

# KIC 007031363

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007031363-01	OBS	No	0.566817	131.819236	15.7	4.572	7.2	9.2	1.18	6381	0.50	9982.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007031363-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_FEW_DIFFS—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.

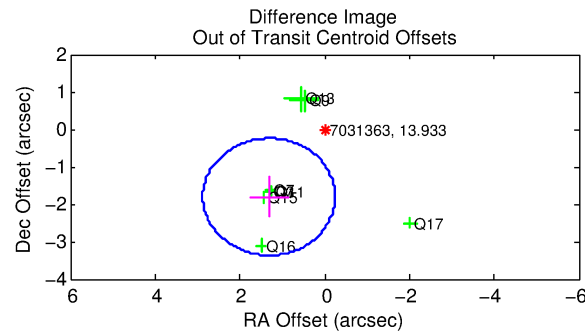
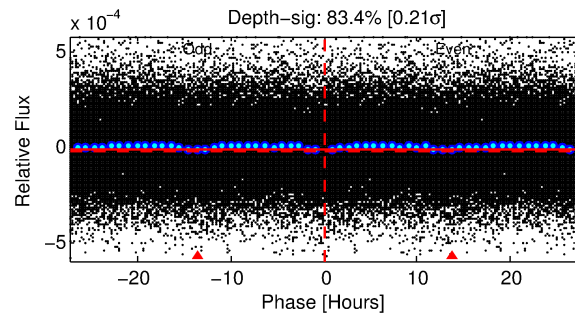
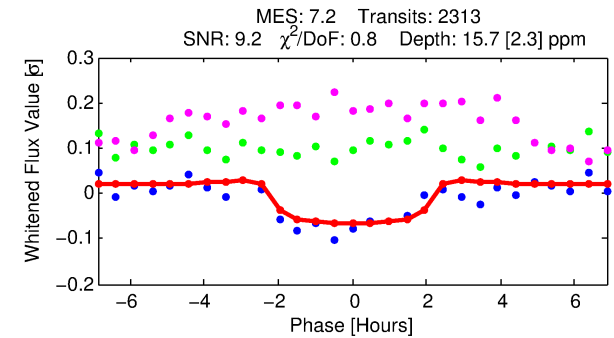
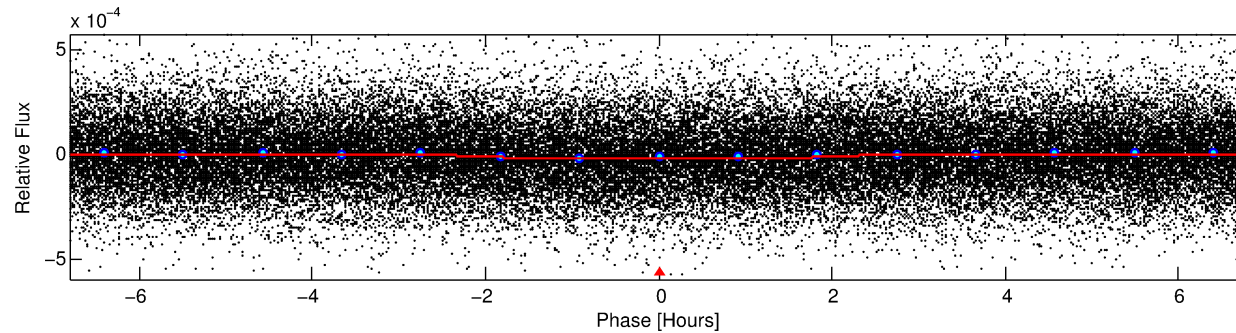
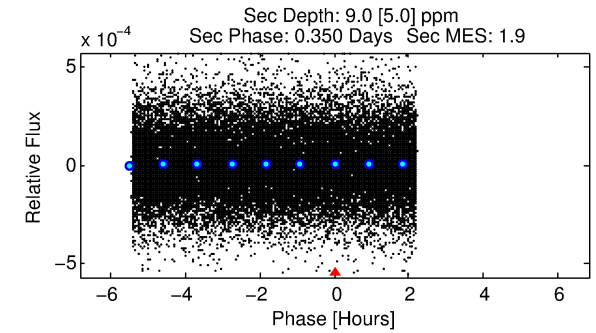
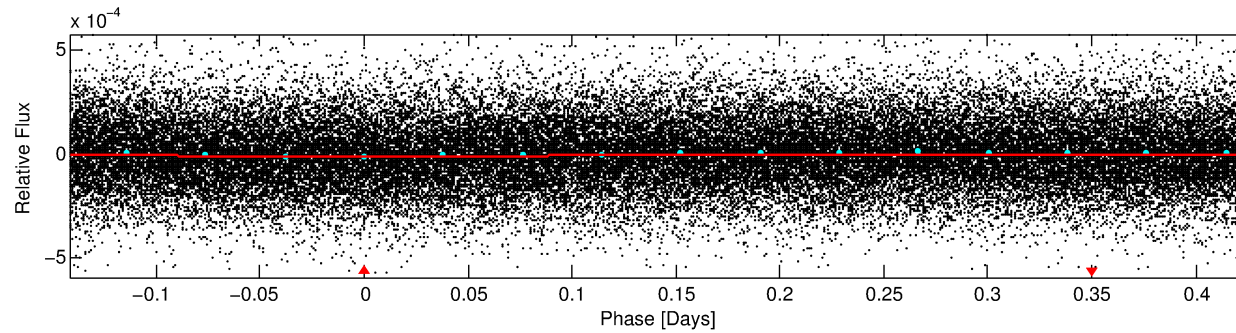
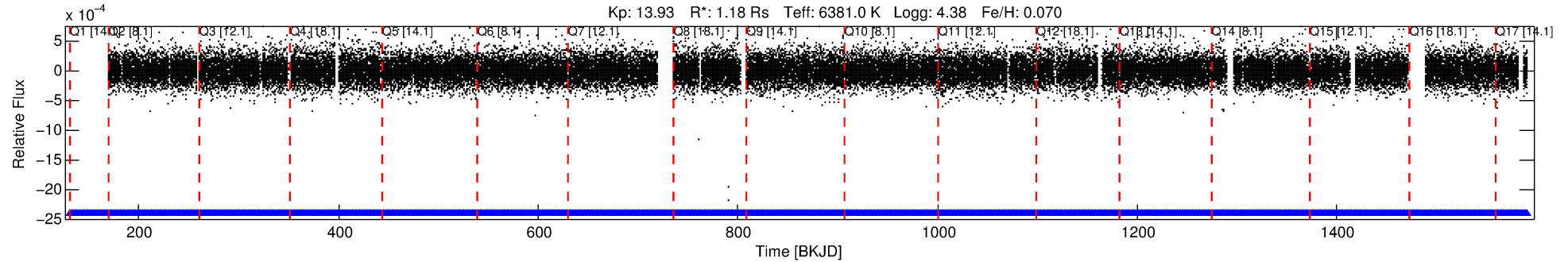
## Ephemeris Match Information For 007031363-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	$\sigma_P$	$\sigma_T$
007031363-01	7031363	RR-Lyr-pri	7198959	1:1	1282.0	103	-306	7.86	13.93	38956.00	Direct-PRF	0	2.19	24.92

**Notes:** P<sub>1</sub>:P<sub>2</sub> 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<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> 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: 7031363 Candidate: 1 of 1 Period: 0.567 d



## DV Fit Results:

Period = 0.56682 [0.00001] d  
Epoch = 131.8192 [0.0042] BKJD  
Rp/R\* = 0.0039 [0.0033]  
a/R\* = 1.08 [0.72]  
b = 0.69 [3.40]  
Seff = 9982.00 [4537.02]  
Teff = 2549 [290] K  
Rp = 0.50 [0.46] Re  
a = 0.0143 [0.0042] AU  
Ag = 4.10 [7.58] [0.41σ]  
Teffp = 5609 [2529] K [1.20σ]

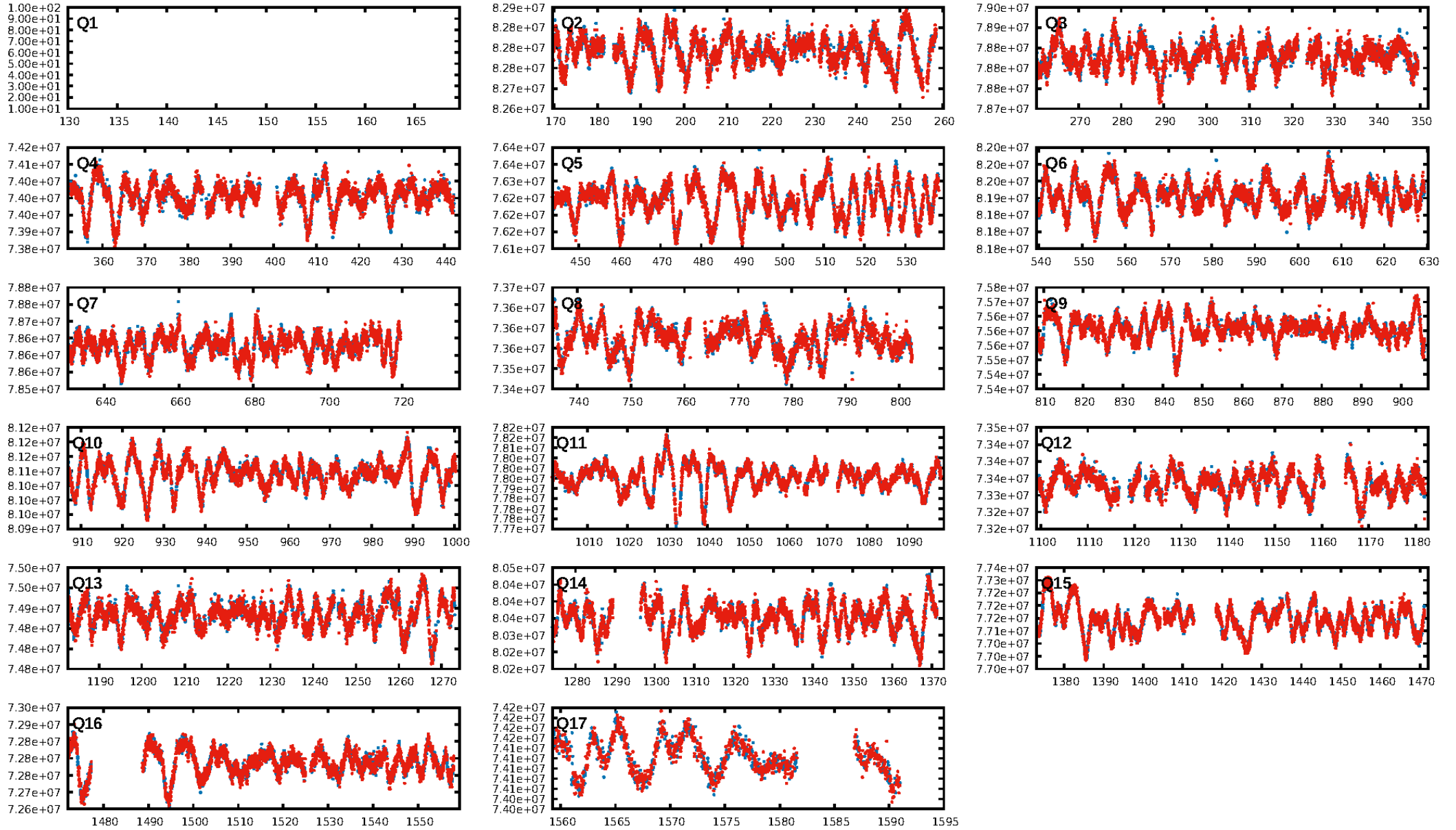
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2266/2266]  
**GhostDiagnostic-chr: 0.2163**  
Centroid-sig: 9.1%  
Centroid-so: 1.668 arcsec [1.67σ]  
**OotOffset-rm: 2.233 arcsec [4.29σ]**  
**KicOffset-rm: 2.256 arcsec [5.33σ]**  
OotOffset-st: 0/4/1/3 [8]  
KicOffset-st: 0/4/1/3 [8]  
DiffImageQuality-fgm: 0.75 [6/8]  
DiffImageOverlap-fno: 1.00 [16/16]

