

# KIC 012254378

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012254378-01	OBS	2387.01	2.032309	132.324586	316.8	1.631	22.3	24.4	1.05	6156	2.00	1337.30

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012254378-01	OBS	PC	1.00	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.

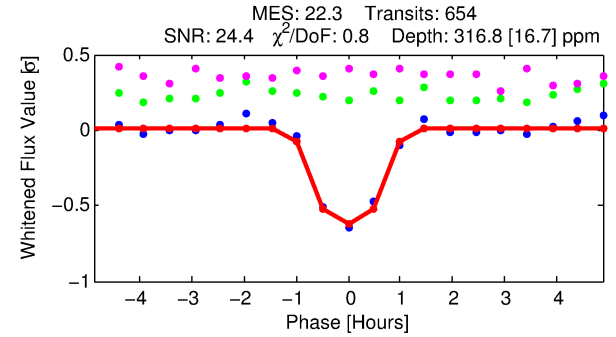
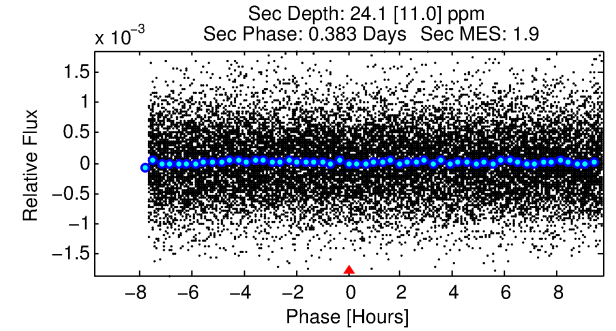
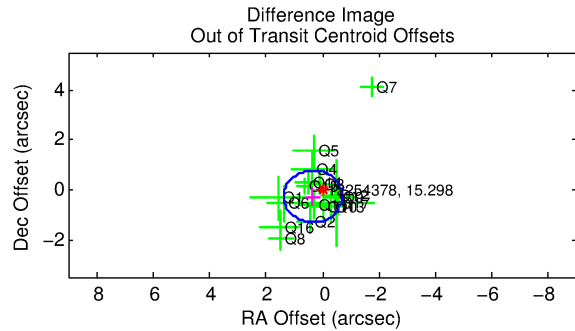
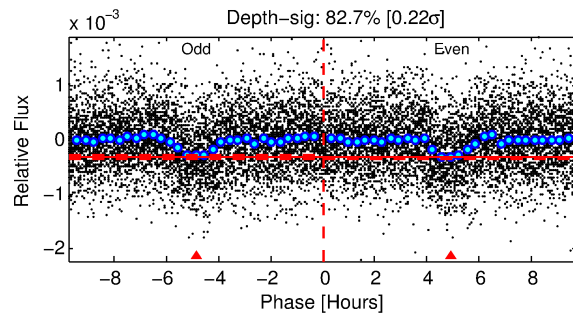
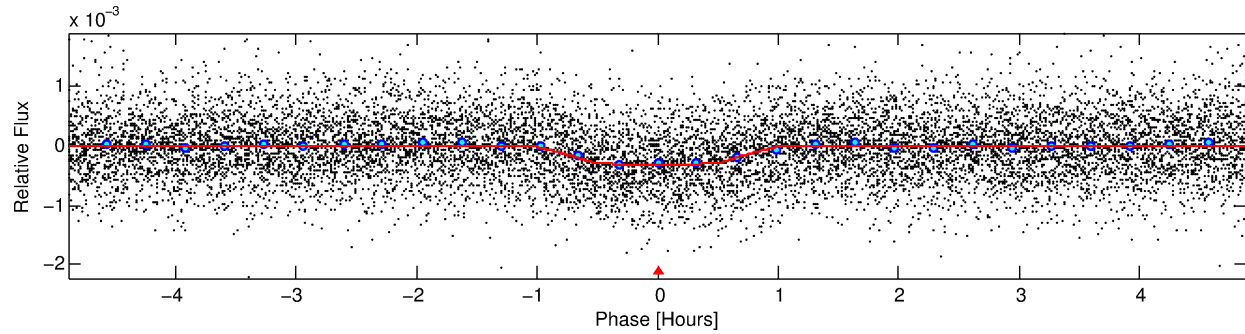
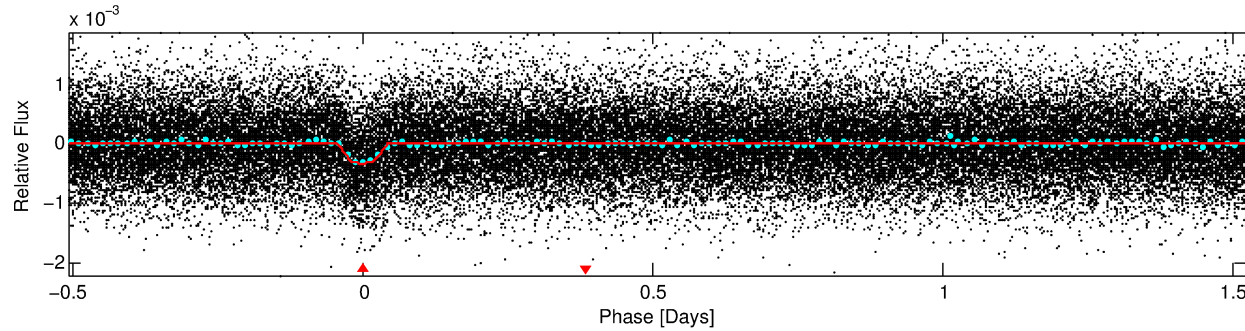
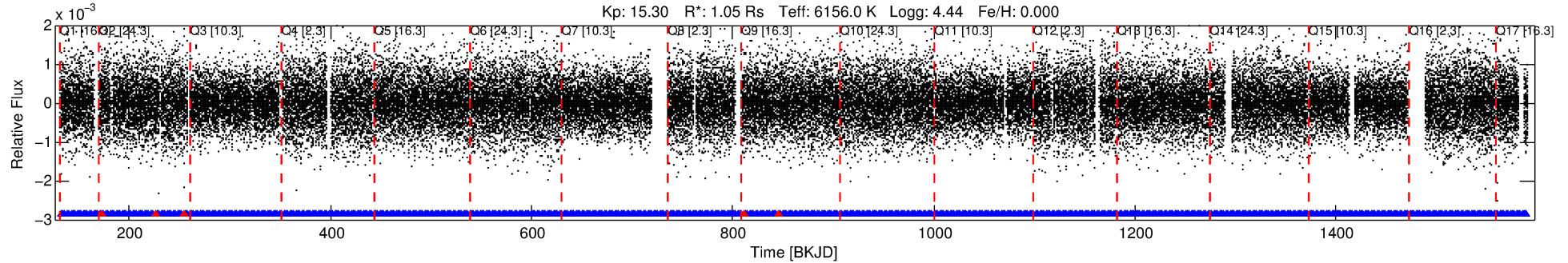
## Ephemeris Match Information For 012254378-01

No Significant Match Found

# DV One-Page Summary

KIC: 12254378 Candidate: 1 of 1 Period: 2.032 d  
KOI: K02387.01 Corr: 0.956

Kp: 15.30 R\*: 1.05 Rs Teff: 6156.0 K Logg: 4.44 Fe/H: 0.000



## DV Fit Results:

Period = 2.03231 [0.00001] d  
Epoch = 132.3246 [0.0011] BKJD  
Rp/R\* = 0.0175 [0.0063]  
a/R\* = 7.15 [12.42]  
b = 0.69 [1.35]  
Seff = 1337.30 [567.89]  
Teq = 1542 [164] K  
Rp = 2.00 [0.97] Re  
a = 0.0326 [0.0089] AU  
Ag = 3.51 [3.31] [0.76σ]  
Teffp = 3263 [710] K [2.36σ]

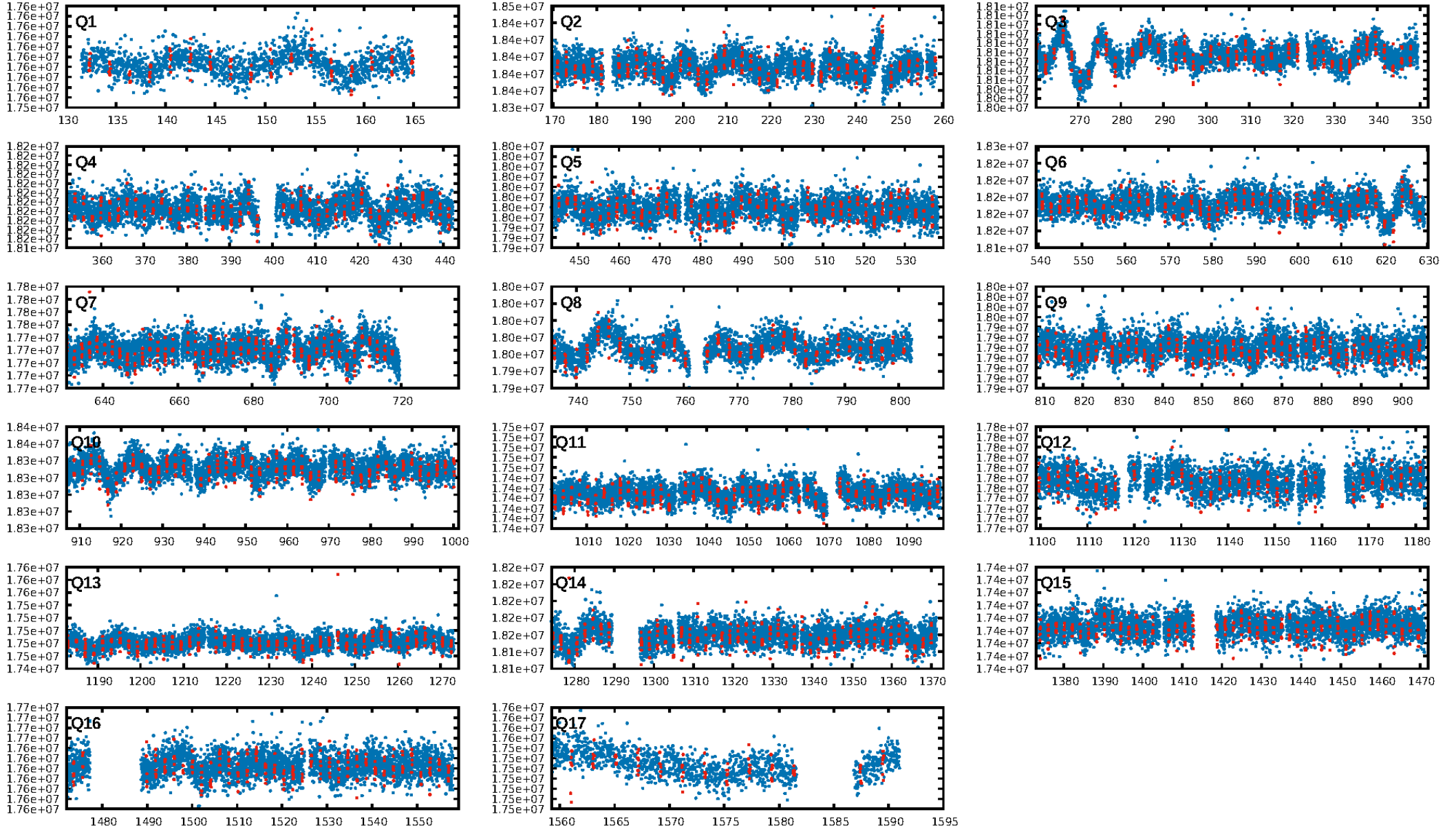
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.32e-108  
RollingBand-fgt: 0.99 [619/624]  
GhostDiagnostic-chr: 6.626  
Centroid-sig: 3.7%  
Centroid-so: 1.173 arcsec [2.08σ]  
OotOffset-rm: 0.444 arcsec [1.28σ]  
KicOffset-rm: 0.376 arcsec [1.16σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.82 [14/17]  
DiffImageOverlap-fno: 1.00 [17/17]

