

# KIC 009910043

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009910043-01	OBS	5732.01	39.399812	160.298408	294.1	7.893	8.8	8.5	0.80	5913	1.54	14.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009910043-01	OBS	PC	0.99	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.

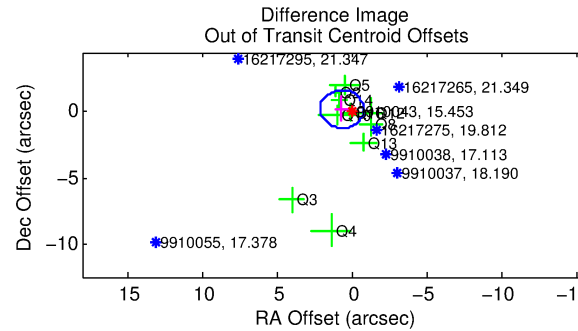
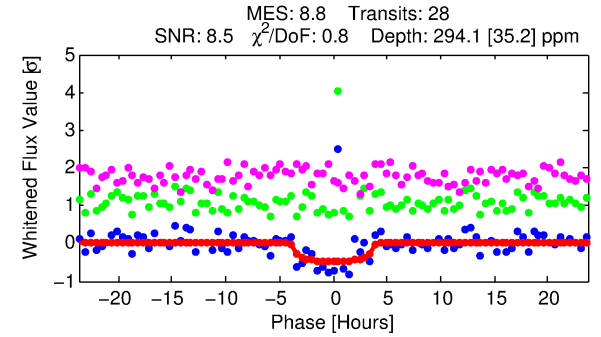
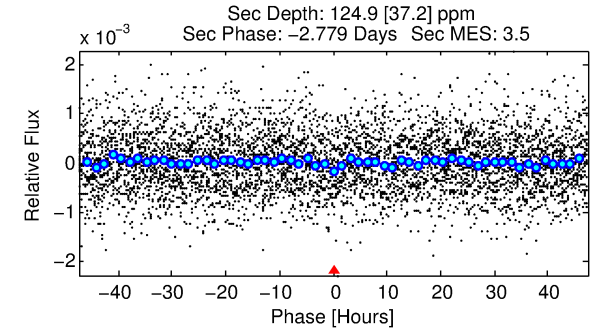
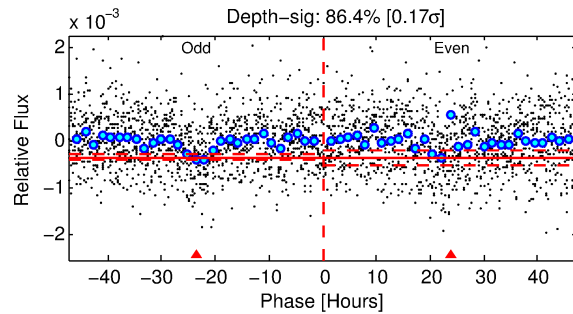
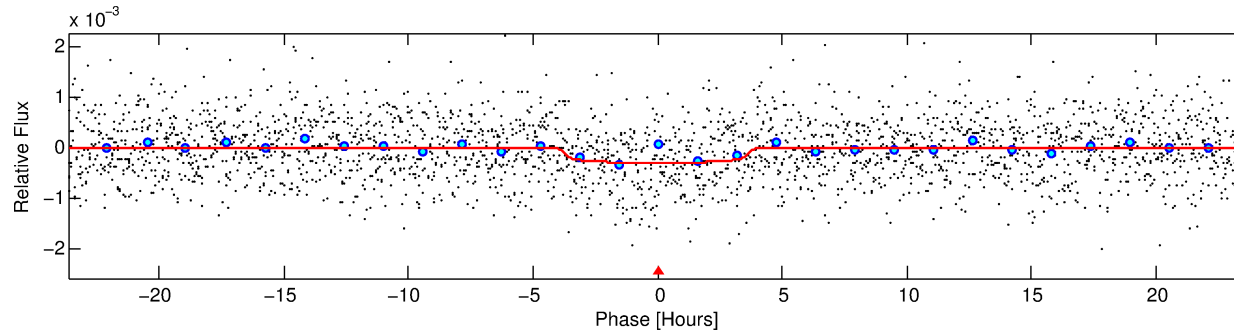
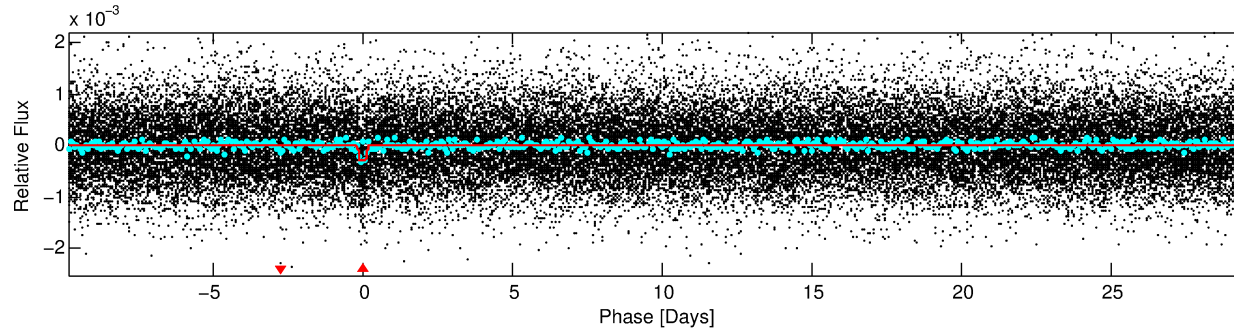
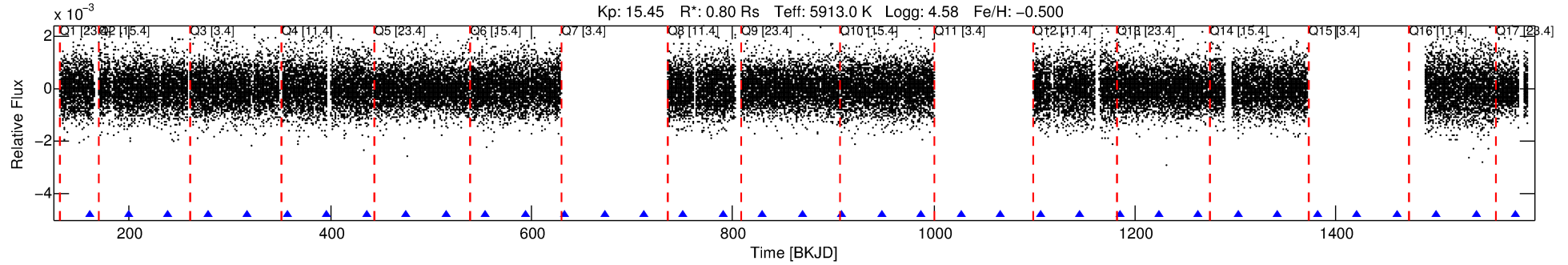
## Ephemeris Match Information For 009910043-01

No Significant Match Found

# DV One-Page Summary

KIC: 9910043 Candidate: 1 of 1 Period: 39.400 d  
KOI: K05732.01 Corr: 0.852

Kp: 15.45 R\*: 0.80 Rs Teff: 5913.0 K Logg: 4.58 Fe/H: -0.500



## DV Fit Results:

Period = 39.39981 [0.00079] d  
Epoch = 160.2984 [0.0163] BKJD  
Rp/R\* = 0.0177 [0.0067]  
a/R\* = 22.03 [41.80]  
b = 0.84 [0.68]  
Seff = 14.69 [4.25]  
Teq = 499 [36] K  
Rp = 1.54 [0.67] Re  
a = 0.2171 [0.0392] AU  
Ag = 1371.08 [1170.25] [1.17σ]  
Teffp = 4697 [964] K [4.35σ]

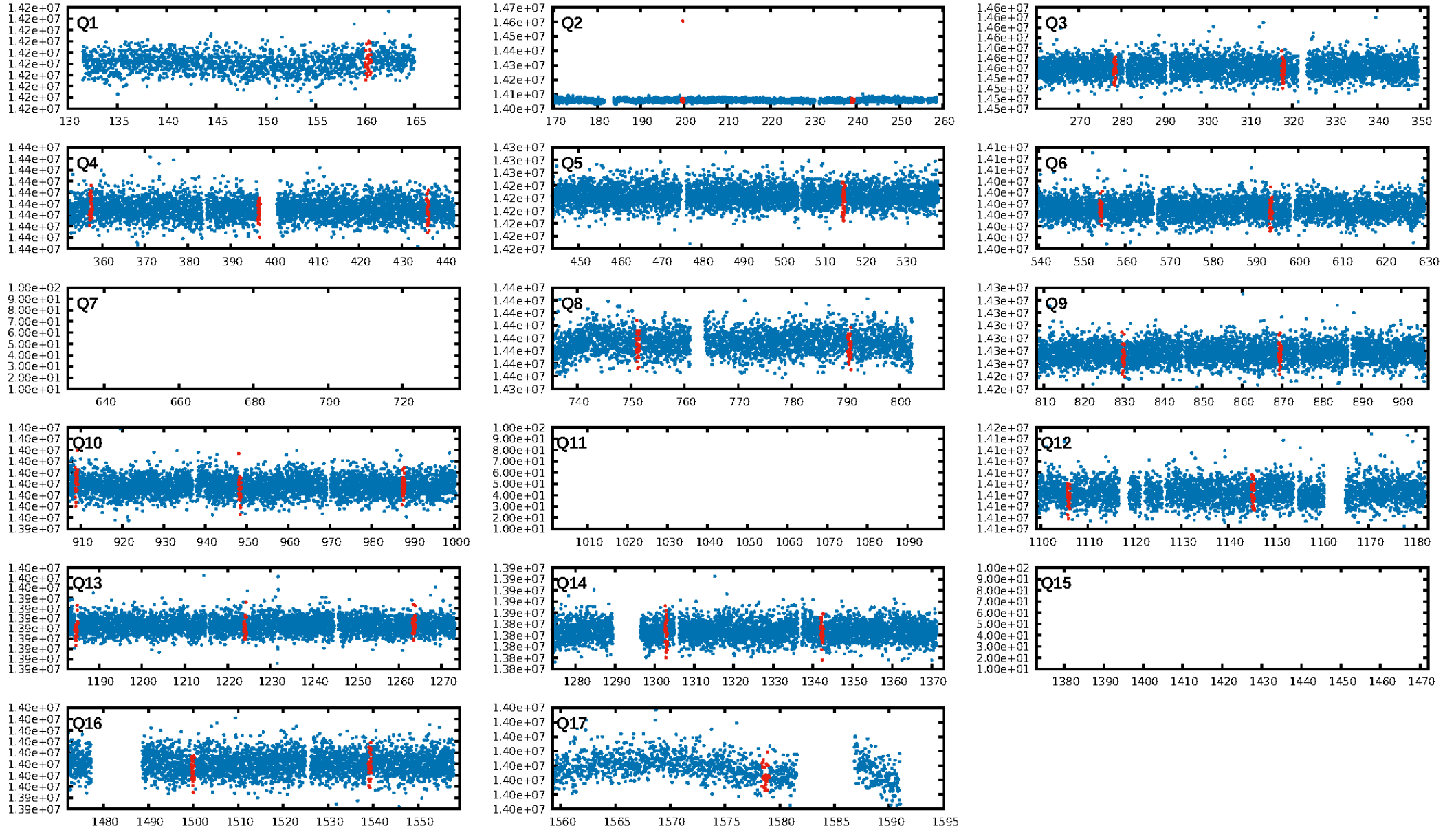
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 68.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.74e-19  
RollingBand-fgt: 1.00 [26/26]  
GhostDiagnostic-chr: 44.02  
Centroid-sig: 0.2%  
Centroid-so: 3.957 arcsec [2.13σ]  
OotOffset-rm: 0.672 arcsec [1.39σ]  
KicOffset-rm: 0.571 arcsec [1.17σ]  
OotOffset-st: 3/1/4/2 [10]  
KicOffset-st: 3/1/4/2 [10]  
DiffImageQuality-fgm: 0.60 [6/10]  
DiffImageOverlap-fno: 1.00 [14/14]