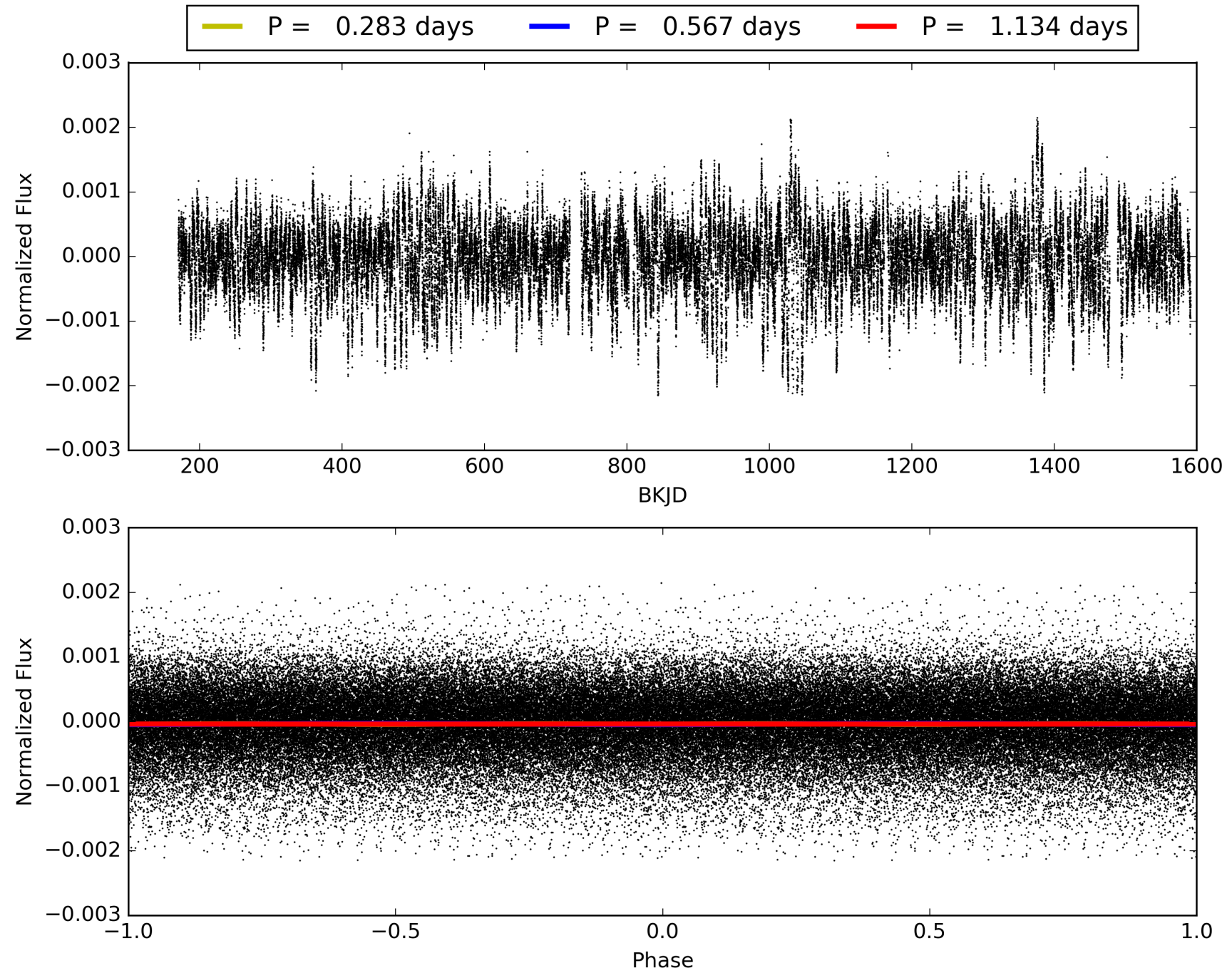
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 16:28:03 Z

