

# KIC 008818552

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008818552-01	OBS	No	374.638414	132.086328	2937.5	65.011	12.8	22.0	0.88	5815	5.94	0.78

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008818552-01	OBS	FP	0.00	1	0	1	1	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—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.

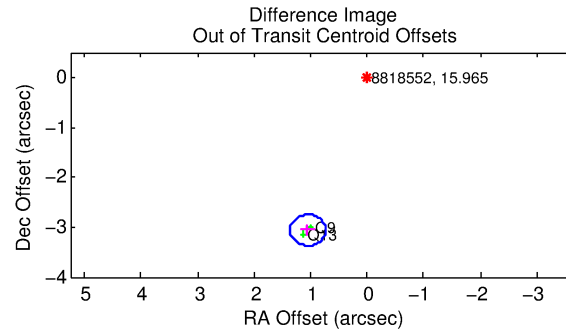
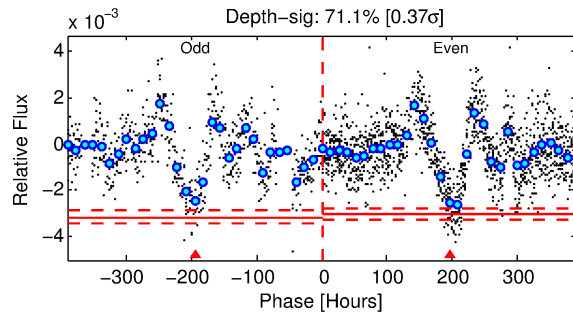
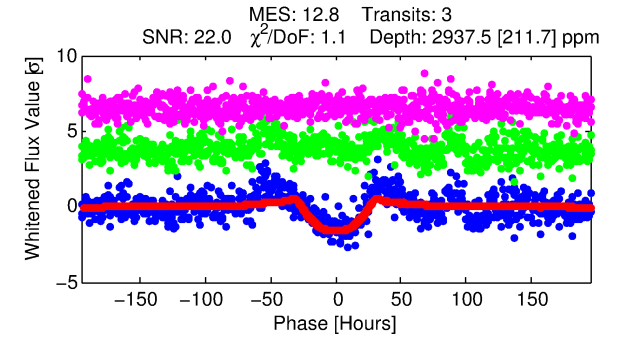
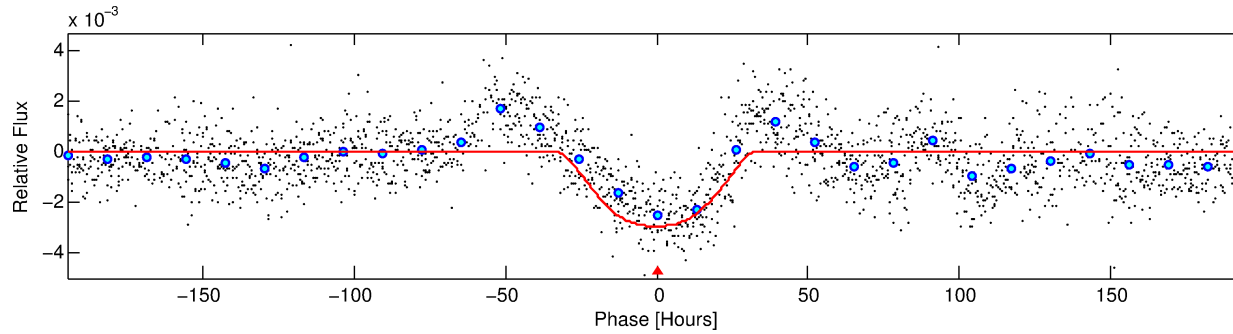
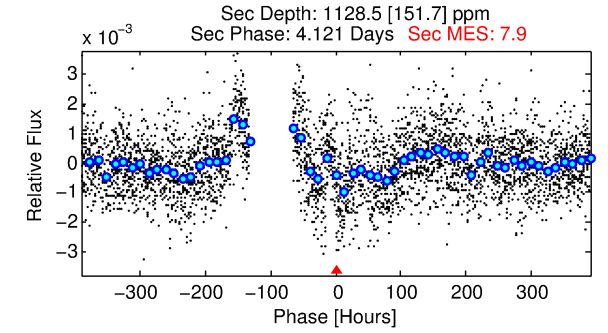
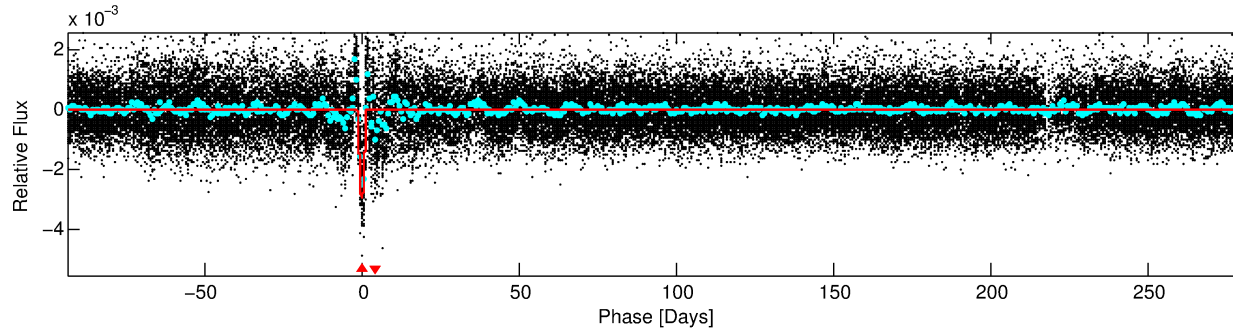
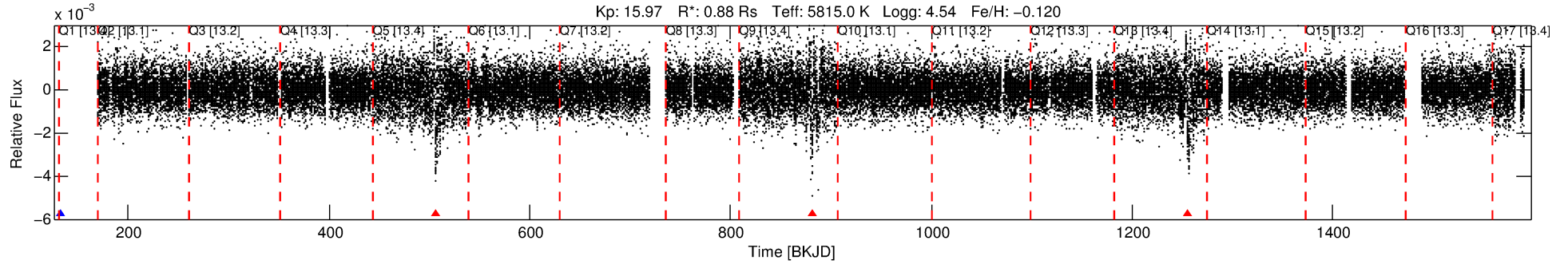
## Ephemeris Match Information For 008818552-01

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	$\sigma_P$	$\sigma_T$
008818552-01	8818552	008557246-01	8557246	1:1	2774.9	-697	-3	15.88	15.96	0.51	Col-Anomaly	1	0.38	0.60

**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: 8818552 Candidate: 1 of 1 Period: 374.638 d



## DV Fit Results:

Period = 374.63841 [0.03844] d  
Epoch = 132.0863 [0.0865] BKJD  
Rp/R\* = 0.0621 [0.0033]  
a/R\* = 22.07 [1.40]  
b = 0.94 [0.01]  
Seff = 0.78 [0.30]  
Teq = 239 [23] K  
Rp = 5.94 [1.80] Re  
a = 1.0079 [0.2554] AU  
Ag = 17867.83 [7303.37] [2.45σ]  
Teff = 4277 [224] K [17.94σ]