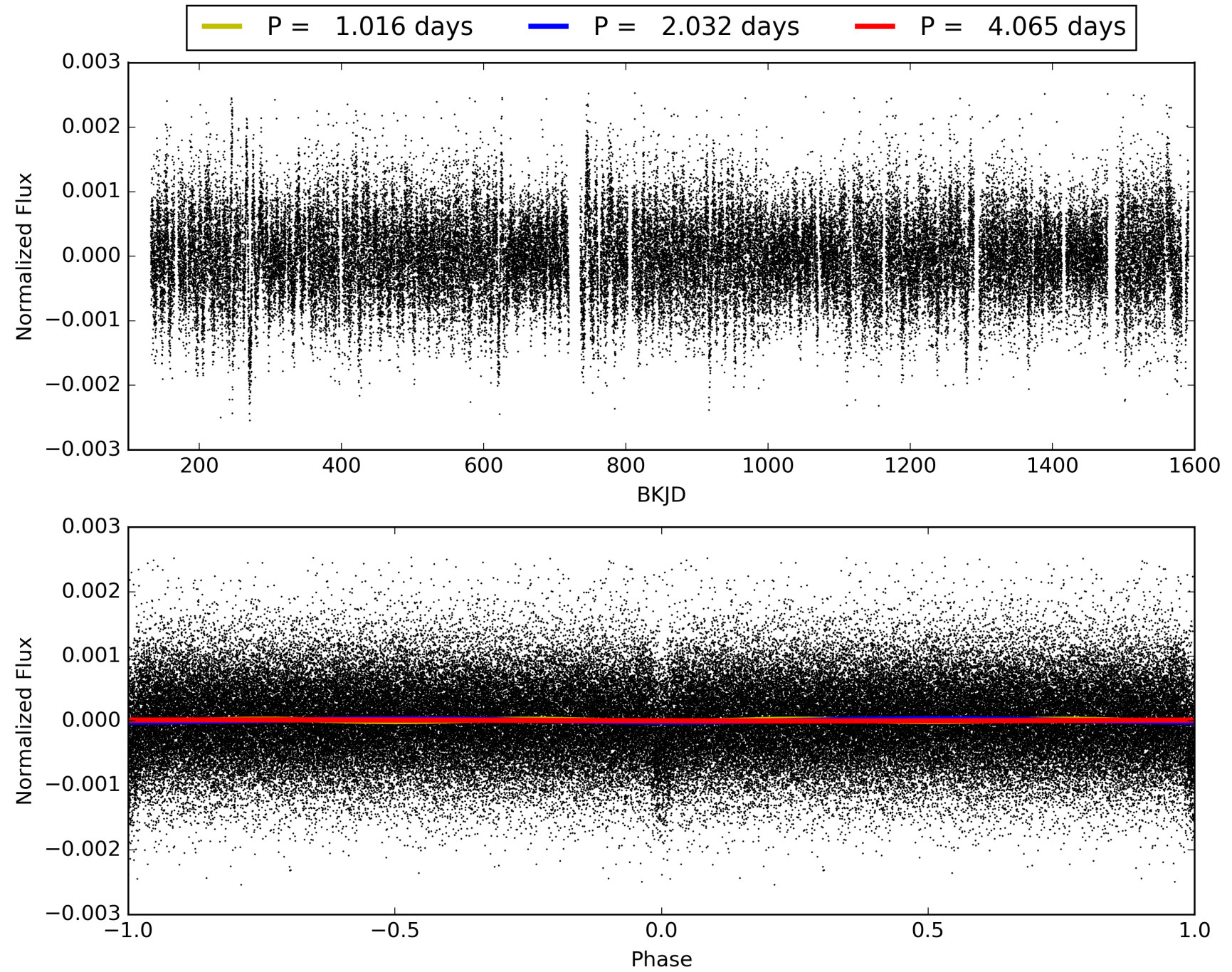
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 22:14:46 Z

