

# KIC 008687610

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008687610-01	OBS	No	378.090679	501.670938	490.1	49.220	7.3	11.4	1.22	6202	4.98	1.77

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008687610-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—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.

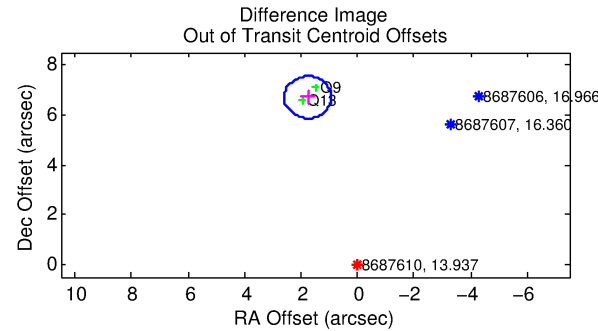
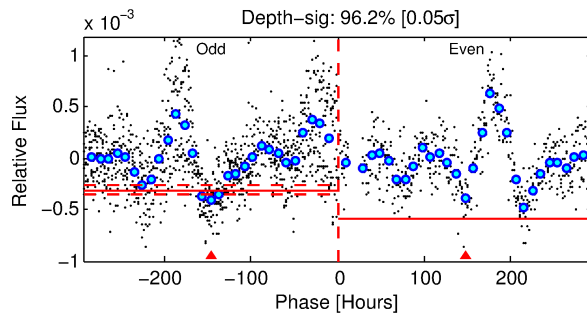
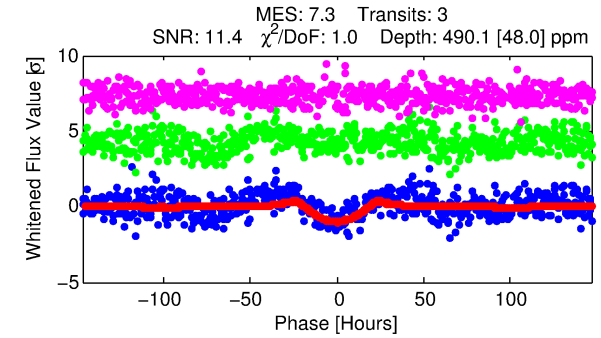
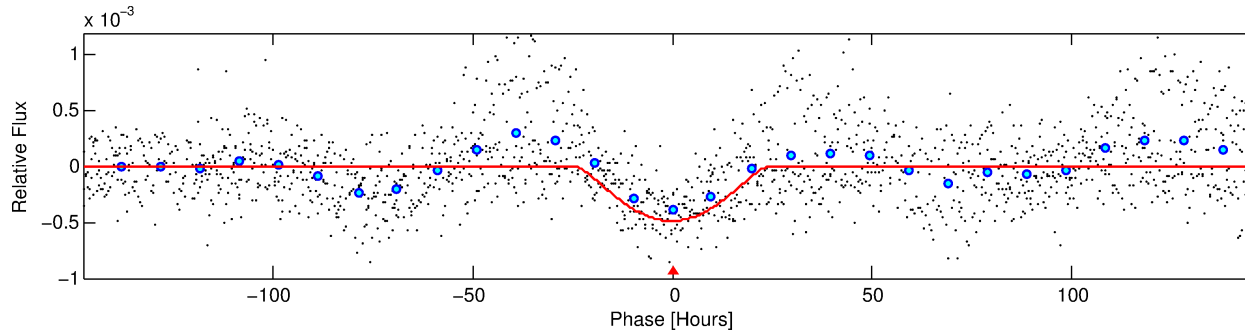
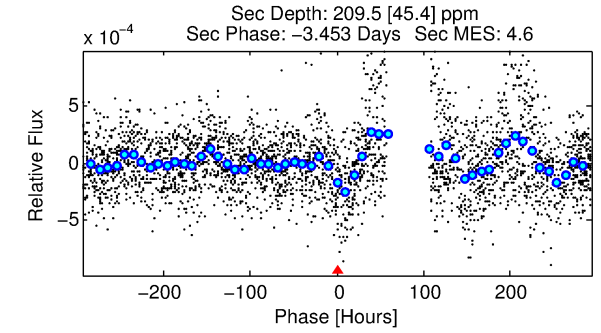
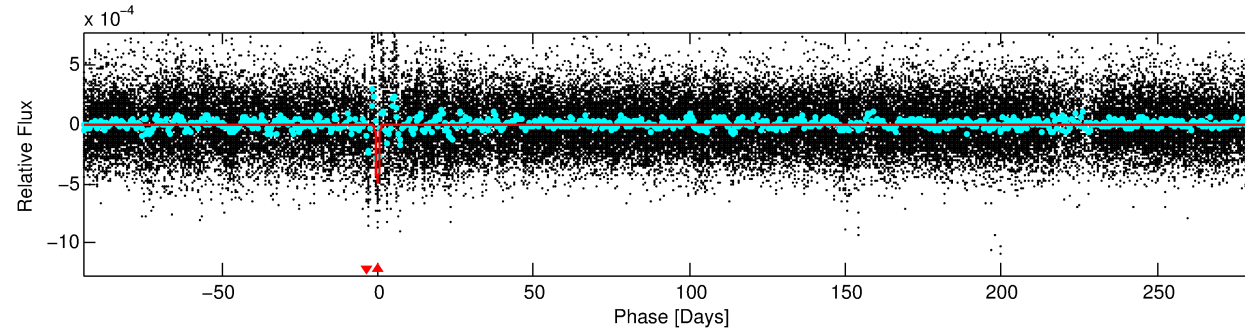
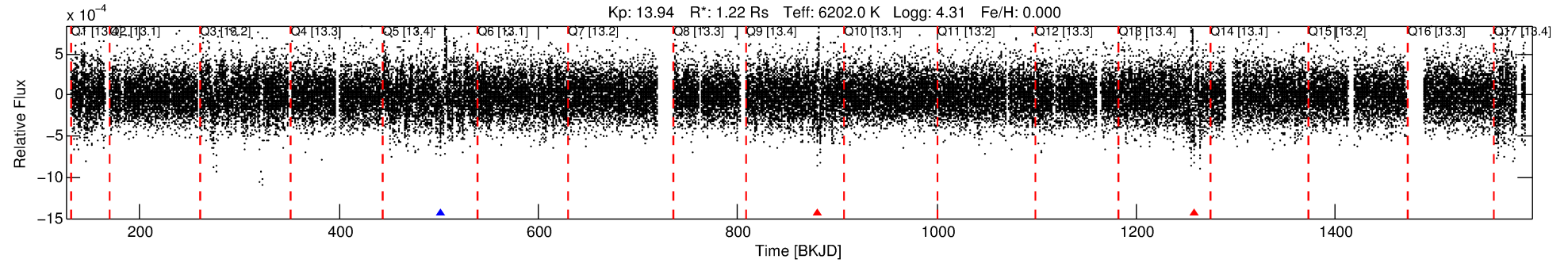
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008687610-01

No Significant Match Found

# DV One-Page Summary

KIC: 8687610 Candidate: 1 of 1 Period: 378.091 d



## DV Fit Results:

Period = 378.09068 [0.05658] d  
Epoch = 501.6709 [0.0742] BKJD  
Rp/R\* = 0.0374 [0.0552]  
a/R\* = 16.94 [6.80]  
b = 1.00 [0.09]  
Seff = 1.77 [0.68]  
Teq = 294 [28] K  
Rp = 4.98 [7.52] Re  
a = 1.0568 [0.2691] AU  
Ag = 5191.51 [15487.39] [0.34σ]  
Teffp = 3858 [2859] K [1.25σ]

