

# KIC 009833599

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009833599-01	OBS	No	1.408441	131.959336	45.2	4.728	9.1	8.5	0.92	5710	0.72	1327.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009833599-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

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

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

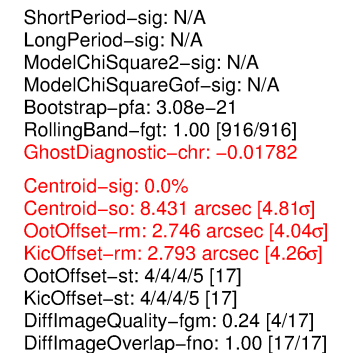
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009833599-01

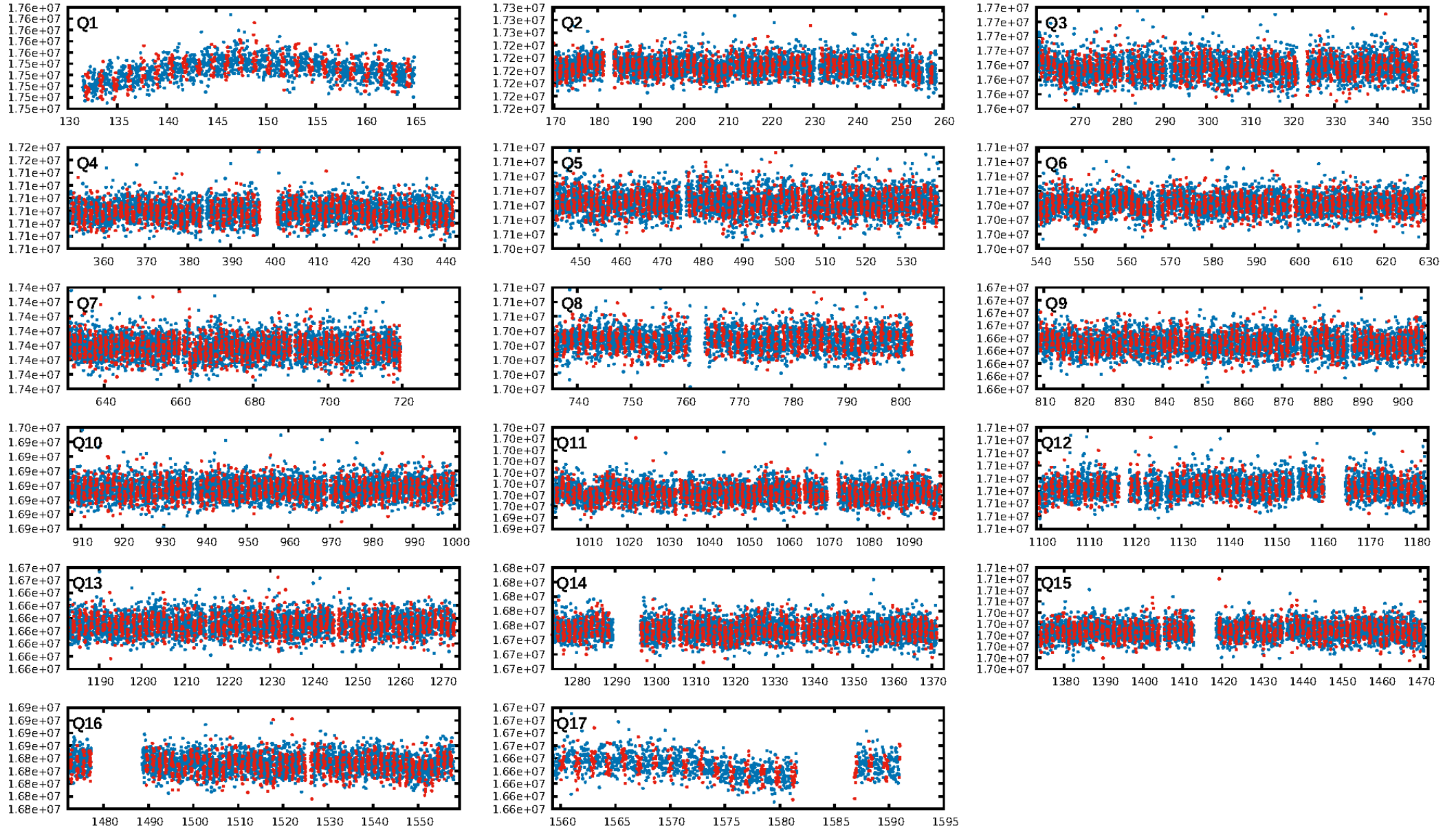
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
009833599-01	9833599	009833618-pri	9833618	1:1	29.0	-3	-7	13.68	15.42	6506.70	Direct-PRF	0	3.50	2.27

