

# KIC 007916058

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007916058-01	OBS	5445.01	7.109542	133.385804	157.1	18.998	10.5	11.4	0.82	5665	1.89	126.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007916058-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_RESOLVED_OFFSET—HALO_GHOST

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

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

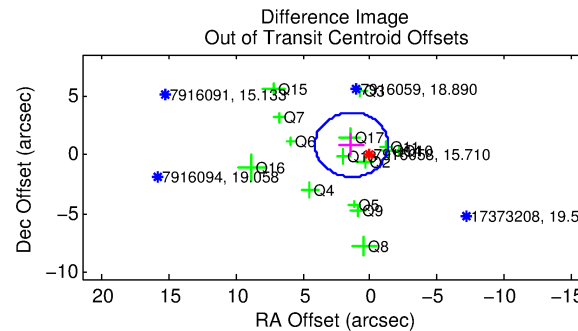
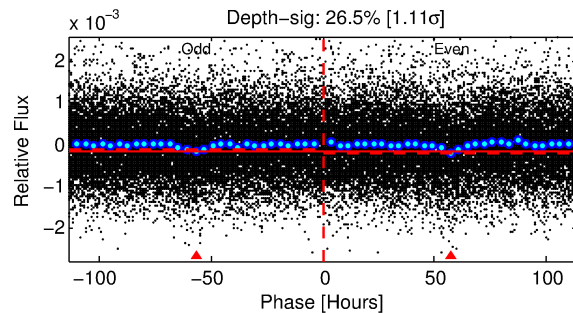
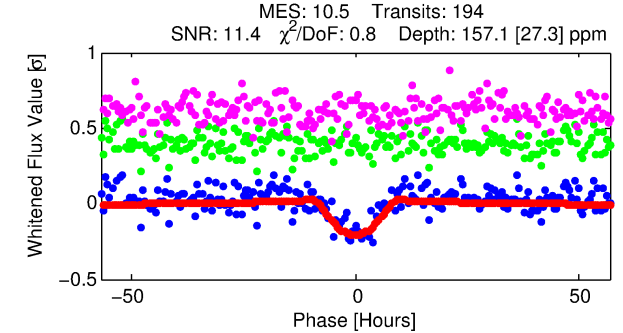
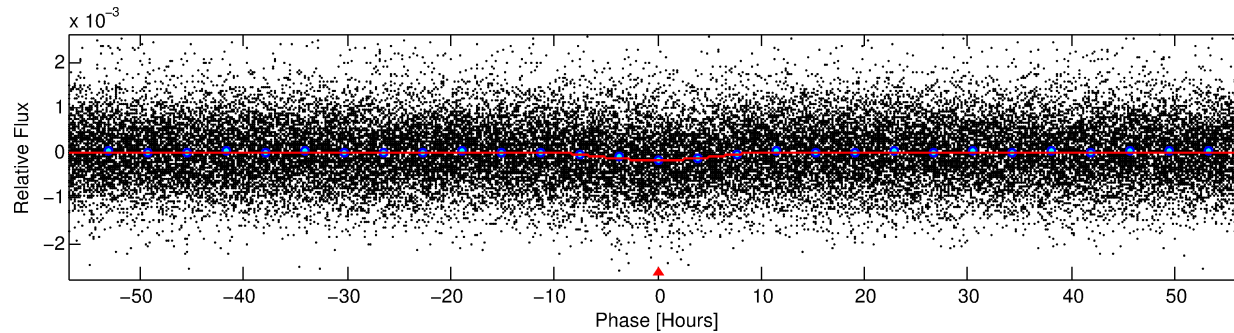
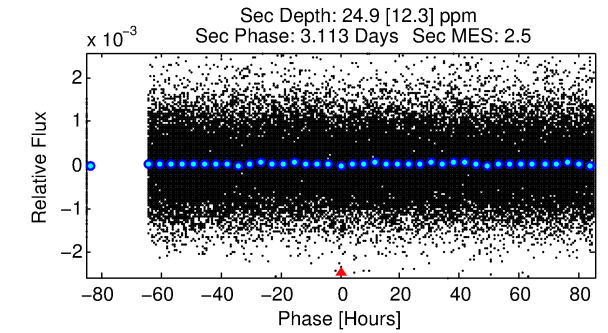
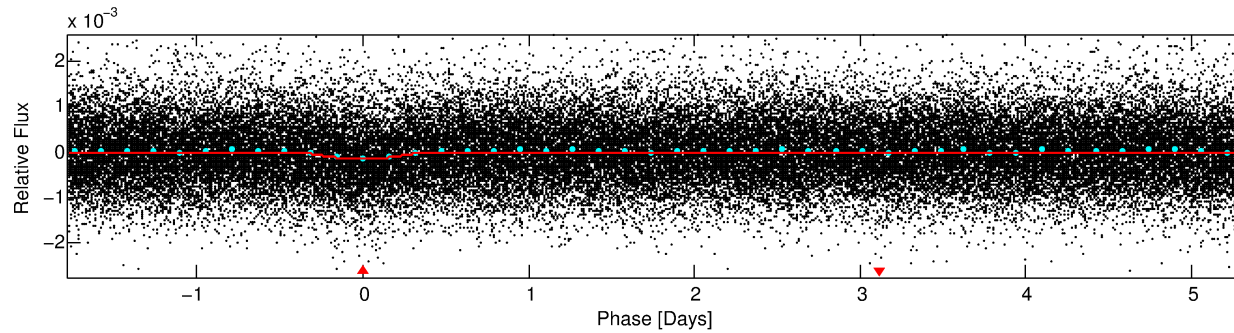
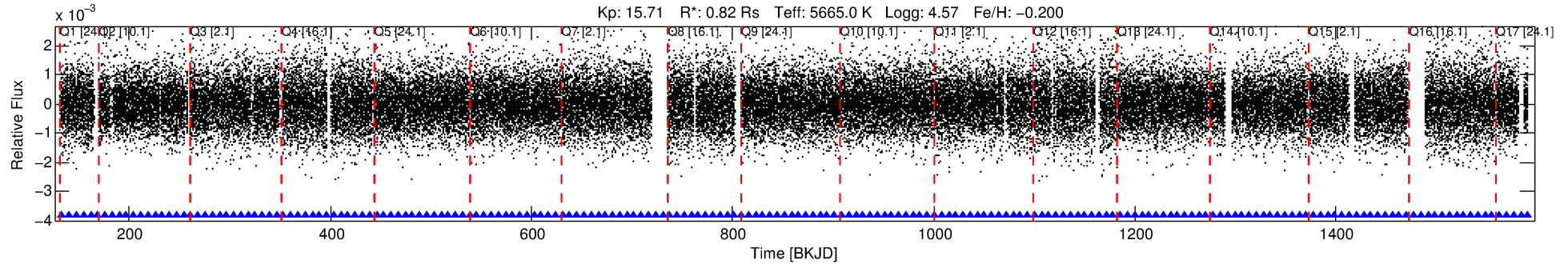
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007916058-01

No Significant Match Found

# DV One-Page Summary

KIC: 7916058 Candidate: 1 of 1 Period: 7.110 d  
KOI: K05445.01 Corr: 0.832



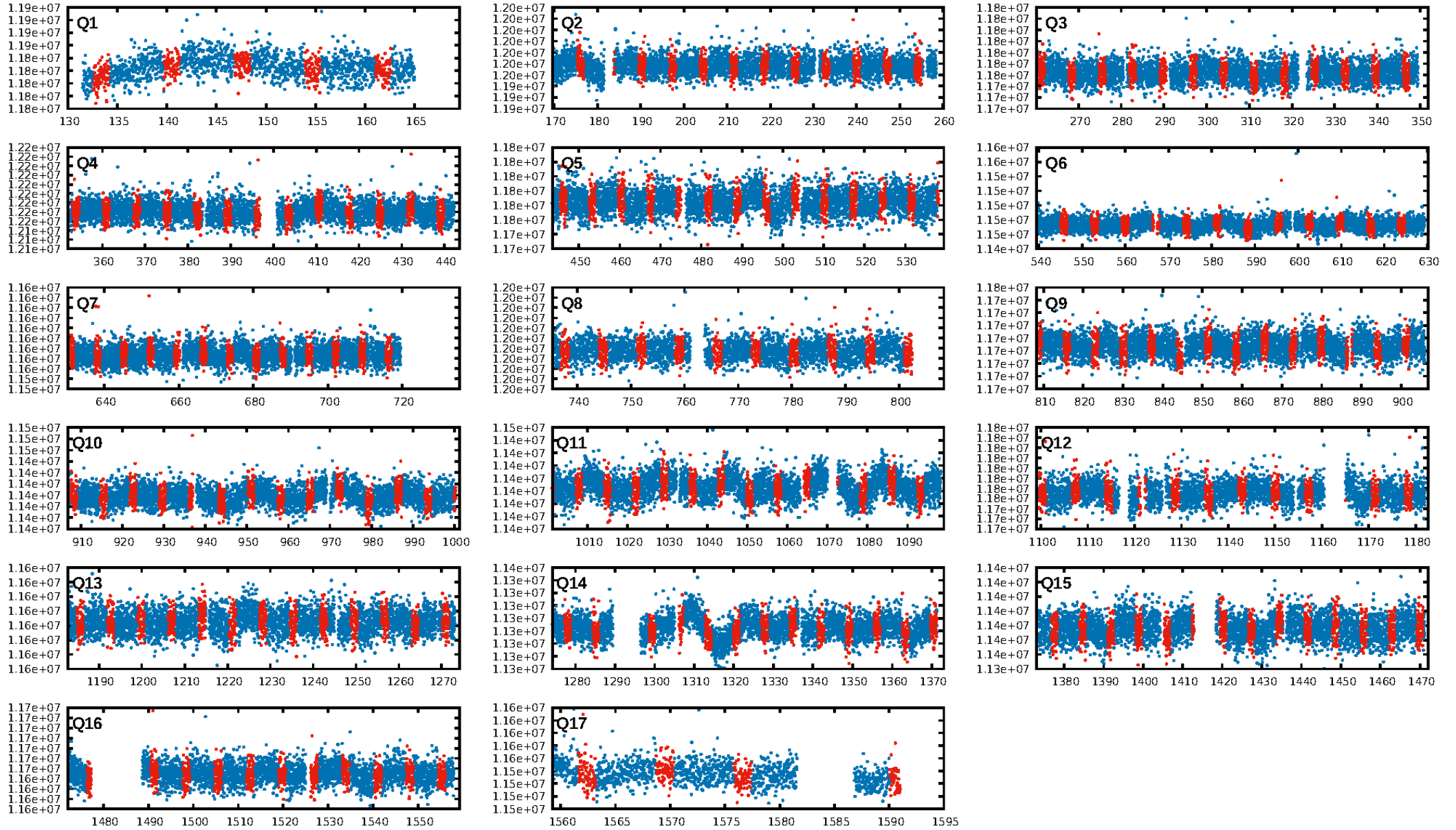
## DV Fit Results:

Period = 7.10954 [0.00032] d  
Epoch = 133.3858 [0.0362] BKJD  
Rp/R\* = 0.0211 [0.0377]  
a/R\* = 1.19 [0.16]  
b = 1.00 [0.06]  
Seff = 126.41 [38.51]  
Teff = 855 [65] K  
Rp = 1.89 [3.40] Re  
a = 0.0701 [0.0136] AU  
Ag = 18.90 [68.45] [0.26σ]  
Teffp = 2756 [2489] K [0.76σ]

