

# KIC 008823426

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008823426-01	OBS	1259.01	1.506474	133.003838	406.6	2.646	32.8	36.8	0.47	3755	1.15	97.56

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008823426-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_ALT—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 008823426-01

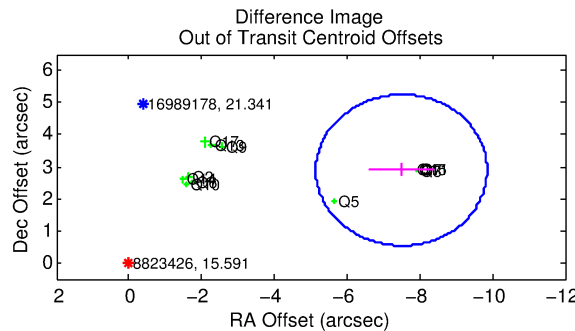
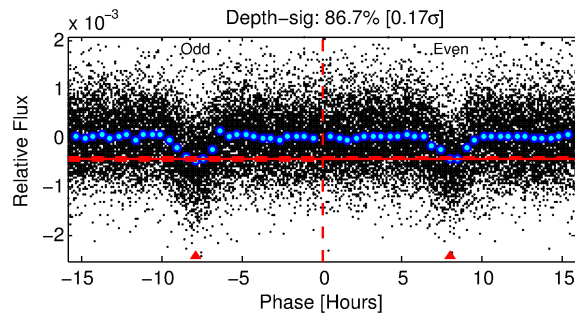
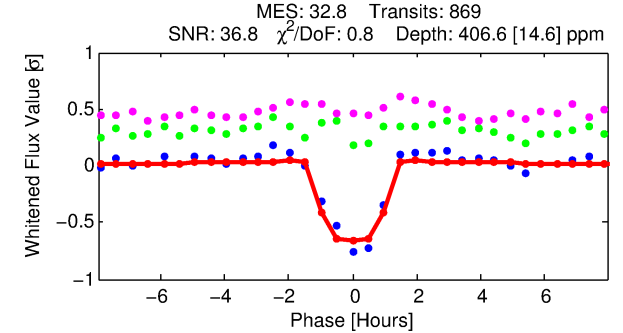
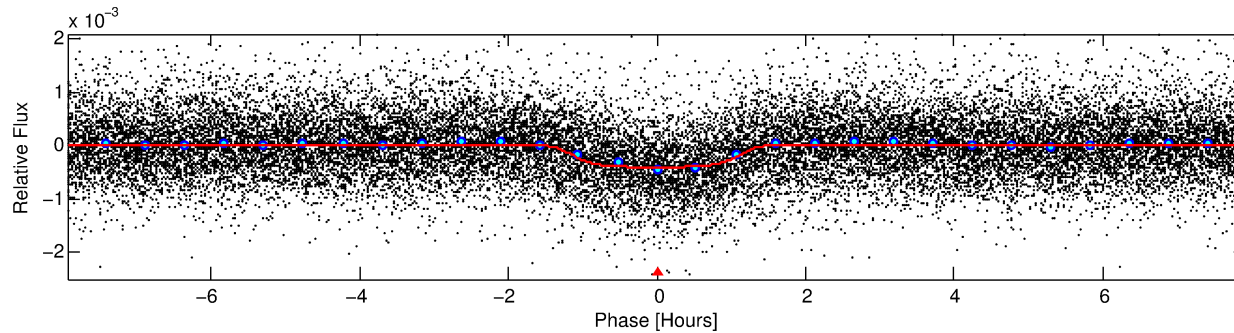
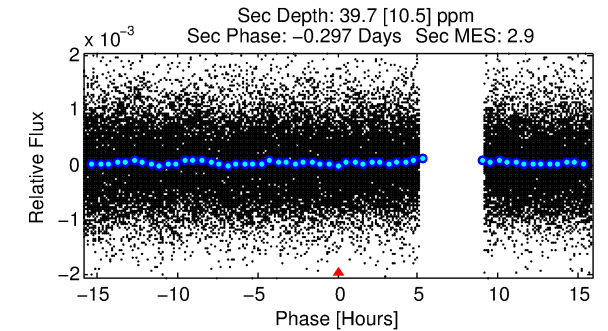
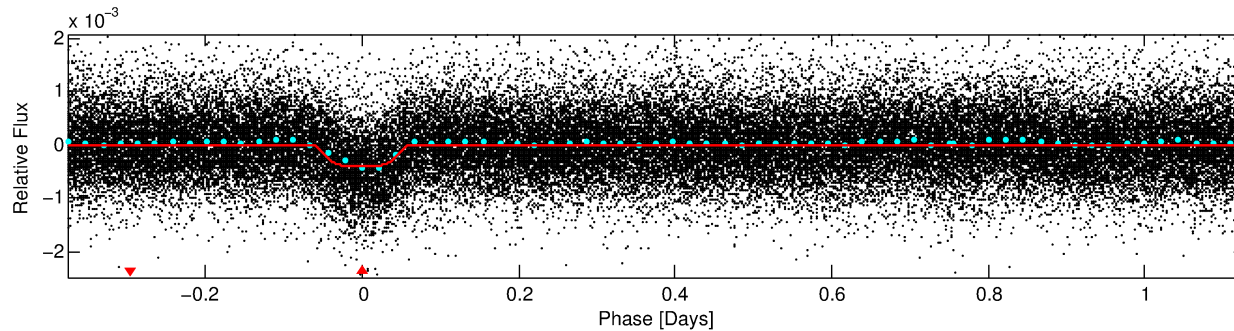
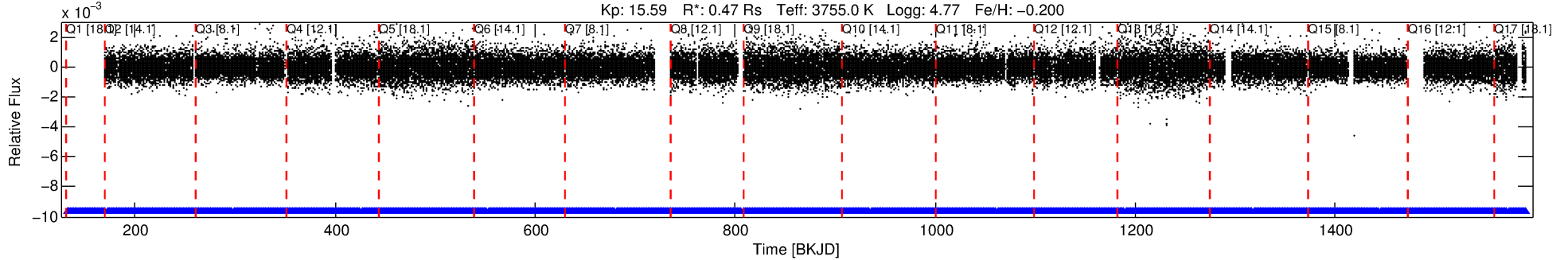
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
008823426-01	8823426	7096.01	8823397	1:1	20.5	3	-4	13.25	15.59	1184.80	Direct-PRF	0	1.56	0.78

**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: 8823426 Candidate: 1 of 1 Period: 1.506 d  
KOI: K01259.01 Corr: 0.767

Kp: 15.59 R\*: 0.47 Rs Teff: 3755.0 K Logg: 4.77 Fe/H: -0.200



## DV Fit Results:

Period = 1.50647 [0.00000] d  
Epoch = 133.0038 [0.0009] BKJD  
Rp/R\* = 0.0222 [0.0017]  
a/R\* = 2.20 [0.61]  
b = 0.92 [0.06]  
Seff = 97.56 [10.48]  
Teq = 801 [22] K  
Rp = 1.15 [0.12] Re  
a = 0.0202 [0.0012] AU  
Ag = 6.78 [2.16] [2.67σ]  
Teffp = 1999 [158] K [7.51σ]

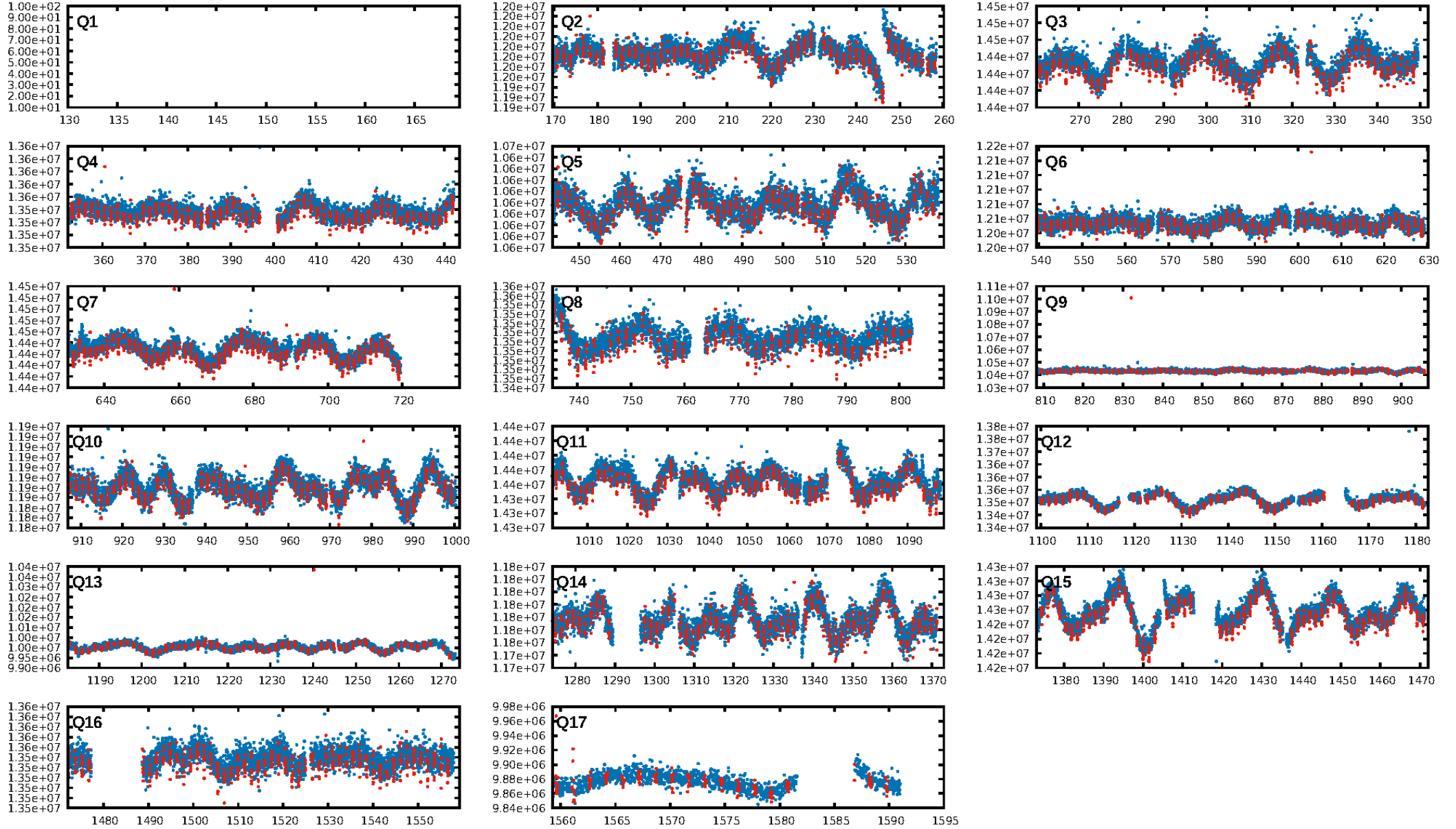
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.42e-219  
RollingBand-fgt: 1.00 [852/852]  
GhostDiagnostic-chr: -0.5967  
Centroid-sig: N/A  
Centroid-so: 49.382 arcsec [165.01σ]  
OotOffset-rm: 8.033 arcsec [10.24σ]  
KicOffset-rm: 8.027 arcsec [9.81σ]  
OotOffset-st: 4/4/0/4 [12]  
KicOffset-st: 4/4/0/4 [12]  
DiffImageQuality-fgm: 0.42 [5/12]  
DiffImageOverlap-fno: 1.00 [16/16]

