

# KIC 010226382

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010226382-01	OBS	No	0.660610	131.693450	10.7	4.878	8.3	5.2	0.78	5227	0.25	2021.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010226382-01	OBS	FP	0.00	1	0	1	1	LPP_DV—HALO_GHOST—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.

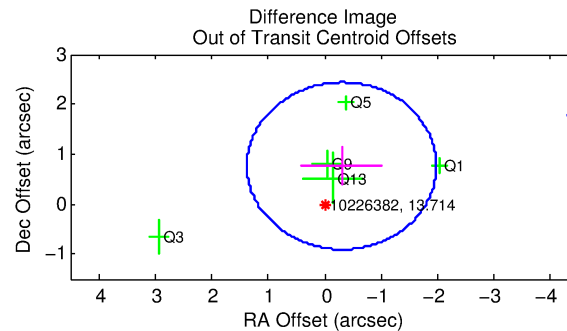
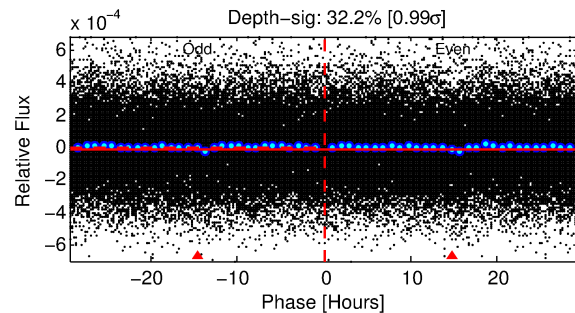
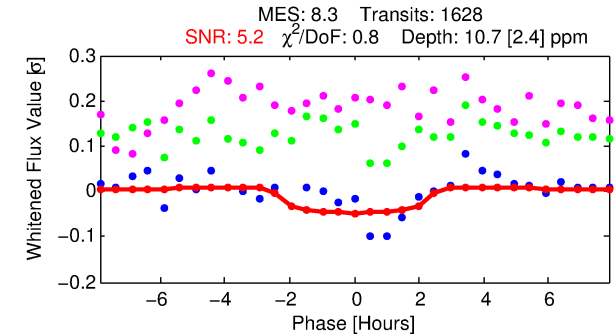
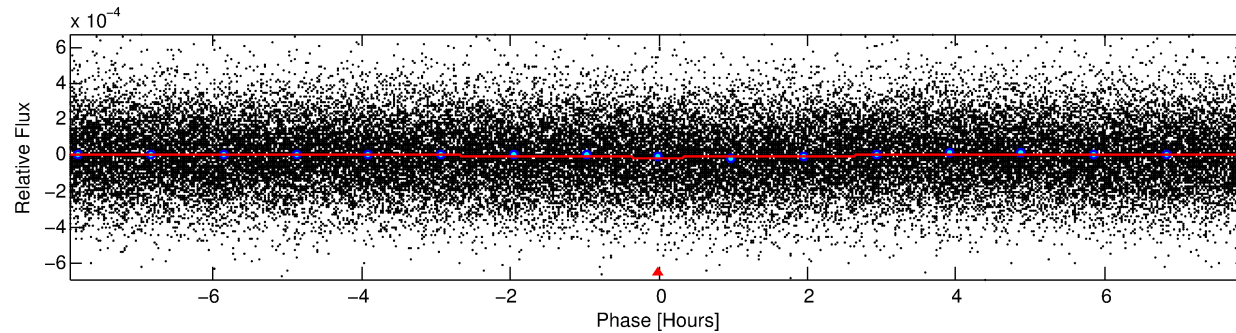
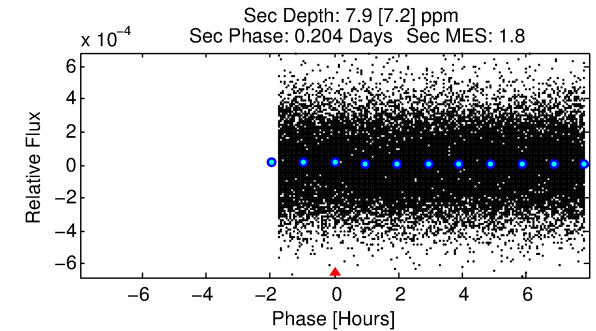
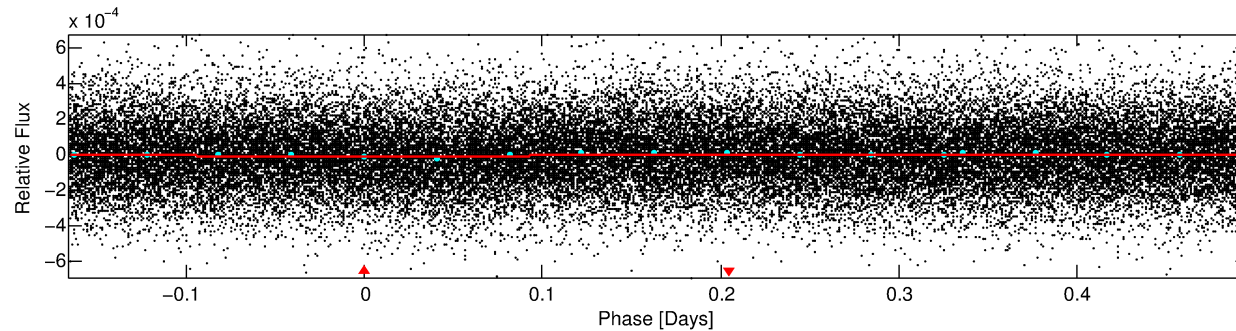
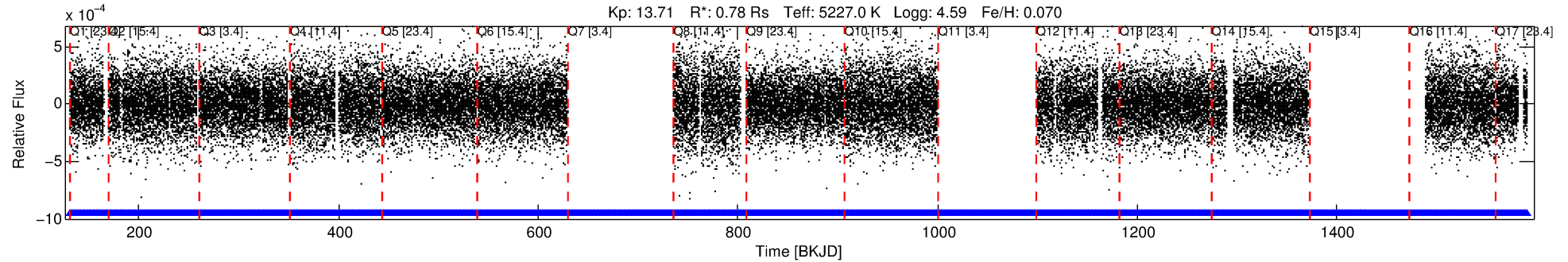
## Ephemeris Match Information For 010226382-01

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	$\sigma_P$	$\sigma_T$
010226382-01	10226382	010226451-01	10226451	1:1	42.1	10	3	14.95	13.72	3.18	Direct-PRF	1	3.18	2.47

**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: 10226382 Candidate: 1 of 1 Period: 0.661 d



## DV Fit Results:

Period = 0.66061 [0.00002] d  
Epoch = 131.6934 [0.0099] BKJD  
Rp/R\* = 0.0029 [0.0059]  
a/R\* = 1.22 [2.86]  
b = 0.11 [65.97]  
Seff = 2021.48 [430.08]  
Teq = 1710 [91] K  
Rp = 0.25 [0.50] Re  
a = 0.0142 [0.0017] AU  
Ag = 14.10 [58.13] [0.23σ]  
Teff = 5122 [5278] K [0.65σ]

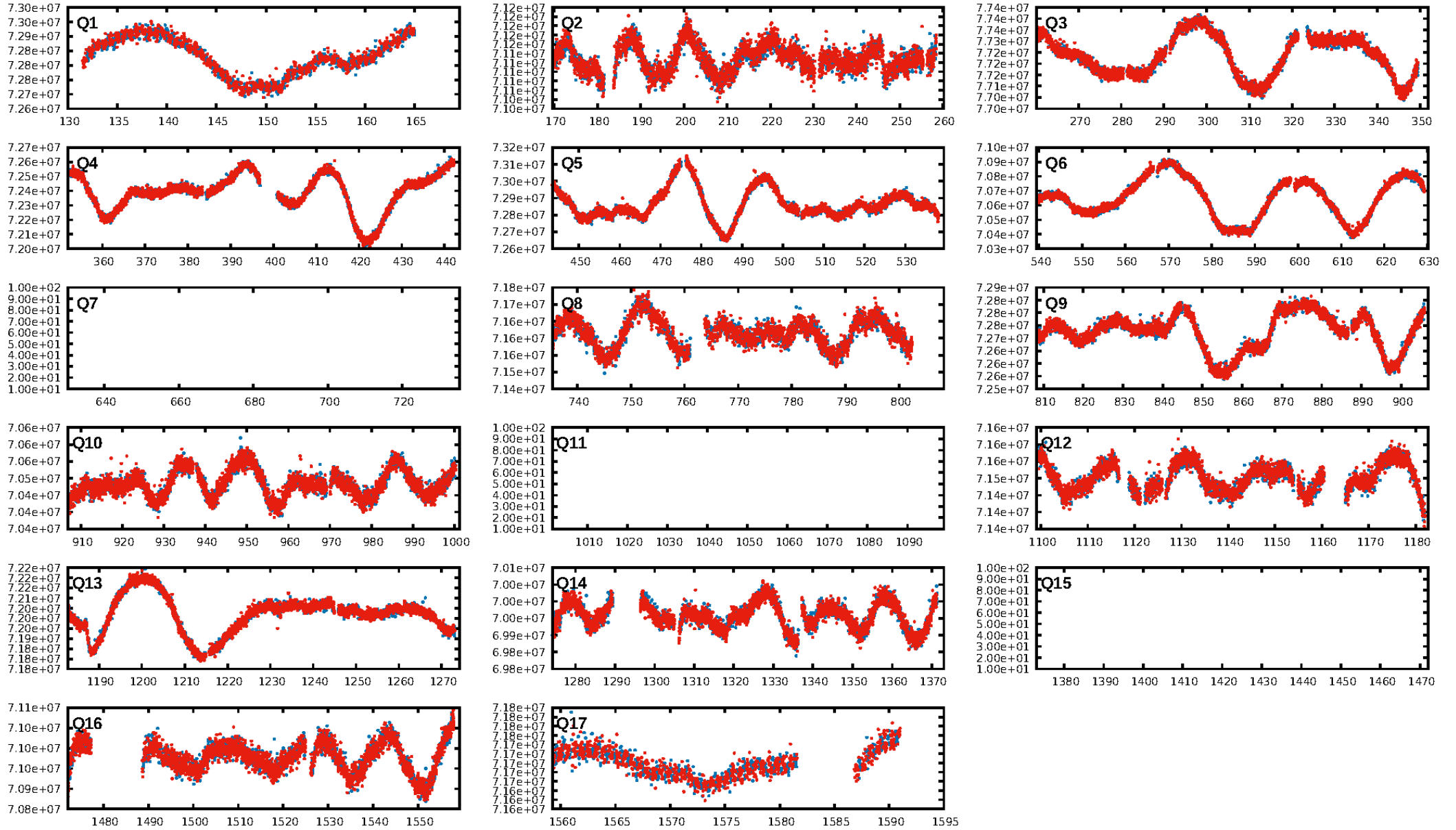
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 8.38e-20  
RollingBand-fgt: 1.00 [1536/1536]  
GhostDiagnostic-chr: -0.1325  
Centroid-sig: 0.1%  
Centroid-so: 4.263 arcsec [1.73σ]  
OotOffset-rm: 0.822 arcsec [1.47σ]  
KicOffset-rm: 0.706 arcsec [1.47σ]  
OotOffset-st: 0/1/0/4 [5]  
KicOffset-st: 0/1/0/4 [5]  
DiffImageQuality-fgm: 0.80 [4/5]  
DiffImageOverlap-fno: 1.00 [14/14]

