

# KIC 007031293

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007031293-01	OBS	No	0.566773	131.857269	9.7	4.932	11.6	8.3	2.05	5431	0.68	18184.62

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007031293-01	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.

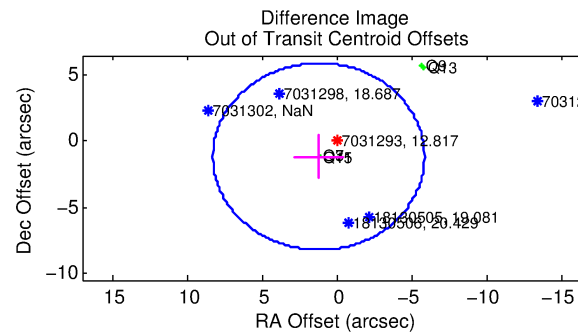
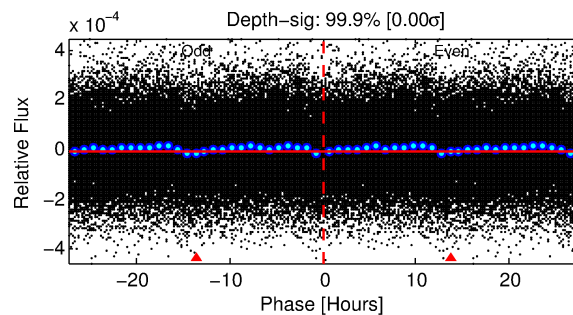
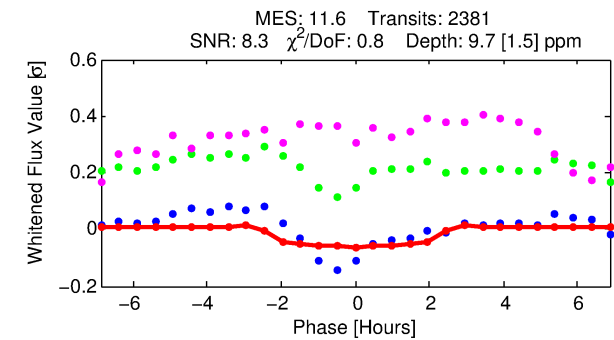
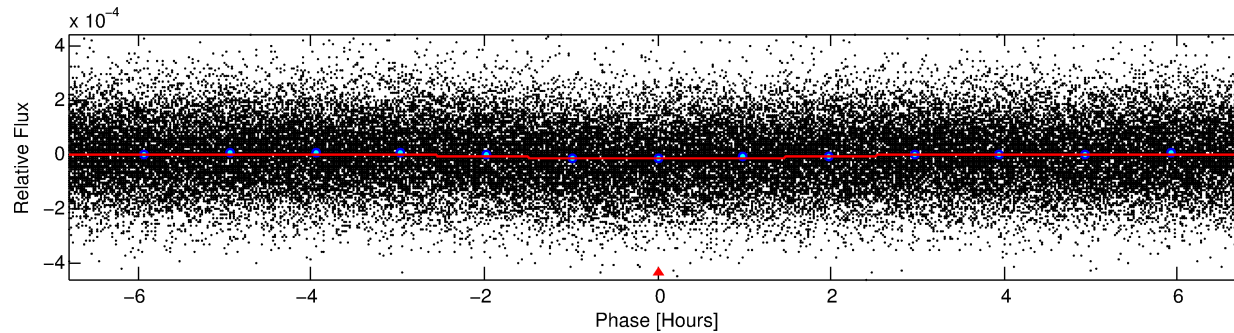
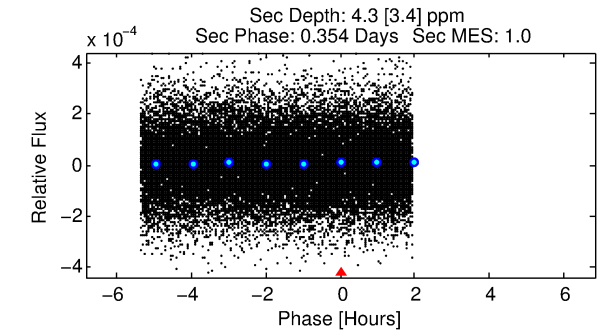
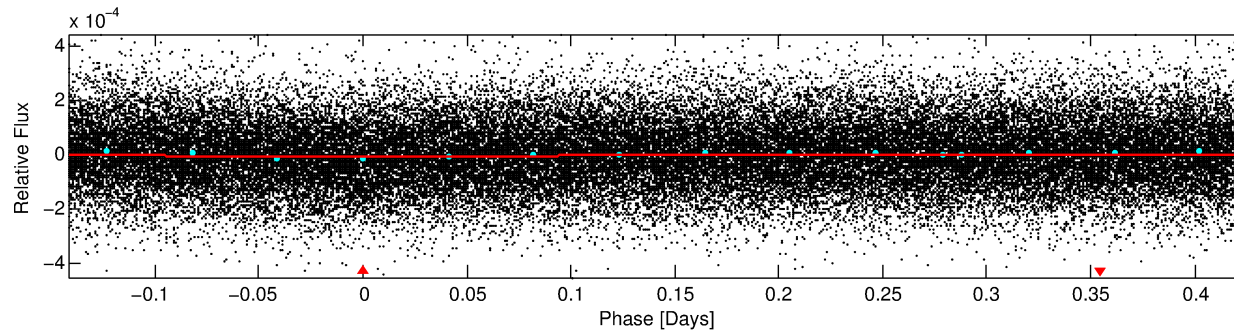
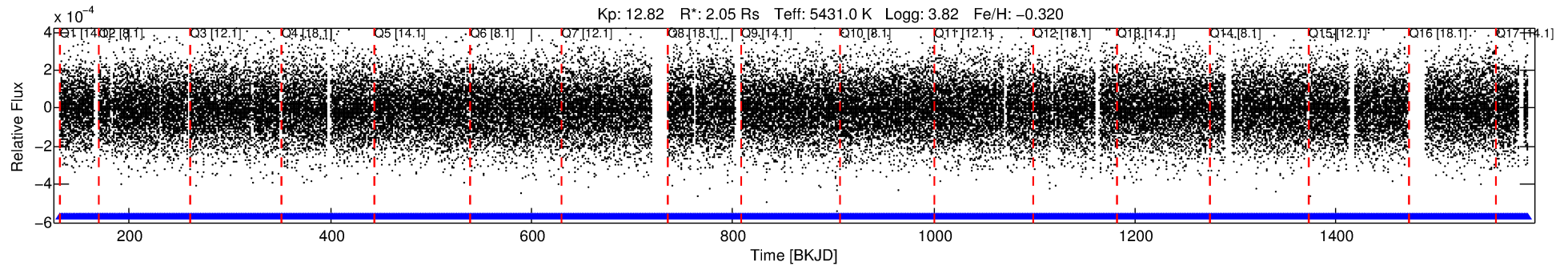
## Ephemeris Match Information For 007031293-01

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	$\sigma_P$	$\sigma_T$
007031293-01	7031293	RR-Lyr-pri	7198959	1:1	1108.7	32	-278	7.86	12.82	62330.00	Direct-PRF	0	1.01	9.92

**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: 7031293 Candidate: 1 of 1 Period: 0.567 d



## DV Fit Results:

Period = 0.56677 [0.00001] d  
Epoch = 131.8573 [0.0057] BKJD  
Rp/R\* = 0.0030 [0.0026]  
a/R\* = 1.06 [0.39]  
b = 0.70 [2.72]  
Seff = 18184.62 [7205.33]  
Teff = 2961 [293] K  
Rp = 0.68 [0.62] Re  
a = 0.0134 [0.0034] AU  
Ag = 0.91 [1.77] [-0.05σ]  
Teffp = 4477 [2125] K [0.71σ]

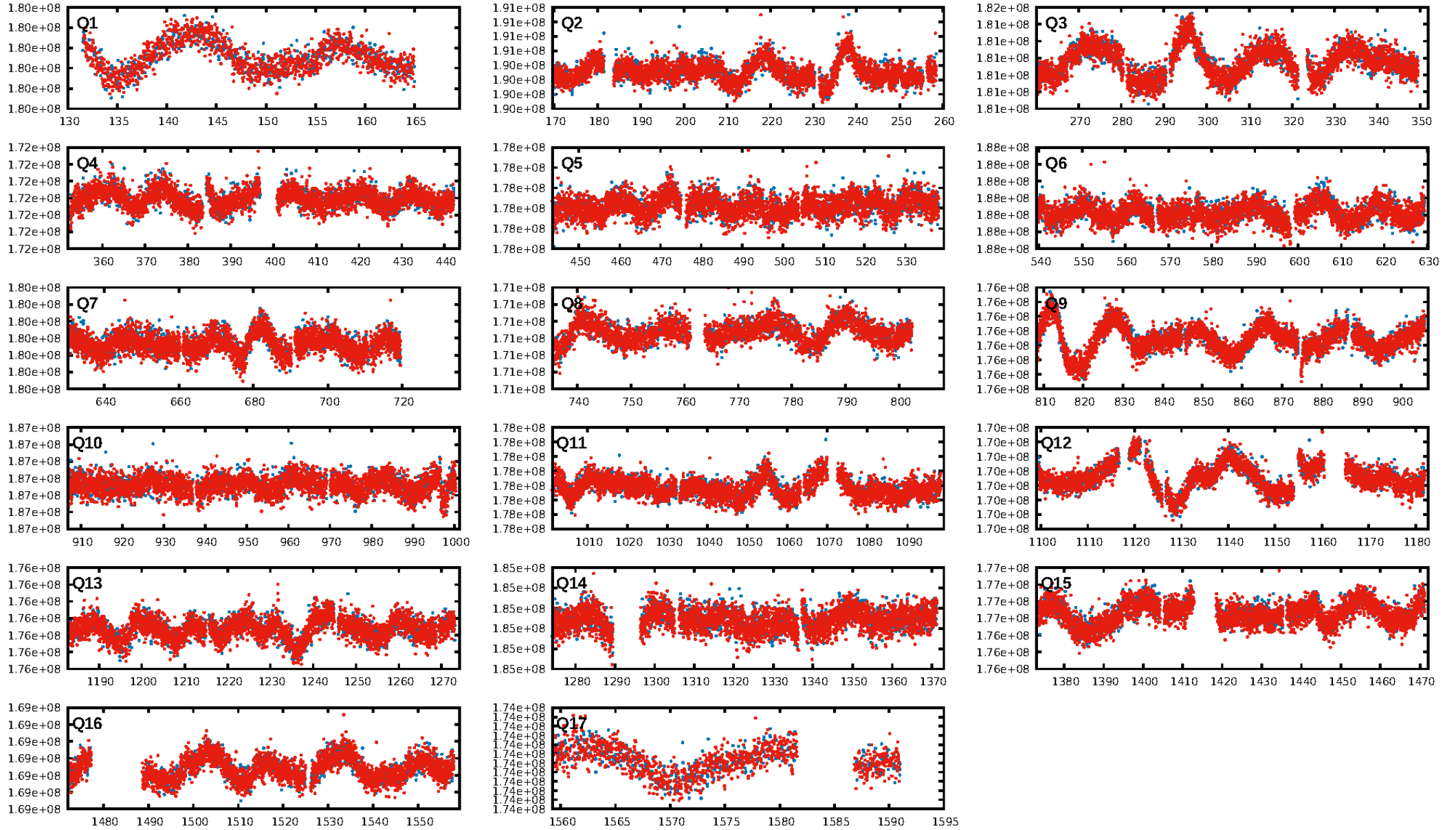
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2274/2274]  
**GhostDiagnostic-chr: 0.3719**  
**Centroid-sig: 0.0%**  
Centroid-so: 2.940 arcsec [2.85σ]  
OotOffset-rm: 1.663 arcsec [0.71σ]  
KicOffset-rm: 1.673 arcsec [0.97σ]  
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]