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

# TCE 012254378-01, PDC Light Curves



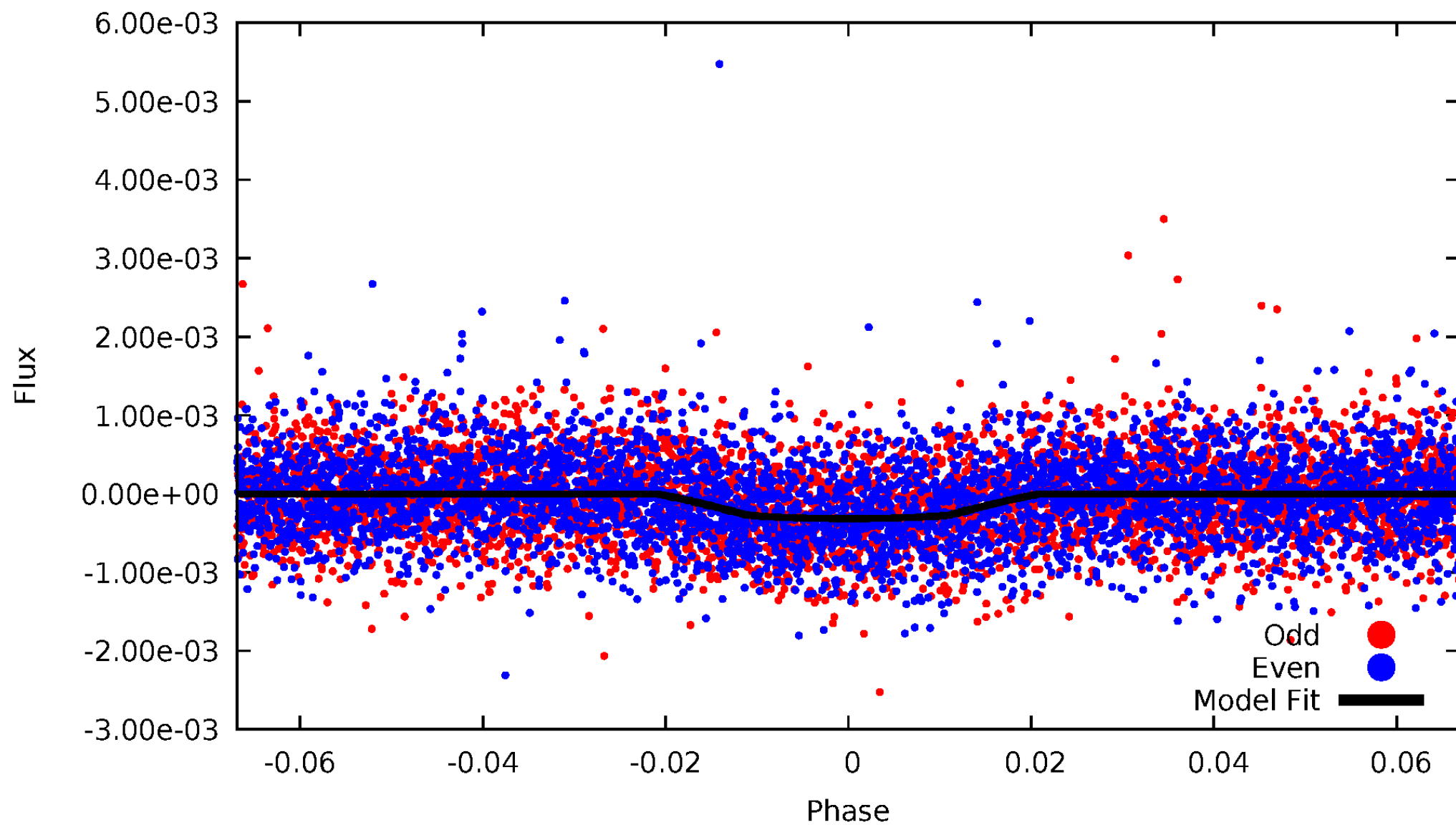
# TCE 012254378-01





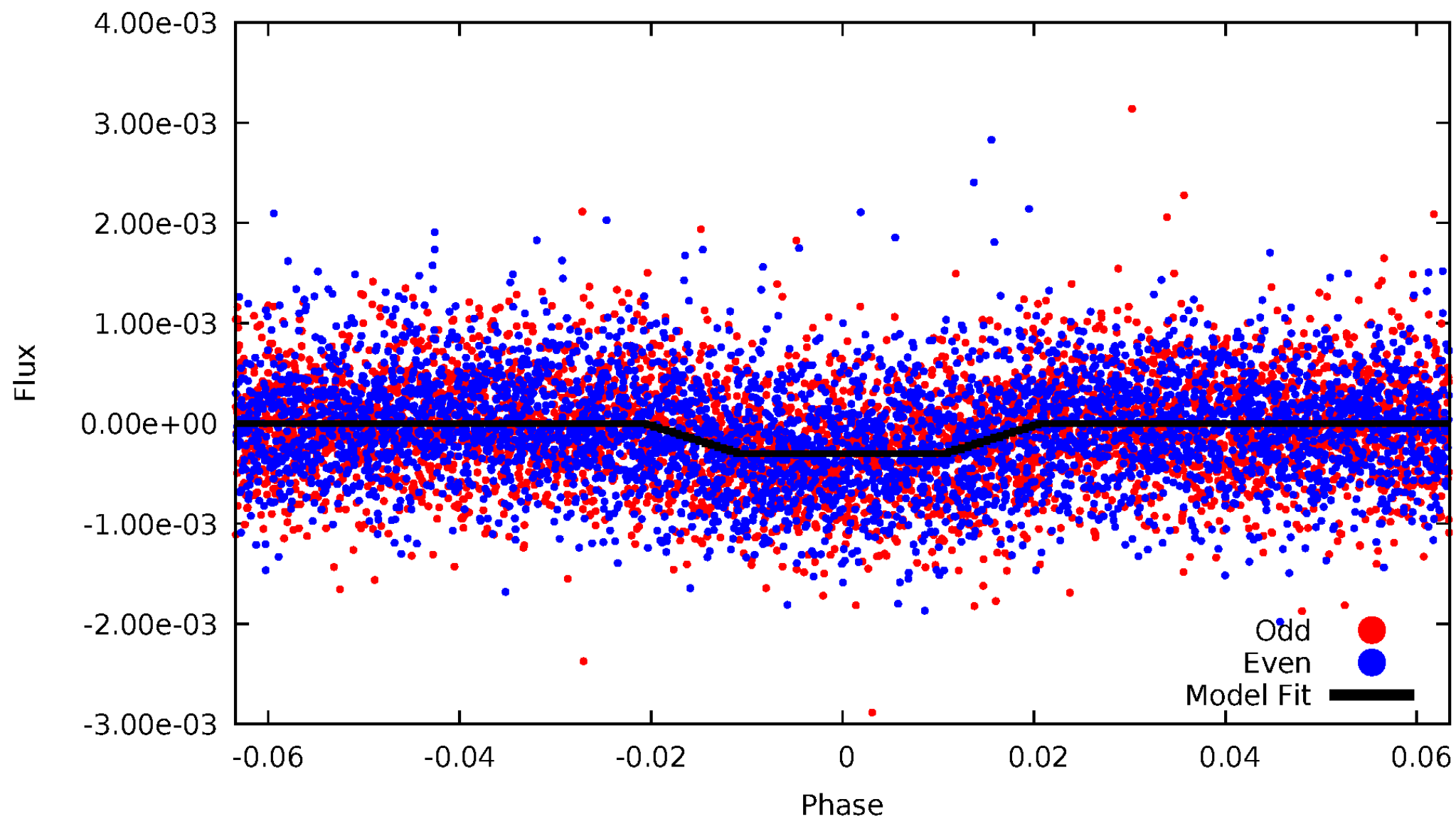
# DV Odd/Even

TCE 012254378-01

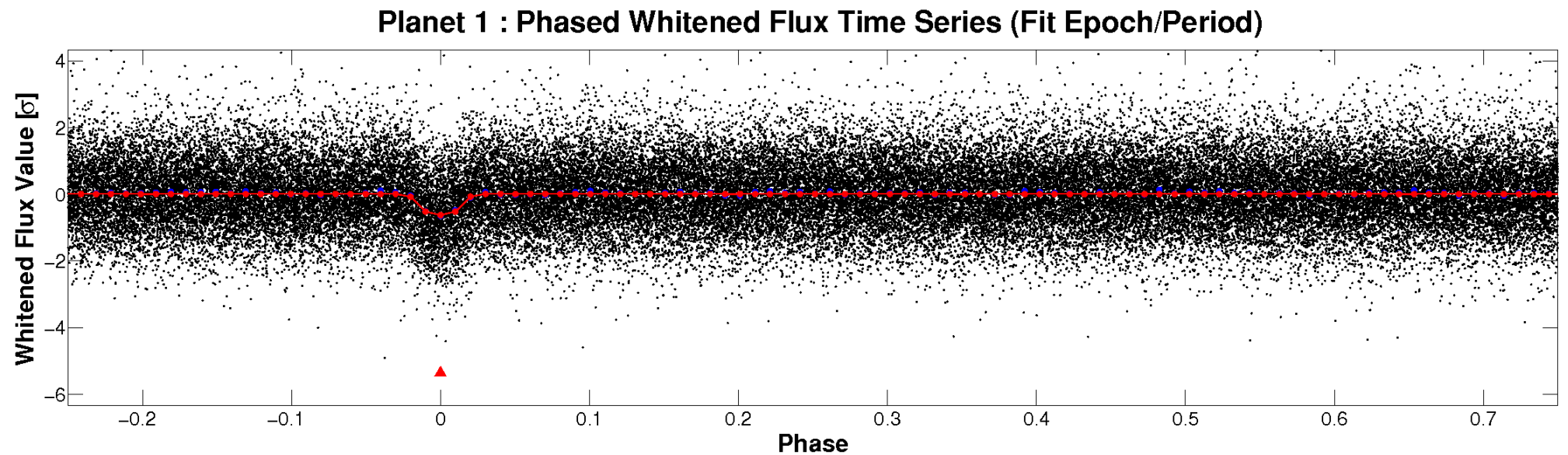
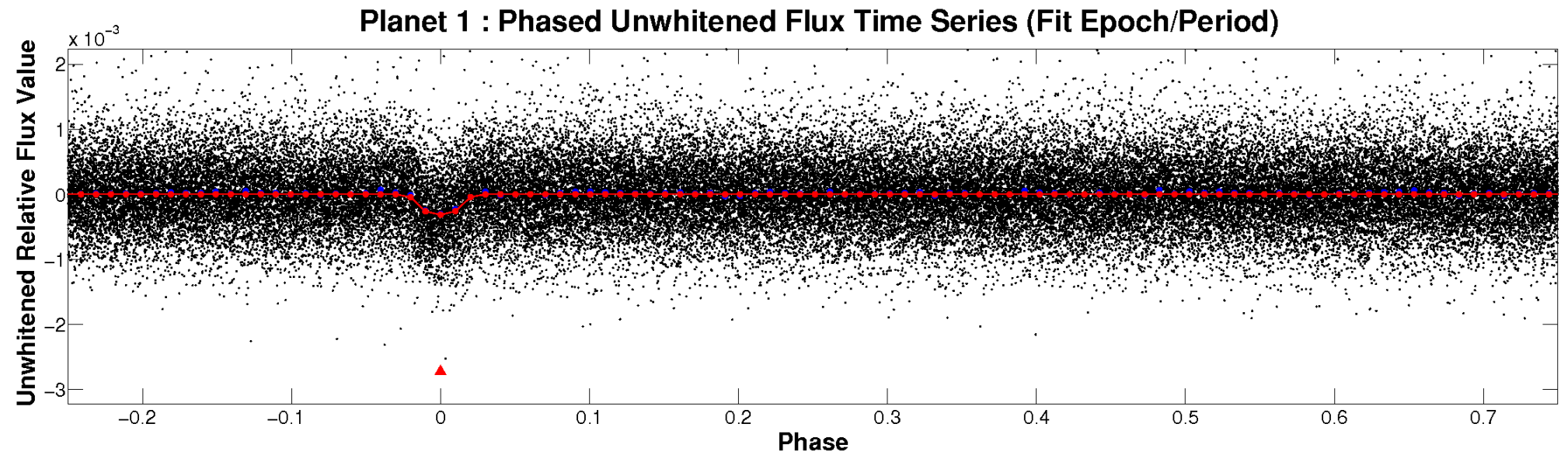


# ALT Odd/Even

TCE 012254378-01

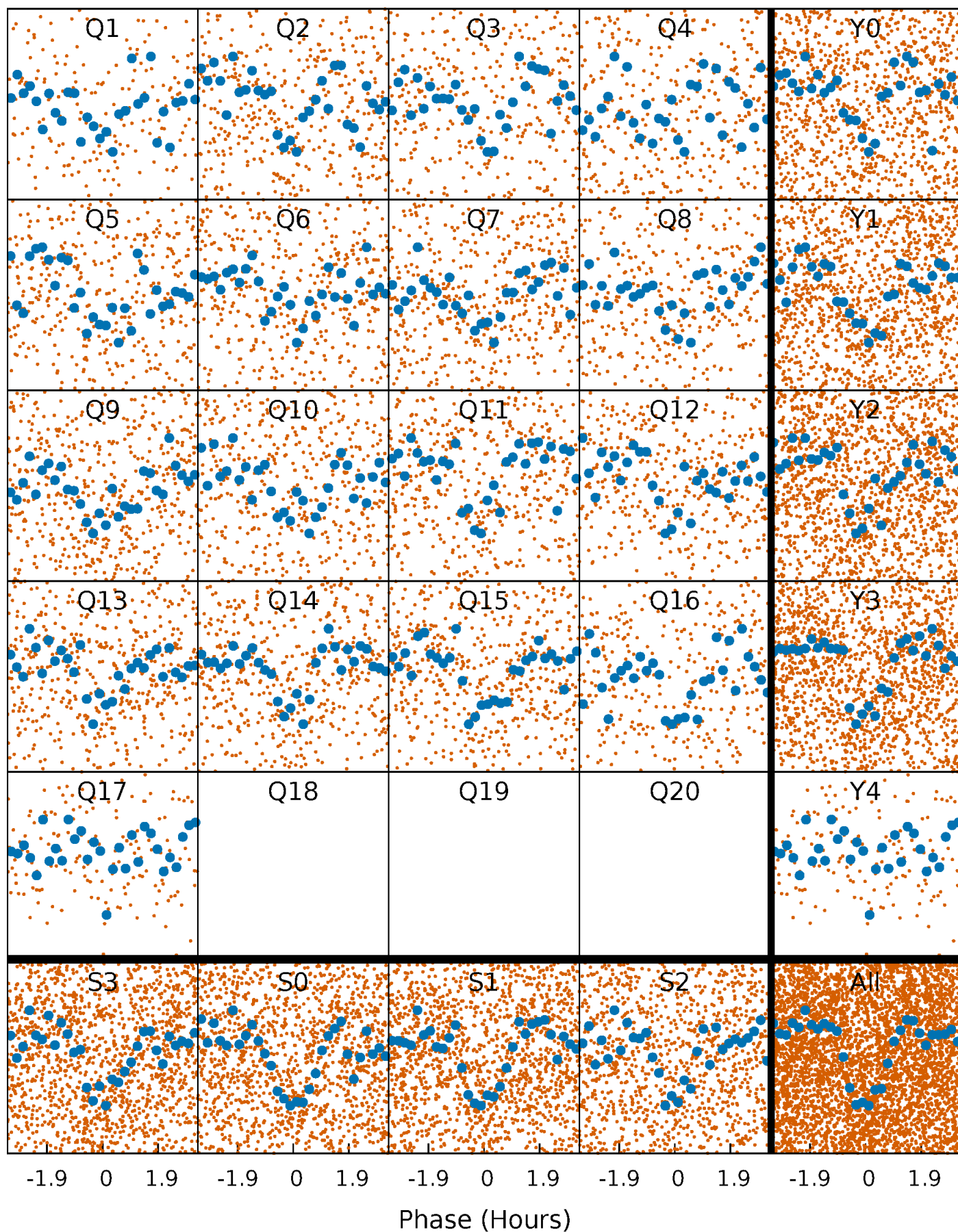


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

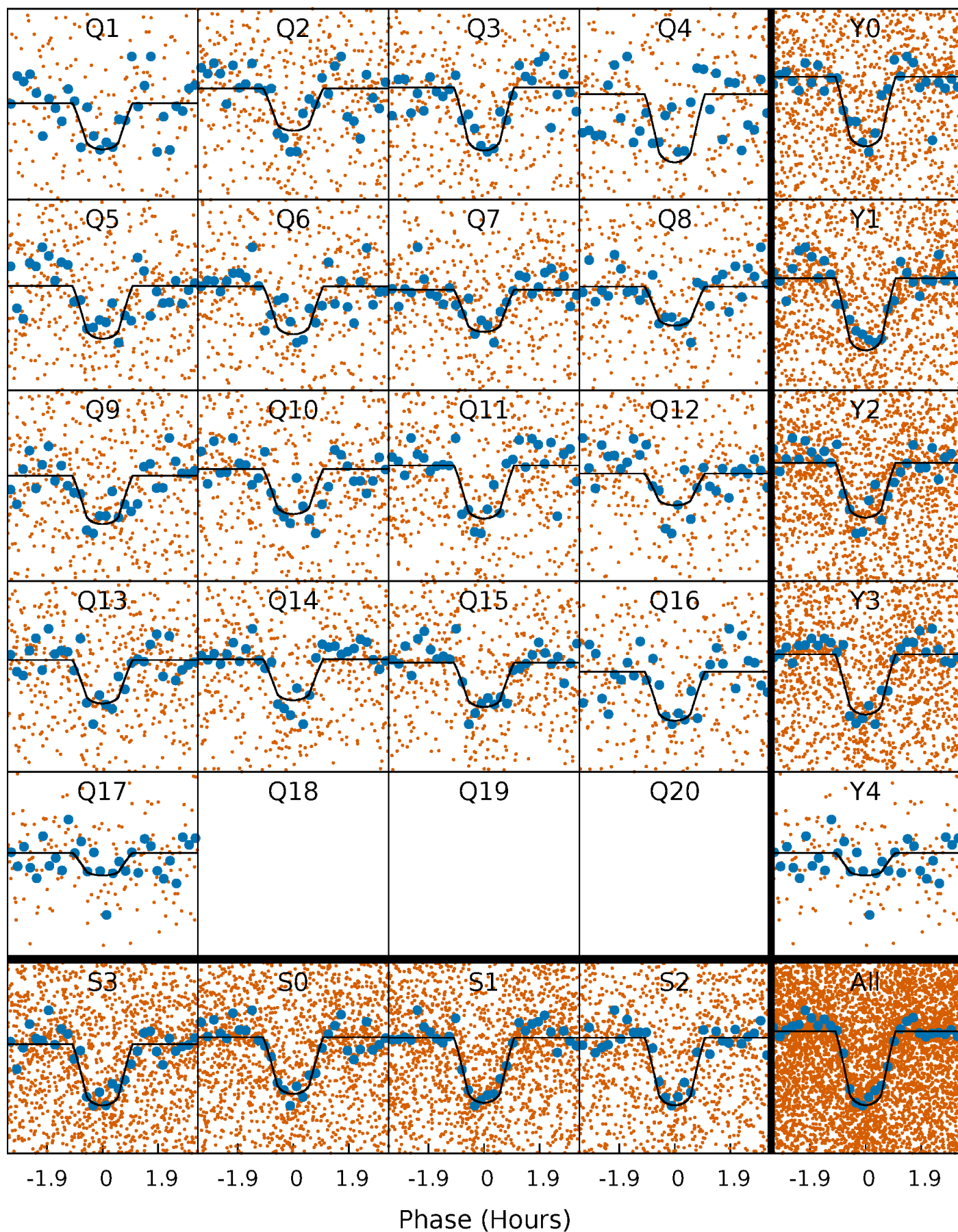
TCE 012254378-01 P= 2.032309 Days  $T_0=132.324586$  (BKJD)





