

# KIC 008751461

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008751461-01	OBS	No	375.946165	140.906206	1240.6	96.022	8.9	21.4	0.82	5572	5.63	0.60

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008751461-01	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_MARSHALL_SKYE—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—EPHEM_MATCH

**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.

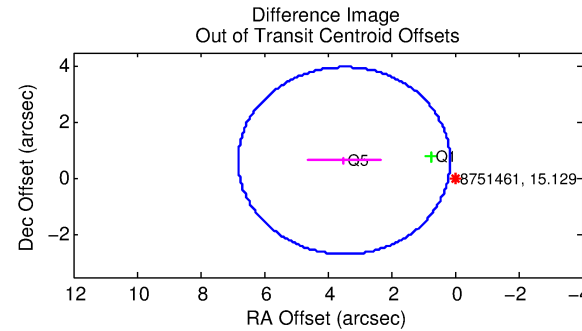
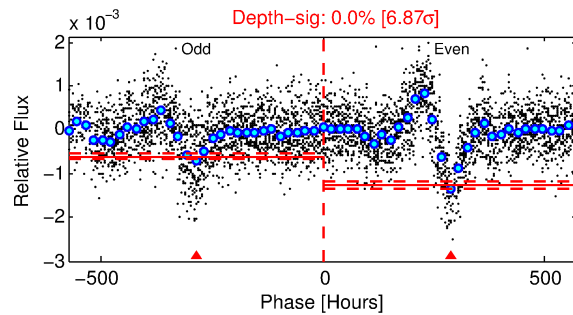
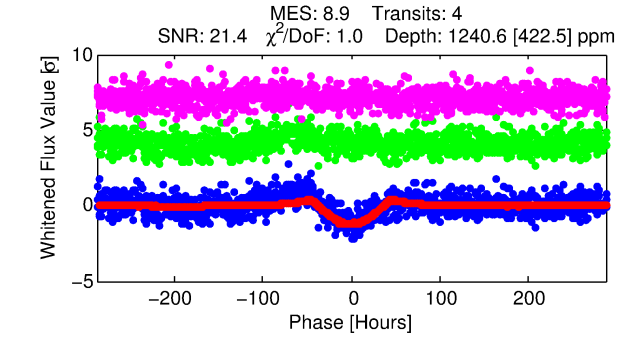
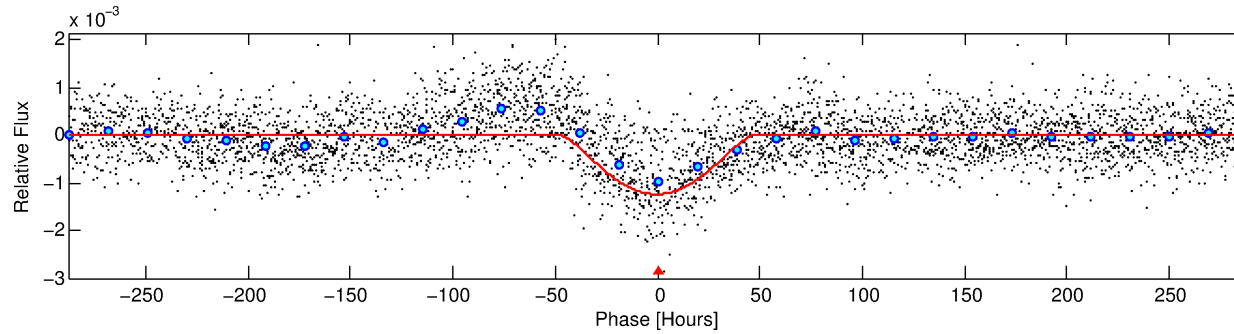
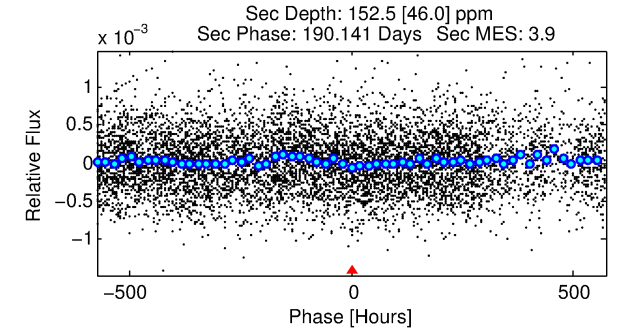
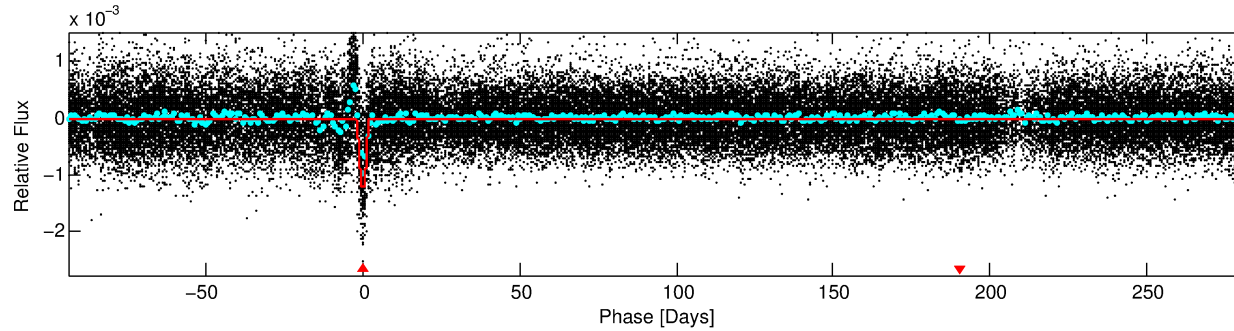
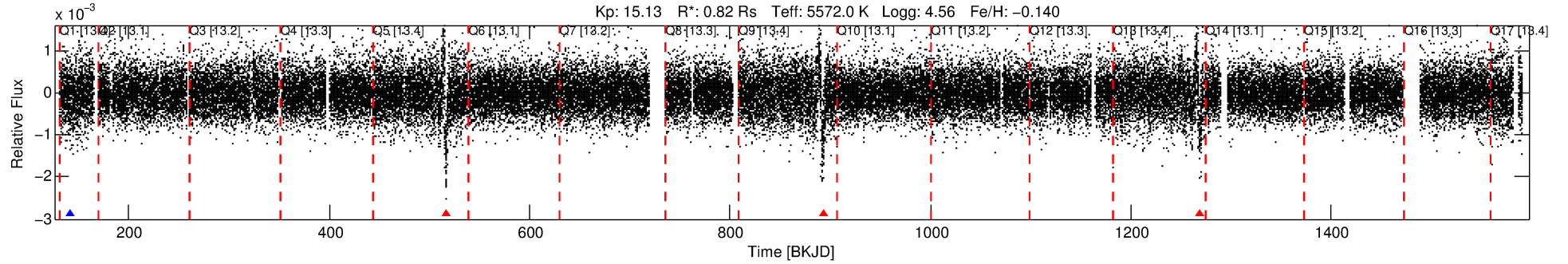
## Ephemeris Match Information For 008751461-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $\prime$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
008751461-01	8751461	008621471-01	8621471	1:1	1393.4	-350	2	15.65	15.12	0.87	Col-Anomaly	1	3.70	4.03

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 8751461 Candidate: 1 of 1 Period: 375.946 d



## DV Fit Results:

Period = 375.94617 [0.04334] d  
Epoch = 140.9062 [0.0795] BKJD  
Rp/R\* = 0.0630 [0.0746]  
a/R\* = 10.83 [2.86]  
b = 1.00 [0.12]  
Seff = 0.60 [0.19]  
Teq = 224 [18] K  
Rp = 5.63 [6.80] Re  
a = 0.9840 [0.1923] AU  
Ag = 2559.51 [6158.75] [0.42σ]  
Teffp = 2468 [1476] K [1.52σ]

