

# KIC 009480310

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009480310-01	OBS	1470.01	15.434014	131.785084	1784.8	4.210	51.6	56.9	0.95	5900	4.30	63.94

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009480310-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

**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.

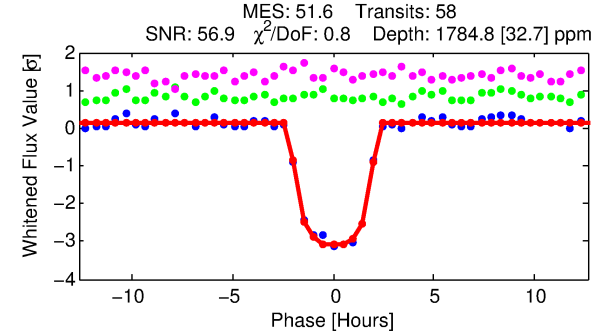
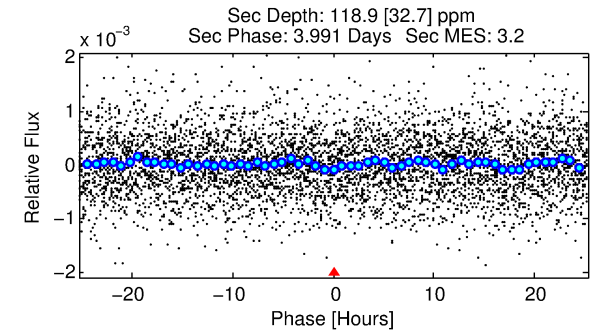
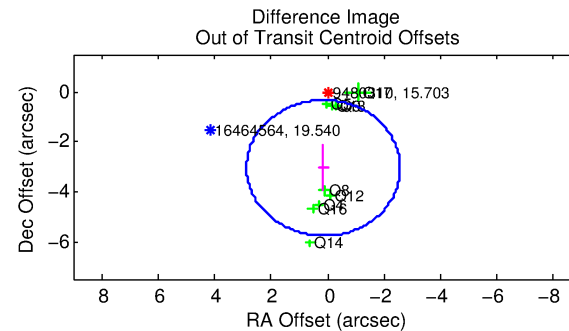
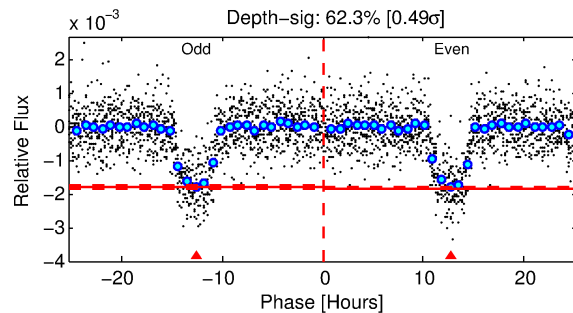
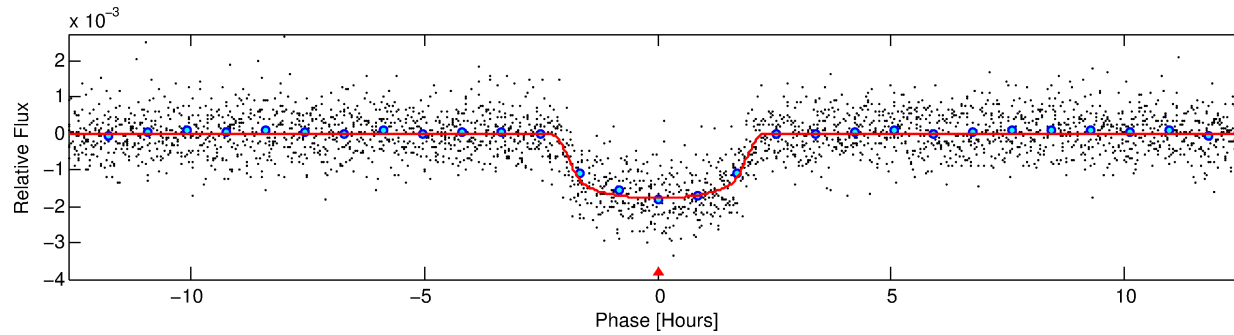
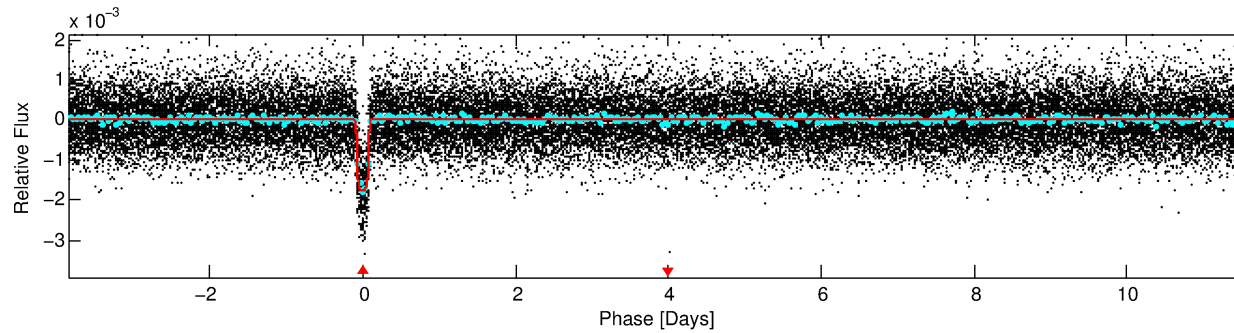
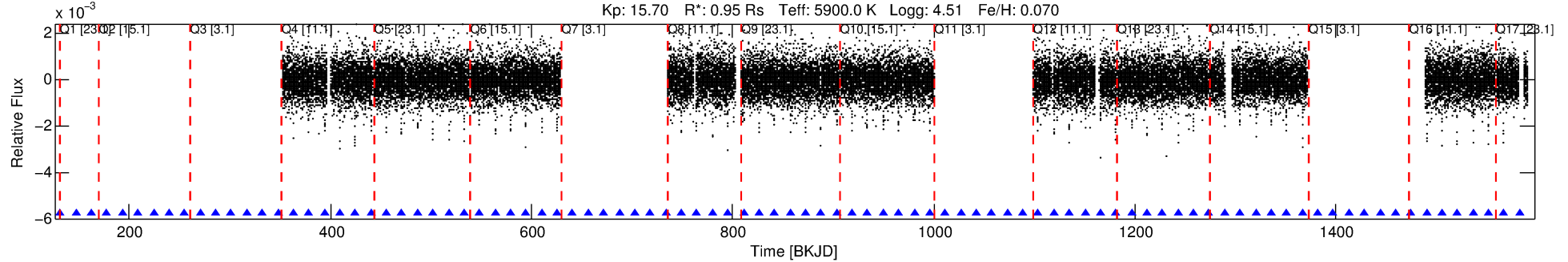
## Ephemeris Match Information For 009480310-01

No Significant Match Found

# DV One-Page Summary

KIC: 9480310 Candidate: 1 of 1 Period: 15.434 d  
KOI: K01470.01 Corr: 0.993

Kp: 15.70 R\*: 0.95 Rs Teff: 5900.0 K Logg: 4.51 Fe/H: 0.070



## DV Fit Results:

Period = 15.43401 [0.00004] d  
Epoch = 131.7851 [0.0020] BKJD  
Rp/R\* = 0.0414 [0.0040]  
a/R\* = 21.52 [9.23]  
b = 0.70 [0.31]  
Seff = 63.94 [26.32]  
Teq = 721 [74] K  
Rp = 4.30 [1.34] Re  
a = 0.1239 [0.0318] AU  
Ag = 54.41 [27.72] [1.93σ]  
Teffp = 3028 [280] K [7.96σ]

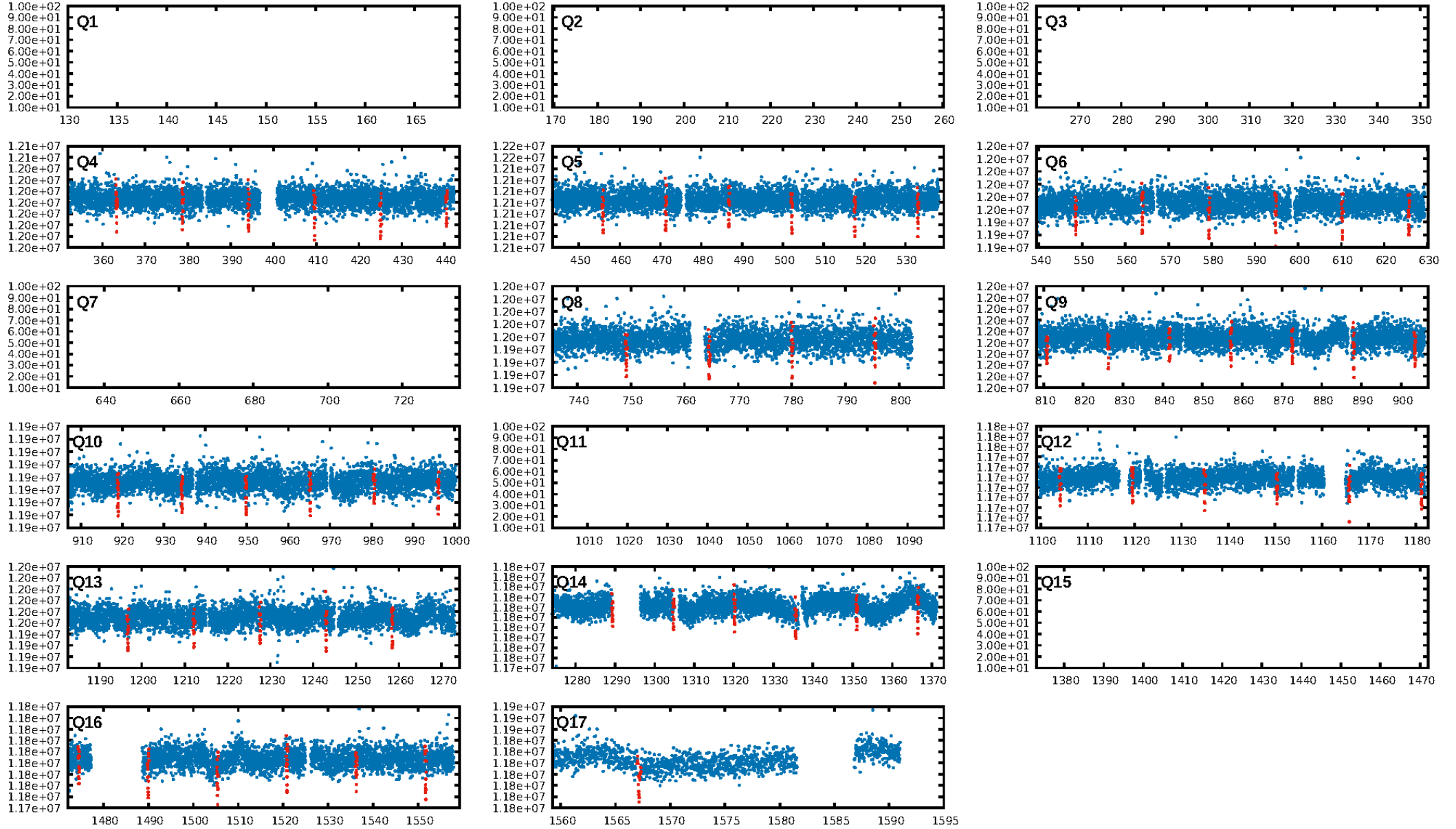
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 90.4%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [57/57]  
GhostDiagnostic-chr: 5.731  
Centroid-sig: 0.0%  
Centroid-so: 1.445 arcsec [7.67σ]  
OotOffset-rm: 3.056 arcsec [3.37σ]  
KicOffset-rm: 0.314 arcsec [2.10σ]  
OotOffset-st: 1/0/4/4 [9]  
KicOffset-st: 3/0/4/4 [11]  
DiffImageQuality-fgm: 1.00 [11/11]  
DiffImageOverlap-fno: 1.00 [11/11]

