

# KIC 004374610

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004374610-01	OBS	4712.01	2.888780	134.178006	146.5	1.390	10.1	11.5	1.21	6667	1.67	1444.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004374610-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—CENT_UNRESOLVED_OFFSET

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

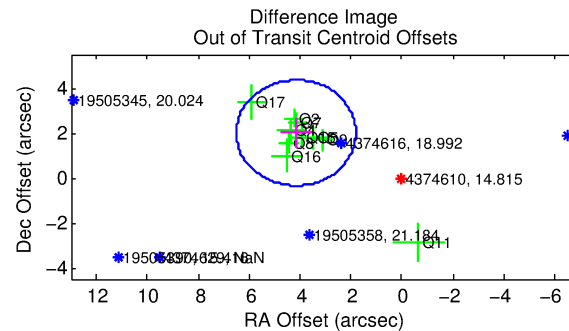
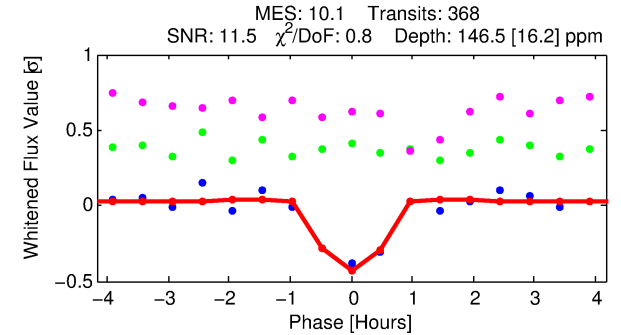
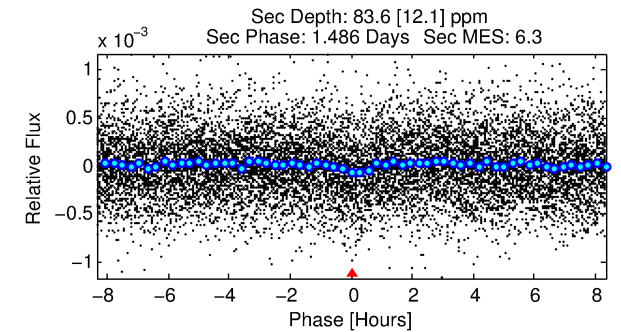
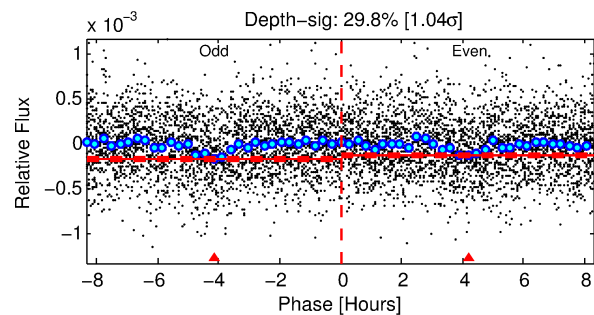
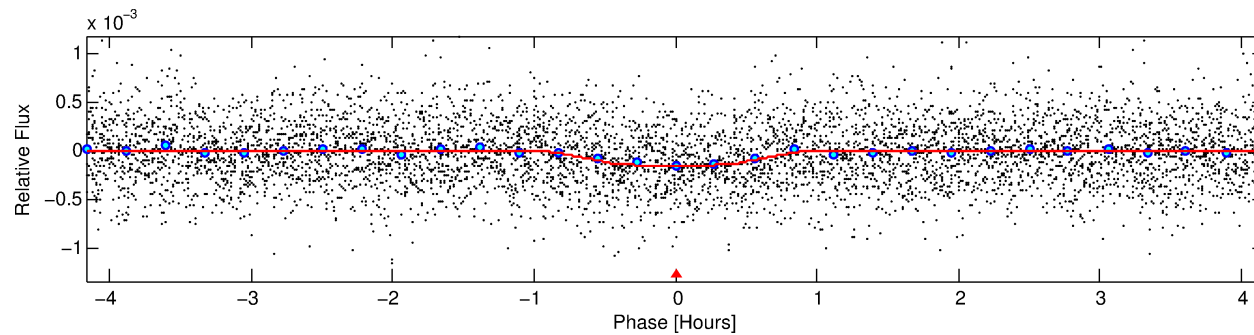
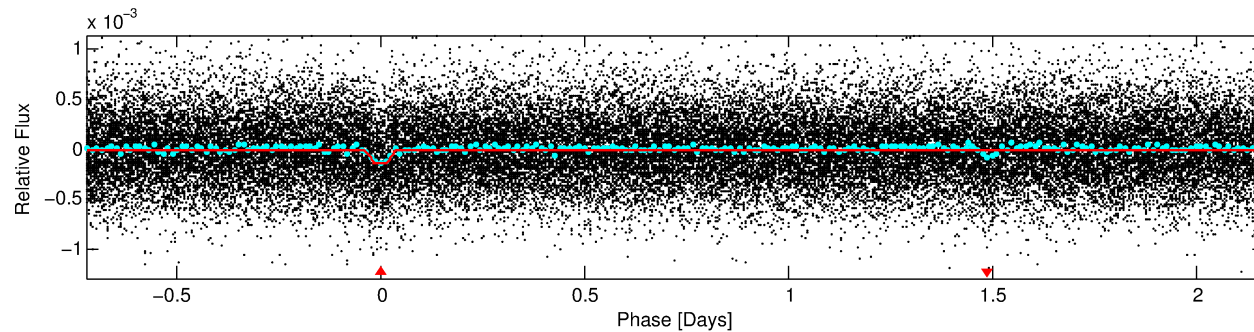
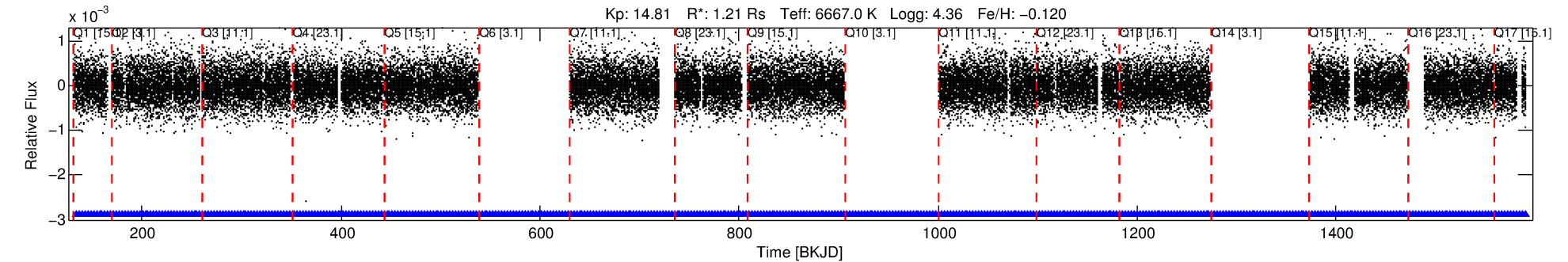
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004374610-01

No Significant Match Found

# DV One-Page Summary

KIC: 4374610 Candidate: 1 of 1 Period: 2.889 d  
KOI: K04712 Corr: No Ephemeris Match



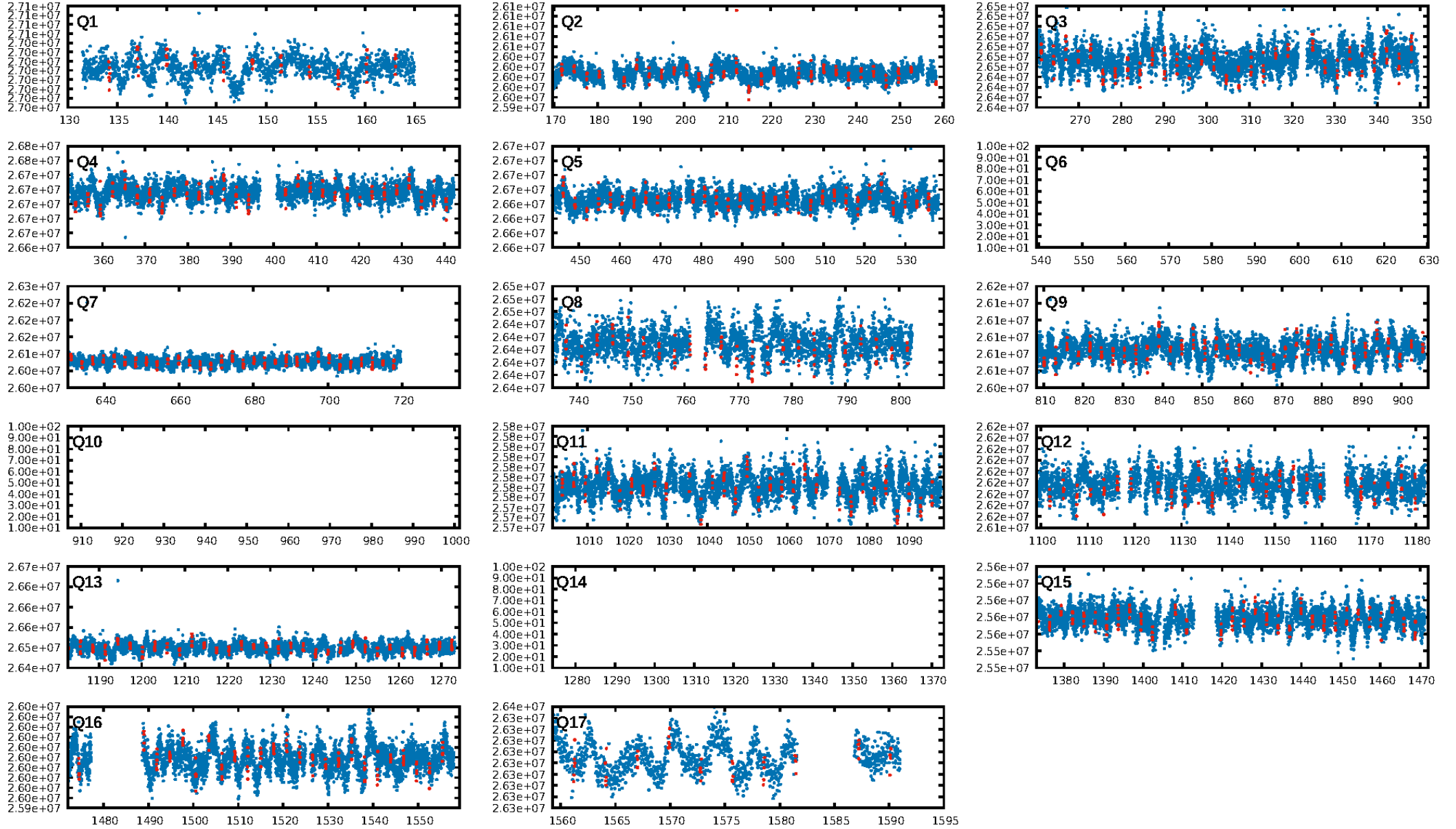
## DV Fit Results:

Period = 2.88878 [0.00001] d  
Epoch = 134.1780 [0.0021] BKJD  
Rp/R\* = 0.0126 [0.0077]  
b = 0.86 [1.11]  
Seff = 1444.01 [516.37]  
Teq = 1572 [141] K  
Rp = 1.67 [1.13] Re  
a = 0.0425 [0.0100] AU  
Ag = 29.75 [37.91] [0.76 $\sigma$ ]  
Teff = 5676 [1758] K [2.33 $\sigma$ ]

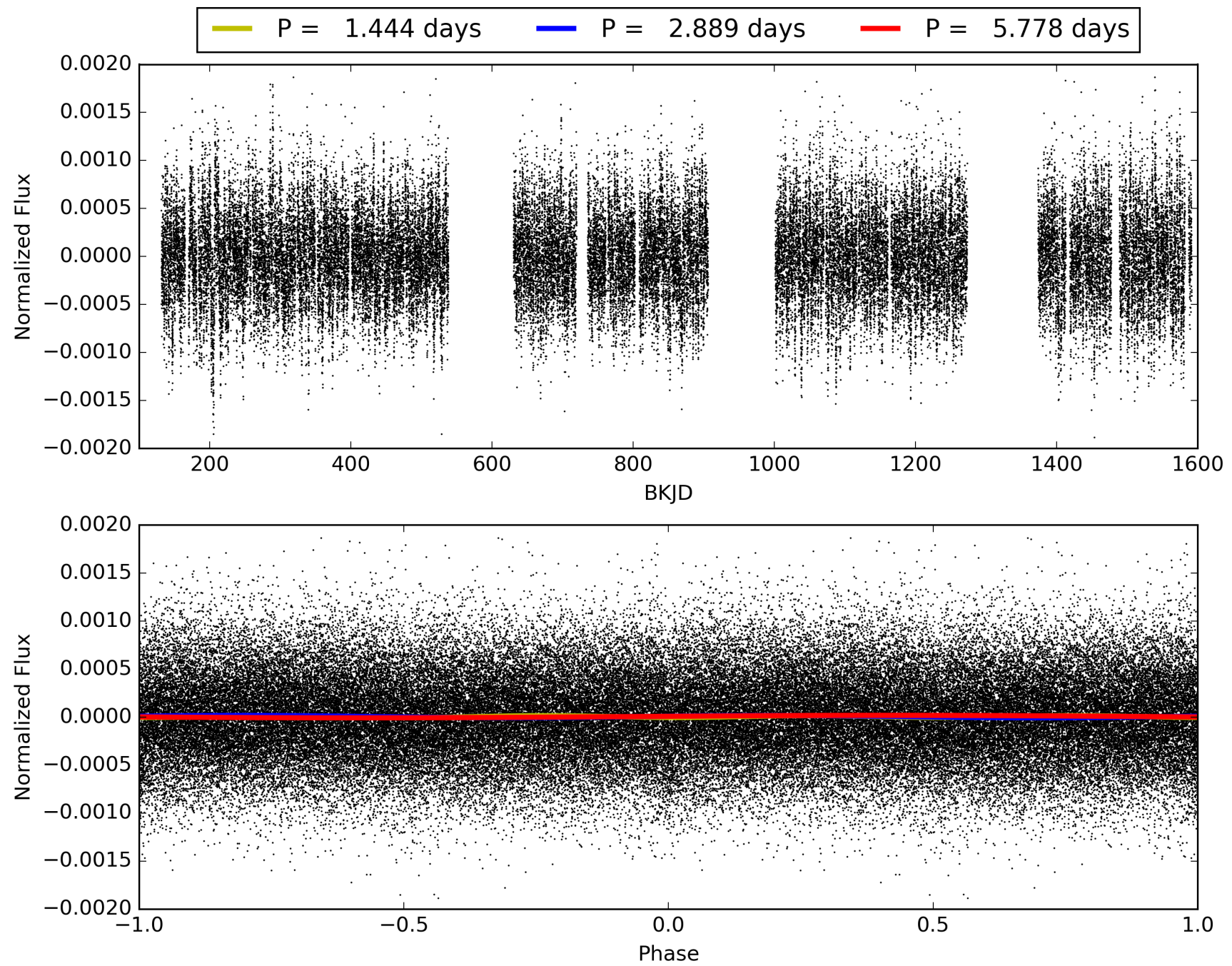
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.50e-23  
RollingBand-fgt: 1.00 [347/347]  
GhostDiagnostic-chr: 0.7216  
Centroid-sig: 0.1%  
Centroid-so: 4.860 arcsec [4.15 $\sigma$ ]  
OotOffset-rm: 4.614 arcsec [5.89 $\sigma$ ]  
KicOffset-rm: 4.836 arcsec [7.81 $\sigma$ ]  
OotOffset-st: 1/3/3/3 [10]  
KicOffset-st: 1/3/3/3 [10]  
DiffImageQuality-fgm: 0.60 [6/10]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 004374610-01, PDC Light Curves