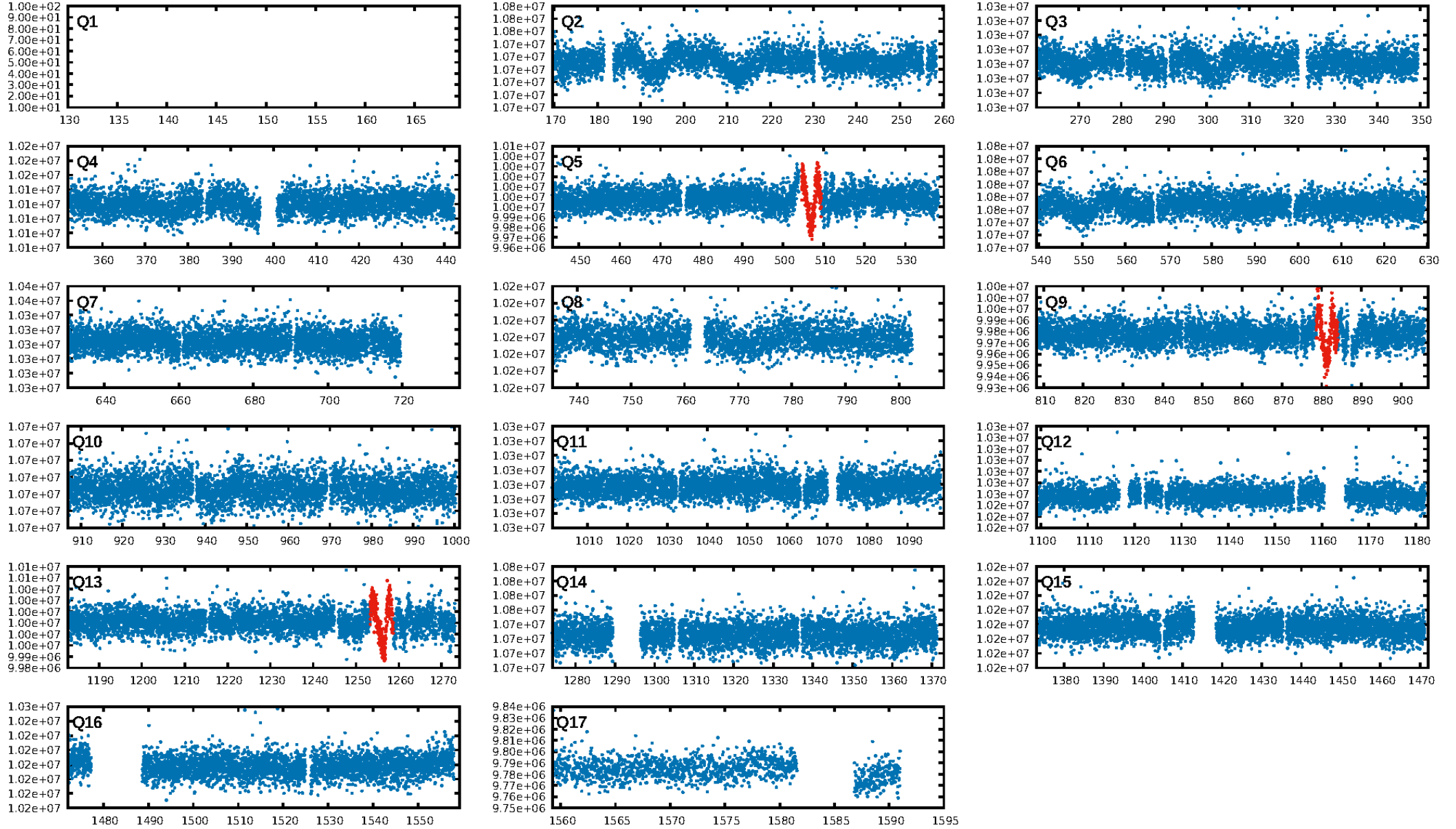
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 87.5%  
ModelChiSquareGoF-sig: 100.0%  
Bootstrap-pfa: 8.58e-24  
RollingBand-fgt: 0.00 [0/3]  
GhostDiagnostic-chr: 0.199  
Centroid-sig: 0.0%  
Centroid-so: 3.836 arcsec [3.42σ]  
OotOffset-rm: 3.237 arcsec [31.22σ]  
KicOffset-rm: 3.148 arcsec [35.09σ]  
OotOffset-st: 0/0/0/2 [2]  
KicOffset-st: 0/0/0/2 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [2/2]

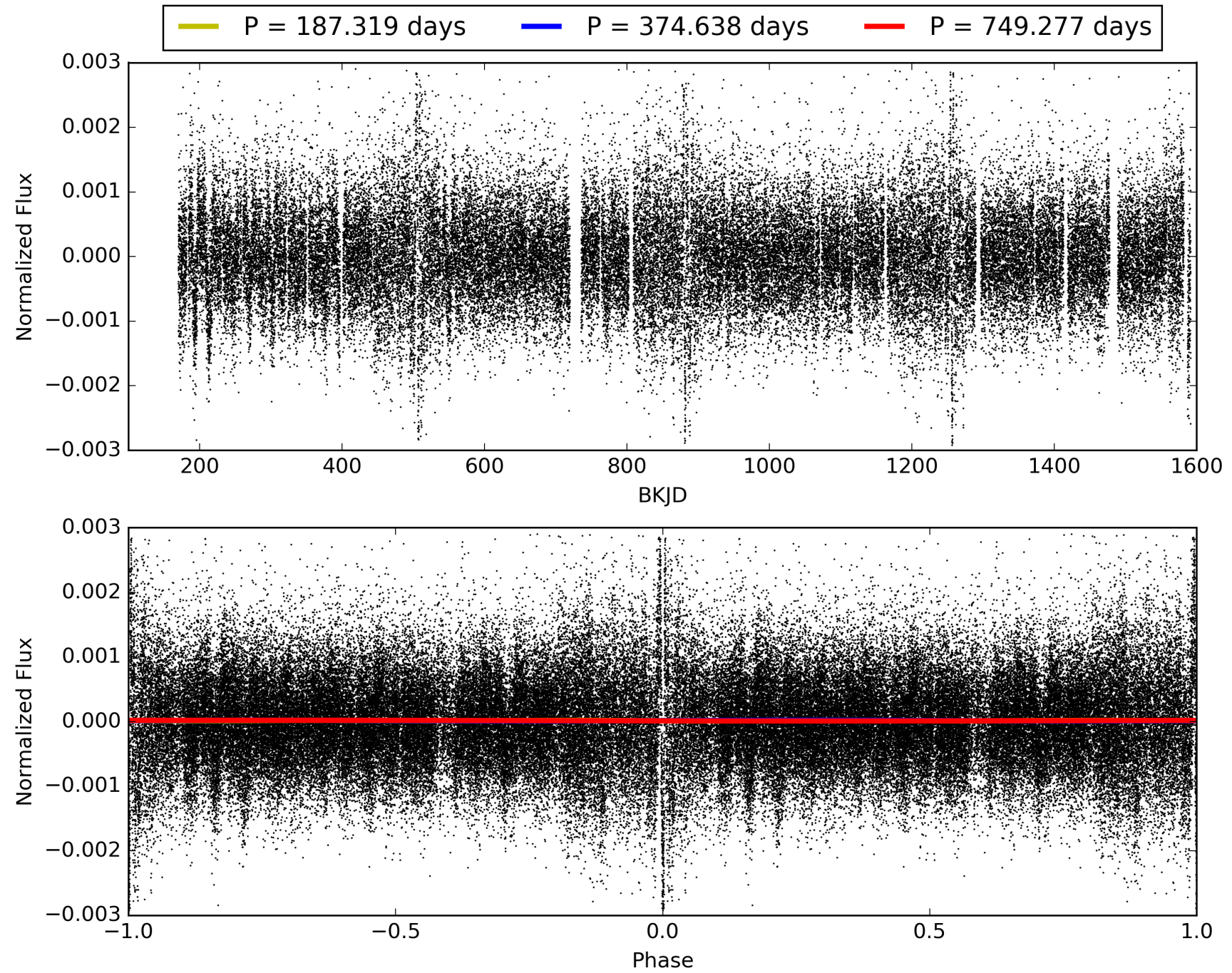
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:45:20 Z