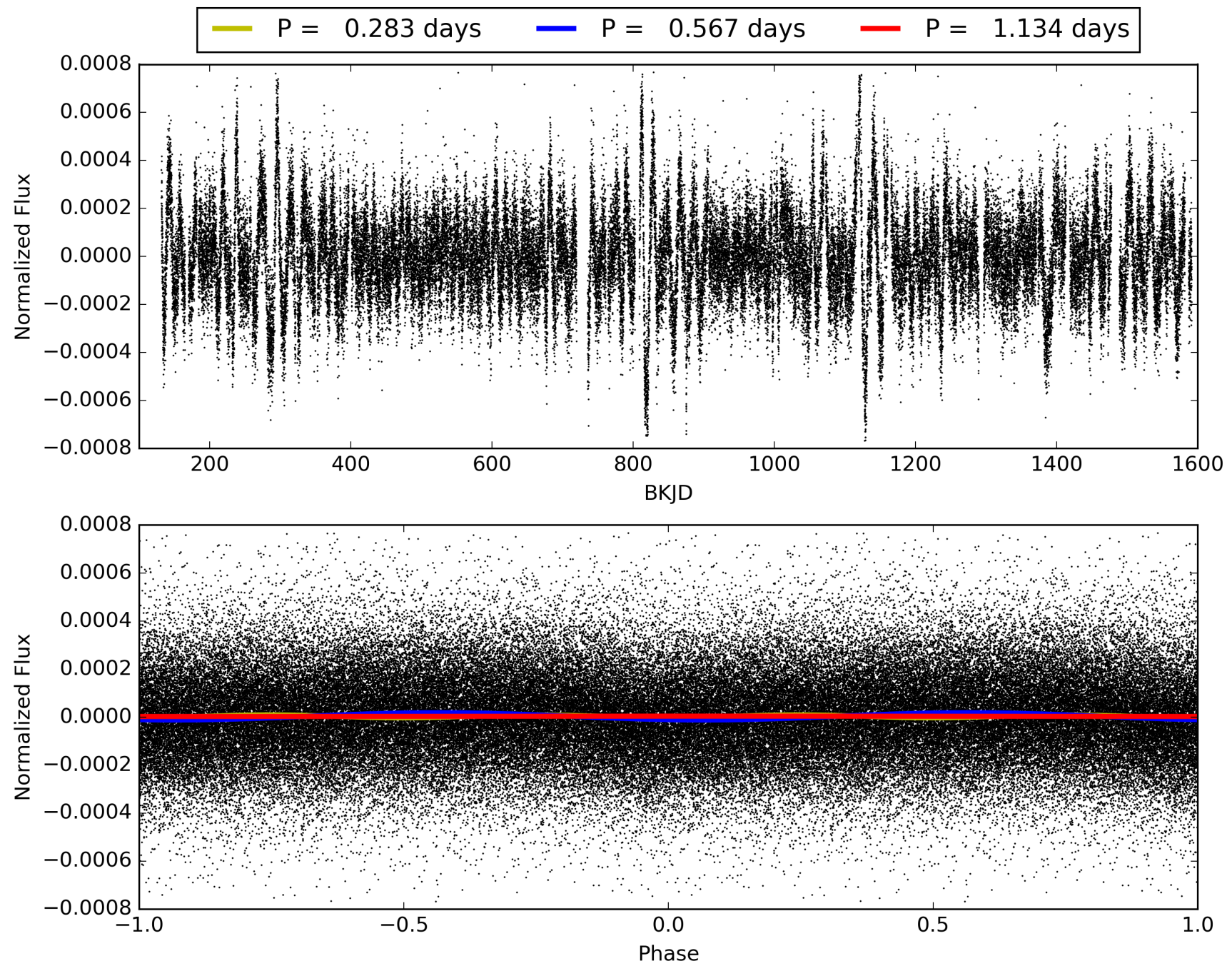
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 09:55:46 Z