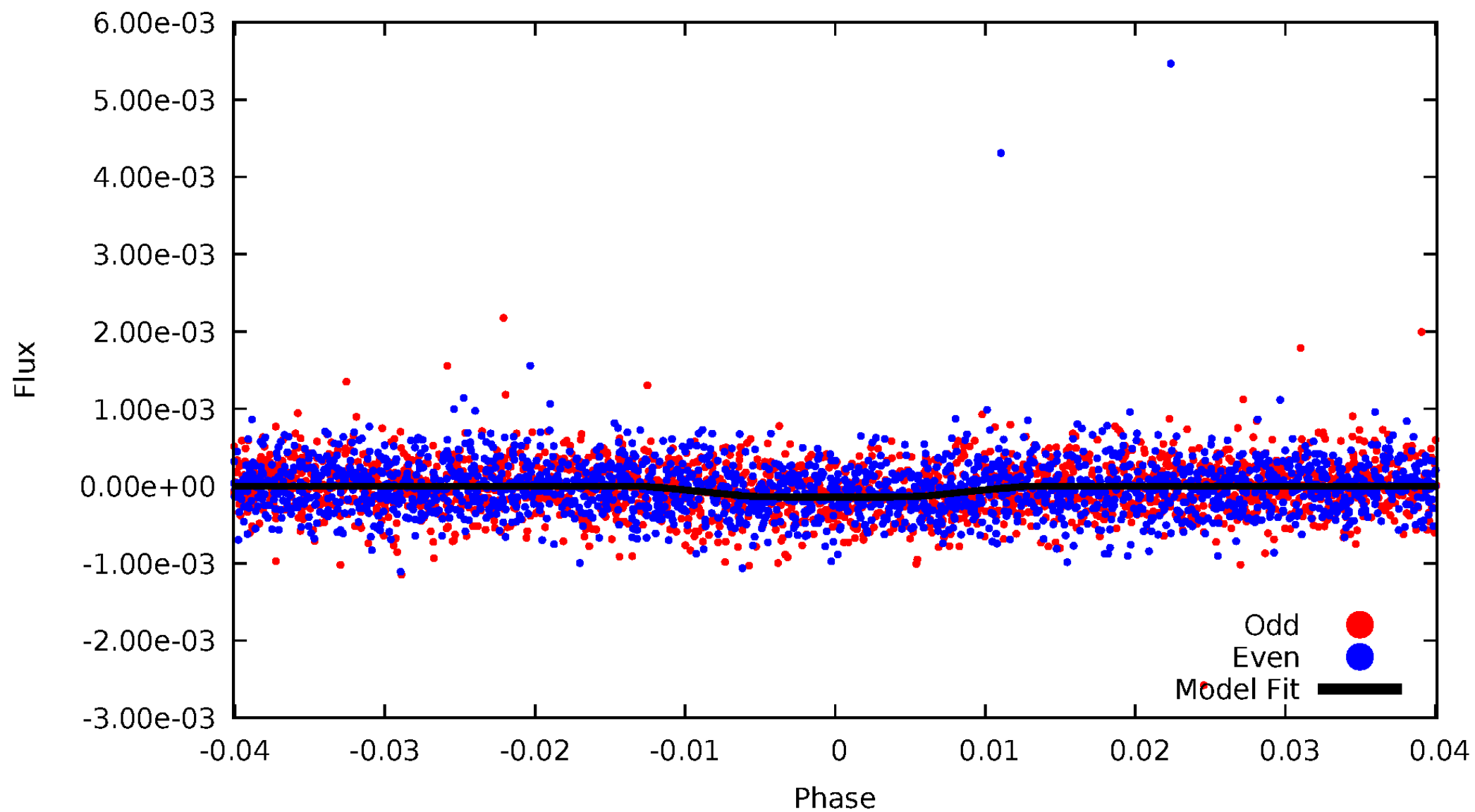


TCE 004374610-01



# DV Odd/Even

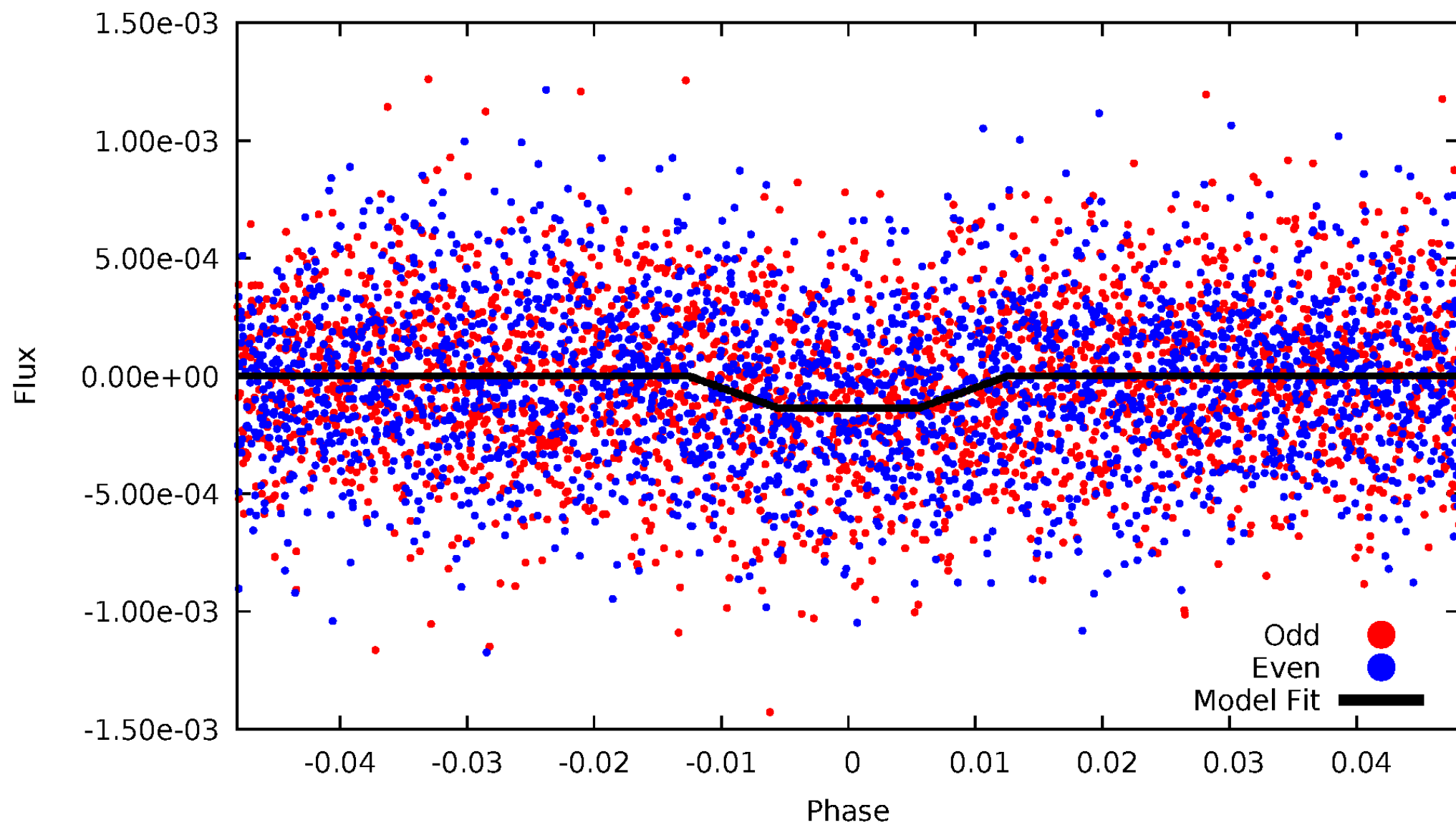
TCE 004374610-01



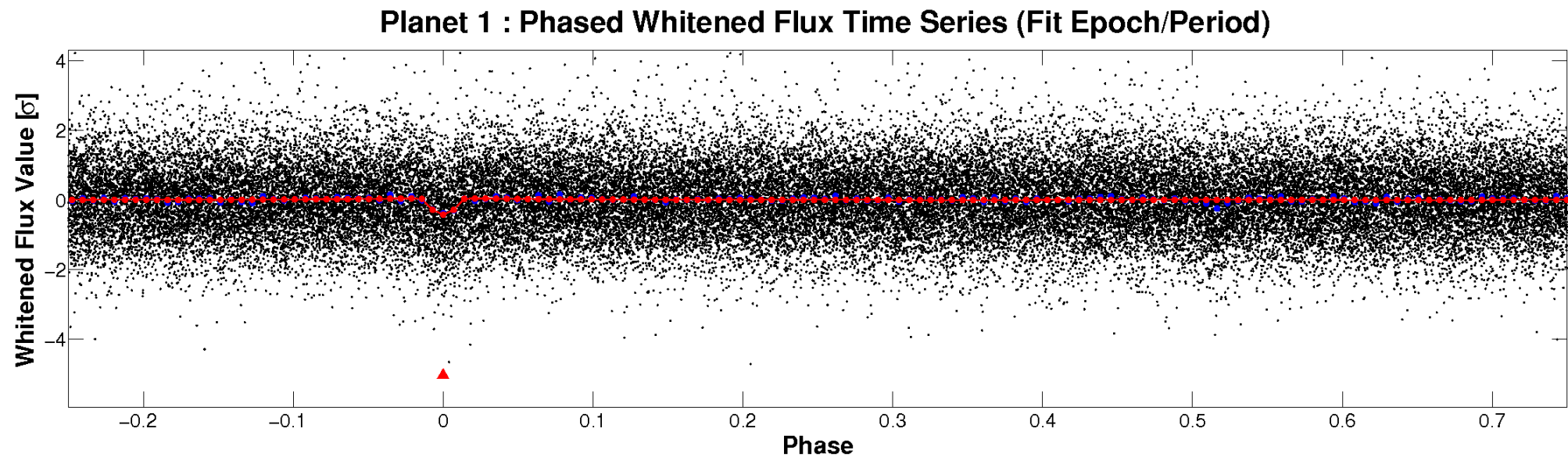
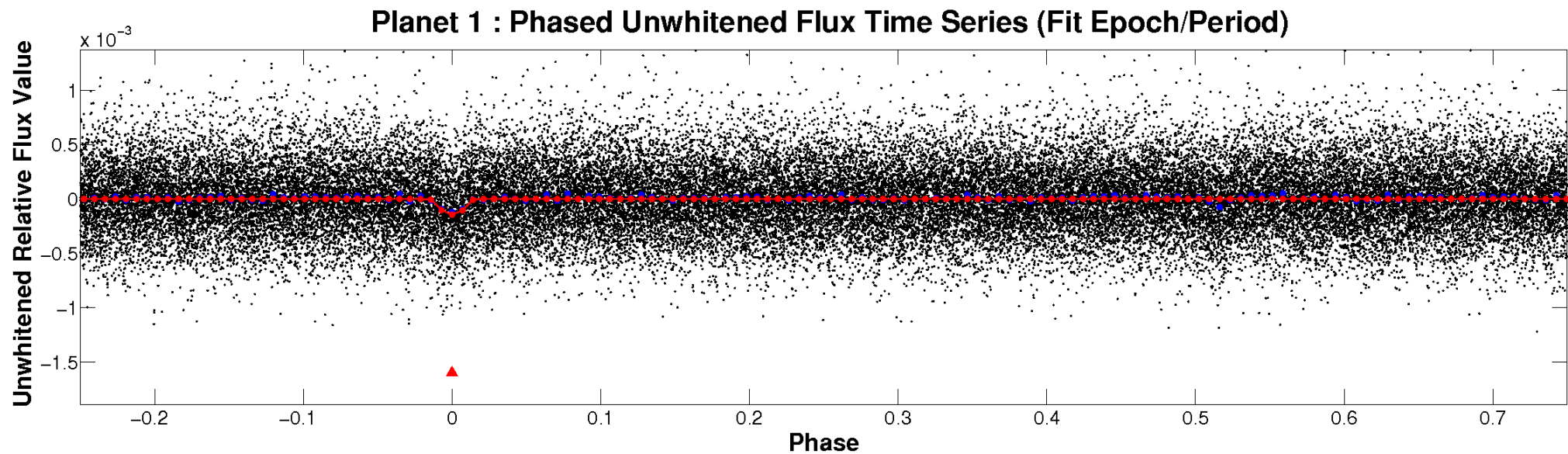


