

# KIC 004571844

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004571844-01	OBS	4353.01	17.808498	146.876756	1695.3	2.156	10.4	13.0	0.98	6194	5.00	71.73

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004571844-01	OBS	PC	1.00	0	0	0	0	CENT_FEW_DIFFS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

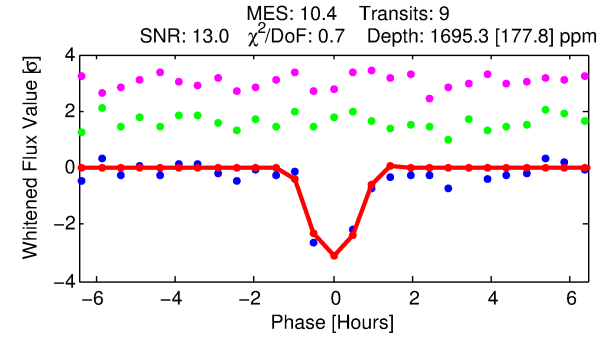
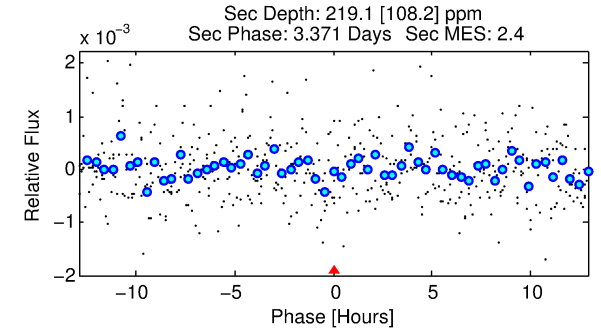
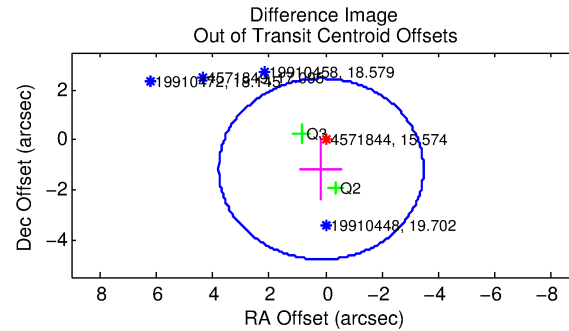
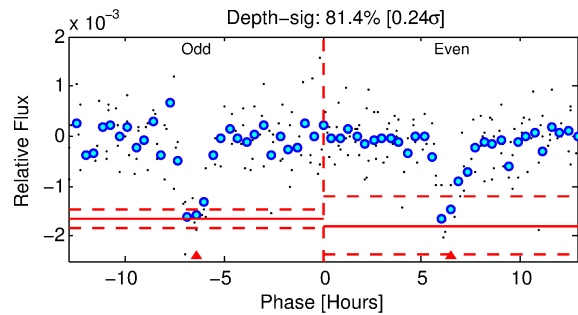
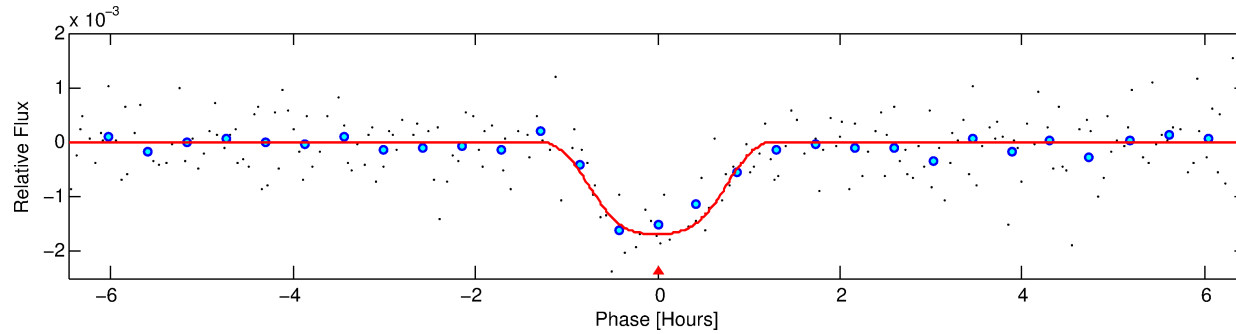
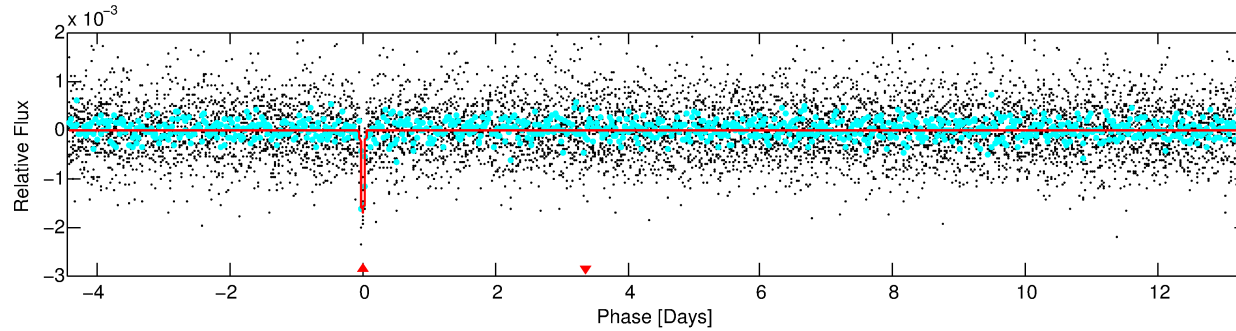
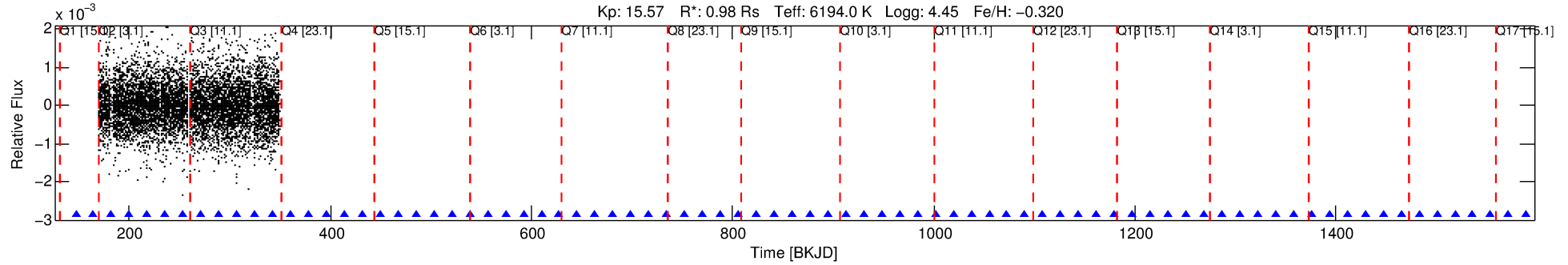
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004571844-01

No Significant Match Found

# DV One-Page Summary

KIC: 4571844 Candidate: 1 of 1 Period: 17.808 d  
KOI: K04353 Corr: No Ephemeris Match



## DV Fit Results:

Period = 17.80850 [0.00067] d  
Epoch = 146.8768 [0.0048] BKJD  
Rp/R\* = 0.0467 [0.0044]  
a/R\* = 28.86 [7.60]  
b = 0.94 [0.03]  
Seff = 71.73 [29.53]  
Teq = 742 [76] K  
Rp = 5.00 [1.60] Re  
a = 0.1330 [0.0345] AU  
Ag = 85.47 [55.74] [1.52 $\sigma$ ]  
Teffp = 3489 [481] K [5.64 $\sigma$ ]