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

# TCE 007031363-01, PDC Light Curves

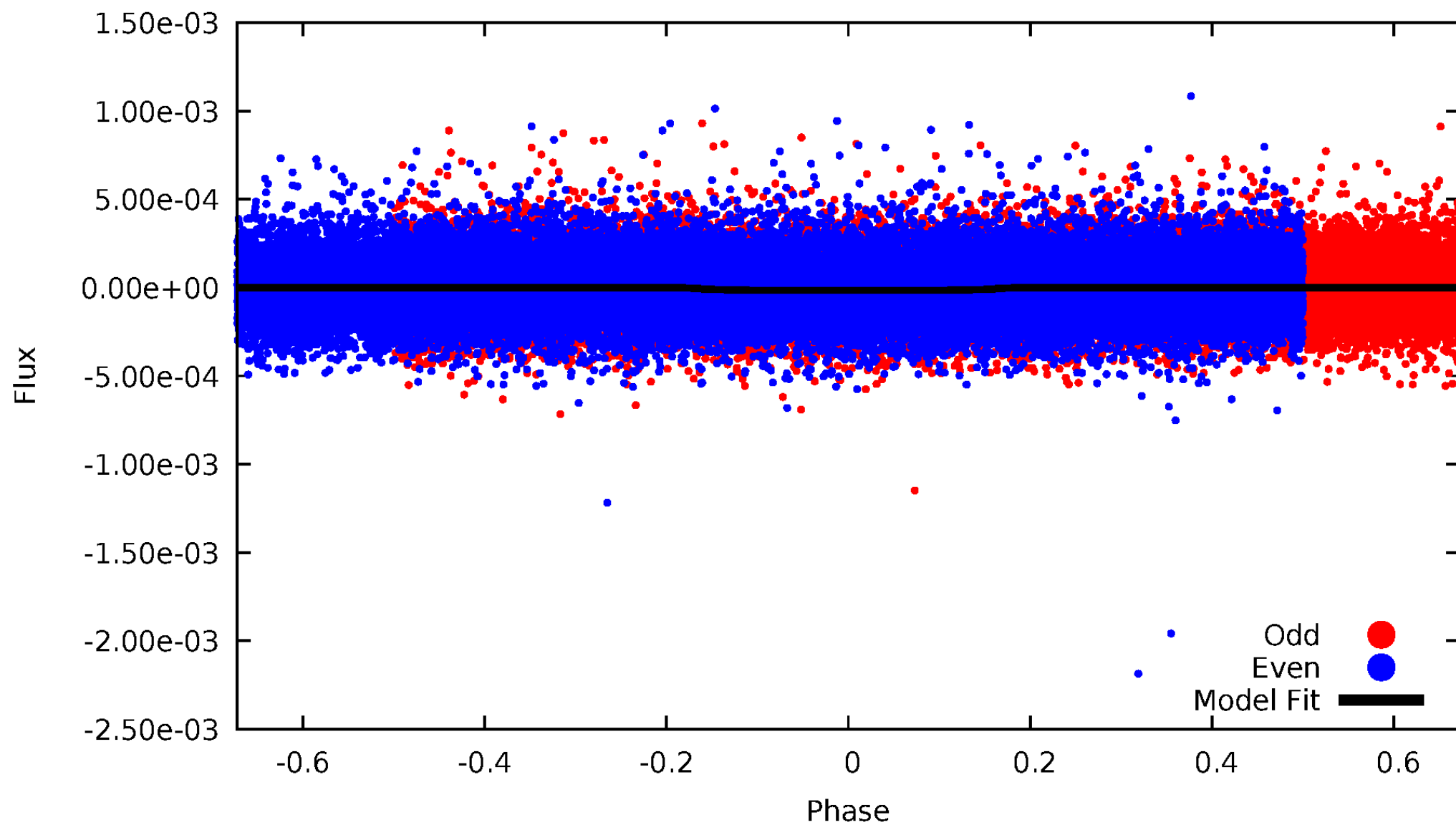


TCE 007031363-01



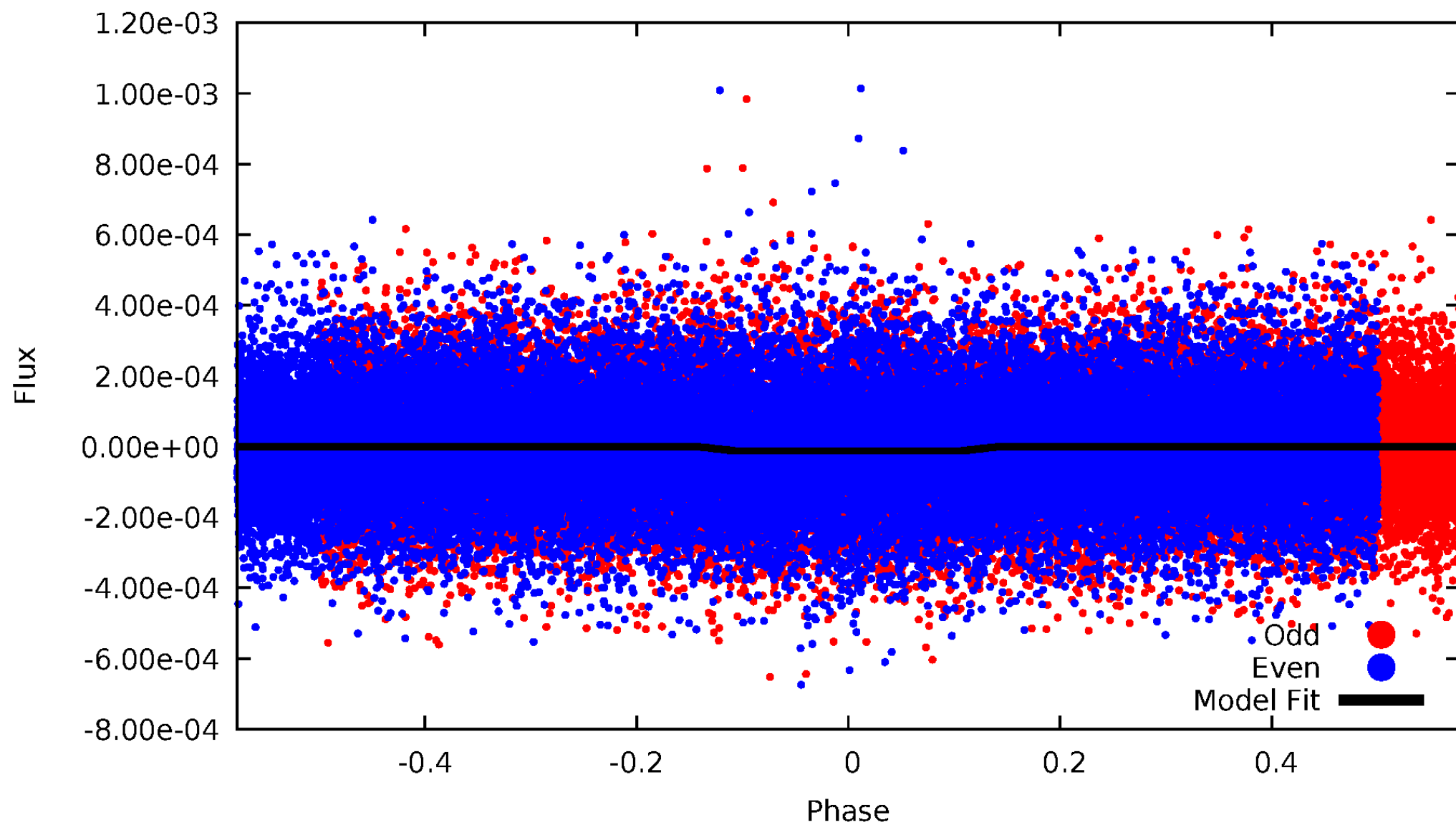
# DV Odd/Even

TCE 007031363-01



# ALT Odd/Even

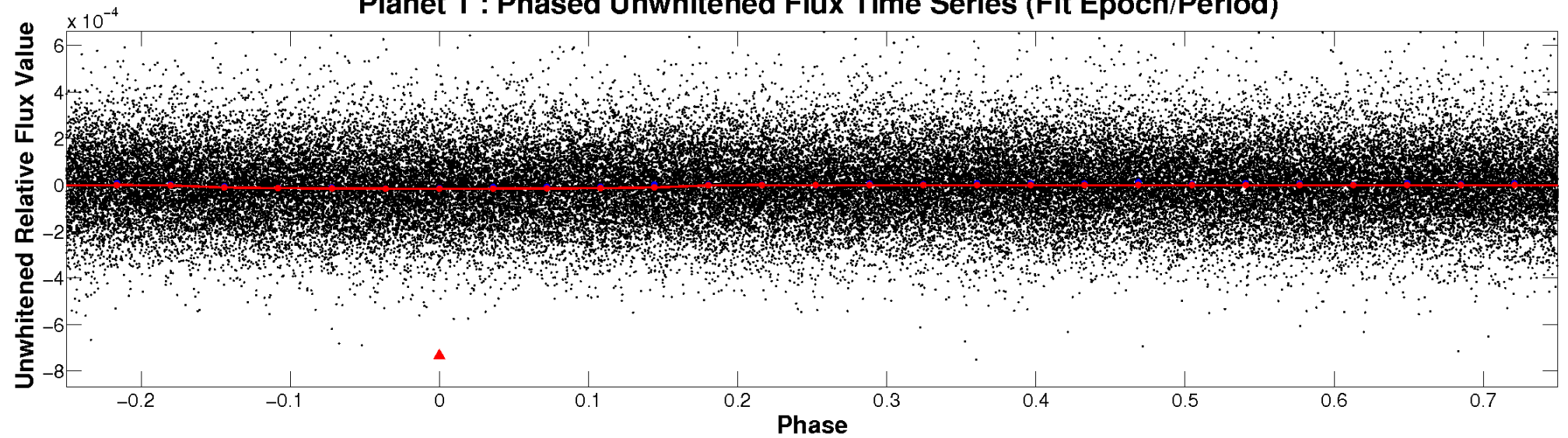
TCE 007031363-01



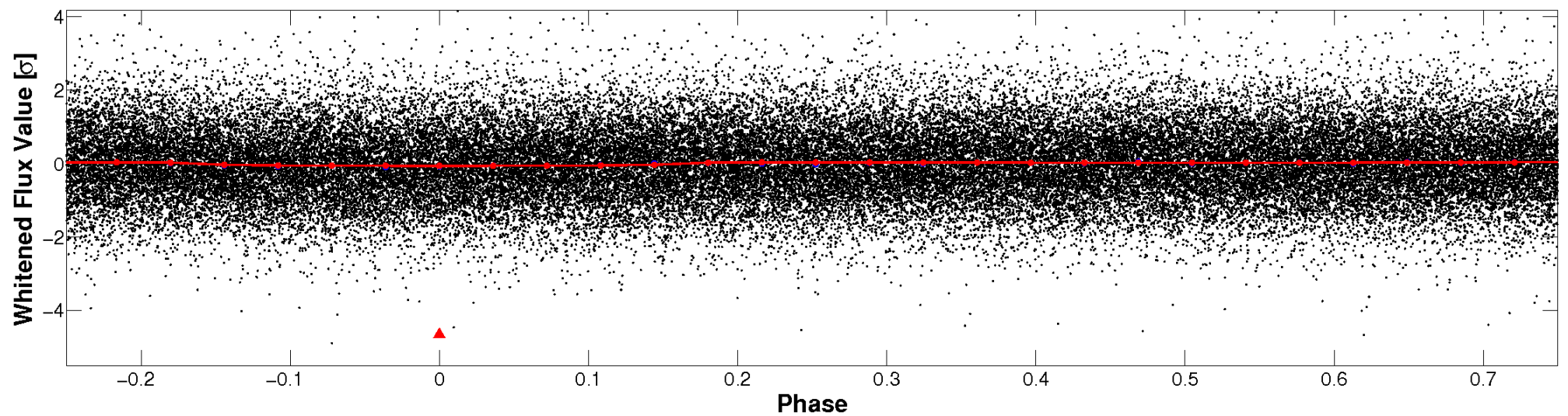


# Non-Whitened Vs. Whitened Light Curve

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

