

# KIC 012307496

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012307496-01	OBS	8078.01	0.805946	132.126866	167.8	0.642	8.6	19.4	0.67	5022	1.08	1191.90

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012307496-01	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.

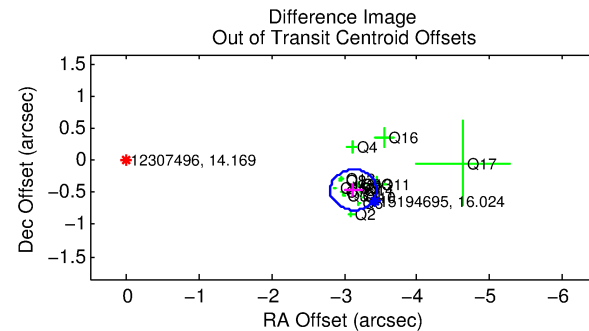
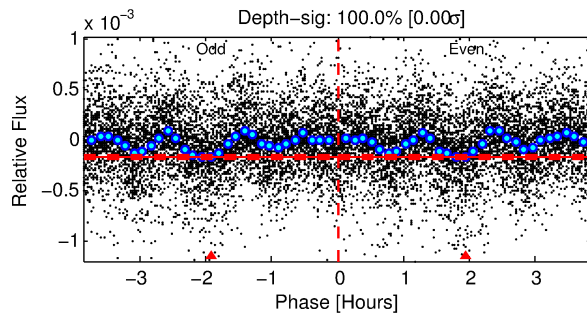
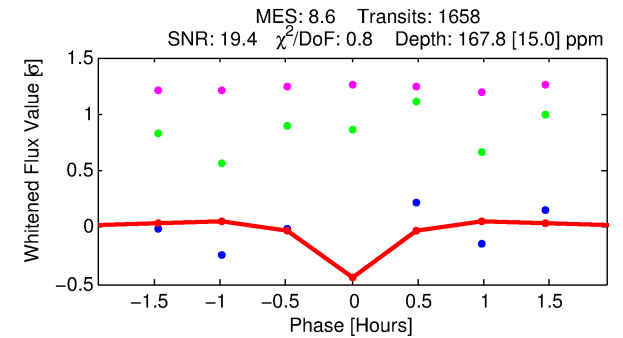
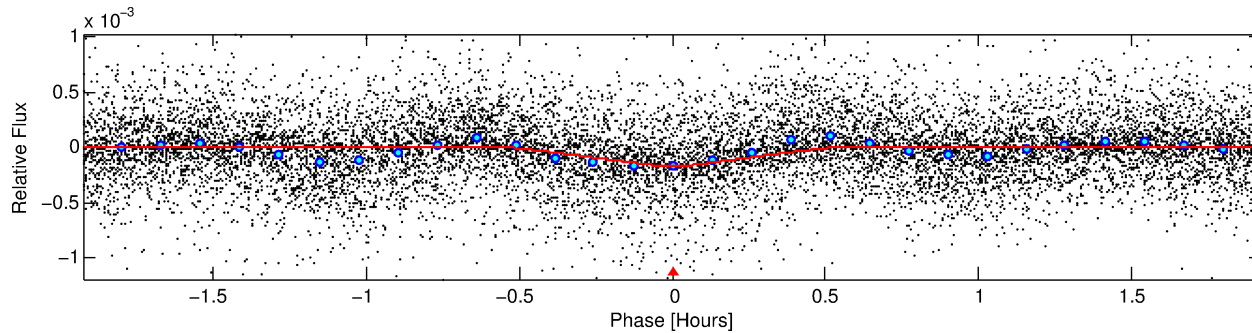
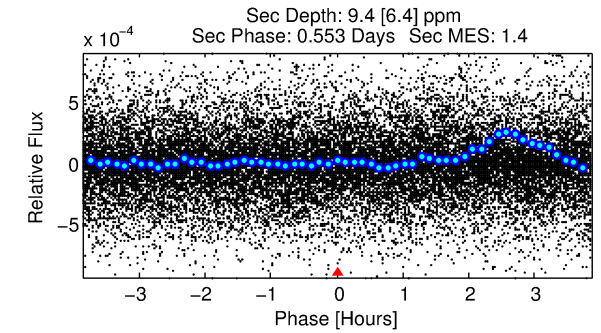
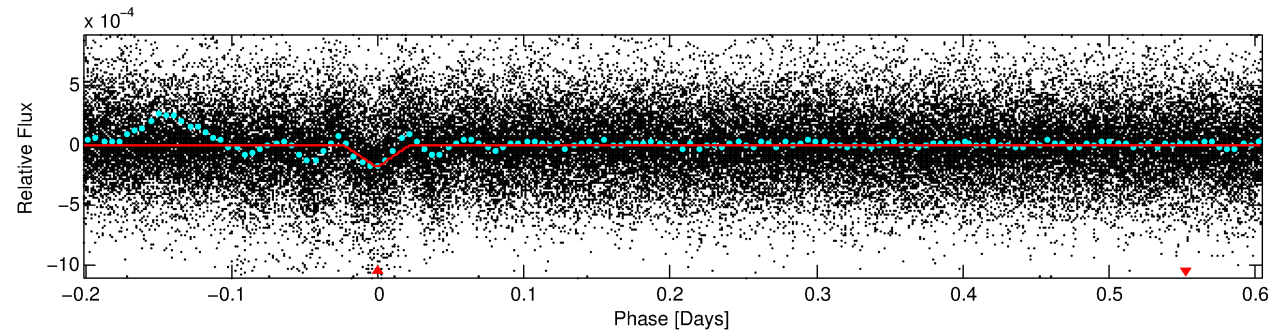
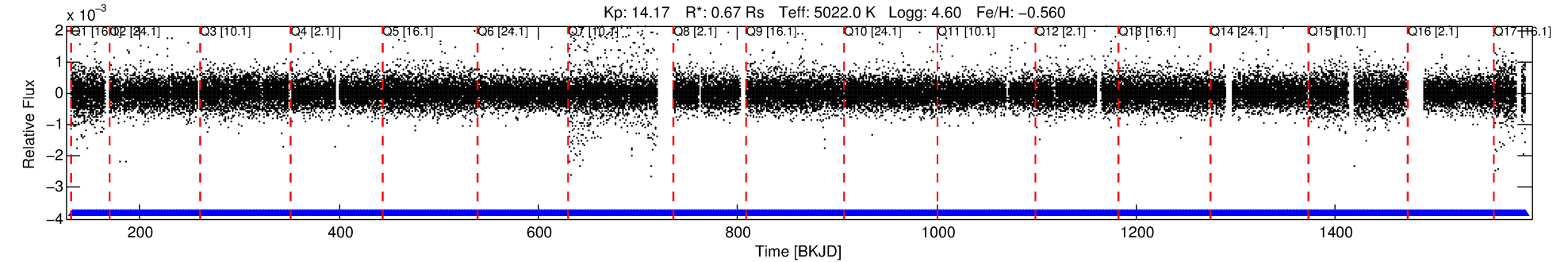
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012307496-01

No Significant Match Found

# DV One-Page Summary

KIC: 12307496 Candidate: 1 of 1 Period: 0.806 d



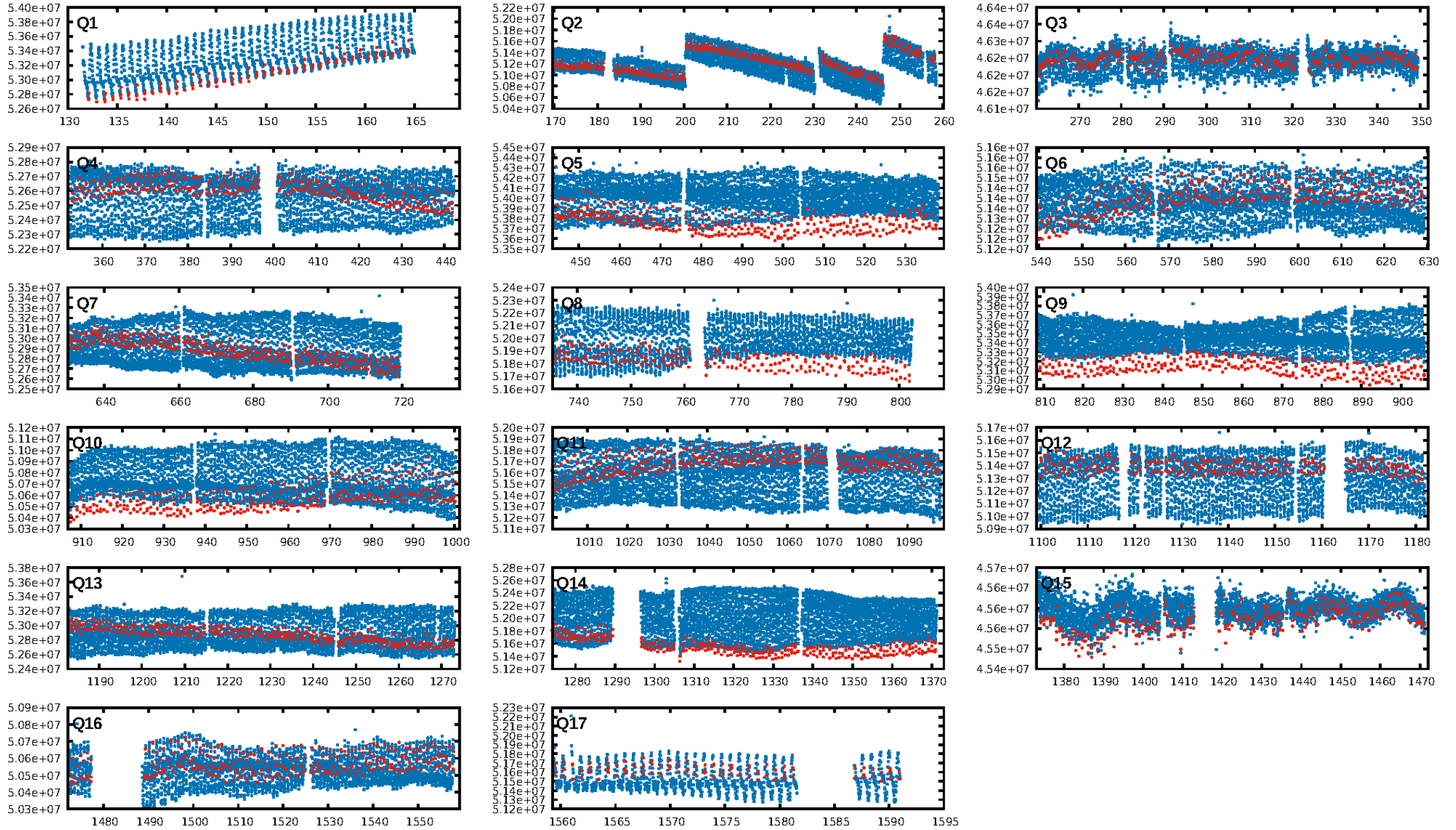
## DV Fit Results:

