

# KIC 011858748

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011858748-01	OBS	1471.01	1.780978	131.522078	520.2	2.516	36.9	41.0	0.87	5730	2.60	902.92

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011858748-01	OBS	FP	0.00	0	0	1	1	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.

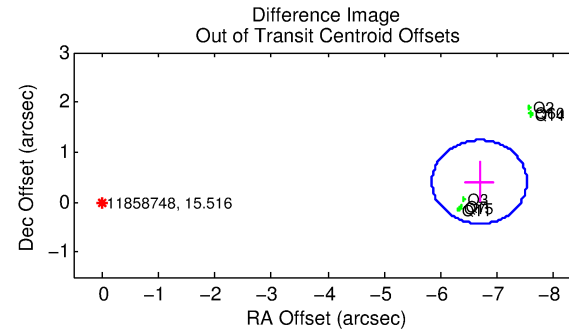
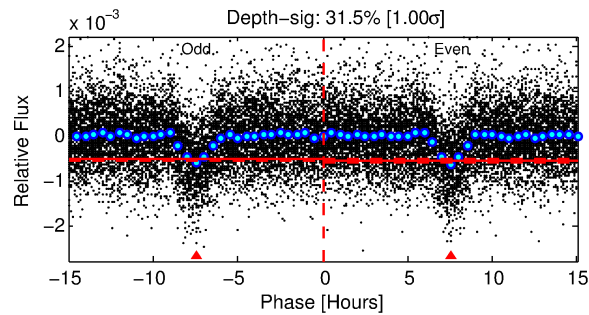
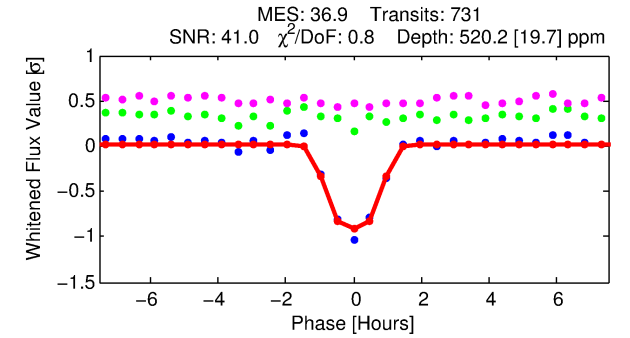
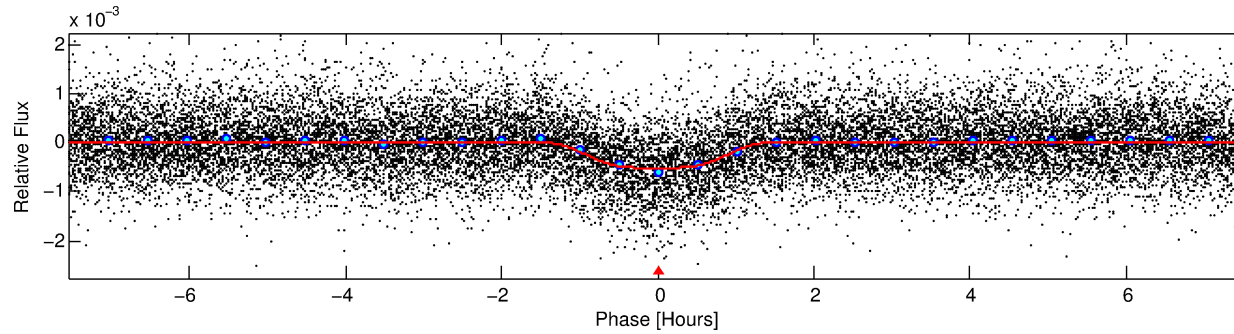
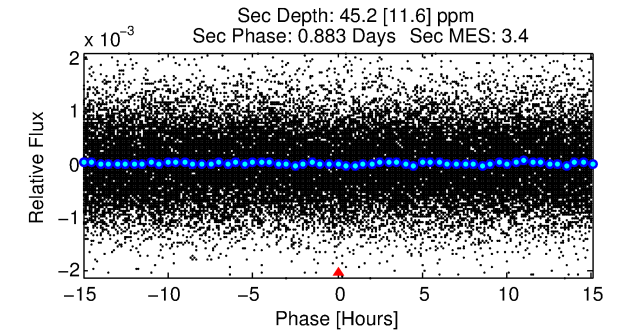
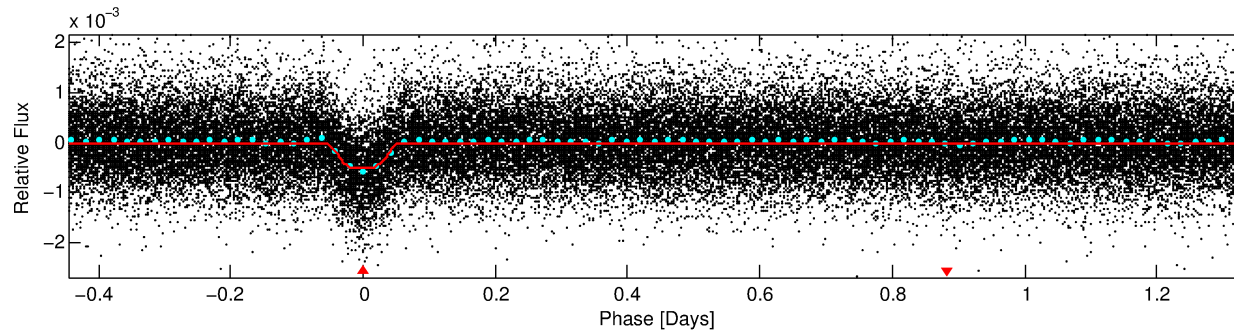
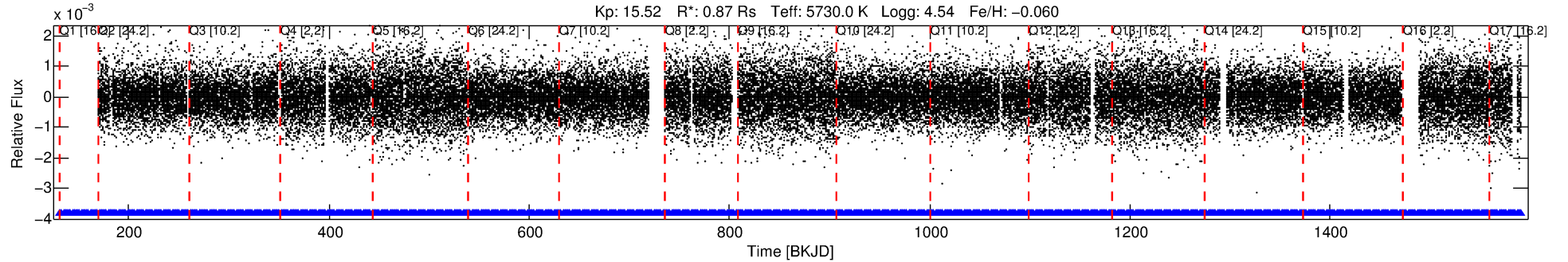
## Ephemeris Match Information For 011858748-01

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	$\sigma_P$	$\sigma_T$
011858748-01	11858748	3633.01	11858741	1:1	11.6	-3	0	16.48	15.51	667.02	Direct-PRF	0	0.21	0.12

**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: 11858748 Candidate: 1 of 1 Period: 1.781 d  
KOI: K01471.01 Corr: 0.957



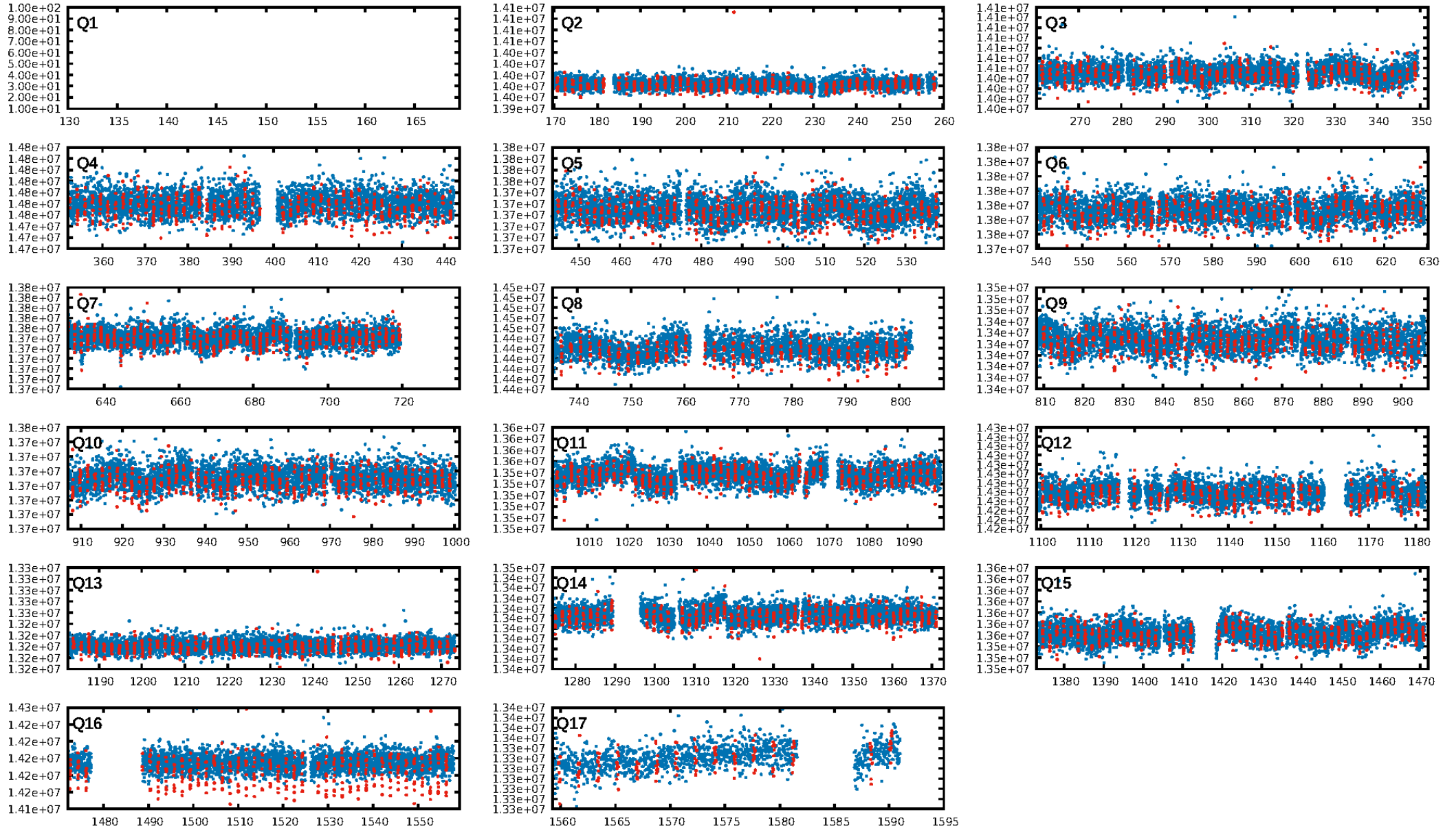
## DV Fit Results:

