

# KIC 010601538

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010601538-01	OBS	7348.01	1.463756	132.811897	31.3	1.398	10.1	11.1	1.65	6781	1.08	6718.55

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010601538-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—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.

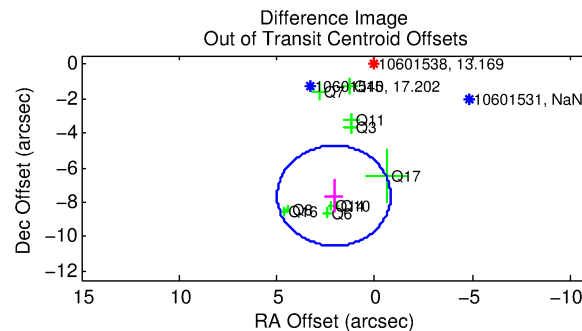
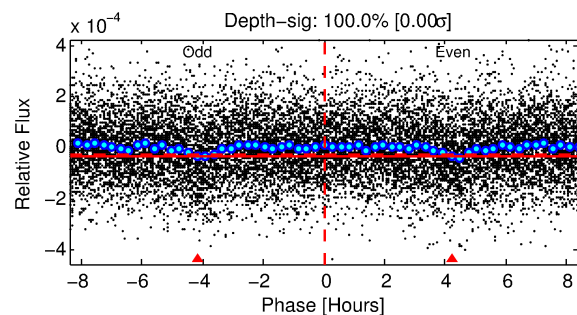
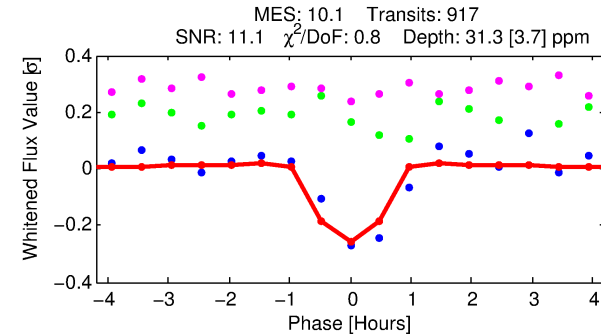
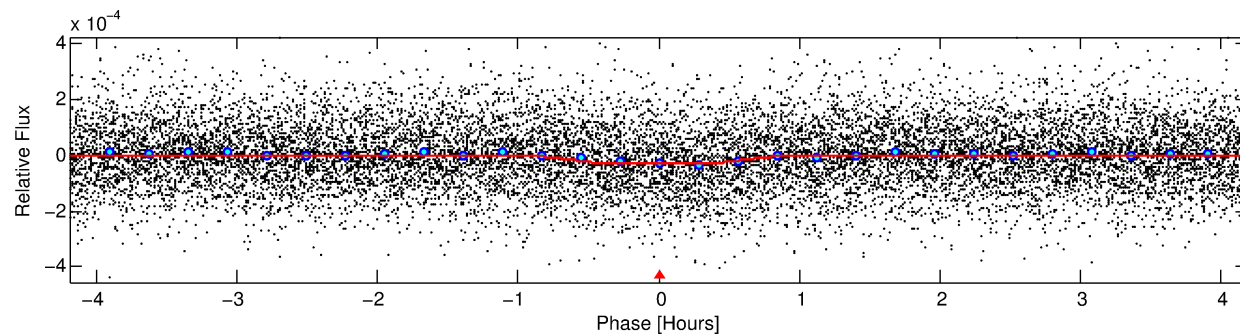
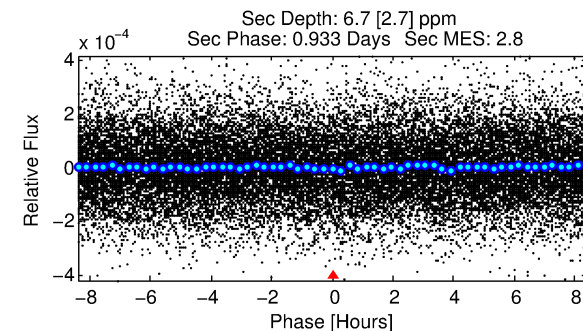
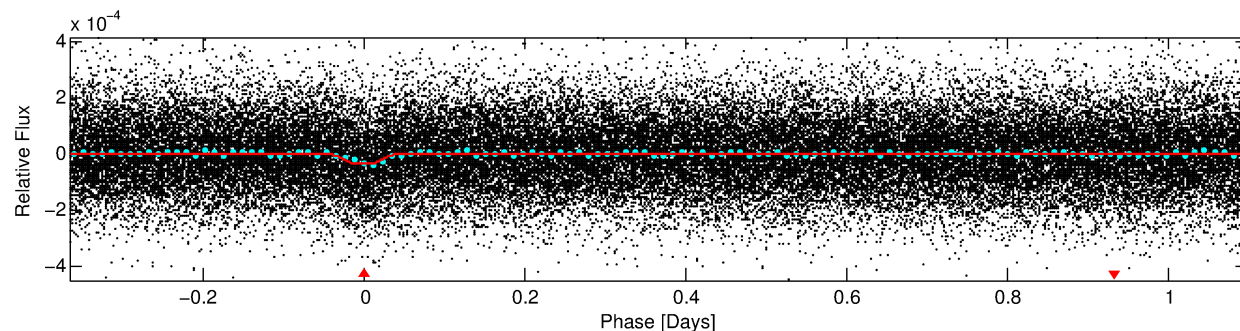
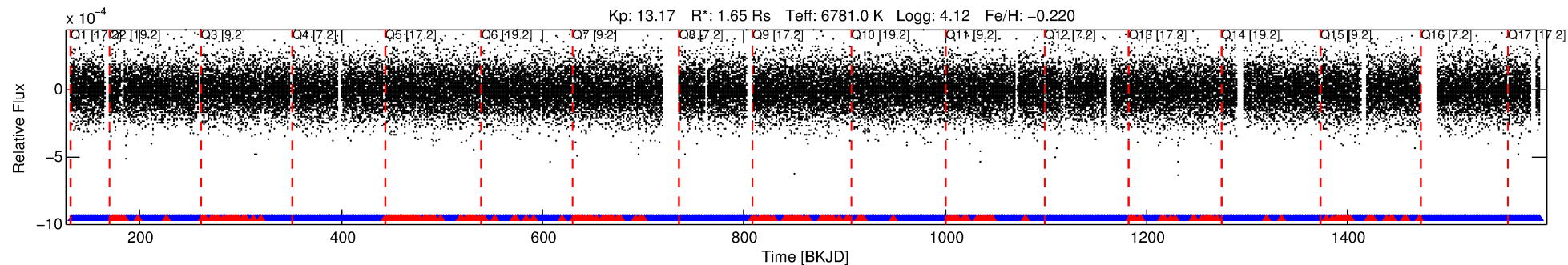
## Ephemeris Match Information For 010601538-01

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	$\sigma_P$	$\sigma_T$
010601538-01	10601538	010601549-pri	10601549	1:1	19.1	5	1	13.32	13.17	2122.60	Direct-PRF	0	0.94	0.30

**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: 10601538 Candidate: 1 of 1 Period: 1.464 d  
KOI: K07348.01 Corr: 0.797



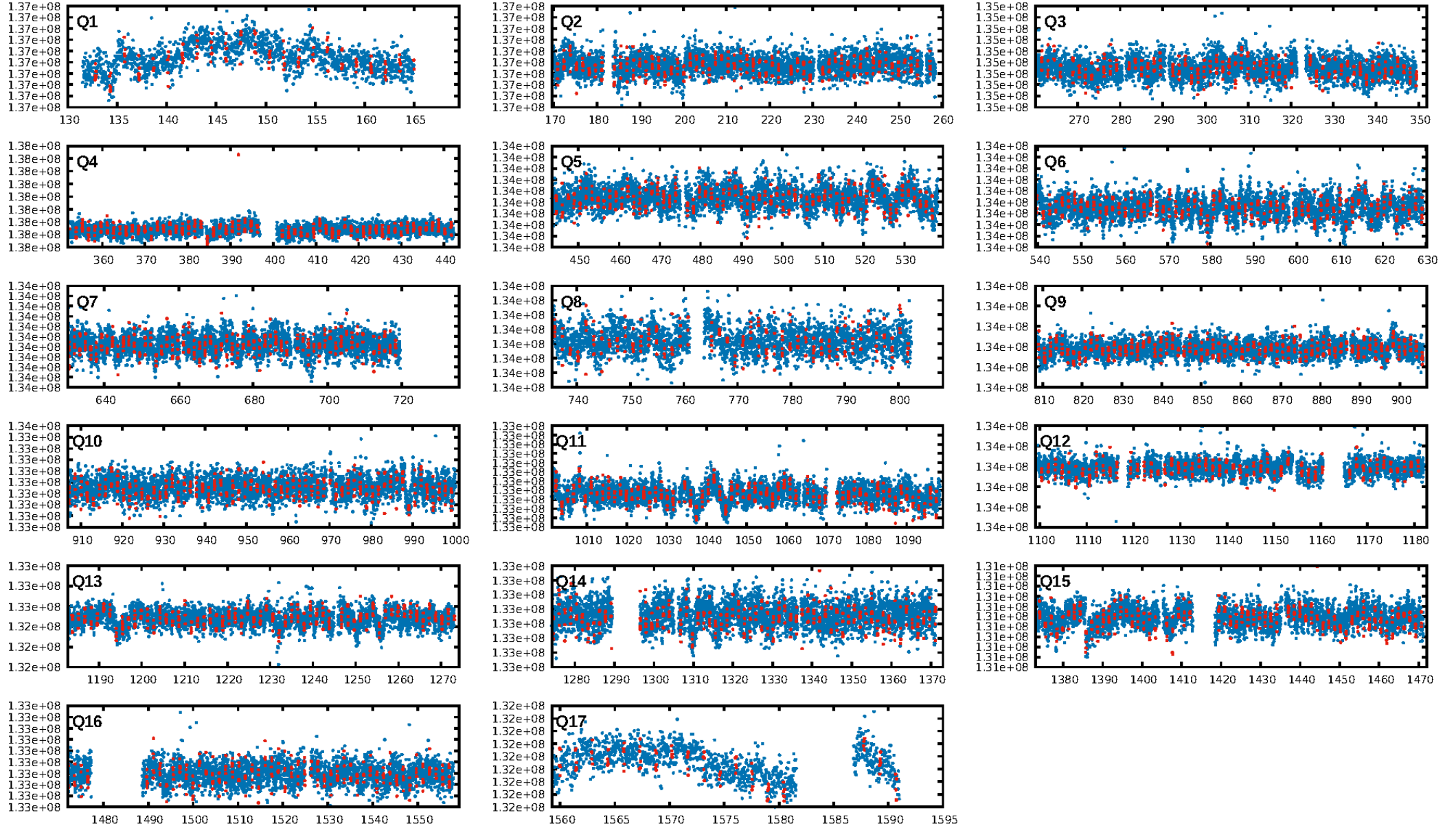
## DV Fit Results:

Period = 1.46376 [0.00001] d  
Epoch = 132.8119 [0.0019] BKJD  
Rp/R\* = 0.0060 [0.0013]  
a/R\* = 3.71 [4.21]  
b = 0.90 [0.26]  
Seff = 6718.55 [2368.74]  
Teq = 2309 [203] K  
Rp = 1.08 [0.35] Re  
a = 0.0277 [0.0060] AU  
Ag = 2.44 [1.62] [0.89σ]  
Teffp = 4461 [666] K [3.09σ]

