

# KIC 010057110

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010057110-01	OBS	No	580.320383	160.256759	203.1	12.026	8.6	8.1	1.86	6131	2.89	2.18

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010057110-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—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.

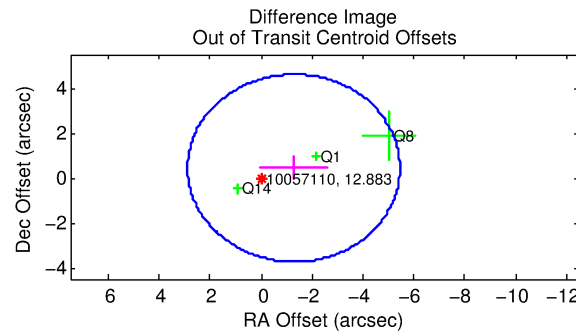
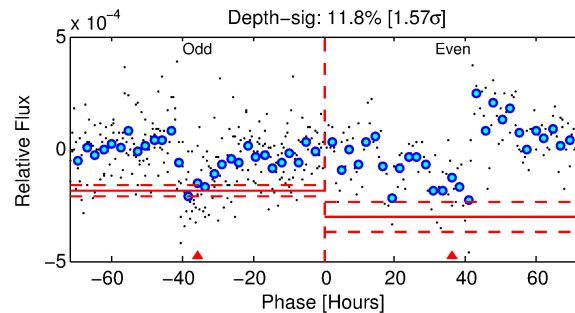
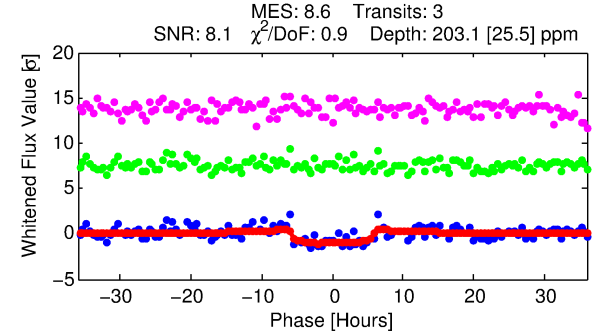
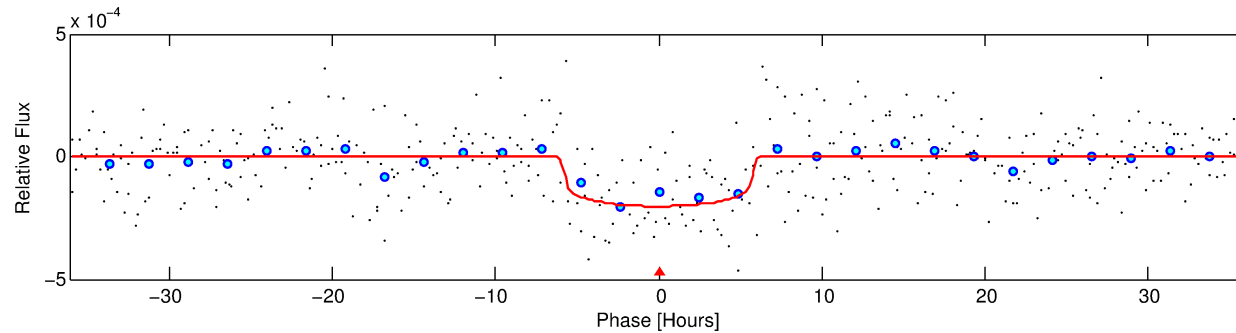
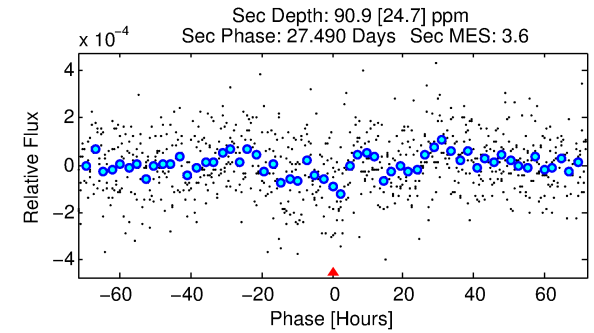
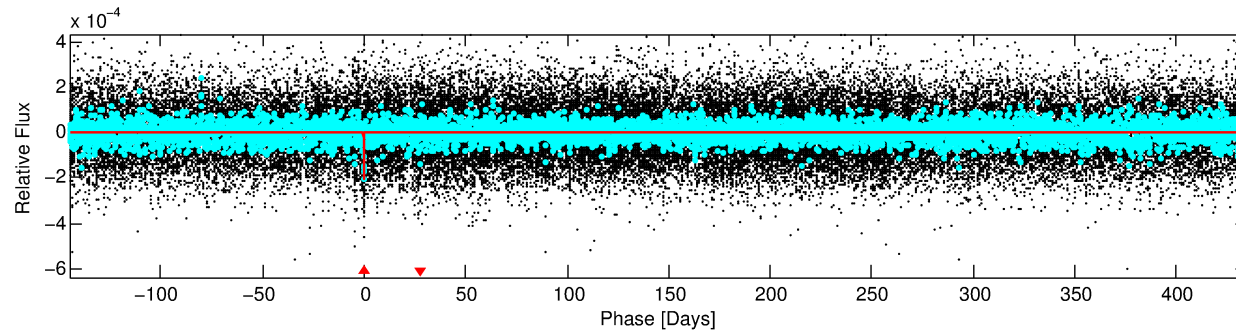
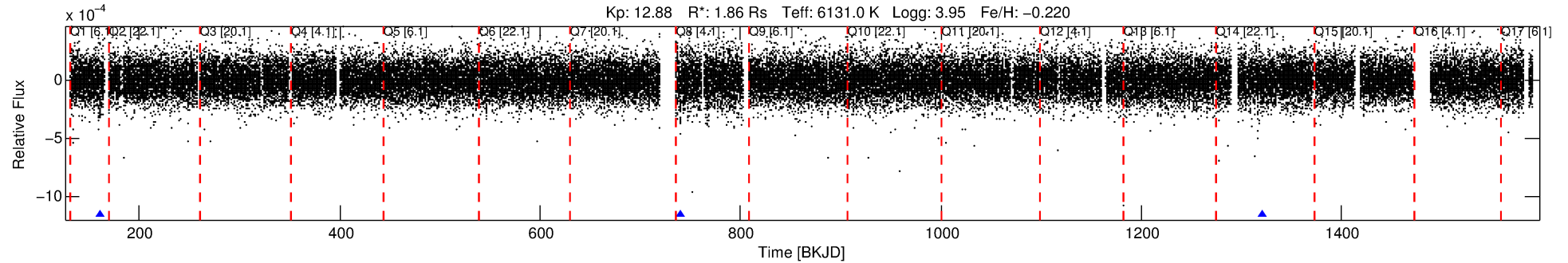
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010057110-01

No Significant Match Found

# DV One-Page Summary

KIC: 10057110 Candidate: 1 of 1 Period: 580.320 d



## DV Fit Results:

Period = 580.32038 [0.01093] d  
Epoch = 160.2568 [0.0137] BKJD  
Rp/R\* = 0.0142 [0.0050]  
a/R\* = 246.98 [433.54]  
b = 0.76 [0.98]  
Seff = 2.18 [1.06]  
Teff = 310 [38] K  
Rp = 2.89 [1.40] Re  
a = 1.4179 [0.4341] AU  
Ag = 12043.06 [10746.80] [1.12σ]  
Teffp = 5019 [958] K [4.91σ]

