

# KIC 005609593

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005609593-01	OBS	2834.01	136.205540	234.721453	1182.0	5.656	16.0	16.8	0.68	4648	2.48	0.89

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005609593-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT

**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 005609593-01

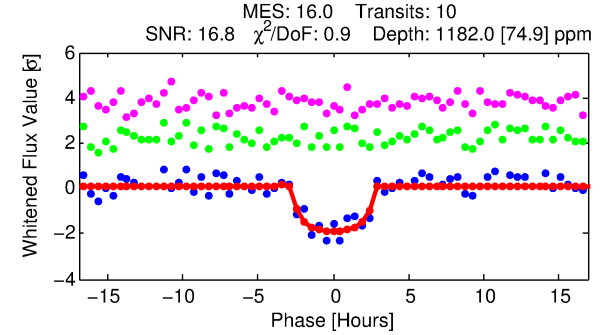
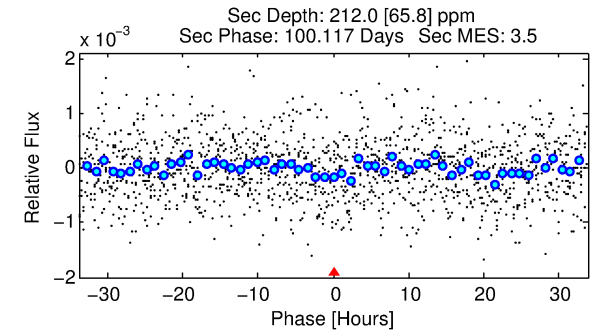
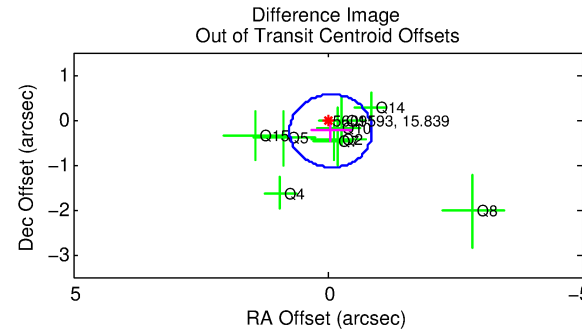
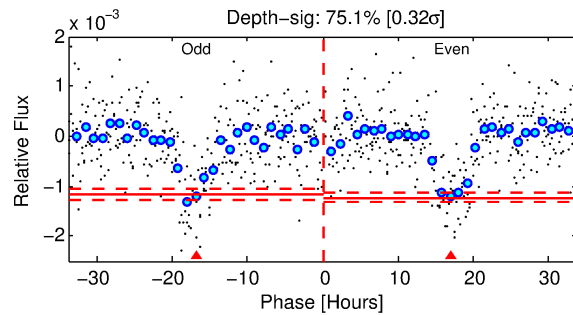
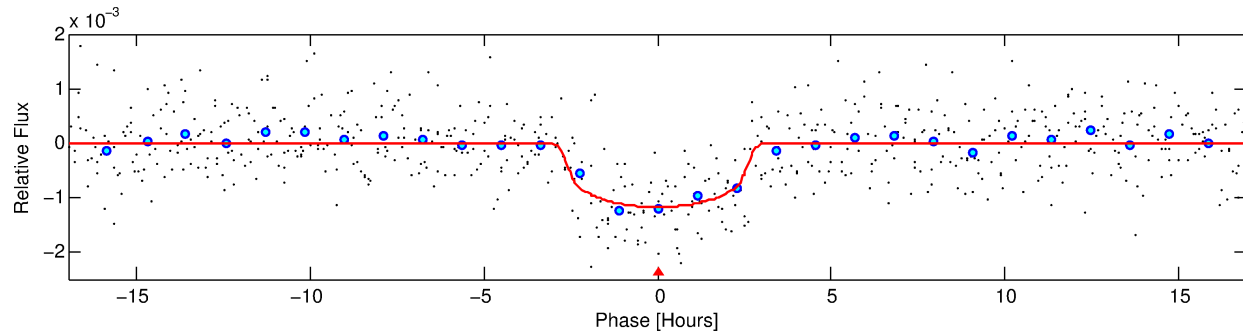
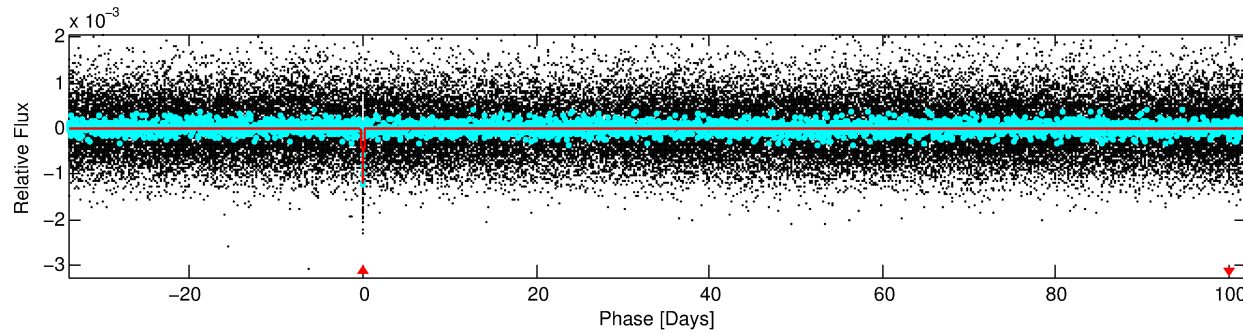
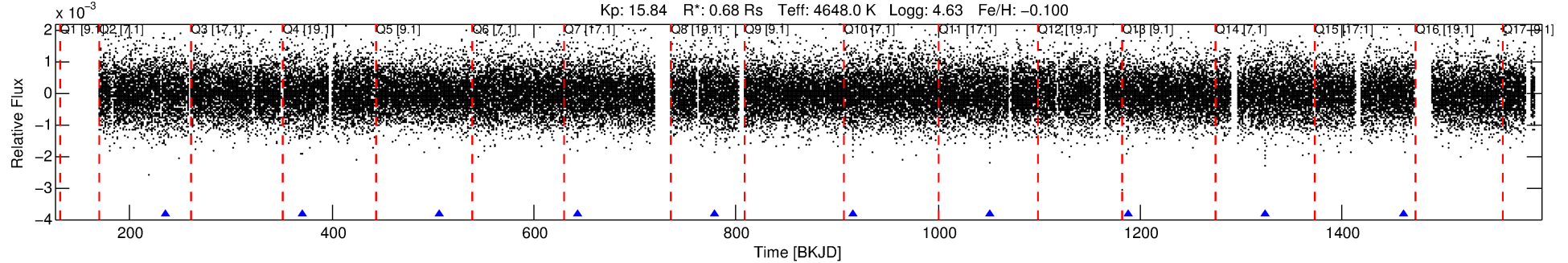
No Significant Match Found

# DV One-Page Summary

KIC: 5609593 Candidate: 1 of 1 Period: 136.206 d

KOI: K02834.01 Corr: 0.985

Kp: 15.84 R\*: 0.68 Rs Teff: 4648.0 K Logg: 4.63 Fe/H: -0.100



## DV Fit Results:

Period = 136.20554 [0.00126] d  
Epoch = 234.7215 [0.0069] BKJD  
Rp/R\* = 0.0336 [0.0155]  
a/R\* = 139.80 [209.07]  
b = 0.70 [1.11]  
Seff = 0.89 [0.15]  
Teq = 248 [10] K  
Rp = 2.48 [1.17] Re  
a = 0.4624 [0.0320] AU  
Ag = 4067.28 [3980.32] [1.02σ]  
Teffp = 3059 [753] K [3.73σ]