## DV Diagnostic Results:

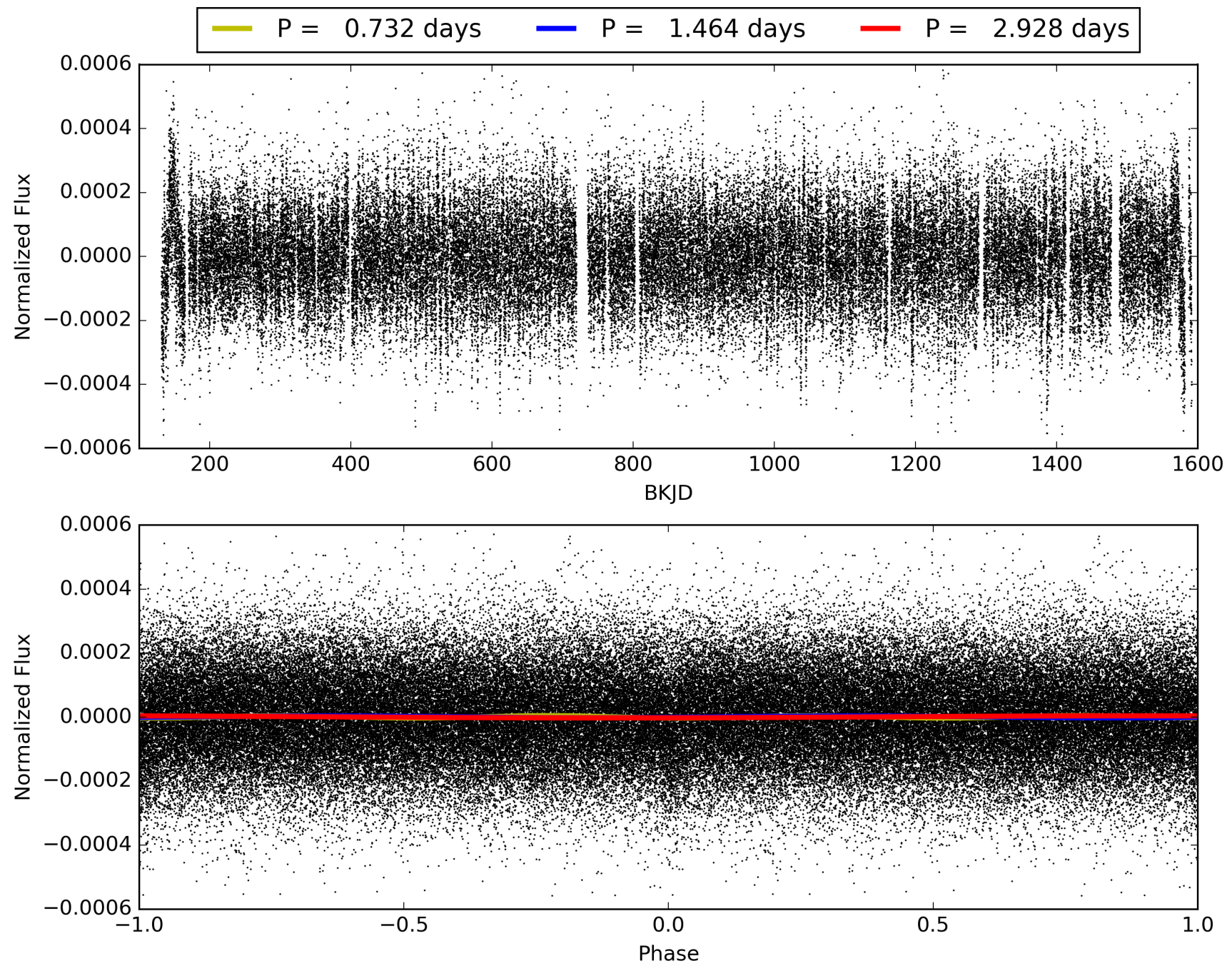
ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.99e-24  
RollingBand-fgt: 0.78 [683/876]  
GhostDiagnostic-chr: -0.04767  
Centroid-sig: 0.0%  
Centroid-so: 9.520 arcsec [10.28σ]  
OotOffset-rm: 7.909 arcsec [8.19σ]  
KicOffset-rm: 7.691 arcsec [8.30σ]  
OotOffset-st: 3/4/2/1 [10]  
KicOffset-st: 3/4/2/1 [10]  
DiffImageQuality-fgm: 0.80 [8/10]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 010601538-01, PDC Light Curves



