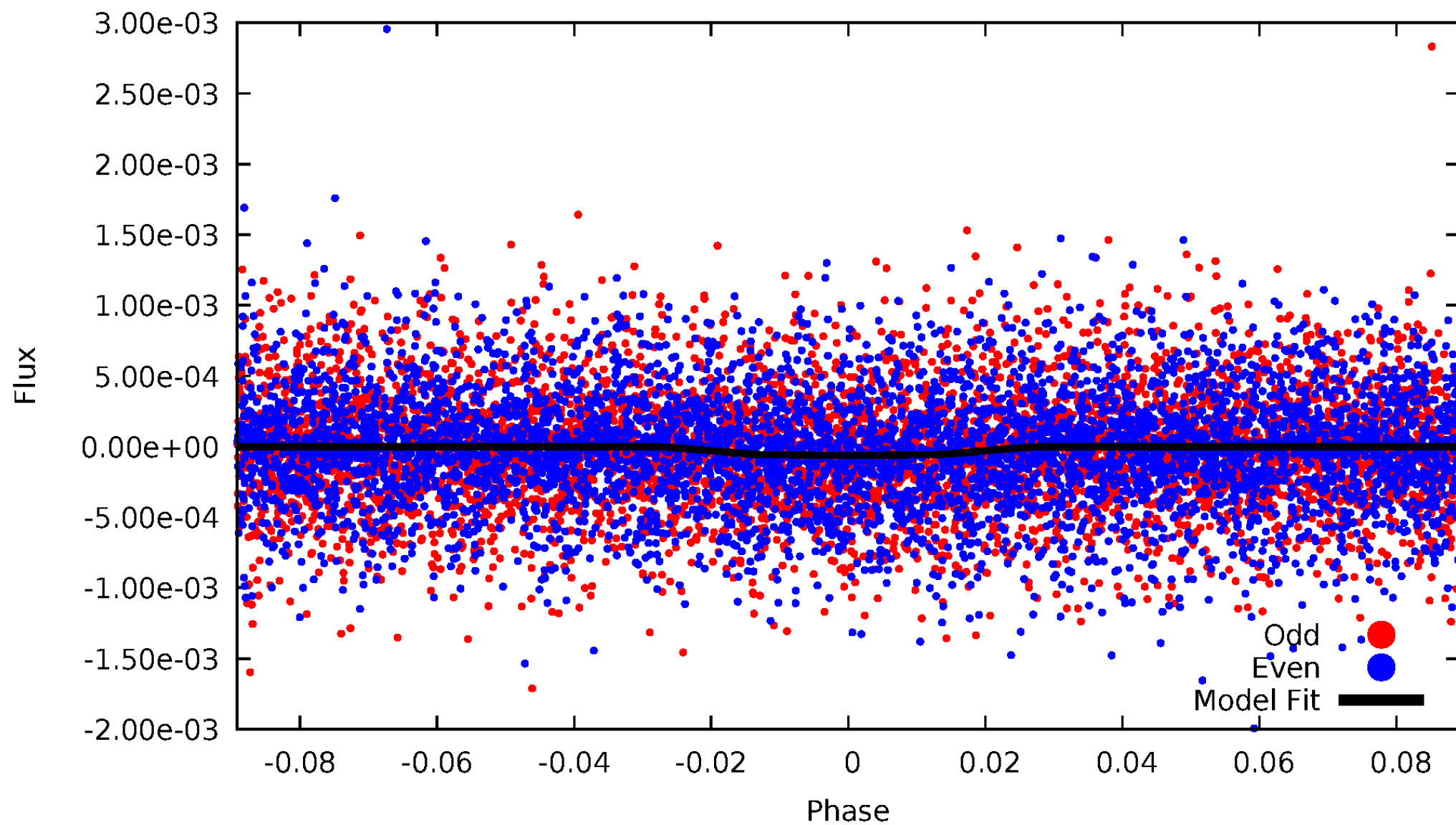
TCE 003732972-01





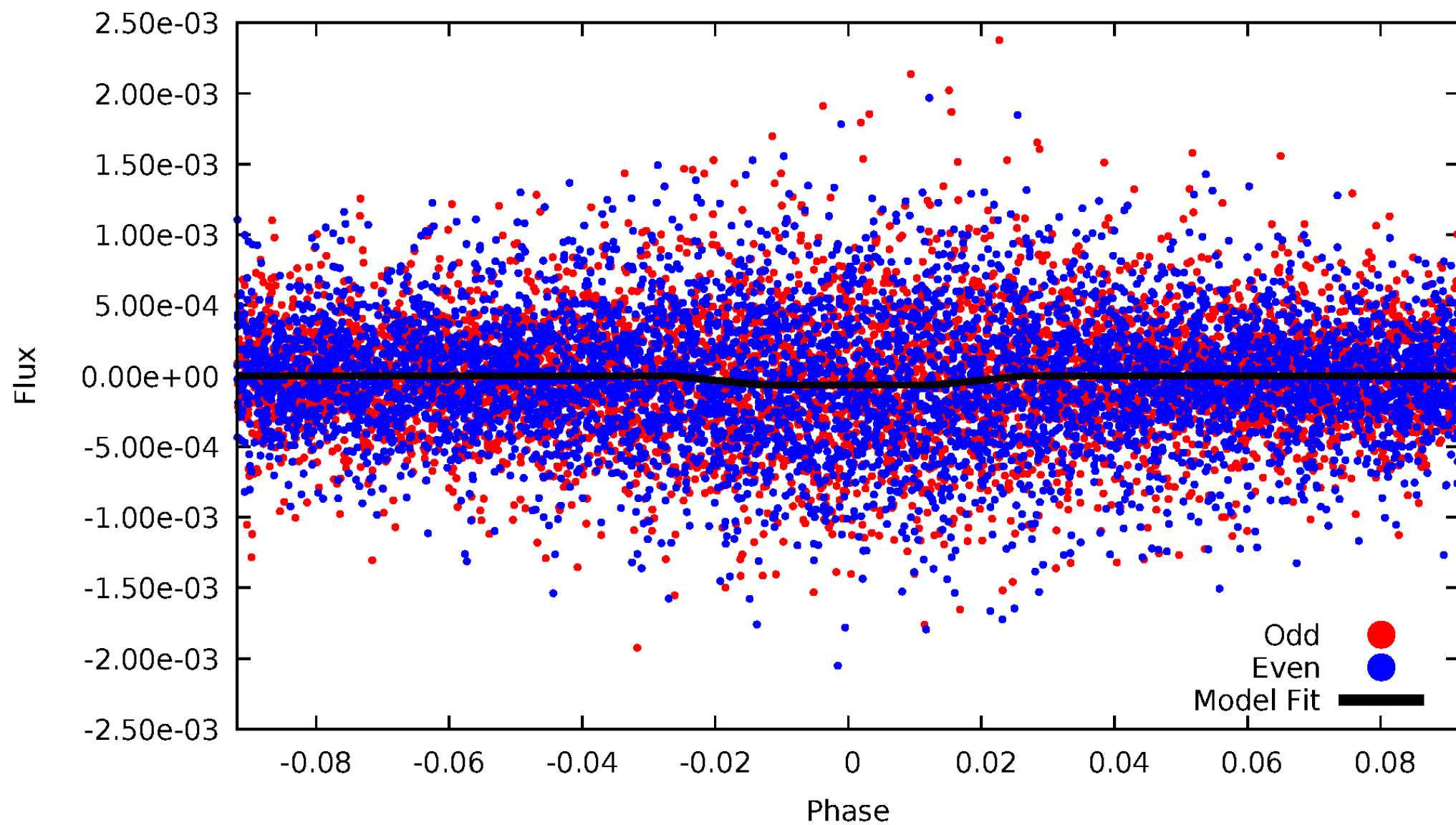
# DV Odd/Even

TCE 003732972-01



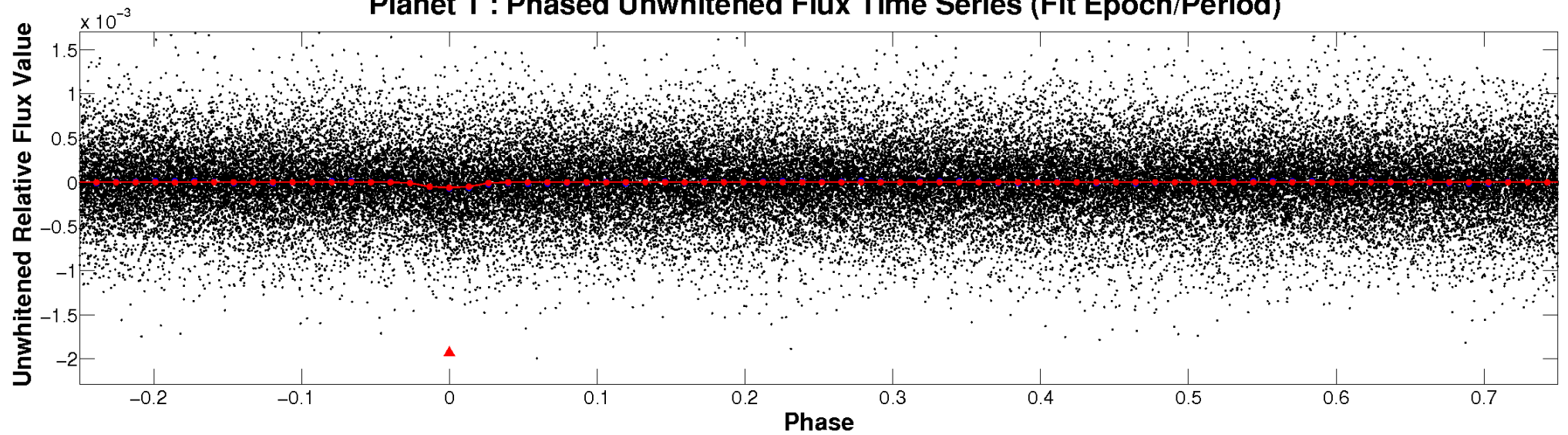
# ALT Odd/Even

TCE 003732972-01

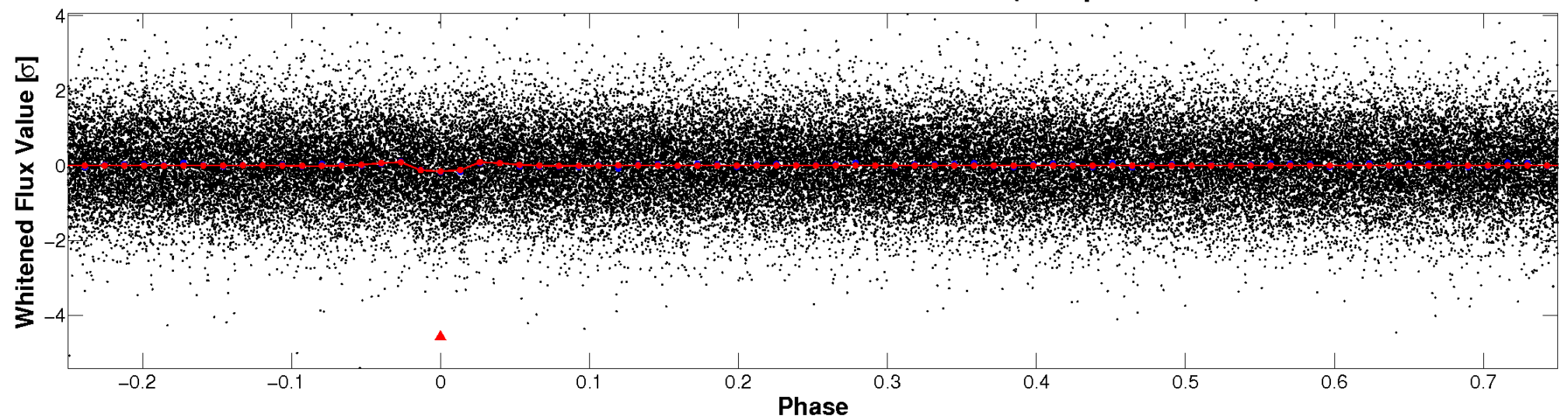


