

# KIC 003860413

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003860413-01	OBS	No	503.591618	213.866326	82.4	13.521	12.2	10.1	3.19	8359	3.23	17.96

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003860413-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—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.

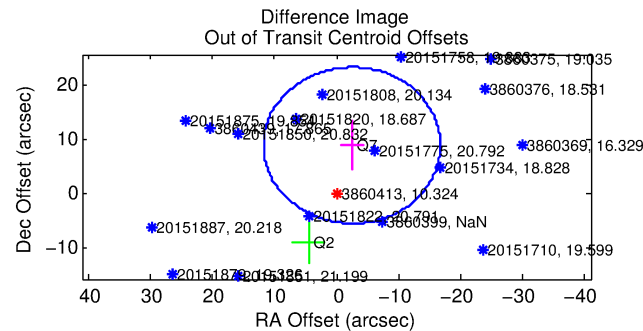
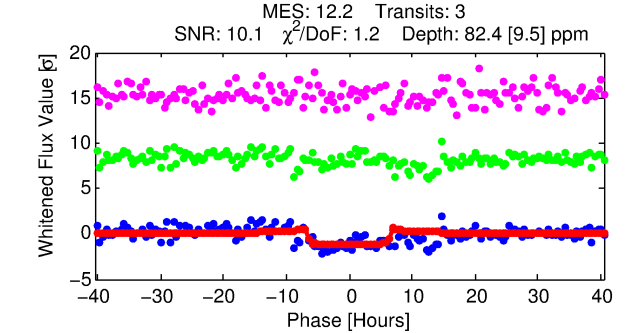
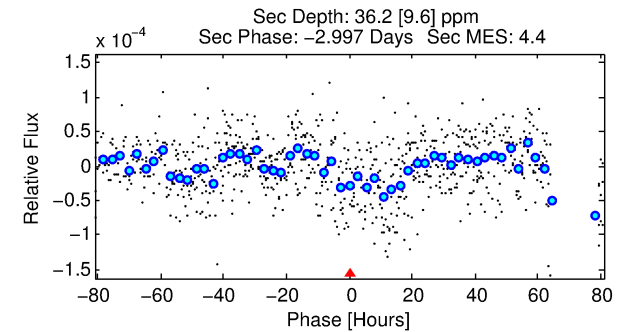
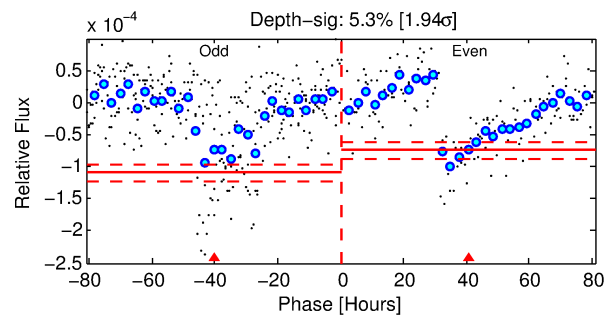
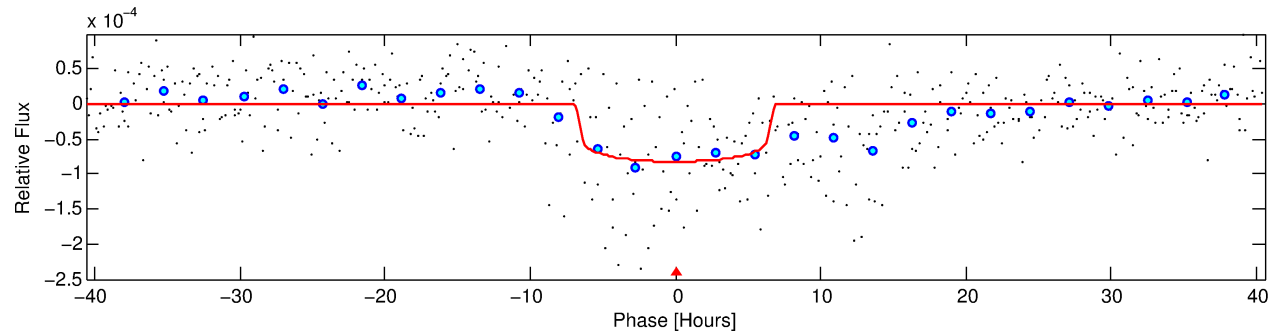
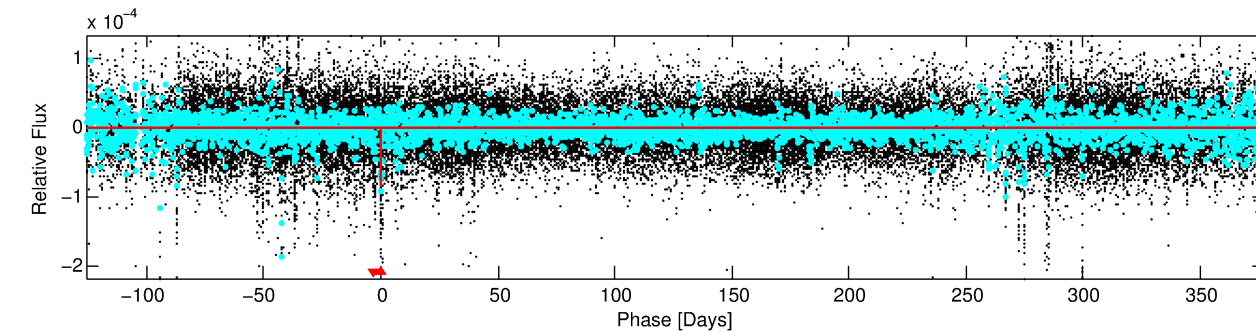
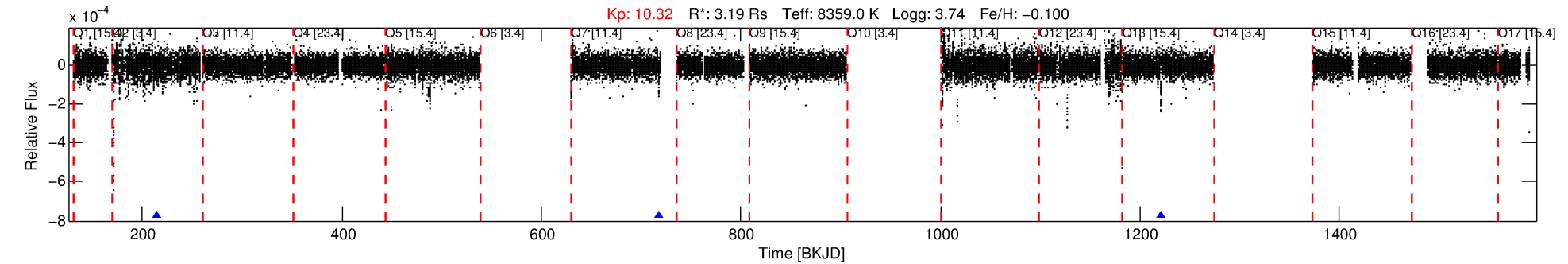
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003860413-01

No Significant Match Found

# DV One-Page Summary

KIC: 3860413 Candidate: 1 of 1 Period: 503.592 d



## DV Fit Results:

Period = 503.59162 [0.01267] d  
Epoch = 213.8663 [0.0132] BKJD  
Rp/R\* = 0.0093 [0.0020]  
a/R\* = 165.11 [208.47]  
b = 0.83 [0.49]  
Seff = 17.96 [13.94]  
Teq = 525 [102] K  
Rp = 3.22 [1.59] Re  
a = 1.5731 [0.6850] AU  
Ag = 4734.20 [4094.96] [1.16 $\sigma$ ]  
Teff = 6733 [1009] K [6.12 $\sigma$ ]

