

# KIC 002720096

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002720096-01	OBS	No	26.680222	143.415577	365.6	54.884	10.7	16.0	7.75	4901	21.19	647.89

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002720096-01	OBS	FP	0.00	1	0	0	0	LPP_DV

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

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

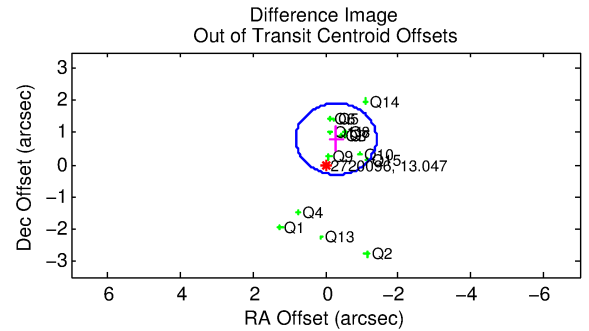
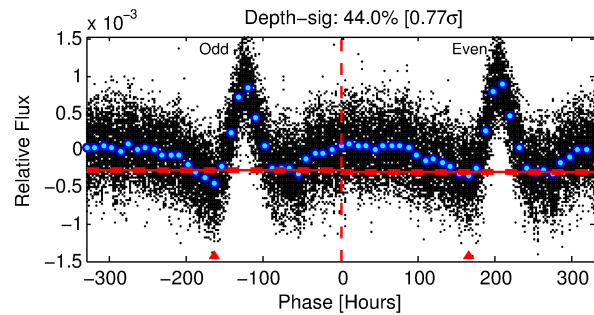
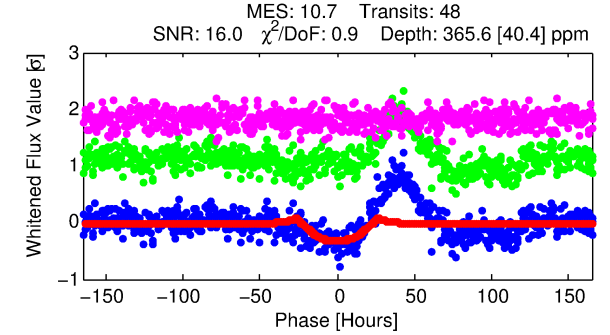
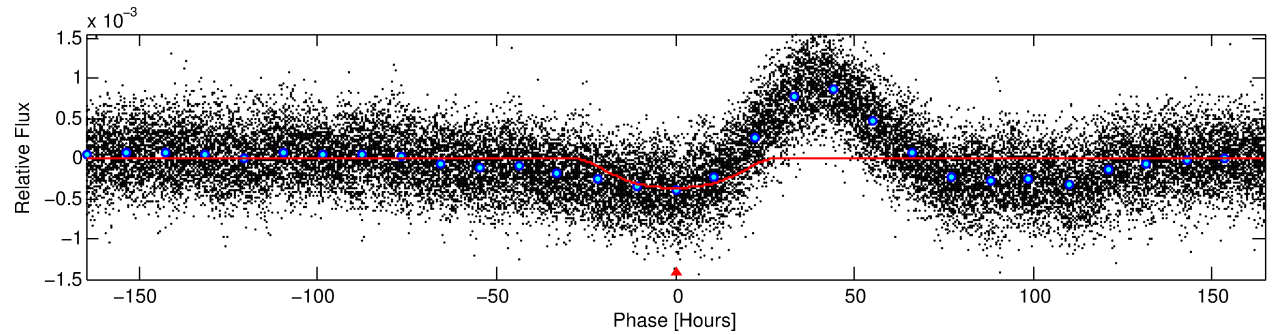
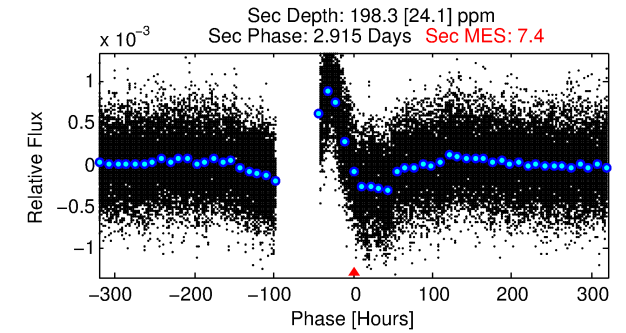
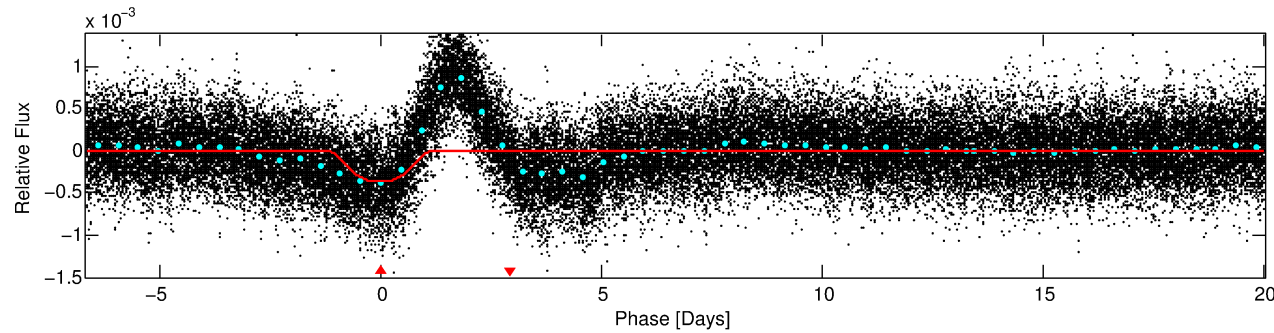
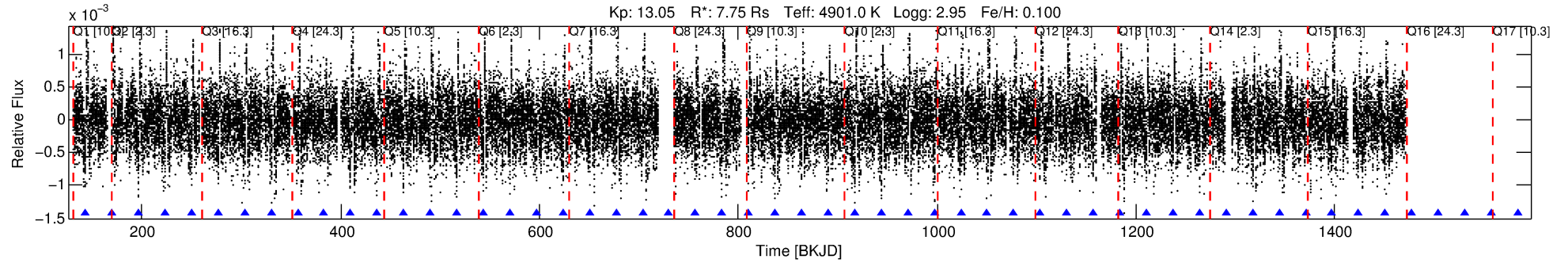
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 002720096-01

No Significant Match Found

# DV One-Page Summary

KIC: 2720096 Candidate: 1 of 1 Period: 26.680 d



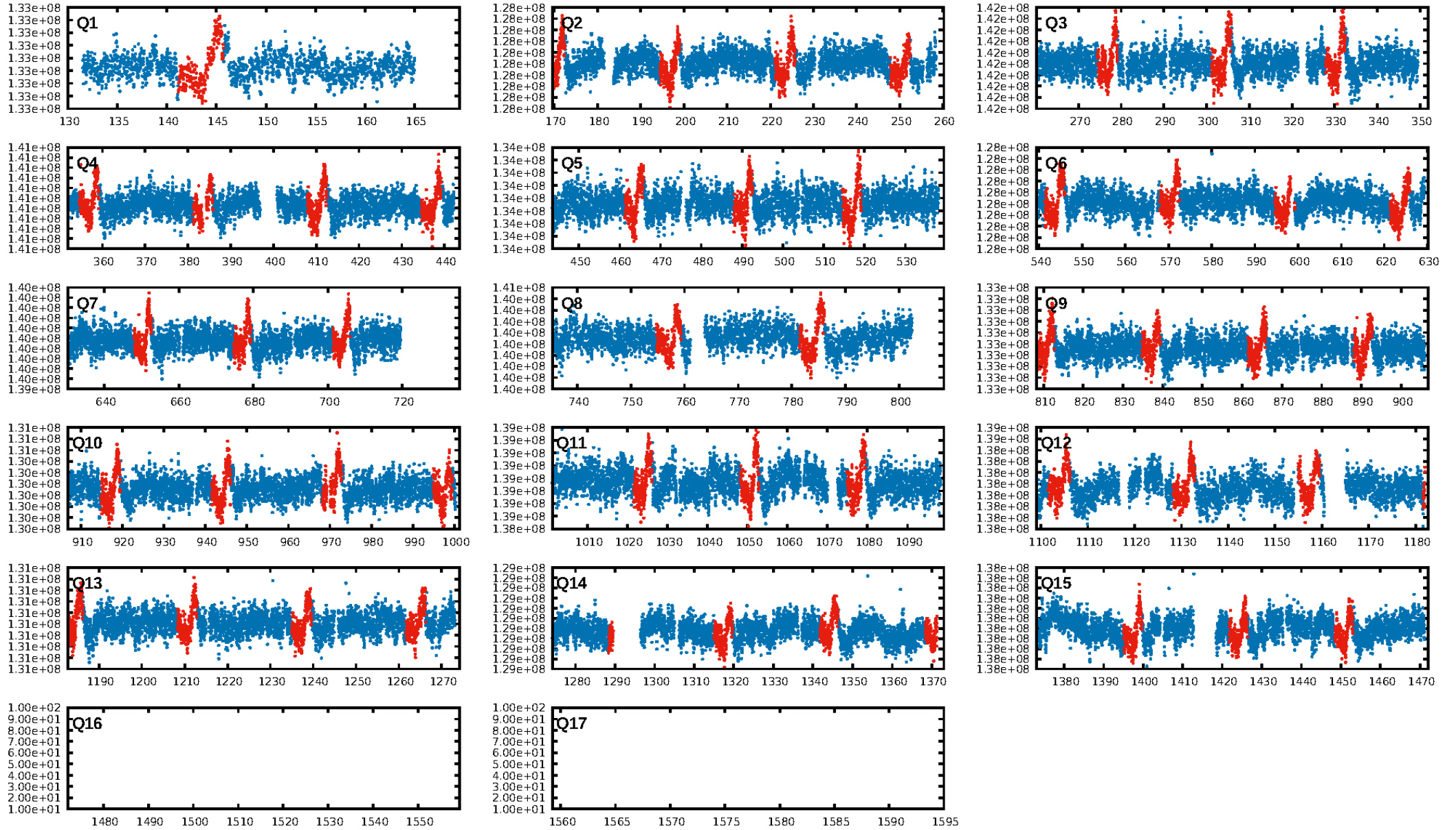
## DV Fit Results:

Period = 26.68022 [0.00242] d  
Epoch = 143.4156 [0.0686] BKJD  
Rp/R\* = 0.0250 [0.0021]  
a/R\* = 1.54 [0.08]  
b = 0.98 [0.01]  
Seff = 647.89 [107.90]  
Teff = 1286 [54] K  
**Rp = 21.19 [4.70] Re**  
**a = 0.2191 [0.0304] AU**  
**Ag = 11.66 [2.95] [3.61 $\sigma$ ]**  
**Teffp = 3675 [206] K [11.23 $\sigma$ ]**

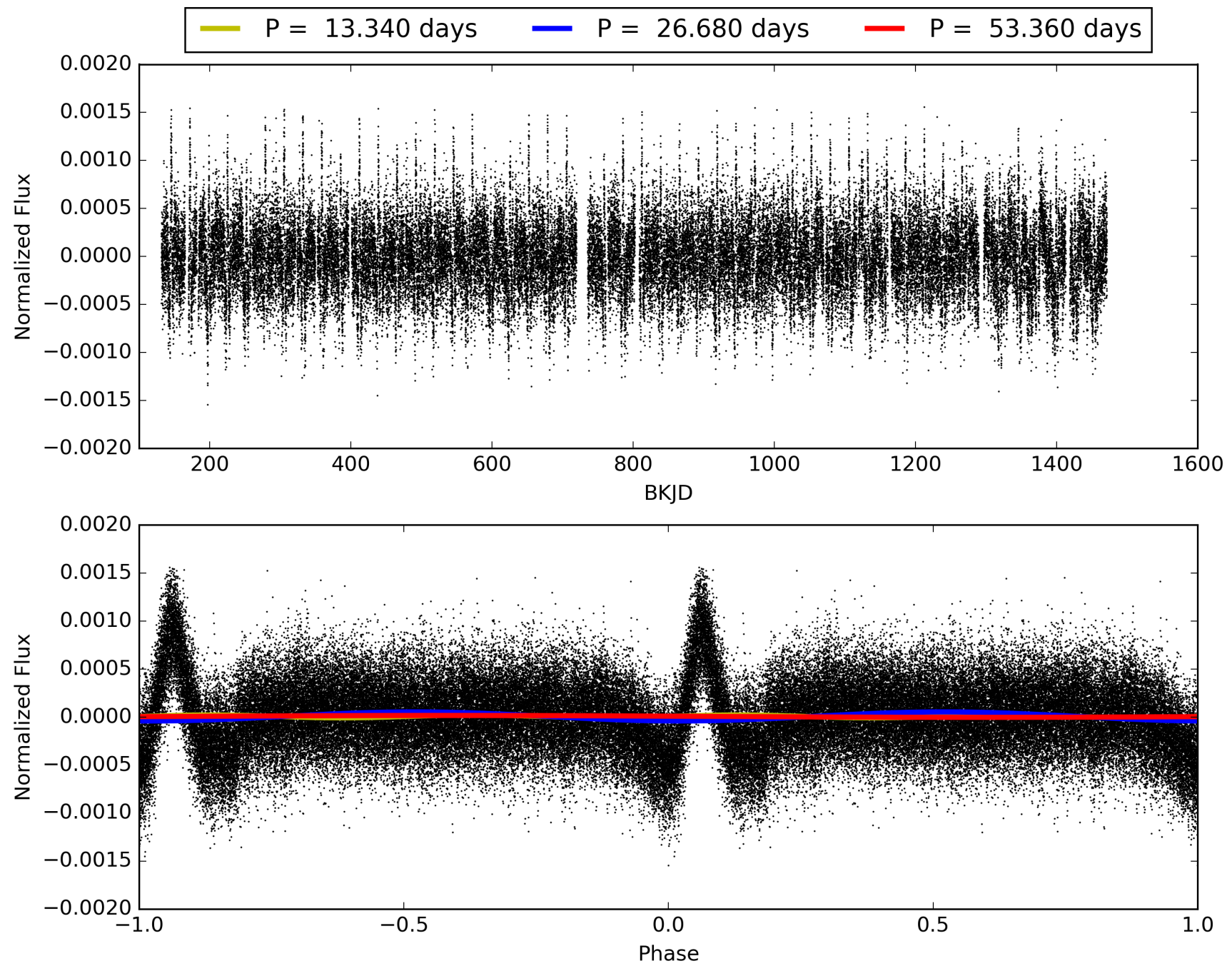
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 89.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.29e-26  
RollingBand-fgt: 1.00 [47/47]  
GhostDiagnostic-chr: 1.181  
Centroid-sig: 9.2%  
Centroid-so: 0.282 arcsec [1.48 $\sigma$ ]  
OotOffset-rm: 0.849 arcsec [2.30 $\sigma$ ]  
KicOffset-rm: 0.738 arcsec [1.81 $\sigma$ ]  
OotOffset-st: 4/4/2/4 [14]  
KicOffset-st: 4/4/2/4 [14]  
DiffImageQuality-fgm: 0.93 [13/14]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 002720096-01, PDC Light Curves