# Non-Whitened Vs. Whitened Light Curve

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

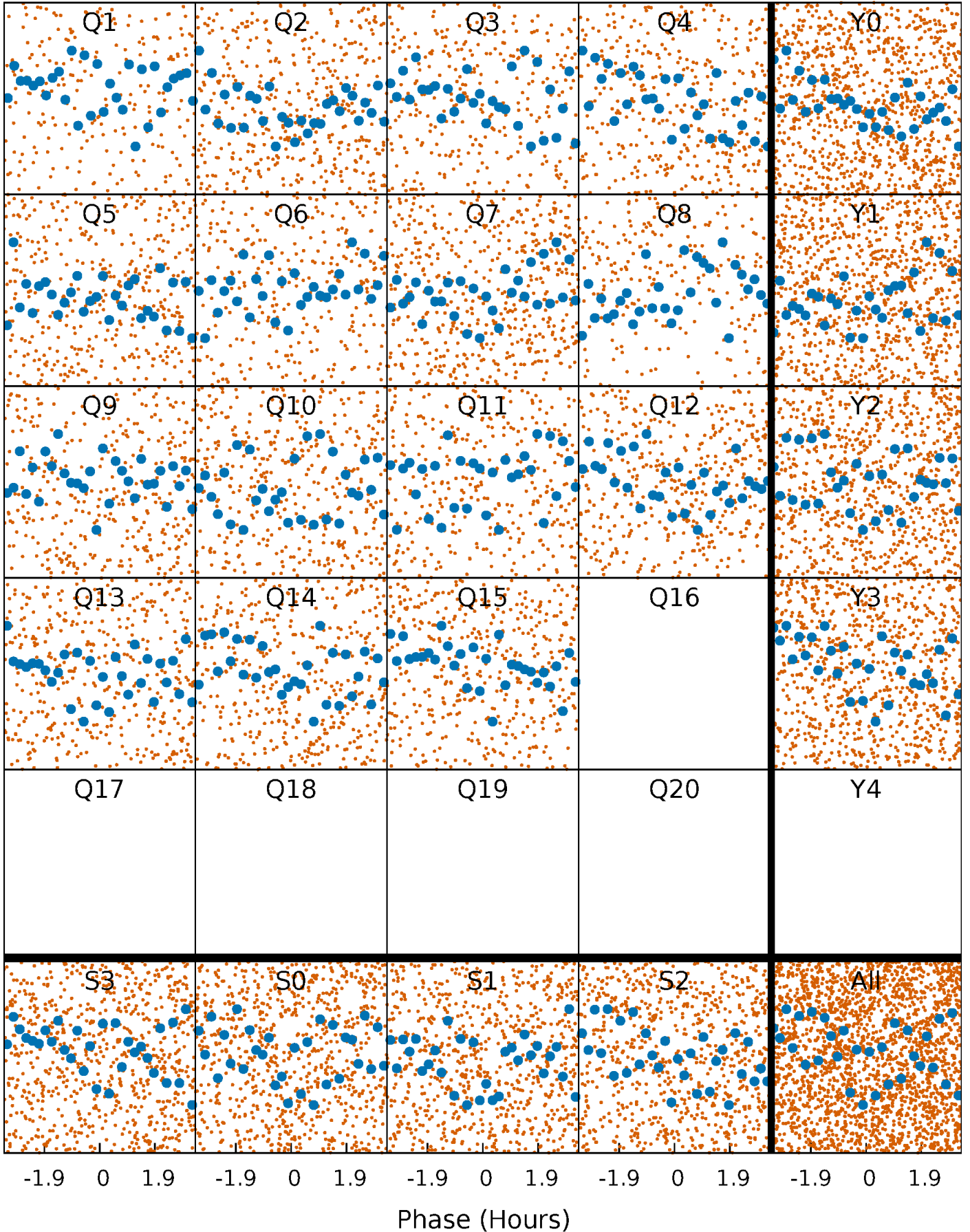


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

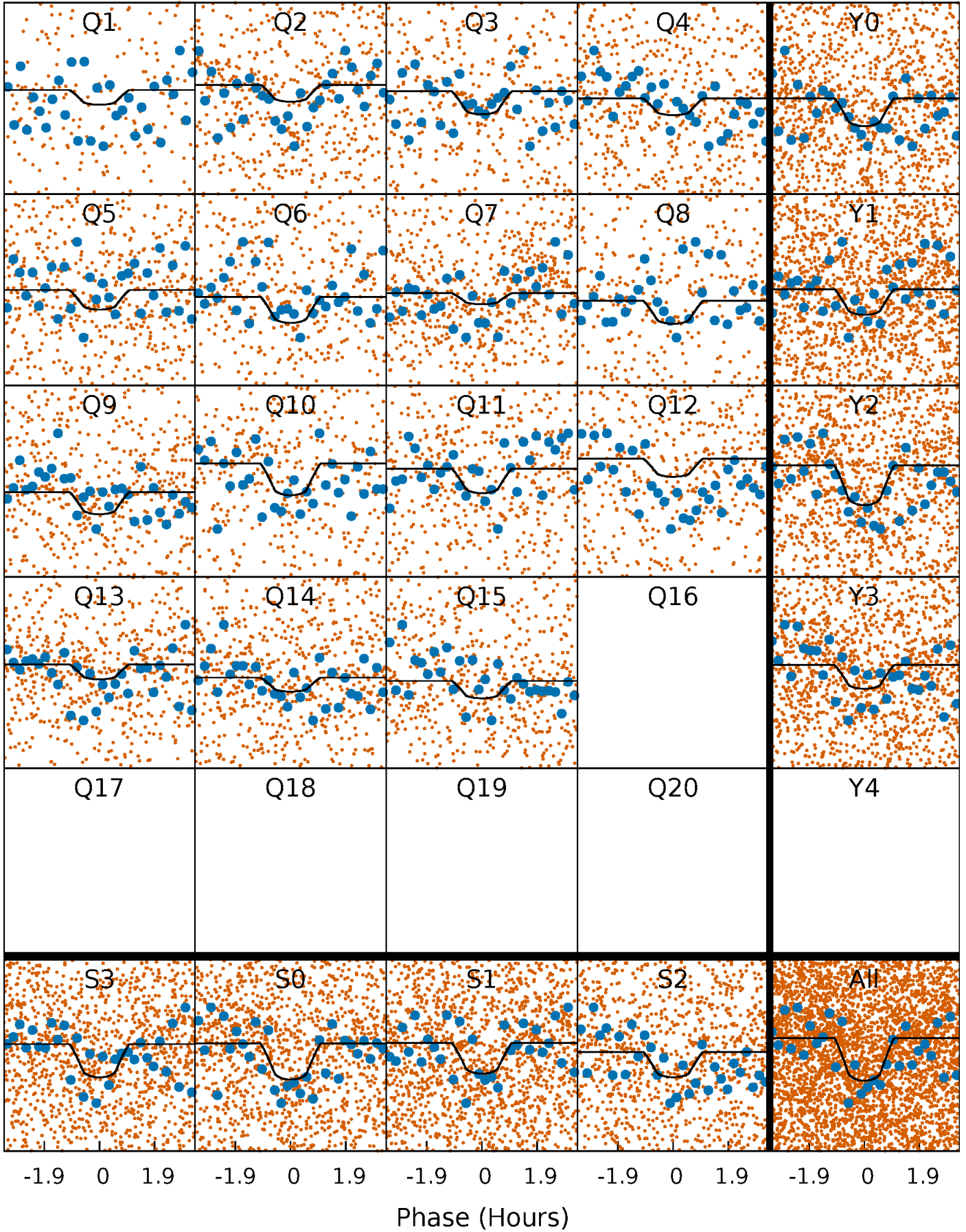
