

# KIC 007816072

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007816072-01	OBS	No	0.737449	132.135151	57.4	1.876	7.5	6.2	1.02	6208	0.83	5167.24

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007816072-01	OBS	FP	0.00	1	0	1	0	<del>LPP_DV</del> <del>LPP_ALT</del> <del>MOD_NONUNIQ_ALT</del> <del>CENT_RESOLVED_OFFSET</del> <del>HALO_GHOST</del>

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

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

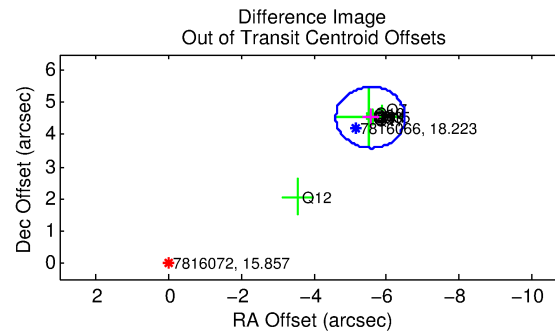
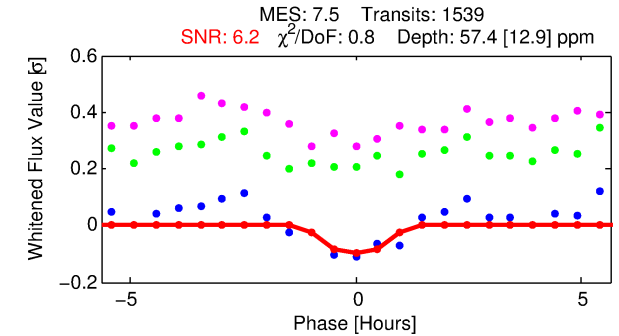
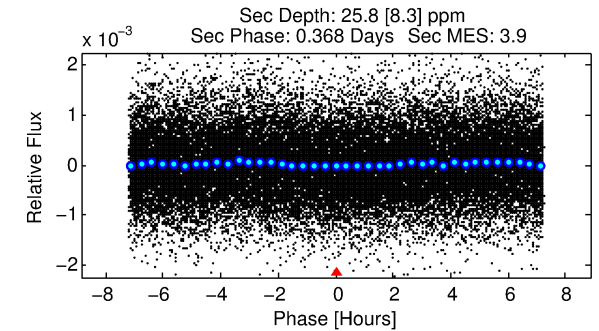
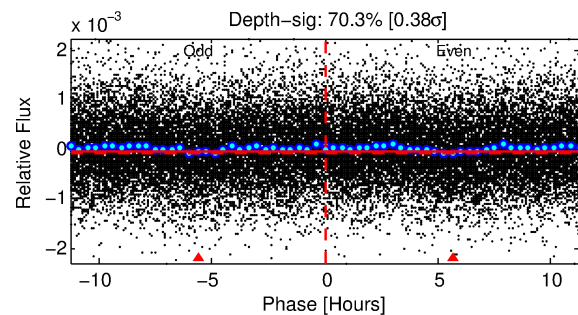
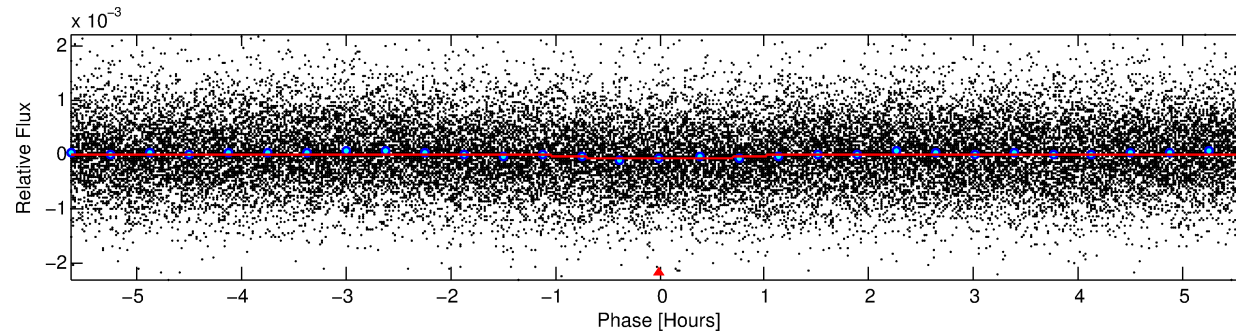
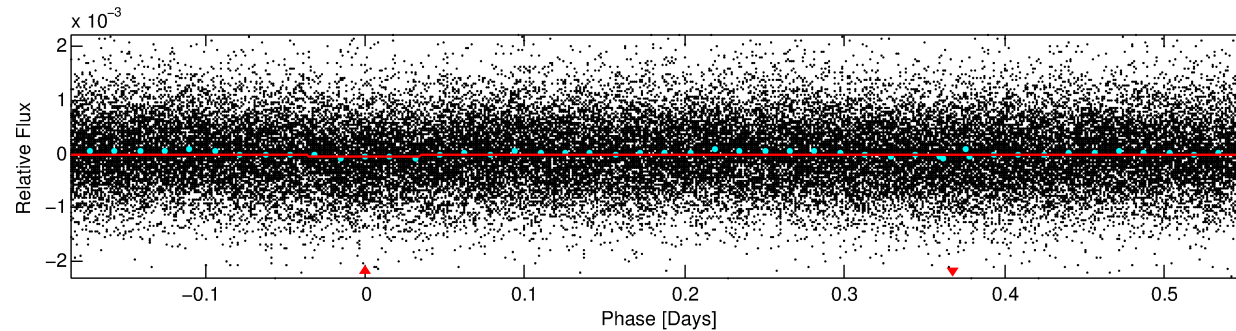
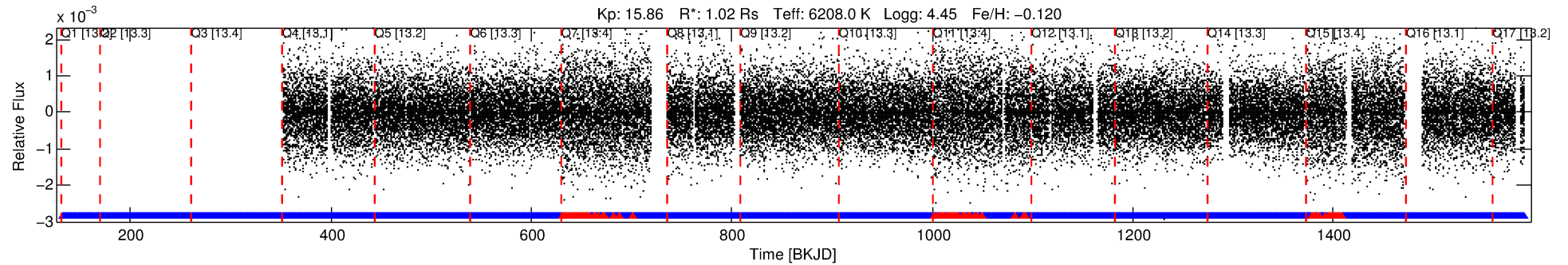
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007816072-01

No Significant Match Found

# DV One-Page Summary

KIC: 7816072 Candidate: 1 of 1 Period: 0.737 d



## DV Fit Results:

Period = 0.73745 [0.00002] d  
Epoch = 132.1352 [0.0045] BKJD  
Rp/R\* = 0.0074 [0.0048]  
a/R\* = 2.32 [6.23]  
b = 0.70 [2.42]  
Seff = 5167.24 [2032.45]  
Teq = 2162 [213] K  
Rp = 0.83 [0.60] Re  
a = 0.0164 [0.0042] AU  
Ag = 5.54 [7.71] [0.59 $\sigma$ ]  
Teff = 5129 [1732] K [1.70 $\sigma$ ]

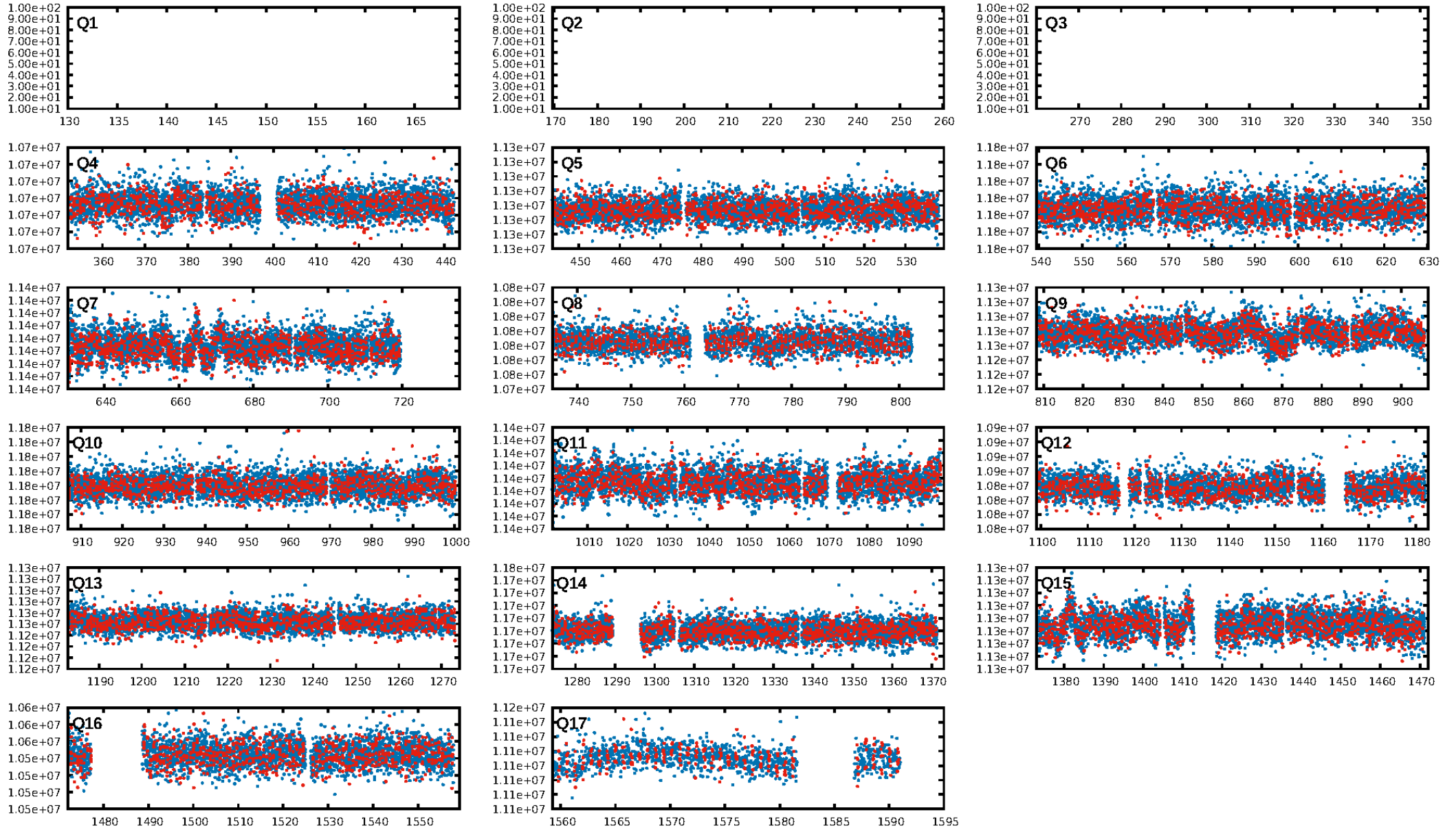
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.47e-15  
RollingBand-fgt: 0.93 [1401/1503]  
GhostDiagnostic-chr: -0.05759  
Centroid-sig: 4.0%  
Centroid-so: 2.779 arcsec [1.37 $\sigma$ ]  
OotOffset-rm: 7.175 arcsec [22.59 $\sigma$ ]  
KicOffset-rm: 7.080 arcsec [22.41 $\sigma$ ]  
OotOffset-st: 2/3/1/4 [10]  
KicOffset-st: 2/3/1/4 [10]  
DiffImageQuality-fgm: 0.90 [9/10]  
DiffImageOverlap-fno: 1.00 [14/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:55:11 Z

