

KIC 003109937

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})
003109937-01	OBS	4720.01	37.810662	158.342179	485.6	8.963	8.6	9.5	0.82	5595	1.92	12.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003109937-01	OBS	FP	0.00	0	0	1	1	CENT_KIC_POS—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 for comment definitions.

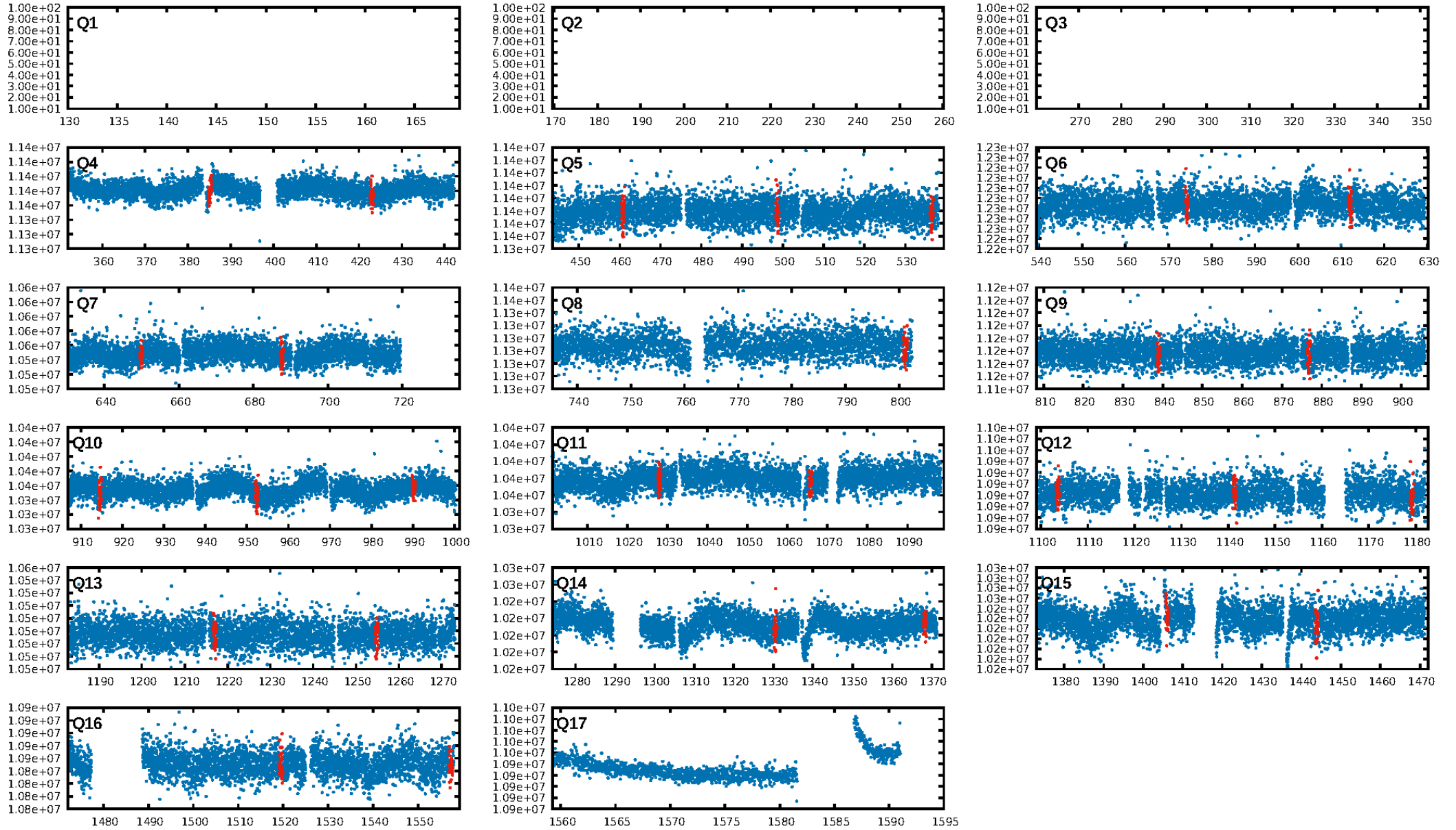
Ephemeris Match Information For 003109937-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
003109937-01	3109937	1112.01	3109930	1:1	4.8	1	2	14.63	15.75	1.29	Direct-PRF	0	0.34	0.34

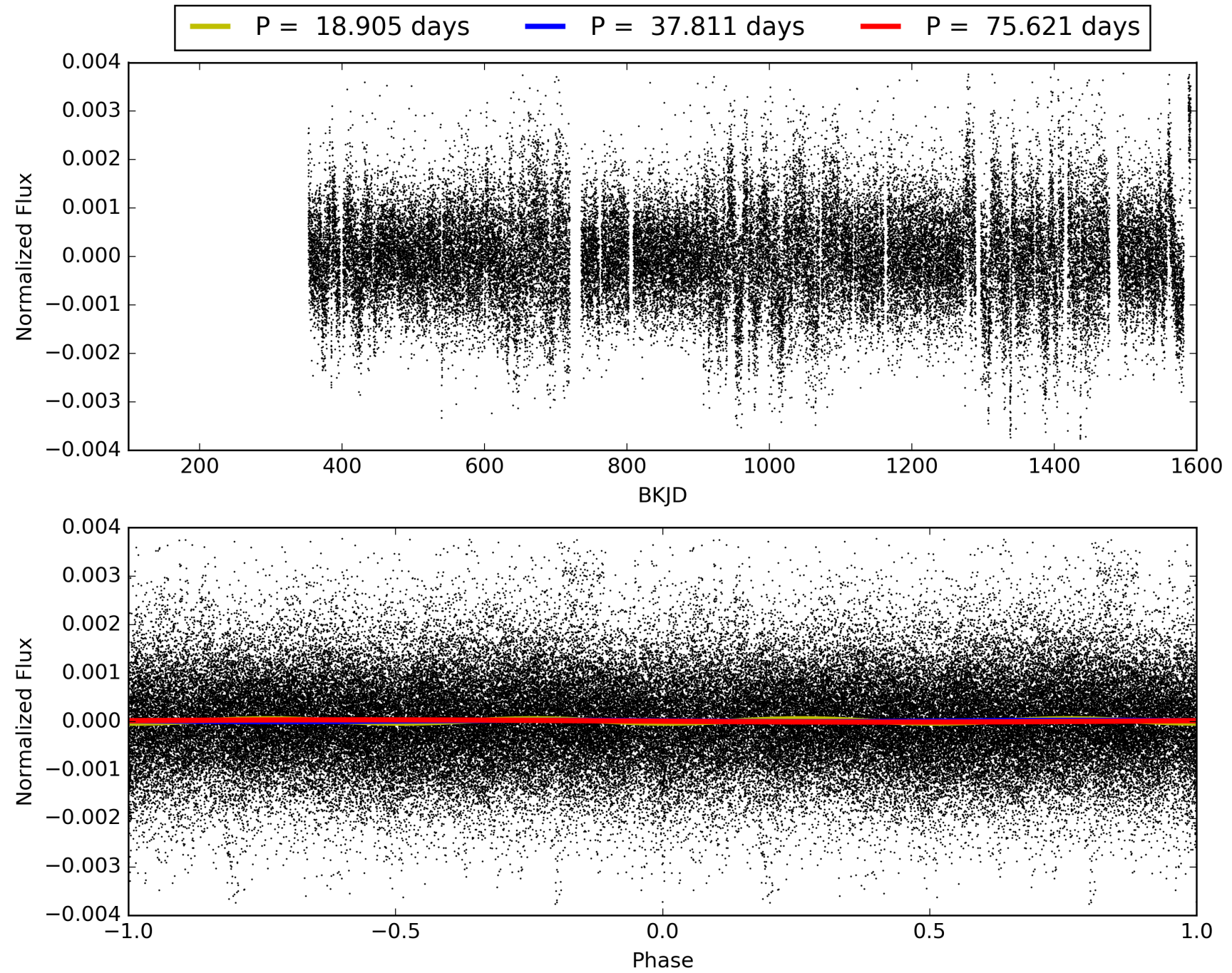
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match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

