

# KIC 007258902

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007258902-01	OBS	No	0.903914	131.953069	100.3	2.929	12.6	4.9	1.78	5164	2.15	6578.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007258902-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_RESOLVED_OFFSET—EPHEM_MATCH

**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 007258902-01

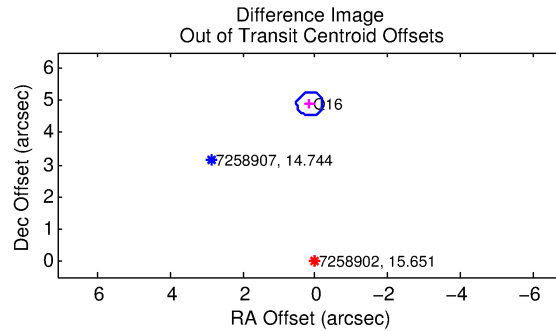
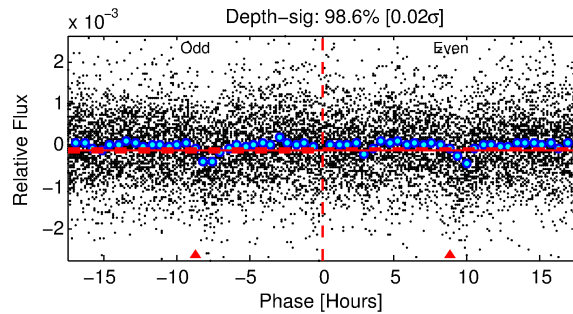
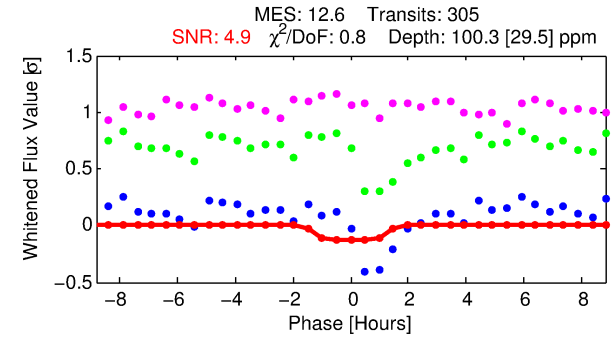
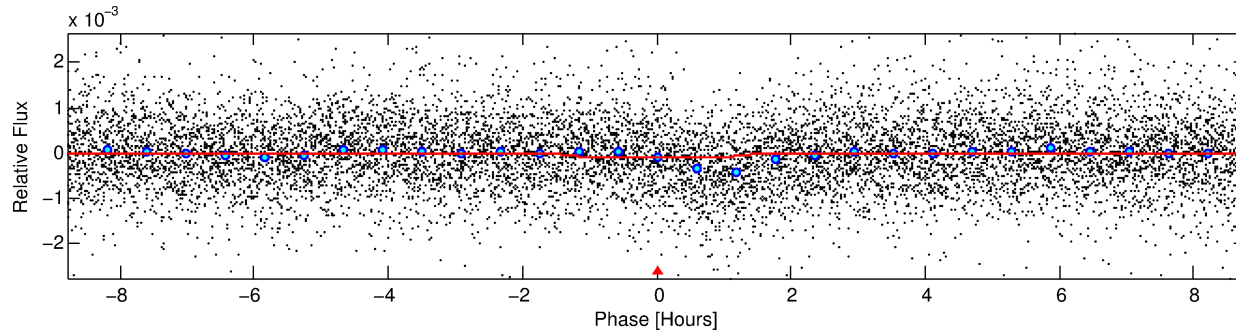
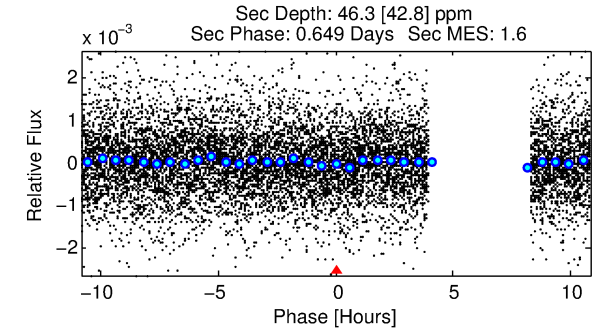
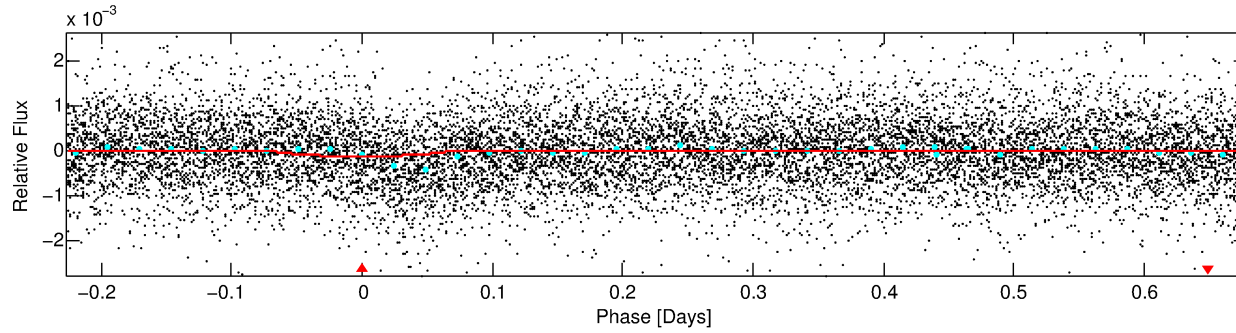
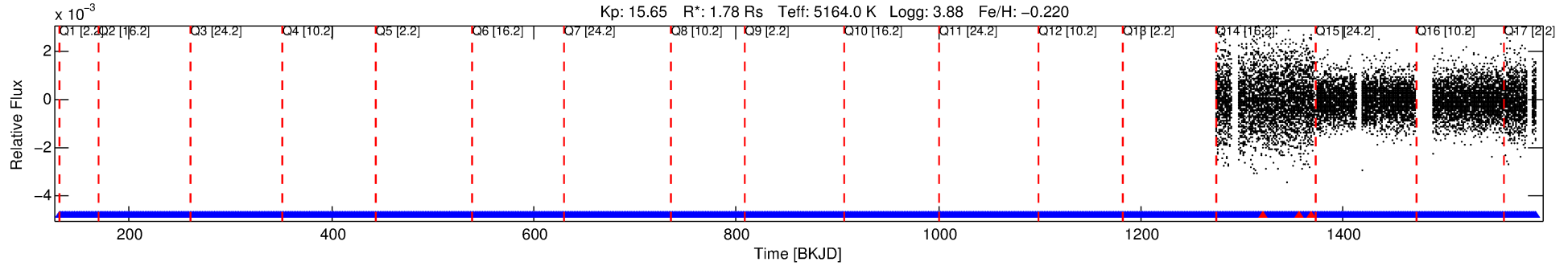
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
007258902-01	7258902	007258889-pri	7258889	1:1	20.8	0	-5	13.67	15.65	3919.00	Direct-PRF	0	0.96	3.83

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 7258902 Candidate: 1 of 1 Period: 0.904 d  
KOI: K05378 Corr: No Ephemeris Match

