

# KIC 009489953

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009489953-01	OBS	3238.01	58.345468	169.824228	1115.6	20.879	24.3	31.6	3.01	5896	19.30	87.19

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009489953-01	OBS	FP	0.00	1	0	0	0	LPP_DV

**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.

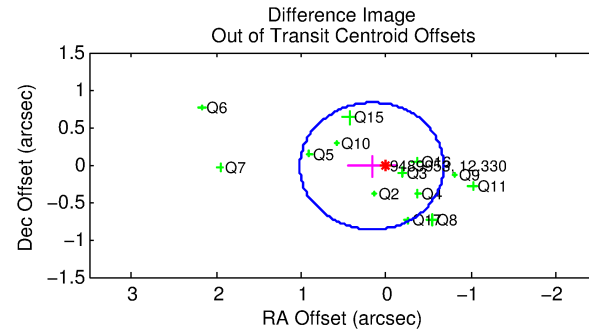
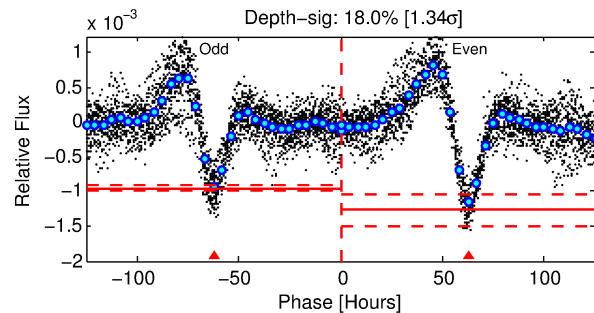
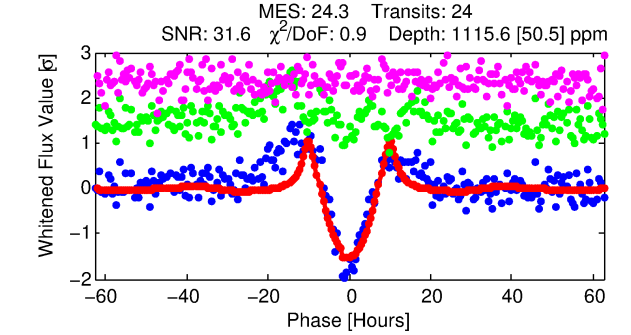
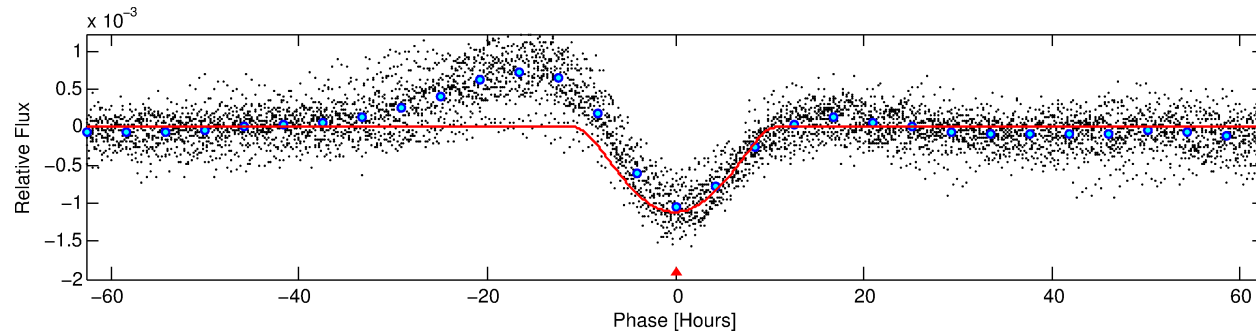
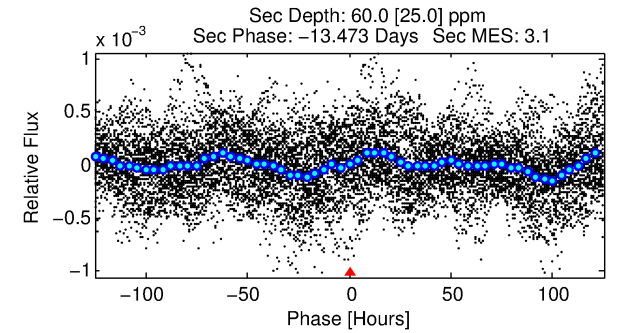
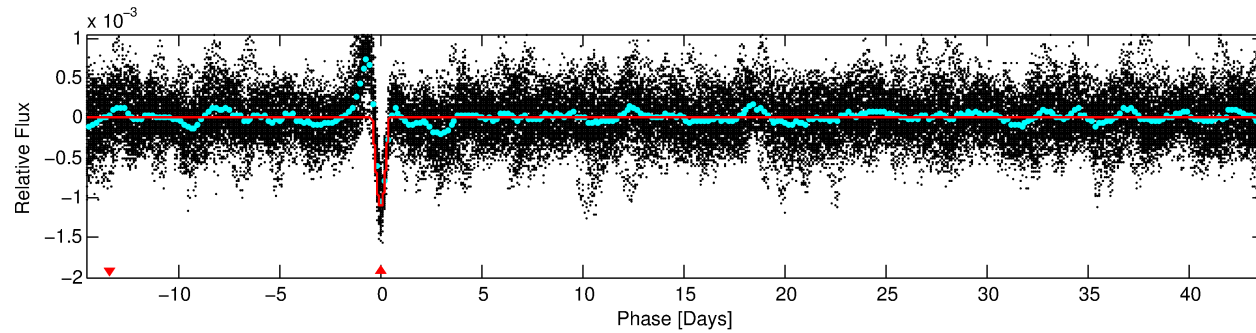
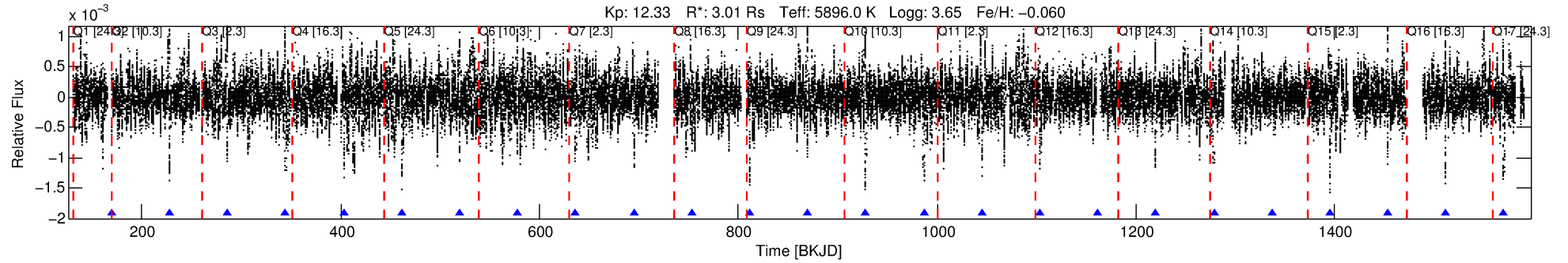
## Ephemeris Match Information For 009489953-01

No Significant Match Found

# DV One-Page Summary

KIC: 9489953 Candidate: 1 of 1 Period: 58.345 d

KOI: K03238.01 Corr: 0.991



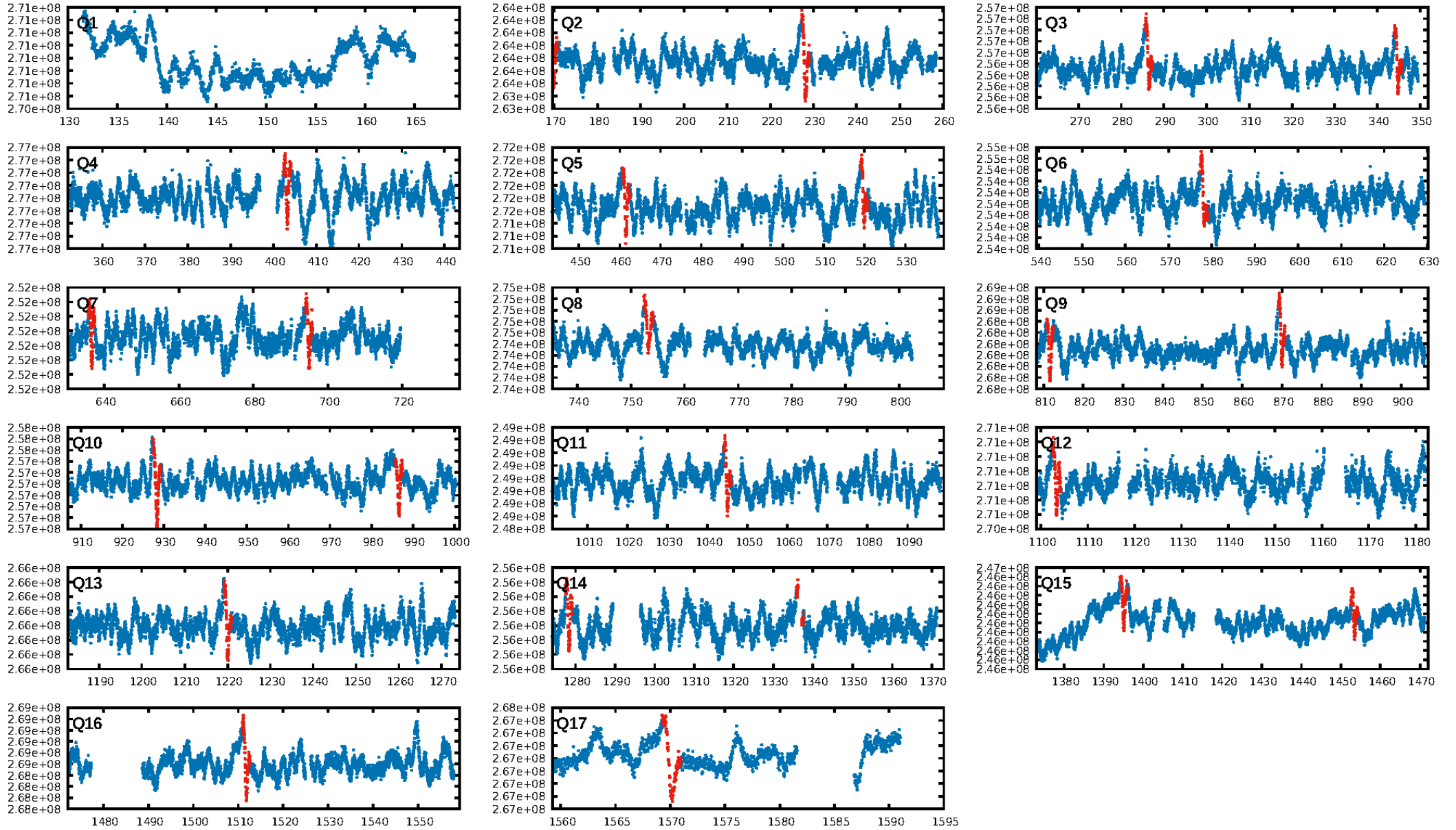
## DV Fit Results:

Period = 58.34547 [0.00062] d  
Epoch = 169.8242 [0.0086] BKJD  
Rp/R\* = 0.0588 [0.0203]  
a/R\* = 7.51 [0.58]  
b = 1.00 [0.03]  
Seff = 87.18 [55.30]  
Teff = 779 [124] K  
Rp = 19.30 [10.65] Re  
a = 0.3350 [0.1336] AU  
Ag = 9.95 [10.12] [0.88σ]  
Teffp = 2139 [435] K [3.01σ]

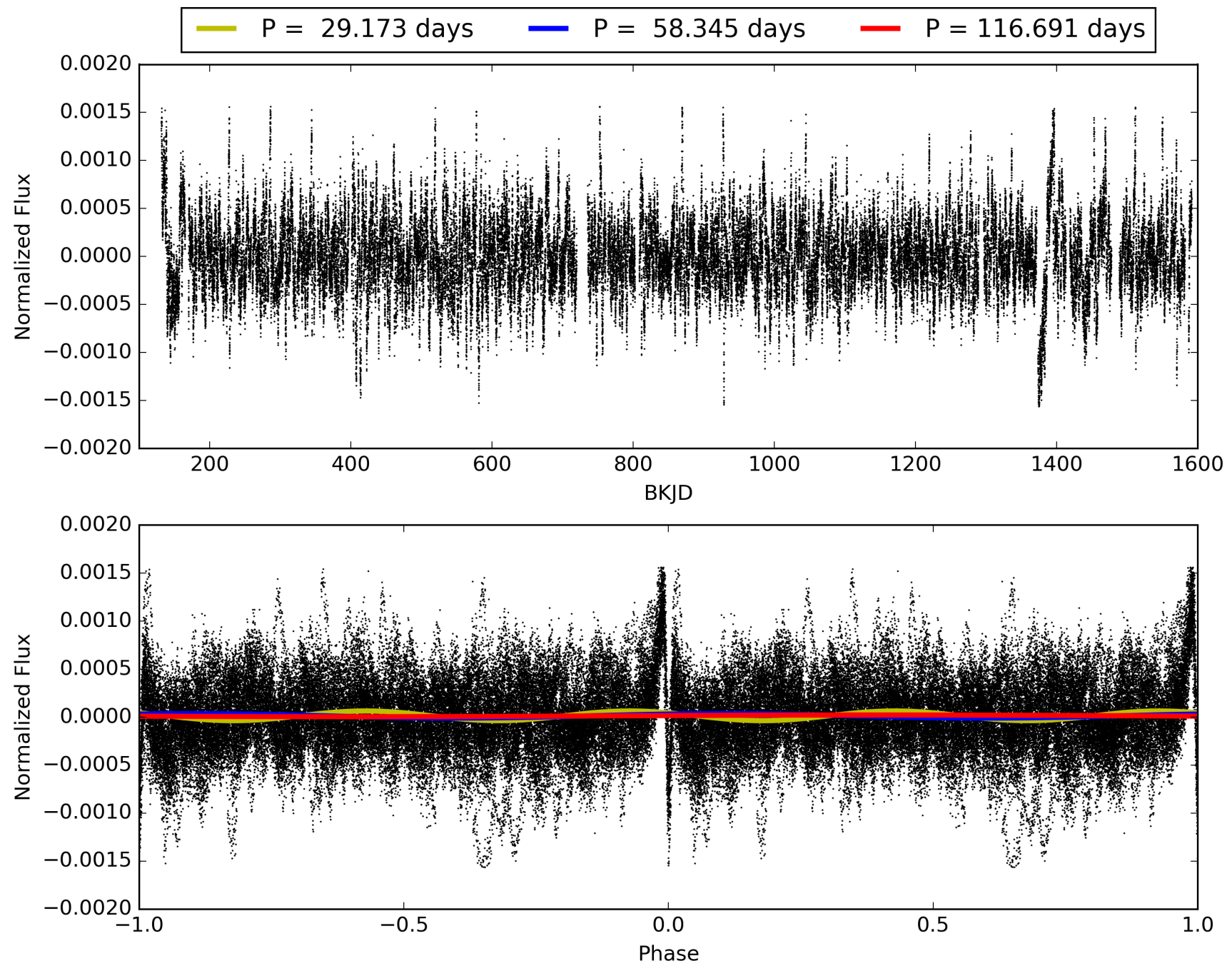
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.82e-122  
RollingBand-fgt: 1.00 [23/23]  
GhostDiagnostic-chr: 1.718  
Centroid-sig: 16.2%  
Centroid-so: 0.123 arcsec [1.37σ]  
OotOffset-rm: 0.166 arcsec [0.59σ]  
KicOffset-rm: 0.150 arcsec [0.50σ]  
OotOffset-st: 3/4/3/3 [13]  
KicOffset-st: 3/4/3/3 [13]  
DiffImageQuality-fgm: 0.92 [12/13]  
DiffImageOverlap-fno: 1.00 [13/13]