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

TCE 003109937-01, PDC Light Curves

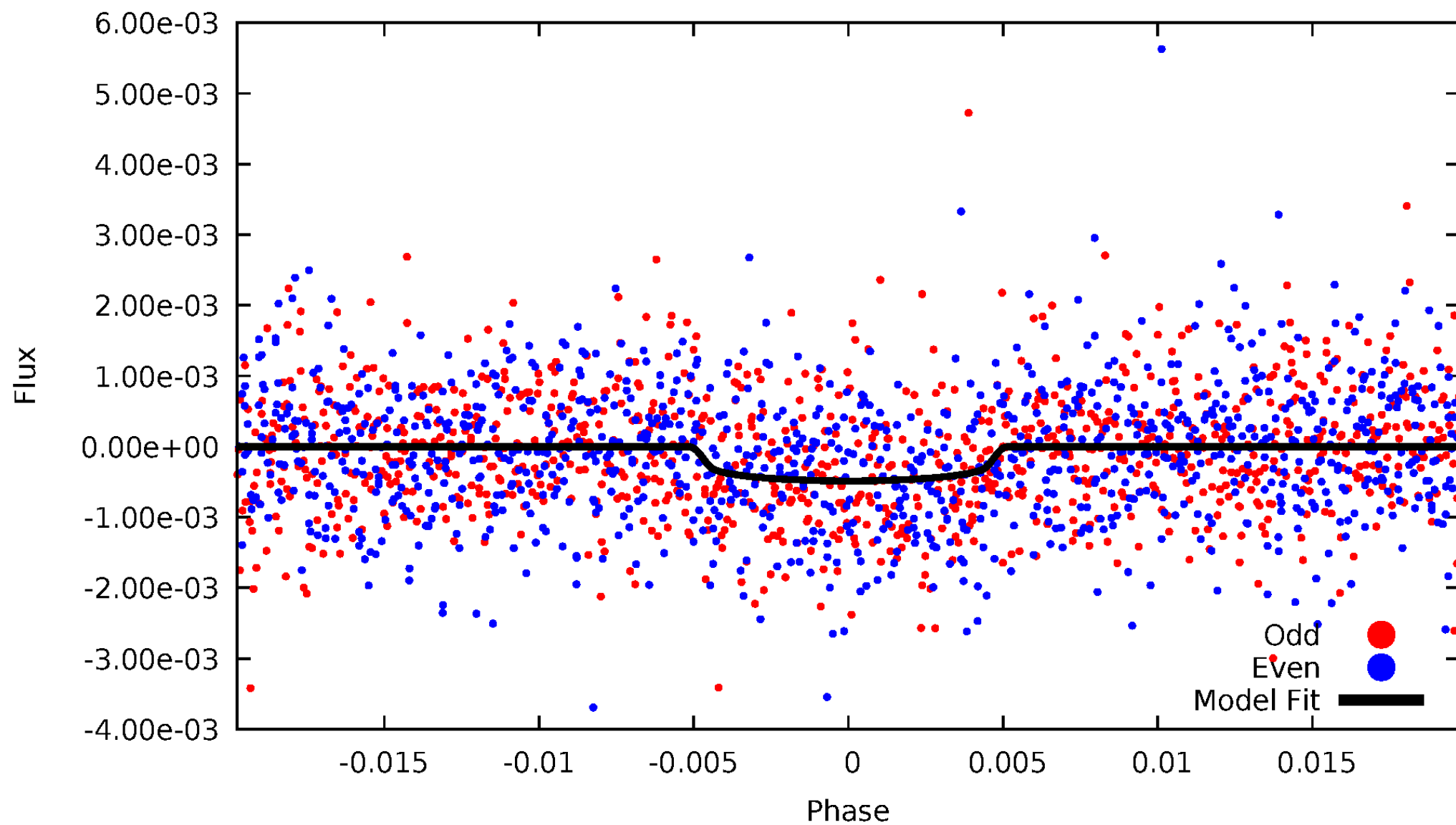


TCE 003109937-01



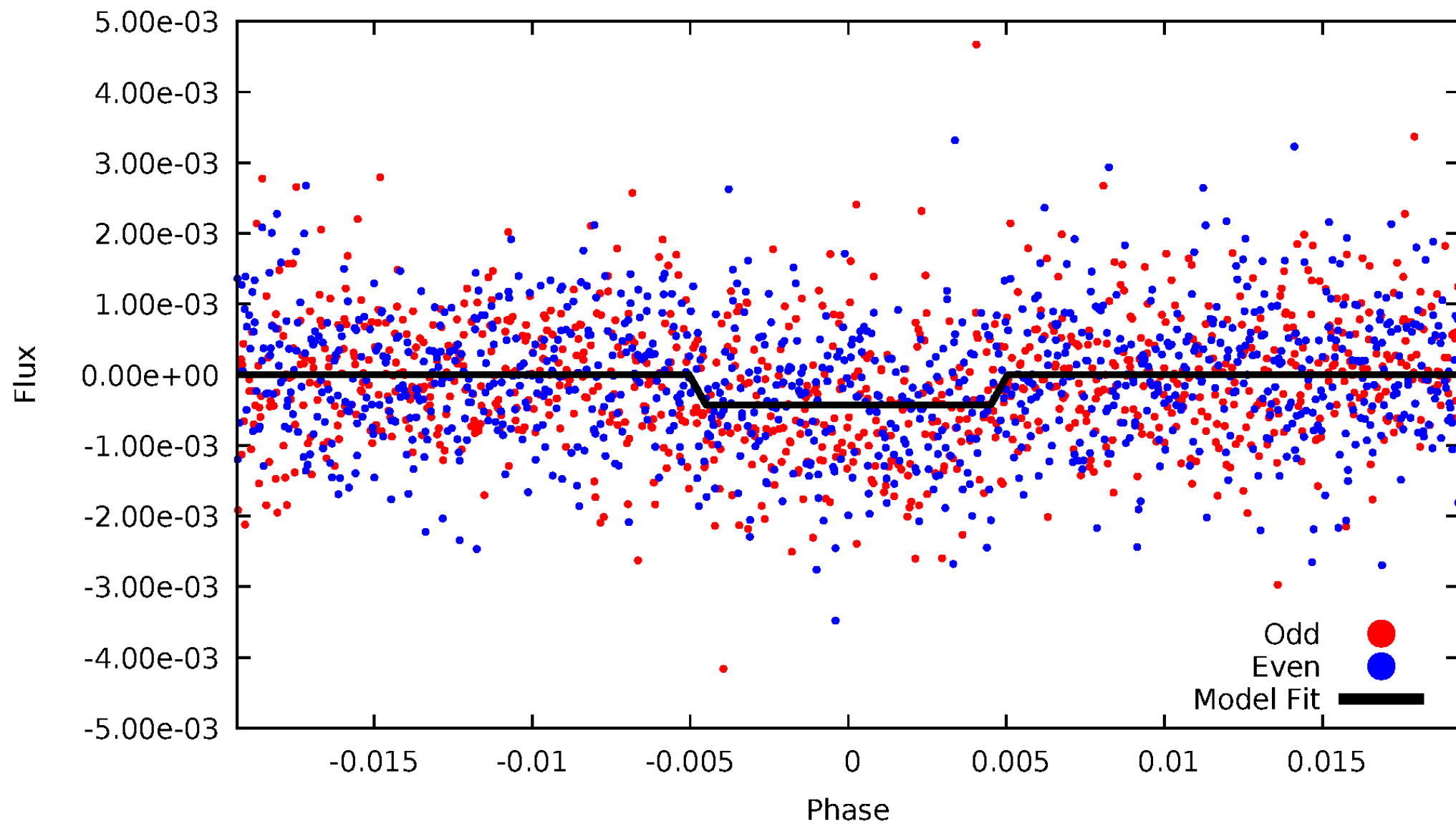
DV Odd/Even

TCE 003109937-01



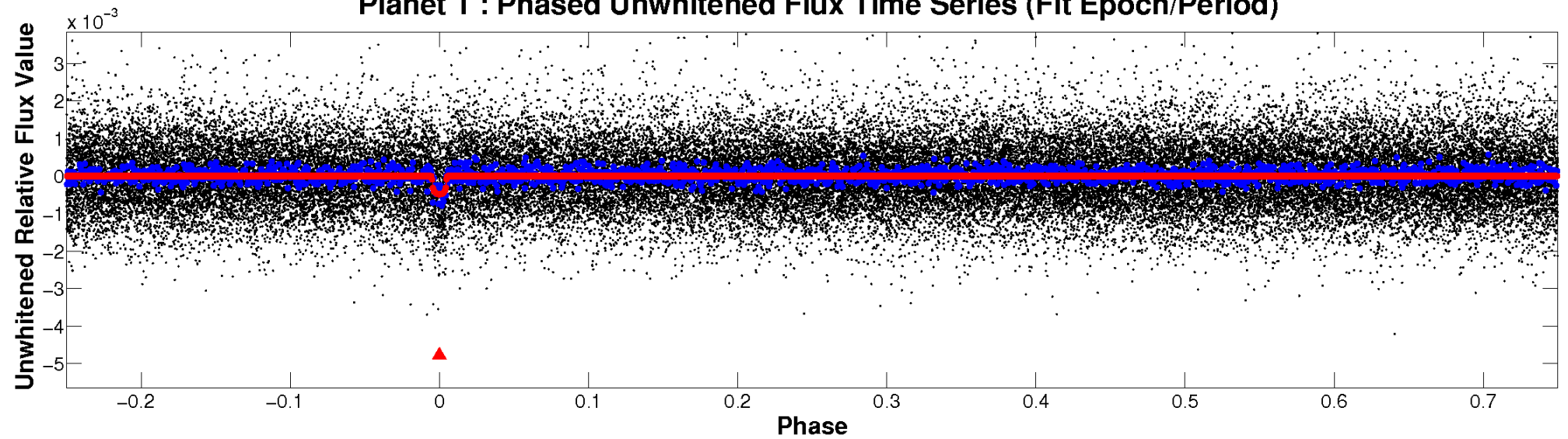
ALT Odd/Even

TCE 003109937-01

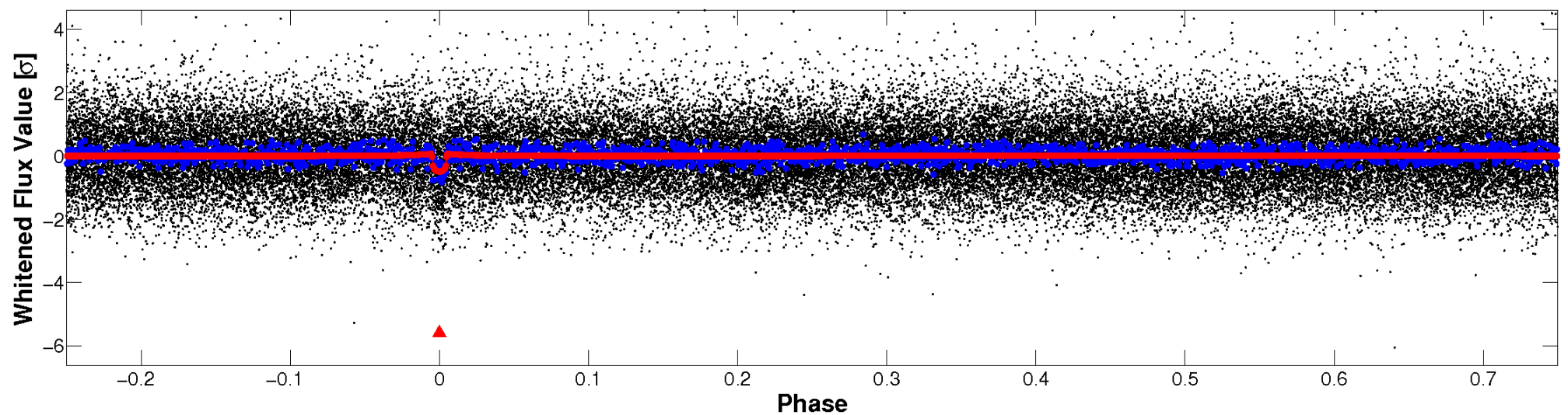


