

# KIC 009786335

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009786335-01	OBS	No	14.384702	143.558127	367.3	33.281	9.4	10.2	1.16	6392	4.00	130.93

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009786335-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

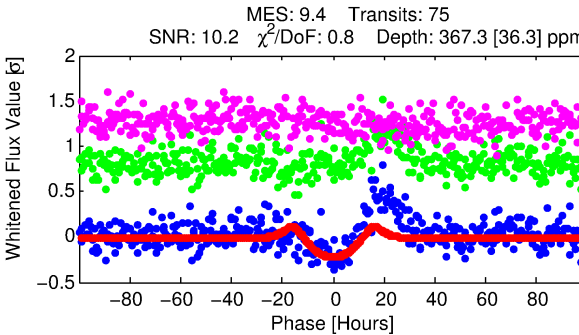
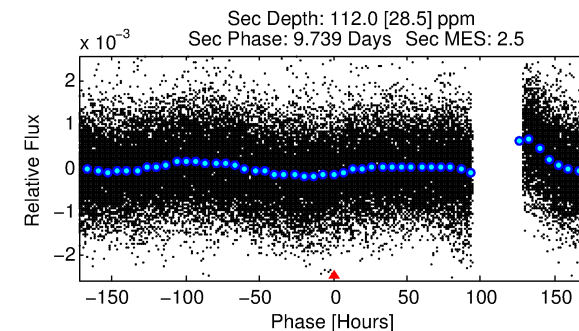
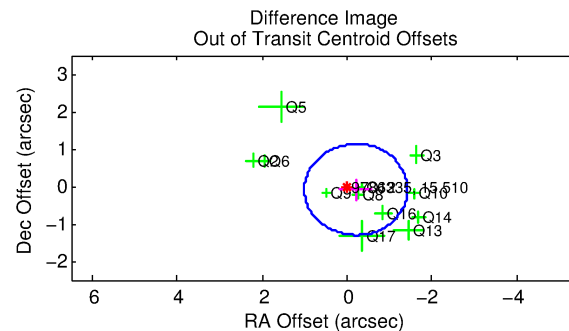
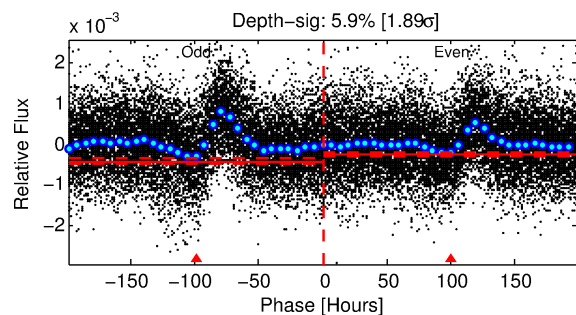
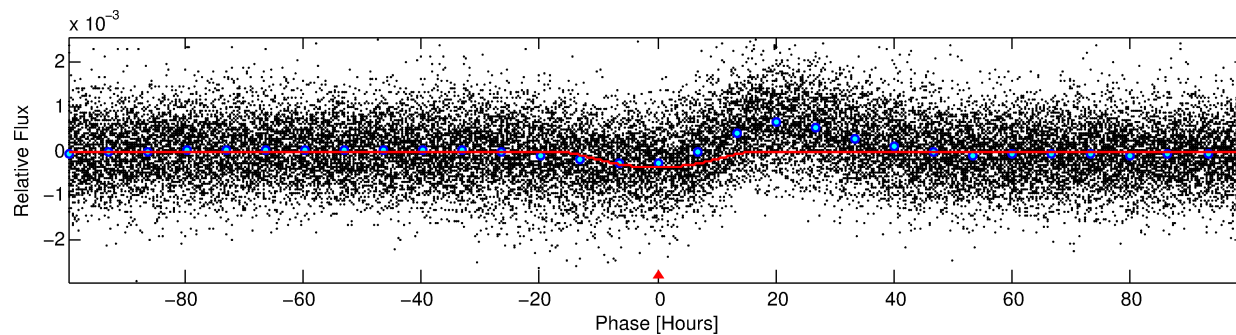
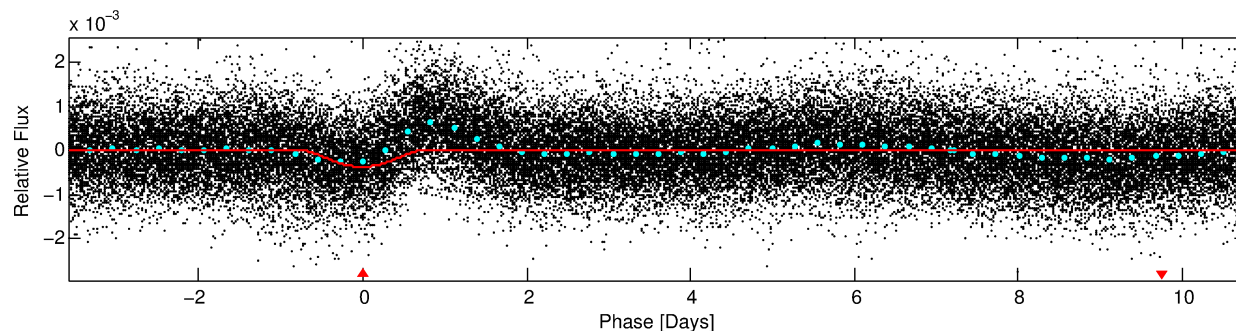
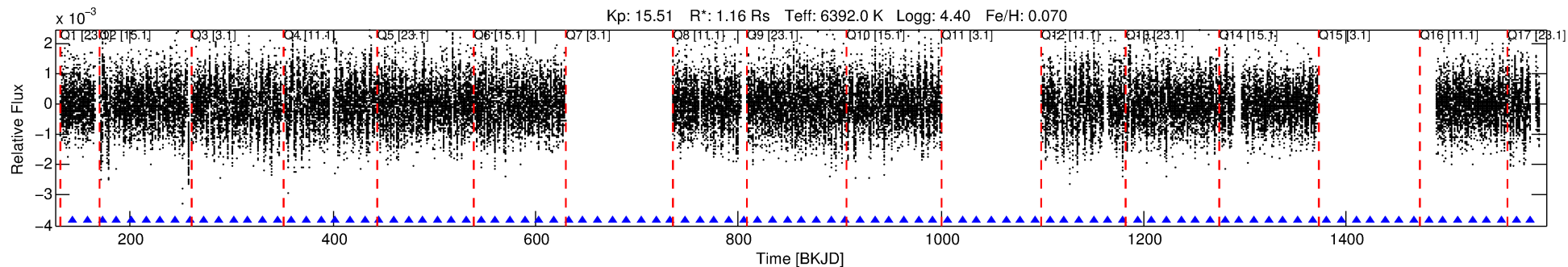
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009786335-01

No Significant Match Found

# DV One-Page Summary

KIC: 9786335 Candidate: 1 of 1 Period: 14.385 d



## DV Fit Results:

Period = 14.38470 [0.00077] d  
Epoch = 143.5581 [0.0428] BKJD  
Rp/R\* = 0.0315 [0.0276]  
a/R\* = 1.35 [0.12]  
b = 1.00 [0.04]  
Seff = 130.93 [52.65]  
Teq = 863 [87] K  
Rp = 4.00 [3.72] Re  
a = 0.1242 [0.0324] AU  
Ag = 59.50 [107.50] [0.54 $\sigma$ ]  
Teffp = 3704 [1643] K [1.73 $\sigma$ ]

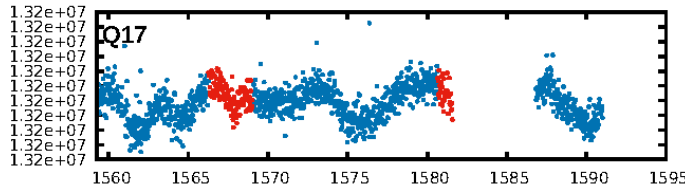
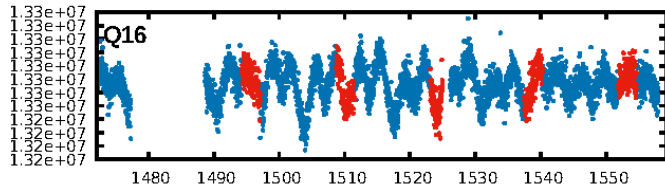
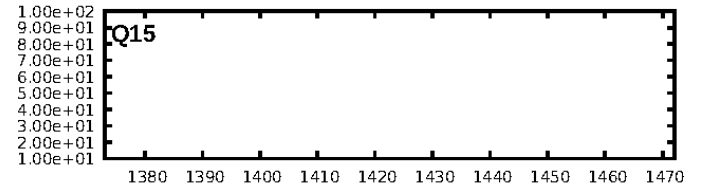
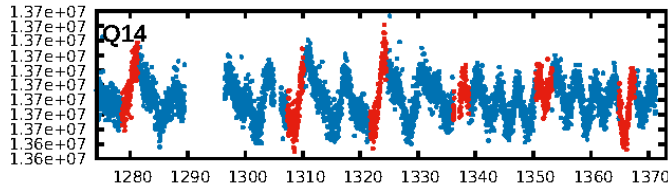
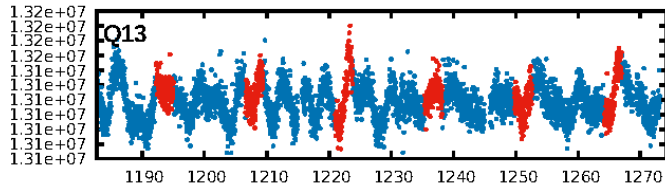
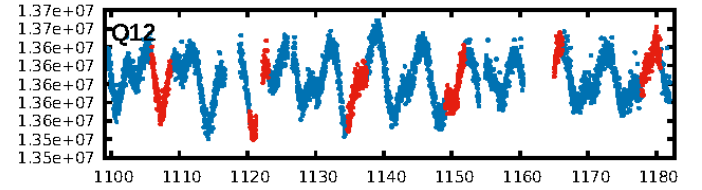
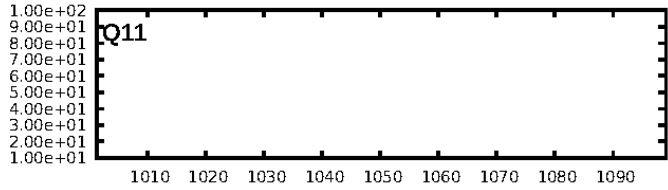
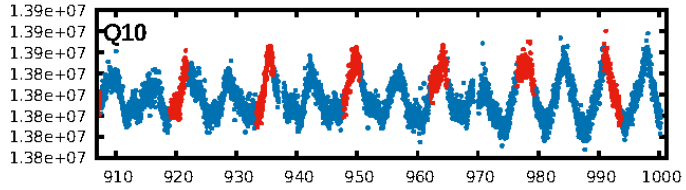
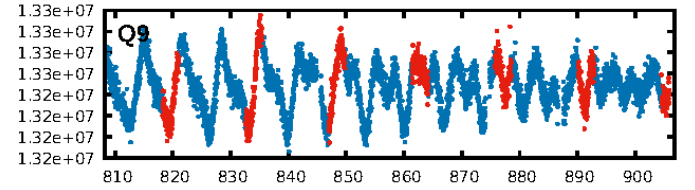
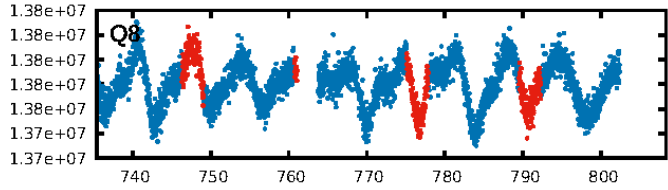
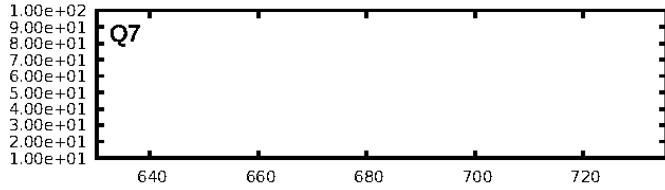
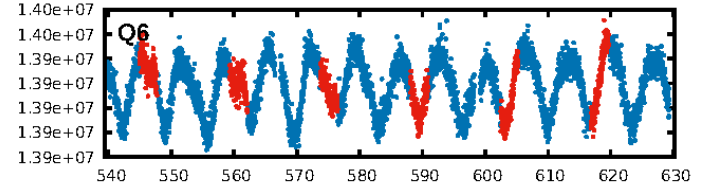
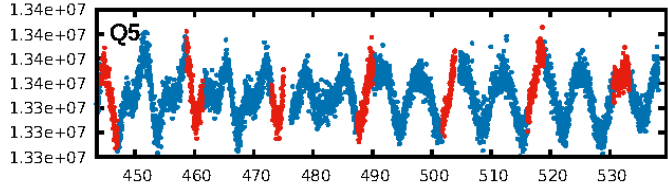
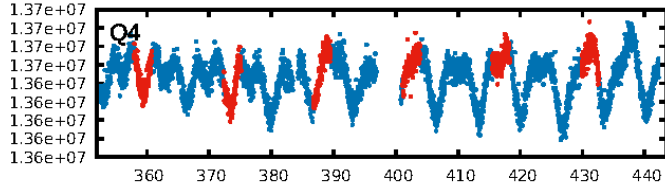
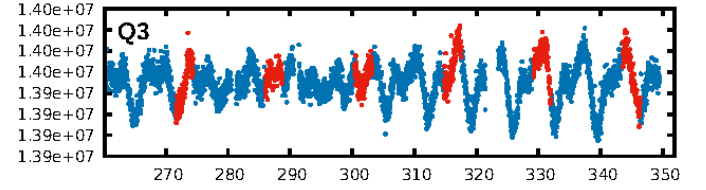
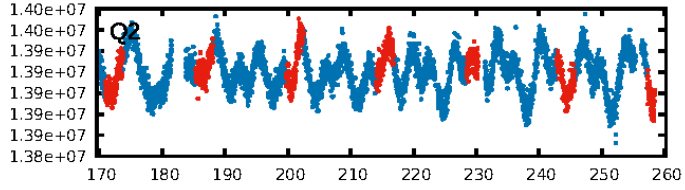
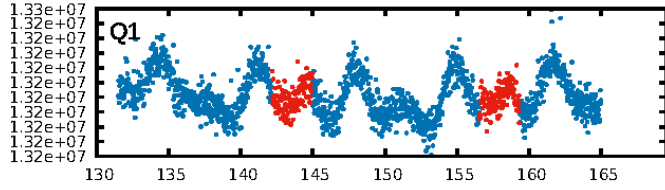
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 93.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.73e-21  
RollingBand-fgt: 1.00 [71/71]  
GhostDiagnostic-chr: 3.246  
Centroid-sig: 15.4%  
Centroid-so: 0.689 arcsec [1.44 $\sigma$ ]  
OotOffset-rm: 0.232 arcsec [0.57 $\sigma$ ]  
KicOffset-rm: 0.228 arcsec [0.67 $\sigma$ ]  
OotOffset-st: 4/1/3/4 [12]  
KicOffset-st: 4/1/3/4 [12]  
DiffImageQuality-fgm: 0.67 [8/12]  
DiffImageOverlap-fno: 1.00 [14/14]

