

# KIC 008161944

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008161944-01	OBS	No	315.302210	338.747701	863.8	11.554	8.5	7.4	1.08	6214	3.31	1.70

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008161944-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—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.

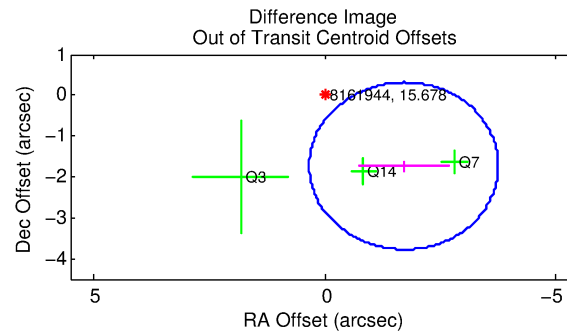
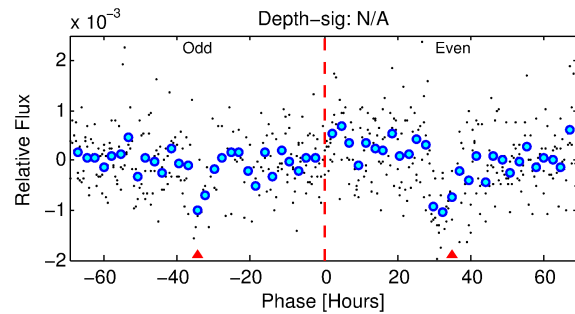
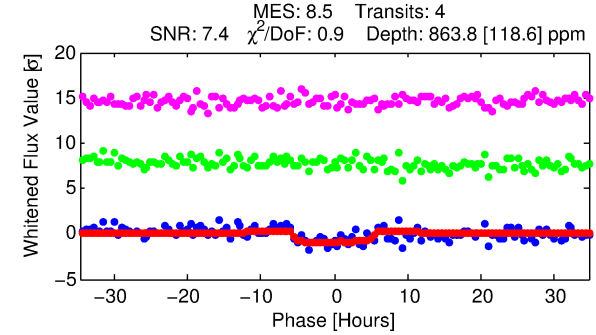
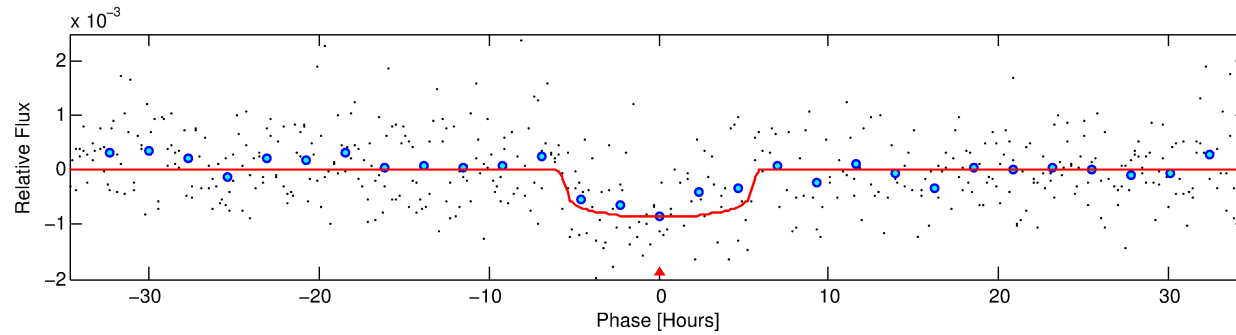
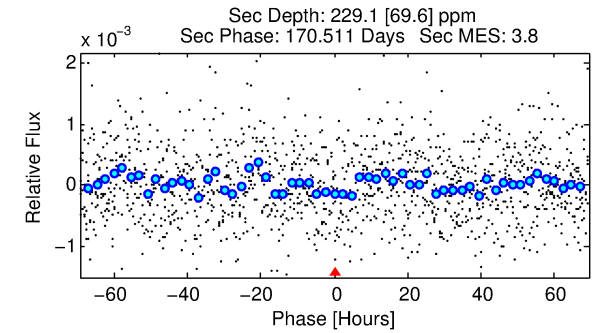
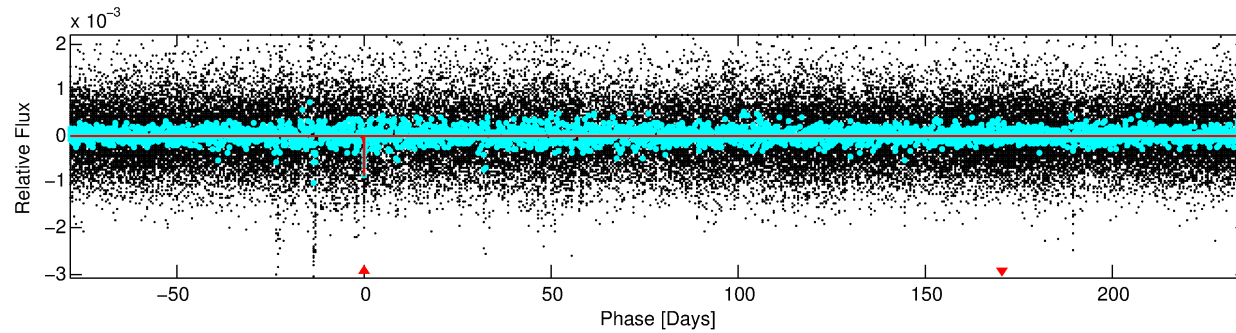
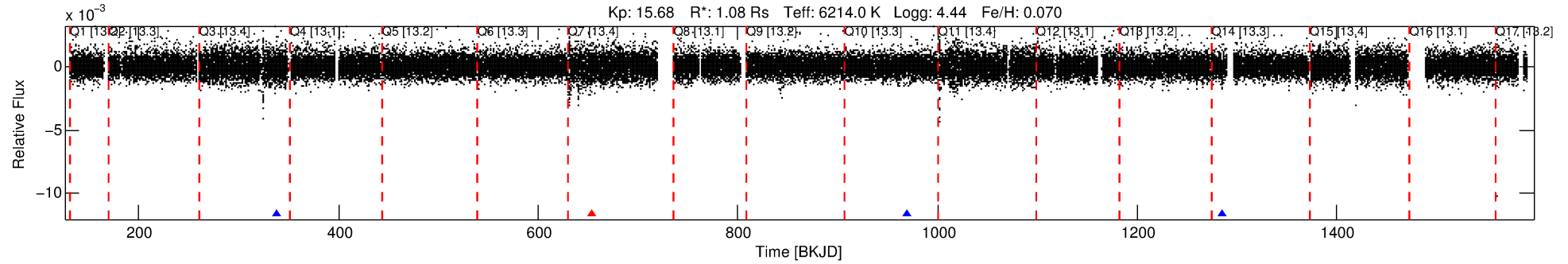
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008161944-01

No Significant Match Found

# DV One-Page Summary

KIC: 8161944 Candidate: 1 of 1 Period: 315.302 d



## DV Fit Results:

Period = 315.30221 [0.00875] d  
Epoch = 338.7477 [0.0185] BKJD  
Rp/R\* = 0.0282 [0.0115]  
a/R\* = 171.69 [334.71]  
b = 0.62 [1.98]  
Seff = 1.70 [0.72]  
Teq = 291 [31] K  
Rp = 3.31 [1.73] Re  
a = 0.9551 [0.2621] AU  
Ag = 10473.24 [10021.36] [1.04σ]  
Teffp = 4551 [1006] K [4.23σ]

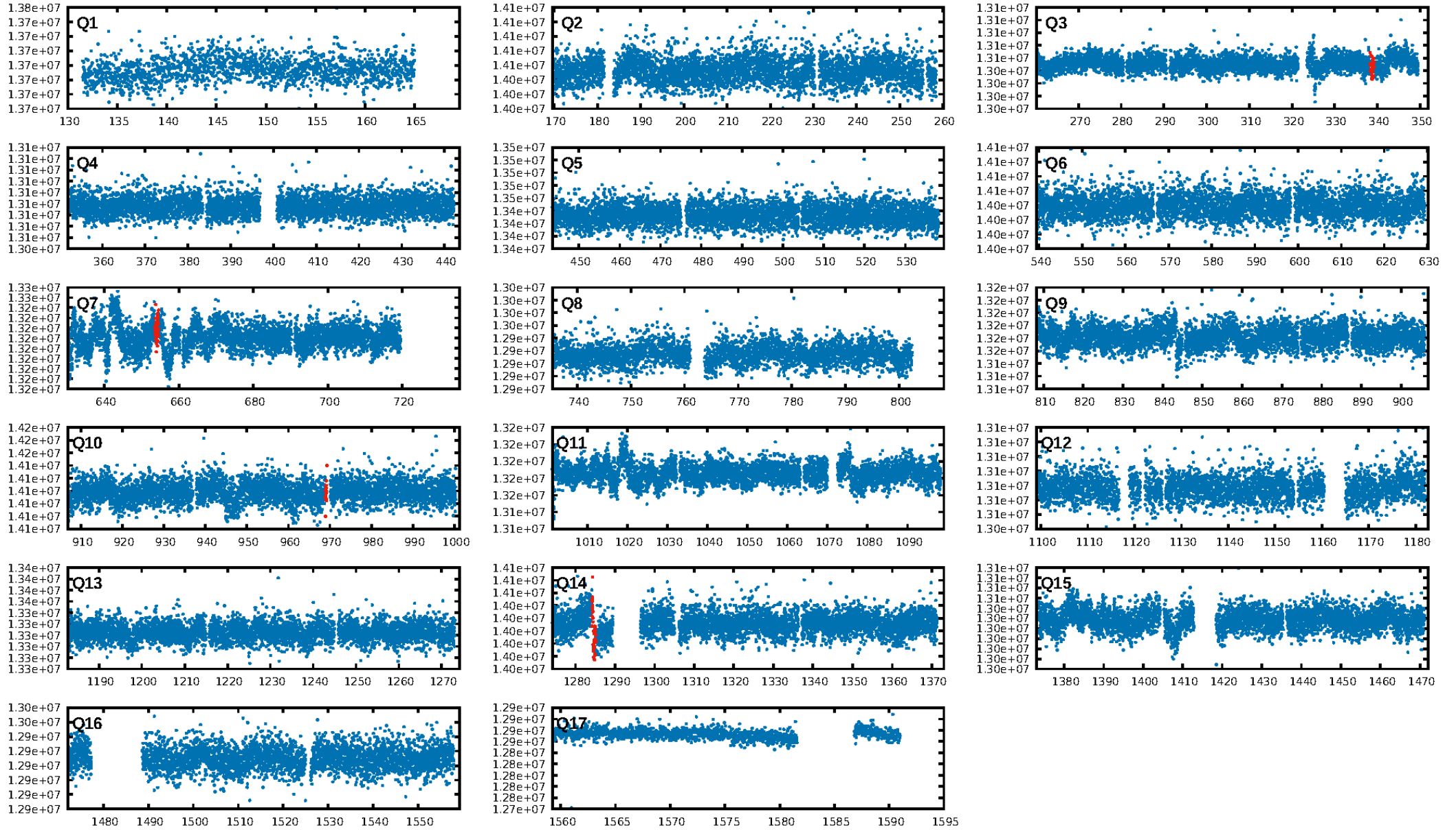
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.12e-11  
RollingBand-fgt: 0.75 [3/4]  
GhostDiagnostic-chr: -0.3171  
Centroid-sig: 0.0%  
Centroid-so: 4.360 arcsec [2.52σ]  
OotOffset-rm: 2.436 arcsec [3.57σ]  
OotOffset-st: 1/2/0/0 [3]  
KicOffset-rm: 2.501 arcsec [2.31σ]  
KicOffset-st: 1/2/0/0 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 1.00 [3/3]