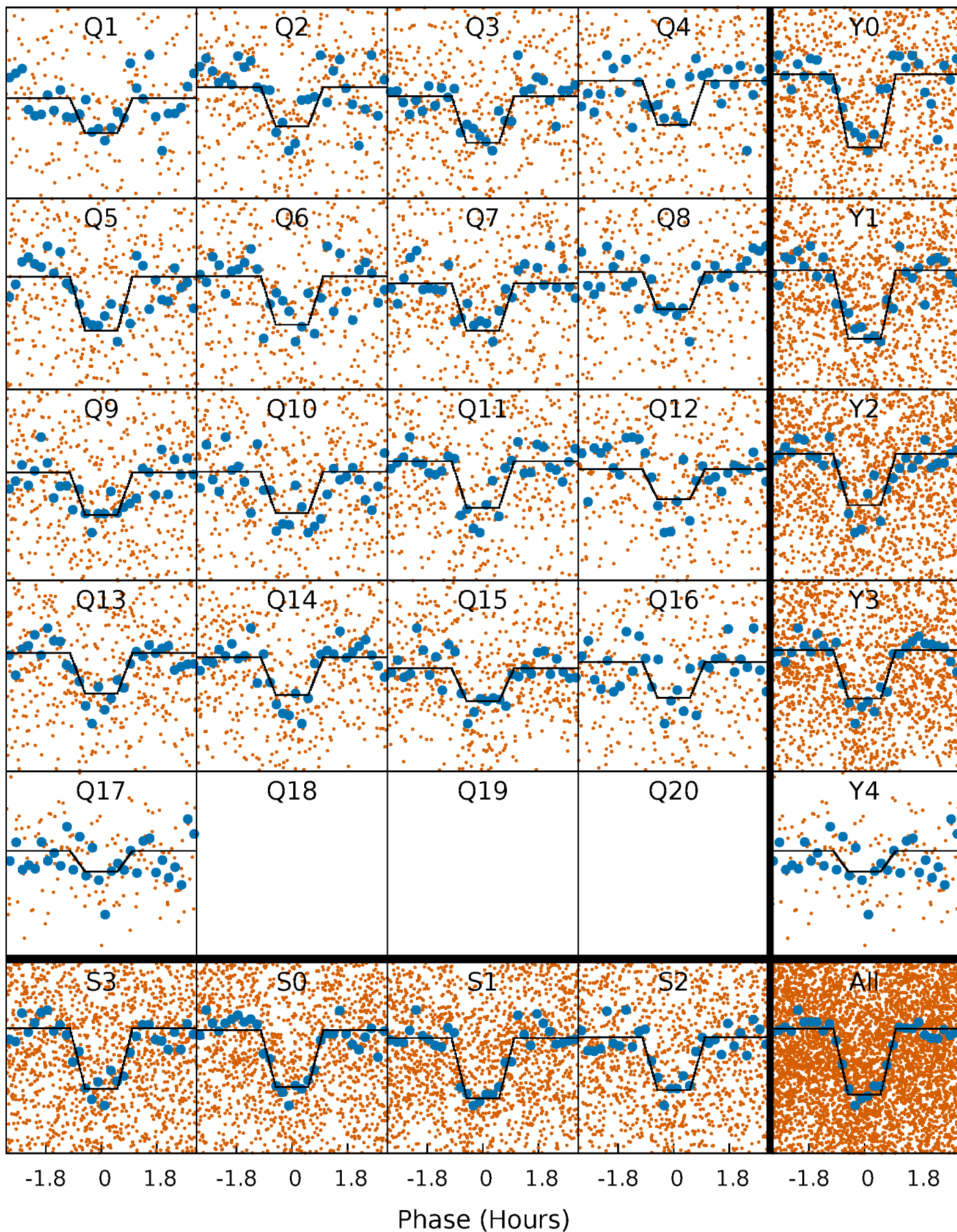
# DV Quarter-Phased Transit Curves

TCE 012254378-01 P= 2.032309 Days  $T_0=132.324586$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

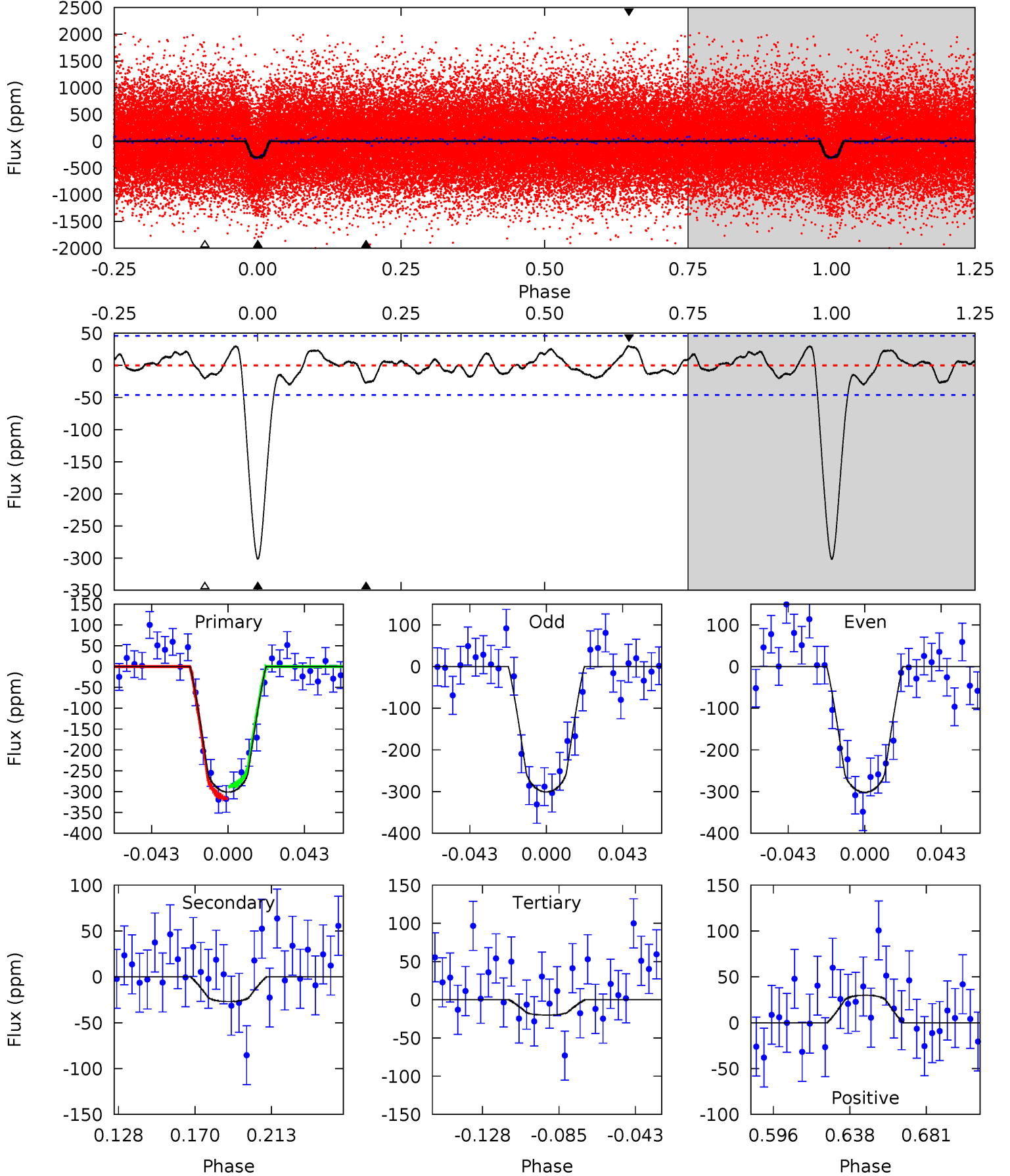
TCE 012254378-01 P= 2.032309 Days  $T_0=132.325381$  (BKJD)



# DV Model-Shift Uniqueness Test

012254378-01, P = 2.032309 Days, E = 130.292277 Days

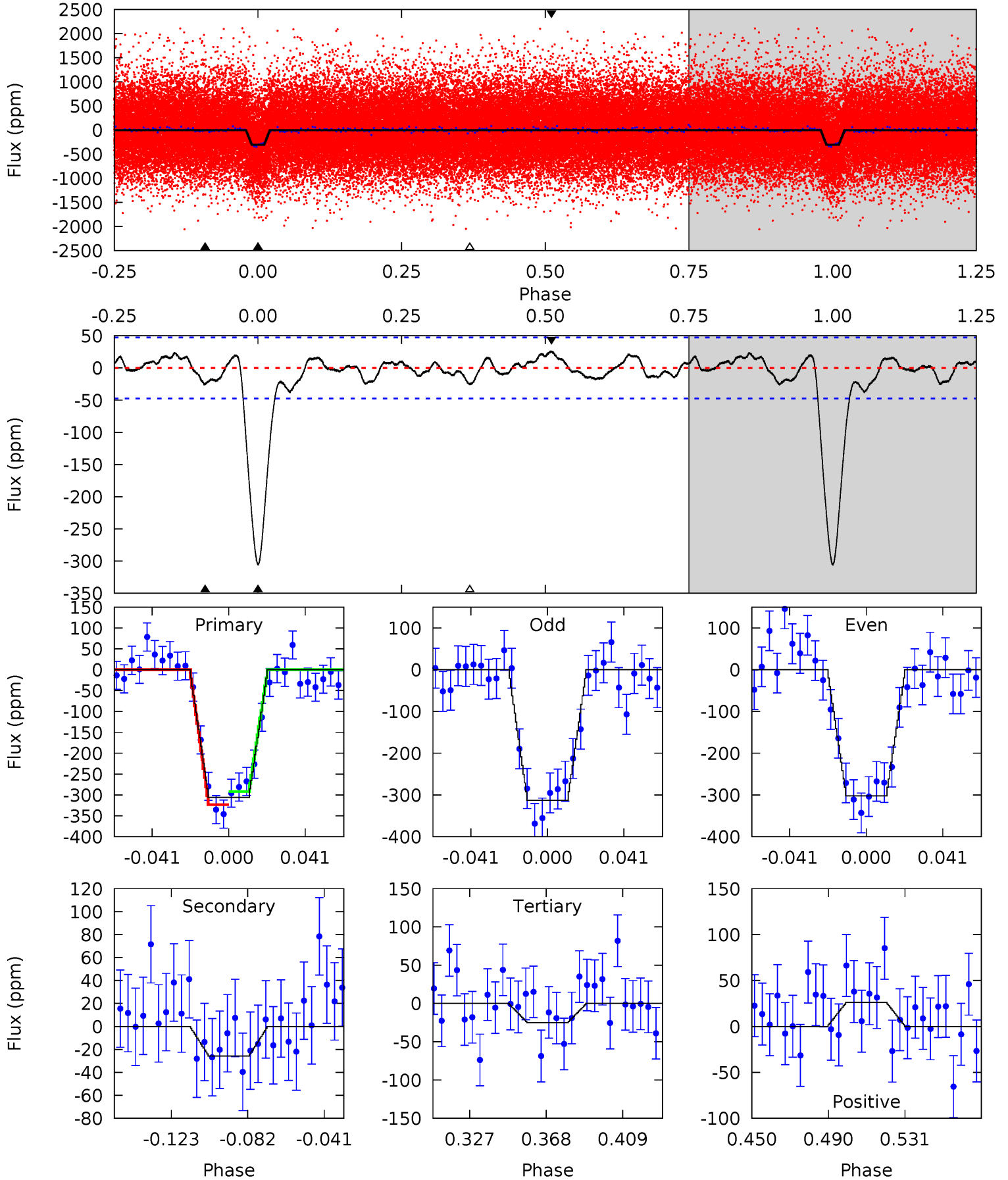
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.0	2.78	2.06	3.08	4.74	2.03	1.33	28.9	27.9	0.72	-0.30	0.04	0.94	0.09	1.52