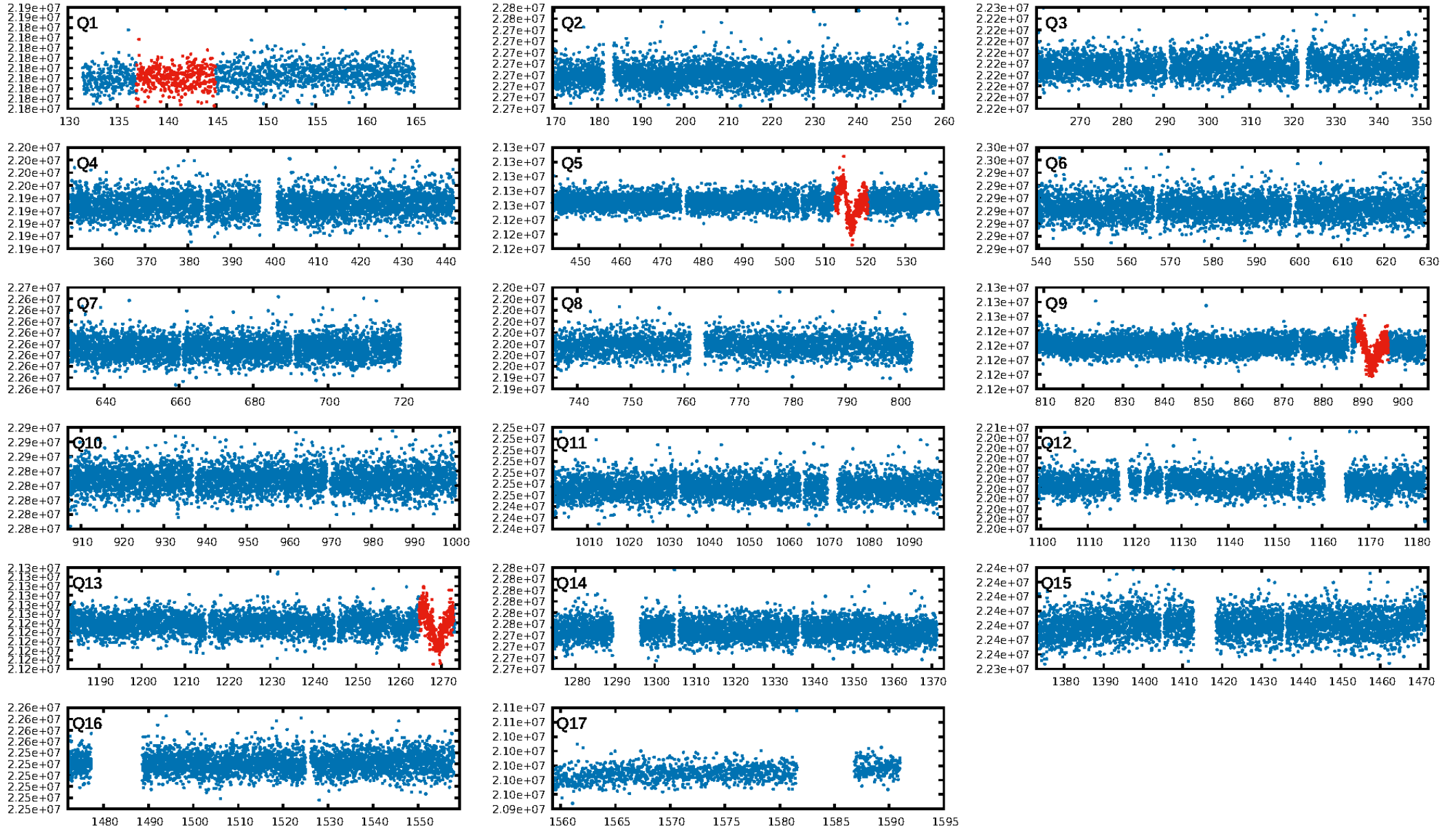
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 5.78e-20  
RollingBand-fgt: 0.00 [0/3]  
GhostDiagnostic-chr: 0.8614  
Centroid-sig: 25.8%  
Centroid-so: 0.341 arcsec [1.04σ]  
OotOffset-rm: 3.534 arcsec [3.18σ]  
KicOffset-rm: 3.611 arcsec [2.76σ]  
OotOffset-st: 0/0/0/2 [2]  
KicOffset-st: 0/0/0/2 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [2/2]

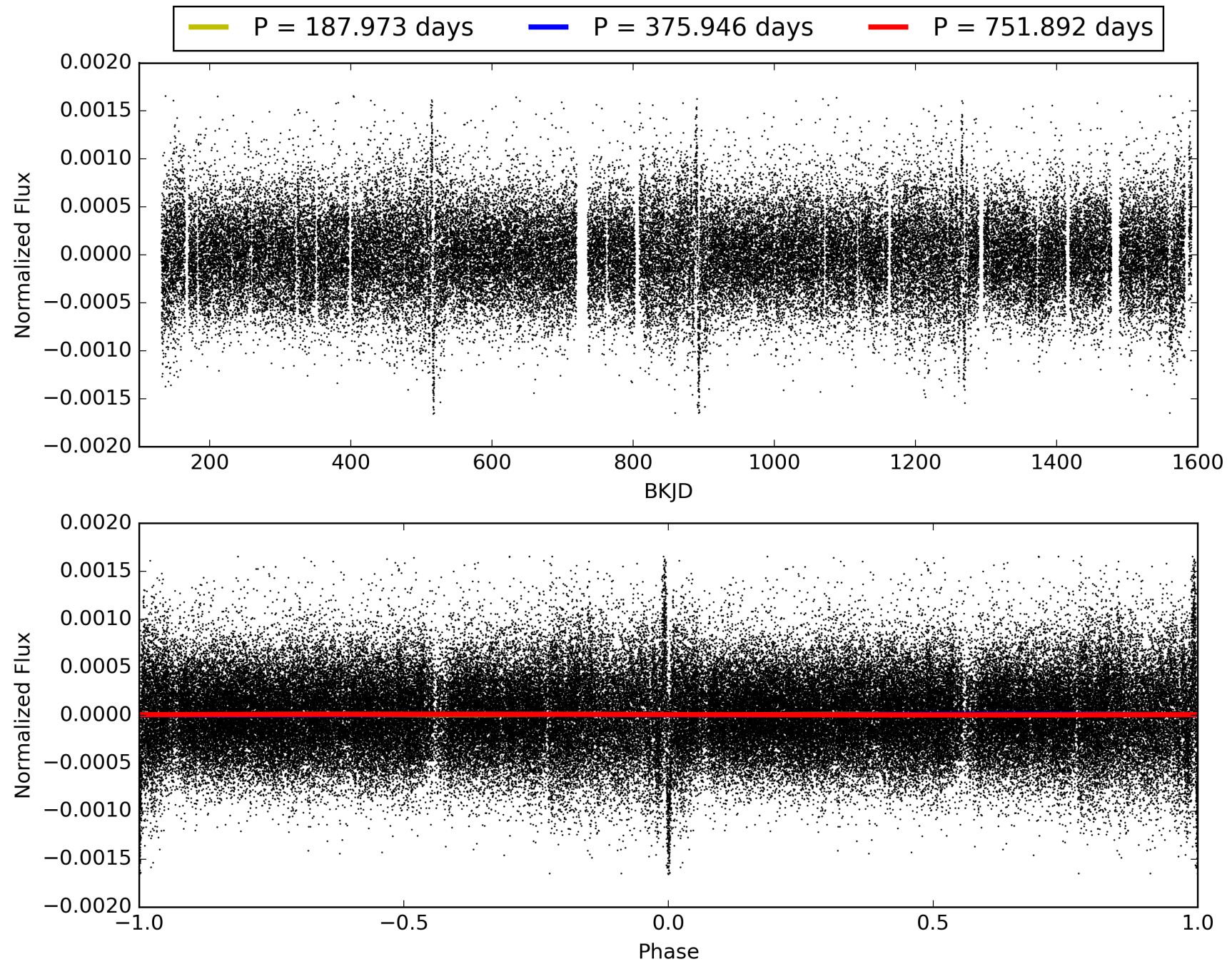
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:47:54 Z

