

# KIC 003756613

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003756613-01	OBS	No	20.923895	140.043327	161.1	41.549	8.5	11.4	1.01	6240	2.48	62.63

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003756613-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—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.

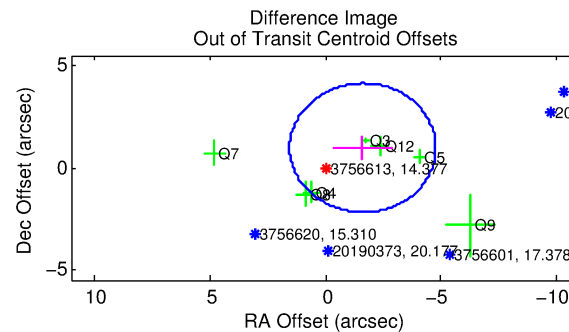
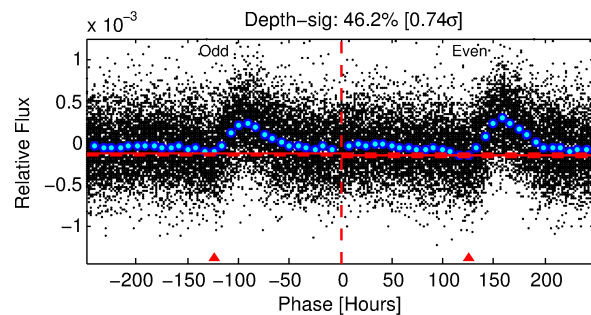
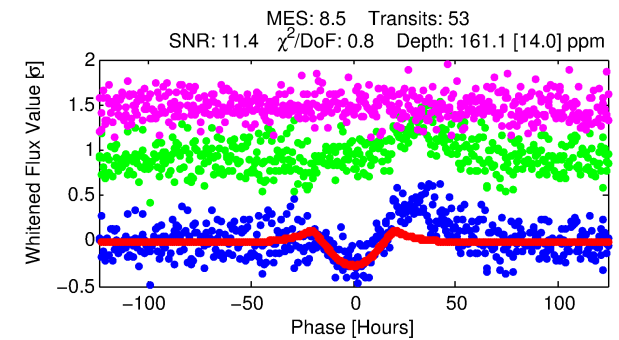
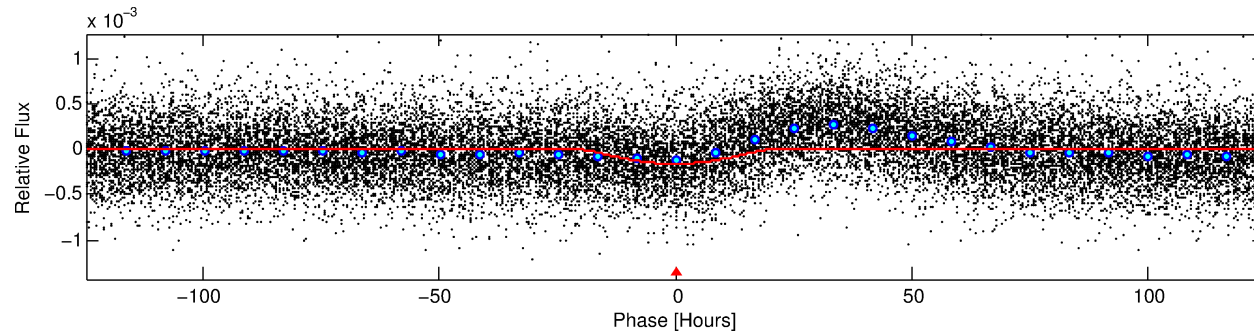
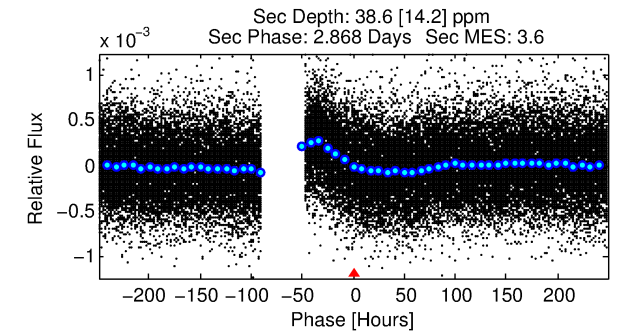
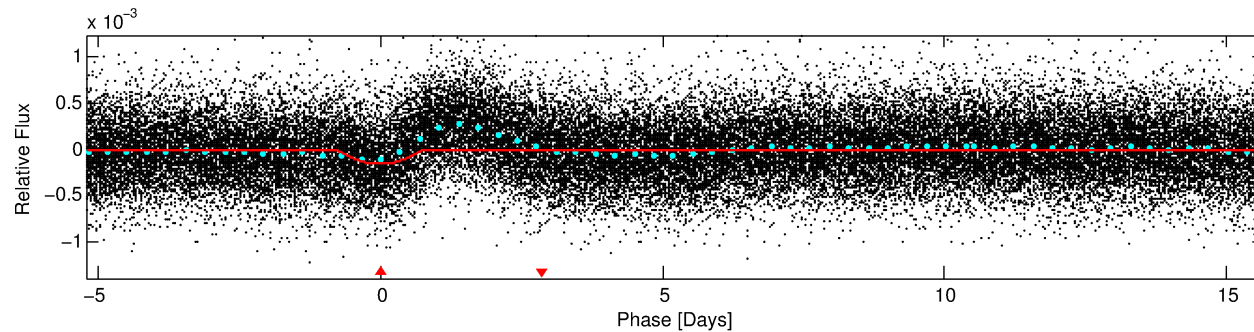
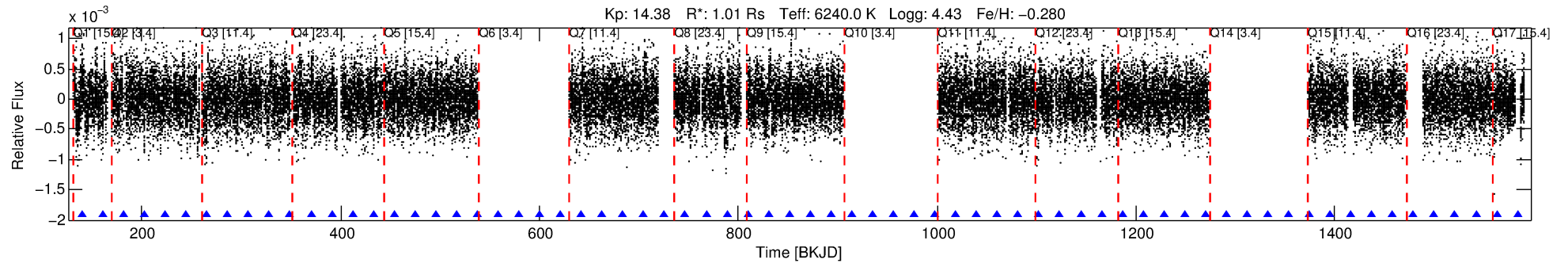
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003756613-01

No Significant Match Found

# DV One-Page Summary

KIC: 3756613 Candidate: 1 of 1 Period: 20.924 d



## DV Fit Results:

Period = 20.92390 [0.00156] d  
Epoch = 140.0433 [0.0582] BKJD  
Rp/R\* = 0.0224 [0.0310]  
a/R\* = 1.31 [0.18]  
b = 1.00 [0.05]  
Seff = 62.63 [25.81]  
Teff = 717 [74] K  
Rp = 2.48 [3.52] Re  
a = 0.1493 [0.0408] AU  
Ag = 76.88 [216.17] [0.35σ]  
Teffp = 3284 [2289] K [1.12σ]

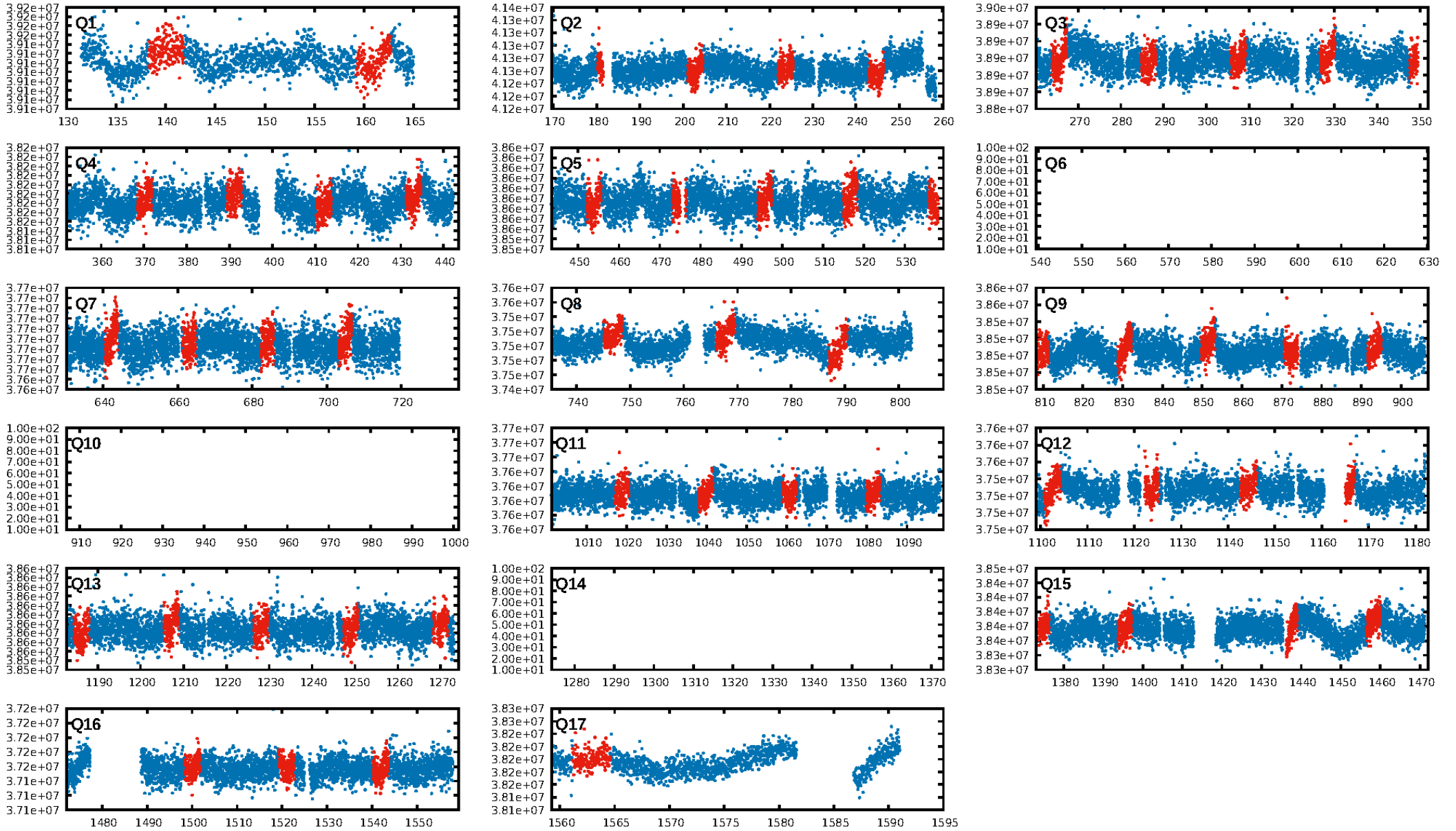
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 97.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 9.45e-18  
RollingBand-fgt: 1.00 [50/50]  
GhostDiagnostic-chr: 0.9545  
Centroid-sig: 0.0%  
Centroid-so: 1.411 arcsec [2.78σ]  
OotOffset-rm: 1.880 arcsec [1.79σ]  
KicOffset-rm: 1.402 arcsec [1.40σ]  
OotOffset-st: 0/2/3/2 [7]  
KicOffset-st: 0/2/3/2 [7]  
DiffImageQuality-fgm: 0.57 [4/7]  
DiffImageOverlap-fno: 1.00 [10/10]

