

# KIC 007777522

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007777522-01	OBS	4415.01	0.885079	131.908850	93.1	3.611	14.2	11.7	0.86	5792	0.98	2376.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007777522-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—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 007777522-01

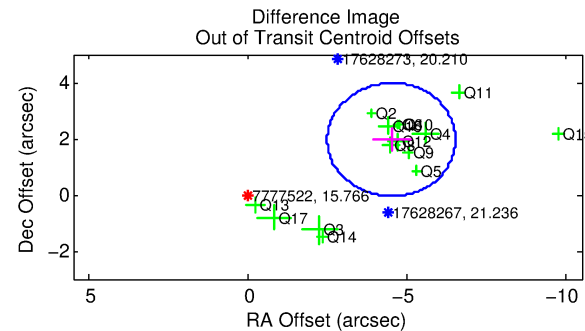
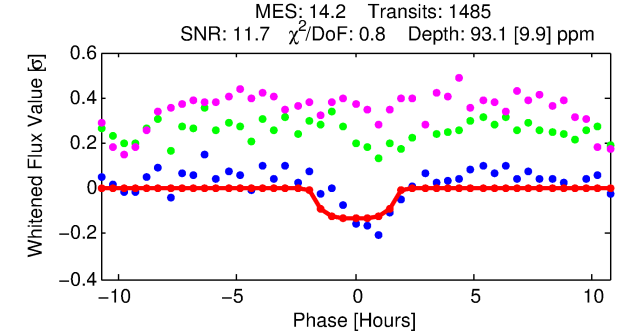
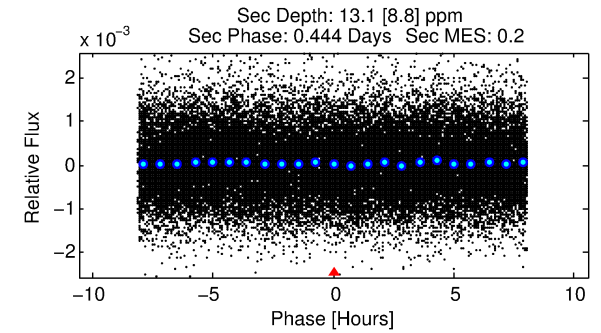
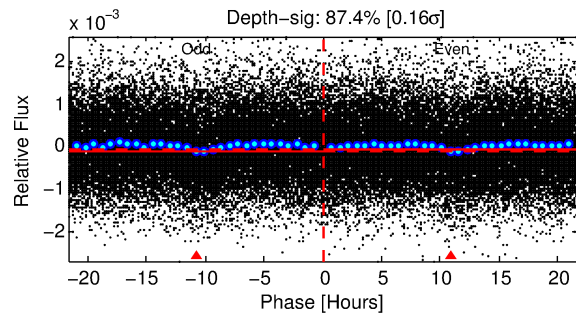
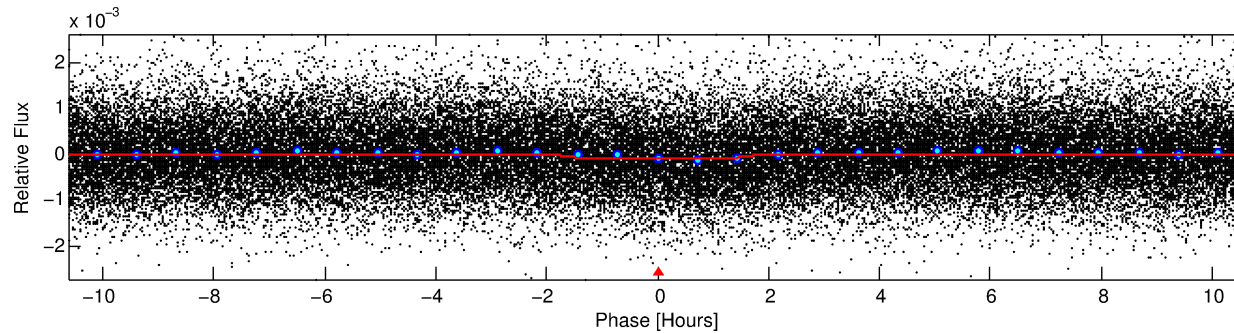
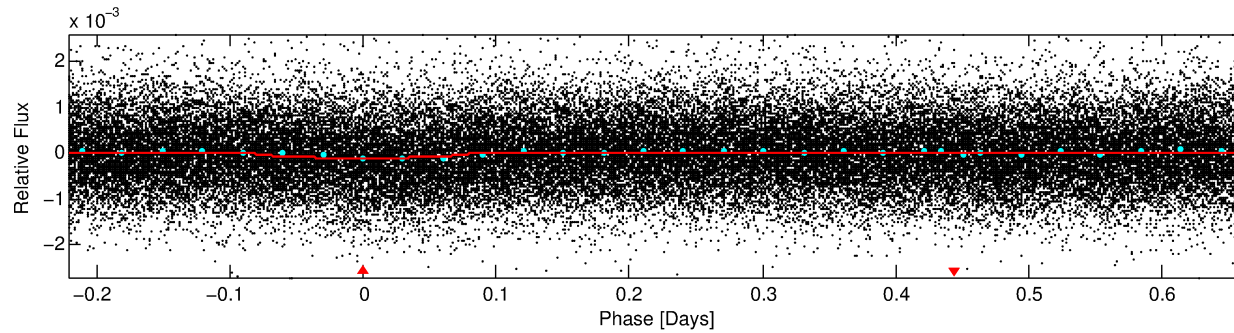
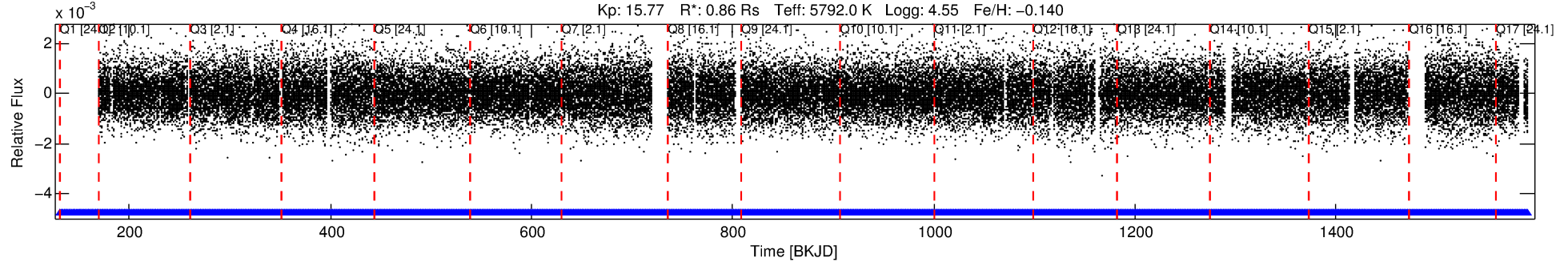
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
007777522-01	7777522	007777443-pri	7777443	1:1	56.9	15	-1	11.91	15.76	4118.30	Direct-PRF	0	4.97	2.33

**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: 7777522 Candidate: 1 of 1 Period: 0.885 d  
KOI: K04415.01 Corr: 0.843

Kp: 15.77 R\*: 0.86 Rs Teff: 5792.0 K Logg: 4.55 Fe/H: -0.140



## DV Fit Results:

Period = 0.88508 [0.00001] d  
Epoch = 131.9089 [0.0039] BKJD  
Rp/R\* = 0.0104 [0.0065]  
a/R\* = 1.29 [1.55]  
b = 0.89 [0.70]  
Seff = 2376.34 [969.85]  
Teq = 1780 [182] K  
Rp = 0.98 [0.68] Re  
a = 0.0178 [0.0047] AU  
Ag = 2.37 [3.46] [0.40σ]  
Teffp = 3416 [1206] K [1.34σ]

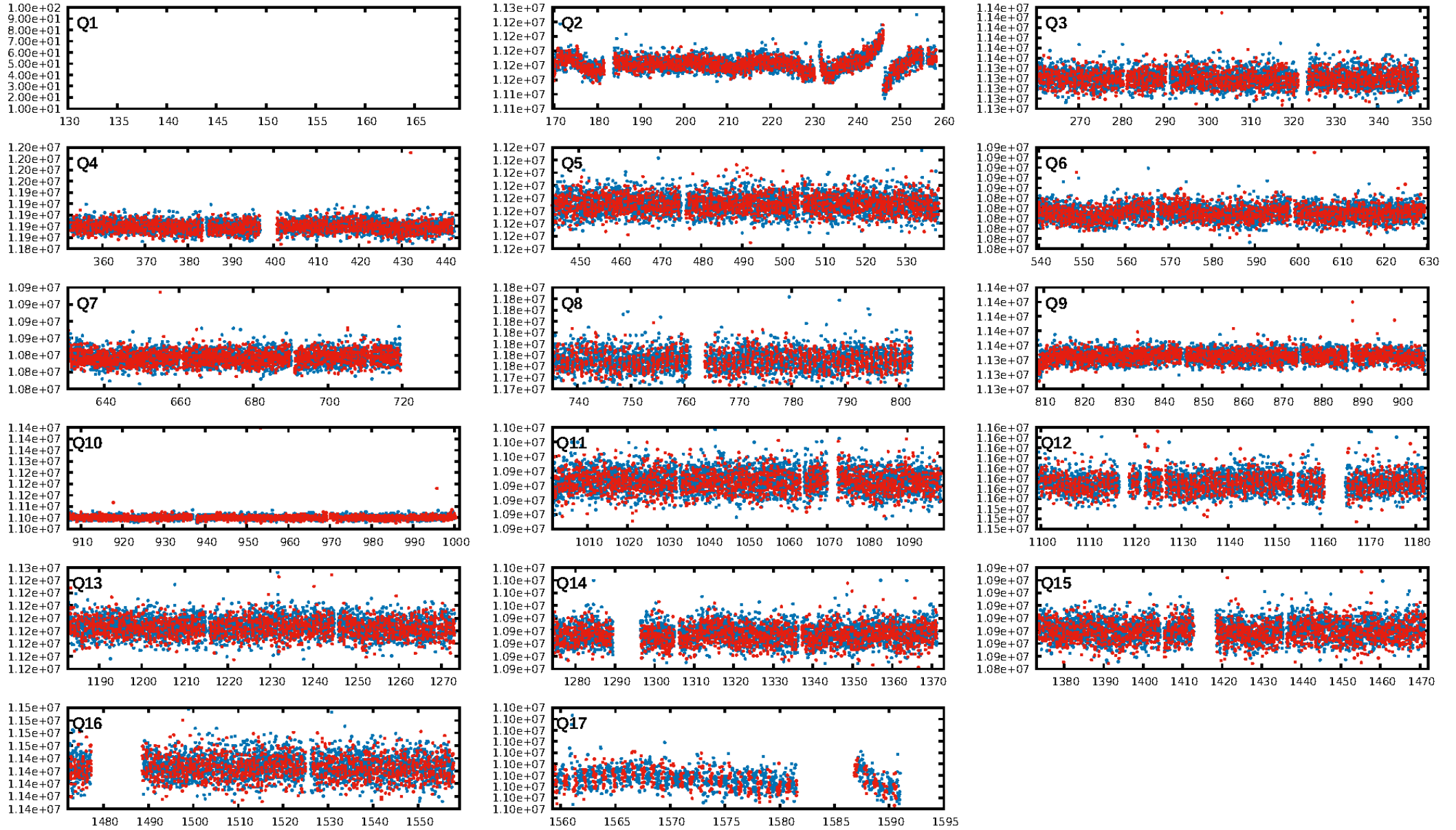
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 6.34e-43  
RollingBand-fgt: 1.00 [1455/1455]  
GhostDiagnostic-chr: -0.4679  
Centroid-sig: 0.0%  
Centroid-so: 8.439 arcsec [6.65σ]  
OotOffset-rm: 4.915 arcsec [7.32σ]  
KicOffset-rm: 4.729 arcsec [7.23σ]  
OotOffset-st: 4/3/4/4 [15]  
KicOffset-st: 4/3/4/4 [15]  
DiffImageQuality-fgm: 0.40 [6/15]  
DiffImageOverlap-fno: 1.00 [16/16]