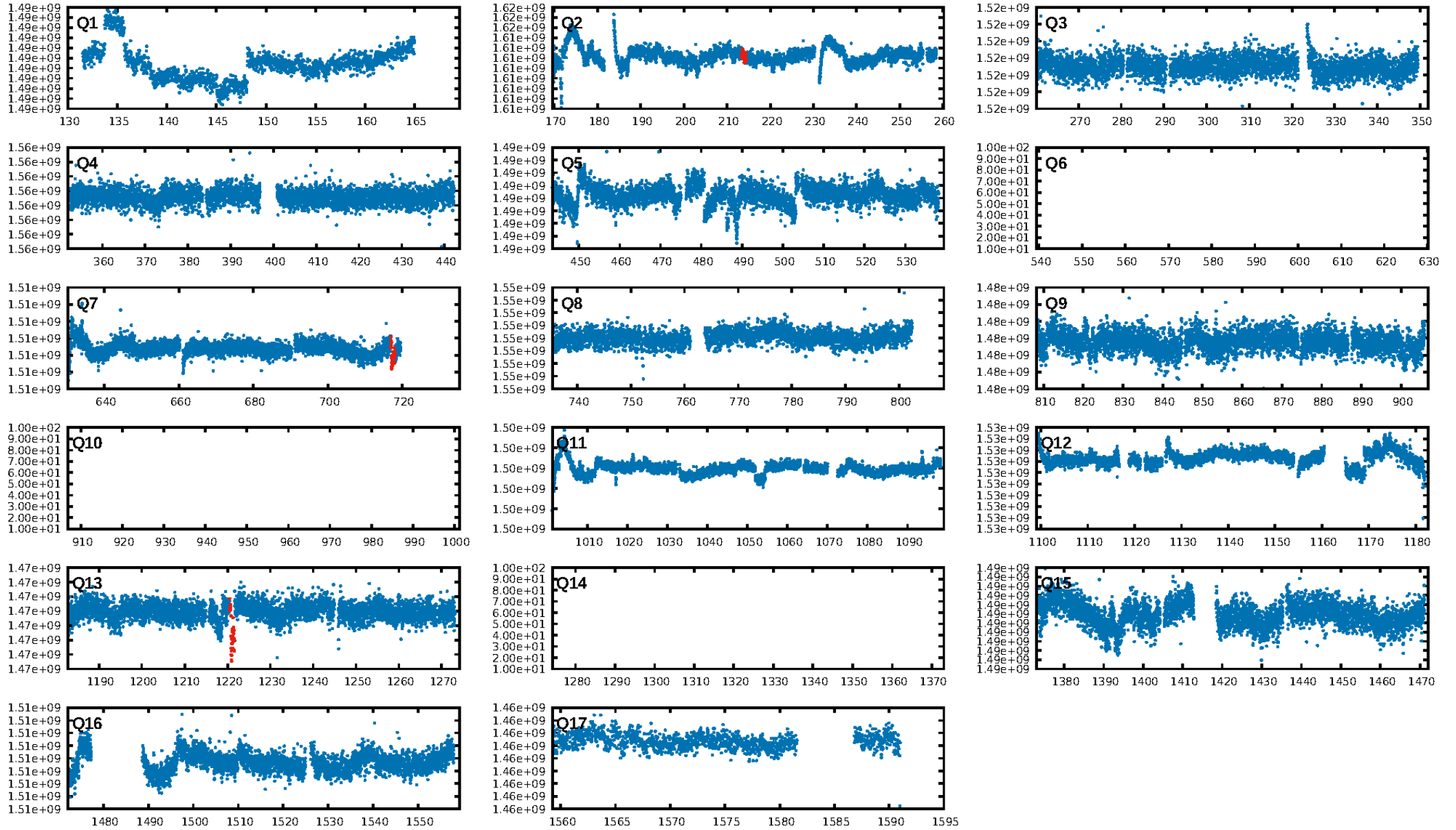
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 78.6%  
Bootstrap-pfa: 5.98e-13  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 84.5%  
Centroid-so: 1.080 arcsec [0.40 $\sigma$ ]  
OotOffset-rm: 9.229 arcsec [1.94 $\sigma$ ]  
KicOffset-rm: 8.315 arcsec [1.52 $\sigma$ ]  
OotOffset-st: 1/1/0/0 [2]  
KicOffset-st: 1/1/0/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [2/2]

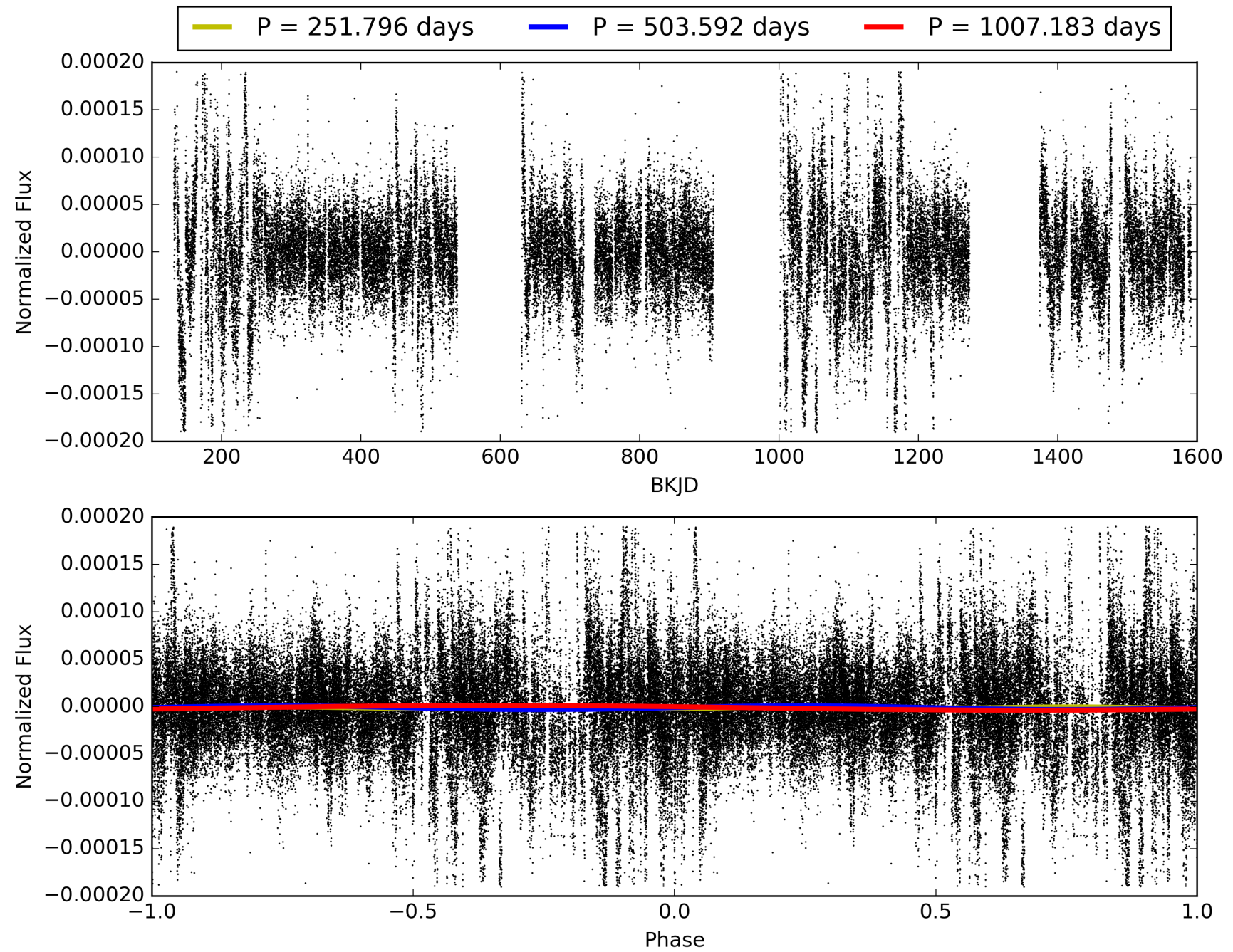
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:23:19 Z