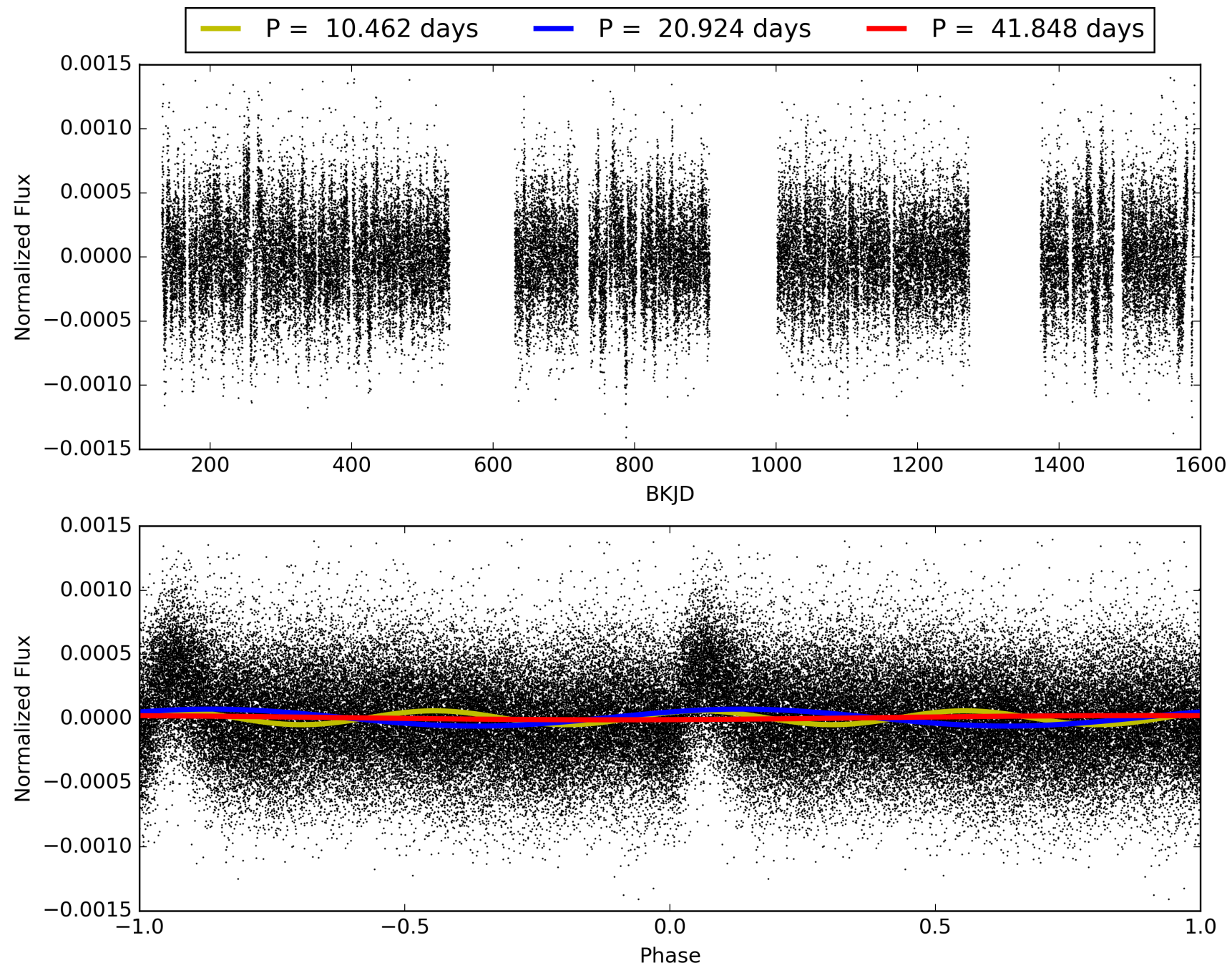
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:12:53 Z

