

# KIC 009898017

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009898017-01	OBS	4484.01	2.297939	133.798583	82.5	2.944	11.0	11.9	1.07	6371	1.14	1355.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009898017-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

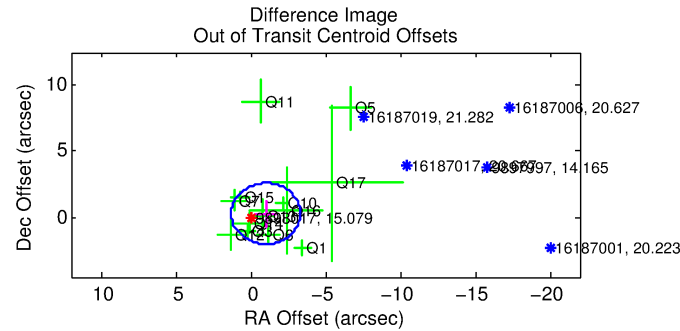
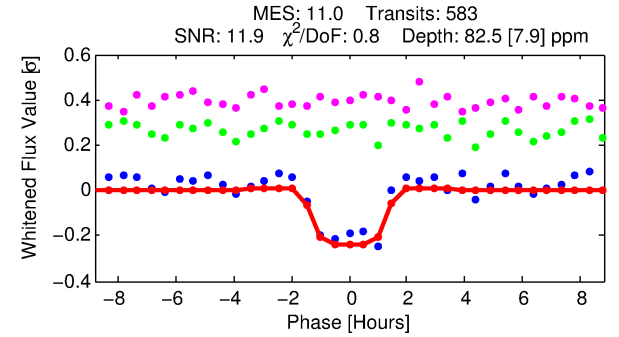
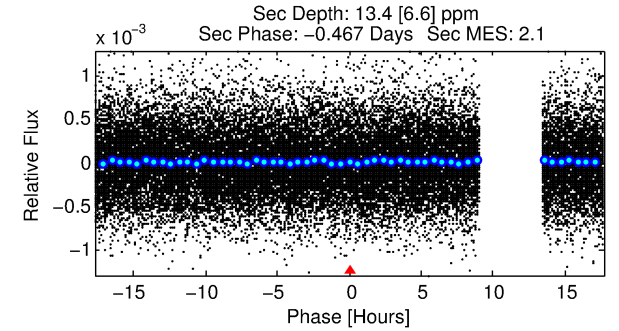
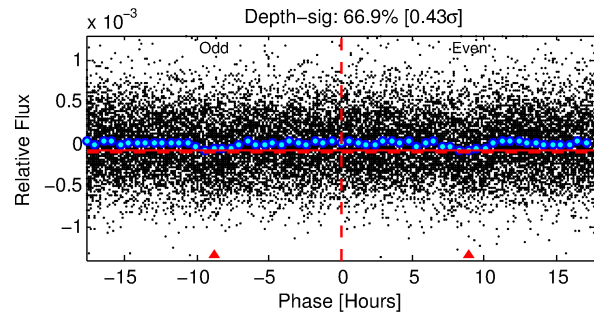
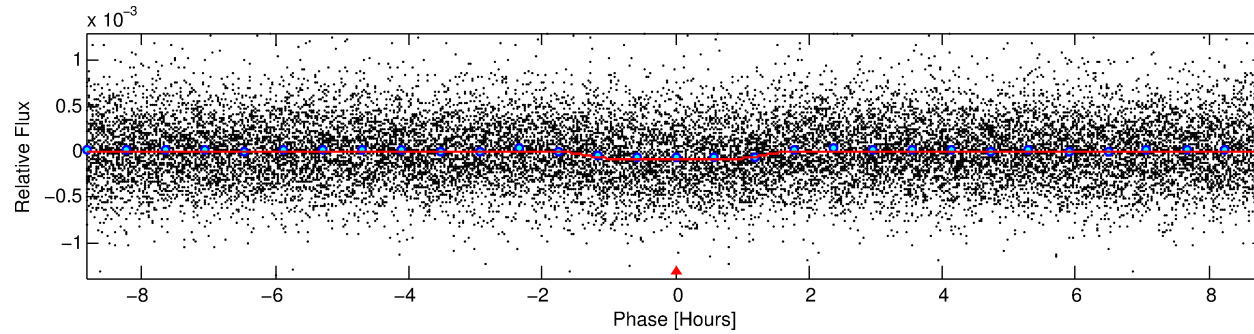
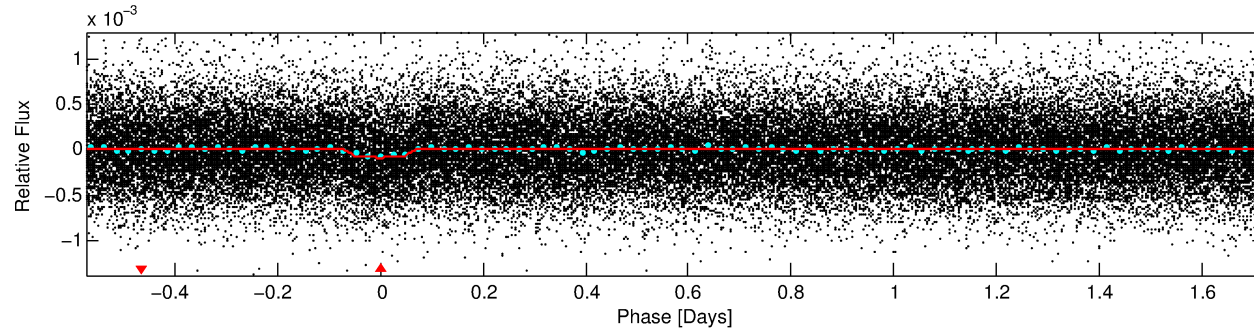
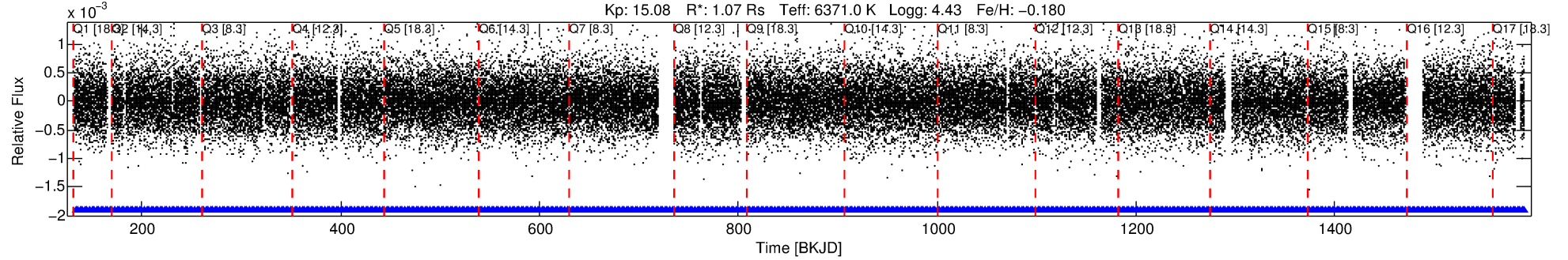
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009898017-01

No Significant Match Found

# DV One-Page Summary

KIC: 9898017 Candidate: 1 of 1 Period: 2.298 d  
KOI: K04484.01 Corr: 0.985



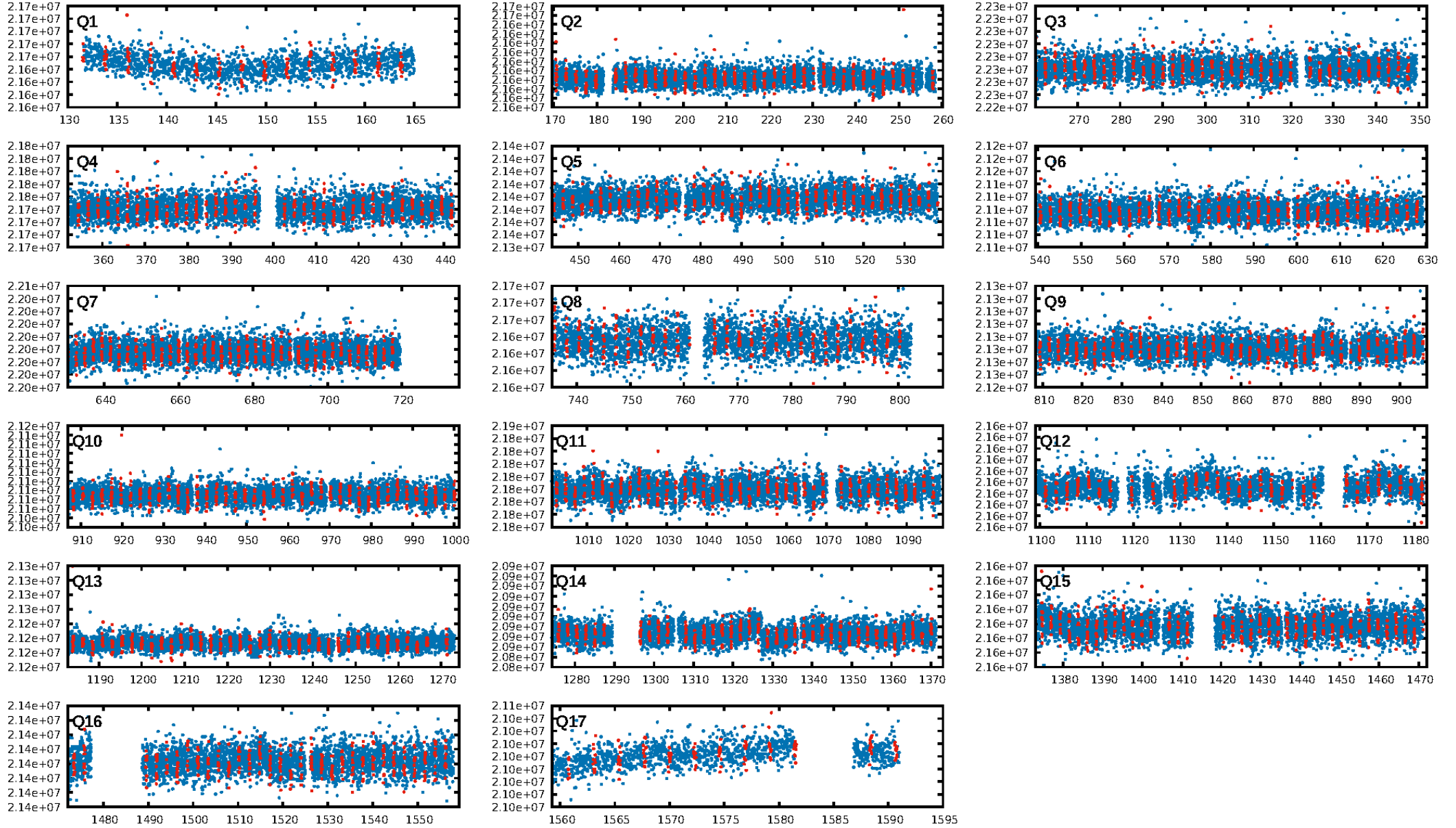
## DV Fit Results:

Period = 2.29794 [0.00002] d  
Epoch = 133.7986 [0.0037] BKJD  
Rp/R\* = 0.0097 [0.0045]  
a/R\* = 2.95 [6.82]  
b = 0.89 [0.59]  
Seff = 1355.41 [514.59]  
Teff = 1547 [147] K  
Rp = 1.14 [0.62] Re  
a = 0.0354 [0.0087] AU  
Ag = 7.15 [7.98] [0.77 $\sigma$ ]  
Teffp = 3912 [1042] K [2.25 $\sigma$ ]

