

# KIC 009034103

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009034103-01	OBS	1402.01	7.139678	137.186921	502.3	4.196	24.8	26.0	0.99	6014	2.61	205.72

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009034103-01	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.

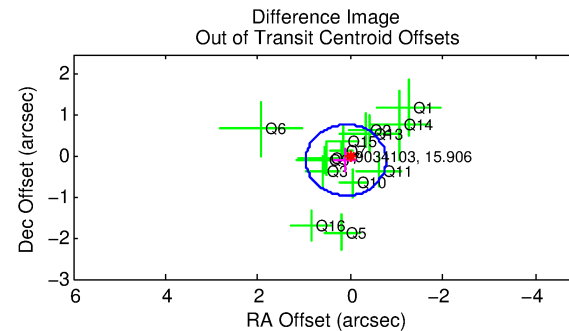
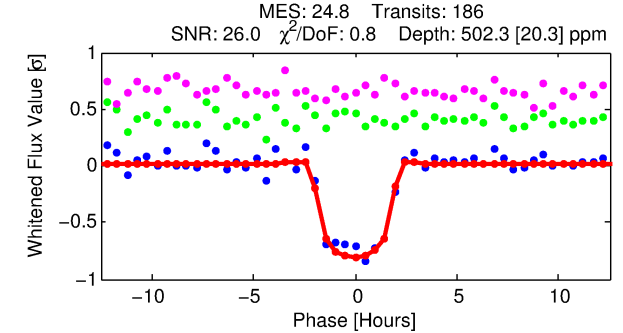
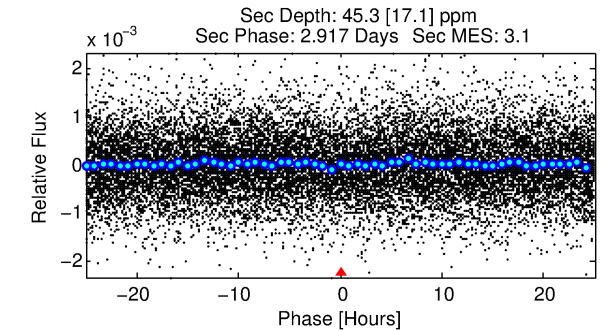
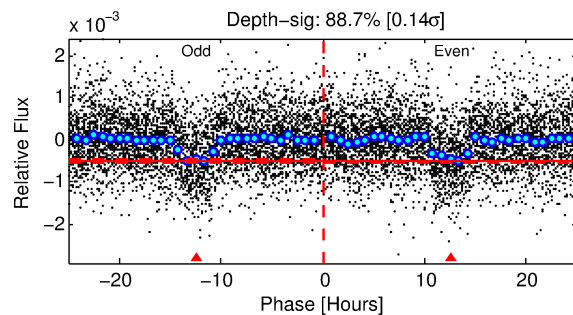
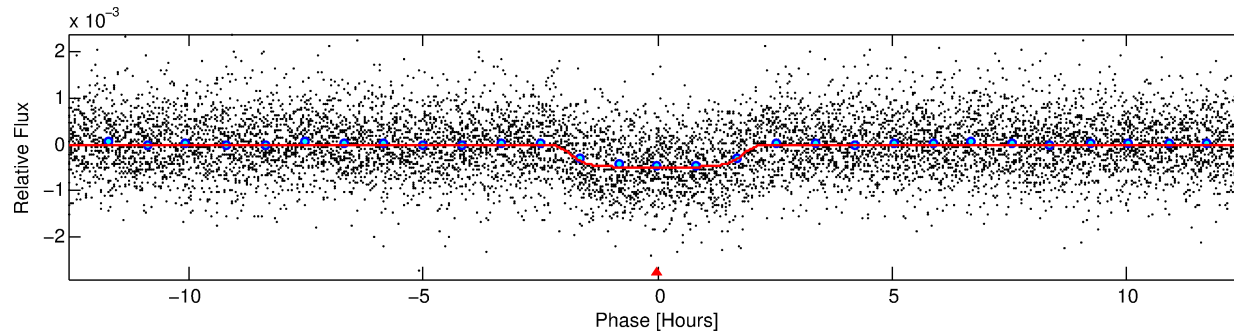
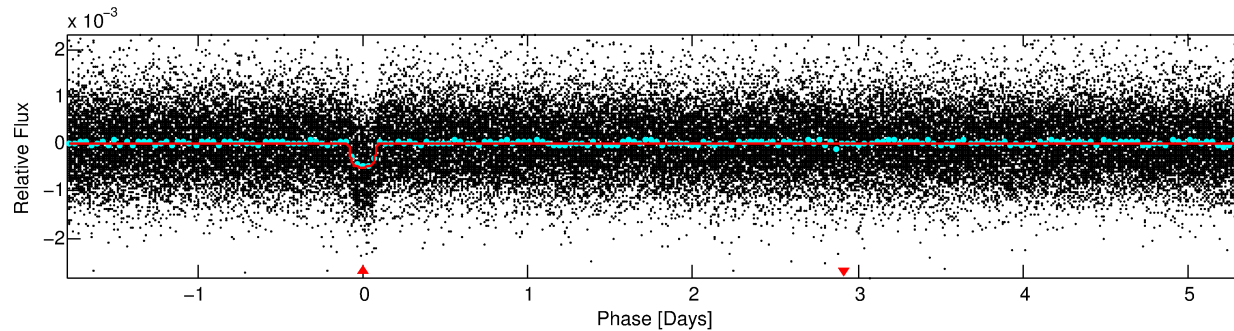
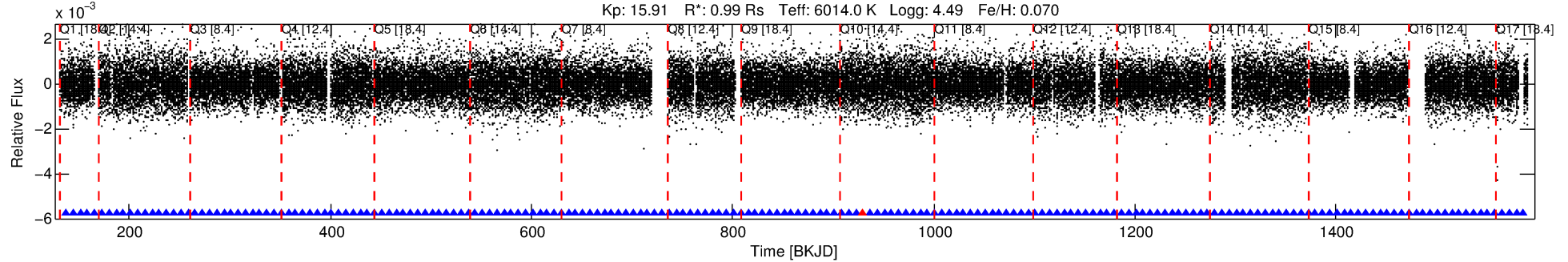
## Ephemeris Match Information For 009034103-01

No Significant Match Found

# DV One-Page Summary

KIC: 9034103 Candidate: 1 of 1 Period: 7.140 d  
KOI: K01402.01 Corr: 0.968

Kp: 15.91 R\*: 0.99 Rs Teff: 6014.0 K Logg: 4.49 Fe/H: 0.070



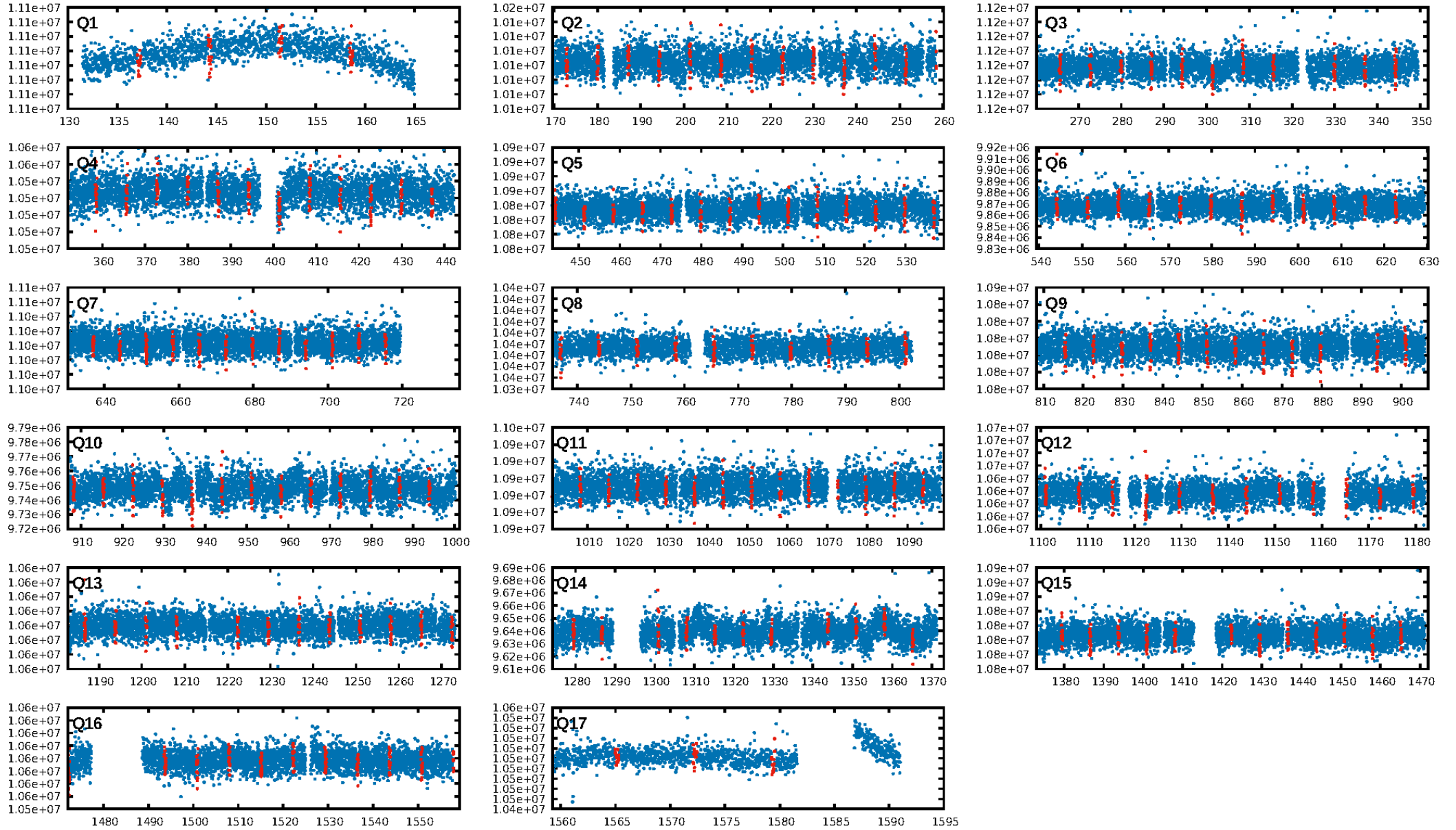
## DV Fit Results:

Period = 7.13968 [0.00003] d  
Epoch = 137.1869 [0.0032] BKJD  
Rp/R\* = 0.0241 [0.0025]  
a/R\* = 6.63 [3.26]  
b = 0.89 [0.12]  
Seff = 205.72 [77.91]  
Teq = 966 [91] K  
Rp = 2.61 [0.80] Re  
a = 0.0750 [0.0181] AU  
Ag = 20.53 [11.43] [1.71σ]  
Teffp = 3178 [361] K [5.95σ]

