

# KIC 008226720

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008226720-01	OBS	8154.01	391.333234	186.724169	272.1	12.559	7.8	7.5	0.98	6428	1.77	1.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008226720-01	OBS	FP	0.04	1	0	0	0	INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

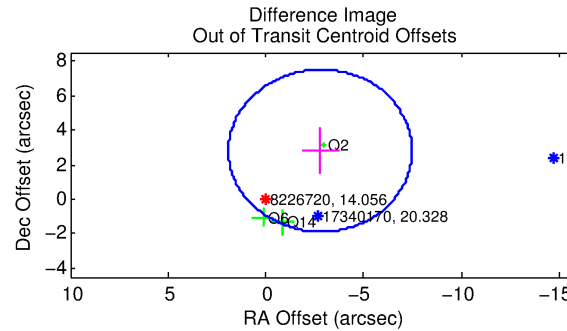
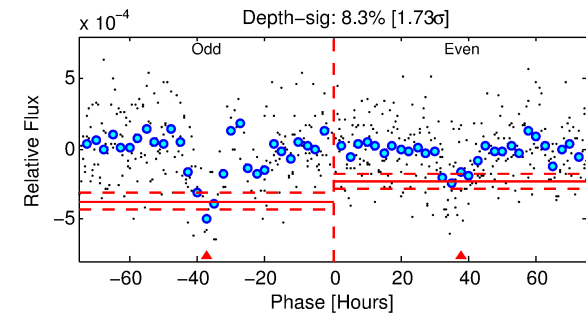
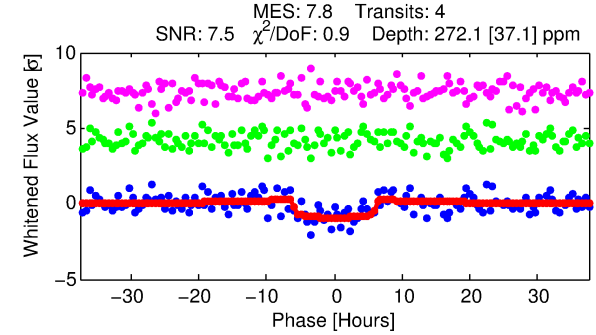
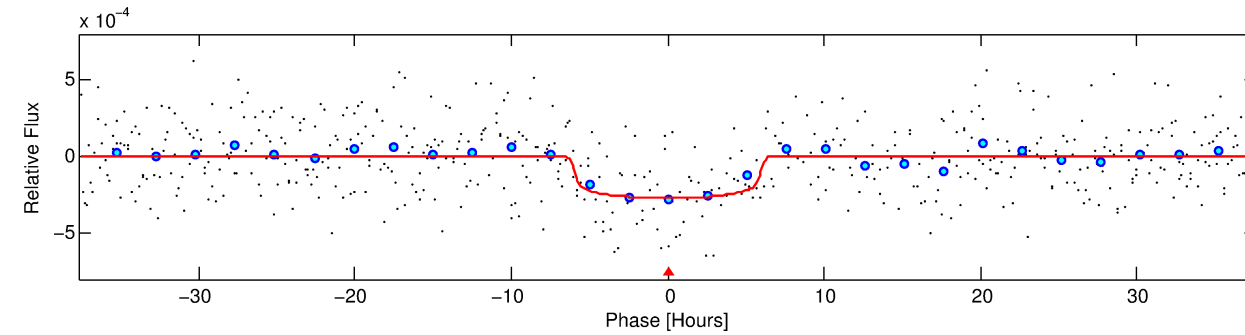
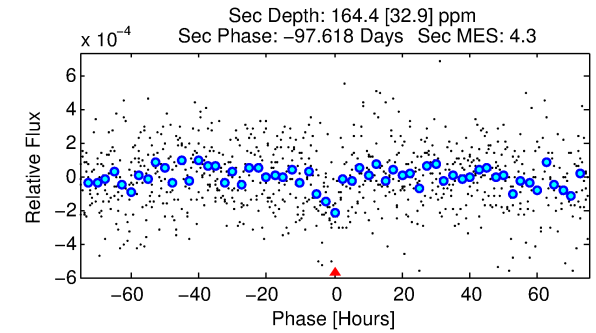
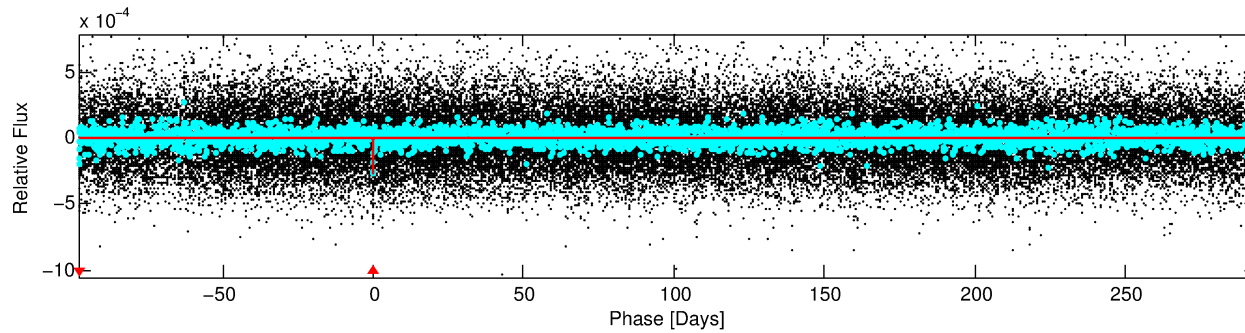
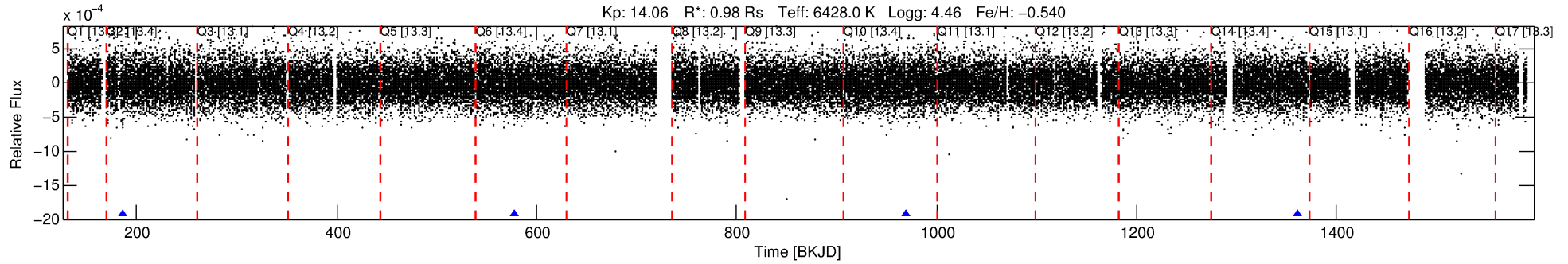
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008226720-01

No Significant Match Found

# DV One-Page Summary

KIC: 8226720 Candidate: 1 of 1 Period: 391.333 d



## DV Fit Results:

Period = 391.33323 [0.00898] d  
Epoch = 186.7242 [0.0167] BKJD  
Rp/R\* = 0.0166 [0.0044]  
a/R\* = 152.53 [217.35]  
b = 0.79 [0.69]  
Seff = 1.33 [0.50]  
Teq = 274 [26] K  
Rp = 1.77 [0.69] Re  
a = 1.0463 [0.2539] AU  
Ag = 31534.41 [21213.96] [1.49σ]  
Teffp = 5646 [827] K [6.49σ]