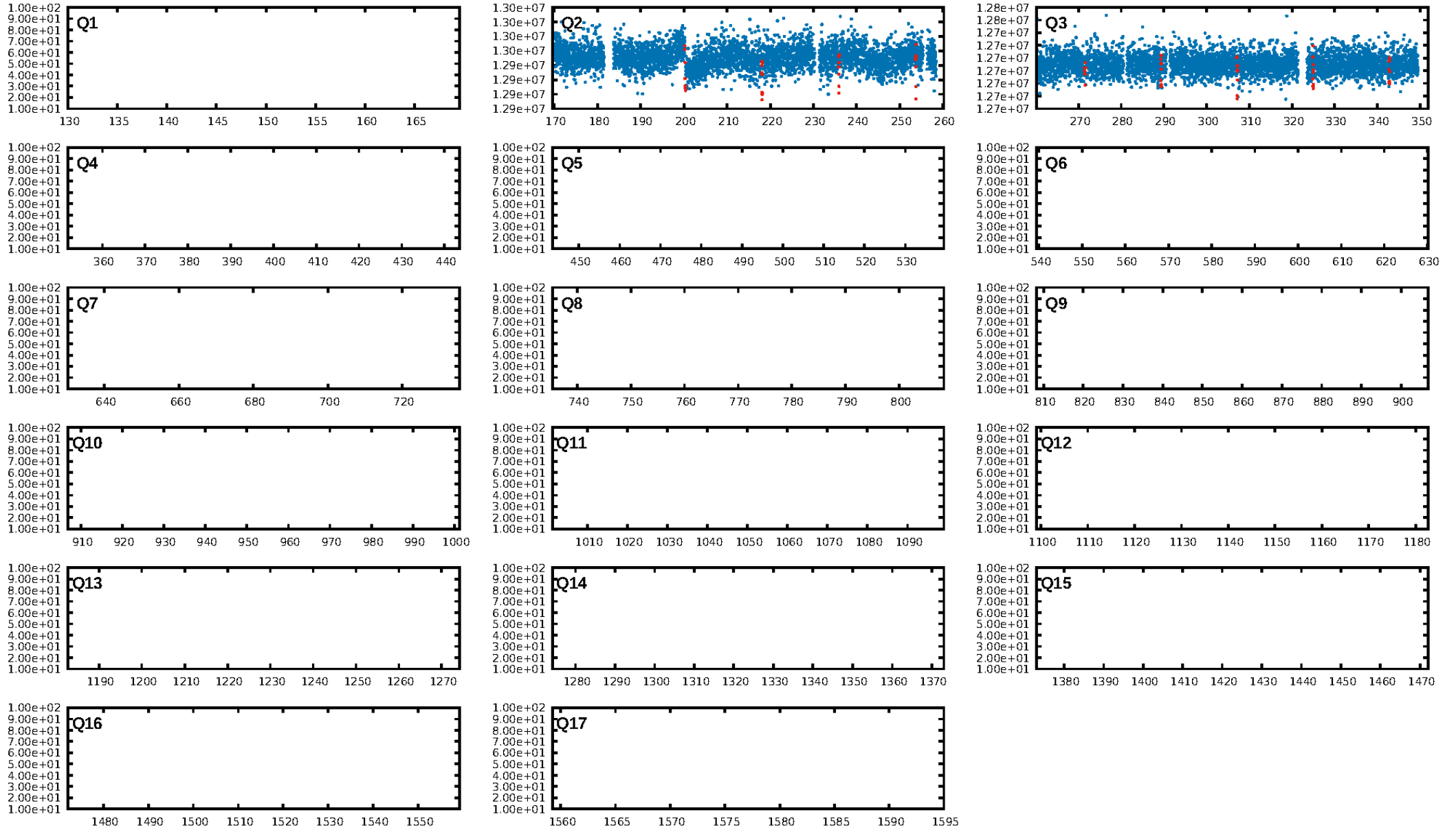
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 87.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 5.17e-25  
RollingBand-fgt: 1.00 [9/9]  
**GhostDiagnostic-chr: 0.9897**  
Centroid-sig: 1.9%  
Centroid-so: 1.289 arcsec [1.38 $\sigma$ ]  
OotOffset-rm: 1.183 arcsec [0.98 $\sigma$ ]  
OotOffset-st: 1/1/0/0 [2]  
KicOffset-rm: 1.143 arcsec [1.08 $\sigma$ ]  
KicOffset-st: 1/1/0/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [2/2]

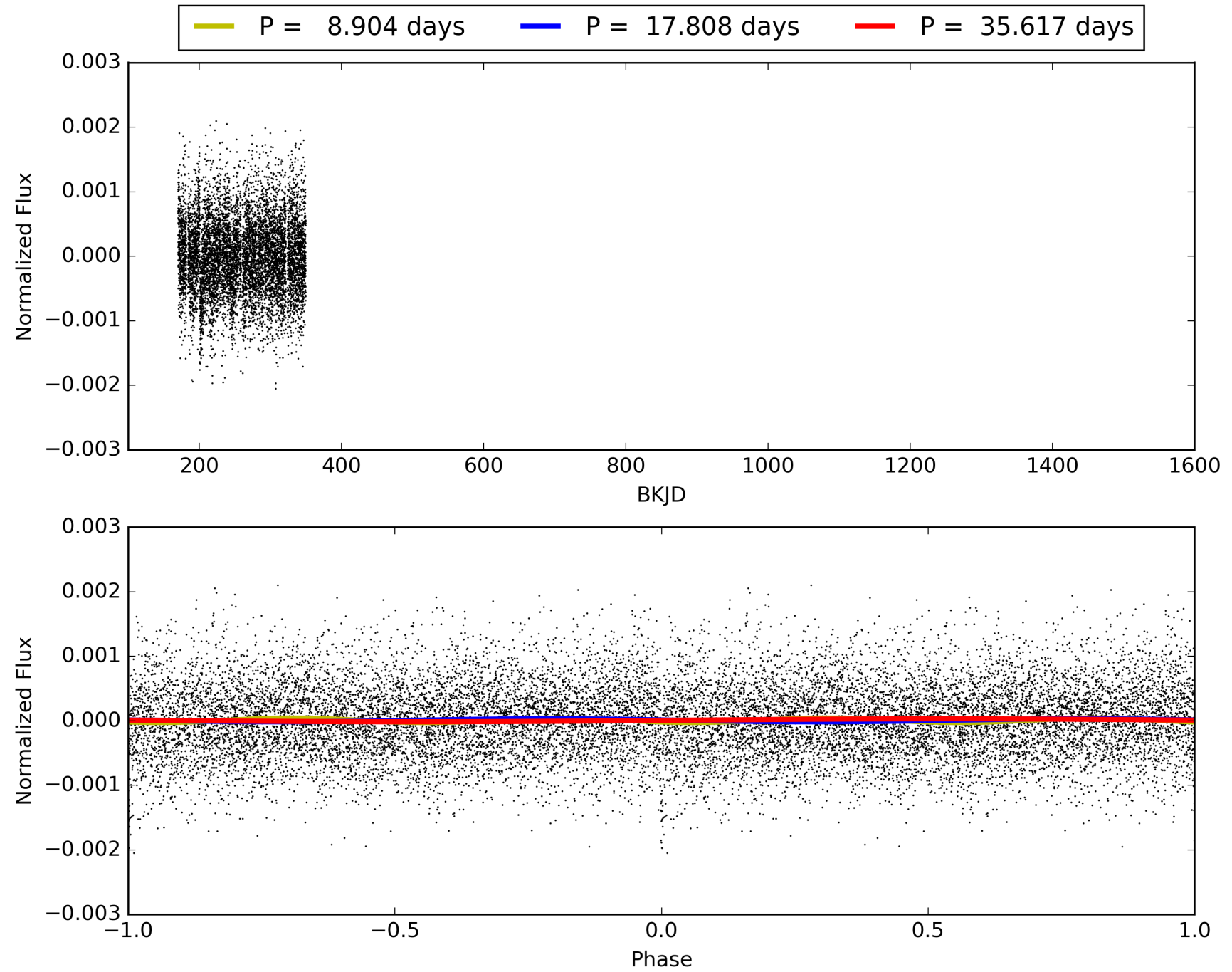
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:37:08 Z

