

# KIC 008509442

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008509442-01	OBS	2992.01	82.659474	152.672095	1448.8	3.515	14.1	16.9	0.55	3952	2.19	0.70

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008509442-01	OBS	PC	0.90	0	0	0	0	NO_COMMENT

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

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

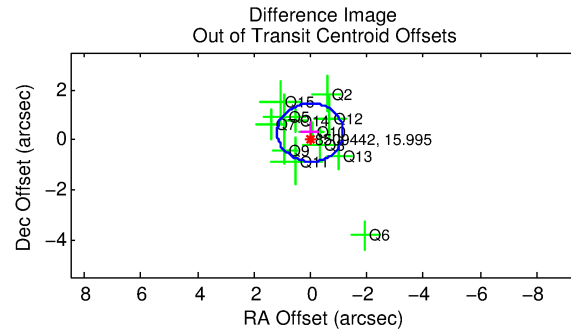
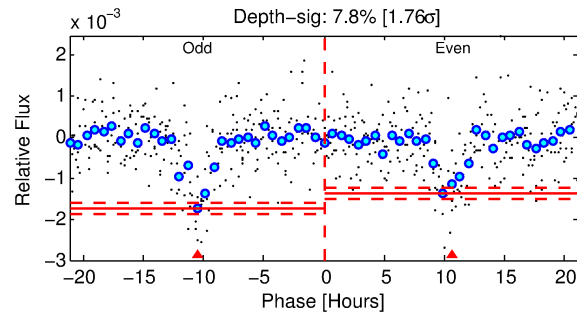
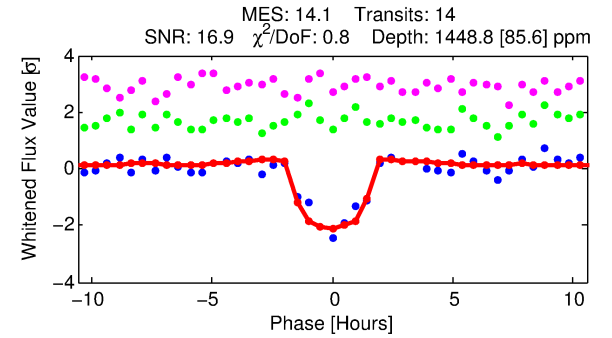
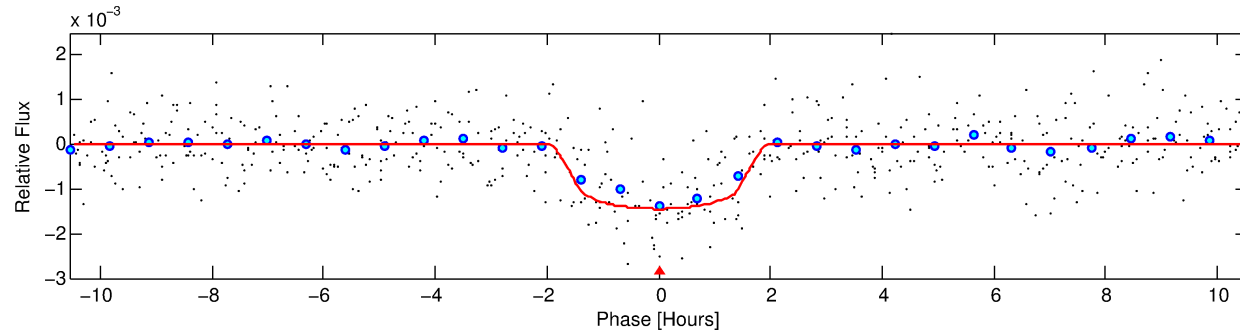
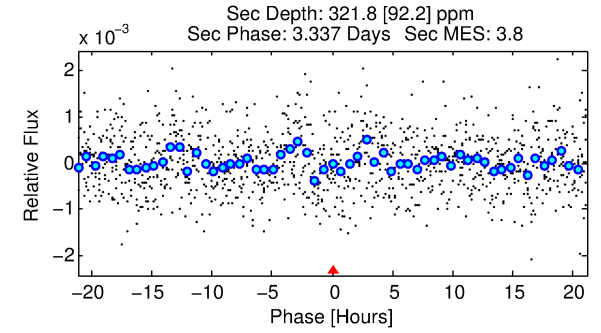
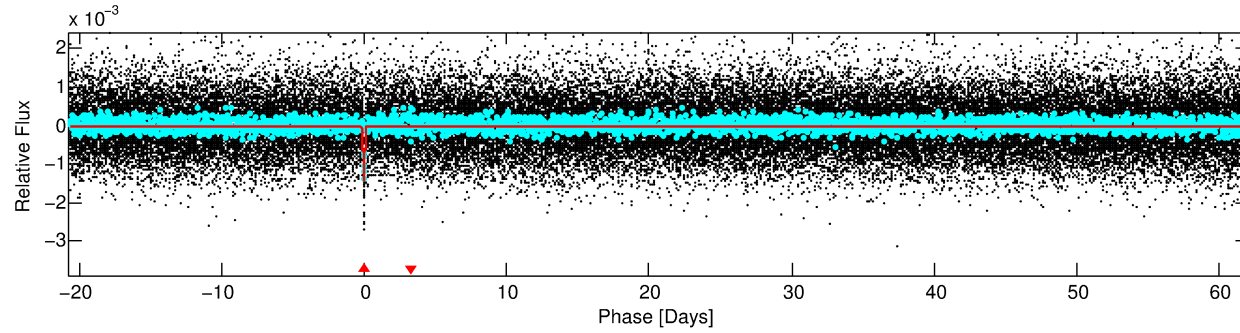
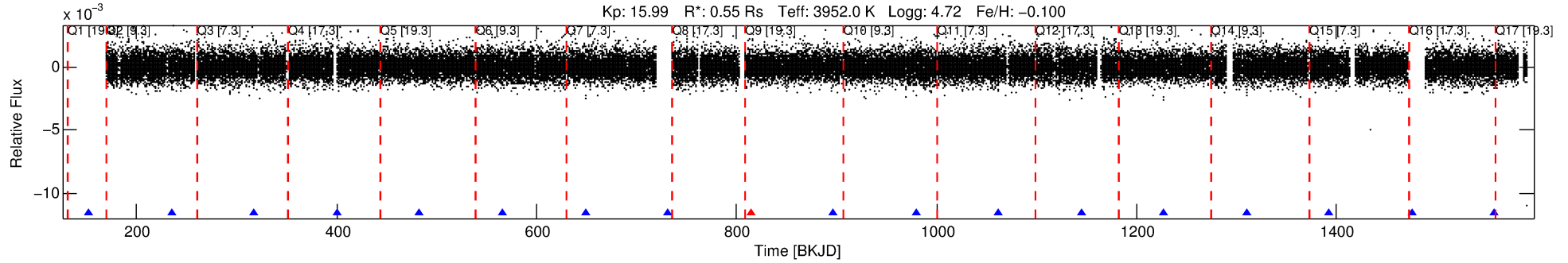
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008509442-01

No Significant Match Found

# DV One-Page Summary

KIC: 8509442 Candidate: 1 of 1 Period: 82.659 d  
KOI: K02992.01 Corr: 0.904



## DV Fit Results:

Period = 82.65947 [0.00044] d  
Epoch = 152.6721 [0.0046] BKJD  
Rp/R\* = 0.0363 [0.0199]  
a/R\* = 150.86 [337.47]  
b = 0.61 [2.35]  
Seff = 0.70 [0.09]  
Teq = 233 [7] K  
Rp = 2.19 [1.22] Re  
a = 0.3098 [0.0206] AU  
Ag = 3543.41 [4030.87] [0.88σ]  
Teffp = 2779 [791] K [3.22σ]