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

# TCE 003756613-01, PDC Light Curves



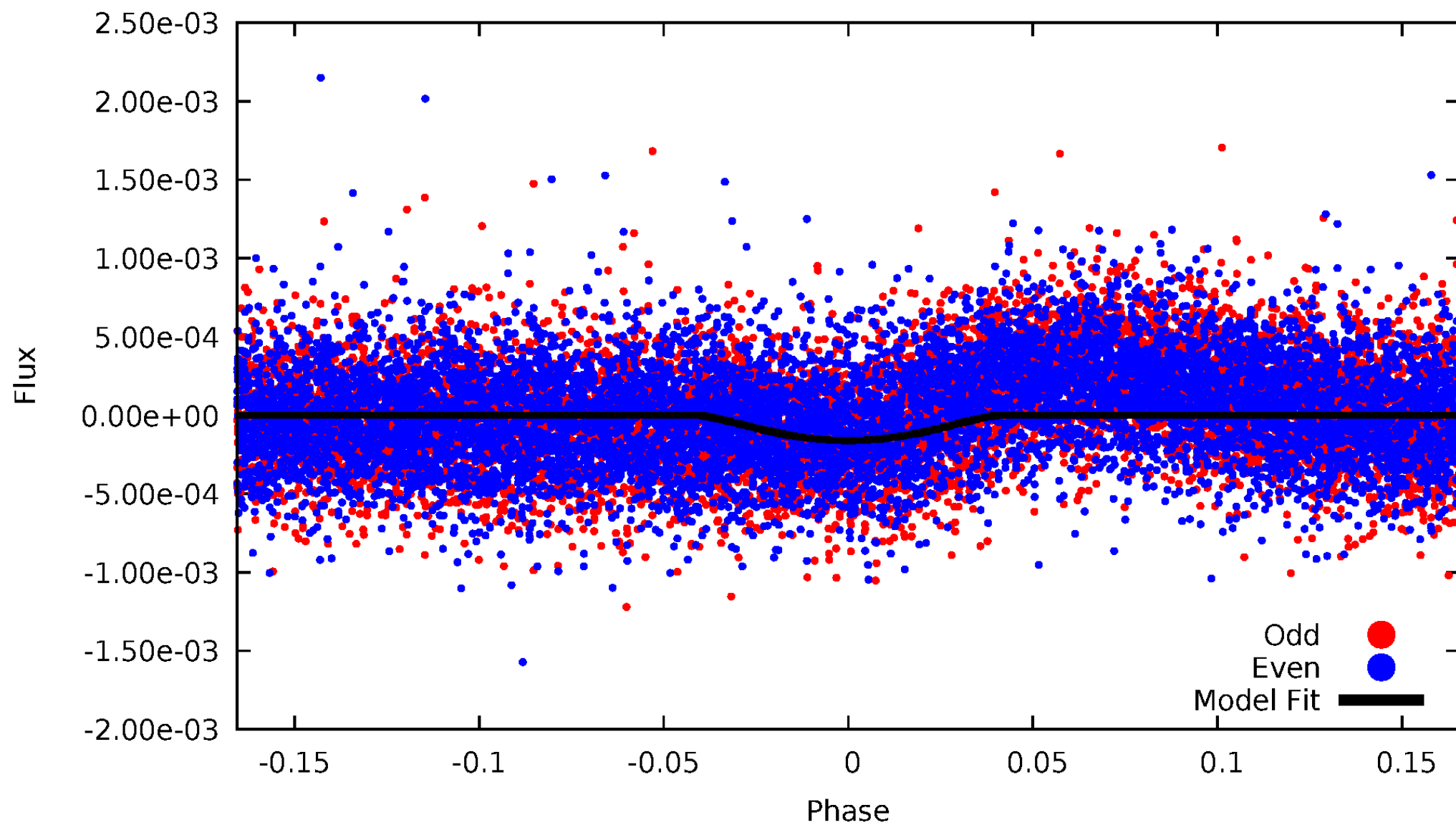
TCE 003756613-01





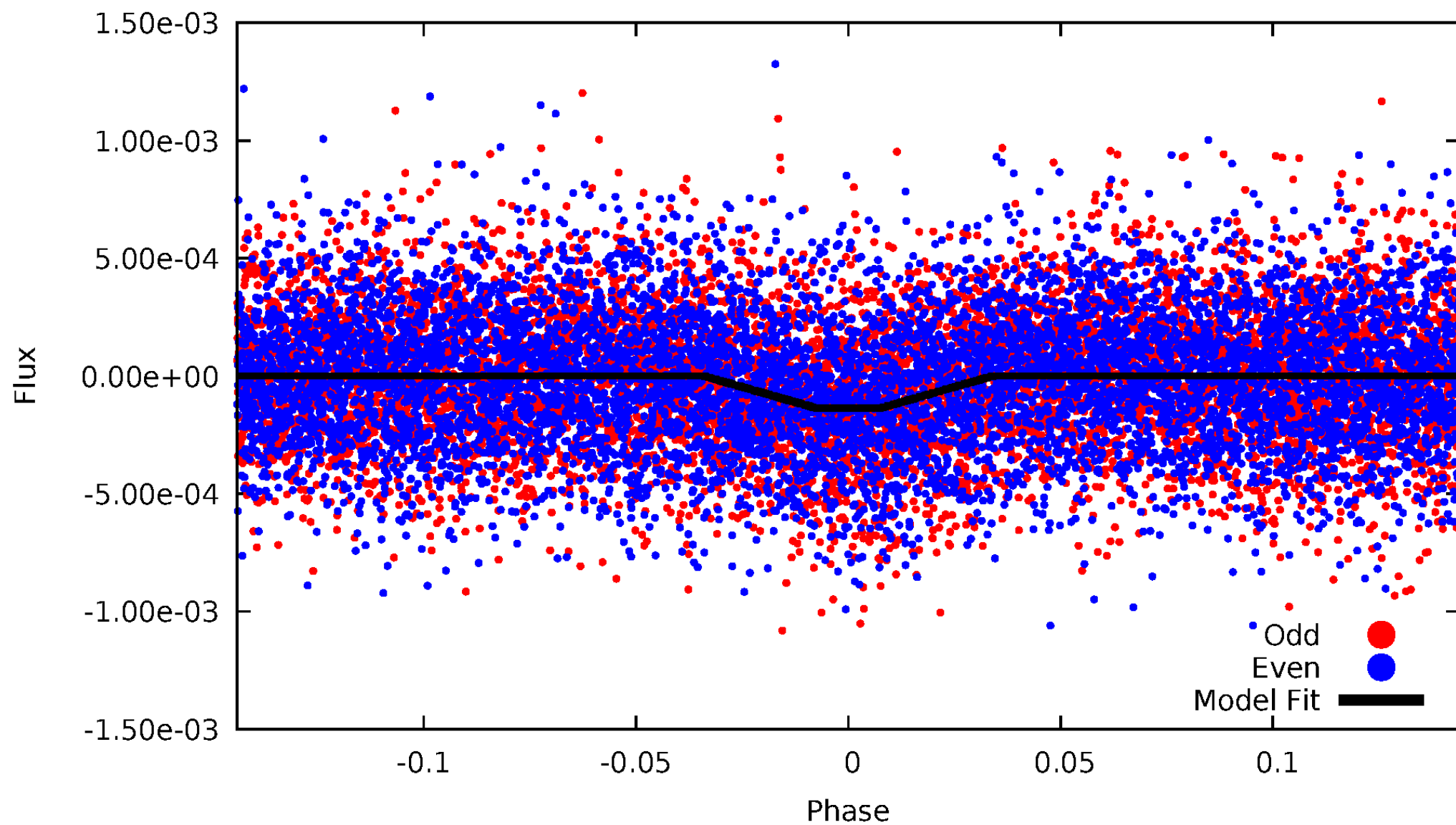
# DV Odd/Even

TCE 003756613-01



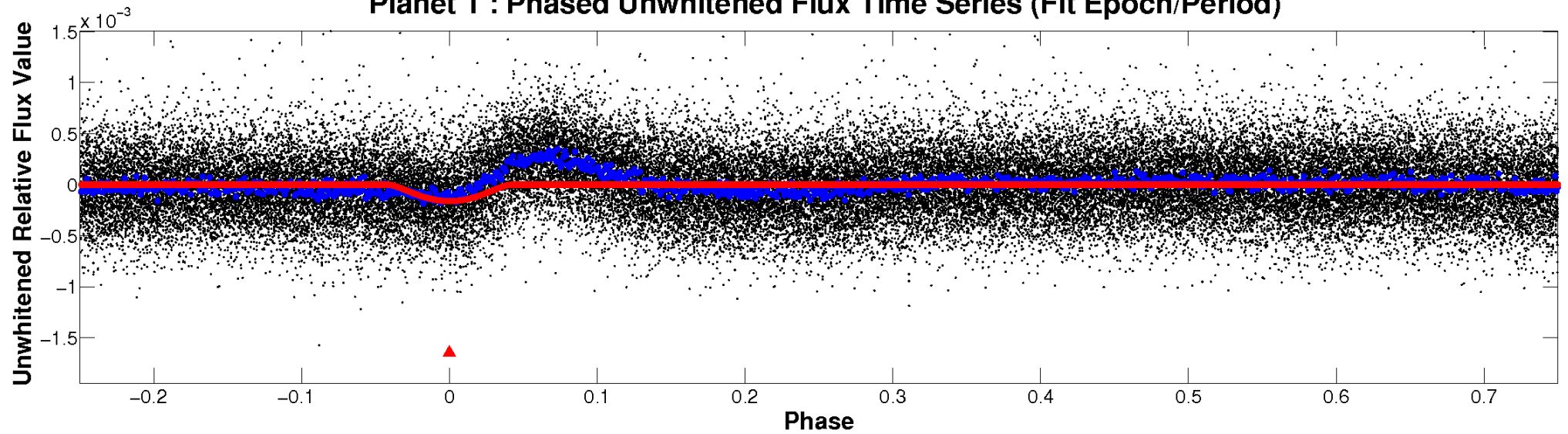
# ALT Odd/Even

TCE 003756613-01

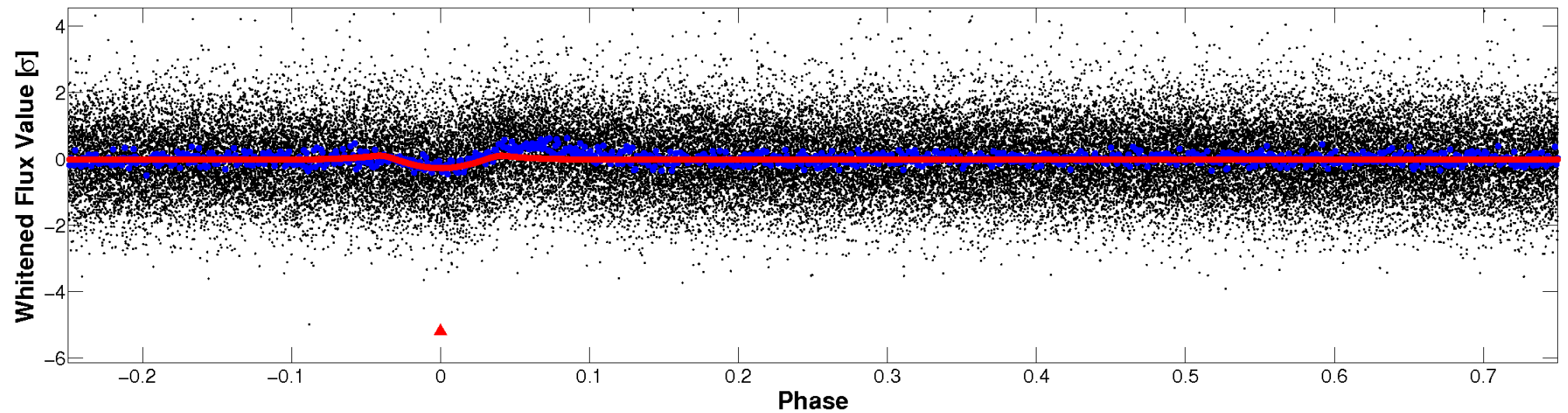


# Non-Whitened Vs. Whitened Light Curve

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

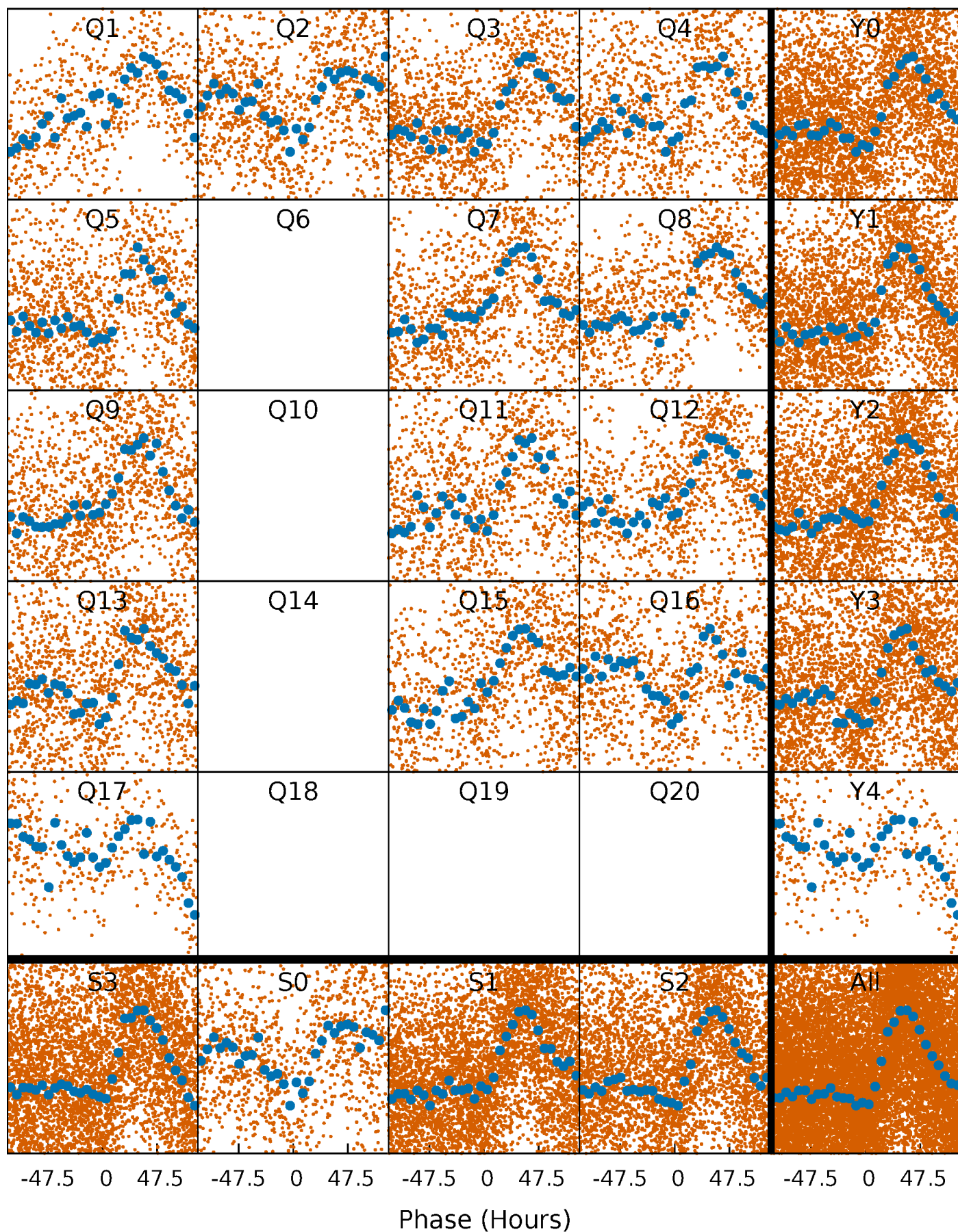