# ALT Odd/Even

TCE 004374610-01

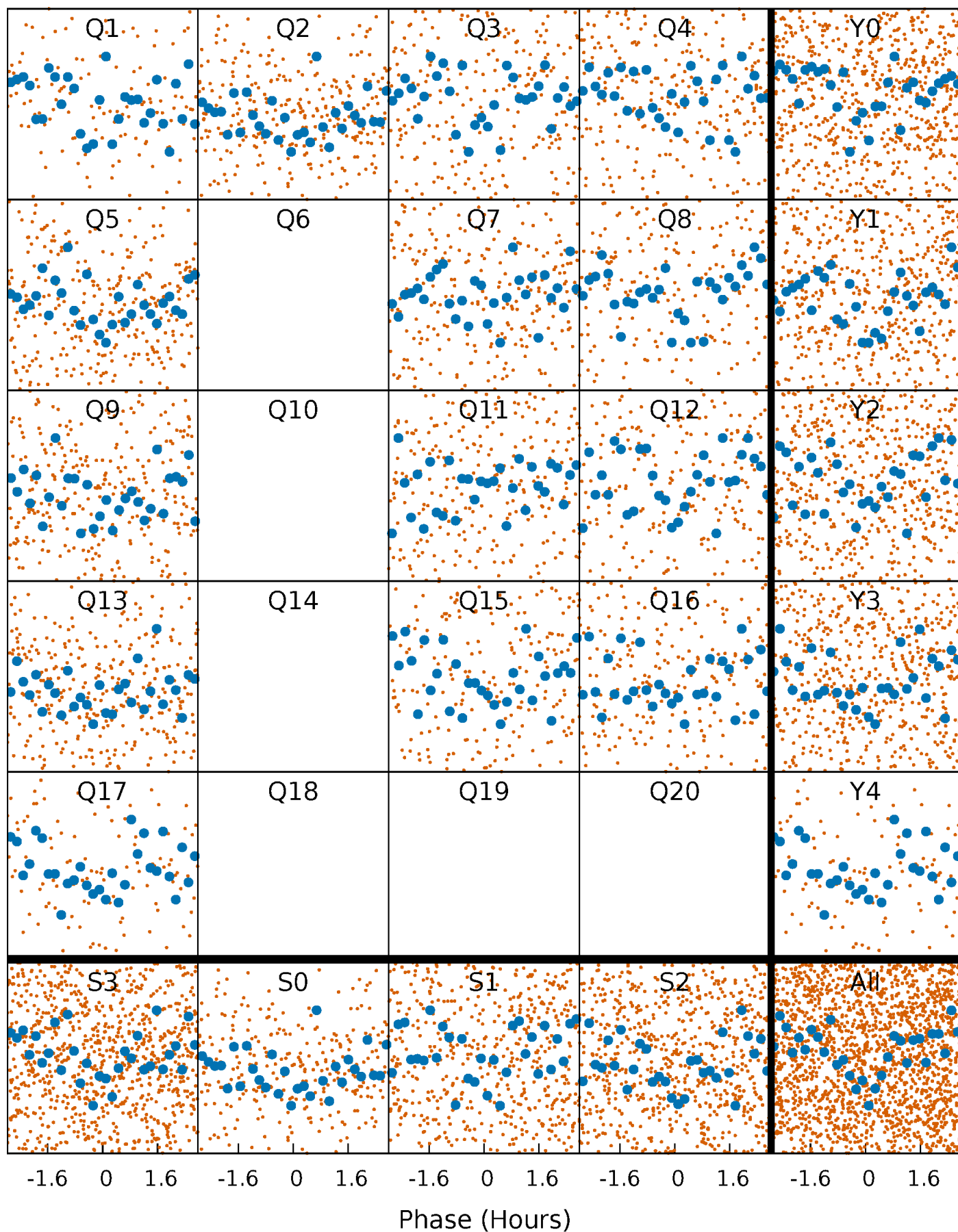


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

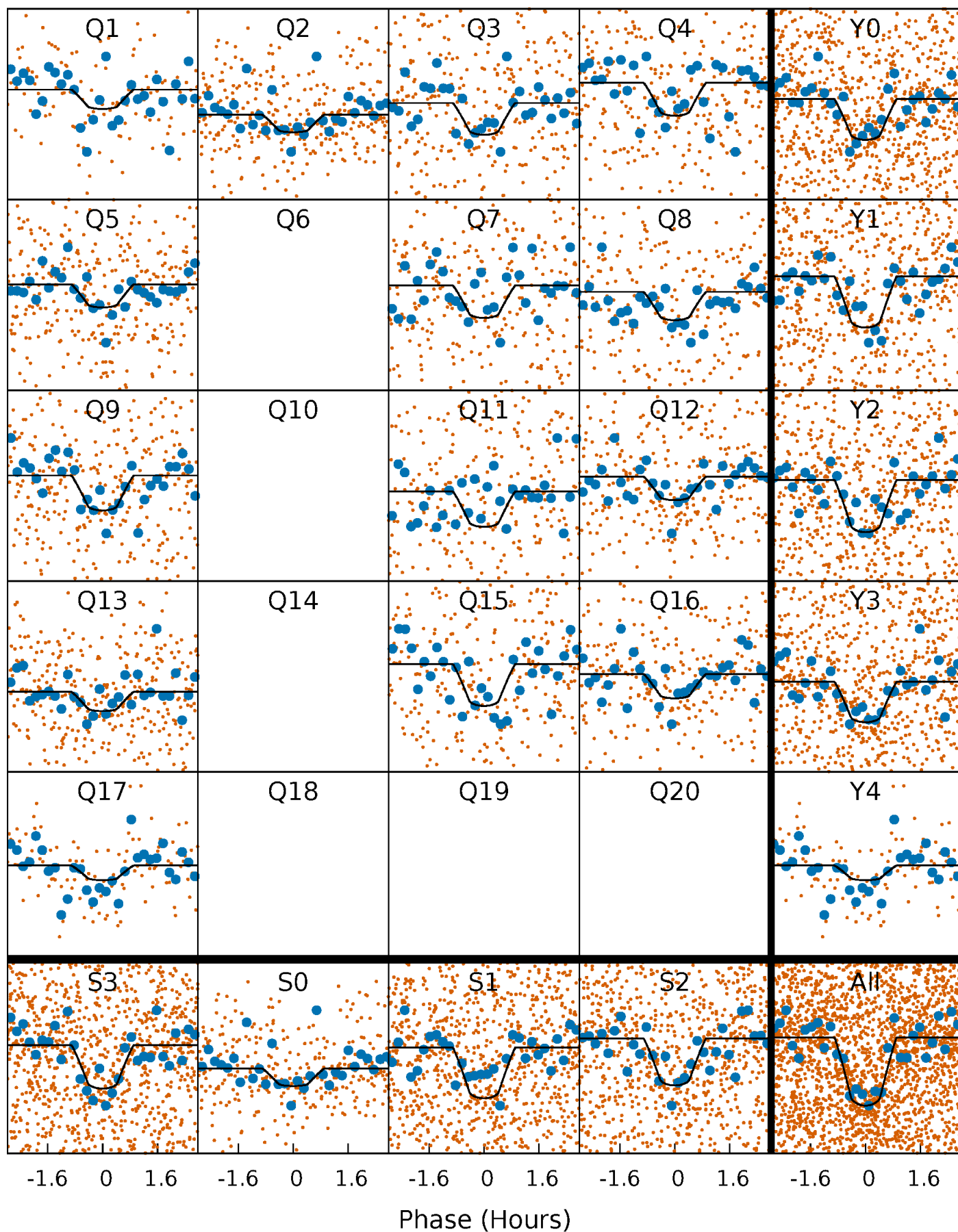
TCE 004374610-01 P= 2.888780 Days  $T_0=134.178006$  (BKJD)





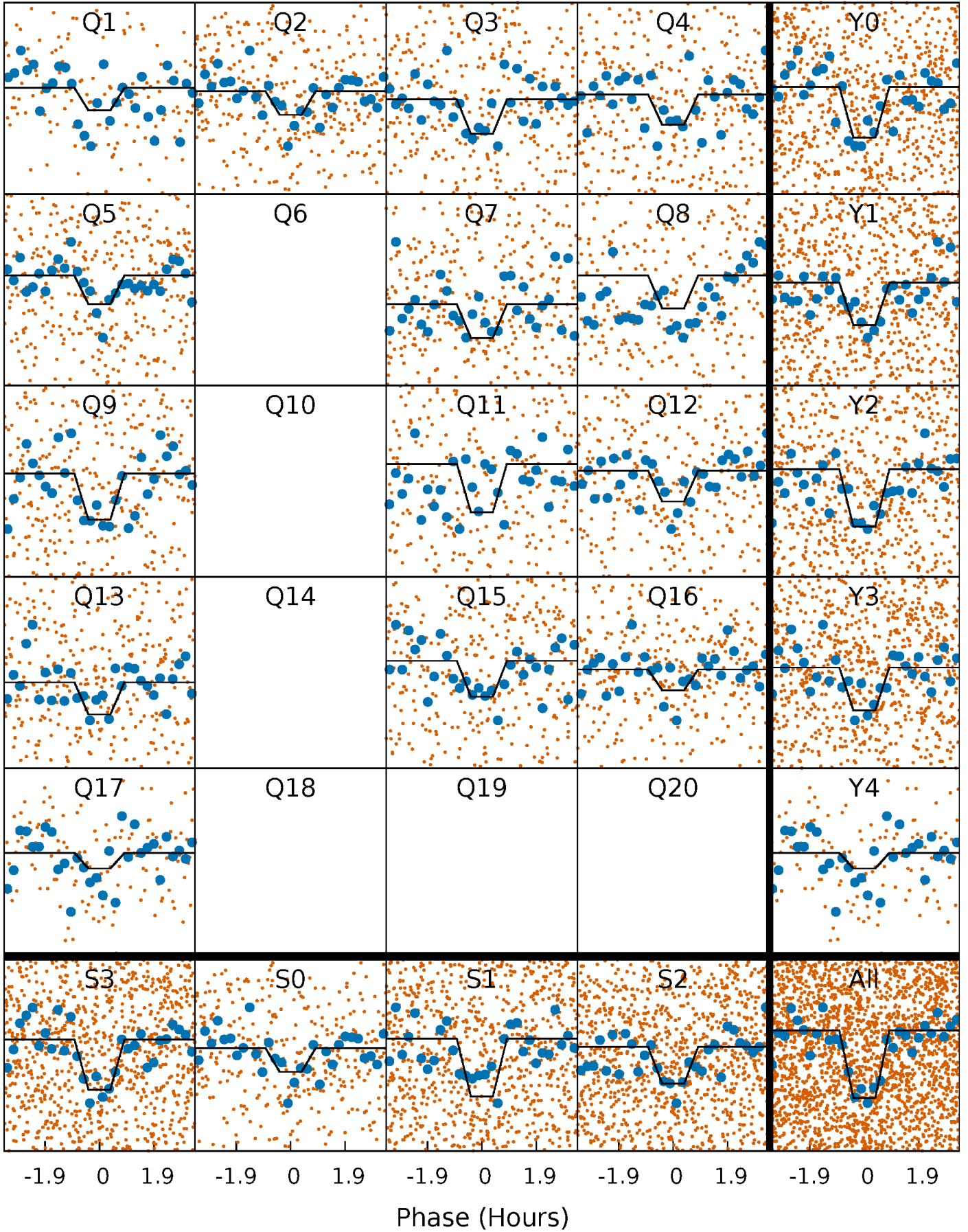
# DV Quarter-Phased Transit Curves

TCE 004374610-01   P= 2.888780 Days    $T_0=134.178006$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

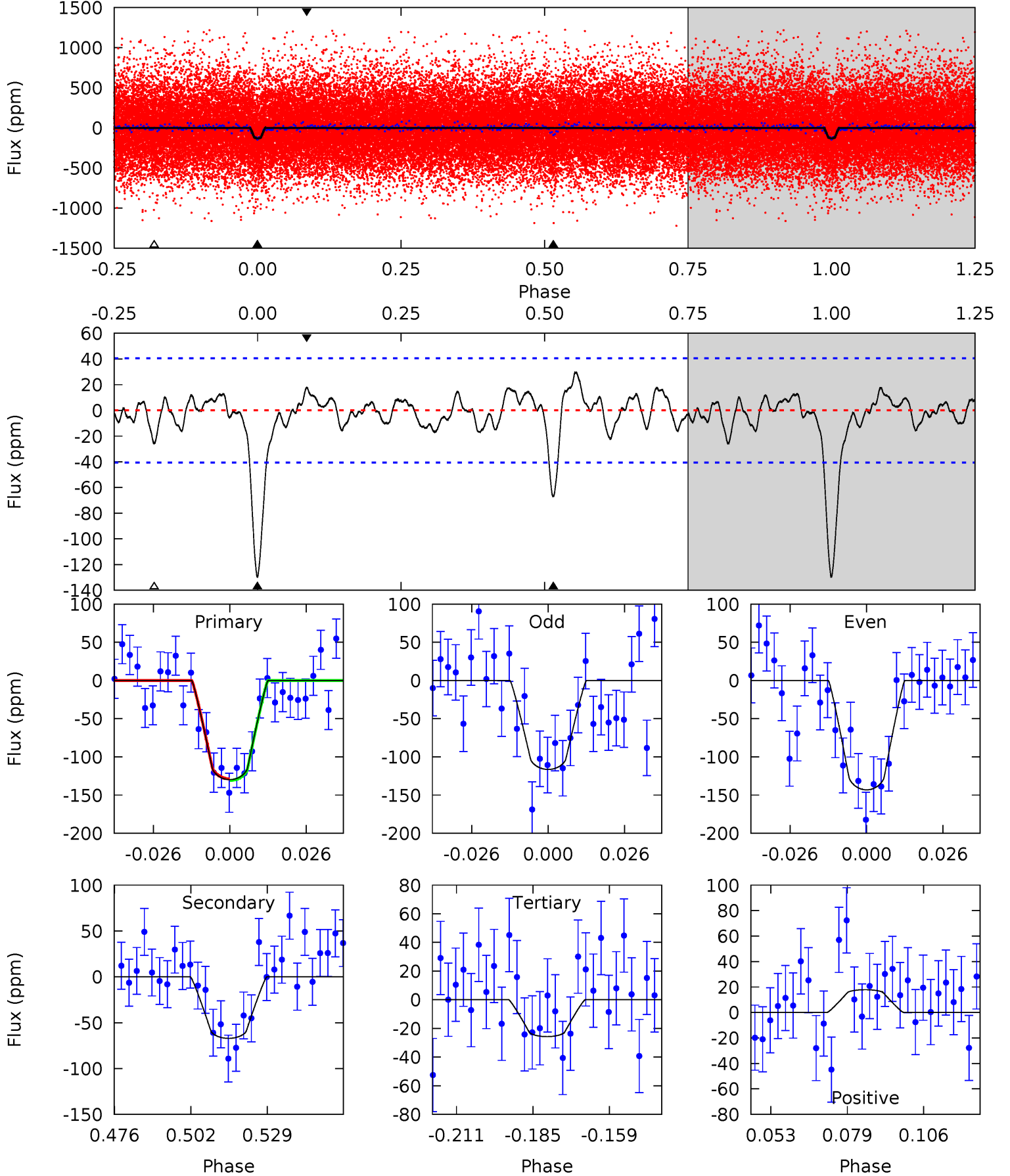
TCE 004374610-01 P= 2.888771 Days  $T_0=134.179492$  (BKJD)