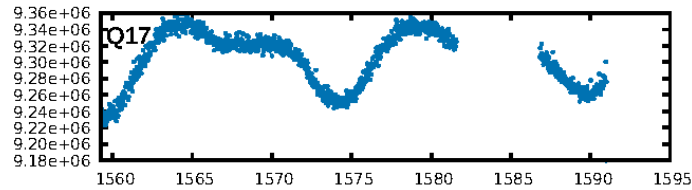
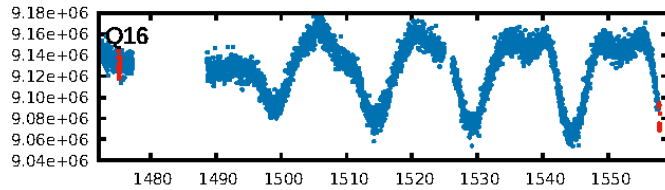
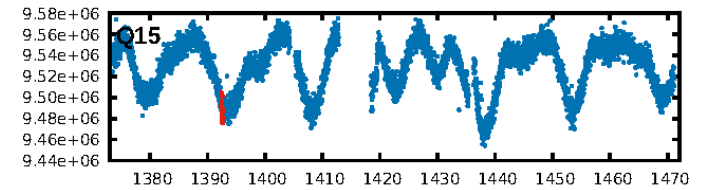
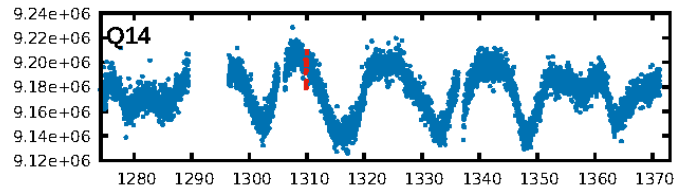
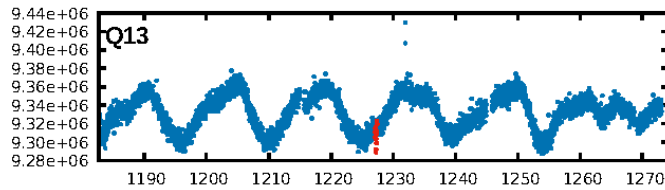
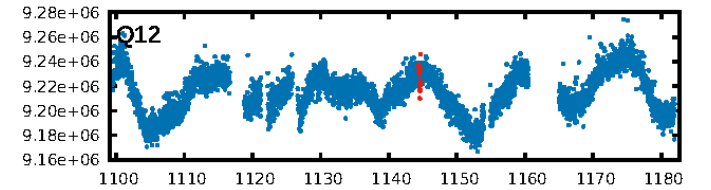
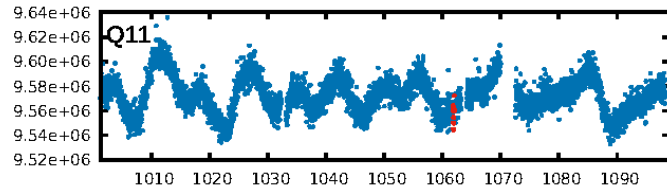
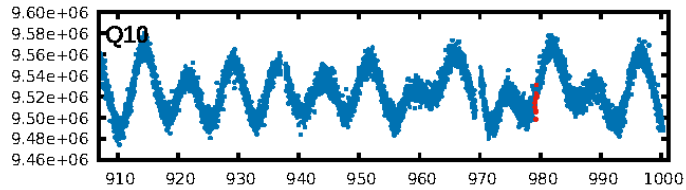
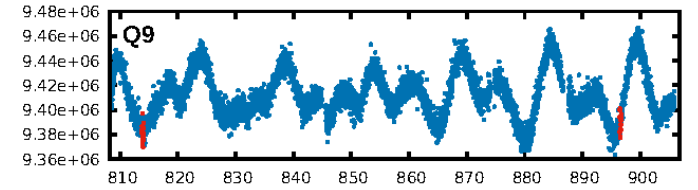
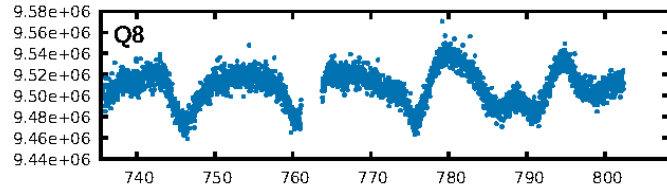
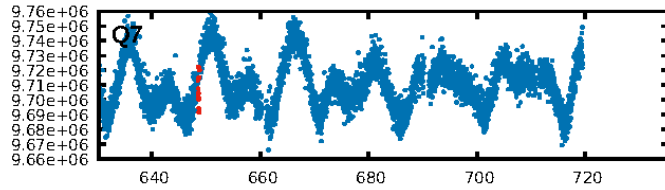
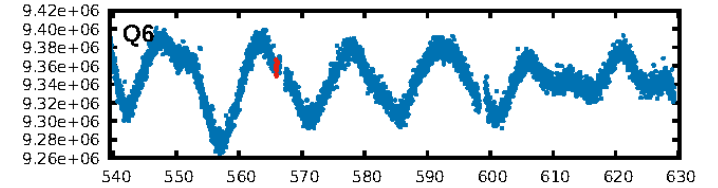
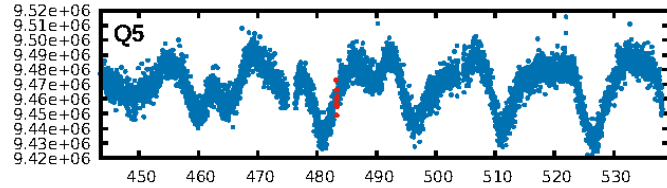
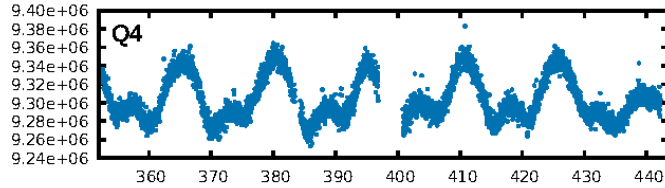
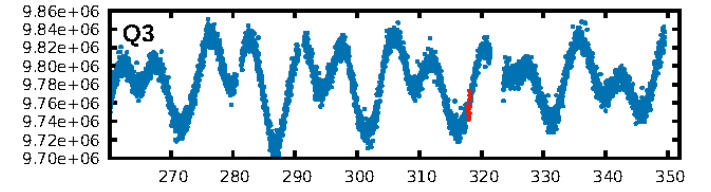
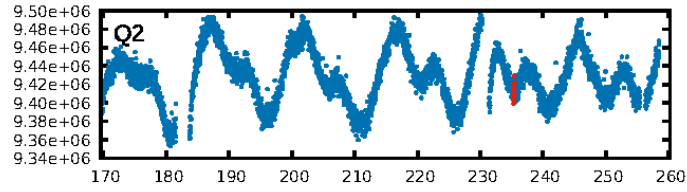
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 89.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.03e-38  
RollingBand-fgt: 0.93 [13/14]  
GhostDiagnostic-chr: 9.672  
Centroid-sig: 43.6%  
Centroid-so: 0.625 arcsec [0.90σ]  
OotOffset-rm: 0.291 arcsec [0.75σ]  
KicOffset-rm: 0.395 arcsec [0.85σ]  
OotOffset-st: 4/4/1/3 [12]  
KicOffset-st: 4/4/1/3 [12]  
DiffImageQuality-fgm: 0.92 [11/12]  
DiffImageOverlap-fno: 1.00 [12/12]

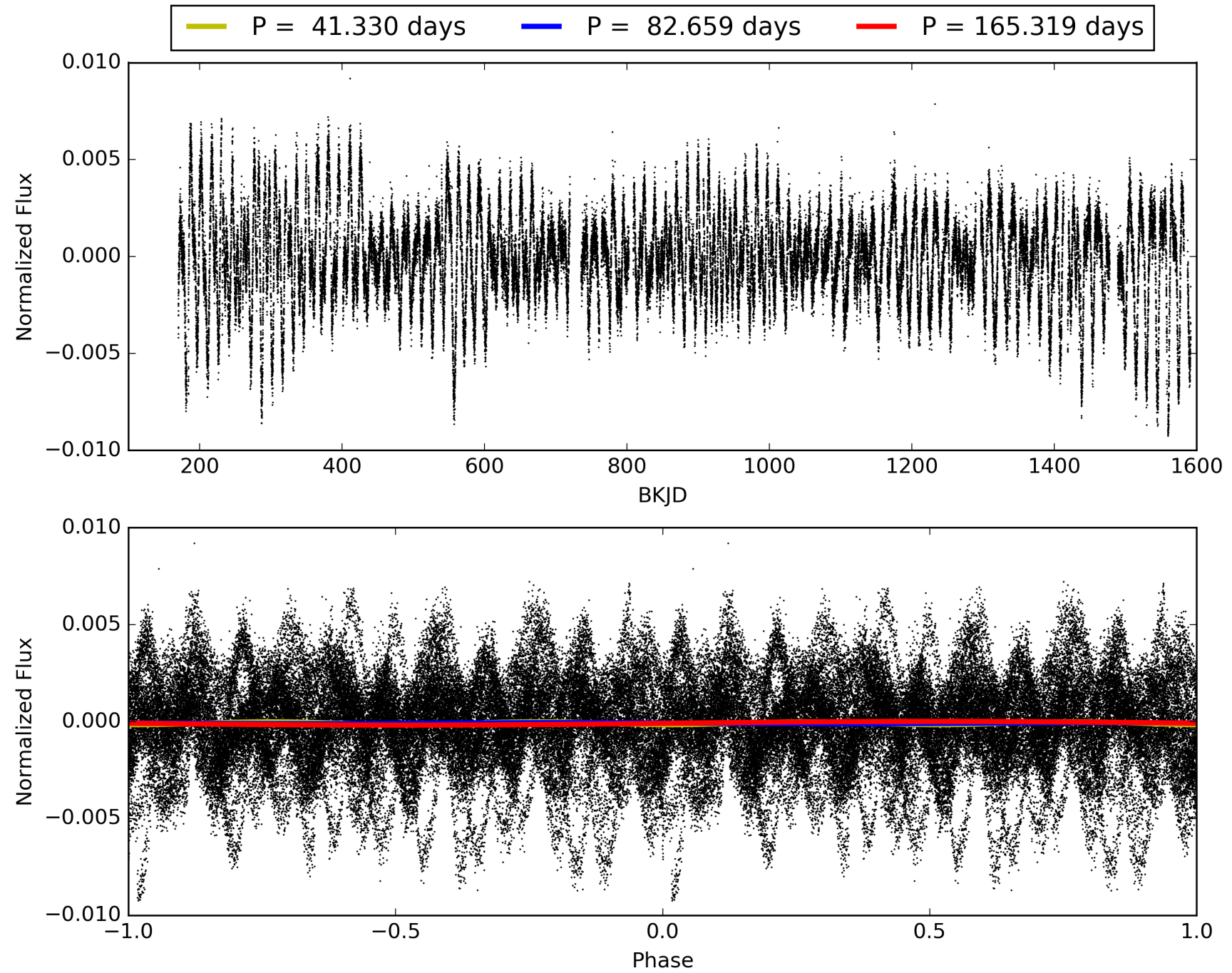
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:58:07 Z