TCE 003732972-01 P= 1.540411 Days  $T_0=131.982590$  (BKJD)





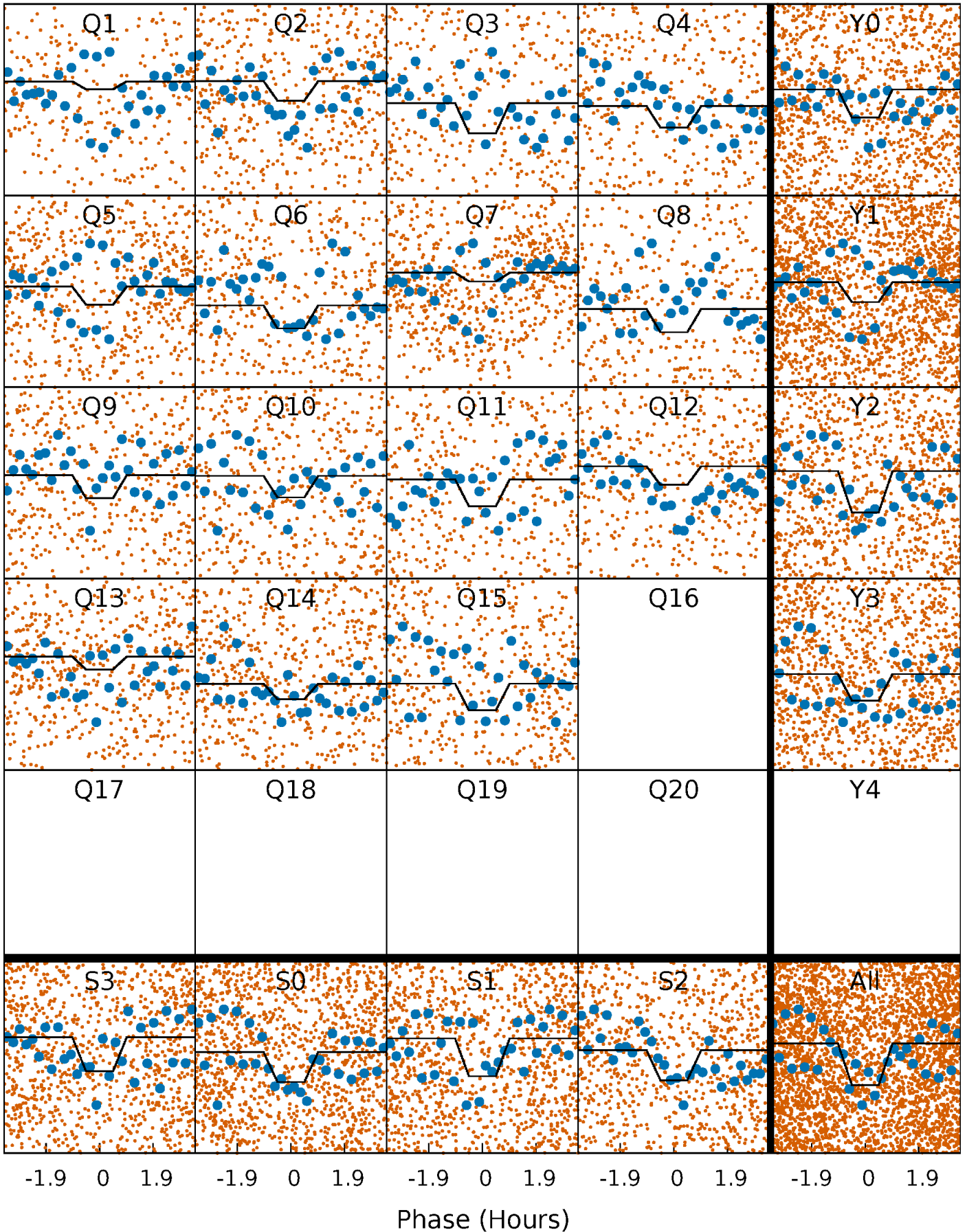
# DV Quarter-Phased Transit Curves

TCE 003732972-01 P= 1.540411 Days  $T_0=131.982590$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