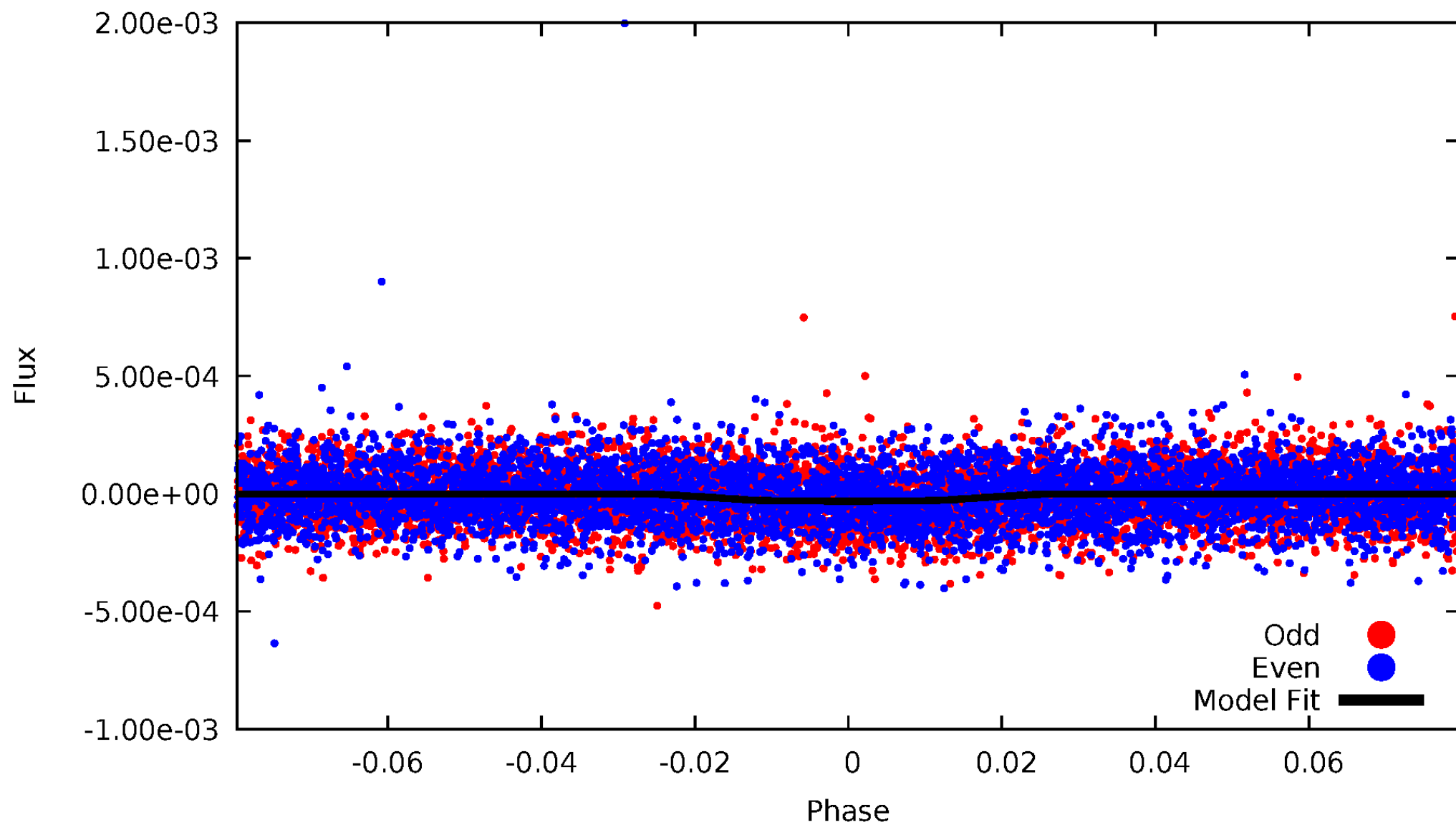


TCE 010601538-01



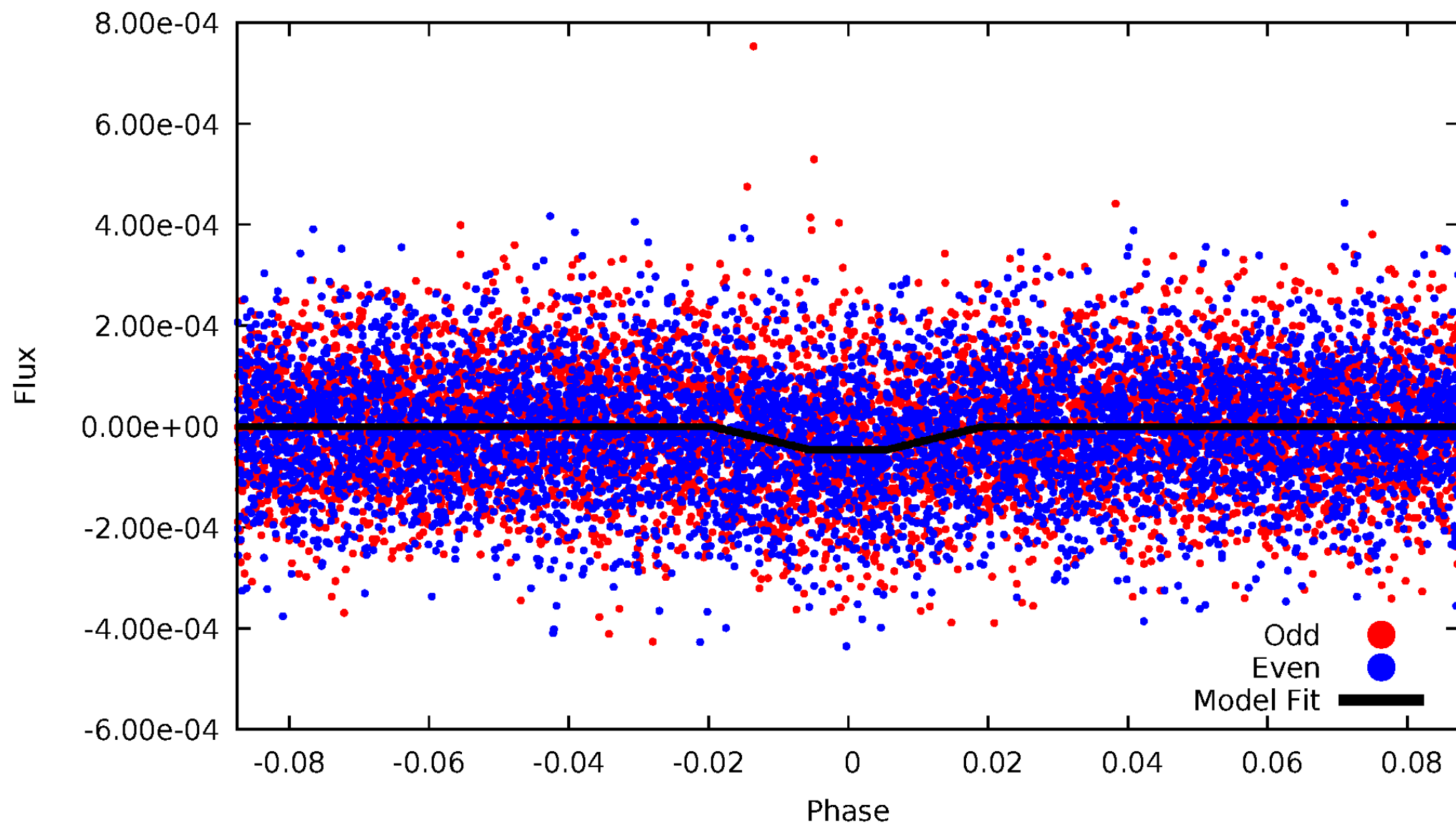
# DV Odd/Even

TCE 010601538-01



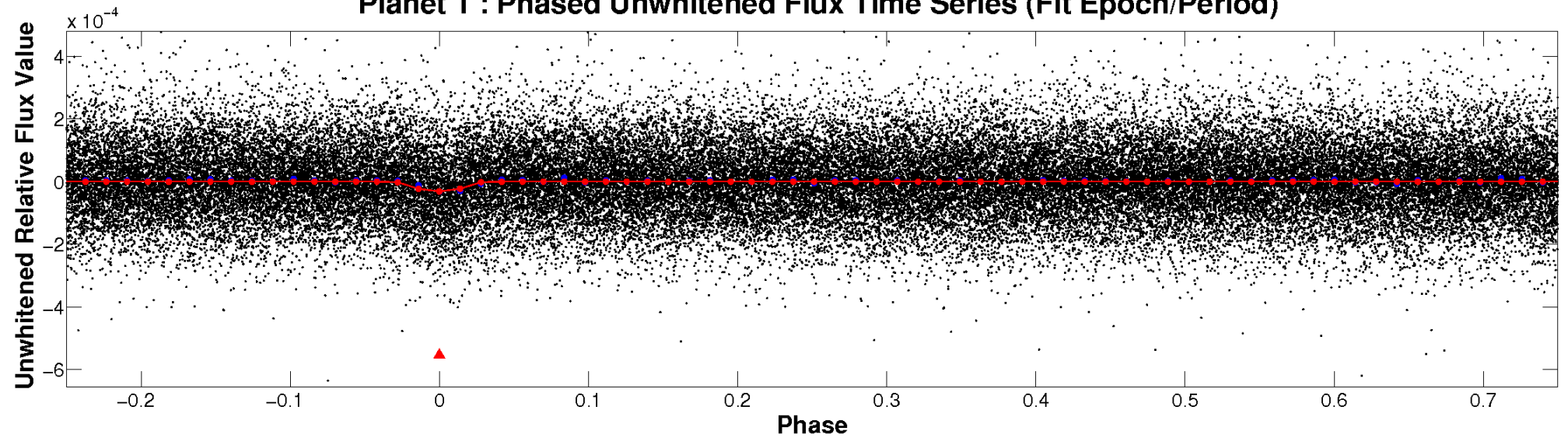
# ALT Odd/Even

TCE 010601538-01

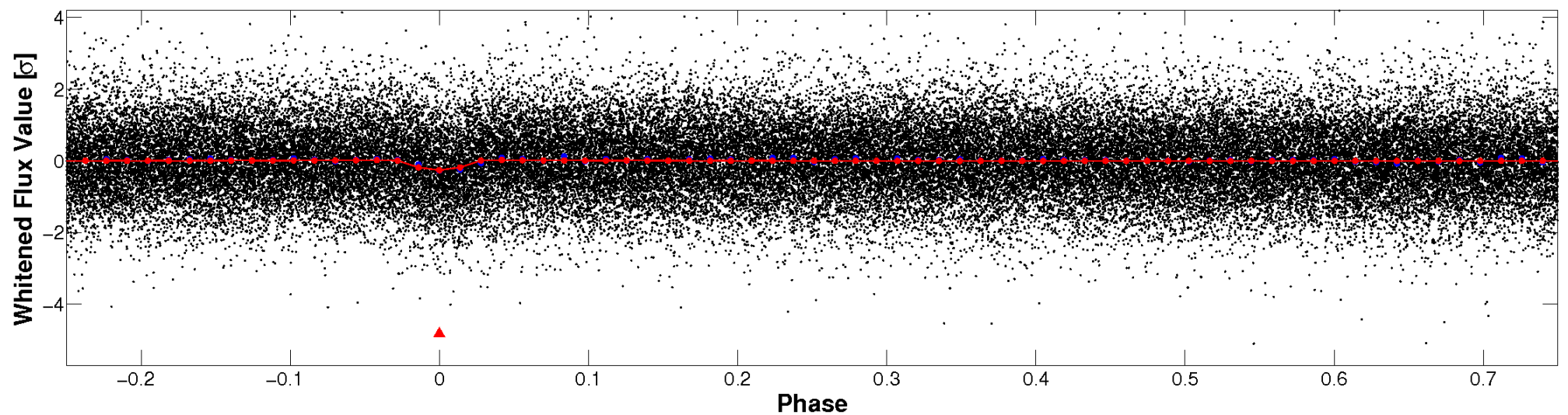


# Non-Whitened Vs. Whitened Light Curve

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



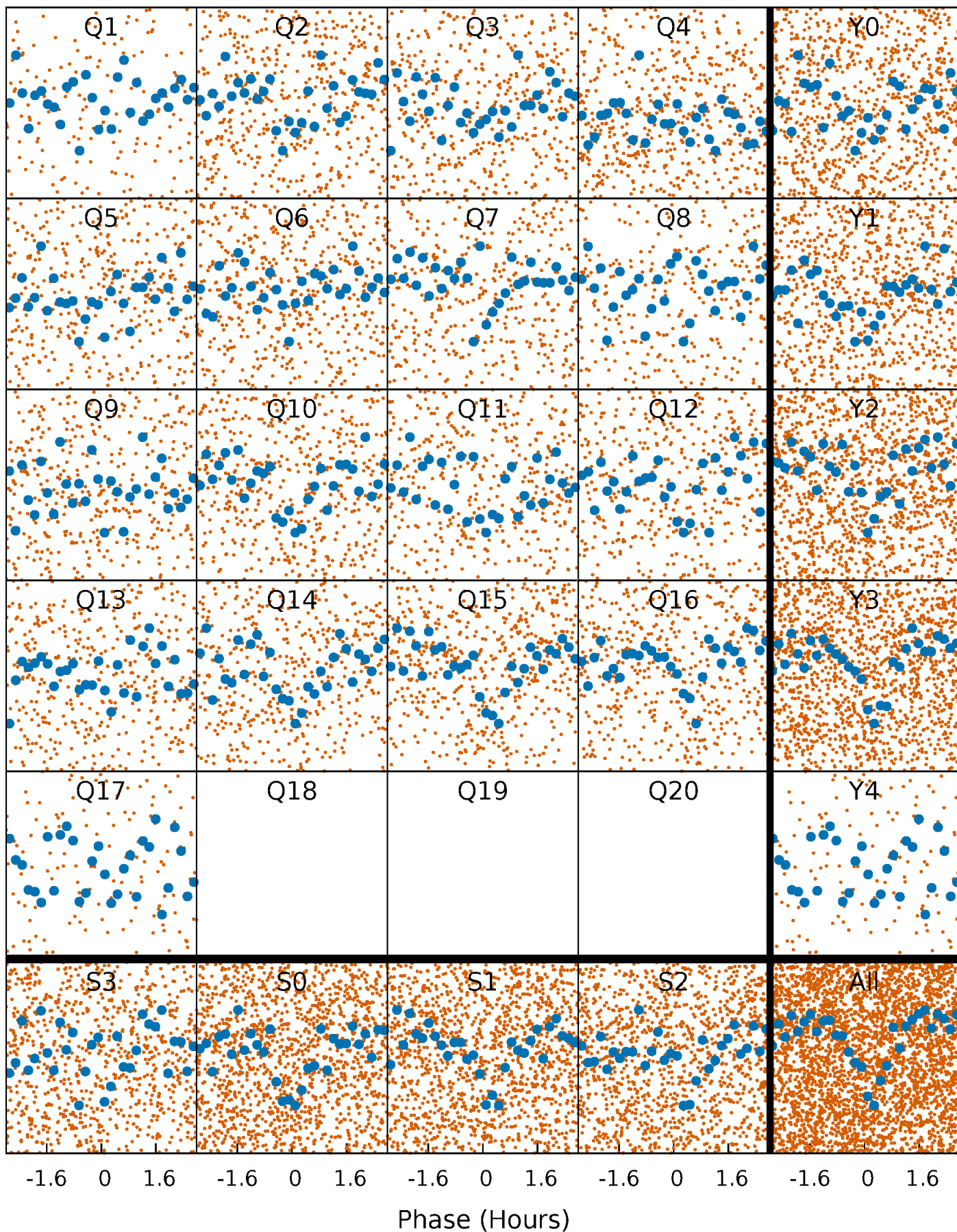
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

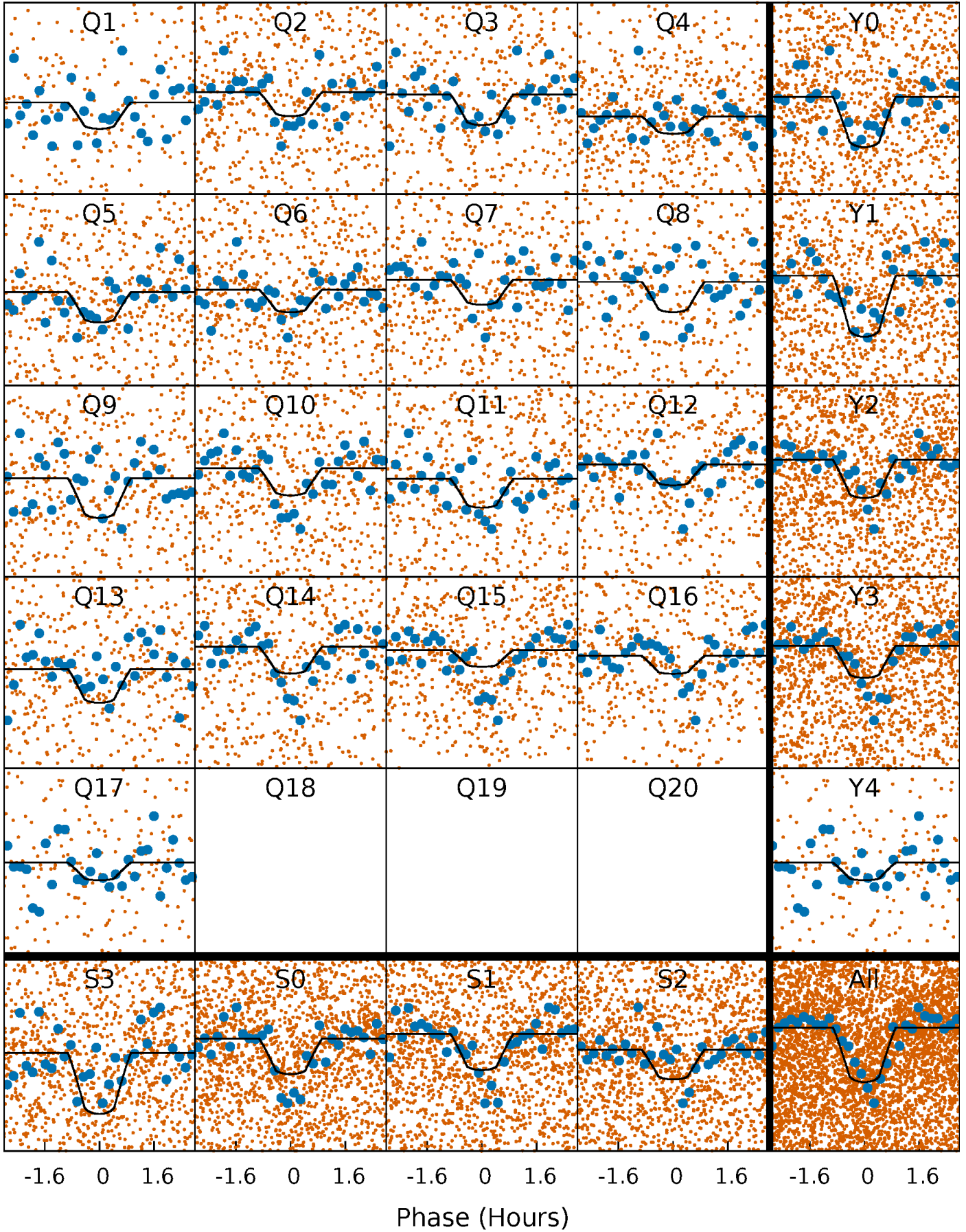
TCE 010601538-01 P= 1.463756 Days  $T_0=132.811896$  (BKJD)