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

# TCE 007031293-01, PDC Light Curves



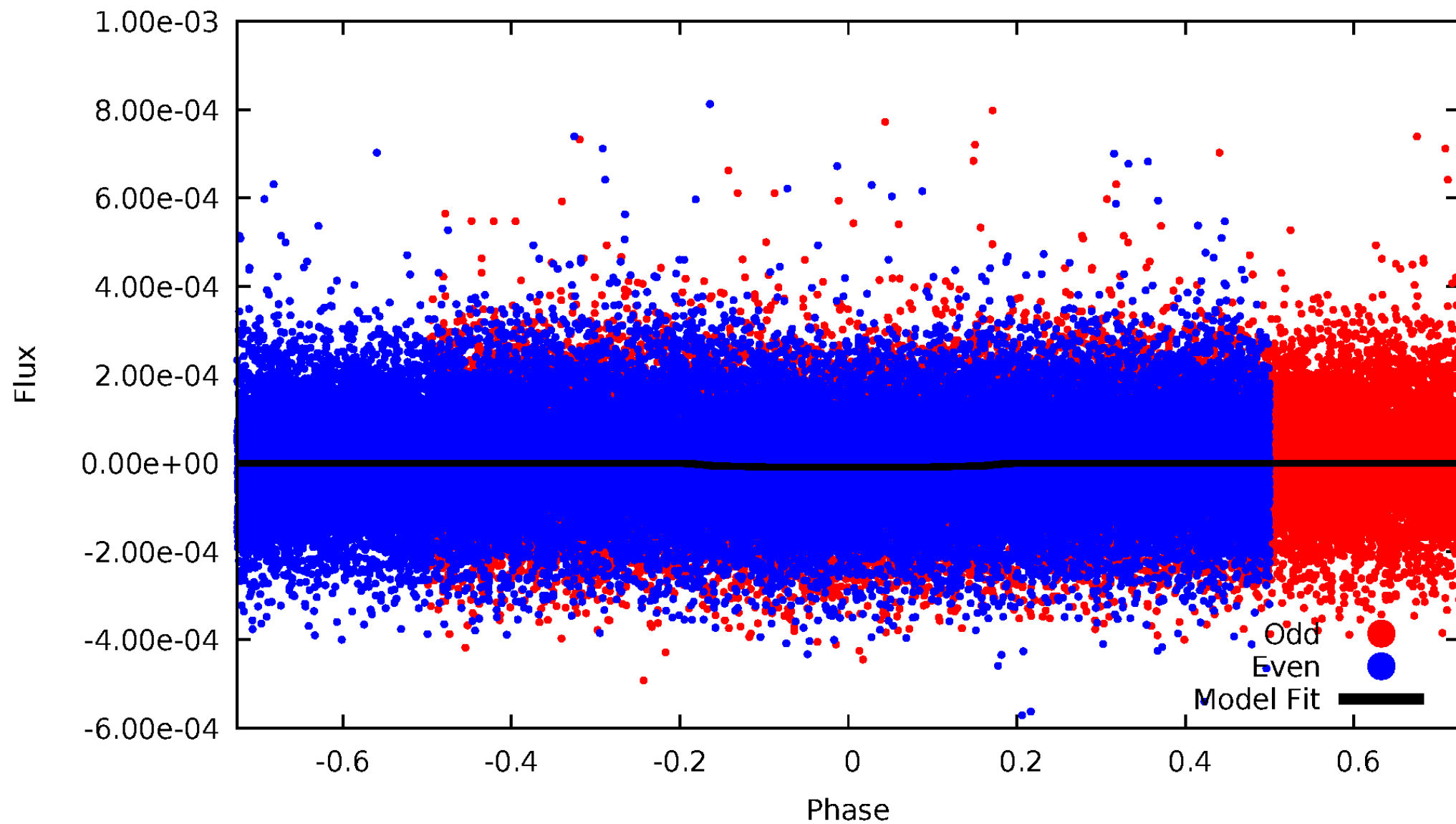
TCE 007031293-01





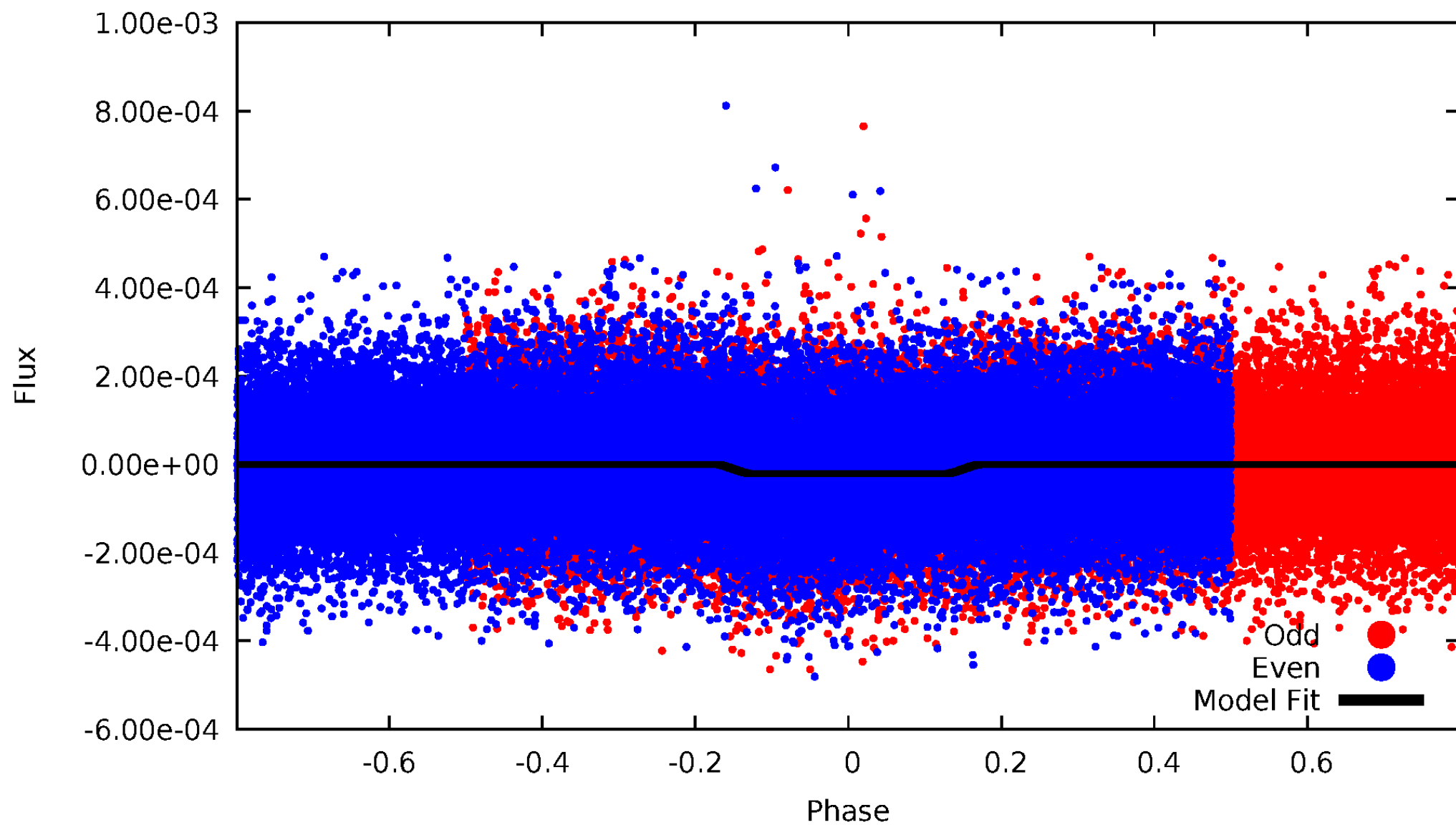
# DV Odd/Even

TCE 007031293-01



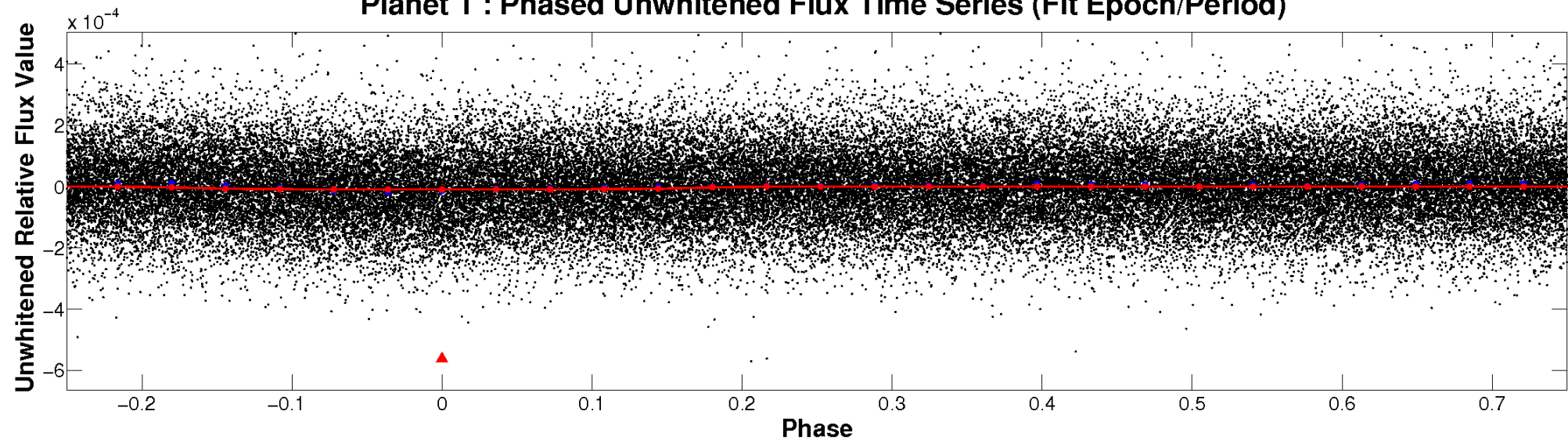
# ALT Odd/Even

TCE 007031293-01

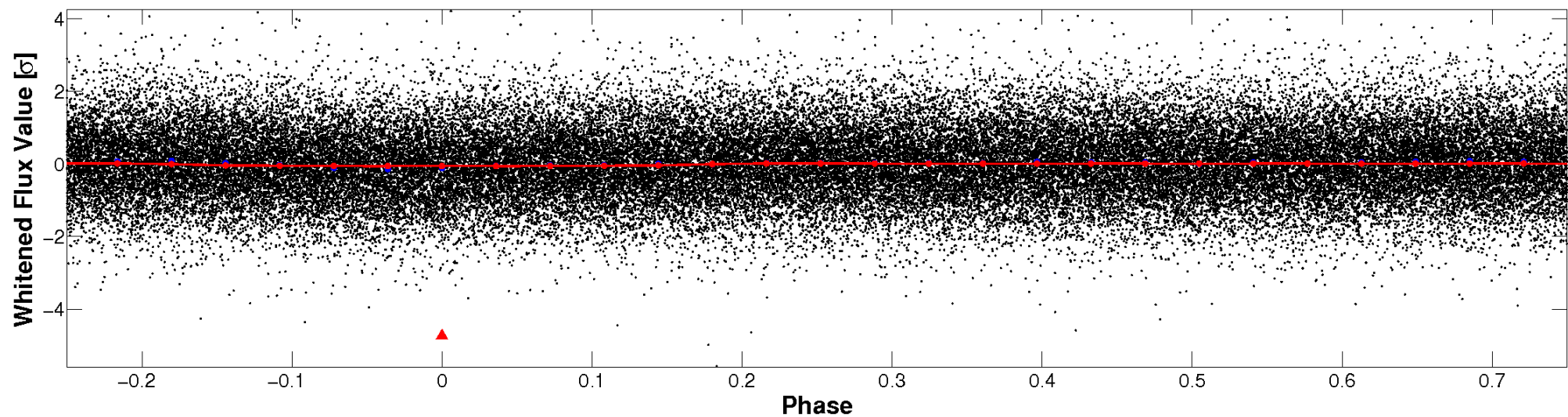


# Non-Whitened Vs. Whitened Light Curve

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

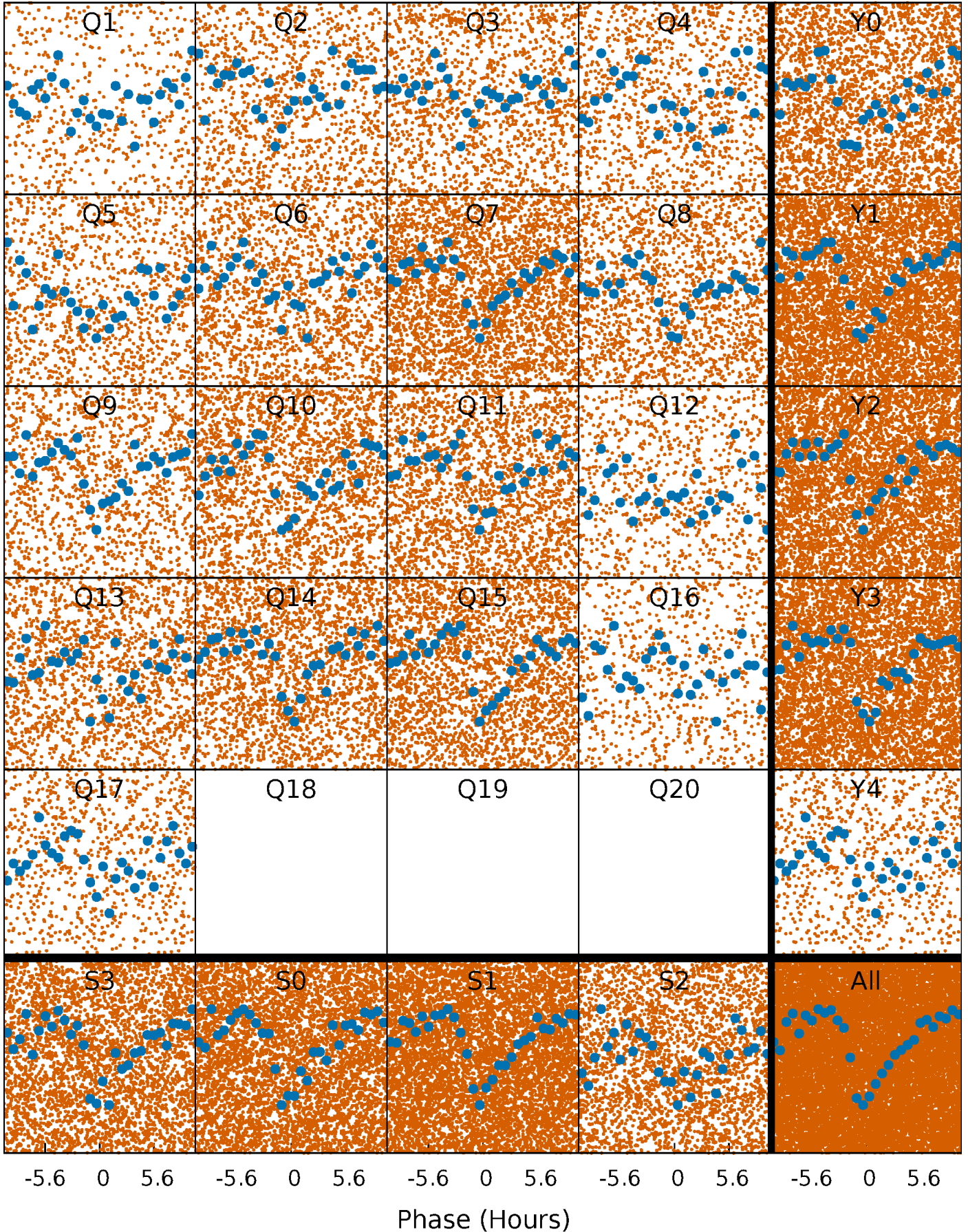


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

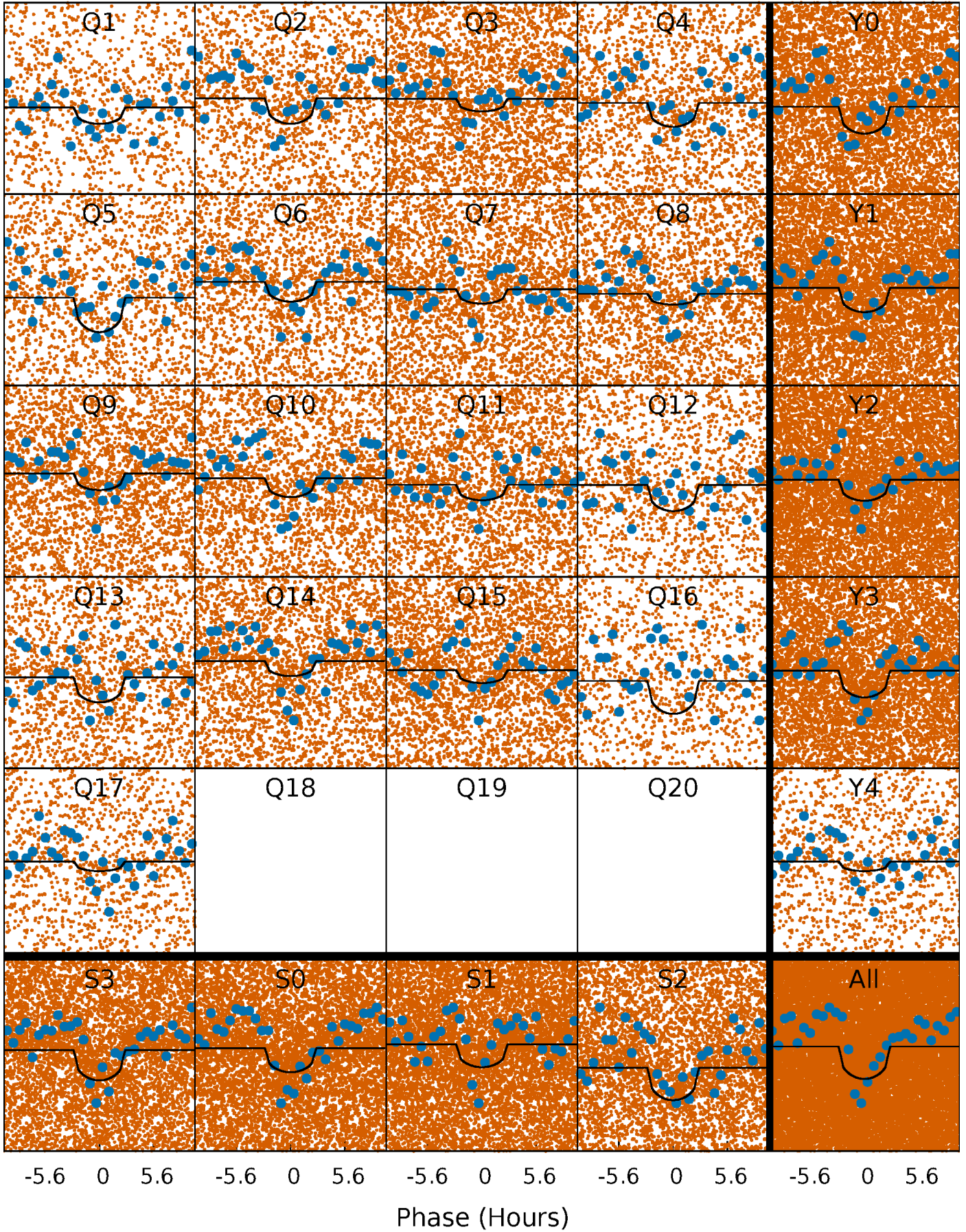
TCE 007031293-01 P= 0.566773 Days  $T_0=131.857269$  (BKJD)