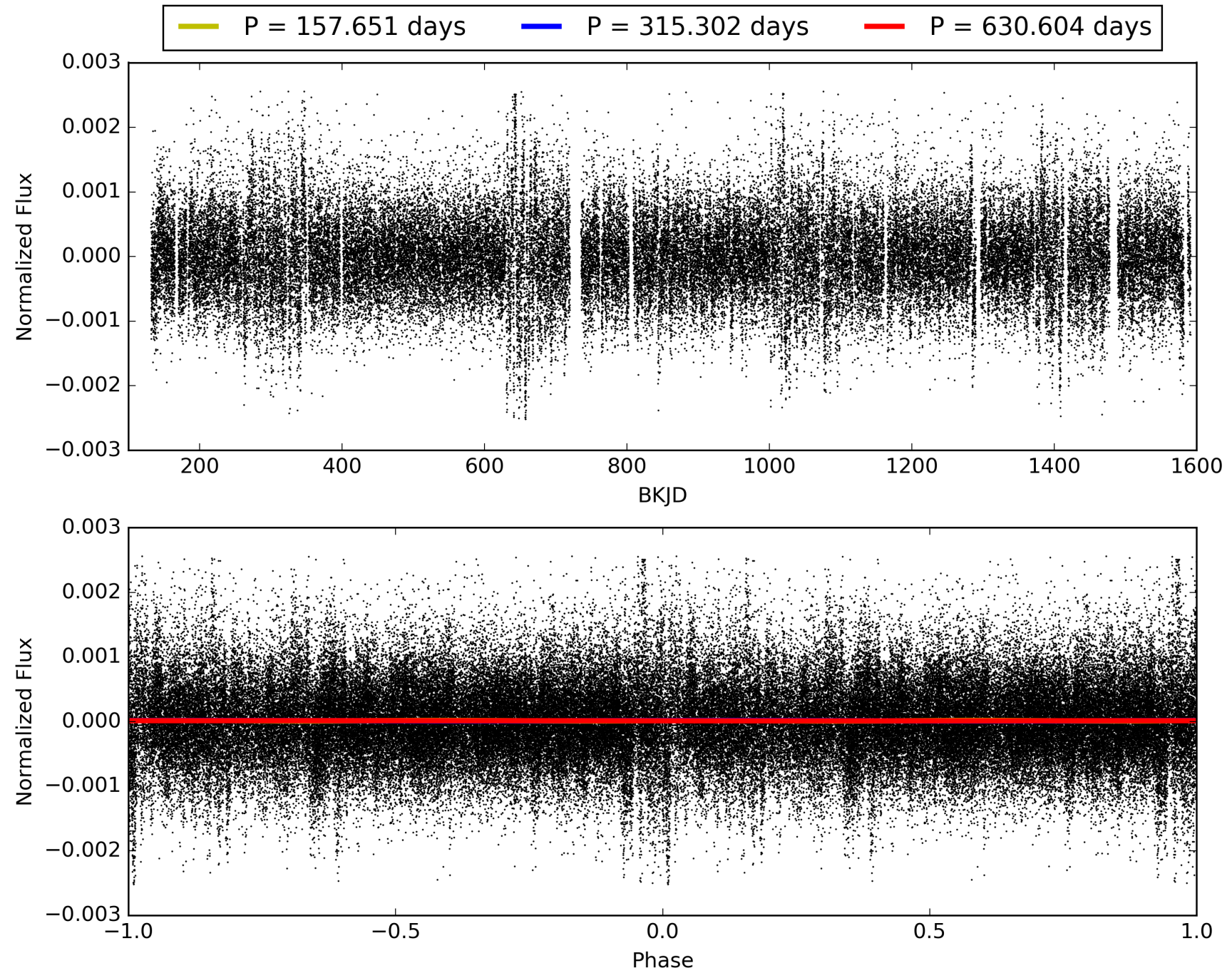
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:02:48 Z