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

# TCE 008751461-01, PDC Light Curves



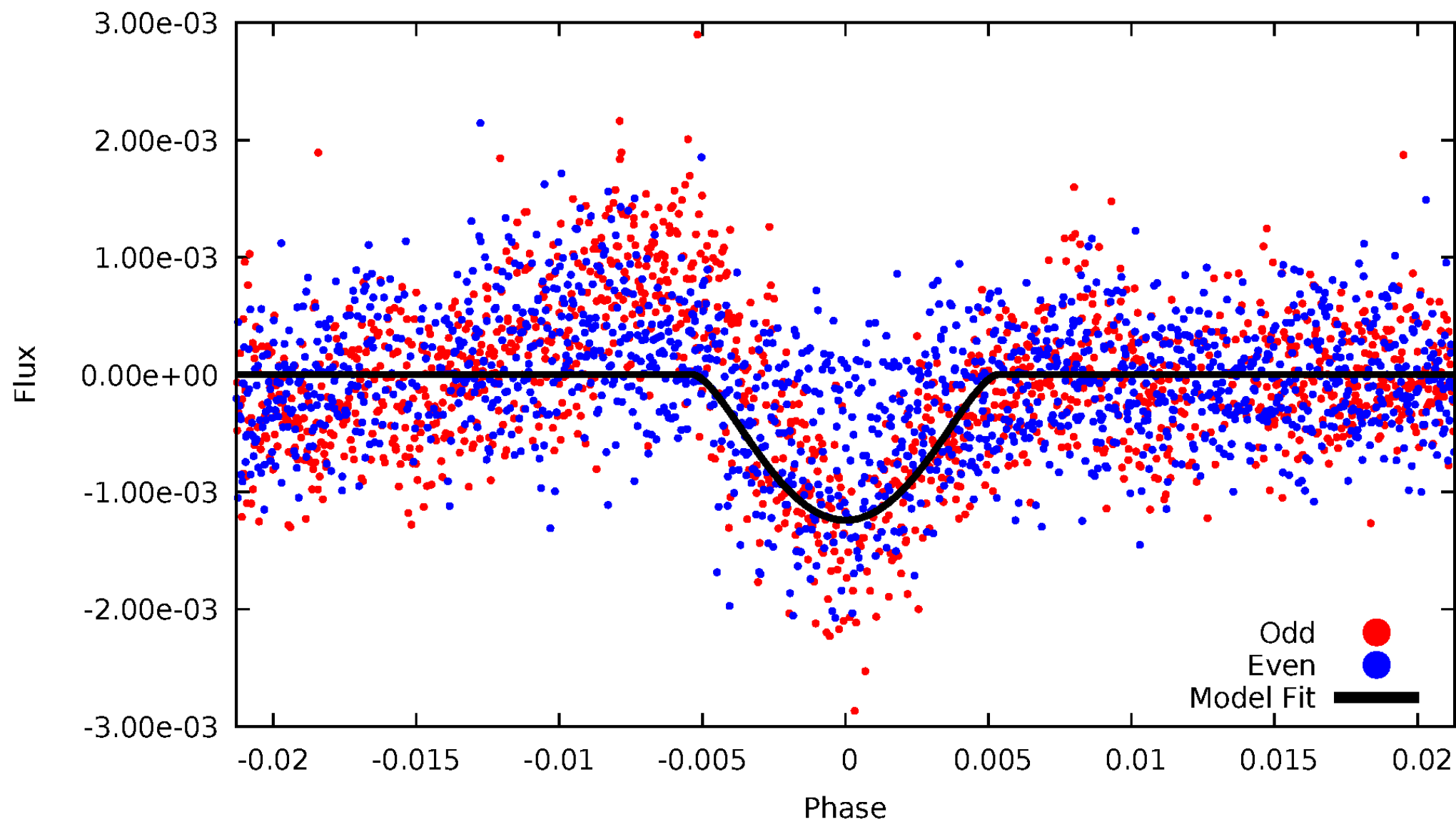
TCE 008751461-01





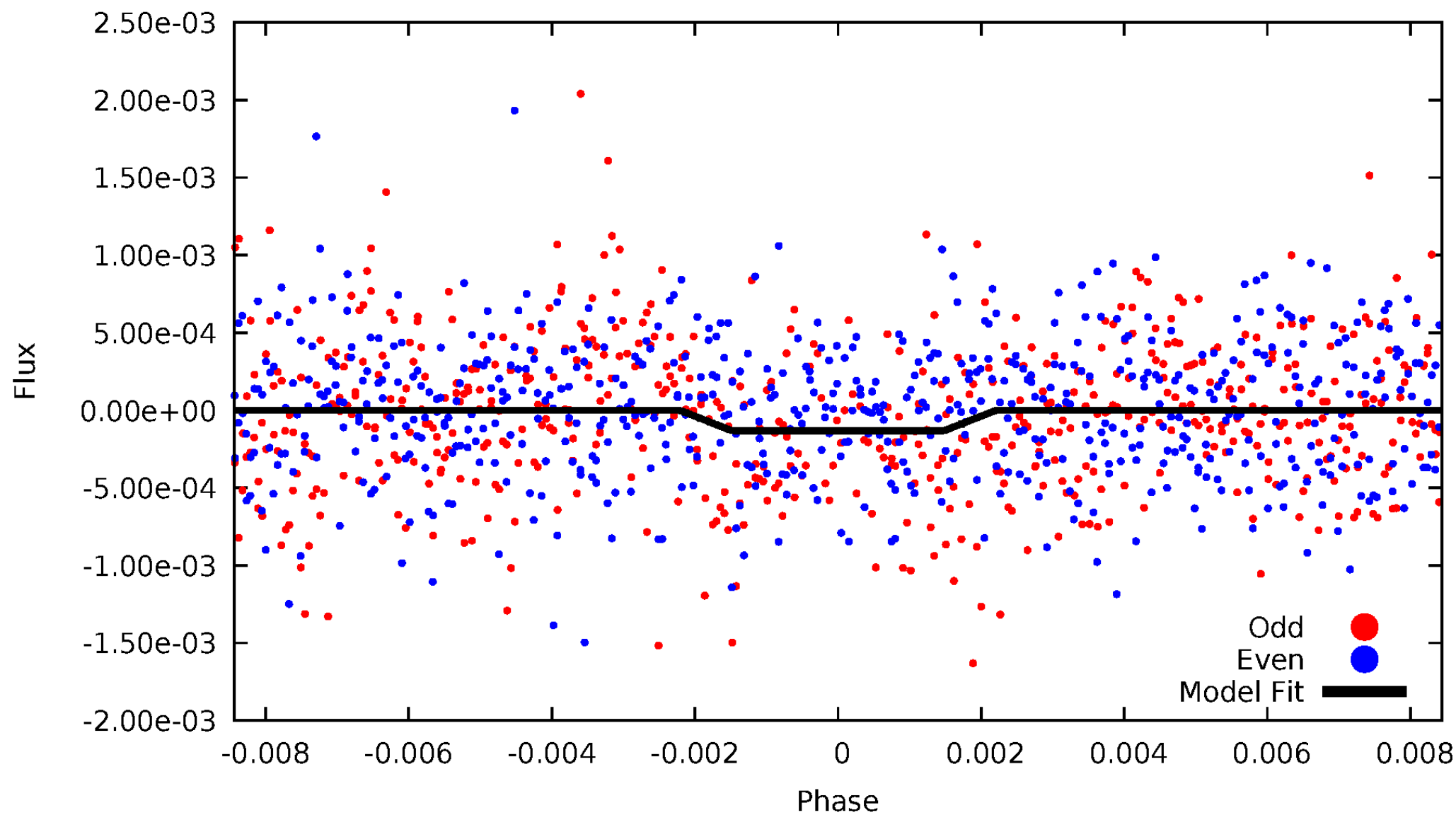
# DV Odd/Even

TCE 008751461-01



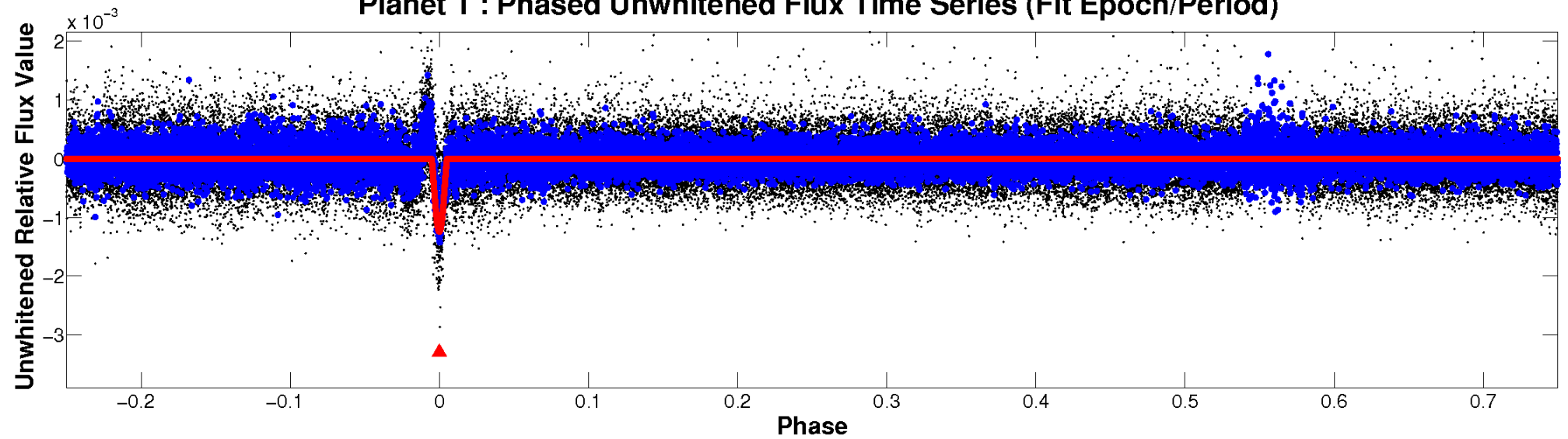
# ALT Odd/Even

TCE 008751461-01