# DV Quarter-Phased Transit Curves

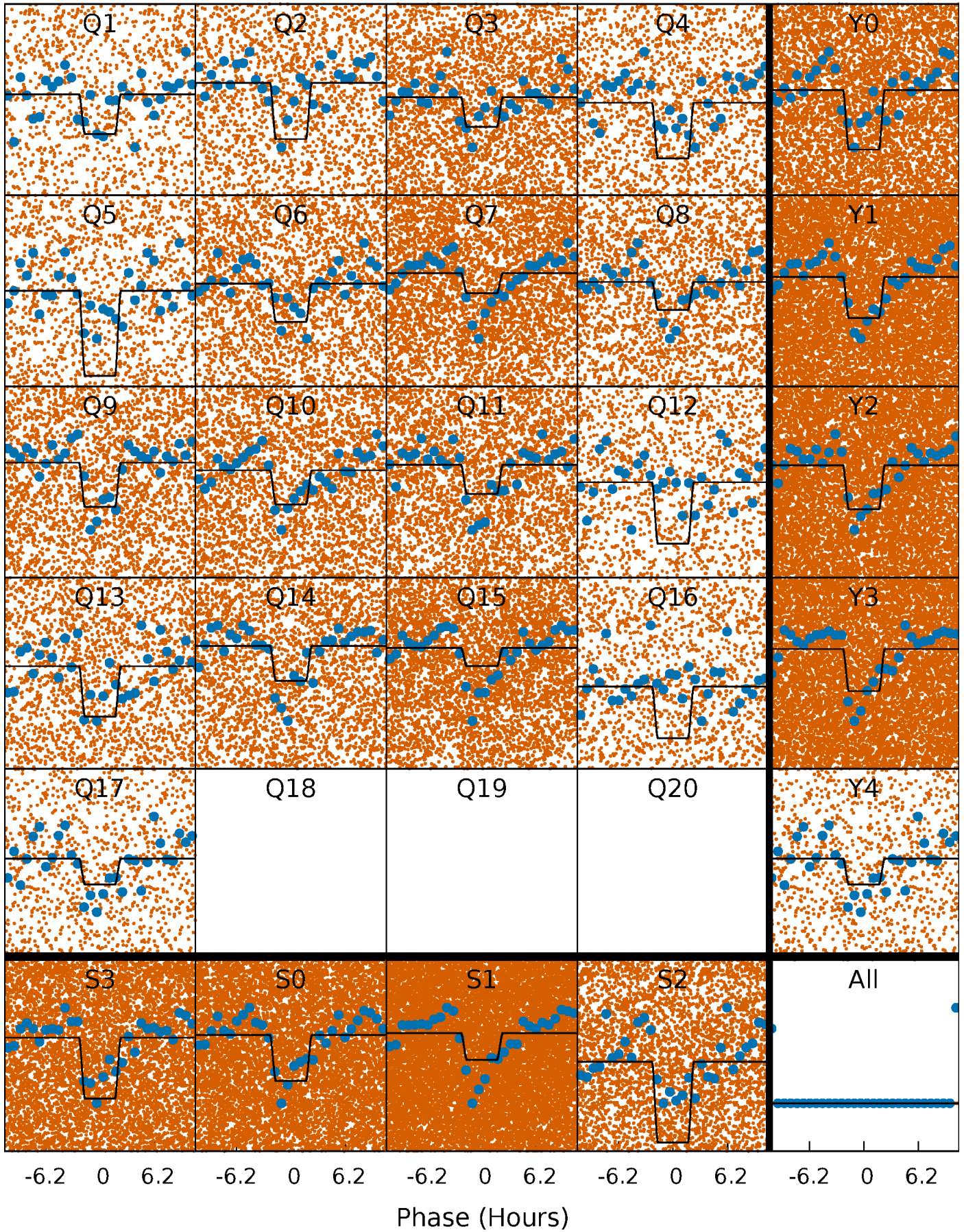
TCE 007031293-01 P= 0.566773 Days  $T_0=131.857269$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

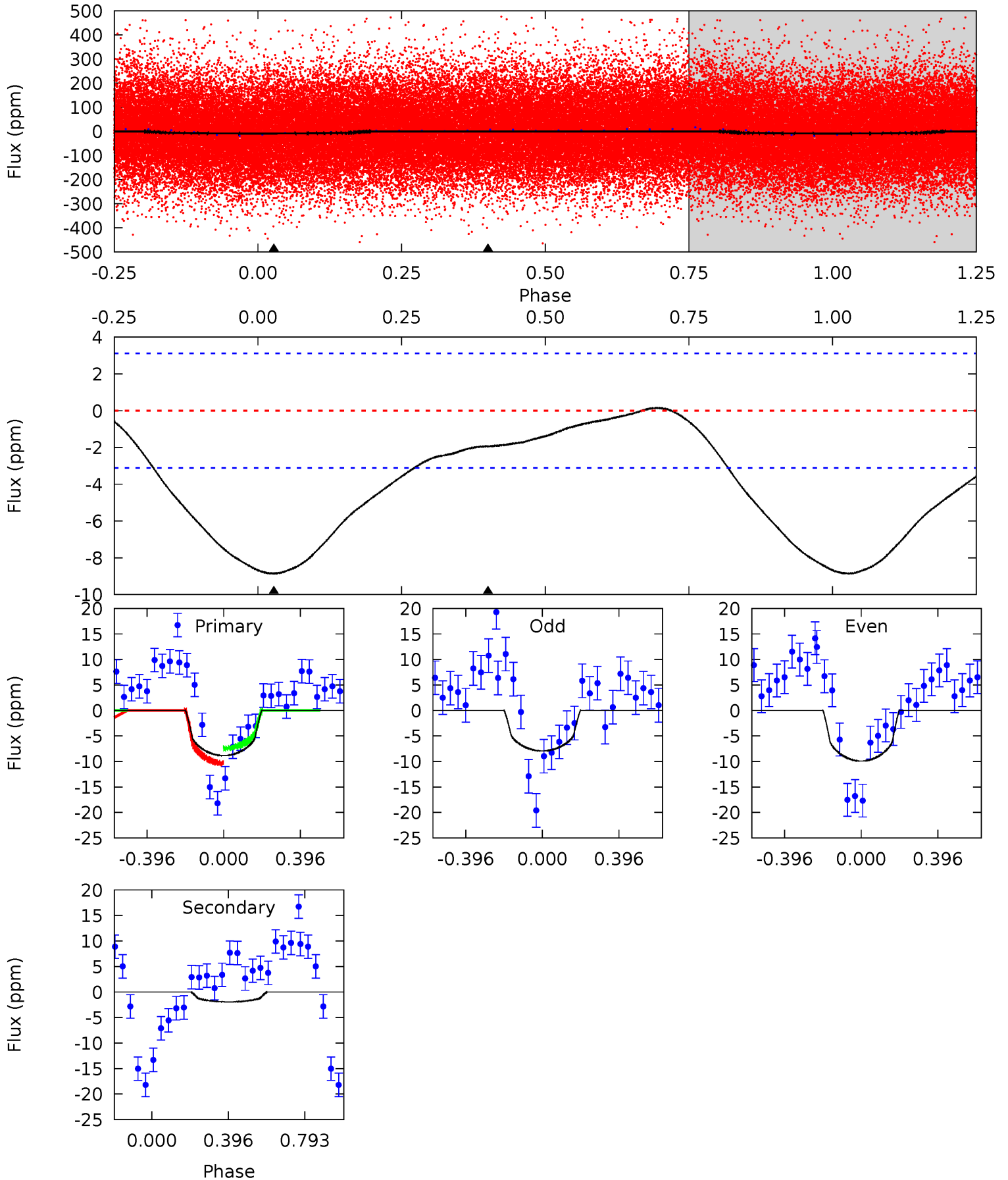
TCE 007031293-01 P= 0.566801 Days  $T_0=131.833668$  (BKJD)



# DV Model-Shift Uniqueness Test

007031293-01, P = 0.566773 Days, E = 131.290496 Days

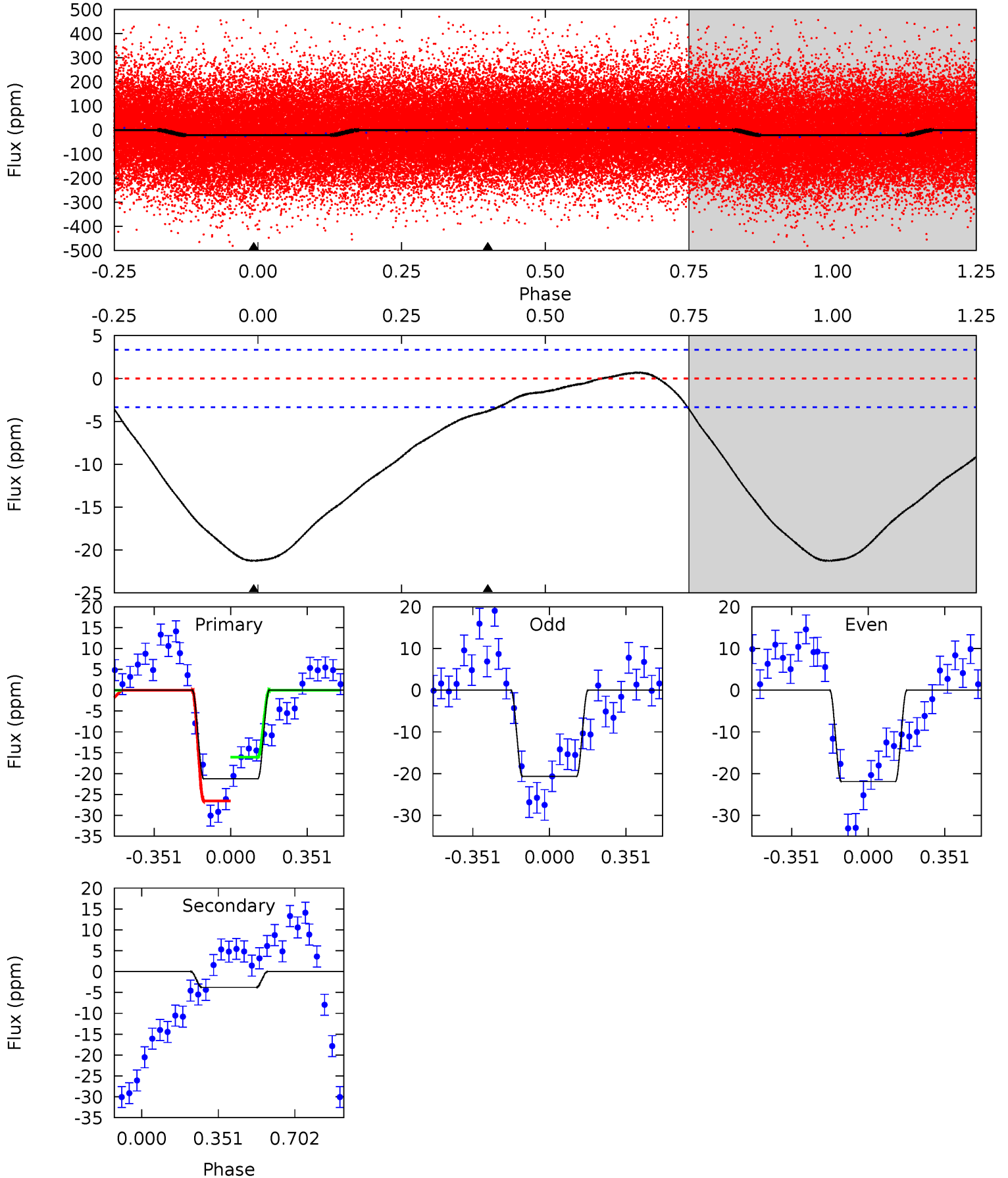
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	2.66	0	0	4.27	0.85	0.44	12.1	12.1	2.66	2.66	1.35	1.03	0.02	2.02



