

# KIC 008242181

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008242181-01	OBS	No	502.213615	313.148765	176.8	7.209	8.9	7.5	1.26	6429	1.85	1.47

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008242181-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—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.

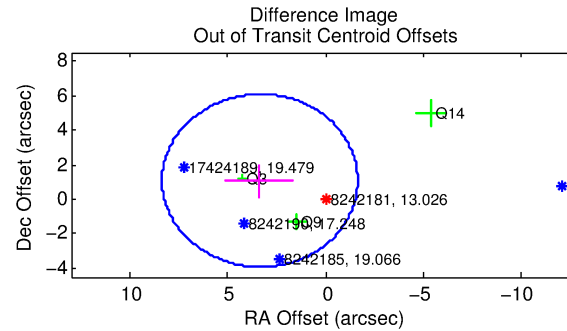
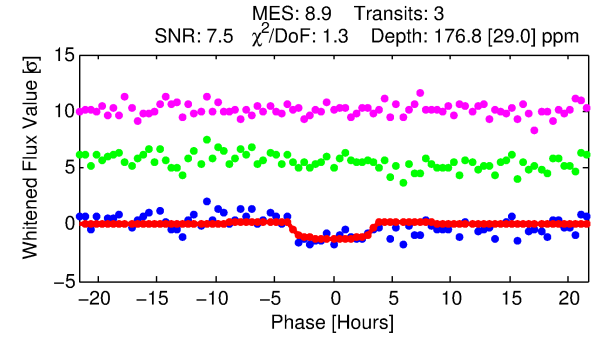
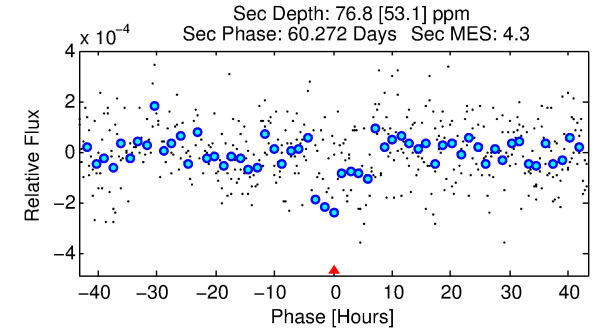
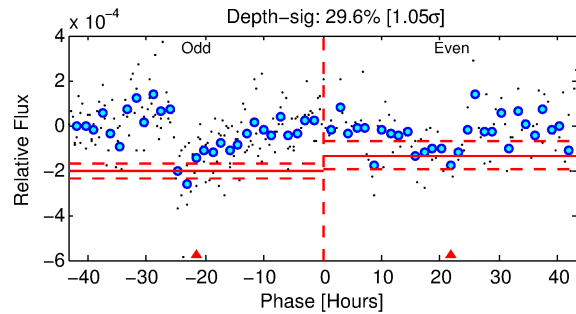
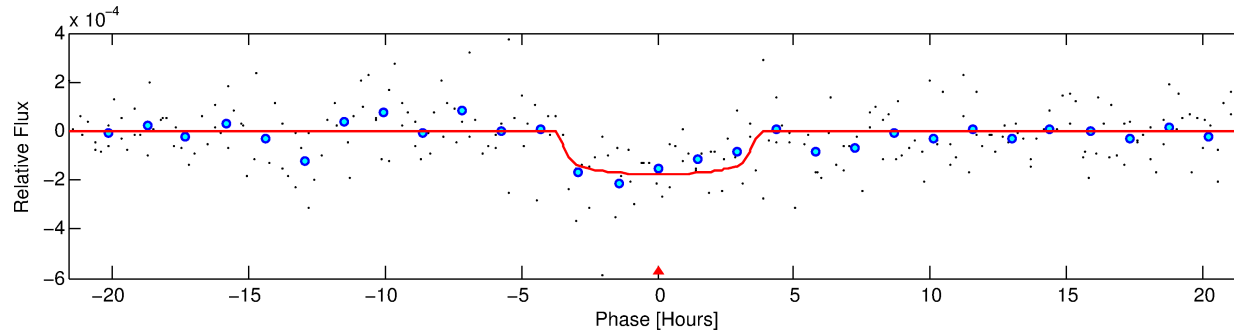
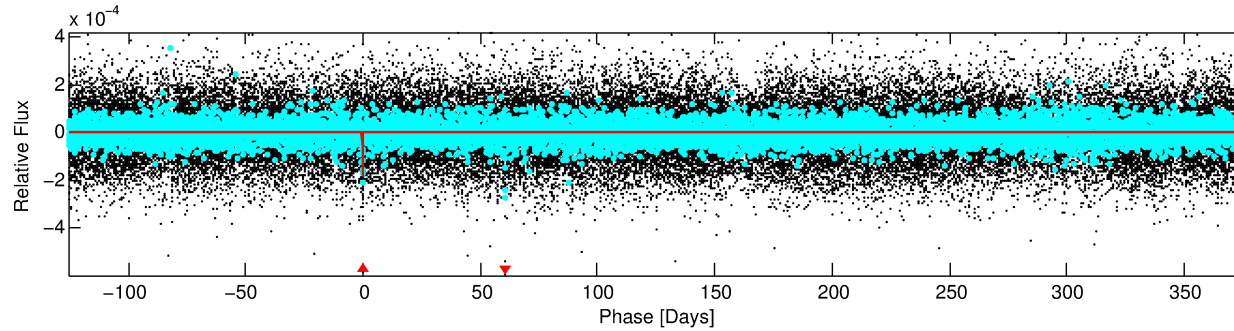
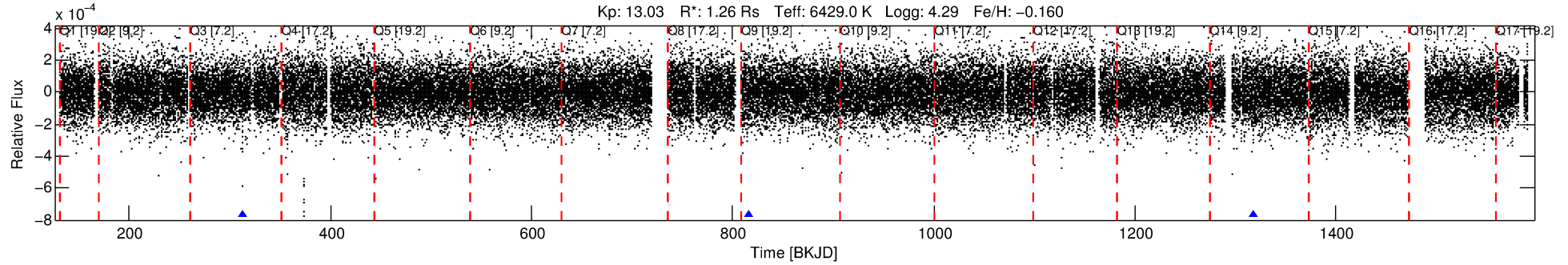
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008242181-01

No Significant Match Found

# DV One-Page Summary

KIC: 8242181 Candidate: 1 of 1 Period: 502.214 d



## DV Fit Results:

Period = 502.21362 [0.01209] d  
Epoch = 313.1488 [0.0142] BKJD  
Rp/R\* = 0.0134 [0.0127]  
a/R\* = 342.61 [1791.27]  
b = 0.78 [2.60]  
Seff = 1.47 [0.42]  
Teq = 281 [20] K  
Rp = 1.85 [1.80] Re  
a = 1.2913 [0.2345] AU  
Ag = 20680.16 [42211.66] [0.49 $\sigma$ ]  
Teffp = 5205 [2639] K [1.87 $\sigma$ ]

