

# KIC 004136659

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004136659-01	OBS	7683.01	0.913245	132.186145	44.0	0.533	7.6	10.1	1.05	5923	0.74	3543.74

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004136659-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—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.

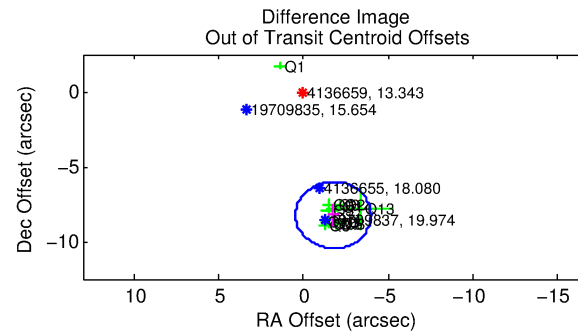
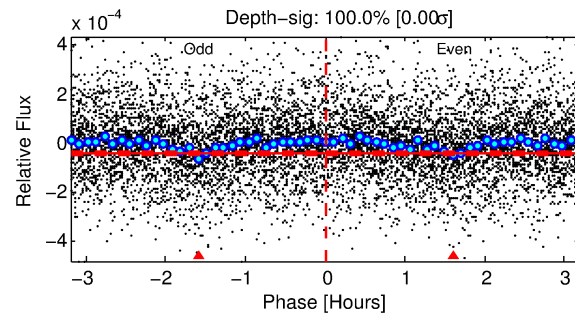
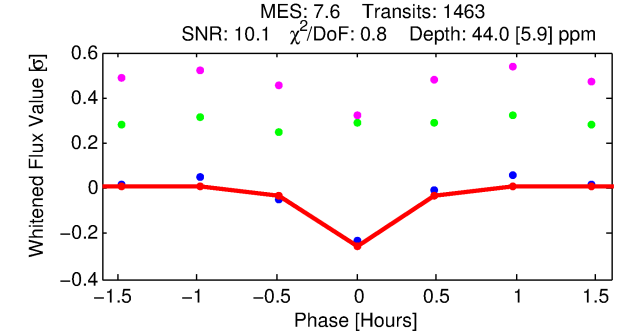
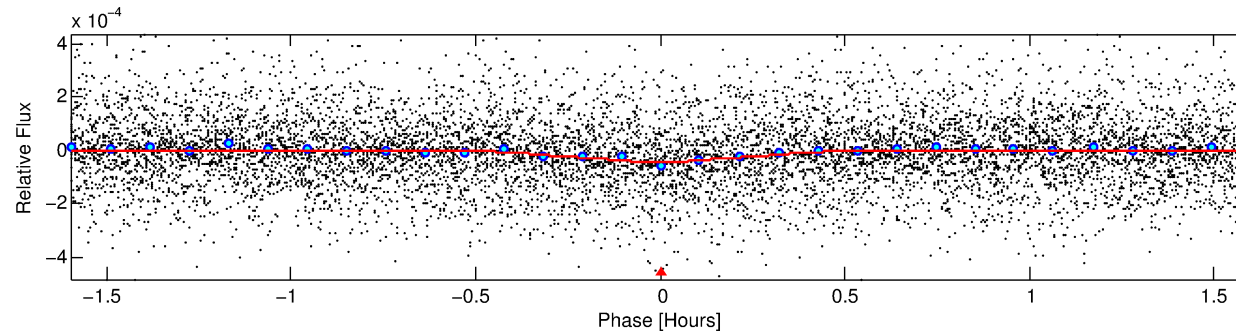
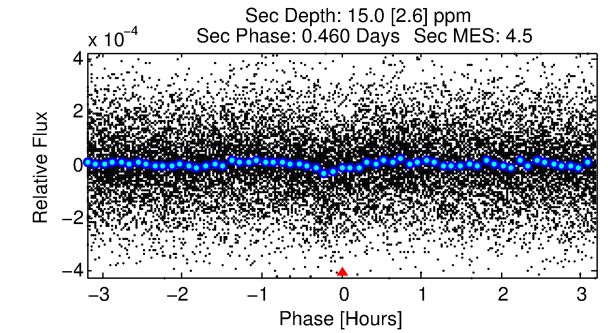
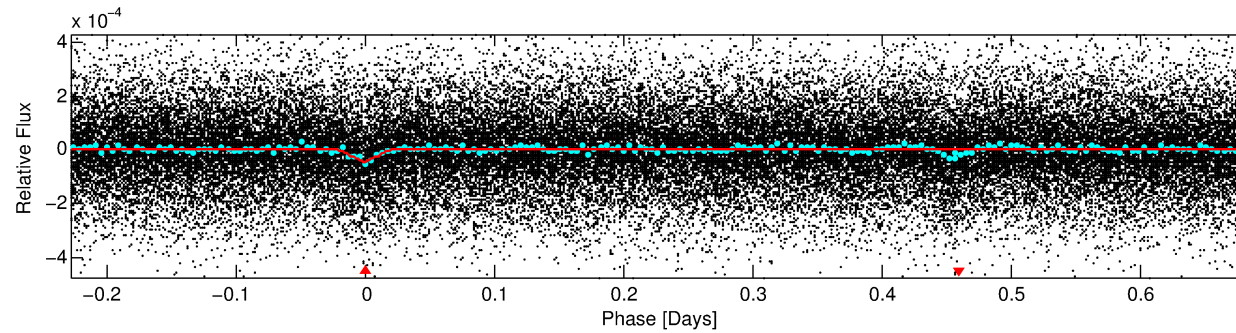
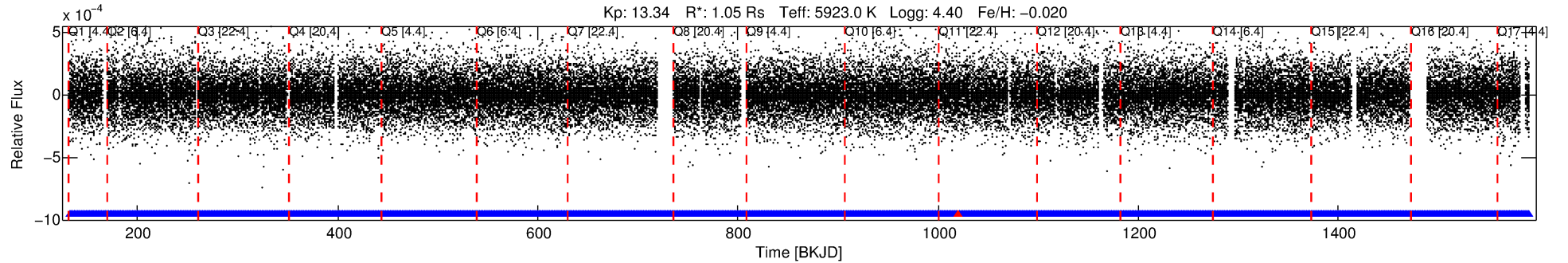
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004136659-01

No Significant Match Found

# DV One-Page Summary

KIC: 4136659 Candidate: 1 of 1 Period: 0.913 d



## DV Fit Results:

Period = 0.91324 [0.00001] d  
Epoch = 132.1861 [0.0011] BKJD  
Rp/R\* = 0.0065 [0.0026]  
a/R\* = 11.46 [20.90]  
b = 0.50 [2.76]  
Seff = 3543.74 [1396.04]  
Teq = 1967 [194] K  
Rp = 0.74 [0.37] Re  
a = 0.0185 [0.0047] AU  
Ag = 5.11 [4.58] [0.90σ]  
Teffp = 4573 [945] K [2.70σ]

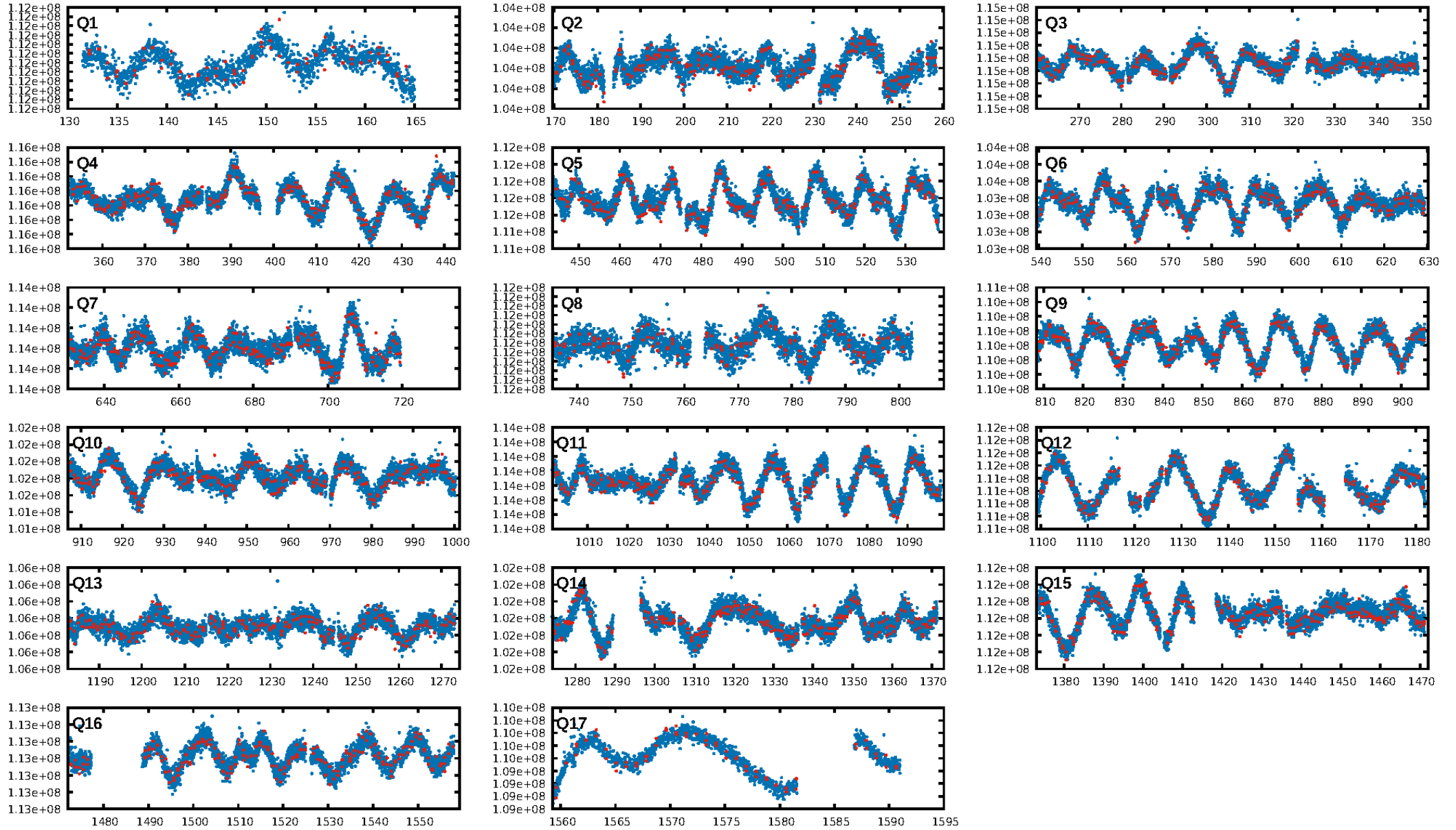
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.00e-14  
RollingBand-fgt: 1.00 [1396/1397]  
GhostDiagnostic-chr: -0.09982  
Centroid-sig: 0.0%  
Centroid-so: 18.034 arcsec [15.56σ]  
OotOffset-rm: 8.423 arcsec [11.35σ]  
KicOffset-rm: 8.567 arcsec [10.83σ]  
OotOffset-st: 3/4/2/4 [13]  
KicOffset-st: 3/4/2/4 [13]  
DiffImageQuality-fgm: 0.77 [10/13]  
DiffImageOverlap-fno: 1.00 [17/17]

