

# KIC 012554051

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012554051-01	OBS	8237.01	365.694427	183.560193	1265.7	12.104	7.3	7.2	8.52	4787	29.26	31.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012554051-01	OBS	FP	0.10	1	0	0	0	INCONSISTENT_TRANS

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

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

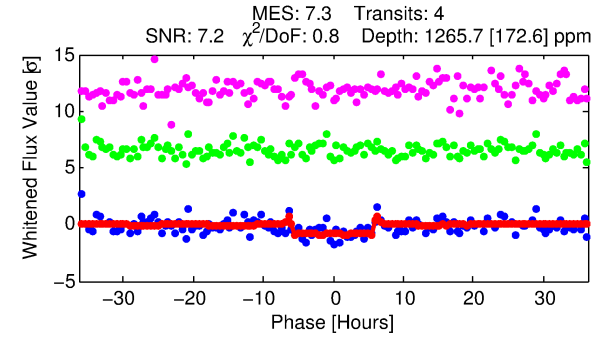
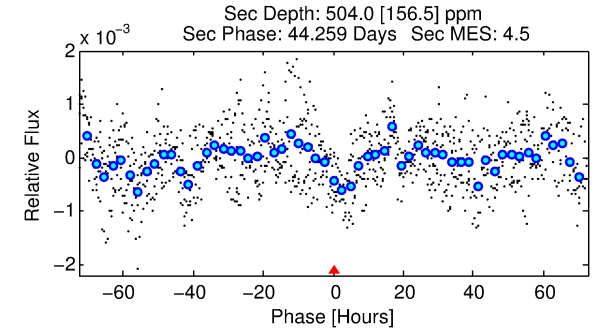
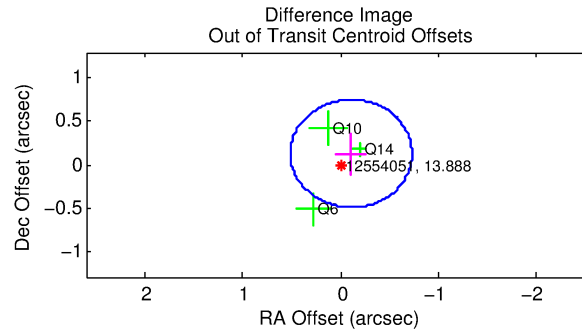
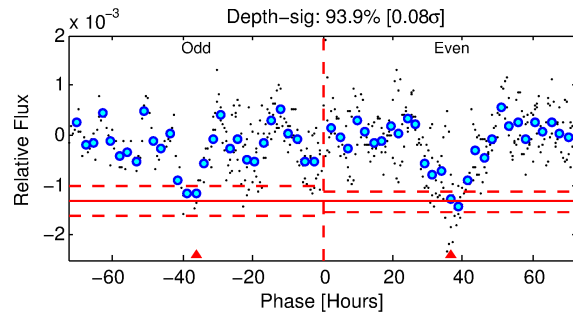
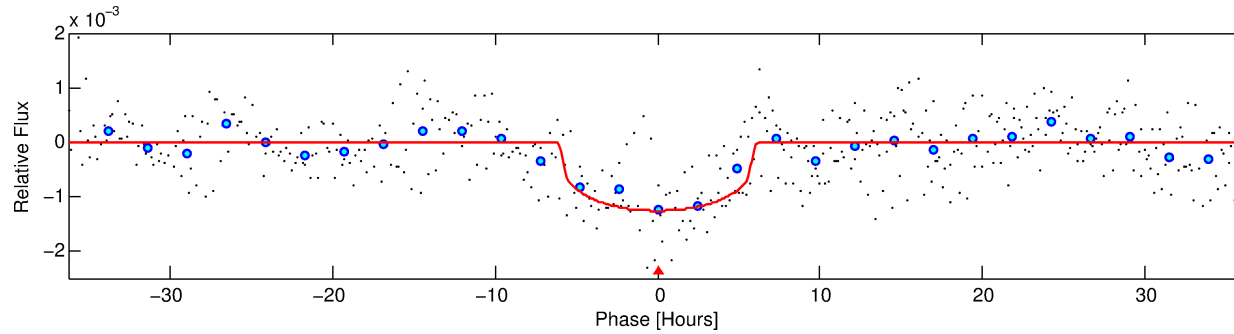
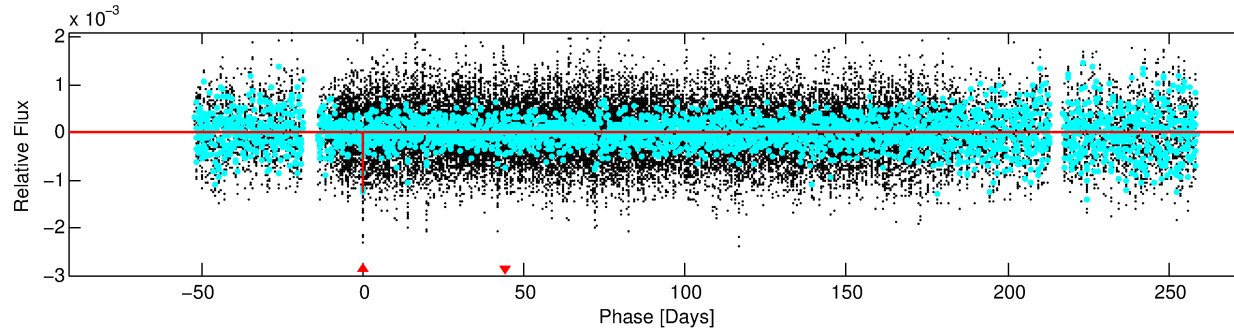
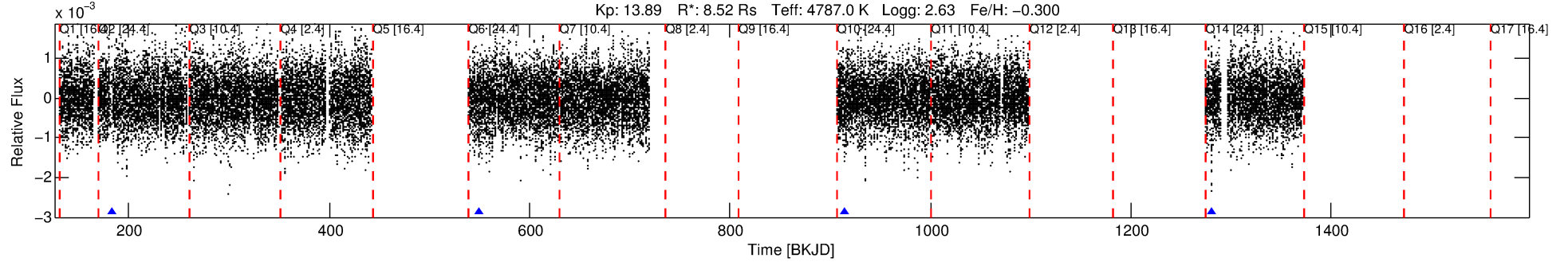
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012554051-01

No Significant Match Found

# DV One-Page Summary

KIC: 12554051 Candidate: 1 of 1 Period: 365.694 d



## DV Fit Results:

Period = 365.69443 [0.00375] d  
Epoch = 183.5602 [0.0074] BKJD  
Rp/R\* = 0.0315 [0.0136]  
a/R\* = 237.87 [337.84]  
b = 0.04 [33.80]  
Seff = 31.48 [4.86]  
Teq = 604 [23] K  
Rp = 29.26 [13.47] Re  
a = 1.0418 [0.1133] AU  
Ag = 351.55 [325.46] [1.08 $\sigma$ ]  
Teff = 4044 [934] K [3.68 $\sigma$ ]

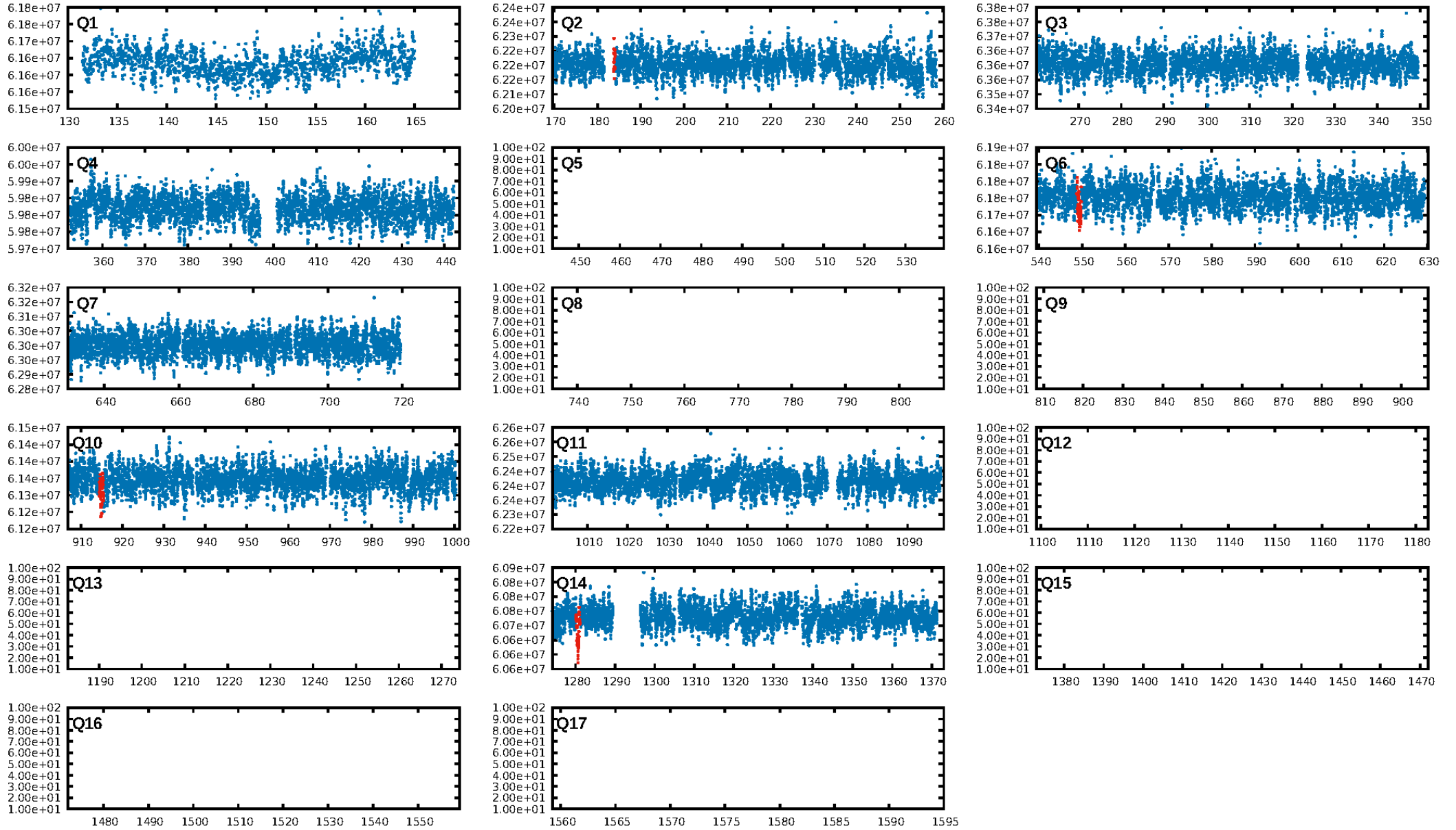
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 70.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.91e-12  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 2.582  
Centroid-sig: 2.3%  
Centroid-so: 0.361 arcsec [0.96 $\sigma$ ]  
OotOffset-rm: 0.167 arcsec [0.80 $\sigma$ ]  
KicOffset-rm: 0.229 arcsec [0.98 $\sigma$ ]  
OotOffset-st: 3/0/0/0 [3]  
KicOffset-st: 3/0/0/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