## DV Diagnostic Results:

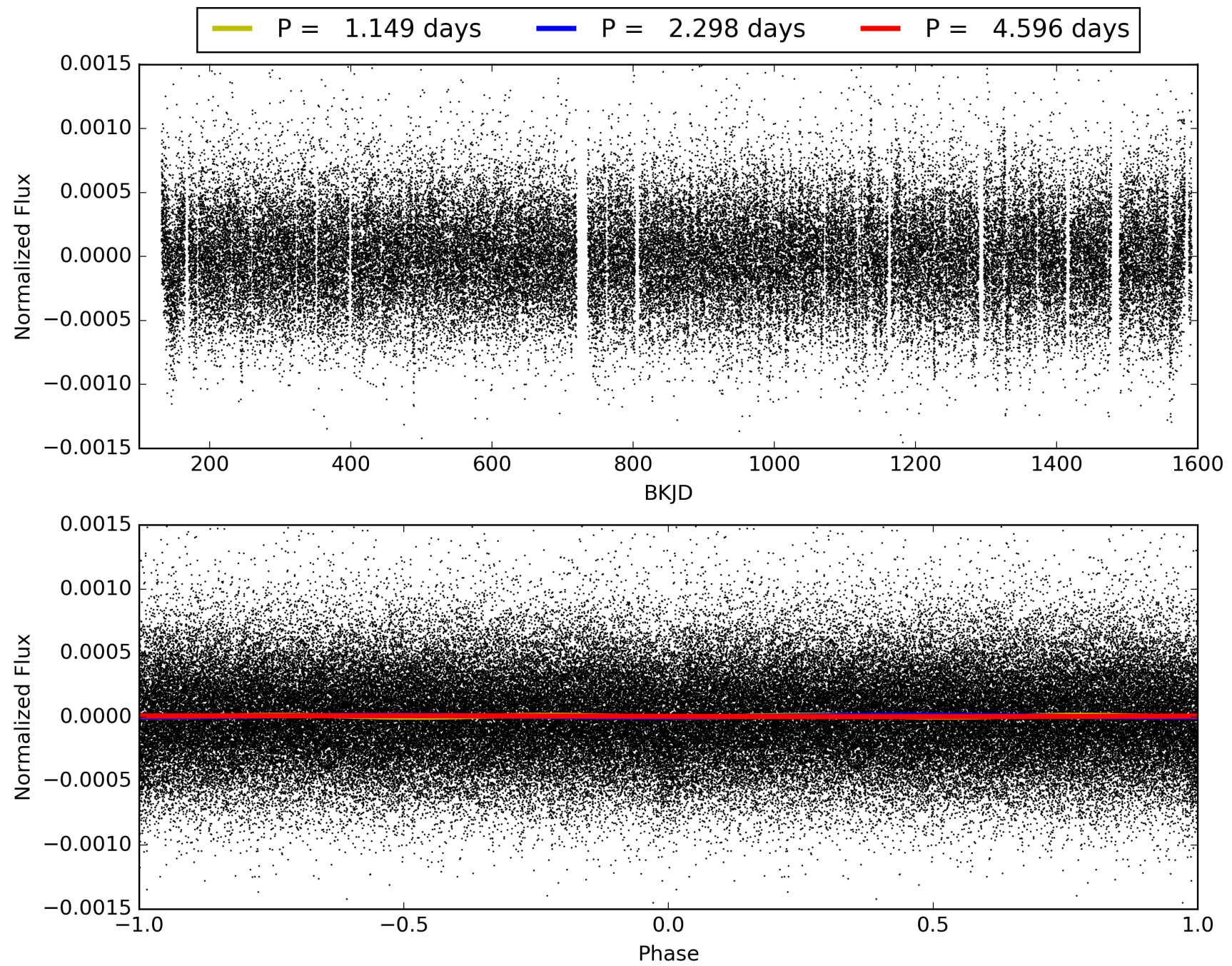
ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.42e-27  
RollingBand-fgt: 1.00 [556/556]  
GhostDiagnostic-chr: -15.75  
Centroid-sig: 3.6%  
Centroid-so: 2.135 arcsec [1.58 $\sigma$ ]  
OotOffset-rm: 1.043 arcsec [1.36 $\sigma$ ]  
KicOffset-rm: 1.080 arcsec [1.26 $\sigma$ ]  
OotOffset-st: 3/4/2/4 [13]  
KicOffset-st: 3/4/2/4 [13]  
DiffImageQuality-fgm: 0.54 [7/13]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 009898017-01, PDC Light Curves