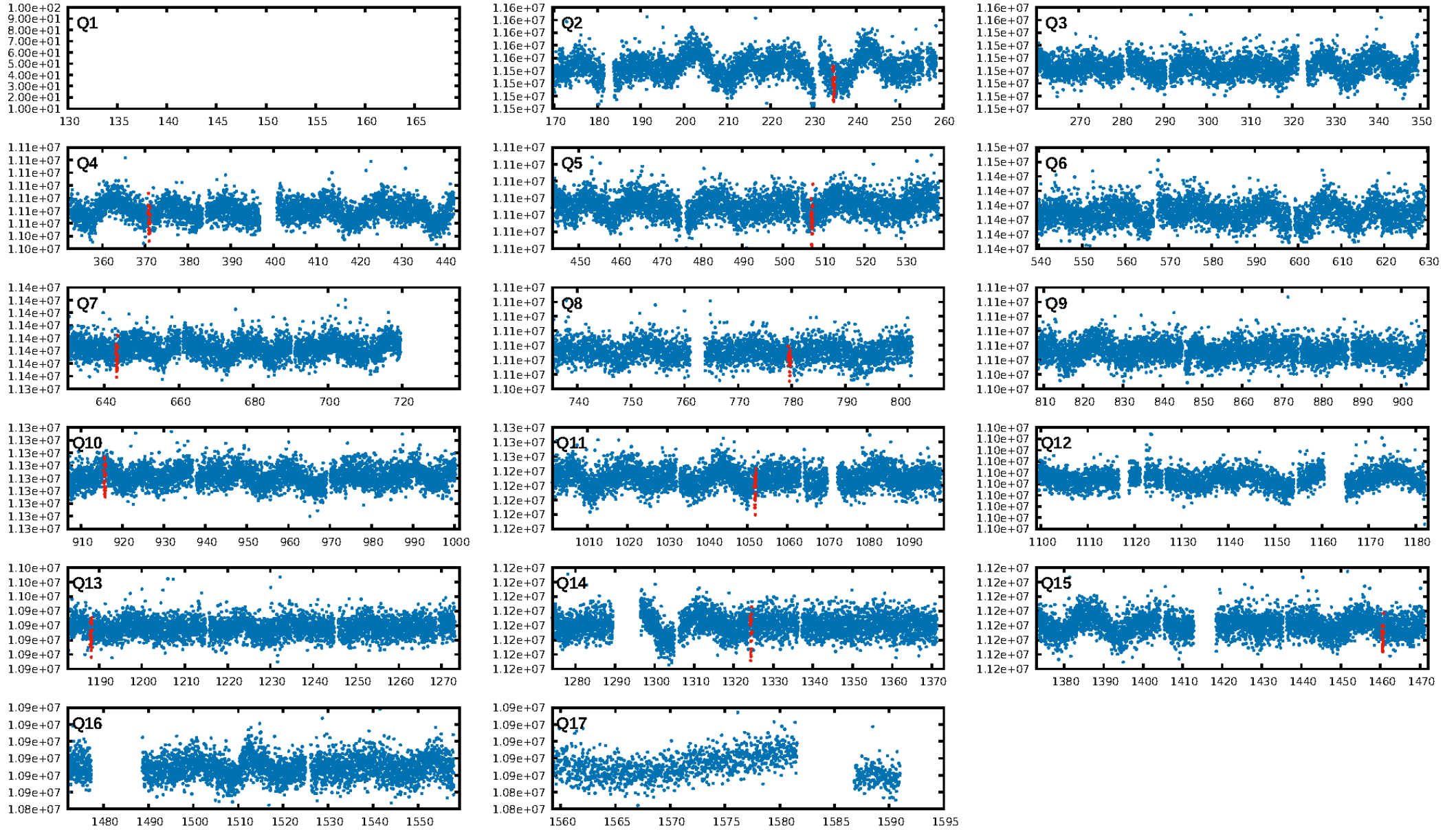
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 53.4%  
ModelChiSquareG-sig: 100.0%  
Bootstrap-pfa: 6.51e-55  
RollingBand-fgt: 1.00 [10/10]  
GhostDiagnostic-chr: 7.017  
Centroid-sig: 9.8%  
Centroid-so: 1.007 arcsec [1.20σ]  
OotOffset-rm: 0.256 arcsec [0.95σ]  
KicOffset-rm: 0.241 arcsec [0.85σ]  
OotOffset-st: 3/3/2/1 [9]  
KicOffset-st: 3/3/2/1 [9]  
DiffImageQuality-fgm: 0.89 [8/9]  
DiffImageOverlap-fno: 1.00 [9/9]

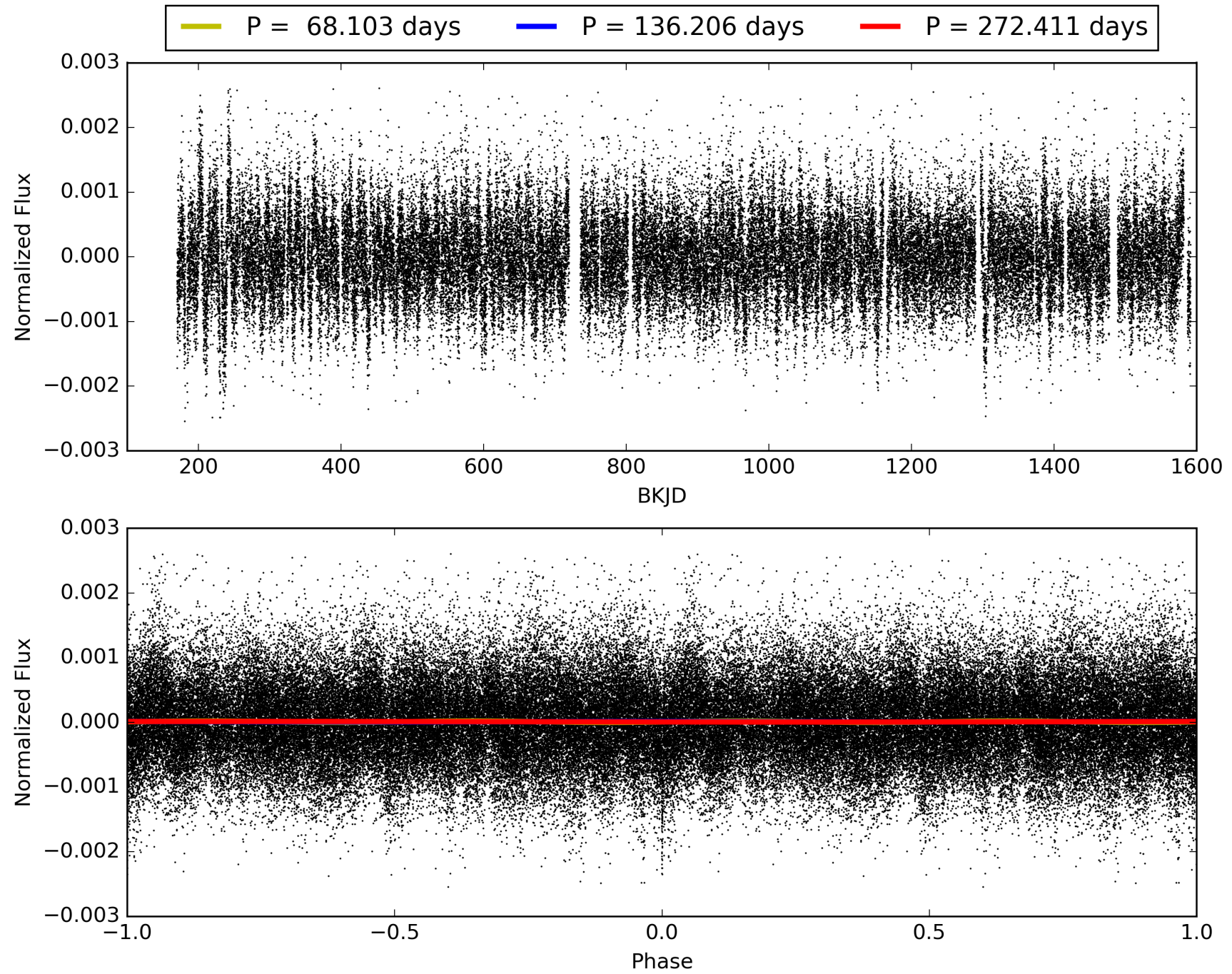
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 15:13:03 Z