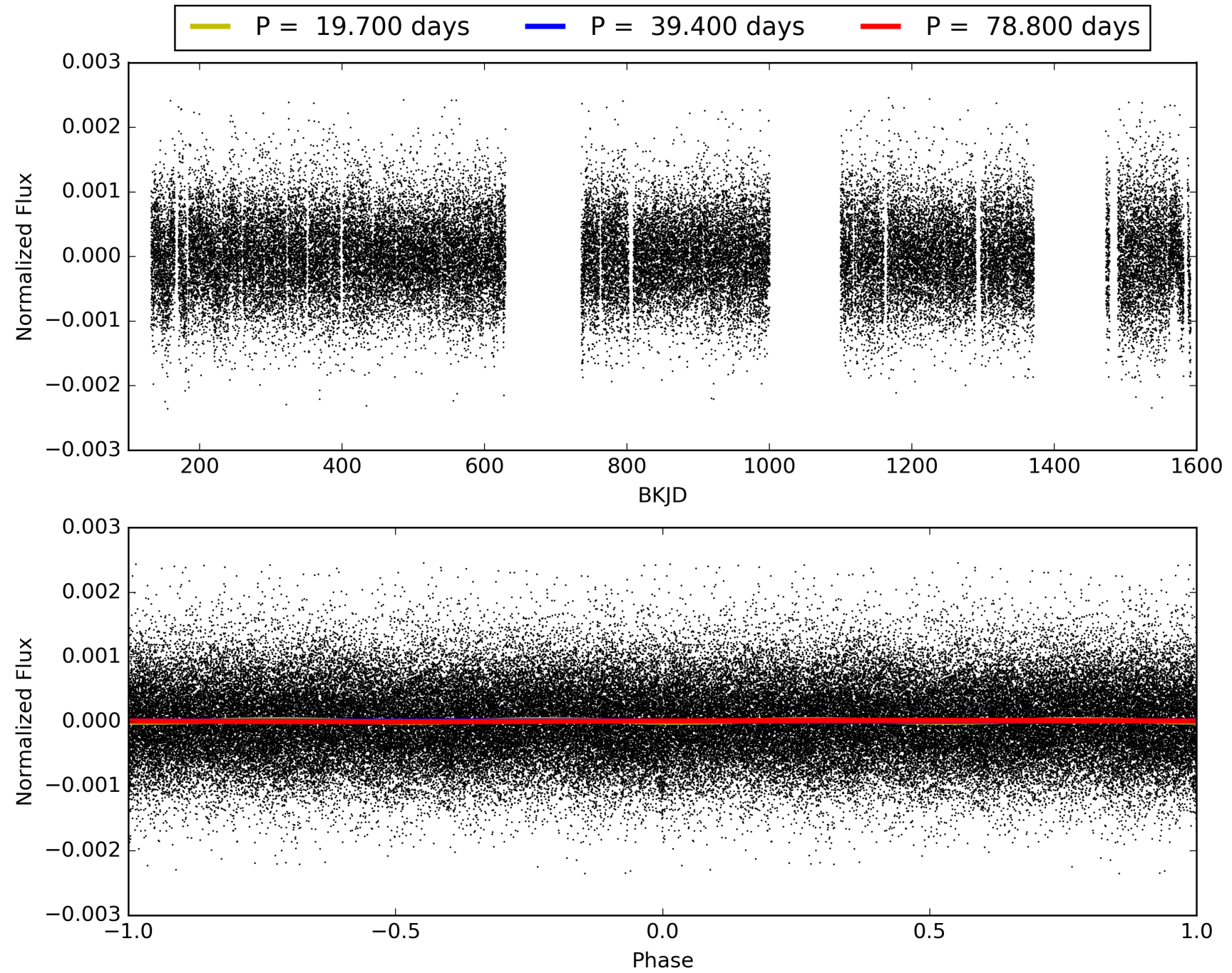
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:42:55 Z

