

# KIC 004768731

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004768731-01	OBS	No	385.907861	233.458303	14.3	14.375	10.4	1.2	2.80	7930	1.17	17.61

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004768731-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED

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

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

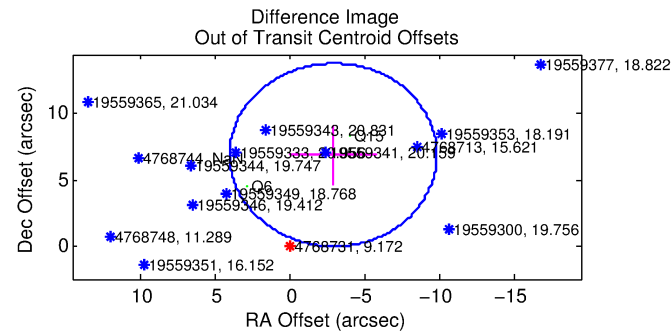
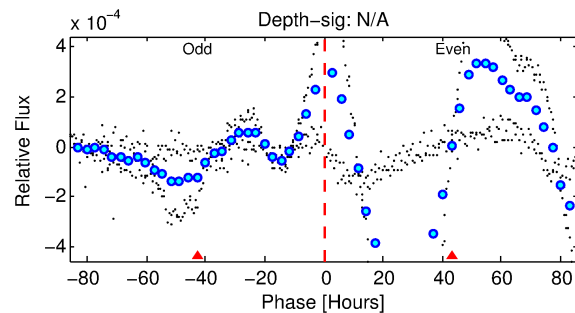
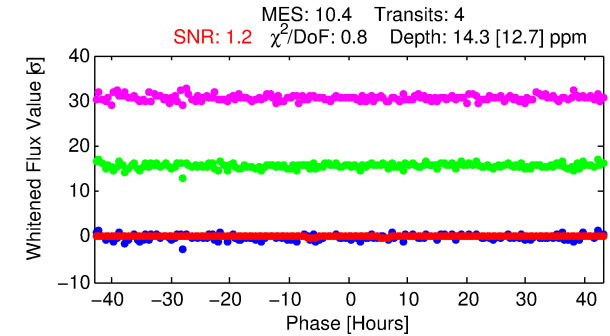
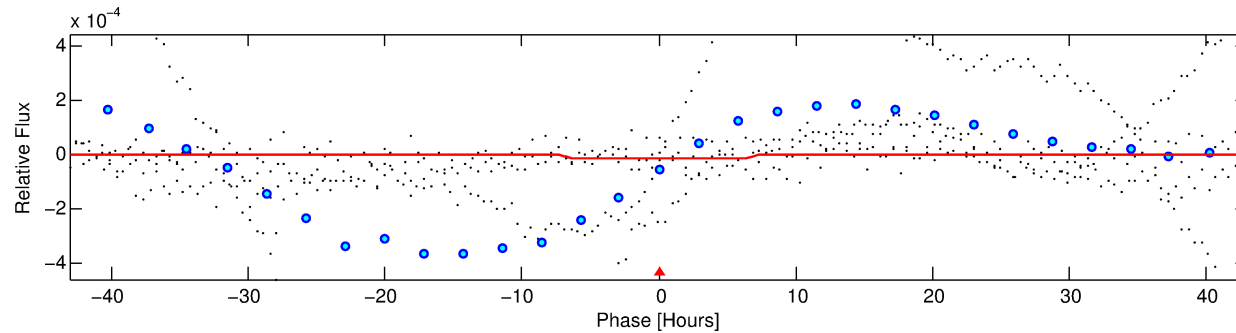
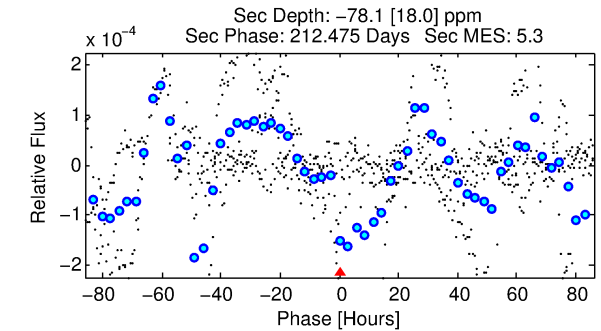
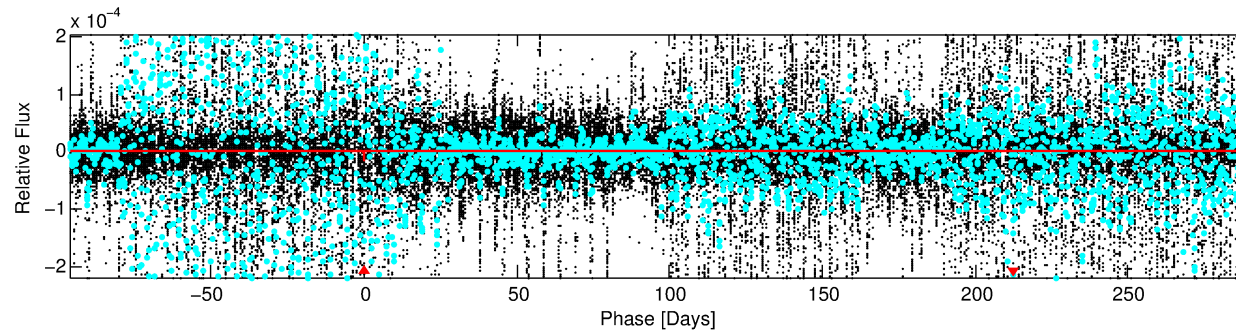
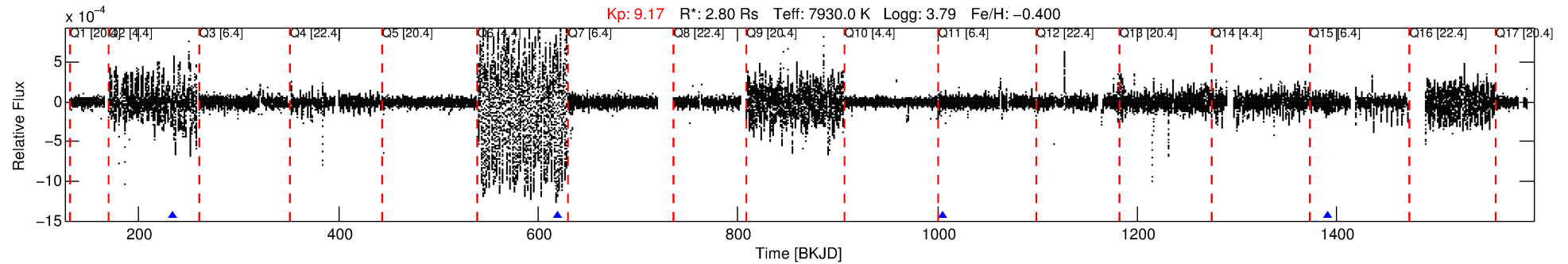
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004768731-01

No Significant Match Found

# DV One-Page Summary

KIC: 4768731 Candidate: 1 of 1 Period: 385.908 d



## DV Fit Results:

Period = 385.90786 [0.02448] d  
Epoch = 233.4583 [0.0456] BKJD  
Rp/R\* = 0.0038 [0.0024]  
a/R\* = 124.75 [268.66]  
b = 0.80 [0.98]  
Seff = 17.61 [12.75]  
Teq = 522 [95] K  
Rp = 1.17 [0.91] Re  
a = 1.2576 [0.5515] AU  
Ag = N/A  
Teffp = N/A