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

# TCE 005609593-01, PDC Light Curves

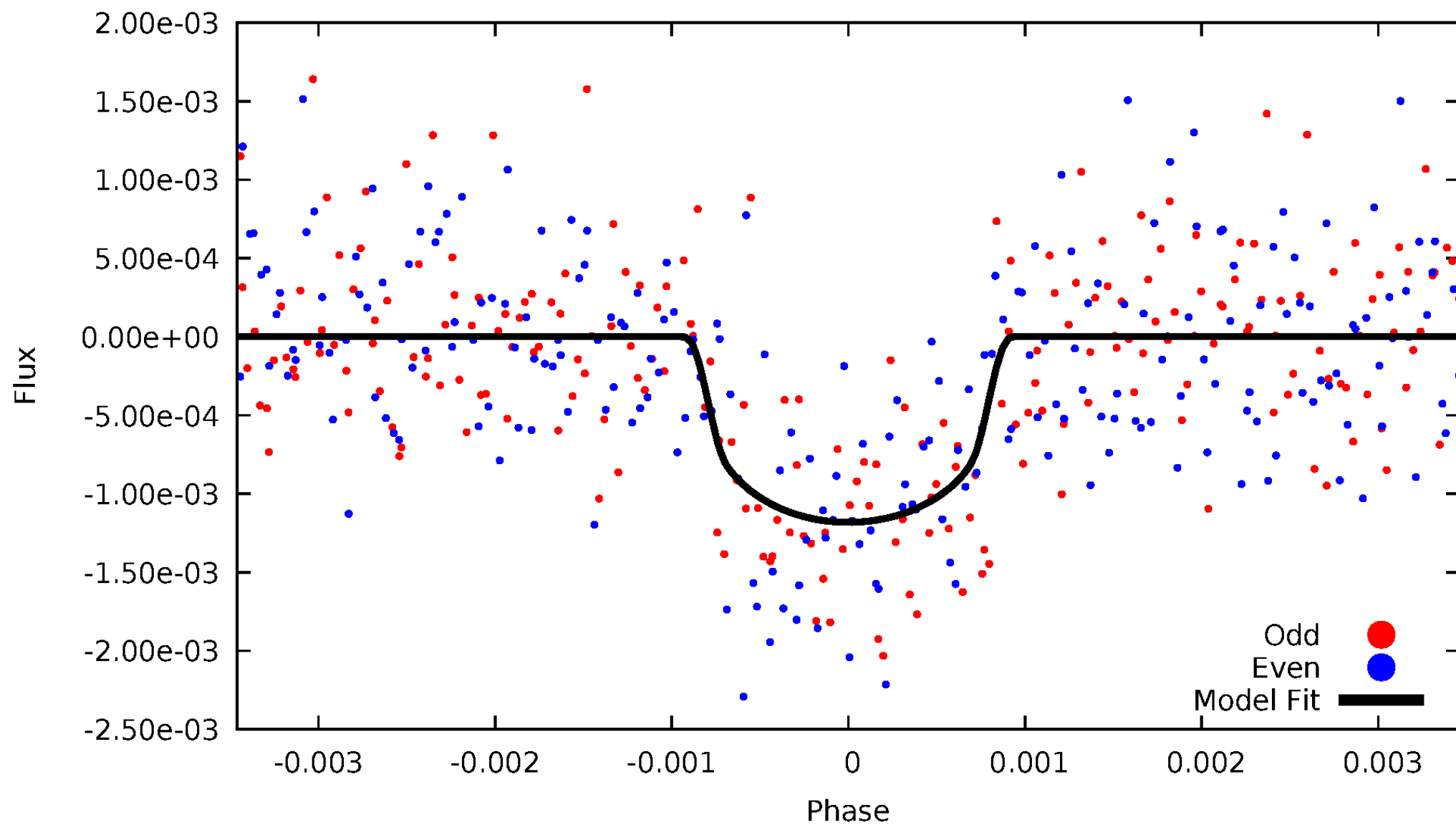


TCE 005609593-01



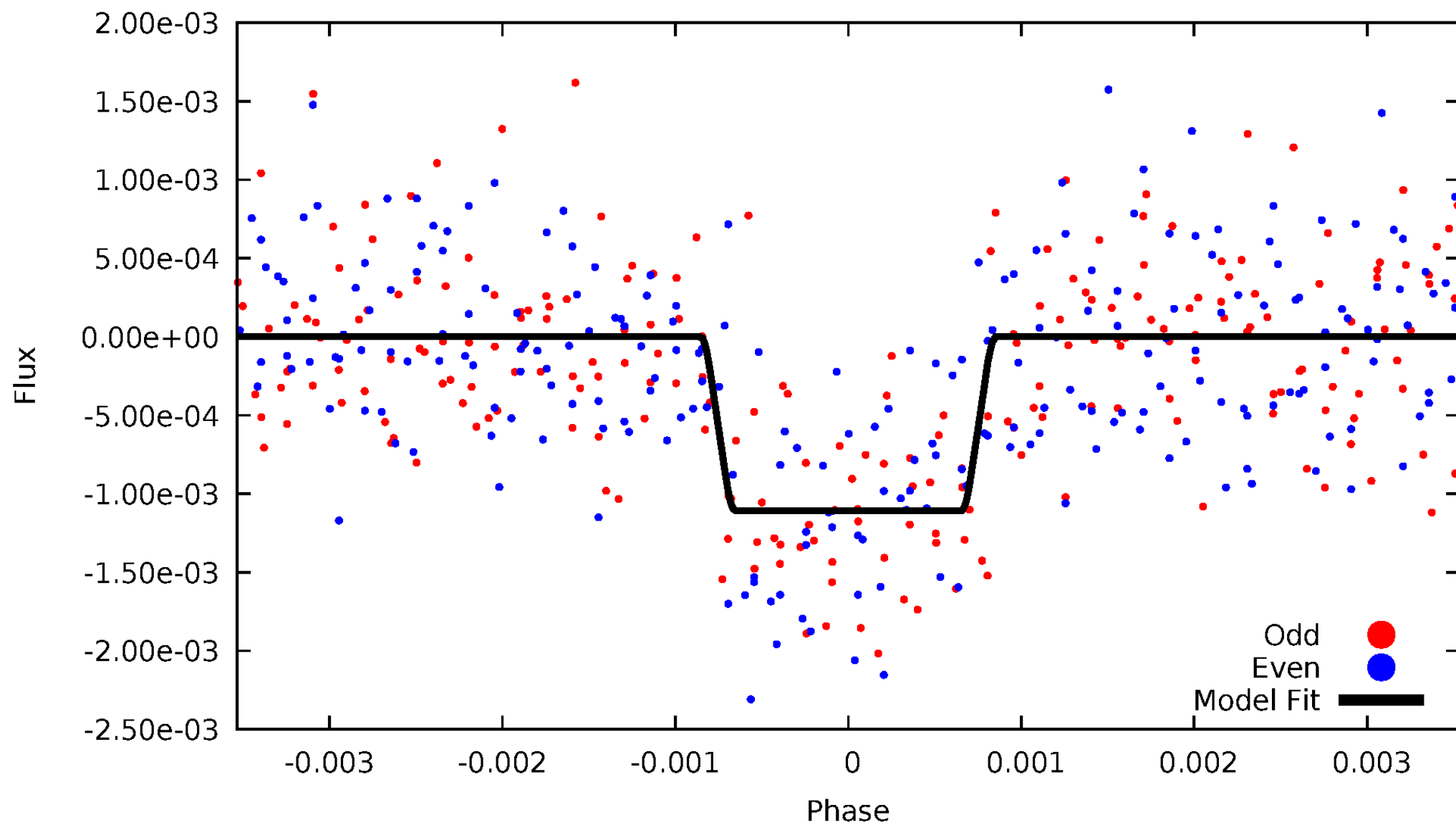
# DV Odd/Even

TCE 005609593-01



# ALT Odd/Even

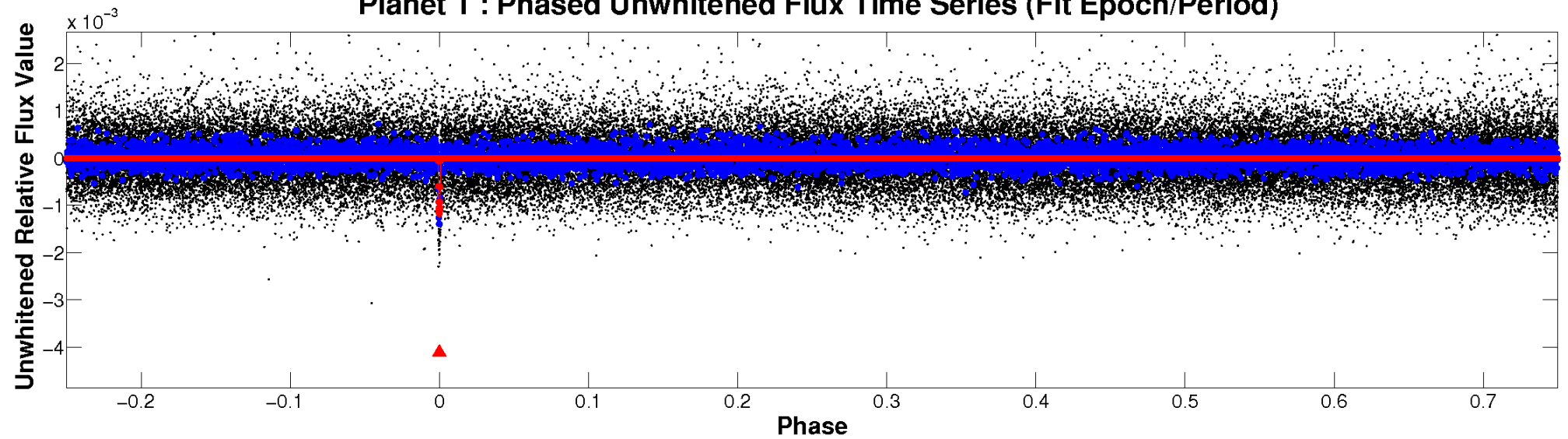
TCE 005609593-01



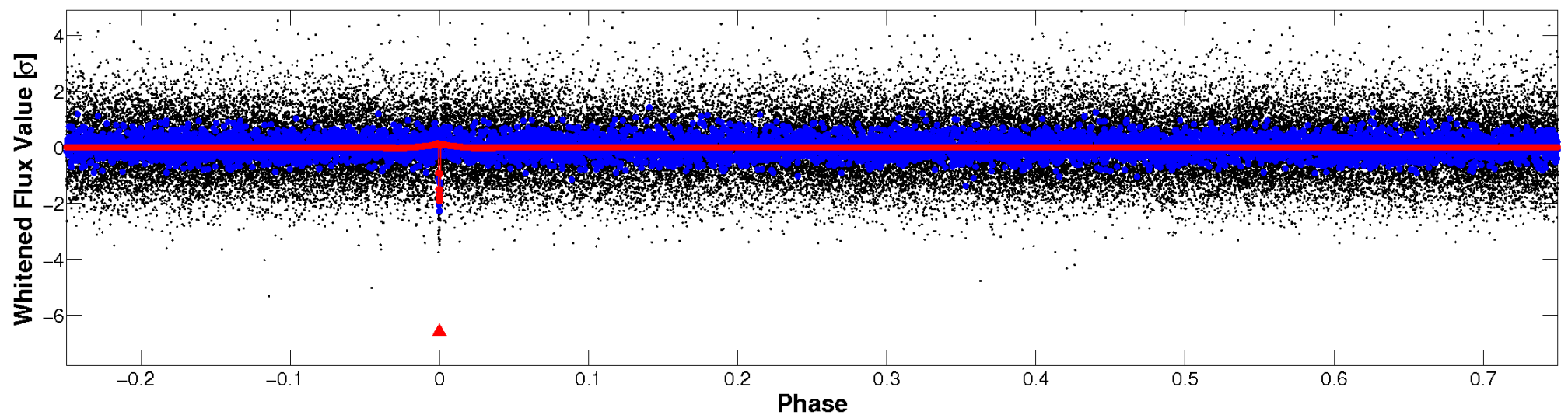


# Non-Whitened Vs. Whitened Light Curve

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

