

# KIC 005176446

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005176446-01	OBS	No	339.661895	412.574628	300.6	5.768	8.0	6.7	2.55	6927	4.89	11.19

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005176446-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—MOD_NONUNIQ_ALT

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

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

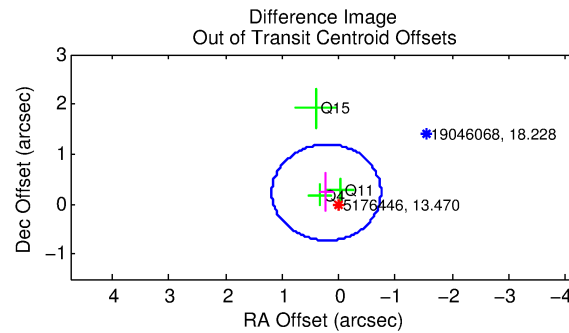
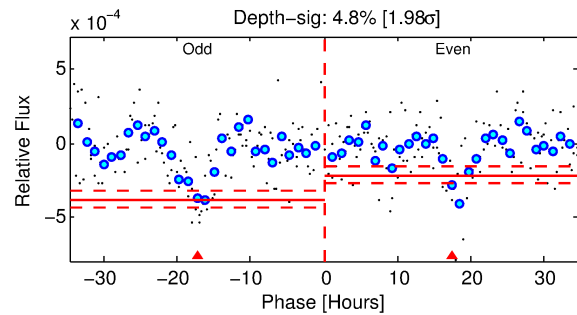
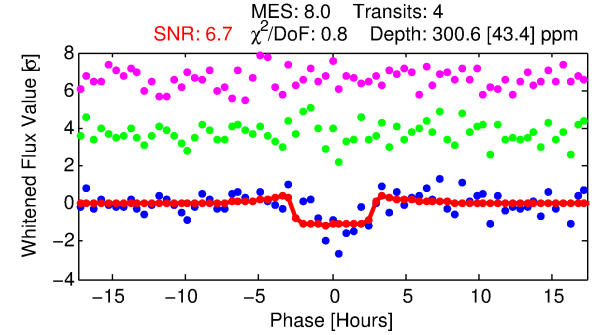
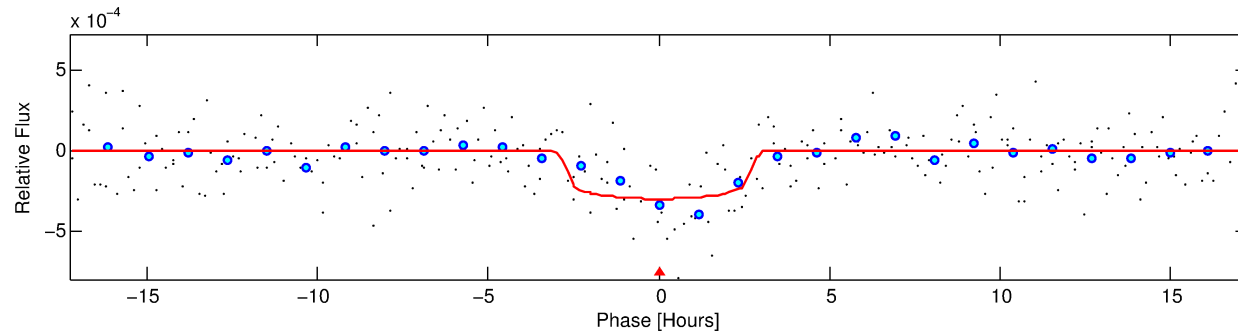
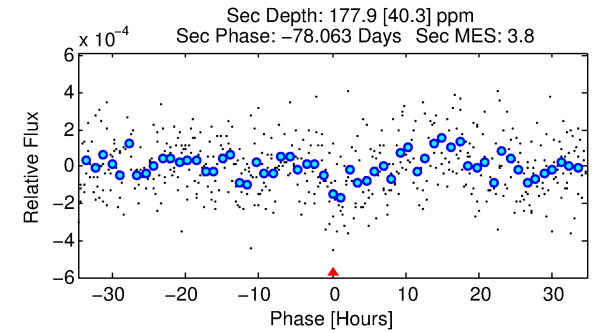
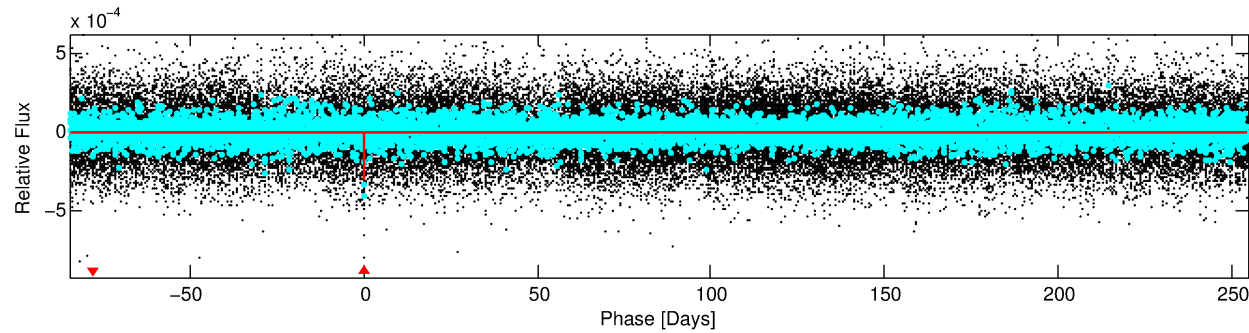
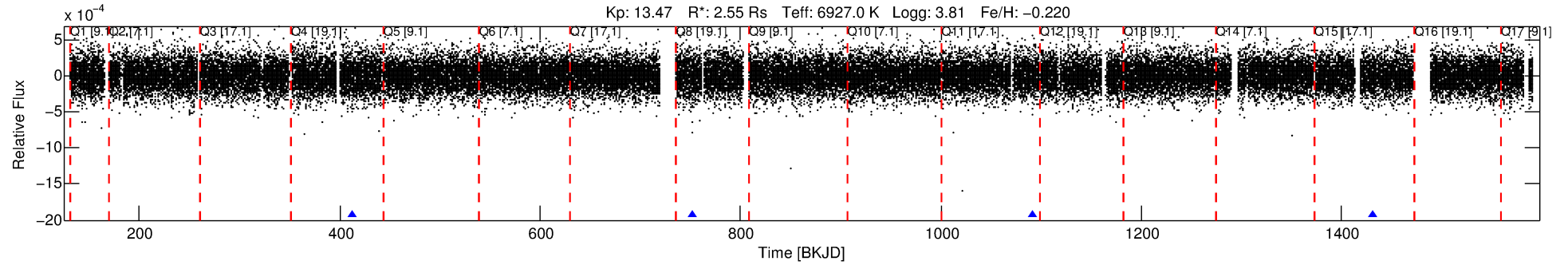
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005176446-01

No Significant Match Found

# DV One-Page Summary

KIC: 5176446 Candidate: 1 of 1 Period: 339.662 d



## DV Fit Results:

Period = 339.66189 [0.00607] d  
Epoch = 412.5746 [0.0114] BKJD  
Rp/R\* = 0.0176 [0.0067]  
a/R\* = 280.38 [612.71]  
b = 0.80 [0.97]  
Seff = 11.19 [5.71]  
Teq = 466 [59] K  
Rp = 4.89 [2.49] Re  
a = 1.0956 [0.3423] AU  
Ag = 4916.70 [4616.82] [1.06σ]  
Teffp = 6038 [1226] K [4.54σ]