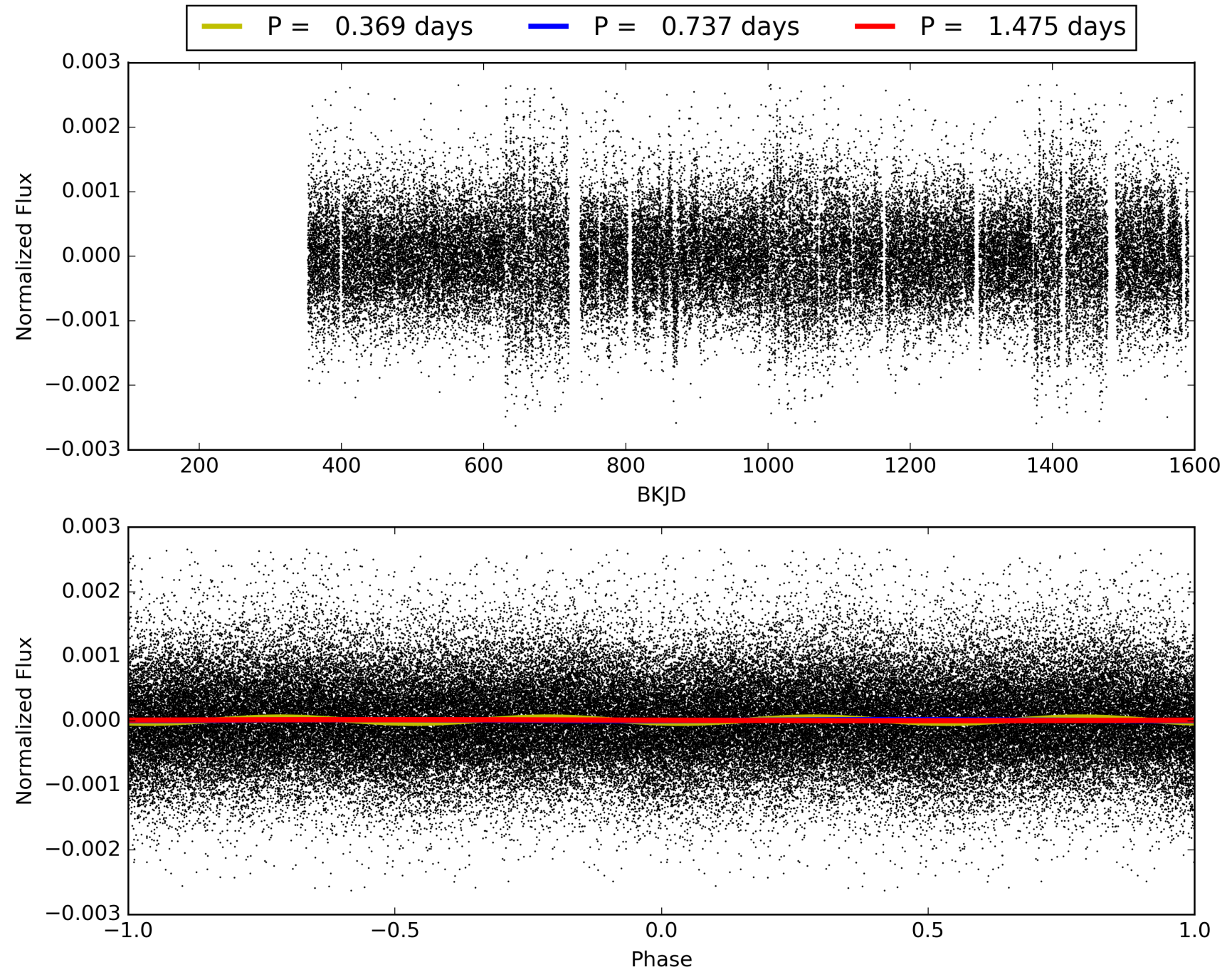
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007816072-01, PDC Light Curves