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

# TCE 008161944-01, PDC Light Curves

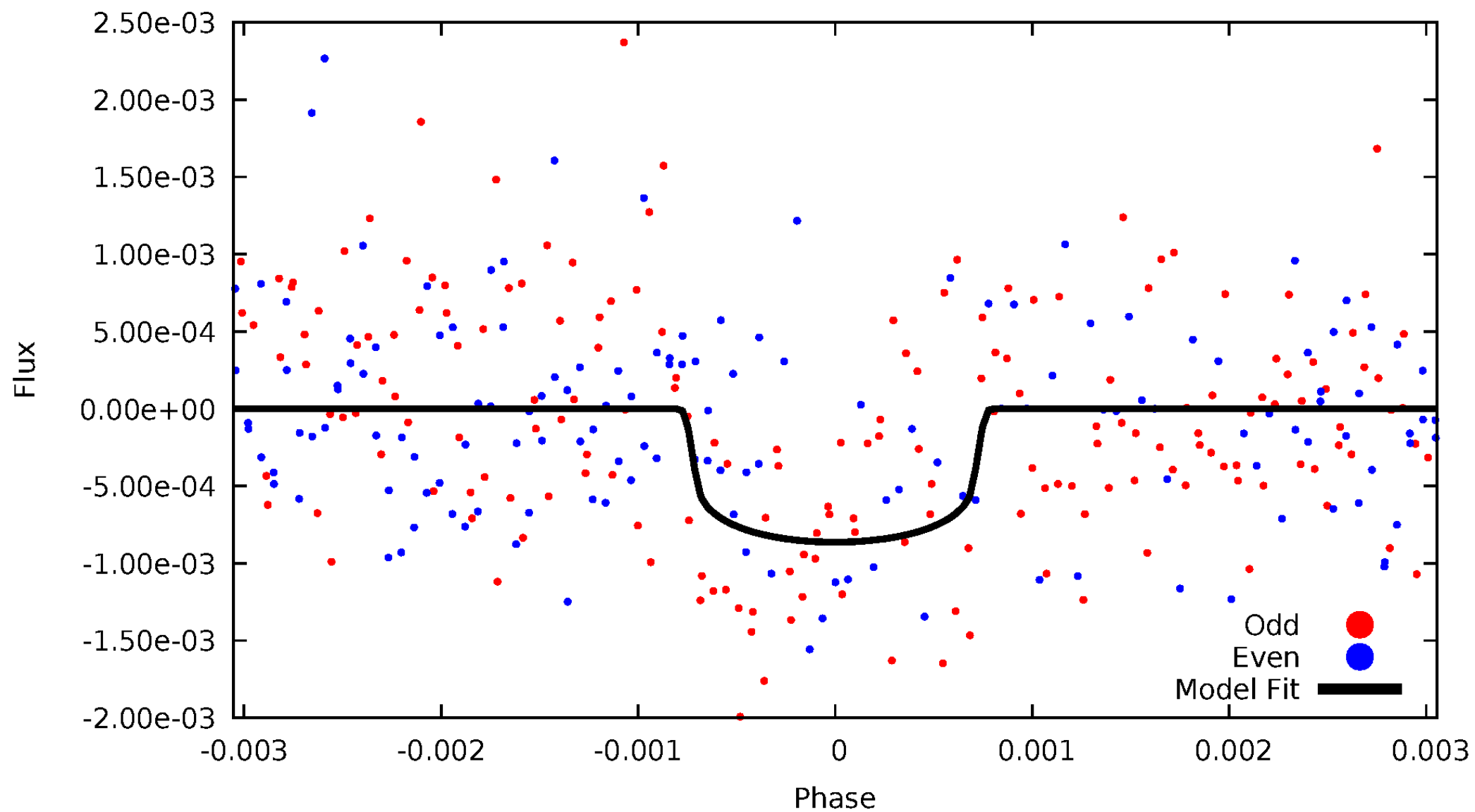


TCE 008161944-01



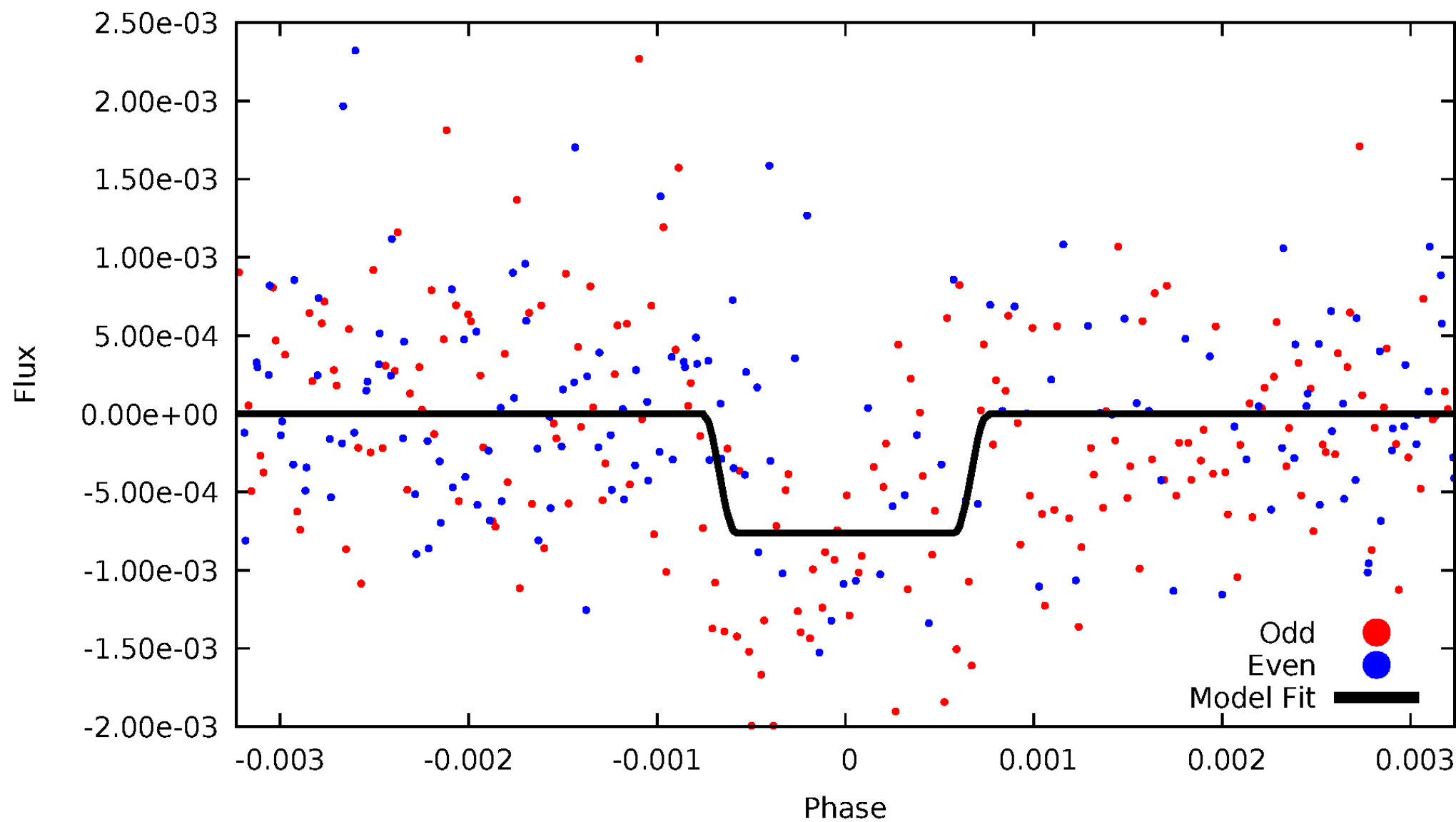
# DV Odd/Even

TCE 008161944-01



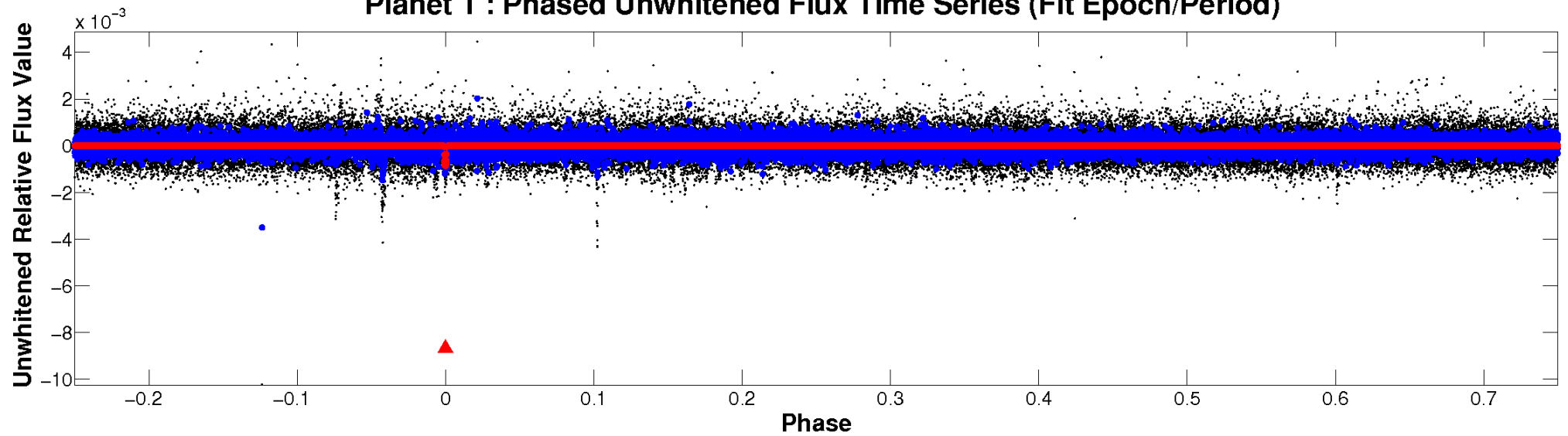
# ALT Odd/Even

TCE 008161944-01

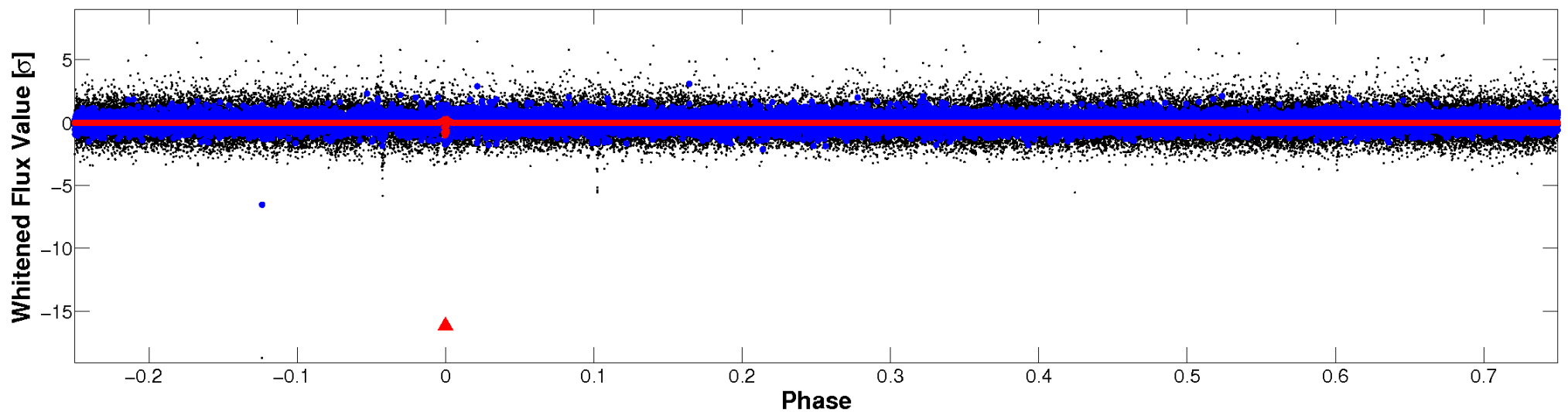


# Non-Whitened Vs. Whitened Light Curve

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



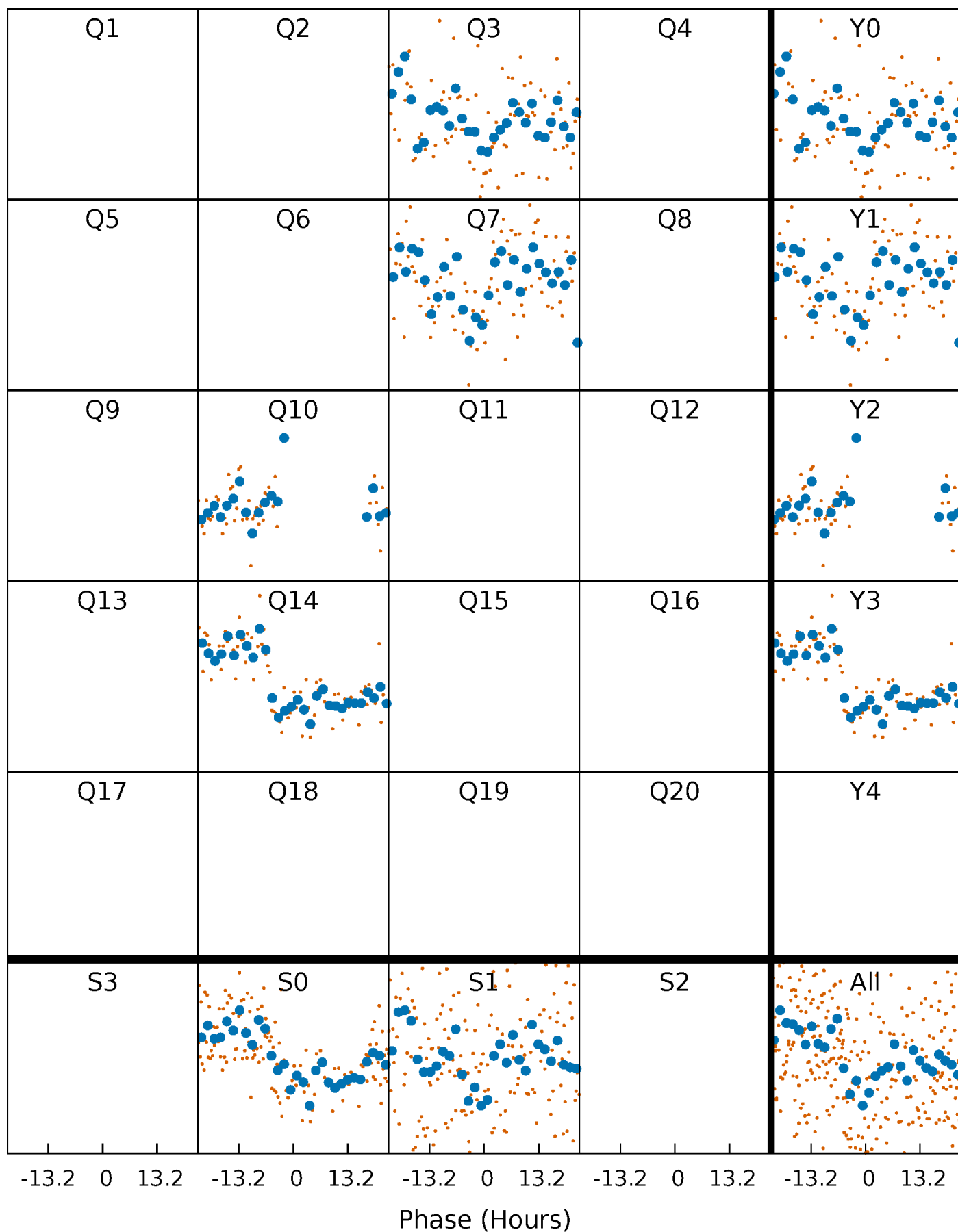
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