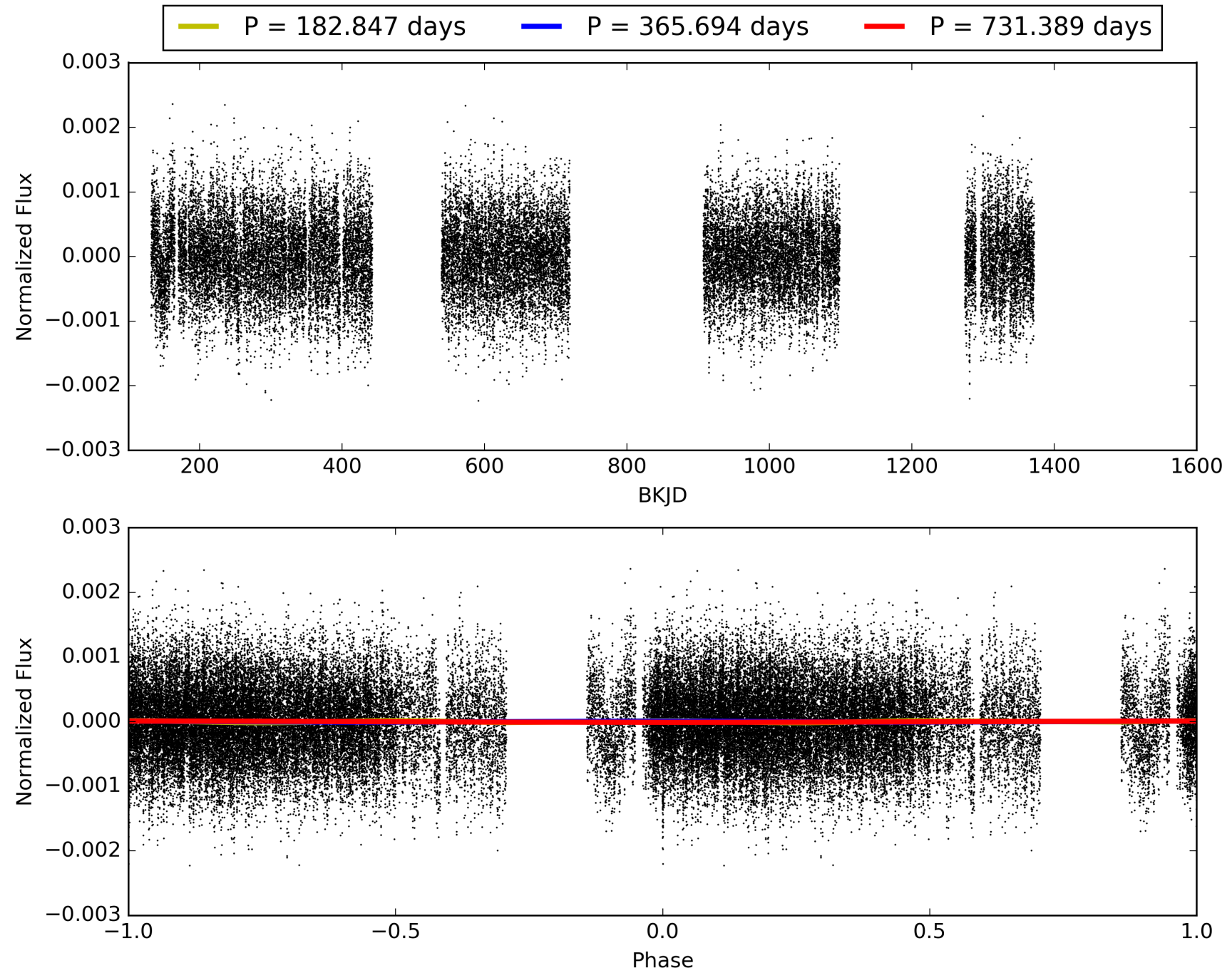
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 20:02:34 Z

