

# KIC 008678561

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008678561-01	OBS	No	379.918148	402.845659	1092.0	4.099	7.4	6.0	0.88	5783	3.14	0.75

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008678561-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—MOD_NONUNIQ_ALT—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.

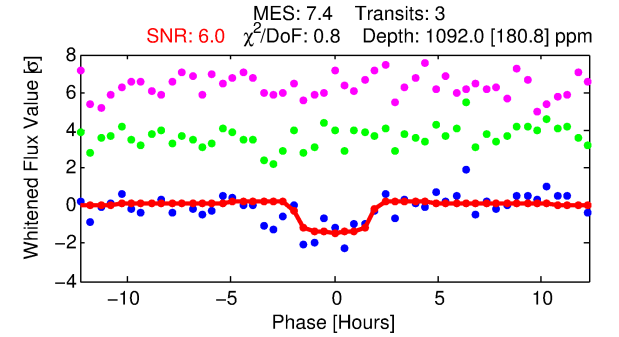
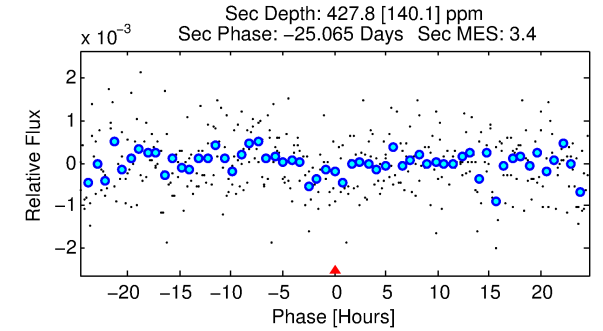
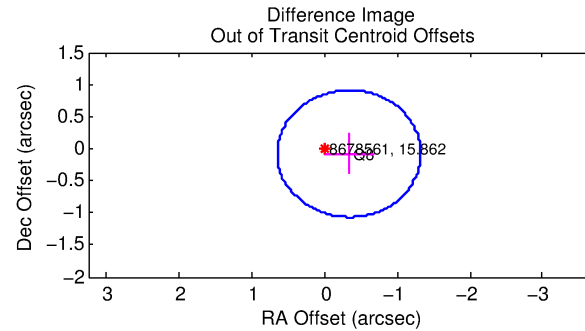
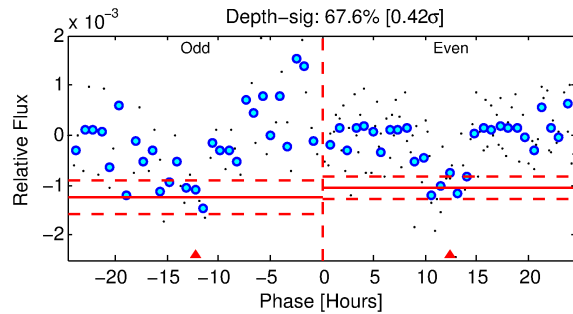
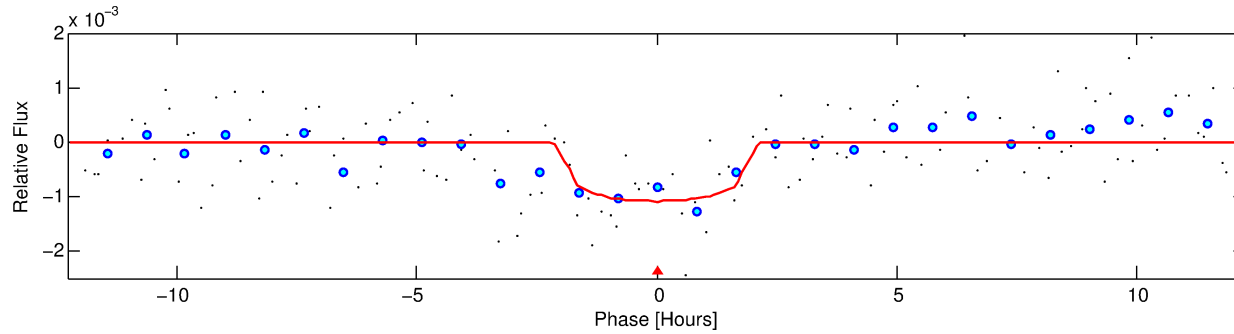
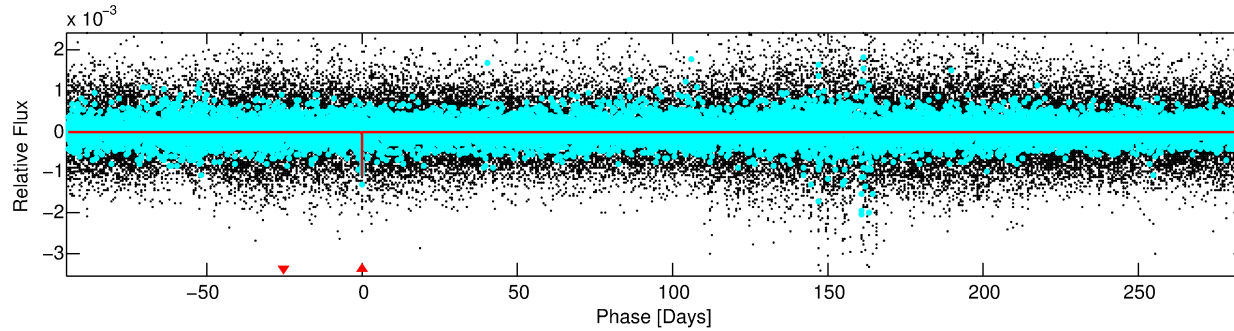
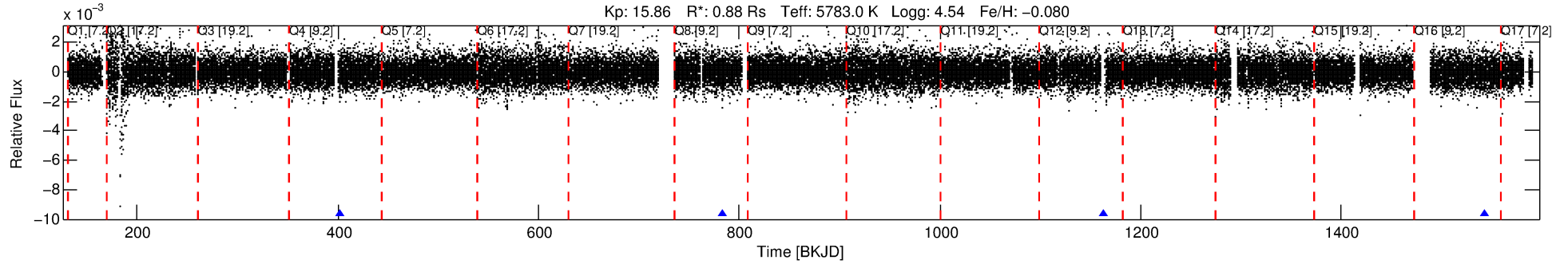
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008678561-01

No Significant Match Found

# DV One-Page Summary

KIC: 8678561 Candidate: 1 of 1 Period: 379.918 d



## DV Fit Results:

Period = 379.91815 [0.00568] d  
Epoch = 402.8457 [0.0106] BKJD  
Rp/R\* = 0.0327 [0.0317]  
a/R\* = 516.04 [2191.21]  
b = 0.73 [2.75]  
Seff = 0.75 [0.28]  
Teq = 237 [22] K  
Rp = 3.14 [3.18] Re  
a = 1.0189 [0.2507] AU  
Ag = 24804.72 [49526.53] [0.50 $\sigma$ ]  
Teffp = 4600 [2264] K [1.93 $\sigma$ ]