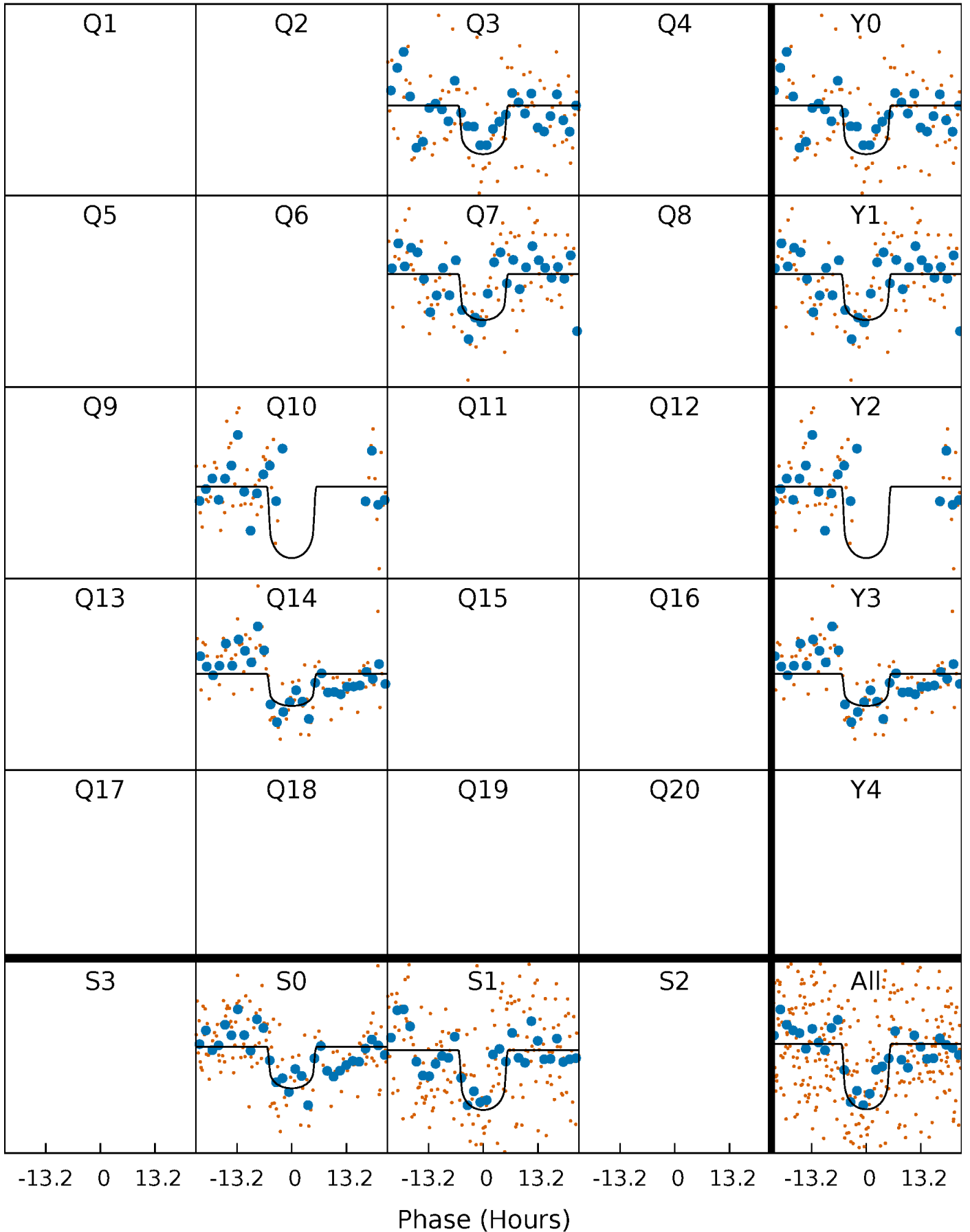
TCE 008161944-01 P=315.302210 Days  $T_0=338.747702$  (BKJD)





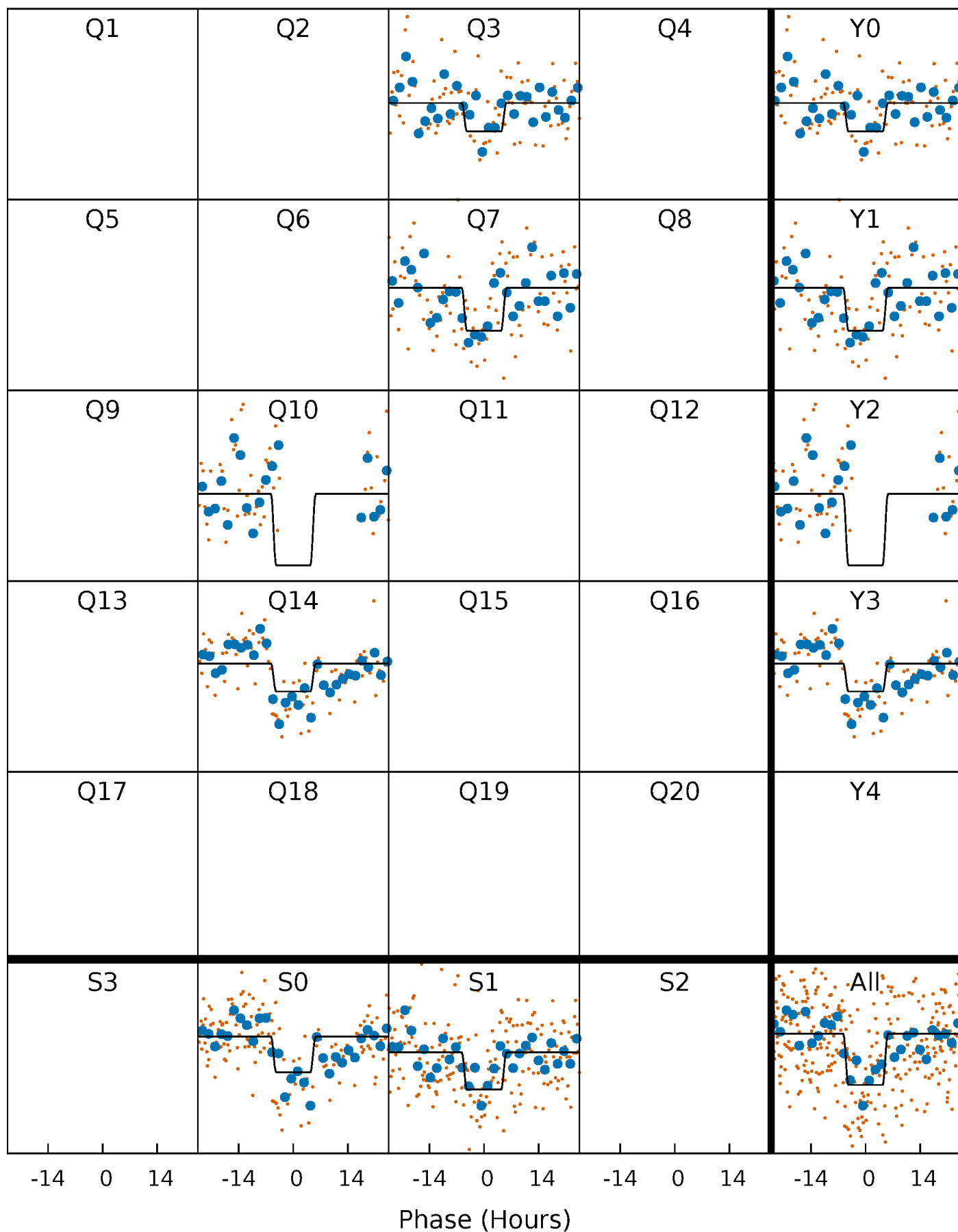
# DV Quarter-Phased Transit Curves

TCE 008161944-01 P=315.302210 Days  $T_0=338.747702$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