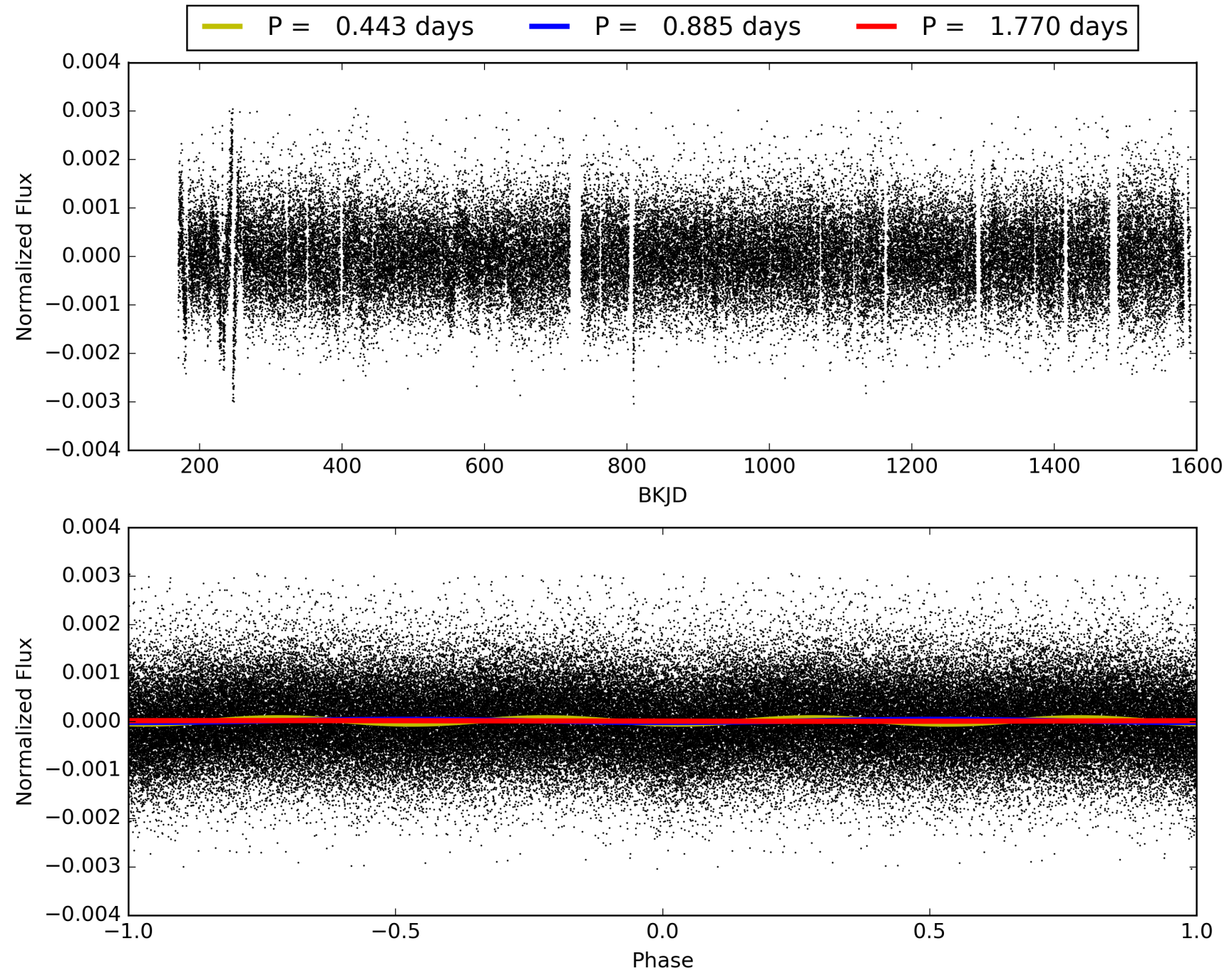
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:40:04 Z