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

# TCE 009910043-01, PDC Light Curves

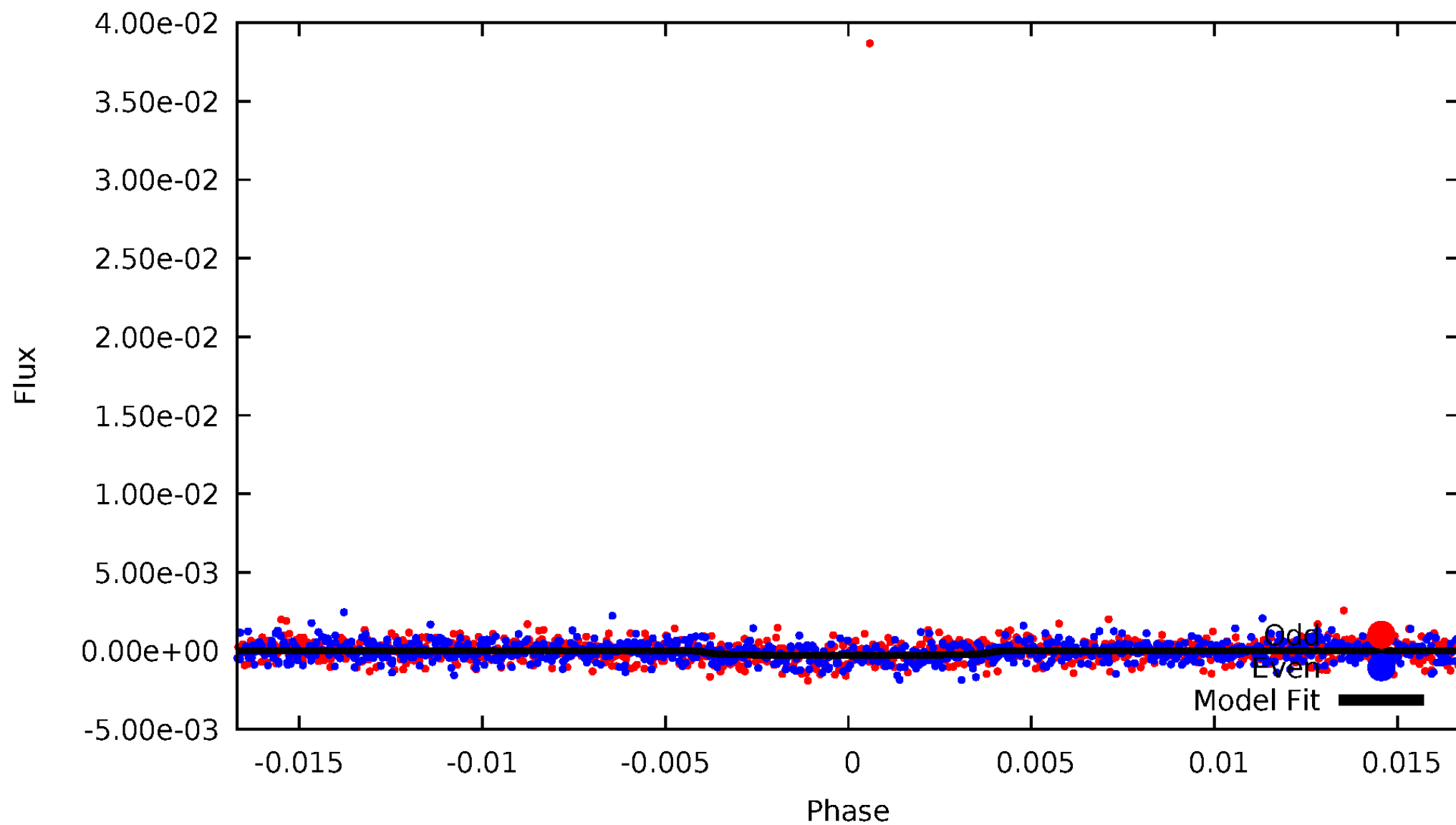


TCE 009910043-01



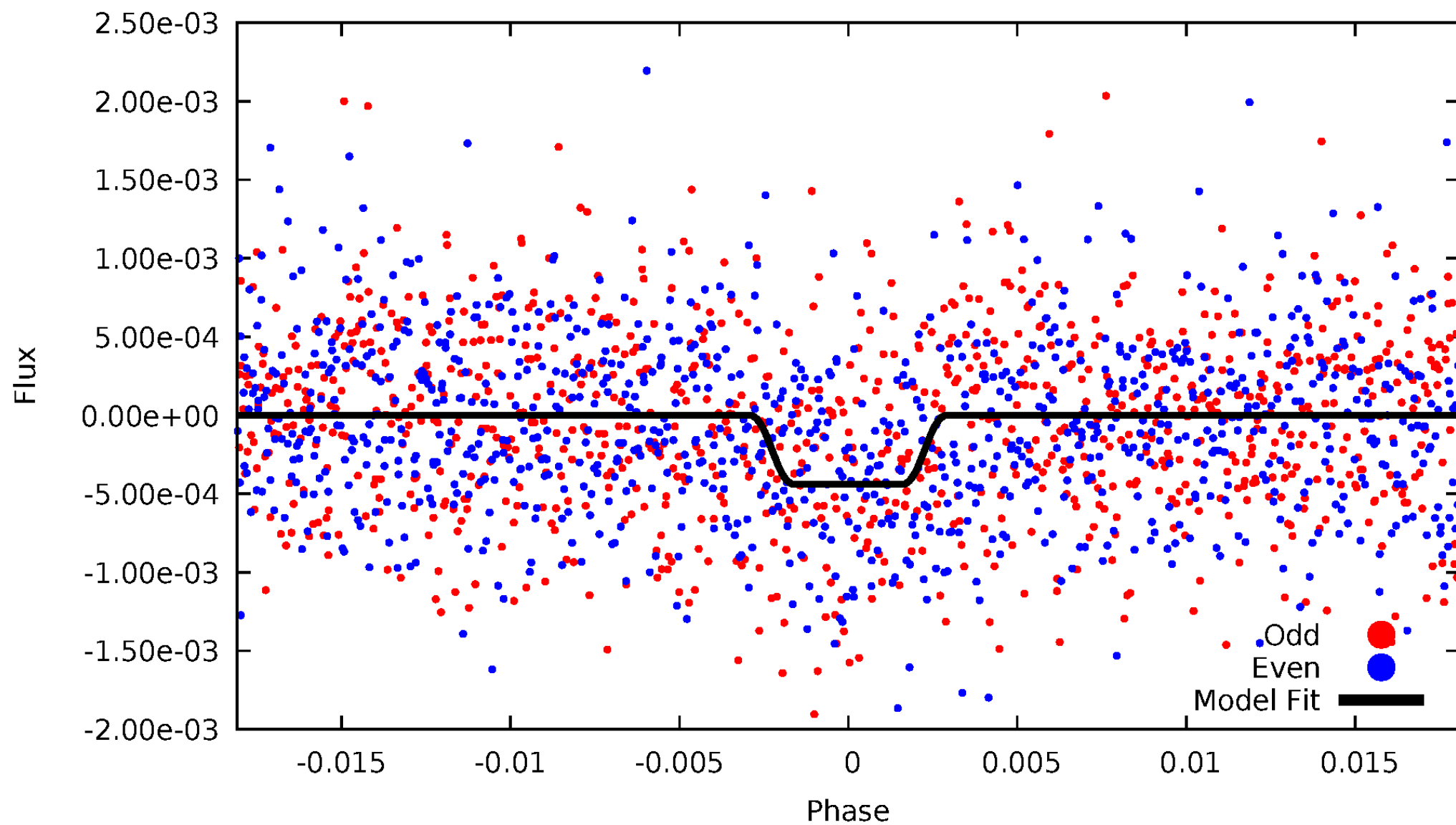
# DV Odd/Even

TCE 009910043-01



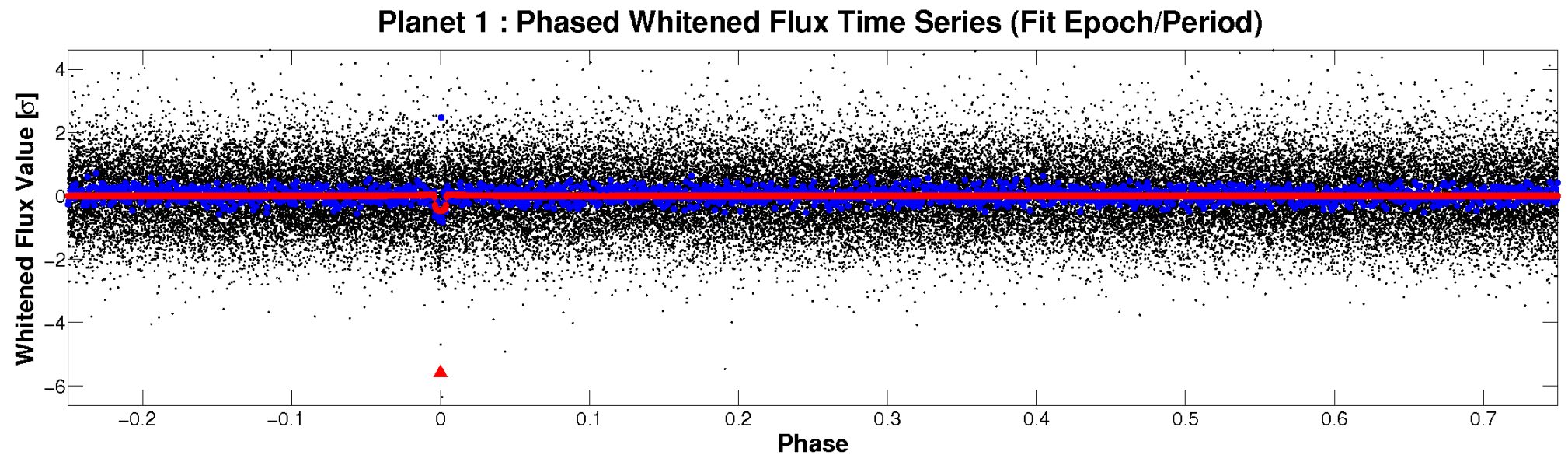
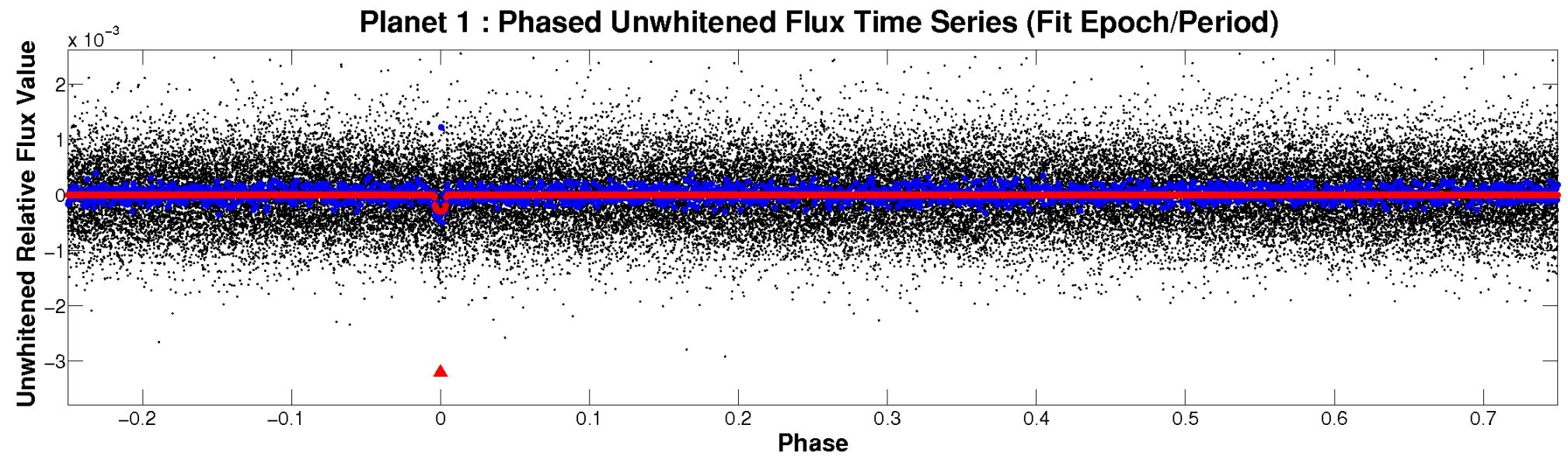
# ALT Odd/Even

TCE 009910043-01



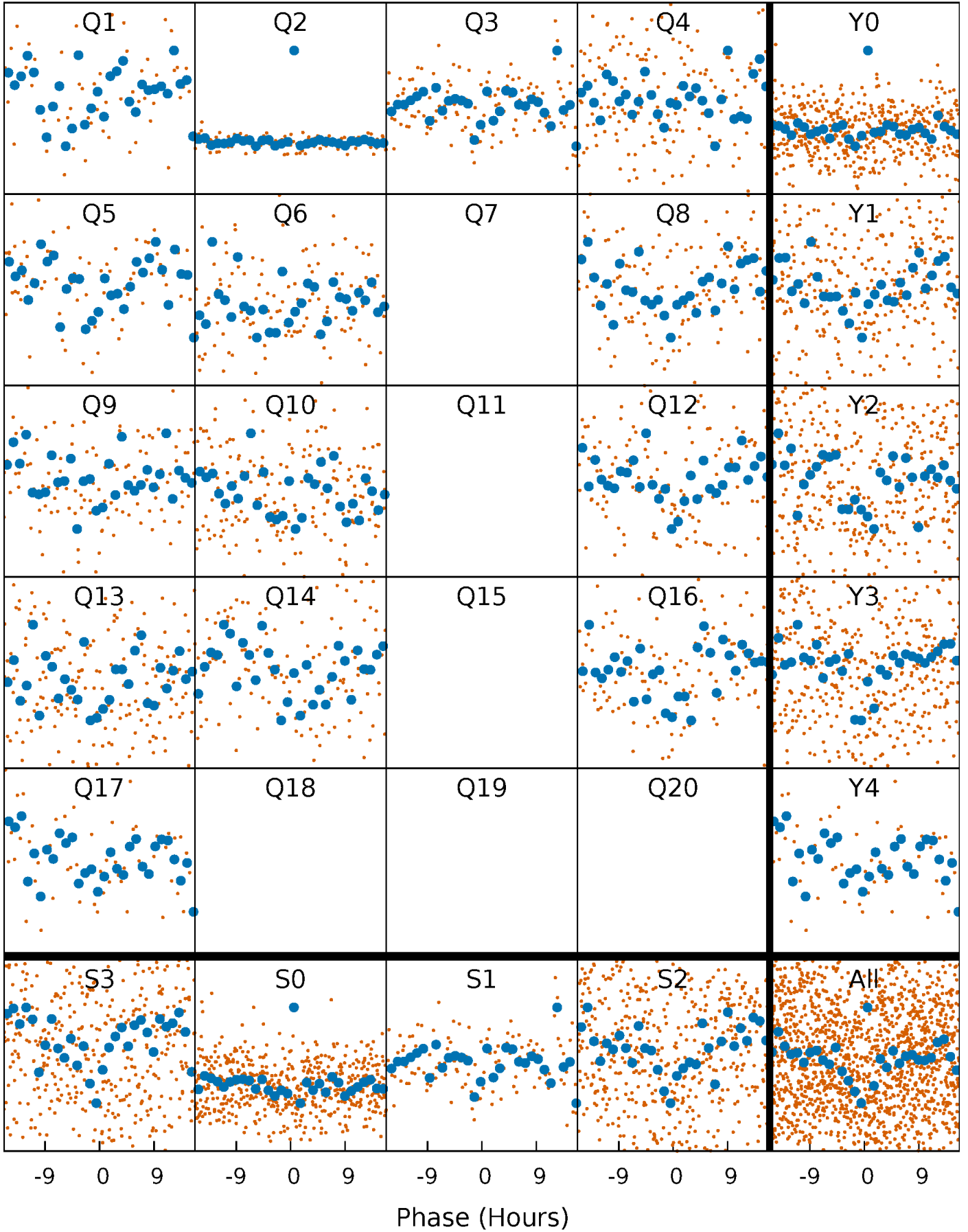


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

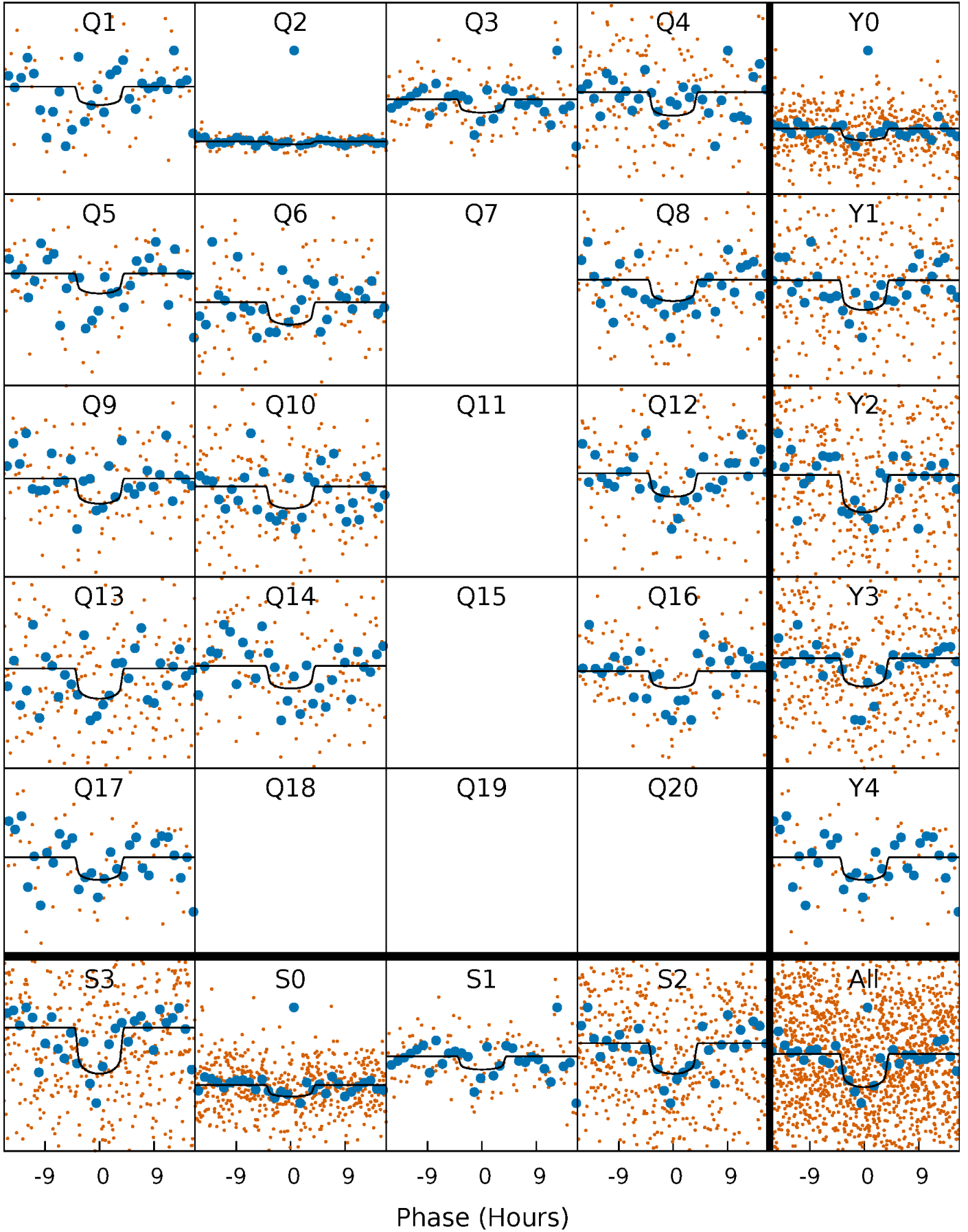
TCE 009910043-01 P= 39.399812 Days  $T_0=160.298408$  (BKJD)