Non-Whitened Vs. Whitened Light Curve

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

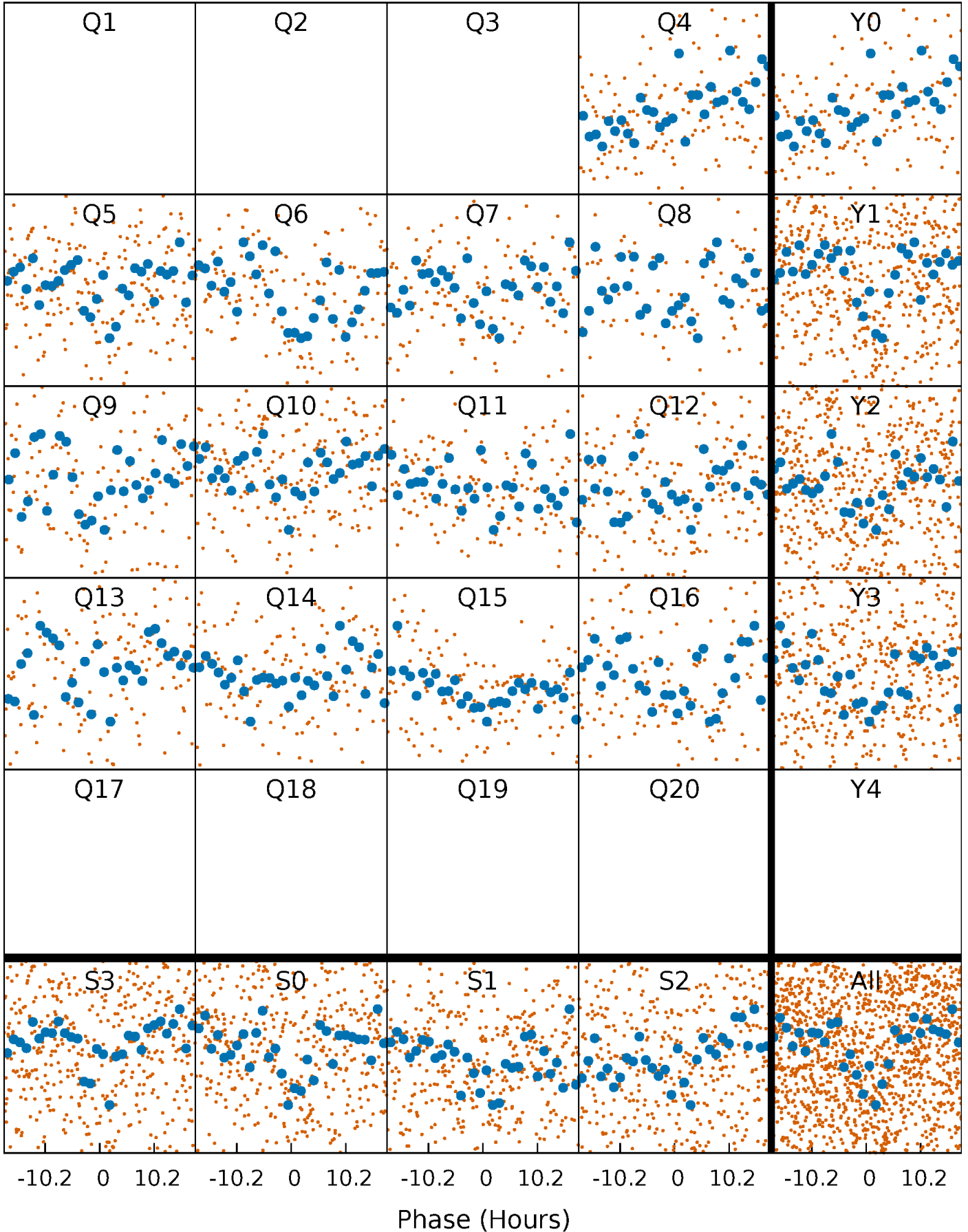


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



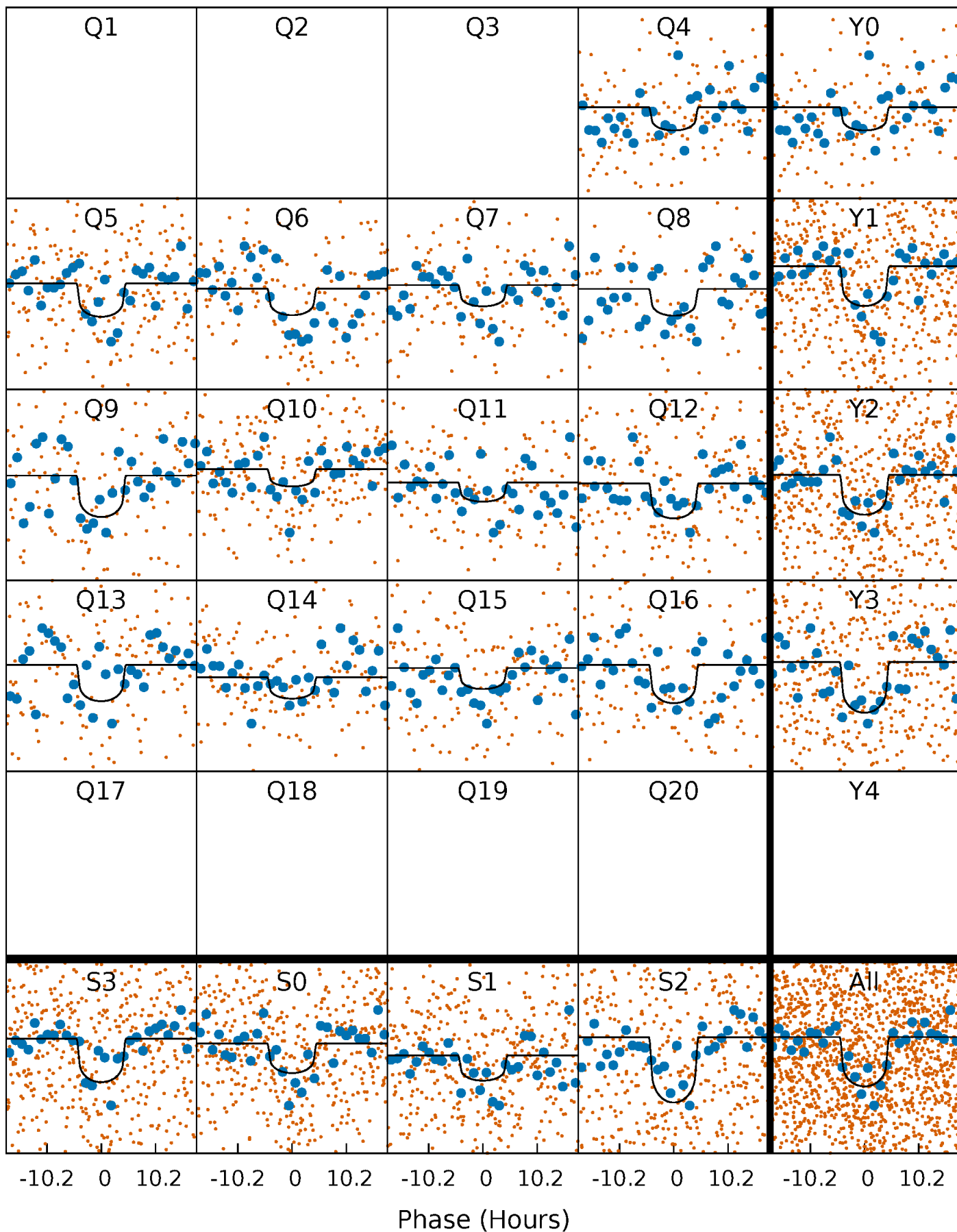
PDC Quarter-Phased Transit Curves

TCE 003109937-01 P= 37.810662 Days $T_0=158.342179$ (BKJD)