Period = 0.80595 [0.00001] d  
Epoch = 132.1269 [0.0006] BKJD  
Rp/R\* = 0.0148 [0.0037]  
a/R\* = 4.59 [4.41]  
b = 0.90 [0.22]  
Seff = 1191.90 [210.27]  
Teq = 1498 [66] K  
Rp = 1.08 [0.29] Re  
a = 0.0147 [0.0013] AU  
Ag = 0.95 [0.81] [-0.07σ]  
Teffp = 2285 [489] K [1.59σ]

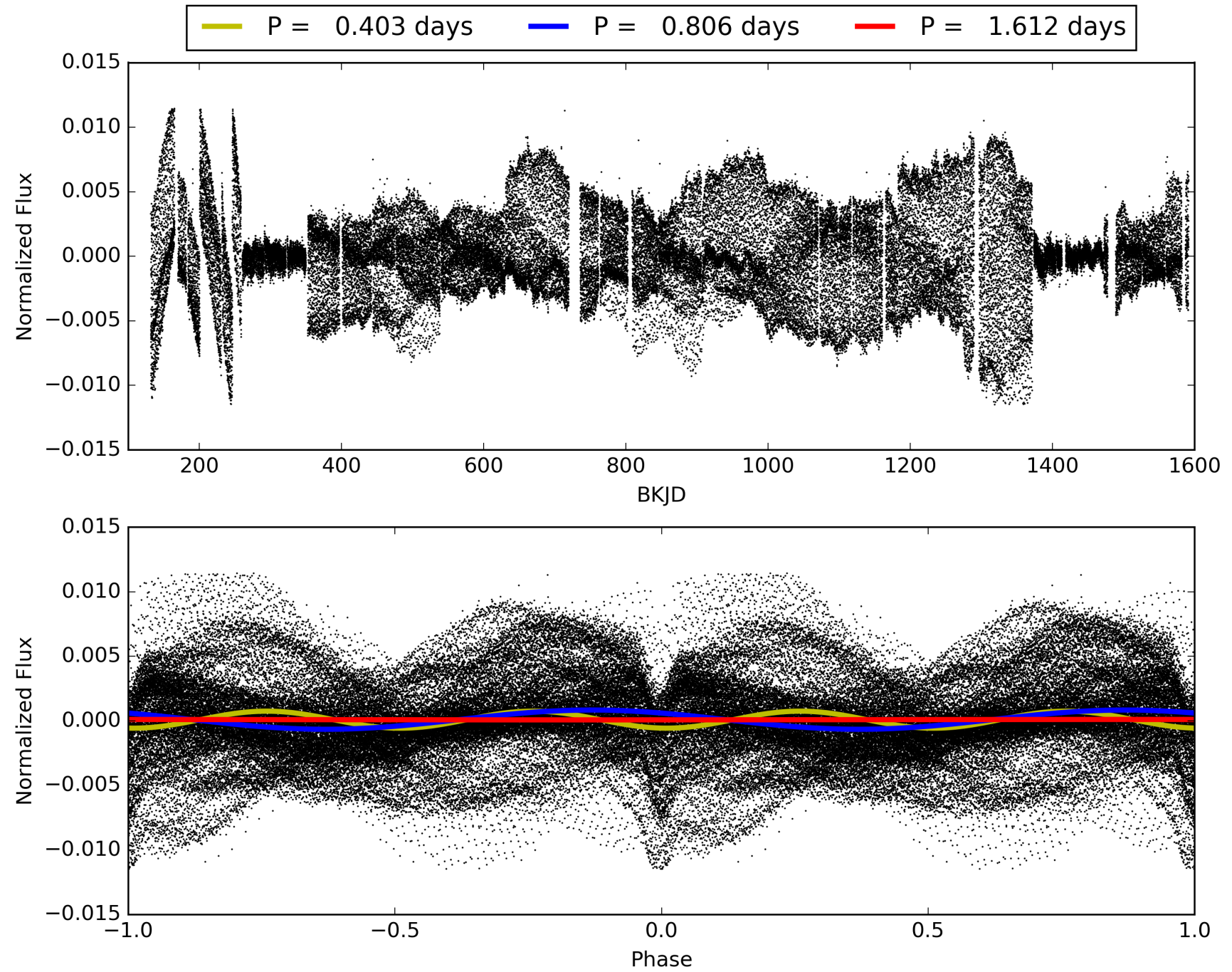
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.33e-16  
RollingBand-fgt: 1.00 [1583/1583]  
GhostDiagnostic-chr: 1.401  
Centroid-sig: 0.0%  
Centroid-so: 4.070 arcsec [7.76σ]  
OotOffset-rm: 3.160 arcsec [29.97σ]  
KicOffset-rm: 3.518 arcsec [29.26σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.94 [16/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 012307496-01, PDC Light Curves