# TCE 009489953-01, PDC Light Curves

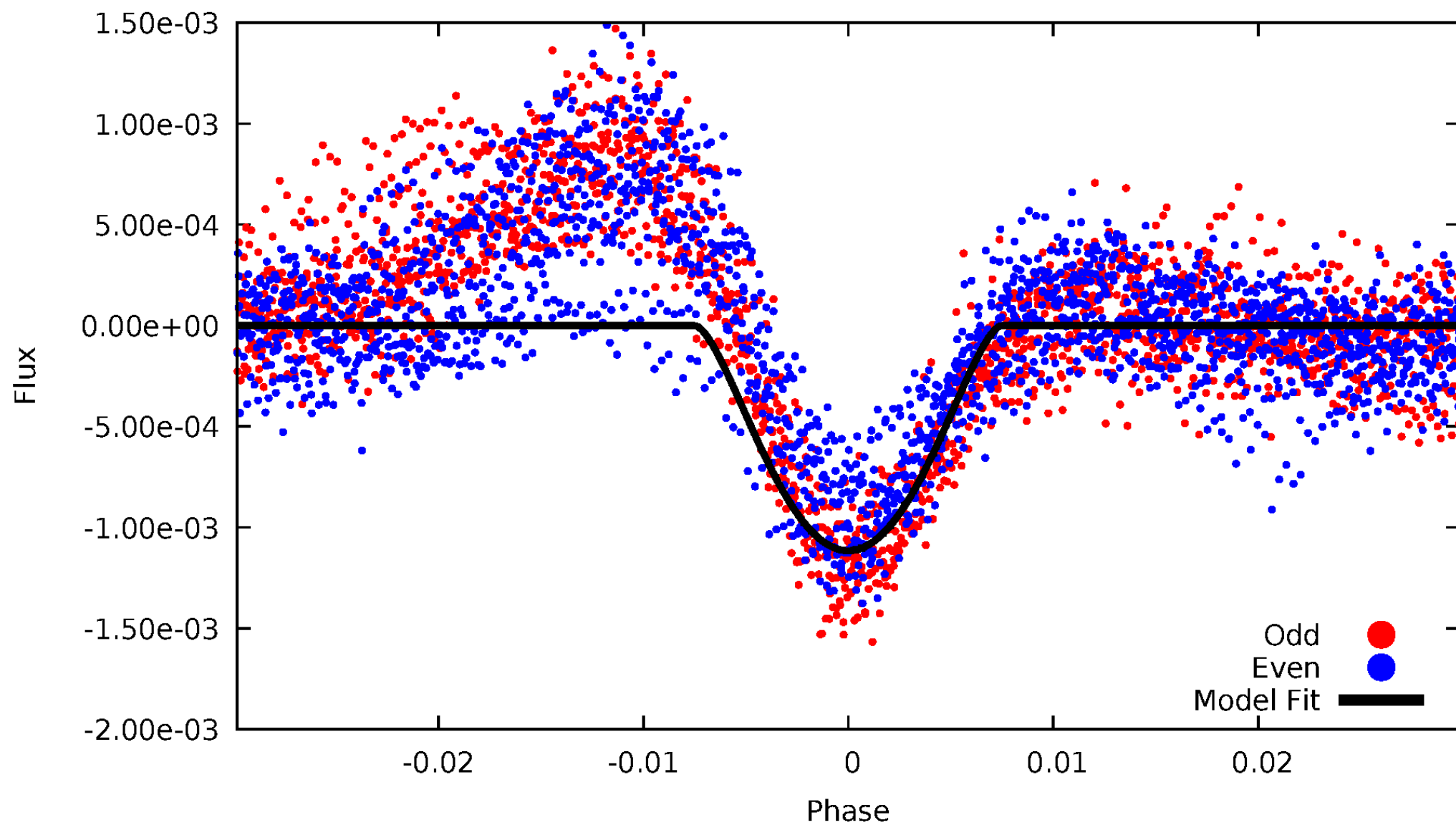


TCE 009489953-01



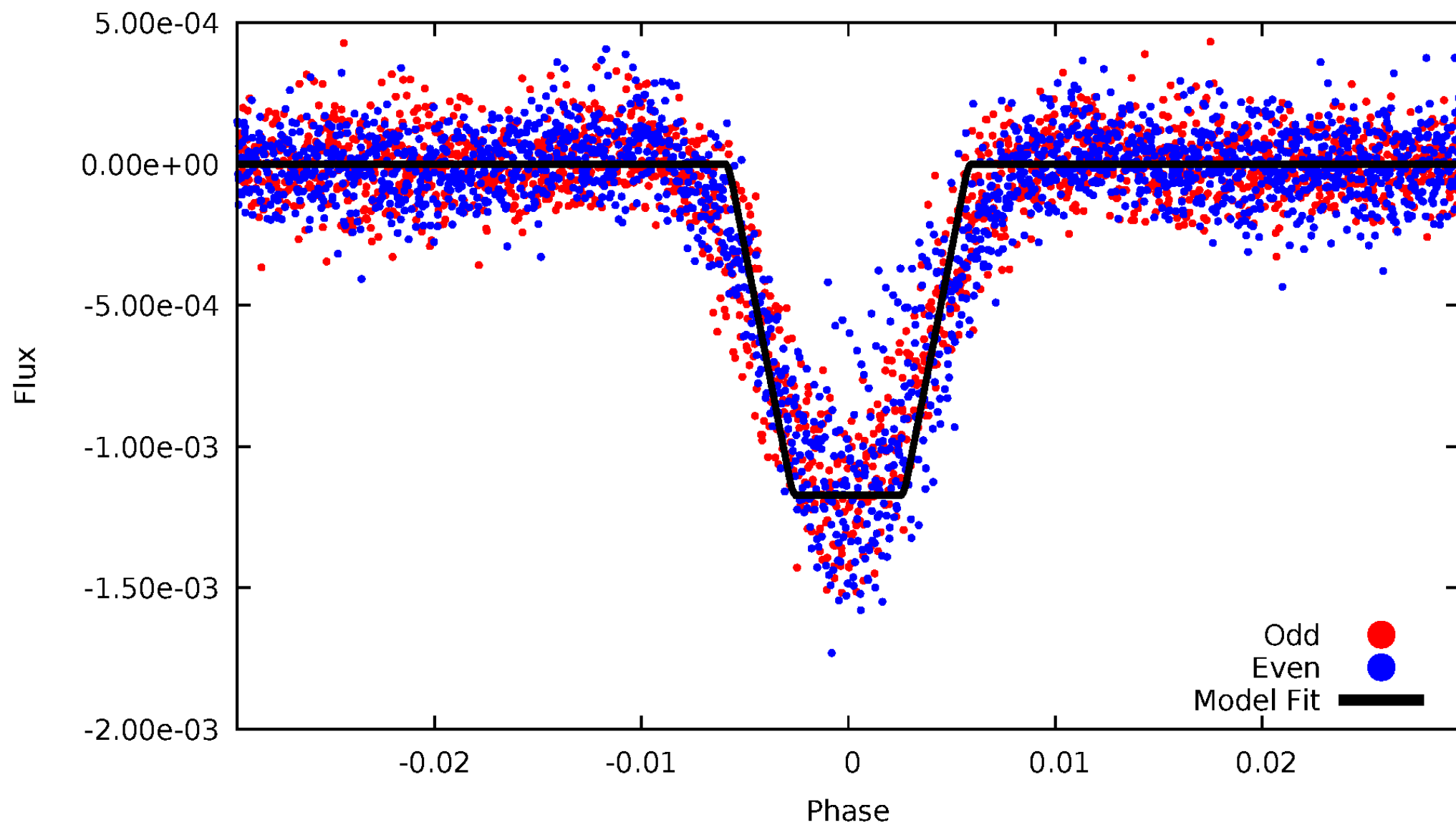
# DV Odd/Even

TCE 009489953-01



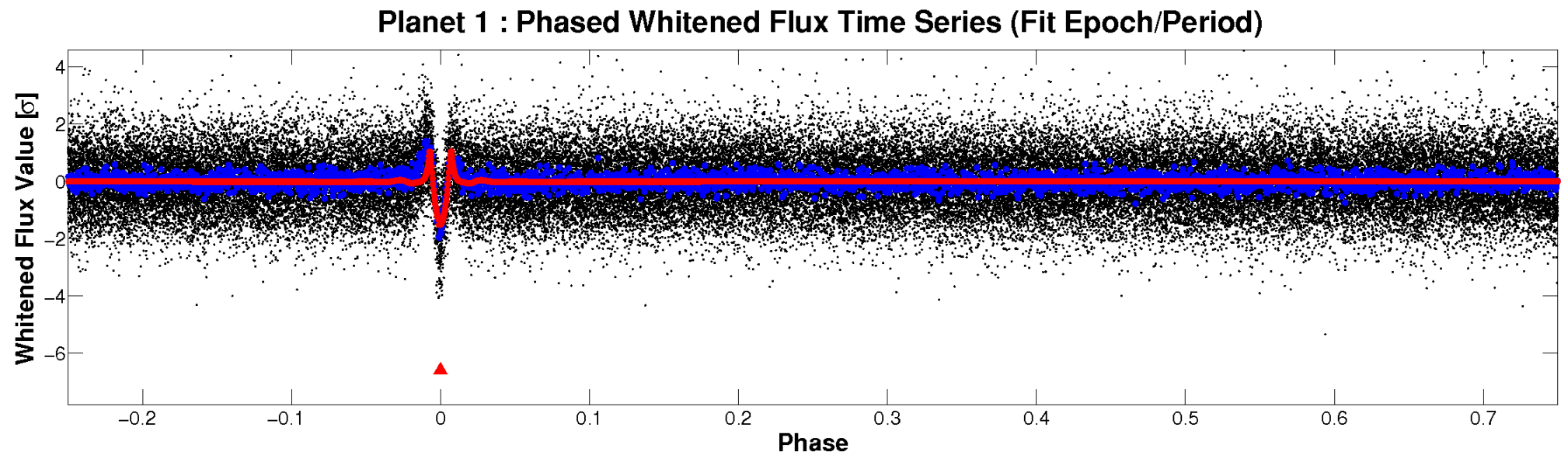
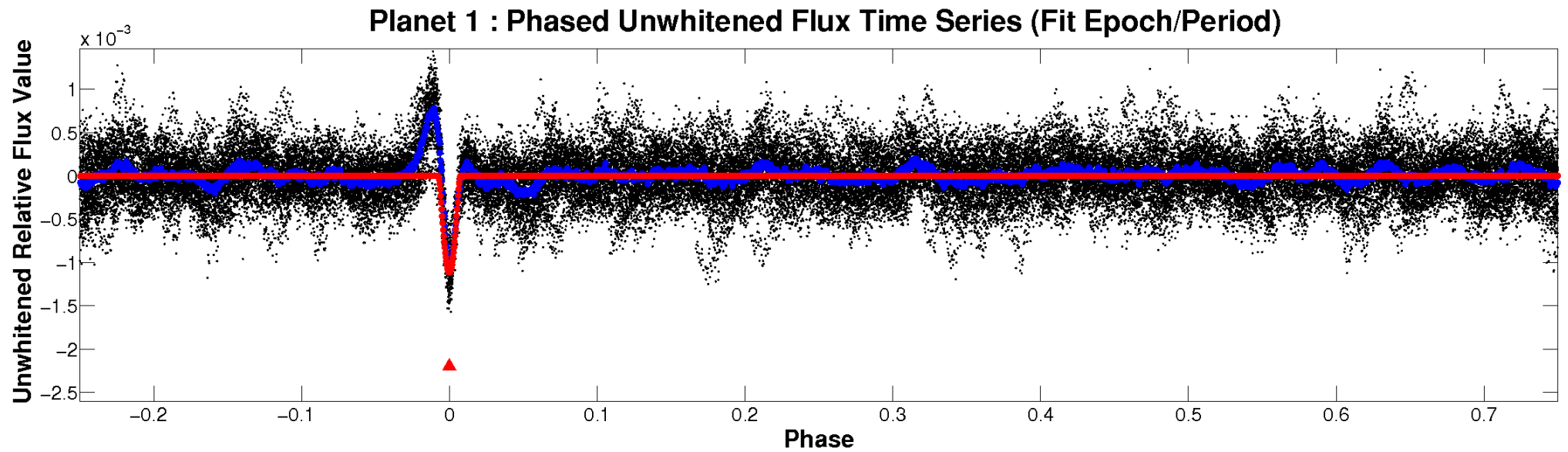
# ALT Odd/Even