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

# TCE 007777522-01, PDC Light Curves



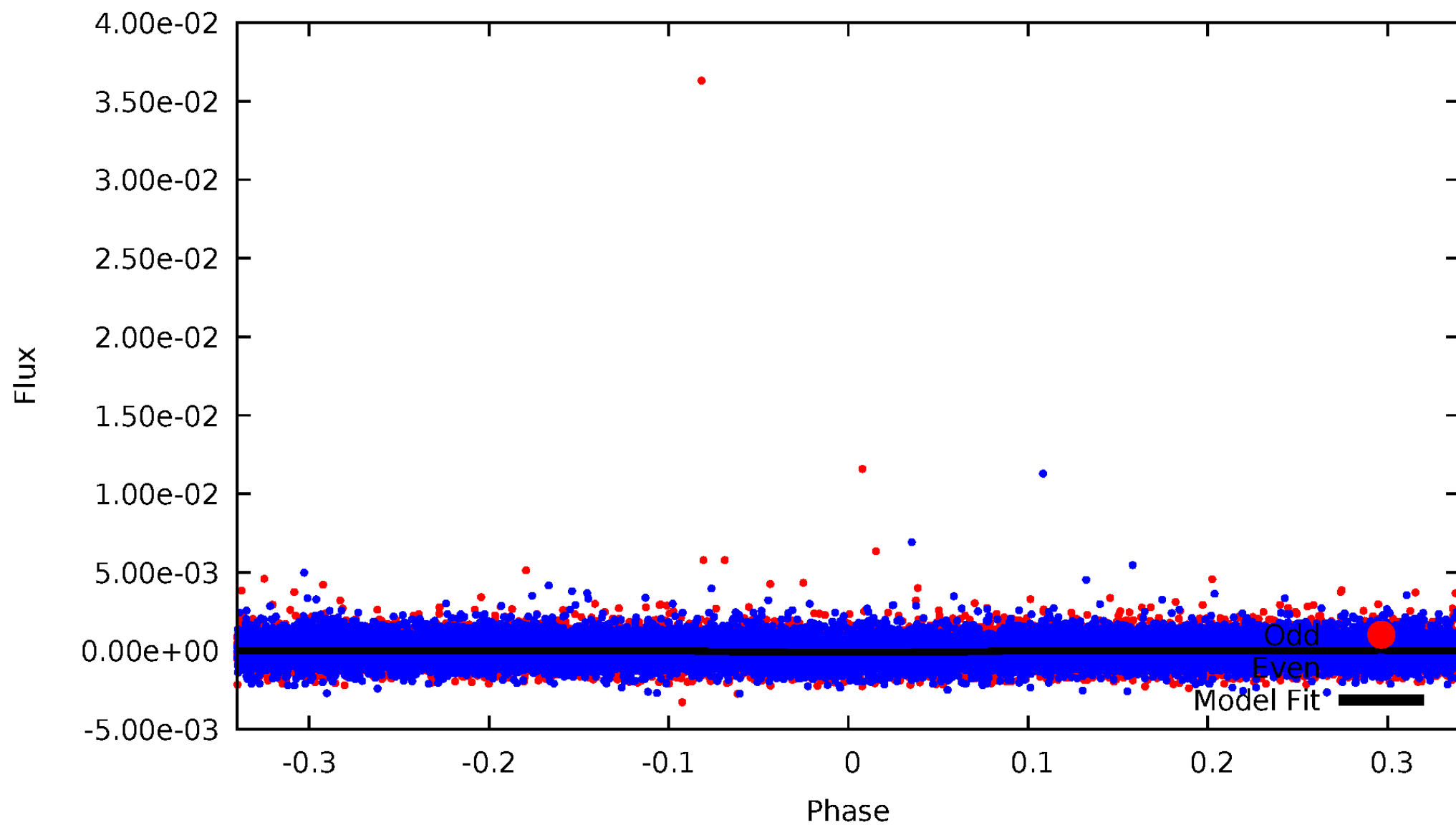
TCE 007777522-01





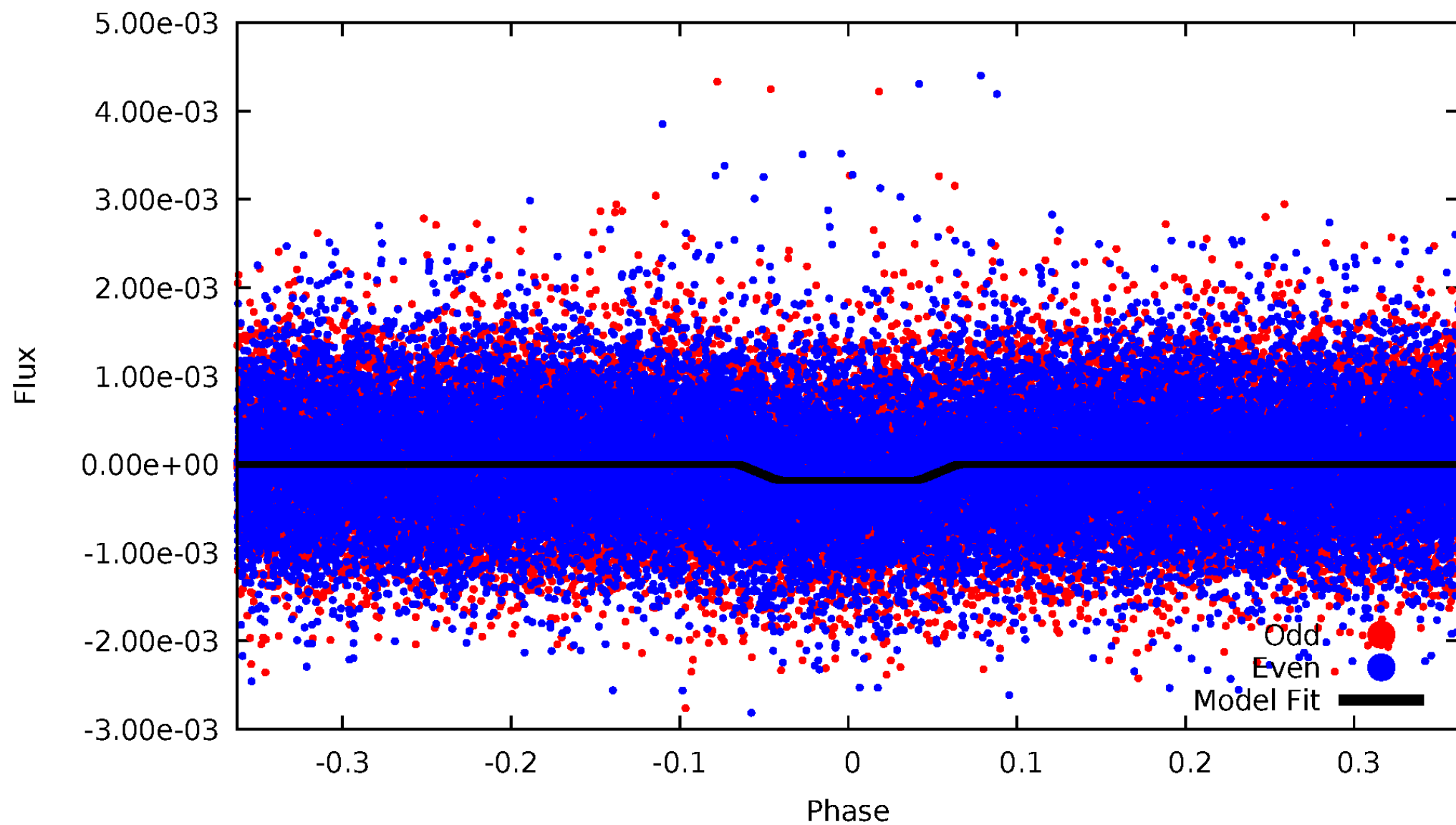
# DV Odd/Even

TCE 007777522-01



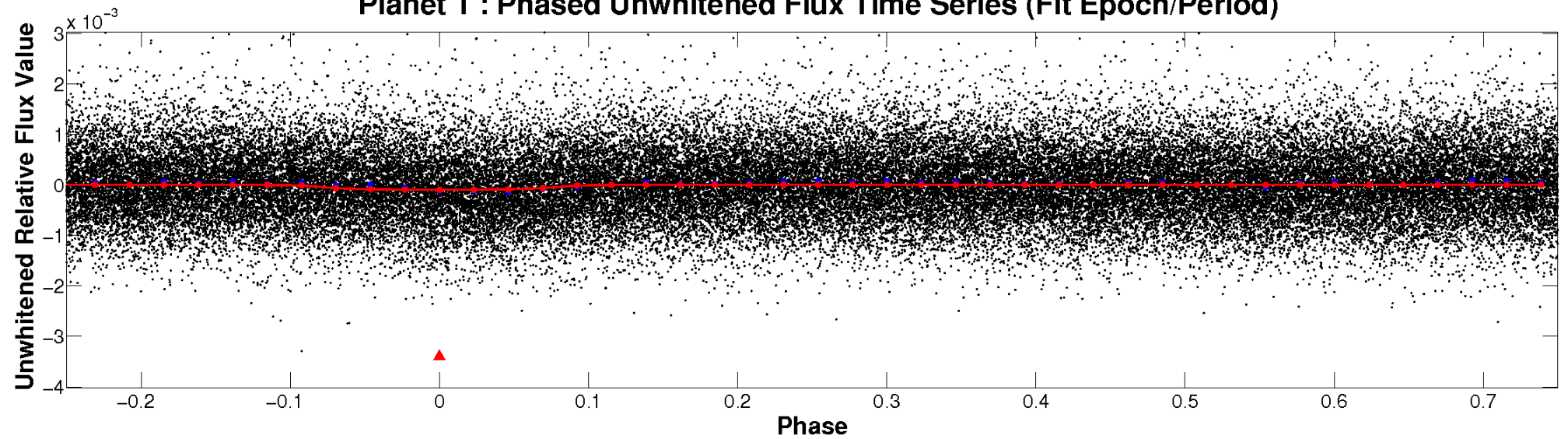
# ALT Odd/Even

TCE 007777522-01

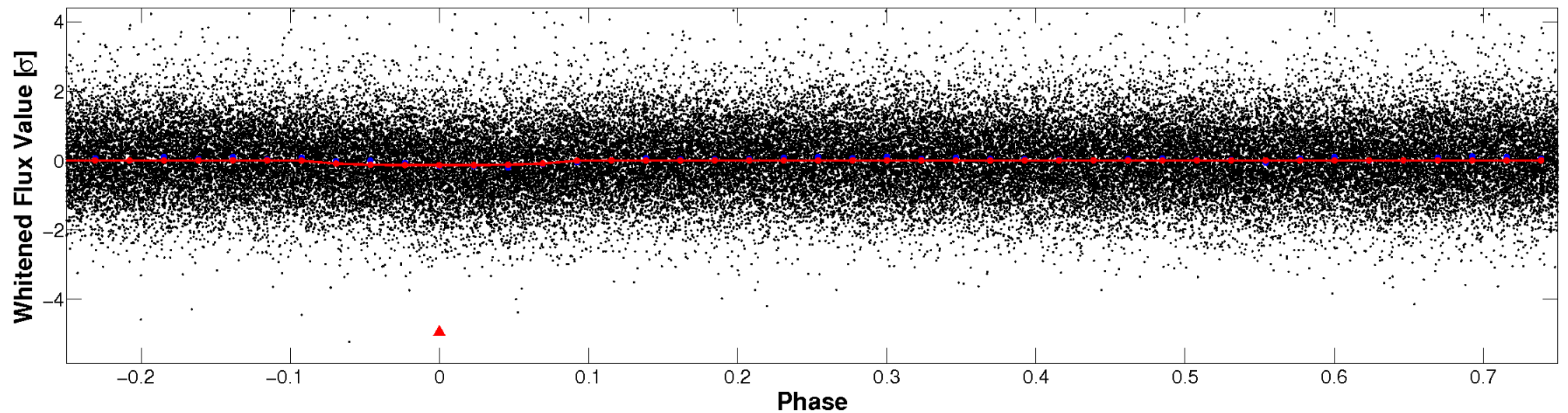


# Non-Whitened Vs. Whitened Light Curve

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