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

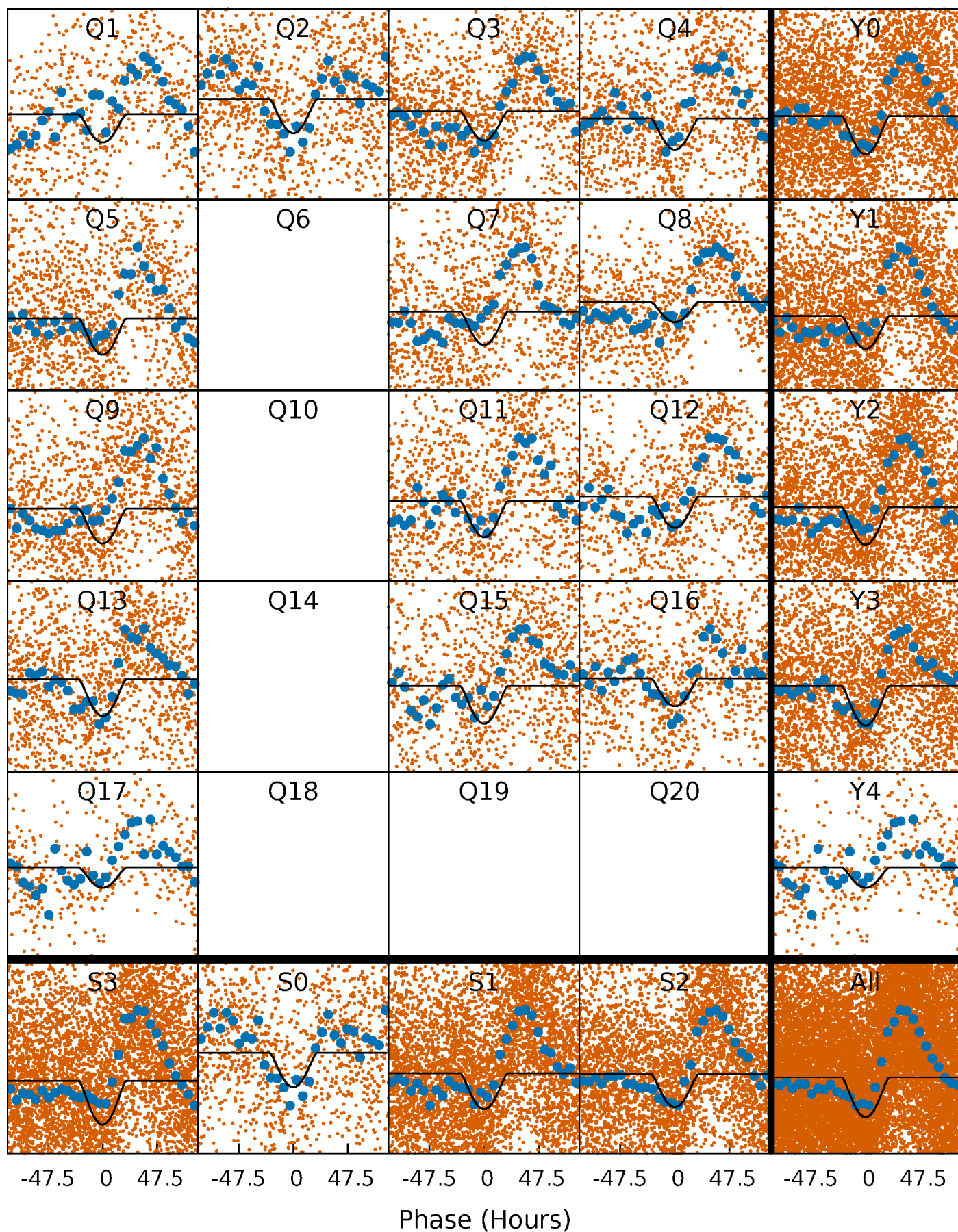
TCE 003756613-01 P= 20.923895 Days  $T_0=140.043327$  (BKJD)





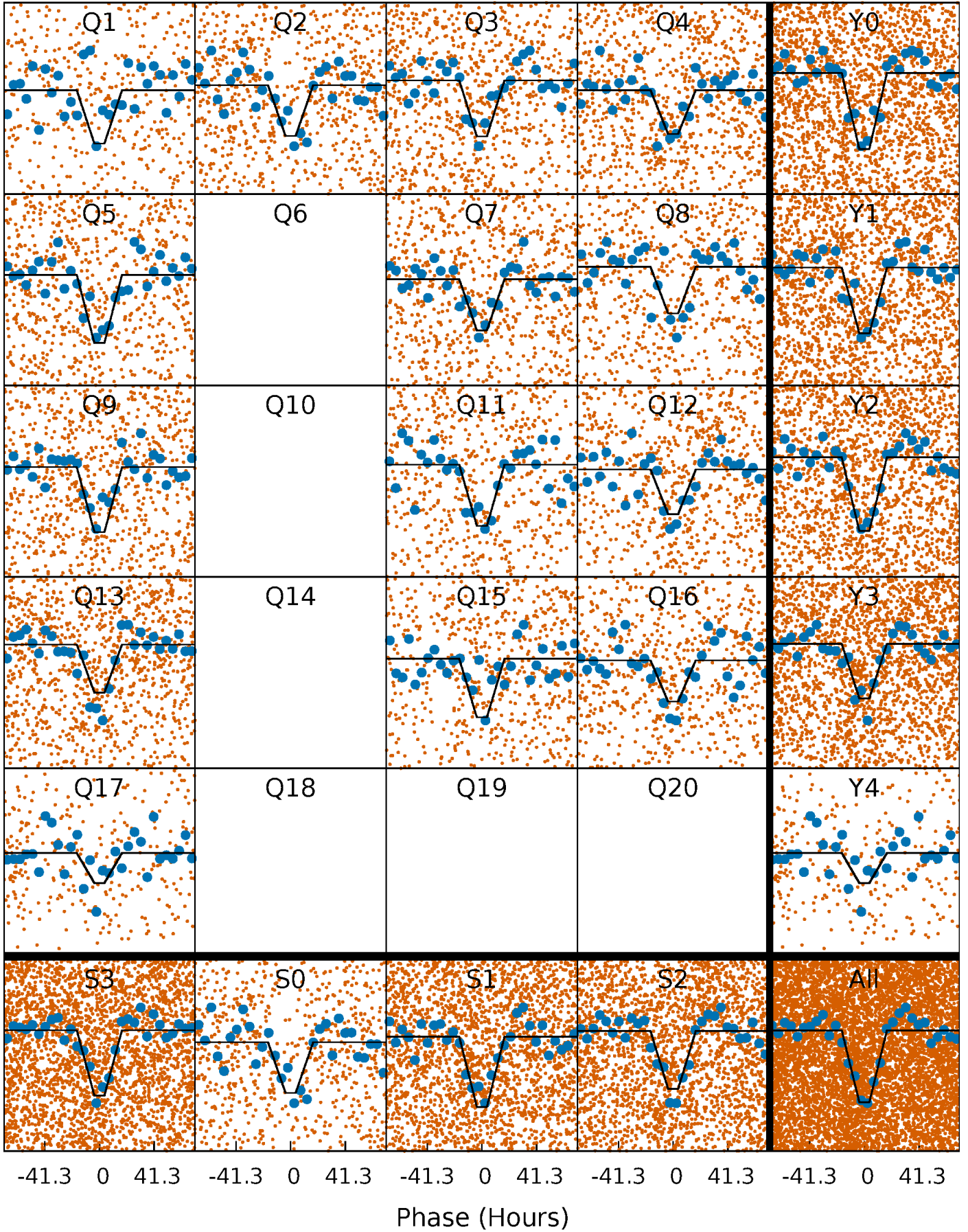
# DV Quarter-Phased Transit Curves

TCE 003756613-01 P= 20.923895 Days  $T_0=140.043327$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

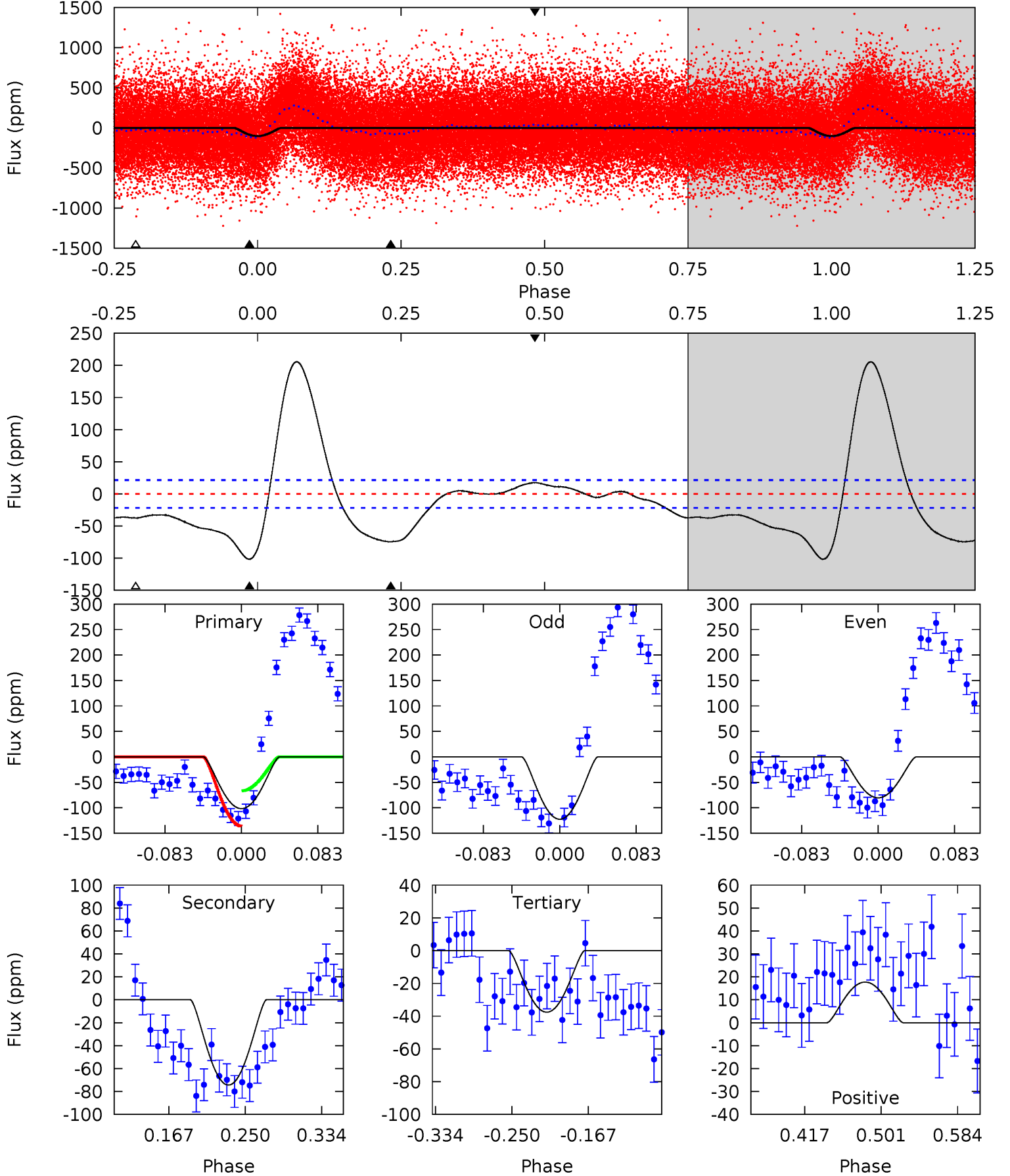
TCE 003756613-01 P= 20.922195 Days  $T_0=140.218751$  (BKJD)