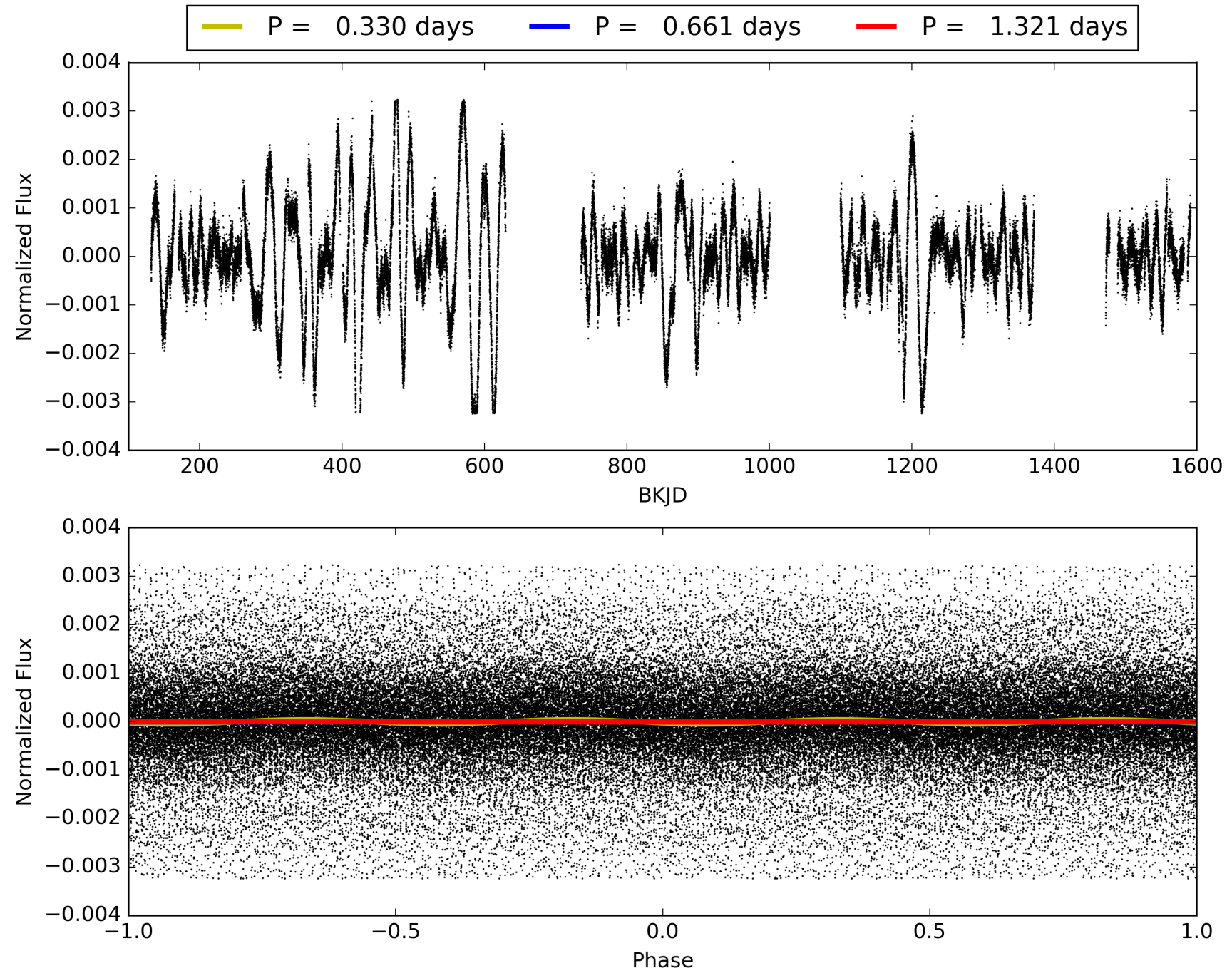
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:23:59 Z