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

## KIC: 9833599    Candidate: 1 of 1    Period: 1.408 d

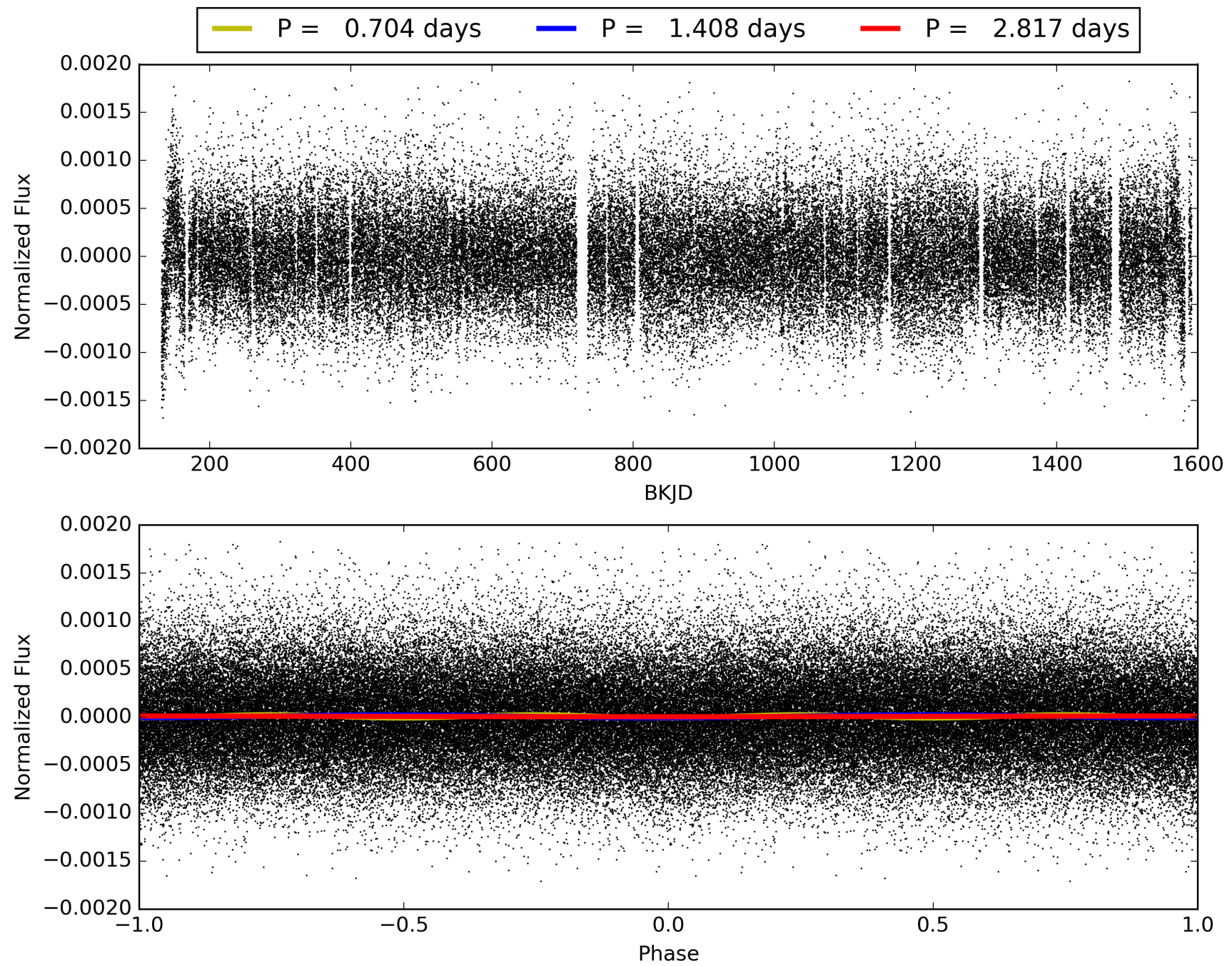


# TCE 009833599-01, PDC Light Curves



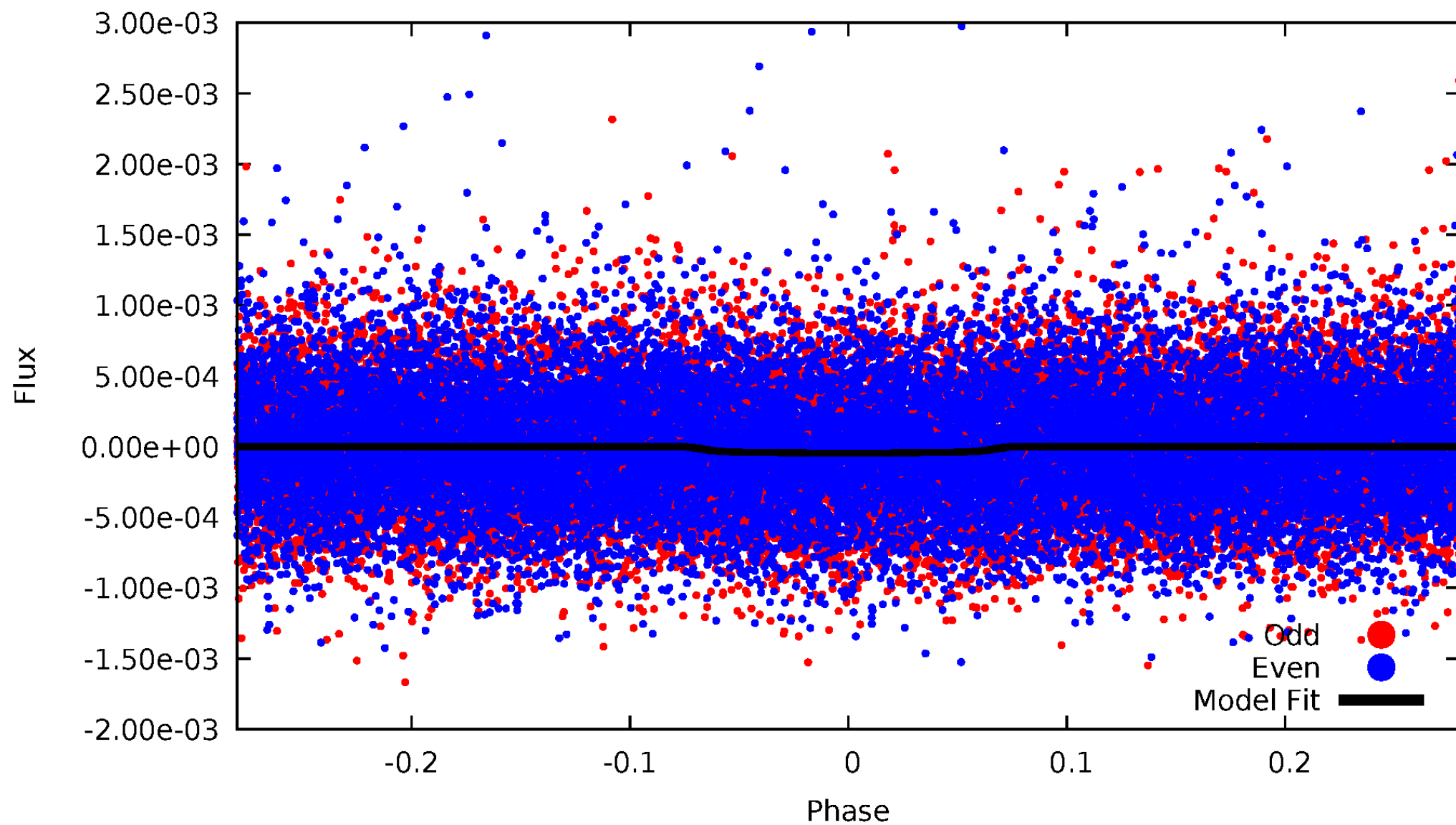


TCE 009833599-01



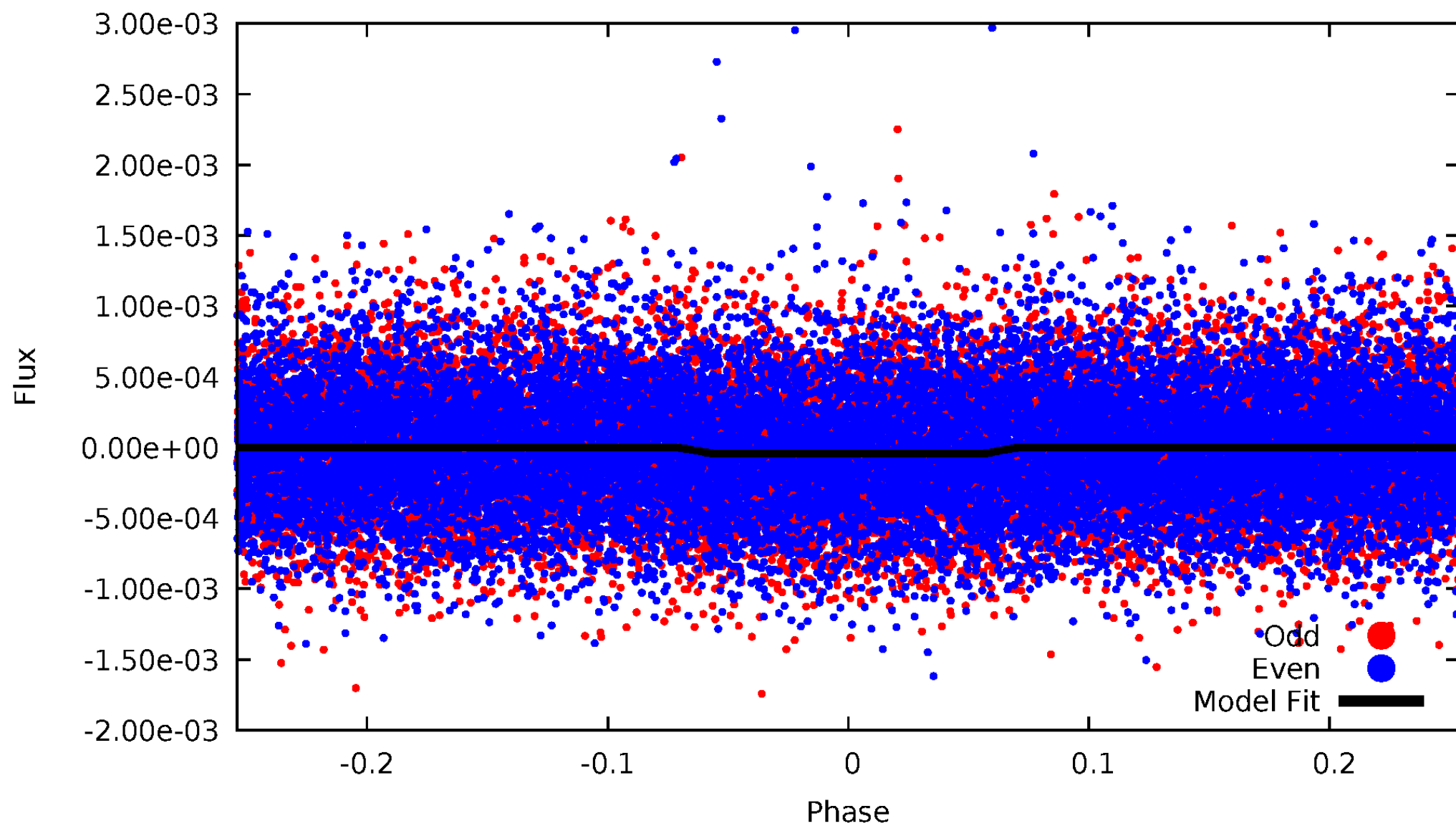
# DV Odd/Even

TCE 009833599-01



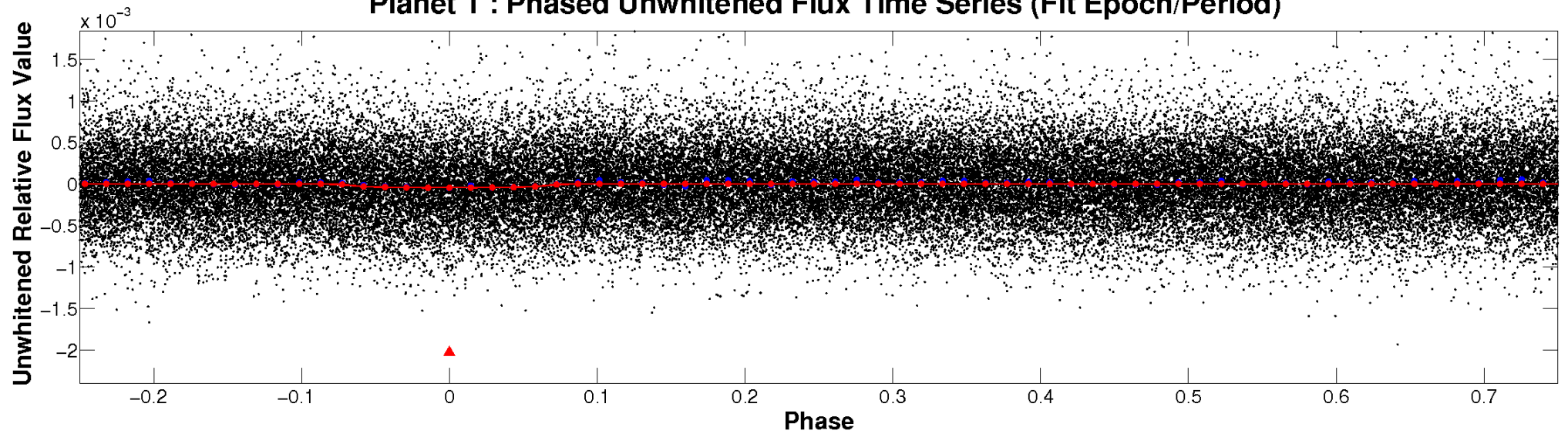