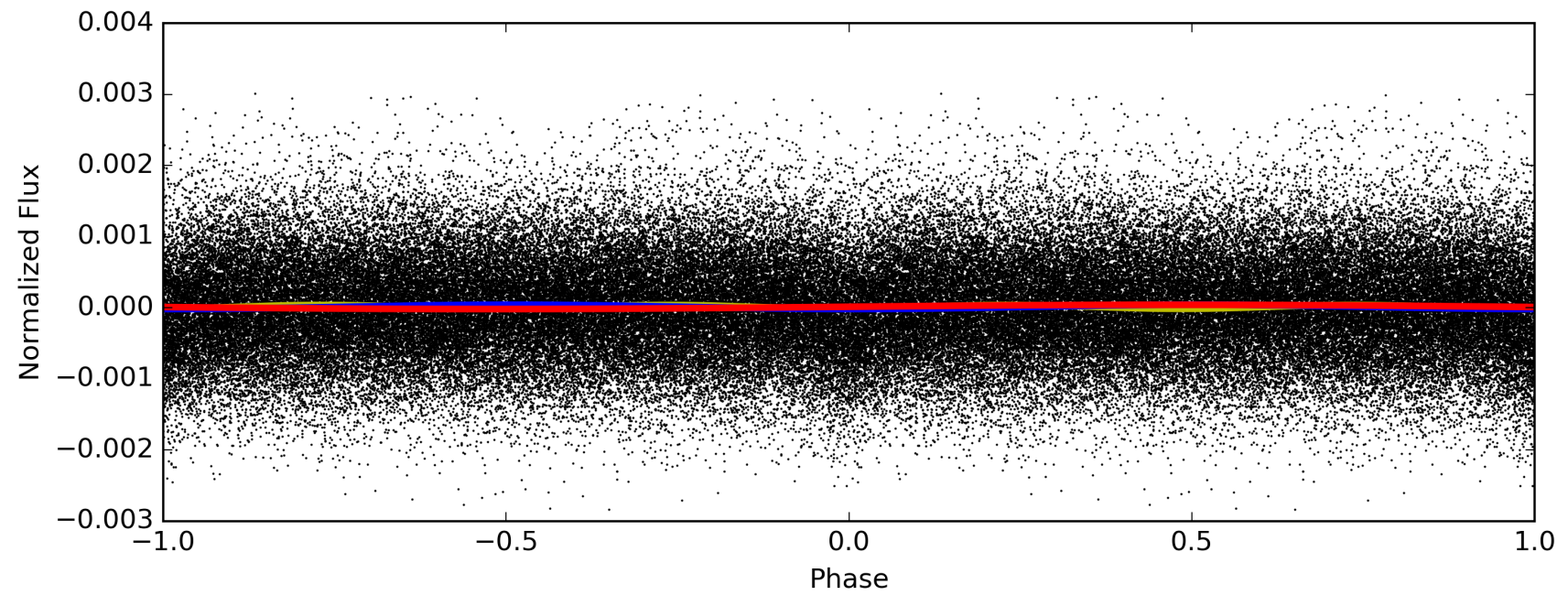
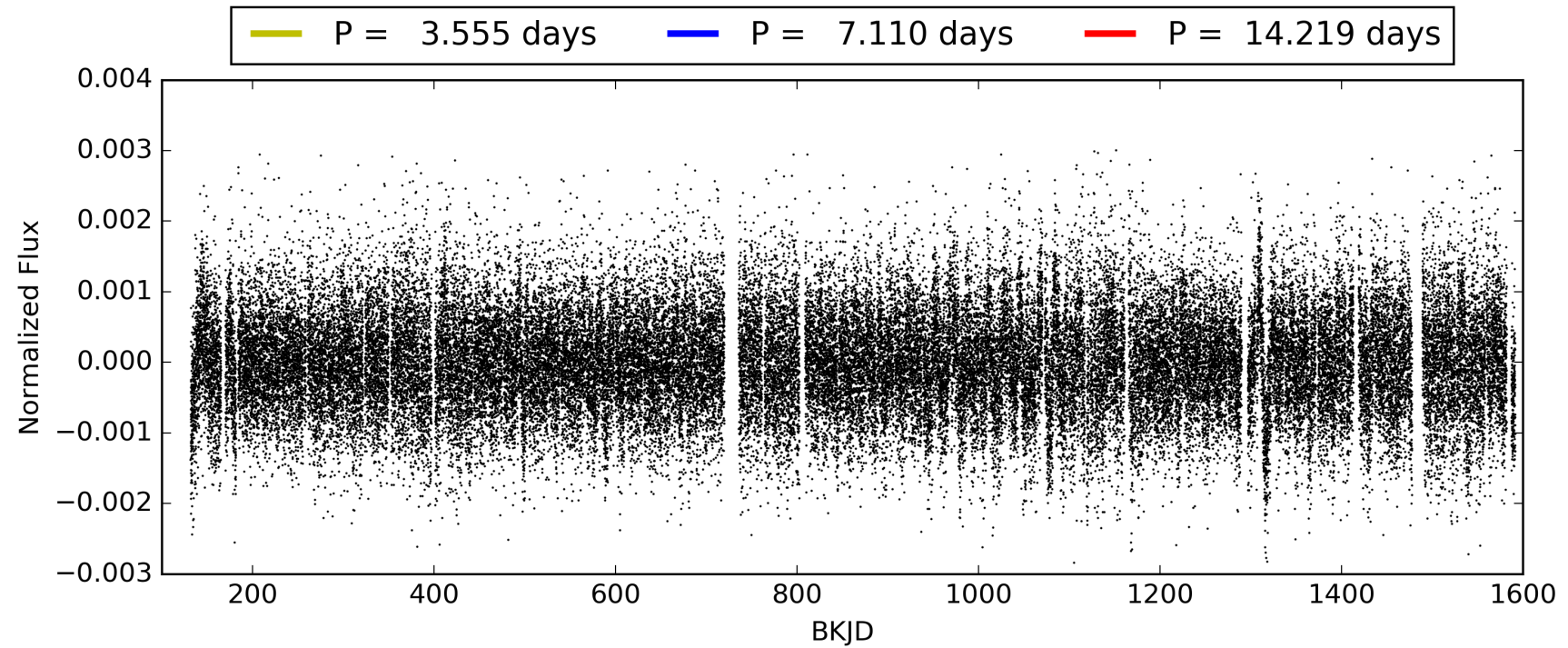
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 98.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.24e-25  
RollingBand-fgt: 1.00 [185/185]  
GhostDiagnostic-chr: 0.03172  
Centroid-sig: 0.0%  
Centroid-so: 5.017 arcsec [4.16σ]  
OotOffset-rm: 1.632 arcsec [1.80σ]  
KicOffset-rm: 1.734 arcsec [1.68σ]  
OotOffset-st: 4/4/3/4 [15]  
KicOffset-st: 4/4/3/4 [15]  
DiffImageQuality-fgm: 0.20 [3/15]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 007916058-01, PDC Light Curves