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

# TCE 003860413-01, PDC Light Curves

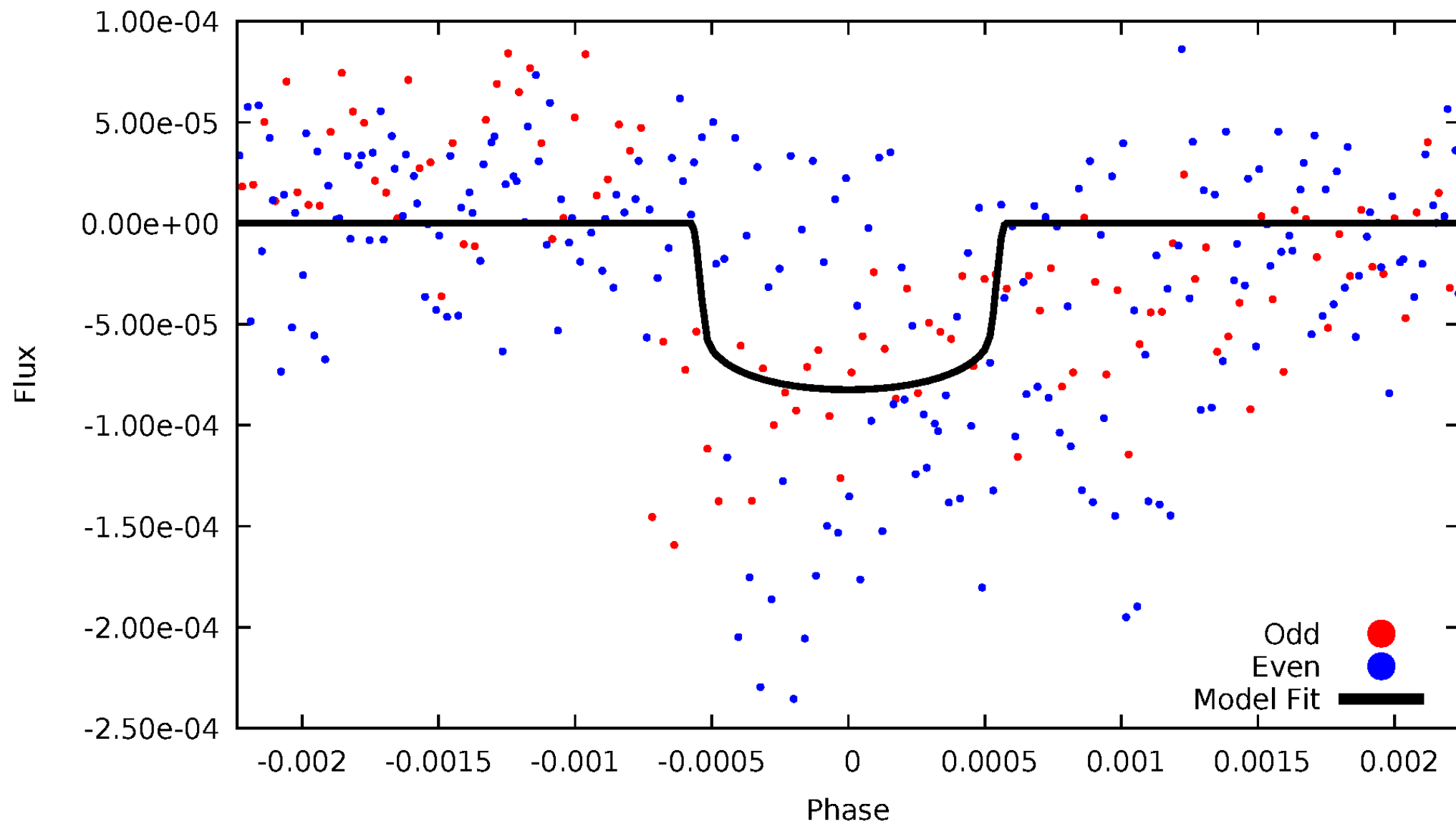


TCE 003860413-01



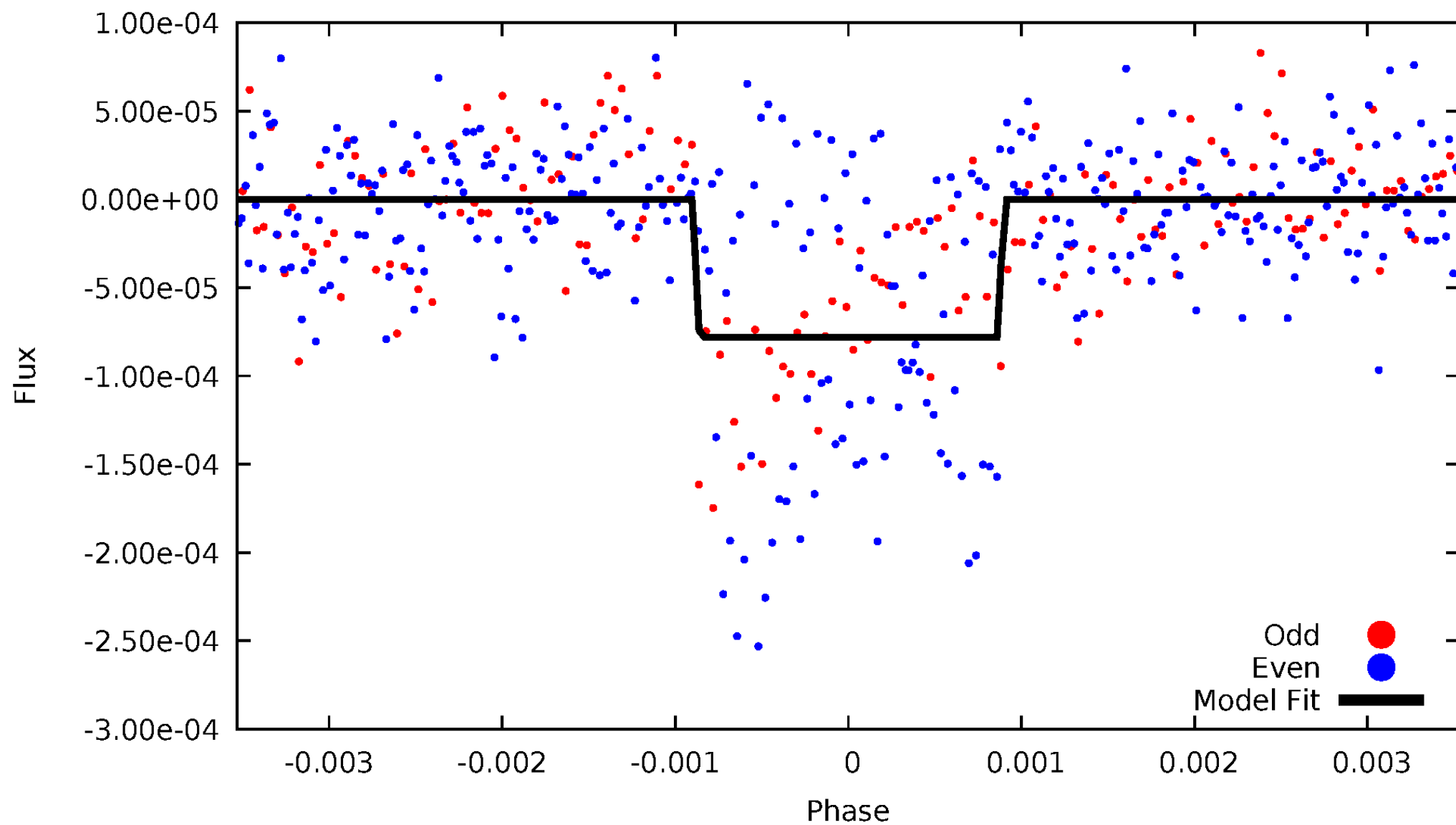
# DV Odd/Even

TCE 003860413-01



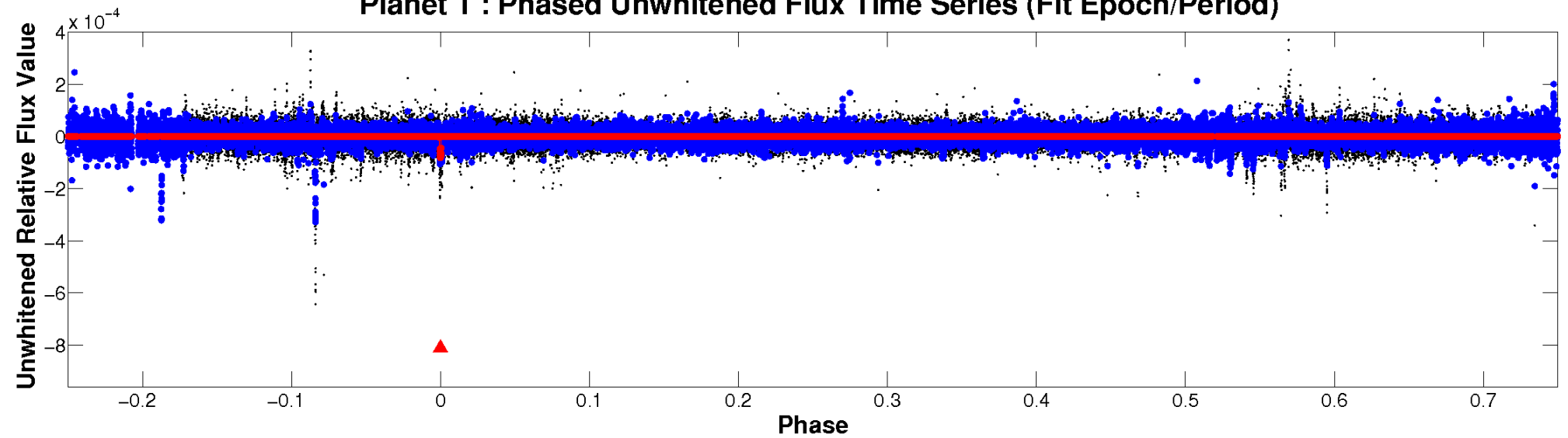