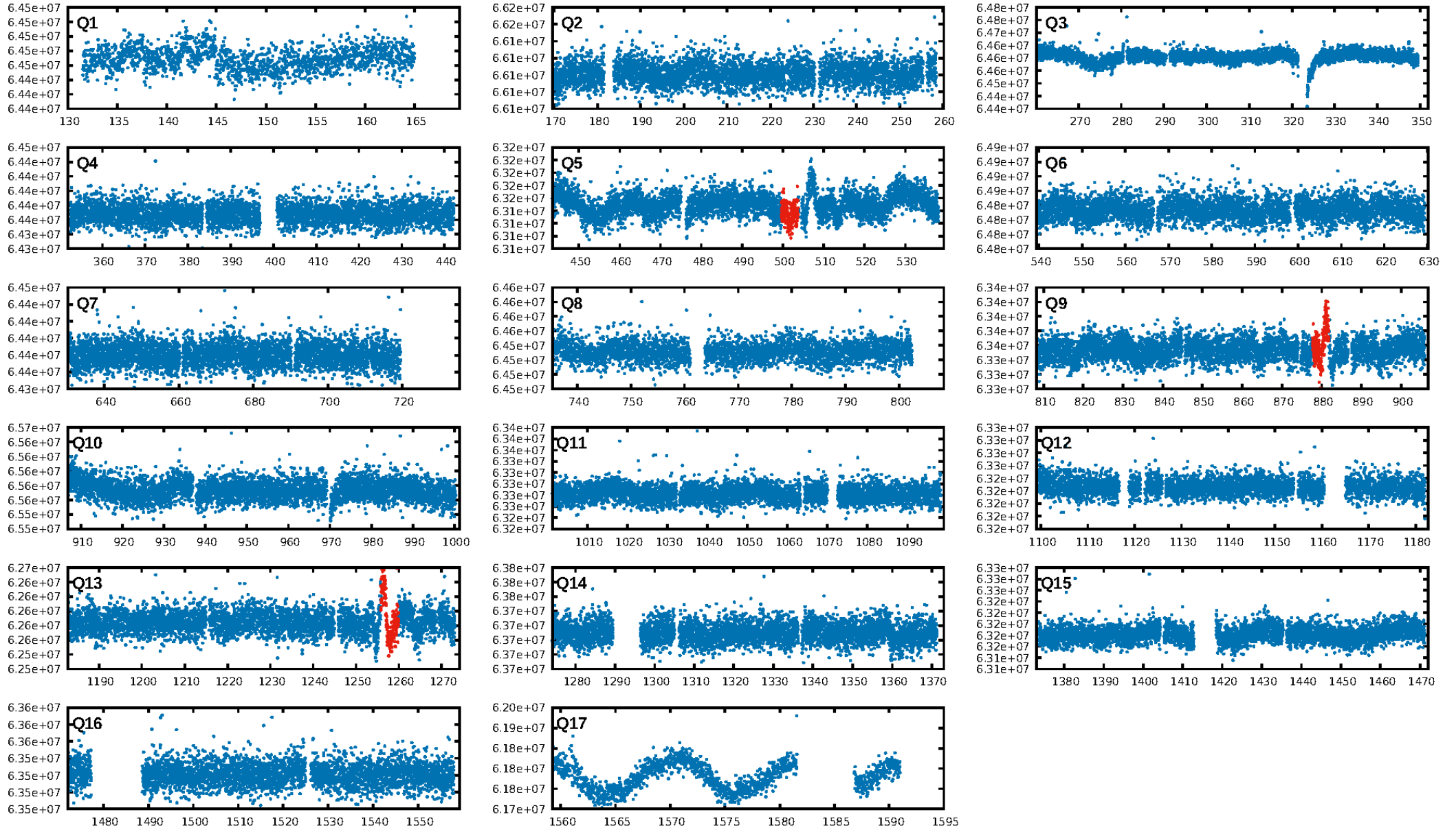
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 54.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.66e-12  
RollingBand-fgt: 0.33 [1/3]  
GhostDiagnostic-chr: 5.189  
Centroid-sig: 11.3%  
Centroid-so: 1.645 arcsec [1.74σ]  
OotOffset-rm: 6.931 arcsec [24.68σ]  
KicOffset-rm: 6.986 arcsec [25.05σ]  
OotOffset-st: 0/0/0/2 [2]  
KicOffset-st: 0/0/0/2 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [2/2]

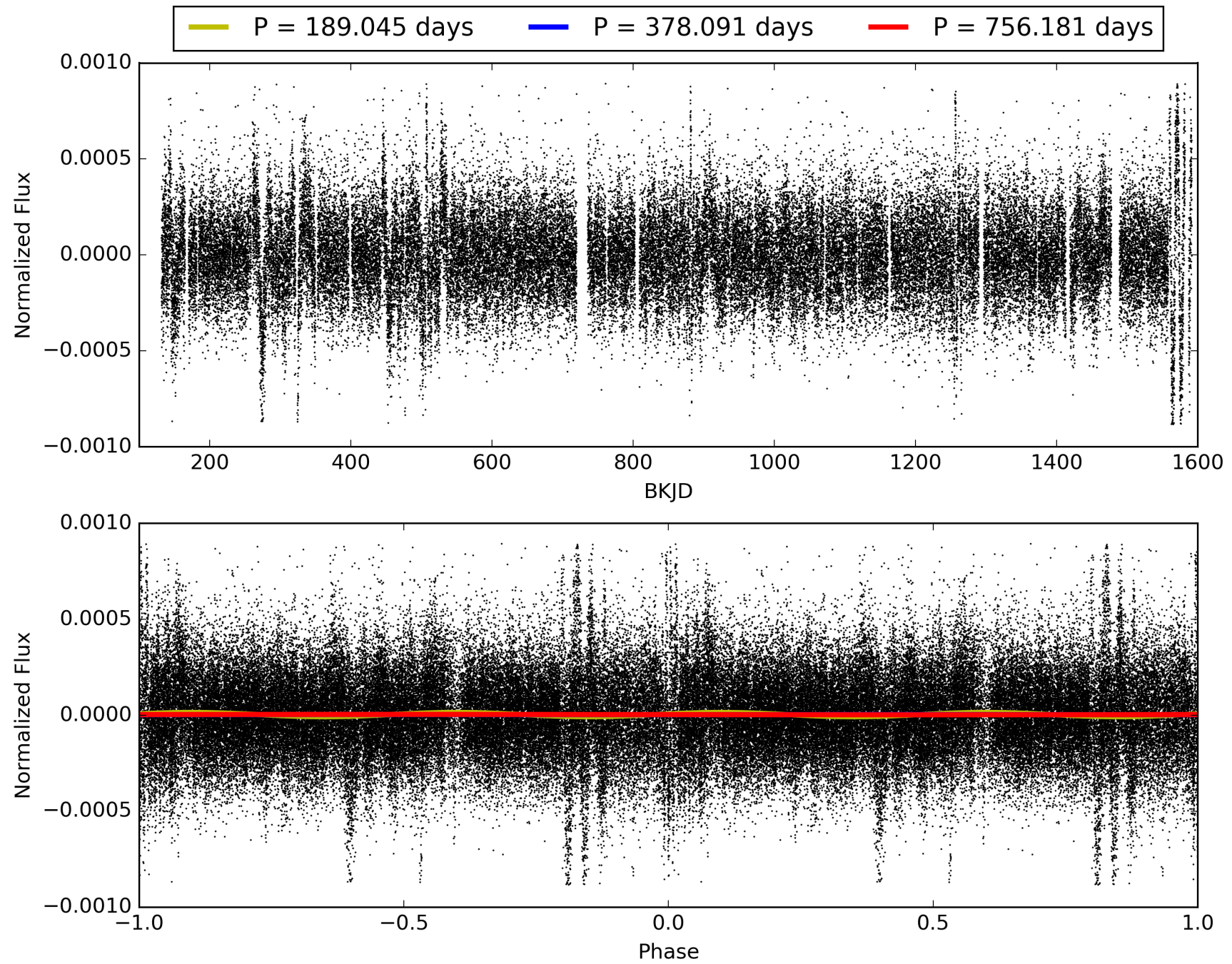
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:31:40 Z