Period = 1.78098 [0.00000] d  
Epoch = 131.5221 [0.0009] BKJD  
Rp/R\* = 0.0274 [0.0009]  
a/R\* = 2.18 [0.17]  
b = 0.96 [0.01]  
Seff = 902.92 [330.51]  
Teq = 1398 [128] K  
Rp = 2.60 [0.73] Re  
a = 0.0285 [0.0068] AU  
Ag = 2.98 [1.31] [1.52σ]  
Teff = 2840 [203] K [6.01σ]

## DV Diagnostic Results:

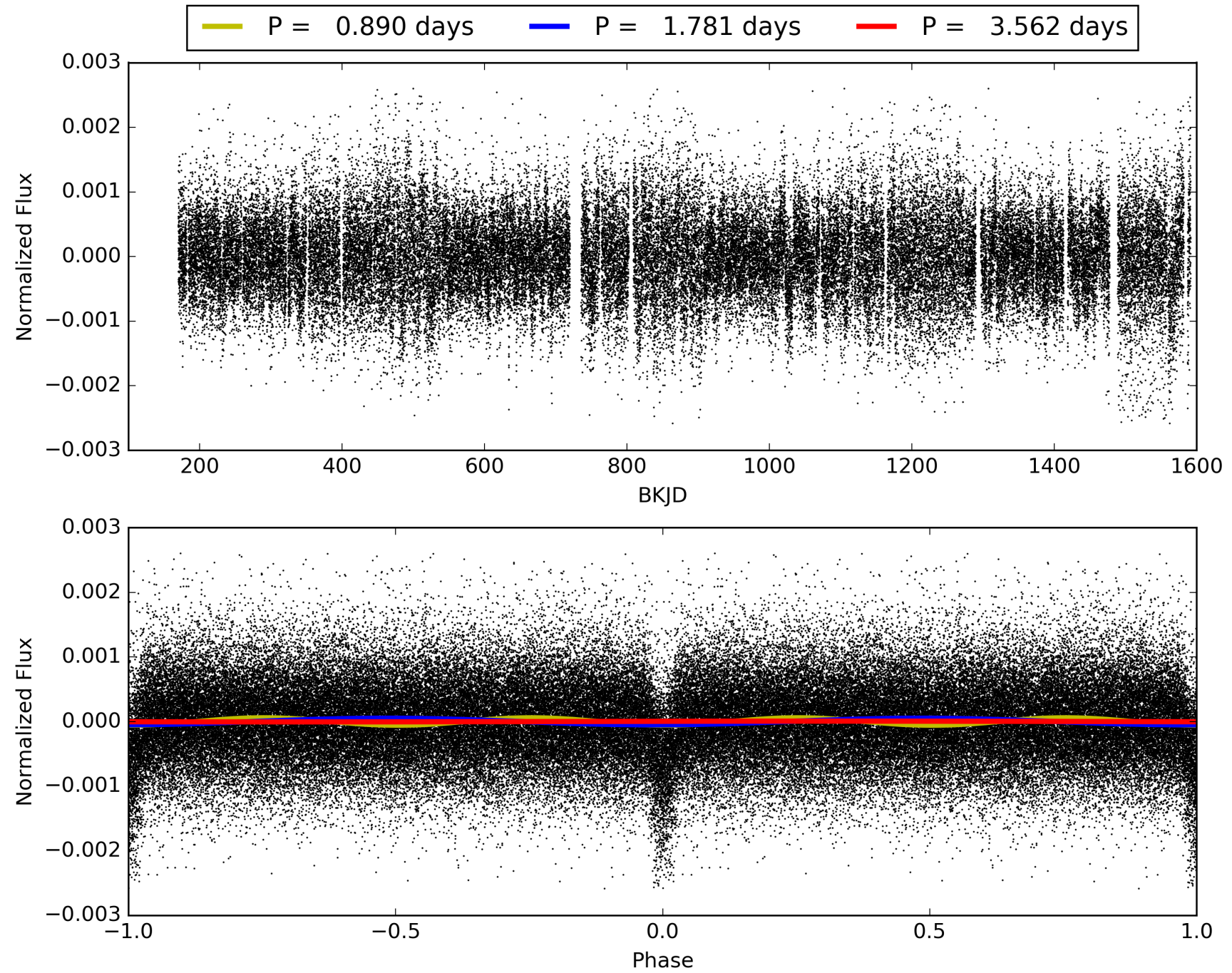
ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.85e-286  
RollingBand-fgt: 1.00 [716/716]  
GhostDiagnostic-chr: -0.2785  
Centroid-sig: 0.0%  
Centroid-so: 44.418 arcsec [120.29σ]  
OotOffset-rm: 6.694 arcsec [24.00σ]  
KicOffset-rm: 6.791 arcsec [28.68σ]  
OotOffset-st: 4/4/0/0 [8]  
KicOffset-st: 4/4/0/0 [8]  
DiffImageQuality-fgm: 1.00 [8/8]  
DiffImageOverlap-fno: 1.00 [16/16]

