

# KIC 008557304

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008557304-01	OBS	No	374.759153	132.791630	2905.2	61.447	14.0	21.1	1.13	6363	11.20	1.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008557304-01	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—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.

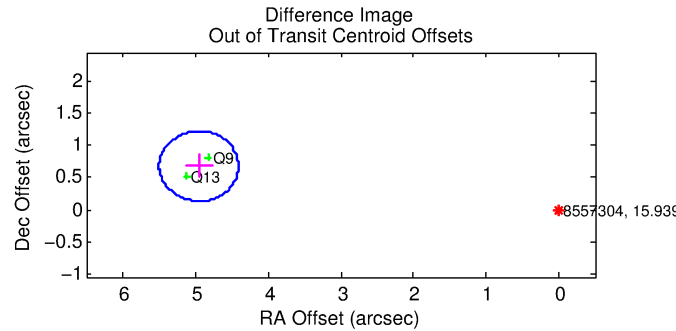
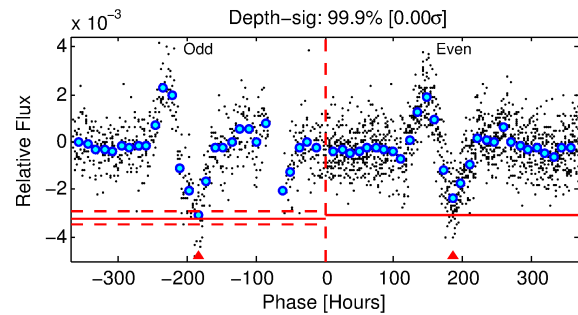
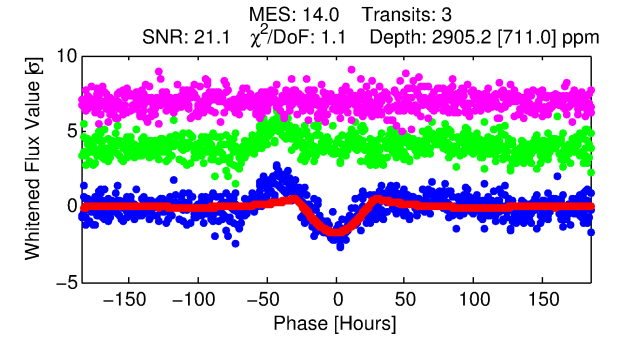
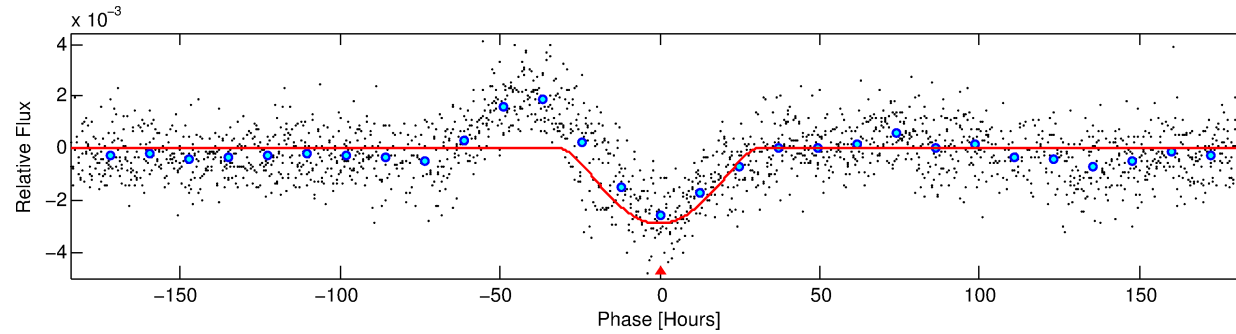
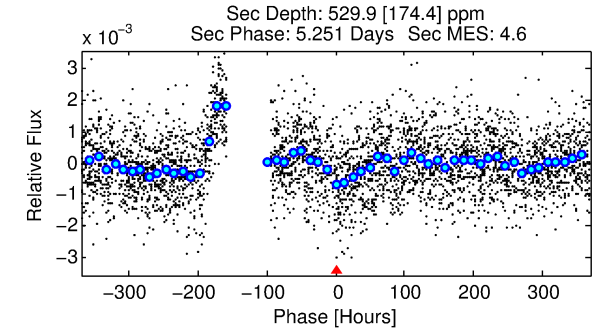
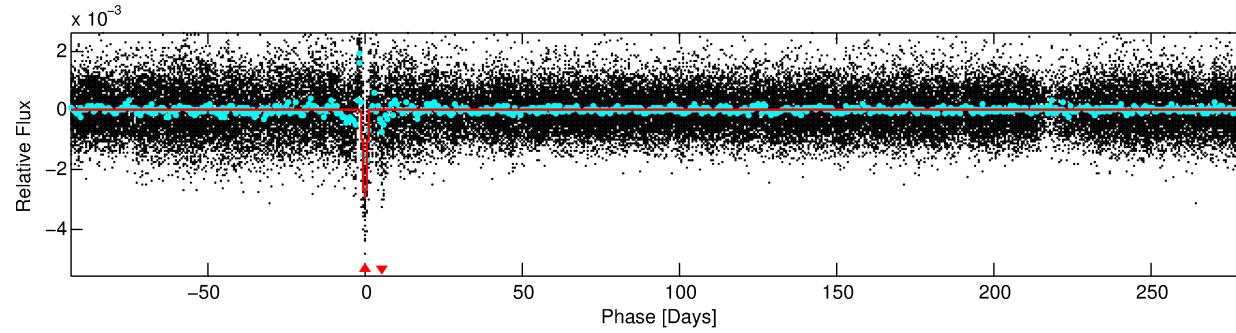
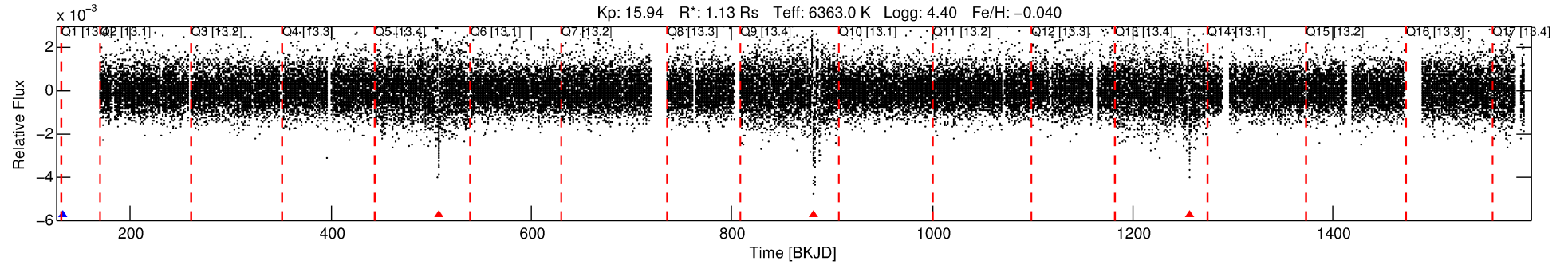
## Ephemeris Match Information For 008557304-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $\prime$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
008557304-01	8557304	008557469-01	8557469	1:1	163.9	41	1	14.80	15.93	0.54	Col-Anomaly	1	2.49	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: 8557304 Candidate: 1 of 1 Period: 374.759 d



## DV Fit Results:

Period = 374.75915 [0.03725] d  
Epoch = 132.7916 [0.0800] BKJD  
Rp/R\* = 0.0908 [0.1242]  
a/R\* = 20.33 [5.75]  
b = 1.00 [0.19]  
Seff = 1.63 [0.60]  
Teq = 288 [26] K  
Rp = 11.20 [15.67] Re  
a = 1.0719 [0.2552] AU  
Ag = 2670.33 [7413.87] [0.36σ]  
Teff = 3205 [2211] K [1.32σ]