Kp: 15.65 R\*: 1.78 Rs Teff: 5164.0 K Logg: 3.88 Fe/H: -0.220



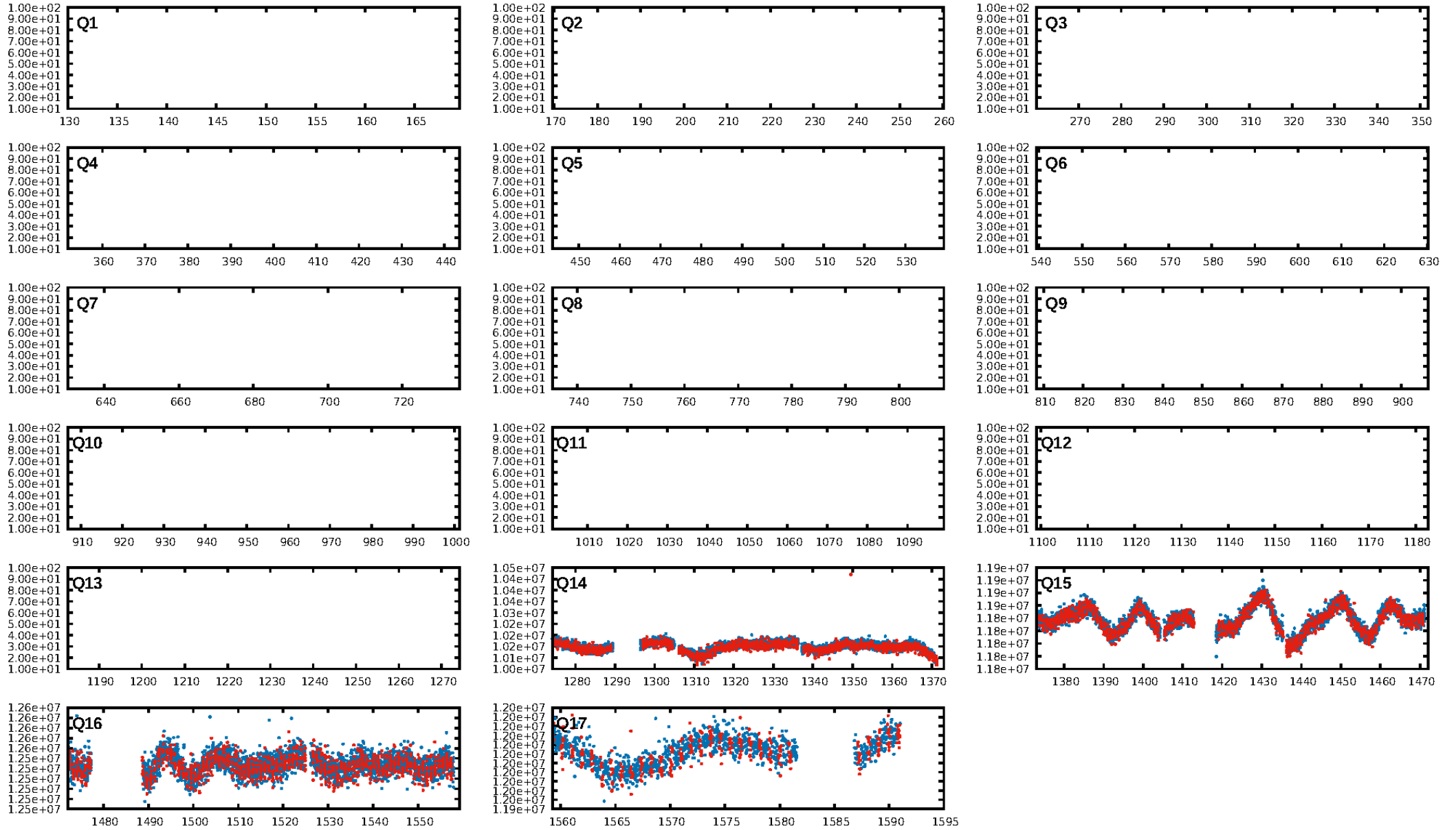
## DV Fit Results:

Period = 0.90391 [0.00002] d  
Epoch = 131.9531 [0.0073] BKJD  
Rp/R\* = 0.0111 [0.0175]  
a/R\* = 1.44 [4.99]  
b = 0.90 [1.46]  
Seff = 6578.41 [7867.24]  
Teq = 2296 [687] K  
Rp = 2.15 [3.68] Re  
a = 0.0175 [0.0123] AU  
Ag = 1.69 [5.91] [0.12σ]  
Teff = 4046 [3337] K [0.51σ]

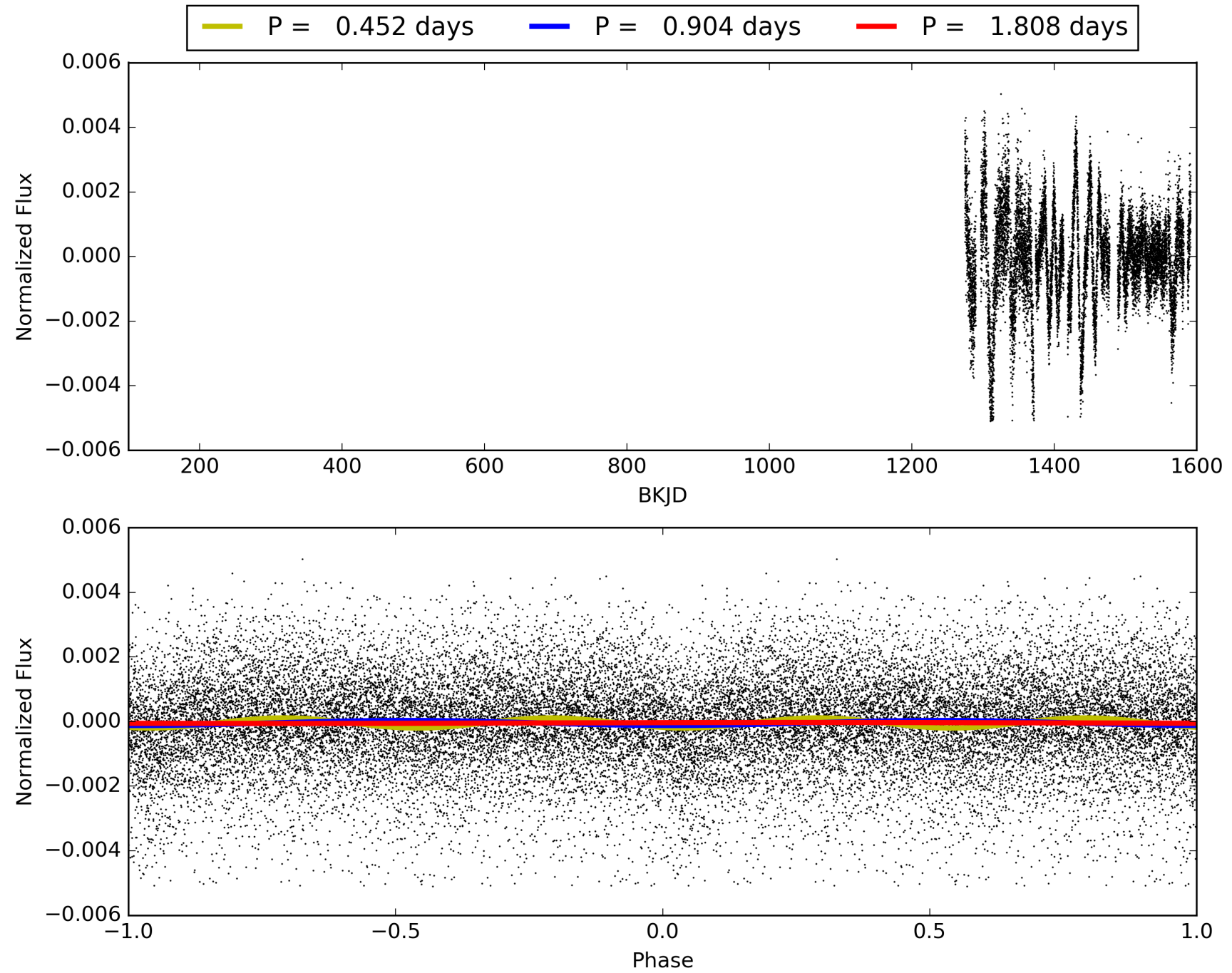
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.35e-35  
RollingBand-fgt: 0.99 [272/275]  
GhostDiagnostic-chr: -0.6861  
Centroid-sig: 0.1%  
Centroid-so: 3.670 arcsec [2.28σ]  
OotOffset-rm: 4.898 arcsec [40.60σ]  
KicOffset-rm: 3.975 arcsec [32.90σ]  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [4/4]