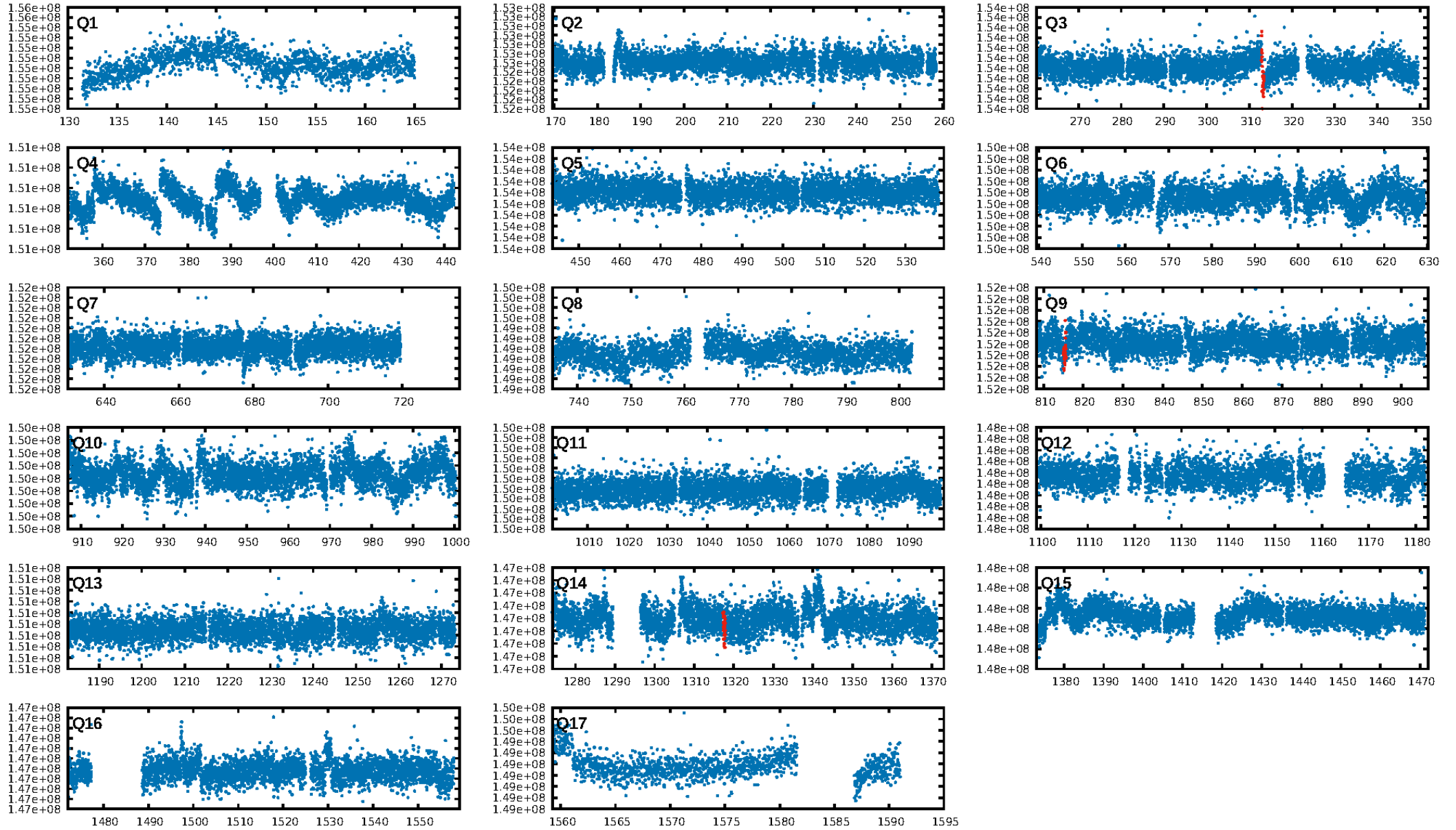
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 13.5%  
ModelChiSquareGof-sig: 98.0%  
Bootstrap-pfa: 1.57e-14  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.388  
Centroid-sig: 15.7%  
Centroid-so: 1.888 arcsec [1.04 $\sigma$ ]  
OotOffset-rm: 3.518 arcsec [2.11 $\sigma$ ]  
KicOffset-rm: 3.563 arcsec [1.59 $\sigma$ ]  
OotOffset-st: 1/1/0/1 [3]  
KicOffset-st: 1/1/0/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

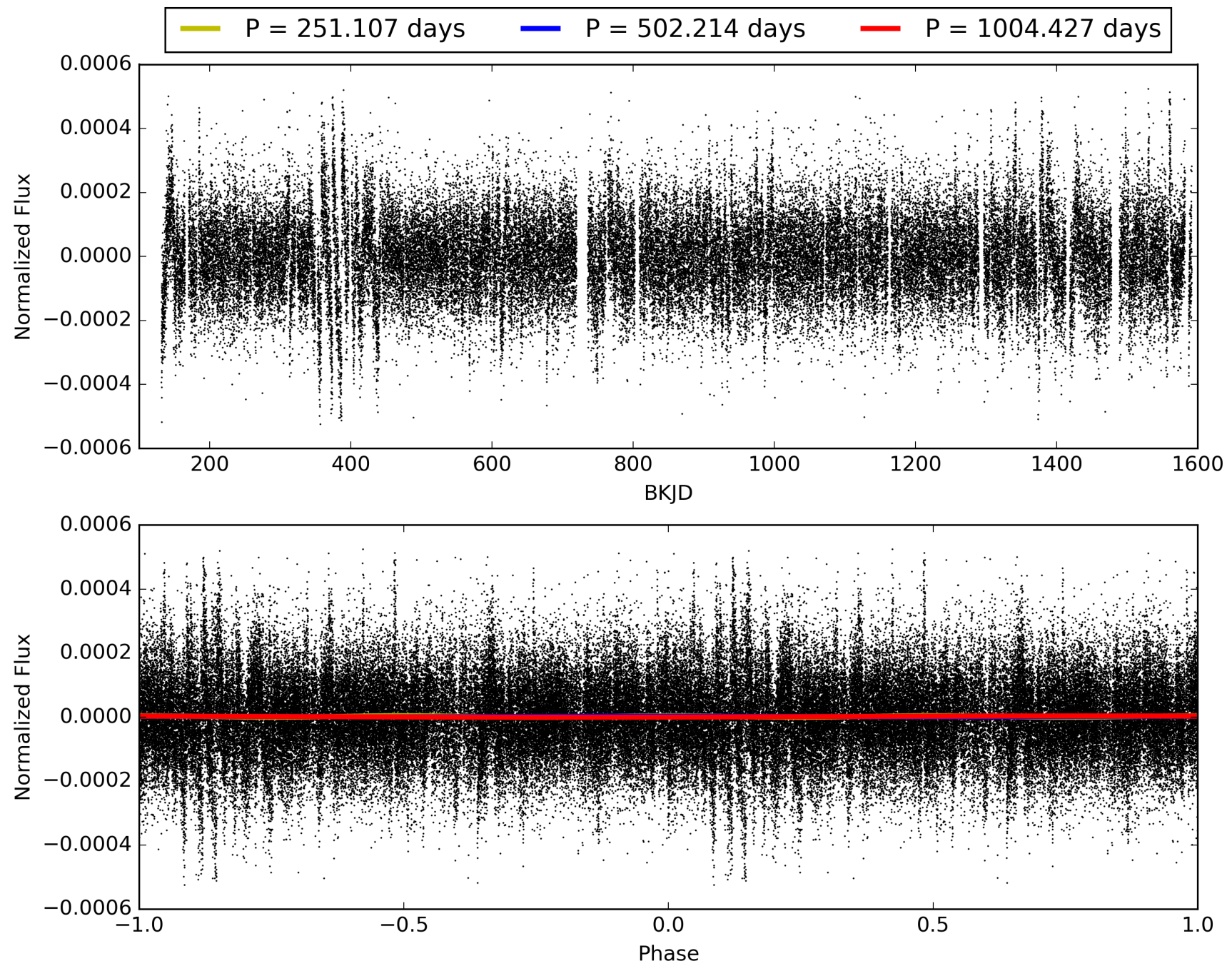
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 01:34:53 Z