# DV Model-Shift Uniqueness Test

003756613-01, P = 20.923895 Days, E = 119.119432 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	15.8	8.00	3.77	4.60	1.73	9.84	13.6	17.9	7.83	12.1	4.47	1.07	0.67	7.25

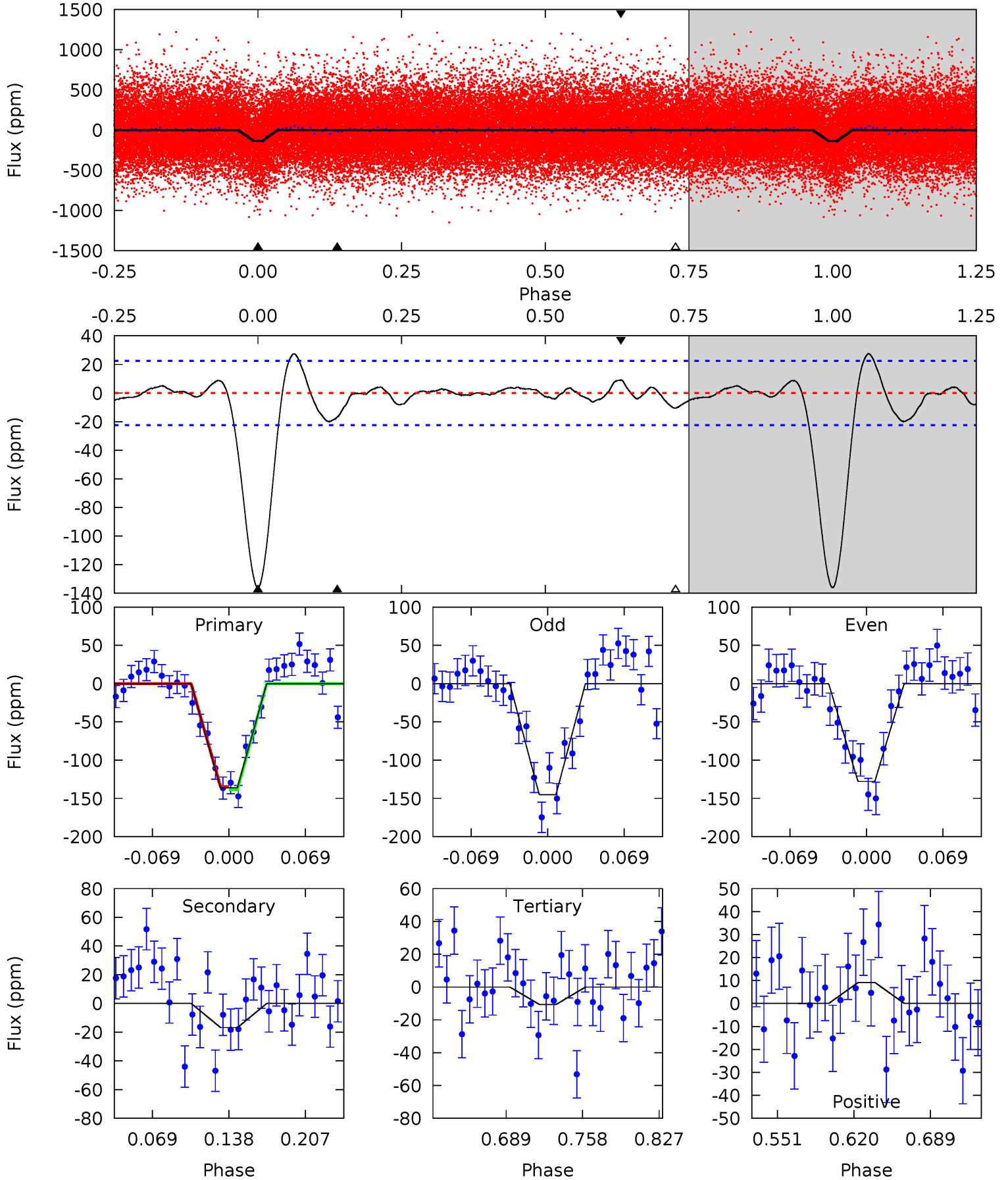




# Alt Model-Shift Uniqueness Test

003756613-01, P = 20.922195 Days, E = 119.296556 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
28.2	3.48	2.19	1.89	4.64	1.82	0.80	26.0	26.3	1.29	1.59	1.78	1.04	0.17	0.46





### Stellar Parameters For KIC 003756613

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6240^{+169}_{-206}$	$4.432^{+0.070}_{-0.210}$	$-0.280^{+0.250}_{-0.300}$	$1.014^{+0.335}_{-0.112}$	$1.010^{+0.147}_{-0.120}$	$1.364^{+0.422}_{-0.728}$
	+3%/-3%	+2%/-5%	+89%/-107%	+33%/-11%	+15%/-12%	+31%/-53%
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 003756613-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-74 \pm 5$	$3.58^{+3.21}_{-2.25}$	$1017^{+80}_{-52}$	$3691^{+1717}_{-670}$	$69^{+448}_{-50}$
Alt.	$-17 \pm 5$	$2.89^{+3.29}_{-2.02}$	$1014^{+75}_{-49}$	$3104^{+1654}_{-578}$	$24^{+257}_{-19}$

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

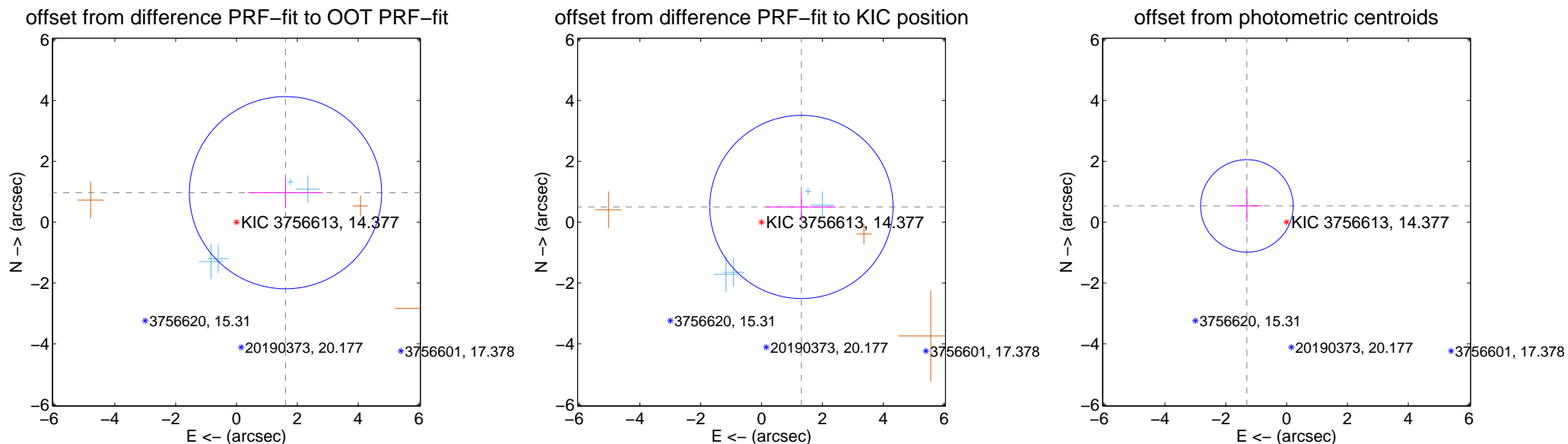
## DV Centroid Data

Supplemental centroid analysis for 003756613-01. Kepler magnitude: 14.38. Transit SNR 11.41