TCE 009489953-01



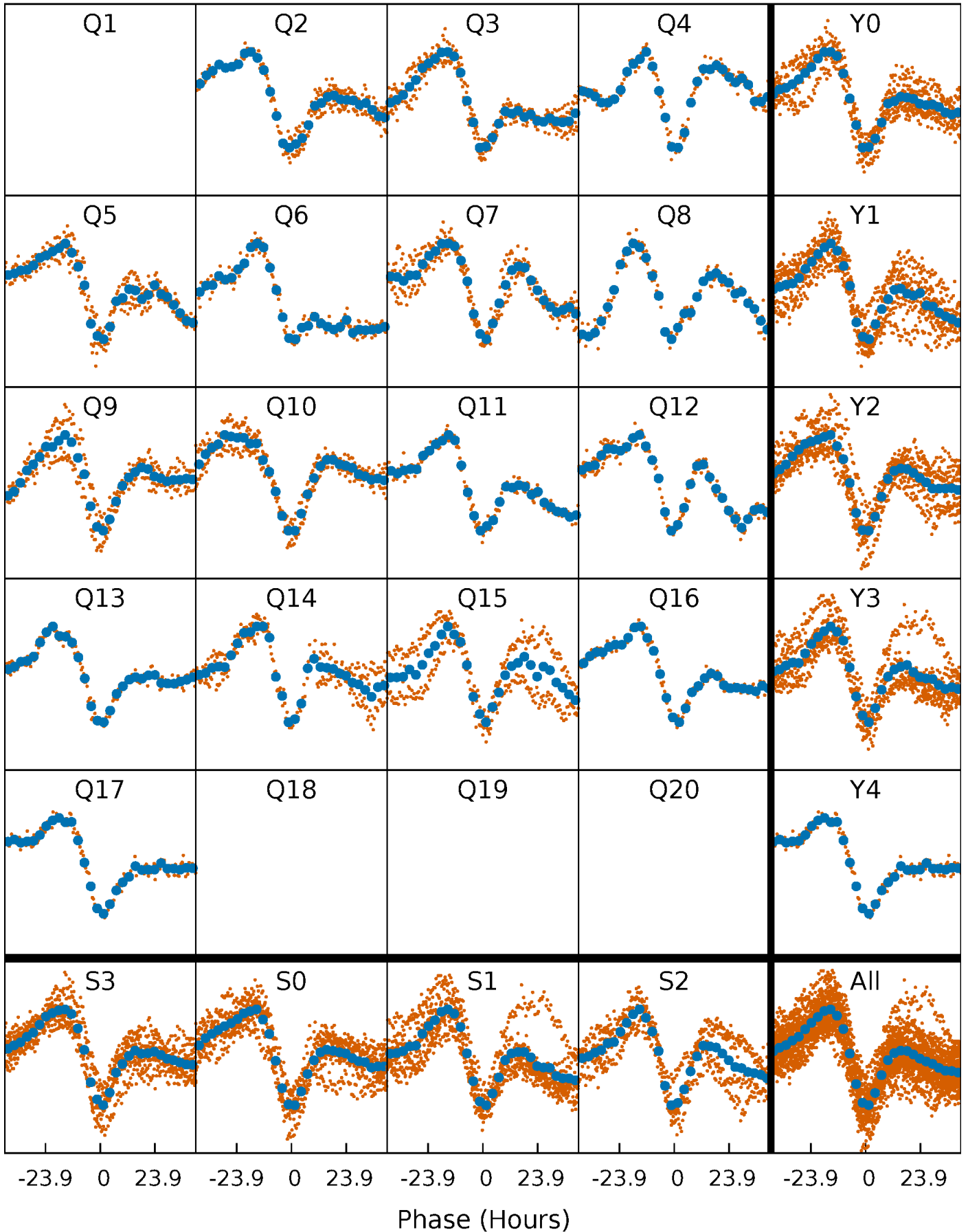


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

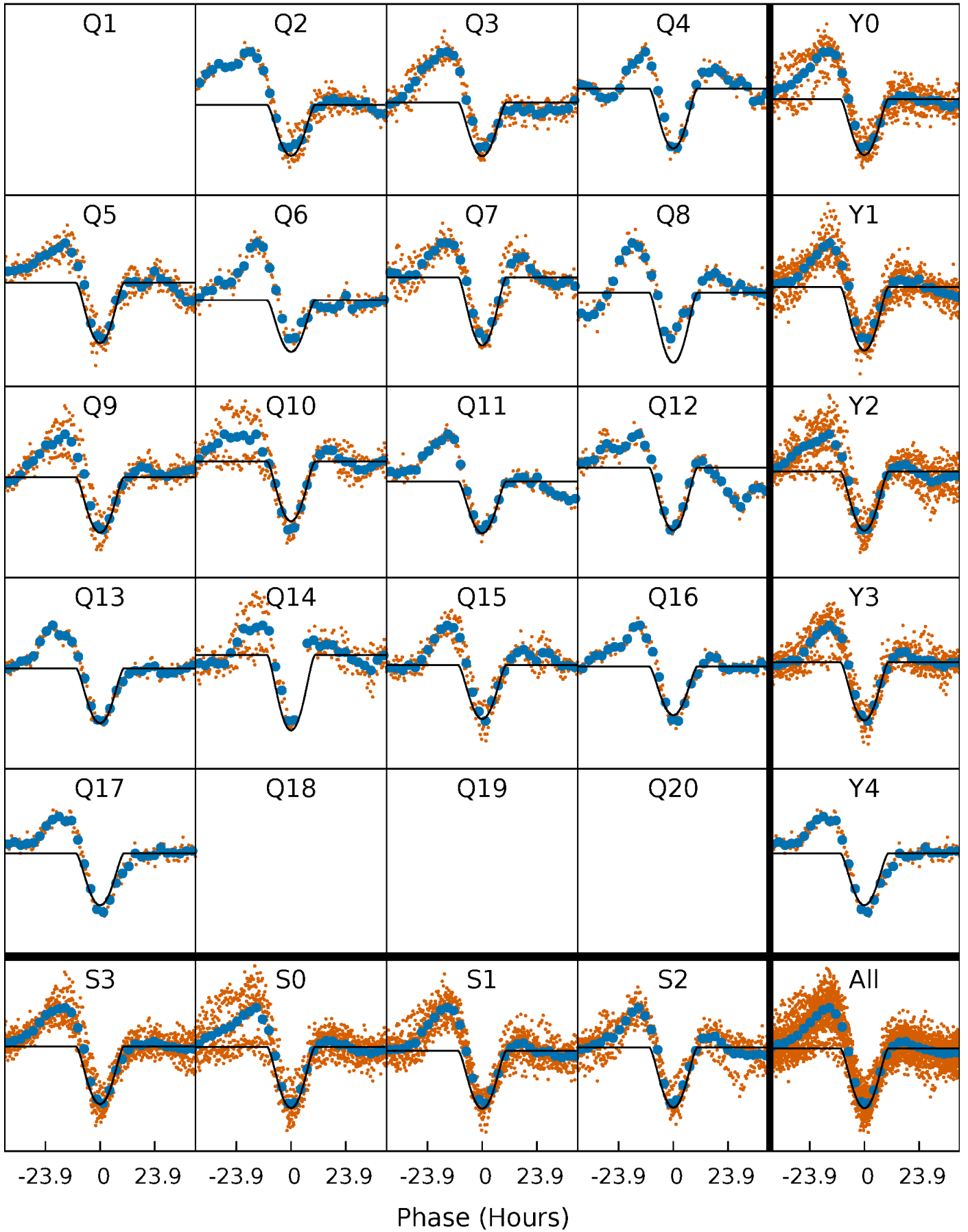
TCE 009489953-01   P= 58.345468 Days    $T_0=169.824228$  (BKJD)





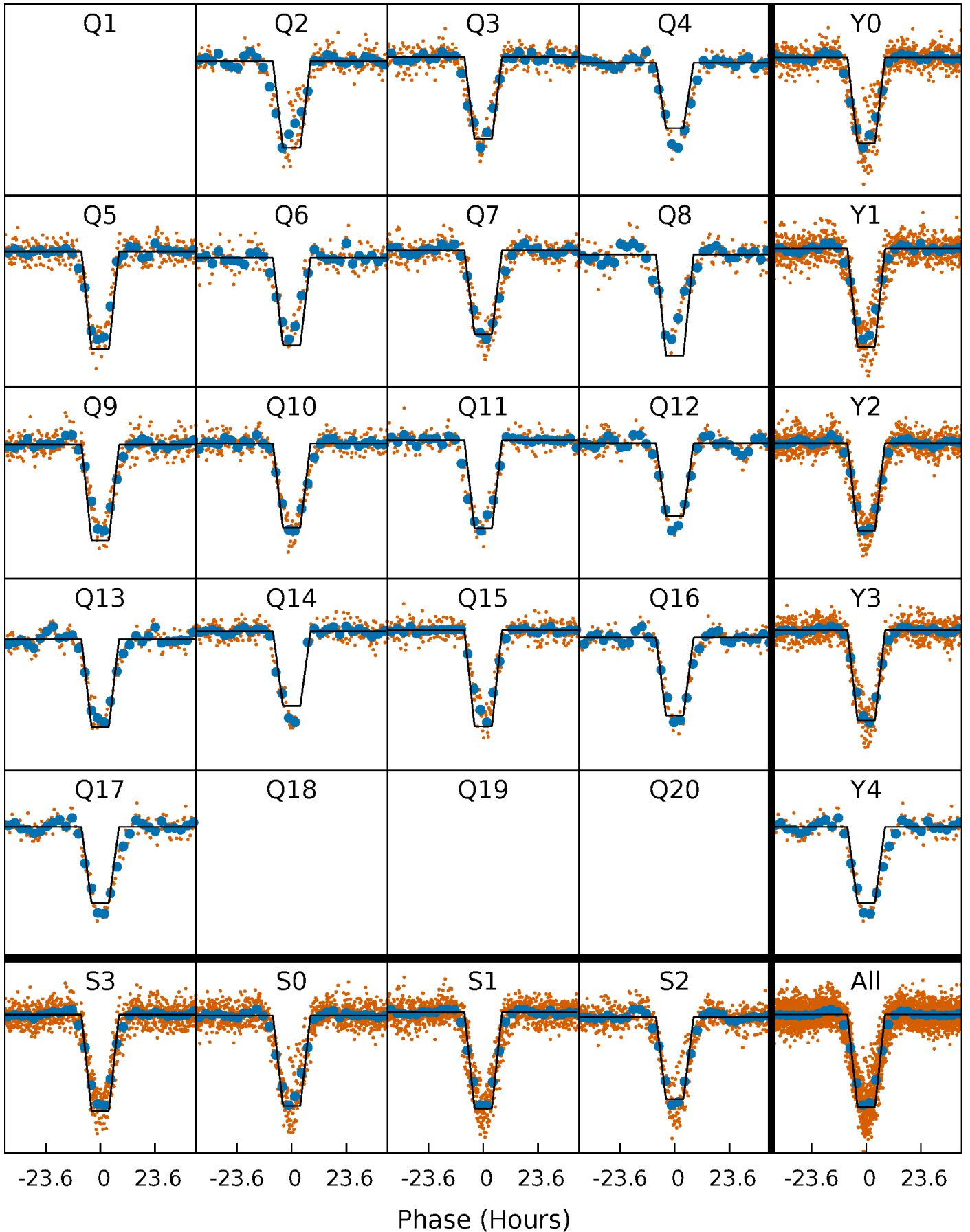
# DV Quarter-Phased Transit Curves

TCE 009489953-01 P= 58.345468 Days  $T_0=169.824228$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