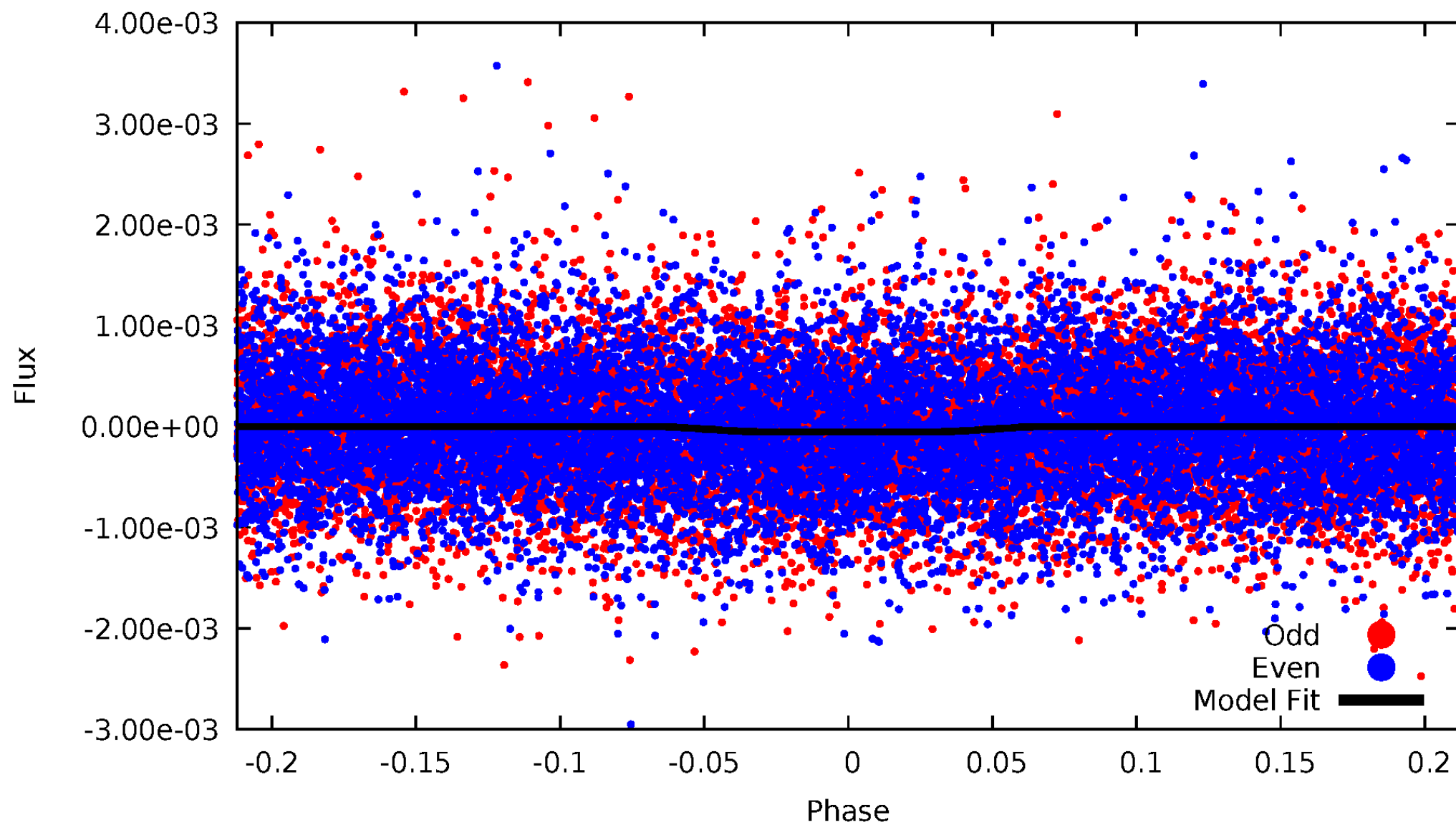


# TCE 007816072-01



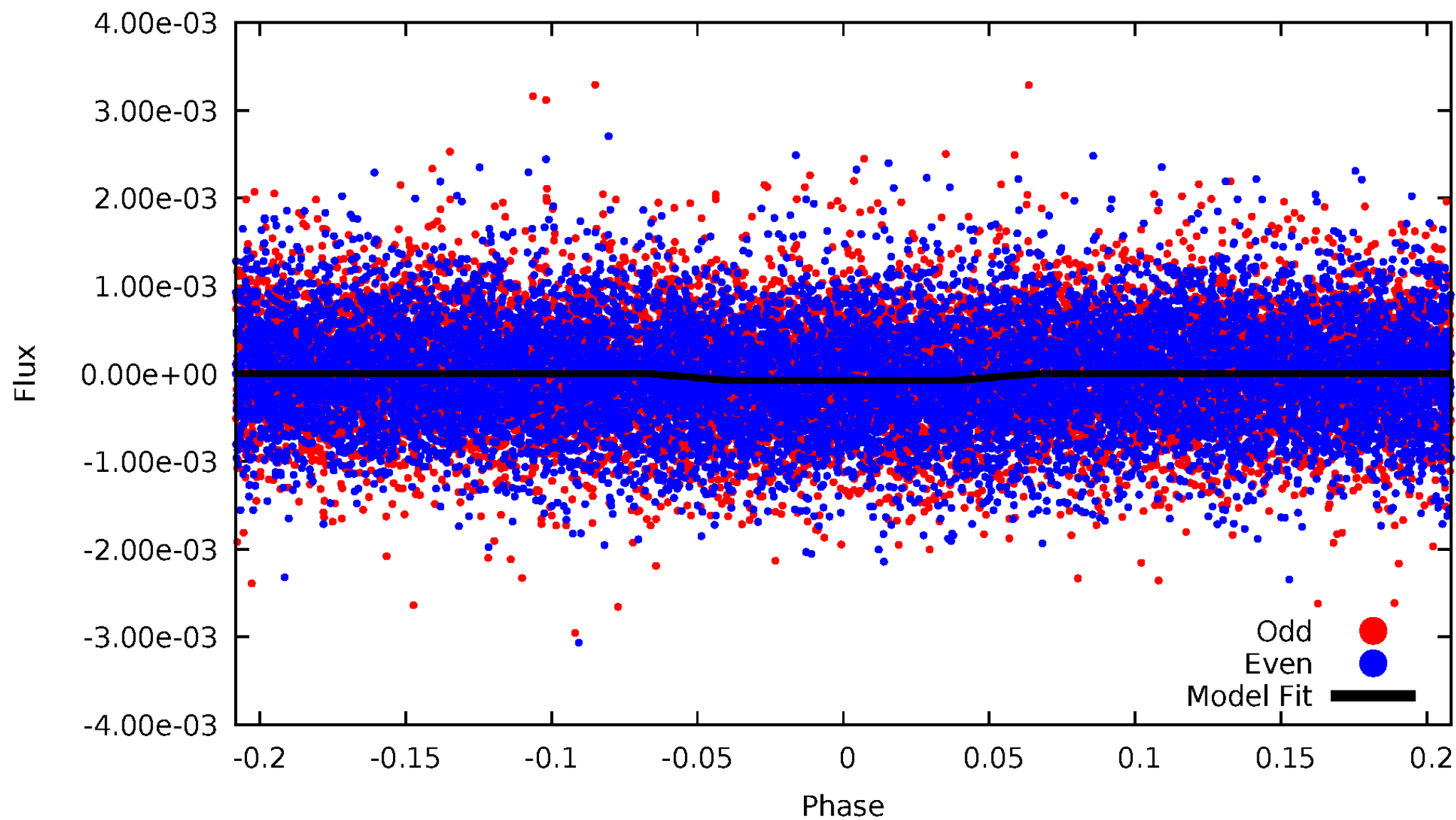
# DV Odd/Even

TCE 007816072-01



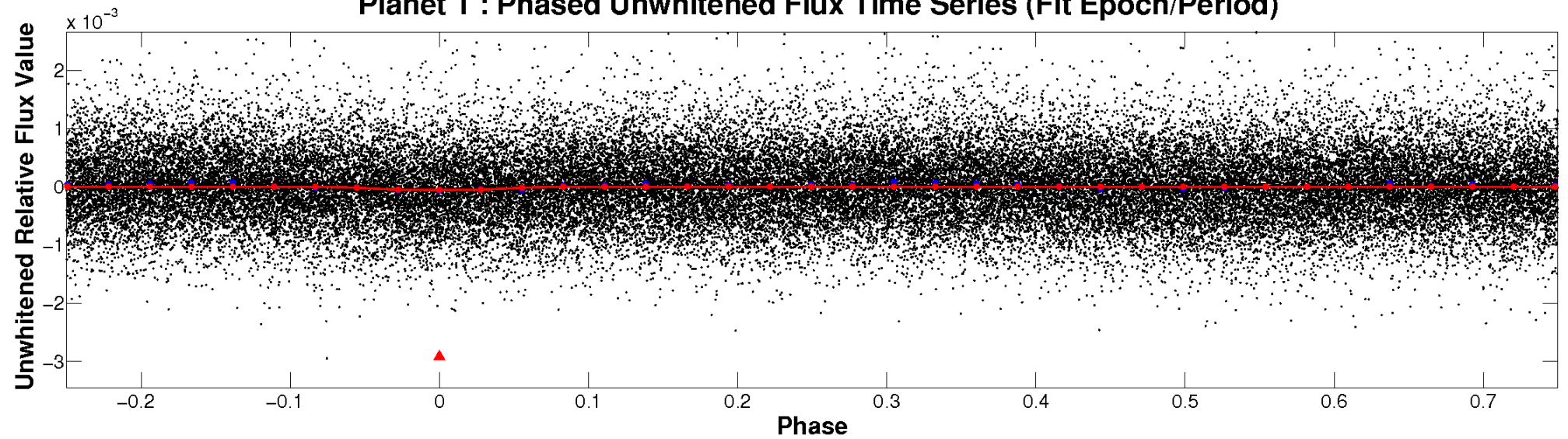
# ALT Odd/Even

TCE 007816072-01

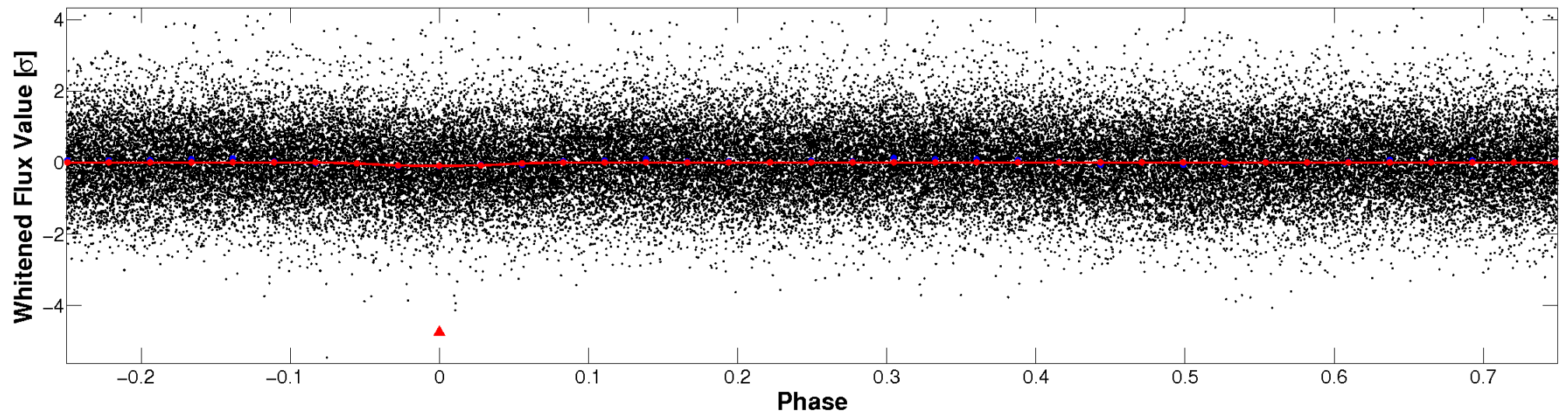


# Non-Whitened Vs. Whitened Light Curve

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



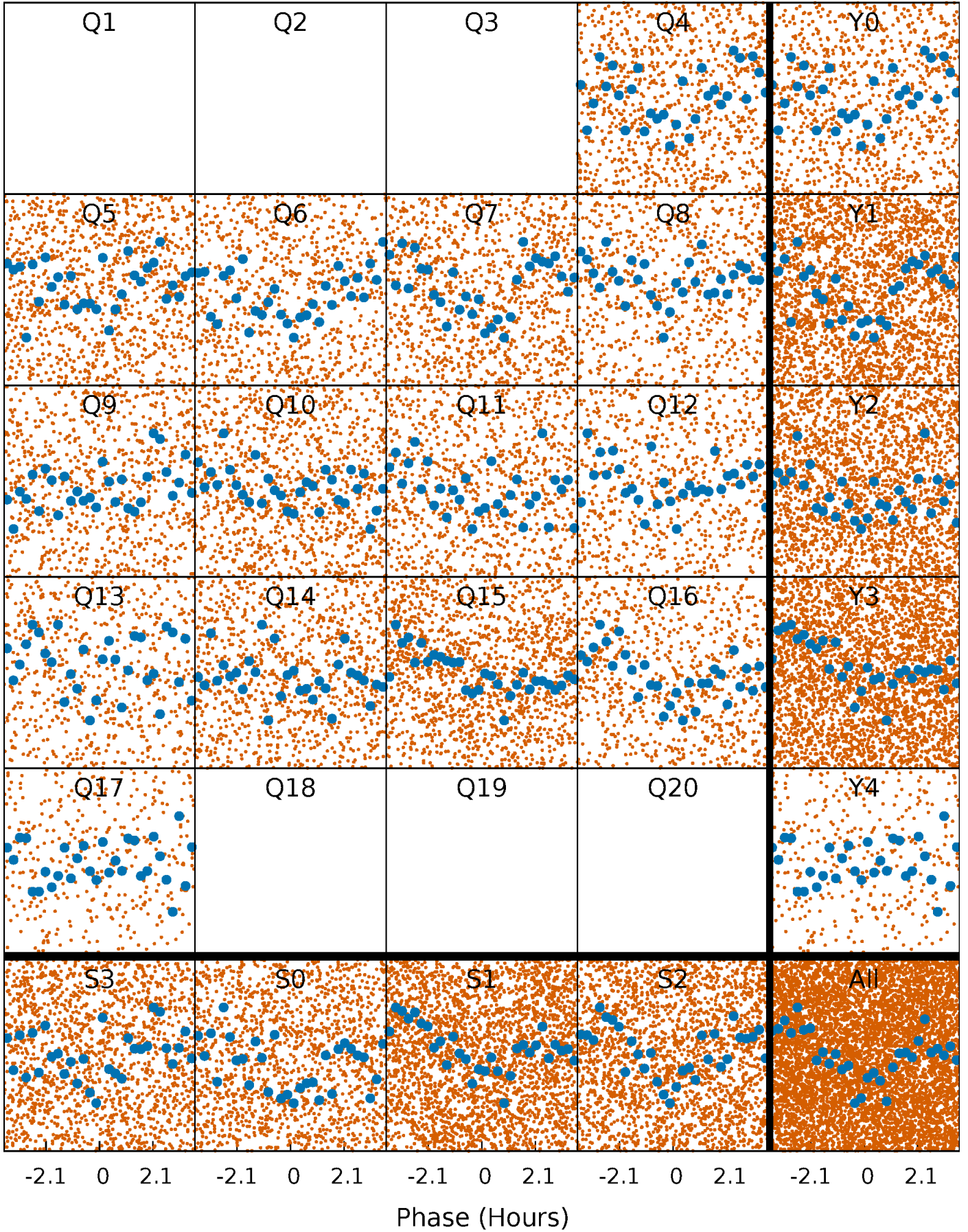
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