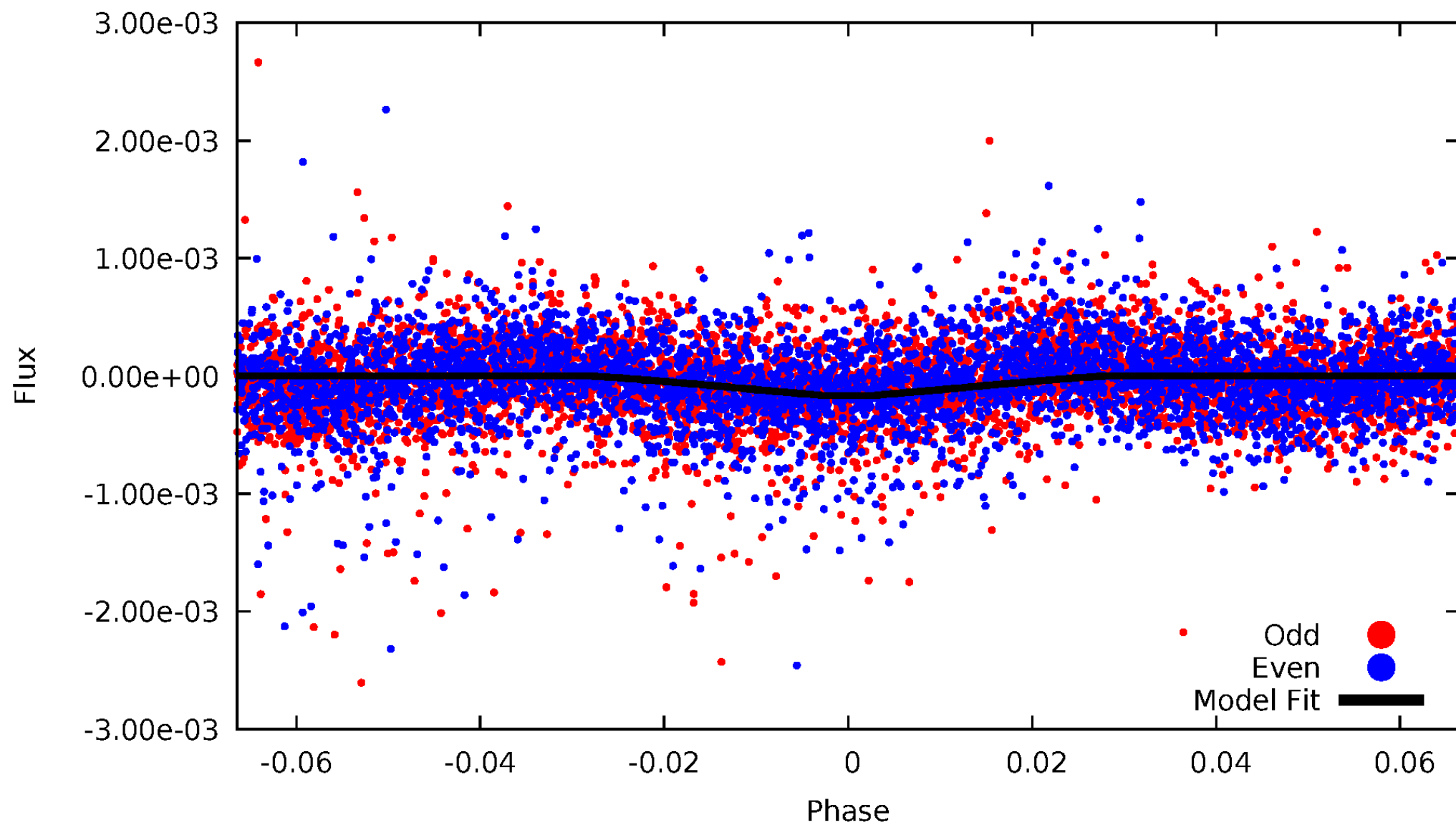
# TCE 012307496-01





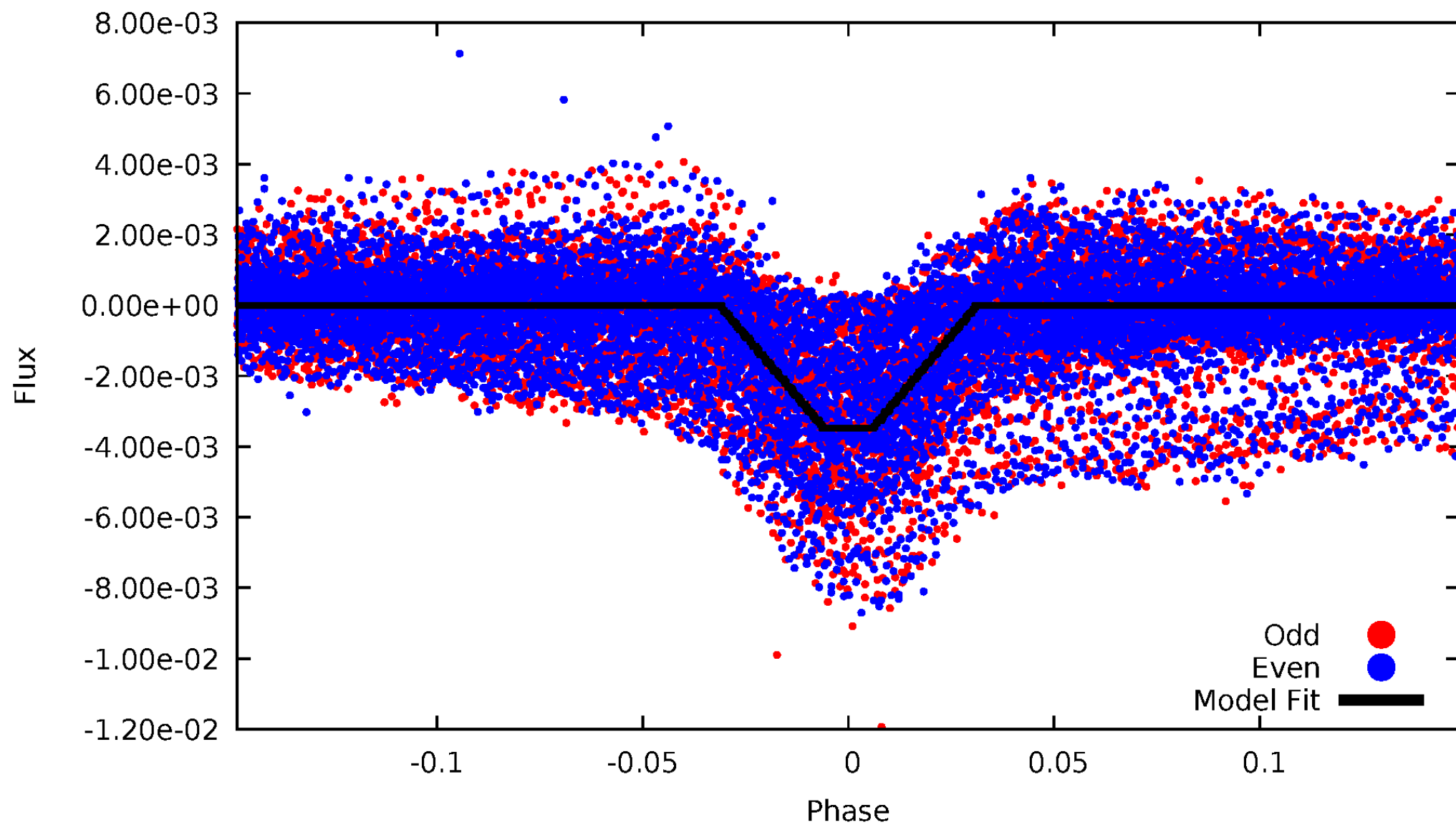
# DV Odd/Even

TCE 012307496-01



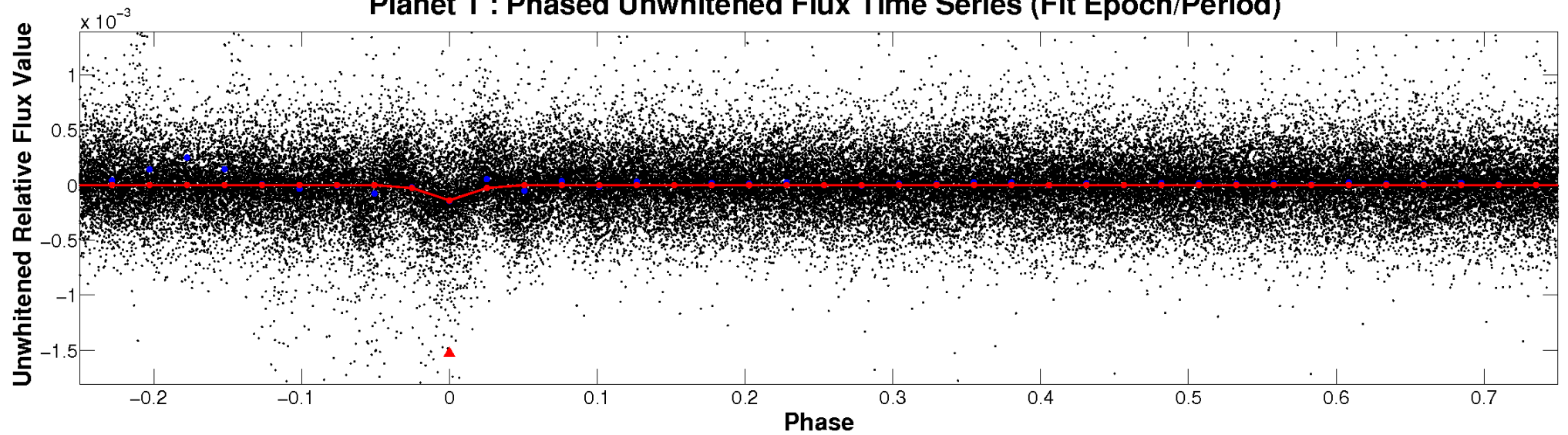
# ALT Odd/Even

TCE 012307496-01

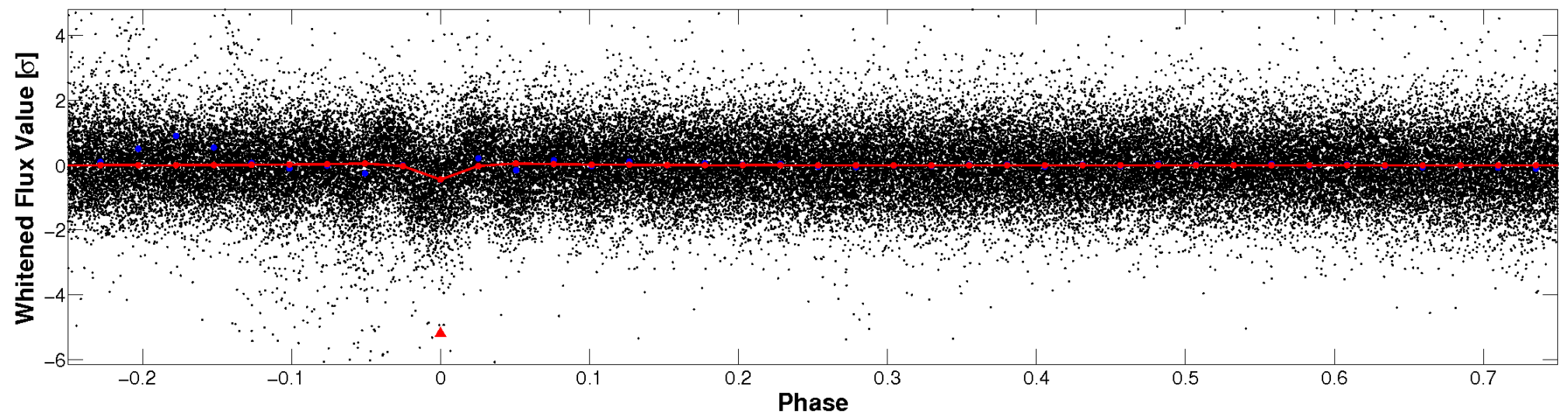