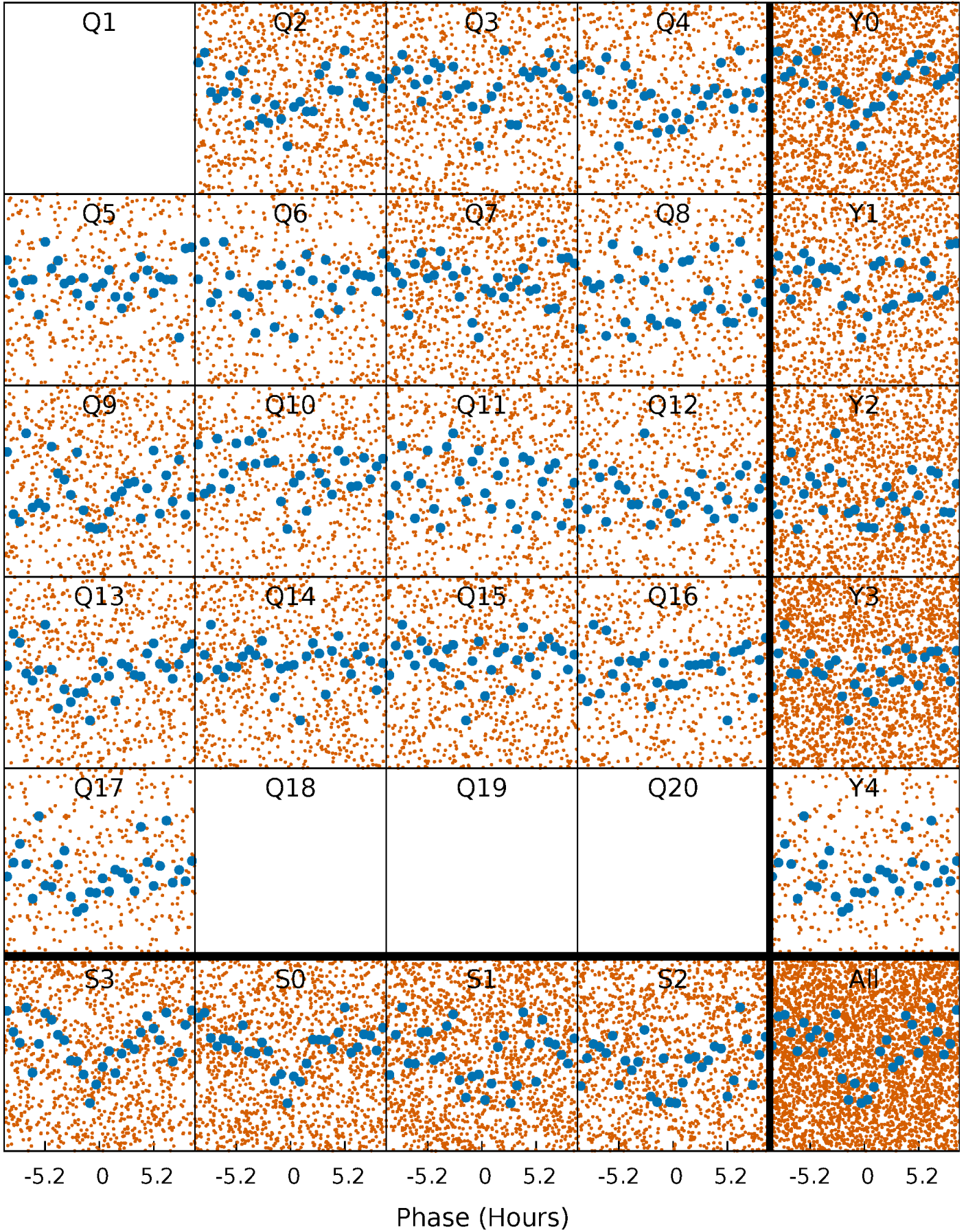


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

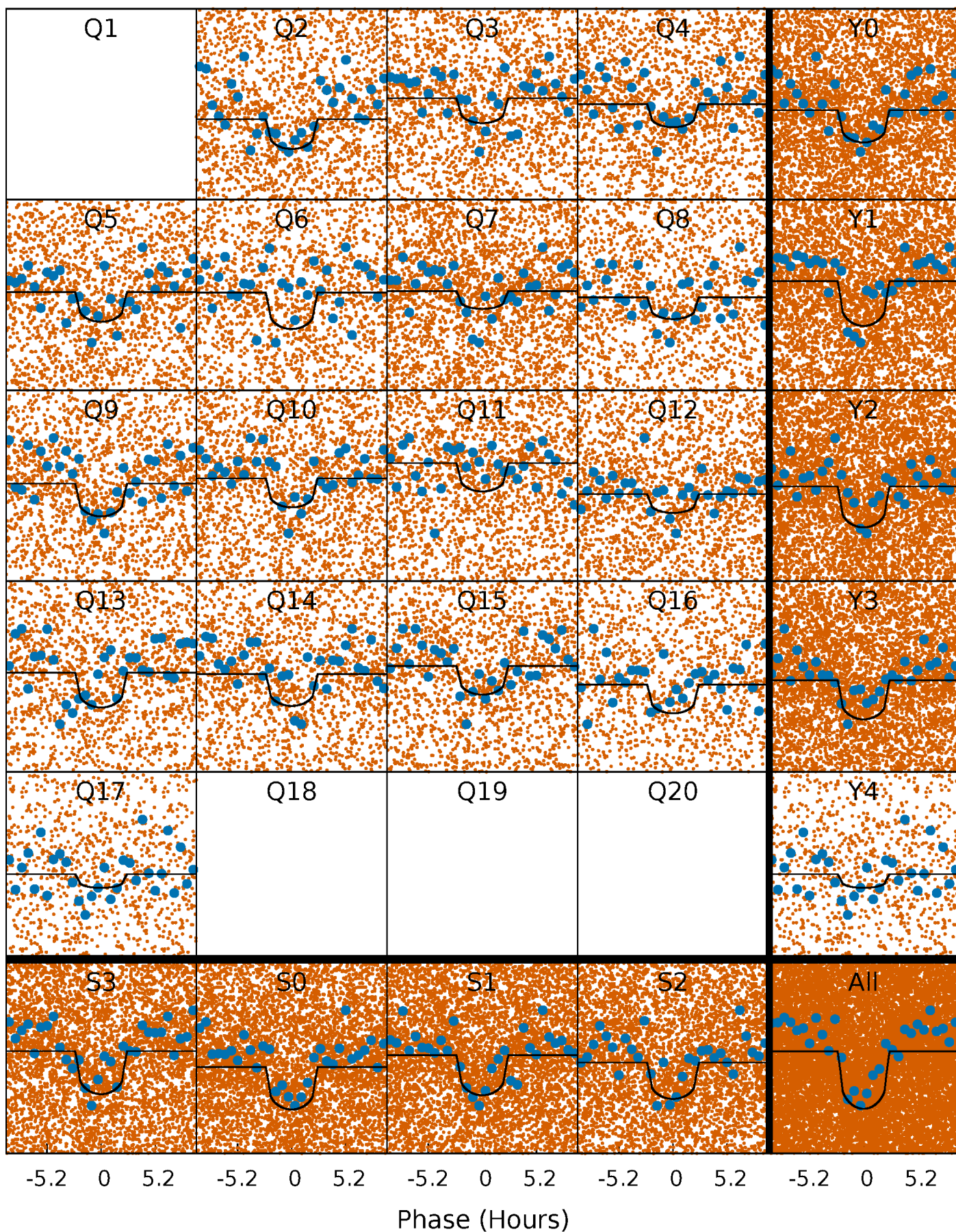
TCE 007031363-01 P= 0.566817 Days  $T_0=131.819236$  (BKJD)





# DV Quarter-Phased Transit Curves

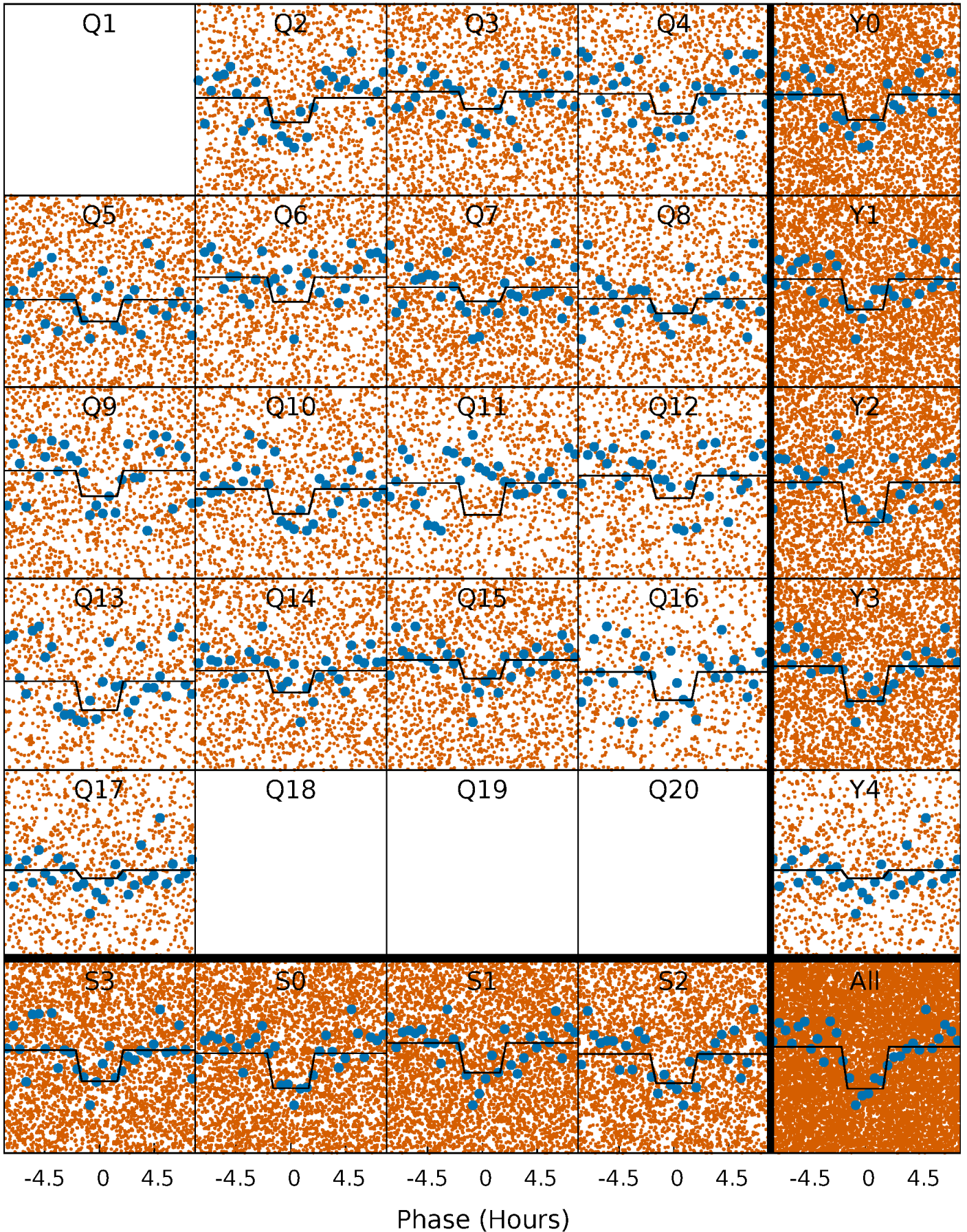
TCE 007031363-01 P= 0.566817 Days  $T_0=131.819236$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