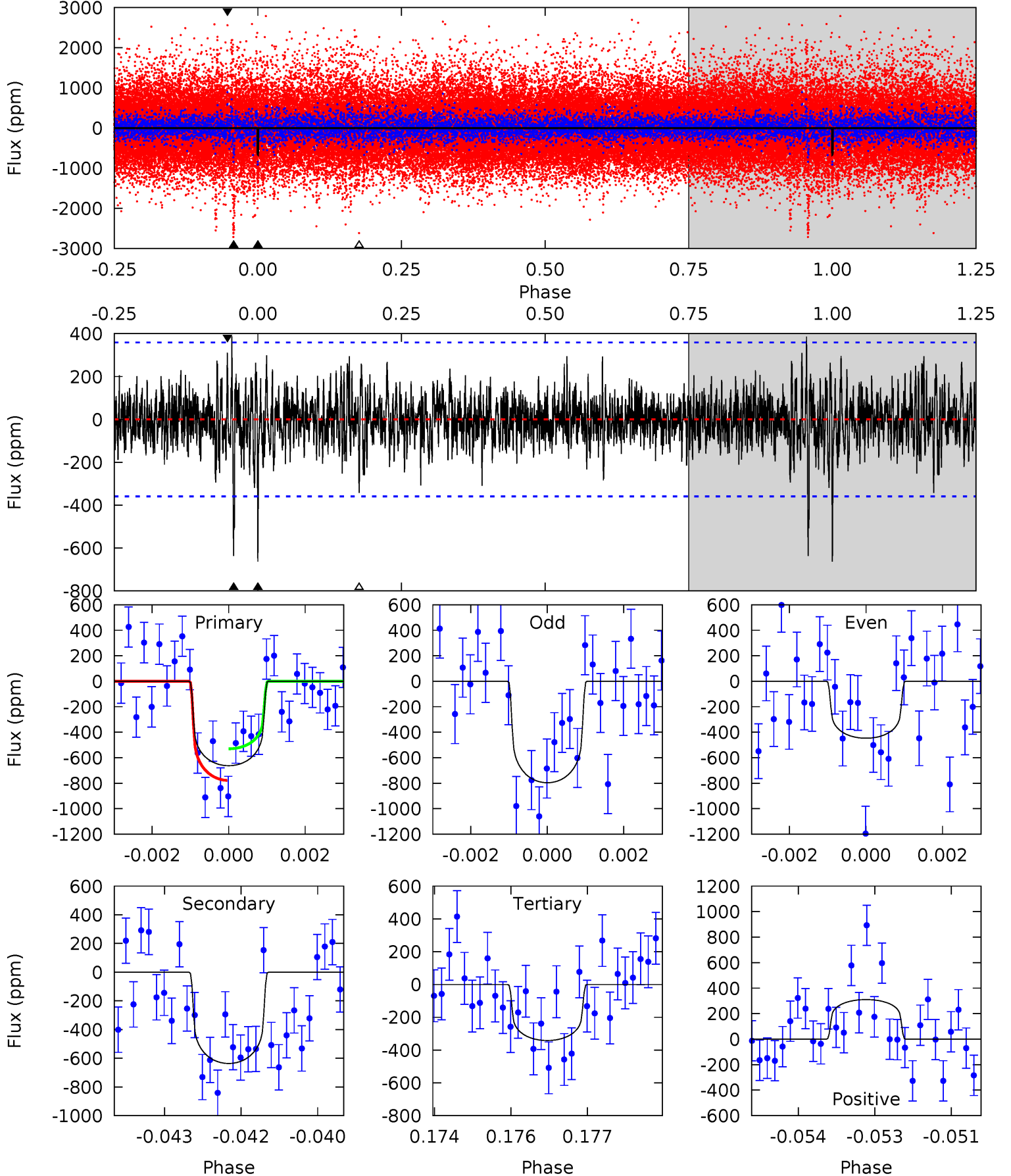
TCE 008161944-01 P=315.303453 Days  $T_0=338.750903$  (BKJD)



# DV Model-Shift Uniqueness Test

008161944-01,  $P = 315.302210$  Days,  $E = 23.445492$  Days

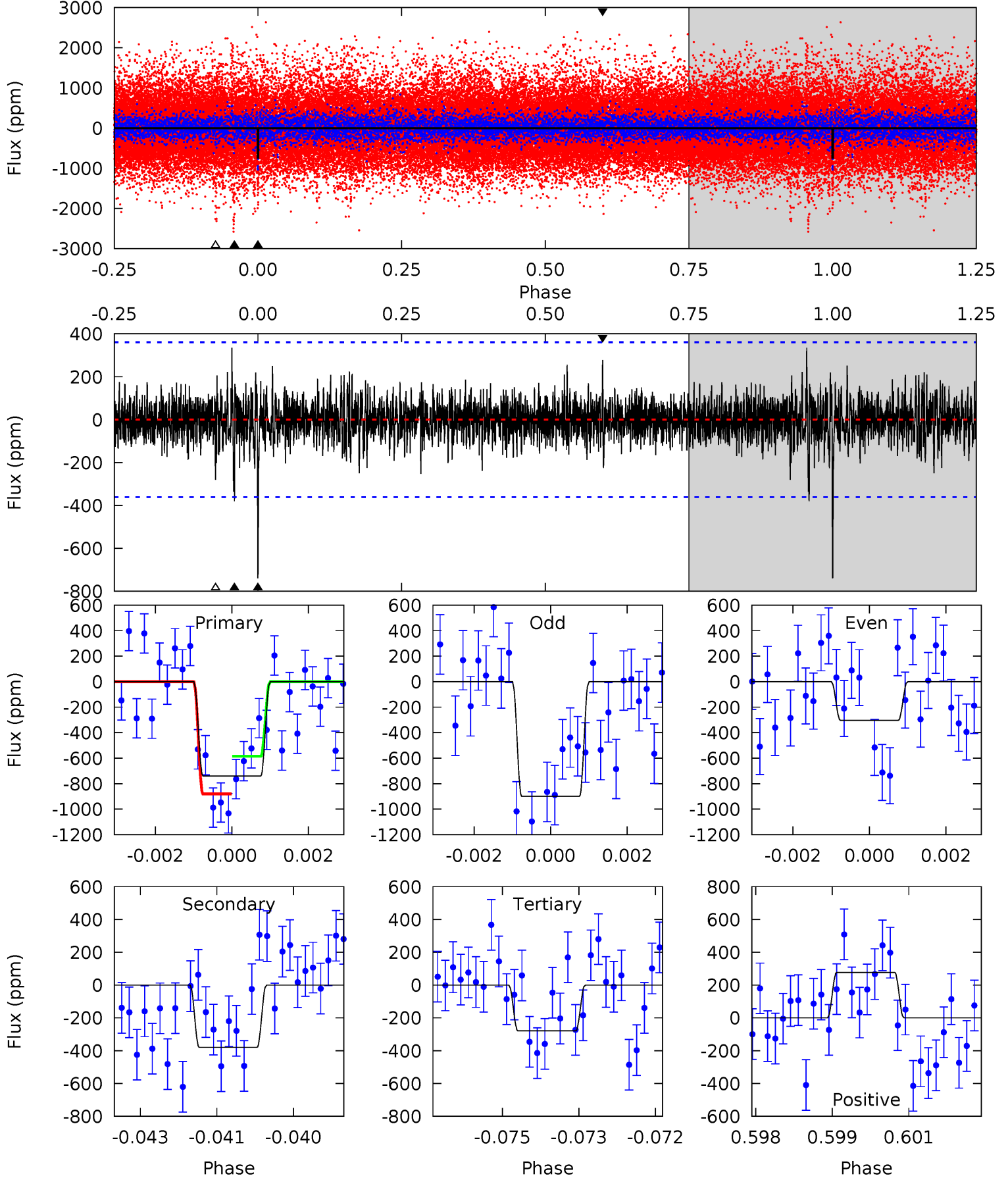
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.92	9.53	5.12	4.64	5.37	3.16	1.32	4.80	5.28	4.41	4.88	2.53	0.95	0.37	1.84



# Alt Model-Shift Uniqueness Test

008161944-01,  $P = 315.303453$  Days,  $E = 23.447450$  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
11.0	5.66	4.16	4.13	5.38	3.17	1.00	6.85	6.88	1.50	1.53	4.39	0.84	0.31	2.18



### Stellar Parameters For KIC 008161944

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6214^{+174}_{-239}$	$4.442^{+0.054}_{-0.216}$	$0.070^{+0.200}_{-0.350}$	$1.076^{+0.353}_{-0.118}$	$1.169^{+0.141}_{-0.173}$	$1.321^{+0.375}_{-0.693}$
	+3%/-4%	+1%/-5%	+286%/-500%	+33%/-11%	+12%/-15%	+28%/-52%
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 008161944-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-636 \pm 67$	$3.51^{+1.52}_{-1.56}$	$416^{+31}_{-22}$	$5830^{+2256}_{-818}$	$24945^{+62424}_{-12868}$
Alt.	$-380 \pm 67$	$3.44^{+1.58}_{-1.40}$	$416^{+31}_{-22}$	$5221^{+1472}_{-742}$	$15777^{+28403}_{-8660}$

$T_{max}$  = 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

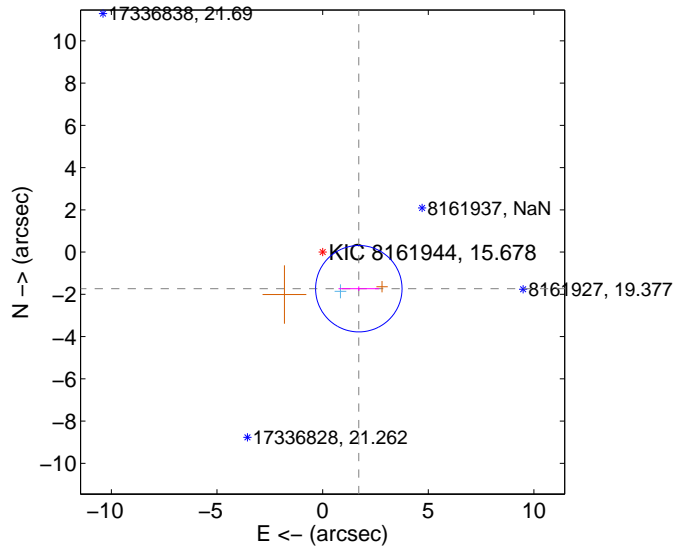
Supplemental centroid analysis for 008161944-01. Kepler magnitude: 15.68. Transit SNR 7.42