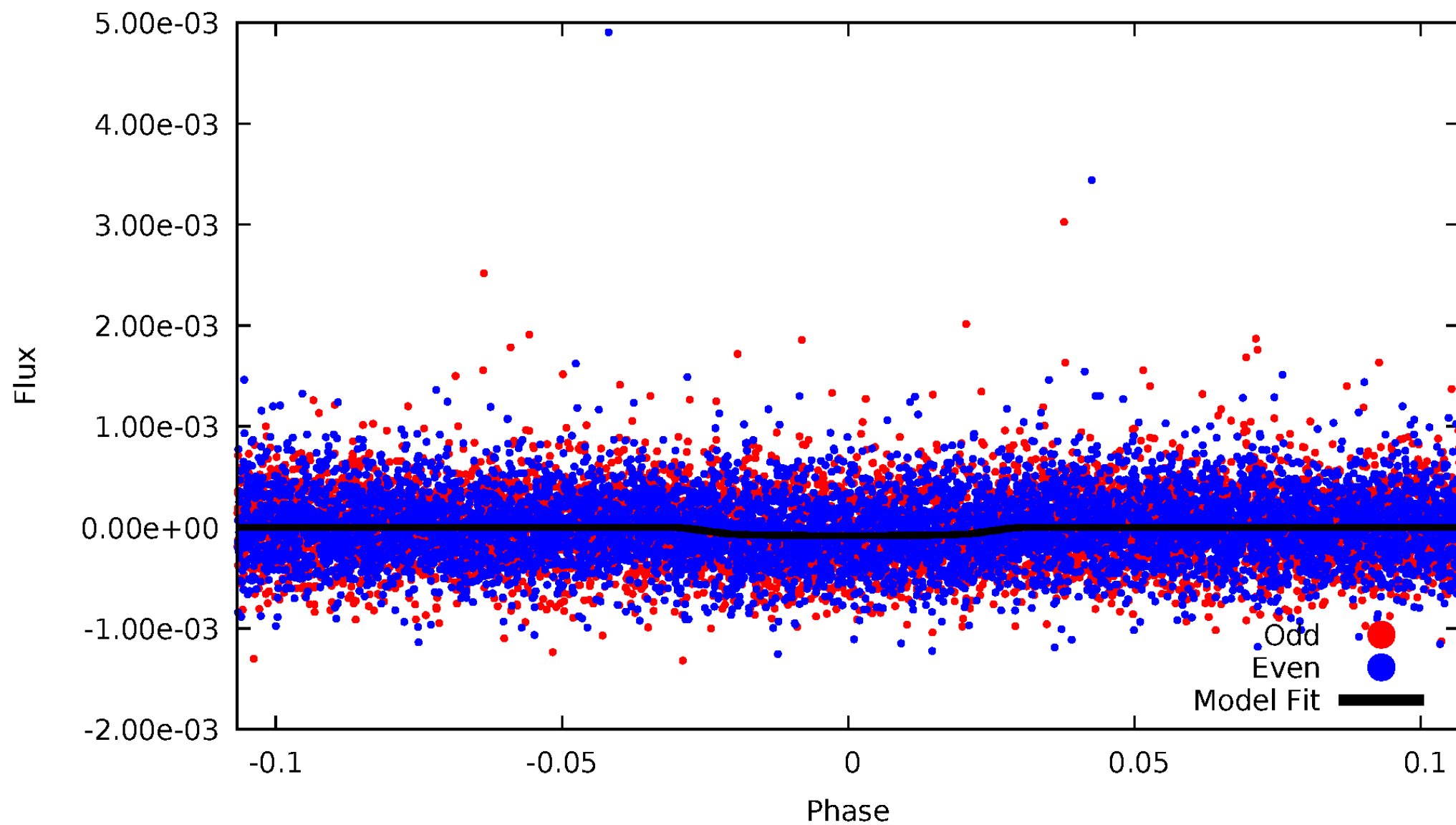


TCE 009898017-01



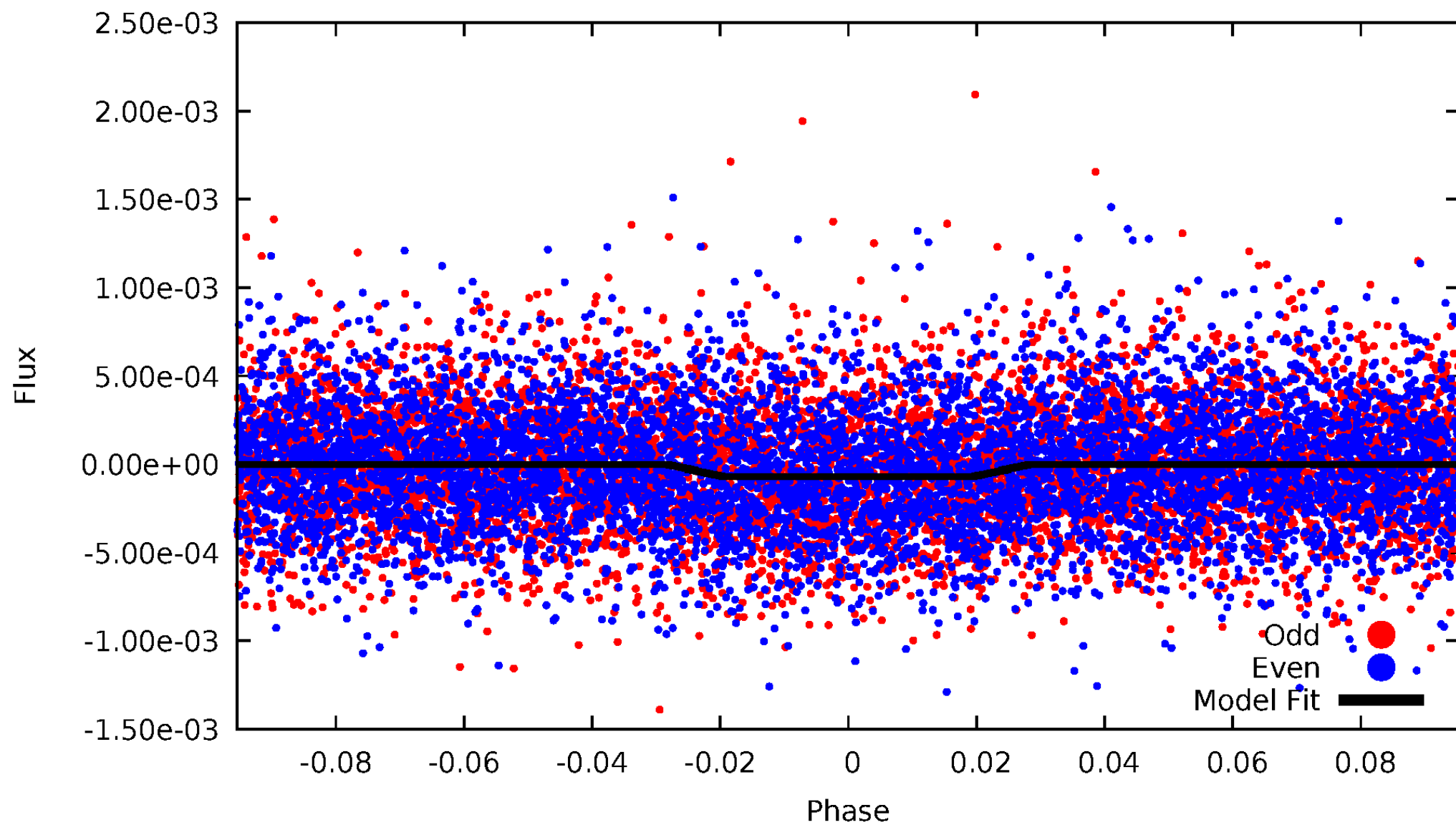
# DV Odd/Even

TCE 009898017-01



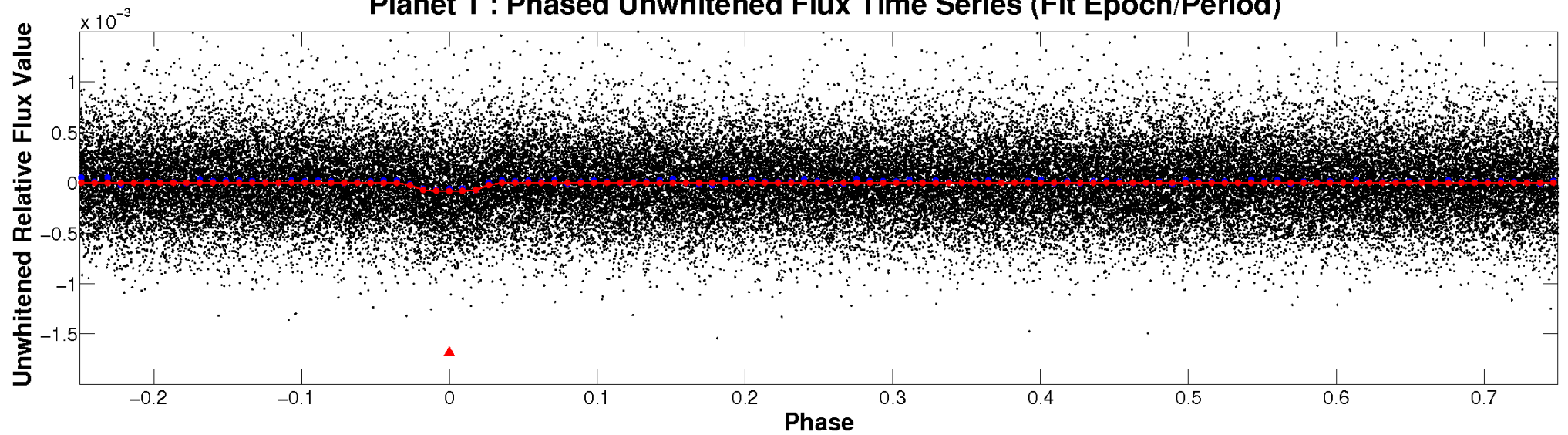
# ALT Odd/Even

TCE 009898017-01

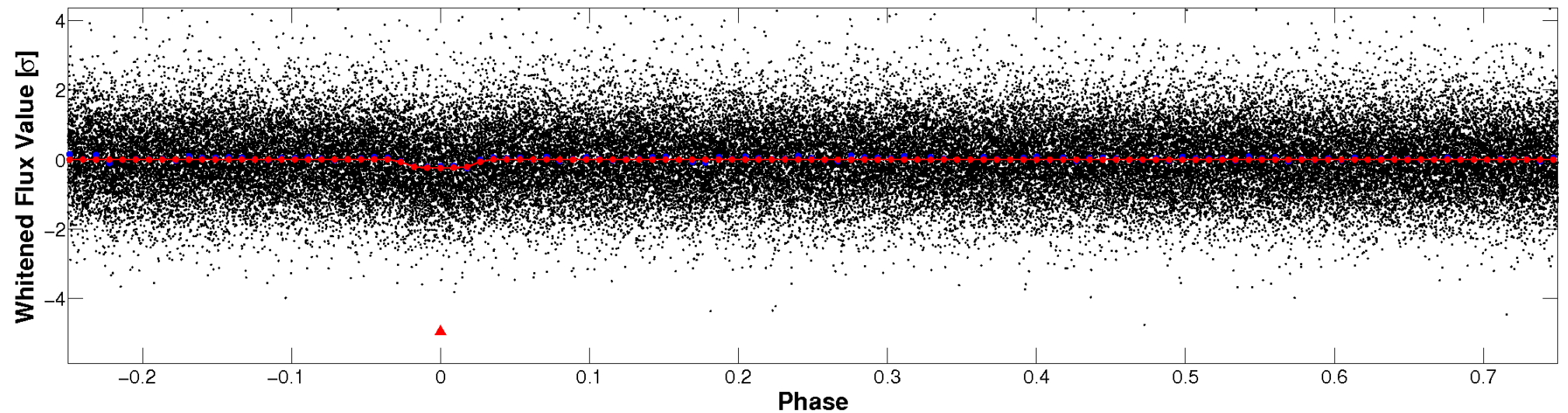


# Non-Whitened Vs. Whitened Light Curve

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



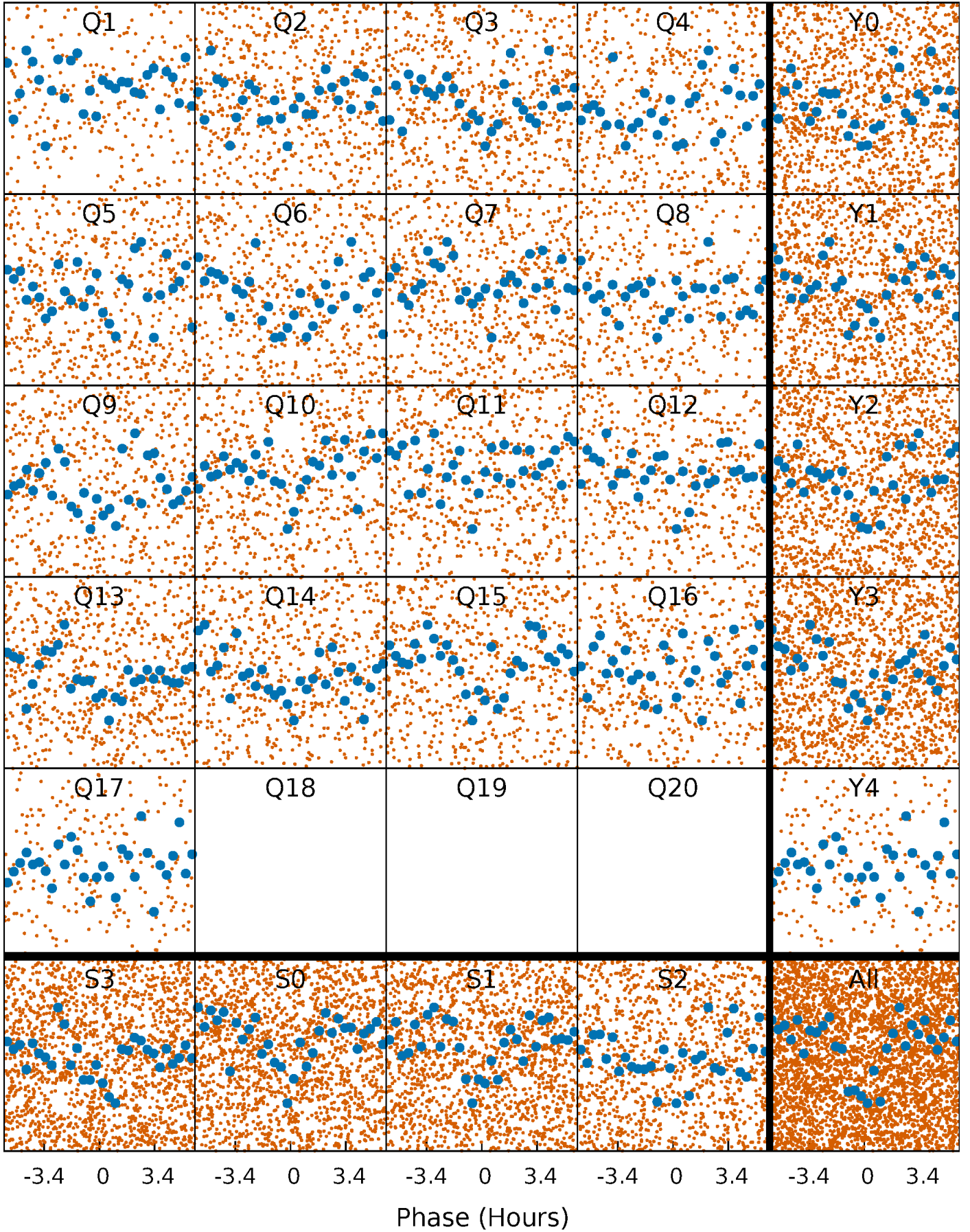
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

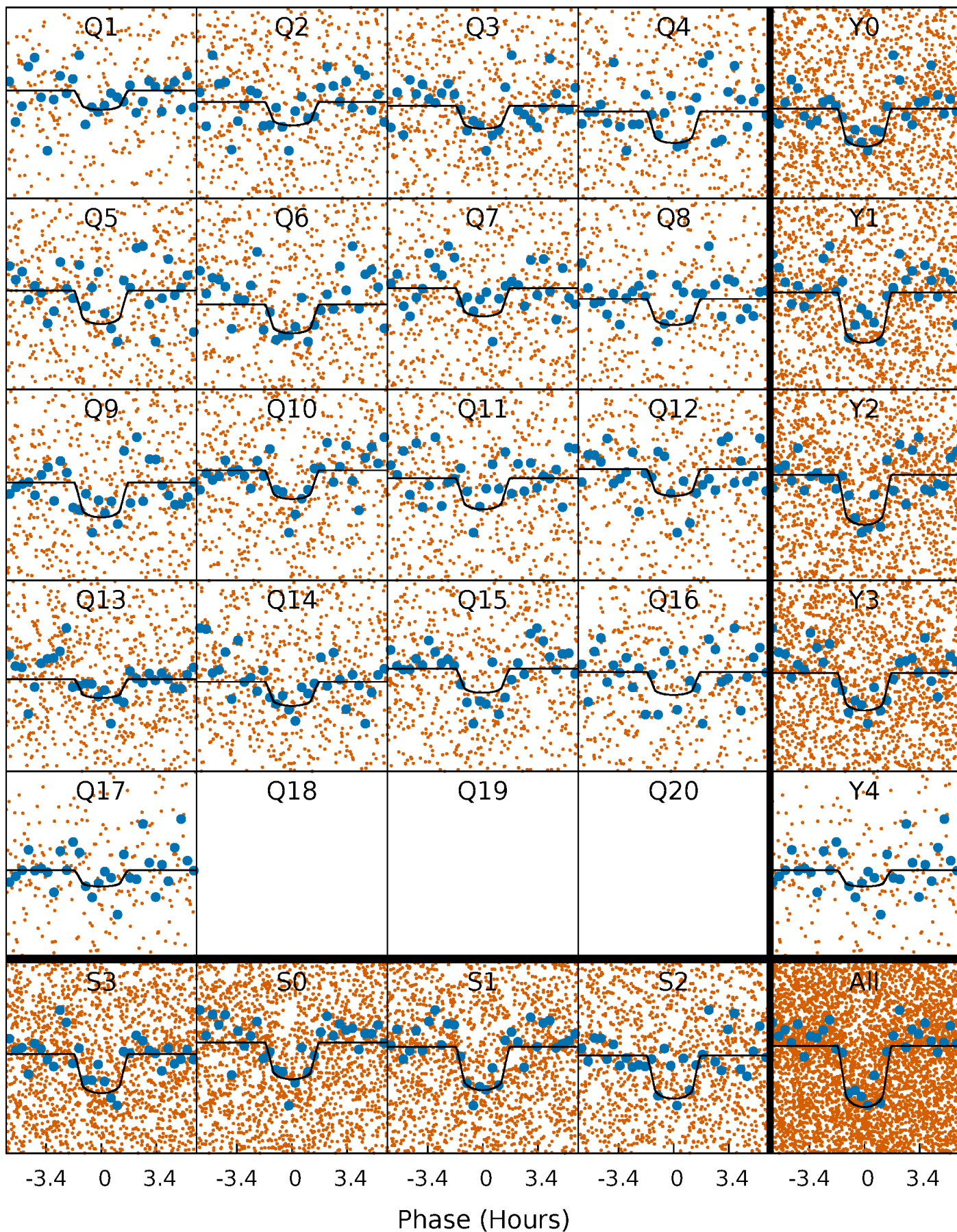
TCE 009898017-01 P= 2.297939 Days  $T_0=133.798583$  (BKJD)