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

# TCE 010226382-01, PDC Light Curves

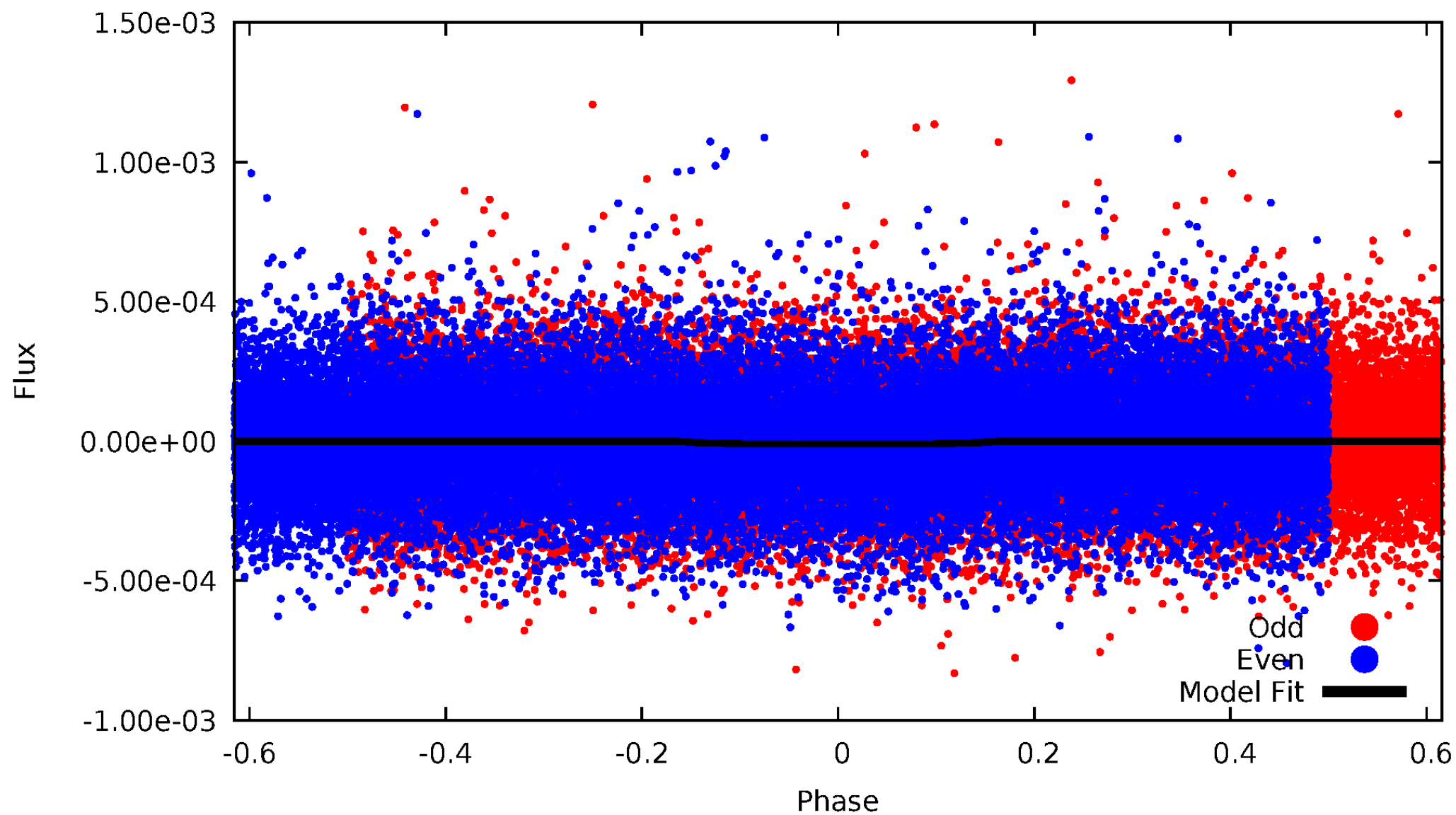


TCE 010226382-01



# DV Odd/Even

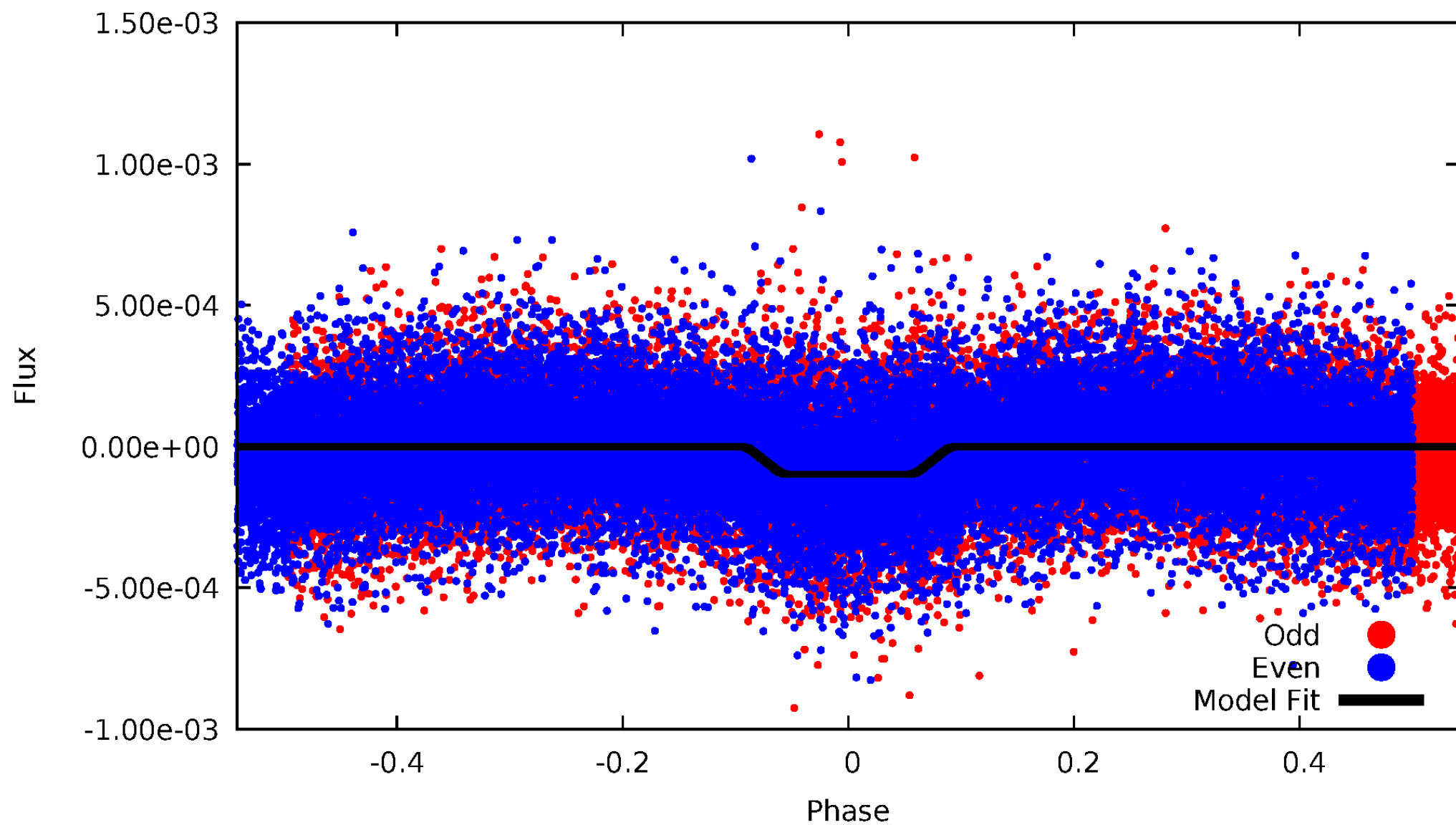
TCE 010226382-01



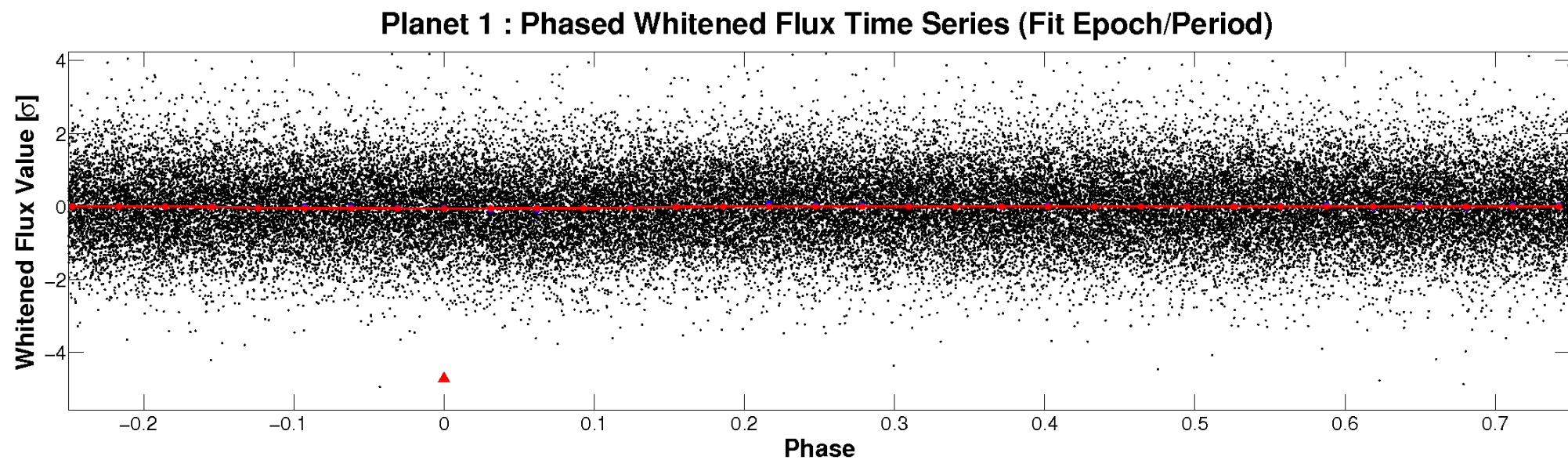
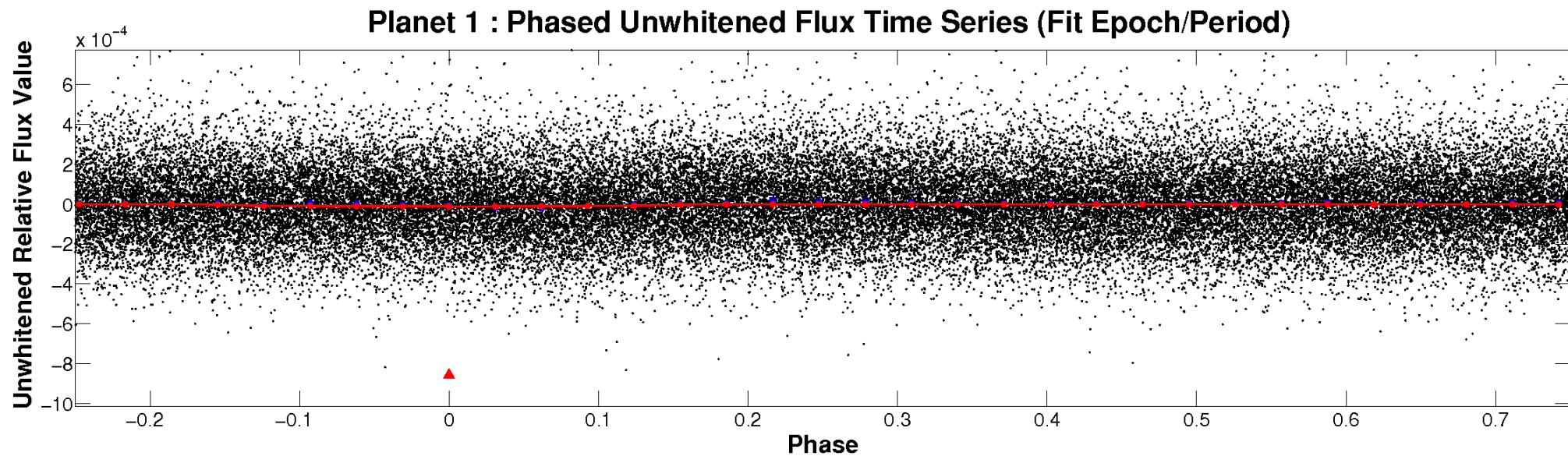


