

# KIC 009715319

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009715319-01	OBS	No	459.164681	533.977284	116.6	14.448	8.3	7.7	0.66	5284	0.87	0.30

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009715319-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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.

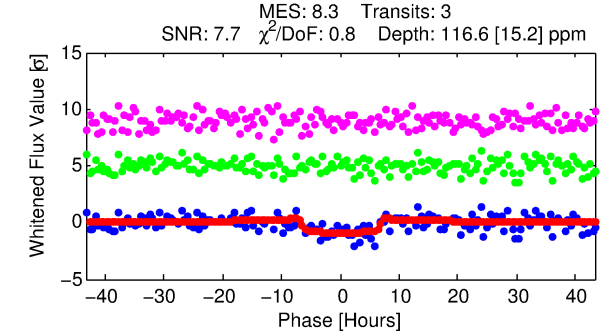
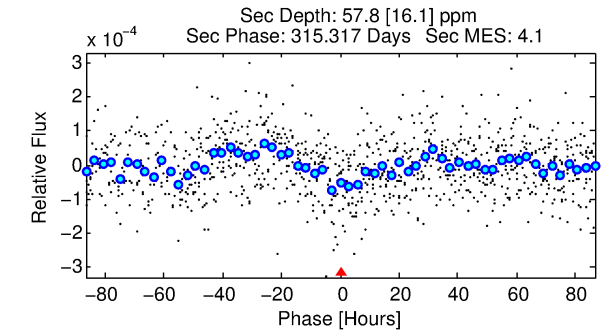
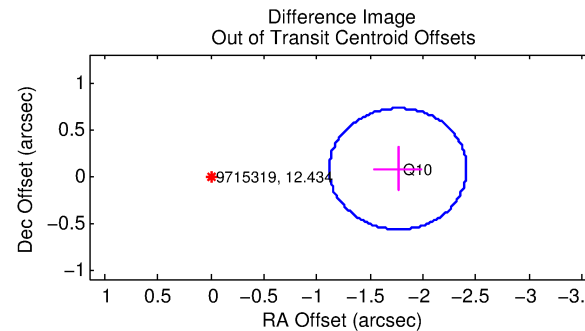
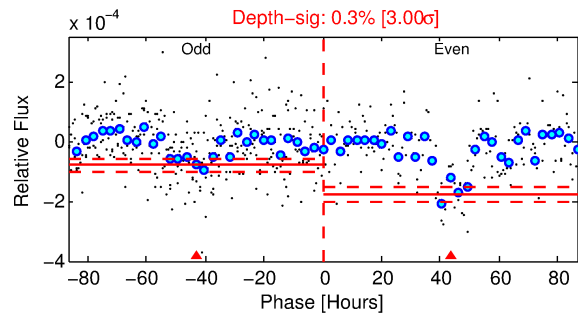
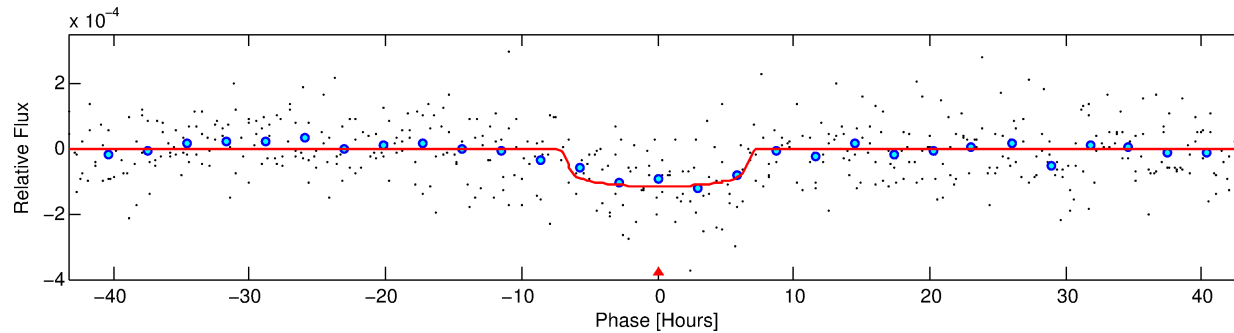
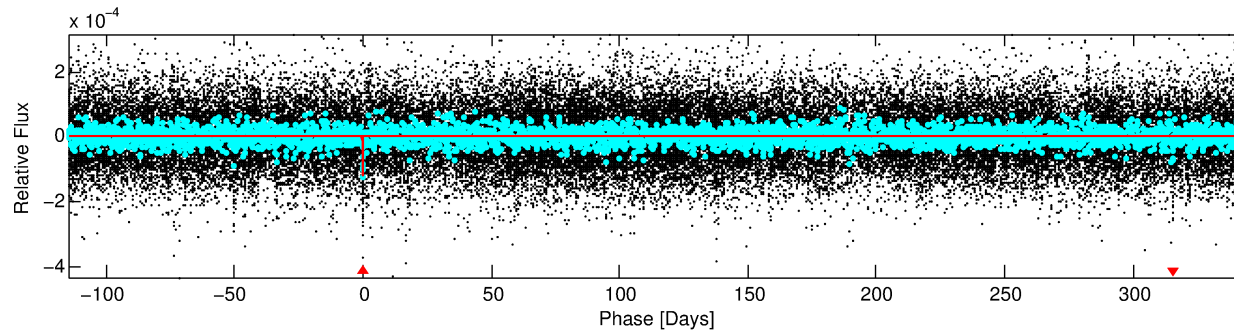
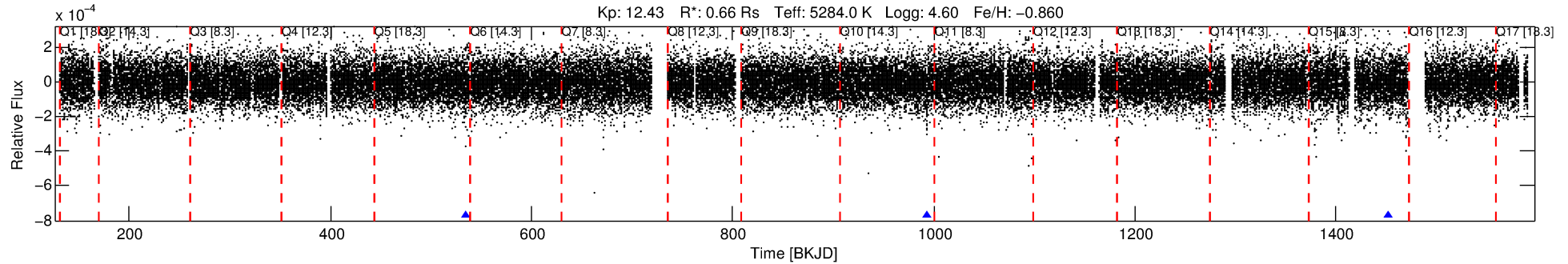
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009715319-01

No Significant Match Found

# DV One-Page Summary

KIC: 9715319 Candidate: 1 of 1 Period: 459.165 d



## DV Fit Results:

Period = 459.16468 [0.01767] d  
Epoch = 533.9773 [0.0227] BKJD  
Rp/R\* = 0.0120 [0.0021]  
a/R\* = 102.20 [79.67]  
b = 0.92 [0.13]  
Seff = 0.30 [0.06]  
Teq = 189 [9] K  
Rp = 0.87 [0.18] Re  
a = 1.0072 [0.0877] AU  
Ag = 42383.86 [20016.90] [2.12σ]  
Teffp = 4199 [494] K [8.11σ]