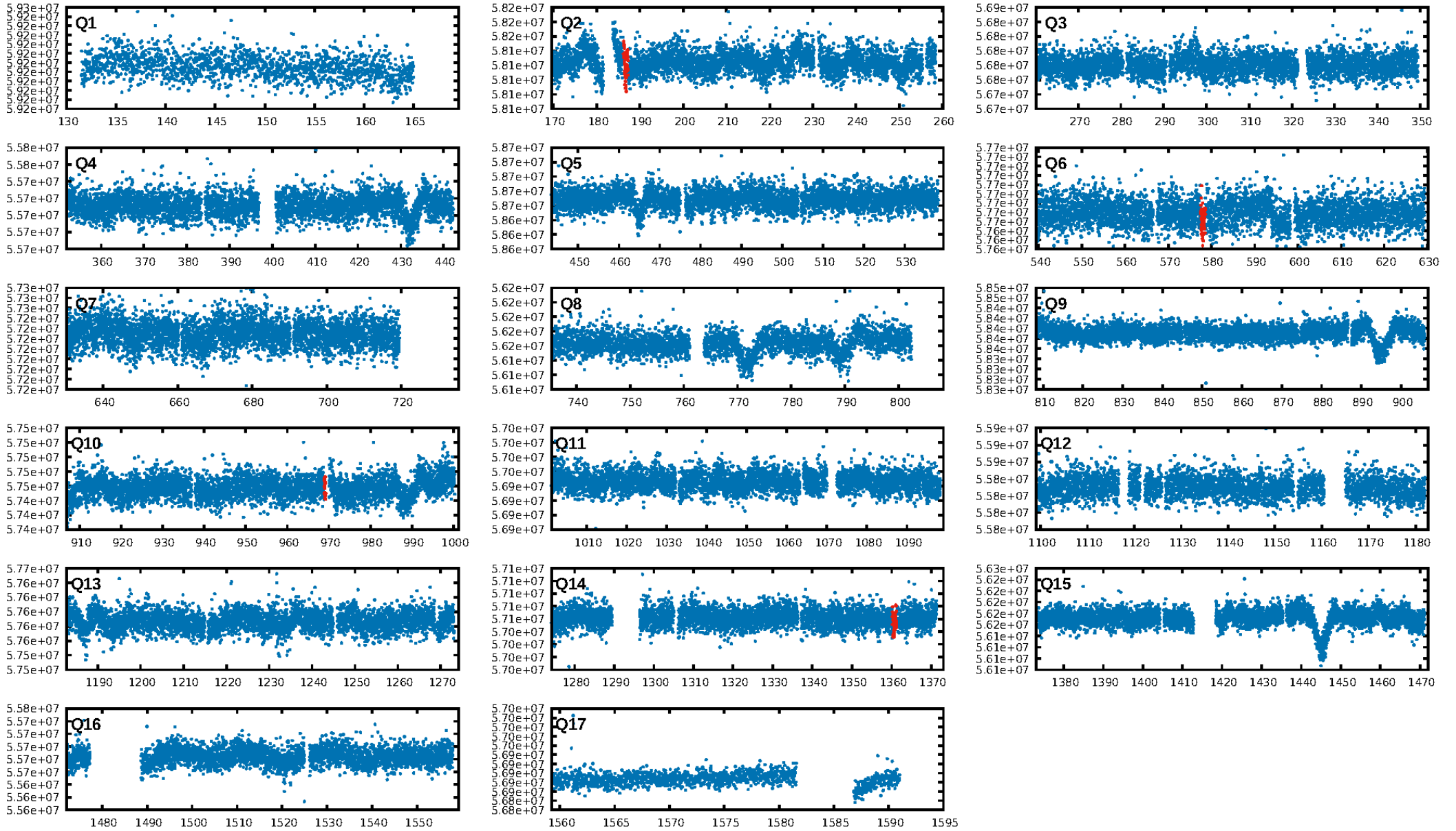
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 23.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.61e-14  
RollingBand-fgt: 1.00 [4/4]  
**GhostDiagnostic-chr: 0.3878**  
Centroid-sig: 37.4%  
Centroid-so: 1.895 arcsec [1.11σ]  
OotOffset-rm: 3.950 arcsec [2.53σ]  
**KicOffset-rm: 3.934 arcsec [3.55σ]**  
OotOffset-st: 3/0/0/0 [3]  
KicOffset-st: 3/0/0/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

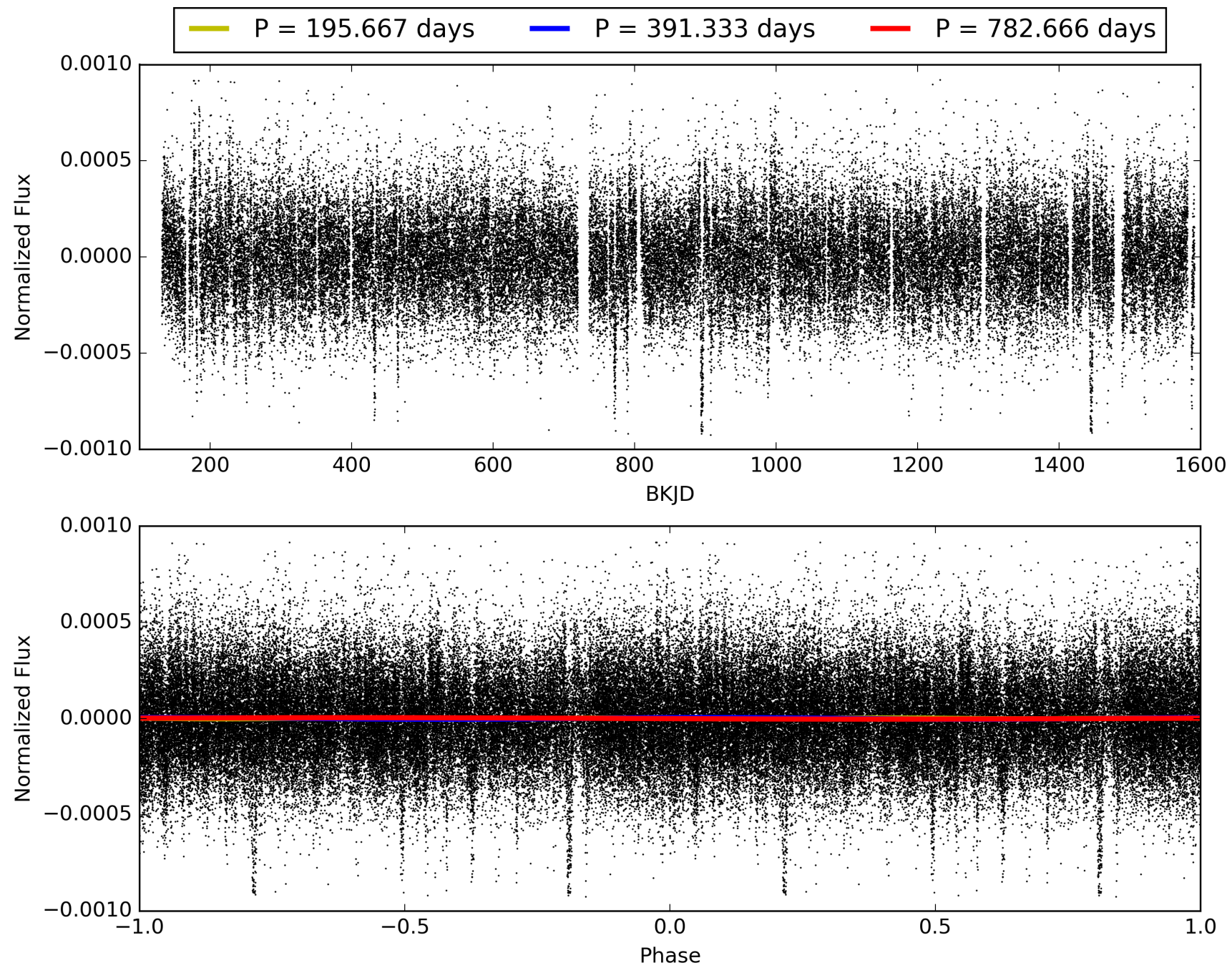
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:48:50 Z