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

# TCE 008687610-01, PDC Light Curves

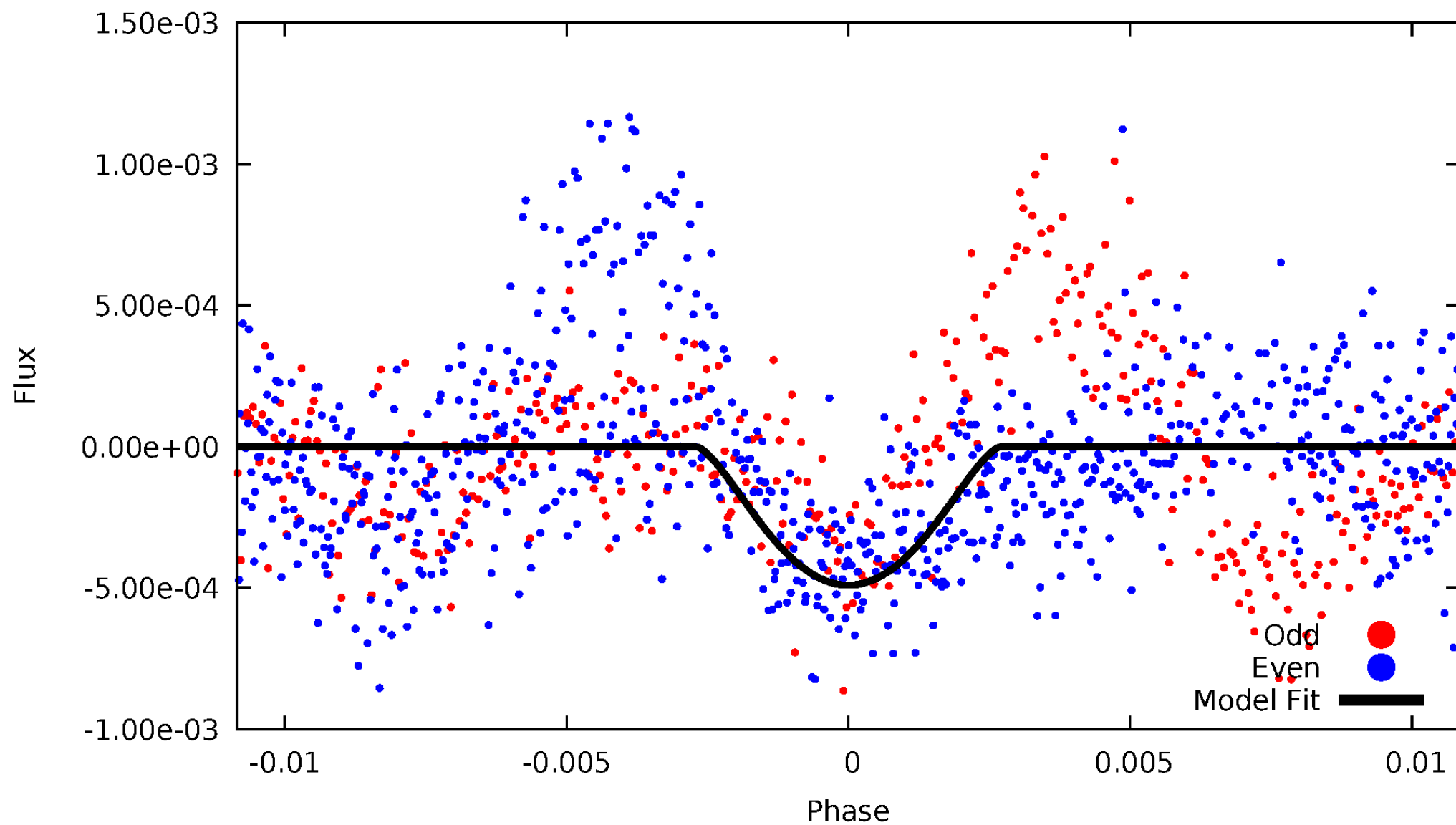


TCE 008687610-01



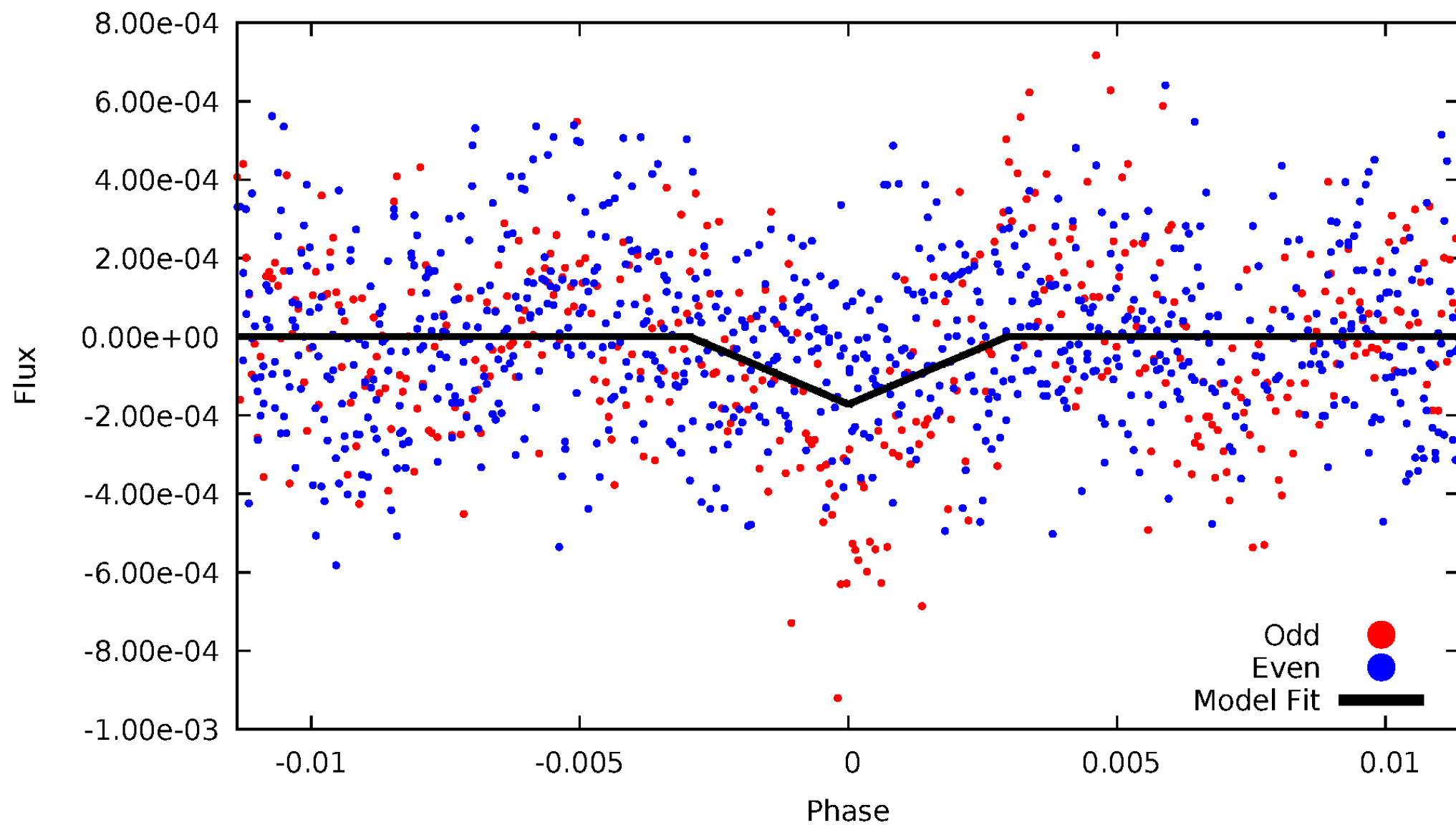
# DV Odd/Even

TCE 008687610-01



# ALT Odd/Even

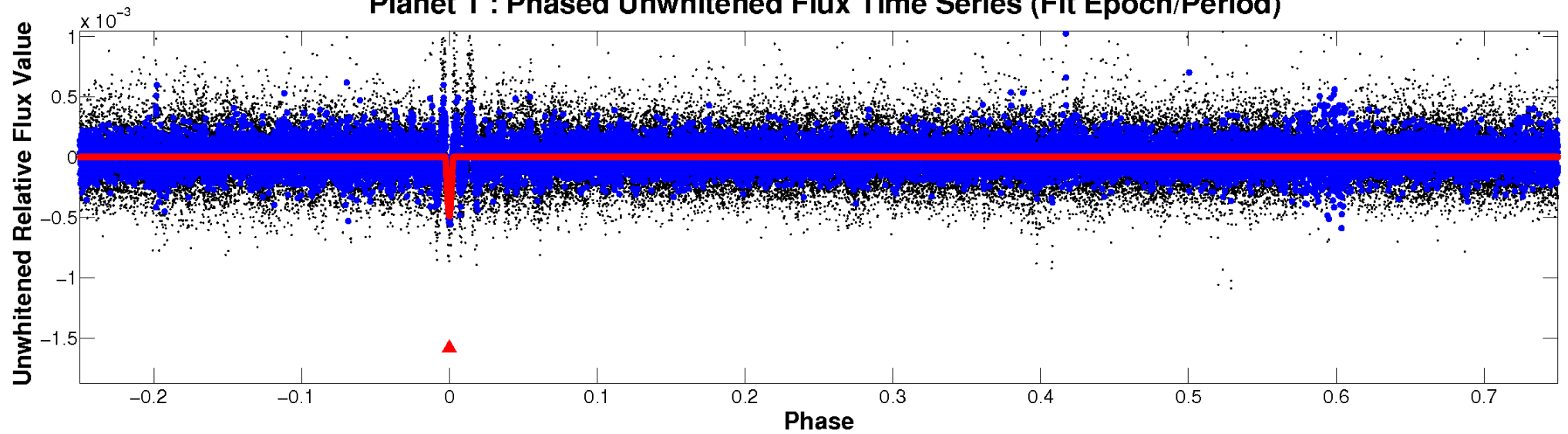
TCE 008687610-01



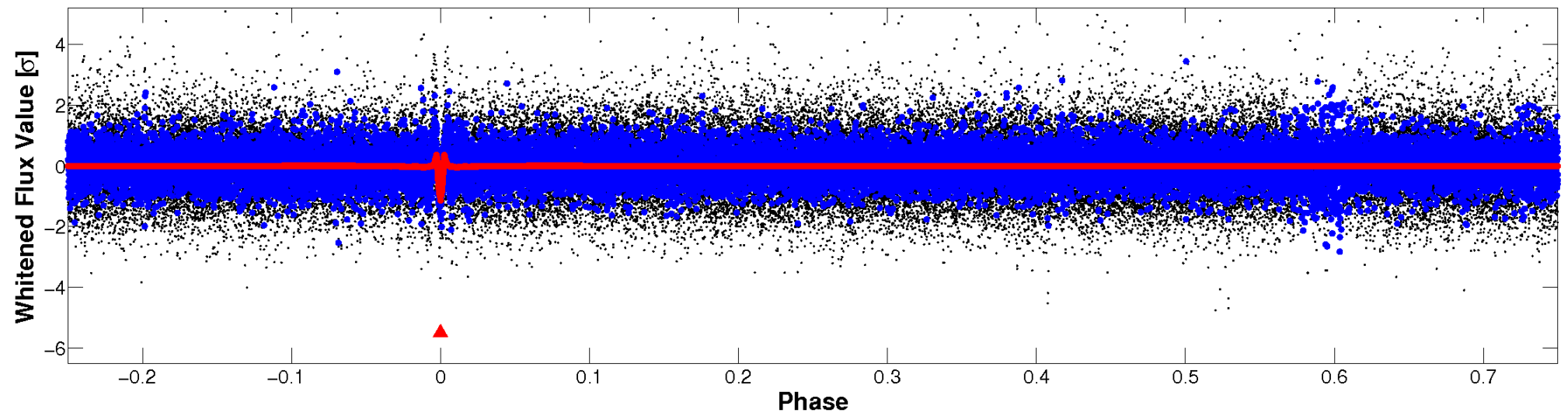