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

# TCE 012554051-01, PDC Light Curves

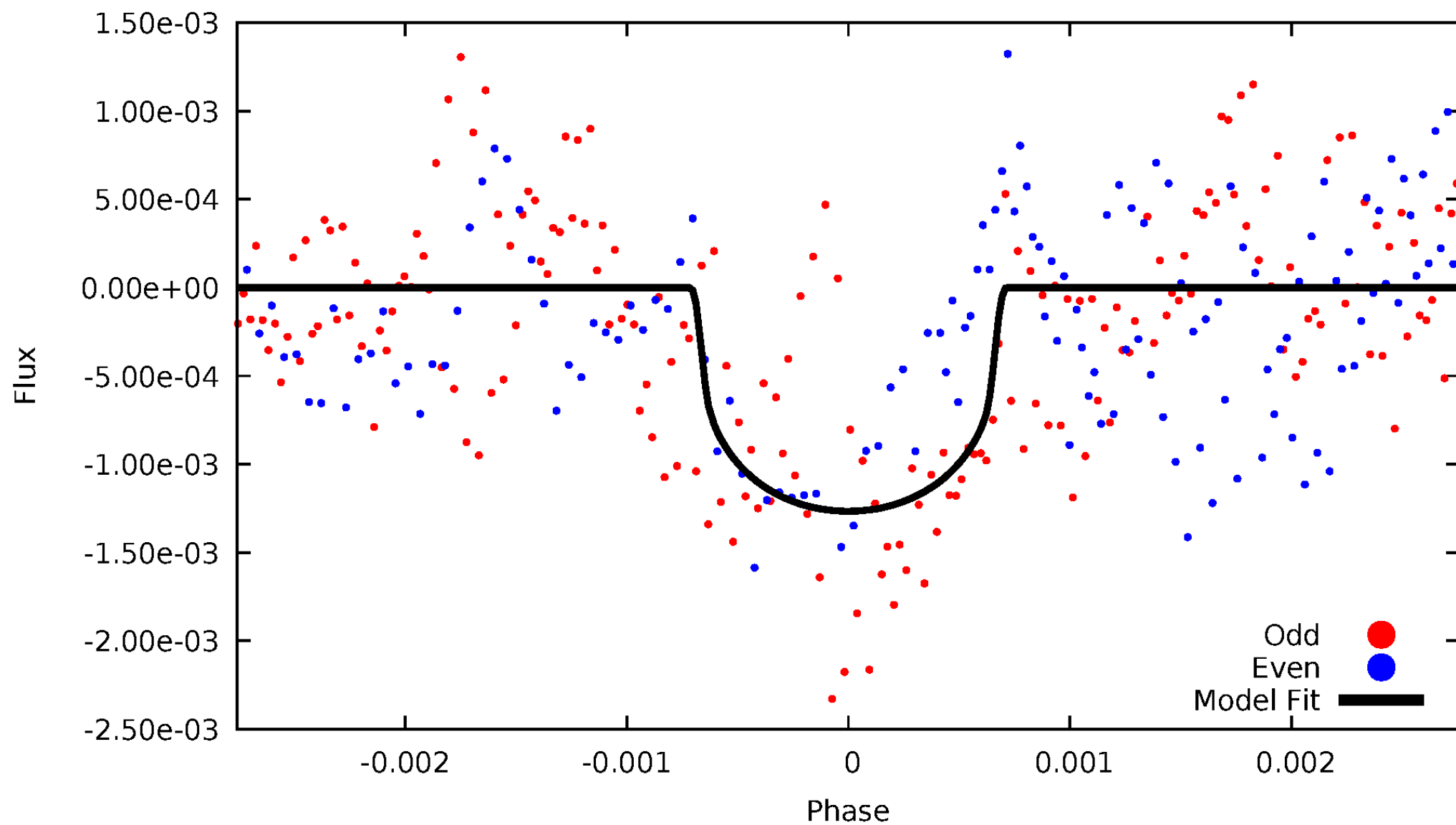


TCE 012554051-01



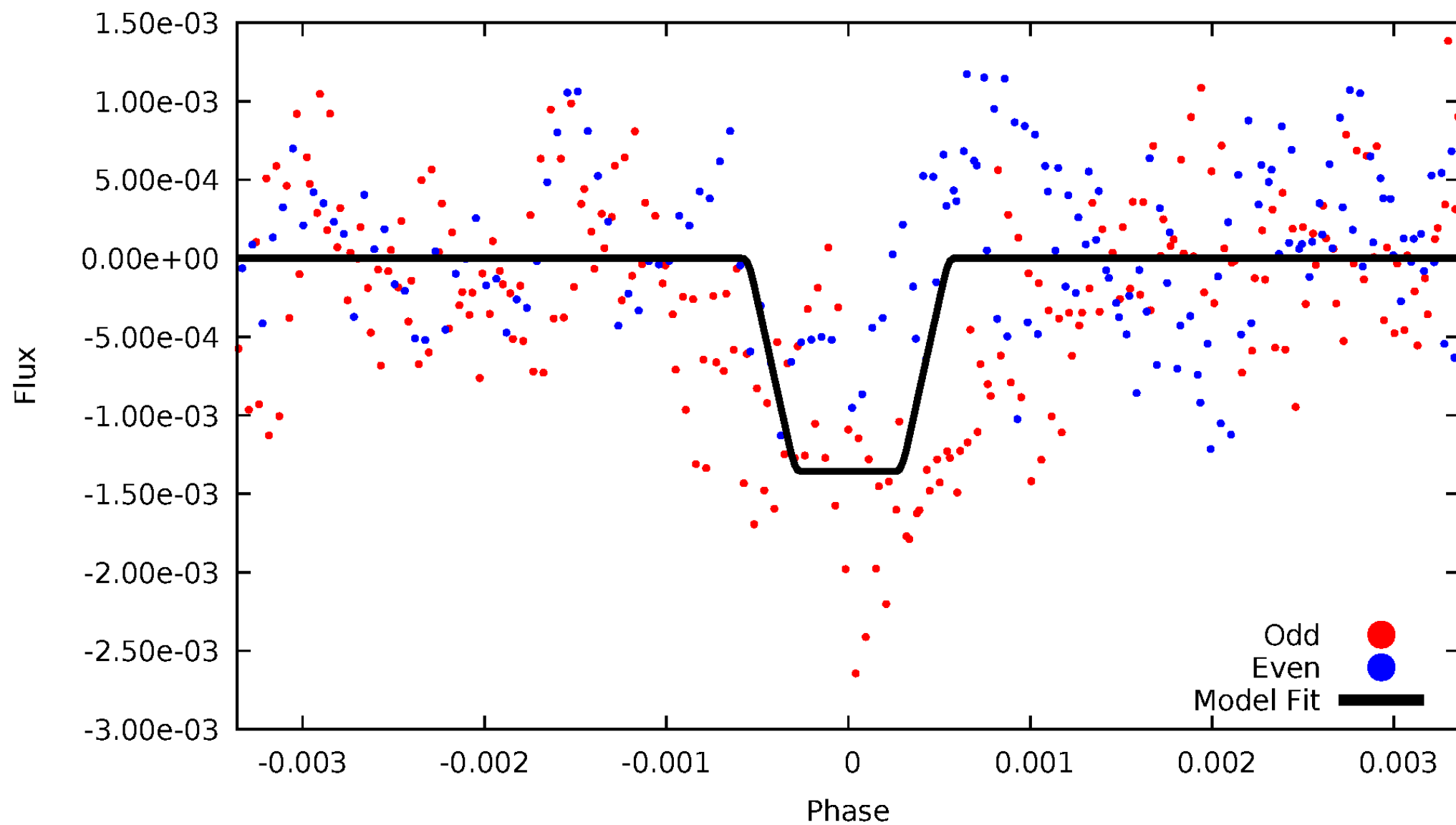
# DV Odd/Even

TCE 012554051-01



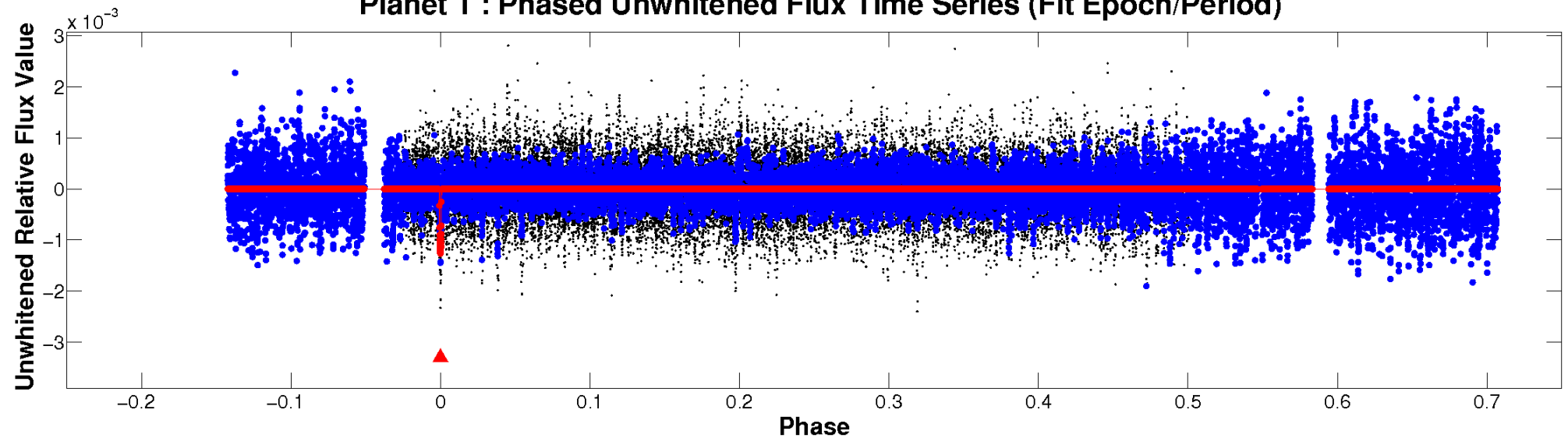
# ALT Odd/Even

TCE 012554051-01

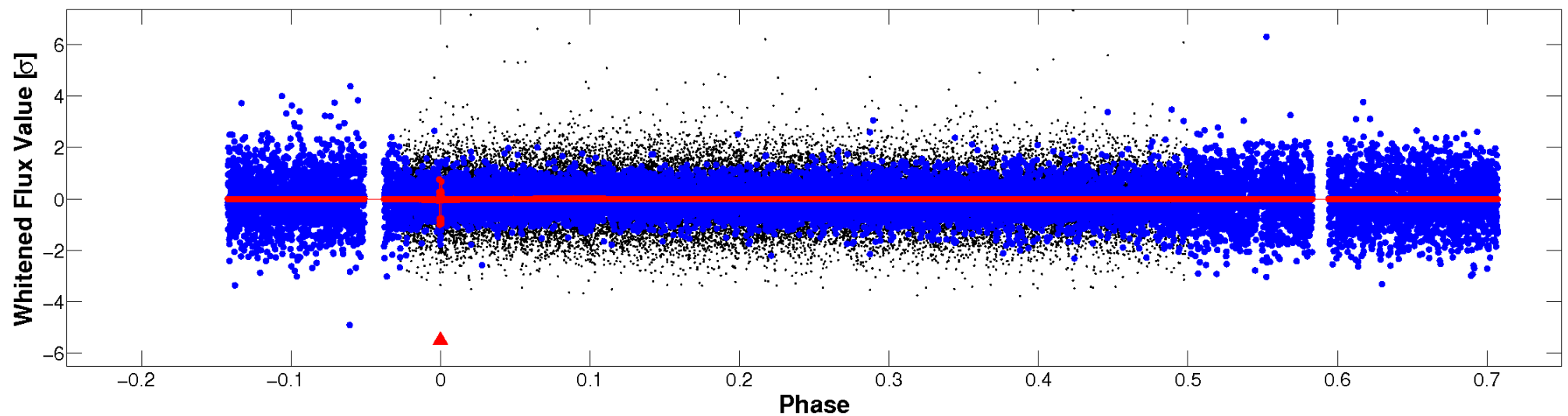


# Non-Whitened Vs. Whitened Light Curve

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