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

# TCE 008818552-01, PDC Light Curves

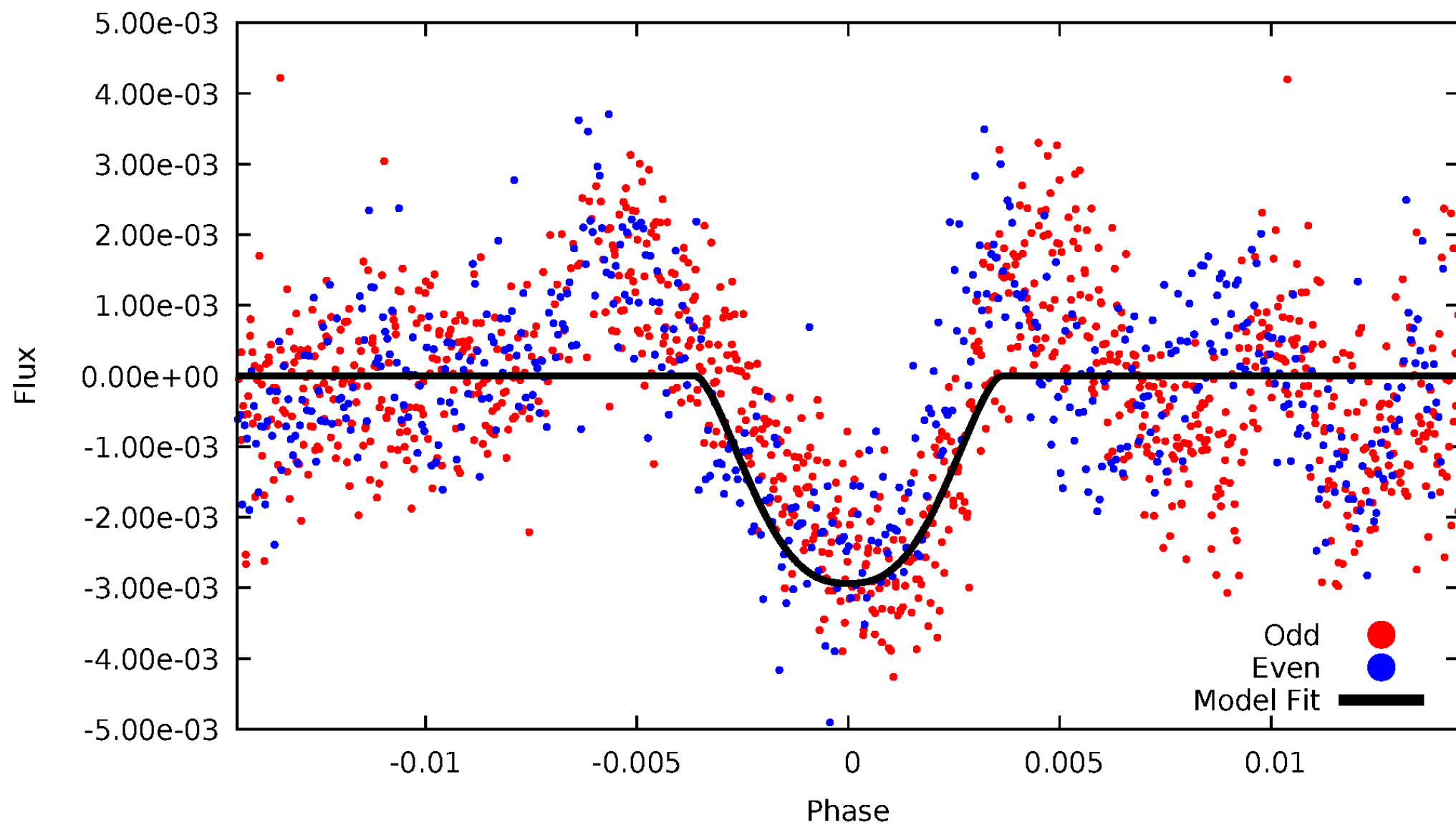


TCE 008818552-01



# DV Odd/Even

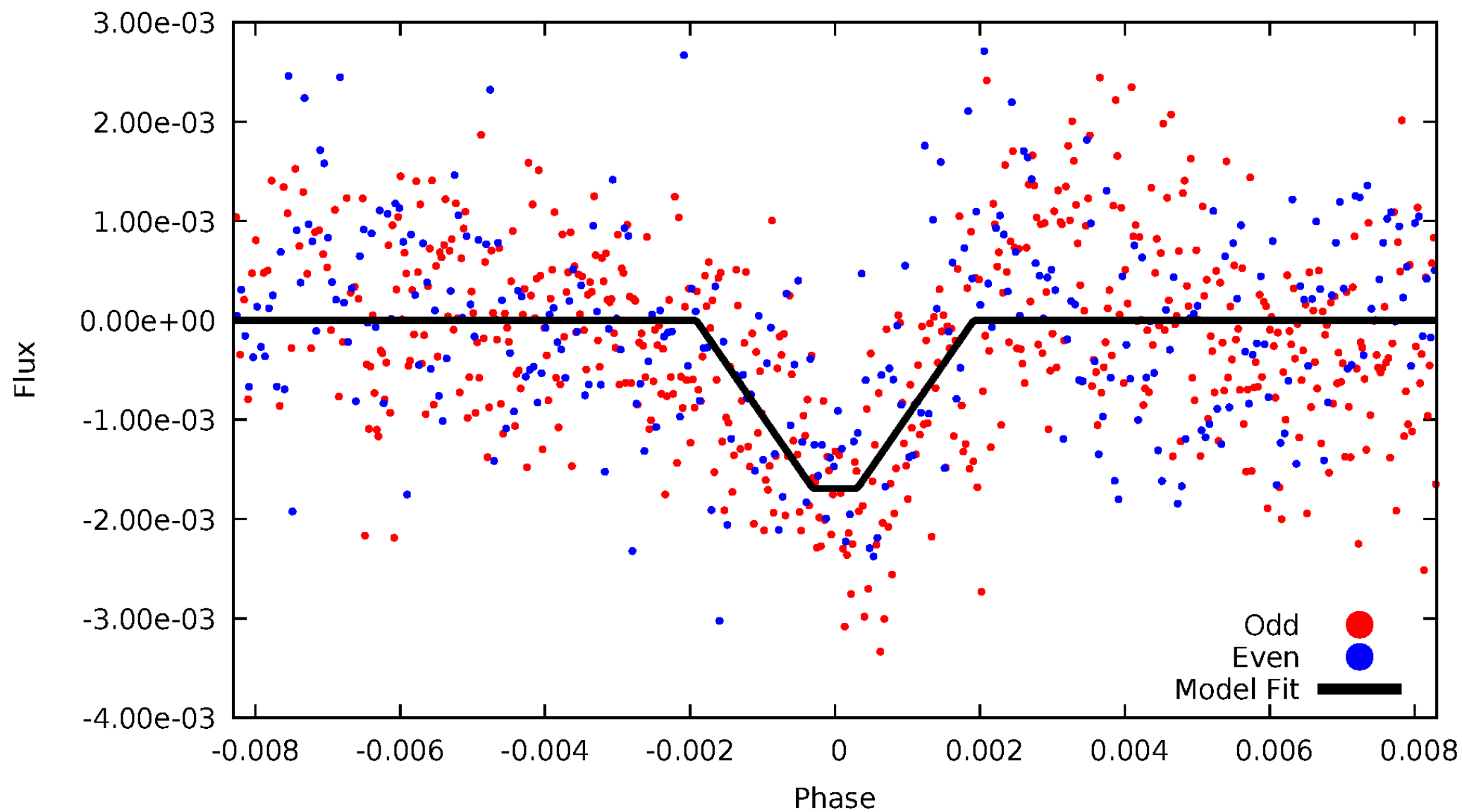
TCE 008818552-01



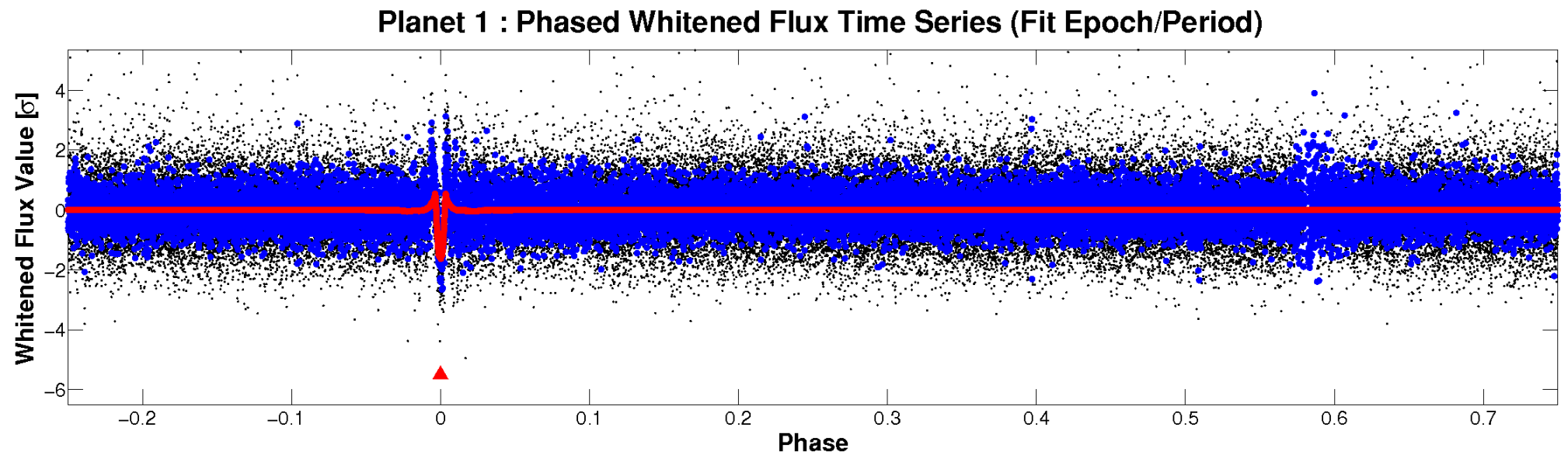