# Non-Whitened Vs. Whitened Light Curve

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

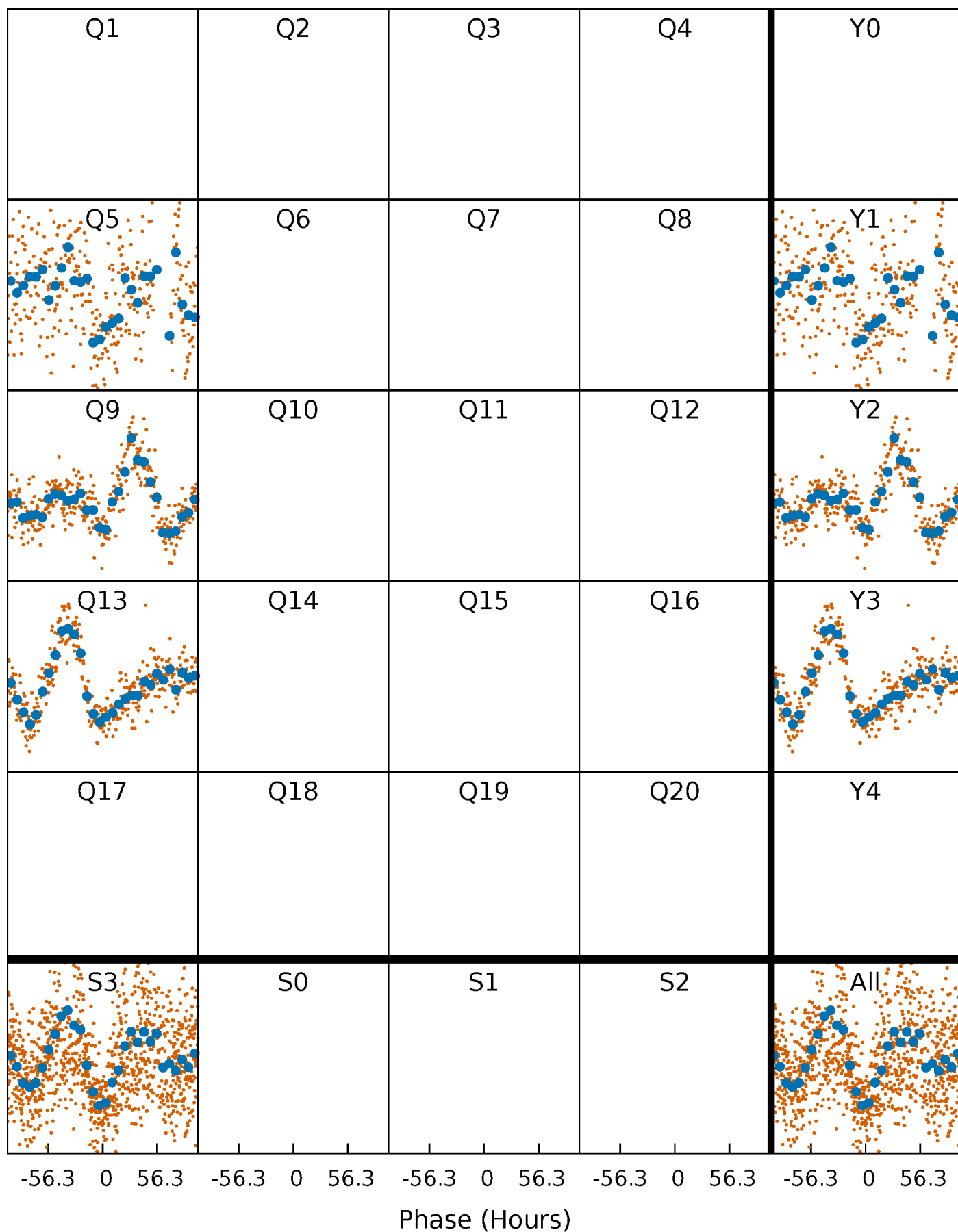


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

TCE 008687610-01 P=378.090679 Days  $T_0=501.670938$  (BKJD)





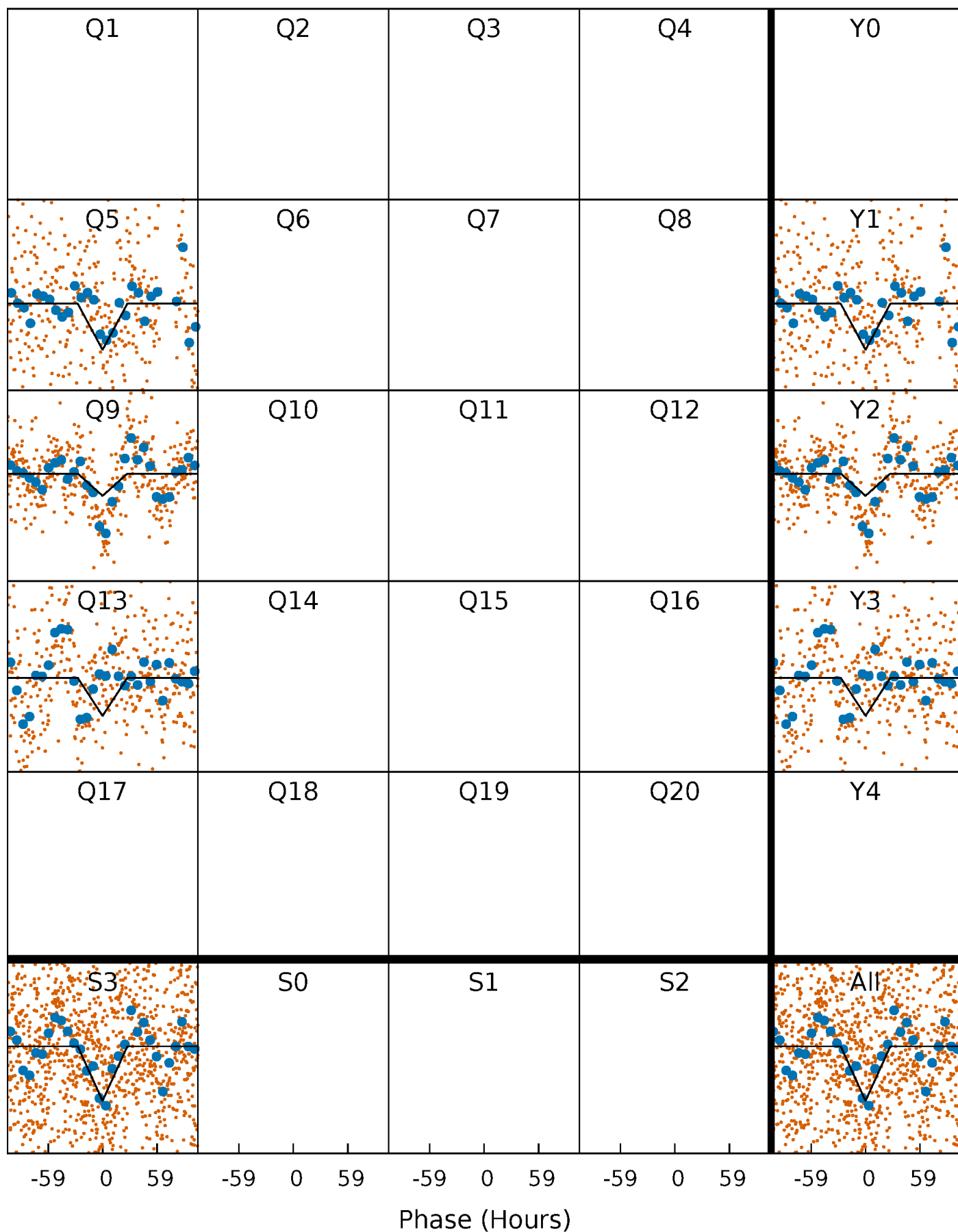
# DV Quarter-Phased Transit Curves

TCE 008687610-01 P=378.090679 Days  $T_0=501.670938$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