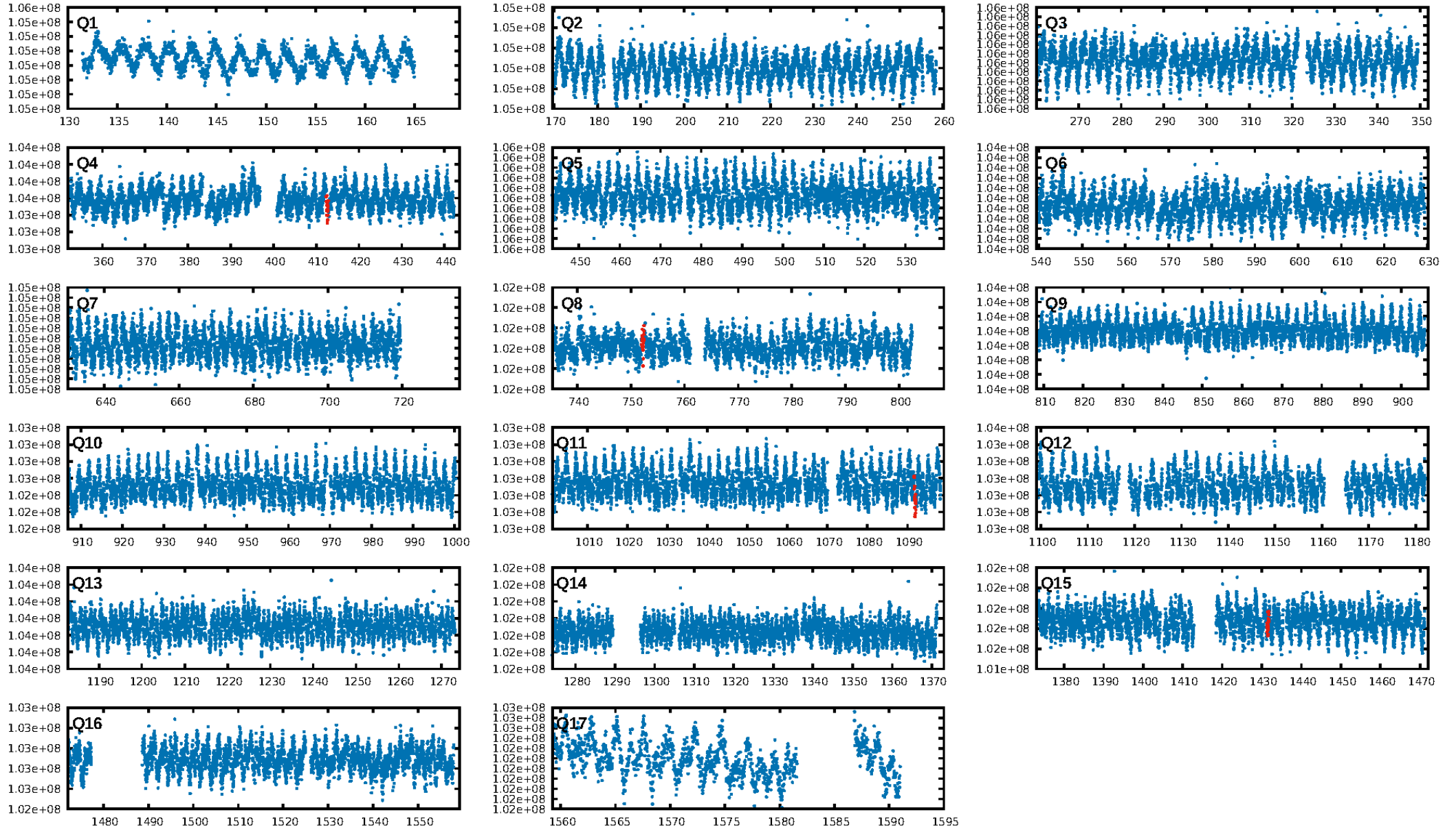
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 43.5%  
ModelChiSquareGof-sig: 99.6%  
Bootstrap-pfa: 4.95e-15  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -3.645  
Centroid-sig: 59.2%  
Centroid-so: 0.609 arcsec [0.77σ]  
OotOffset-rm: 0.319 arcsec [0.99σ]  
KicOffset-rm: 0.314 arcsec [1.20σ]  
OotOffset-st: 0/2/1/0 [3]  
KicOffset-st: 0/2/1/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [4/4]

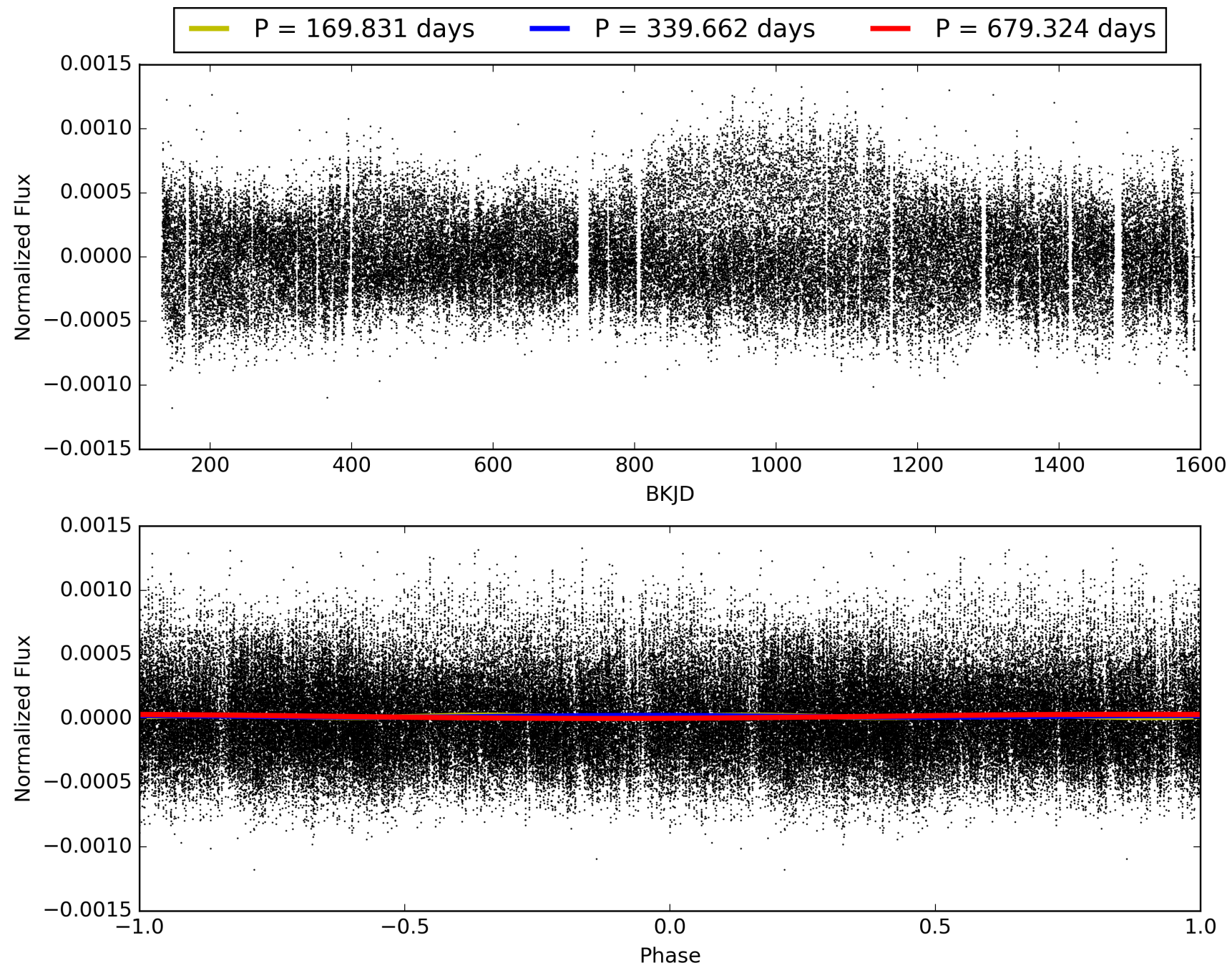
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:15:06 Z