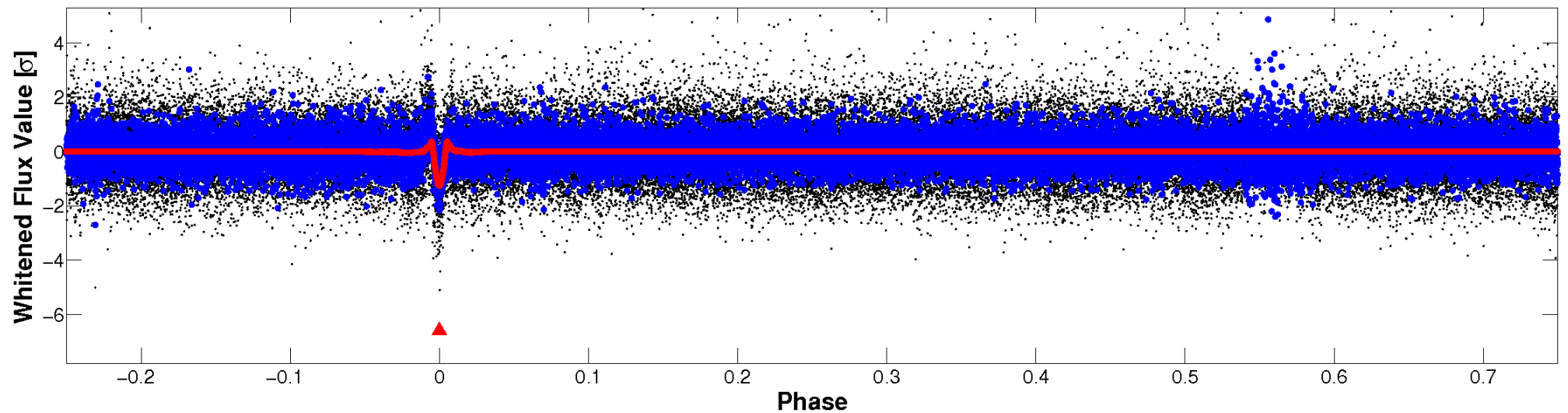


# Non-Whitened Vs. Whitened Light Curve

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

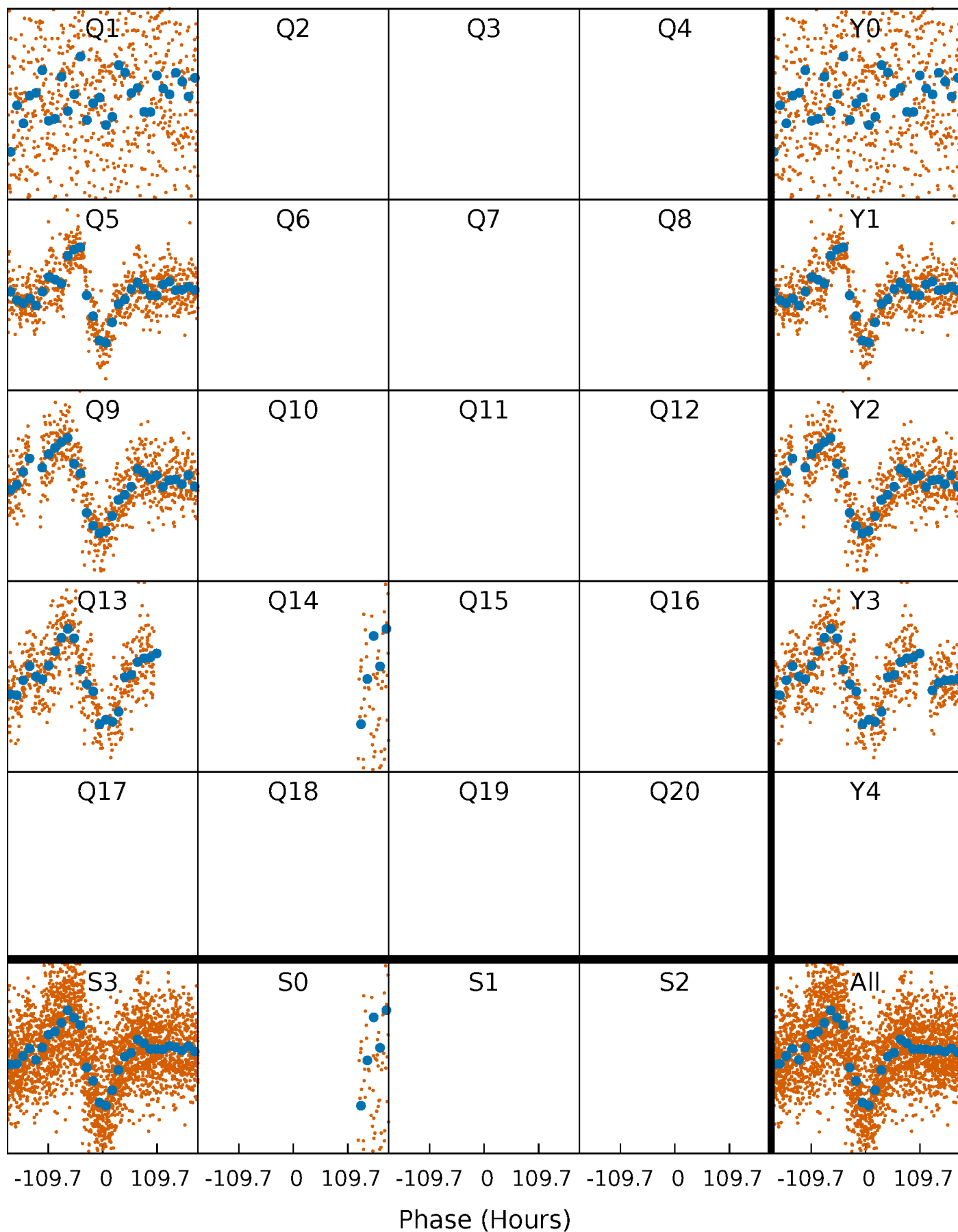


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

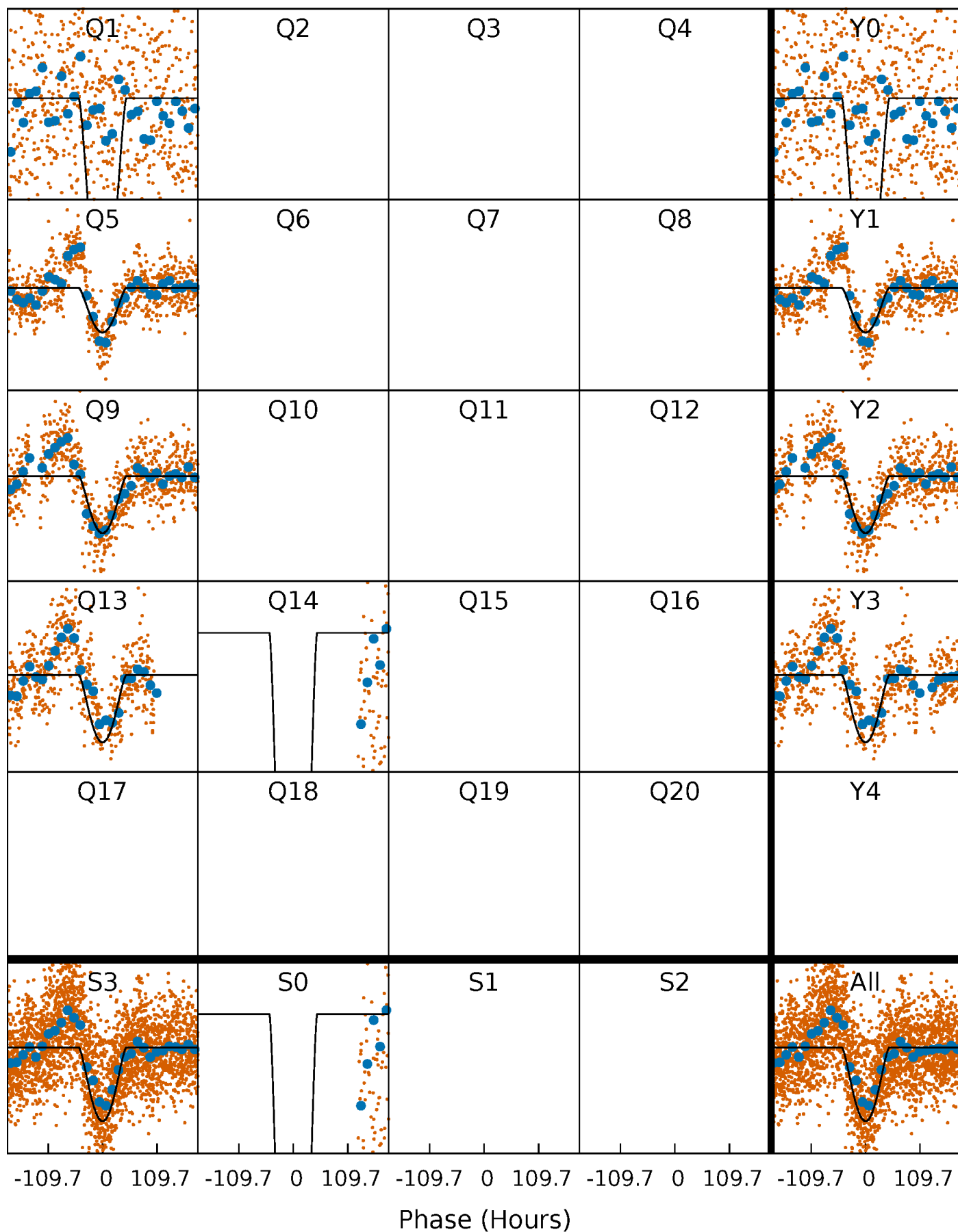
TCE 008751461-01 P=375.946165 Days  $T_0=140.906206$  (BKJD)