# Alt Model-Shift Uniqueness Test

012254378-01, P = 2.032309 Days, E = 130.293072 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
30.6	2.58	2.52	2.61	4.75	2.04	1.26	28.1	28.0	0.06	-0.03	0.56	1.00	0.08	1.59





### Stellar Parameters For KIC 012254378

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6156^{+171}_{-236}$	$4.443^{+0.054}_{-0.216}$	$0.000^{+0.250}_{-0.350}$	$1.050^{+0.341}_{-0.114}$	$1.114^{+0.151}_{-0.151}$	$1.357^{+0.388}_{-0.716}$
	+3%/-4%	+1%/-5%	+inf%/-inf%	+32%/-11%	+14%/-14%	+29%/-53%
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 012254378-01 / KOI 2387.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-27 \pm 10$	$2.09^{+0.89}_{-0.76}$	$2208^{+159}_{-120}$	$3685^{+739}_{-524}$	$3.403^{+6.071}_{-1.985}$
Alt.	$-26 \pm 10$	$2.09^{+0.84}_{-0.78}$	$2199^{+165}_{-108}$	$3654^{+719}_{-469}$	$3.222^{+5.608}_{-1.720}$

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

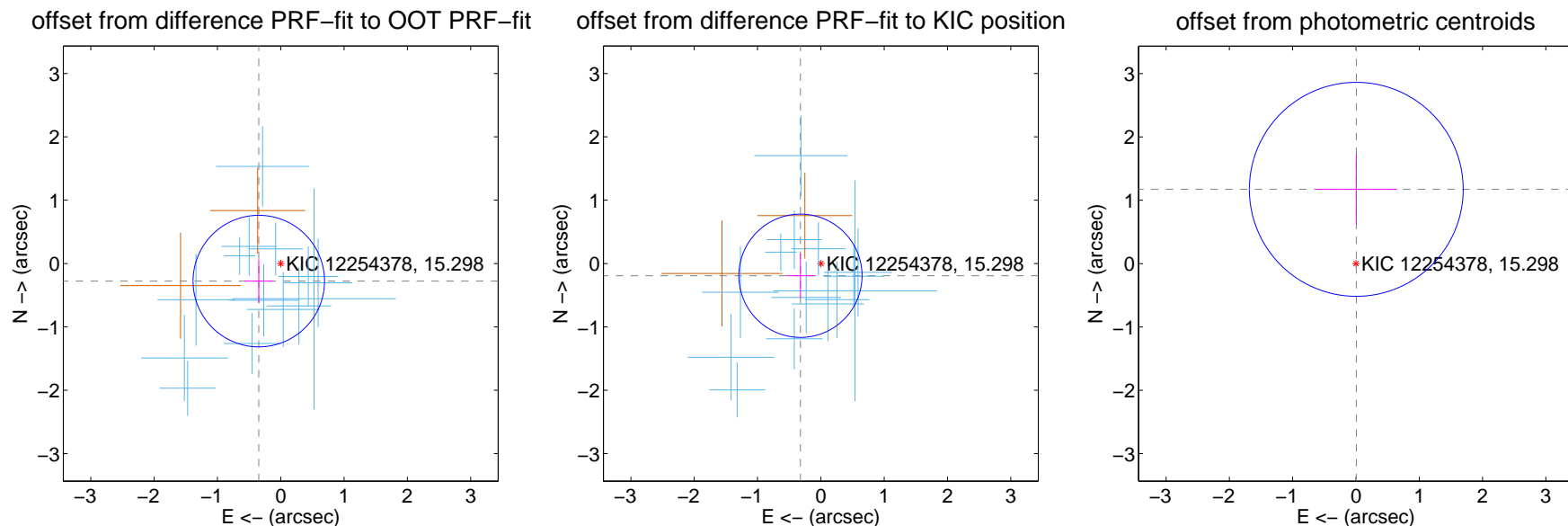
## DV Centroid Data

Supplemental centroid analysis for 012254378-01. Kepler magnitude: 15.30. Transit SNR 24.45

There are 14 quarters with good PRF difference image offsets

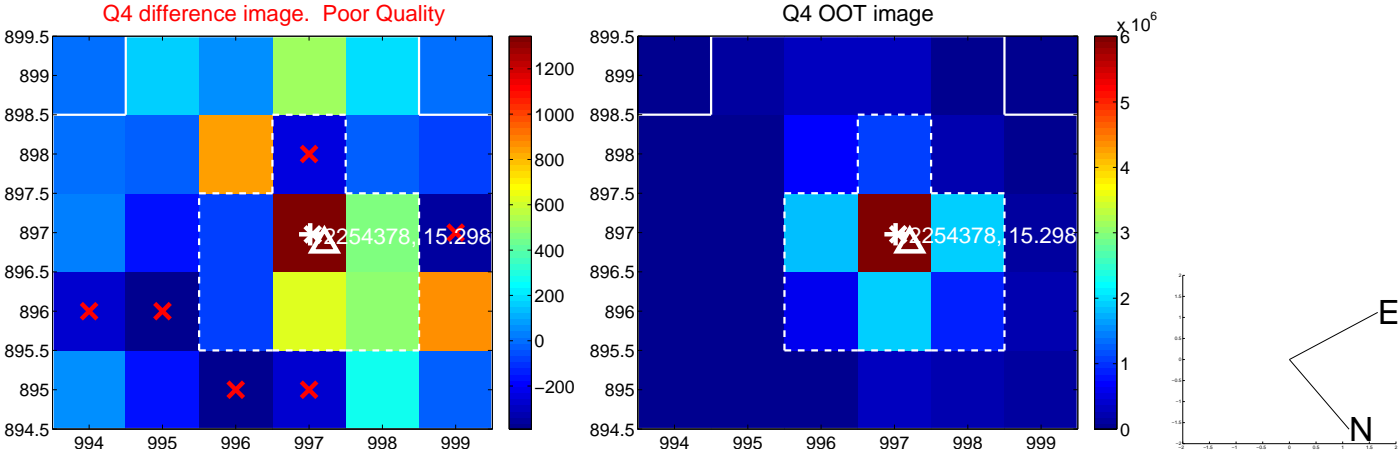
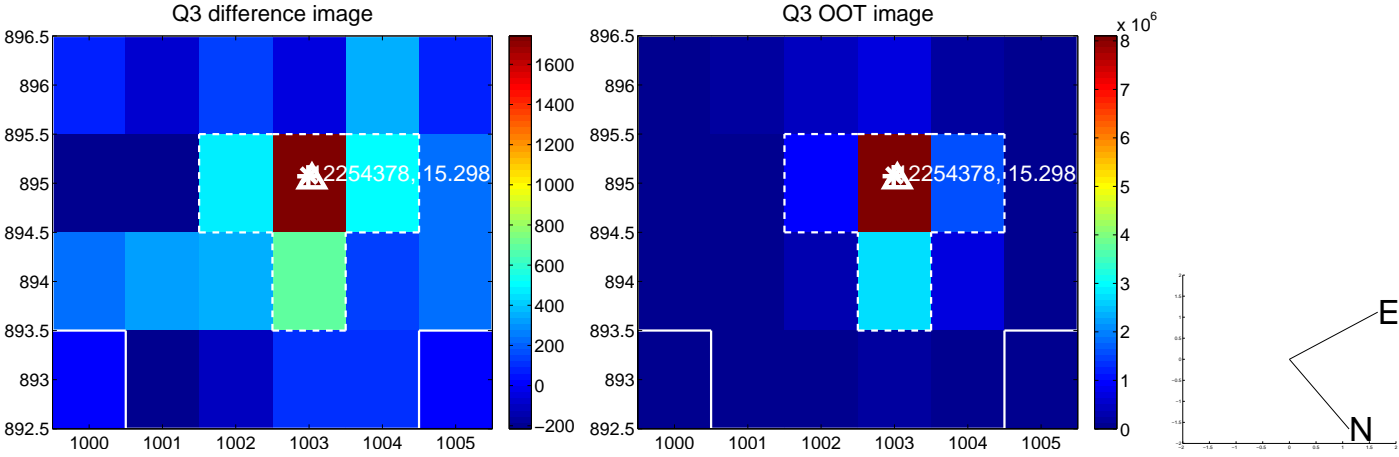
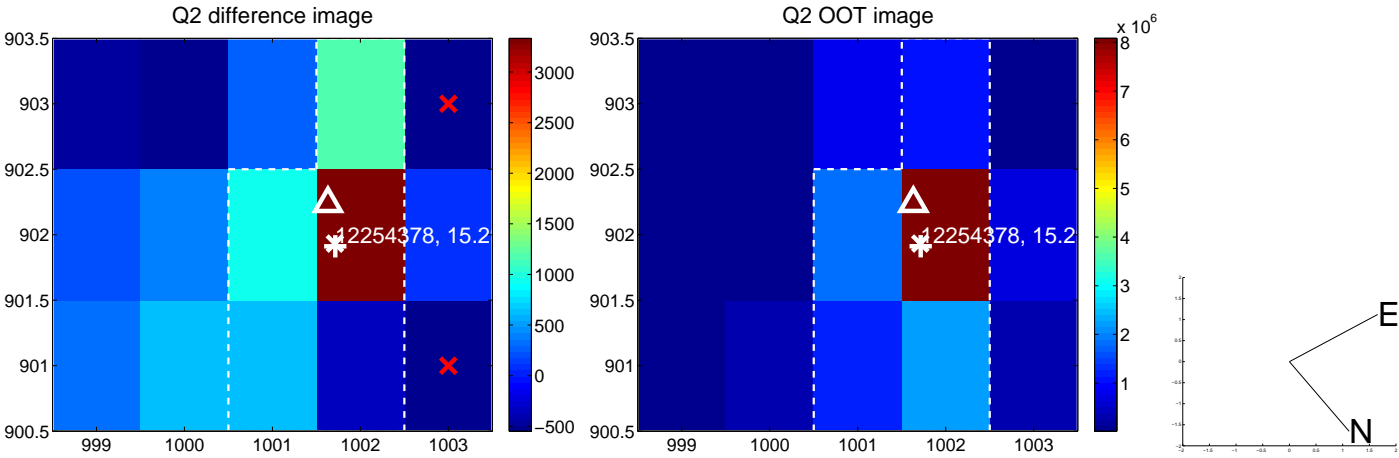
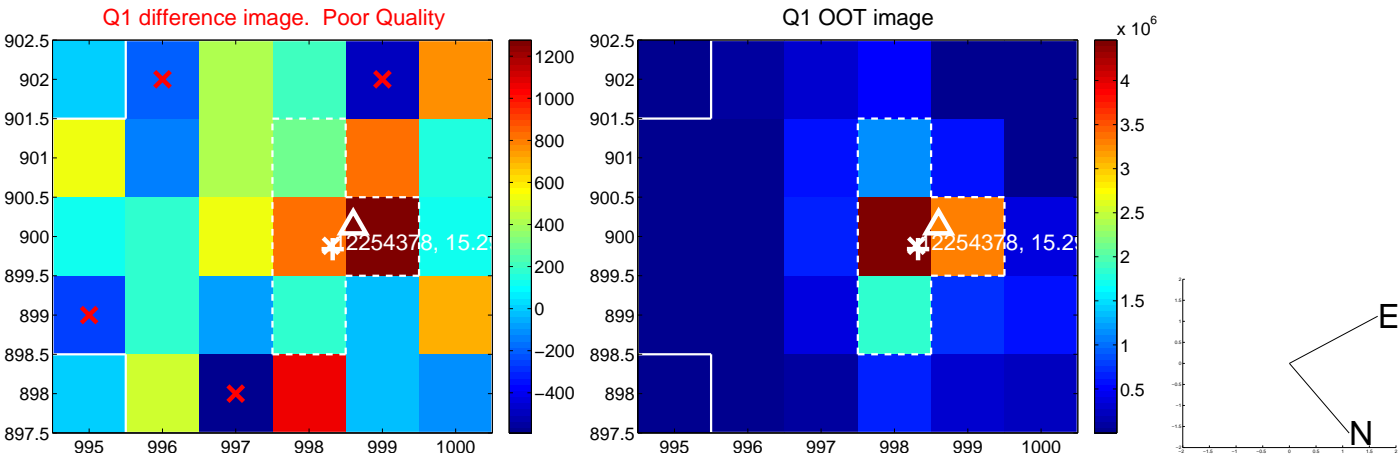
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.444 \pm 0.346$	1.28	$0.347 \pm 0.224$	$-0.277 \pm 0.344$
PRF-fit source offset from KIC position	$0.376 \pm 0.324$	1.16	$0.323 \pm 0.219$	$-0.193 \pm 0.348$
photometric centroid source offset	$1.17 \pm 0.56$	2.08	$-0.00 \pm 0.64$	$1.17 \pm 0.56$