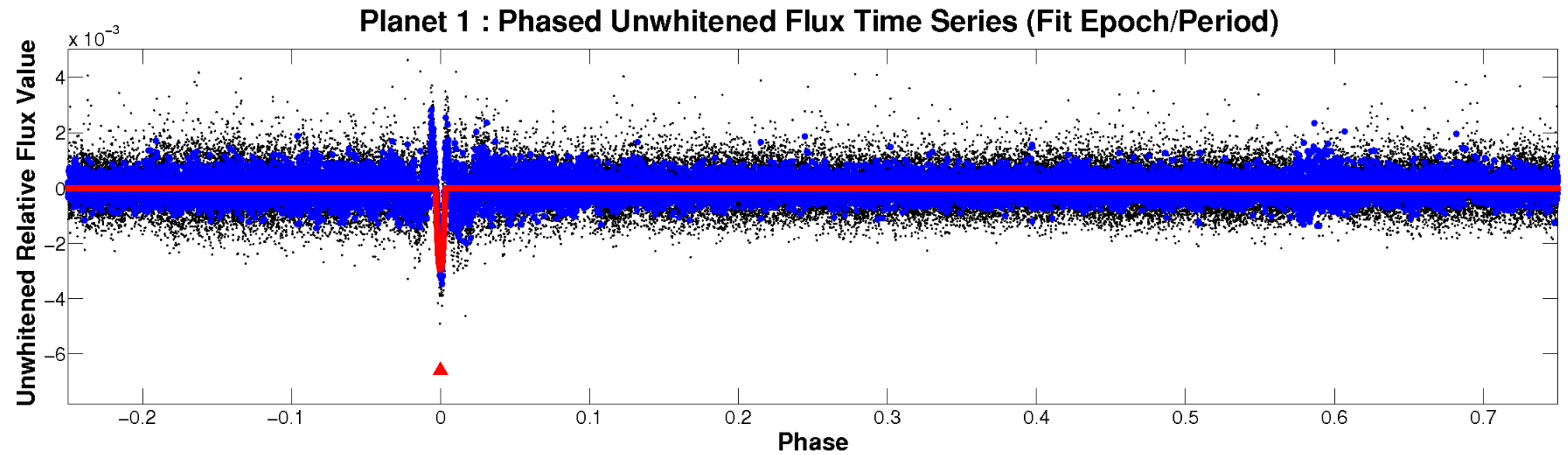


# ALT Odd/Even

TCE 008818552-01

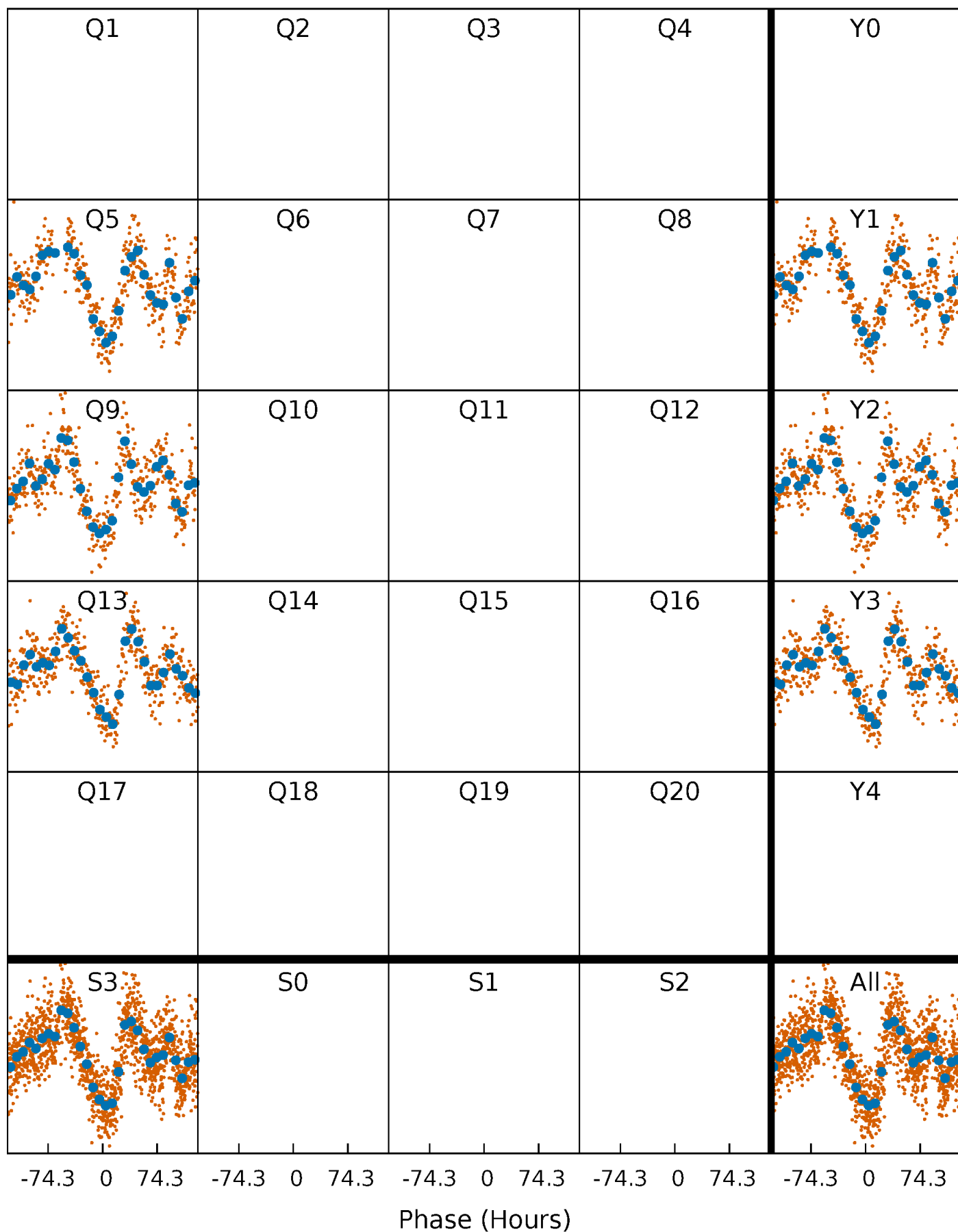


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

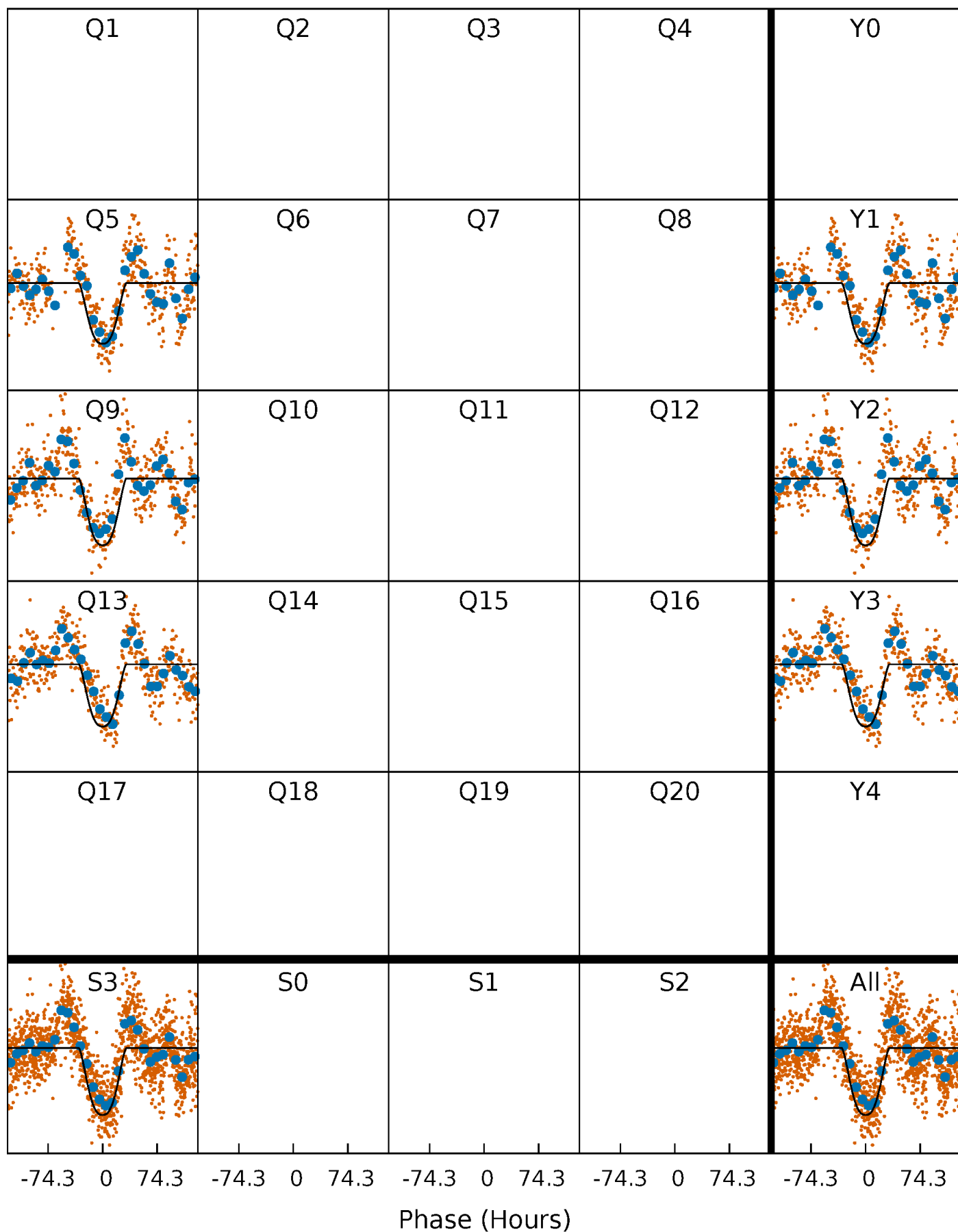
TCE 008818552-01 P=374.638414 Days  $T_0=132.086328$  (BKJD)