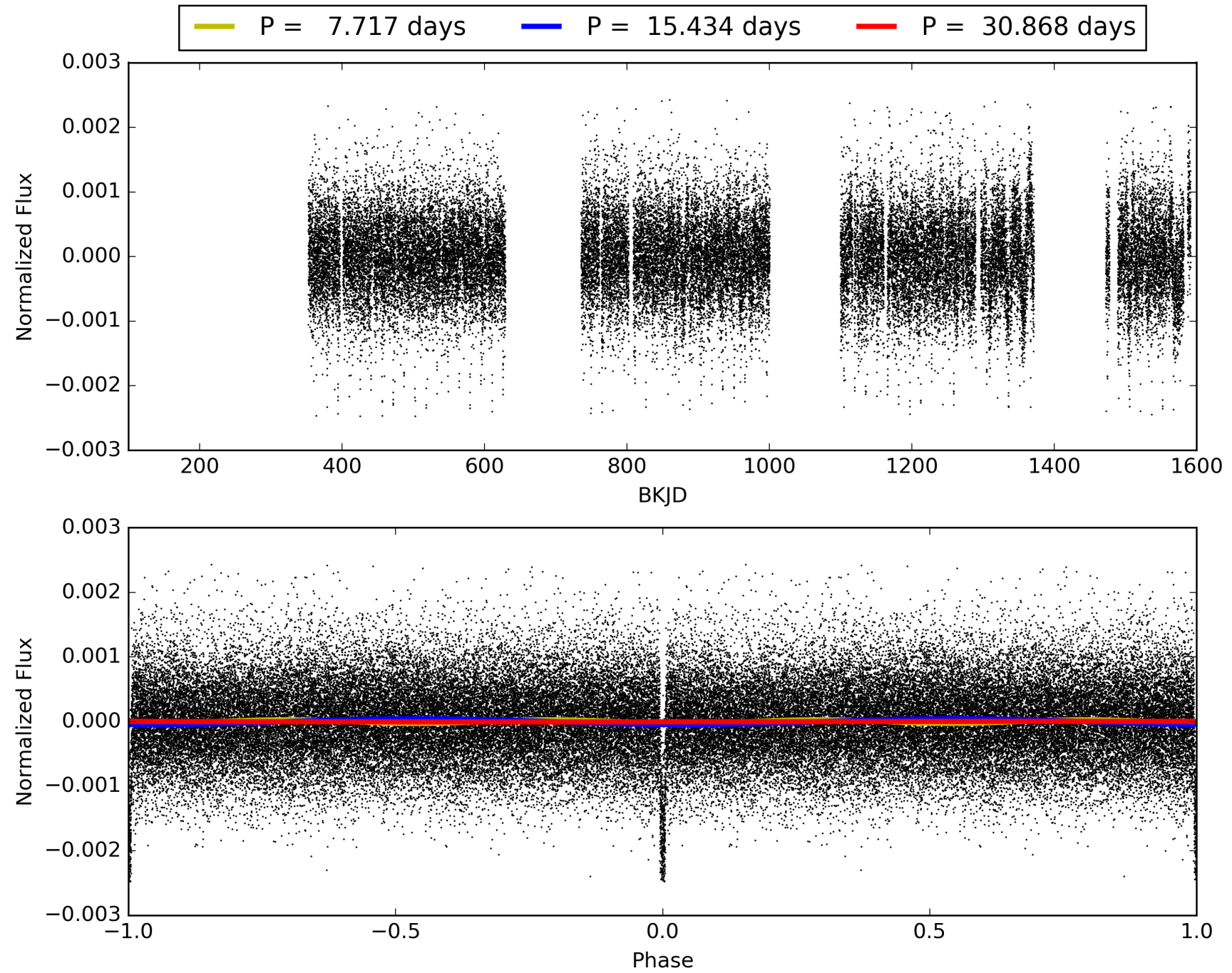
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:20:46 Z