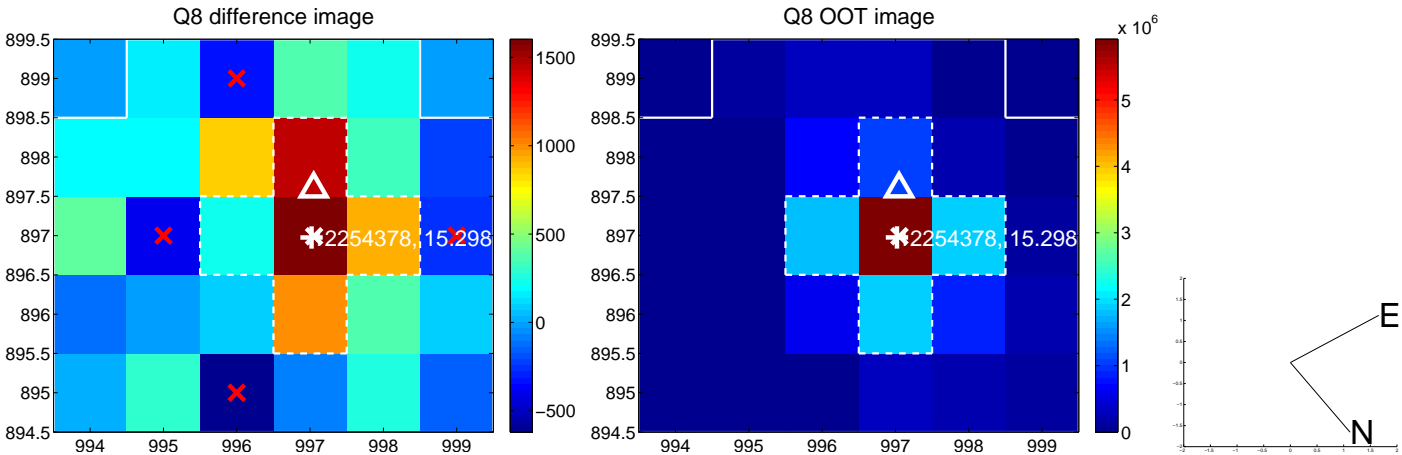
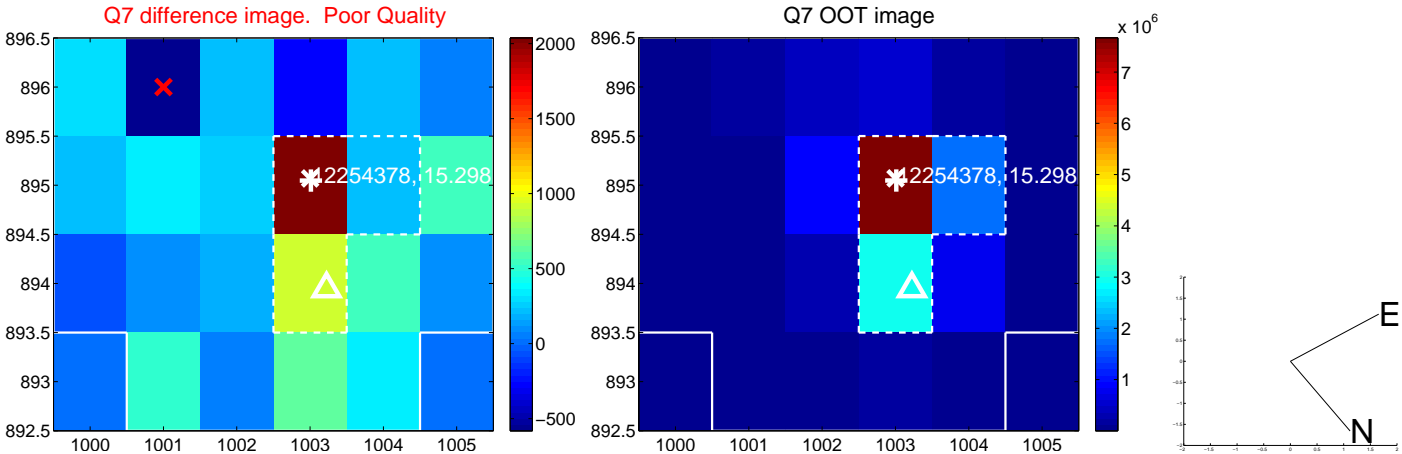
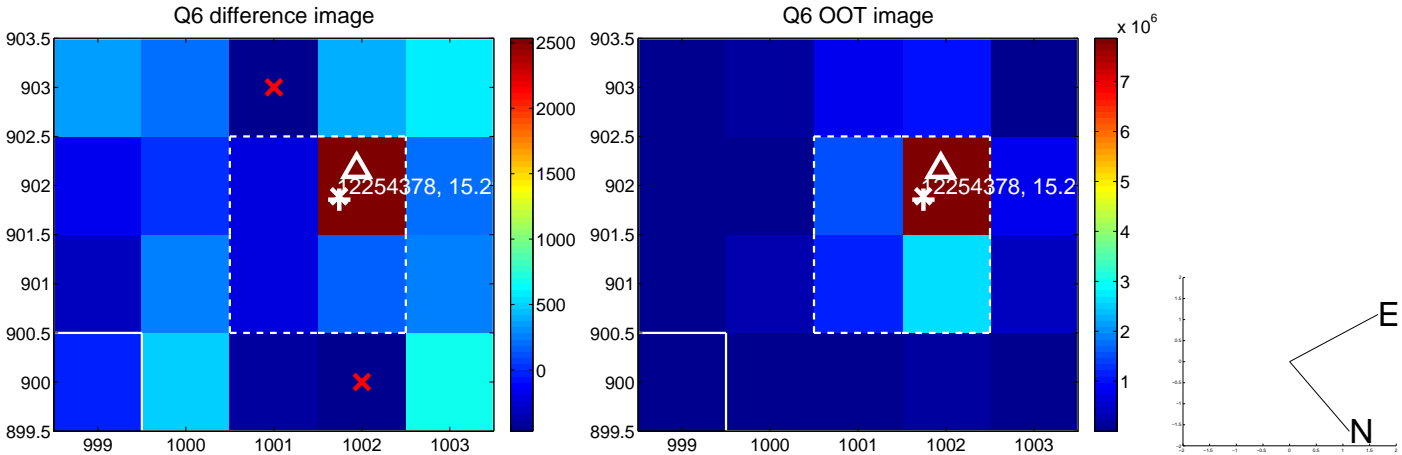
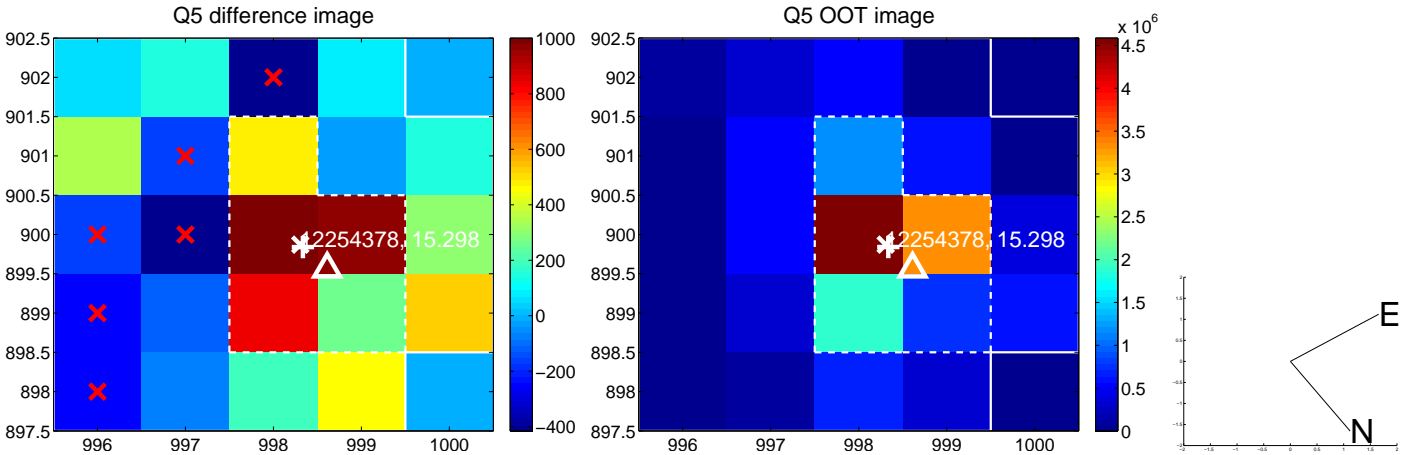