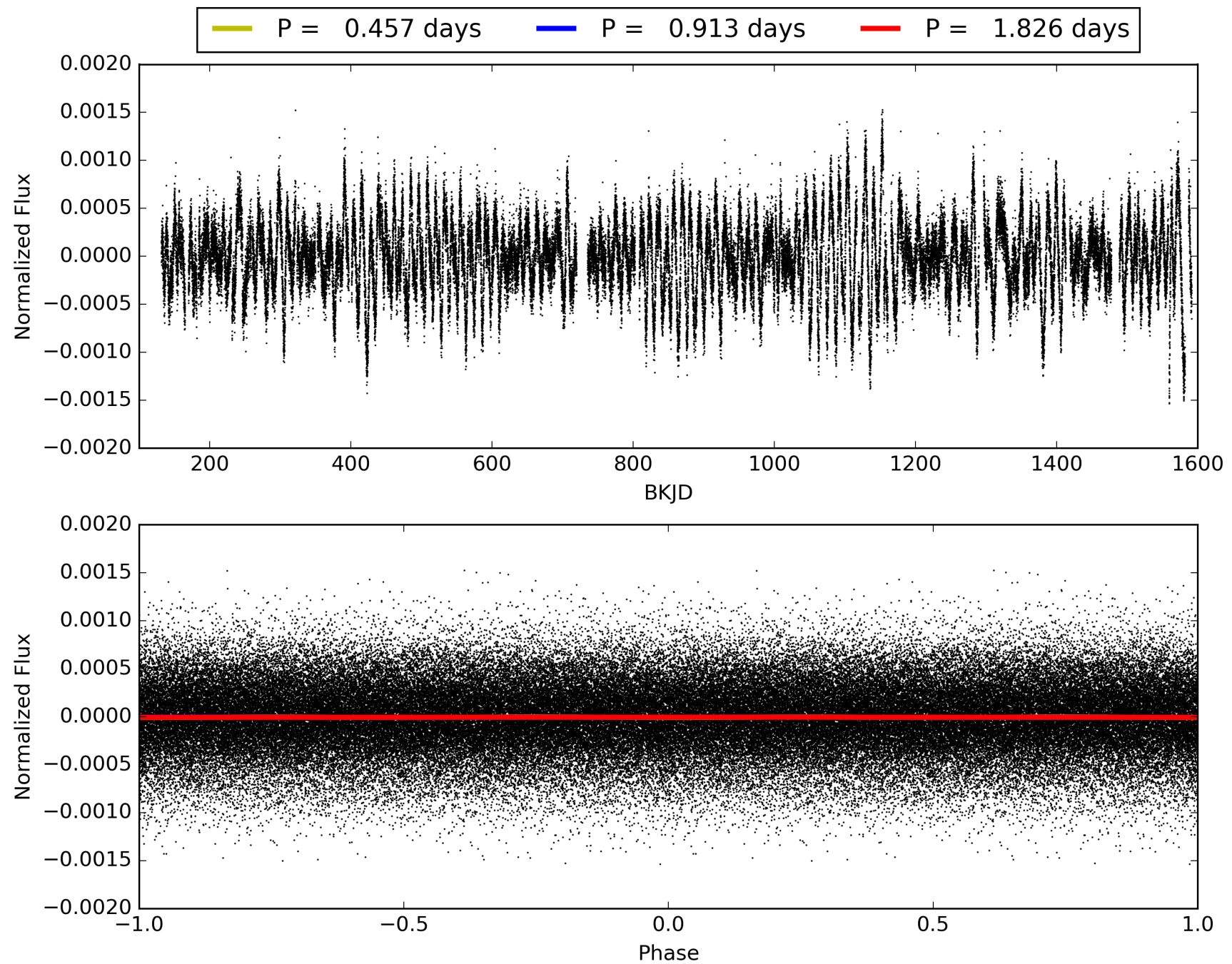
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:42:59 Z