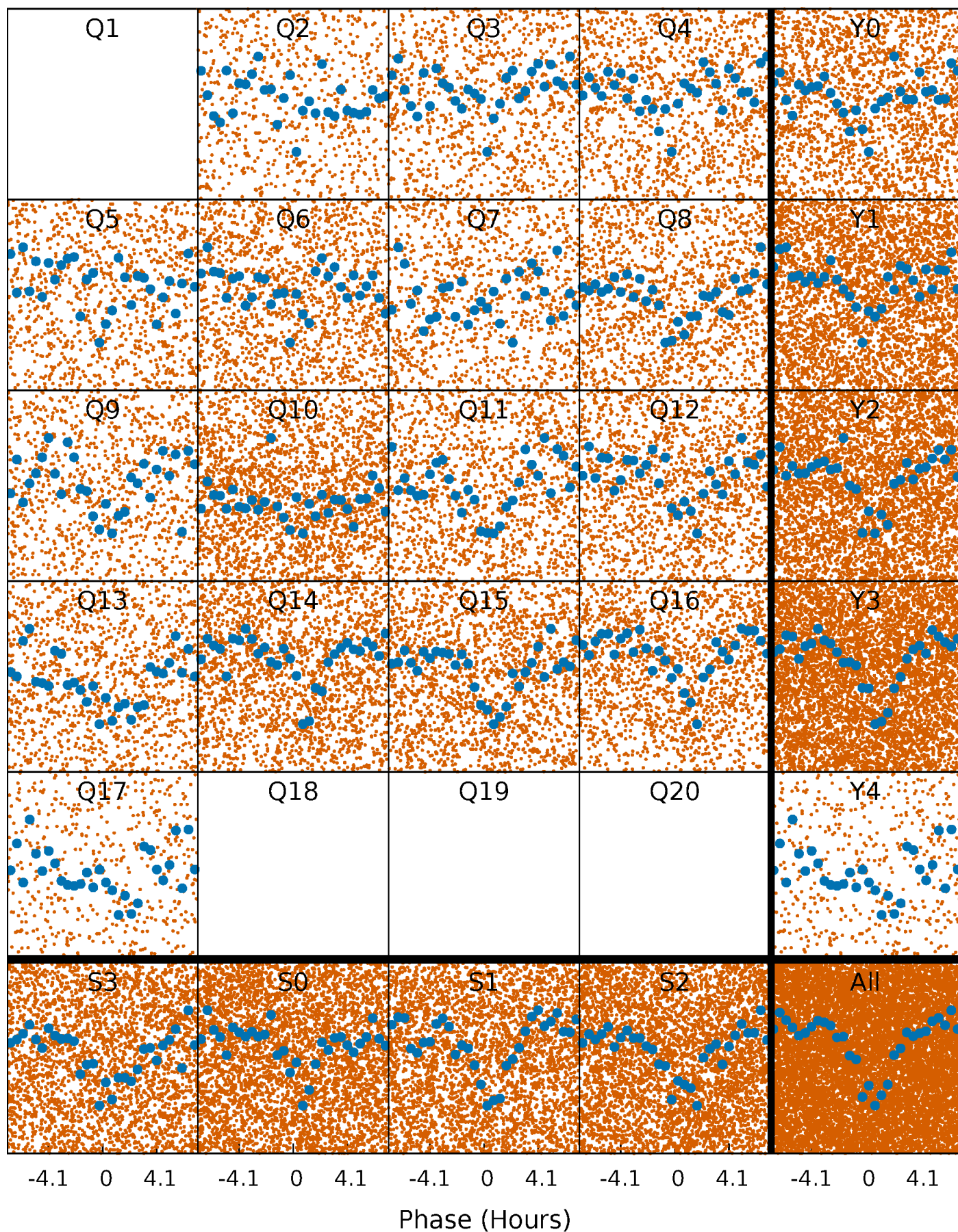


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

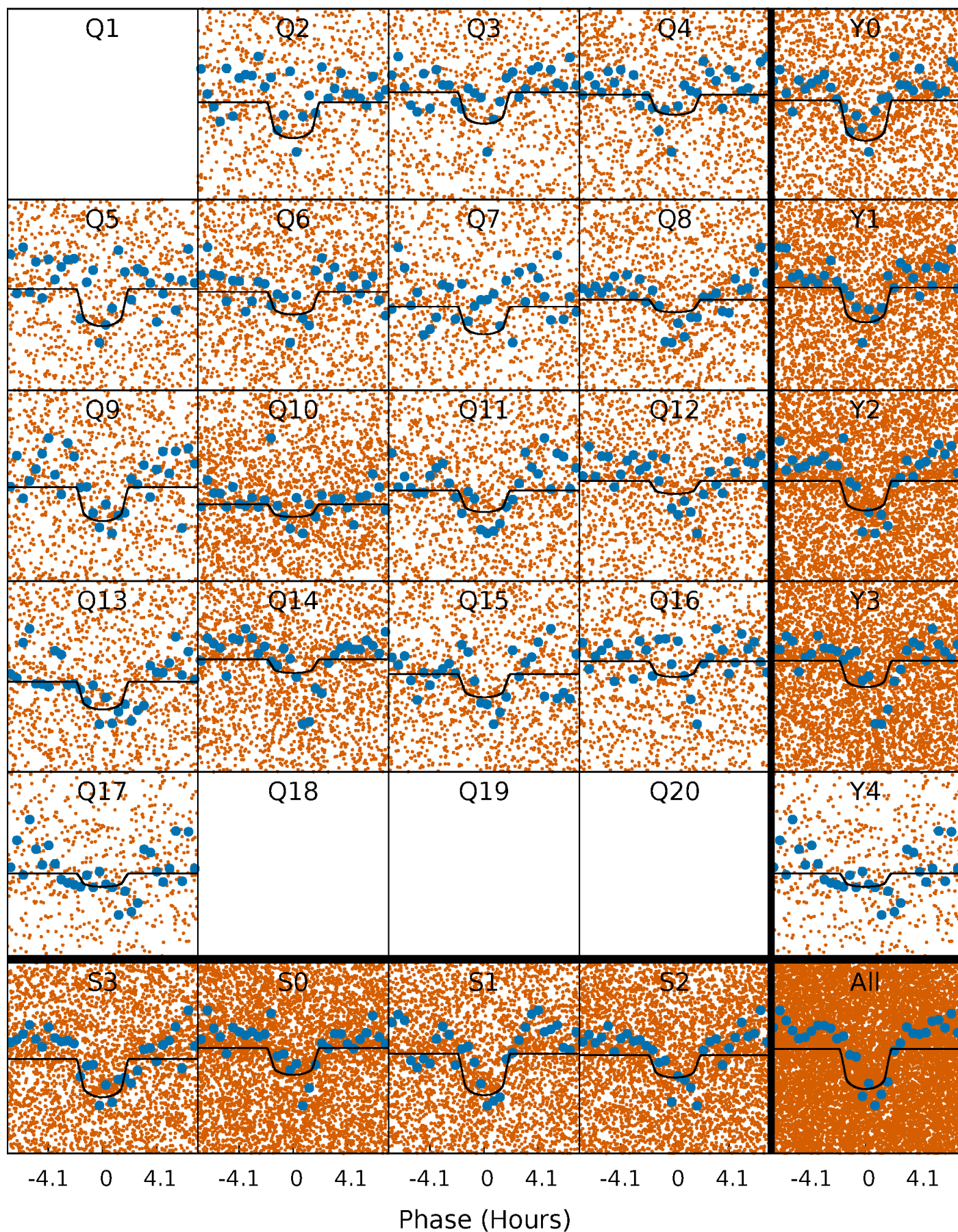
TCE 007777522-01 P= 0.885079 Days  $T_0=131.908850$  (BKJD)





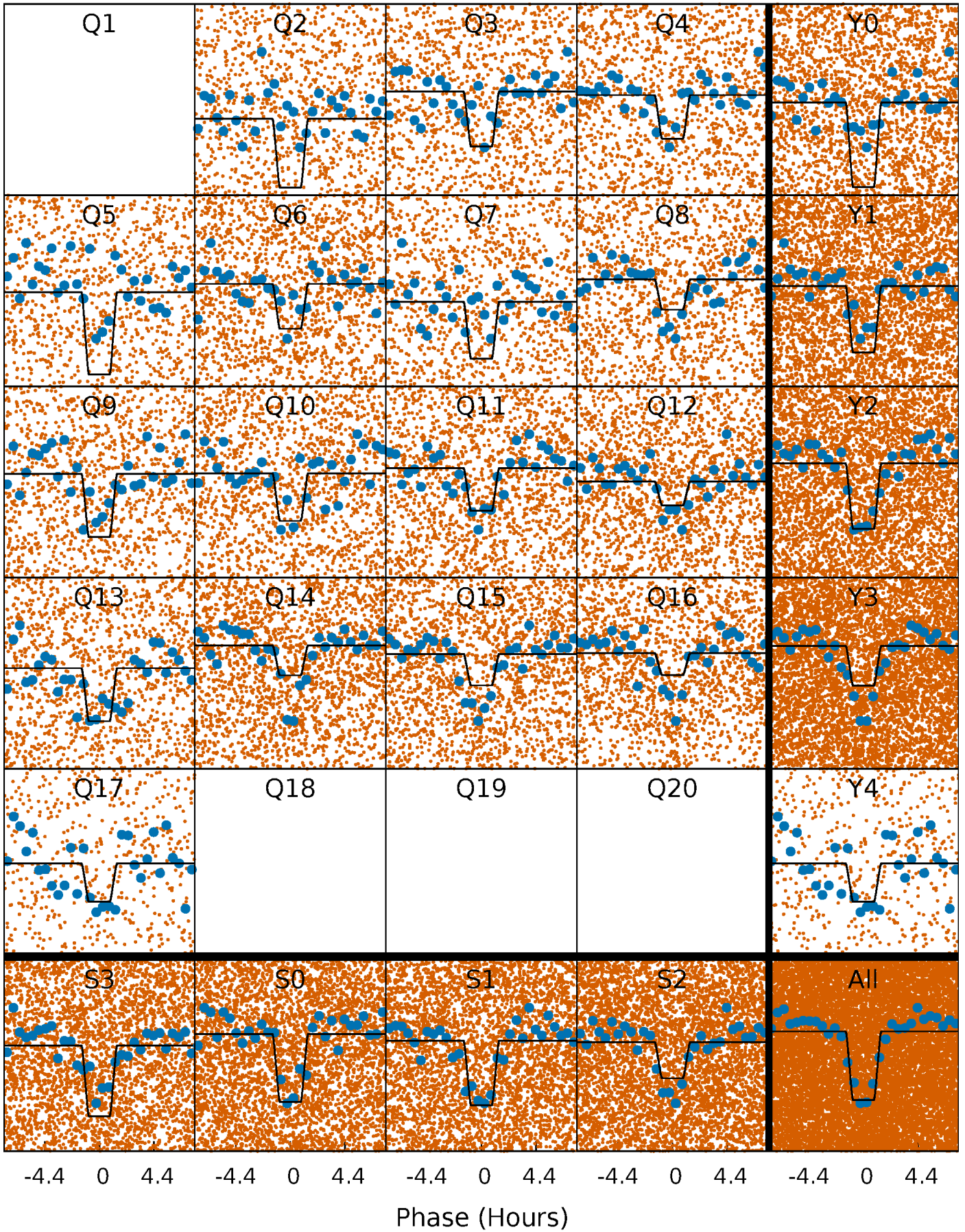
# DV Quarter-Phased Transit Curves

TCE 007777522-01 P= 0.885079 Days  $T_0=131.908850$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007777522-01 P= 0.885126 Days  $T_0=131.887541$  (BKJD)