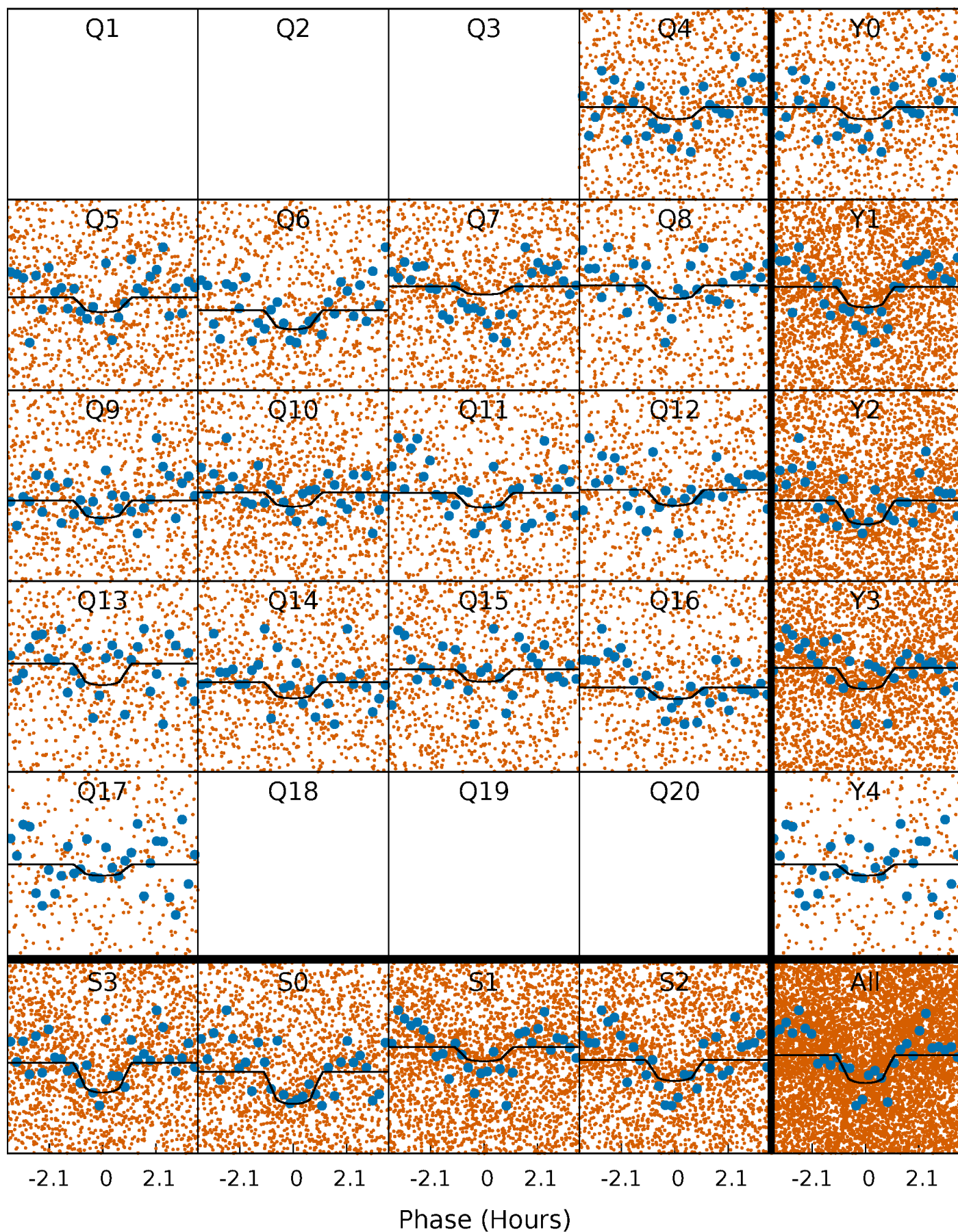
TCE 007816072-01 P= 0.737449 Days  $T_0=132.135151$  (BKJD)





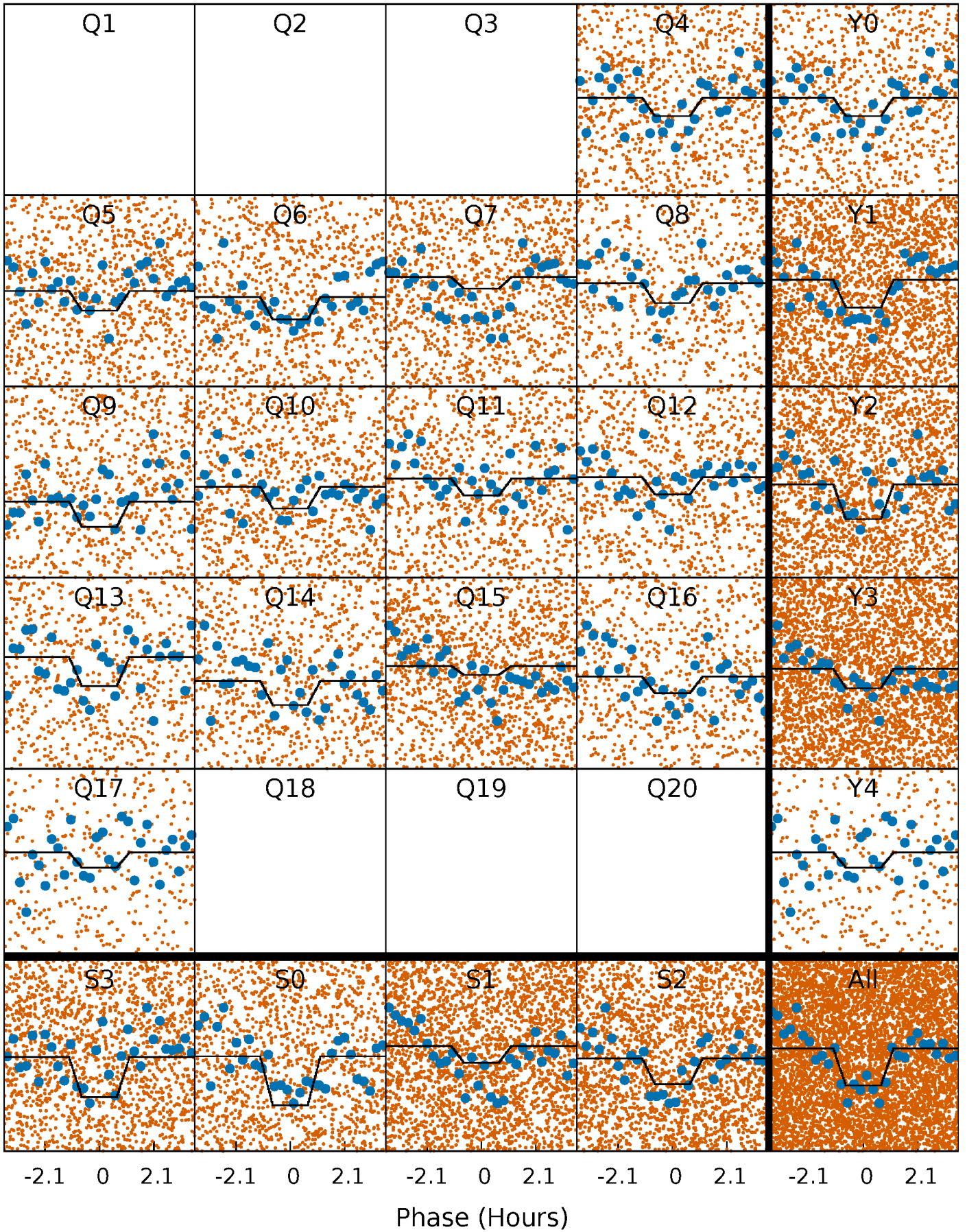
# DV Quarter-Phased Transit Curves

TCE 007816072-01 P= 0.737449 Days  $T_0=132.135151$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

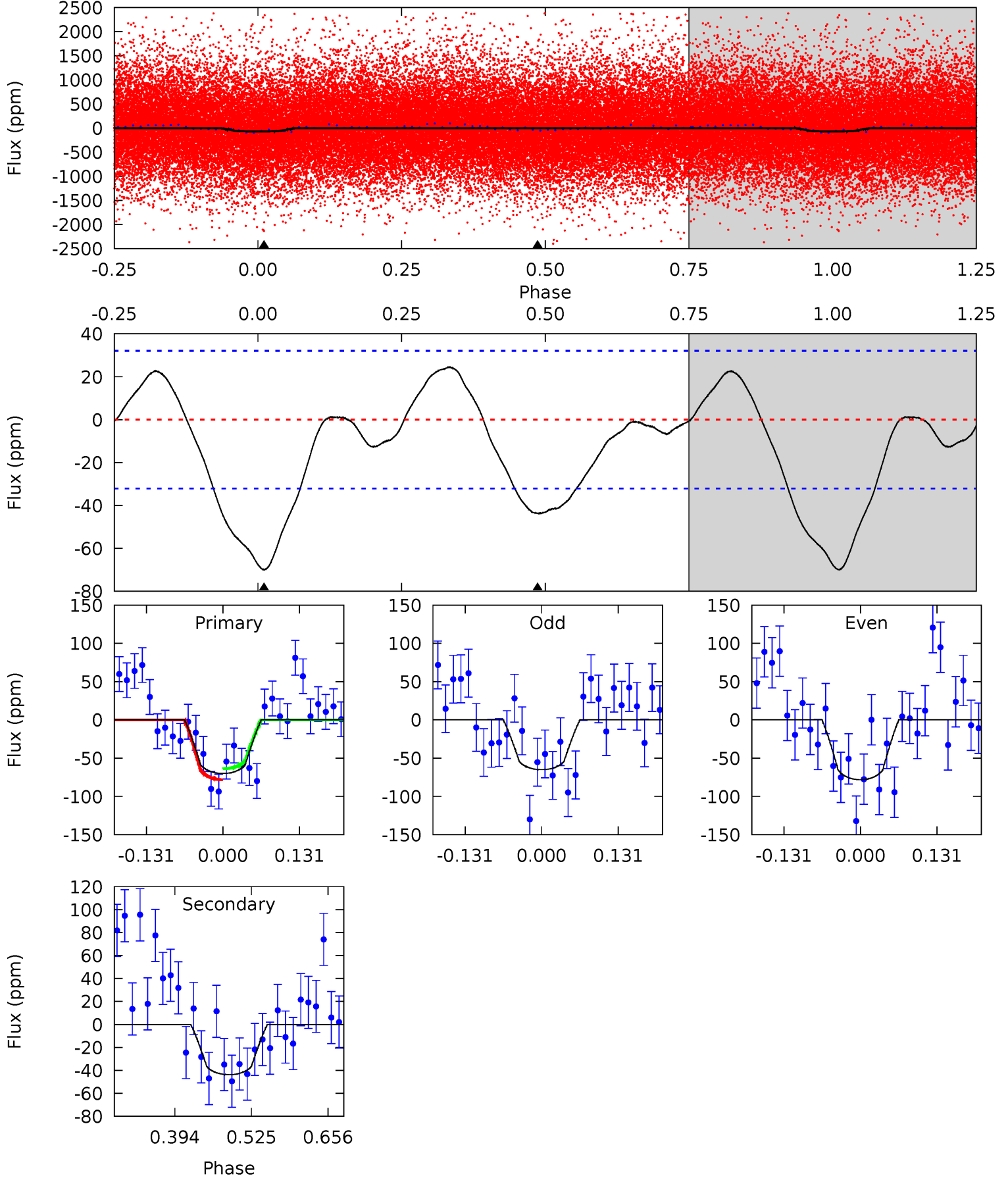
TCE 007816072-01 P= 0.737462 Days  $T_0=132.127347$  (BKJD)