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

# TCE 008509442-01, PDC Light Curves

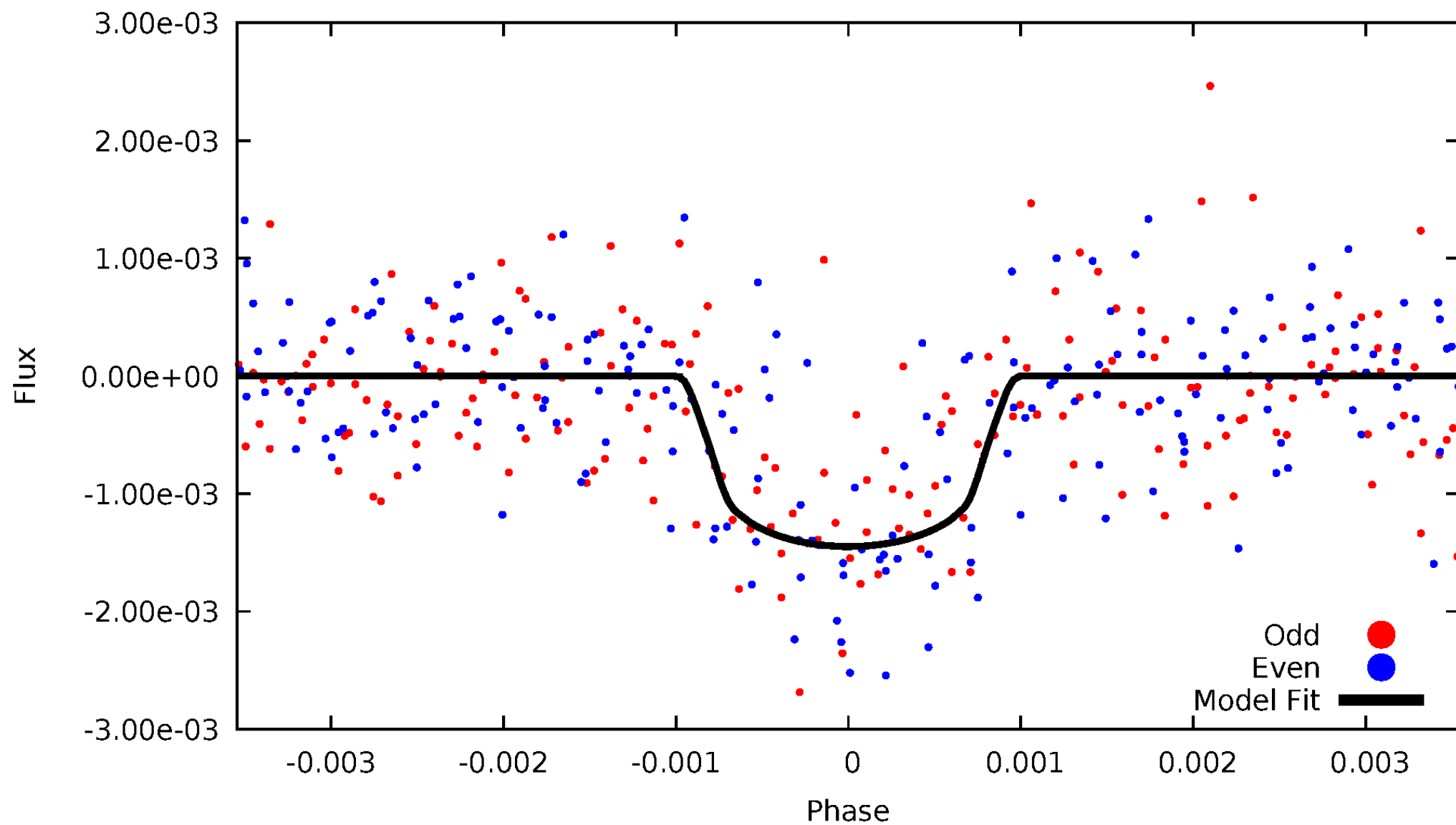


TCE 008509442-01



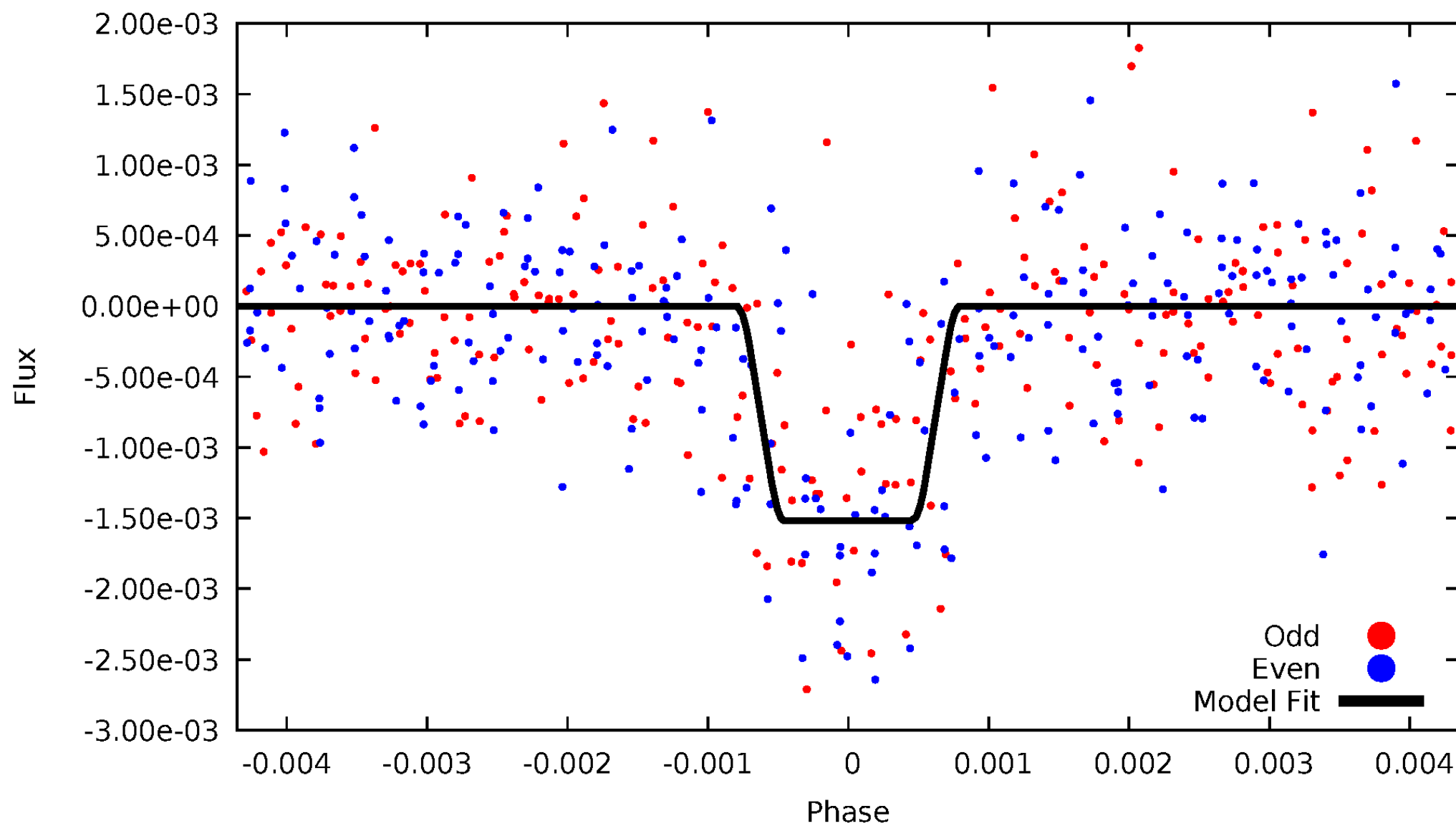
# DV Odd/Even

TCE 008509442-01



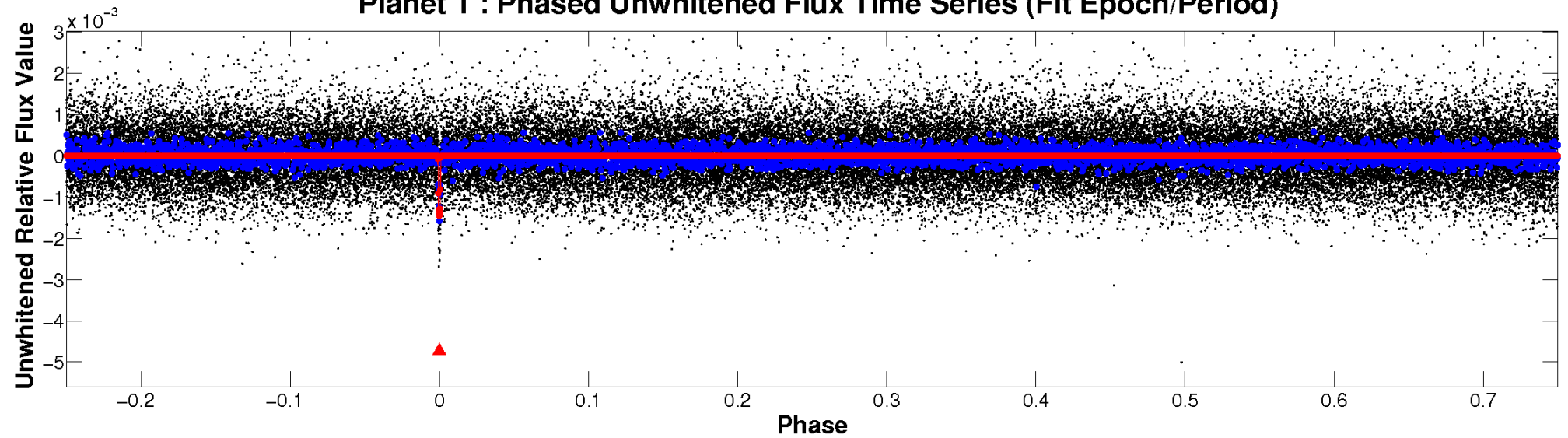
# ALT Odd/Even

TCE 008509442-01

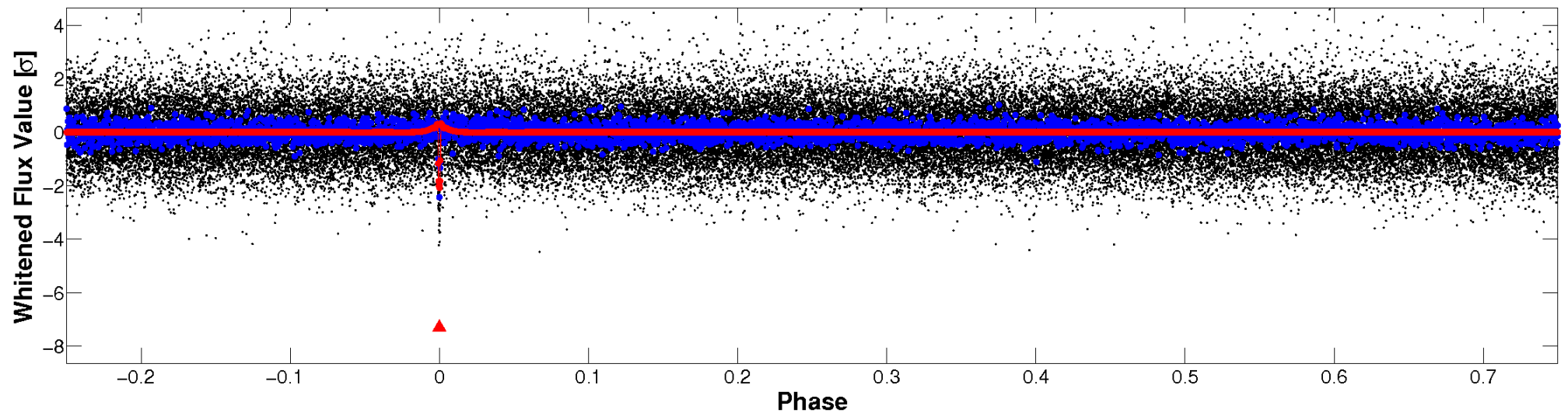


# Non-Whitened Vs. Whitened Light Curve

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