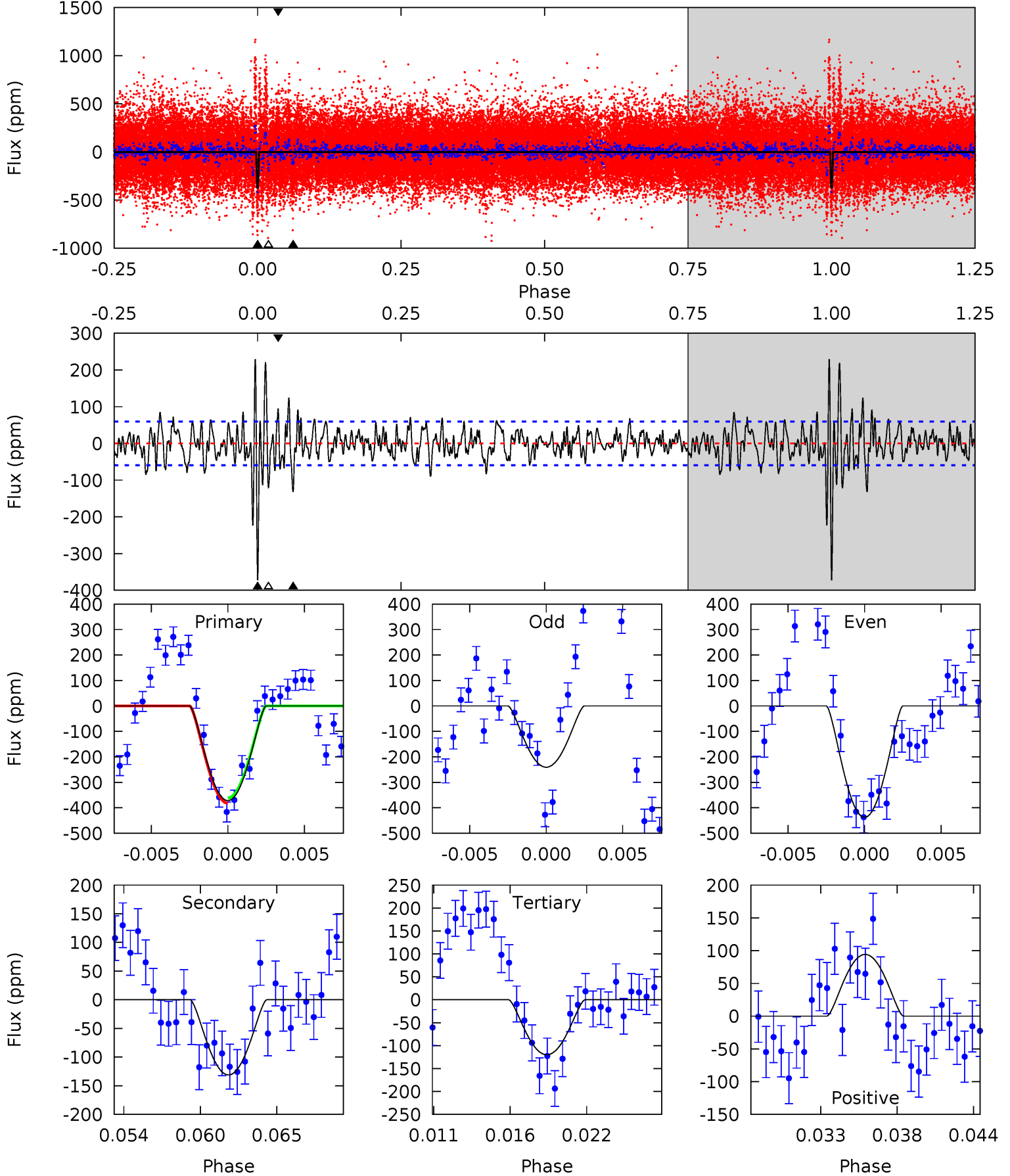
TCE 008687610-01 P=378.511265 Days  $T_0=501.292182$  (BKJD)



# DV Model-Shift Uniqueness Test

008687610-01,  $P = 378.090679$  Days,  $E = 123.580259$  Days

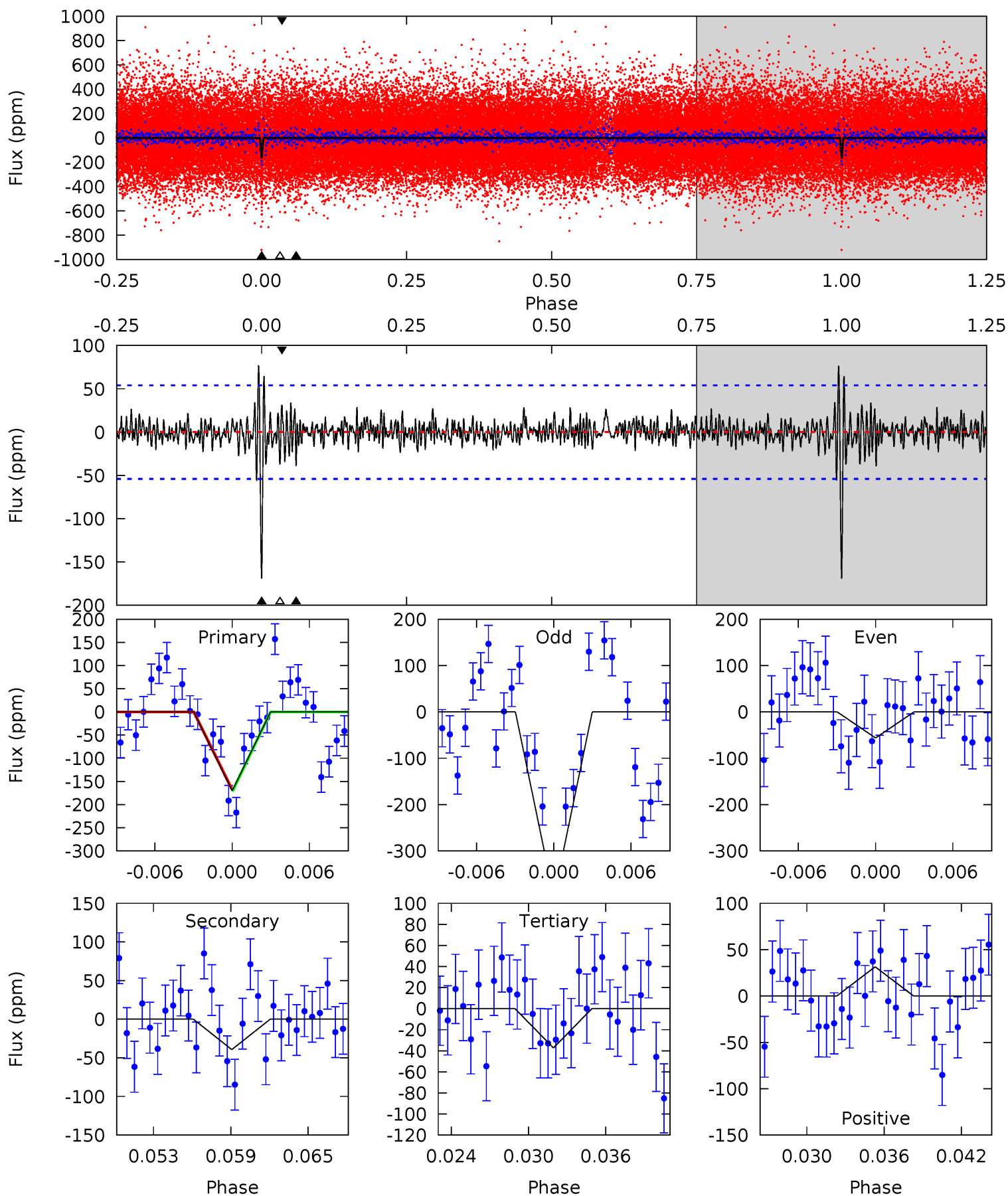
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.0	11.3	10.3	8.11	5.14	2.78	3.01	21.7	23.9	0.97	3.18	8.06	1.03	0.38	0.89