# ALT Odd/Even

TCE 010226382-01

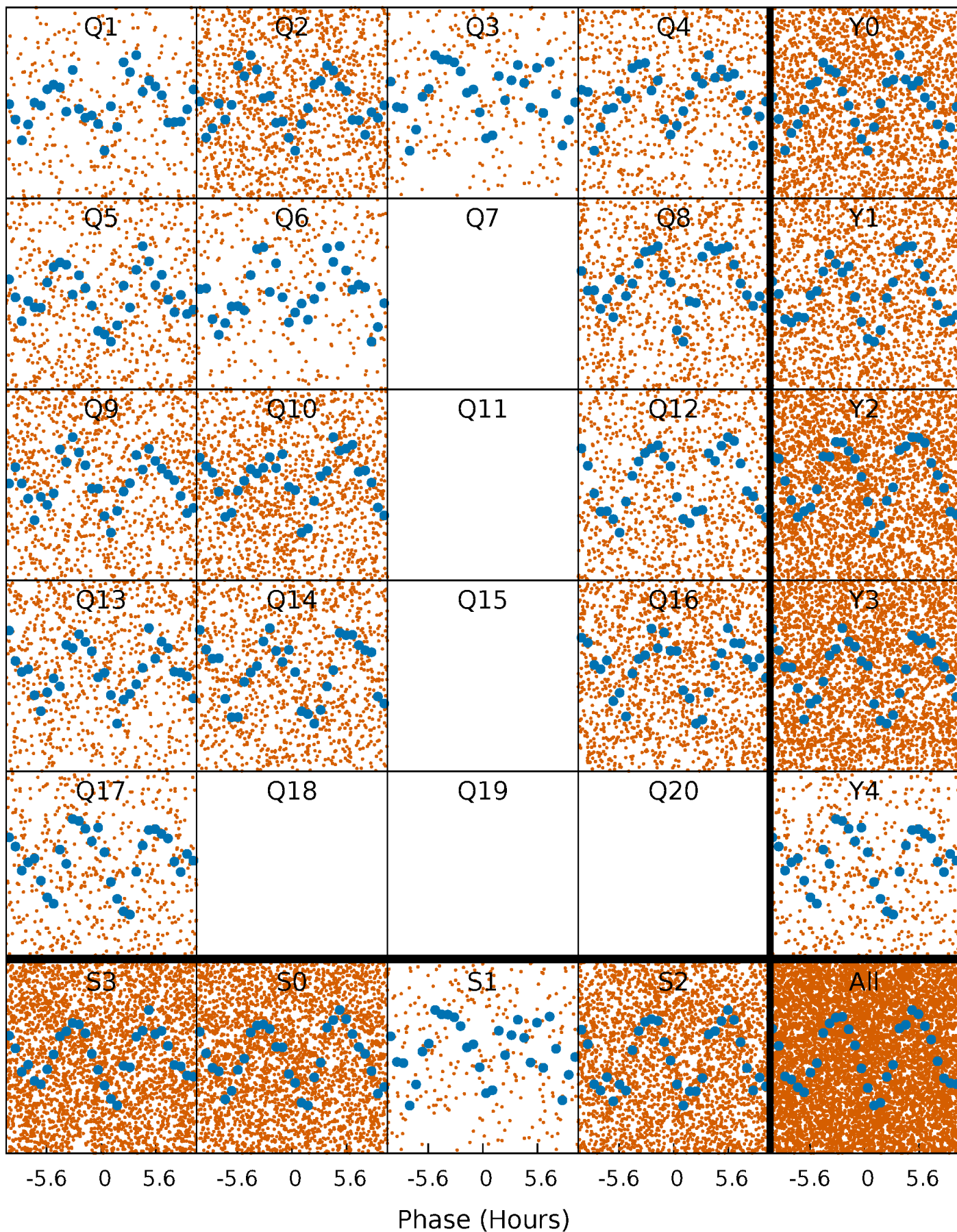


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

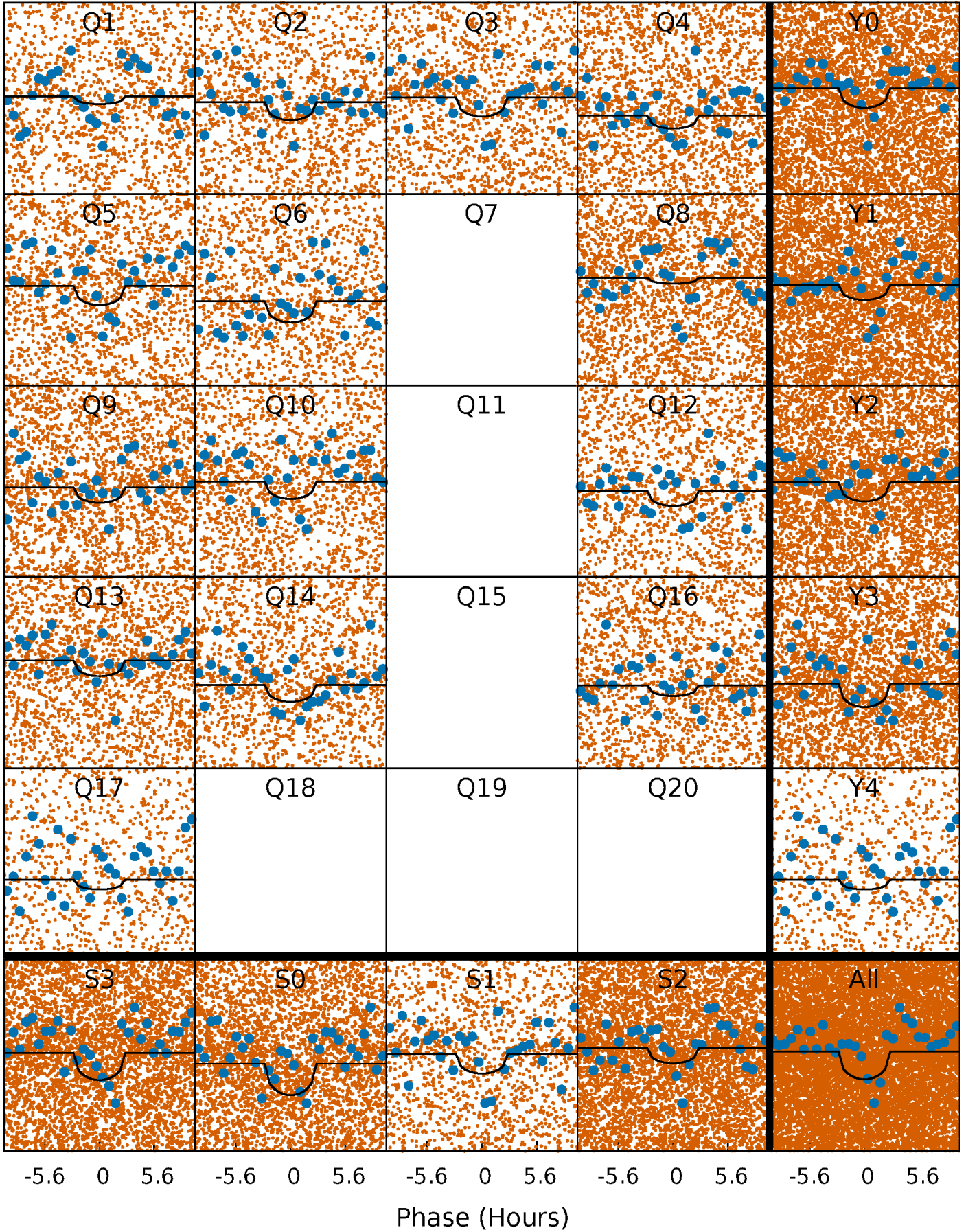
TCE 010226382-01 P= 0.660610 Days  $T_0=131.693450$  (BKJD)





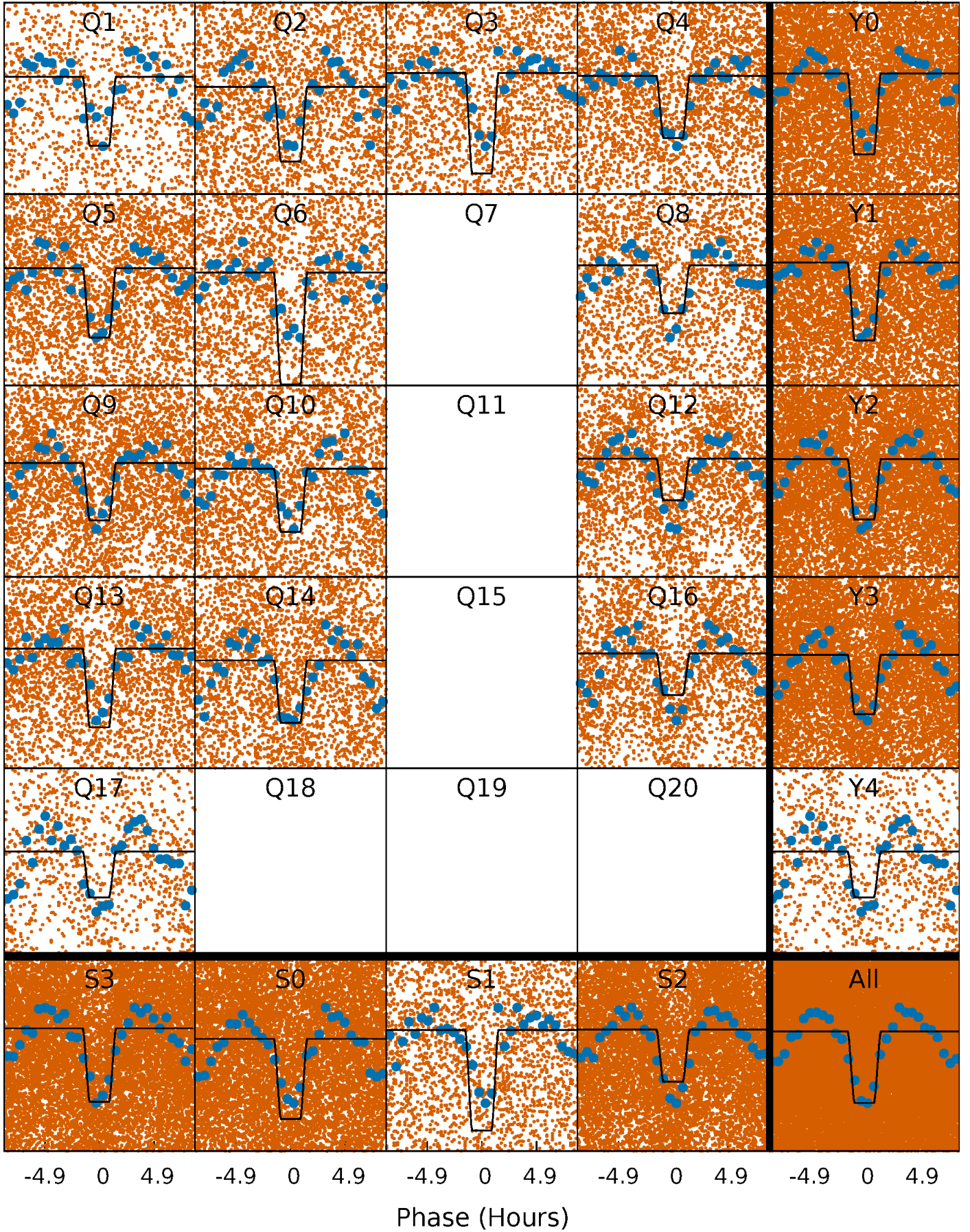
# DV Quarter-Phased Transit Curves

TCE 010226382-01 P= 0.660610 Days  $T_0=131.693450$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010226382-01 P= 0.660657 Days  $T_0=131.691923$  (BKJD)