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

# TCE 008226720-01, PDC Light Curves

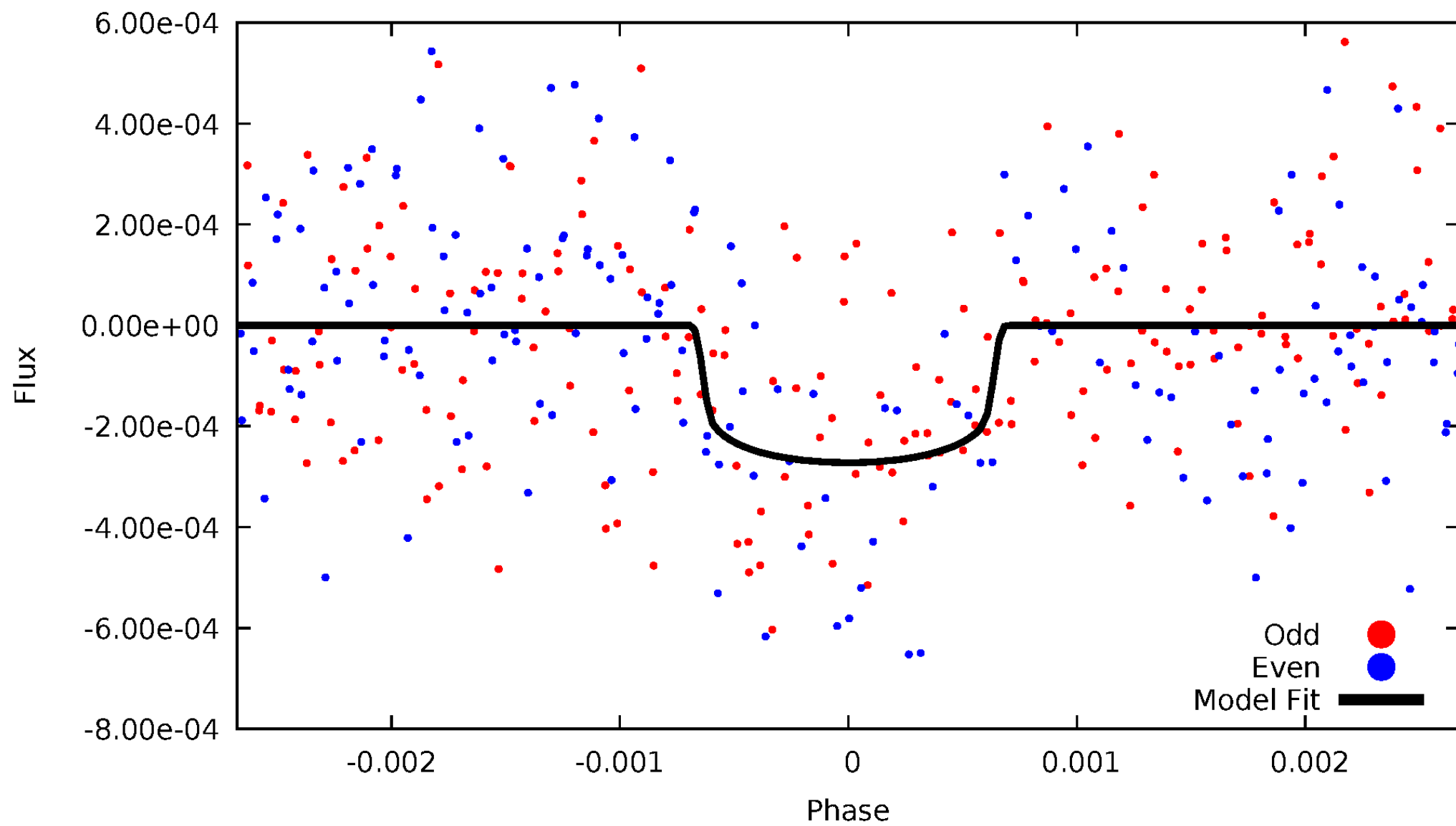


TCE 008226720-01



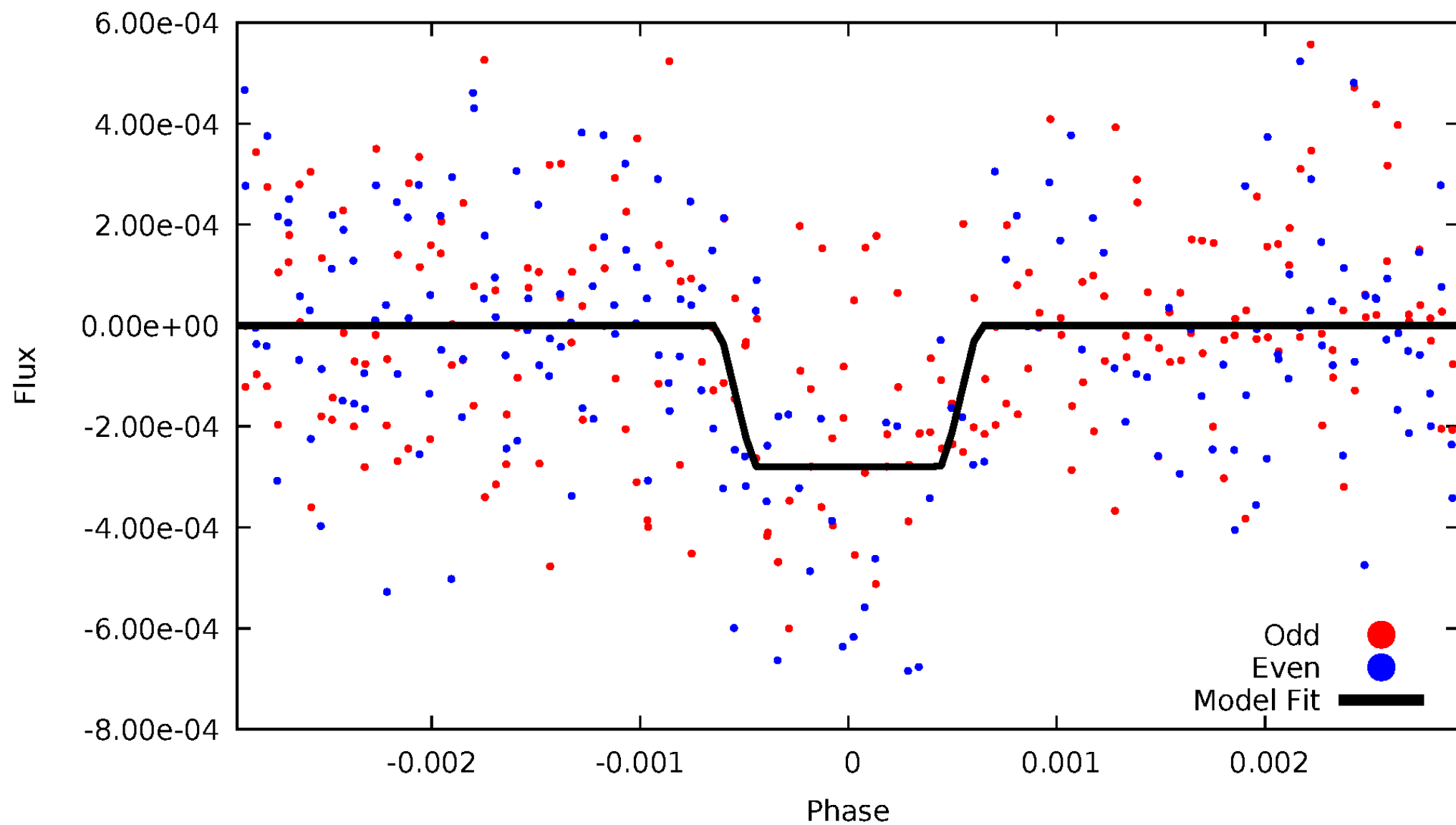
# DV Odd/Even

TCE 008226720-01



# ALT Odd/Even

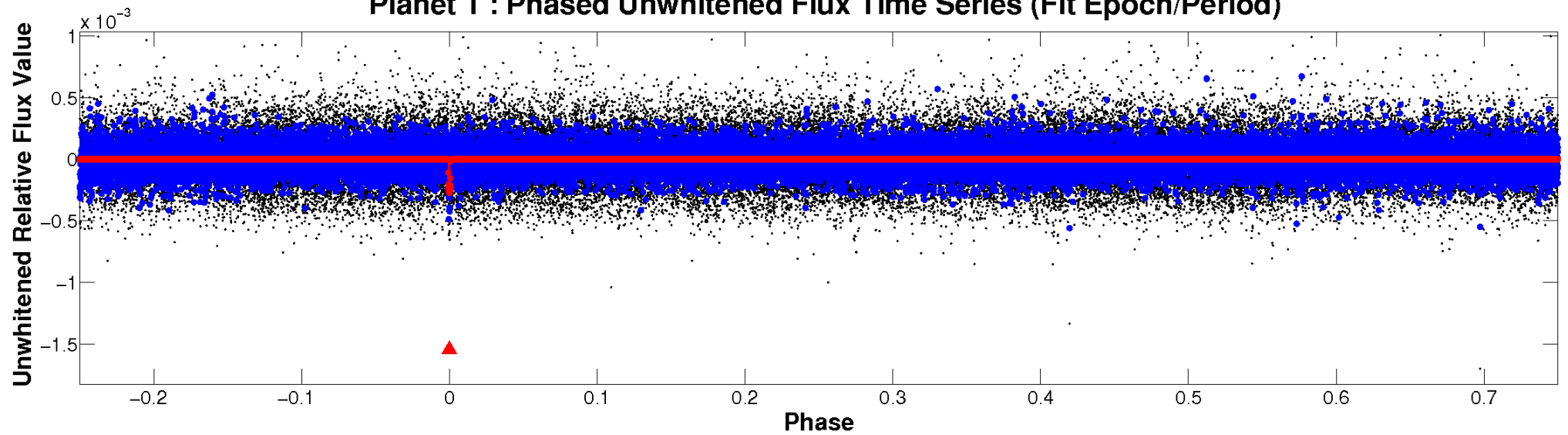
TCE 008226720-01