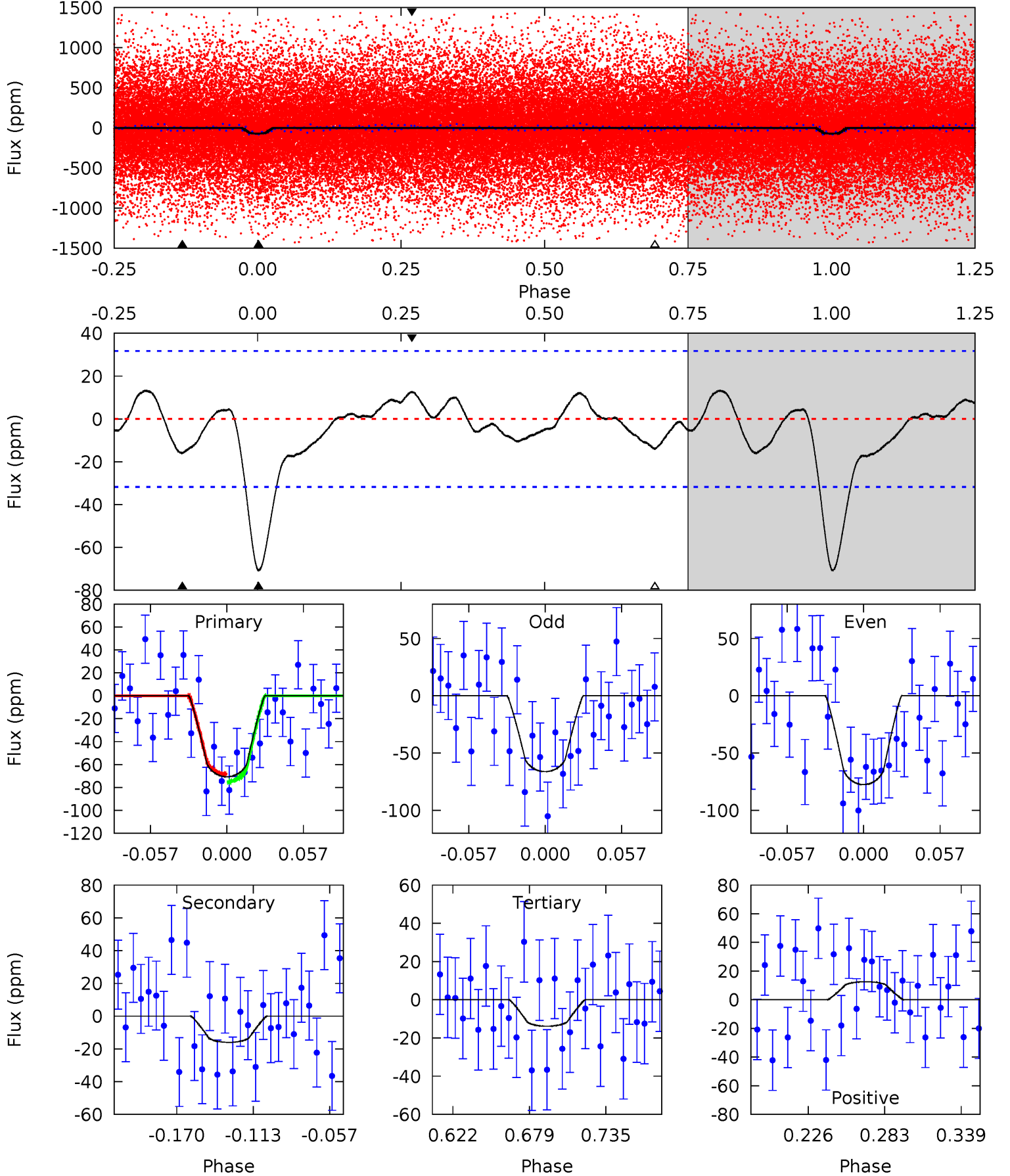
TCE 003732972-01 P= 1.540414 Days  $T_0=131.985303$  (BKJD)



# DV Model-Shift Uniqueness Test

003732972-01, P = 1.540411 Days, E = 130.442179 Days

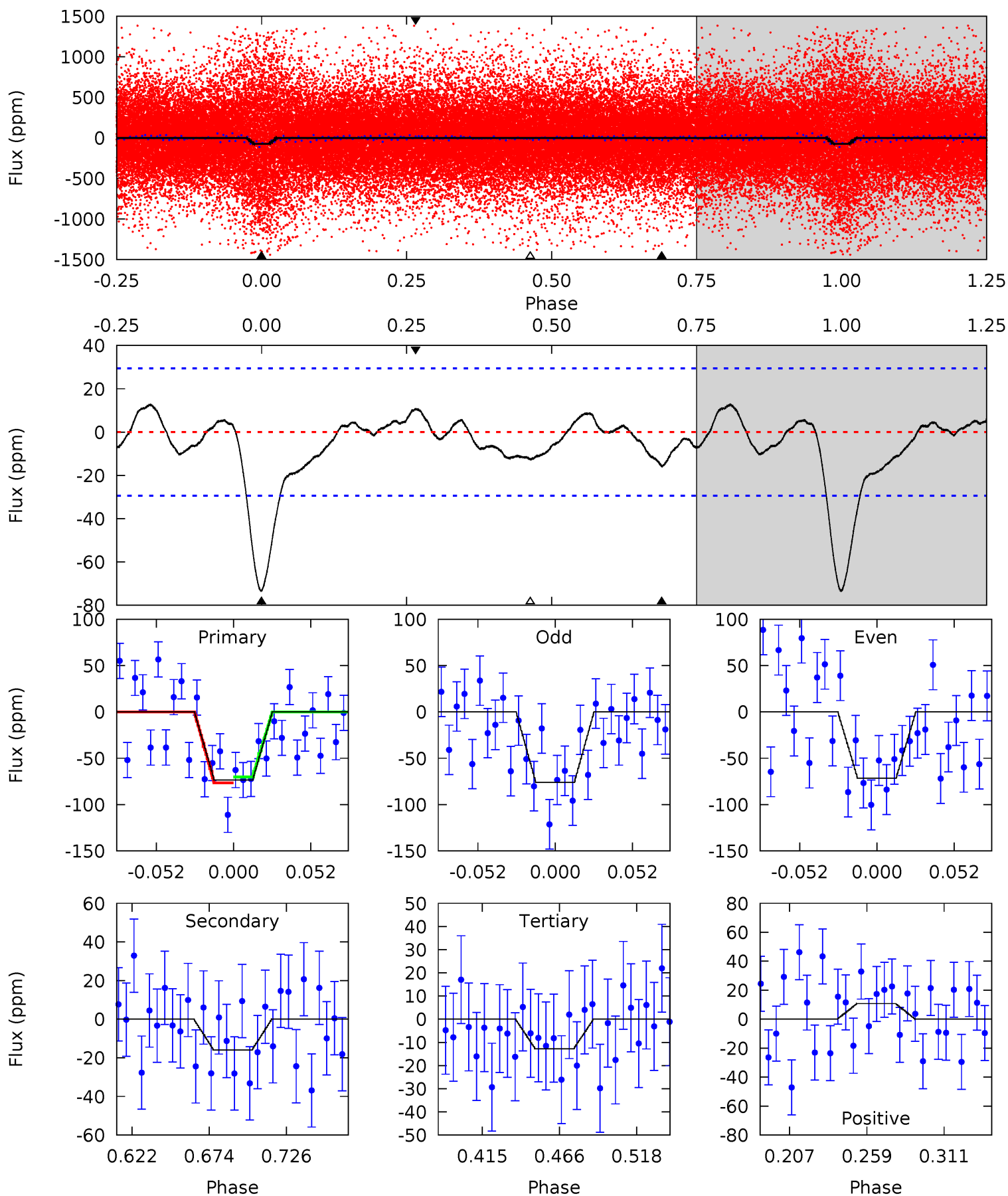
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	2.36	2.05	1.85	4.68	1.91	1.11	8.39	8.59	0.31	0.51	0.84	0.94	0.16	0.49



# Alt Model-Shift Uniqueness Test

003732972-01, P = 1.540414 Days, E = 130.444889 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
11.7	2.54	2.04	1.72	4.70	1.94	1.15	9.70	10.0	0.50	0.82	0.36	0.63	0.15	0.50