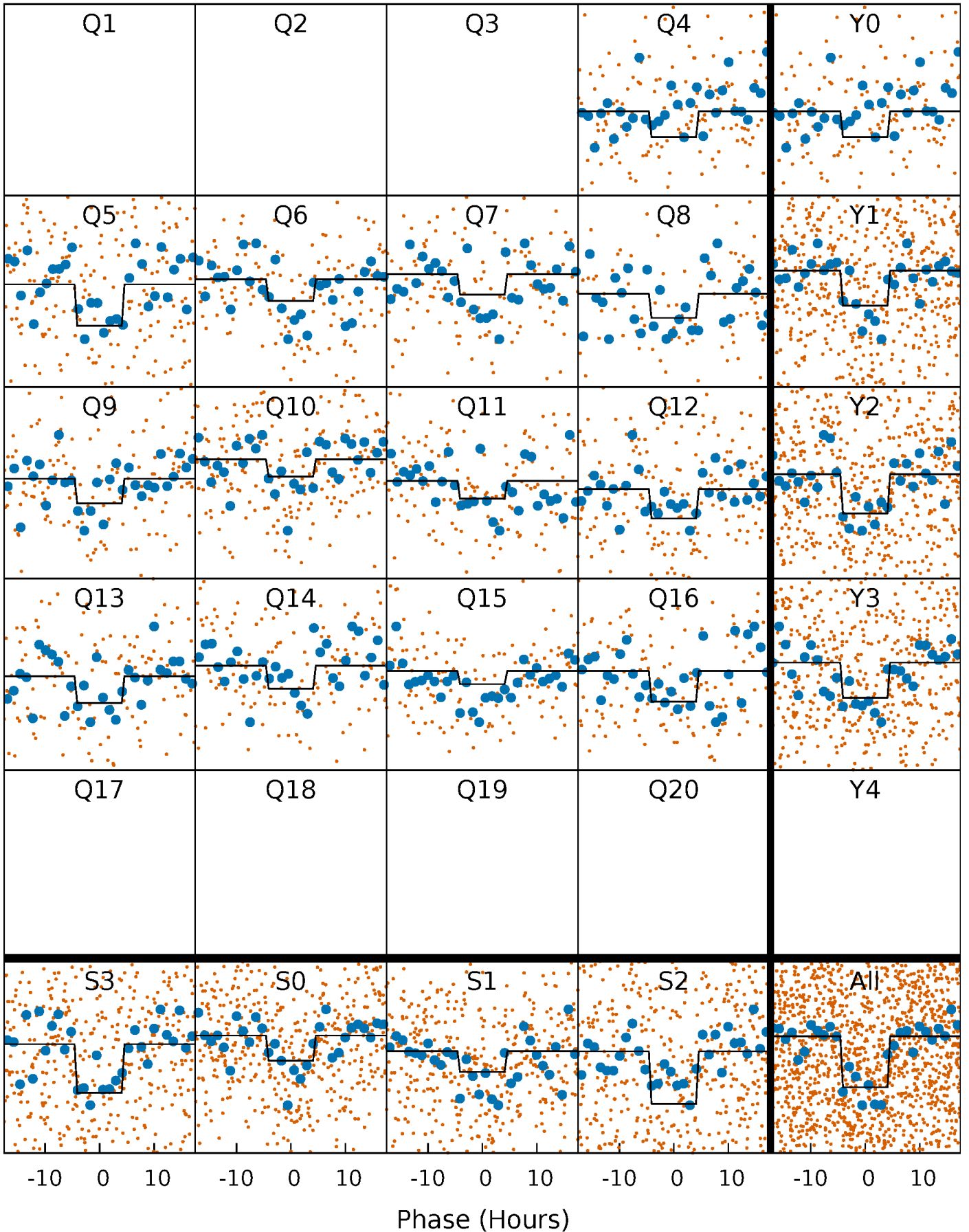
DV Quarter-Phased Transit Curves

TCE 003109937-01 P= 37.810662 Days $T_0=158.342179$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

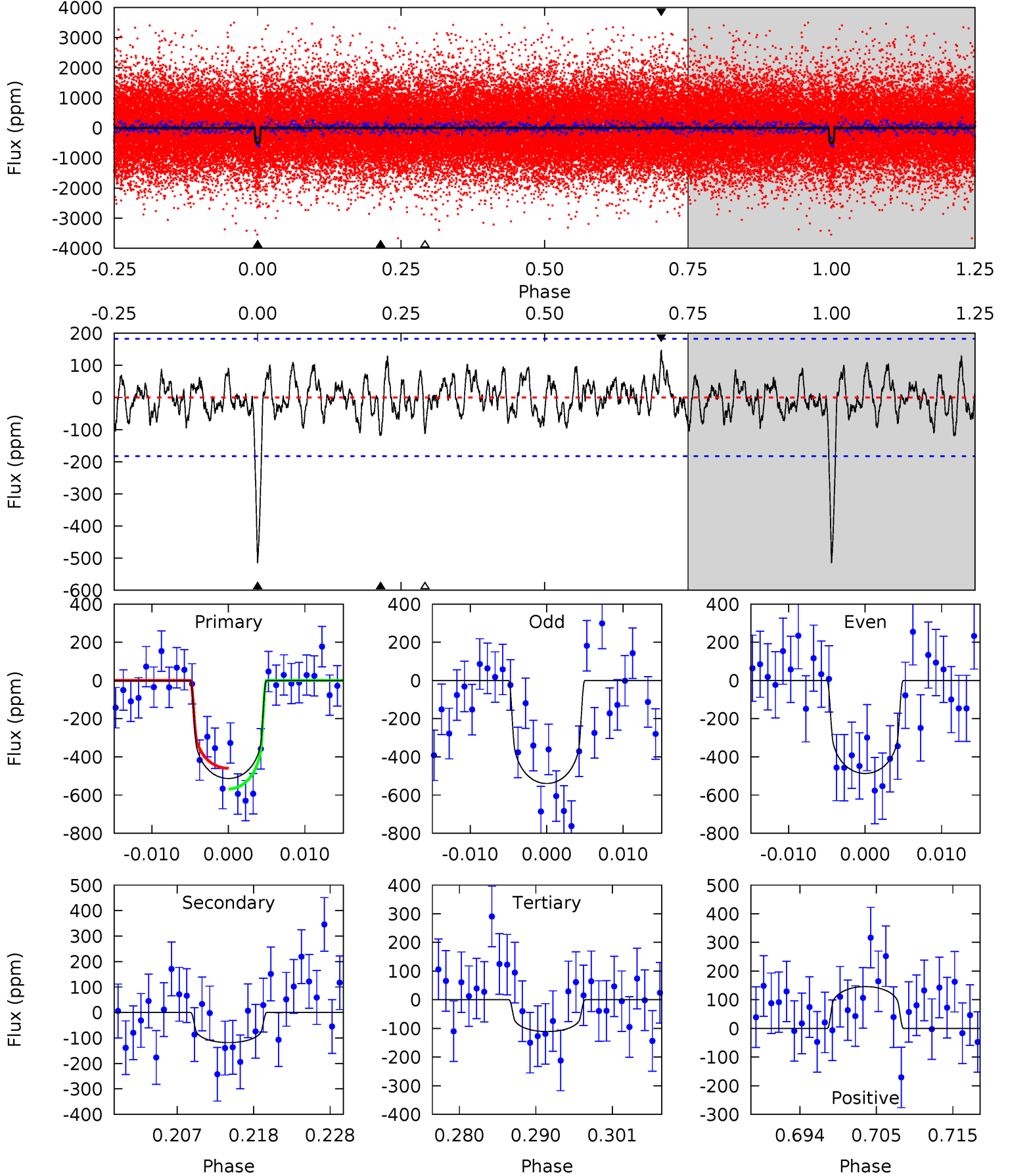
TCE 003109937-01 P= 37.809175 Days $T_0=158.382167$ (BKJD)



DV Model-Shift Uniqueness Test

003109937-01, $P = 37.810662$ Days, $E = 158.342179$ Days

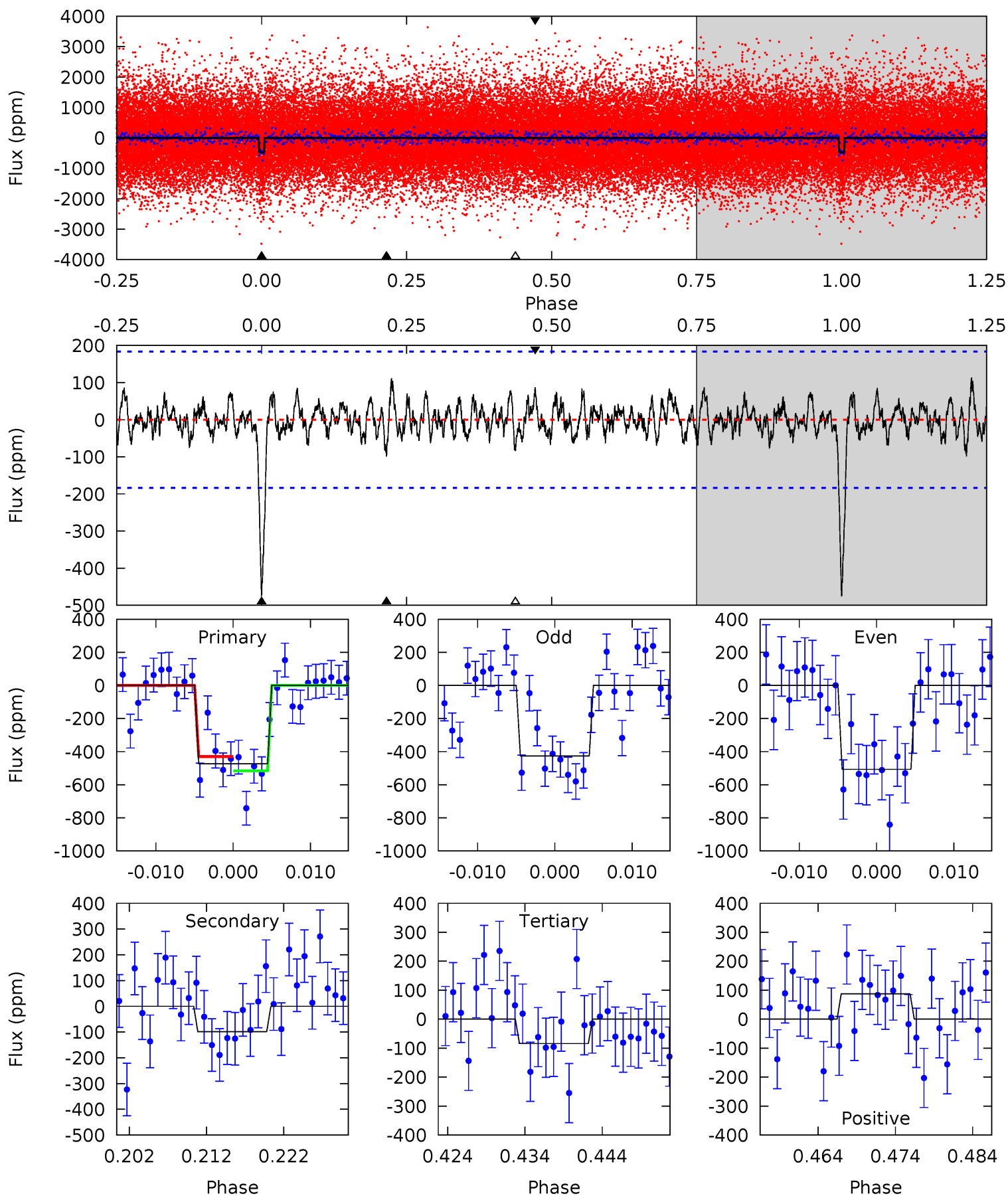
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.1	3.24	3.05	4.01	5.02	2.56	1.24	11.0	10.1	0.19	-0.76	0.72	1.04	0.22	1.49



