

# KIC 008752452

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008752452-01	OBS	No	323.945855	214.894774	504.1	17.660	8.9	9.2	1.20	6324	3.15	2.35
008752452-02	OBS	No	374.336025	133.424552	657.3	20.050	8.2	8.3	1.20	6324	3.62	1.94

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008752452-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008752452-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—MOD_NONUNIQ_ALT—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.

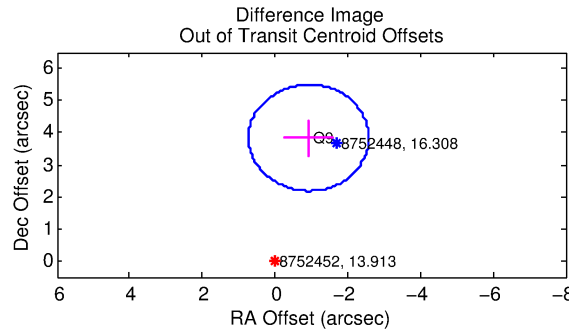
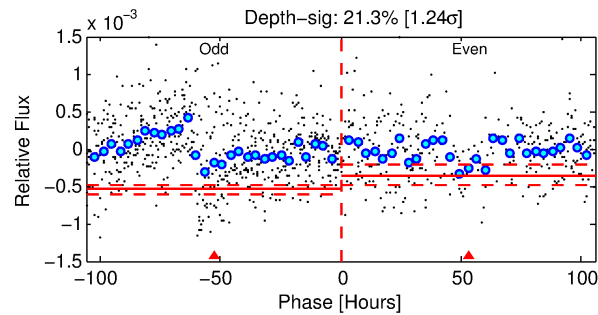
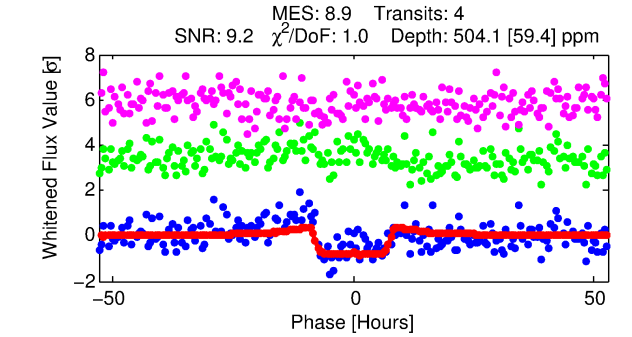
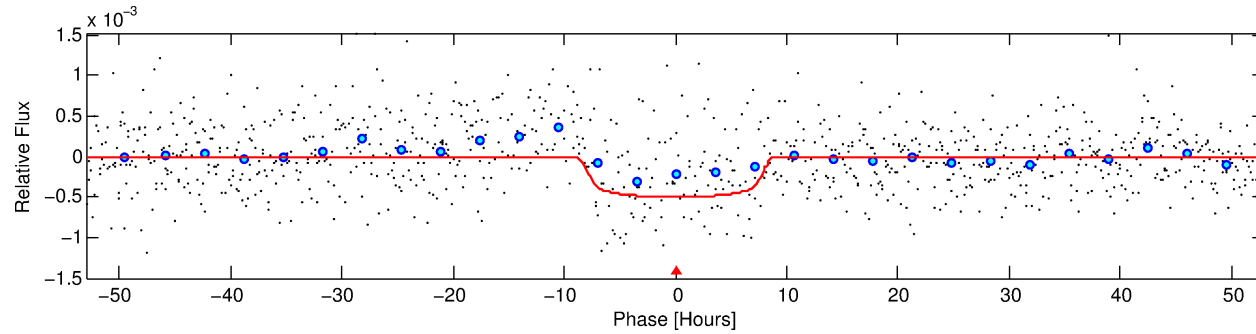
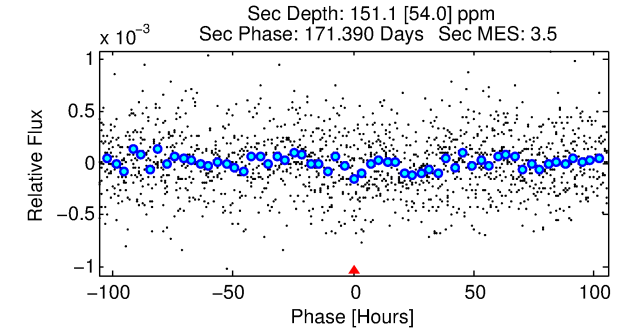
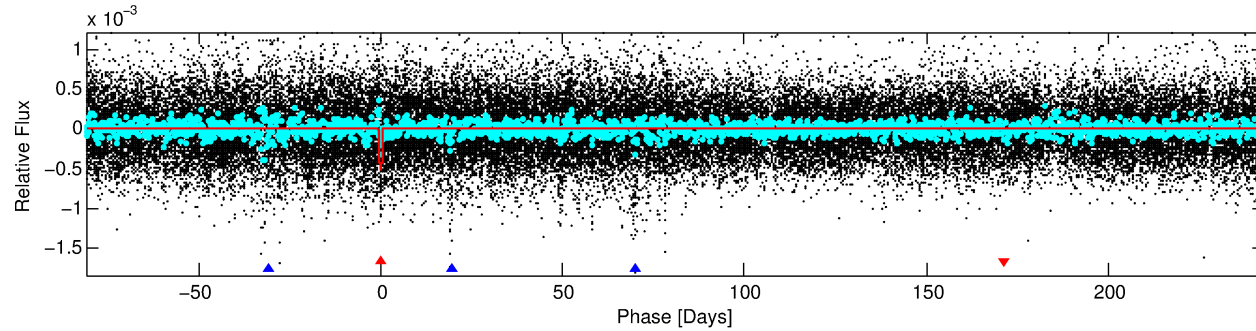
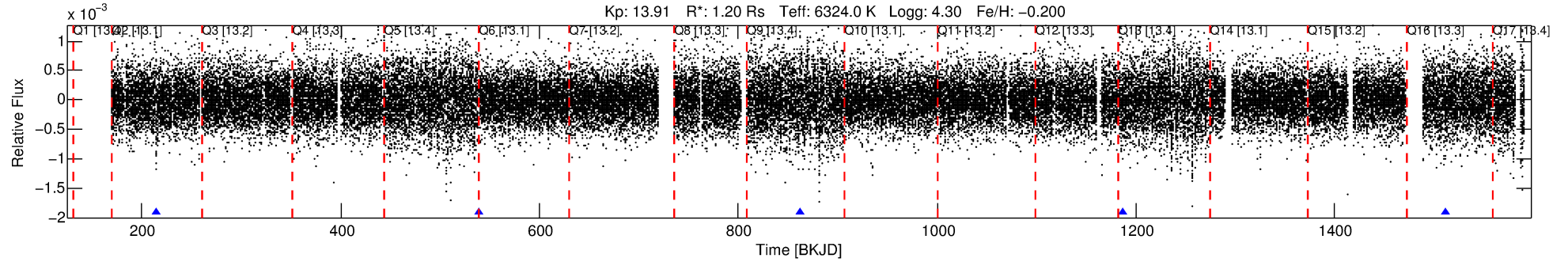
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008752452-01

No Significant Match Found

# DV One-Page Summary

KIC: 8752452 Candidate: 1 of 2 Period: 323.946 d



## DV Fit Results:

Period = 323.94586 [0.00878] d  
Epoch = 214.8948 [0.0230] BKJD  
Rp/R\* = 0.0240 [0.0025]  
a/R\* = 69.65 [29.21]  
b = 0.90 [0.09]  
Seff = 2.35 [0.93]  
Teq = 316 [31] K  
Rp = 3.15 [1.04] Re  
a = 0.9401 [0.2408] AU  
Ag = 7398.99 [4055.75] [1.82σ]  
Teffp = 4525 [503] K [8.36σ]

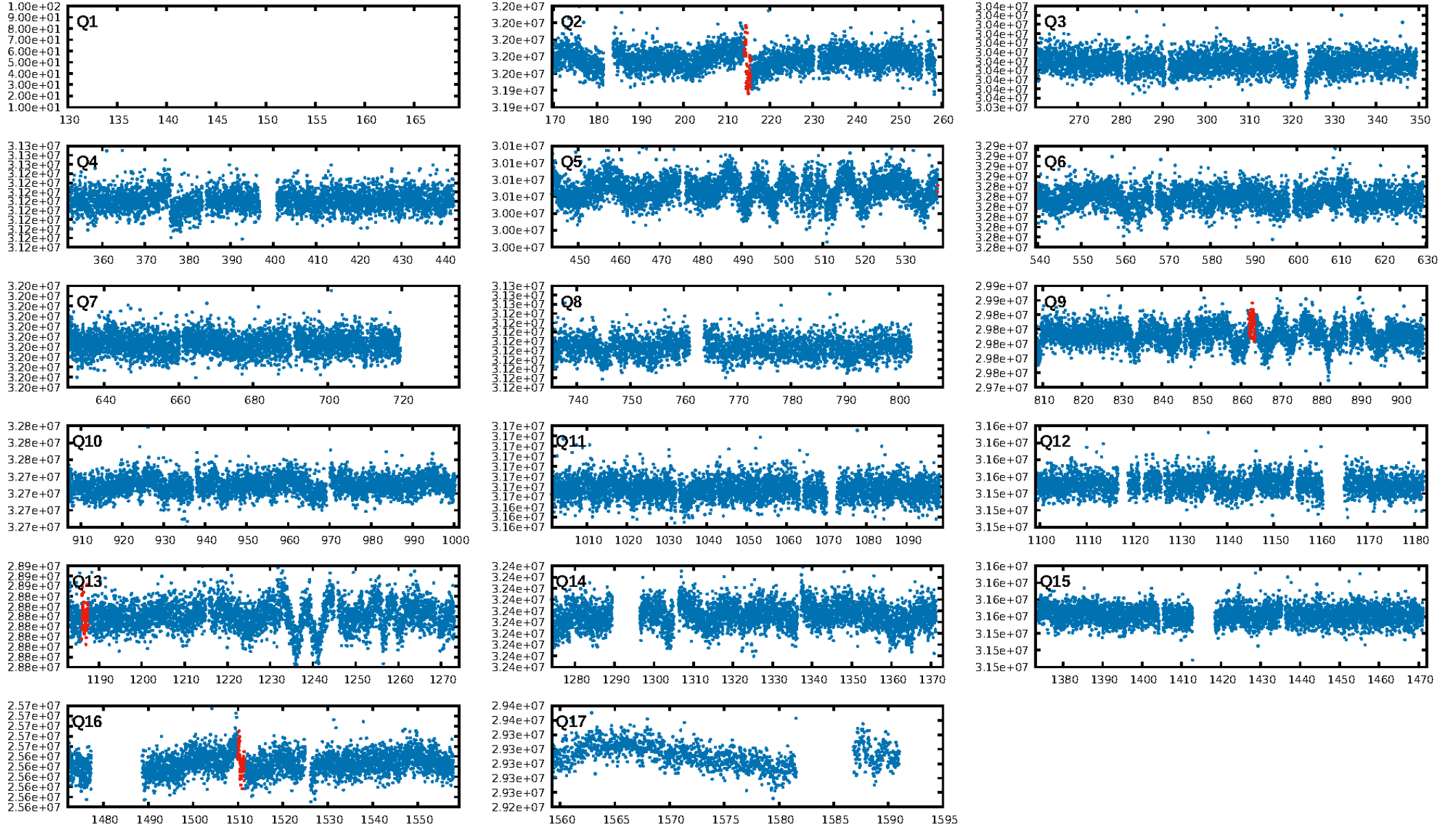
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [45.26σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 99.9%  
Bootstrap-pfa: 5.82e-13  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -13.97  
Centroid-sig: 0.0%  
Centroid-so: 3.975 arcsec [3.74σ]  
OotOffset-rm: 3.945 arcsec [7.15σ]  
KicOffset-rm: 2.618 arcsec [4.71σ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [2/2]

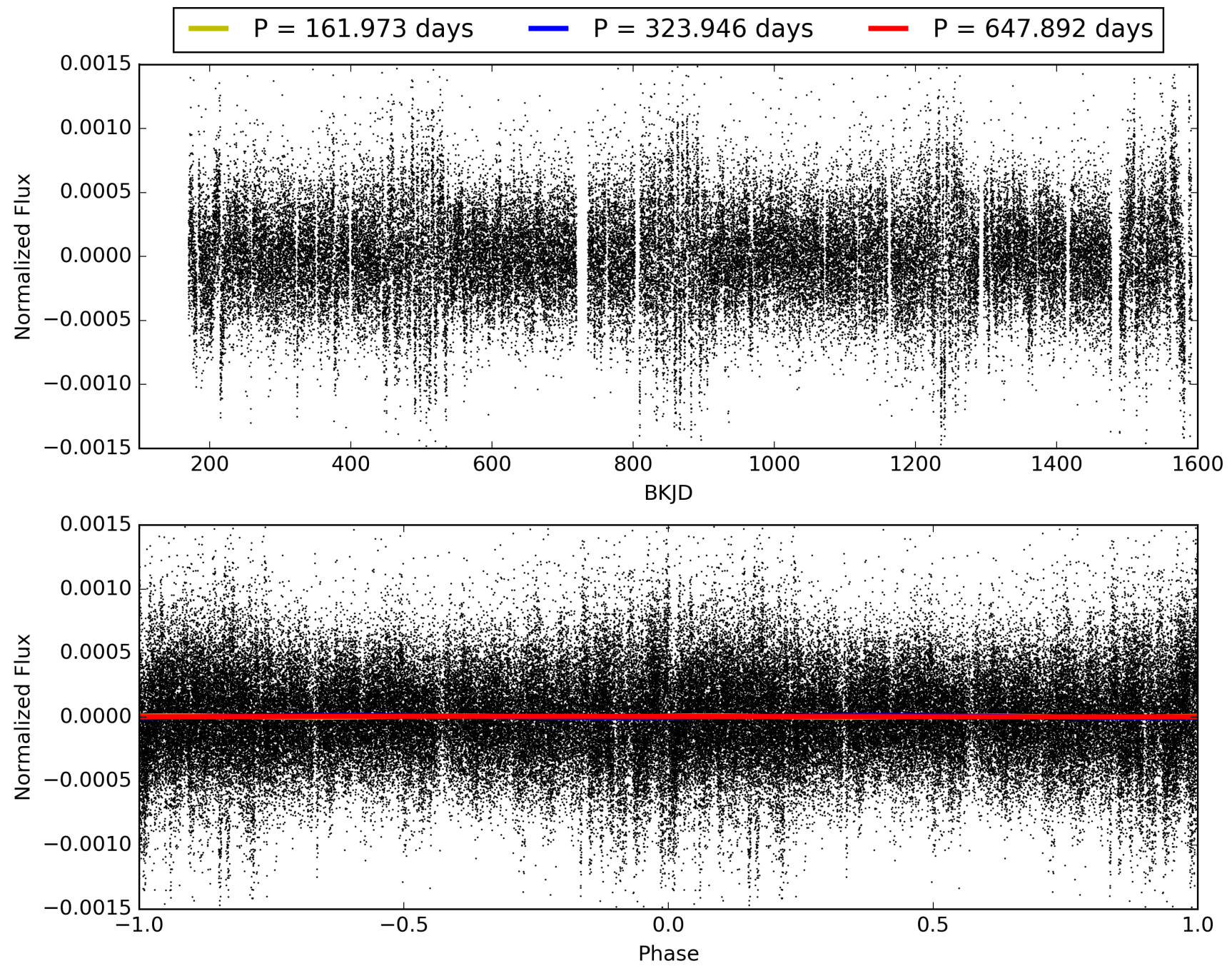
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:14:03 Z