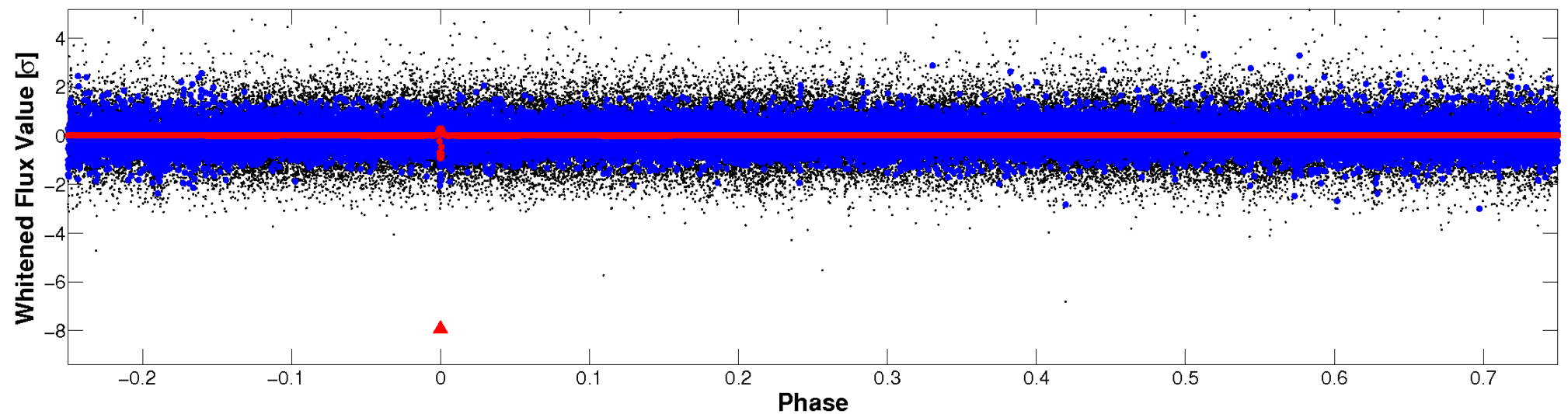


# Non-Whitened Vs. Whitened Light Curve

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

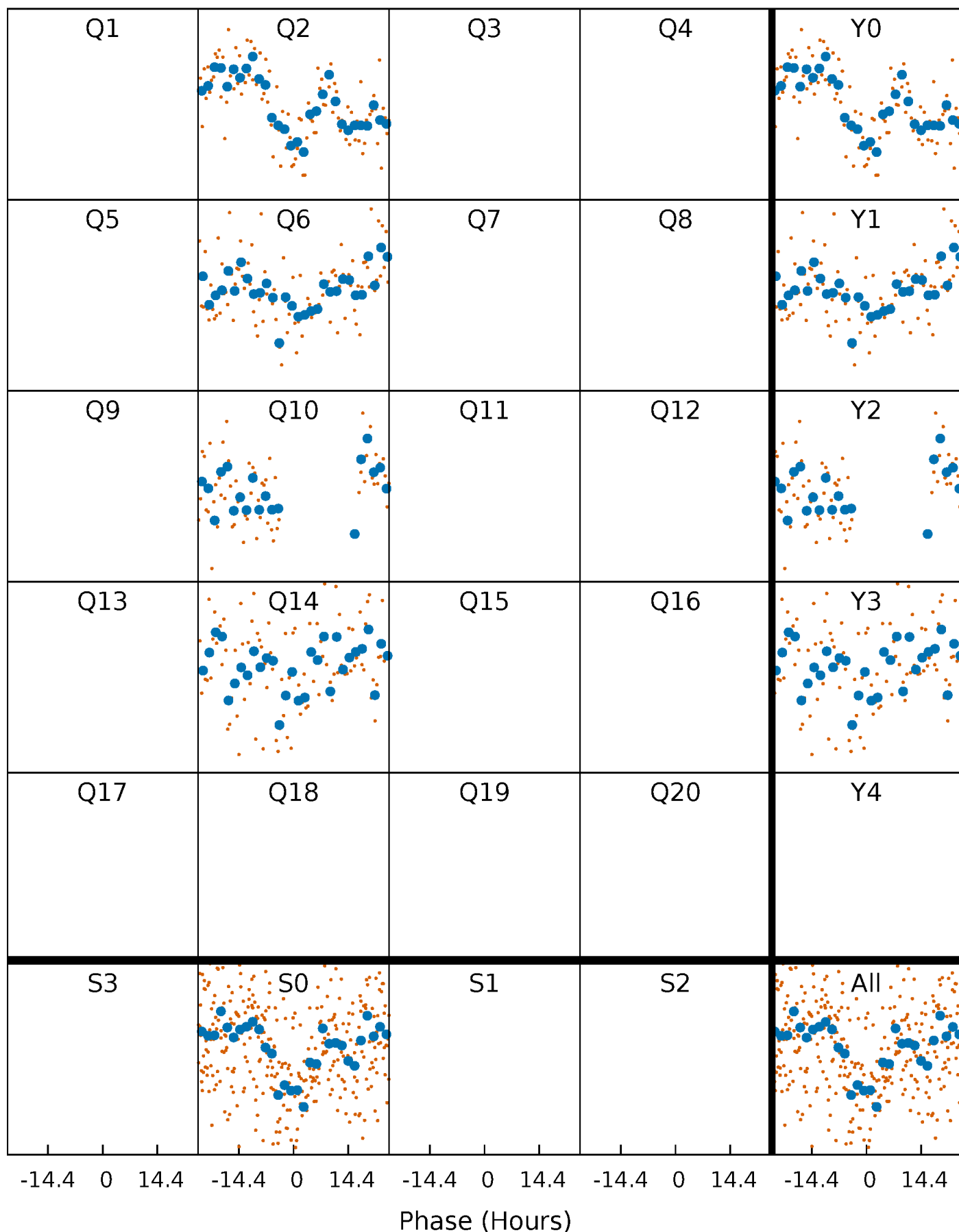


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

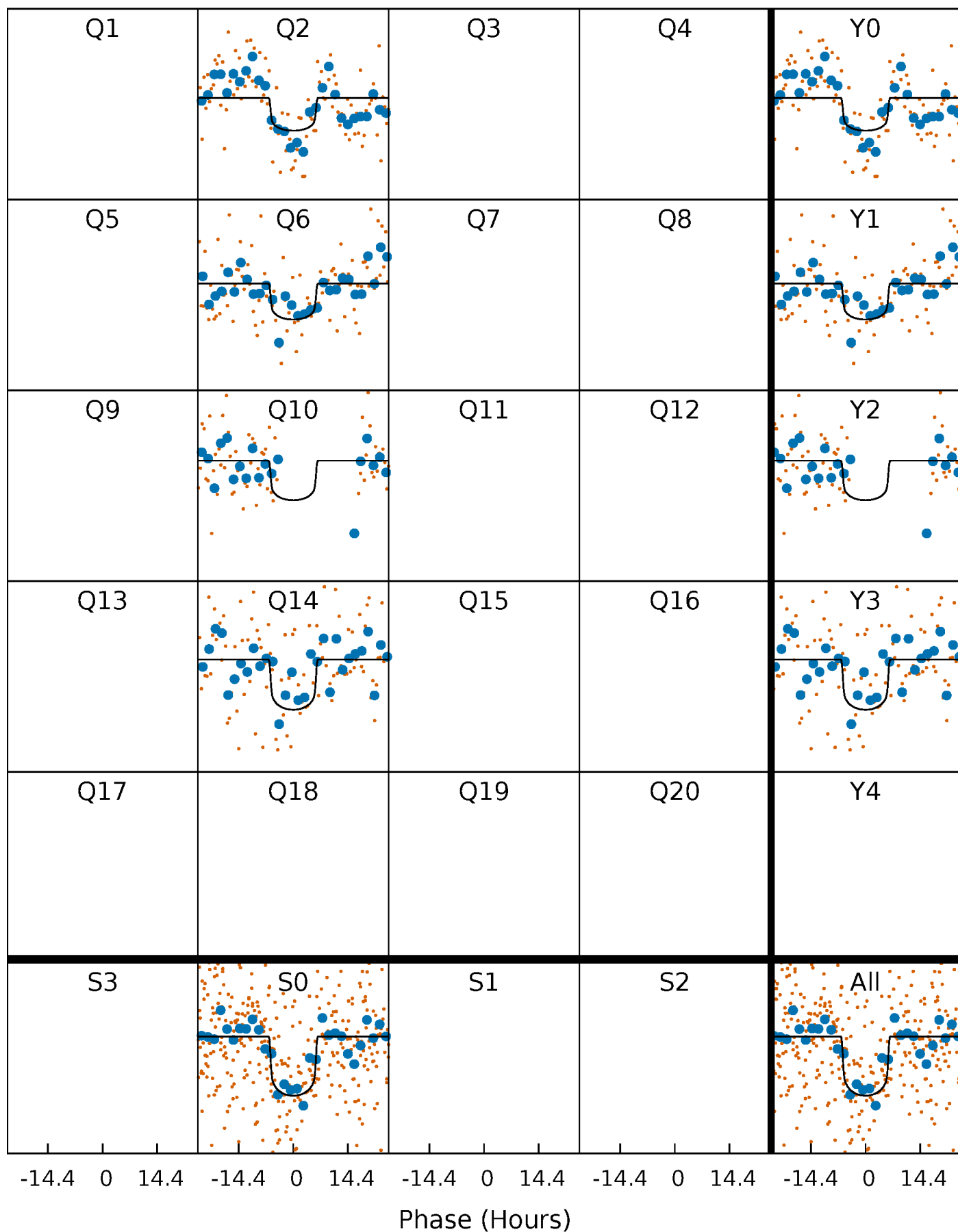
TCE 008226720-01 P=391.333234 Days  $T_0=186.724169$  (BKJD)