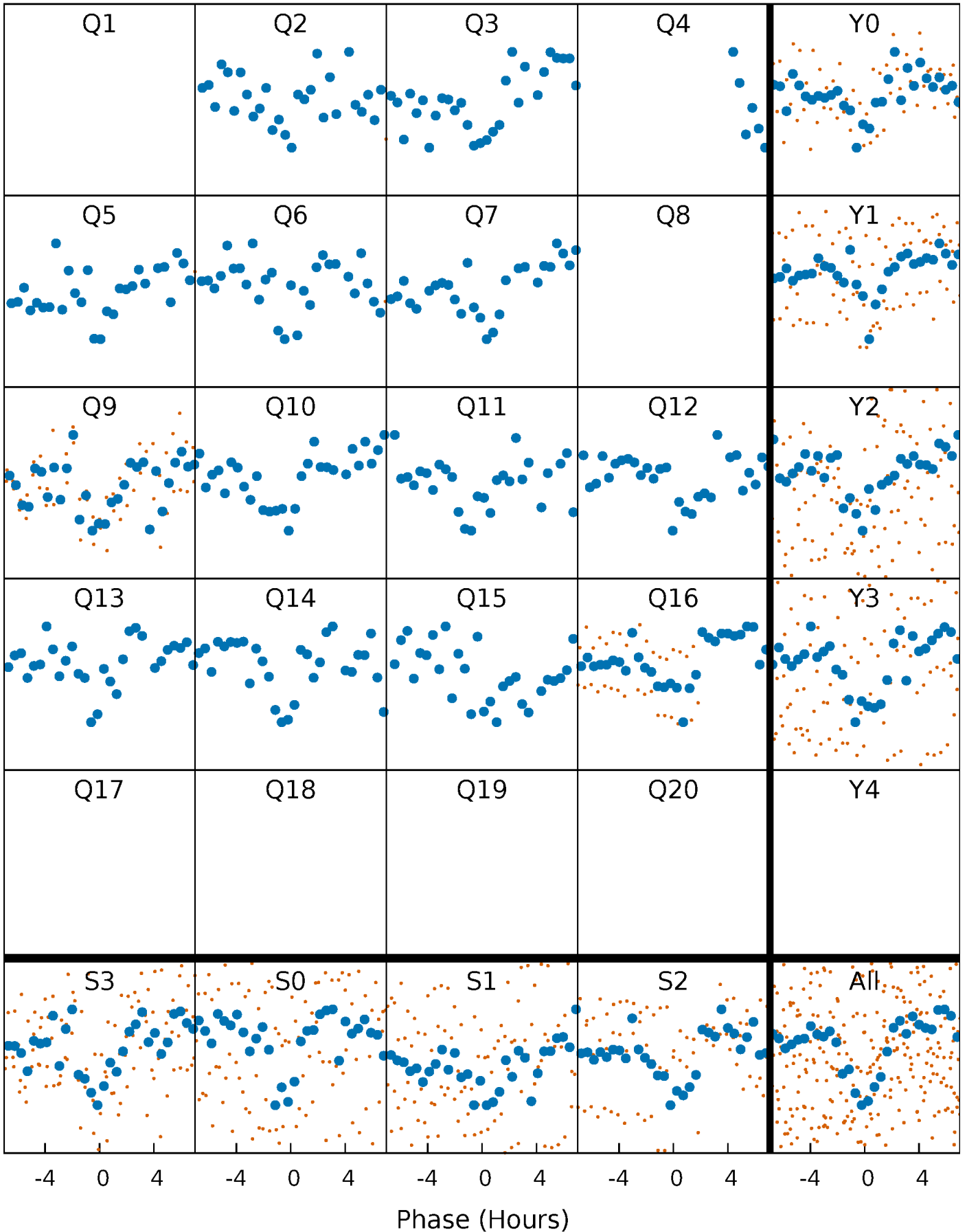
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

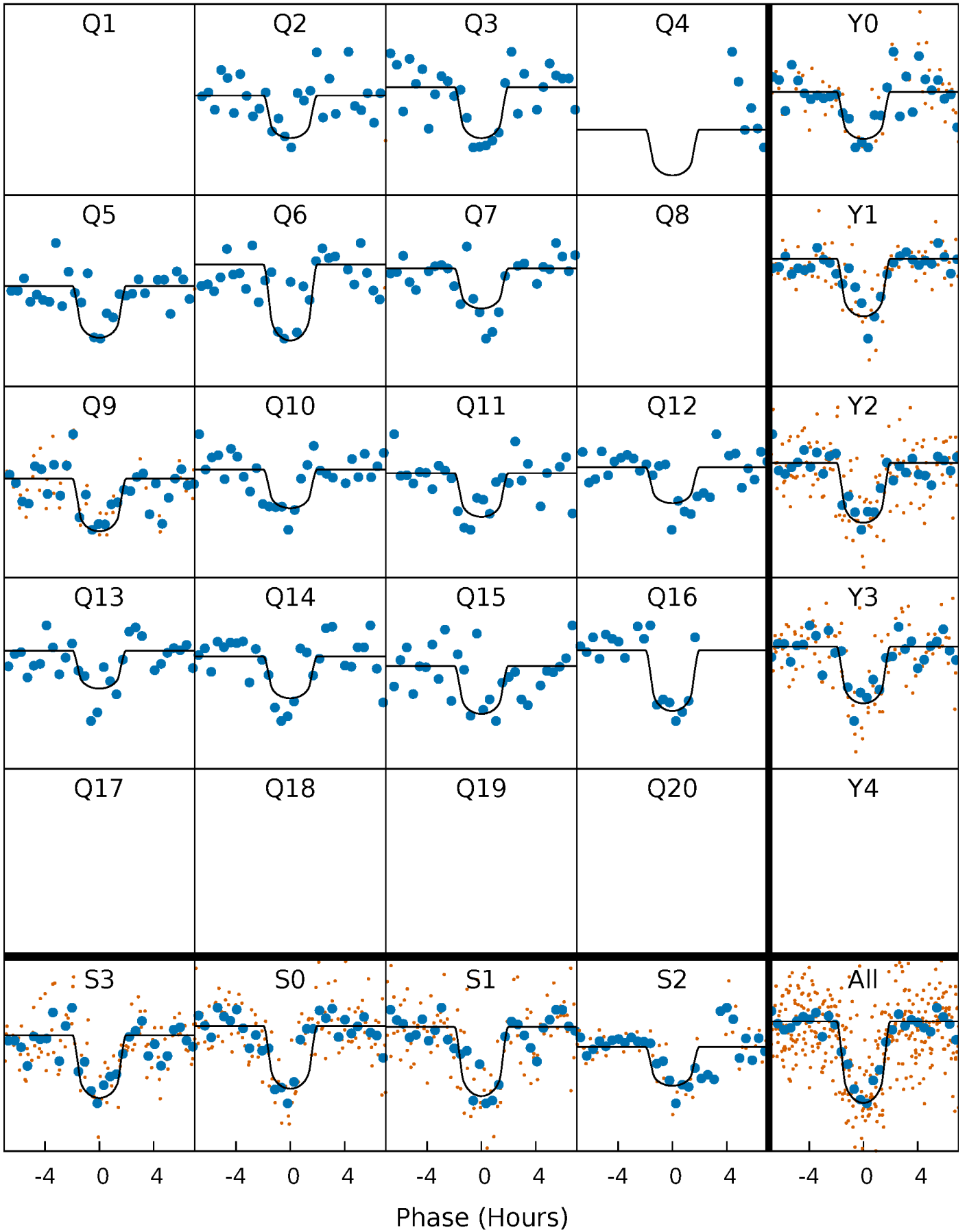
TCE 008509442-01   P= 82.659474 Days    $T_0=152.672095$  (BKJD)





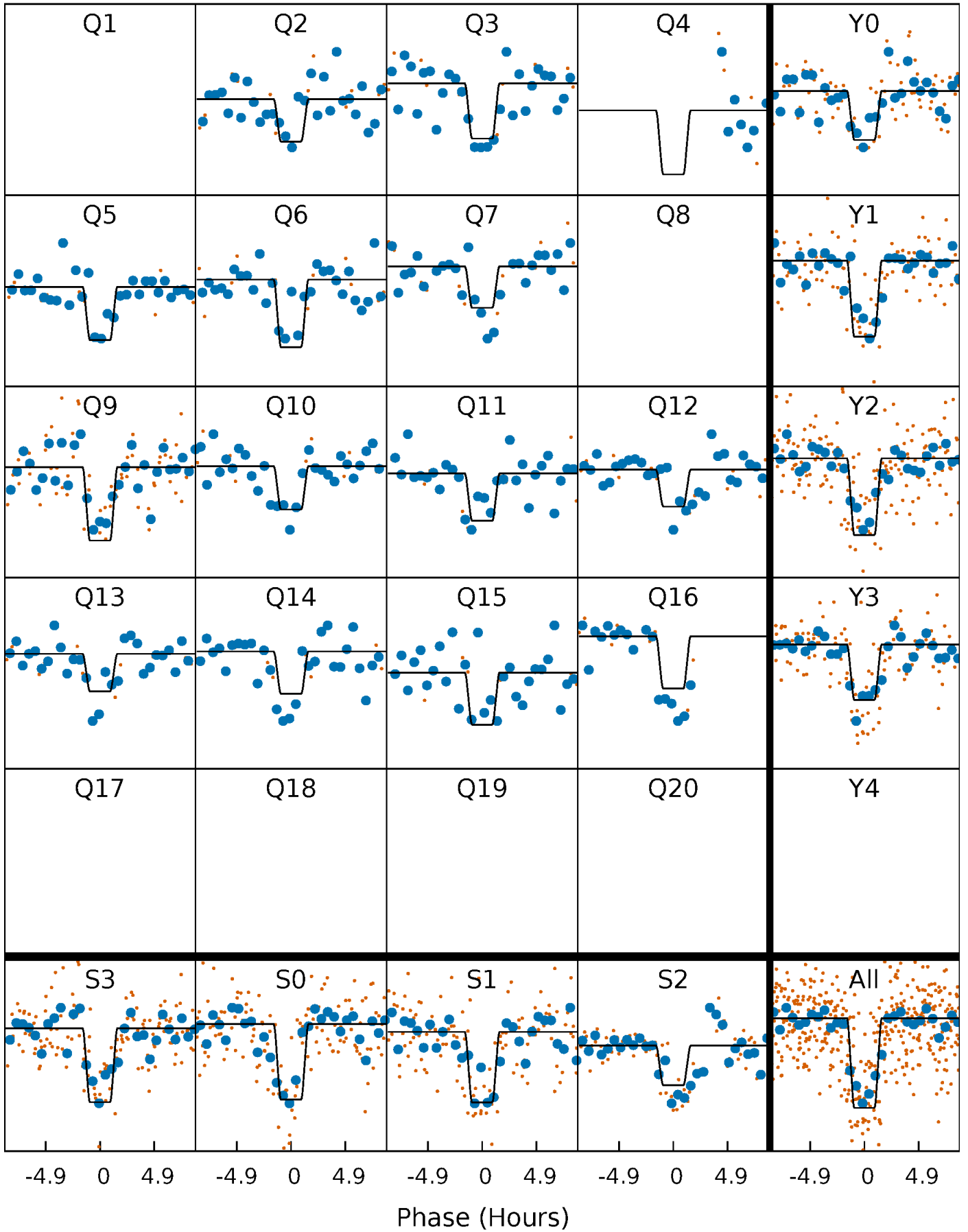
# DV Quarter-Phased Transit Curves

TCE 008509442-01 P= 82.659474 Days  $T_0=152.672095$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