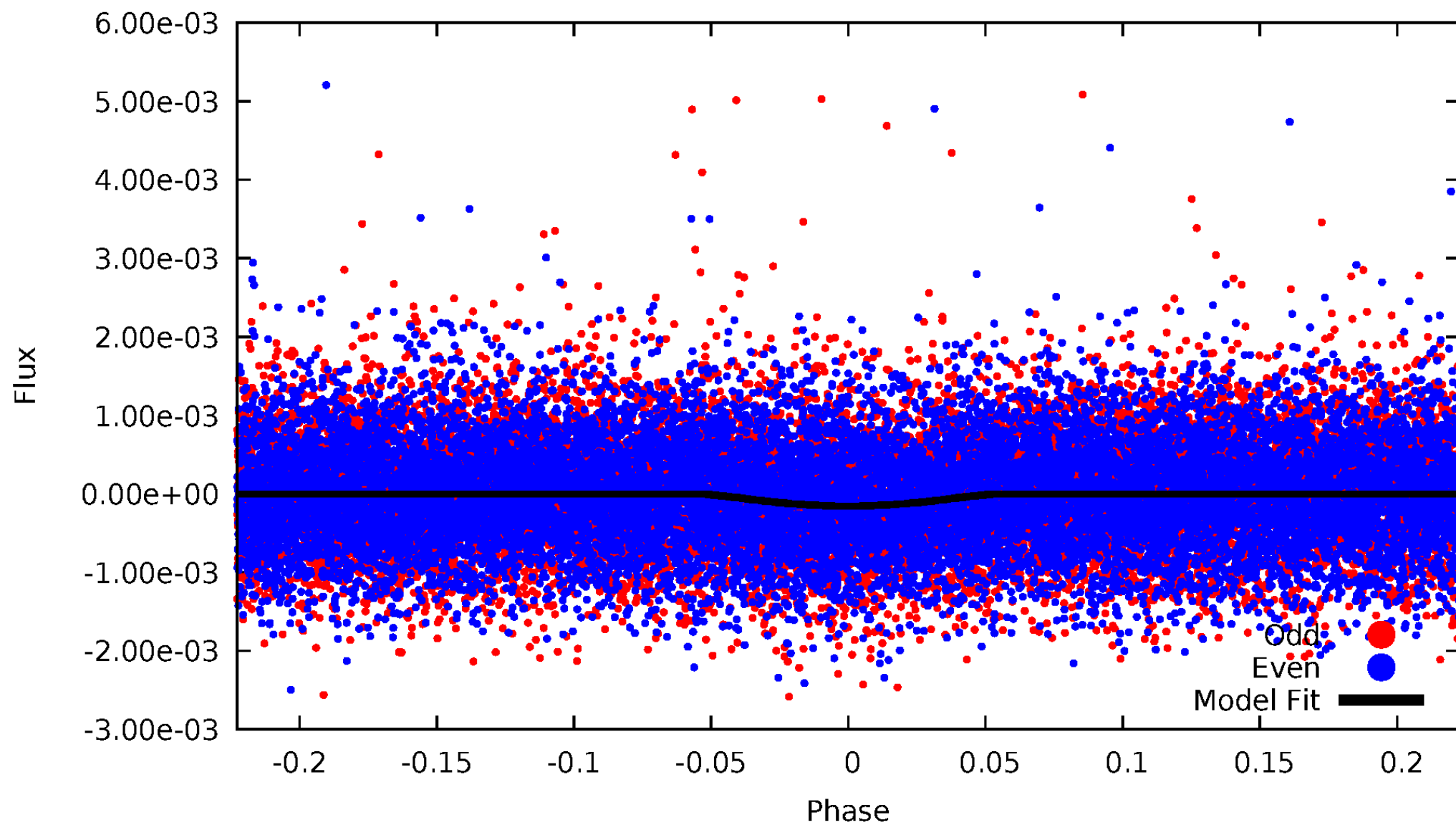
TCE 007916058-01





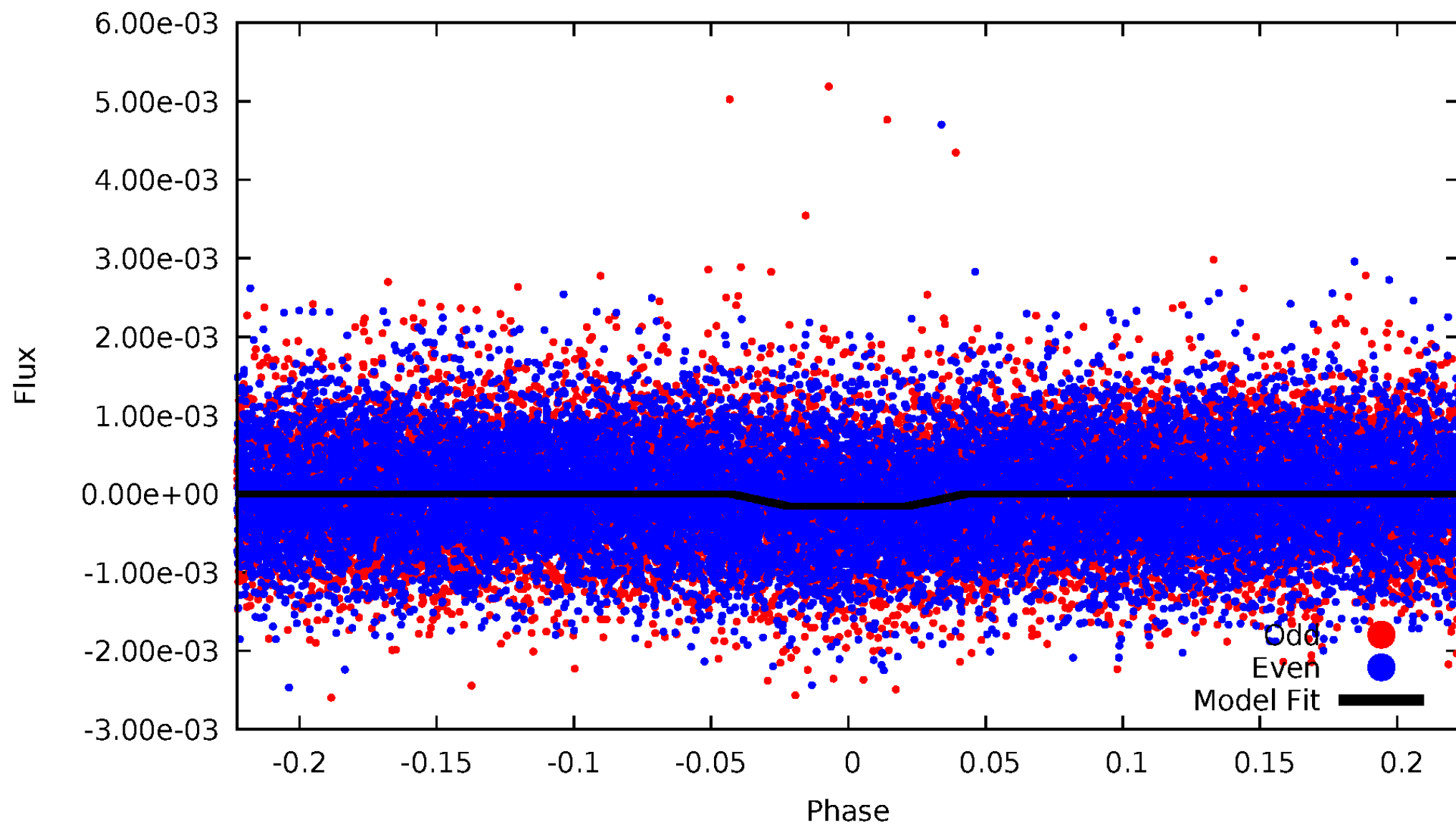
# DV Odd/Even

TCE 007916058-01



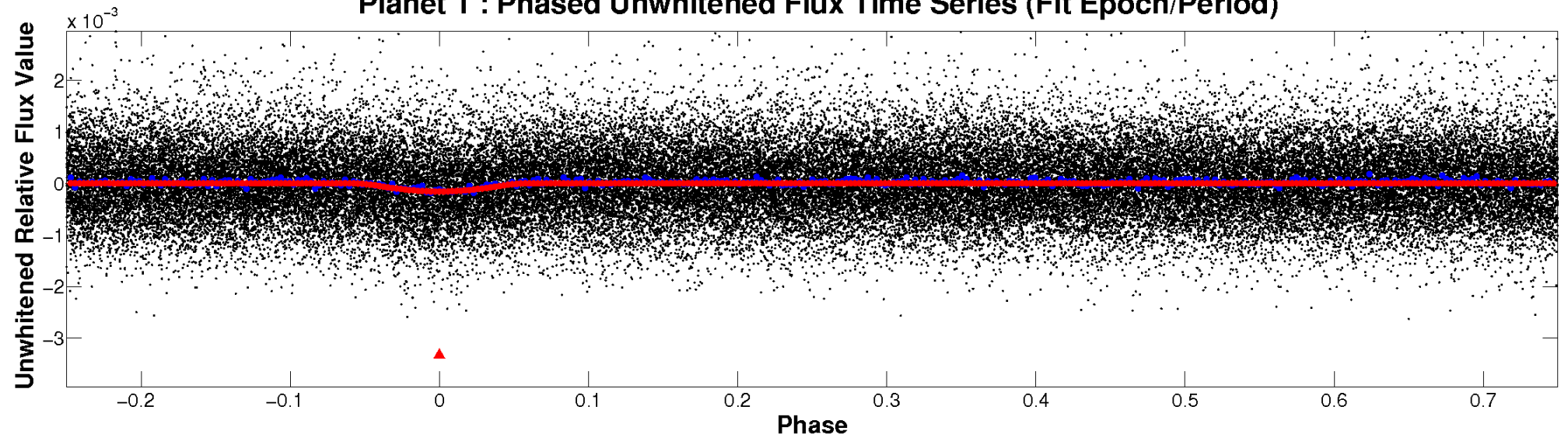
# ALT Odd/Even

TCE 007916058-01

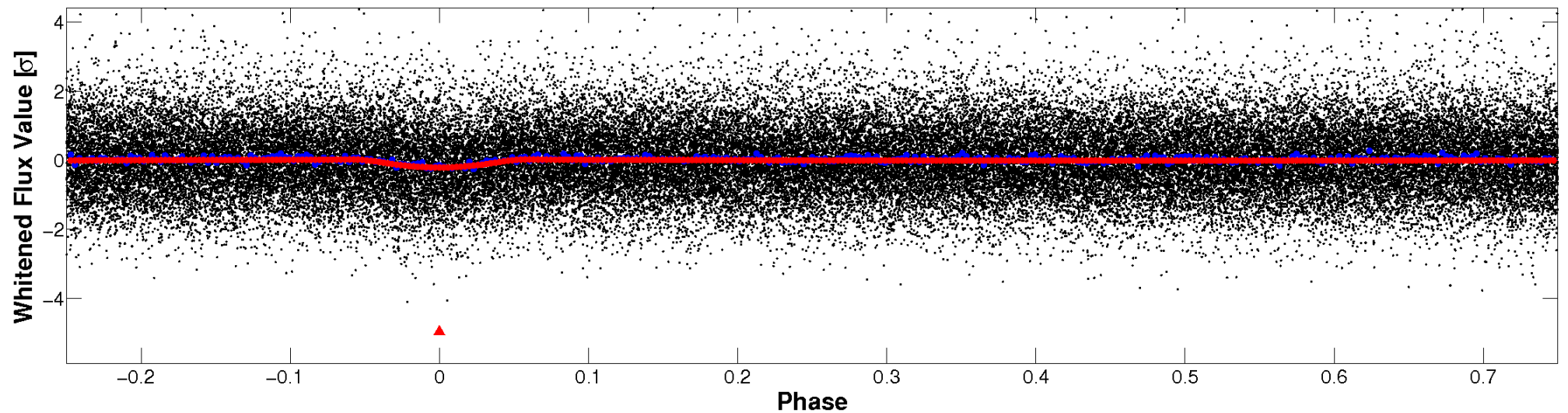


# Non-Whitened Vs. Whitened Light Curve

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

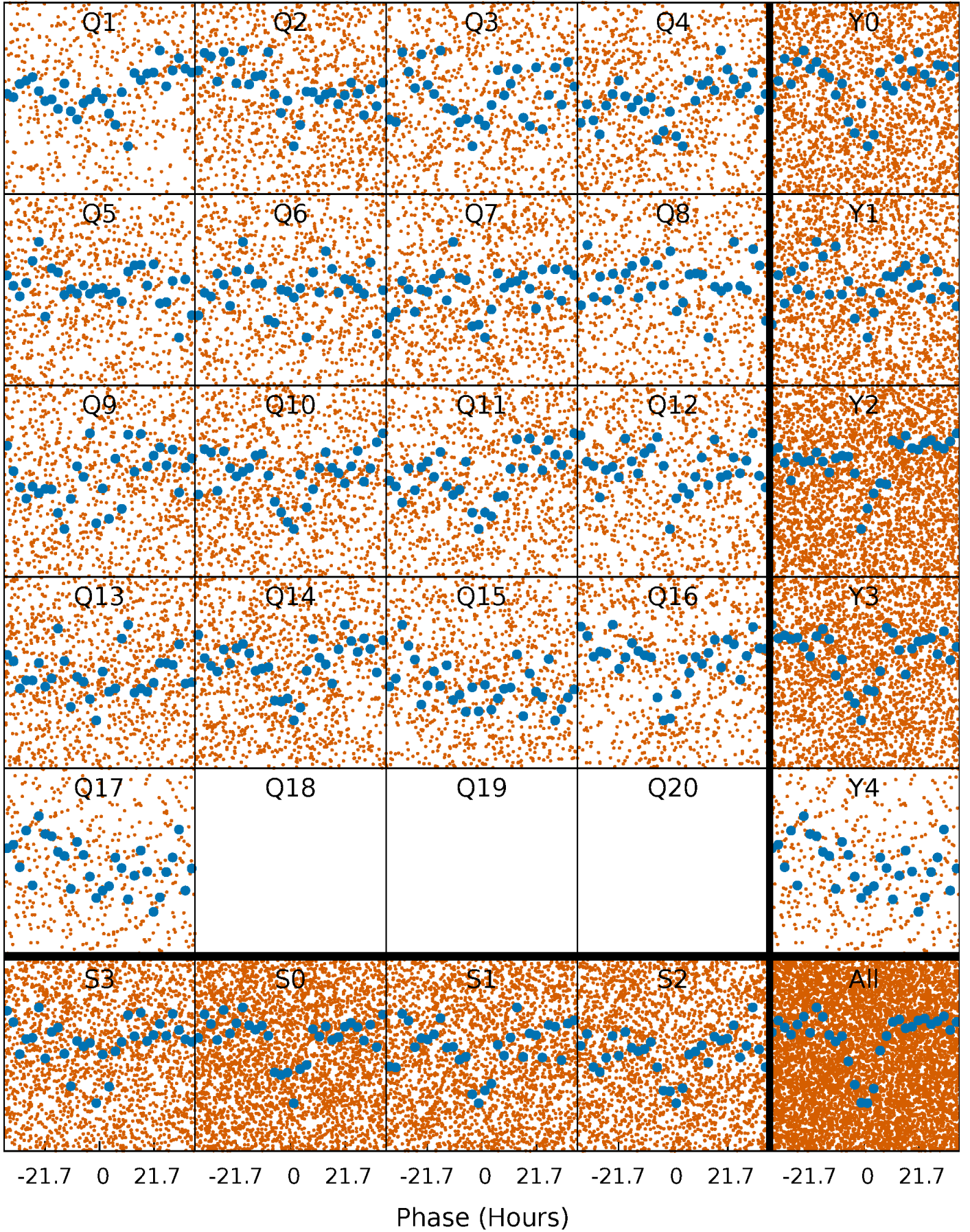