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

# TCE 009480310-01, PDC Light Curves

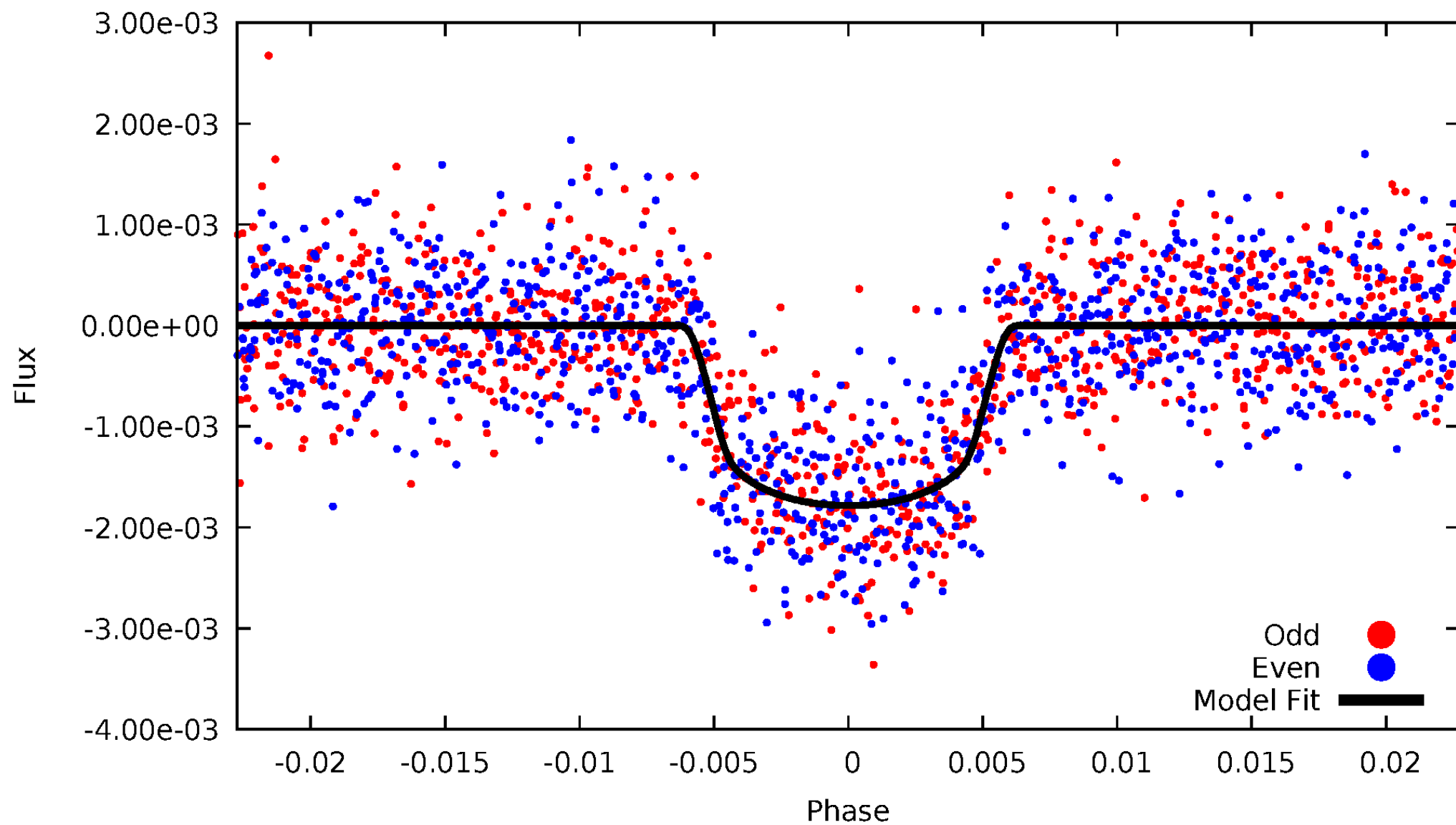


TCE 009480310-01



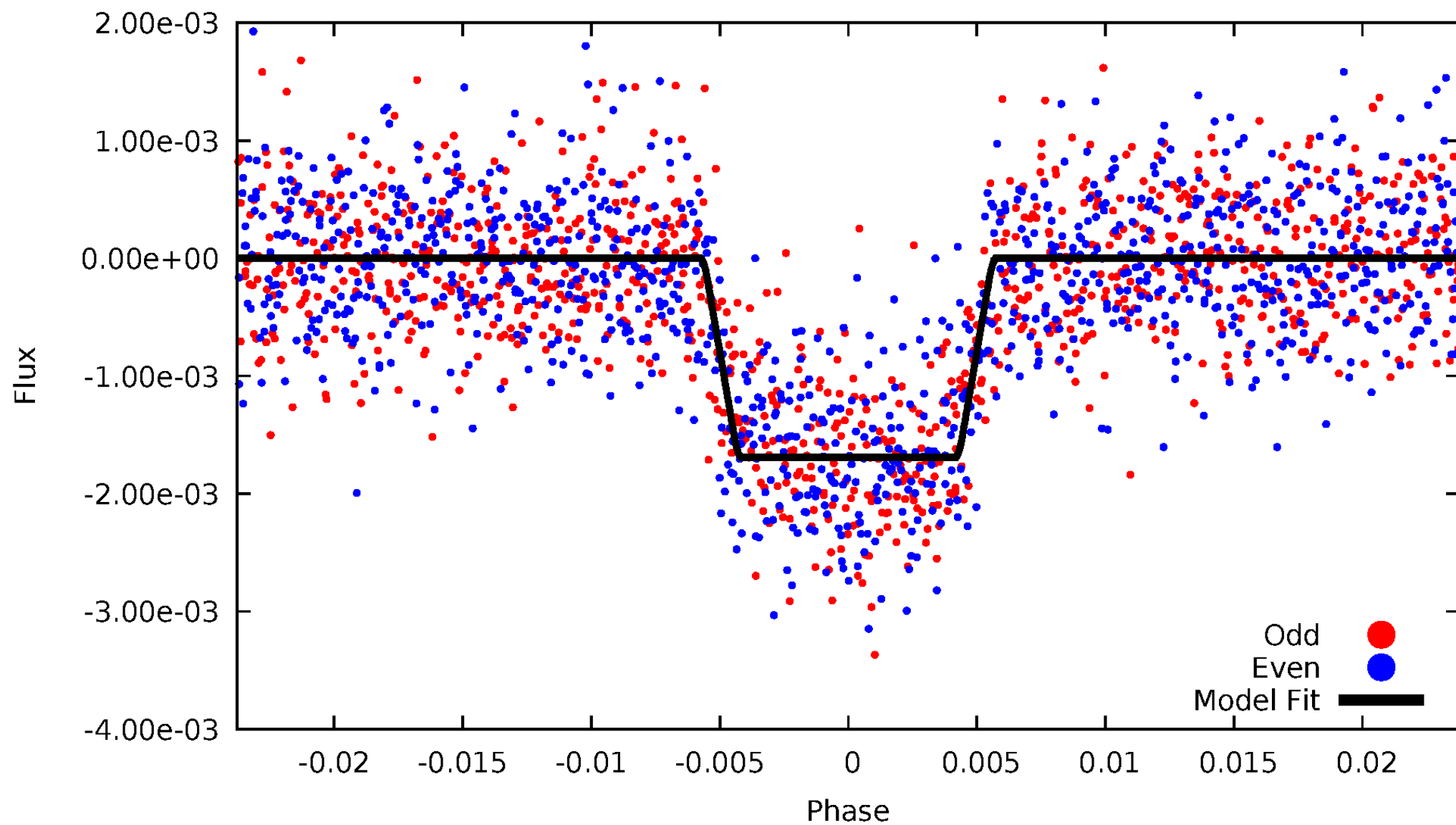
# DV Odd/Even

TCE 009480310-01



# ALT Odd/Even

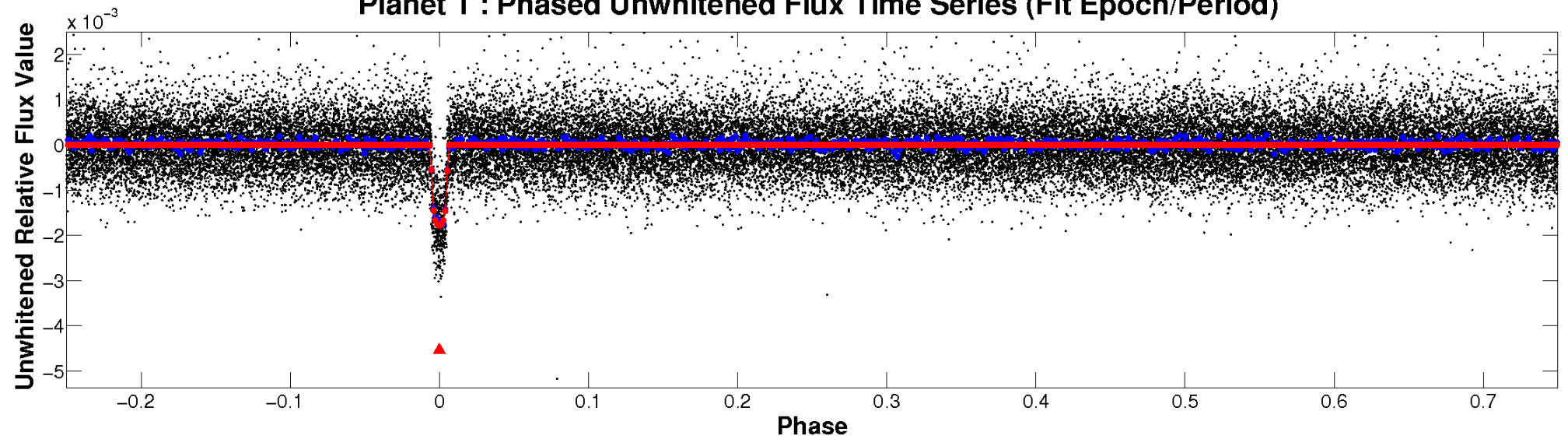
TCE 009480310-01



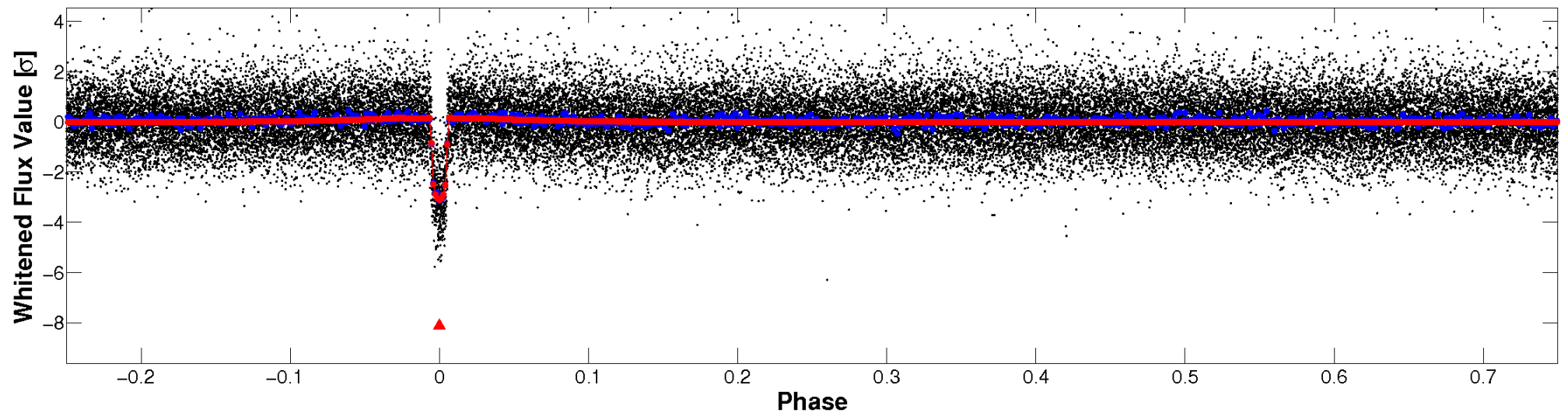


# Non-Whitened Vs. Whitened Light Curve

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

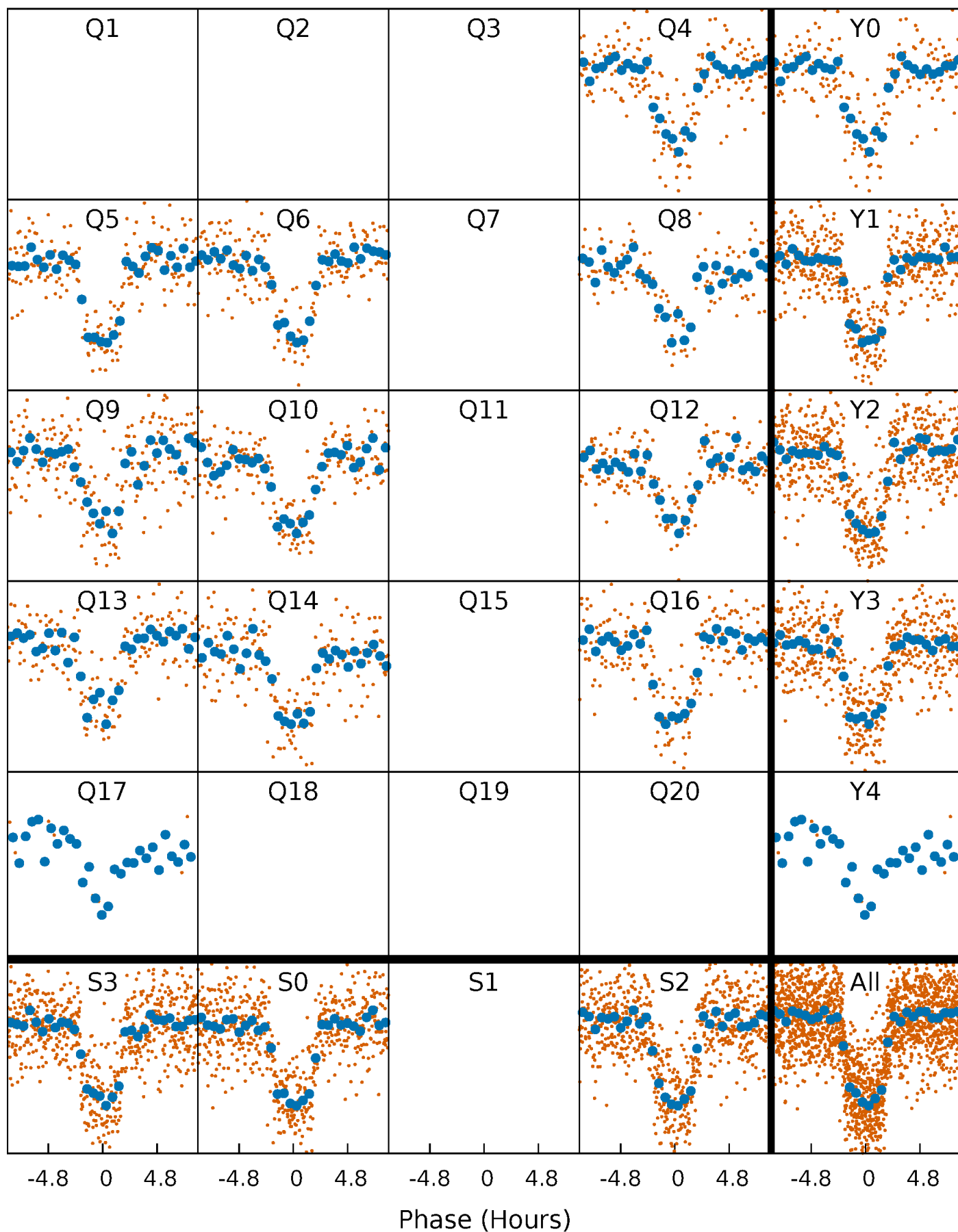