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

# TCE 004571844-01, PDC Light Curves

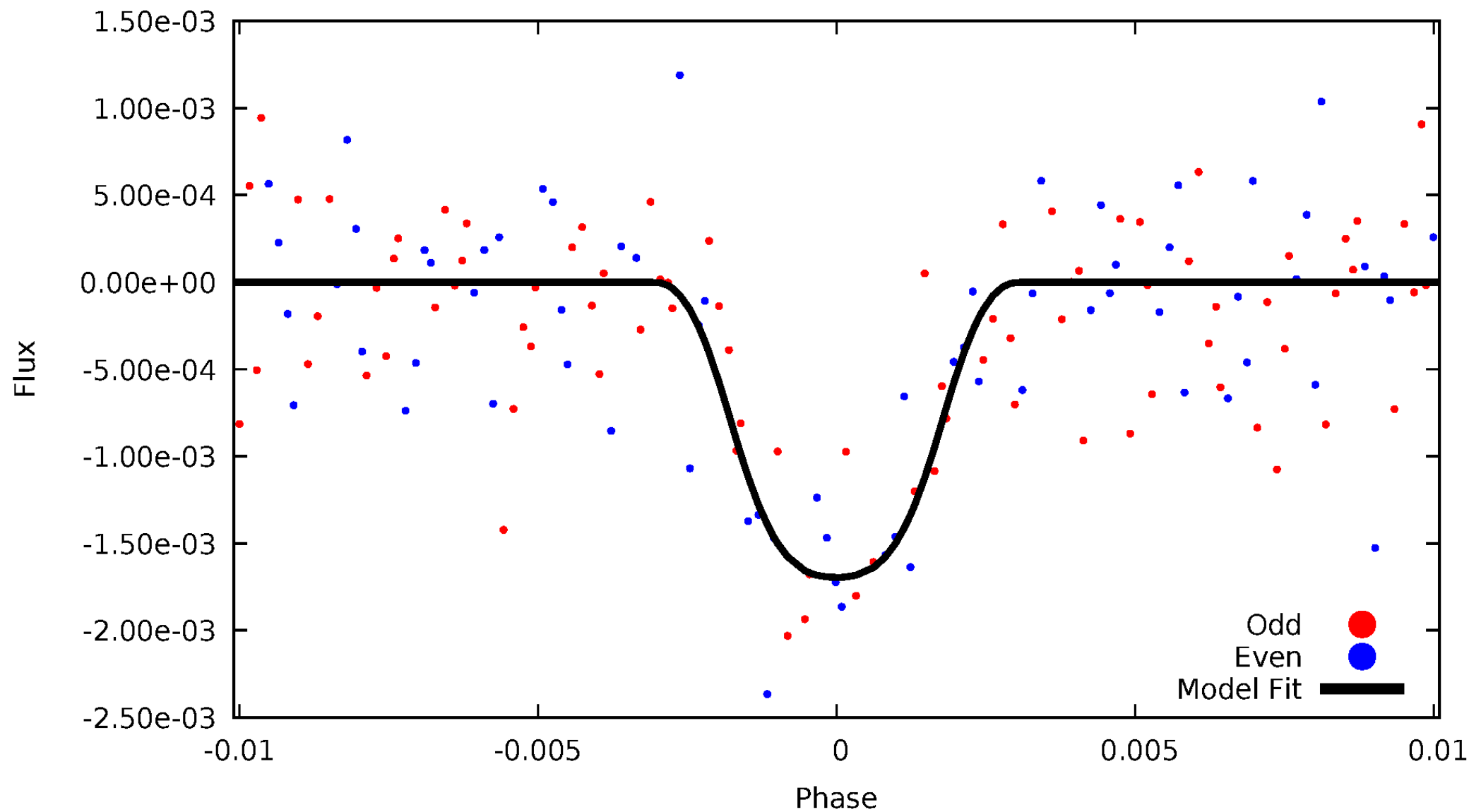


# TCE 004571844-01



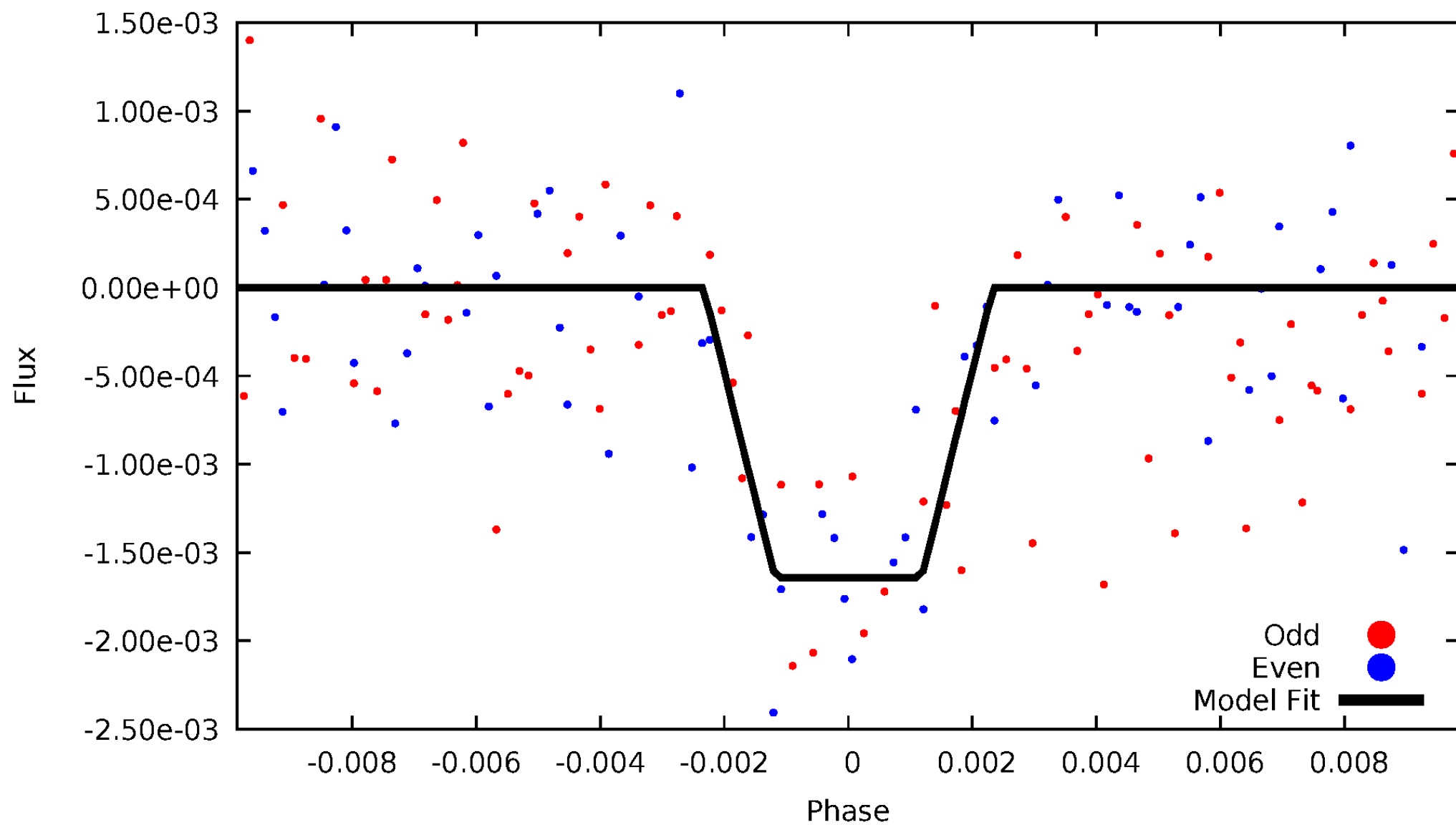
# DV Odd/Even

TCE 004571844-01



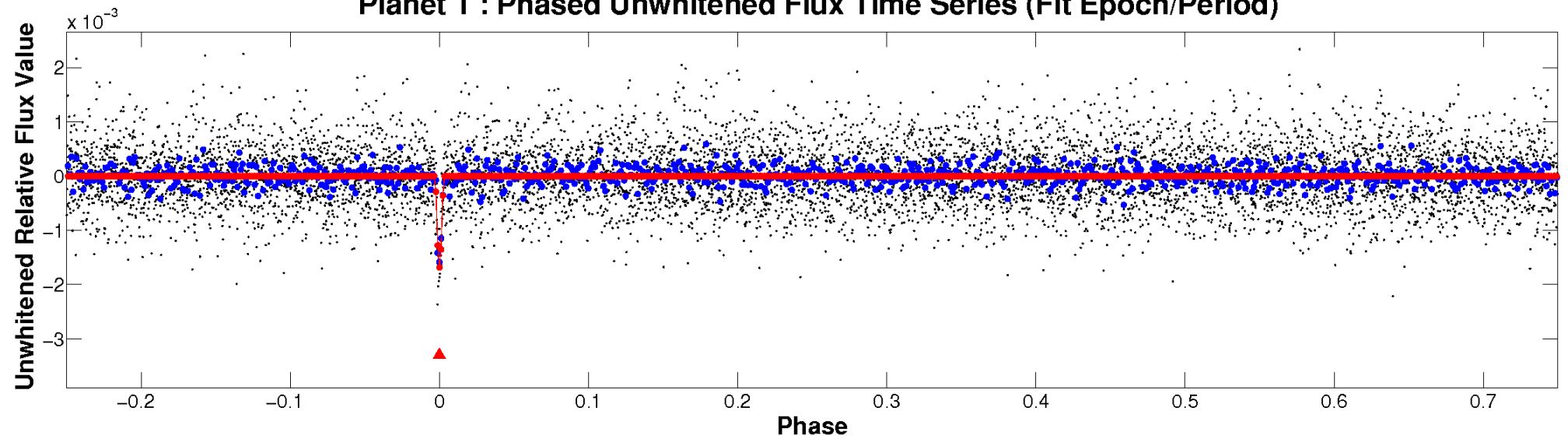