Alt Model-Shift Uniqueness Test

003109937-01, $P = 37.809175$ Days, $E = 158.382167$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	2.69	2.30	2.39	5.02	2.57	0.89	10.6	10.5	0.40	0.31	1.11	1.11	0.19	1.19



Stellar Parameters For KIC 003109937

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5595^{+177}_{-197}	$4.570^{+0.038}_{-0.152}$	$-0.140^{+0.300}_{-0.300}$	$0.820^{+0.181}_{-0.078}$	$0.917^{+0.083}_{-0.115}$	$2.341^{+0.461}_{-0.978}$
	+3%/-4%	+1%/-3%	+214%/-214%	+22%/-10%	+9%/-13%	+20%/-42%
Source	KIC0	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 003109937-01 / KOI 4720.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-118 ± 36	$2.18^{+1.32}_{-1.28}$	689^{+40}_{-34}	4118^{+1880}_{-668}	627^{+3155}_{-403}
Alt.	-99 ± 37	$2.11^{+1.36}_{-1.12}$	689^{+42}_{-31}	3976^{+1462}_{-662}	543^{+2055}_{-371}

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

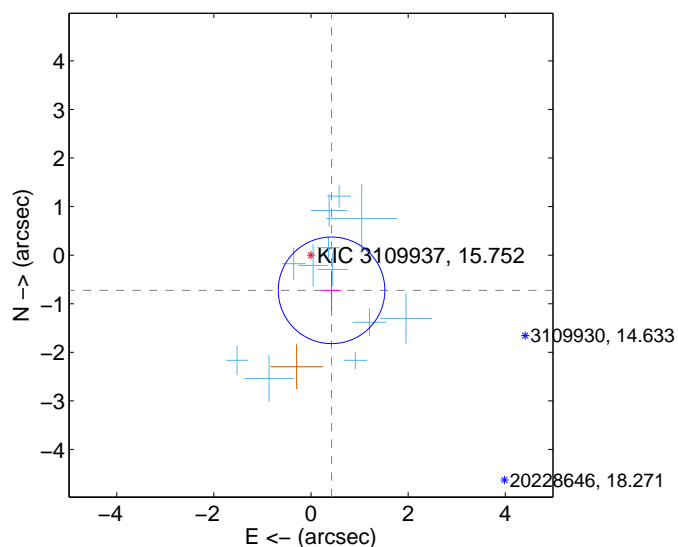
Supplemental centroid analysis for 003109937-01. Kepler magnitude: 15.75. Transit SNR 9.51

There are 12 quarters with good PRF difference image offsets

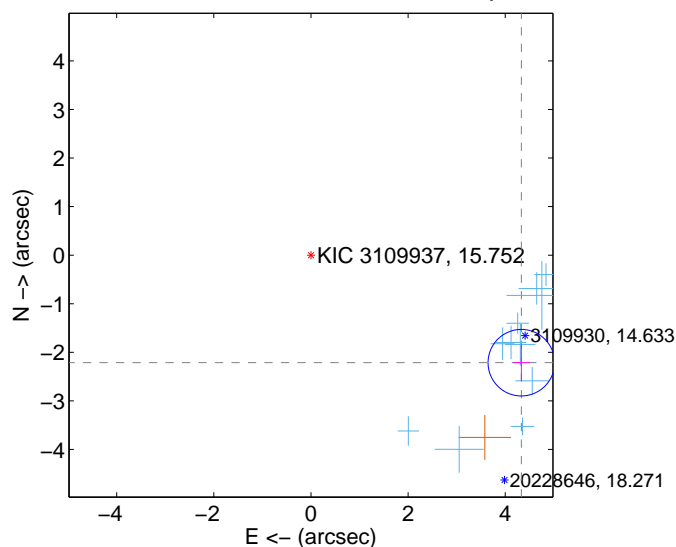
The OOT PRF centroid is offset from the target star catalog position by about 4.61 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.839 ± 0.366	2.29	-0.424 ± 0.200	-0.724 ± 0.407
PRF-fit source offset from KIC position	4.865 ± 0.228	21.31	-4.332 ± 0.170	-2.214 ± 0.375
photometric centroid source offset	2.83 ± 0.44	6.43	-2.71 ± 0.44	-0.84 ± 0.40

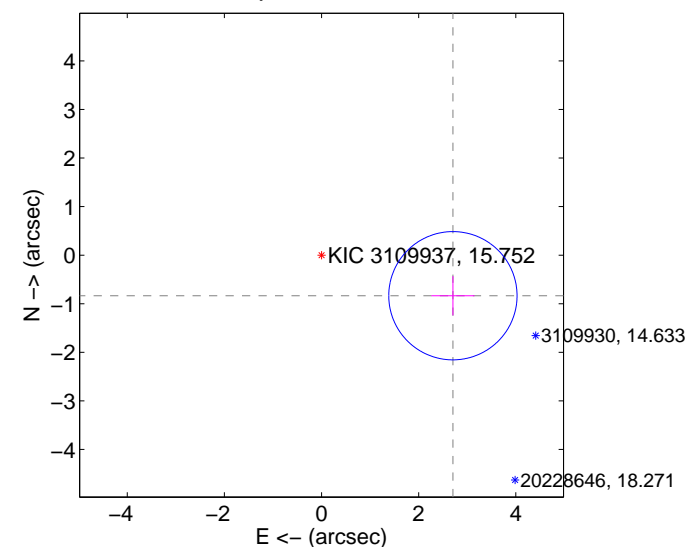
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