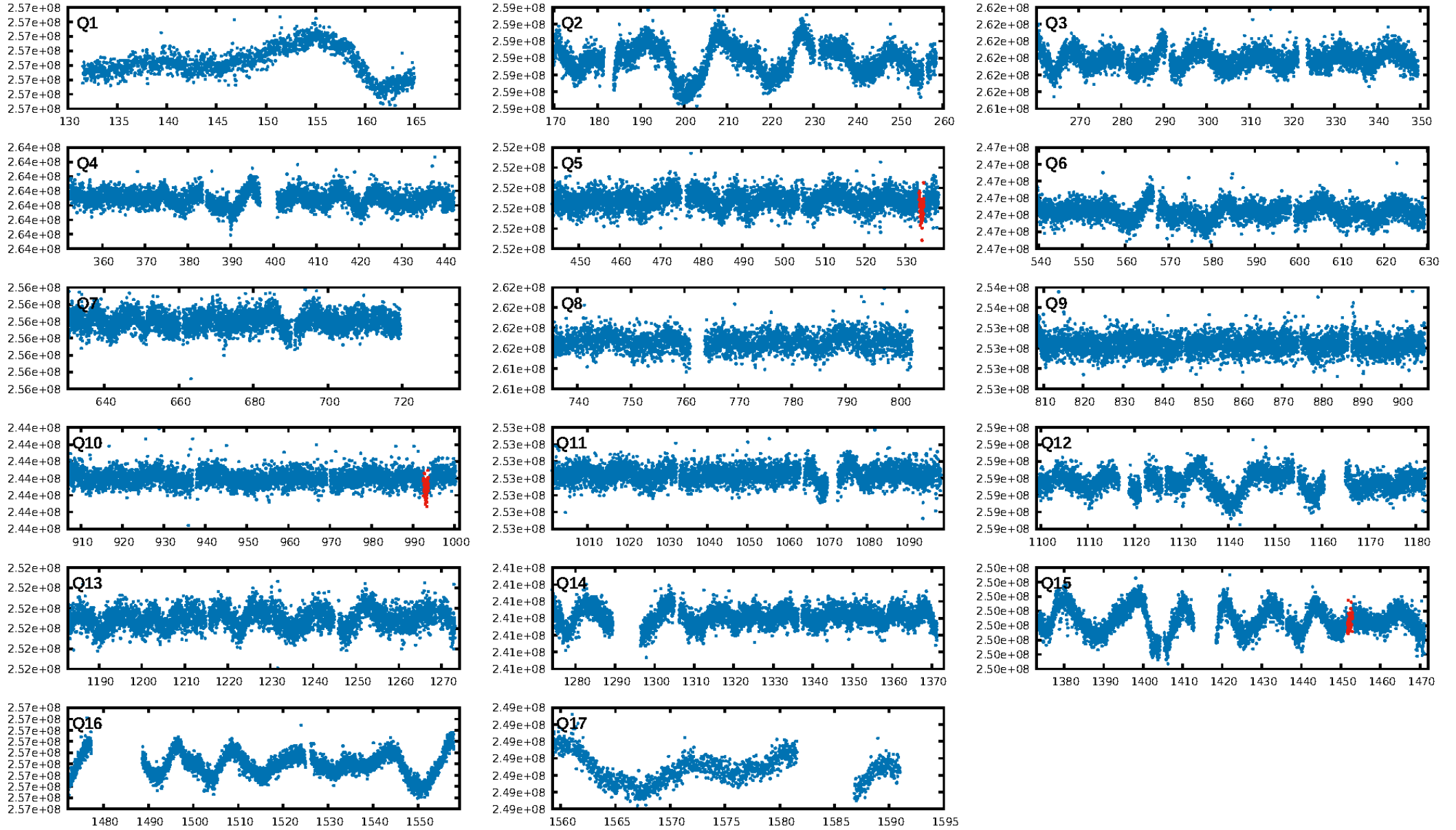
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 2.6%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.37e-16  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -21.1  
Centroid-sig: 25.1%  
Centroid-so: 0.901 arcsec [0.72σ]  
OotOffset-rm: 1.765 arcsec [8.18σ]  
KicOffset-rm: 1.997 arcsec [9.19σ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [3/3]

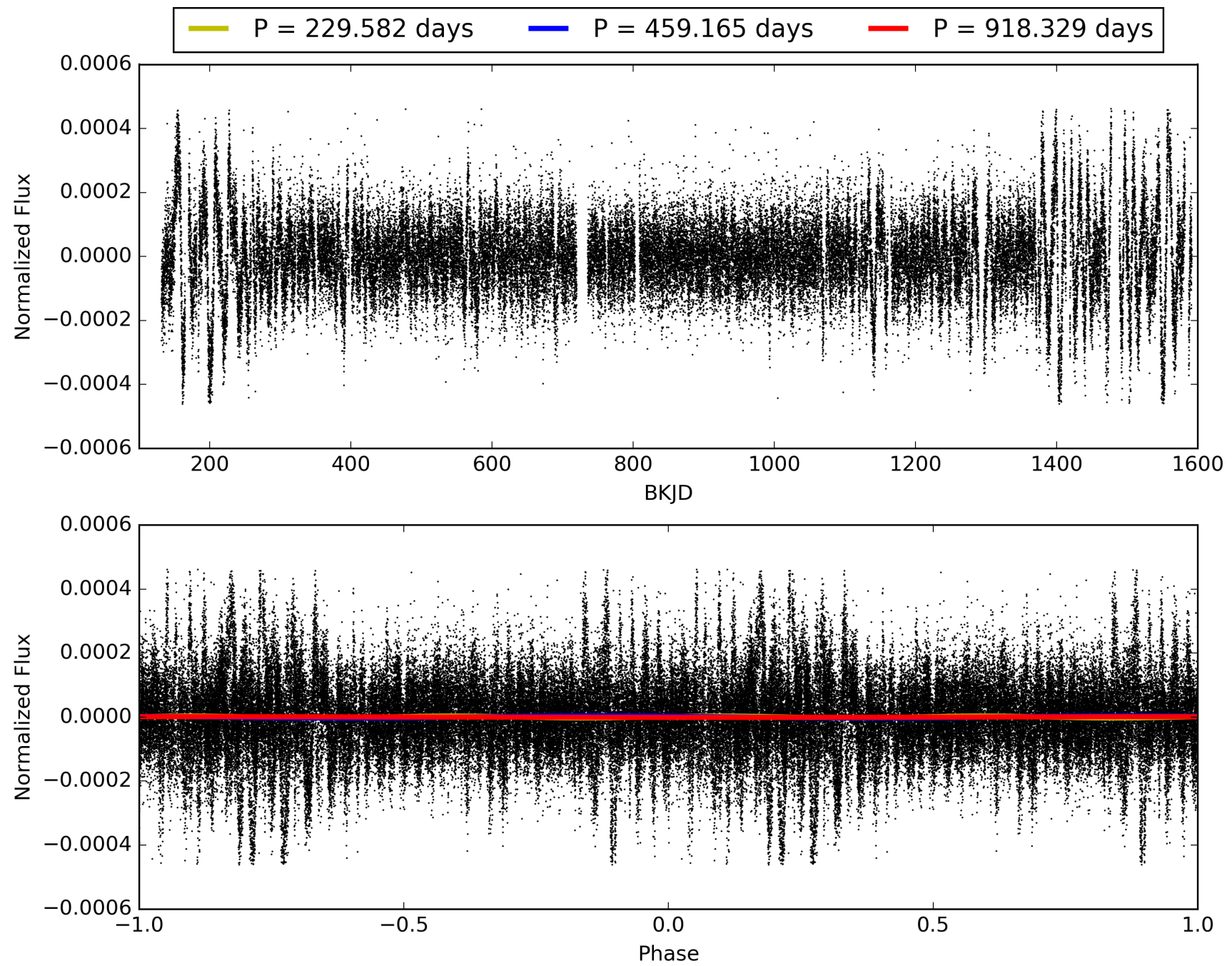
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 16:12:11 Z

