

KIC 002309404

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})
002309404-01	OBS	No	517.199017	267.674384	617.4	8.524	8.1	7.4	0.82	5502	2.23	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002309404-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

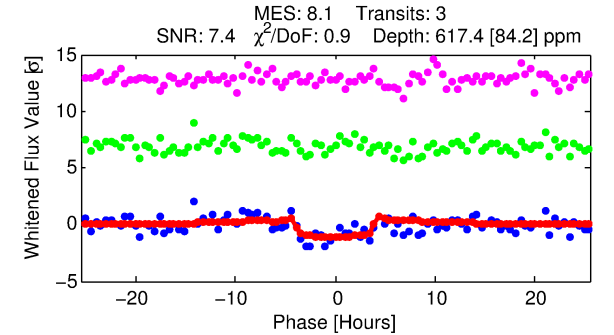
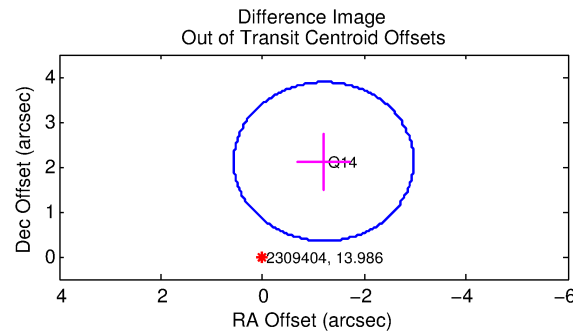
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002309404-01

No Significant Match Found

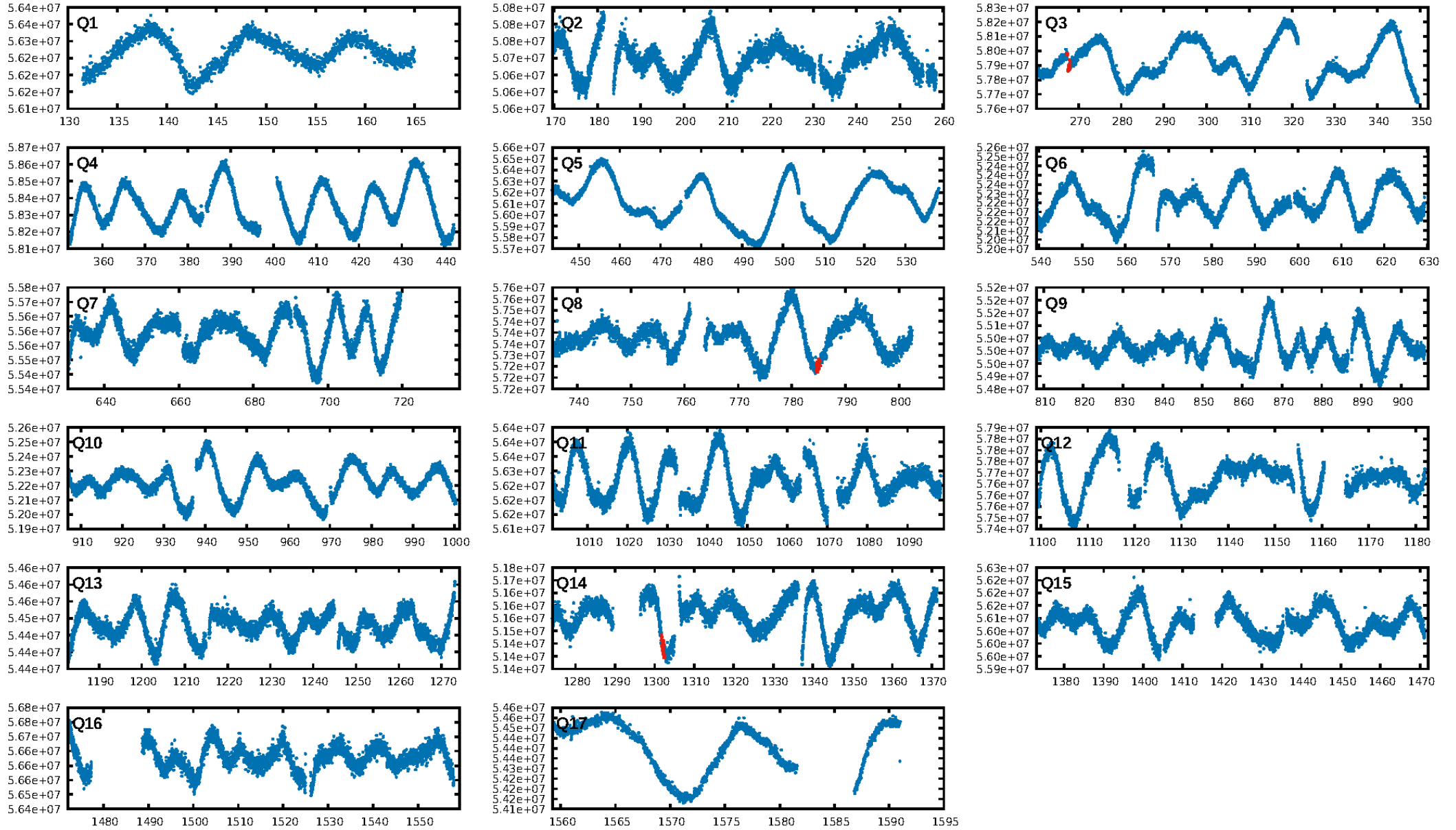
KIC: 2309404 Candidate: 1 of 1 Period: 517.199 d