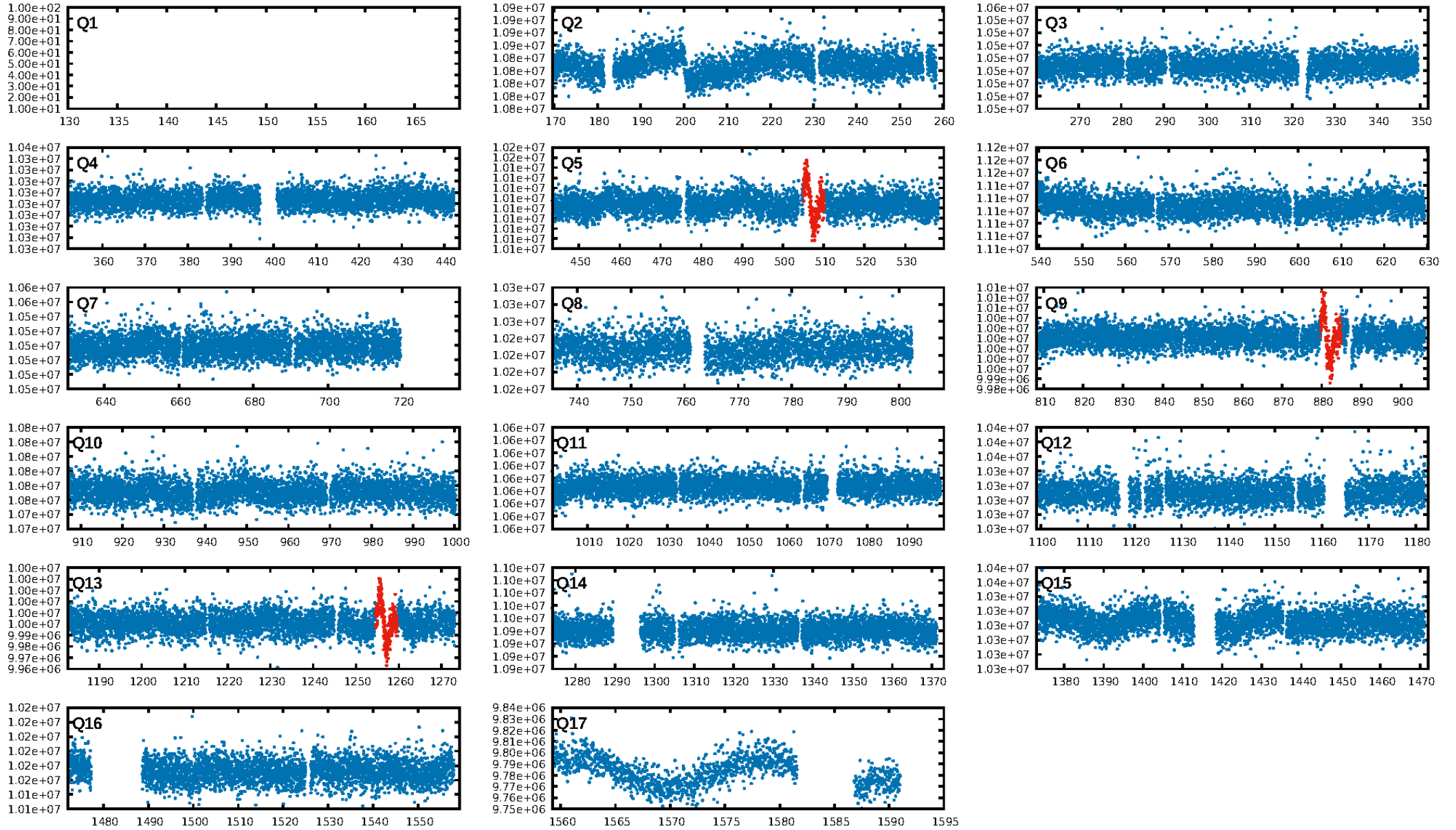
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 42.0%  
ModelChiSquareGoF-sig: 100.0%  
Bootstrap-pfa: 5.58e-49  
RollingBand-fgt: 0.00 [0/3]  
GhostDiagnostic-chr: 0.4785  
Centroid-sig: 2.3%  
Centroid-so: 1.773 arcsec [1.97σ]  
OotOffset-rm: 4.999 arcsec [27.53σ]  
KicOffset-rm: 5.073 arcsec [32.24σ]  
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]

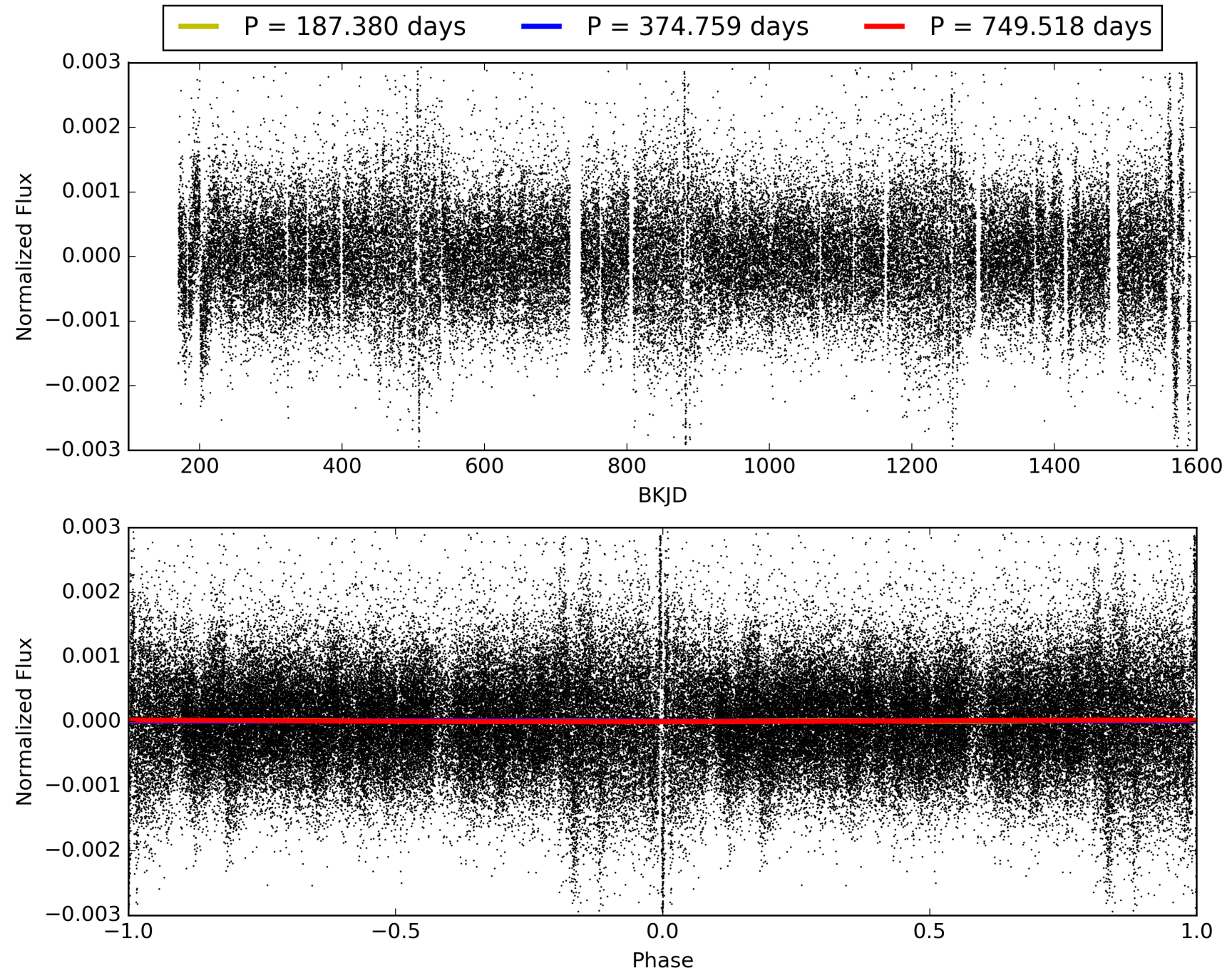
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:08:45 Z