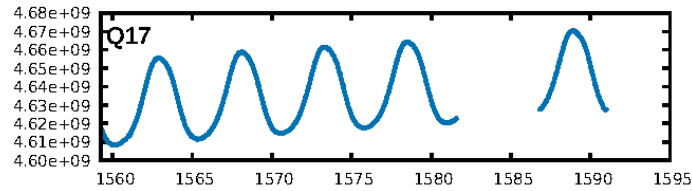
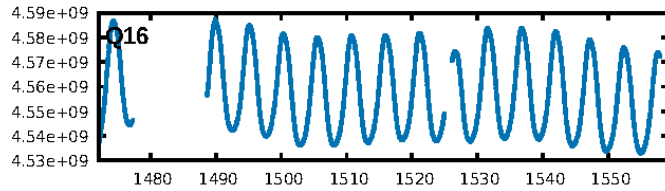
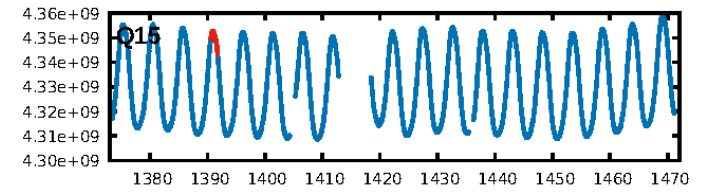
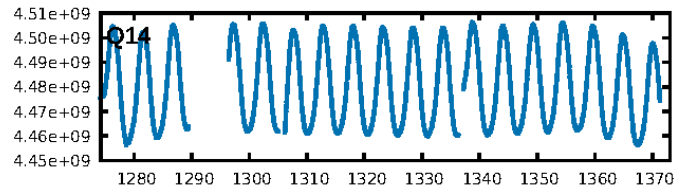
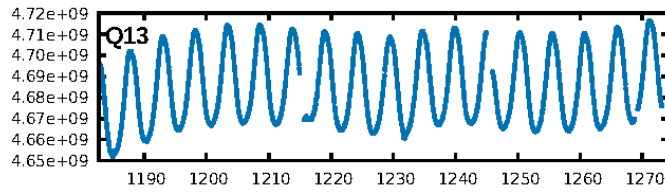
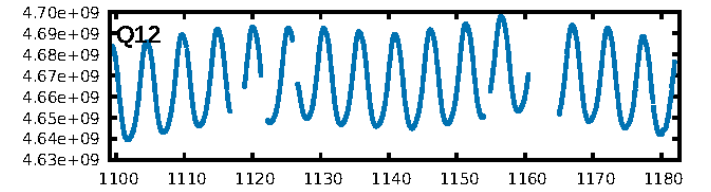
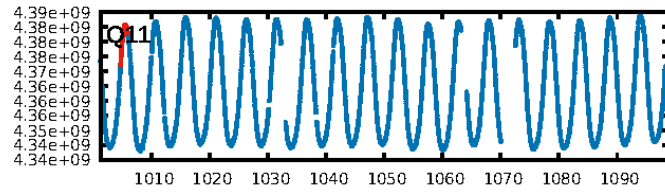
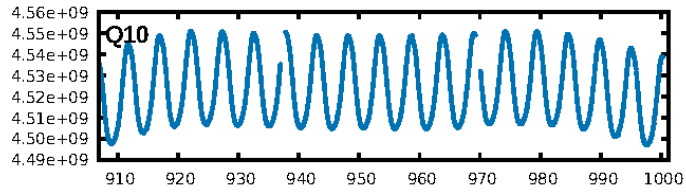
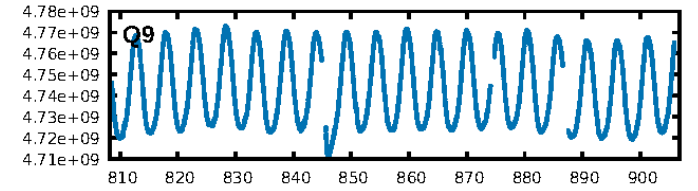
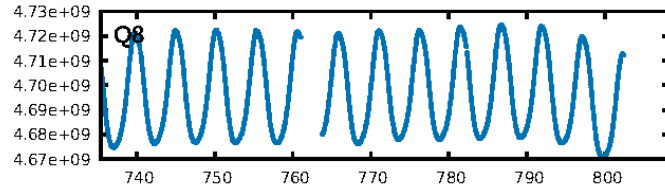
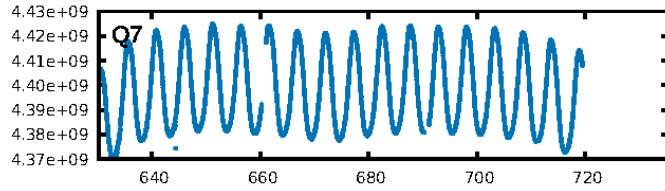
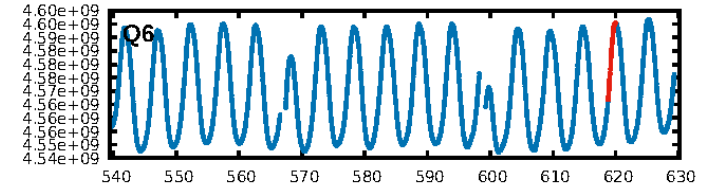
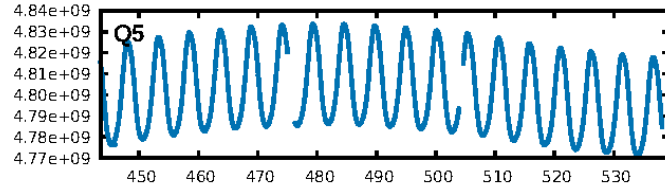
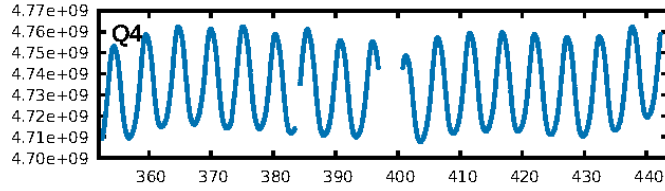
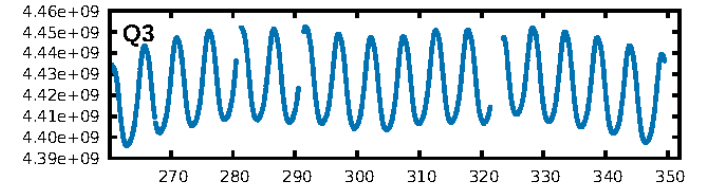
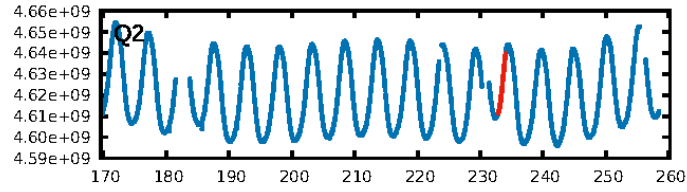
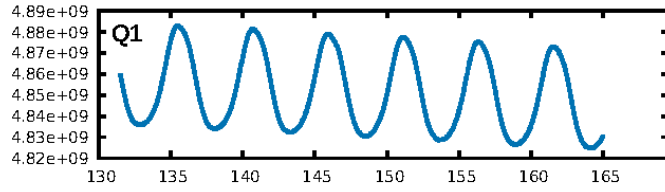
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 37.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 8.15e-11  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 10.5%  
Centroid-so: 56.404 arcsec [1.20 $\sigma$ ]  
OotOffset-rm: 7.493 arcsec [3.25 $\sigma$ ]  
KicOffset-st: 1/1/0/0 [2]  
KicOffset-st: 1/1/0/0 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [3/3]

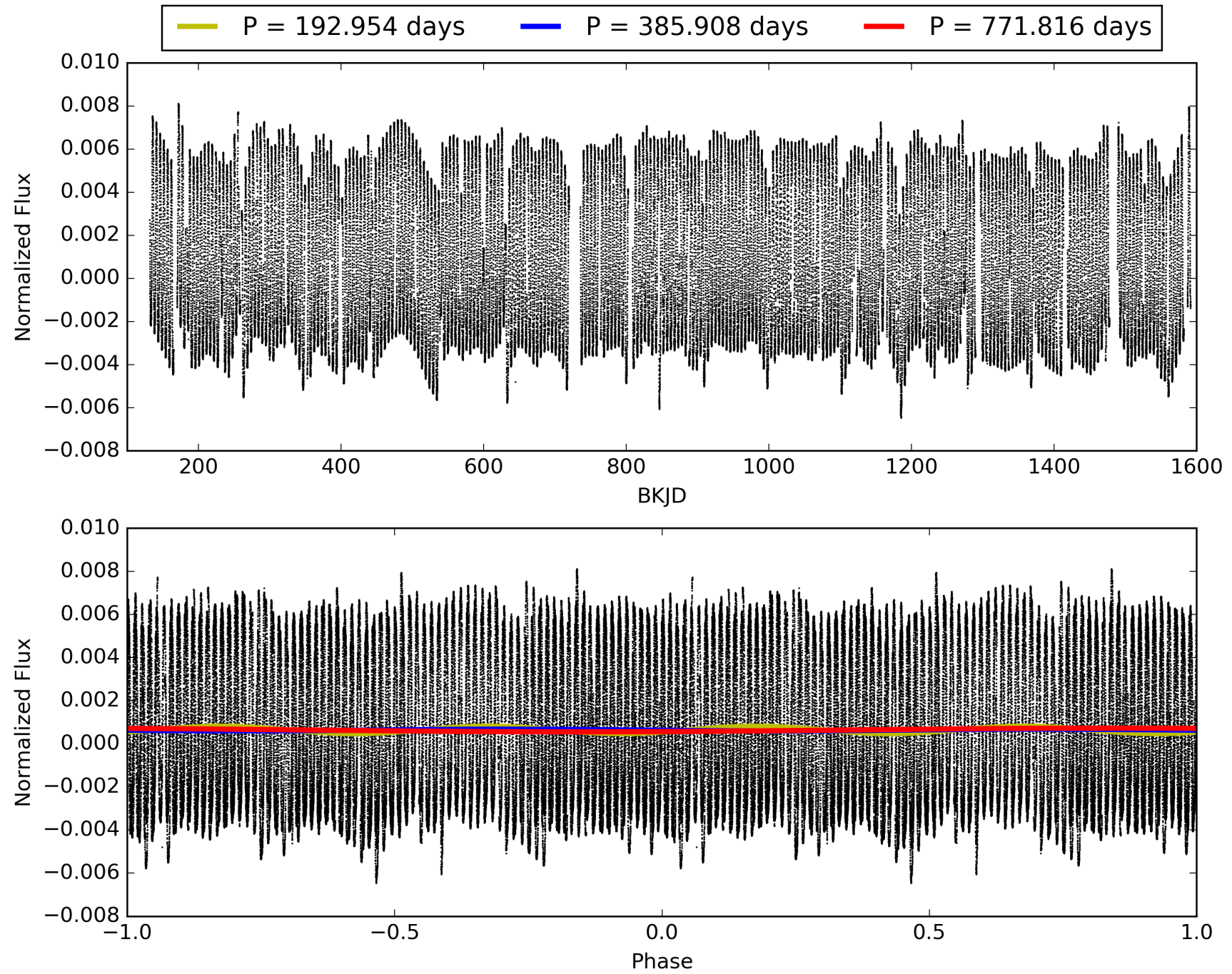
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:46:33 Z