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

# TCE 008242181-01, PDC Light Curves

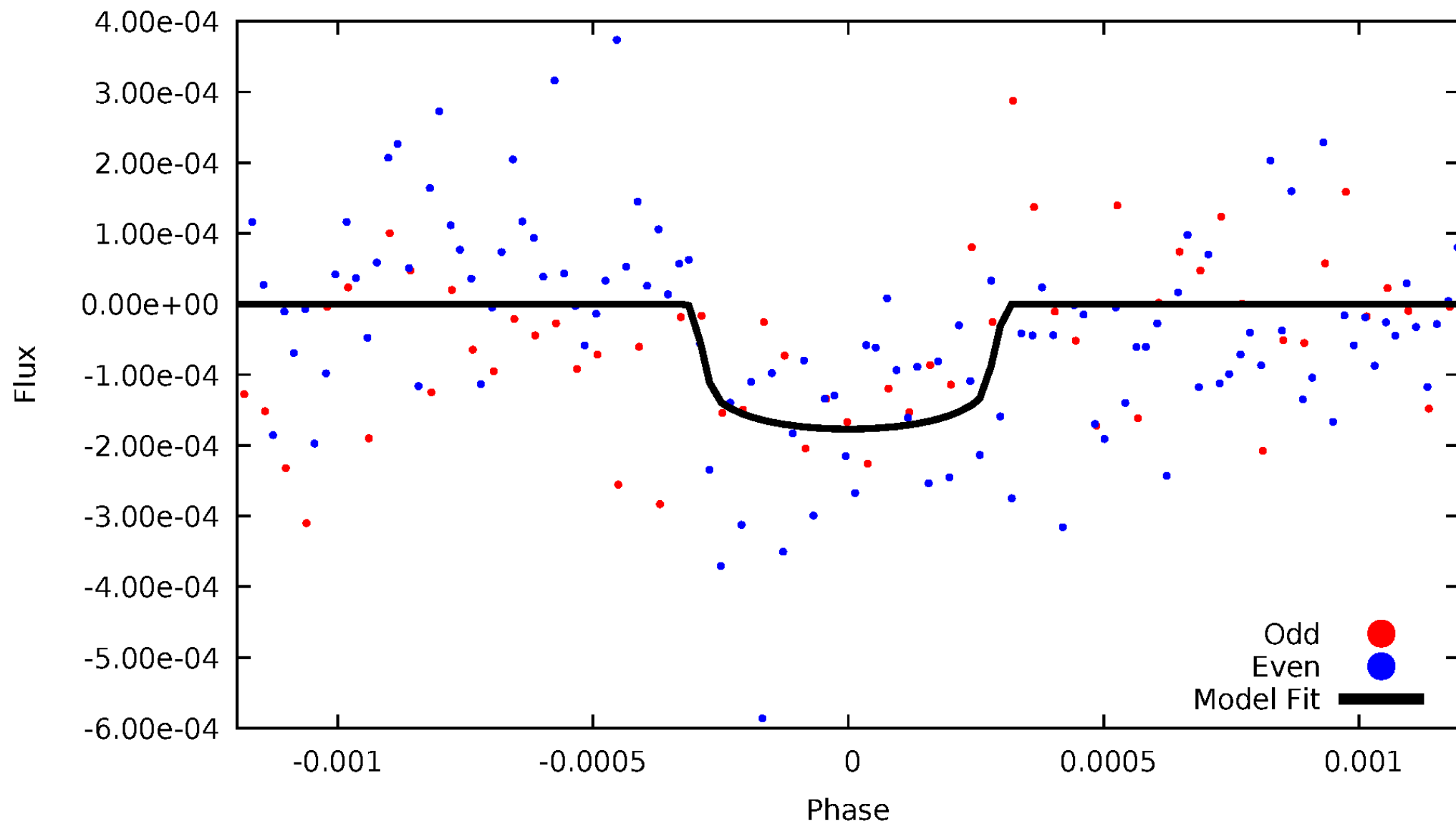


TCE 008242181-01