There are 1 quarters with good PRF difference image offsets

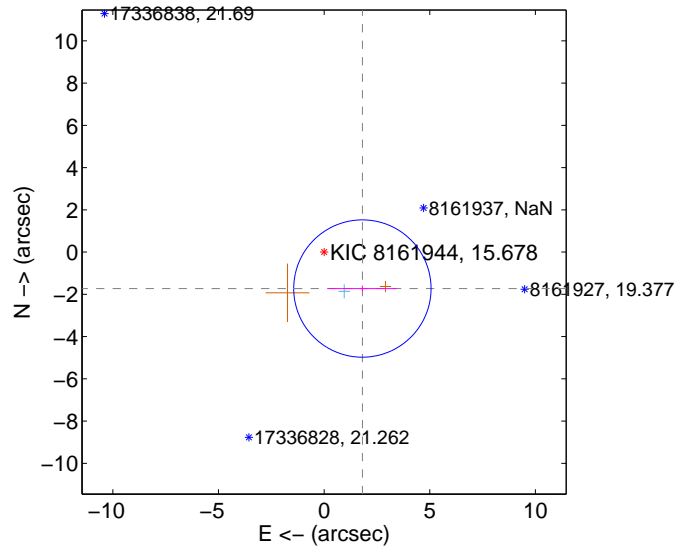
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.436 \pm 0.682$	$3.57$	$-1.712 \pm 0.963$	$-1.732 \pm 0.111$
PRF-fit source offset from KIC position	$2.501 \pm 1.083$	$2.31$	$-1.811 \pm 1.612$	$-1.725 \pm 0.142$
photometric centroid source offset	$4.36 \pm 1.73$	$2.52$	$0.45 \pm 1.71$	$-4.34 \pm 1.73$

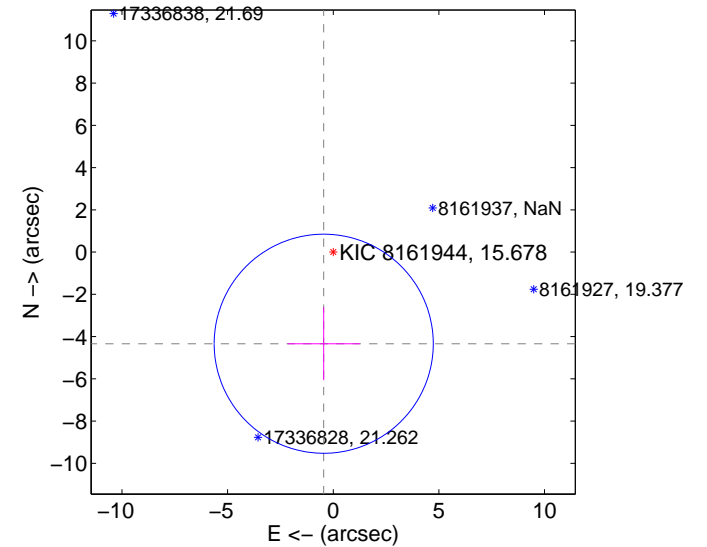
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

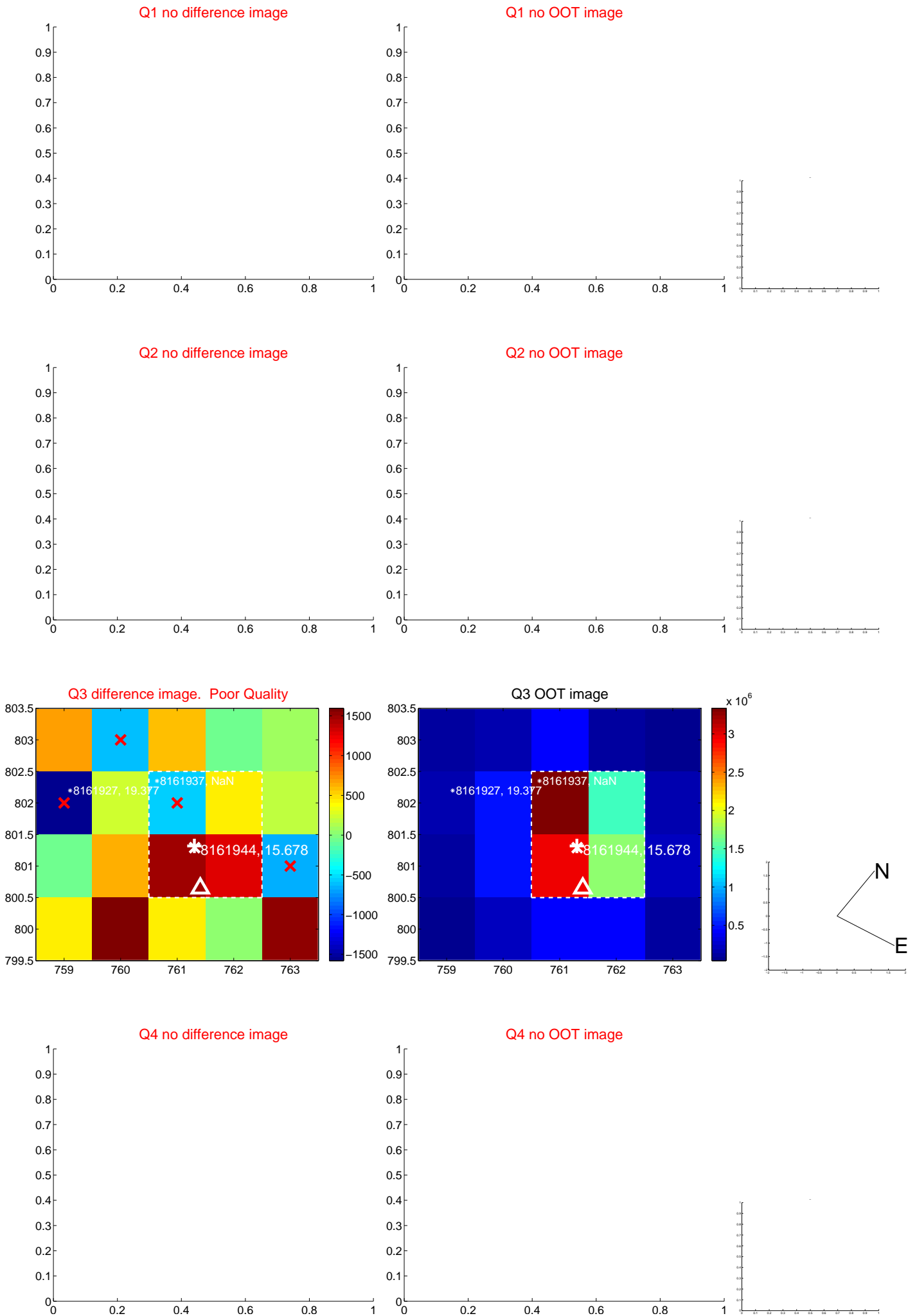


offset from photometric centroids



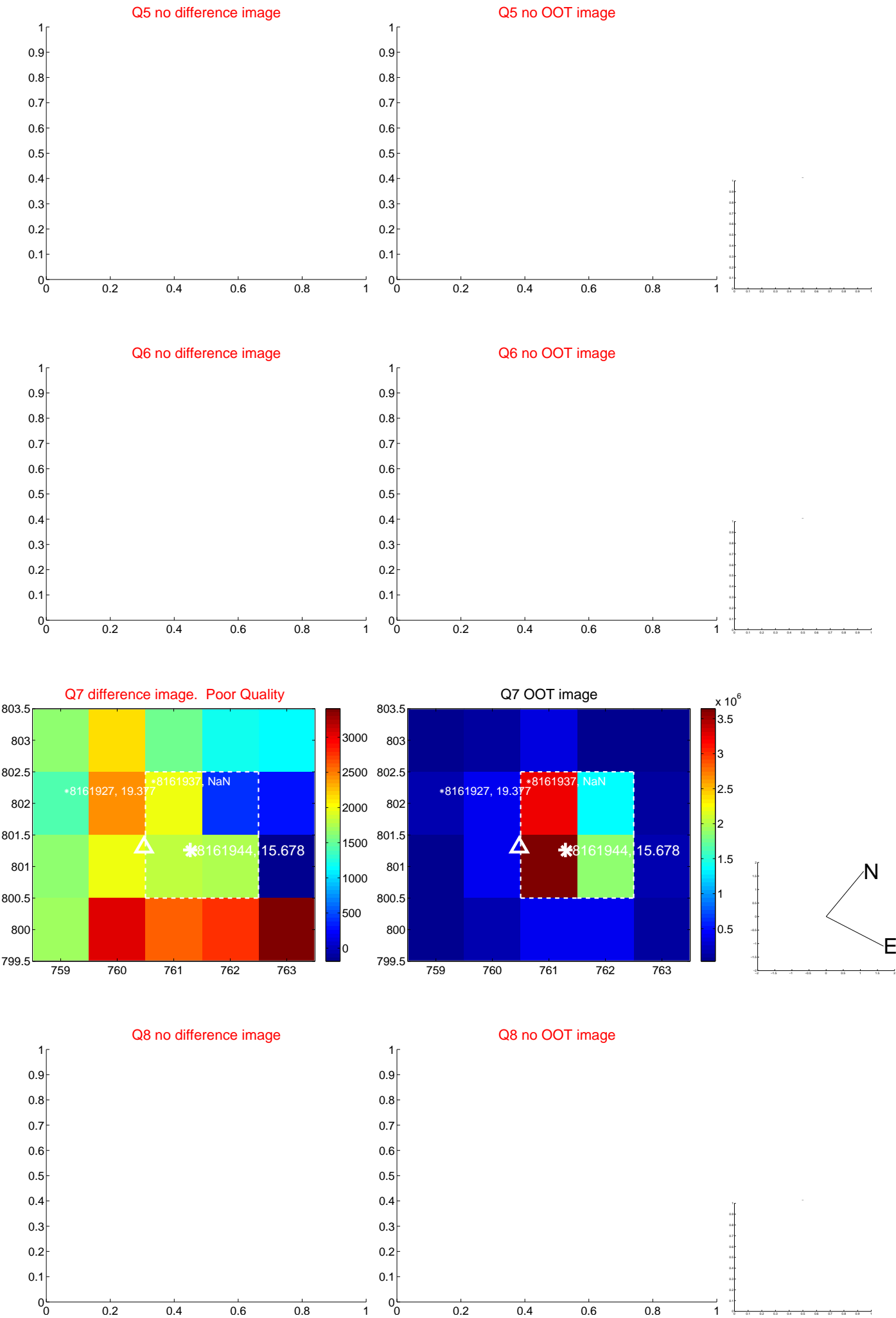
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