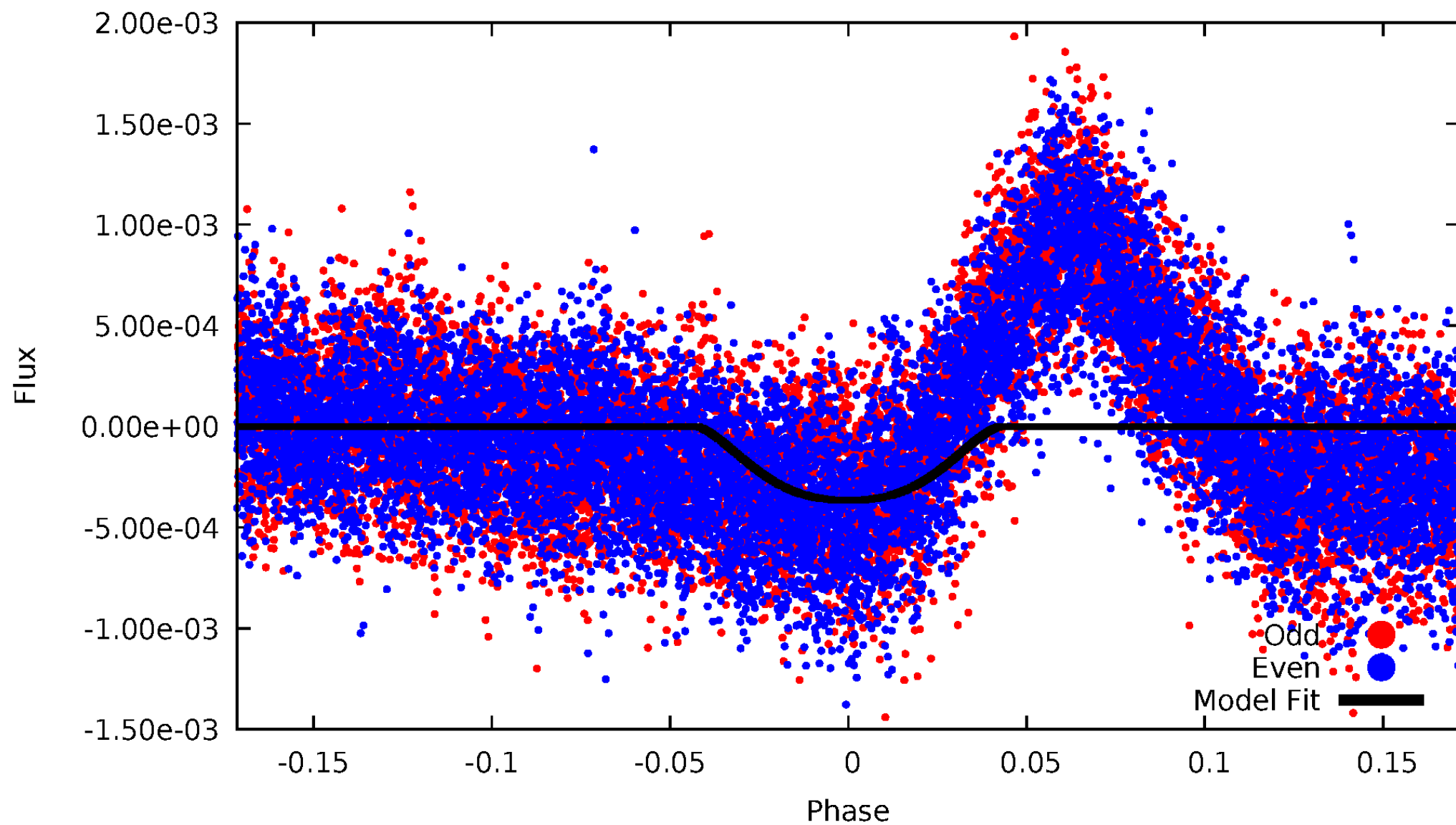


TCE 002720096-01



# DV Odd/Even

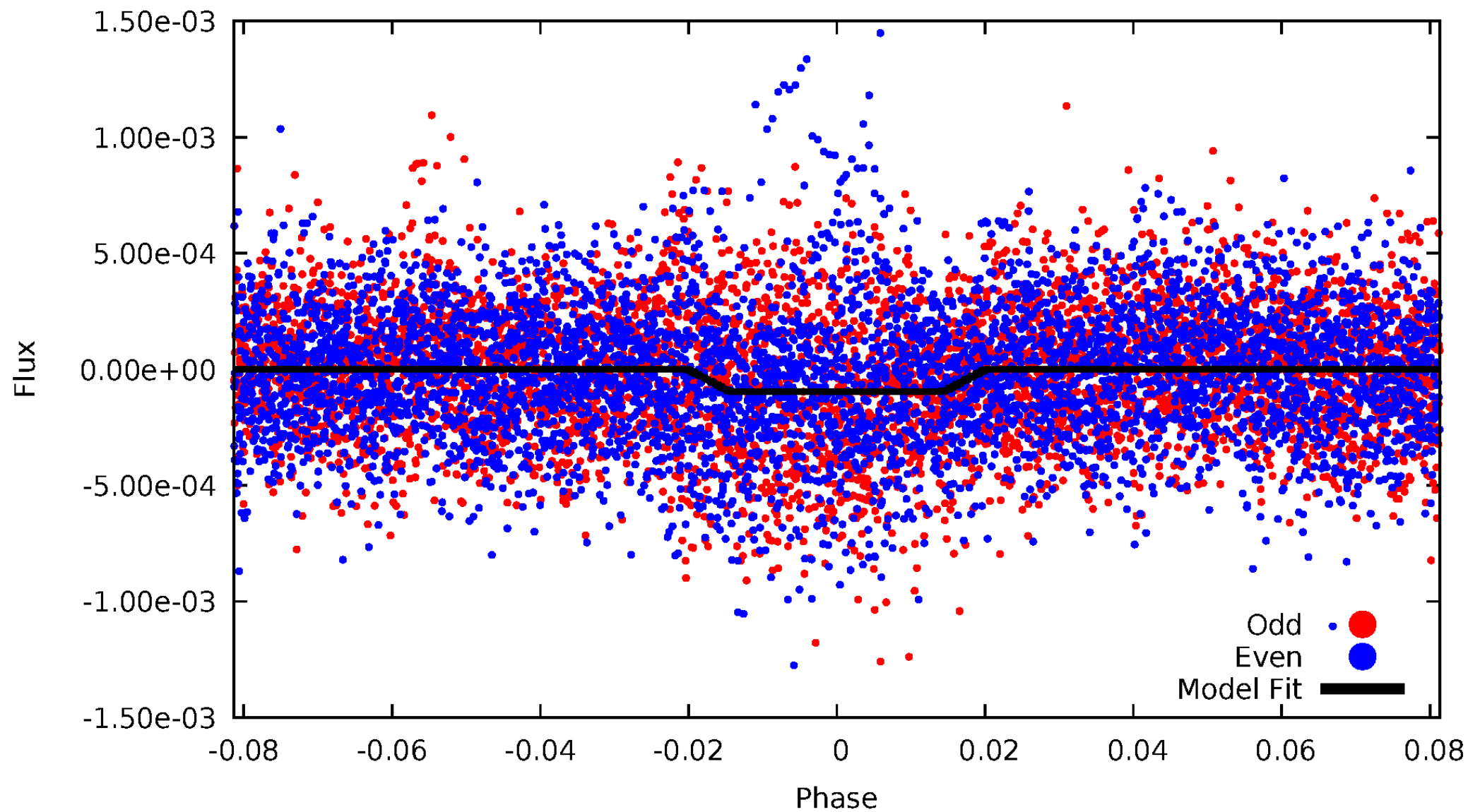
TCE 002720096-01





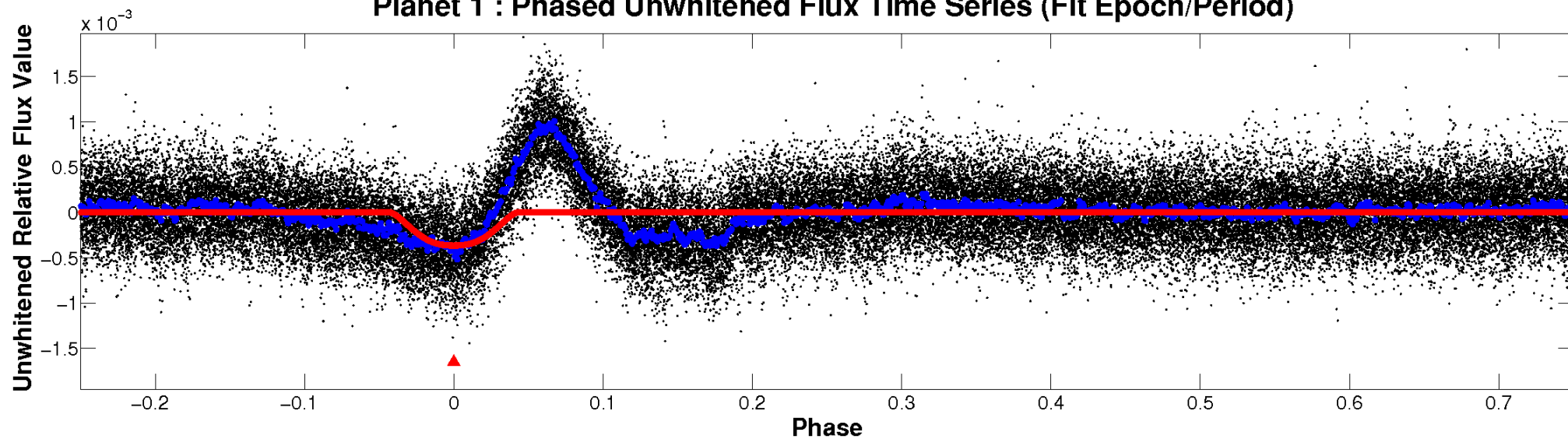
# ALT Odd/Even

TCE 002720096-01

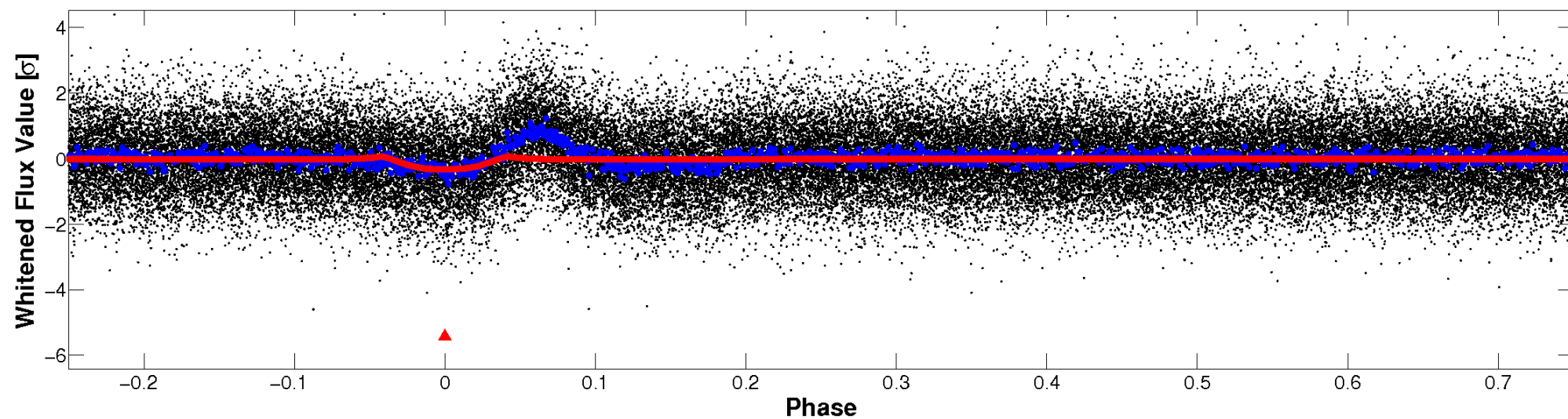