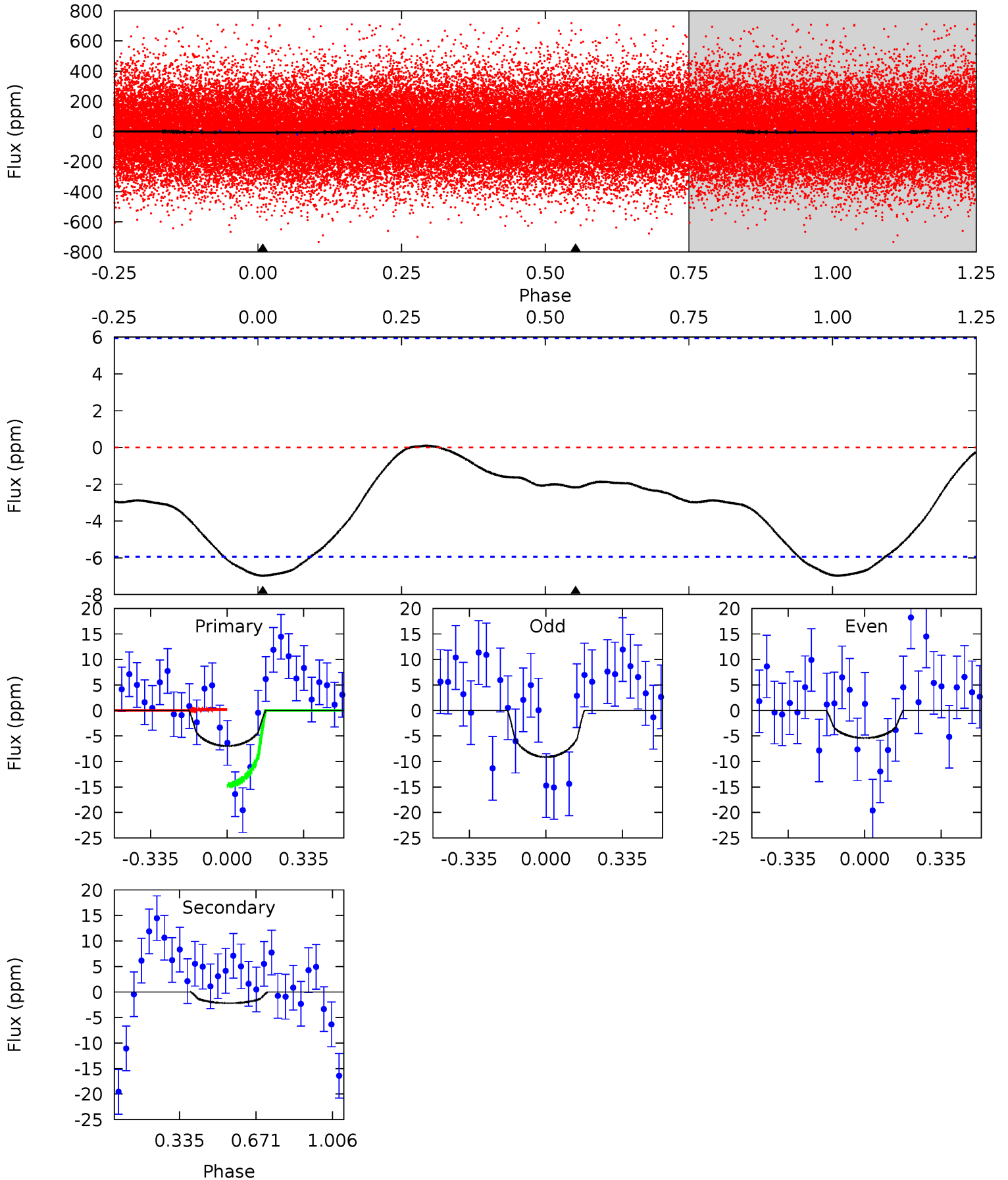




# DV Model-Shift Uniqueness Test

010226382-01, P = 0.660610 Days, E = 131.032840 Days

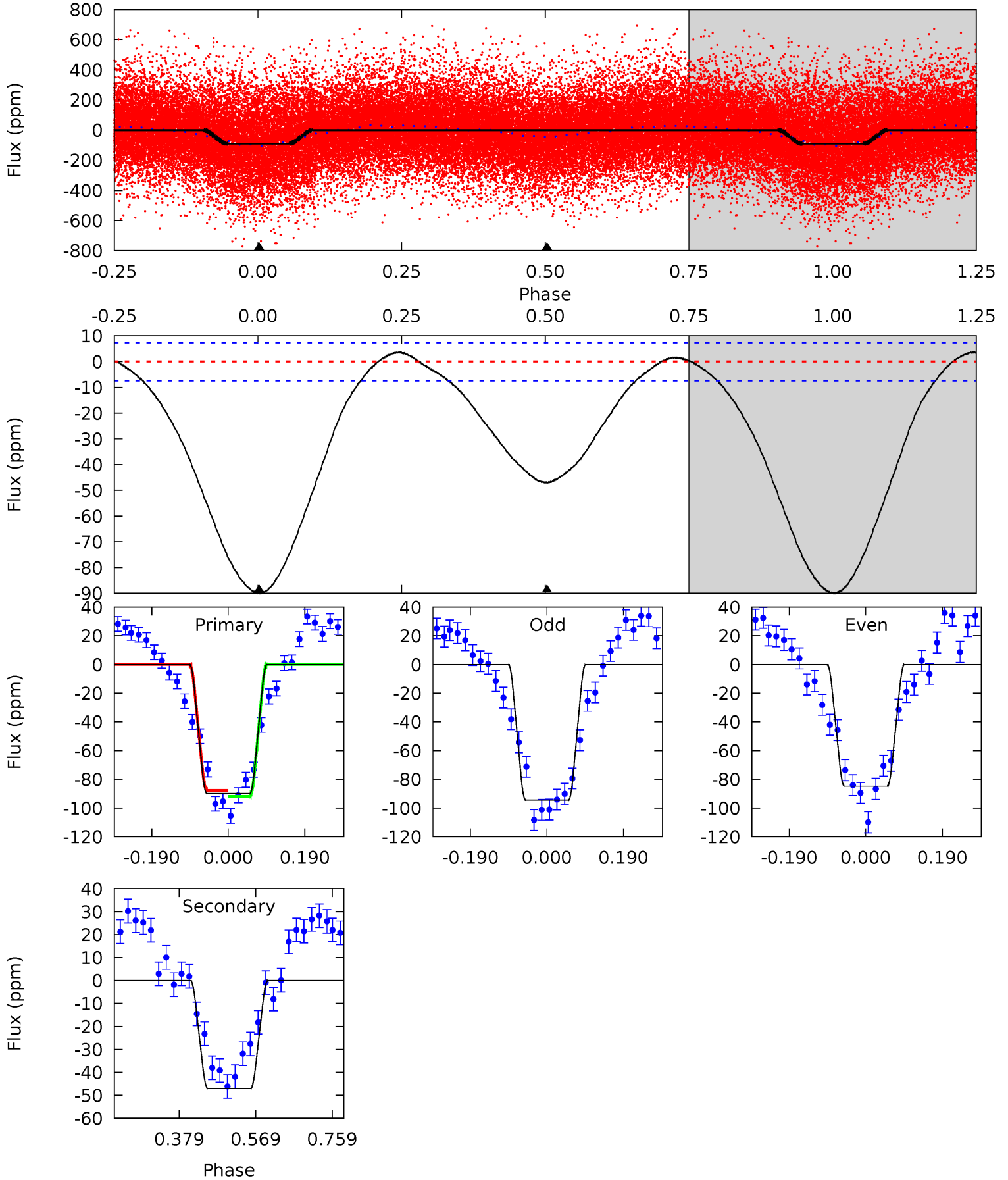
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.05	1.58	0	0	4.30	0.96	0.52	5.05	5.05	1.58	1.58	1.35	0.97	0.01	5.29



# Alt Model-Shift Uniqueness Test

010226382-01, P = 0.660657 Days, E = 131.031266 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
53.7	28.1	0	0	4.43	1.31	1.94	53.7	53.7	28.1	28.1	2.88	1.02	0.04	1.23





### Stellar Parameters For KIC 010226382

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5227^{+140}_{-155}$	$4.594^{+0.026}_{-0.097}$	$0.070^{+0.250}_{-0.300}$	$0.779^{+0.111}_{-0.056}$	$0.890^{+0.048}_{-0.096}$	$2.651^{+0.361}_{-0.845}$
	+3%/-3%	+1%/-2%	+357%/-429%	+14%/-7%	+5%/-11%	+14%/-32%
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 010226382-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-2 \pm 1$	$0.46^{+0.43}_{-0.30}$	$2428^{+96}_{-93}$	$2988^{+1729}_{-5441}$	$0.863^{+7.779}_{-0.695}$
Alt.	$-47 \pm 2$	$0.90^{+0.57}_{-0.50}$	$2426^{+99}_{-89}$	$4343^{+1910}_{-692}$	$6.255^{+26.174}_{-3.830}$

$T_{\text{max}}$  = 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

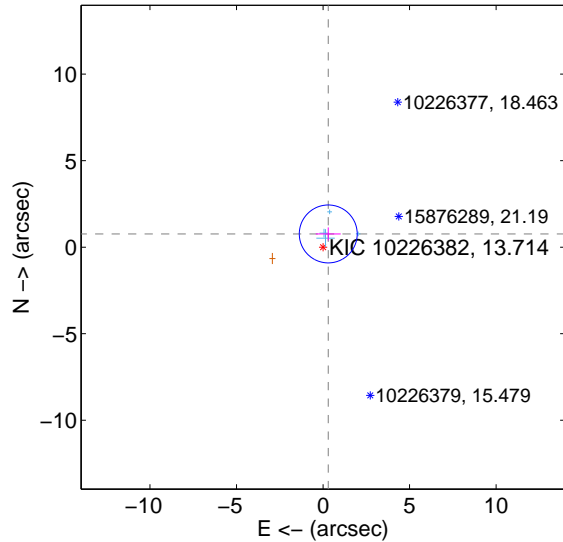
Supplemental centroid analysis for 010226382-01. Kepler magnitude: 13.71. Transit SNR 5.22

There are 4 quarters with good PRF difference image offsets

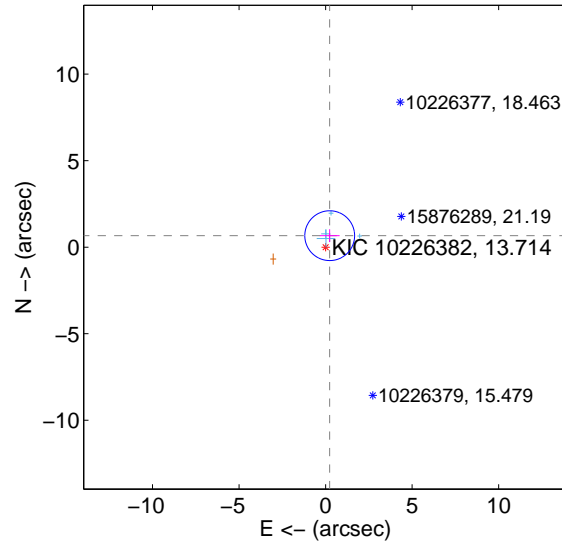
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.822 \pm 0.558$	1.47	$-0.301 \pm 0.723$	$0.765 \pm 0.380$
PRF-fit source offset from KIC position	$0.706 \pm 0.480$	1.47	$-0.238 \pm 0.571$	$0.665 \pm 0.369$
photometric centroid source offset	$4.26 \pm 2.46$	1.73	$-2.00 \pm 2.27$	$3.77 \pm 2.52$

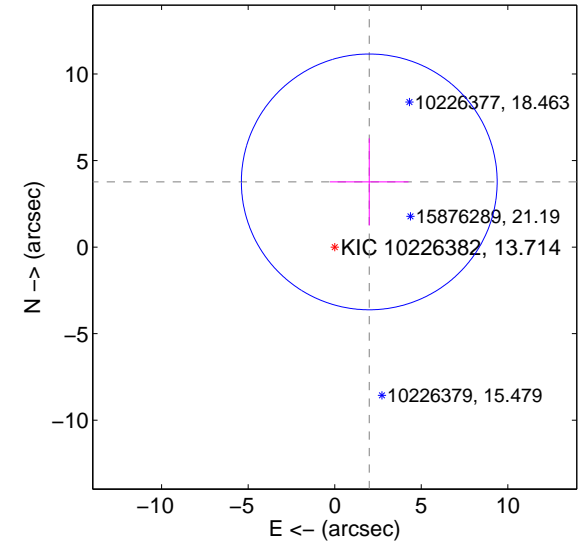
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