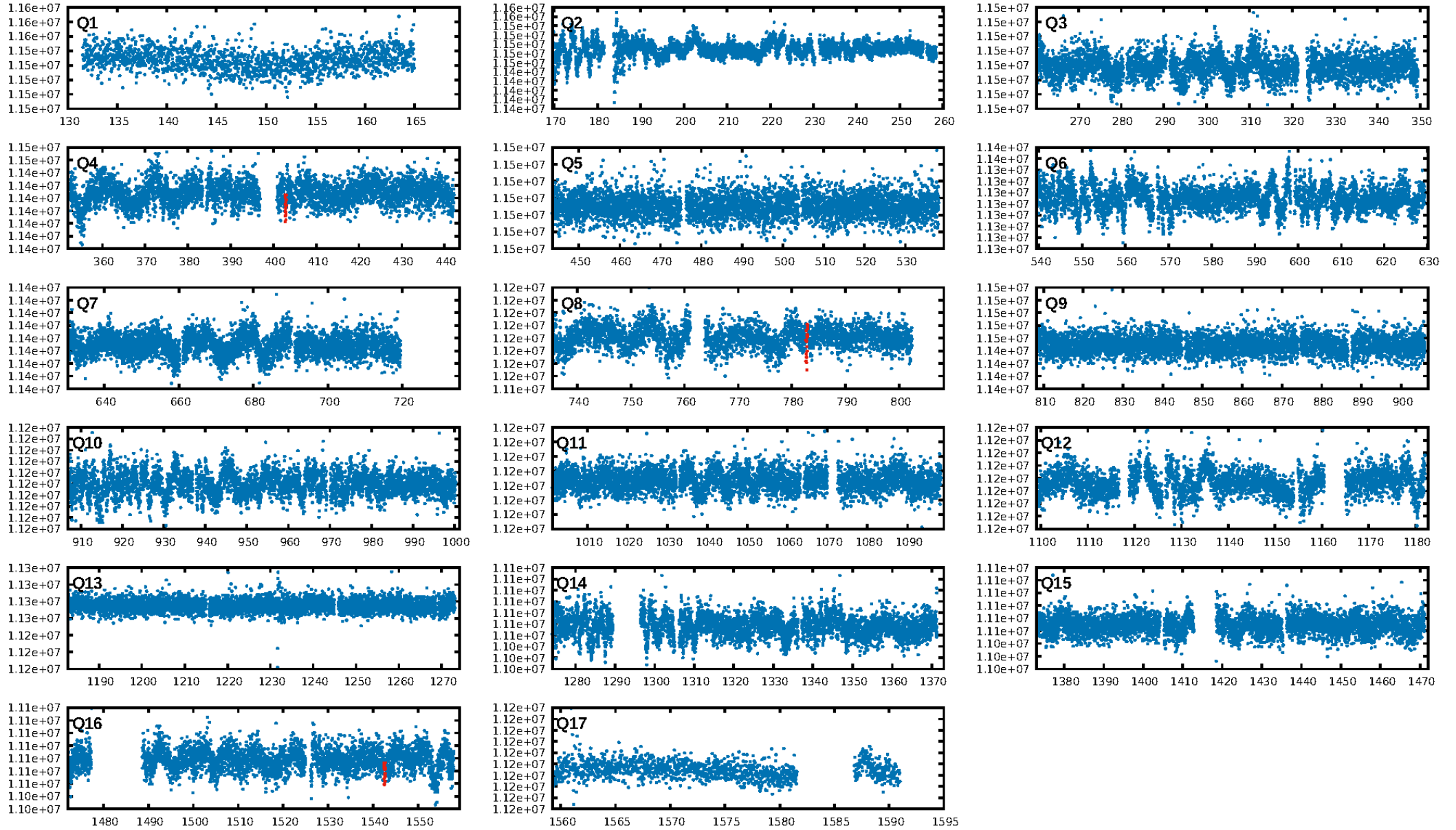
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 91.4%  
ModelChiSquareGof-sig: 99.6%  
**Bootstrap-pfa: 1.65e-08**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 7.819  
Centroid-sig: 99.0%  
Centroid-so: 0.211 arcsec [0.08 $\sigma$ ]  
OotOffset-rm: 0.347 arcsec [1.05 $\sigma$ ]  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-rm: 0.395 arcsec [1.20 $\sigma$ ]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [3/3]

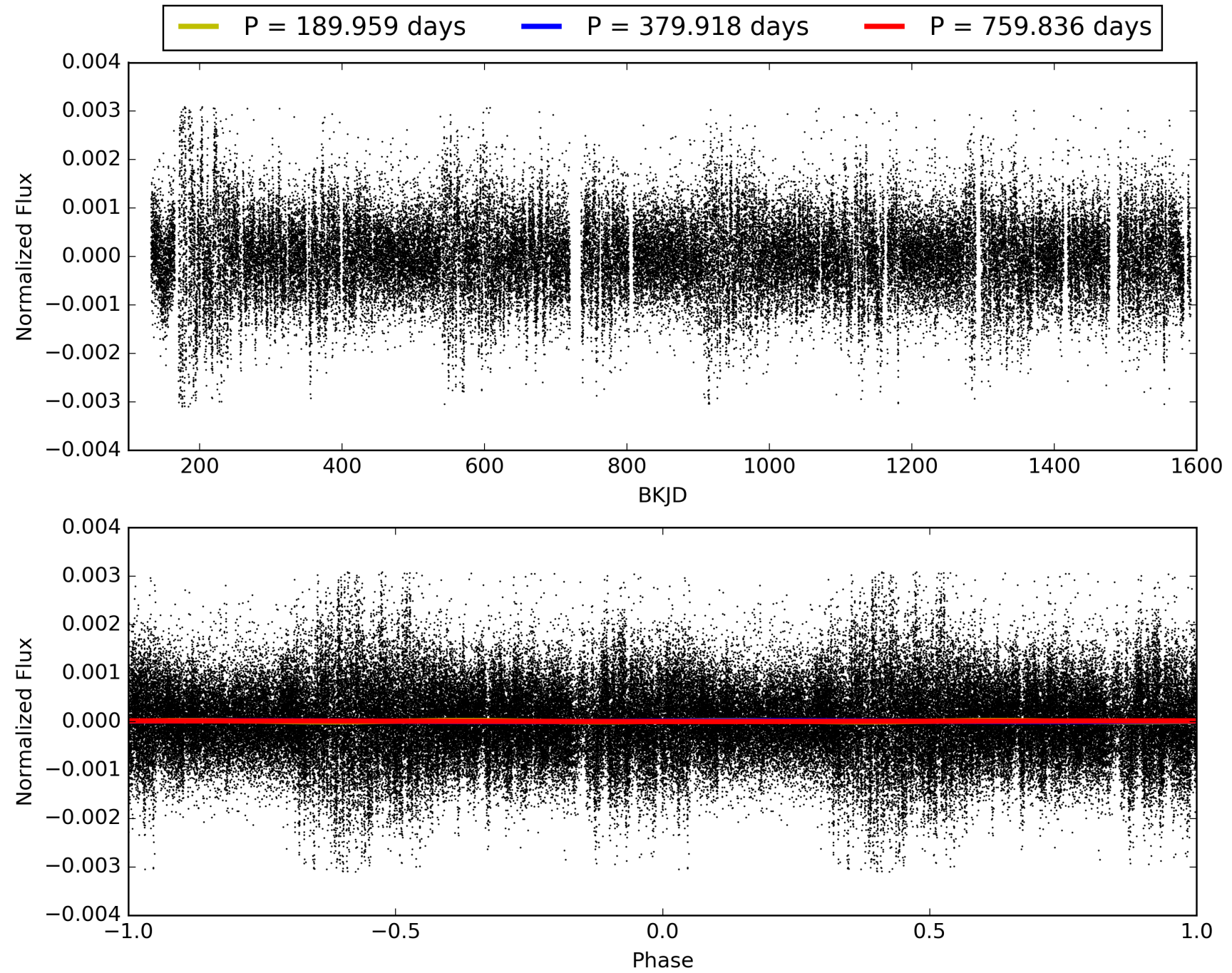
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 19:41:49 Z