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

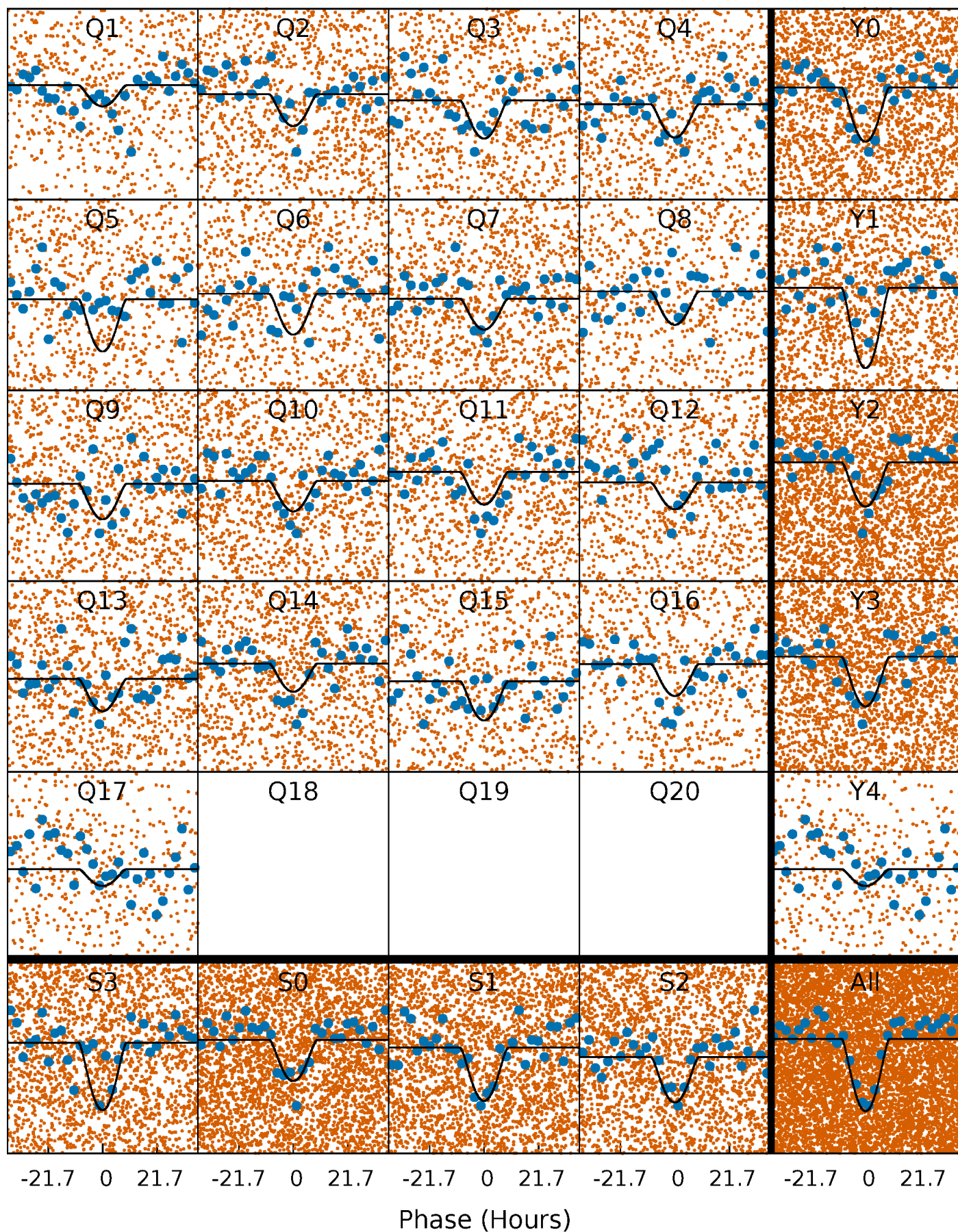
TCE 007916058-01 P= 7.109542 Days  $T_0=133.385804$  (BKJD)





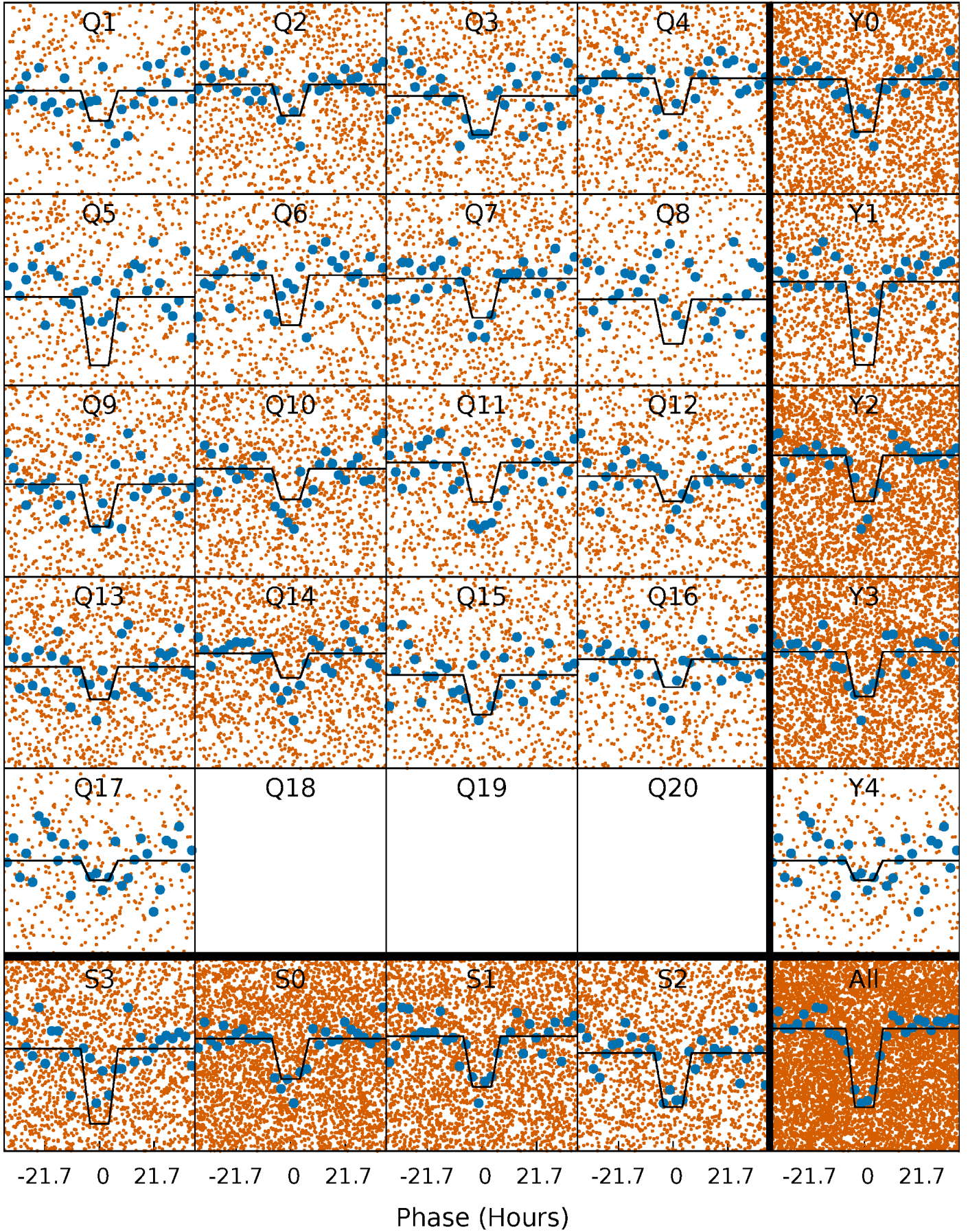
# DV Quarter-Phased Transit Curves

TCE 007916058-01   P= 7.109542 Days    $T_0=133.385804$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007916058-01 P= 7.109774 Days  $T_0=133.358355$  (BKJD)