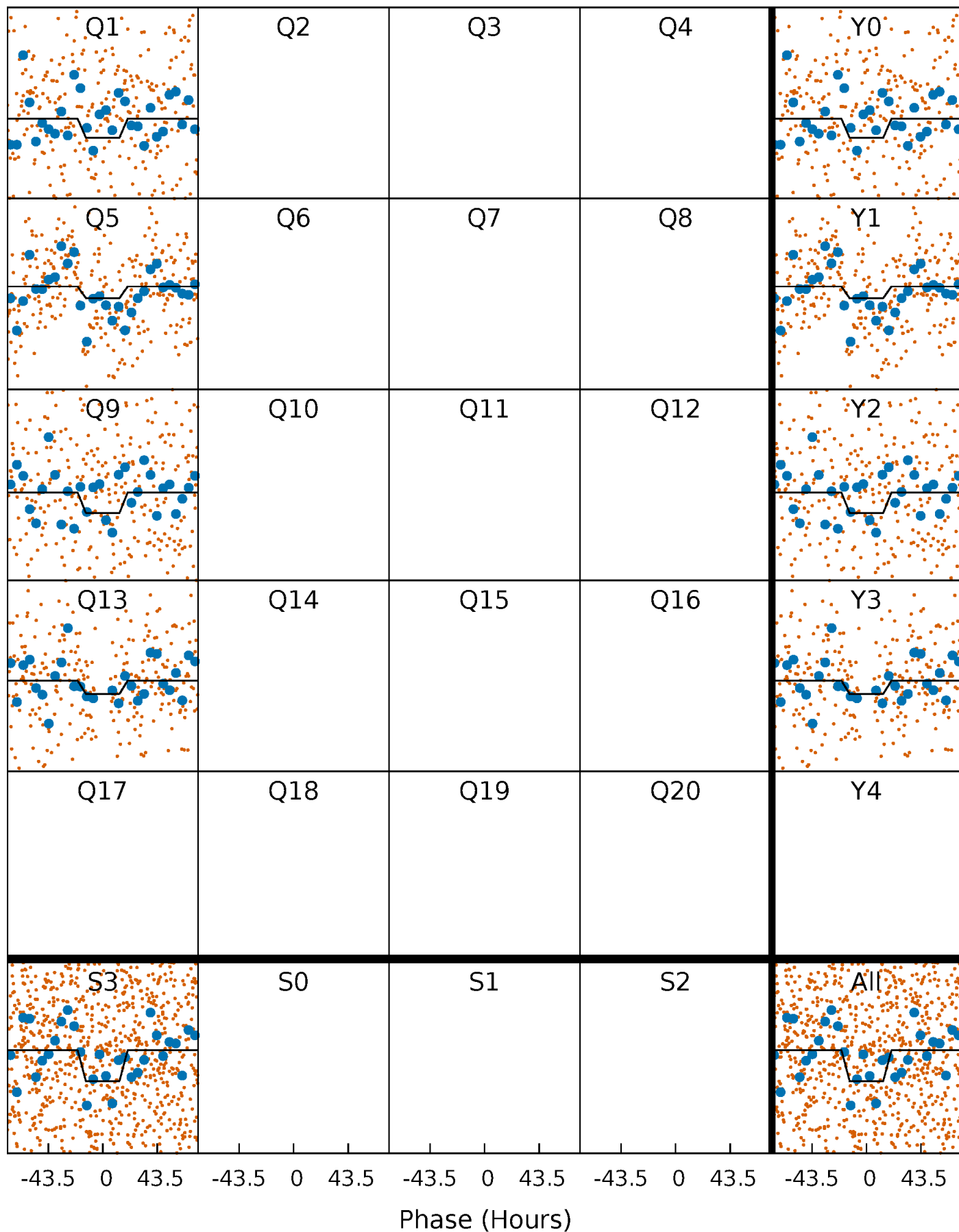
# DV Quarter-Phased Transit Curves

TCE 008751461-01 P=375.946165 Days  $T_0=140.906206$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

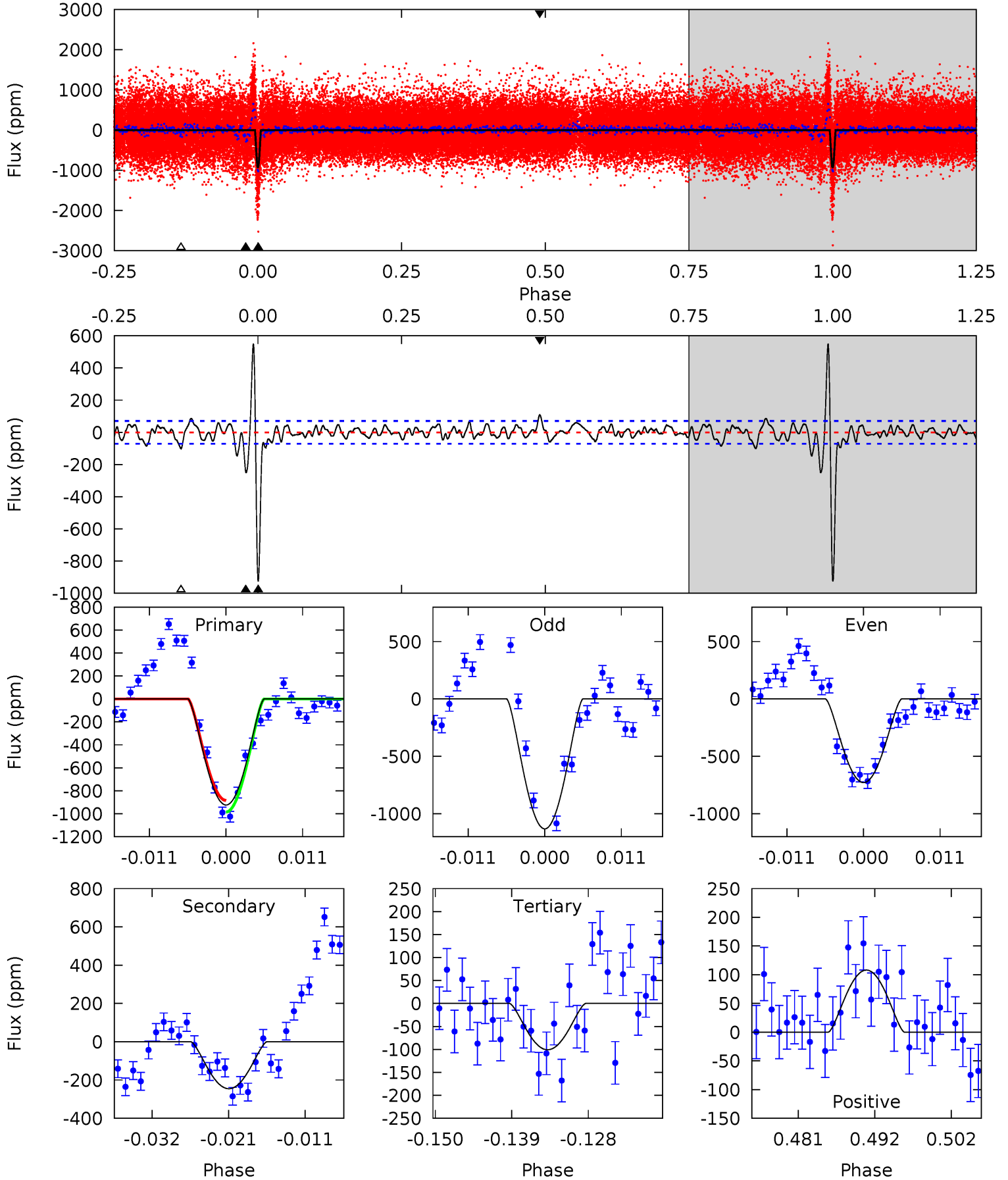
TCE 008751461-01 P=376.345308 Days  $T_0=139.917123$  (BKJD)