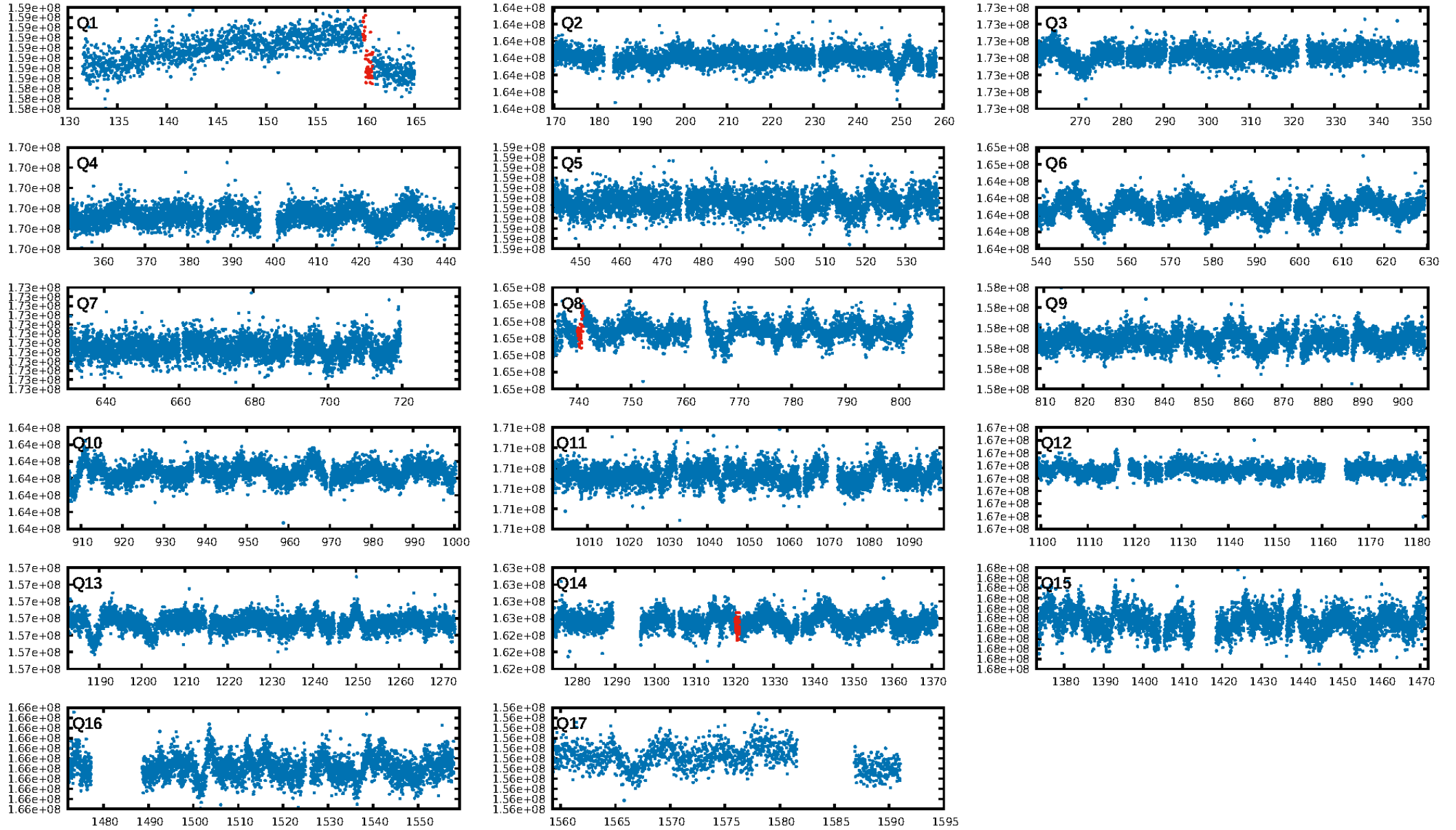
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 7.0%  
ModelChiSquareGof-sig: 99.3%  
Bootstrap-pfa: 7.62e-13  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: -4.054  
Centroid-sig: 82.9%  
Centroid-so: 0.633 arcsec [0.56σ]  
OotOffset-rm: 1.360 arcsec [0.98σ]  
OotOffset-st: 1/0/1/1 [3]  
KicOffset-rm: 1.302 arcsec [0.86σ]  
KicOffset-st: 1/0/1/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

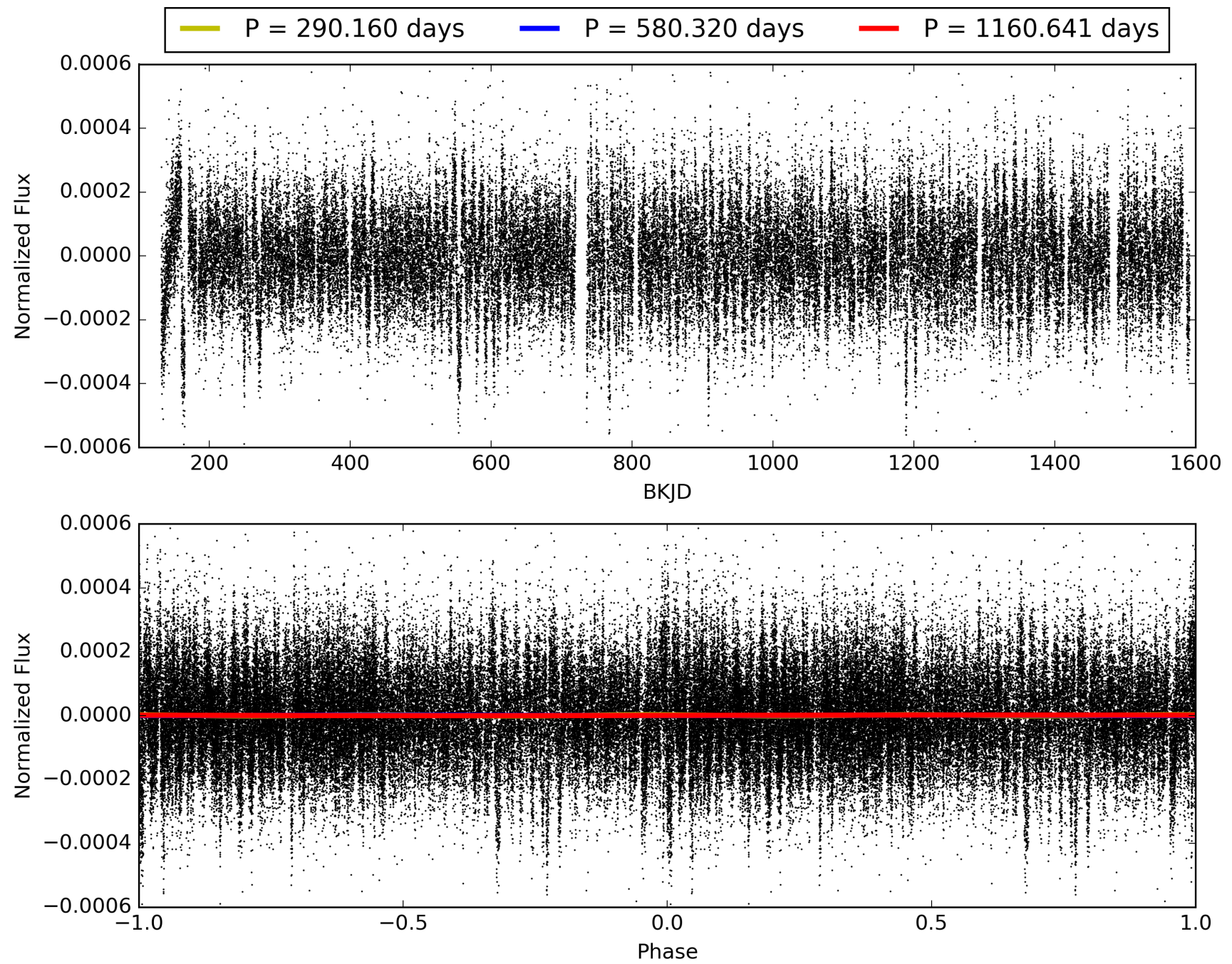
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:01:21 Z