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

# TCE 008752452-01, PDC Light Curves

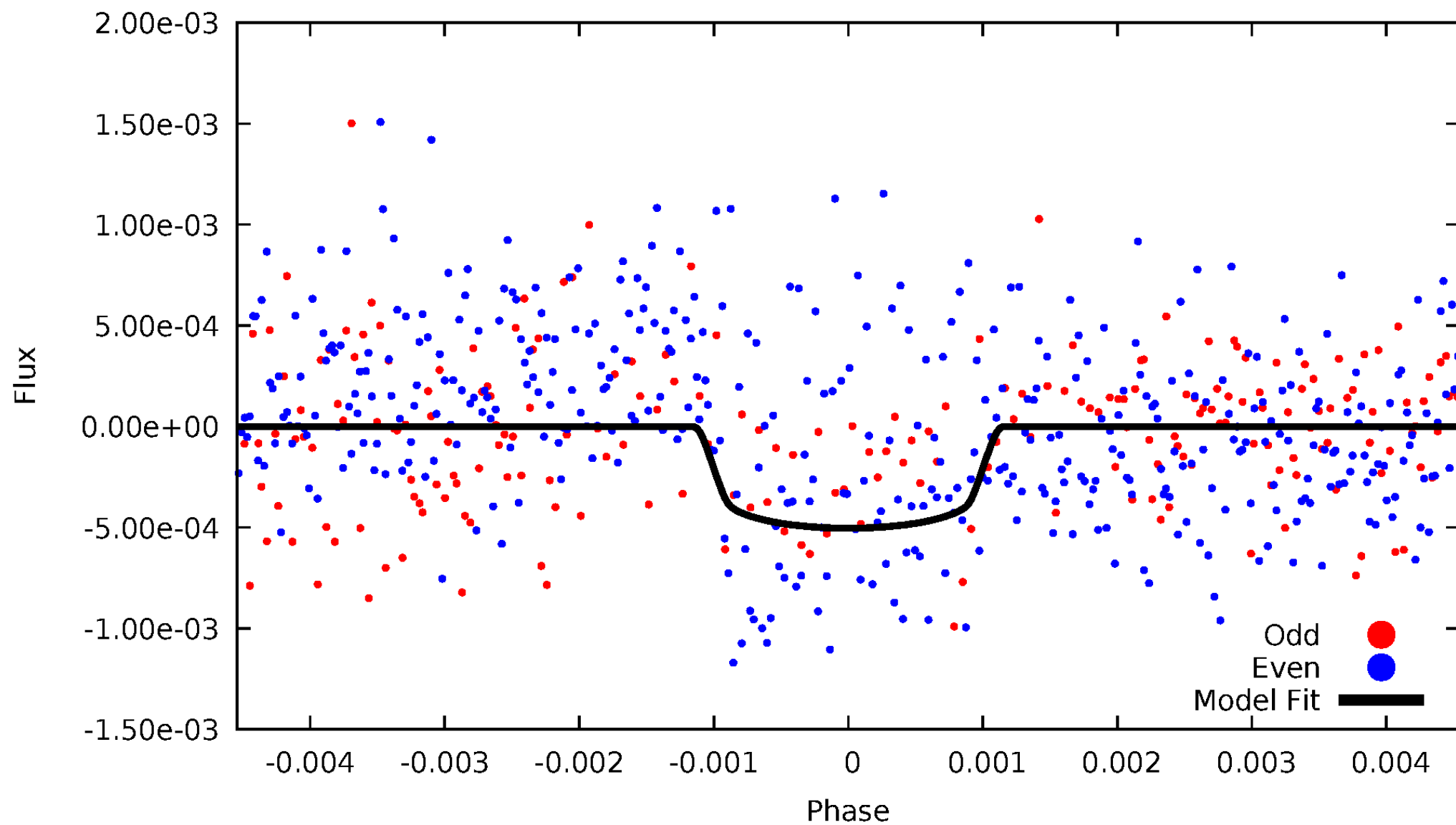


TCE 008752452-01



# DV Odd/Even

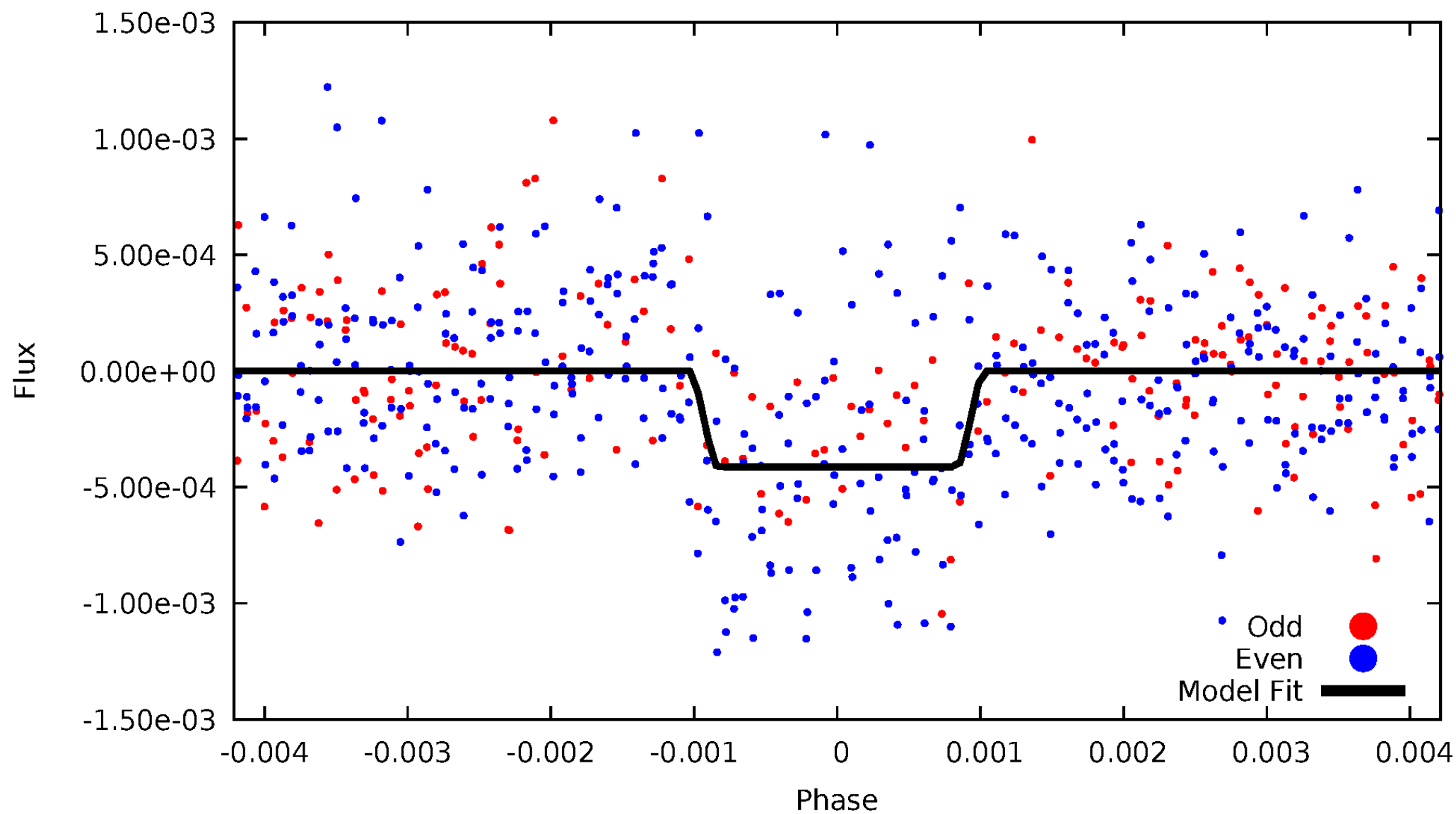
TCE 008752452-01





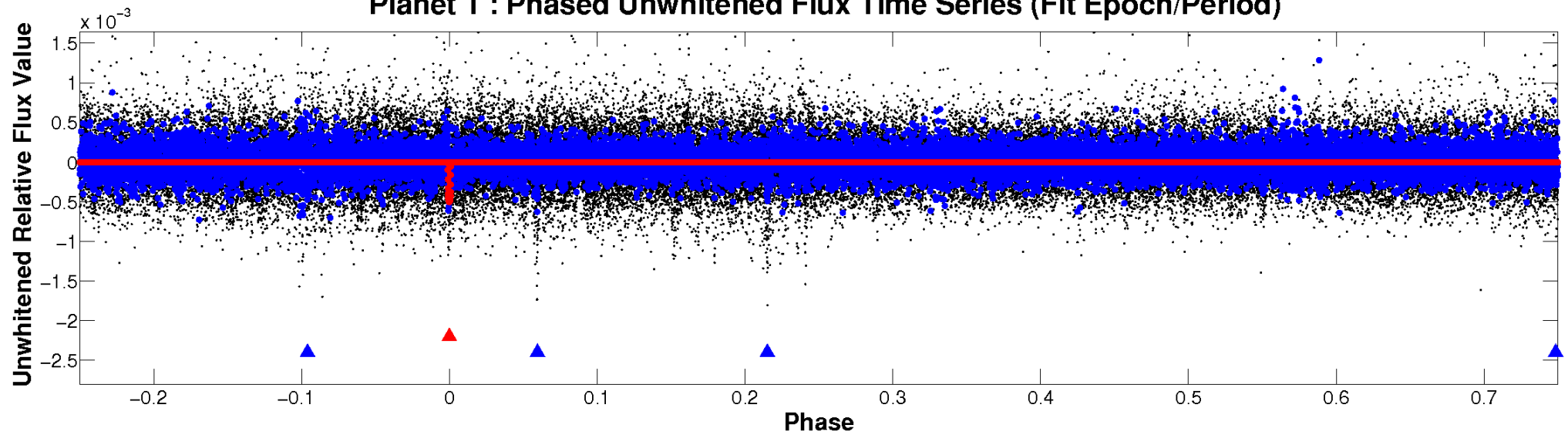
# ALT Odd/Even

TCE 008752452-01

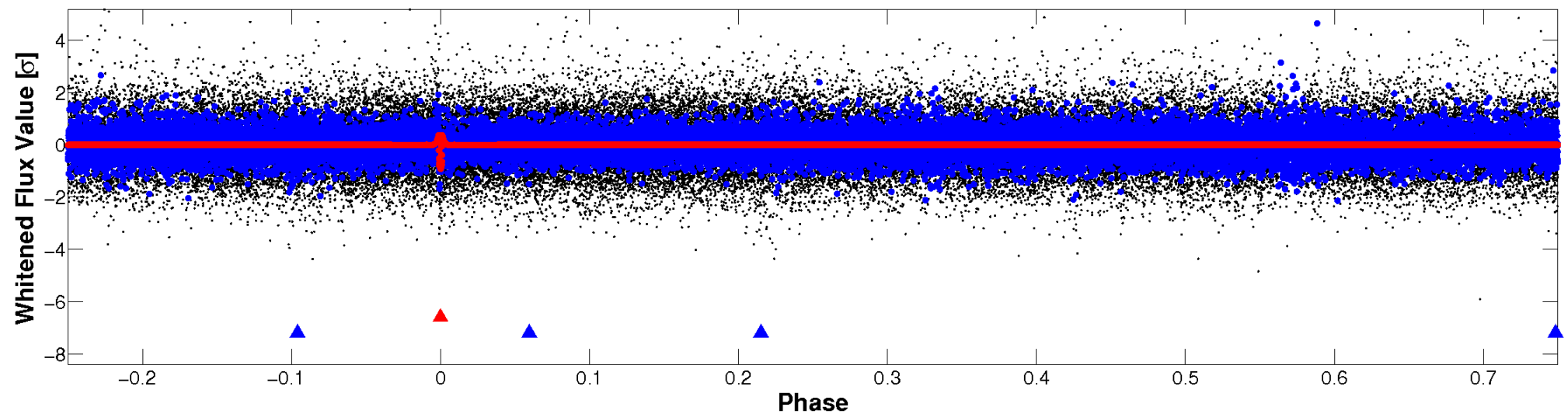


# Non-Whitened Vs. Whitened Light Curve

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

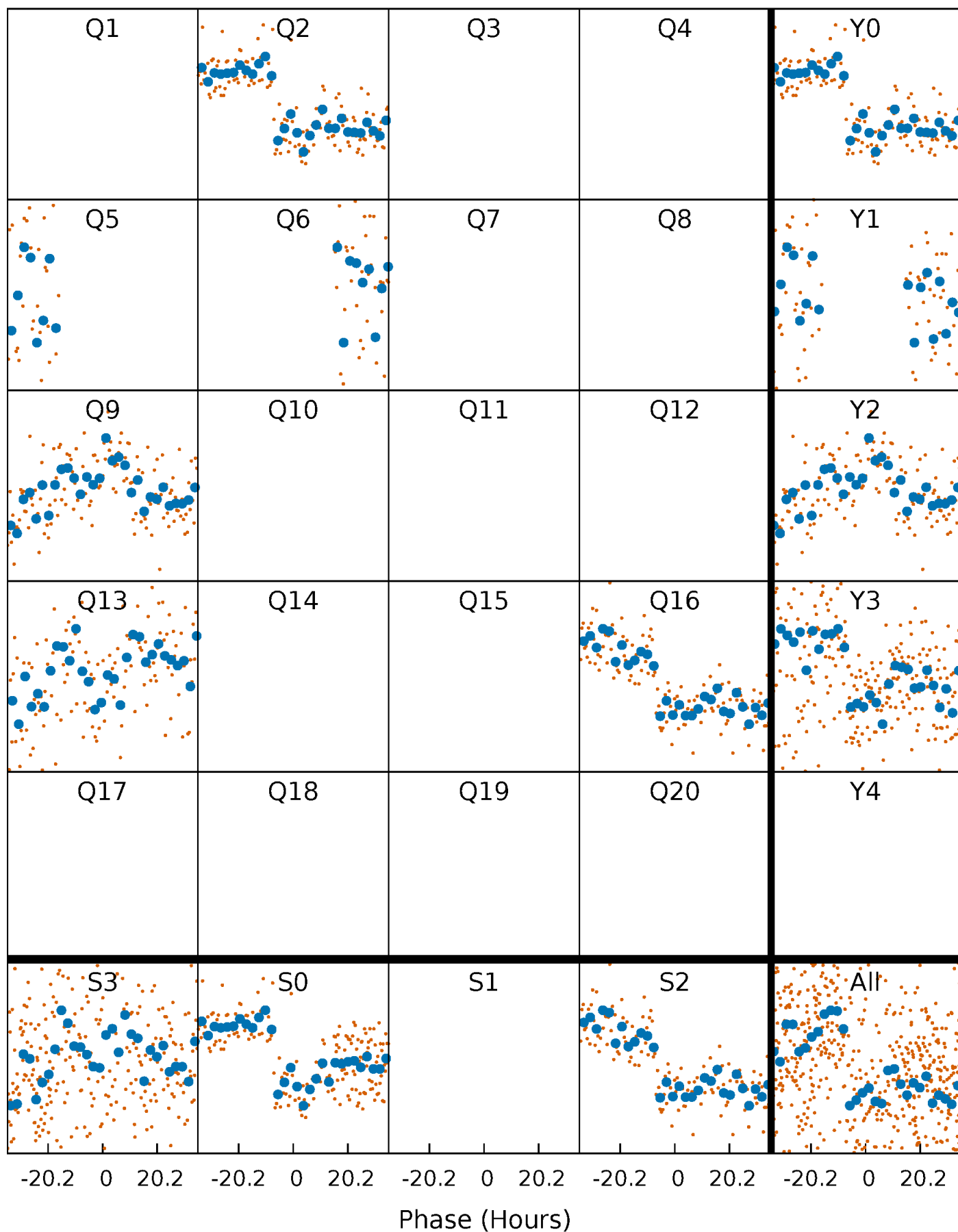


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

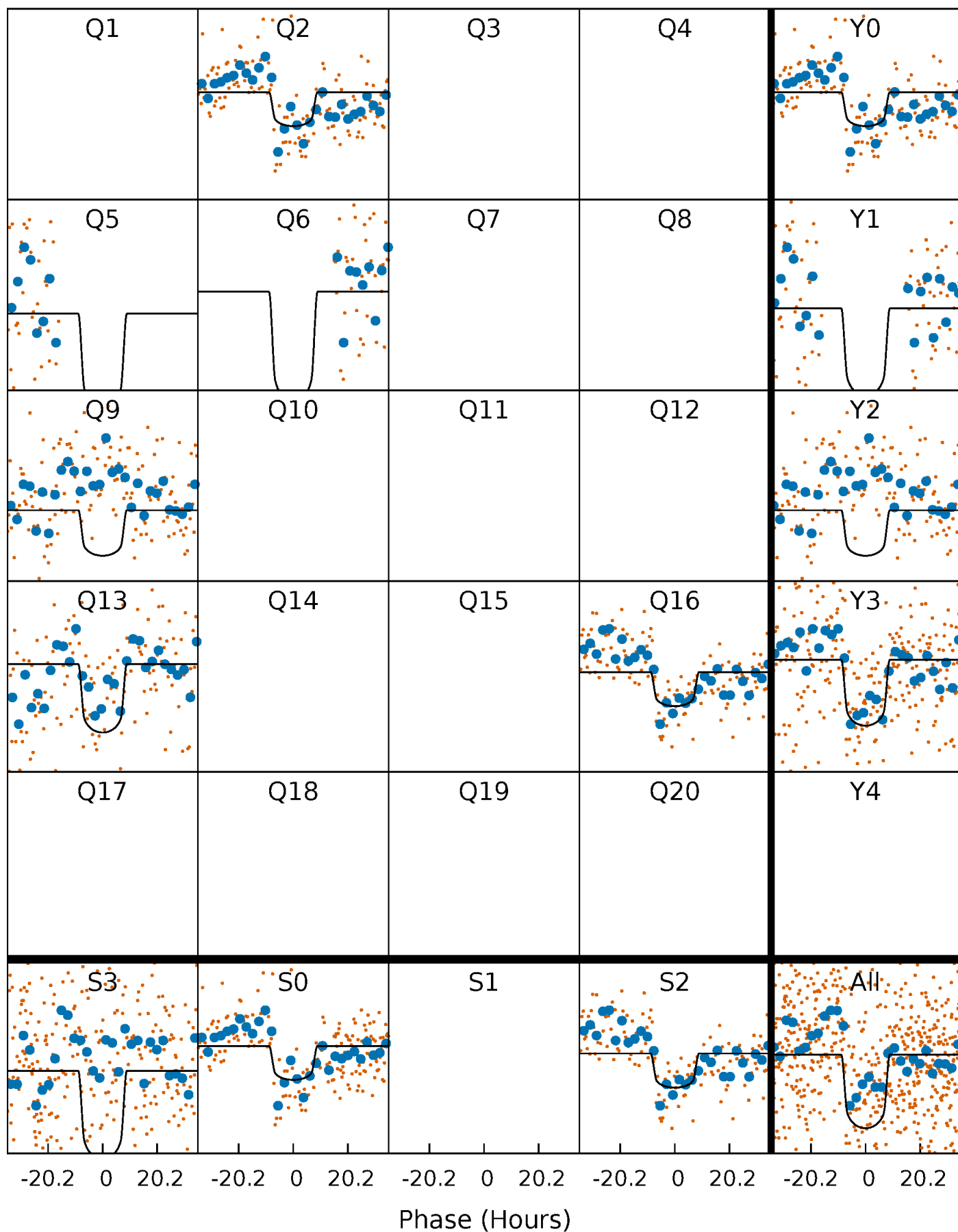
TCE 008752452-01 P=323.945855 Days  $T_0=214.894774$  (BKJD)