# Non-Whitened Vs. Whitened Light Curve

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

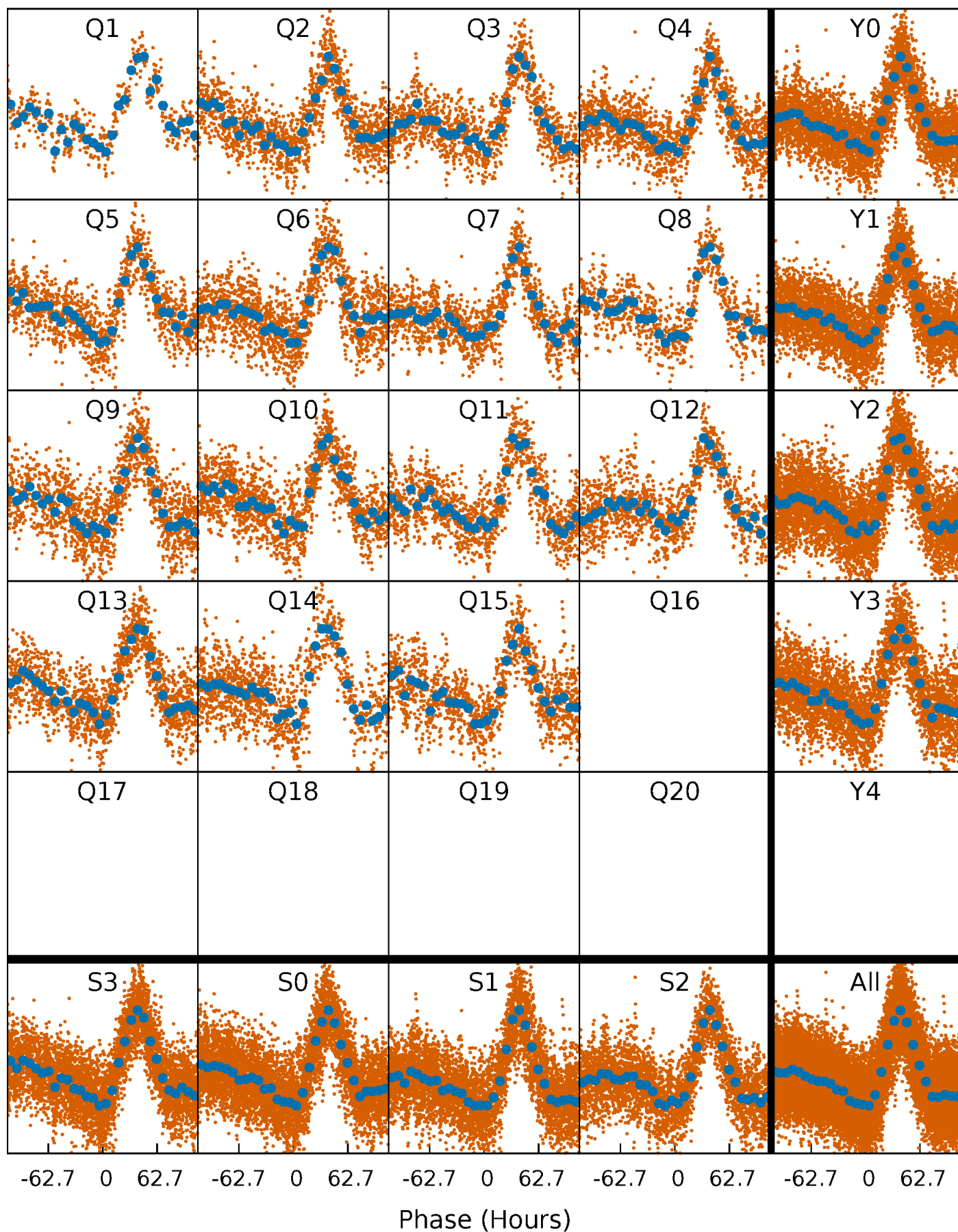


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

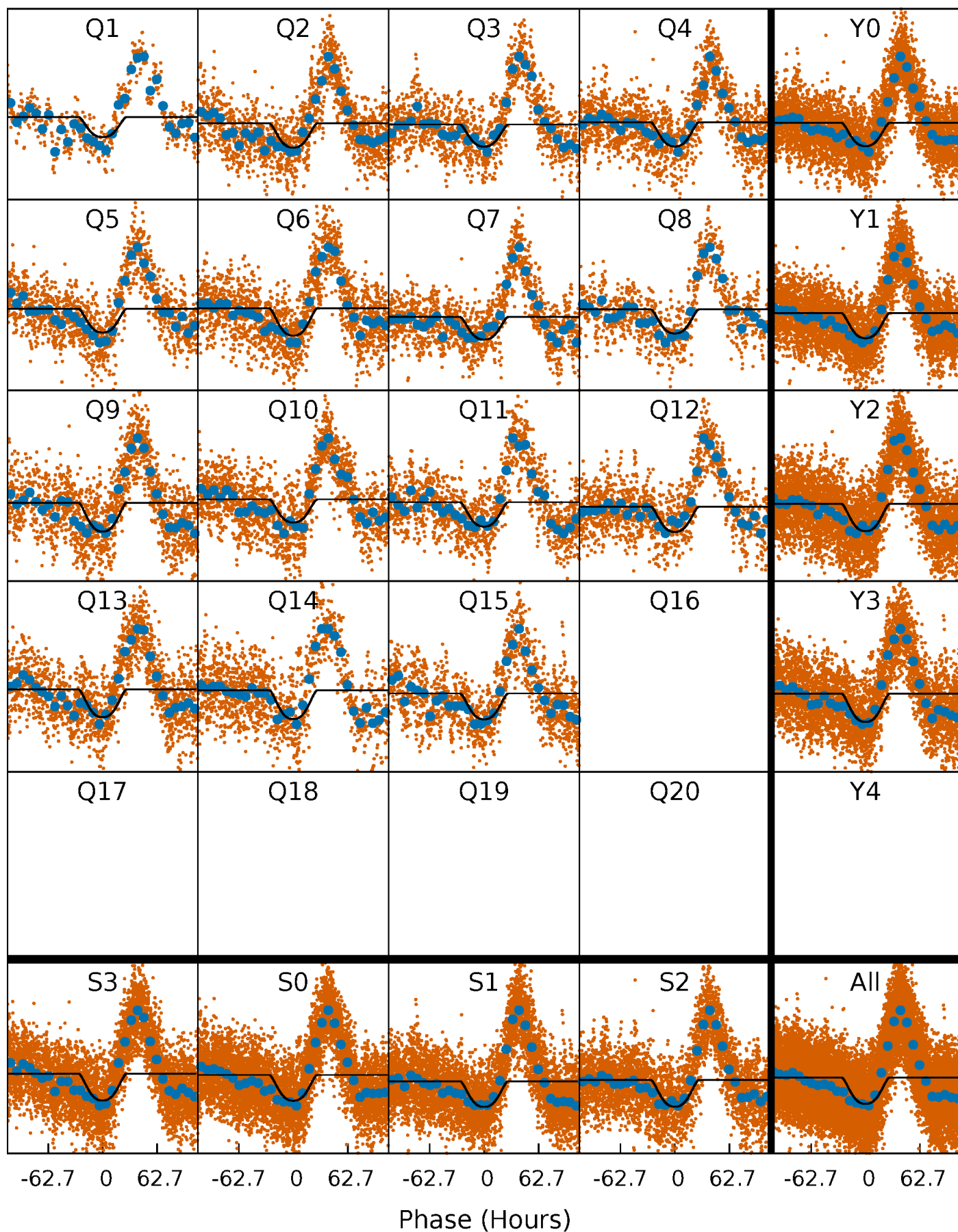
TCE 002720096-01   P= 26.680222 Days    $T_0=143.415577$  (BKJD)