# Non-Whitened Vs. Whitened Light Curve

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

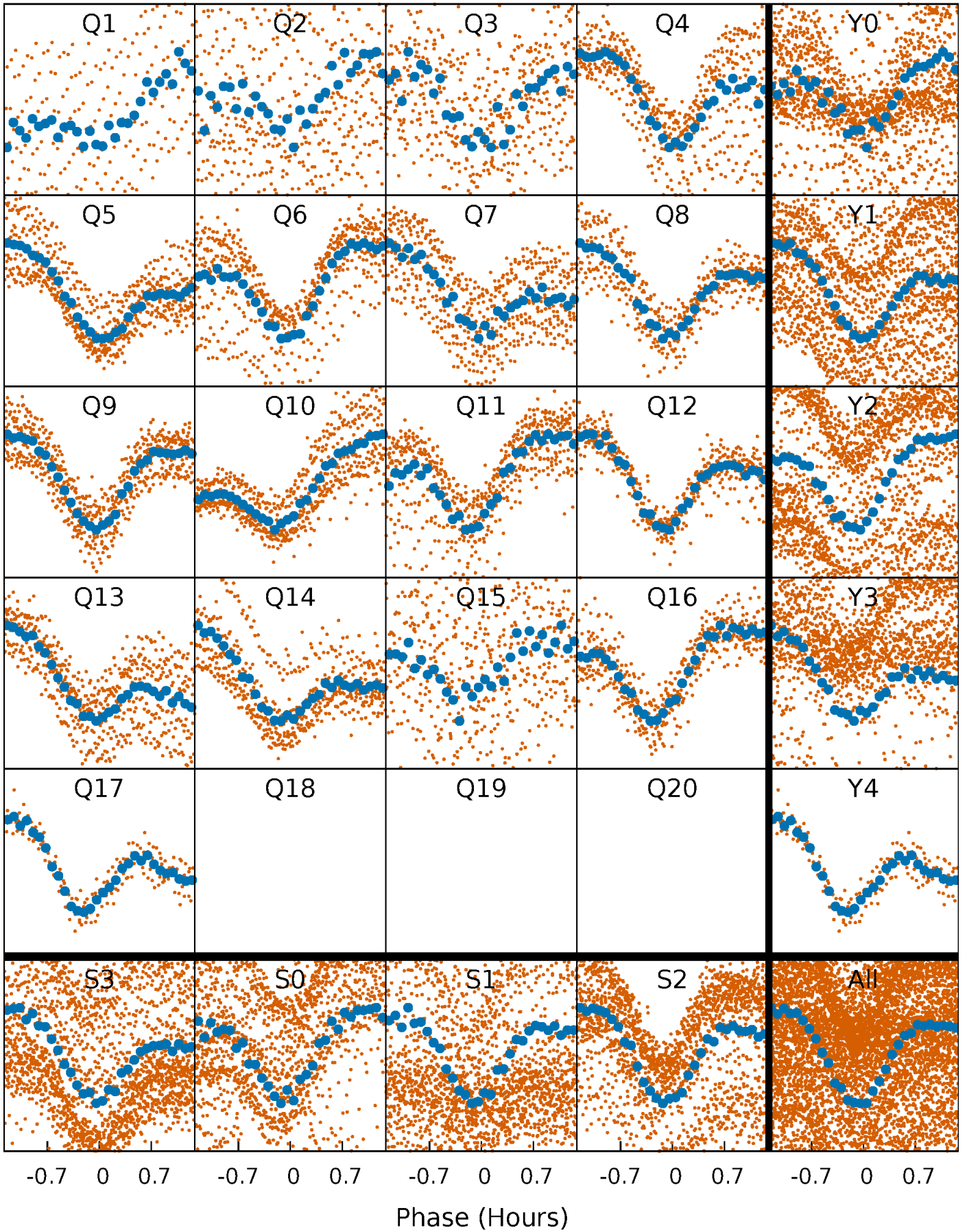


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

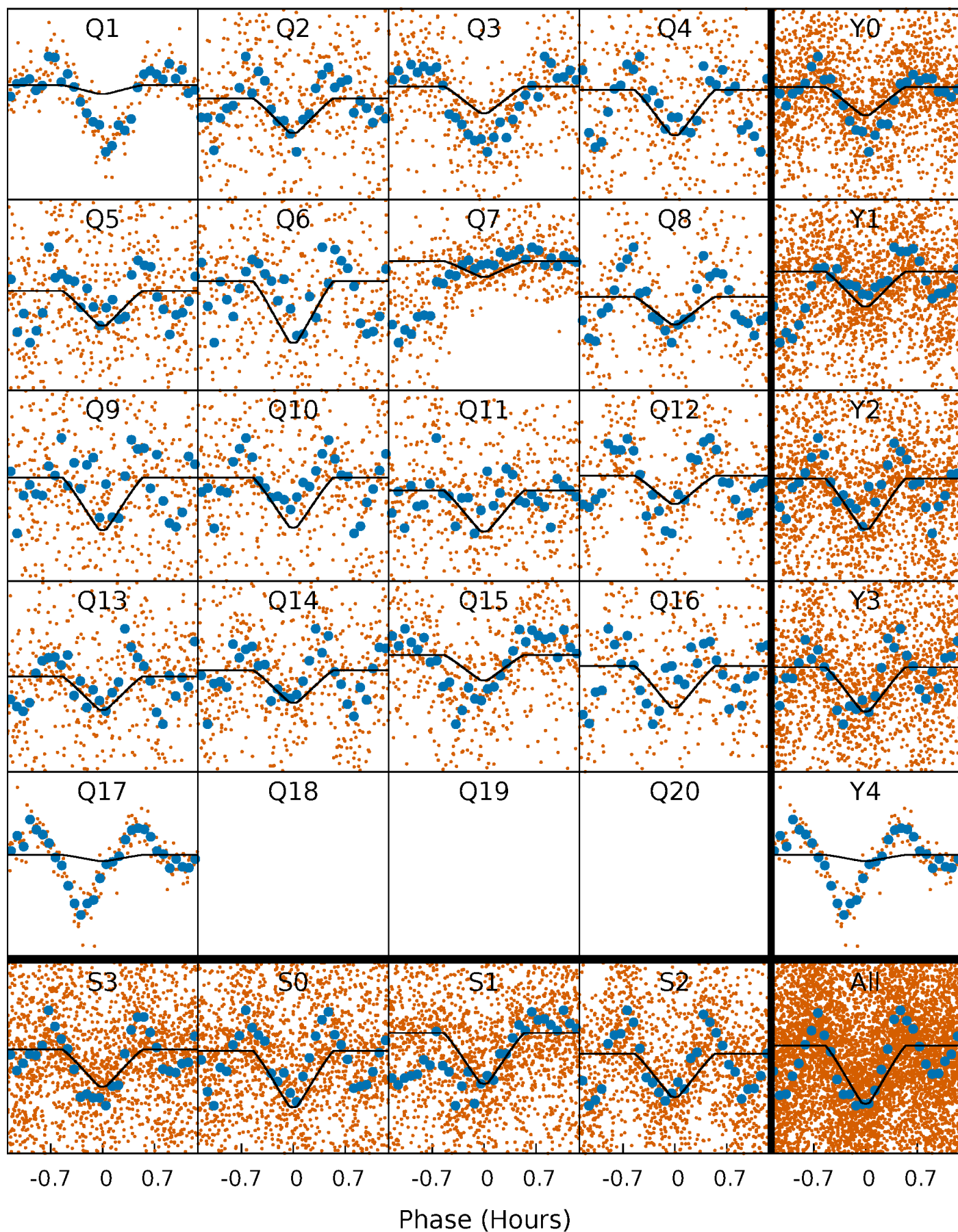
TCE 012307496-01 P= 0.805946 Days  $T_0=132.126866$  (BKJD)