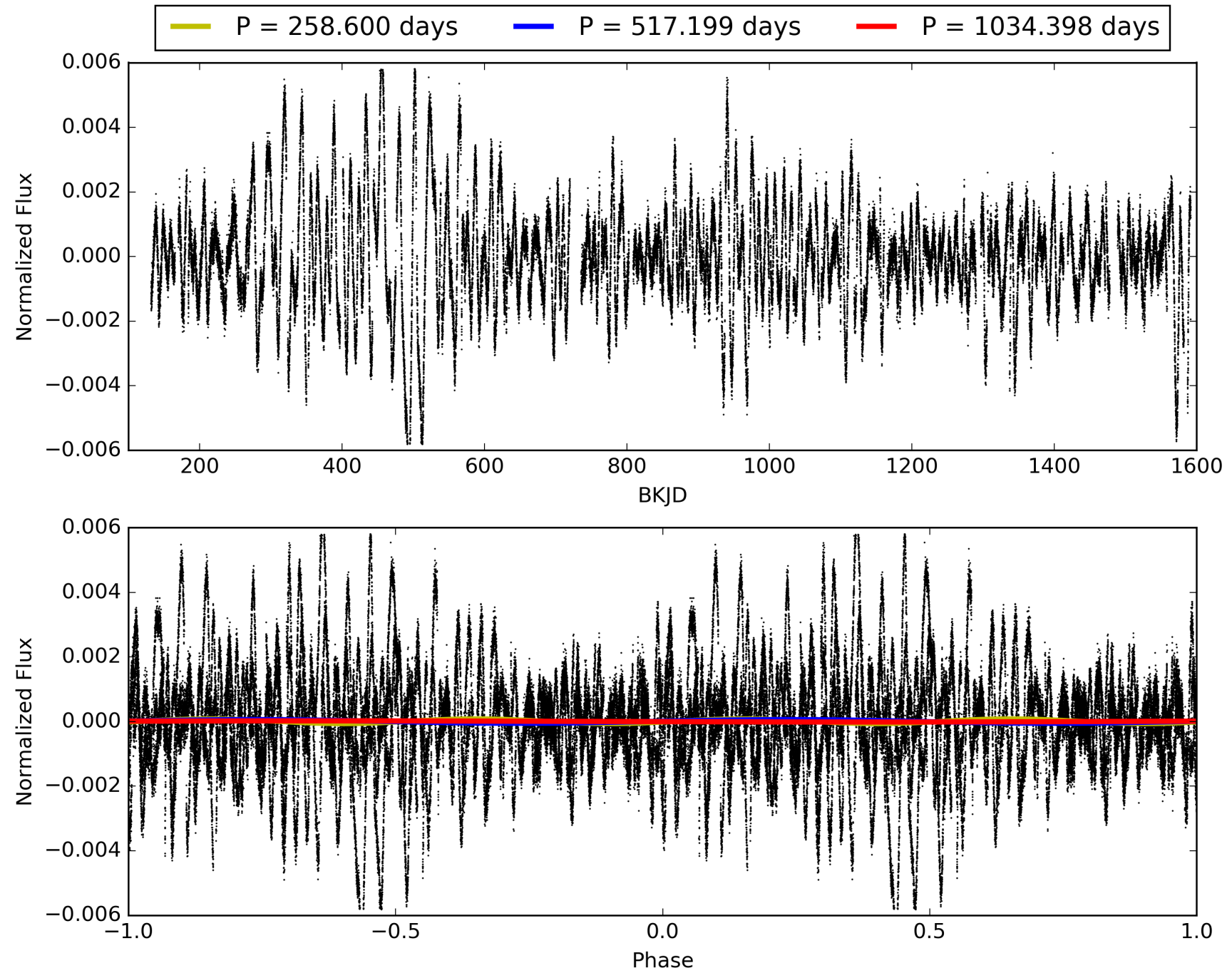
ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 18.1%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 2.86e-10
RollingBand-fgt: 0.67 [2/3]
GhostDiagnostic-chr: -0.6746