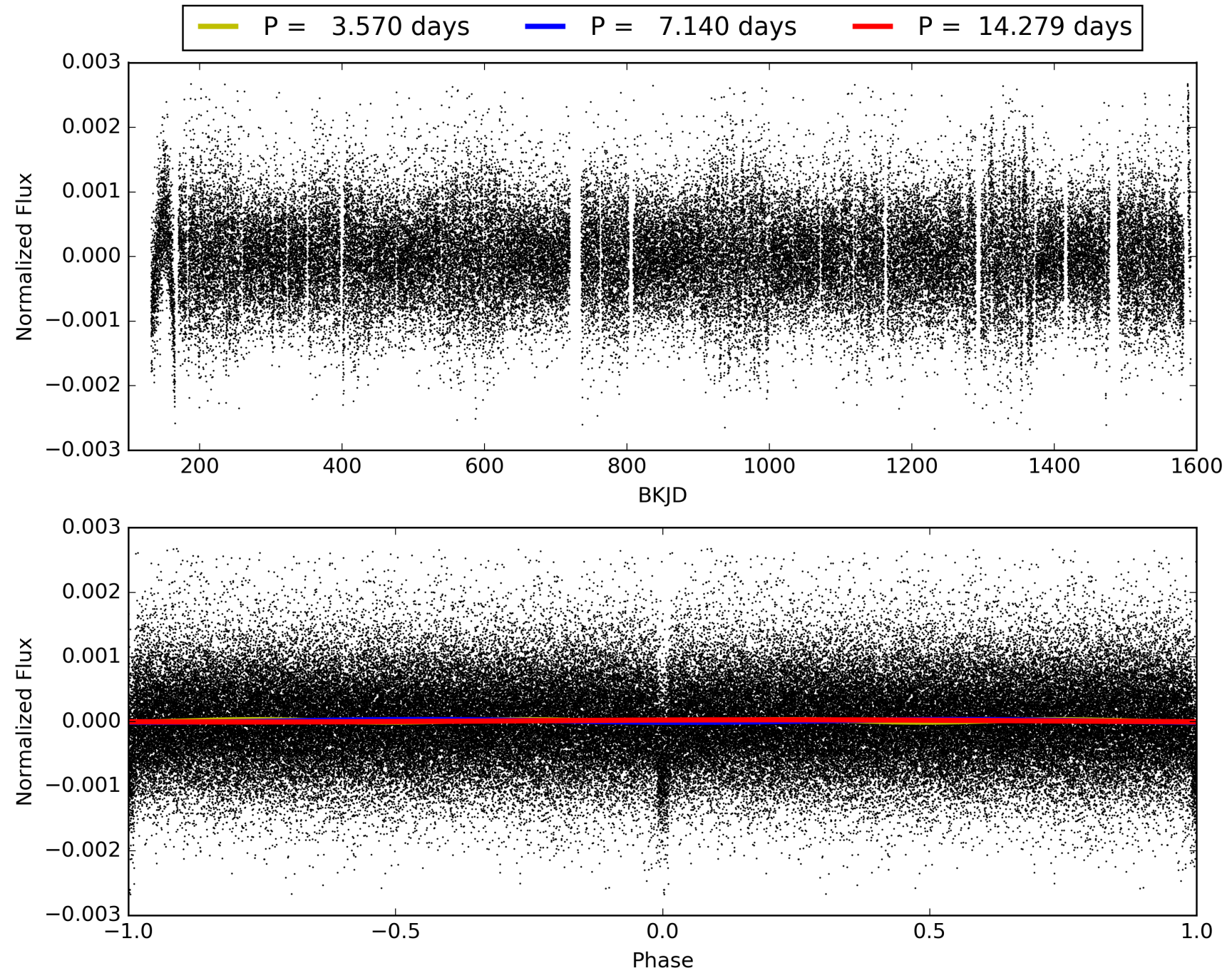
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.83e-132  
RollingBand-fgt: 0.99 [178/179]  
GhostDiagnostic-chr: 16.82  
Centroid-sig: 11.7%  
Centroid-so: 0.568 arcsec [1.07σ]  
OotOffset-rm: 0.136 arcsec [0.47σ]  
KicOffset-rm: 0.320 arcsec [1.67σ]  
OotOffset-st: 4/4/1/5 [14]  
KicOffset-st: 4/4/1/5 [14]  
DiffImageQuality-fgm: 0.93 [13/14]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 009034103-01, PDC Light Curves