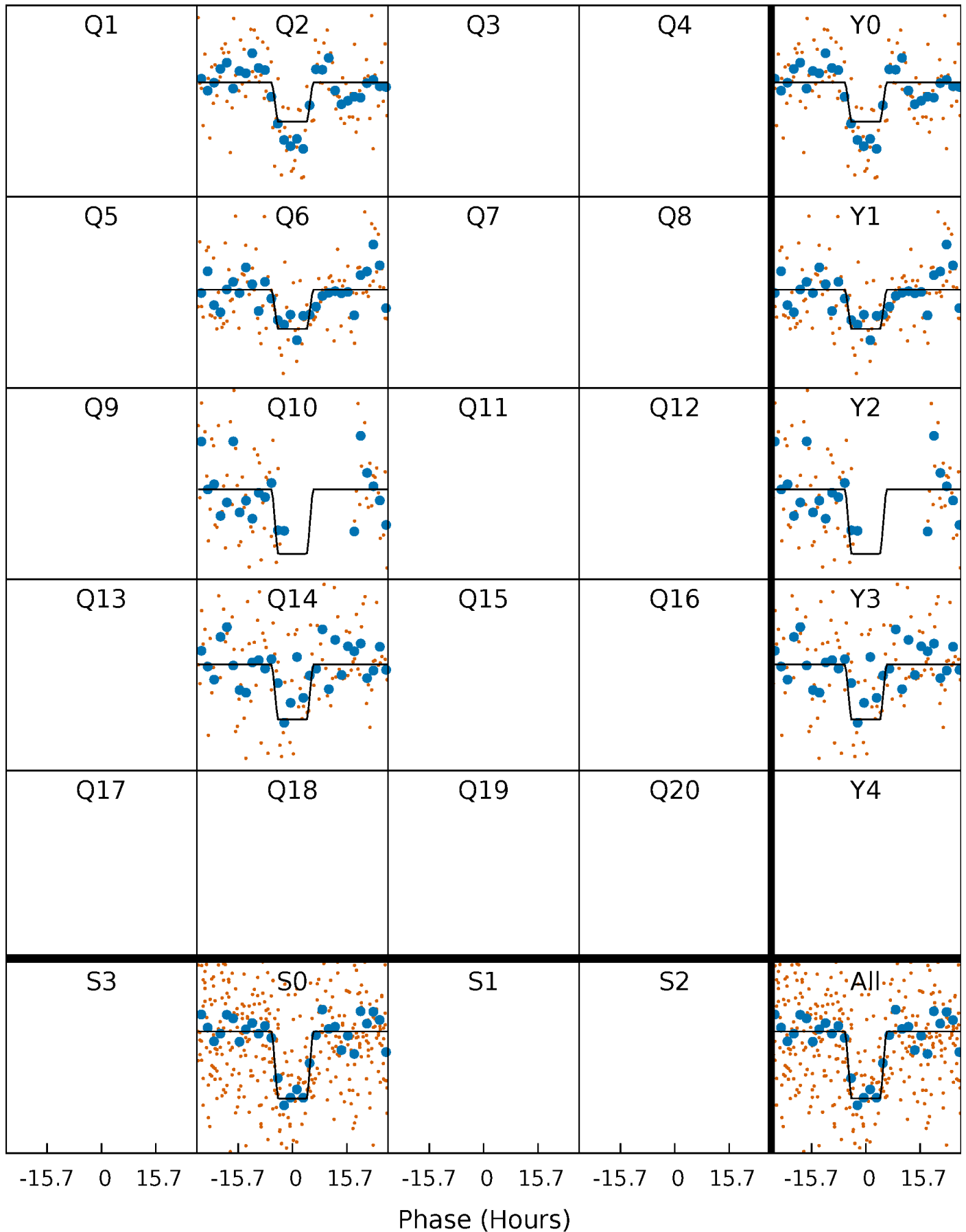
# DV Quarter-Phased Transit Curves

TCE 008226720-01 P=391.333234 Days  $T_0=186.724169$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

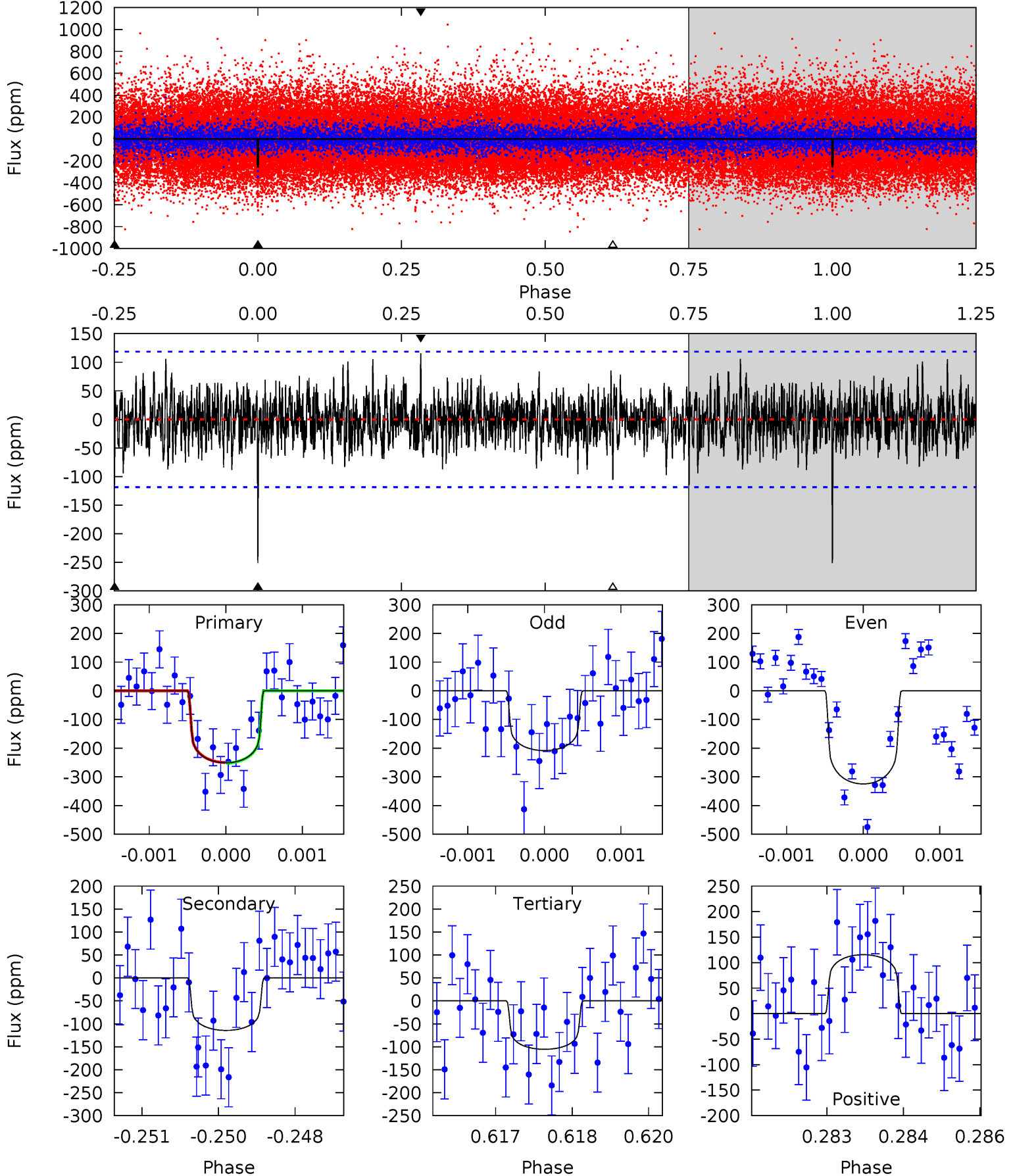
TCE 008226720-01 P=391.323107 Days  $T_0=186.715743$  (BKJD)