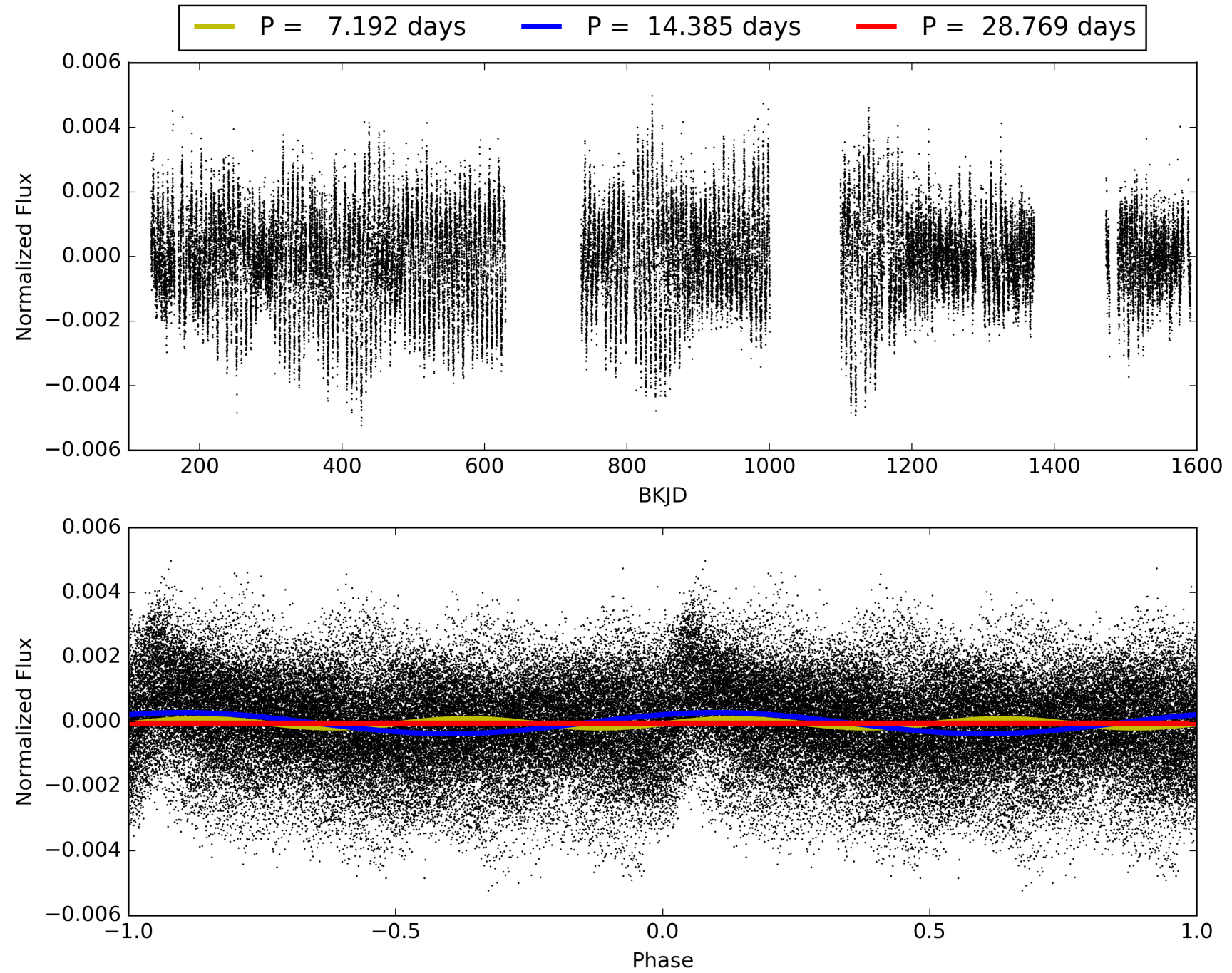
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 10:45:35 Z

