

# KIC 007031904

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007031904-01	OBS	No	0.566802	131.811460	9.3	4.614	8.1	8.2	1.38	6409	0.43	15554.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007031904-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_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.

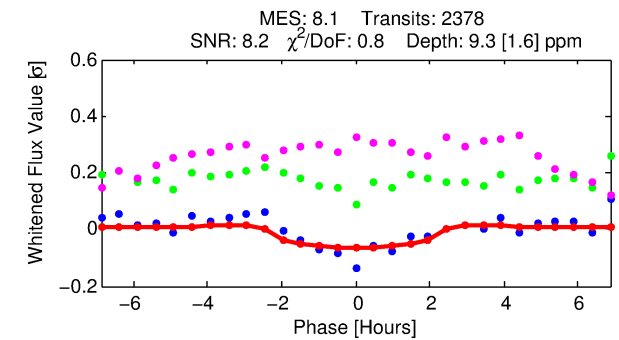
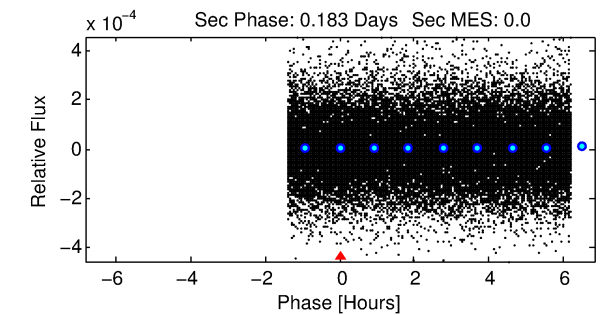
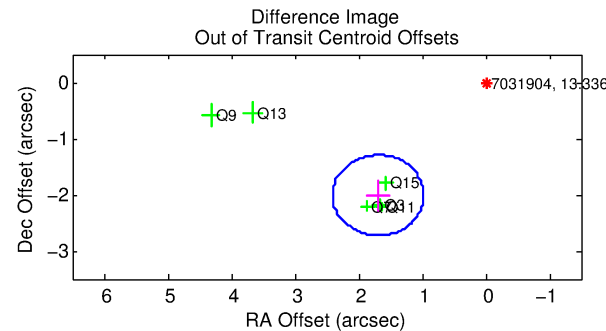
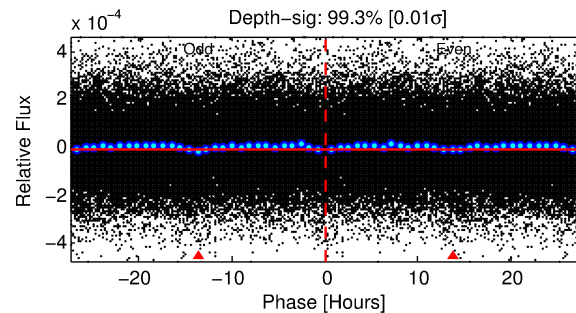
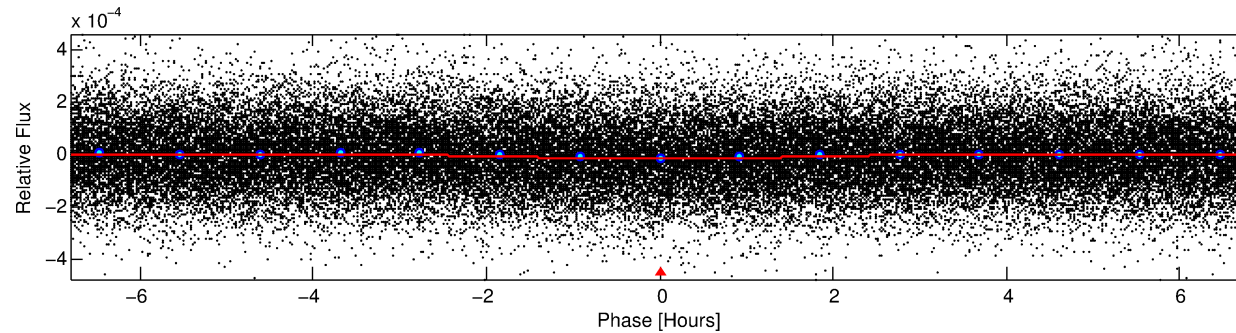
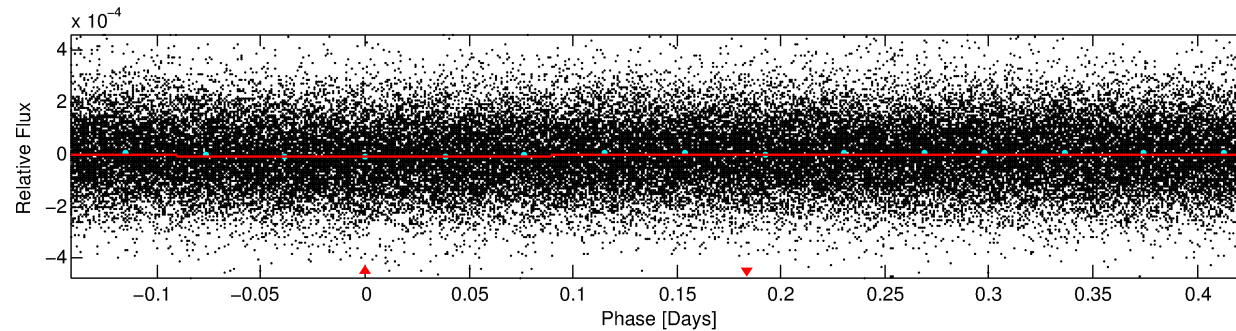
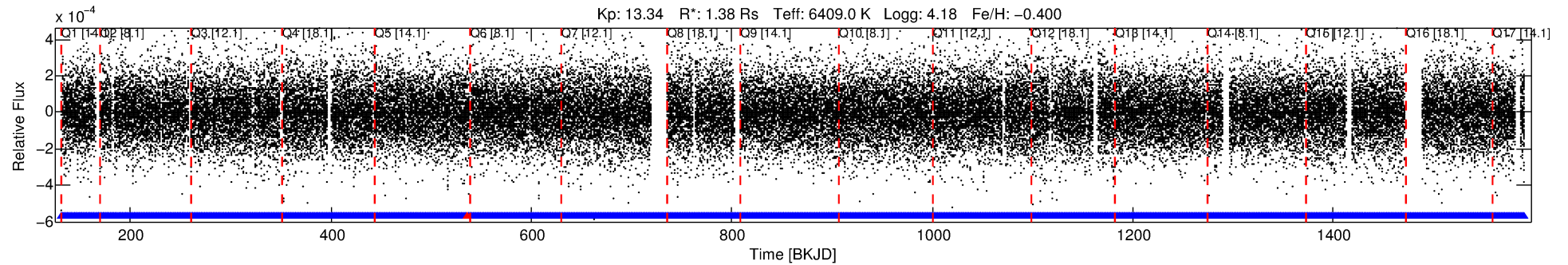
## Ephemeris Match Information For 007031904-01

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	$\sigma_P$	$\sigma_T$
007031904-01	7031904	RR-Lyr-pri	7198959	1:1	982.7	155	-193	7.86	13.33	69255.00	Direct-PRF	0	0.78	20.34

**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: 7031904 Candidate: 1 of 1 Period: 0.567 d



## DV Fit Results:

Period = 0.56680 [0.00001] d  
Epoch = 131.8115 [0.0056] BKJD  
Rp/R\* = 0.0029 [0.0030]  
a/R\* = 1.13 [1.33]  
b = 0.38 [12.74]  
Seff = 15554.53 [5362.59]  
Teq = 2848 [245] K  
Rp = 0.43 [0.46] Re  
a = 0.0136 [0.0028] AU  
Ag = N/A  
Teffp = N/A

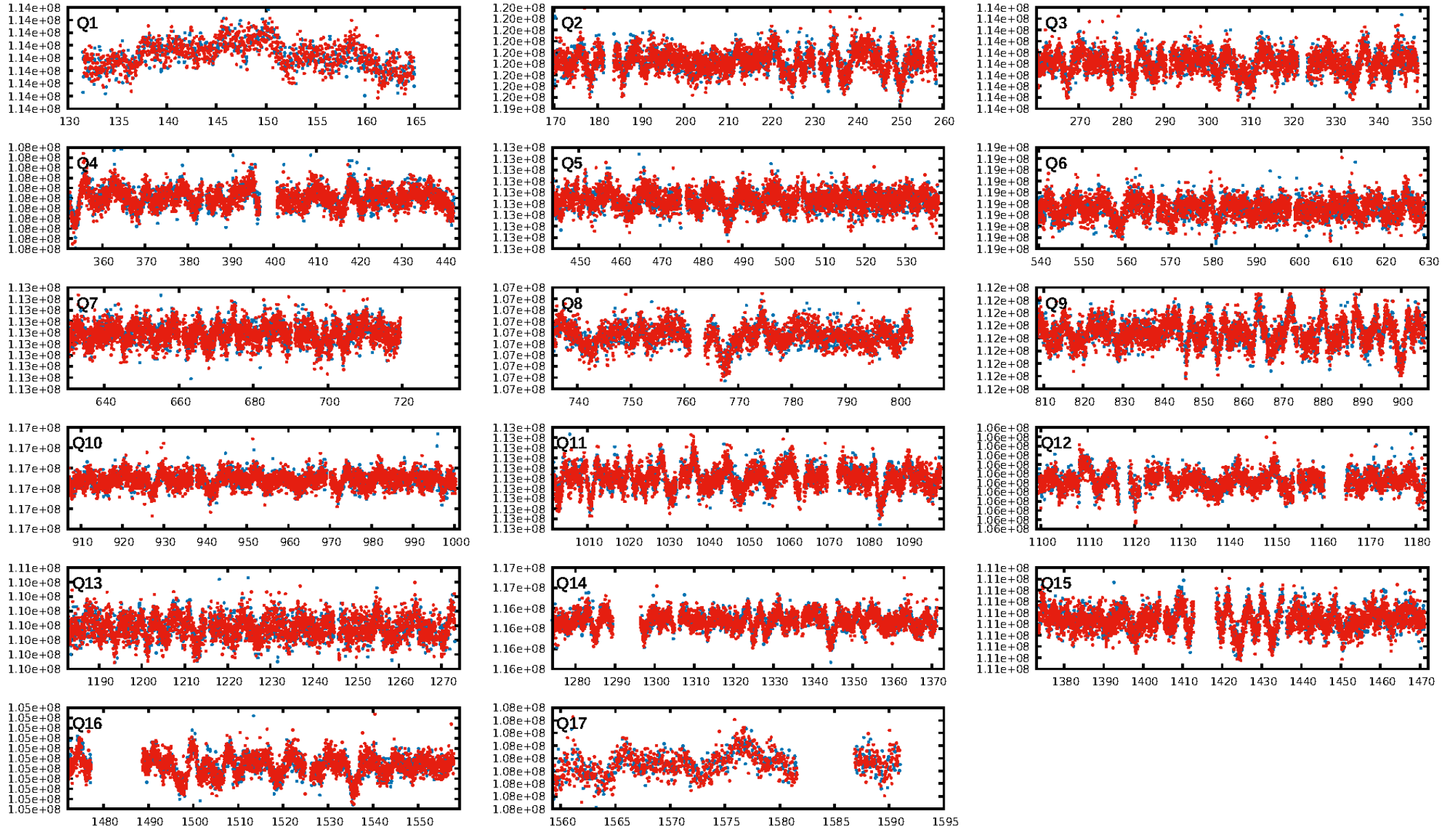
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2271/2272]  
**GhostDiagnostic-chr: 0.2634**  
Centroid-sig: 7.7%  
Centroid-so: 1.778 arcsec [1.42 $\sigma$ ]  
**OotOffset-rm: 2.629 arcsec [11.01 $\sigma$ ]**  
**KicOffset-rm: 2.629 arcsec [11.55 $\sigma$ ]**  
OotOffset-st: 0/4/0/2 [6]  
KicOffset-st: 0/4/0/2 [6]  
DiffImageQuality-fgm: 0.67 [4/6]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:44:04 Z