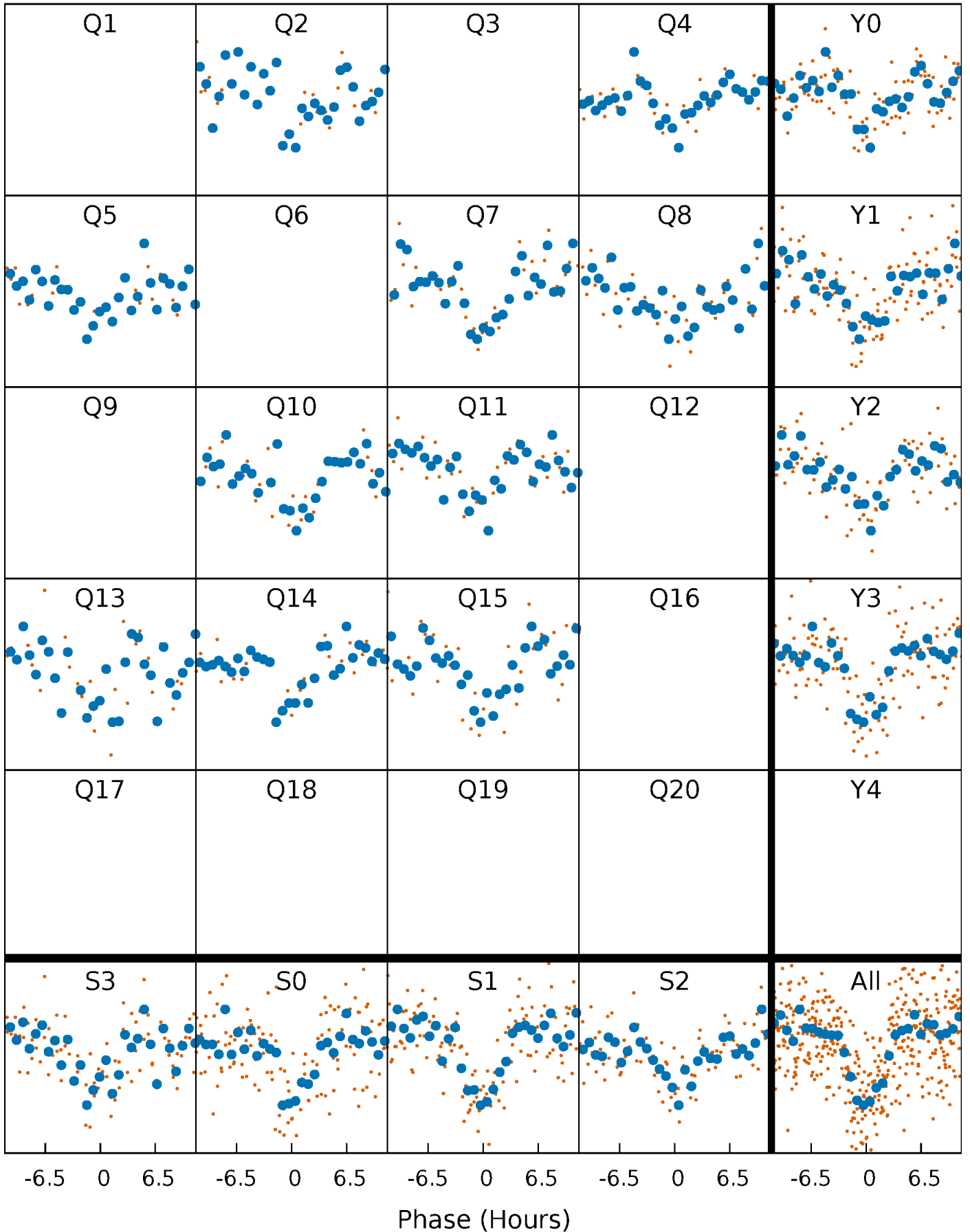


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

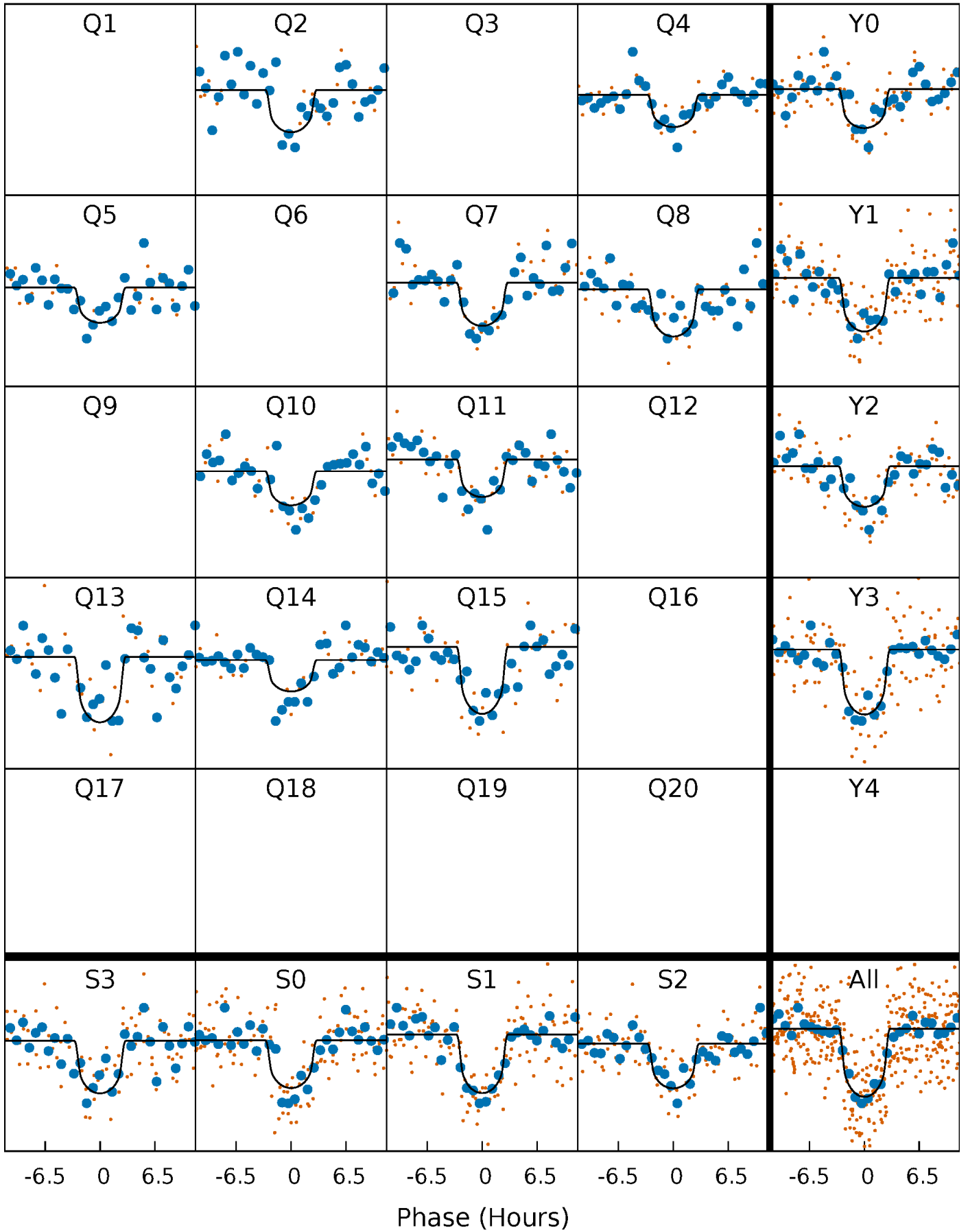
TCE 005609593-01 P=136.205540 Days  $T_0=234.721453$  (BKJD)





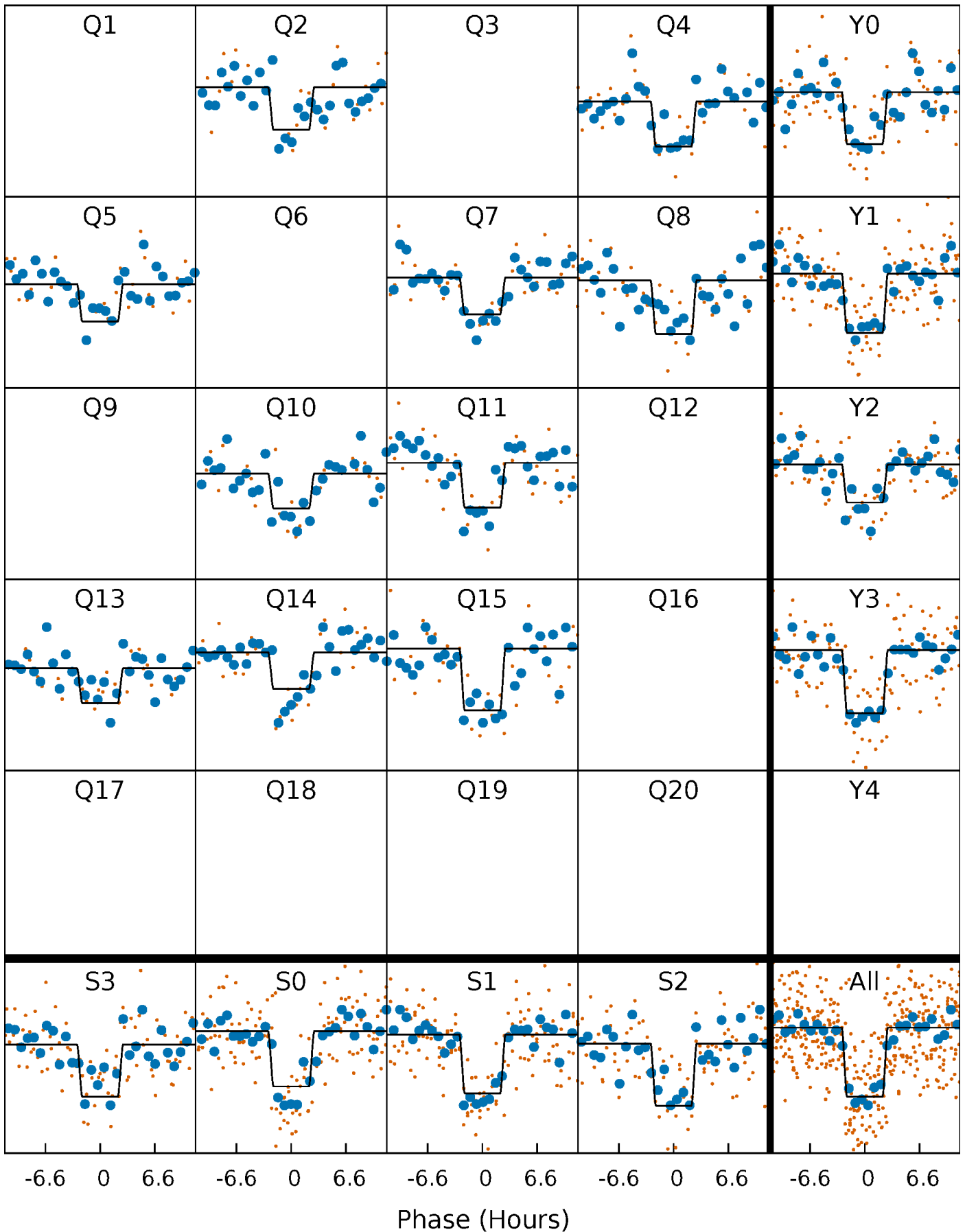
# DV Quarter-Phased Transit Curves

TCE 005609593-01 P=136.205540 Days  $T_0=234.721453$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