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

# TCE 004768731-01, PDC Light Curves

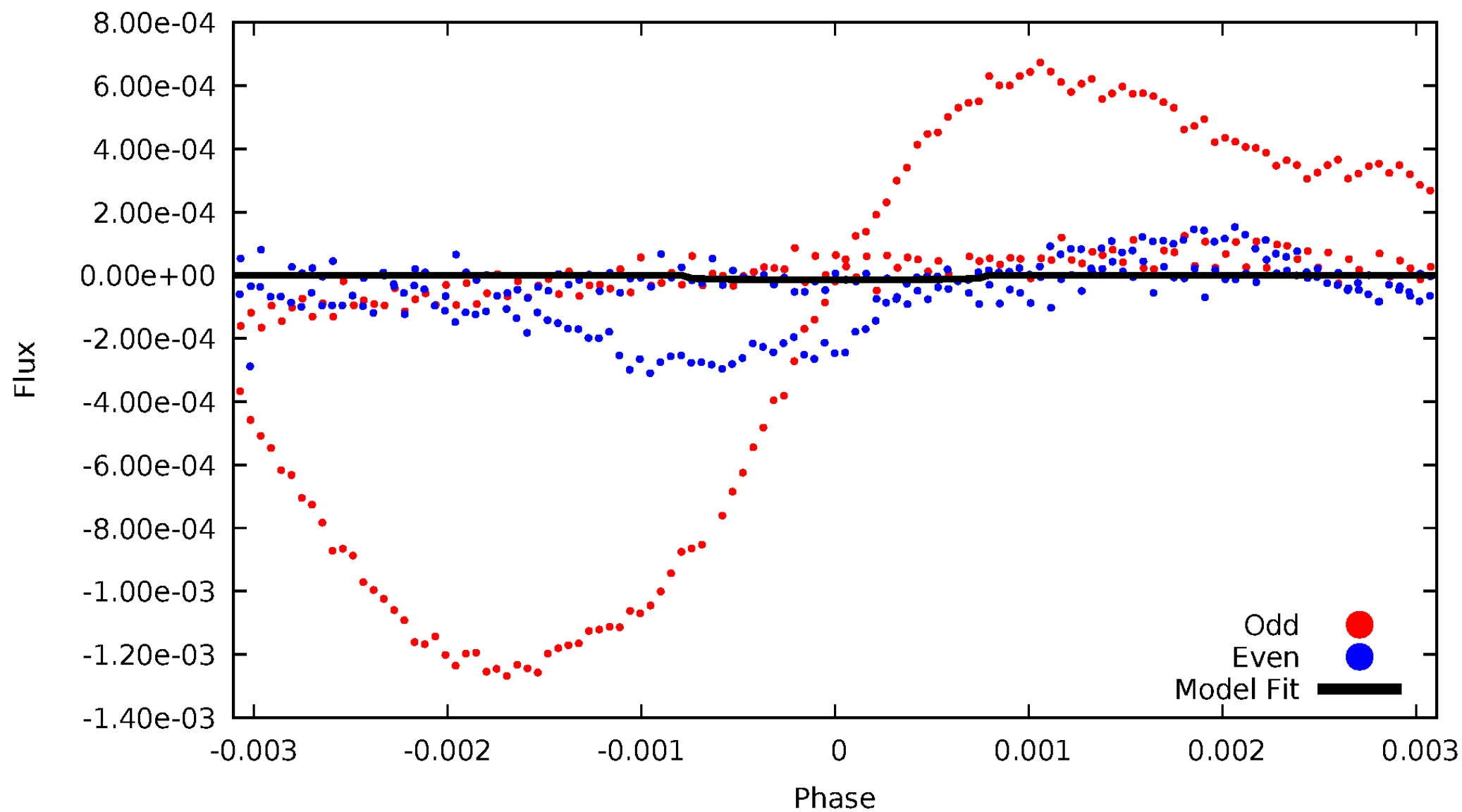


# TCE 004768731-01



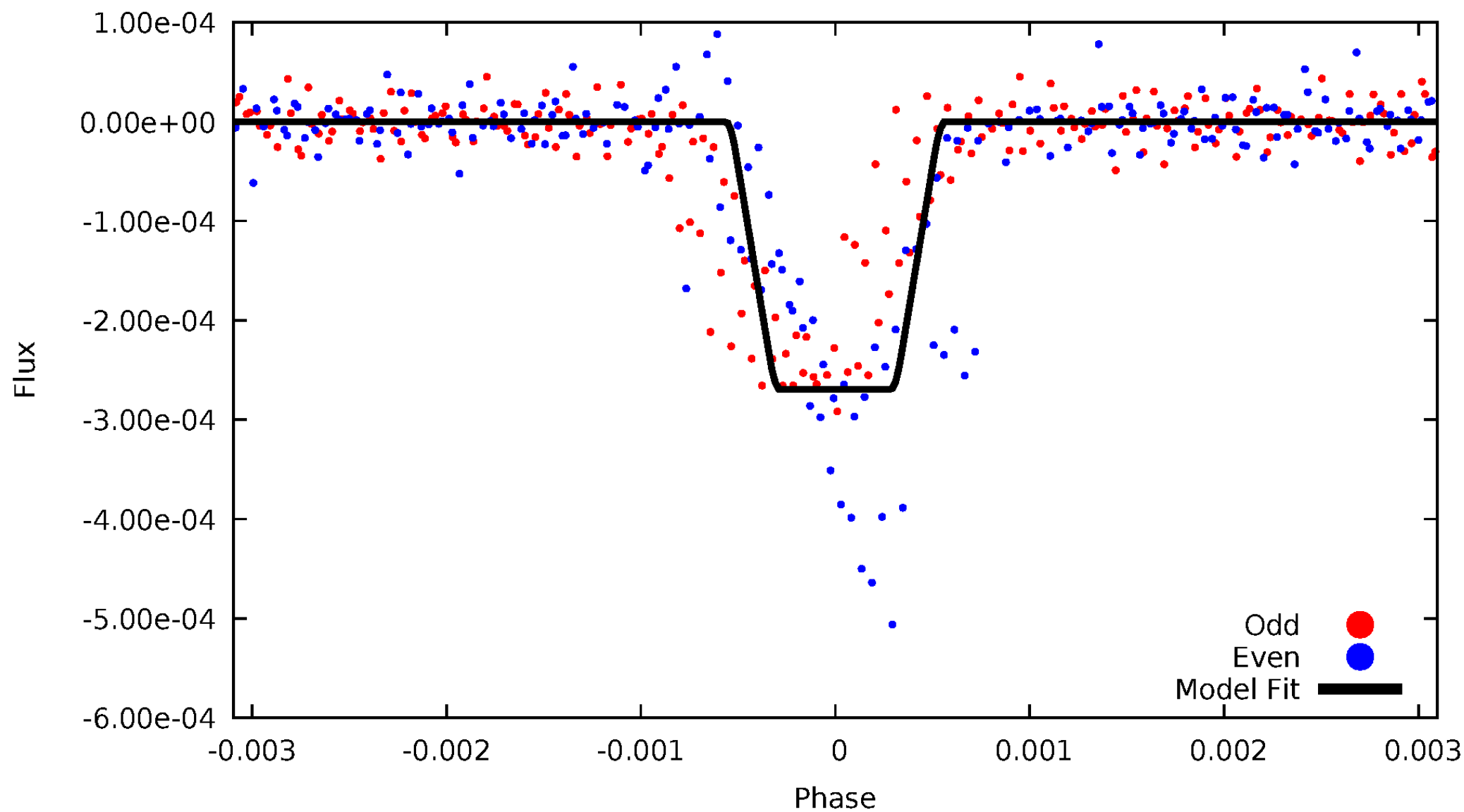
# DV Odd/Even

TCE 004768731-01



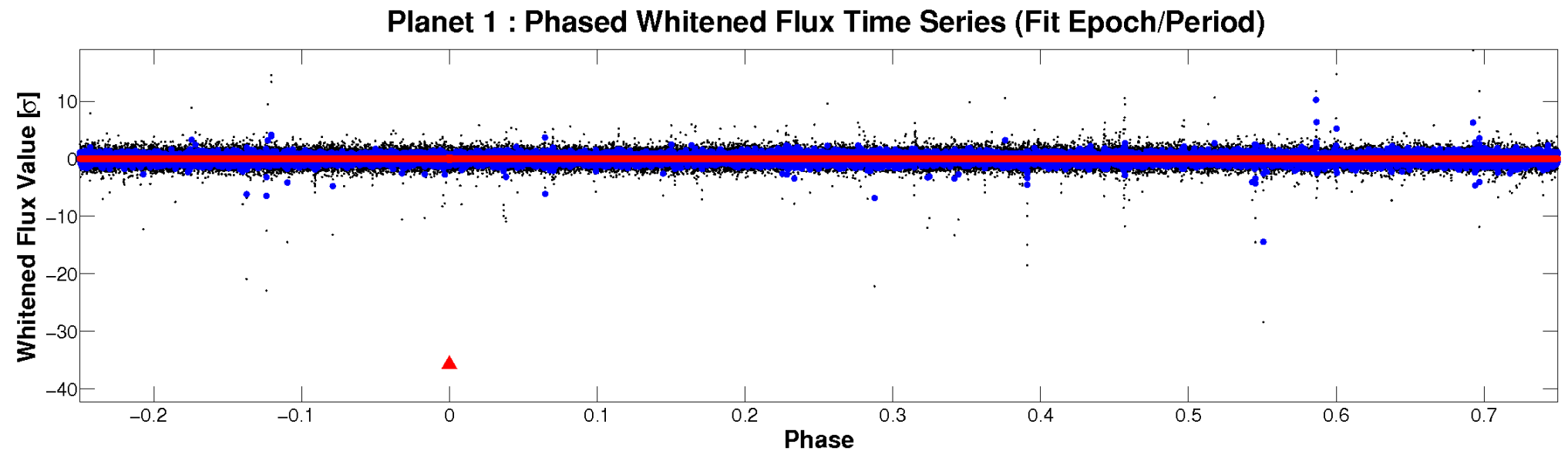