# DV Quarter-Phased Transit Curves

TCE 008818552-01 P=374.638414 Days  $T_0=132.086328$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

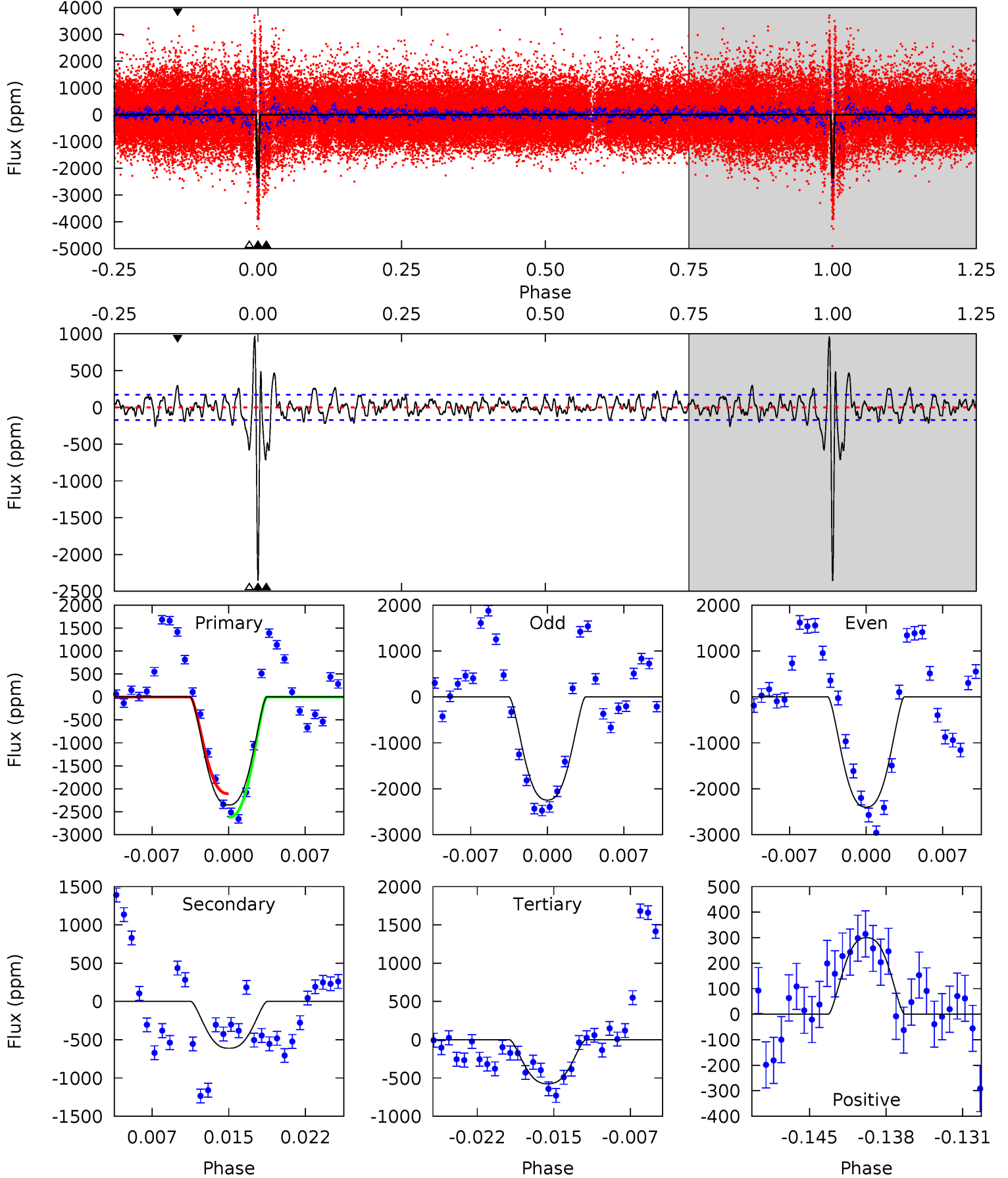
TCE 008818552-01 P=374.758302 Days  $T_0=132.281964$  (BKJD)



# DV Model-Shift Uniqueness Test

008818552-01, P = 374.638414 Days, E = 132.086328 Days

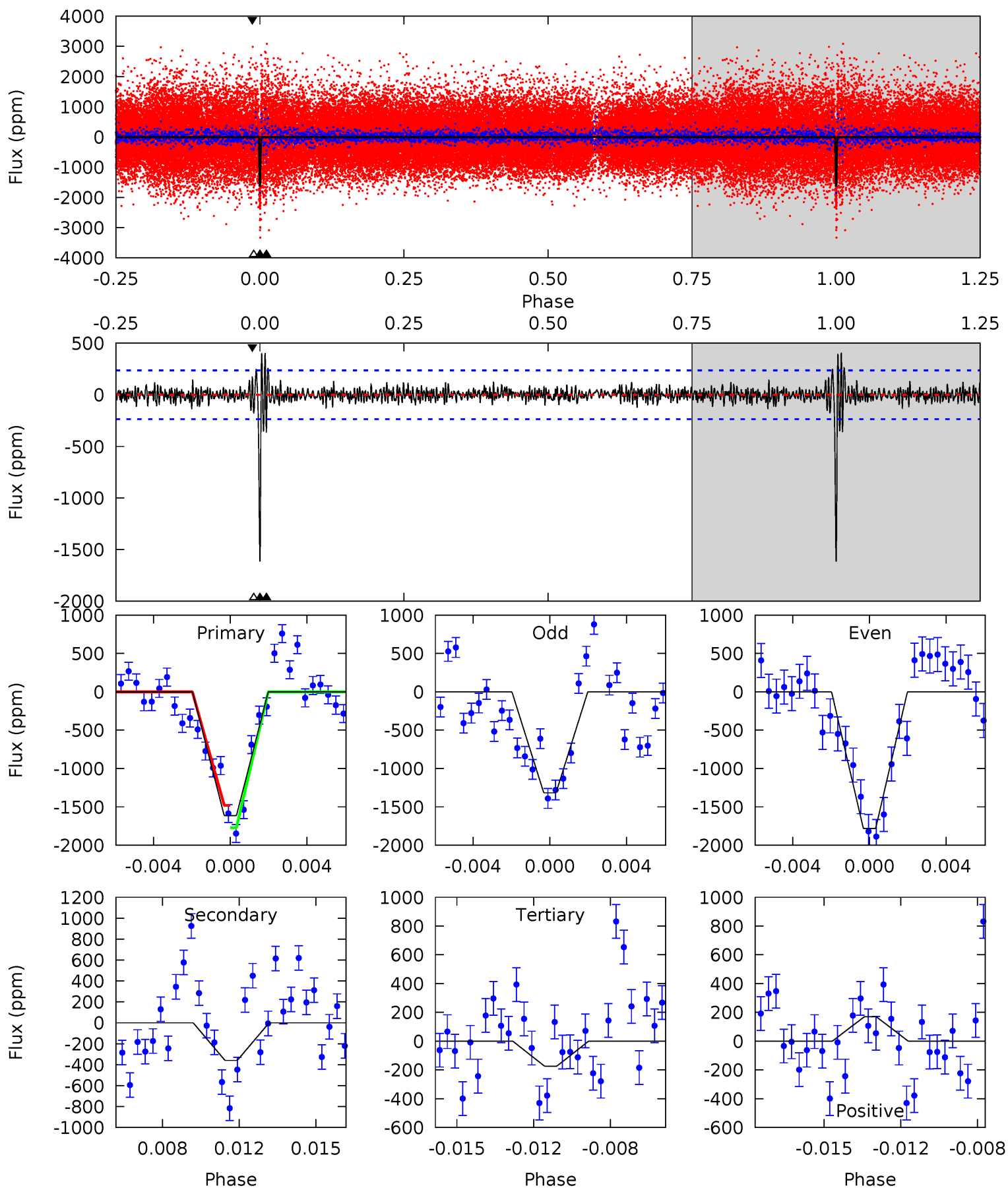
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
69.4	18.0	17.0	8.84	5.09	2.68	3.12	52.4	60.6	1.06	9.19	2.14	1.01	0.29	7.39