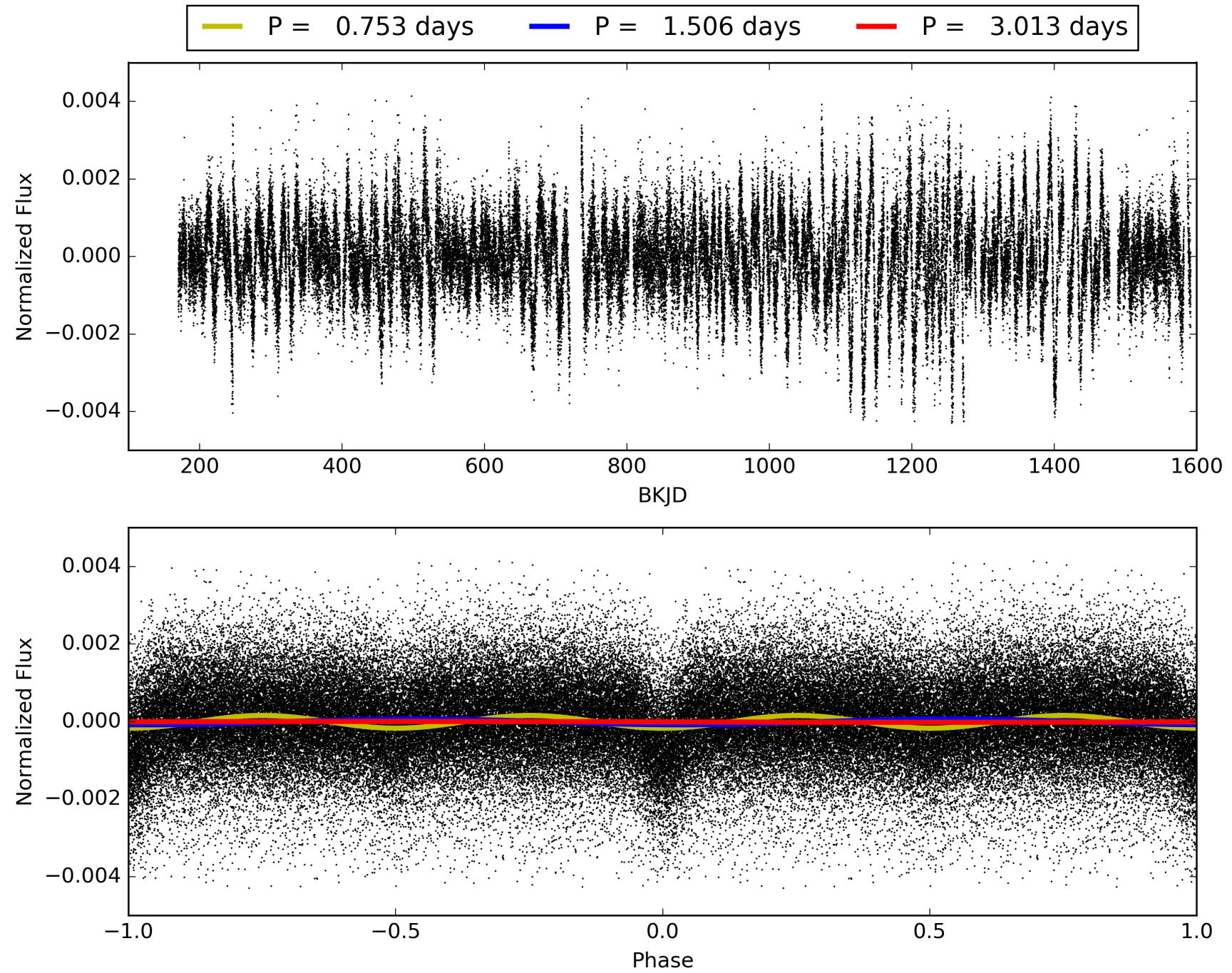
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:58:25 Z