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

# TCE 005176446-01, PDC Light Curves

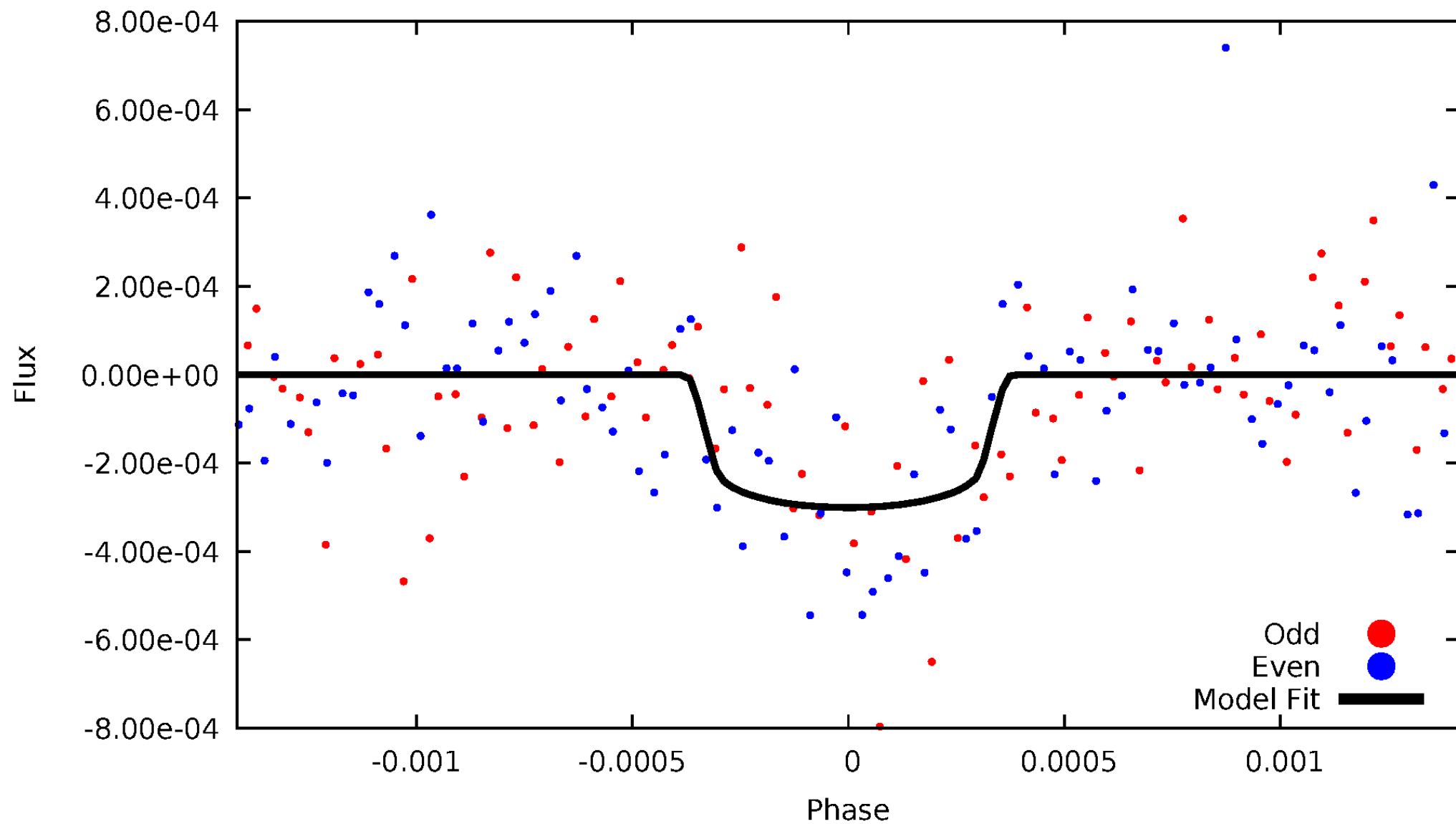


TCE 005176446-01



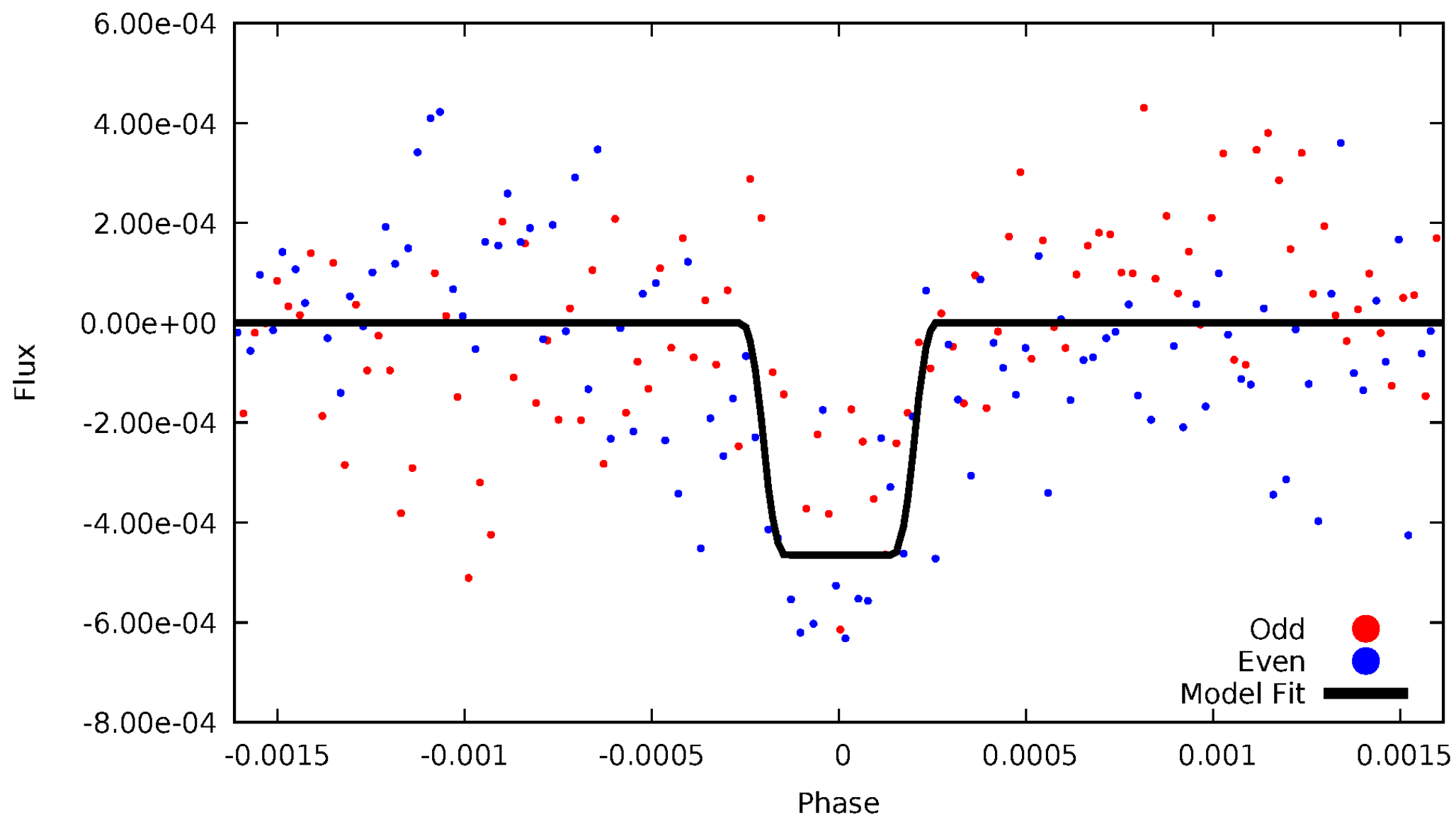
# DV Odd/Even

TCE 005176446-01



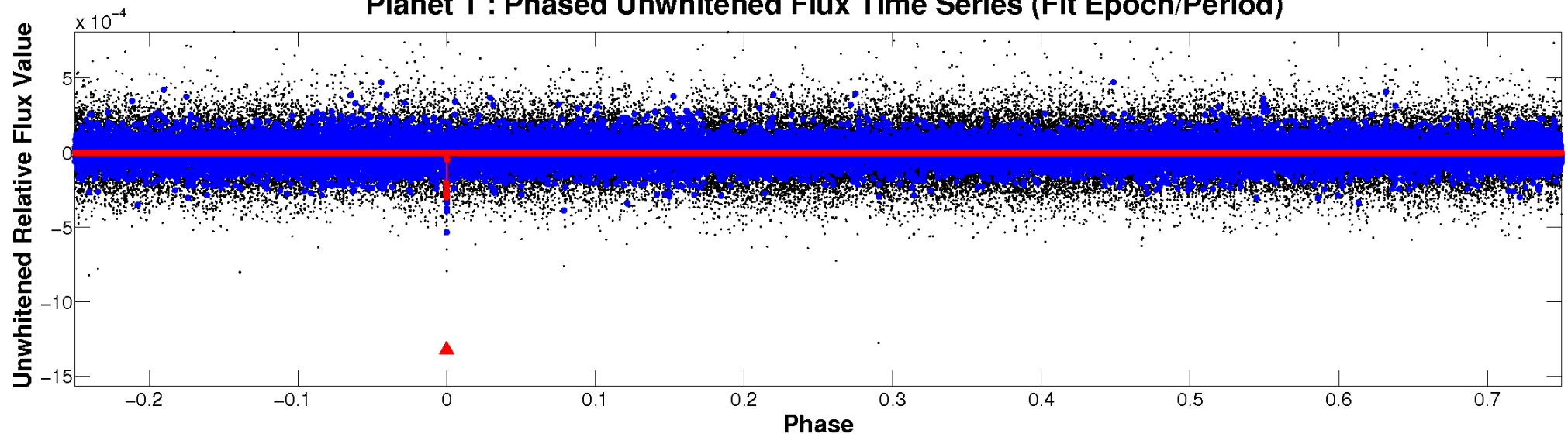
# ALT Odd/Even

TCE 005176446-01

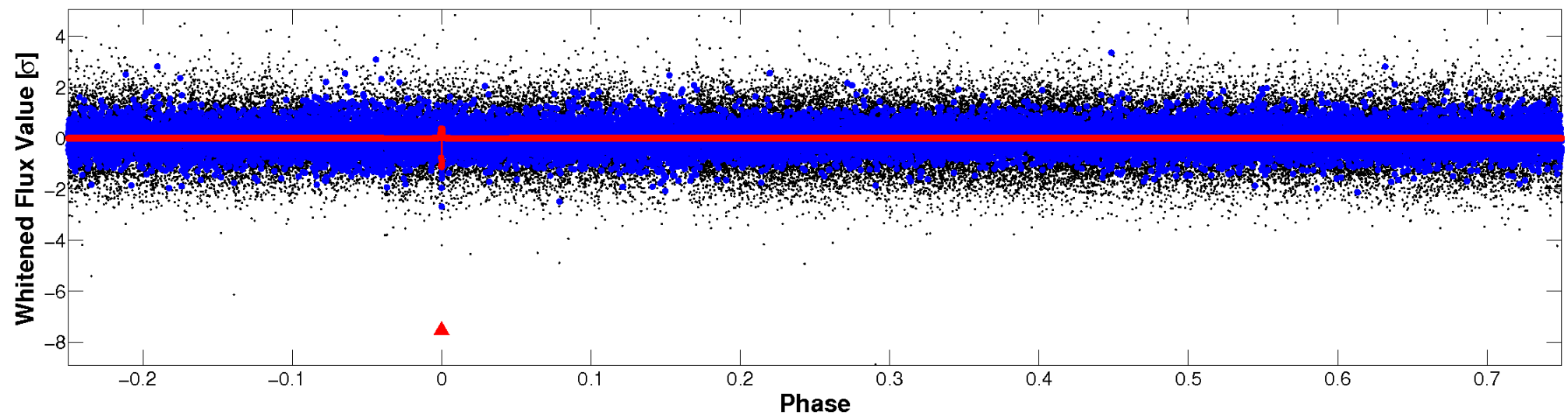


