

# KIC 010724372

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010724372-01	OBS	No	0.745078	131.836107	29.1	3.332	10.0	9.8	1.06	6202	0.67	5347.72

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010724372-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_OFFSET—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.

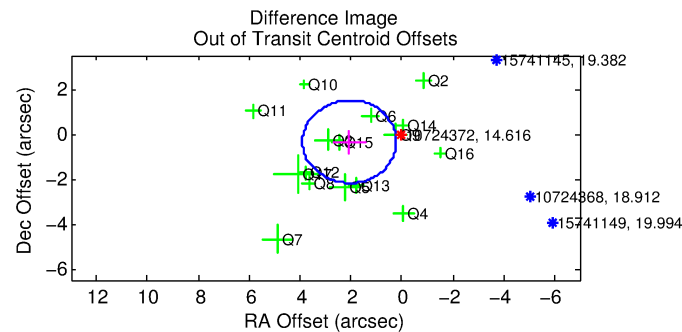
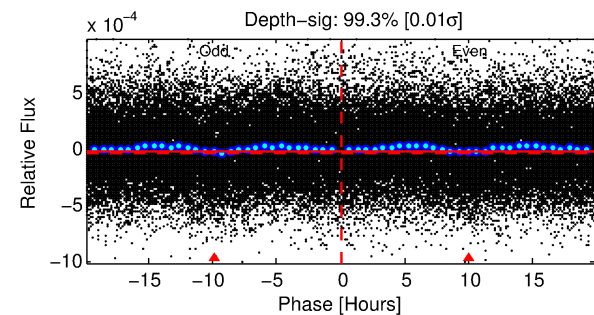
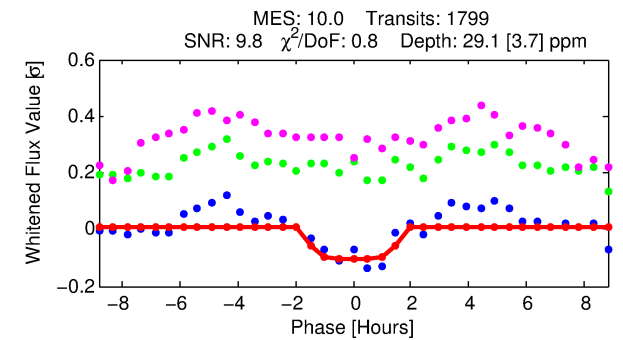
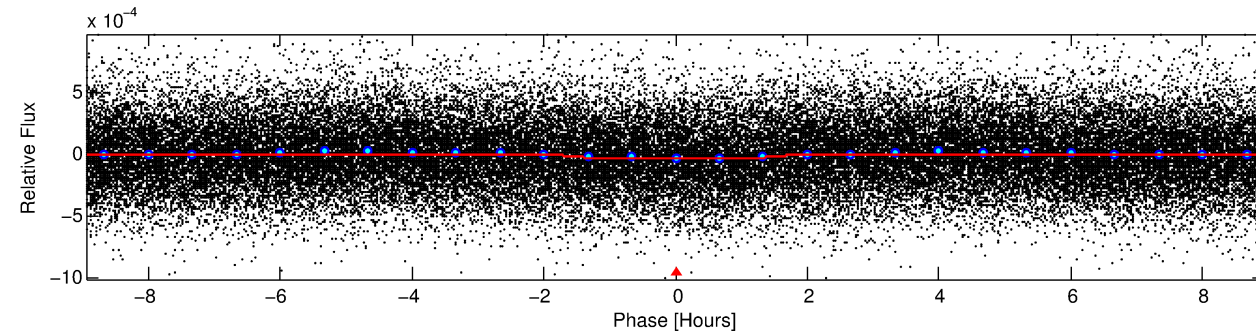
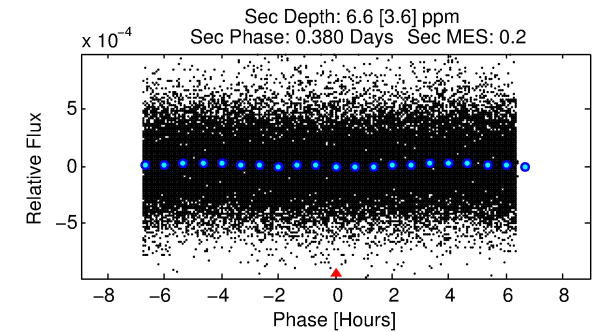
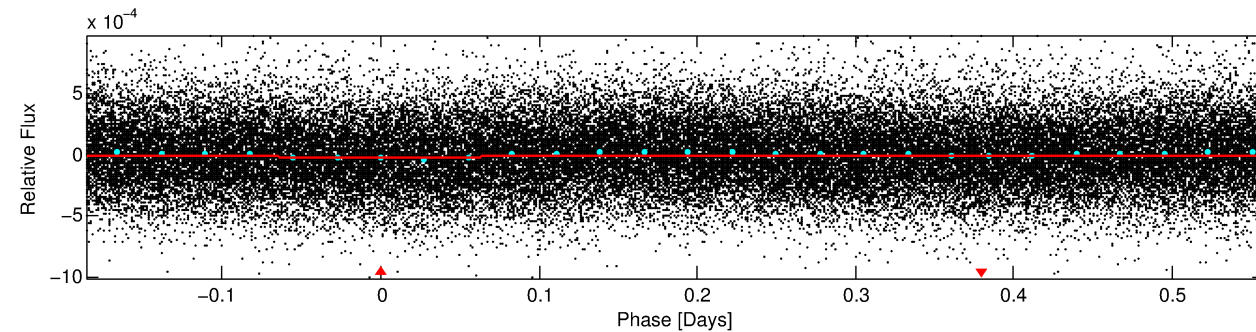
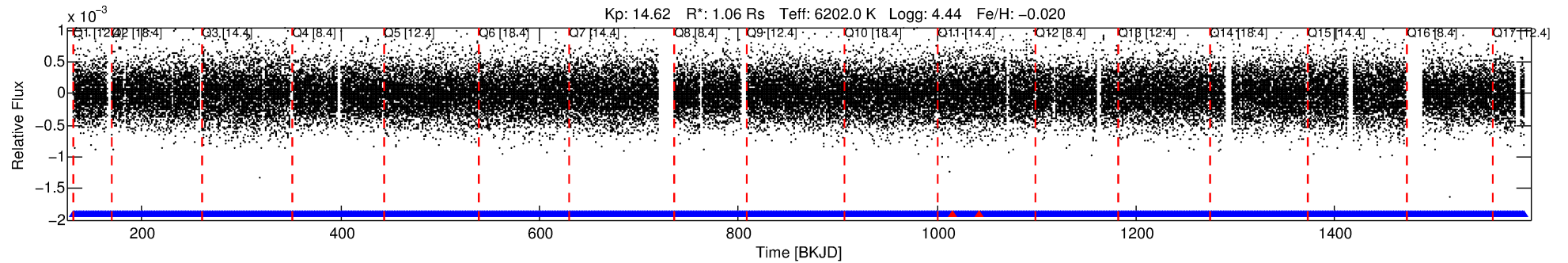
## Ephemeris Match Information For 010724372-01

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	$\sigma_P$	$\sigma_T$
010724372-01	10724372	010724533-pri	10724533	1:1	188.2	-10	46	9.04	14.62	4379.30	Direct-PRF	0	1.90	1.09

**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: 10724372 Candidate: 1 of 1 Period: 0.745 d



## DV Fit Results:

Period = 0.74508 [0.00001] d  
Epoch = 131.8361 [0.0039] BKJD  
Rp/R\* = 0.0058 [0.0038]  
a/R\* = 1.21 [1.39]  
b = 0.90 [0.77]  
Seff = 5347.72 [2310.89]  
Teff = 2181 [236] K  
Rp = 0.67 [0.50] Re  
a = 0.0167 [0.0047] AU  
Ag = 2.23 [3.31] [0.37σ]  
Teffp = 4120 [1478] K [1.30σ]