# DV Model-Shift Uniqueness Test

004374610-01, P = 2.888780 Days, E = 131.289226 Days

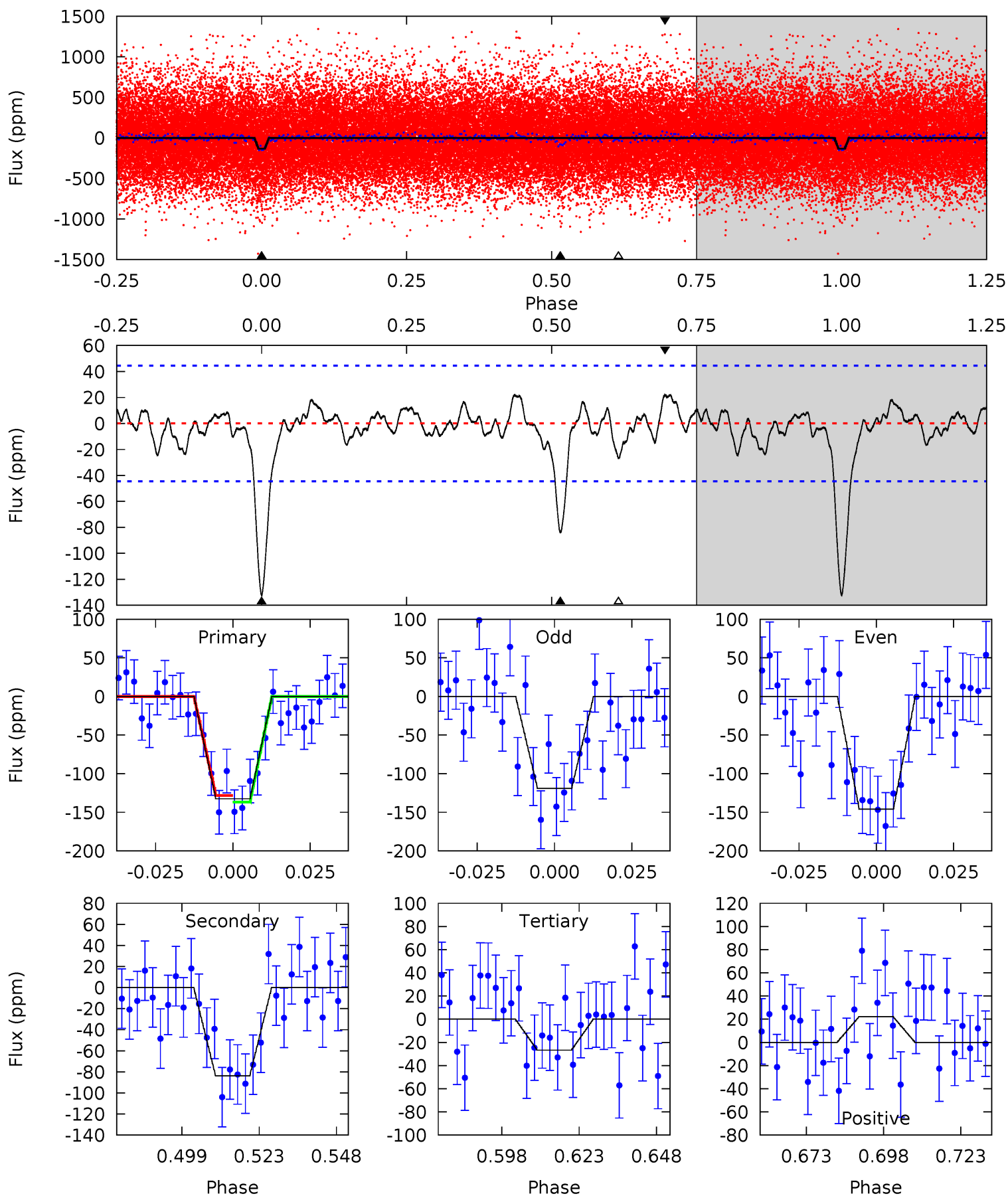
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.5	7.99	3.06	2.13	4.84	2.22	1.18	12.4	13.3	4.93	5.86	1.59	0.96	0.19	0.11



# Alt Model-Shift Uniqueness Test

004374610-01, P = 2.888771 Days, E = 131.290721 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
14.4	9.12	2.91	2.41	4.85	2.24	1.05	11.5	12.0	6.21	6.71	1.47	0.98	0.14	0.46



### Stellar Parameters For KIC 004374610

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6667^{+164}_{-234}$	$4.358^{+0.069}_{-0.173}$	$-0.120^{+0.250}_{-0.300}$	$1.213^{+0.353}_{-0.141}$	$1.233^{+0.156}_{-0.174}$	$0.973^{+0.315}_{-0.470}$
	+2%/-4%	+2%/-4%	+208%/-250%	+29%/-12%	+13%/-14%	+32%/-48%
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 004374610-01 / KOI 4712.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-67 \pm 8$	$1.86^{+1.07}_{-0.93}$	$2227^{+138}_{-113}$	$5169^{+2045}_{-861}$	$19^{+55}_{-11}$
Alt.	$-84 \pm 9$	$1.69^{+1.06}_{-0.90}$	$2220^{+137}_{-109}$	$5724^{+2975}_{-1098}$	$30^{+102}_{-19}$

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



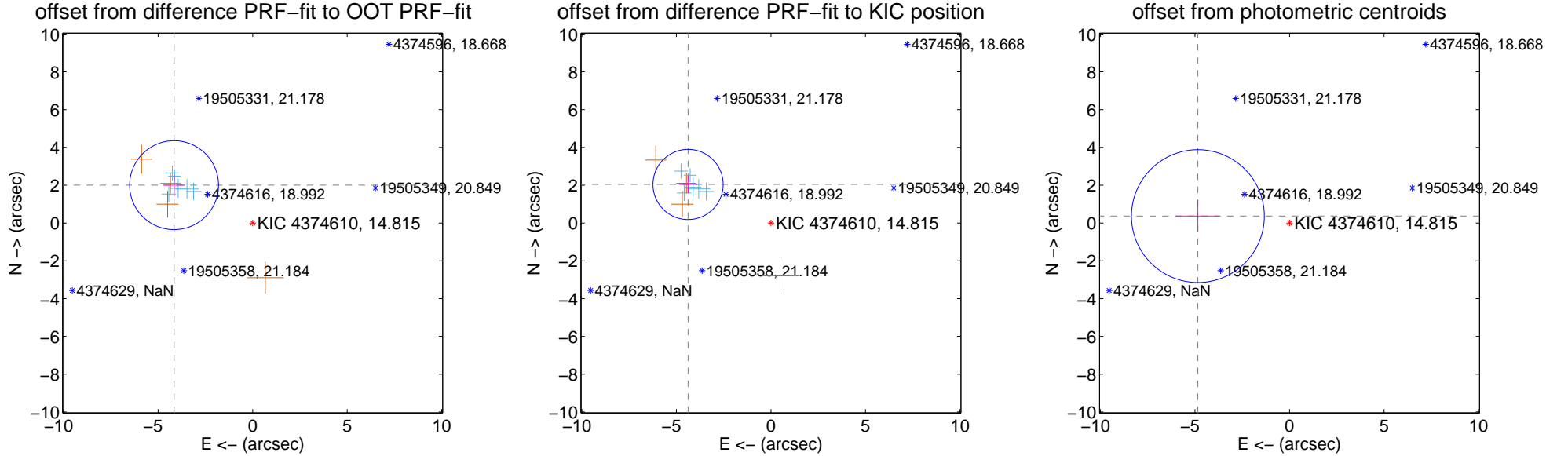
## DV Centroid Data

Supplemental centroid analysis for 004374610-01. Kepler magnitude: 14.81. Transit SNR 11.51

There are 6 quarters with good PRF difference image offsets

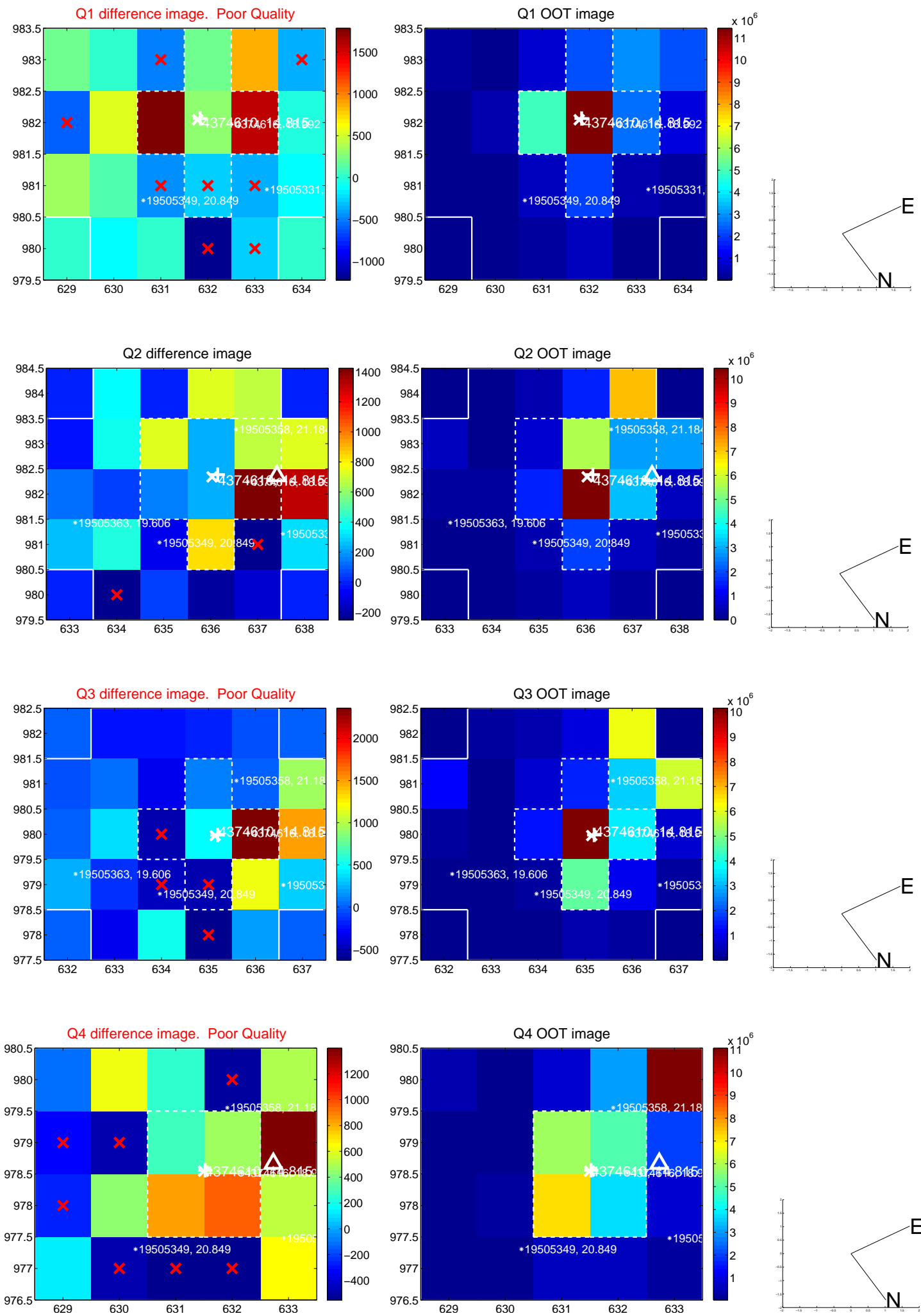
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.614 \pm 0.784$	5.89	$4.156 \pm 0.593$	$2.003 \pm 0.596$
PRF-fit source offset from KIC position	$4.836 \pm 0.619$	7.81	$4.384 \pm 0.479$	$2.040 \pm 0.468$
photometric centroid source offset	$4.86 \pm 1.17$	4.15	$4.85 \pm 1.17$	$0.37 \pm 0.85$