# Non-Whitened Vs. Whitened Light Curve

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

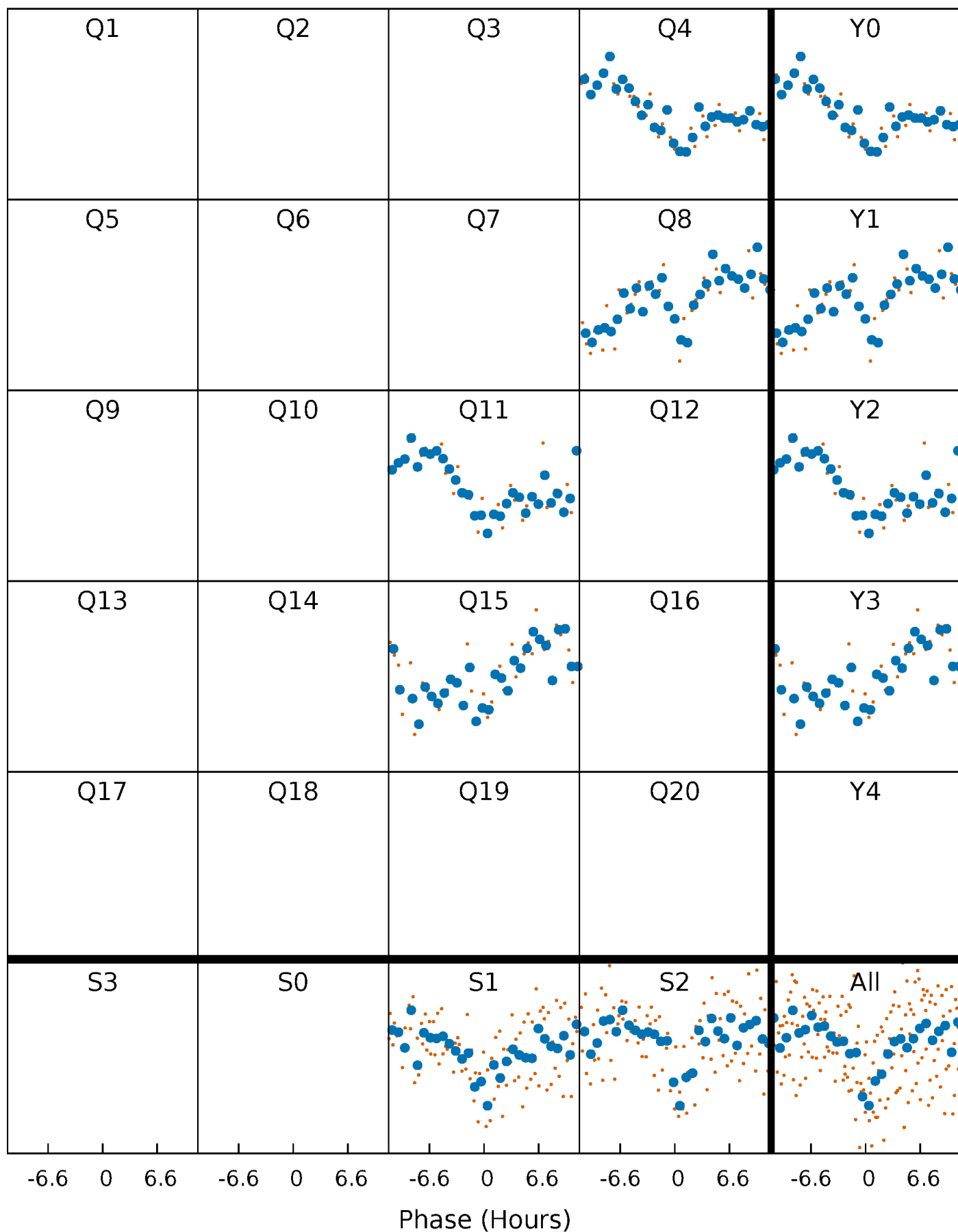


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



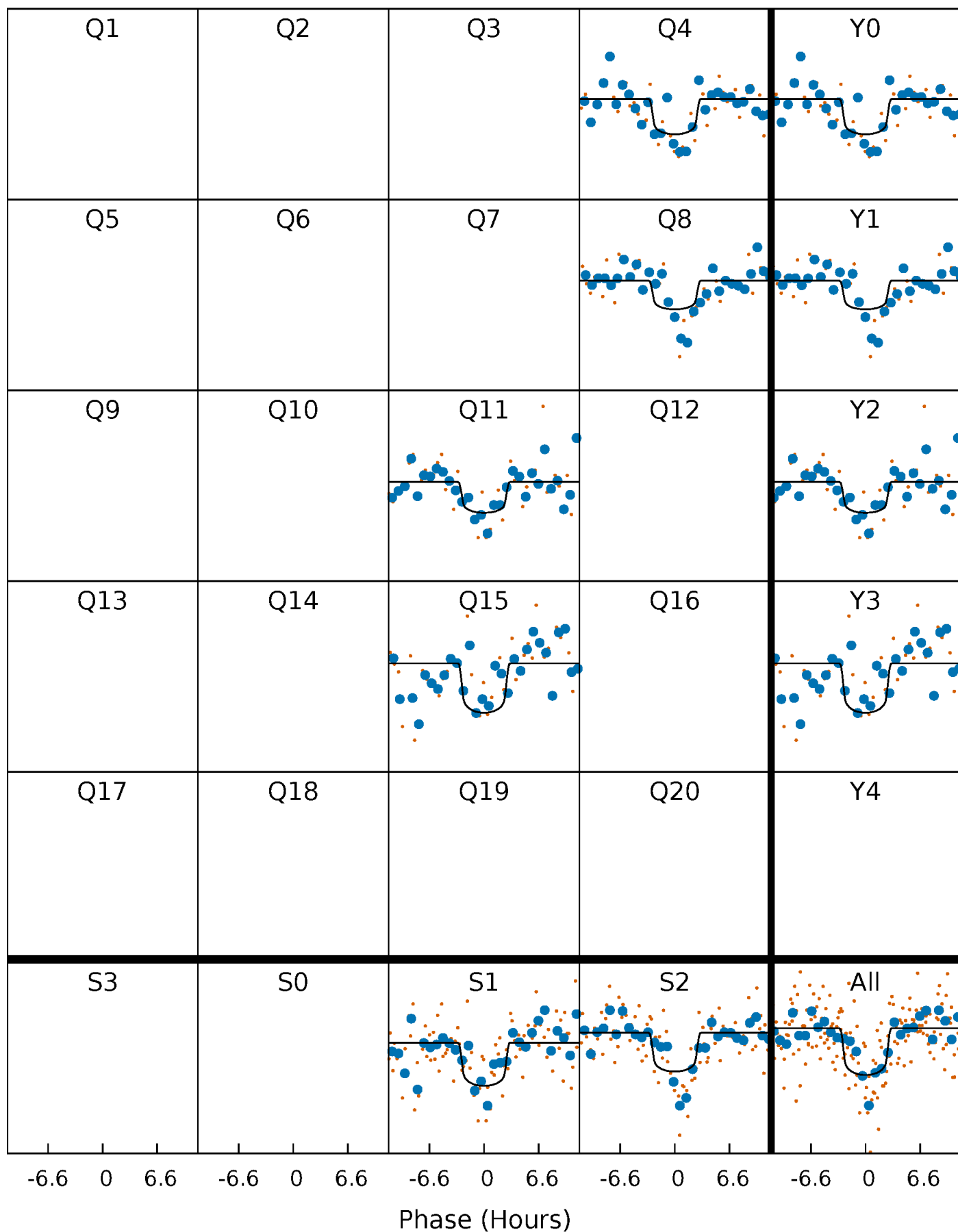
# PDC Quarter-Phased Transit Curves

TCE 005176446-01 P=339.661895 Days  $T_0=412.574628$  (BKJD)