# ALT Odd/Even

TCE 003860413-01

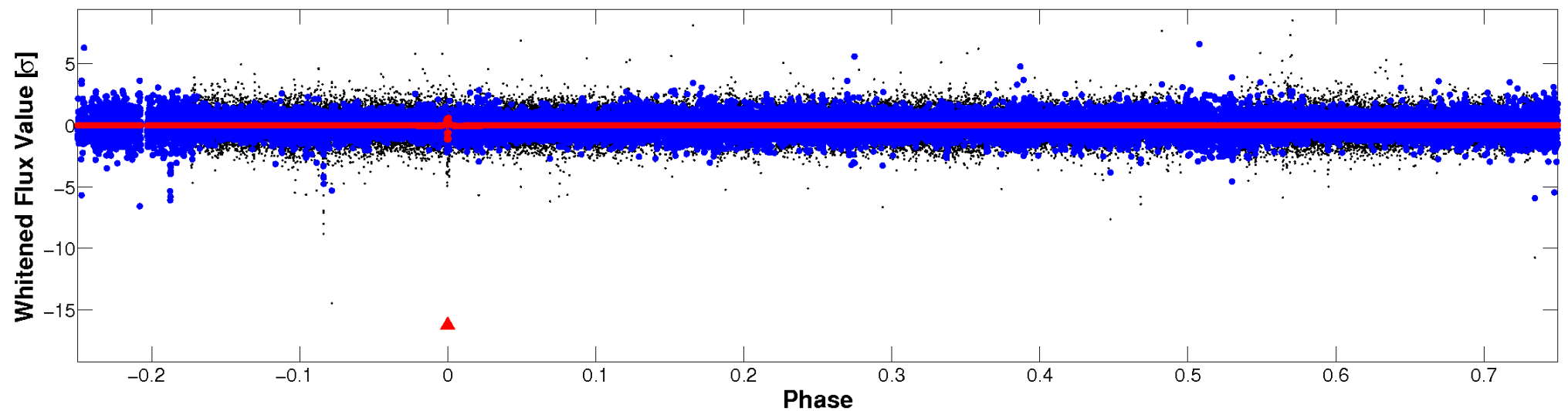


# Non-Whitened Vs. Whitened Light Curve

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

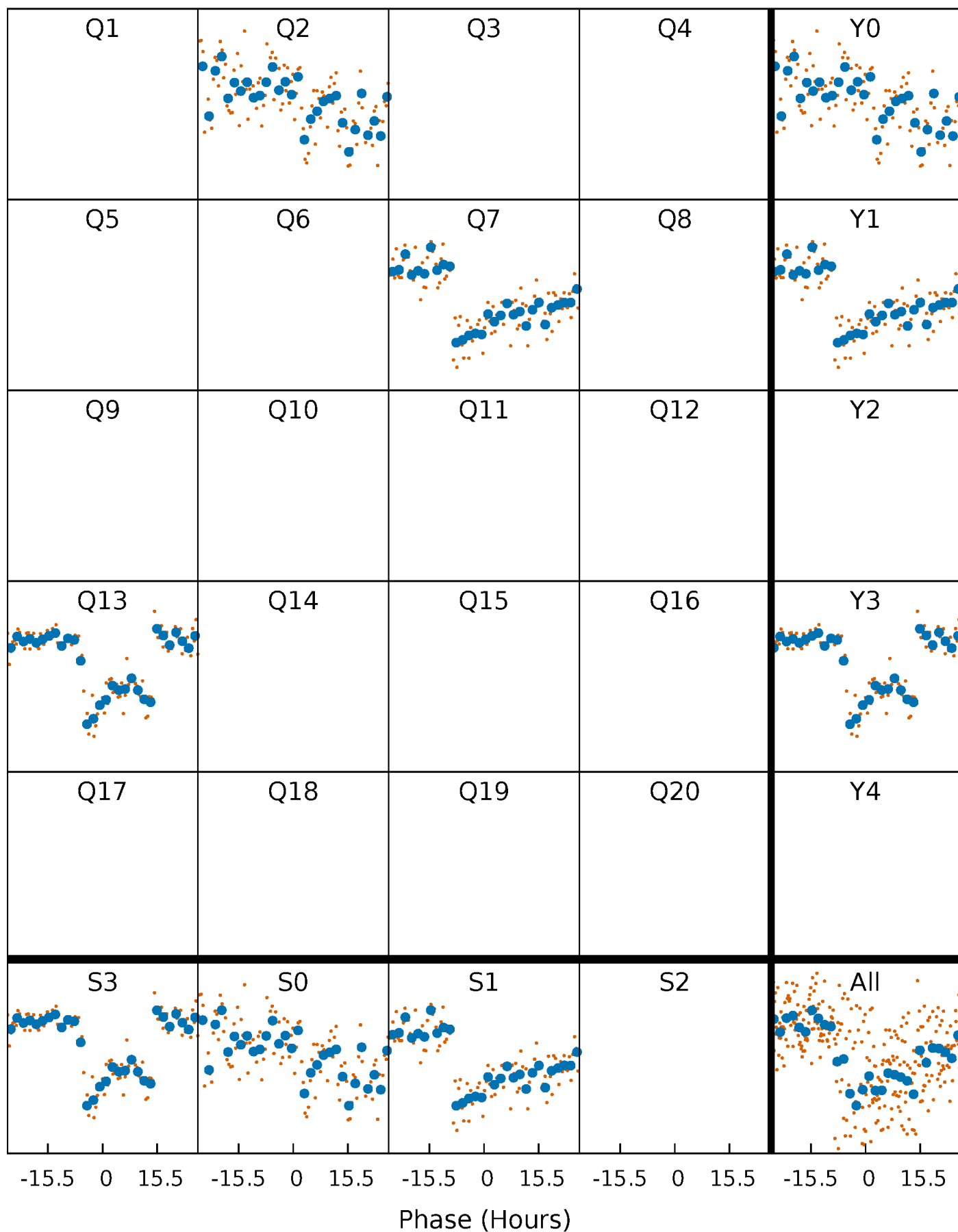


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