# TCE 011858748-01, PDC Light Curves



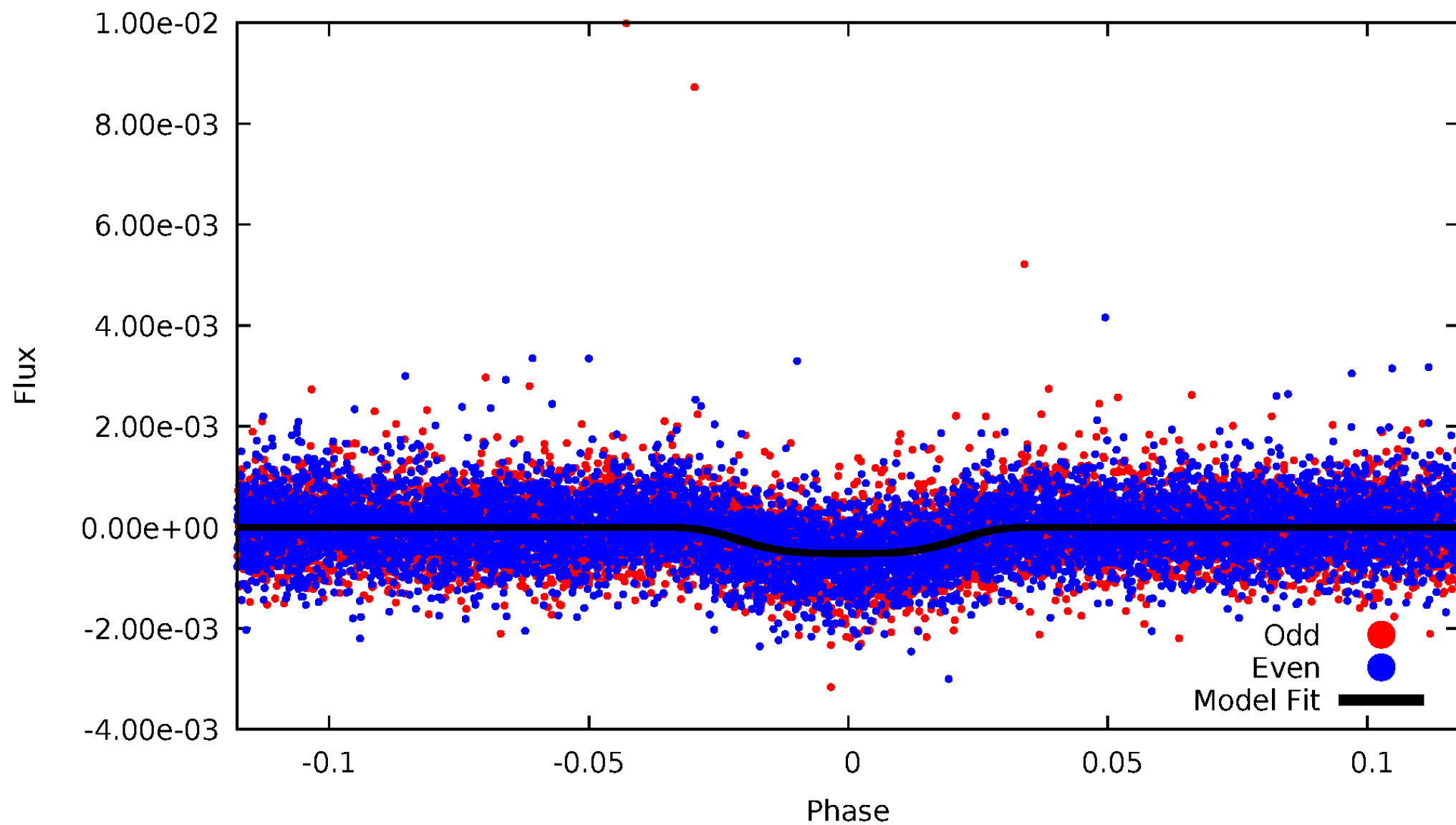


TCE 011858748-01



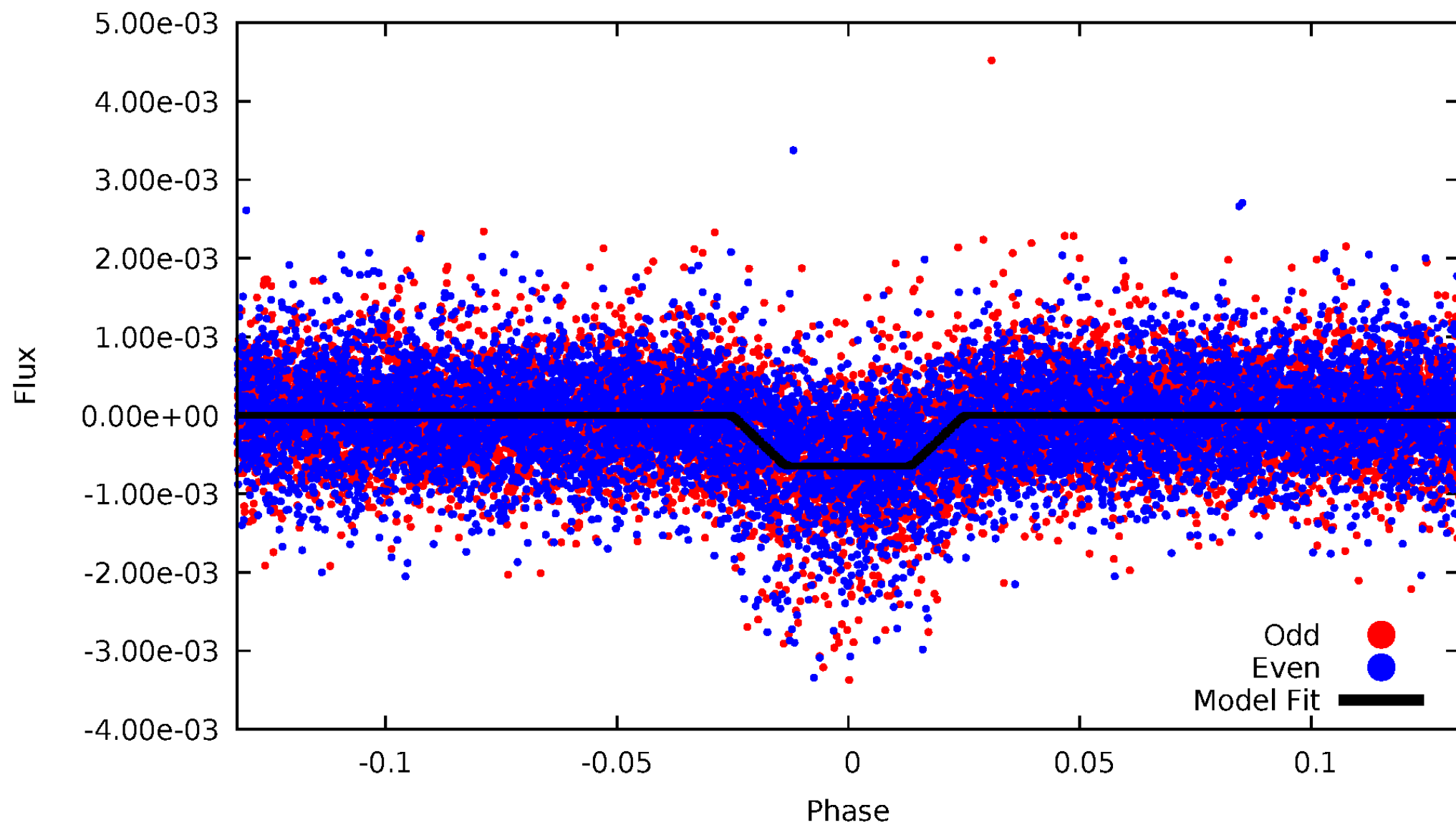
# DV Odd/Even

TCE 011858748-01

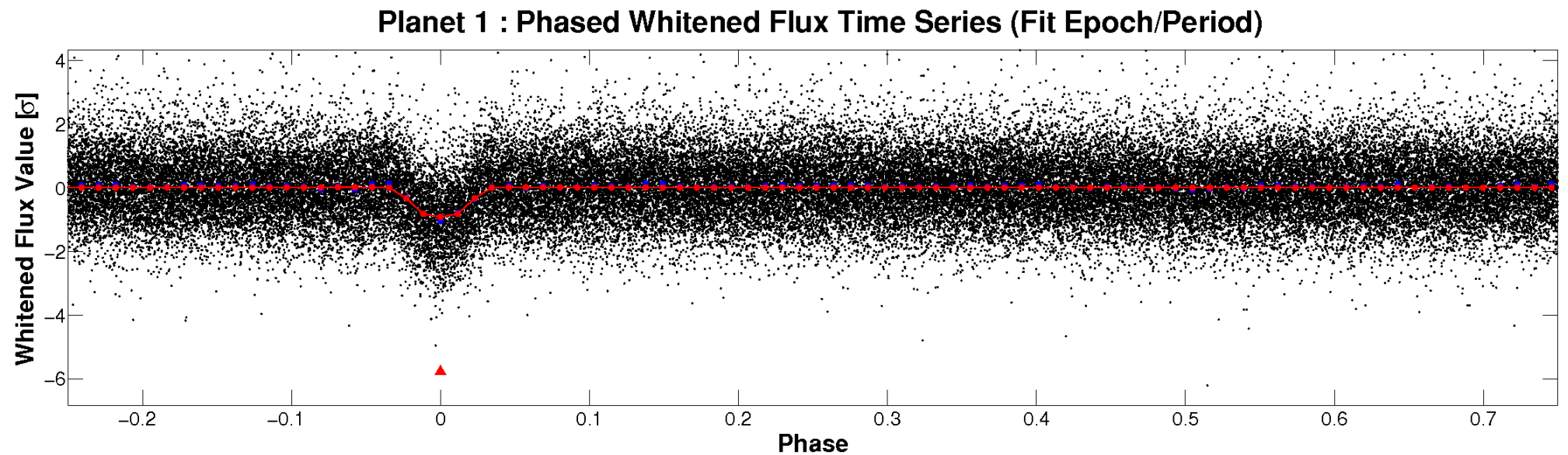
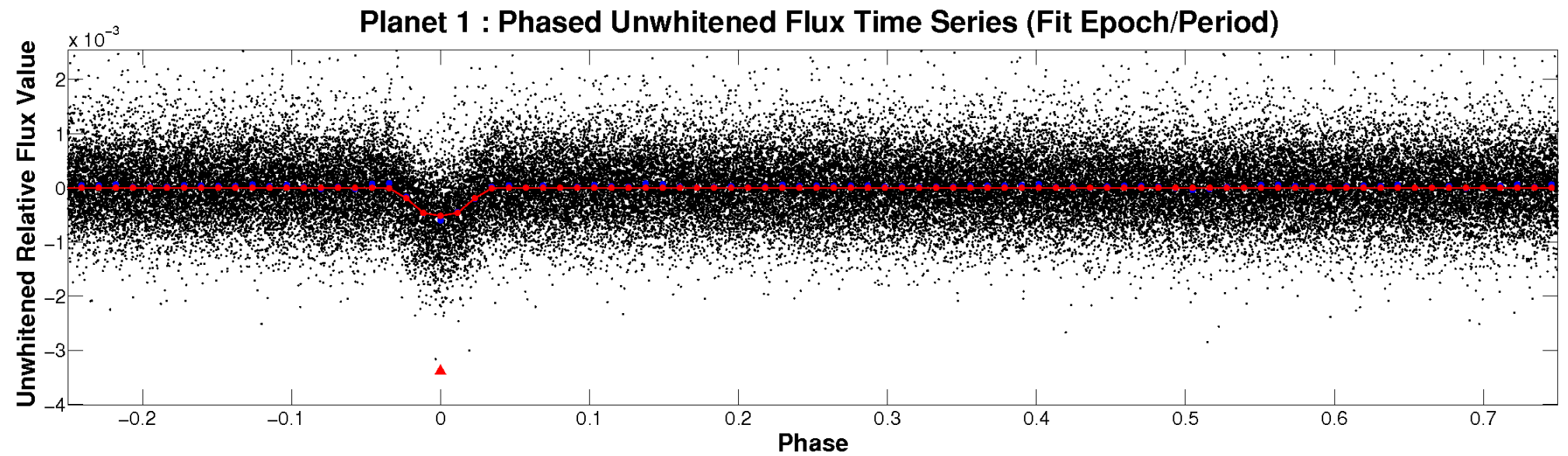


# ALT Odd/Even

TCE 011858748-01



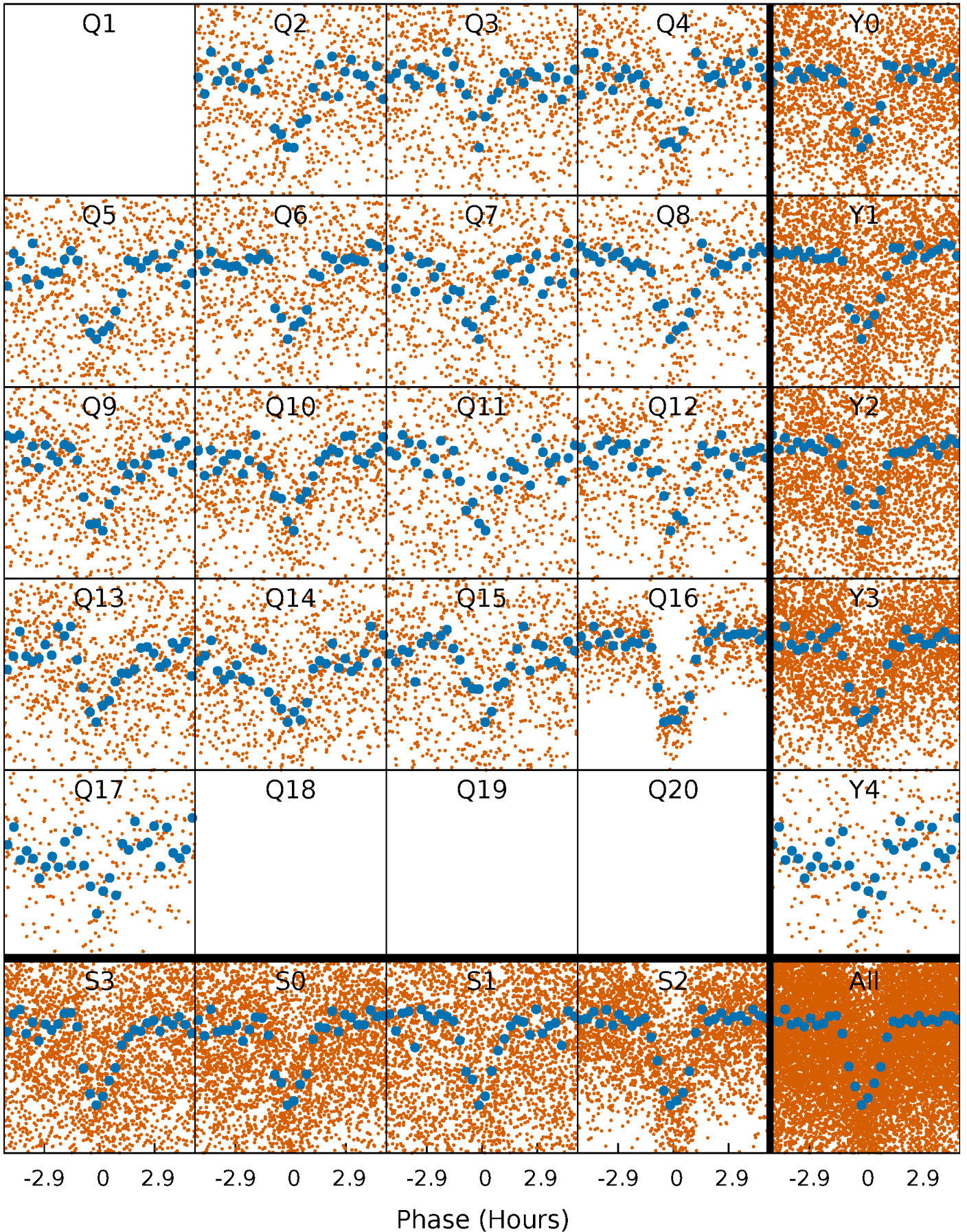
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