# DV Model-Shift Uniqueness Test

008751461-01, P = 375.946165 Days, E = 140.906206 Days

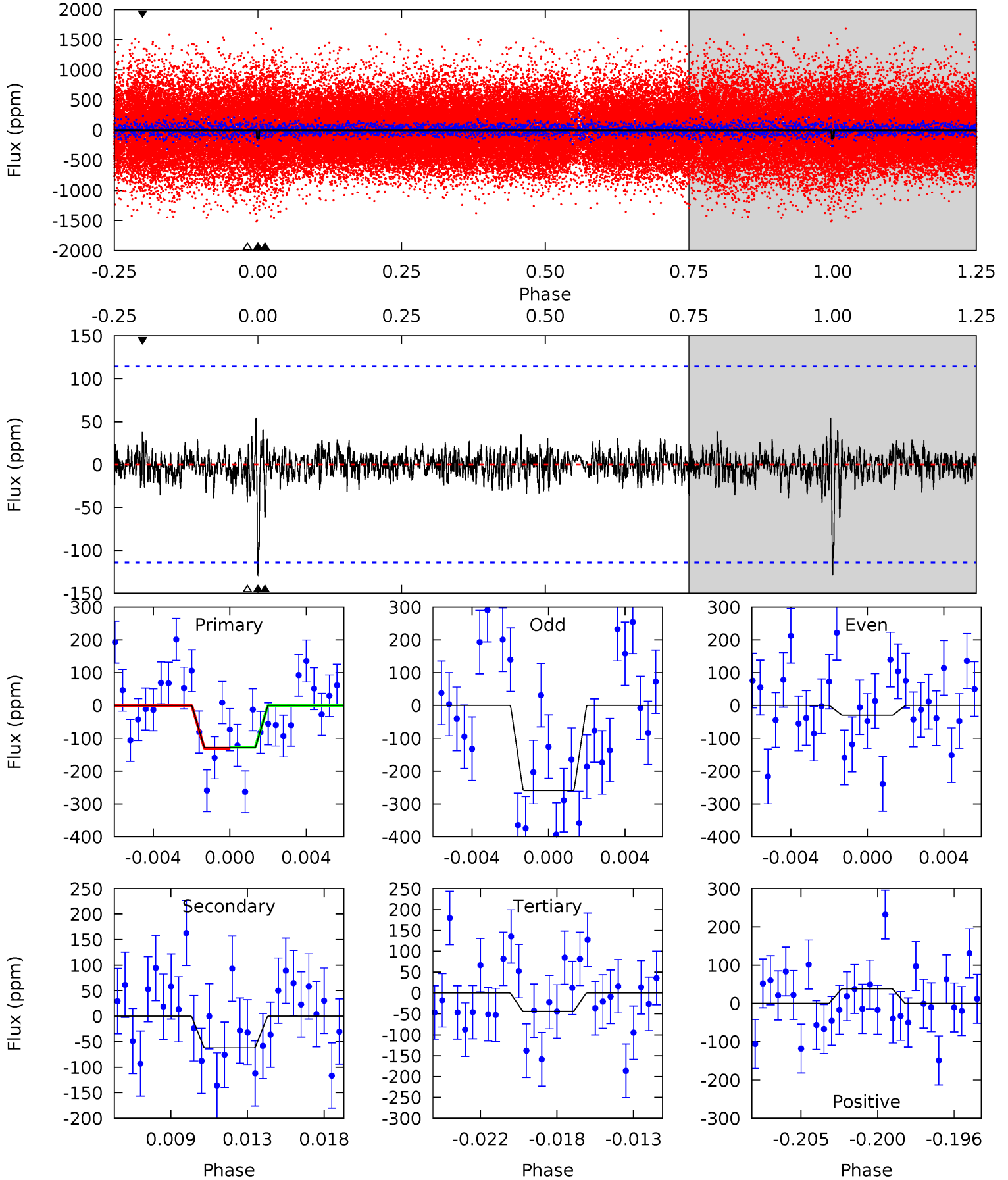
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
65.2	17.3	7.11	7.63	5.01	2.55	2.38	58.1	57.6	10.2	9.69	14.2	0.84	0.37	3.52



# Alt Model-Shift Uniqueness Test

008751461-01, P = 376.345308 Days, E = 139.917123 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
5.83	2.81	1.99	1.73	5.18	2.84	0.53	3.85	4.10	0.82	1.08	5.18	1.30	0.30	0.08



### Stellar Parameters For KIC 008751461

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5572^{+166}_{-149}$	$4.564^{+0.040}_{-0.160}$	$-0.140^{+0.300}_{-0.300}$	$0.820^{+0.187}_{-0.080}$	$0.898^{+0.092}_{-0.102}$	$2.296^{+0.485}_{-1.008}$
	+3%/-3%	+1%/-4%	+214%/-214%	+23%/-10%	+10%/-11%	+21%/-44%
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 008751461-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-245 \pm 14$	$7.54^{+6.23}_{-4.50}$	$321^{+17}_{-14}$	$3090^{+1091}_{-484}$	$2243^{+11587}_{-1558}$
Alt.	$-62 \pm 22$	$5.36^{+5.43}_{-3.70}$	$320^{+19}_{-12}$	$2796^{+1260}_{-490}$	$1105^{+10595}_{-867}$

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



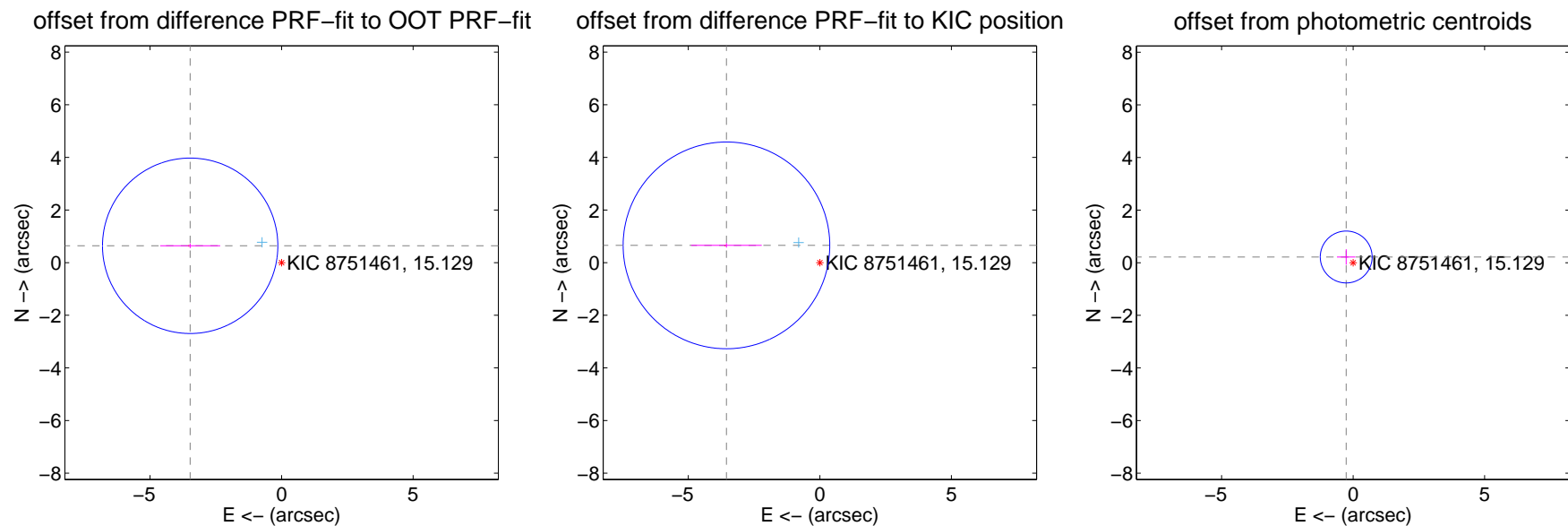
## DV Centroid Data

Supplemental centroid analysis for 008751461-01. Kepler magnitude: 15.13. Transit SNR 21.43