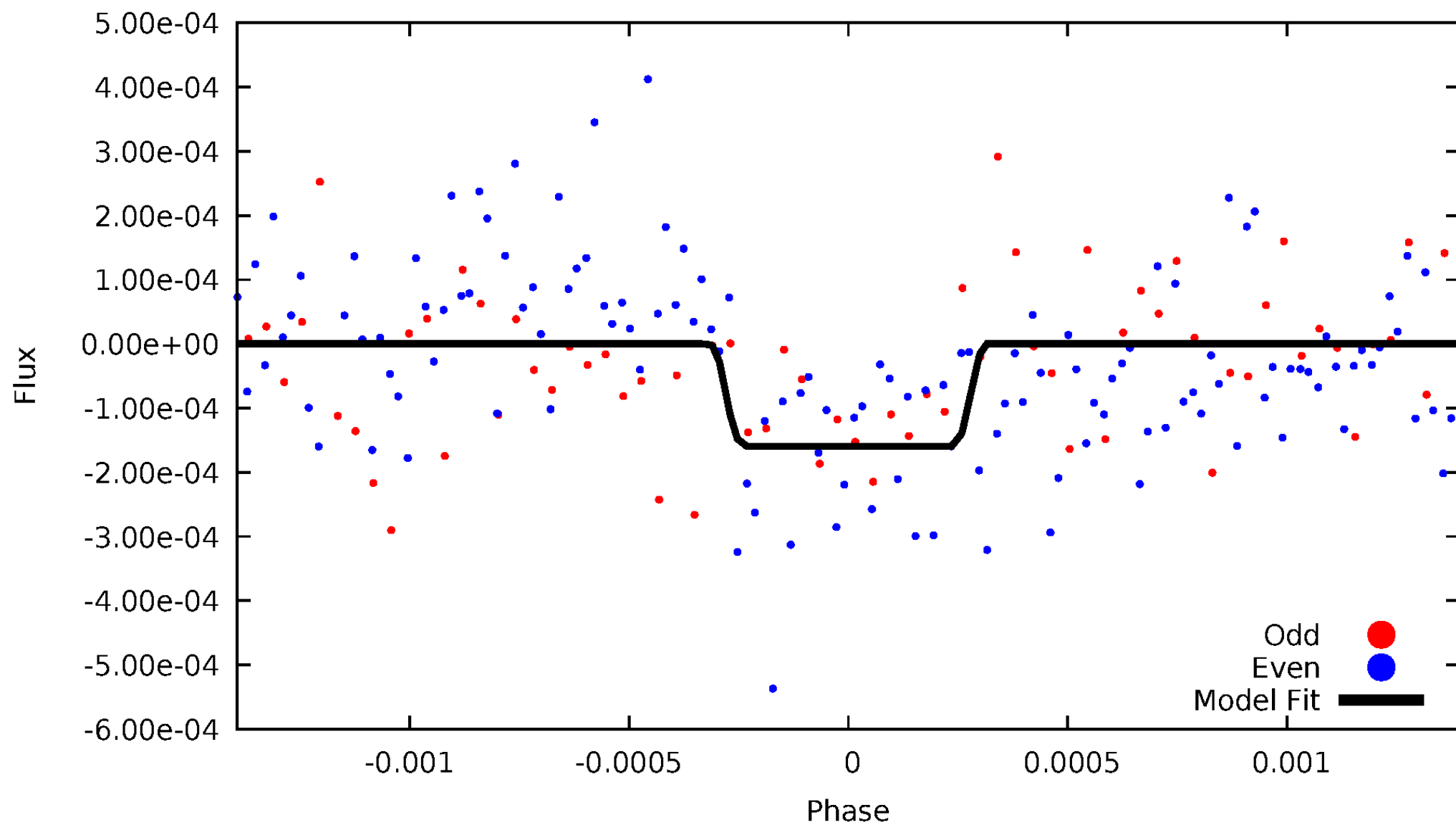
# DV Odd/Even

TCE 008242181-01



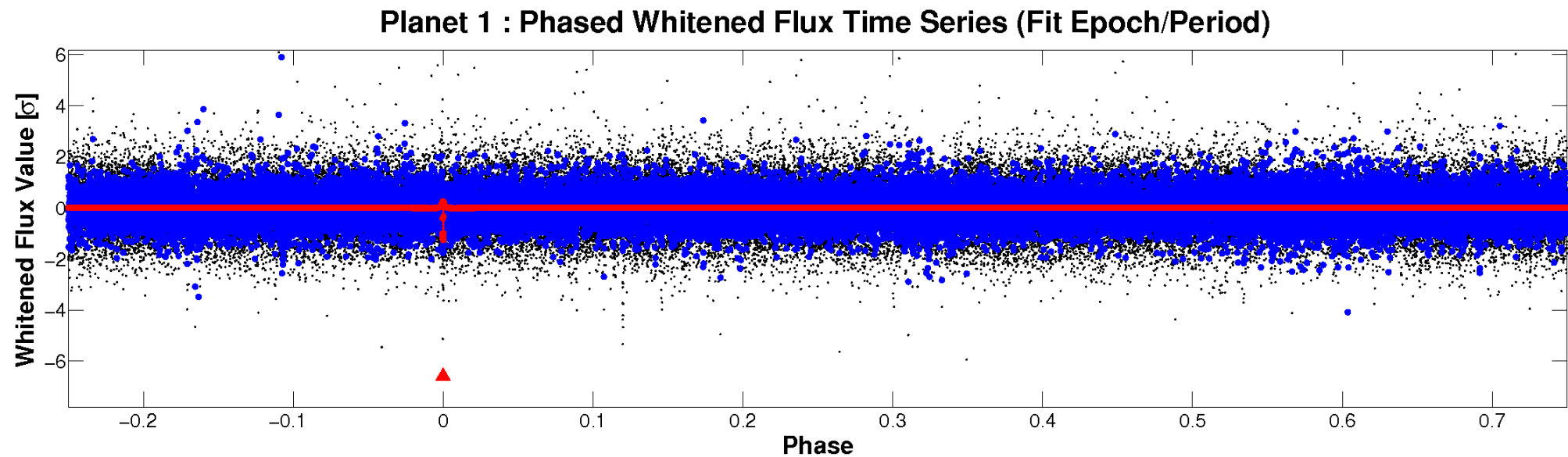
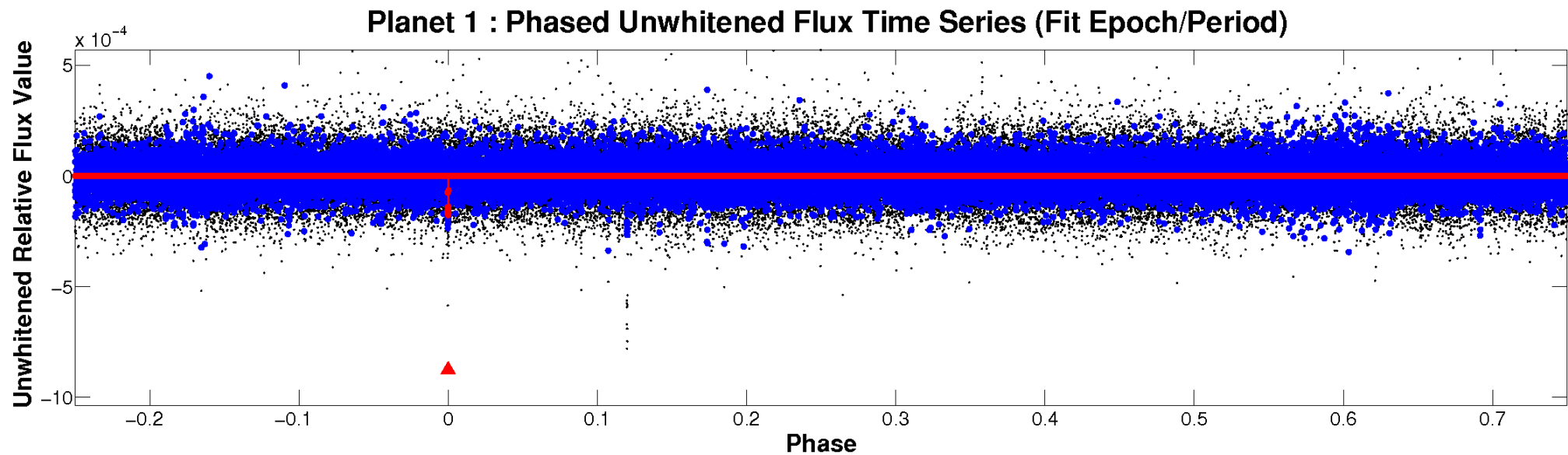
# ALT Odd/Even