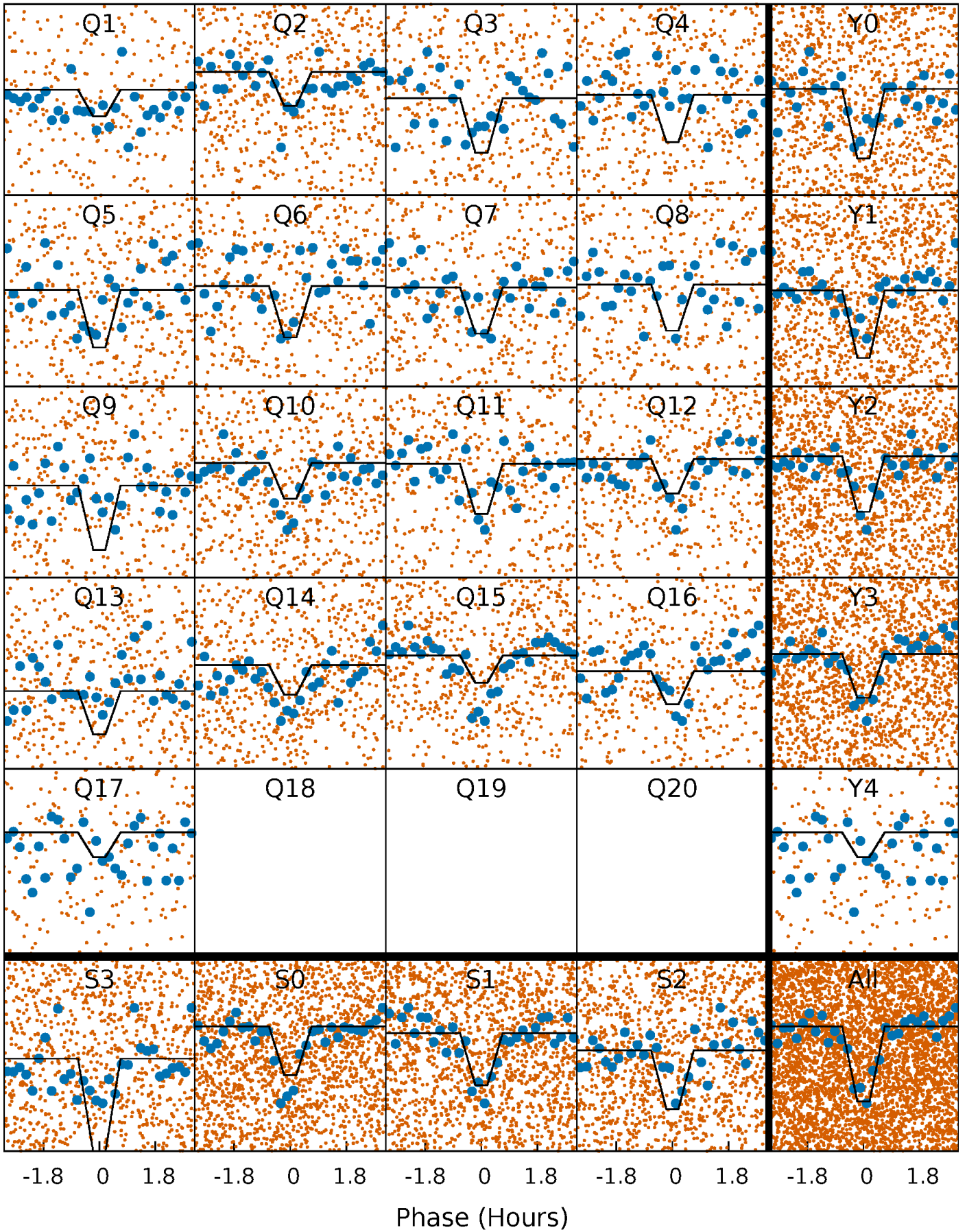
# DV Quarter-Phased Transit Curves

TCE 010601538-01 P= 1.463756 Days  $T_0=132.811896$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

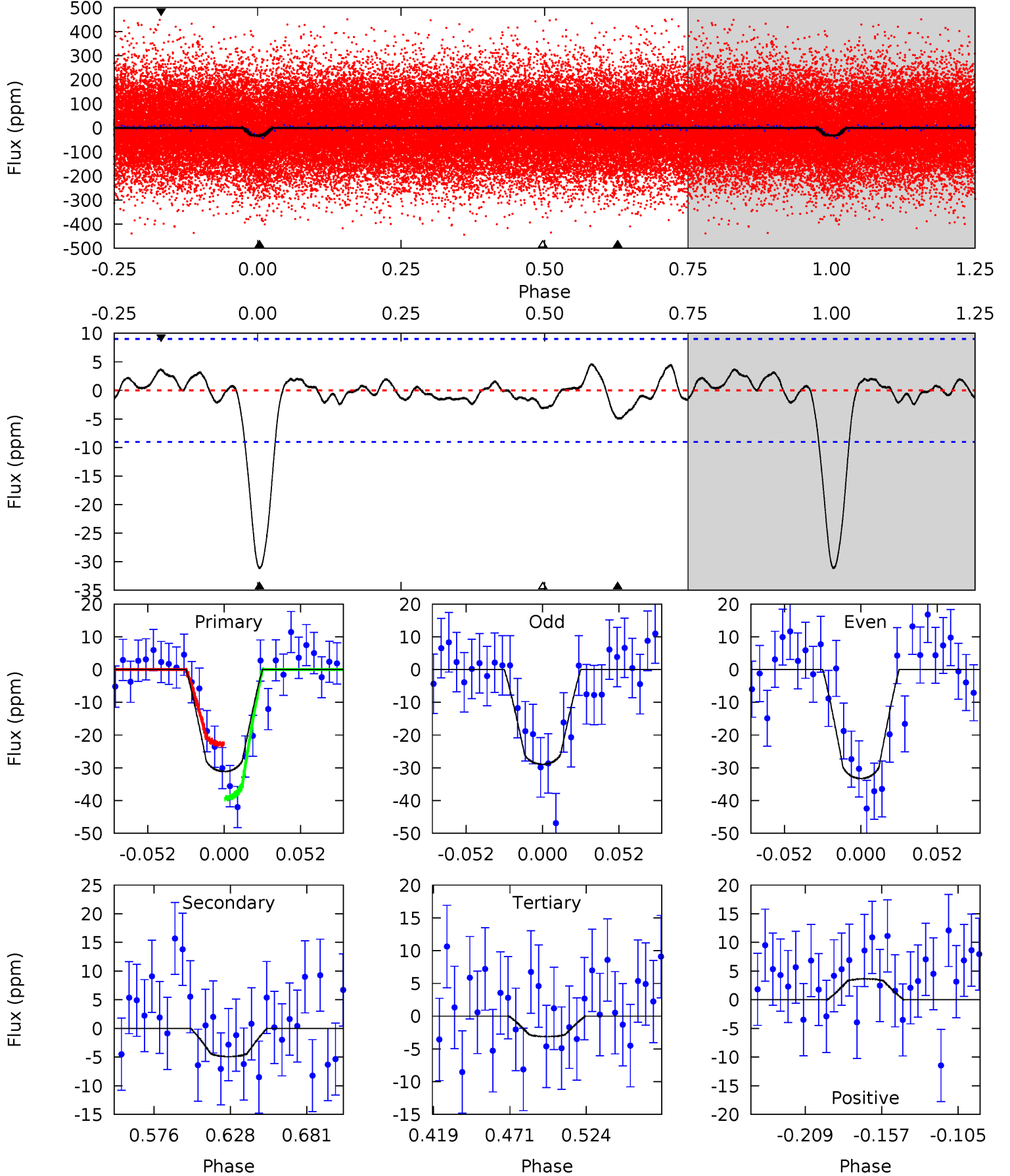
TCE 010601538-01 P= 1.463771 Days  $T_0=132.810458$  (BKJD)



# DV Model-Shift Uniqueness Test

010601538-01, P = 1.463756 Days, E = 131.348140 Days

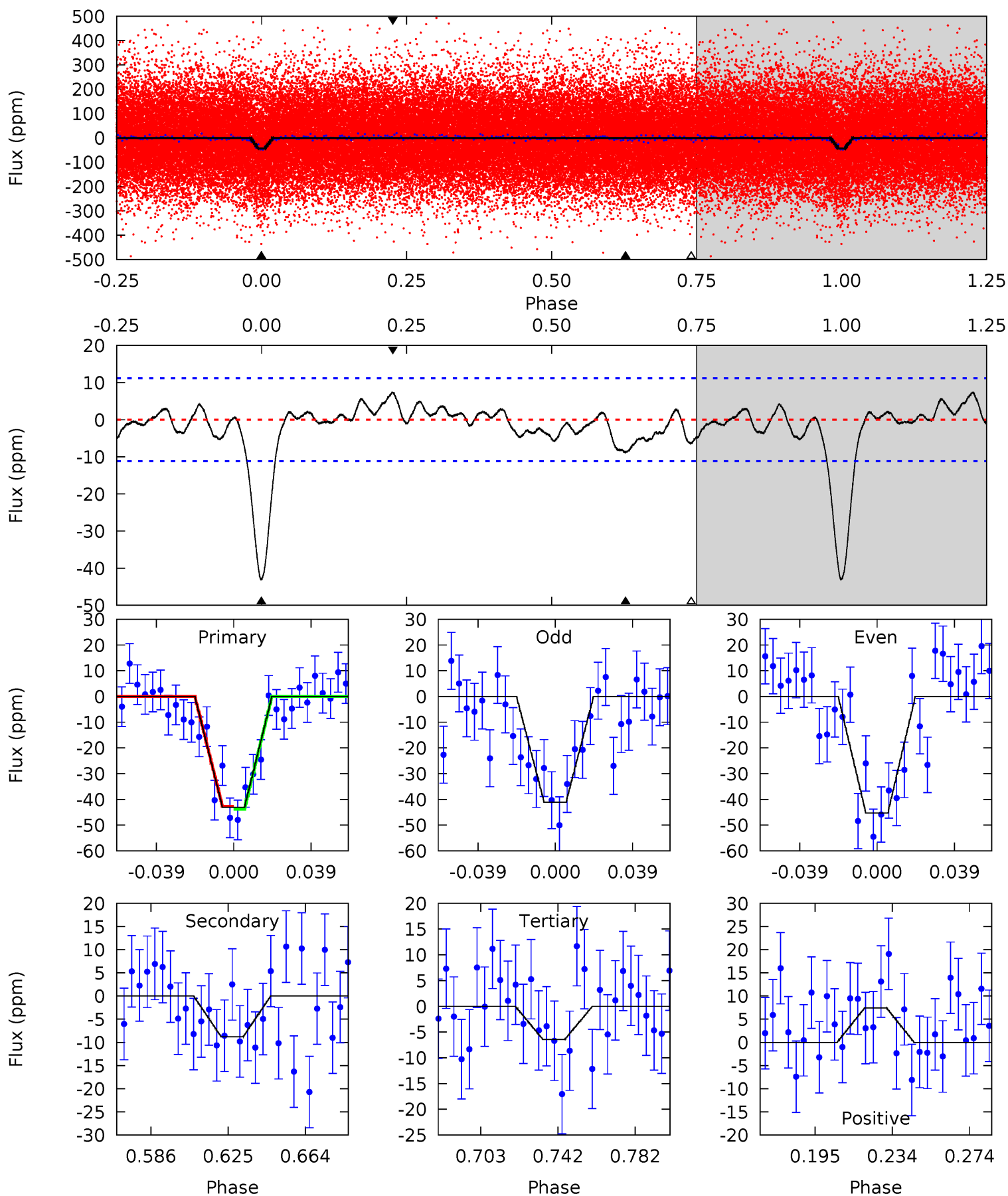
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.2	2.56	1.63	1.90	4.70	1.94	0.84	14.6	14.3	0.93	0.66	1.13	0.90	0.13	4.29