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

# TCE 008557304-01, PDC Light Curves

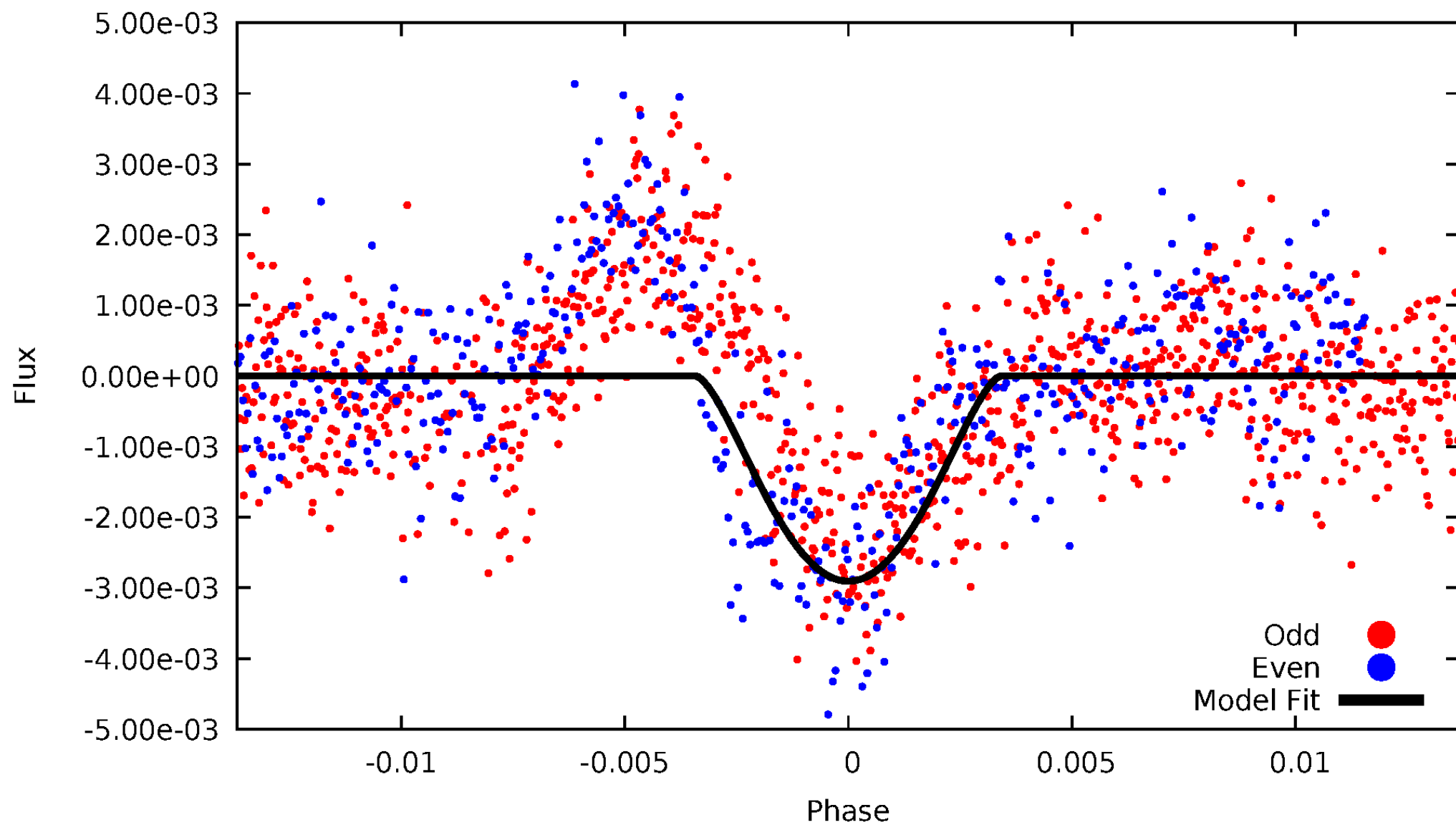


TCE 008557304-01



# DV Odd/Even

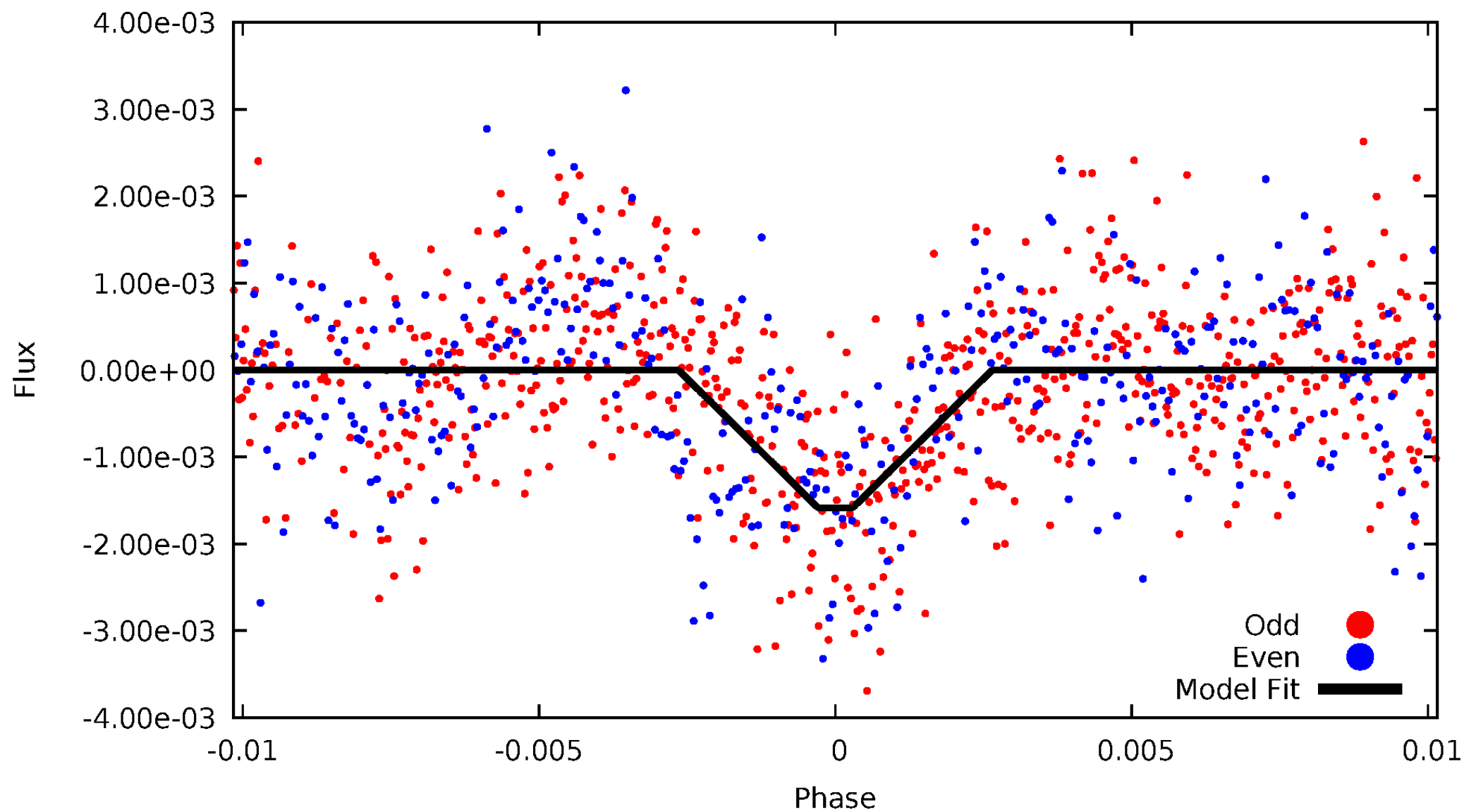
TCE 008557304-01





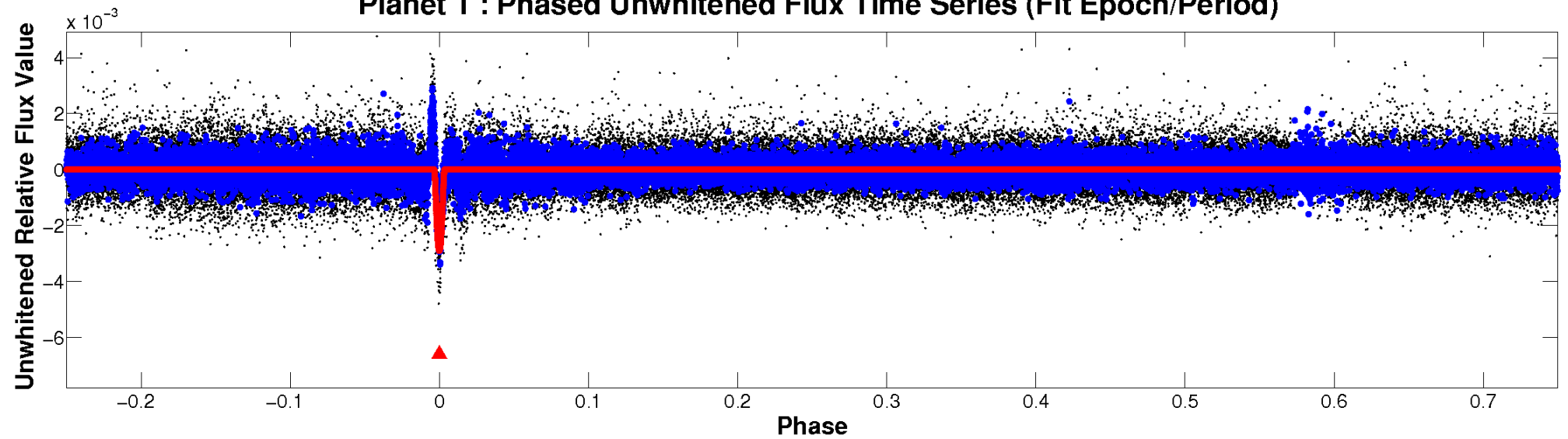
# ALT Odd/Even

TCE 008557304-01