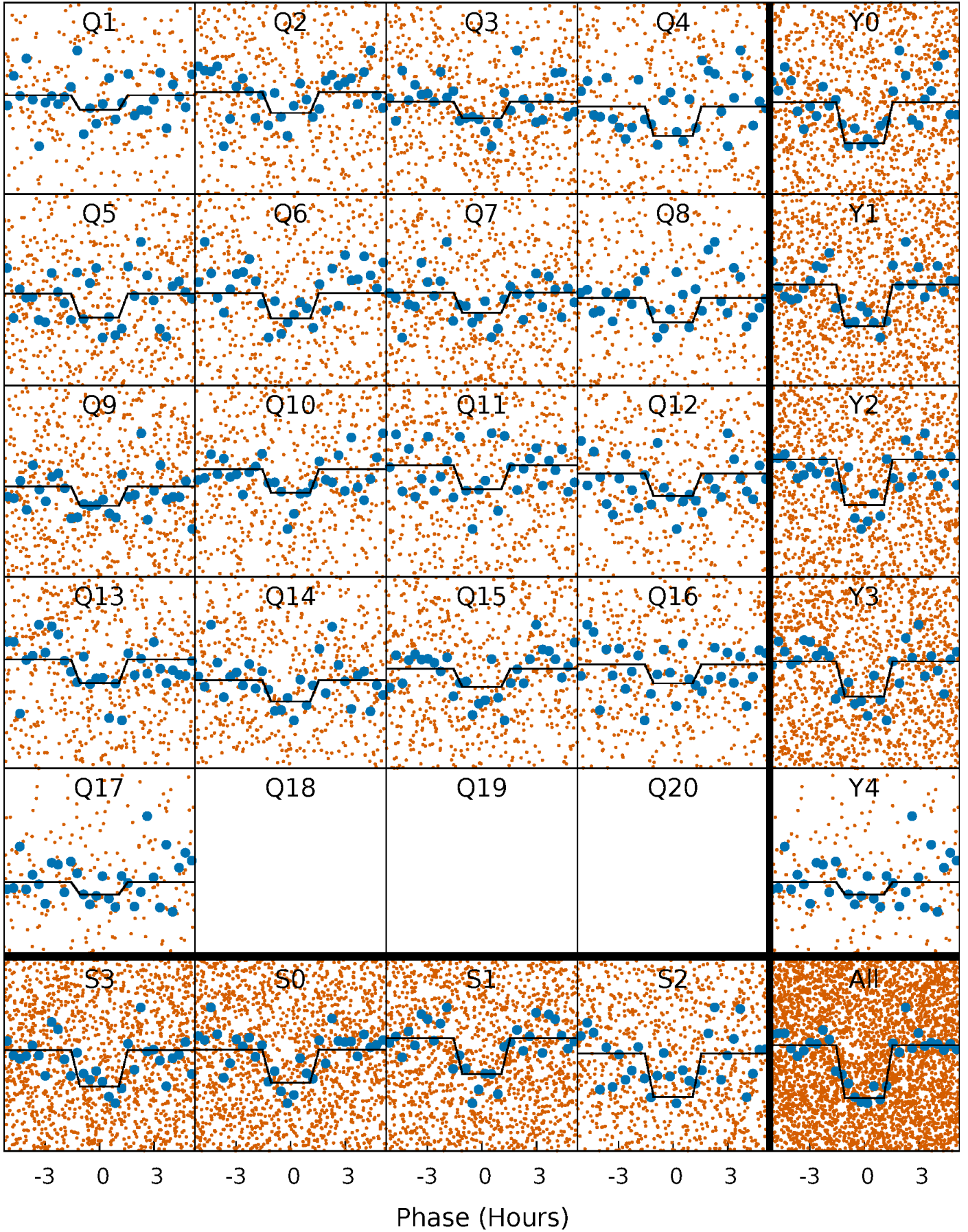
# DV Quarter-Phased Transit Curves

TCE 009898017-01   P= 2.297939 Days    $T_0=133.798583$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

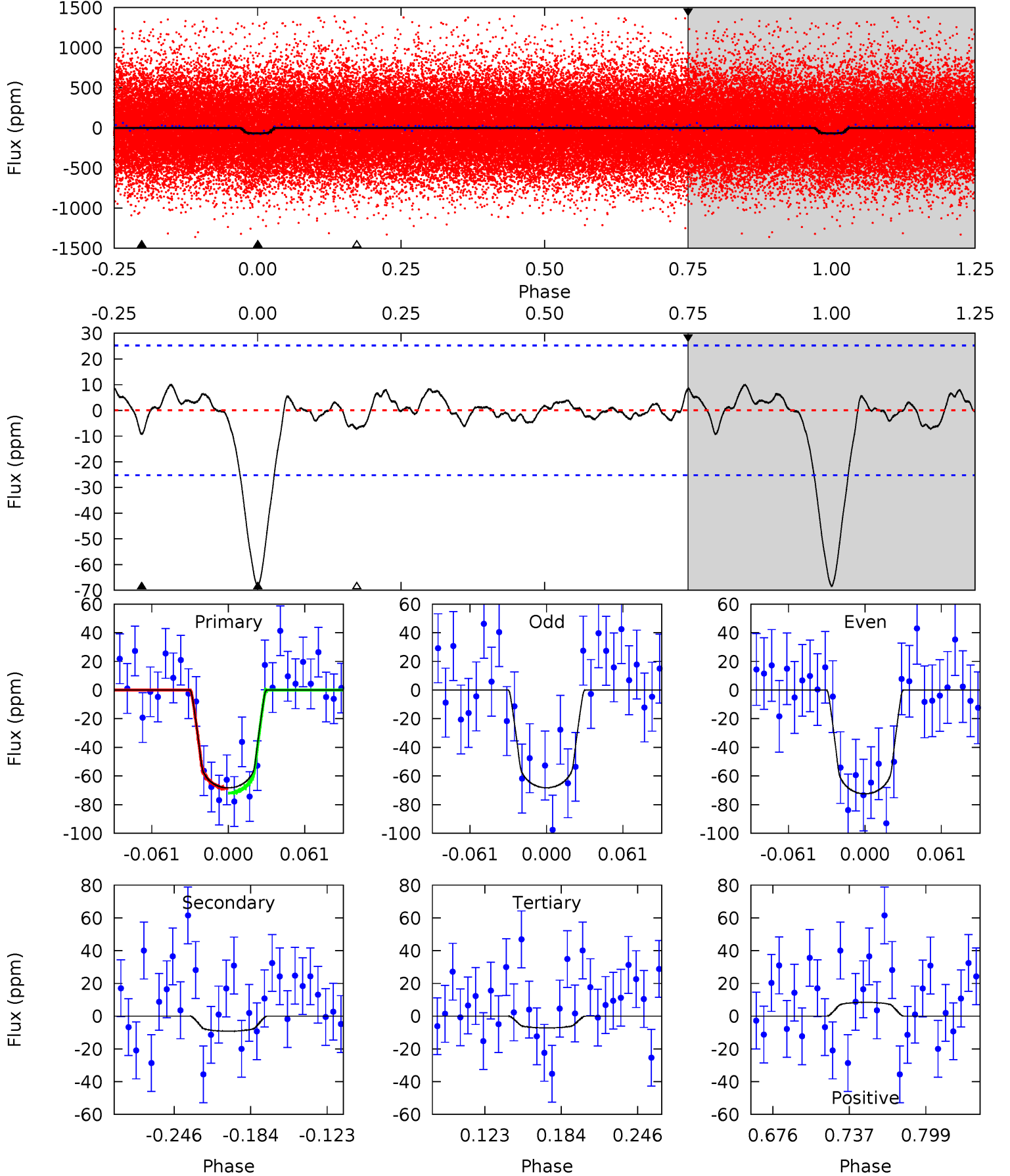
TCE 009898017-01 P= 2.297947 Days  $T_0=133.796181$  (BKJD)



# DV Model-Shift Uniqueness Test

009898017-01, P = 2.297939 Days, E = 131.500644 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
12.6	1.70	1.33	1.56	4.67	1.87	0.62	11.3	11.1	0.37	0.14	0.39	0.97	0.13	0.31