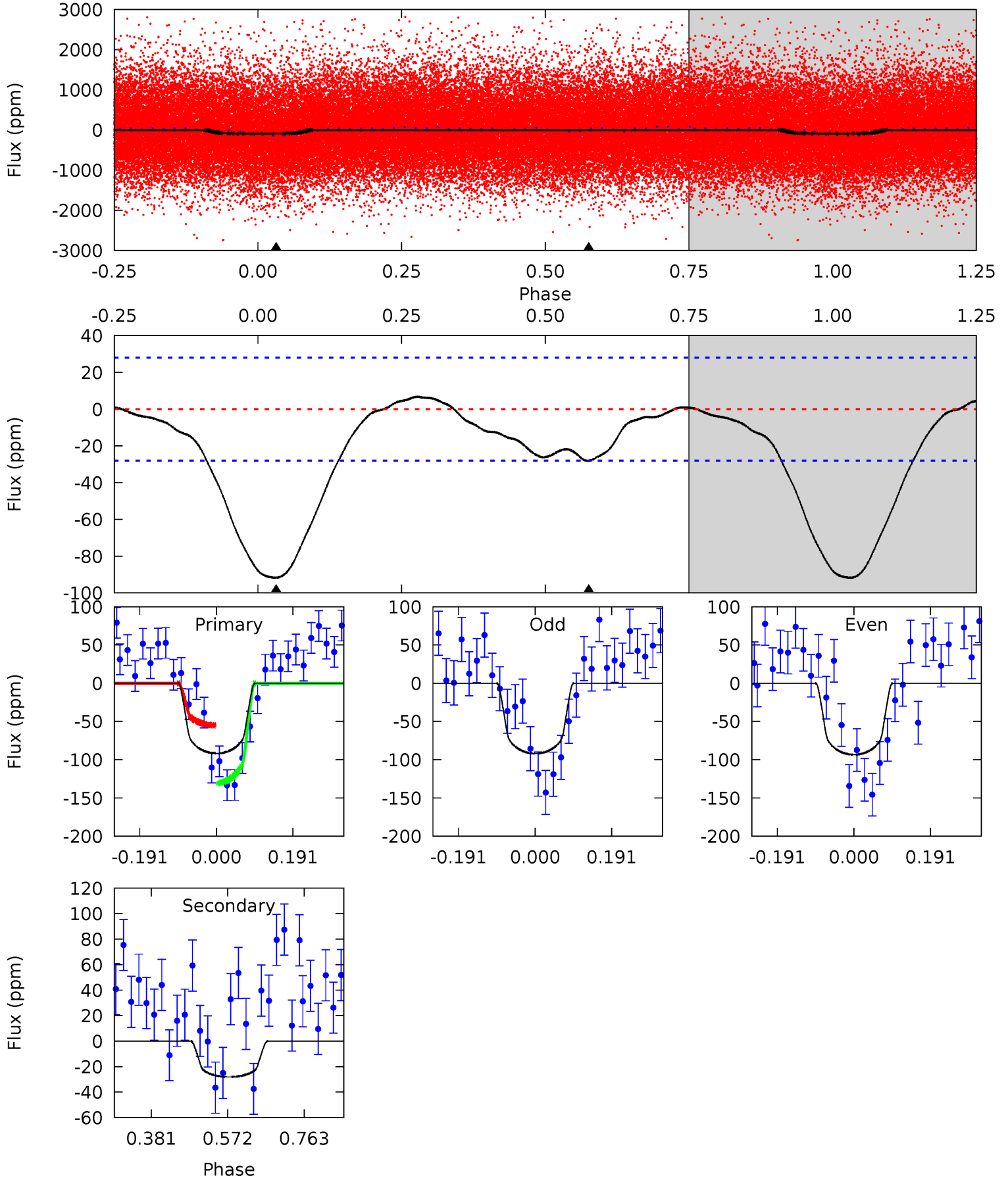




# DV Model-Shift Uniqueness Test

007777522-01, P = 0.885079 Days, E = 131.908850 Days

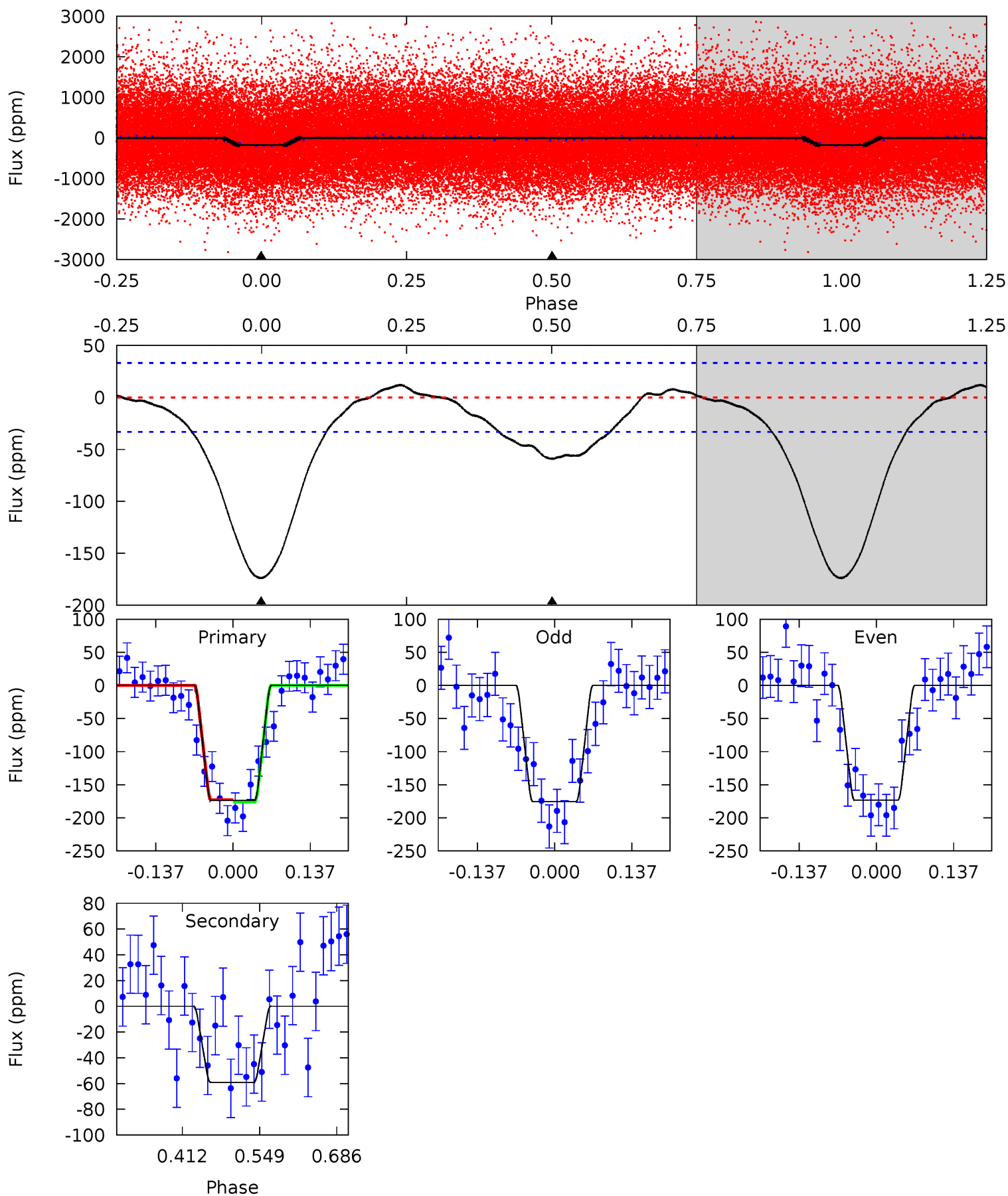
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.5	4.45	0	0	4.43	1.31	0.79	14.5	14.5	4.45	4.45	0.12	0.82	0.07	6.00



# Alt Model-Shift Uniqueness Test

007777522-01, P = 0.885126 Days, E = 131.887541 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
23.6	8.01	0	0	4.50	1.49	1.02	23.6	23.6	8.01	8.01	0.14	0.98	0.06	0.25





### Stellar Parameters For KIC 007777522

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5792^{+172}_{-190}$	$4.547^{+0.037}_{-0.213}$	$-0.140^{+0.300}_{-0.300}$	$0.864^{+0.267}_{-0.071}$	$0.959^{+0.109}_{-0.121}$	$2.094^{+0.427}_{-1.101}$
	+3%/-3%	+1%/-5%	+214%/-214%	+31%/-8%	+11%/-13%	+20%/-53%
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 007777522-01 / KOI 4415.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-28 \pm 6$	$1.06^{+0.64}_{-0.58}$	$2550^{+187}_{-124}$	$4230^{+1814}_{-720}$	$4.191^{+16.046}_{-2.615}$
Alt.	$-59 \pm 7$	$1.33^{+0.72}_{-0.60}$	$2552^{+196}_{-116}$	$4501^{+1358}_{-660}$	$5.827^{+13.224}_{-3.463}$

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

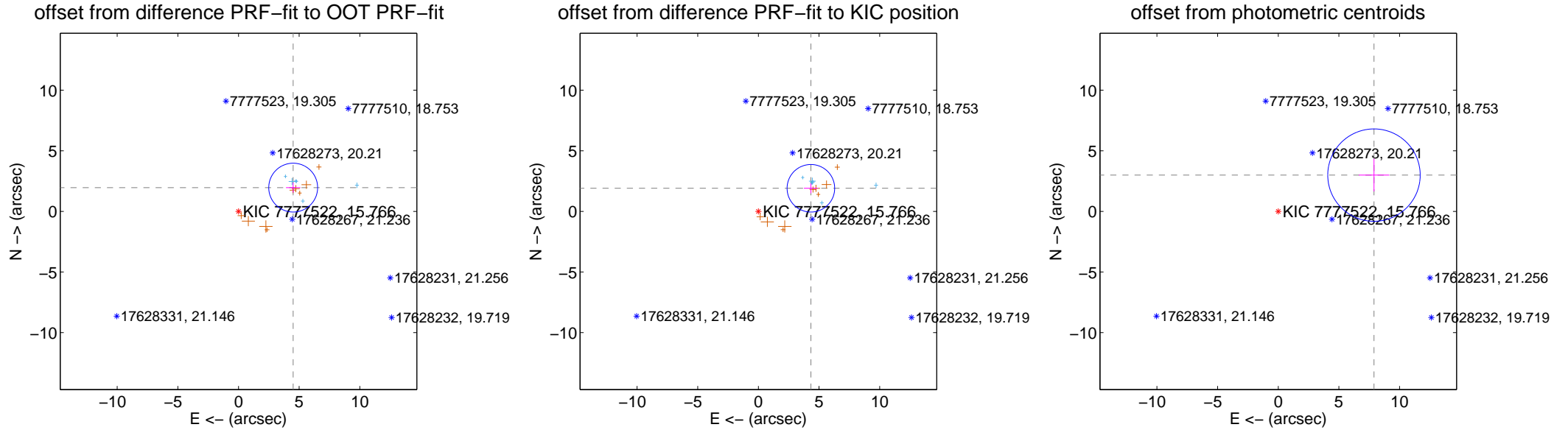
## DV Centroid Data

Supplemental centroid analysis for 007777522-01. Kepler magnitude: 15.77. Transit SNR 11.70

There are 6 quarters with good PRF difference image offsets

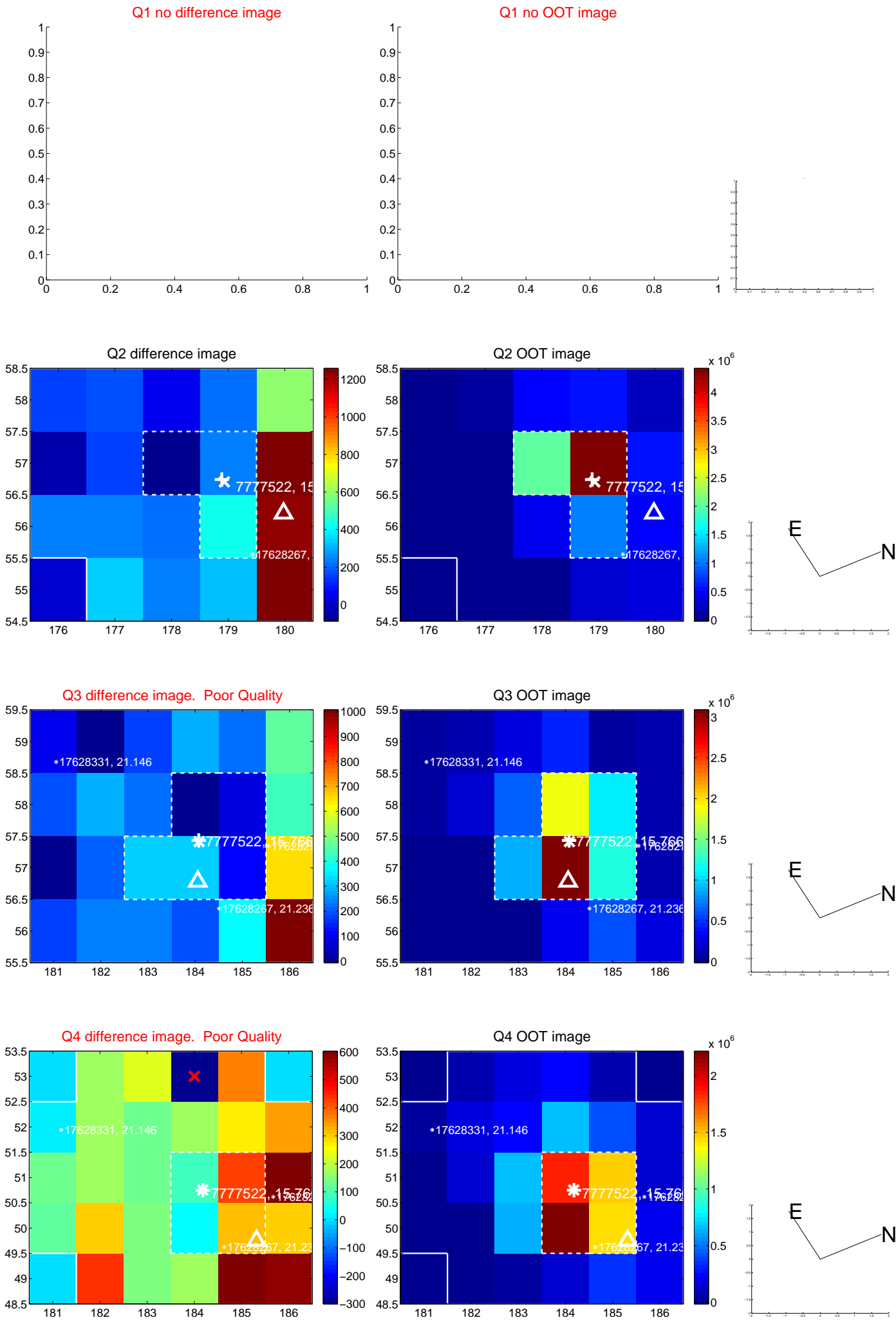
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.915 \pm 0.671$	<b>7.32</b>	$-4.507 \pm 0.593$	$1.962 \pm 0.413$
PRF-fit source offset from KIC position	$4.729 \pm 0.654$	<b>7.23</b>	$-4.328 \pm 0.573$	$1.907 \pm 0.404$
photometric centroid source offset	$8.44 \pm 1.27$	<b>6.65</b>	$-7.89 \pm 1.26$	$2.99 \pm 1.35$