# ALT Odd/Even

TCE 009833599-01

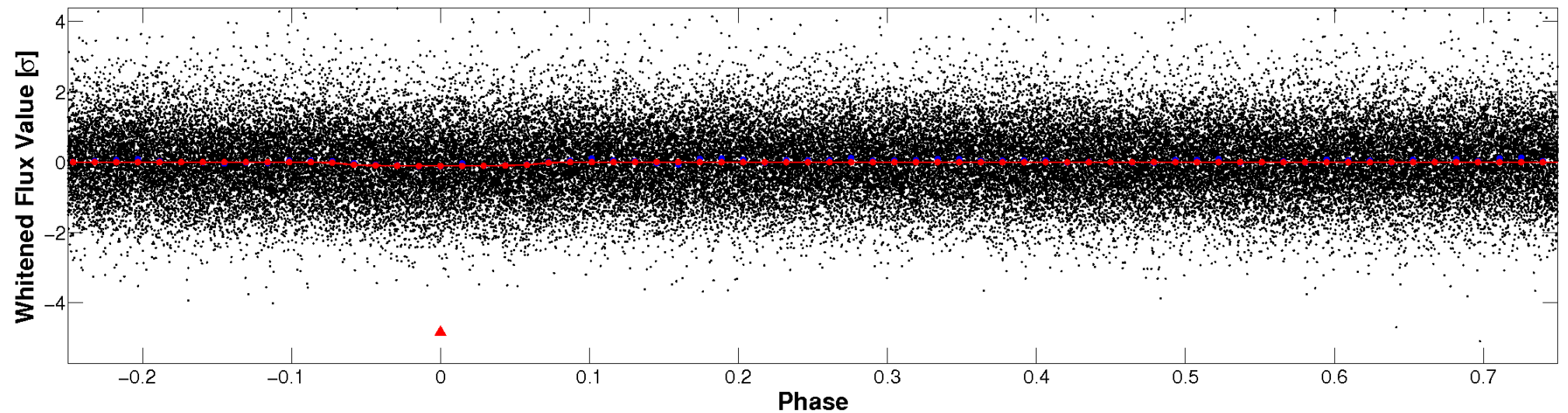


# Non-Whitened Vs. Whitened Light Curve

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



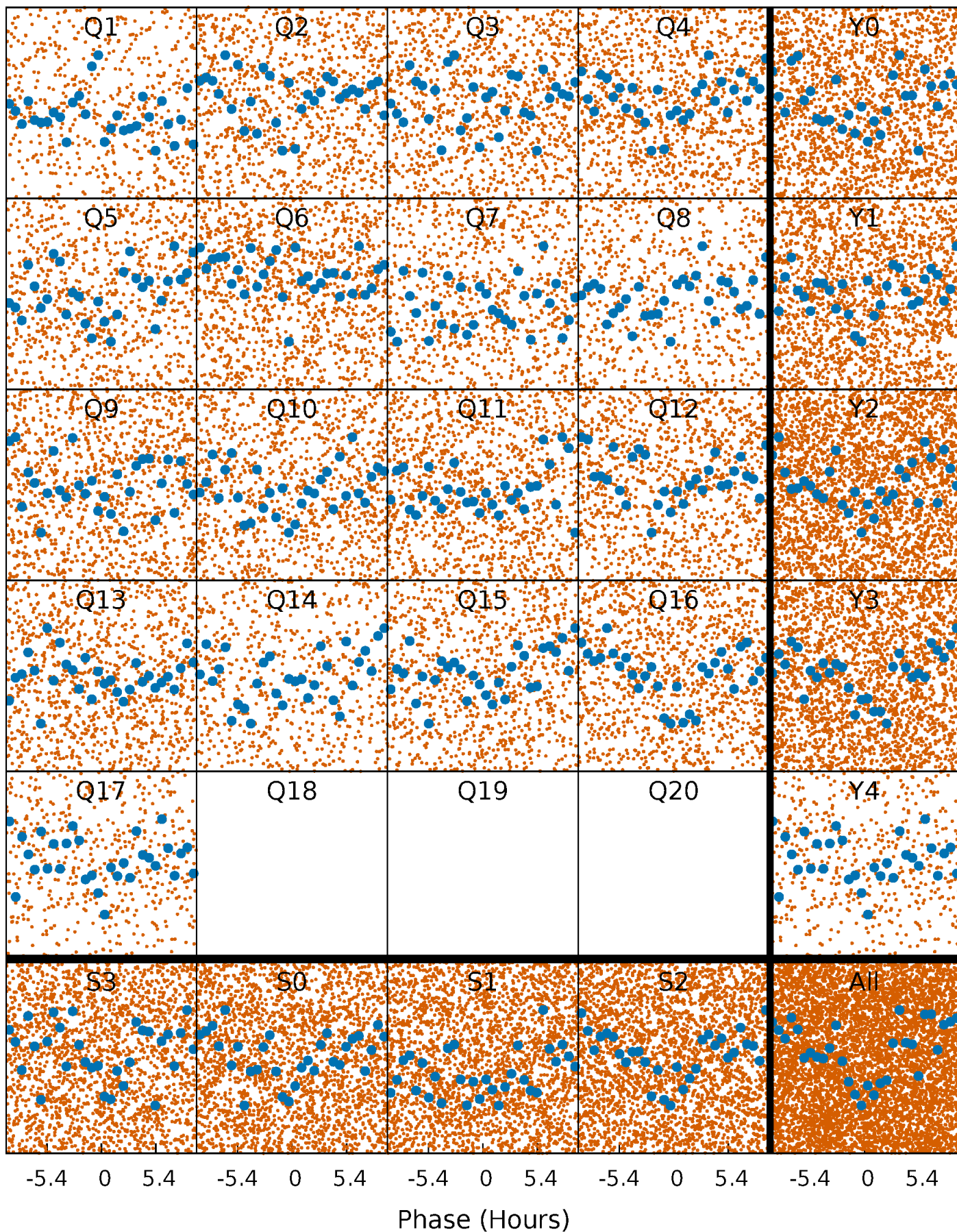
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

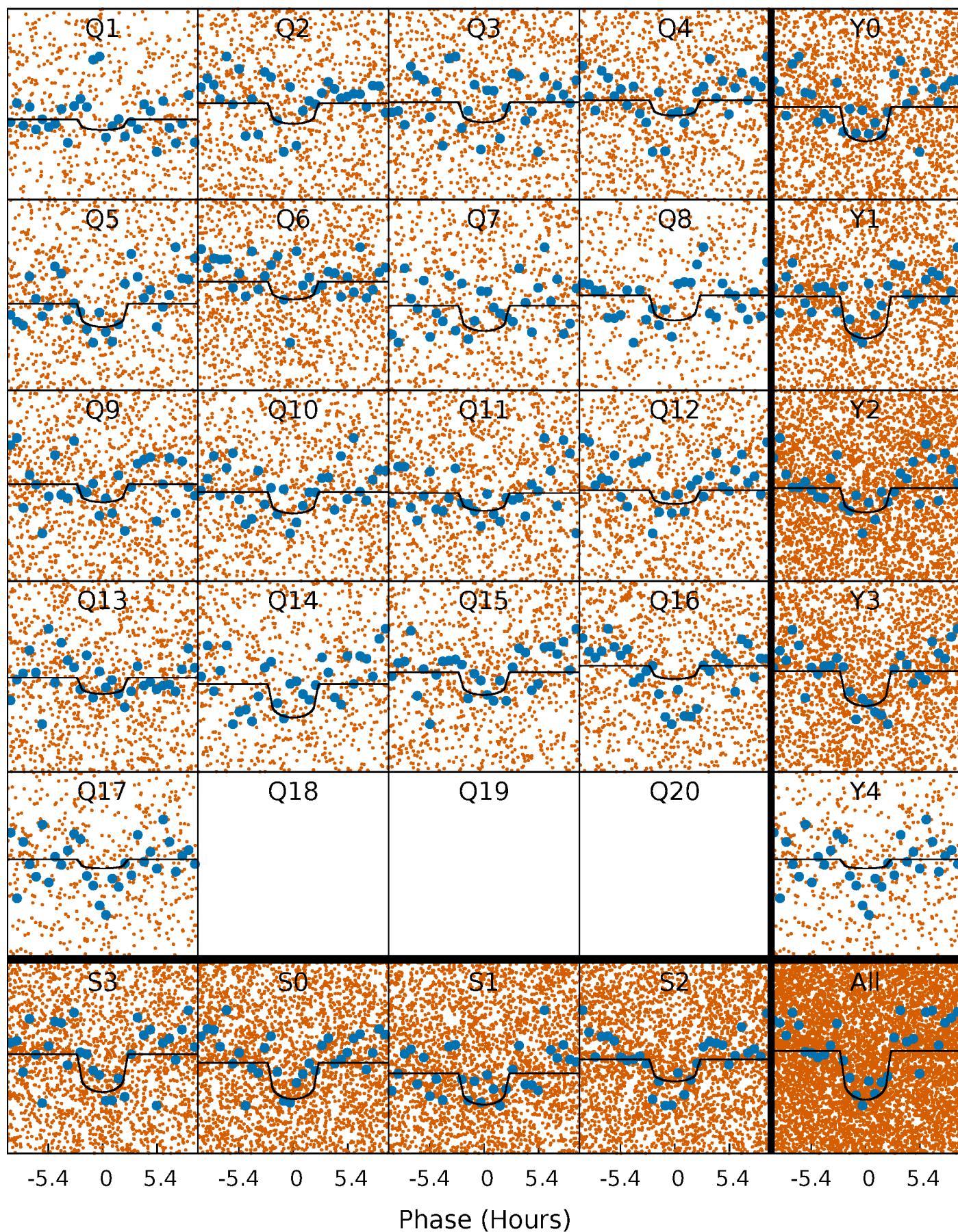
TCE 009833599-01 P= 1.408441 Days  $T_0=131.959336$  (BKJD)