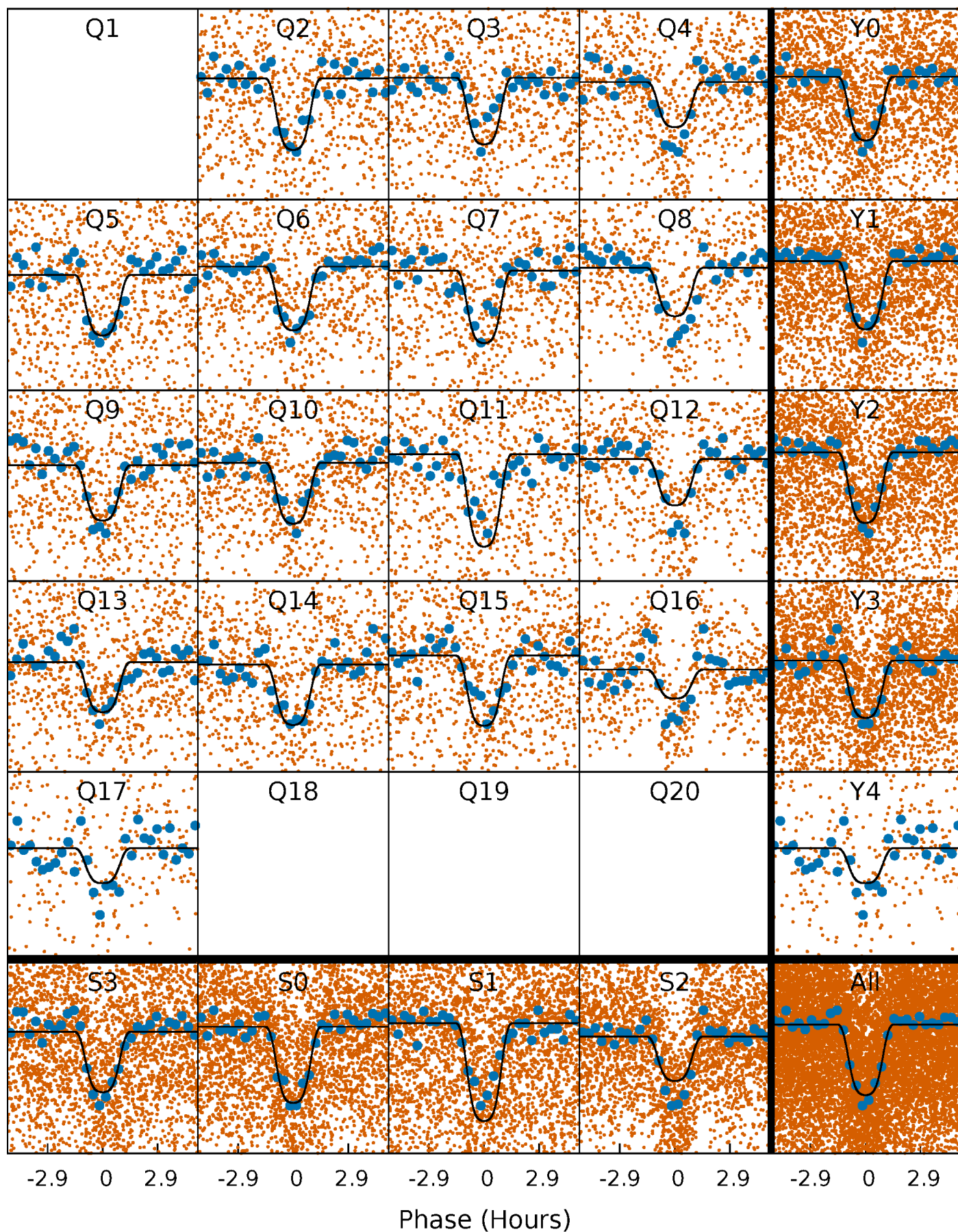
TCE 011858748-01 P= 1.780978 Days  $T_0=131.522078$  (BKJD)





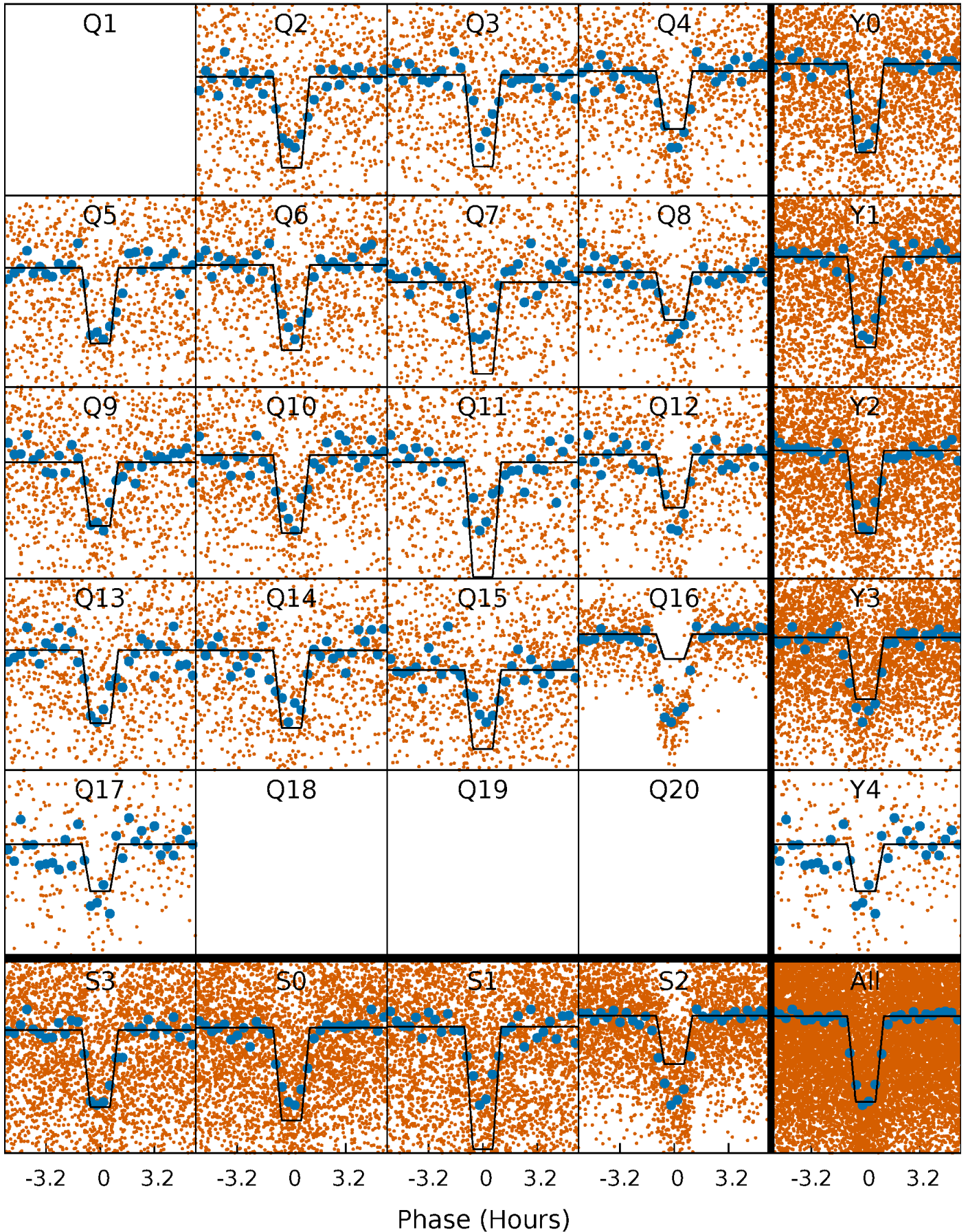
# DV Quarter-Phased Transit Curves

TCE 011858748-01 P= 1.780978 Days  $T_0=131.522078$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 011858748-01 P= 1.780994 Days  $T_0=131.514926$  (BKJD)