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

## TCE 009786335-01, PDC Light Curves



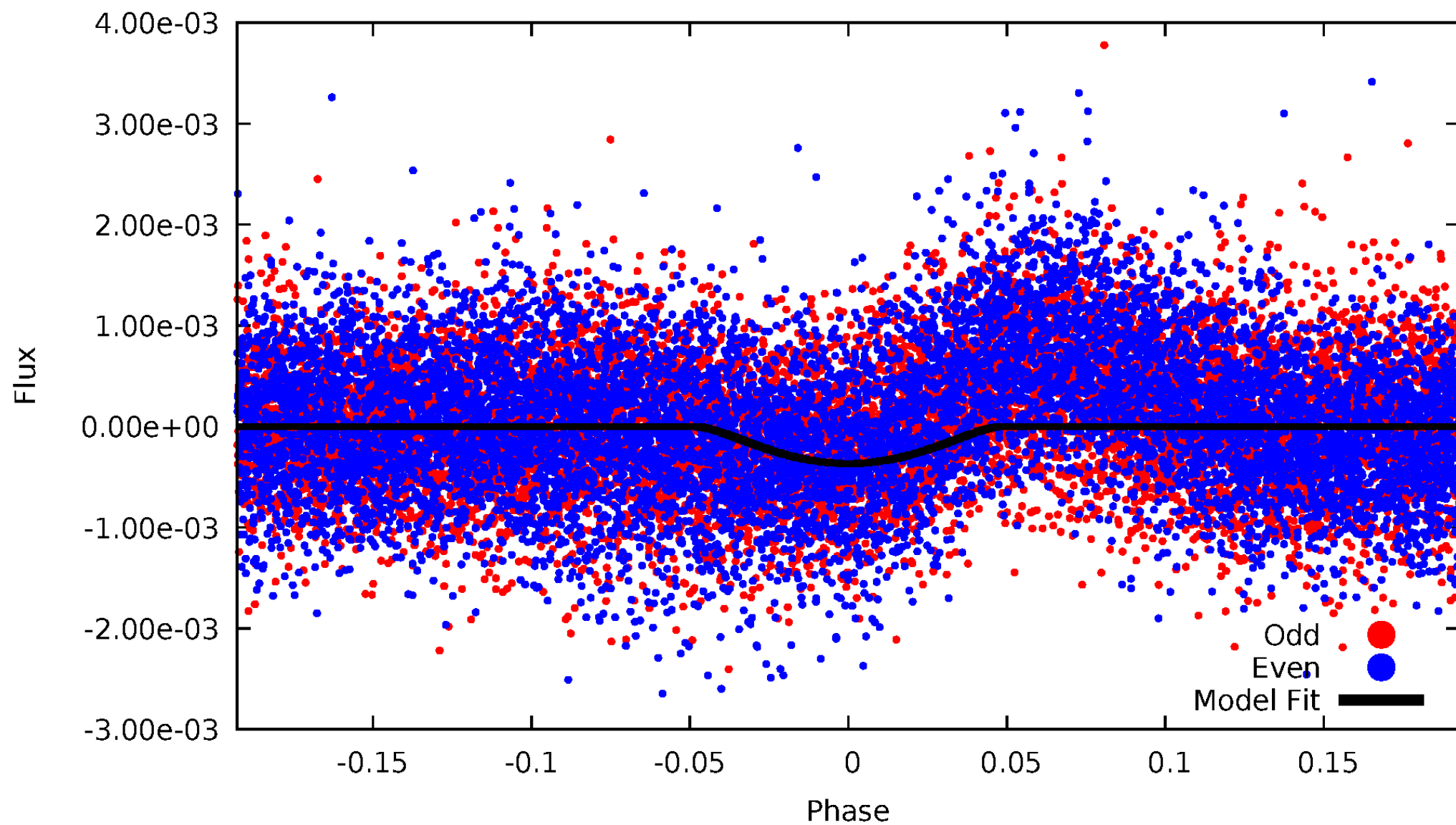
TCE 009786335-01





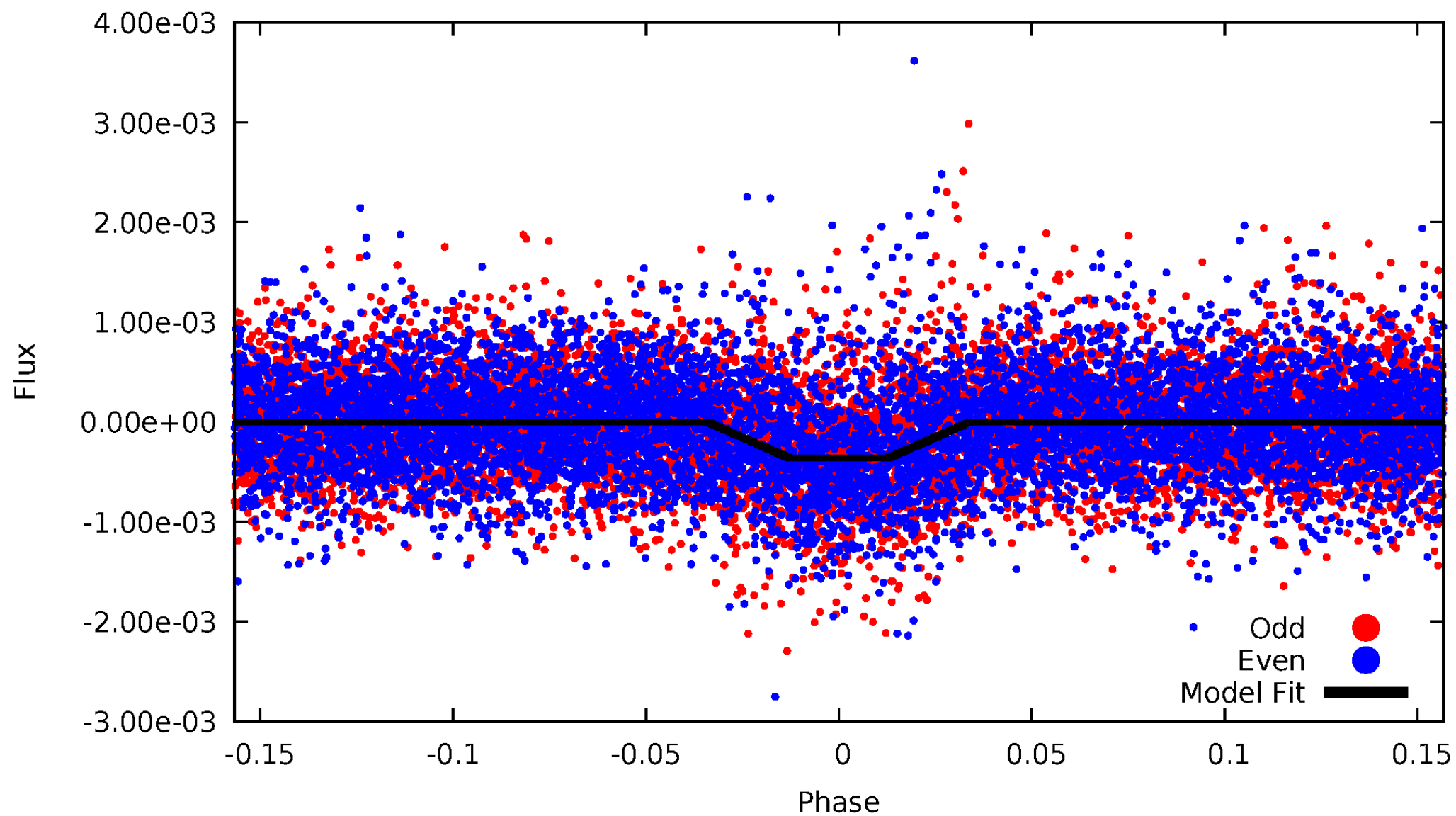
# DV Odd/Even

TCE 009786335-01



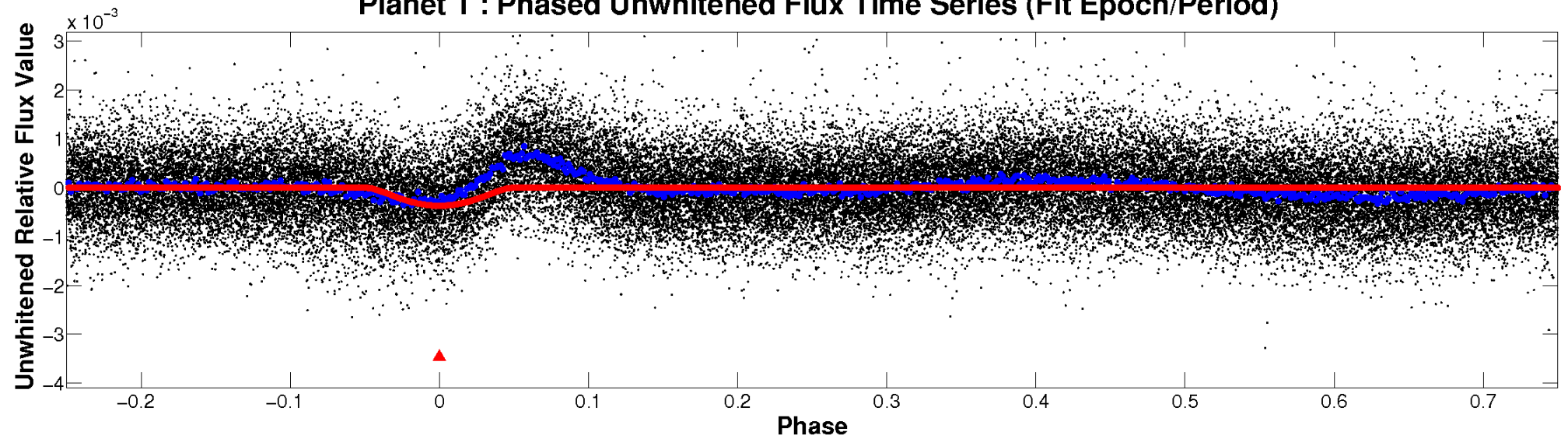
# ALT Odd/Even

TCE 009786335-01

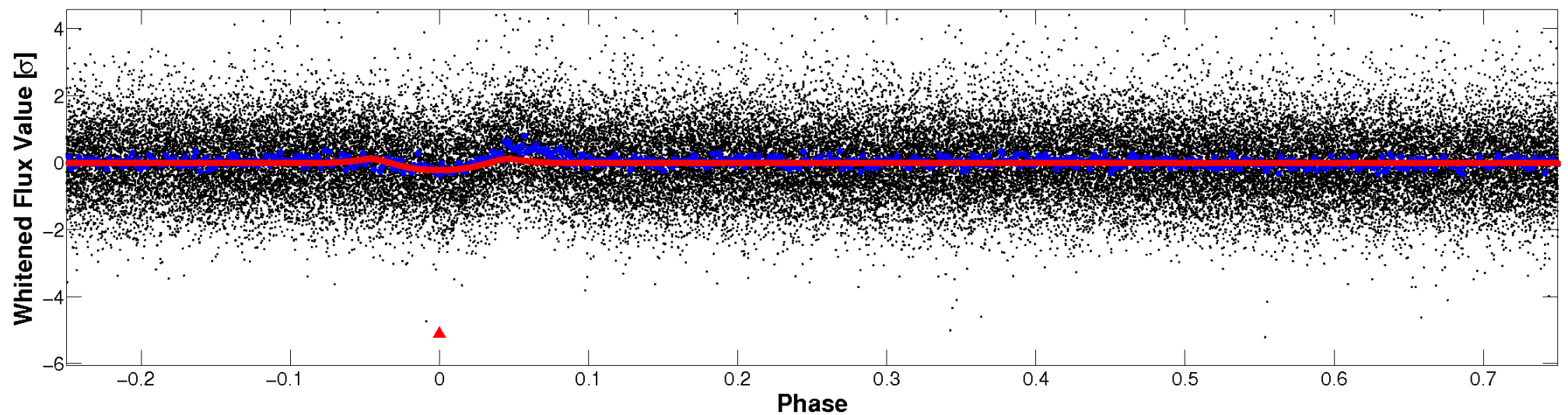


# Non-Whitened Vs. Whitened Light Curve

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

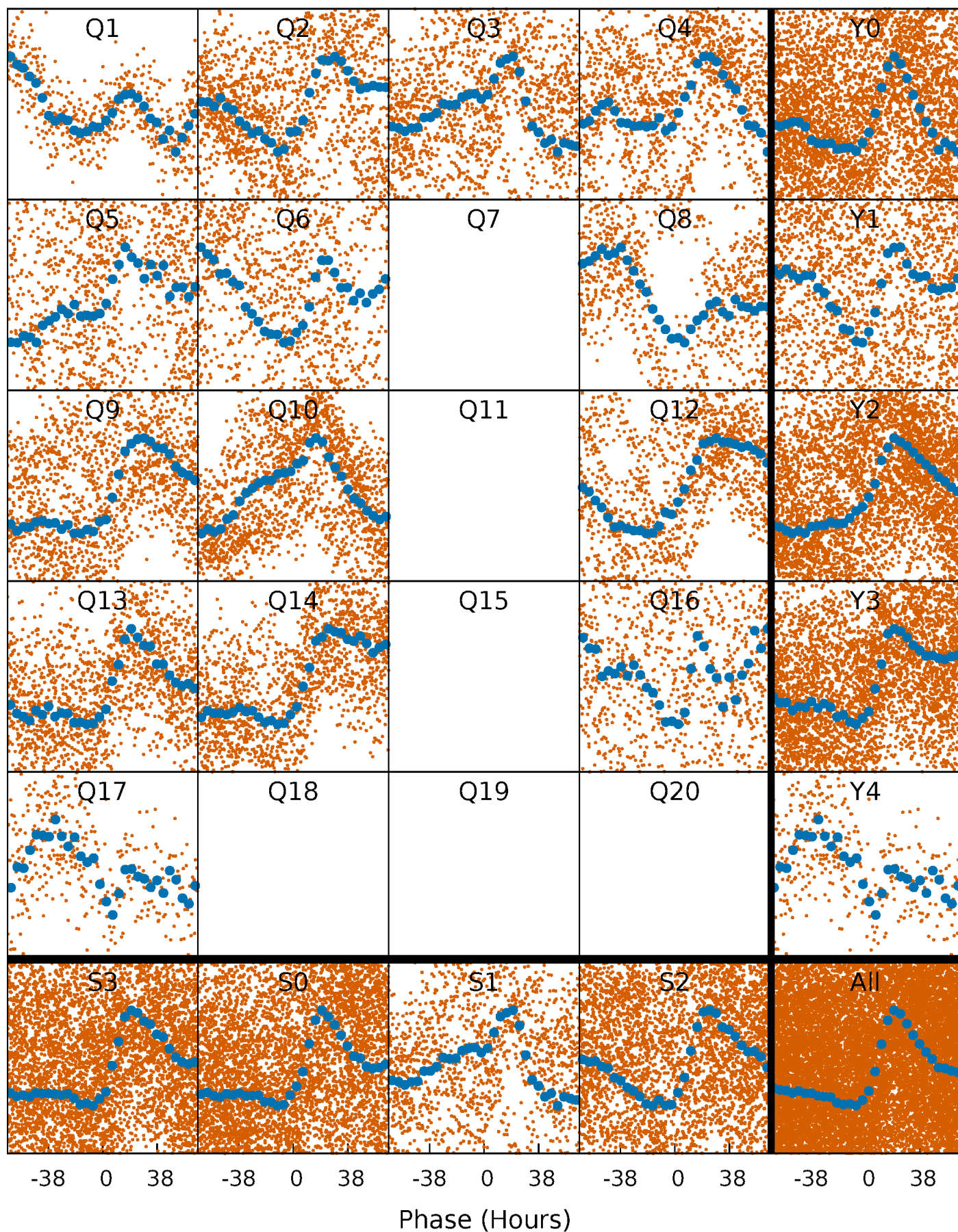