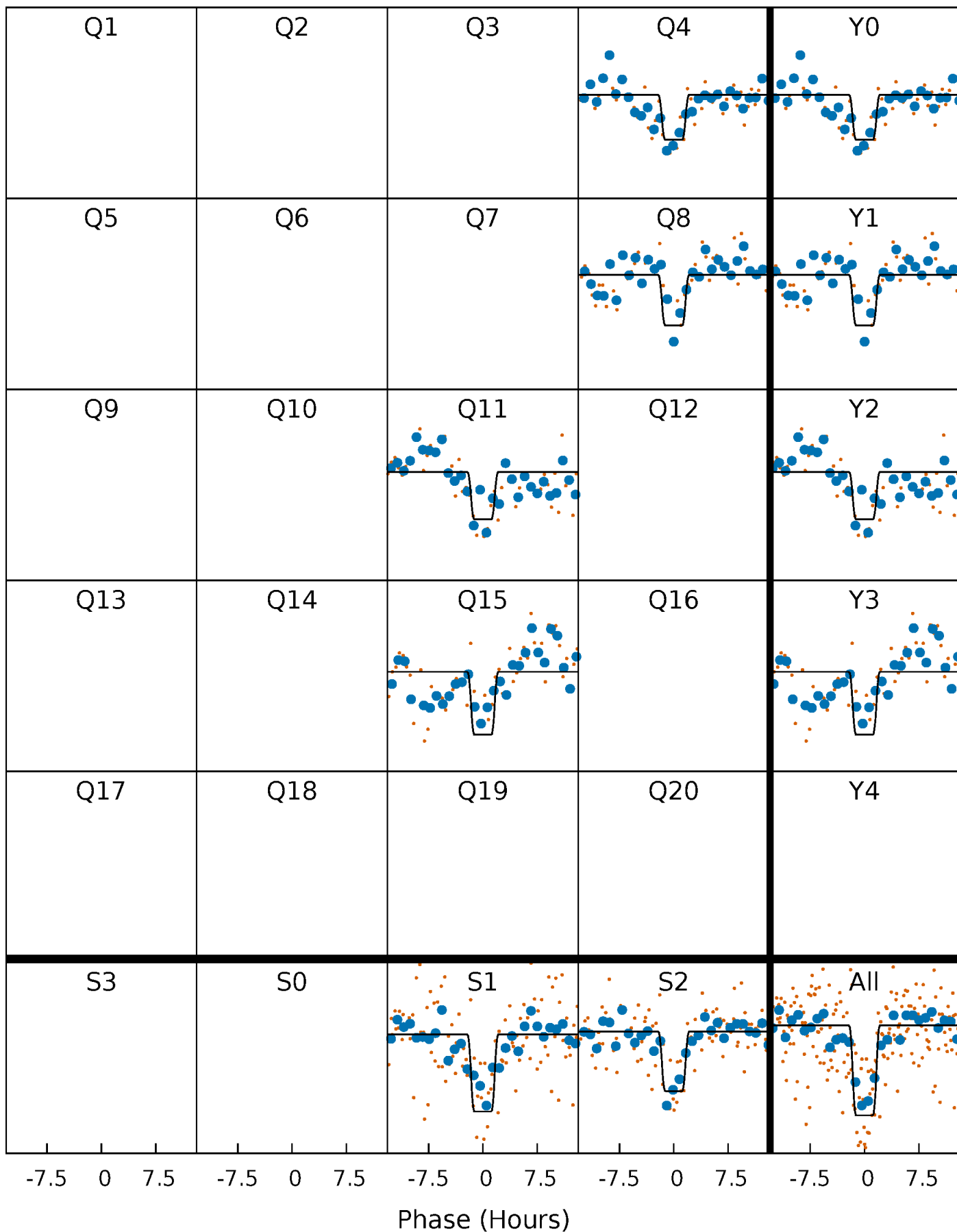
# DV Quarter-Phased Transit Curves

TCE 005176446-01 P=339.661895 Days  $T_0=412.574628$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

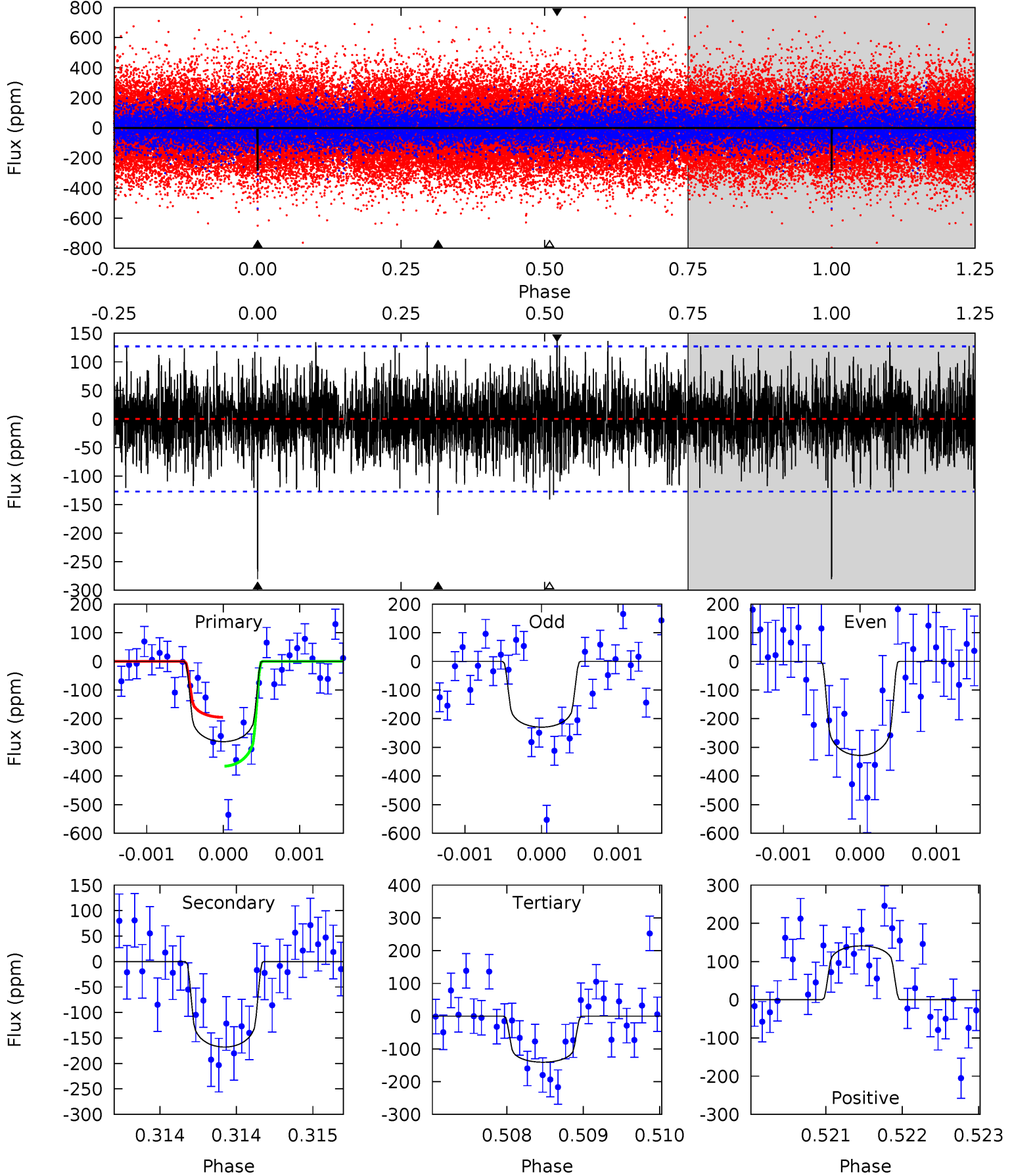
TCE 005176446-01 P=339.643241 Days  $T_0=412.616850$  (BKJD)