# DV Model-Shift Uniqueness Test

008226720-01, P = 391.333234 Days, E = 186.724169 Days

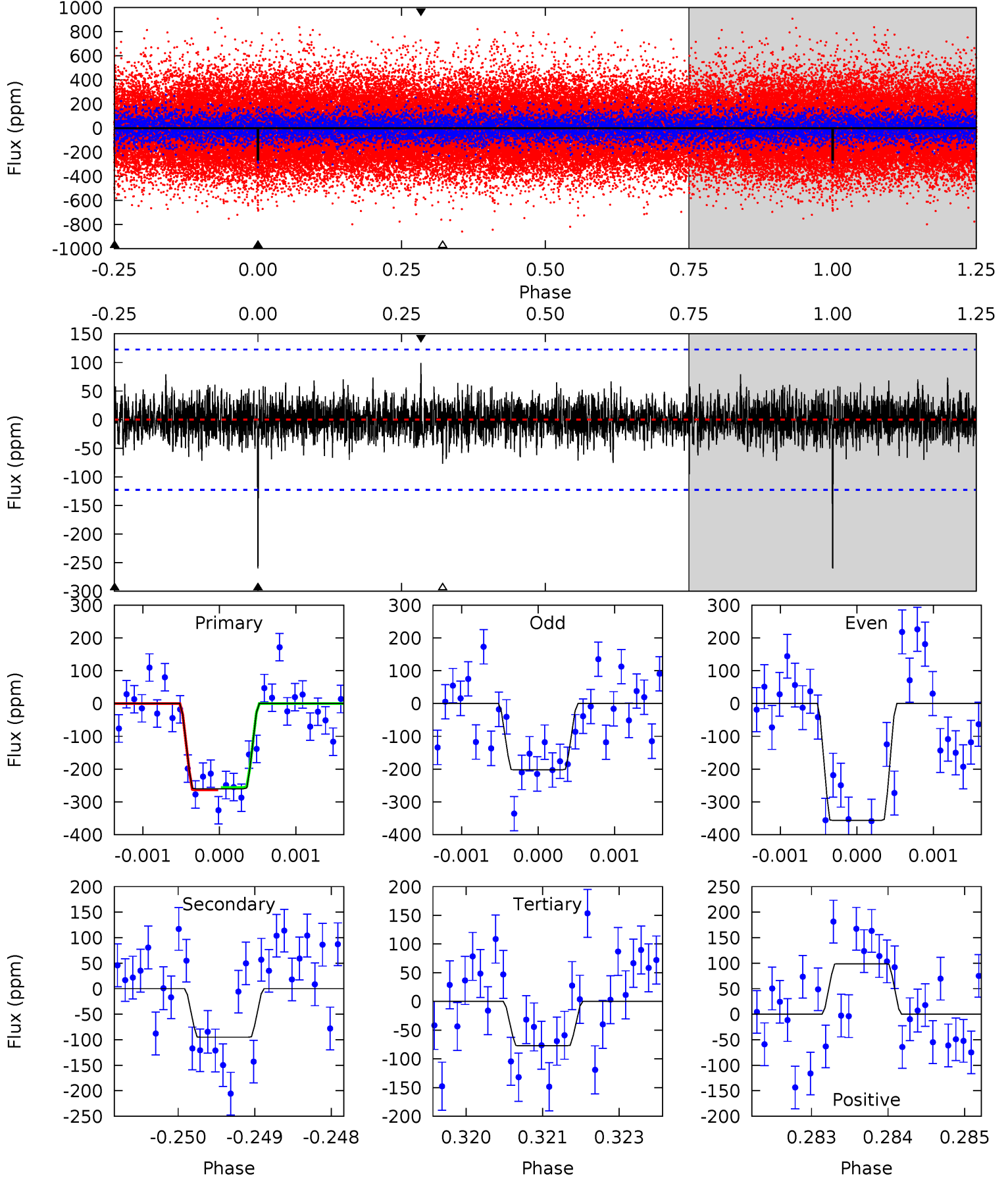
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	5.21	4.80	5.26	5.39	3.20	1.36	6.62	6.16	0.40	-0.05	2.57	1.05	0.32	0.05



# Alt Model-Shift Uniqueness Test

008226720-01, P = 391.323107 Days, E = 186.715743 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
11.5	4.19	3.40	4.35	5.41	3.23	0.96	8.06	7.10	0.79	-0.17	3.31	1.18	0.28	0.17



### Stellar Parameters For KIC 008226720

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6428^{+160}_{-208}$	$4.457^{+0.065}_{-0.195}$	$-0.540^{+0.300}_{-0.300}$	$0.977^{+0.280}_{-0.100}$	$0.998^{+0.121}_{-0.121}$	$1.509^{+0.411}_{-0.775}$
	+2%/-3%	+1%/-4%	+56%/-56%	+29%/-10%	+12%/-12%	+27%/-51%
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 008226720-01 / KOI 8154.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-114 \pm 22$	$1.83^{+0.56}_{-0.53}$	$389^{+28}_{-21}$	$5222^{+826}_{-551}$	$20636^{+19345}_{-9137}$
Alt.	$-95 \pm 23$	$1.88^{+0.58}_{-0.54}$	$388^{+25}_{-18}$	$4959^{+892}_{-562}$	$16332^{+16097}_{-7700}$

$T_{\text{max}}$  = 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

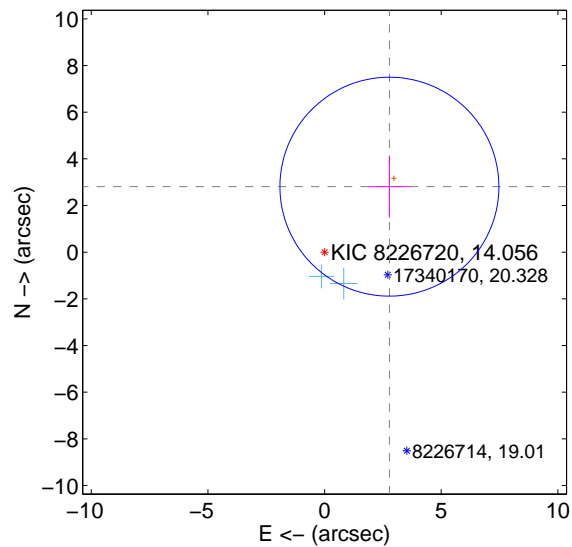
Supplemental centroid analysis for 008226720-01. Kepler magnitude: 14.06. Transit SNR 7.53

There are 2 quarters with good PRF difference image offsets

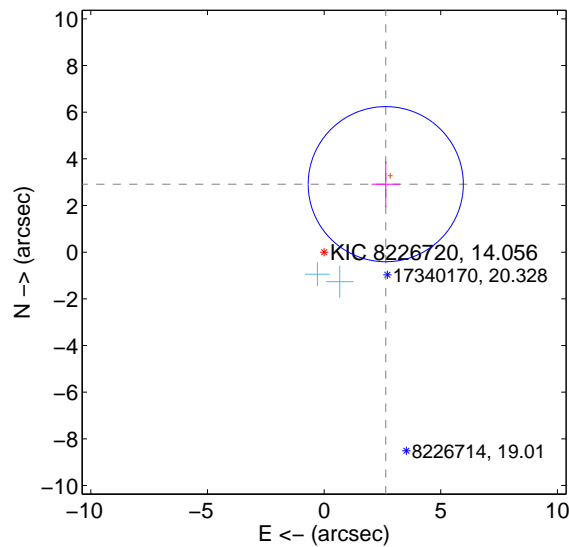
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.950 \pm 1.564$	2.53	$-2.779 \pm 0.902$	$2.807 \pm 1.331$
PRF-fit source offset from KIC position	<b><math>3.934 \pm 1.108</math></b>	<b>3.55</b>	$-2.642 \pm 0.607$	$2.915 \pm 0.990$
photometric centroid source offset	$1.89 \pm 1.71$	1.11	$1.77 \pm 1.72$	$0.67 \pm 1.67$