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

# TCE 010057110-01, PDC Light Curves

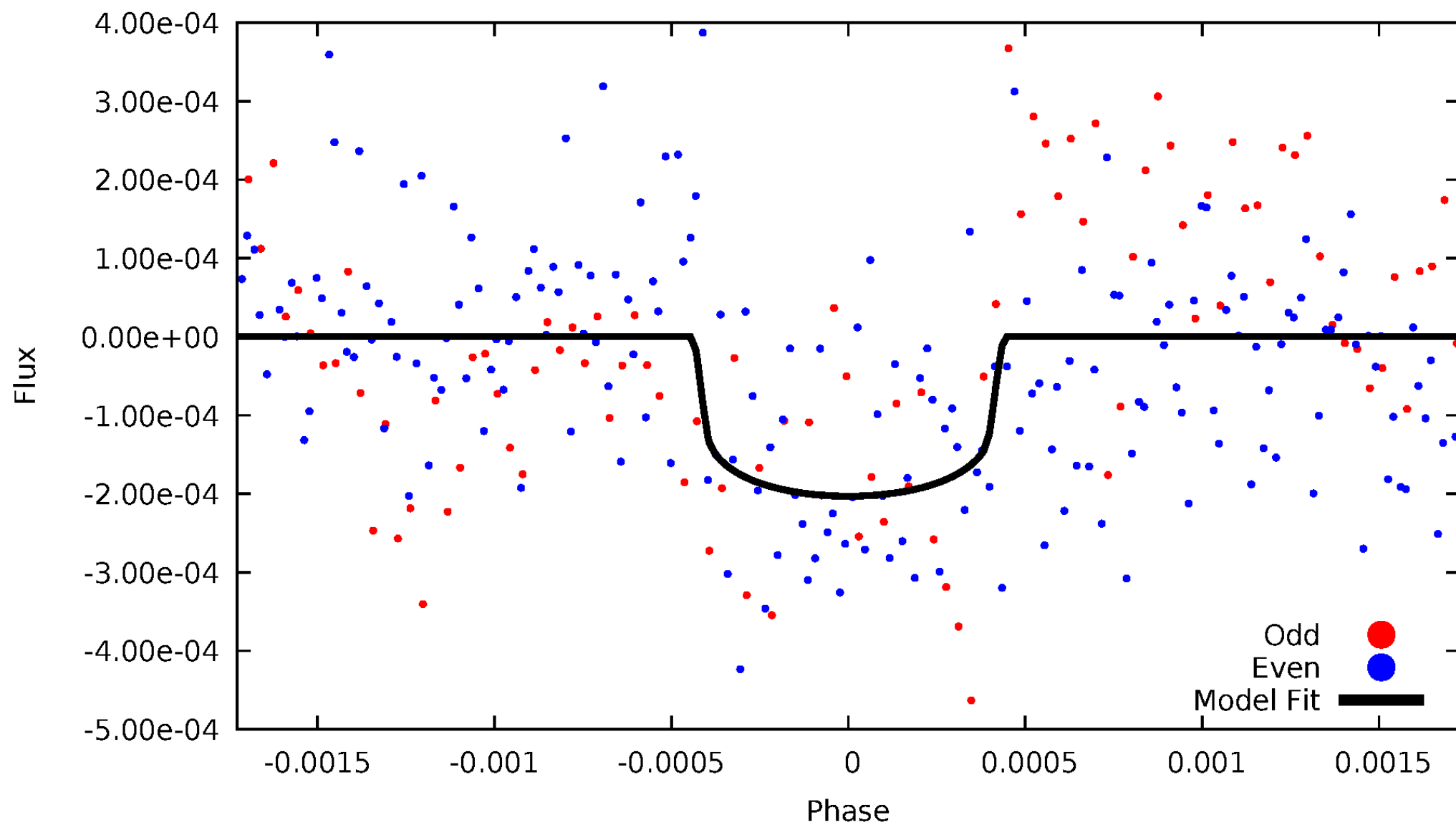


# TCE 010057110-01



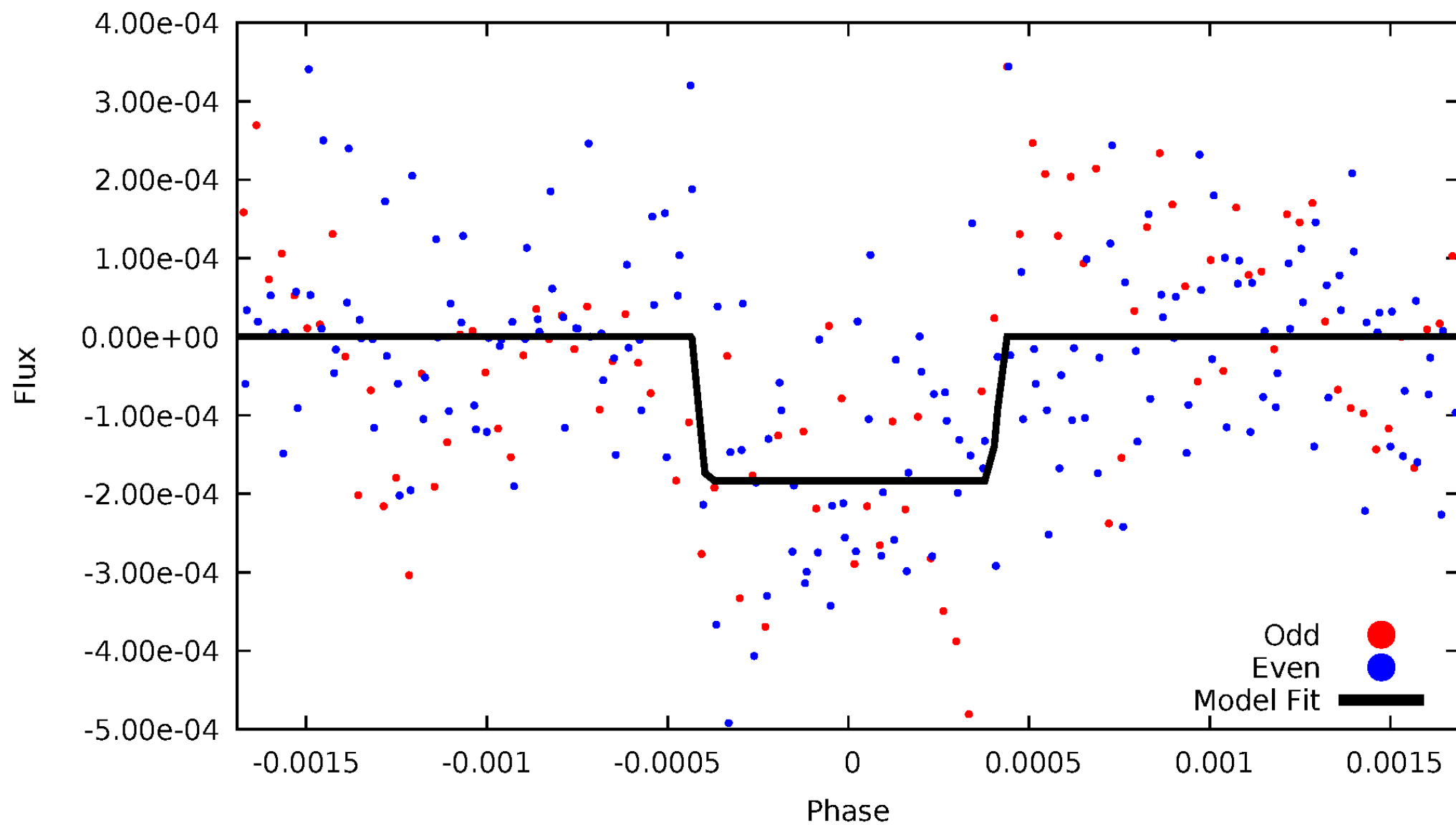
# DV Odd/Even

TCE 010057110-01



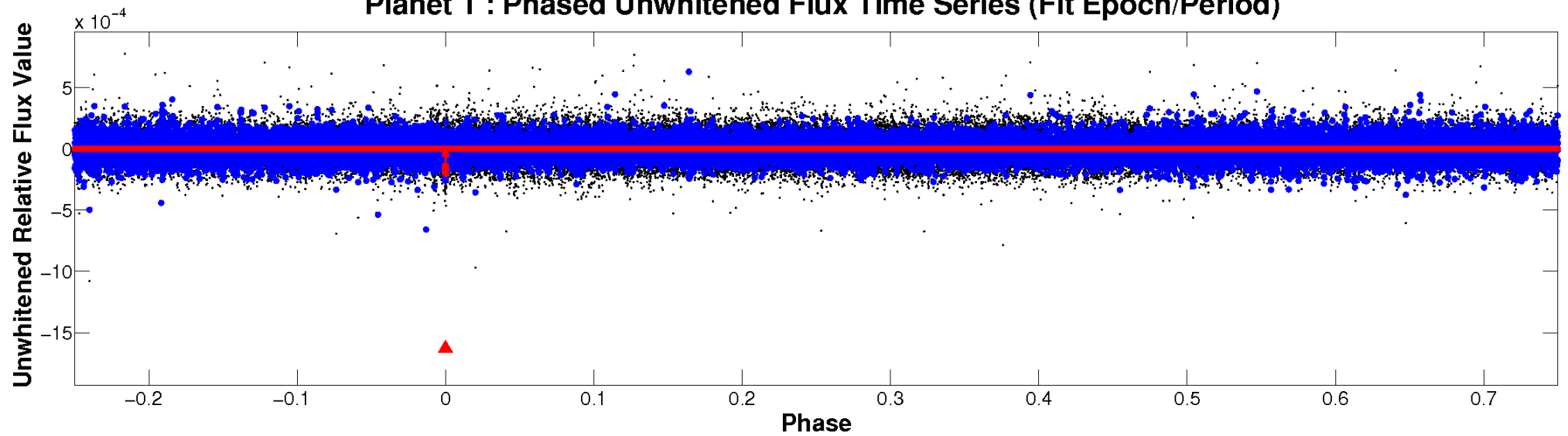
# ALT Odd/Even

TCE 010057110-01