### Stellar Parameters For KIC 003732972

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4971^{+86}_{-161}$	$2.373^{+0.030}_{-0.030}$	$-0.740^{+0.200}_{-0.250}$	$14.678^{+3.067}_{-3.749}$	$1.854^{+0.832}_{-0.832}$	$0.001^{+0.000}_{-0.000}$
	+2%/-3%	+1%/-1%	+27%/-34%	+21%/-26%	+45%/-45%	+36%/-12%
Source	PHO1	AST9	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 003732972-01 / KOI 7664.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-16 \pm 7$	$14.09^{+7.29}_{-6.36}$	$6539^{+241}_{-265}$	$-5072^{+528}_{-260}$	$0.042^{+0.107}_{-0.026}$
Alt.	$-16 \pm 6$	$13.19^{+7.36}_{-6.63}$	$6561^{+236}_{-259}$	$-5041^{+869}_{-277}$	$0.049^{+0.156}_{-0.030}$

$T_{\text{max}}$  = 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

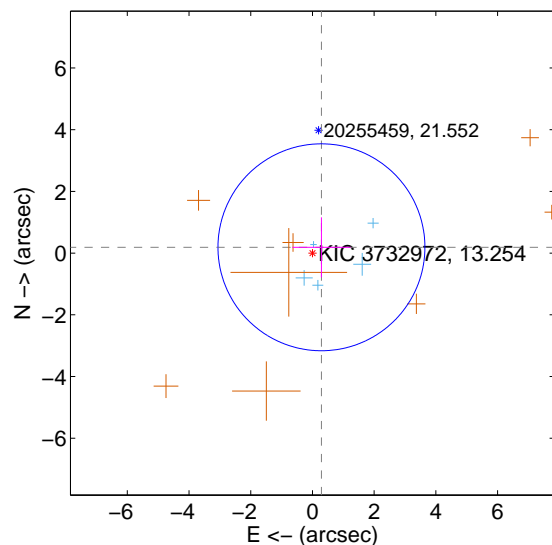
Supplemental centroid analysis for 003732972-01. Kepler magnitude: 13.25. Transit SNR 8.23

There are 5 quarters with good PRF difference image offsets

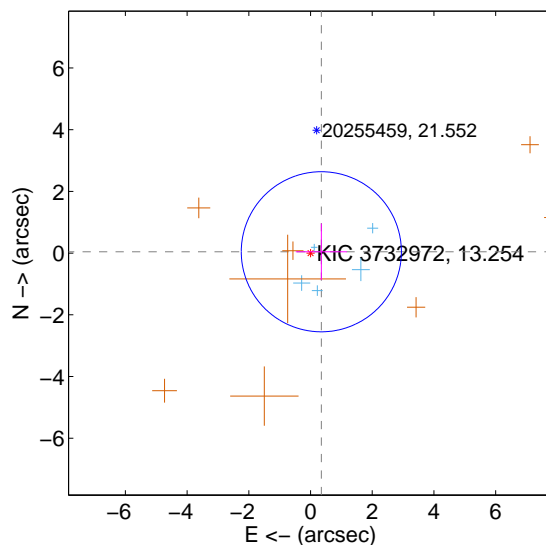
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.347 \pm 1.118$	0.31	$-0.291 \pm 0.945$	$0.188 \pm 0.973$
PRF-fit source offset from KIC position	$0.353 \pm 0.865$	0.41	$-0.350 \pm 0.827$	$0.043 \pm 0.917$
photometric centroid source offset	$4.31 \pm 0.74$	5.81	$-3.79 \pm 0.72$	$-2.05 \pm 0.82$

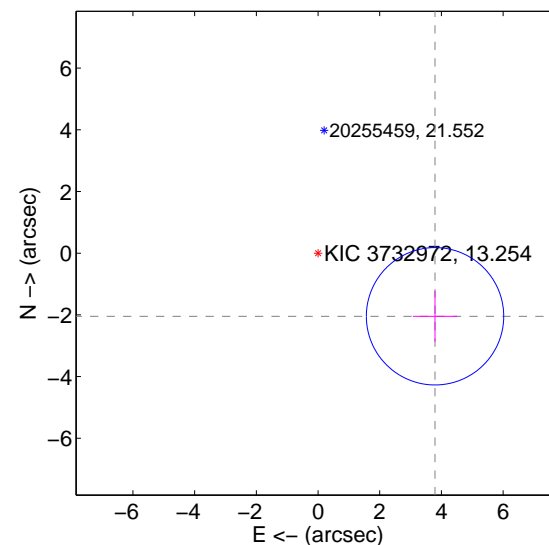
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