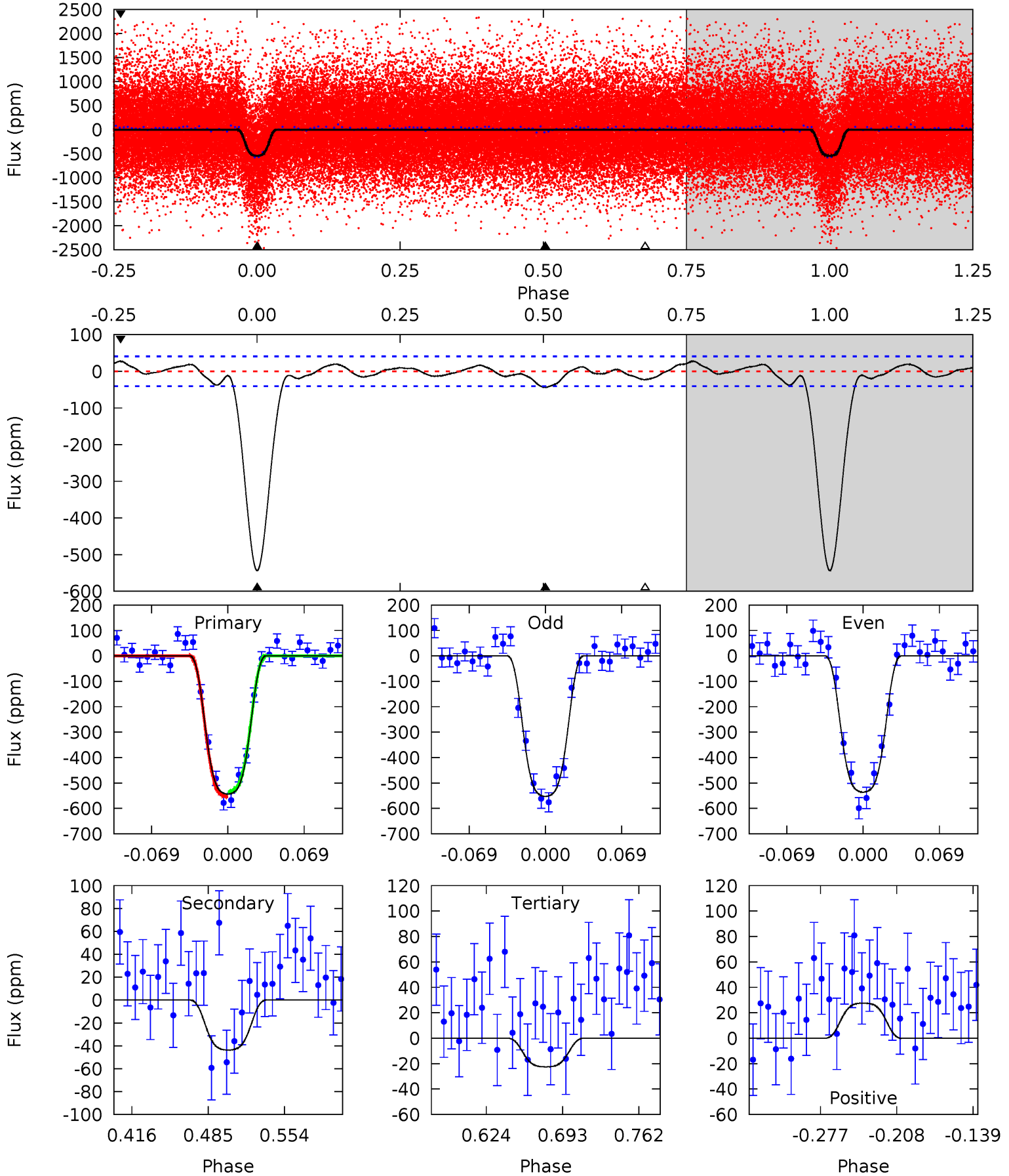




# DV Model-Shift Uniqueness Test

011858748-01, P = 1.780978 Days, E = 131.522078 Days

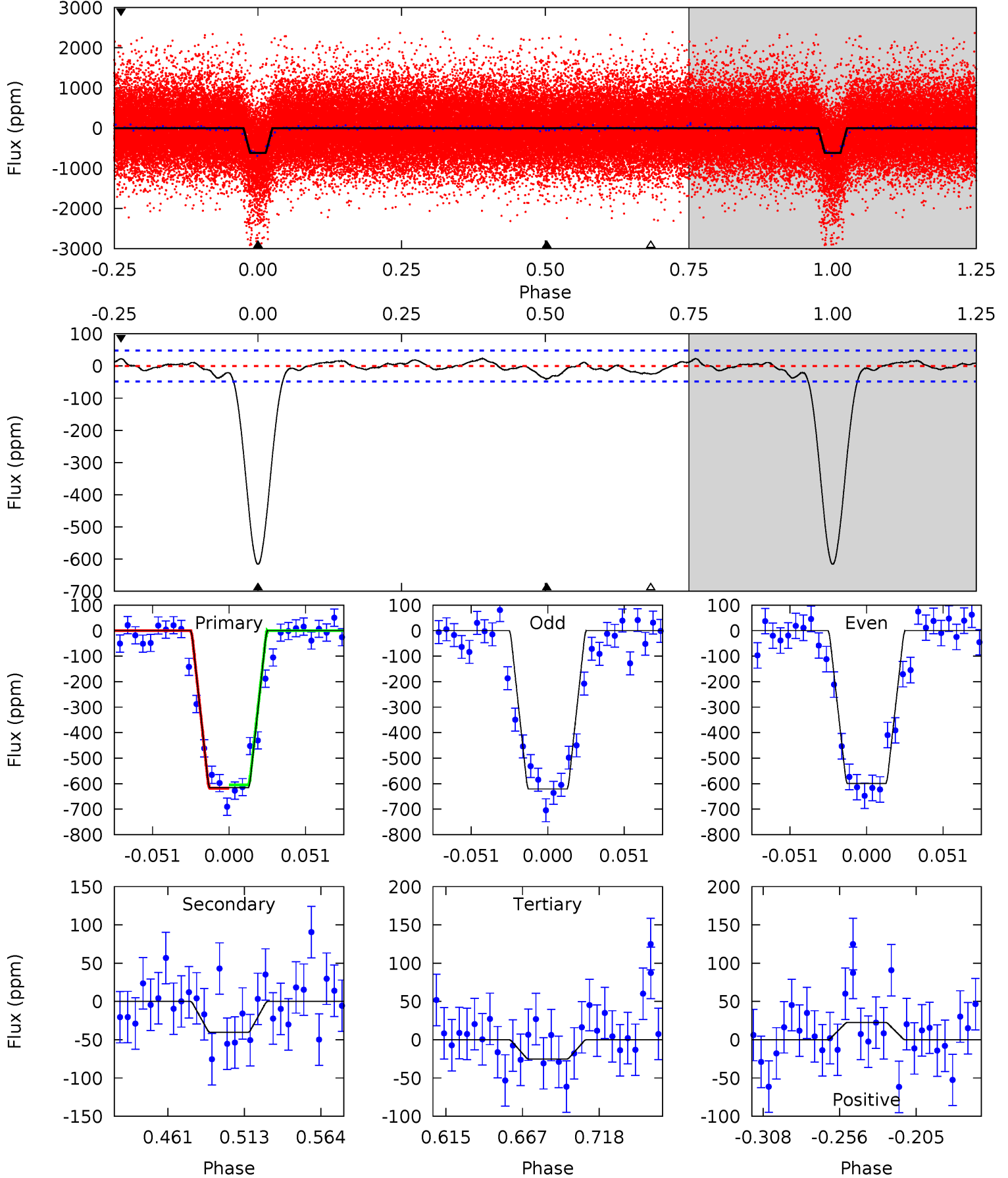
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
62.0	4.98	2.57	3.14	4.64	1.82	1.43	59.4	58.8	2.41	1.83	0.95	1.03	0.05	1.07



# Alt Model-Shift Uniqueness Test

011858748-01, P = 1.780994 Days, E = 131.514926 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
60.5	3.94	2.47	2.21	4.70	1.95	1.19	58.0	58.3	1.47	1.73	1.07	1.09	0.04	0.65





### Stellar Parameters For KIC 011858748

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5730^{+158}_{-158}$	$4.545^{+0.036}_{-0.192}$	$-0.060^{+0.300}_{-0.300}$	$0.870^{+0.244}_{-0.065}$	$0.968^{+0.103}_{-0.114}$	$2.069^{+0.388}_{-1.033}$
	+3%/-3%	+1%/-4%	+500%/-500%	+28%/-7%	+11%/-12%	+19%/-50%
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 011858748-01 / KOI 1471.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-44 \pm 9$	$2.67^{+0.40}_{-0.21}$	$1999^{+128}_{-93}$	$3273^{+131}_{-145}$	$2.551^{+0.824}_{-0.749}$
Alt.	$-40 \pm 10$	$2.49^{+0.39}_{-0.20}$	$2001^{+135}_{-85}$	$3323^{+141}_{-177}$	$2.688^{+0.962}_{-0.799}$

$T_{max}$  = 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

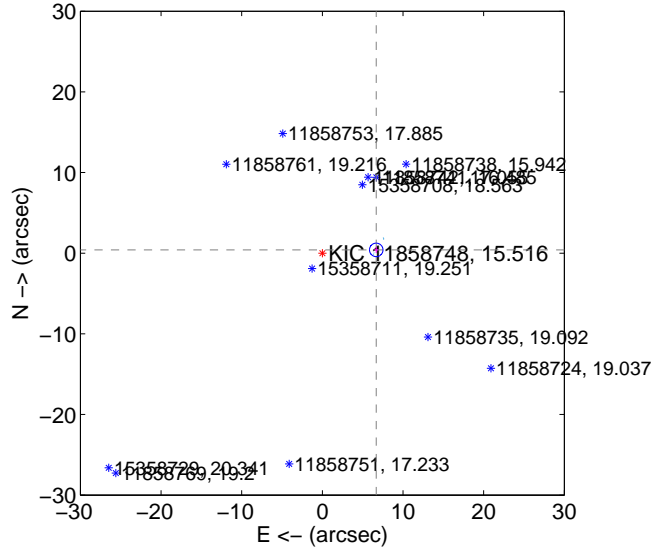
Supplemental centroid analysis for 011858748-01. Kepler magnitude: 15.52. Transit SNR 40.99

There are 8 quarters with good PRF difference image offsets

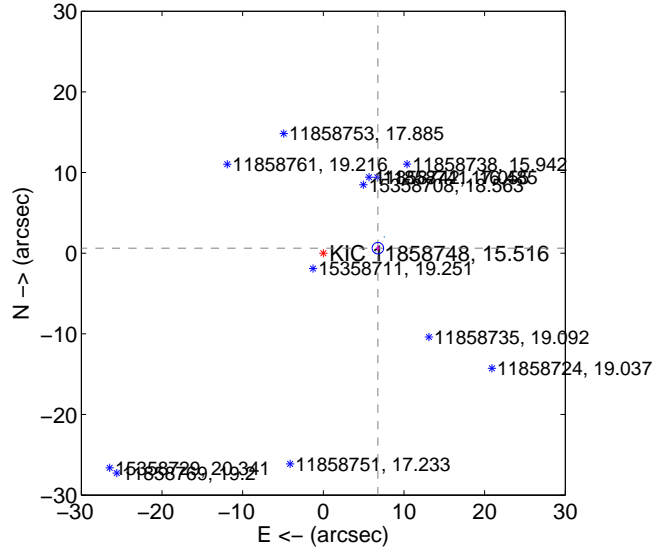
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$6.694 \pm 0.279$	24.00	$-6.681 \pm 0.257$	$0.406 \pm 0.388$
PRF-fit source offset from KIC position	$6.791 \pm 0.237$	28.68	$-6.763 \pm 0.208$	$0.618 \pm 0.344$
photometric centroid source offset	$44.42 \pm 0.37$	120.29	$-44.10 \pm 0.37$	$5.32 \pm 0.33$

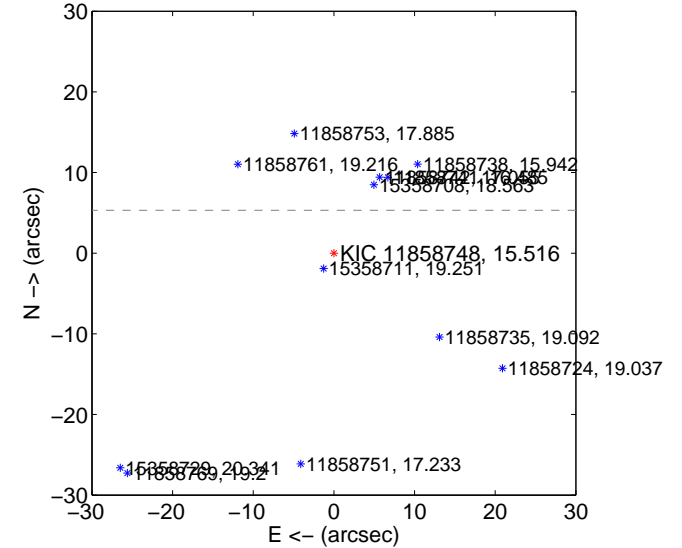
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