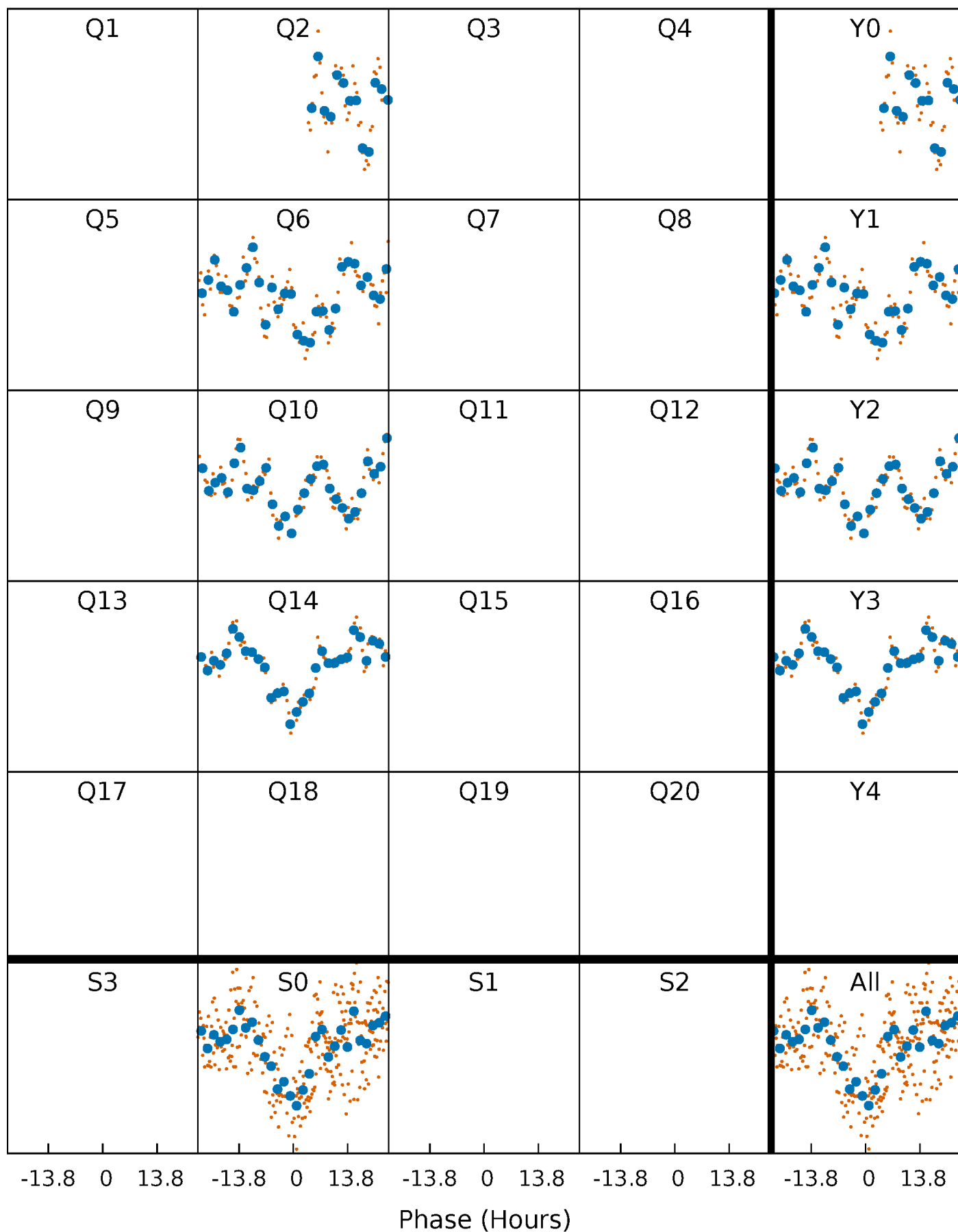


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

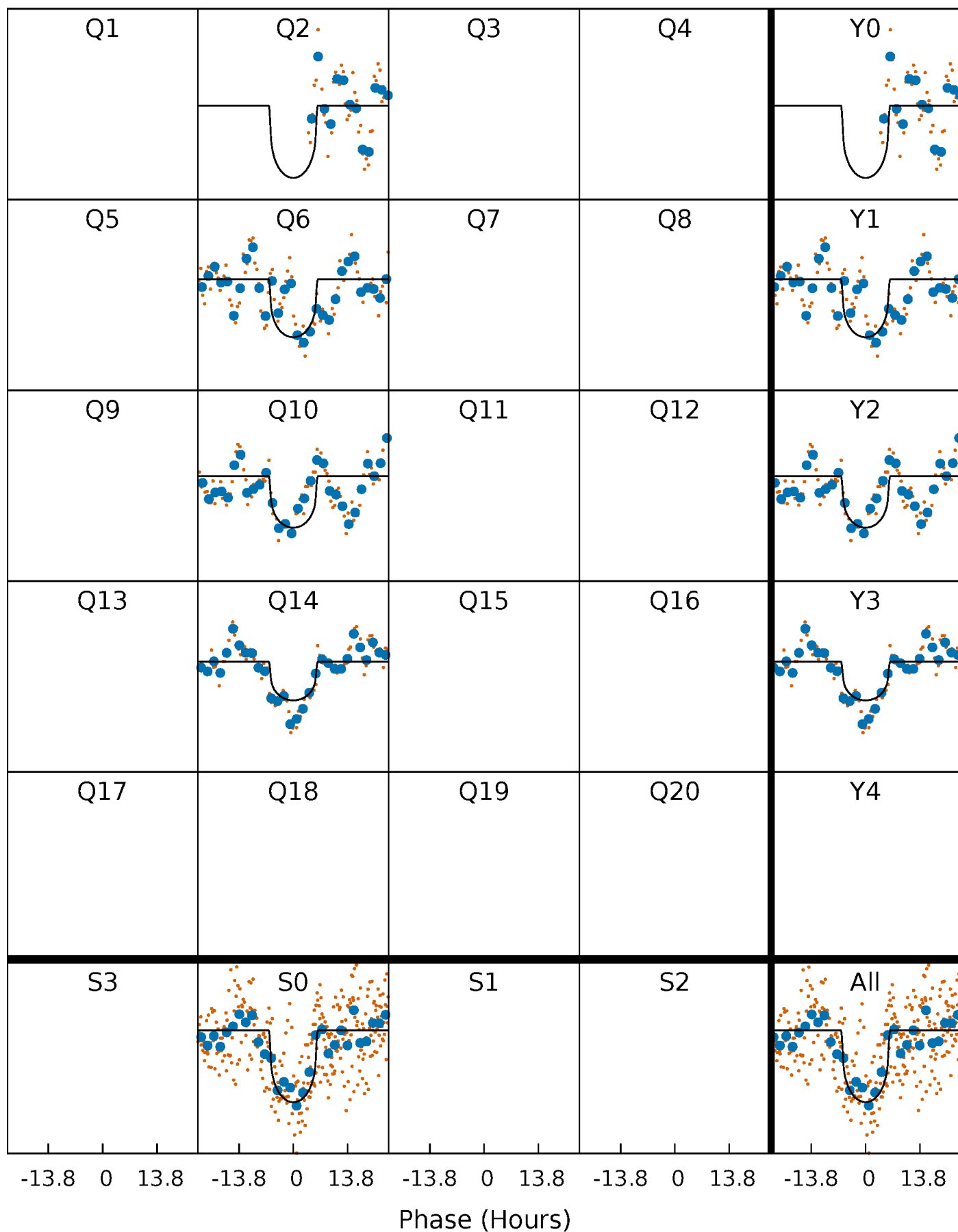
TCE 012554051-01 P=365.694427 Days  $T_0=183.560193$  (BKJD)





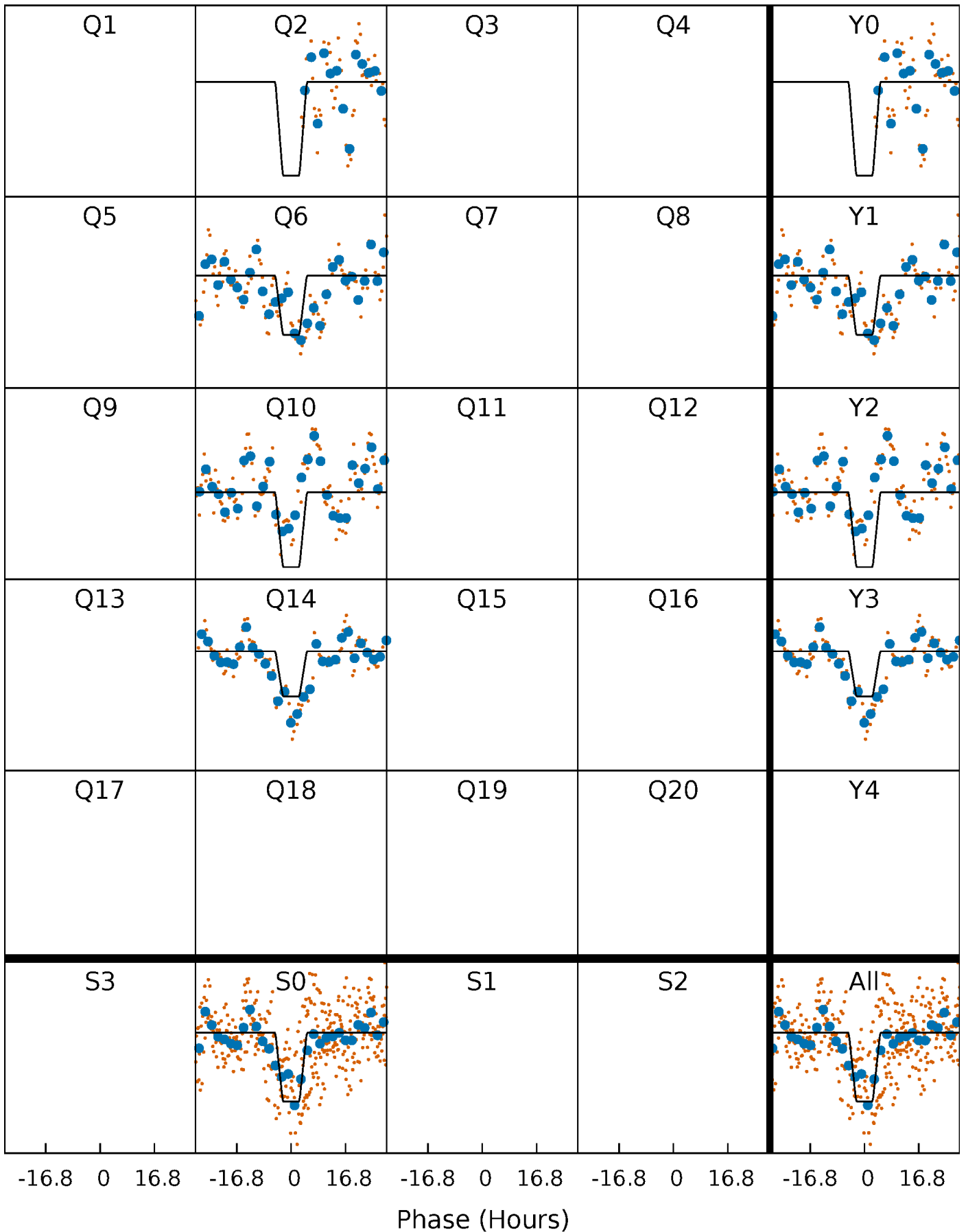
# DV Quarter-Phased Transit Curves

TCE 012554051-01 P=365.694427 Days  $T_0=183.560193$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