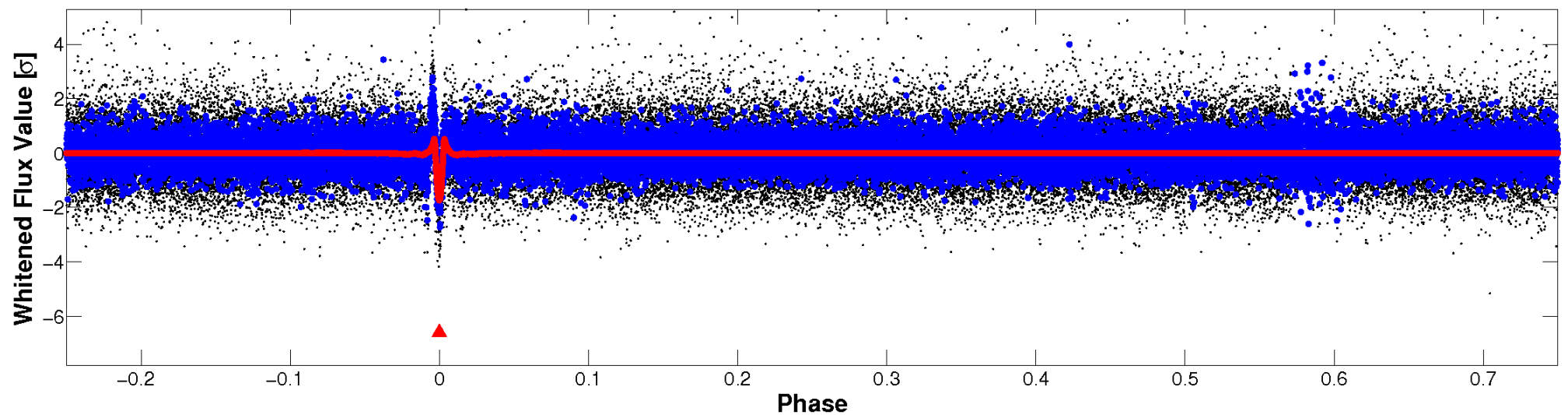


# Non-Whitened Vs. Whitened Light Curve

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

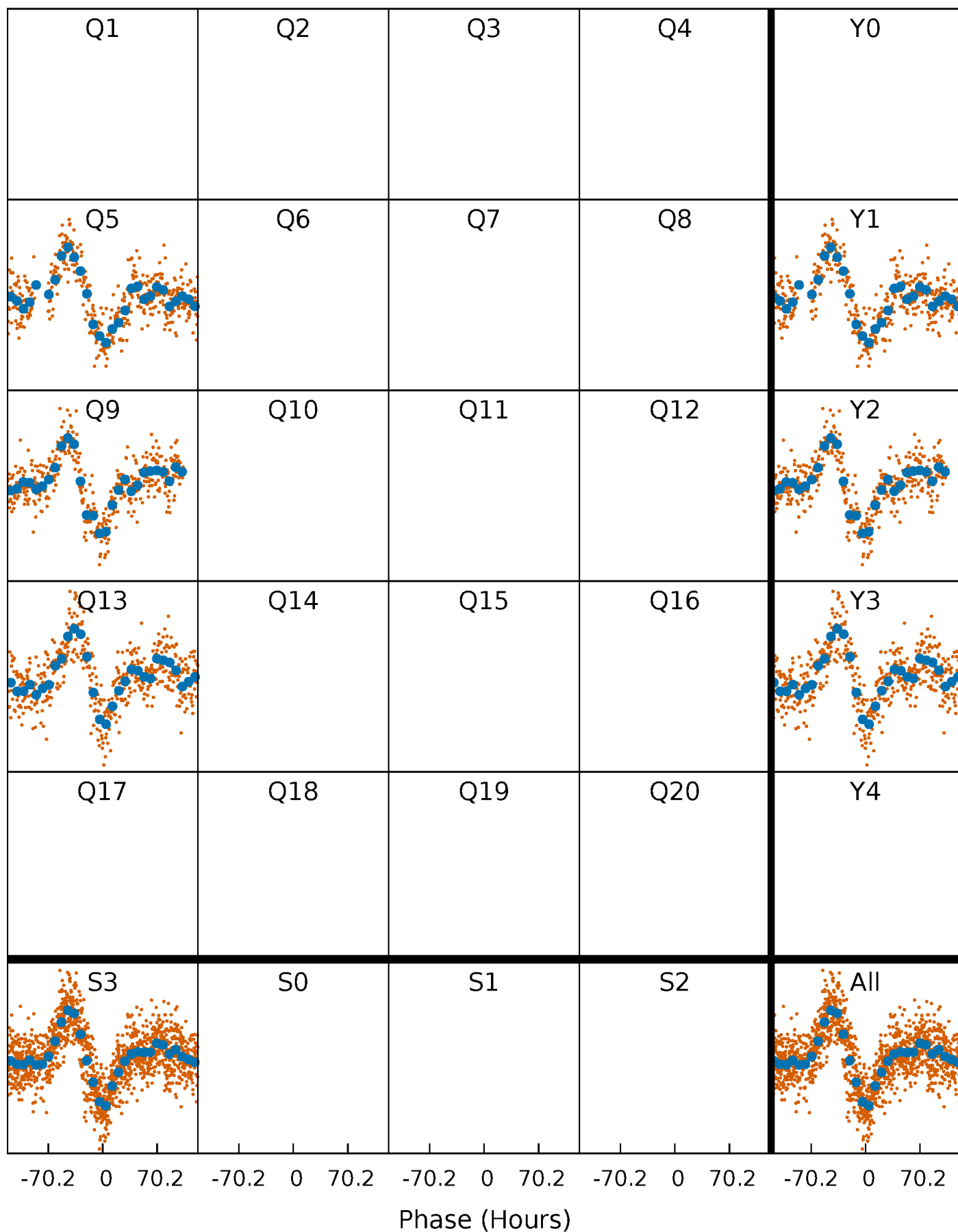


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

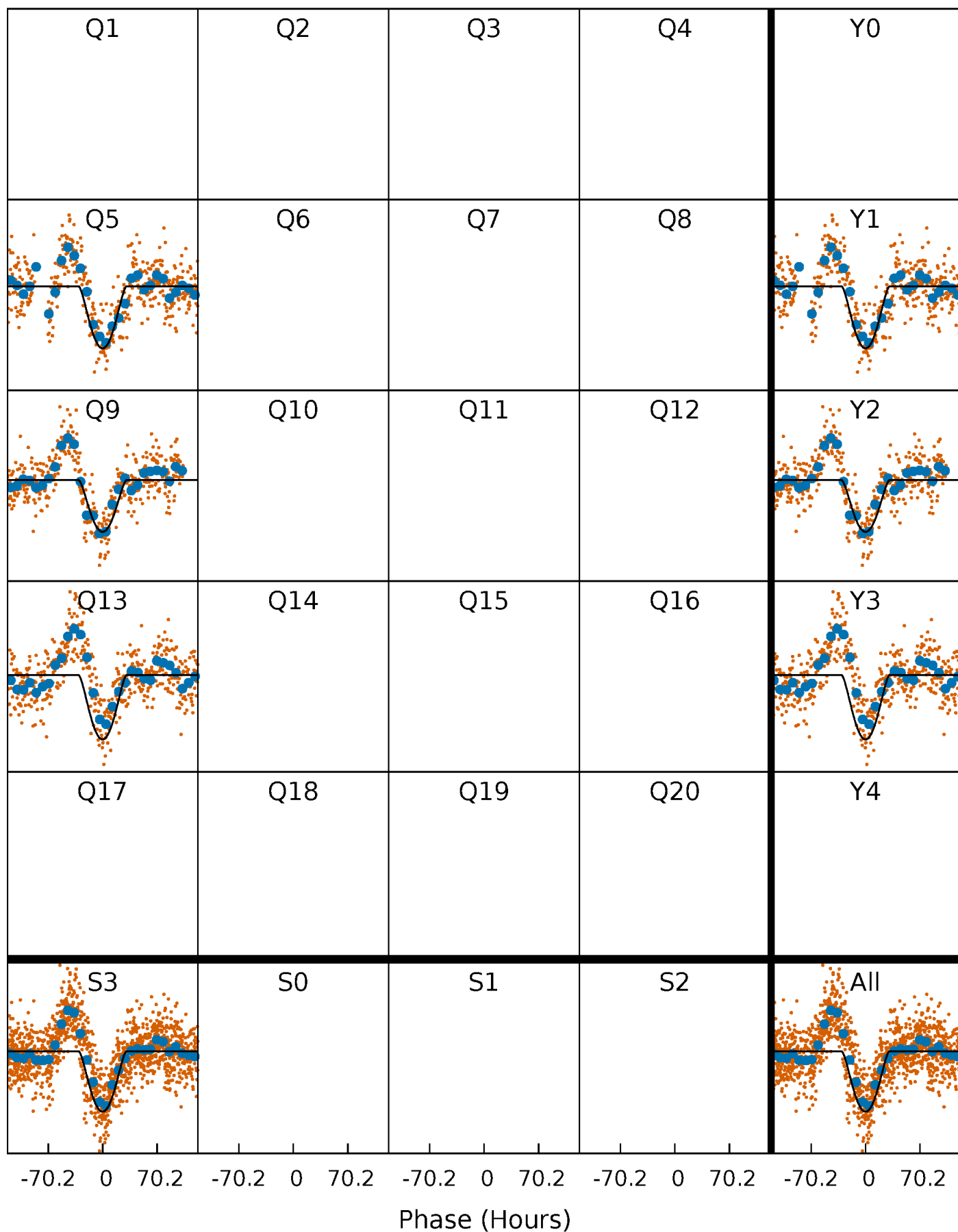
TCE 008557304-01   P=374.759153 Days    $T_0=132.791630$  (BKJD)