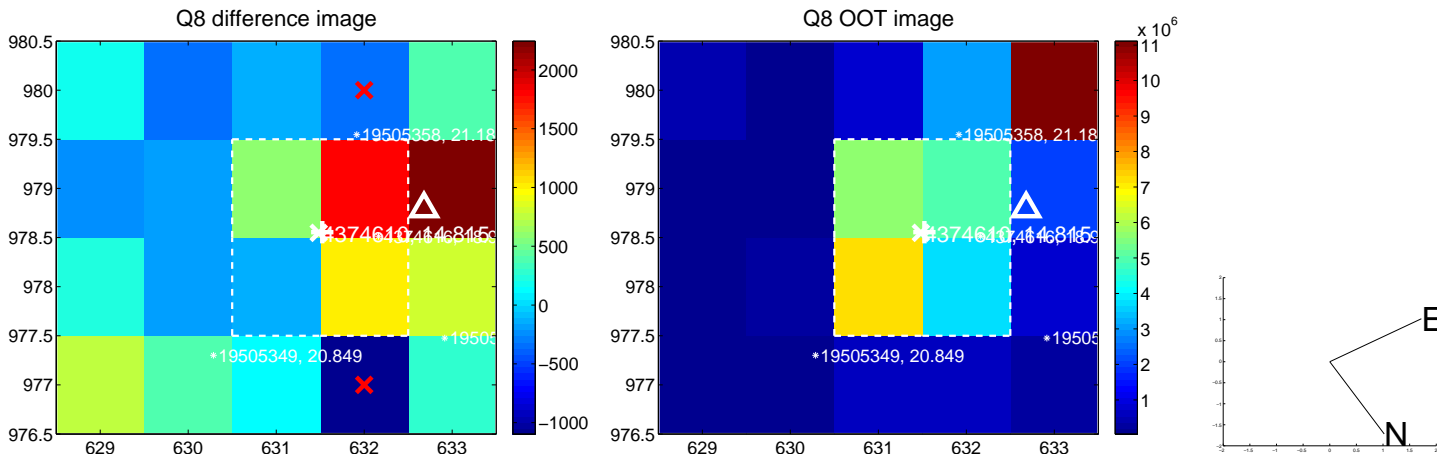
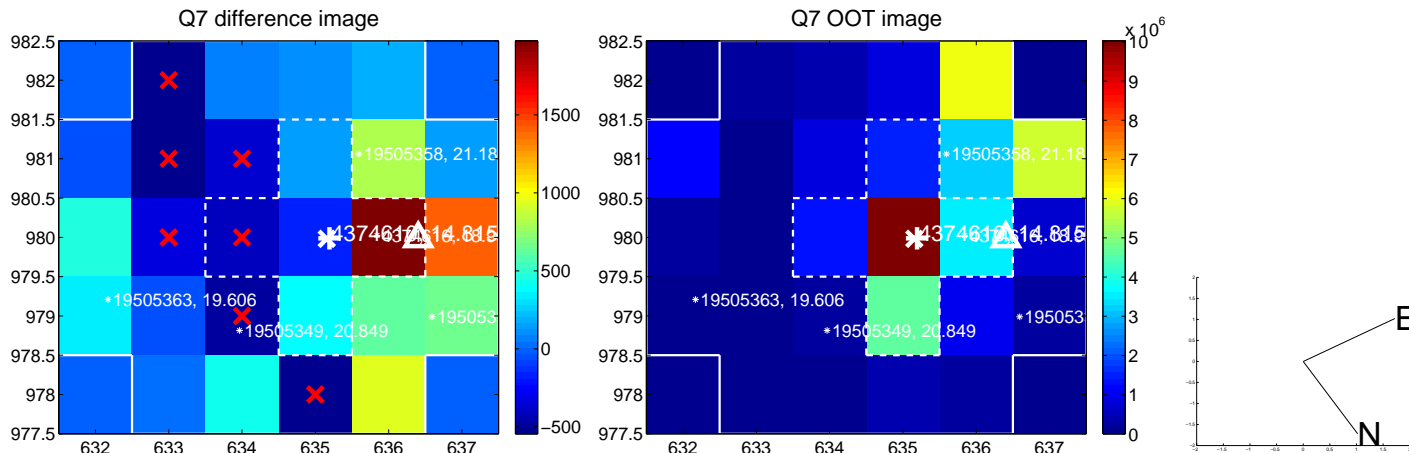
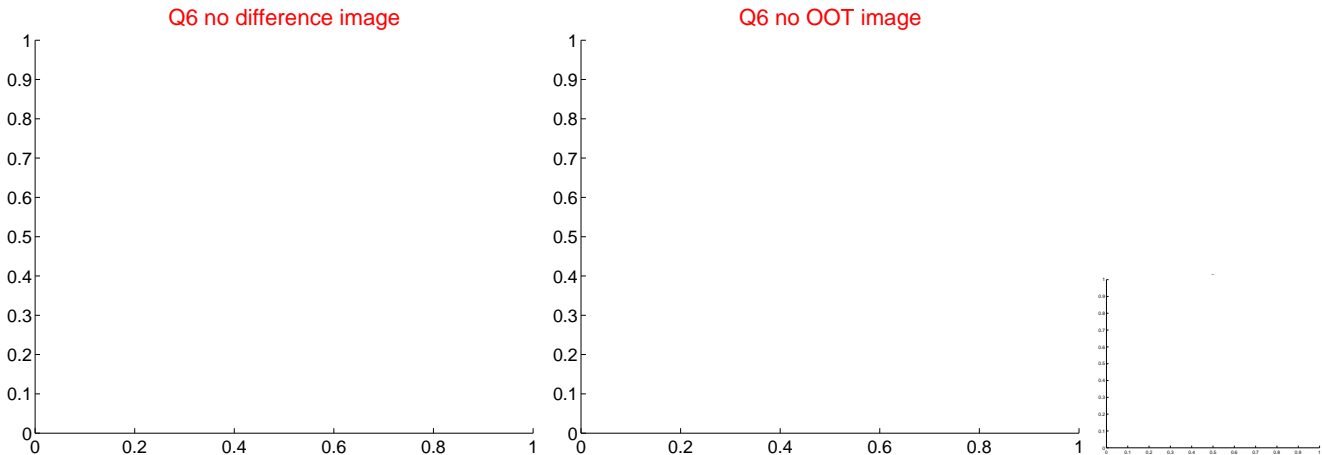
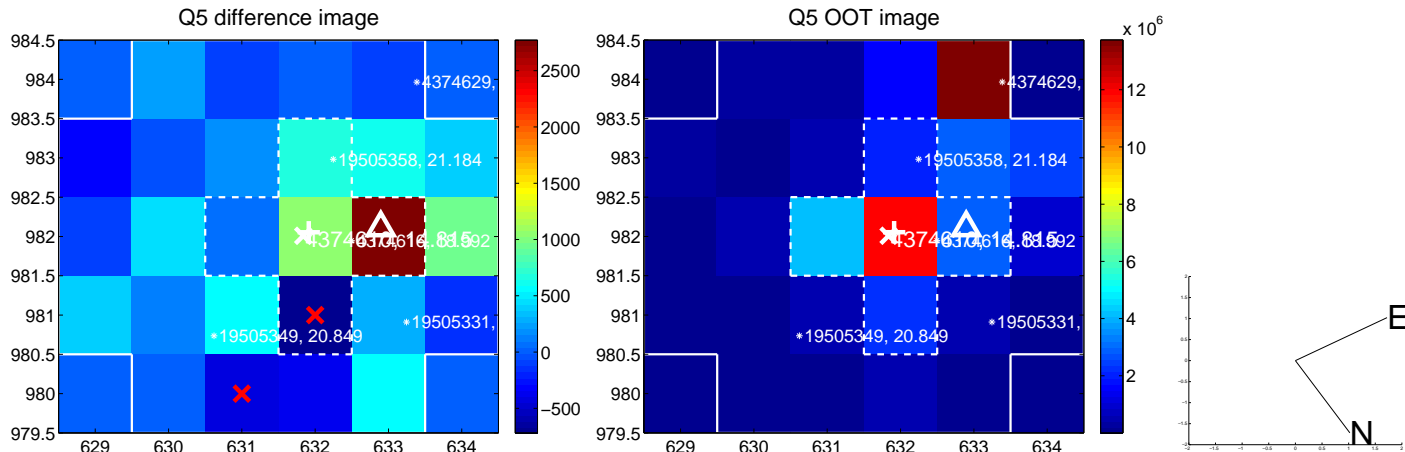