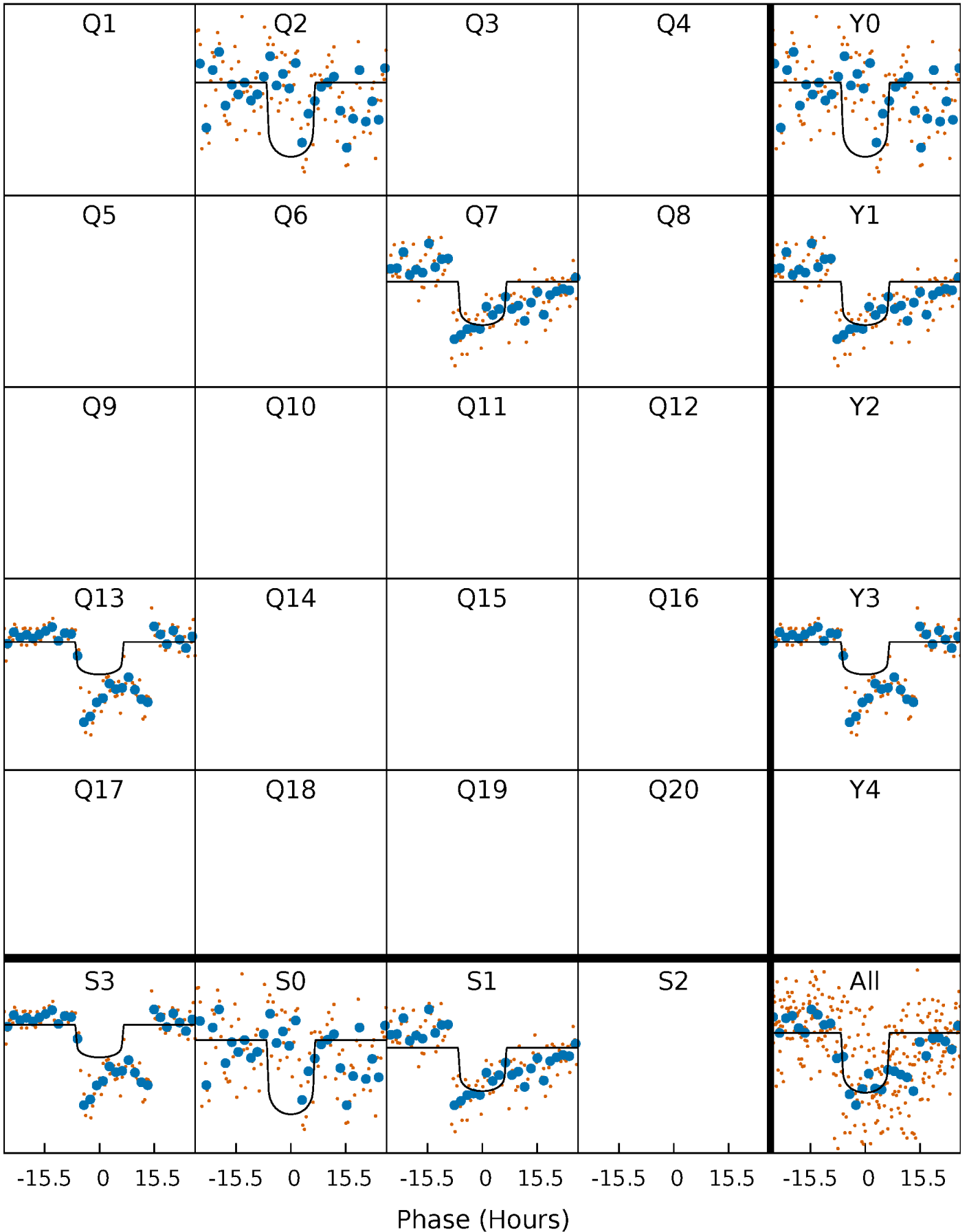
TCE 003860413-01 P=503.591618 Days  $T_0=213.866326$  (BKJD)





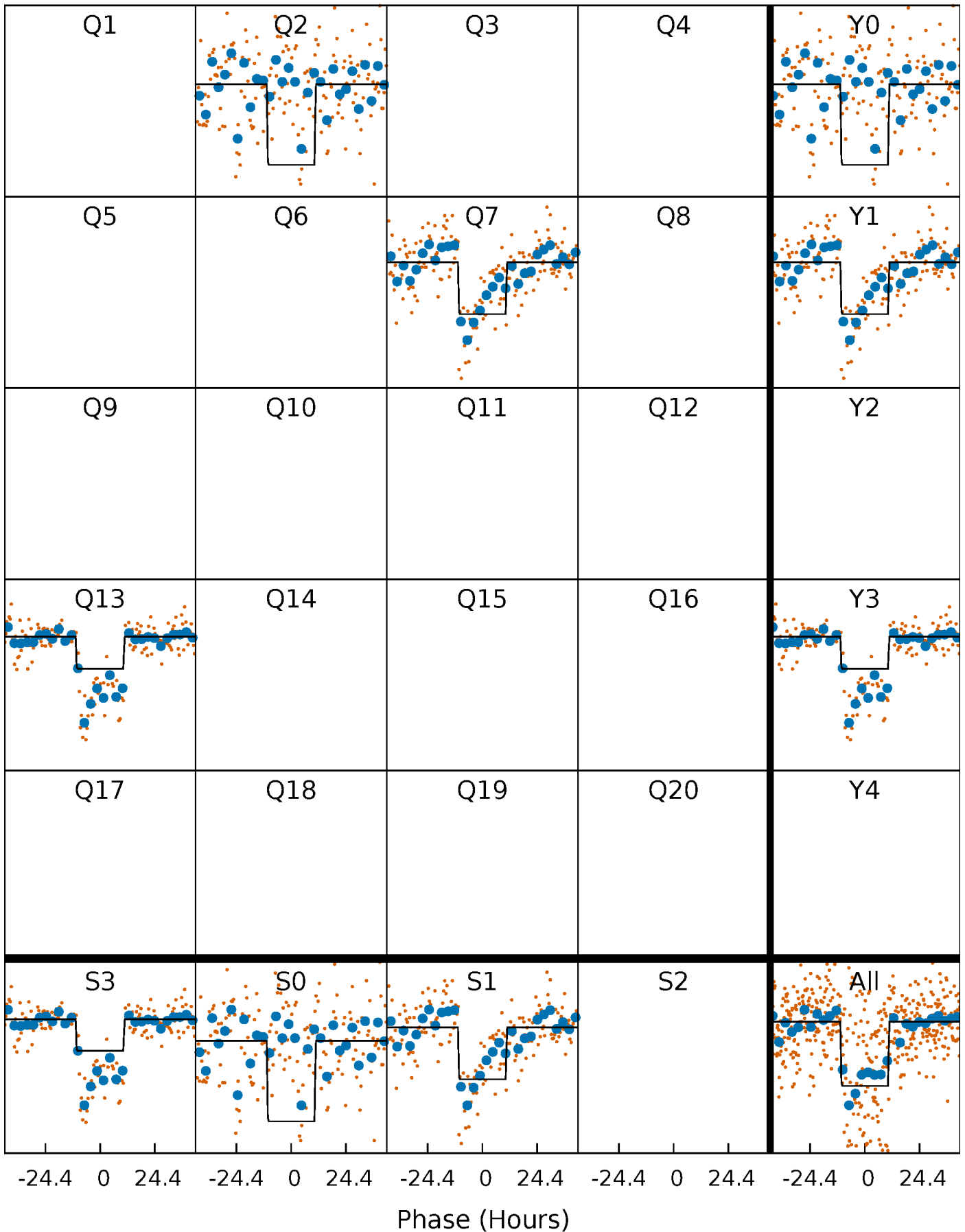
# DV Quarter-Phased Transit Curves

TCE 003860413-01 P=503.591618 Days  $T_0=213.866326$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