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

# TCE 008823426-01, PDC Light Curves

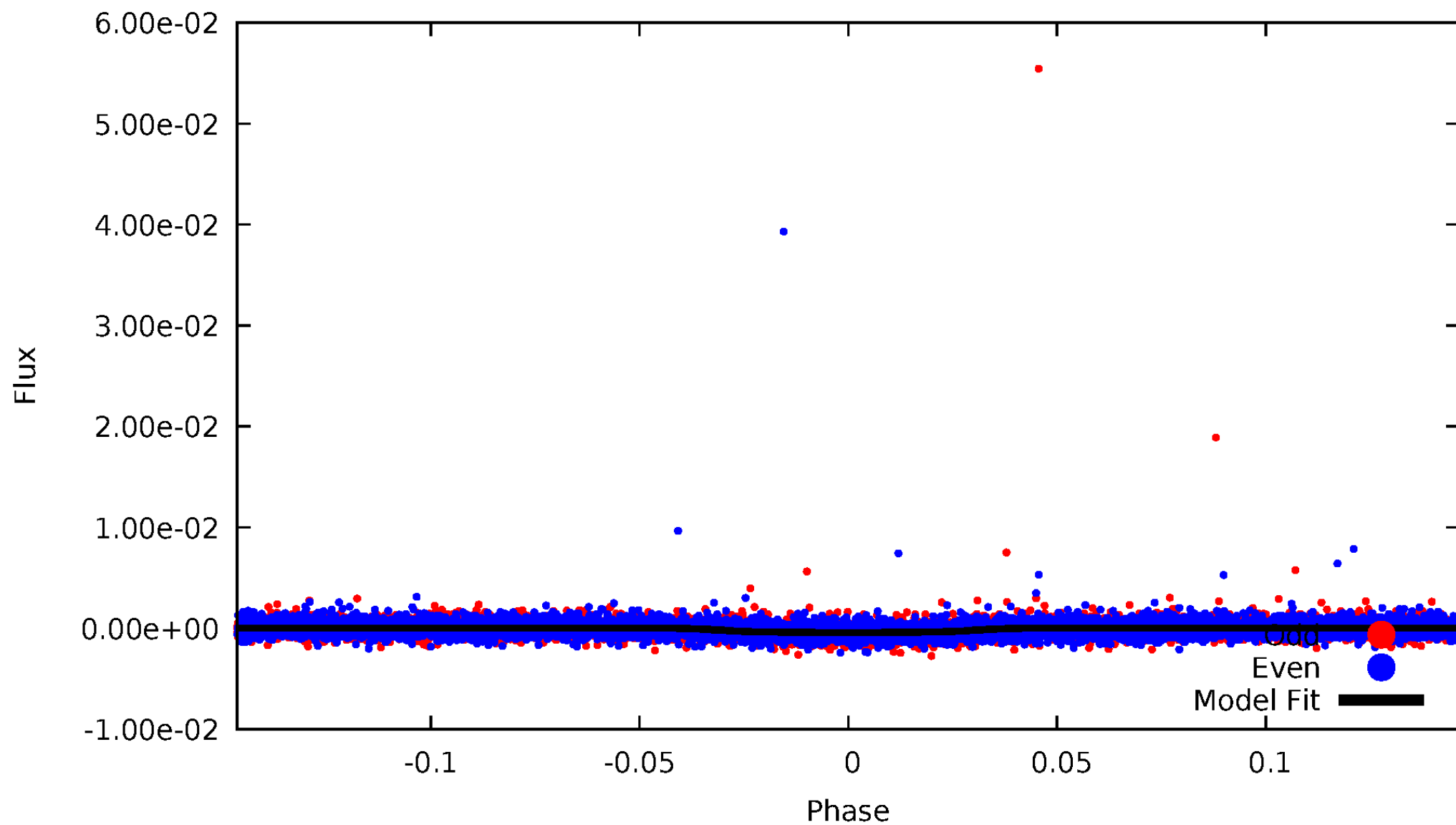


TCE 008823426-01



# DV Odd/Even

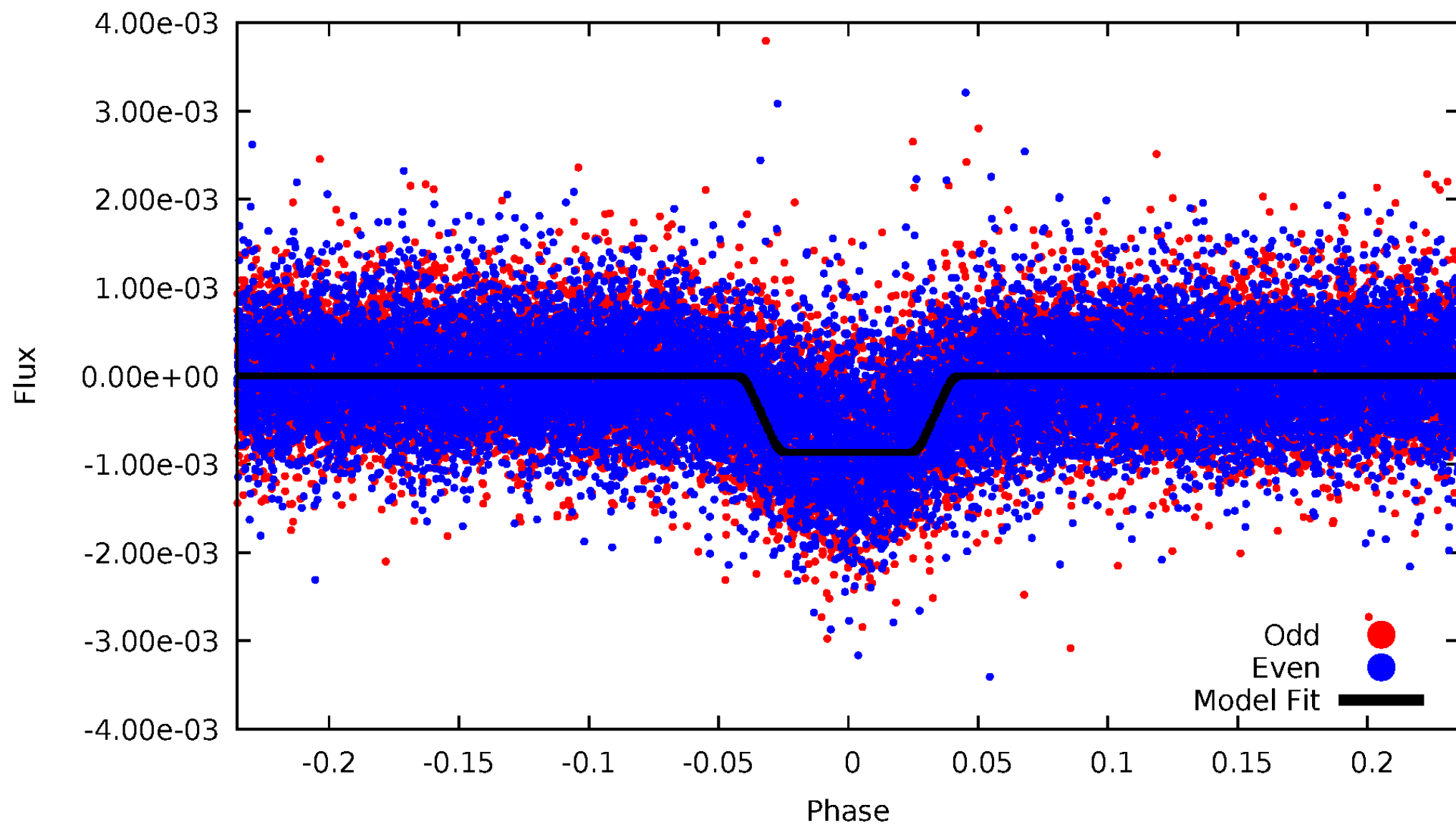
TCE 008823426-01



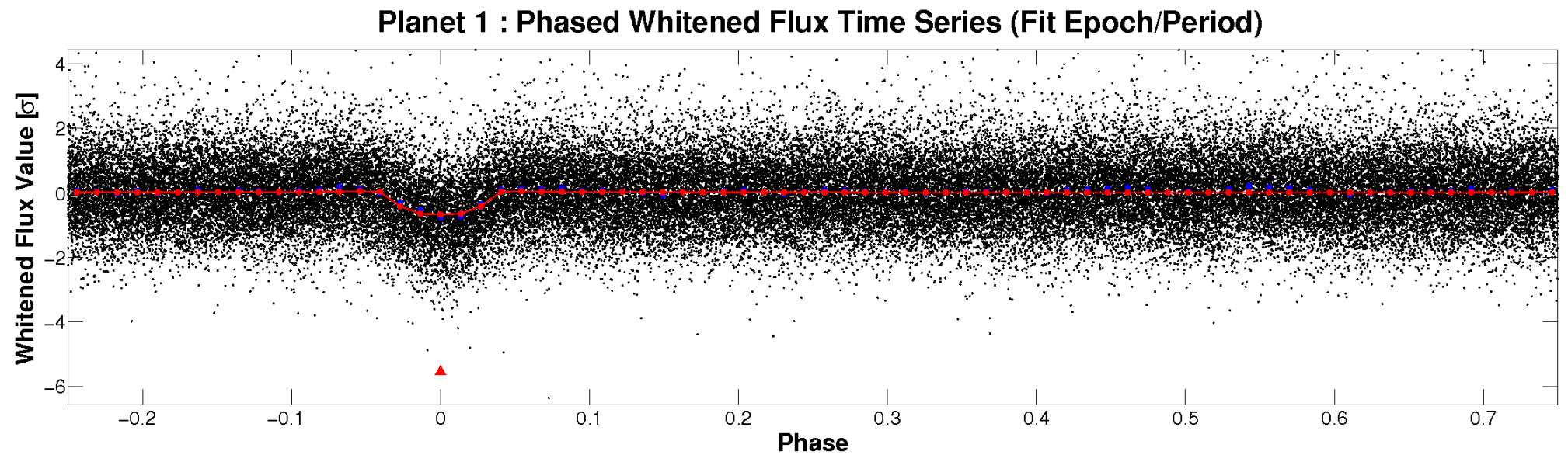
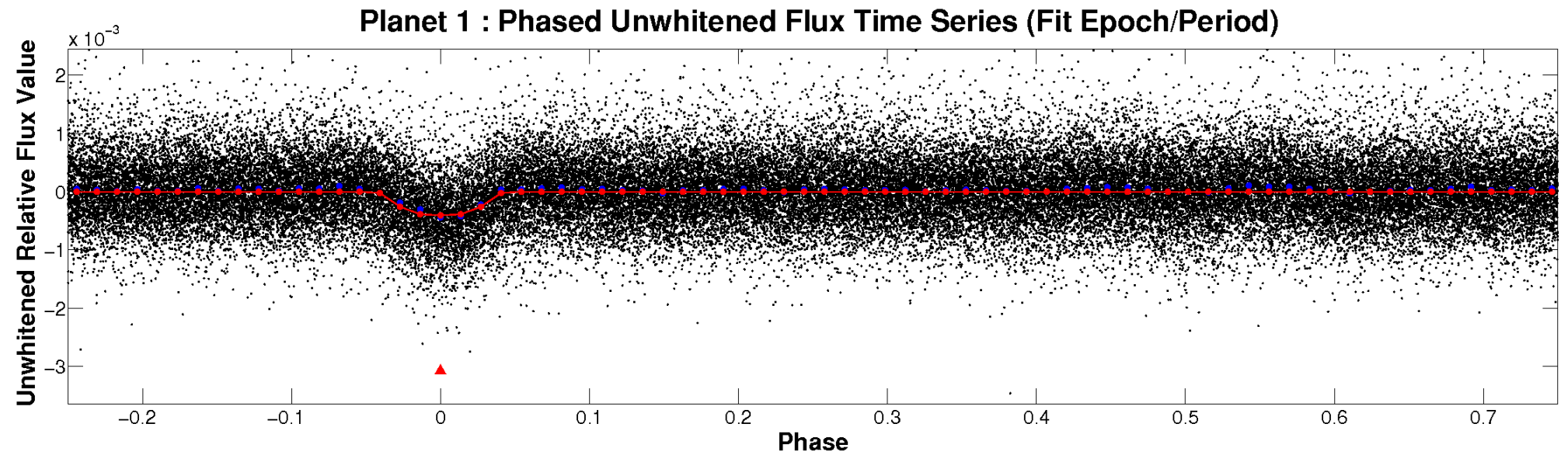