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

# TCE 009715319-01, PDC Light Curves

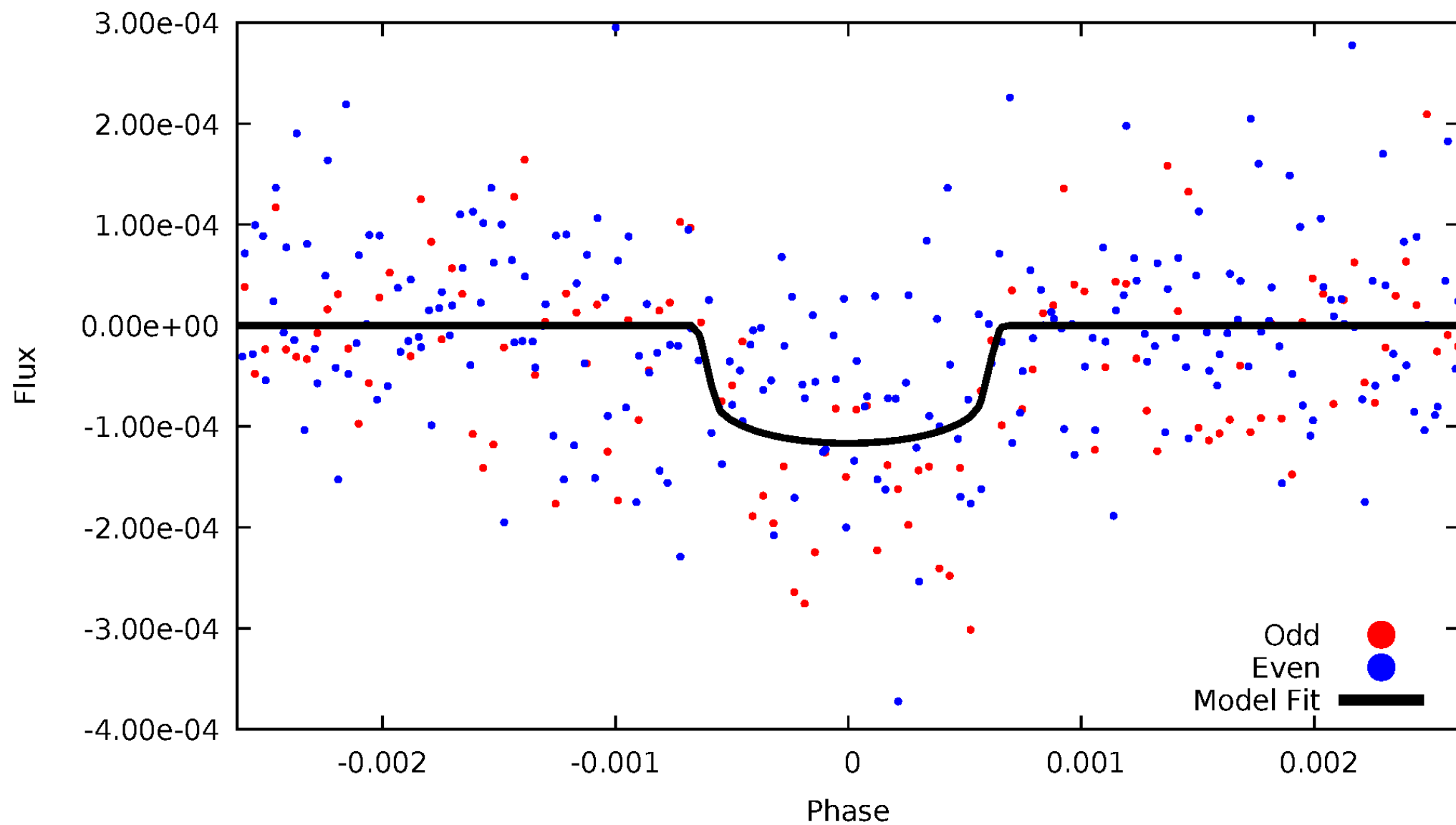


# TCE 009715319-01



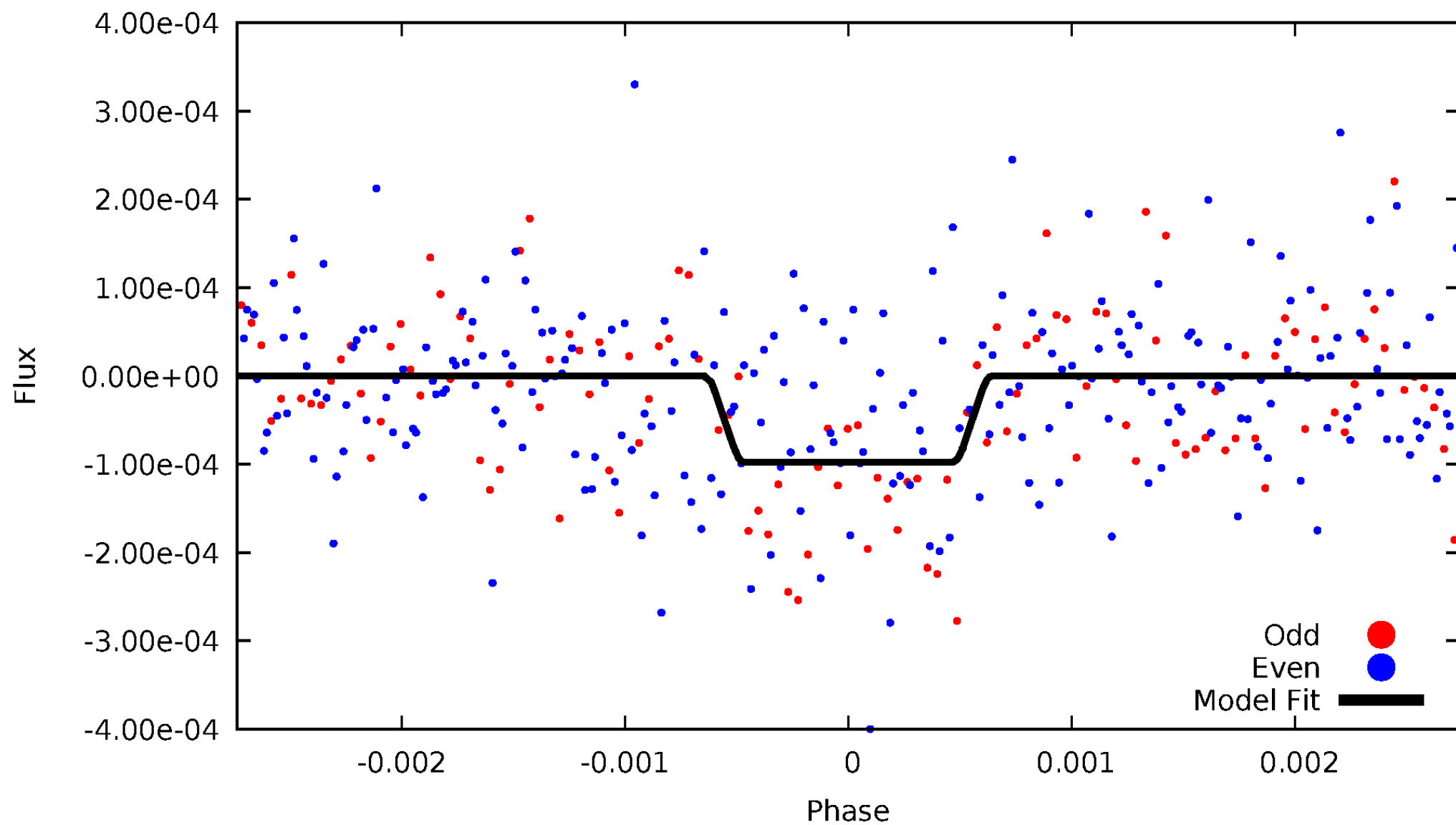
# DV Odd/Even

TCE 009715319-01



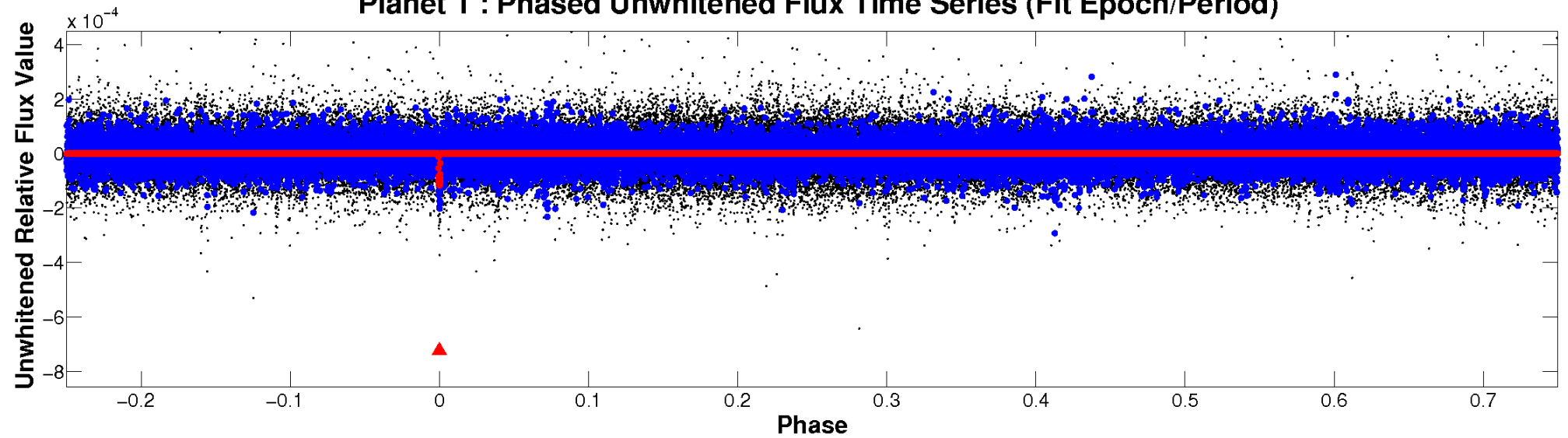
# ALT Odd/Even

TCE 009715319-01