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

# TCE 008678561-01, PDC Light Curves

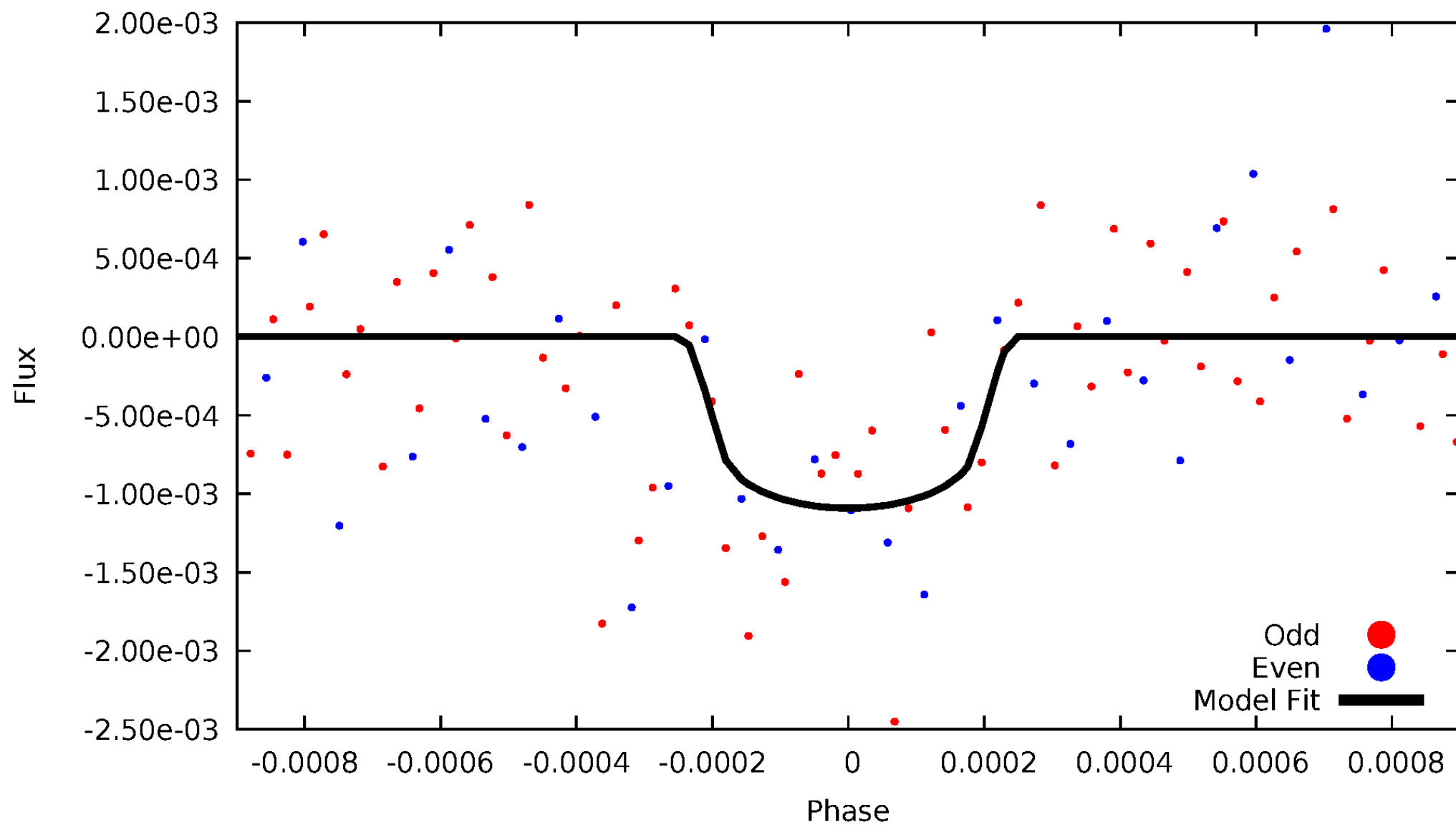


TCE 008678561-01



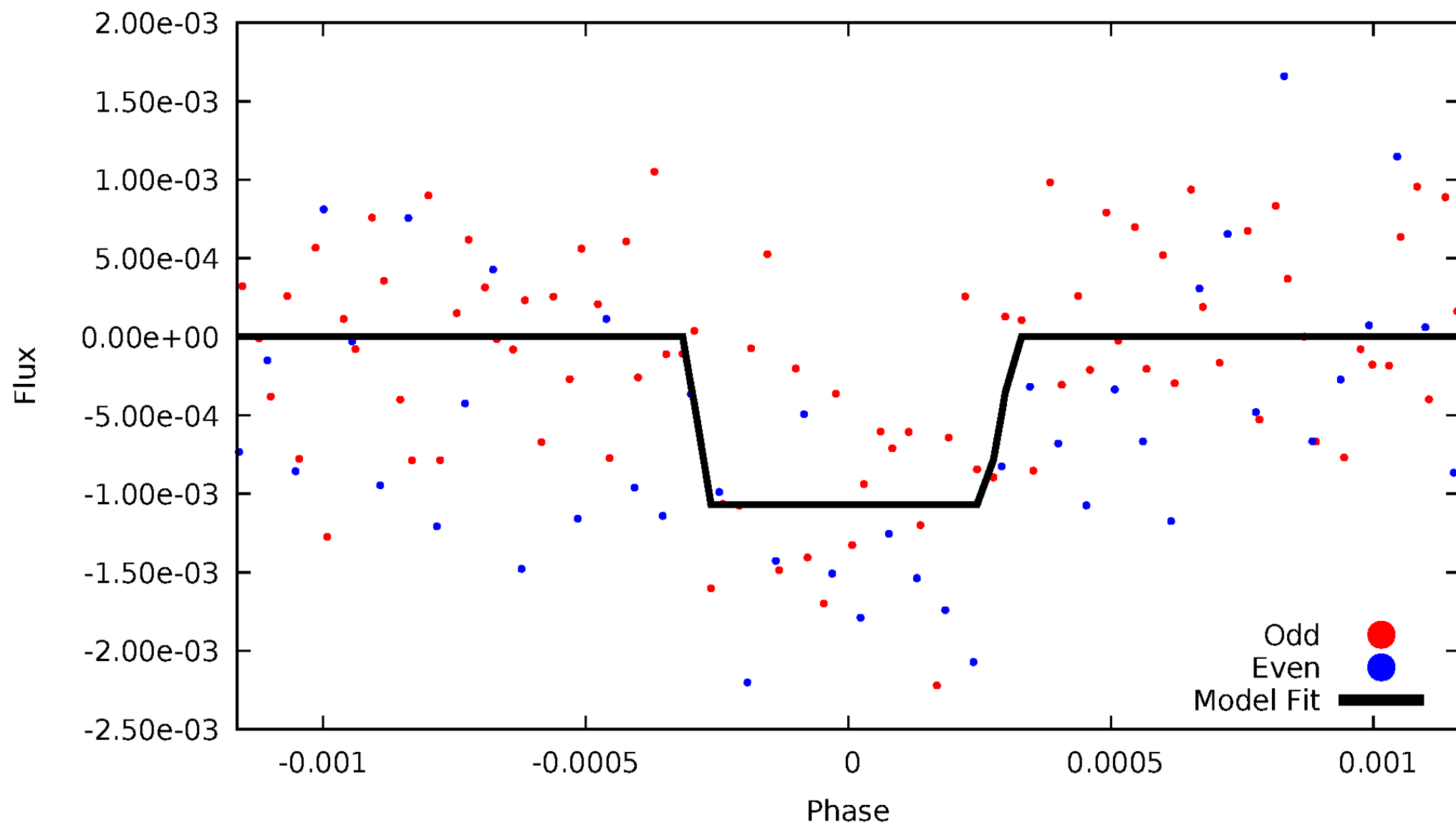
# DV Odd/Even

TCE 008678561-01

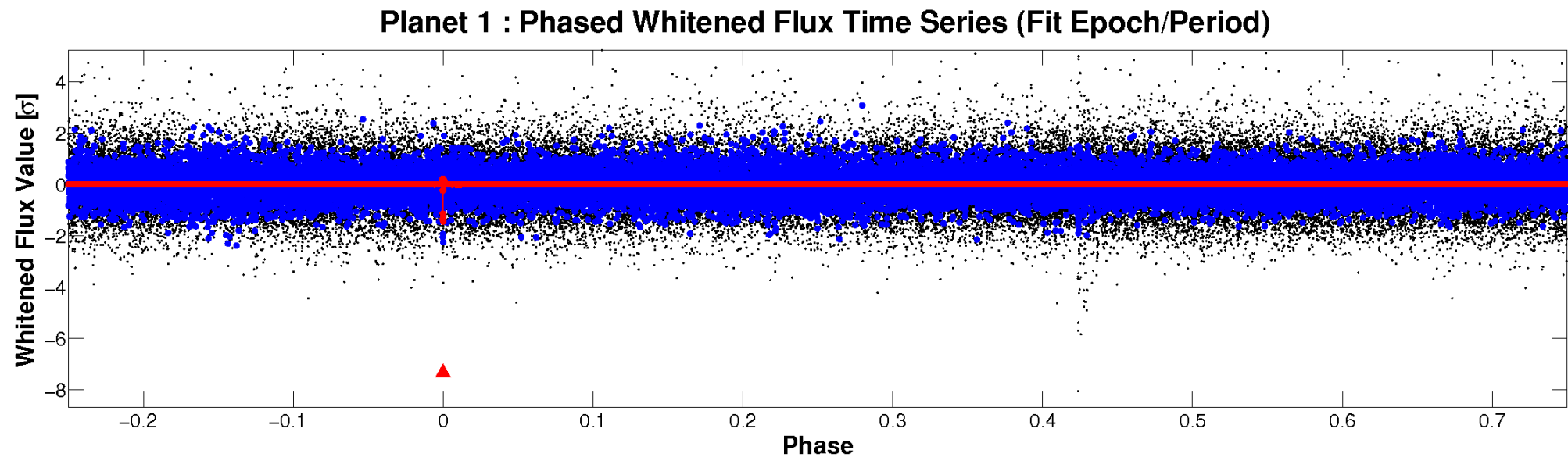