TCE 008242181-01



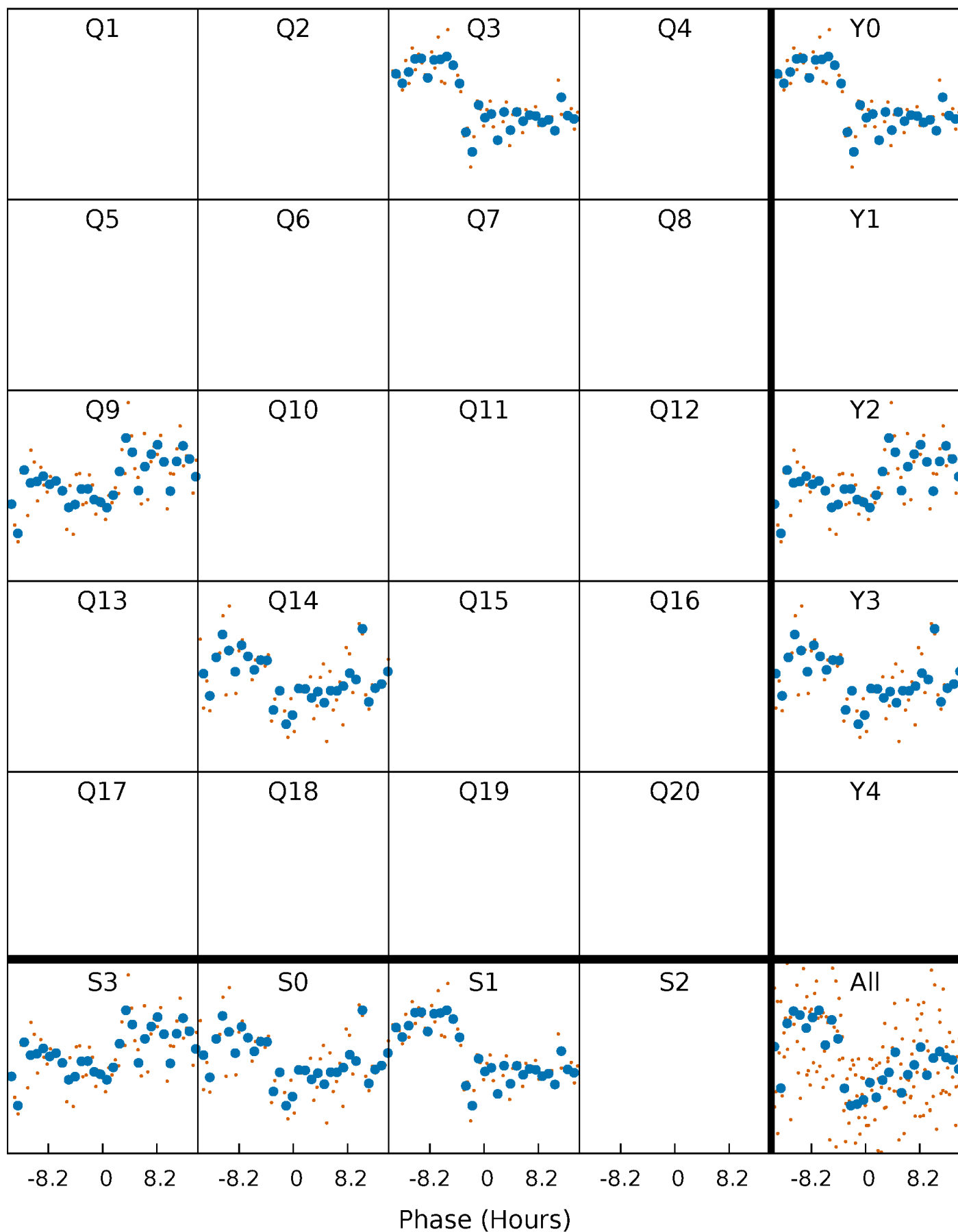


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

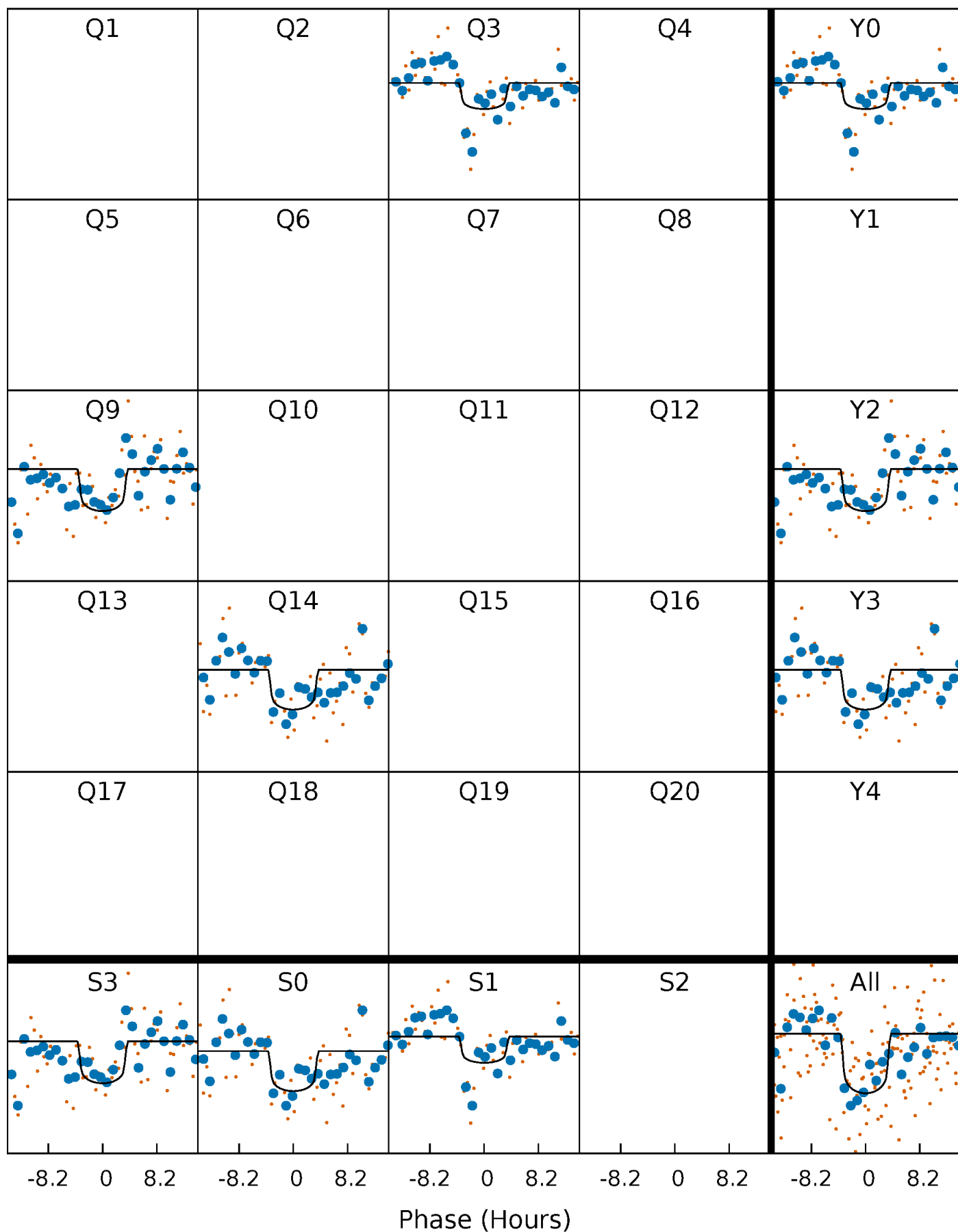
TCE 008242181-01 P=502.213615 Days  $T_0=313.148765$  (BKJD)





# DV Quarter-Phased Transit Curves

TCE 008242181-01 P=502.213615 Days  $T_0=313.148765$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

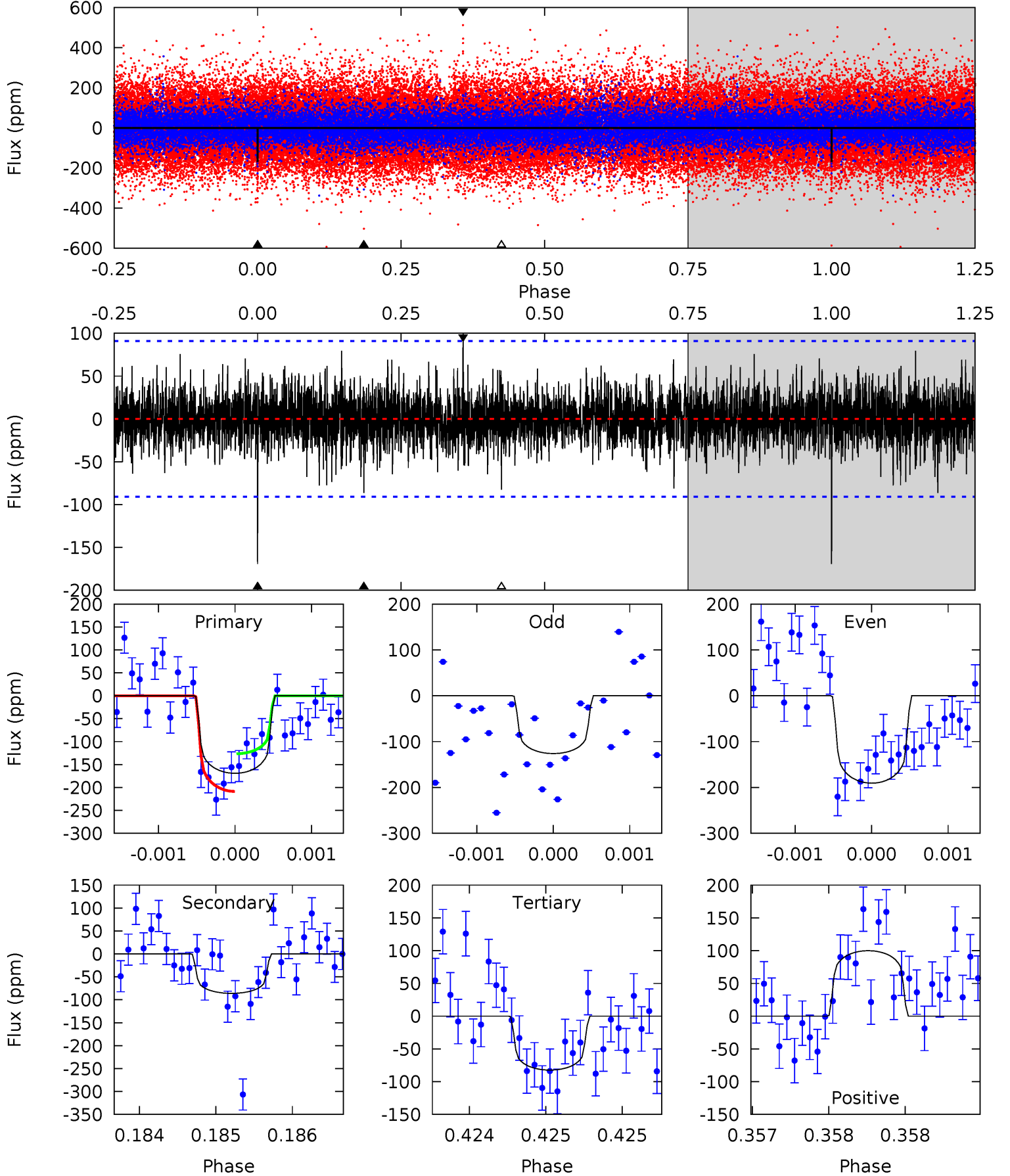
TCE 008242181-01 P=502.202415 Days  $T_0=313.150616$  (BKJD)