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

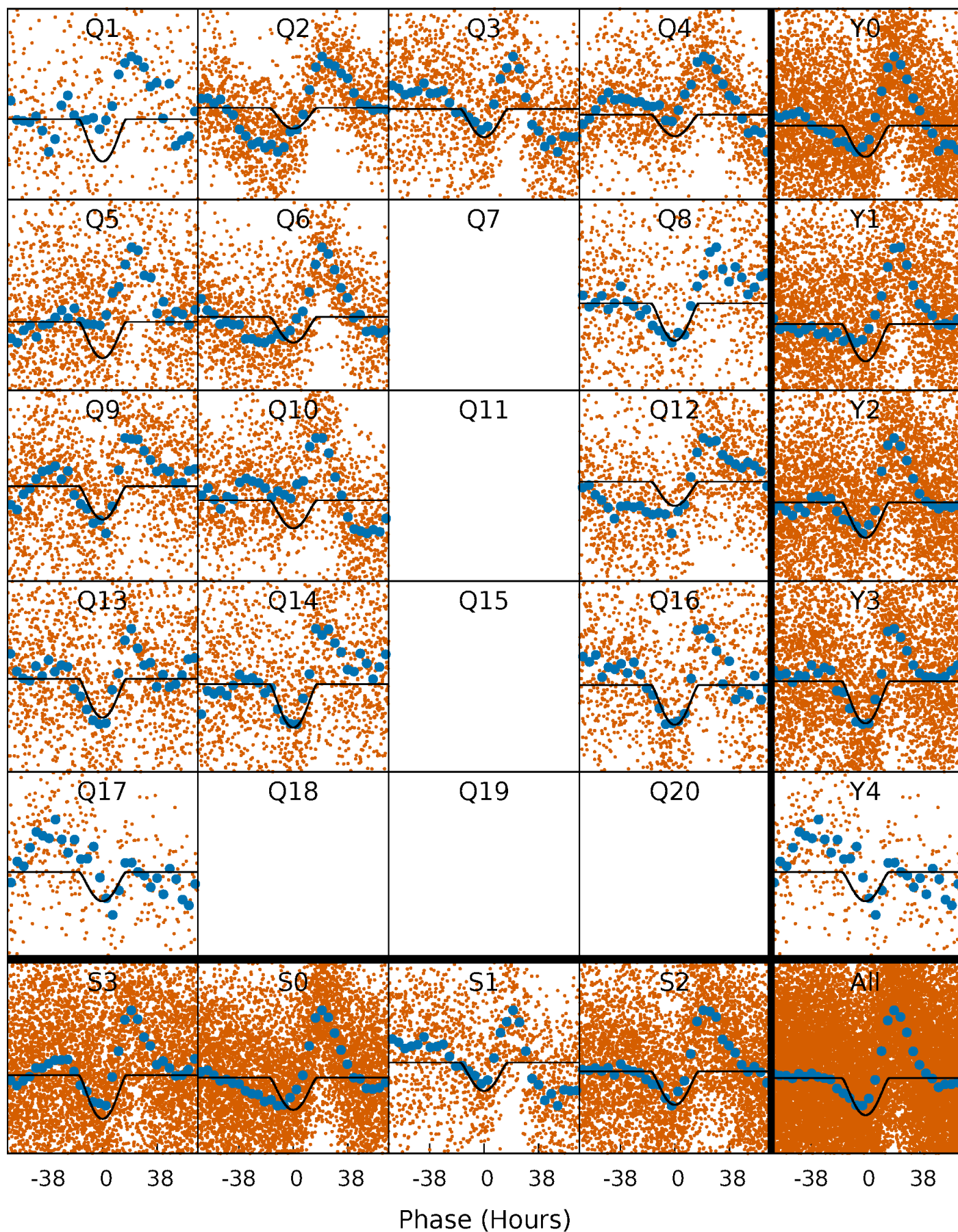
TCE 009786335-01 P= 14.384702 Days  $T_0=143.558127$  (BKJD)





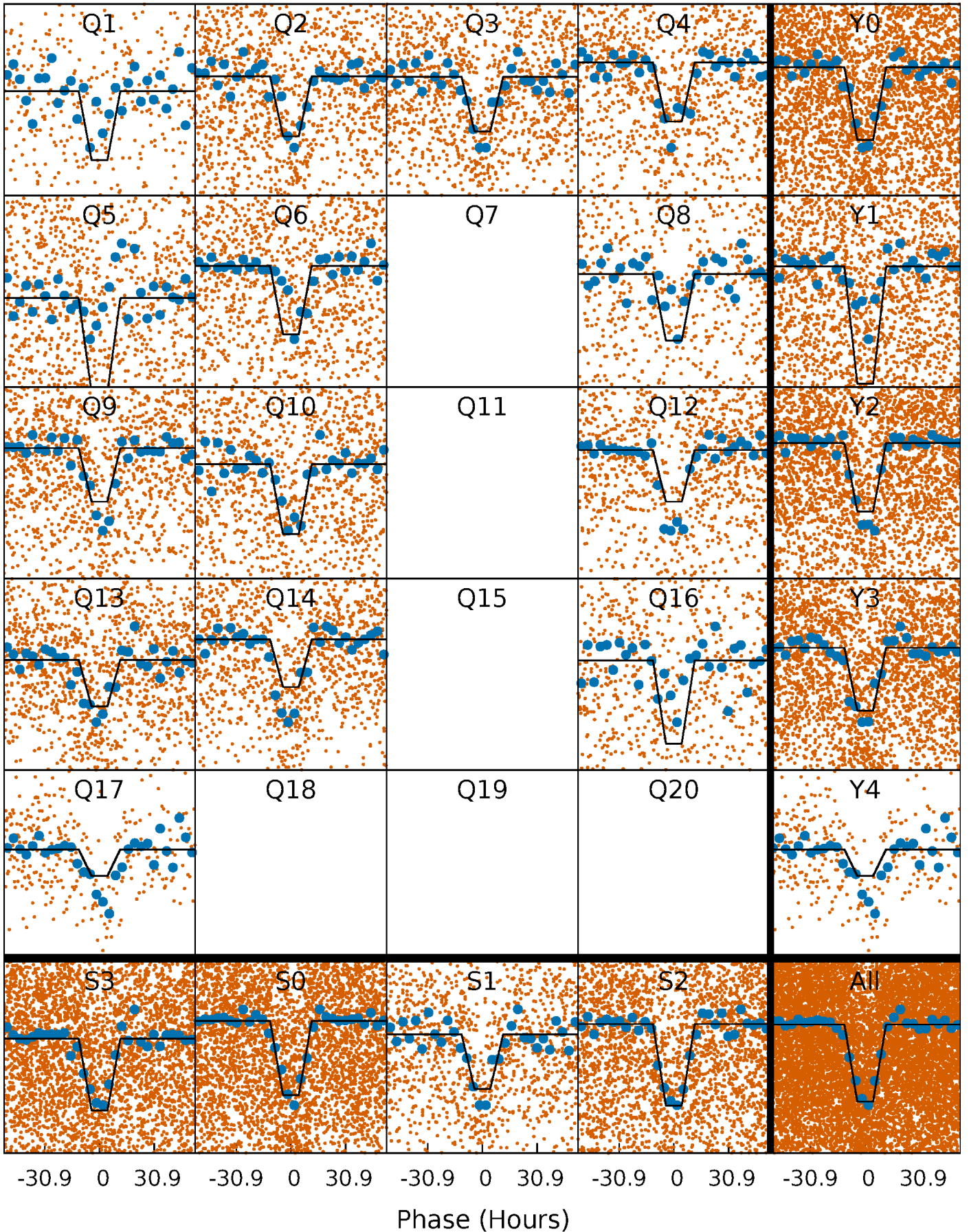
# DV Quarter-Phased Transit Curves

TCE 009786335-01 P= 14.384702 Days  $T_0=143.558127$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

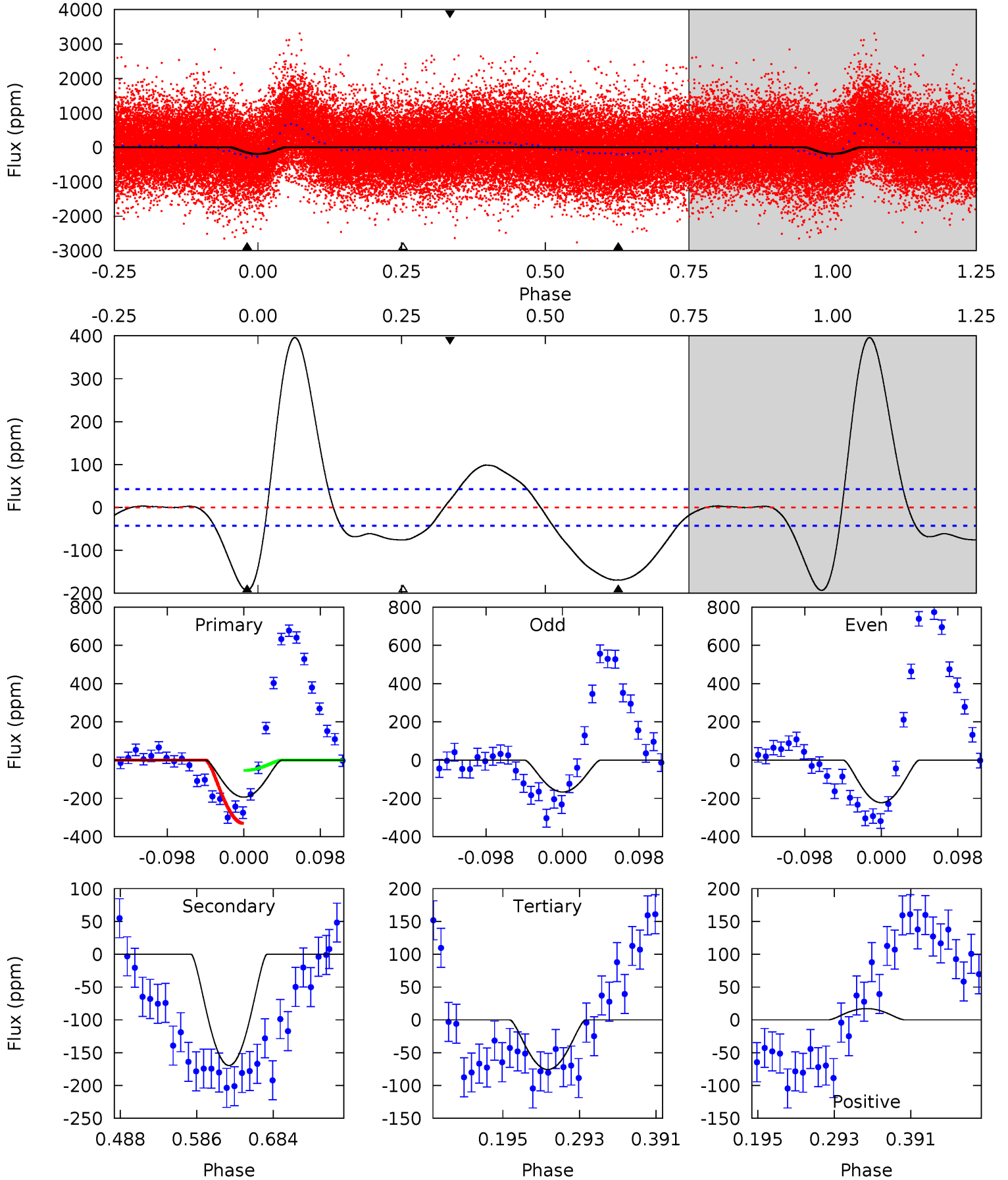
TCE 009786335-01 P= 14.384367 Days  $T_0=143.675123$  (BKJD)