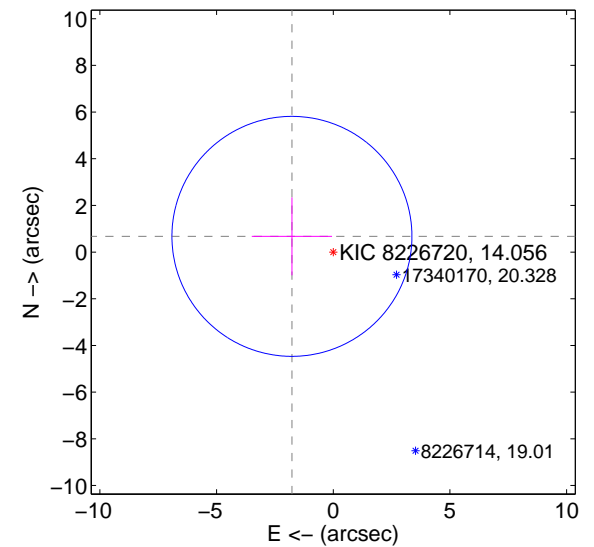
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

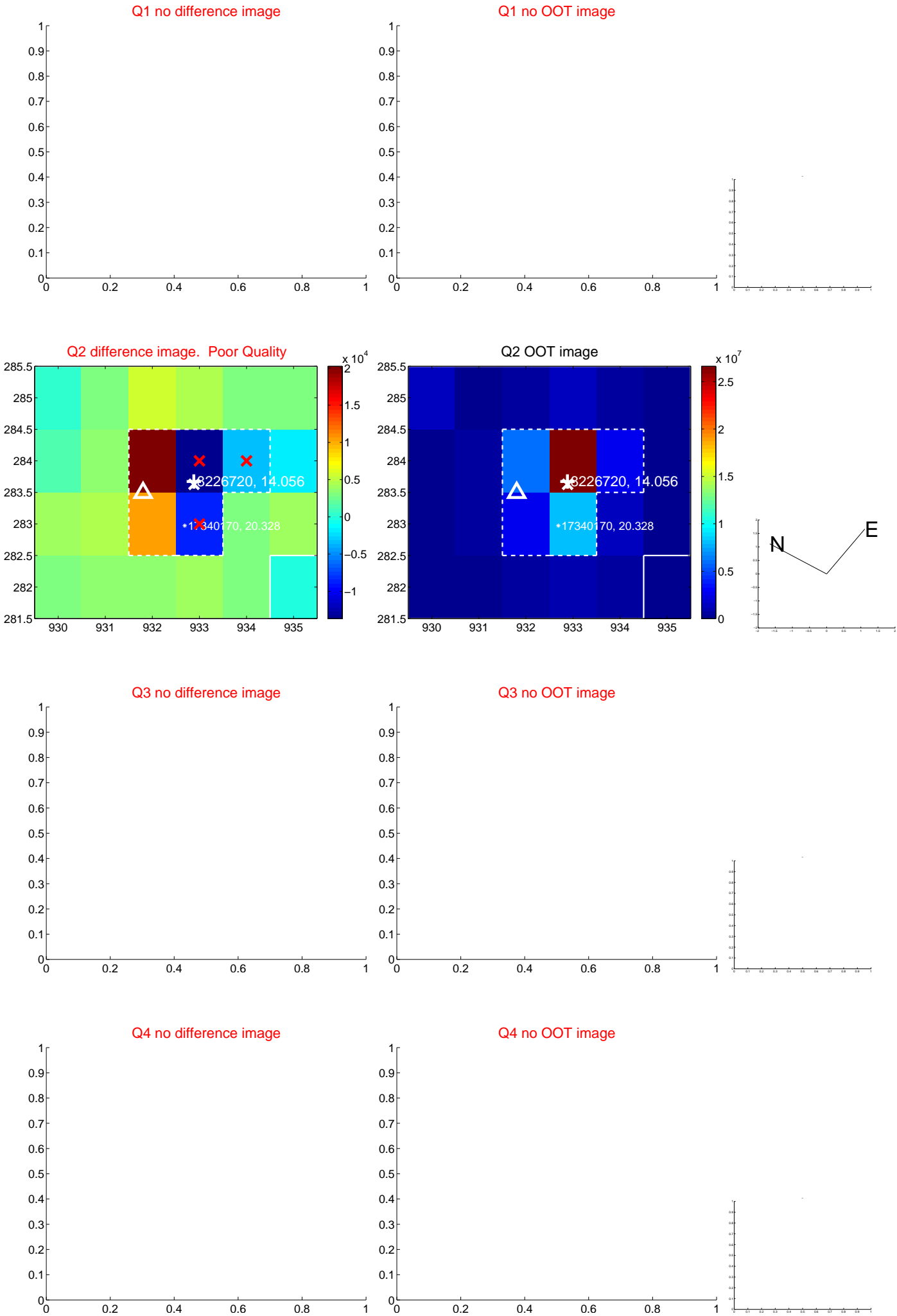


offset from photometric centroids



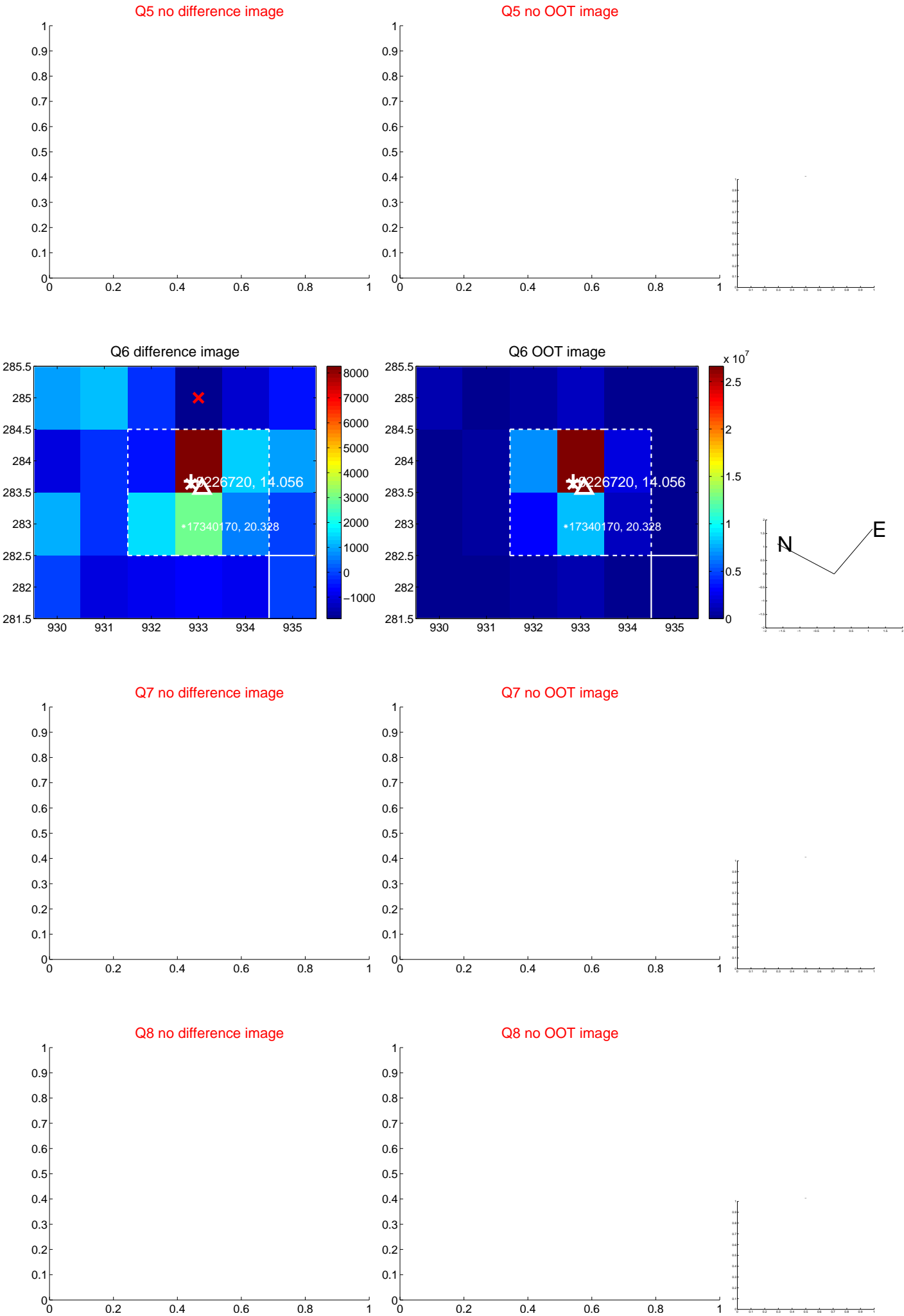
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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