There are 1 quarters with good PRF difference image offsets

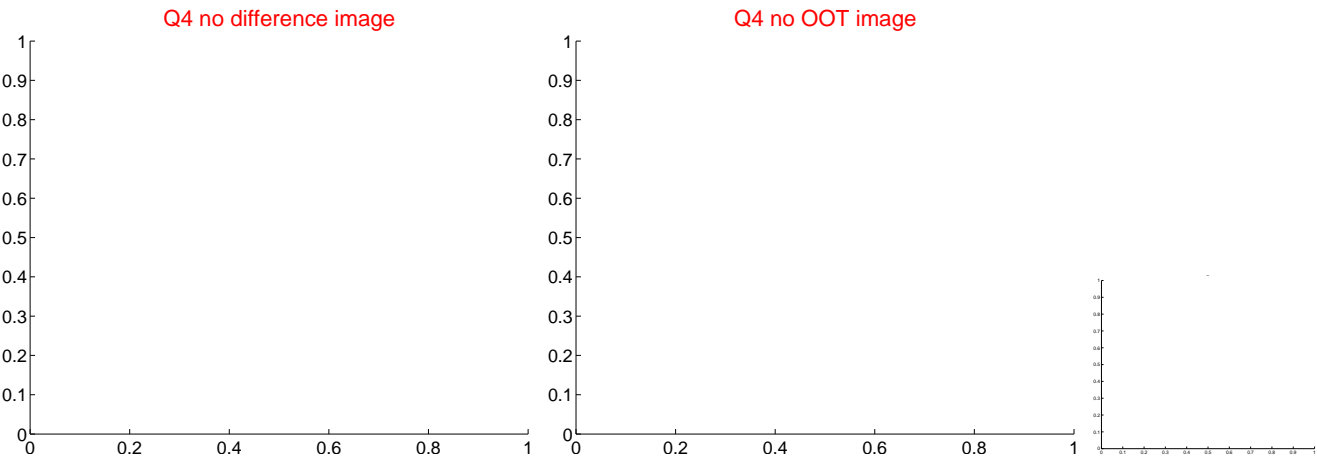
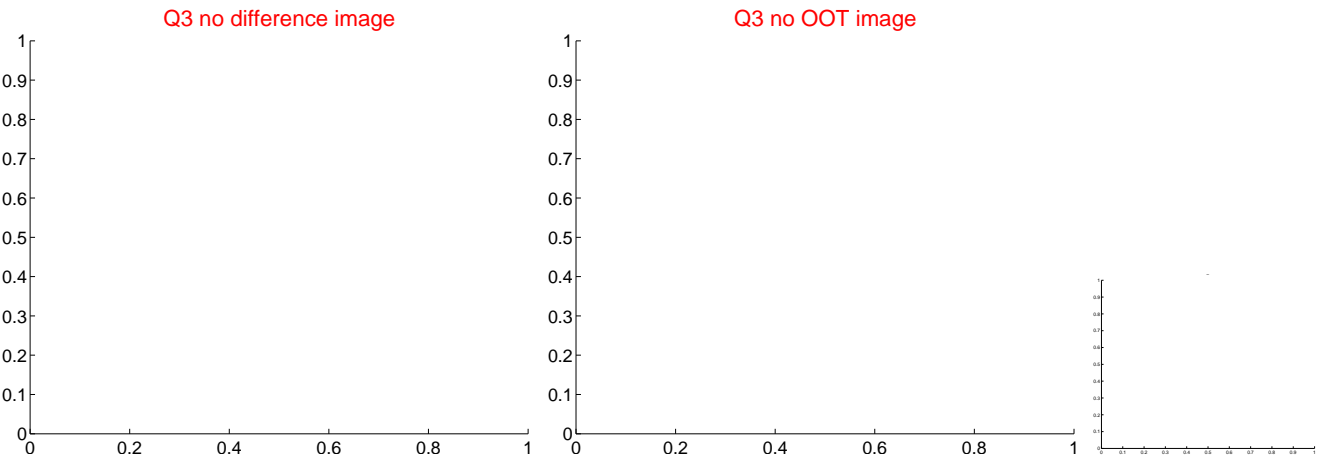
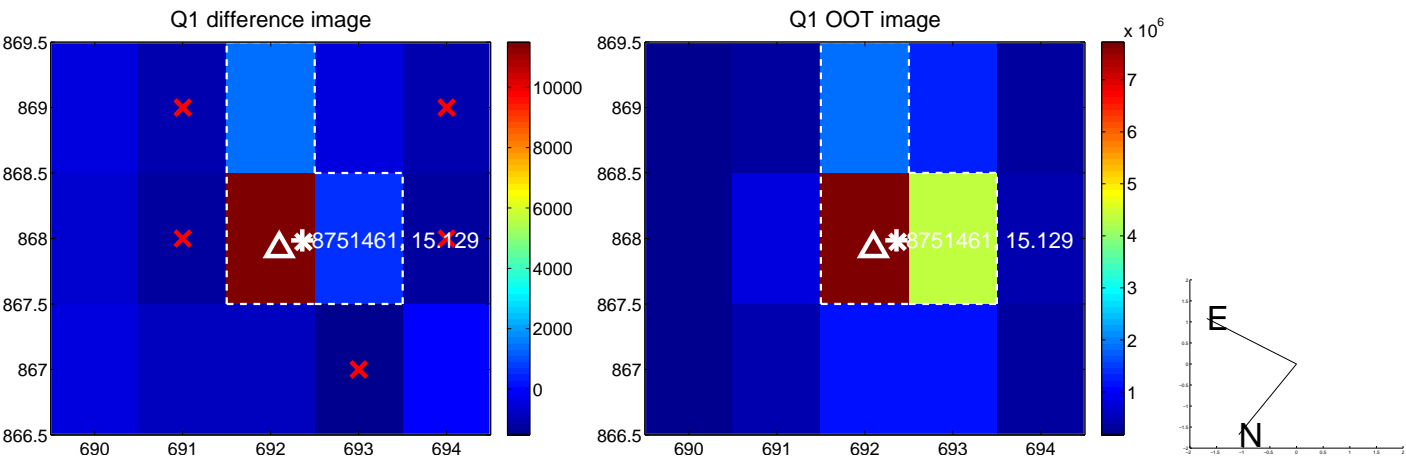
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.534 \pm 1.111$	3.18	$3.475 \pm 1.140$	$0.640 \pm 0.087$
PRF-fit source offset from KIC position	$3.611 \pm 1.309$	2.76	$3.551 \pm 1.341$	$0.656 \pm 0.085$
photometric centroid source offset	$0.34 \pm 0.33$	1.04	$0.26 \pm 0.35$	$0.22 \pm 0.29$