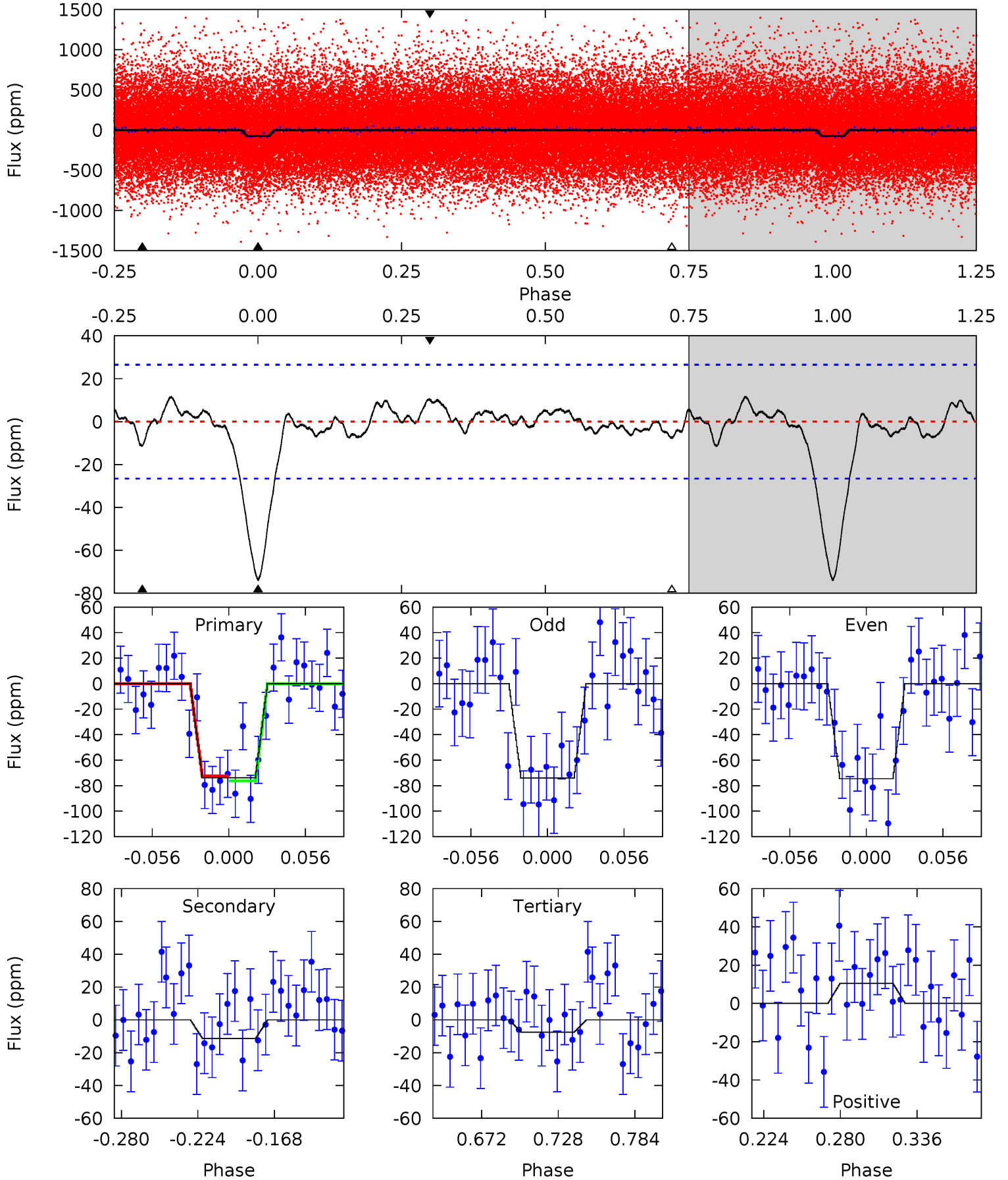




# Alt Model-Shift Uniqueness Test

009898017-01, P = 2.297947 Days, E = 131.498234 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
13.1	2.01	1.34	1.85	4.68	1.91	0.76	11.7	11.2	0.67	0.16	0.04	0.95	0.14	0.35





### Stellar Parameters For KIC 009898017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6371^{+169}_{-207}$	$4.426^{+0.065}_{-0.195}$	$-0.180^{+0.250}_{-0.300}$	$1.072^{+0.312}_{-0.134}$	$1.117^{+0.154}_{-0.154}$	$1.277^{+0.351}_{-0.663}$
	+3%/-3%	+1%/-4%	+139%/-167%	+29%/-12%	+14%/-14%	+28%/-52%
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 009898017-01 / KOI 4484.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-9 \pm 5$	$1.19^{+0.59}_{-0.55}$	$2195^{+143}_{-107}$	$3748^{+1096}_{-755}$	$3.786^{+10.362}_{-2.618}$
Alt.	$-11 \pm 6$	$1.03^{+0.56}_{-0.46}$	$2199^{+146}_{-112}$	$4167^{+1270}_{-807}$	$6.853^{+17.334}_{-4.771}$

$T_{max}$  = 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

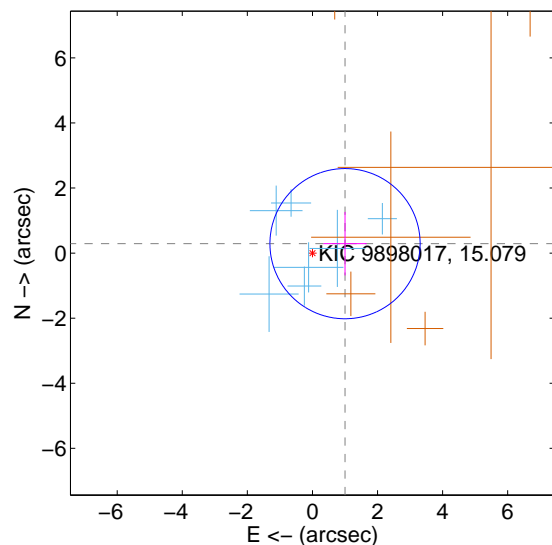
Supplemental centroid analysis for 009898017-01. Kepler magnitude: 15.08. Transit SNR 11.90

There are 7 quarters with good PRF difference image offsets

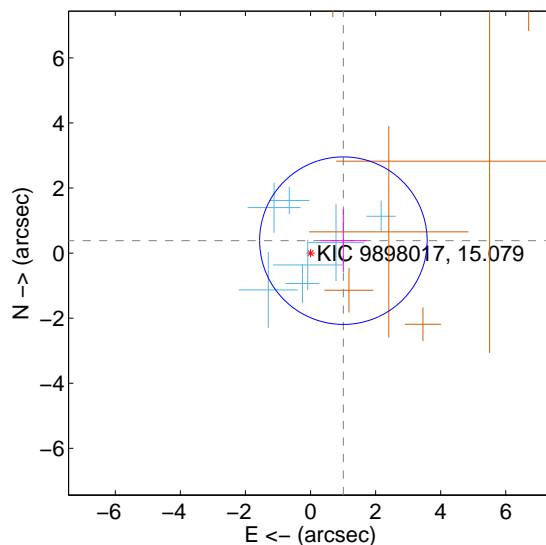
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.043 \pm 0.769$	1.36	$-1.001 \pm 0.664$	$0.290 \pm 0.975$
PRF-fit source offset from KIC position	$1.080 \pm 0.858$	1.26	$-1.010 \pm 0.696$	$0.382 \pm 0.958$
photometric centroid source offset	$2.13 \pm 1.35$	1.58	$-0.33 \pm 1.14$	$2.11 \pm 1.36$

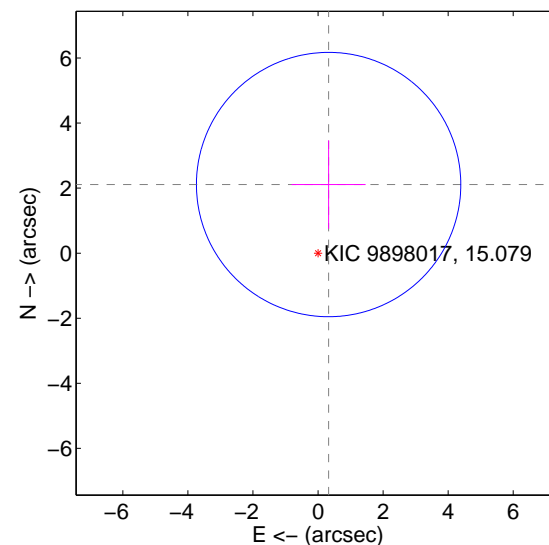
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

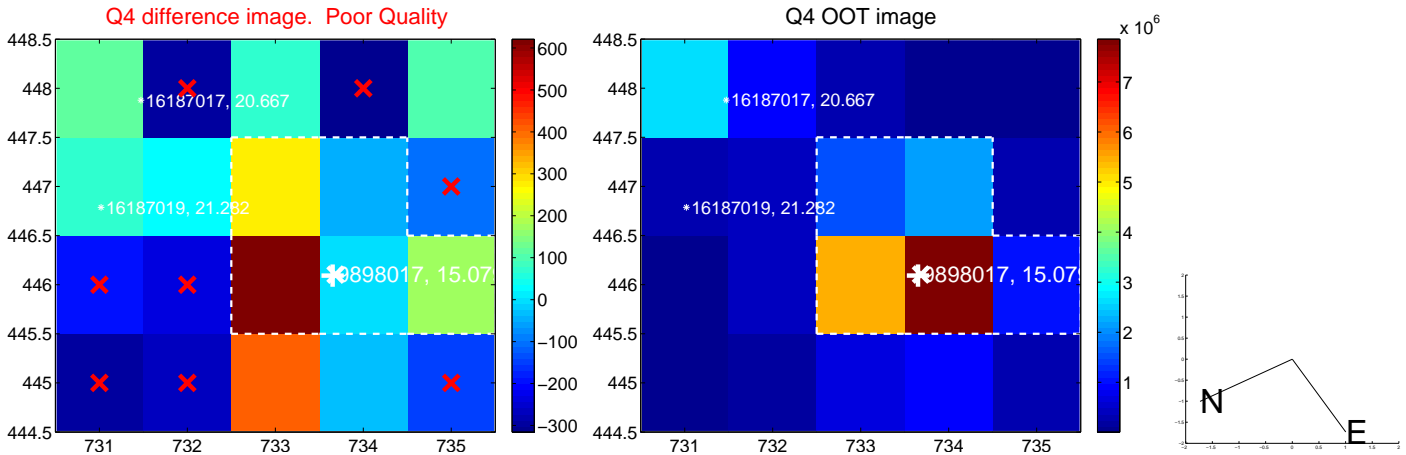
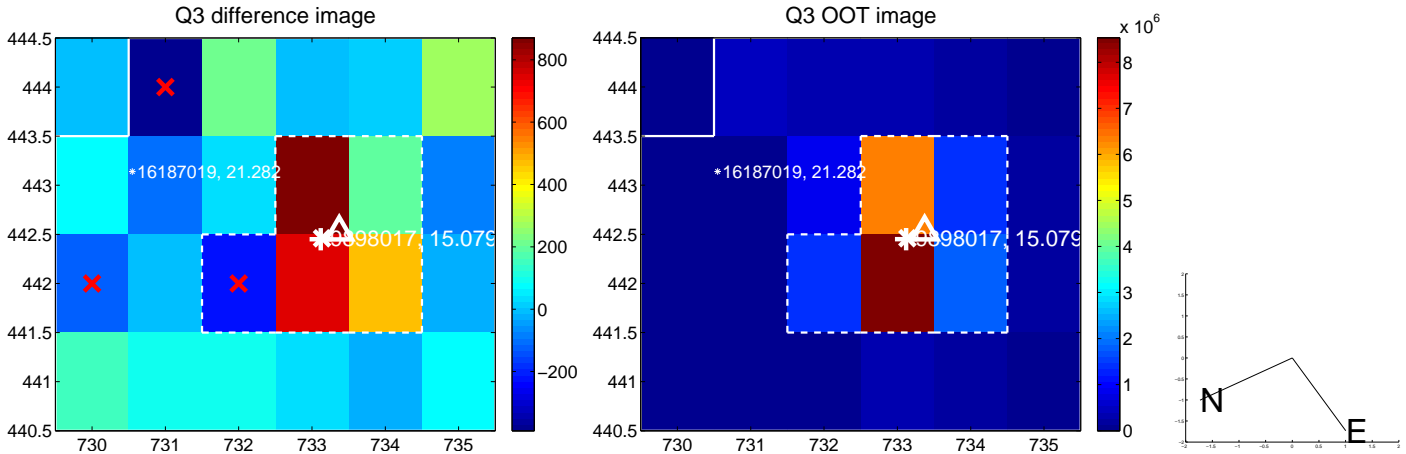
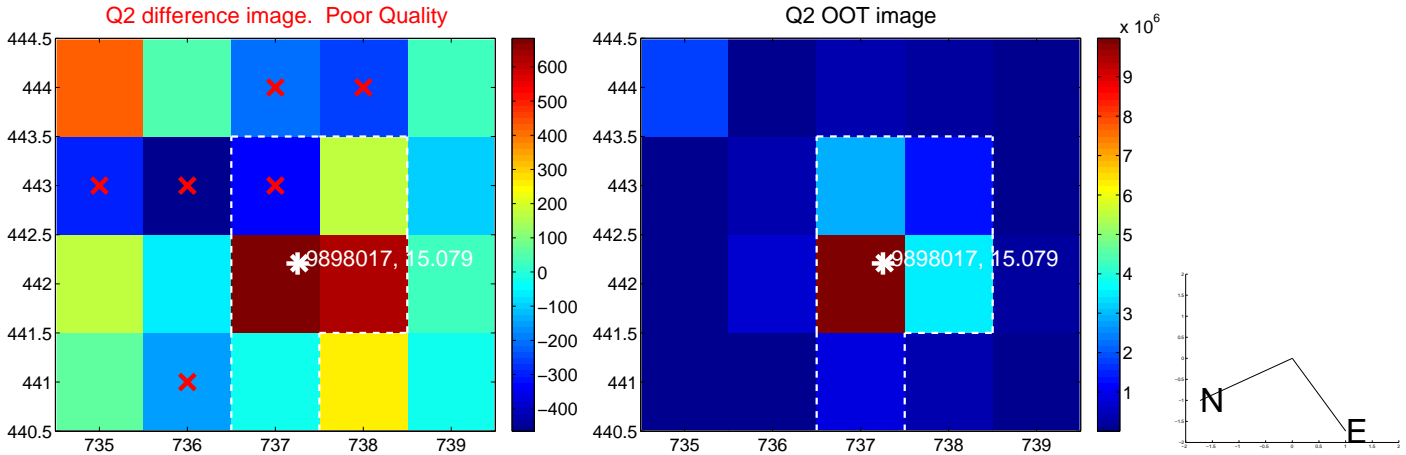
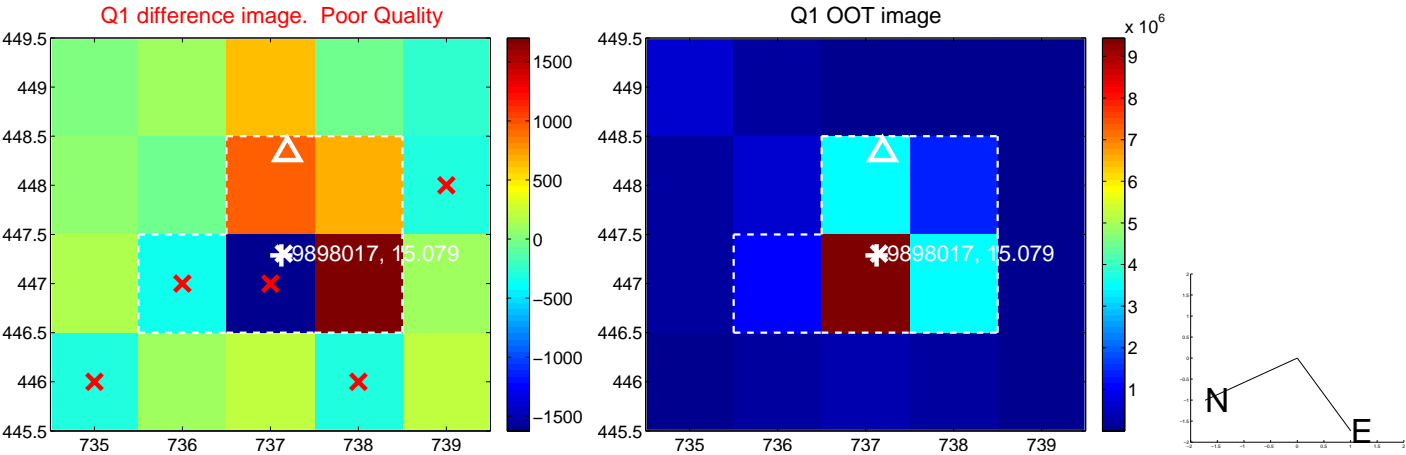