# DV Model-Shift Uniqueness Test

009786335-01, P = 14.384702 Days, E = 129.173425 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
20.7	18.2	8.10	1.85	4.57	1.66	8.15	12.6	18.9	10.1	16.3	2.99	1.40	0.67	14.4

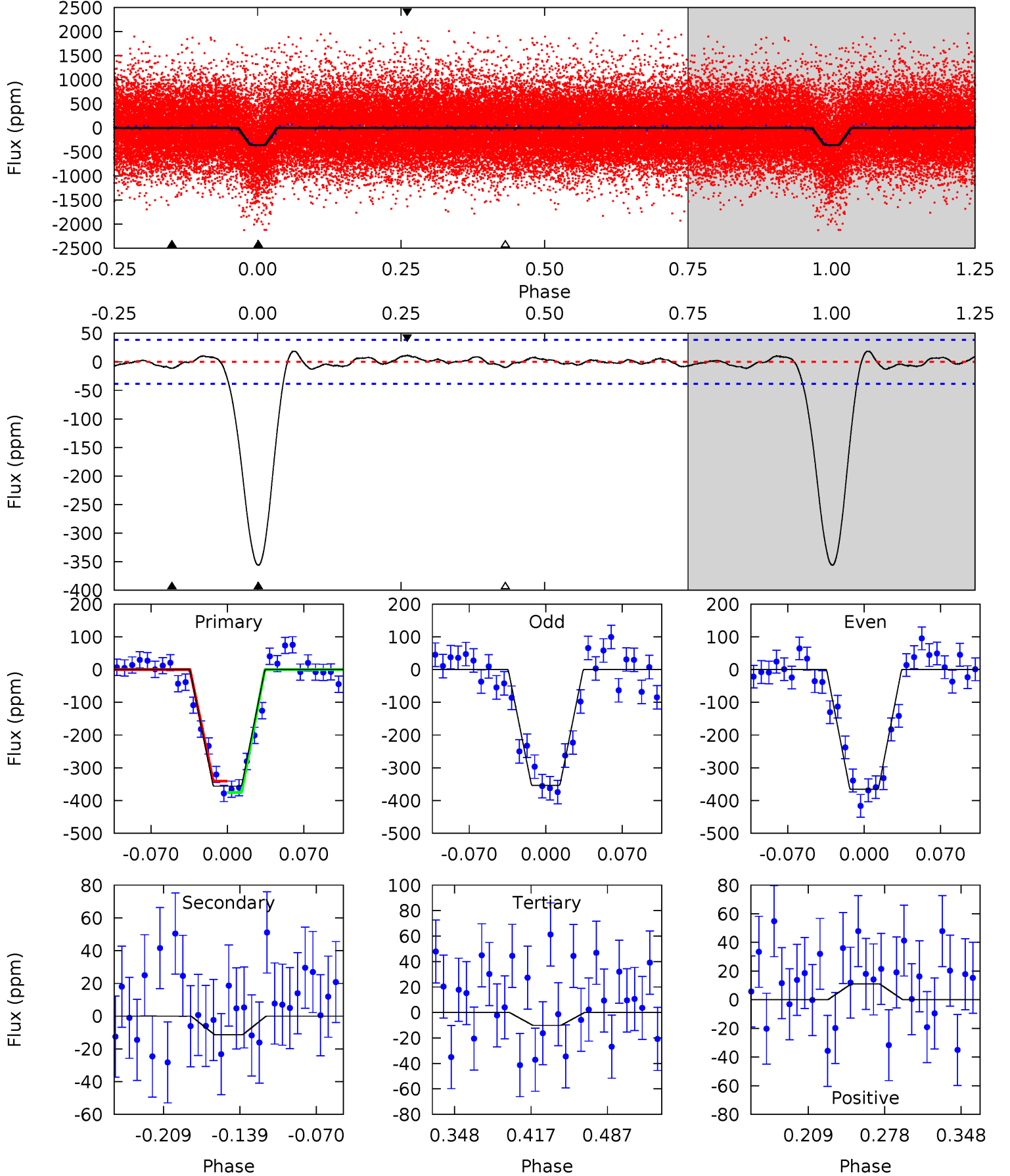




# Alt Model-Shift Uniqueness Test

009786335-01, P = 14.384367 Days, E = 129.290756 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
42.9	1.36	1.21	1.34	4.64	1.81	0.61	41.7	41.6	0.15	0.03	0.75	0.75	0.05	2.11





### Stellar Parameters For KIC 009786335

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6392^{+176}_{-243}$	$4.399^{+0.050}_{-0.200}$	$0.070^{+0.250}_{-0.300}$	$1.162^{+0.367}_{-0.122}$	$1.232^{+0.167}_{-0.167}$	$1.107^{+0.303}_{-0.572}$
	+3%/-4%	+1%/-5%	+357%/-429%	+32%/-10%	+14%/-14%	+27%/-52%
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 009786335-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-170 \pm 9$	$5.00^{+3.58}_{-3.23}$	$1226^{+92}_{-63}$	$4044^{+2199}_{-648}$	$55^{+396}_{-36}$
Alt.	$-11 \pm 8$	$3.71^{+3.25}_{-2.62}$	$1232^{+97}_{-64}$	$2853^{+1234}_{-720}$	$5.789^{+61.413}_{-4.995}$

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

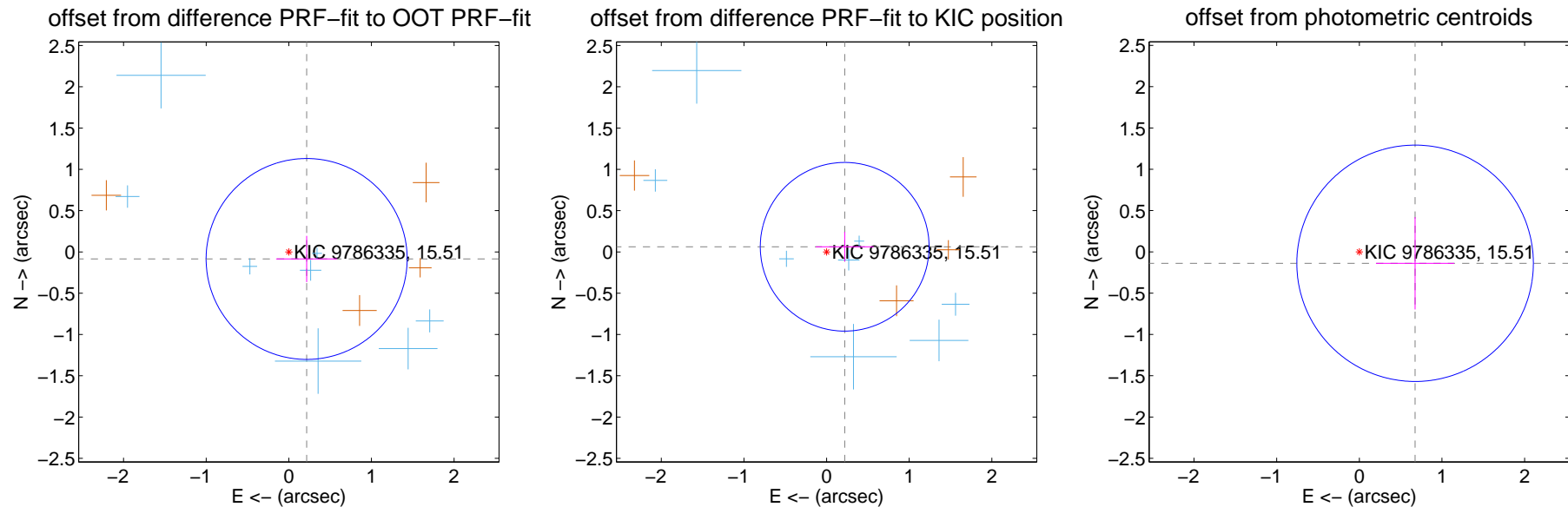
## DV Centroid Data

Supplemental centroid analysis for 009786335-01. Kepler magnitude: 15.51. Transit SNR 10.23