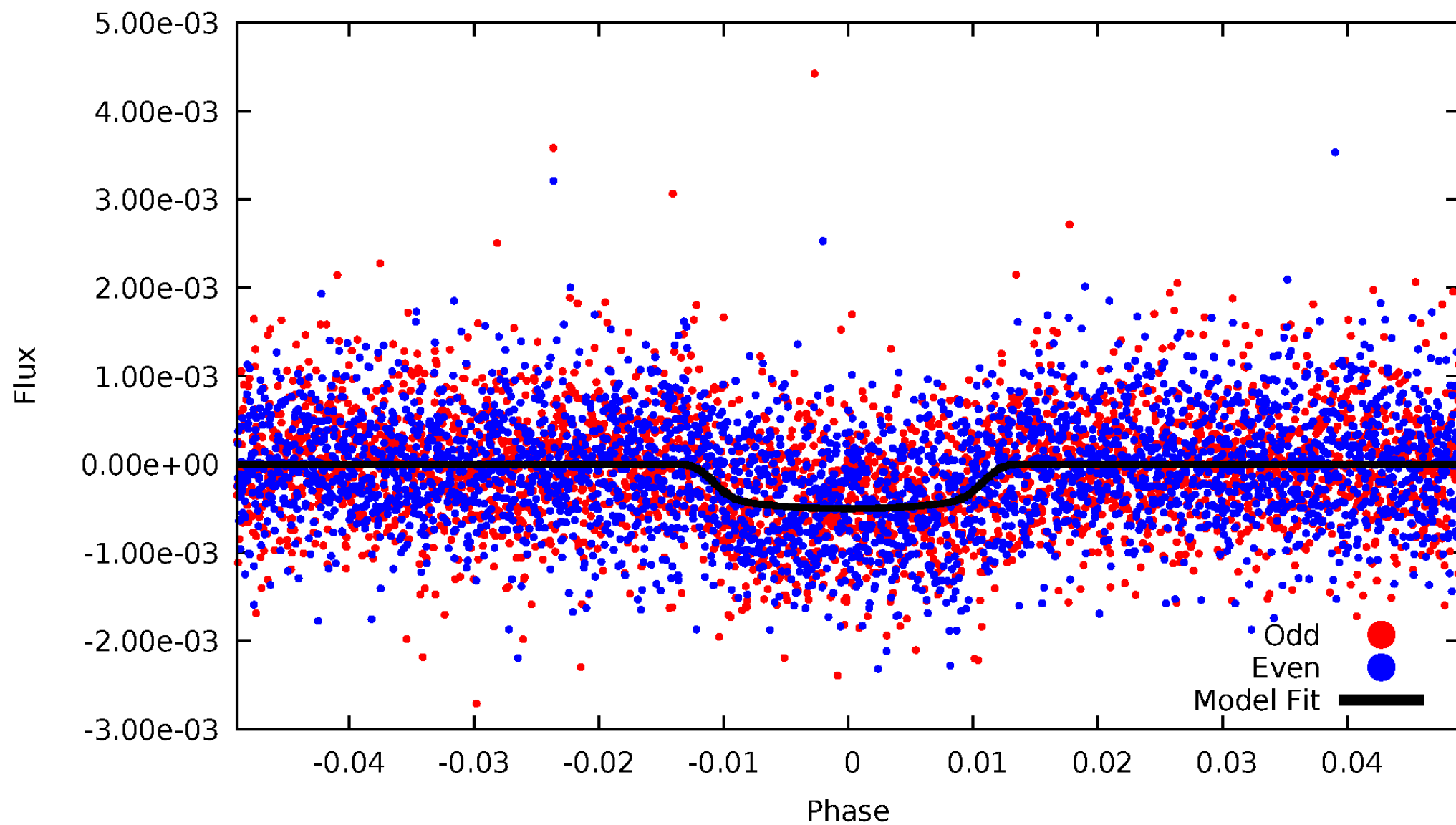
TCE 009034103-01





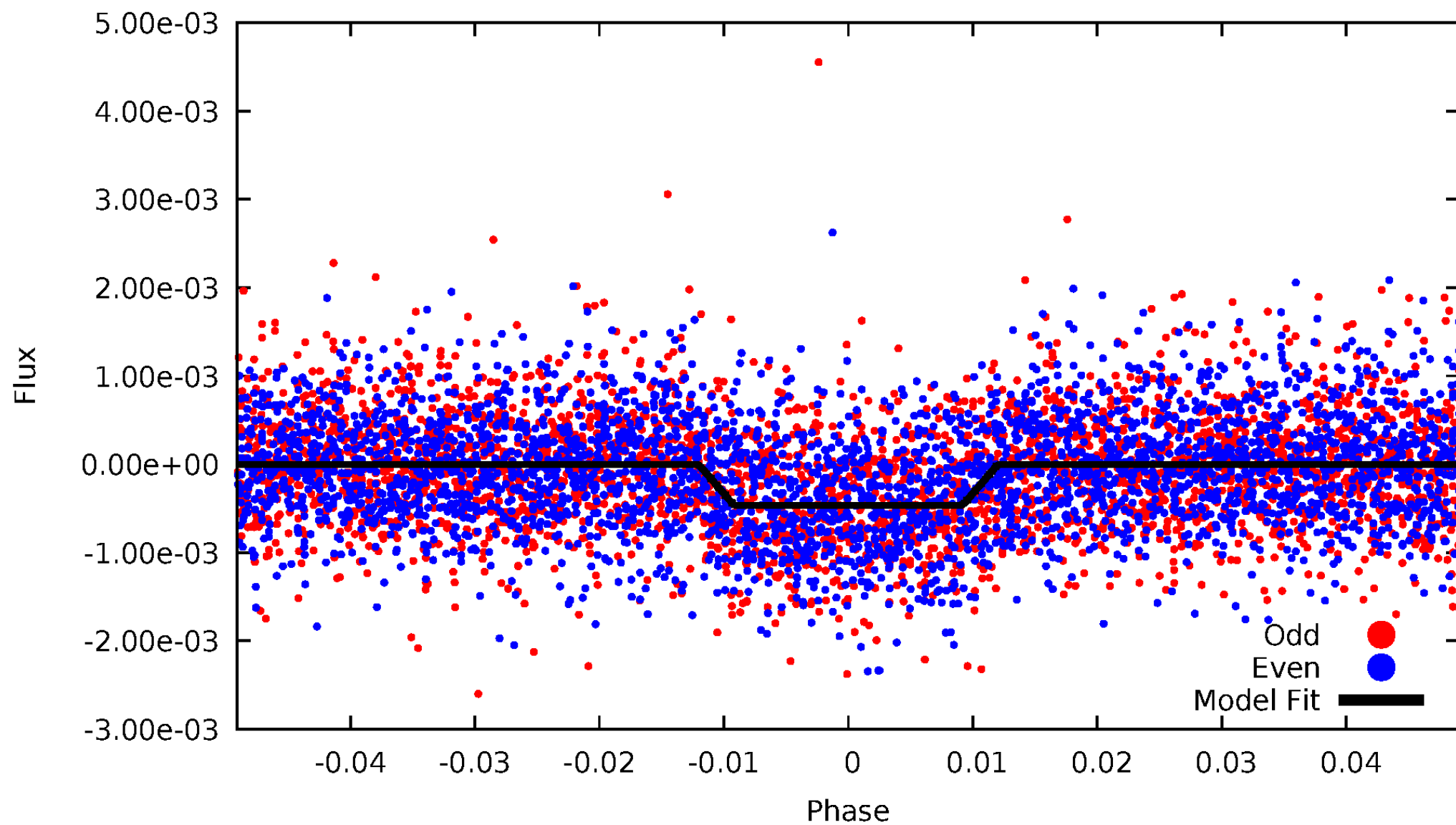
# DV Odd/Even

TCE 009034103-01

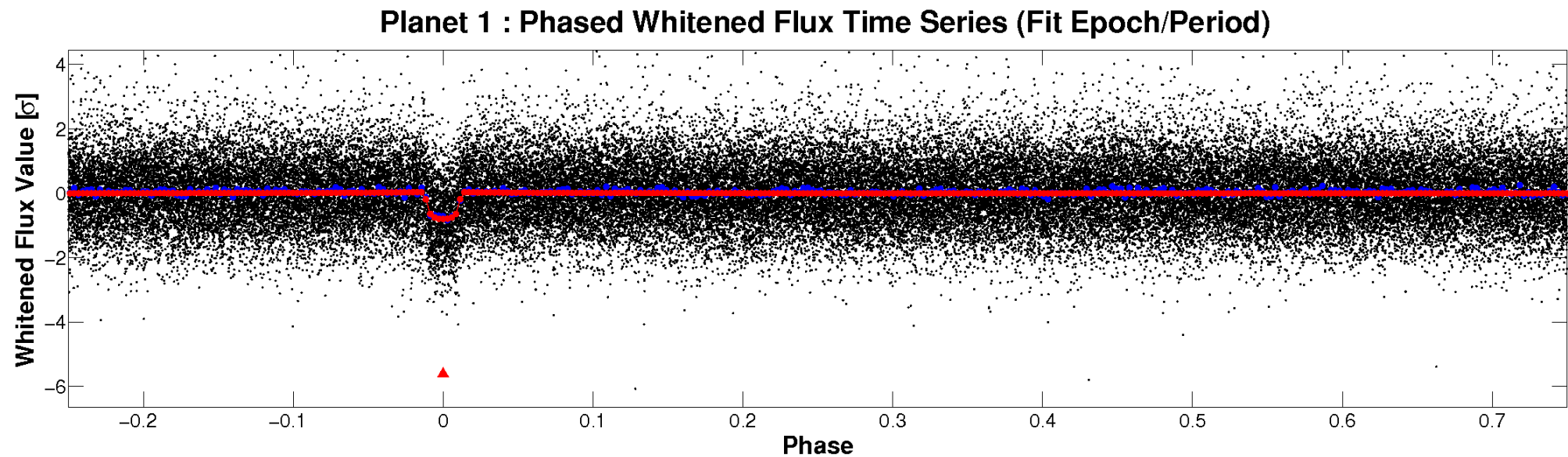
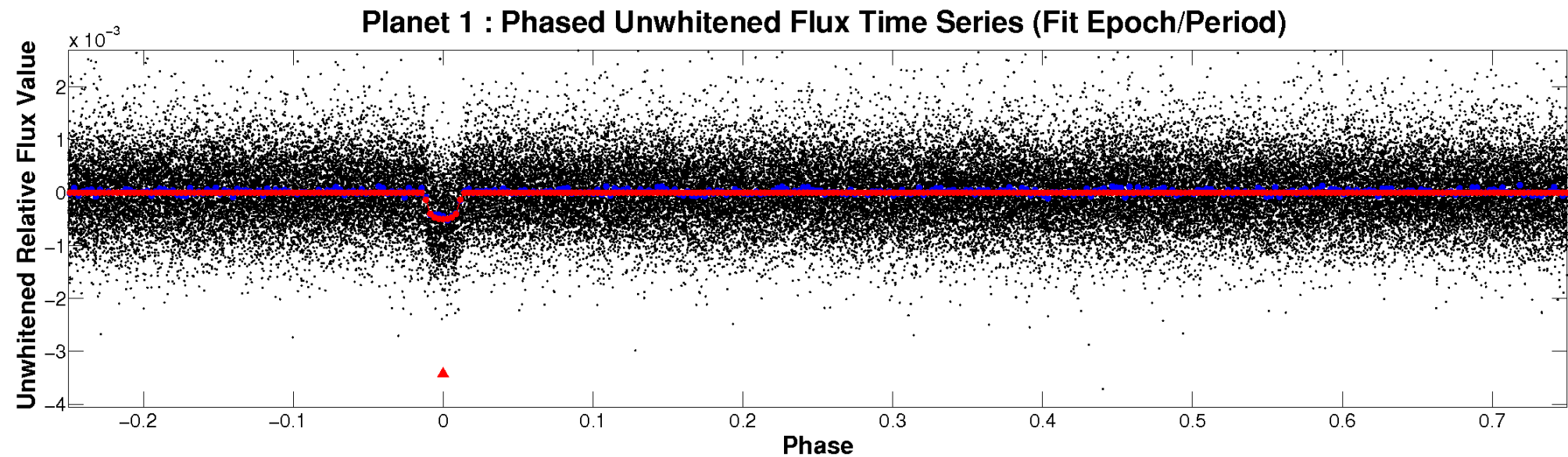


# ALT Odd/Even

TCE 009034103-01

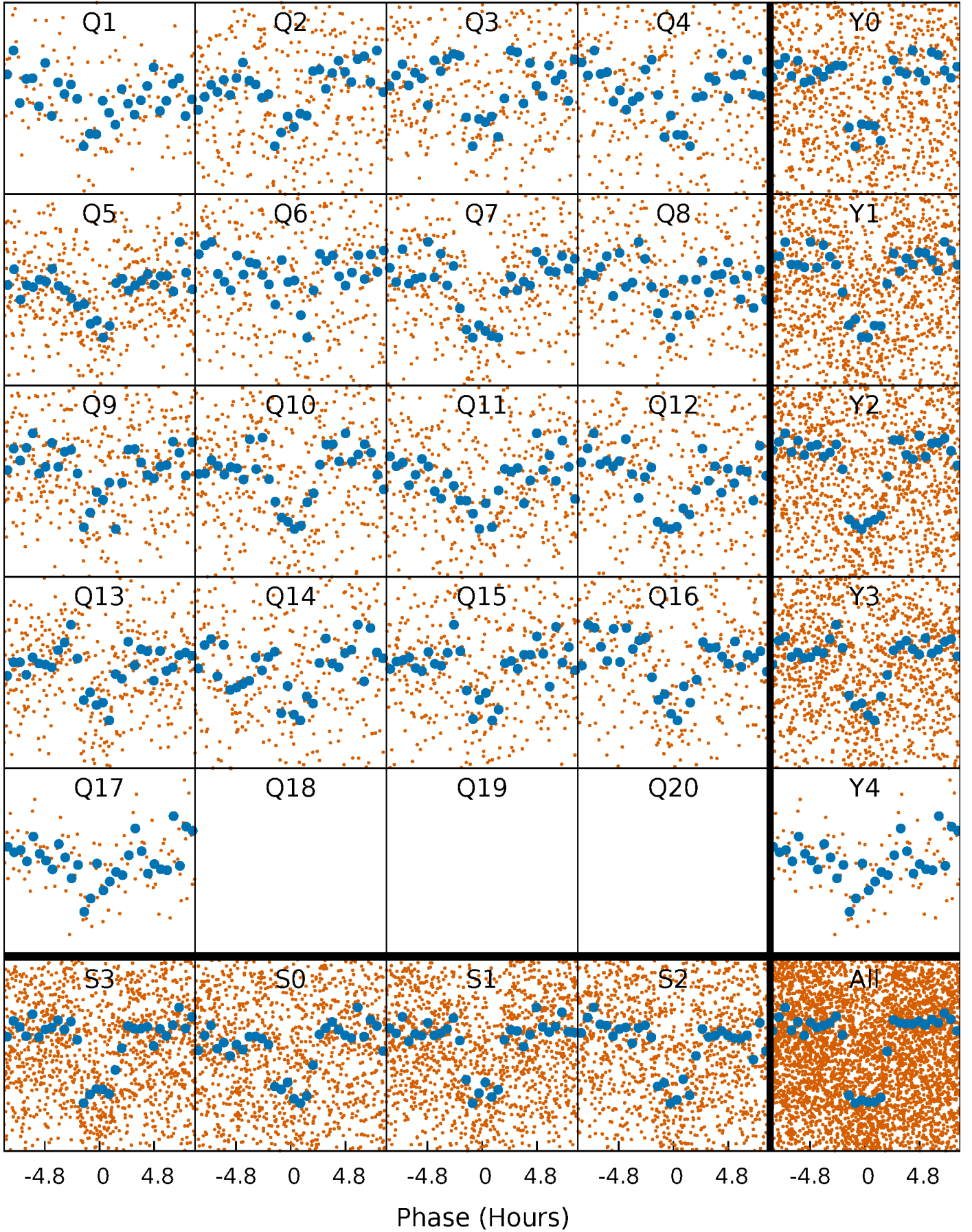


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

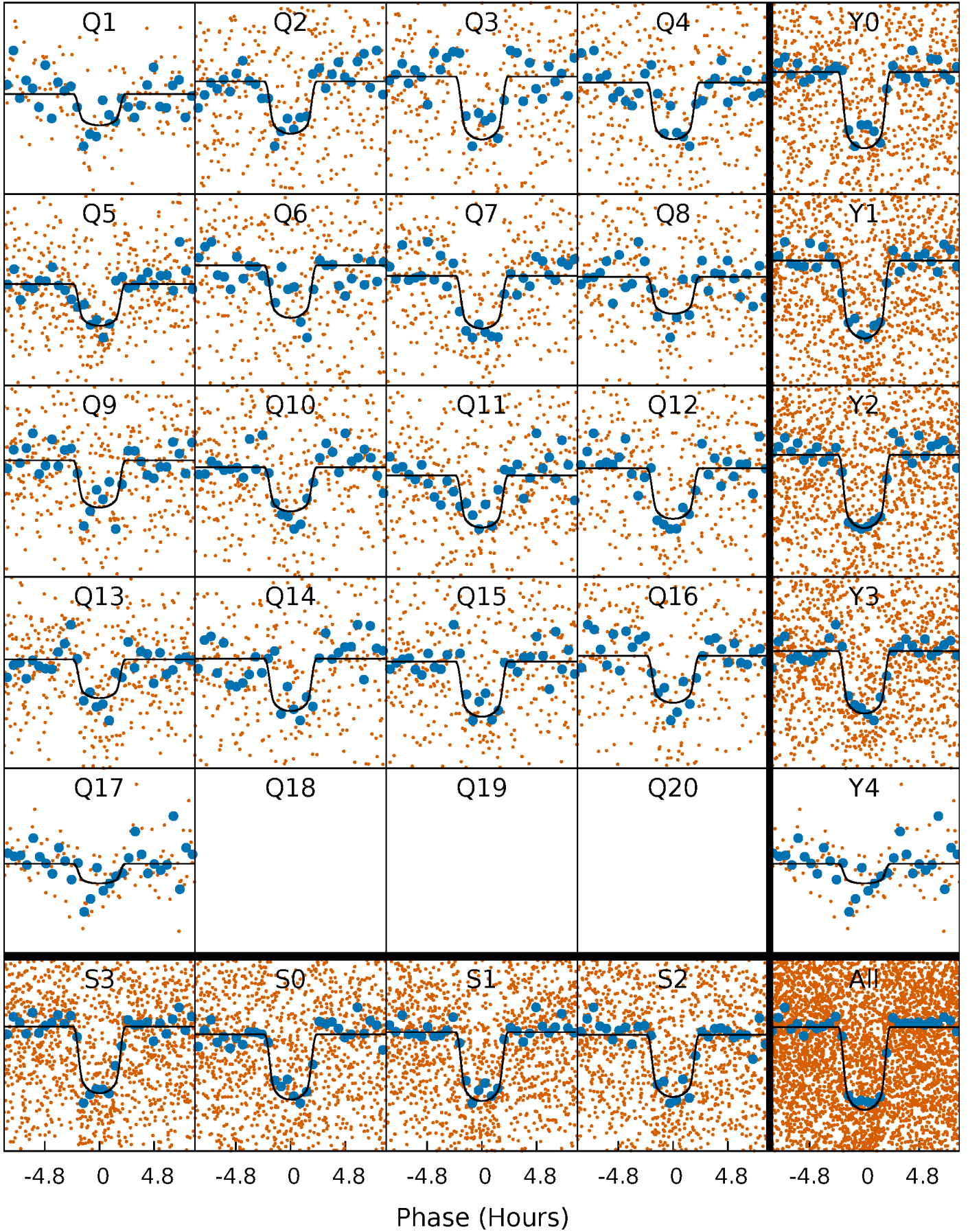
TCE 009034103-01 P= 7.139678 Days  $T_0=137.186921$  (BKJD)