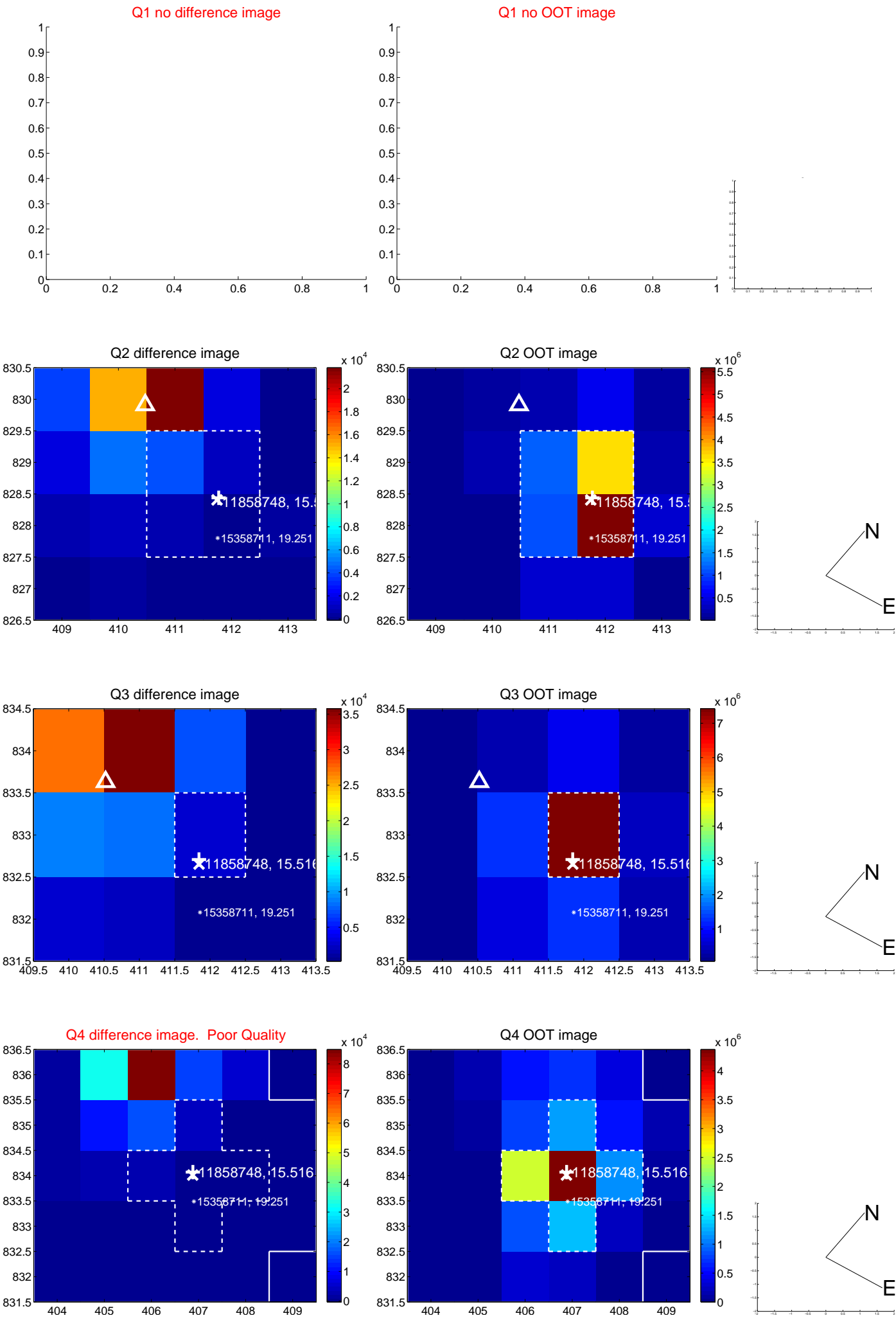


offset from photometric centroids

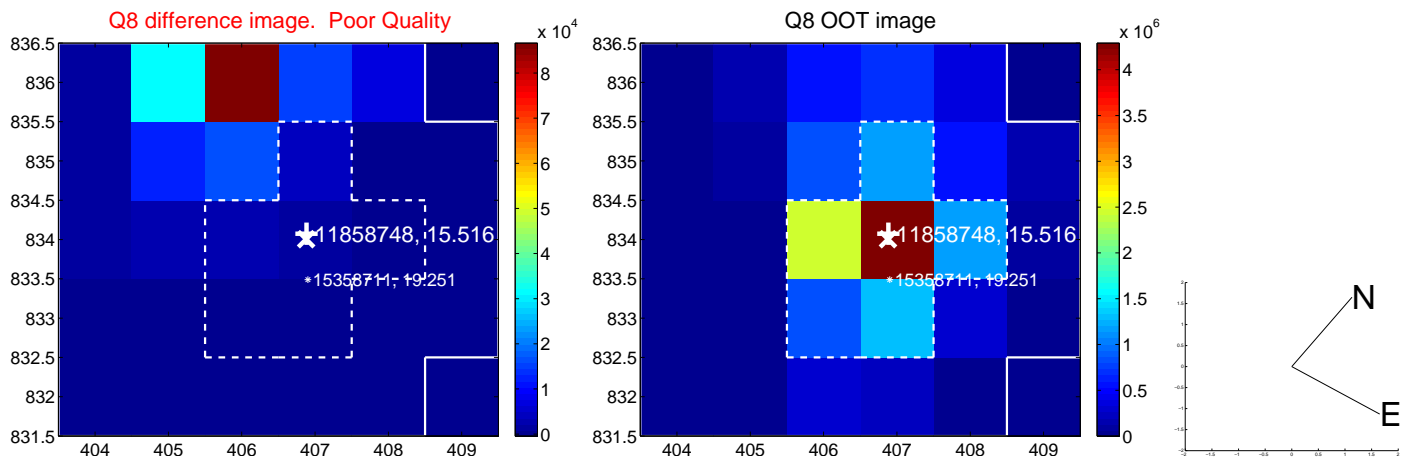
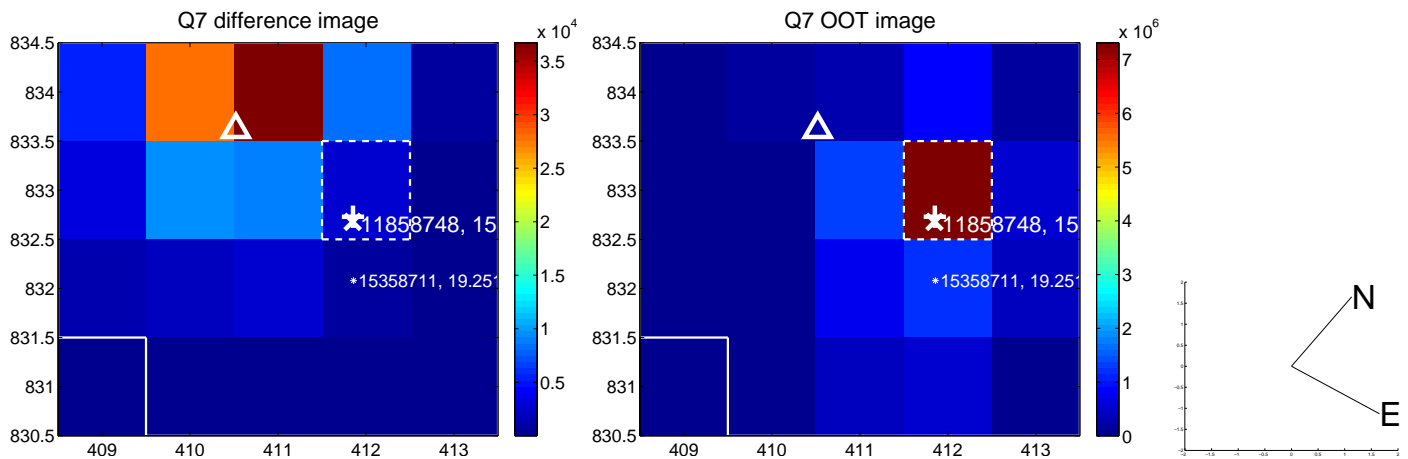
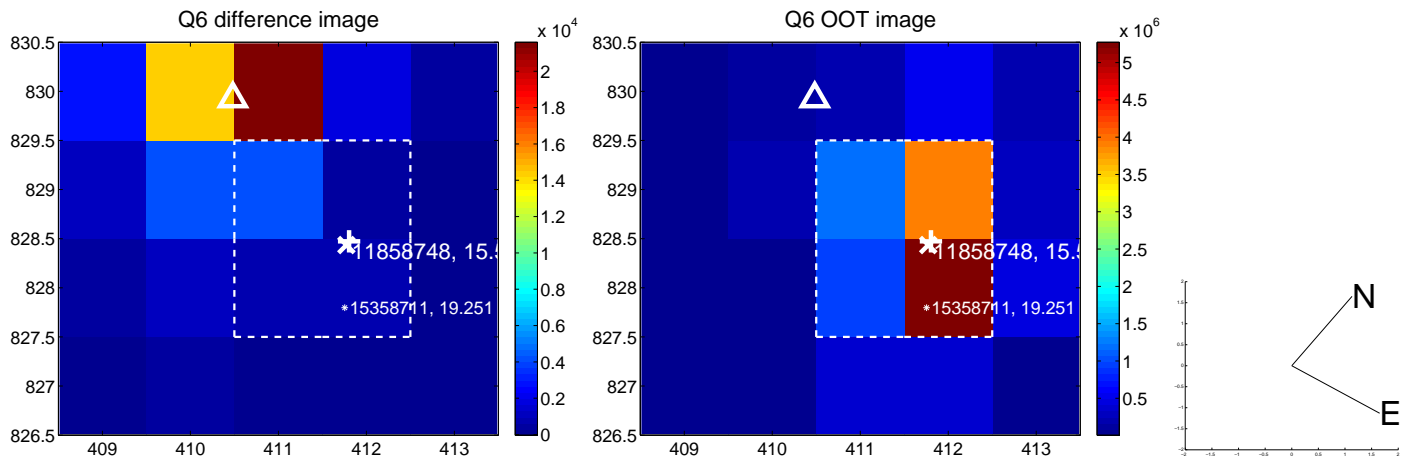
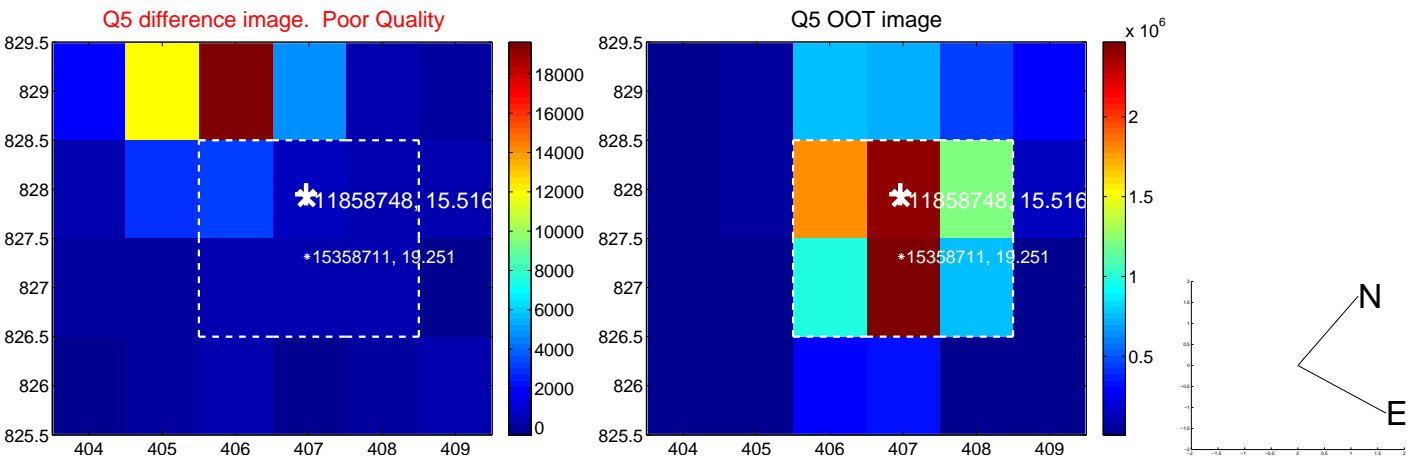