# TCE 007258902-01, PDC Light Curves

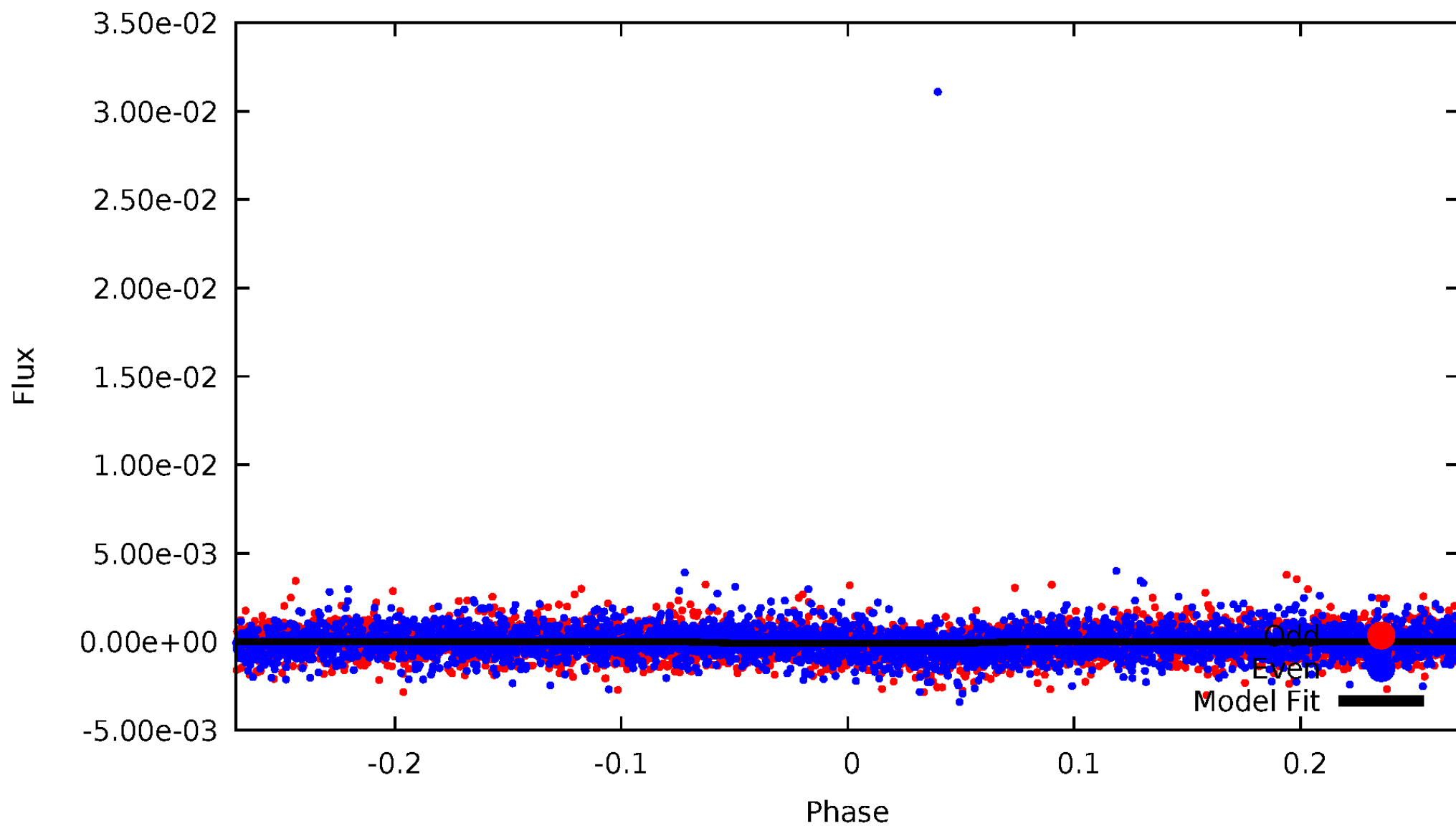


TCE 007258902-01



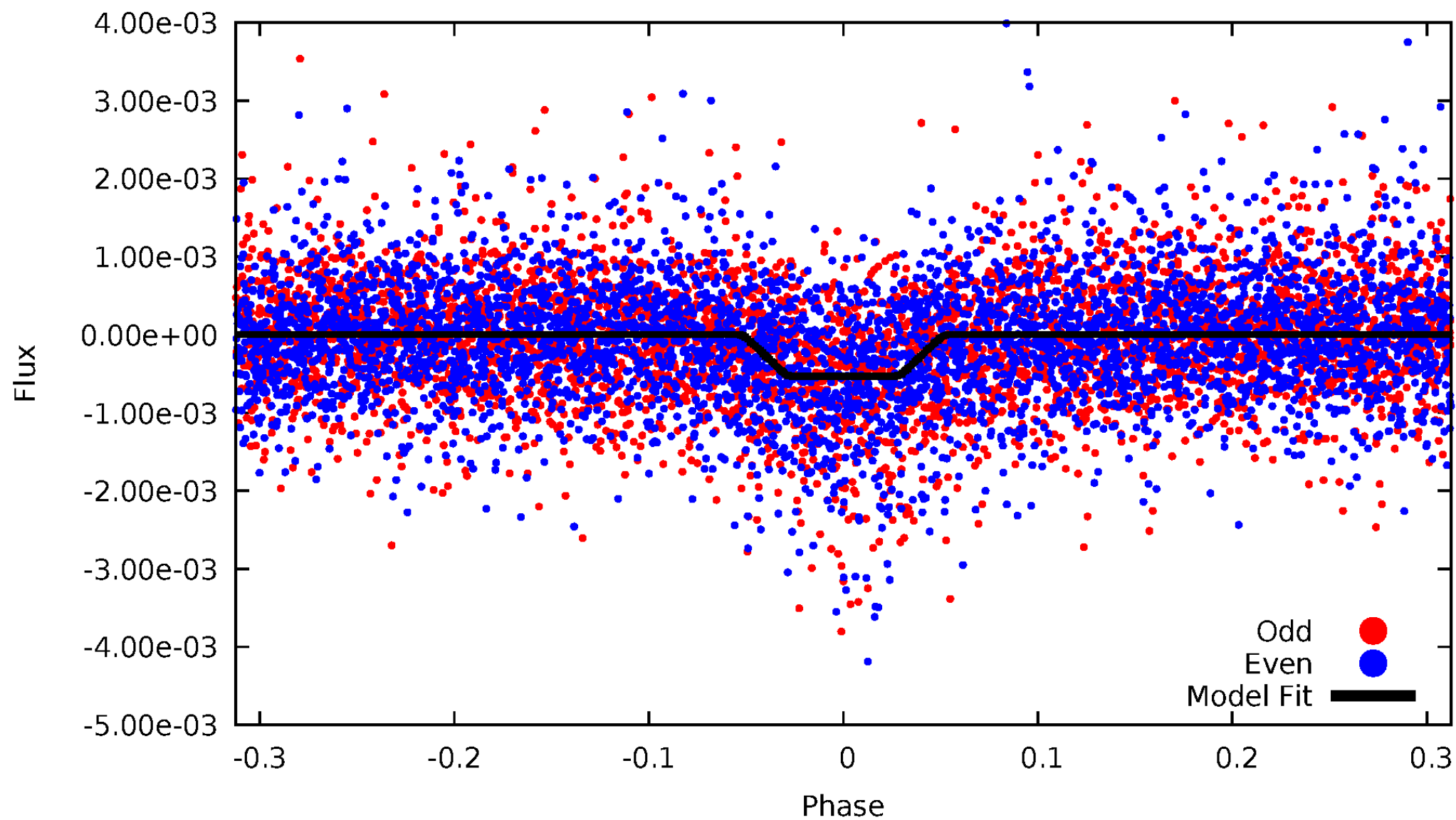
# DV Odd/Even

TCE 007258902-01



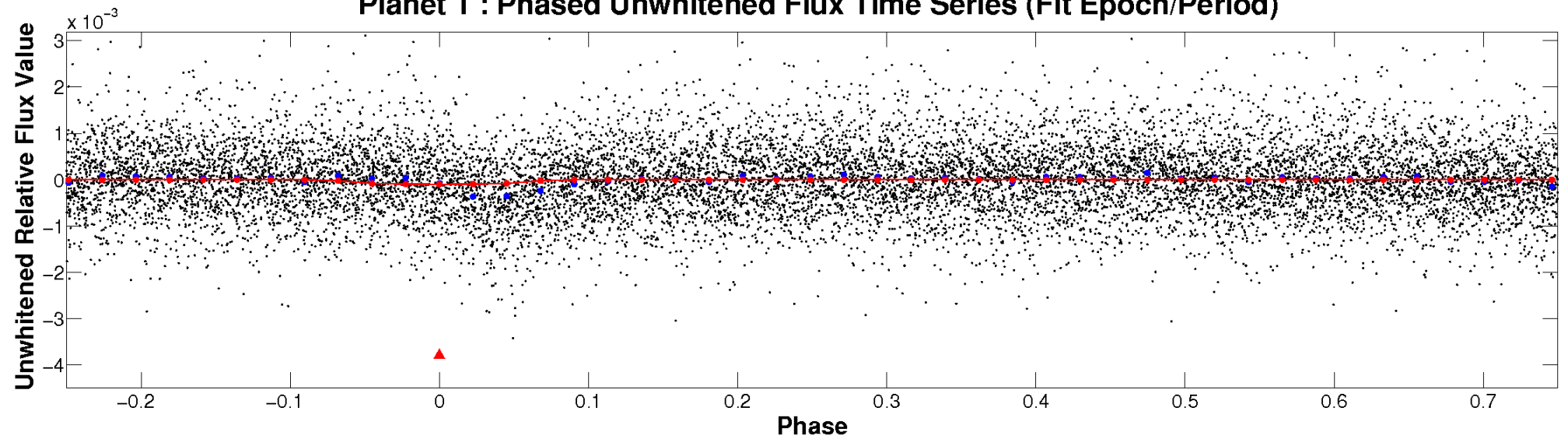
# ALT Odd/Even

TCE 007258902-01