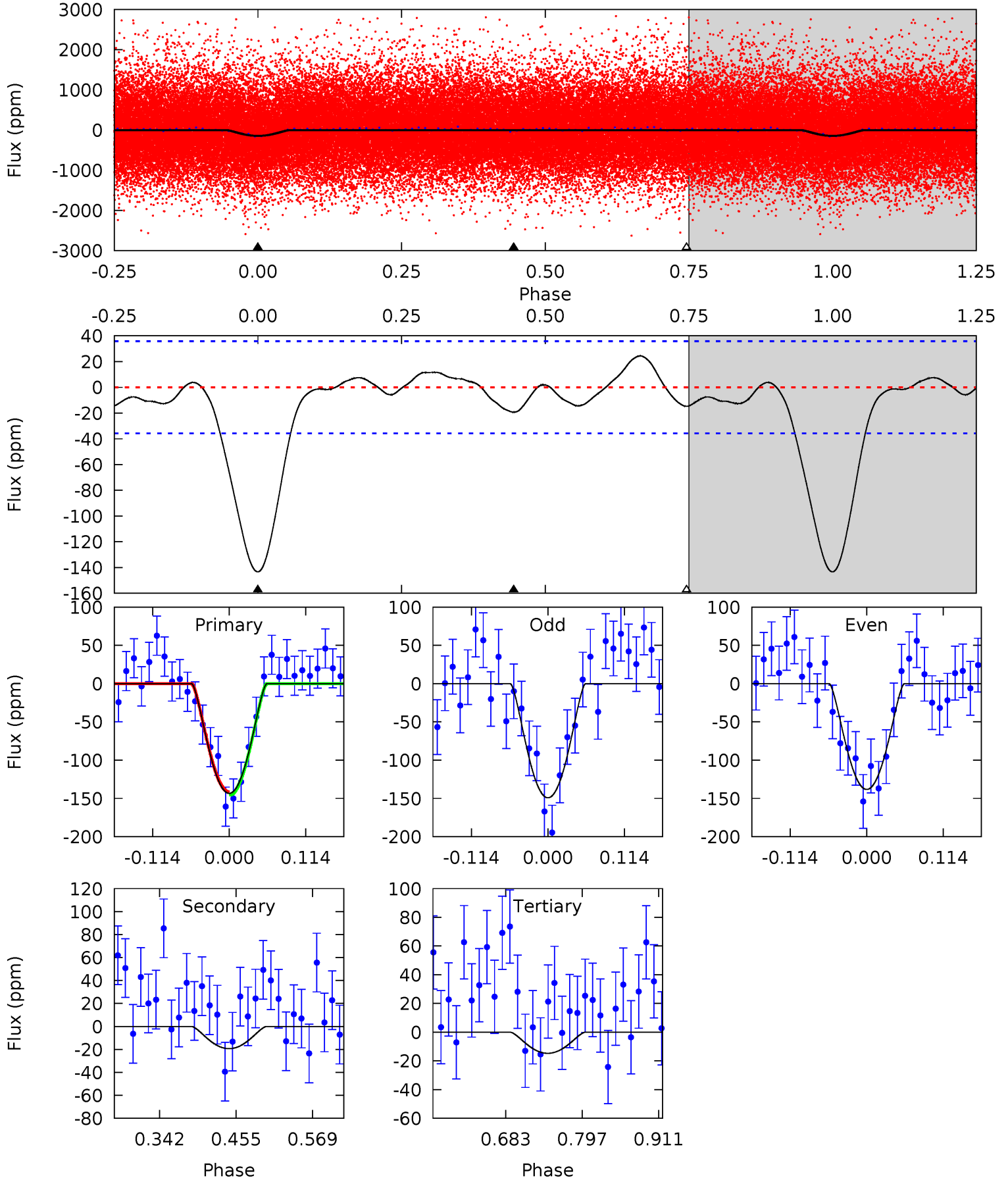




# DV Model-Shift Uniqueness Test

007916058-01, P = 7.109542 Days, E = 126.276262 Days

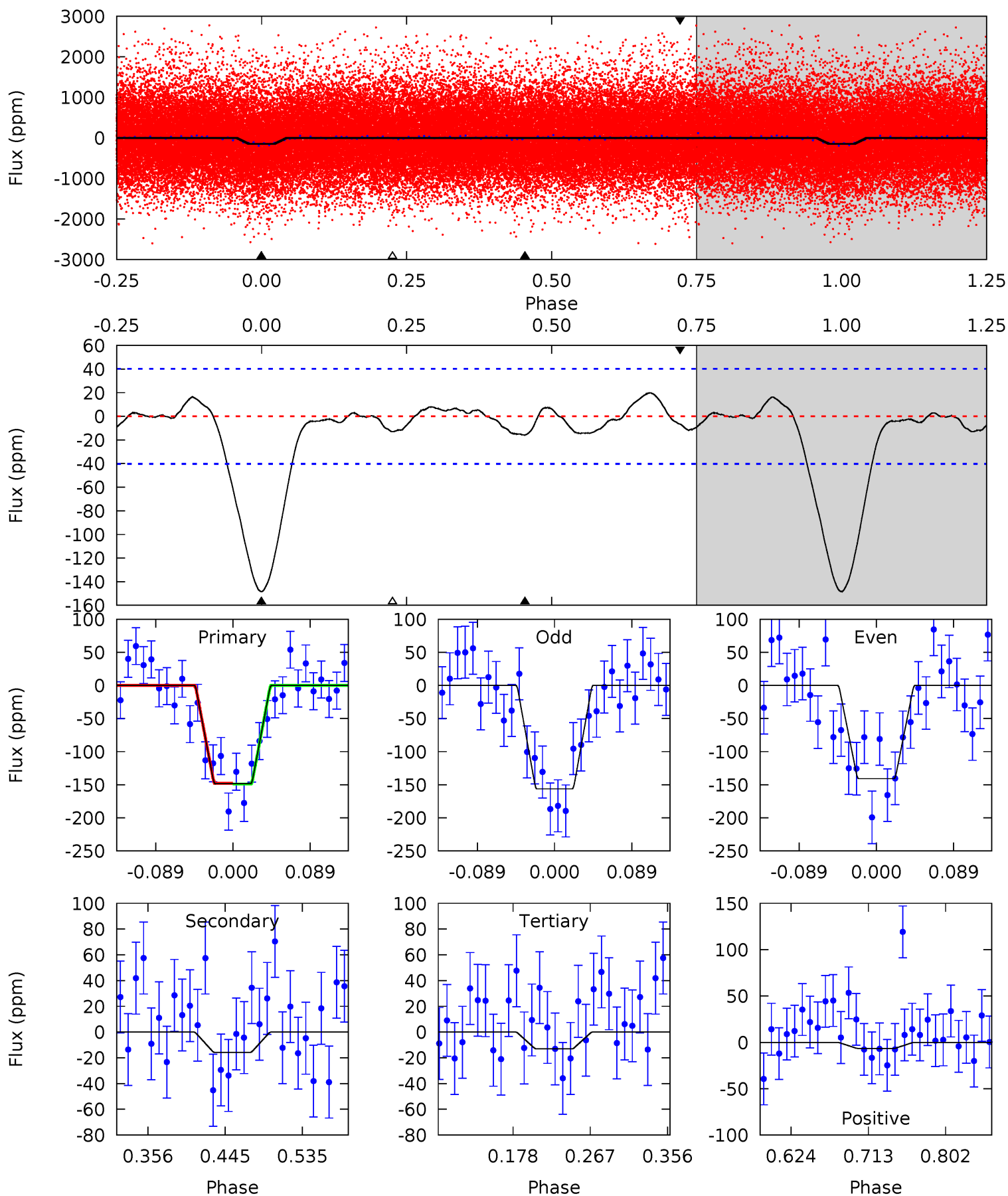
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.2	2.45	1.87	0	4.54	1.58	1.30	16.3	18.2	0.59	2.45	0.70	1.70	0.15	0.27



# Alt Model-Shift Uniqueness Test

007916058-01, P = 7.109774 Days, E = 126.248581 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
16.9	1.80	1.49	-0.75	4.59	1.70	0.94	15.5	17.7	0.31	2.55	0.89	1.01	0.12	0.06





### Stellar Parameters For KIC 007916058

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5665^{+152}_{-169}$	$4.568^{+0.038}_{-0.152}$	$-0.200^{+0.300}_{-0.300}$	$0.820^{+0.191}_{-0.076}$	$0.916^{+0.092}_{-0.112}$	$2.336^{+0.449}_{-0.953}$
	+3%/-3%	+1%/-3%	+150%/-150%	+23%/-9%	+10%/-12%	+19%/-41%
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 007916058-01 / KOI 5445.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-19 \pm 8$	$3.15^{+2.98}_{-2.17}$	$1218^{+70}_{-53}$	$2741^{+1194}_{-464}$	$5.075^{+45.587}_{-3.793}$
Alt.	$-16 \pm 9$	$2.80^{+2.82}_{-1.87}$	$1219^{+72}_{-53}$	$2723^{+1152}_{-541}$	$4.601^{+41.664}_{-3.614}$

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

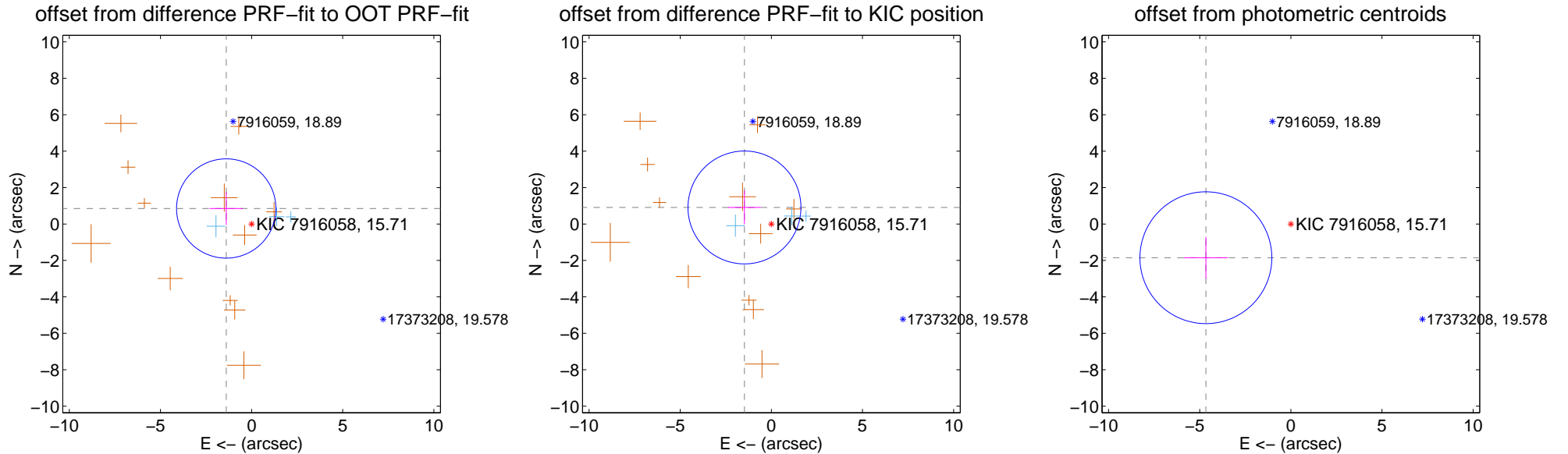
## DV Centroid Data

Supplemental centroid analysis for 007916058-01. Kepler magnitude: 15.71. Transit SNR 11.43

There are 3 quarters with good PRF difference image offsets

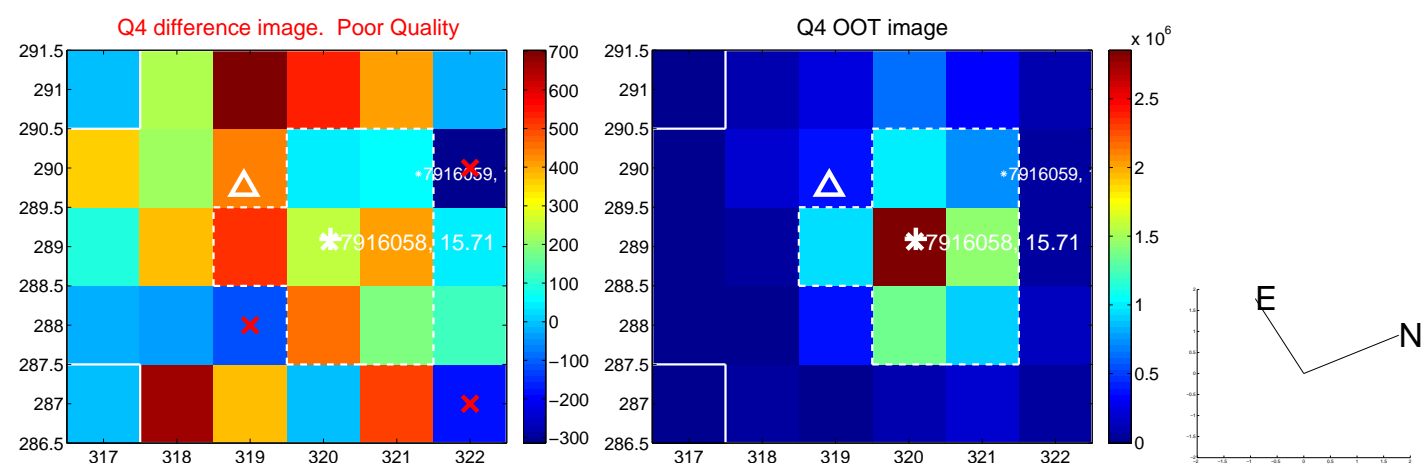
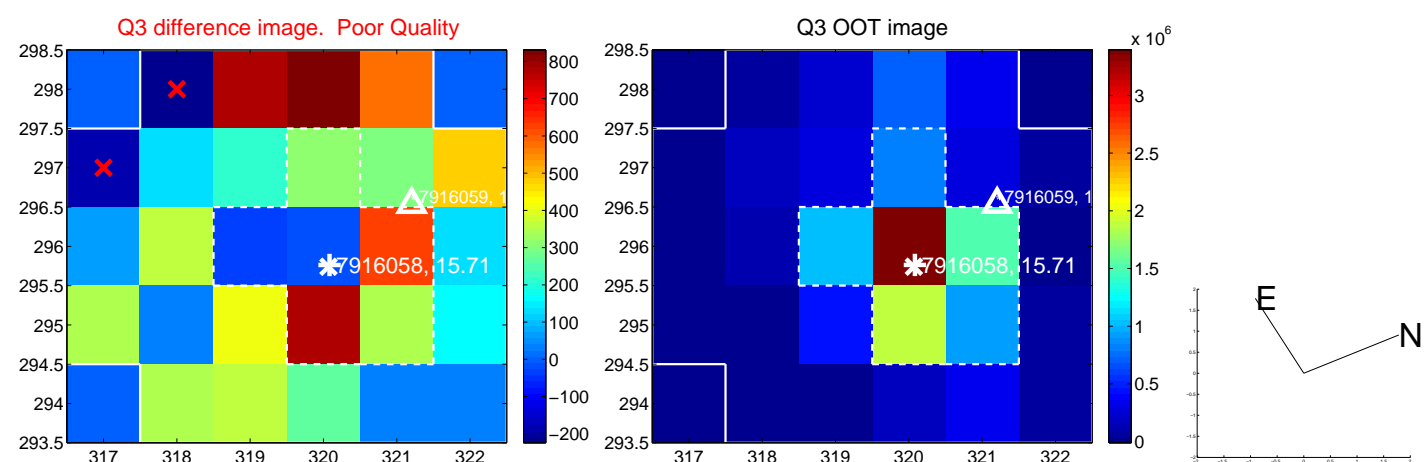
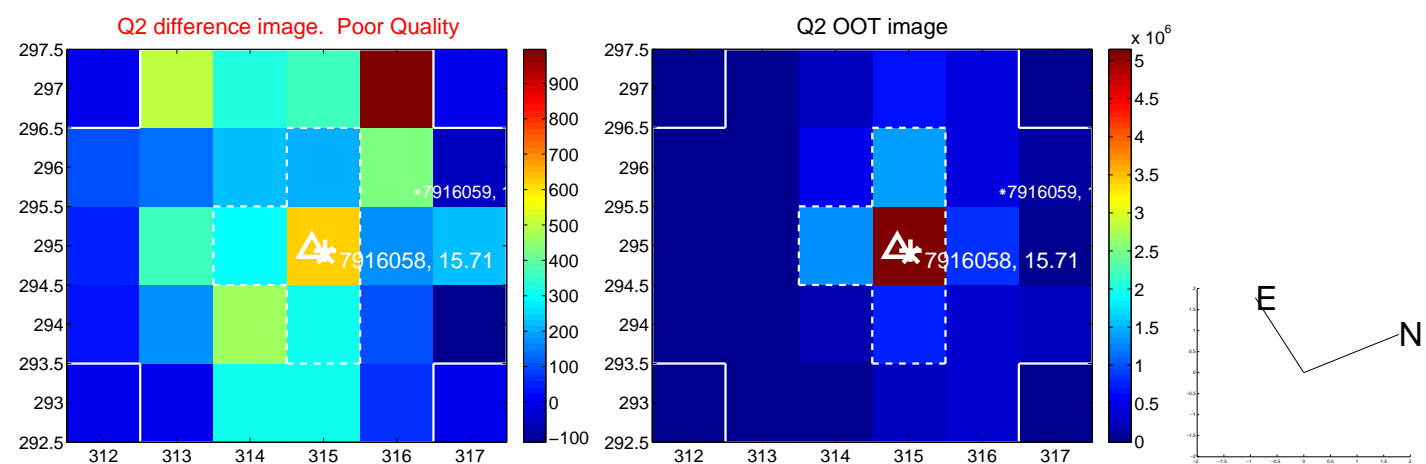
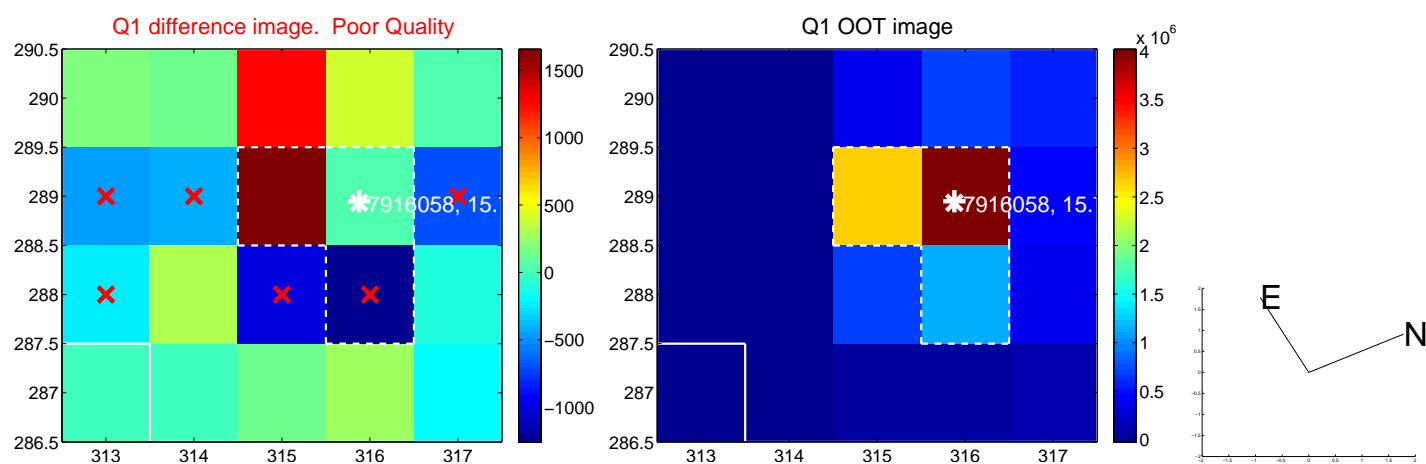
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.632 \pm 0.909$	1.80	$1.392 \pm 0.913$	$0.852 \pm 0.897$
PRF-fit source offset from KIC position	$1.734 \pm 1.033$	1.68	$1.476 \pm 0.896$	$0.909 \pm 0.924$
photometric centroid source offset	$5.02 \pm 1.21$	4.16	$4.66 \pm 1.22$	$-1.85 \pm 1.14$