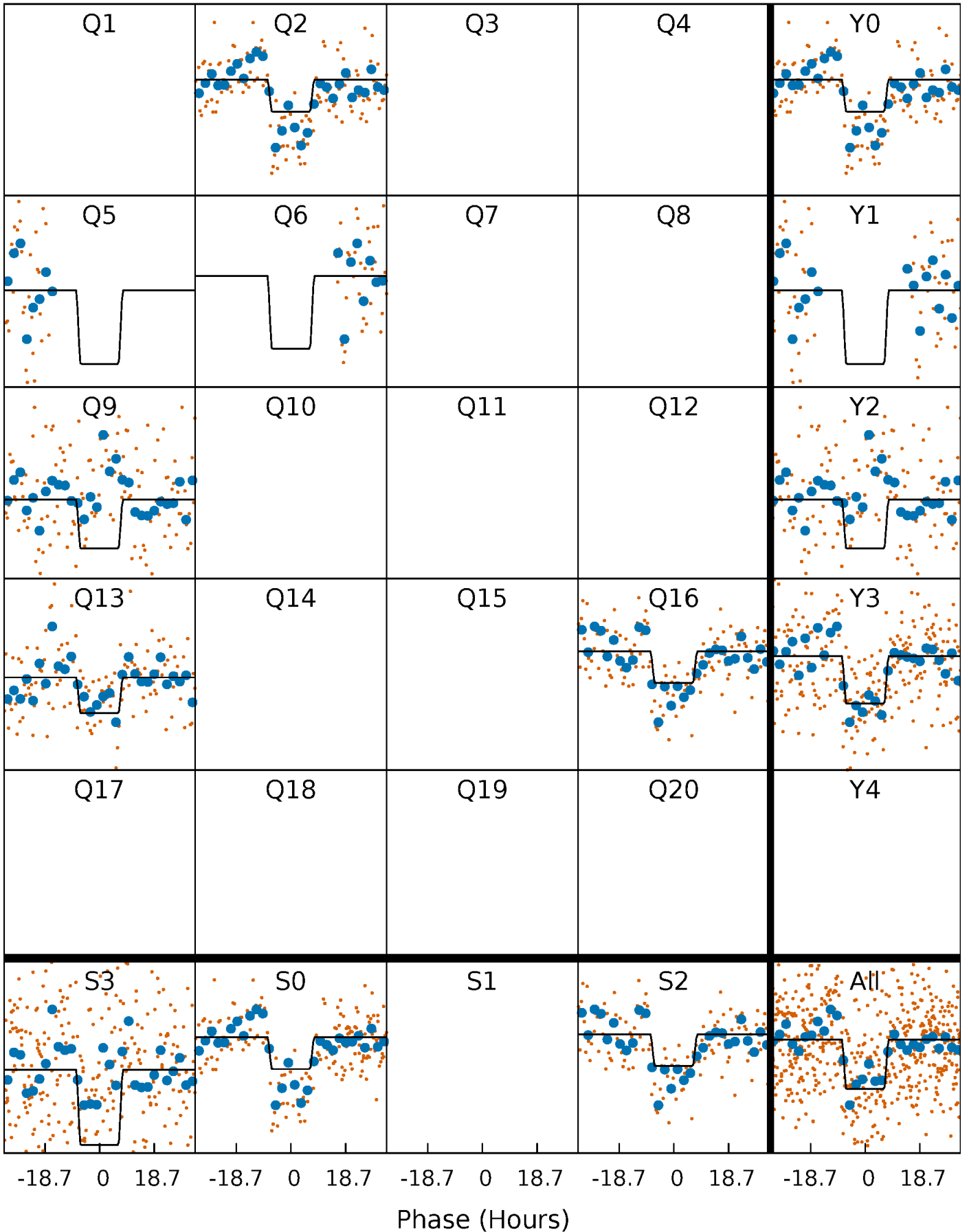
# DV Quarter-Phased Transit Curves

TCE 008752452-01 P=323.945855 Days  $T_0=214.894774$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

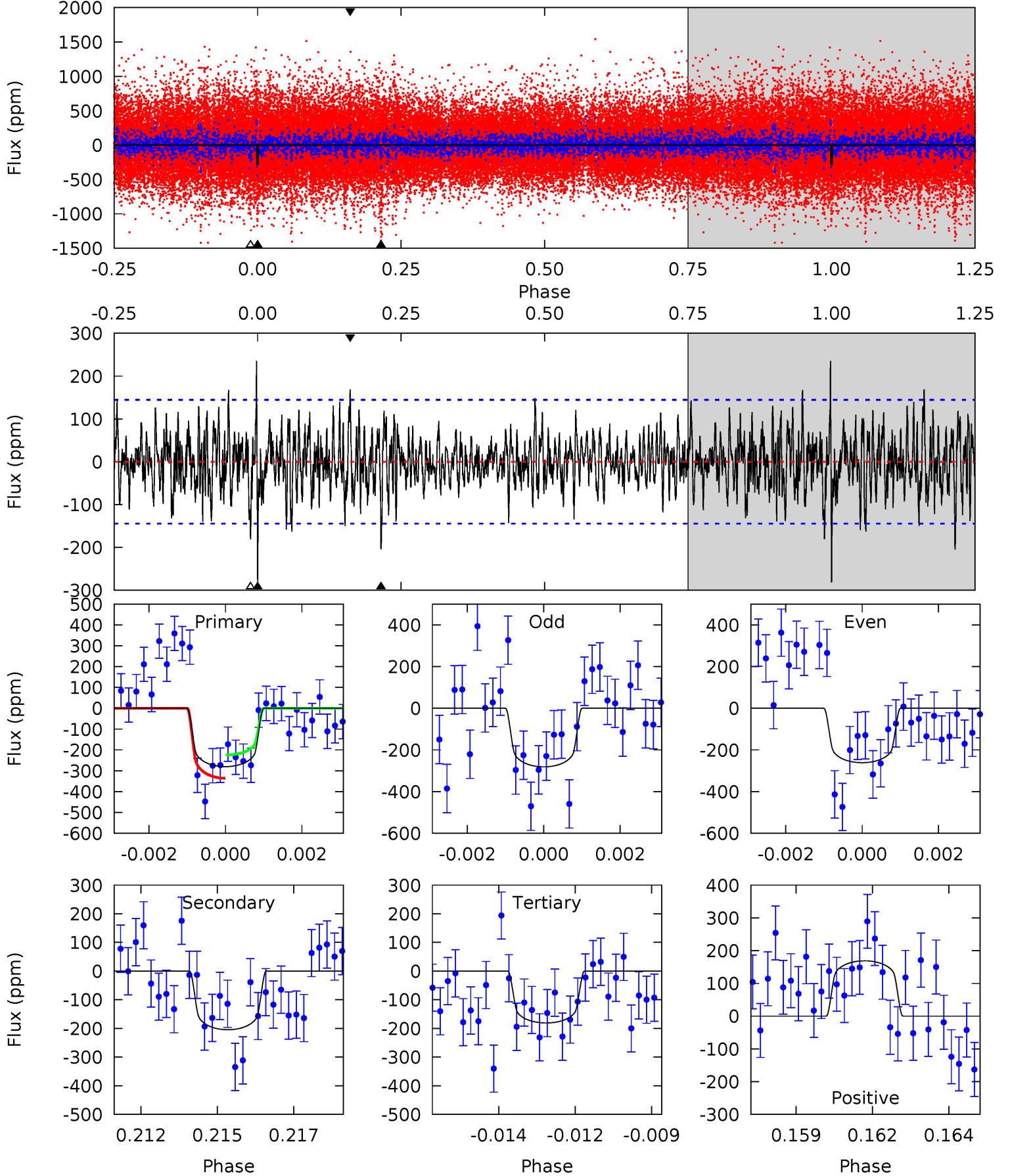
TCE 008752452-01 P=323.953660 Days  $T_0=214.889707$  (BKJD)



# DV Model-Shift Uniqueness Test

008752452-01, P = 323.945855 Days, E = 214.894774 Days

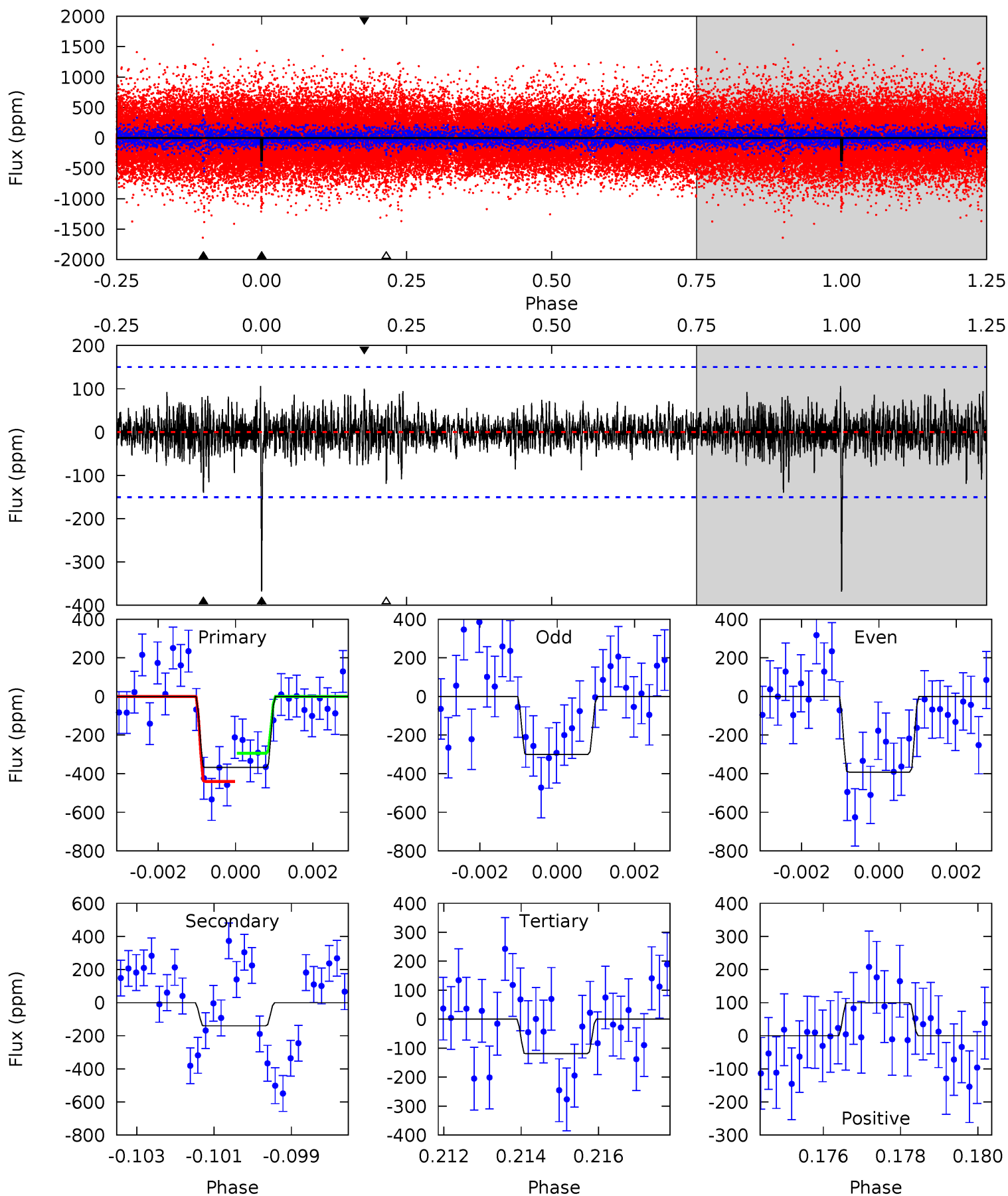
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	7.50	6.63	6.19	5.30	3.05	1.87	3.64	4.08	0.87	1.31	0.32	0.58	0.46	2.05



# Alt Model-Shift Uniqueness Test

008752452-01, P = 323.953660 Days, E = 214.889707 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
13.0	4.97	4.22	3.54	5.33	3.09	0.99	8.82	9.50	0.74	1.43	1.42	0.79	0.22	2.59



### Stellar Parameters For KIC 008752452

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6324^{+175}_{-263}$	$4.301^{+0.128}_{-0.192}$	$-0.200^{+0.250}_{-0.300}$	$1.203^{+0.378}_{-0.204}$	$1.050^{+0.185}_{-0.123}$	$0.850^{+0.522}_{-0.436}$
	+3%/-4%	+3%/-4%	+125%/-150%	+31%/-17%	+18%/-12%	+61%/-51%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 008752452-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-205 \pm 27$	$3.21^{+0.58}_{-0.49}$	$442^{+35}_{-29}$	$4958^{+294}_{-292}$	$9688^{+3686}_{-2939}$
Alt.	$-140 \pm 28$	$2.72^{+0.54}_{-0.46}$	$442^{+36}_{-28}$	$4920^{+366}_{-356}$	$9217^{+4173}_{-3174}$

$T_{max}$  = 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

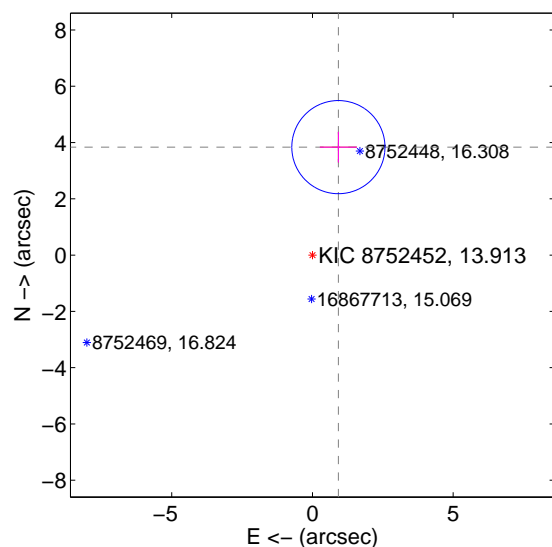
Supplemental centroid analysis for 008752452-01. Kepler magnitude: 13.91. Transit SNR 9.21

There are 0 quarters with good PRF difference image offsets

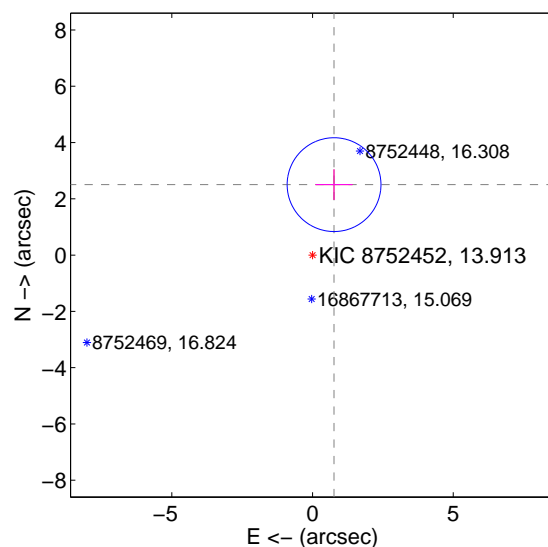
The direct PRF centroid is offset from the target star catalog position by about 1.34 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.945 \pm 0.552$	7.15	$-0.922 \pm 0.659$	$3.836 \pm 0.545$
PRF-fit source offset from KIC position	$2.618 \pm 0.555$	4.71	$-0.765 \pm 0.659$	$2.504 \pm 0.545$
photometric centroid source offset	$3.98 \pm 1.06$	3.74	$2.91 \pm 1.07$	$-2.71 \pm 1.05$