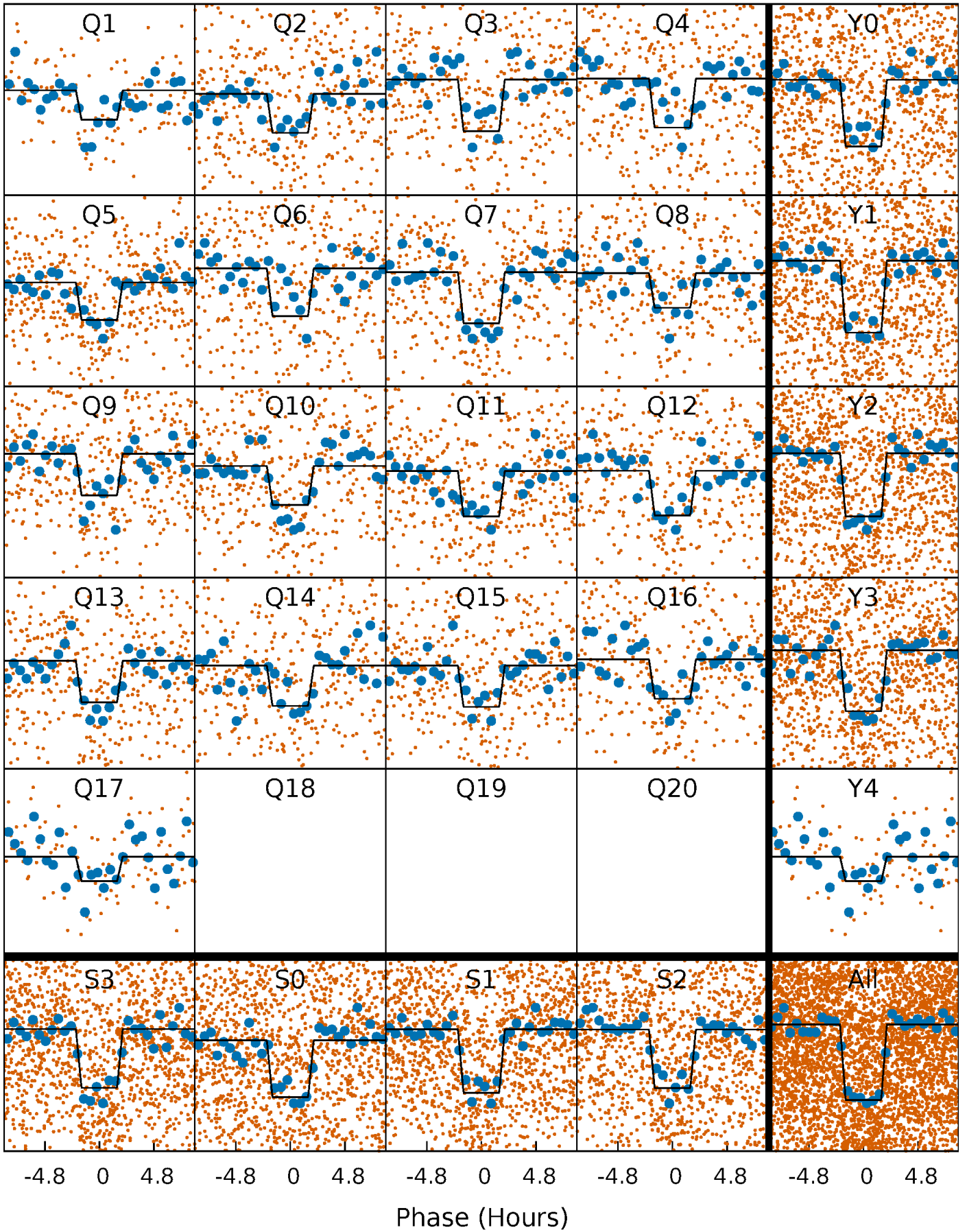
# DV Quarter-Phased Transit Curves

TCE 009034103-01   P= 7.139678 Days    $T_0=137.186921$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

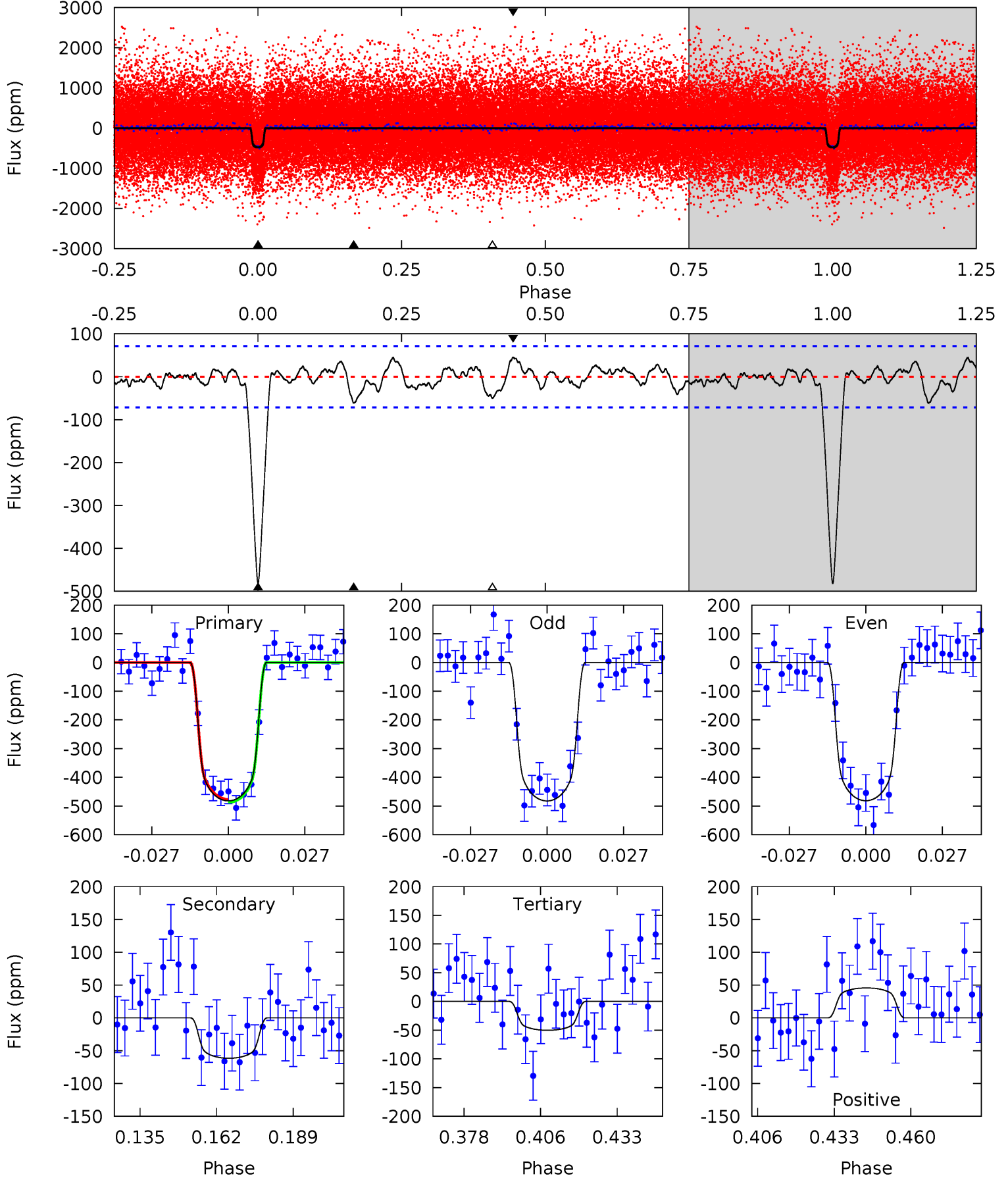
TCE 009034103-01 P= 7.139740 Days  $T_0=137.180988$  (BKJD)



# DV Model-Shift Uniqueness Test

009034103-01, P = 7.139678 Days, E = 130.047243 Days

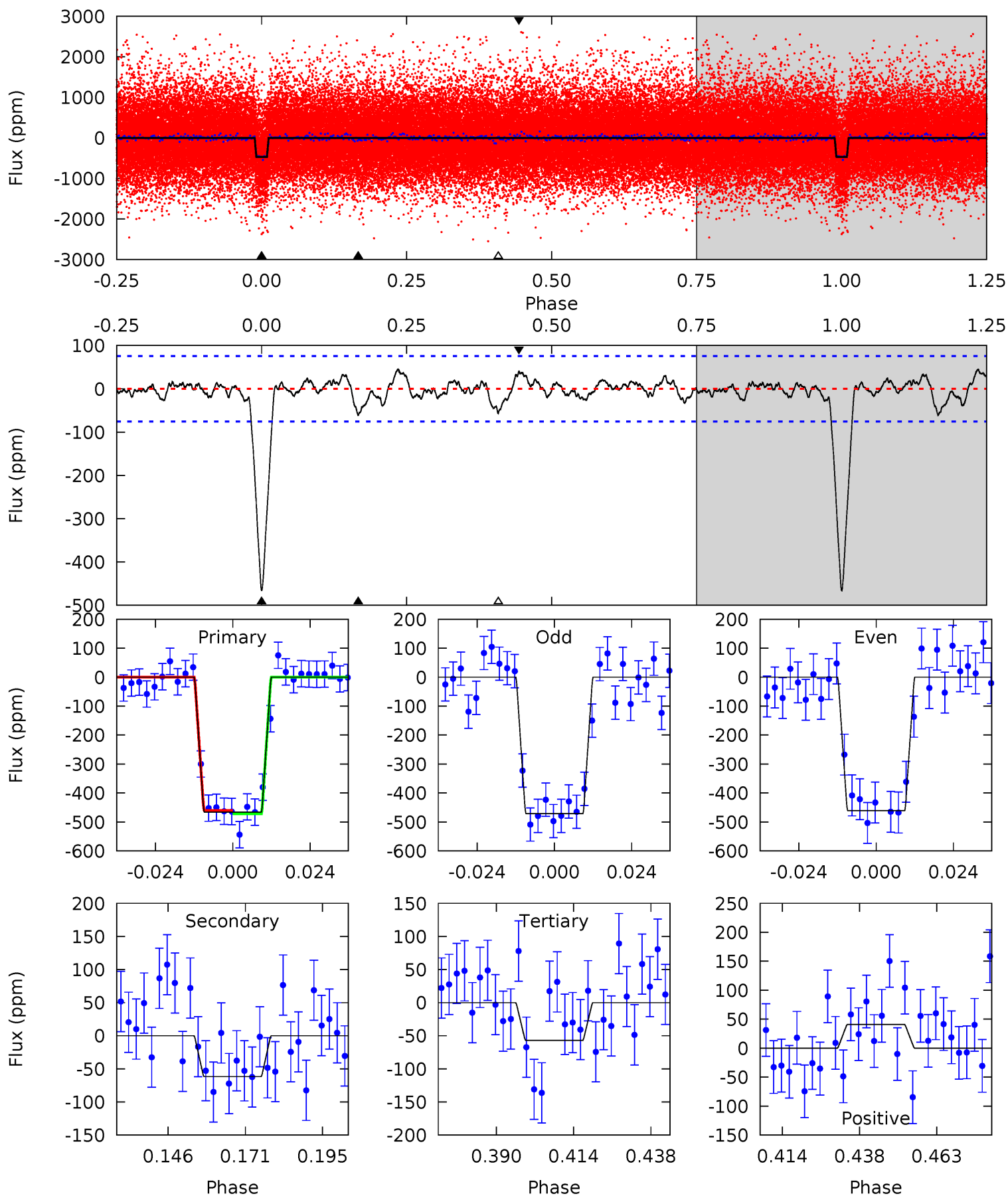
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.6	4.16	3.39	3.08	4.83	2.21	1.22	29.2	29.5	0.77	1.08	0.03	0.99	0.09	0.30