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

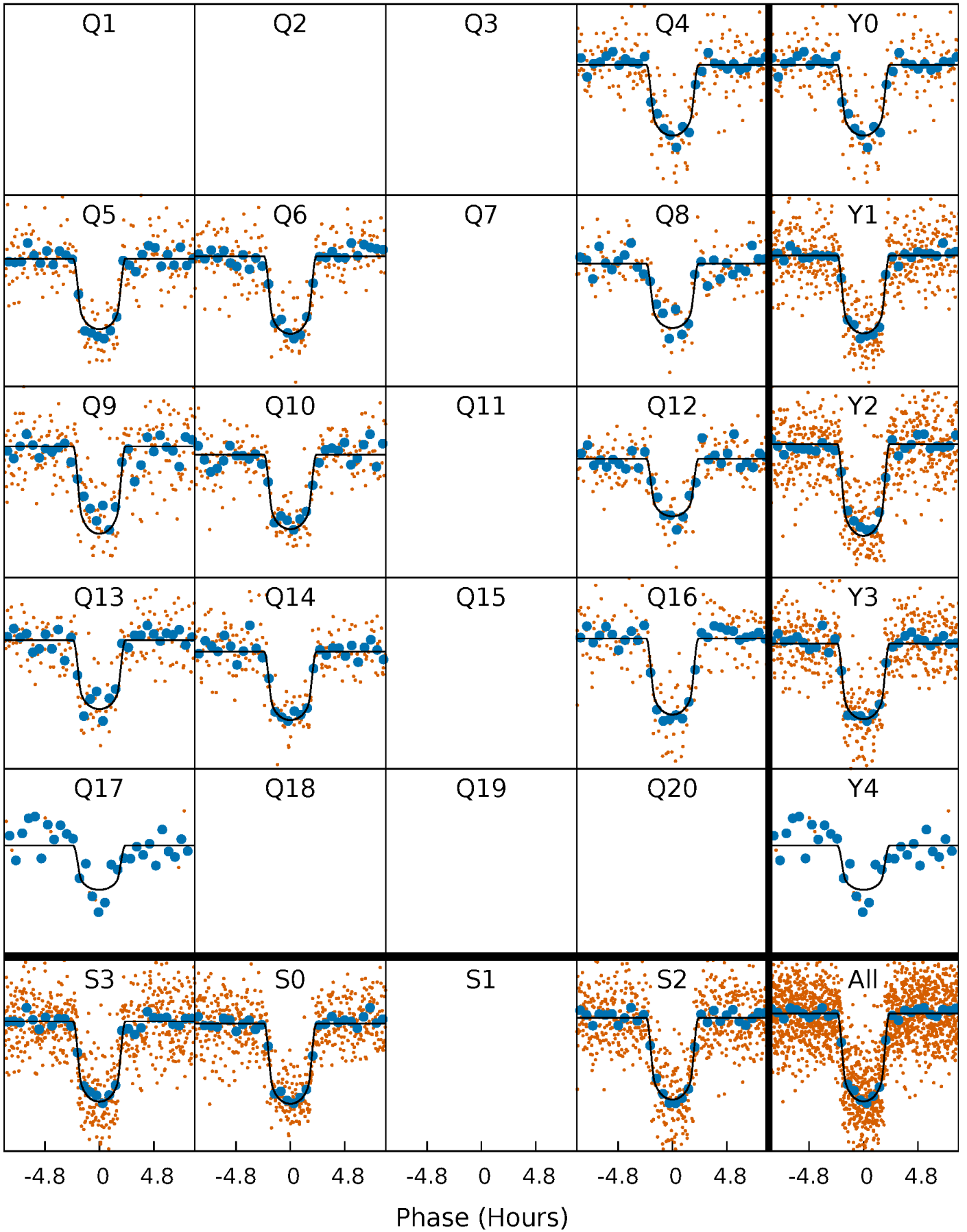
TCE 009480310-01 P= 15.434014 Days  $T_0=131.785084$  (BKJD)





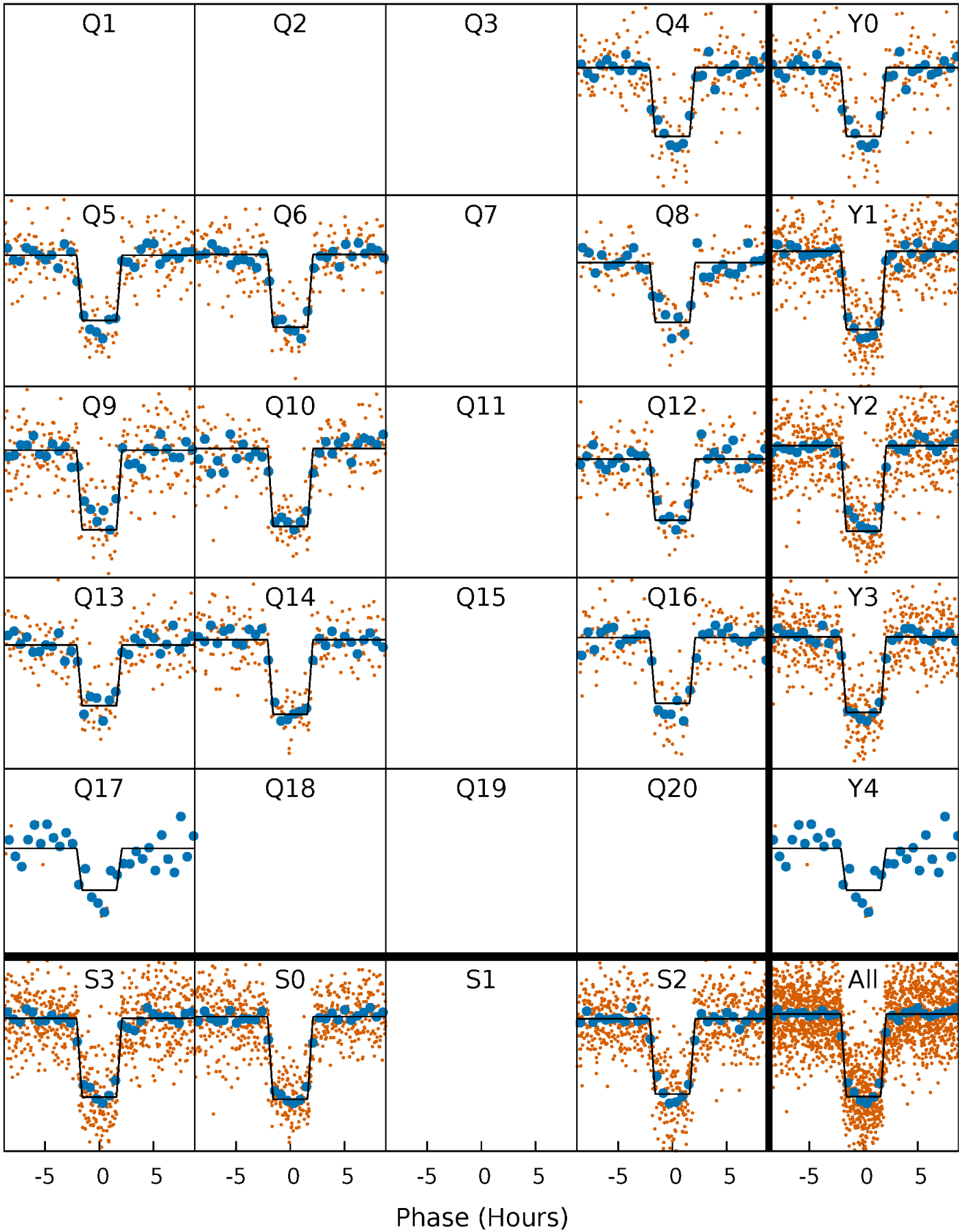
# DV Quarter-Phased Transit Curves

TCE 009480310-01 P= 15.434014 Days  $T_0=131.785084$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

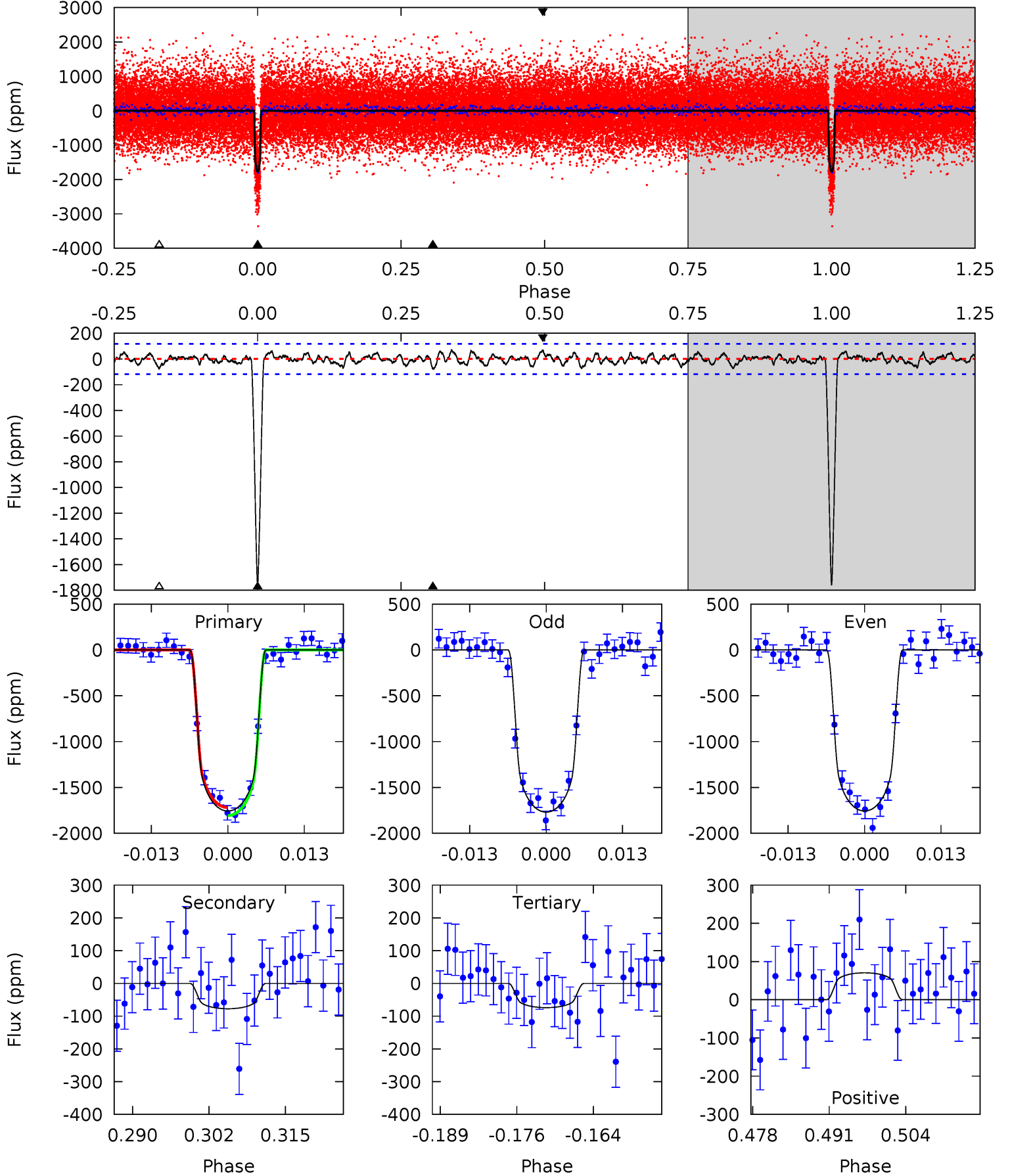
TCE 009480310-01 P= 15.433966 Days  $T_0=131.786927$  (BKJD)