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

# TCE 004136659-01, PDC Light Curves

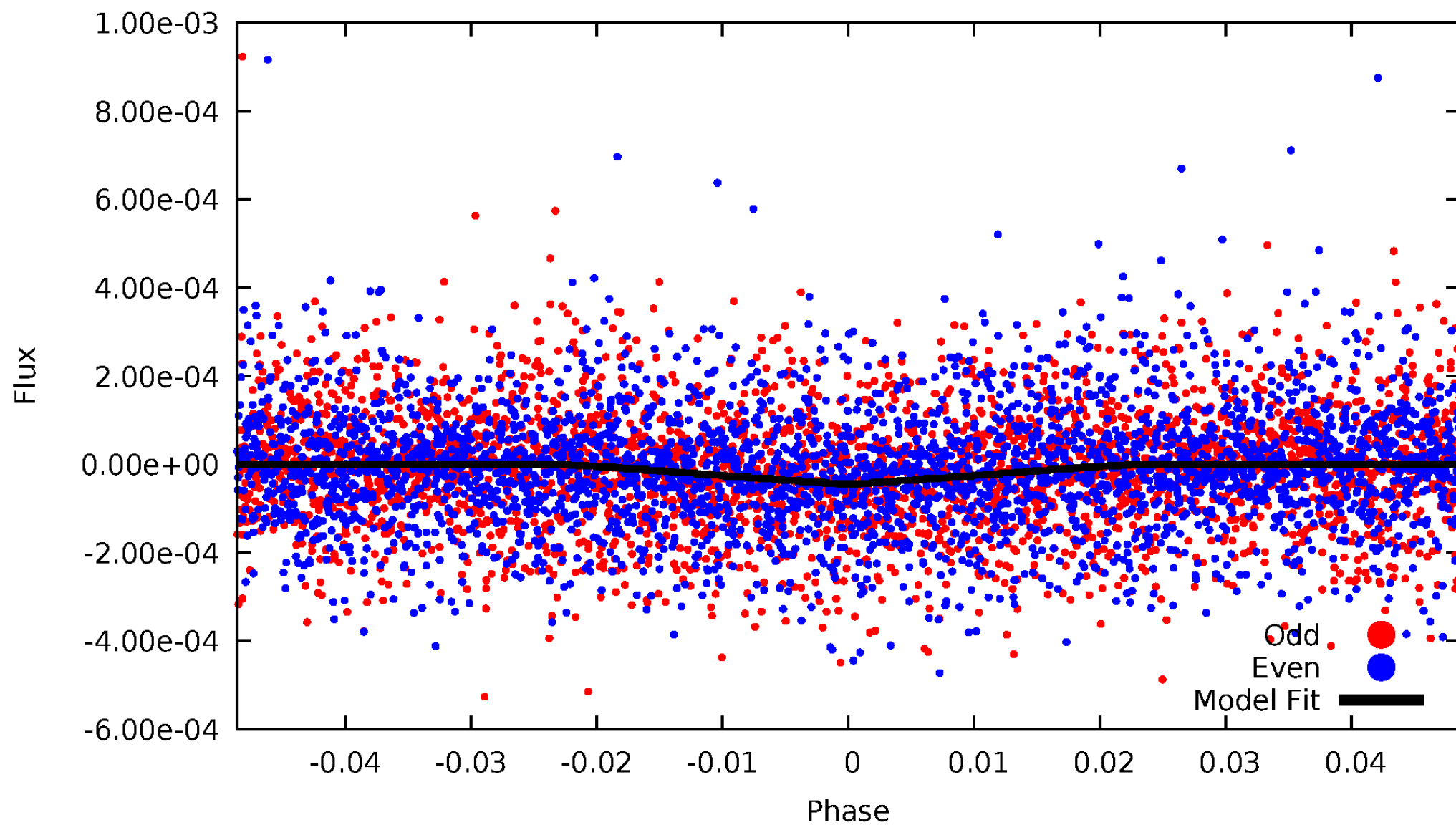


TCE 004136659-01



# DV Odd/Even

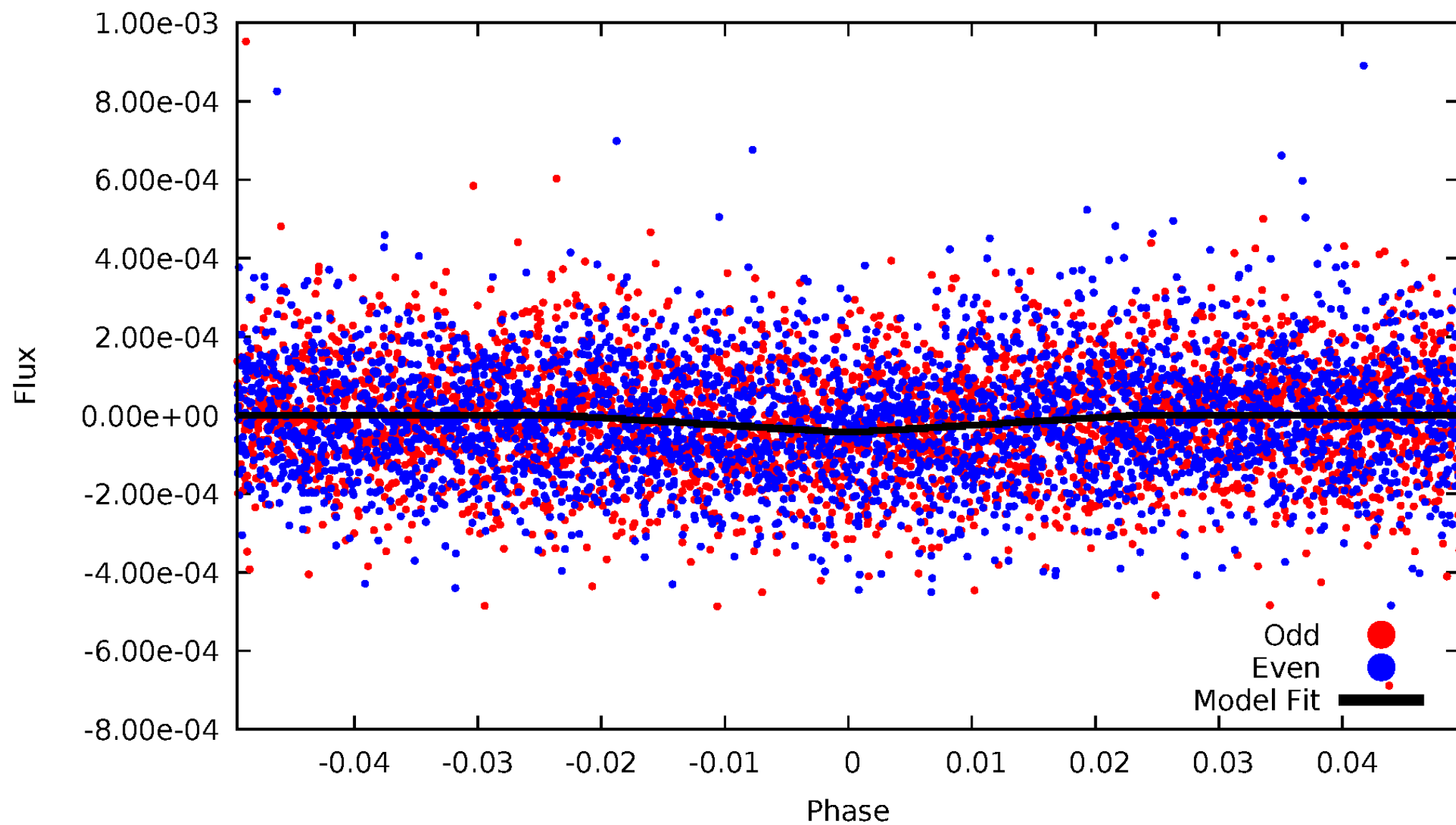
TCE 004136659-01





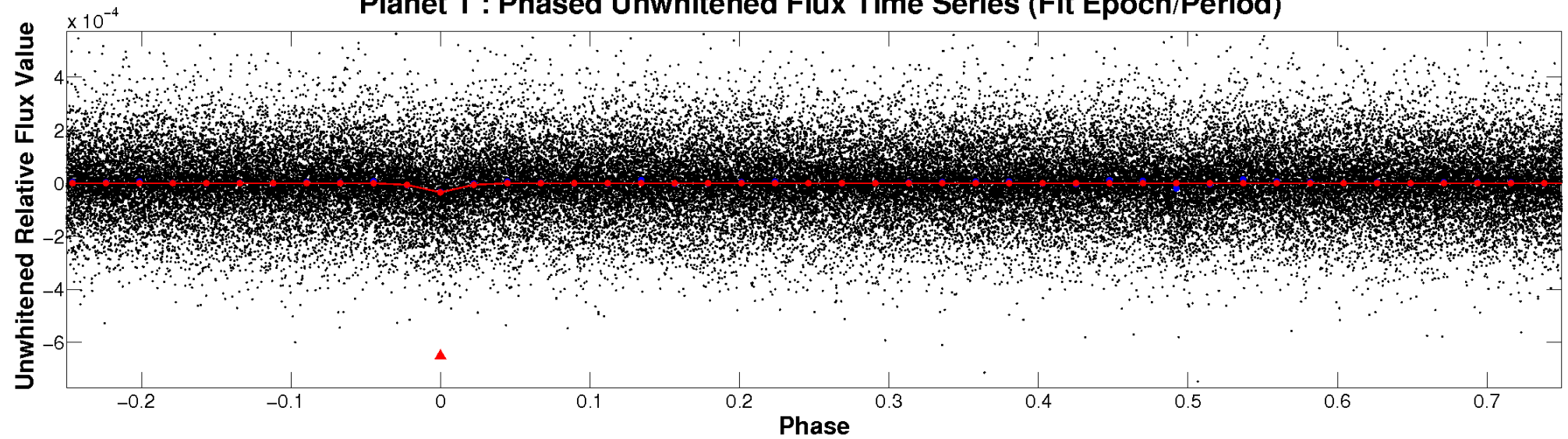
# ALT Odd/Even

TCE 004136659-01

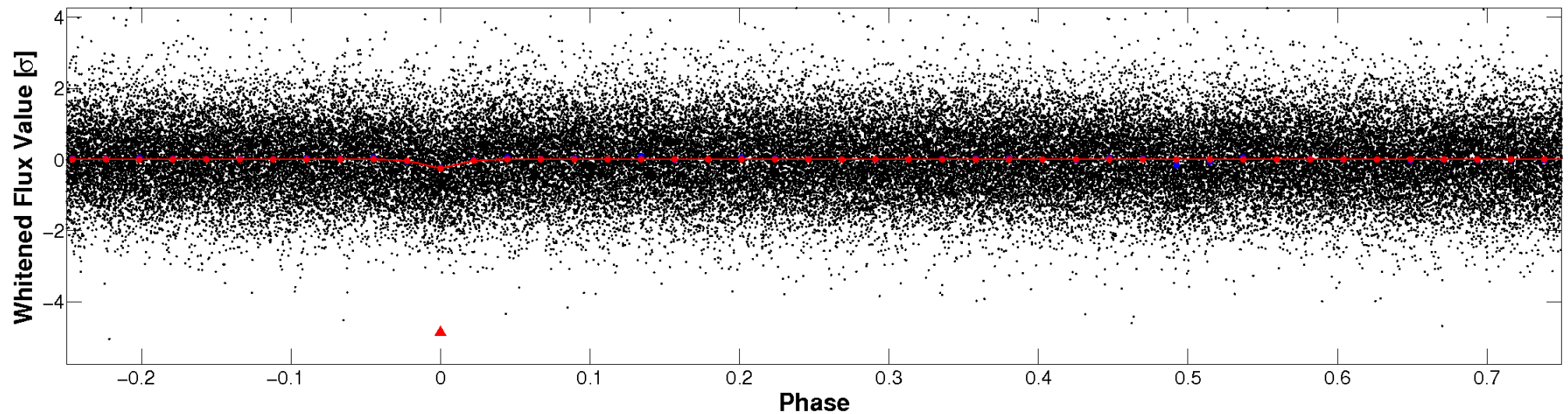


# Non-Whitened Vs. Whitened Light Curve

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

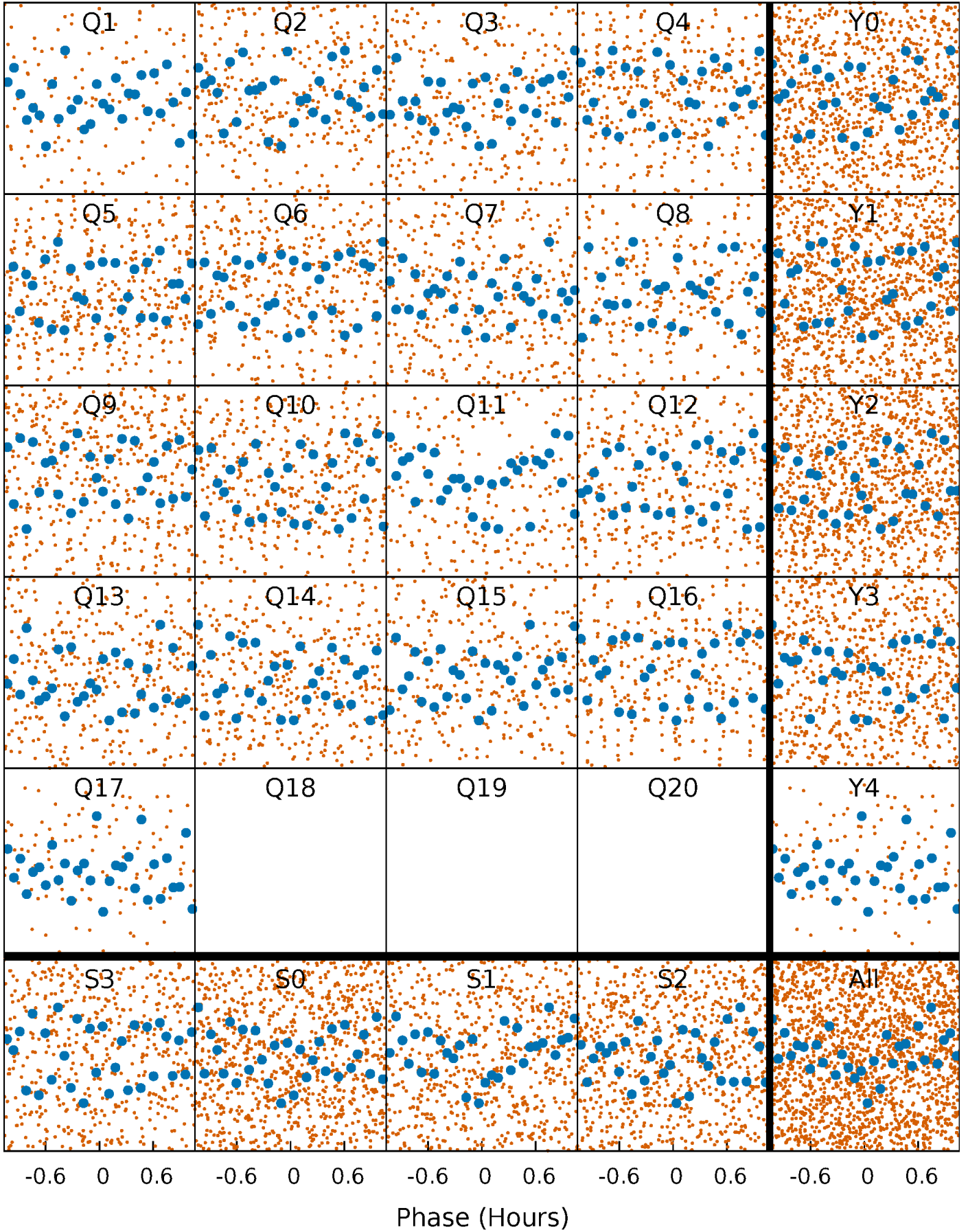