# ALT Odd/Even

TCE 004571844-01

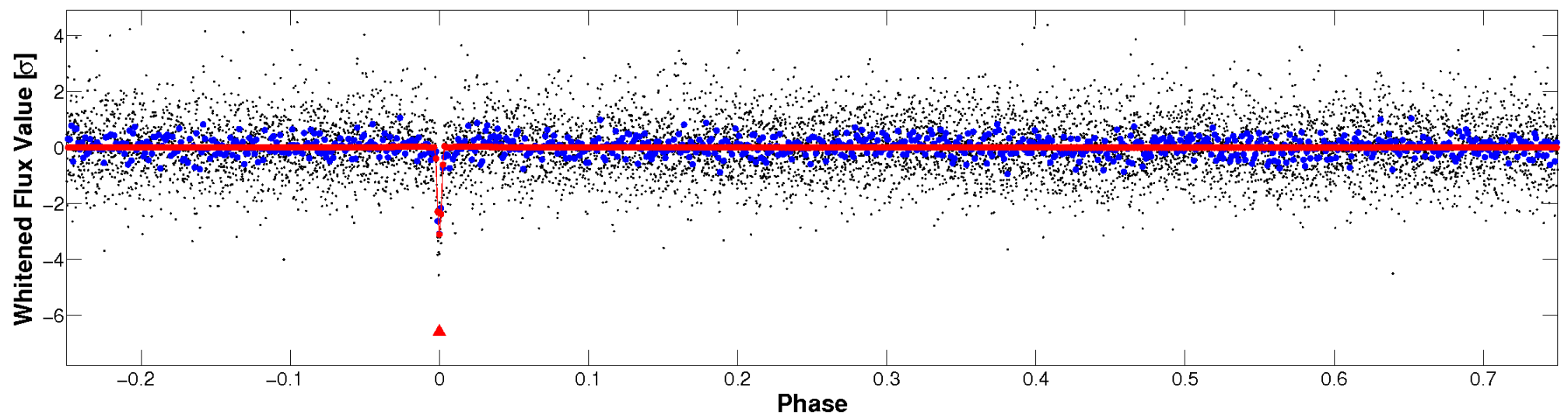


# Non-Whitened Vs. Whitened Light Curve

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

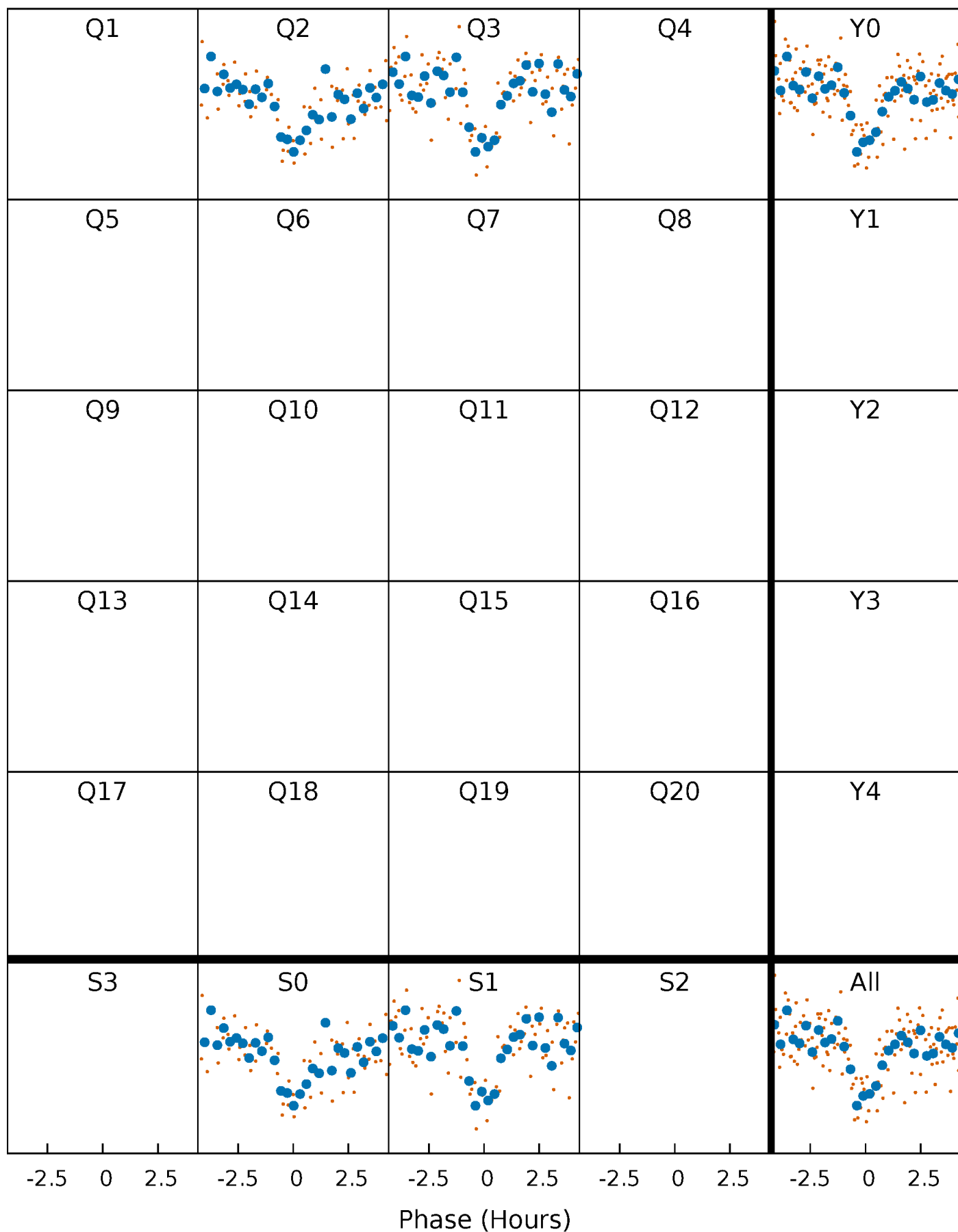


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