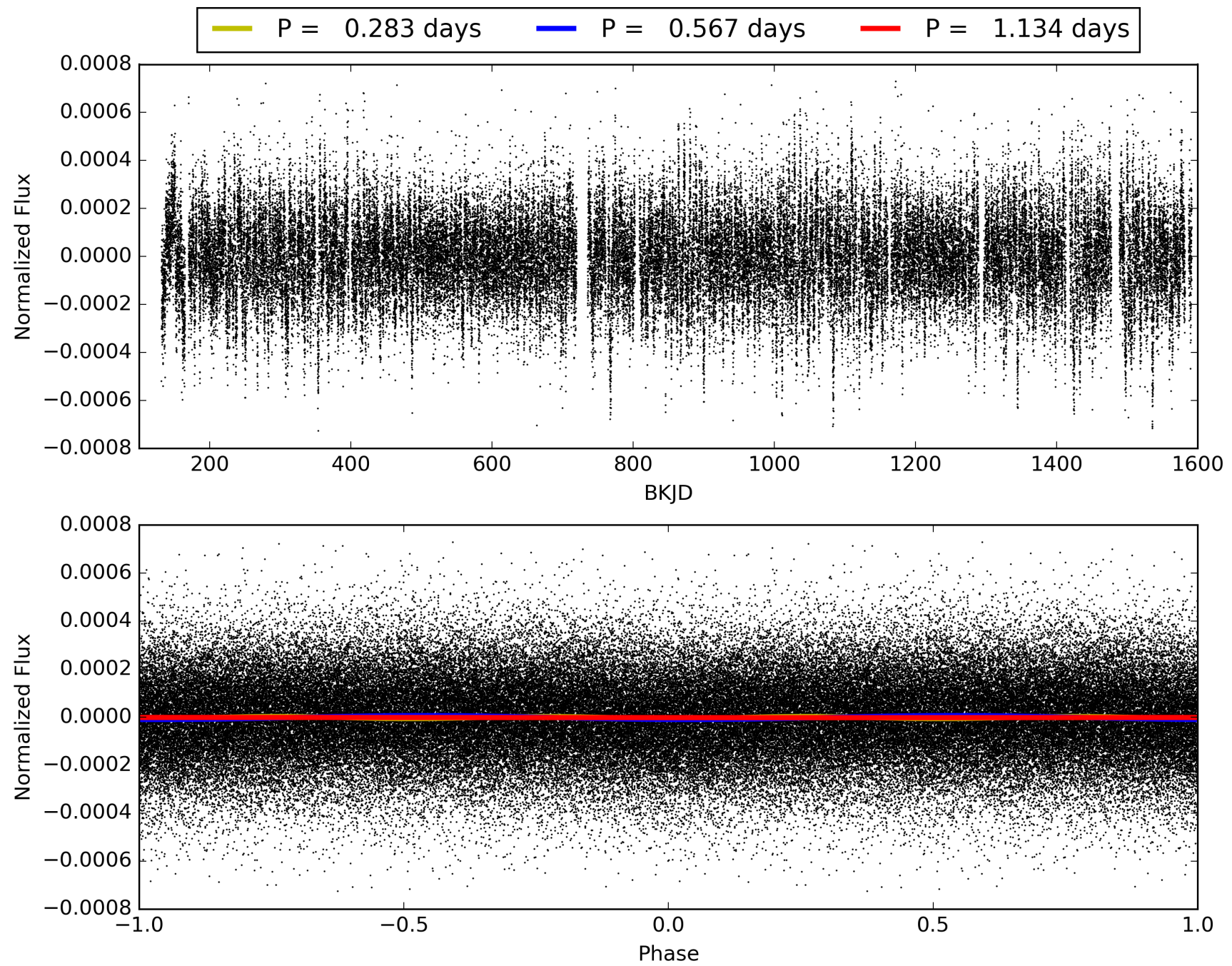
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007031904-01, PDC Light Curves