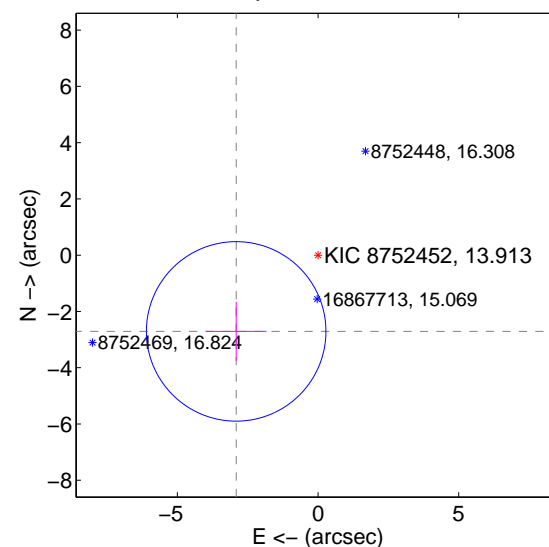
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



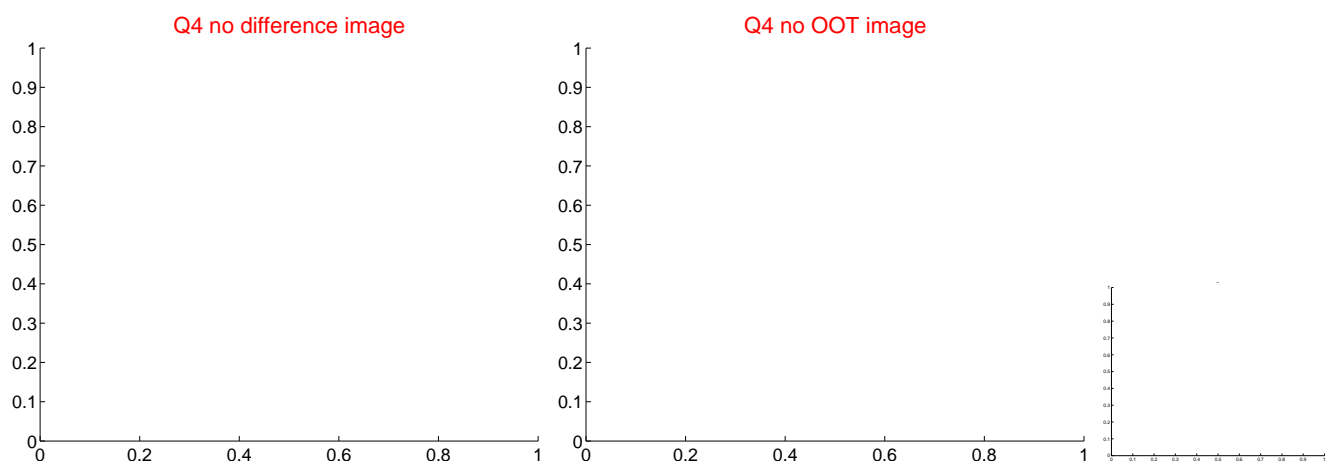
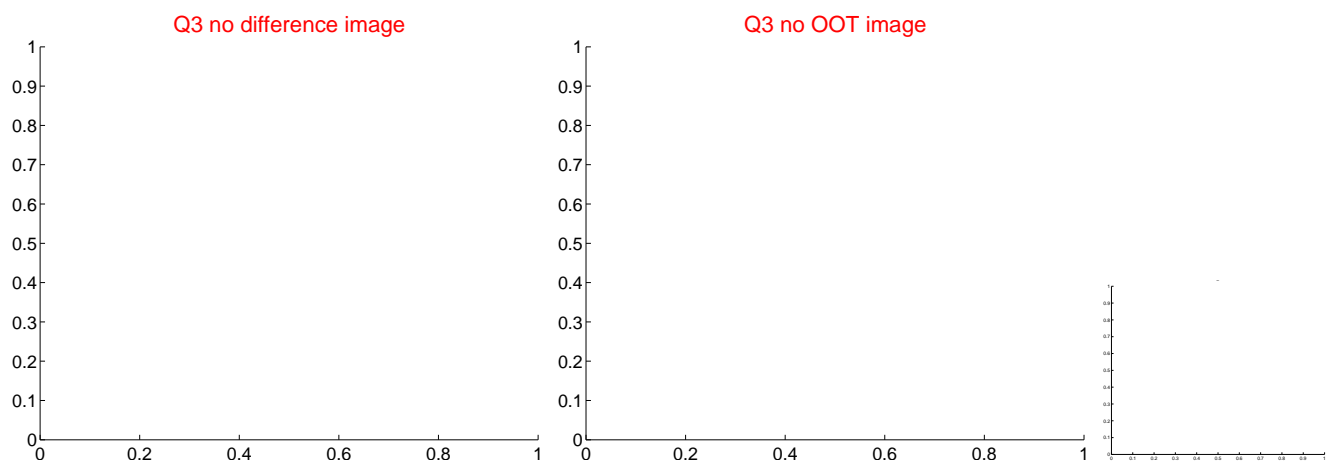
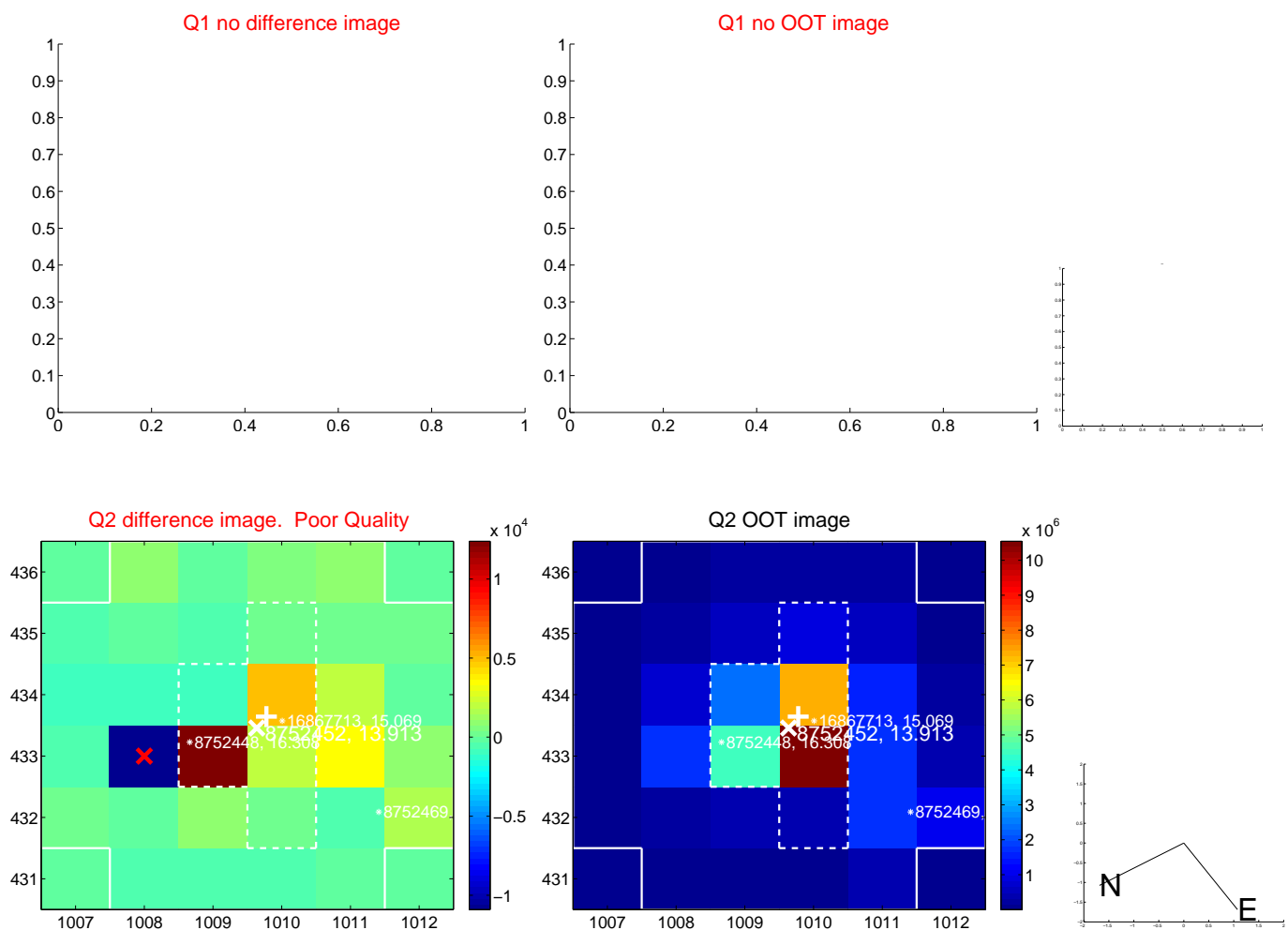
offset from photometric centroids



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.



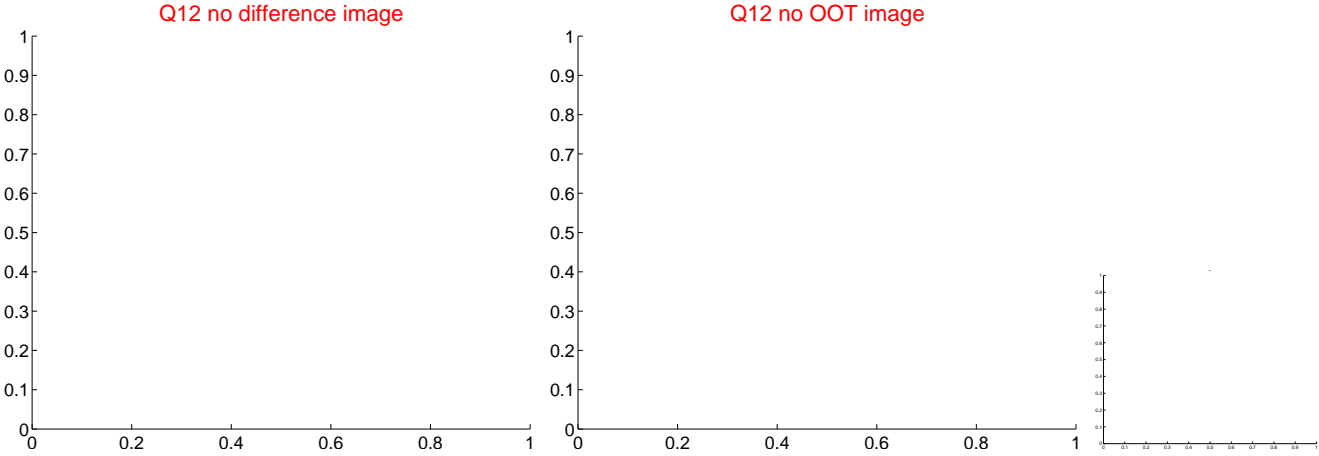
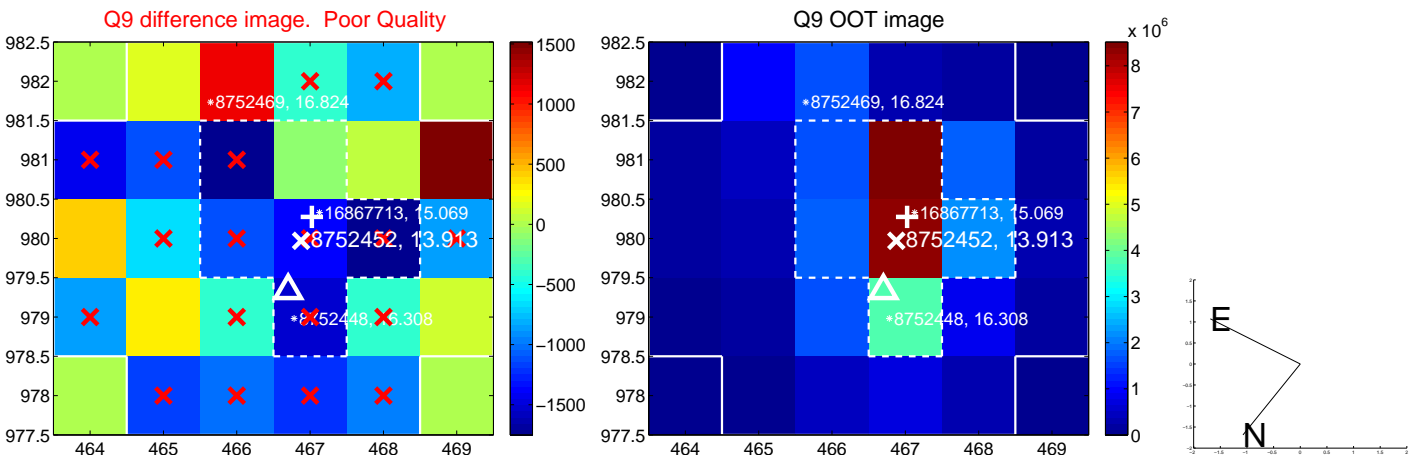
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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



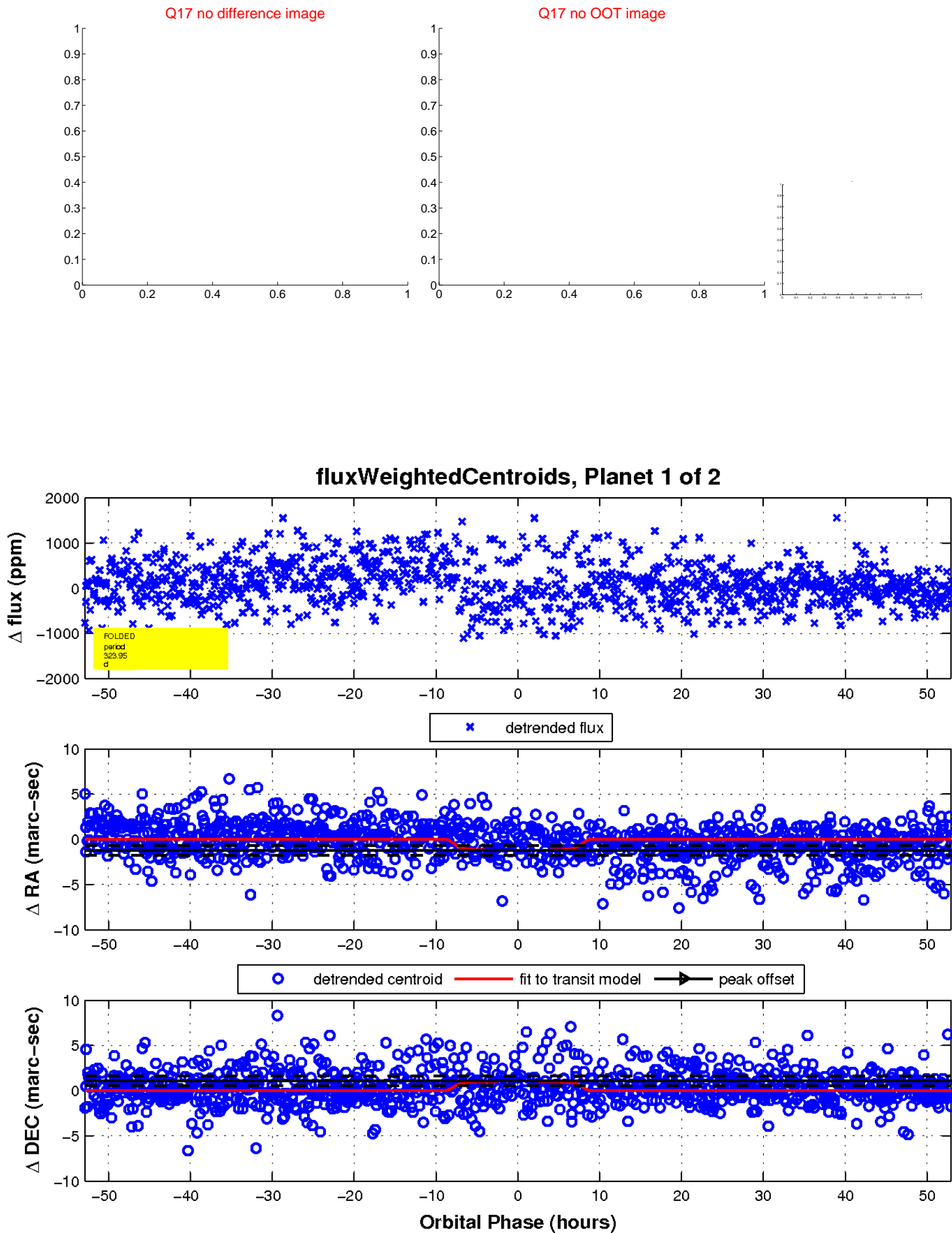
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