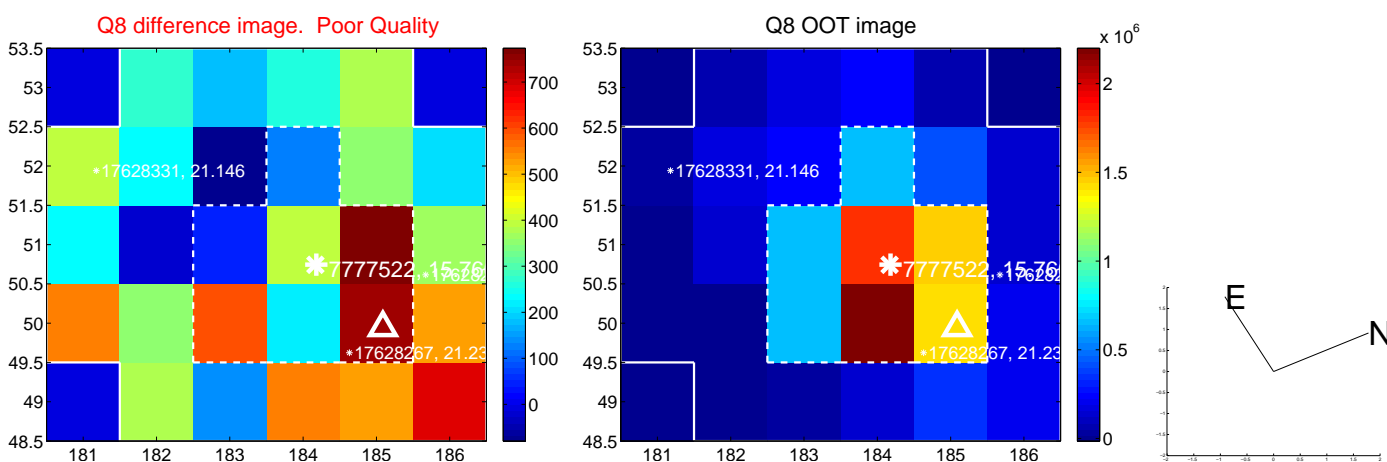
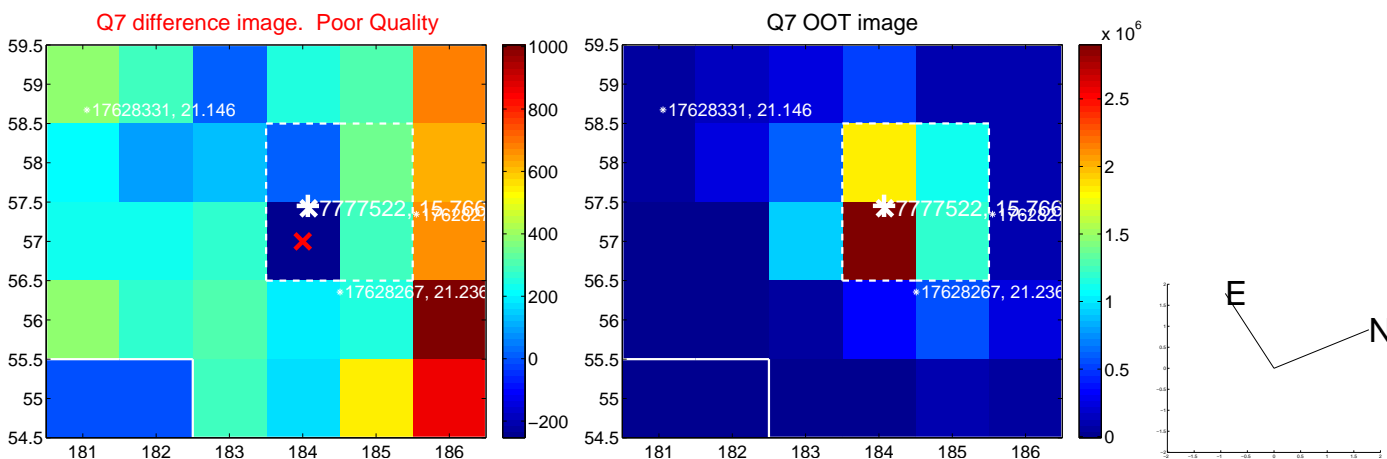
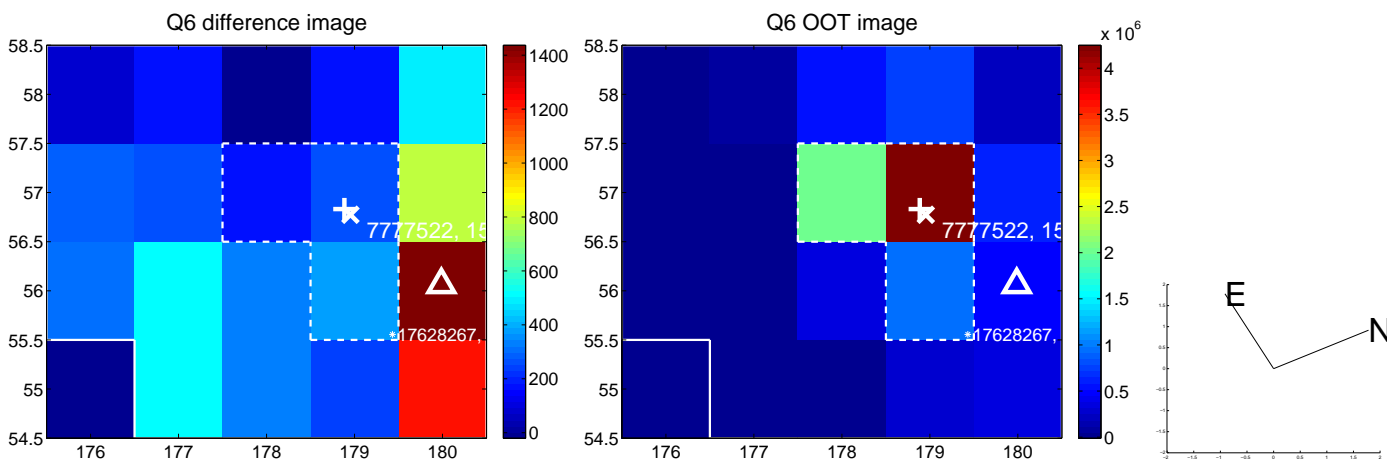
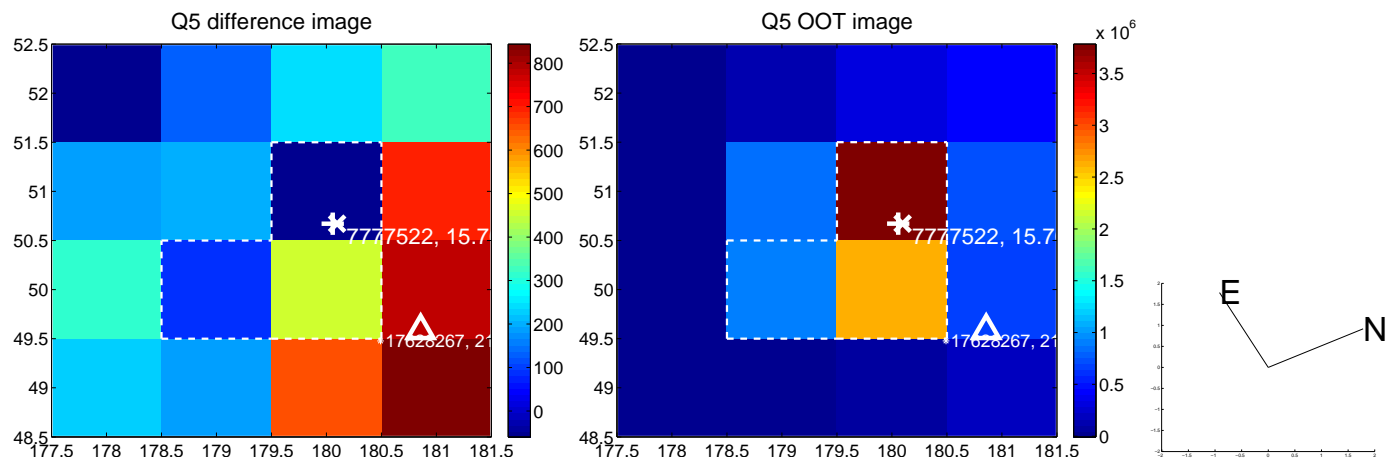