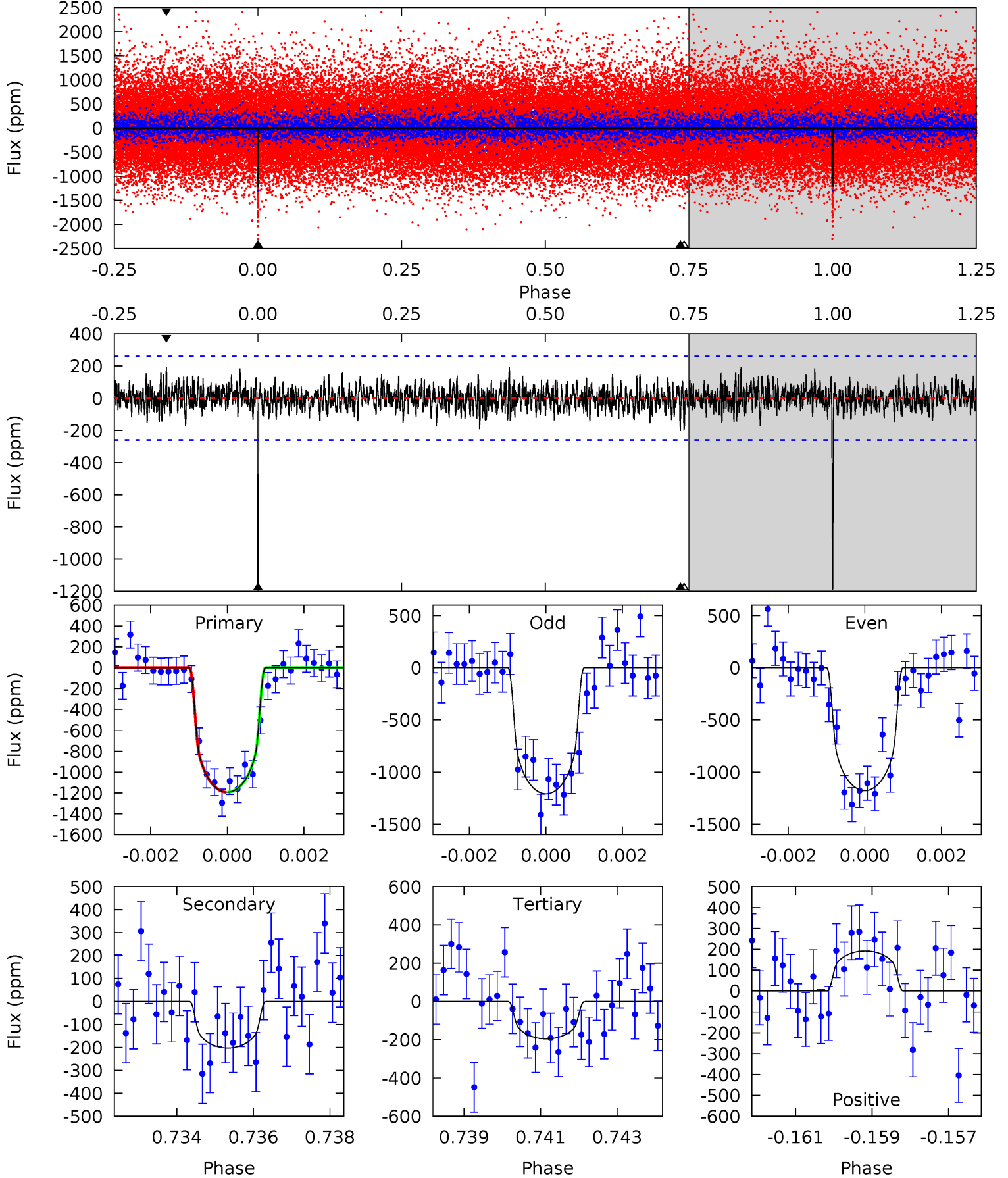
TCE 005609593-01 P=136.203084 Days  $T_0=234.737178$  (BKJD)



# DV Model-Shift Uniqueness Test

005609593-01,  $P = 136.205540$  Days,  $E = 98.515913$  Days

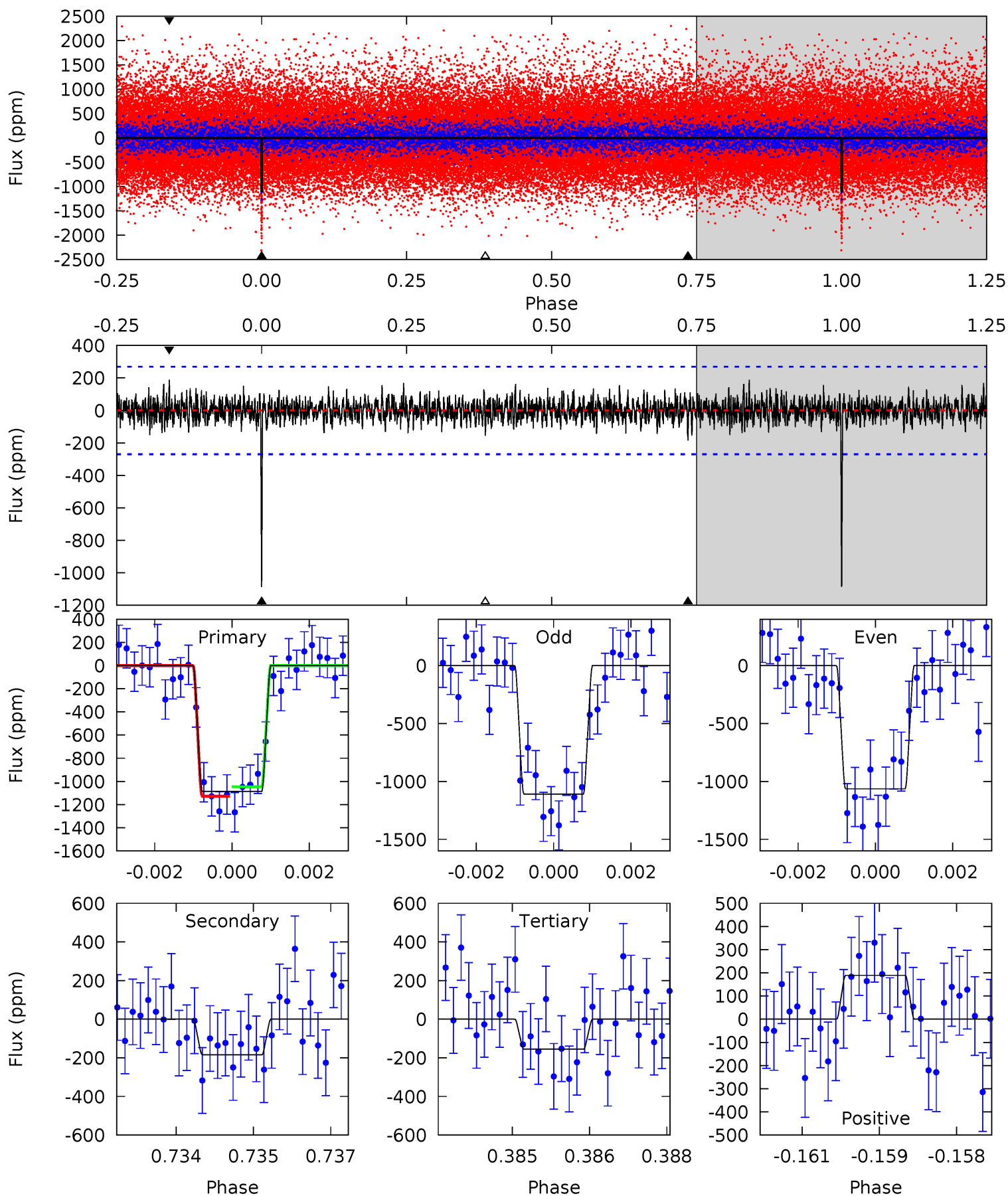
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.5	4.17	4.01	3.95	5.34	3.11	1.16	20.5	20.6	0.16	0.22	0.32	0.99	0.14	0.01



# Alt Model-Shift Uniqueness Test

005609593-01, P = 136.203084 Days, E = 98.534094 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
21.6	3.66	3.09	3.76	5.36	3.14	0.97	18.5	17.8	0.57	-0.10	0.45	1.03	0.15	0.80



### Stellar Parameters For KIC 005609593

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4648^{+167}_{-167}$	$4.631^{+0.032}_{-0.042}$	$-0.100^{+0.300}_{-0.300}$	$0.675^{+0.062}_{-0.050}$	$0.711^{+0.064}_{-0.070}$	$3.258^{+0.551}_{-0.567}$
	+4%/-4%	+1%/-1%	+300%/-300%	+9%/-7%	+9%/-10%	+17%/-17%
Source	PHO16	PHO16	PHO16	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 005609593-01 / KOI 2834.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-203 \pm 49$	$2.53^{+1.20}_{-1.16}$	$347^{+14}_{-14}$	$3401^{+793}_{-379}$	$3733^{+8529}_{-2129}$
Alt.	$-184 \pm 50$	$2.58^{+1.16}_{-1.15}$	$348^{+13}_{-13}$	$3372^{+663}_{-425}$	$3442^{+6639}_{-1989}$