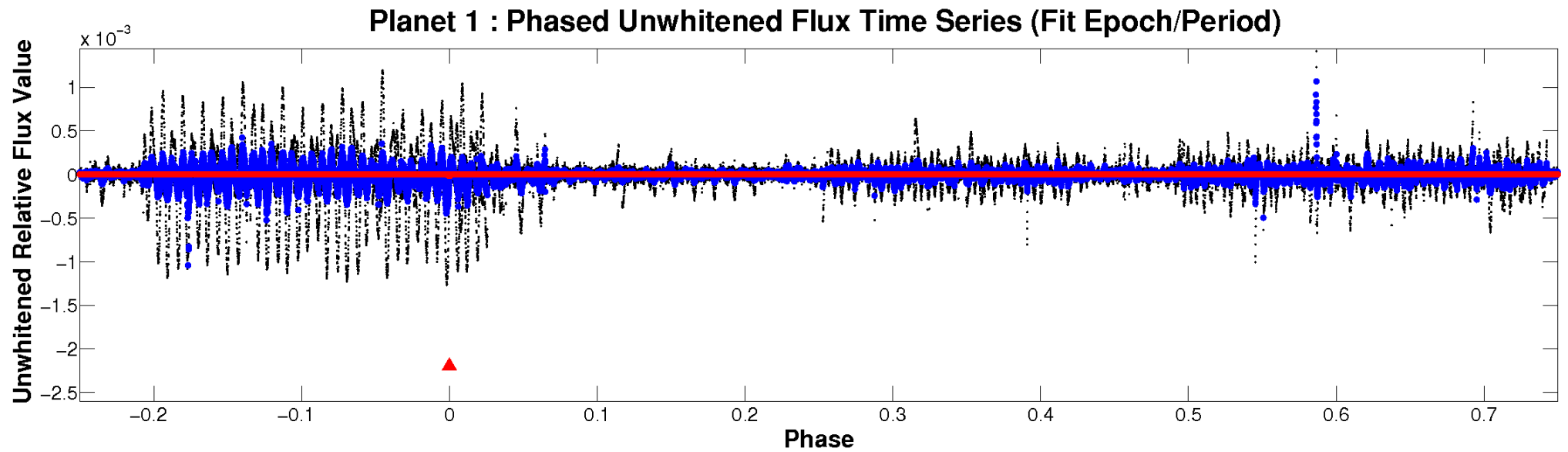
# ALT Odd/Even

TCE 004768731-01



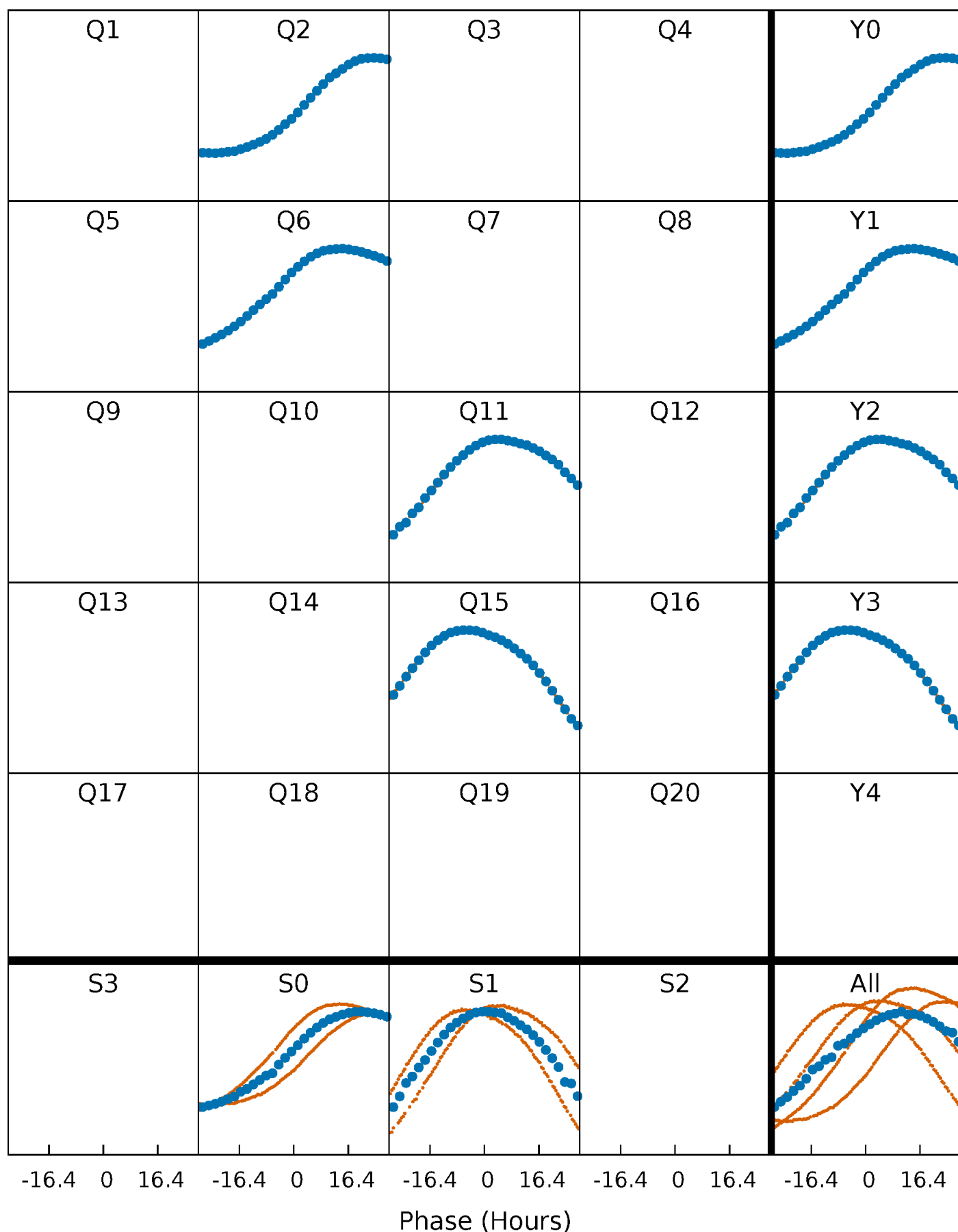


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

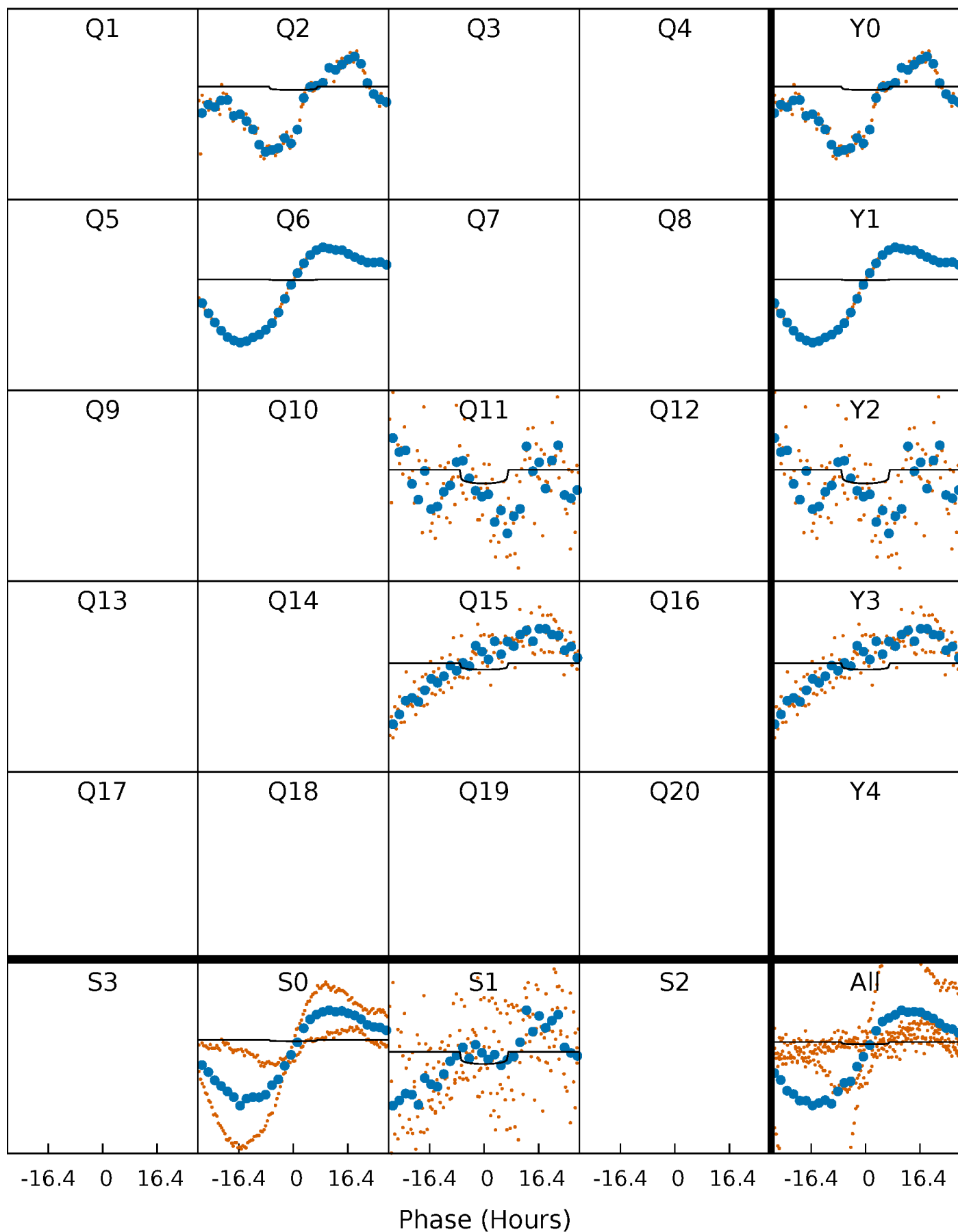
TCE 004768731-01 P=385.907861 Days  $T_0=233.458303$  (BKJD)