There are 4 quarters with good PRF difference image offsets

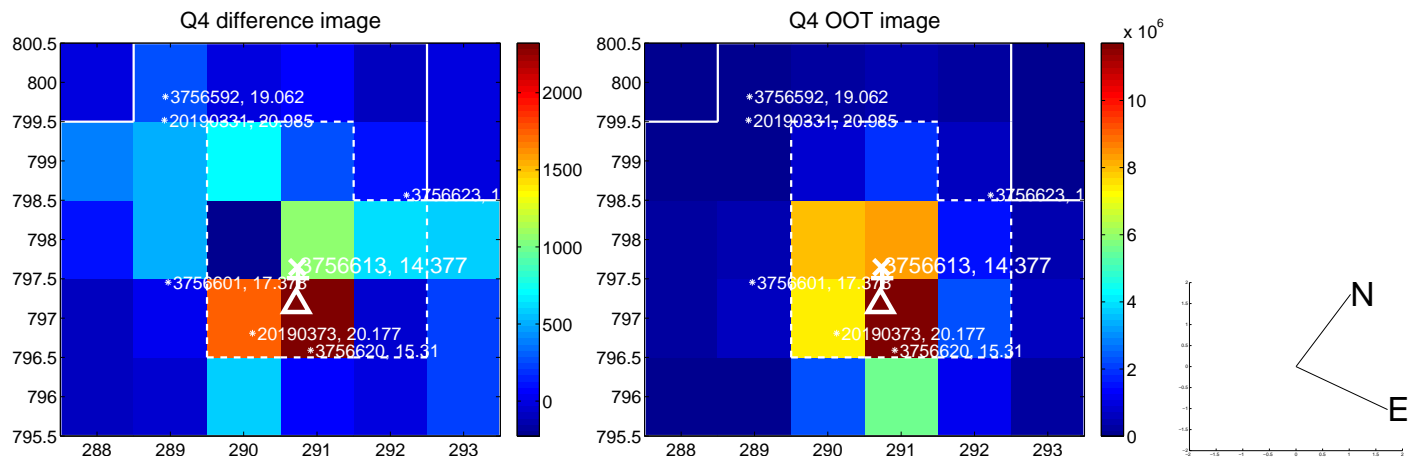
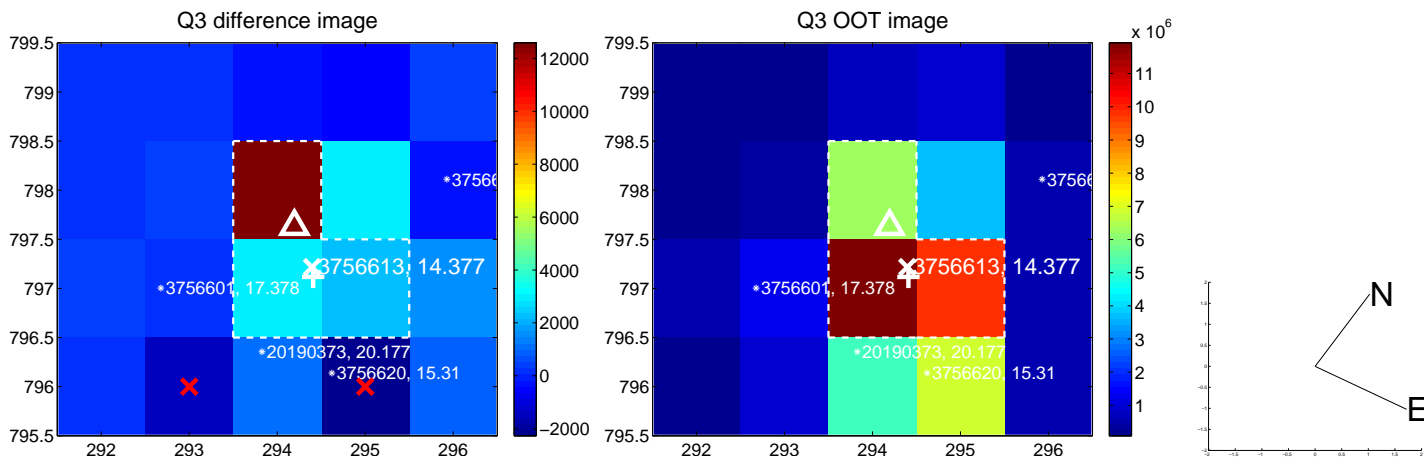
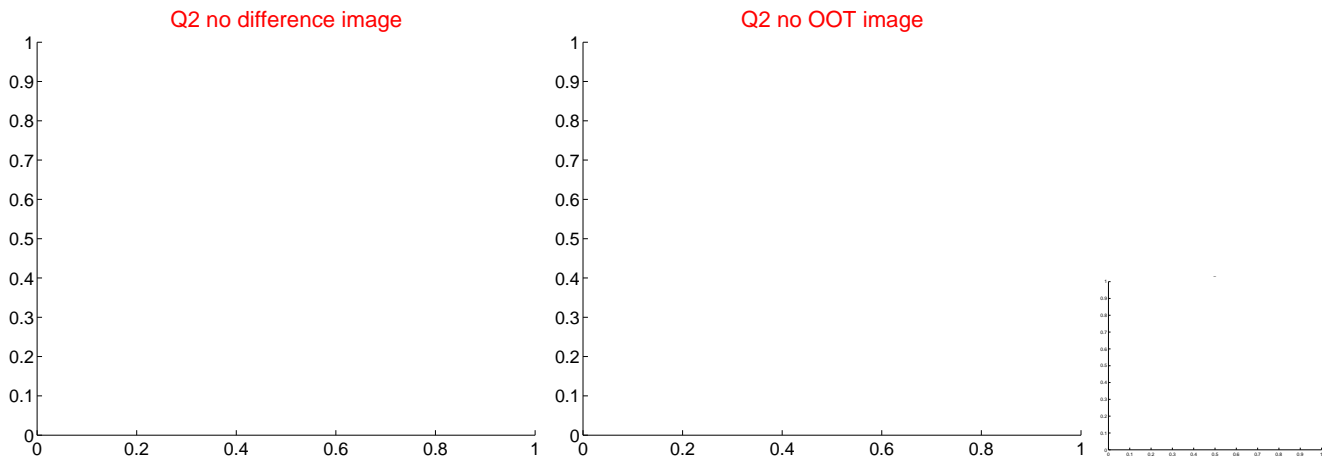
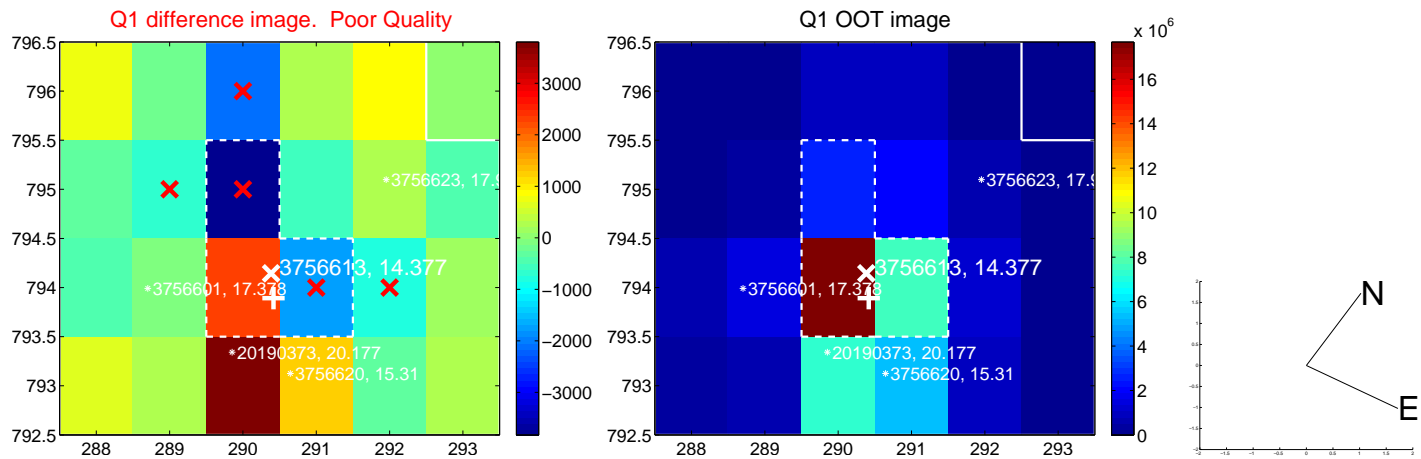
The direct PRF centroid is offset from the target star catalog position by about 0.63 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.880 \pm 1.053$	1.79	$-1.612 \pm 1.227$	$0.967 \pm 0.512$
PRF-fit source offset from KIC position	$1.402 \pm 1.004$	1.40	$-1.310 \pm 1.136$	$0.499 \pm 0.473$
photometric centroid source offset	$1.41 \pm 0.51$	2.78	$1.31 \pm 0.50$	$0.53 \pm 0.53$