# DV Model-Shift Uniqueness Test

005176446-01,  $P = 339.661895$  Days,  $E = 72.912733$  Days

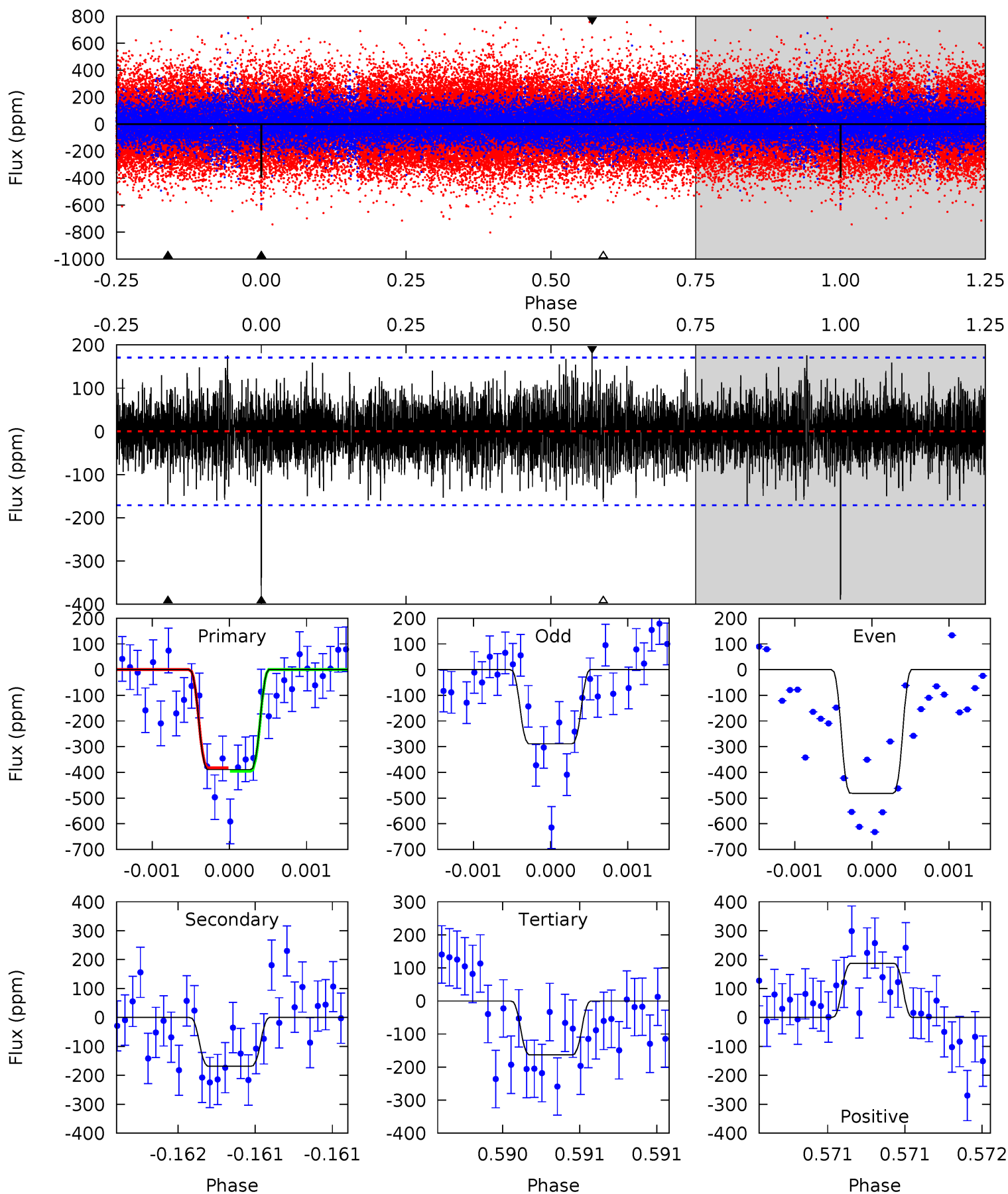
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	7.26	6.09	6.09	5.50	3.37	1.78	6.03	6.03	1.17	1.17	2.15	0.87	0.33	3.69



# Alt Model-Shift Uniqueness Test

005176446-01, P = 339.643241 Days, E = 72.973609 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
12.7	5.49	5.32	6.10	5.57	3.48	1.54	7.36	6.58	0.18	-0.61	3.22	0.98	0.32	0.22



### Stellar Parameters For KIC 005176446

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6927^{+190}_{-238}$	$3.806^{+0.285}_{-0.095}$	$-0.220^{+0.300}_{-0.250}$	$2.552^{+0.460}_{-0.854}$	$1.519^{+0.231}_{-0.257}$	$0.129^{+0.227}_{-0.046}$
	+3%/-3%	+7%/-2%	+136%/-114%	+18%/-33%	+15%/-17%	+176%/-36%
Source	PHO1	FLK73	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 005176446-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-168 \pm 23$	$4.69^{+1.99}_{-1.93}$	$640^{+37}_{-51}$	$5925^{+1870}_{-919}$	$5318^{+9330}_{-2836}$
Alt.	$-168 \pm 31$	$5.68^{+2.00}_{-2.00}$	$639^{+40}_{-54}$	$5415^{+1085}_{-684}$	$3496^{+4494}_{-1650}$

$T_{\text{max}}$  = 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

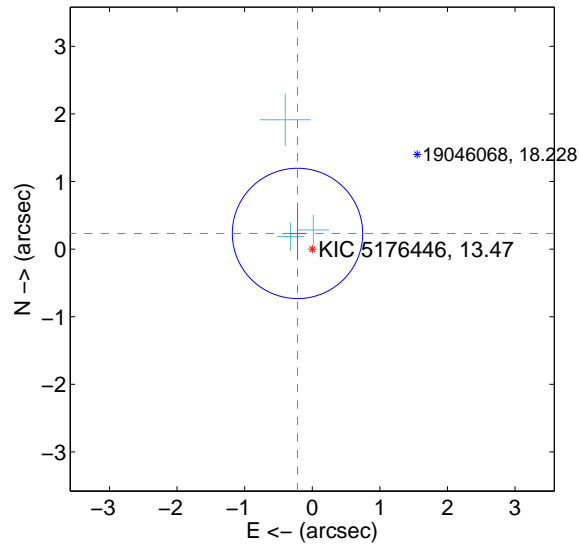
Supplemental centroid analysis for 005176446-01. Kepler magnitude: 13.47. Transit SNR 6.66

There are 3 quarters with good PRF difference image offsets

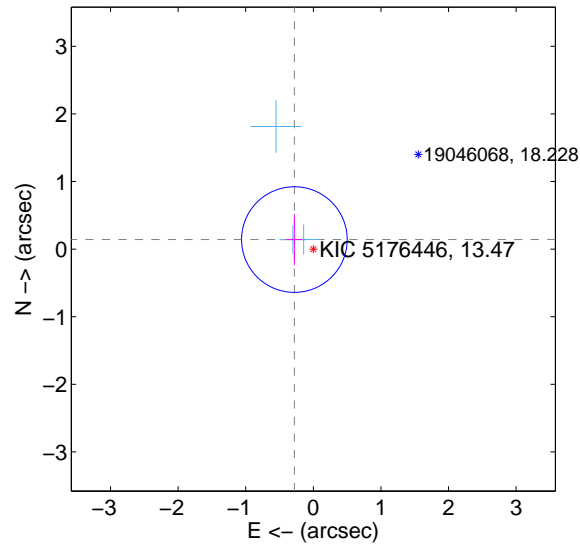
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.319 \pm 0.321$	0.99	$0.218 \pm 0.114$	$0.232 \pm 0.377$
PRF-fit source offset from KIC position	$0.314 \pm 0.260$	1.20	$0.280 \pm 0.119$	$0.141 \pm 0.377$
photometric centroid source offset	$0.61 \pm 0.79$	0.77	$0.48 \pm 0.82$	$-0.37 \pm 0.75$

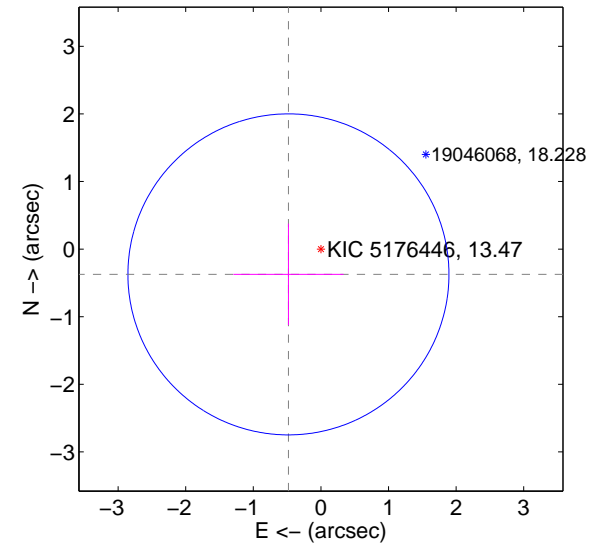
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