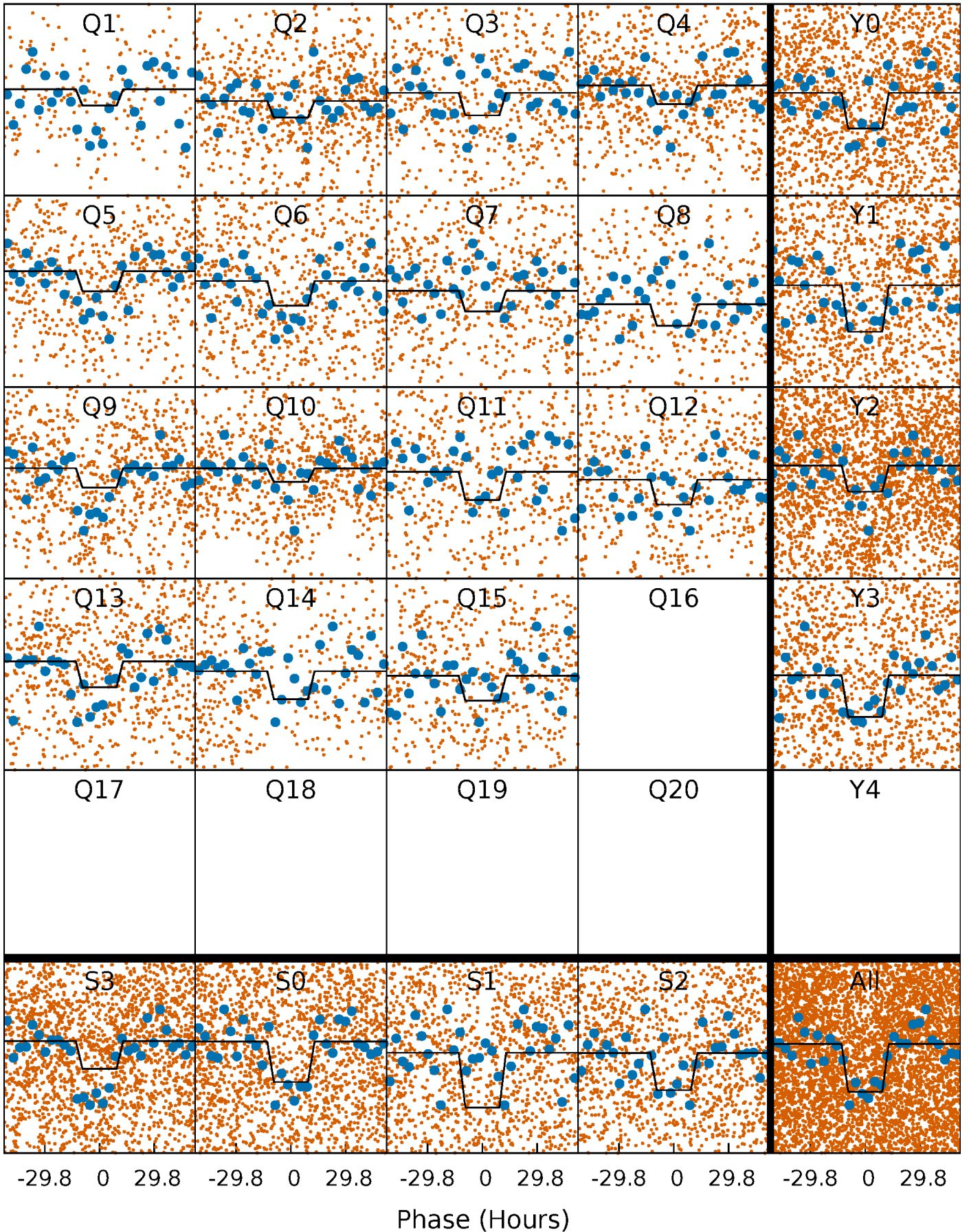
# DV Quarter-Phased Transit Curves

TCE 002720096-01 P= 26.680222 Days  $T_0=143.415577$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

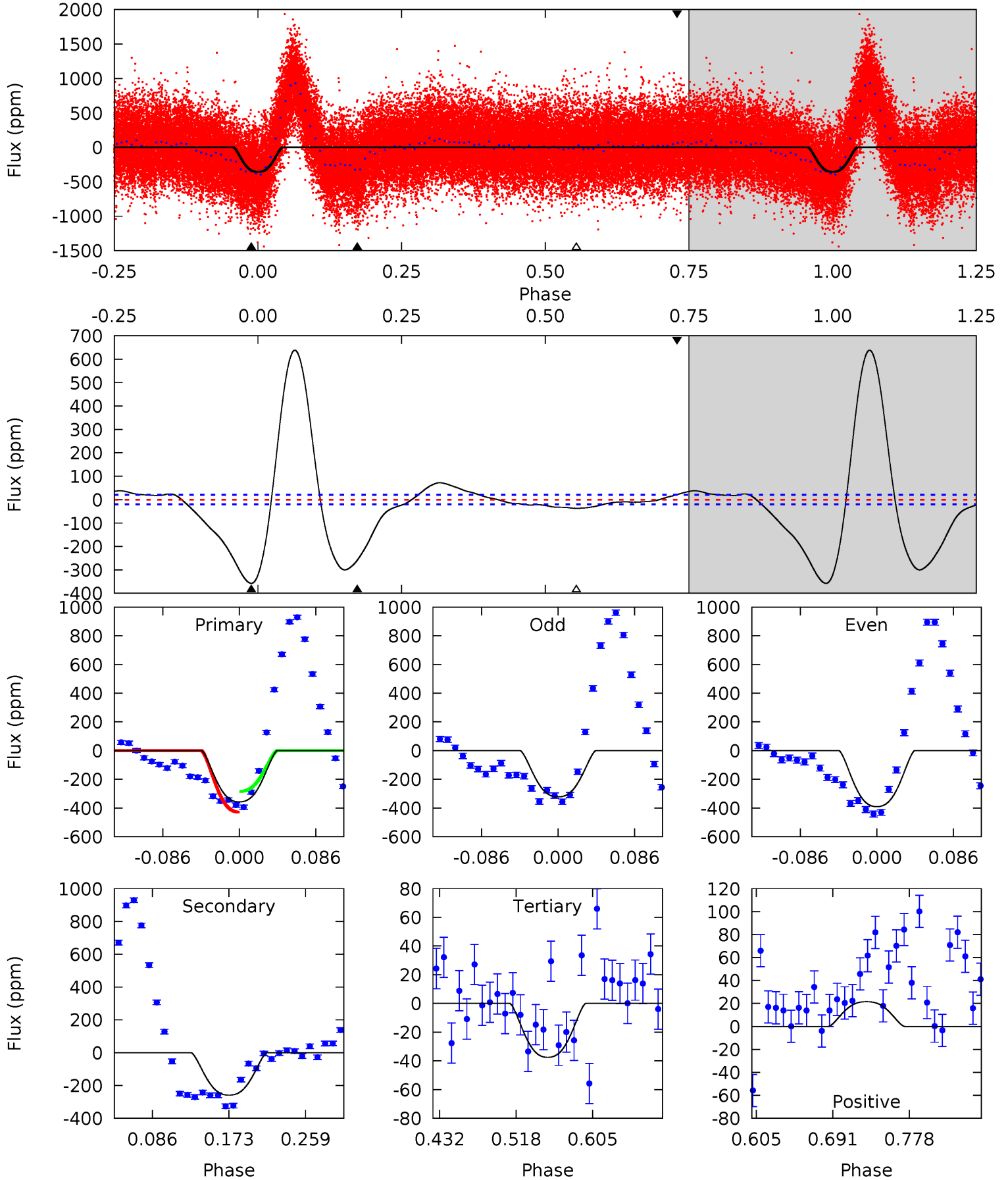
TCE 002720096-01 P= 26.683262 Days  $T_0=143.735662$  (BKJD)



# DV Model-Shift Uniqueness Test

002720096-01, P = 26.680222 Days, E = 116.735355 Days

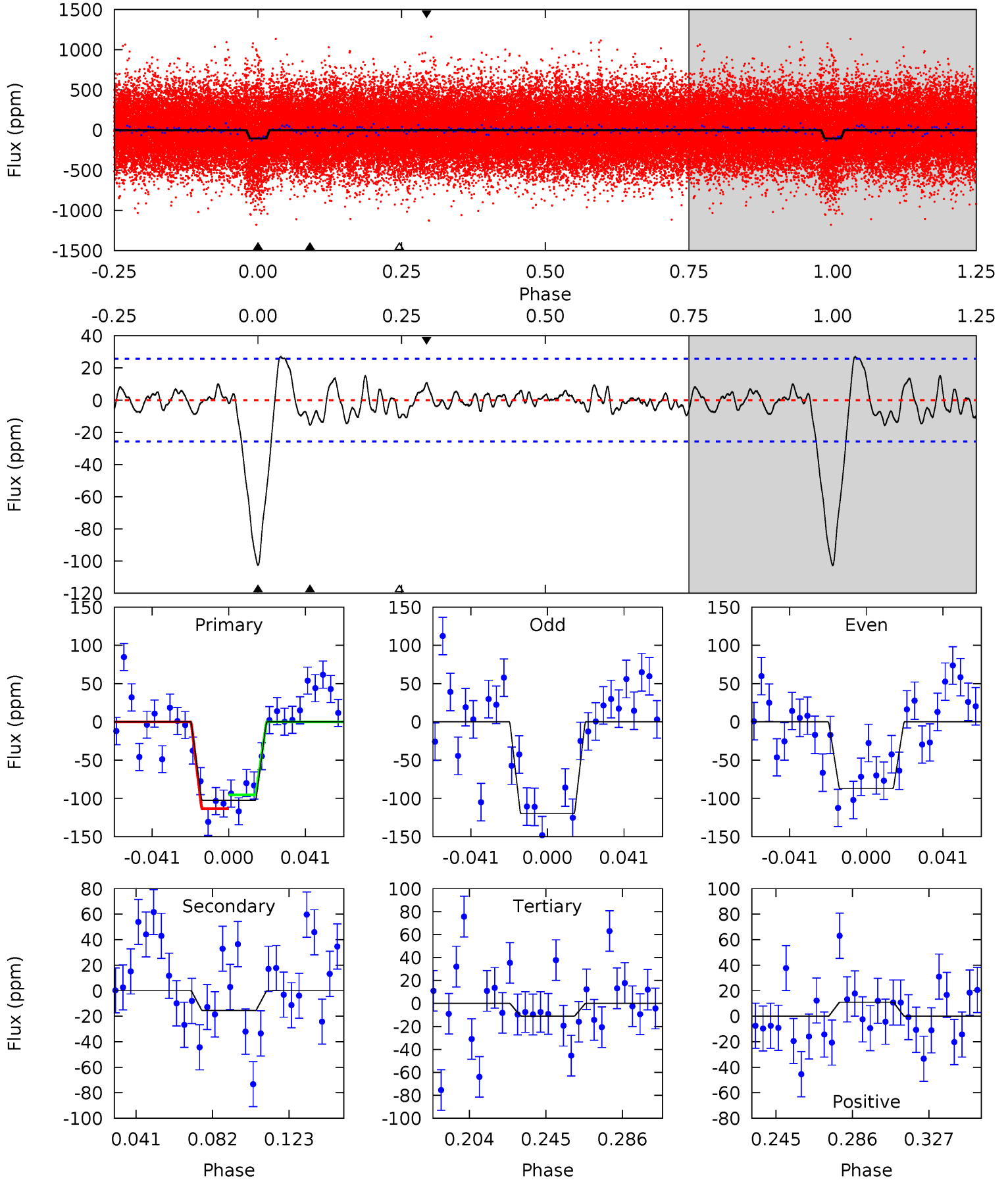
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
80.6	58.4	8.46	4.86	4.60	1.71	16.5	72.1	75.7	49.9	53.5	7.67	1.01	0.64	14.4