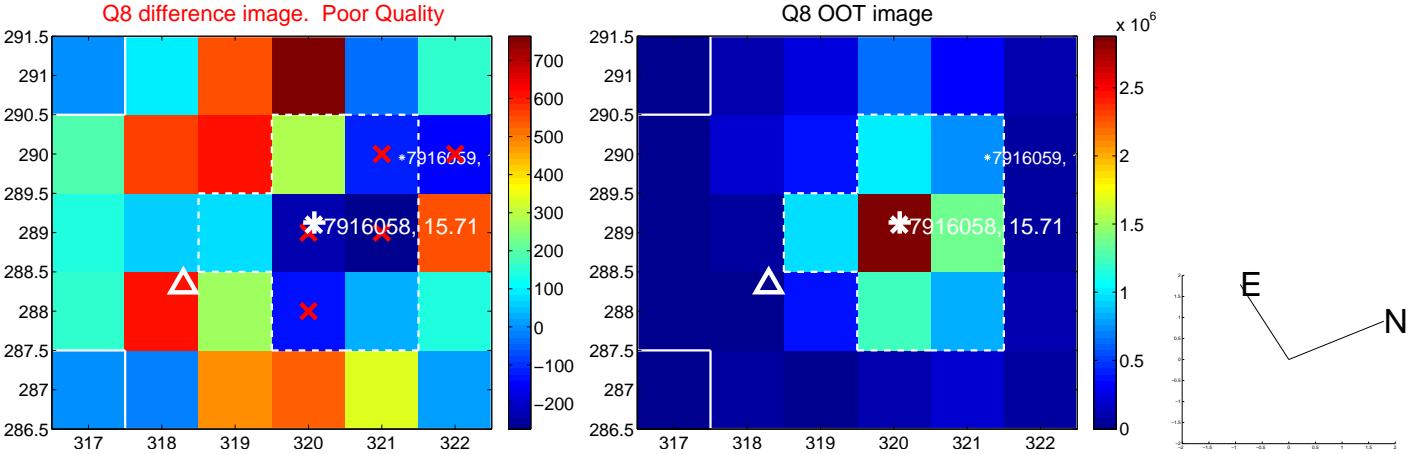
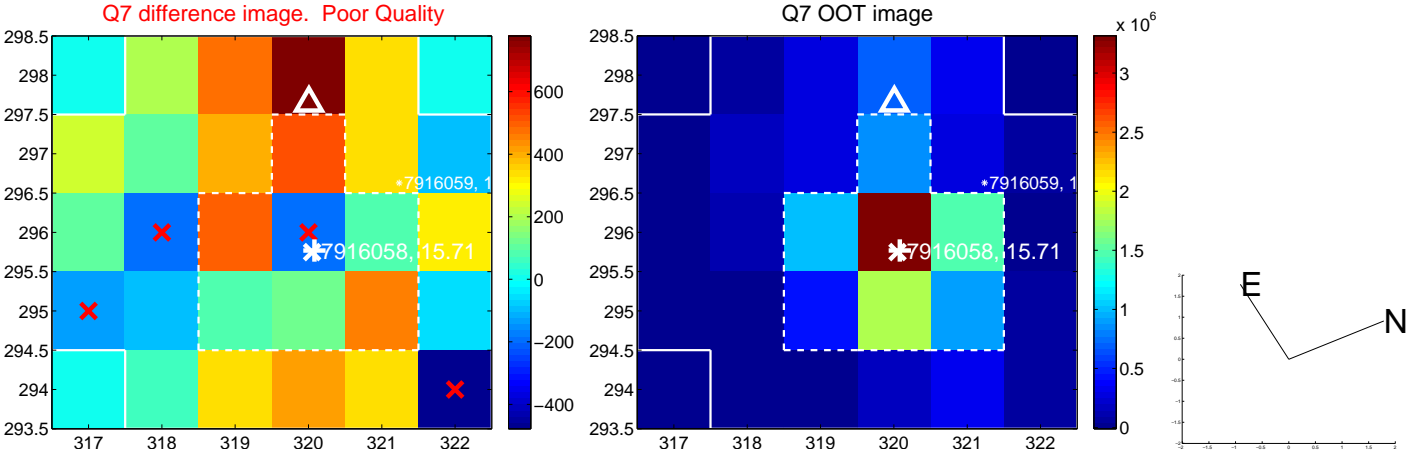
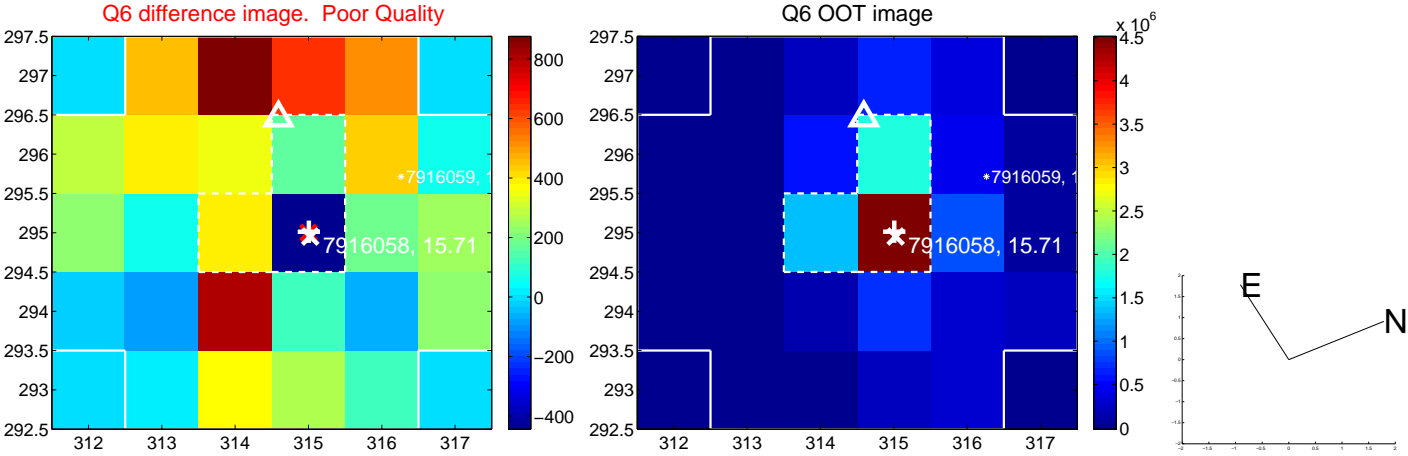
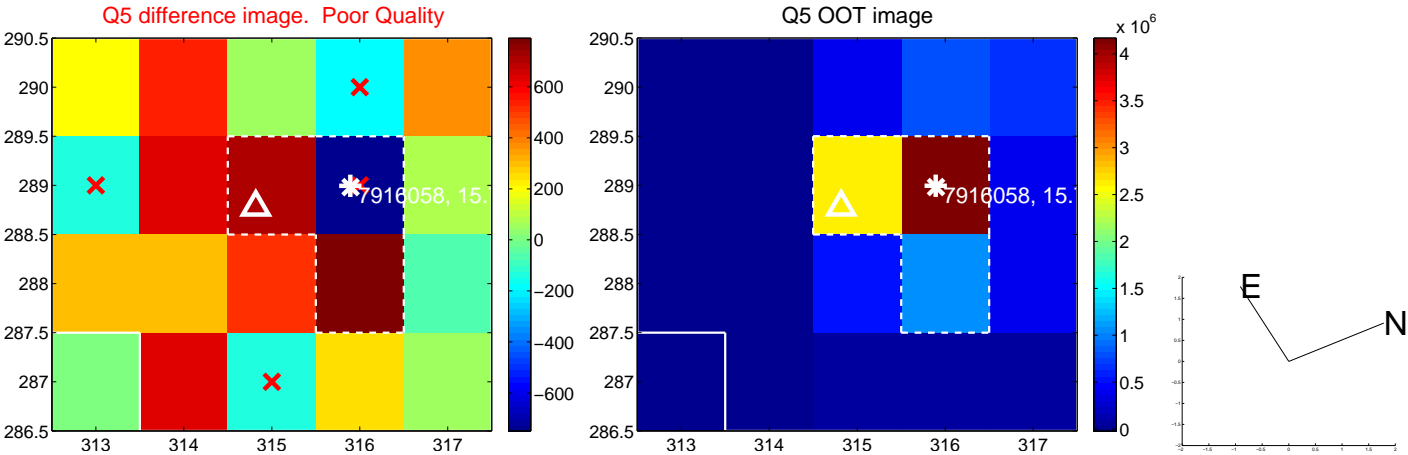