# Alt Model-Shift Uniqueness Test

010601538-01, P = 1.463771 Days, E = 131.346687 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
18.3	3.75	2.73	3.15	4.76	2.06	1.20	15.6	15.2	1.02	0.60	0.90	0.88	0.15	0.23





### Stellar Parameters For KIC 010601538

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6781^{+182}_{-243}$	$4.125^{+0.180}_{-0.135}$	$-0.220^{+0.250}_{-0.300}$	$1.651^{+0.336}_{-0.410}$	$1.333^{+0.162}_{-0.223}$	$0.417^{+0.365}_{-0.167}$
	+3%/-4%	+4%/-3%	+114%/-136%	+20%/-25%	+12%/-17%	+88%/-40%
Source	PHO1	FLK73	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 010601538-01 / KOI 7348.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-5 \pm 2$	$1.05^{+0.29}_{-0.23}$	$3192^{+216}_{-194}$	$4172^{+552}_{-579}$	$1.812^{+1.491}_{-0.911}$
Alt.	$-9 \pm 2$	$1.20^{+0.27}_{-0.28}$	$3214^{+208}_{-221}$	$4478^{+566}_{-418}$	$2.531^{+1.986}_{-1.022}$

$T_{\text{max}}$  = 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

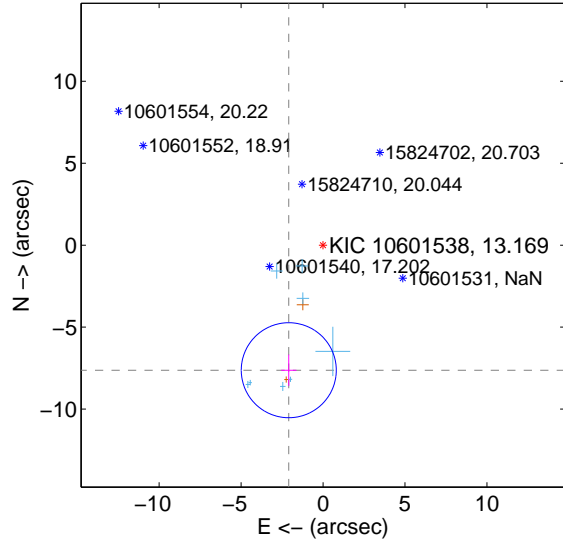
Supplemental centroid analysis for 010601538-01. Kepler magnitude: 13.17. Transit SNR 11.13

There are 8 quarters with good PRF difference image offsets

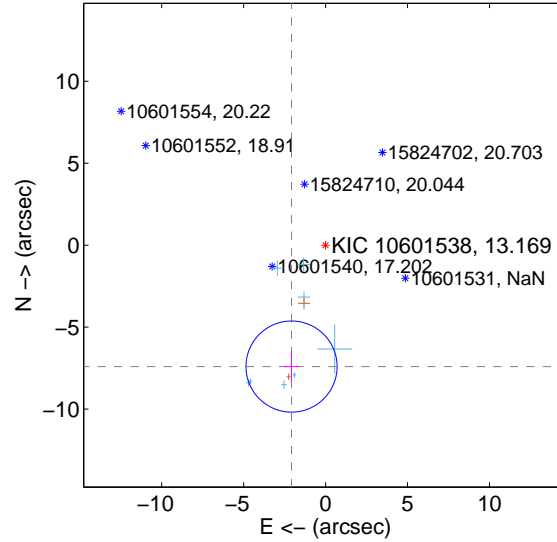
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$7.909 \pm 0.966$	8.19	$2.090 \pm 0.466$	$-7.628 \pm 0.955$
PRF-fit source offset from KIC position	$7.691 \pm 0.926$	8.30	$2.077 \pm 0.473$	$-7.405 \pm 0.921$
photometric centroid source offset	$9.52 \pm 0.93$	10.28	$2.94 \pm 1.02$	$-9.05 \pm 0.92$

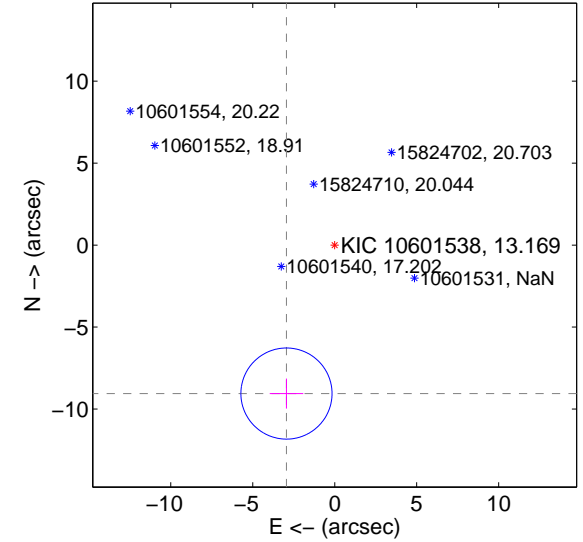
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

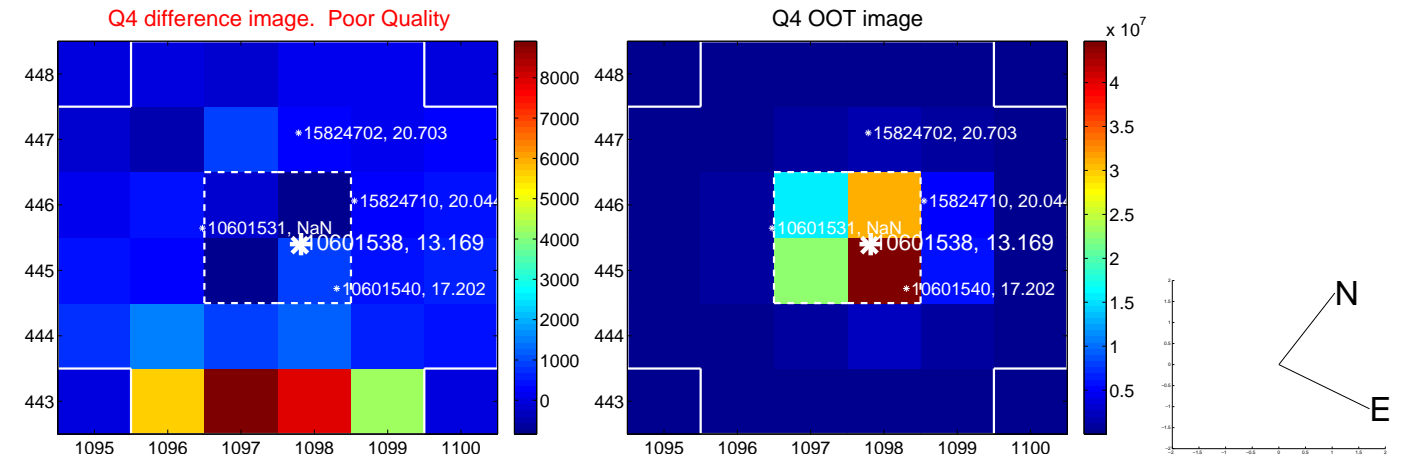
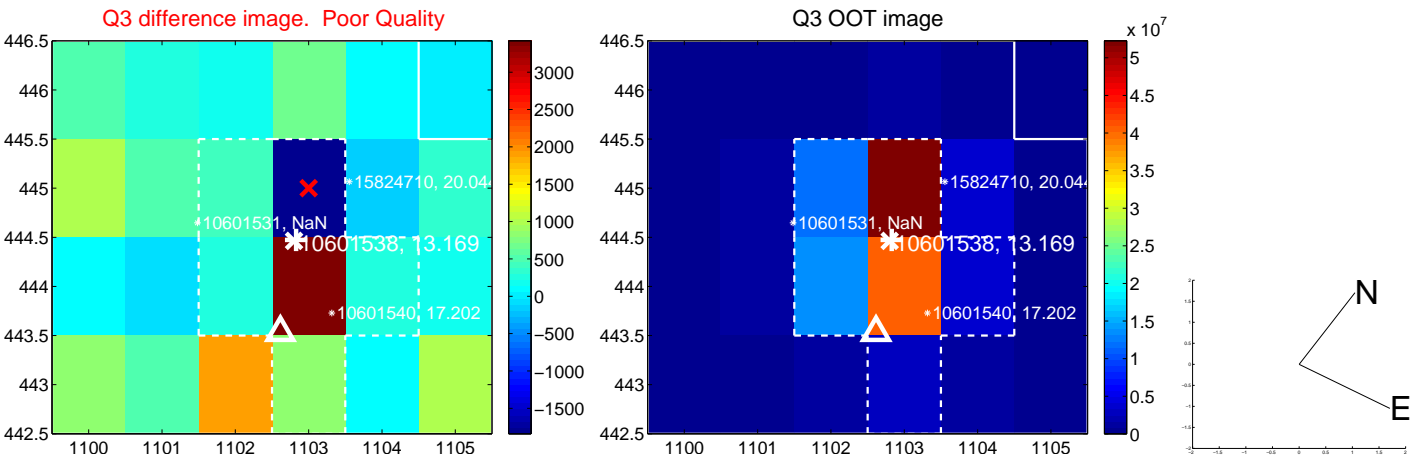
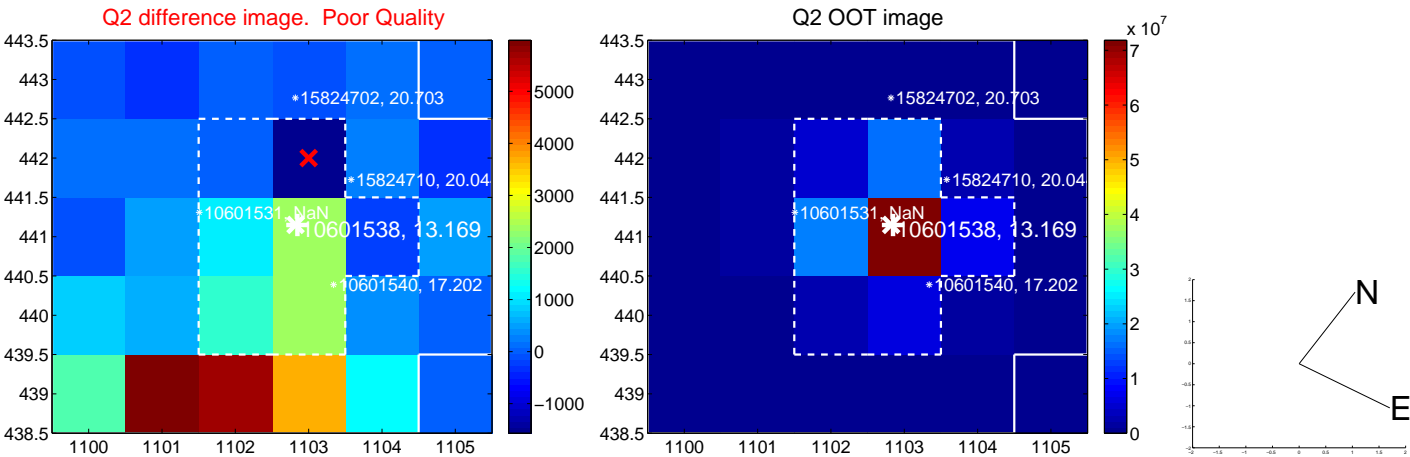
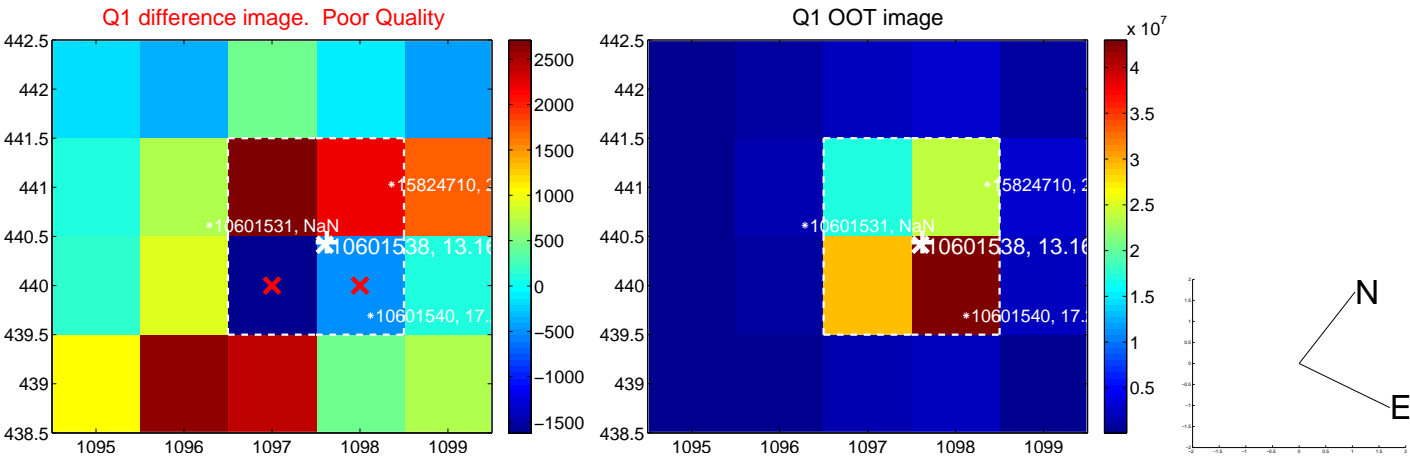