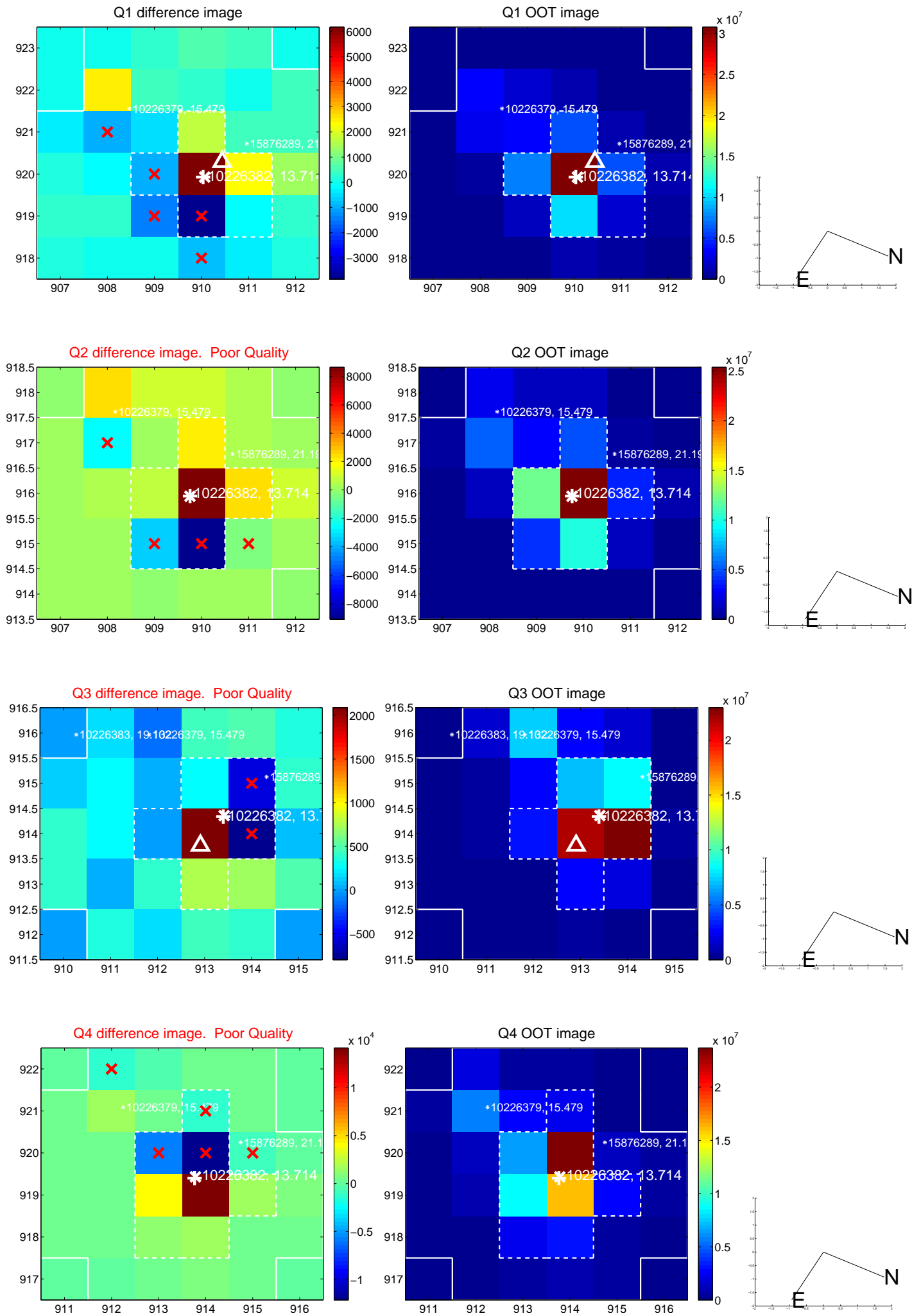


offset from photometric centroids

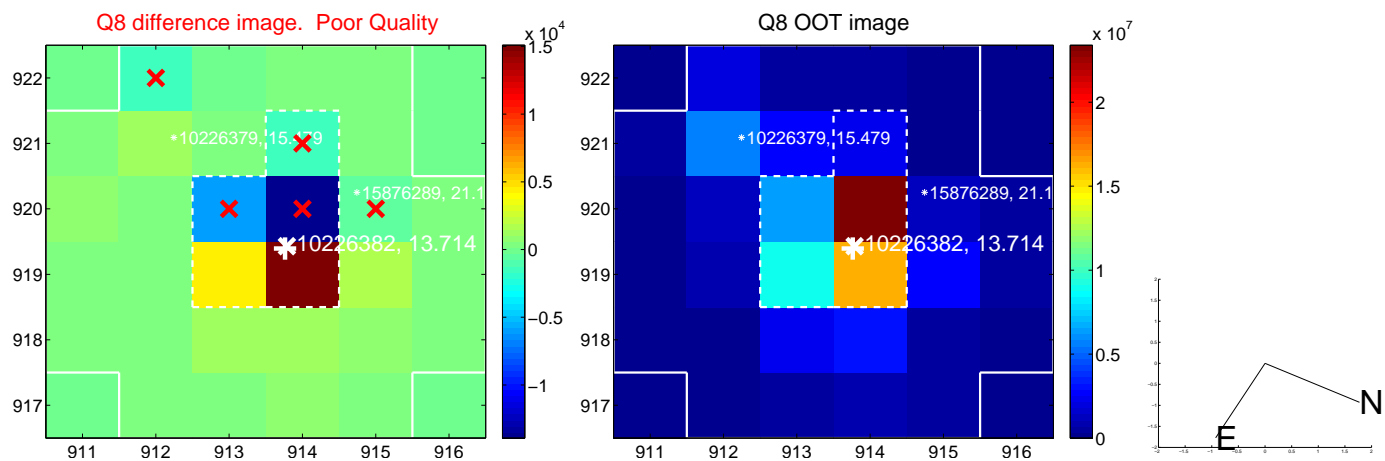
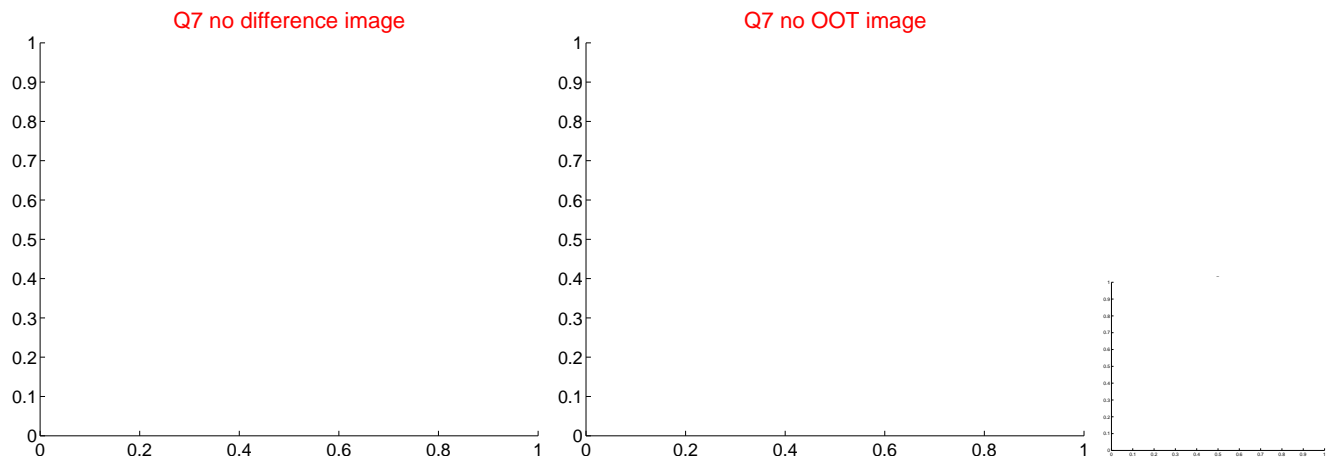
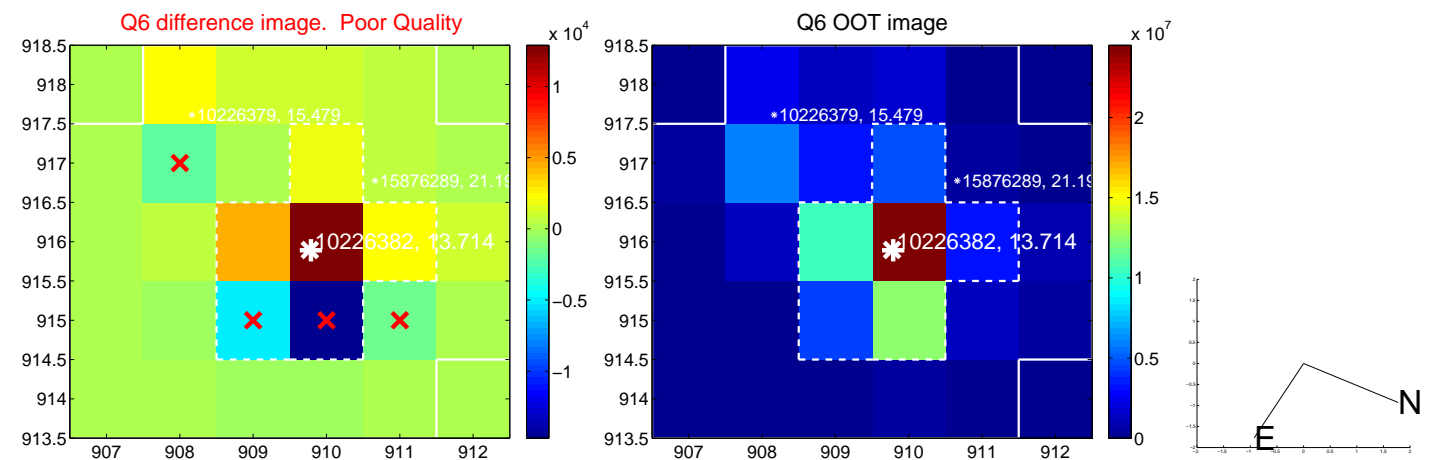
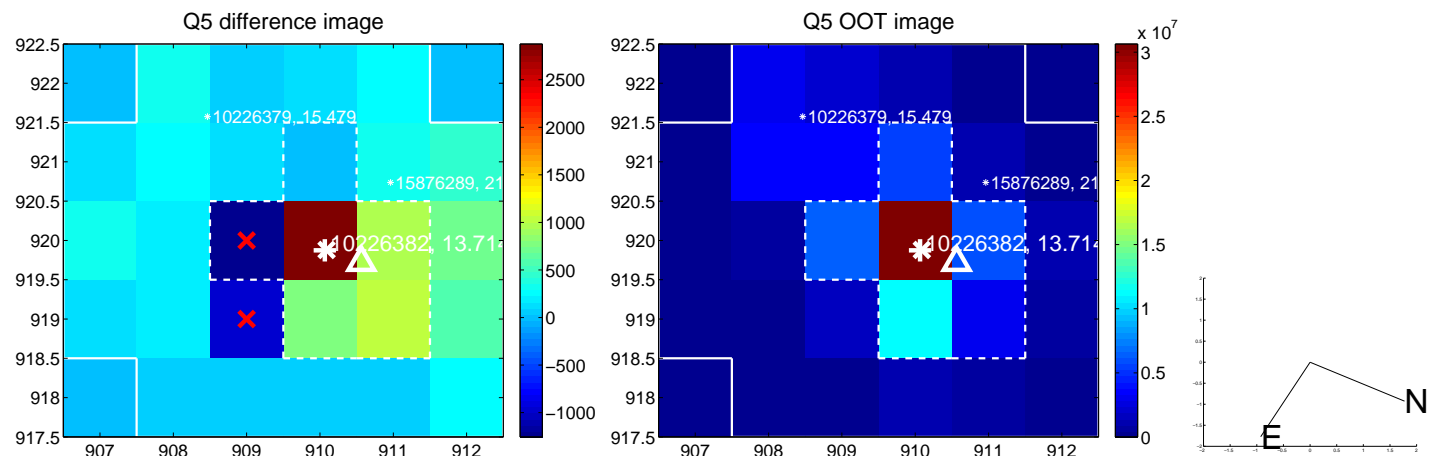