# Alt Model-Shift Uniqueness Test

007031293-01, P = 0.566801 Days, E = 131.266867 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
27.3	4.88	0	0	4.29	0.93	1.51	27.3	27.3	4.88	4.88	0.79	0.98	0.03	6.63





### Stellar Parameters For KIC 007031293

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5431^{+179}_{-146}$	$3.816^{+0.209}_{-0.152}$	$-0.320^{+0.350}_{-0.250}$	$2.050^{+0.589}_{-0.482}$	$1.003^{+0.188}_{-0.125}$	$0.164^{+0.183}_{-0.075}$
	+3%/-3%	+5%/-4%	+109%/-78%	+29%/-24%	+19%/-12%	+112%/-46%
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 007031293-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-2 \pm 1$	$0.78^{+0.60}_{-0.45}$	$4108^{+324}_{-266}$	$1972^{+3040}_{-5535}$	$0.302^{+1.558}_{-0.214}$
Alt.	$-4 \pm 1$	$1.05^{+0.63}_{-0.52}$	$4137^{+278}_{-303}$	$2842^{+1844}_{-6316}$	$0.349^{+1.047}_{-0.219}$

$T_{\text{max}}$  = 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

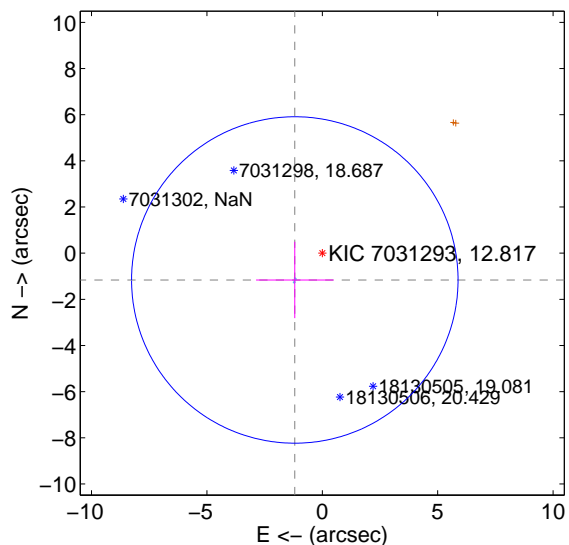
Supplemental centroid analysis for 007031293-01. Kepler magnitude: 12.82. Transit SNR 8.30

There are 4 quarters with good PRF difference image offsets

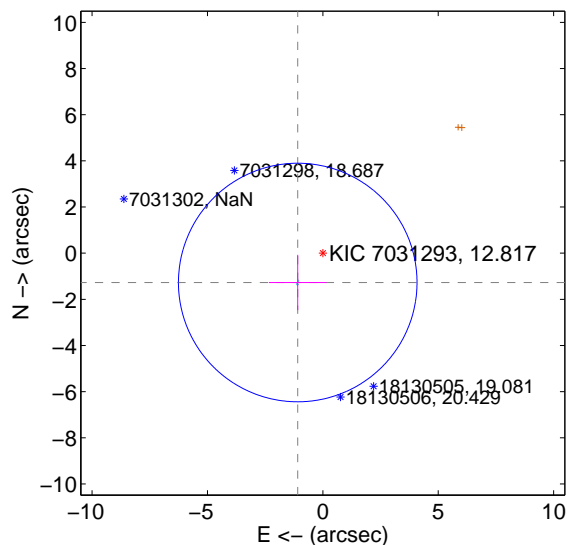
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.663 \pm 2.357$	0.71	$1.191 \pm 1.681$	$-1.161 \pm 1.654$
PRF-fit source offset from KIC position	$1.673 \pm 1.723$	0.97	$1.088 \pm 1.252$	$-1.271 \pm 1.198$
photometric centroid source offset	$2.94 \pm 1.03$	2.85	$-1.99 \pm 1.07$	$-2.17 \pm 1.00$

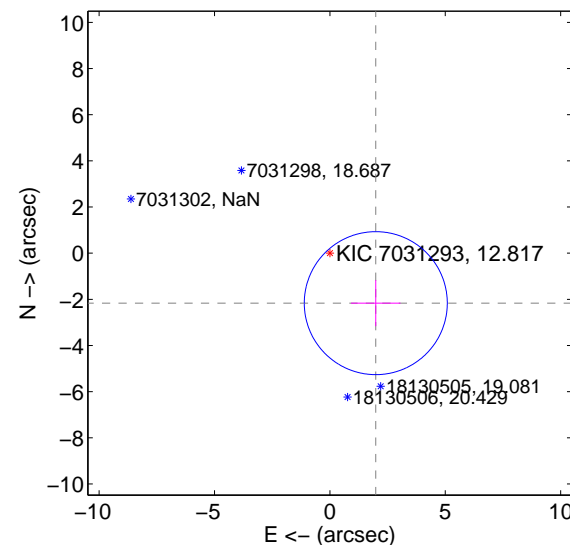
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

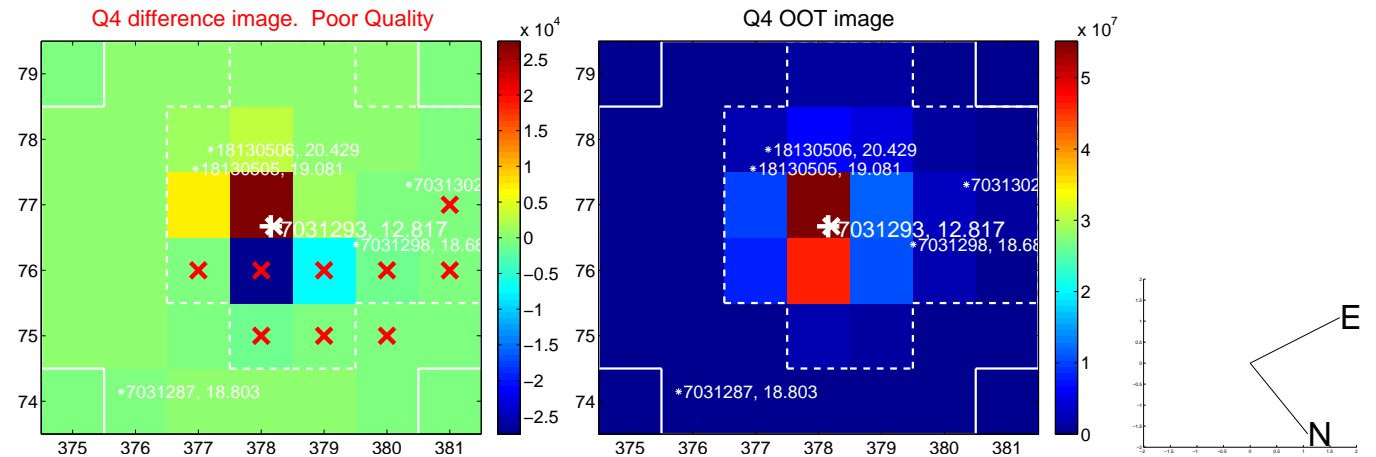
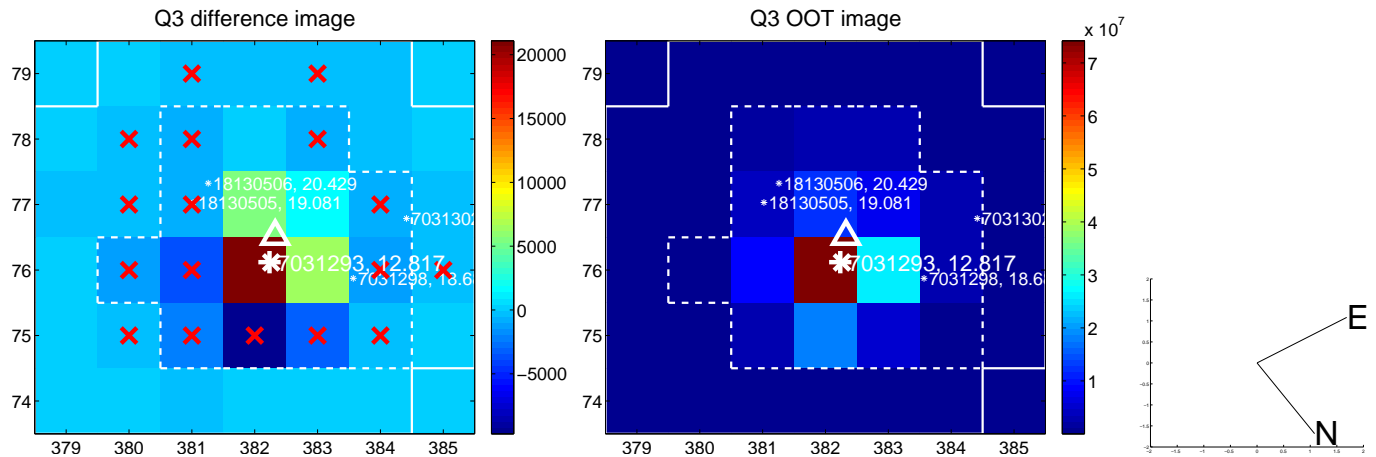
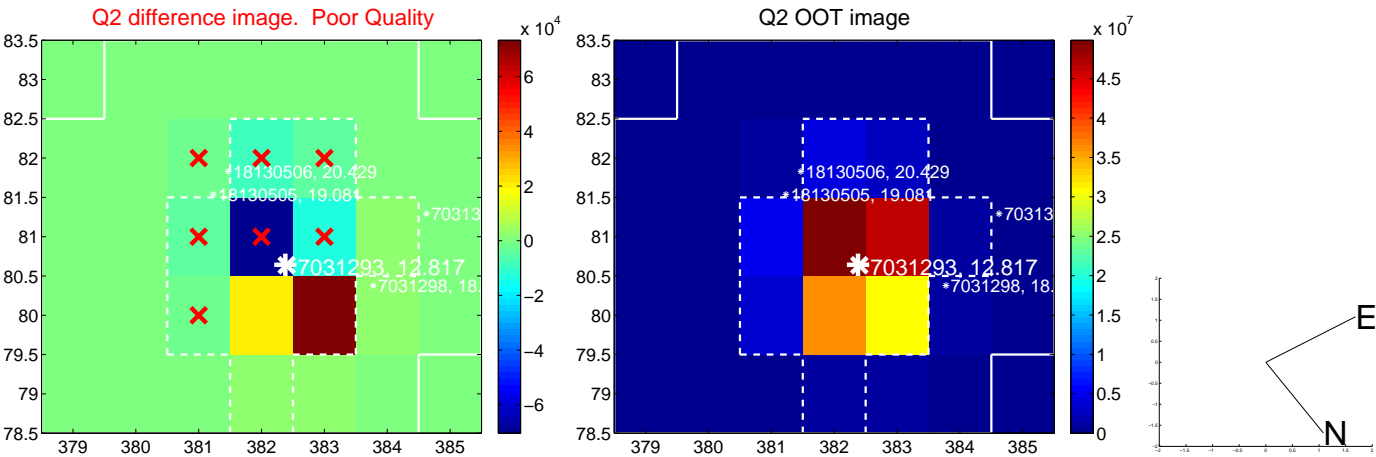
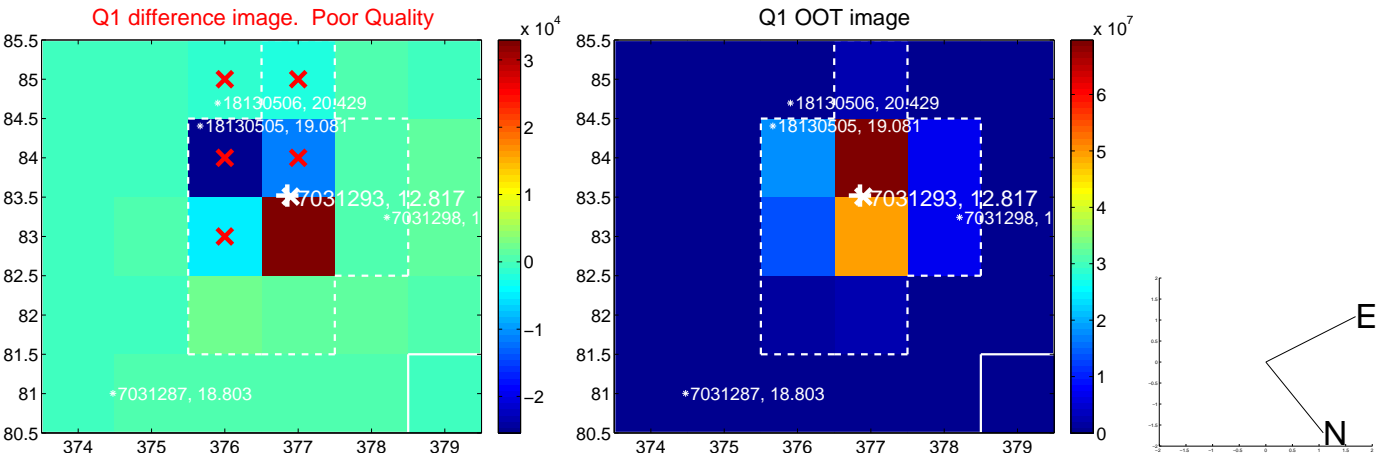