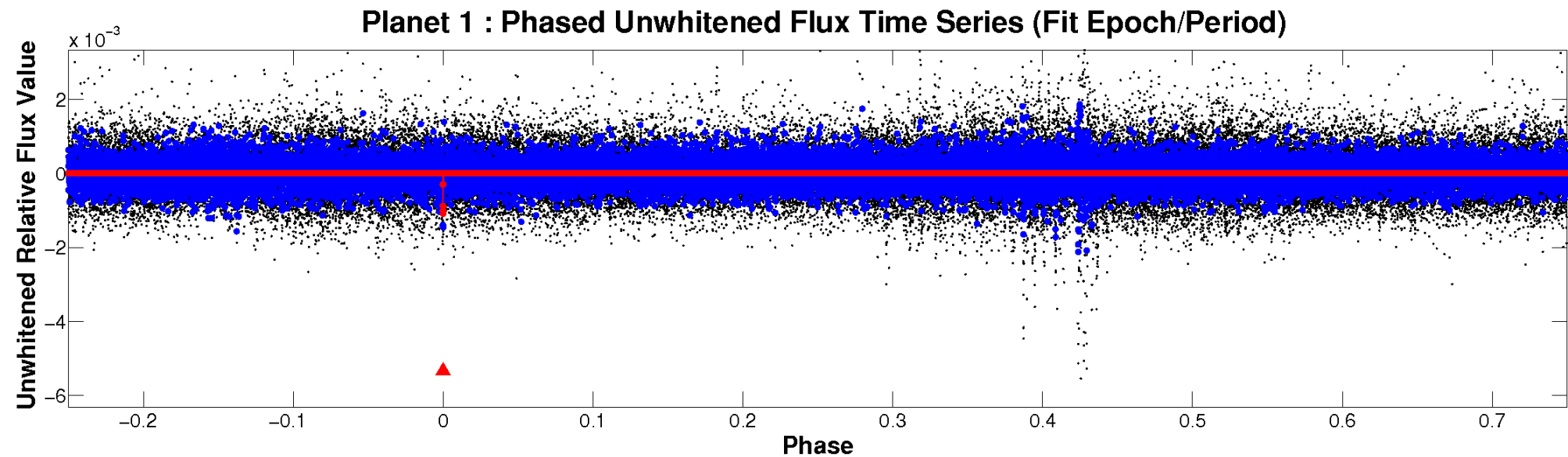


# ALT Odd/Even

TCE 008678561-01



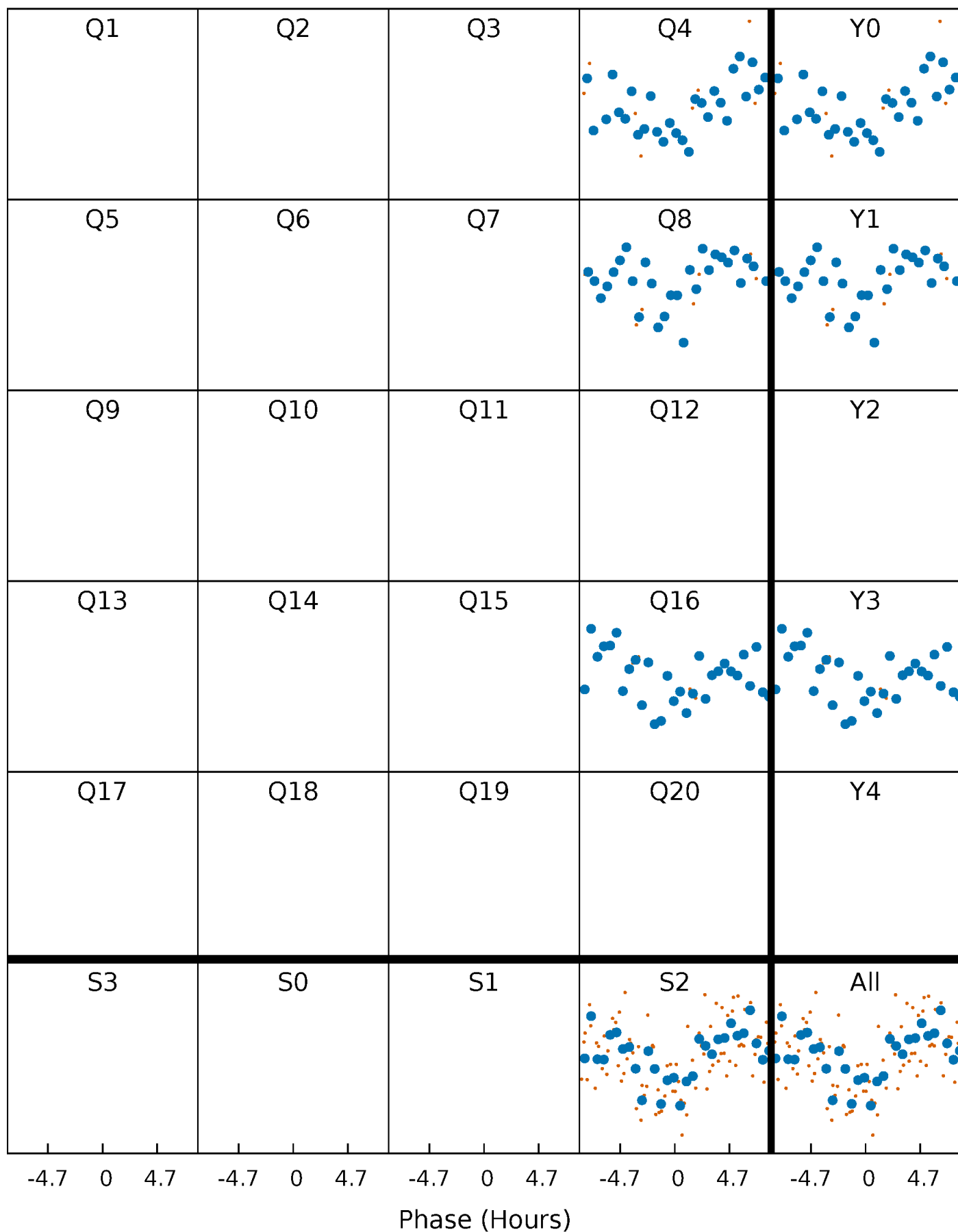
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

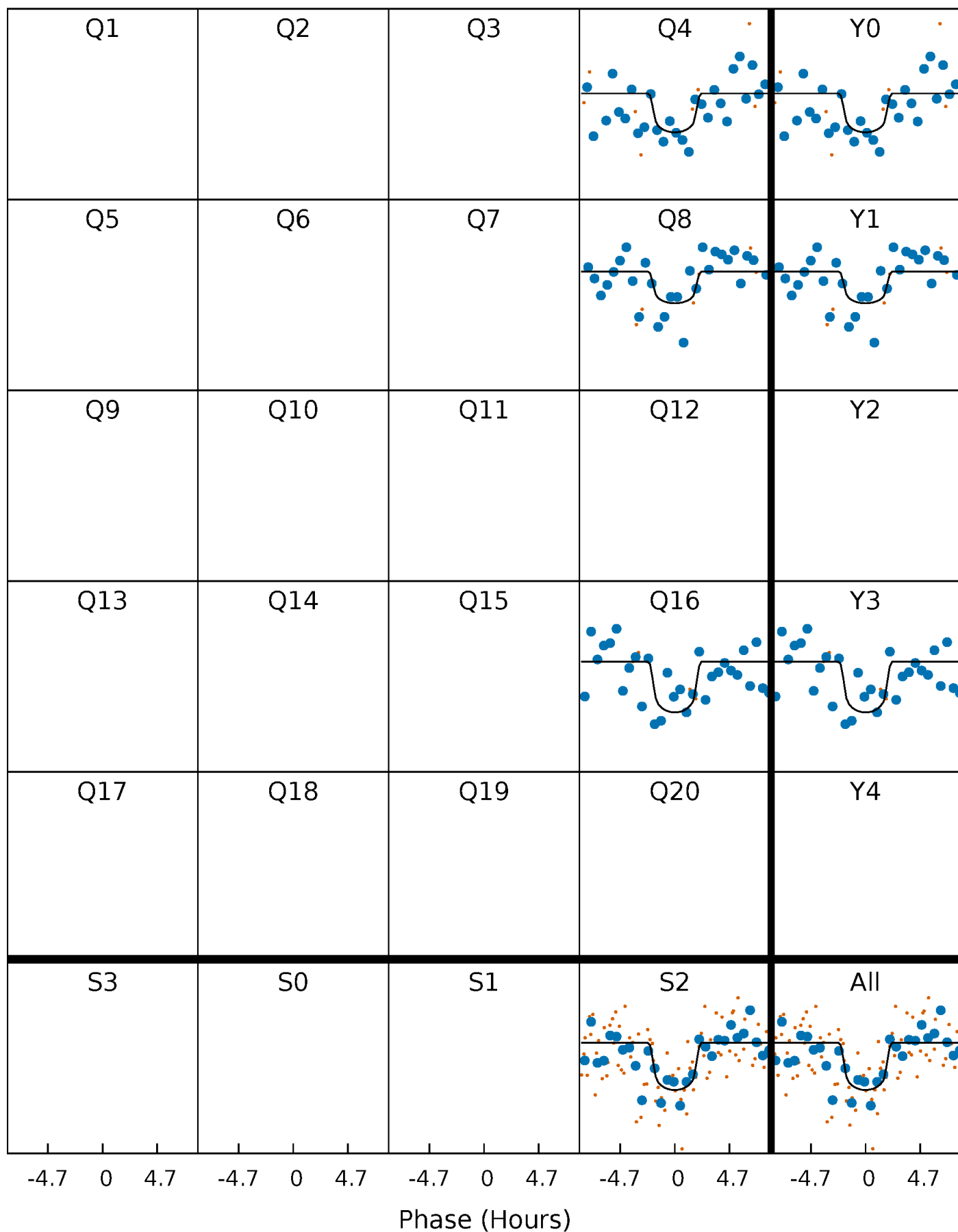
TCE 008678561-01 P=379.918148 Days  $T_0=402.845659$  (BKJD)