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

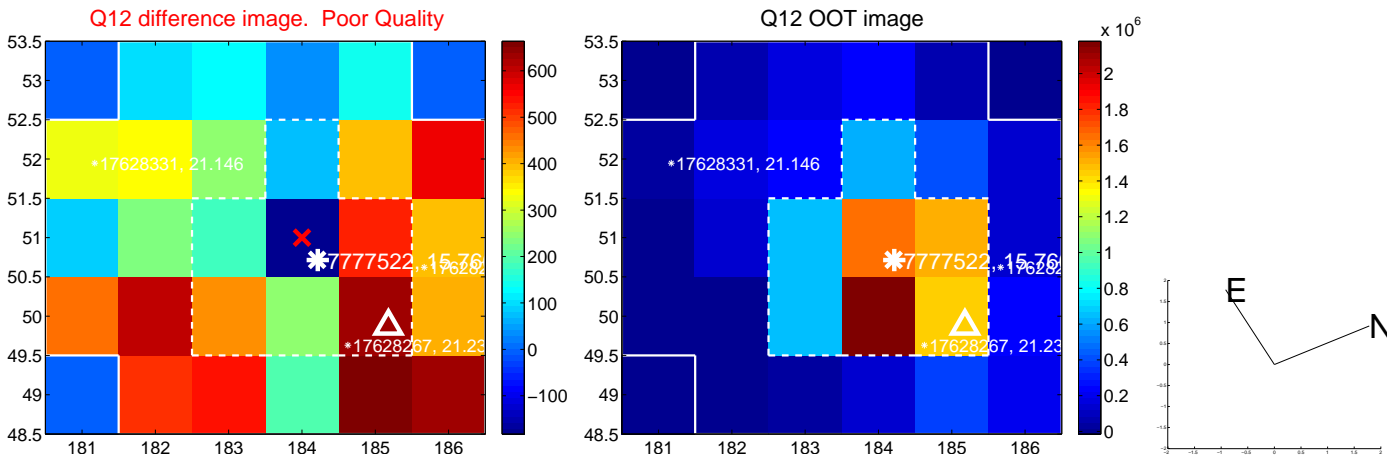
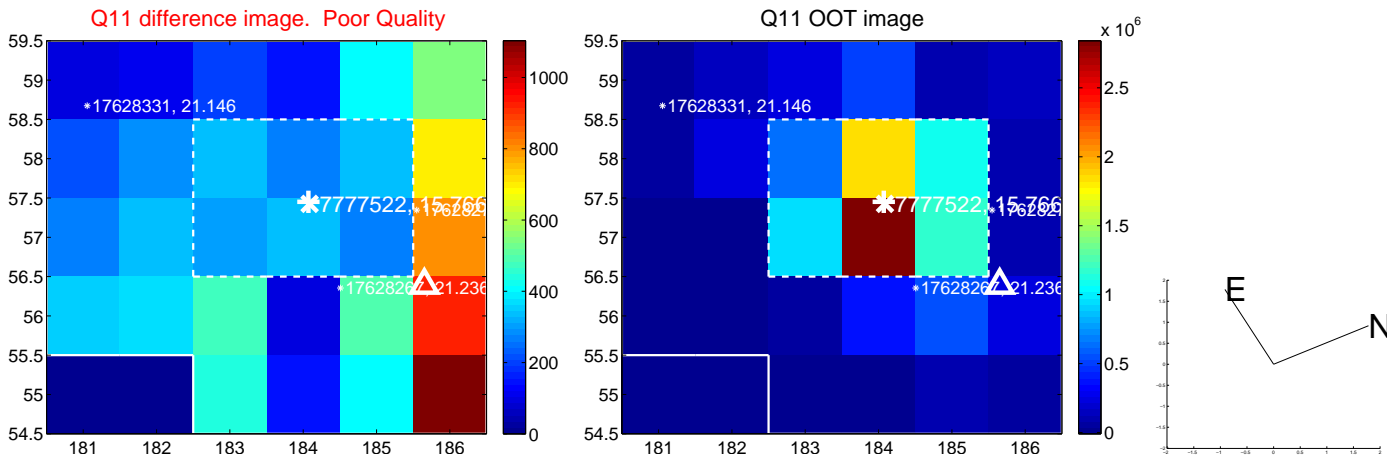
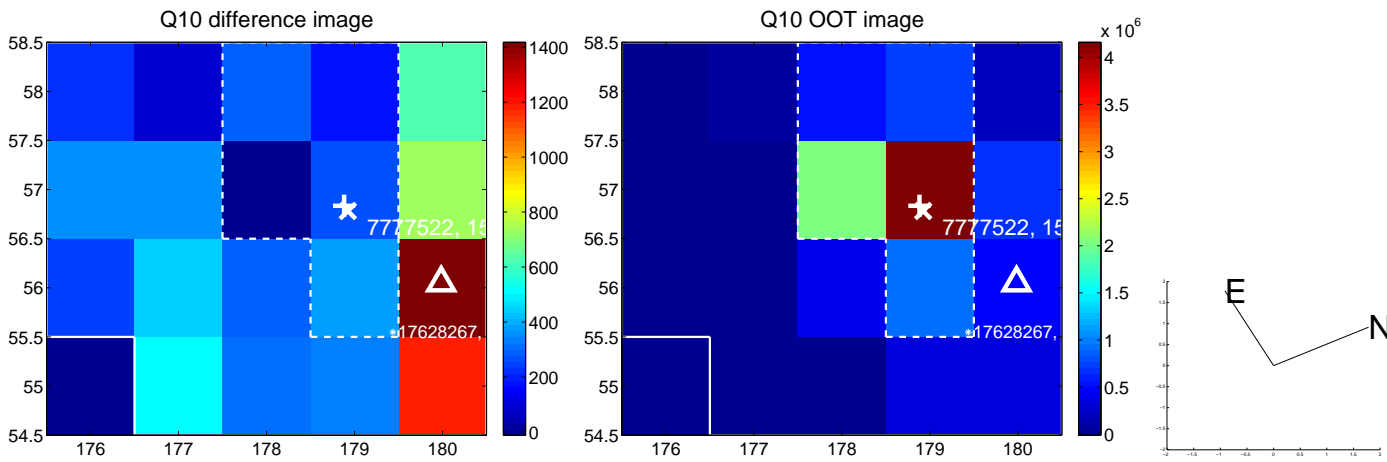
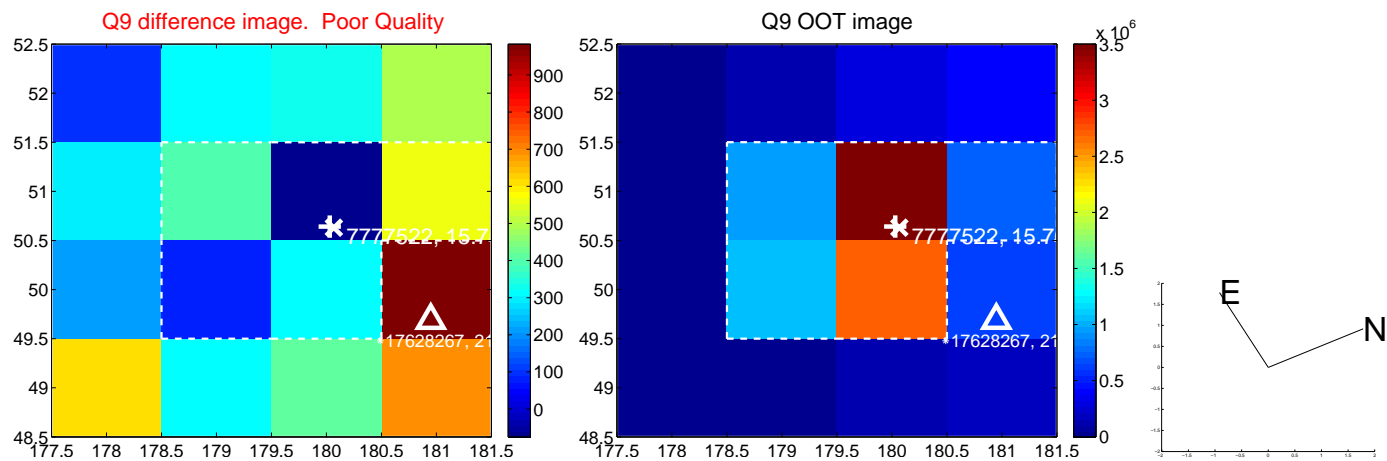