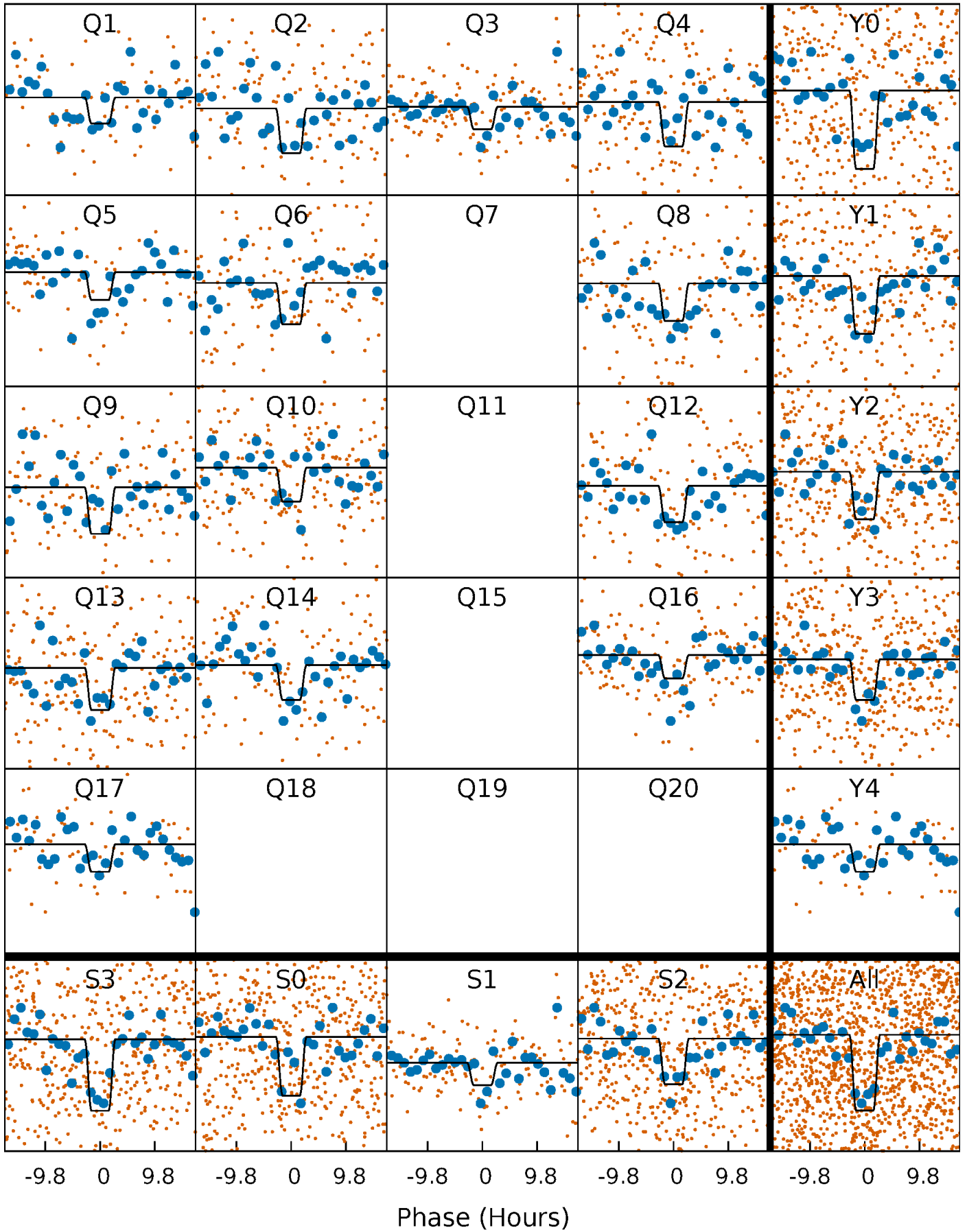
# DV Quarter-Phased Transit Curves

TCE 009910043-01 P= 39.399812 Days  $T_0=160.298408$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

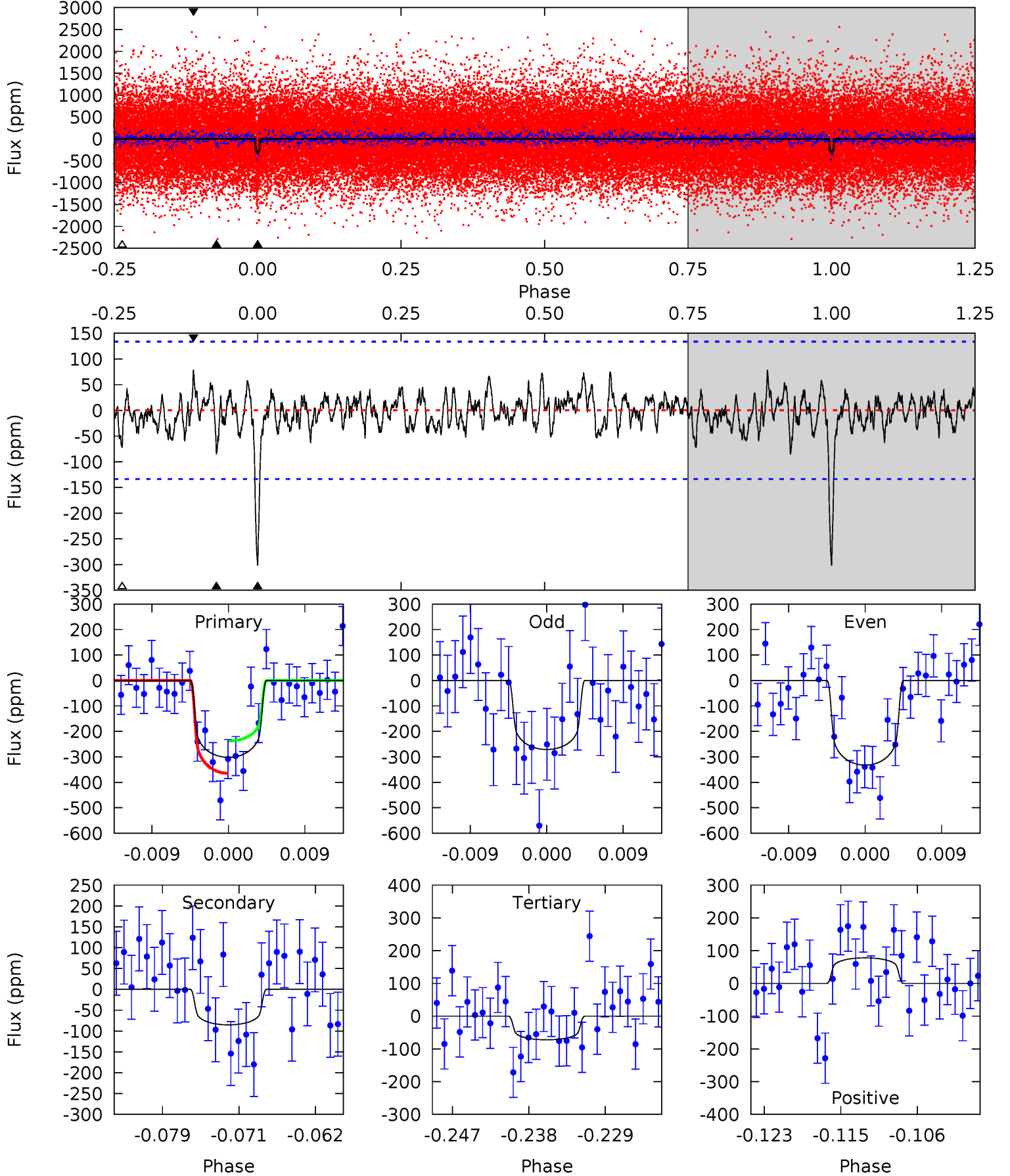
TCE 009910043-01 P= 39.401450 Days  $T_0=160.246883$  (BKJD)



# DV Model-Shift Uniqueness Test

009910043-01, P = 39.399812 Days, E = 120.898596 Days

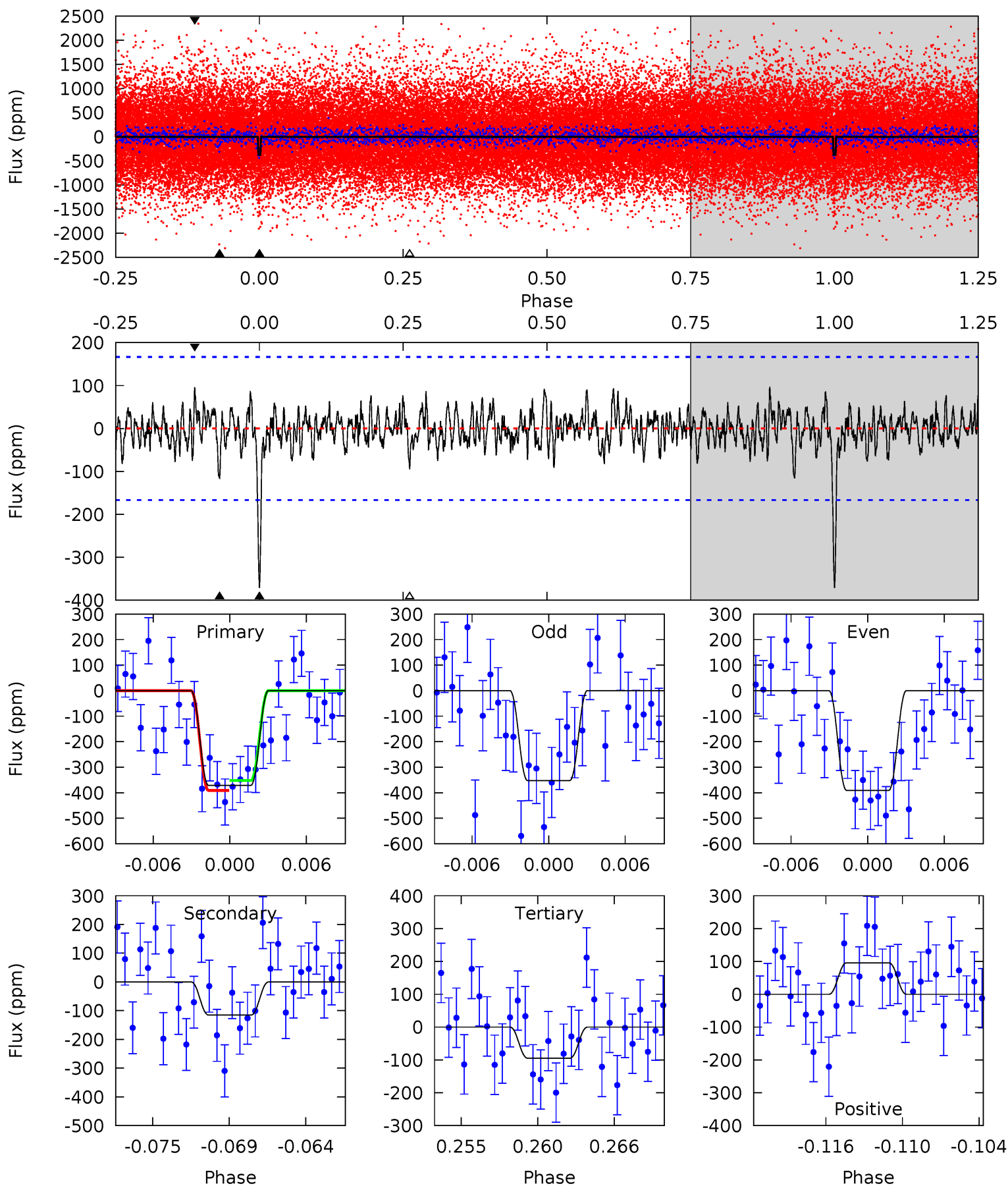
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	3.22	2.73	2.95	5.05	2.62	0.97	8.67	8.45	0.49	0.28	1.16	0.63	0.21	2.40