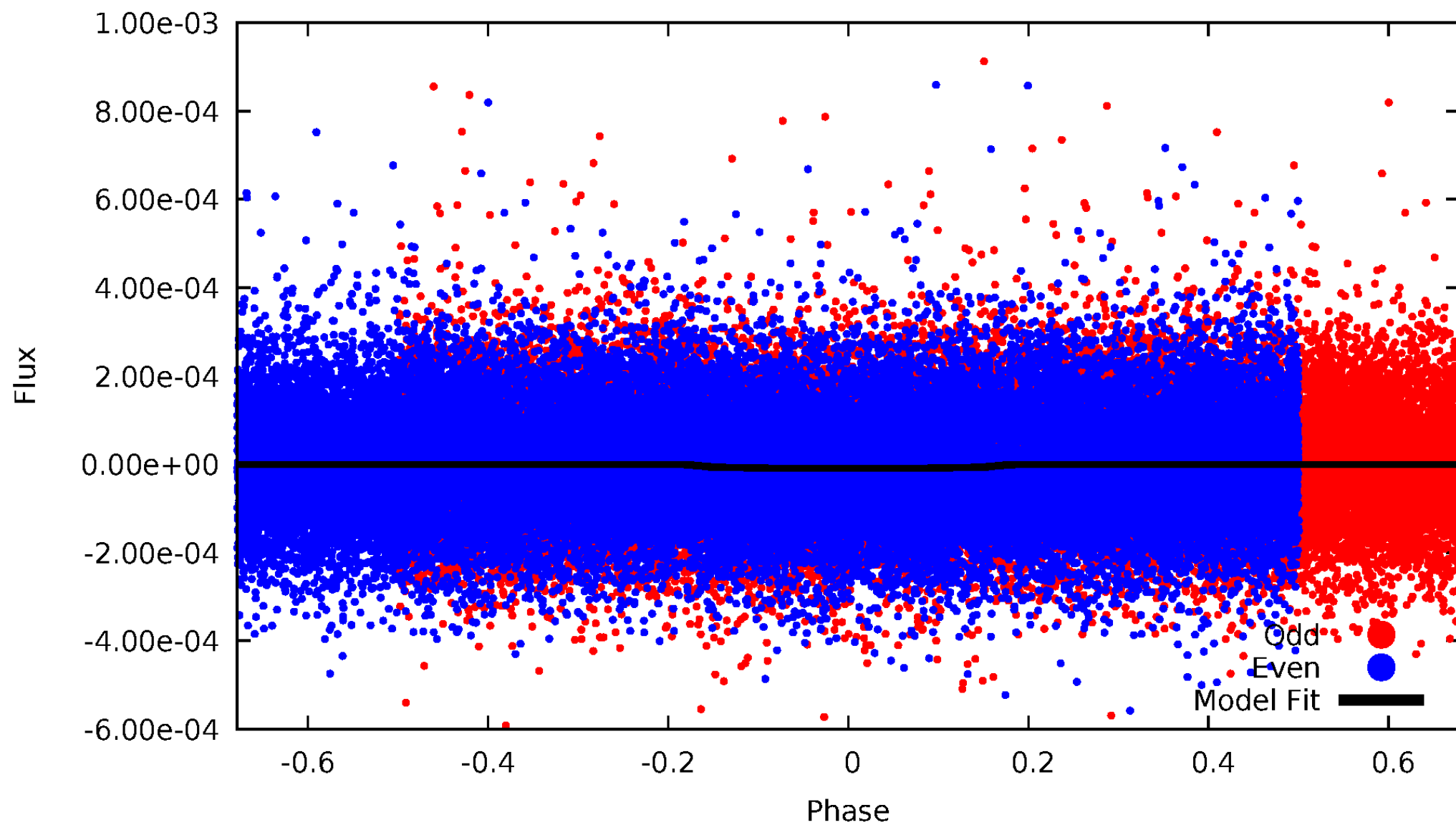


TCE 007031904-01



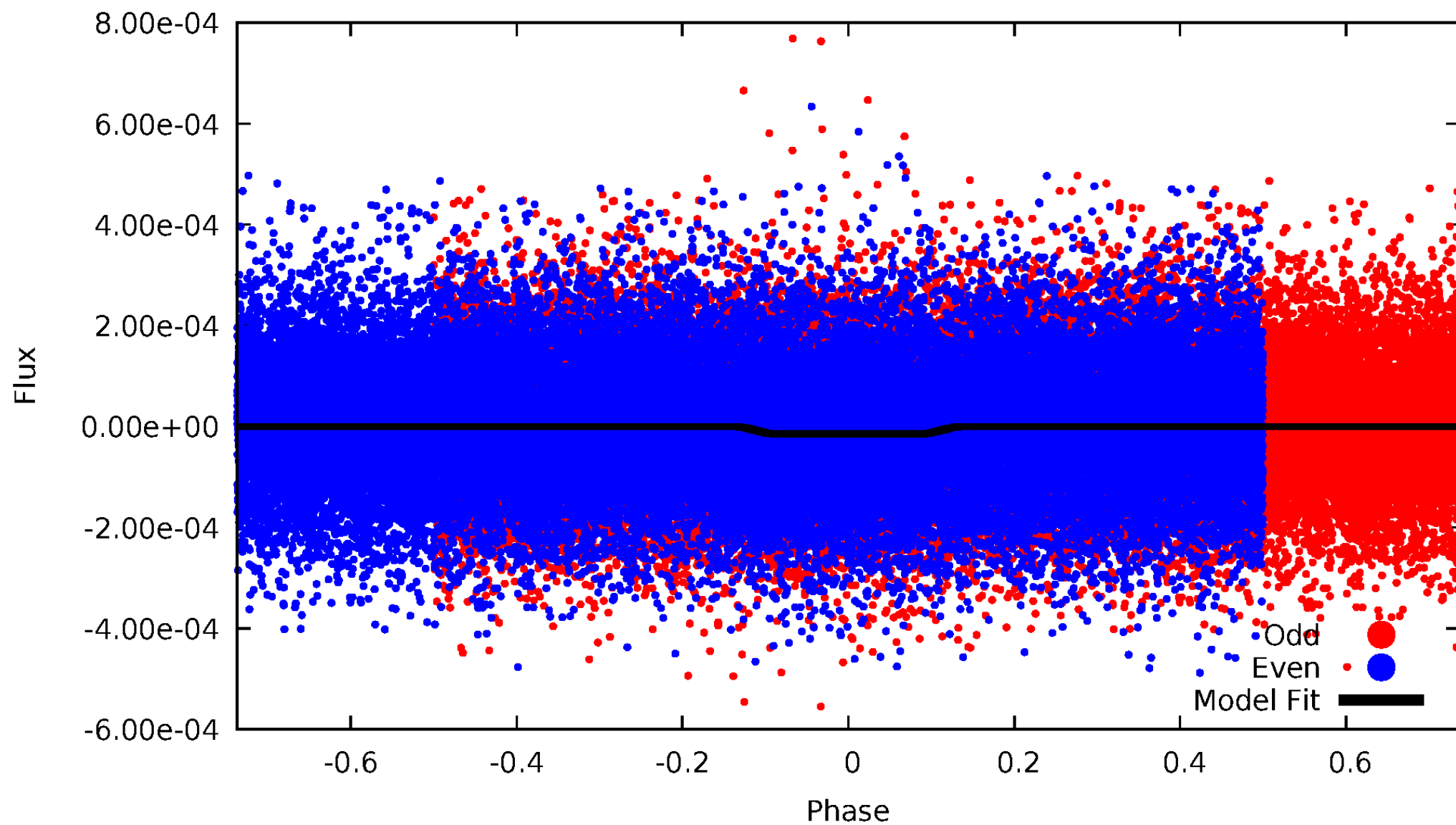
# DV Odd/Even

TCE 007031904-01



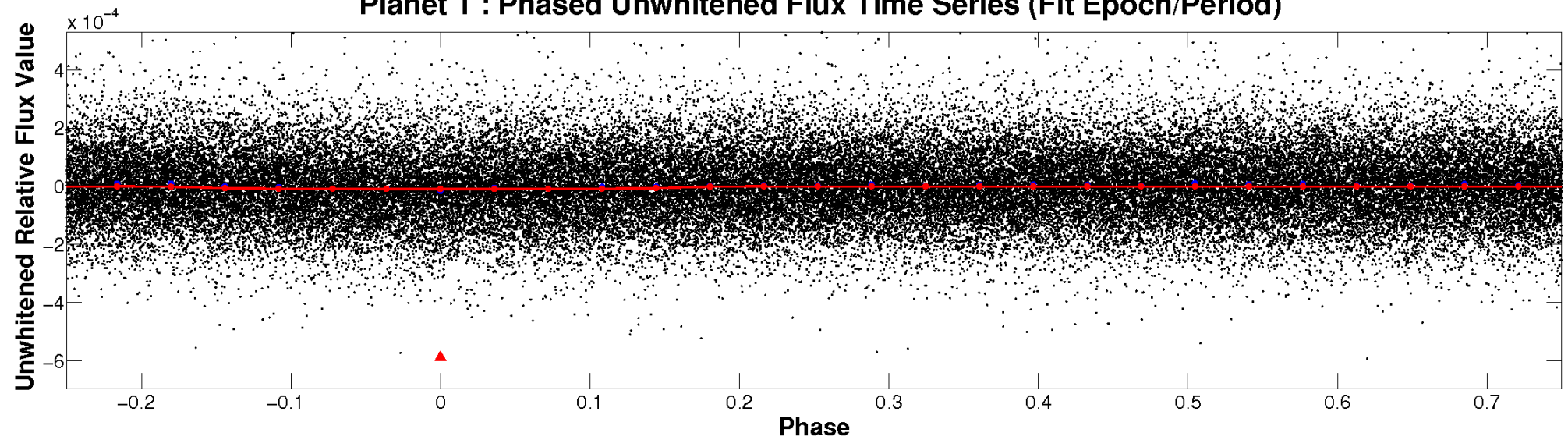
# ALT Odd/Even

TCE 007031904-01

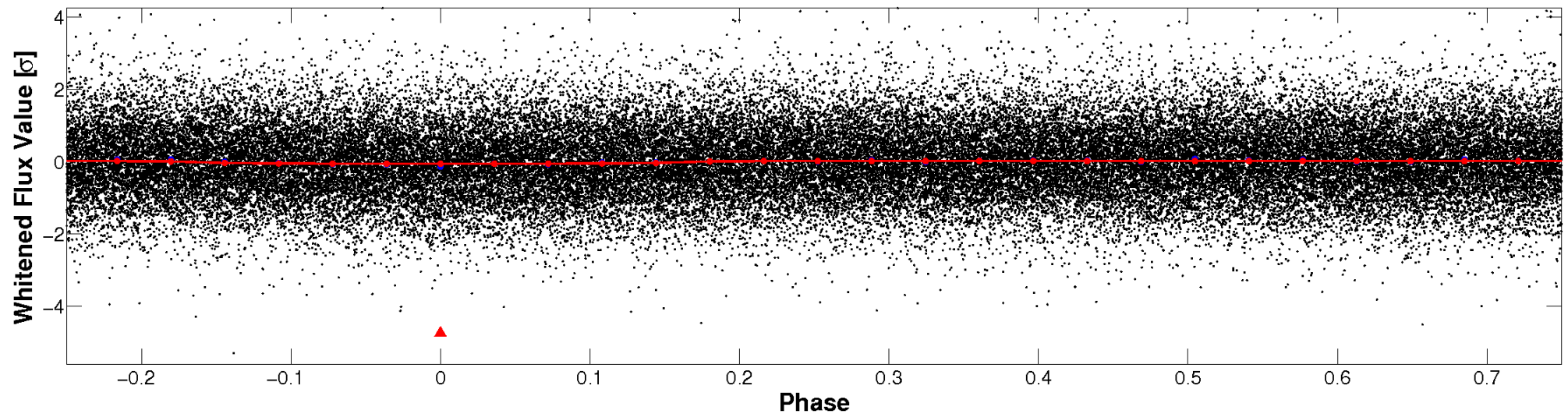


# Non-Whitened Vs. Whitened Light Curve

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



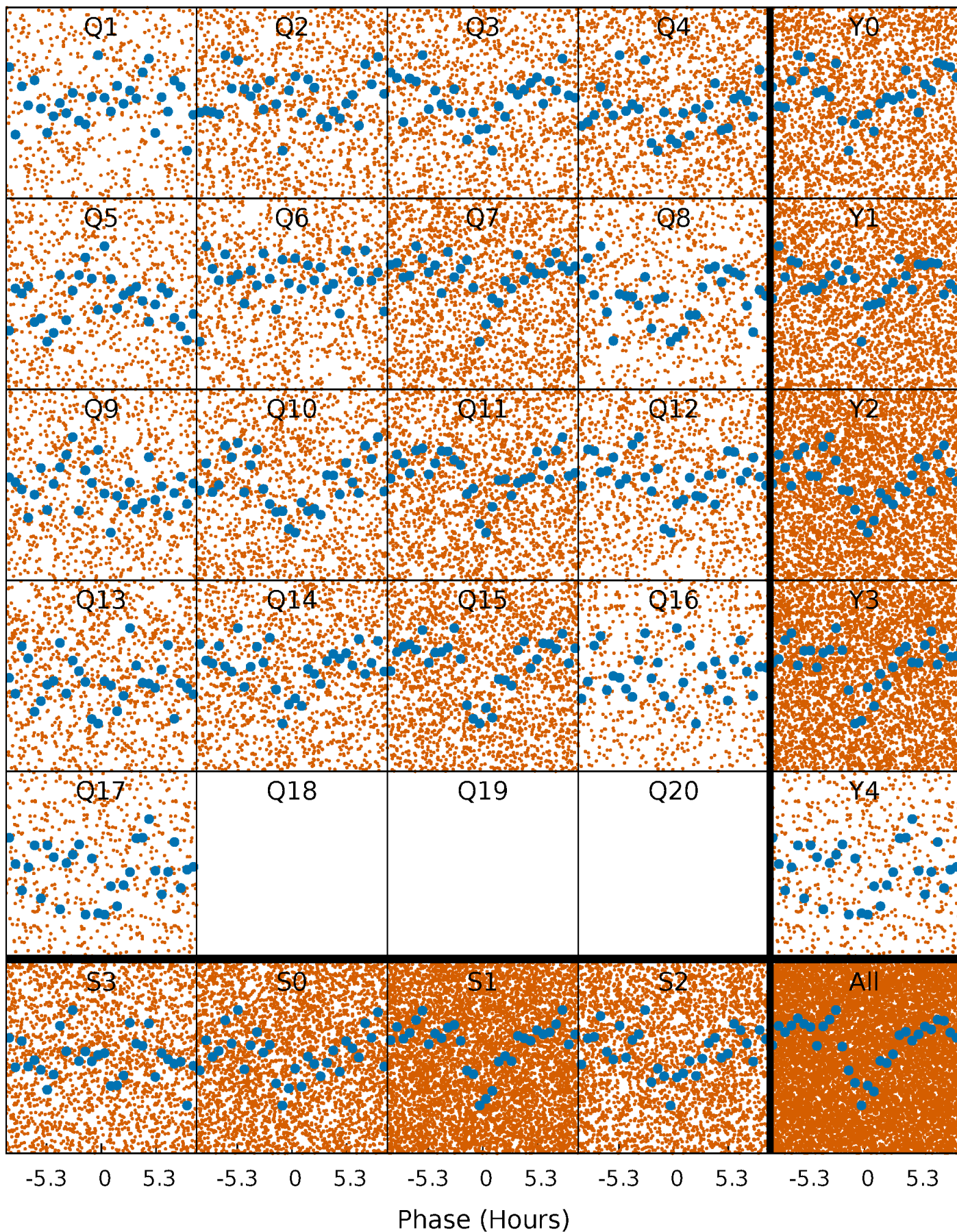
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