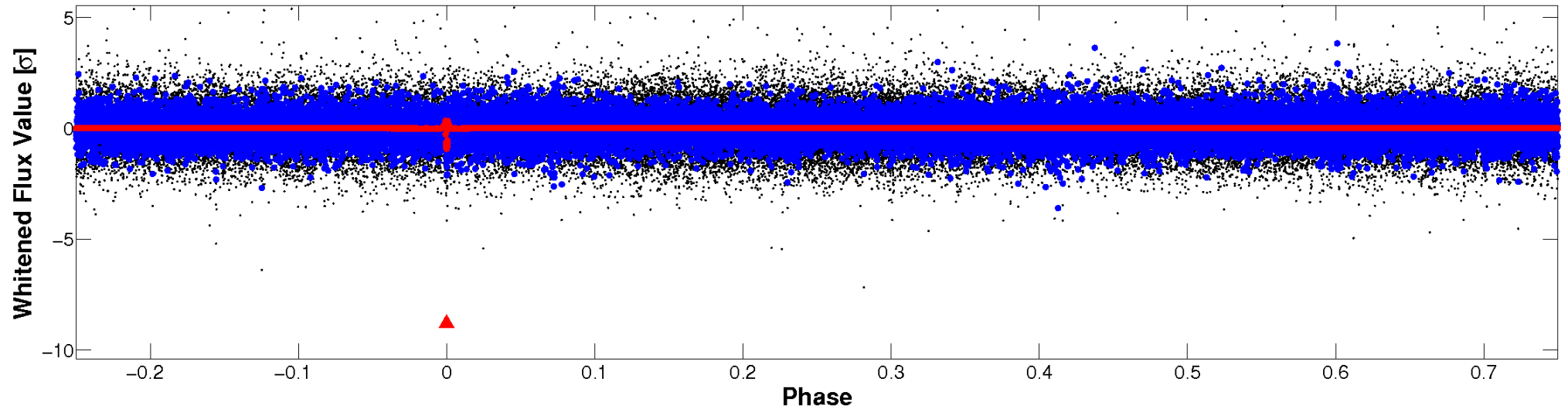


# Non-Whitened Vs. Whitened Light Curve

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



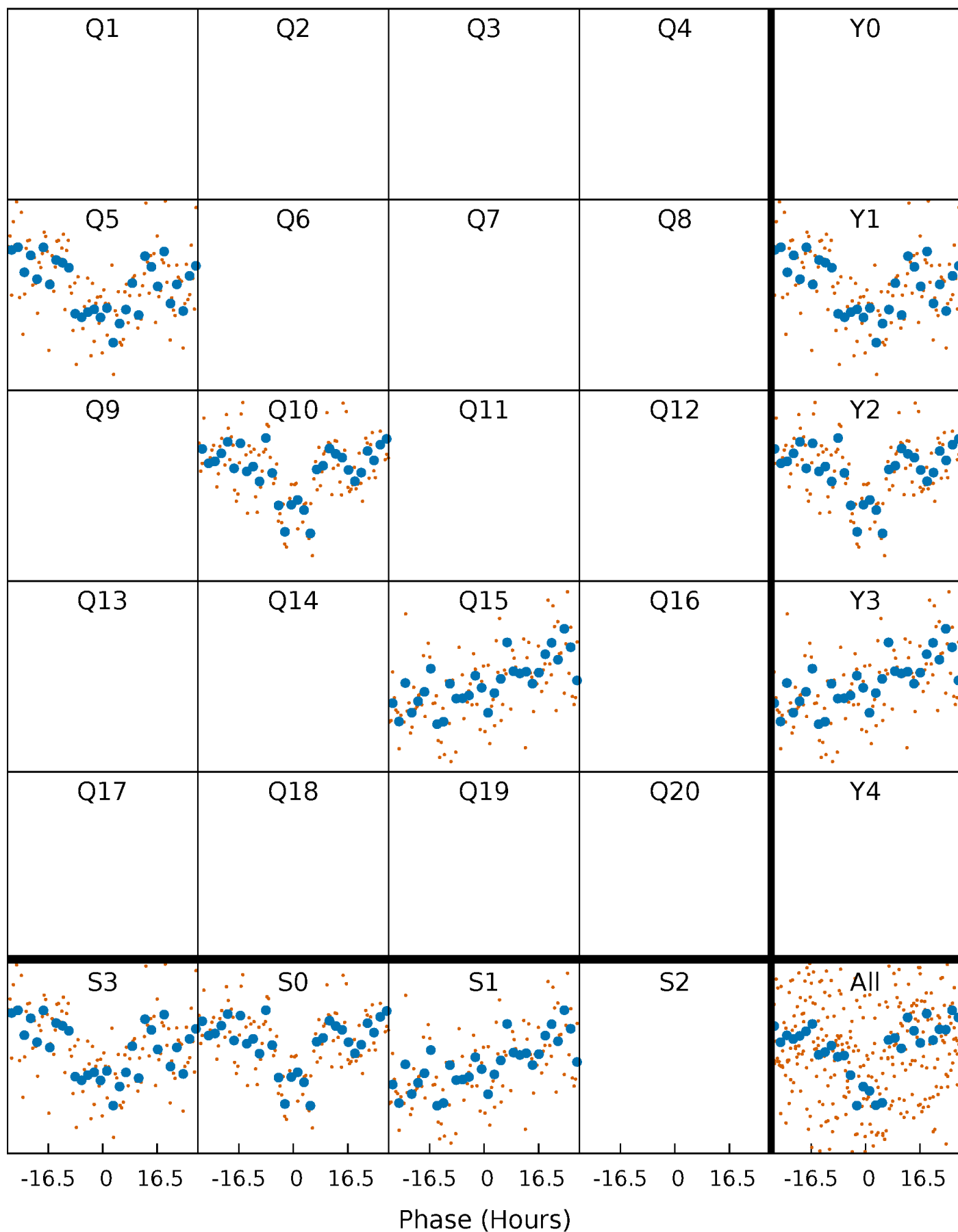
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

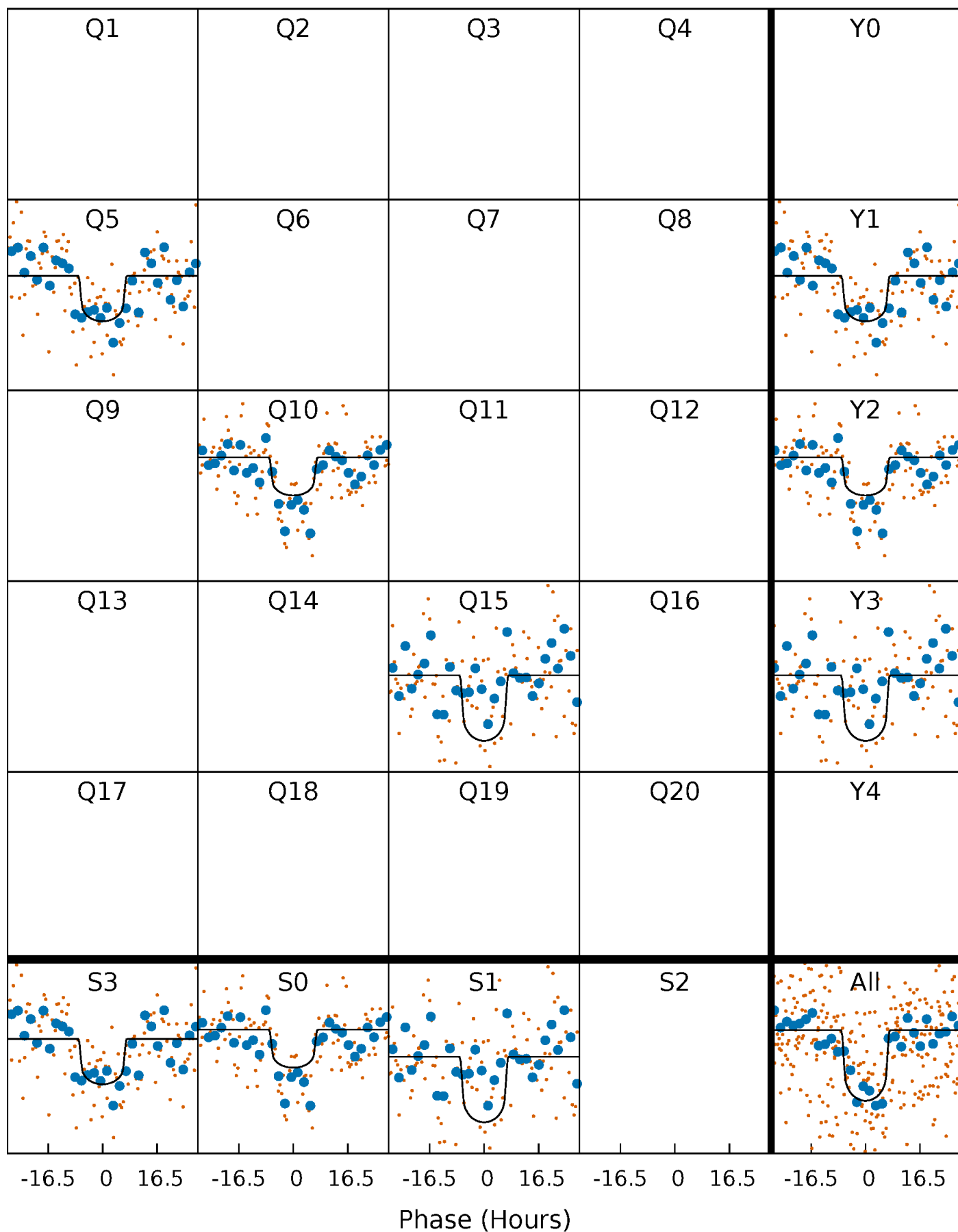
TCE 009715319-01 P=459.164681 Days  $T_0=533.977284$  (BKJD)