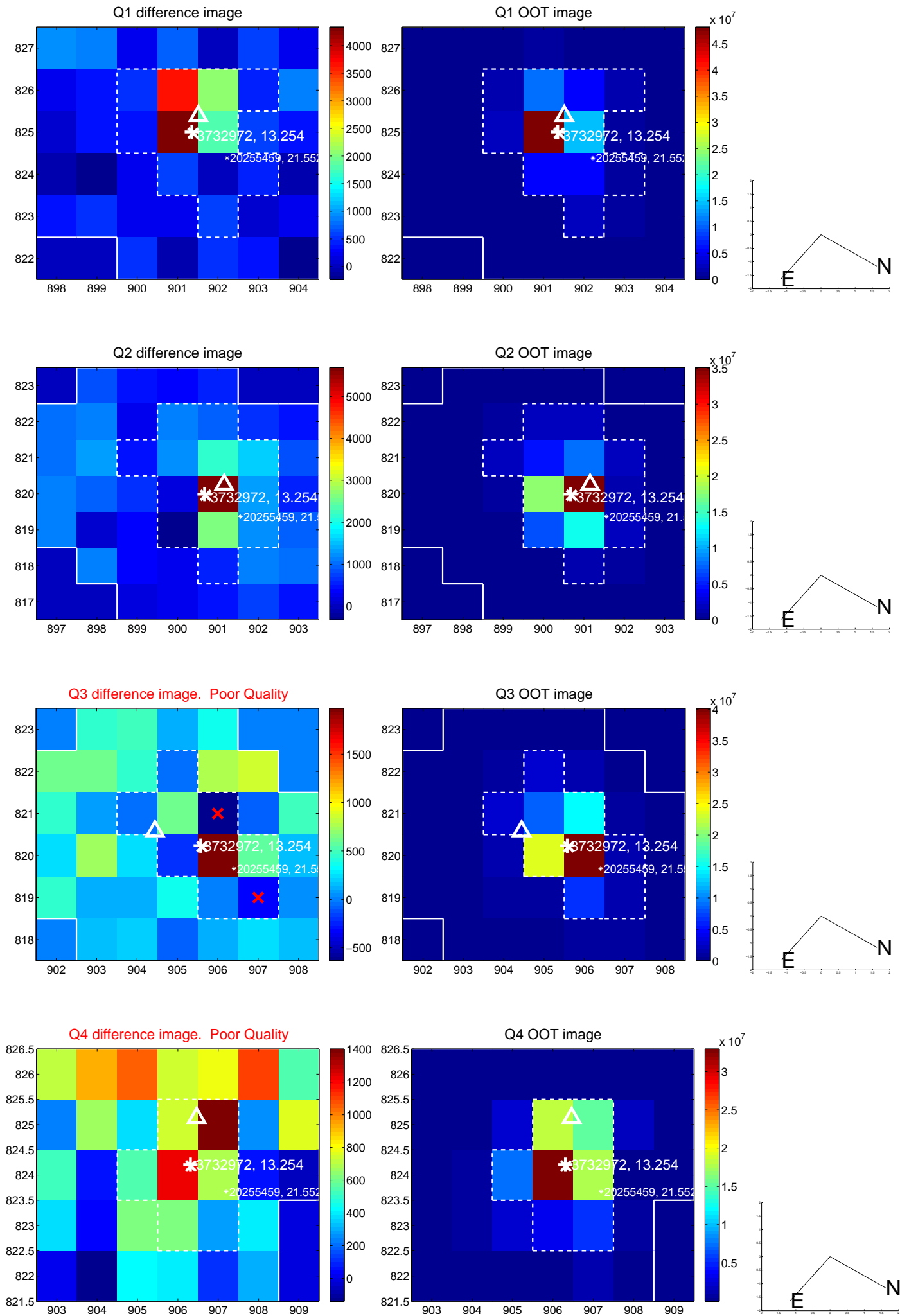


offset from photometric centroids

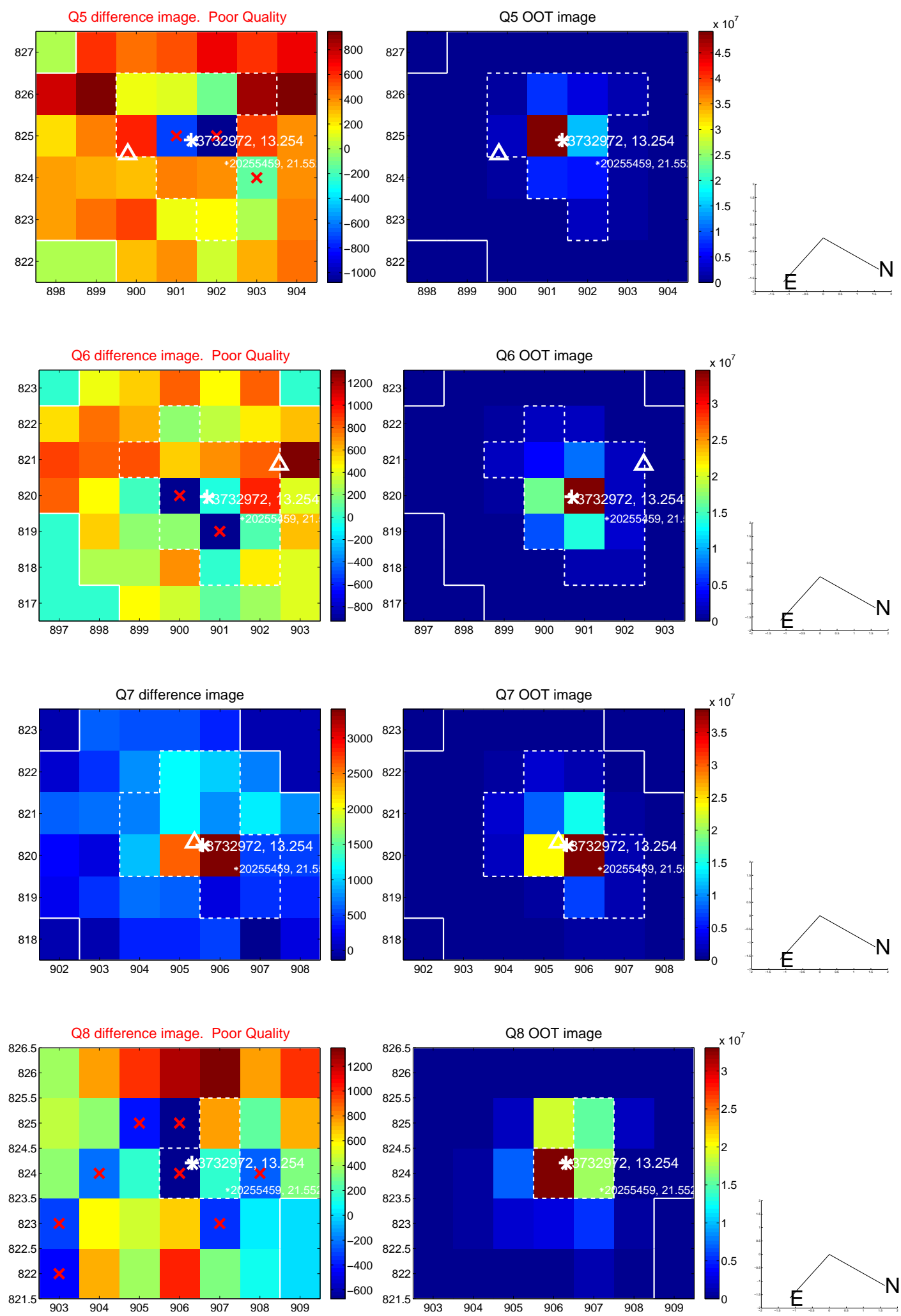


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: 