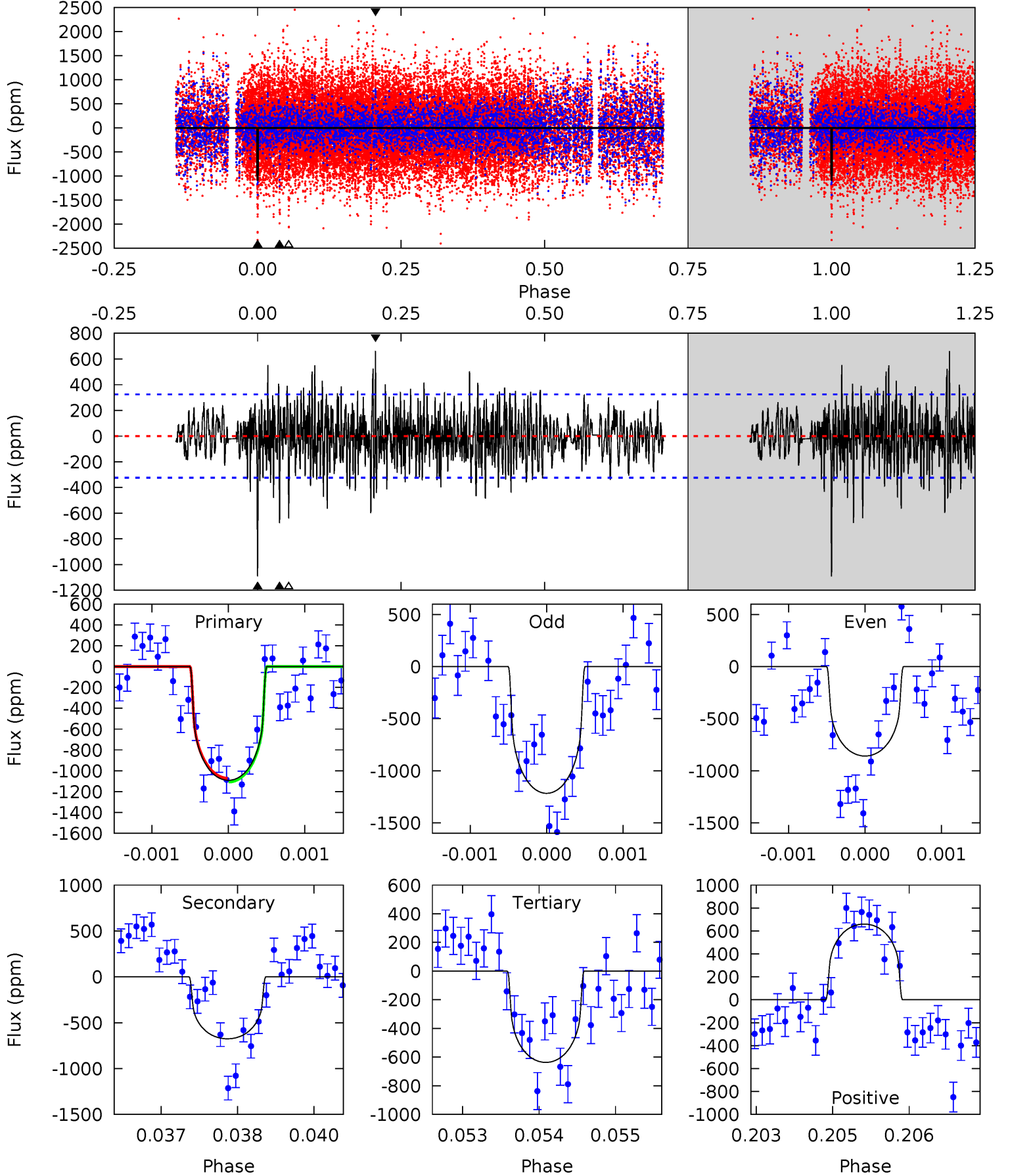
TCE 012554051-01     $P=365.672179$  Days     $T_0=183.585430$  (BKJD)



# DV Model-Shift Uniqueness Test

012554051-01, P = 365.694427 Days, E = 183.560193 Days

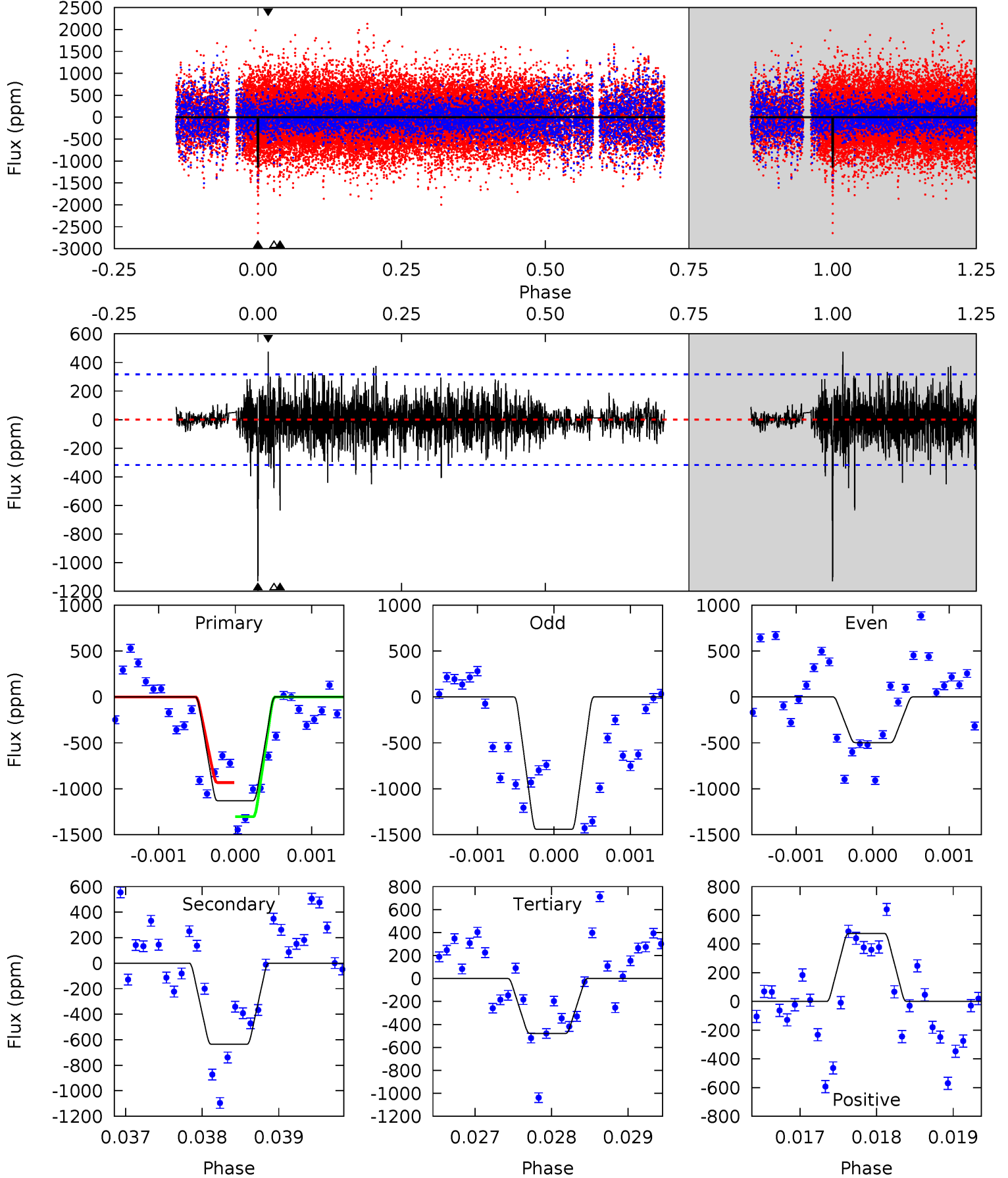
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.1	11.2	10.6	11.0	5.39	3.19	2.80	7.54	7.16	0.64	0.26	2.89	1.05	0.38	0.30



# Alt Model-Shift Uniqueness Test

012554051-01, P = 365.672179 Days, E = 183.585430 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
19.4	10.9	8.21	8.13	5.43	3.26	1.90	11.2	11.3	2.70	2.77	7.83	1.13	0.30	3.14



### Stellar Parameters For KIC 012554051

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4787^{+108}_{-120}$	$2.629^{+0.030}_{-0.033}$	$-0.300^{+0.250}_{-0.200}$	$8.522^{+1.352}_{-0.728}$	$1.129^{+0.382}_{-0.176}$	$0.003^{+0.000}_{-0.000}$
	+2%/-3%	+1%/-1%	+83%/-67%	+16%/-9%	+34%/-16%	+14%/-18%
Source	PHO1	AST9	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 012554051-01 / KOI 8237.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-676 \pm 60$	$29.23^{+12.86}_{-12.41}$	$844^{+25}_{-25}$	$4444^{+1195}_{-549}$	$477^{+1004}_{-245}$
Alt.	$-636 \pm 58$	$33.29^{+13.43}_{-12.68}$	$843^{+27}_{-24}$	$4166^{+911}_{-456}$	$343^{+569}_{-165}$

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

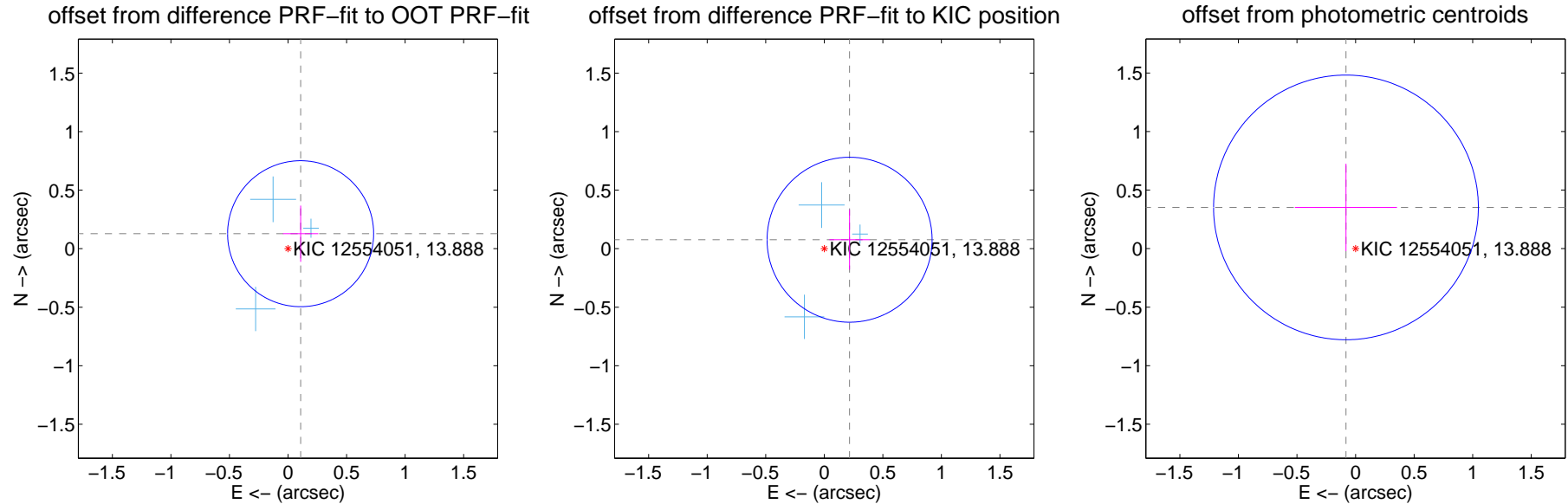
## DV Centroid Data

Supplemental centroid analysis for 012554051-01. Kepler magnitude: 13.89. Transit SNR 7.24