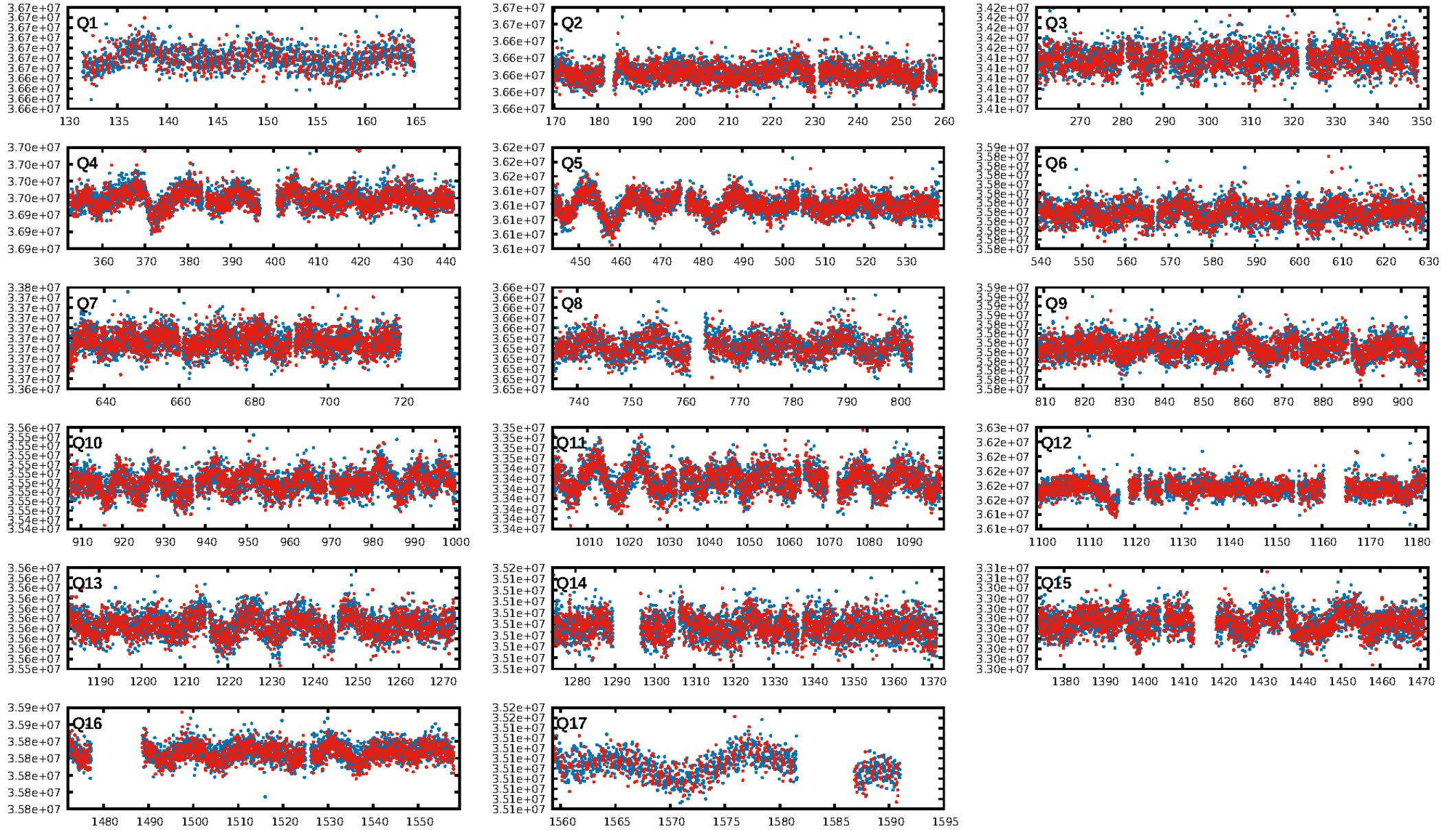
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.25e-20  
RollingBand-fgt: 1.00 [1716/1718]  
GhostDiagnostic-chr: 0.5292  
Centroid-sig: 0.0%  
Centroid-so: 2.771 arcsec [2.10σ]  
OotOffset-rm: 2.088 arcsec [3.40σ]  
KicOffset-rm: 2.091 arcsec [3.40σ]  
OotOffset-st: 4/4/4 [16]  
KicOffset-st: 4/4/4 [16]  
DiffImageQuality-fgm: 0.06 [1/16]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 23:38:52 Z

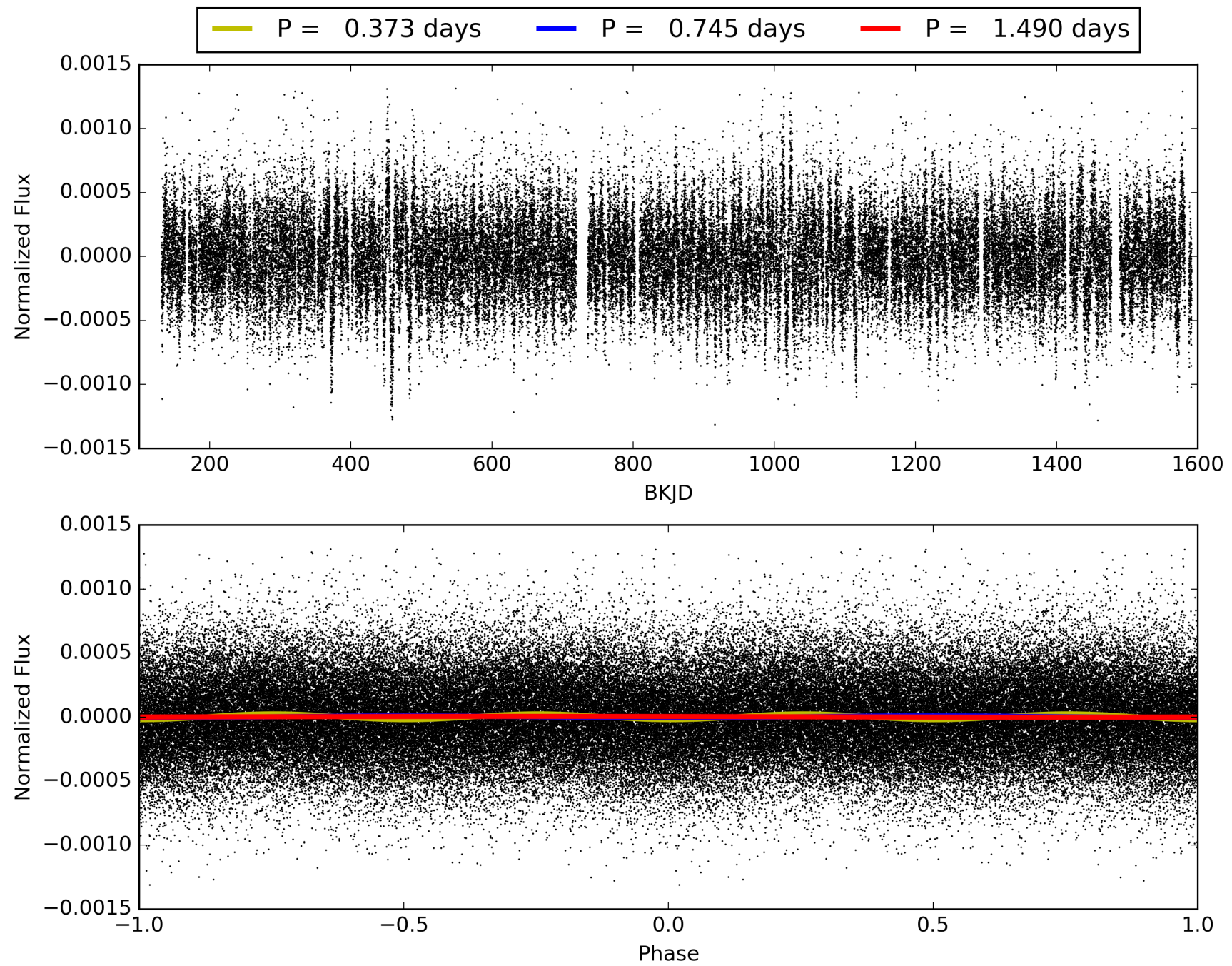
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010724372-01, PDC Light Curves