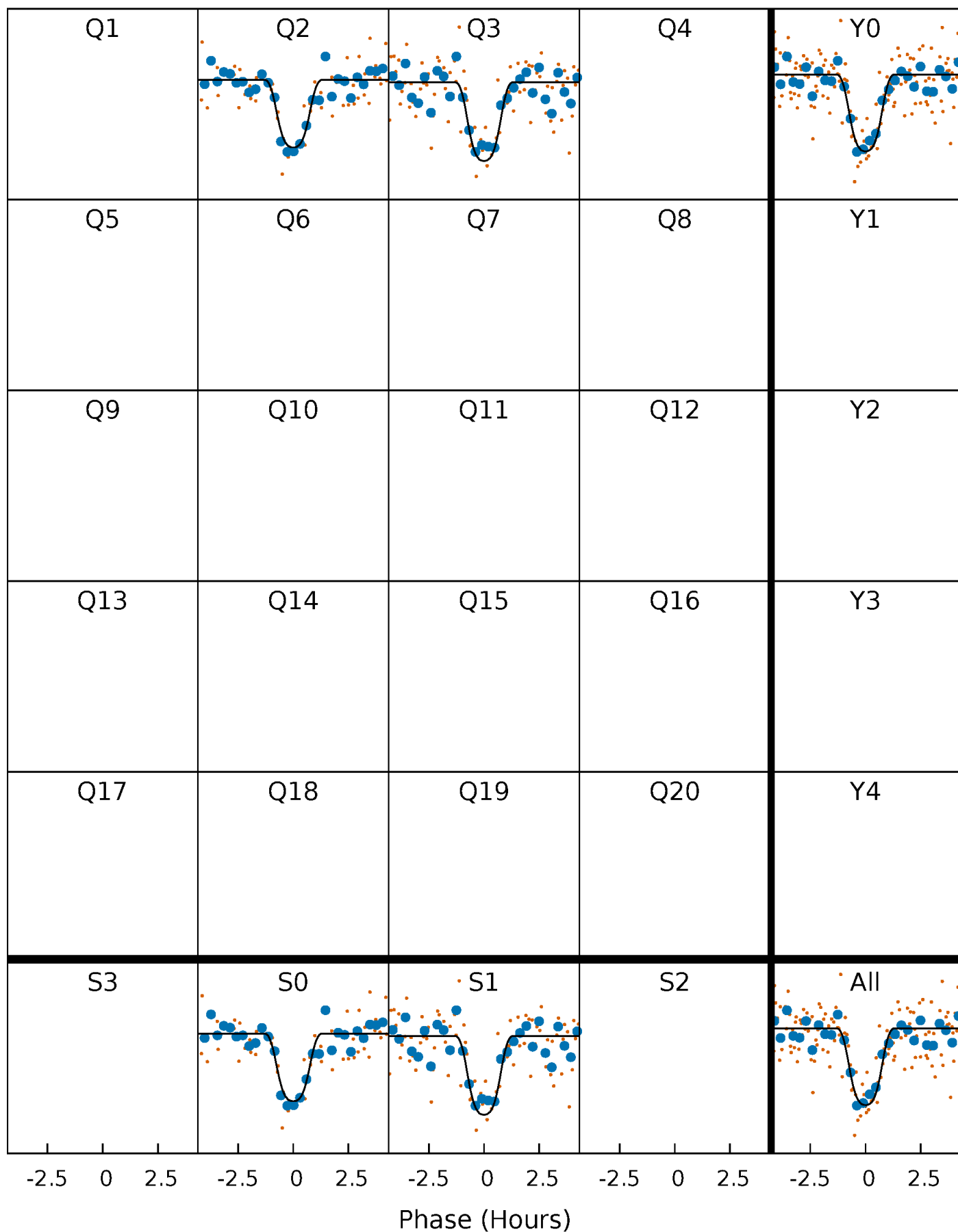
TCE 004571844-01   P= 17.808498 Days    $T_0=146.876756$  (BKJD)





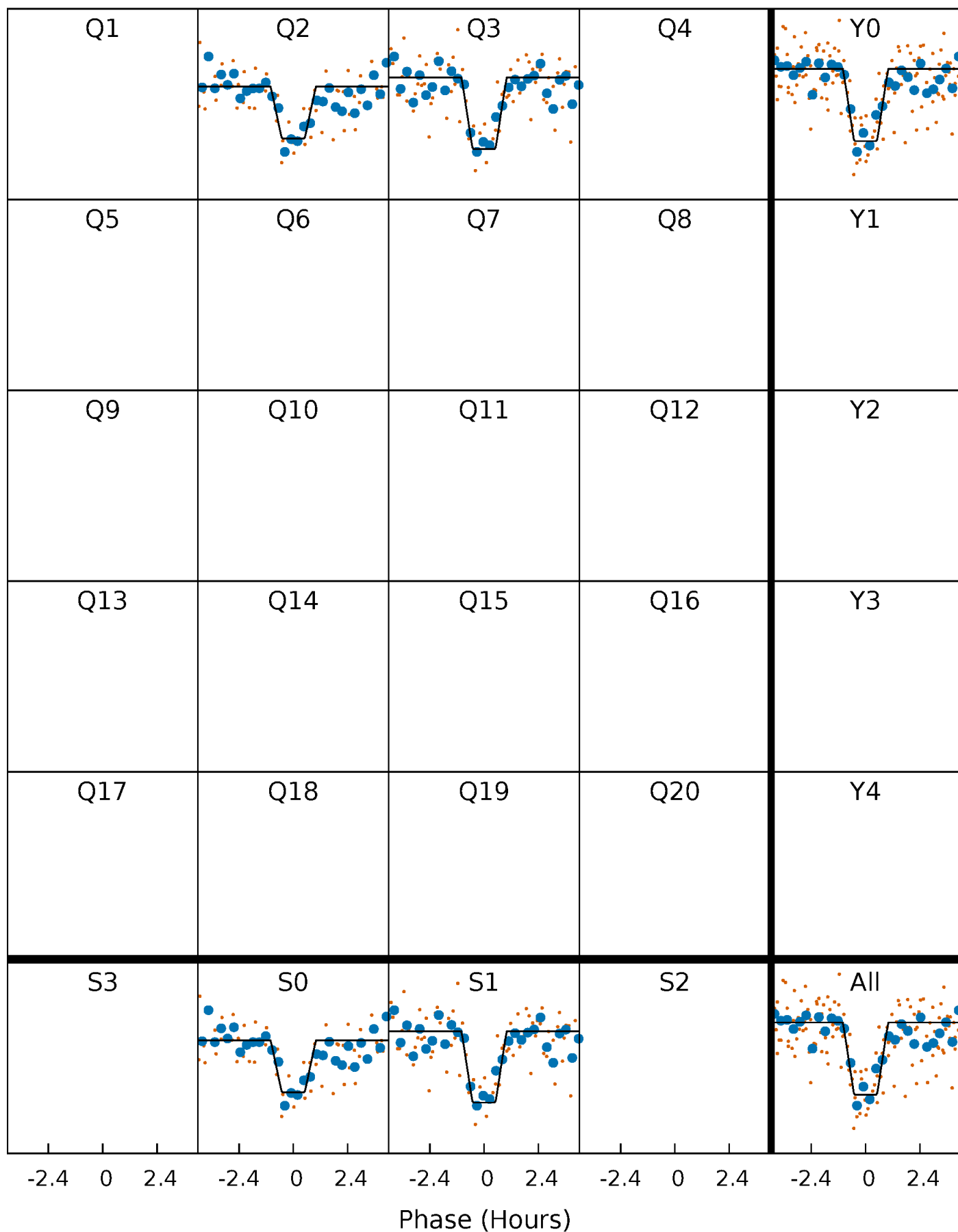
# DV Quarter-Phased Transit Curves

TCE 004571844-01 P= 17.808498 Days  $T_0=146.876756$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