# DV Model-Shift Uniqueness Test

009480310-01,  $P = 15.434014$  Days,  $E = 131.785084$  Days

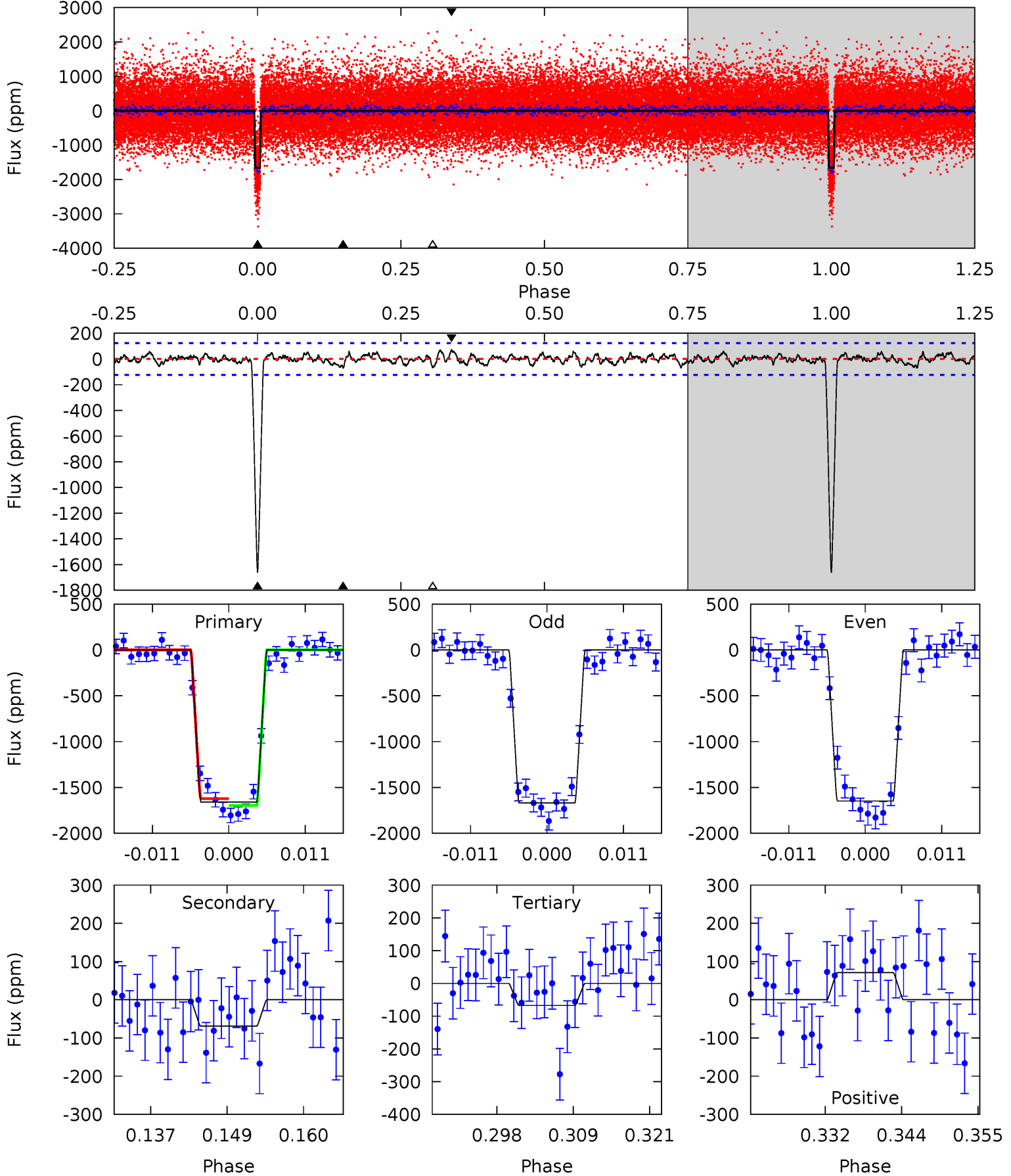
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
74.4	3.28	3.13	2.99	4.98	2.50	1.15	71.2	71.4	0.14	0.29	0.27	0.98	0.04	1.85



# Alt Model-Shift Uniqueness Test

009480310-01,  $P = 15.433966$  Days,  $E = 131.786927$  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
67.2	2.80	2.73	2.88	5.00	2.53	1.01	64.4	64.3	0.07	-0.08	0.45	0.99	0.04	1.55



### Stellar Parameters For KIC 009480310

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5900^{+164}_{-226}$	$4.509^{+0.037}_{-0.213}$	$0.070^{+0.250}_{-0.300}$	$0.951^{+0.282}_{-0.094}$	$1.065^{+0.110}_{-0.138}$	$1.745^{+0.347}_{-0.894}$
	+3%/-4%	+1%/-5%	+357%/-429%	+30%/-10%	+10%/-13%	+20%/-51%
Source	KIC0	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 009480310-01 / KOI 1470.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-77 \pm 24$	$4.47^{+0.82}_{-0.59}$	$1032^{+73}_{-49}$	$3261^{+213}_{-198}$	$31^{+16}_{-12}$
Alt.	$-69 \pm 25$	$4.50^{+0.78}_{-0.57}$	$1035^{+69}_{-51}$	$3217^{+206}_{-236}$	$27^{+15}_{-11}$

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

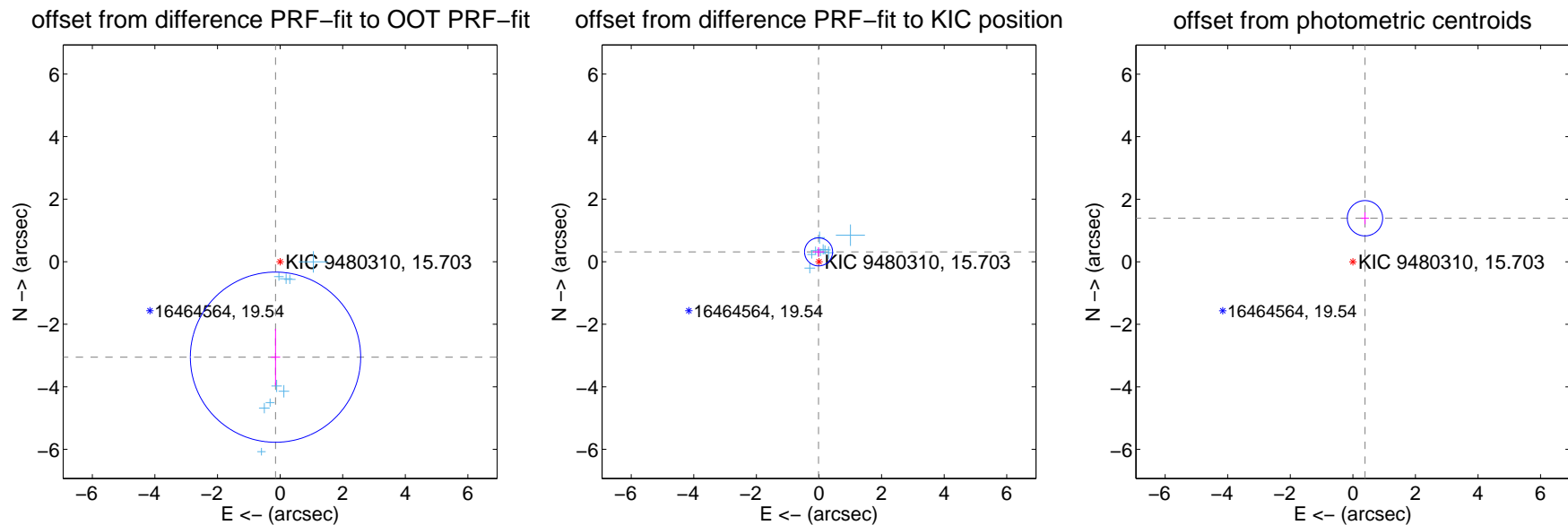
## DV Centroid Data

Supplemental centroid analysis for 009480310-01. Kepler magnitude: 15.70. Transit SNR 56.86

There are 11 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.85 arcsec

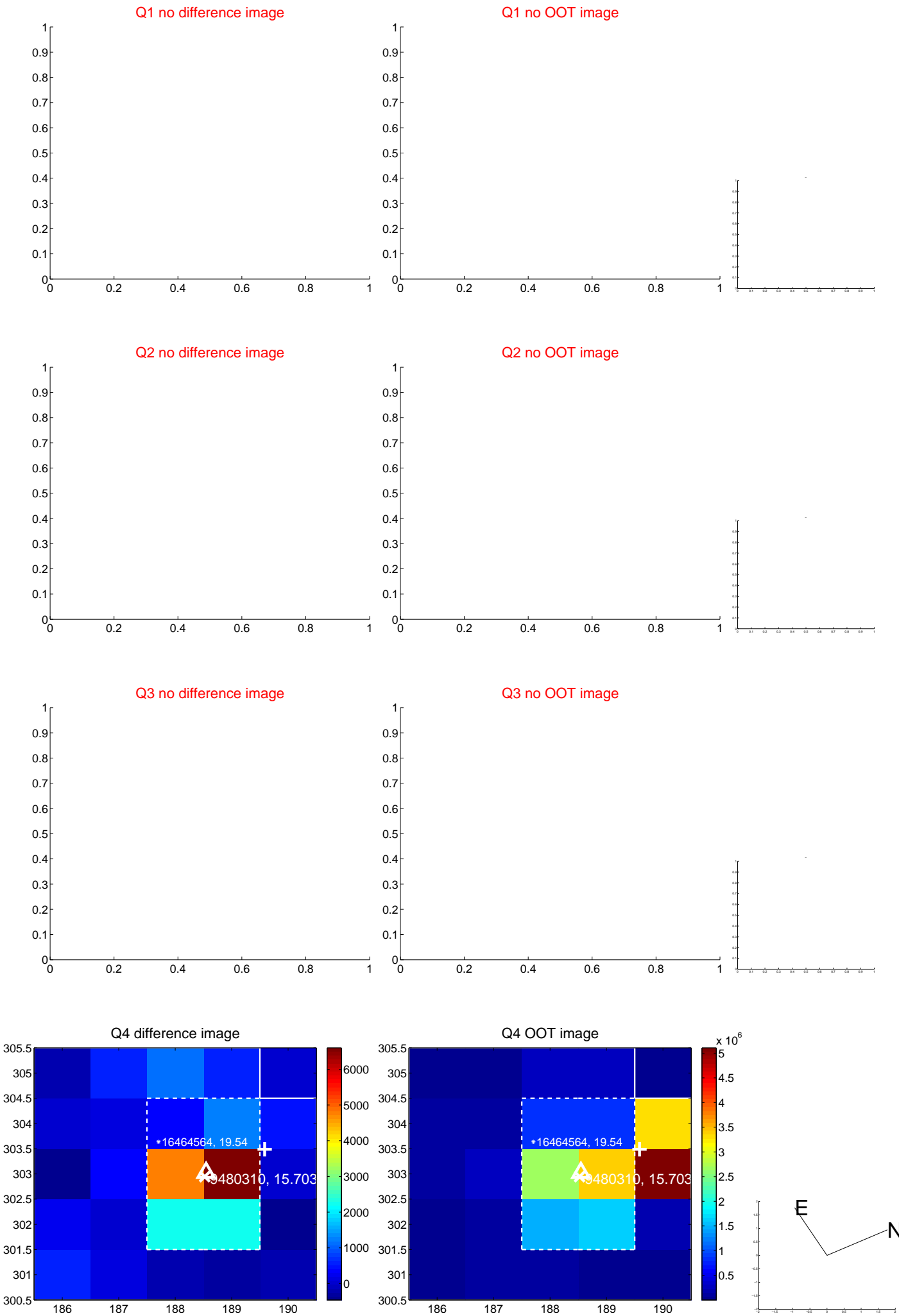
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.056 \pm 0.907$	$3.37$	$0.147 \pm 0.149$	$-3.052 \pm 0.908$
PRF-fit source offset from KIC position	$0.314 \pm 0.149$	$2.10$	$0.013 \pm 0.174$	$0.314 \pm 0.147$
photometric centroid source offset	$1.44 \pm 0.19$	$7.67$	$-0.39 \pm 0.13$	$1.39 \pm 0.19$