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

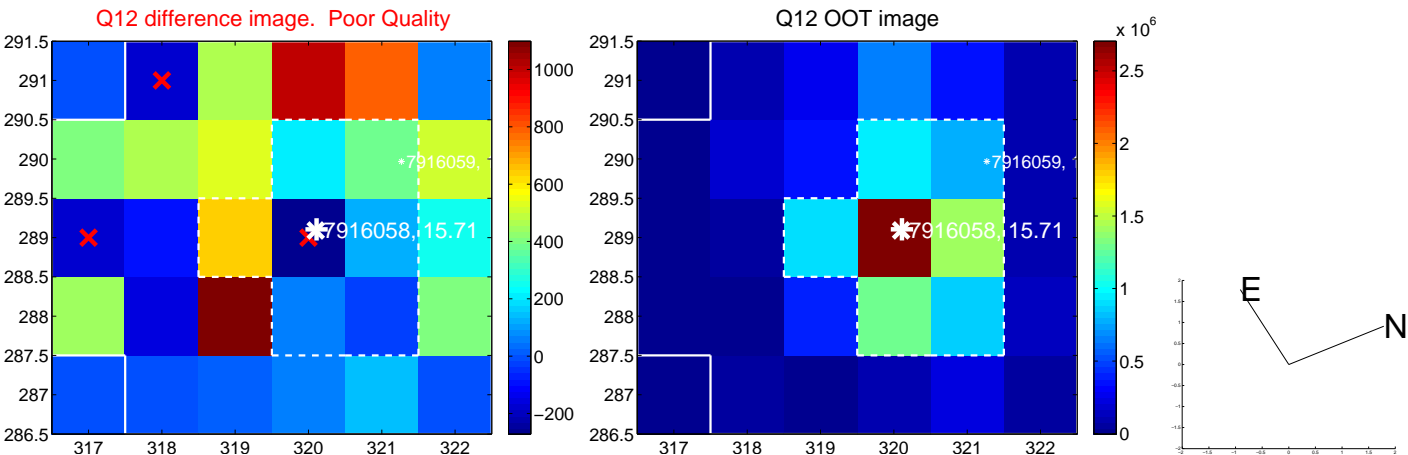
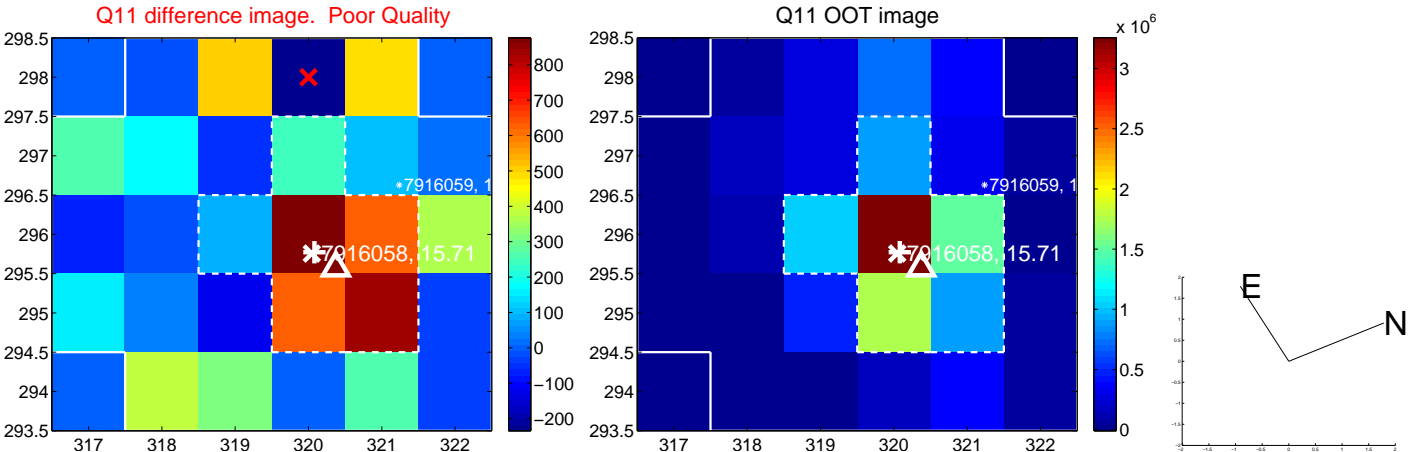
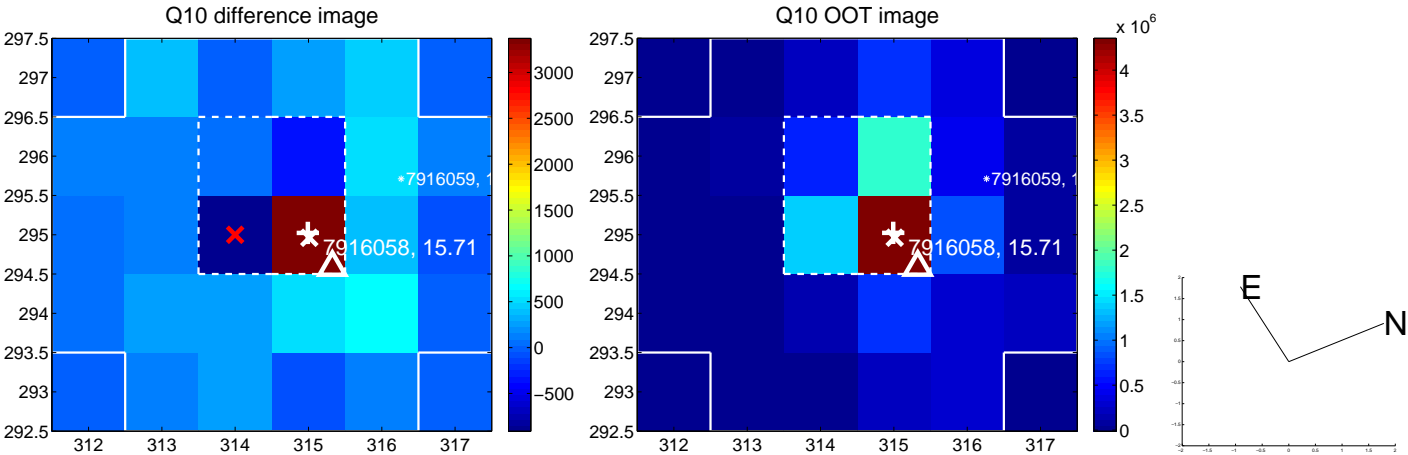
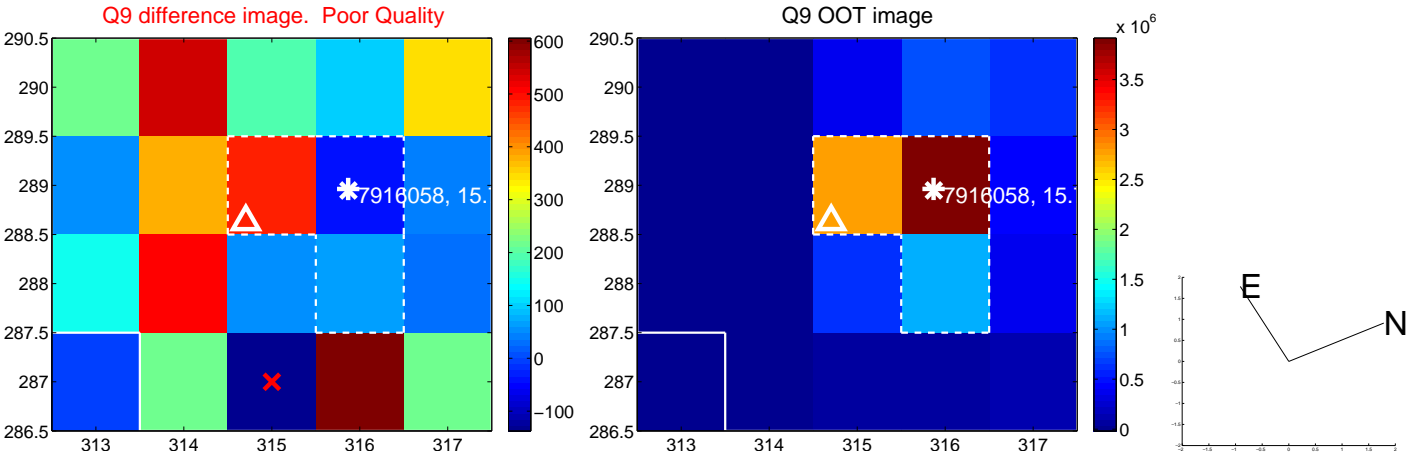