# DV Model-Shift Uniqueness Test

007816072-01, P = 0.737449 Days, E = 132.135151 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
9.83	6.14	0	0	4.51	1.51	1.62	9.83	9.83	6.14	6.14	0.92	1.02	0.26	1.01

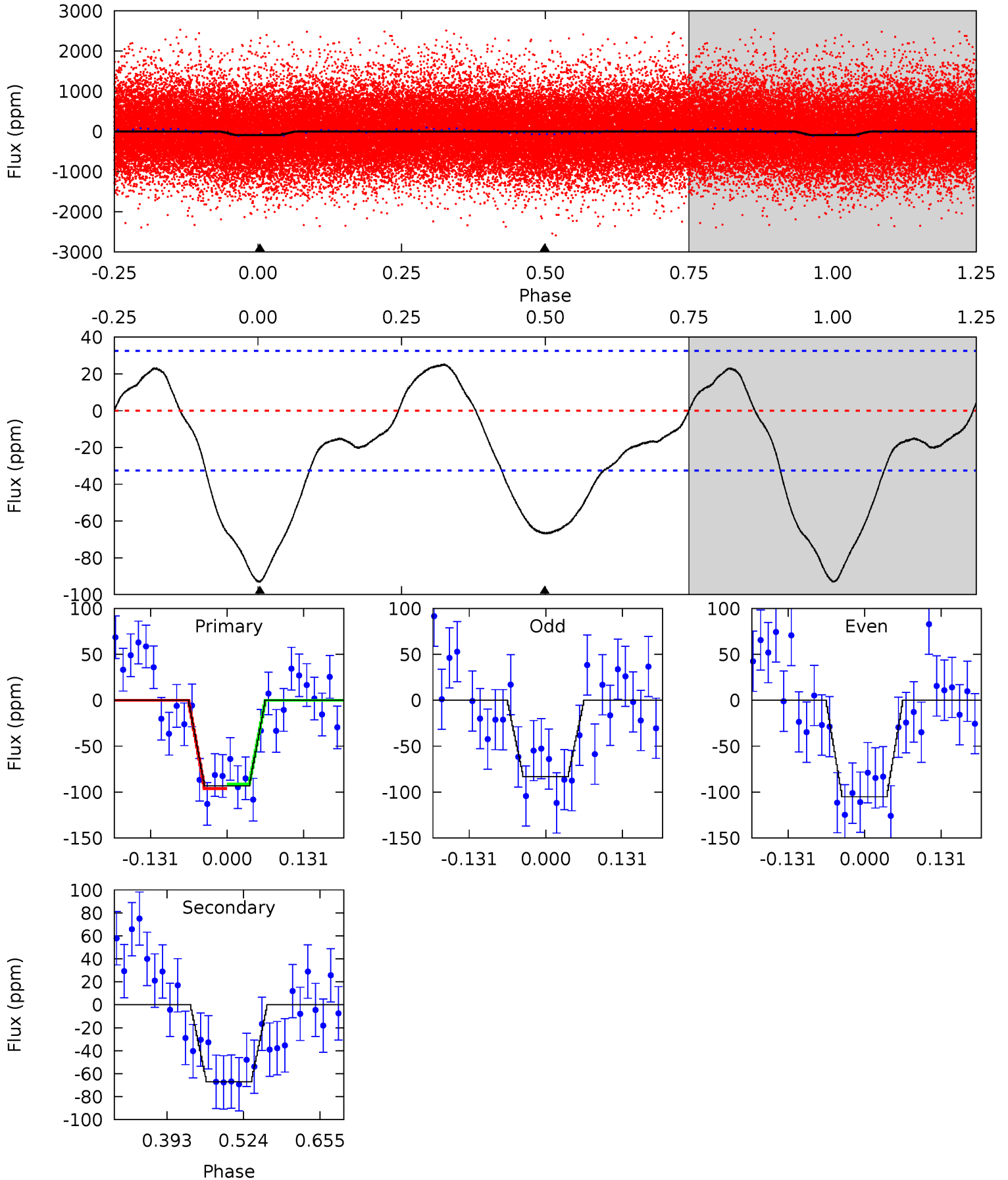




# Alt Model-Shift Uniqueness Test

007816072-01, P = 0.737462 Days, E = 132.127347 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
12.9	9.28	0	0	4.51	1.51	2.28	12.9	12.9	9.28	9.28	1.52	1.09	0.21	0.35





### Stellar Parameters For KIC 007816072

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6208^{+194}_{-237}$	$4.454^{+0.065}_{-0.195}$	$-0.120^{+0.250}_{-0.300}$	$1.024^{+0.314}_{-0.126}$	$1.086^{+0.155}_{-0.141}$	$1.423^{+0.396}_{-0.747}$
	+3%/-4%	+1%/-4%	+208%/-250%	+31%/-12%	+14%/-13%	+28%/-52%
Source	KIC0	KIC0	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 007816072-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-44 \pm 7$	$0.92^{+0.60}_{-0.55}$	$3086^{+225}_{-166}$	$5694^{+3835}_{-1177}$	$7.780^{+37.969}_{-4.954}$
Alt.	$-67 \pm 7$	$1.01^{+0.57}_{-0.50}$	$3057^{+221}_{-149}$	$5896^{+2896}_{-1076}$	$9.248^{+26.911}_{-5.290}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

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

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

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

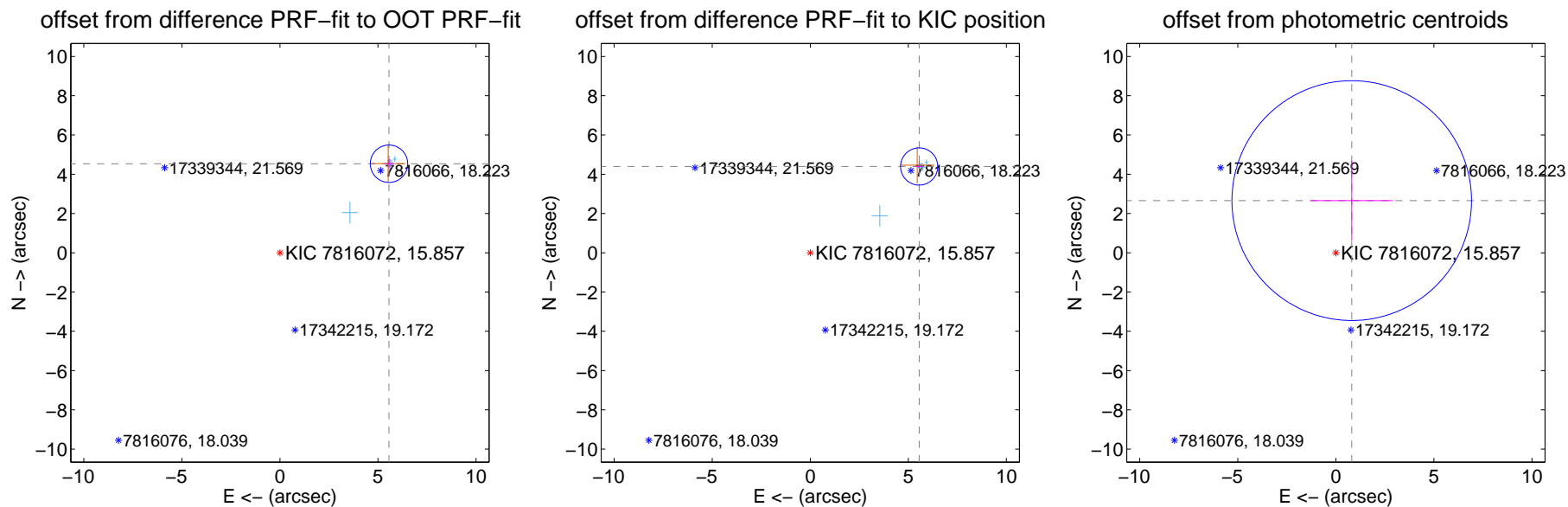
## DV Centroid Data

Supplemental centroid analysis for 007816072-01. Kepler magnitude: 15.86. Transit SNR 6.19

There are 9 quarters with good PRF difference image offsets

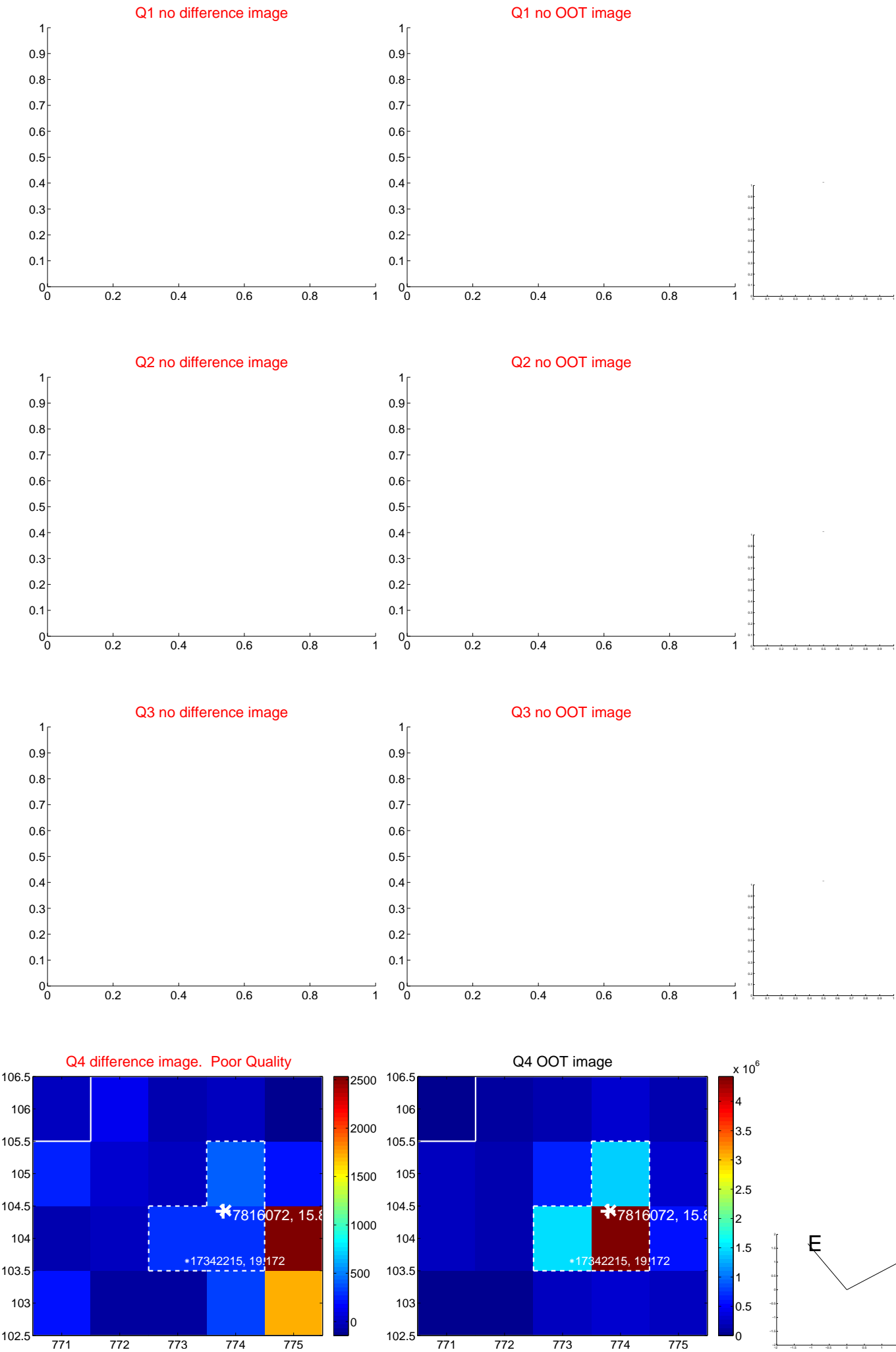
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>7.175 <math>\pm</math> 0.318</b>	<b>22.59</b>	-5.560 $\pm$ 0.212	4.535 $\pm$ 0.254
PRF-fit source offset from KIC position	<b>7.080 <math>\pm</math> 0.316</b>	<b>22.41</b>	-5.551 $\pm$ 0.213	4.395 $\pm$ 0.253
photometric centroid source offset	2.78 $\pm$ 2.04	1.37	-0.81 $\pm$ 2.09	2.66 $\pm$ 2.03