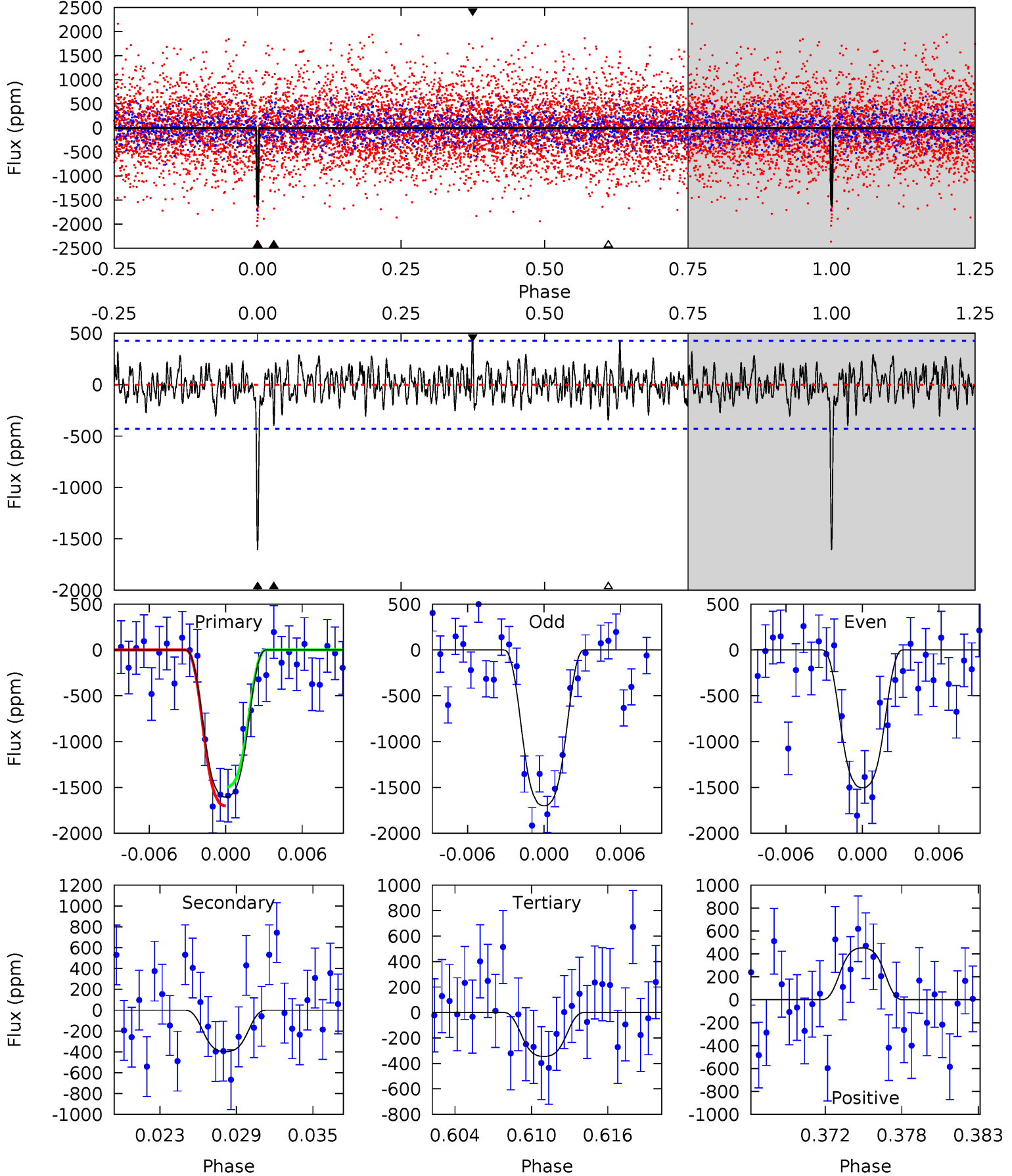
TCE 004571844-01 P= 17.808682 Days  $T_0=146.876477$  (BKJD)



# DV Model-Shift Uniqueness Test

004571844-01, P = 17.808498 Days, E = 146.876756 Days

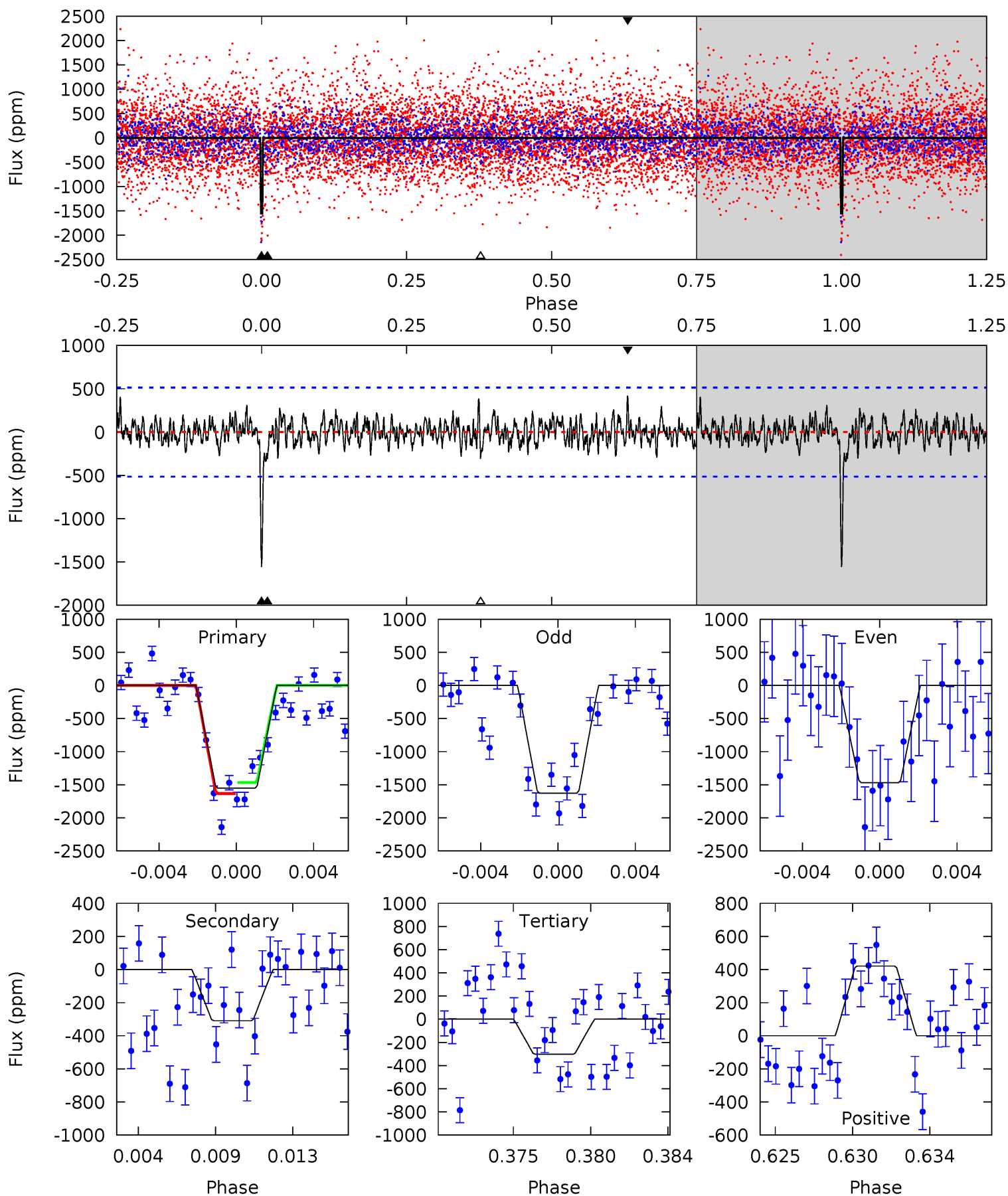
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	4.77	4.14	5.42	5.13	2.76	1.40	15.1	13.8	0.63	-0.65	1.19	0.98	0.22	1.23