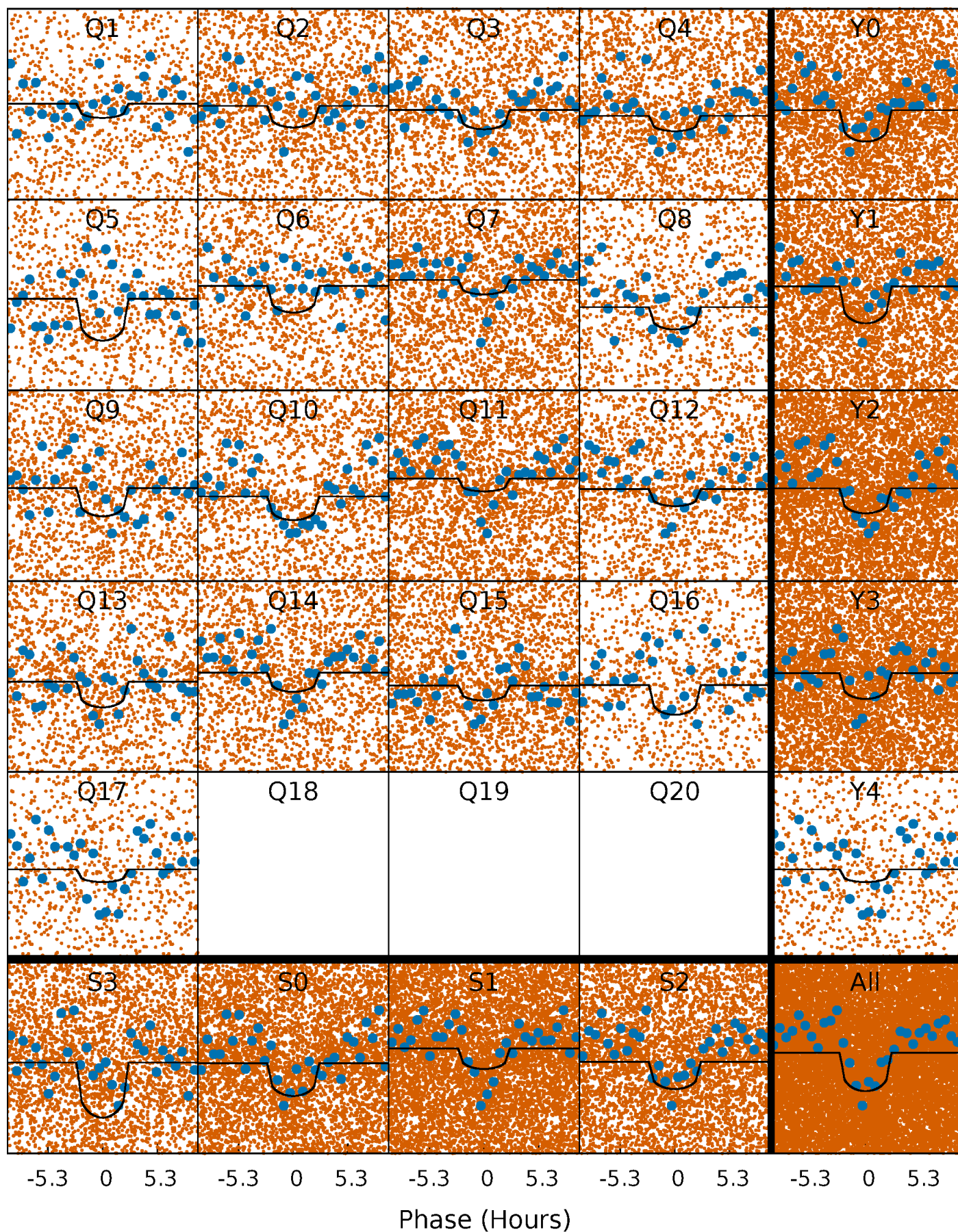
TCE 007031904-01 P= 0.566802 Days  $T_0=131.811460$  (BKJD)





# DV Quarter-Phased Transit Curves

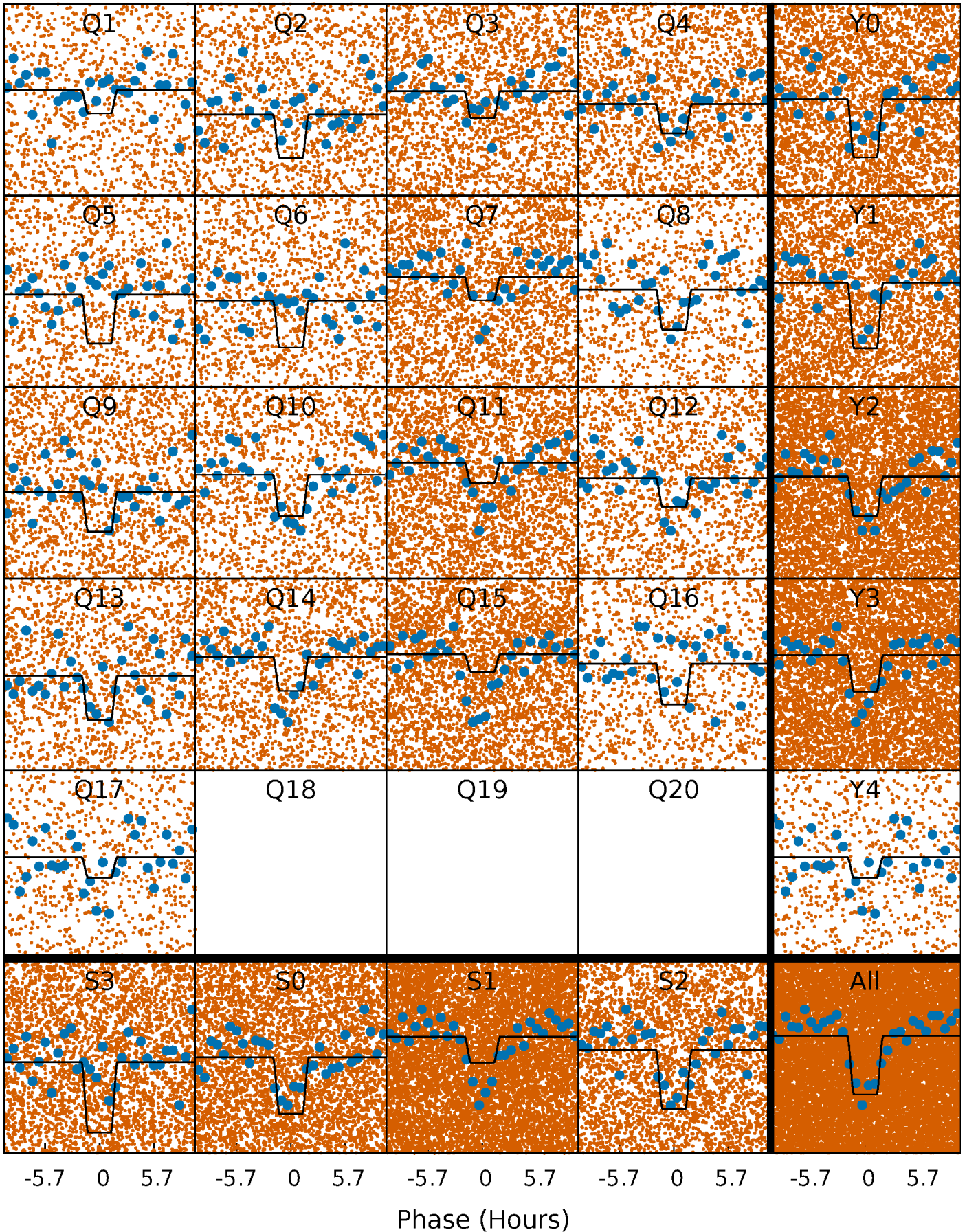
TCE 007031904-01 P= 0.566802 Days  $T_0=131.811460$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