# Alt Model-Shift Uniqueness Test

008687610-01, P = 378.511265 Days, E = 122.780917 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
16.1	3.72	3.52	2.97	5.13	2.75	0.94	12.5	13.1	0.20	0.74	15.4	1.63	0.31	0.25



### Stellar Parameters For KIC 008687610

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6202^{+152}_{-217}$	$4.307^{+0.128}_{-0.192}$	$0.000^{+0.250}_{-0.300}$	$1.220^{+0.380}_{-0.205}$	$1.100^{+0.175}_{-0.131}$	$0.853^{+0.456}_{-0.449}$
	+2%/-3%	+3%/-4%	+inf%/-inf%	+31%/-17%	+16%/-12%	+54%/-53%
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 008687610-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	-131±12	$7.28^{+6.81}_{-4.94}$	$411^{+34}_{-23}$	$3401^{+1708}_{-574}$	$1524^{+12462}_{-1118}$
Alt.	-39±11	$5.79^{+6.26}_{-4.05}$	$412^{+34}_{-23}$	$3001^{+1520}_{-498}$	$686^{+7416}_{-525}$

$T_{max}$  = 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

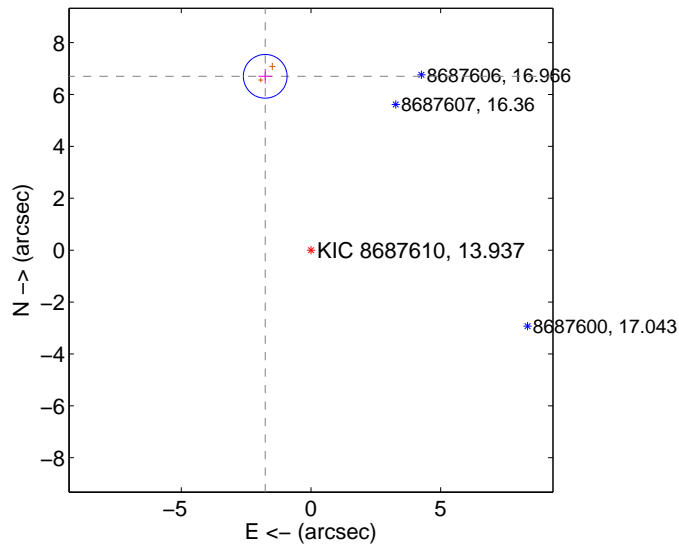
Supplemental centroid analysis for 008687610-01. Kepler magnitude: 13.94. Transit SNR 11.43

There are 0 quarters with good PRF difference image offsets

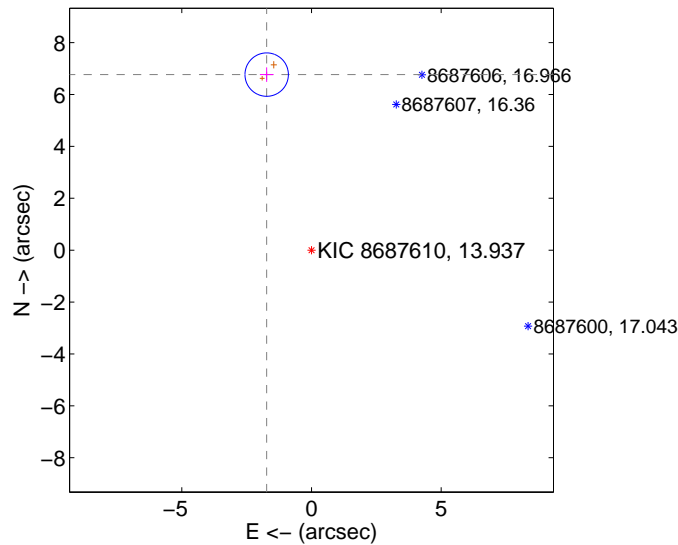
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>6.931 <math>\pm</math> 0.281</b>	<b>24.68</b>	1.764 $\pm$ 0.264	6.703 $\pm$ 0.282
PRF-fit source offset from KIC position	<b>6.986 <math>\pm</math> 0.279</b>	<b>25.05</b>	1.727 $\pm$ 0.263	6.769 $\pm$ 0.280
photometric centroid source offset	1.65 $\pm$ 0.95	1.74	-1.51 $\pm$ 0.94	0.64 $\pm$ 1.02

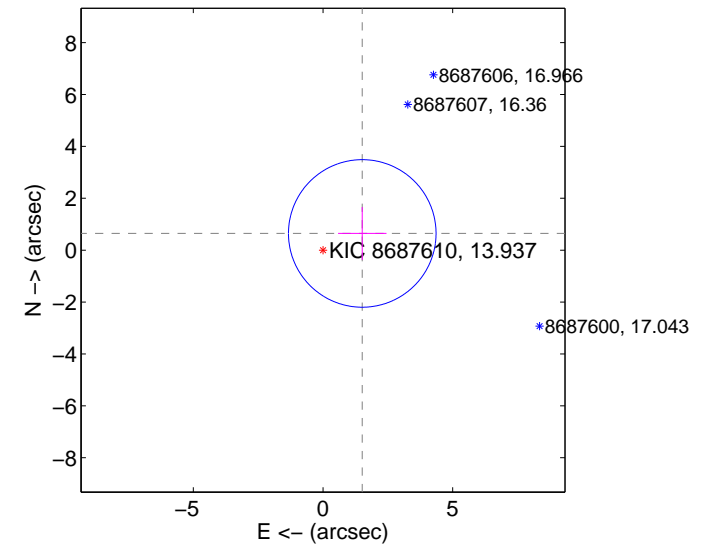
offset from difference PRF-fit to OOT PRF-fit



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.