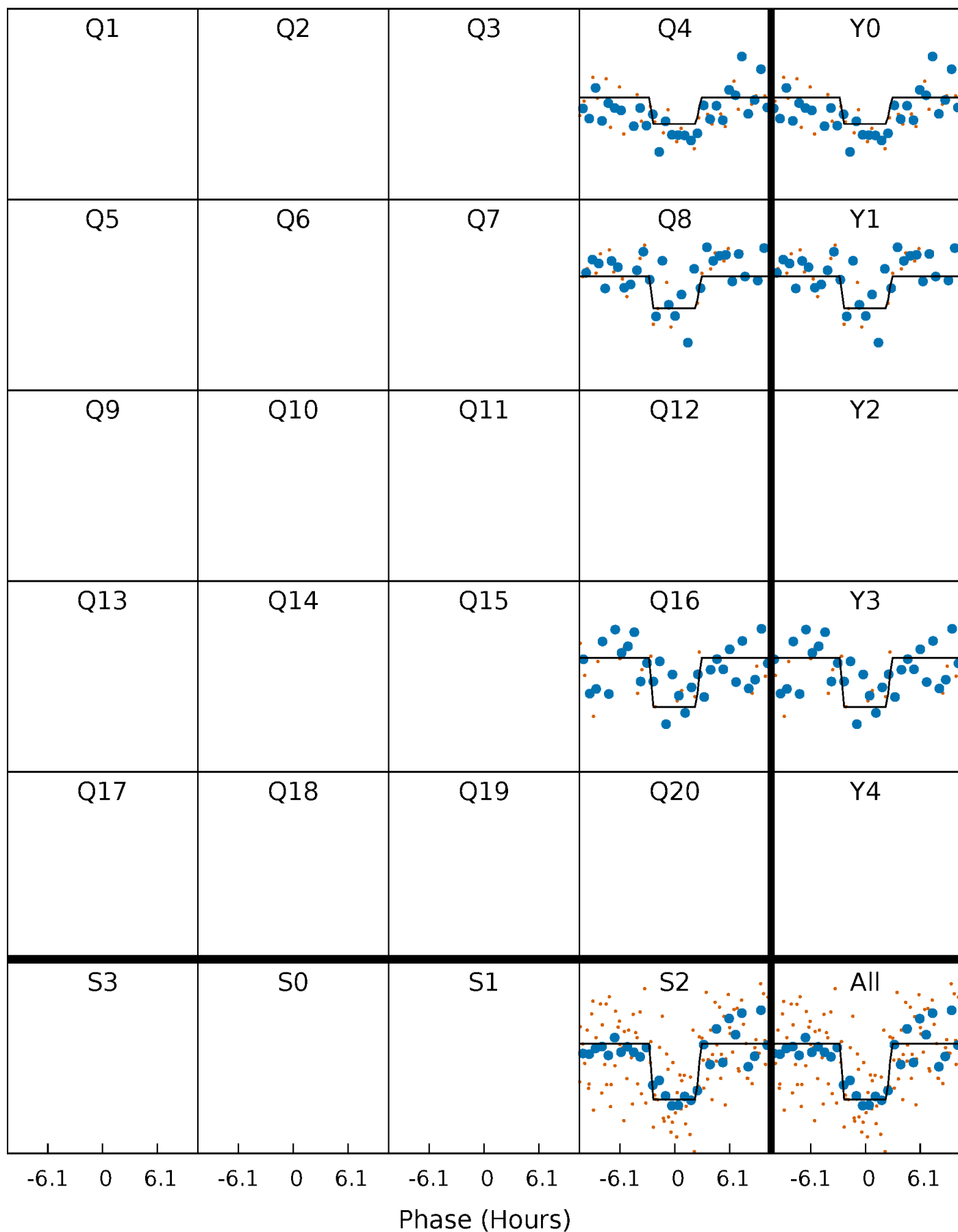
# DV Quarter-Phased Transit Curves

TCE 008678561-01 P=379.918148 Days  $T_0=402.845659$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

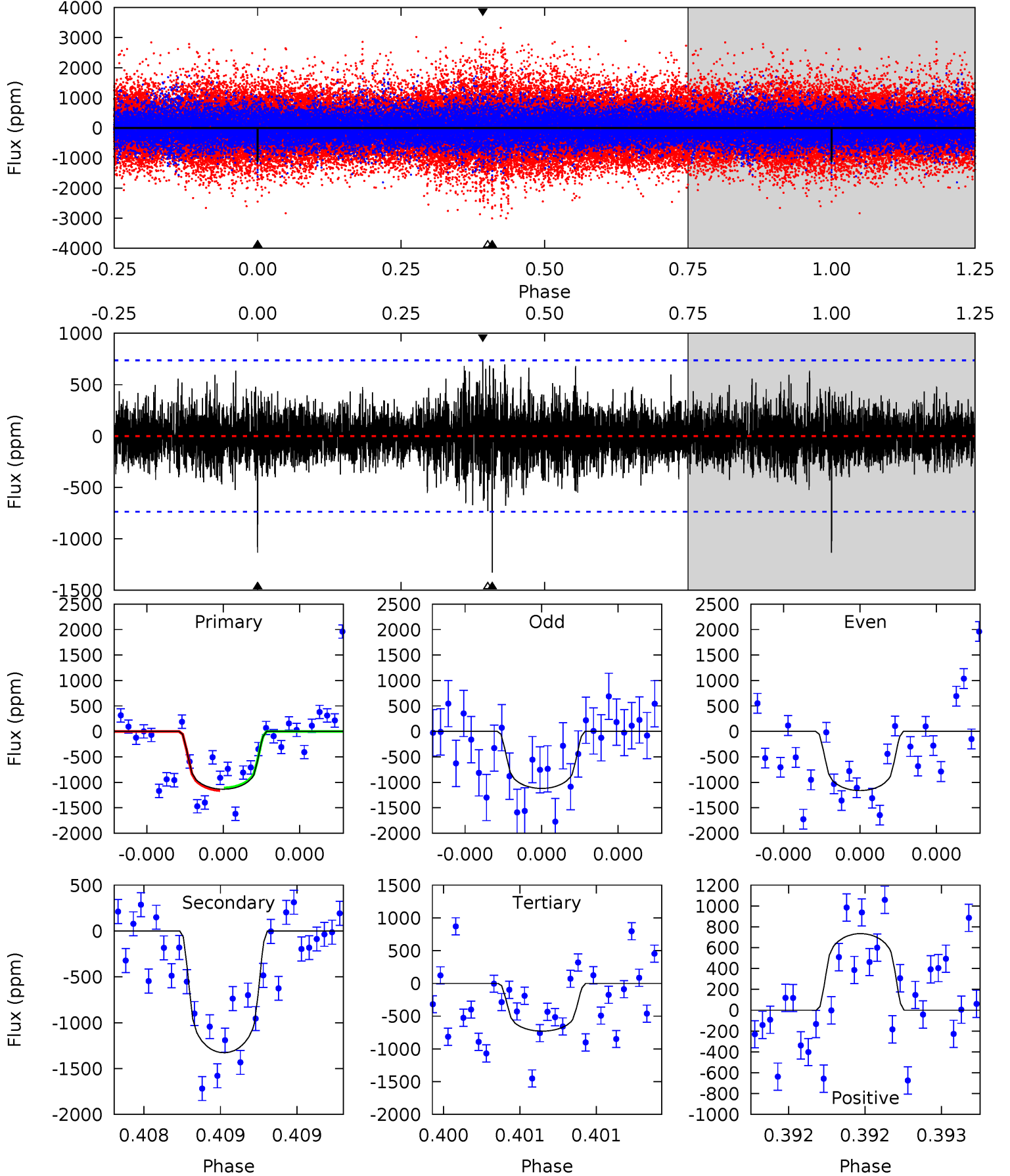
TCE 008678561-01 P=379.927992 Days  $T_0=402.797606$  (BKJD)