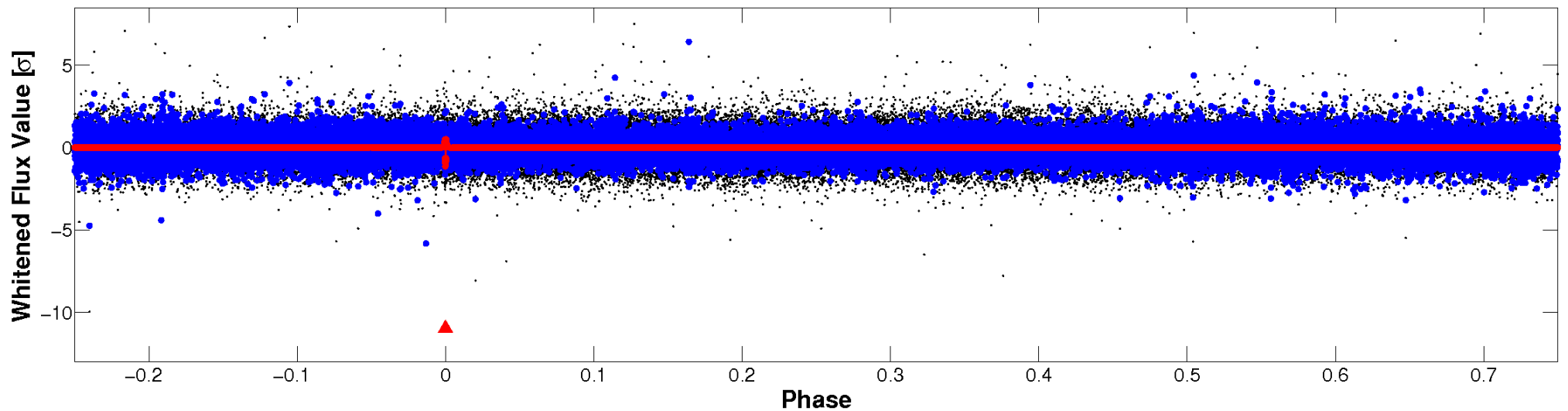


# Non-Whitened Vs. Whitened Light Curve

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



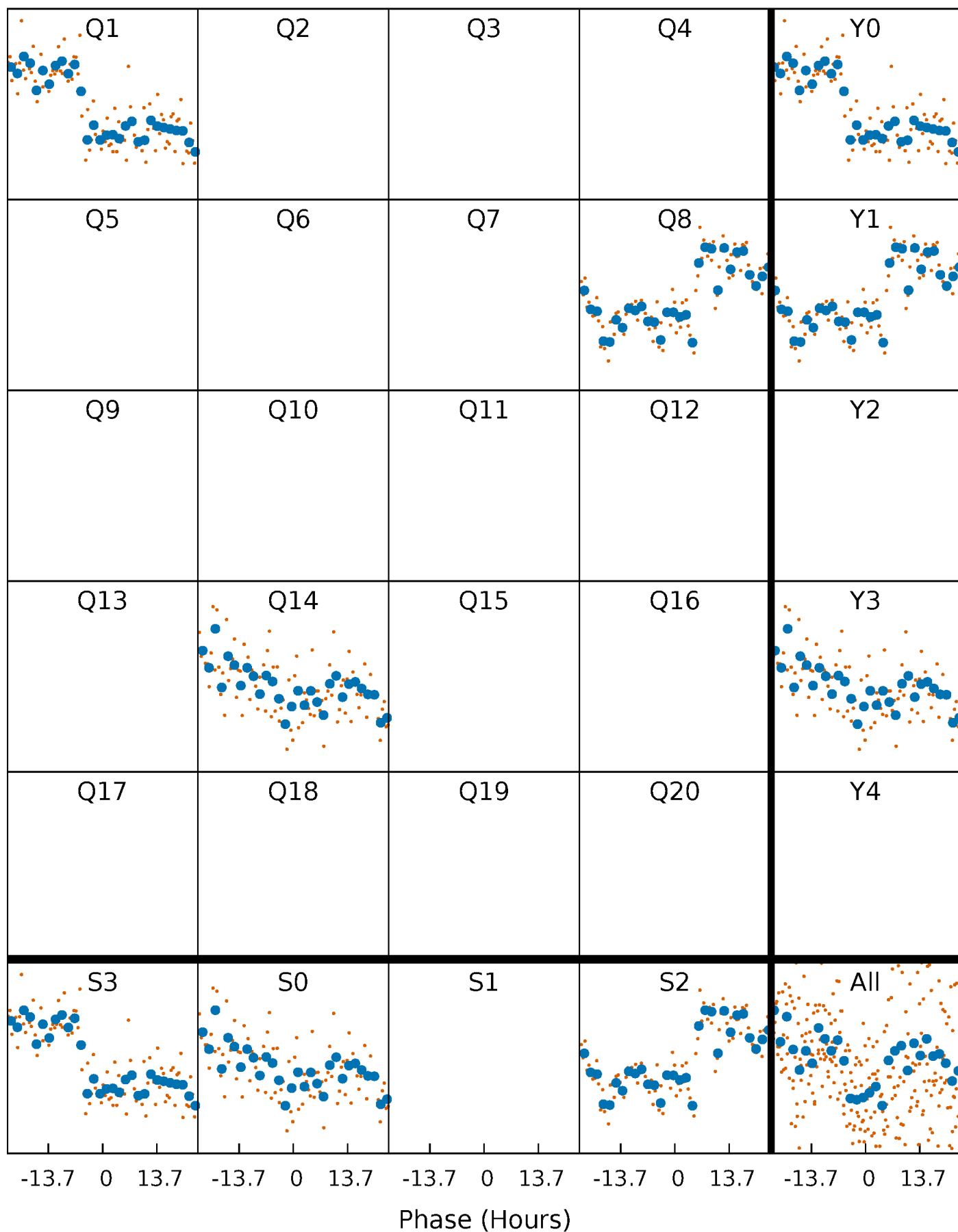
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

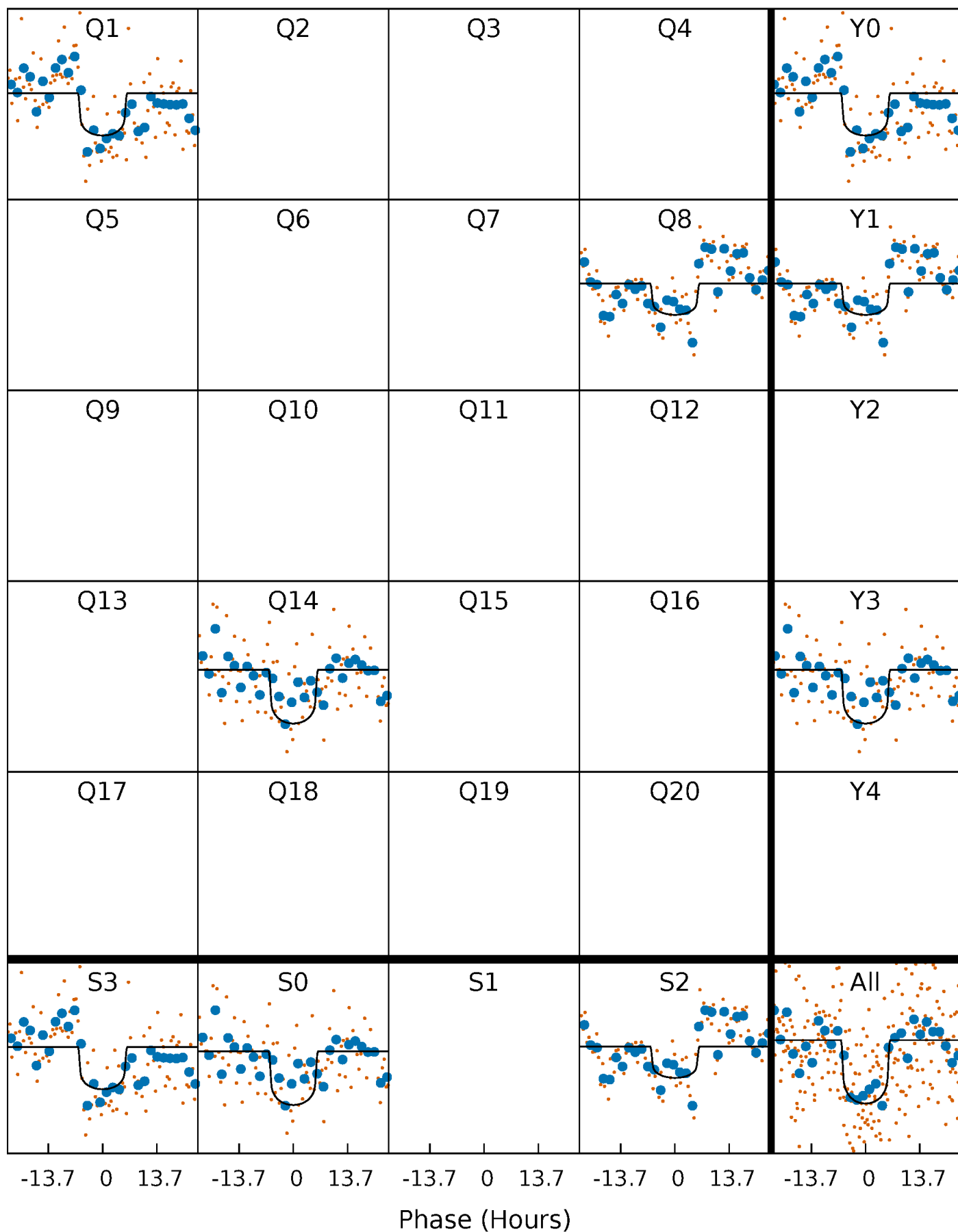
TCE 010057110-01 P=580.320383 Days  $T_0=160.256759$  (BKJD)