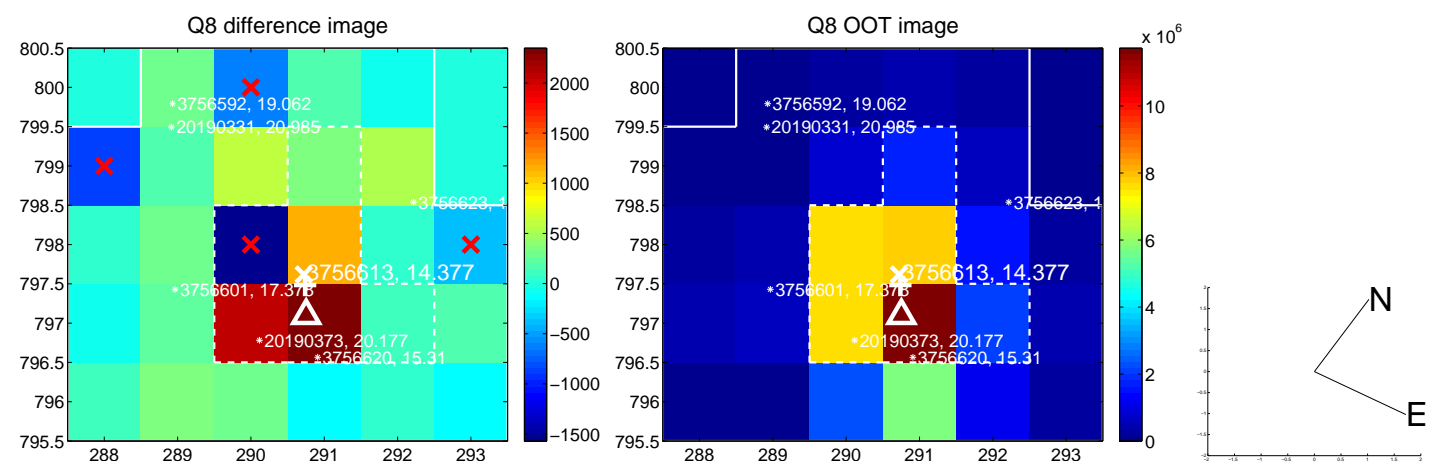
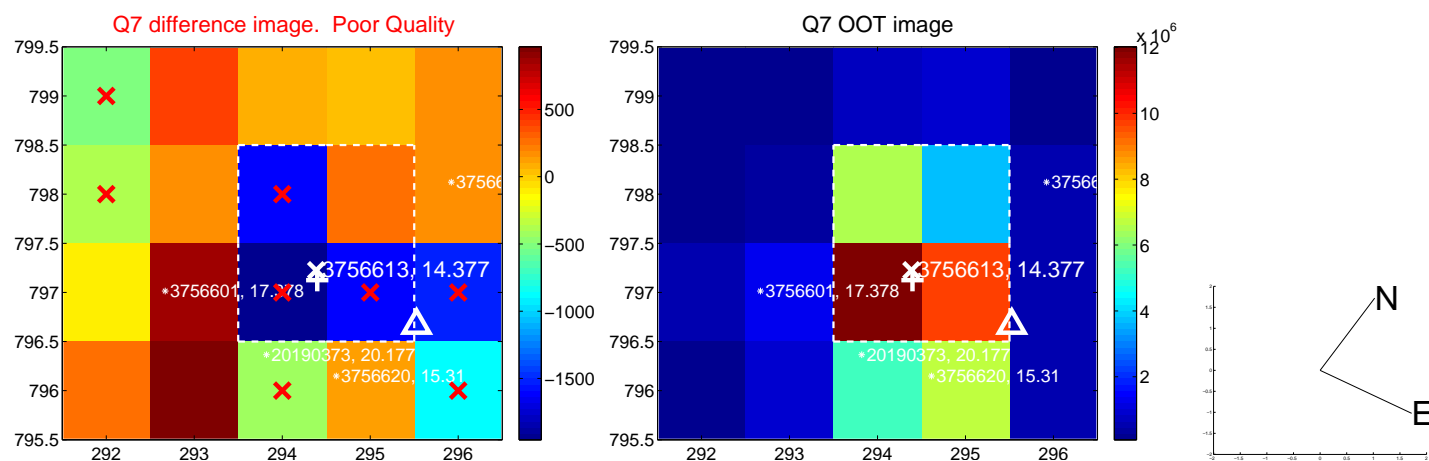
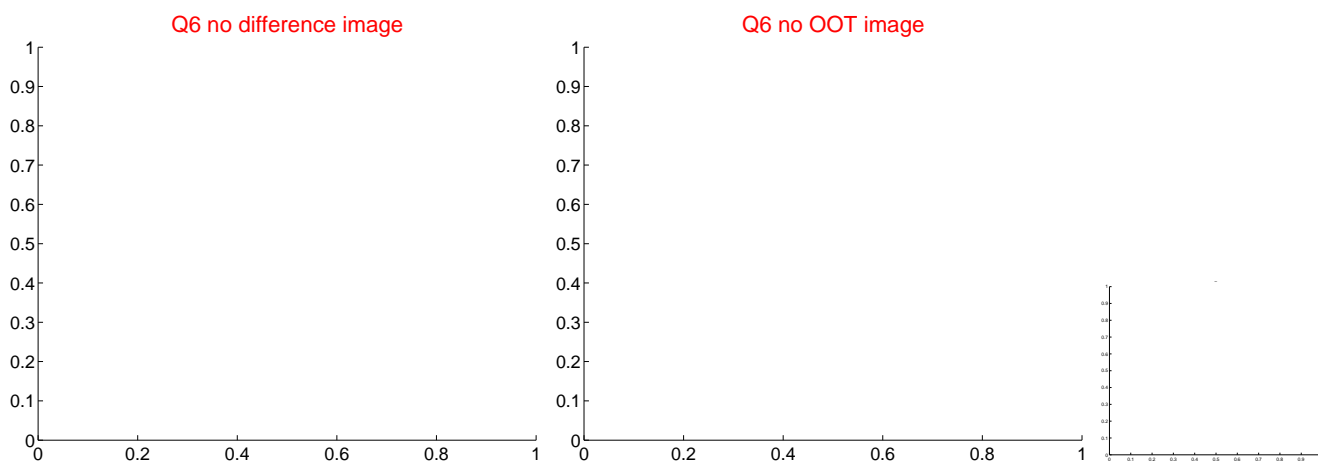
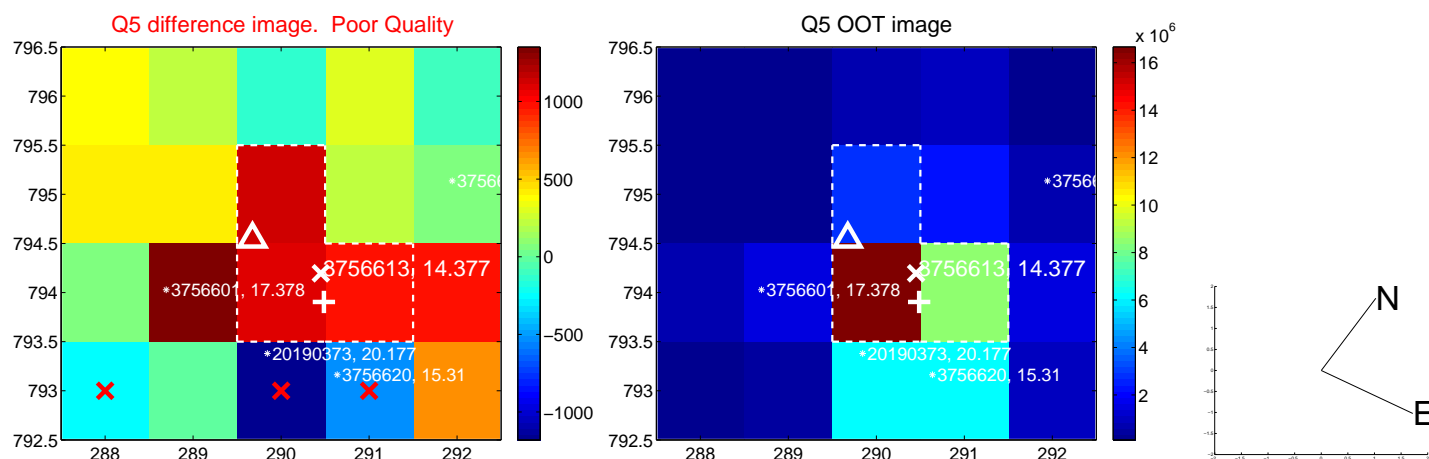


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

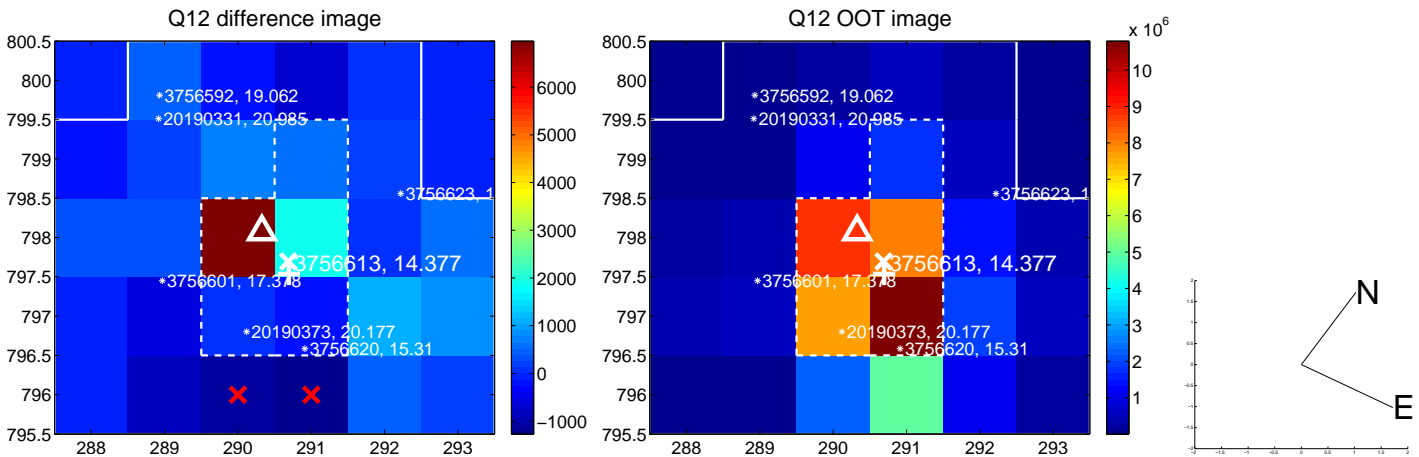
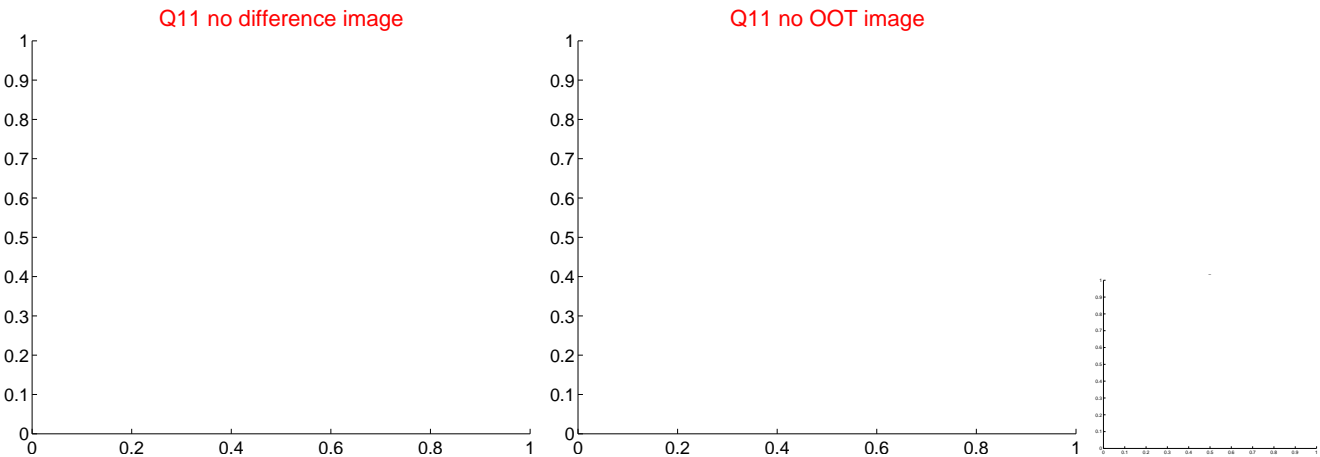
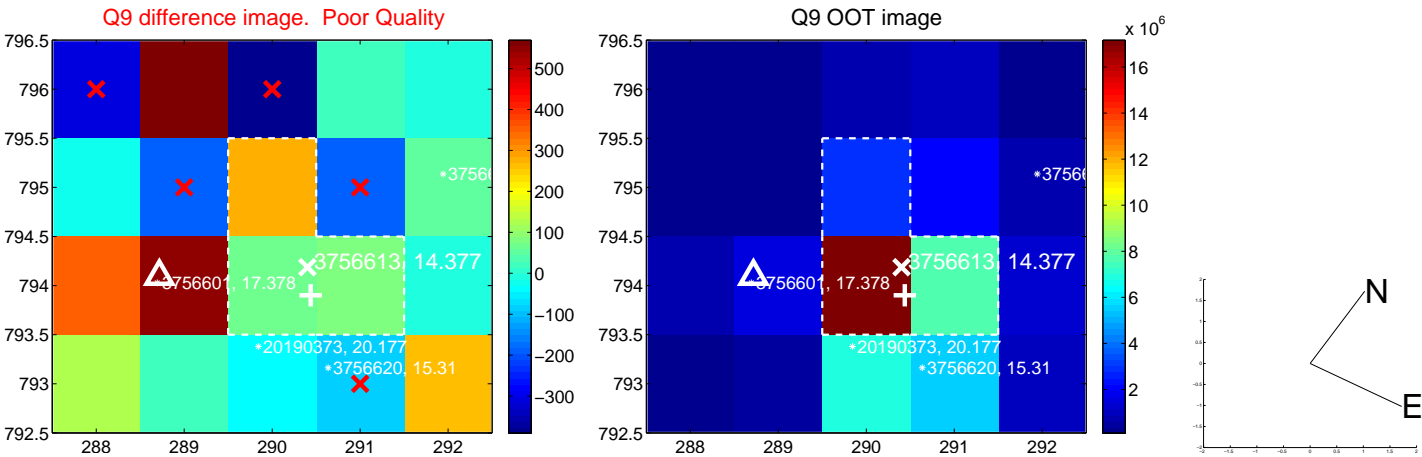