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

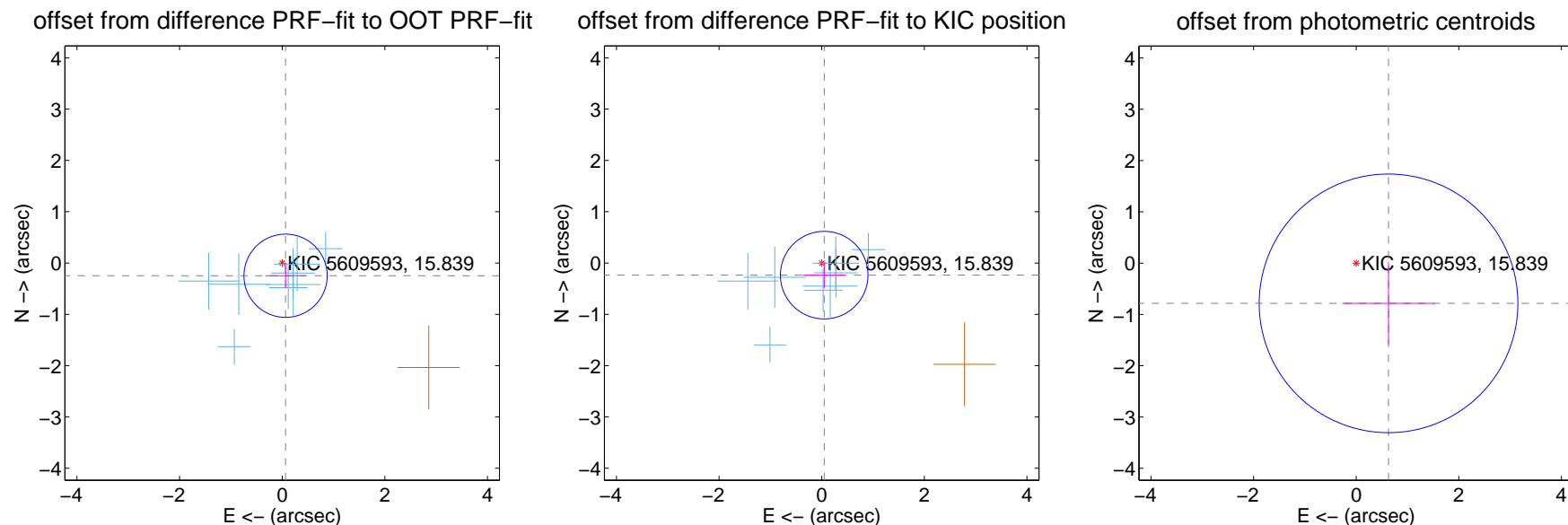
## DV Centroid Data

Supplemental centroid analysis for 005609593-01. Kepler magnitude: 15.84. Transit SNR 16.81

There are 8 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

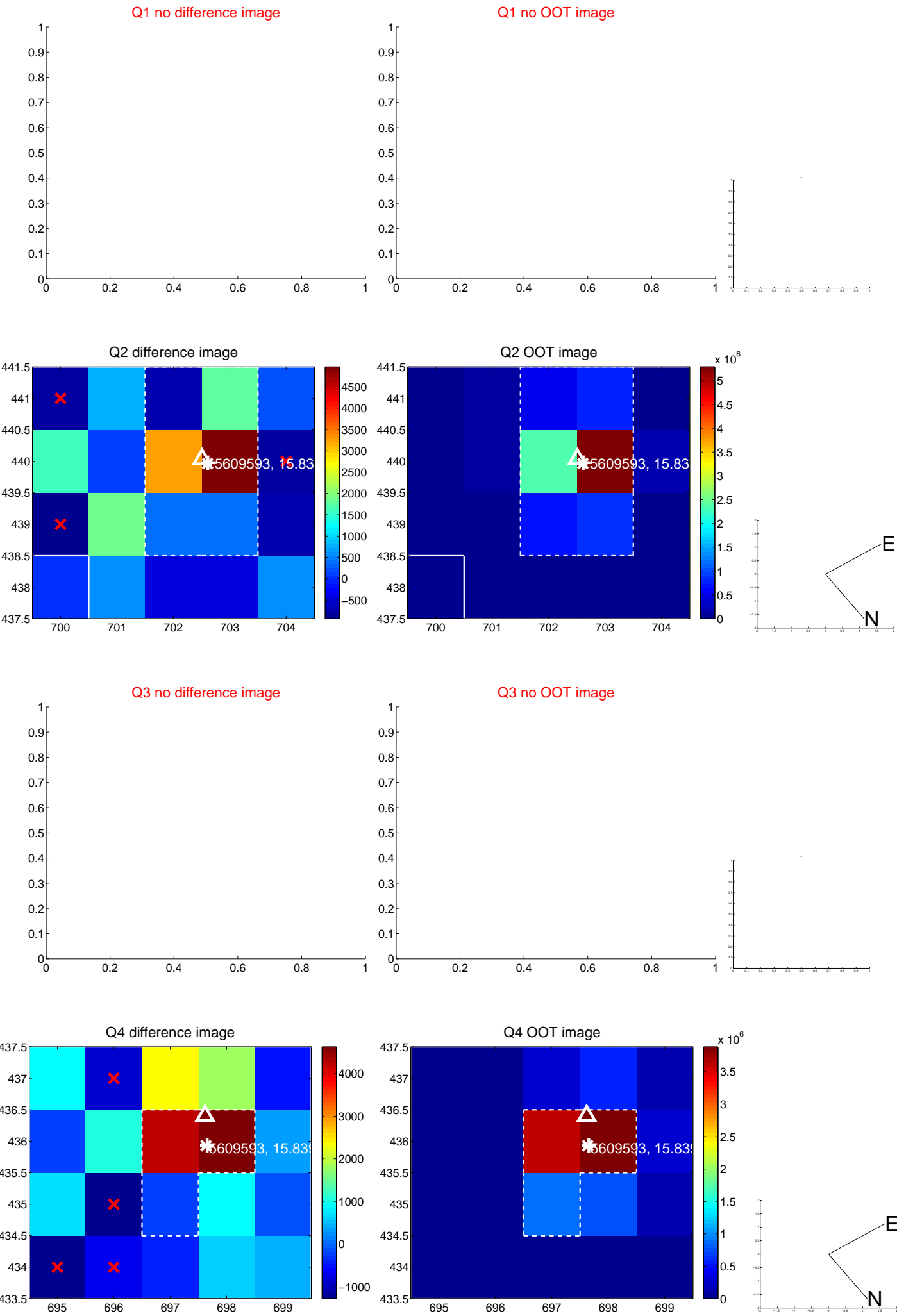
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.256 \pm 0.270$	0.95	$-0.065 \pm 0.391$	$-0.248 \pm 0.244$
PRF-fit source offset from KIC position	$0.241 \pm 0.285$	0.85	$-0.048 \pm 0.416$	$-0.236 \pm 0.254$
photometric centroid source offset	$1.01 \pm 0.84$	1.20	$-0.63 \pm 0.90$	$-0.78 \pm 0.80$