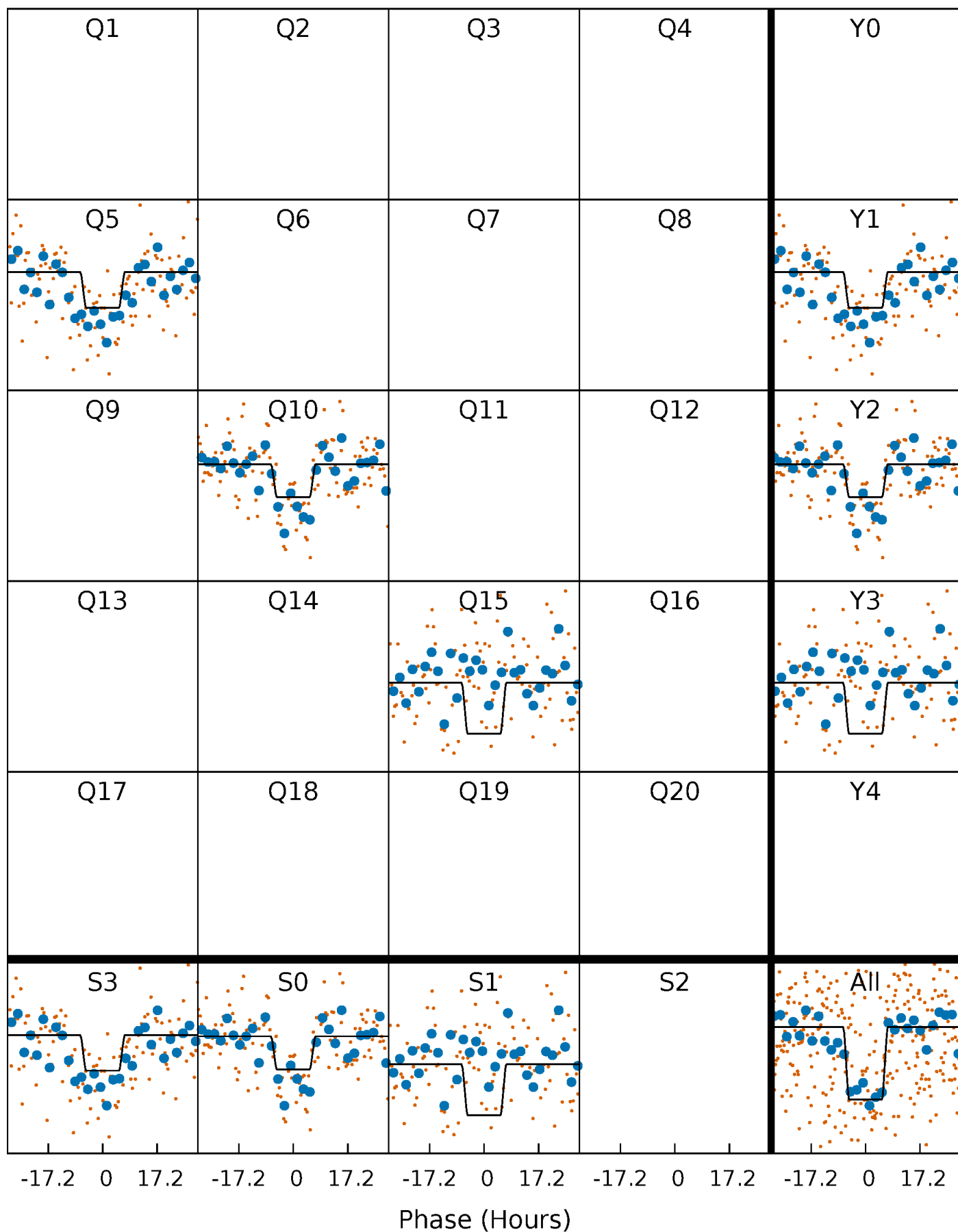
# DV Quarter-Phased Transit Curves

TCE 009715319-01 P=459.164681 Days  $T_0=533.977284$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

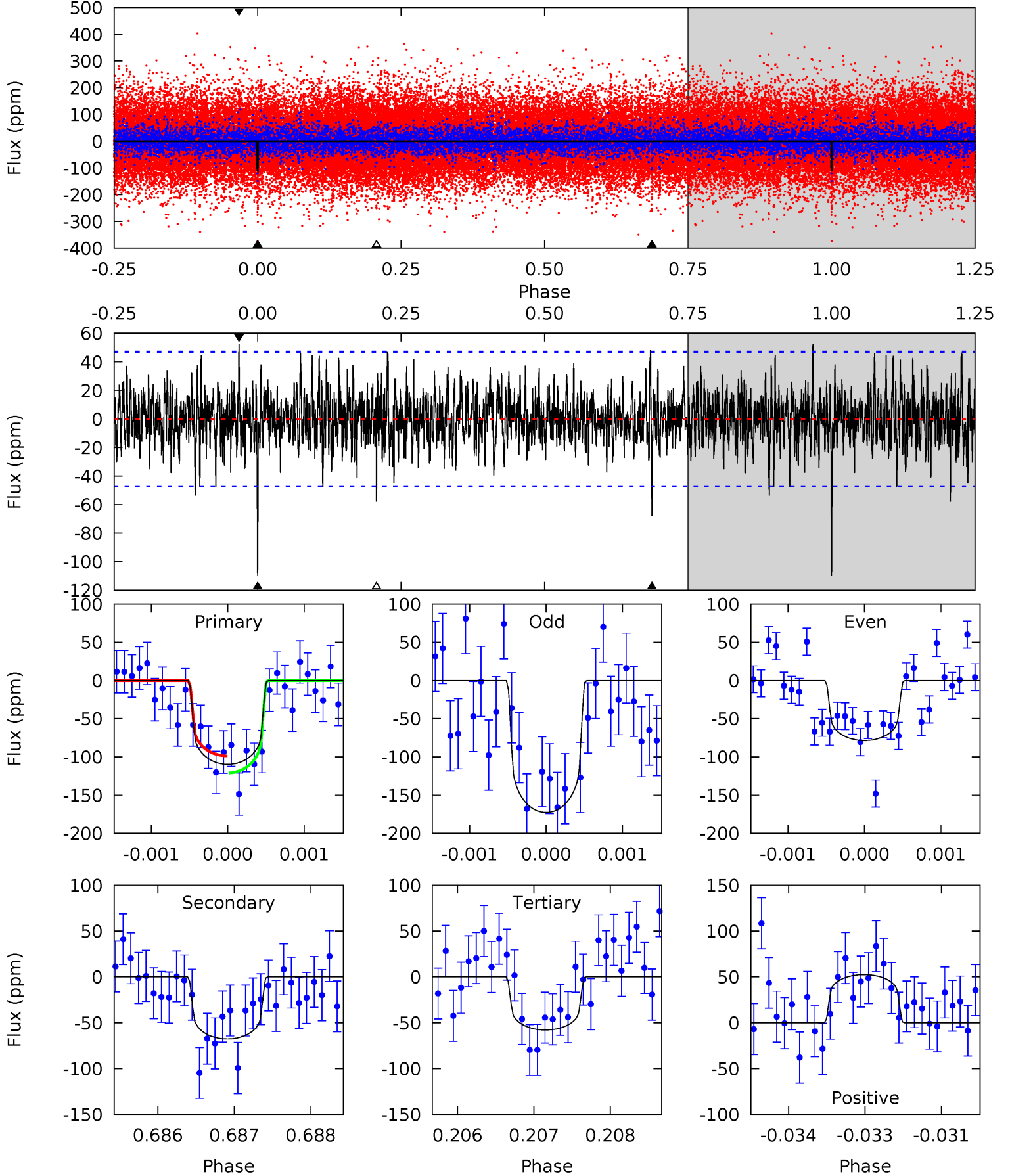
TCE 009715319-01 P=459.128471 Days  $T_0=534.030508$  (BKJD)