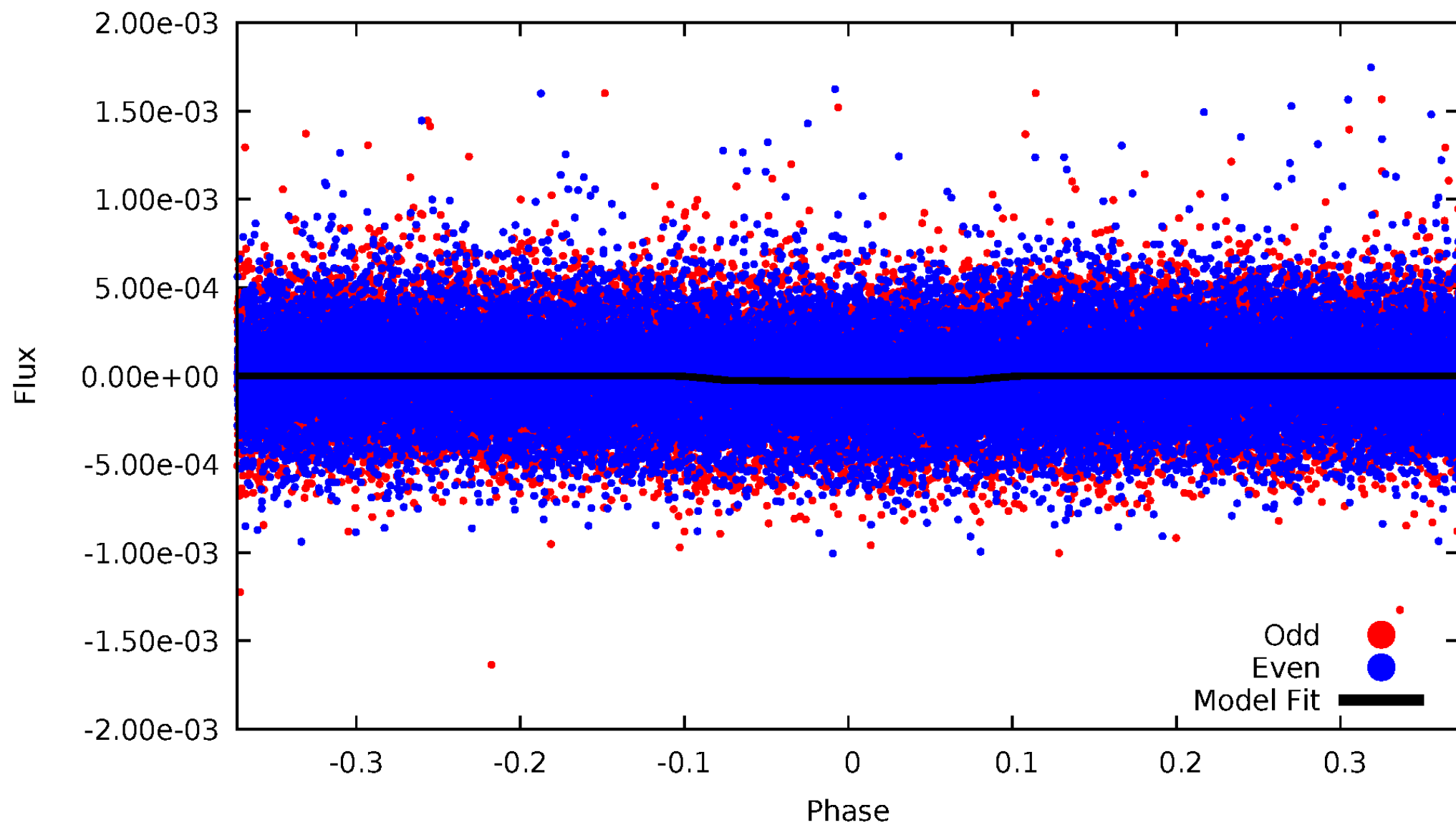


TCE 010724372-01



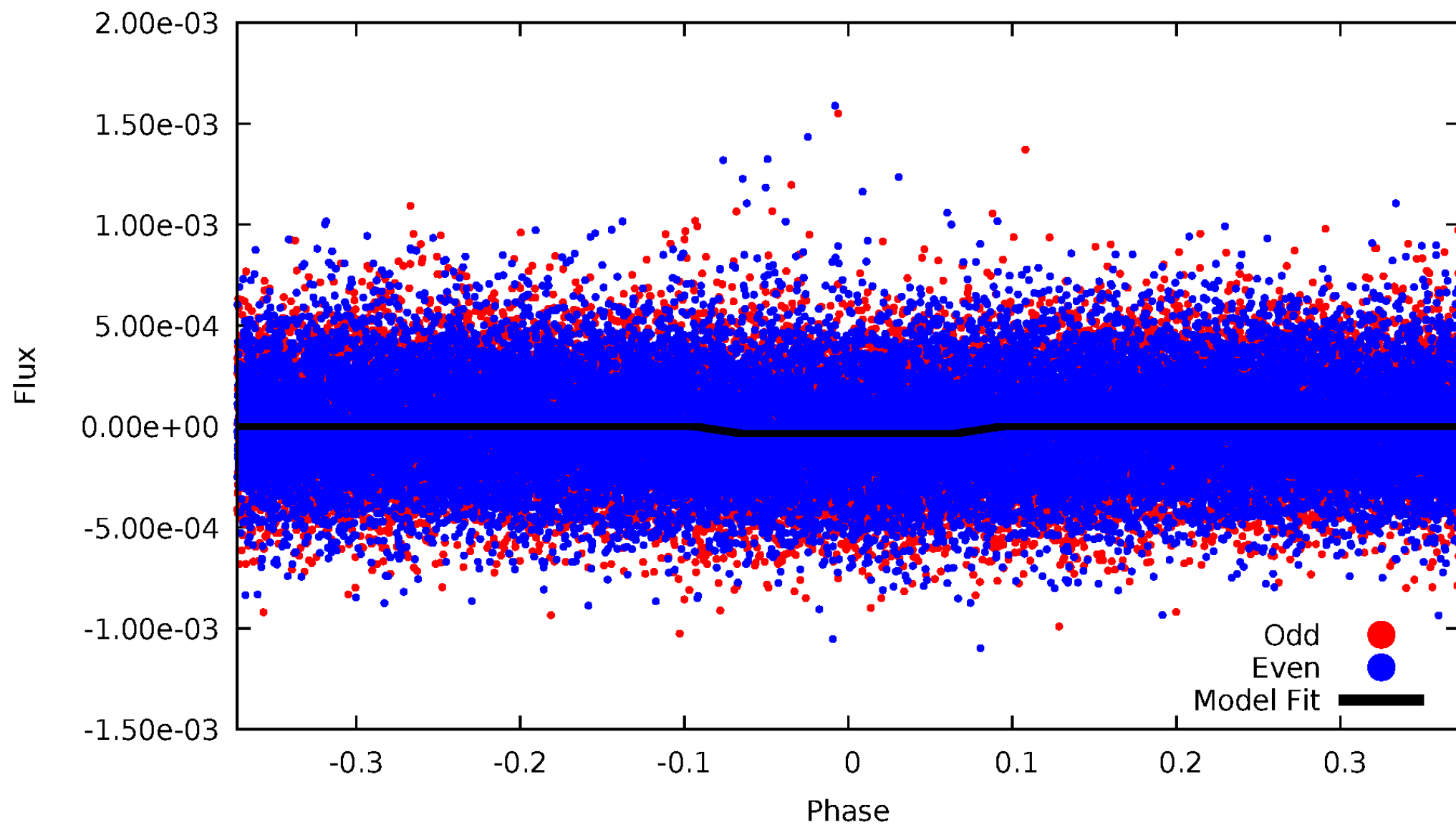
DV Odd/Even

TCE 010724372-01

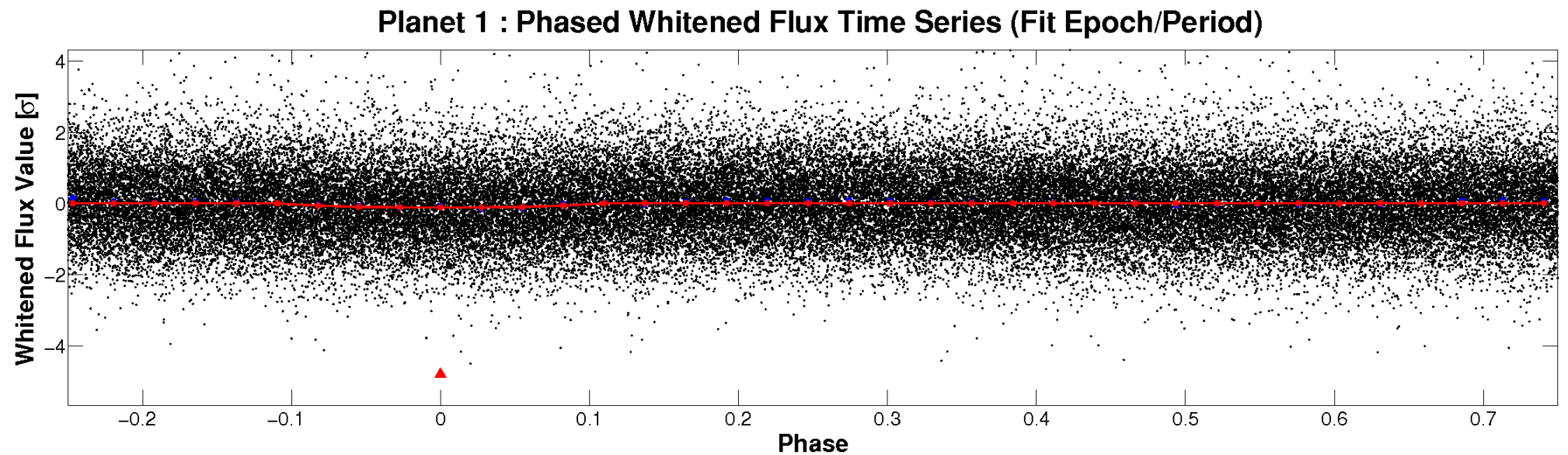
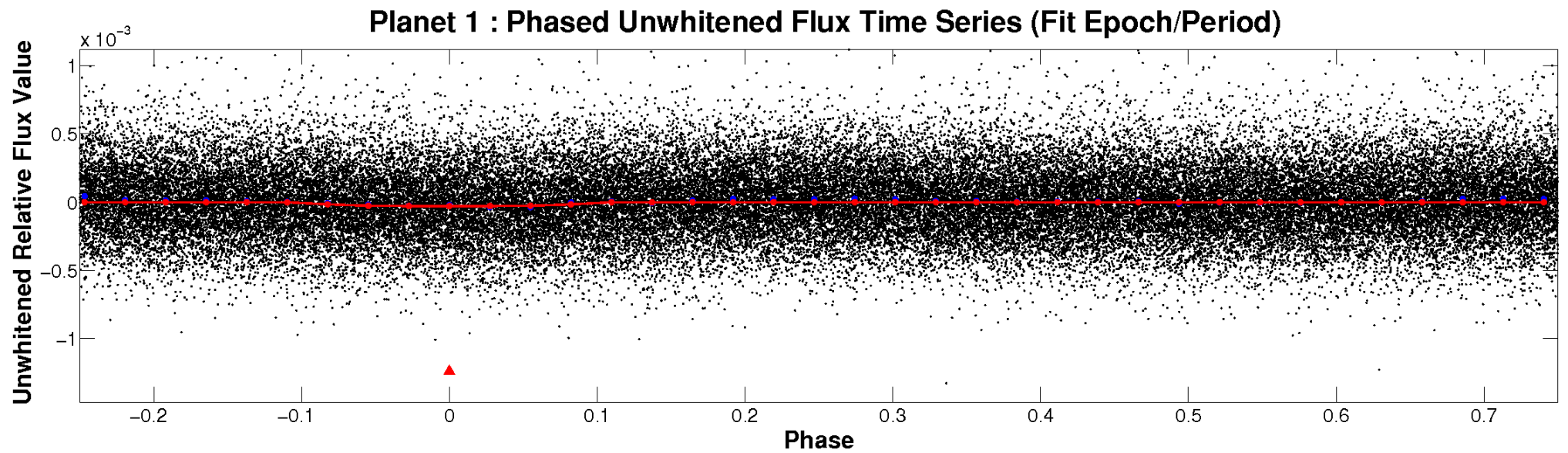