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

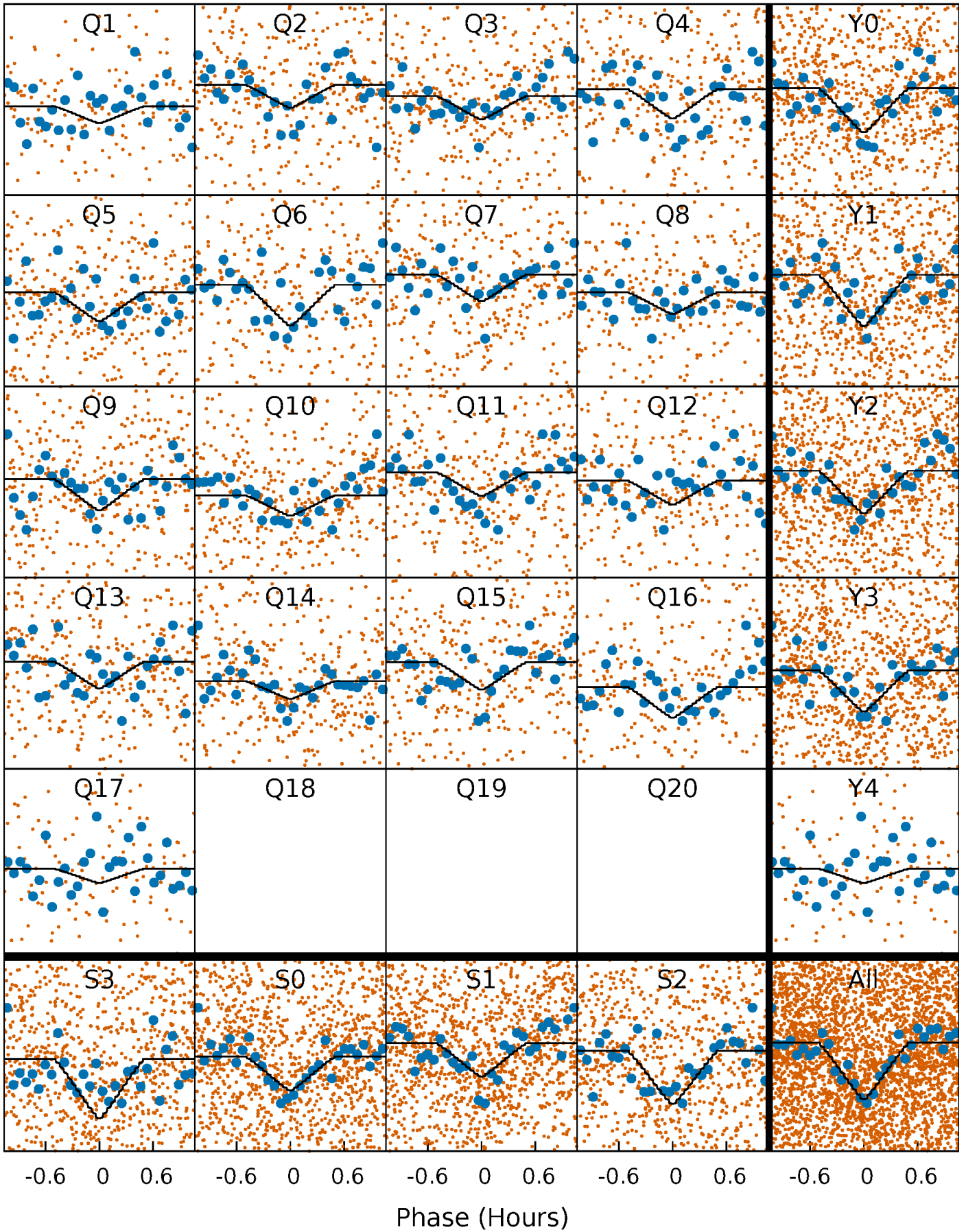
TCE 004136659-01   P= 0.913245 Days    $T_0=132.186145$  (BKJD)





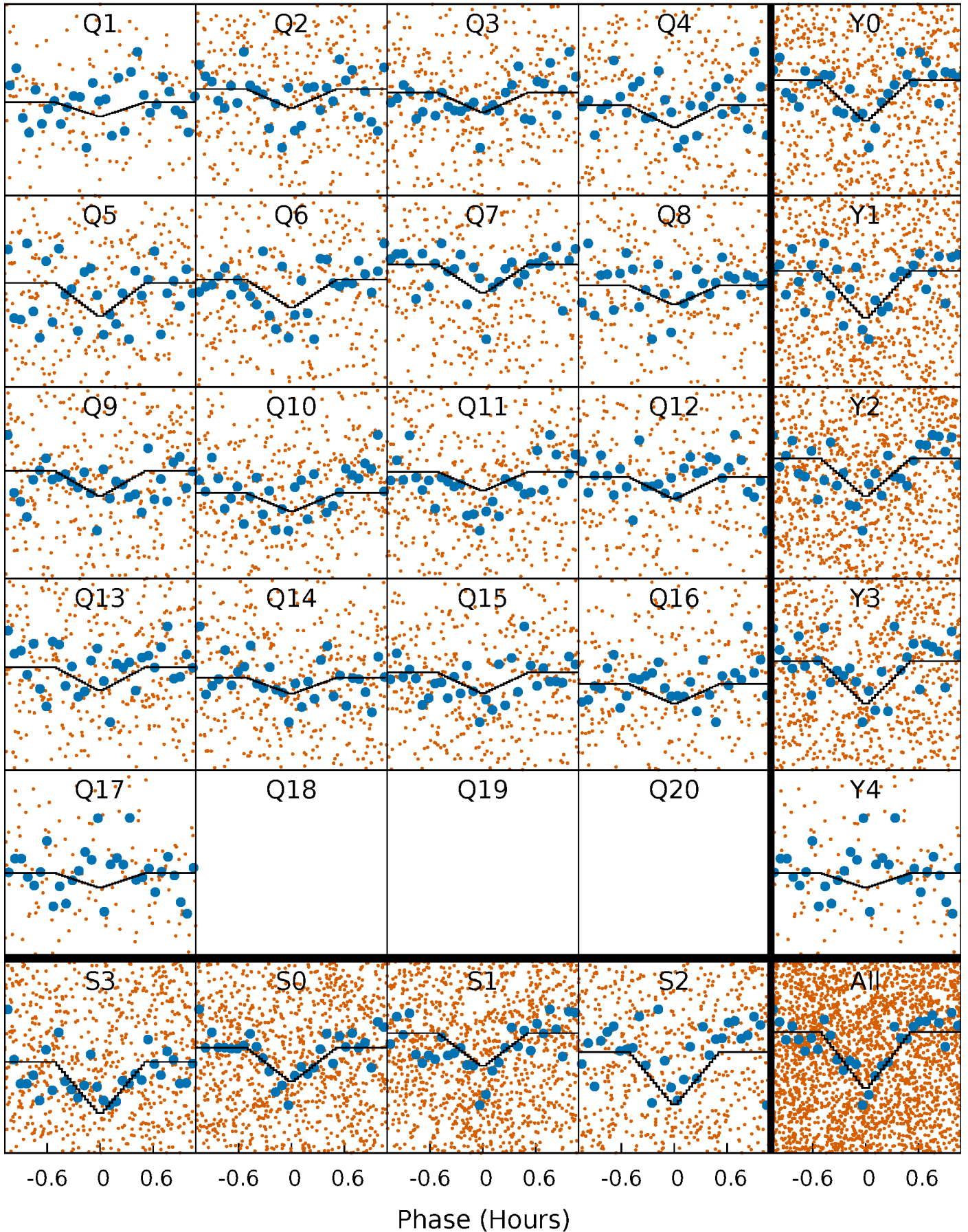
# DV Quarter-Phased Transit Curves

TCE 004136659-01   P= 0.913245 Days    $T_0=132.186145$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

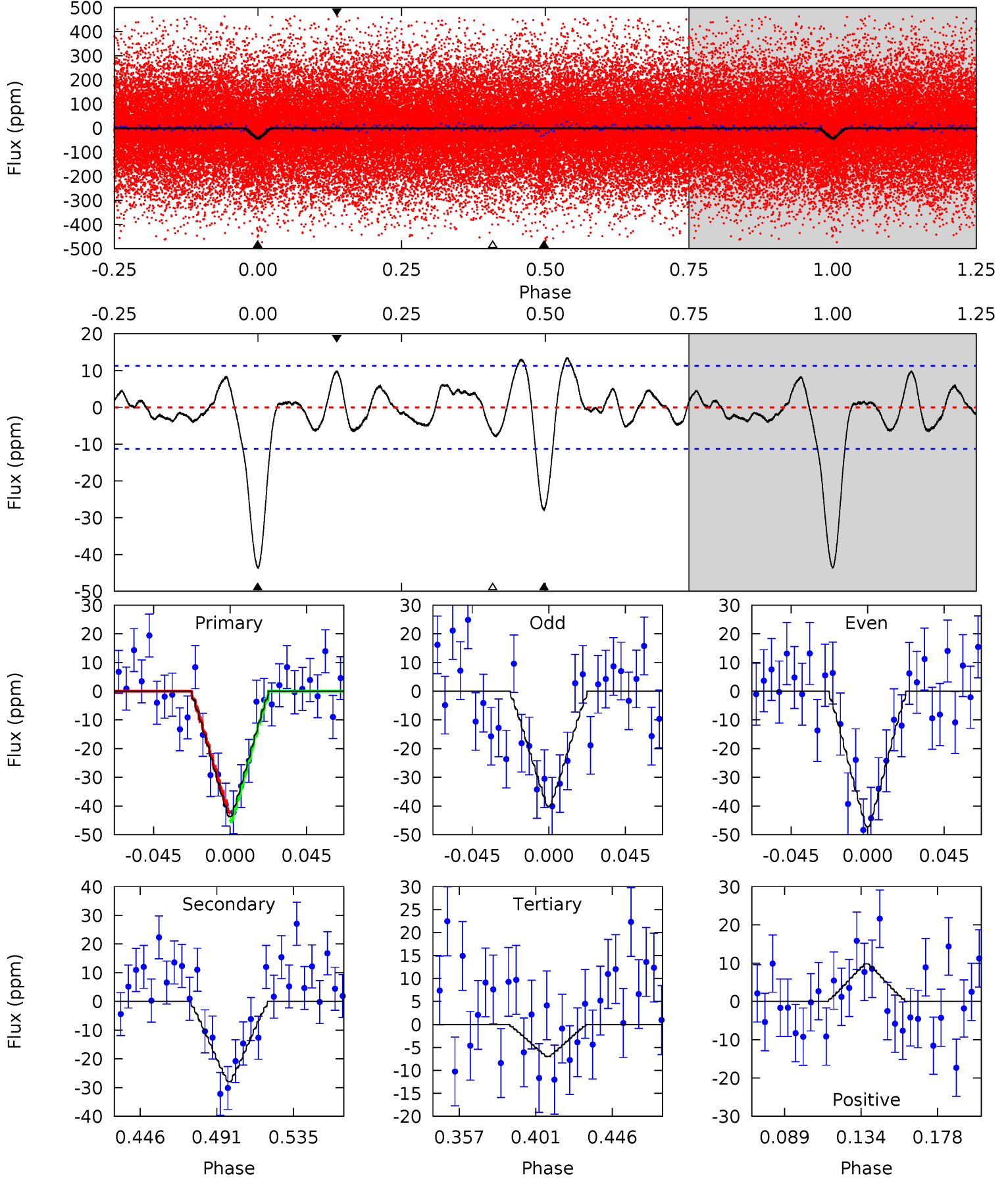
TCE 004136659-01 P= 0.913245 Days  $T_0=132.186181$  (BKJD)