# Alt Model-Shift Uniqueness Test

004571844-01, P = 17.808682 Days, E = 146.876477 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
15.6	3.11	3.05	4.24	5.18	2.84	1.12	12.6	11.4	0.07	-1.13	0.80	1.01	0.21	0.83



### Stellar Parameters For KIC 004571844

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6194^{+197}_{-241}$	$4.450^{+0.070}_{-0.210}$	$-0.320^{+0.300}_{-0.300}$	$0.981^{+0.299}_{-0.128}$	$0.988^{+0.147}_{-0.120}$	$1.473^{+0.525}_{-0.743}$
	+3%/-4%	+2%/-5%	+94%/-94%	+30%/-13%	+15%/-12%	+36%/-50%
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 004571844-01 / KOI 4353.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-398 \pm 83$	$5.19^{+0.89}_{-0.72}$	$1061^{+83}_{-60}$	$4279^{+274}_{-253}$	$139^{+57}_{-44}$
Alt.	$-309 \pm 99$	$4.52^{+0.85}_{-0.67}$	$1055^{+82}_{-58}$	$4276^{+353}_{-366}$	$139^{+75}_{-57}$

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

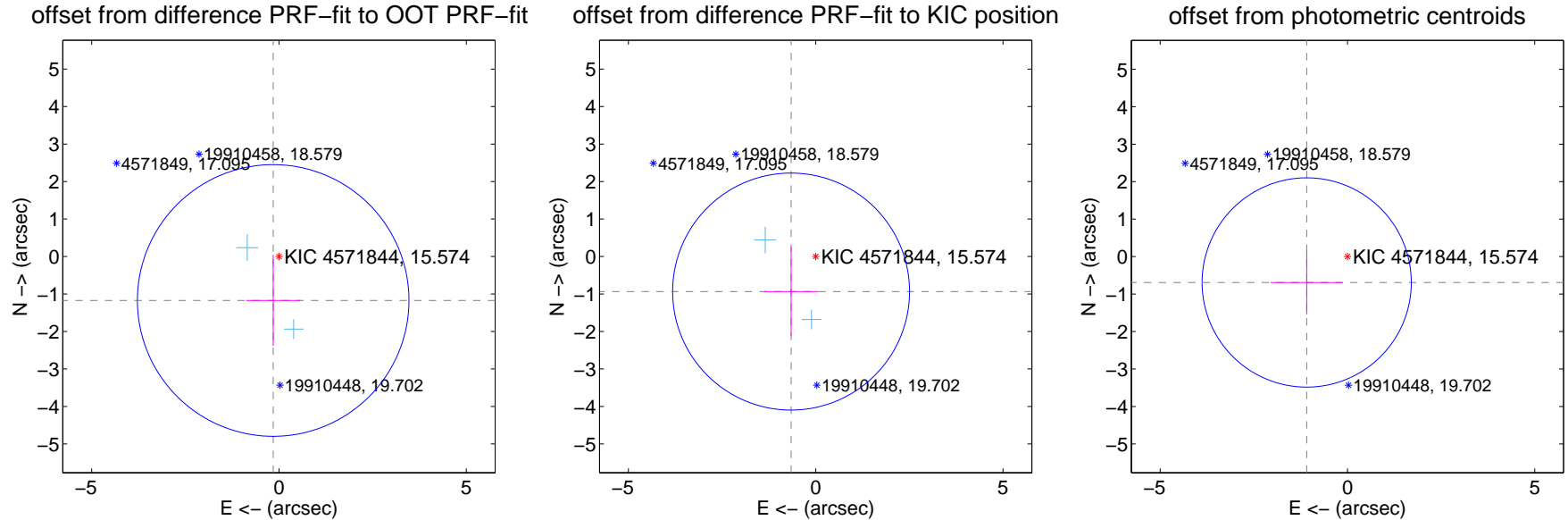
## DV Centroid Data

Supplemental centroid analysis for 004571844-01. Kepler magnitude: 15.57. Transit SNR 13.05

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.54 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.183 \pm 1.208$	0.98	$0.155 \pm 0.723$	$-1.173 \pm 1.215$
PRF-fit source offset from KIC position	$1.143 \pm 1.054$	1.08	$0.658 \pm 0.718$	$-0.935 \pm 1.185$
photometric centroid source offset	$1.29 \pm 0.93$	1.38	$1.09 \pm 0.96$	$-0.69 \pm 0.85$



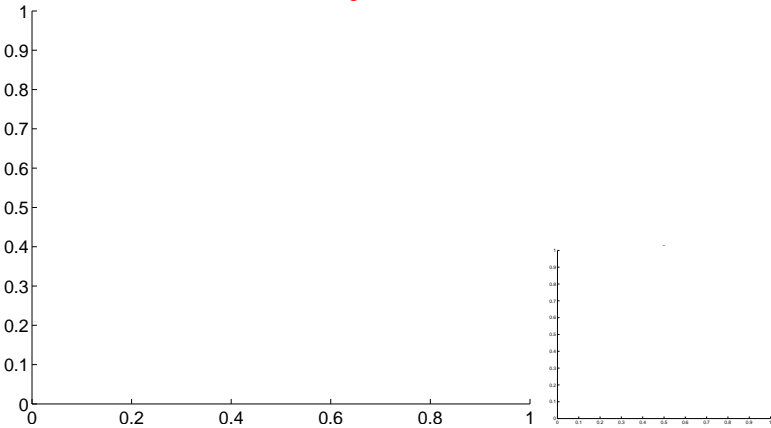
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