# ALT Odd/Even

TCE 008823426-01

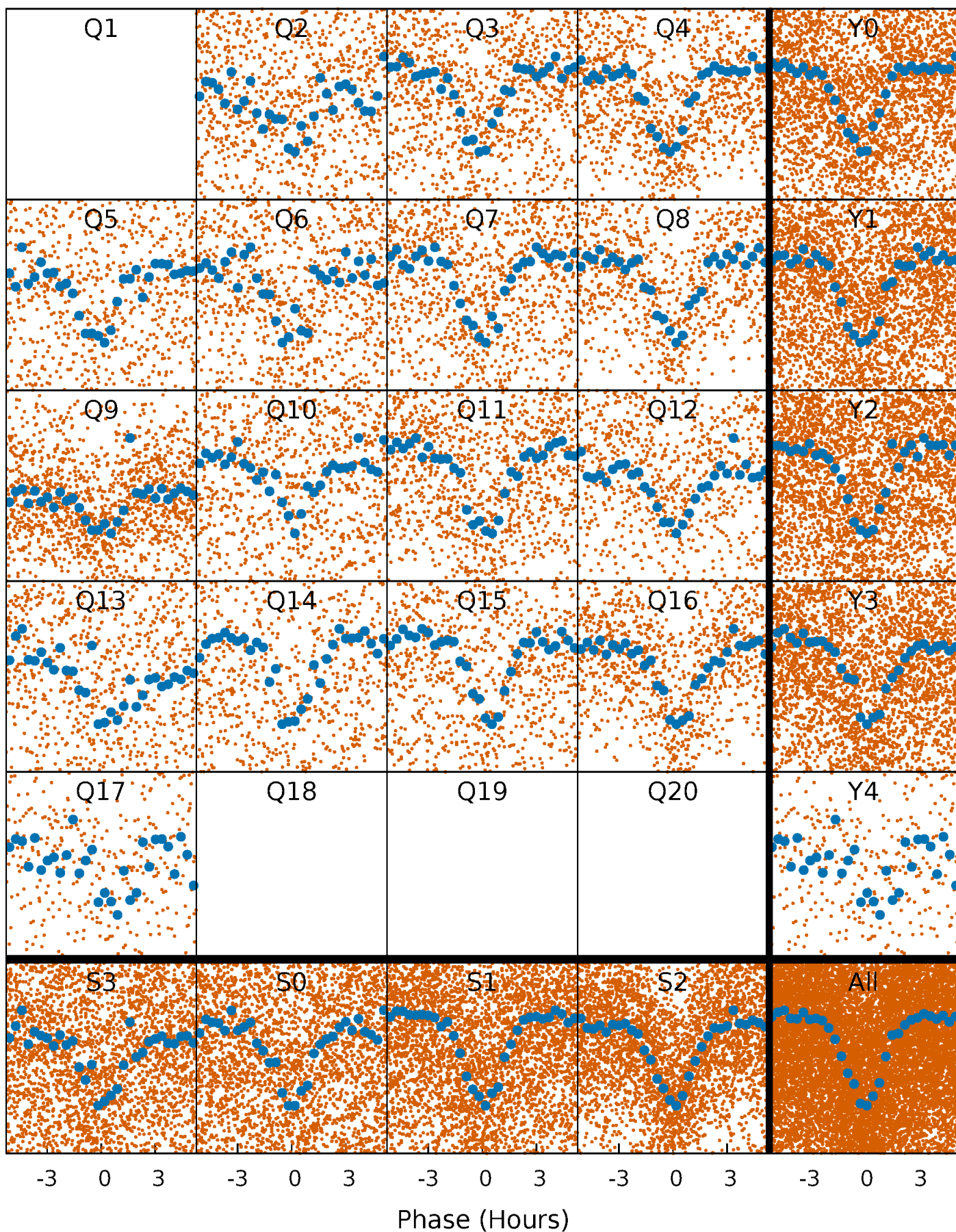


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

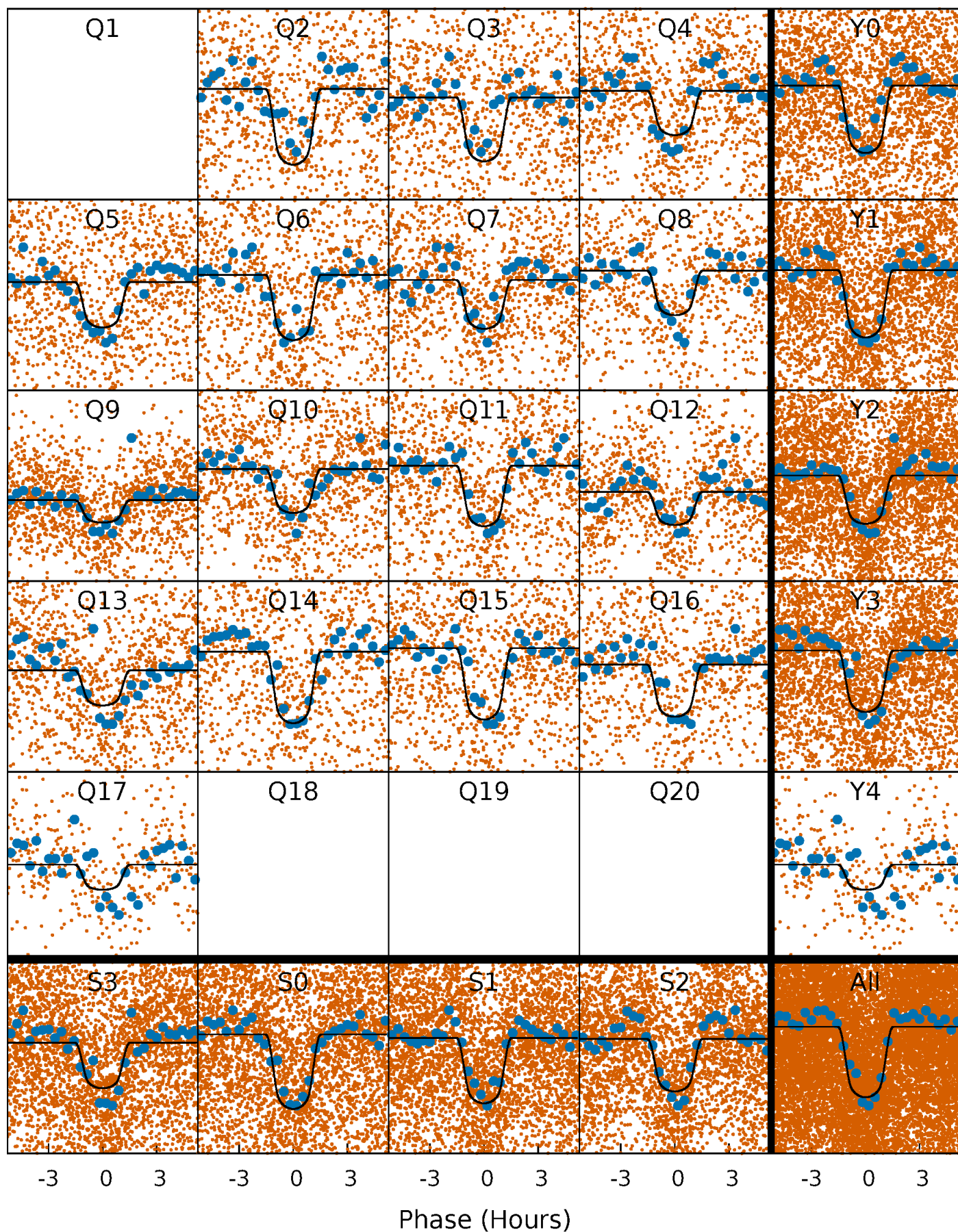
TCE 008823426-01 P= 1.506474 Days  $T_0=133.003838$  (BKJD)





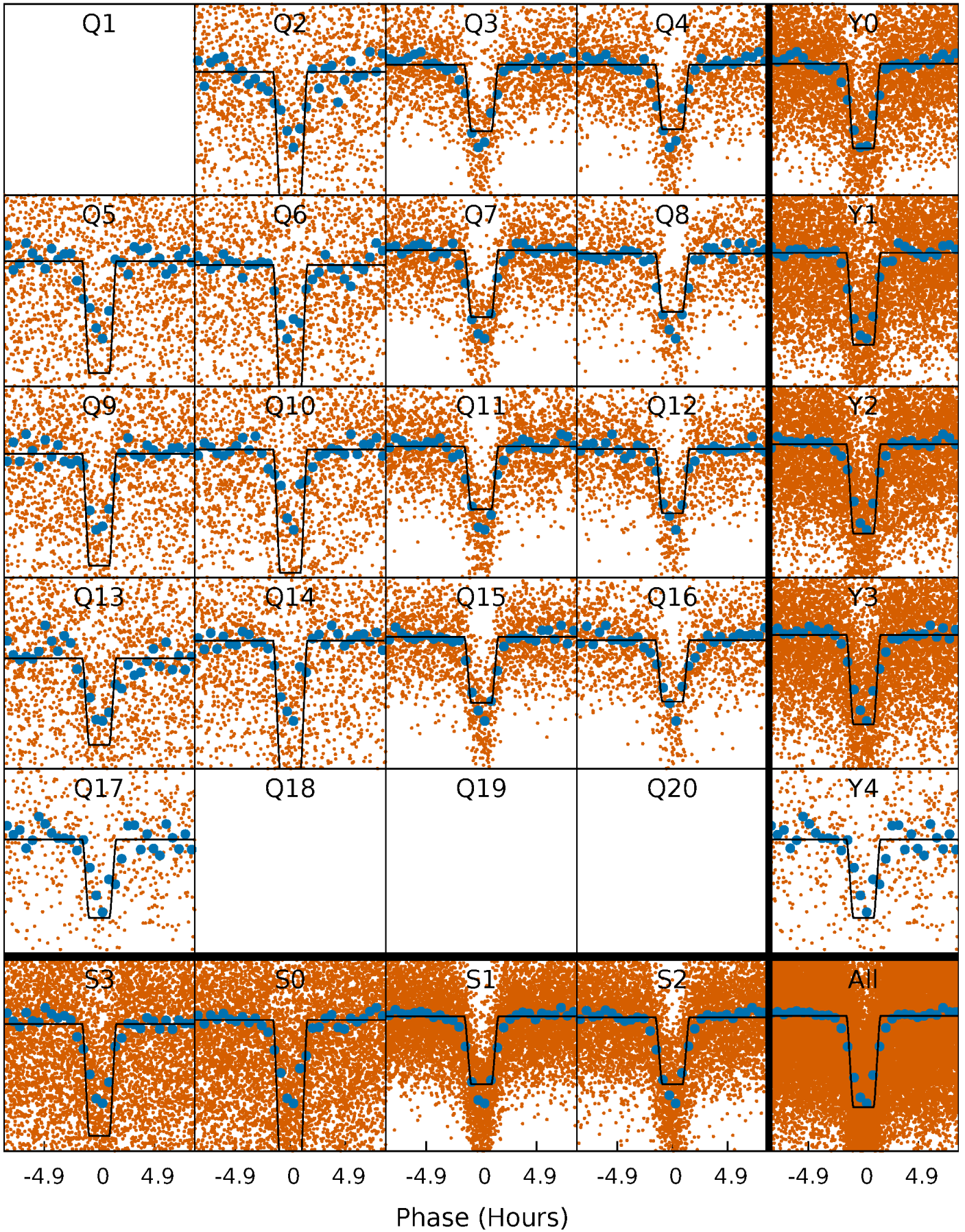
# DV Quarter-Phased Transit Curves

TCE 008823426-01 P= 1.506474 Days  $T_0=133.003838$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008823426-01 P= 1.506496 Days  $T_0=132.995376$  (BKJD)