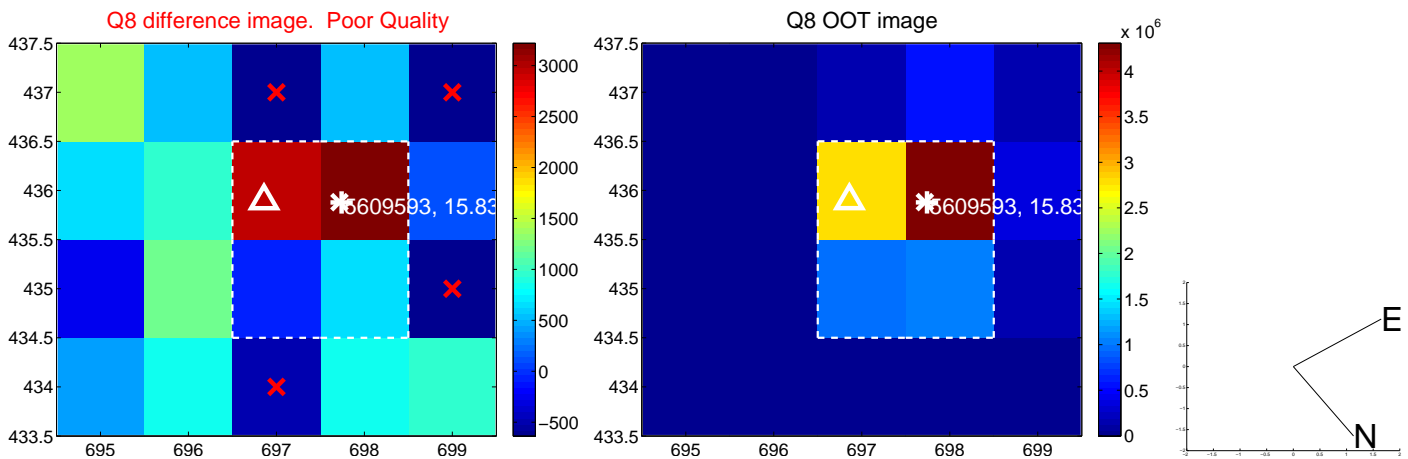
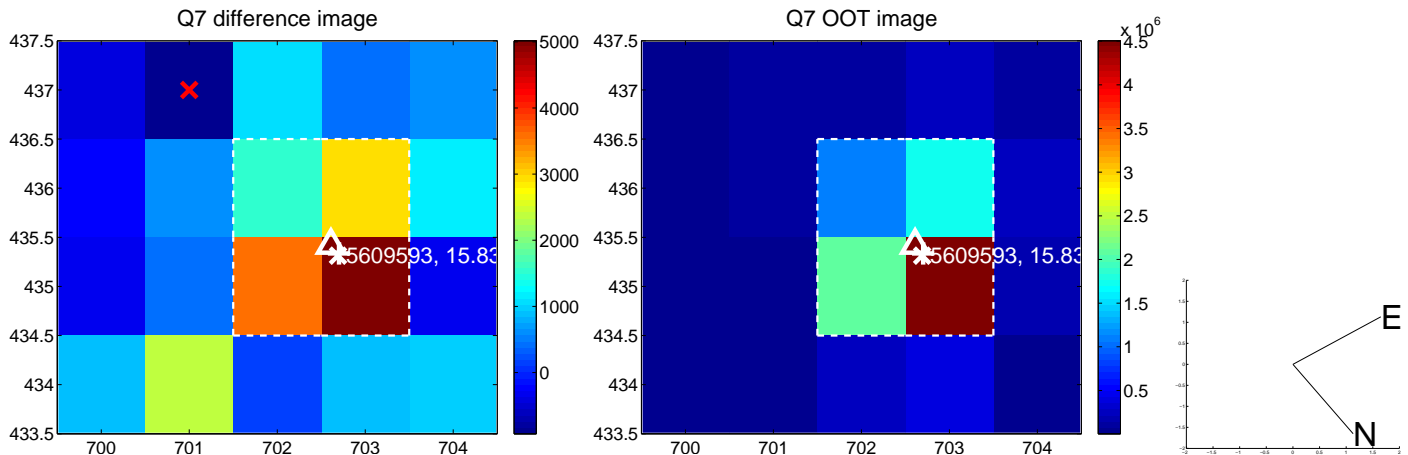
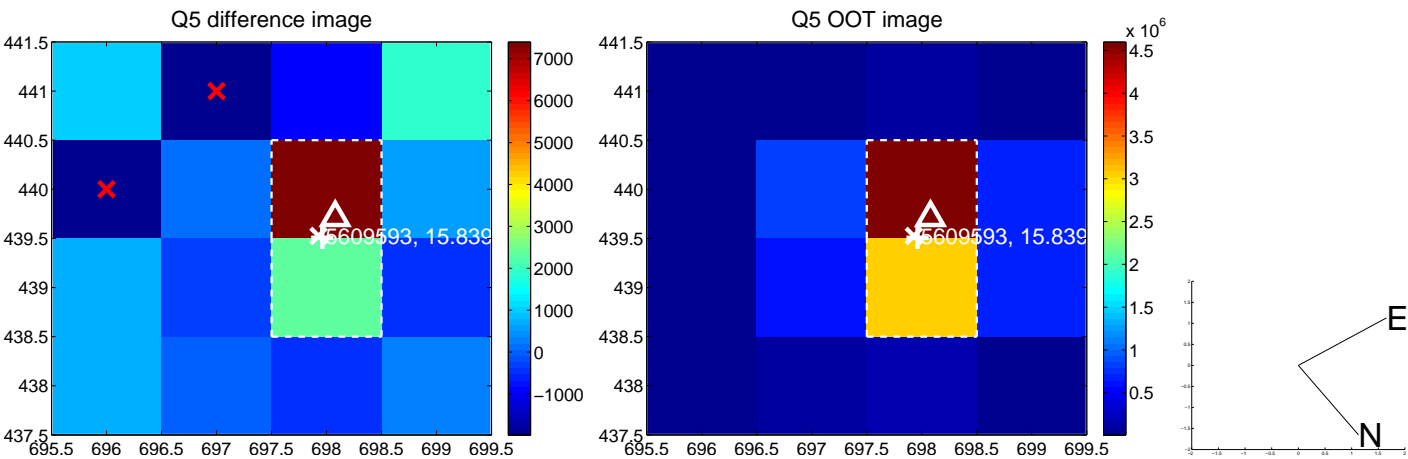
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



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

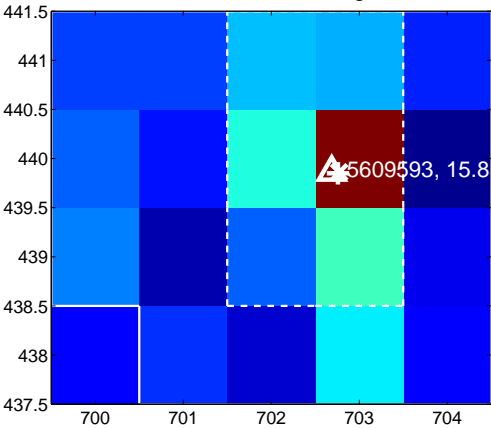
Q9 no difference image



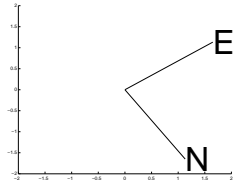
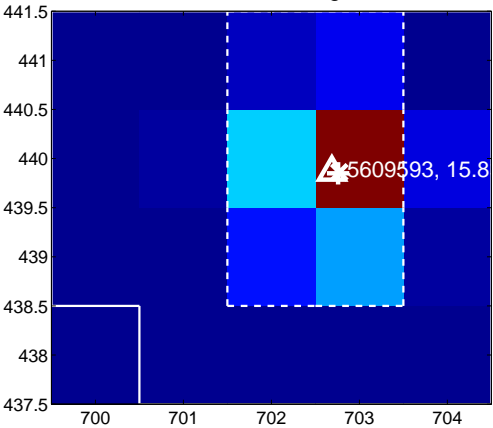
Q9 no OOT image



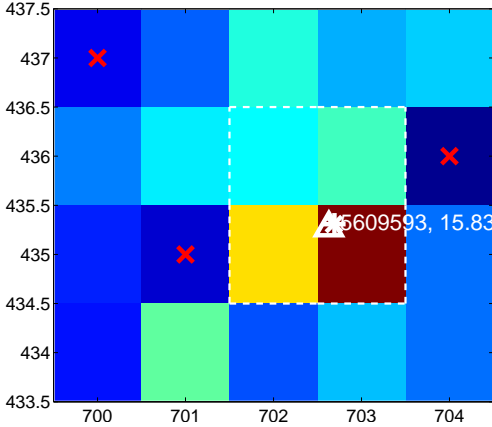
Q10 difference image



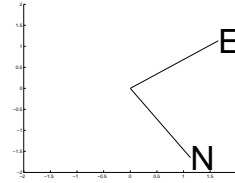
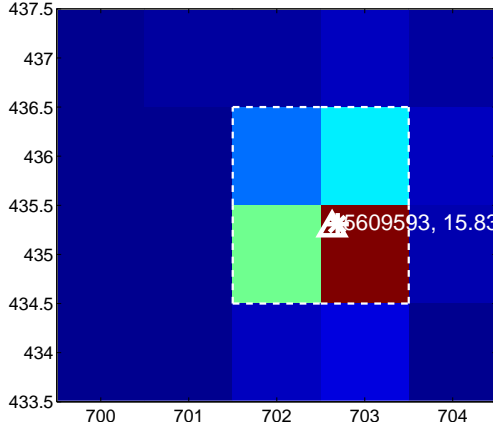
Q10 OOT image