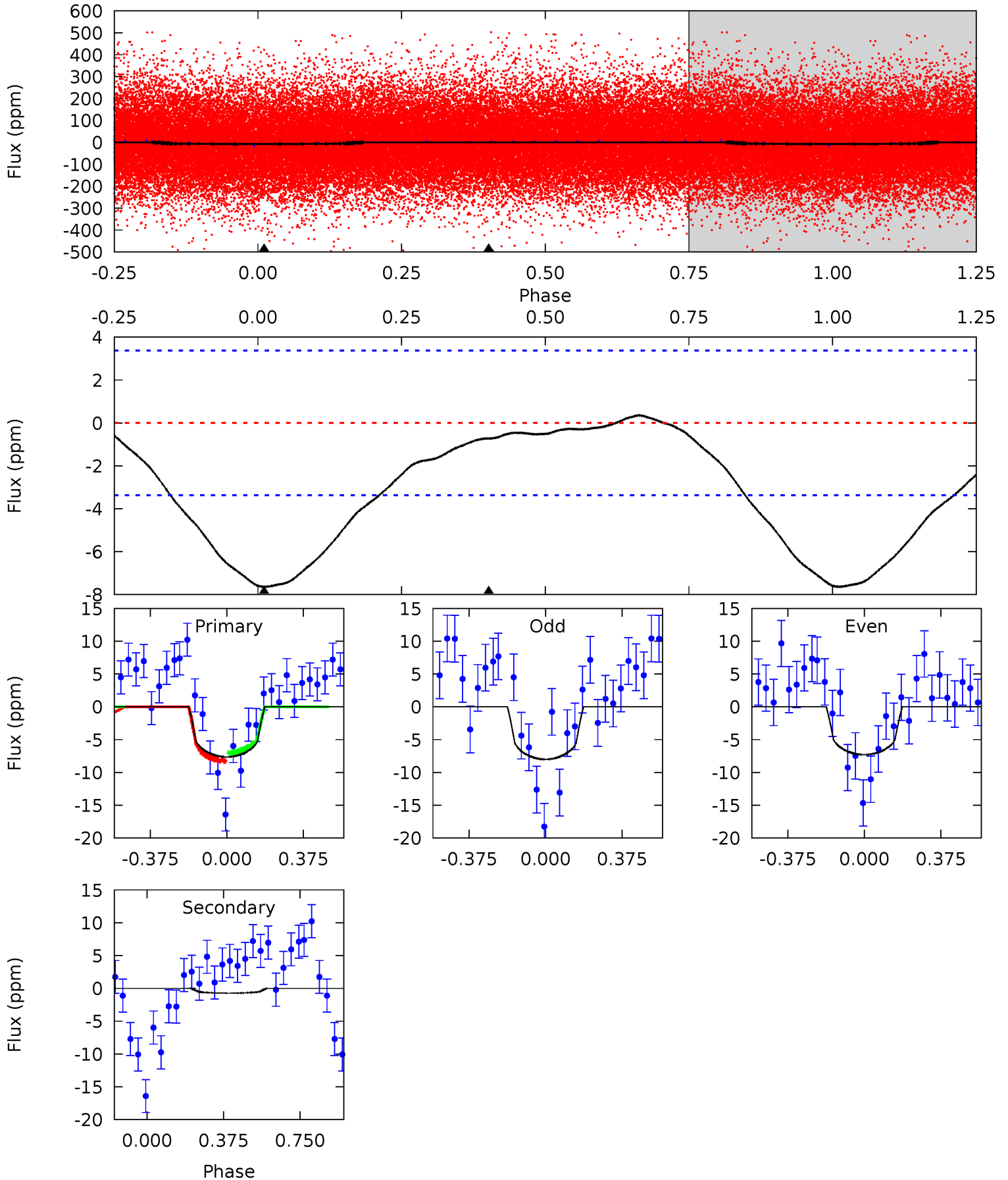
TCE 007031904-01 P= 0.566814 Days  $T_0=131.797574$  (BKJD)



# DV Model-Shift Uniqueness Test

007031904-01, P = 0.566802 Days, E = 131.244658 Days

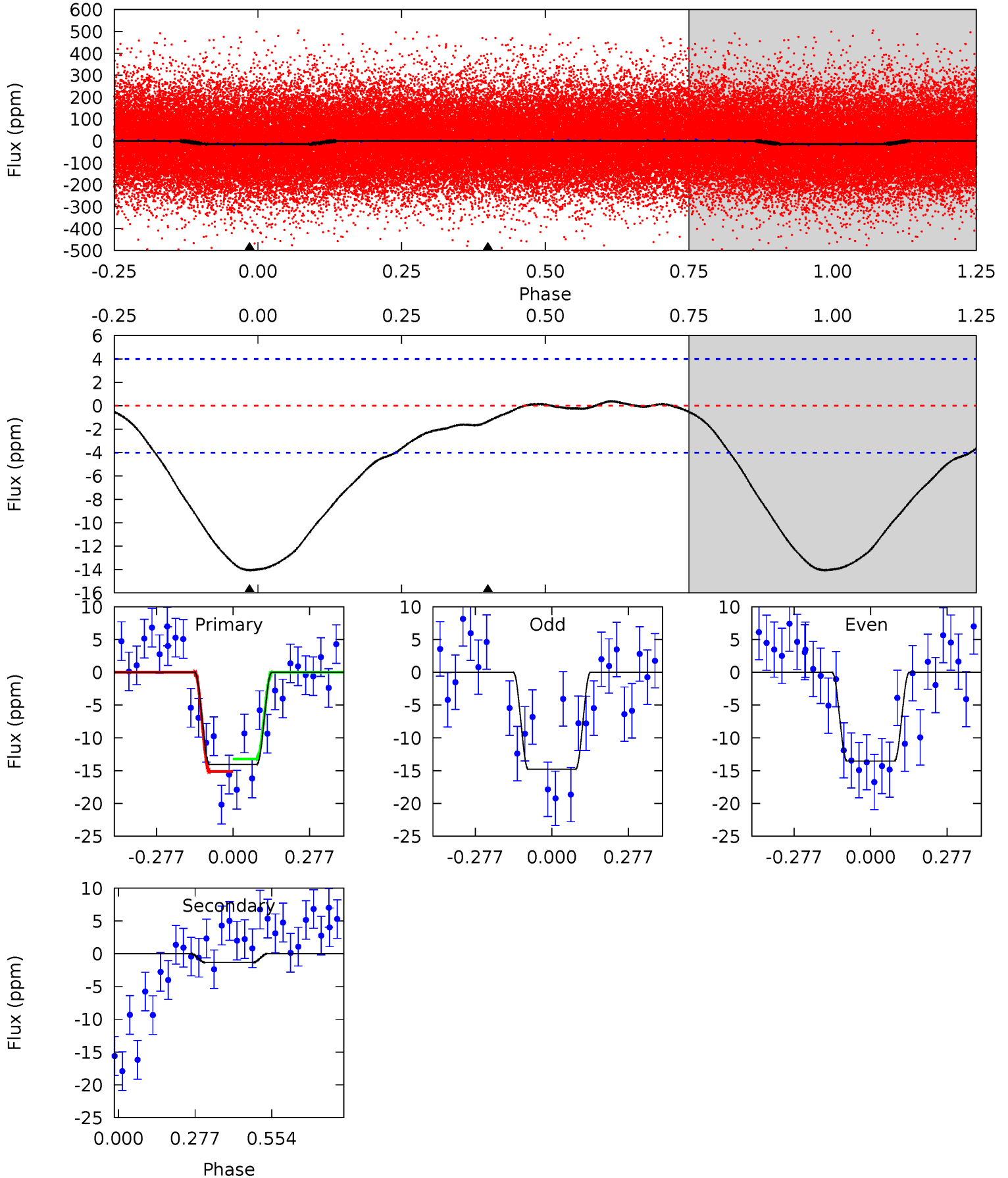
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.69	0.93	0	0	4.28	0.89	0.40	9.69	9.69	0.93	0.93	0.45	1.12	0.04	0.77



# Alt Model-Shift Uniqueness Test

007031904-01, P = 0.566814 Days, E = 131.230760 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
15.2	1.45	0	0	4.35	1.09	0.13	15.2	15.2	1.45	1.45	0.67	1.15	0.03	1.02





### Stellar Parameters For KIC 007031904

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6409^{+155}_{-175}$	$4.177^{+0.192}_{-0.128}$	$-0.400^{+0.300}_{-0.300}$	$1.379^{+0.293}_{-0.293}$	$1.041^{+0.174}_{-0.107}$	$0.560^{+0.564}_{-0.209}$
	+2%/-3%	+5%/-3%	+75%/-75%	+21%/-21%	+17%/-10%	+101%/-37%
Source	PHO1	FLK73	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 007031904-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-1 \pm 1$	$0.52^{+0.43}_{-0.33}$	$3944^{+251}_{-268}$	$-2985^{+7945}_{-803}$	$0.209^{+1.740}_{-0.224}$
Alt.	$-1 \pm 1$	$0.63^{+0.44}_{-0.39}$	$3945^{+245}_{-261}$	$-1952^{+7060}_{-1629}$	$0.298^{+1.689}_{-0.242}$

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

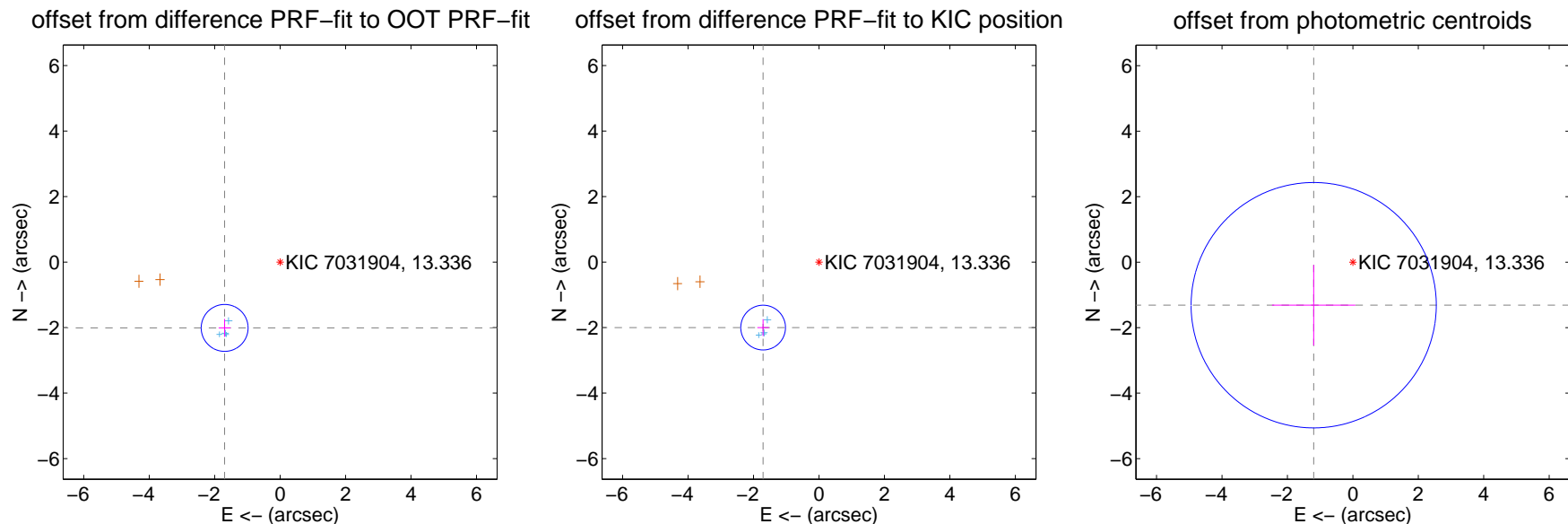
## DV Centroid Data

Supplemental centroid analysis for 007031904-01. Kepler magnitude: 13.34. Transit SNR 8.20