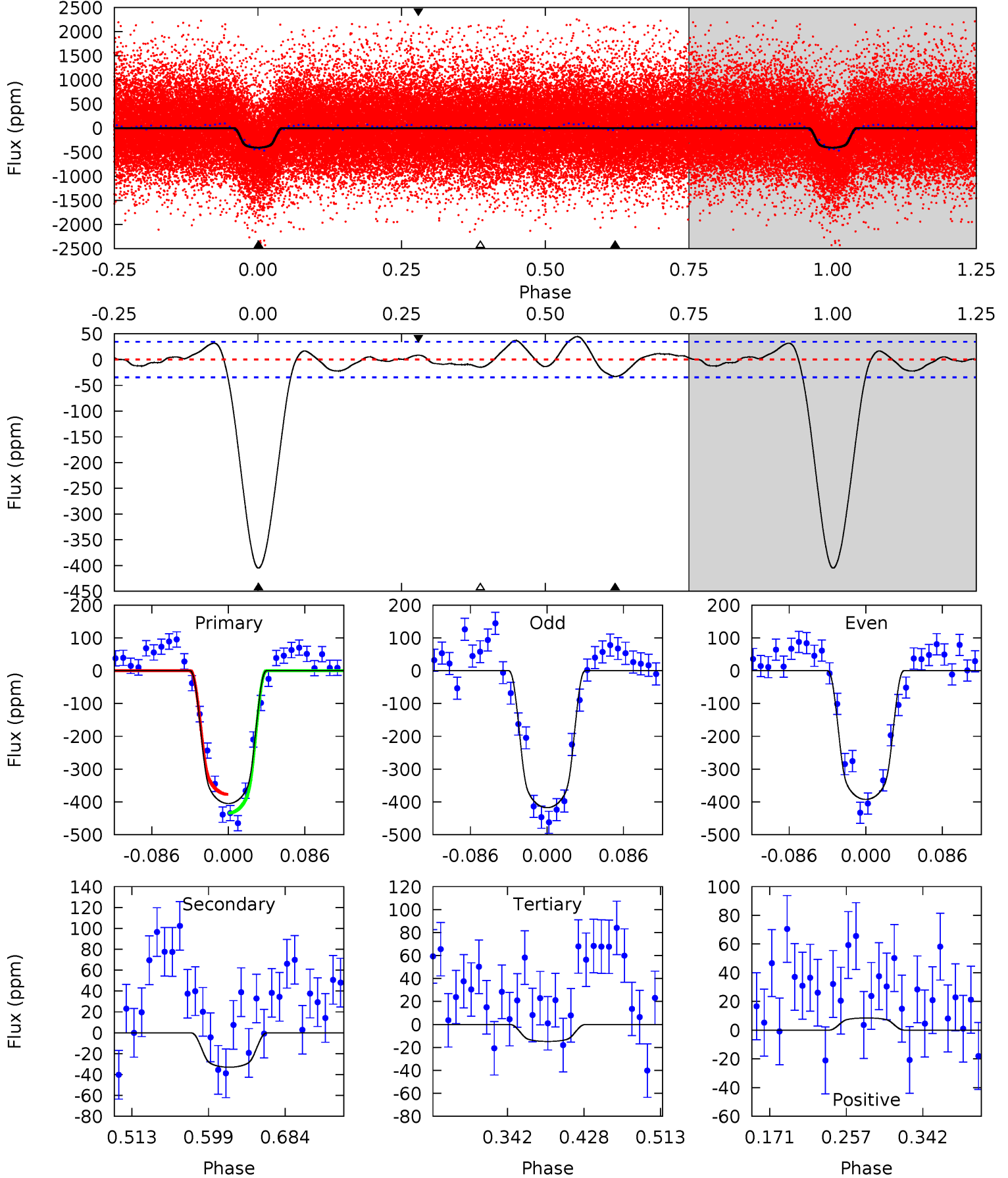




# DV Model-Shift Uniqueness Test

008823426-01, P = 1.506474 Days, E = 133.003838 Days

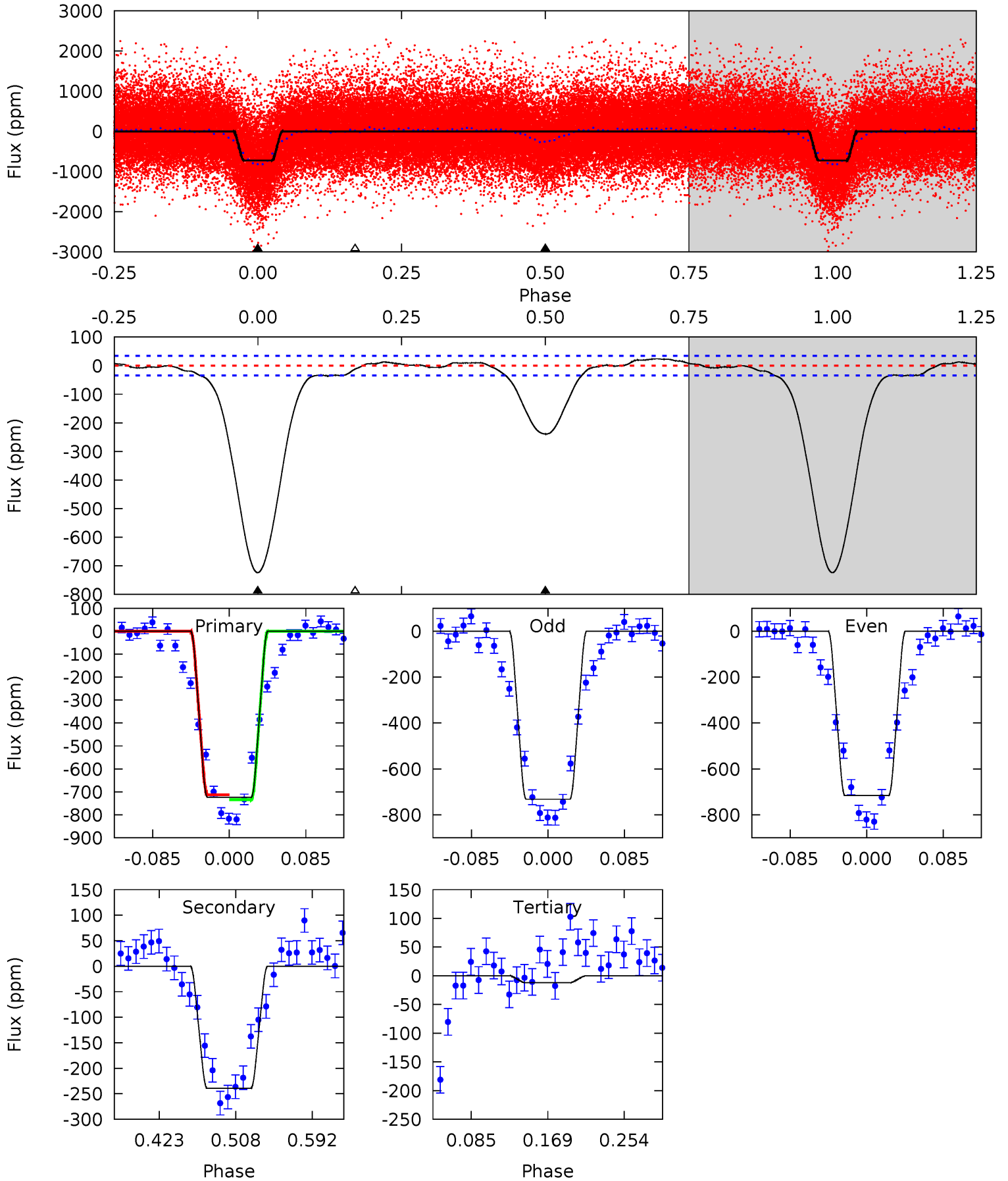
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
53.8	4.38	1.97	1.13	4.60	1.72	1.65	51.8	52.7	2.41	3.25	1.68	0.95	0.10	3.81



# Alt Model-Shift Uniqueness Test

008823426-01, P = 1.506496 Days, E = 132.995376 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
97.0	32.1	1.61	0	4.60	1.72	2.29	95.4	97.0	30.5	32.1	1.05	0.99	0.03	1.42





### Stellar Parameters For KIC 008823426

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3755^{+59}_{-66}$	$4.774^{+0.042}_{-0.025}$	$-0.200^{+0.100}_{-0.100}$	$0.473^{+0.028}_{-0.035}$	$0.485^{+0.029}_{-0.031}$	$6.451^{+1.165}_{-0.676}$
	+2%/-2%	+1%/-1%	+50%/-50%	+6%/-7%	+6%/-6%	+18%/-10%
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 008823426-01 / KOI 1259.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-33 \pm 8$	$1.14^{+0.10}_{-0.10}$	$1115^{+25}_{-25}$	$2531^{+96}_{-105}$	$5.761^{+1.779}_{-1.596}$
Alt.	$-239 \pm 7$	$1.52^{+0.10}_{-0.11}$	$1116^{+22}_{-26}$	$3068^{+74}_{-66}$	$24^{+4}_{-3}$

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

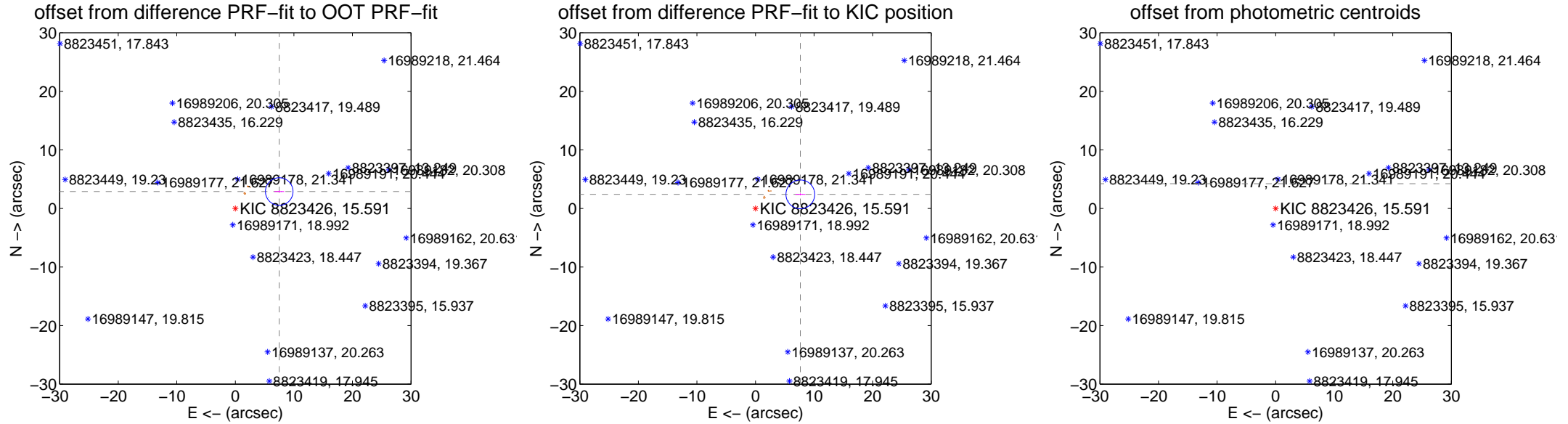
## DV Centroid Data

Supplemental centroid analysis for 008823426-01. Kepler magnitude: 15.59. Transit SNR 36.85

There are 5 quarters with good PRF difference image offsets

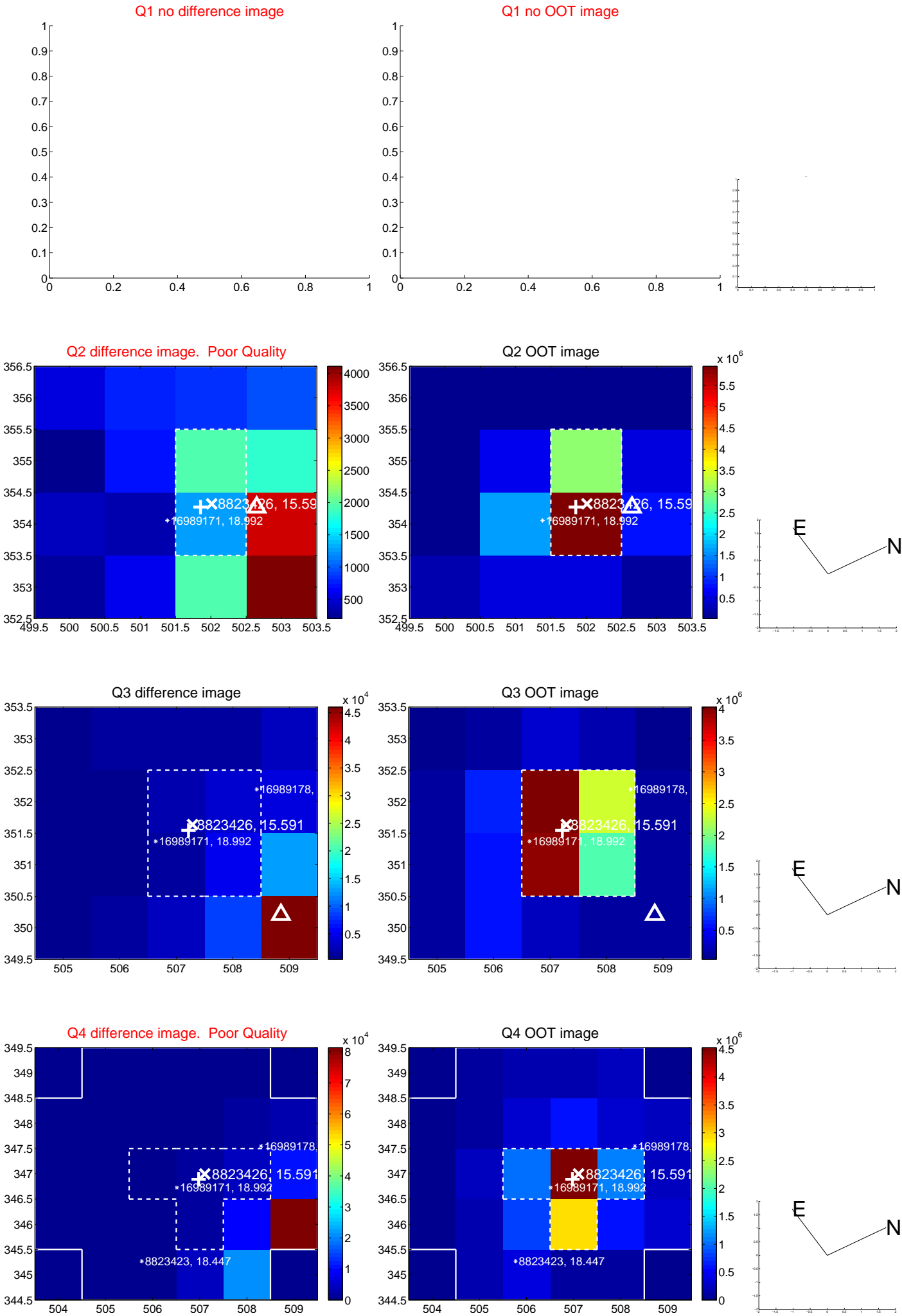
The direct PRF centroid is offset from the target star catalog position by about 0.75 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>8.033 <math>\pm</math> 0.785</b>	<b>10.24</b>	-7.496 $\pm$ 0.850	2.889 $\pm$ 0.172
PRF-fit source offset from KIC position	<b>8.027 <math>\pm</math> 0.819</b>	<b>9.81</b>	-7.658 $\pm$ 0.848	2.404 $\pm$ 0.167
photometric centroid source offset	<b>49.38 <math>\pm</math> 0.30</b>	<b>165.01</b>	-49.20 $\pm$ 0.30	4.22 $\pm$ 0.31