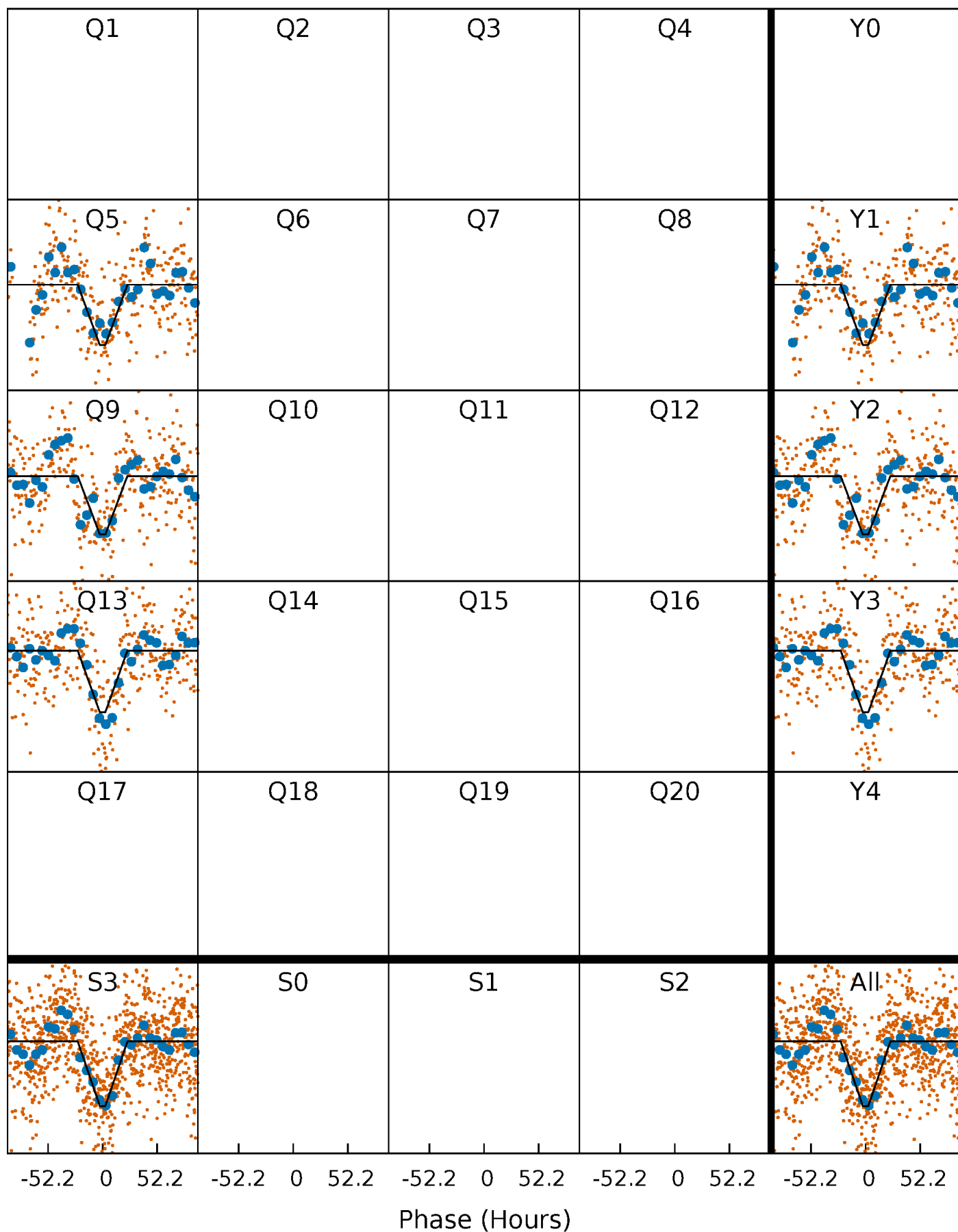
# DV Quarter-Phased Transit Curves

TCE 008557304-01     $P=374.759153$  Days     $T_0=132.791630$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

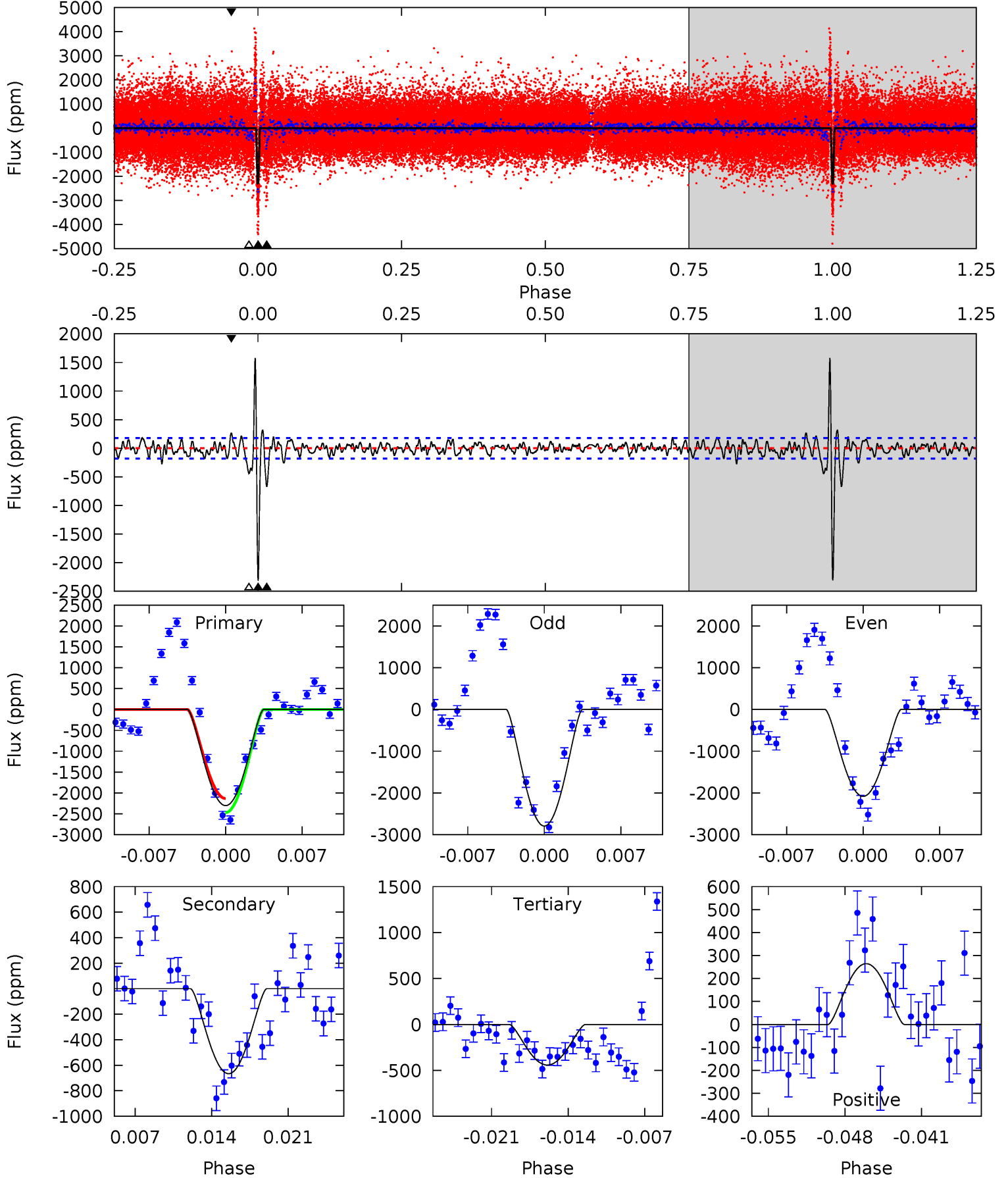
TCE 008557304-01 P=374.717435 Days  $T_0=132.784262$  (BKJD)