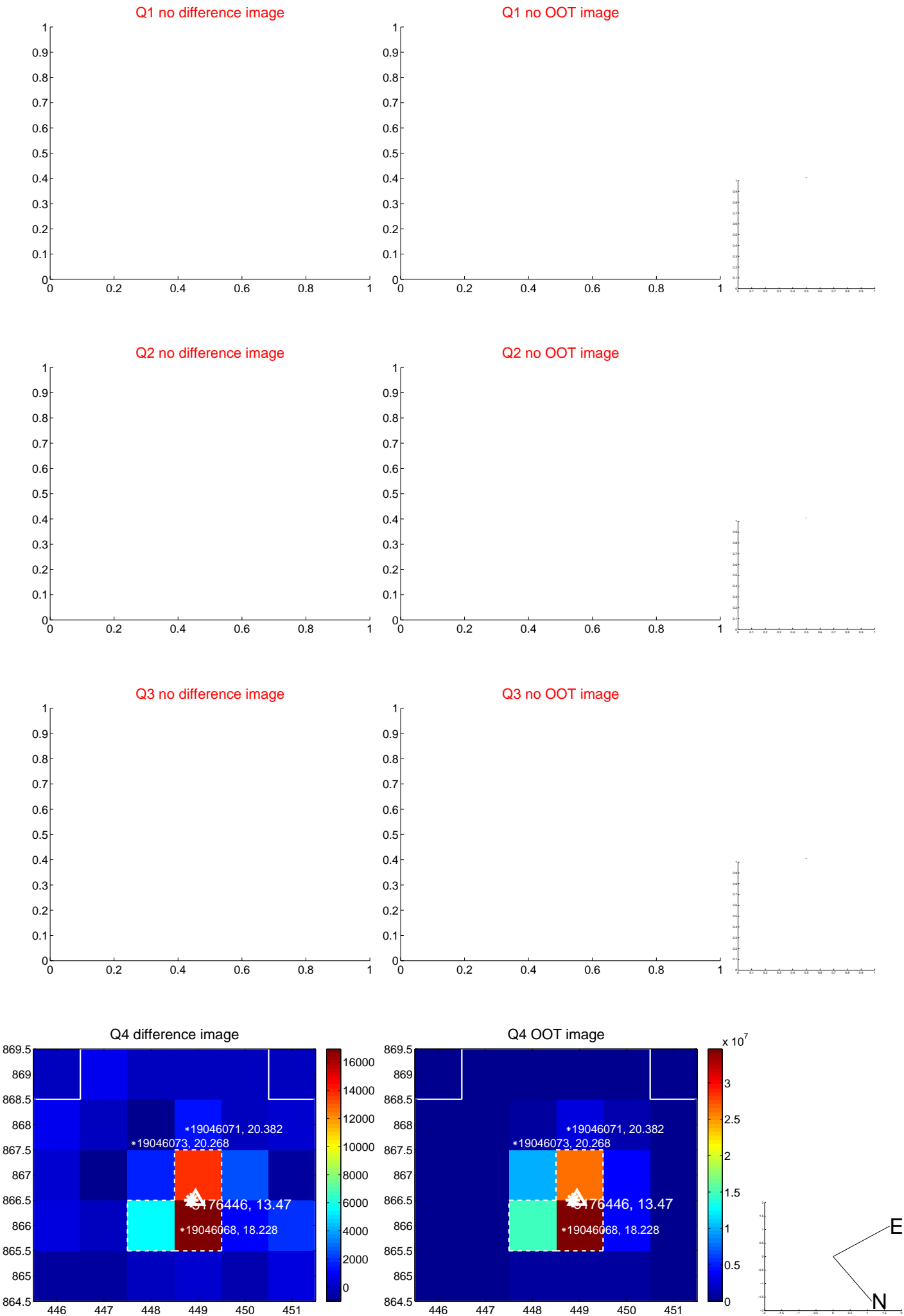


offset from photometric centroids

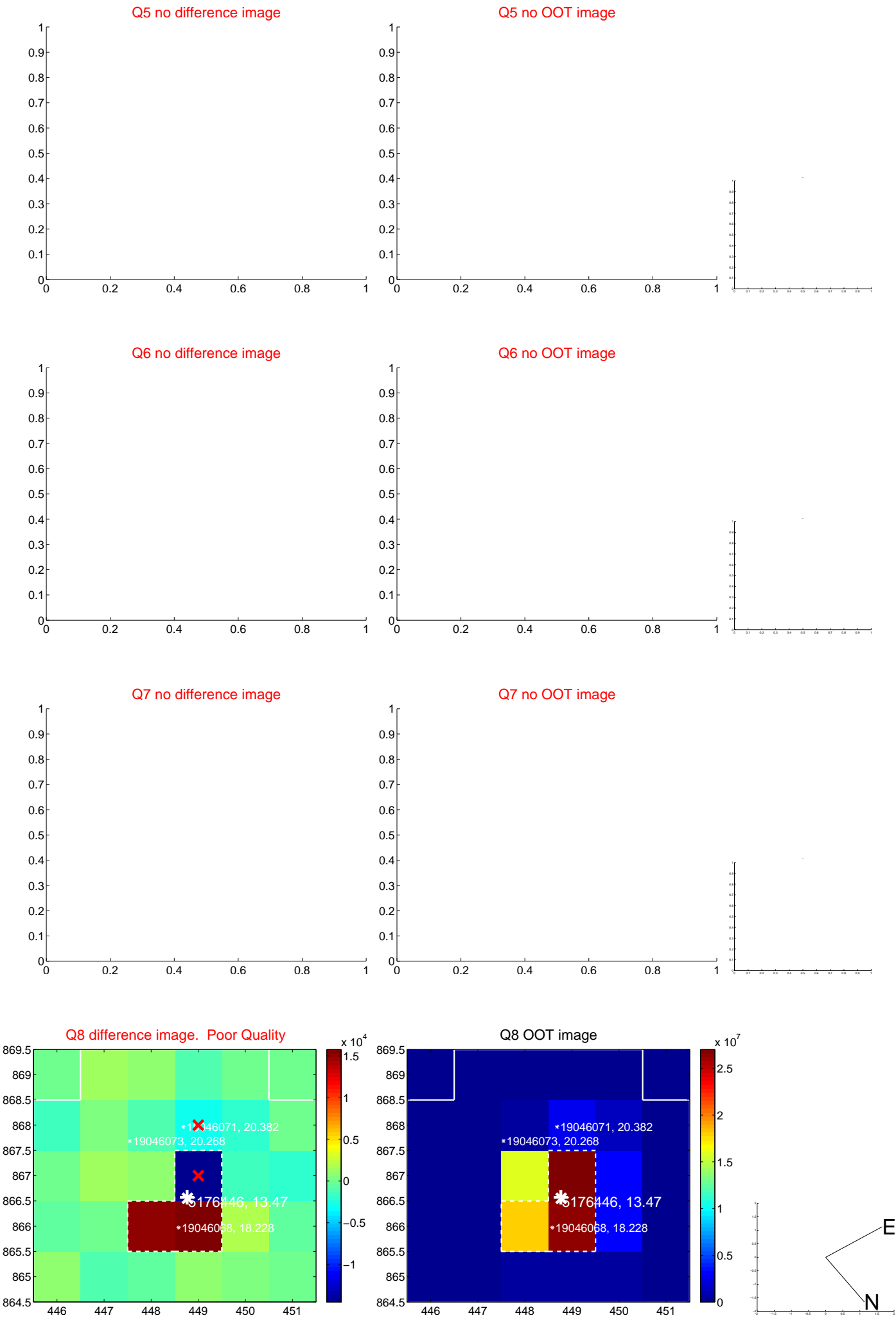


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

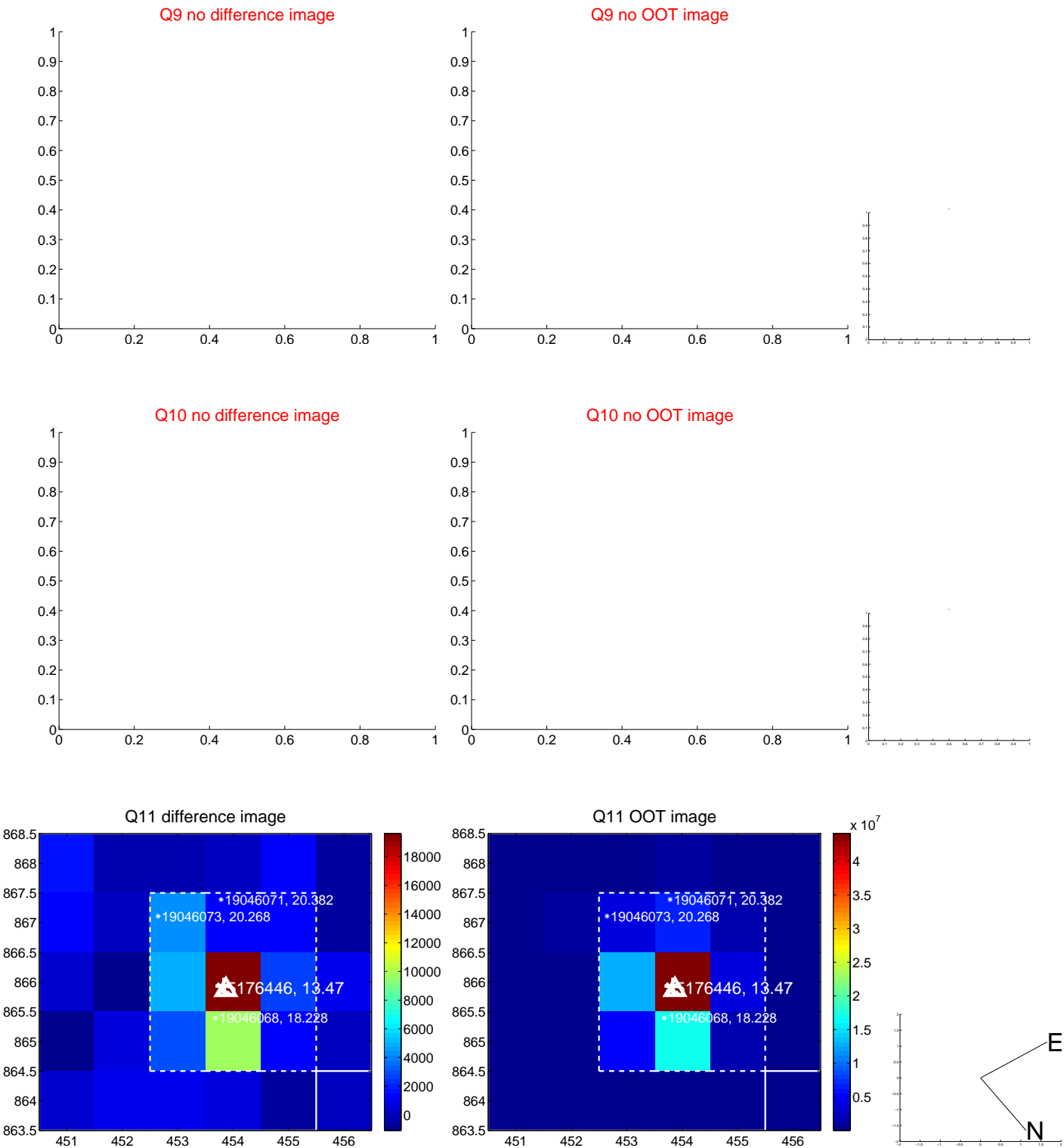
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