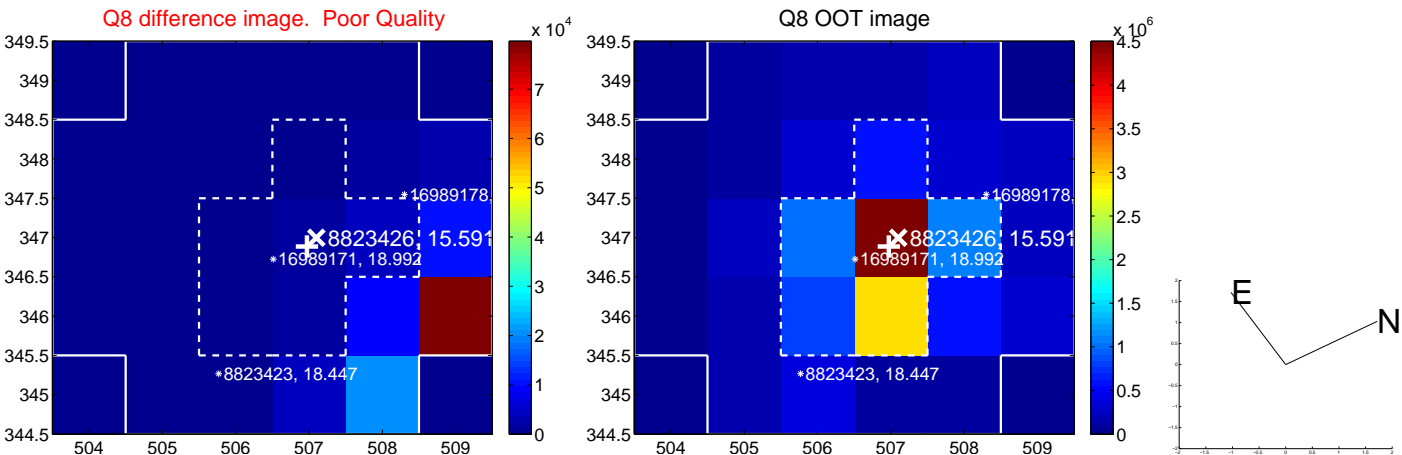
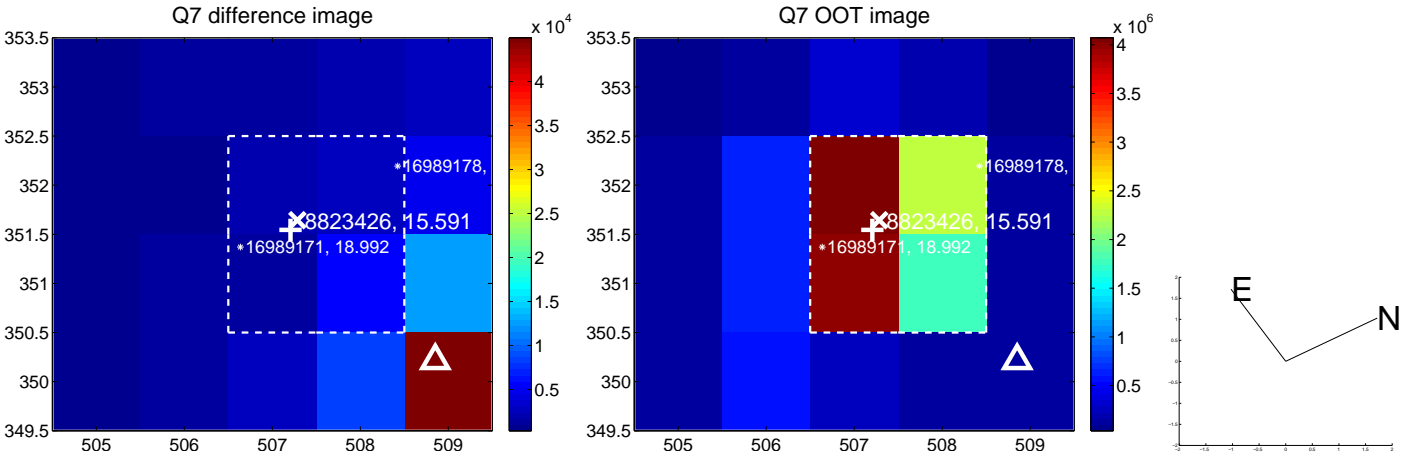
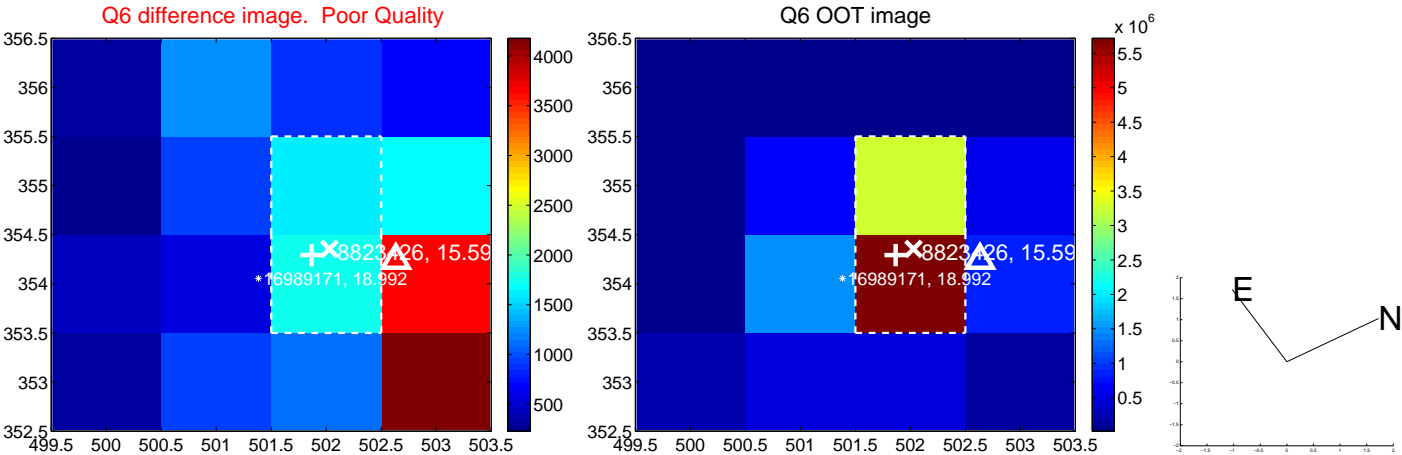
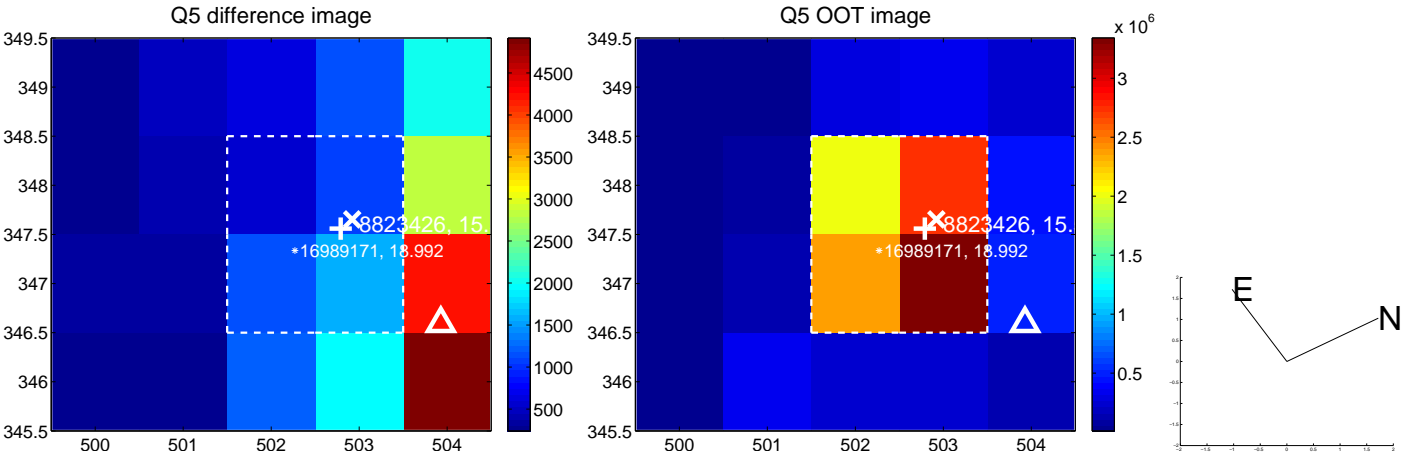