offset from photometric centroids

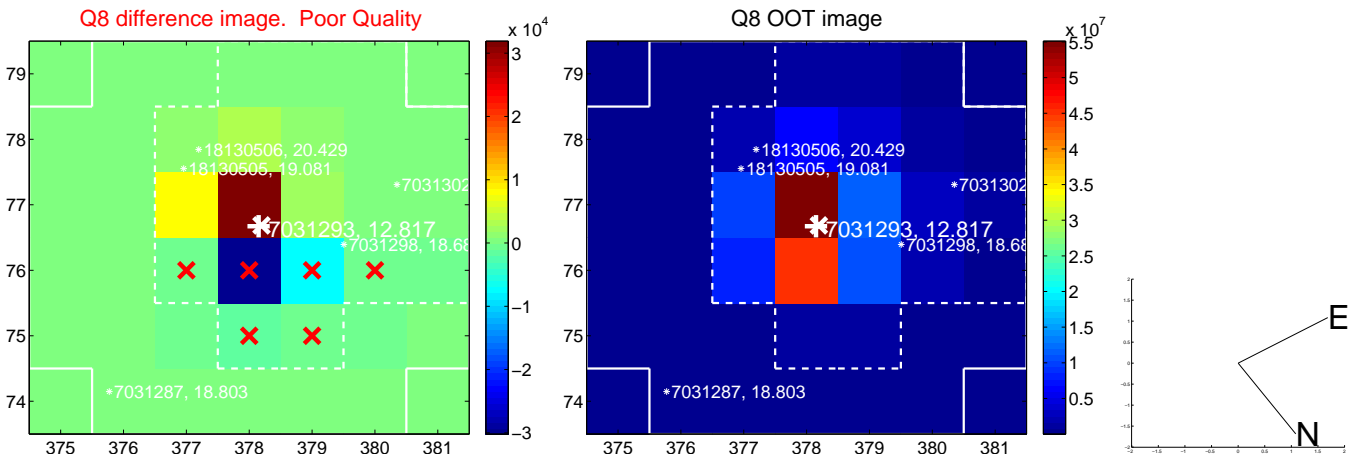
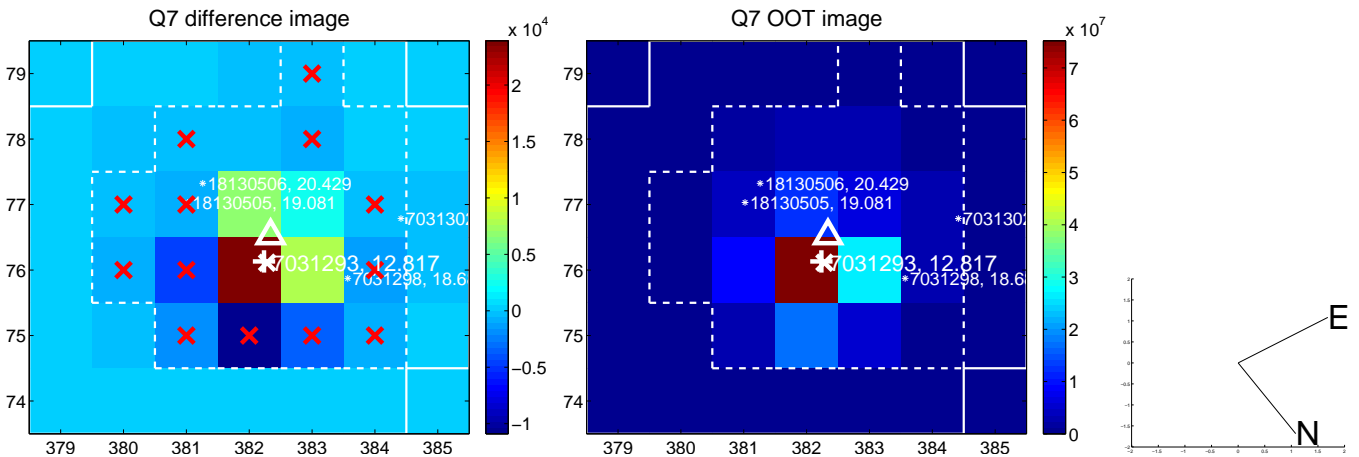
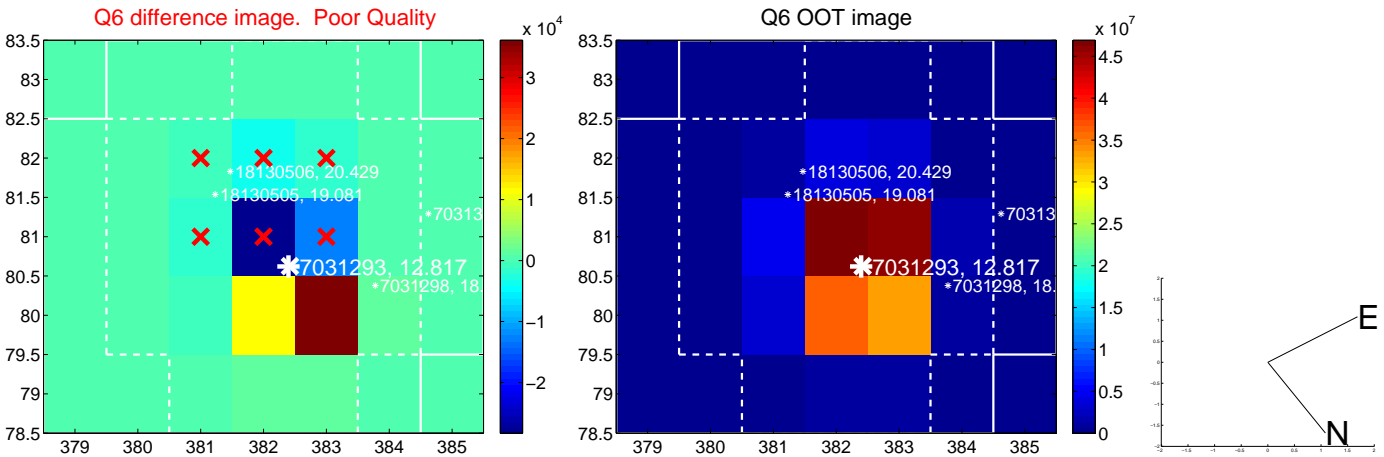
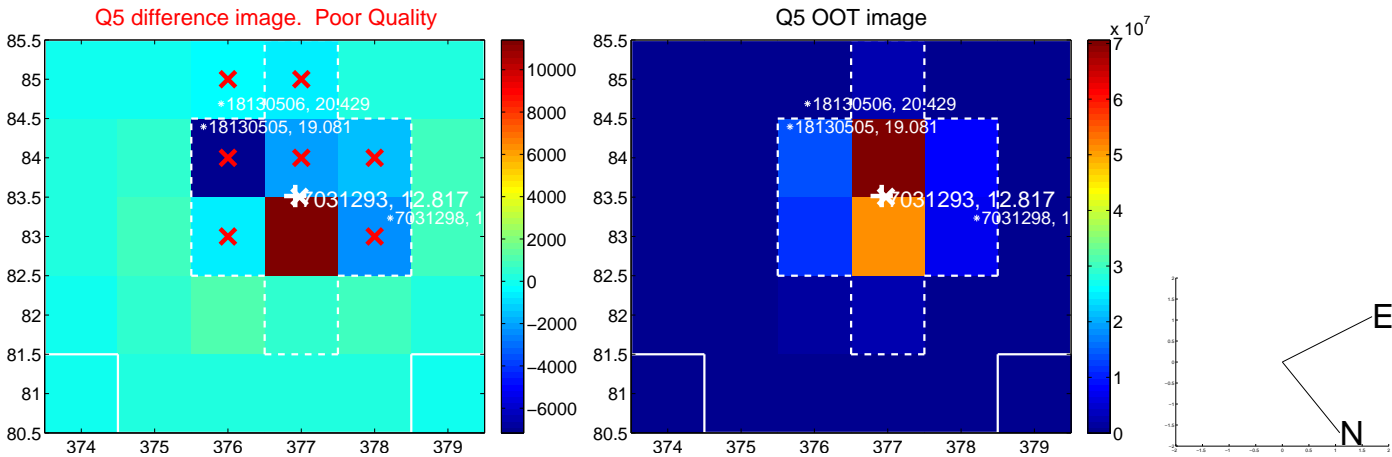