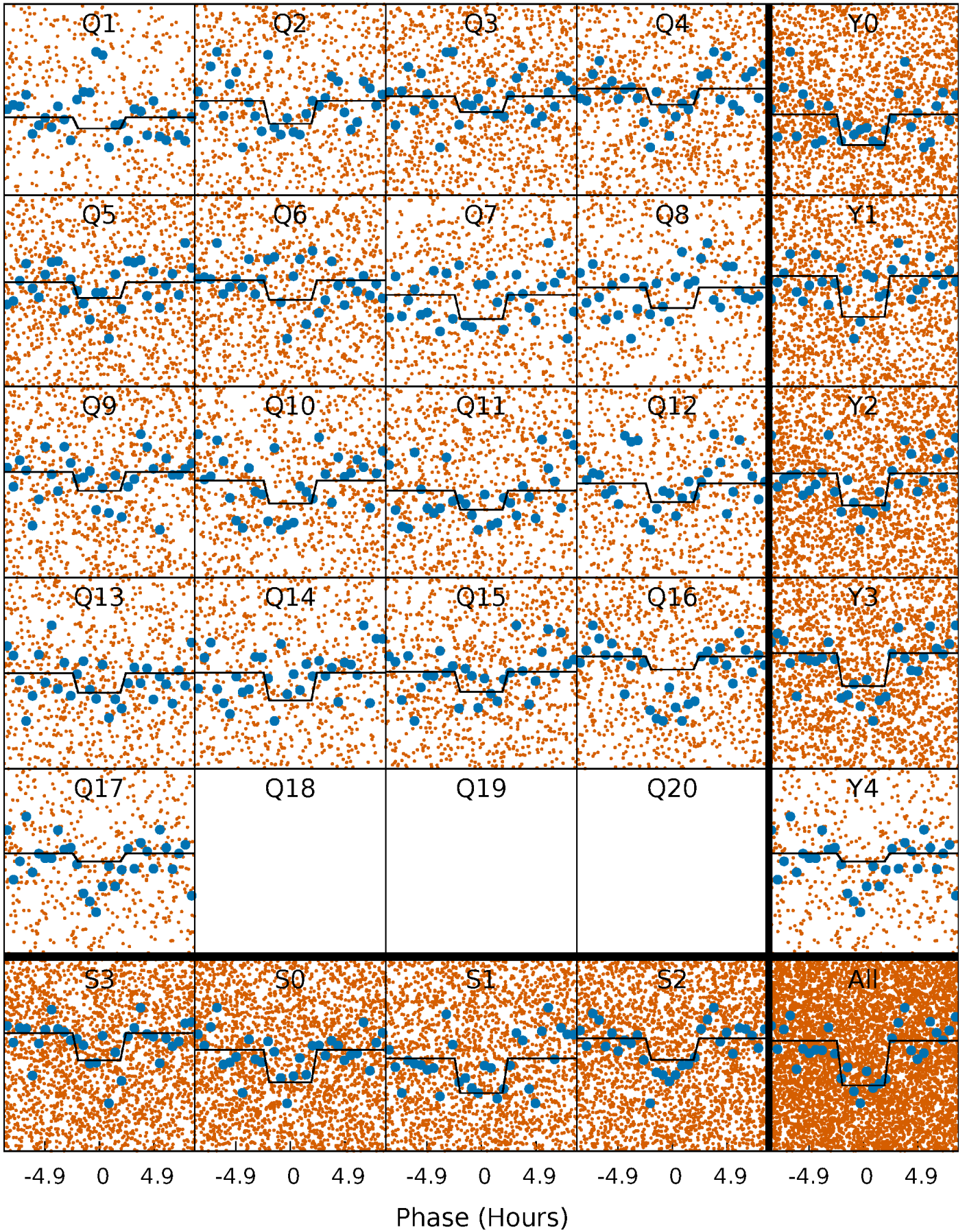
# DV Quarter-Phased Transit Curves

TCE 009833599-01 P= 1.408441 Days  $T_0=131.959336$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009833599-01     $P = 1.408484$  Days     $T_0 = 131.940146$  (BKJD)

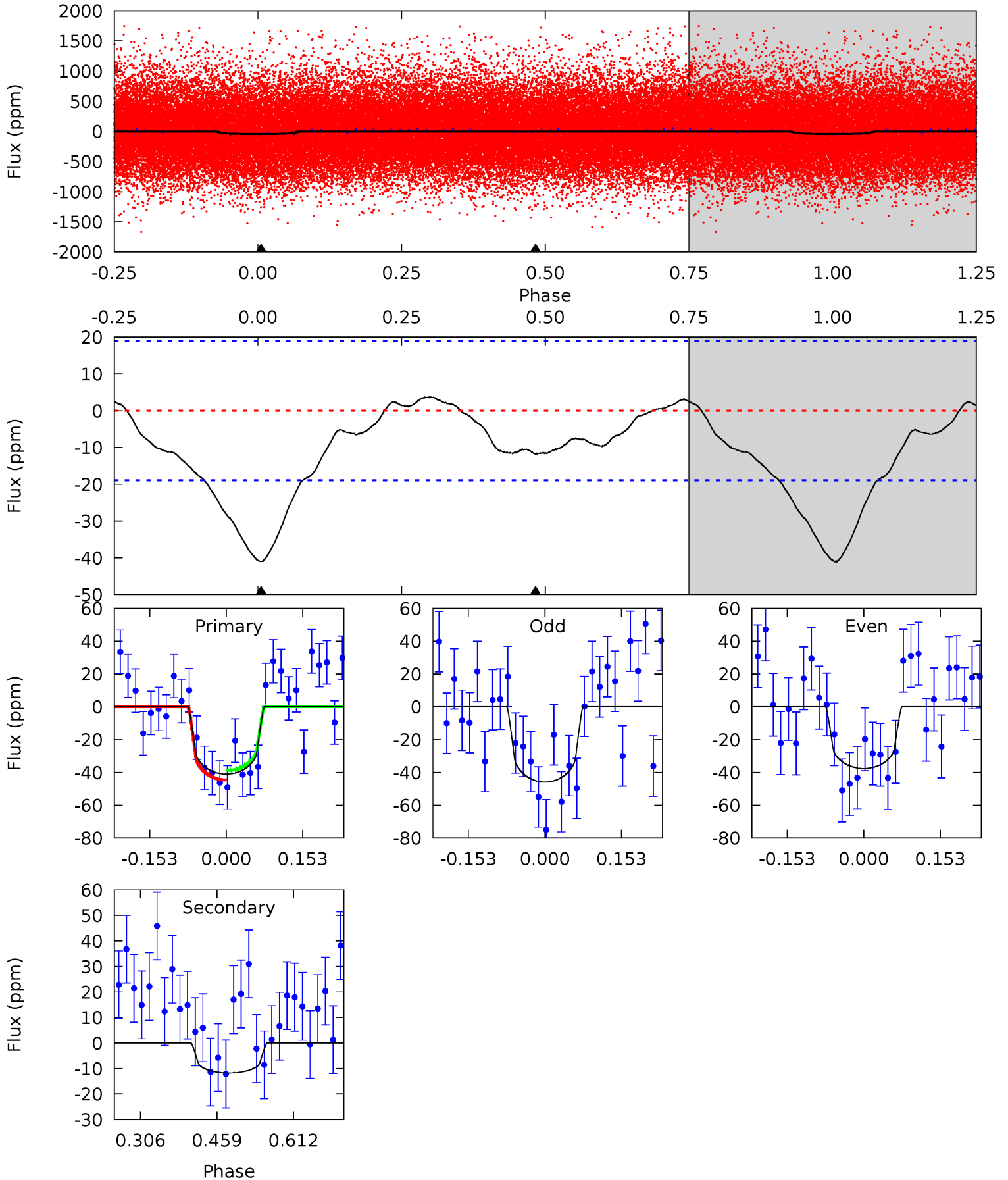




# DV Model-Shift Uniqueness Test

009833599-01, P = 1.408441 Days, E = 130.550895 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
9.68	2.77	0	0	4.47	1.43	1.04	9.68	9.68	2.77	2.77	0.97	0.93	0.08	0.68