There are 3 quarters with good PRF difference image offsets

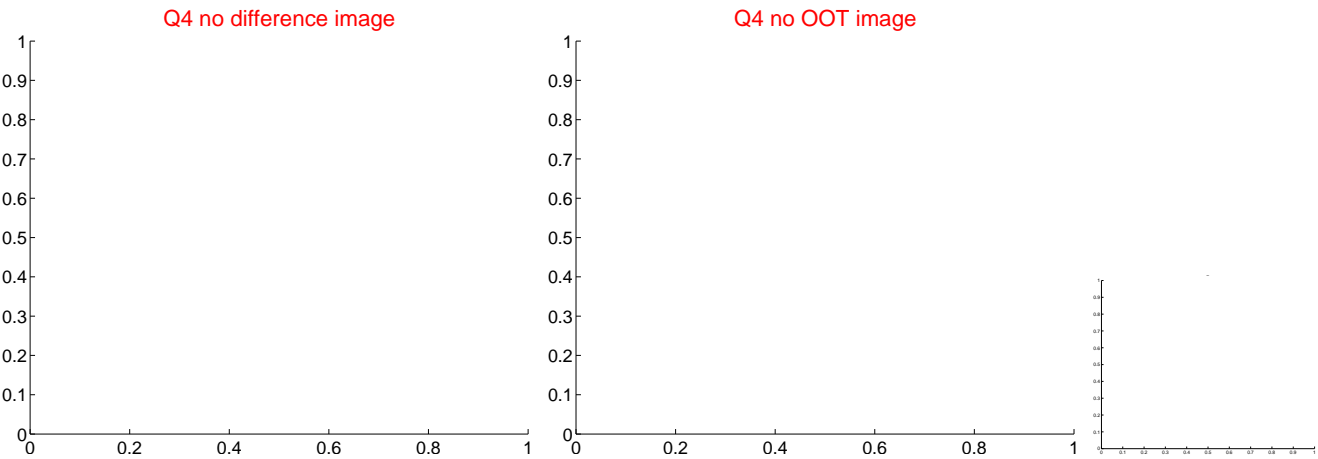
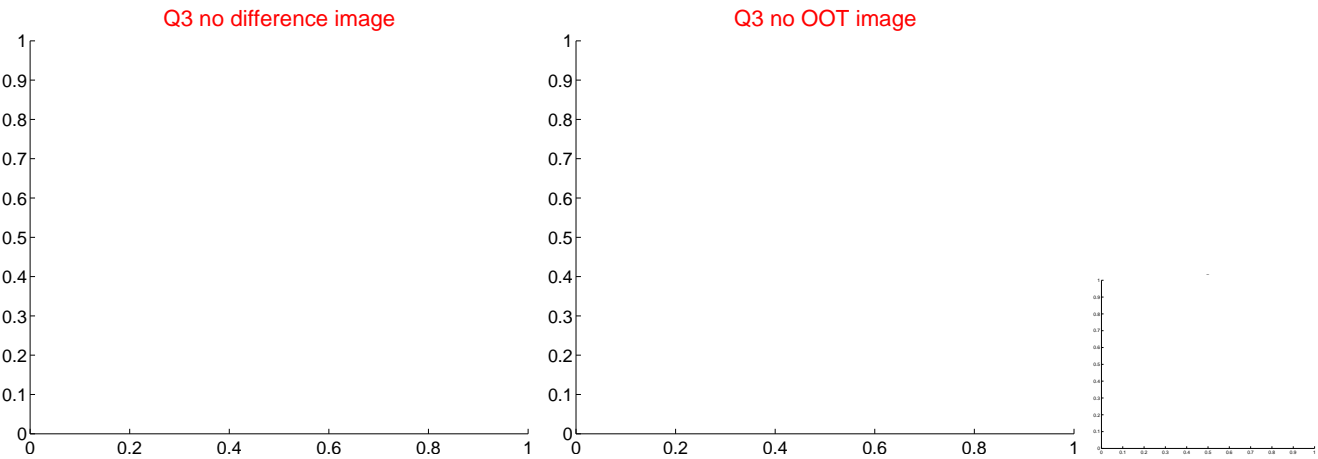
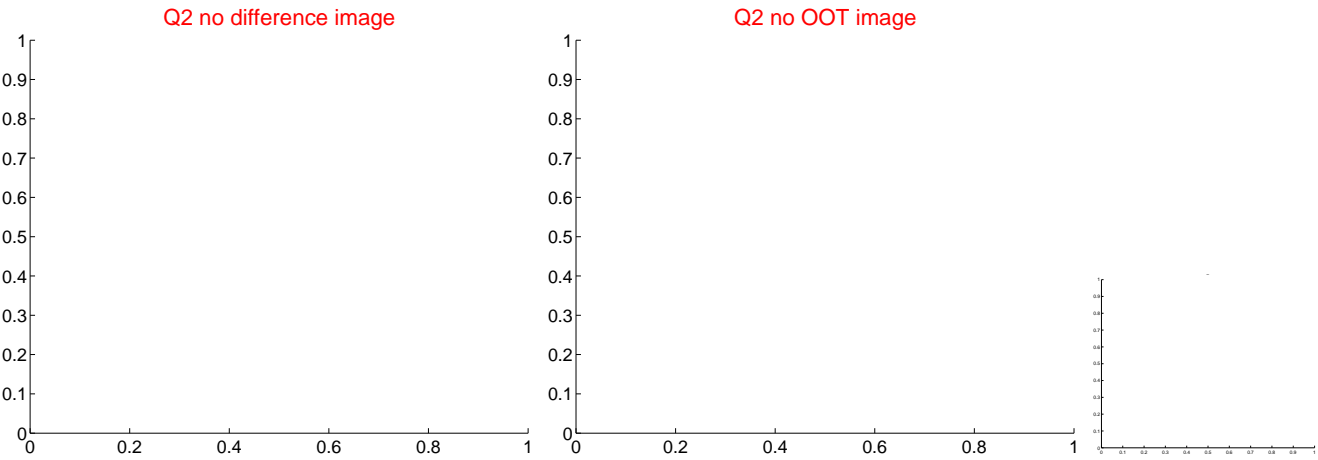
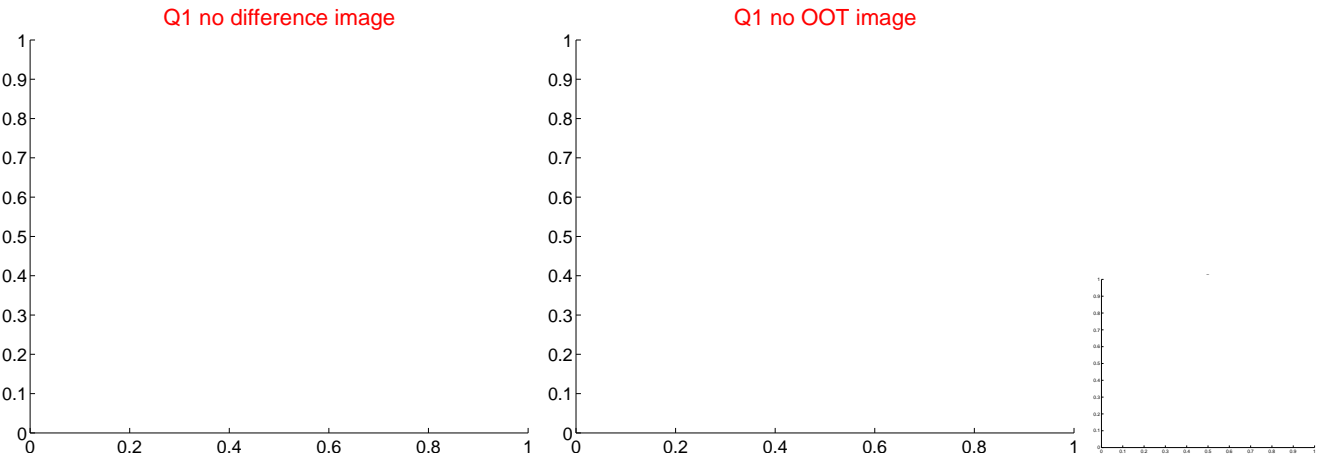
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.167 \pm 0.208$	0.80	$-0.108 \pm 0.151$	$0.128 \pm 0.240$
PRF-fit source offset from KIC position	$0.229 \pm 0.235$	0.98	$-0.216 \pm 0.173$	$0.077 \pm 0.255$
photometric centroid source offset	$0.36 \pm 0.38$	0.96	$0.08 \pm 0.44$	$0.35 \pm 0.37$