# Alt Model-Shift Uniqueness Test

009910043-01, P = 39.401450 Days, E = 120.845433 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
11.4	3.56	2.91	2.95	5.13	2.76	1.00	8.52	8.49	0.64	0.61	0.59	1.12	0.20	0.59



### Stellar Parameters For KIC 009910043

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5913^{+147}_{-177}$	$4.581^{+0.036}_{-0.144}$	$-0.500^{+0.250}_{-0.300}$	$0.795^{+0.170}_{-0.068}$	$0.898^{+0.077}_{-0.106}$	$2.514^{+0.475}_{-1.019}$
	+2%/-3%	+1%/-3%	+50%/-60%	+21%/-9%	+9%/-12%	+19%/-41%
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 009910043-01 / KOI 5732.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-85 \pm 26$	$1.62^{+0.61}_{-0.63}$	$711^{+37}_{-28}$	$4428^{+1099}_{-563}$	$825^{+1447}_{-418}$
Alt.	$-116 \pm 32$	$1.90^{+0.65}_{-0.61}$	$710^{+37}_{-28}$	$4408^{+861}_{-484}$	$800^{+1092}_{-374}$

$T_{max}$  = 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

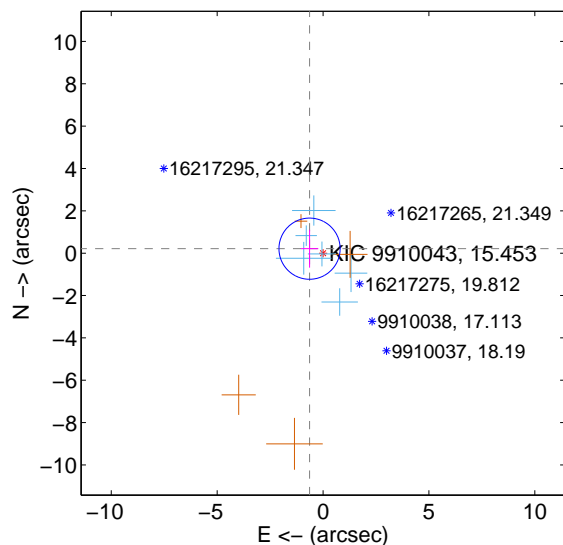
Supplemental centroid analysis for 009910043-01. Kepler magnitude: 15.45. Transit SNR 8.46

There are 6 quarters with good PRF difference image offsets

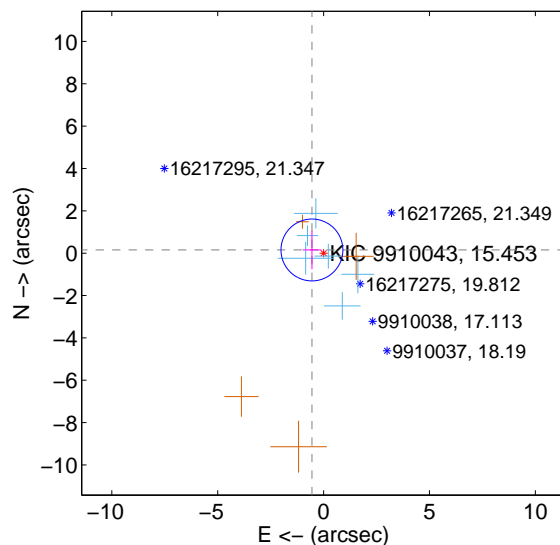
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.672 \pm 0.482$	1.39	$0.637 \pm 0.411$	$0.212 \pm 0.895$
PRF-fit source offset from KIC position	$0.571 \pm 0.487$	1.17	$0.550 \pm 0.438$	$0.151 \pm 0.912$
photometric centroid source offset	$3.96 \pm 1.86$	2.13	$2.33 \pm 1.72$	$-3.19 \pm 1.92$

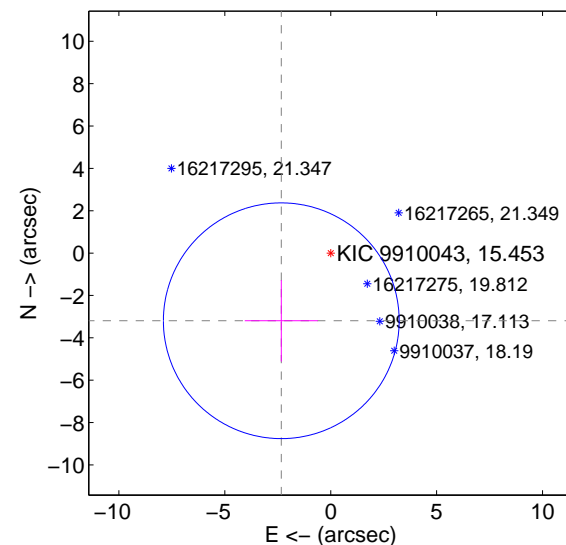
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



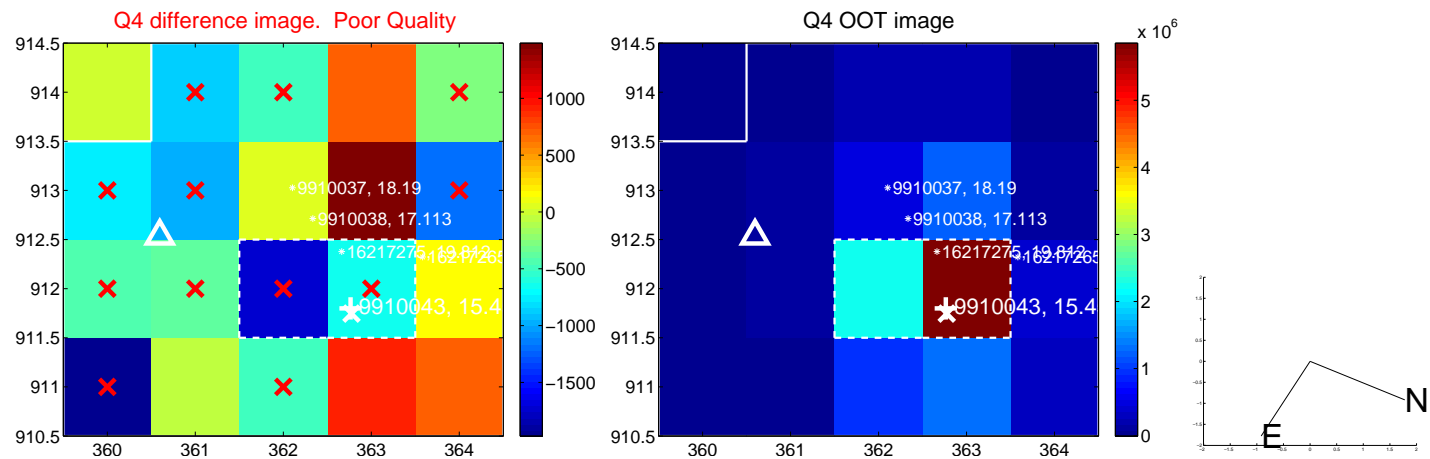
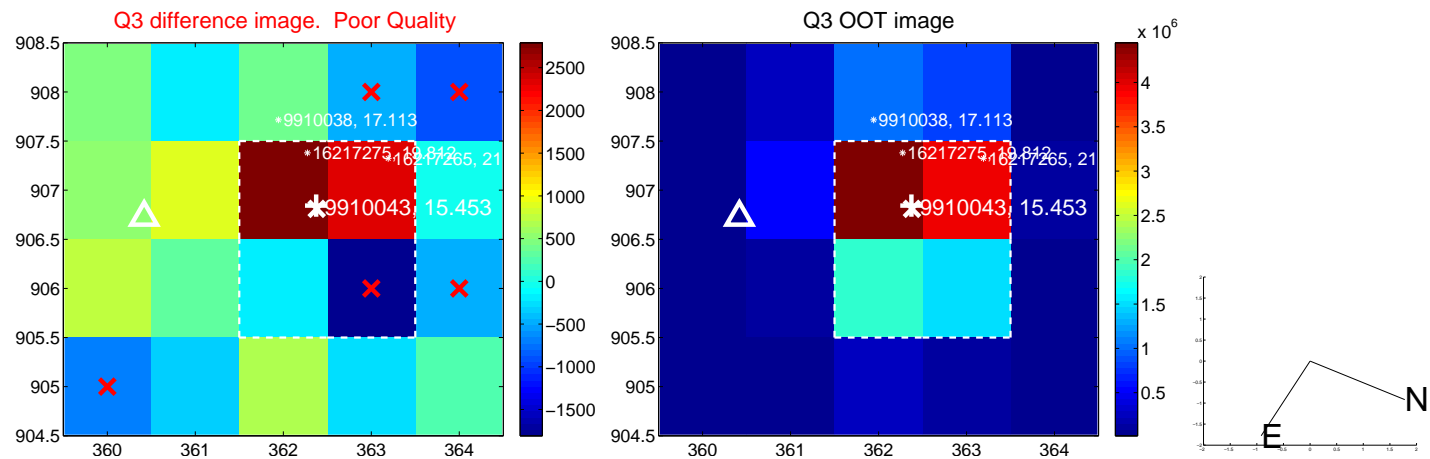
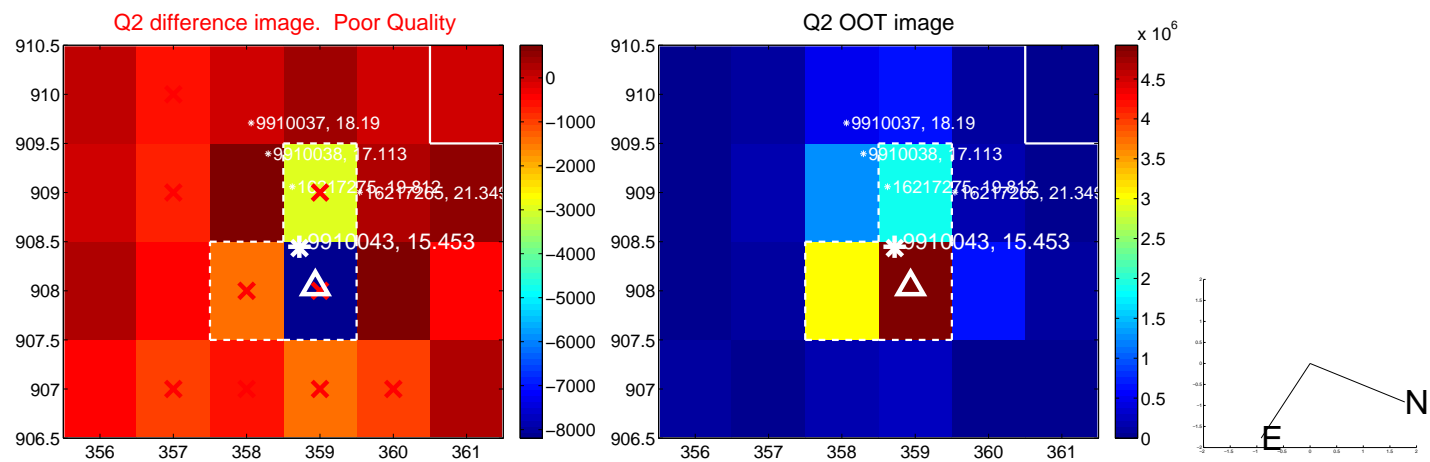
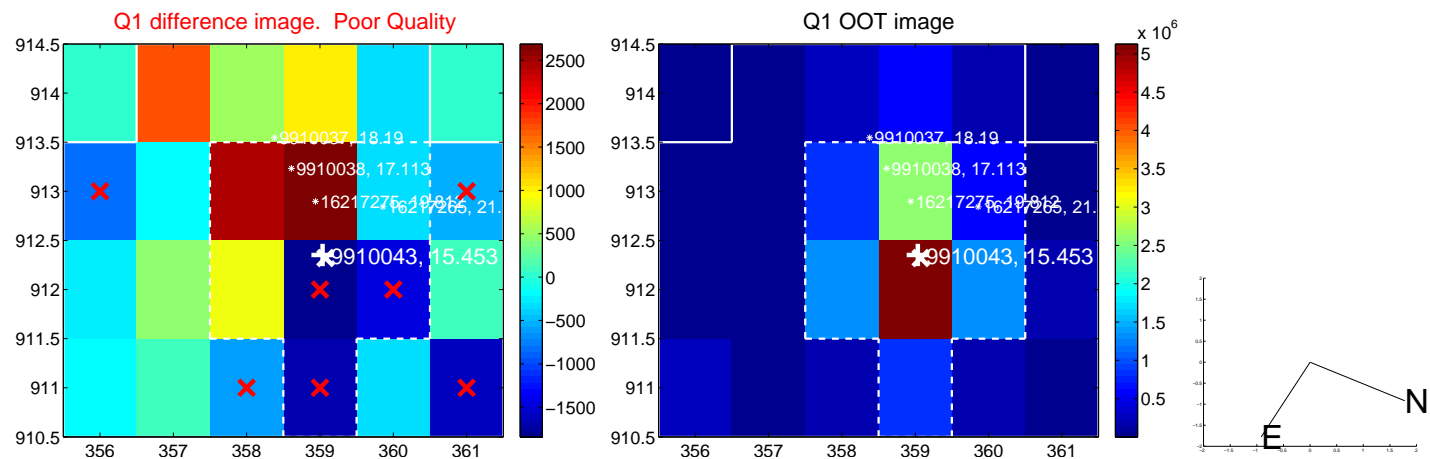
offset from photometric centroids