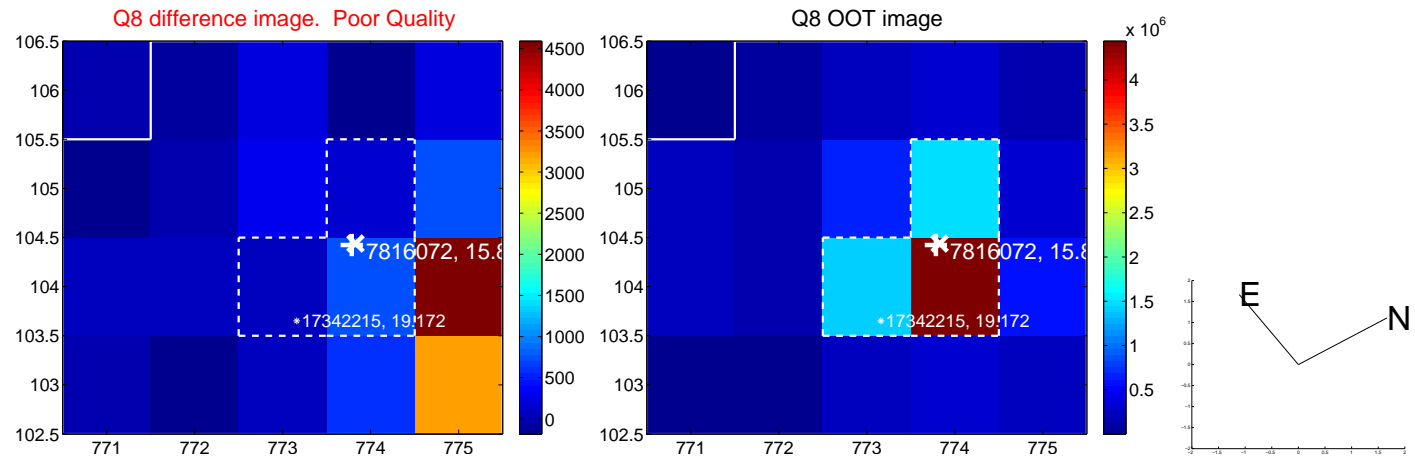
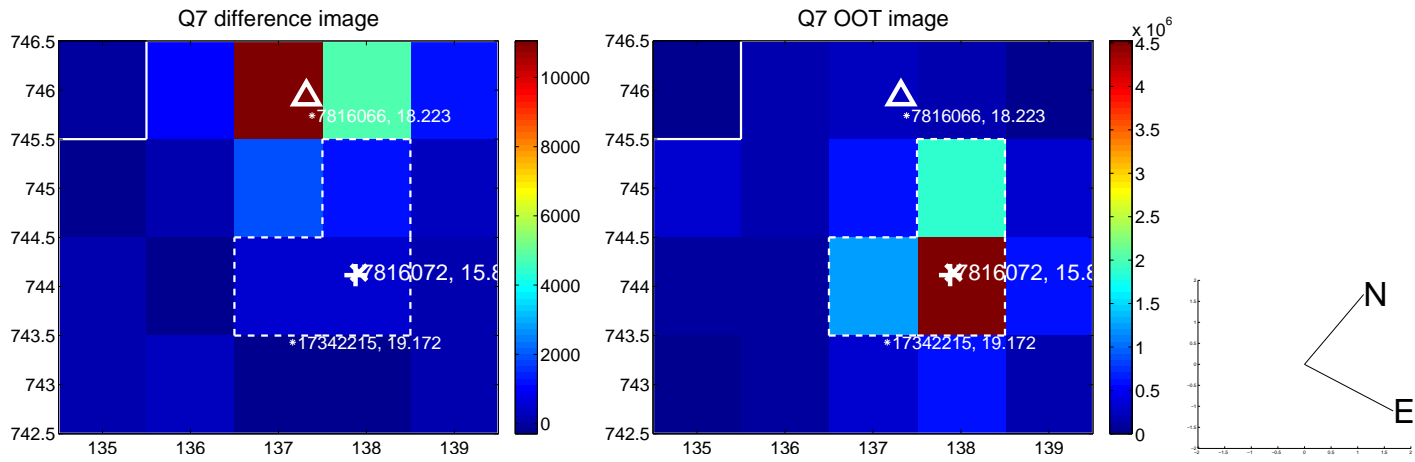
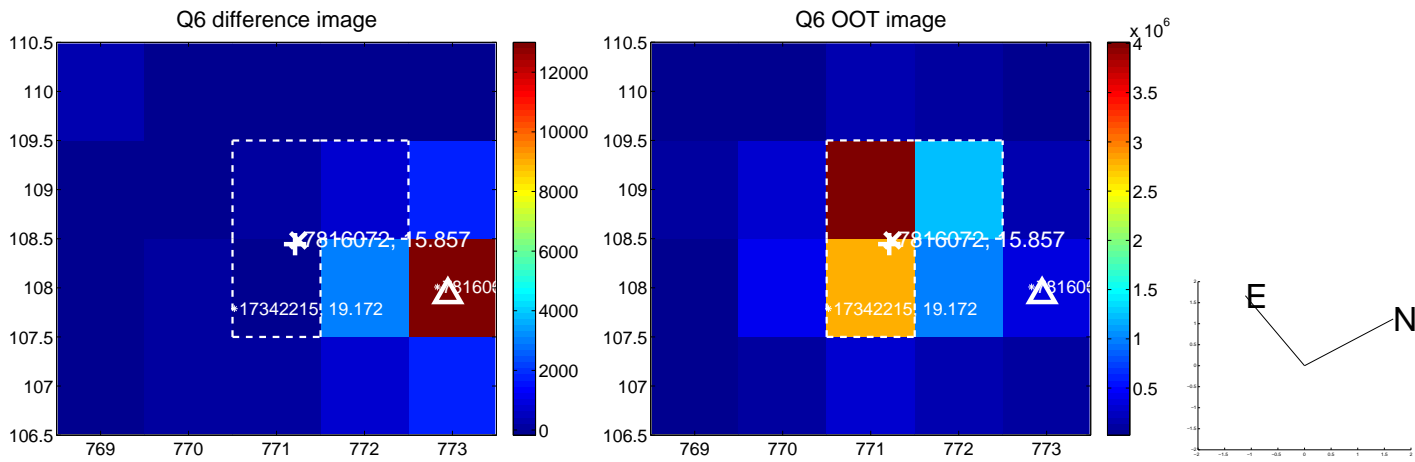
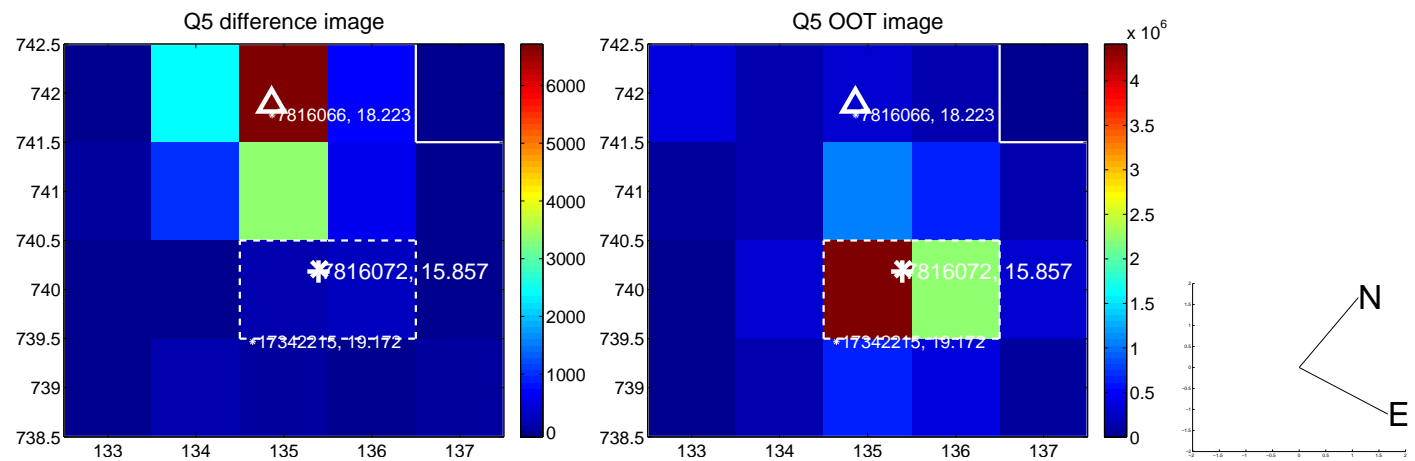