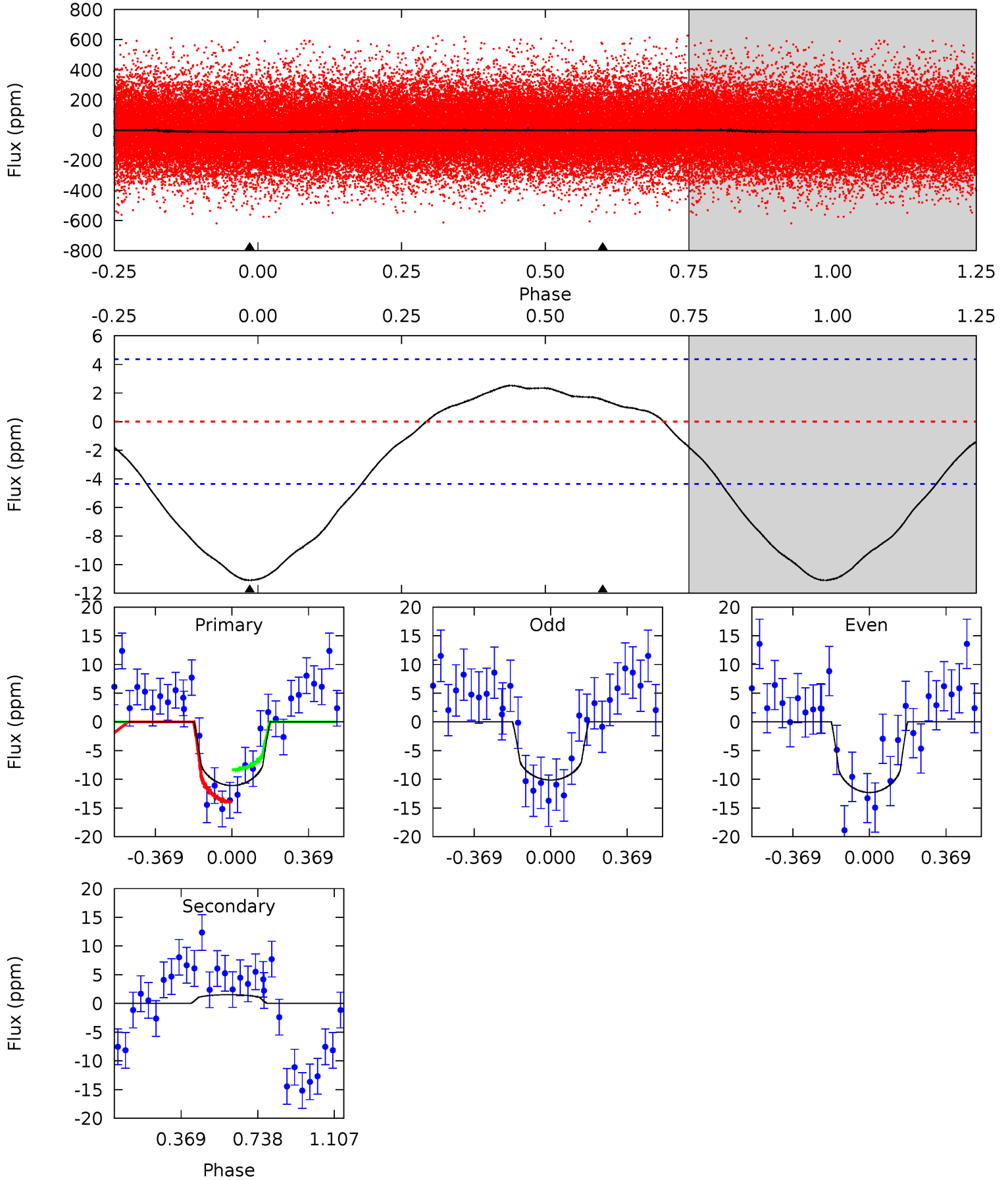
TCE 007031363-01 P= 0.566795 Days  $T_0=131.834735$  (BKJD)



# DV Model-Shift Uniqueness Test

007031363-01, P = 0.566817 Days, E = 131.819236 Days

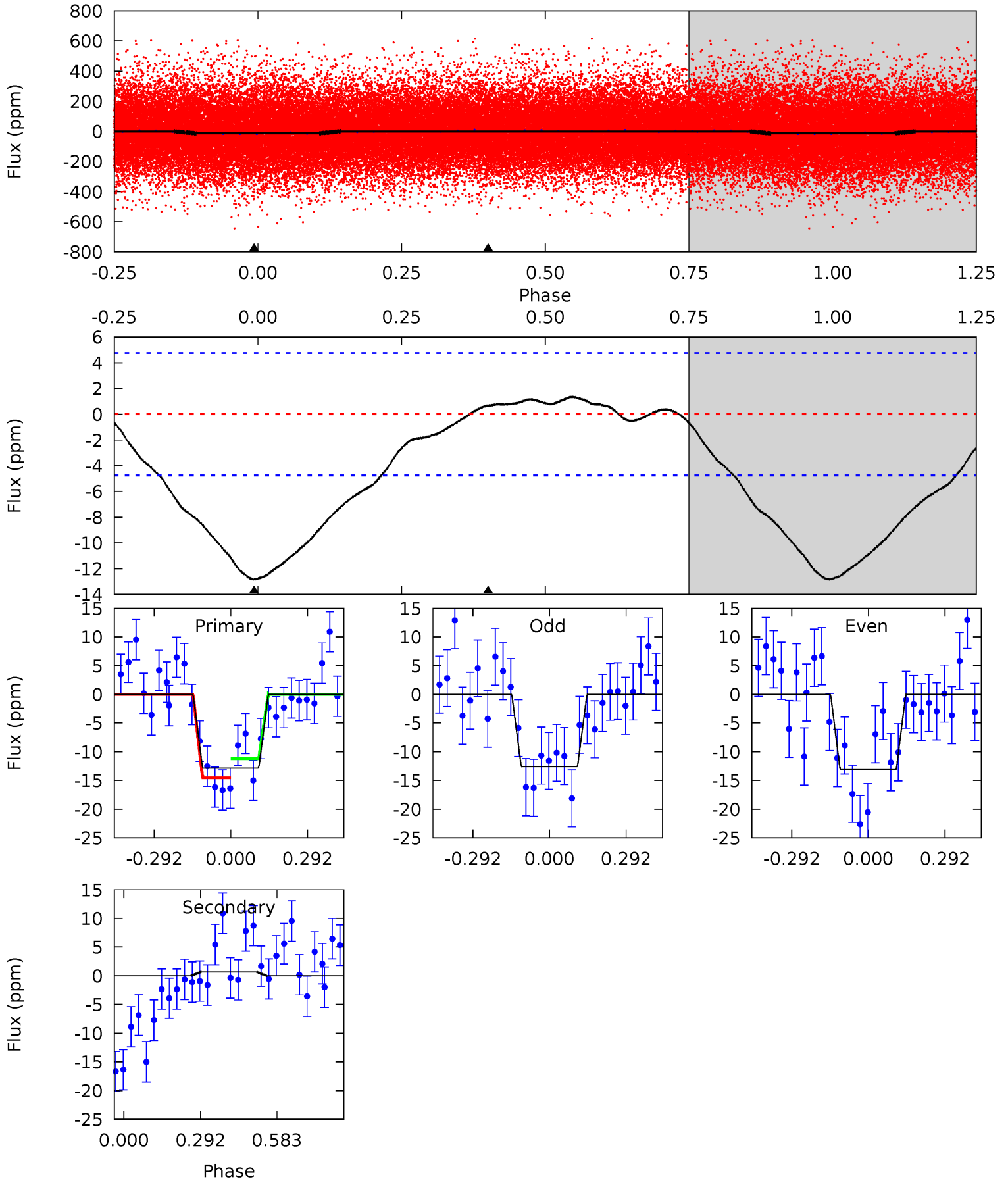
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	-1.50	0	0	4.28	0.90	0.85	10.9	10.9	-1.50	-1.50	1.07	1.04	0.19	2.77



# Alt Model-Shift Uniqueness Test

007031363-01, P = 0.566795 Days, E = 131.834735 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
11.7	-0.60	0	0	4.33	1.05	0.28	11.7	11.7	-0.60	-0.60	0.22	0.87	0.10	1.49





### Stellar Parameters For KIC 007031363

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6381^{+179}_{-246}$	$4.385^{+0.072}_{-0.232}$	$0.070^{+0.250}_{-0.300}$	$1.175^{+0.417}_{-0.139}$	$1.223^{+0.180}_{-0.180}$	$1.061^{+0.332}_{-0.588}$
	+3%/-4%	+2%/-5%	+357%/-429%	+35%/-12%	+15%/-15%	+31%/-55%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 007031363-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$2\pm 1$	$0.61^{+0.46}_{-0.36}$	$3615^{+296}_{-185}$	$-4004^{+427}_{-1230}$	$-0.364^{+0.292}_{-1.944}$
Alt.	$1\pm 1$	$0.55^{+0.41}_{-0.31}$	$3620^{+287}_{-199}$	$-3776^{+658}_{-999}$	$-0.166^{+0.320}_{-1.266}$

$T_{max}$  = 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

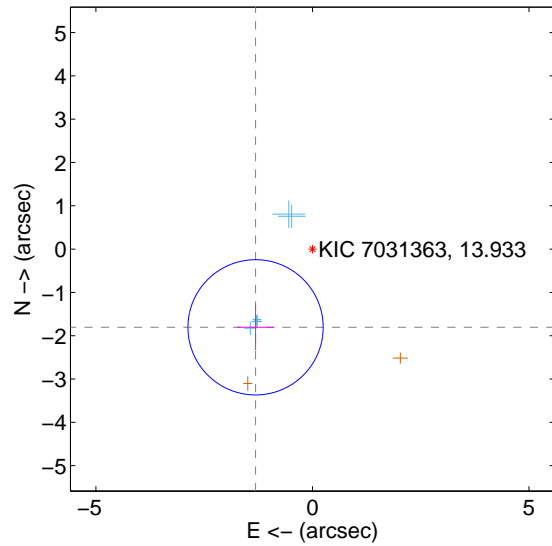
Supplemental centroid analysis for 007031363-01. Kepler magnitude: 13.93. Transit SNR 9.23

There are 6 quarters with good PRF difference image offsets

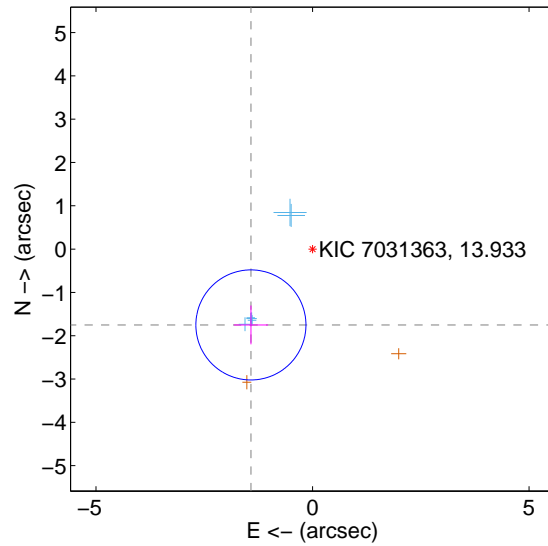
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>2.233 \pm 0.520</math></b>	<b>4.29</b>	$1.313 \pm 0.434$	$-1.806 \pm 0.522$
PRF-fit source offset from KIC position	<b><math>2.256 \pm 0.424</math></b>	<b>5.33</b>	$1.423 \pm 0.396$	$-1.751 \pm 0.447$
photometric centroid source offset	$1.67 \pm 1.00$	1.67	$1.61 \pm 0.99$	$0.44 \pm 1.03$