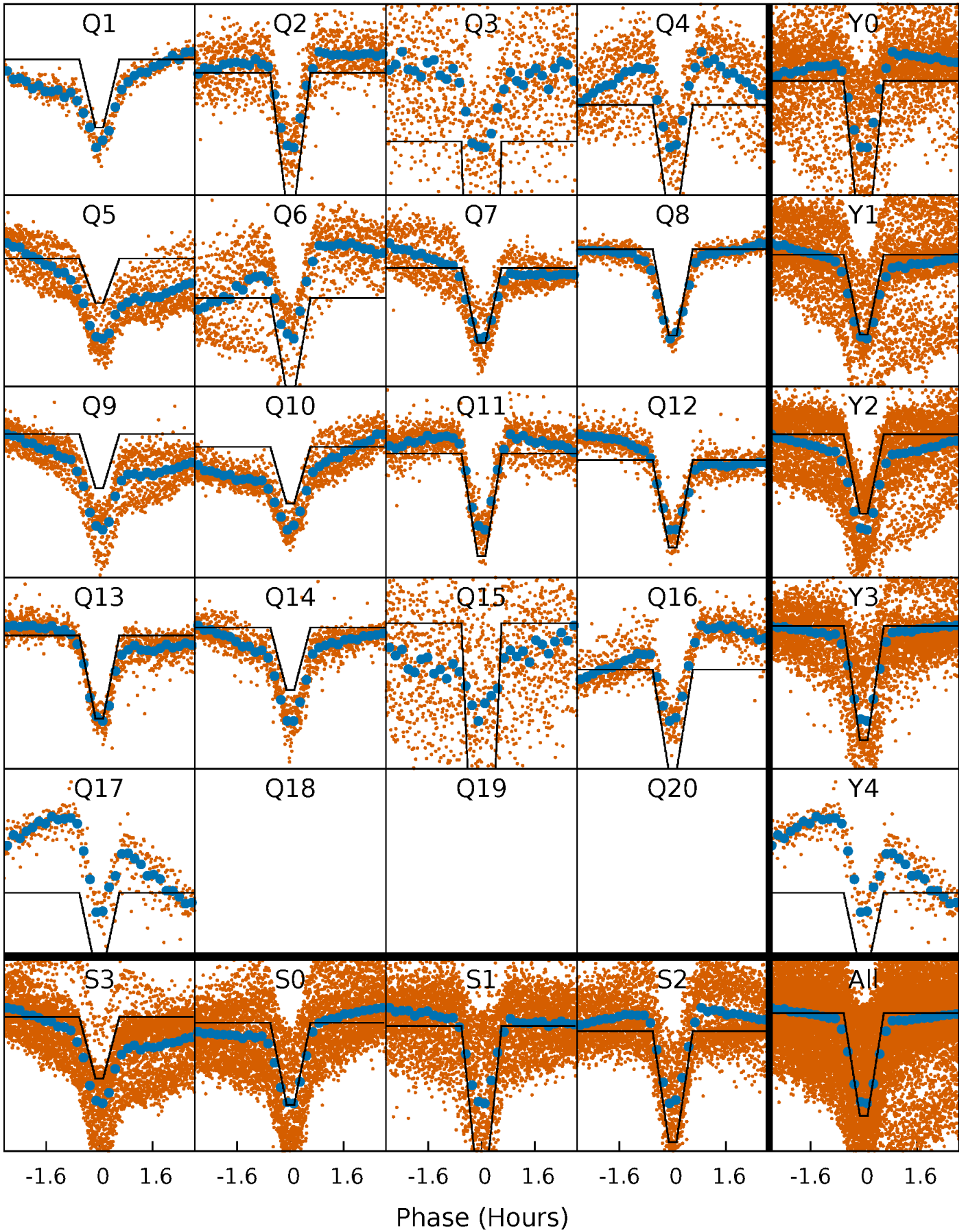
# DV Quarter-Phased Transit Curves

TCE 012307496-01 P= 0.805946 Days  $T_0=132.126866$  (BKJD)



## Alt. Detrend Quarter-Phased Transit Curves

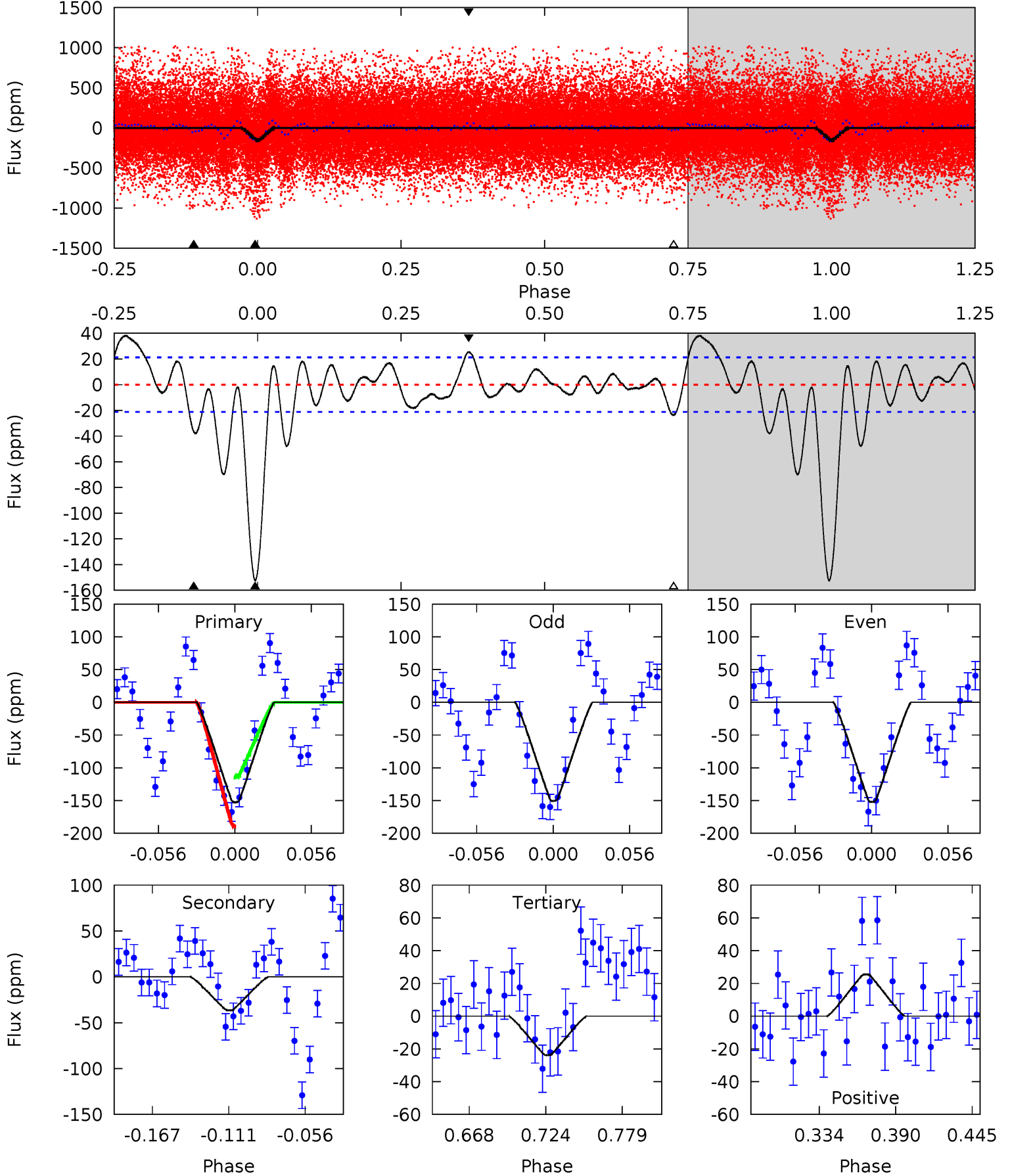
TCE 012307496-01   P= 0.805939 Days    $T_0=132.129603$  (BKJD)



# DV Model-Shift Uniqueness Test

012307496-01, P = 0.805946 Days, E = 131.320920 Days

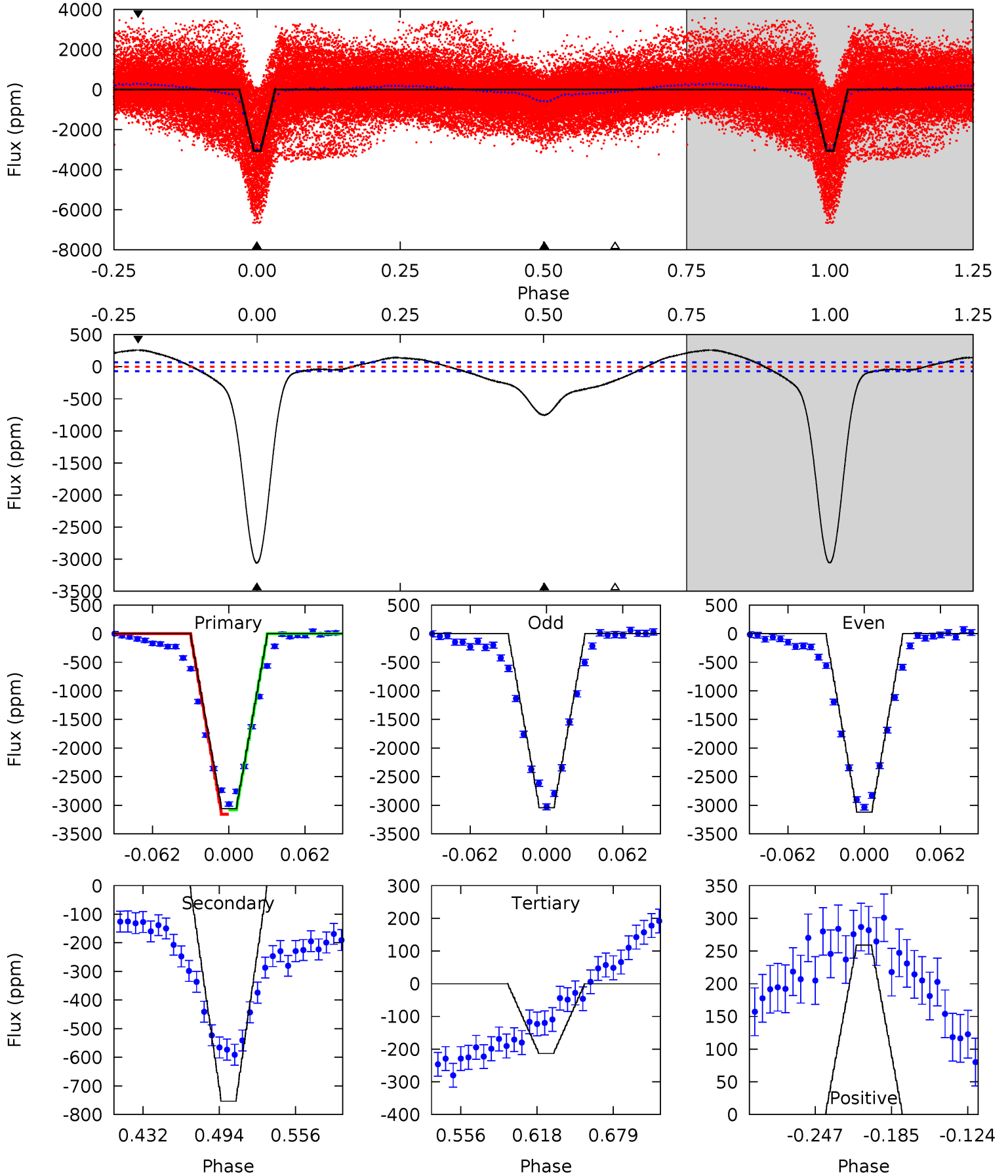
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.8	8.09	5.27	5.64	4.69	1.91	2.96	28.5	28.1	2.83	2.45	0.17	1.11	0.20	8.30