offset from photometric centroids

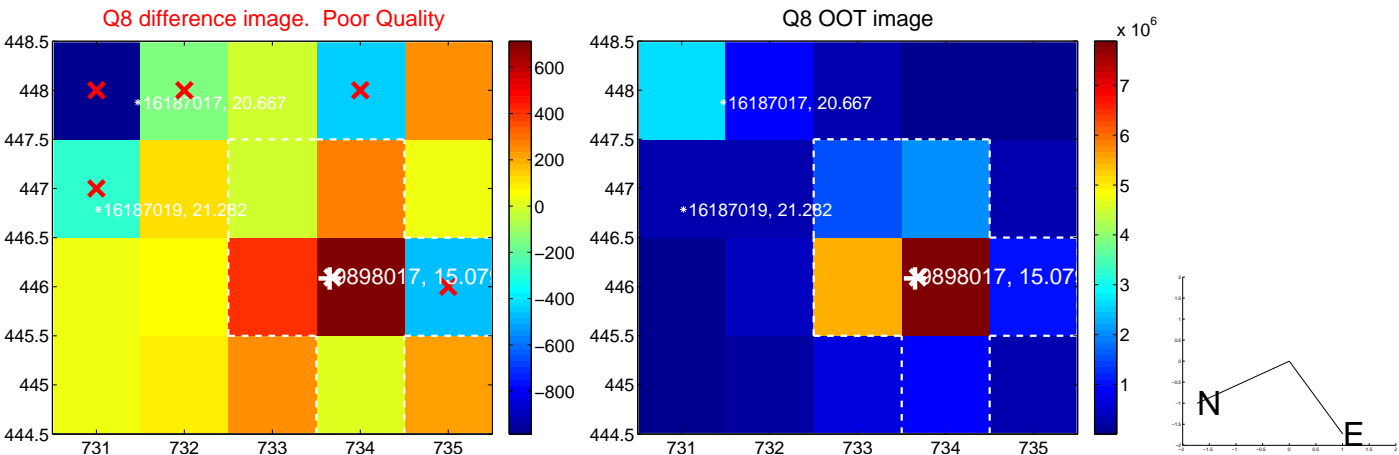
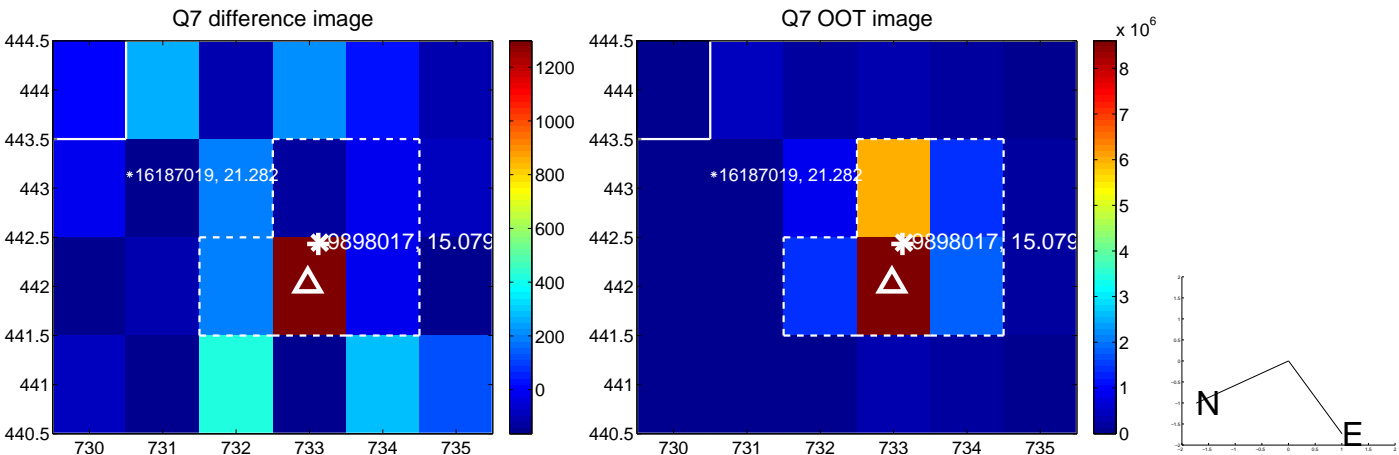
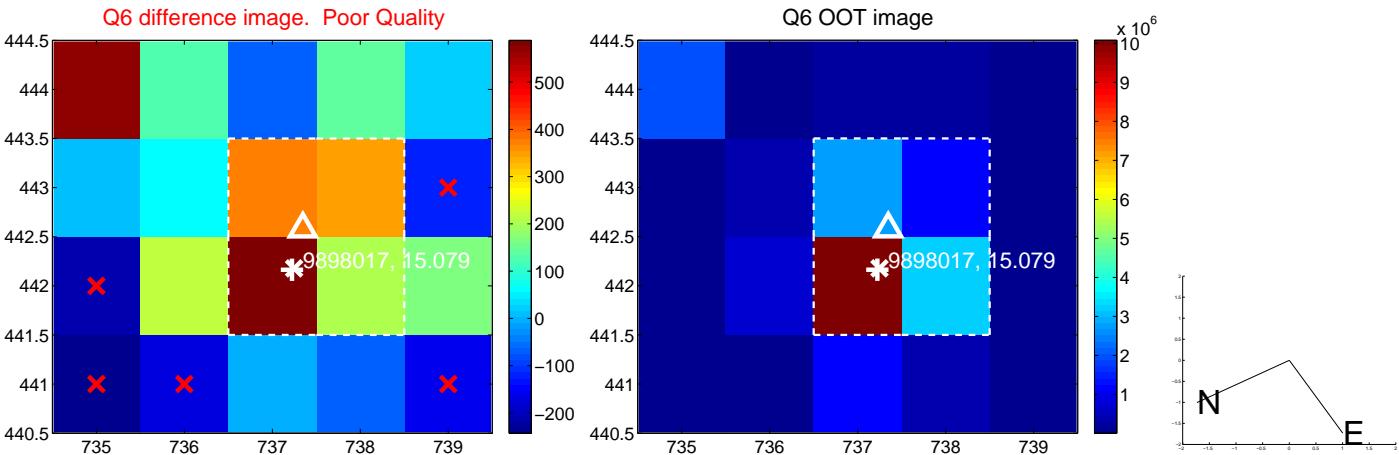
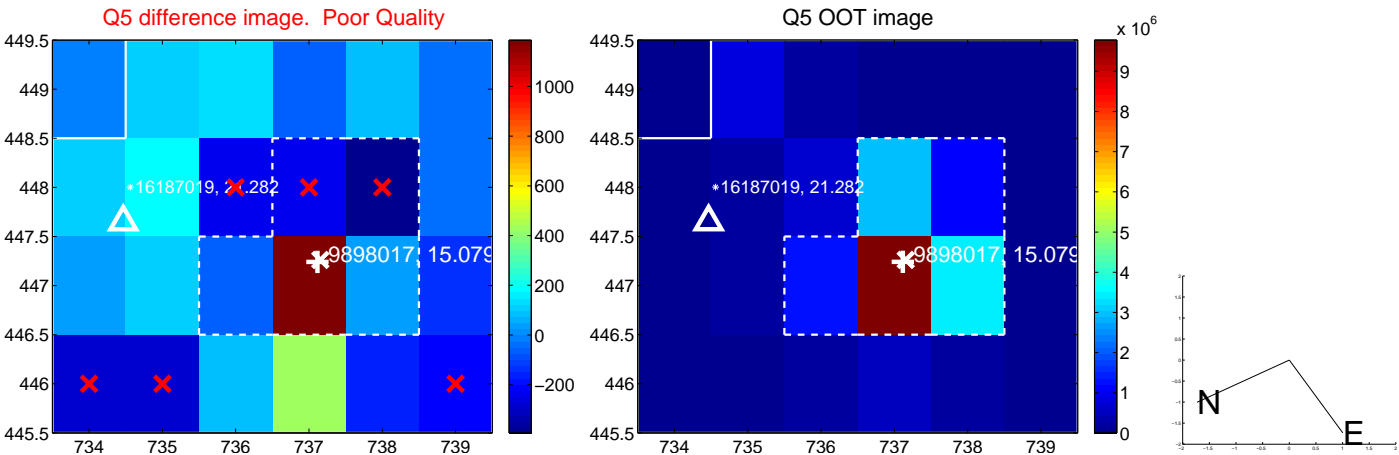