# Alt Model-Shift Uniqueness Test

009034103-01, P = 7.139740 Days, E = 130.041248 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
30.0	3.96	3.67	2.63	4.85	2.25	1.05	26.3	27.3	0.29	1.33	0.32	1.01	0.09	0.37





### Stellar Parameters For KIC 009034103

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6014^{+190}_{-211}$	$4.486^{+0.048}_{-0.192}$	$0.070^{+0.200}_{-0.350}$	$0.993^{+0.286}_{-0.114}$	$1.101^{+0.120}_{-0.174}$	$1.584^{+0.412}_{-0.793}$
	+3%/-4%	+1%/-4%	+286%/-500%	+29%/-11%	+11%/-16%	+26%/-50%
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 009034103-01 / KOI 1402.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-62 \pm 15$	$2.70^{+0.49}_{-0.36}$	$1379^{+98}_{-70}$	$3805^{+214}_{-237}$	$25^{+11}_{-8}$
Alt.	$-62 \pm 16$	$2.44^{+0.43}_{-0.37}$	$1385^{+97}_{-69}$	$3943^{+289}_{-259}$	$31^{+15}_{-10}$

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

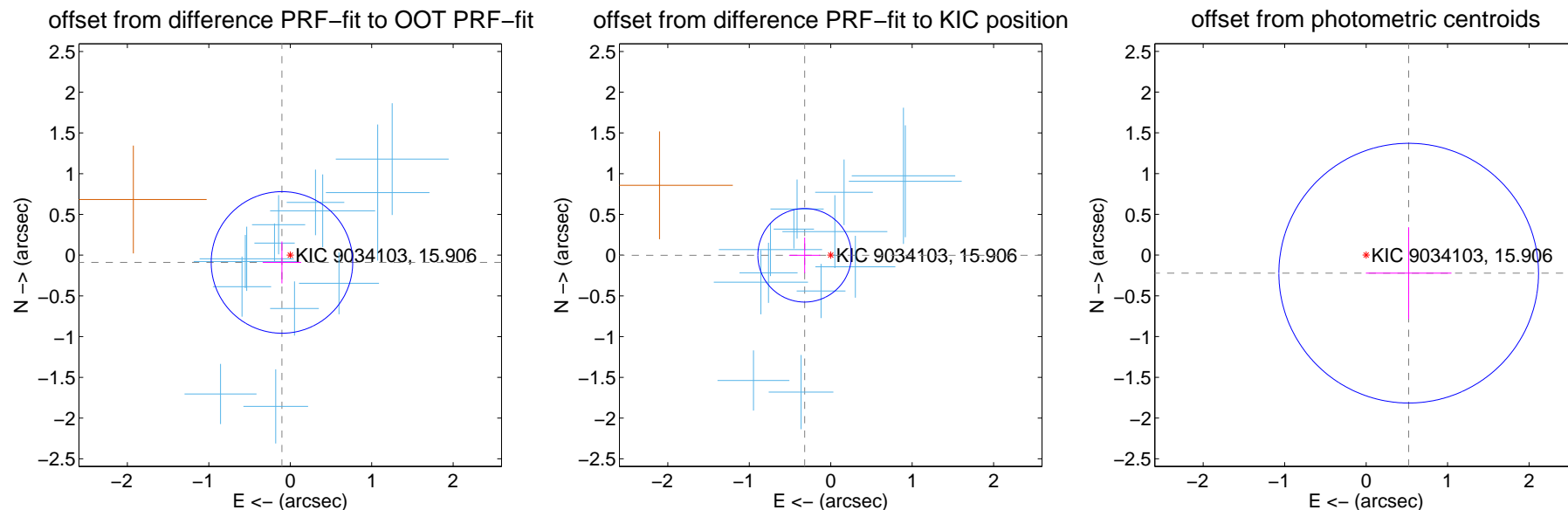
## DV Centroid Data

Supplemental centroid analysis for 009034103-01. Kepler magnitude: 15.91. Transit SNR 26.00

There are 13 quarters with good PRF difference image offsets

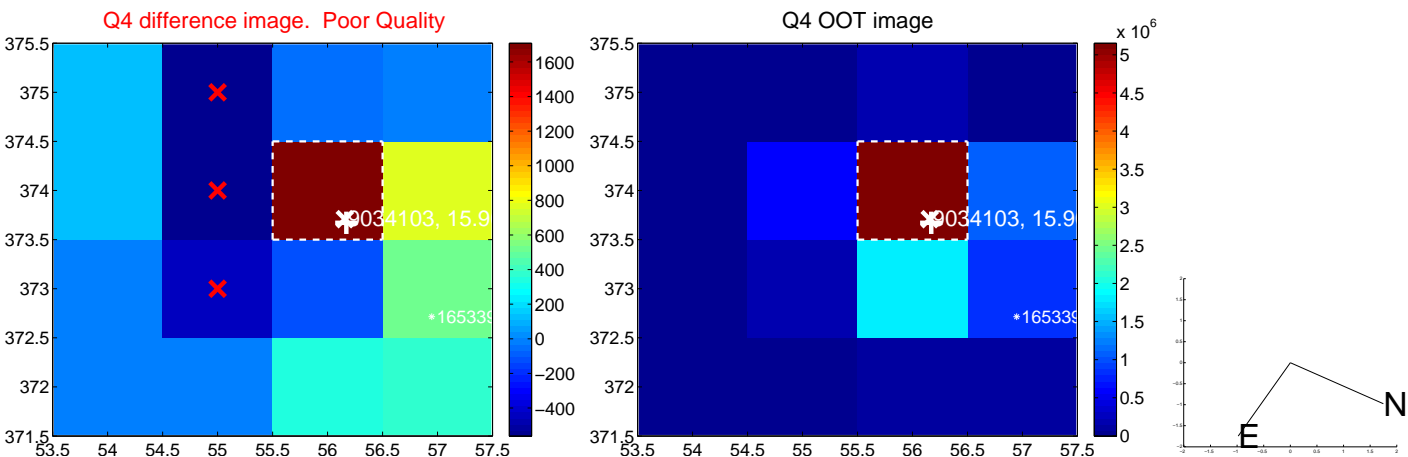
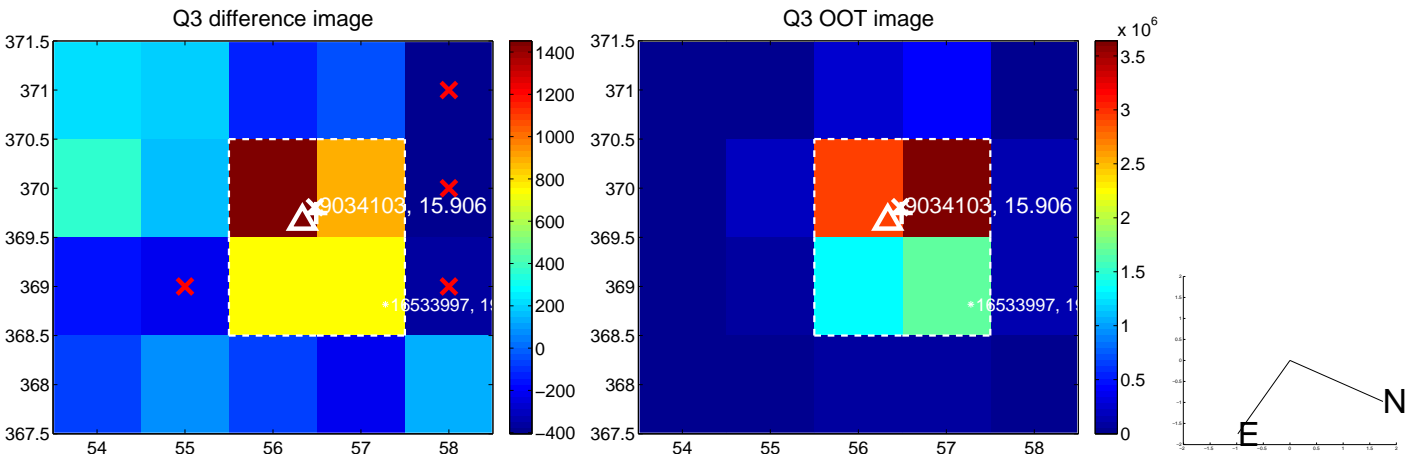
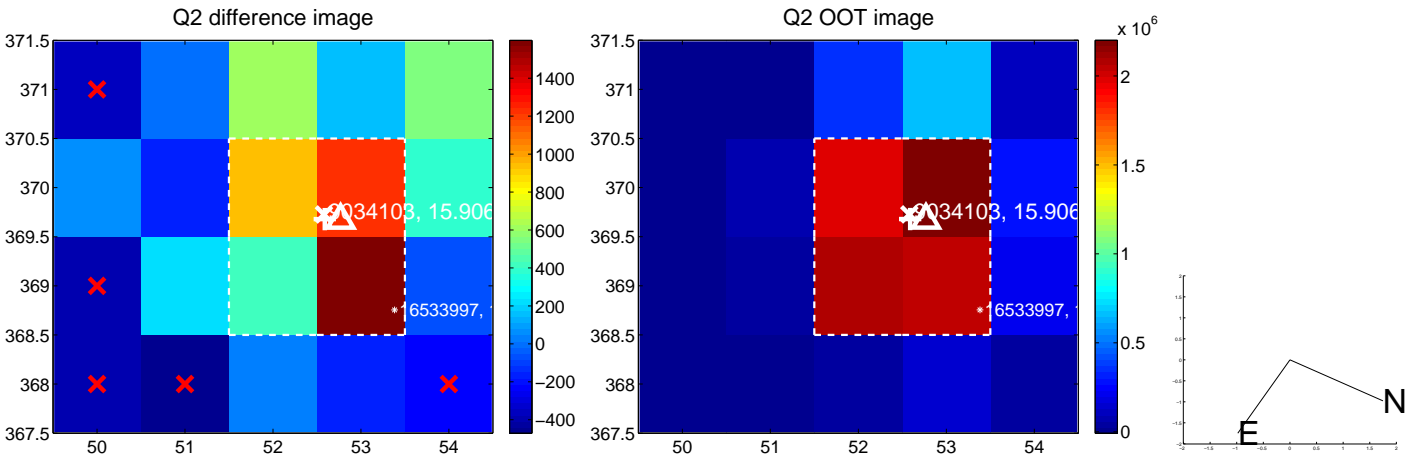
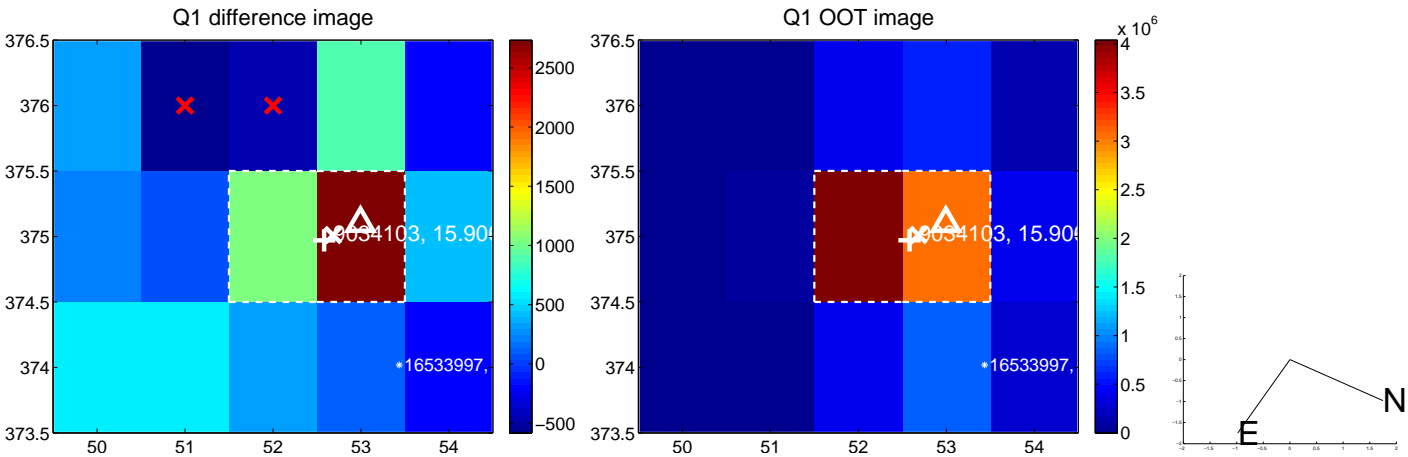
The direct PRF centroid is offset from the target star catalog position by about 0.43 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.136 \pm 0.290$	0.47	$0.102 \pm 0.237$	$-0.089 \pm 0.257$
PRF-fit source offset from KIC position	$0.320 \pm 0.191$	1.67	$0.320 \pm 0.191$	$-0.002 \pm 0.219$
photometric centroid source offset	$0.57 \pm 0.53$	1.07	$-0.52 \pm 0.53$	$-0.22 \pm 0.56$