There are 4 quarters with good PRF difference image offsets

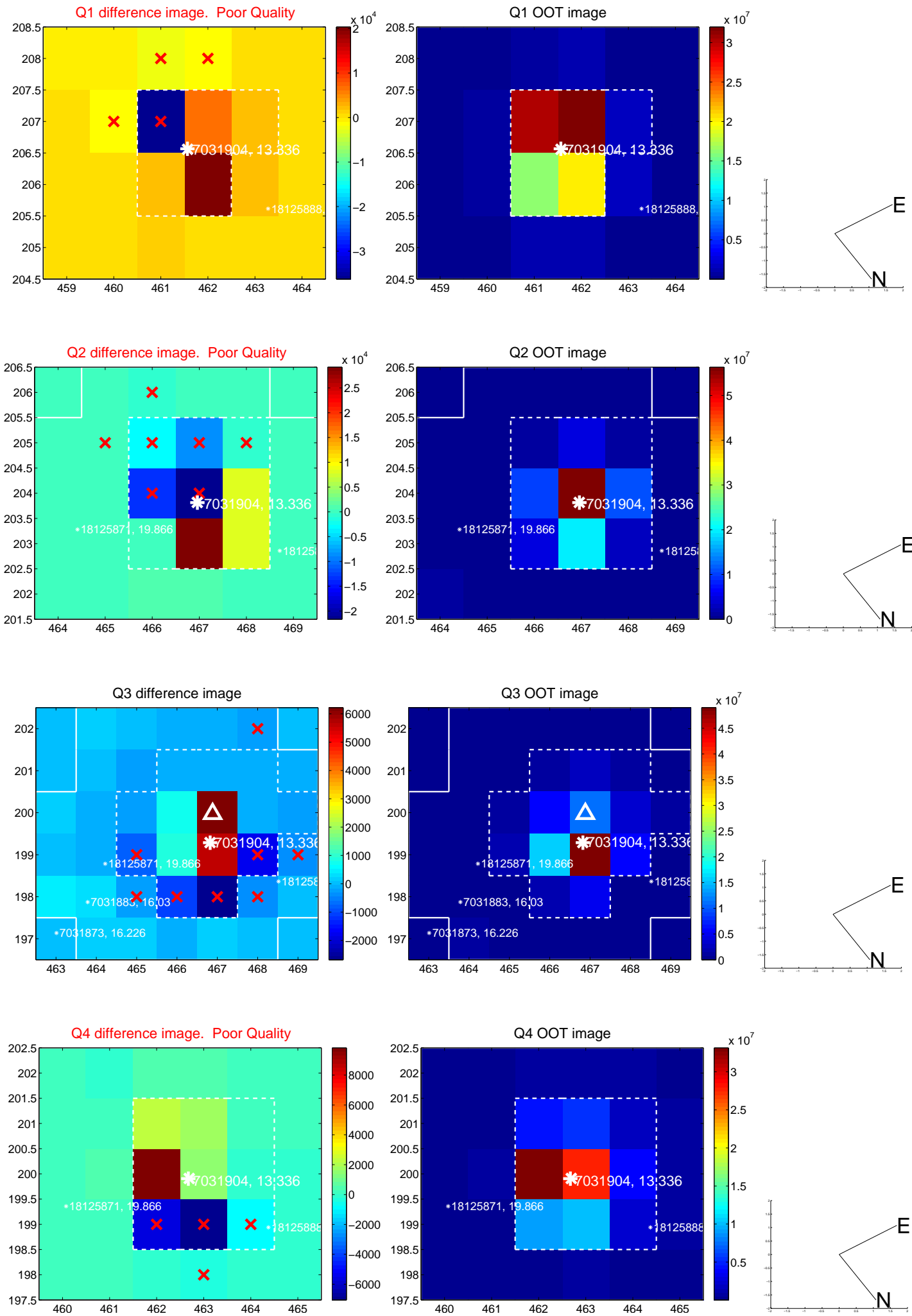
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.629 \pm 0.239$	11.01	$1.695 \pm 0.182$	$-2.010 \pm 0.272$
PRF-fit source offset from KIC position	$2.629 \pm 0.228$	11.55	$1.707 \pm 0.178$	$-2.000 \pm 0.258$
photometric centroid source offset	$1.78 \pm 1.25$	1.42	$1.20 \pm 1.27$	$-1.31 \pm 1.23$

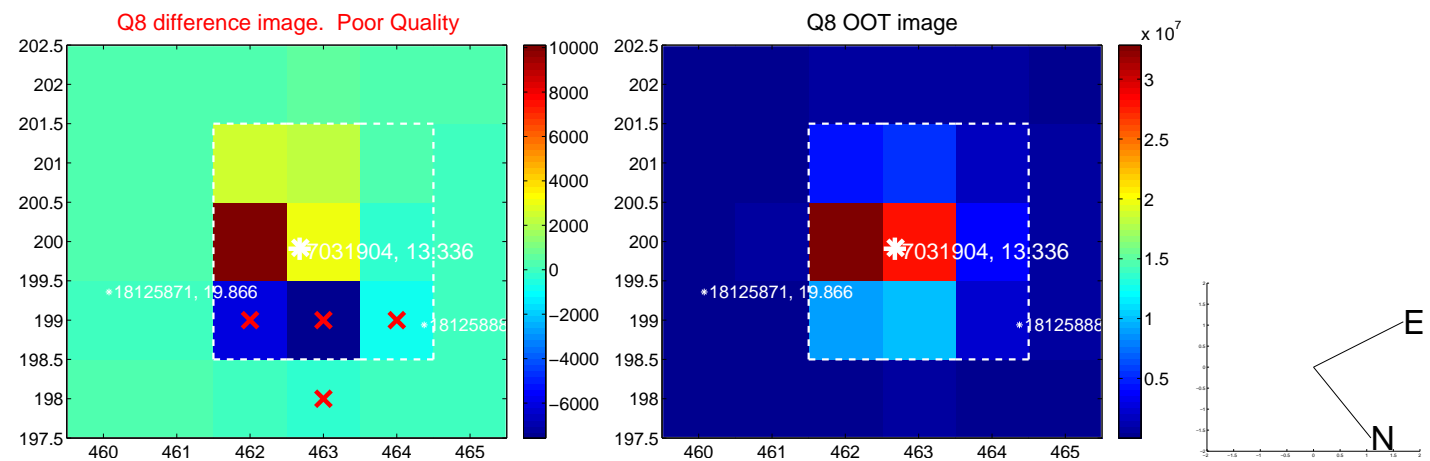
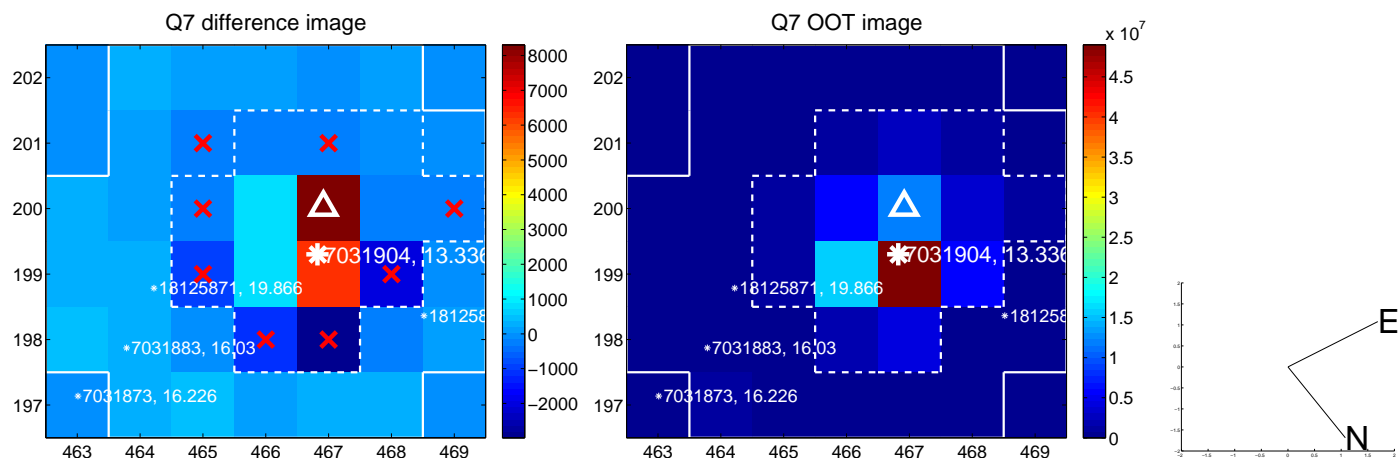
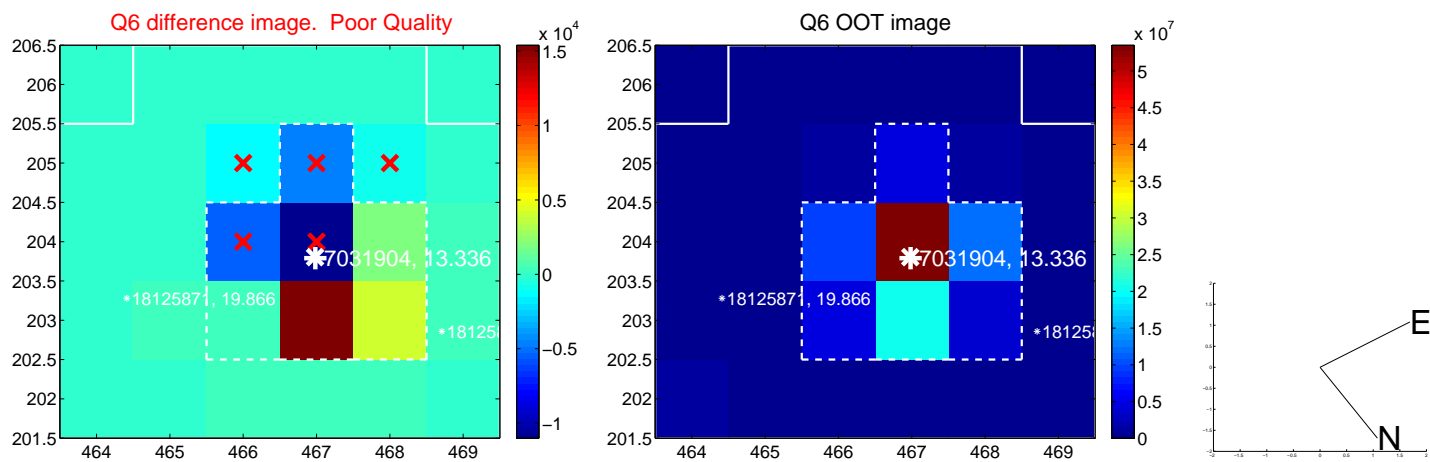
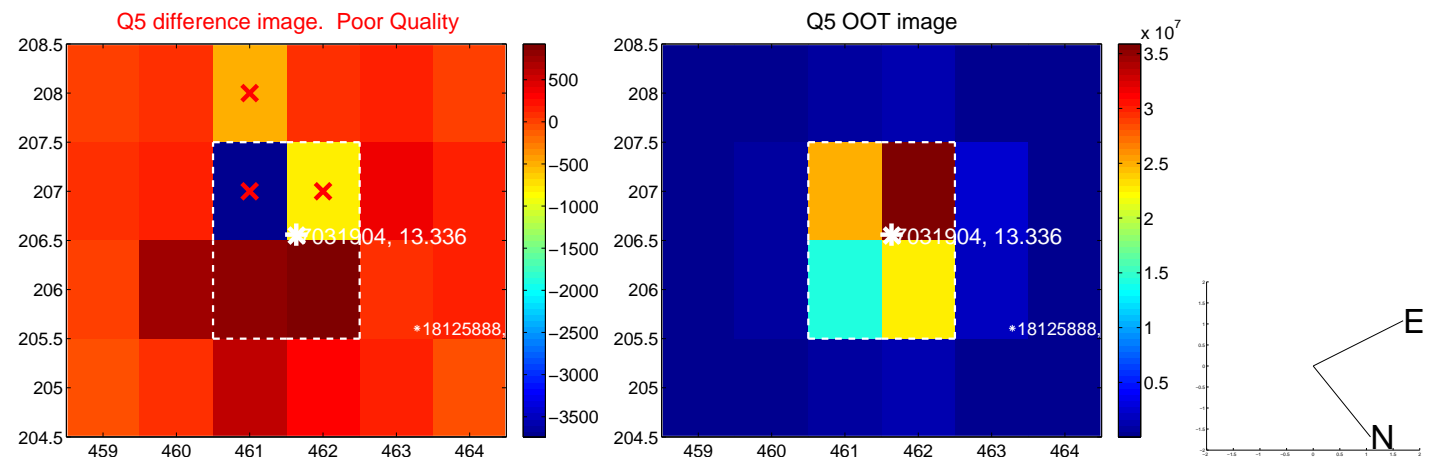