There are 8 quarters with good PRF difference image offsets

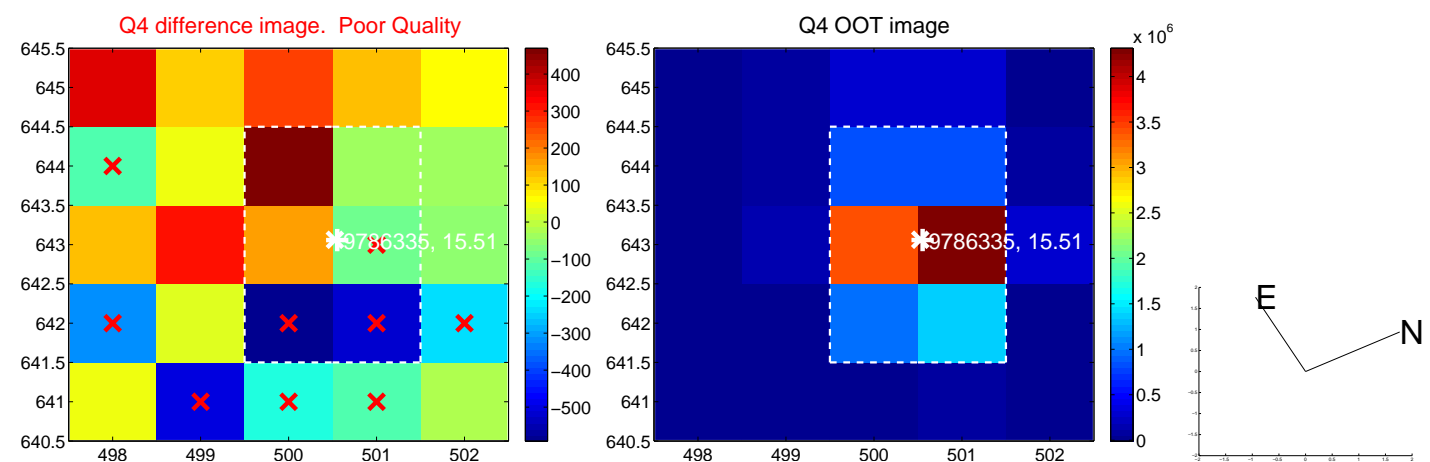
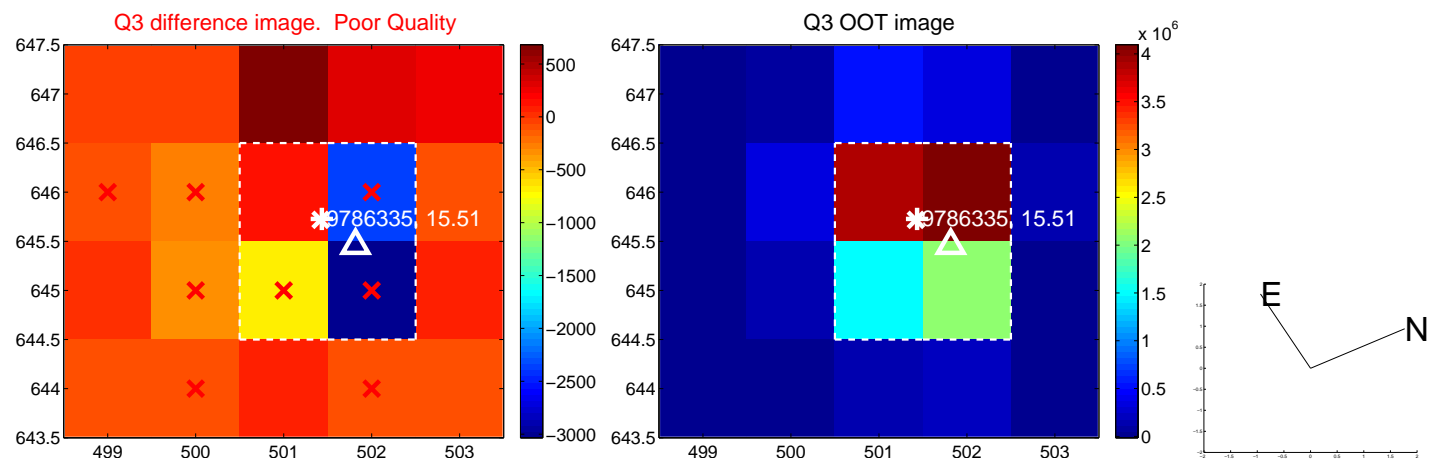
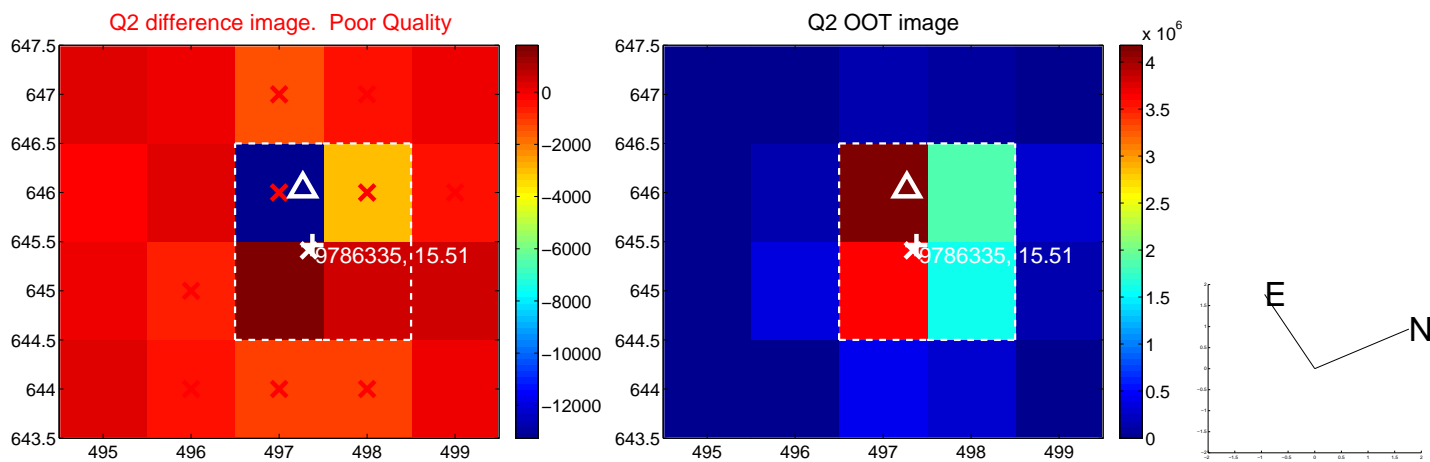
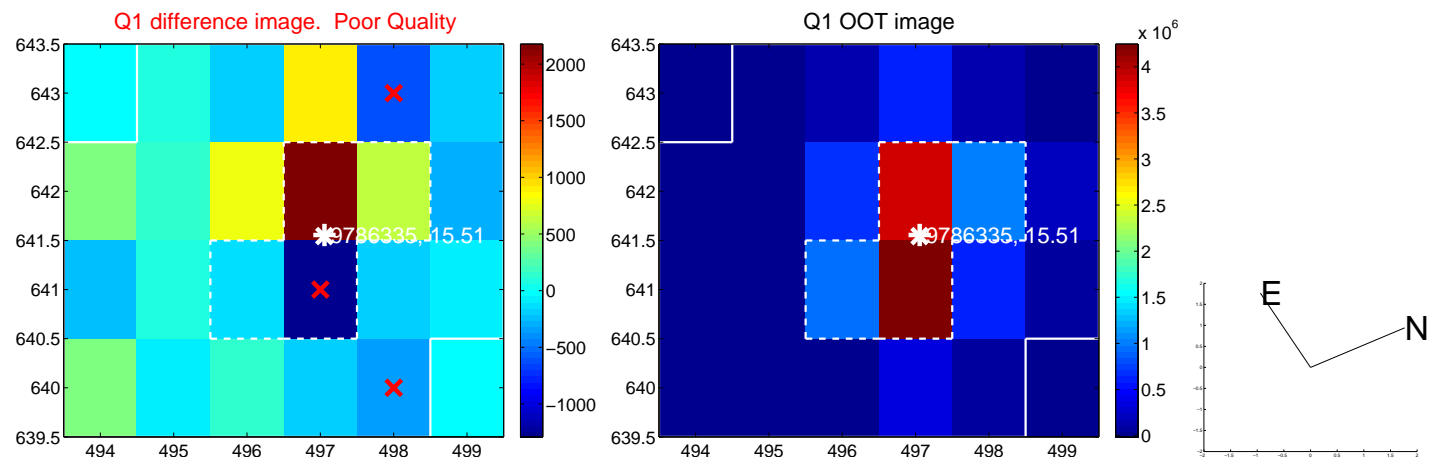
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.232 \pm 0.406$	0.57	$-0.216 \pm 0.369$	$-0.085 \pm 0.280$
PRF-fit source offset from KIC position	$0.228 \pm 0.340$	0.67	$-0.219 \pm 0.350$	$0.062 \pm 0.179$
photometric centroid source offset	$0.69 \pm 0.48$	1.44	$-0.67 \pm 0.47$	$-0.14 \pm 0.56$

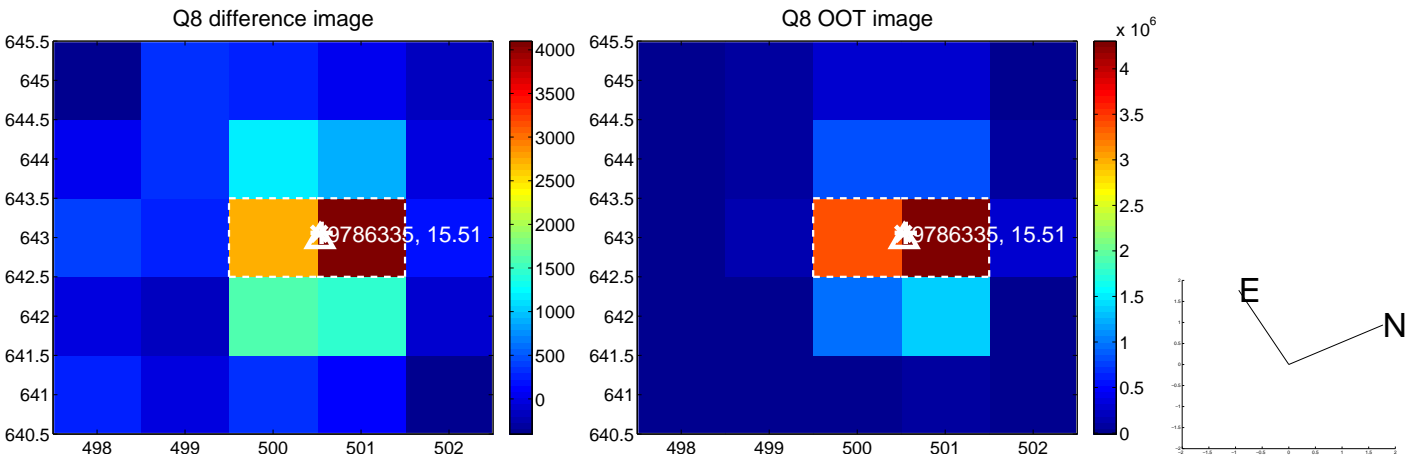
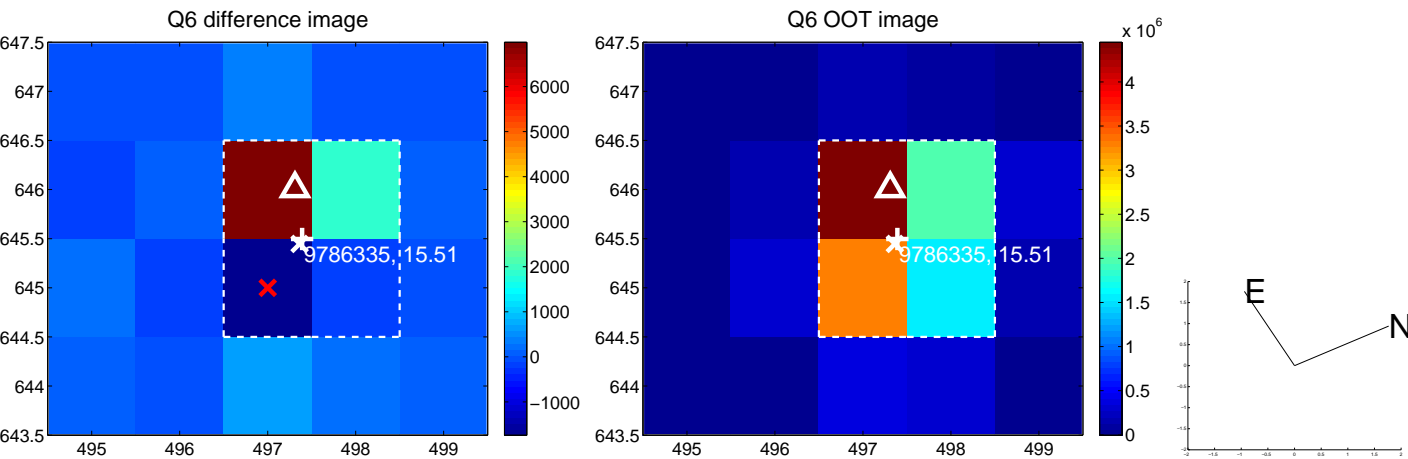
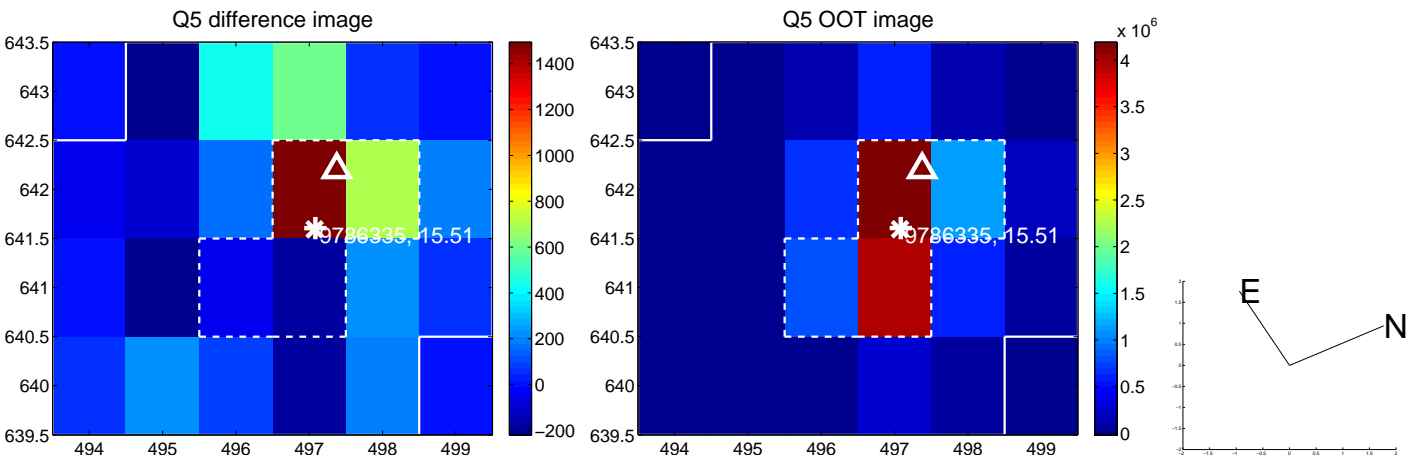