# Alt Model-Shift Uniqueness Test

008818552-01, P = 374.758302 Days, E = 132.281964 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
35.6	7.93	3.84	3.73	5.21	2.89	1.01	31.8	31.9	4.09	4.20	4.85	1.11	0.20	3.20



### Stellar Parameters For KIC 008818552

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5815^{+157}_{-175}$	$4.540^{+0.036}_{-0.204}$	$-0.120^{+0.300}_{-0.300}$	$0.877^{+0.262}_{-0.082}$	$0.973^{+0.116}_{-0.116}$	$2.032^{+0.394}_{-1.027}$
	+3%/-3%	+1%/-4%	+250%/-250%	+30%/-9%	+12%/-12%	+19%/-51%
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 008818552-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-612 \pm 34$	$6.16^{+1.02}_{-0.55}$	$343^{+24}_{-16}$	$3994^{+119}_{-117}$	$8701^{+1857}_{-1999}$
Alt.	$-359 \pm 45$	$4.11^{+0.65}_{-0.48}$	$343^{+24}_{-14}$	$4218^{+181}_{-177}$	$11684^{+3554}_{-3307}$

$T_{\text{max}}$  = 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

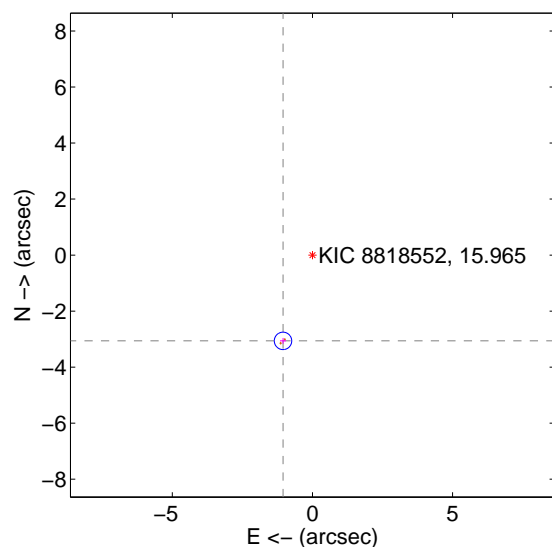
Supplemental centroid analysis for 008818552-01. Kepler magnitude: 15.96. Transit SNR 22.01

There are 0 quarters with good PRF difference image offsets

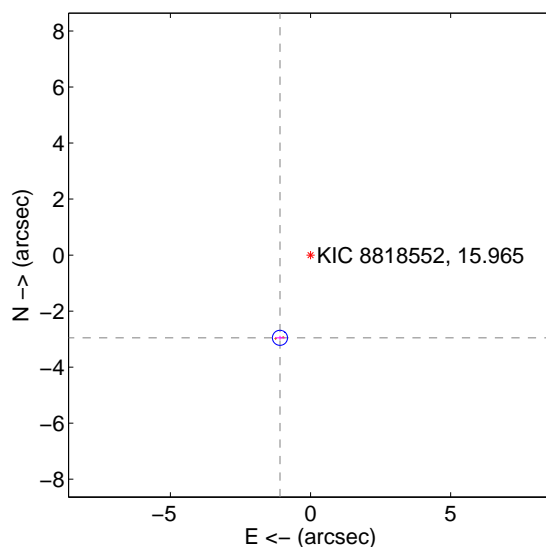
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.237 \pm 0.104$	31.22	$1.050 \pm 0.109$	$-3.062 \pm 0.103$
PRF-fit source offset from KIC position	$3.148 \pm 0.090$	35.09	$1.091 \pm 0.171$	$-2.953 \pm 0.072$
photometric centroid source offset	$3.84 \pm 1.12$	3.42	$0.62 \pm 0.50$	$-3.78 \pm 1.13$

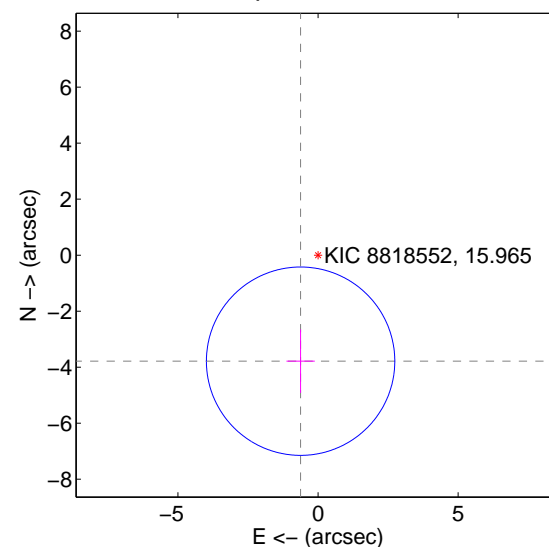
offset from difference PRF-fit to OOT PRF-fit



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.