# DV Model-Shift Uniqueness Test

004136659-01, P = 0.913245 Days, E = 131.272900 Days

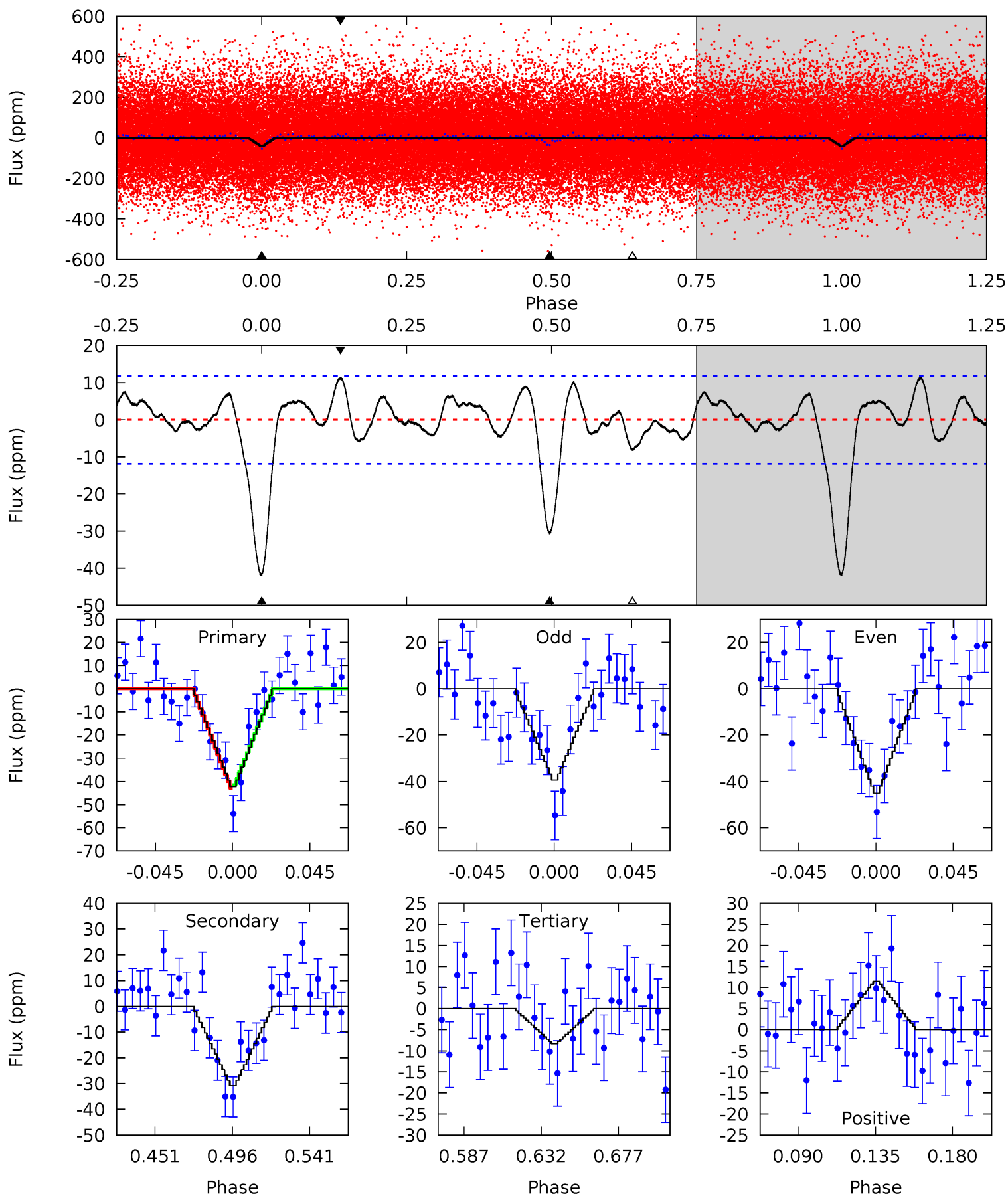
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.3	11.7	2.92	4.11	4.73	2.01	1.69	15.4	14.2	8.78	7.59	1.50	1.01	0.24	0.65



# Alt Model-Shift Uniqueness Test

004136659-01, P = 0.913245 Days, E = 131.272936 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
16.8	12.3	3.32	4.58	4.73	2.00	1.56	13.5	12.2	8.98	7.73	1.14	0.90	0.21	0.32





### Stellar Parameters For KIC 004136659

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5923^{+158}_{-193}$	$4.402^{+0.087}_{-0.203}$	$-0.020^{+0.250}_{-0.300}$	$1.049^{+0.319}_{-0.137}$	$1.013^{+0.138}_{-0.110}$	$1.237^{+0.559}_{-0.613}$
	+3%/-3%	+2%/-5%	+1250%/-1500%	+30%/-13%	+14%/-11%	+45%/-50%
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 004136659-01 / KOI 7683.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-28 \pm 2$	$0.81^{+0.31}_{-0.34}$	$2789^{+204}_{-150}$	$5196^{+1542}_{-663}$	$7.928^{+14.984}_{-3.760}$
Alt.	$-31 \pm 3$	$0.77^{+0.34}_{-0.29}$	$2779^{+208}_{-141}$	$5426^{+1591}_{-753}$	$9.626^{+16.404}_{-4.918}$

$T_{max}$  = 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

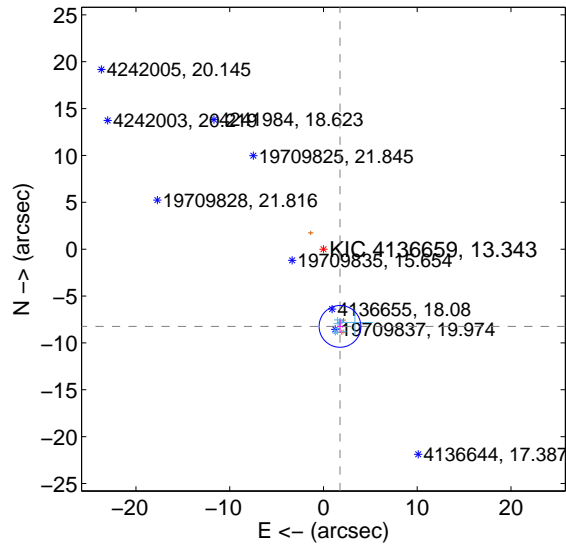
Supplemental centroid analysis for 004136659-01. Kepler magnitude: 13.34. Transit SNR 10.15

There are 10 quarters with good PRF difference image offsets

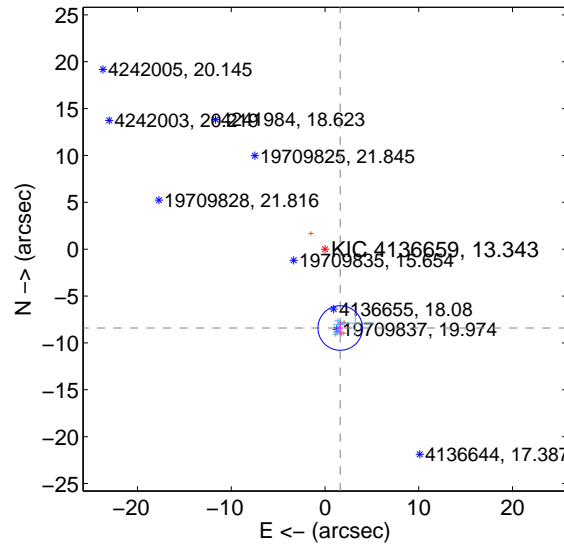
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$8.423 \pm 0.742$	11.35	$-1.763 \pm 0.276$	$-8.237 \pm 0.715$
PRF-fit source offset from KIC position	$8.567 \pm 0.791$	10.83	$-1.620 \pm 0.298$	$-8.412 \pm 0.761$
photometric centroid source offset	$18.03 \pm 1.16$	15.56	$-7.65 \pm 1.14$	$-16.33 \pm 1.16$

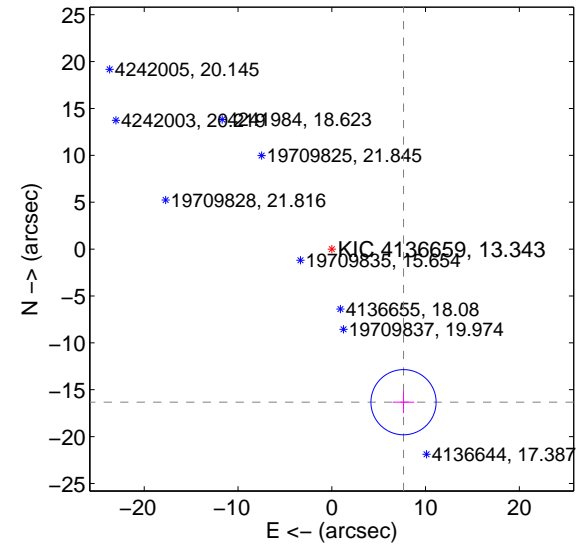
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