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

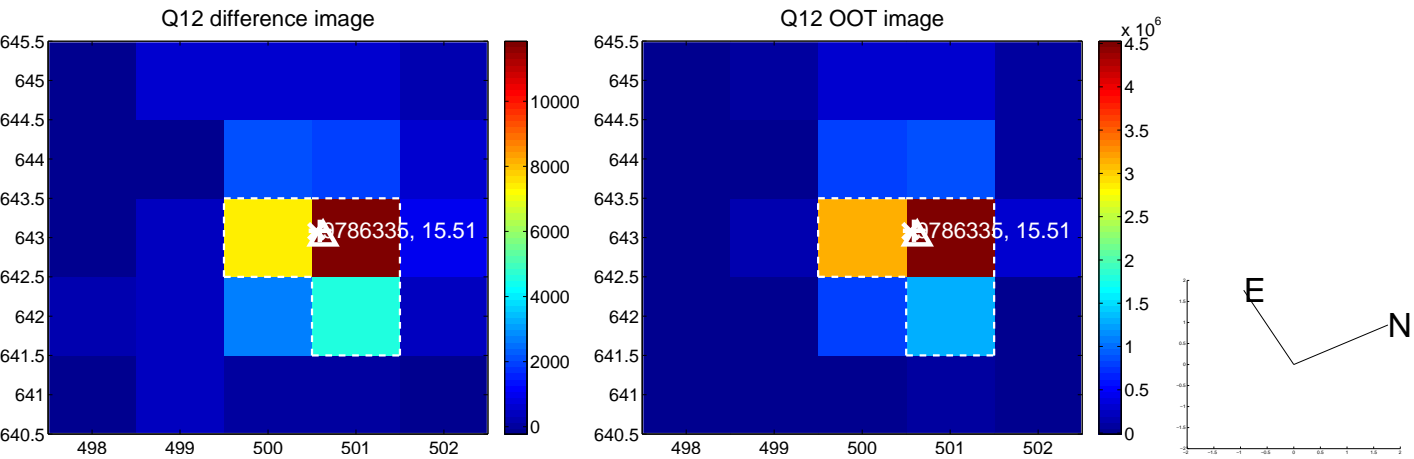
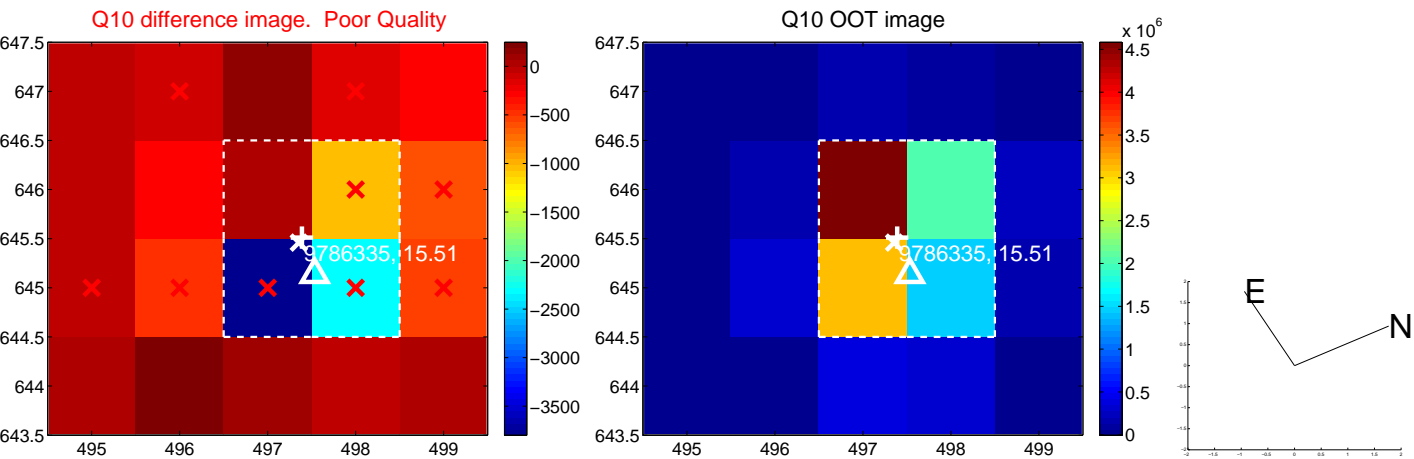
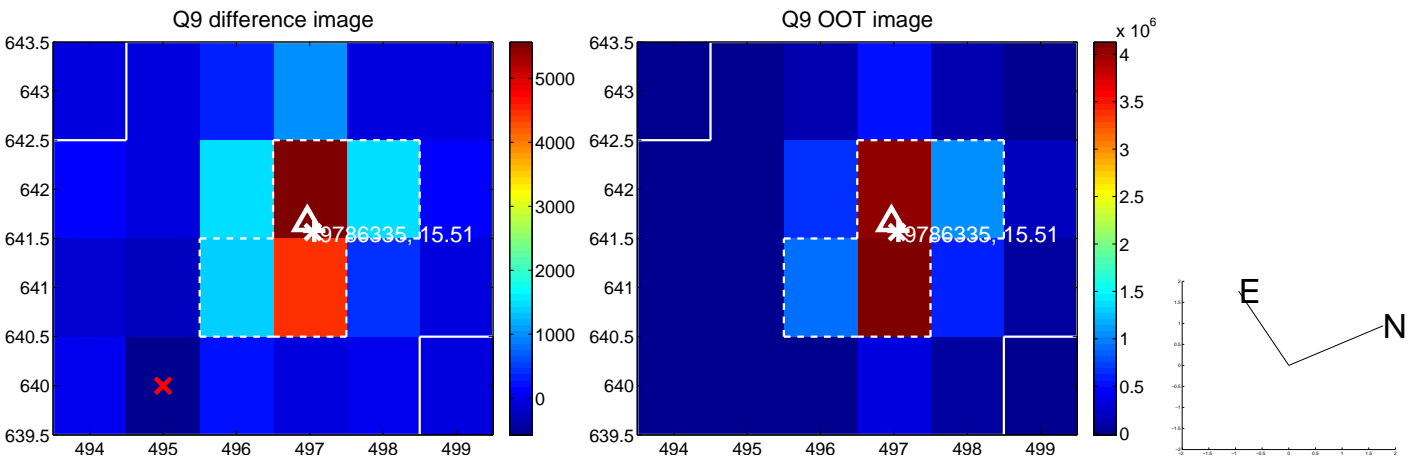