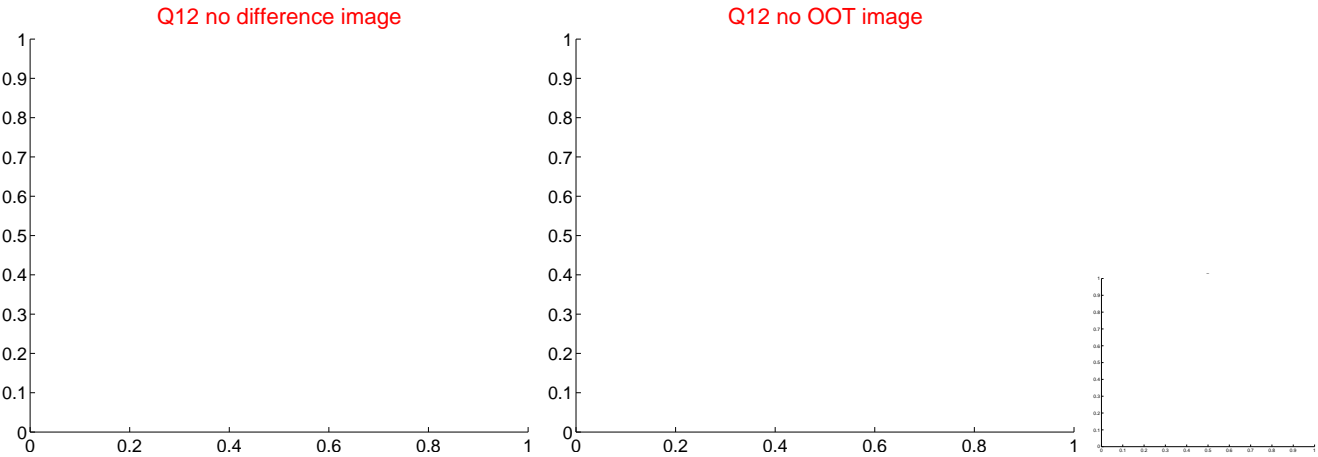
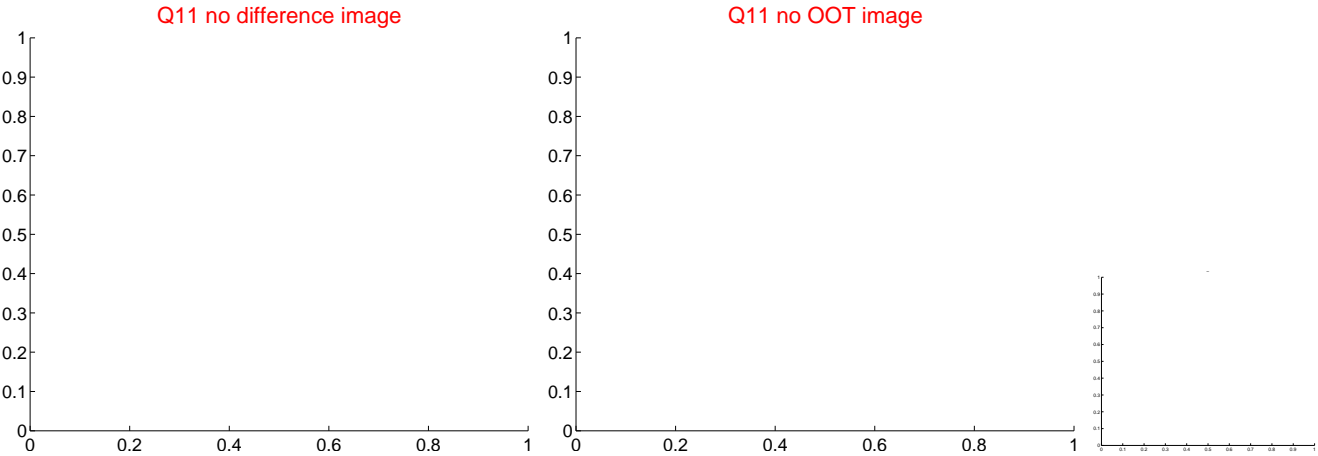
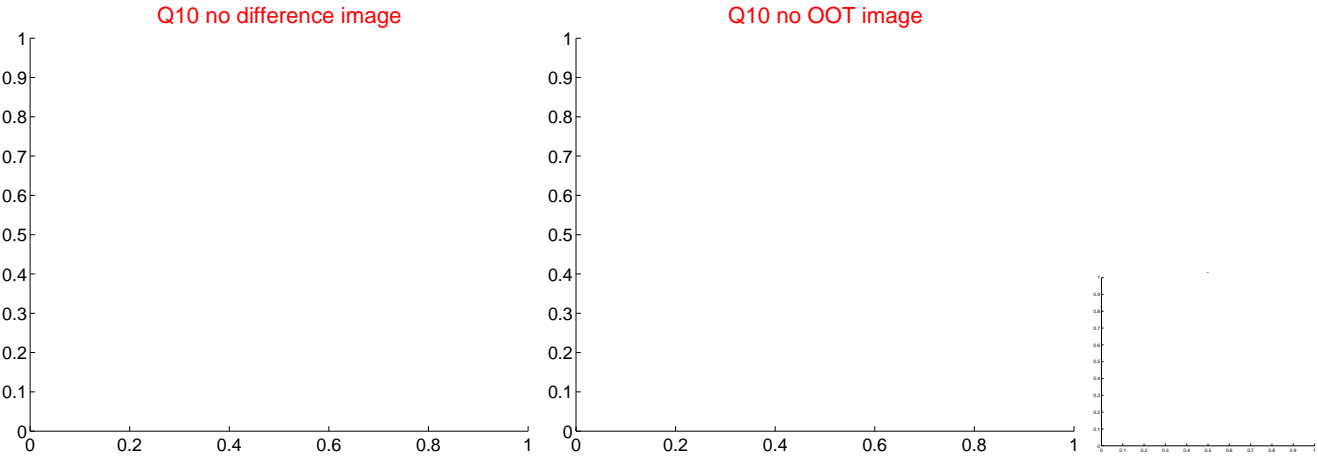
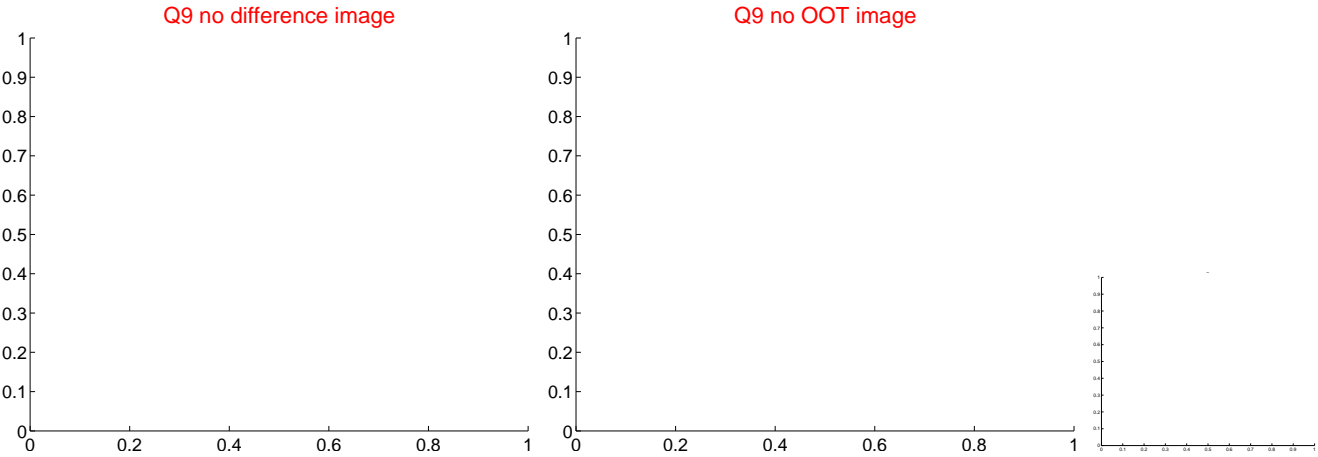