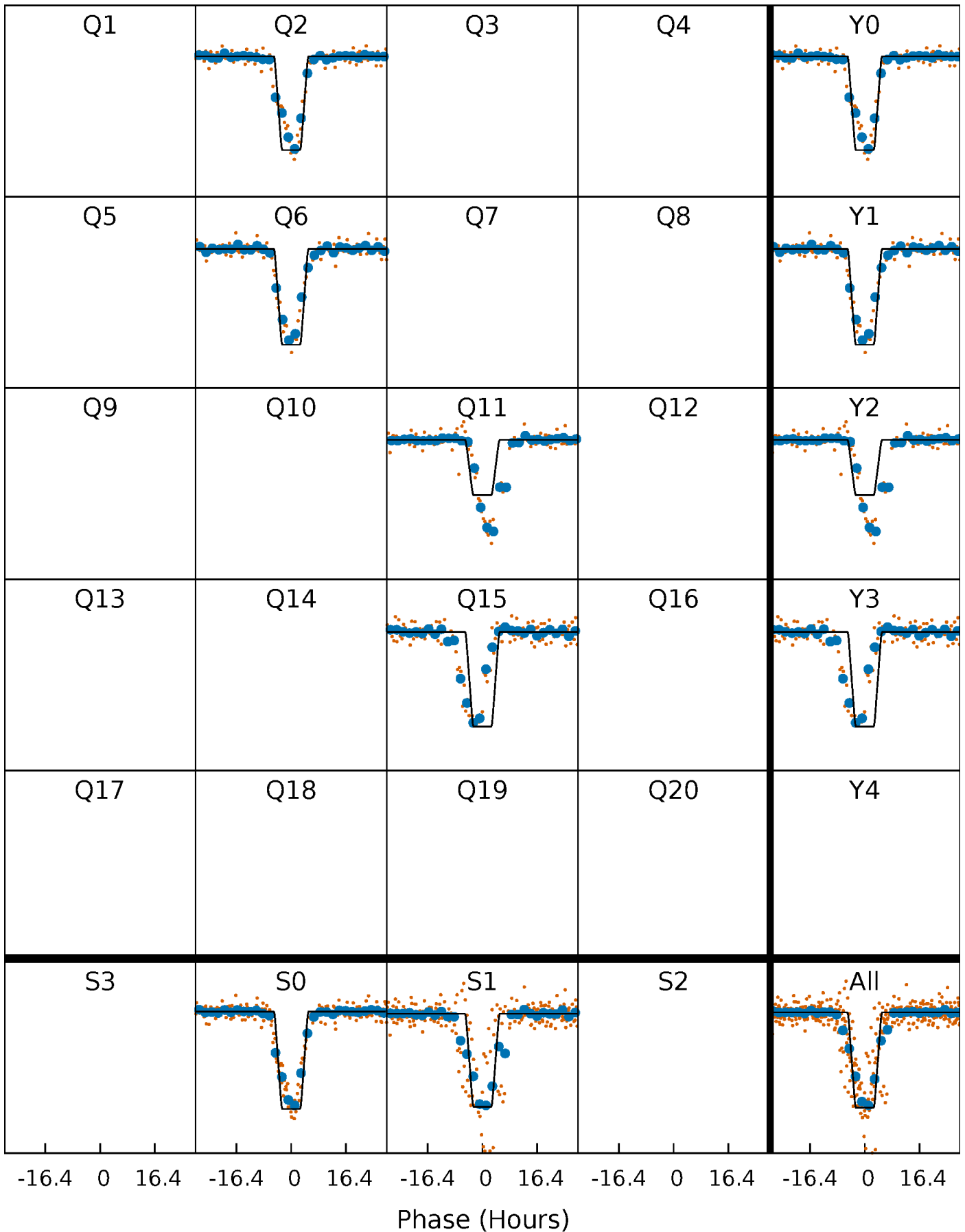
# DV Quarter-Phased Transit Curves

TCE 004768731-01 P=385.907861 Days  $T_0=233.458303$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

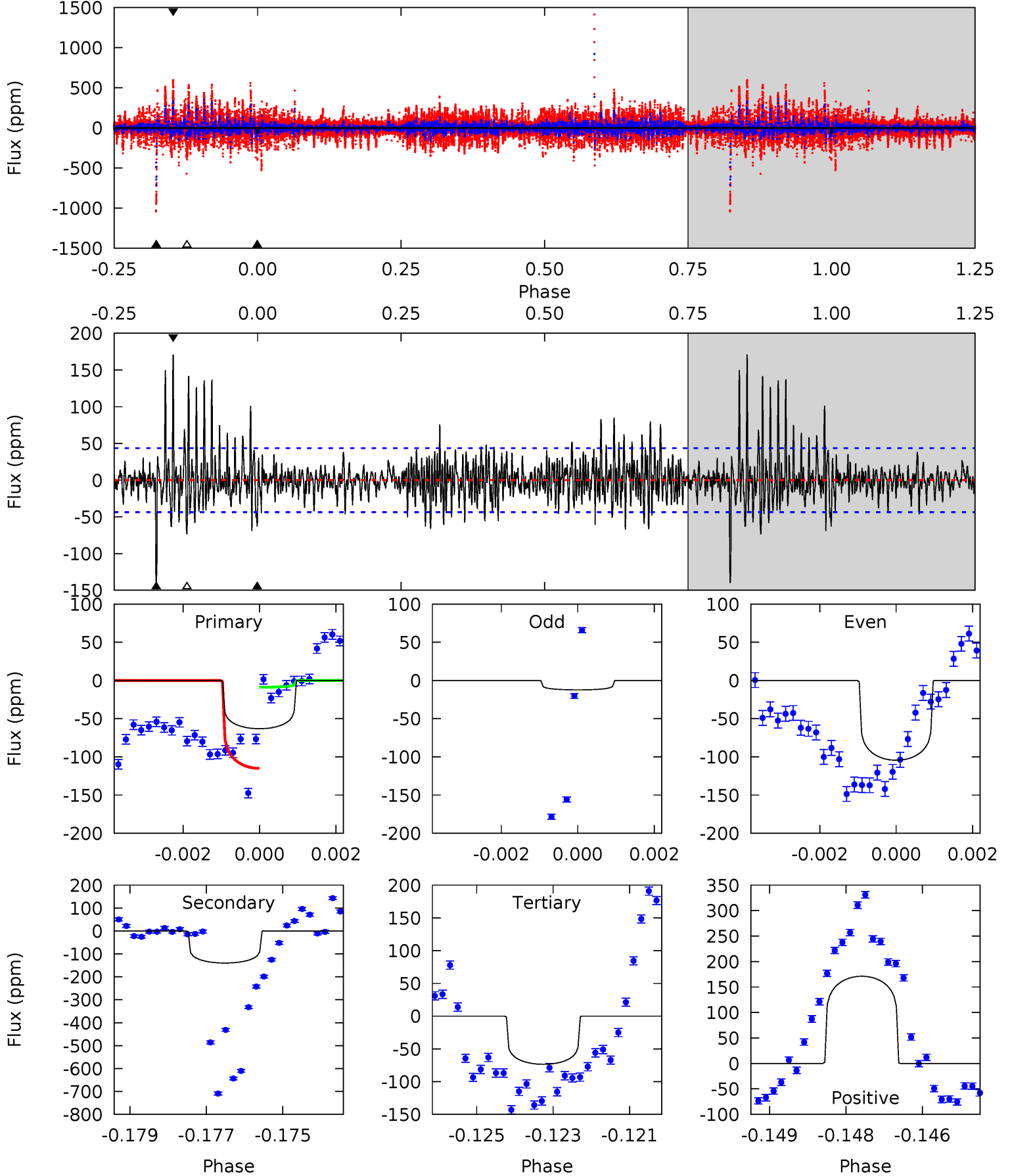
TCE 004768731-01 P=385.288396 Days  $T_0=233.420363$  (BKJD)