# DV Model-Shift Uniqueness Test

009715319-01, P = 459.164681 Days, E = 74.812603 Days

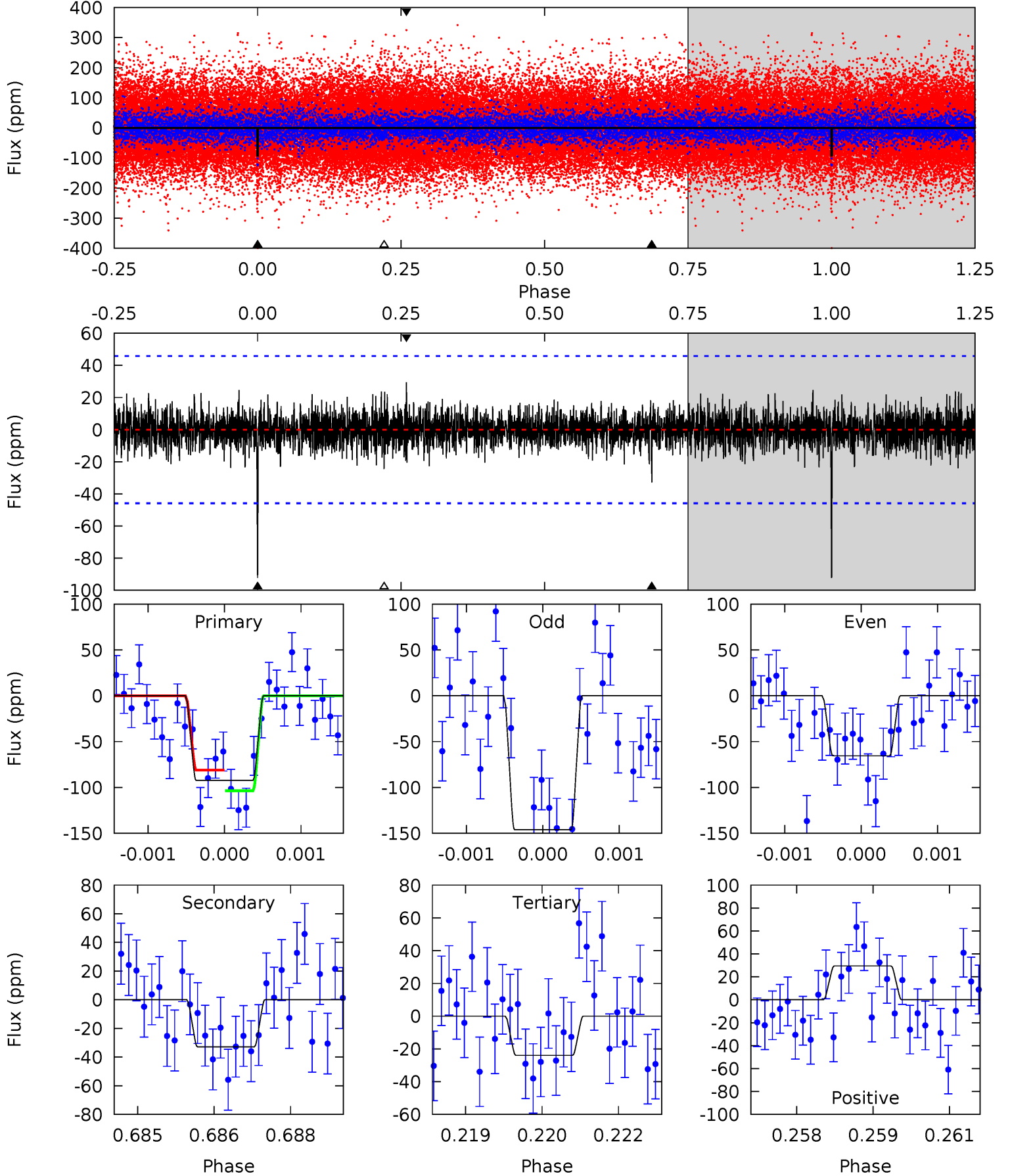
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	7.78	6.65	6.02	5.40	3.22	1.64	5.94	6.57	1.13	1.76	5.13	0.90	0.32	1.28



# Alt Model-Shift Uniqueness Test

009715319-01,  $P = 459.128471$  Days,  $E = 74.902037$  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
10.9	3.88	2.83	3.48	5.41	3.23	0.84	8.08	7.42	1.05	0.40	4.51	0.64	0.24	1.33



### Stellar Parameters For KIC 009715319

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5284^{+173}_{-157}$	$4.604^{+0.078}_{-0.048}$	$-0.860^{+0.350}_{-0.300}$	$0.664^{+0.063}_{-0.056}$	$0.644^{+0.065}_{-0.028}$	$3.107^{+0.854}_{-0.561}$
	+3%/-3%	+2%/-1%	+41%/-35%	+9%/-8%	+10%/-4%	+27%/-18%
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 009715319-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-68 \pm 9$	$0.87^{+0.17}_{-0.15}$	$264^{+10}_{-10}$	$4510^{+407}_{-308}$	$50472^{+24487}_{-16146}$
Alt.	$-33 \pm 8$	$0.71^{+0.16}_{-0.15}$	$263^{+10}_{-11}$	$4248^{+526}_{-365}$	$37274^{+26789}_{-14912}$

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

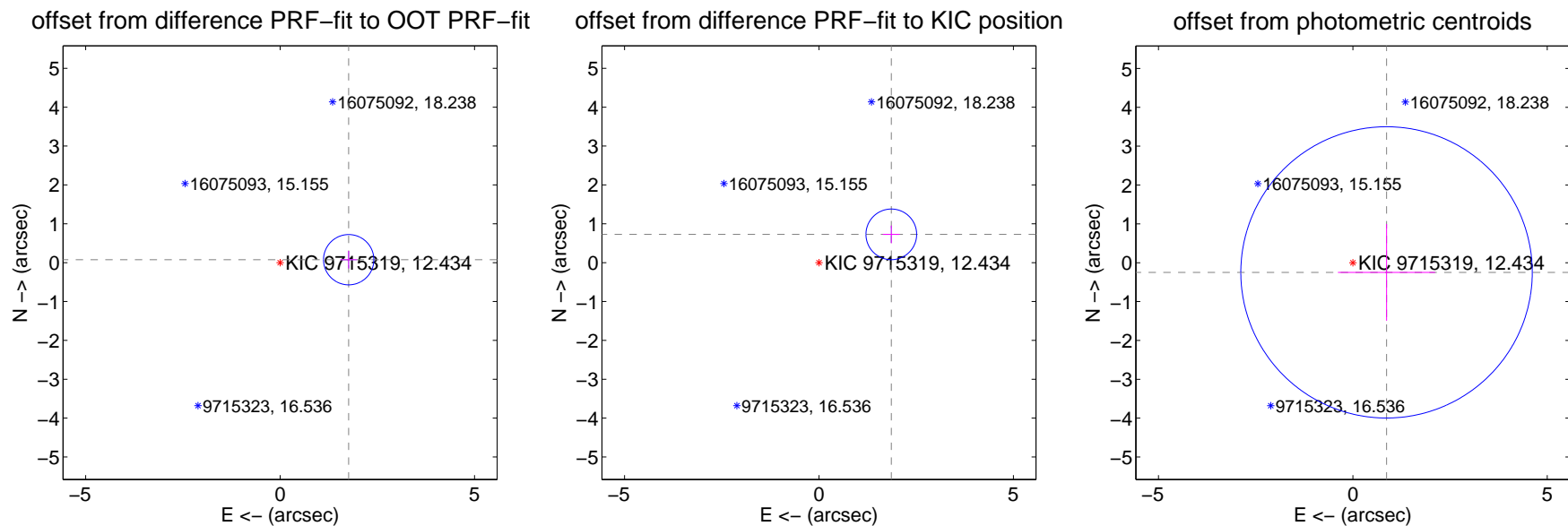
## DV Centroid Data

Supplemental centroid analysis for 009715319-01. Kepler magnitude: 12.43. Transit SNR 7.72

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.66 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.765 \pm 0.216$	8.18	$-1.764 \pm 0.216$	$0.076 \pm 0.227$
PRF-fit source offset from KIC position	$1.997 \pm 0.217$	9.19	$-1.860 \pm 0.216$	$0.728 \pm 0.227$
photometric centroid source offset	$0.90 \pm 1.25$	0.72	$-0.87 \pm 1.25$	$-0.25 \pm 1.25$