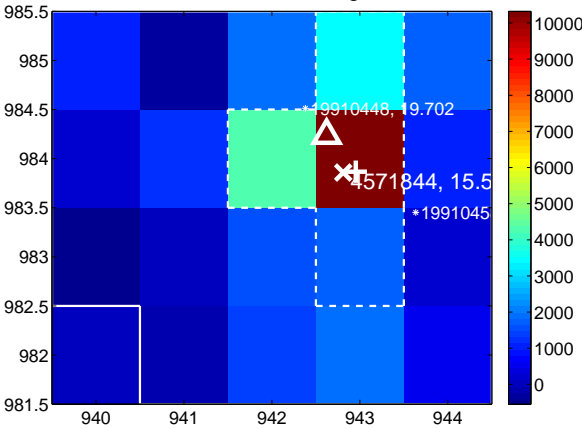
Q1 no difference image



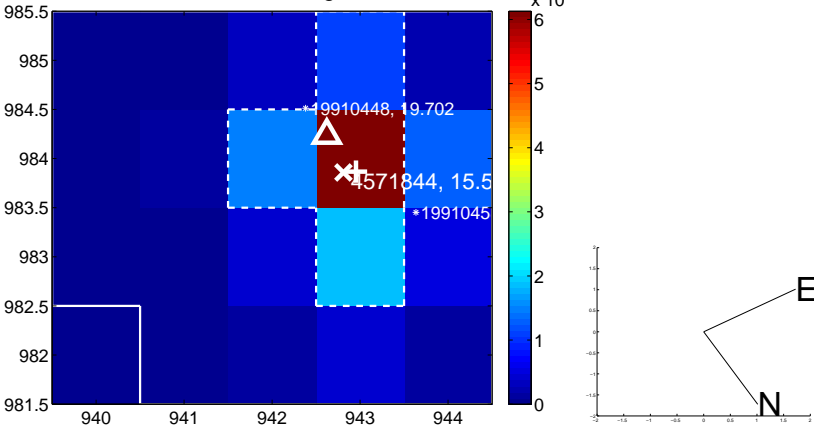
Q1 no OOT image



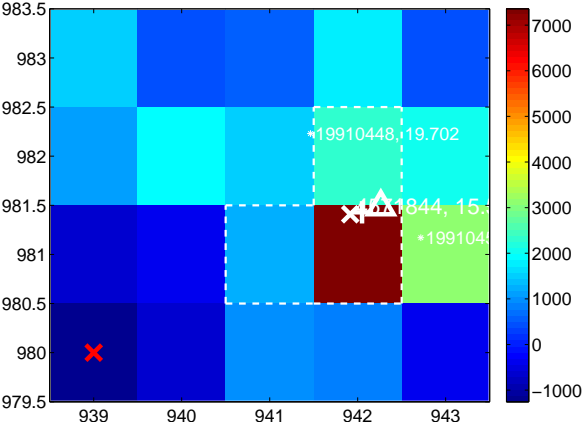
Q2 difference image



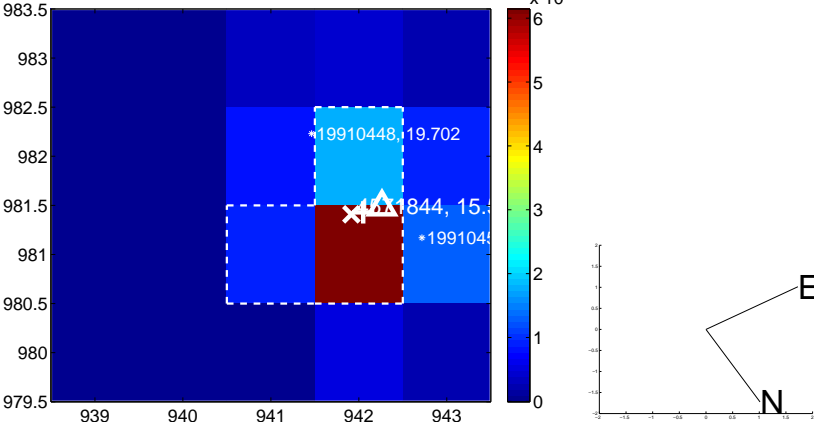
Q2 OOT image



Q3 difference image



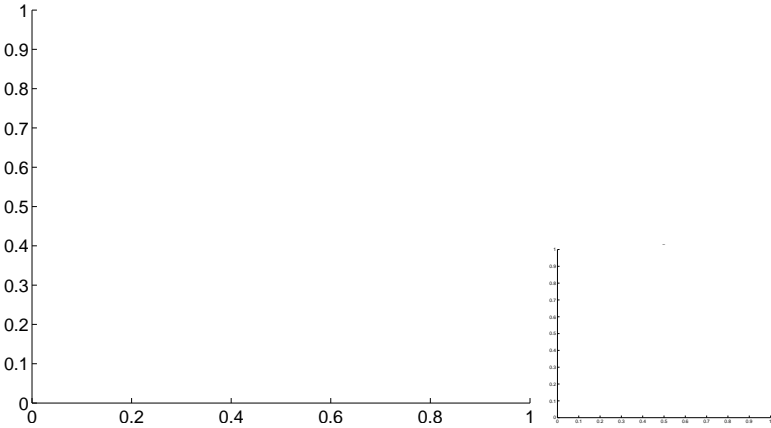
Q3 OOT image



Q4 no difference image



Q4 no OOT image



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



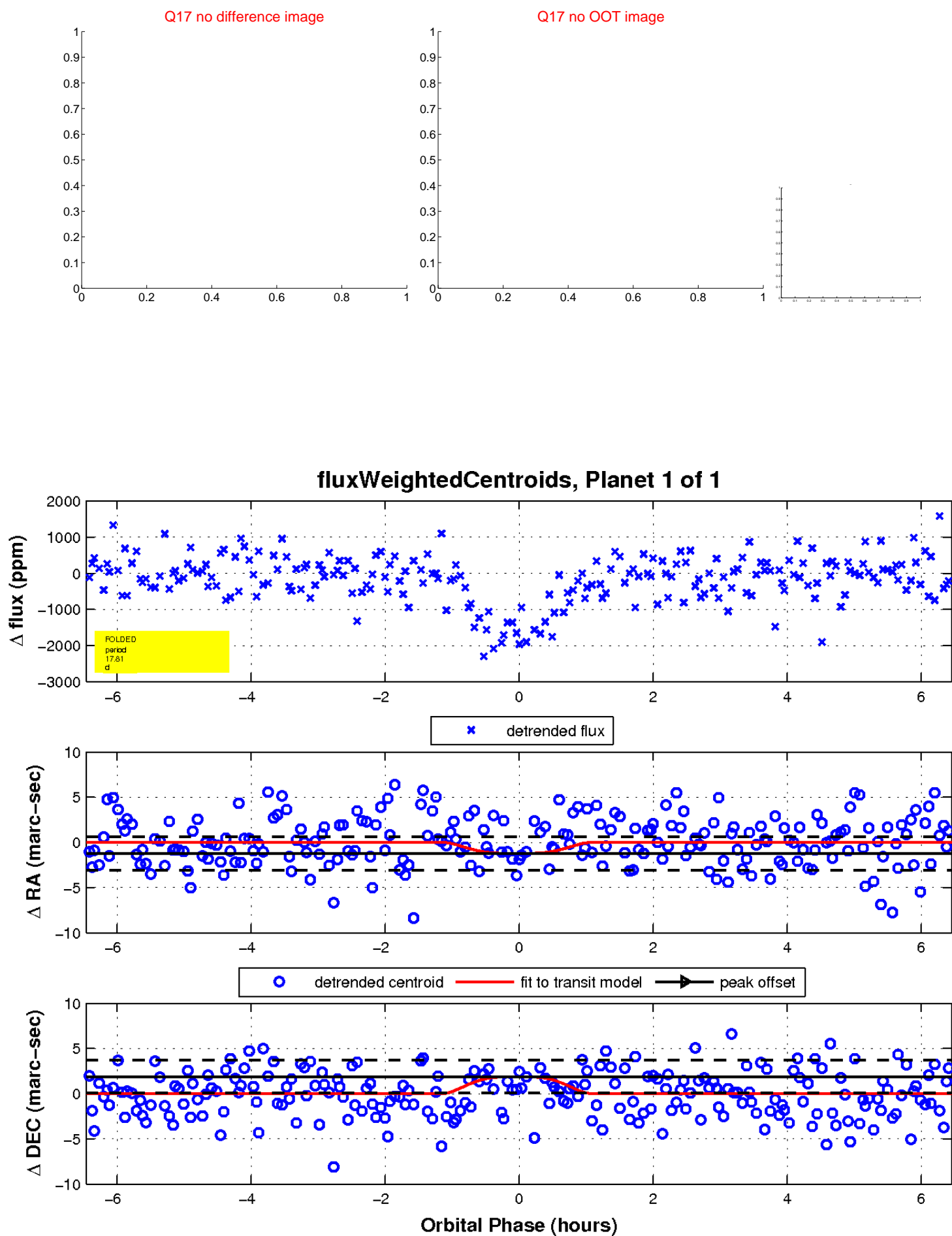


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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





UKIRT Image

Declination