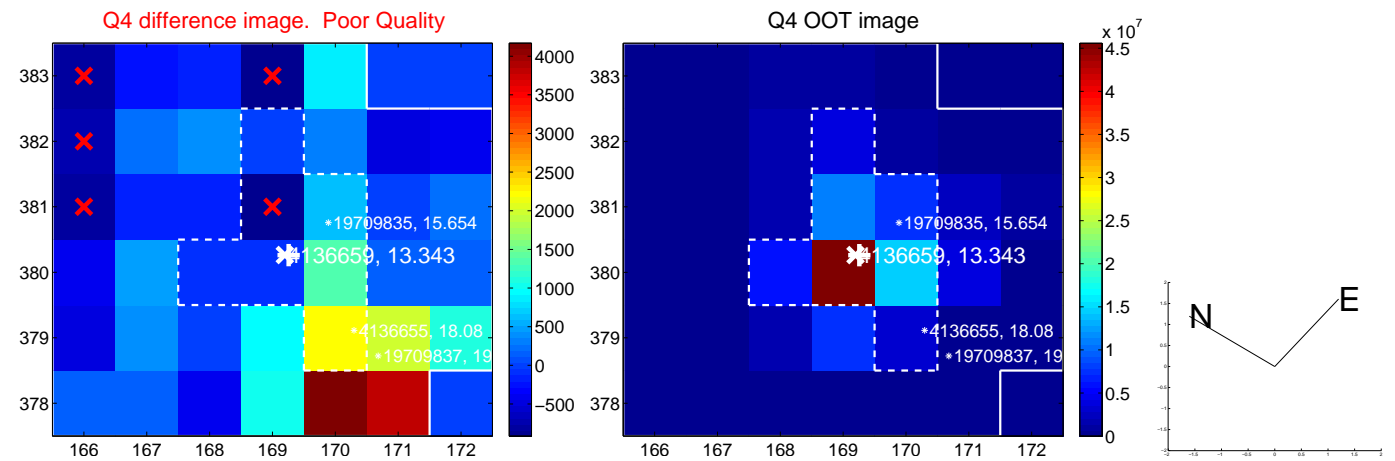
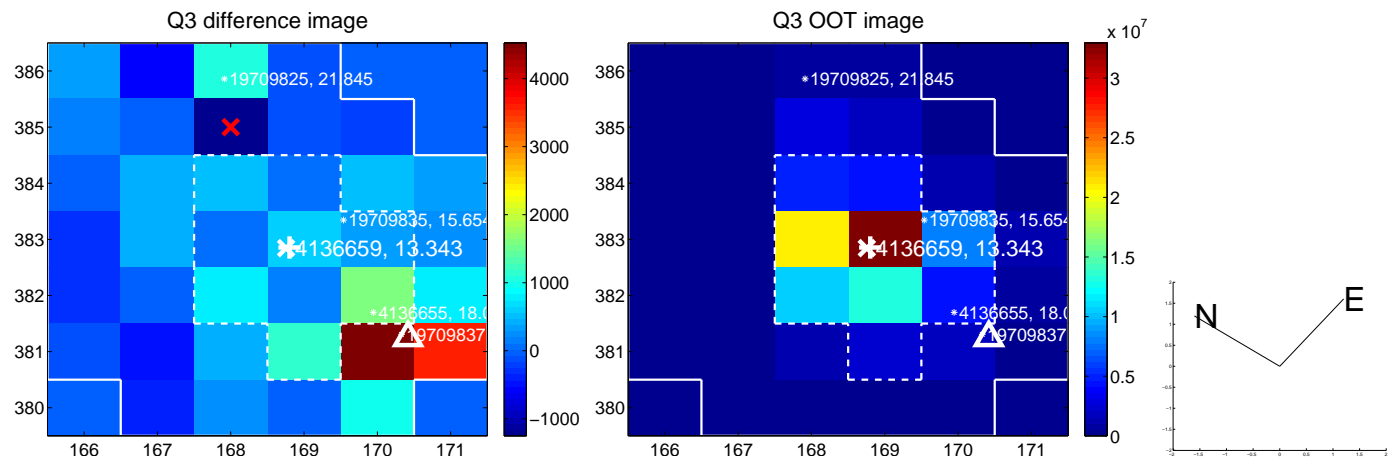
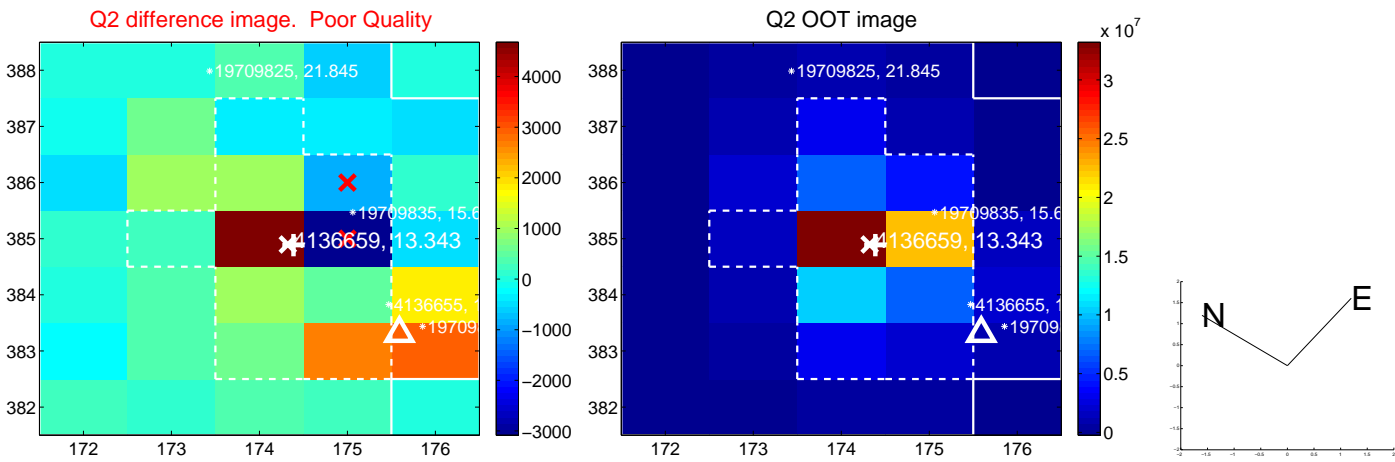
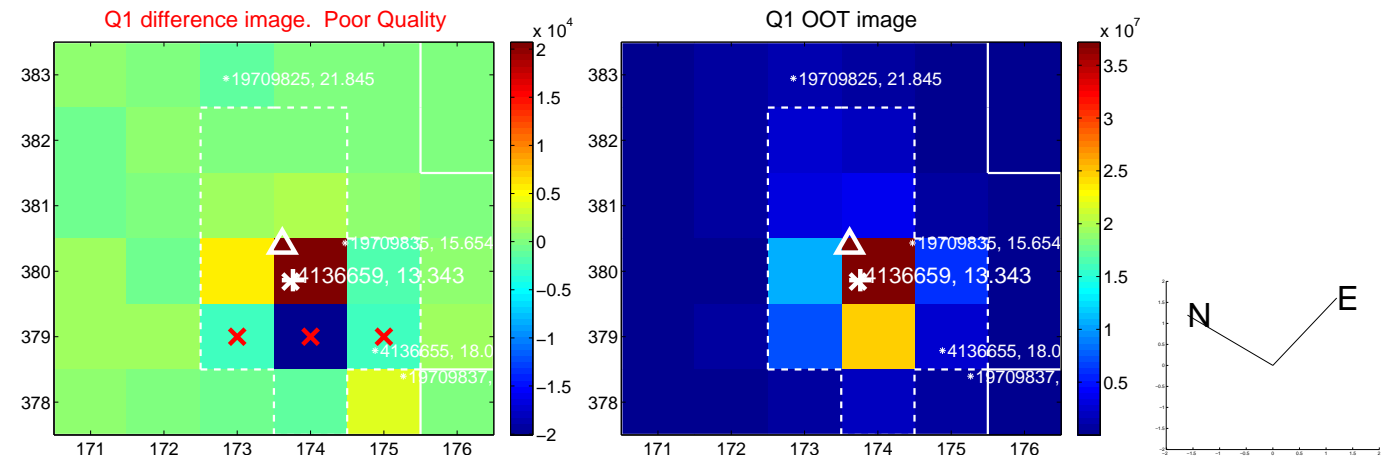


offset from photometric centroids

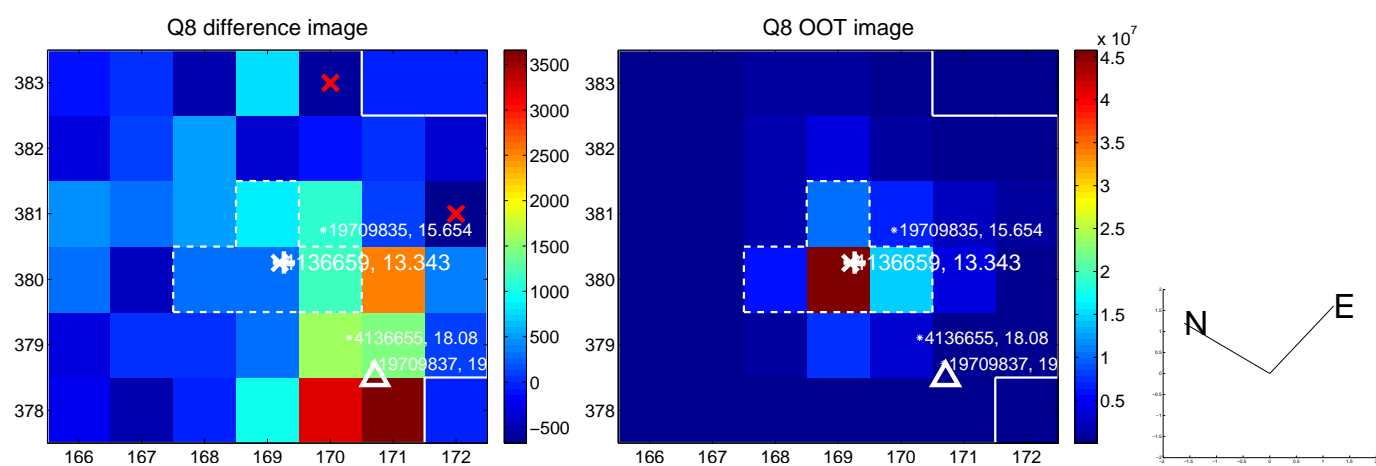
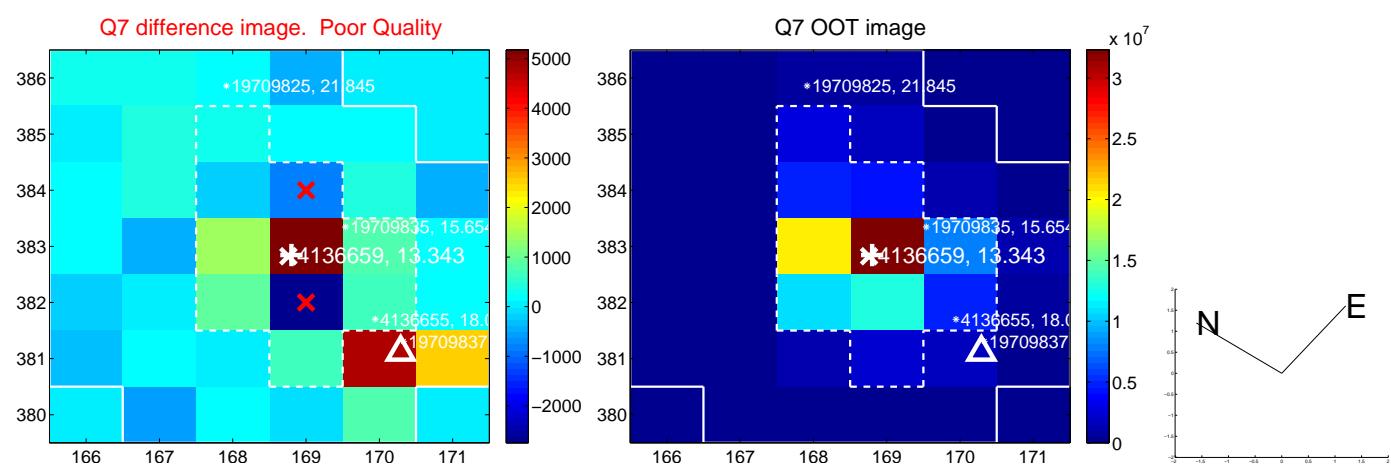
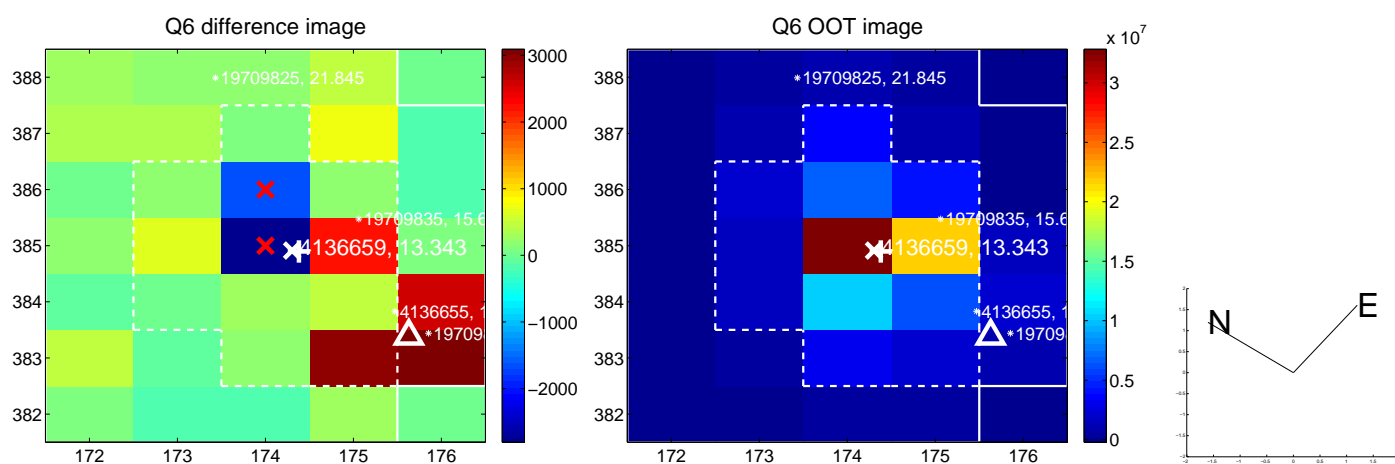
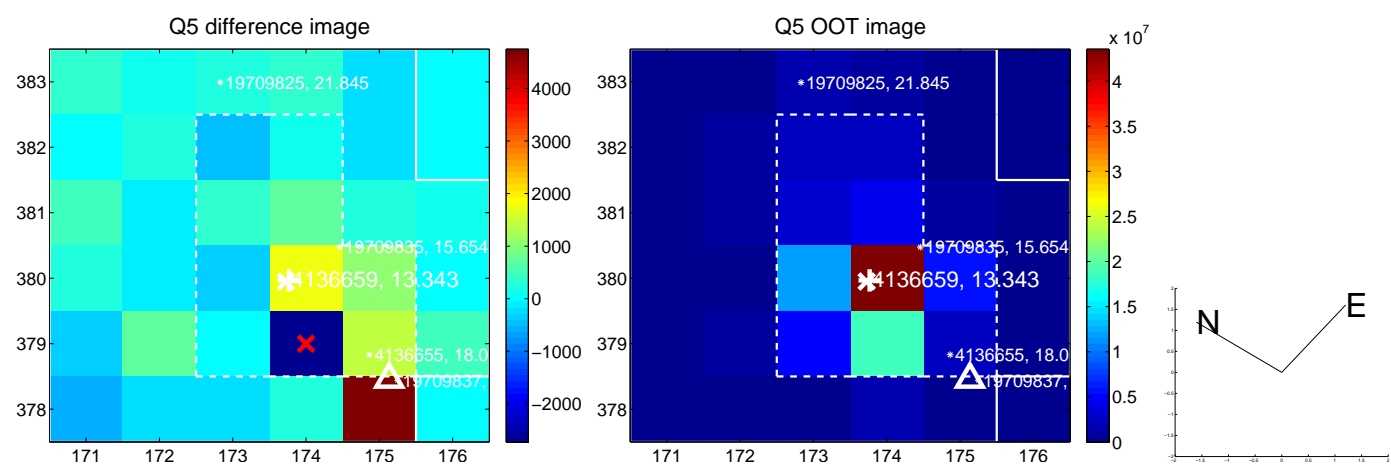