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

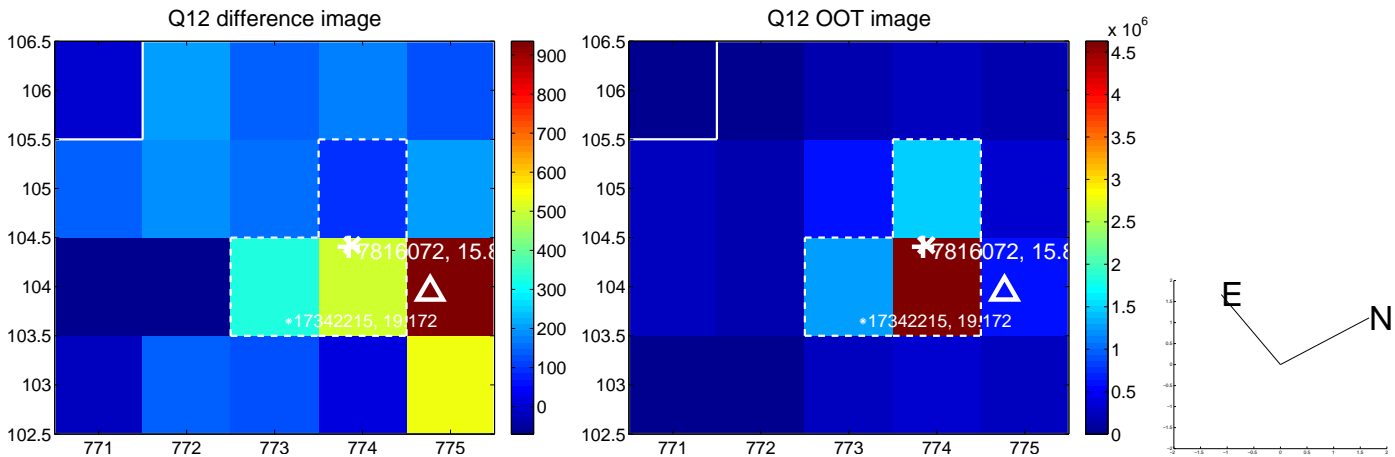
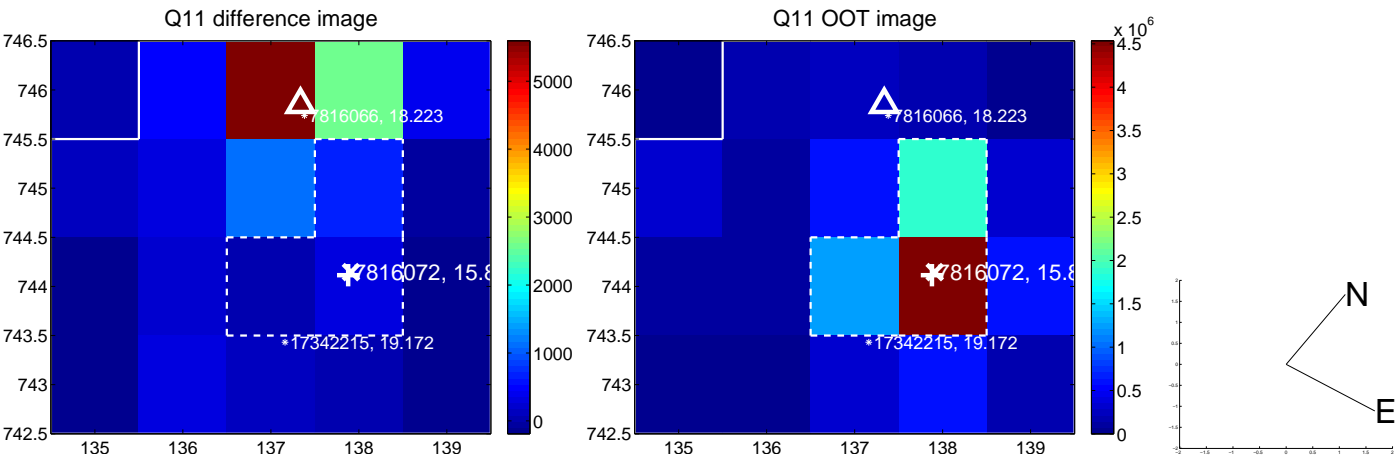
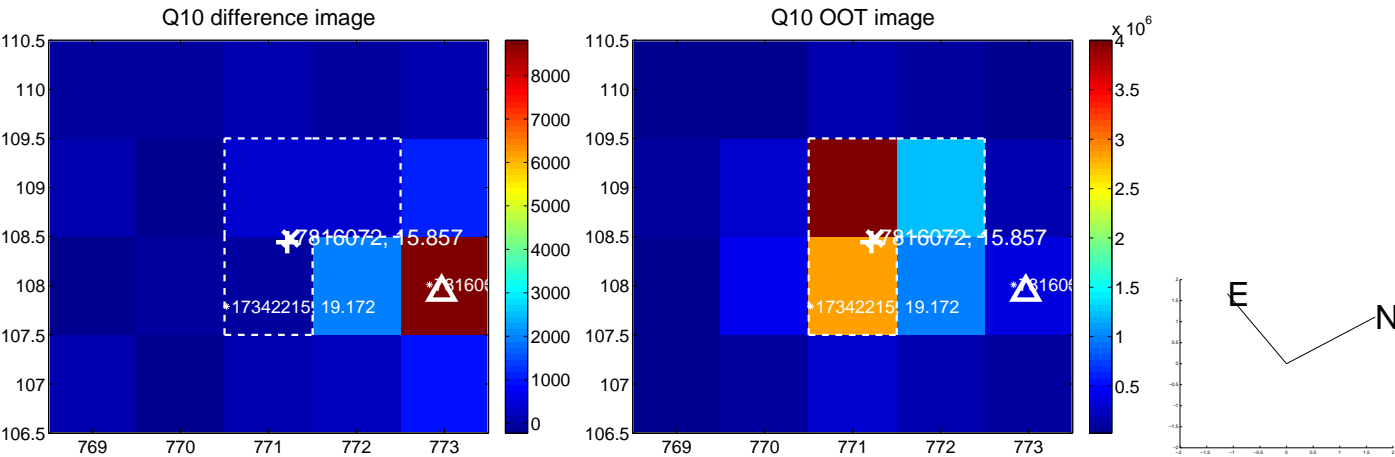
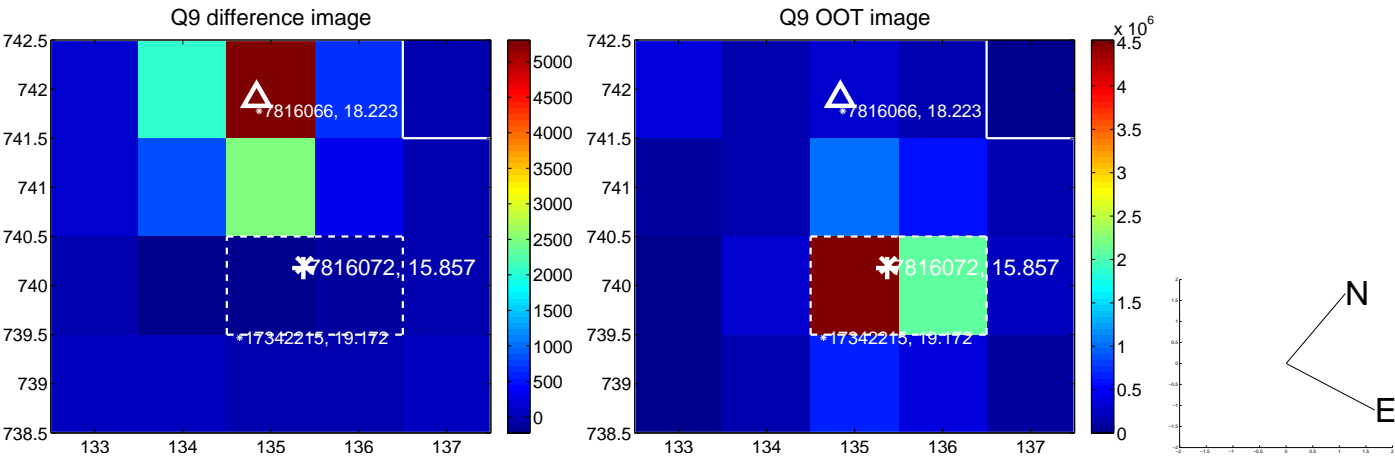