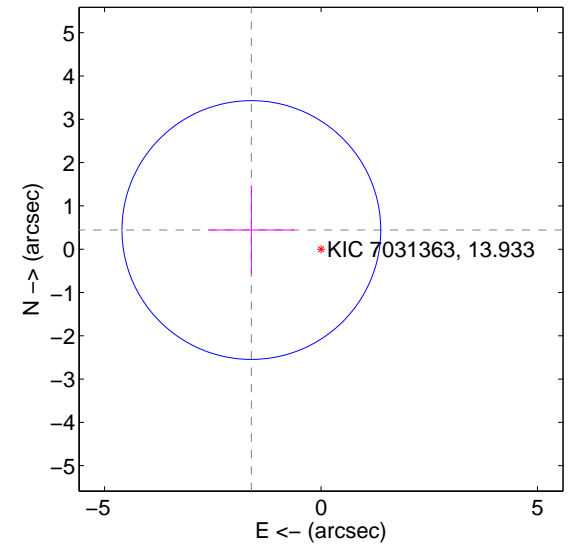
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

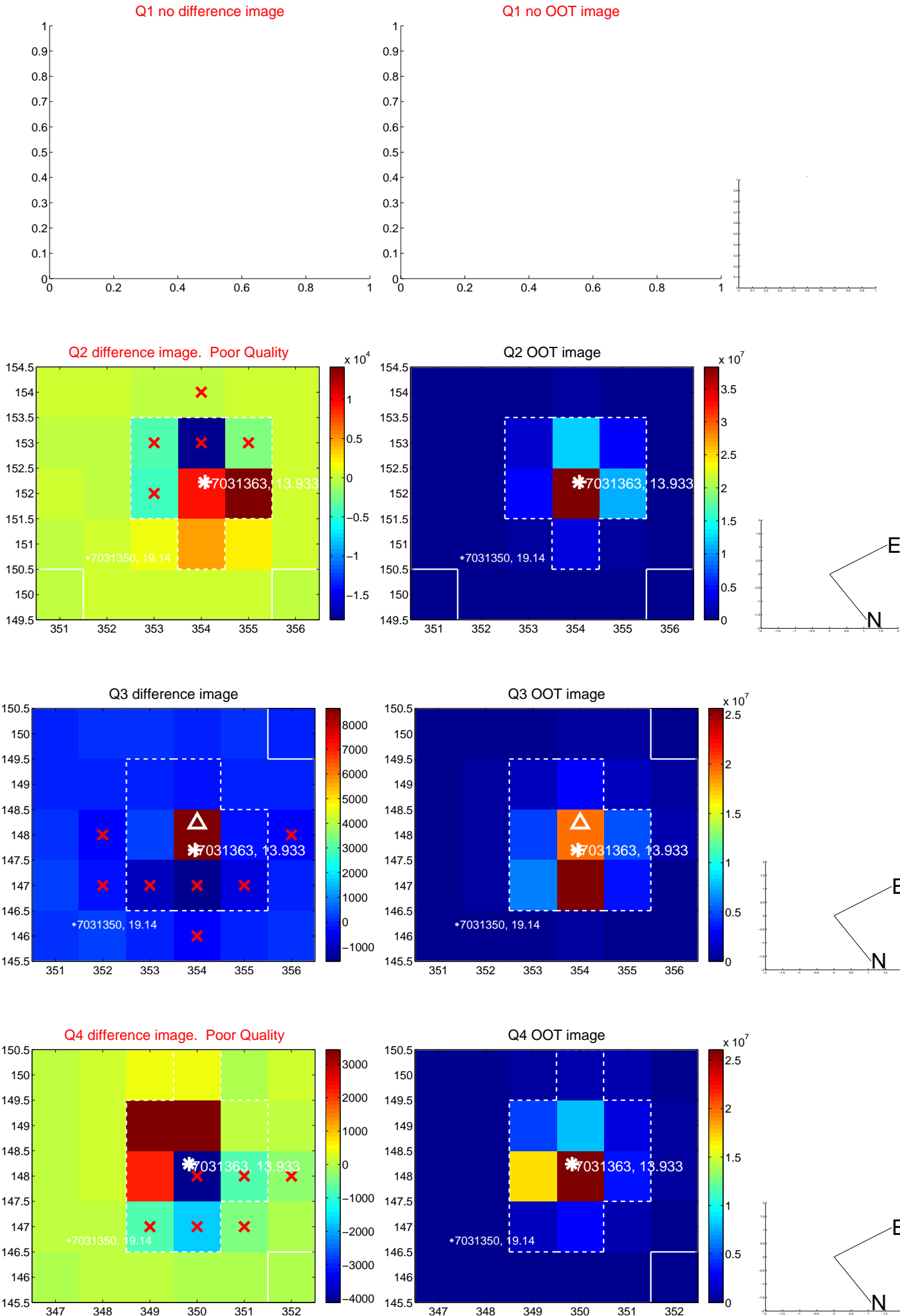


offset from photometric centroids

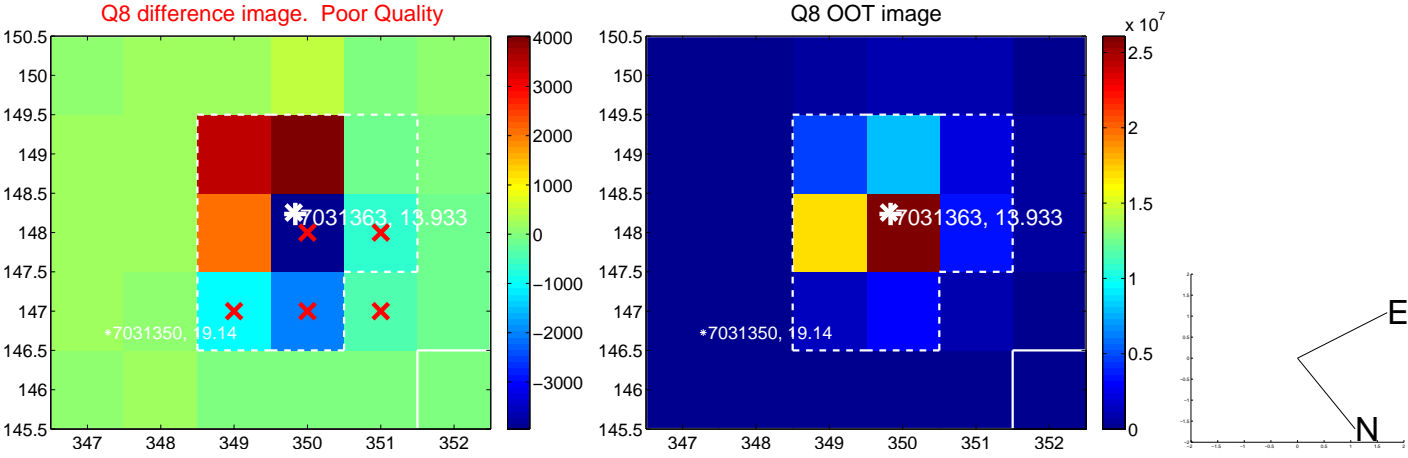
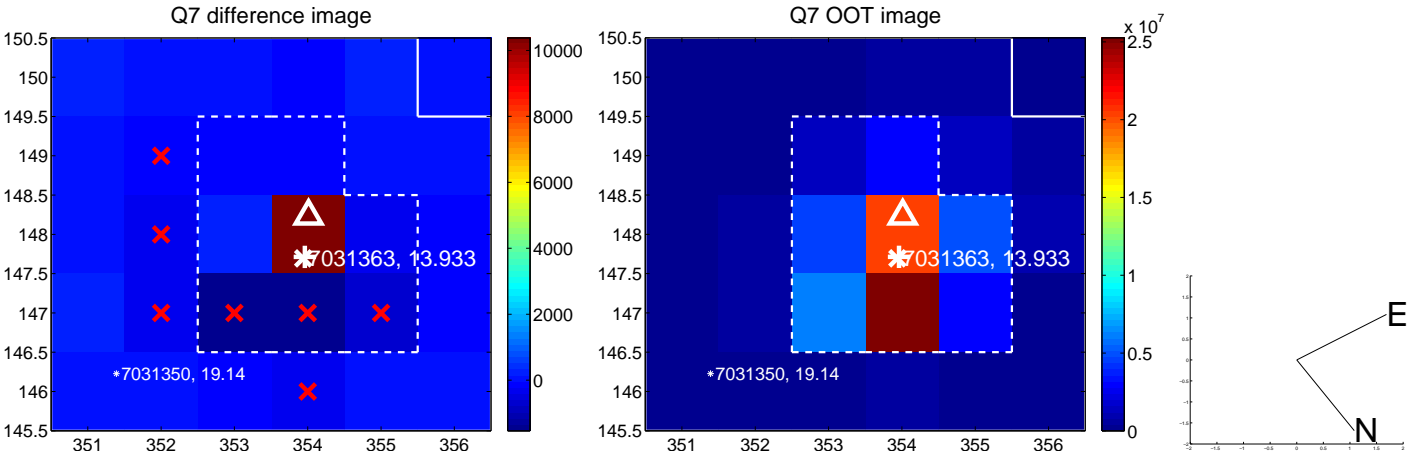
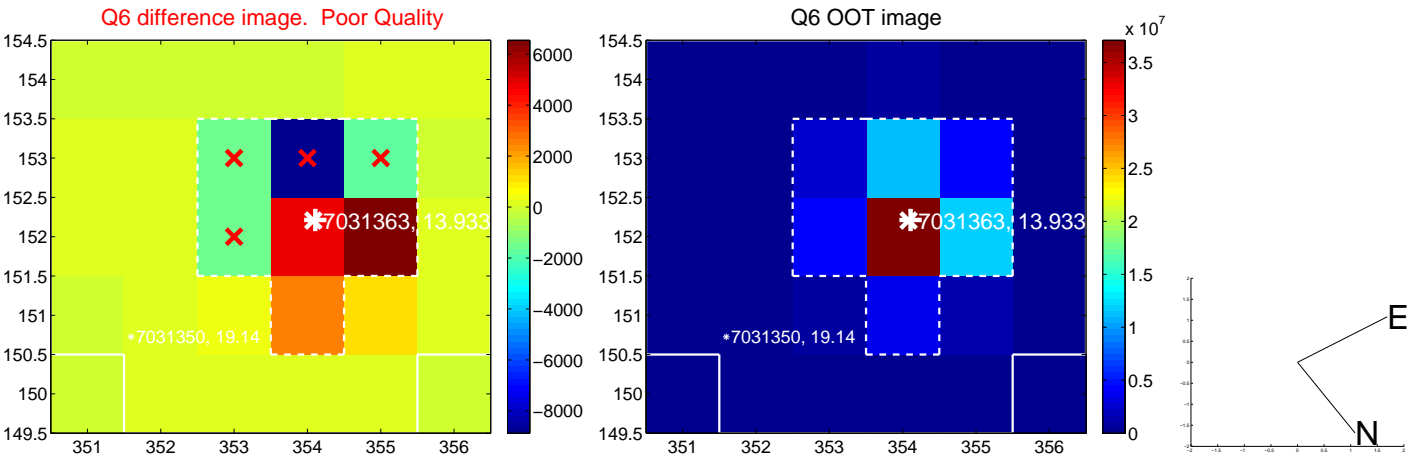
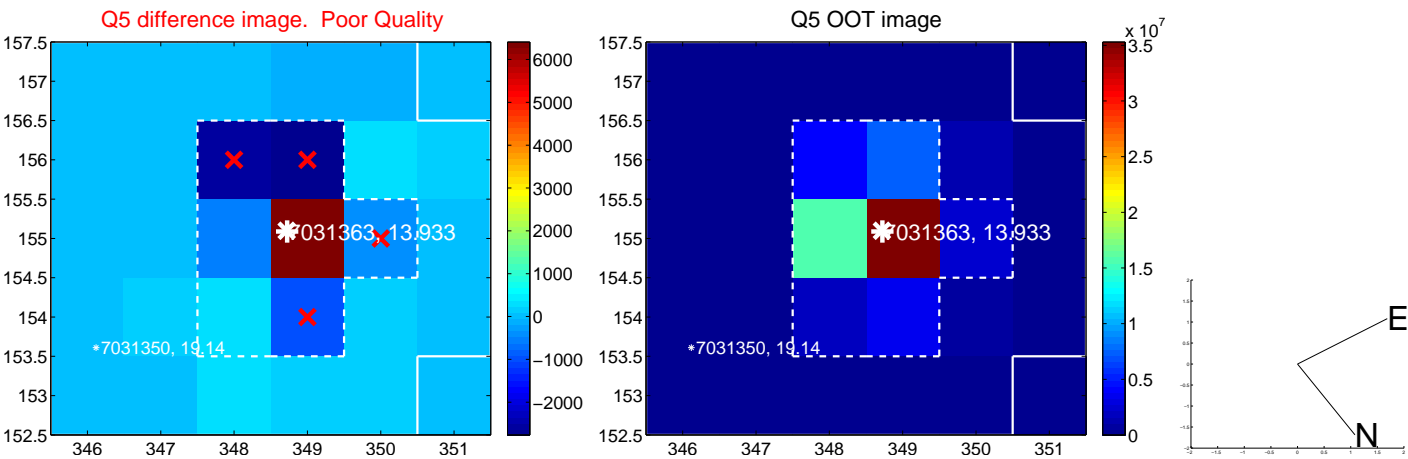