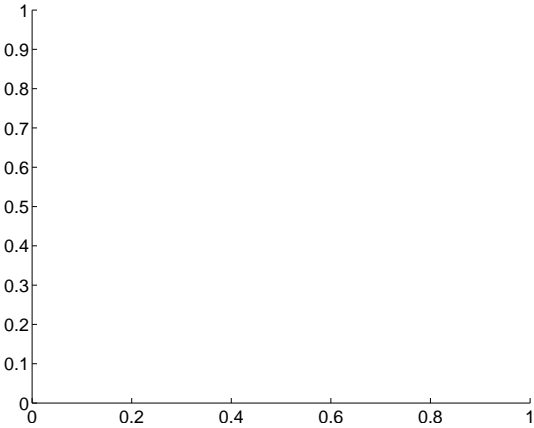
Q11 difference image



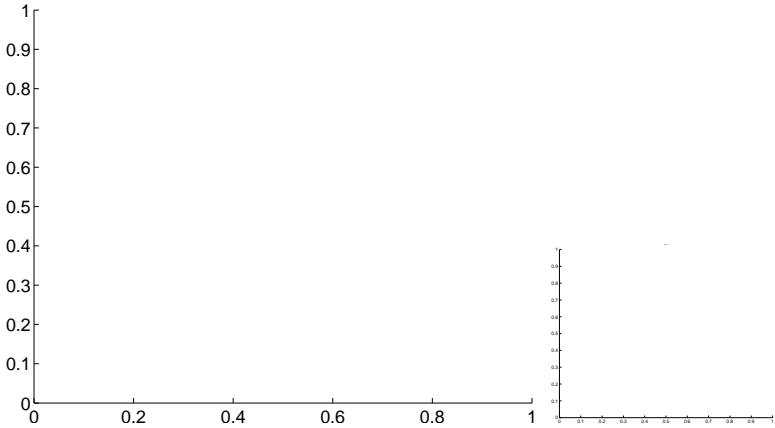
Q11 OOT image



Q12 no difference image



Q12 no OOT image

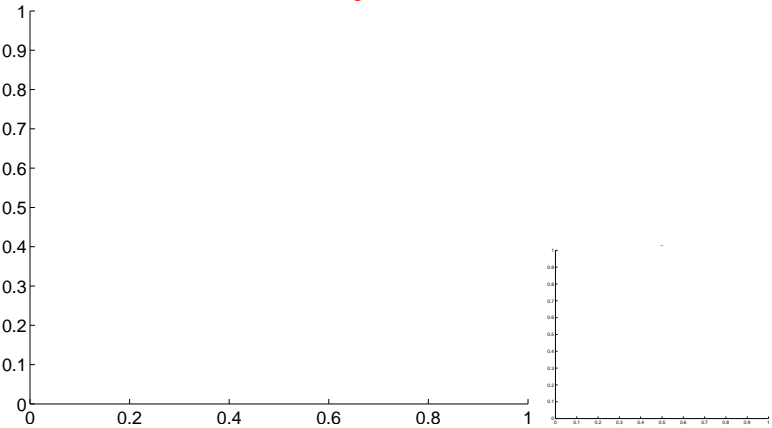


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

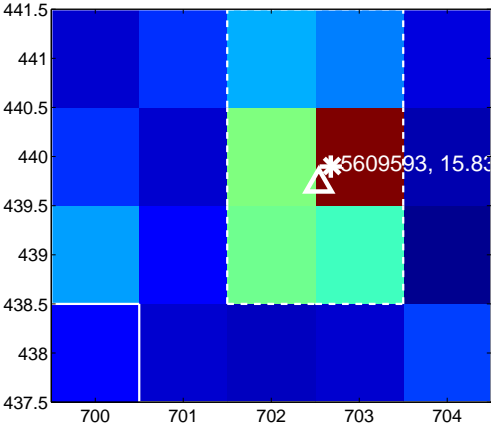
Q13 no difference image



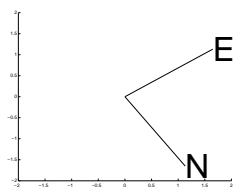
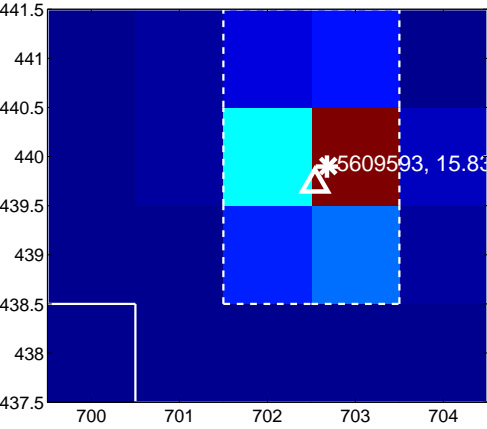
Q13 no OOT image



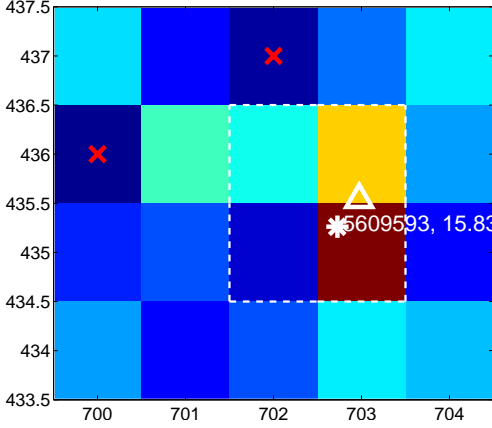
Q14 difference image



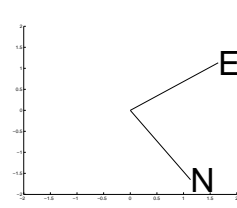
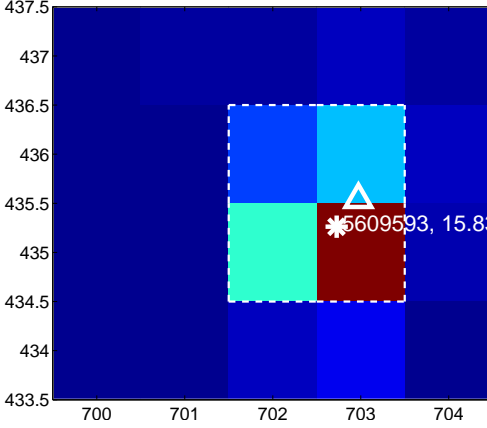
Q14 OOT image



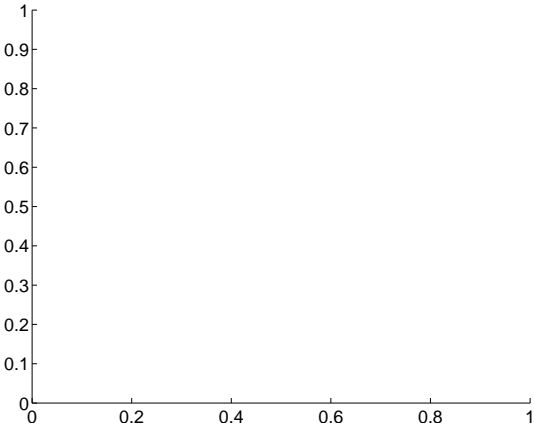
Q15 difference image



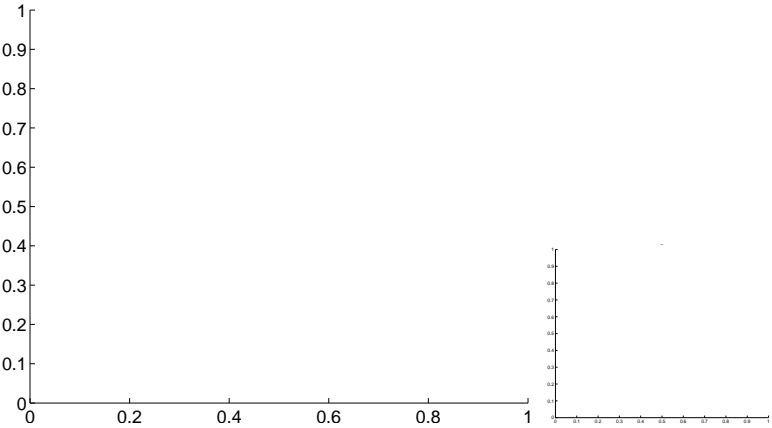
Q15 OOT image



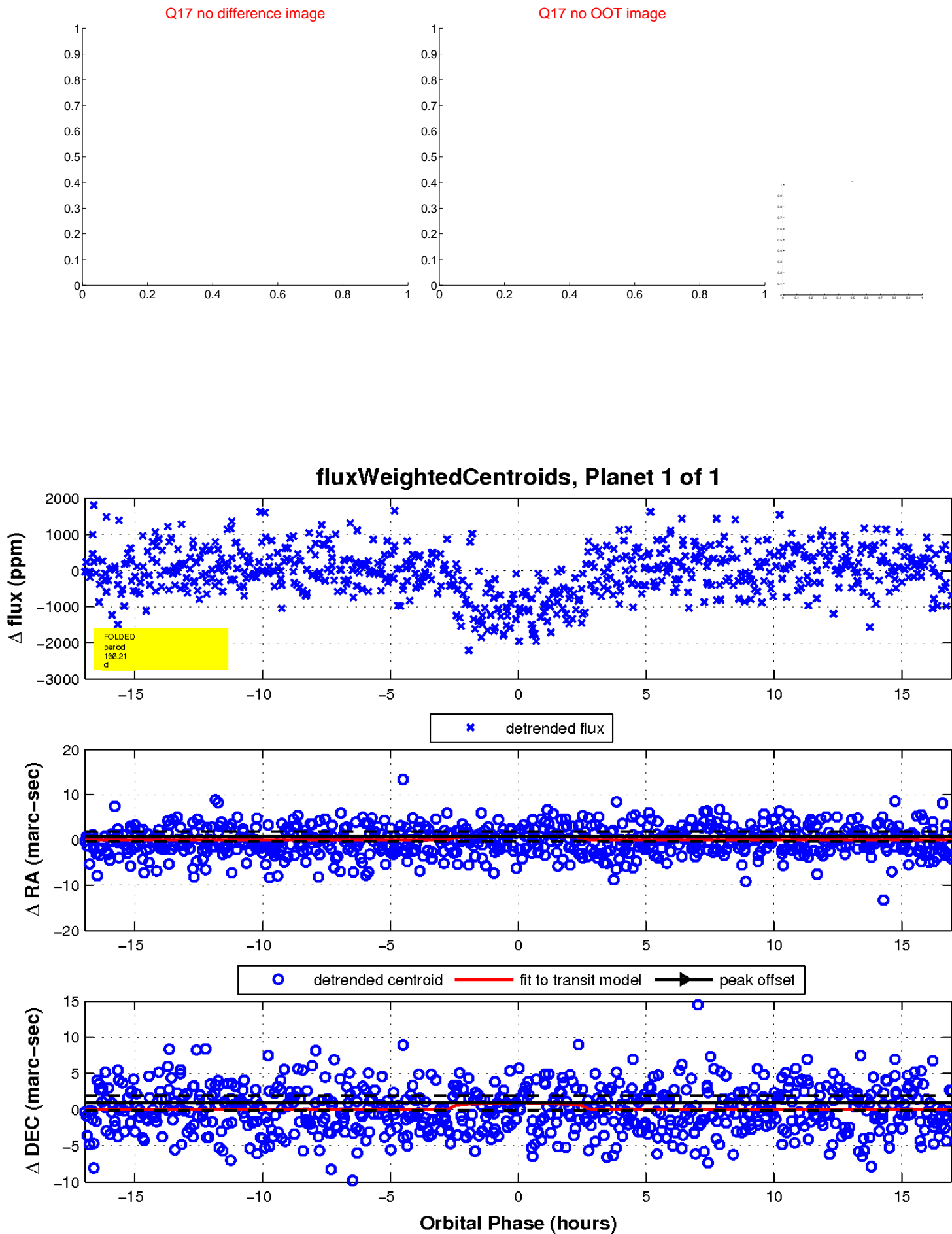
Q16 no difference image



Q16 no OOT image



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



# UKIRT Image

Declination