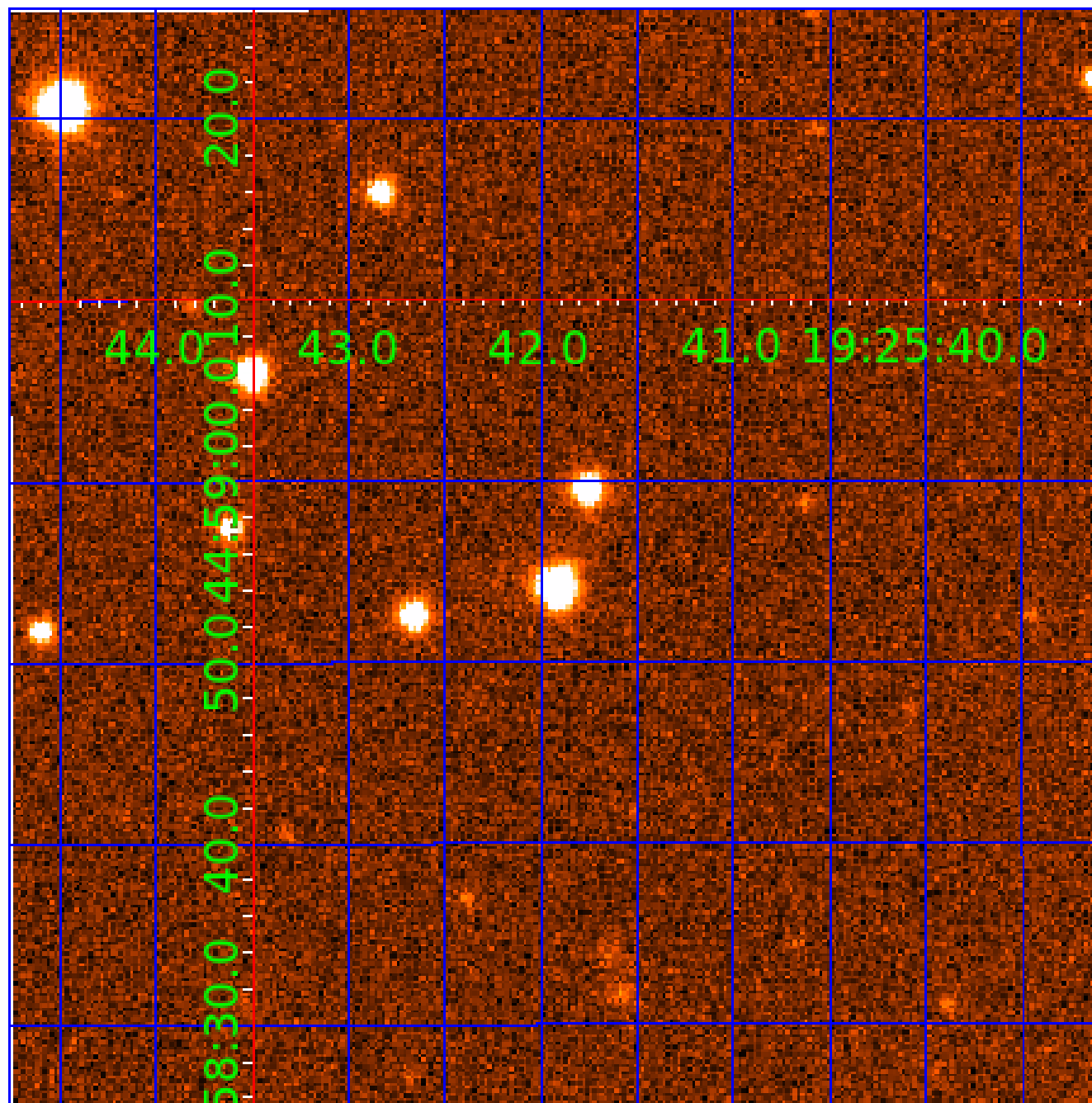


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008752452

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008752452-01	OBS	No	323.945855	214.894774	504.1	17.660	8.9	9.2	1.20	6324	3.15	2.35
008752452-02	OBS	No	374.336025	133.424552	657.3	20.050	8.2	8.3	1.20	6324	3.62	1.94

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008752452-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008752452-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—MOD_NONUNIQ_ALT—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.

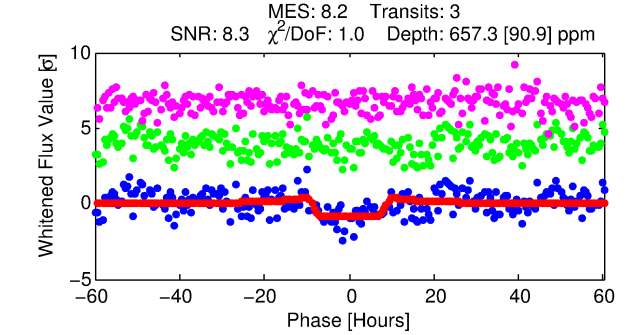
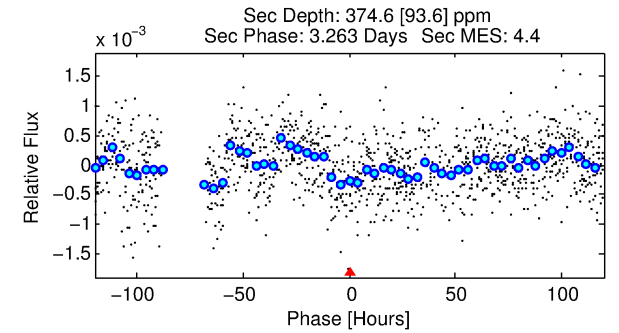
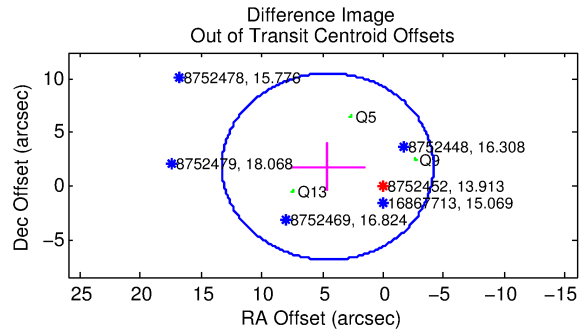
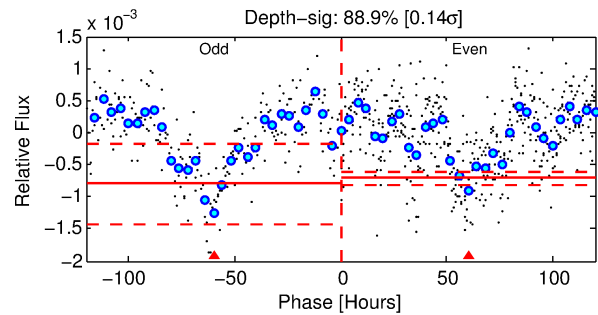
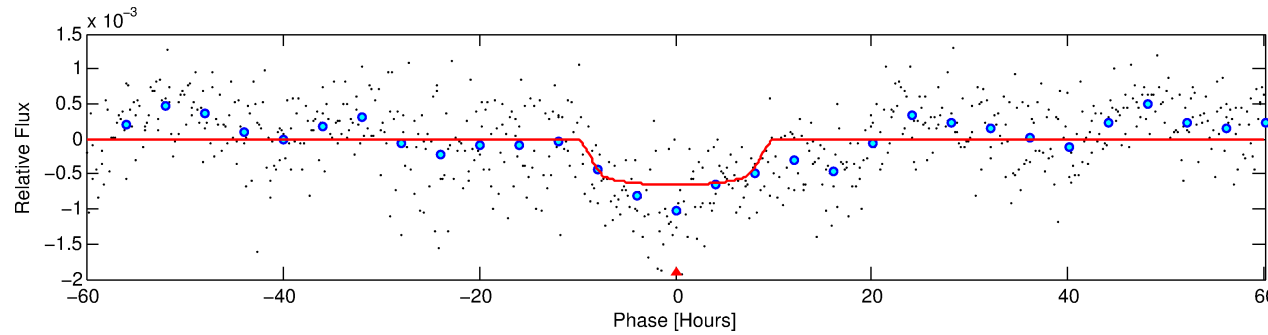
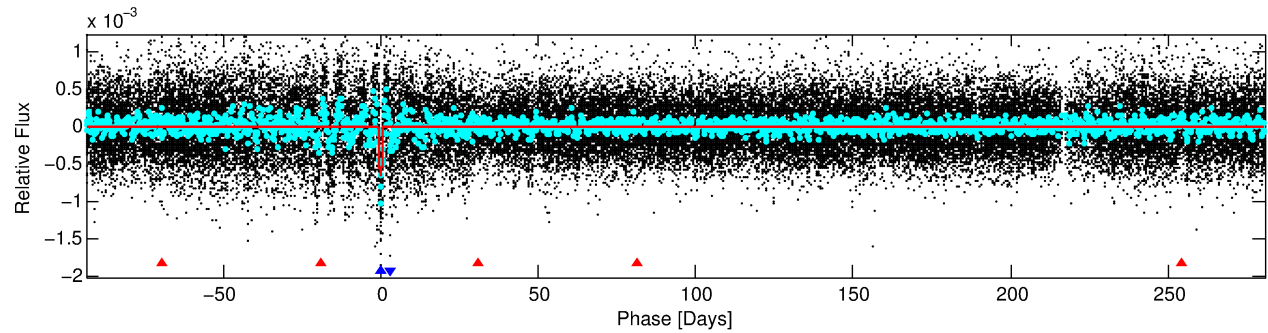
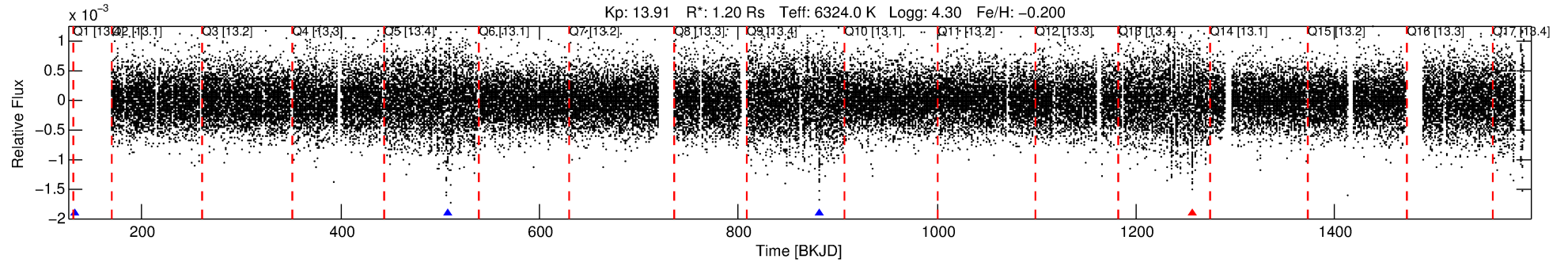
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008752452-02

No Significant Match Found

# DV One-Page Summary

KIC: 8752452 Candidate: 2 of 2 Period: 374.336 d



## DV Fit Results:

Period = 374.33602 [0.02100] d  
Epoch = 133.4246 [0.0460] BKJD  
Rp/R\* = 0.0276 [0.0027]  
a/R\* = 69.97 [23.48]  
b = 0.90 [0.07]  
Seff = 1.94 [0.77]  
Teff = 301 [30] K  
Rp = 3.62 [1.19] Re  
a = 1.0353 [0.2651] AU  
Ag = 16830.07 [8115.80] [2.07 $\sigma$ ]  
Teffp = 5296 [476] K [10.47 $\sigma$ ]

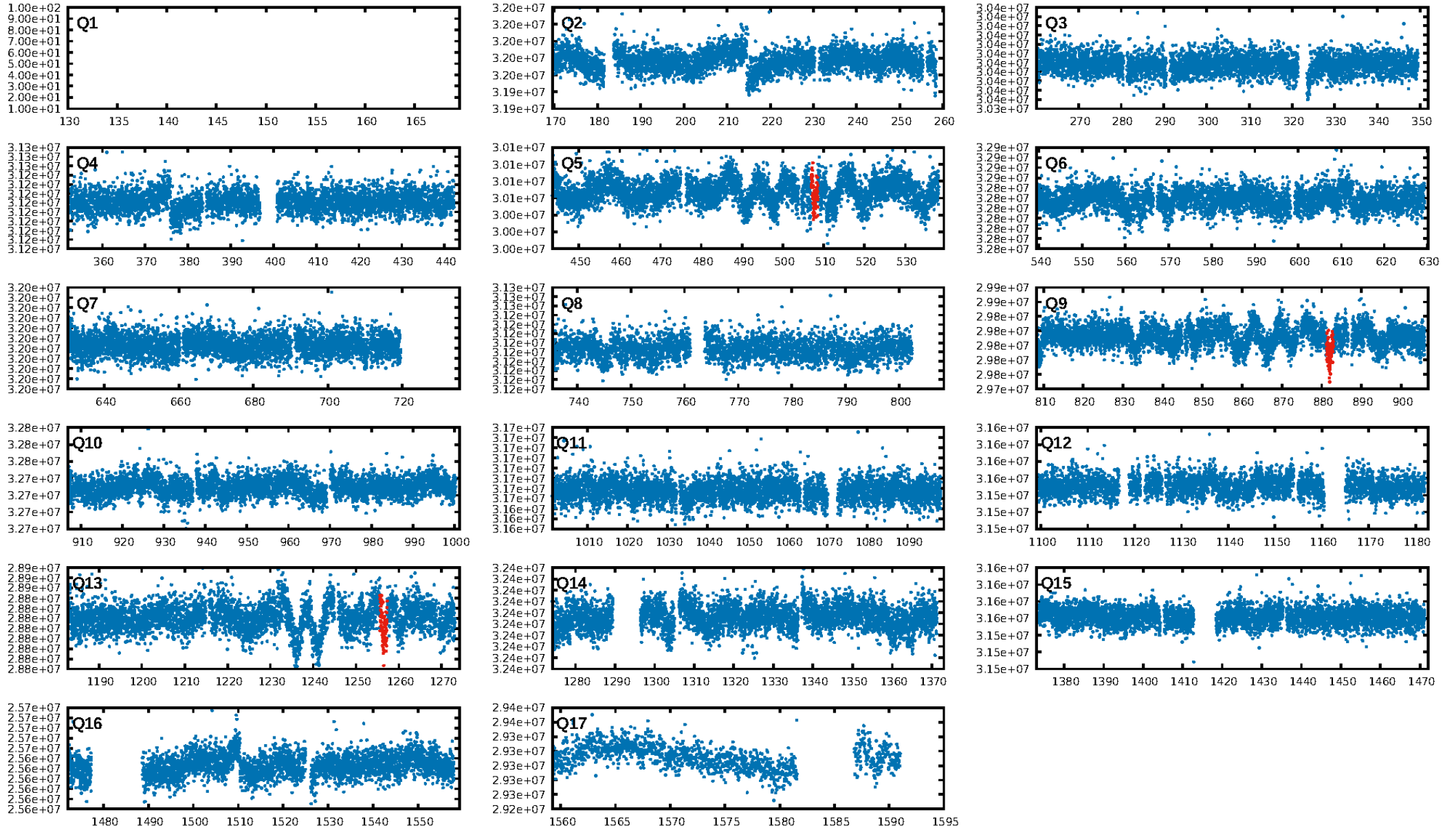
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [45.26 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 92.5%  
ModelChiSquareGof-sig: 99.9%  
Bootstrap-pfa: 4.65e-11  
RollingBand-fgt: 0.67 [2/3]  
GhostDiagnostic-chr: 0.3388  
Centroid-sig: 0.0%  
Centroid-so: 6.739 arcsec [3.58 $\sigma$ ]  
OotOffset-rm: 4.911 arcsec [1.69 $\sigma$ ]  
KicOffset-rm: 4.761 arcsec [1.58 $\sigma$ ]  
OotOffset-st: 0/0/0/3 [3]  
KicOffset-st: 0/0/0/3 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 1.00 [3/3]