offset from photometric centroids

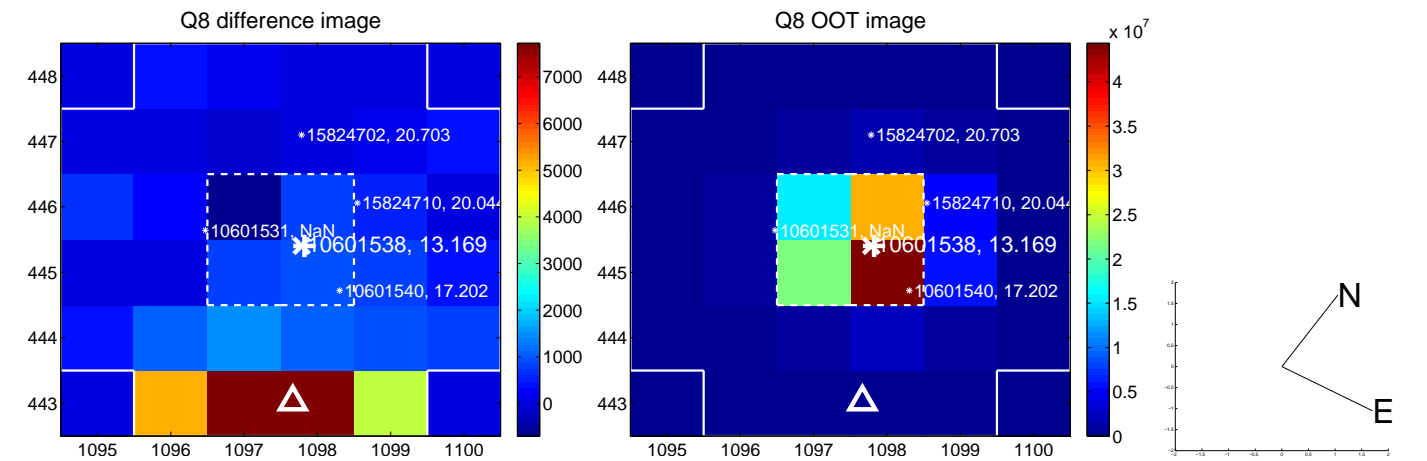
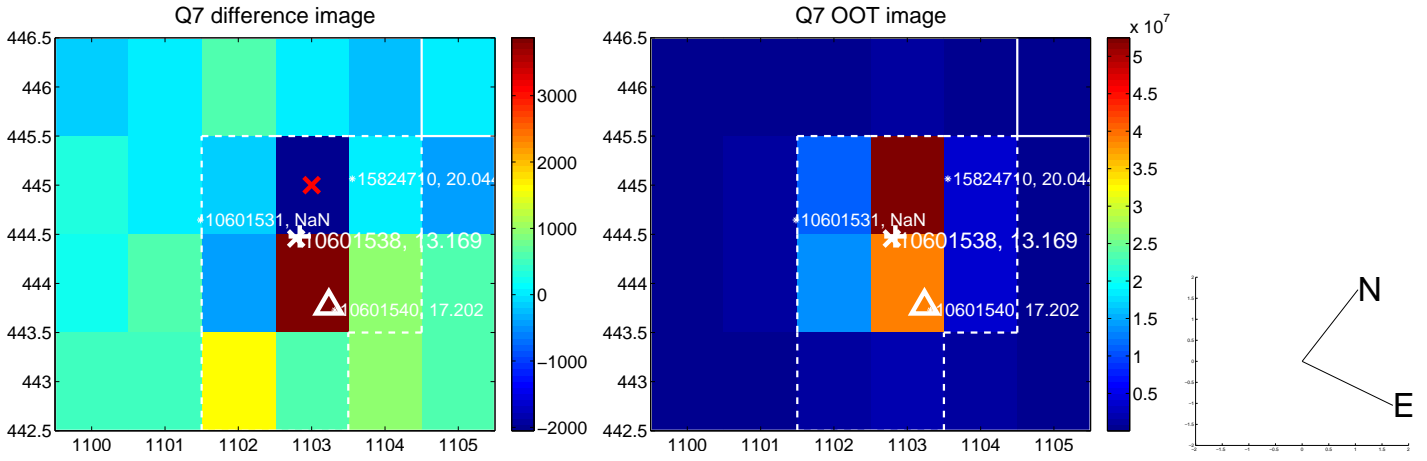
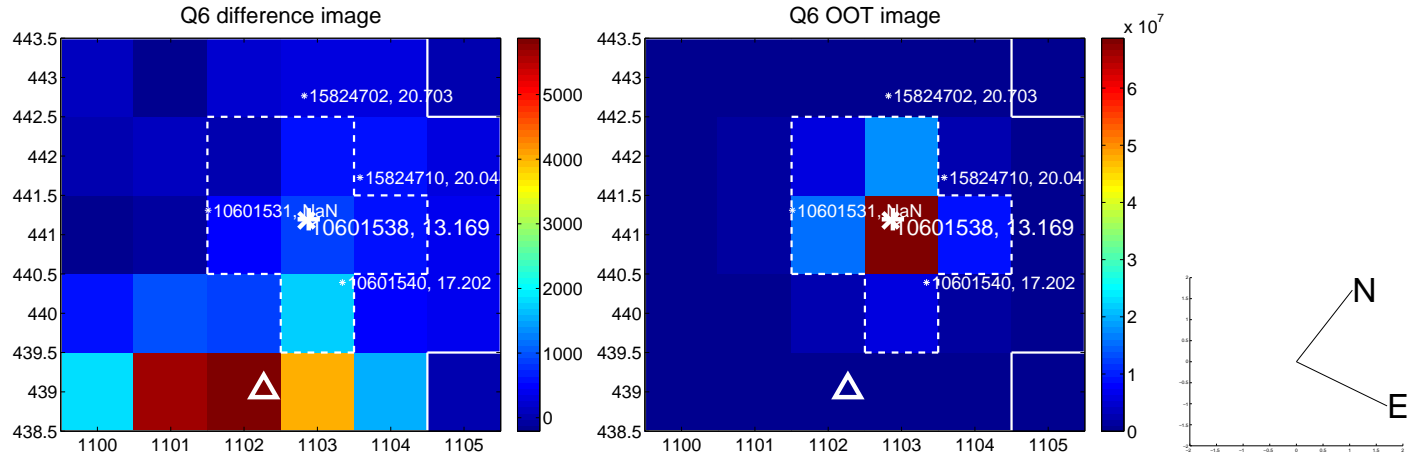
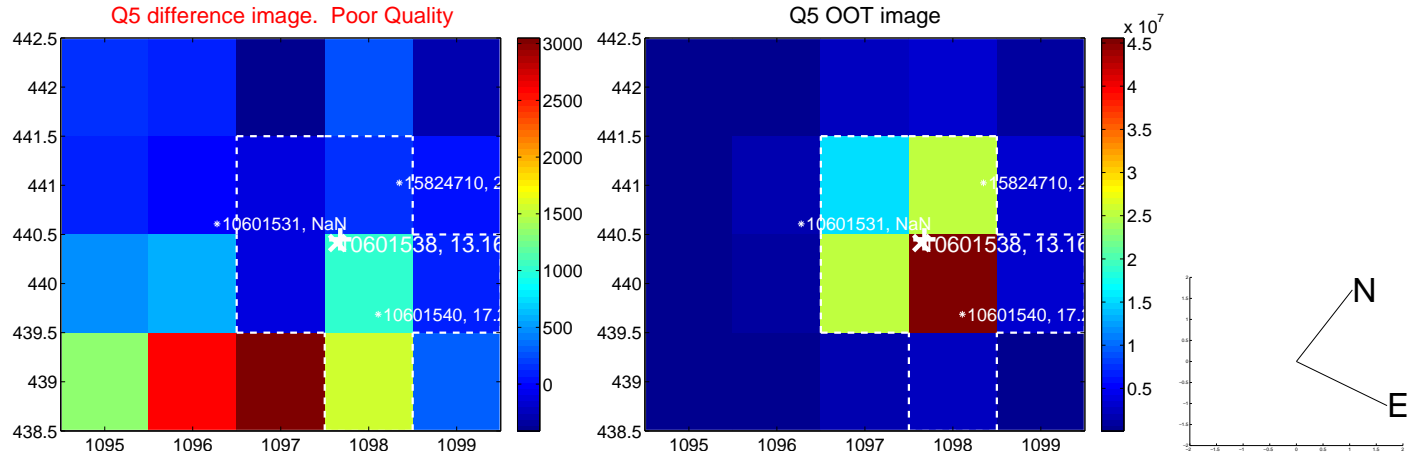