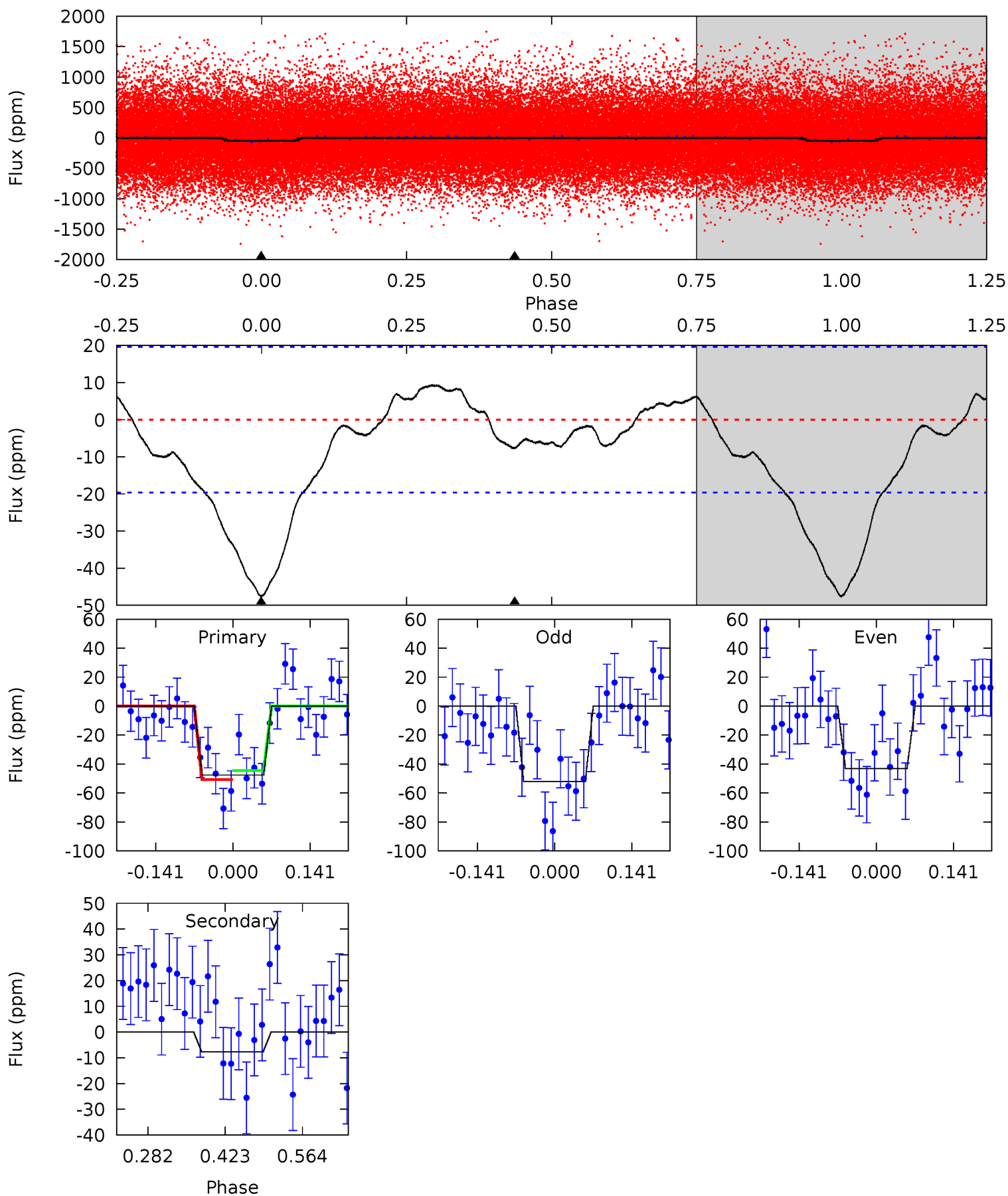




# Alt Model-Shift Uniqueness Test

009833599-01, P = 1.408484 Days, E = 130.531662 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
10.9	1.76	0	0	4.49	1.47	1.28	10.9	10.9	1.76	1.76	1.03	0.98	0.16	0.72



### Stellar Parameters For KIC 009833599

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5710^{+154}_{-171}$	$4.515^{+0.048}_{-0.192}$	$0.120^{+0.250}_{-0.300}$	$0.924^{+0.265}_{-0.083}$	$1.018^{+0.100}_{-0.120}$	$1.819^{+0.347}_{-0.913}$
	+3%/-3%	+1%/-4%	+208%/-250%	+29%/-9%	+10%/-12%	+19%/-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 009833599-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-12 \pm 4$	$0.79^{+0.54}_{-0.45}$	$2191^{+143}_{-101}$	$4027^{+1732}_{-714}$	$5.707^{+27.149}_{-3.830}$
Alt.	$-8 \pm 4$	$0.77^{+0.53}_{-0.48}$	$2192^{+155}_{-90}$	$3715^{+1785}_{-822}$	$3.729^{+21.910}_{-2.795}$

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

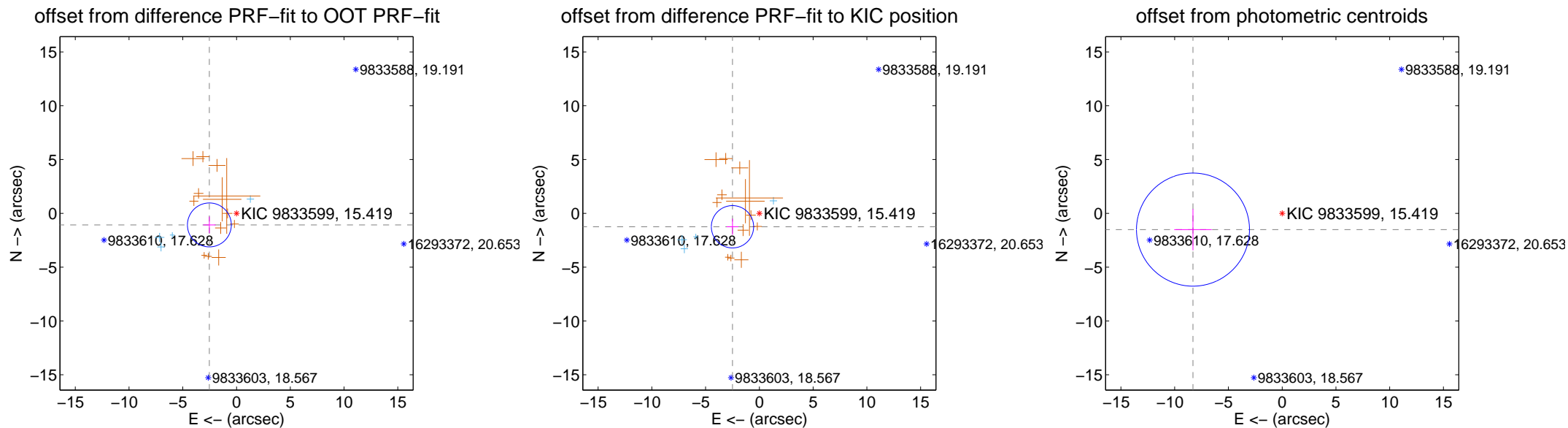
## DV Centroid Data

Supplemental centroid analysis for 009833599-01. Kepler magnitude: 15.42. Transit SNR 8.49