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

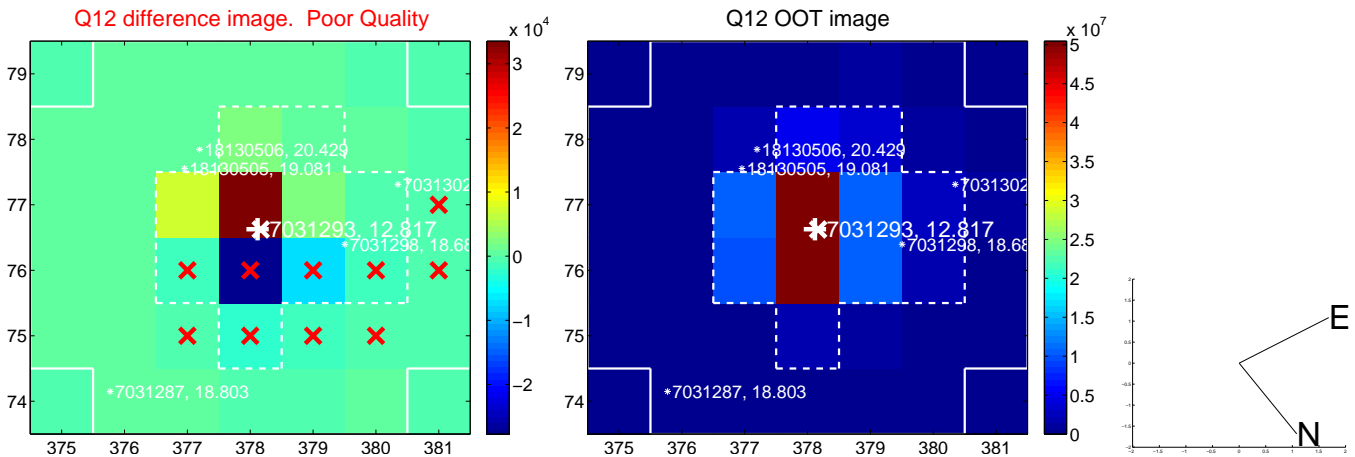
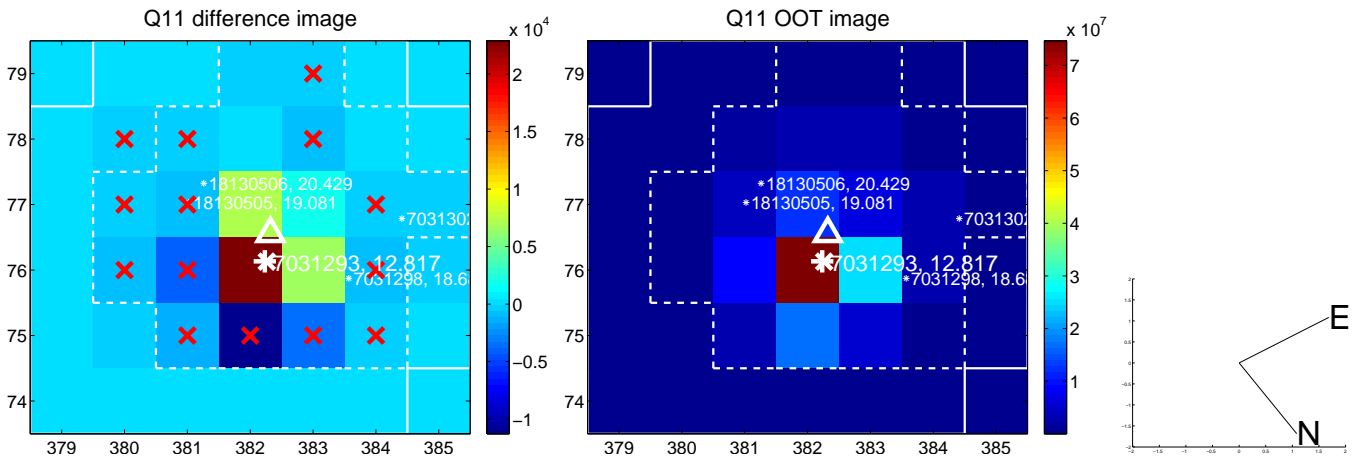
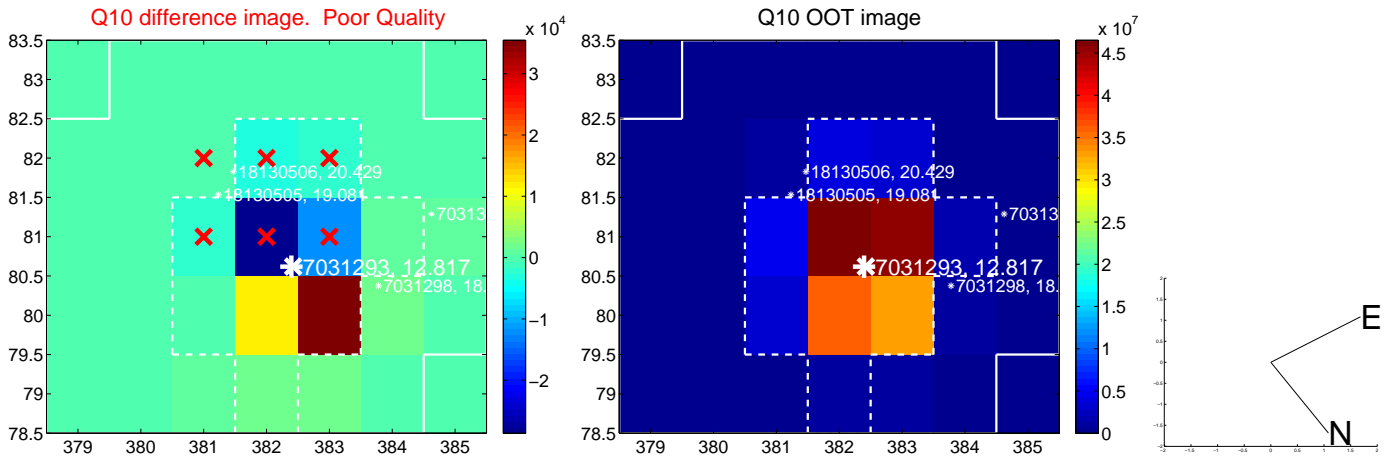
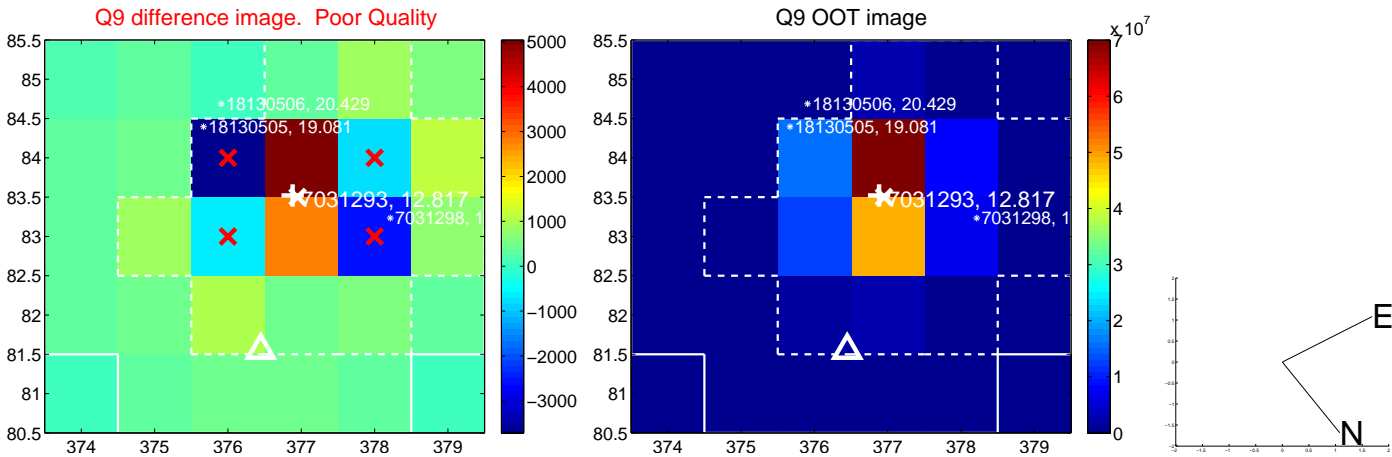