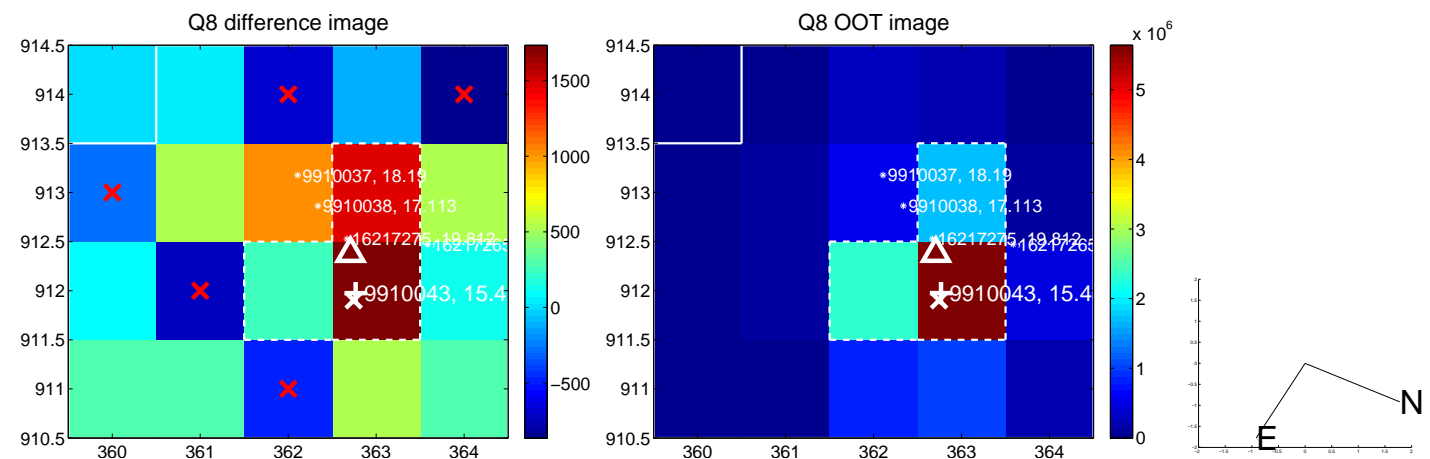
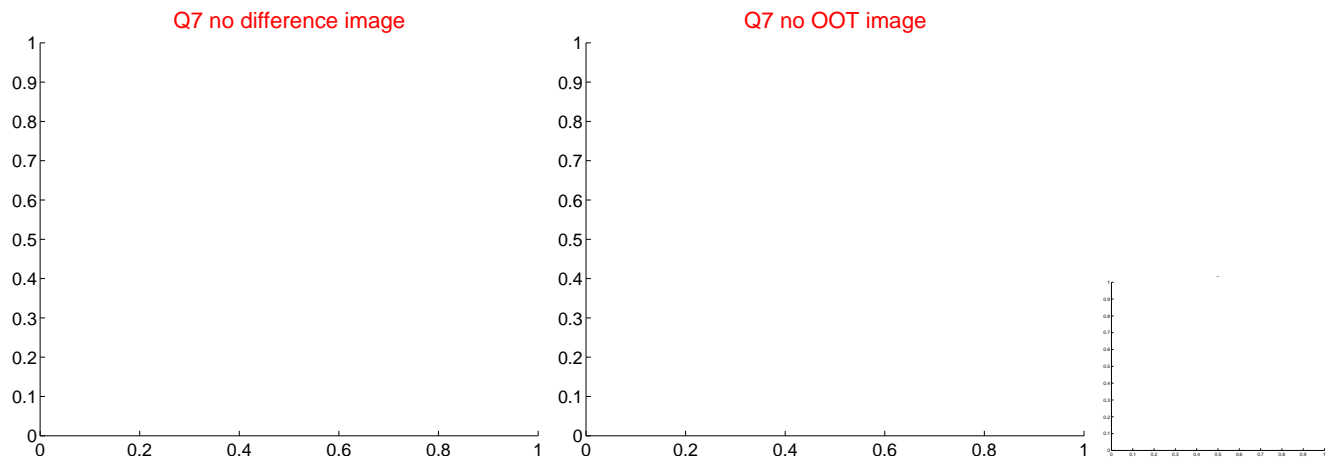
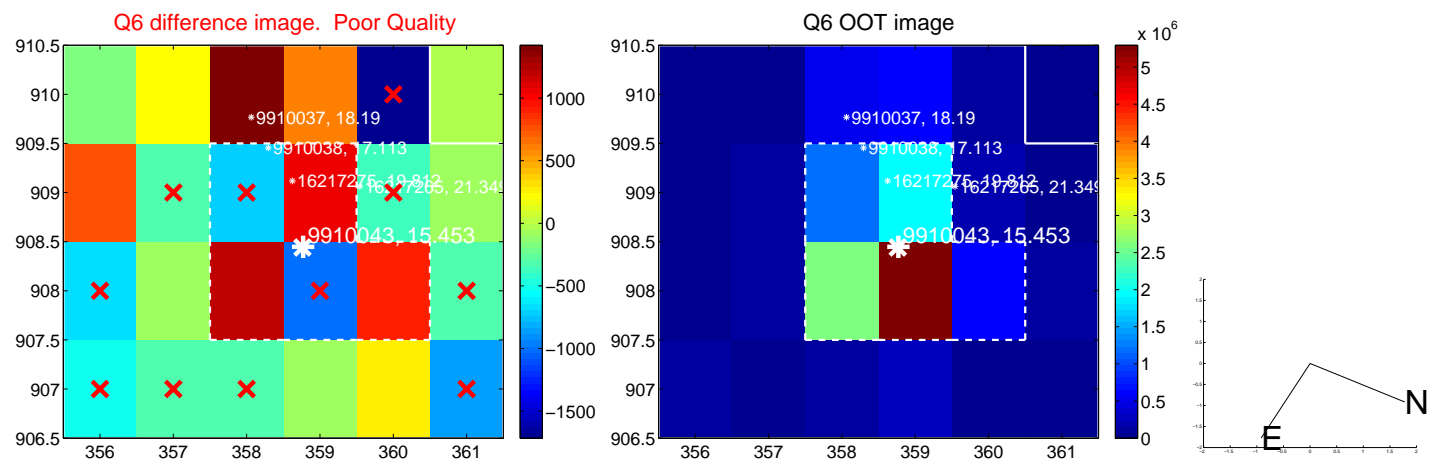
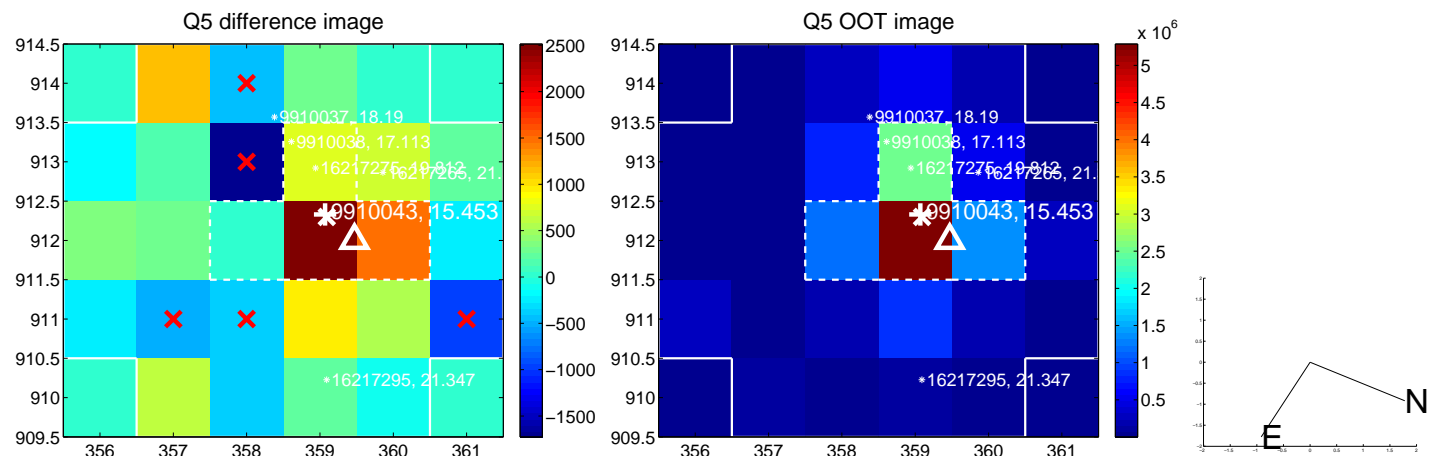
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