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.

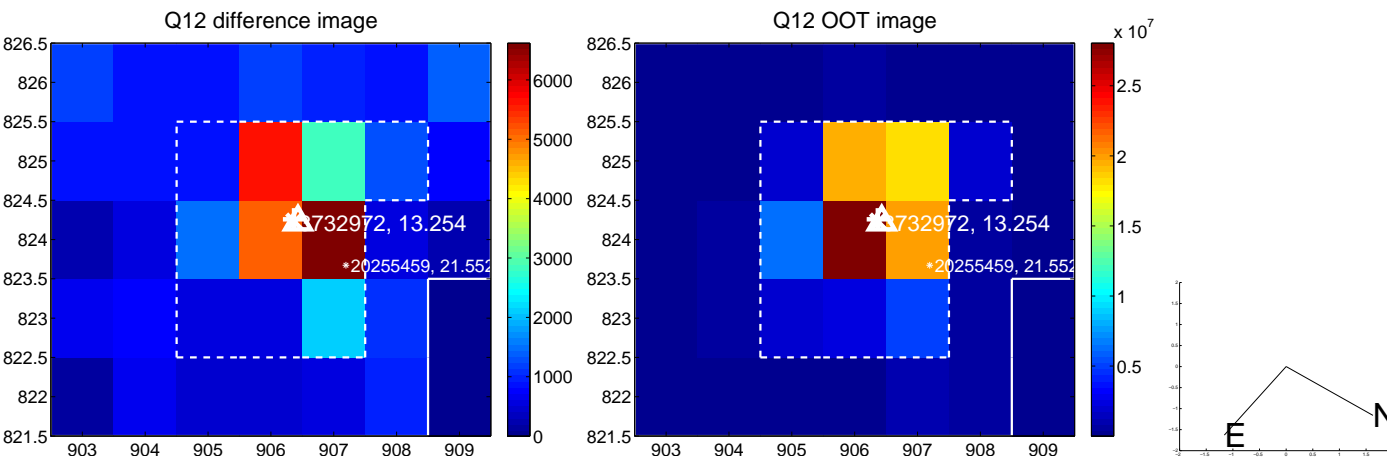
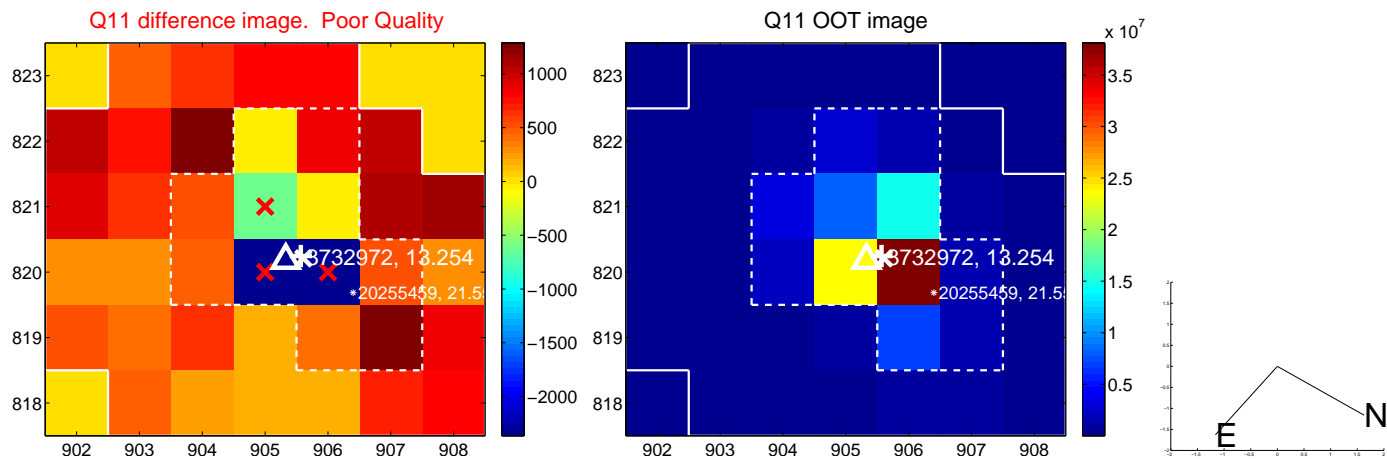
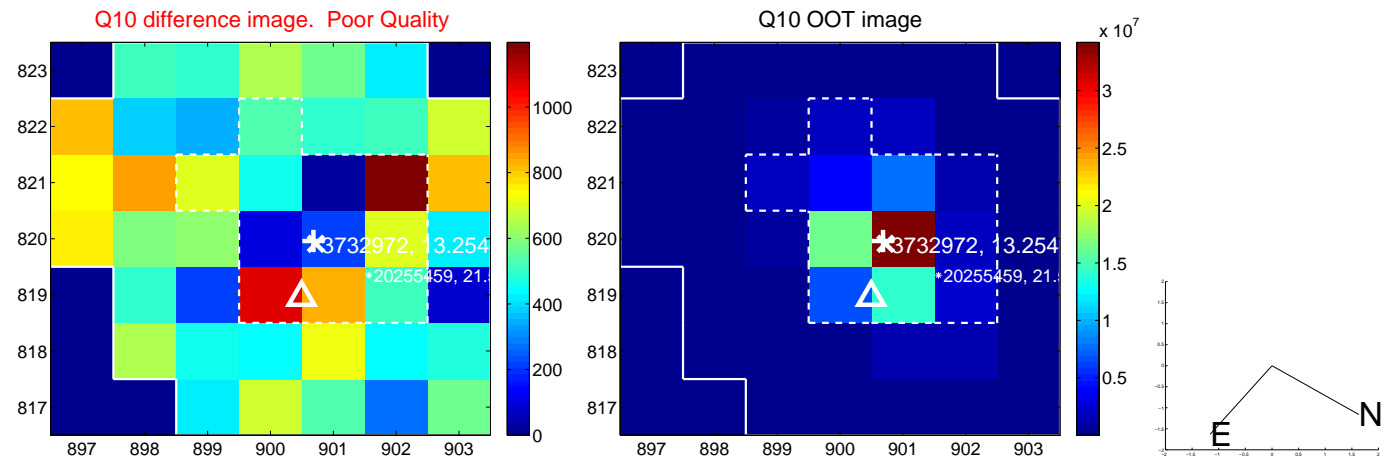
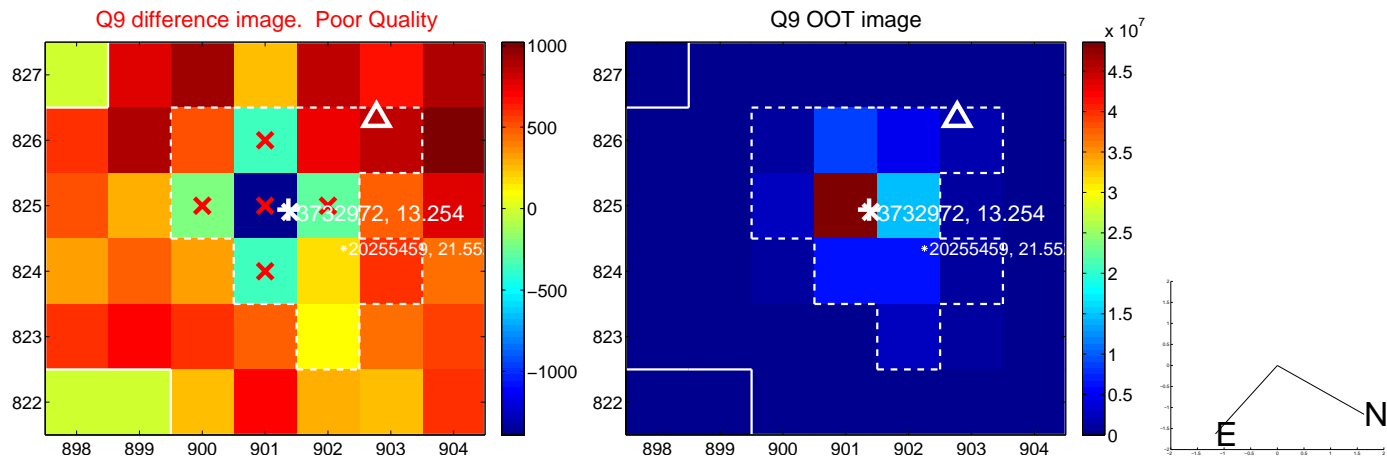