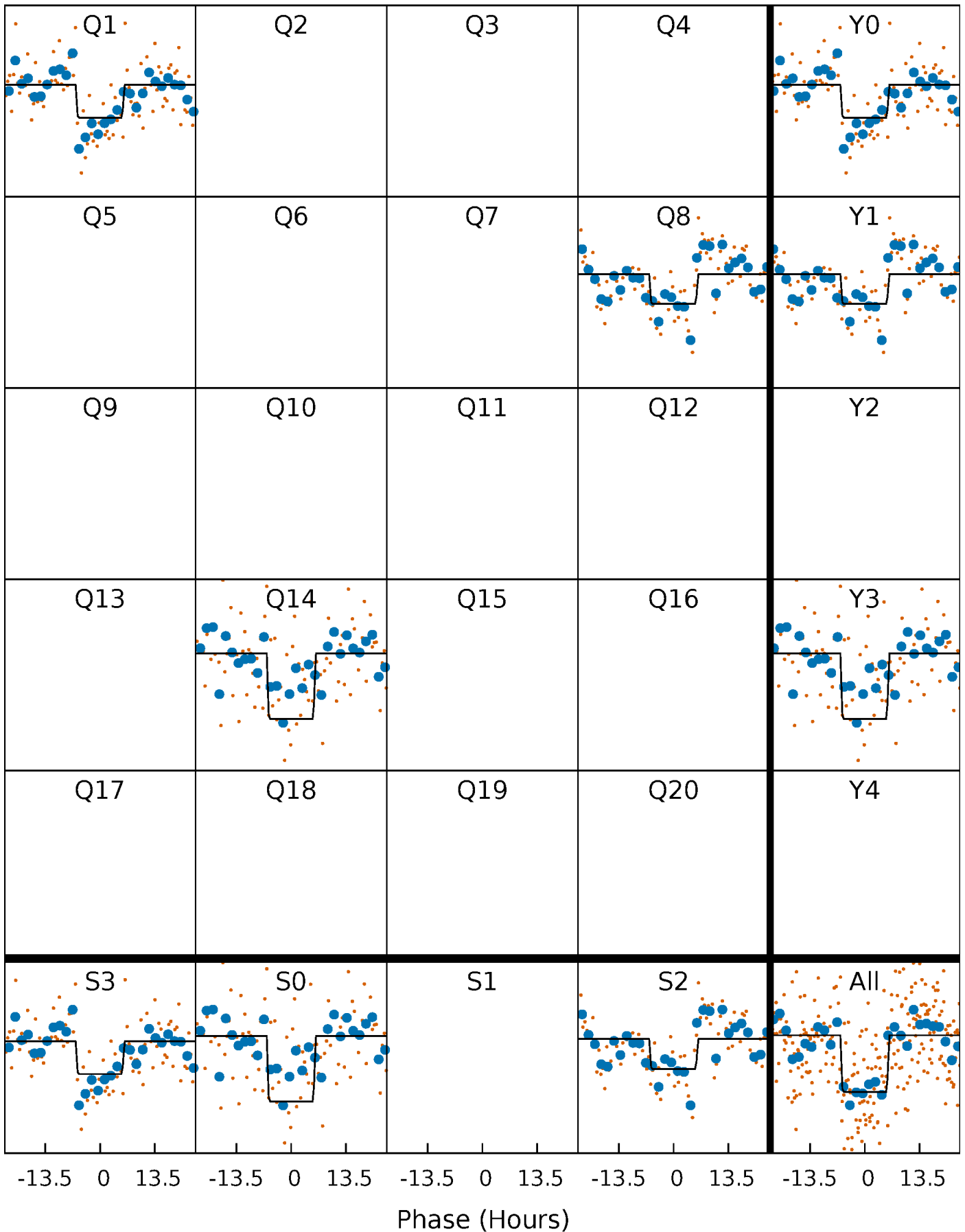
# DV Quarter-Phased Transit Curves

TCE 010057110-01 P=580.320383 Days  $T_0=160.256759$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

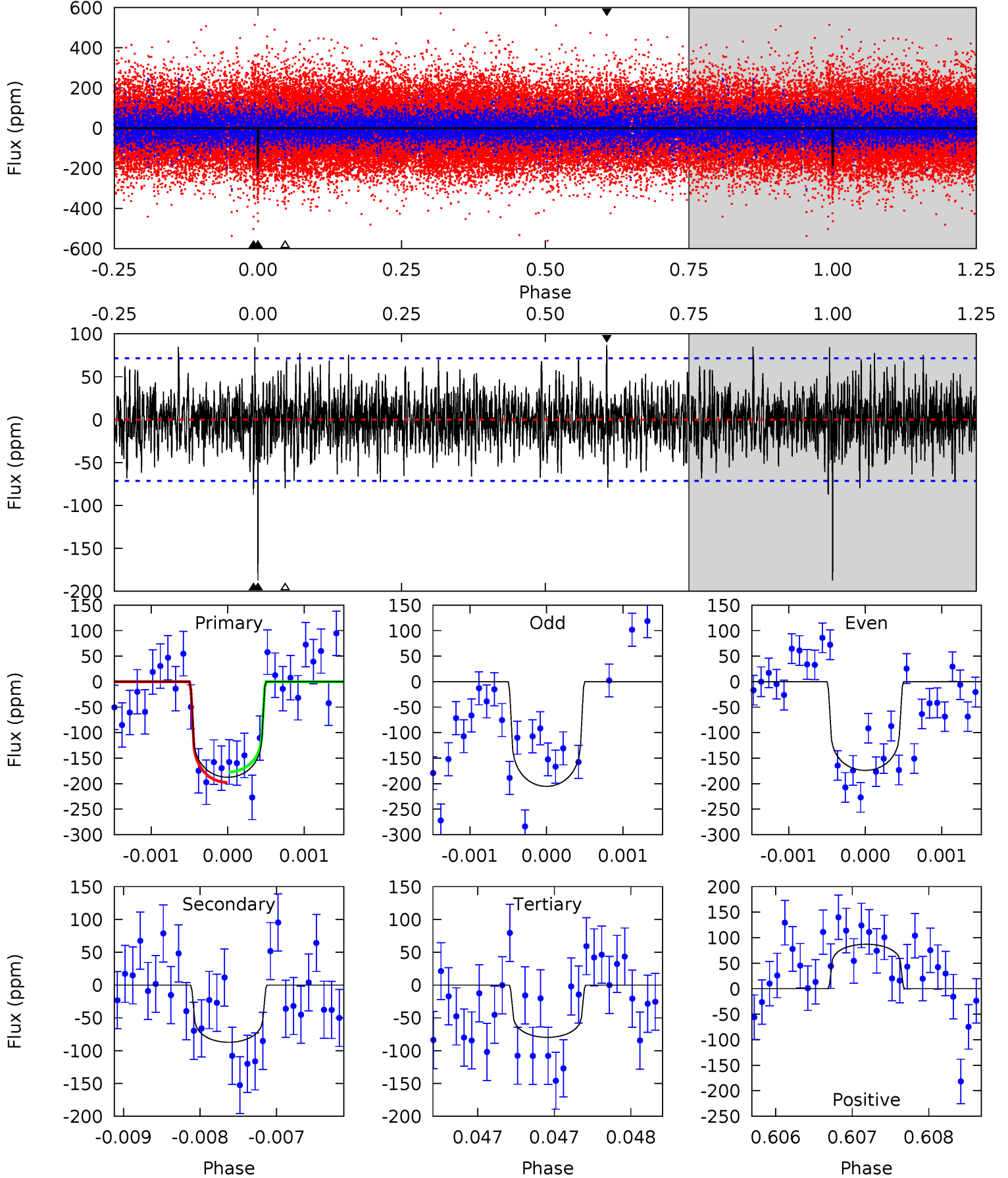
TCE 010057110-01 P=580.313104 Days  $T_0=160.271717$  (BKJD)



# DV Model-Shift Uniqueness Test

010057110-01, P = 580.320383 Days, E = 160.256759 Days

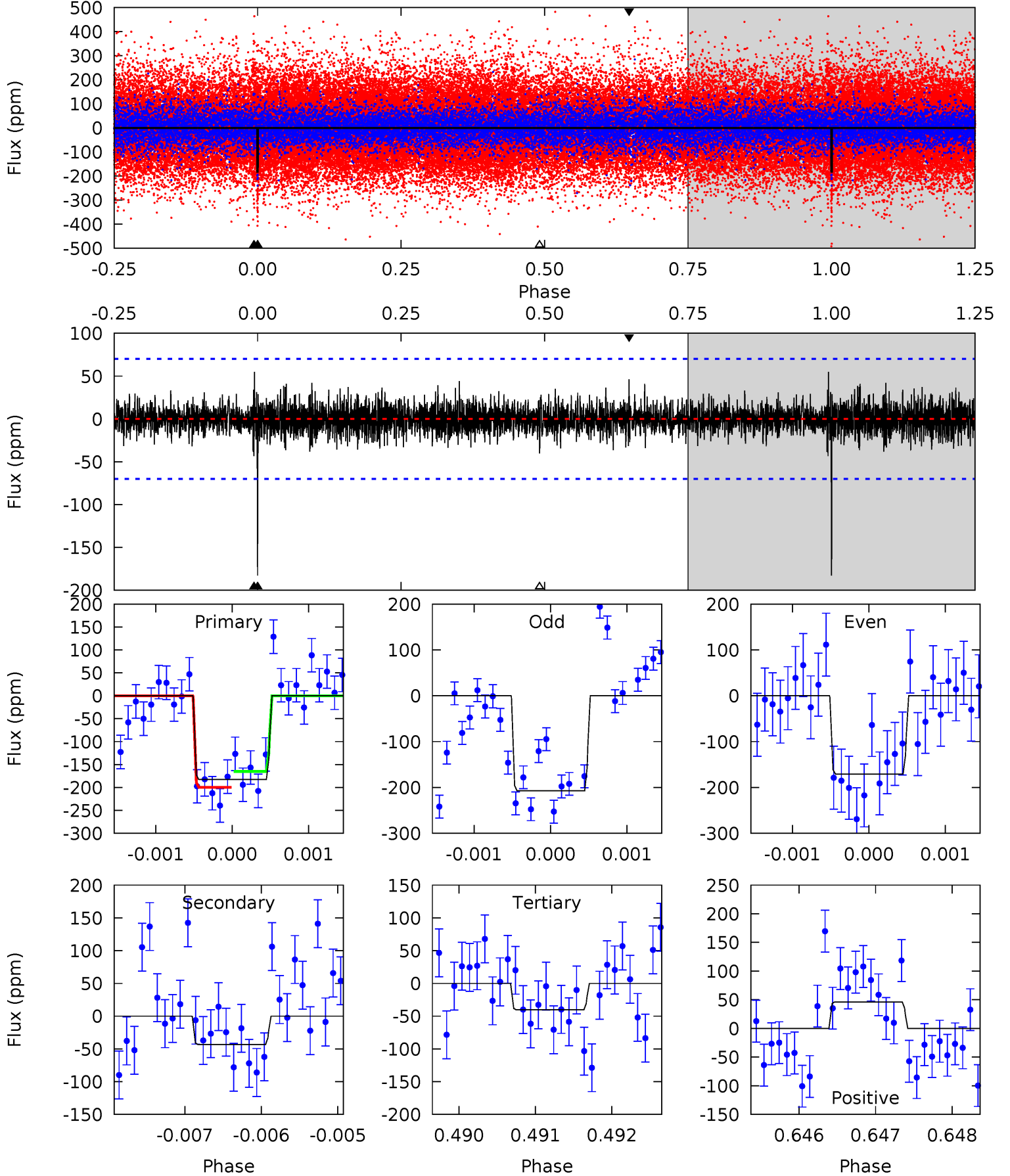
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.3	6.67	6.10	6.66	5.47	3.32	1.77	8.24	7.68	0.57	0.01	1.12	0.90	0.32	0.78