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

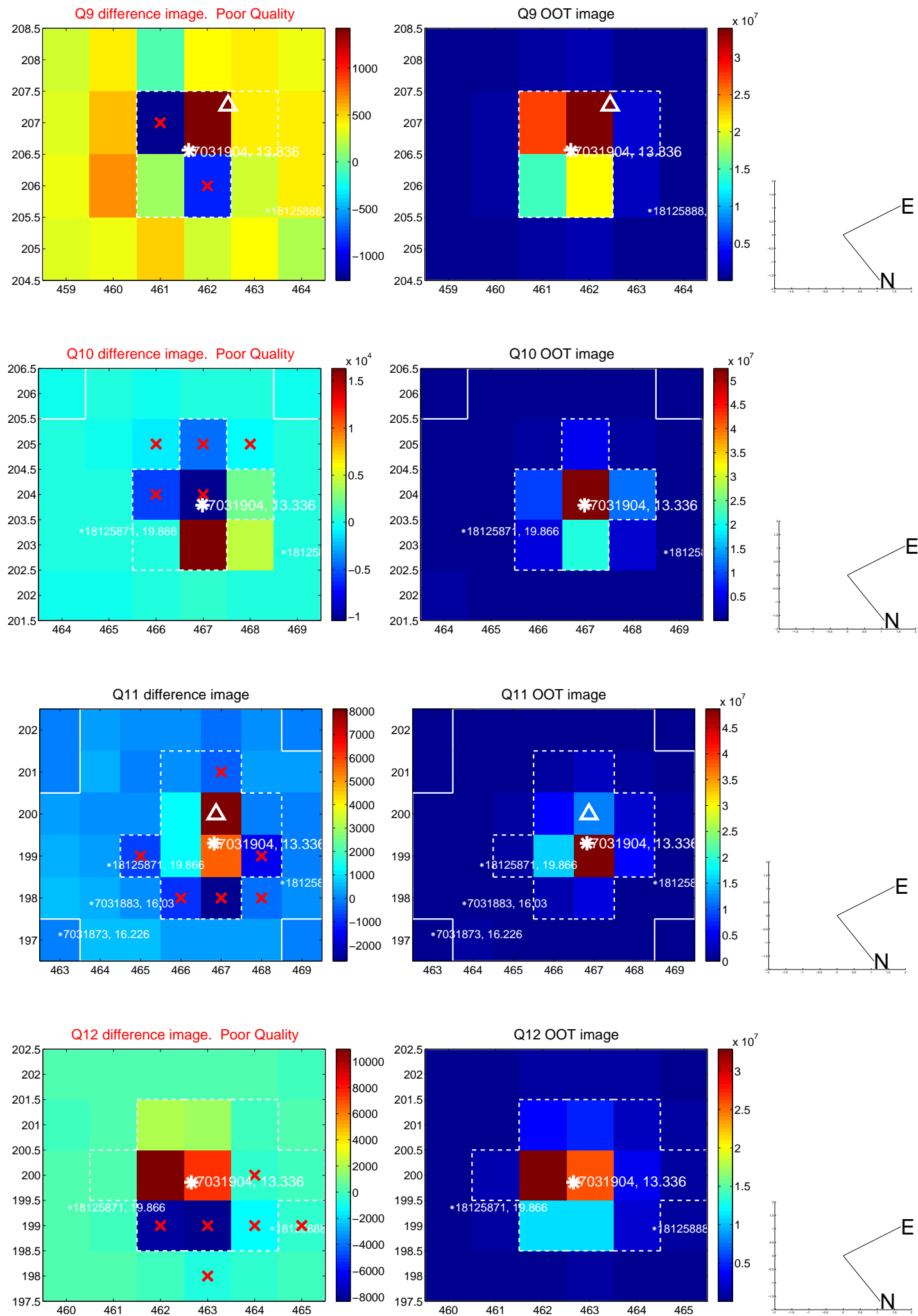


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

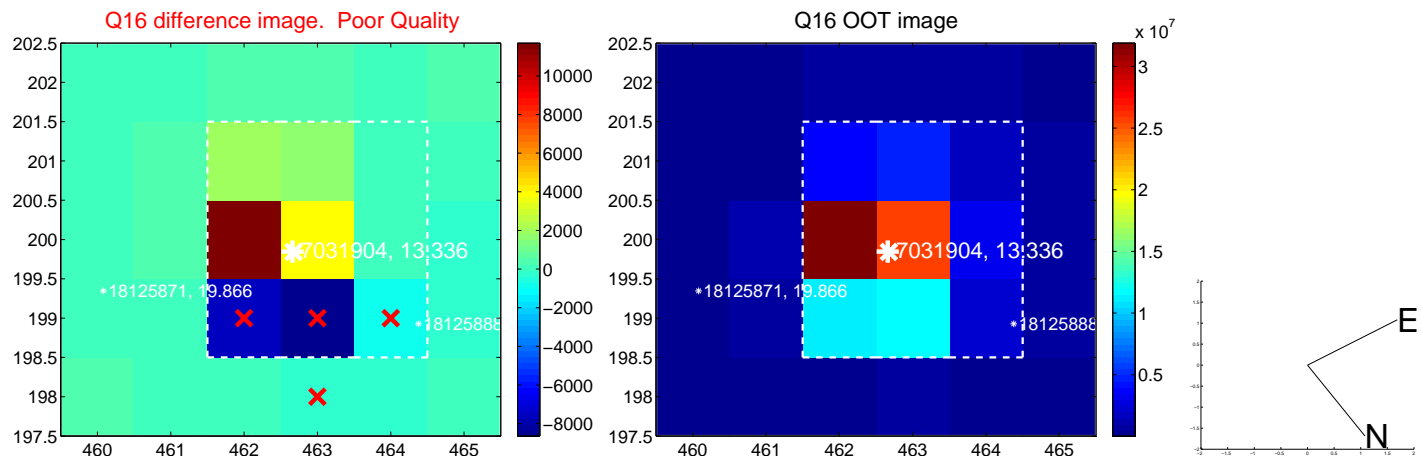
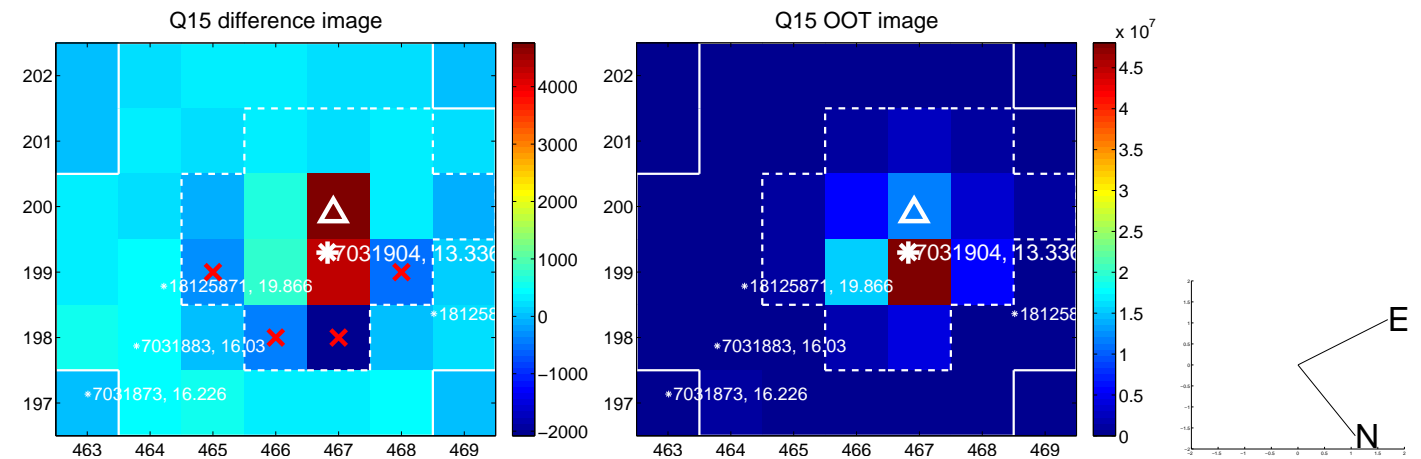