# ALT Odd/Even

TCE 010724372-01



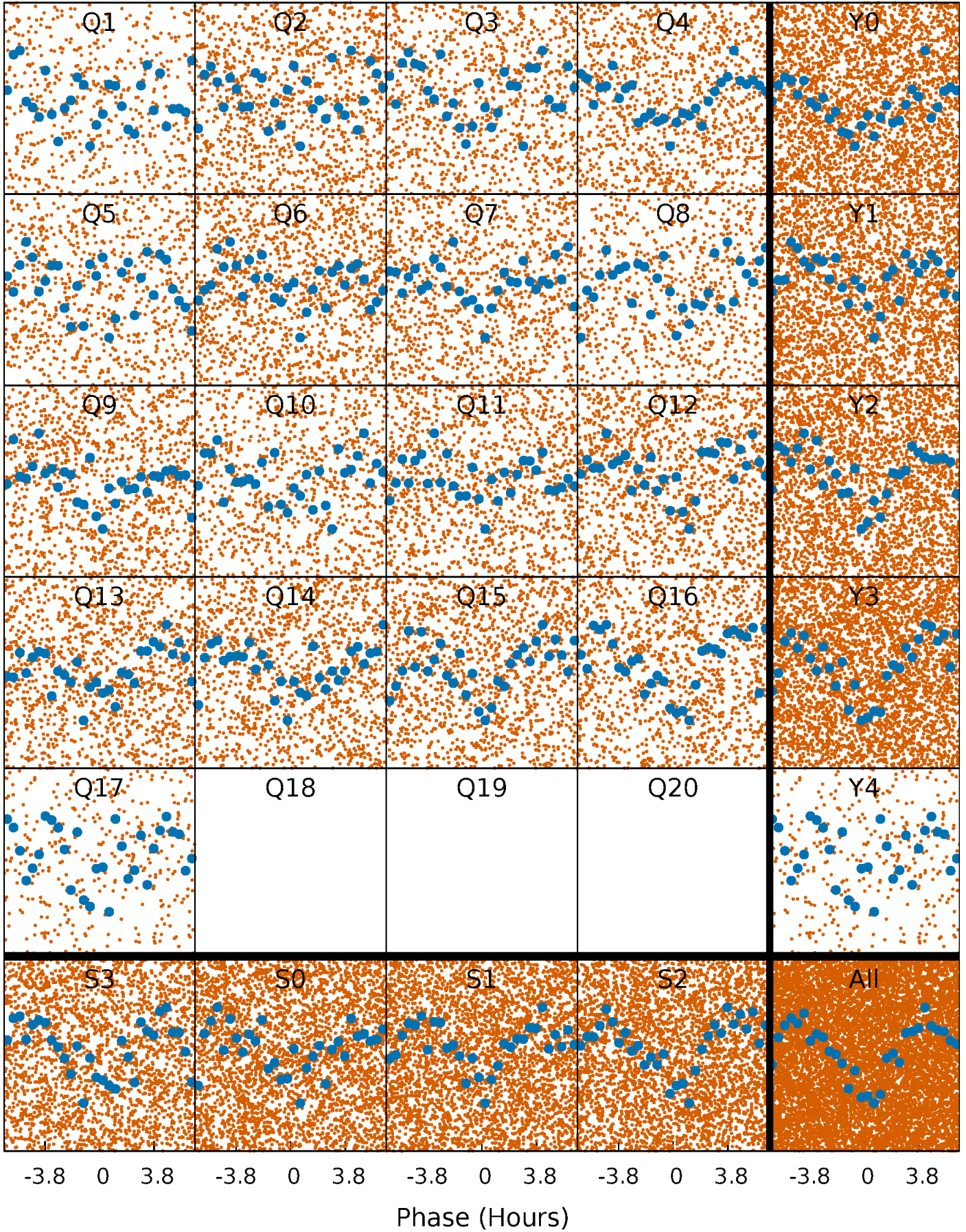
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

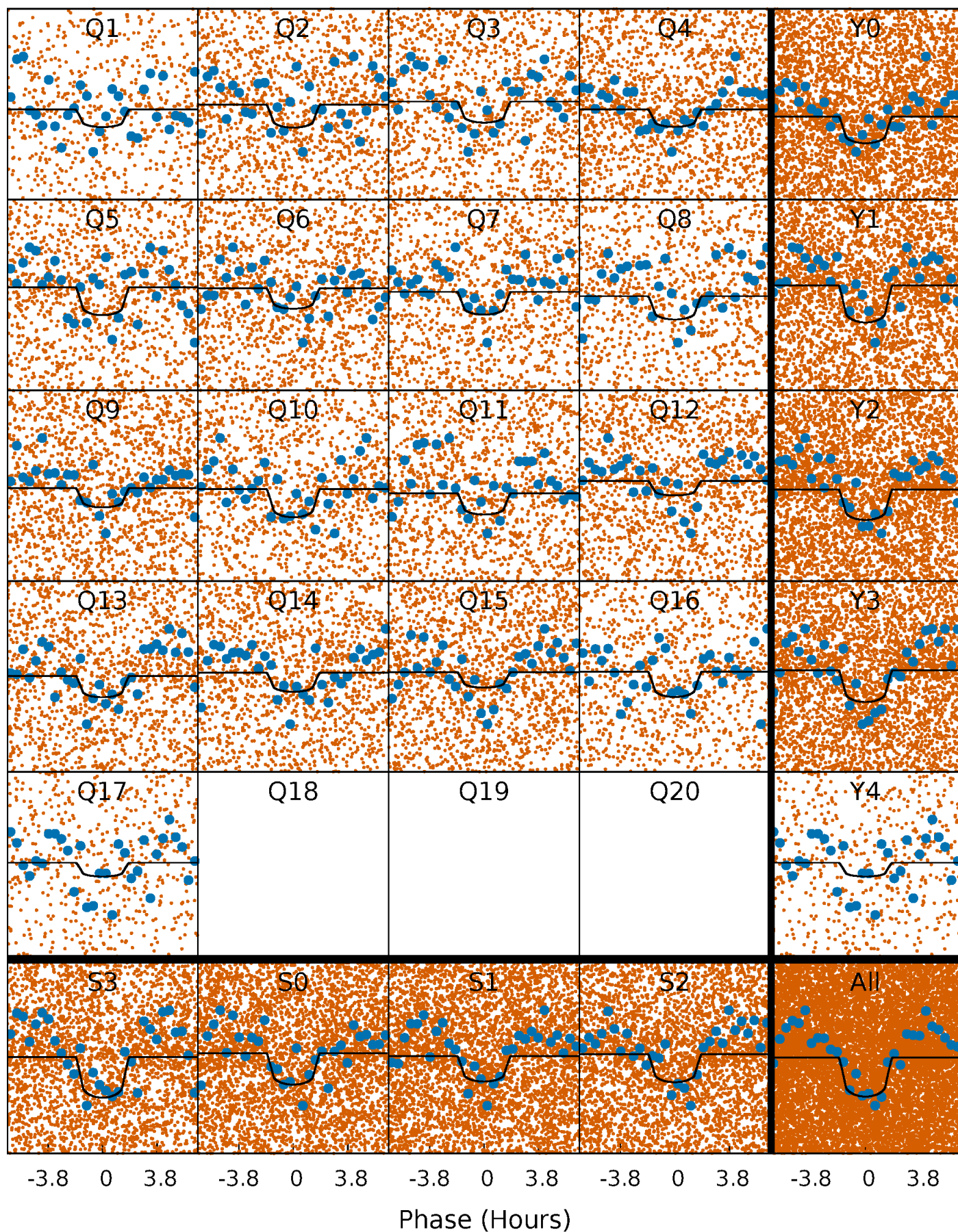
TCE 010724372-01 P= 0.745078 Days  $T_0=131.836107$  (BKJD)