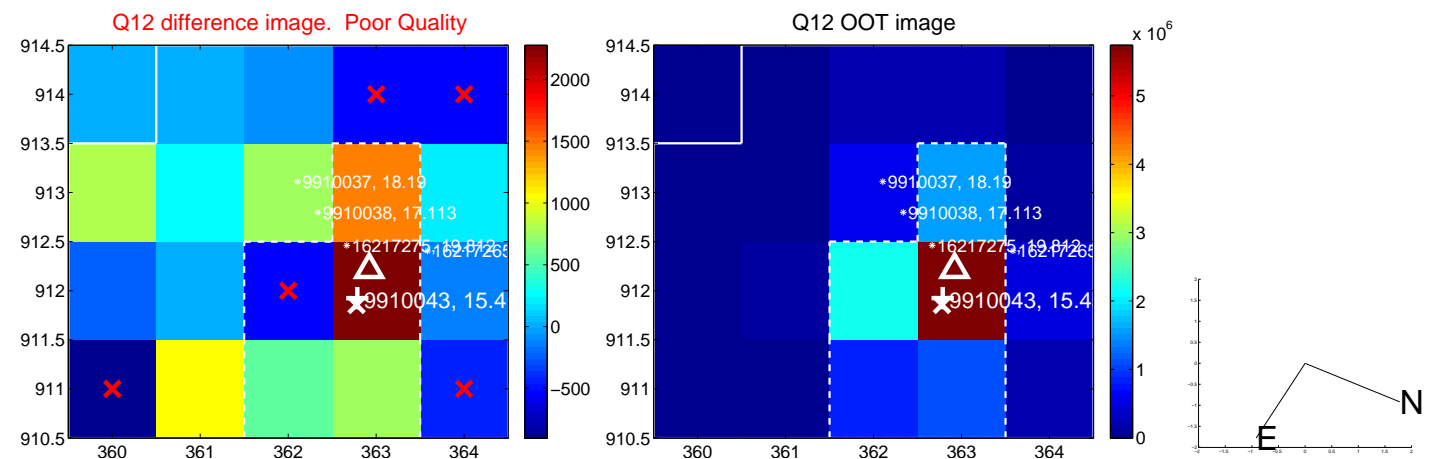
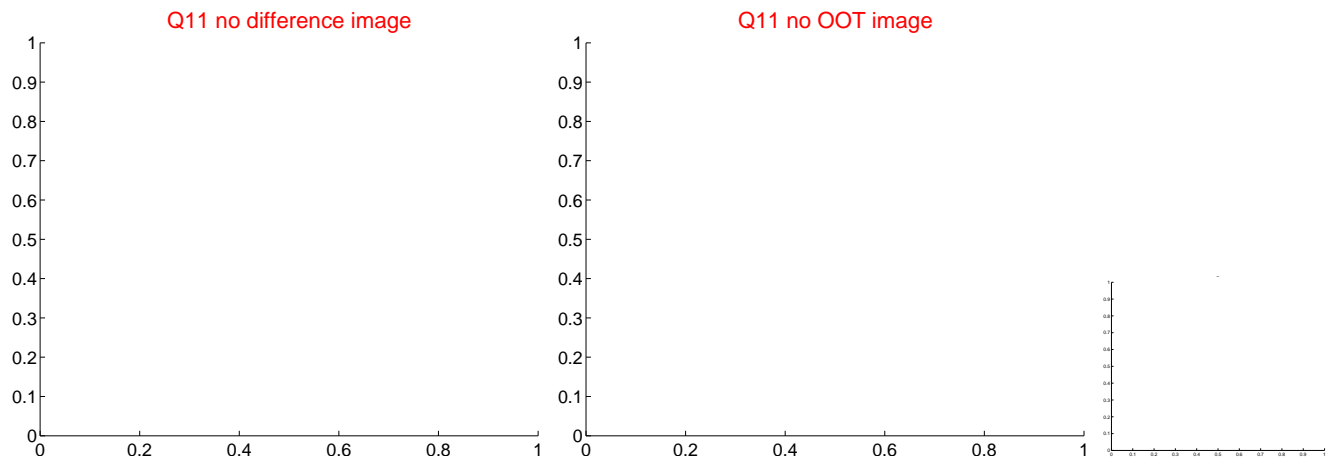
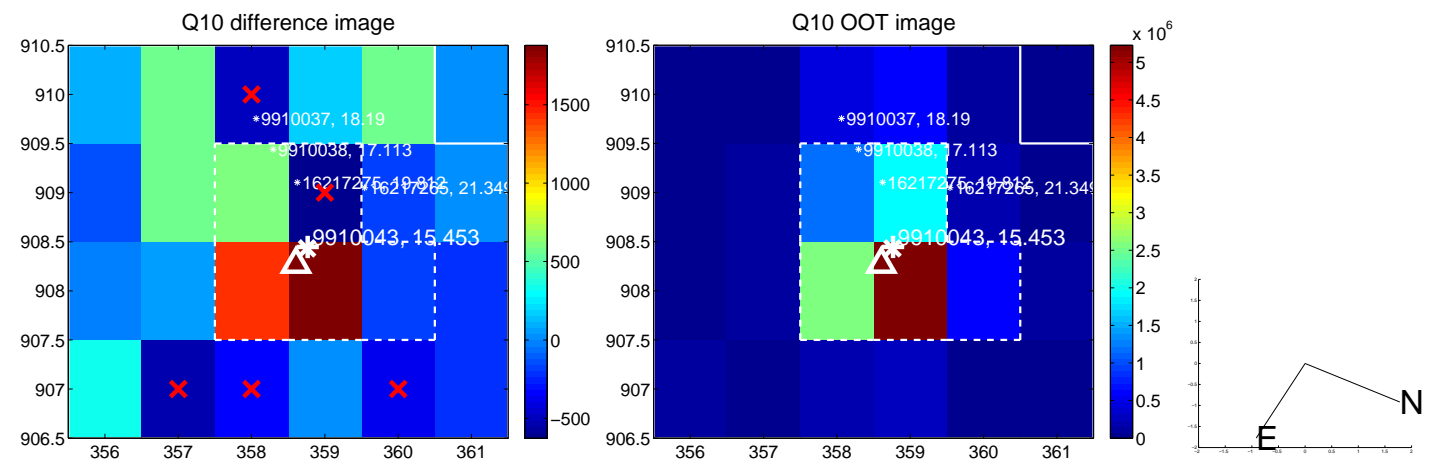
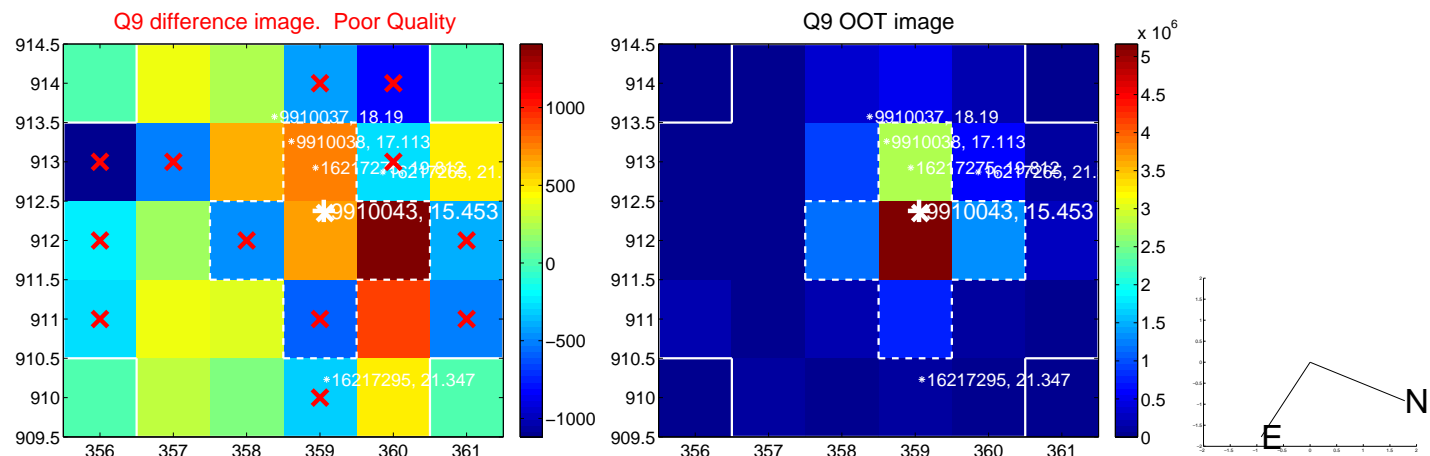
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