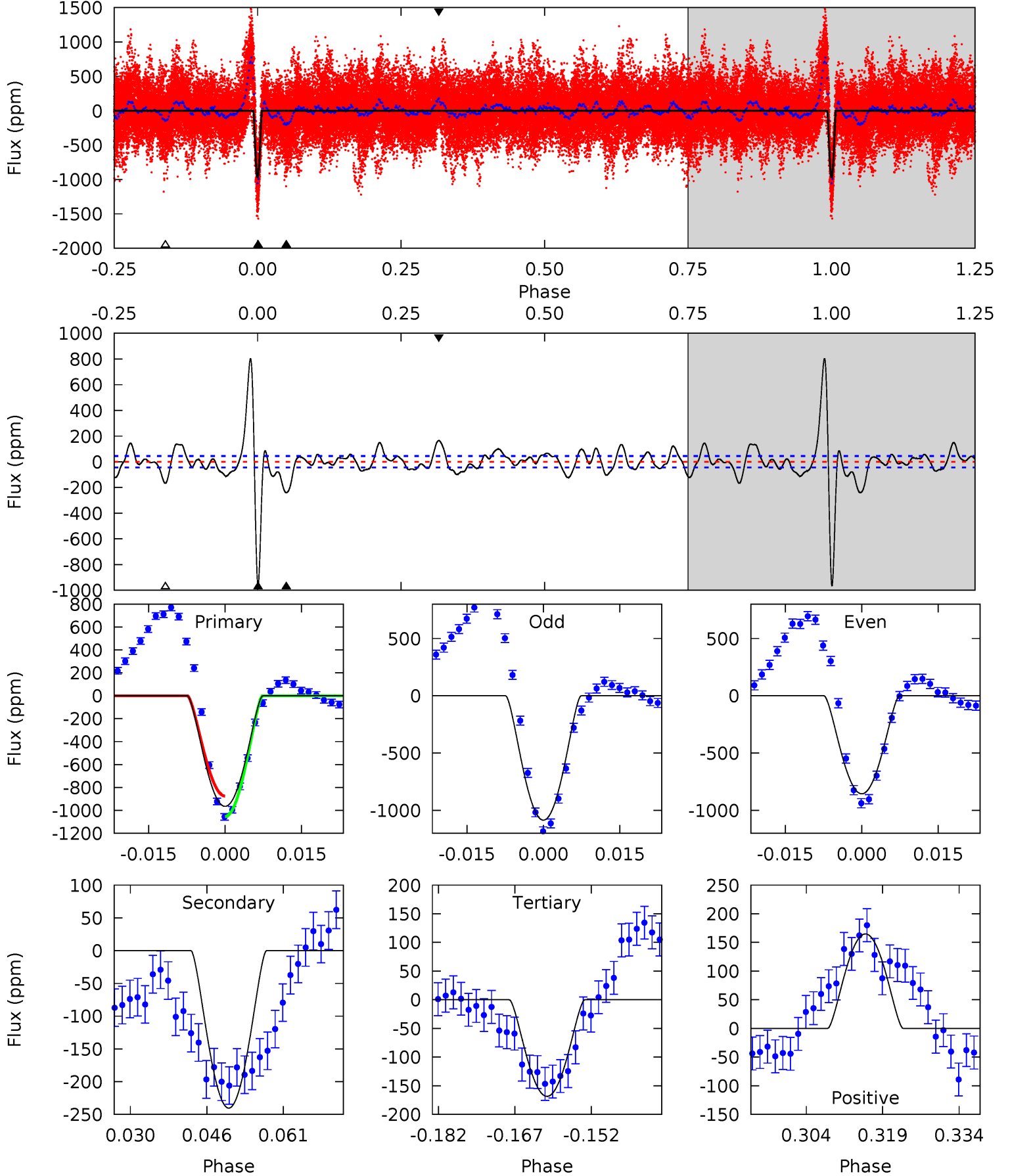
TCE 009489953-01   P= 58.344472 Days    $T_0=169.822302$  (BKJD)



# DV Model-Shift Uniqueness Test

009489953-01, P = 58.345468 Days, E = 111.478760 Days

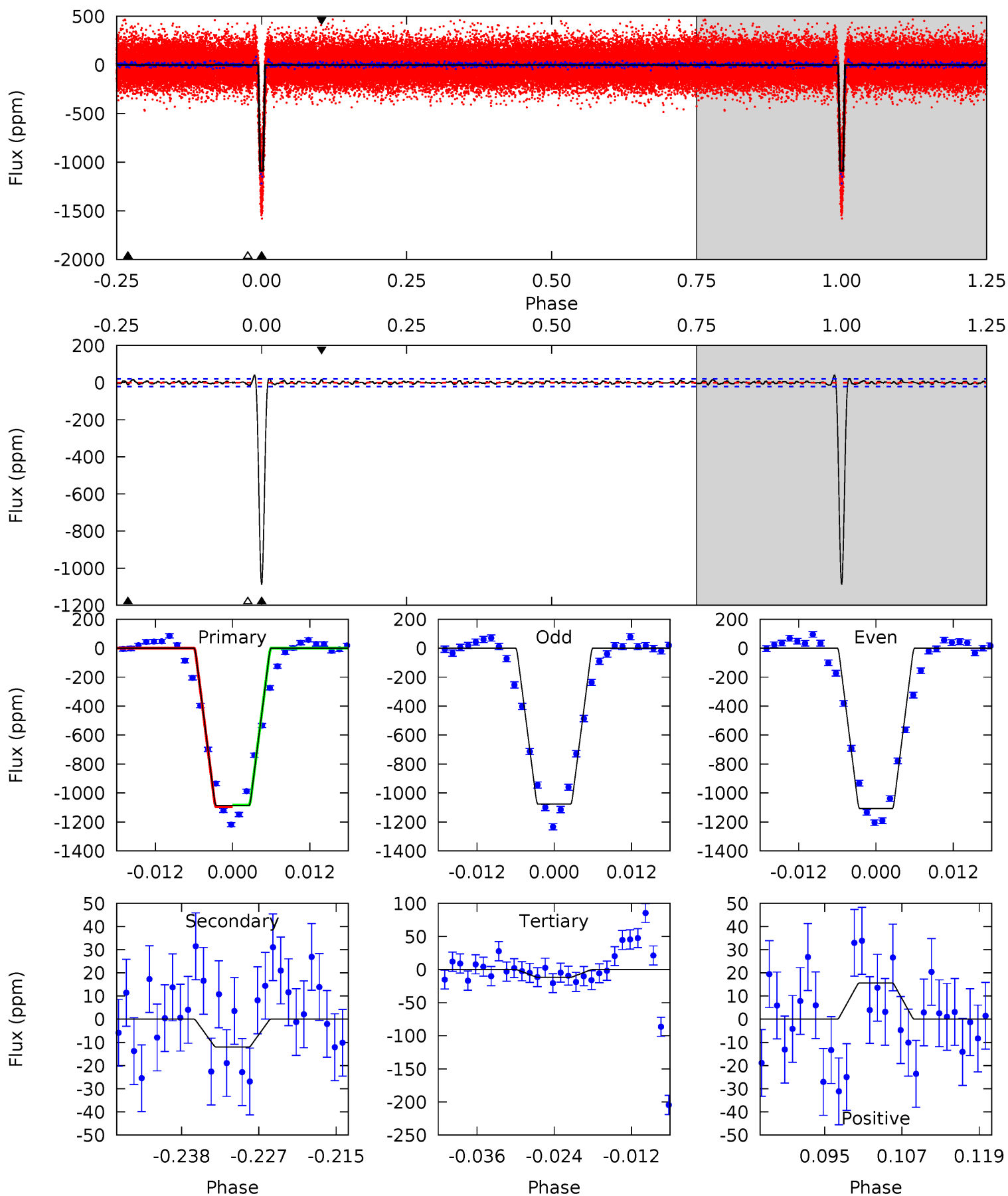
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
107.3	26.7	18.7	18.3	4.95	2.43	8.94	88.5	89.0	7.98	8.39	12.8	0.97	0.45	9.97



# Alt Model-Shift Uniqueness Test

009489953-01, P = 58.344472 Days, E = 111.477830 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
256.8	2.84	2.77	3.69	4.99	2.51	1.21	254.0	253.1	0.07	-0.85	3.55	1.01	0.04	1.50



### Stellar Parameters For KIC 009489953

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5896^{+176}_{-176}$	$3.650^{+0.360}_{-0.120}$	$-0.060^{+0.300}_{-0.300}$	$3.006^{+0.555}_{-1.296}$	$1.472^{+0.170}_{-0.397}$	$0.076^{+0.229}_{-0.029}$
	+3%/-3%	+10%/-3%	+500%/-500%	+18%/-43%	+12%/-27%	+300%/-38%
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 009489953-01 / KOI 3238.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-240 \pm 9$	$17.97^{+7.67}_{-6.41}$	$1075^{+73}_{-115}$	$3505^{+558}_{-330}$	$46^{+62}_{-23}$
Alt.	$-12 \pm 4$	$10.41^{+6.95}_{-5.40}$	$1071^{+78}_{-119}$	$2625^{+625}_{-319}$	$6.520^{+21.677}_{-4.304}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature  
 $T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )  
 $A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