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

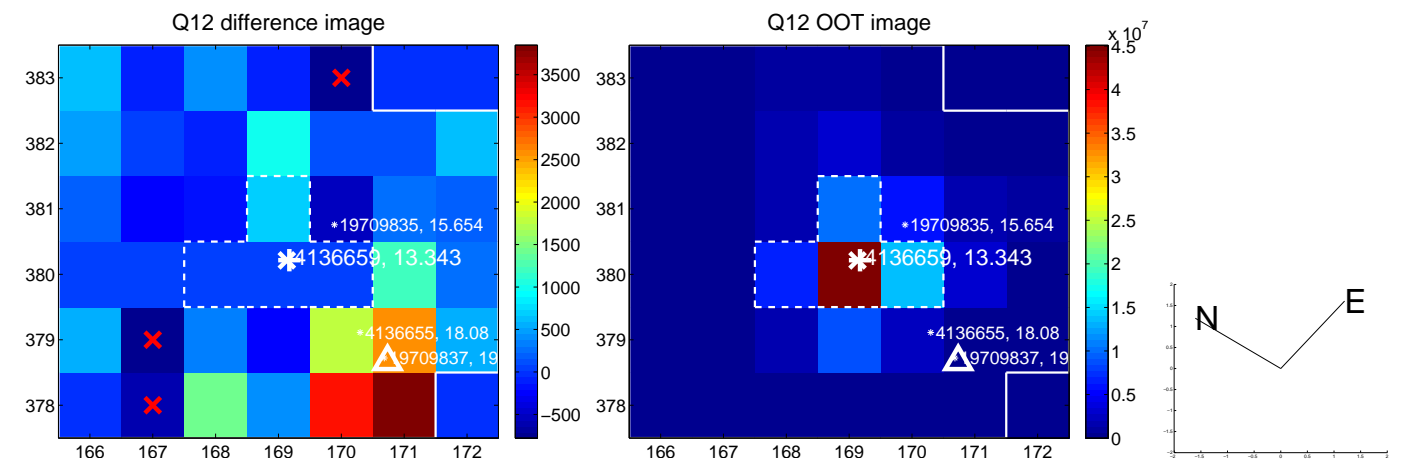
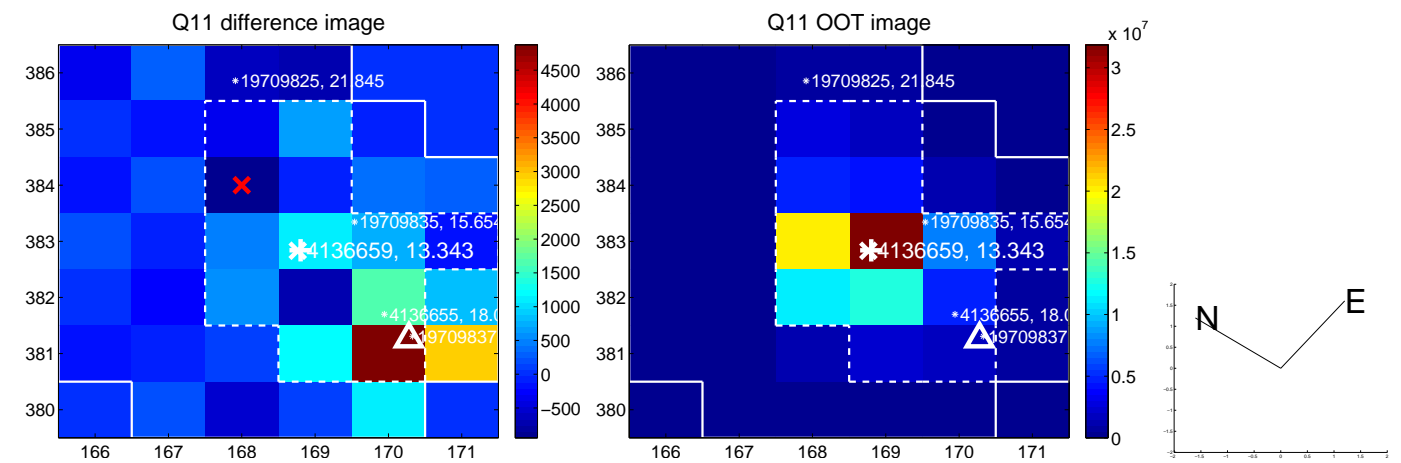
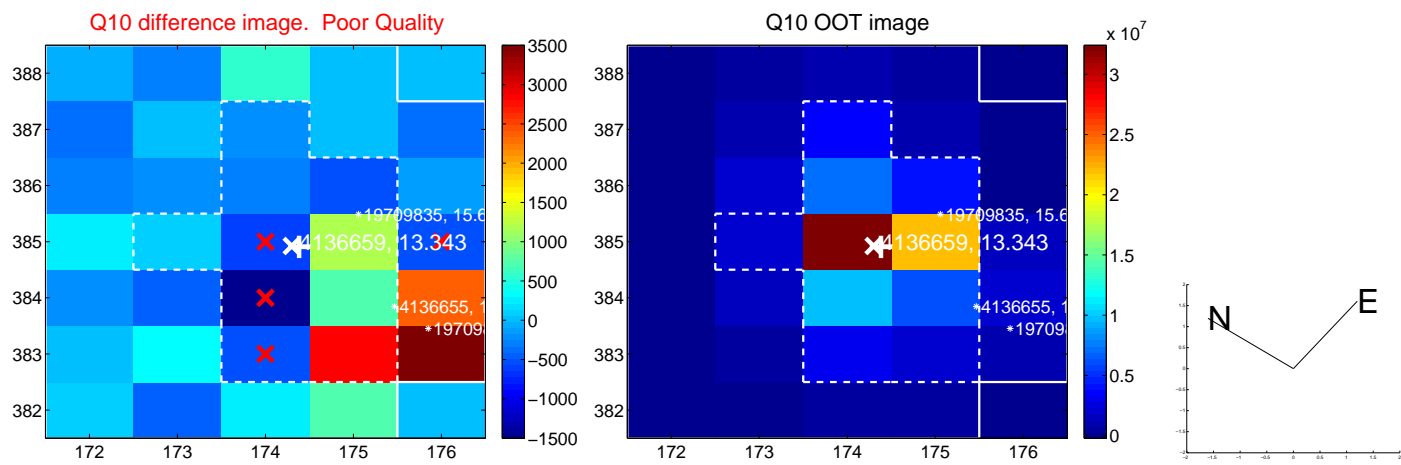
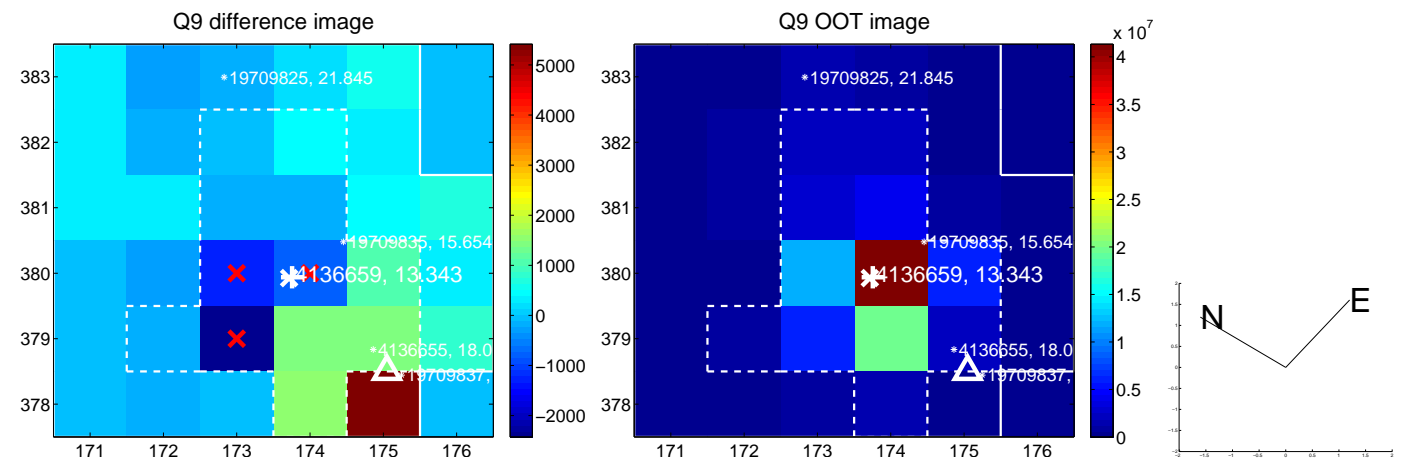