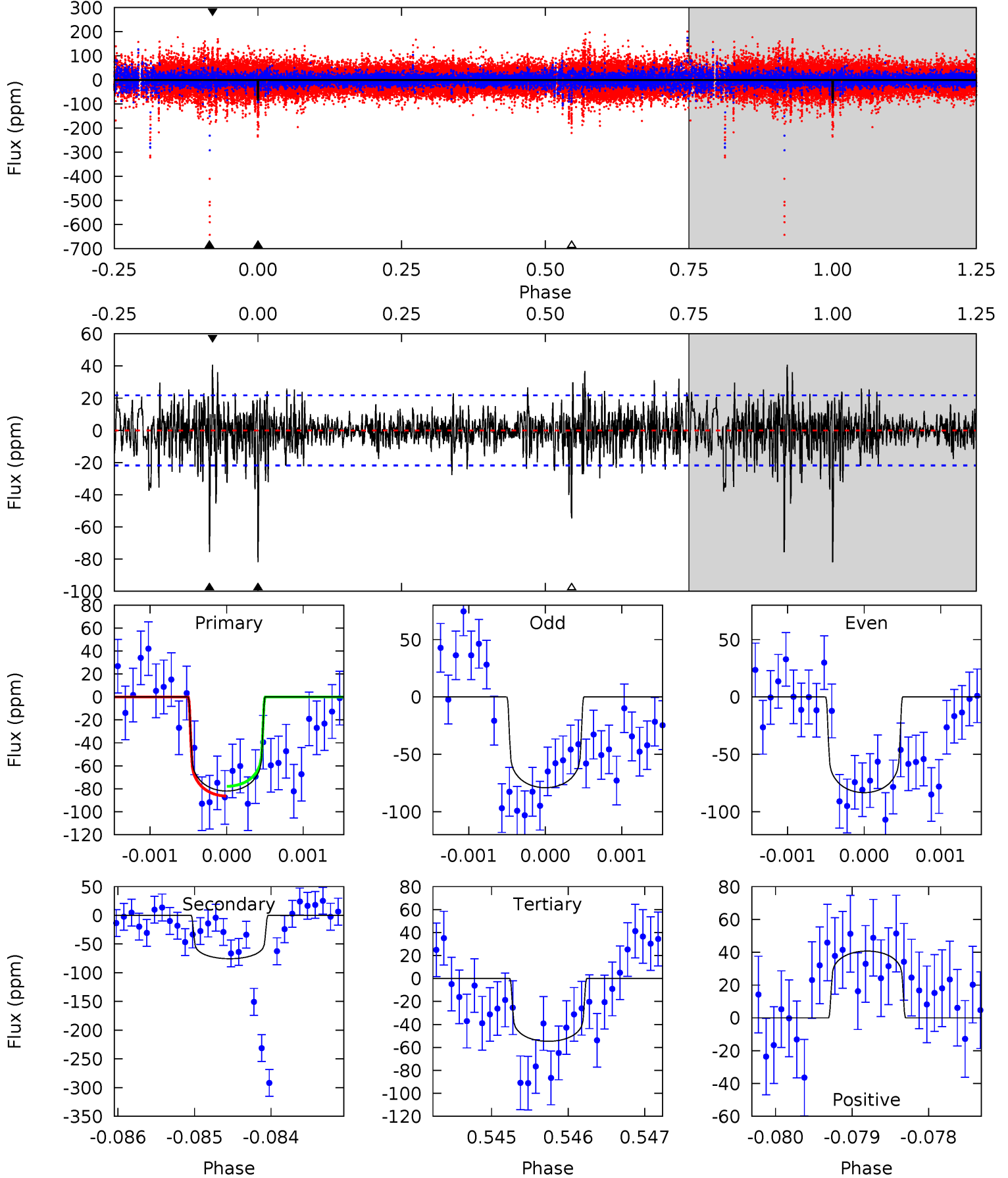
TCE 003860413-01 P=503.680443 Days  $T_0=213.850251$  (BKJD)



# DV Model-Shift Uniqueness Test

003860413-01, P = 503.591618 Days, E = 213.866326 Days

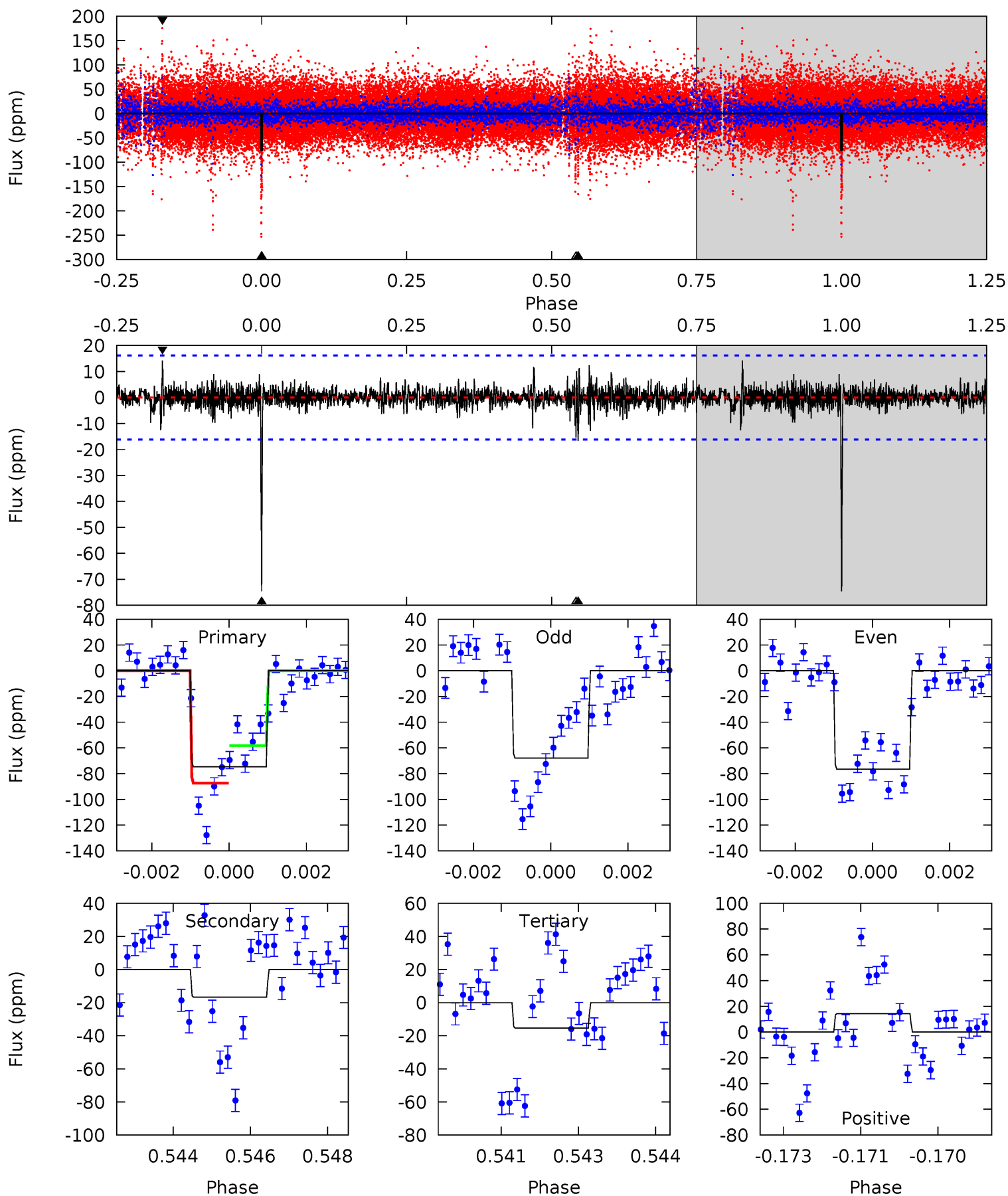
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.4	18.8	13.6	10.1	5.43	3.25	2.42	6.79	10.3	5.20	8.68	0.52	1.04	0.33	1.04