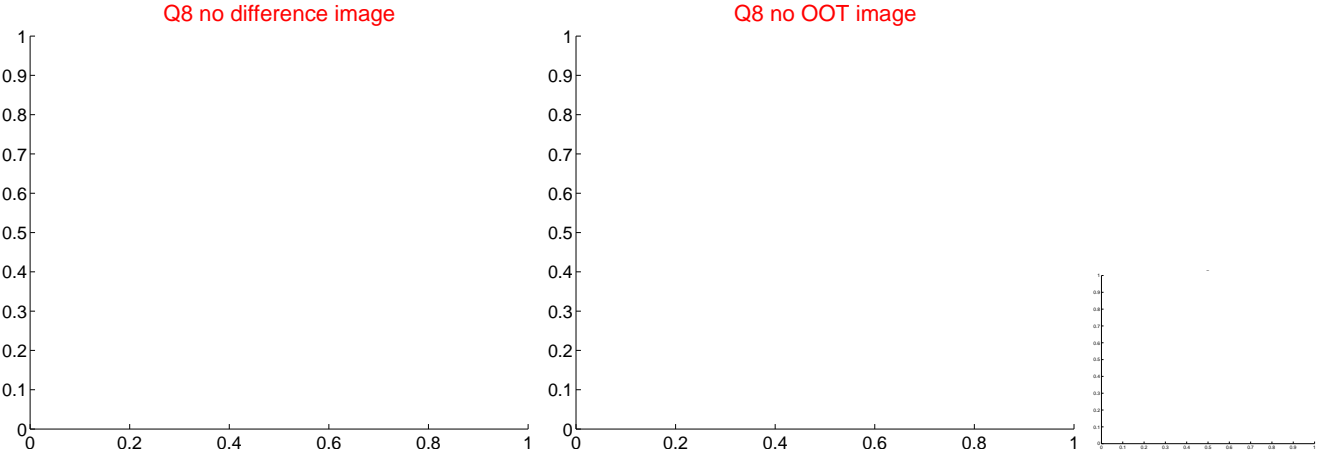
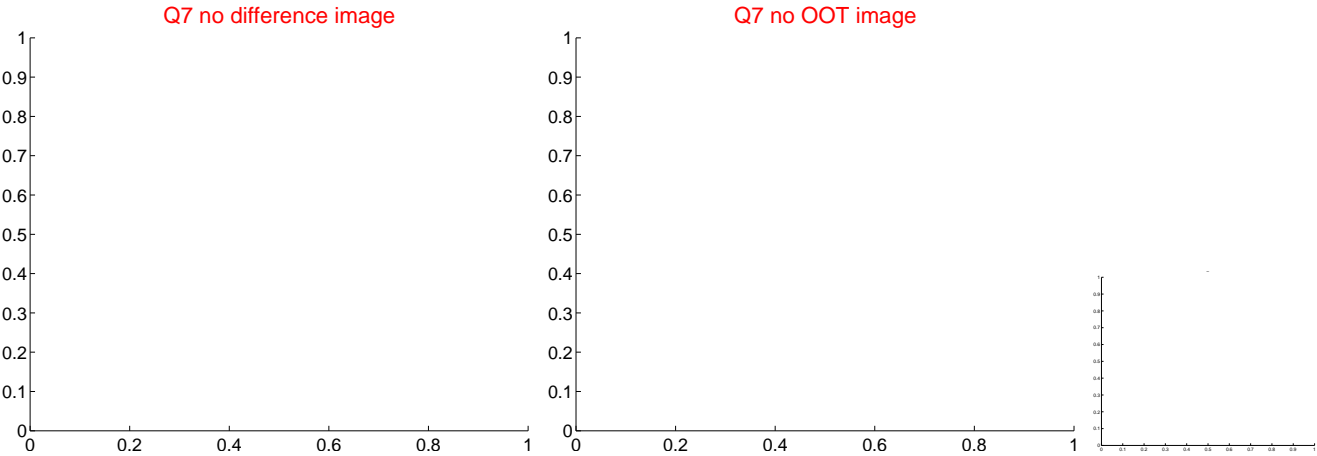
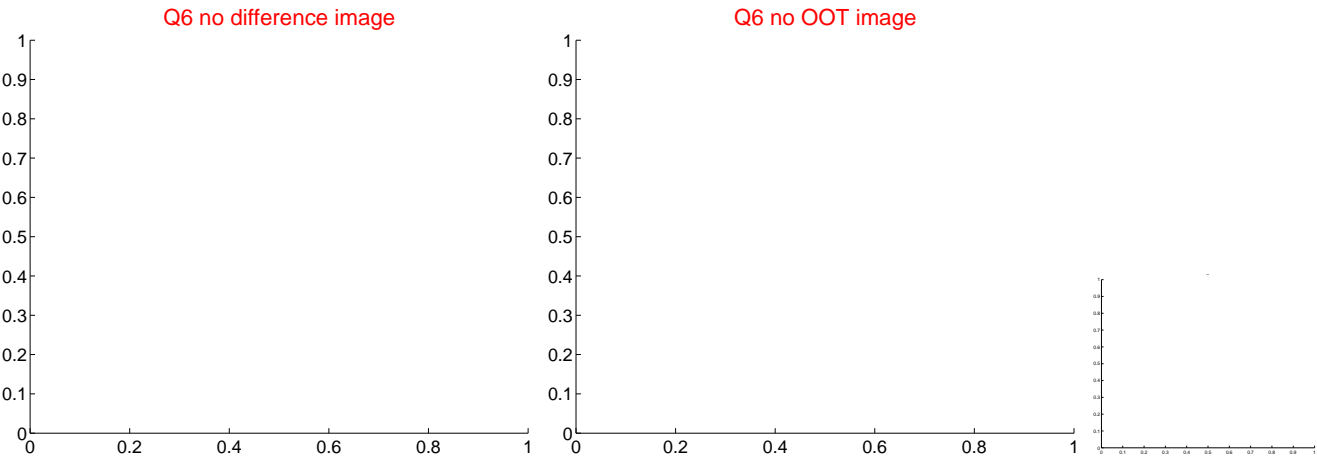
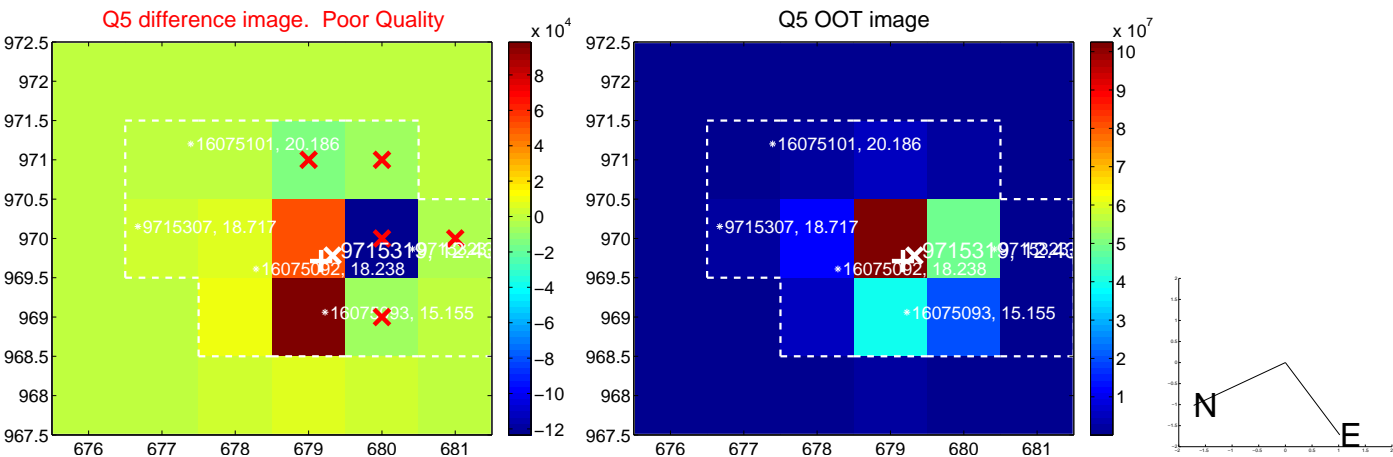
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