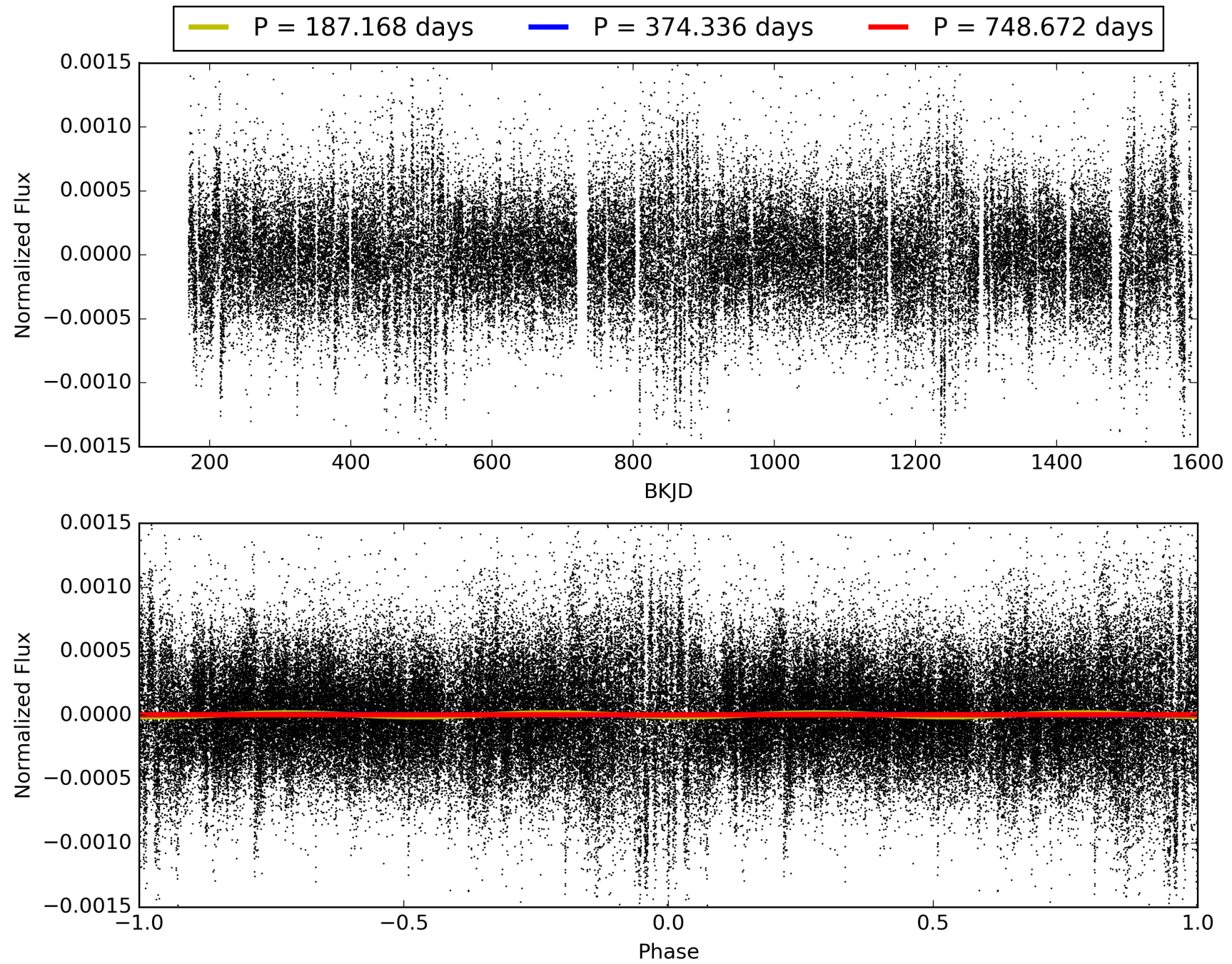
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:14:17 Z