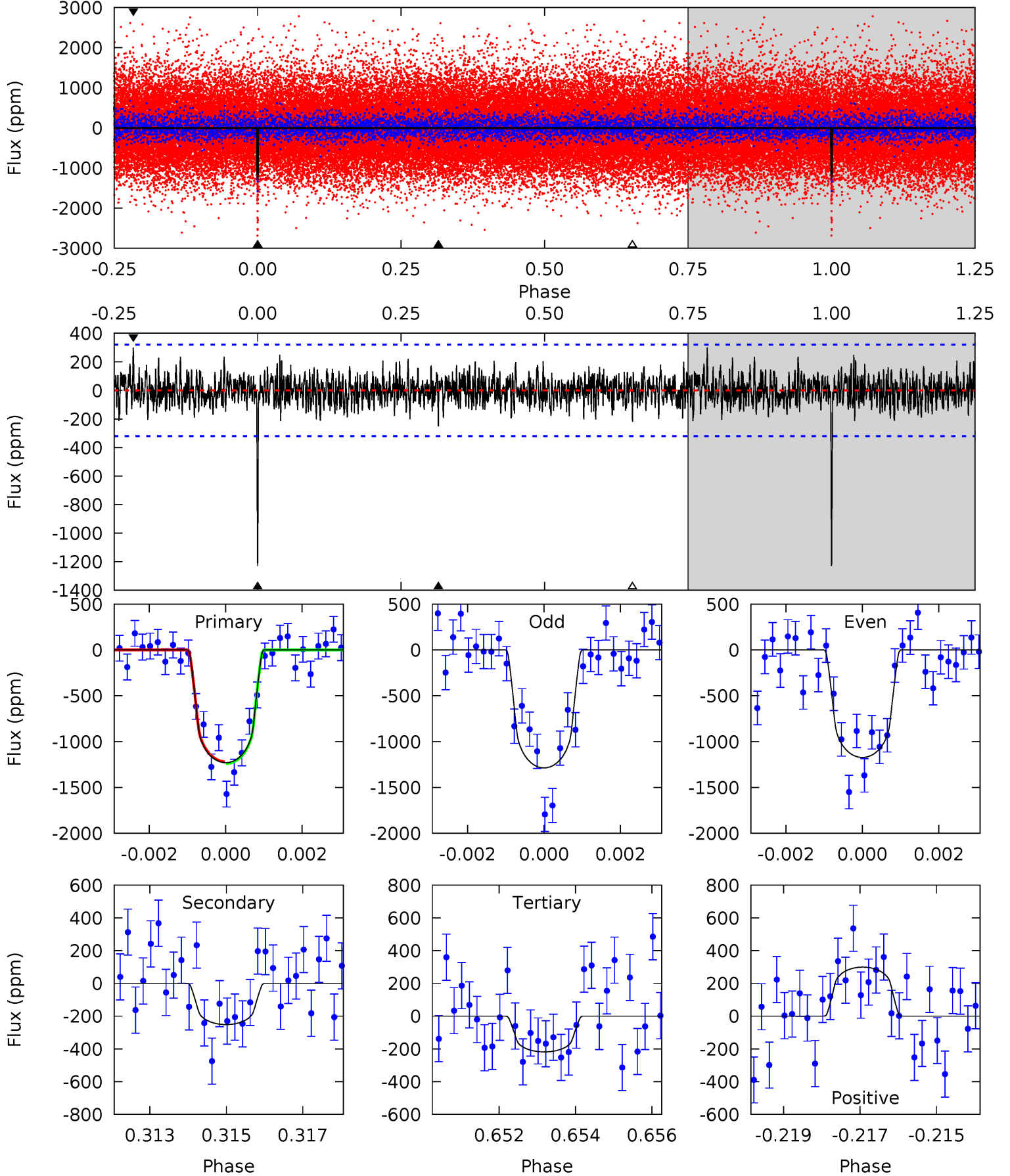
TCE 008509442-01 P= 82.659358 Days  $T_0=152.674861$  (BKJD)



# DV Model-Shift Uniqueness Test

008509442-01,  $P = 82.659474$  Days,  $E = 152.672095$  Days

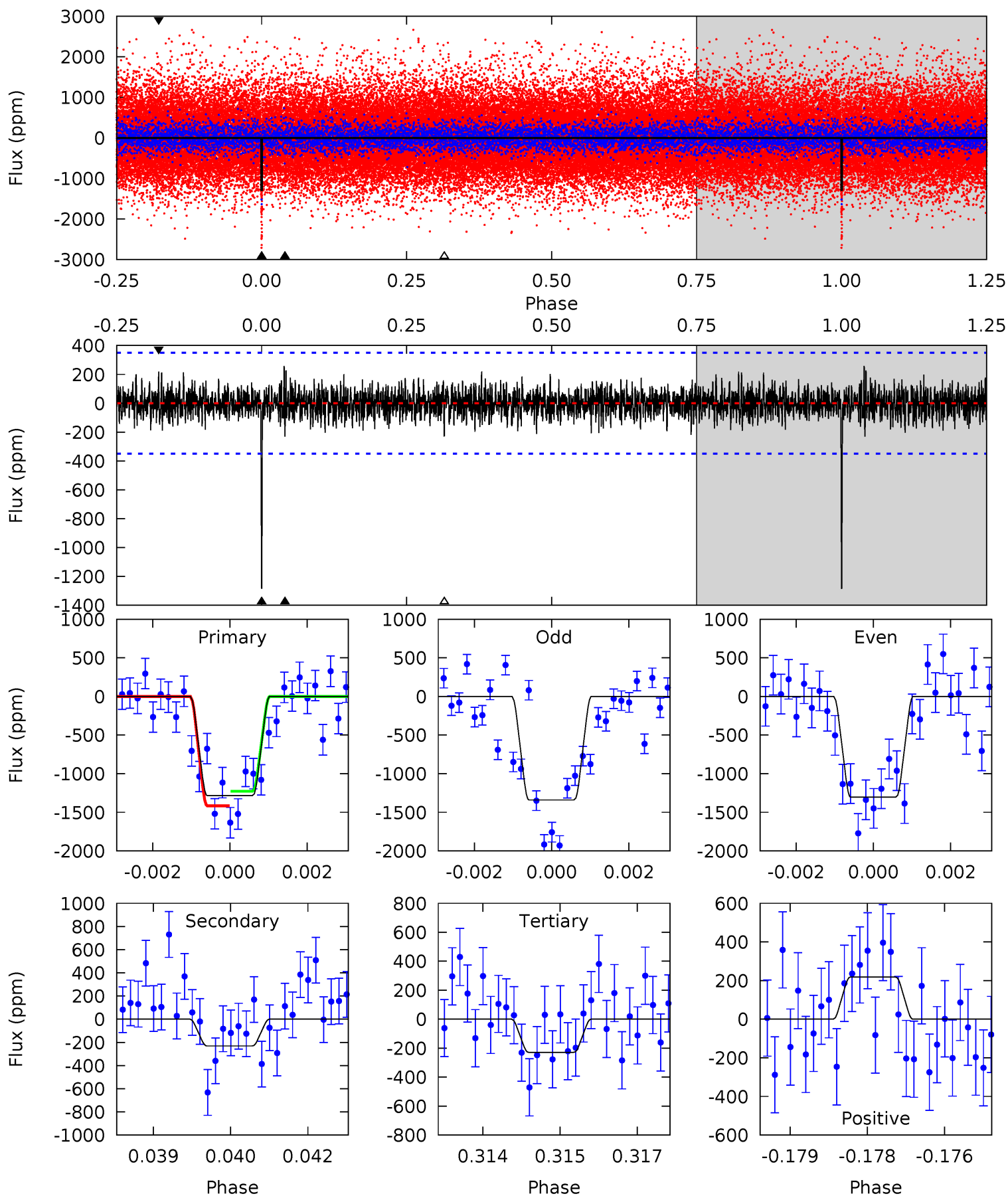
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.5	4.18	3.63	4.98	5.33	3.09	1.25	16.8	15.5	0.55	-0.79	0.94	0.97	0.20	0.17



# Alt Model-Shift Uniqueness Test

008509442-01, P = 82.659358 Days, E = 152.674861 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
19.7	3.55	3.51	3.35	5.37	3.17	1.04	16.2	16.4	0.04	0.20	0.27	1.12	0.17	1.45



### Stellar Parameters For KIC 008509442

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3952^{+86}_{-94}$	$4.716^{+0.040}_{-0.036}$	$-0.100^{+0.250}_{-0.300}$	$0.553^{+0.040}_{-0.049}$	$0.572^{+0.042}_{-0.053}$	$4.762^{+1.017}_{-0.644}$
	+2%/-2%	+1%/-1%	+250%/-300%	+7%/-9%	+7%/-9%	+21%/-14%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 008509442-01 / KOI 2992.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-252 \pm 60$	$2.21^{+1.12}_{-1.07}$	$325^{+8}_{-9}$	$3016^{+690}_{-342}$	$2680^{+7319}_{-1595}$
Alt.	$-231 \pm 65$	$2.39^{+1.15}_{-1.12}$	$326^{+9}_{-10}$	$2942^{+552}_{-320}$	$2172^{+5051}_{-1275}$

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

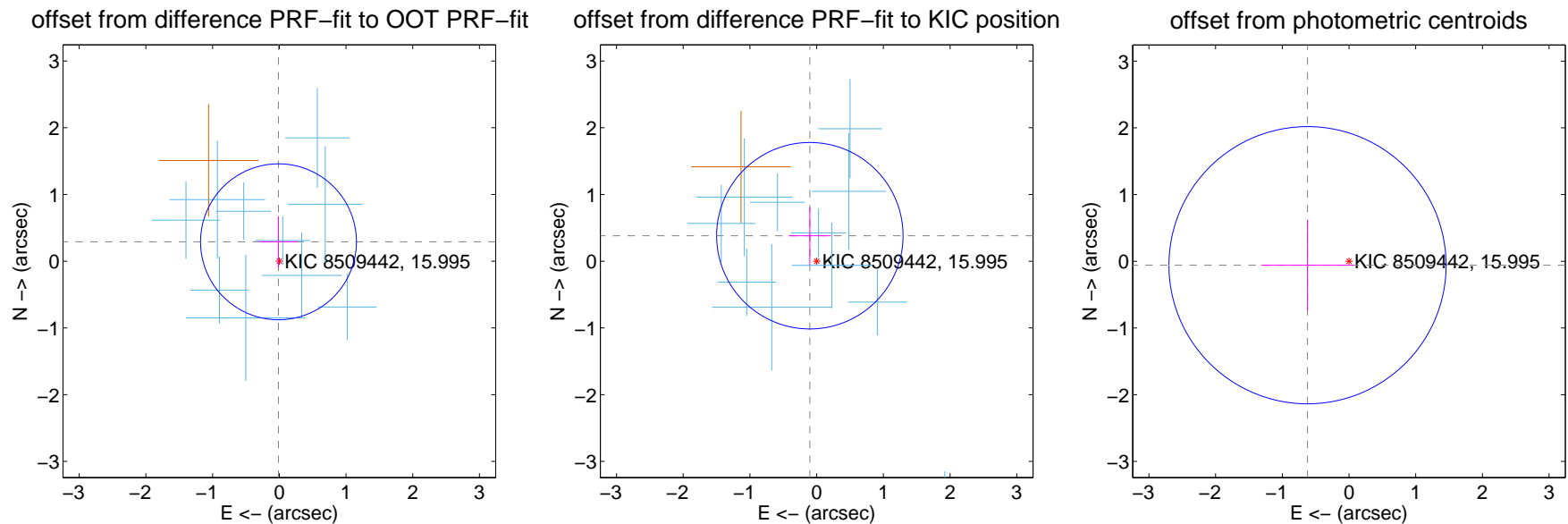
## DV Centroid Data

Supplemental centroid analysis for 008509442-01. Kepler magnitude: 15.99. Transit SNR 16.93