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

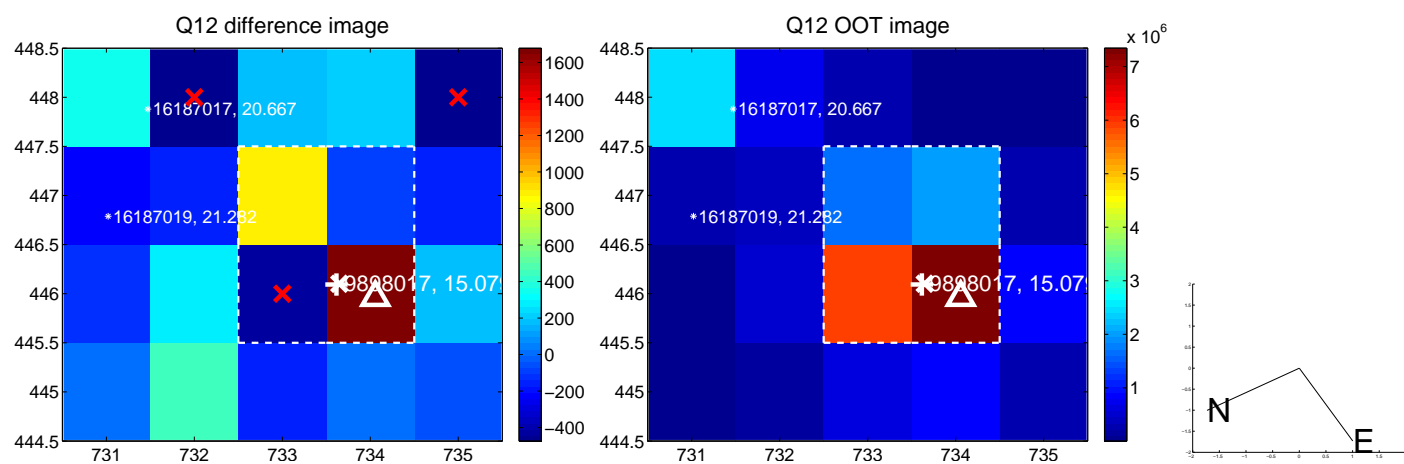
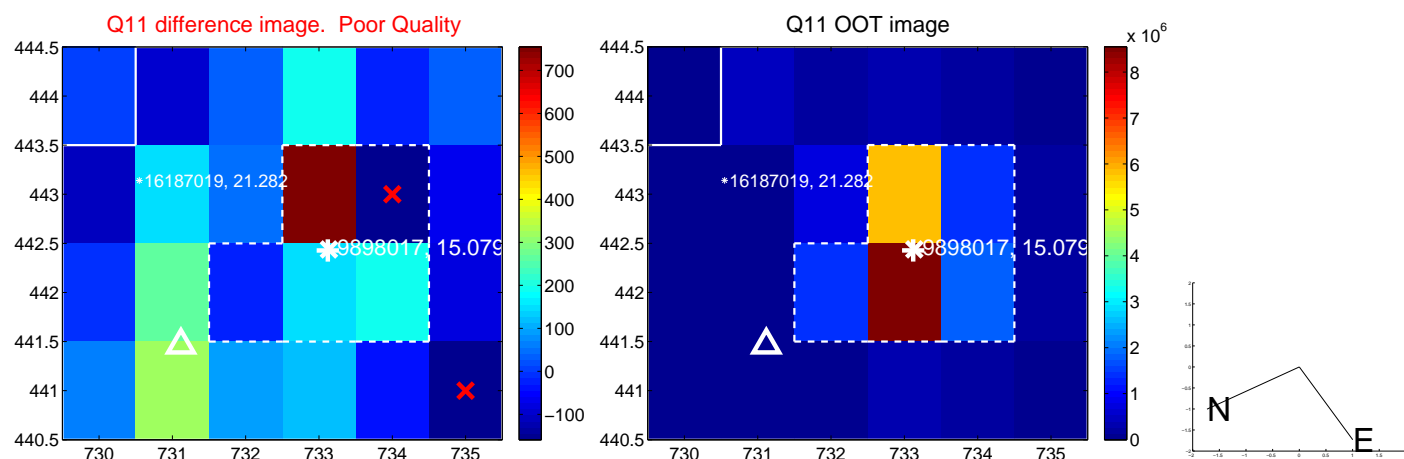
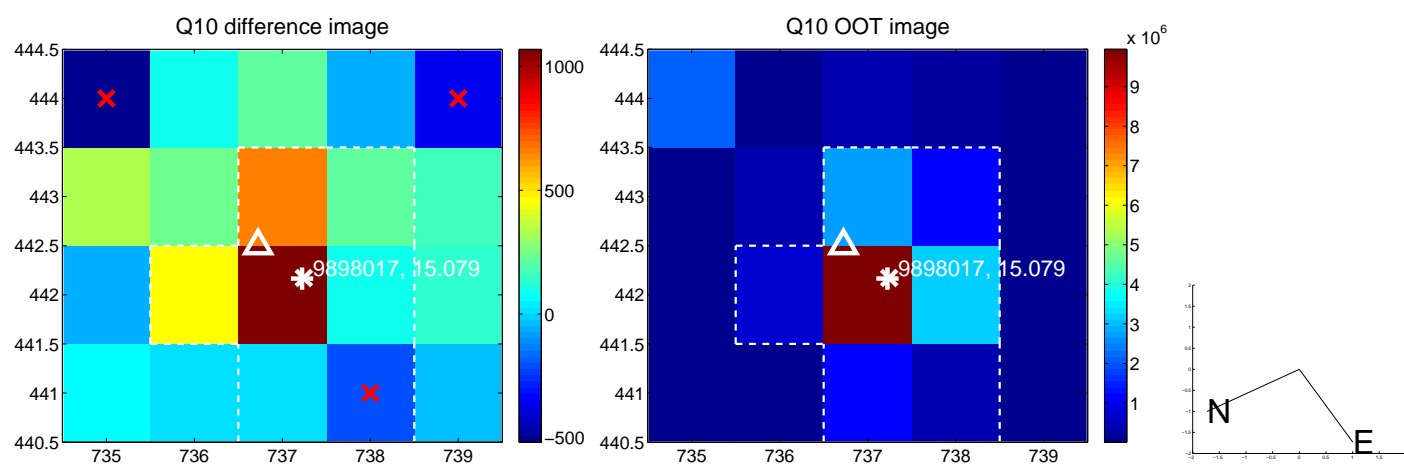
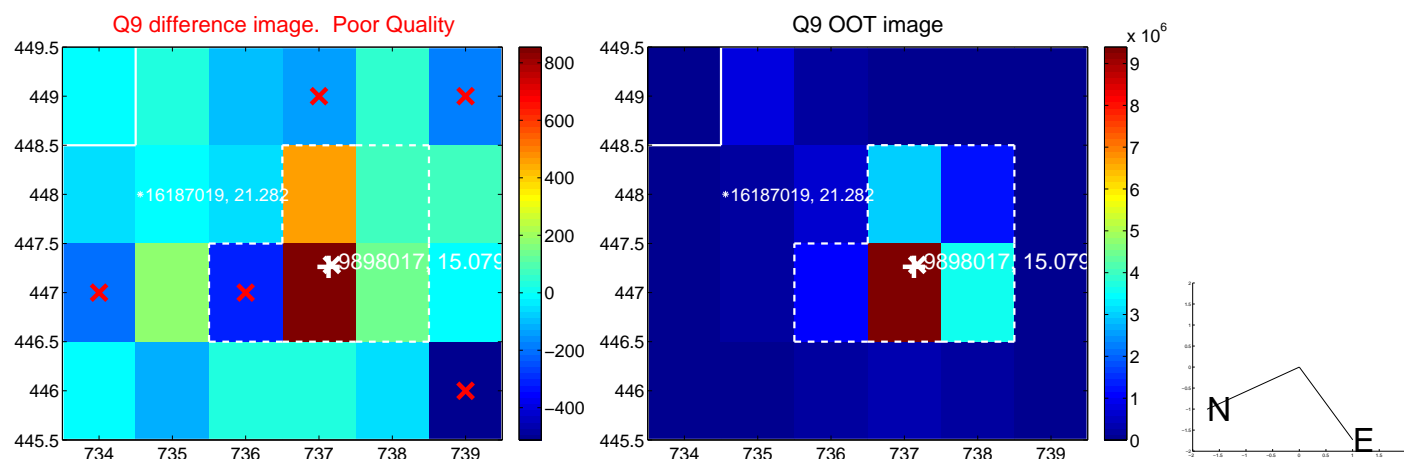