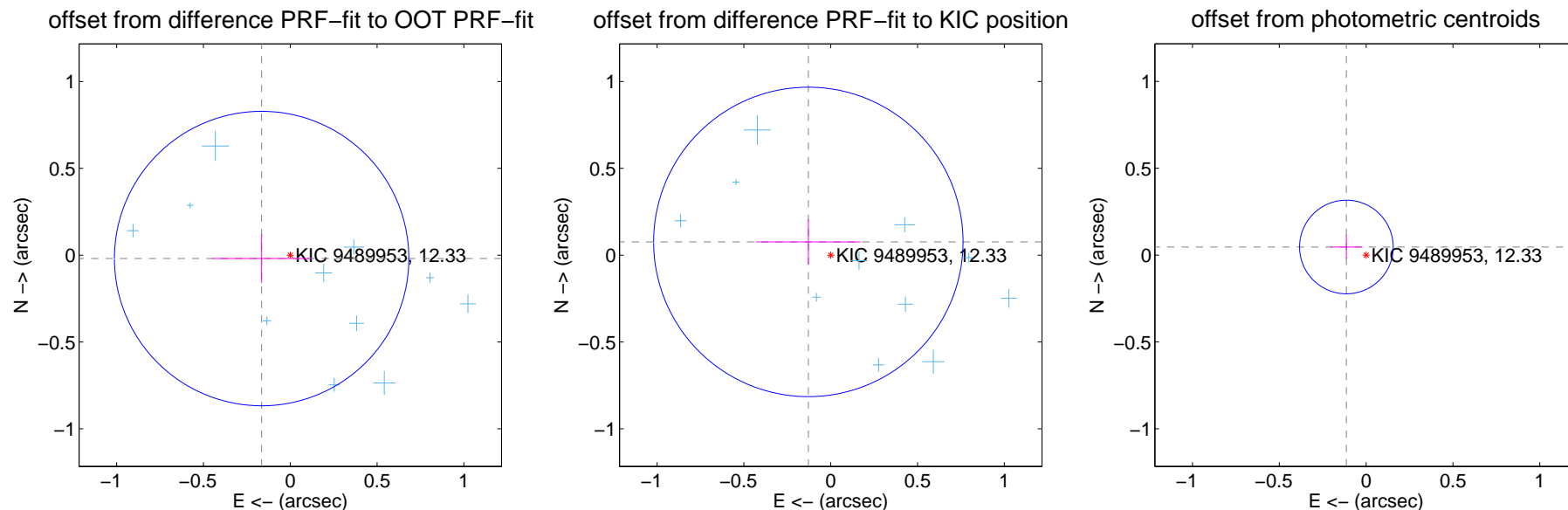
## DV Centroid Data

Supplemental centroid analysis for 009489953-01. Kepler magnitude: 12.33. Transit SNR 31.59

There are 12 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

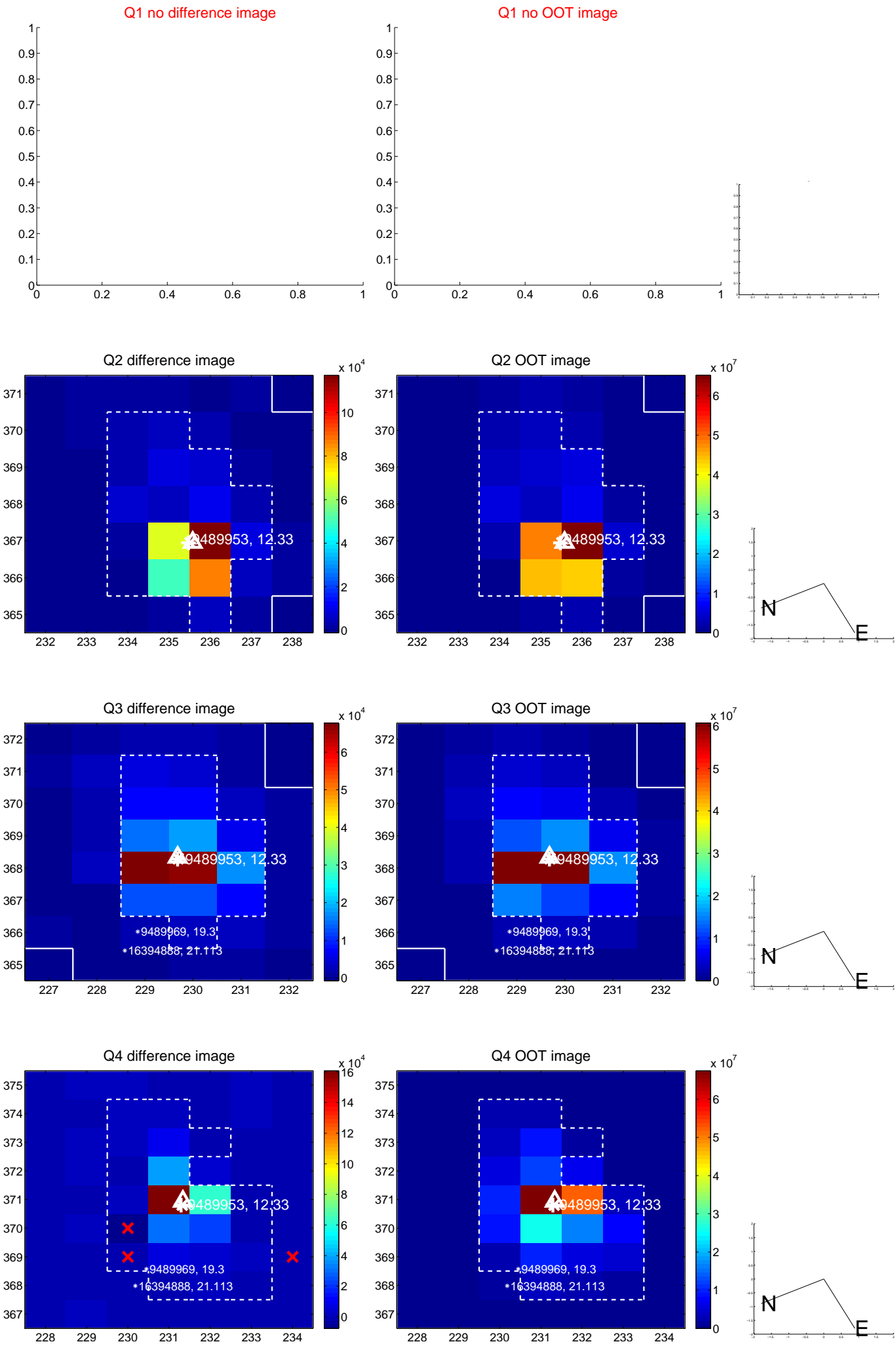
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.166 \pm 0.283$	0.59	$0.165 \pm 0.284$	$-0.020 \pm 0.142$
PRF-fit source offset from KIC position	$0.150 \pm 0.297$	0.50	$0.129 \pm 0.301$	$0.076 \pm 0.130$
photometric centroid source offset	$0.12 \pm 0.09$	1.37	$0.11 \pm 0.09$	$0.05 \pm 0.07$



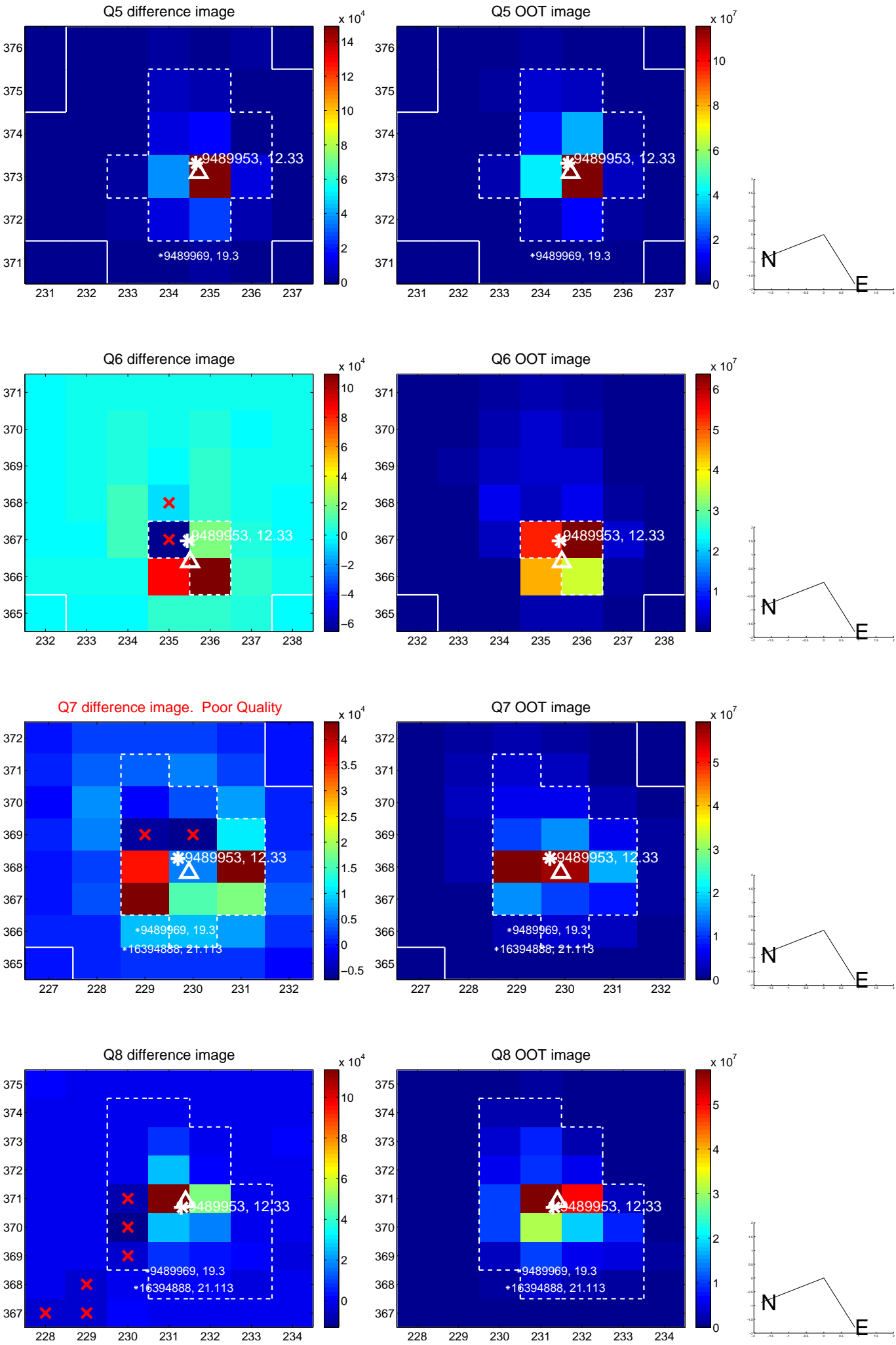
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