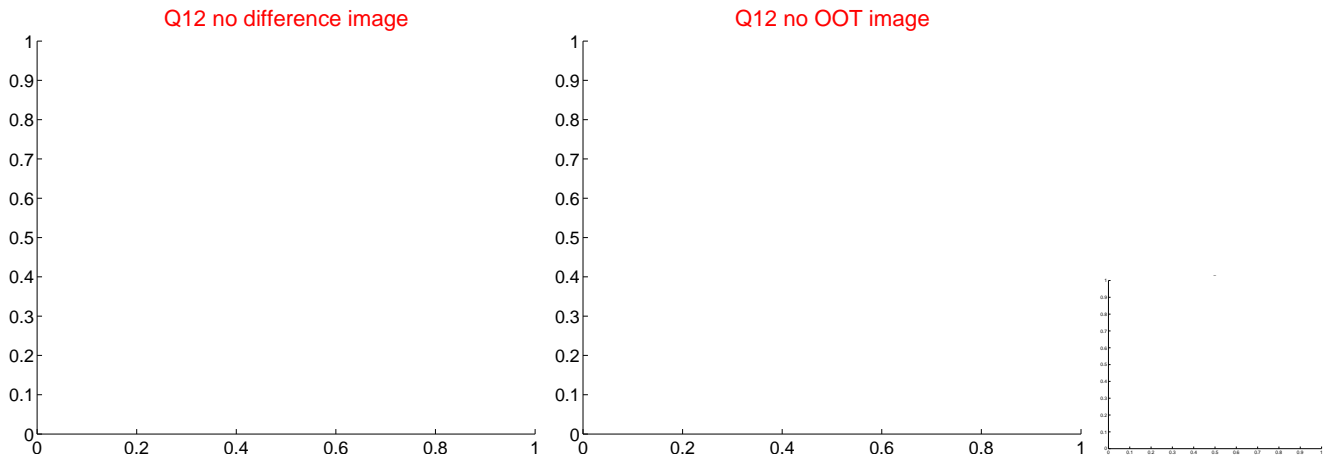
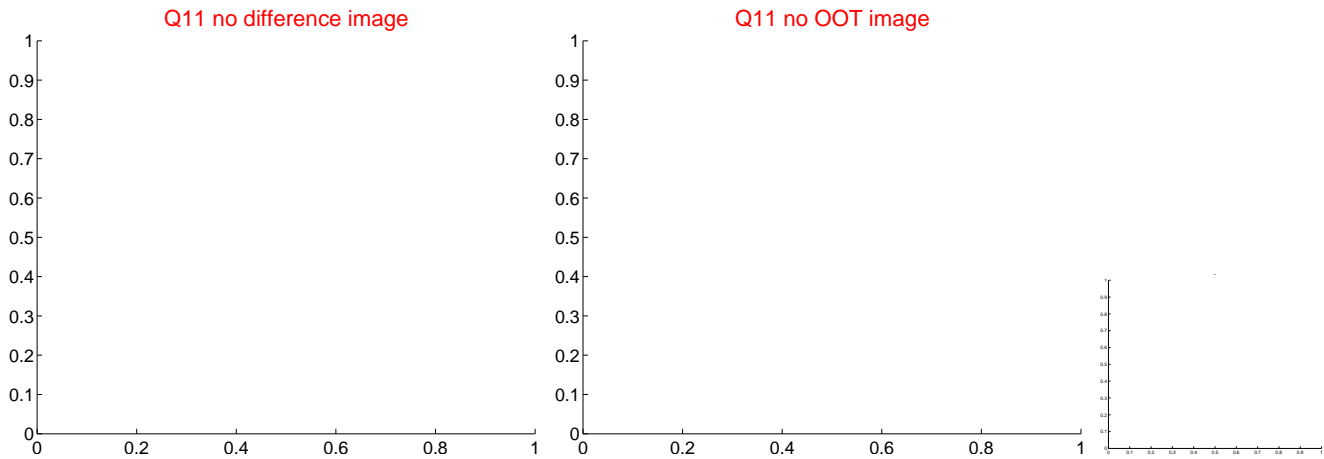
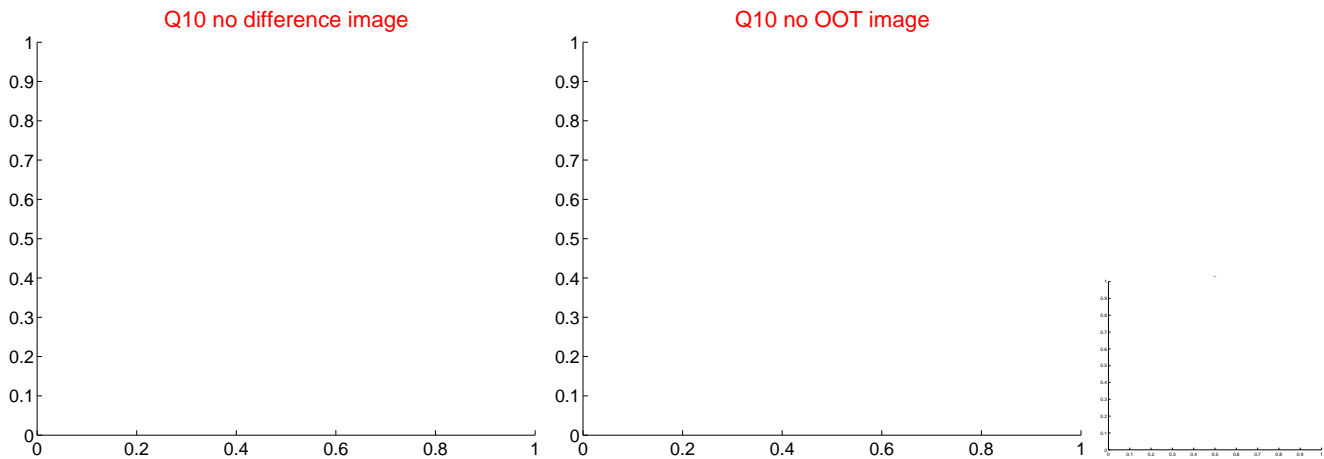
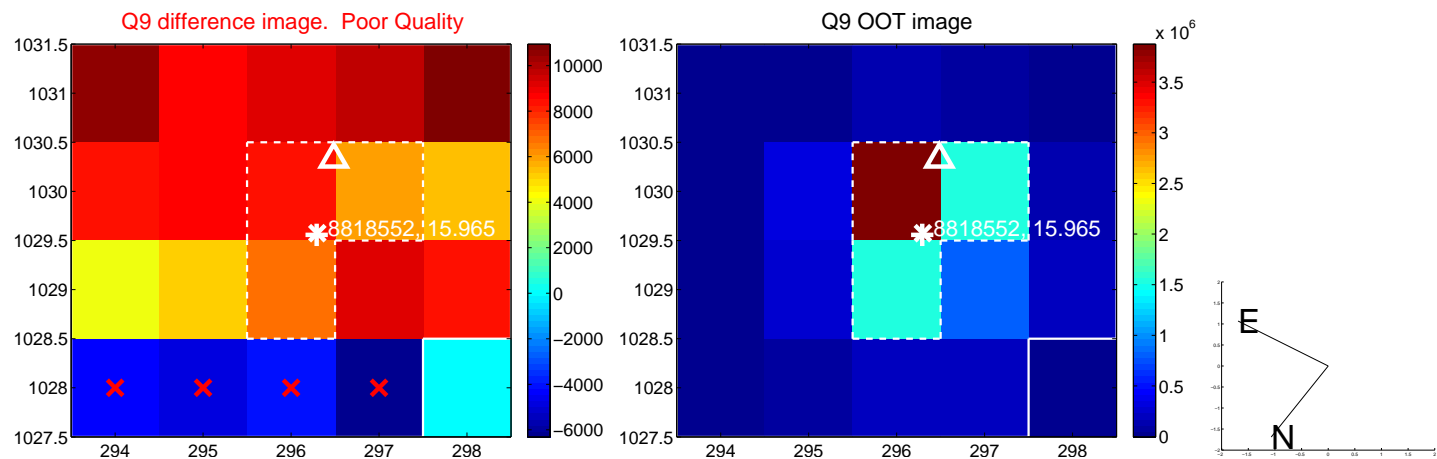
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