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

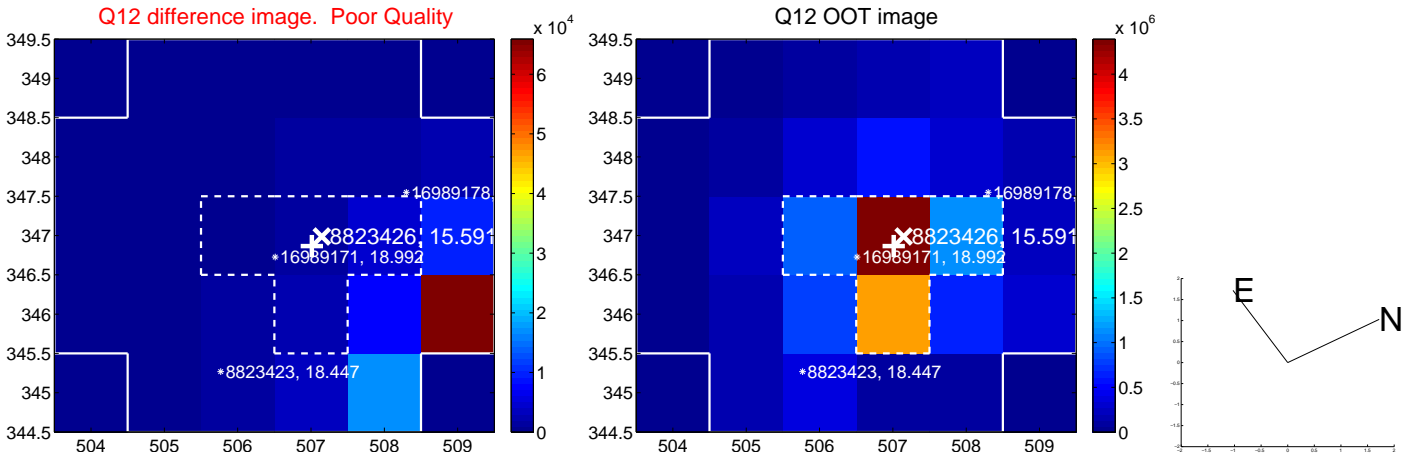
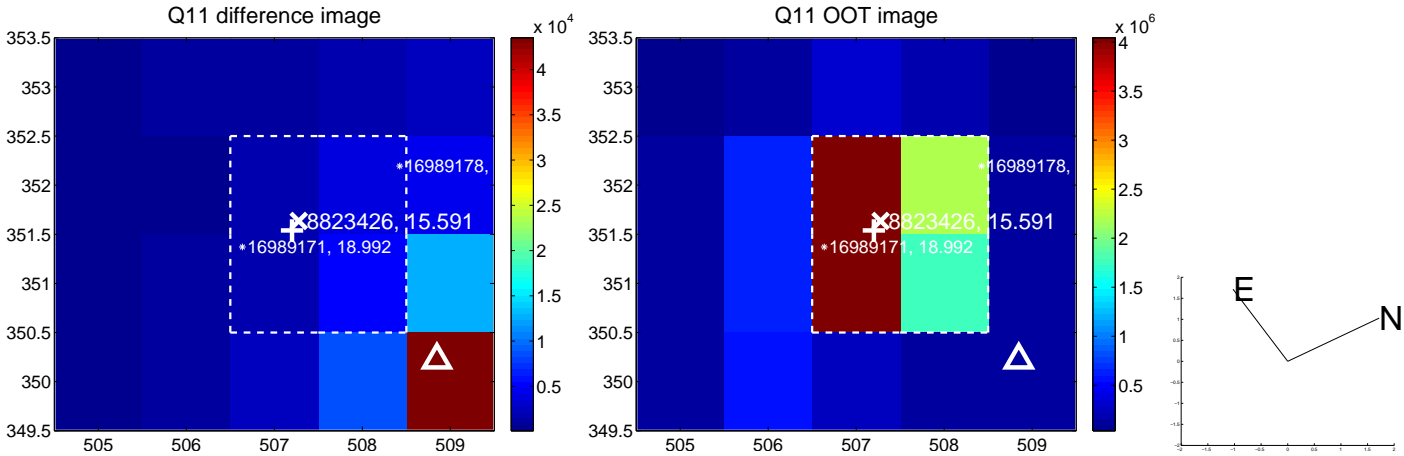
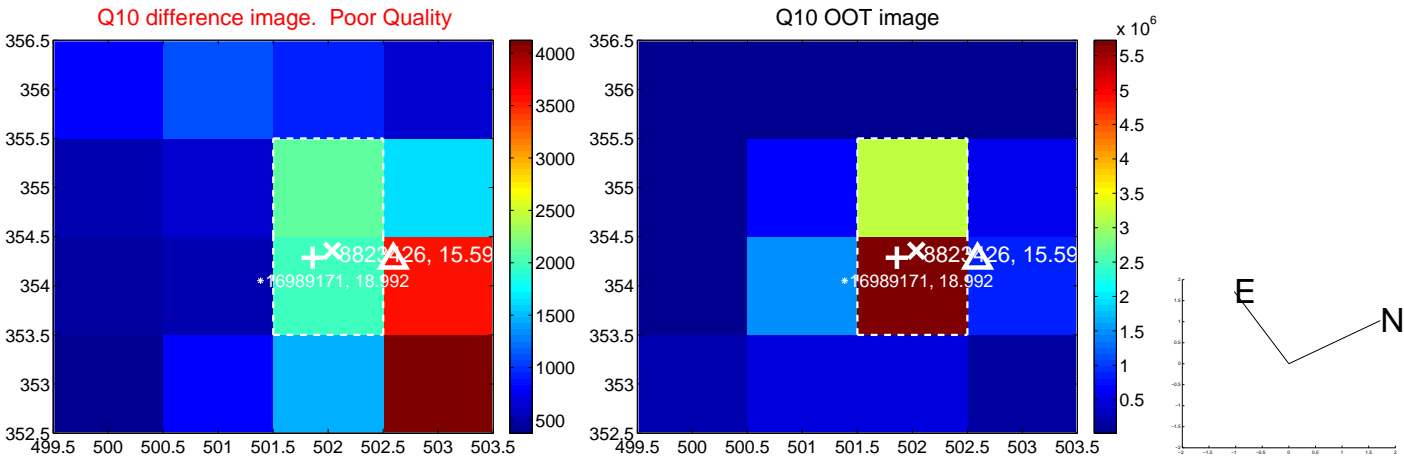
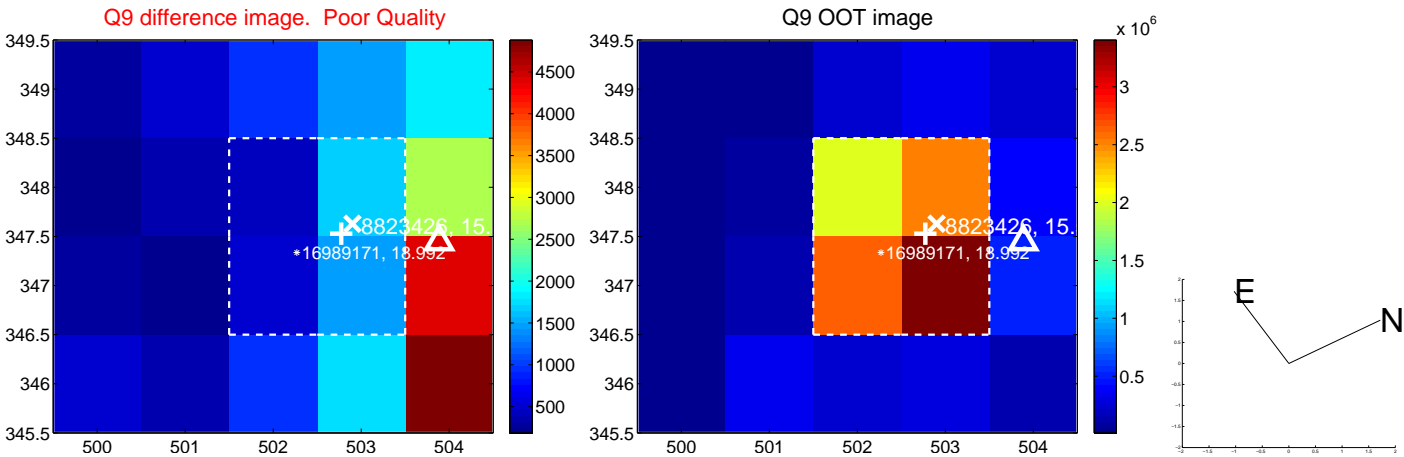