# DV Quarter-Phased Transit Curves

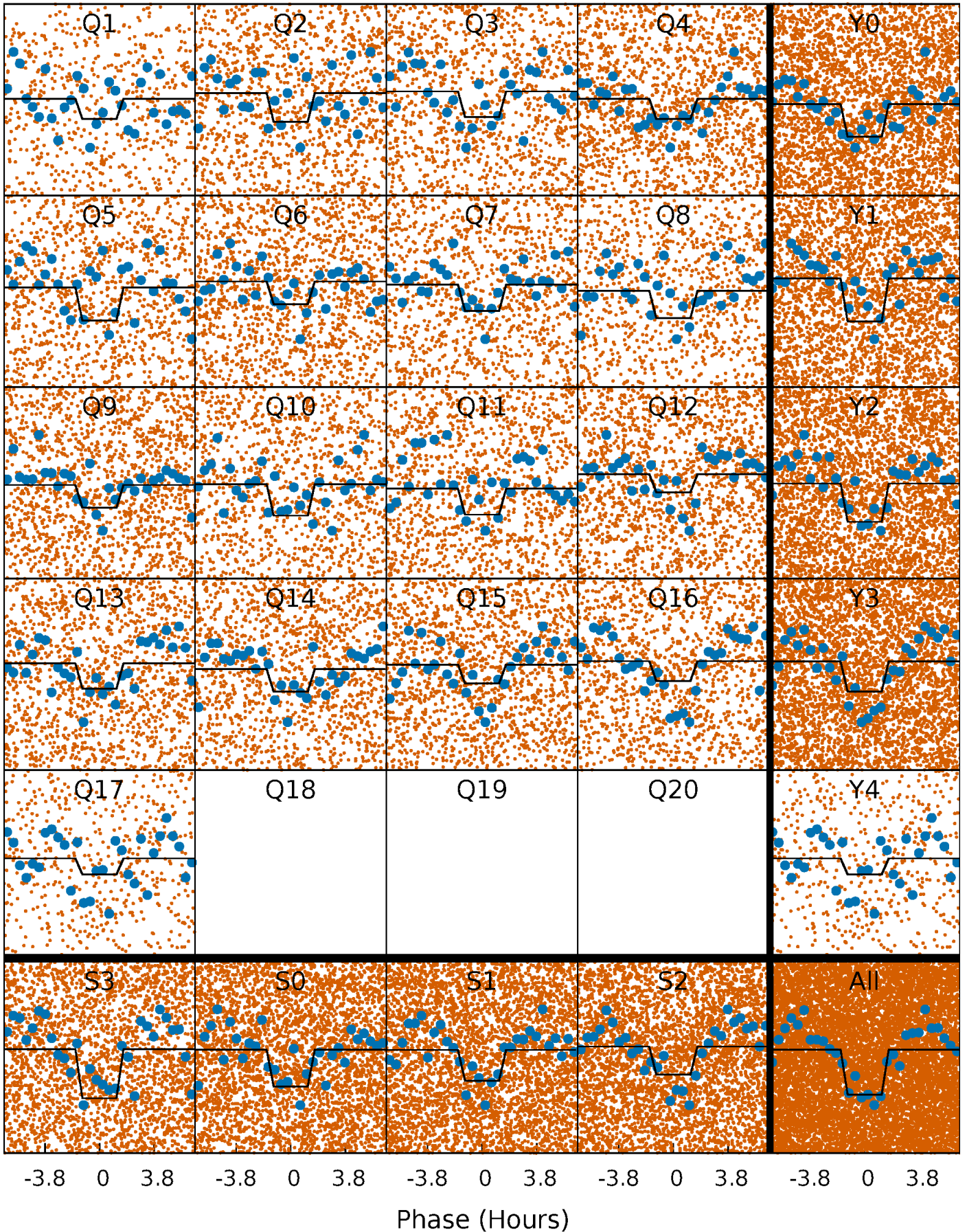
TCE 010724372-01 P= 0.745078 Days  $T_0=131.836107$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

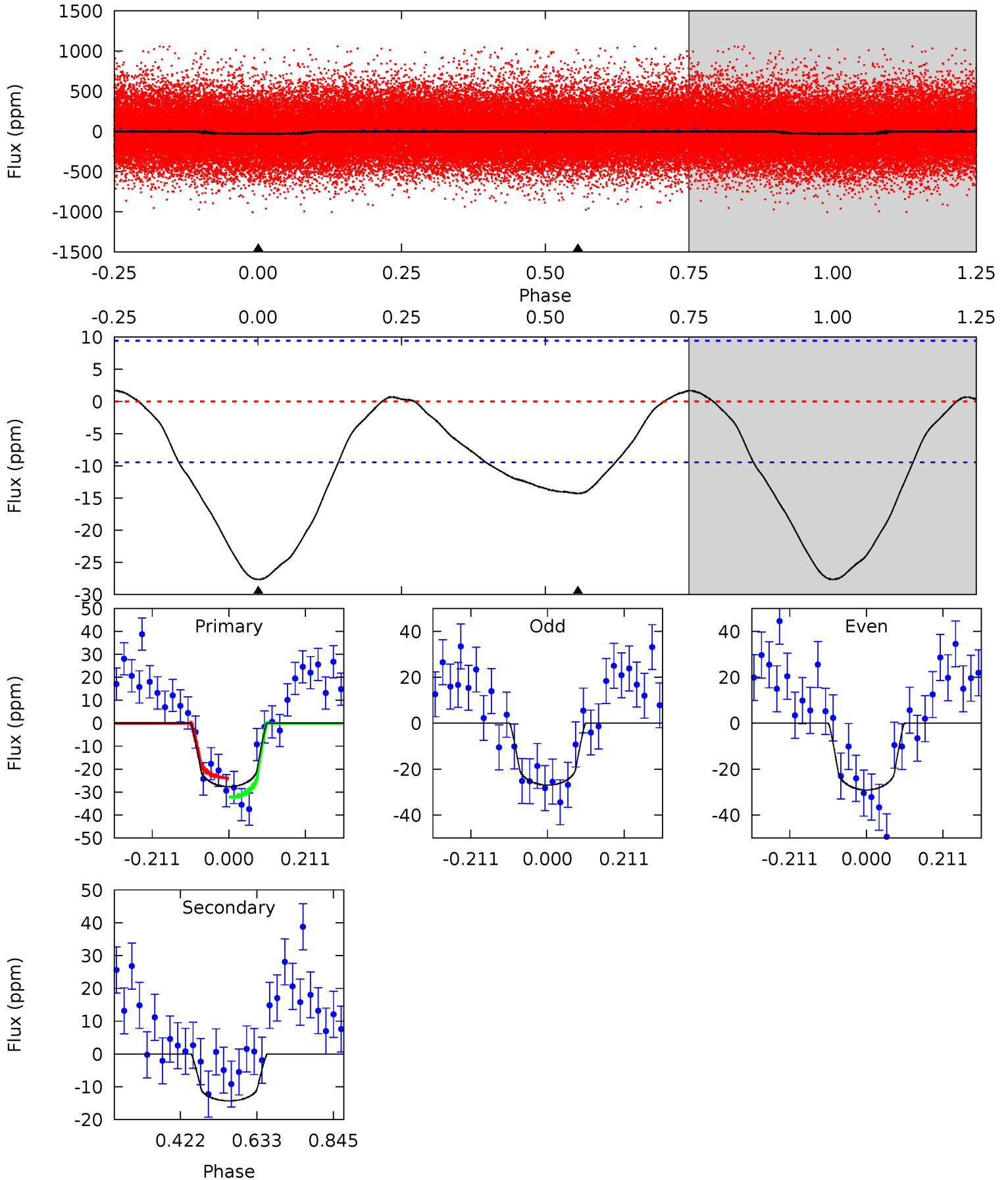
TCE 010724372-01 P= 0.745078 Days  $T_0=131.836107$  (BKJD)