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

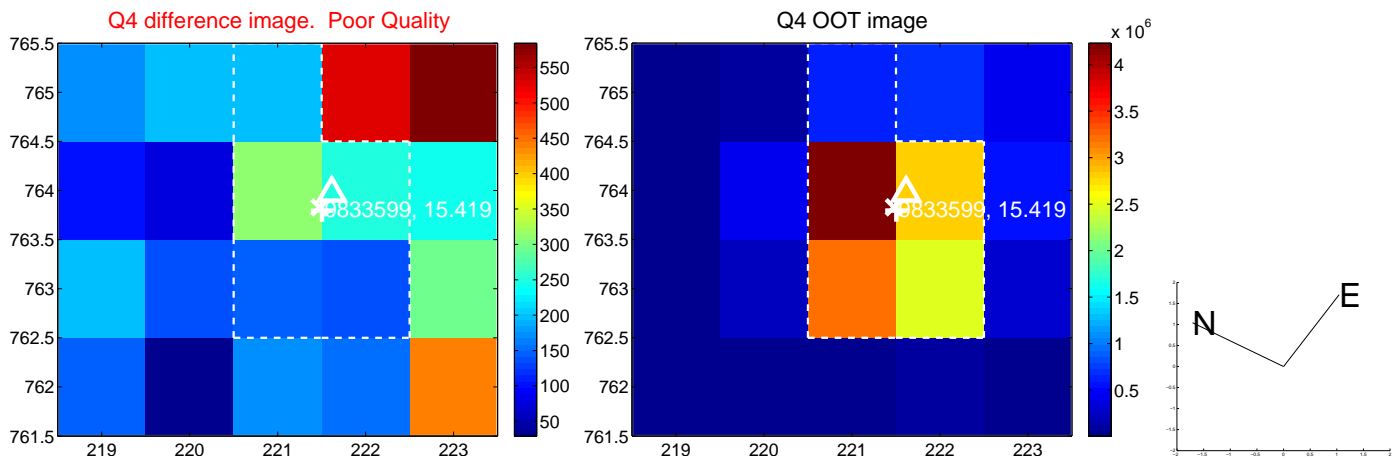
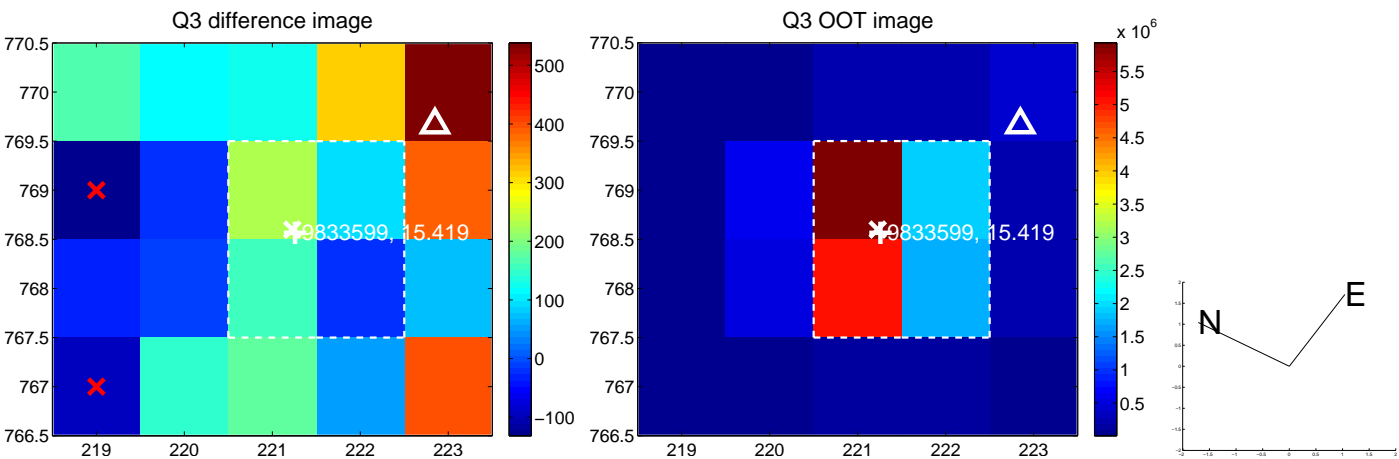
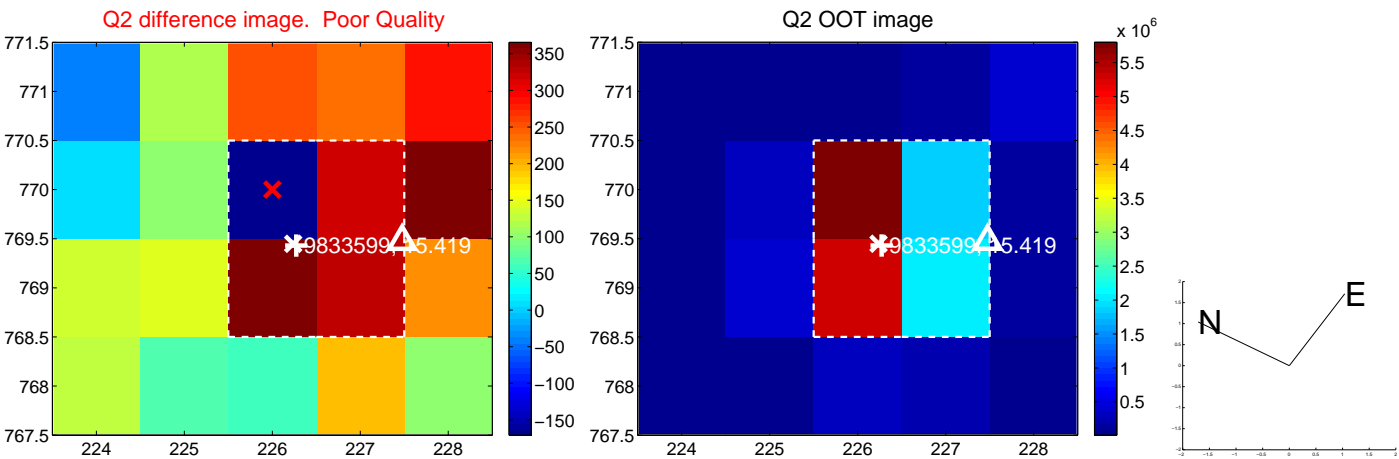
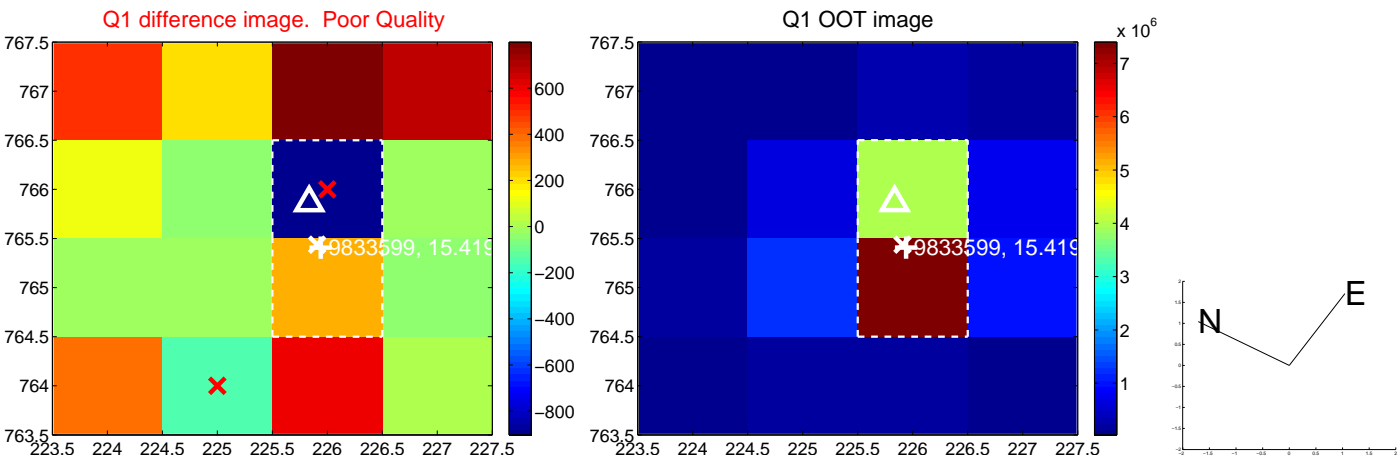
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.746 \pm 0.680$	4.04	$2.526 \pm 0.568$	$-1.075 \pm 0.772$
PRF-fit source offset from KIC position	$2.793 \pm 0.656$	4.26	$2.499 \pm 0.544$	$-1.247 \pm 0.750$
photometric centroid source offset	$8.43 \pm 1.75$	4.81	$8.29 \pm 1.75$	$-1.51 \pm 1.92$