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

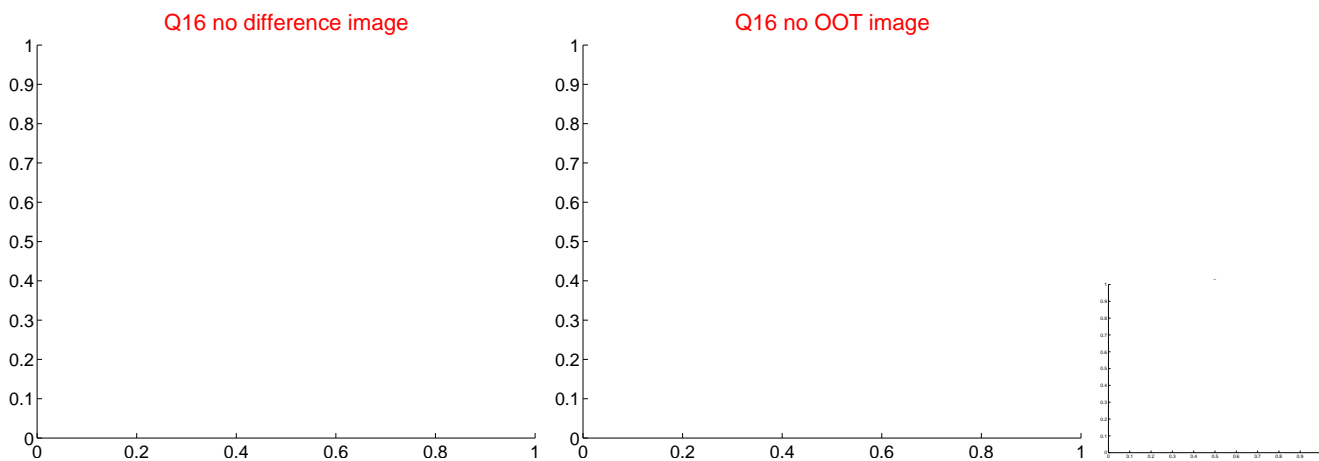
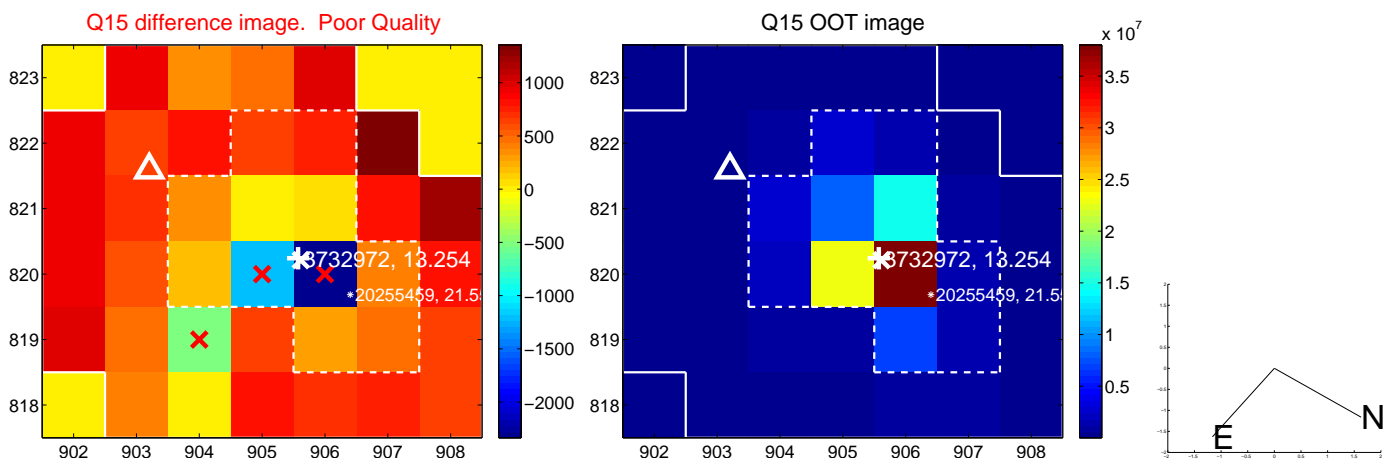
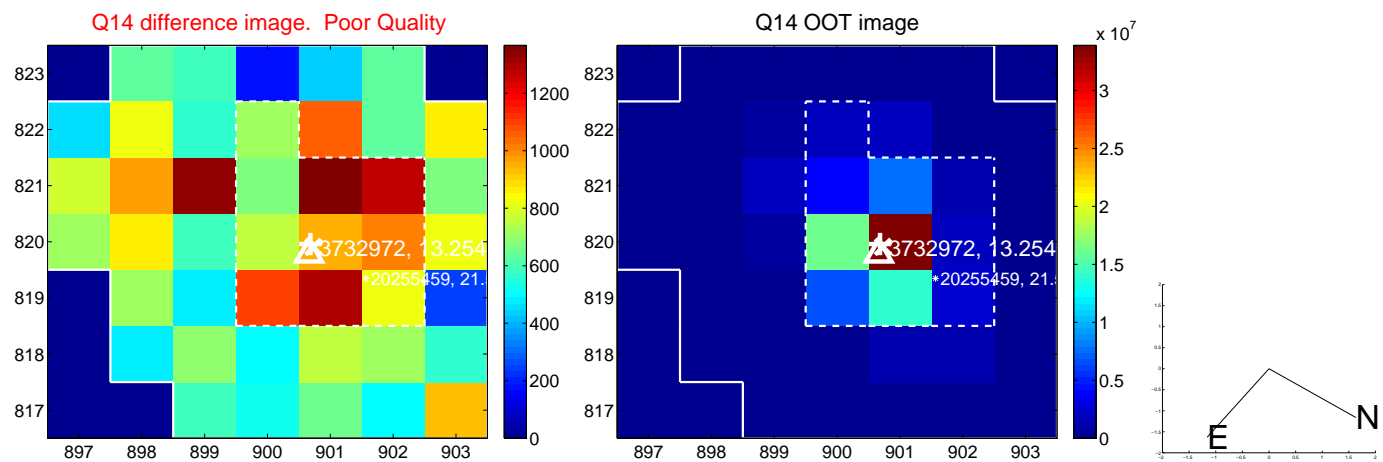
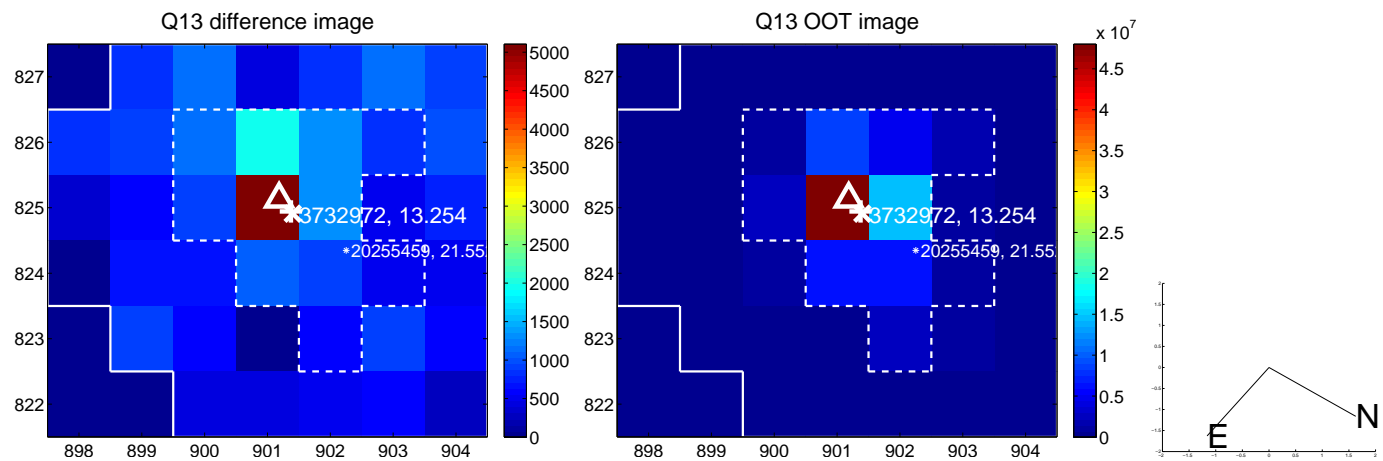




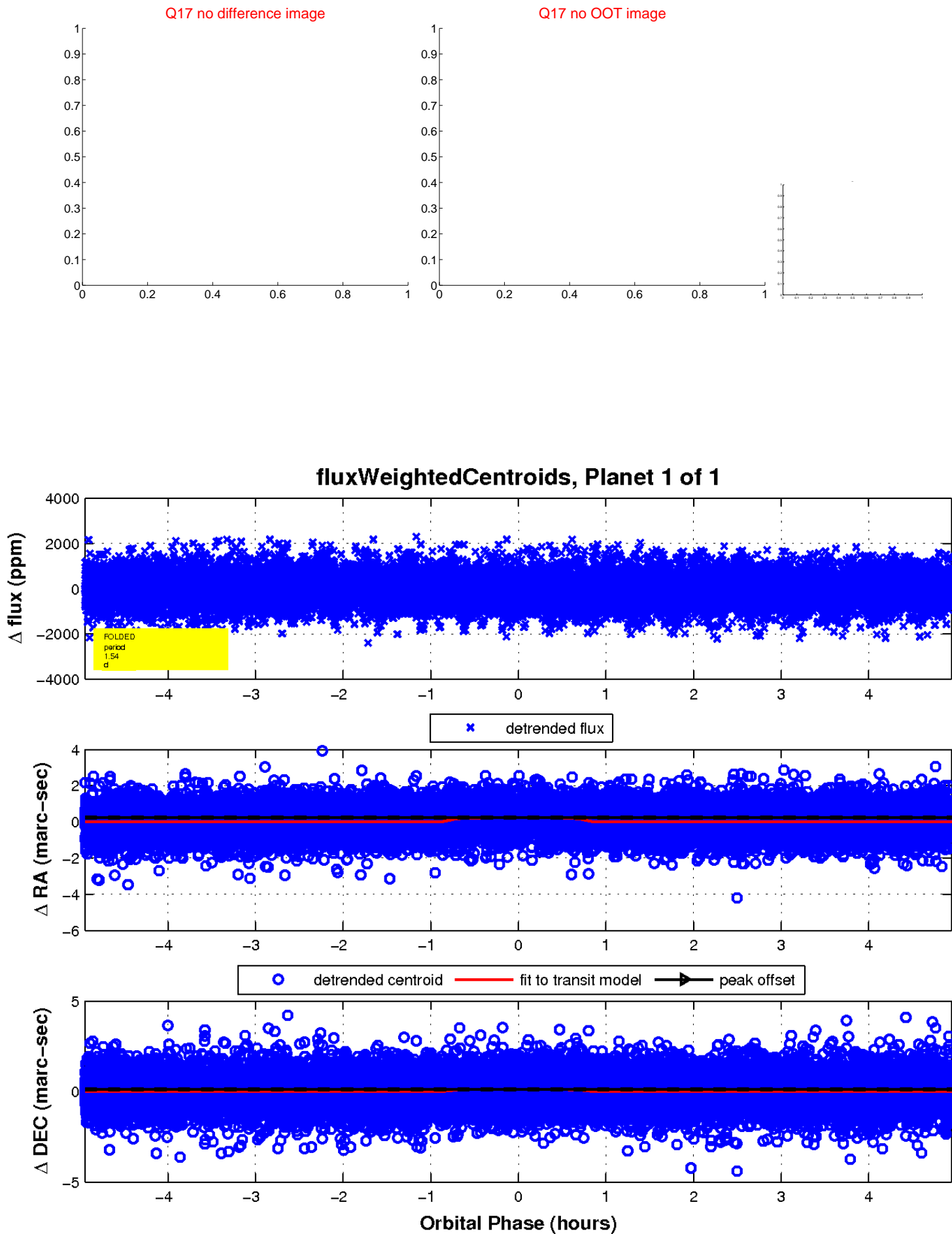
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