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

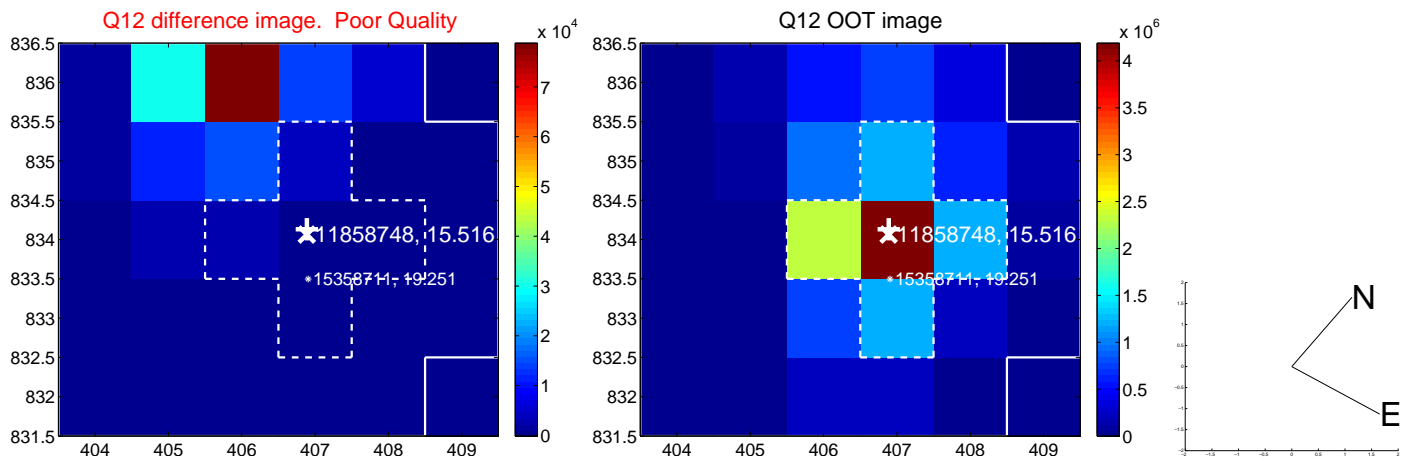
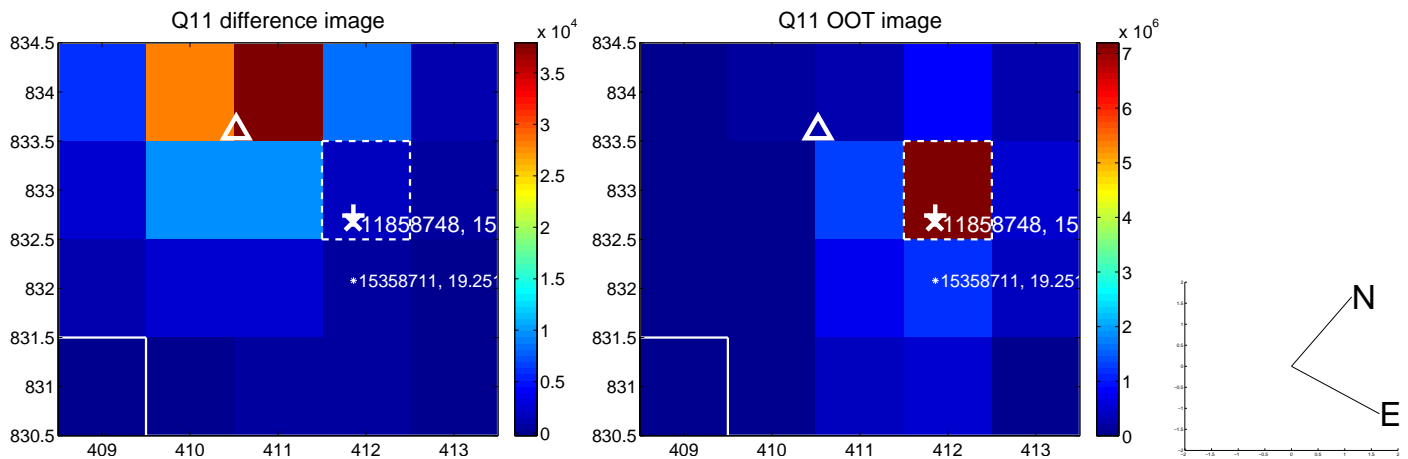
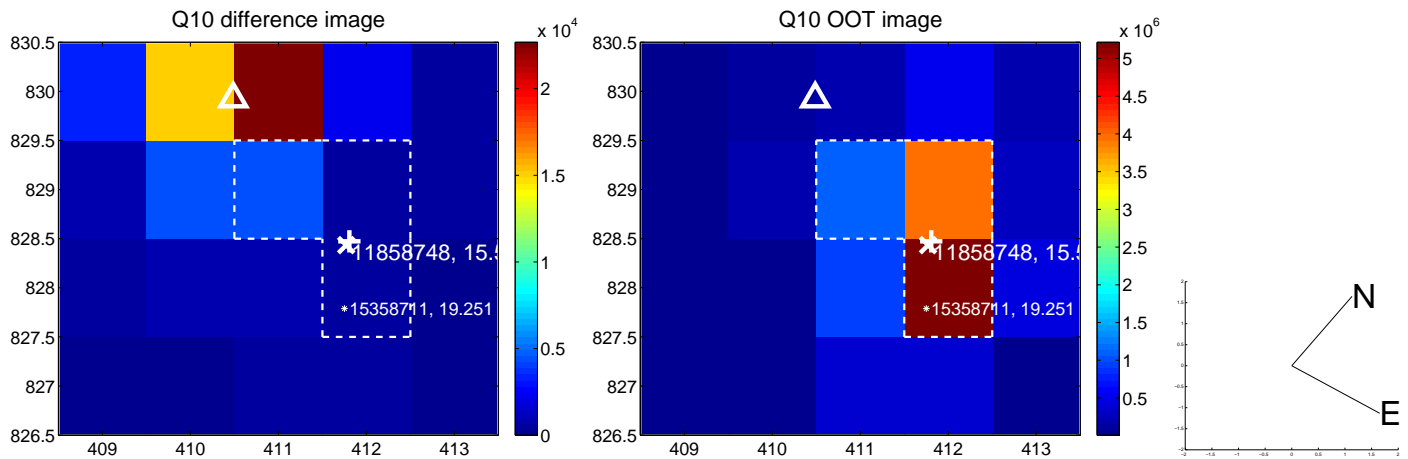
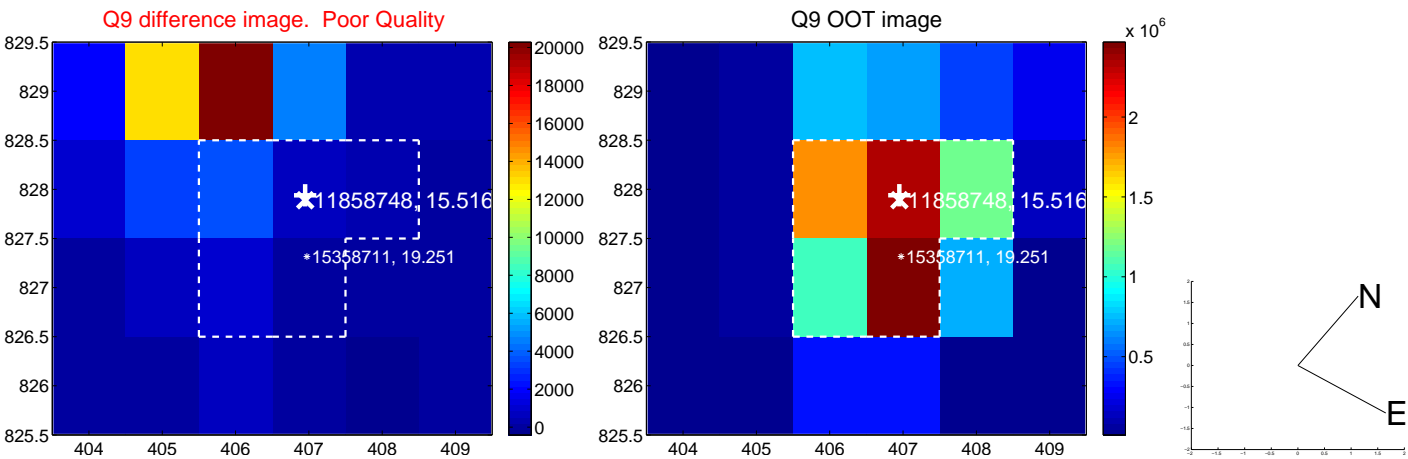