# DV Model-Shift Uniqueness Test

008242181-01, P = 502.213615 Days, E = 313.148765 Days

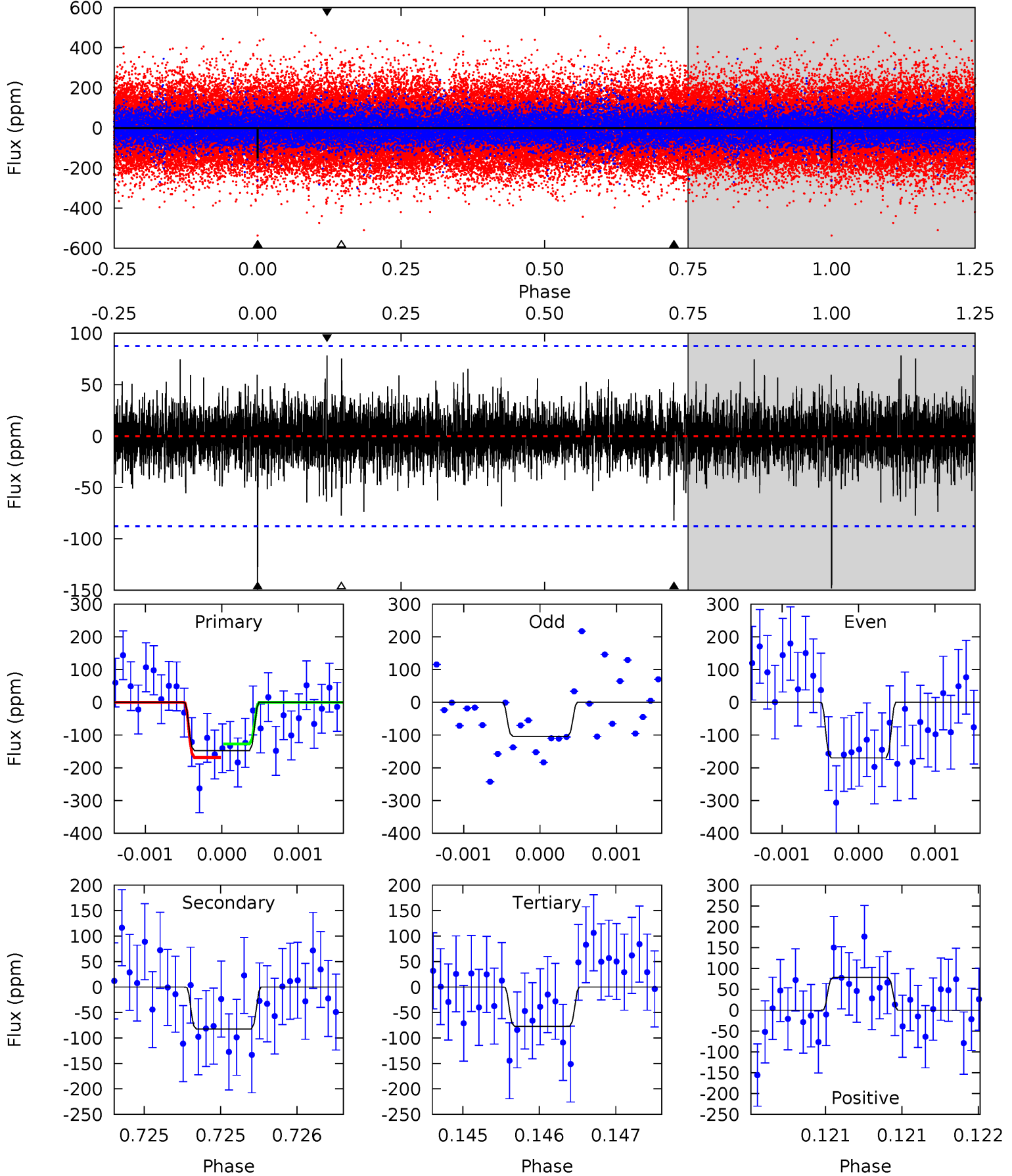
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	5.25	5.02	6.09	5.54	3.43	1.27	5.29	4.22	0.23	-0.84	1.88	1.07	0.37	2.50



# Alt Model-Shift Uniqueness Test

008242181-01, P = 502.202415 Days, E = 313.150616 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
9.33	5.19	4.86	4.94	5.53	3.41	1.09	4.46	4.38	0.32	0.24	1.96	1.23	0.35	1.31



### Stellar Parameters For KIC 008242181

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6429^{+153}_{-192}$	$4.290^{+0.100}_{-0.138}$	$-0.160^{+0.250}_{-0.300}$	$1.265^{+0.280}_{-0.187}$	$1.137^{+0.159}_{-0.144}$	$0.791^{+0.408}_{-0.316}$
	+2%/-3%	+2%/-3%	+156%/-188%	+22%/-15%	+14%/-13%	+52%/-40%
Source	PHO1	FLK73	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 008242181-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-86 \pm 16$	$2.14^{+1.66}_{-1.31}$	$395^{+21}_{-20}$	$5046^{+3280}_{-994}$	$17444^{+102111}_{-11897}$
Alt.	$-82 \pm 16$	$2.16^{+1.61}_{-1.28}$	$395^{+24}_{-21}$	$4999^{+2943}_{-993}$	$16385^{+81332}_{-11467}$