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

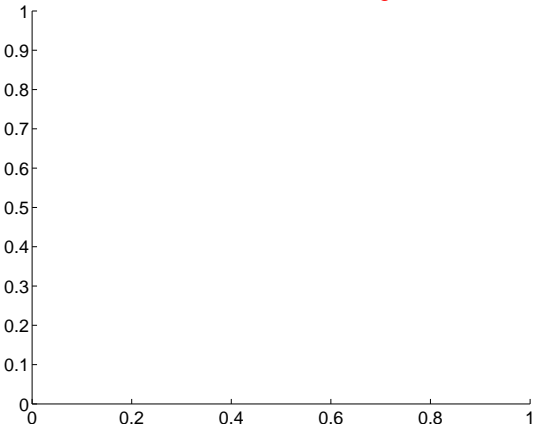


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

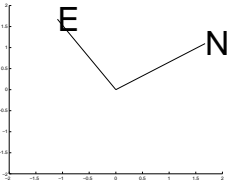
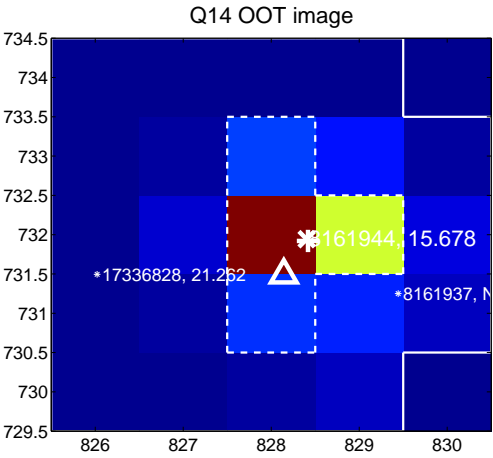
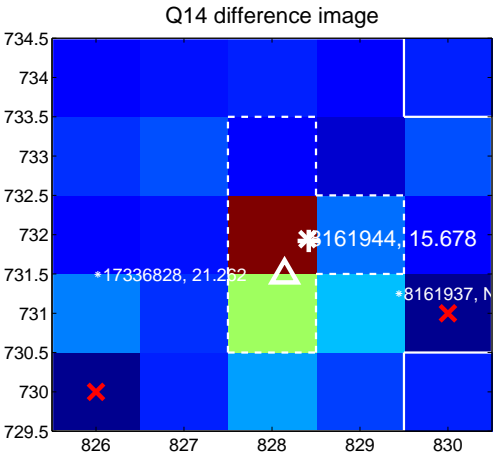
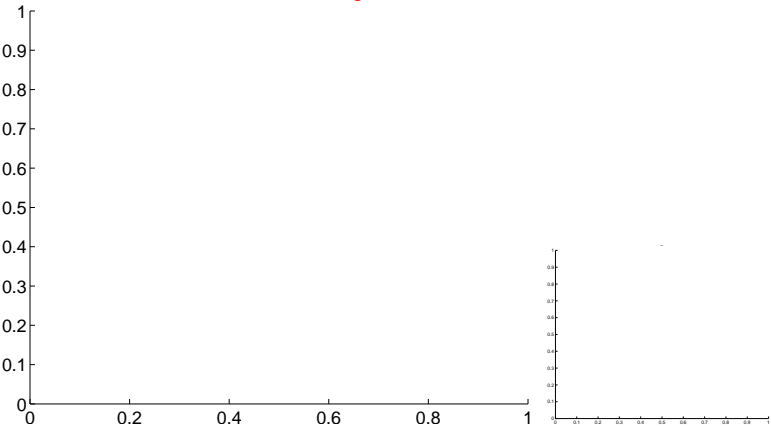


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

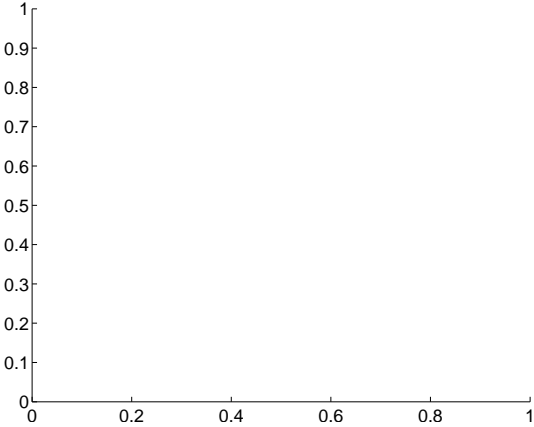
Q13 no difference image



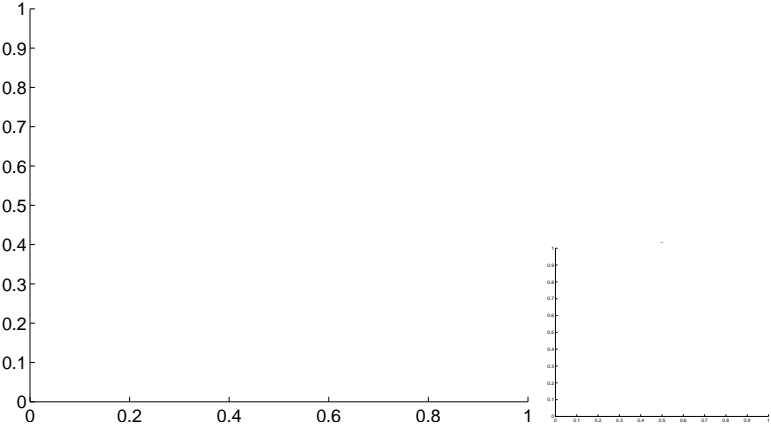
Q13 no OOT image



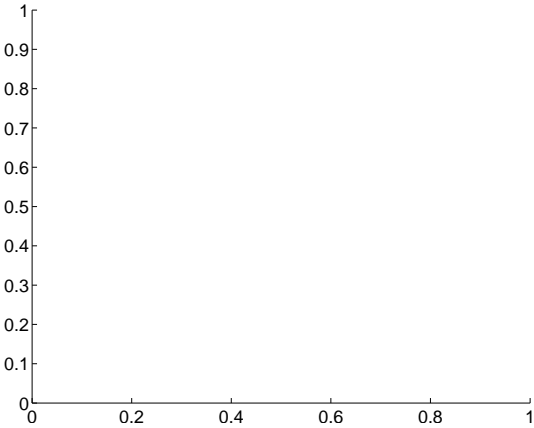
Q15 no difference image



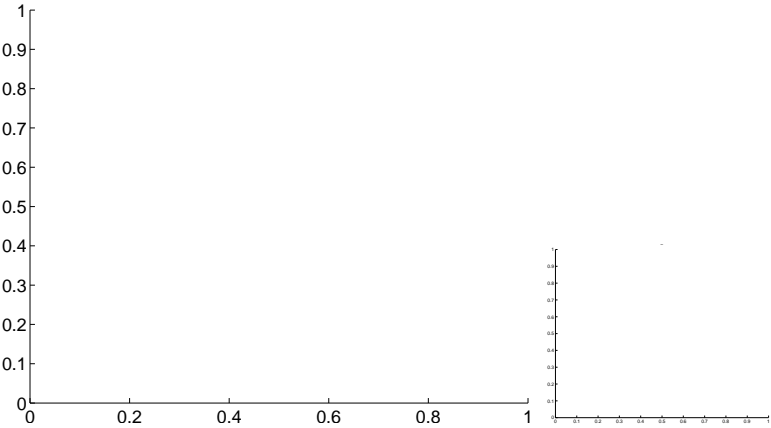
Q15 no OOT image



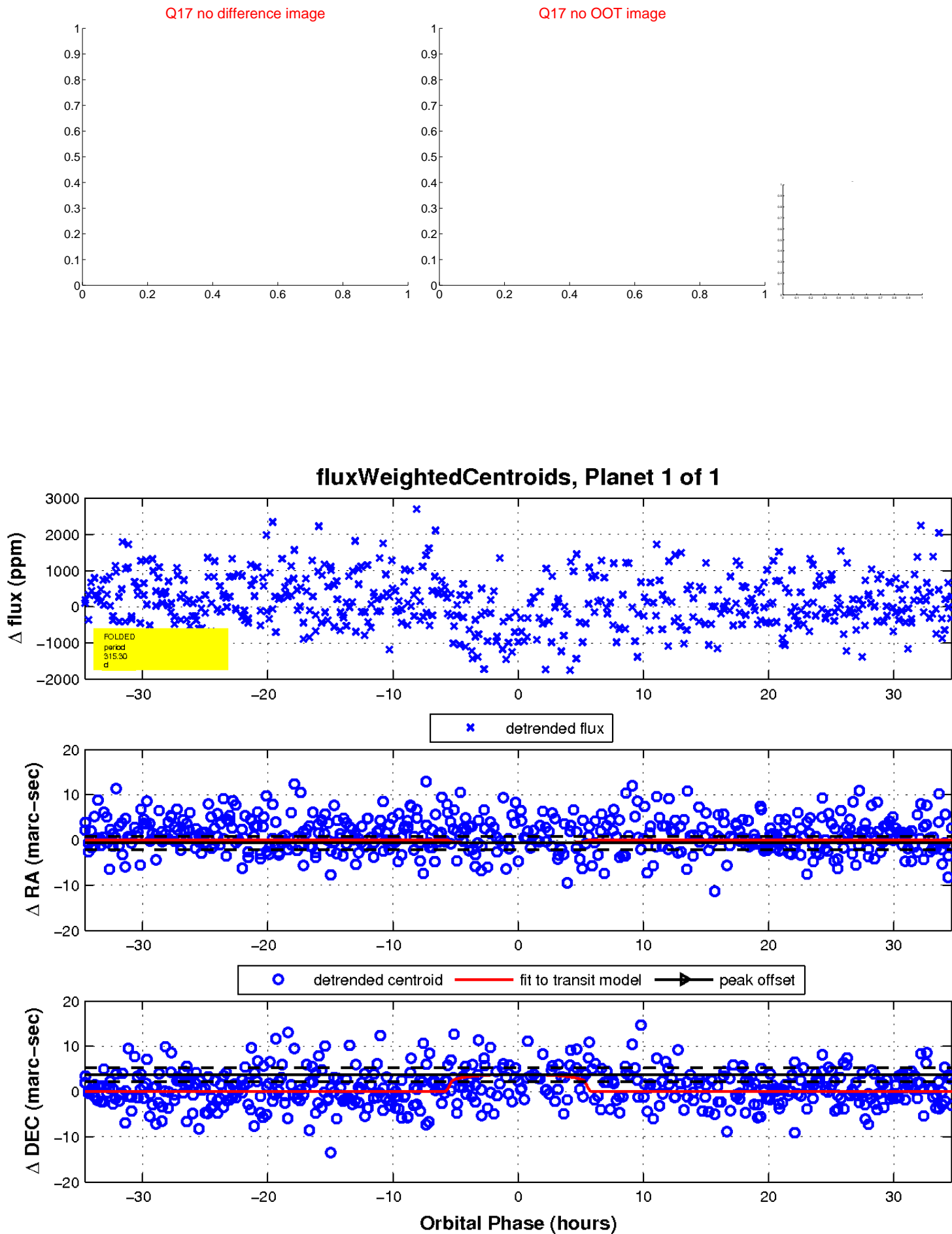
Q16 no difference image



Q16 no OOT image



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



# UKIRT Image

Declination