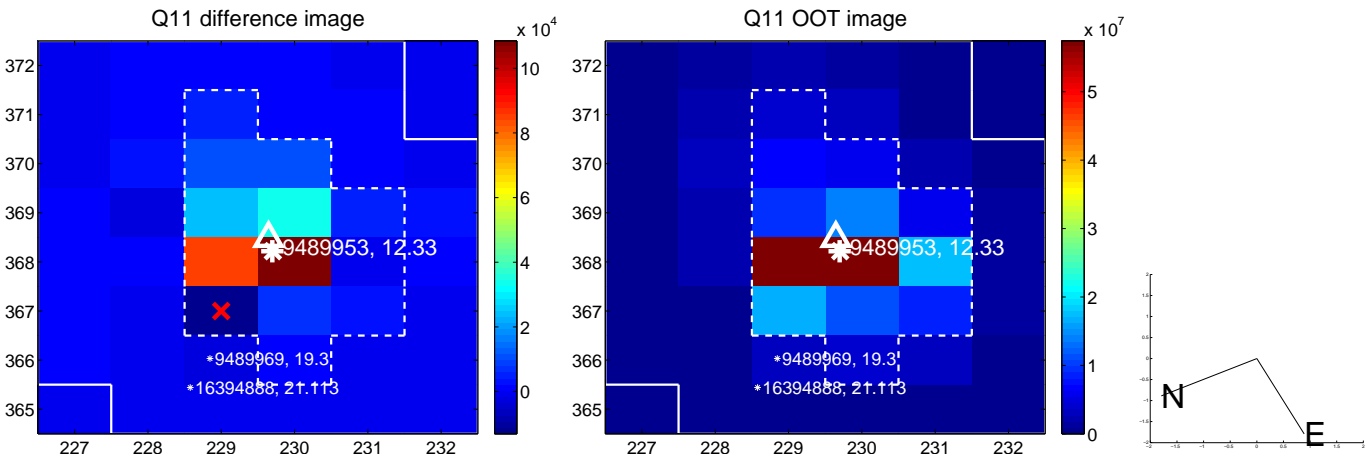
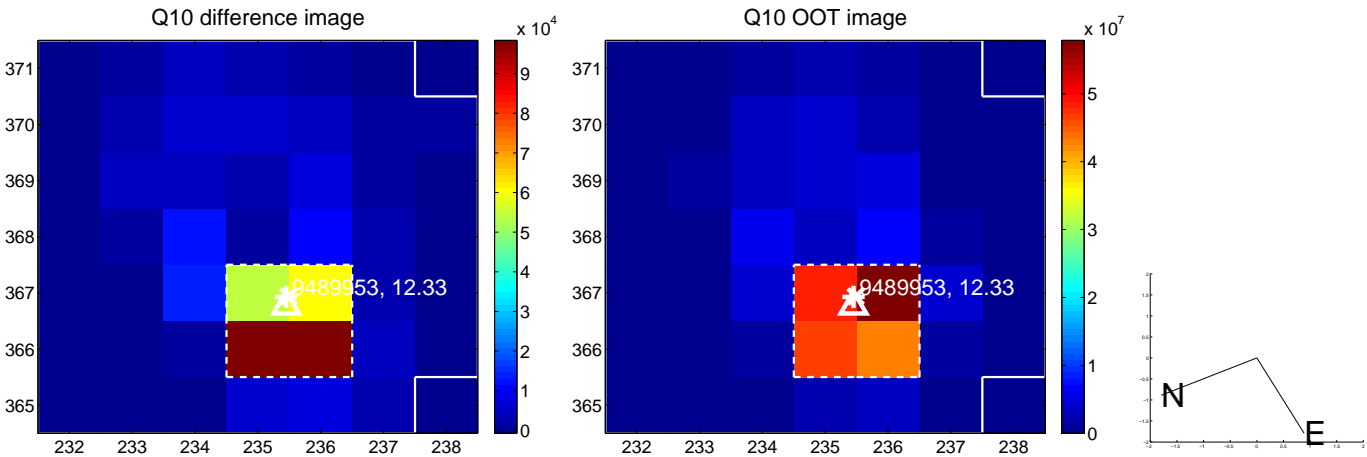
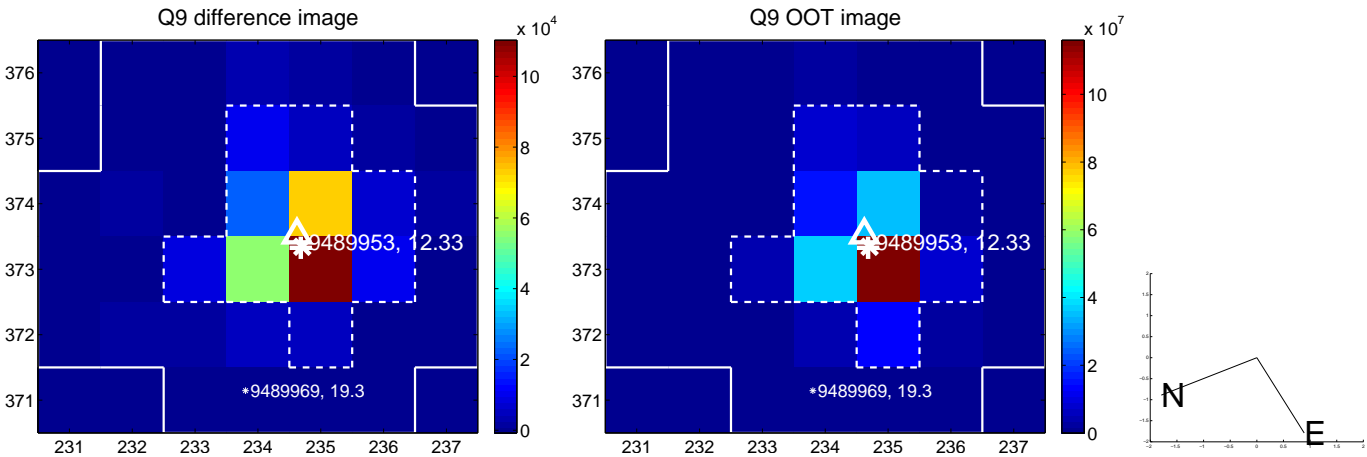
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