# DV Model-Shift Uniqueness Test

008678561-01, P = 379.918148 Days, E = 22.927511 Days

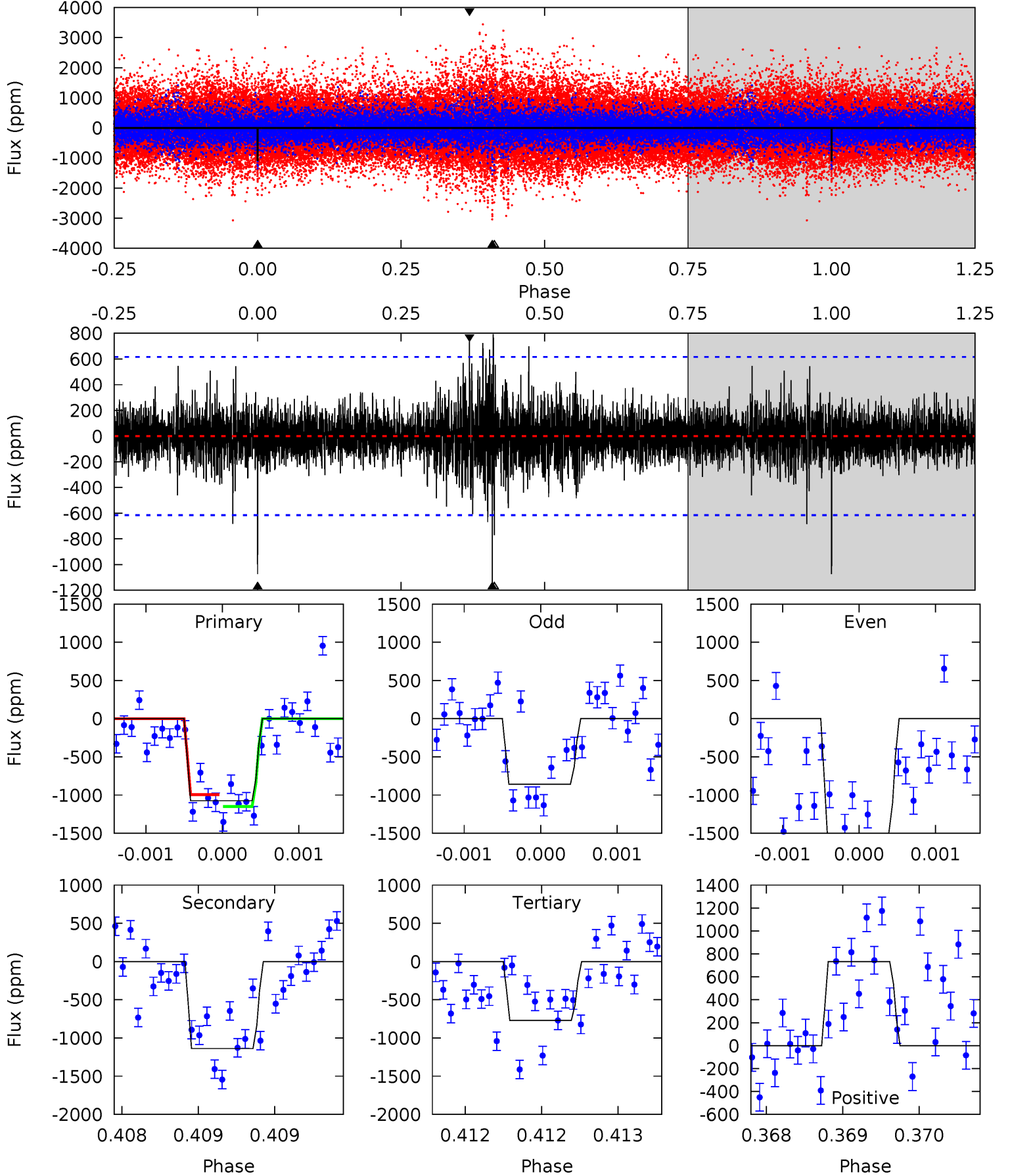
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.62	10.1	5.54	5.58	5.60	3.51	1.27	3.08	3.04	4.55	4.51	0.15	0.98	0.36	0.19



# Alt Model-Shift Uniqueness Test

008678561-01, P = 379.927992 Days, E = 22.869614 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
9.65	10.2	6.92	6.58	5.53	3.42	1.29	2.73	3.07	3.31	3.65	2.72	1.23	0.41	0.70



### Stellar Parameters For KIC 008678561

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5783^{+156}_{-173}$	$4.539^{+0.036}_{-0.192}$	$-0.080^{+0.300}_{-0.300}$	$0.880^{+0.260}_{-0.081}$	$0.977^{+0.114}_{-0.114}$	$2.021^{+0.403}_{-1.051}$
	+3%/-3%	+1%/-4%	+375%/-375%	+30%/-9%	+12%/-12%	+20%/-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 008678561-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-1328 \pm 132$	$3.99^{+2.89}_{-2.39}$	$339^{+22}_{-16}$	$5573^{+3457}_{-1105}$	$47650^{+228757}_{-31531}$
Alt.	$-1138 \pm 111$	$3.82^{+3.16}_{-2.37}$	$340^{+21}_{-15}$	$5448^{+4023}_{-1158}$	$43888^{+268739}_{-31004}$

$T_{max}$  = 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

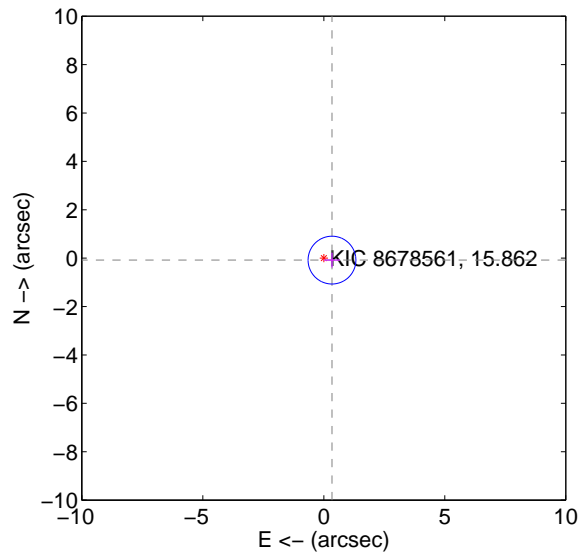
Supplemental centroid analysis for 008678561-01. Kepler magnitude: 15.86. Transit SNR 6.02

There are 1 quarters with good PRF difference image offsets

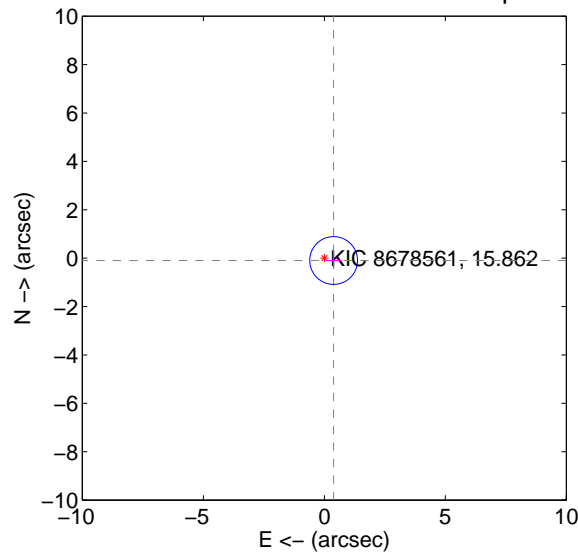
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.347 \pm 0.329$	1.05	$-0.338 \pm 0.331$	$-0.080 \pm 0.305$
PRF-fit source offset from KIC position	$0.395 \pm 0.329$	1.20	$-0.383 \pm 0.331$	$-0.096 \pm 0.305$
photometric centroid source offset	$0.21 \pm 2.71$	0.08	$0.18 \pm 2.73$	$-0.11 \pm 2.65$