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

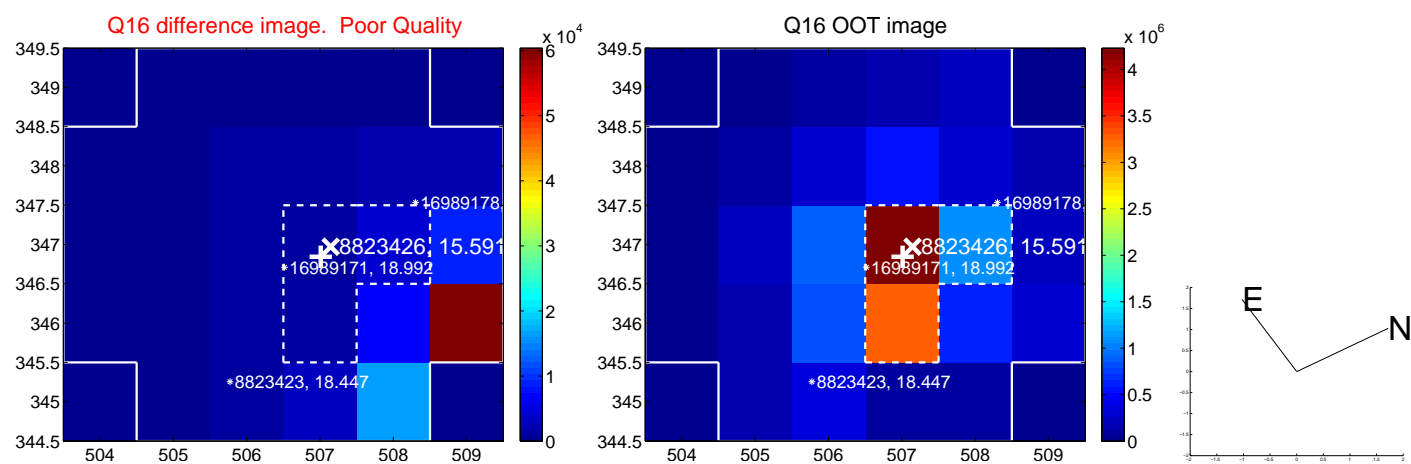
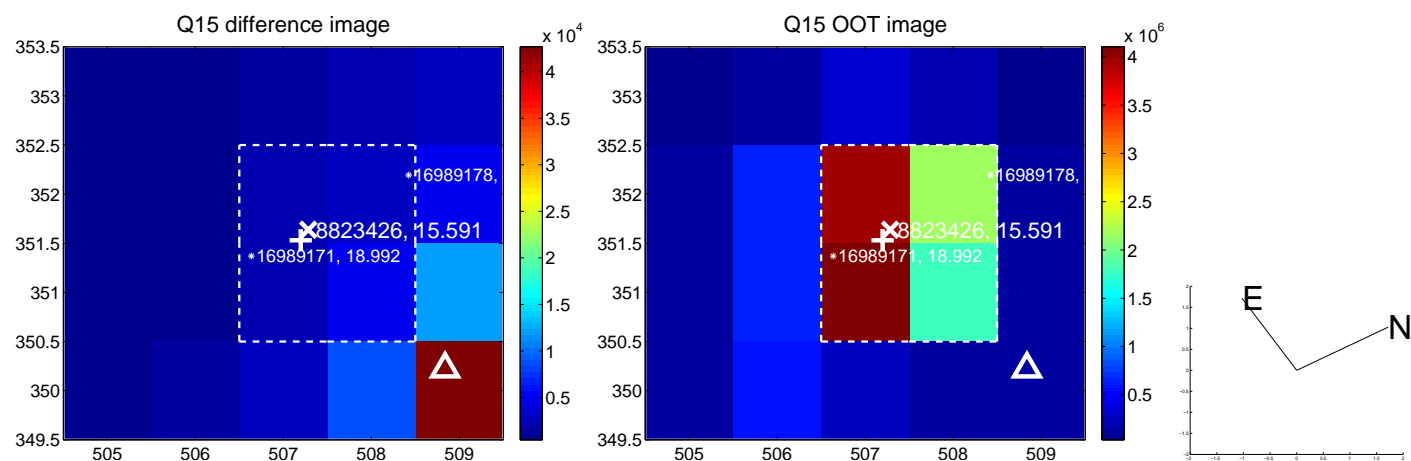
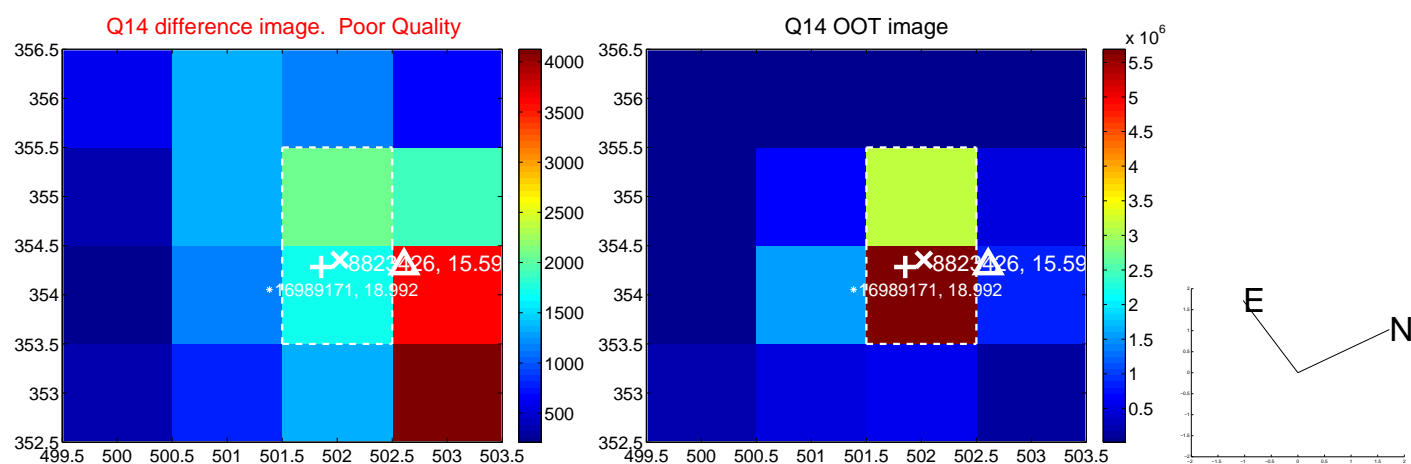
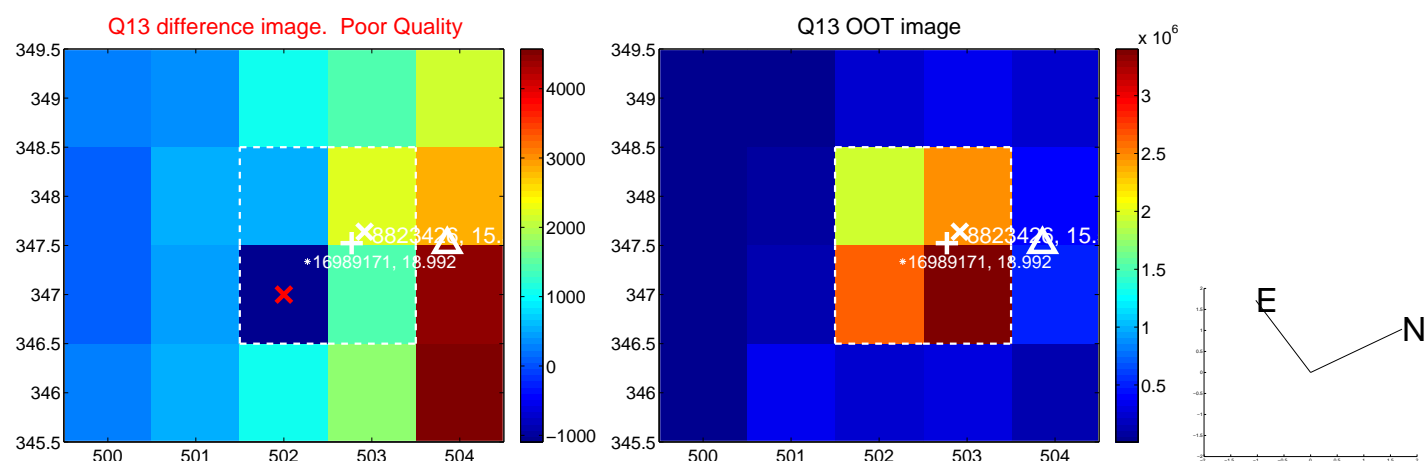




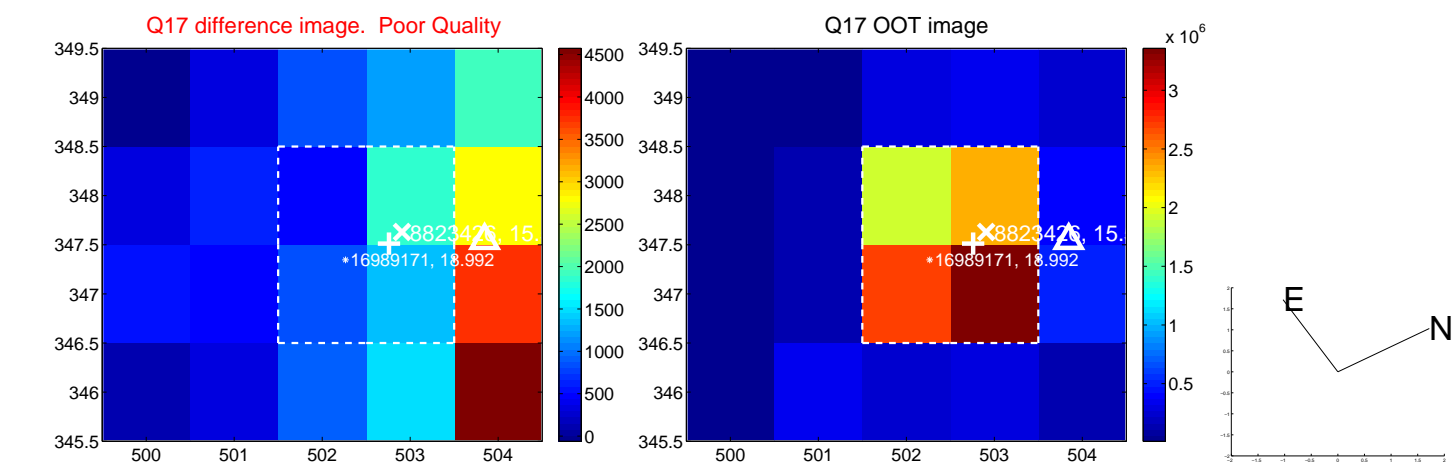
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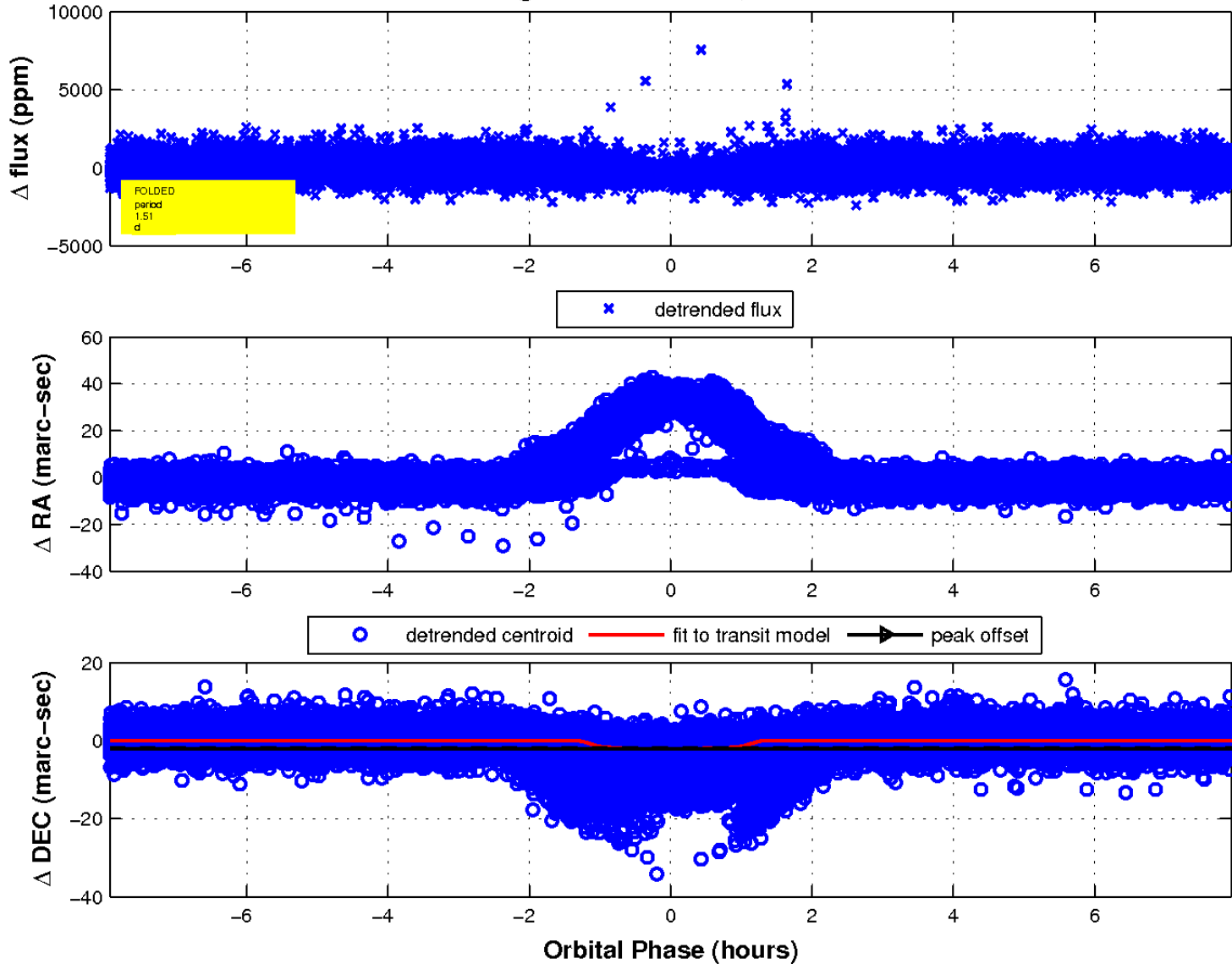
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