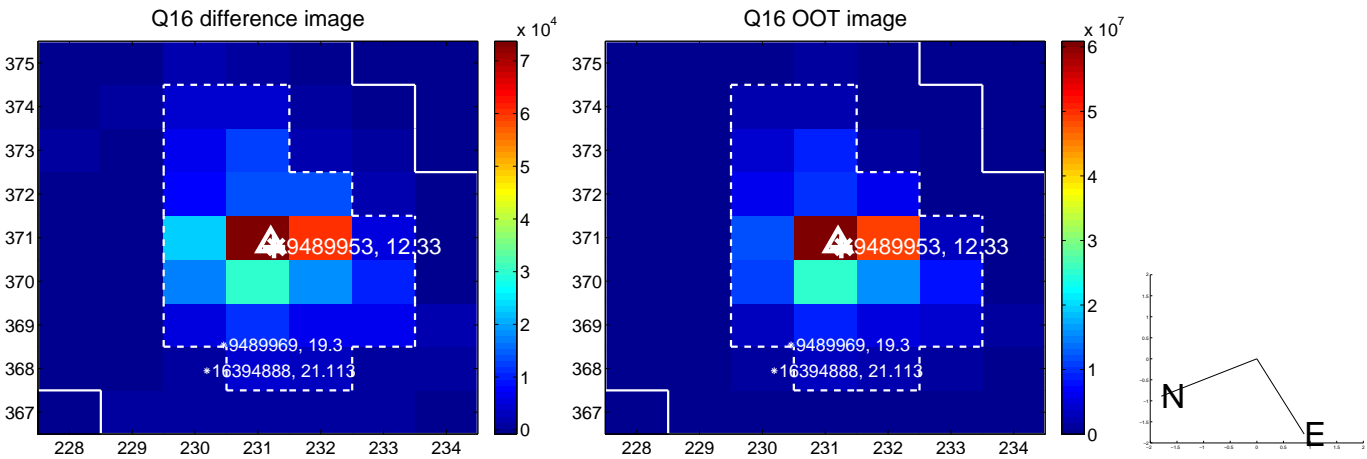
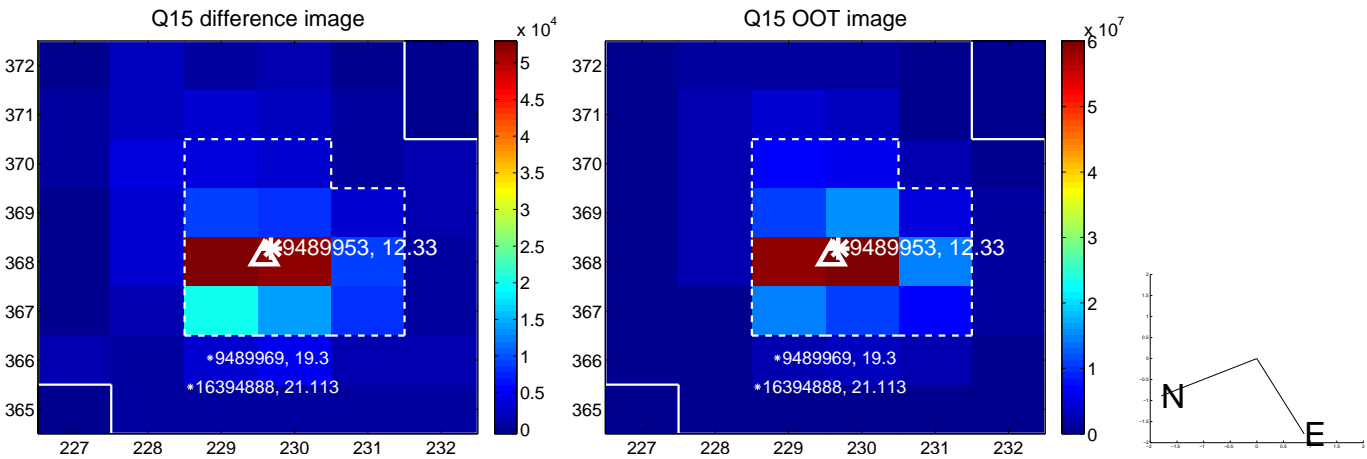
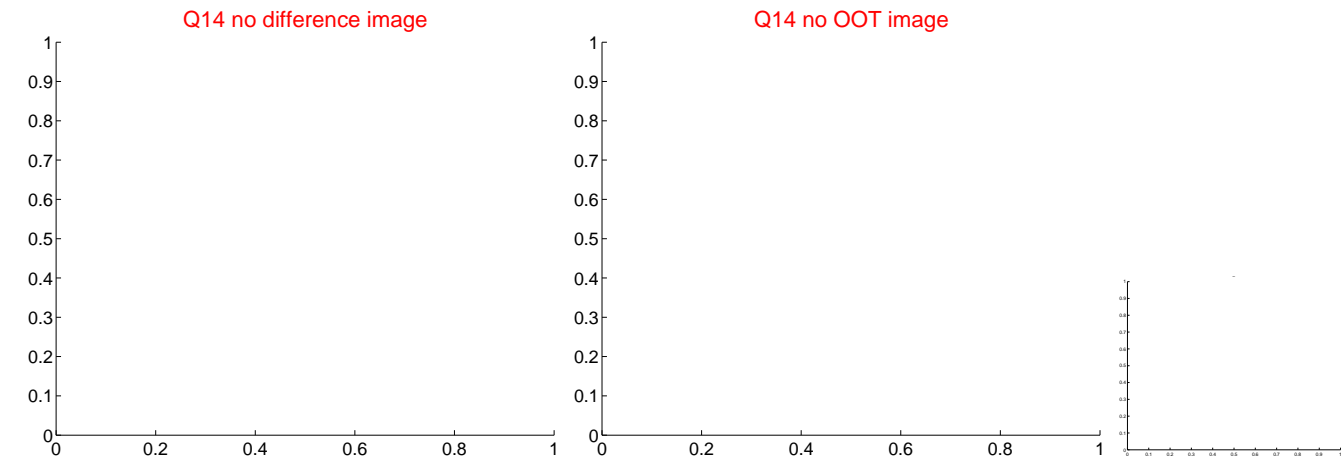
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



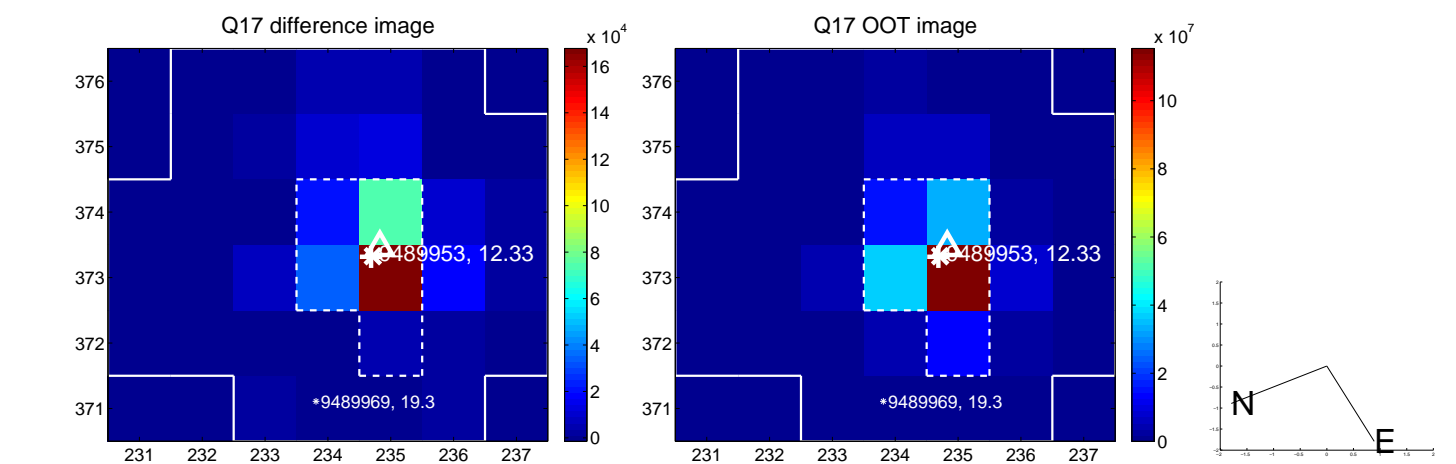
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



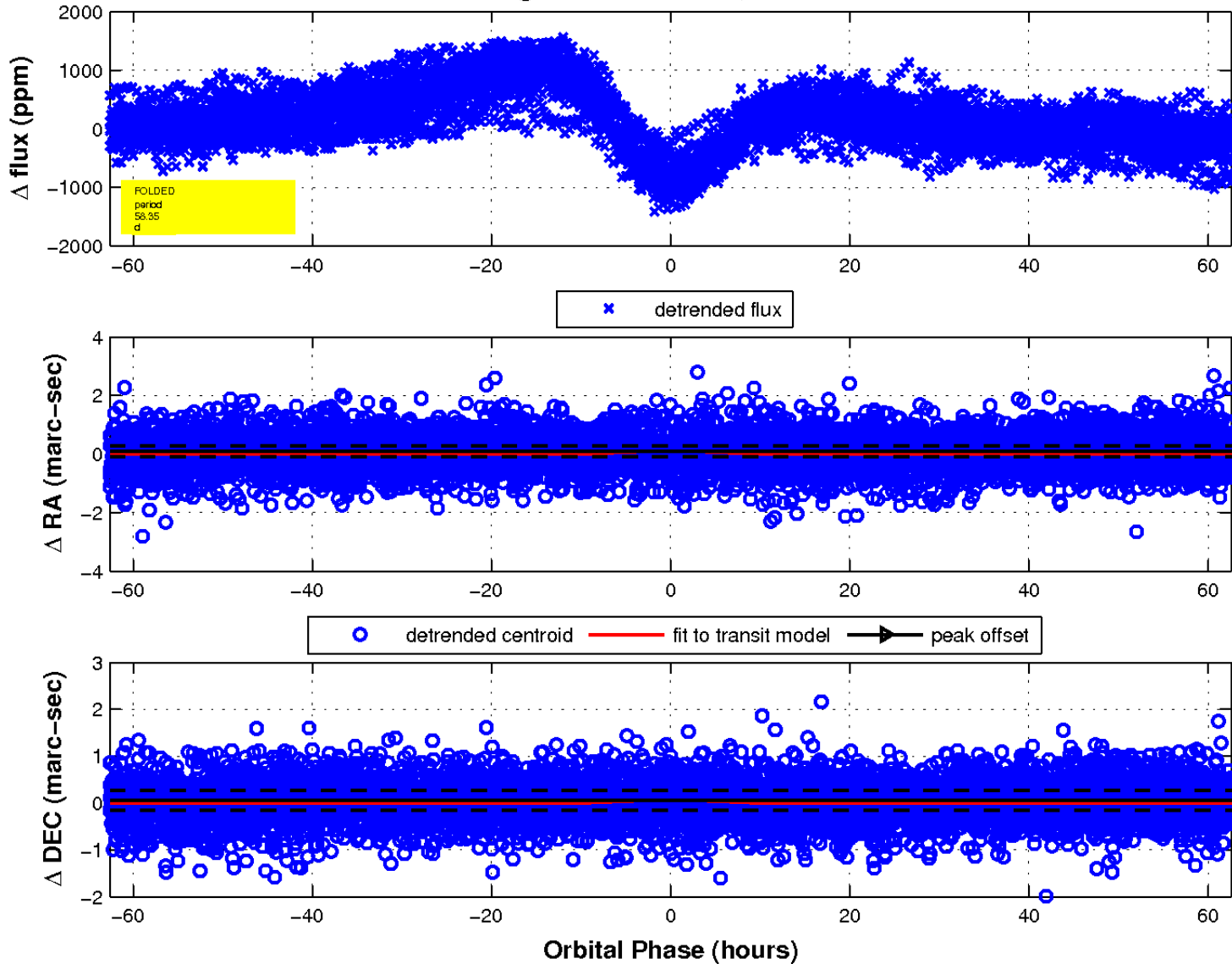
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