# DV Model-Shift Uniqueness Test

010724372-01, P = 0.745078 Days, E = 131.091029 Days

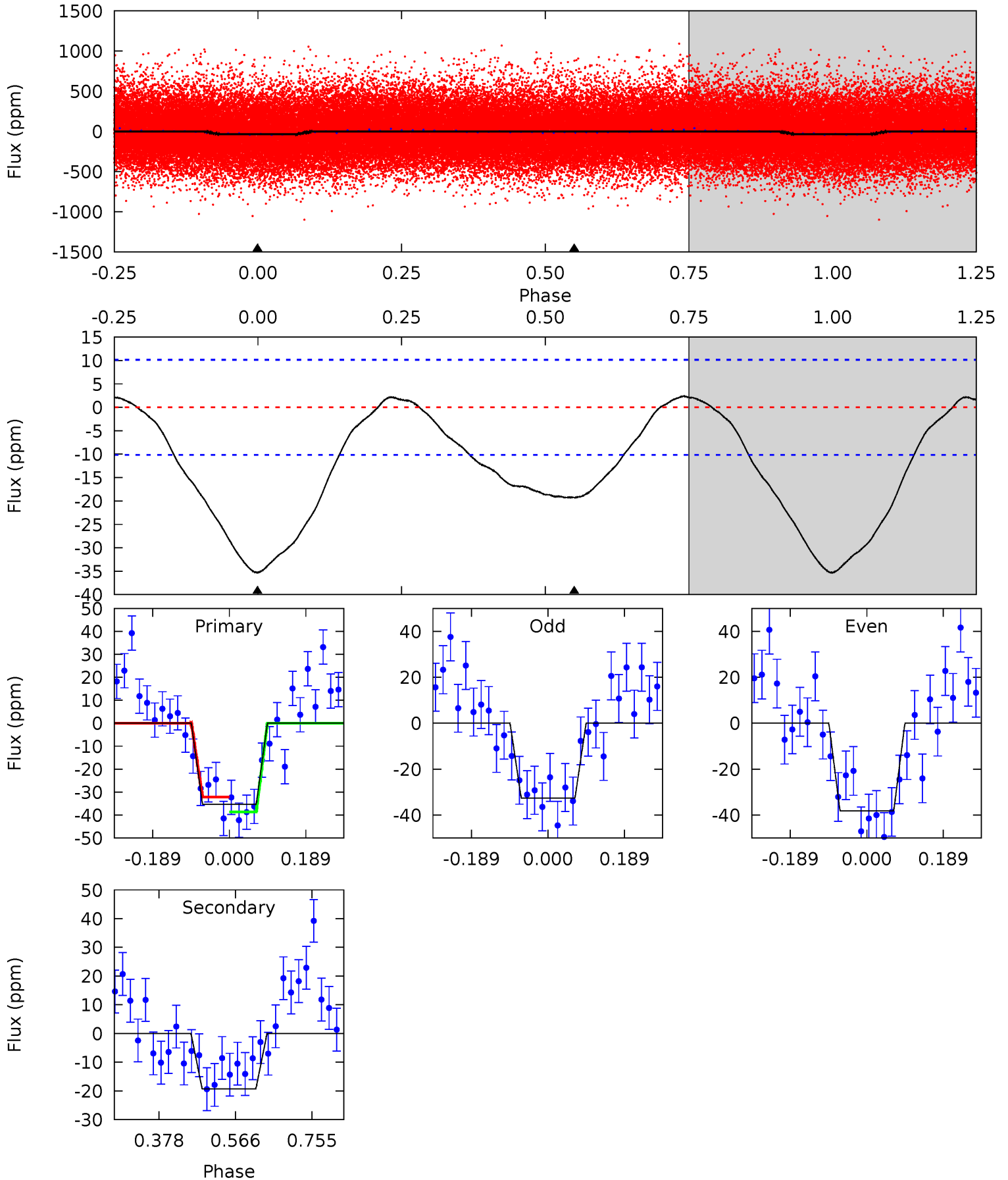
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	6.66	0	0	4.41	1.25	0.99	12.9	12.9	6.66	6.66	0.49	1.01	0.06	1.89



# Alt Model-Shift Uniqueness Test

010724372-01, P = 0.745078 Days, E = 131.091029 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
15.4	8.42	0	0	4.43	1.31	1.42	15.4	15.4	8.42	8.42	1.20	0.98	0.06	1.41





### Stellar Parameters For KIC 010724372

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6202^{+166}_{-222}$	$4.436^{+0.056}_{-0.224}$	$-0.020^{+0.250}_{-0.300}$	$1.062^{+0.349}_{-0.116}$	$1.122^{+0.164}_{-0.148}$	$1.320^{+0.395}_{-0.722}$
	+3%/-4%	+1%/-5%	+1250%/-1500%	+33%/-11%	+15%/-13%	+30%/-55%
Source	PHO1	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 010724372-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-14 \pm 2$	$0.75^{+0.49}_{-0.43}$	$3119^{+240}_{-164}$	$4871^{+2748}_{-947}$	$3.920^{+17.818}_{-2.527}$
Alt.	$-19 \pm 2$	$0.75^{+0.49}_{-0.40}$	$3115^{+229}_{-171}$	$5209^{+2705}_{-1003}$	$5.166^{+20.031}_{-3.222}$

$T_{\text{max}}$  = 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  $A_{\text{obs}} \gg 1.0$

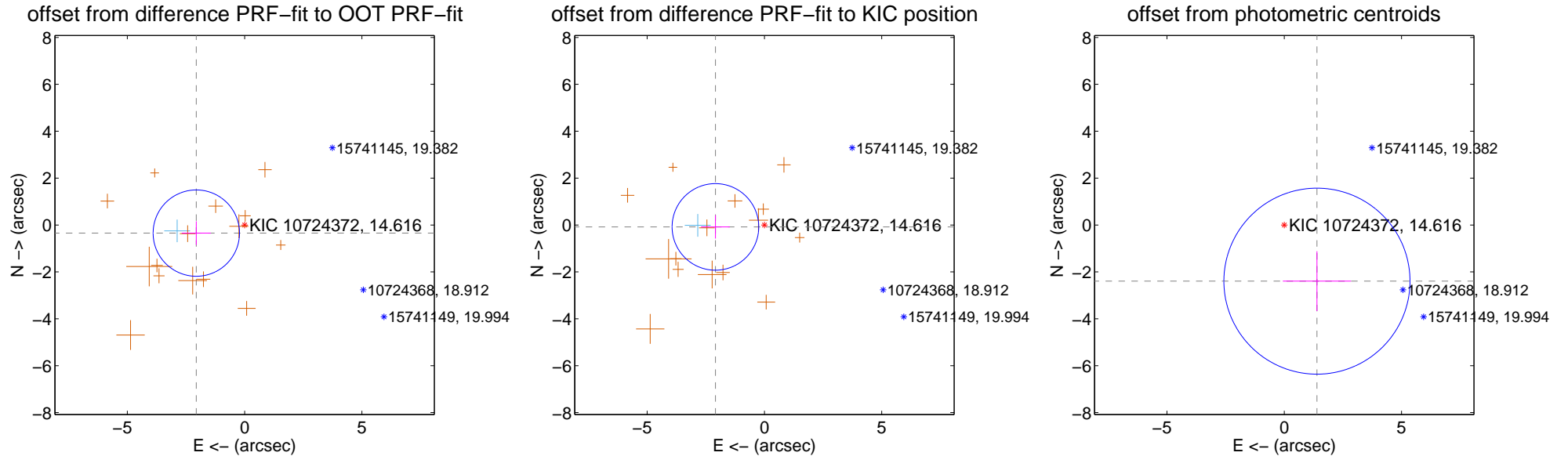
## DV Centroid Data

Supplemental centroid analysis for 010724372-01. Kepler magnitude: 14.62. Transit SNR 9.79