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

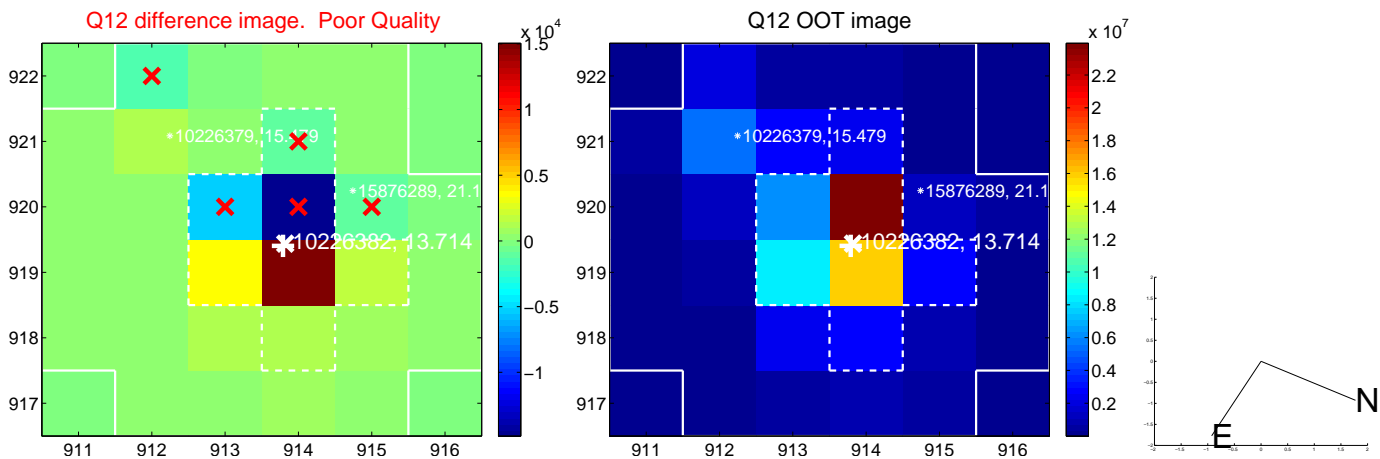
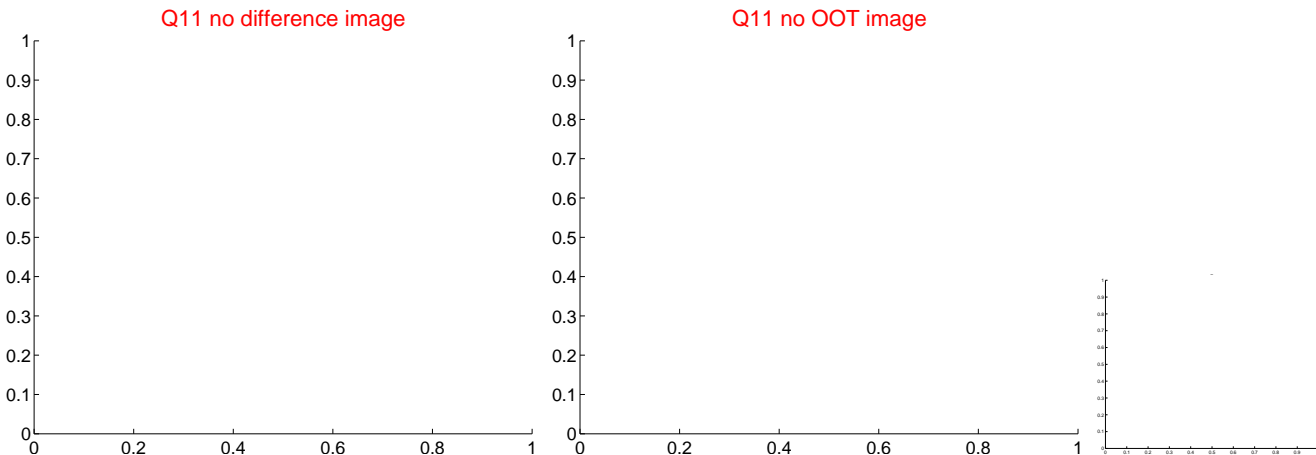
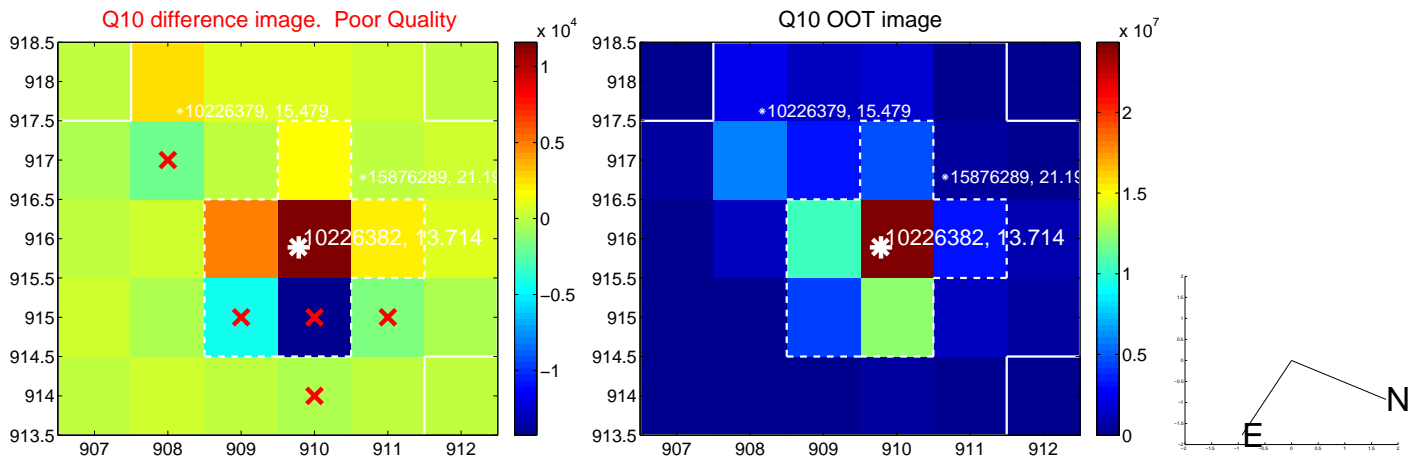
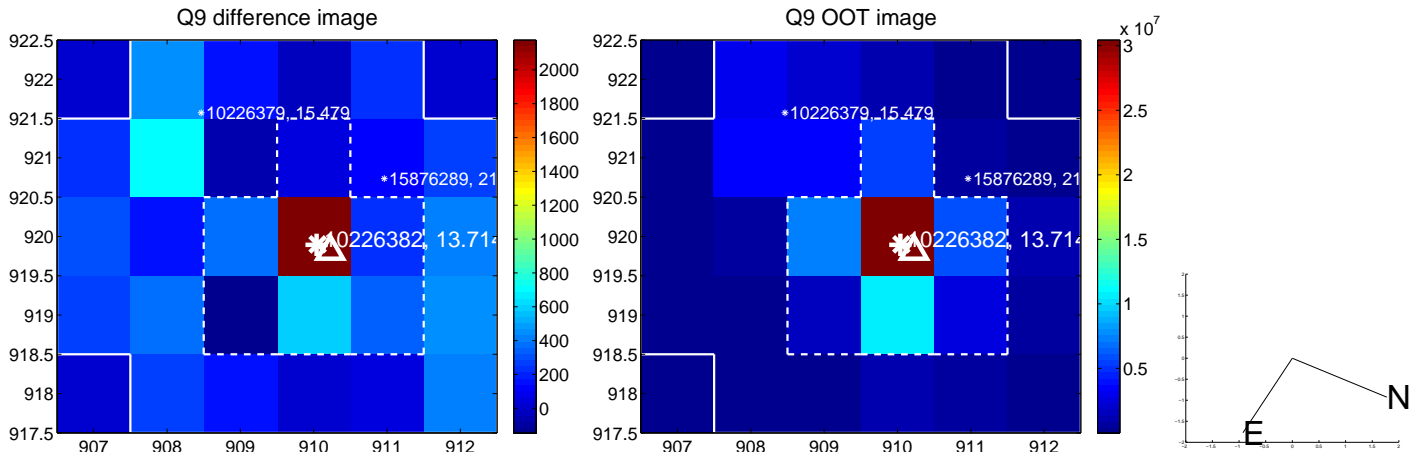