# Alt Model-Shift Uniqueness Test

012307496-01, P = 0.805939 Days, E = 131.323664 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
207.9	51.2	14.5	17.6	4.66	1.87	10.9	193.4	190.2	36.7	33.6	2.71	1.07	0.08	0





### Stellar Parameters For KIC 012307496

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5022^{+149}_{-149}$	$4.597^{+0.072}_{-0.048}$	$-0.560^{+0.300}_{-0.300}$	$0.672^{+0.070}_{-0.064}$	$0.651^{+0.083}_{-0.036}$	$3.020^{+0.911}_{-0.542}$
	+3%/-3%	+2%/-1%	+54%/-54%	+10%/-10%	+13%/-6%	+30%/-18%
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 012307496-01 / KOI 8078.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-37 \pm 5$	$1.08^{+0.30}_{-0.27}$	$2080^{+82}_{-75}$	$3543^{+379}_{-281}$	$3.683^{+2.998}_{-1.378}$
Alt.	$-754 \pm 15$	$4.33^{+0.39}_{-0.36}$	$2090^{+73}_{-83}$	$3722^{+135}_{-119}$	$4.871^{+0.815}_{-0.698}$

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

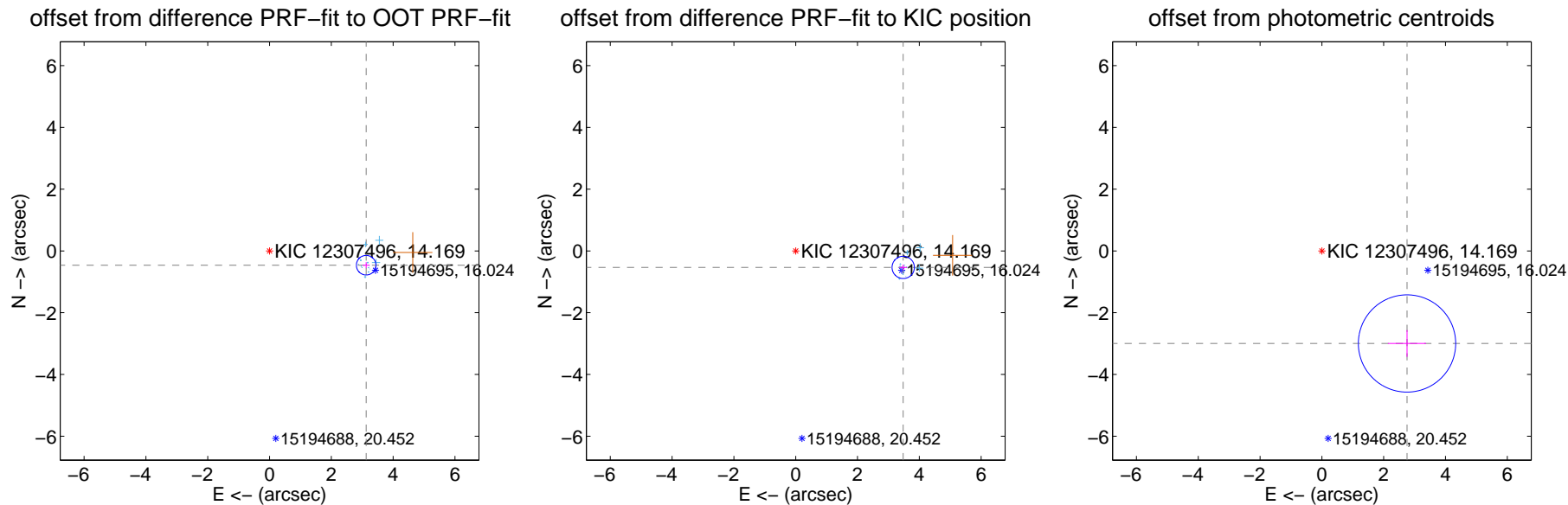
## DV Centroid Data

Supplemental centroid analysis for 012307496-01. Kepler magnitude: 14.17. Transit SNR 19.39

There are 16 quarters with good PRF difference image offsets

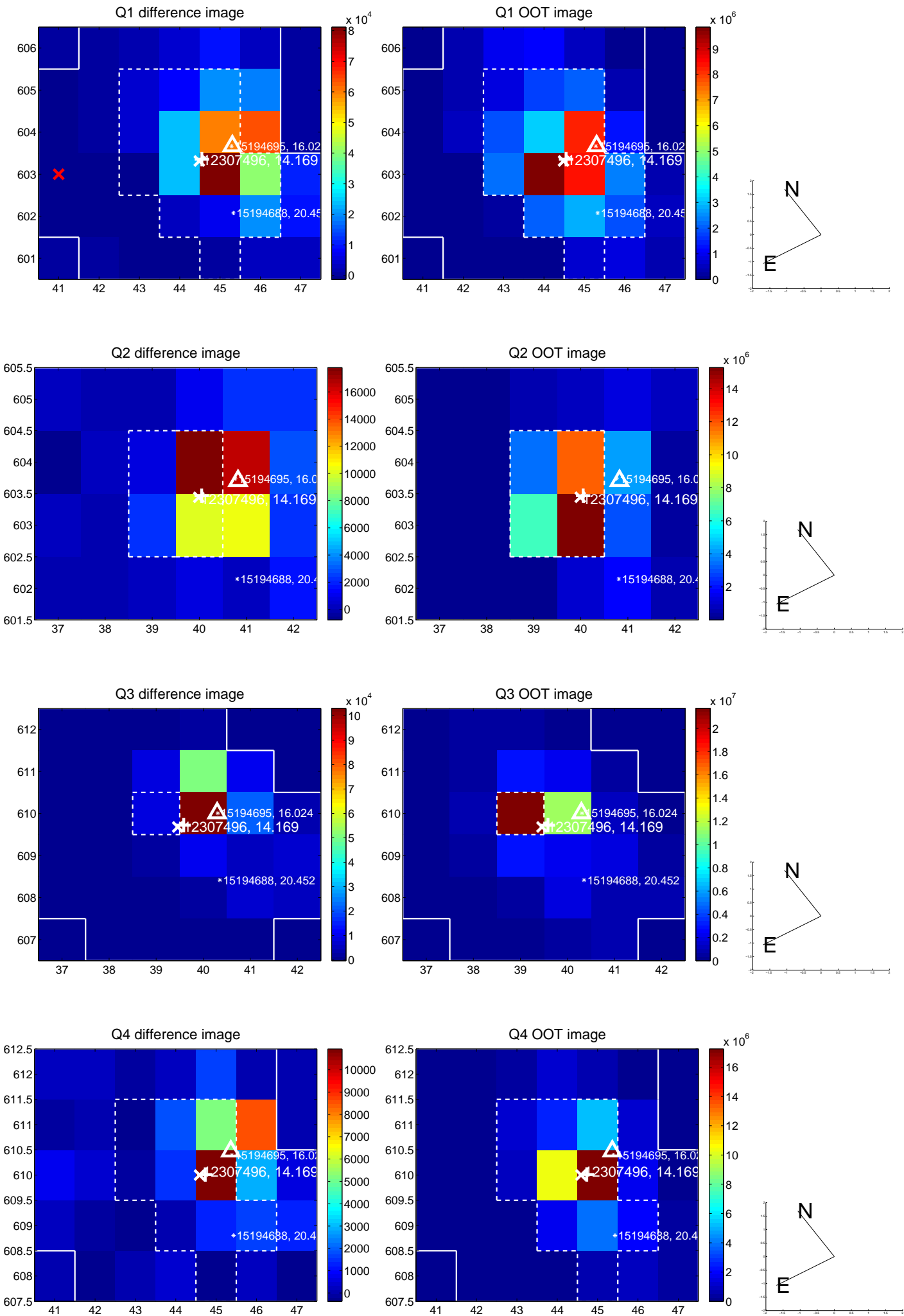
The direct PRF centroid is offset from the target star catalog position by about 0.45 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.160 \pm 0.105$	29.97	$-3.126 \pm 0.110$	$-0.462 \pm 0.097$
PRF-fit source offset from KIC position	$3.518 \pm 0.120$	29.26	$-3.478 \pm 0.125$	$-0.534 \pm 0.091$
photometric centroid source offset	$4.07 \pm 0.52$	7.76	$-2.75 \pm 0.62$	$-3.00 \pm 0.43$