# DV Model-Shift Uniqueness Test

004768731-01, P = 385.907861 Days, E = 233.458303 Days

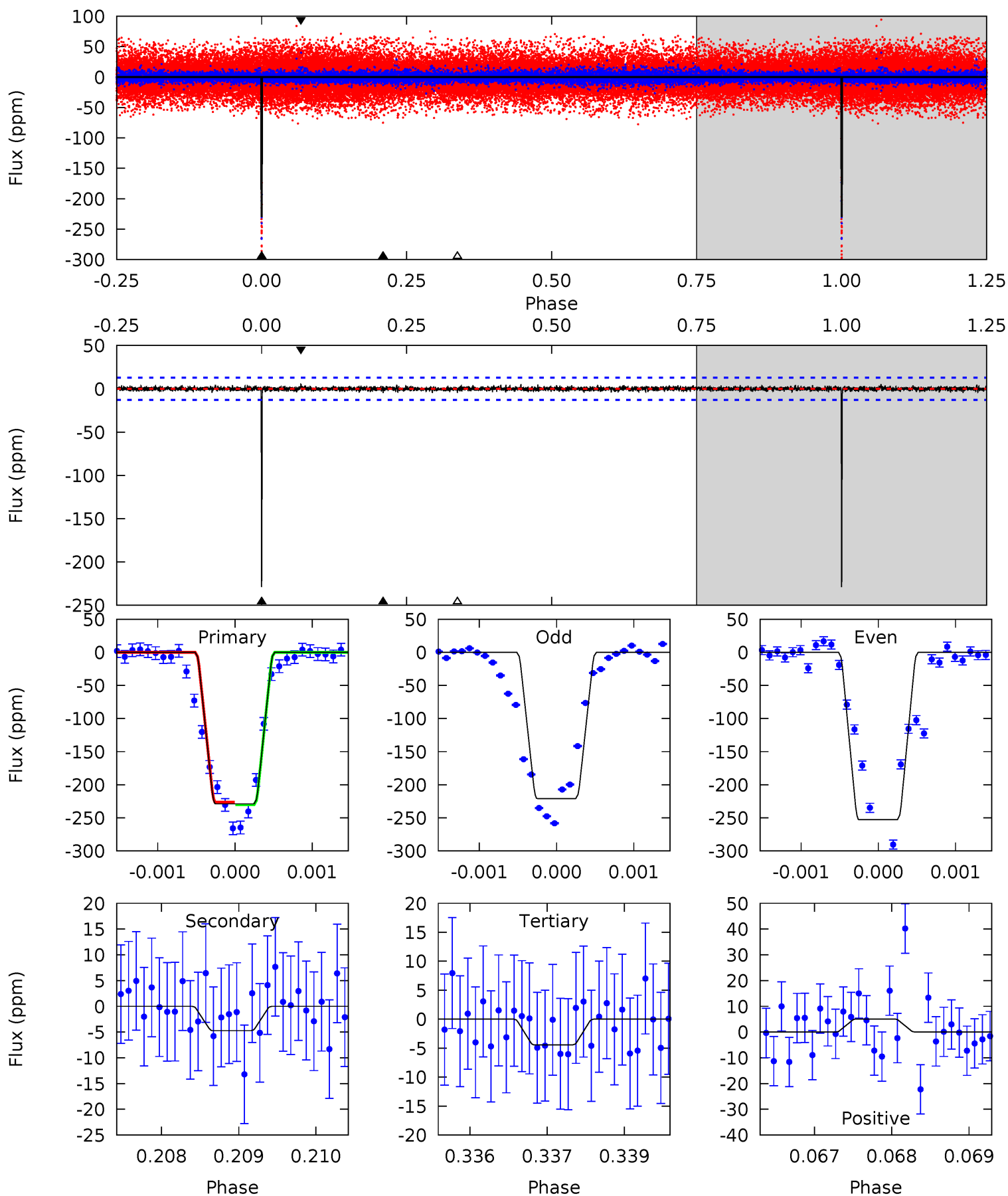
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.78	17.2	9.05	21.1	5.36	3.15	3.05	-1.27	-13.3	8.17	-3.85	2.76	1.37	0.55	6.39



# Alt Model-Shift Uniqueness Test

004768731-01, P = 385.288396 Days, E = 233.420363 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
97.1	2.00	1.88	2.15	5.43	3.26	0.49	95.2	94.9	0.12	-0.15	7.48	1.04	0.02	0.74



### Stellar Parameters For KIC 004768731

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7930^{+251}_{-307}$	$3.793^{+0.417}_{-0.074}$	$-0.400^{+0.200}_{-0.300}$	$2.804^{+0.315}_{-1.261}$	$1.782^{+0.129}_{-0.387}$	$0.114^{+0.406}_{-0.026}$
	+3%/-4%	+11%/-2%	+50%/-75%	+11%/-45%	+7%/-22%	+357%/-23%
Source	KIC0	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 004768731-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-140 \pm 8$	$1.07^{+0.78}_{-0.62}$	$715^{+44}_{-79}$	$19918^{+43410}_{-7670}$	$106230^{+481806}_{-70607}$
Alt.	$-5 \pm 2$	$4.58^{+1.11}_{-1.11}$	$708^{+46}_{-74}$	$3354^{+290}_{-357}$	$196^{+181}_{-109}$

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

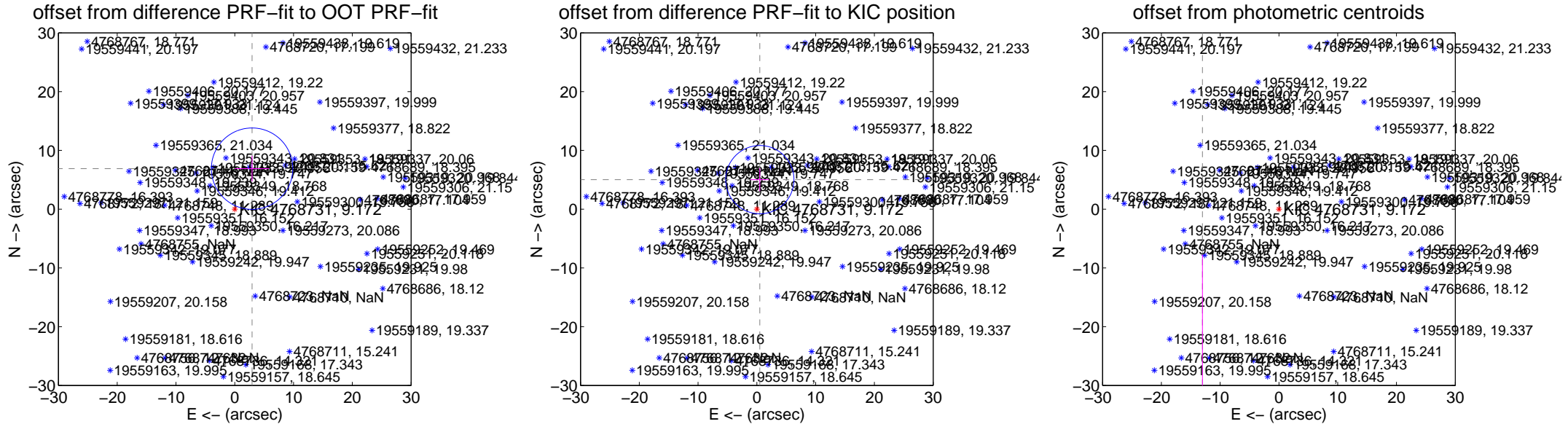
# DV Centroid Data

Supplemental centroid analysis for 004768731-01. **Kepler magnitude: 9.17.** Transit SNR 1.21