There are 11 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.291 \pm 0.389$	0.75	$0.012 \pm 0.288$	$0.291 \pm 0.384$
PRF-fit source offset from KIC position	$0.395 \pm 0.466$	0.85	$0.102 \pm 0.316$	$0.382 \pm 0.429$
photometric centroid source offset	$0.62 \pm 0.69$	0.90	$0.62 \pm 0.69$	$-0.06 \pm 0.68$



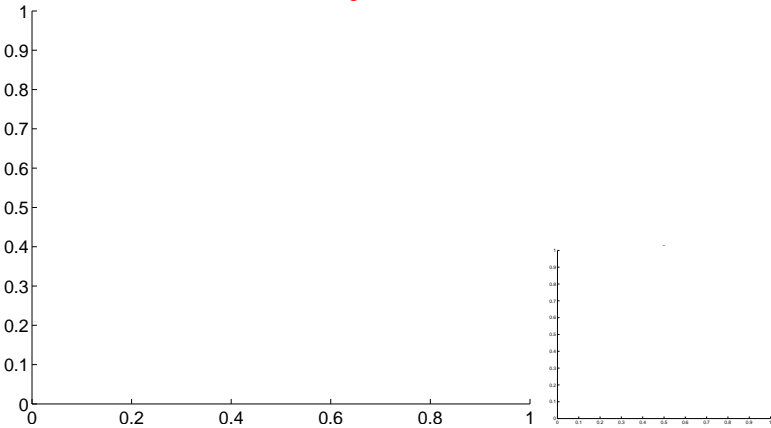
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

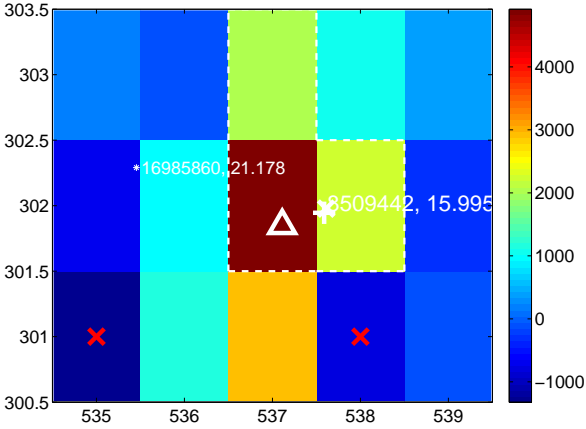
Q1 no difference image



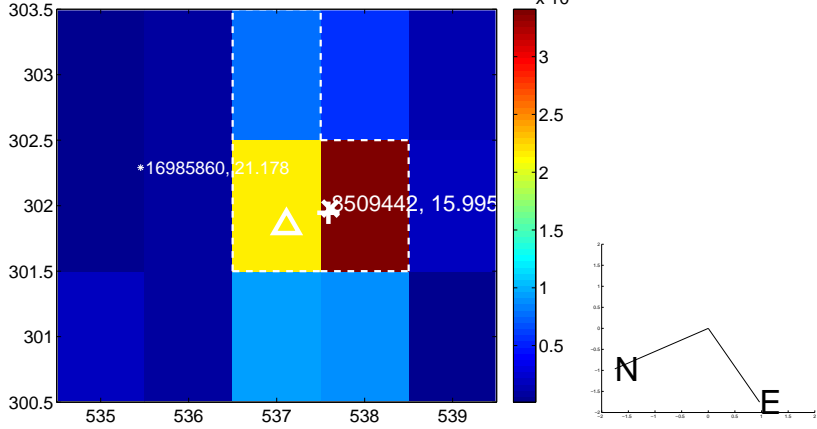
Q1 no OOT image



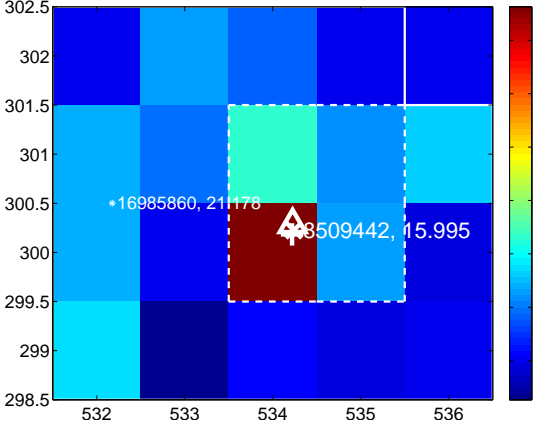
Q2 difference image



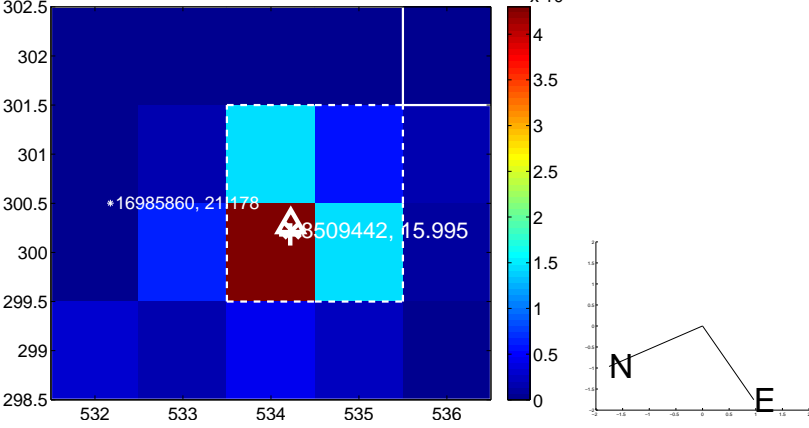
Q2 OOT image



Q3 difference image



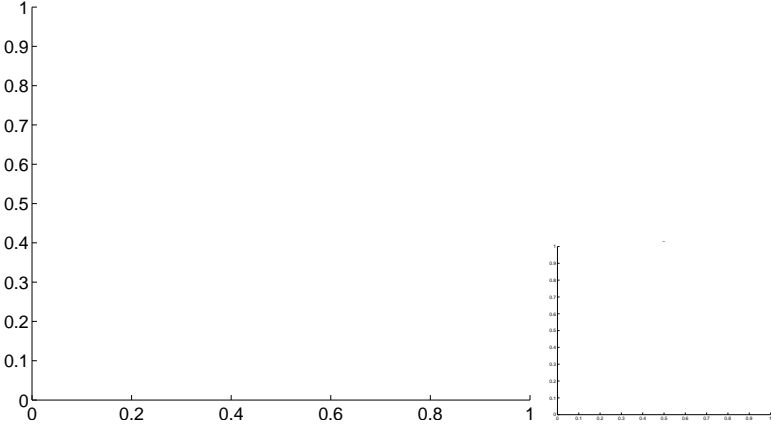
Q3 OOT image



Q4 no difference image

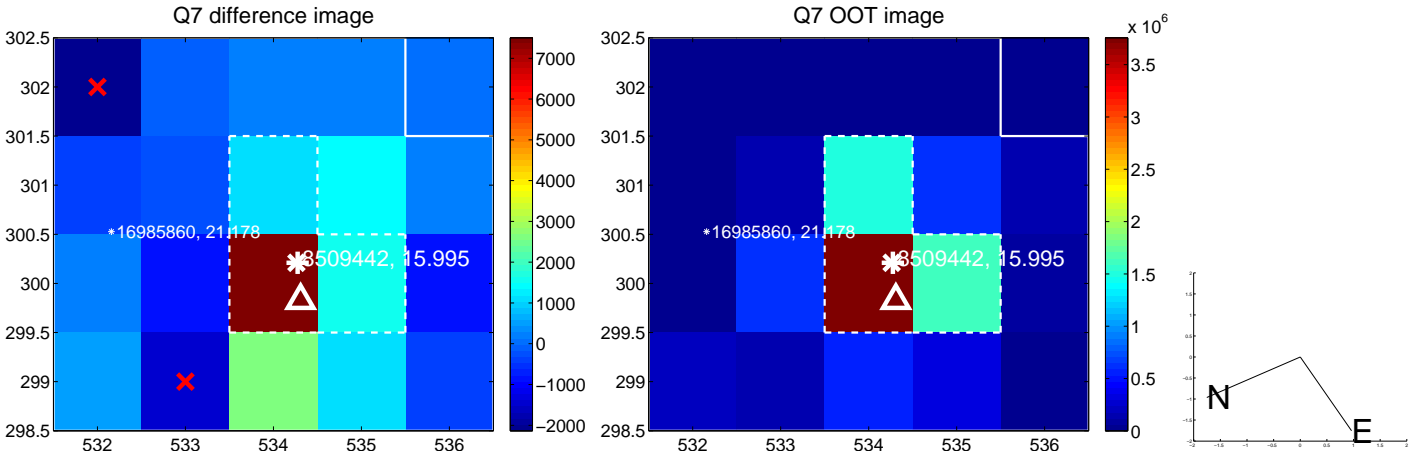
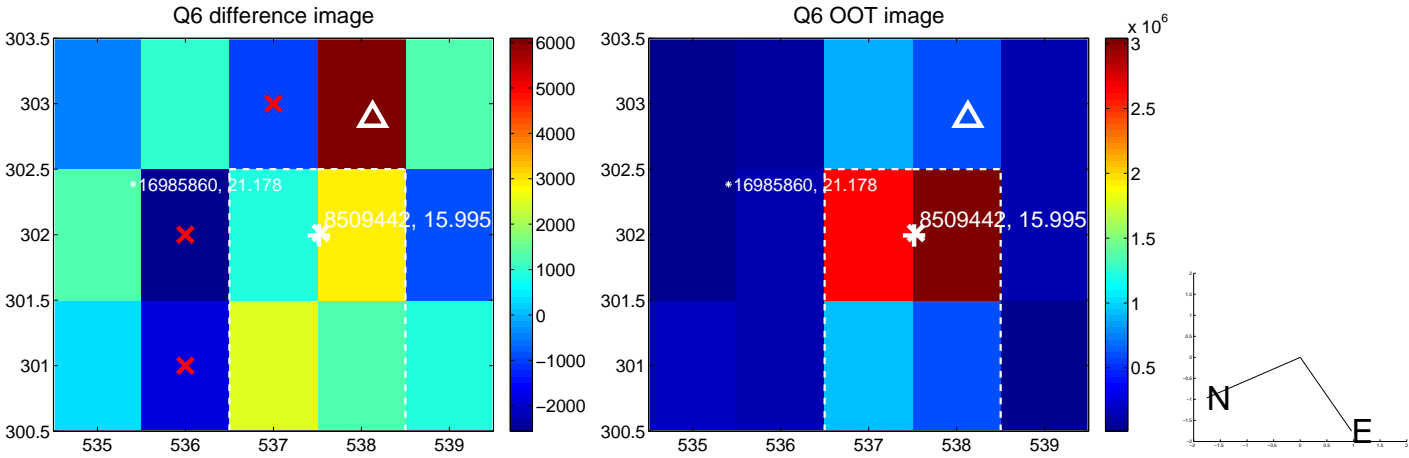
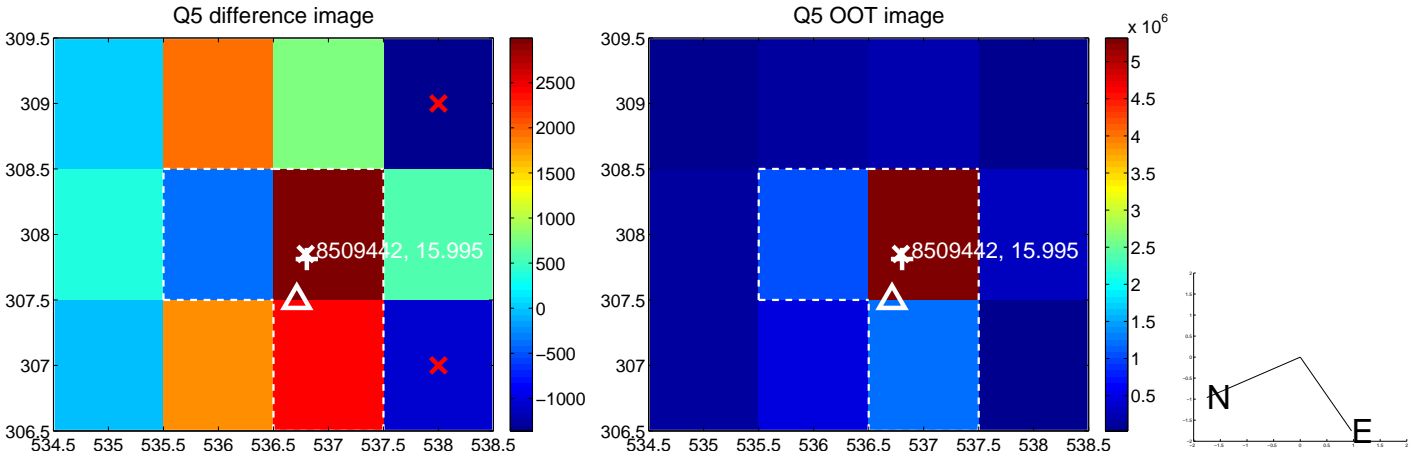