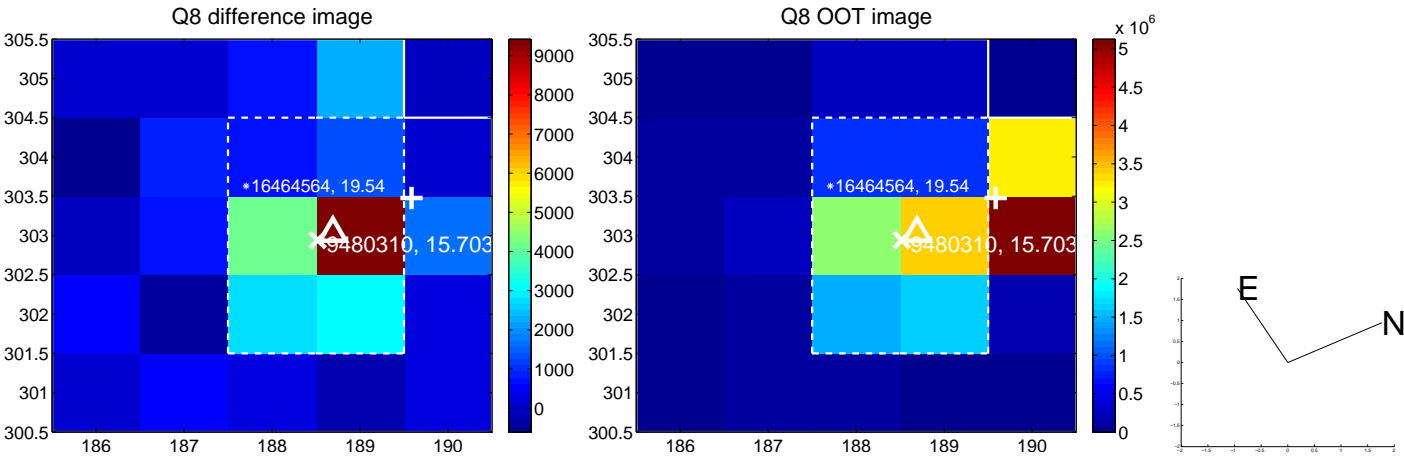
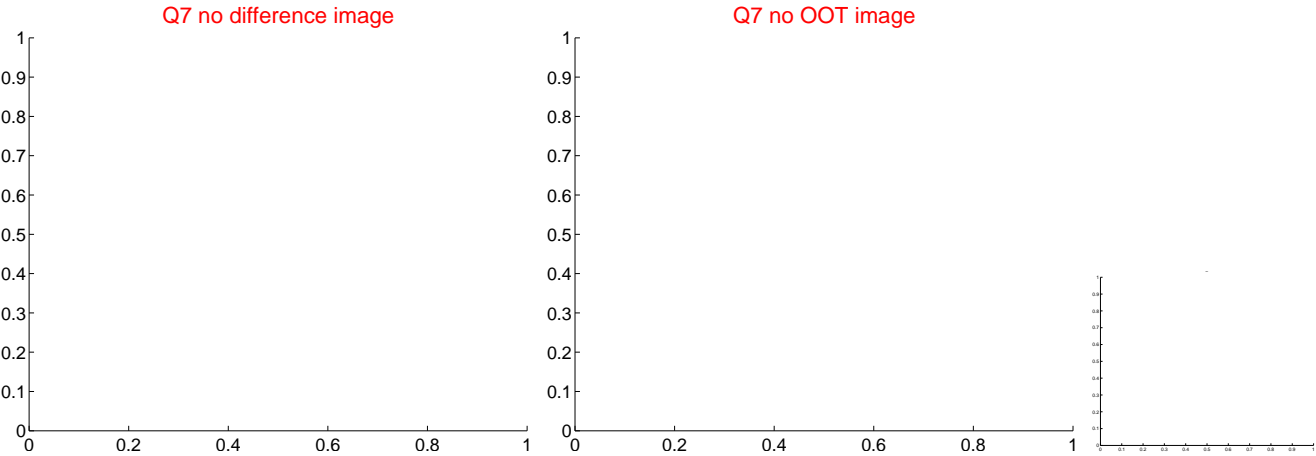
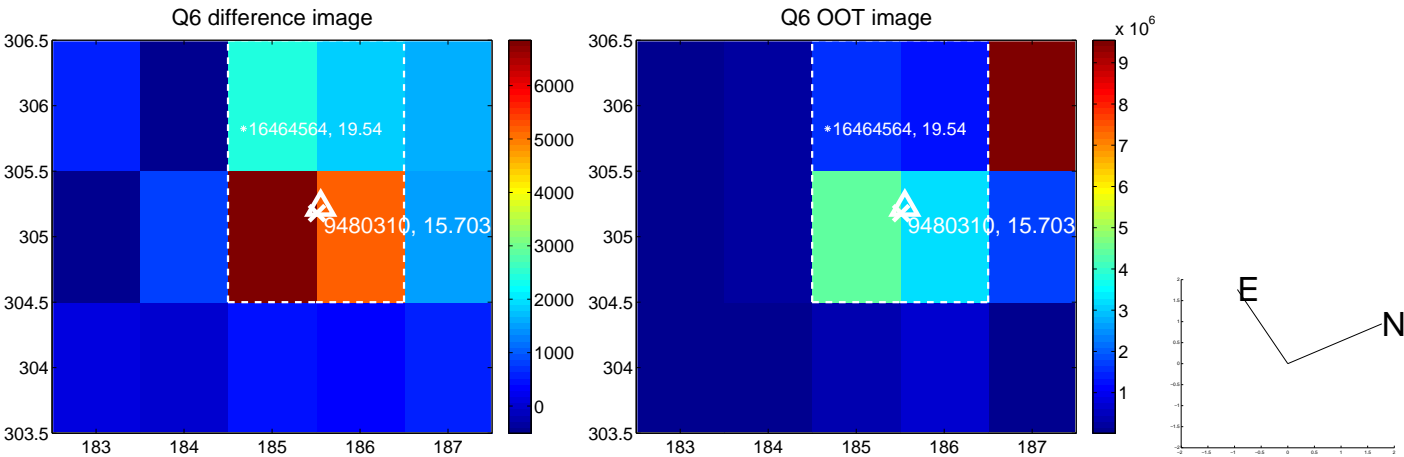
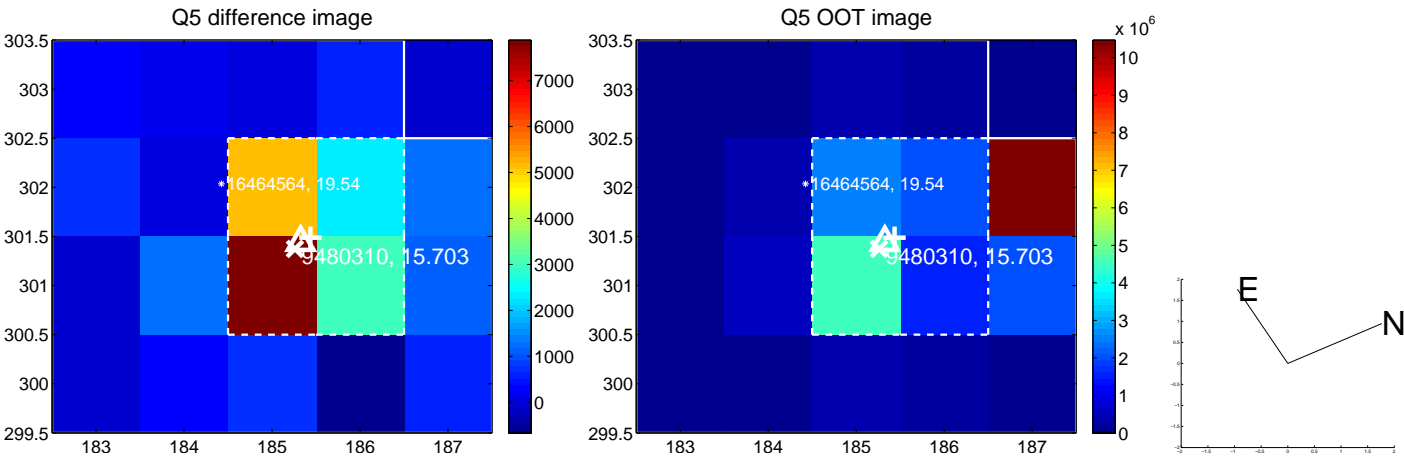
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