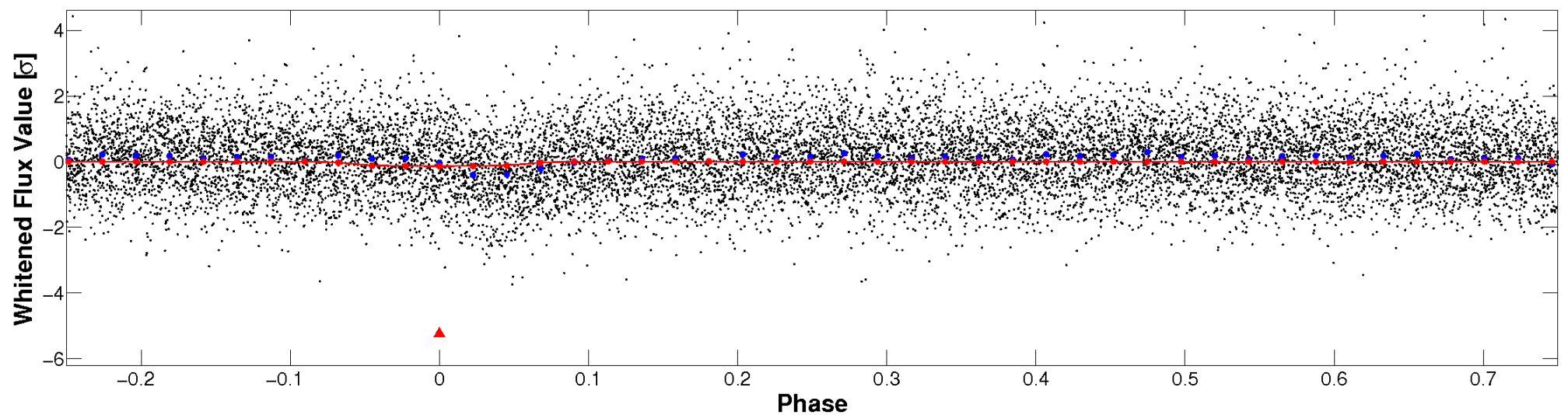


# Non-Whitened Vs. Whitened Light Curve

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



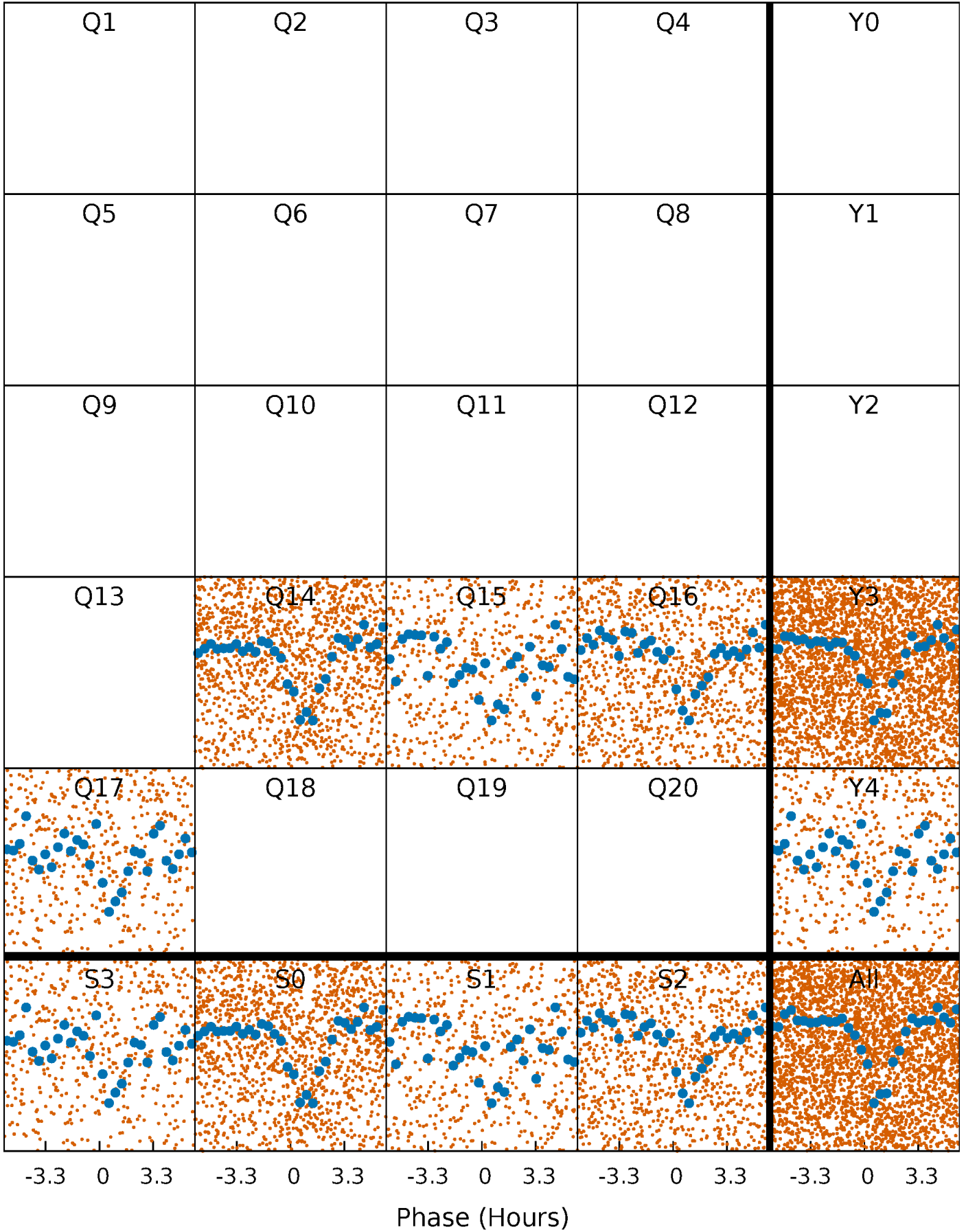
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