# DV Model-Shift Uniqueness Test

008557304-01, P = 374.759153 Days, E = 132.791630 Days

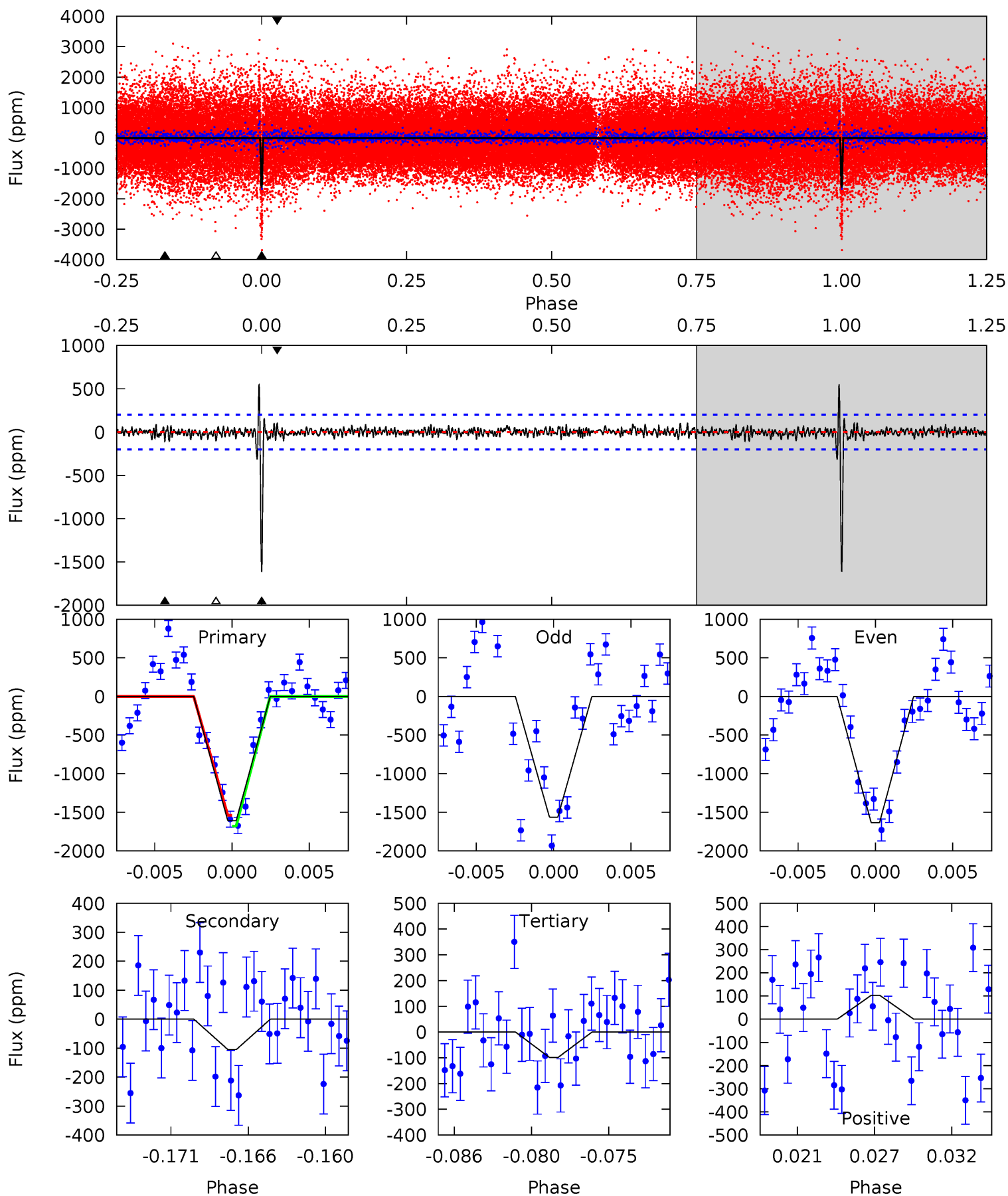
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
65.3	18.9	12.5	7.50	5.10	2.70	2.36	52.8	57.8	6.35	11.4	9.54	0.94	0.41	4.75



# Alt Model-Shift Uniqueness Test

008557304-01,  $P = 374.717435$  Days,  $E = 132.784262$  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
41.2	2.69	2.53	2.65	5.15	2.79	0.88	38.7	38.5	0.15	0.04	0.86	1.03	0.25	1.76



### Stellar Parameters For KIC 008557304

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6363^{+174}_{-217}$	$4.399^{+0.060}_{-0.180}$	$-0.040^{+0.250}_{-0.300}$	$1.131^{+0.329}_{-0.141}$	$1.170^{+0.157}_{-0.157}$	$1.139^{+0.375}_{-0.553}$
	+3%/-3%	+1%/-4%	+625%/-750%	+29%/-12%	+13%/-13%	+33%/-49%
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 008557304-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-666 \pm 35$	$16.07^{+14.25}_{-10.17}$	$411^{+27}_{-22}$	$3413^{+1443}_{-581}$	$1566^{+10410}_{-1123}$
Alt.	$-105 \pm 39$	$12.29^{+12.90}_{-8.63}$	$409^{+26}_{-19}$	$2797^{+1223}_{-470}$	$430^{+4080}_{-337}$

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

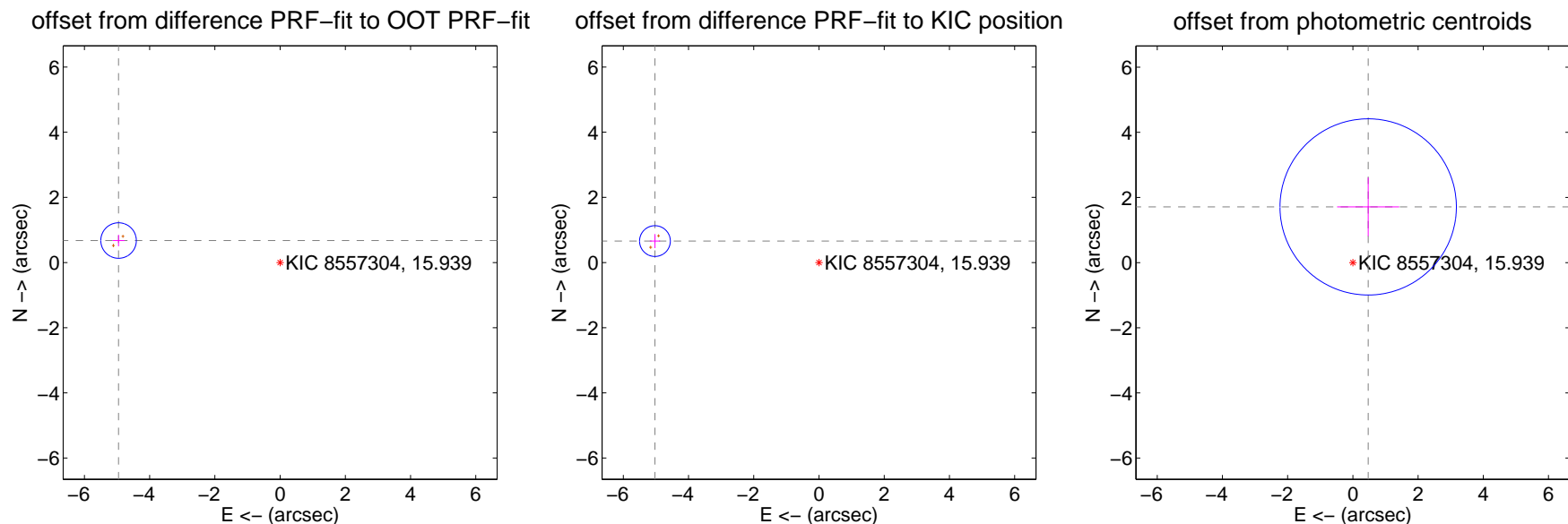
## DV Centroid Data

Supplemental centroid analysis for 008557304-01. Kepler magnitude: 15.94. Transit SNR 21.06

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.999 \pm 0.182$	27.53	$4.953 \pm 0.182$	$0.675 \pm 0.177$
PRF-fit source offset from KIC position	$5.073 \pm 0.157$	32.24	$5.030 \pm 0.156$	$0.659 \pm 0.216$
photometric centroid source offset	$1.77 \pm 0.90$	1.97	$-0.47 \pm 0.95$	$1.71 \pm 0.90$



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.