# Alt Model-Shift Uniqueness Test

010057110-01,  $P = 580.313104$  Days,  $E = 160.271717$  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
14.3	3.38	3.16	3.61	5.48	3.34	0.87	11.1	10.7	0.23	-0.22	1.34	0.88	0.23	1.36



### Stellar Parameters For KIC 010057110

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6131^{+167}_{-167}$	$3.951^{+0.273}_{-0.117}$	$-0.220^{+0.300}_{-0.300}$	$1.861^{+0.383}_{-0.623}$	$1.129^{+0.198}_{-0.179}$	$0.247^{+0.426}_{-0.085}$
	+3%/-3%	+7%/-3%	+136%/-136%	+21%/-33%	+18%/-16%	+173%/-35%
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 010057110-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-87 \pm 13$	$2.74^{+1.28}_{-1.02}$	$429^{+26}_{-34}$	$5089^{+1087}_{-657}$	$12965^{+19173}_{-6770}$
Alt.	$-43 \pm 13$	$2.61^{+1.11}_{-0.96}$	$427^{+29}_{-38}$	$4443^{+878}_{-579}$	$6540^{+10455}_{-3489}$

$T_{max}$  = 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

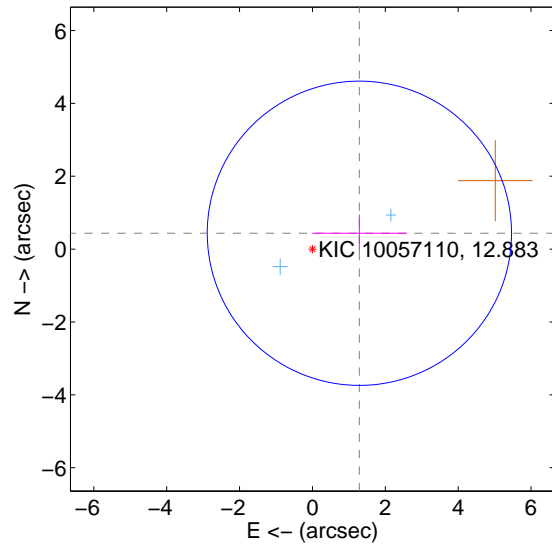
Supplemental centroid analysis for 010057110-01. Kepler magnitude: 12.88. Transit SNR 8.11

There are 2 quarters with good PRF difference image offsets

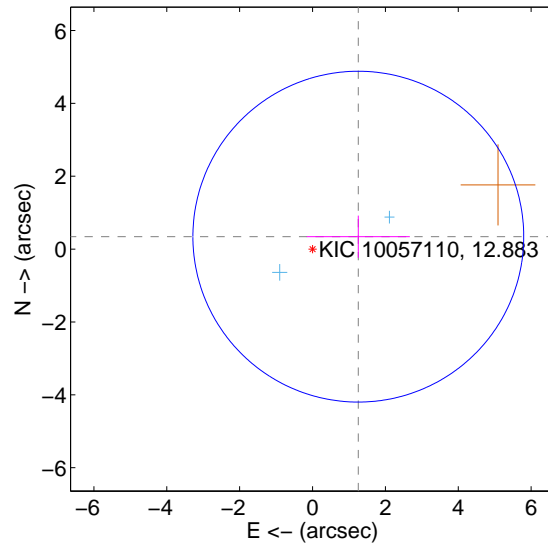
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.360 \pm 1.392$	0.98	$-1.289 \pm 1.298$	$0.435 \pm 0.513$
PRF-fit source offset from KIC position	$1.302 \pm 1.513$	0.86	$-1.256 \pm 1.414$	$0.341 \pm 0.579$
photometric centroid source offset	$0.63 \pm 1.12$	0.56	$0.50 \pm 1.23$	$0.38 \pm 0.91$

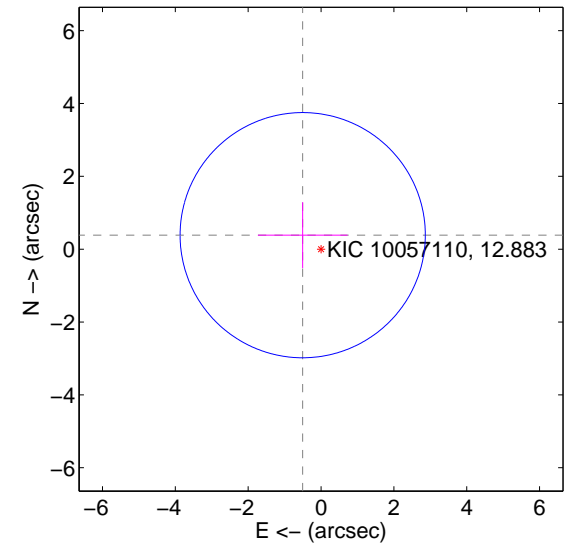
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