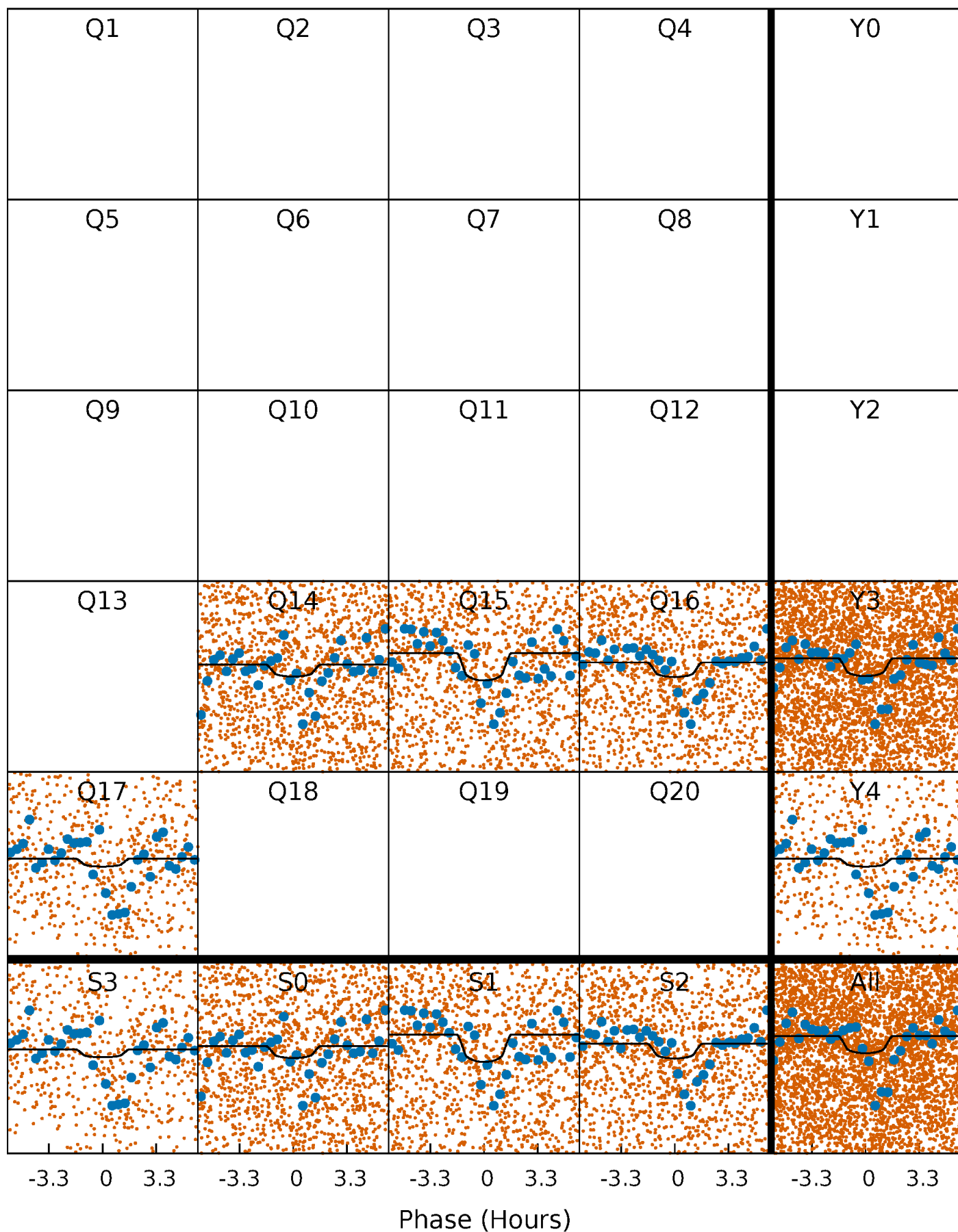
TCE 007258902-01   P= 0.903914 Days    $T_0=131.953069$  (BKJD)





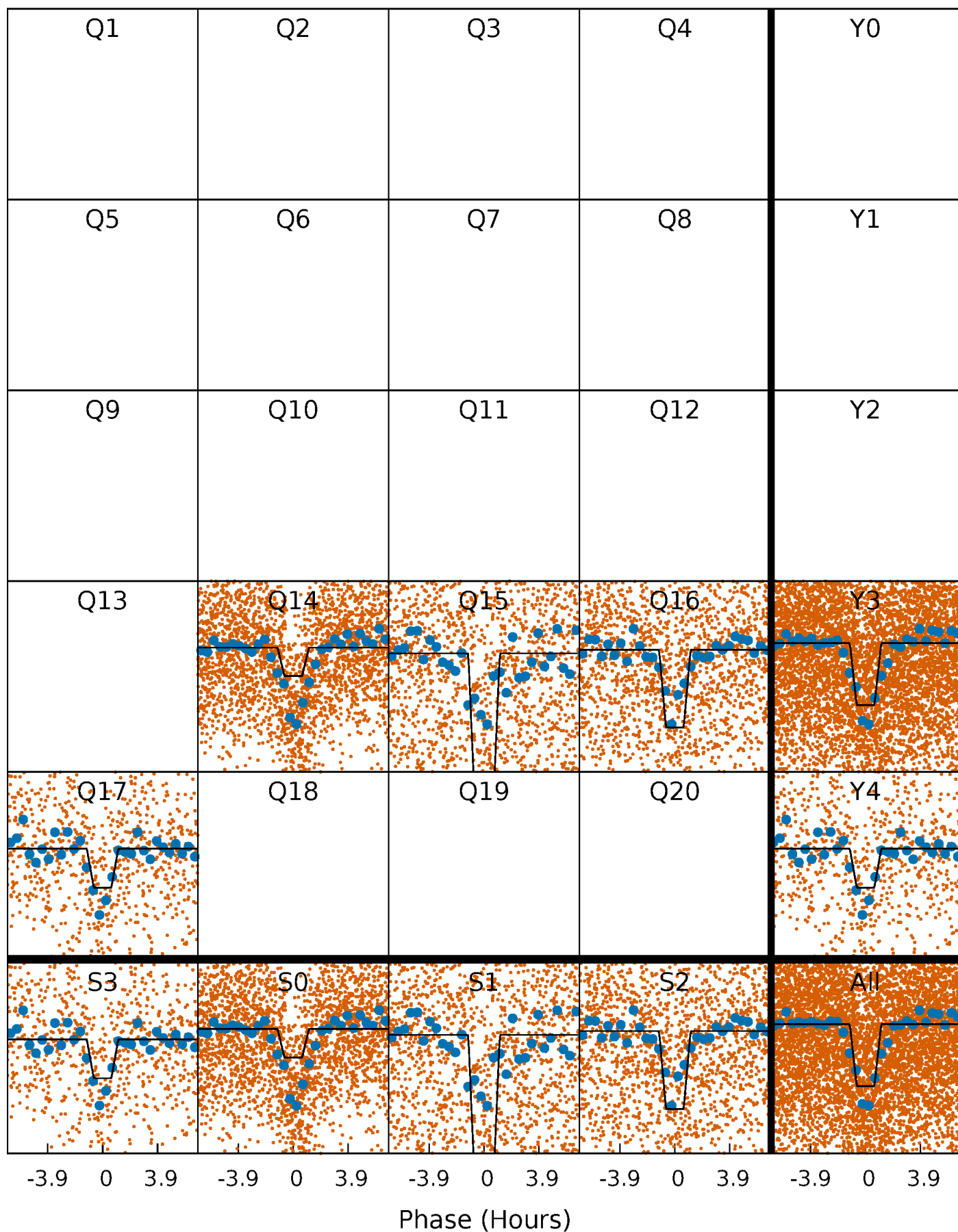
# DV Quarter-Phased Transit Curves

TCE 007258902-01   P= 0.903914 Days    $T_0=131.953069$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