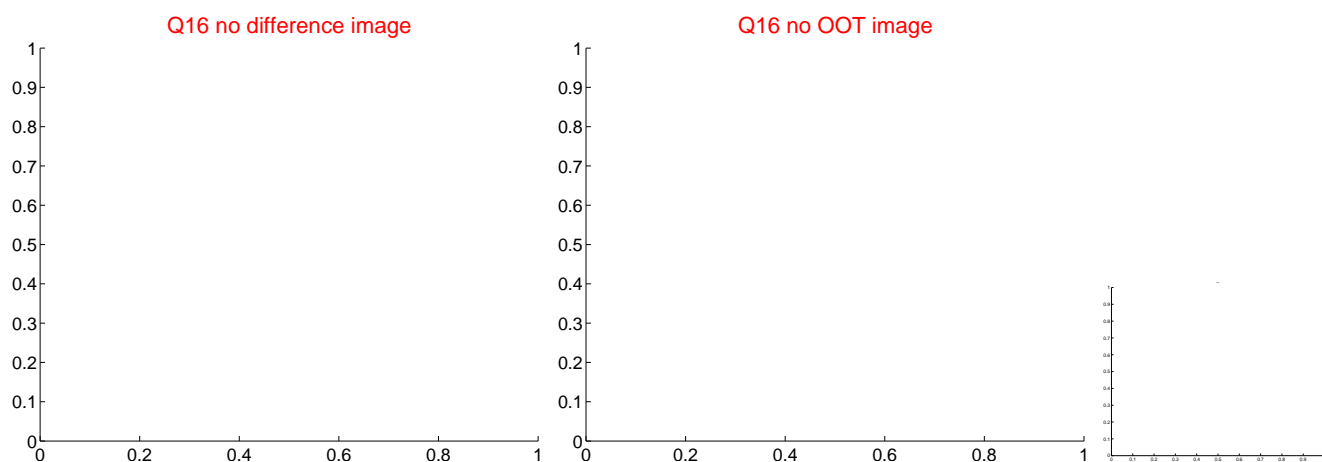
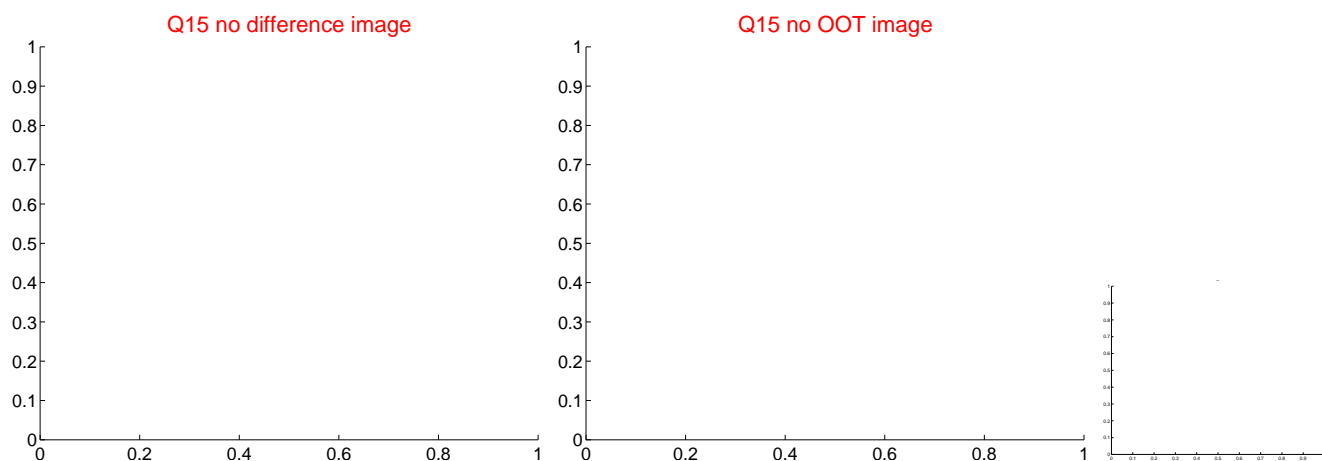
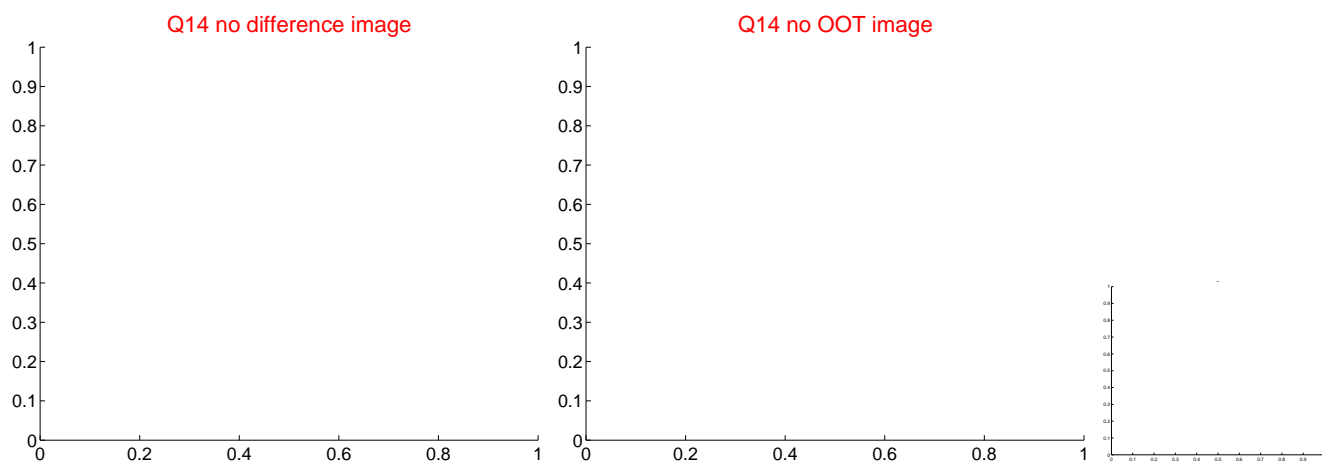
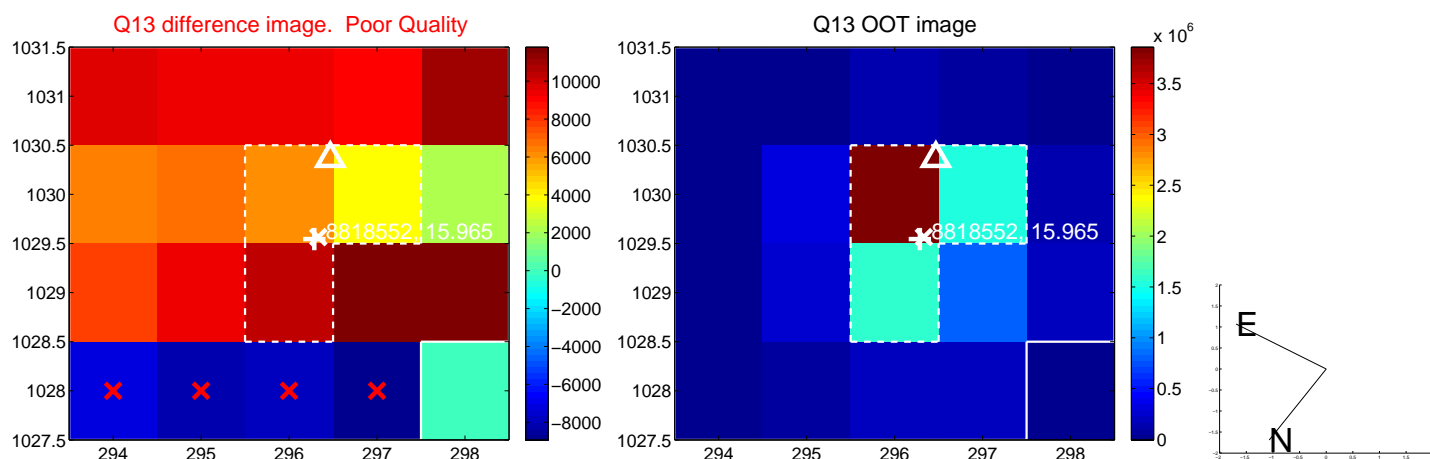
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



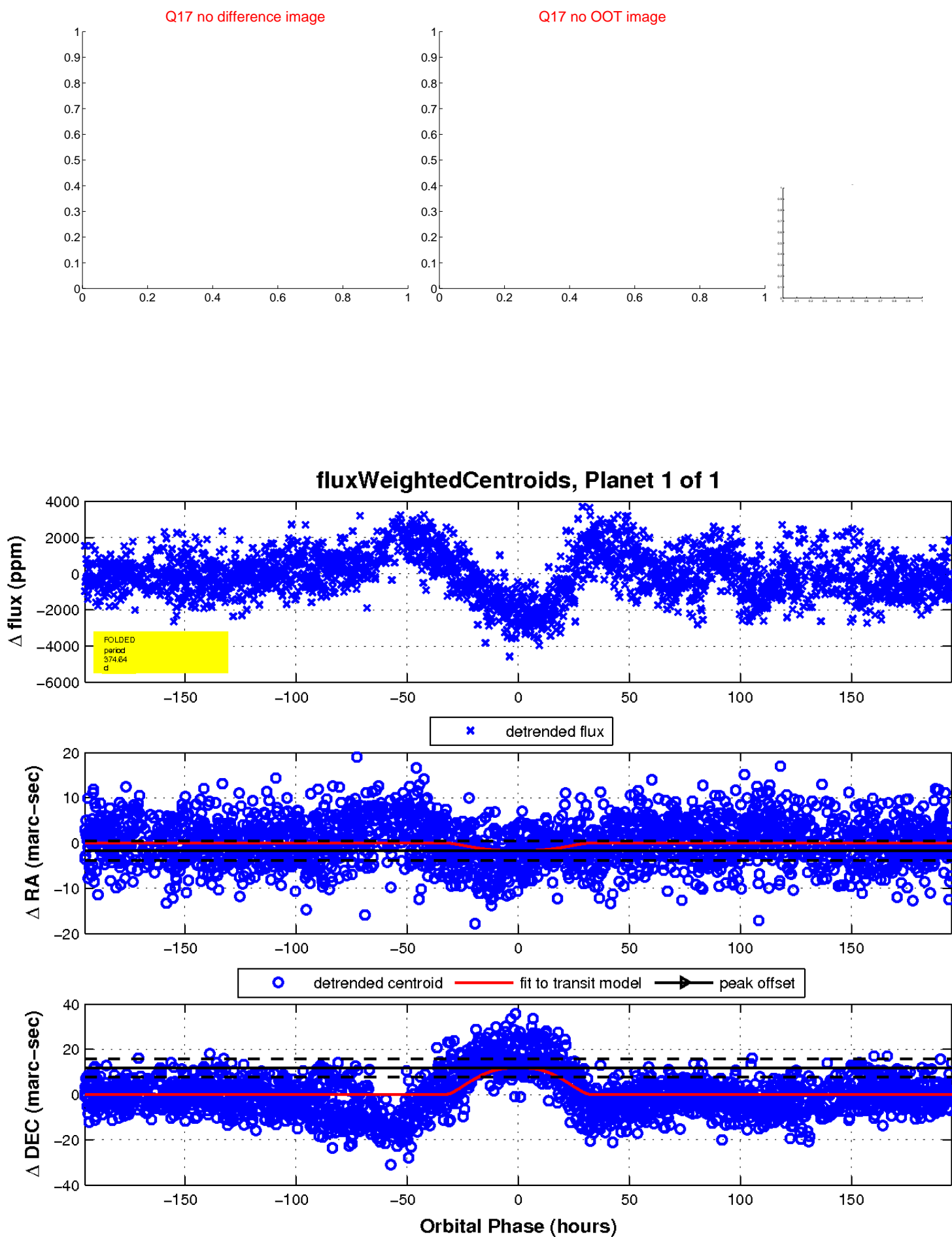
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



# UKIRT Image

Declination