There are 0 quarters with good PRF difference image offsets

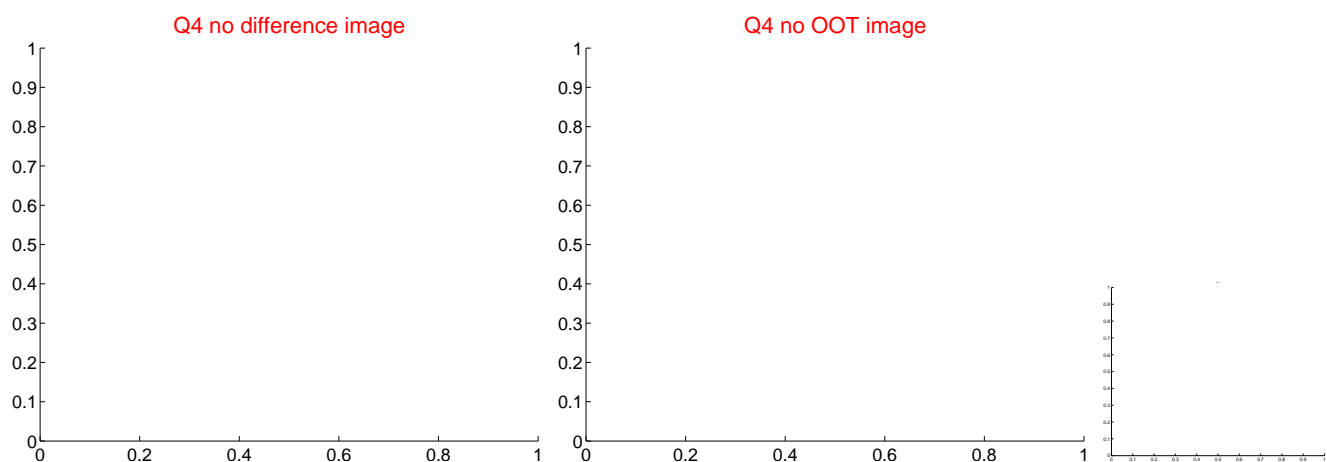
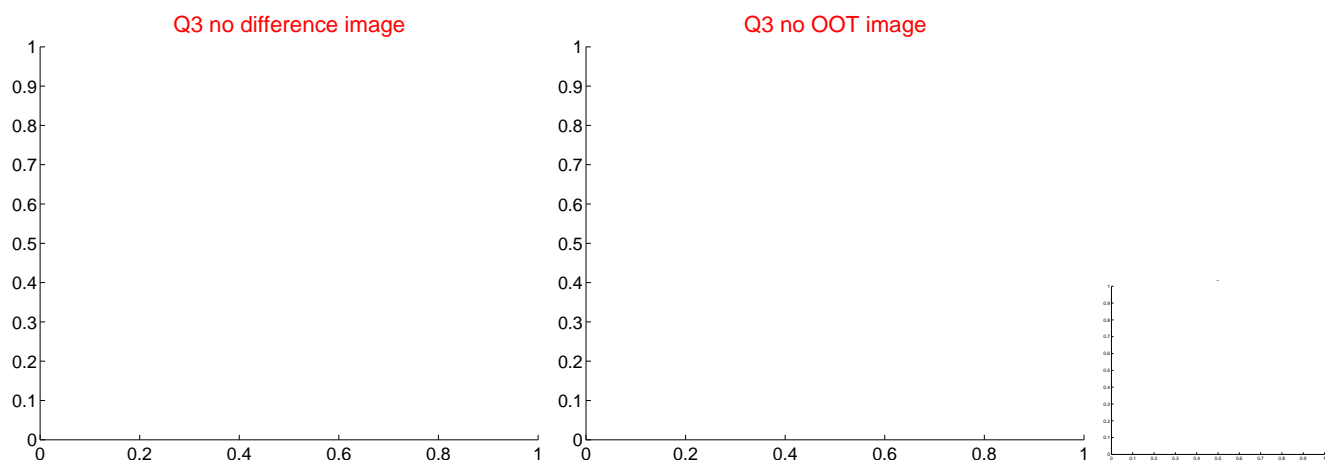
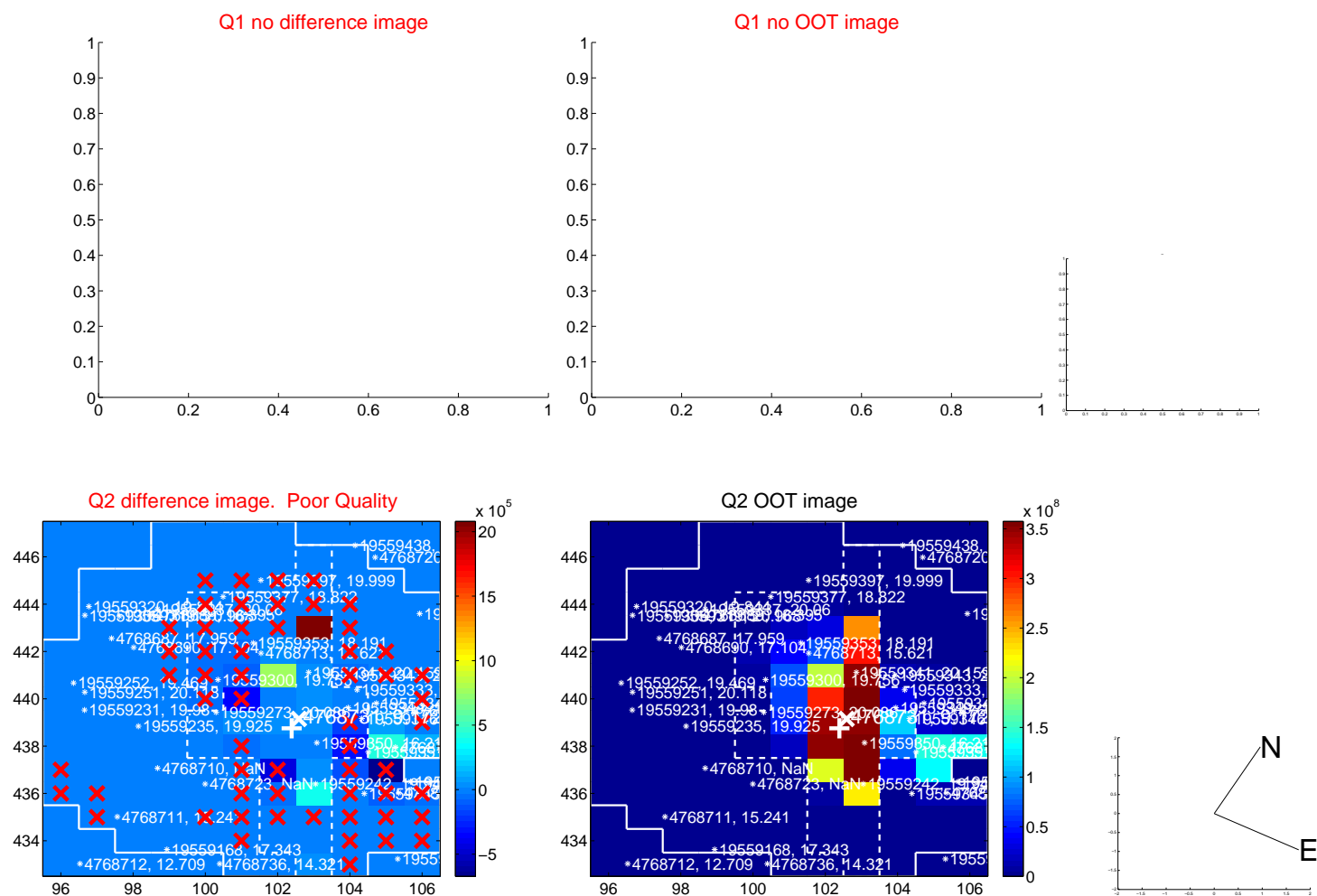
The OOT PRF centroid is offset from the target star catalog position by about 3.57 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>7.493 <math>\pm</math> 2.308</b>	<b>3.25</b>	-2.946 $\pm$ 2.895	6.889 $\pm$ 2.184
PRF-fit source offset from KIC position	5.047 $\pm$ 1.936	2.61	-0.508 $\pm$ 1.559	5.021 $\pm$ 1.940
photometric centroid source offset	56.40 $\pm$ 46.84	1.20	13.01 $\pm$ 40.99	-54.88 $\pm$ 47.14



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.