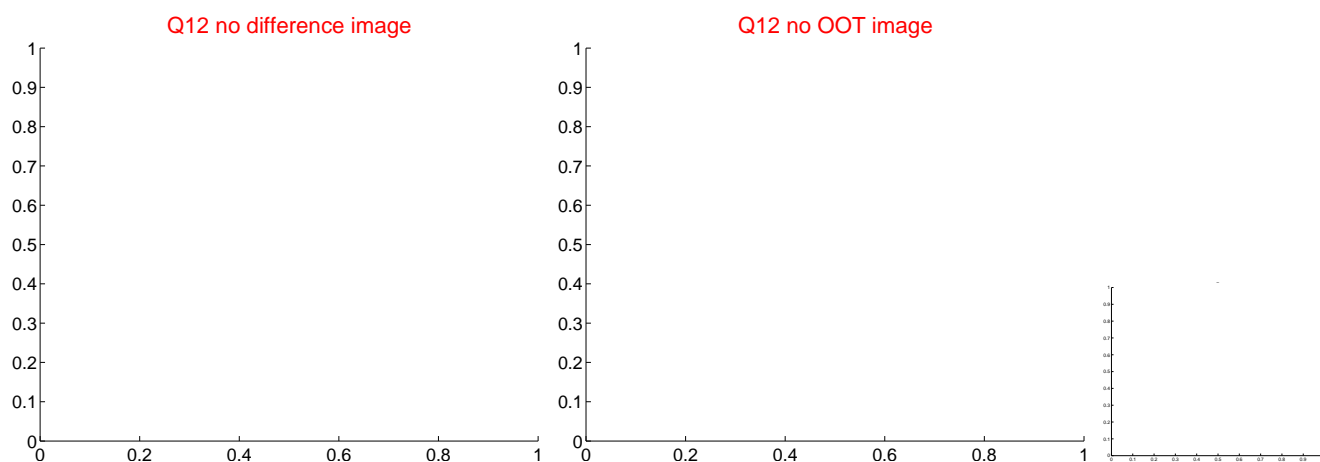
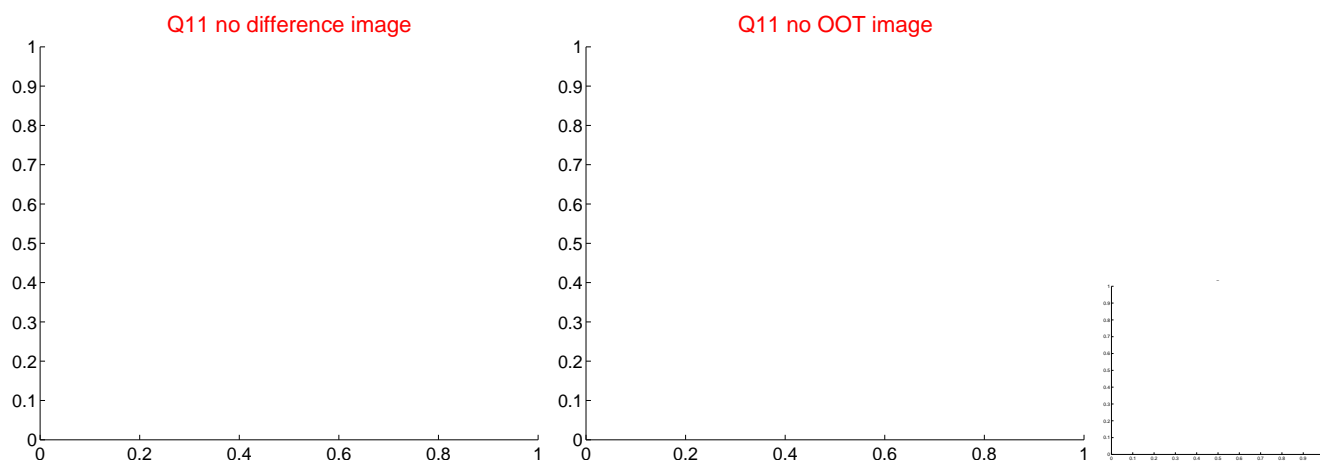
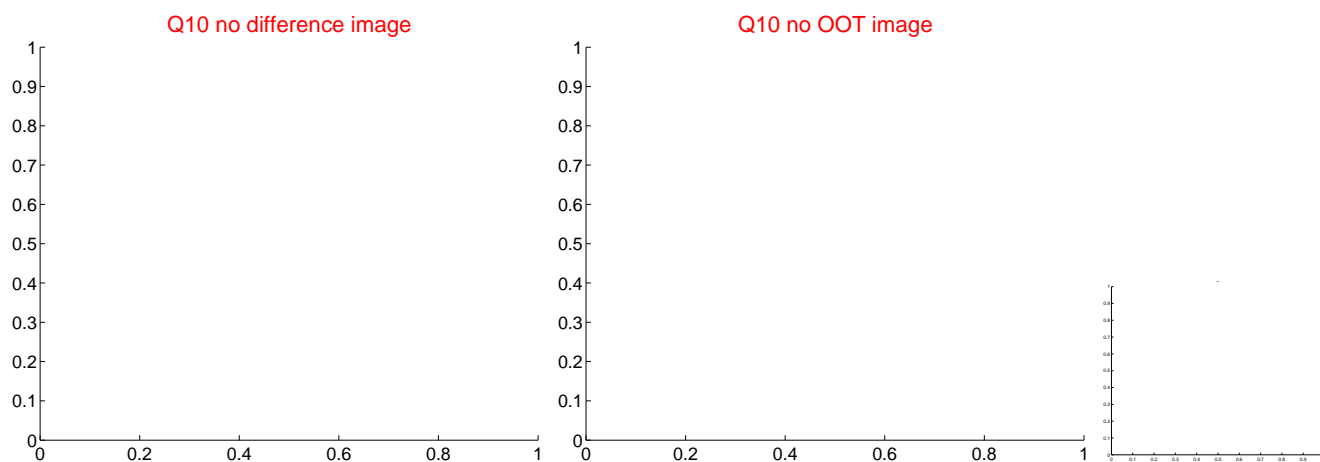
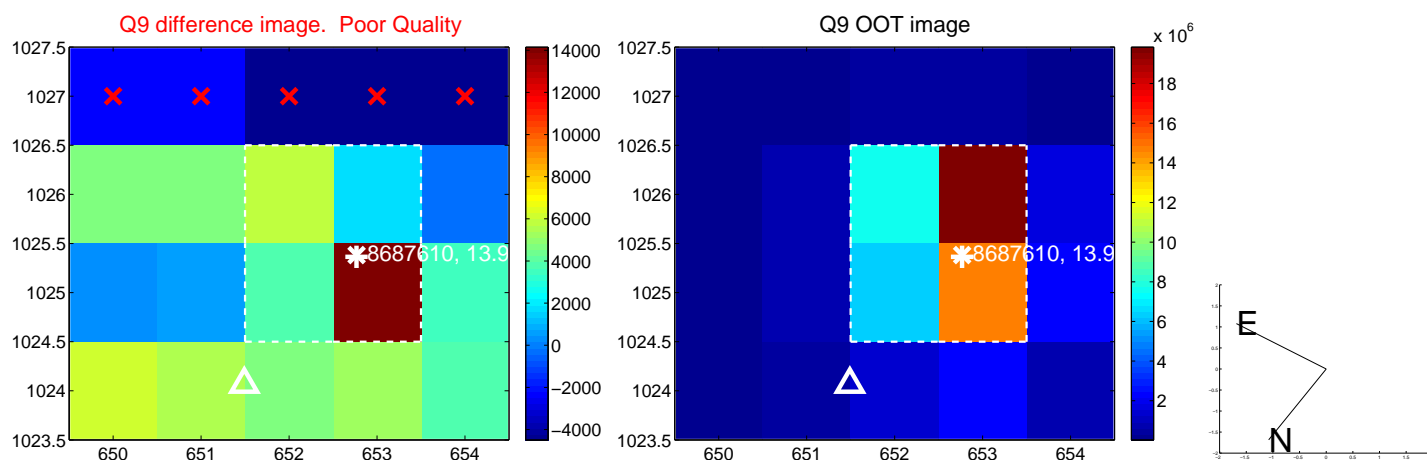
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