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

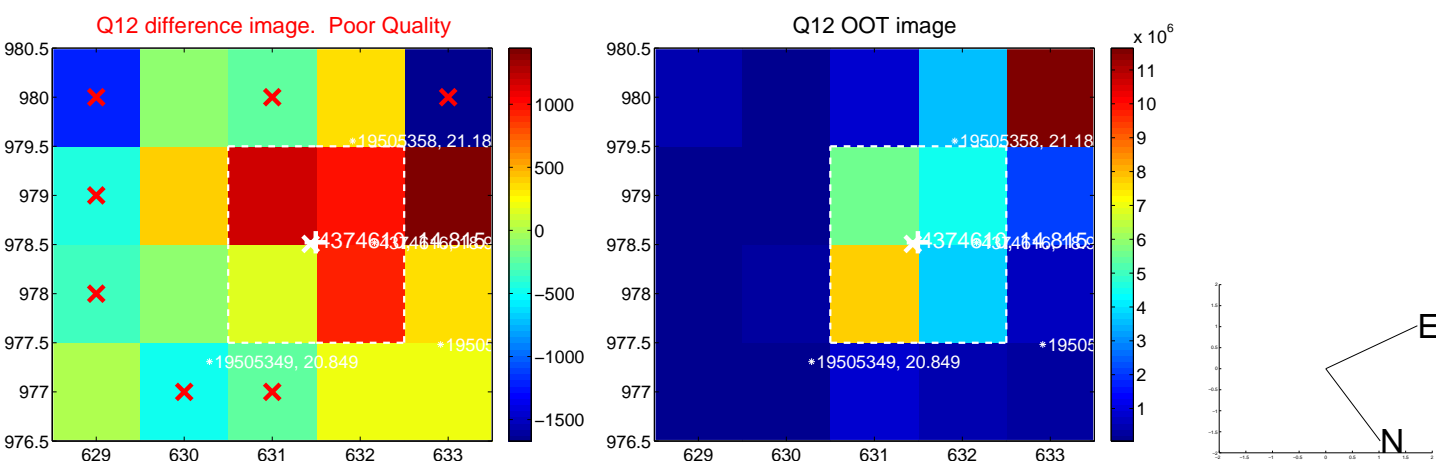
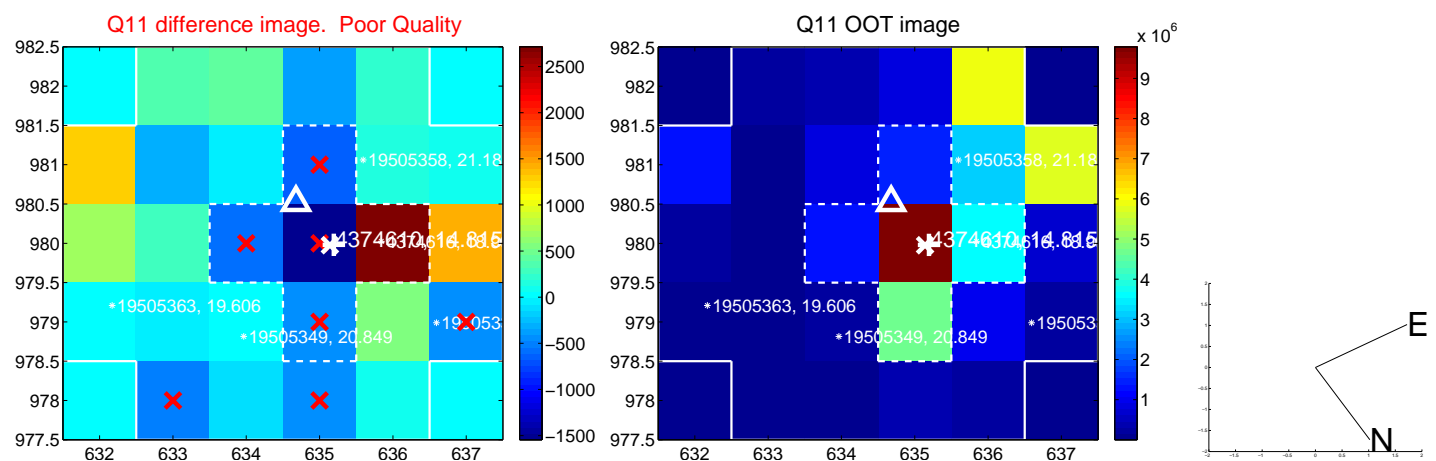
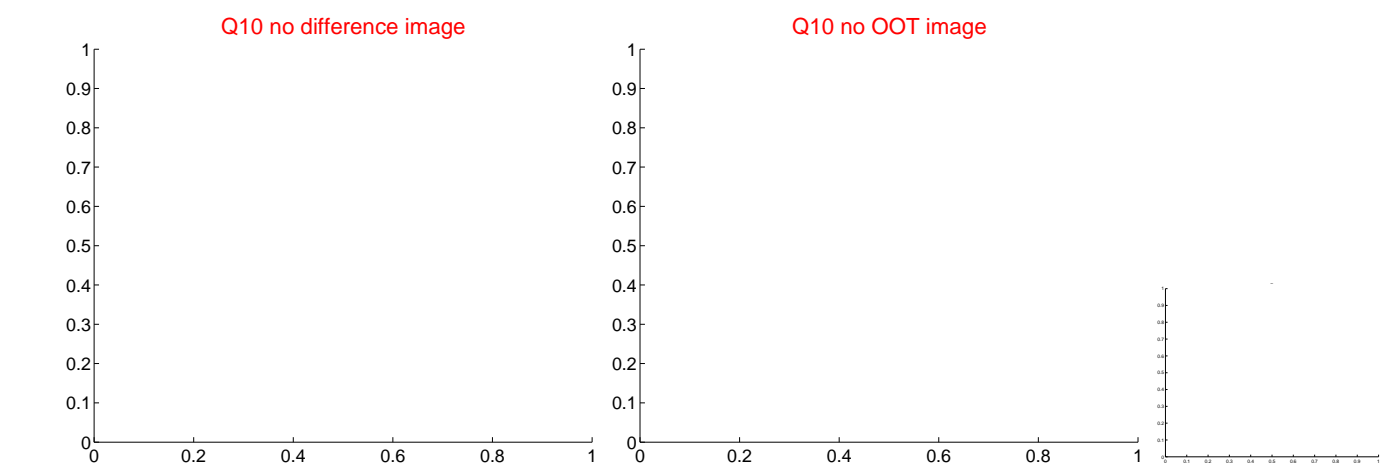
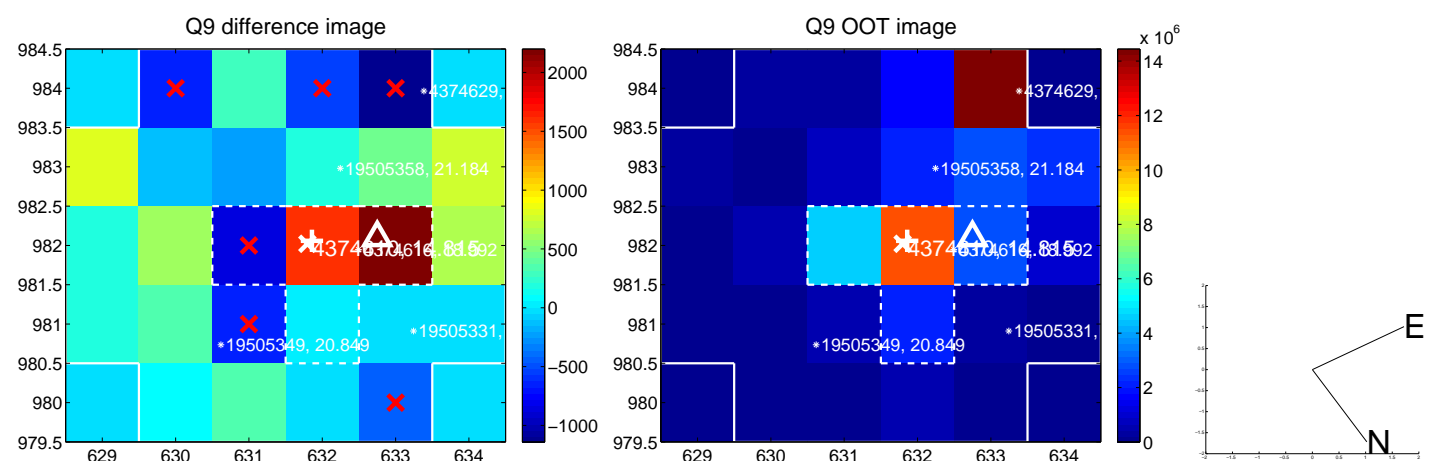
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