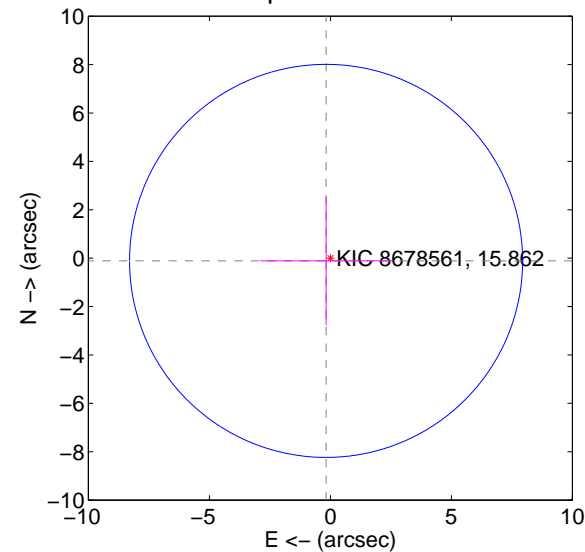
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

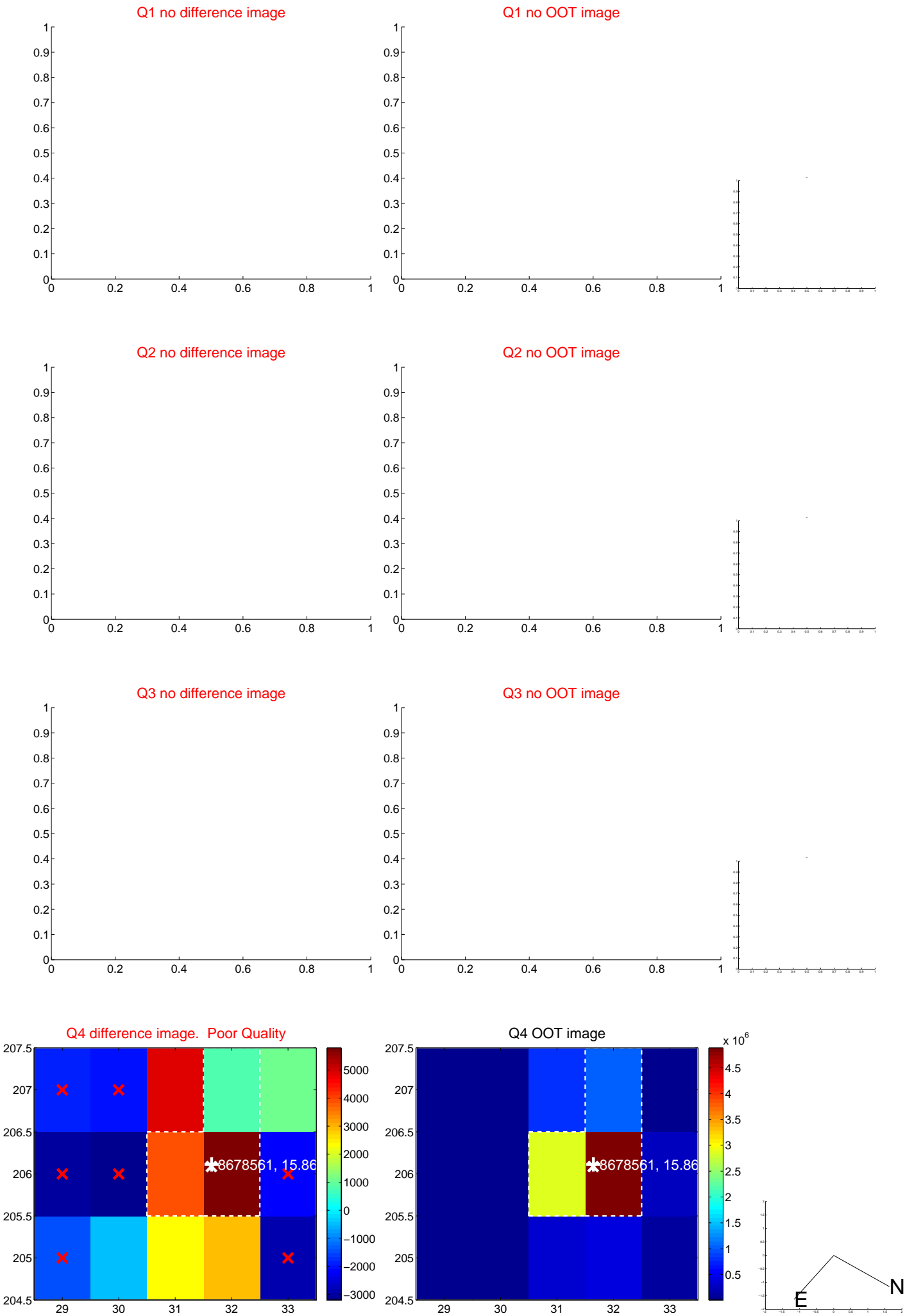


offset from photometric centroids



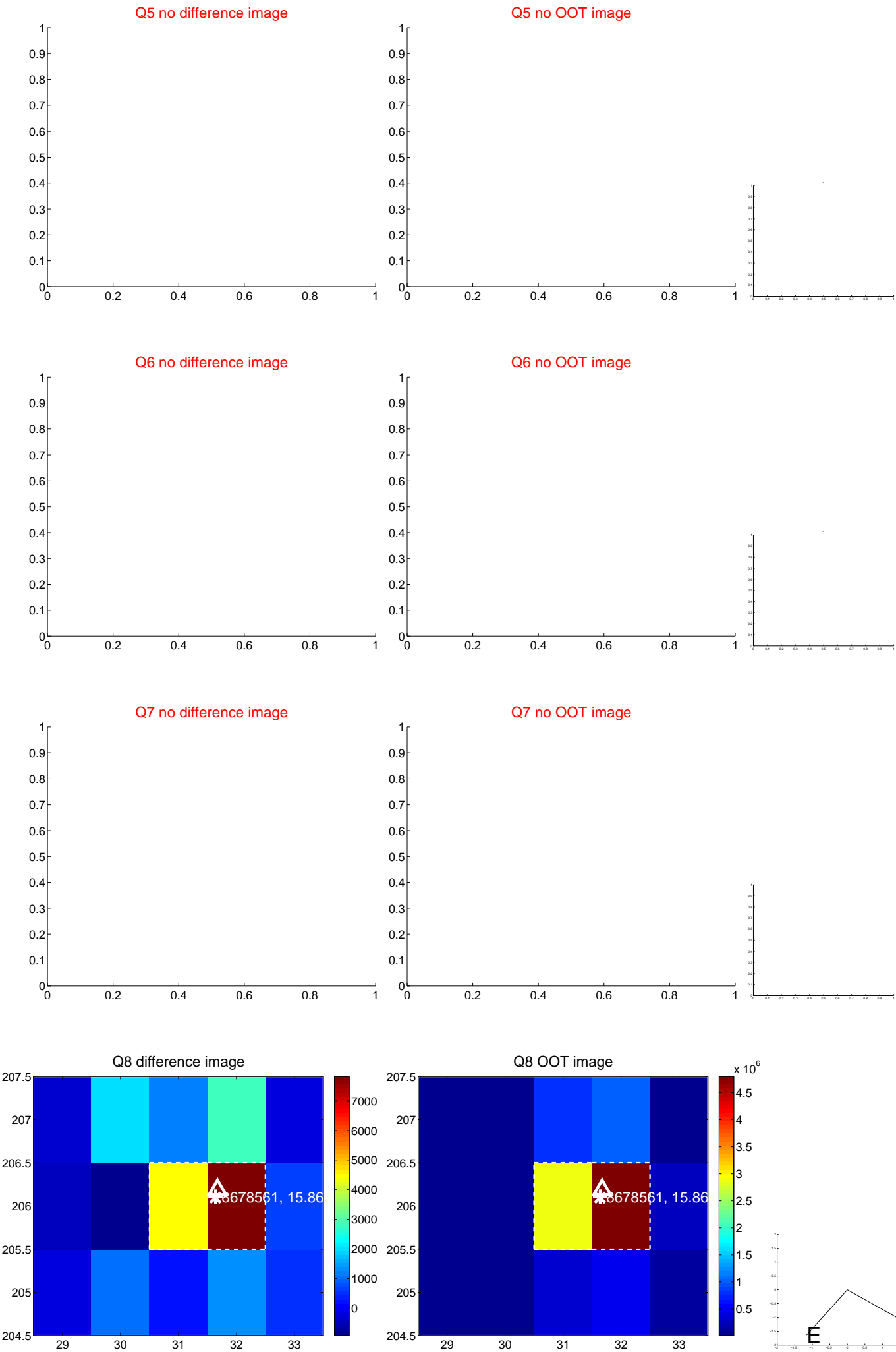
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.