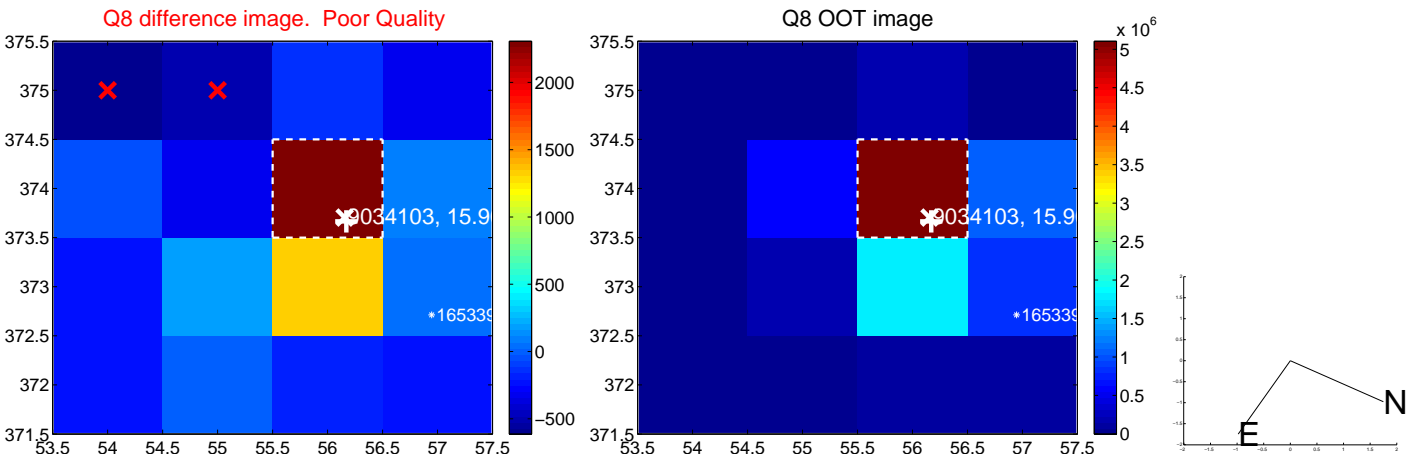
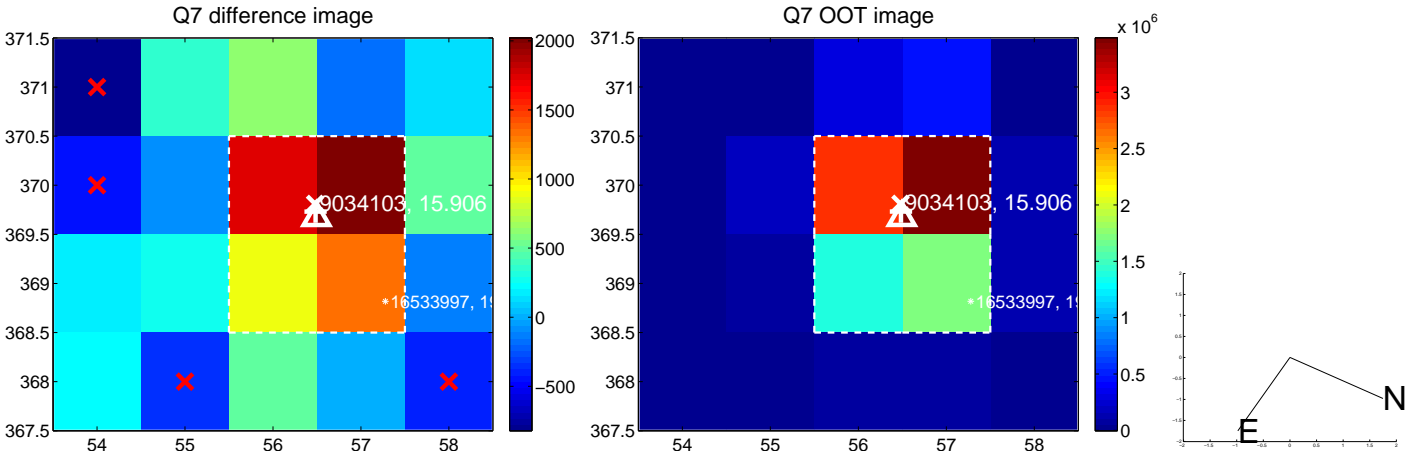
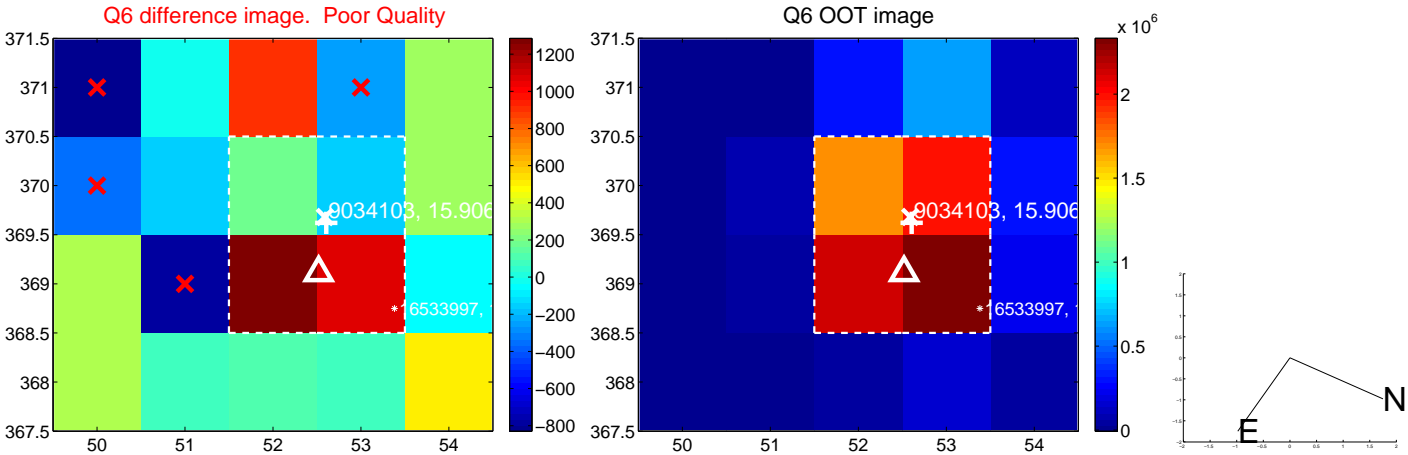
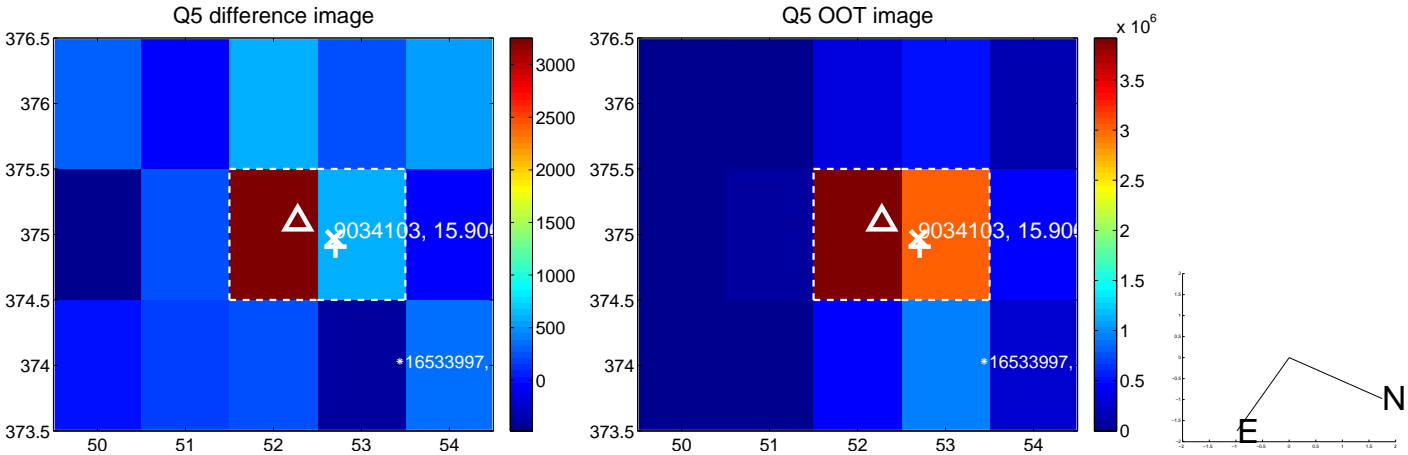