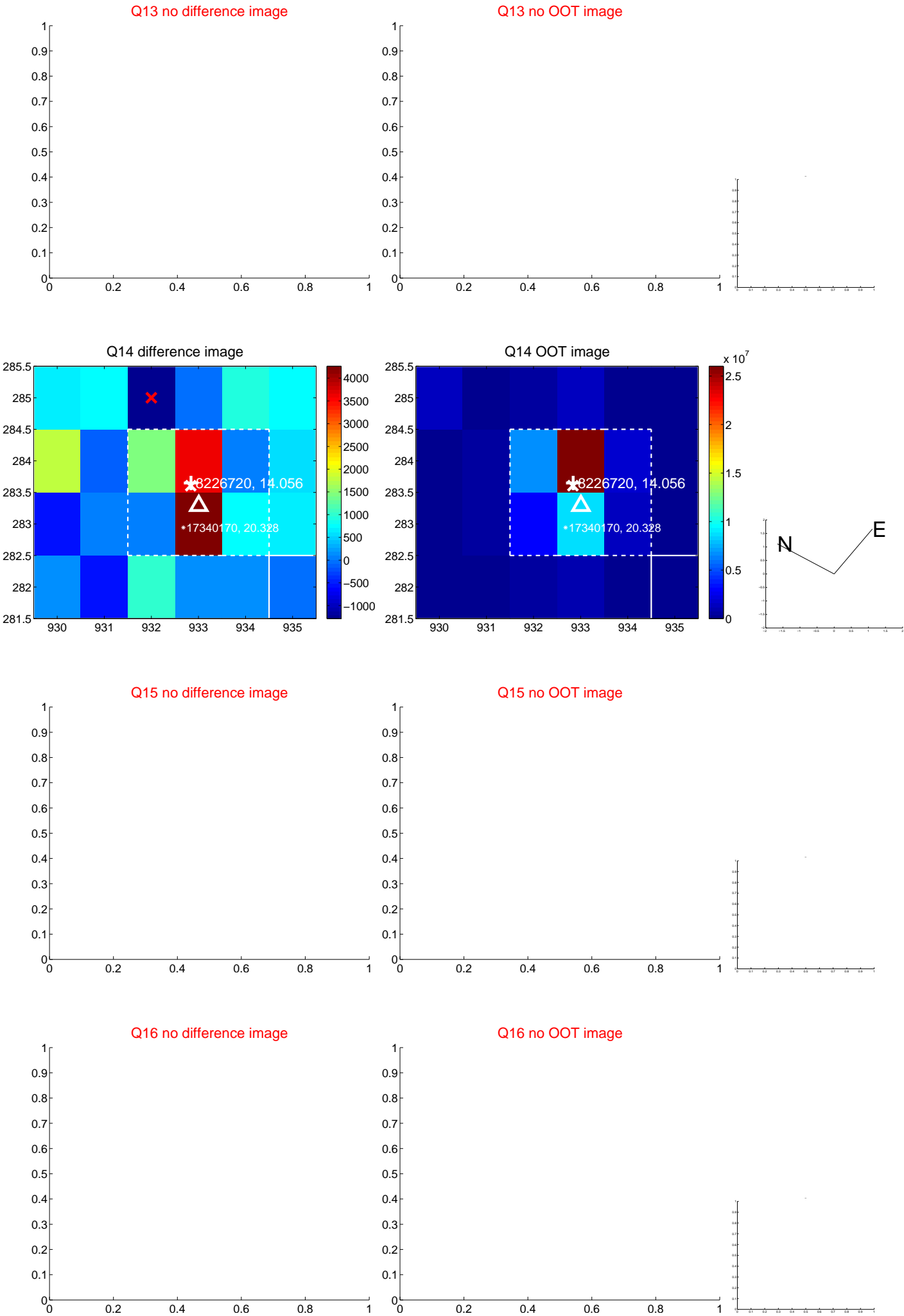
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



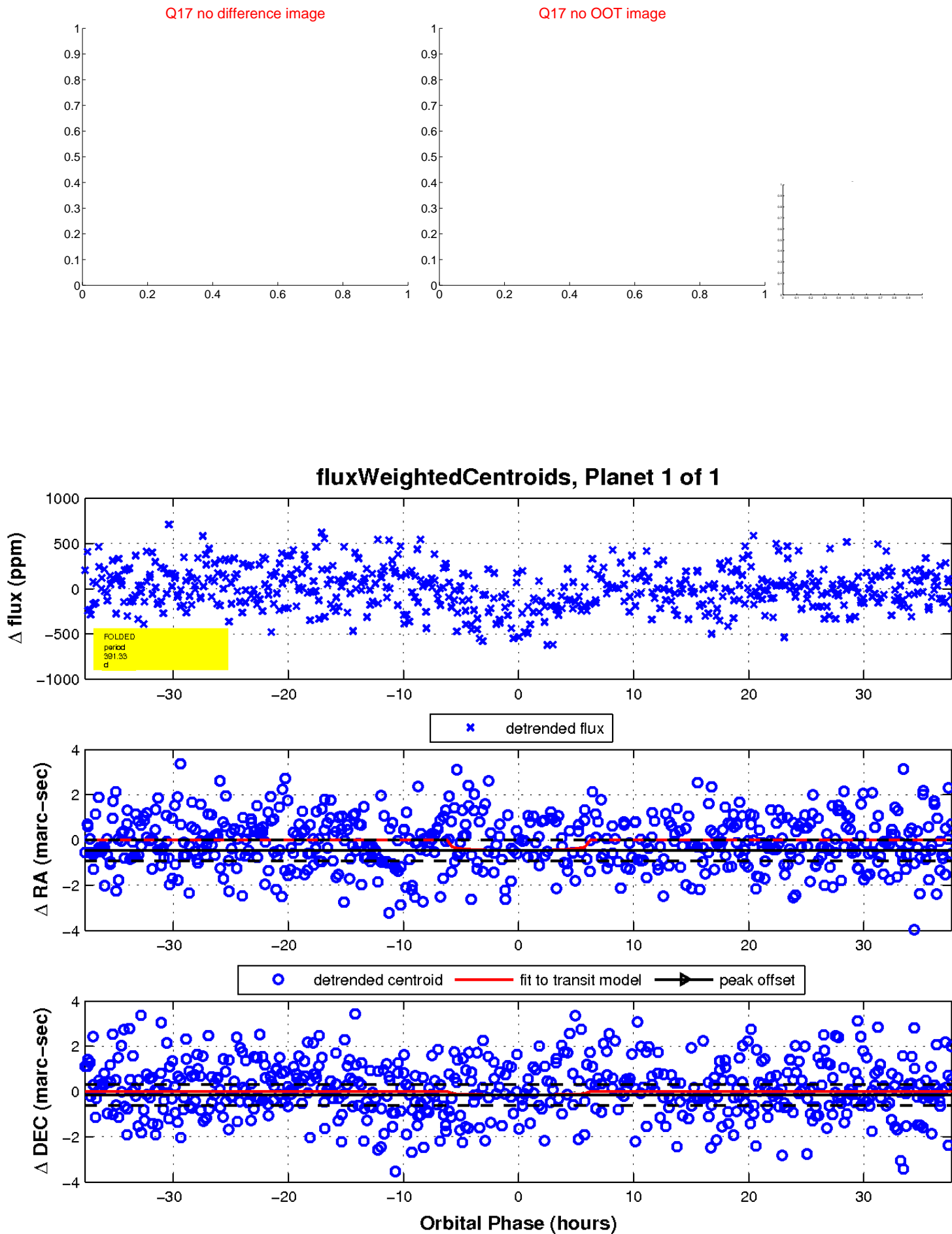
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



UKIRT Image