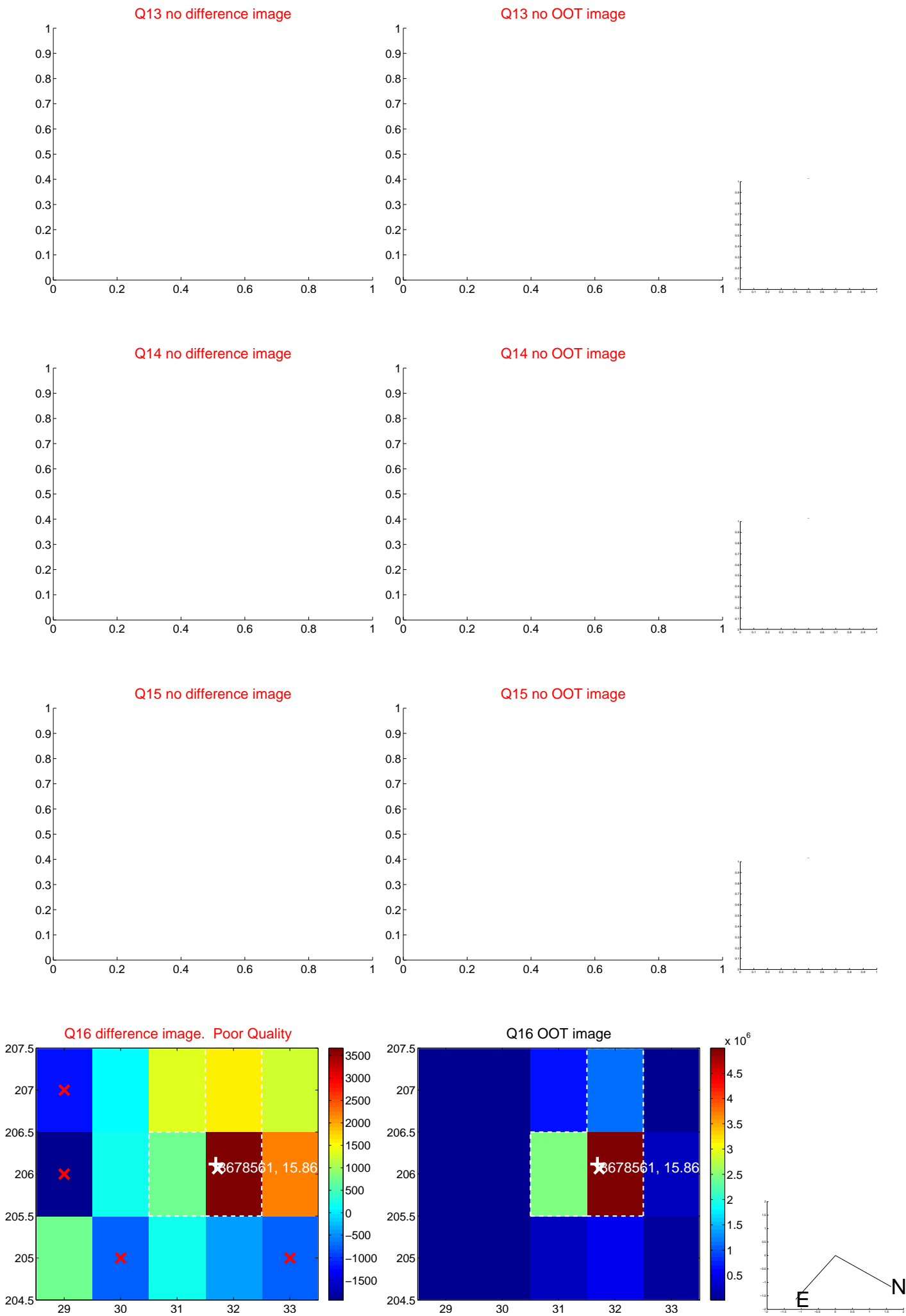
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



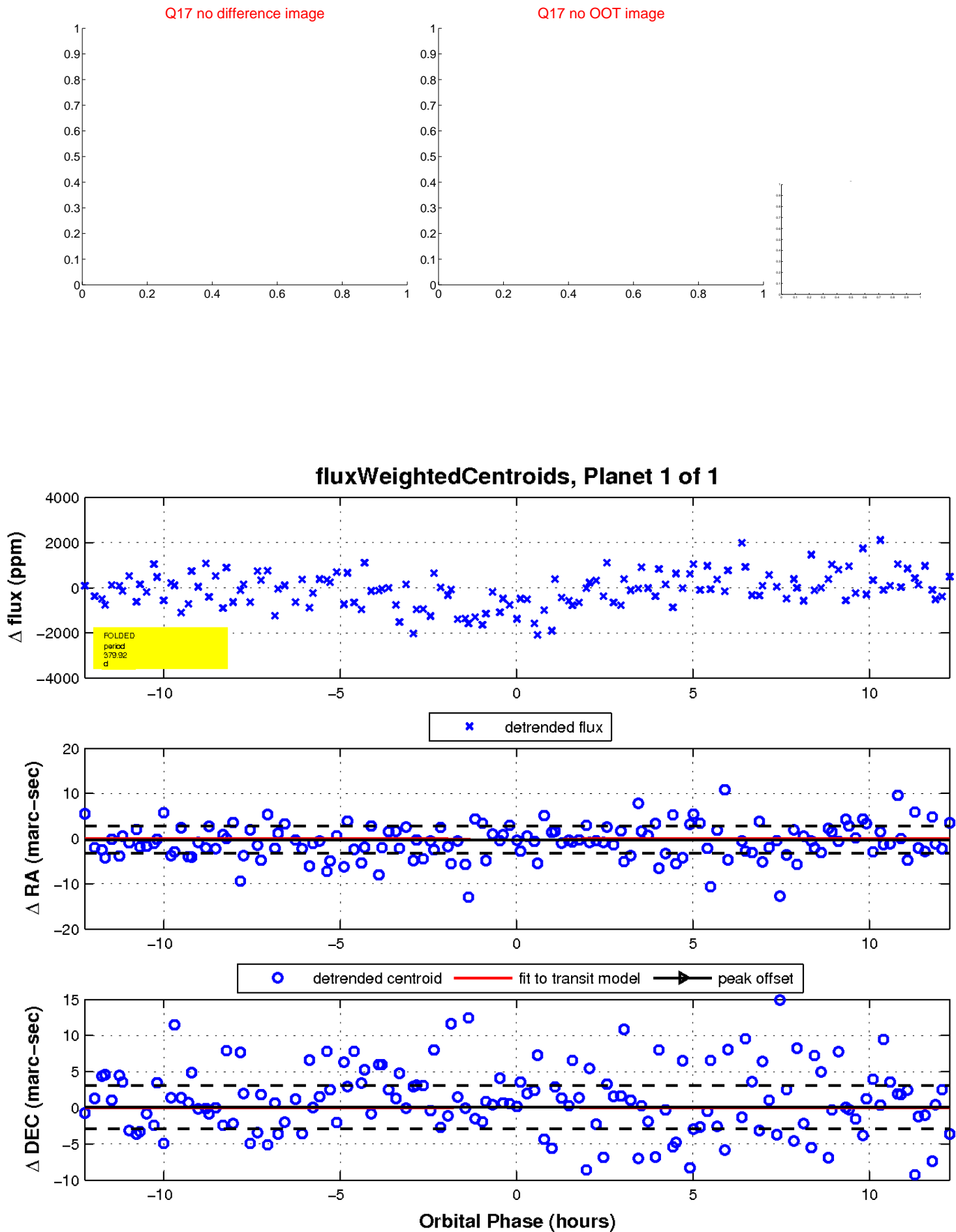
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: 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.



# UKIRT Image

Declination