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

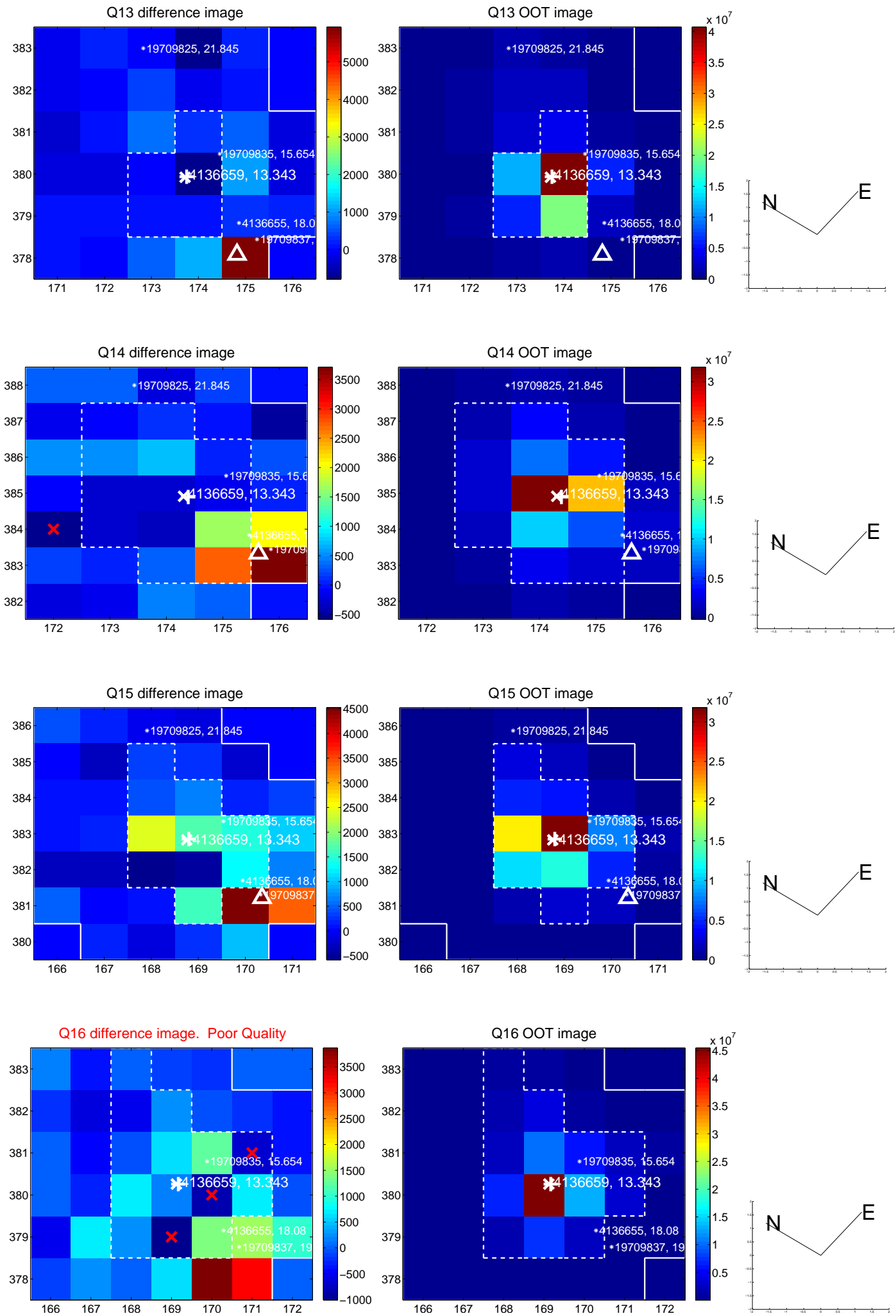




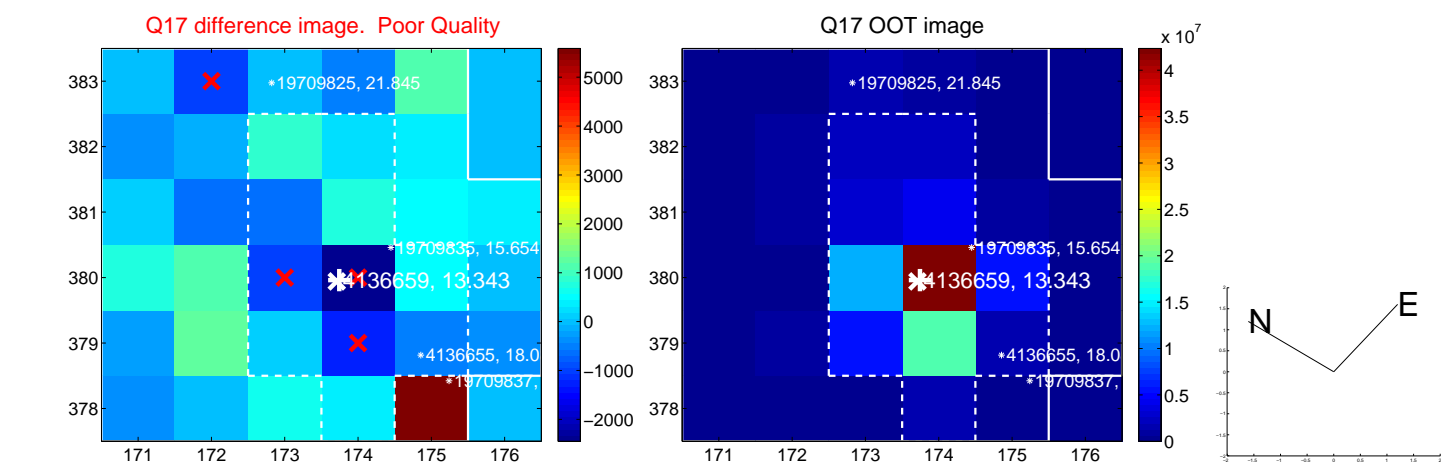
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



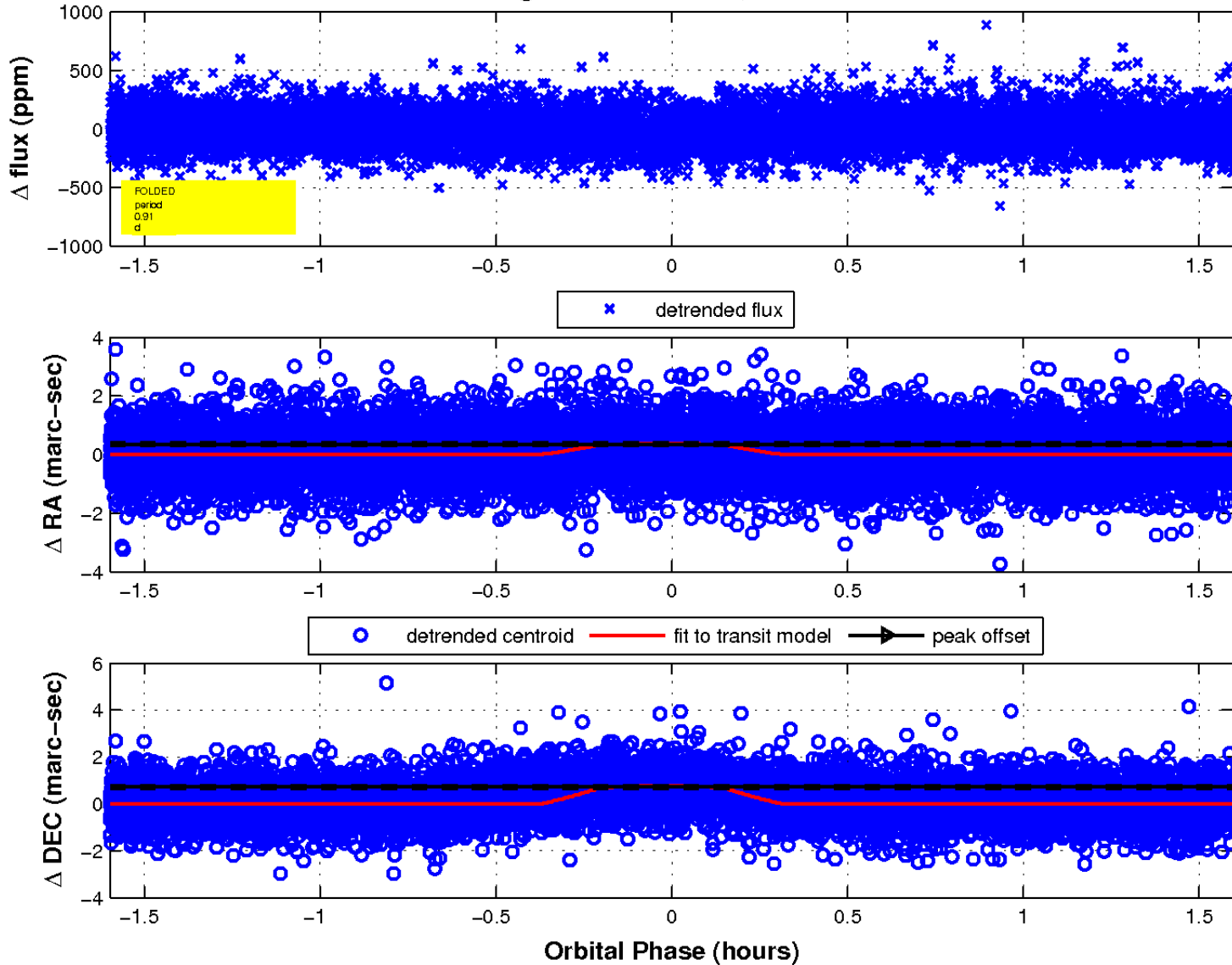
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