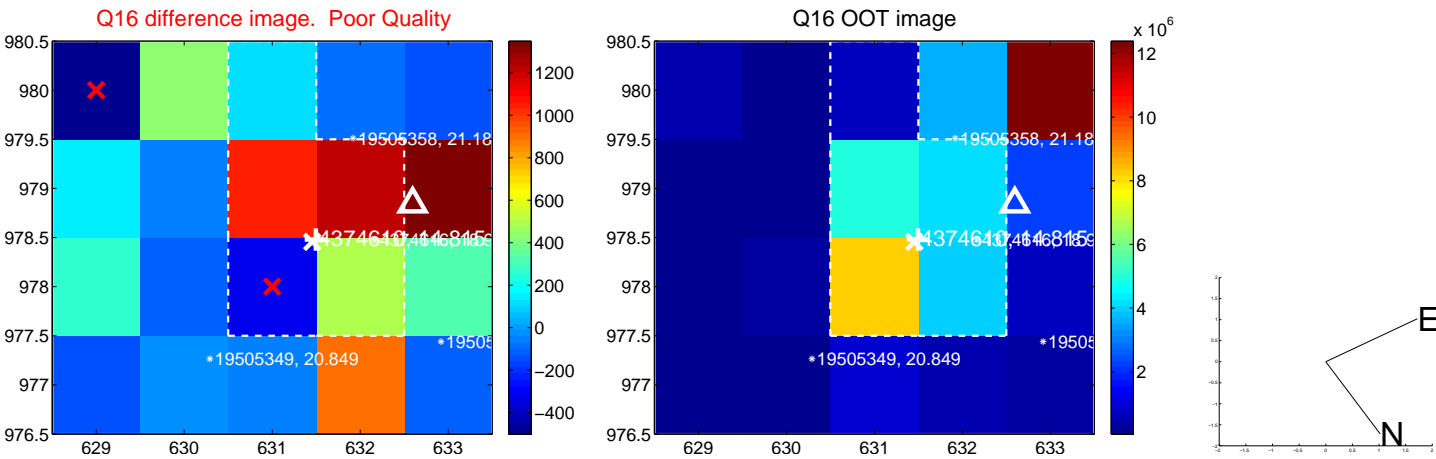
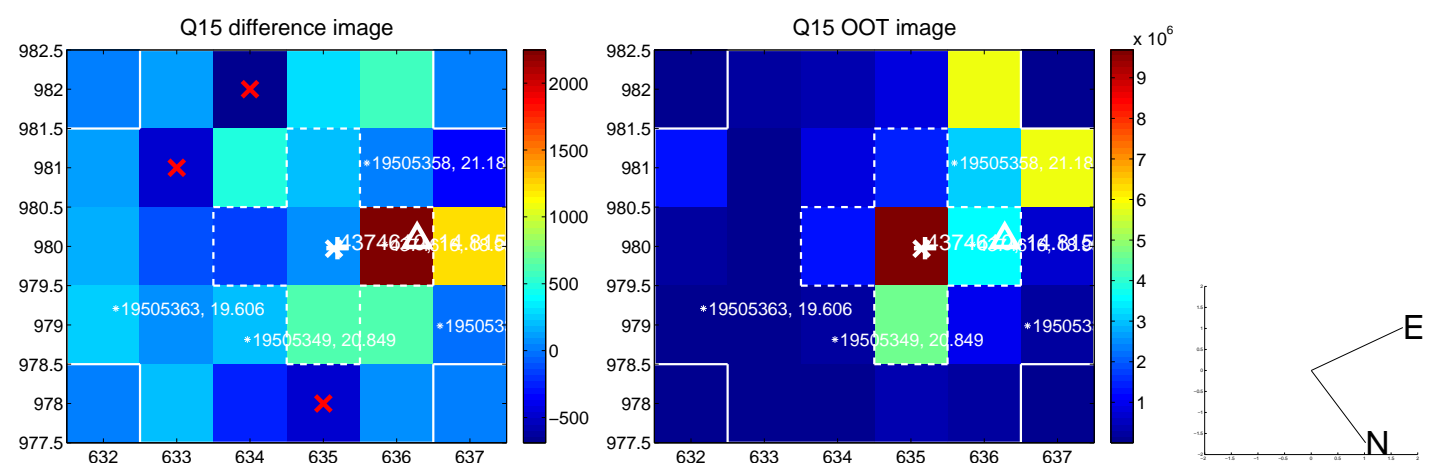
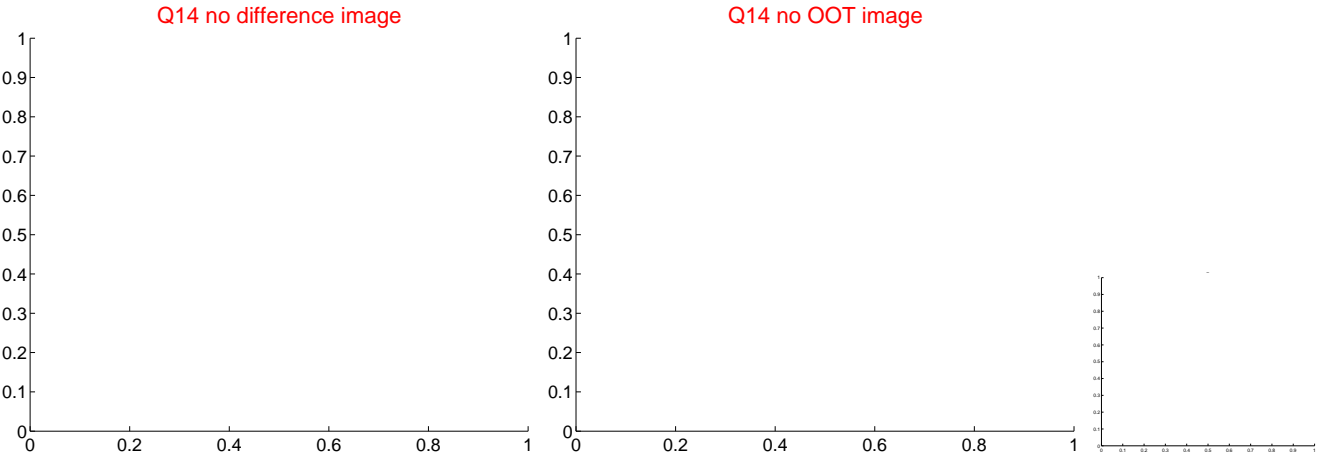
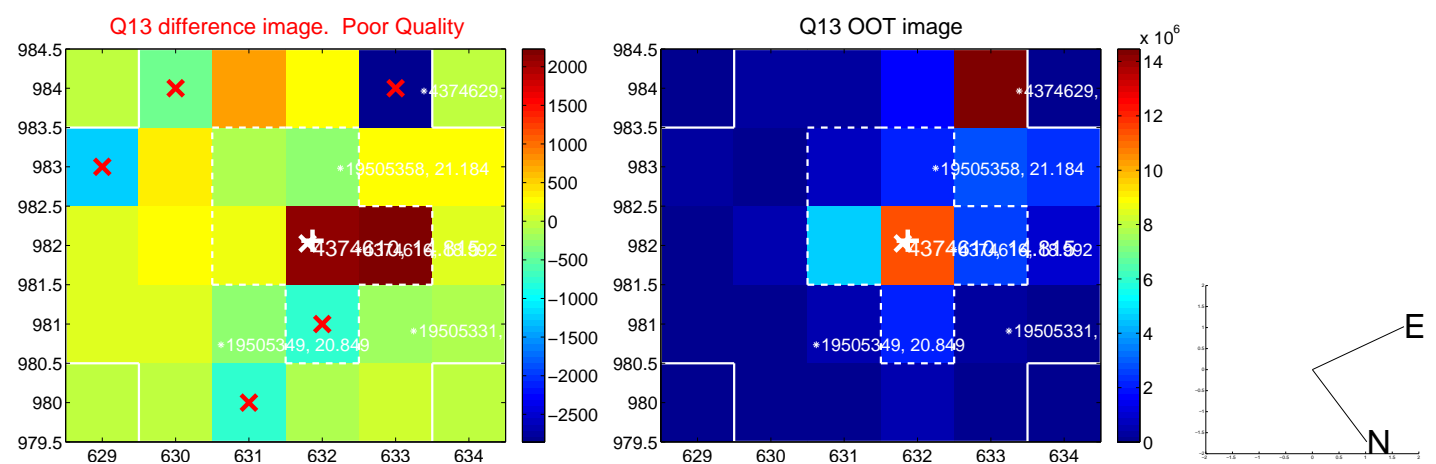
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

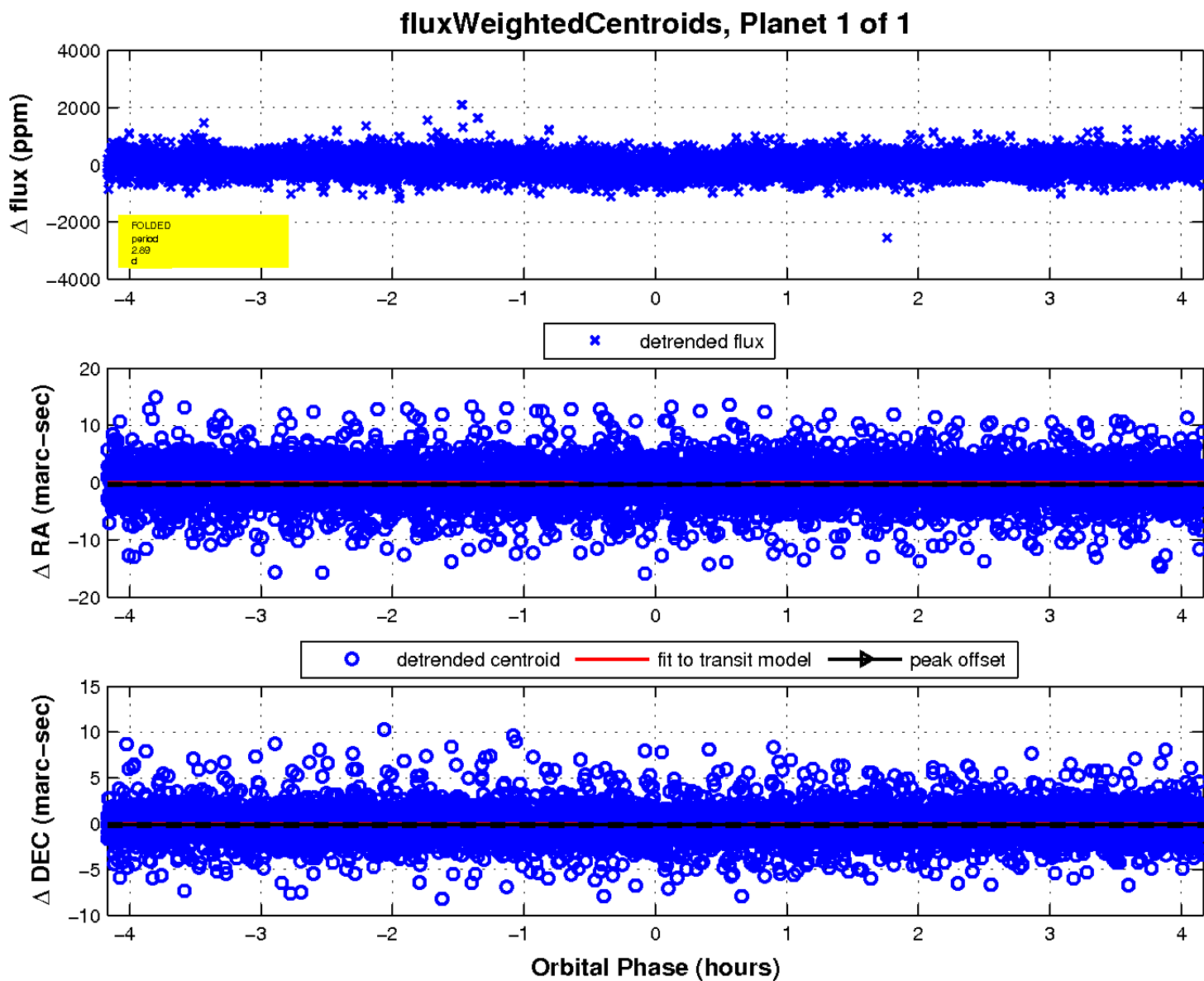
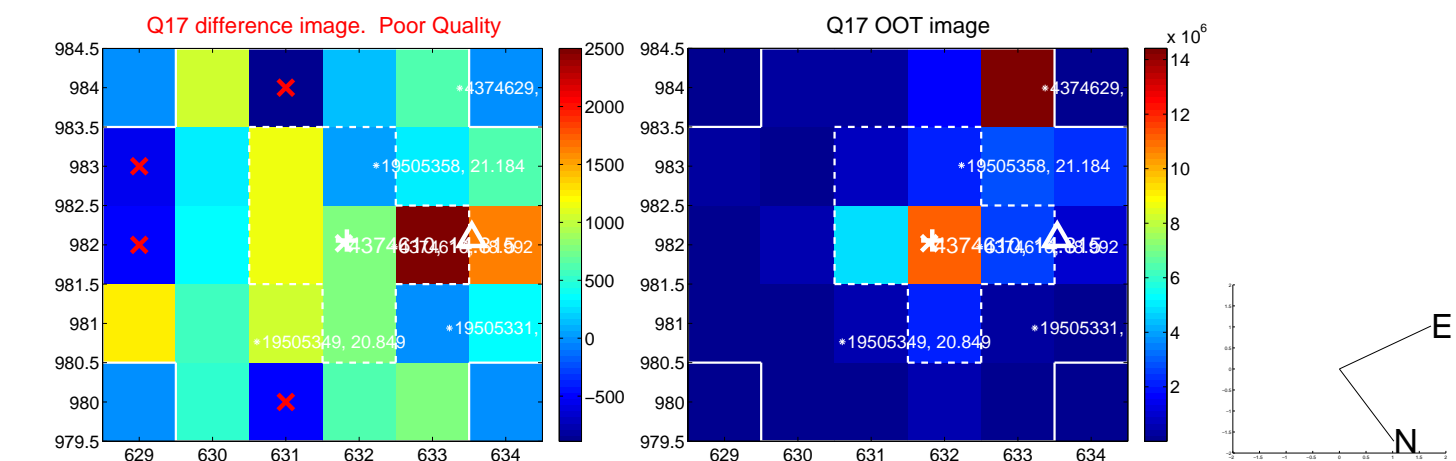


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.





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



UKIRT Image

Declination