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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

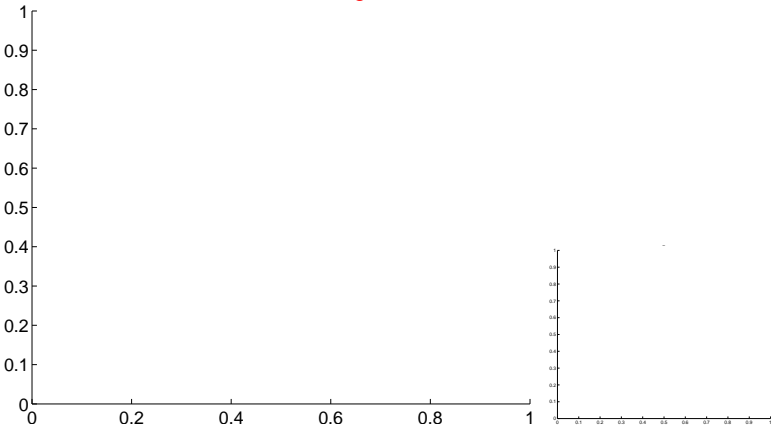


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

Q13 no difference image



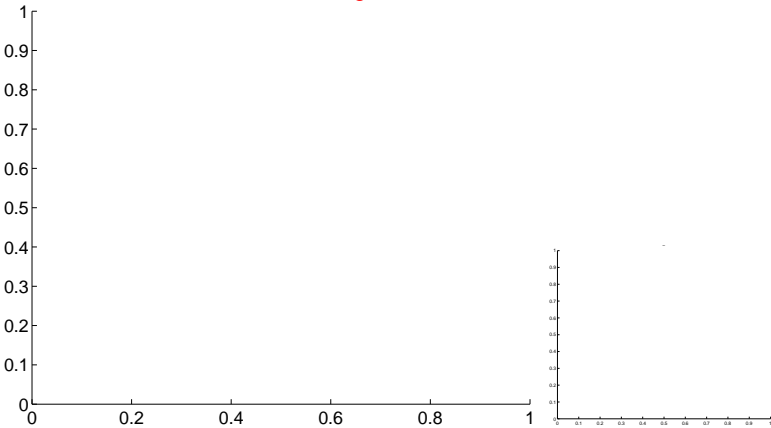
Q13 no OOT image



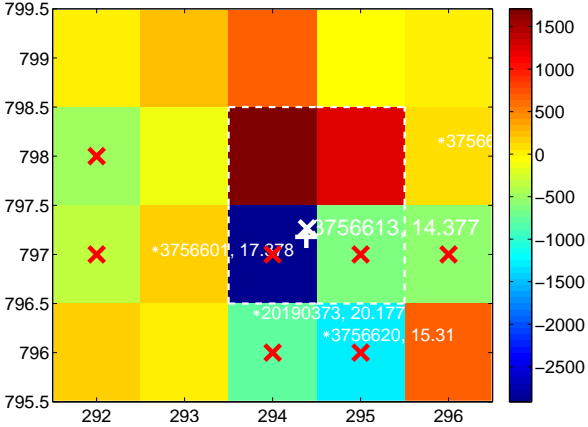
Q14 no difference image



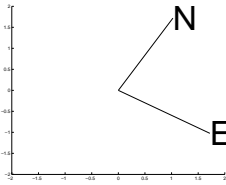
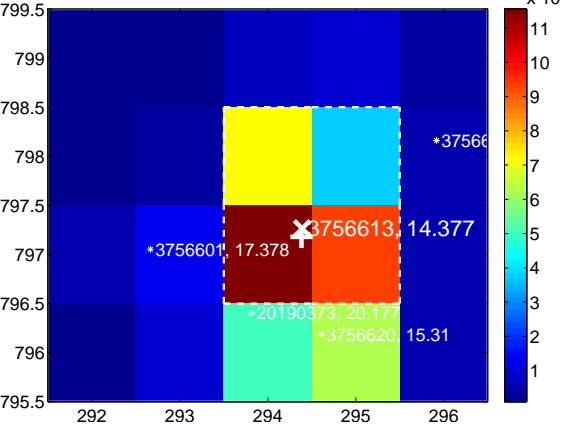
Q14 no OOT image



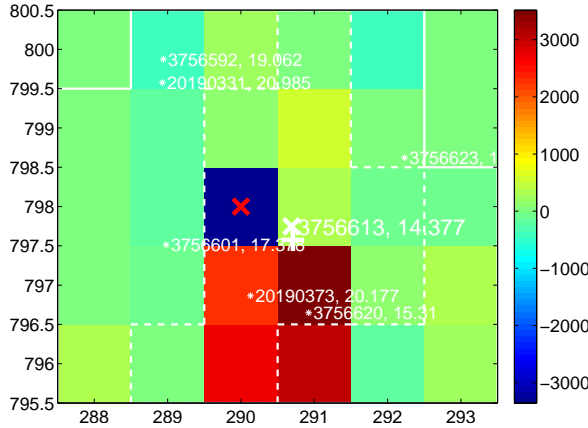
Q15 difference image. Poor Quality



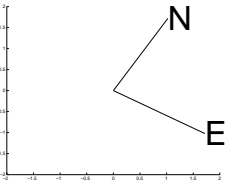
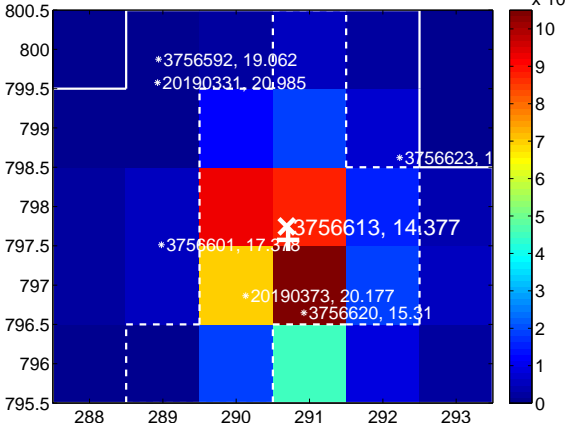
Q15 OOT image



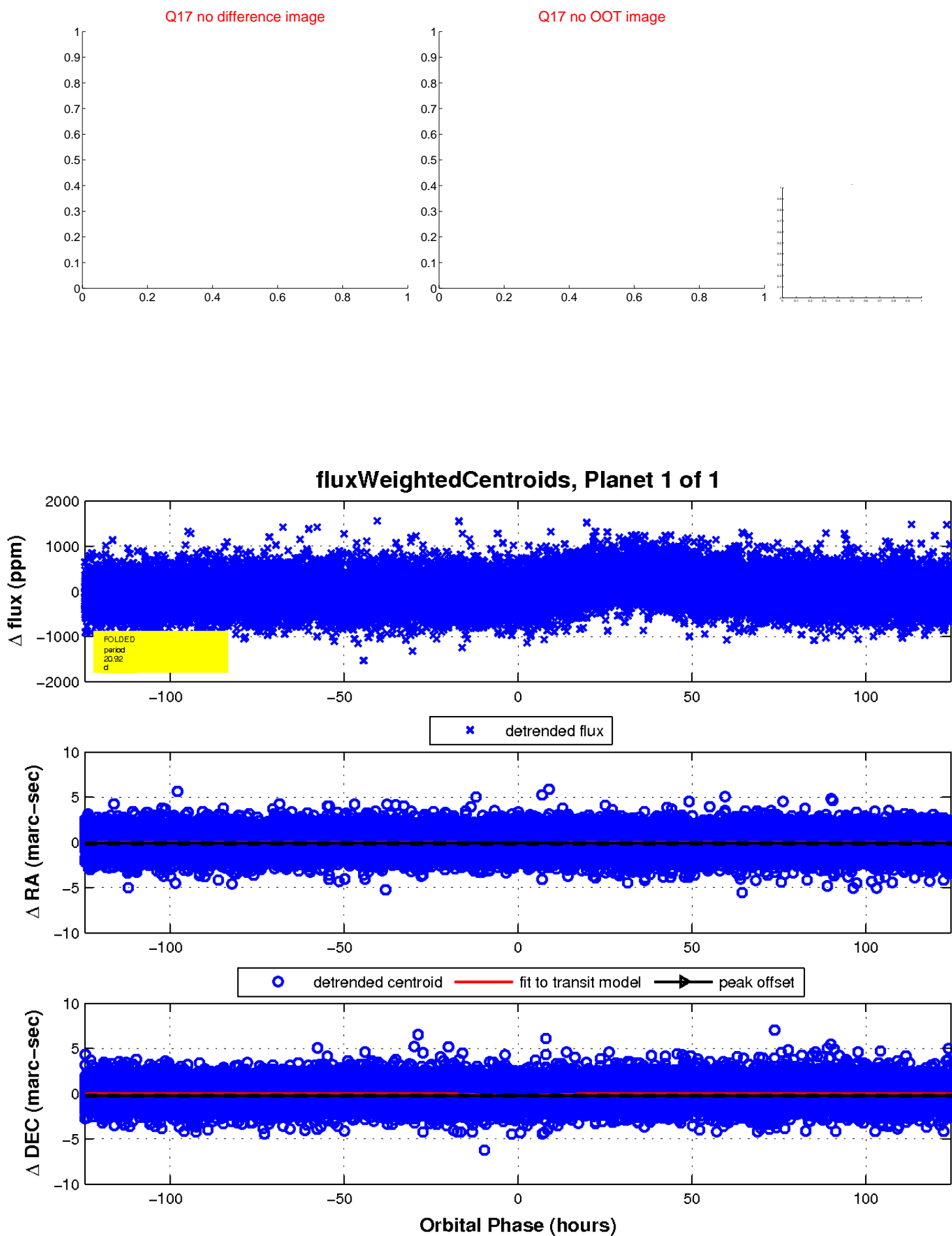
Q16 difference image. Poor Quality



Q16 OOT image



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



UKIRT Image

Declination