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

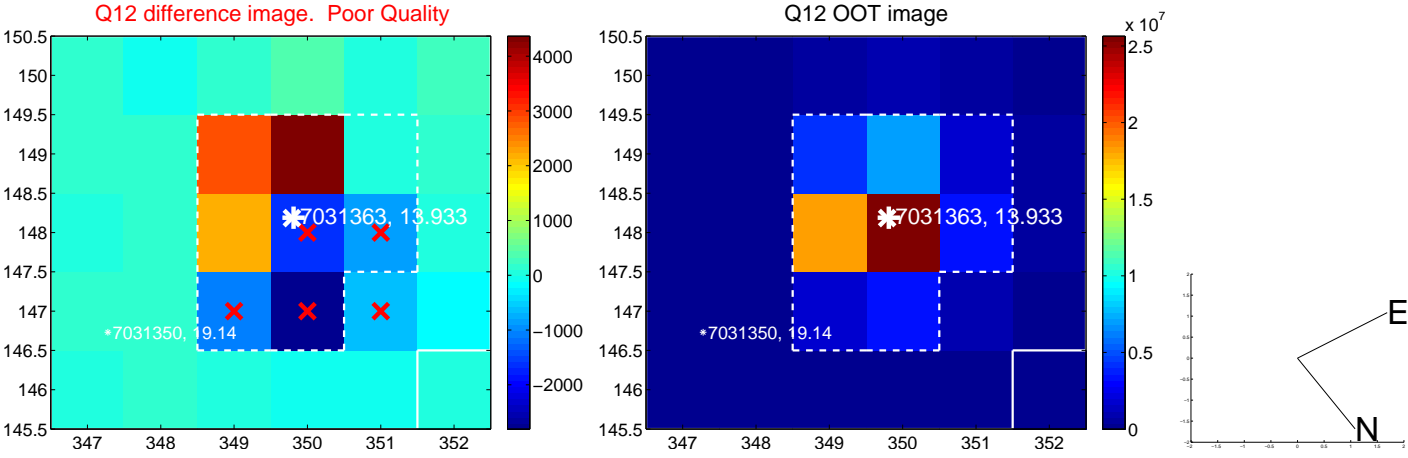
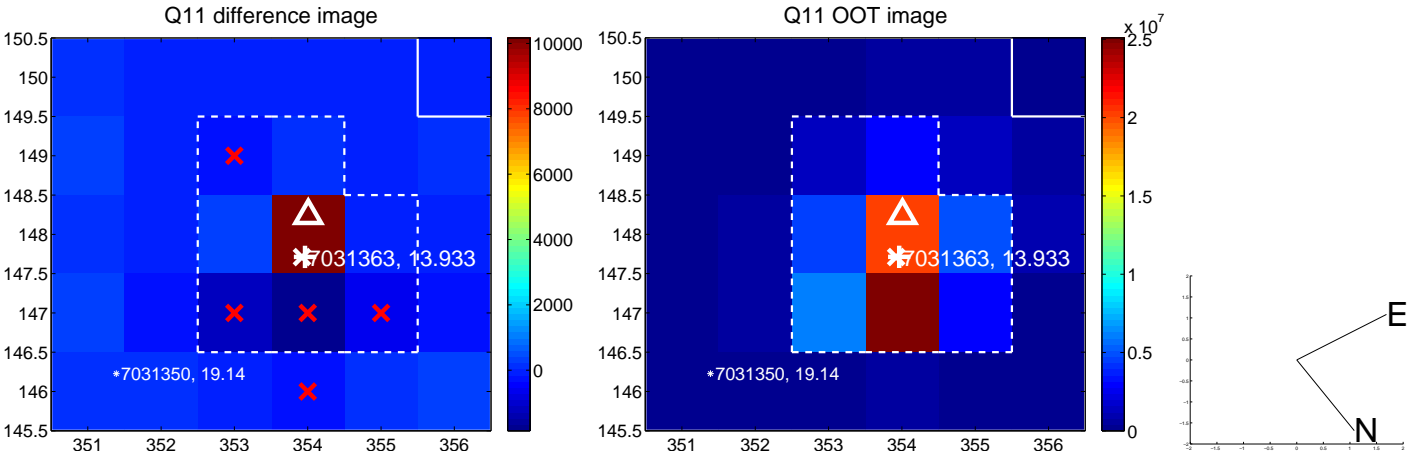
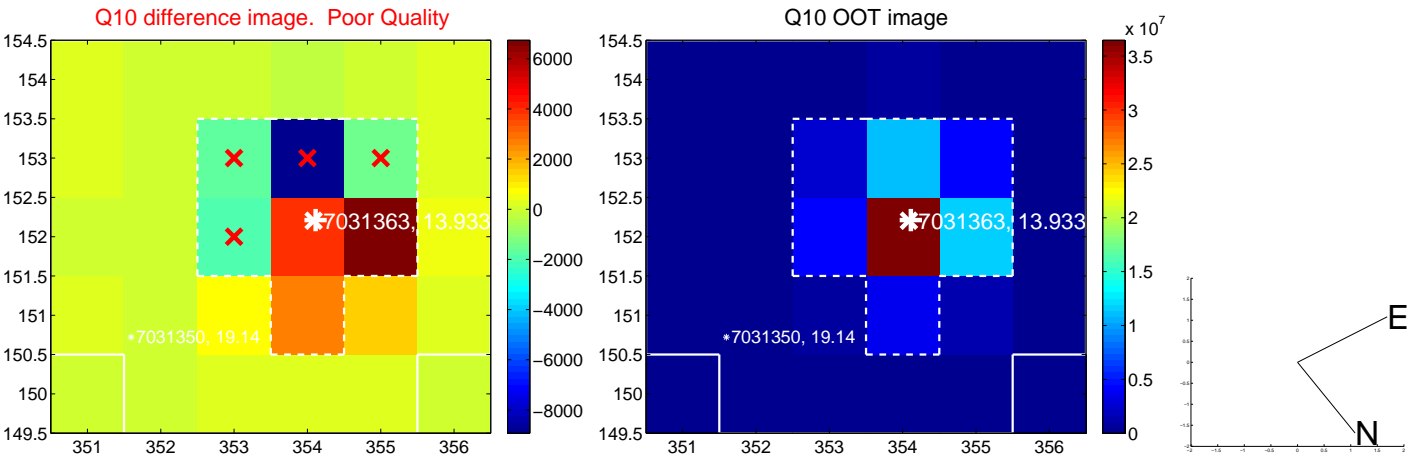
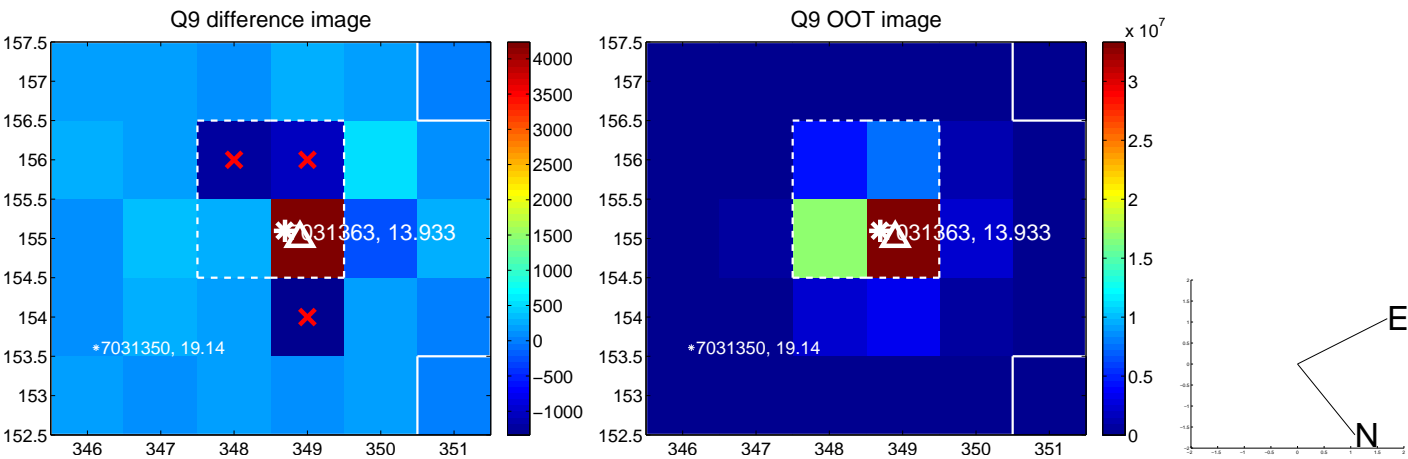