# Alt Model-Shift Uniqueness Test

002720096-01, P = 26.683262 Days, E = 117.052400 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
18.9	2.87	2.01	2.01	4.75	2.05	1.01	16.9	16.9	0.86	0.86	3.03	0.68	0.21	1.67



### Stellar Parameters For KIC 002720096

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4901^{+43}_{-102}$	$2.953^{+0.030}_{-0.027}$	$0.100^{+0.100}_{-0.200}$	$7.755^{+0.397}_{-1.590}$	$1.969^{+0.173}_{-0.693}$	$0.006^{+0.002}_{-0.000}$
	+1%/-2%	+1%/-1%	+100%/-200%	+5%/-21%	+9%/-35%	+29%/-8%
Source	SPE74	AST9	SPE74	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 002720096-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-259 \pm 4$	$21.49^{+1.97}_{-2.36}$	$1795^{+33}_{-43}$	$4097^{+139}_{-131}$	$15^{+3}_{-2}$
Alt.	$-16 \pm 5$	$8.38^{+1.82}_{-1.94}$	$1796^{+31}_{-42}$	$3476^{+353}_{-311}$	$5.871^{+4.487}_{-2.505}$

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



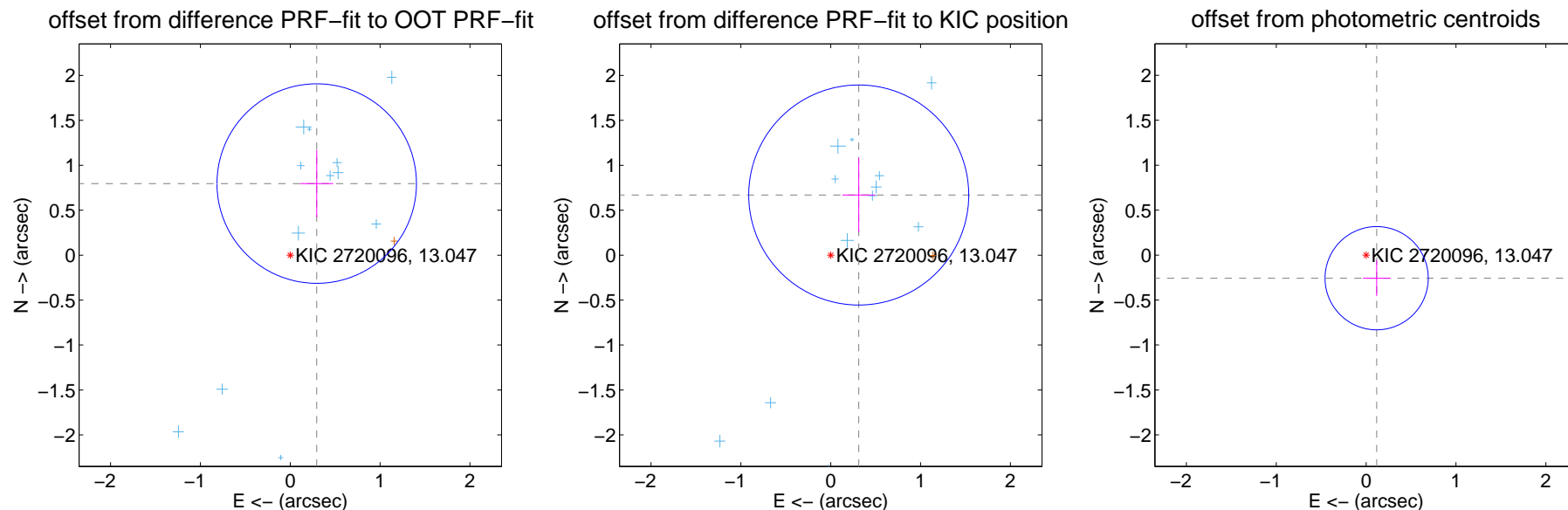
## DV Centroid Data

Supplemental centroid analysis for 002720096-01. Kepler magnitude: 13.05. Transit SNR 16.05

There are 13 quarters with good PRF difference image offsets

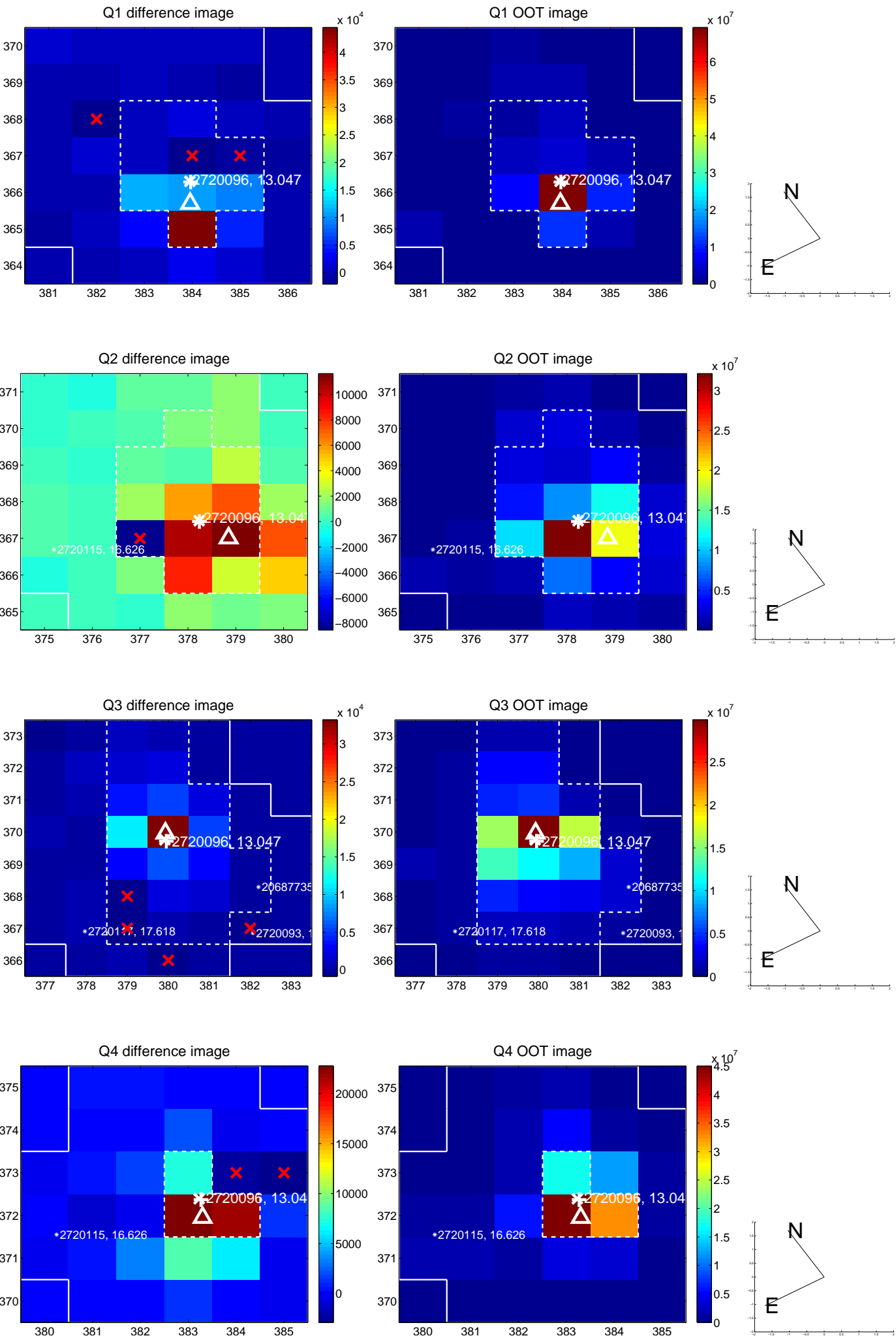
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.849 \pm 0.370$	2.30	$-0.294 \pm 0.184$	$0.796 \pm 0.374$
PRF-fit source offset from KIC position	$0.738 \pm 0.408$	1.81	$-0.312 \pm 0.183$	$0.669 \pm 0.415$
photometric centroid source offset	$0.28 \pm 0.19$	1.48	$-0.12 \pm 0.15$	$-0.26 \pm 0.20$