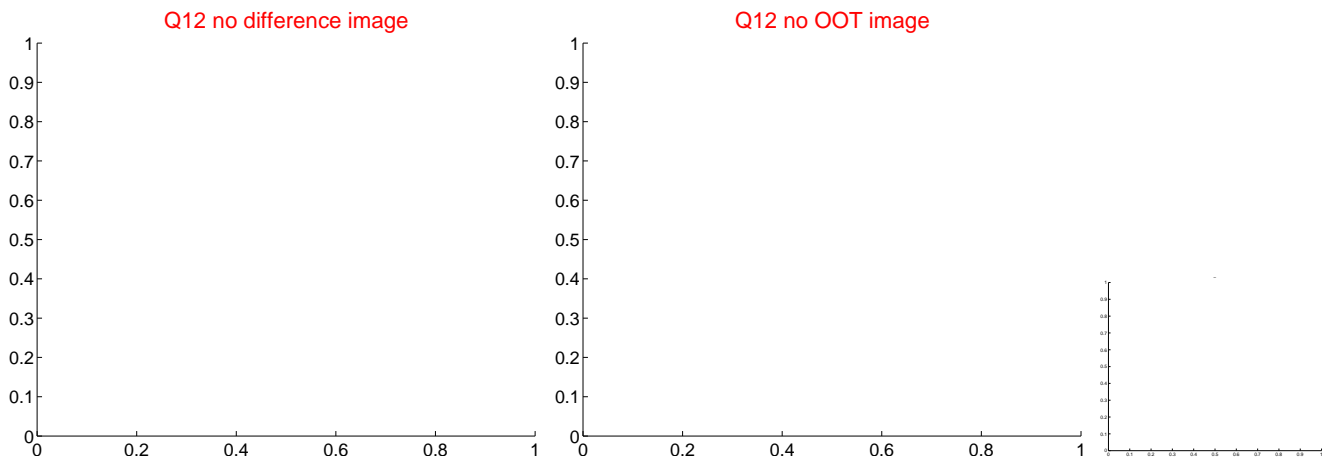
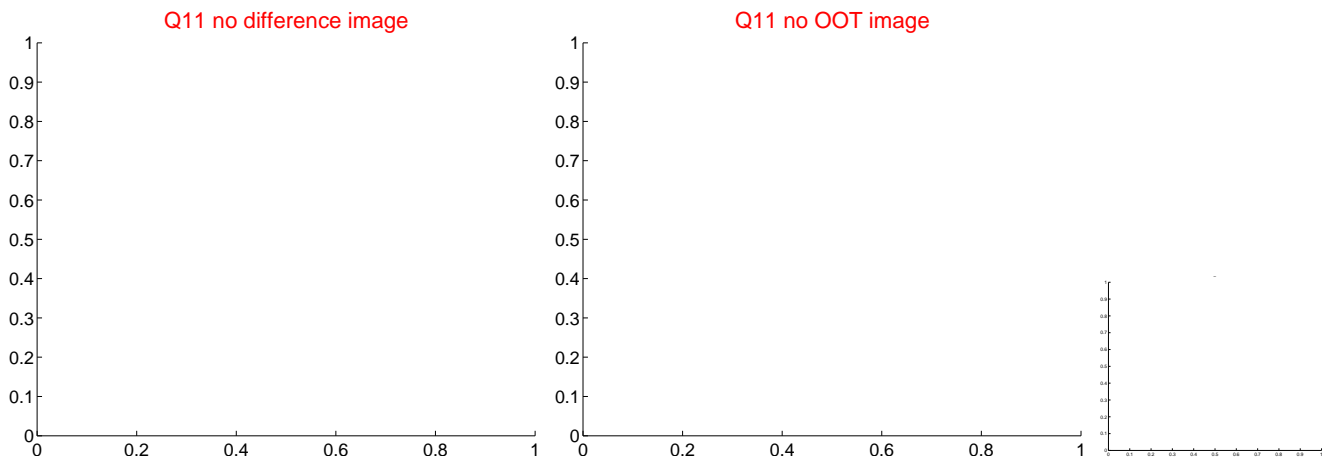
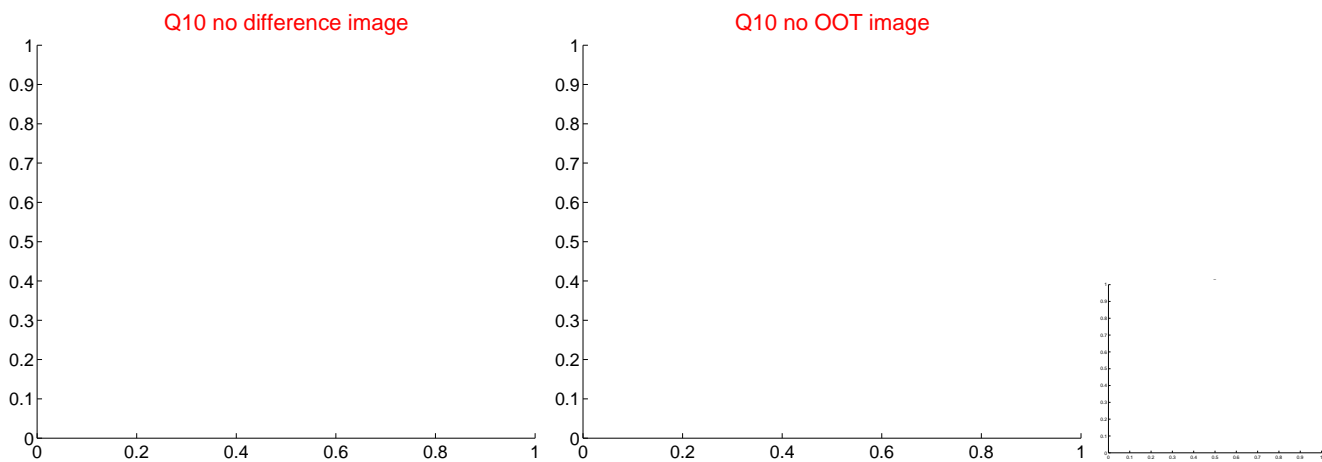
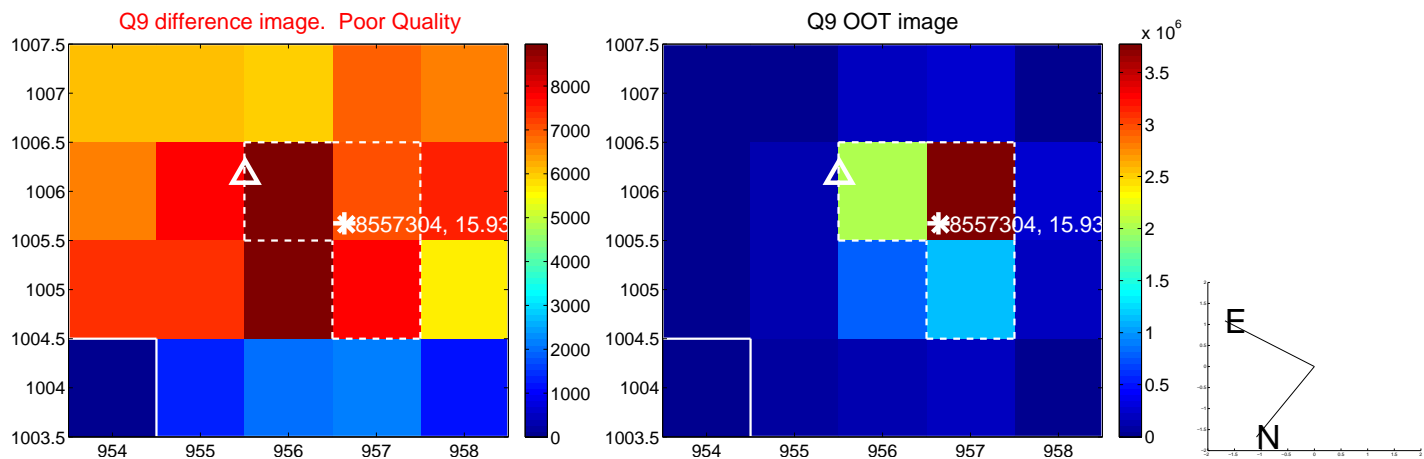
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