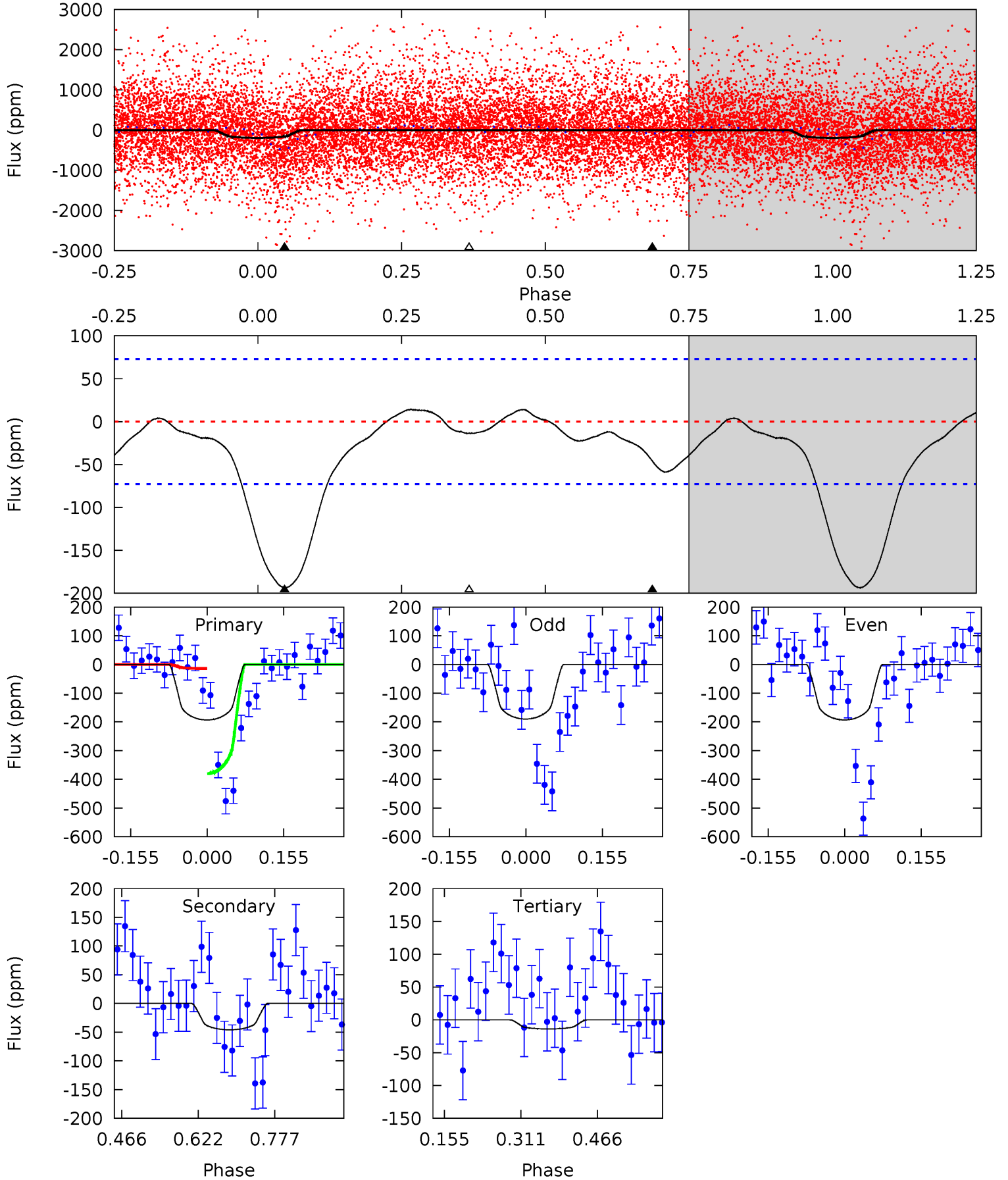
TCE 007258902-01 P= 0.903966 Days  $T_0=131.915869$  (BKJD)



# DV Model-Shift Uniqueness Test

007258902-01, P = 0.903914 Days, E = 131.953069 Days

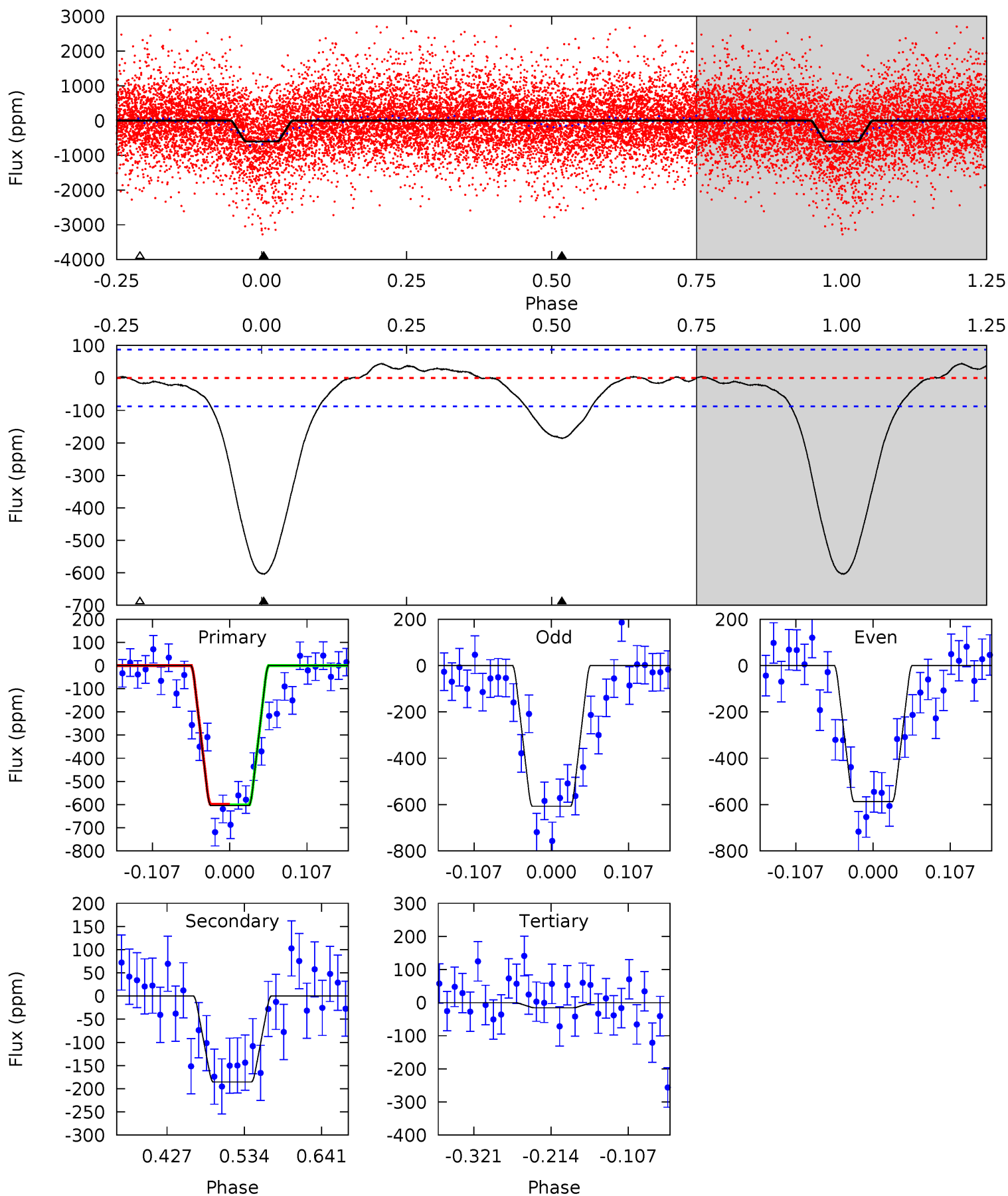
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.9	2.82	0.85	0	4.47	1.42	0.60	11.0	11.9	1.97	2.82	0.10	1.03	0.07	11.3