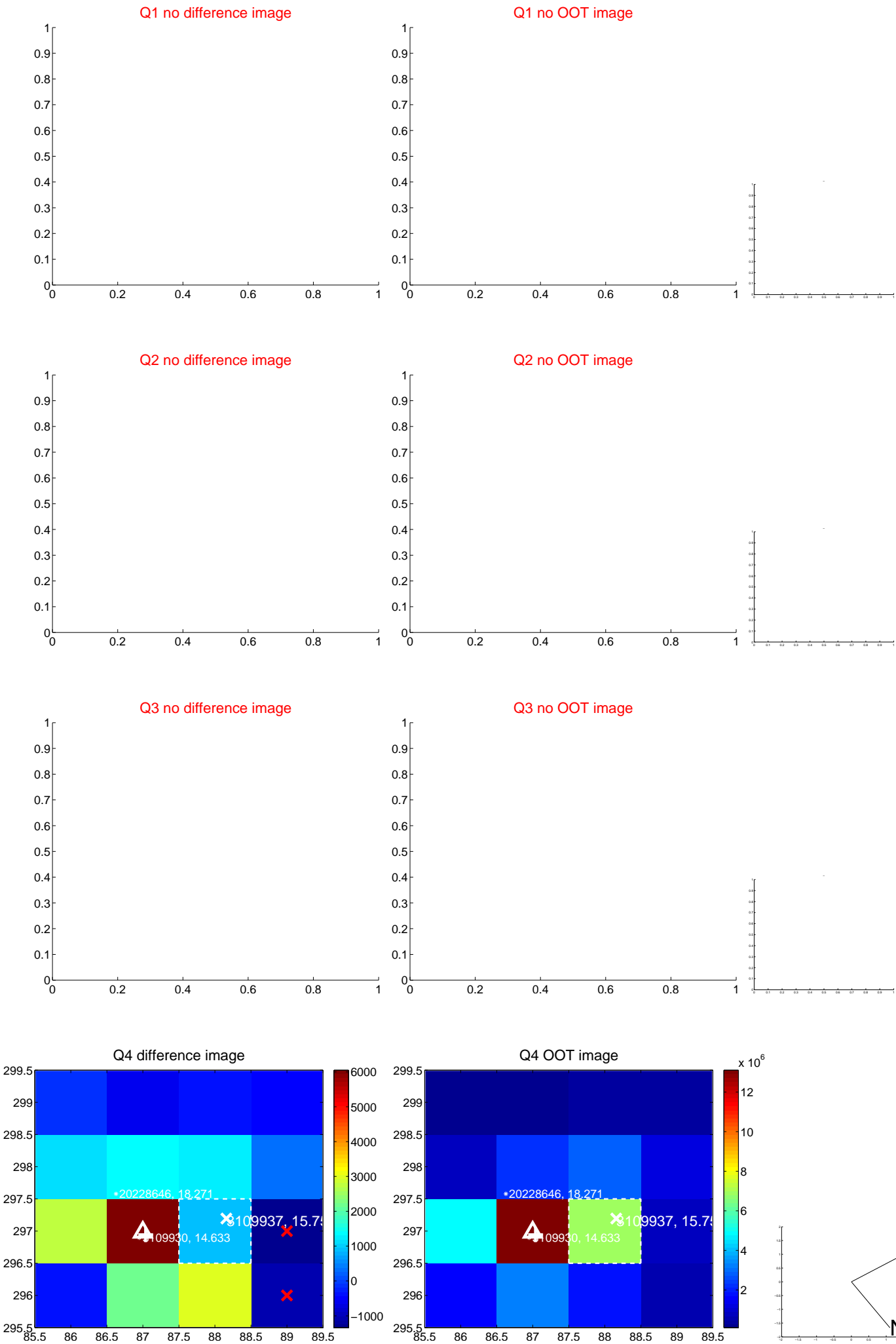


offset from photometric centroids

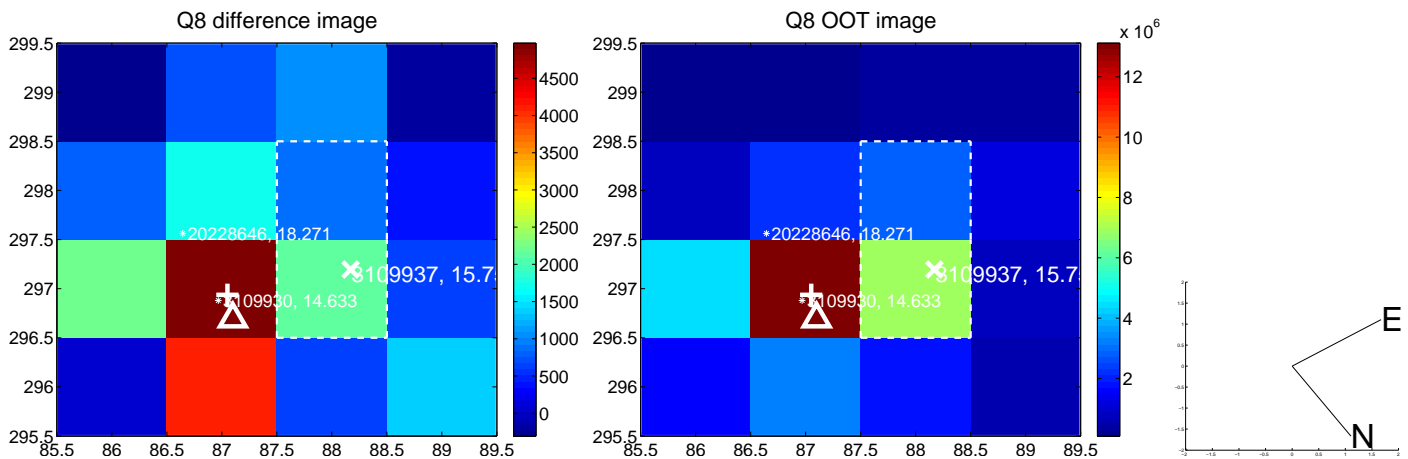
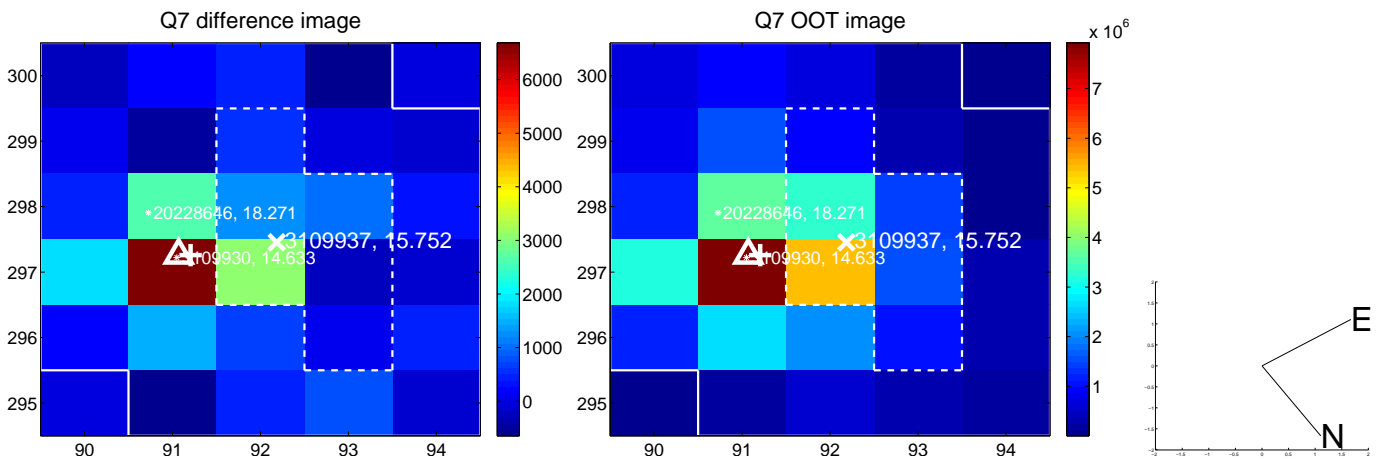
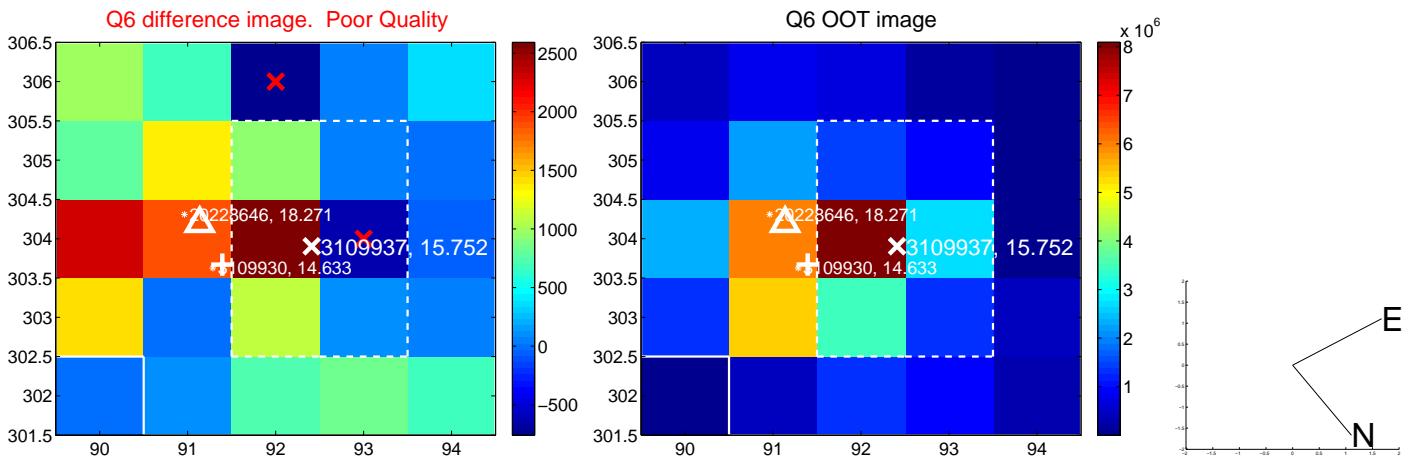
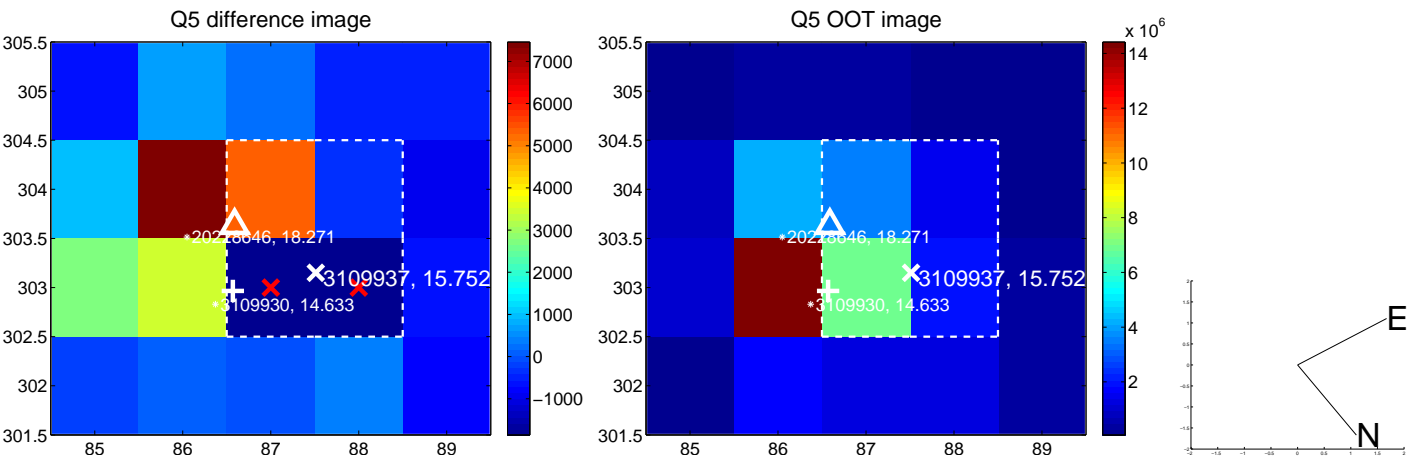