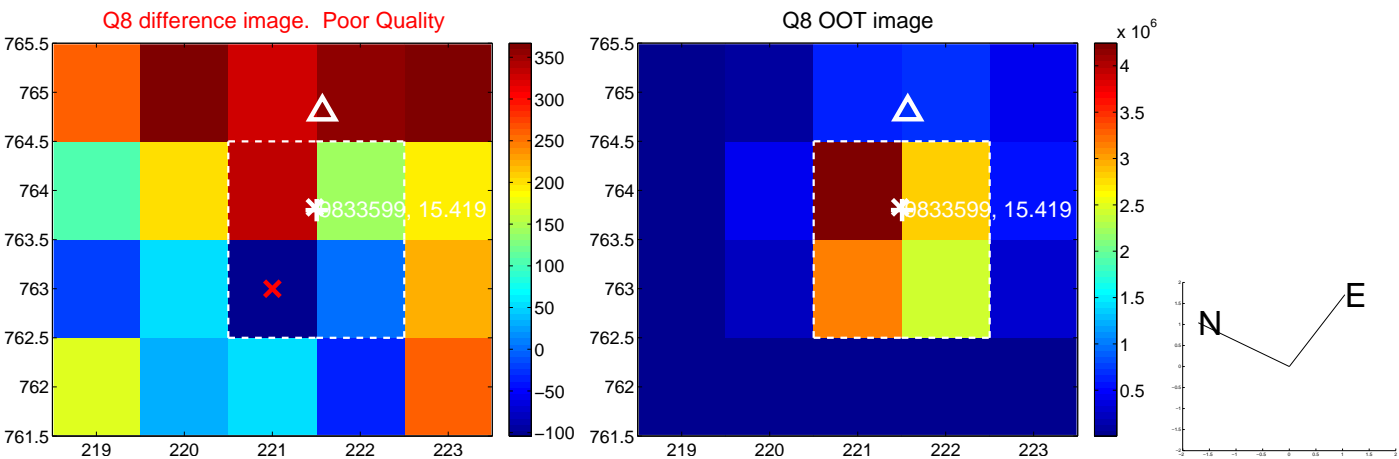
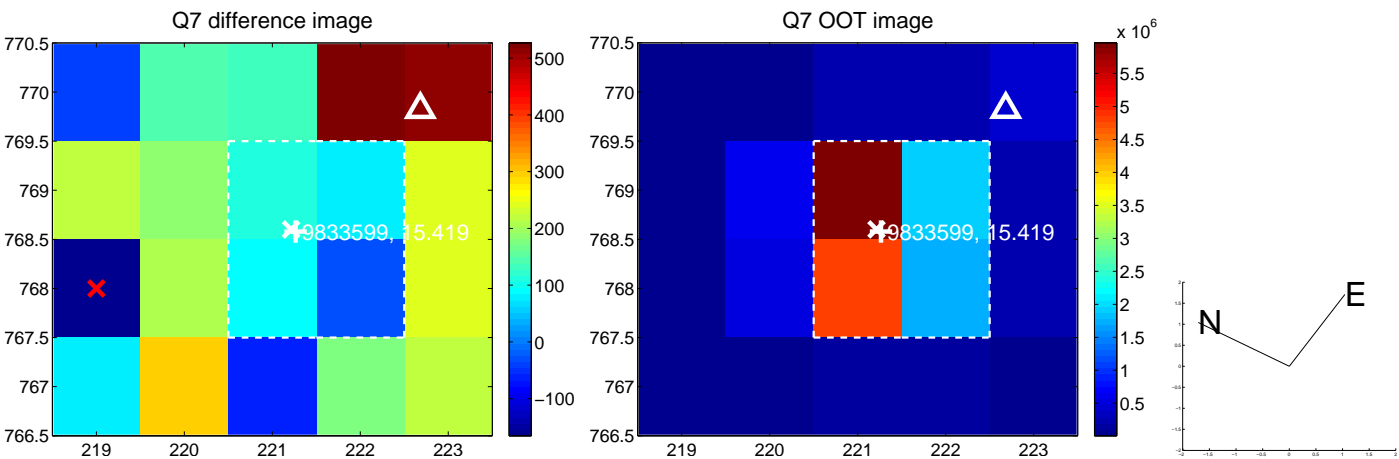
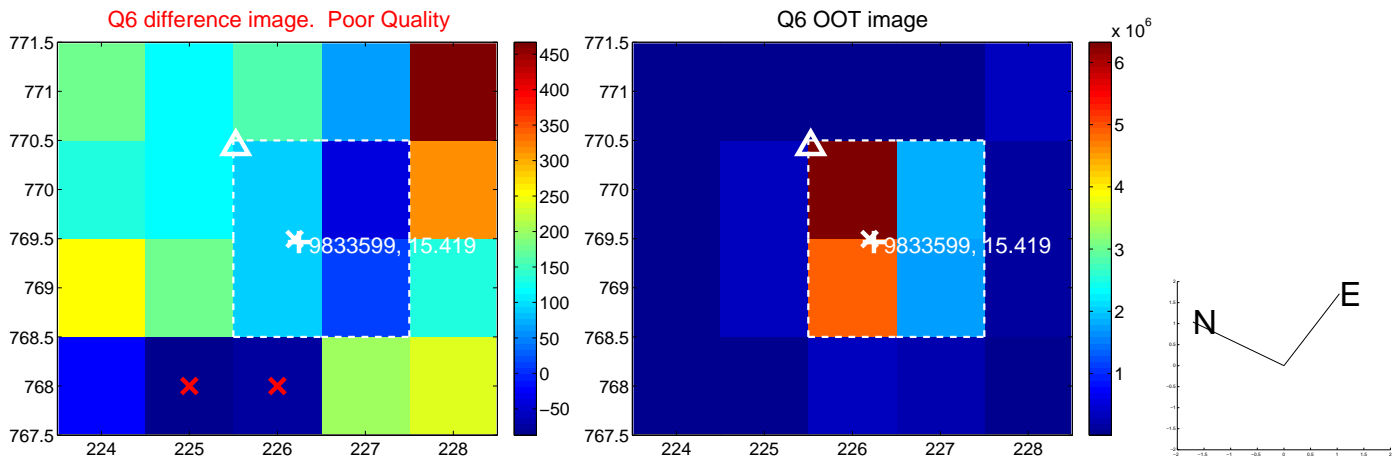
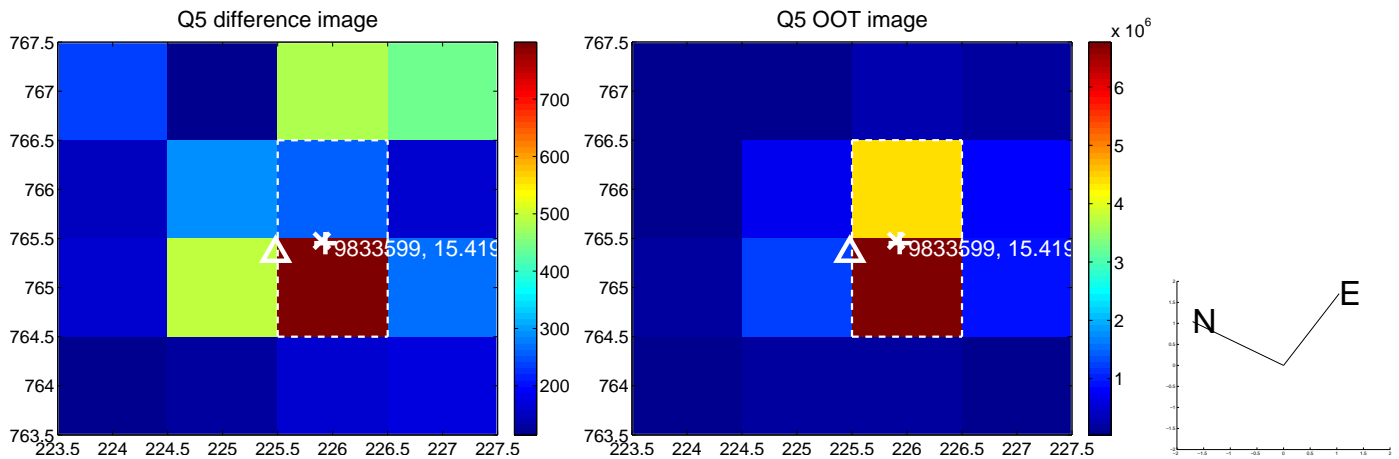
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