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

# TCE 008752452-02, PDC Light Curves

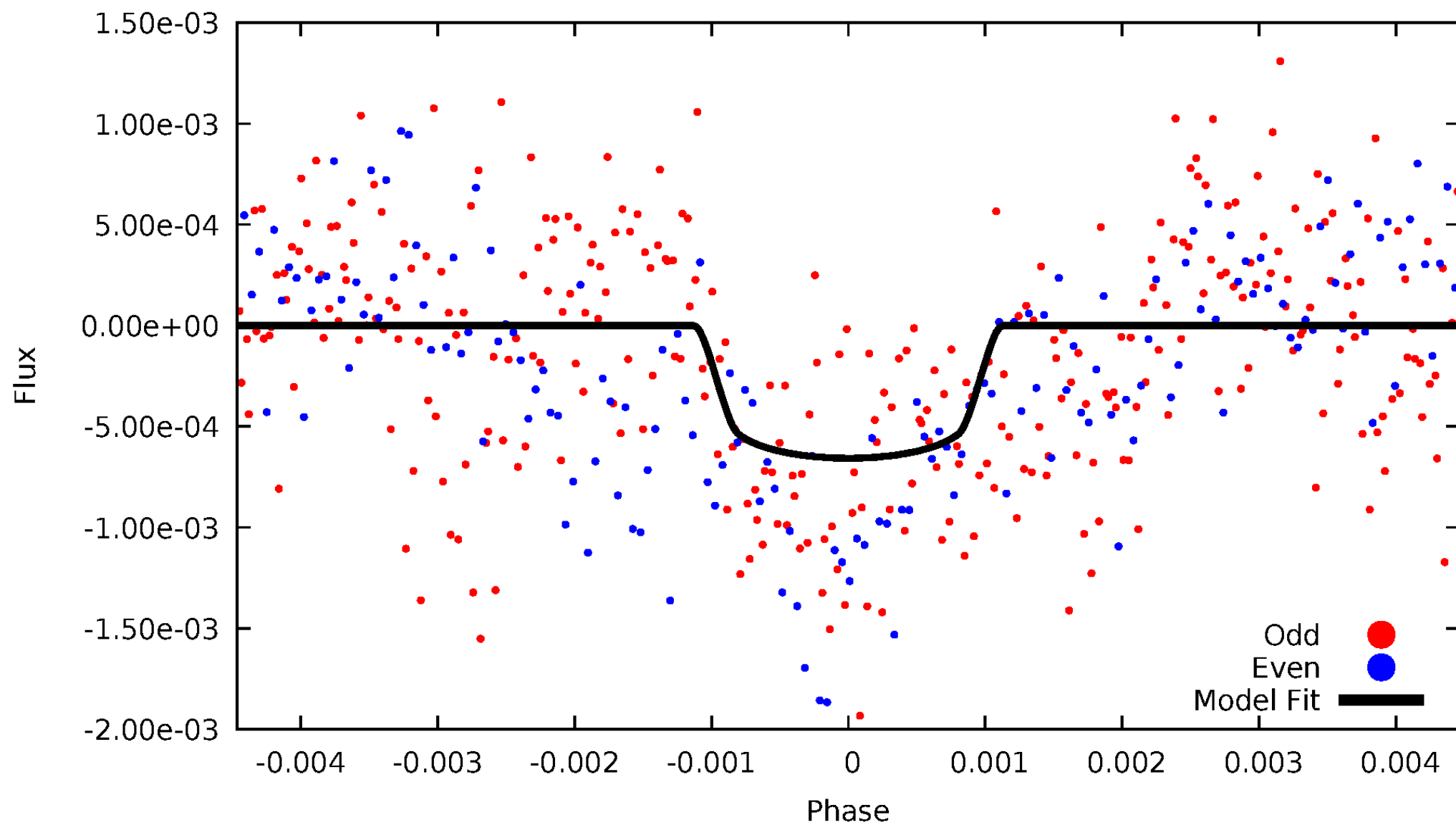


TCE 008752452-02



# DV Odd/Even

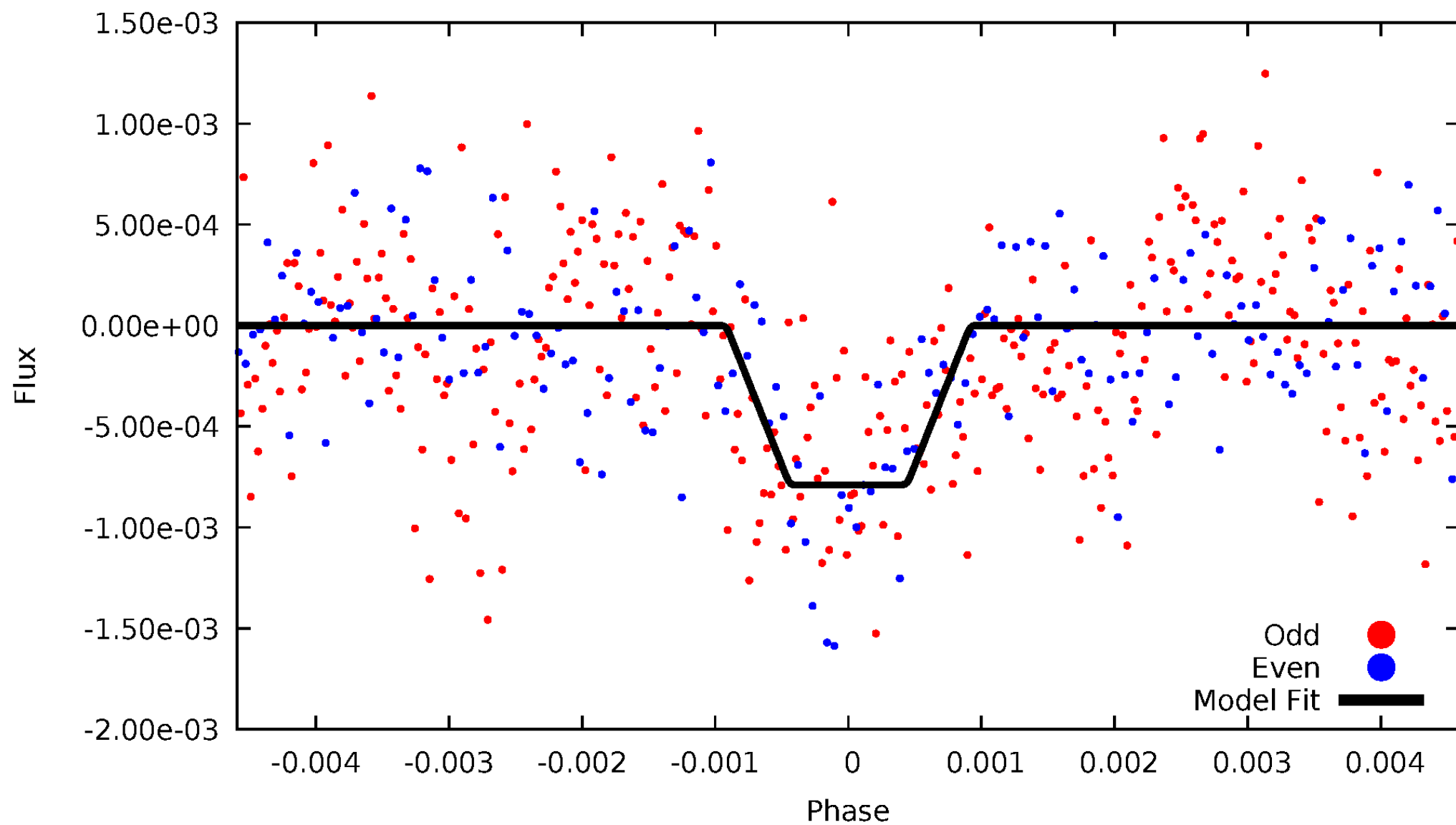
TCE 008752452-02





# ALT Odd/Even

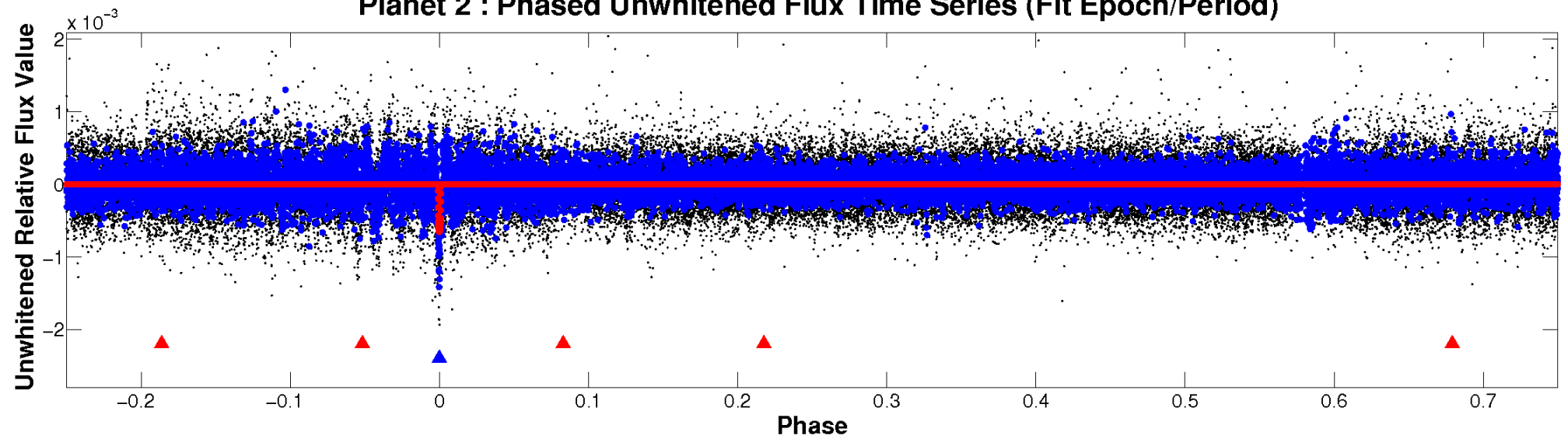
TCE 008752452-02



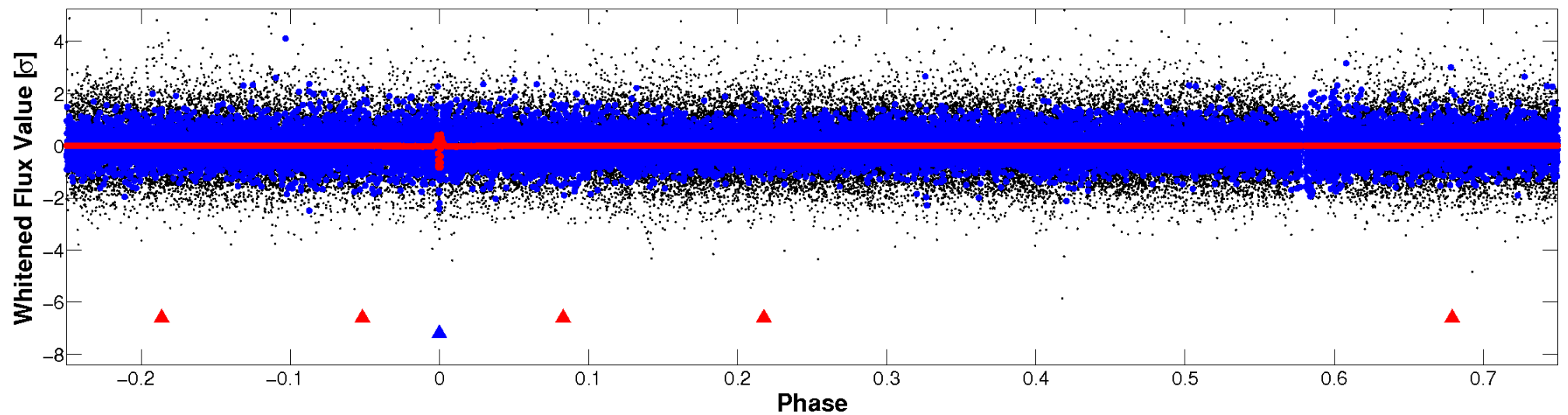


# Non-Whitened Vs. Whitened Light Curve

## Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

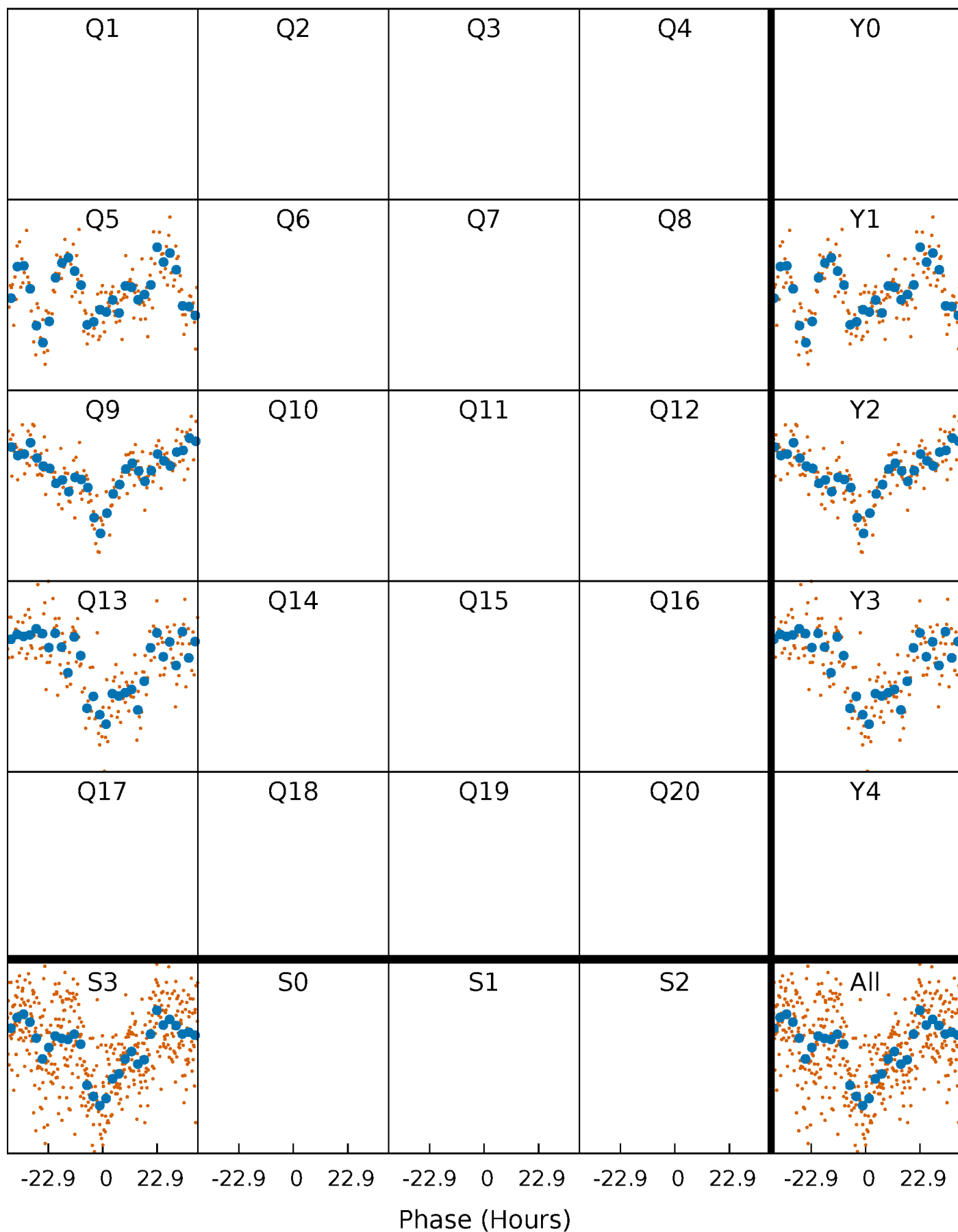


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



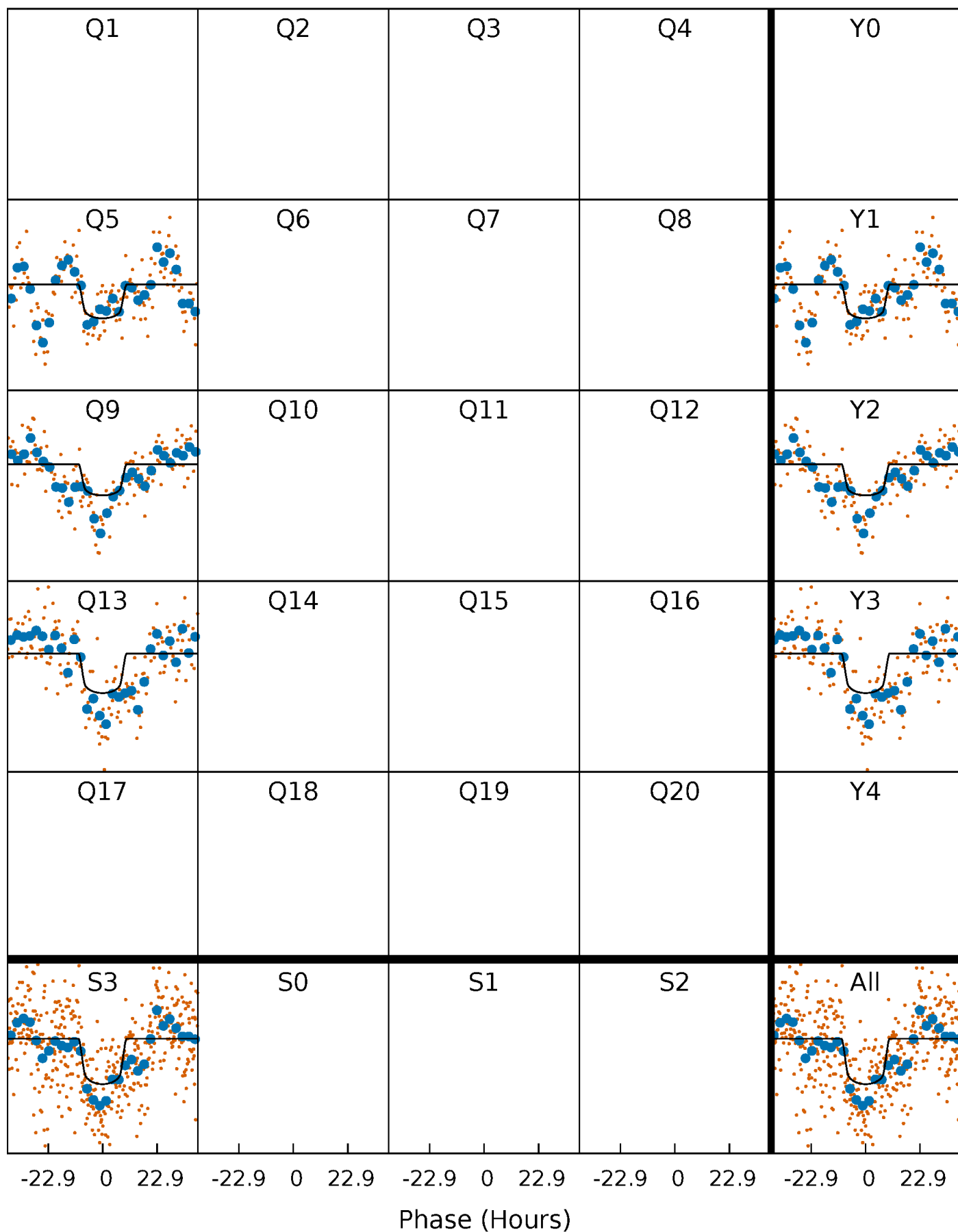
# PDC Quarter-Phased Transit Curves

TCE 008752452-02 P=374.336025 Days  $T_0=133.424552$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 008752452-02     $P=374.336025$  Days     $T_0=133.424552$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

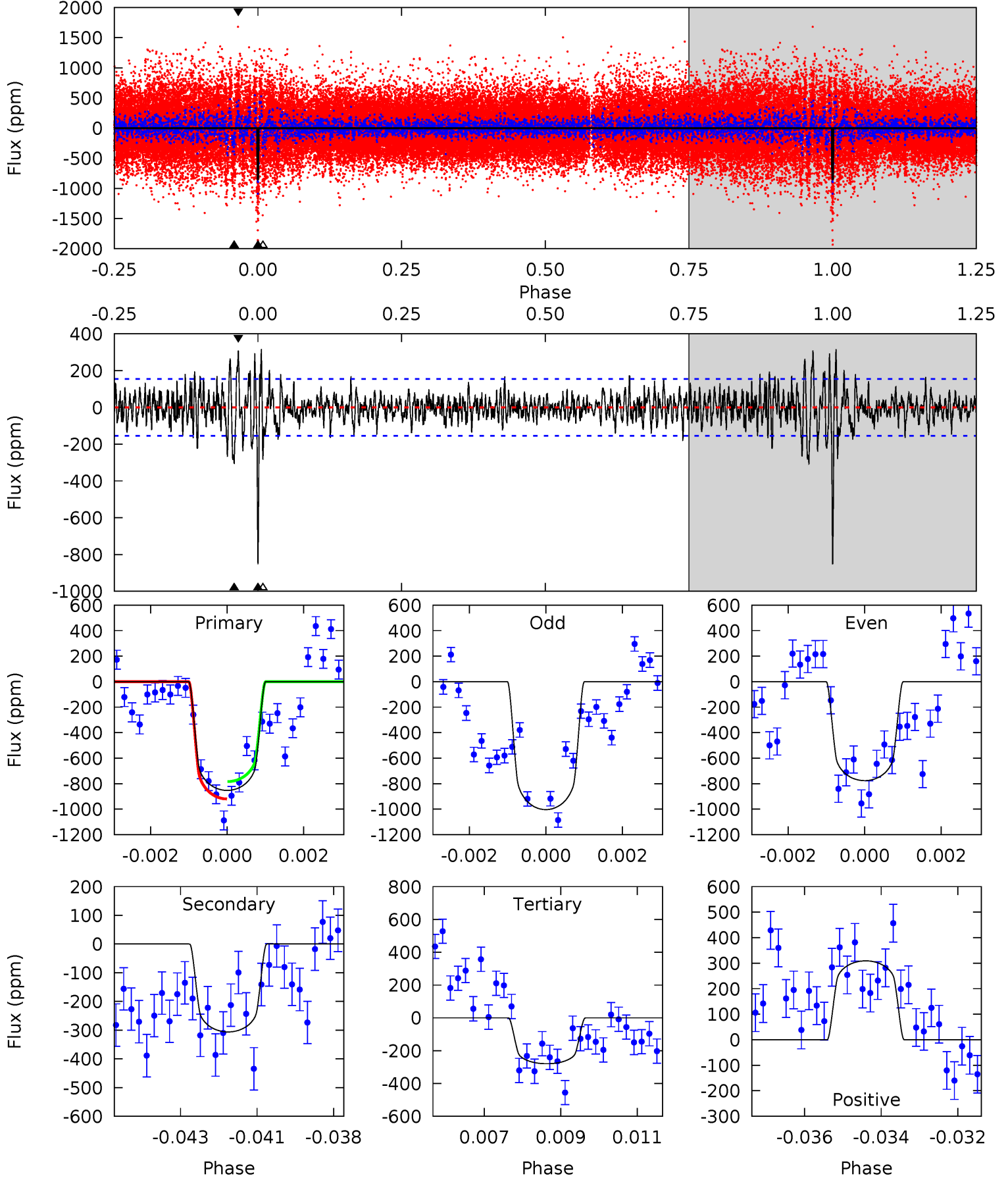
TCE 008752452-02 P=374.308763 Days  $T_0=133.460246$  (BKJD)



# DV Model-Shift Uniqueness Test

008752452-02, P = 374.336025 Days, E = 133.424552 Days

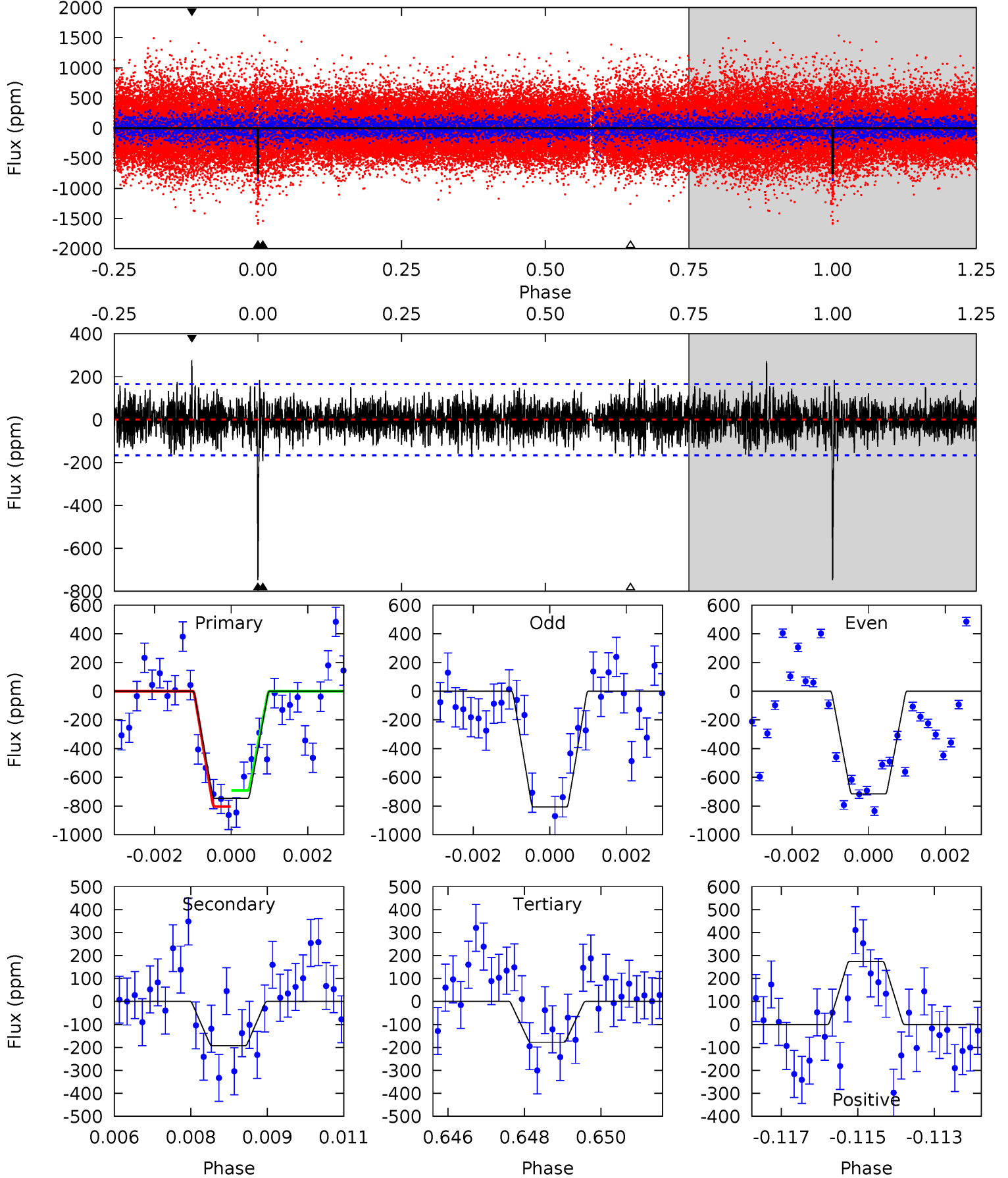
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.2	10.5	9.59	10.6	5.31	3.05	2.24	19.6	18.6	0.90	-0.10	3.68	0.88	0.27	2.31



# Alt Model-Shift Uniqueness Test

008752452-02,  $P = 374.308763$  Days,  $E = 133.460246$  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
24.0	6.20	5.72	8.82	5.34	3.11	1.98	18.3	15.2	0.48	-2.62	1.39	1.00	0.27	1.80





### Stellar Parameters For KIC 008752452

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6324^{+175}_{-263}$	$4.301^{+0.128}_{-0.192}$	$-0.200^{+0.250}_{-0.300}$	$1.203^{+0.378}_{-0.204}$	$1.050^{+0.185}_{-0.123}$	$0.850^{+0.522}_{-0.436}$
	+3%/-4%	+3%/-4%	+125%/-150%	+31%/-17%	+18%/-12%	+61%/-51%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 008752452-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-306 \pm 29$	$3.70^{+0.67}_{-0.56}$	$423^{+33}_{-27}$	$5093^{+319}_{-266}$	$13109^{+5109}_{-3612}$
Alt.	$-193 \pm 31$	$3.74^{+0.66}_{-0.55}$	$421^{+31}_{-26}$	$4598^{+287}_{-254}$	$8105^{+3253}_{-2330}$

$T_{\text{max}}$  = 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

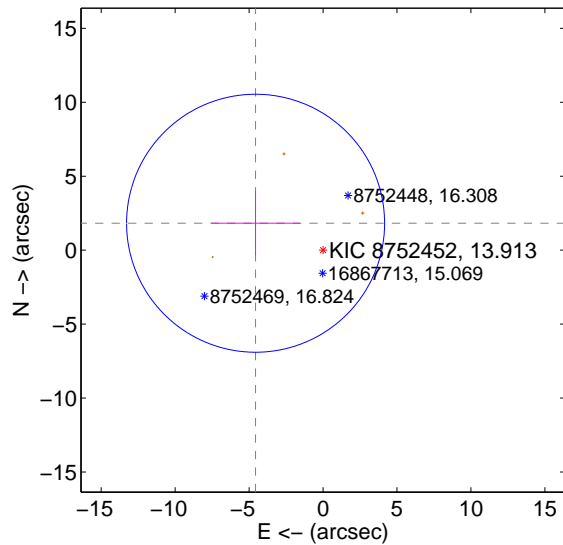
Supplemental centroid analysis for 008752452-02. Kepler magnitude: 13.91. Transit SNR 8.26

There are 0 quarters with good PRF difference image offsets

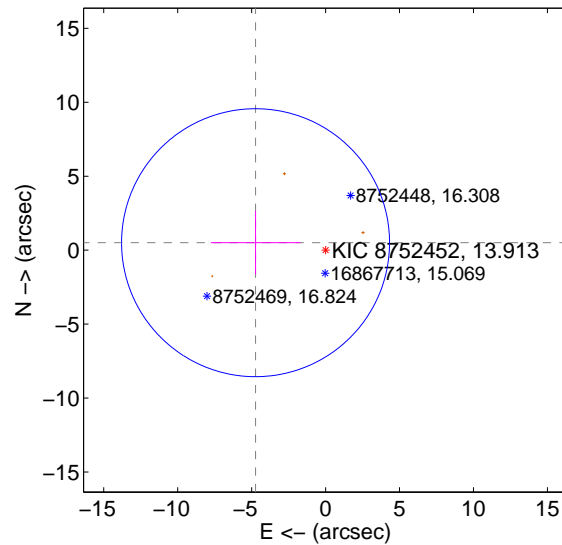
The direct PRF centroid is offset from the target star catalog position by about 1.32 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.911 \pm 2.907$	1.69	$4.561 \pm 3.010$	$1.821 \pm 2.155$
PRF-fit source offset from KIC position	$4.761 \pm 3.020$	1.58	$4.734 \pm 3.028$	$0.505 \pm 2.145$
photometric centroid source offset	$6.74 \pm 1.88$	3.58	$-0.14 \pm 2.05$	$-6.74 \pm 1.88$