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

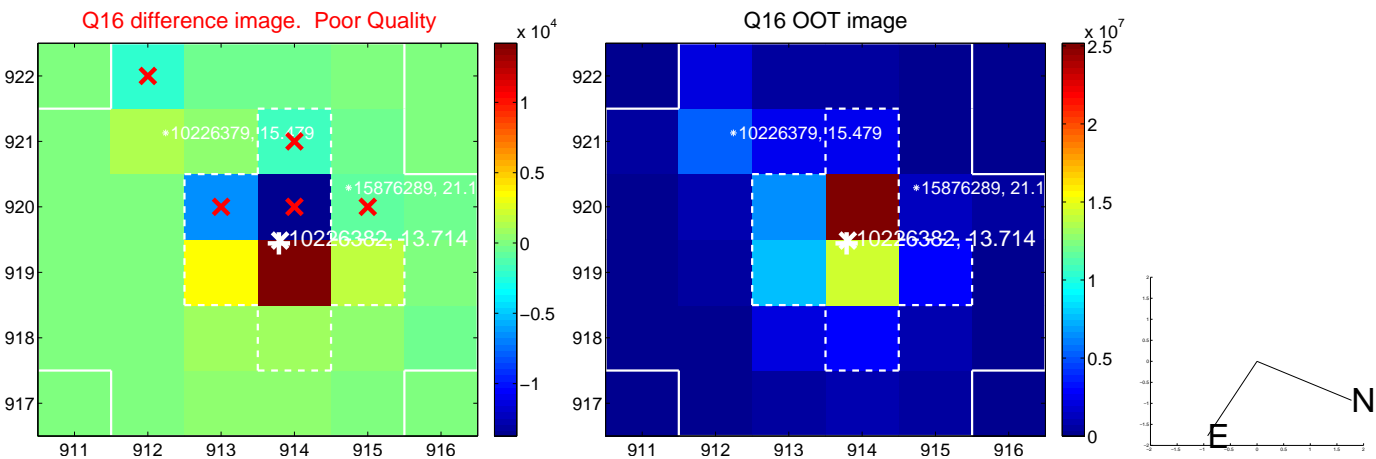
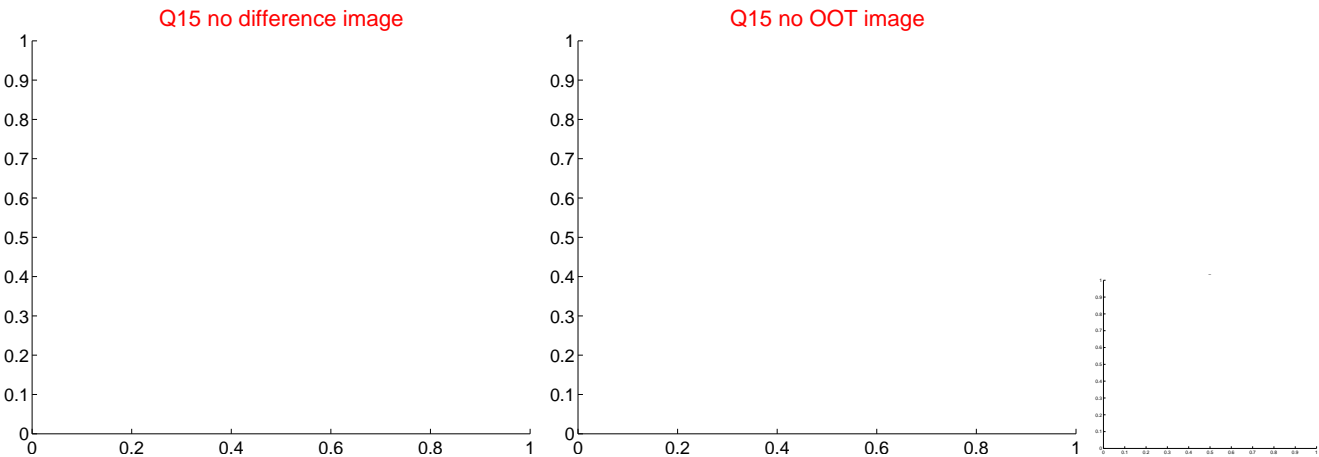
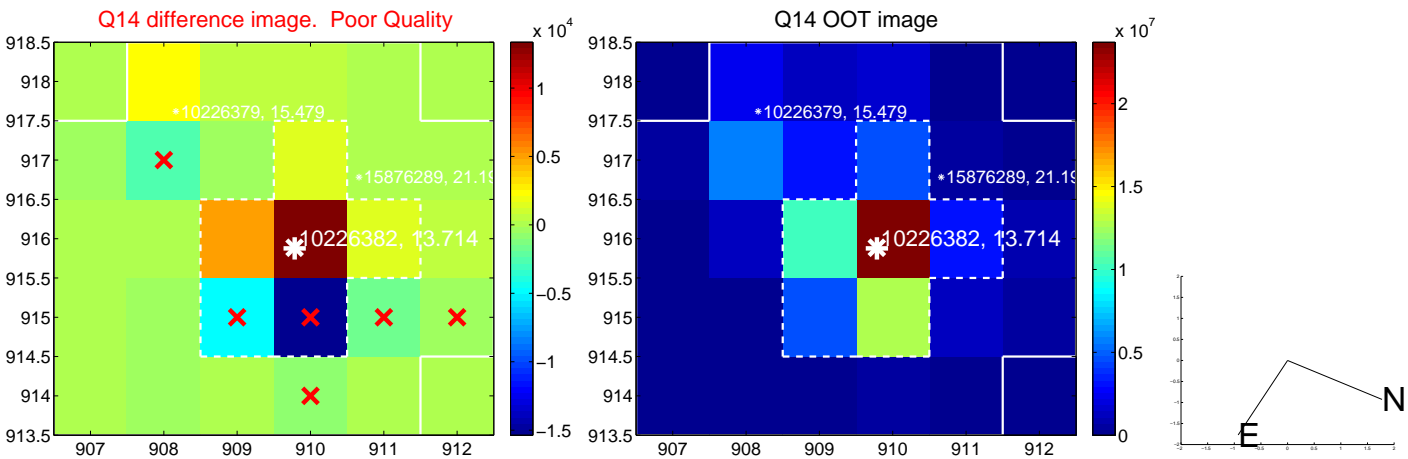
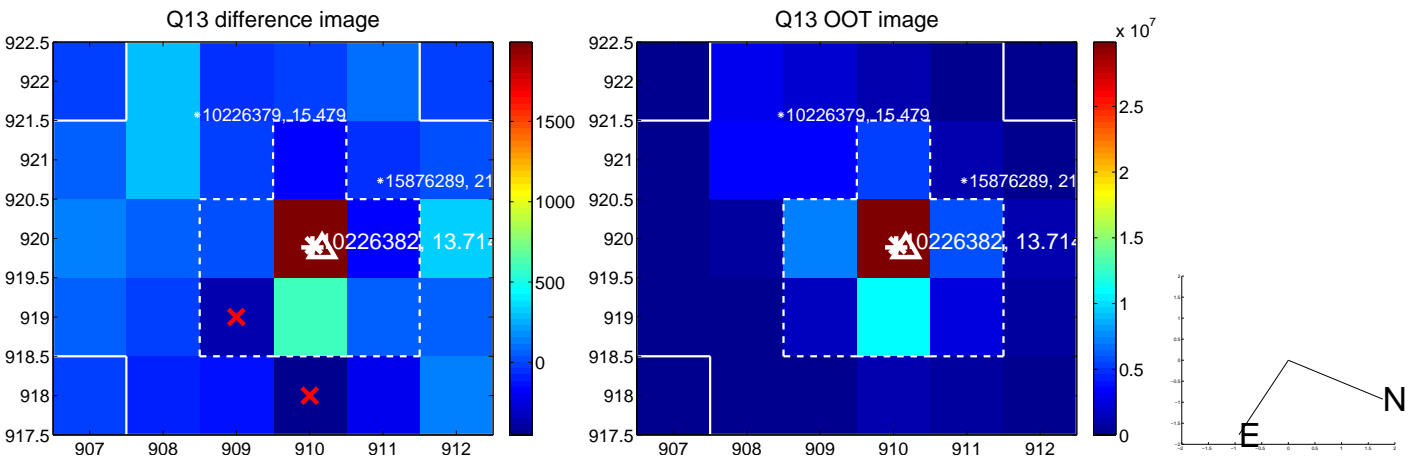




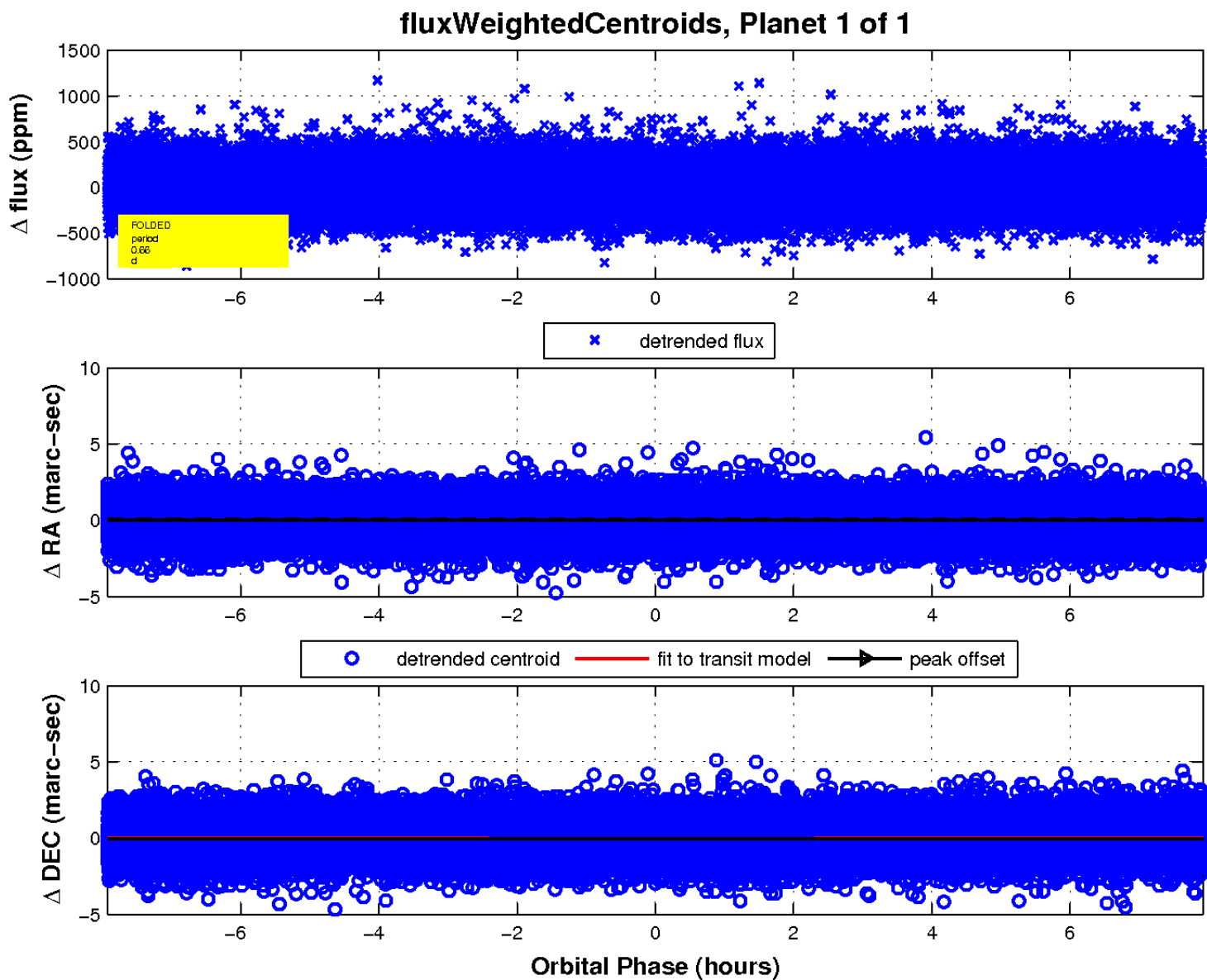
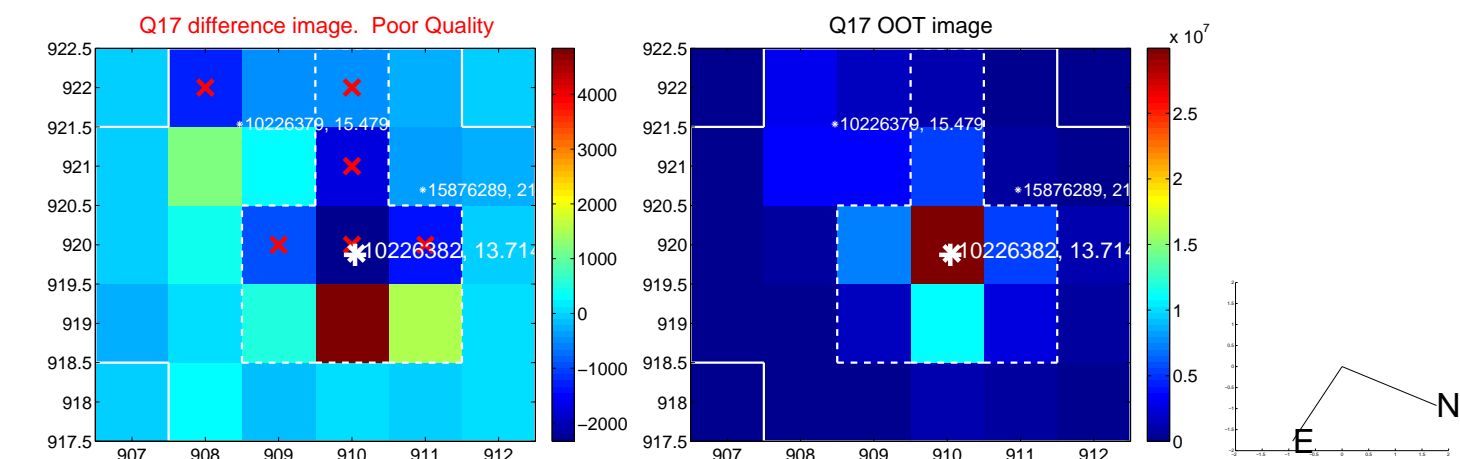
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