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

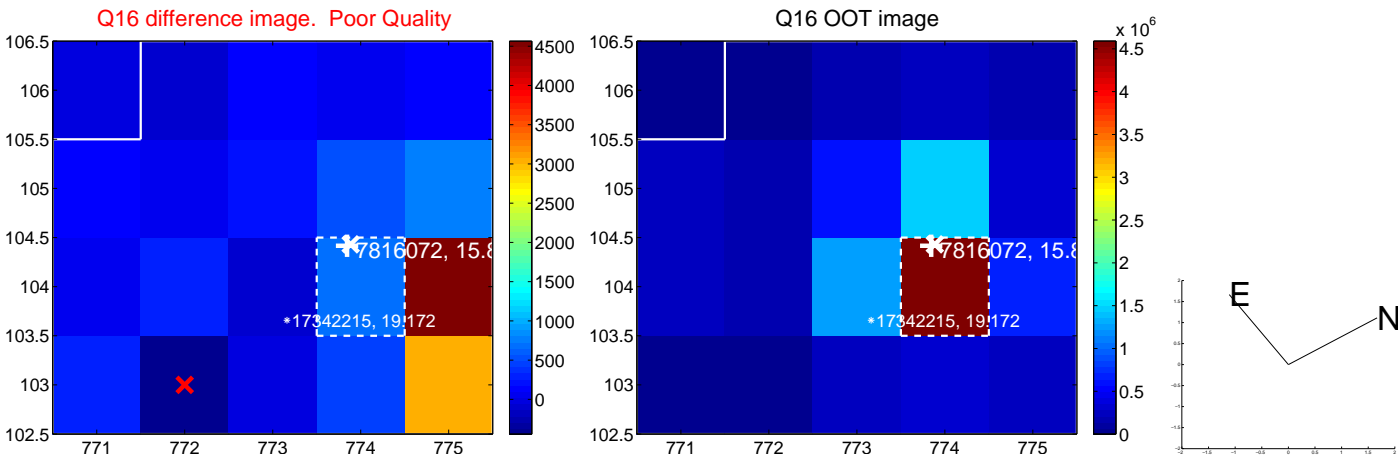
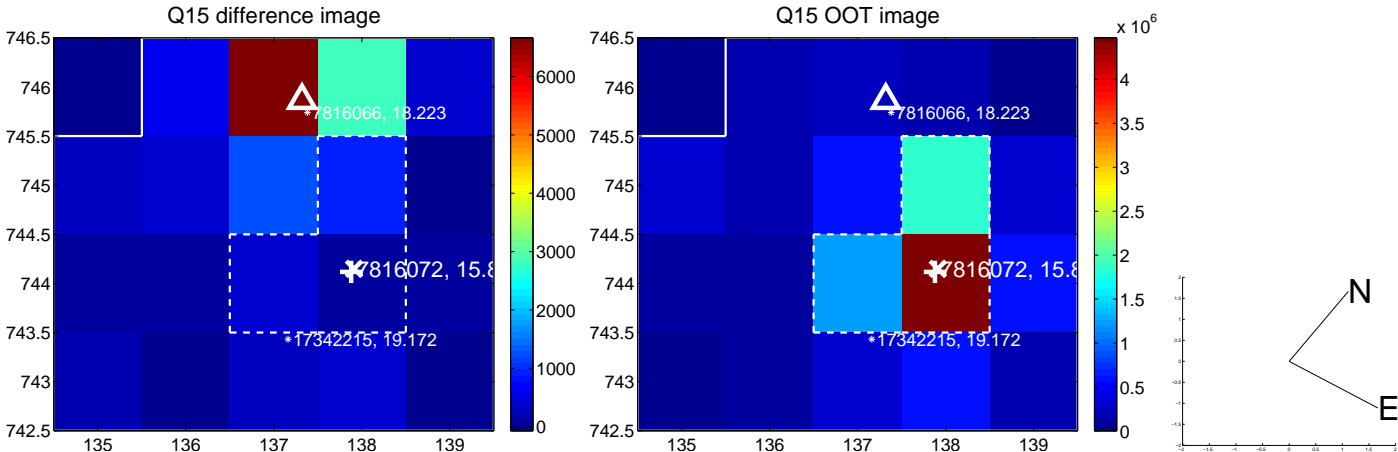
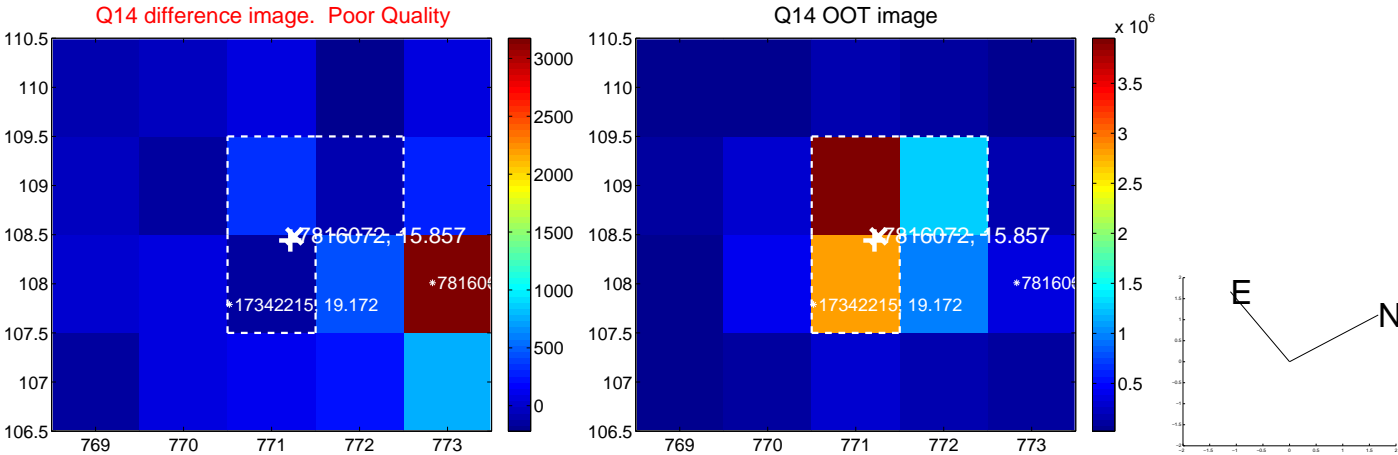
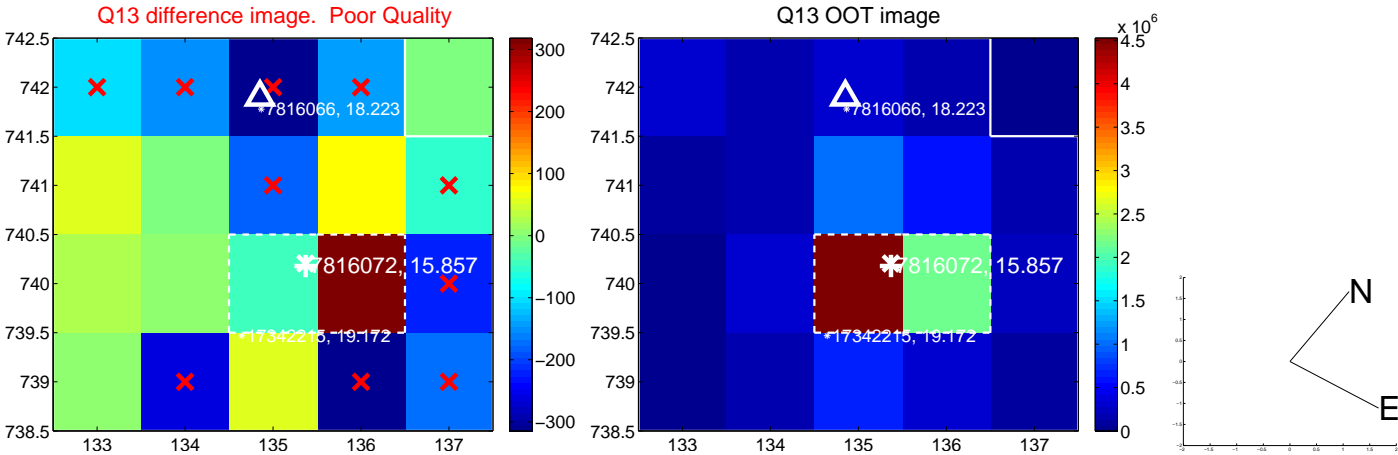




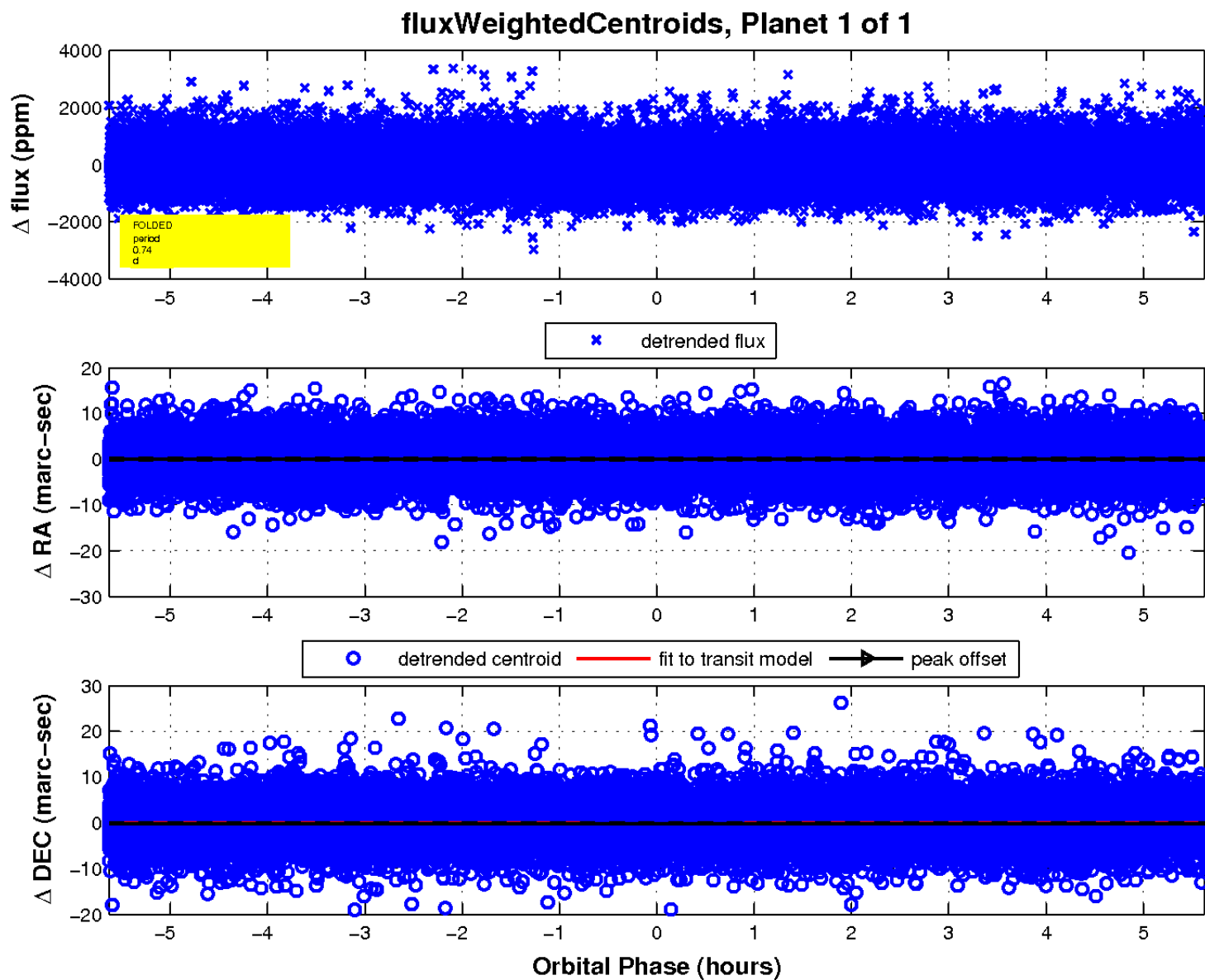
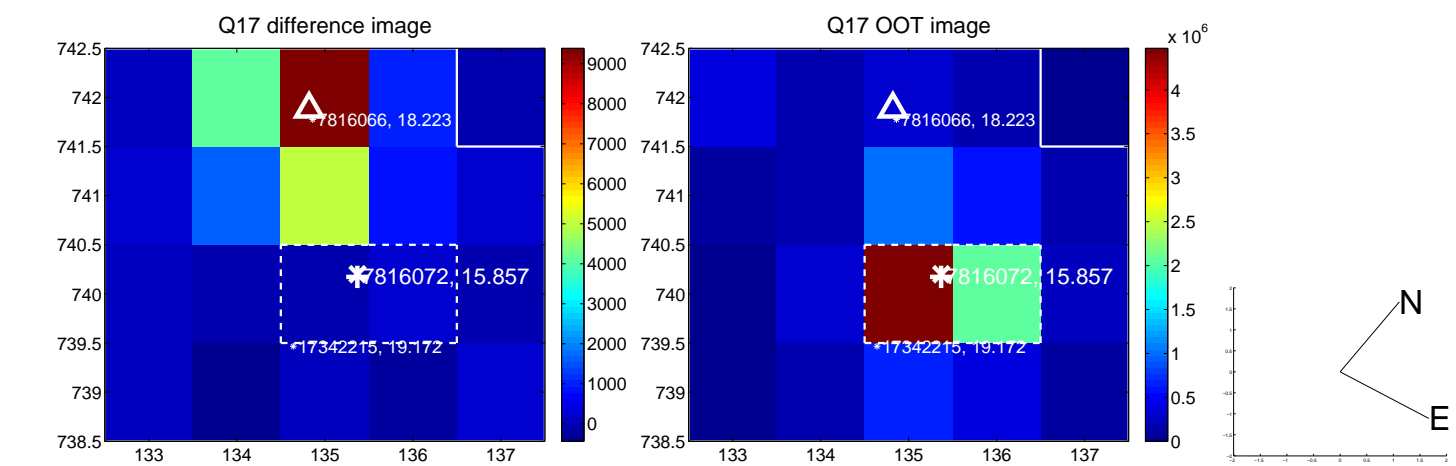
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