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

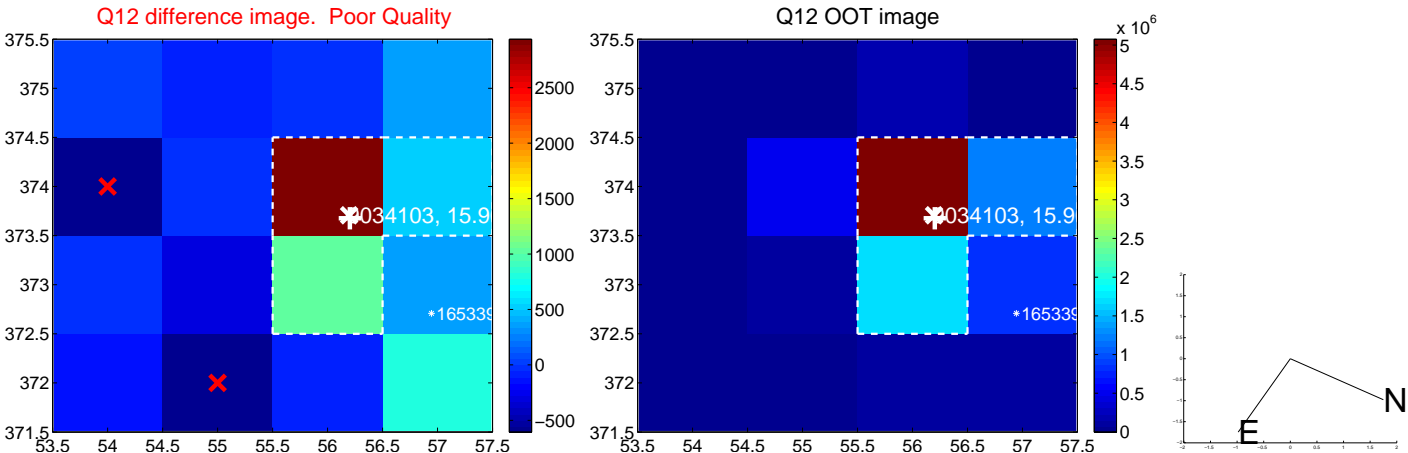
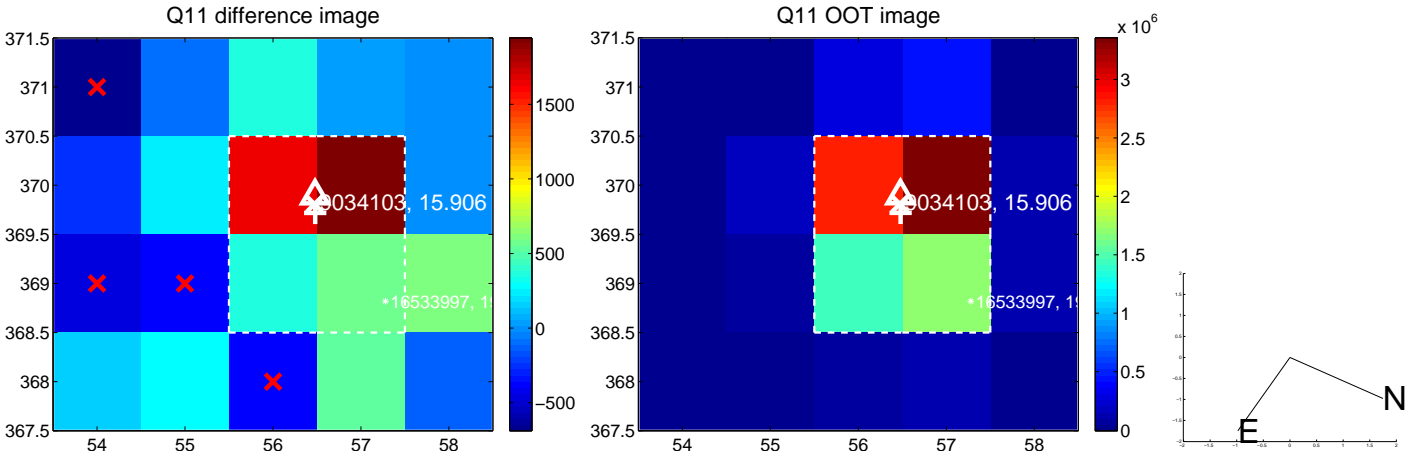
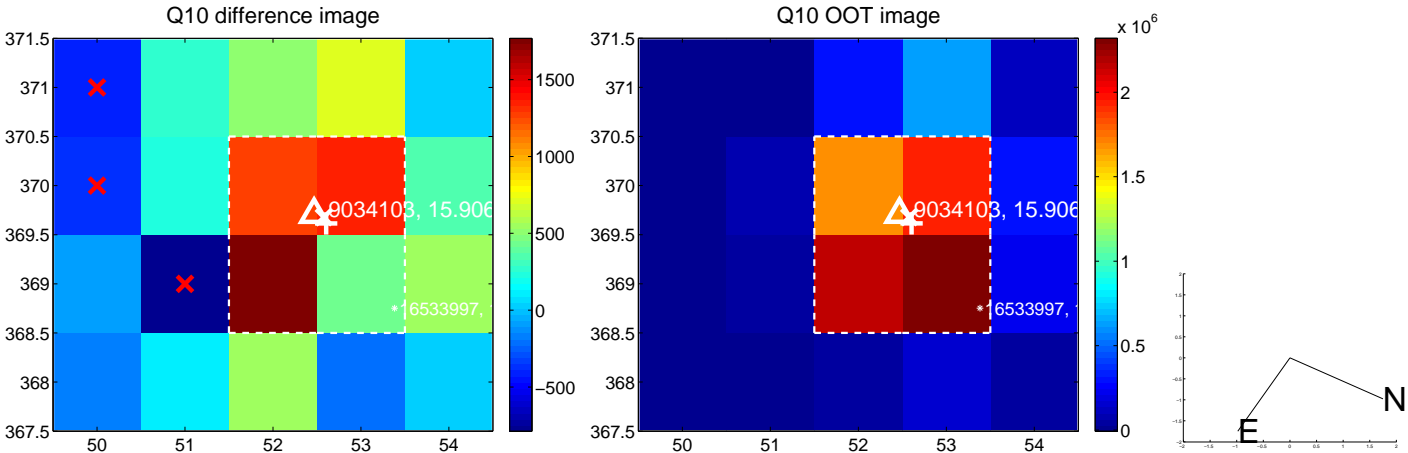
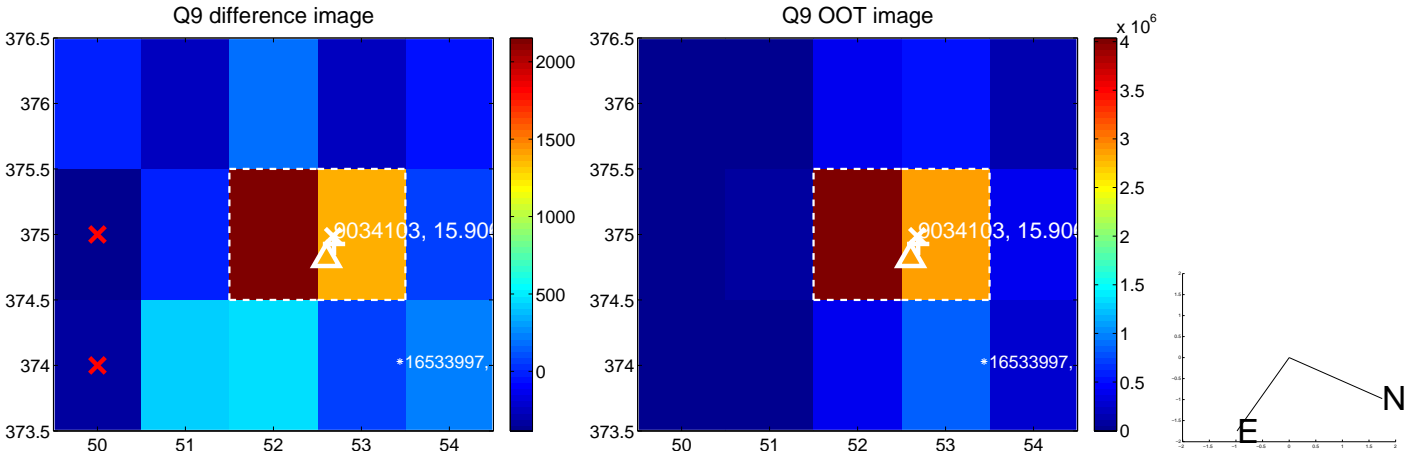