# Alt Model-Shift Uniqueness Test

003860413-01, P = 503.680443 Days, E = 213.850251 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
24.6	5.51	5.07	4.69	5.35	3.12	0.85	19.6	19.9	0.44	0.82	1.39	1.09	0.16	4.85



### Stellar Parameters For KIC 003860413

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8359^{+397}_{-682}$	$3.742^{+0.416}_{-0.104}$	$-0.100^{+0.200}_{-0.200}$	$3.188^{+0.763}_{-1.416}$	$2.046^{+0.349}_{-0.466}$	$0.089^{+0.341}_{-0.034}$
	+5%/-8%	+11%/-3%	+200%/-200%	+24%/-44%	+17%/-23%	+384%/-39%
Source	SPE68	SPE68	SPE68	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 003860413-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-76 \pm 4$	$2.98^{+0.90}_{-0.86}$	$701^{+70}_{-81}$	$7966^{+1448}_{-1000}$	$11754^{+10498}_{-4569}$
Alt.	$-17 \pm 3$	$2.83^{+0.89}_{-0.79}$	$698^{+73}_{-88}$	$5418^{+831}_{-535}$	$2719^{+2846}_{-1090}$

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

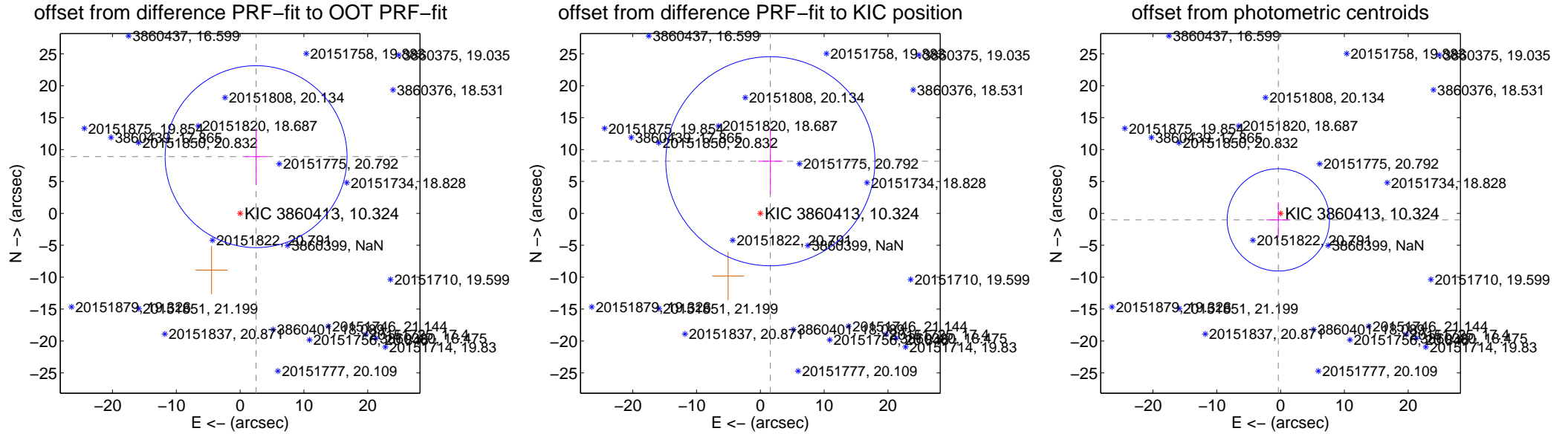
## DV Centroid Data

Supplemental centroid analysis for 003860413-01. **Kepler magnitude: 10.32.** Transit SNR 10.09

**There are 1 quarters with good PRF difference image offsets**

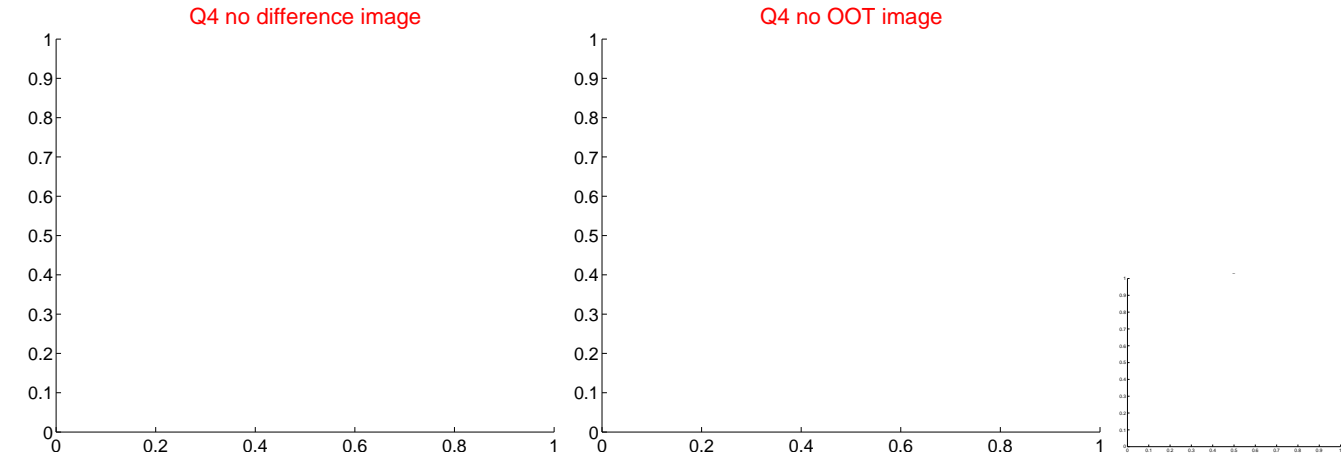
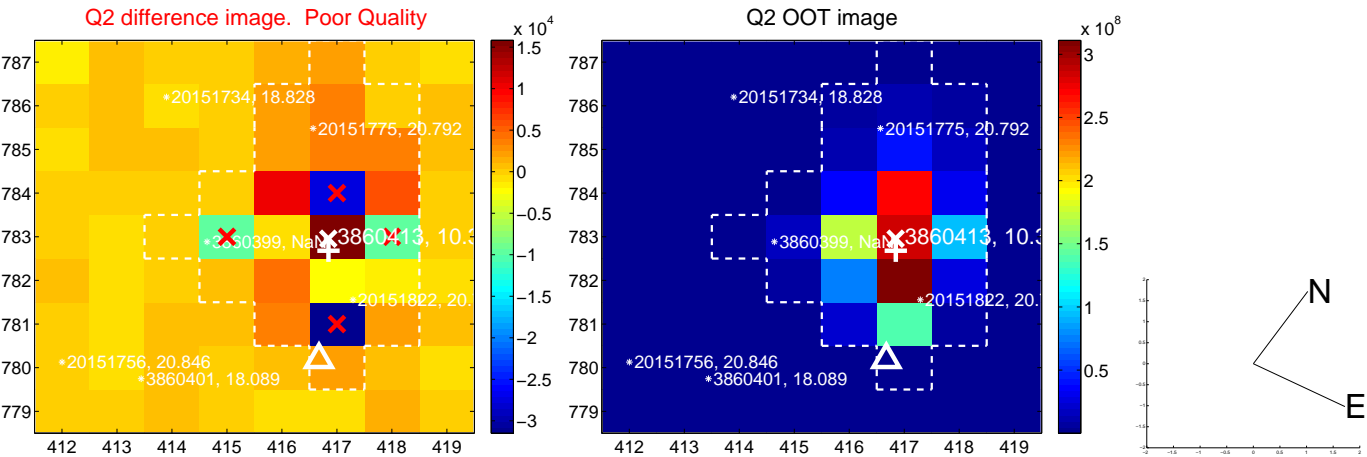
The direct PRF centroid is offset from the target star catalog position by about 1.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$9.229 \pm 4.750$	1.94	$-2.501 \pm 1.746$	$8.884 \pm 4.444$
PRF-fit source offset from KIC position	$8.315 \pm 5.460$	1.52	$-1.572 \pm 1.912$	$8.165 \pm 5.192$
photometric centroid source offset	$1.08 \pm 2.67$	0.40	$0.35 \pm 1.87$	$-1.02 \pm 2.75$