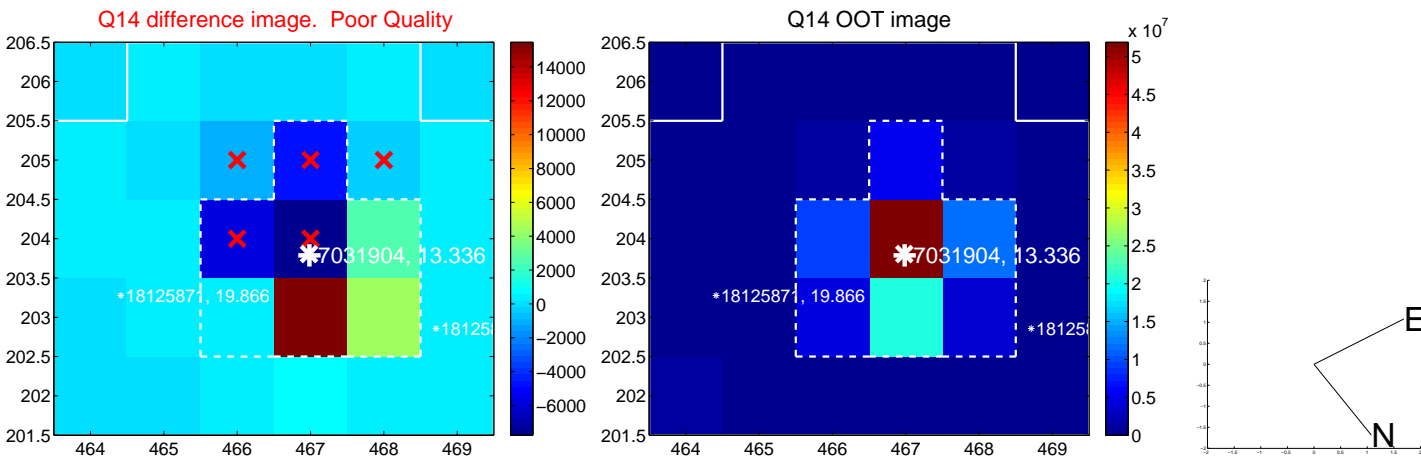
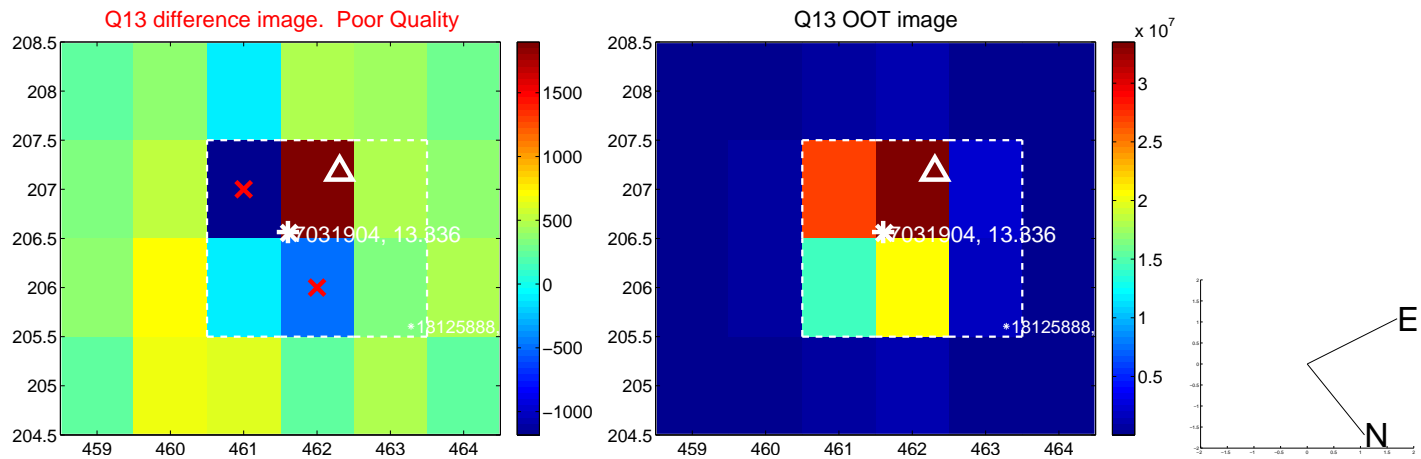




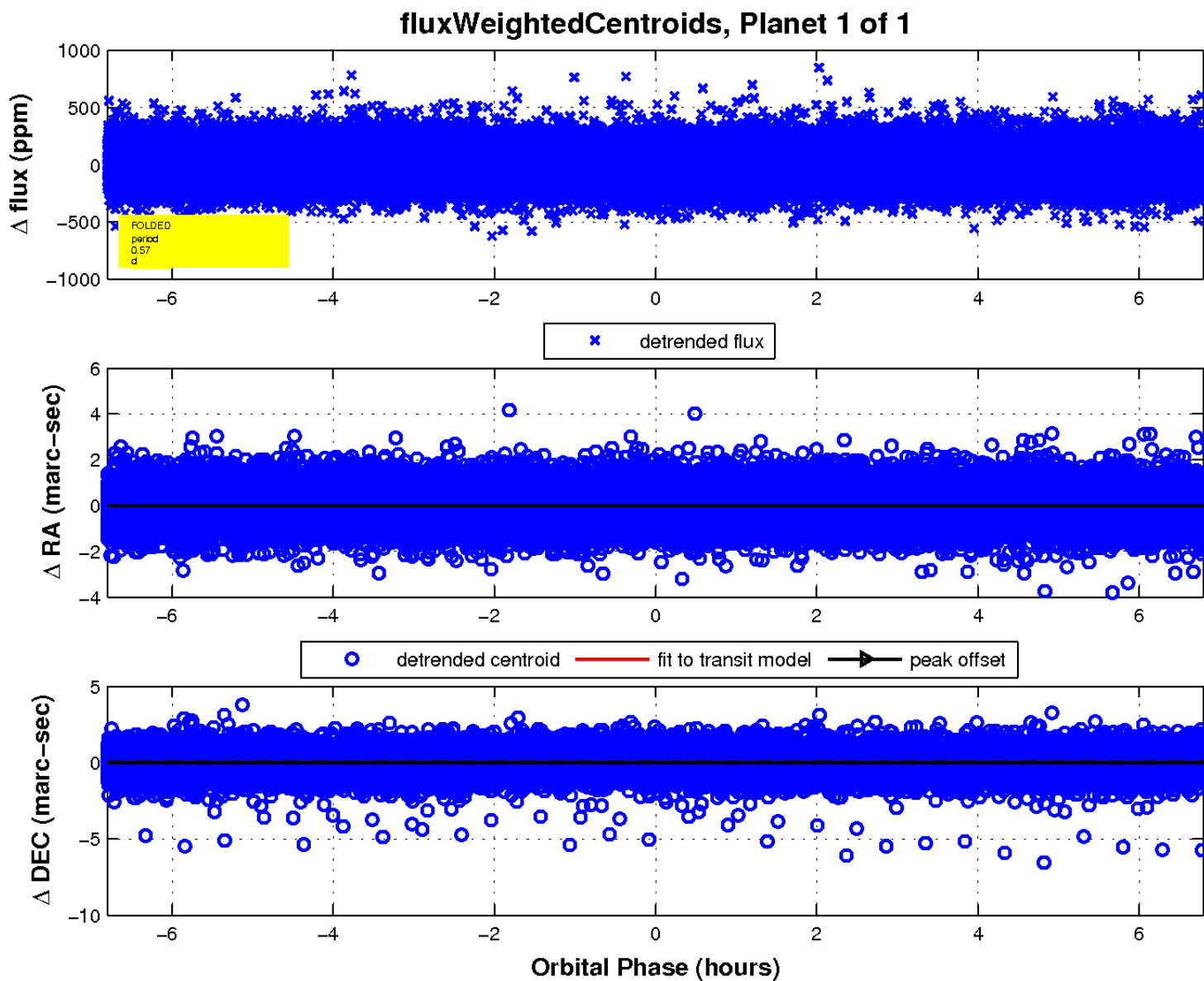
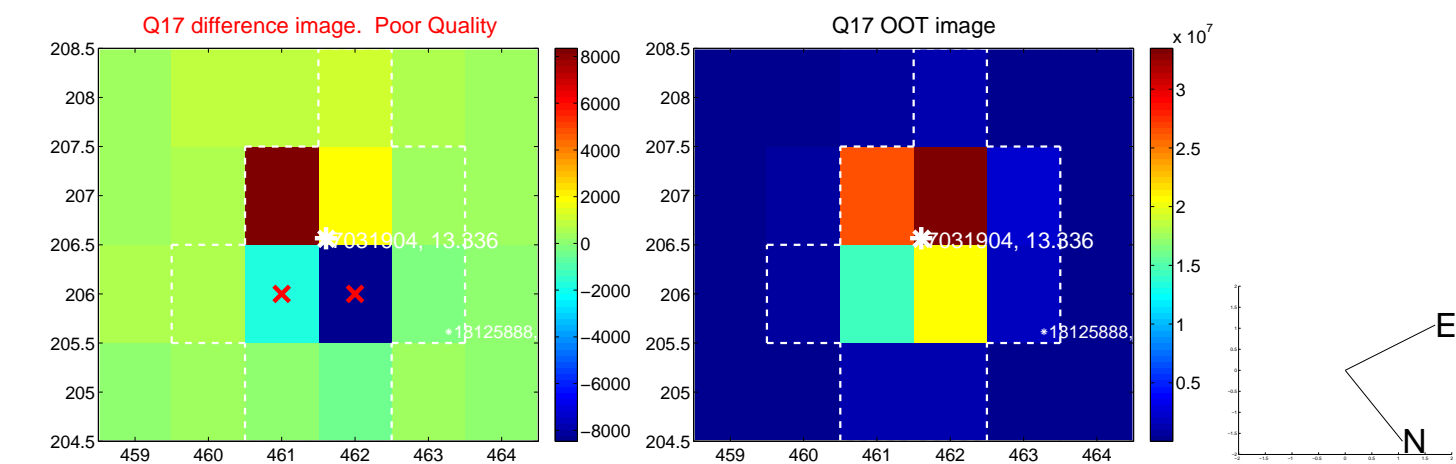
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



UKIRT Image

Declination