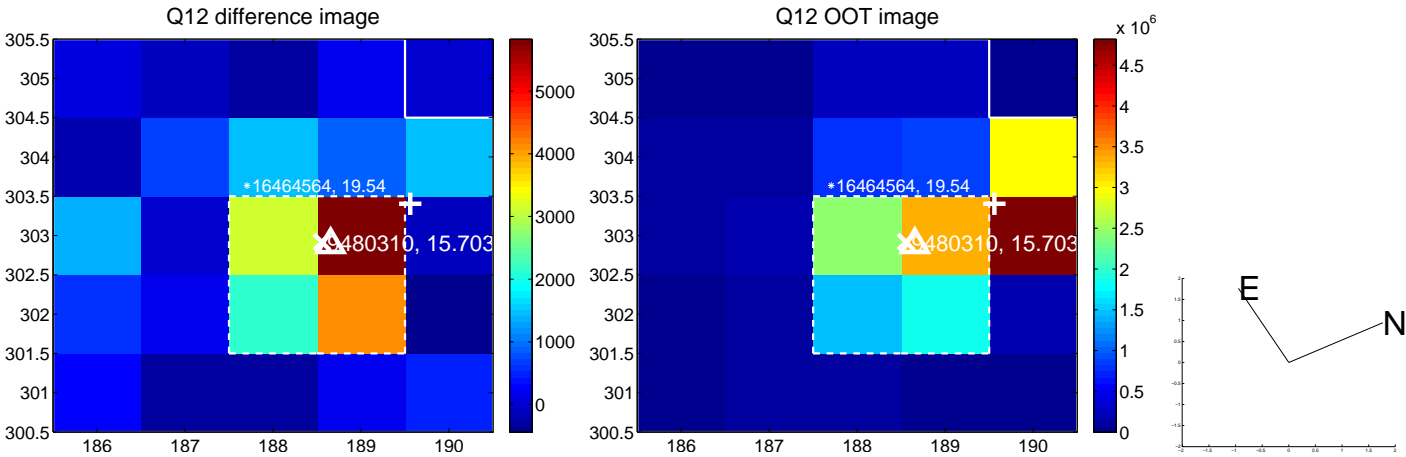
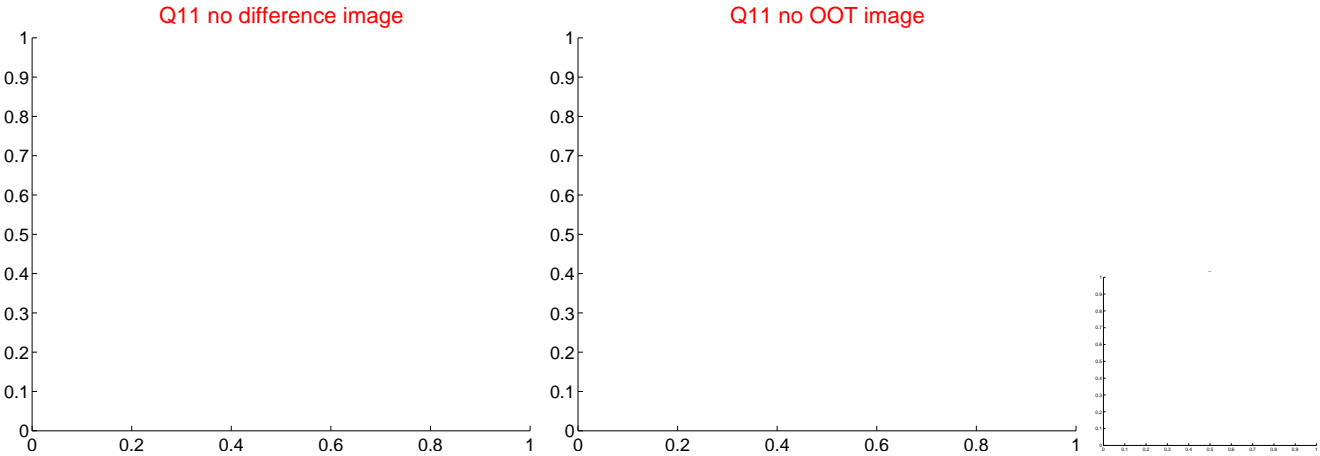
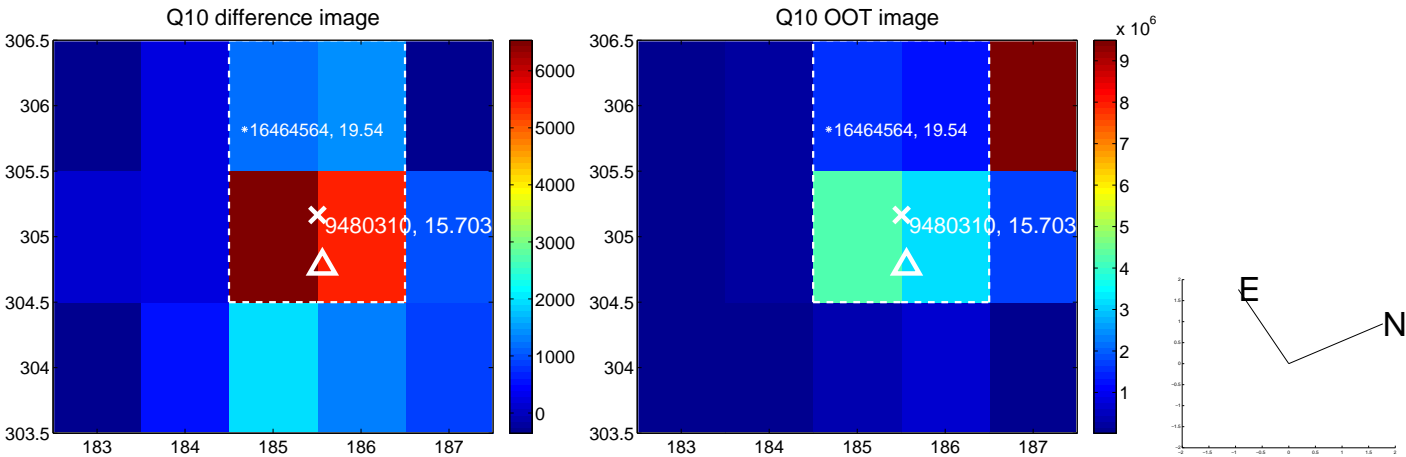
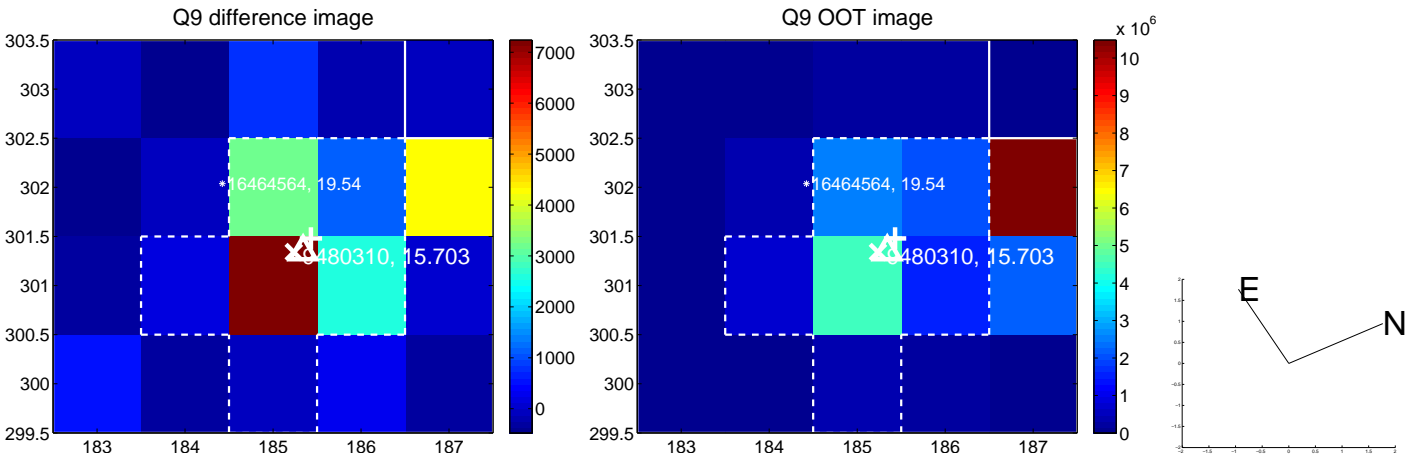
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