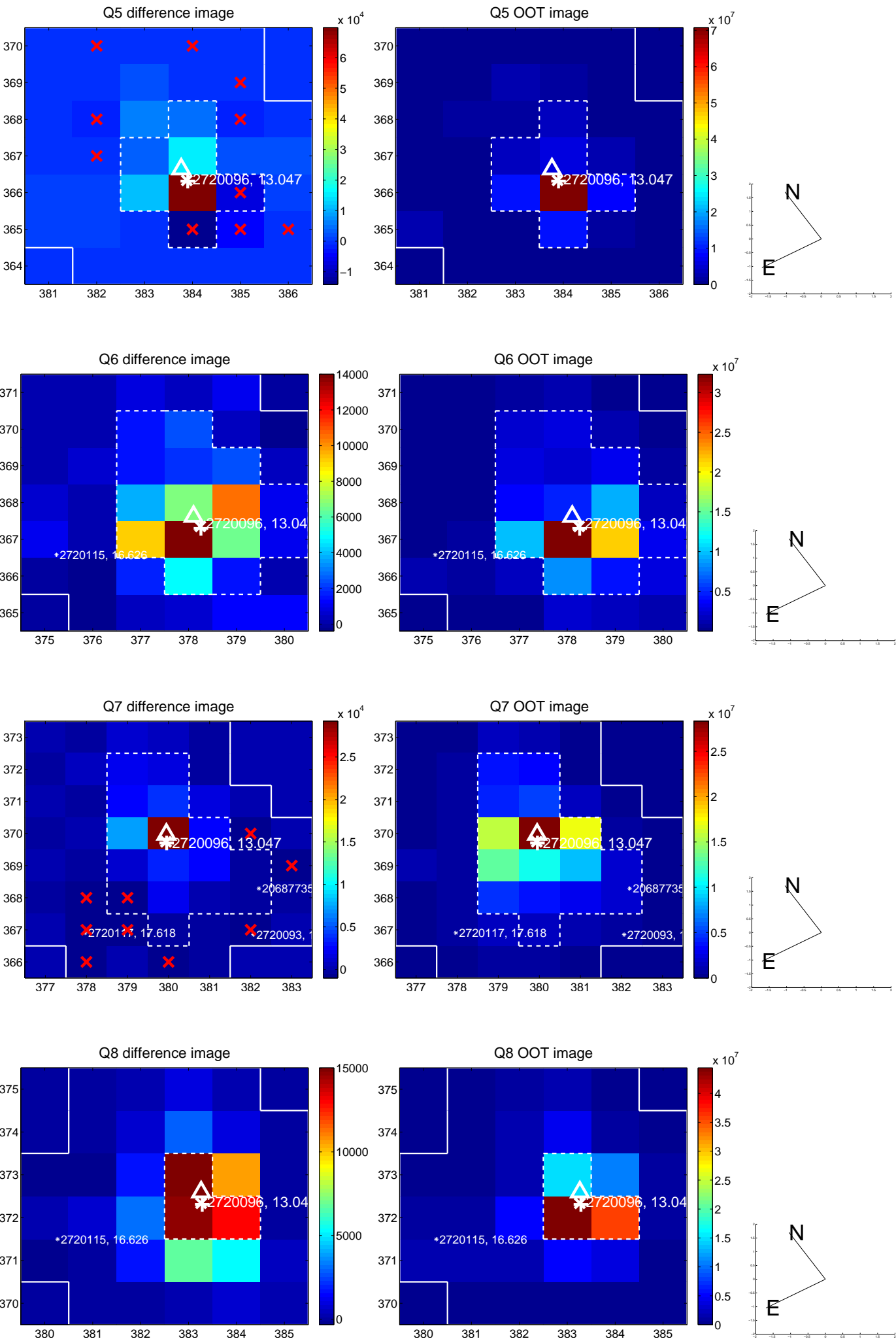


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

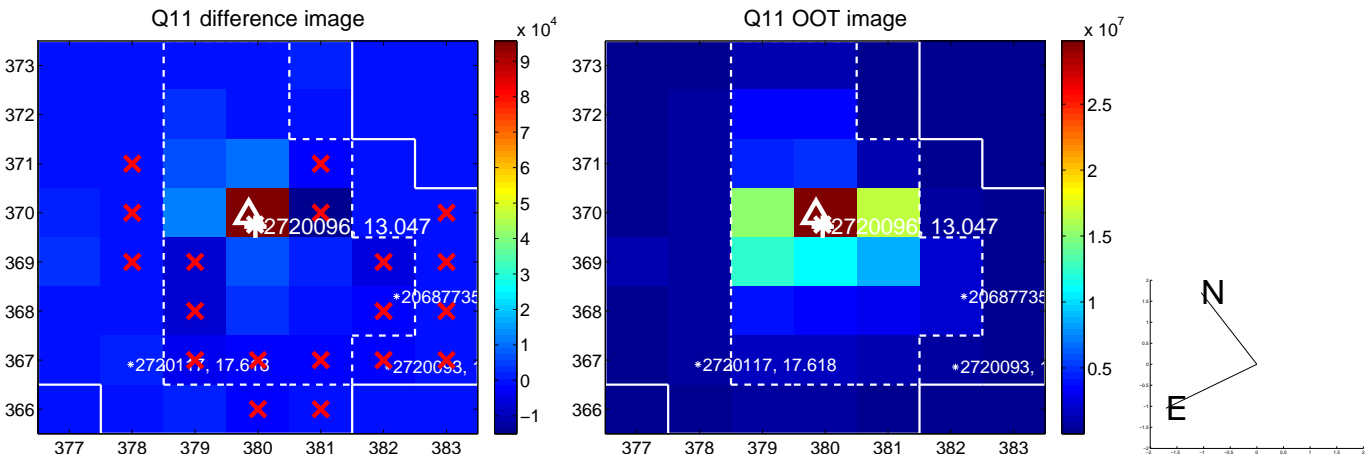
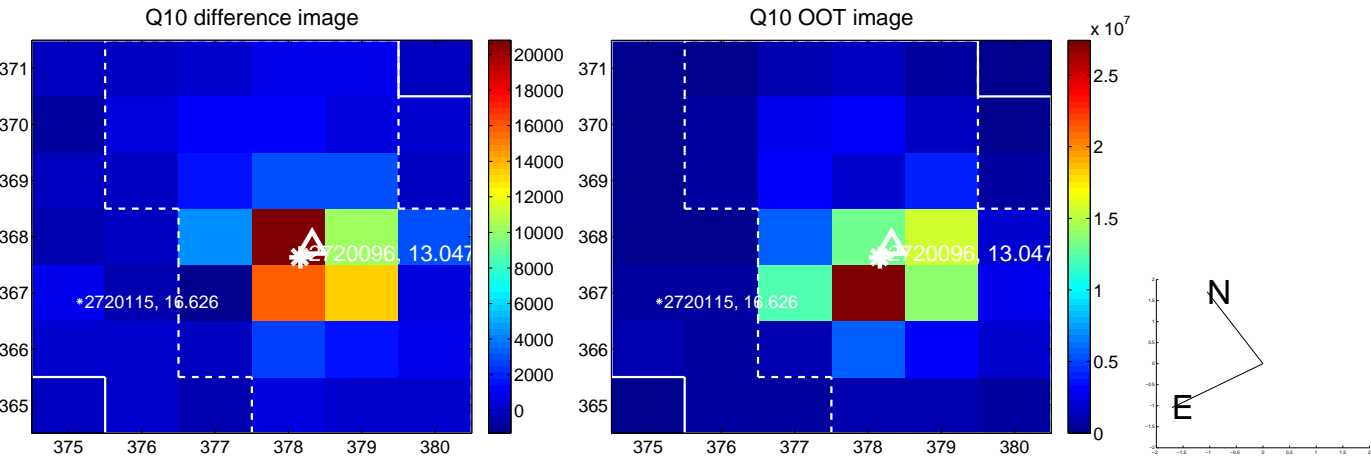
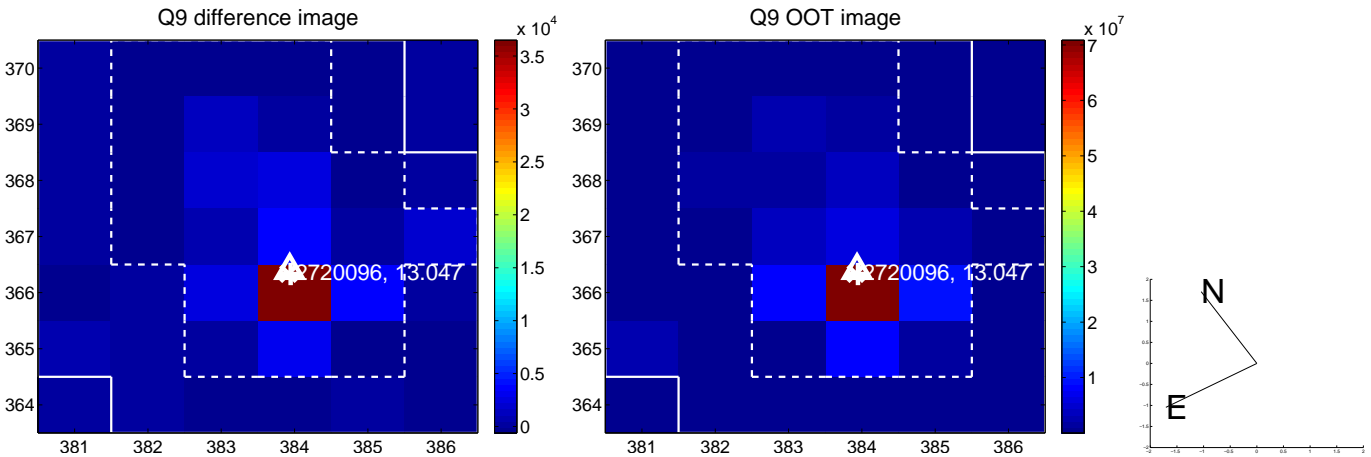
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