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

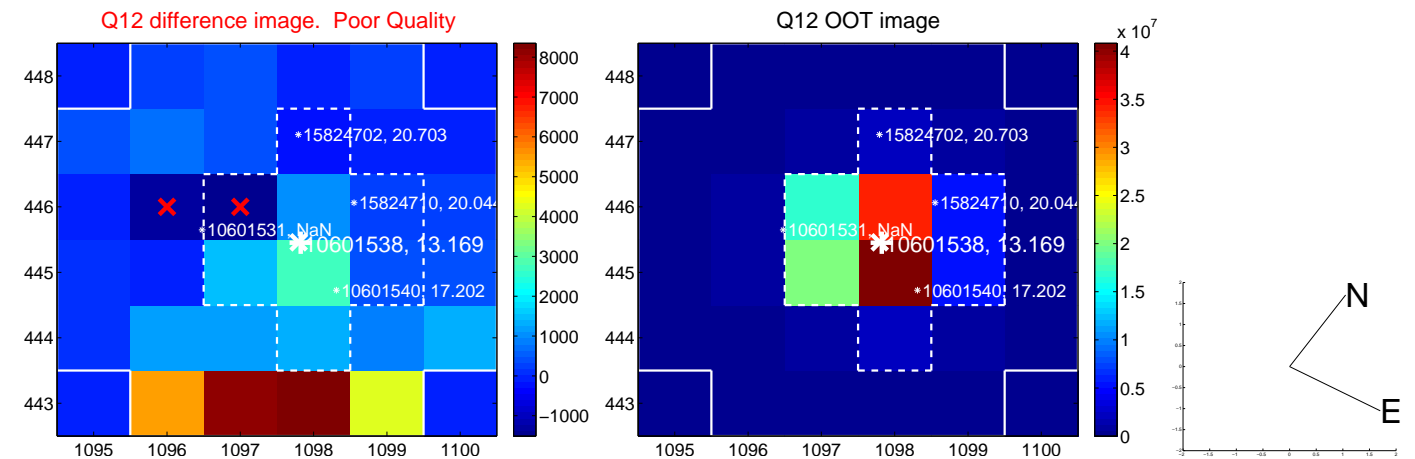
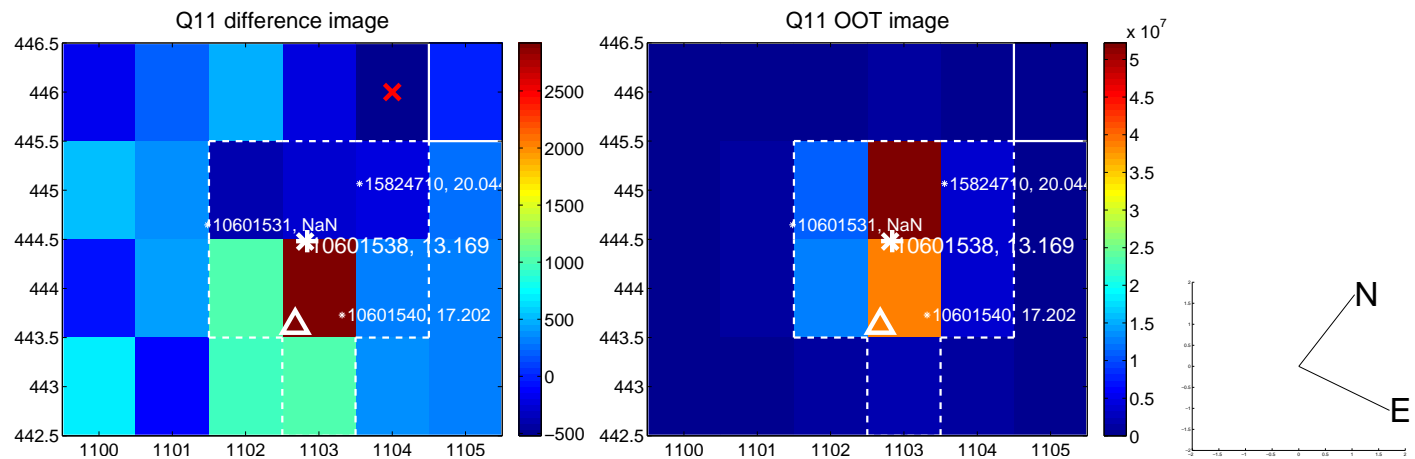
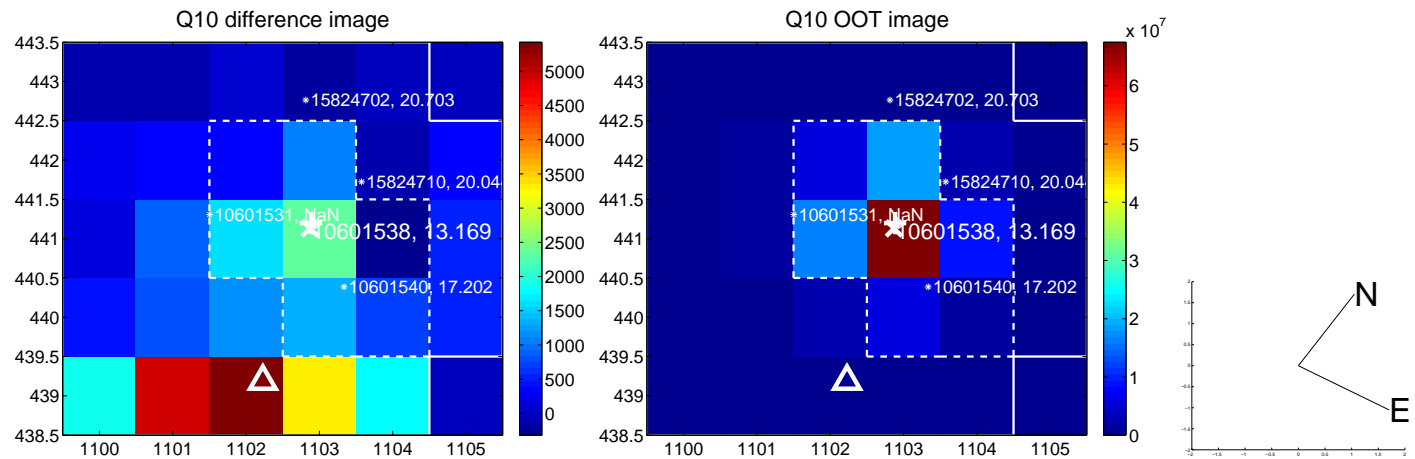
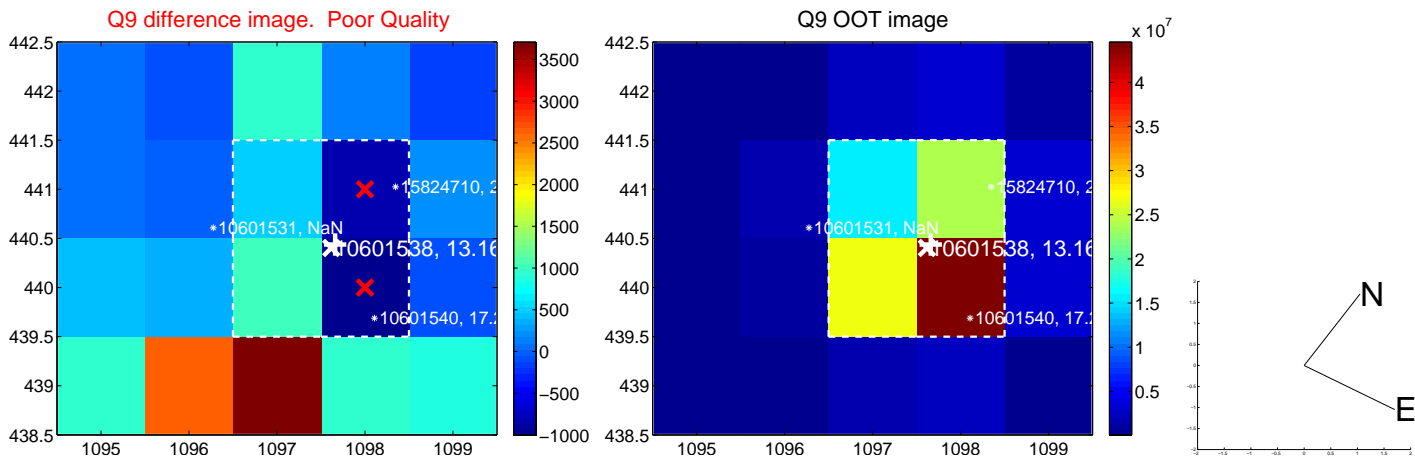