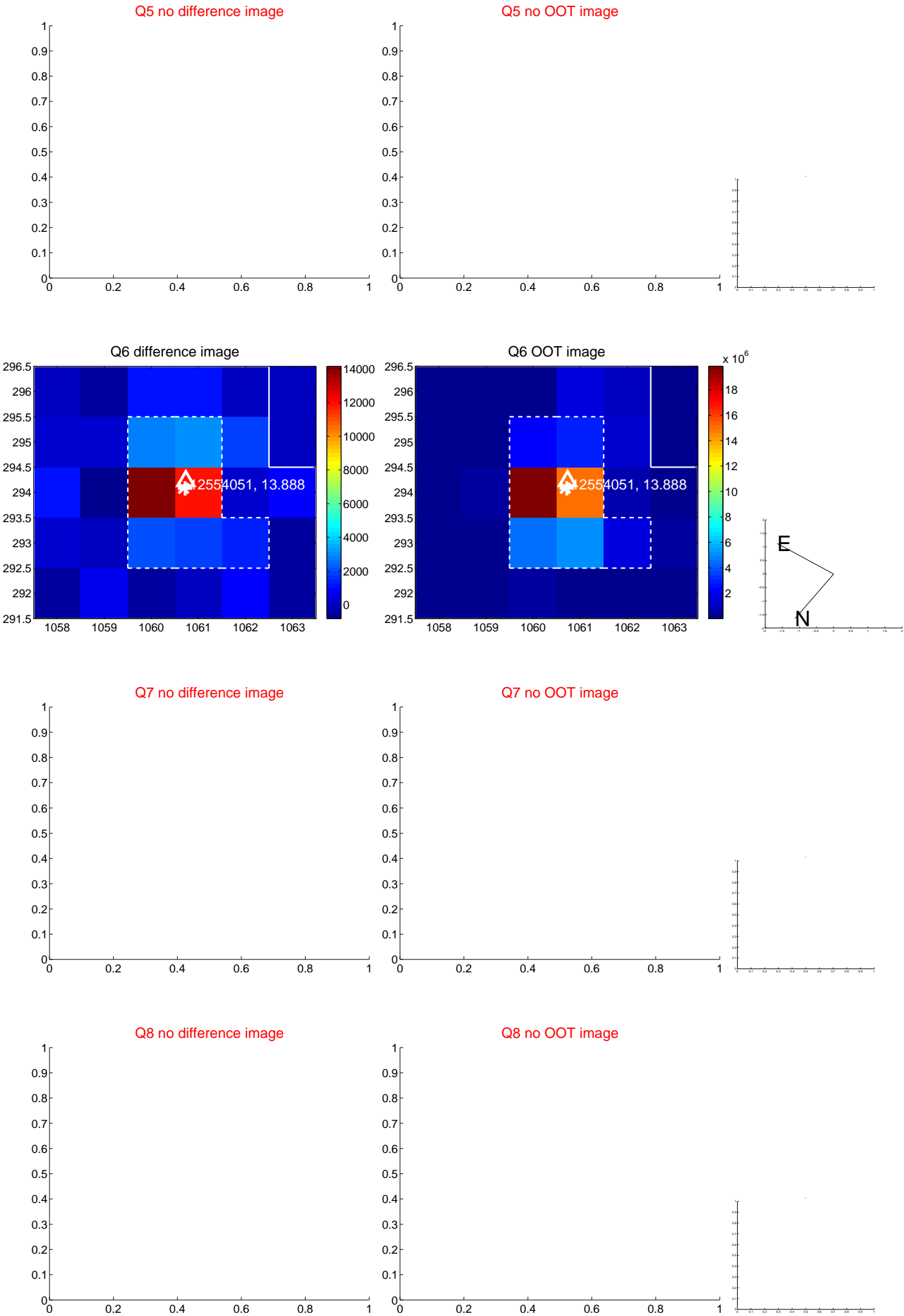


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



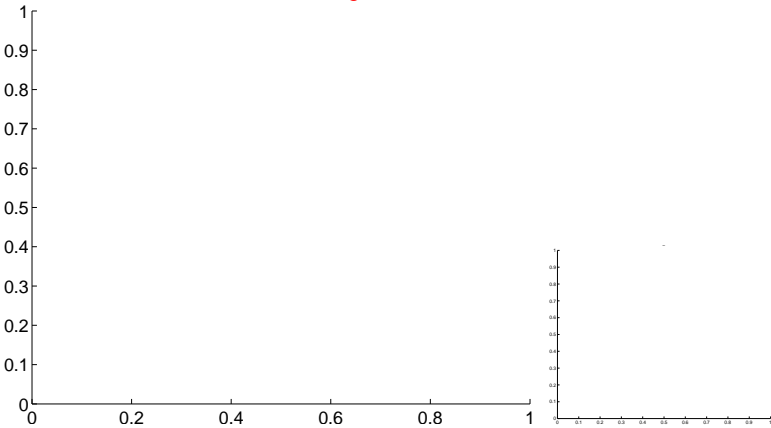


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

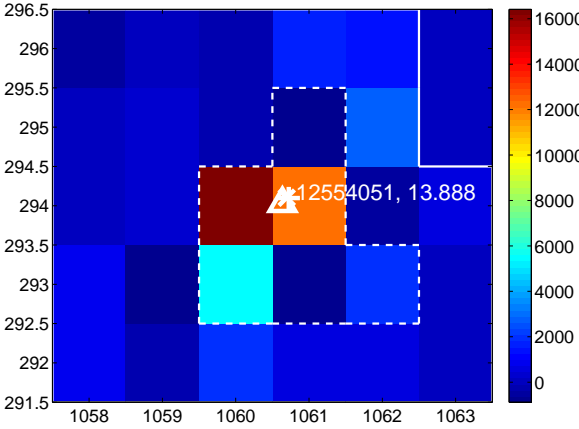
Q9 no difference image



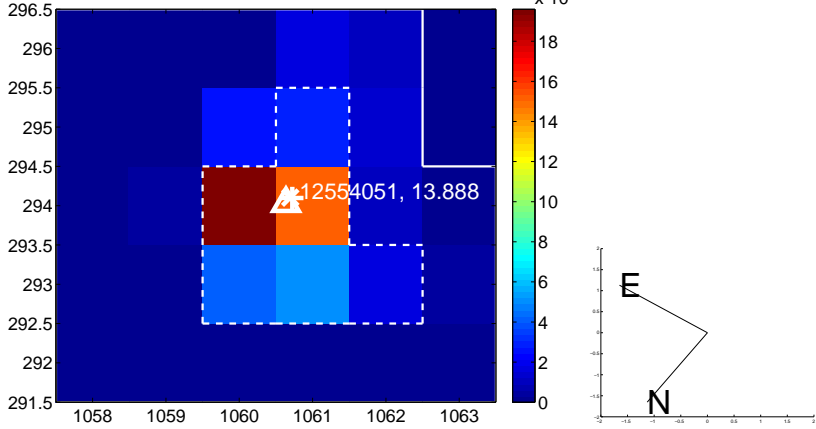
Q9 no OOT image



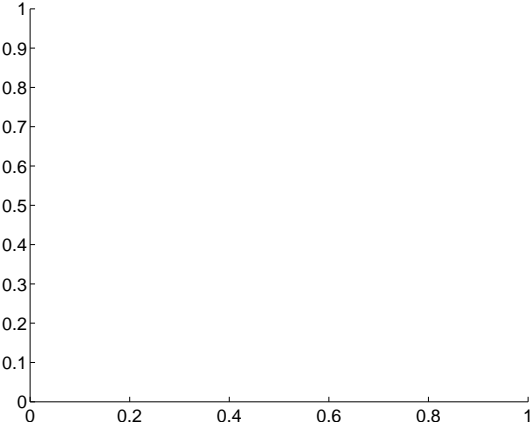
Q10 difference image



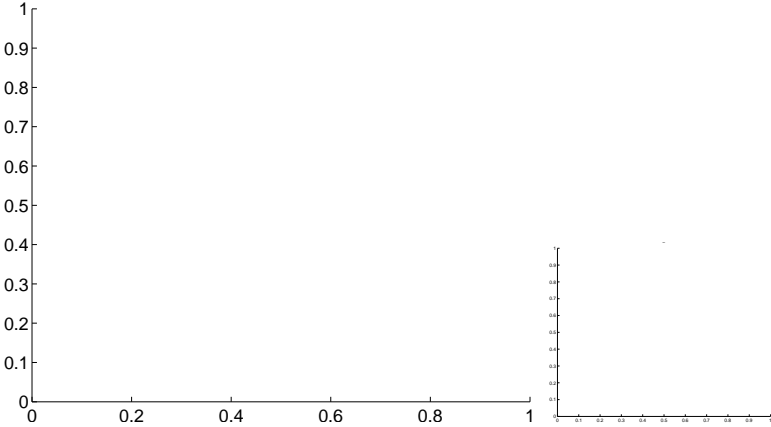
Q10 OOT image



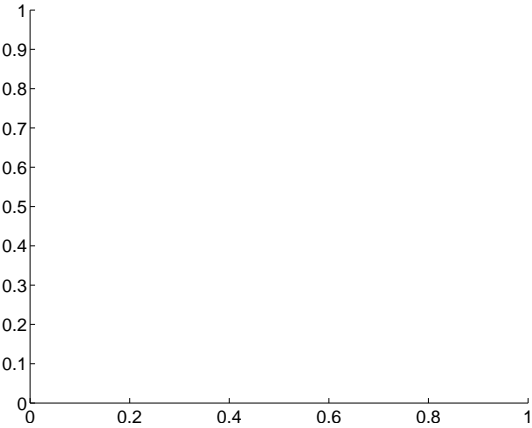
Q11 no difference image



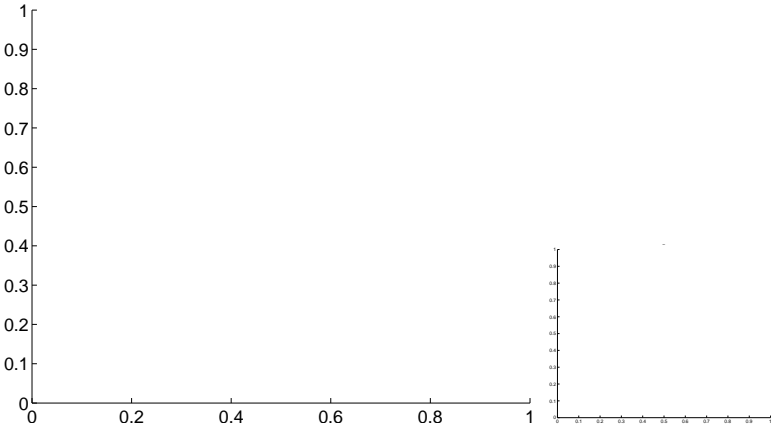
Q11 no OOT image



Q12 no difference image

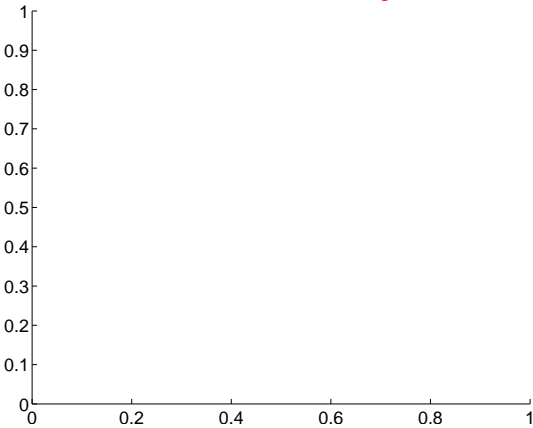


Q12 no OOT image