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

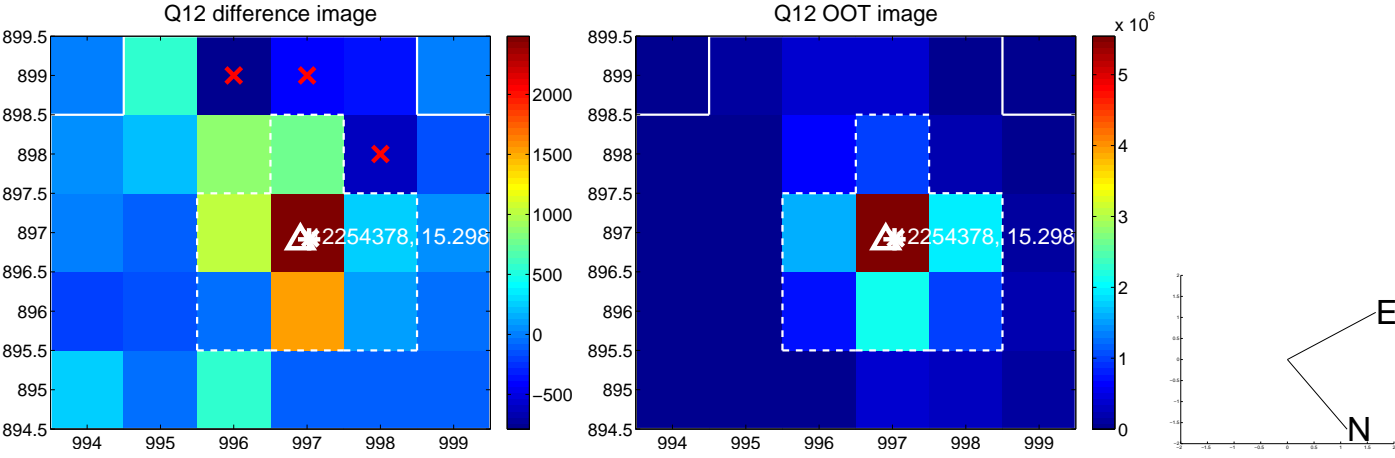
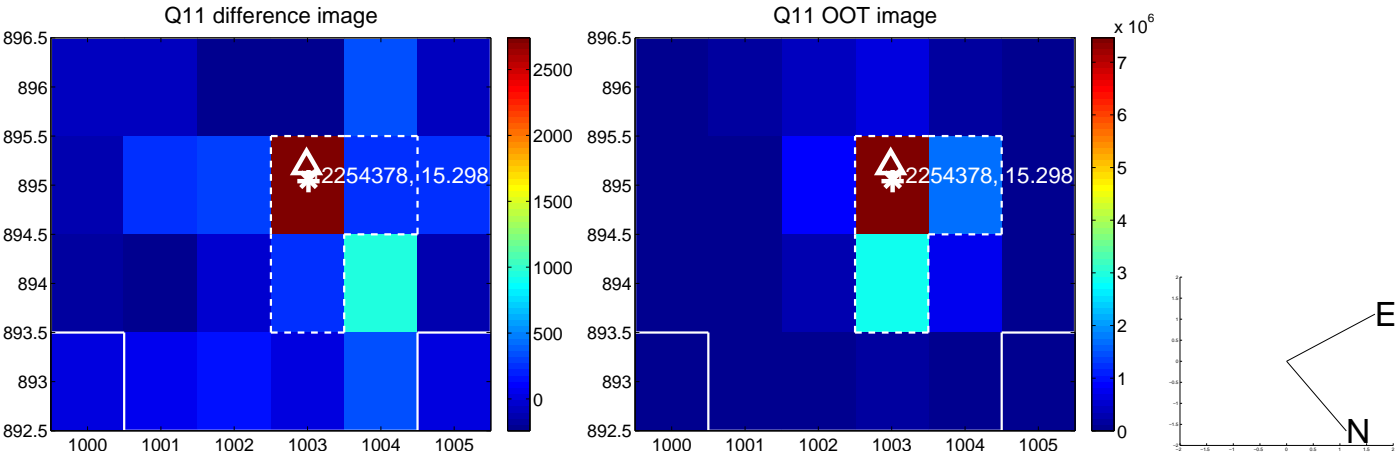
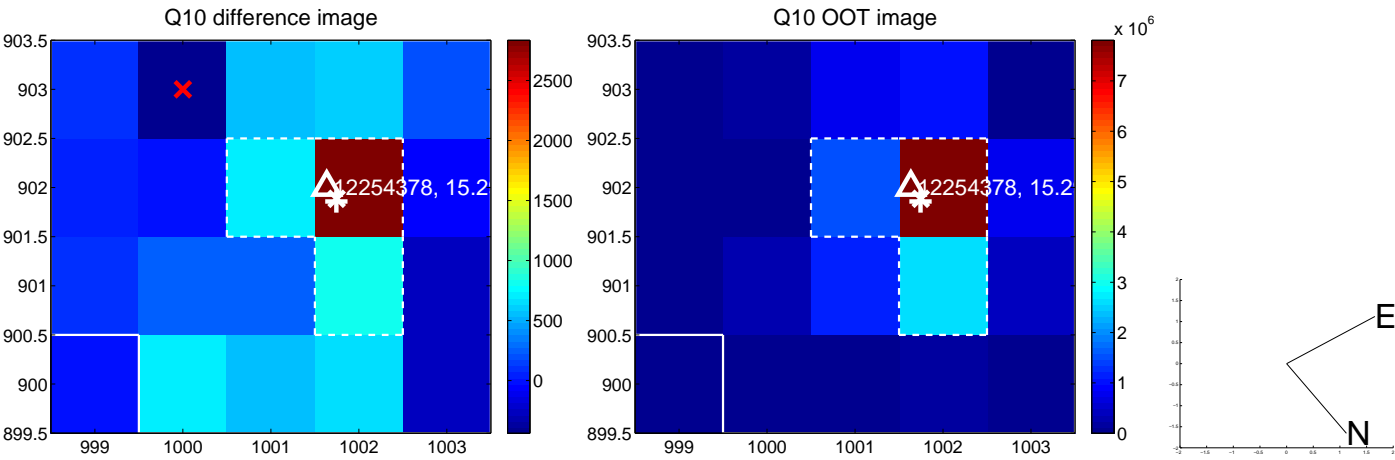
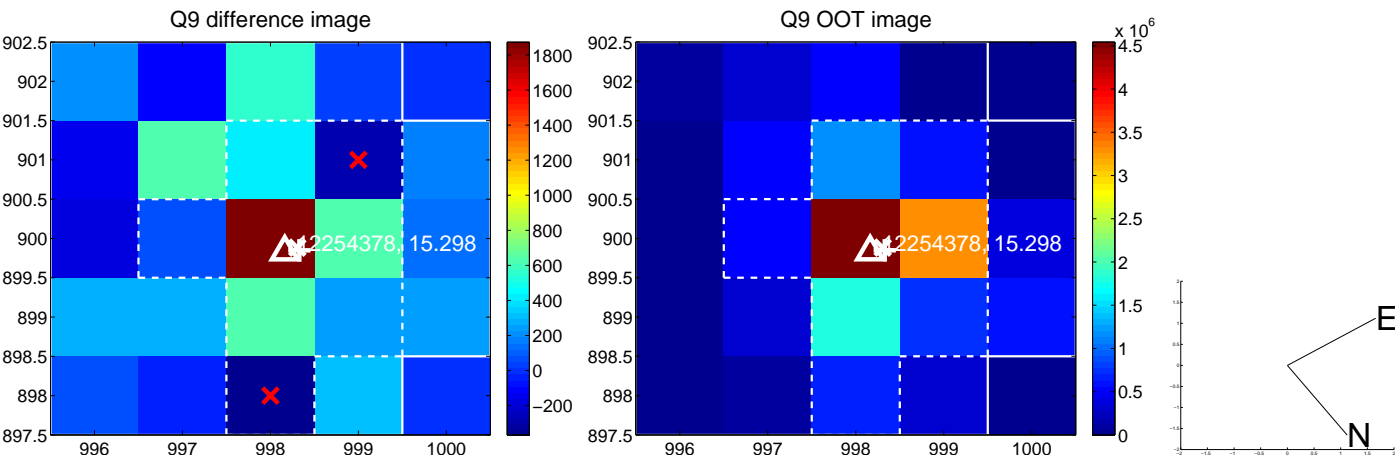