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

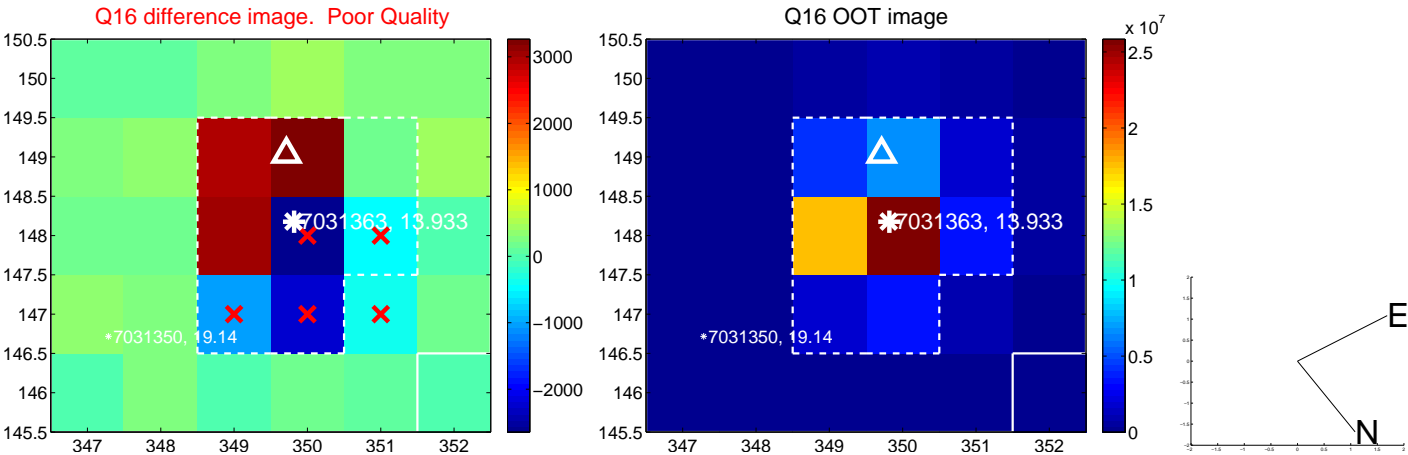
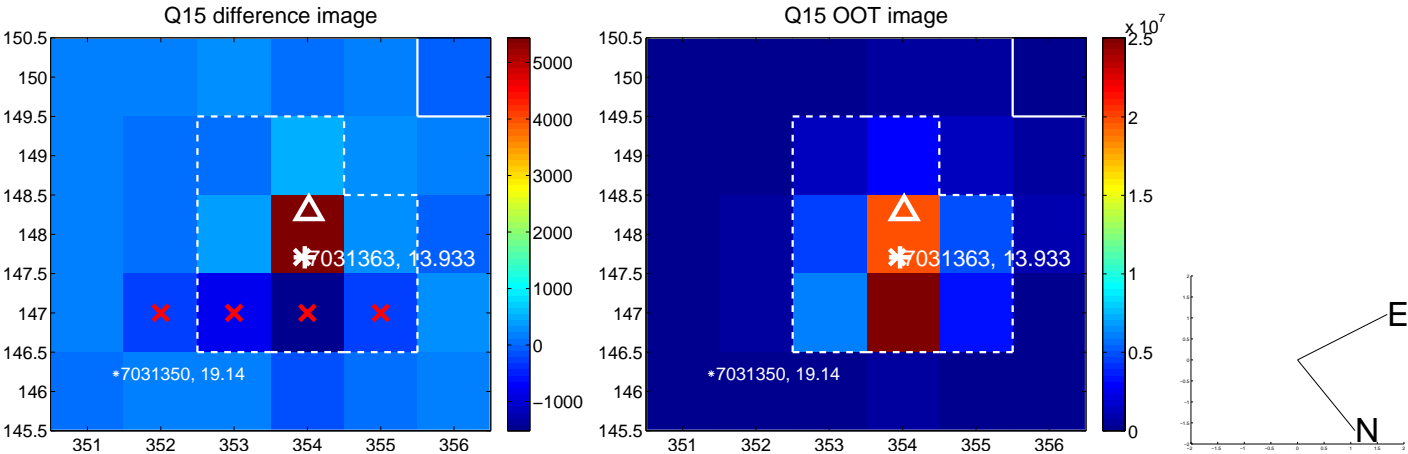
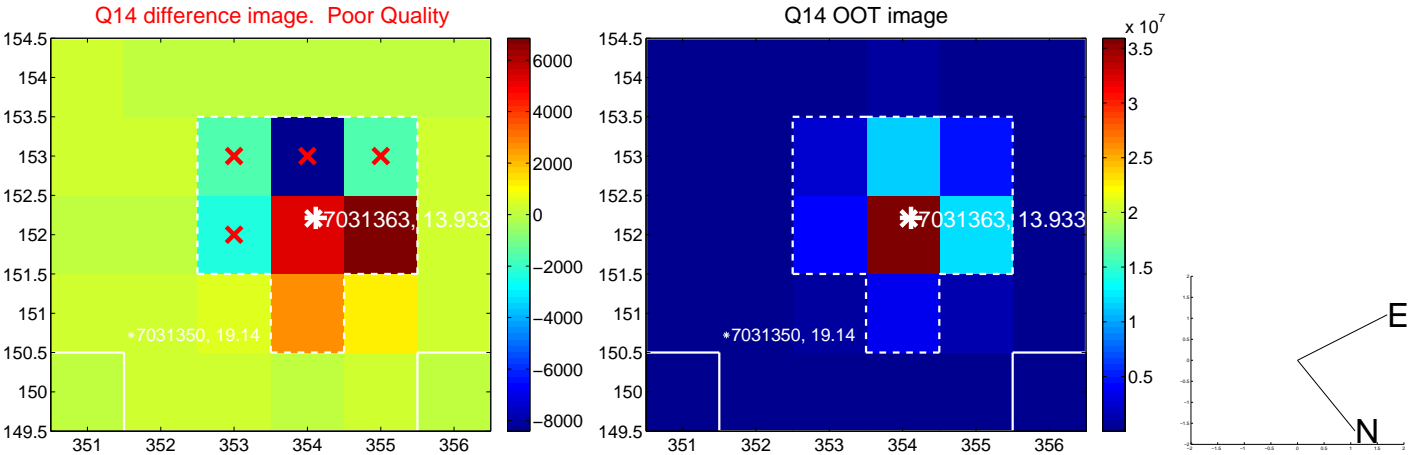
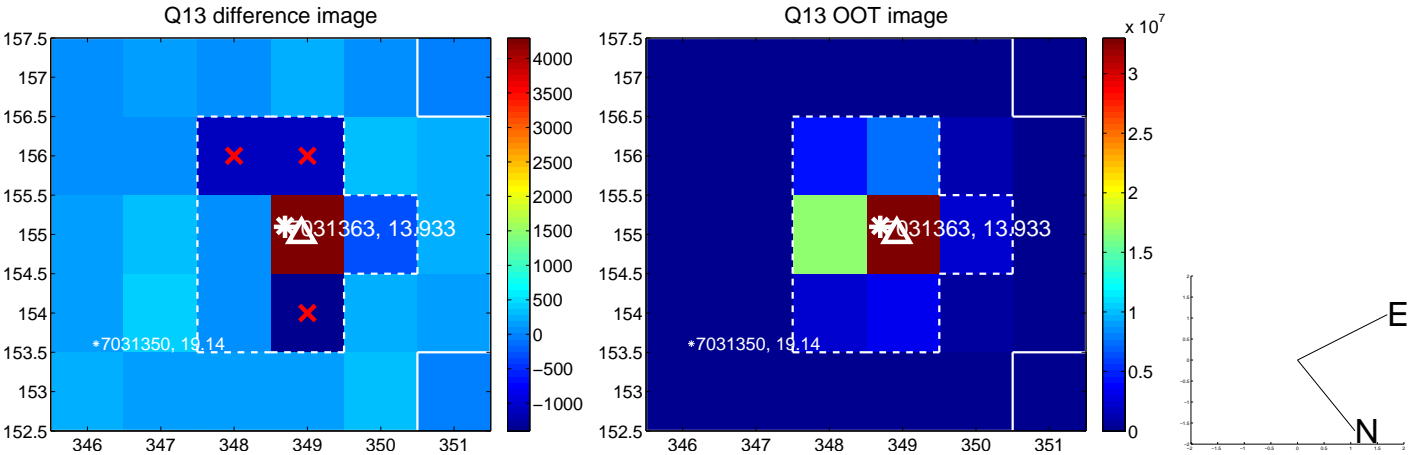




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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





UKIRT Image