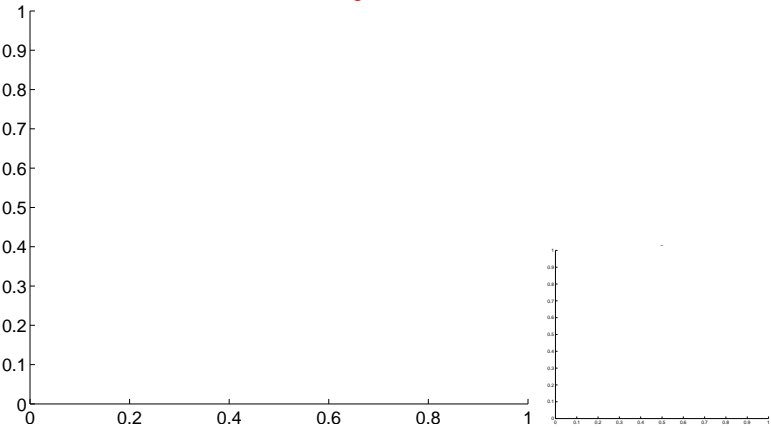


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

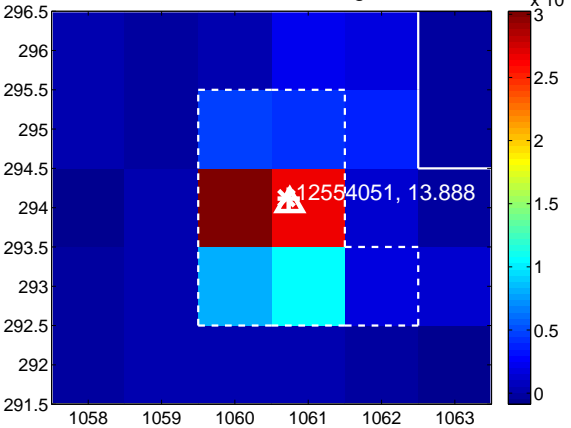
Q13 no difference image



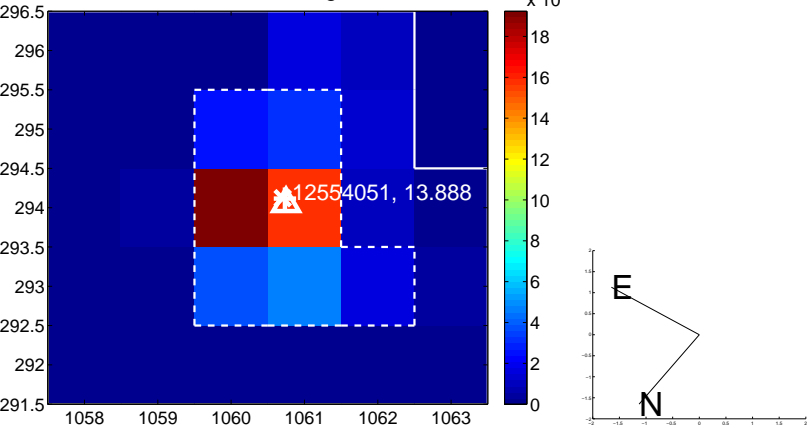
Q13 no OOT image



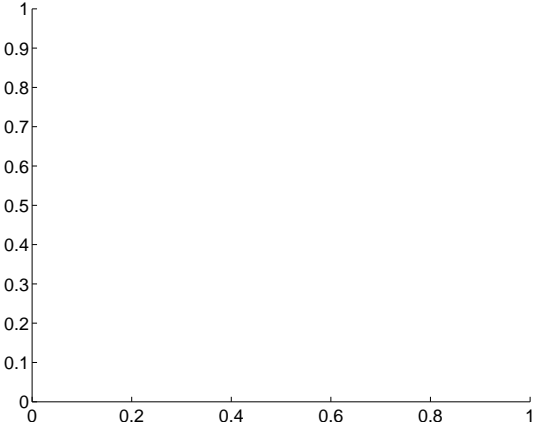
Q14 difference image



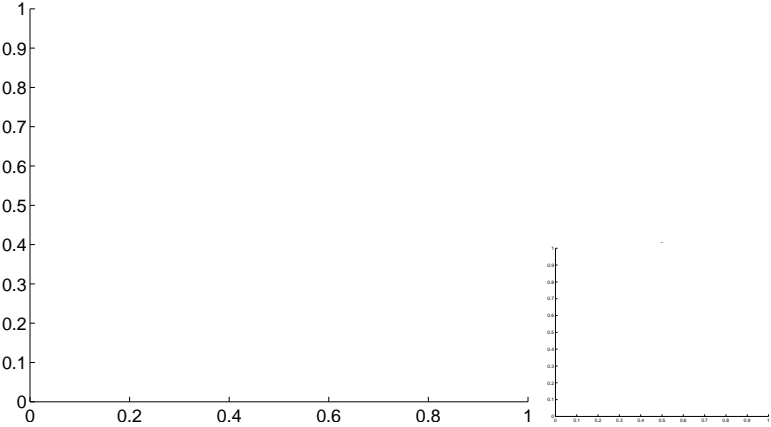
Q14 OOT image



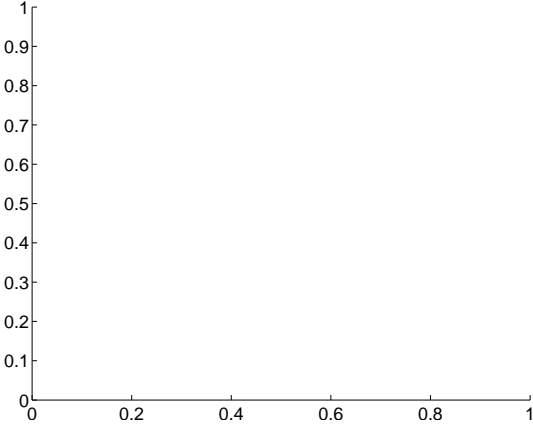
Q15 no difference image



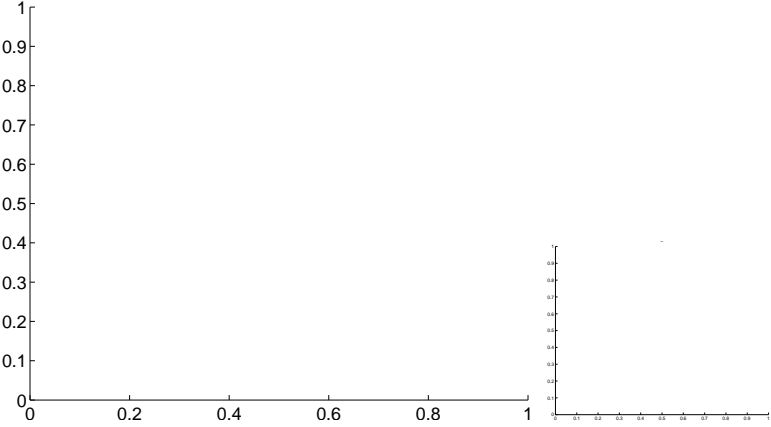
Q15 no OOT image



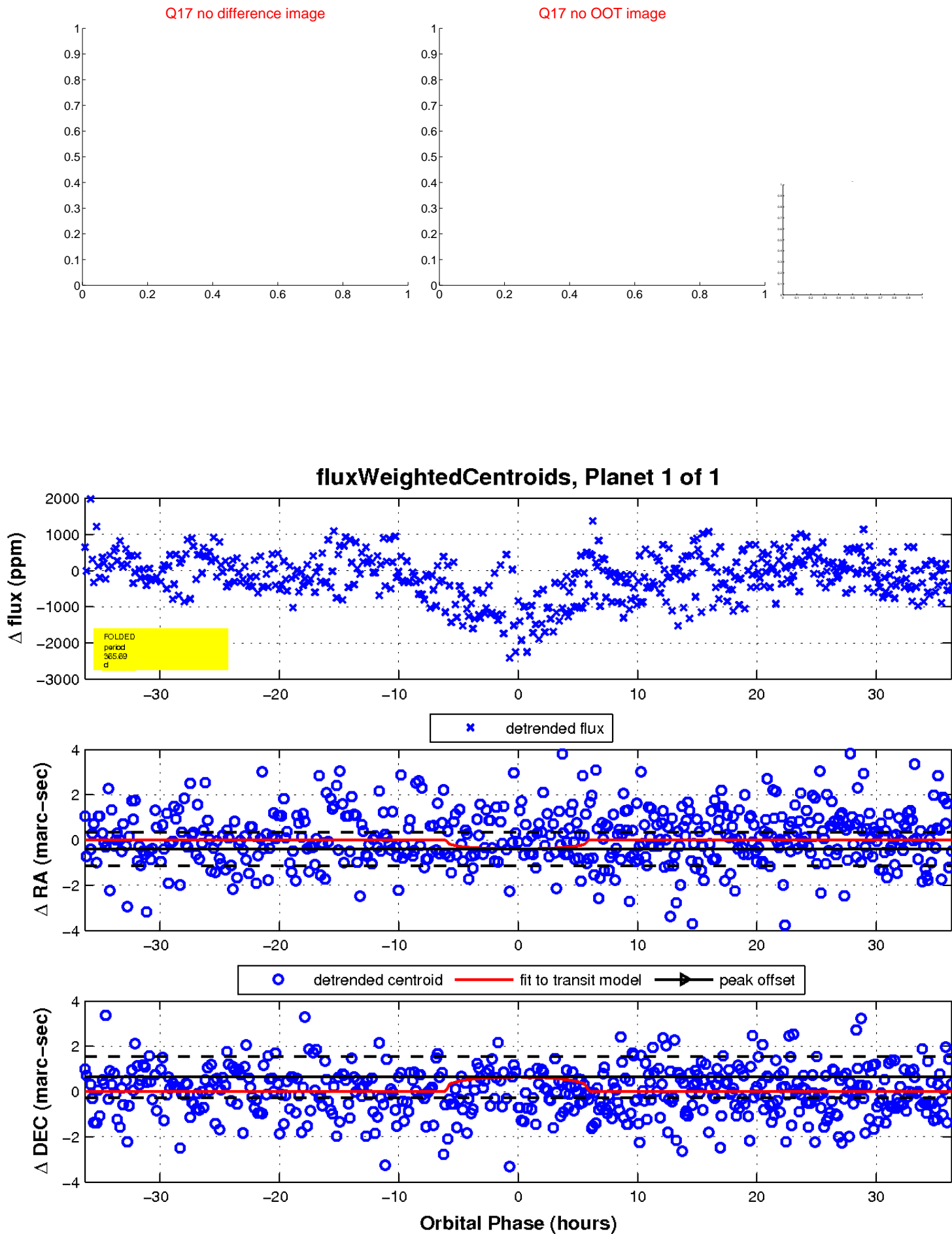
Q16 no difference image



Q16 no OOT image



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



# UKIRT Image

Declination