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

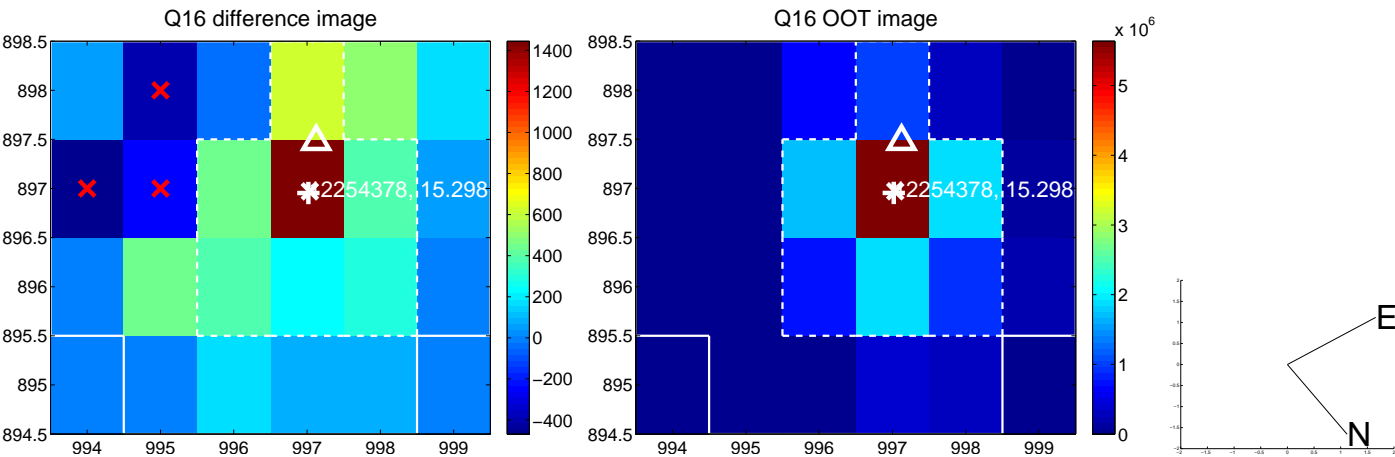
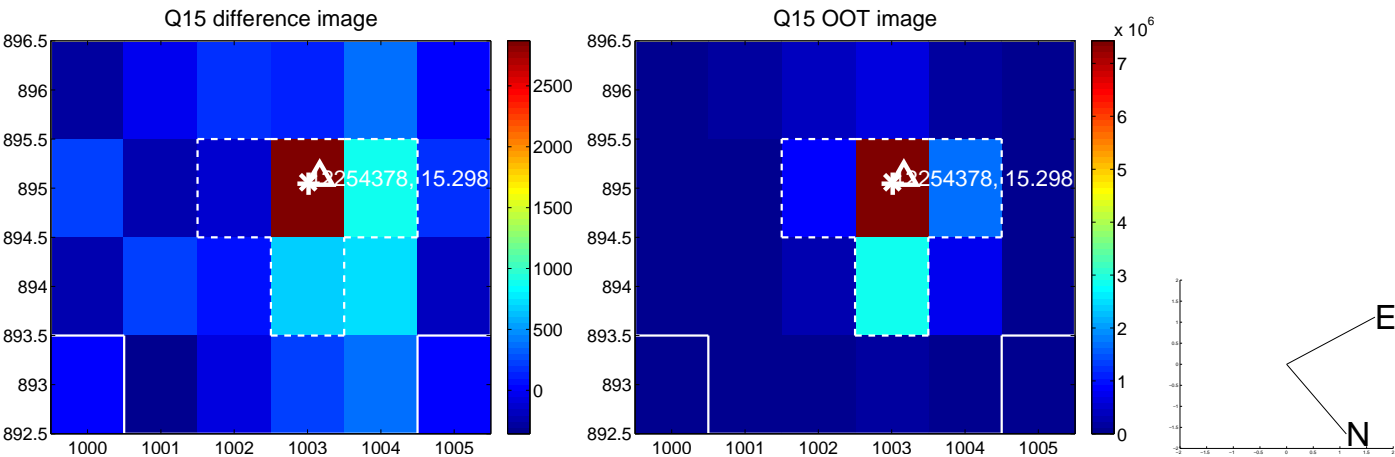
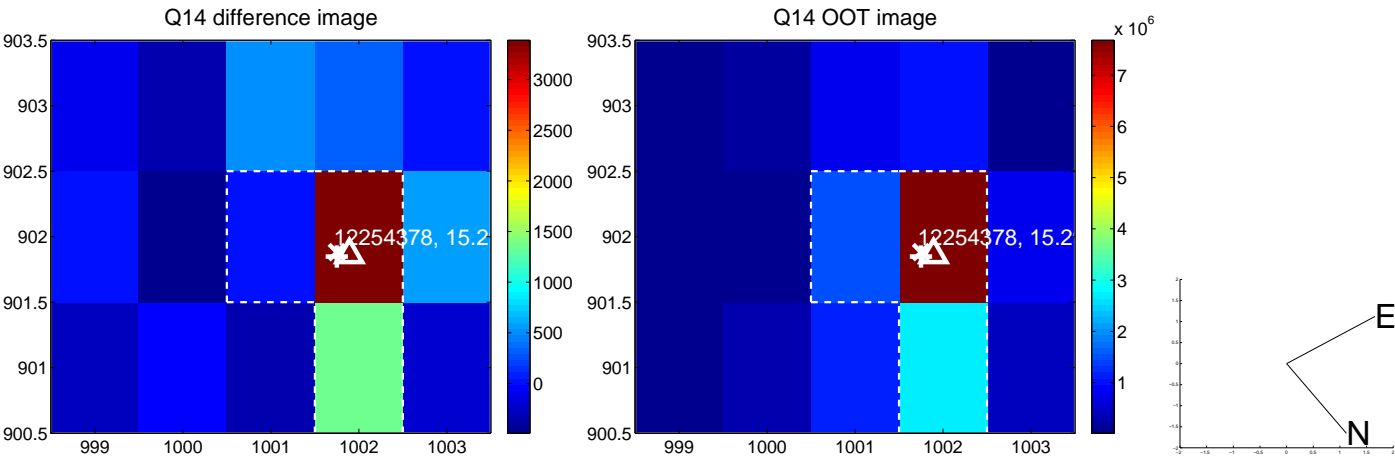
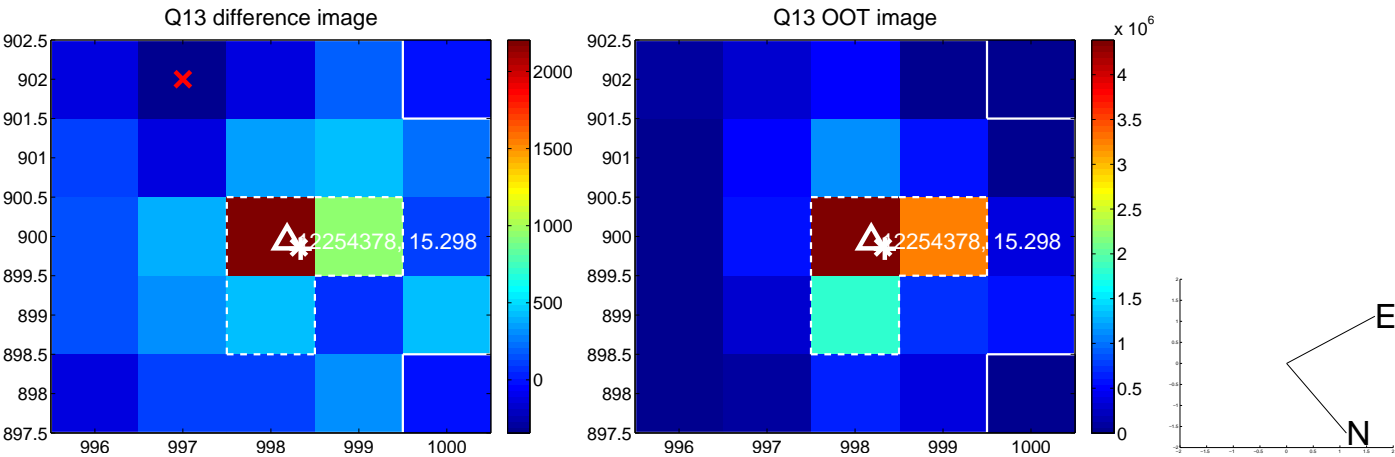




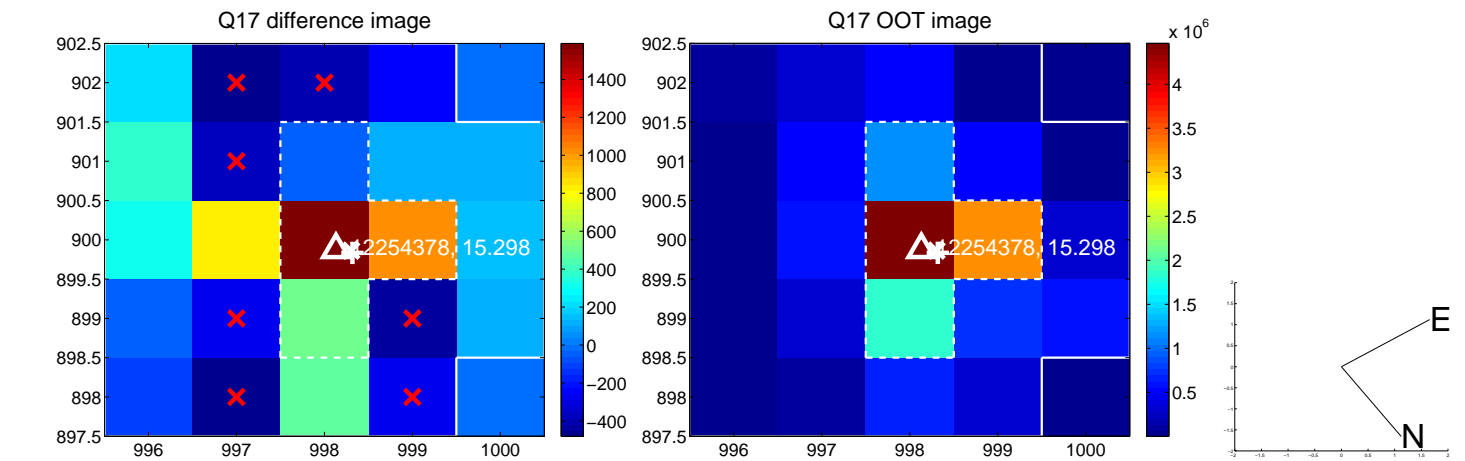
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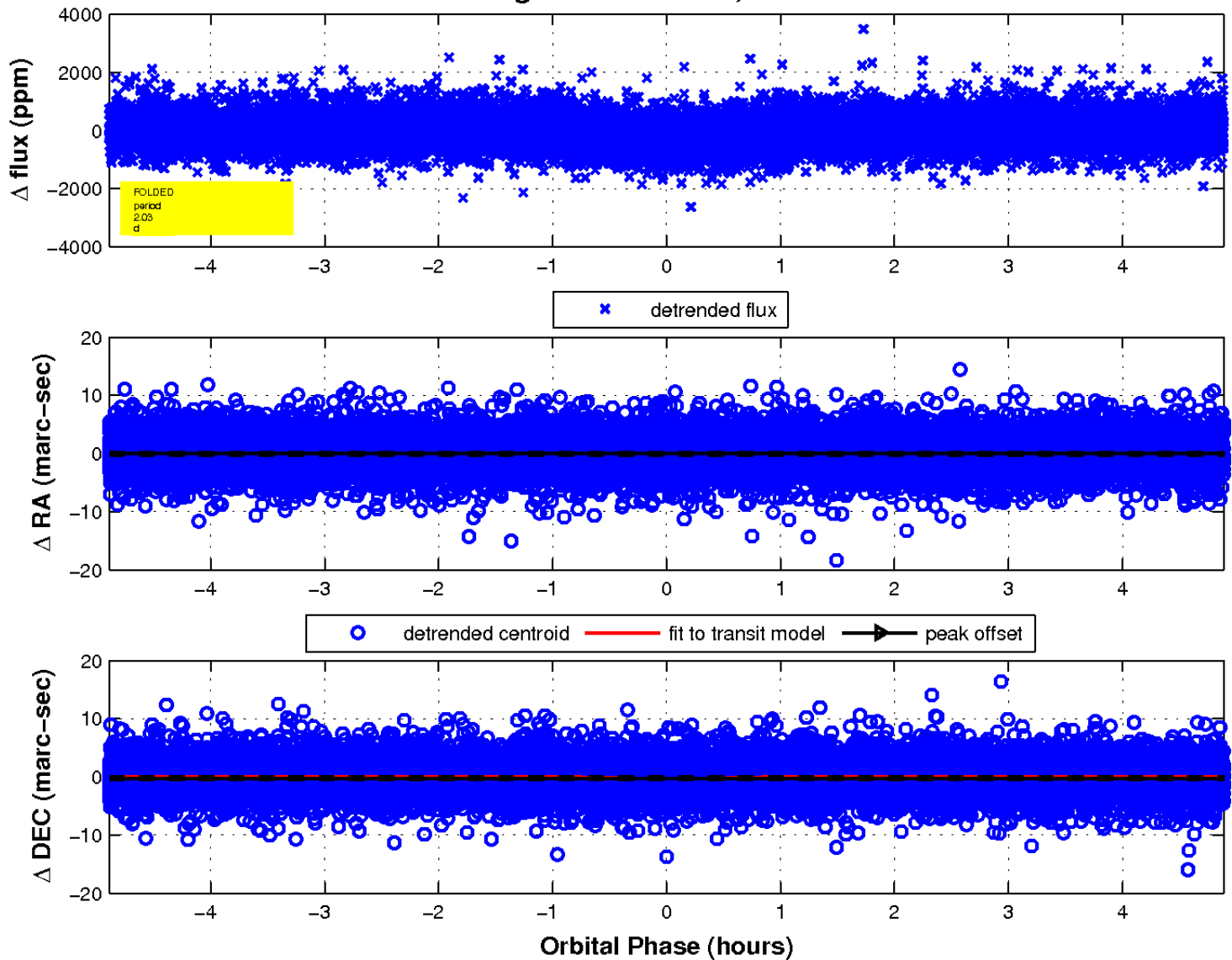
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



# UKIRT Image

Declination