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

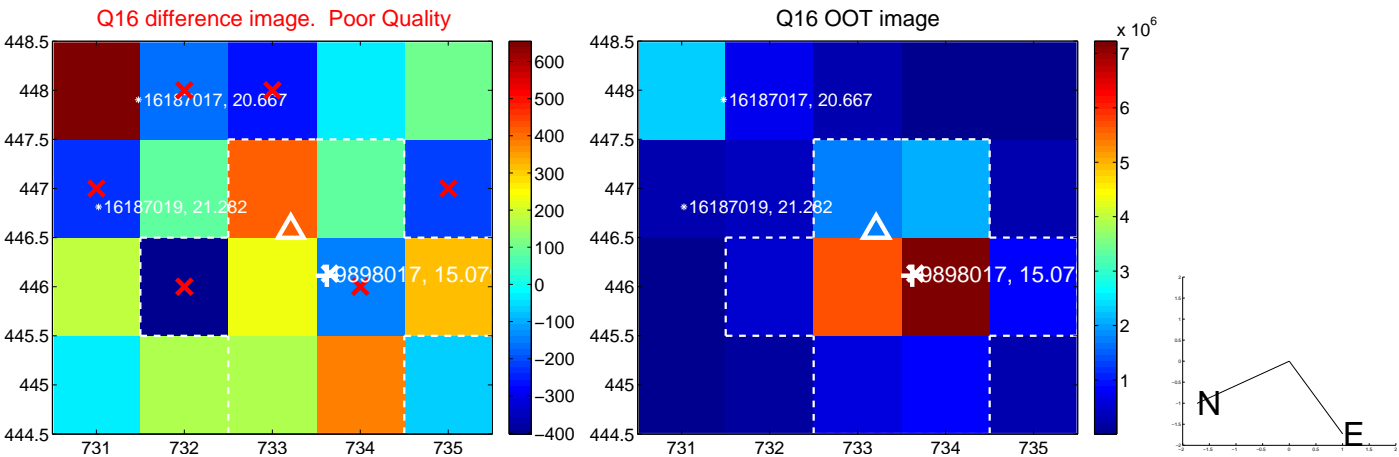
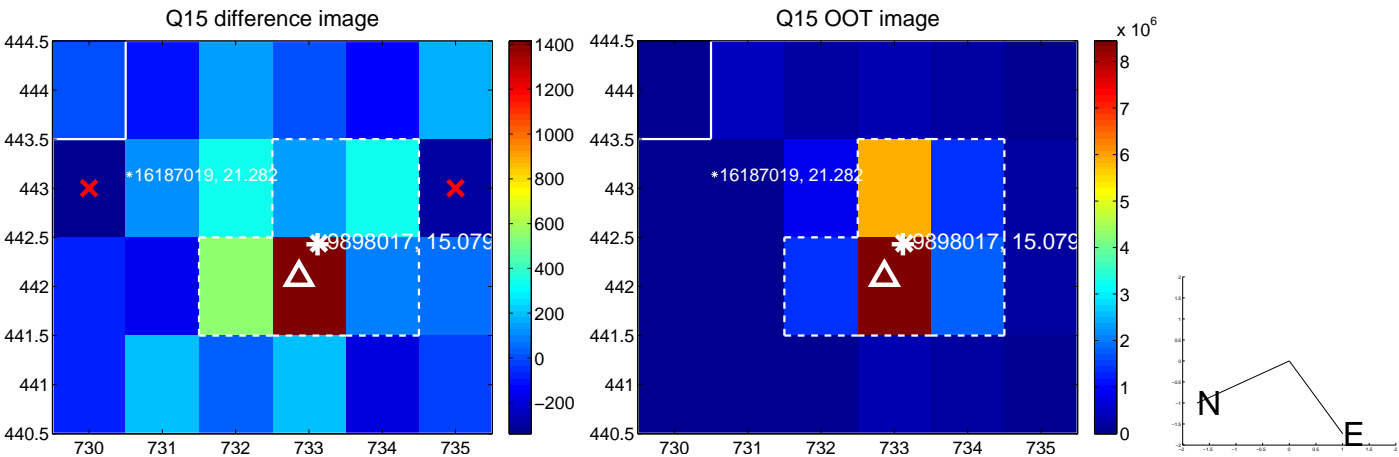
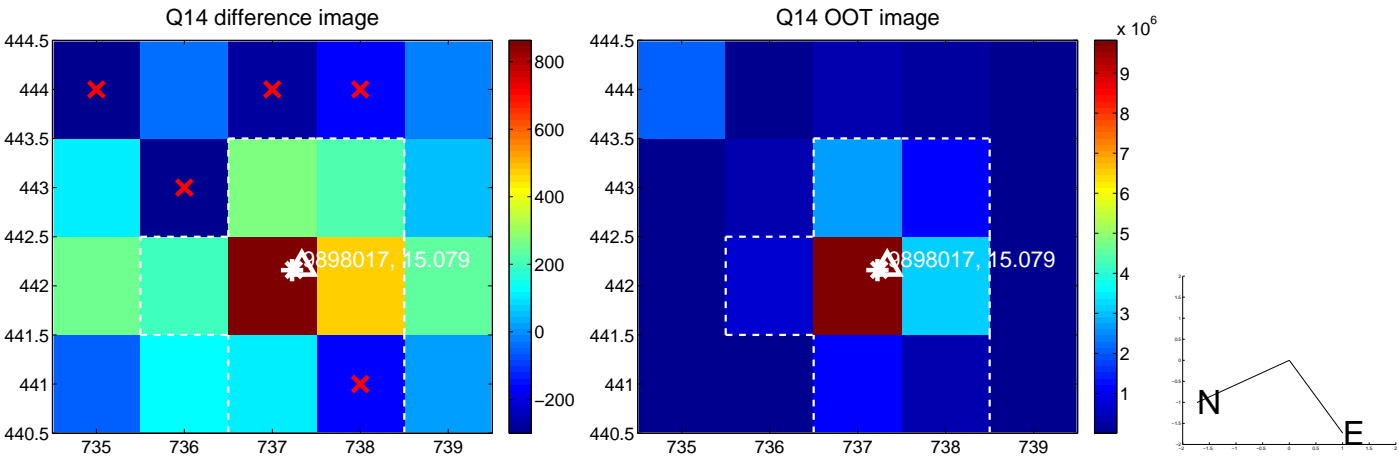
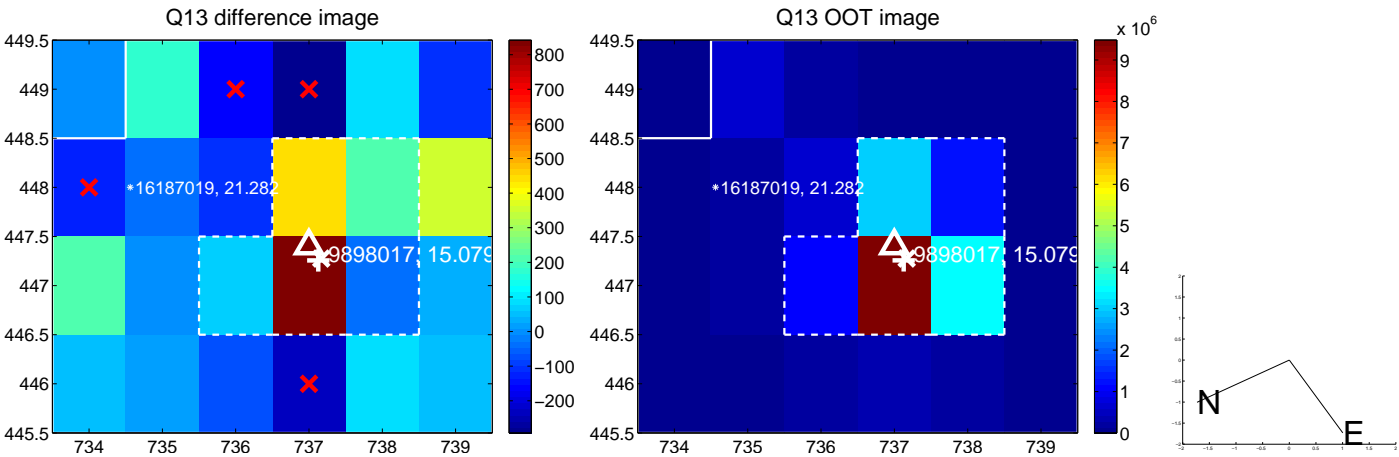




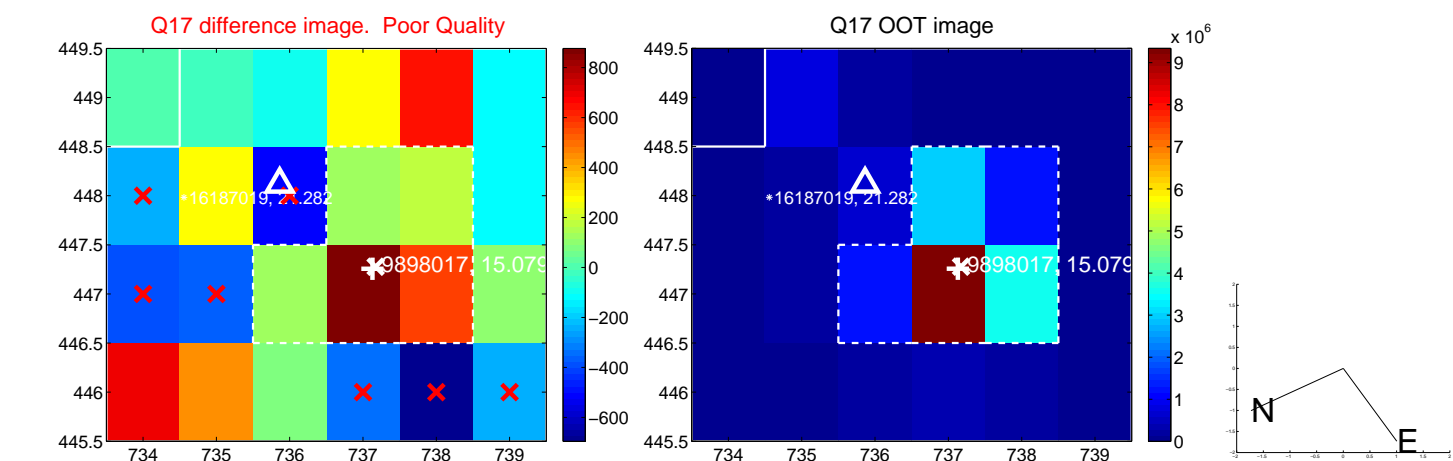
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



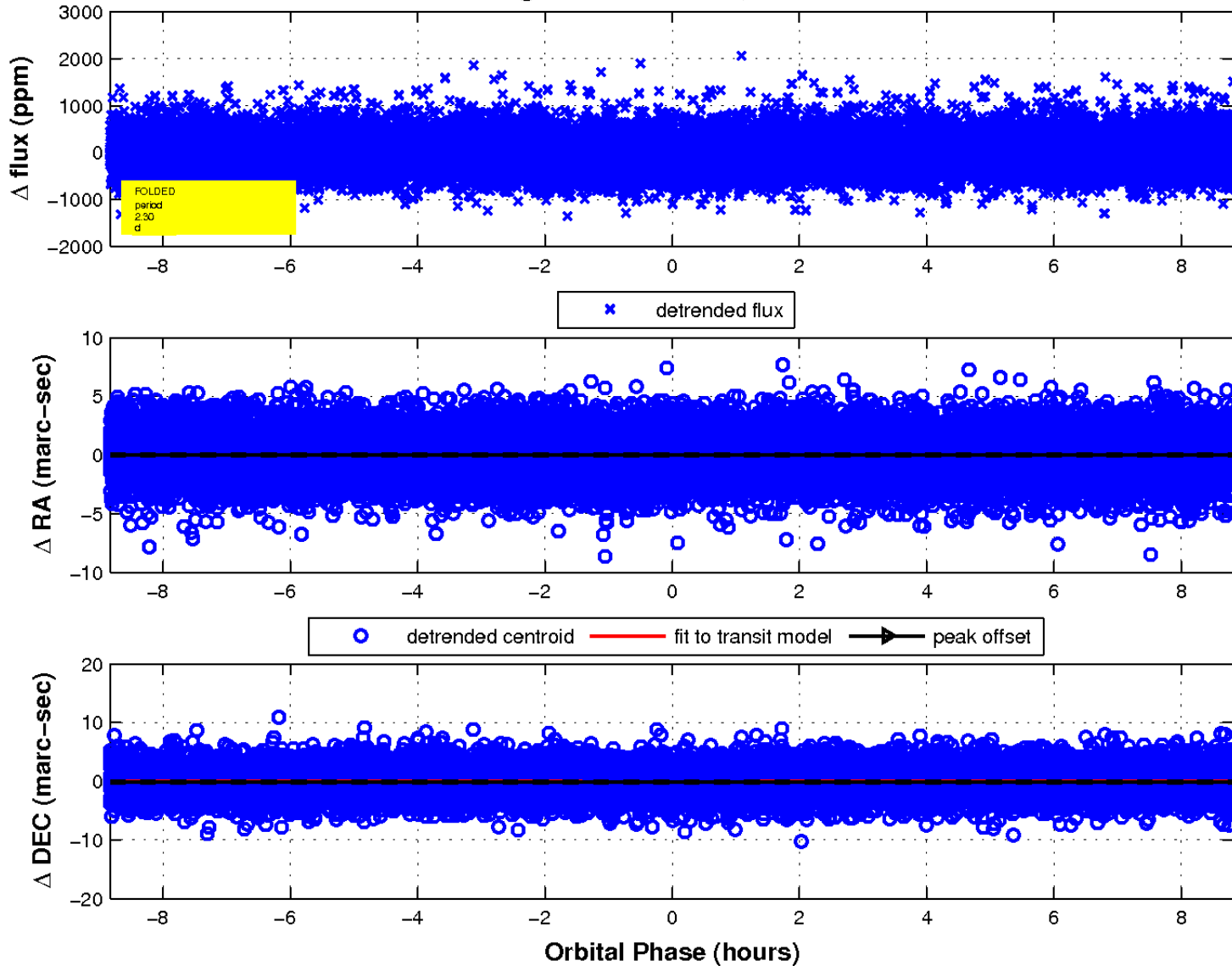
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