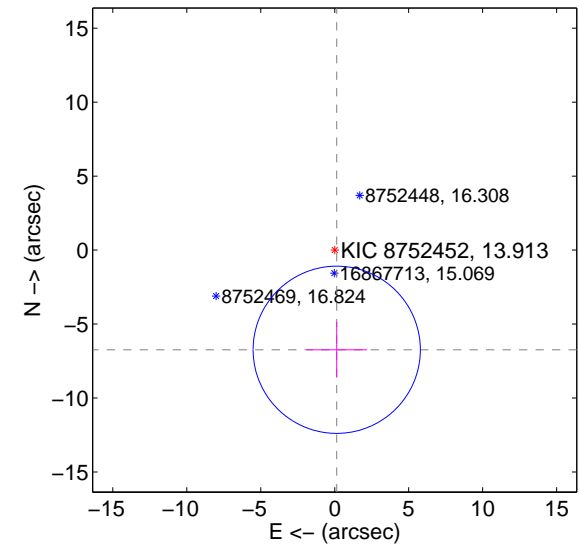
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

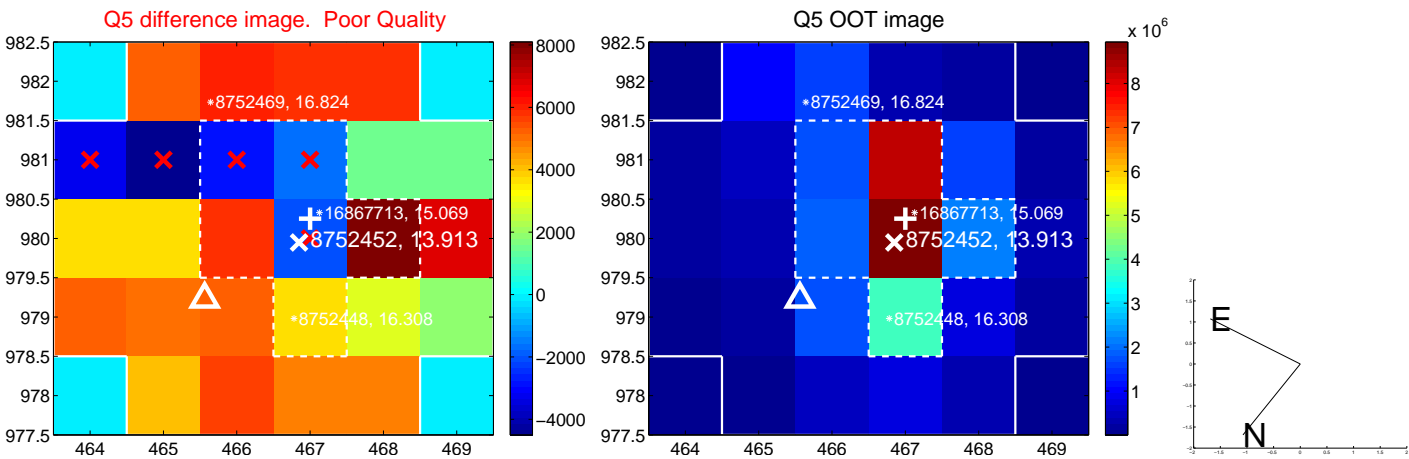


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

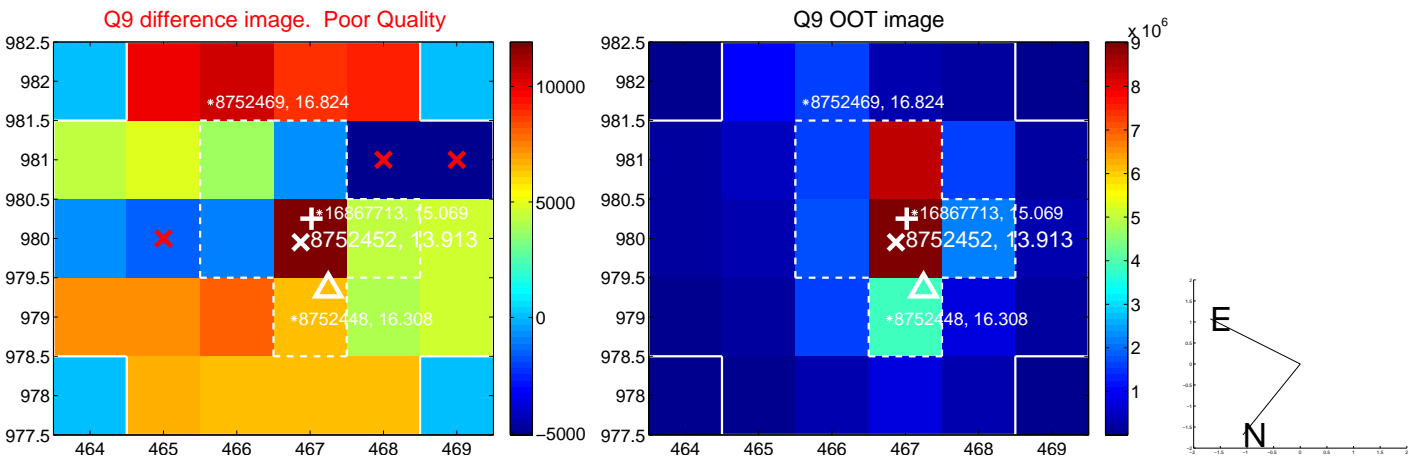
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



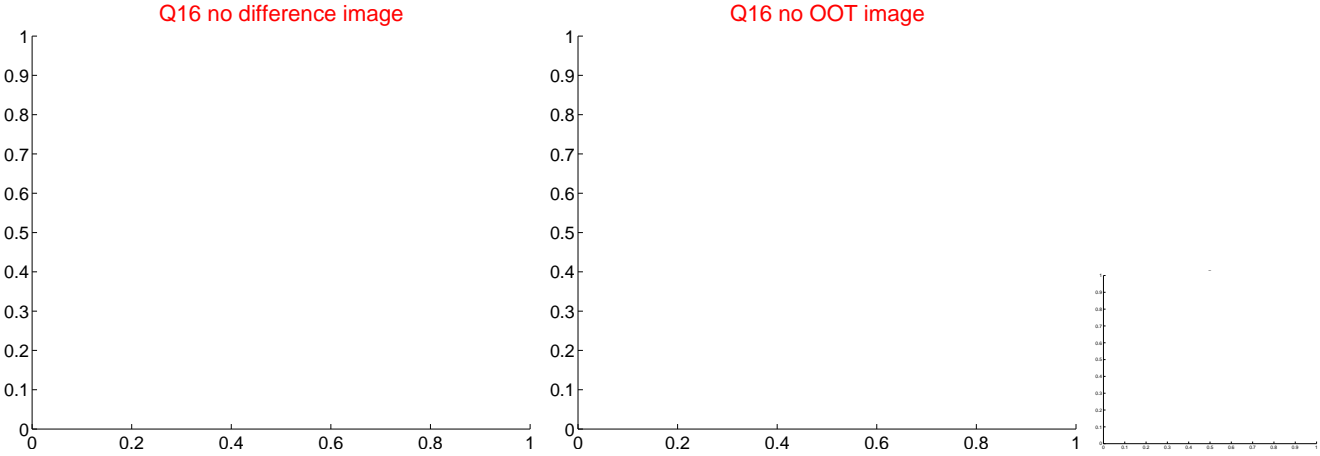
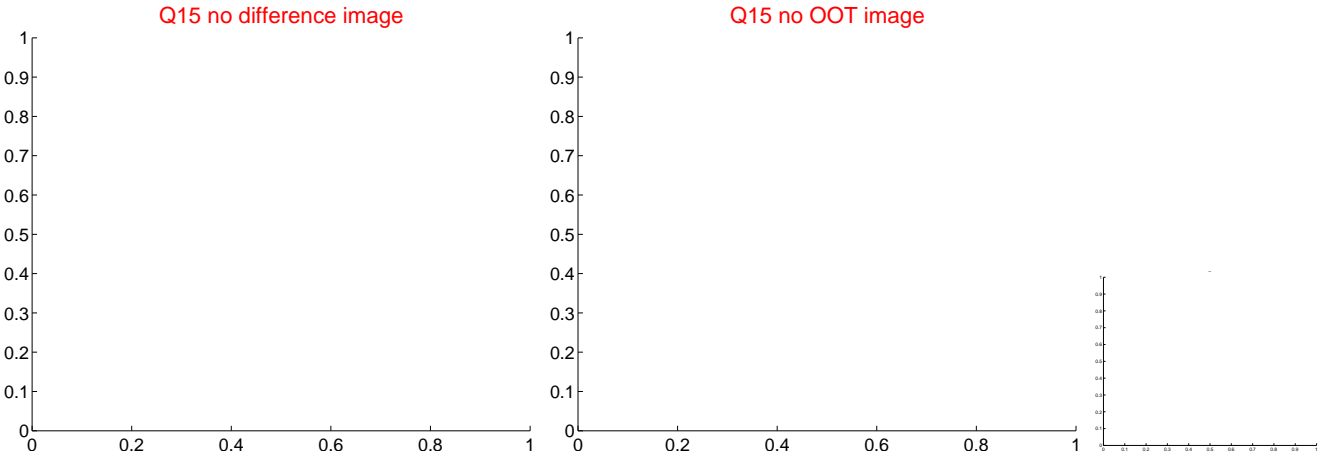
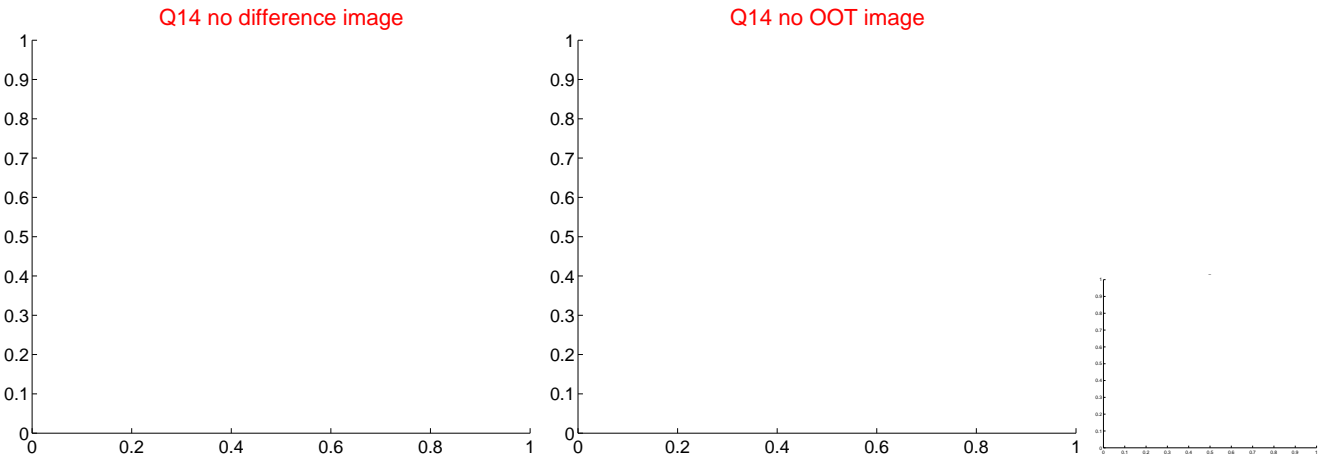
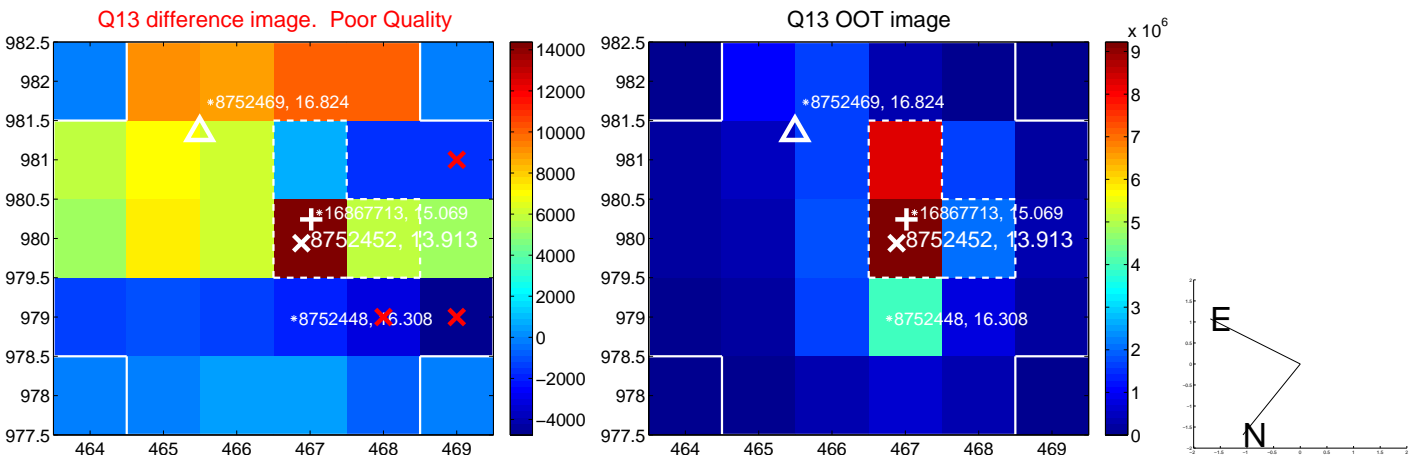
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



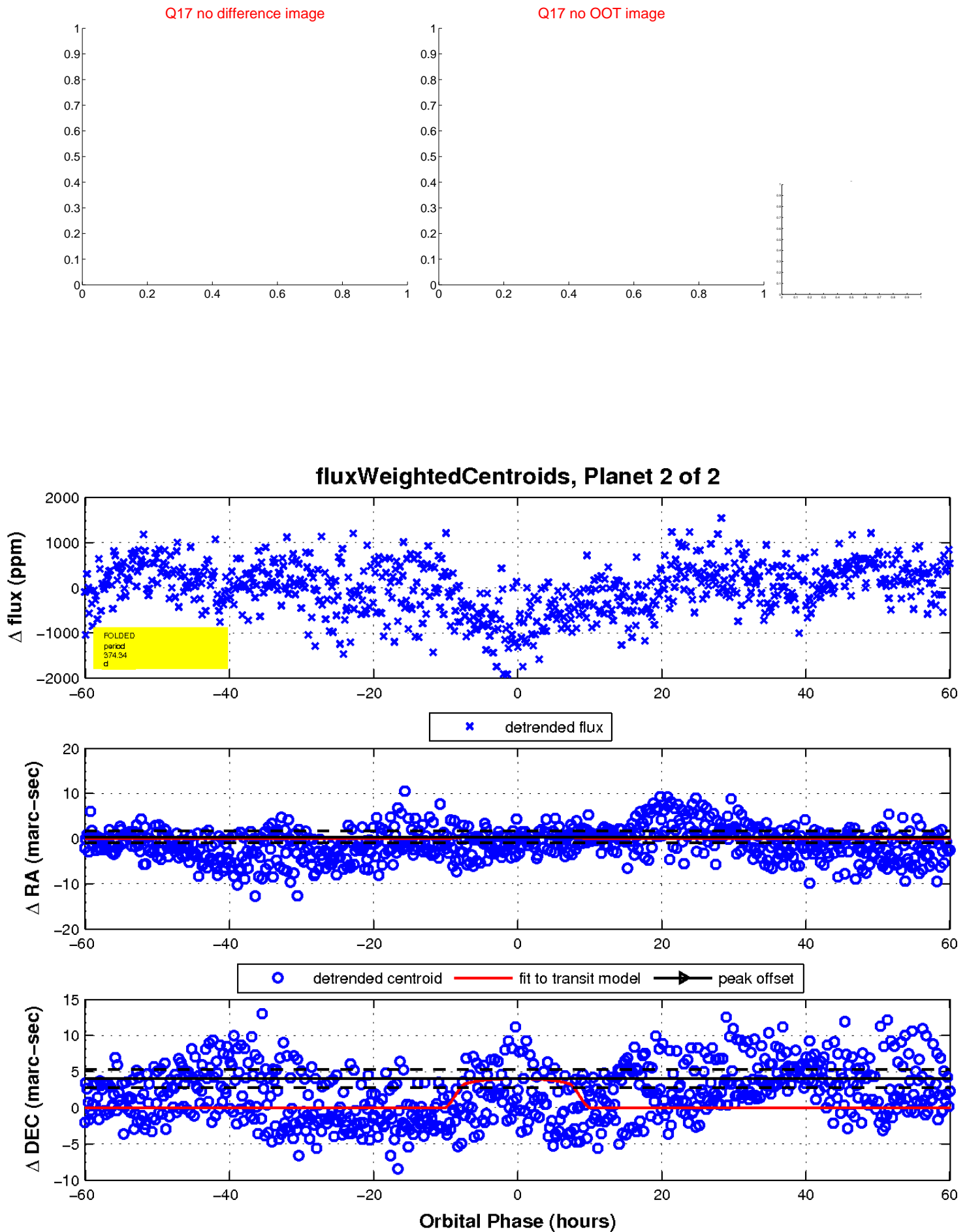
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