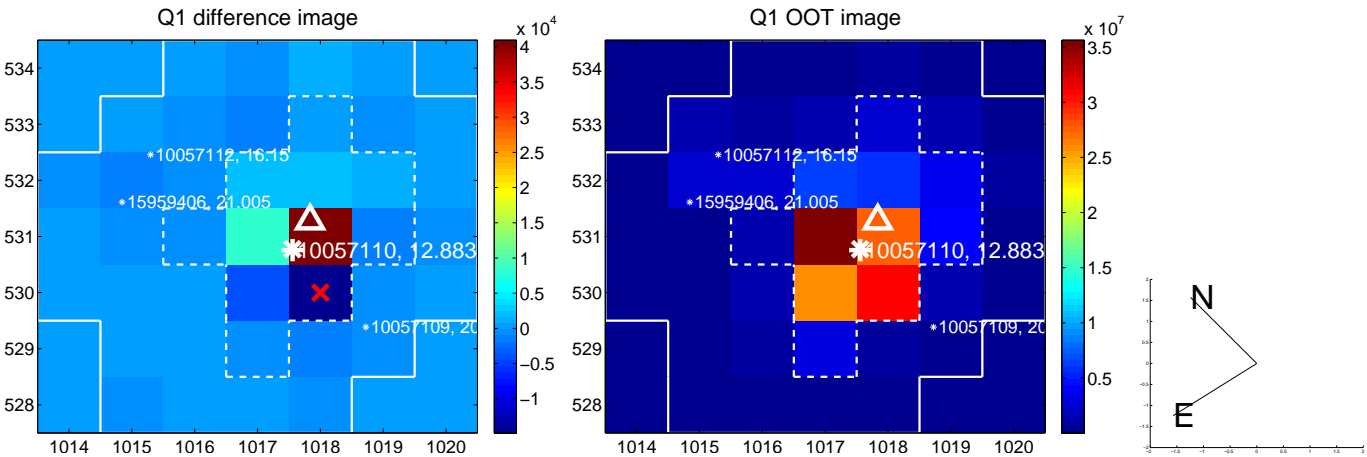


offset from photometric centroids



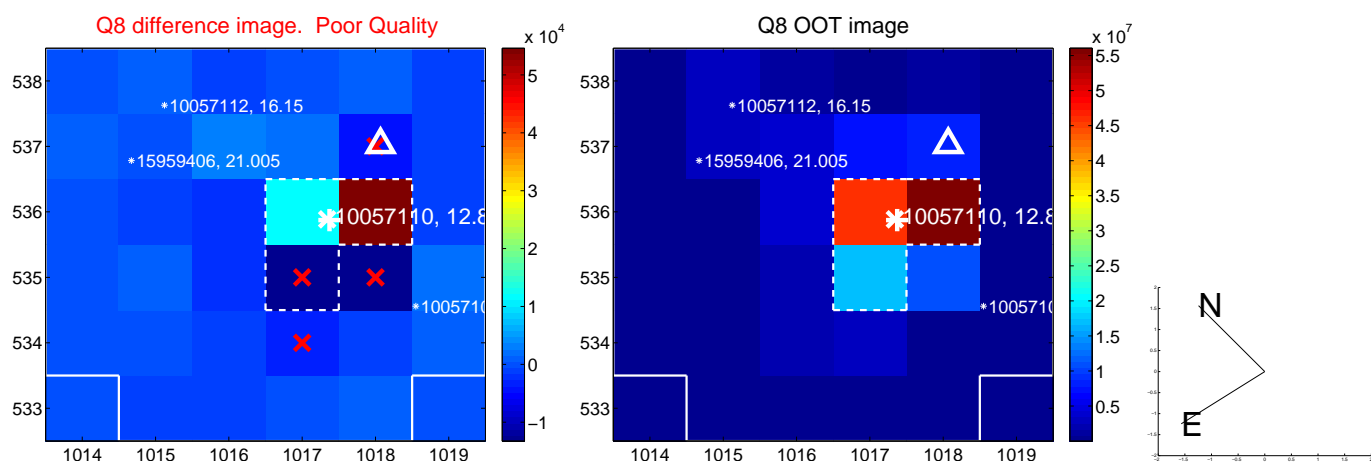
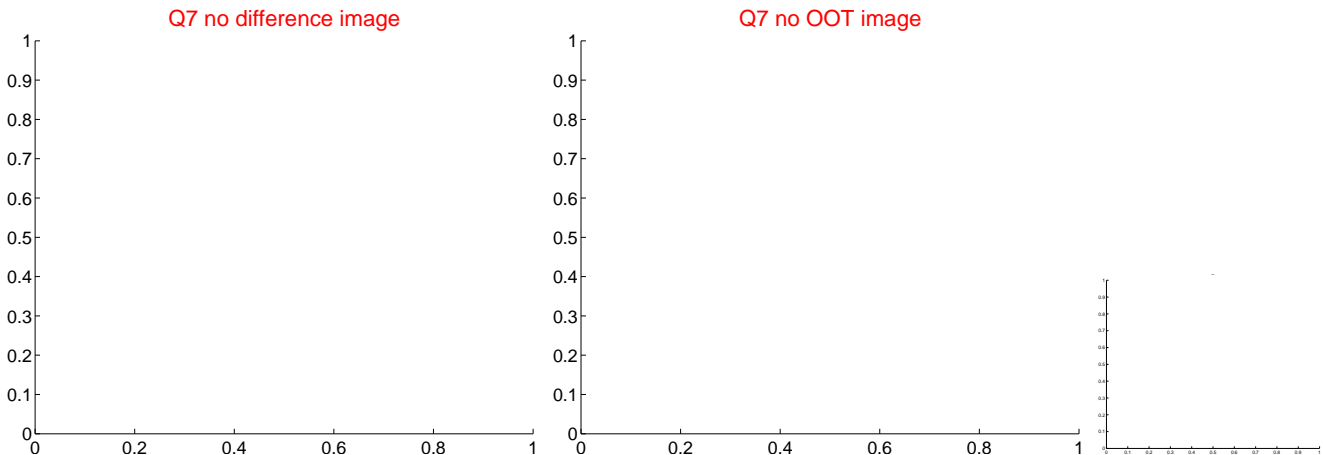
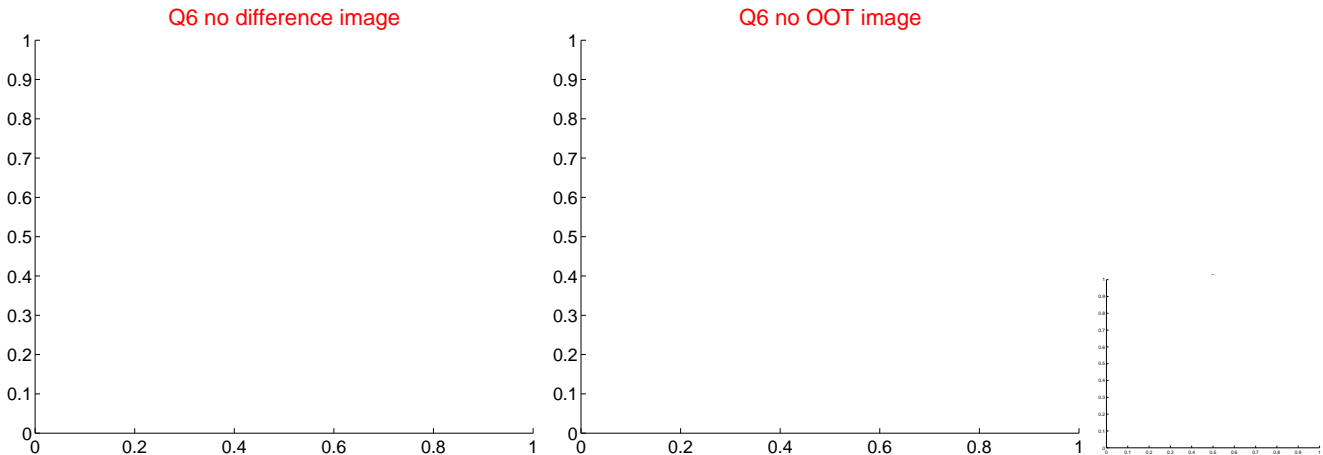
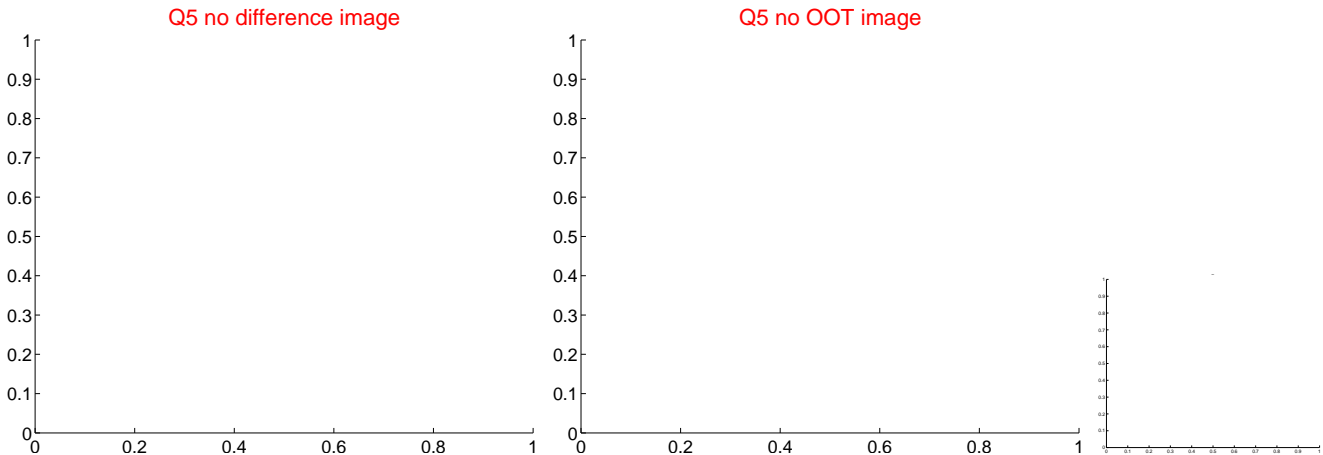
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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