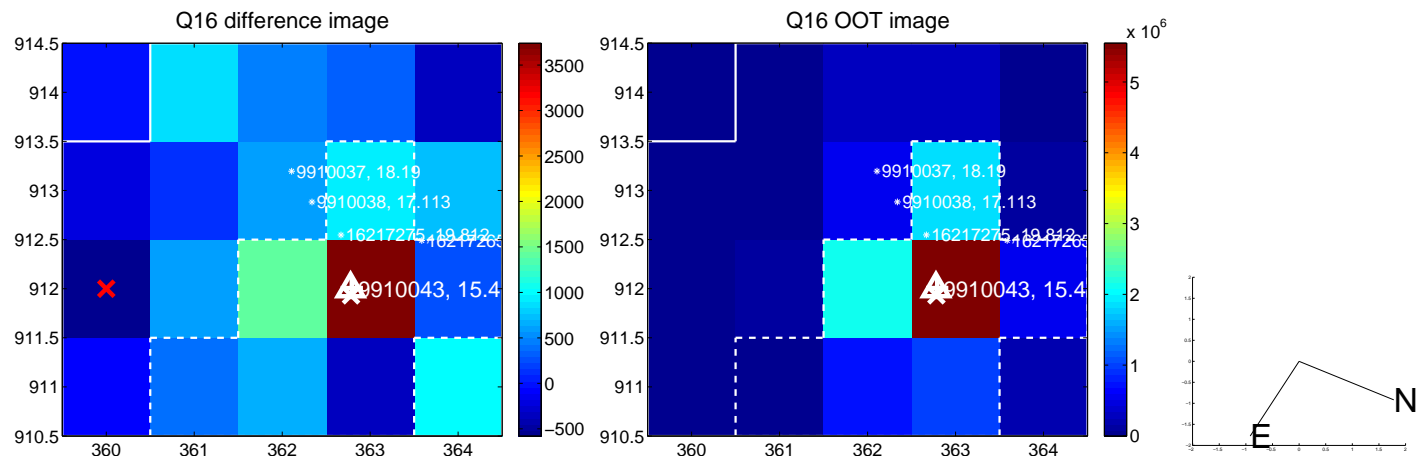
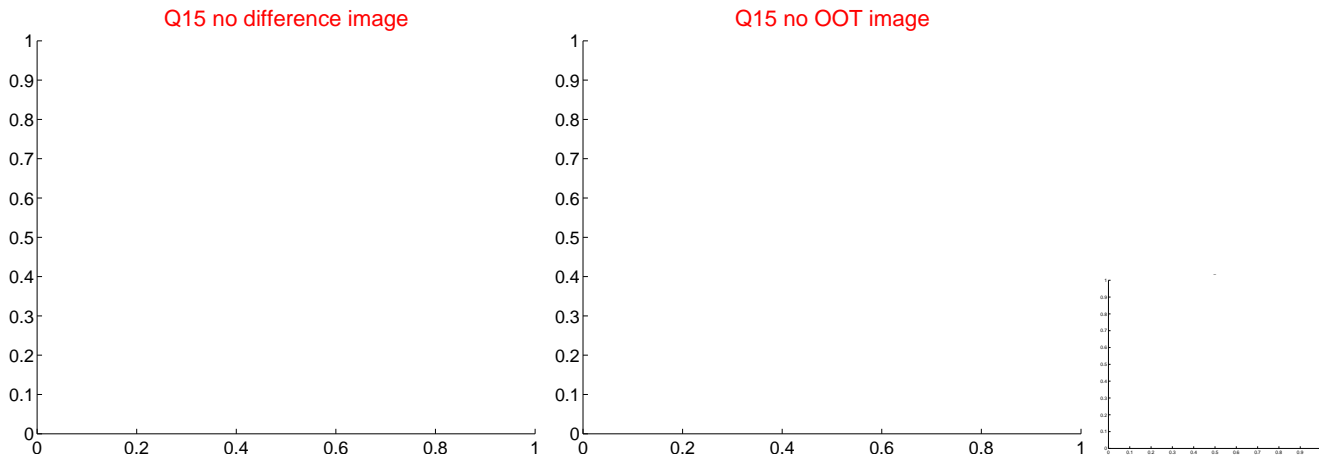
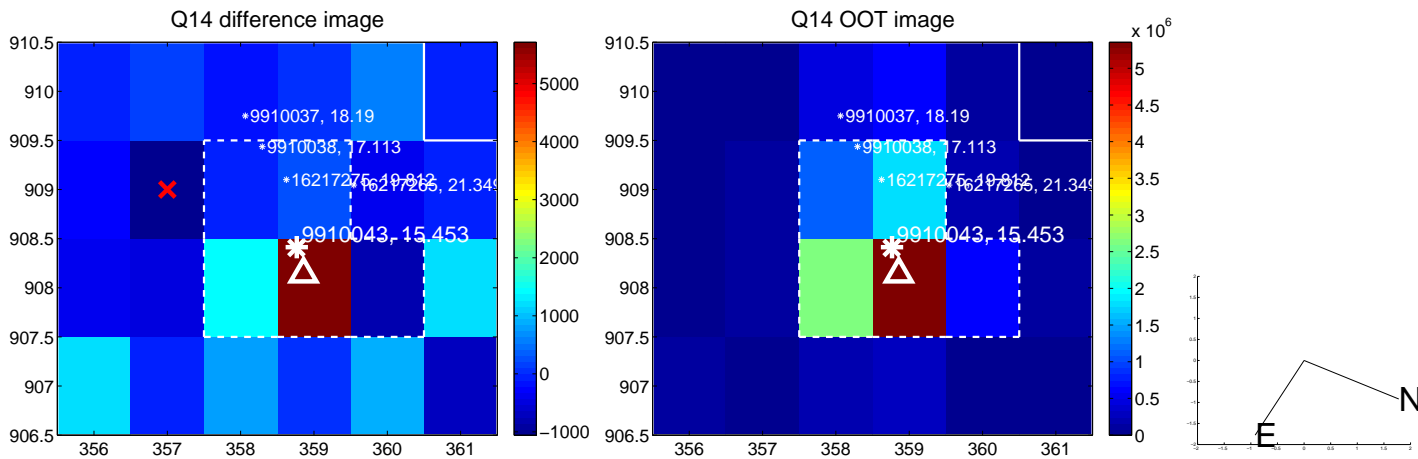
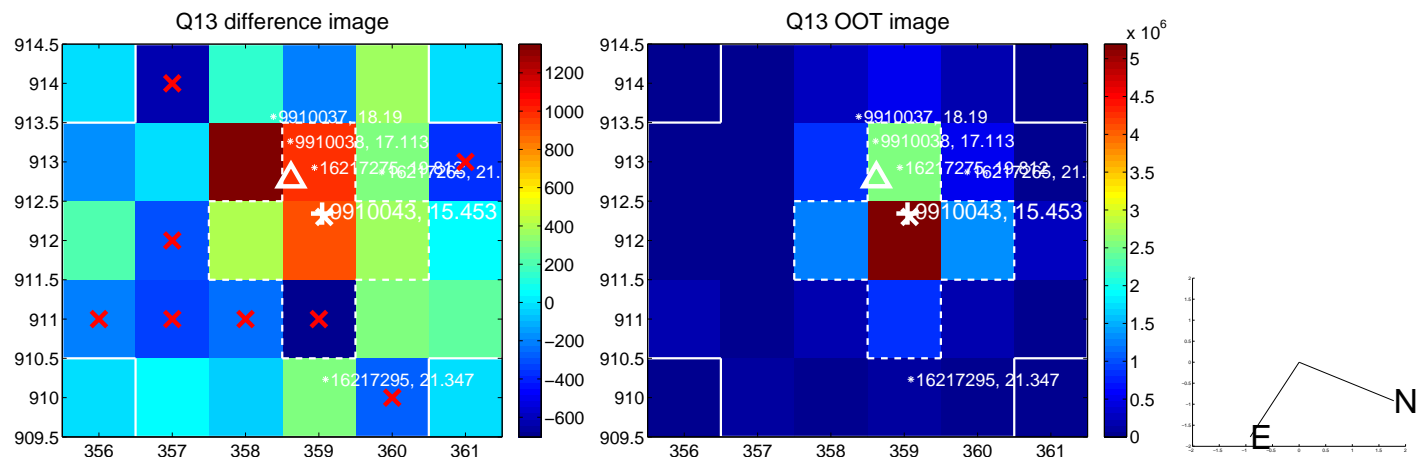
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



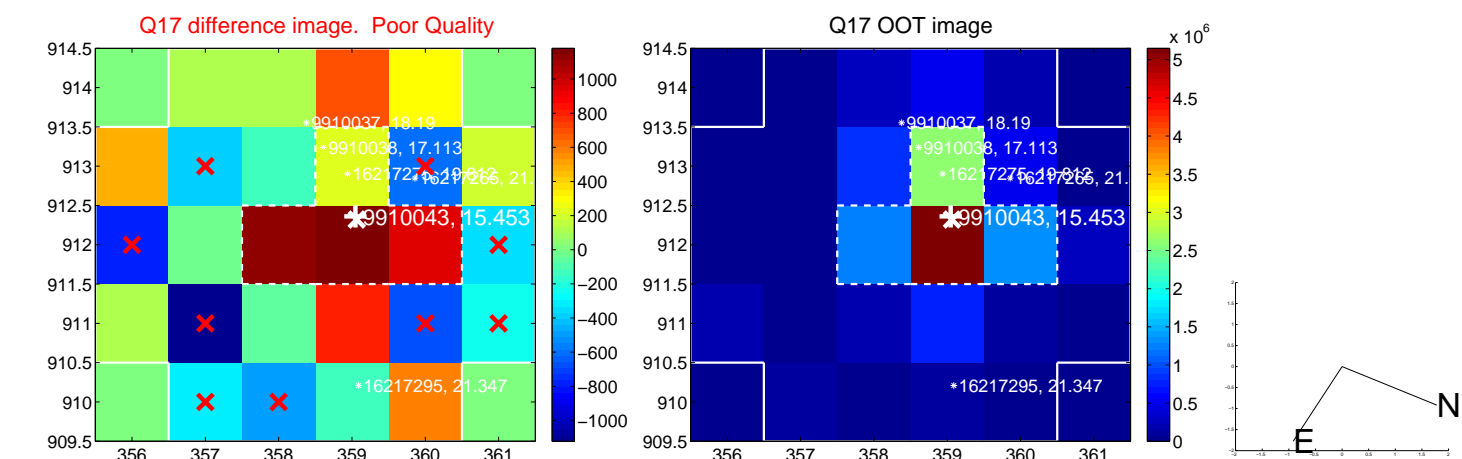
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



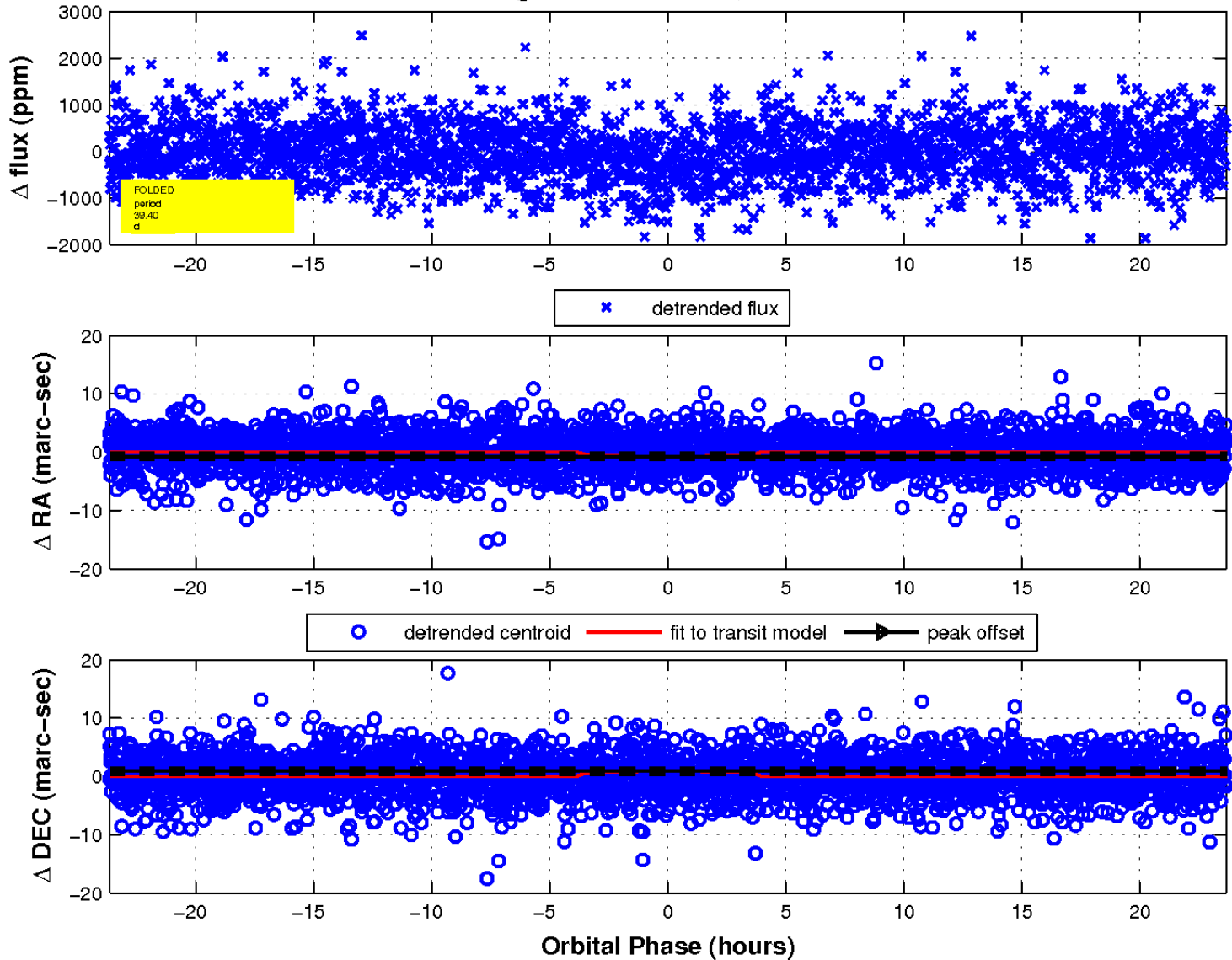
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