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

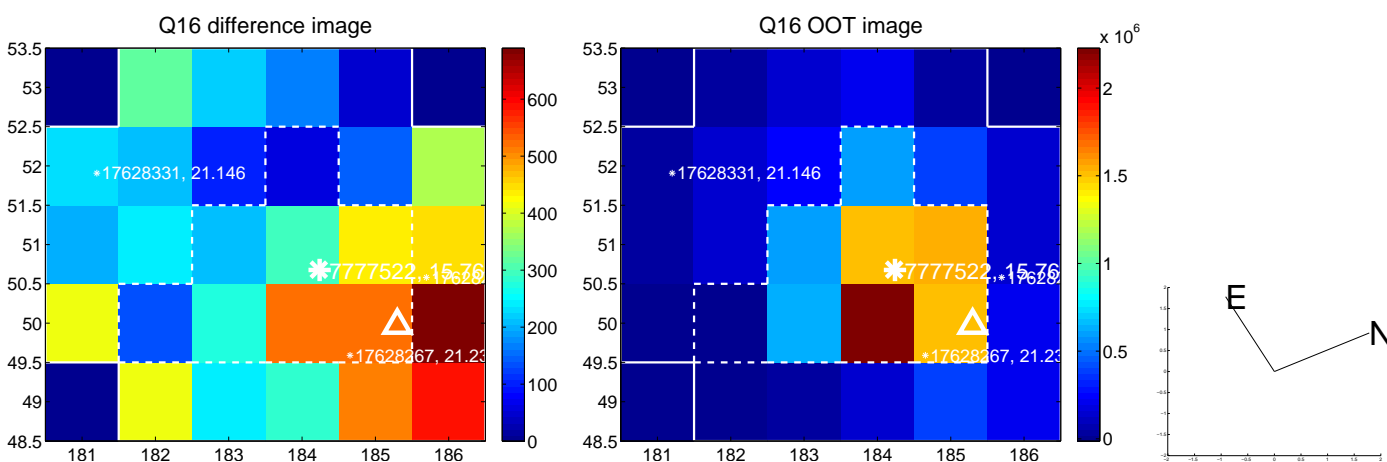
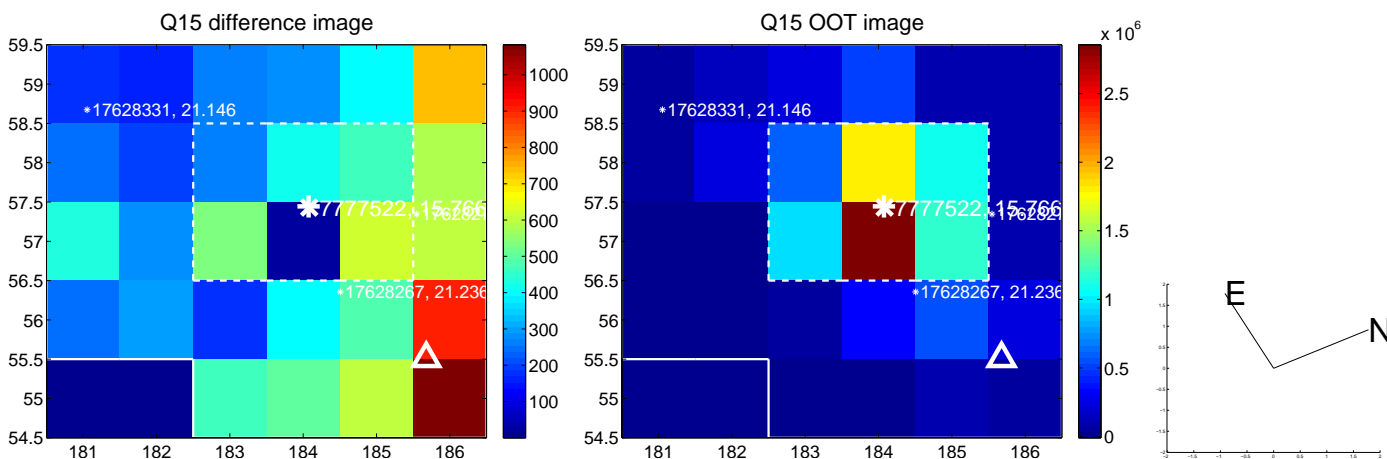
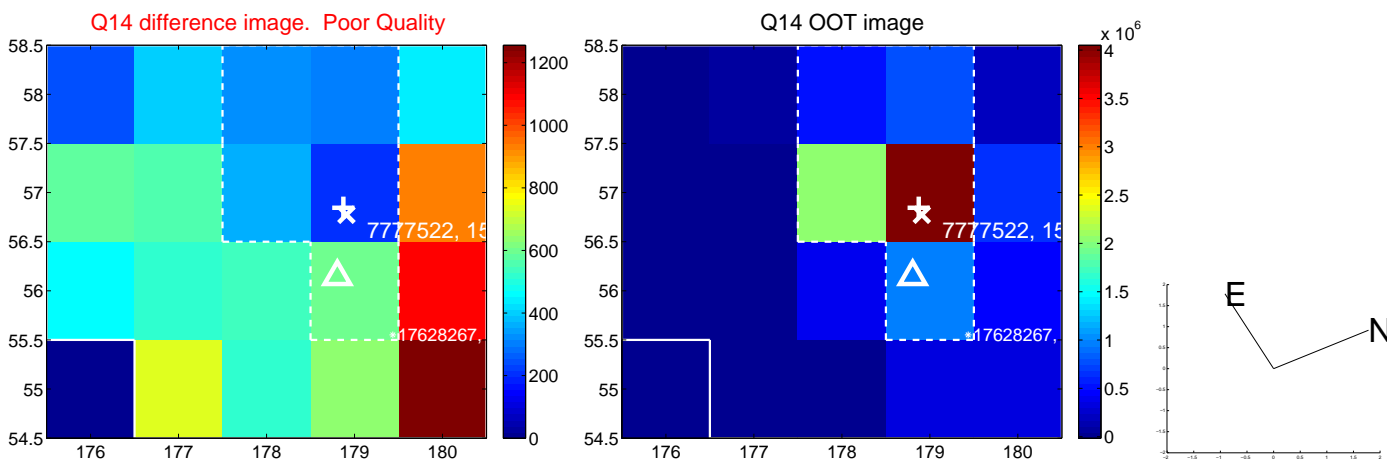
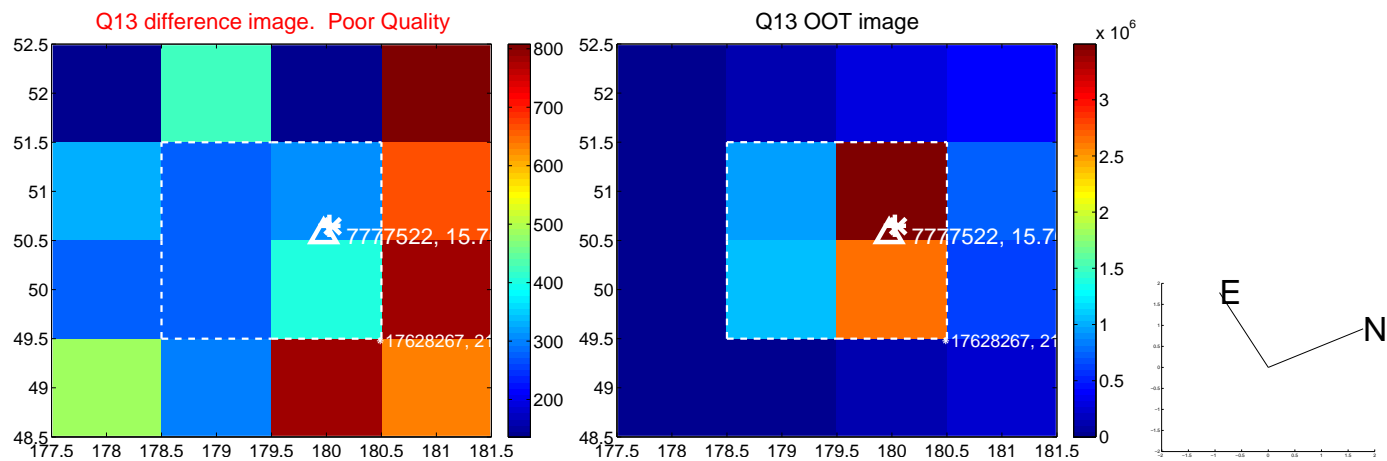




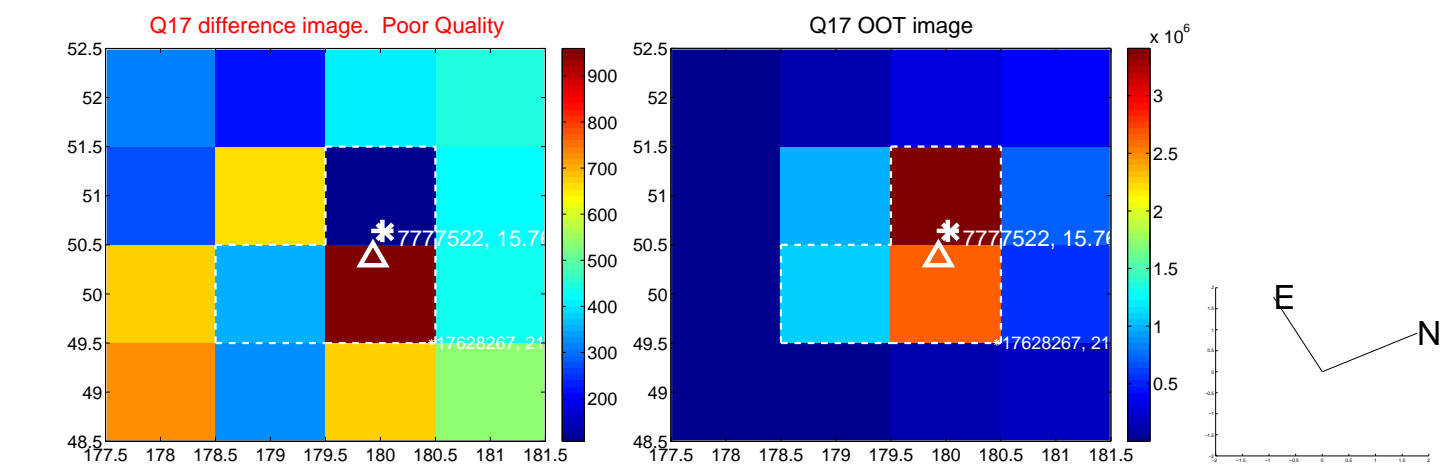
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



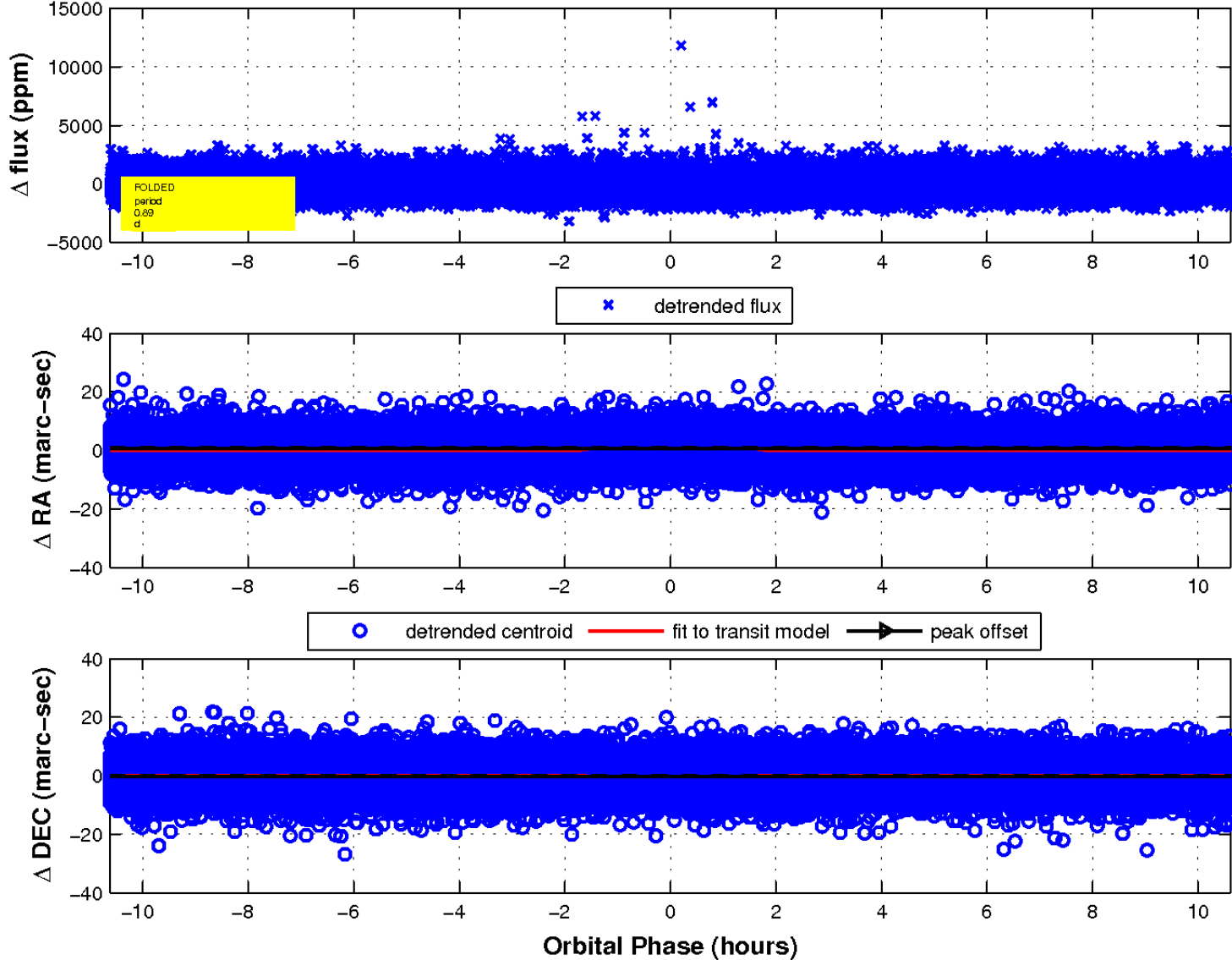
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



# UKIRT Image

Declination