Q4 no OOT image

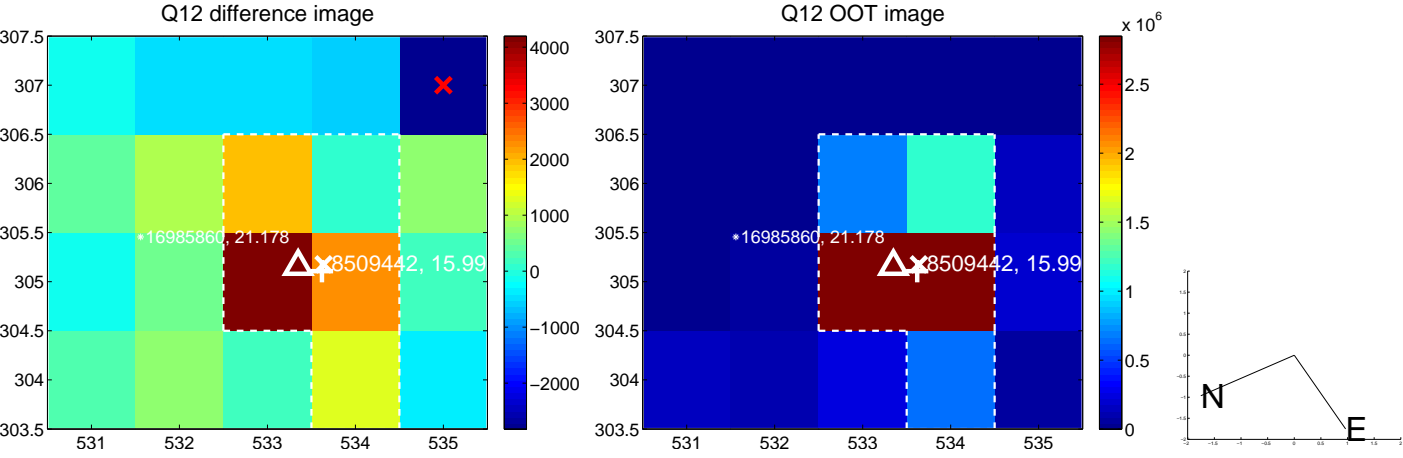
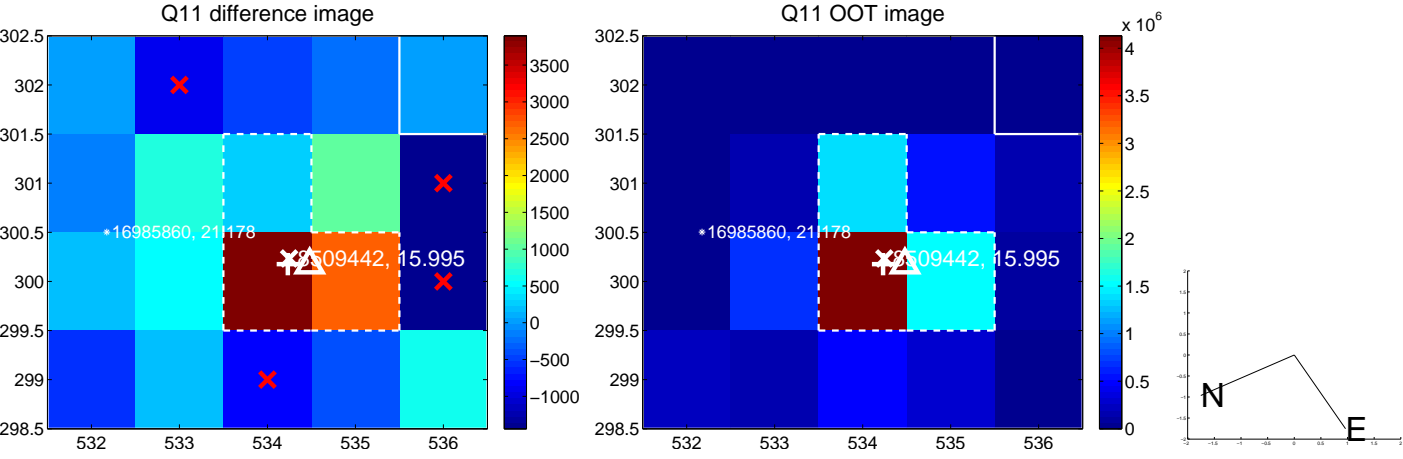
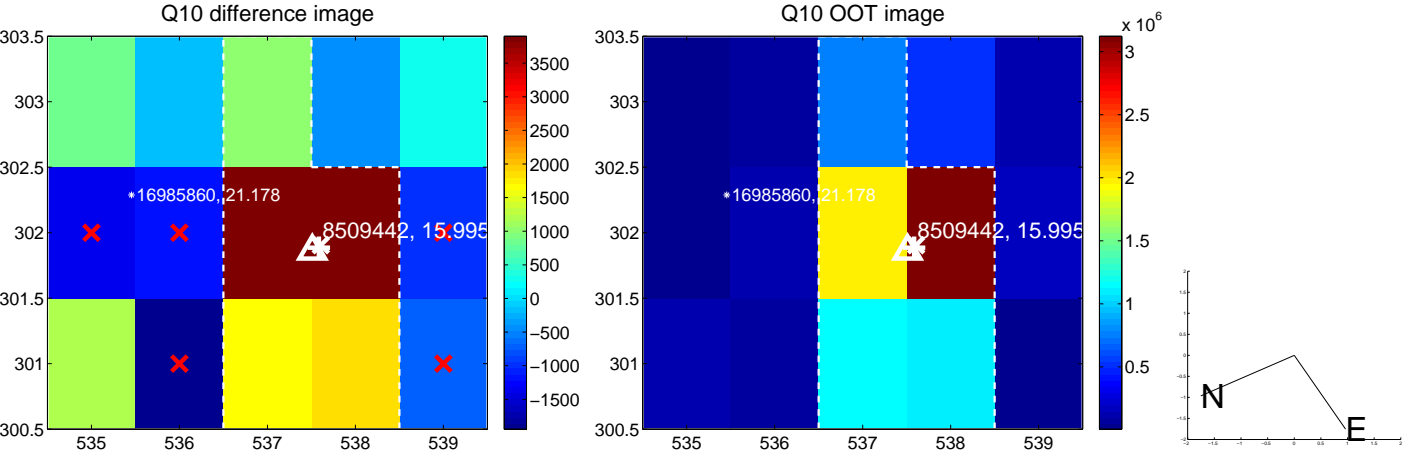
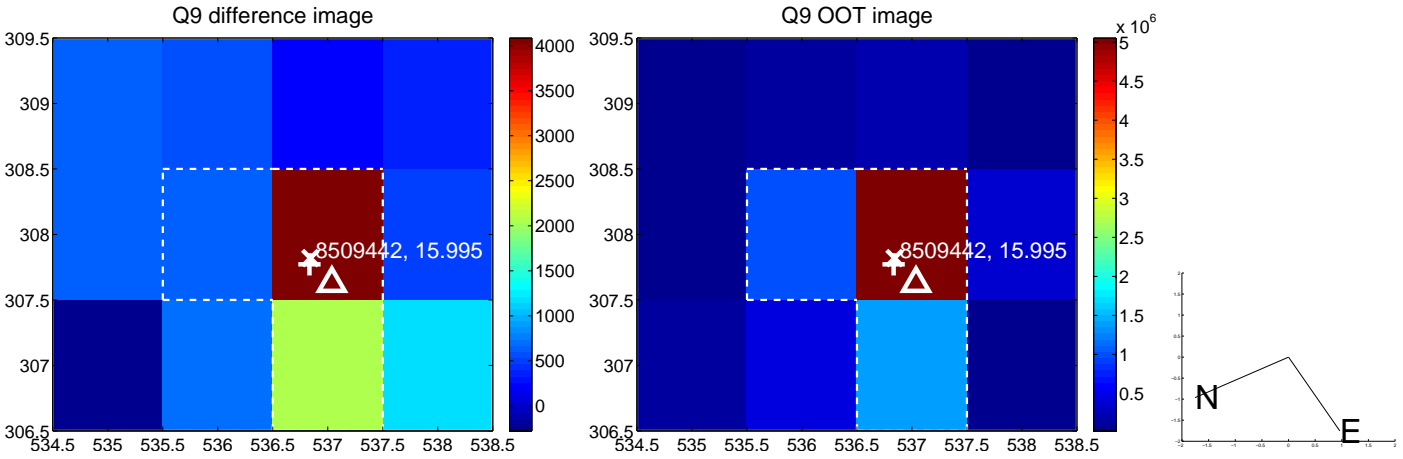