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

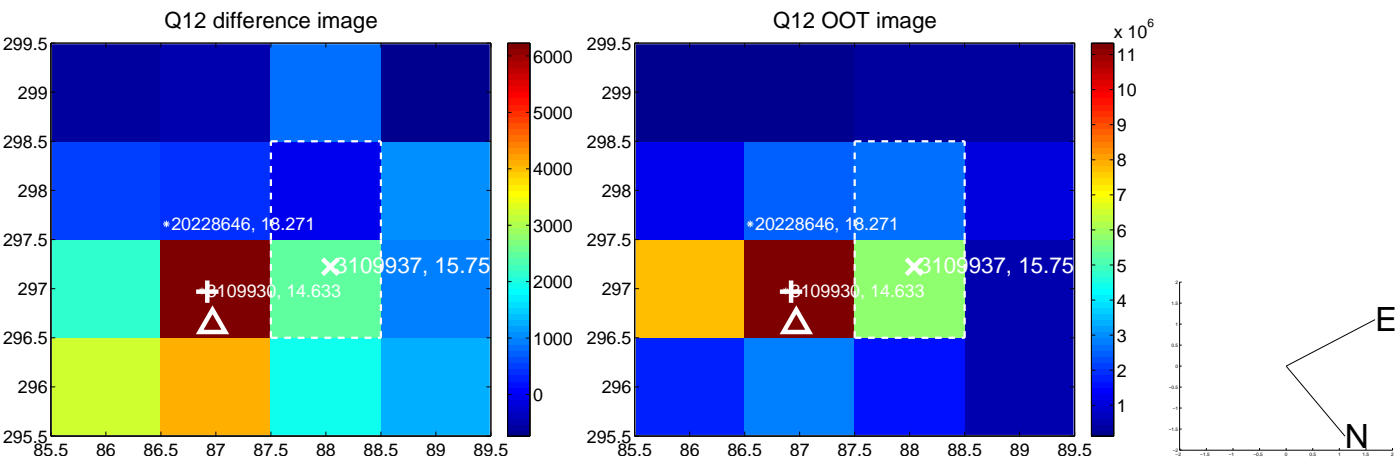
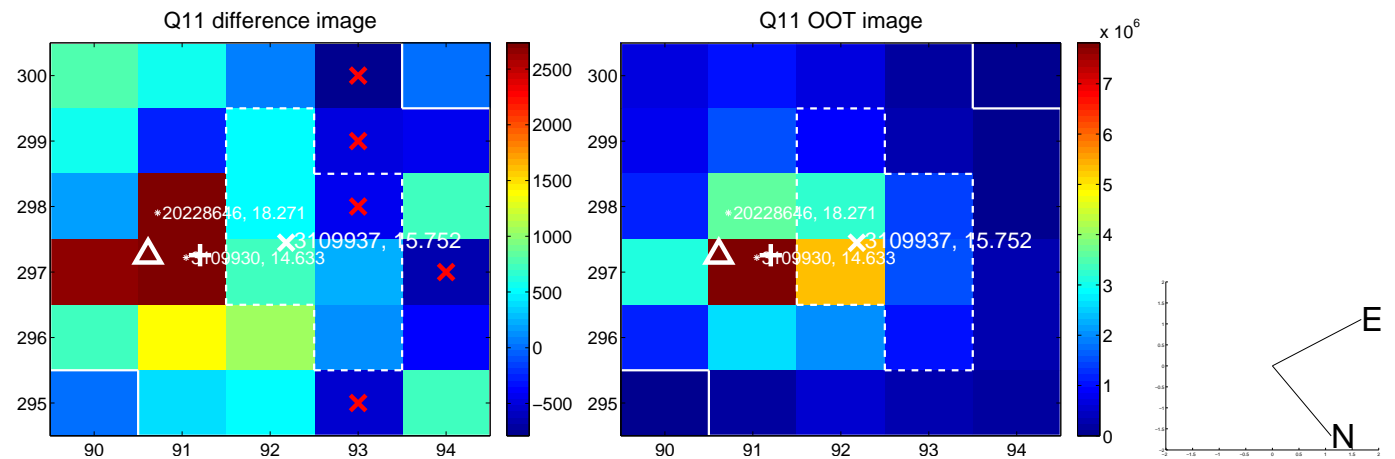
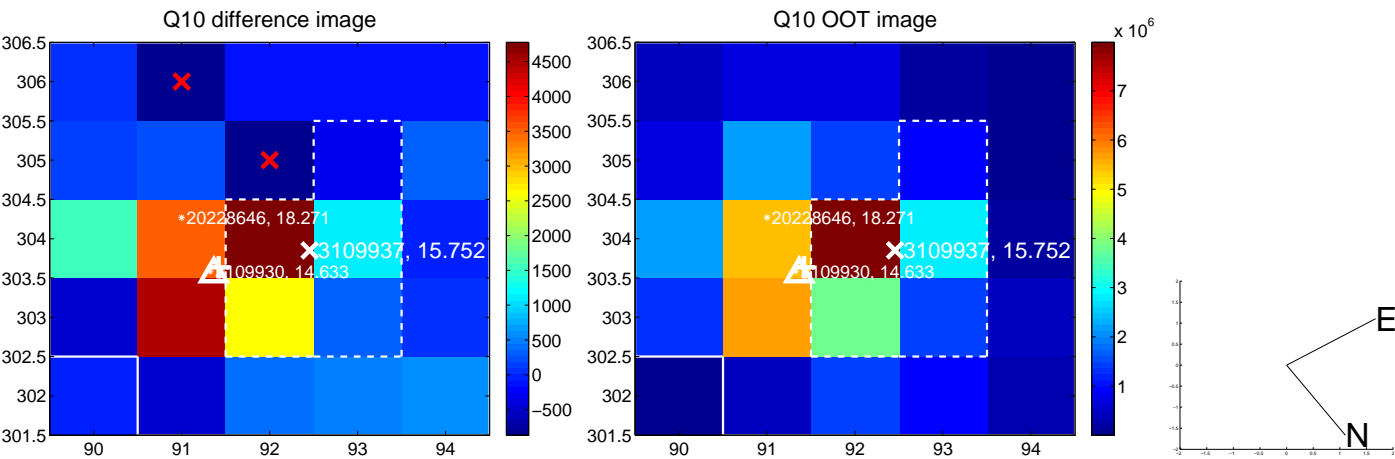
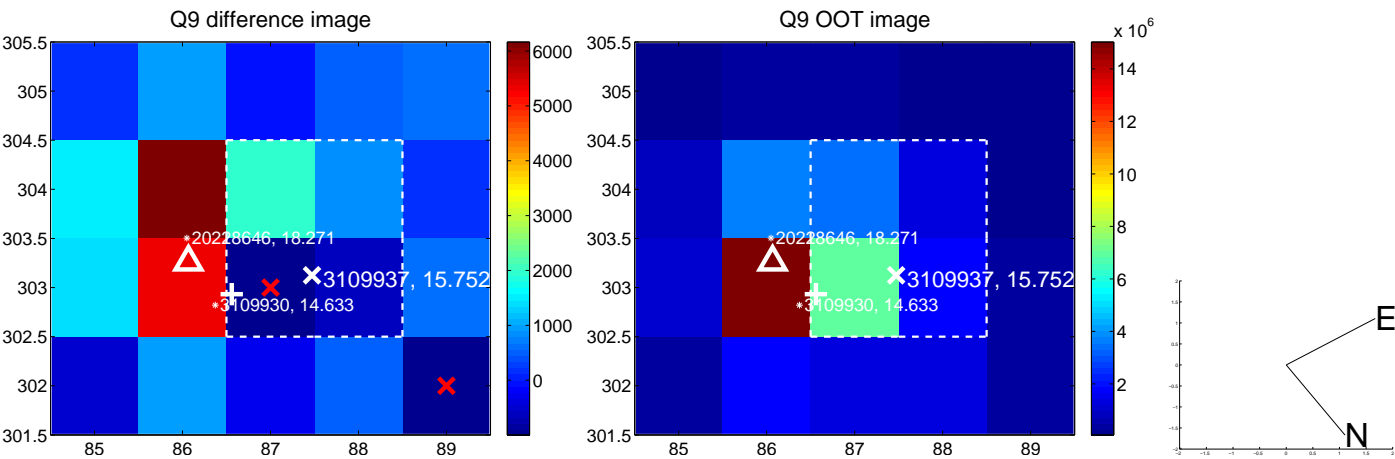
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