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

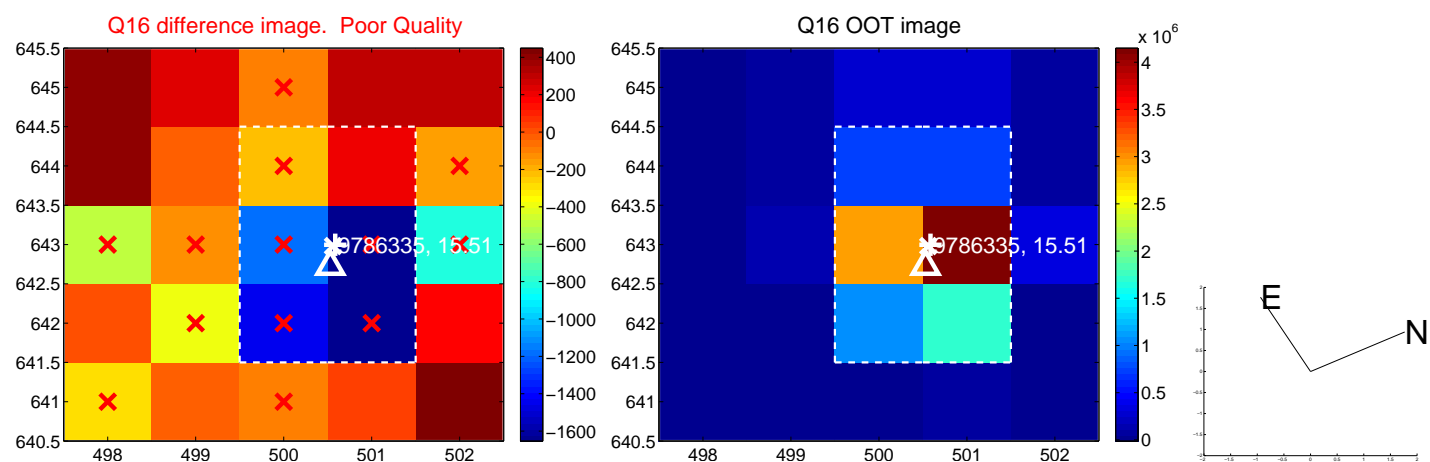
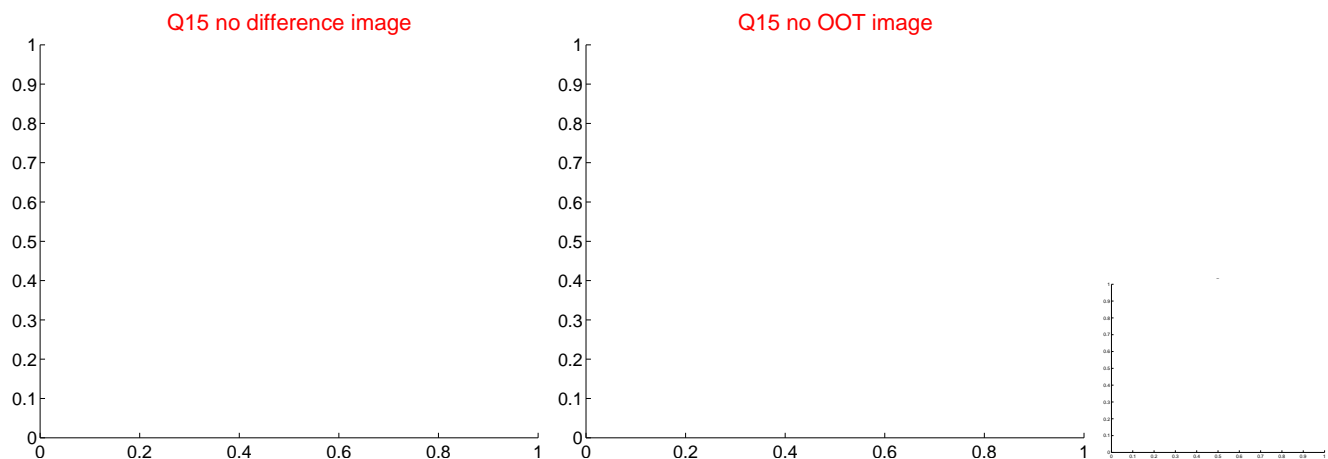
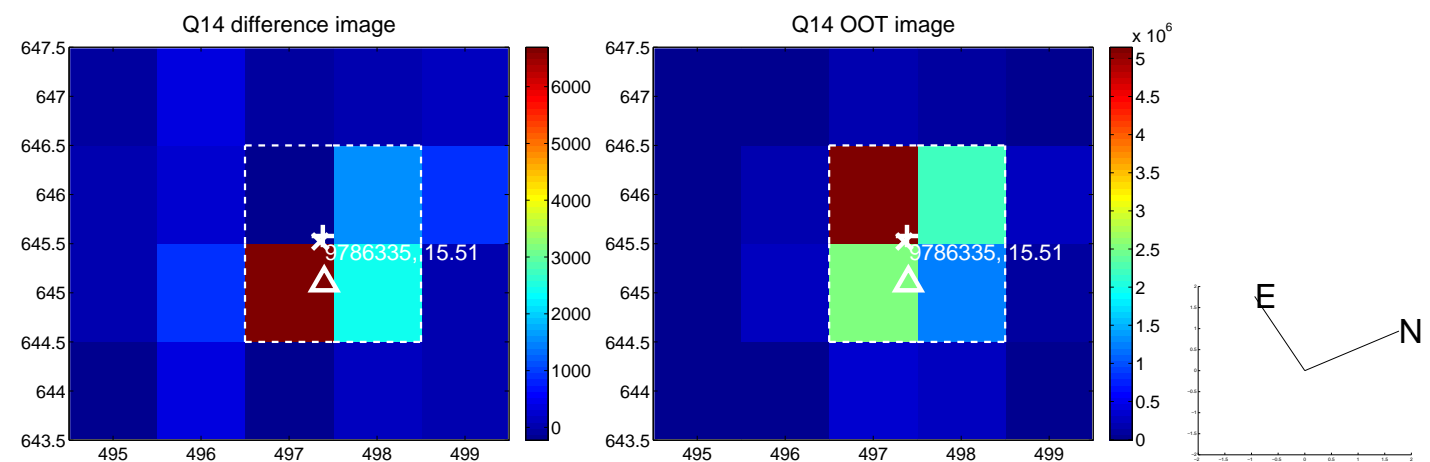
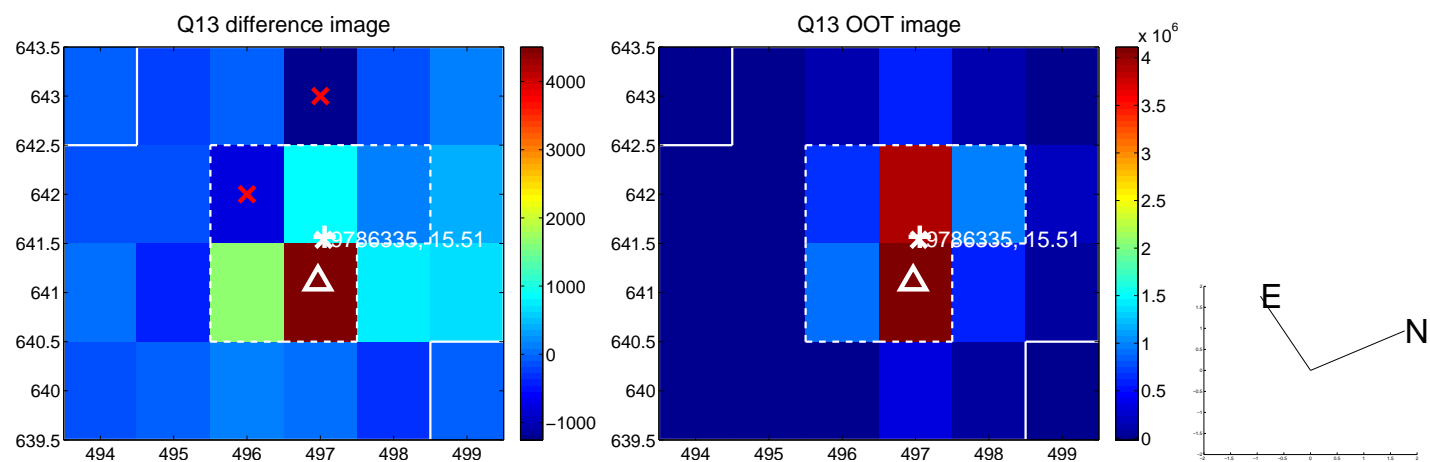




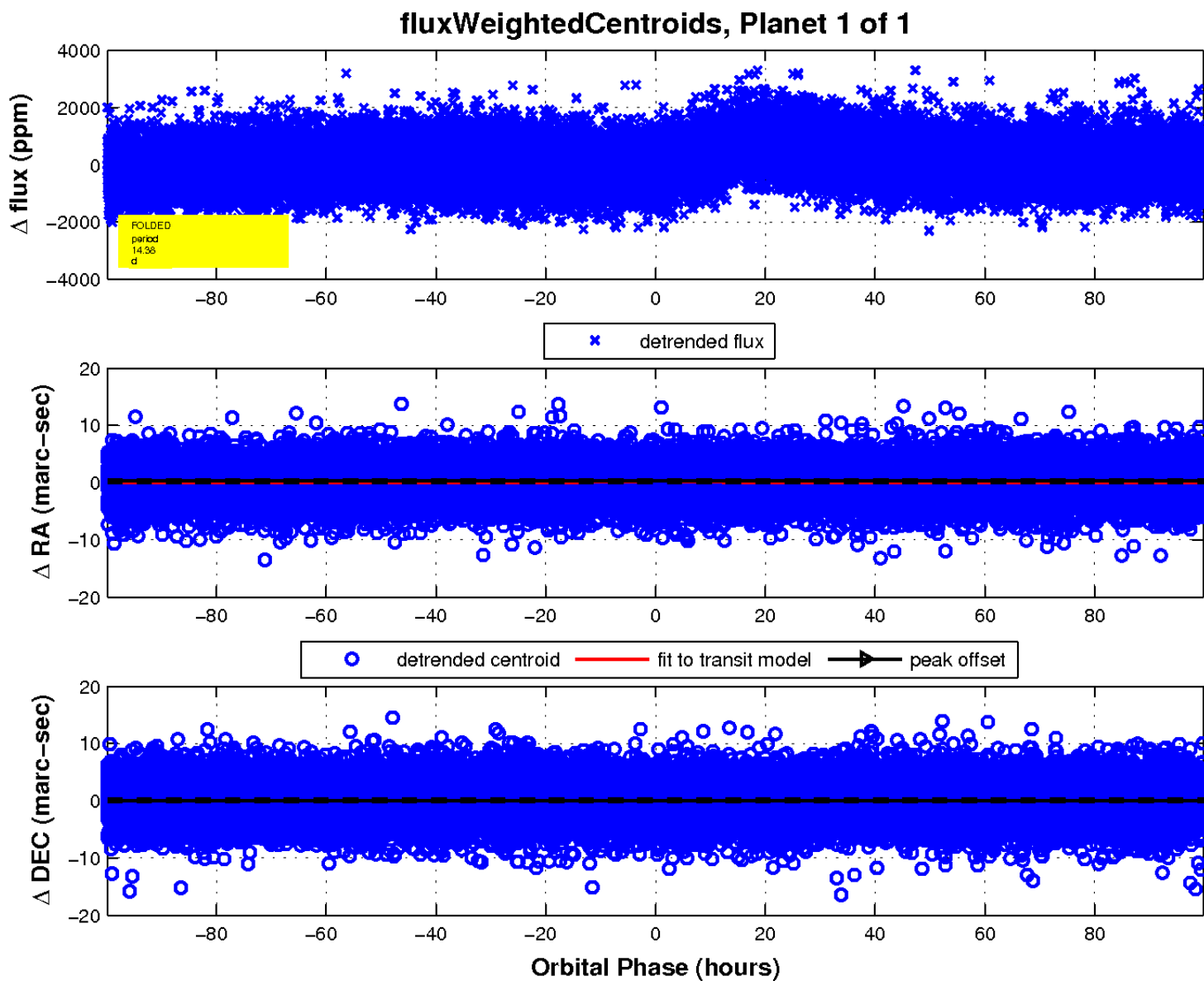
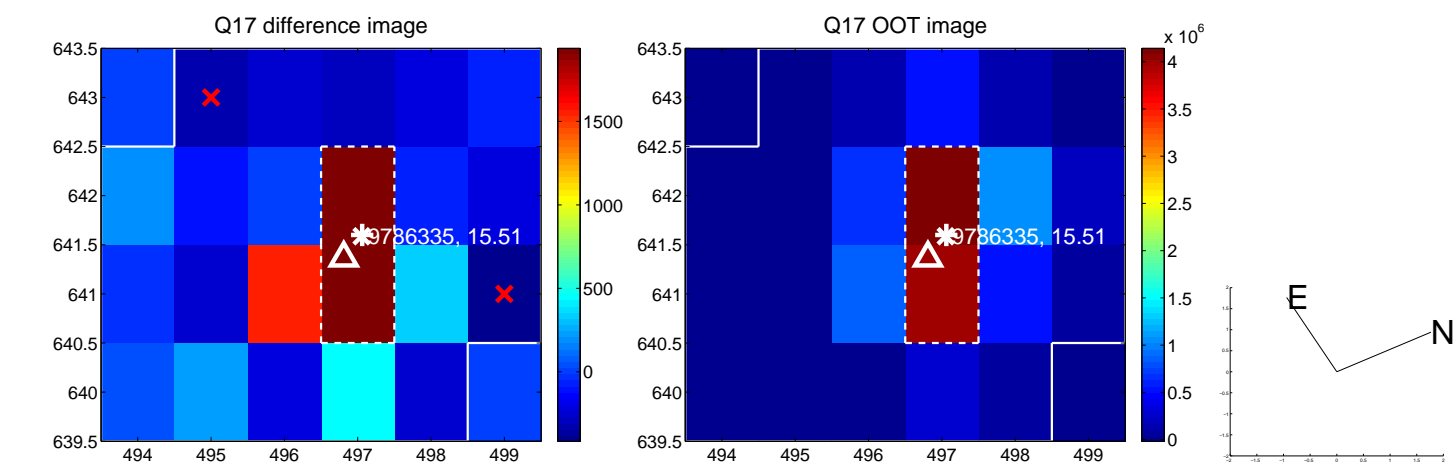
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white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