# Alt Model-Shift Uniqueness Test

007258902-01, P = 0.903966 Days, E = 131.915869 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
31.5	9.67	0.82	0	4.55	1.61	1.13	30.7	31.5	8.85	9.67	0.53	1.23	0.07	0.08



### Stellar Parameters For KIC 007258902

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} \text{ (g}\cdot\text{cm}^{-3}\text{)}$
	$5164^{+179}_{-179}$	$3.880^{+0.721}_{-0.309}$	$-0.220^{+0.300}_{-0.300}$	$1.779^{+1.047}_{-1.151}$	$0.876^{+0.125}_{-0.153}$	$0.219^{+2.762}_{-0.147}$
	+3%/-3%	+19%/-8%	+136%/-136%	+59%/-65%	+14%/-17%	+1259%/-67%
Source	KIC0	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 007258902-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} \text{ (K)}$	$T_{obs} \text{ (K)}$	$A_{obs}$
DV	$-46 \pm 16$	$3.11^{+3.39}_{-2.22}$	$3149^{+500}_{-590}$	$3254^{+1959}_{-6124}$	$0.753^{+8.135}_{-0.598}$
Alt.	$-185 \pm 19$	$4.28^{+3.98}_{-2.57}$	$3154^{+487}_{-578}$	$3931^{+1787}_{-1045}$	$1.691^{+8.883}_{-1.220}$

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

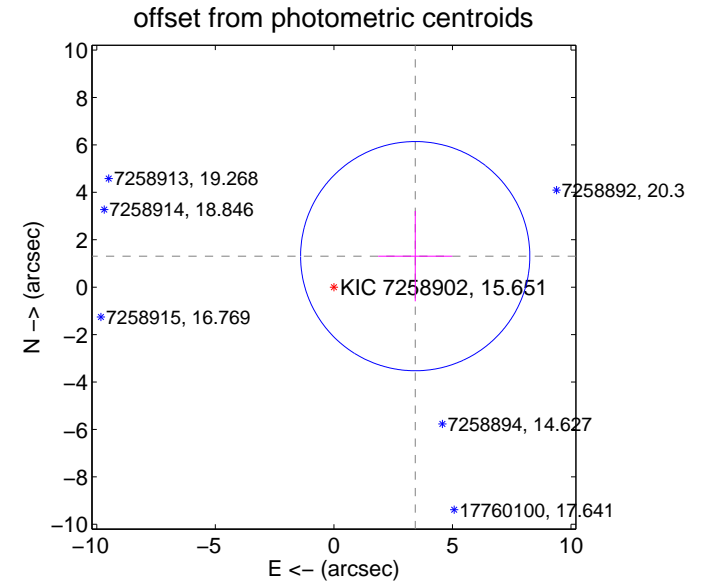
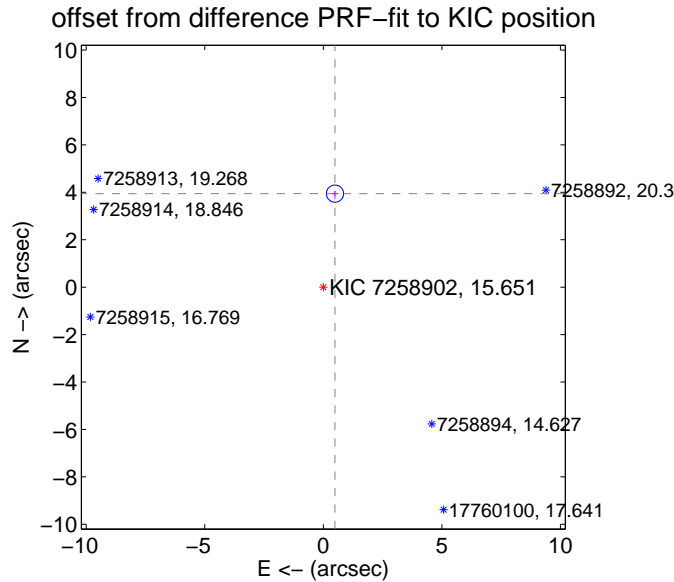
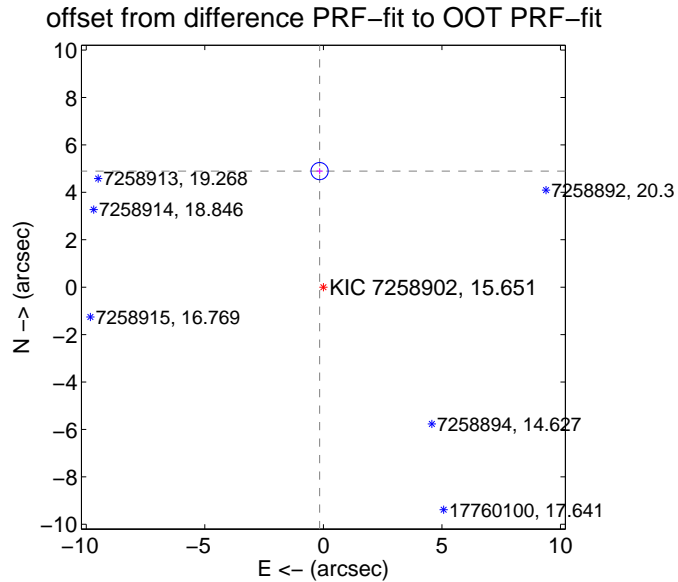
## DV Centroid Data

Supplemental centroid analysis for 007258902-01. Kepler magnitude: 15.65. Transit SNR 4.87

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.898 \pm 0.121$	40.60	$0.159 \pm 0.132$	$4.896 \pm 0.121$
PRF-fit source offset from KIC position	$3.975 \pm 0.121$	32.90	$-0.492 \pm 0.132$	$3.945 \pm 0.121$
photometric centroid source offset	$3.67 \pm 1.61$	2.28	$-3.43 \pm 1.56$	$1.31 \pm 1.91$



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 are from the UKIRT catalog.



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



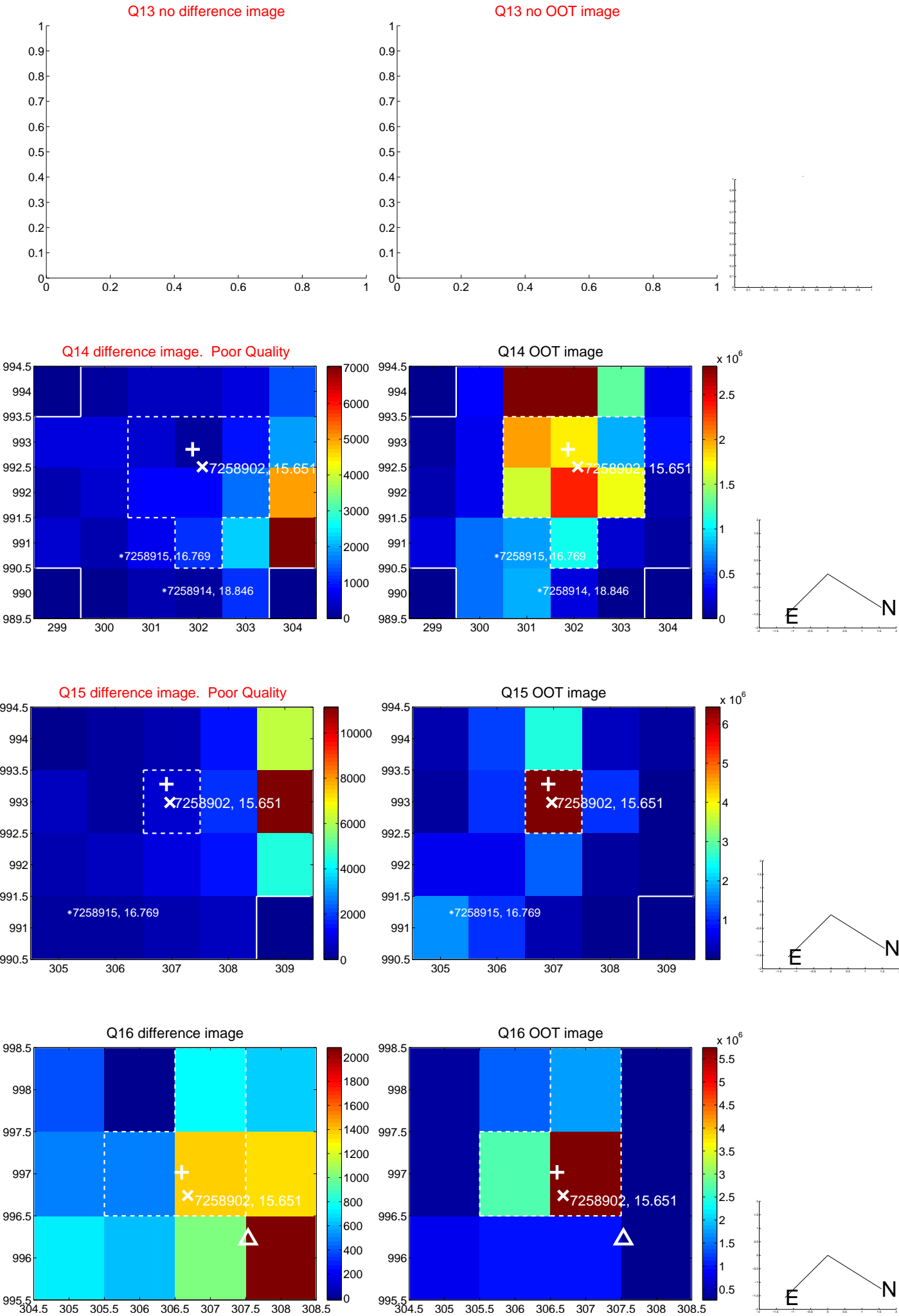
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