There are 1 quarters with good PRF difference image offsets

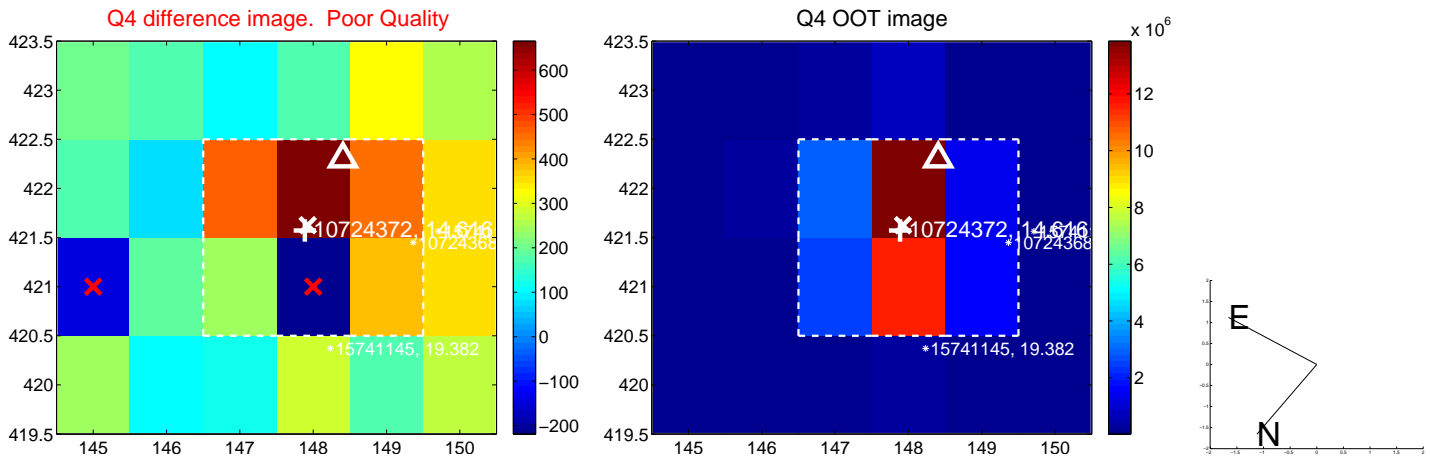
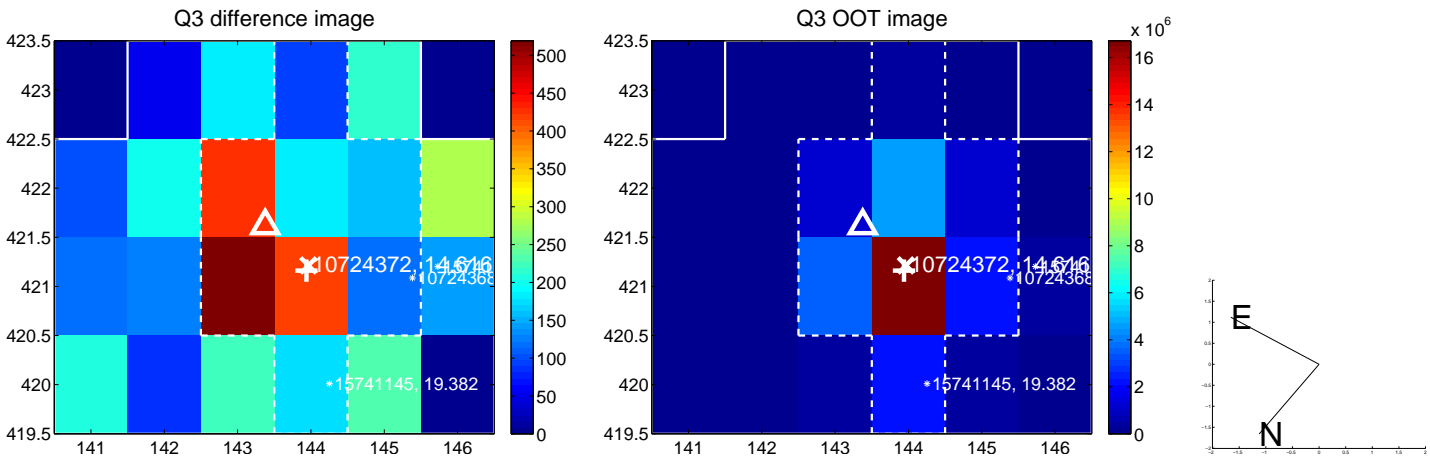
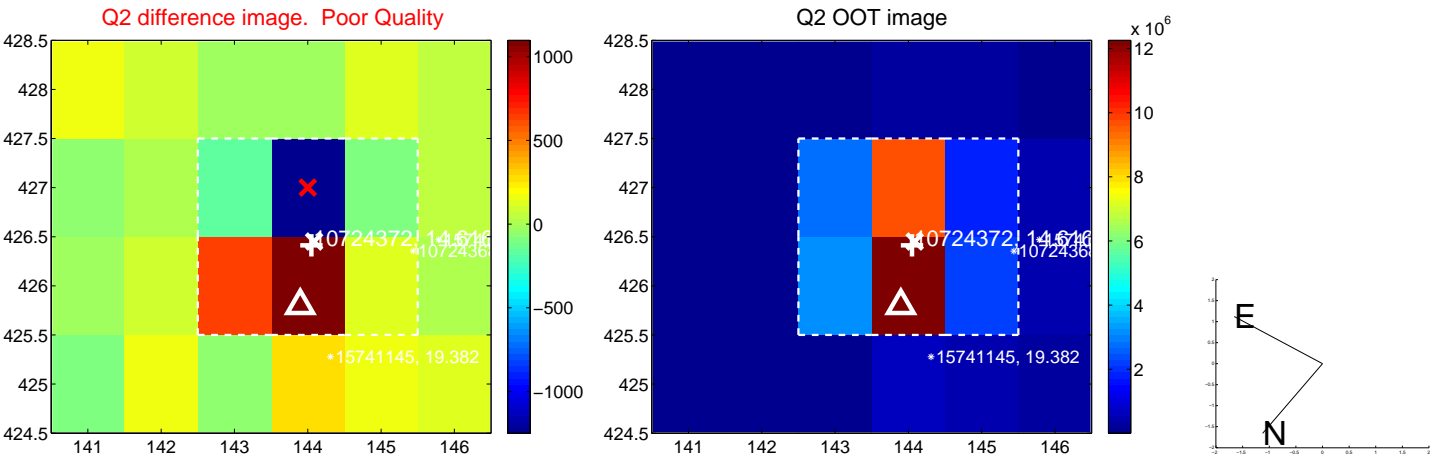
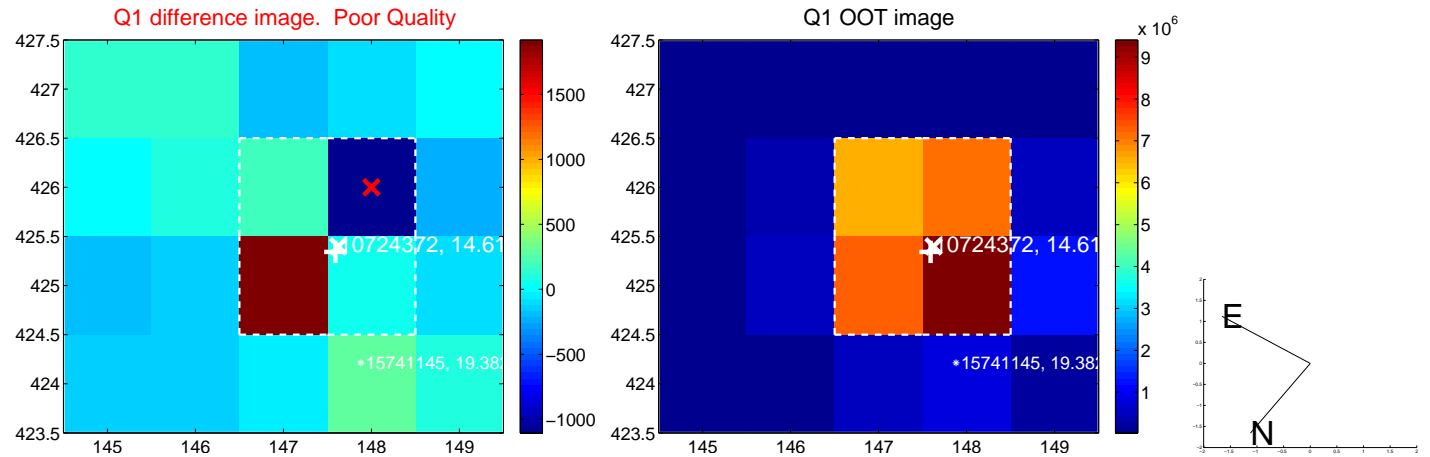
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.088 \pm 0.614$	3.40	$2.059 \pm 0.616$	$-0.345 \pm 0.503$
PRF-fit source offset from KIC position	$2.091 \pm 0.616$	3.40	$2.089 \pm 0.616$	$-0.081 \pm 0.498$
photometric centroid source offset	$2.77 \pm 1.32$	2.10	$-1.39 \pm 1.45$	$-2.40 \pm 1.27$