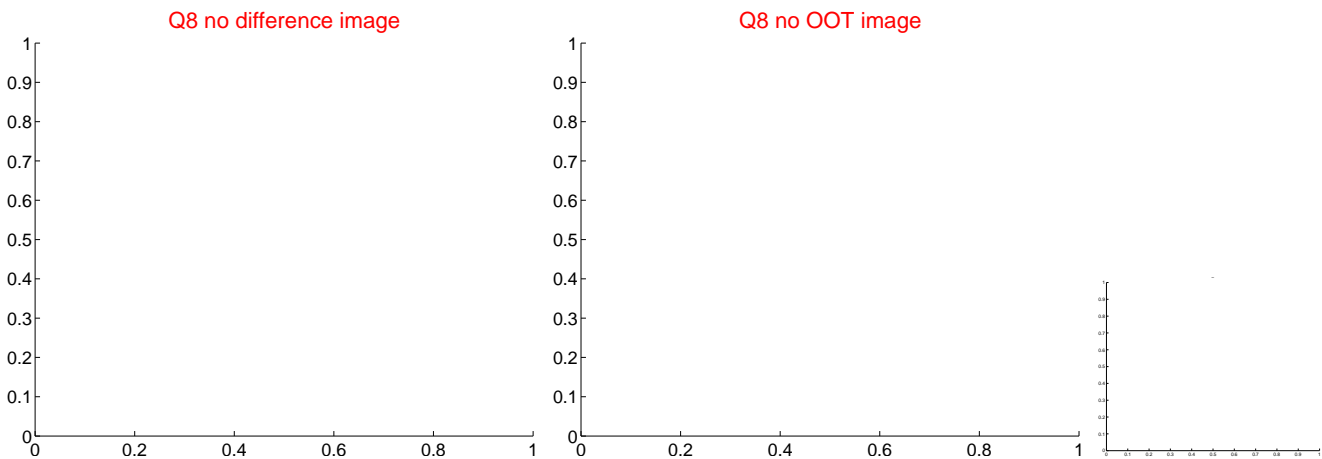
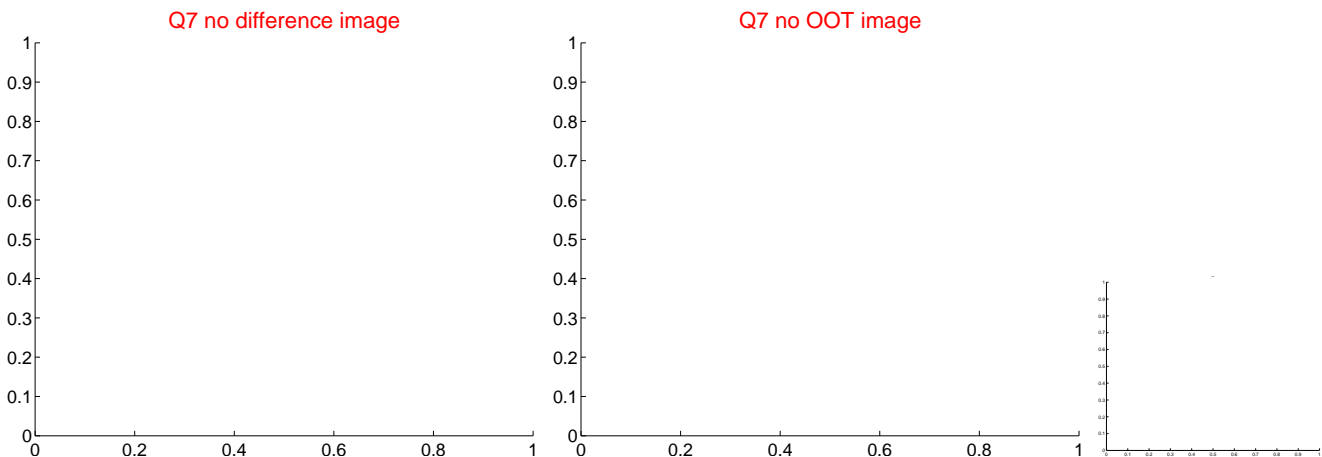
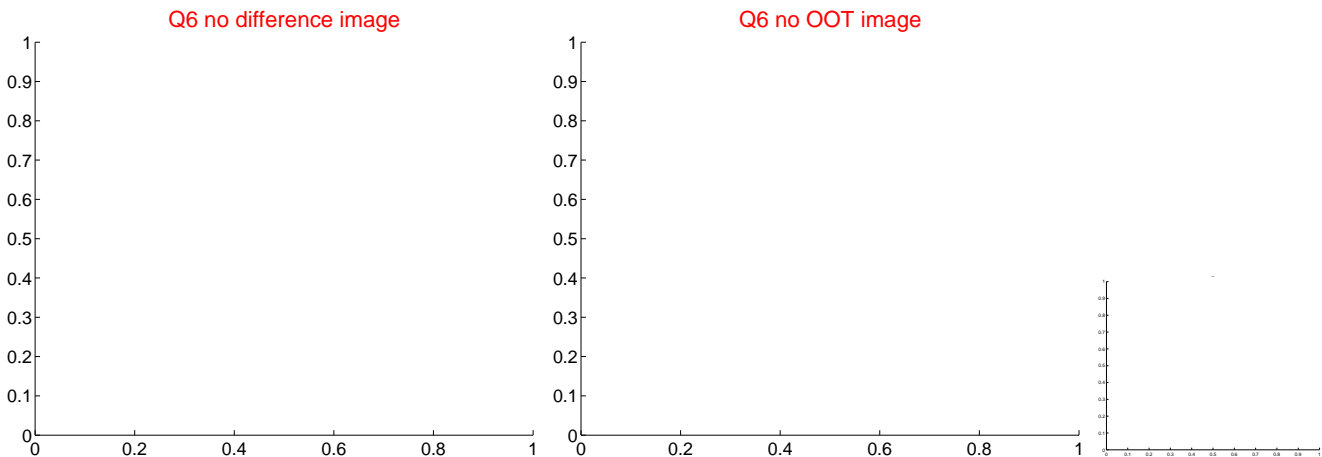
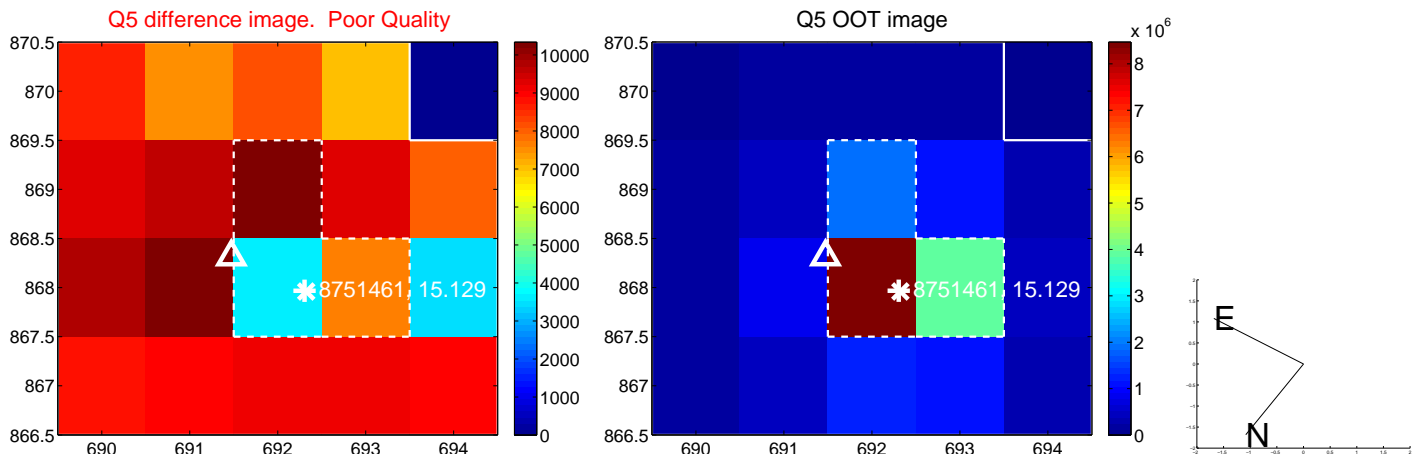


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

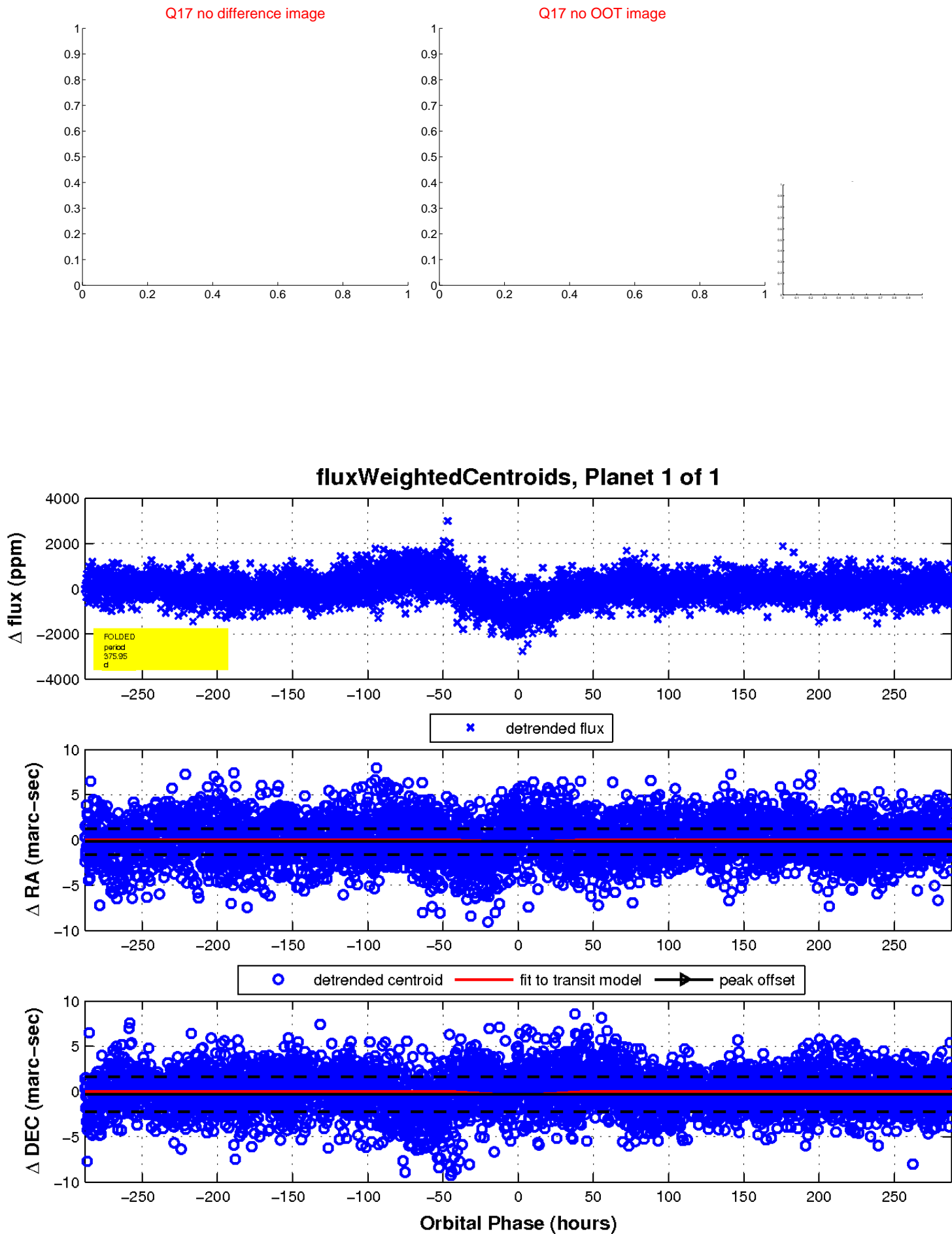


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



# UKIRT Image

Declination