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

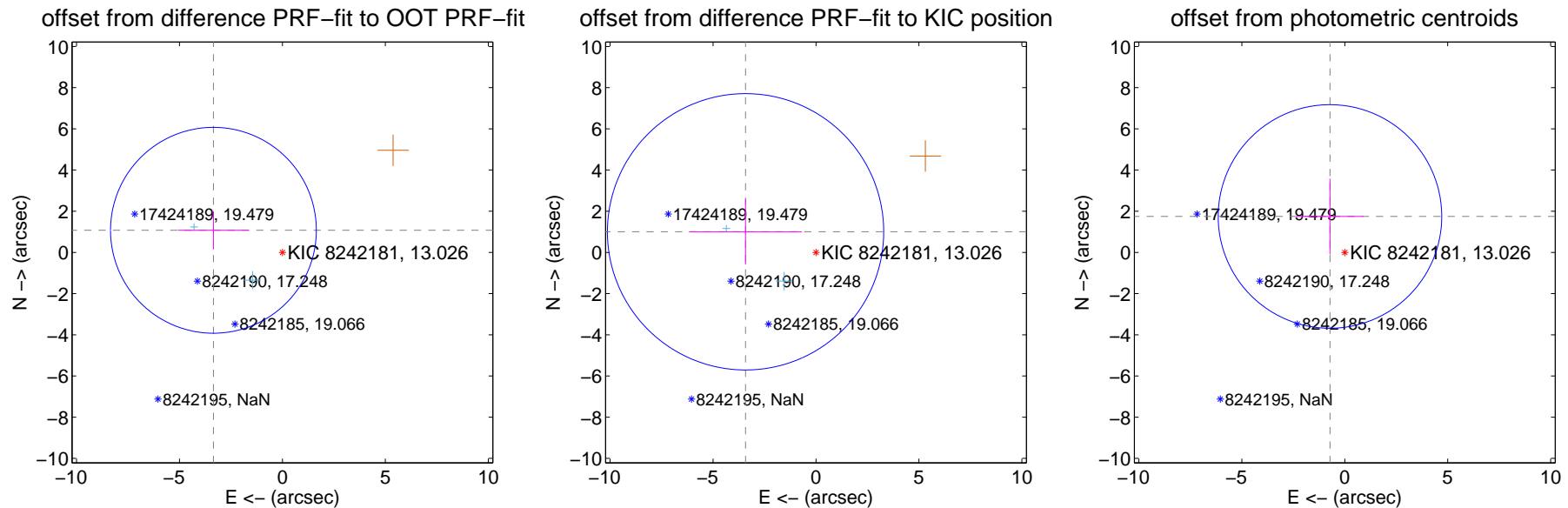
## DV Centroid Data

Supplemental centroid analysis for 008242181-01. Kepler magnitude: 13.03. Transit SNR 7.52

There are 2 quarters with good PRF difference image offsets

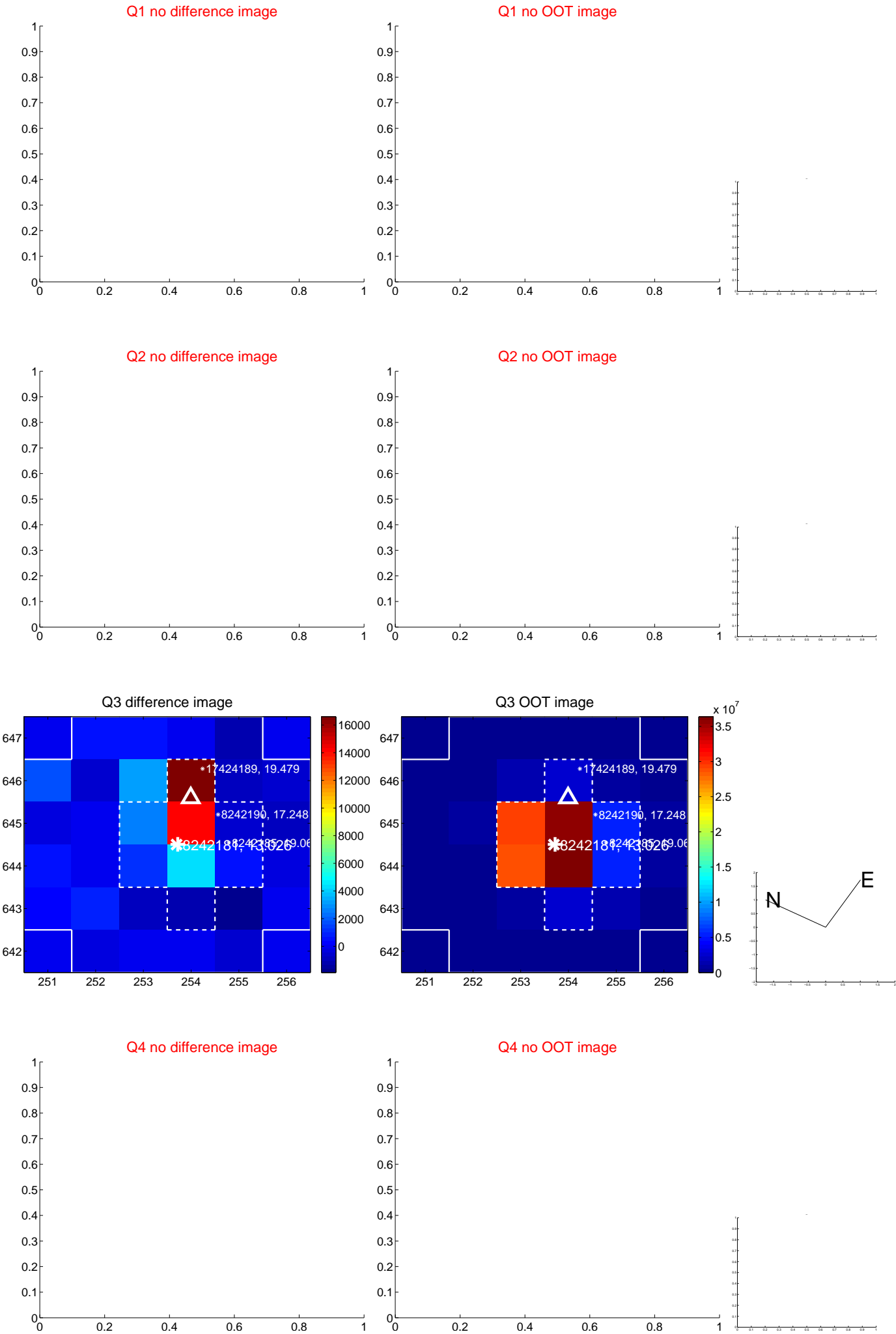
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.518 \pm 1.666$	2.11	$3.349 \pm 1.724$	$1.074 \pm 0.924$
PRF-fit source offset from KIC position	$3.563 \pm 2.236$	1.59	$3.420 \pm 2.743$	$1.001 \pm 1.584$
photometric centroid source offset	$1.89 \pm 1.81$	1.04	$0.72 \pm 1.62$	$1.75 \pm 1.84$



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.