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

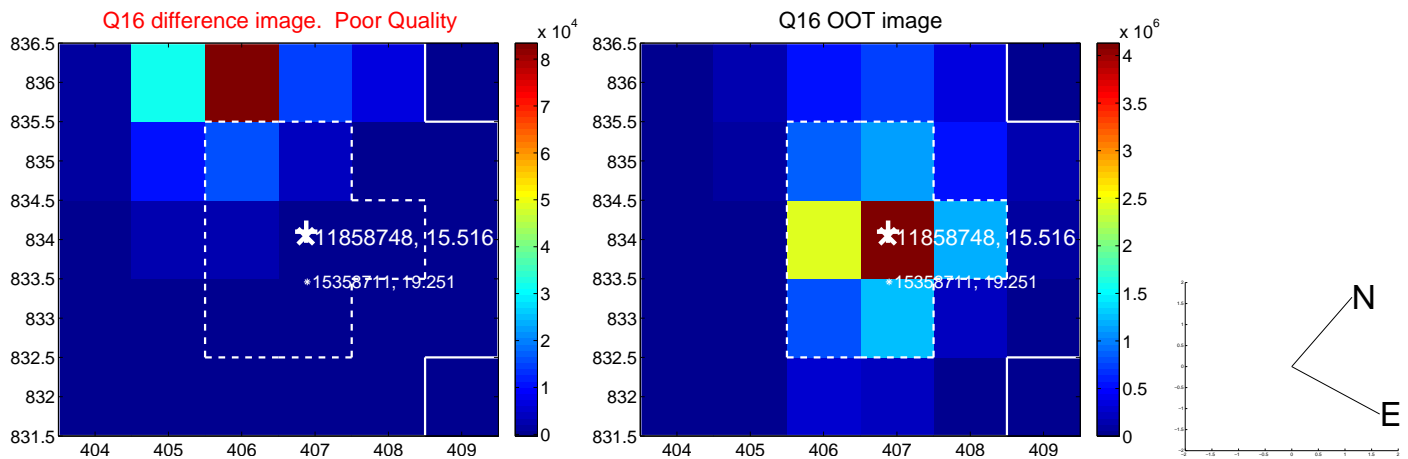
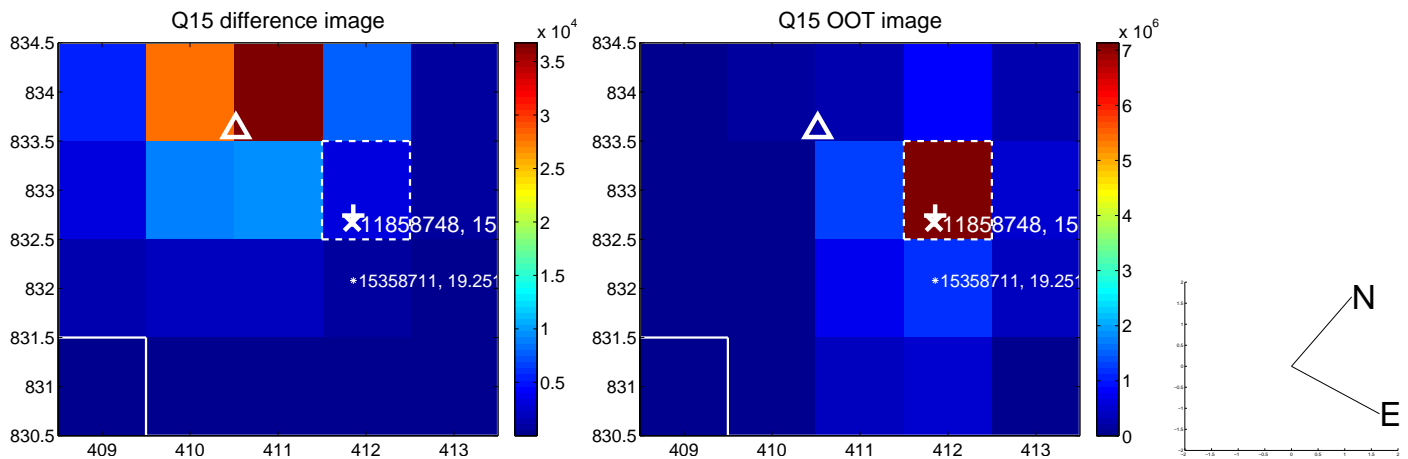
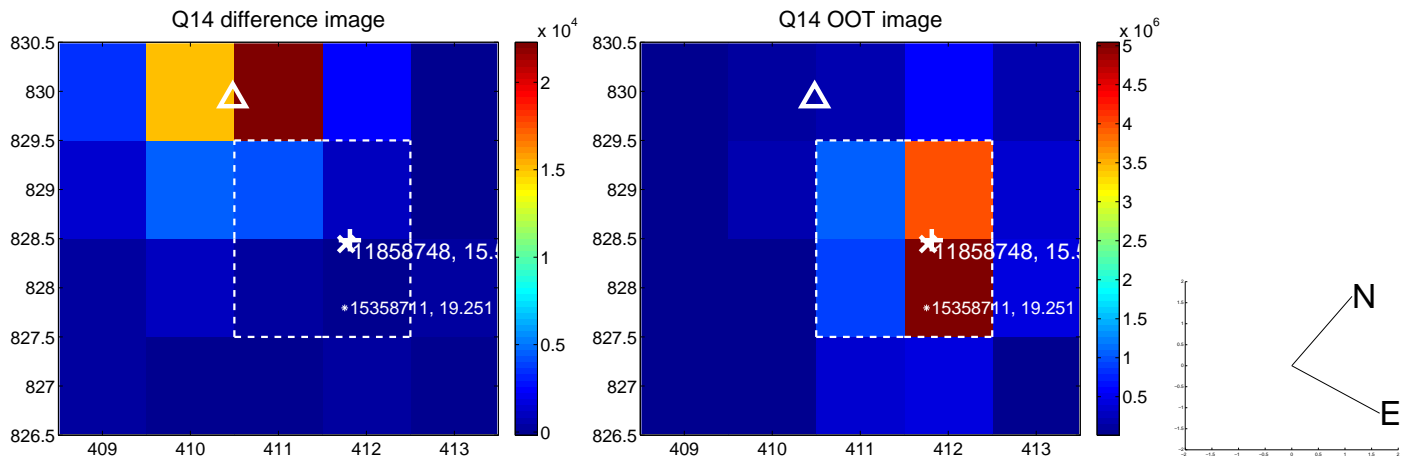
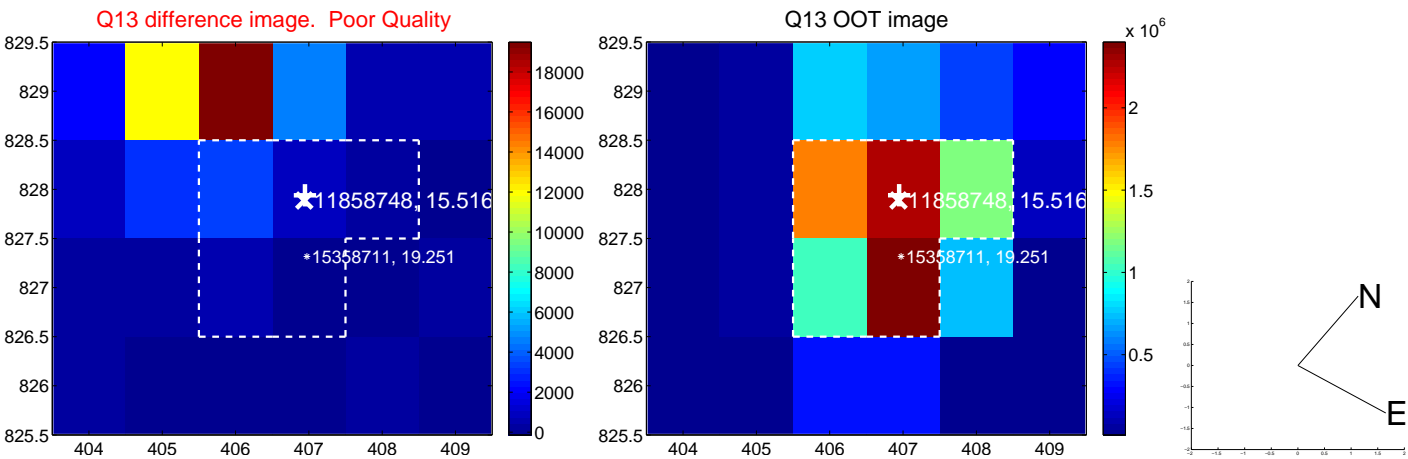




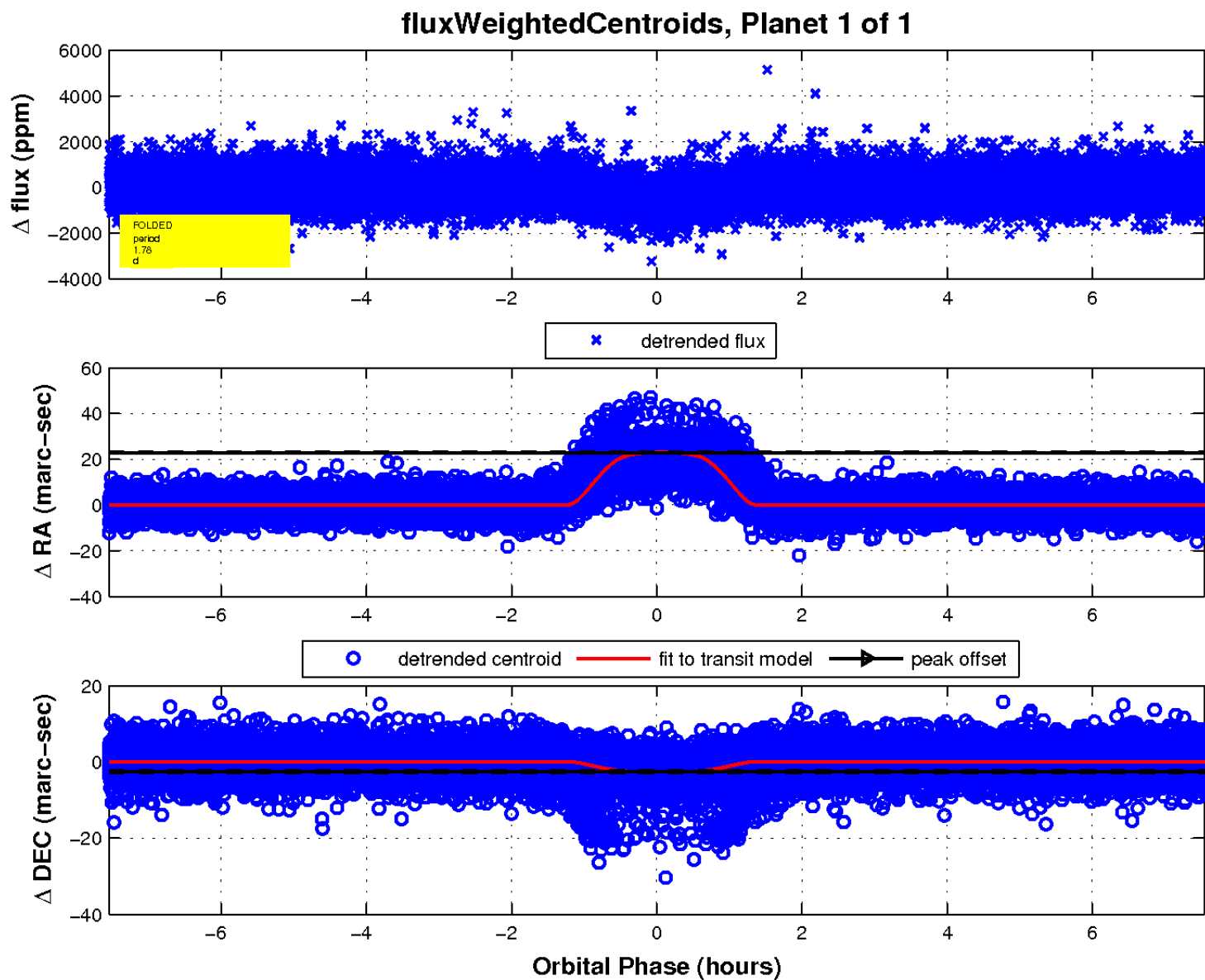
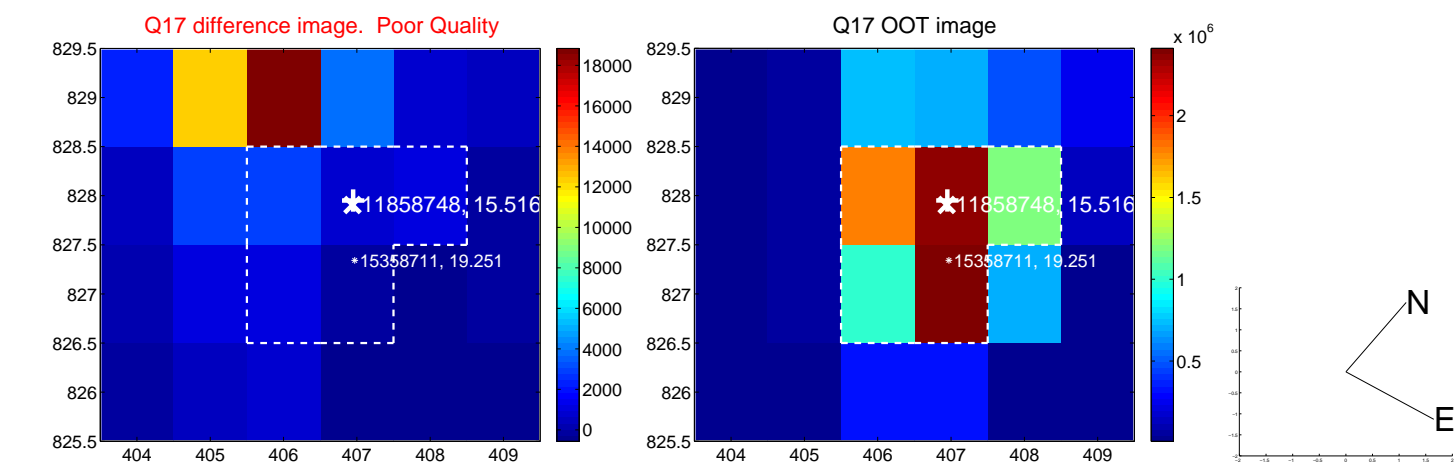
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