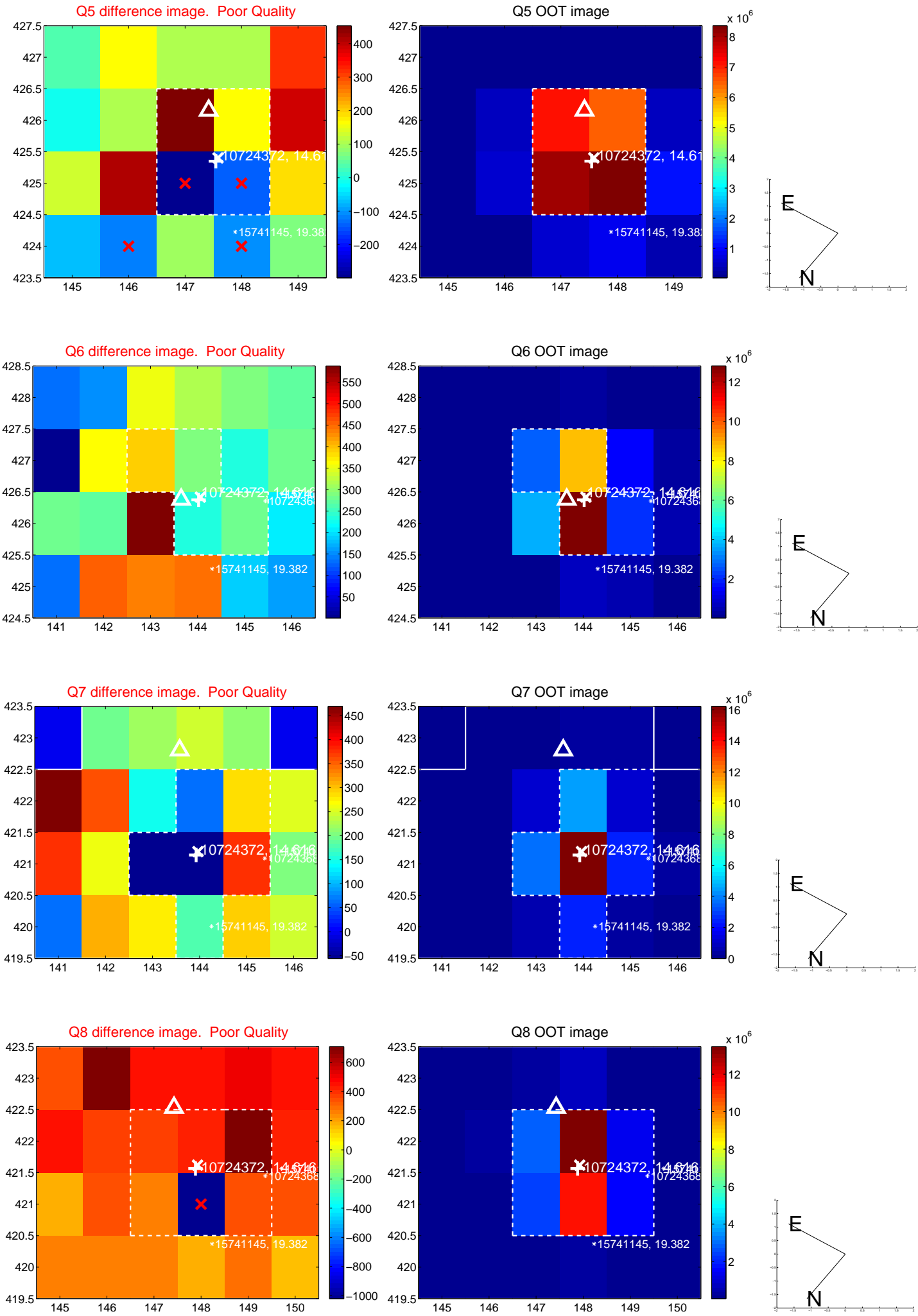


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

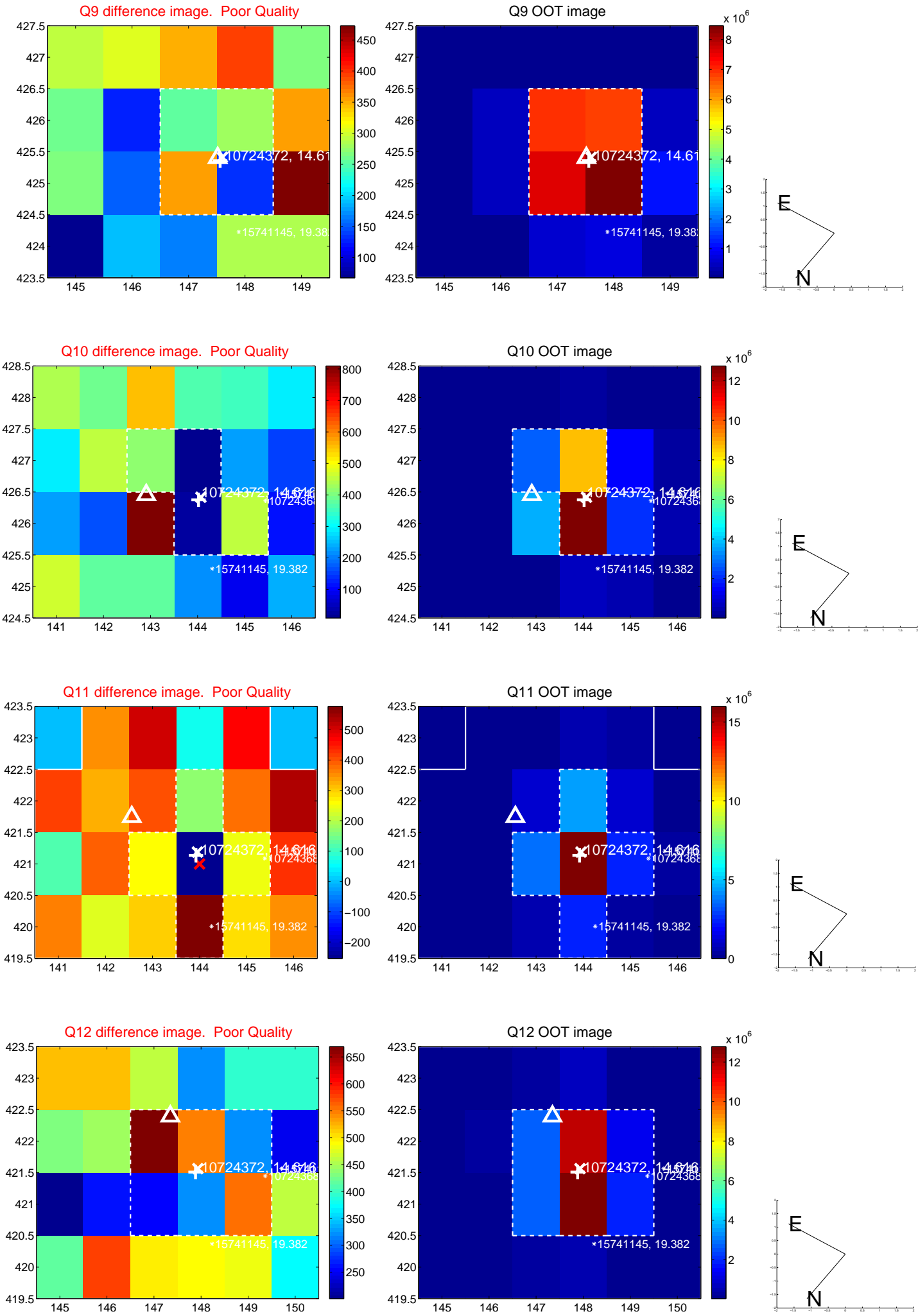


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

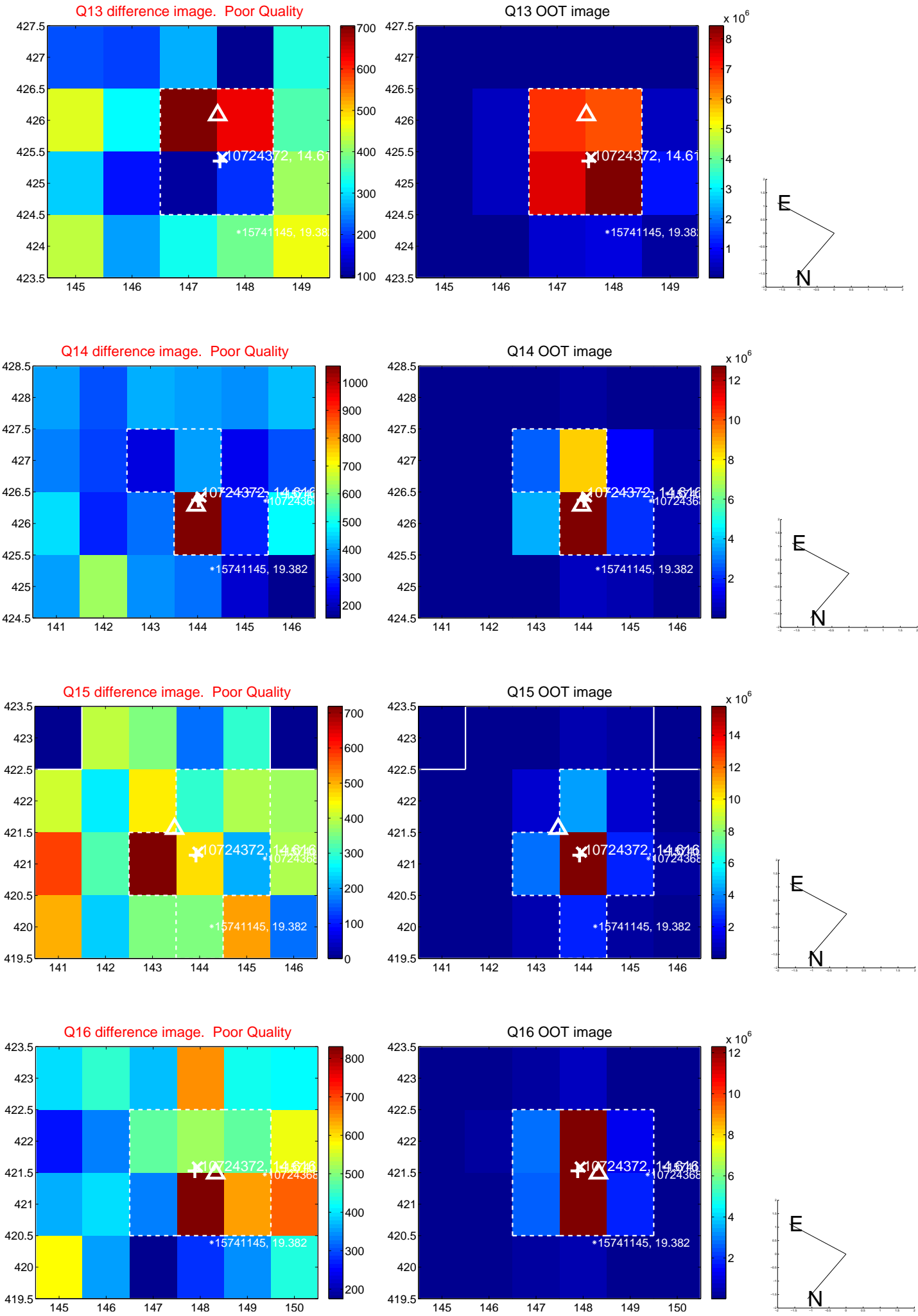




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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





UKIRT Image

Declination