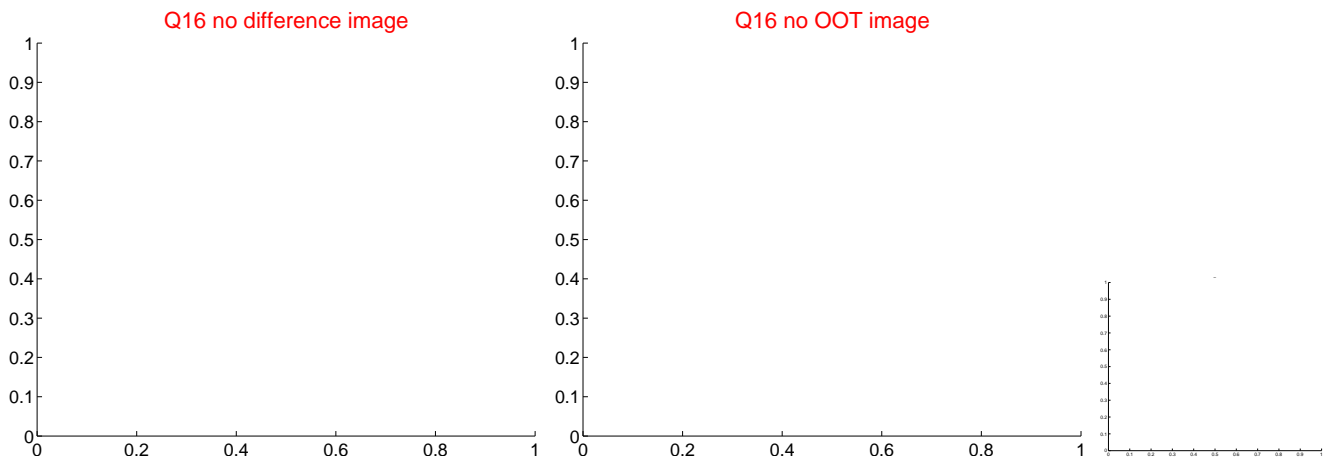
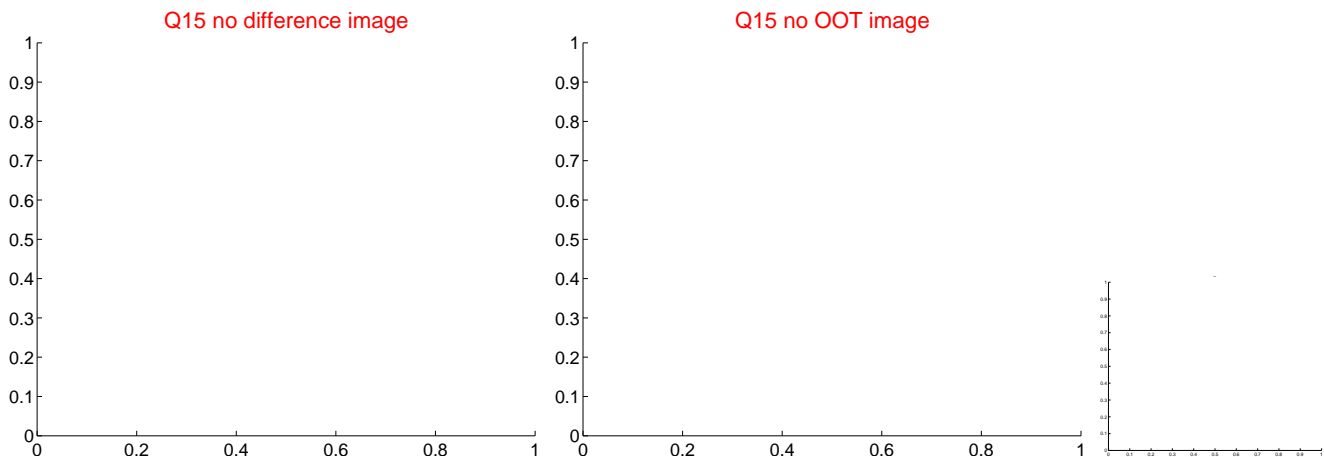
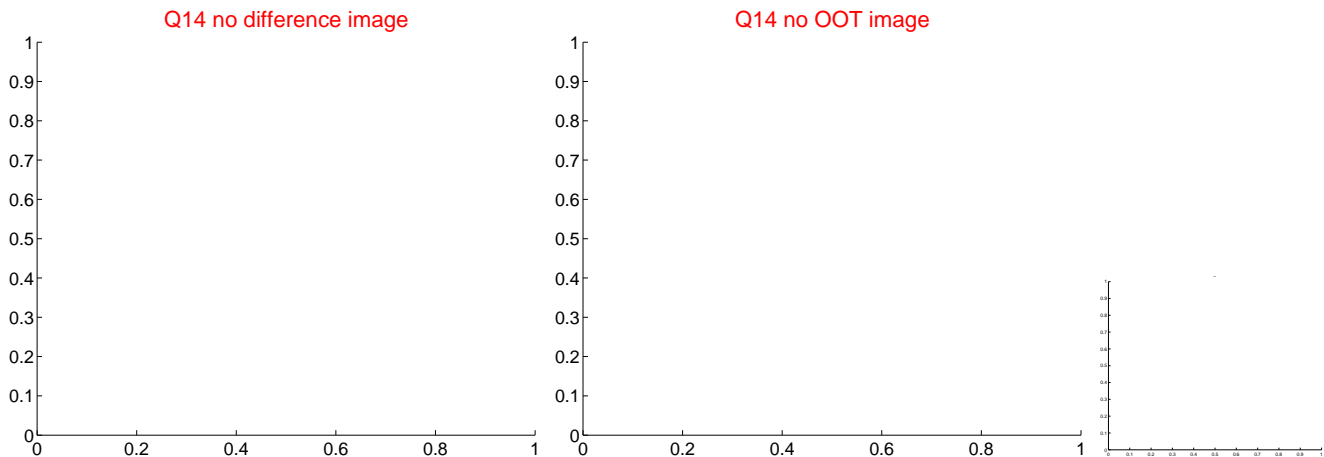
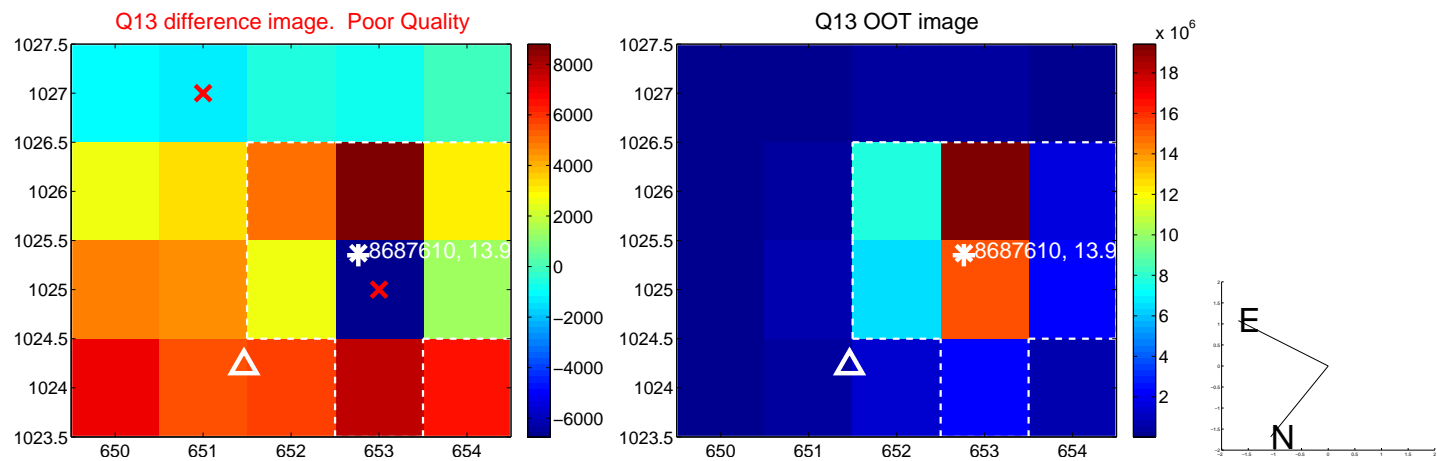
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



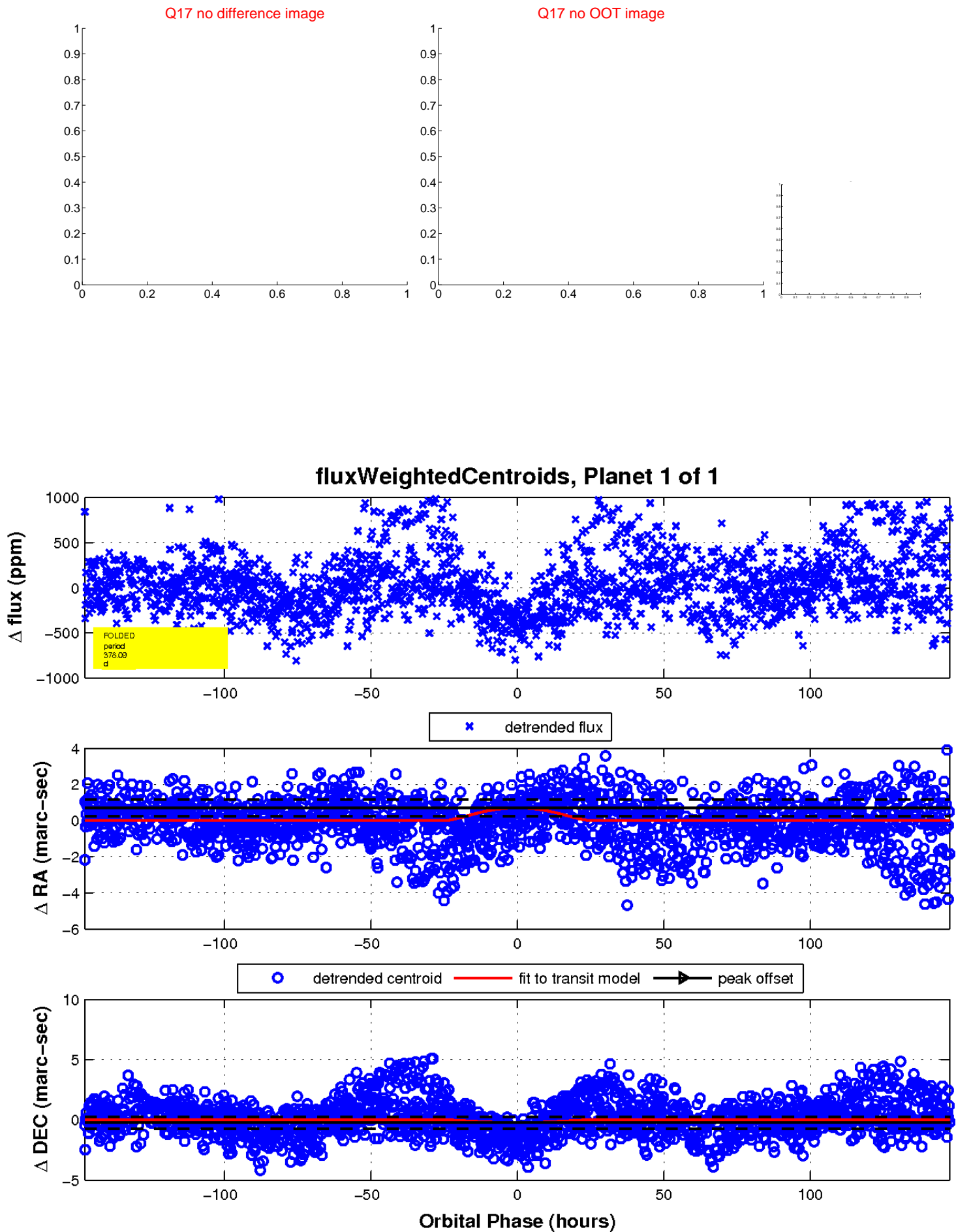
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



white ×: 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