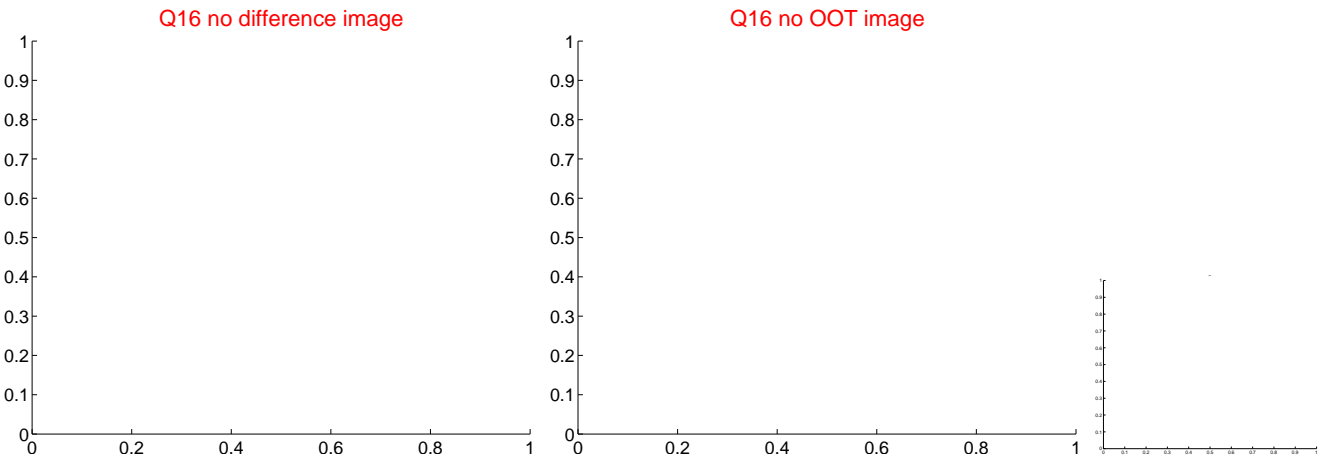
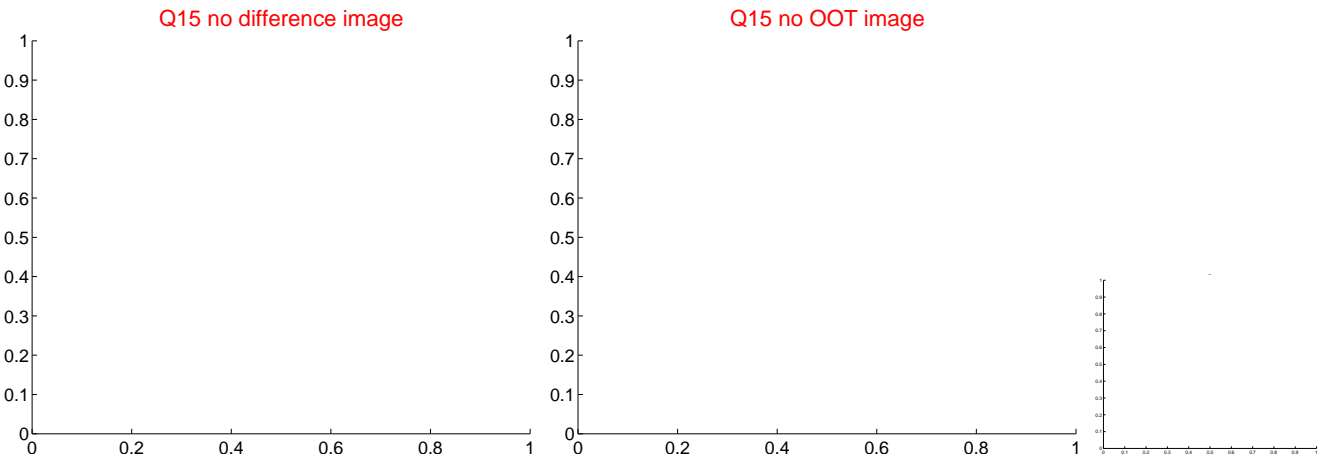
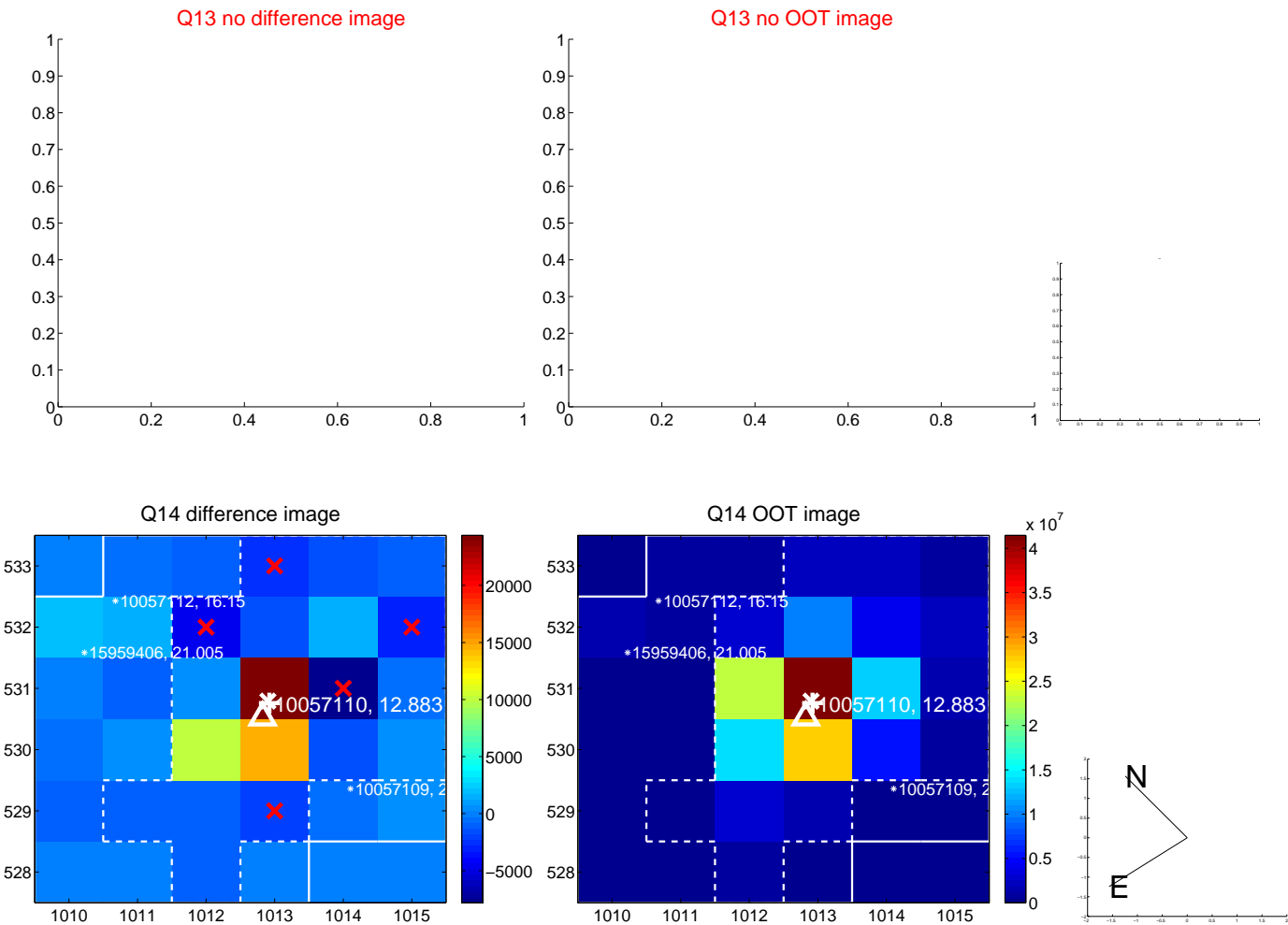
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



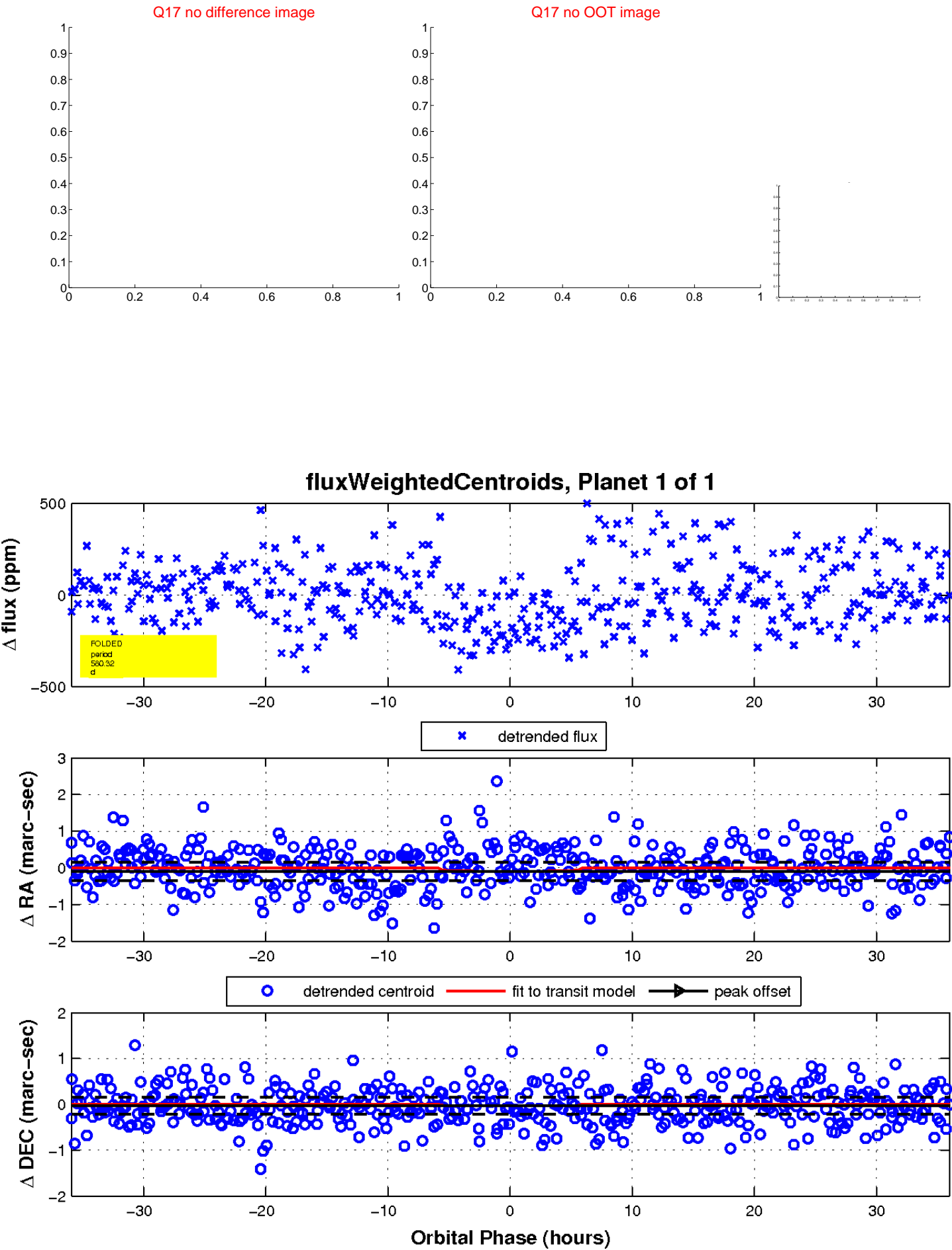
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