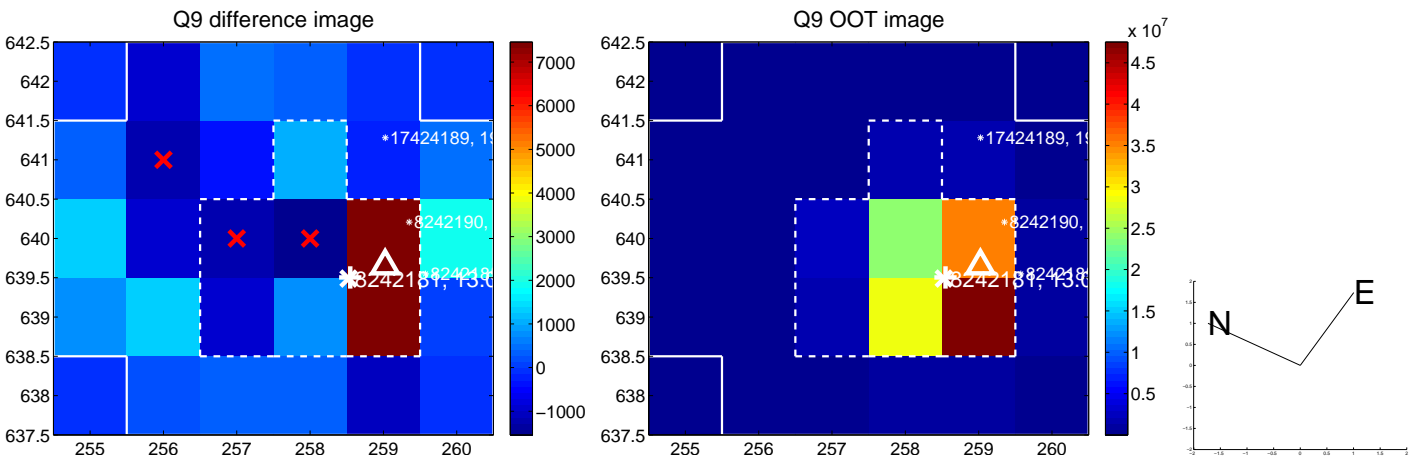




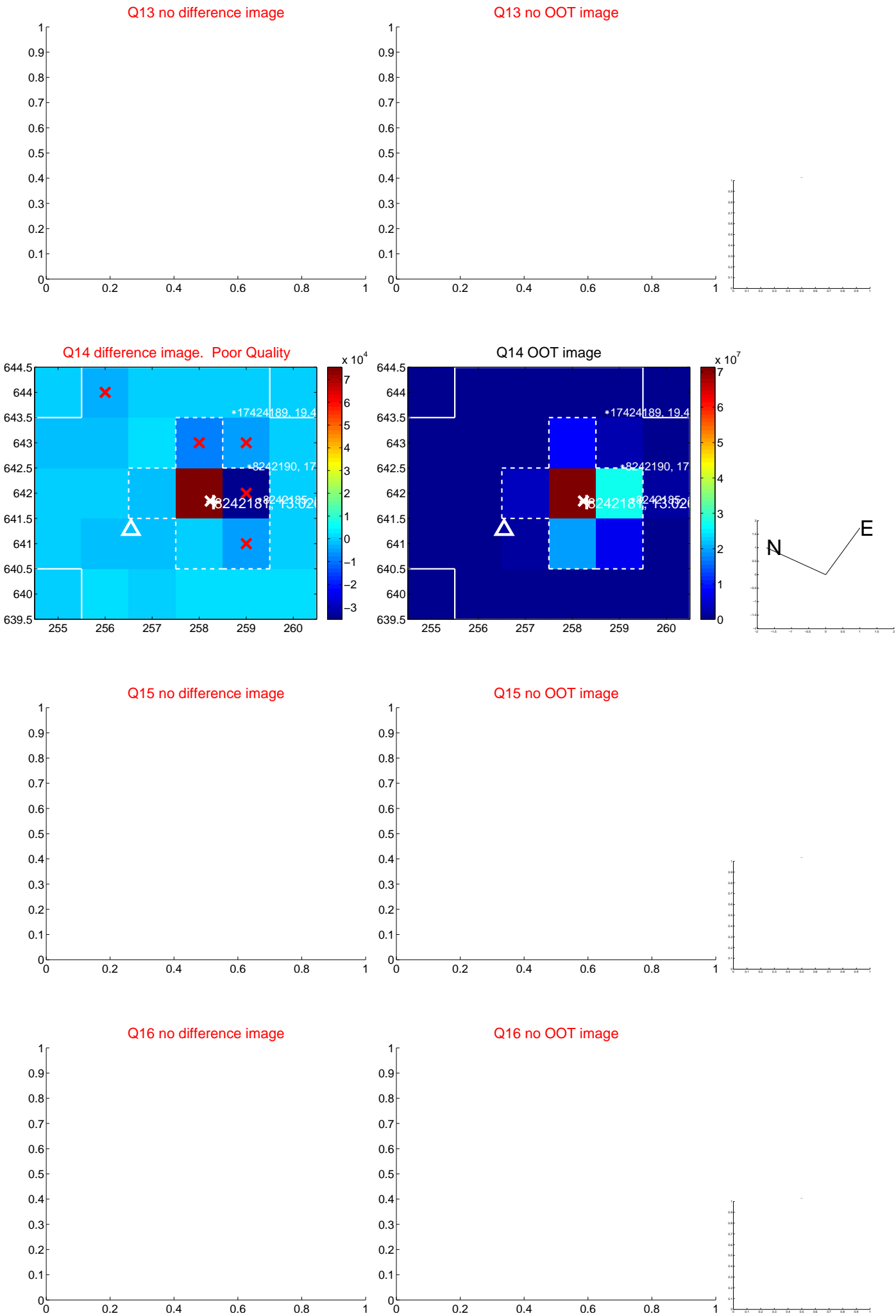
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



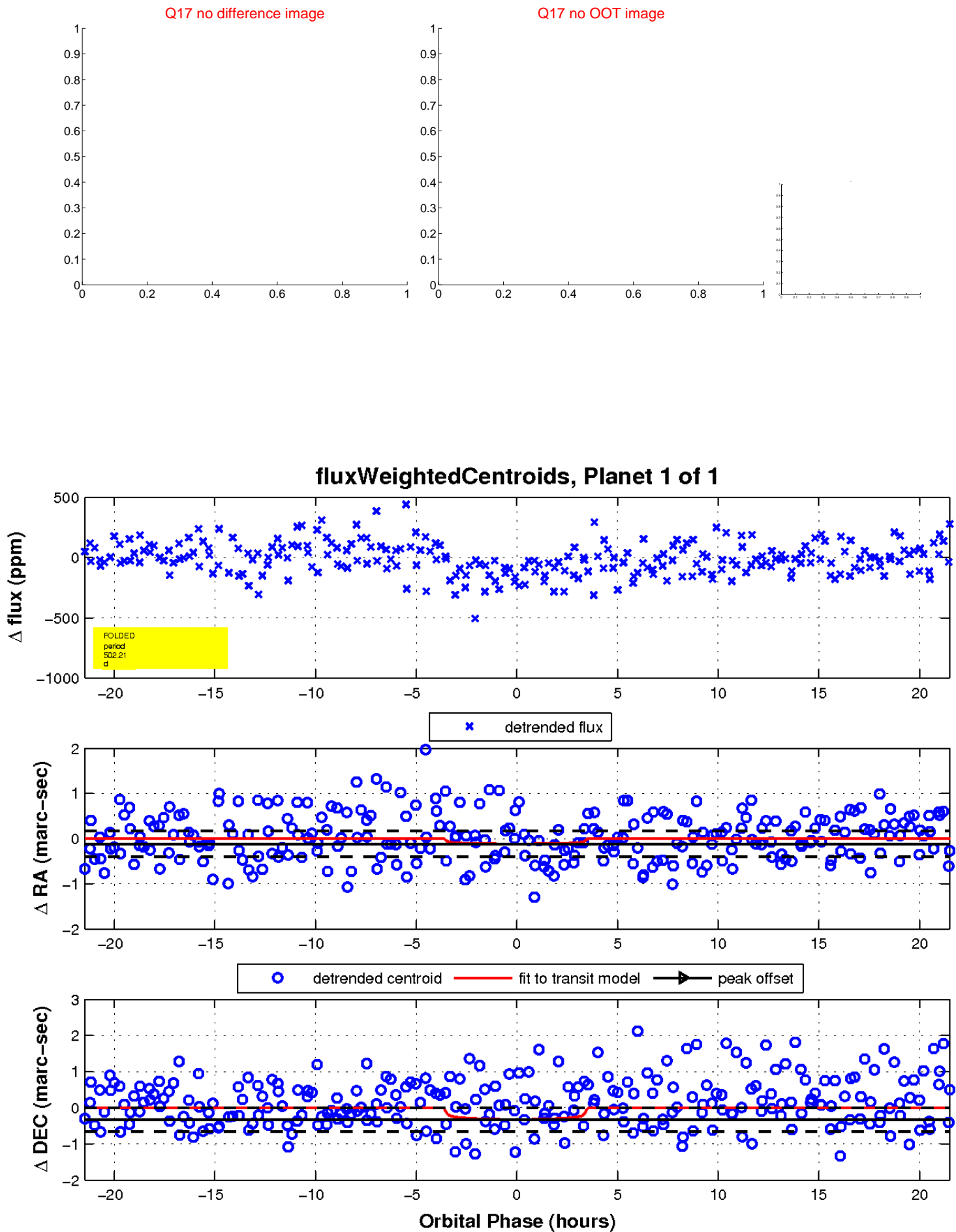
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