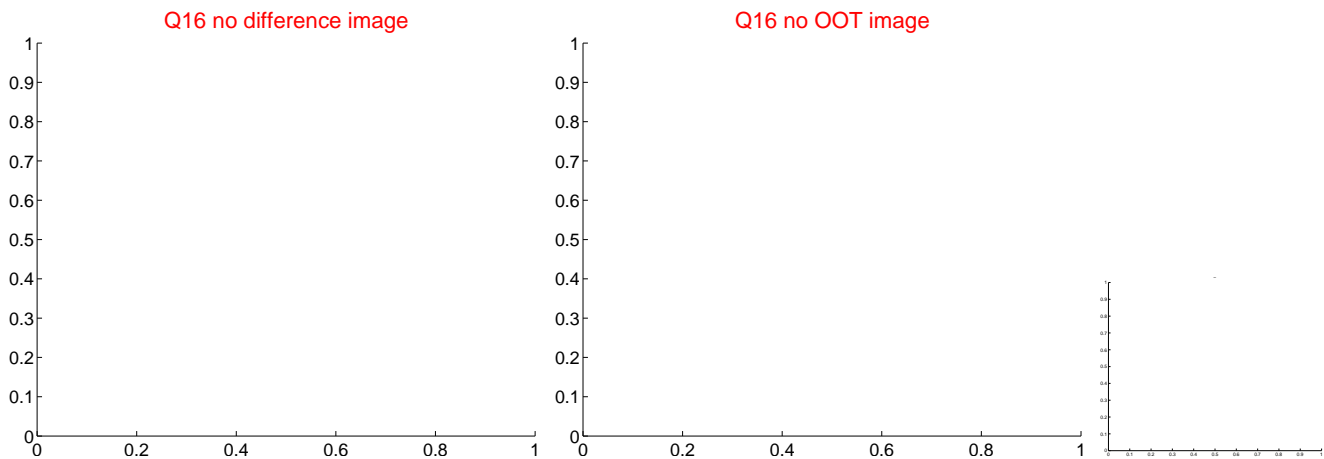
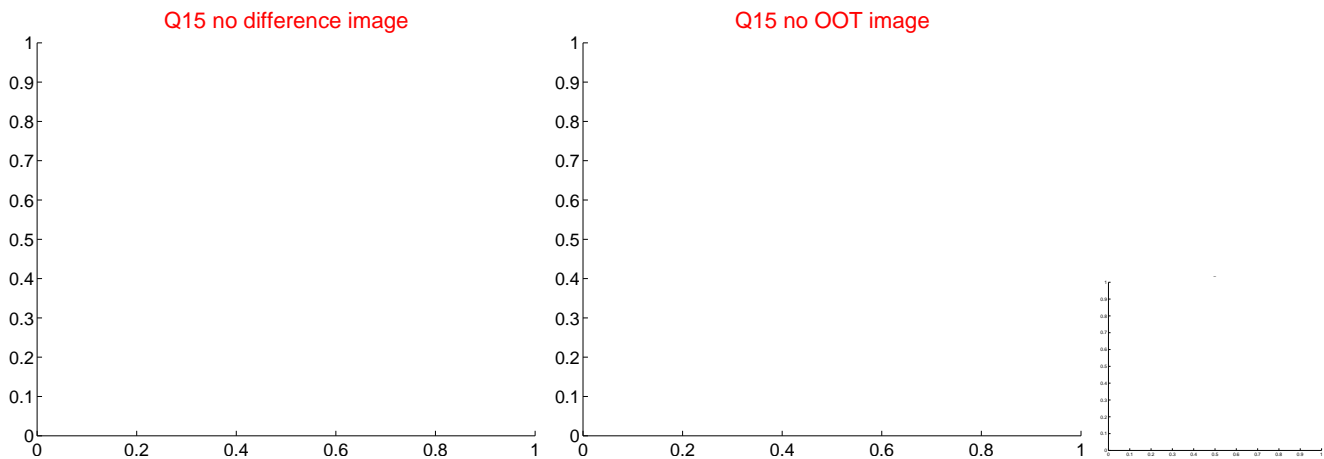
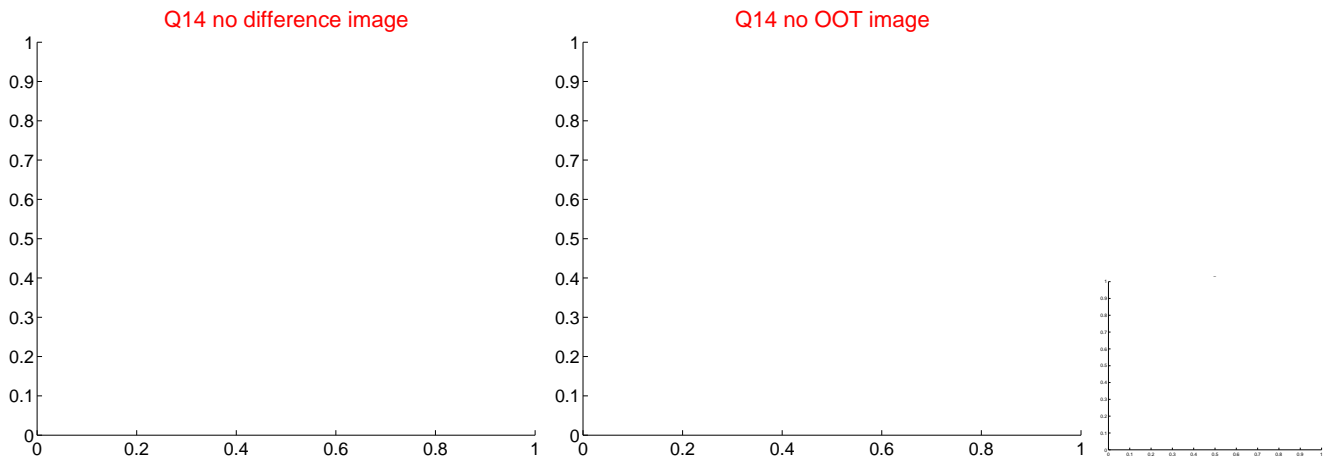
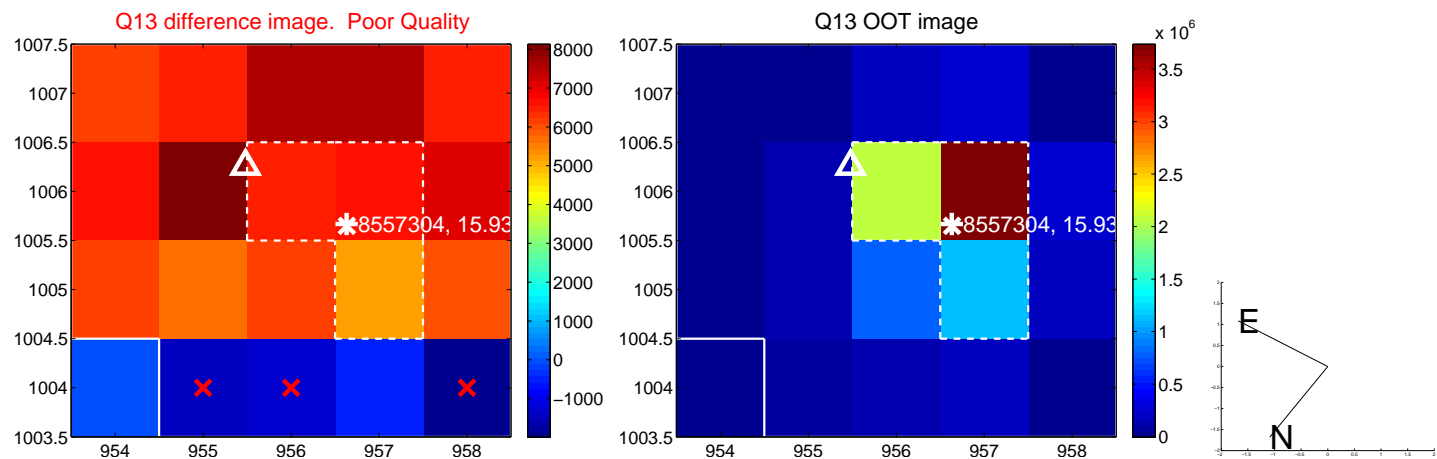
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



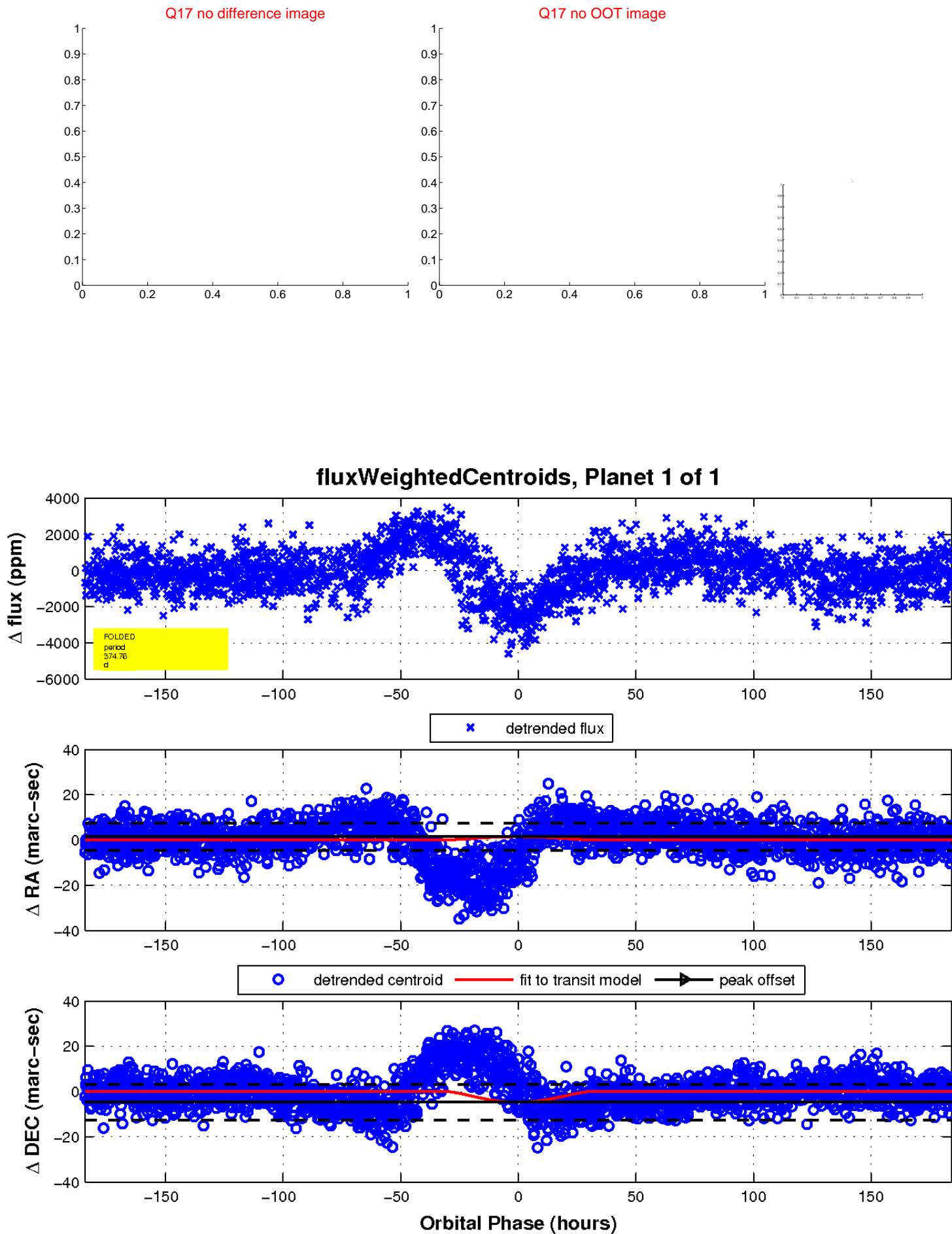
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



# UKIRT Image

Declination