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

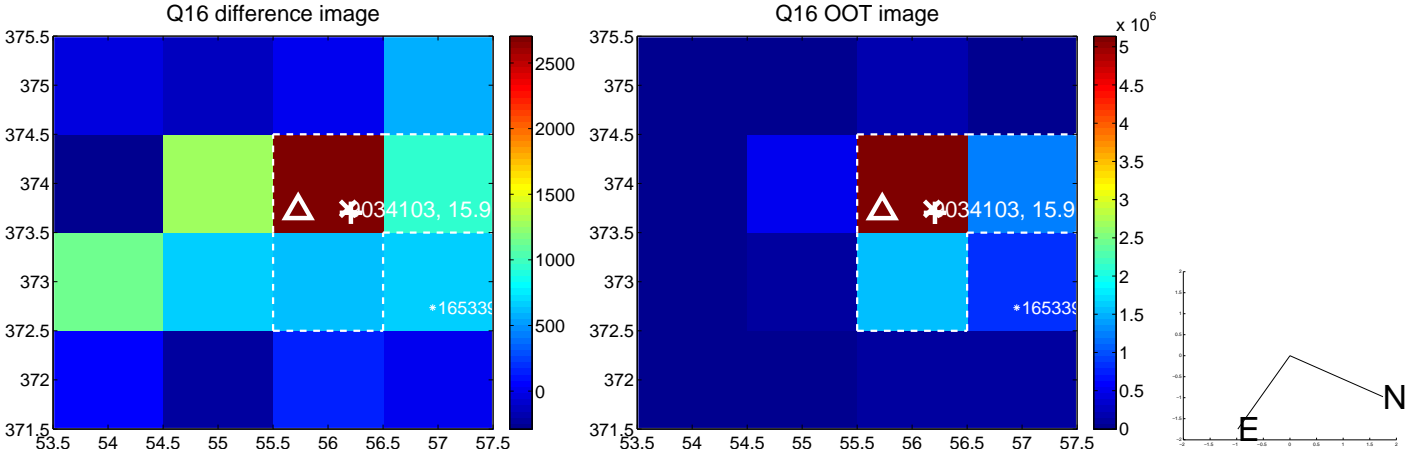
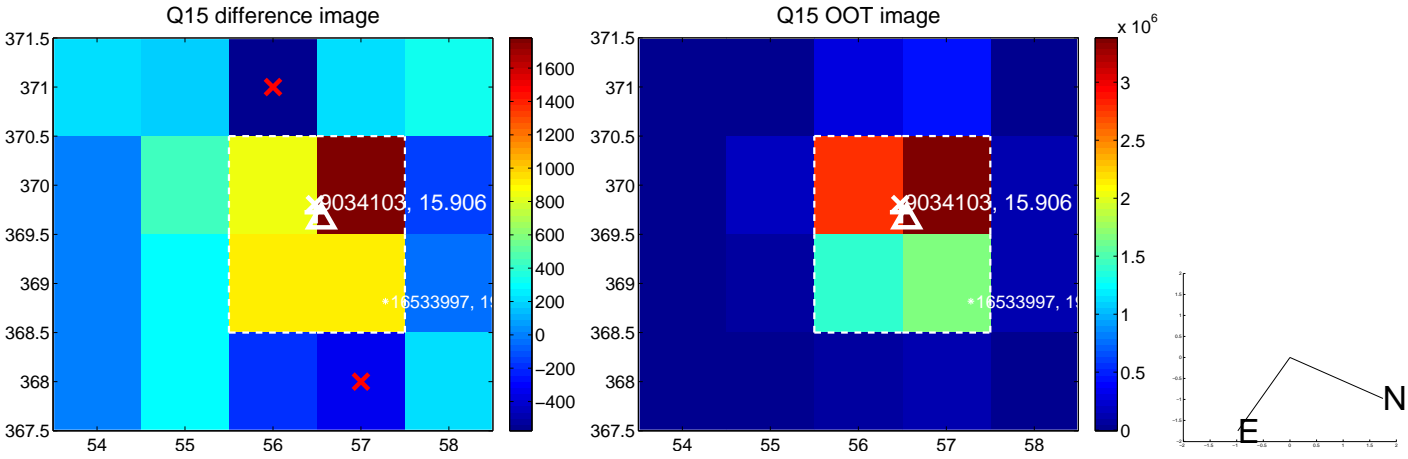
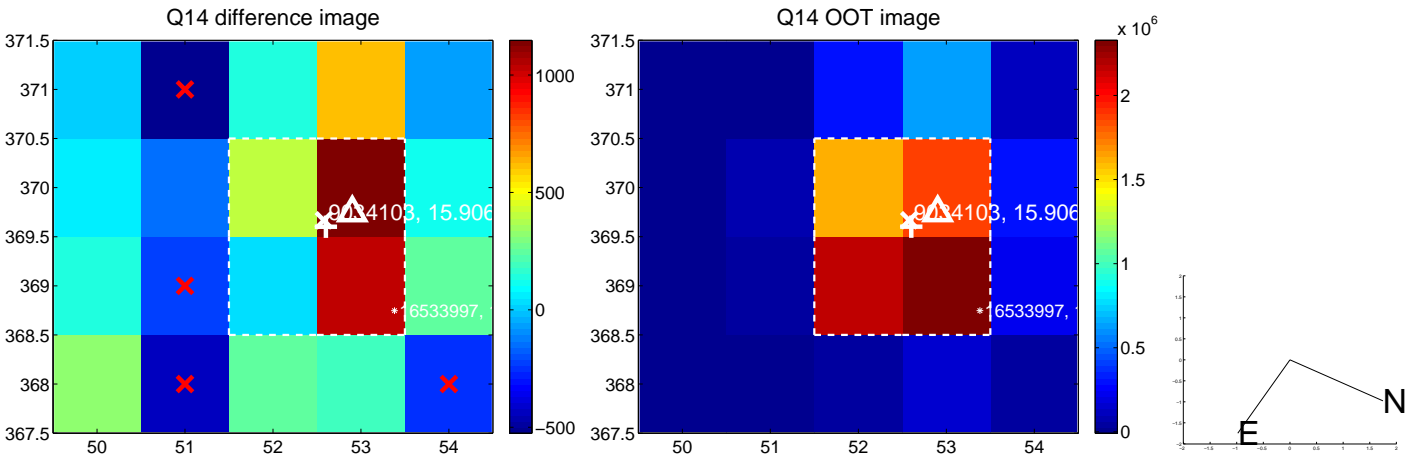
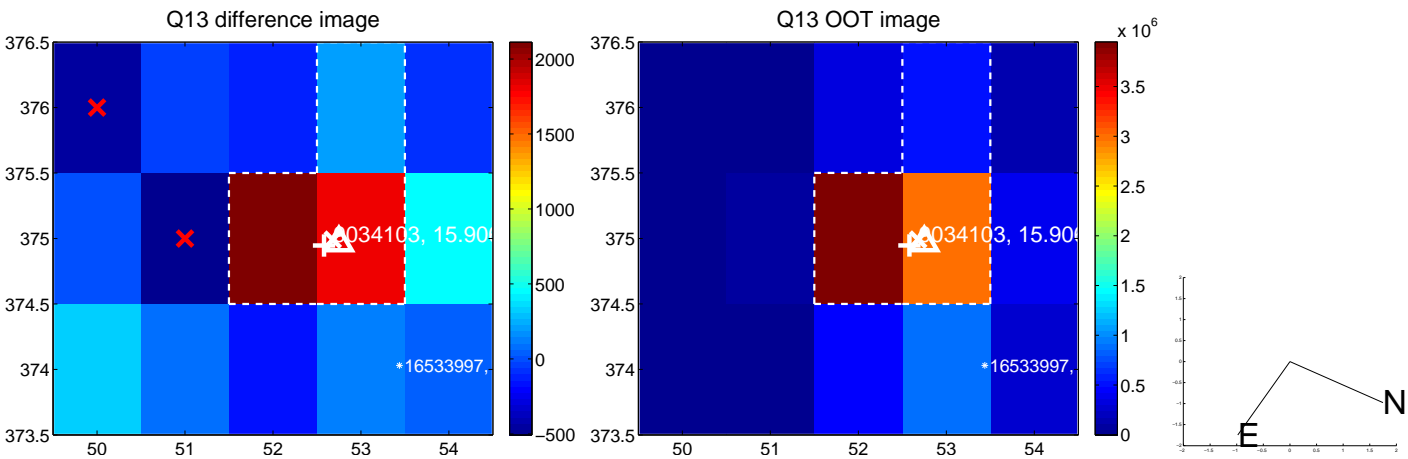




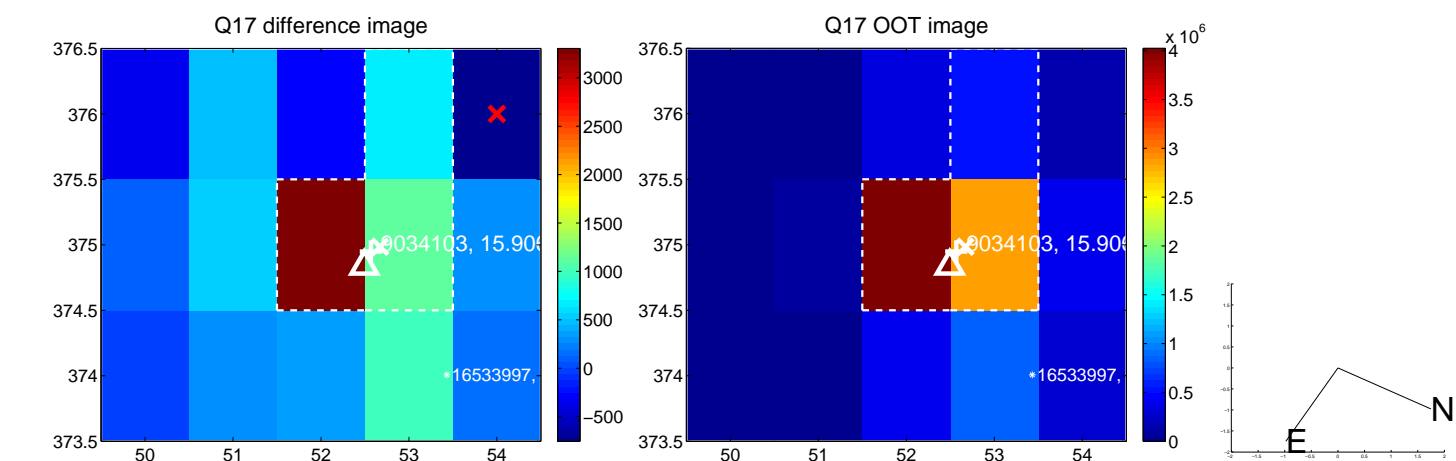
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



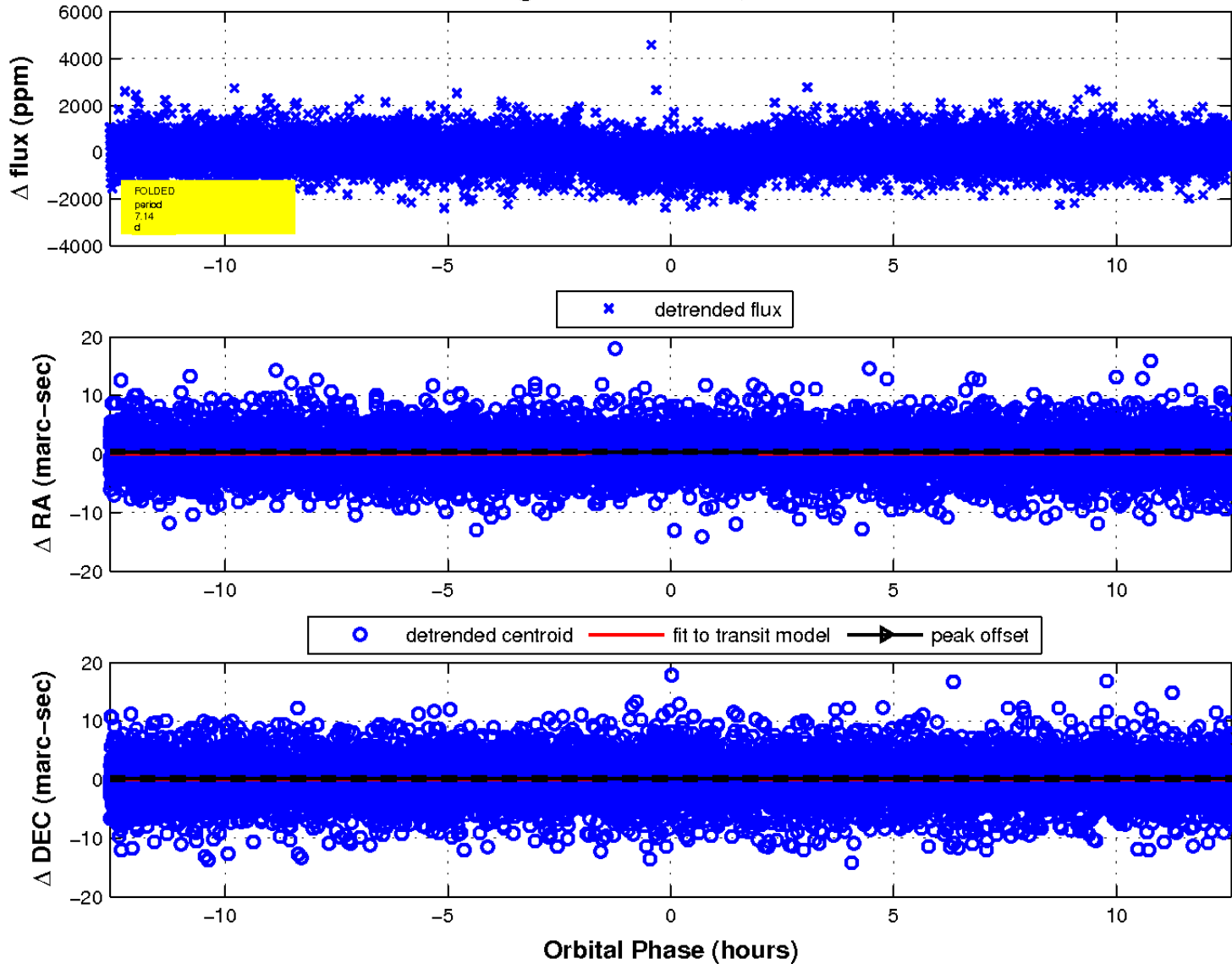
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