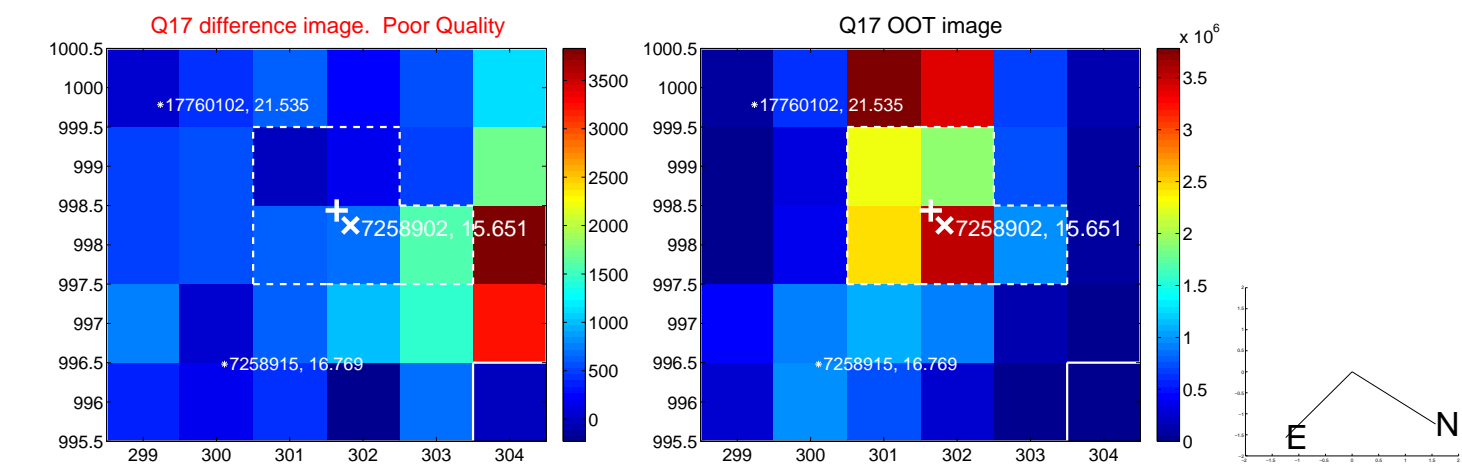
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



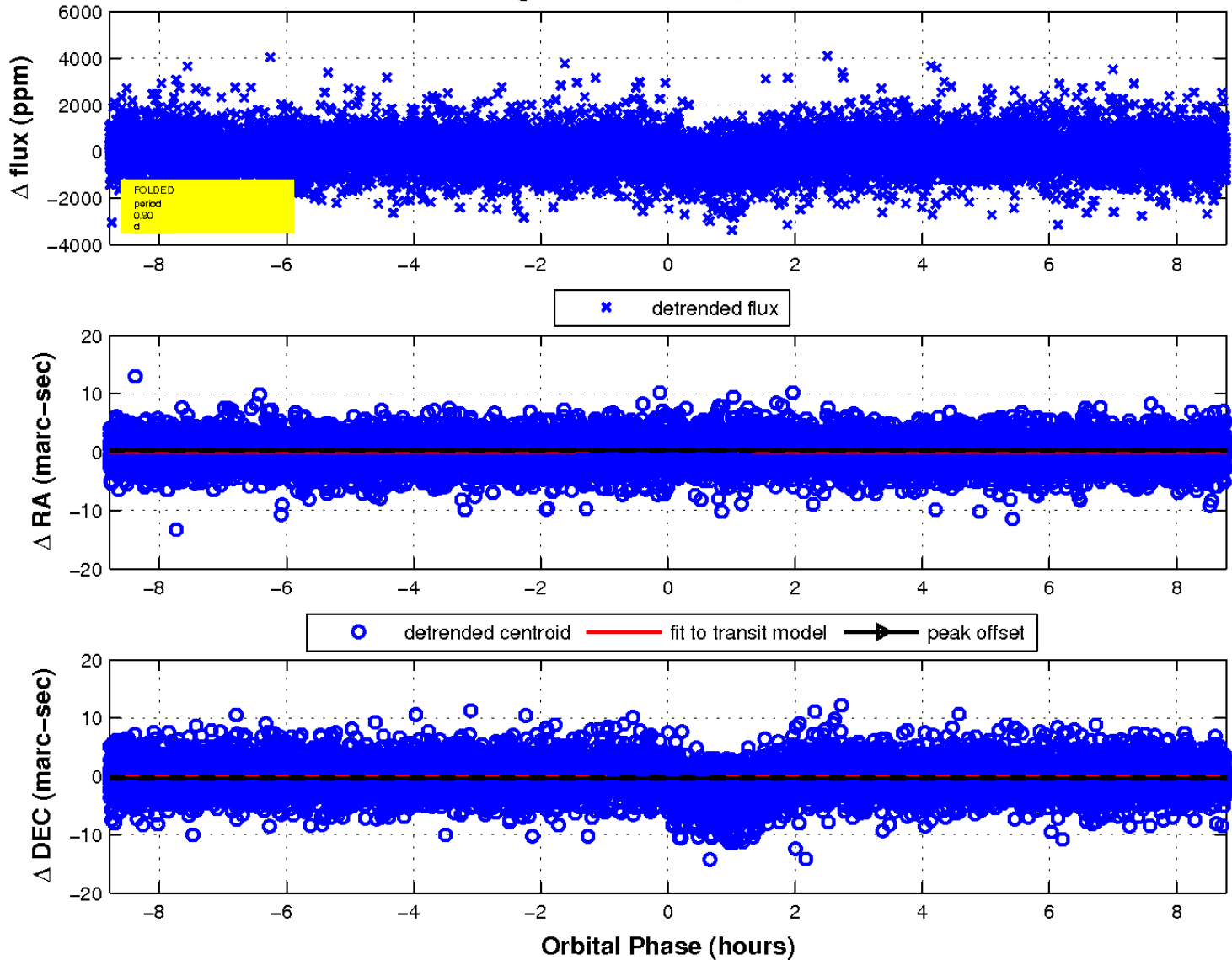
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