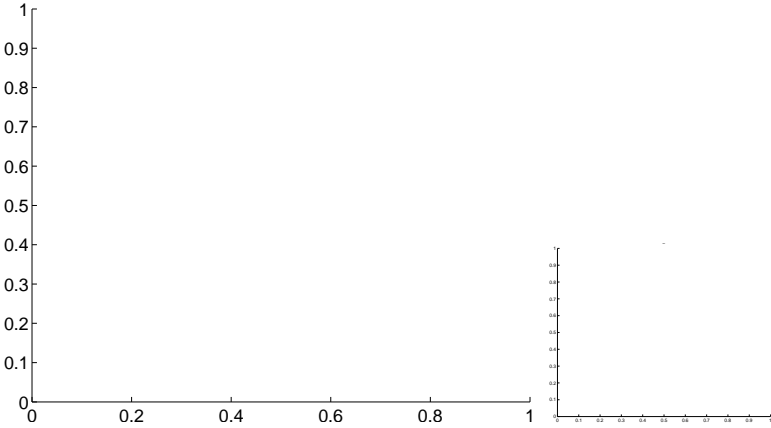


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

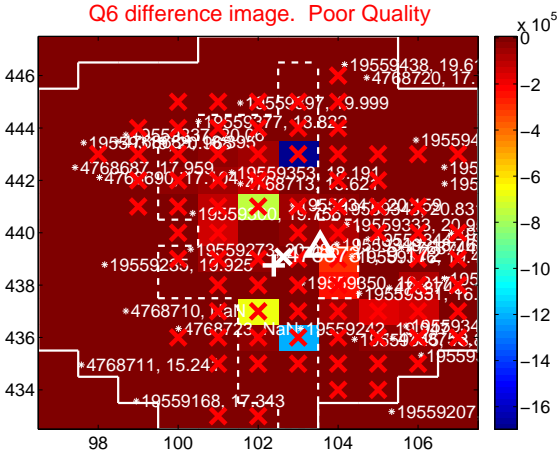
Q5 no difference image



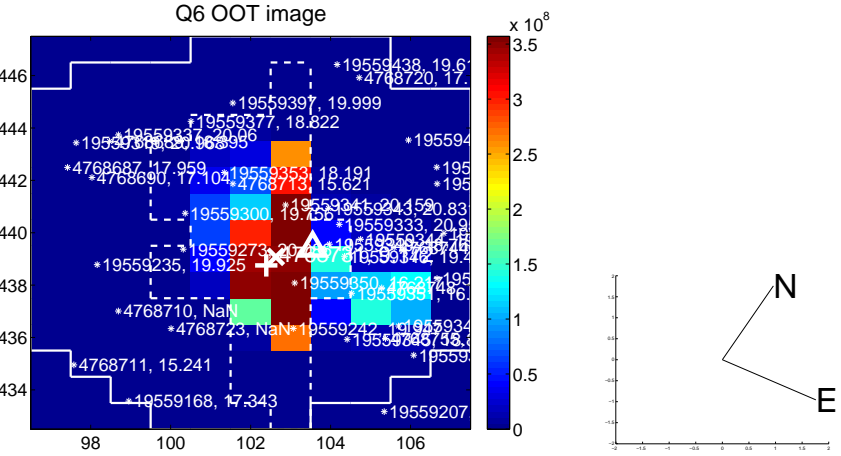
Q5 no OOT image



Q6 difference image. Poor Quality



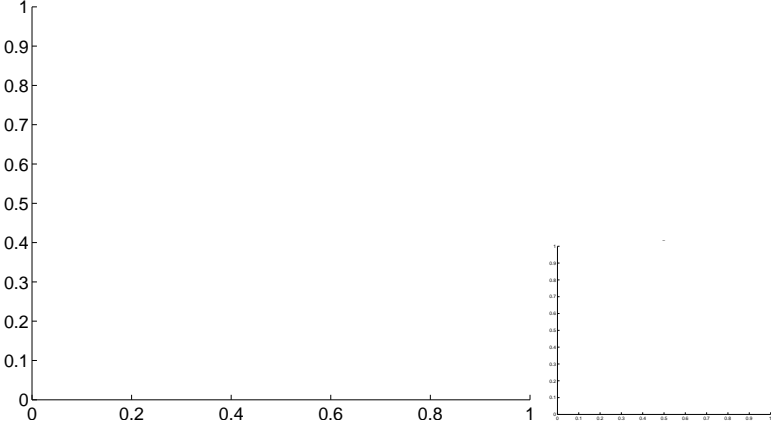
Q6 OOT image



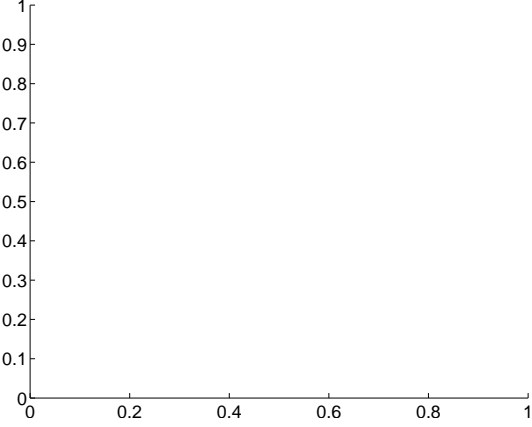
Q7 no difference image



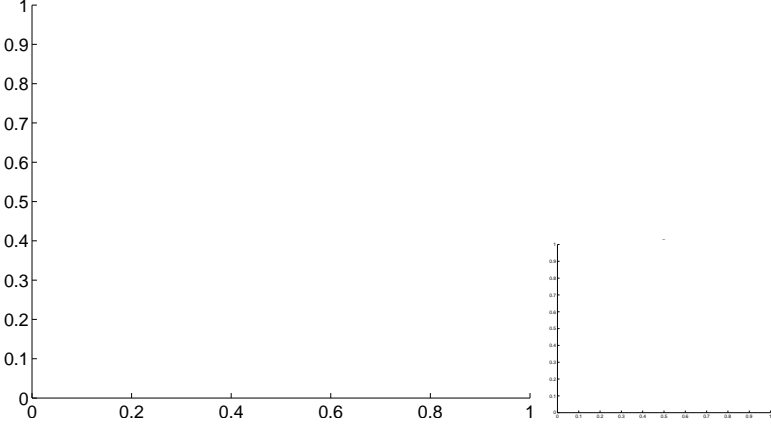
Q7 no OOT image



Q8 no difference image



Q8 no OOT image



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



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

Q13 no difference image



Q13 no OOT image



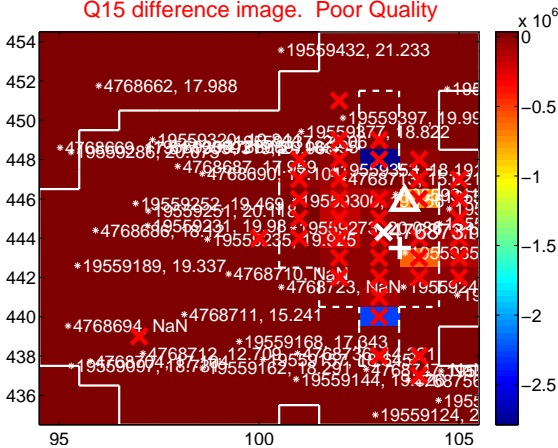
Q14 no difference image



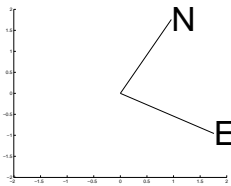
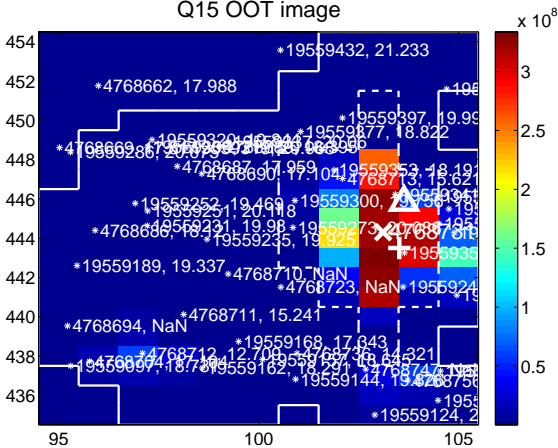
Q14 no OOT image



Q15 difference image. Poor Quality



Q15 OOT image



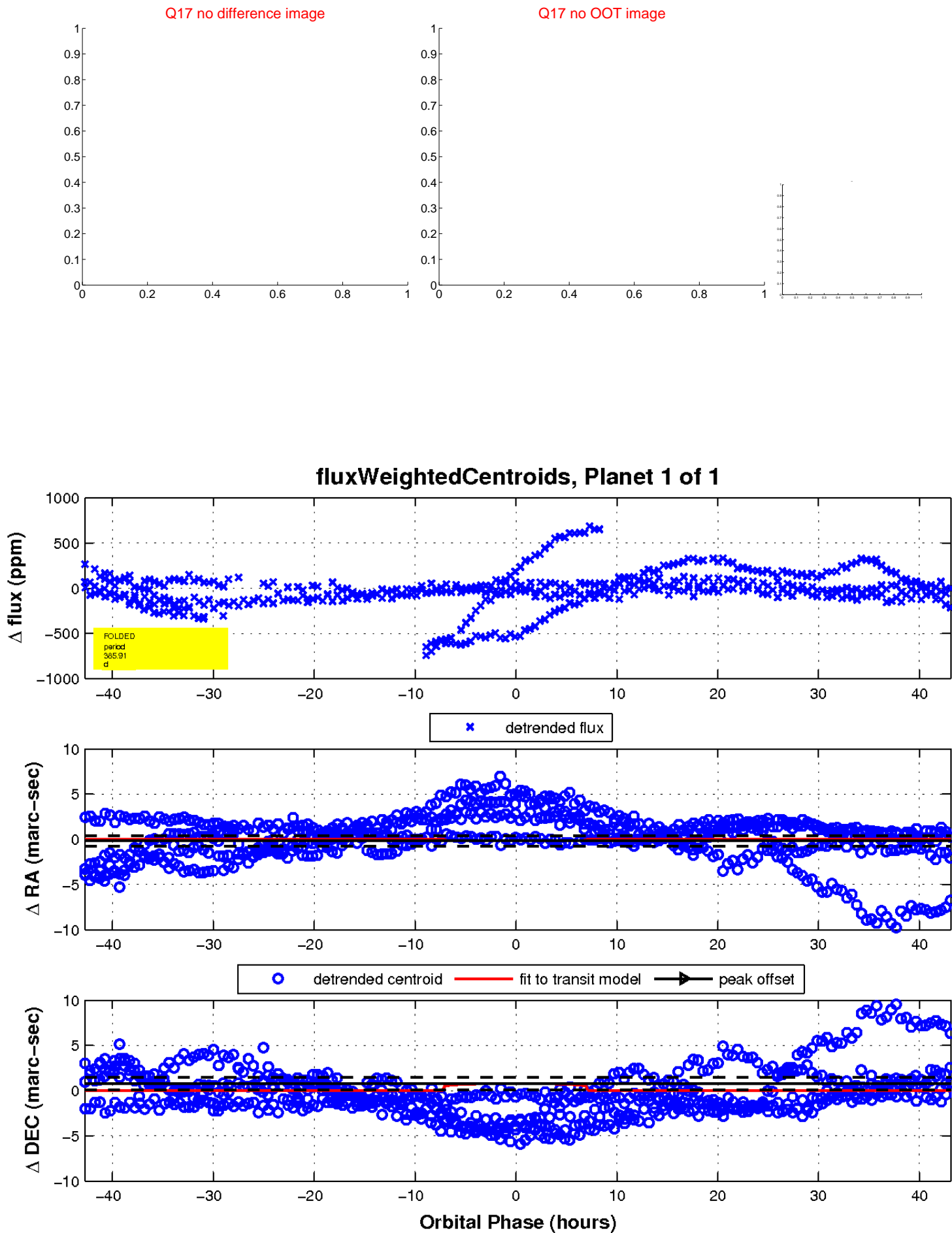
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