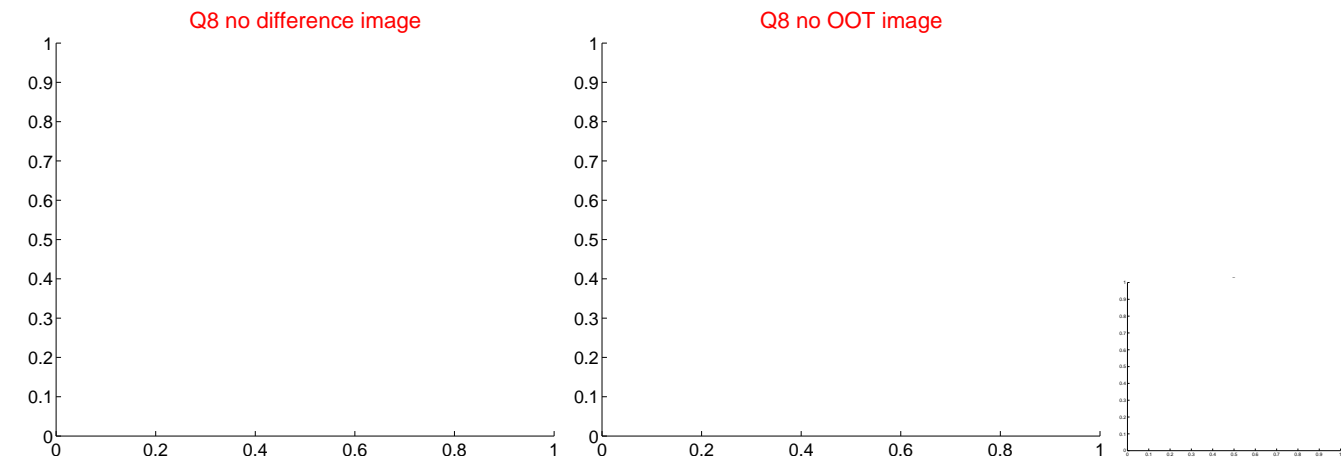
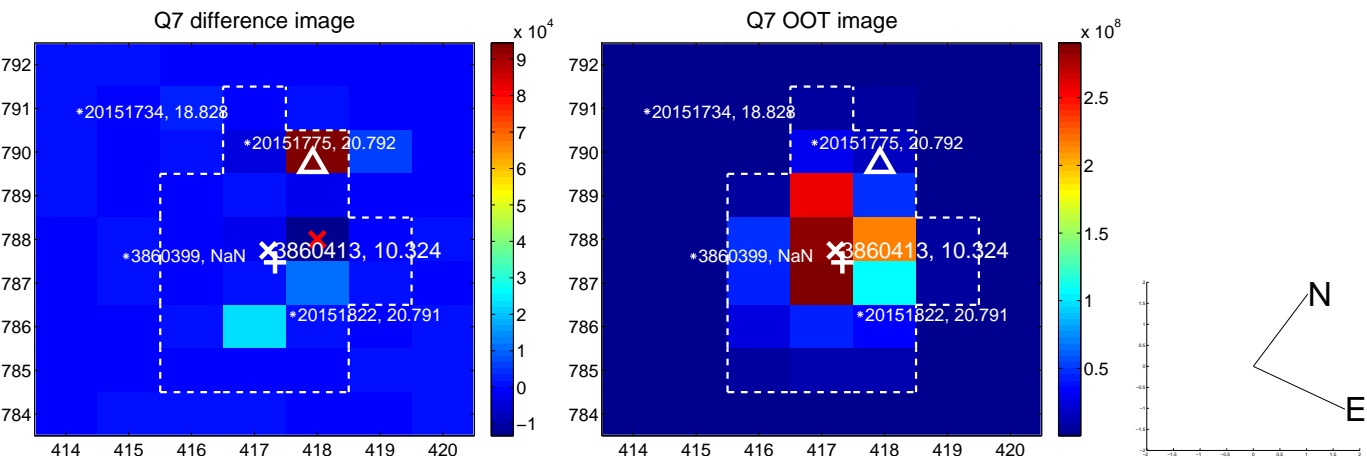


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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





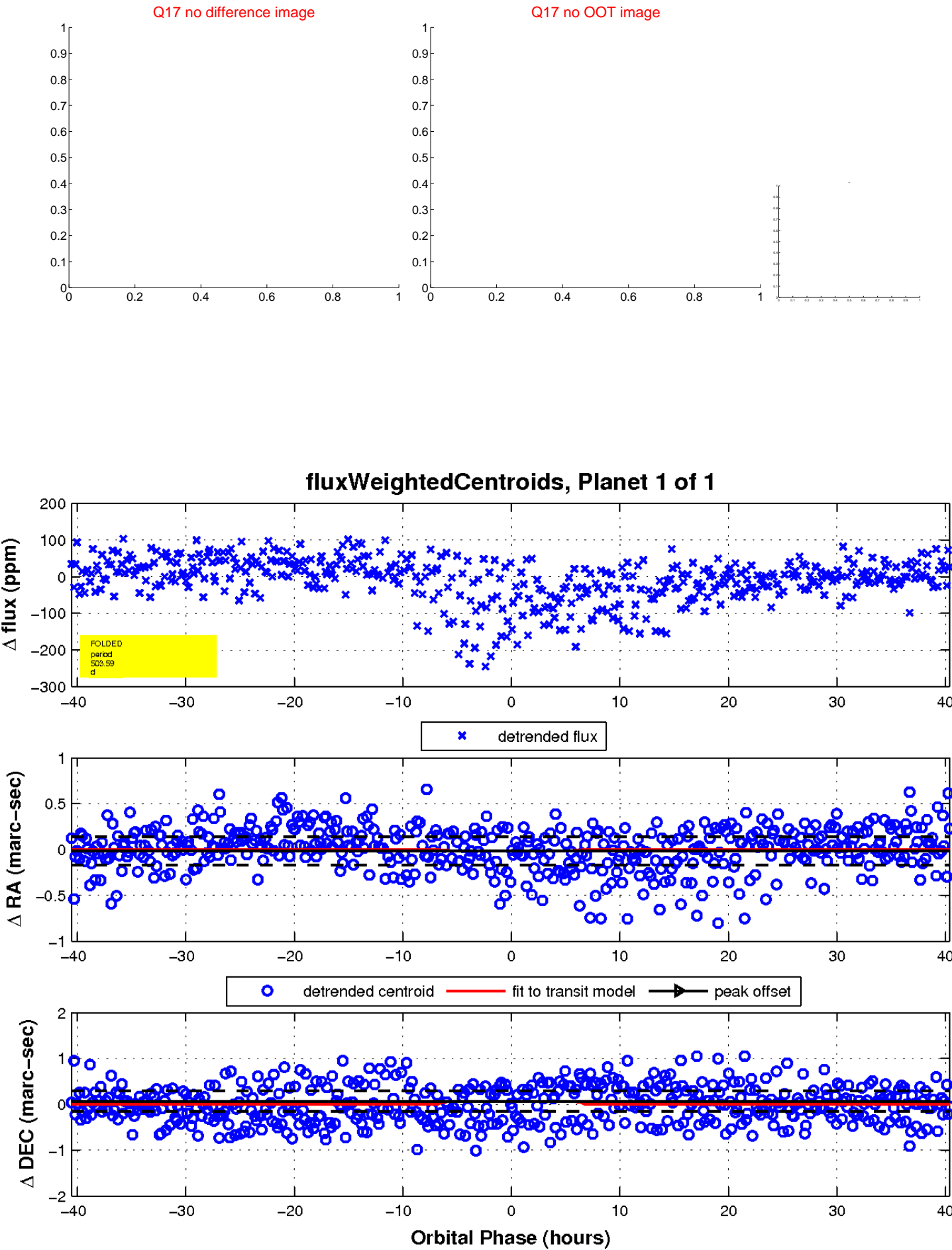
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