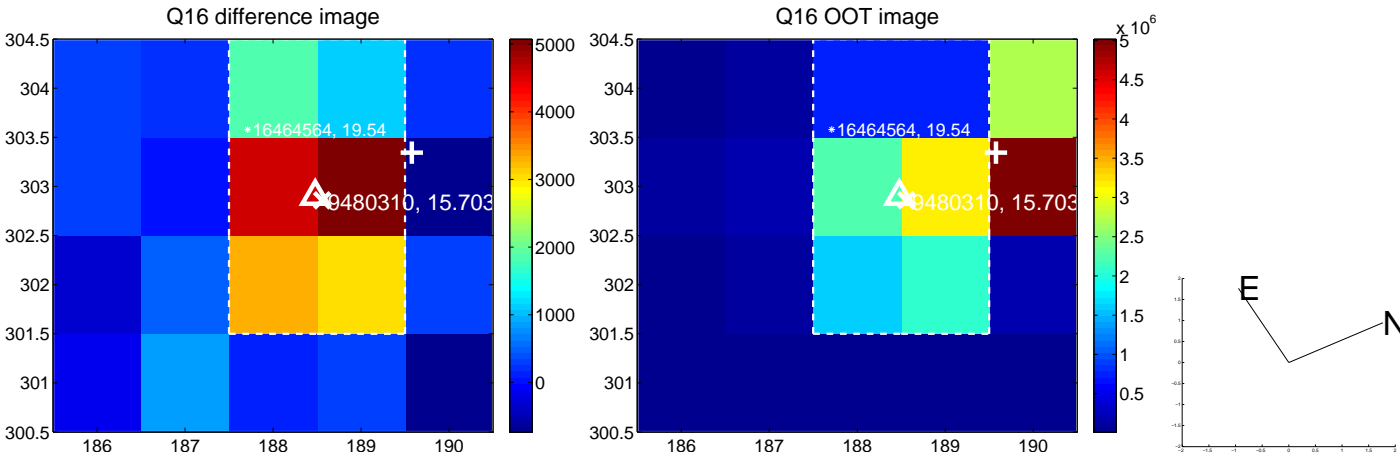
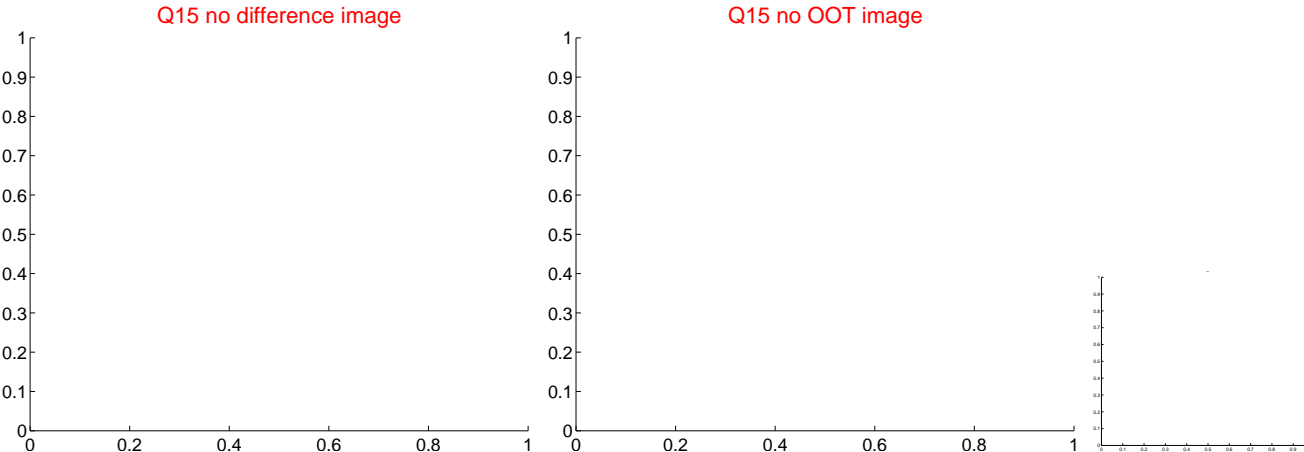
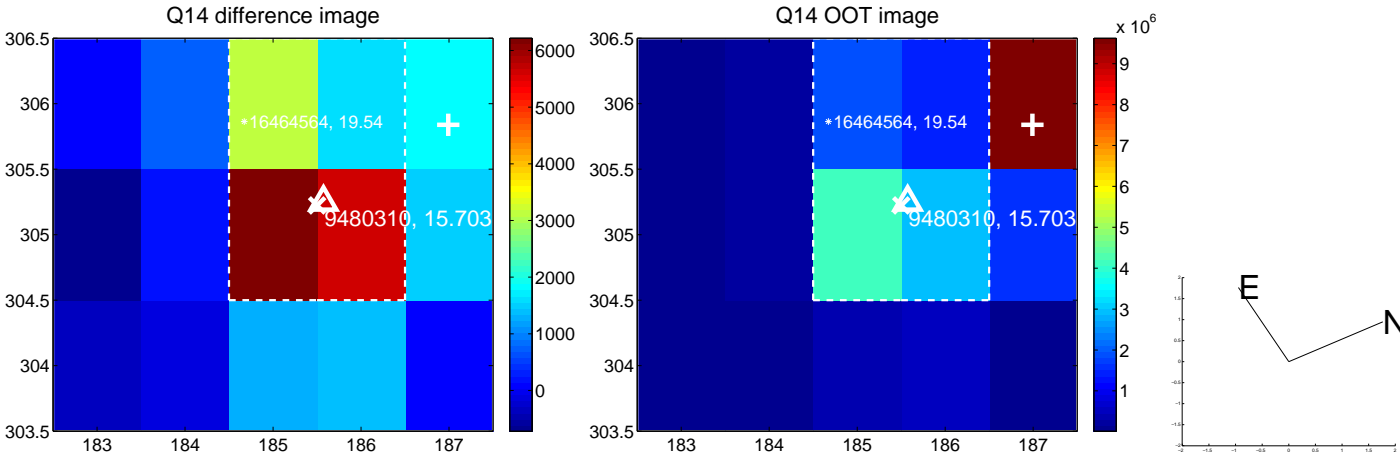
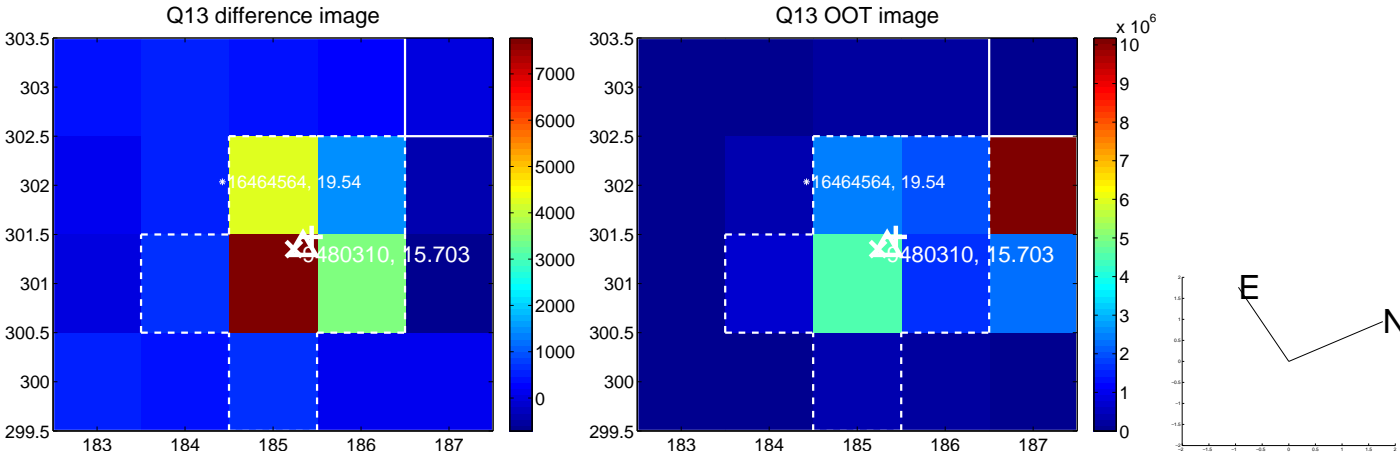
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



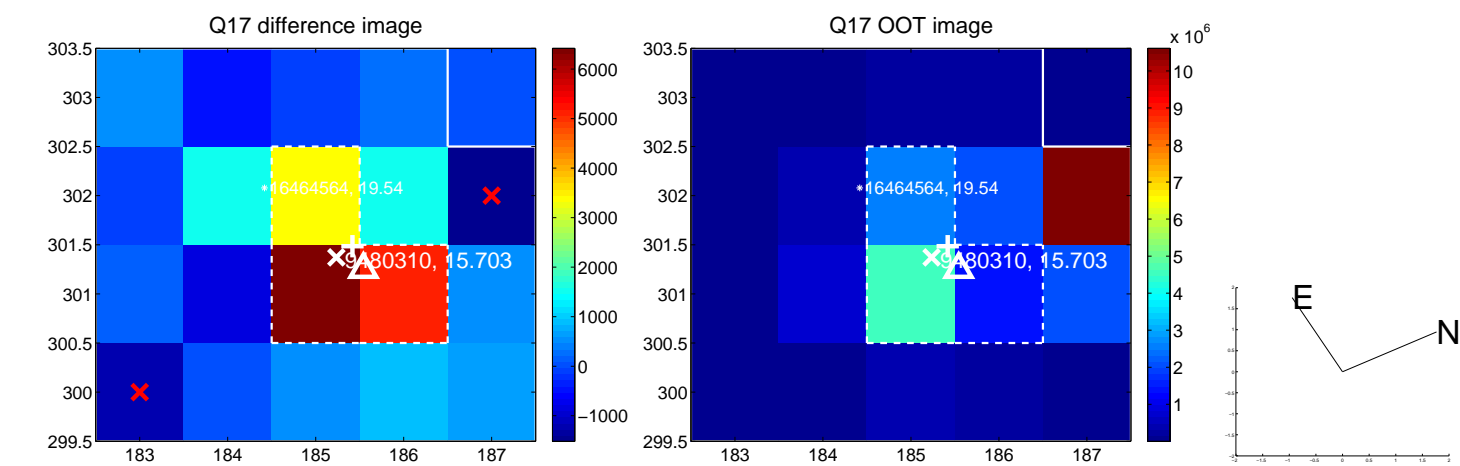
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



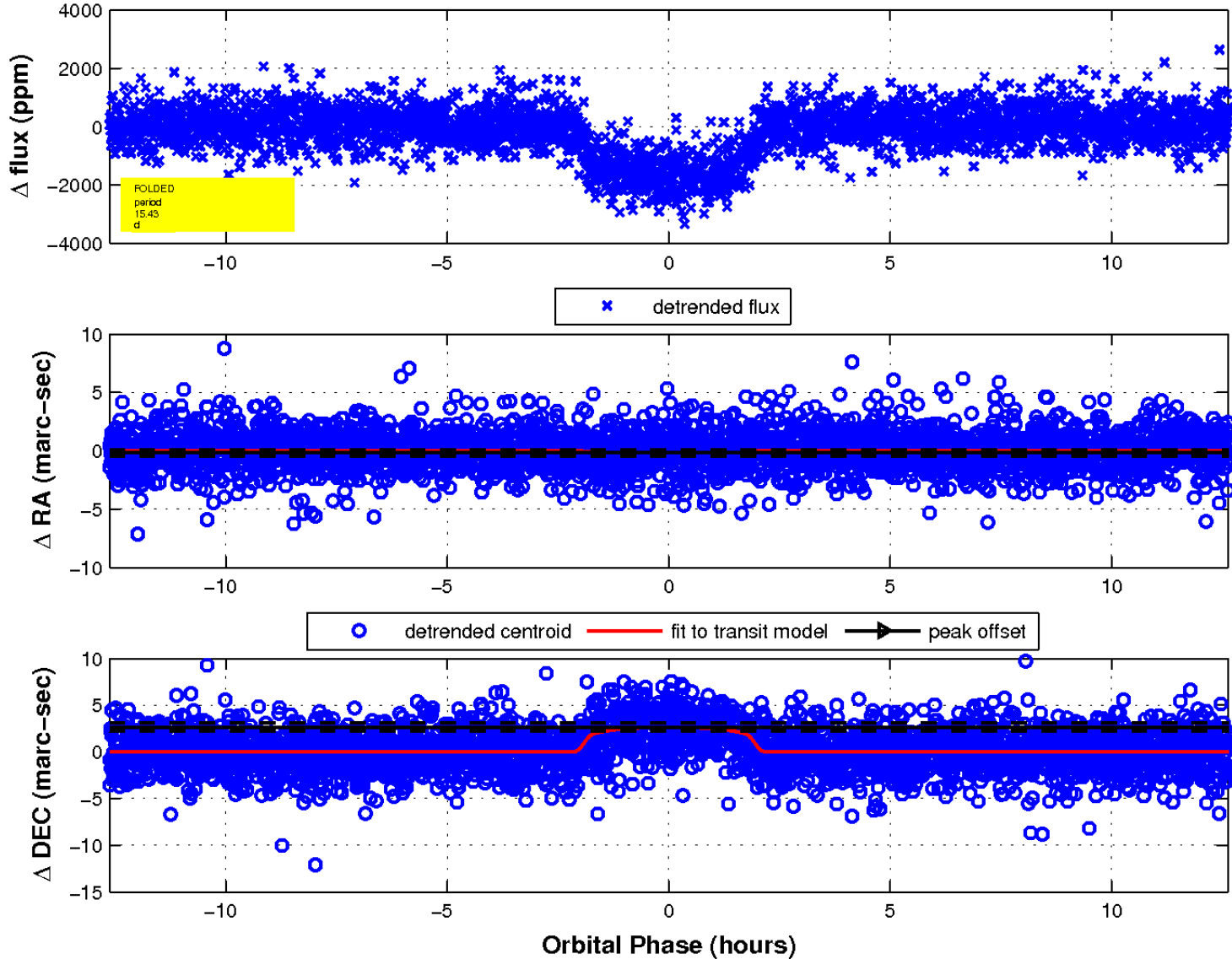
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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



fluxWeightedCentroids, Planet 1 of 1



# UKIRT Image

Declination