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

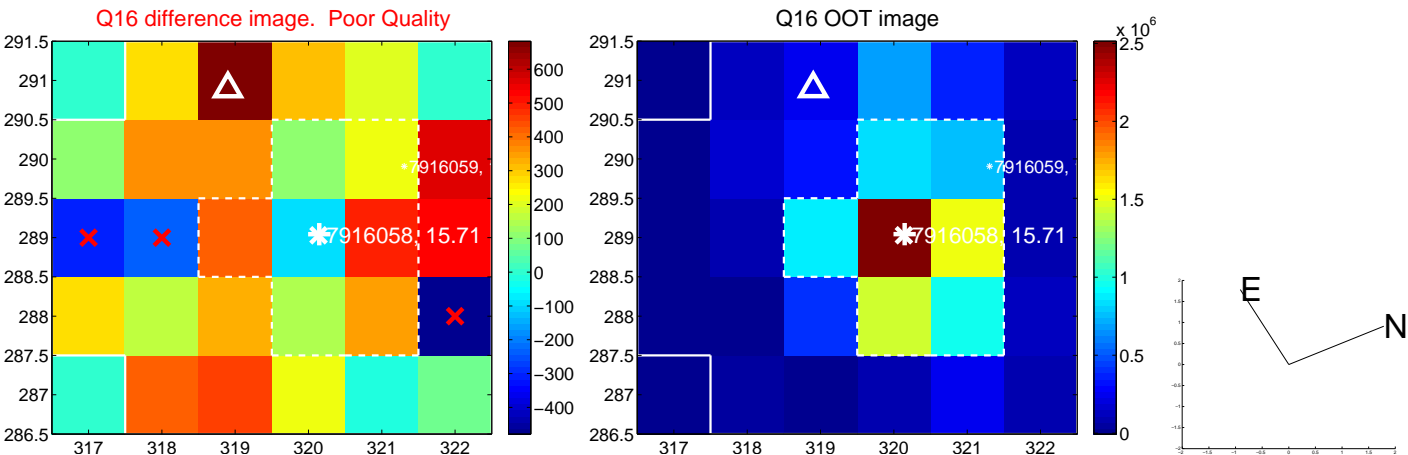
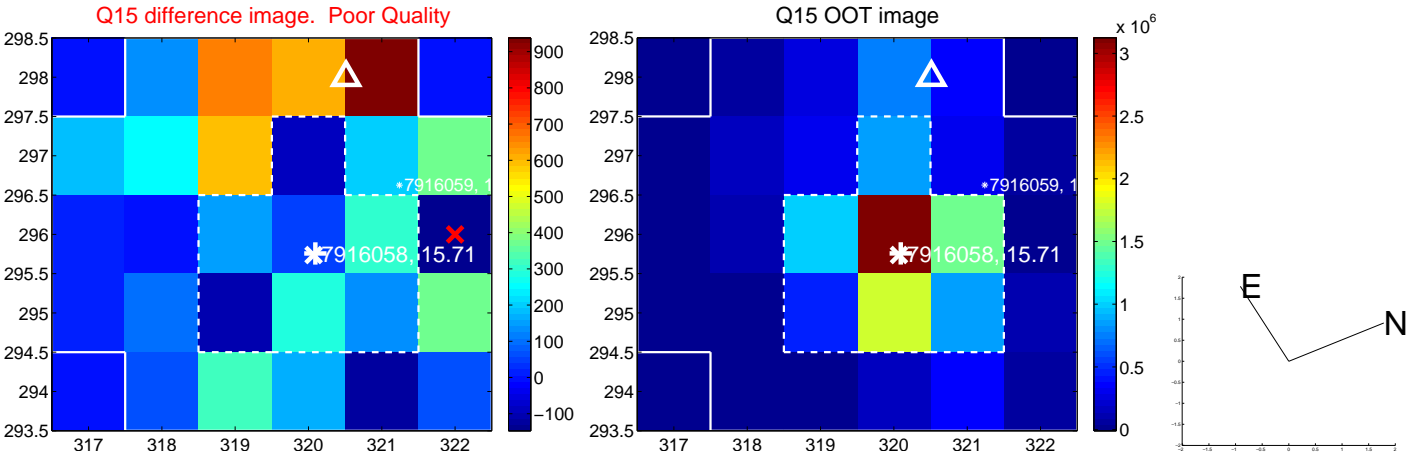
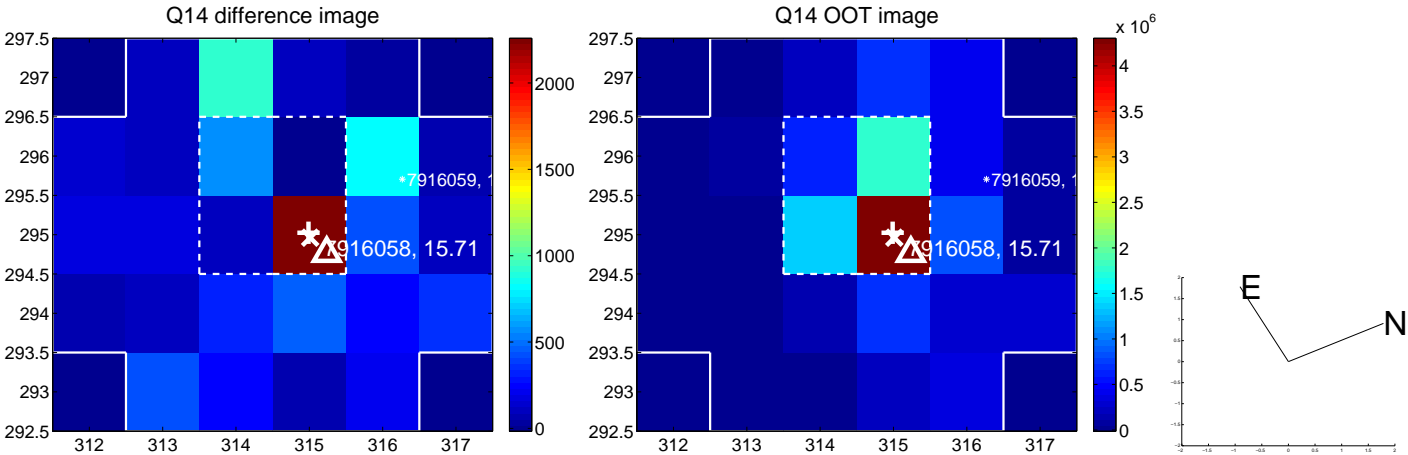
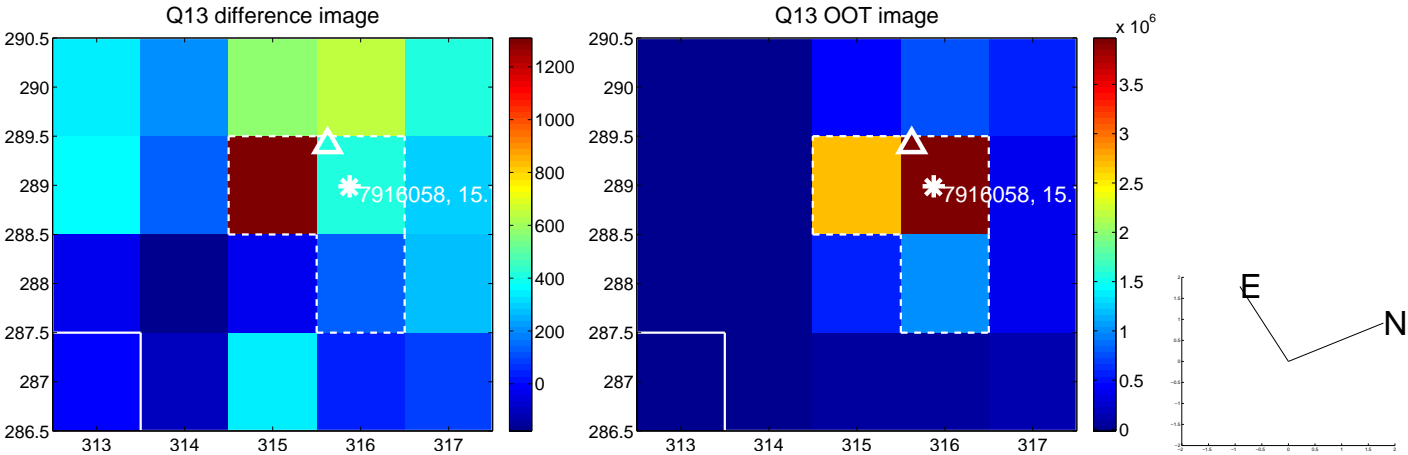




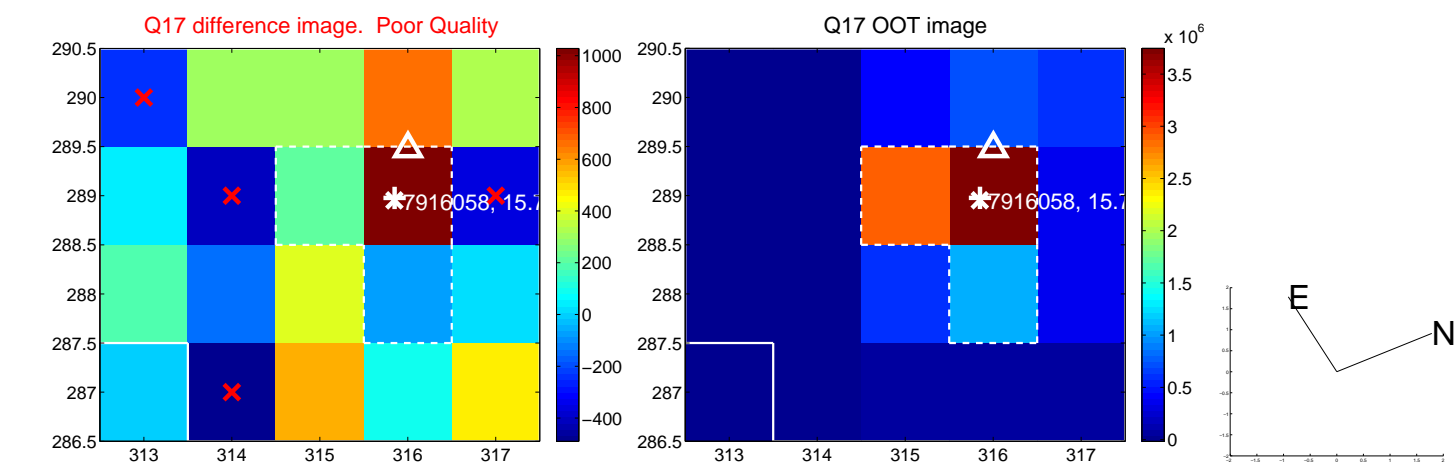
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



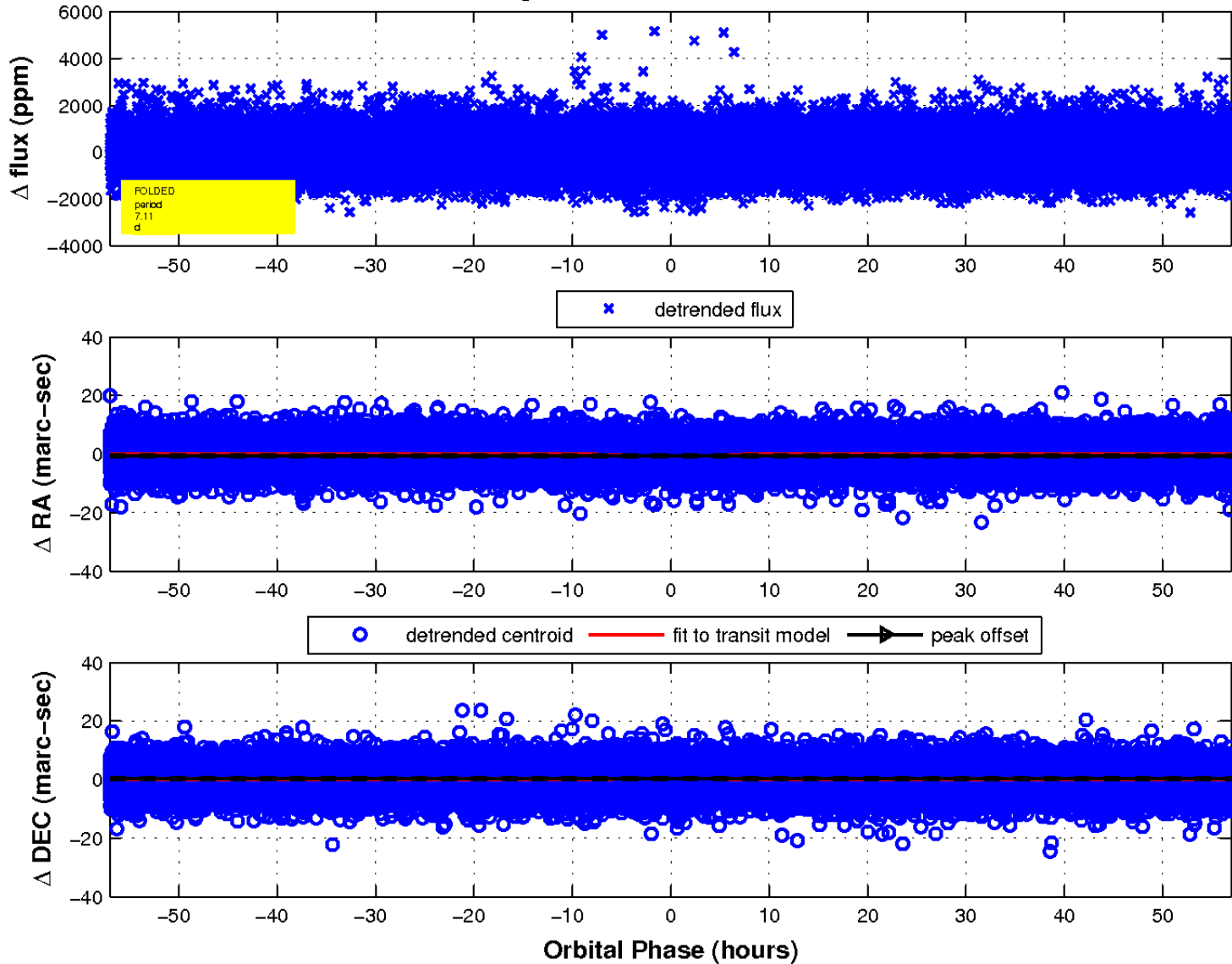
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



# UKIRT Image

Declination