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

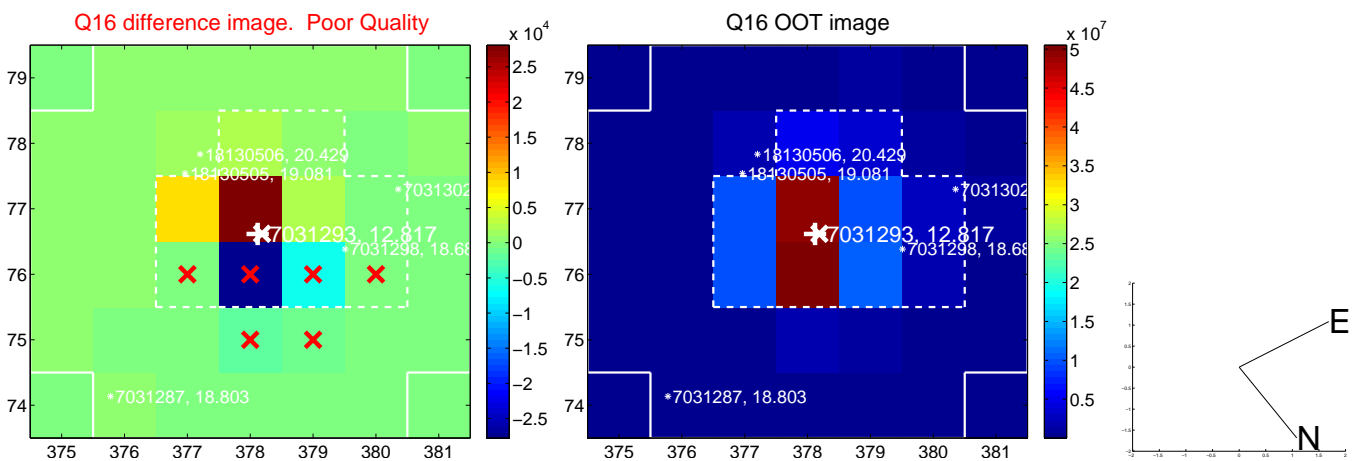
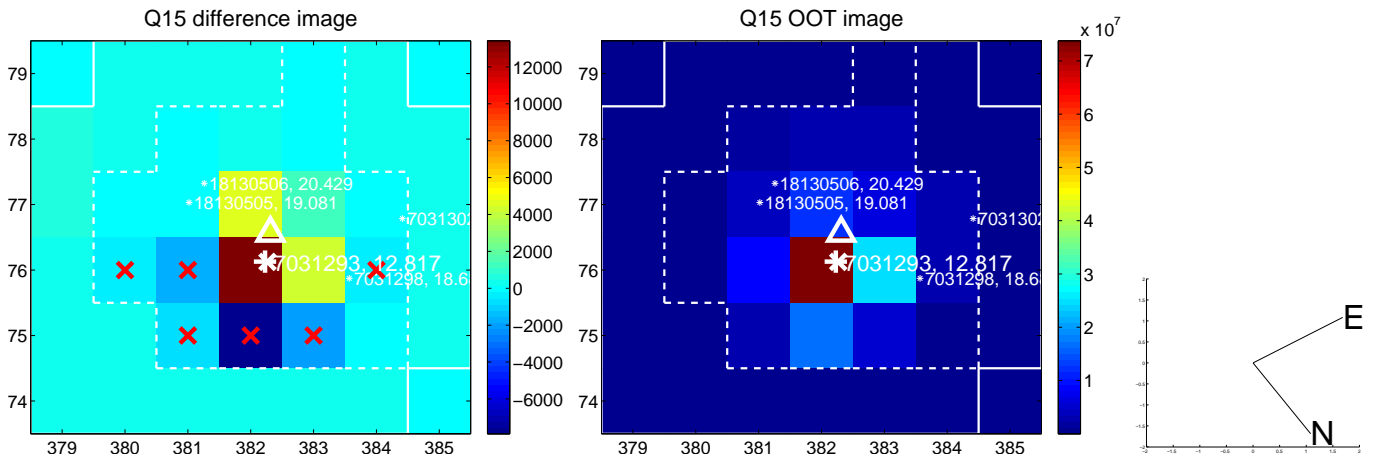
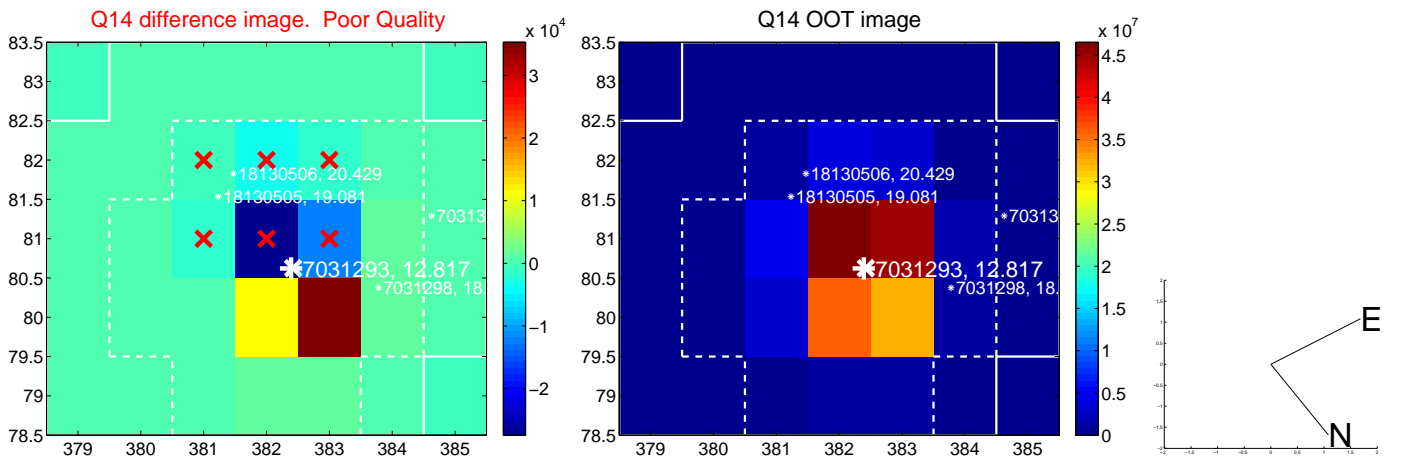
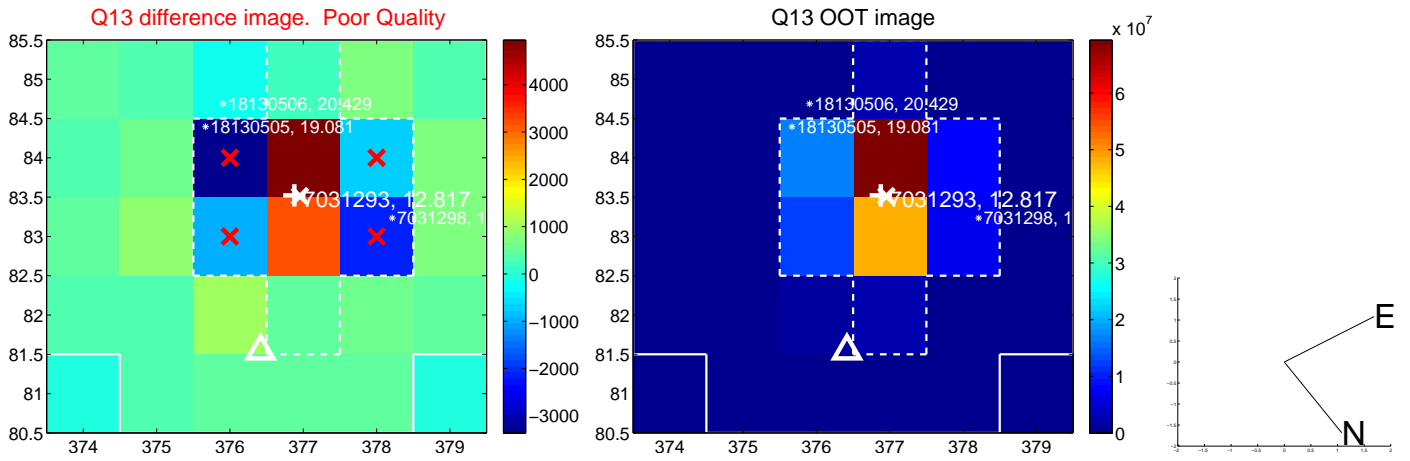




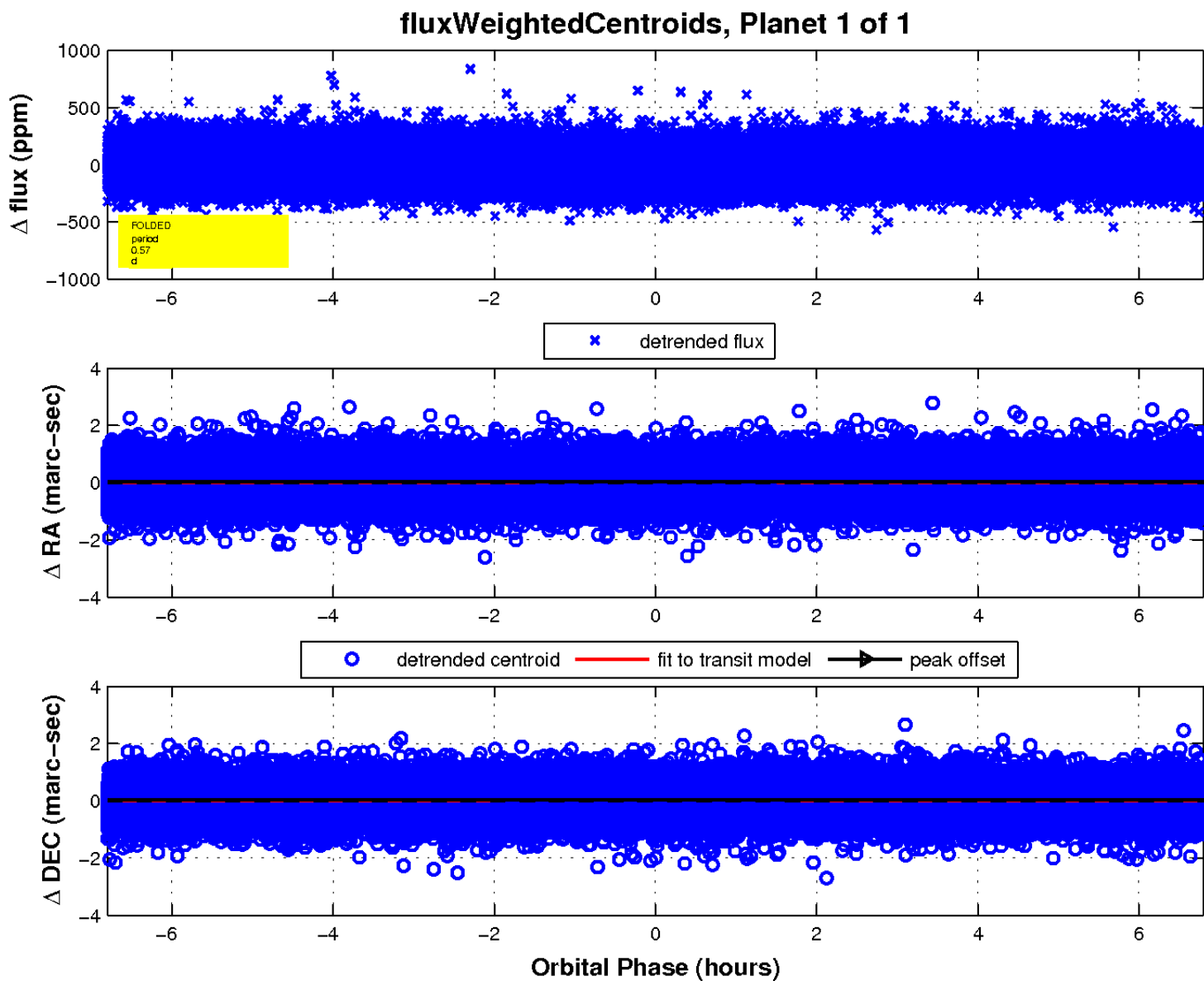
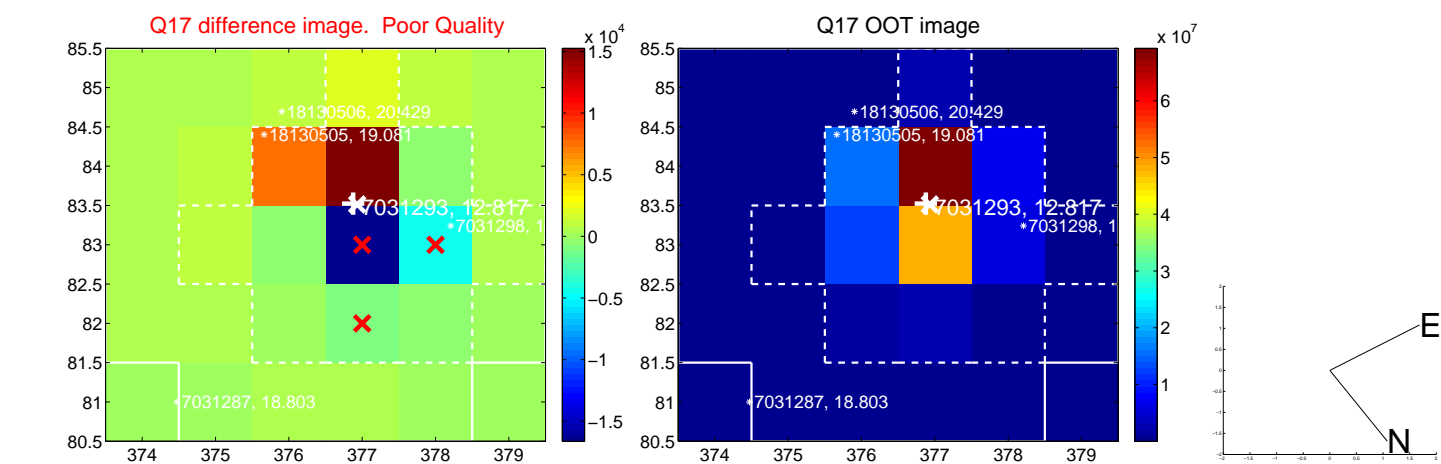
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



# UKIRT Image

Declination