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

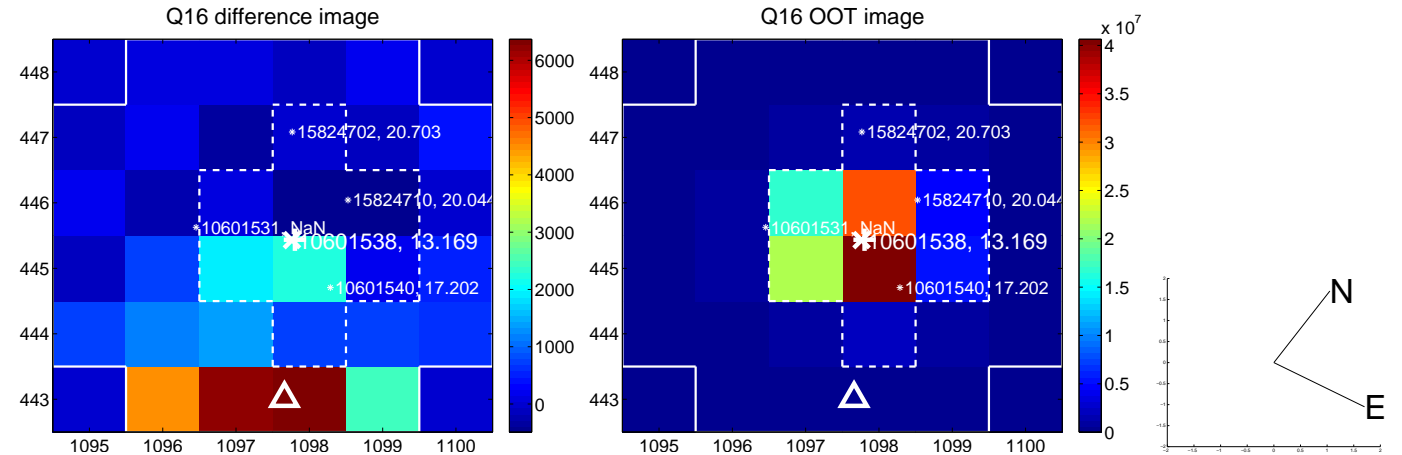
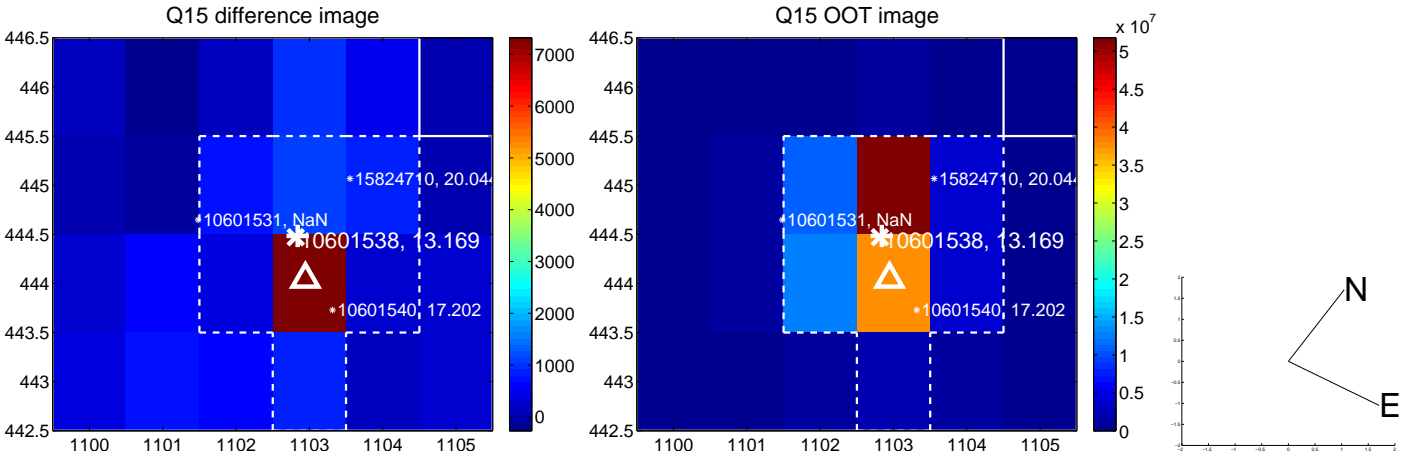
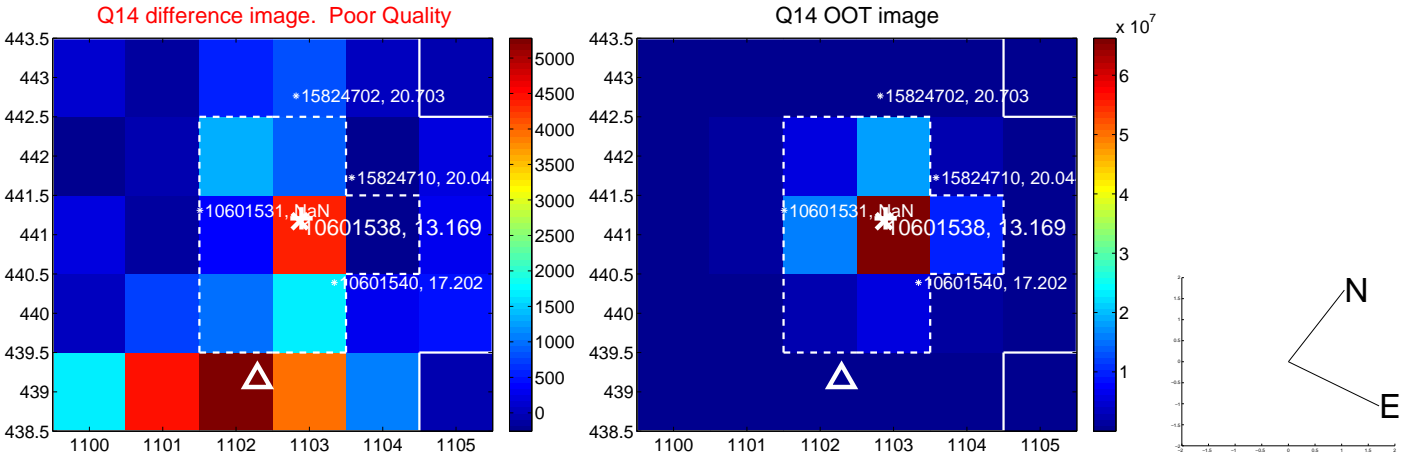
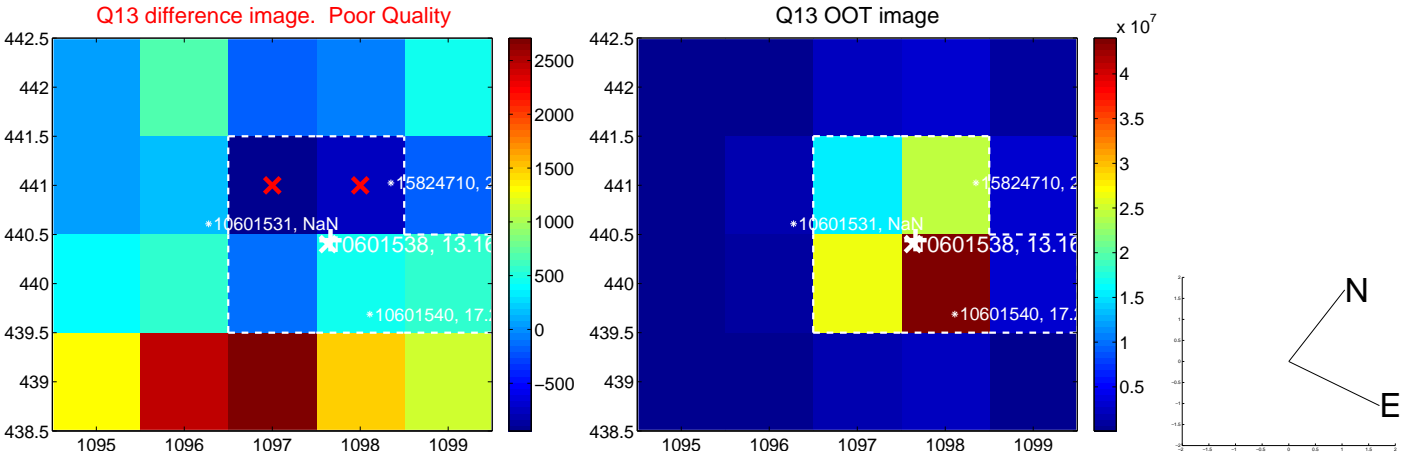




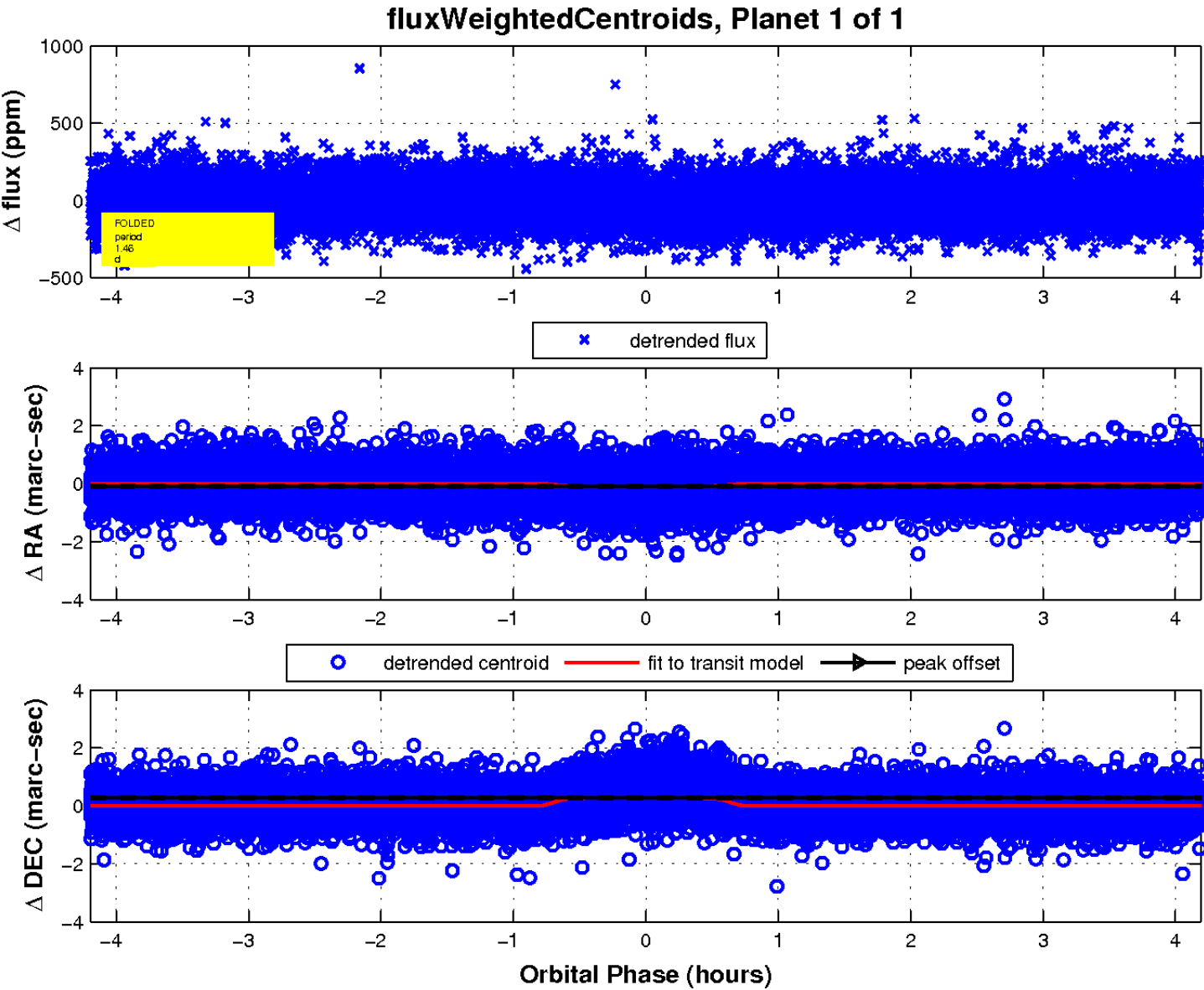
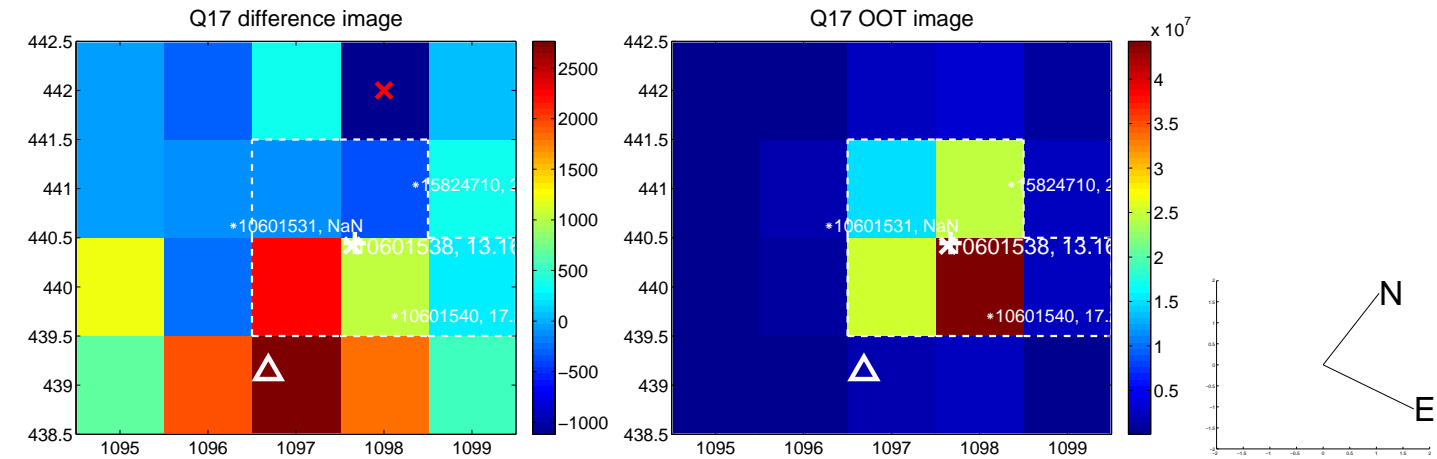
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