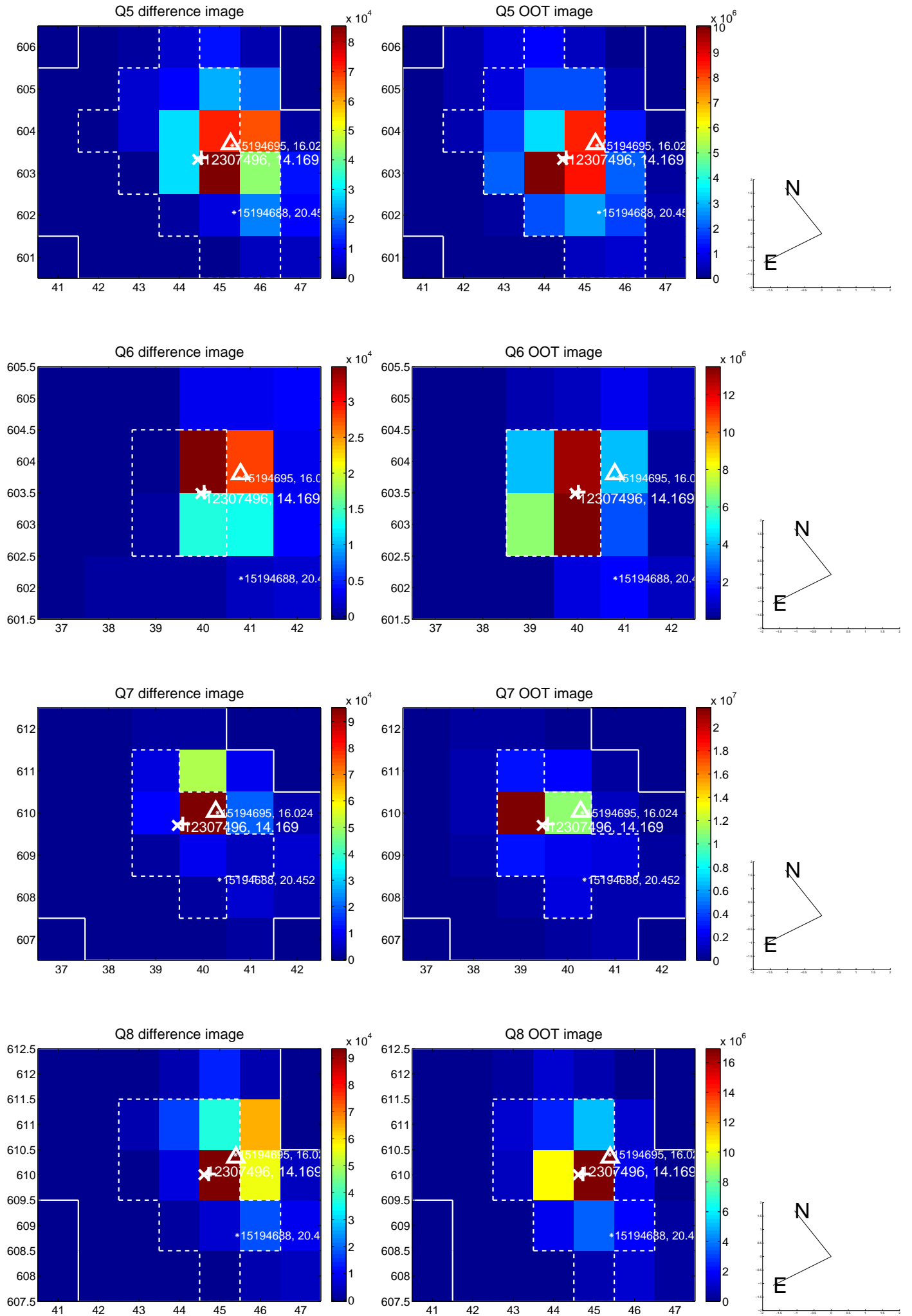


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

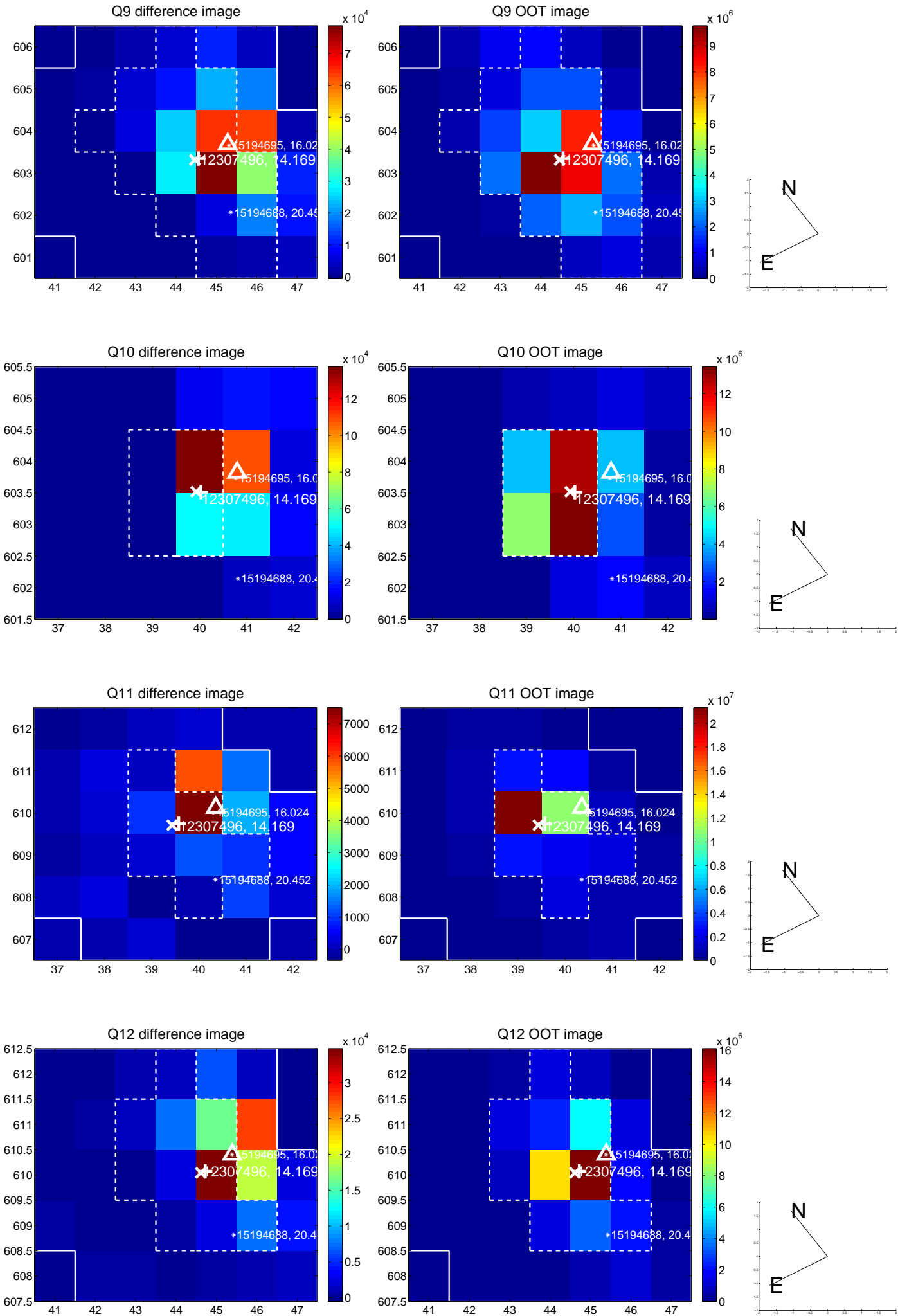


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