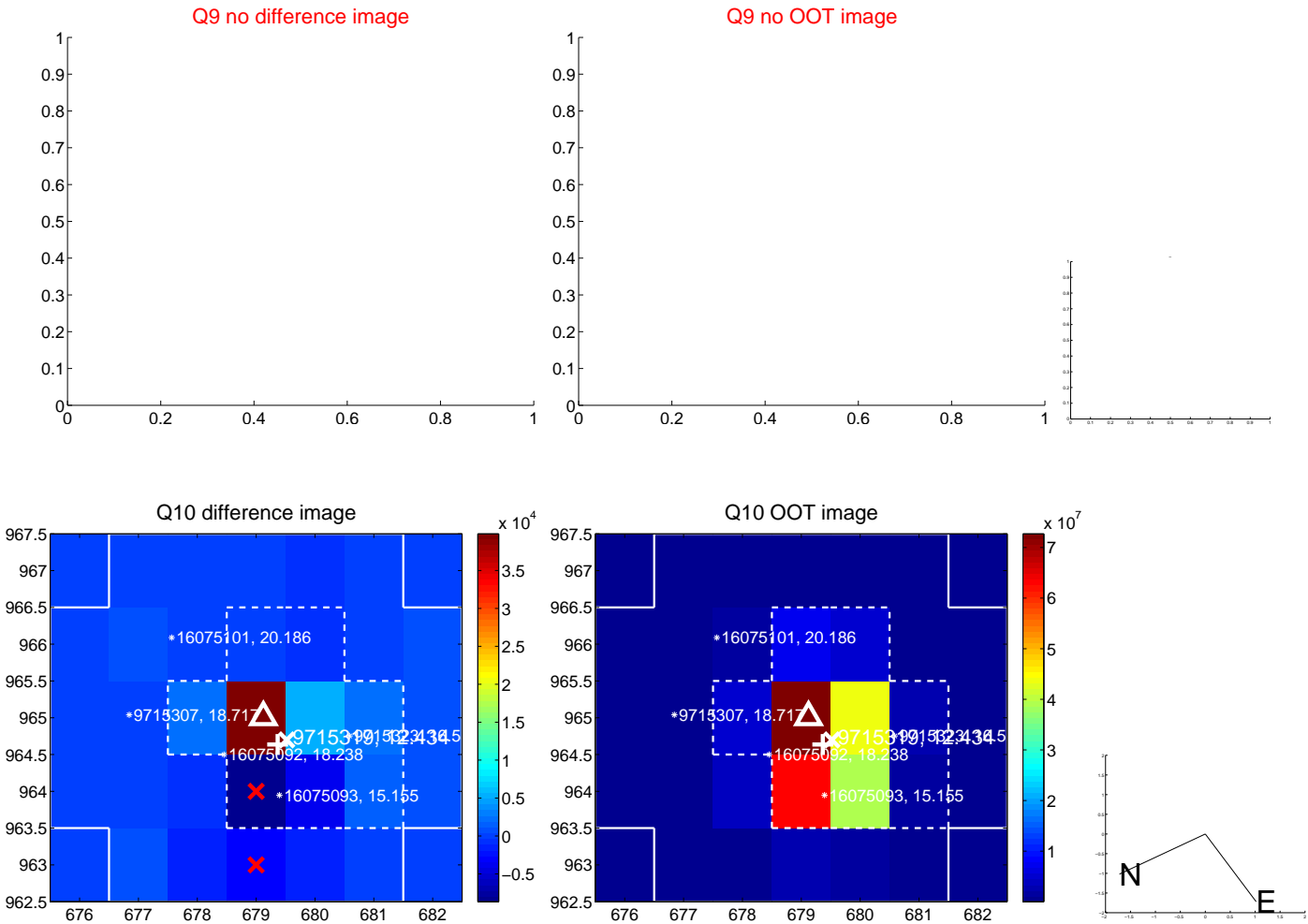




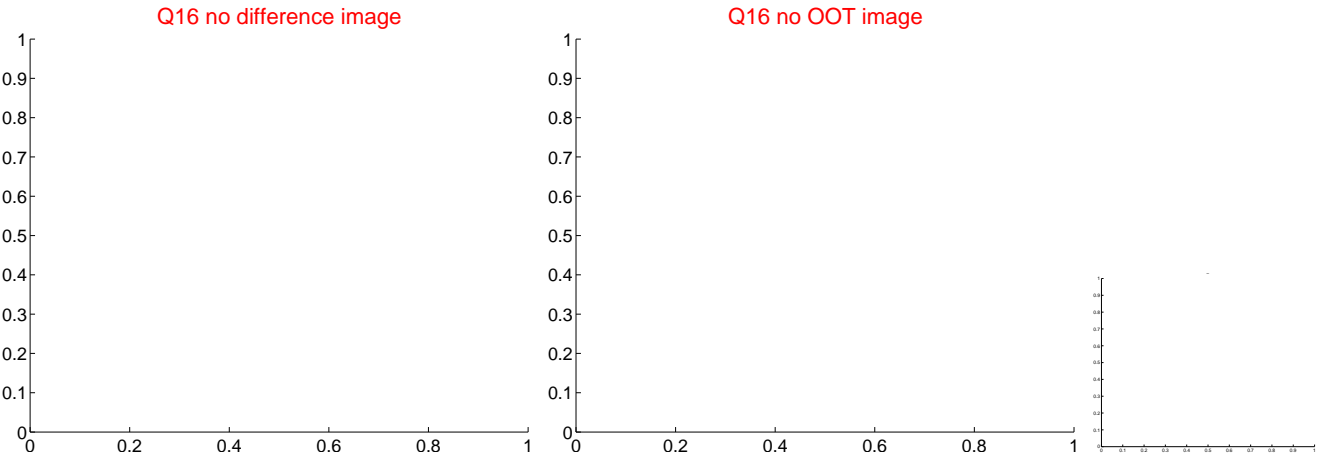
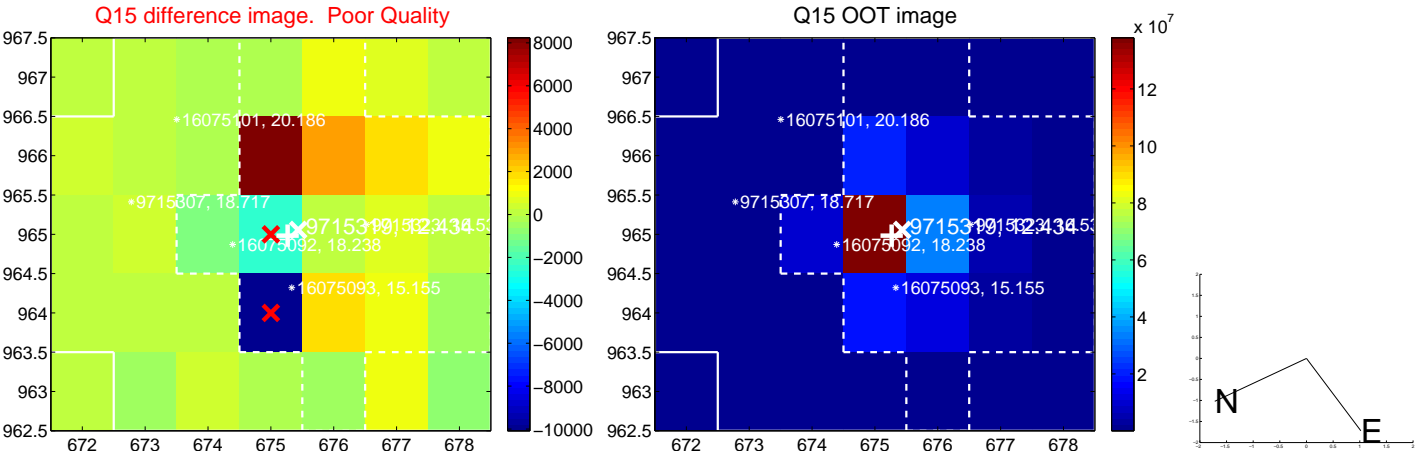
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



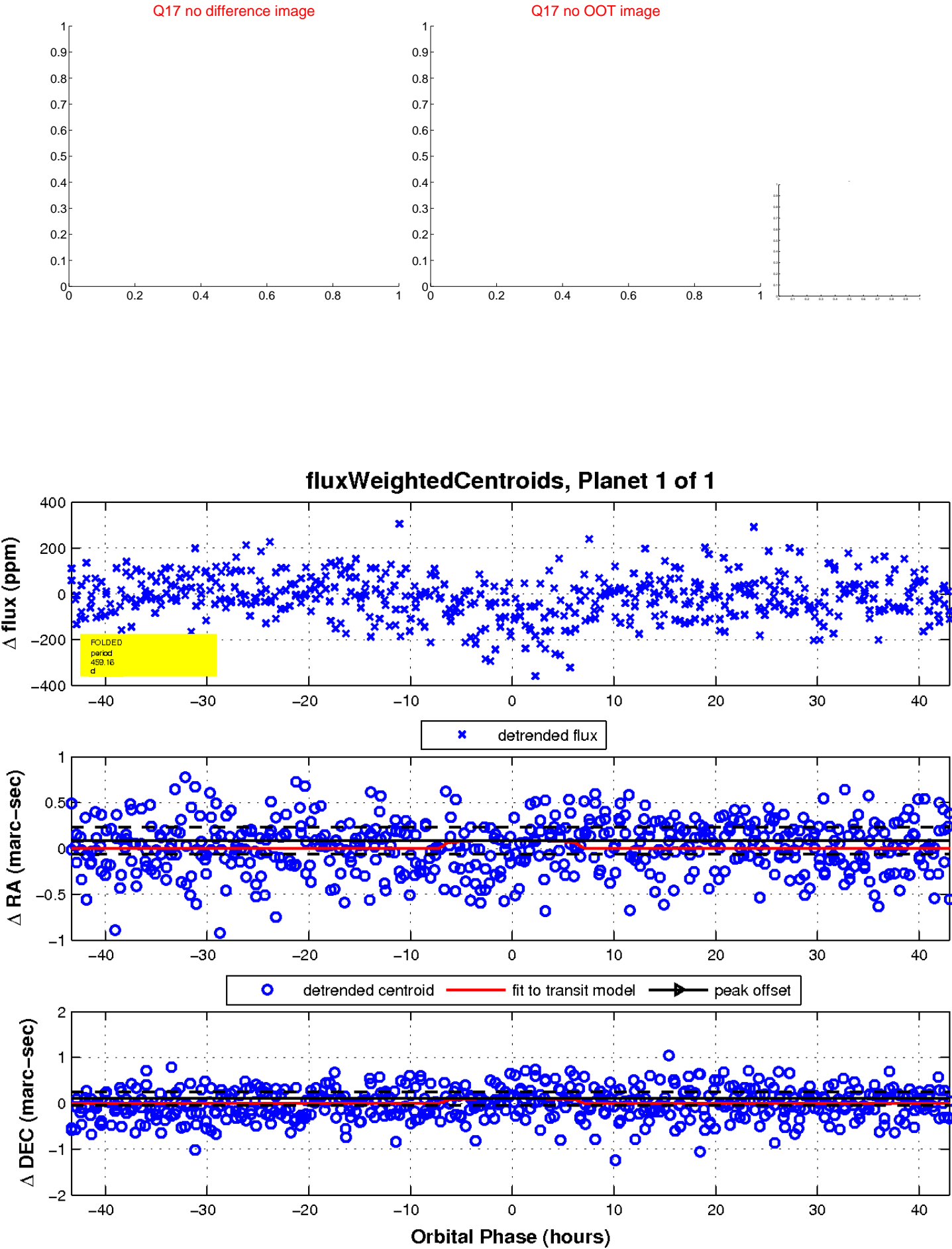
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