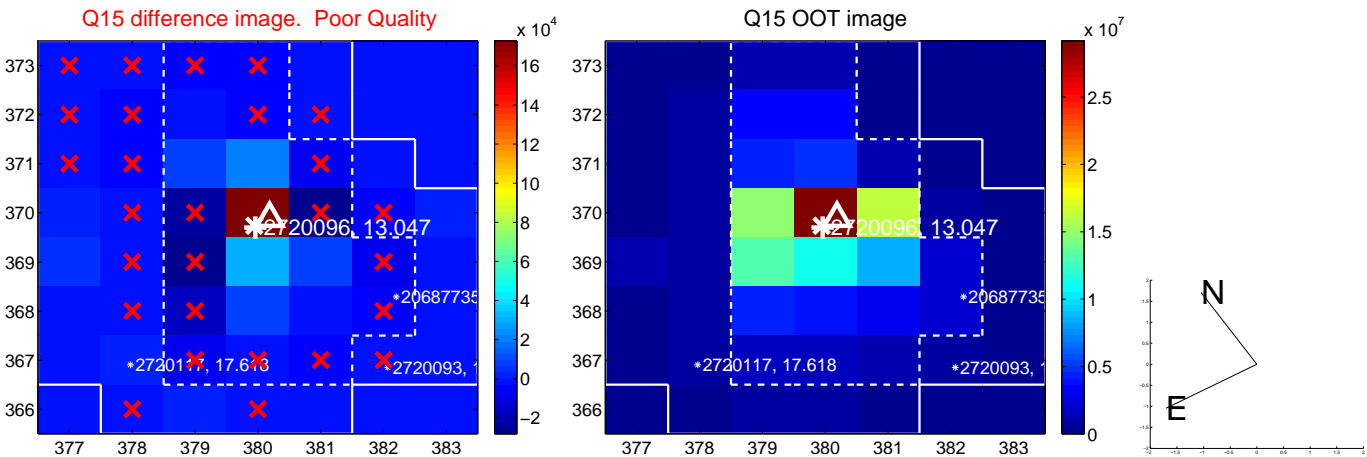
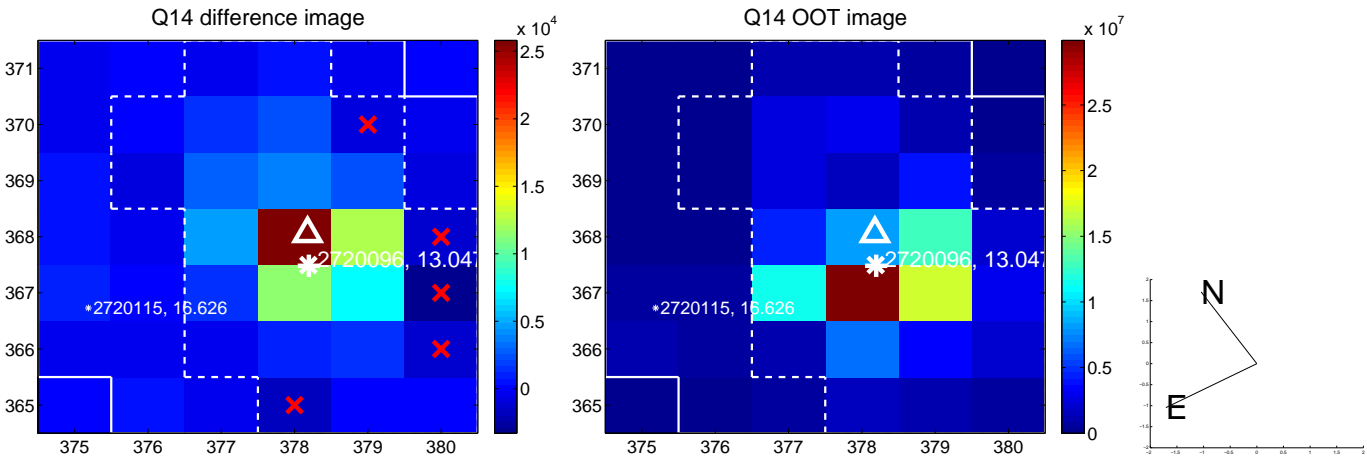
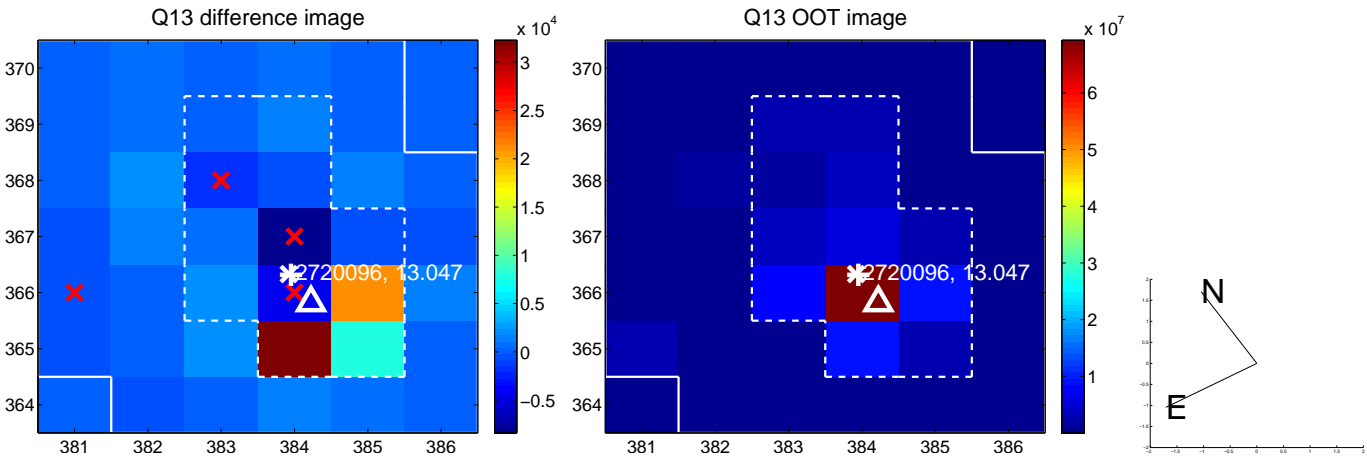
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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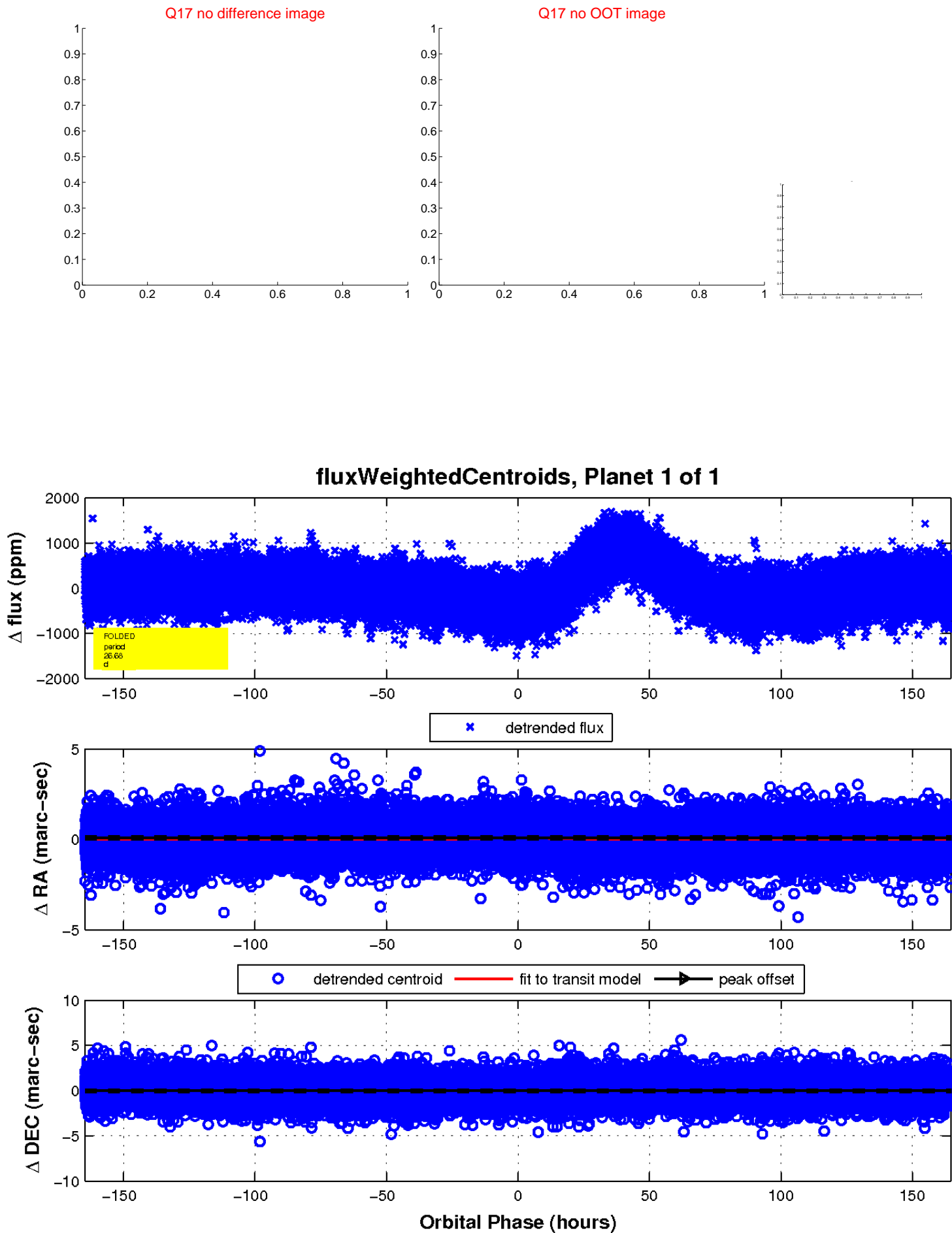


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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