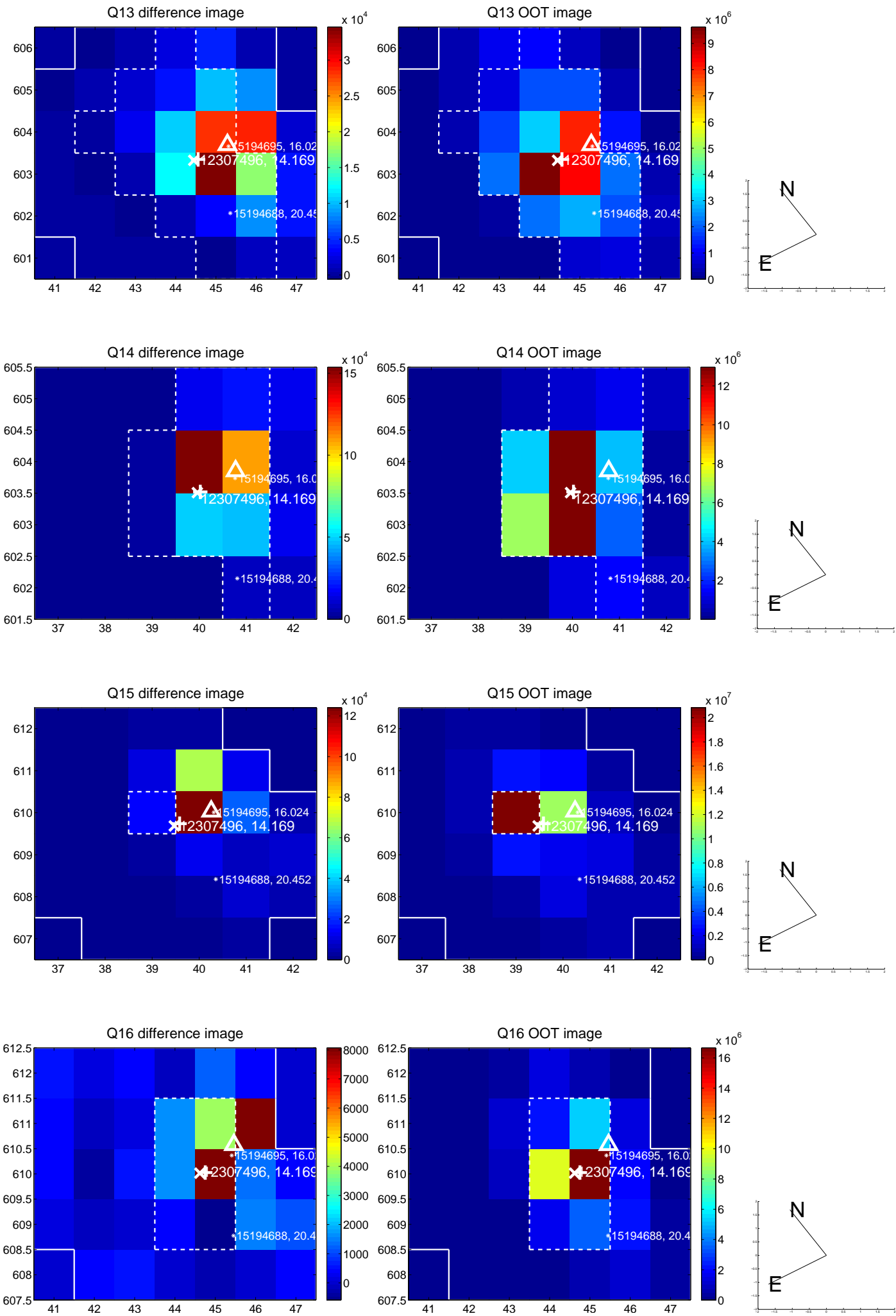




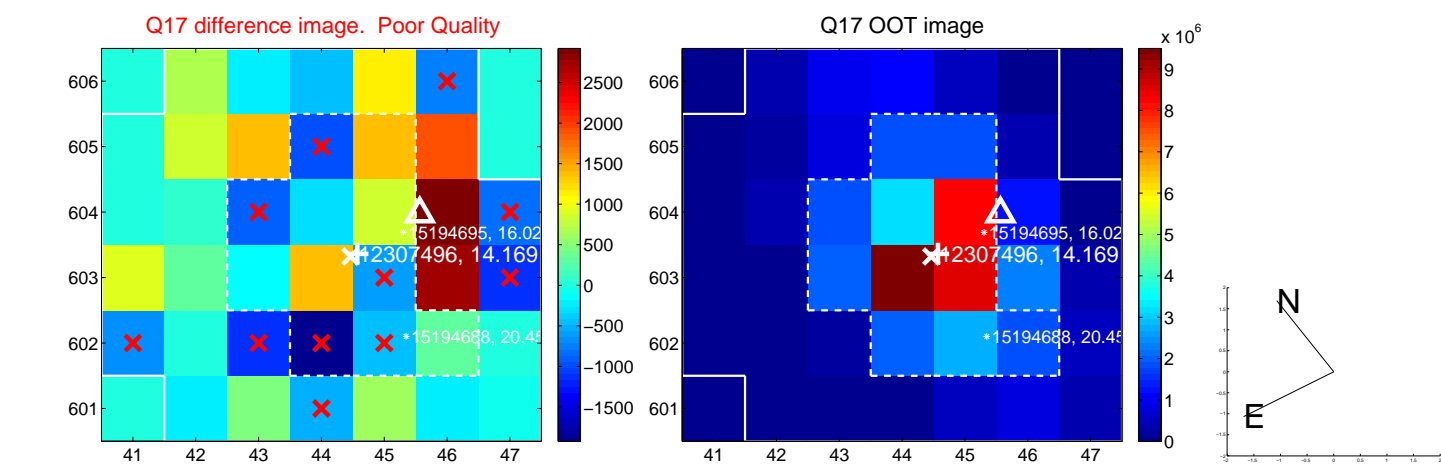
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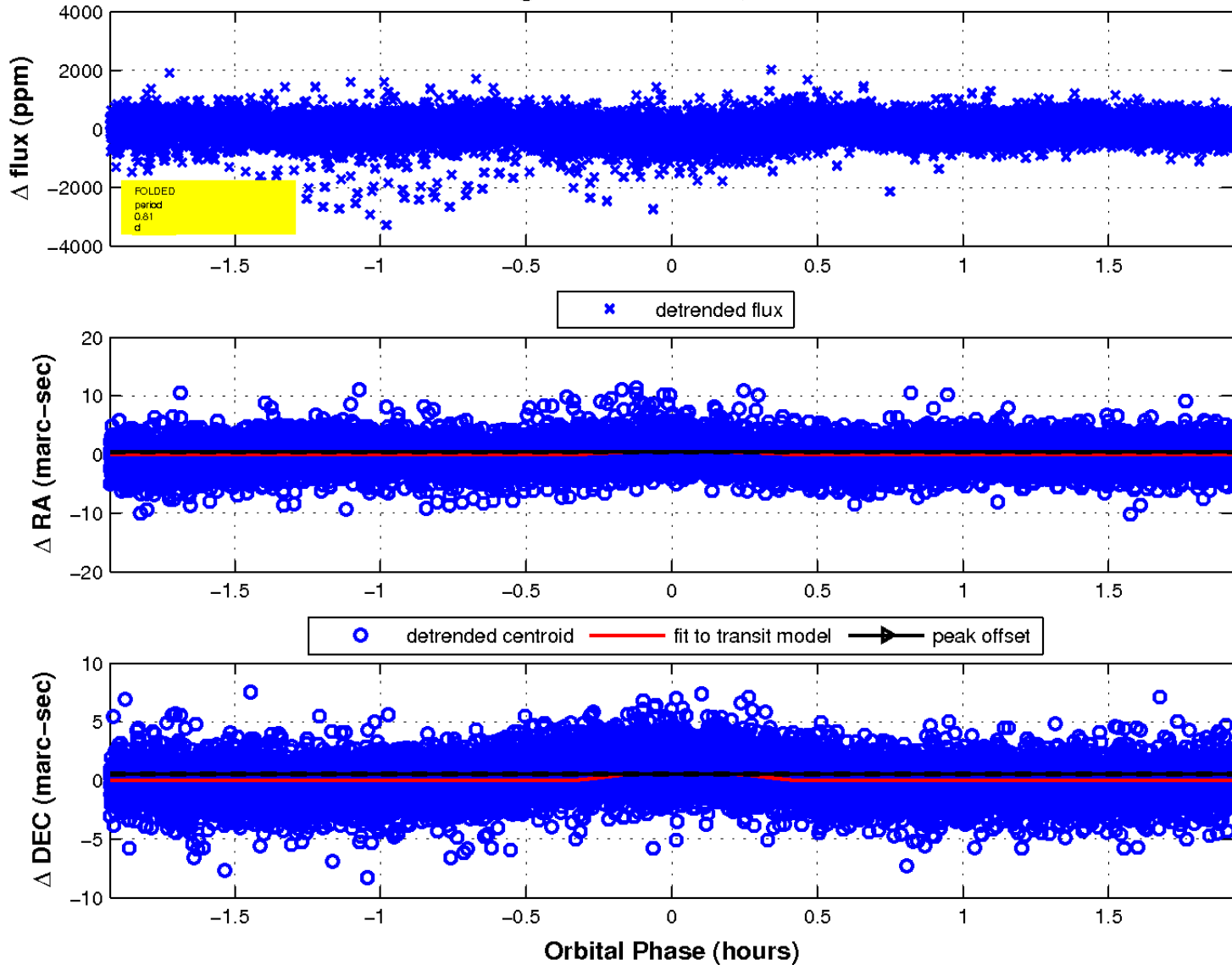
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