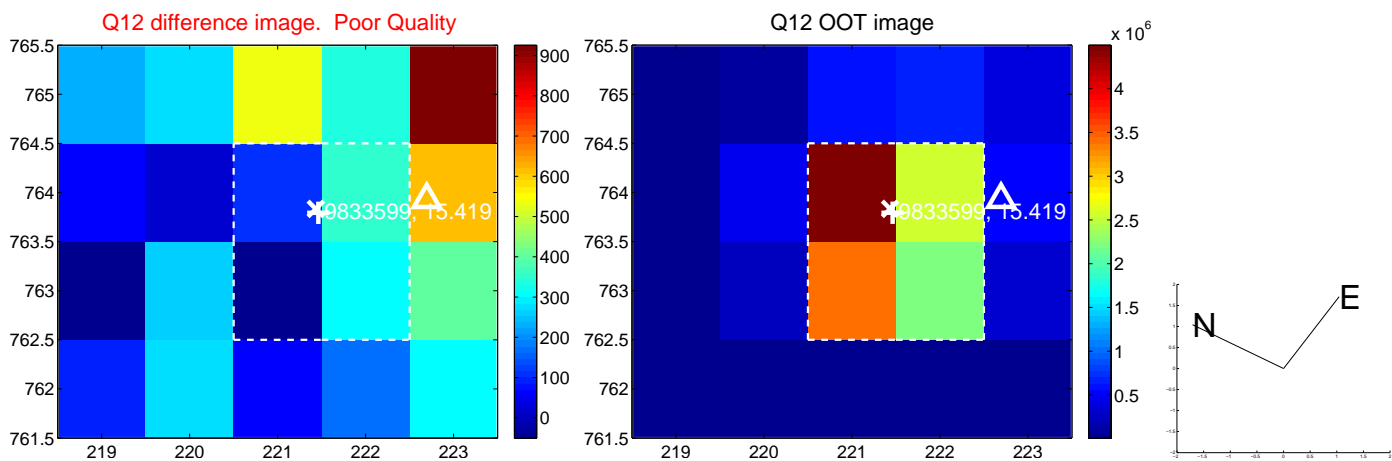
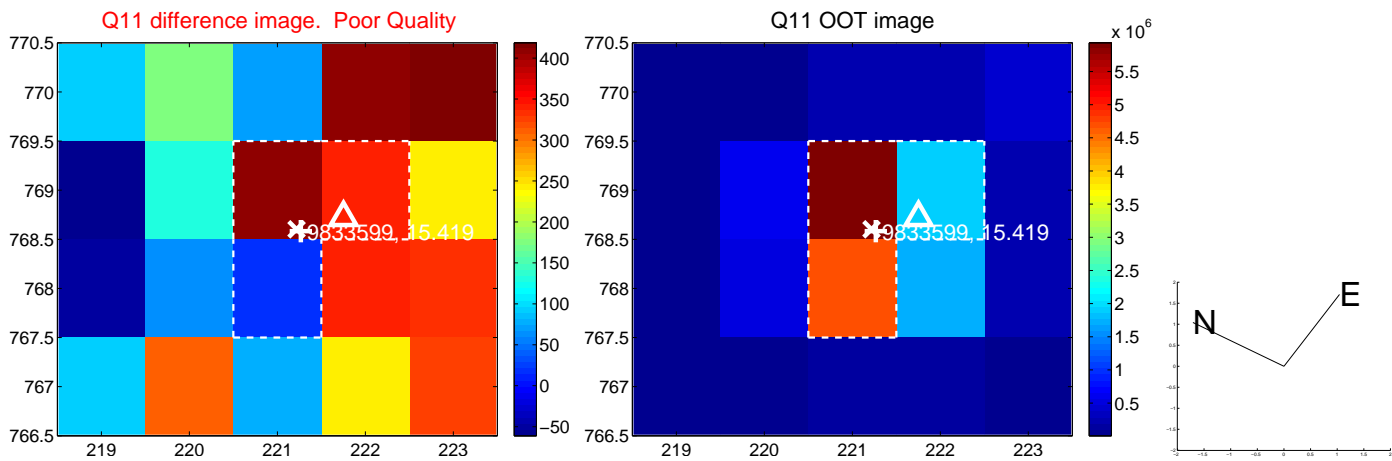
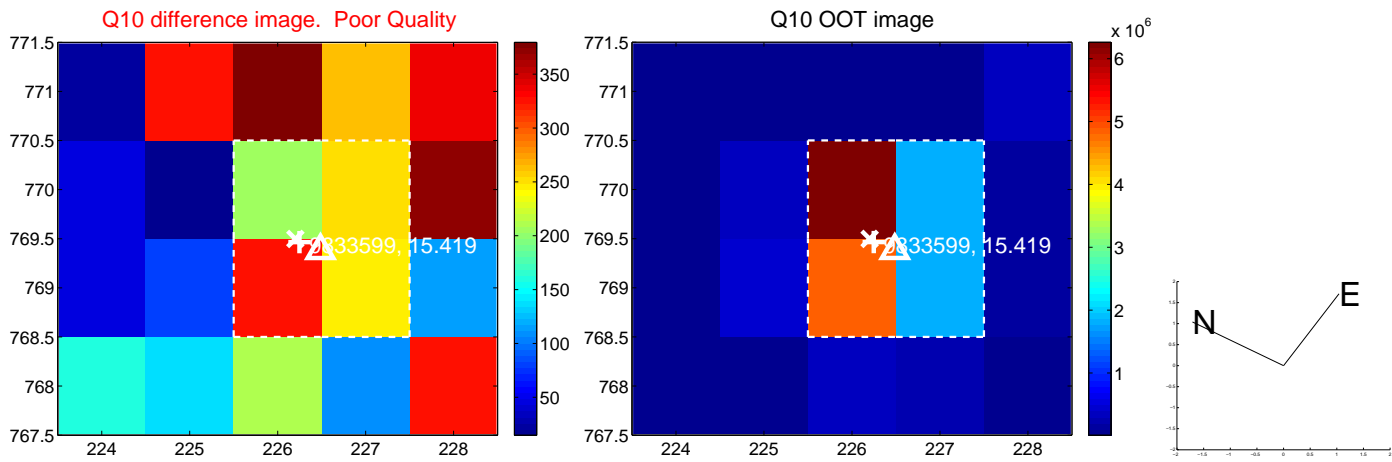
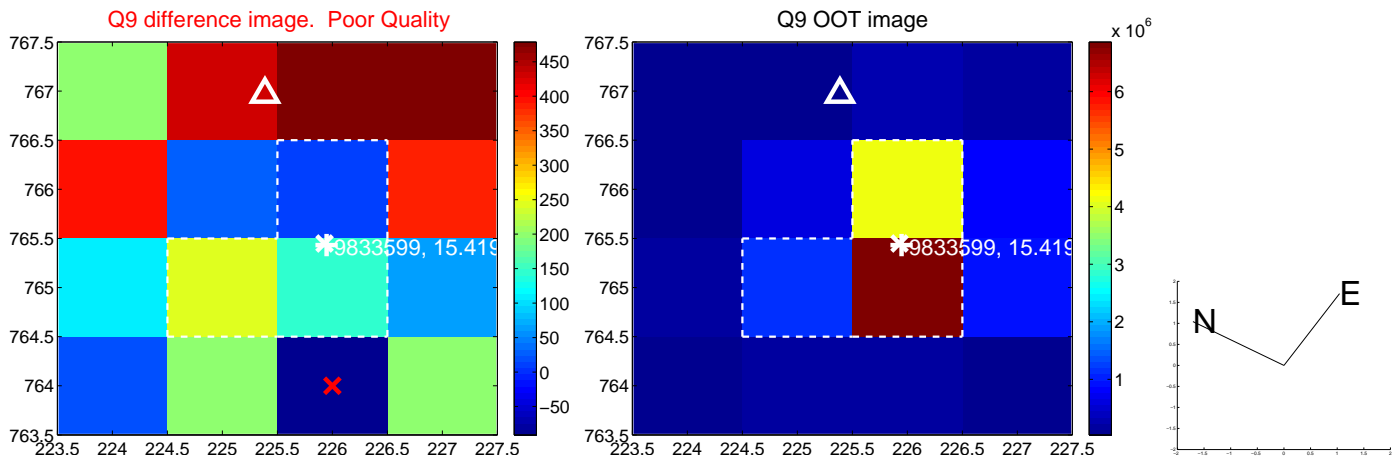
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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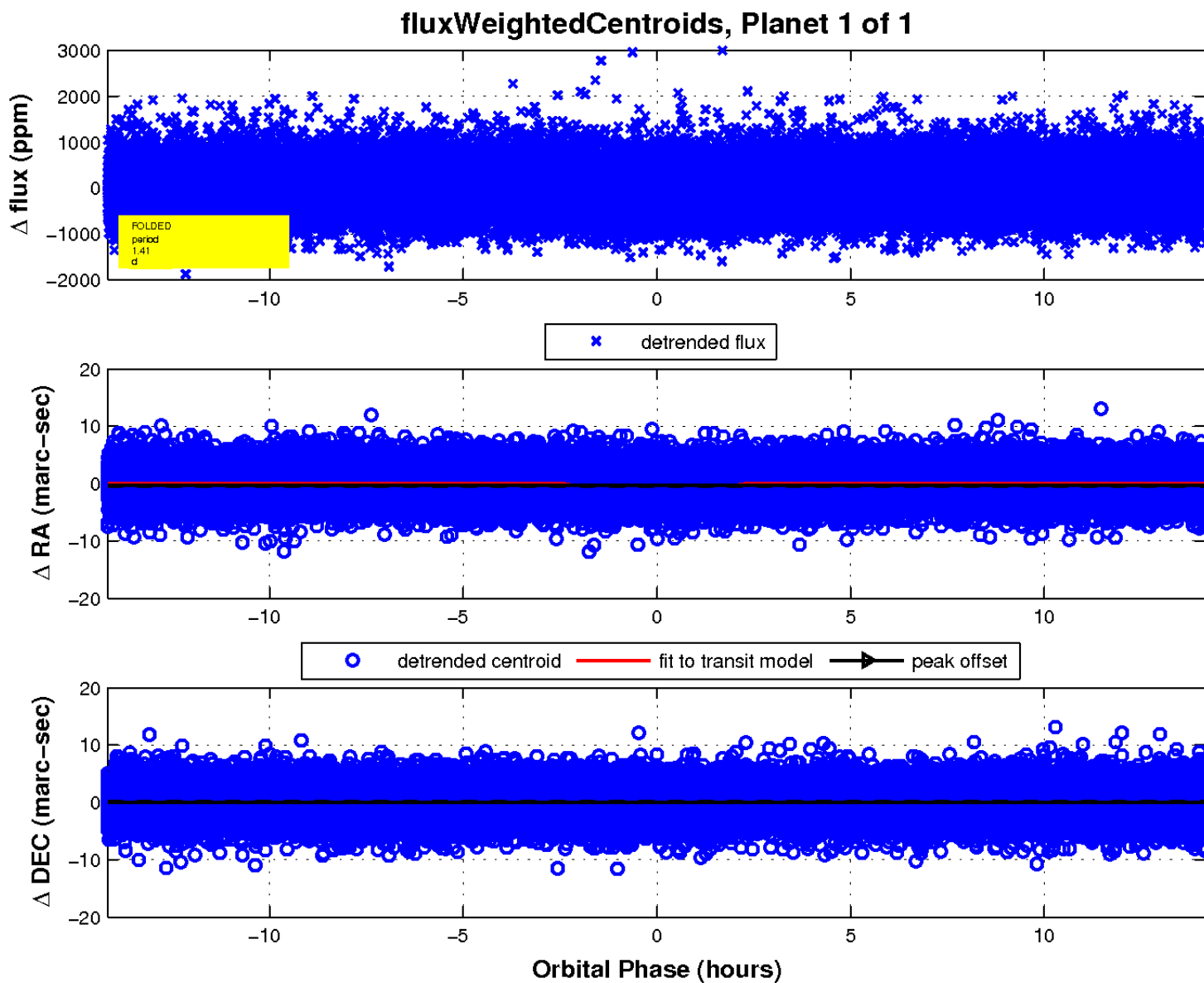
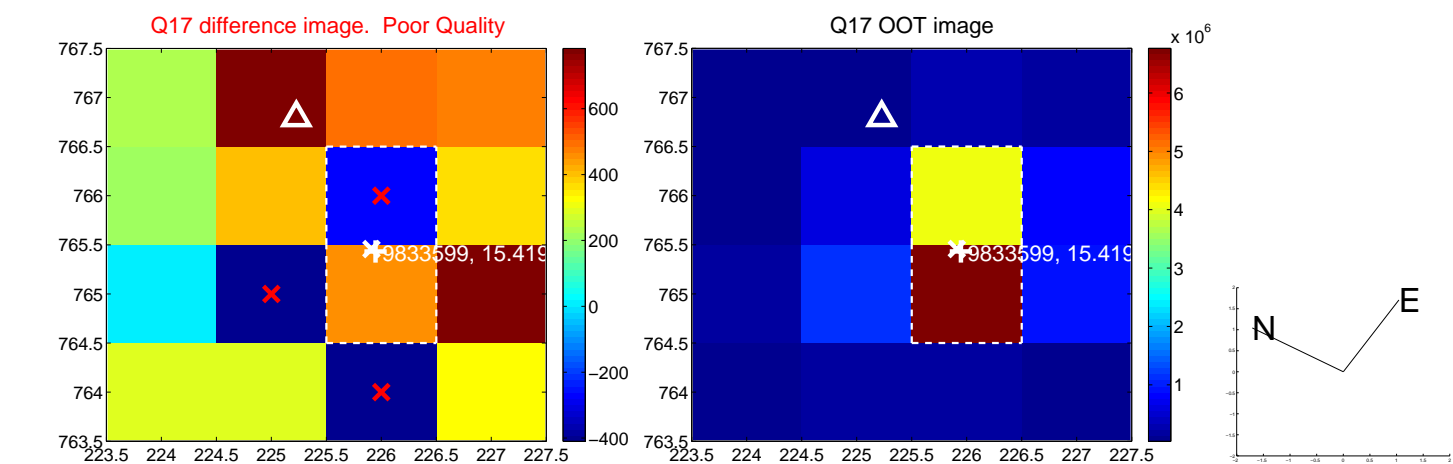
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.







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UKIRT Image

Declination