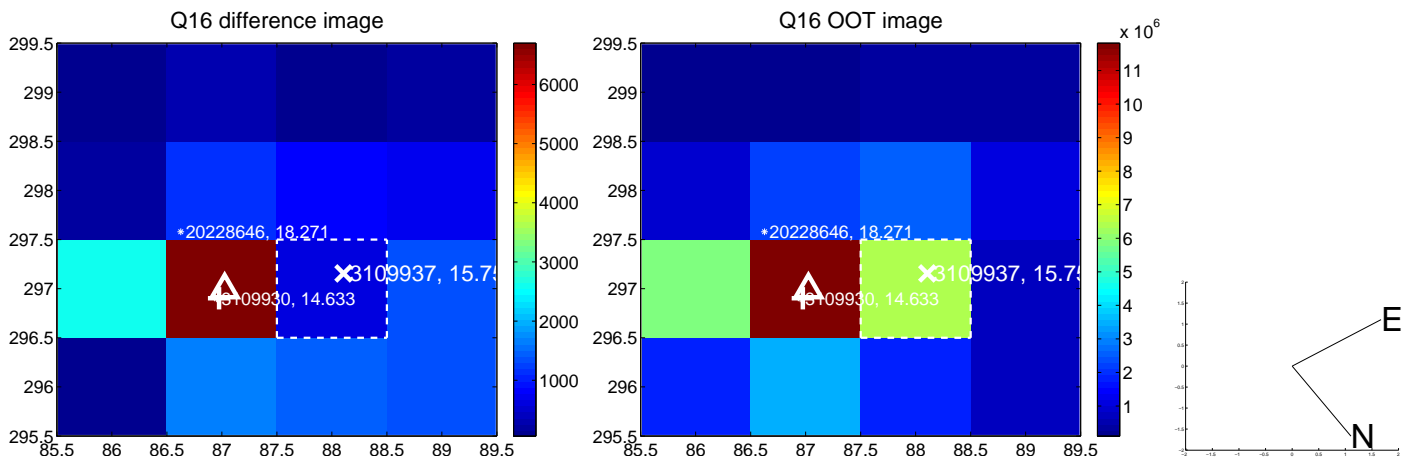
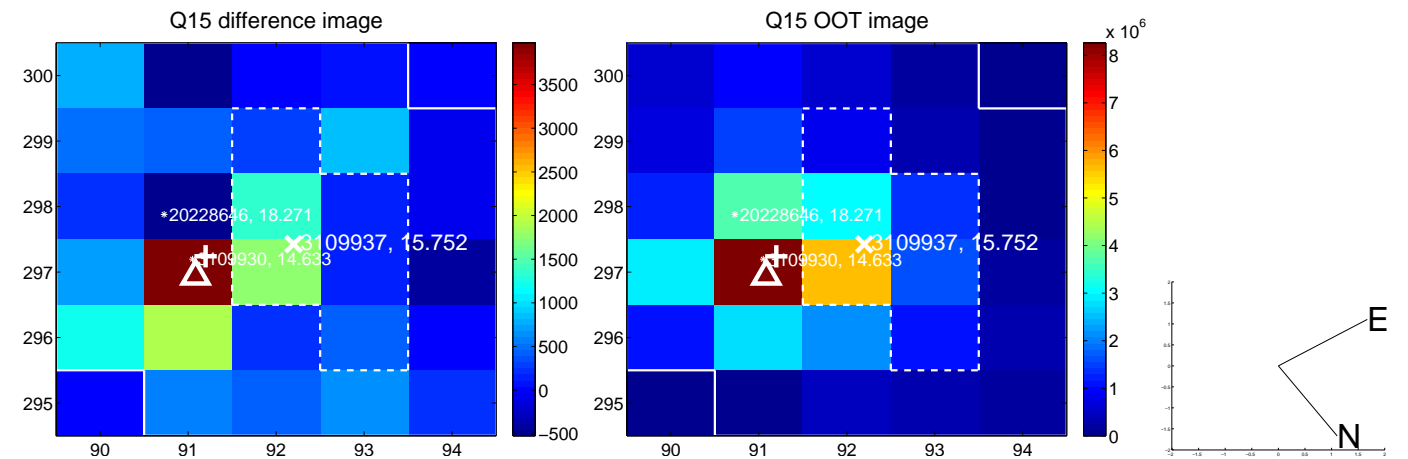
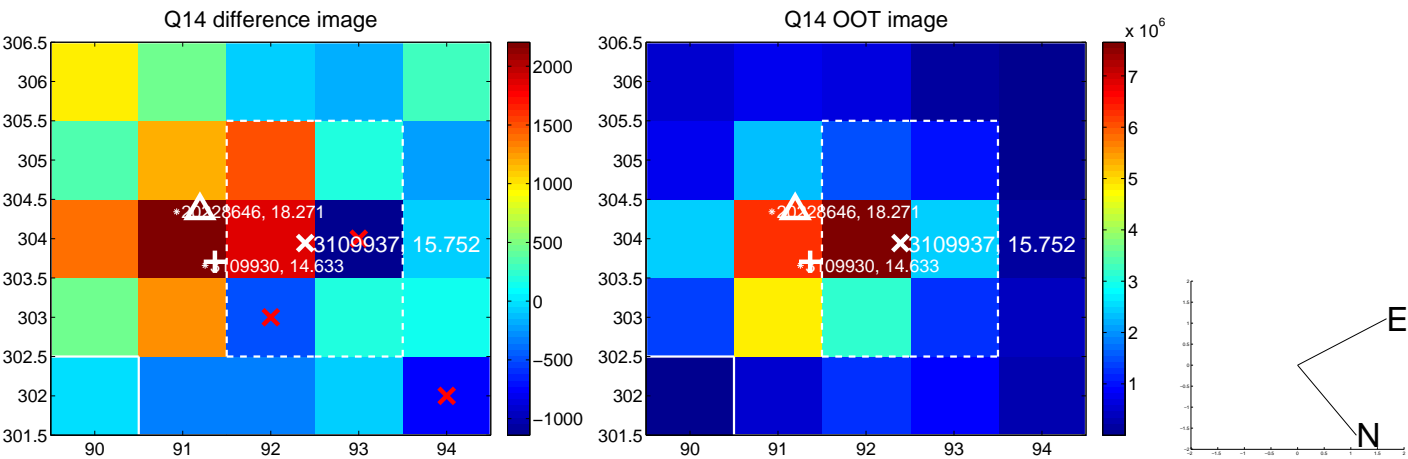
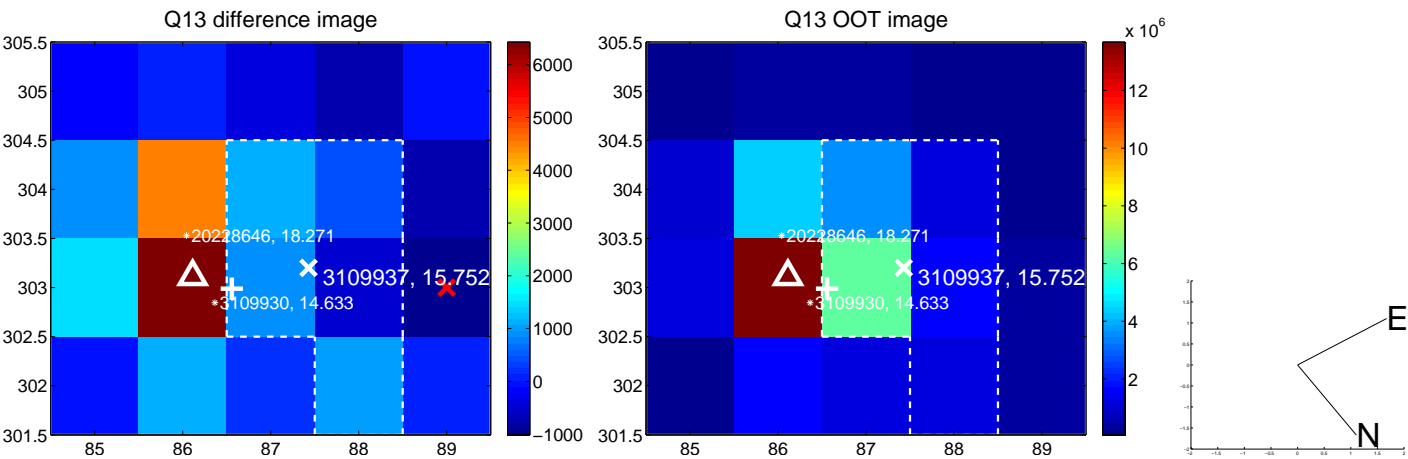
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



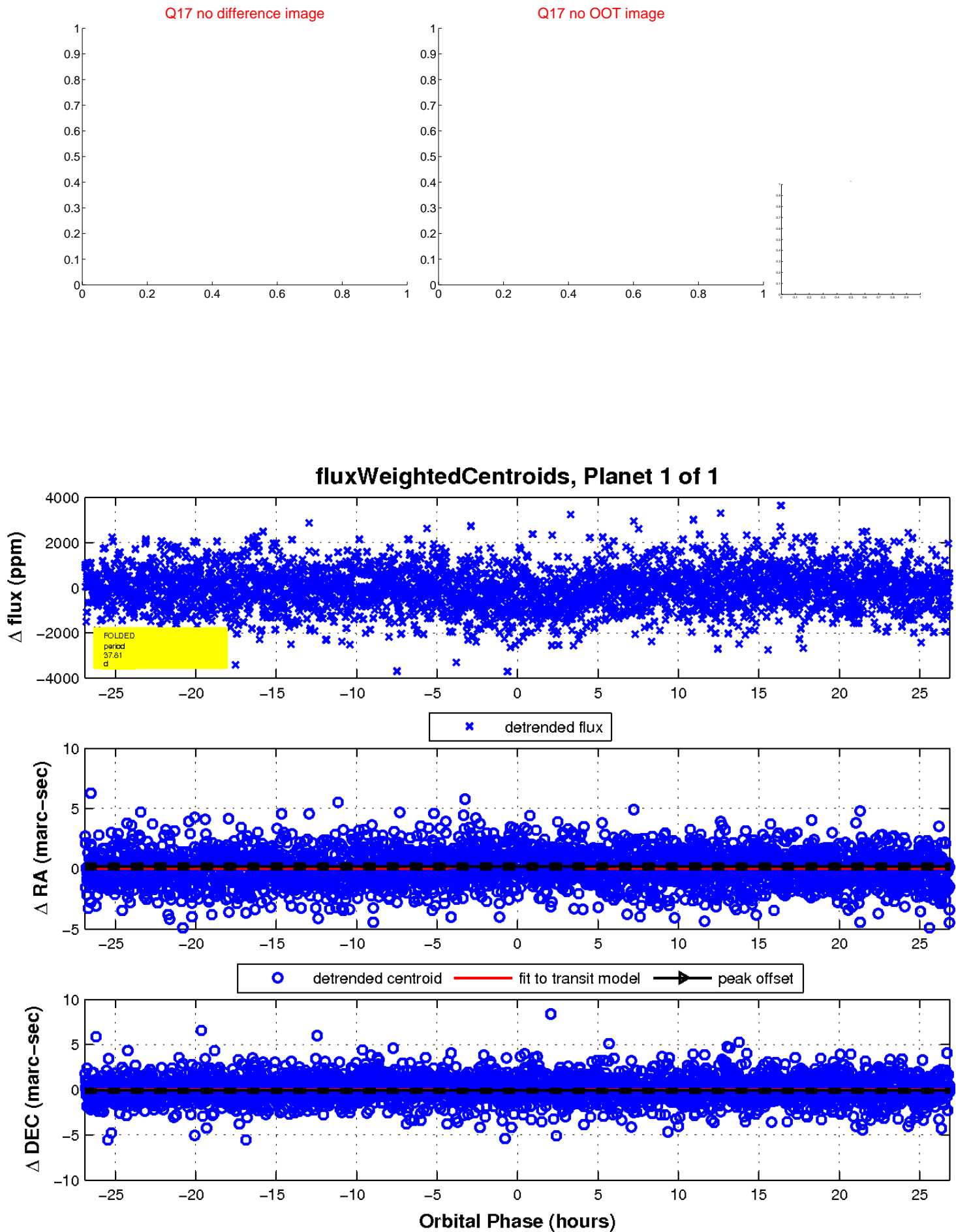
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UKIRT Image

Declination