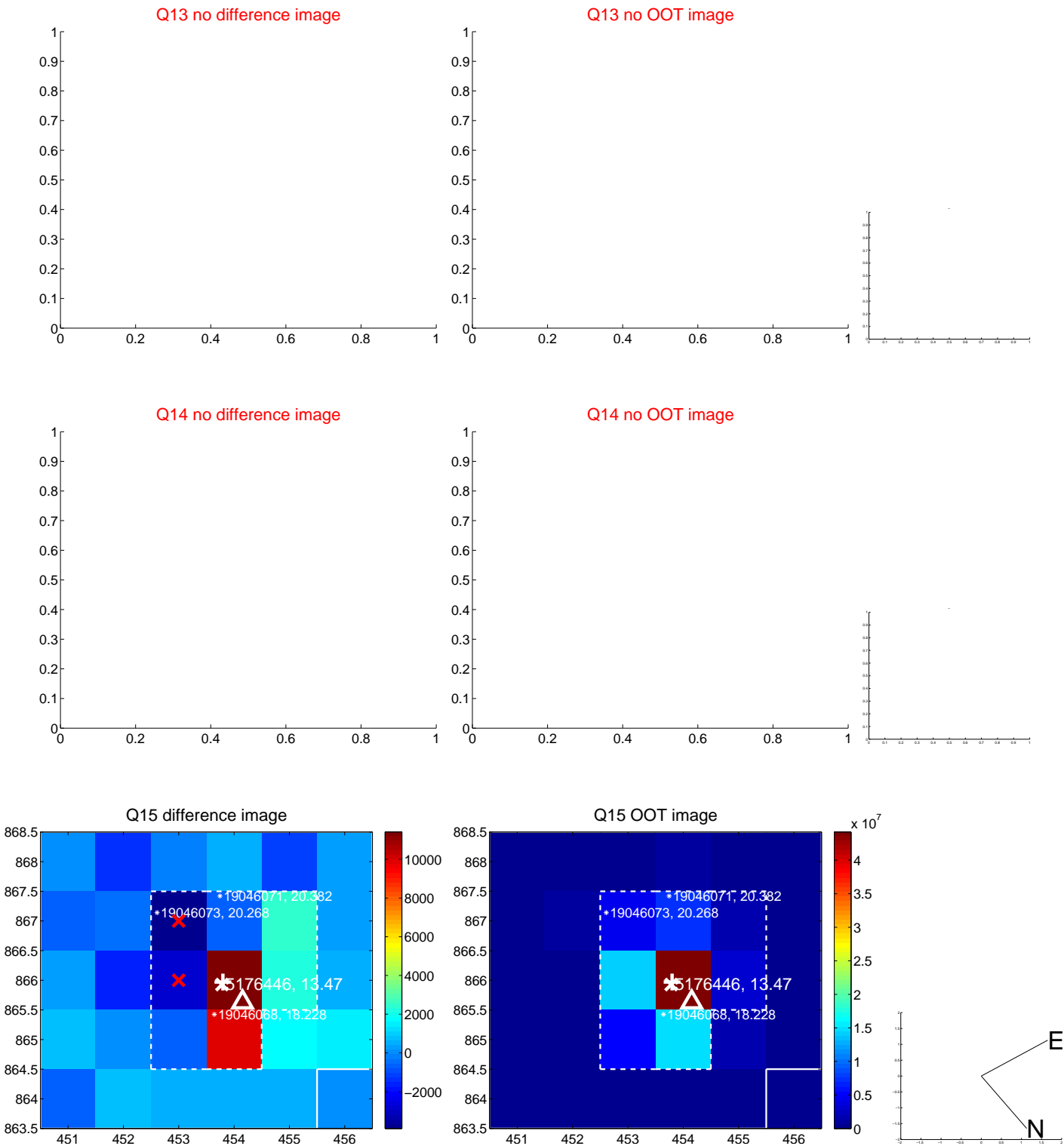
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



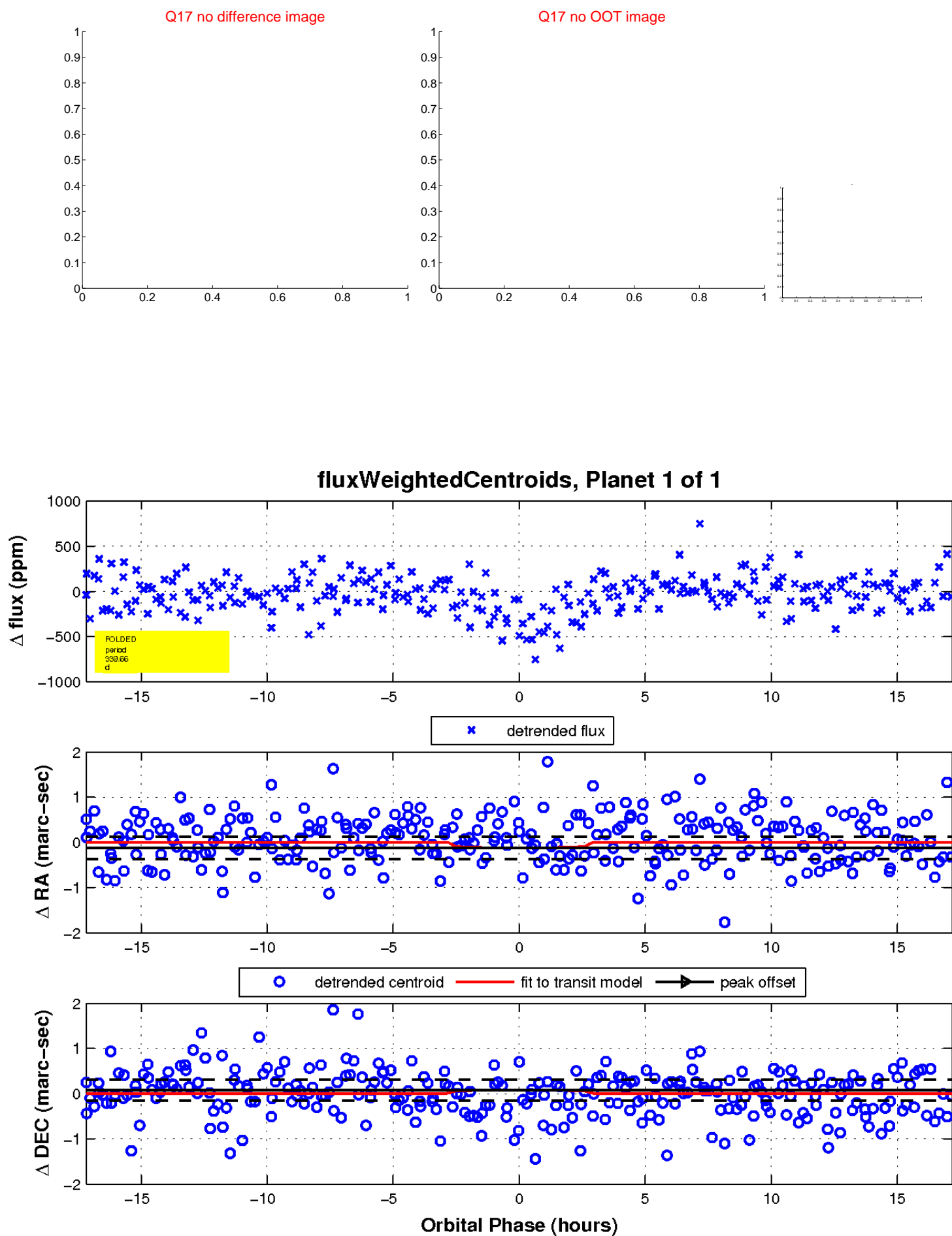
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

Declination