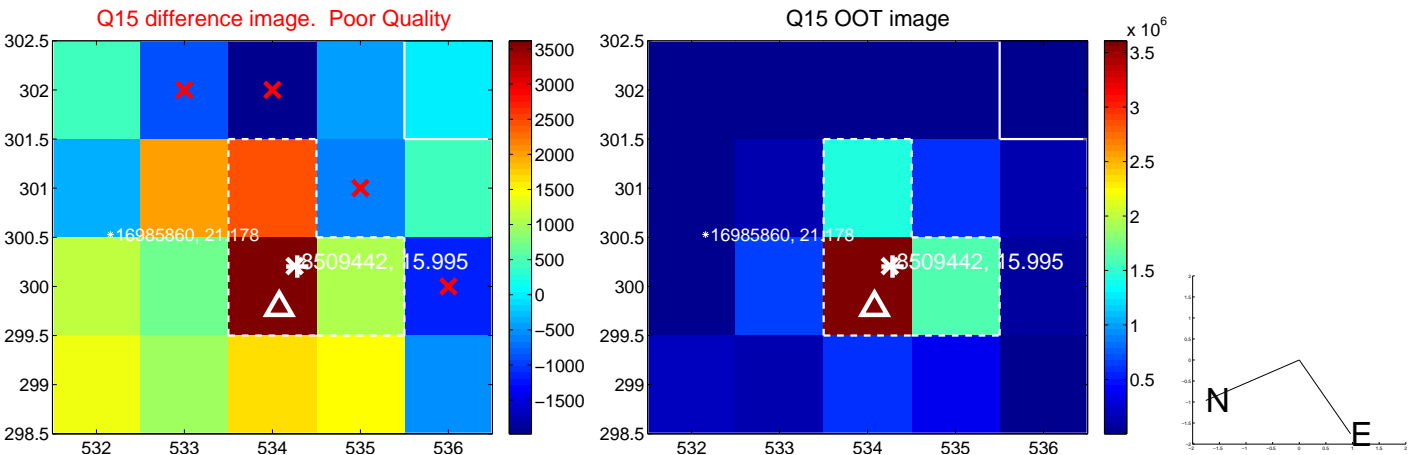
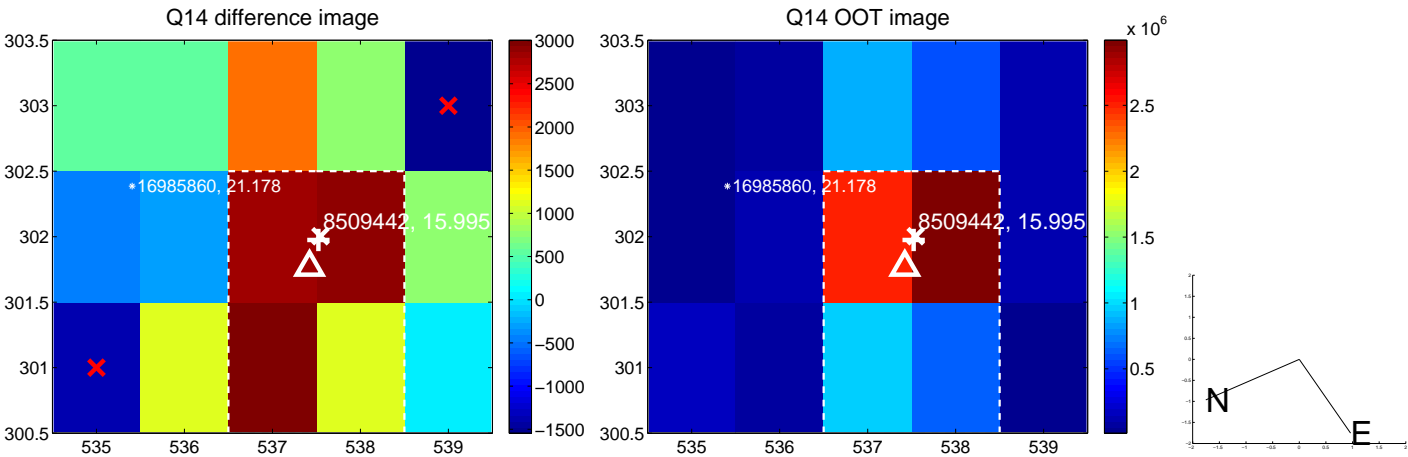
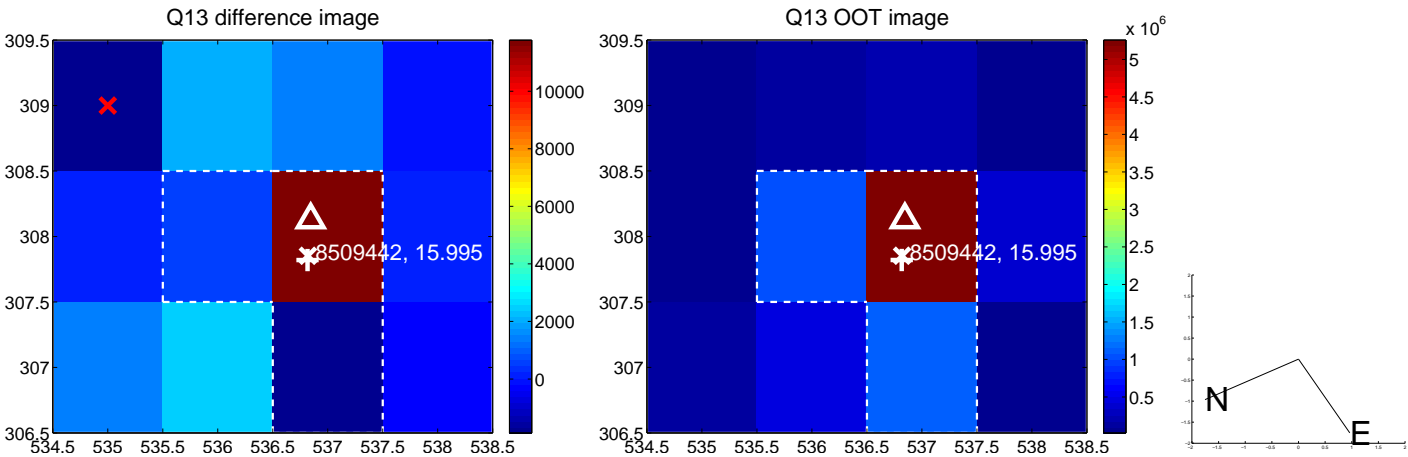
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



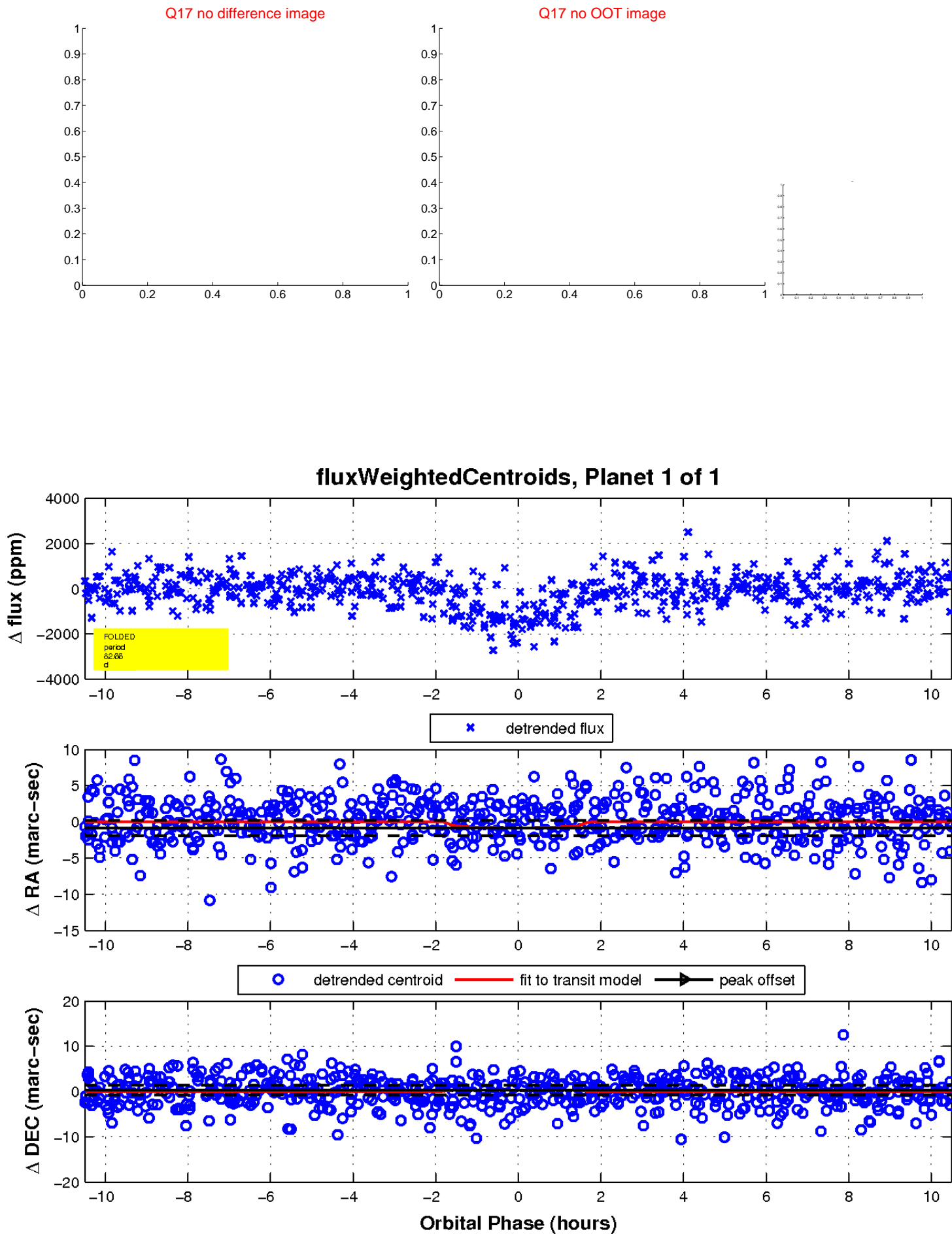
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



# UKIRT Image

Declination