Centroid-sig: 0.5%
Centroid-so: 2.194 arcsec [2.16σ]
OotOffset-rm: 2.432 arcsec [4.13σ]
KicOffset-rm: 2.812 arcsec [4.69σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [2/2]

TCE 002309404-01, PDC Light Curves

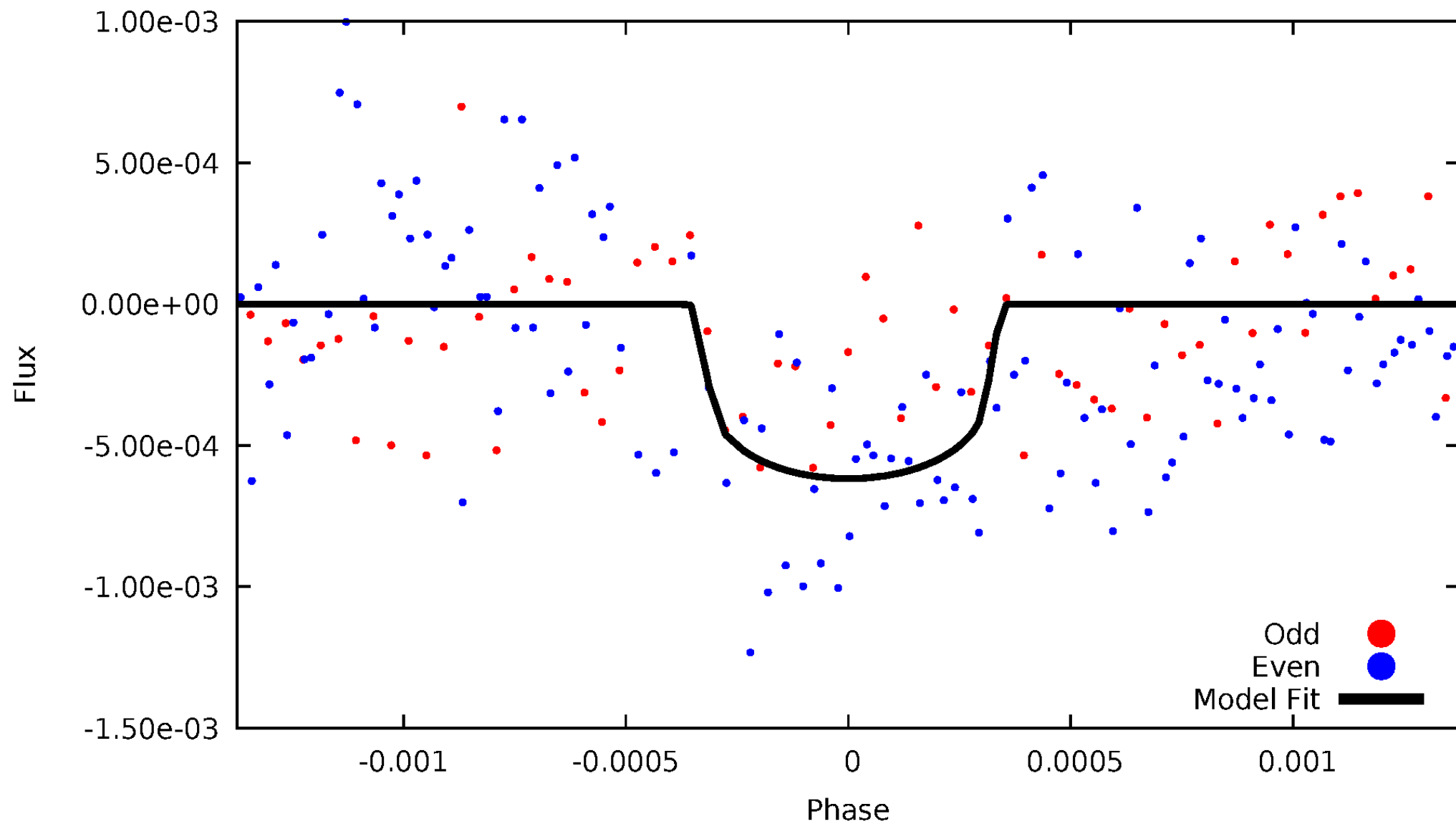


TCE 002309404-01



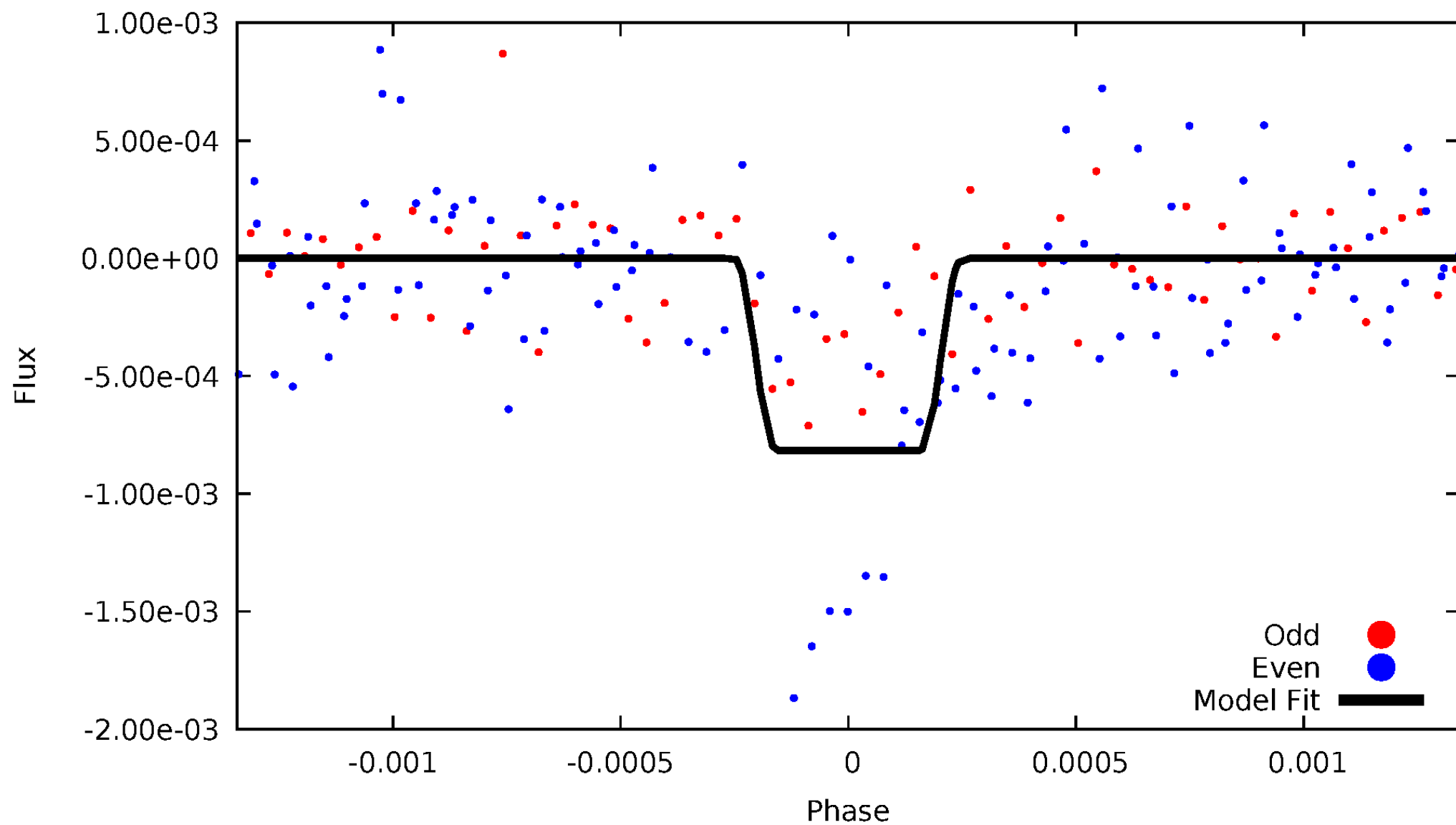
DV Odd/Even

TCE 002309404-01



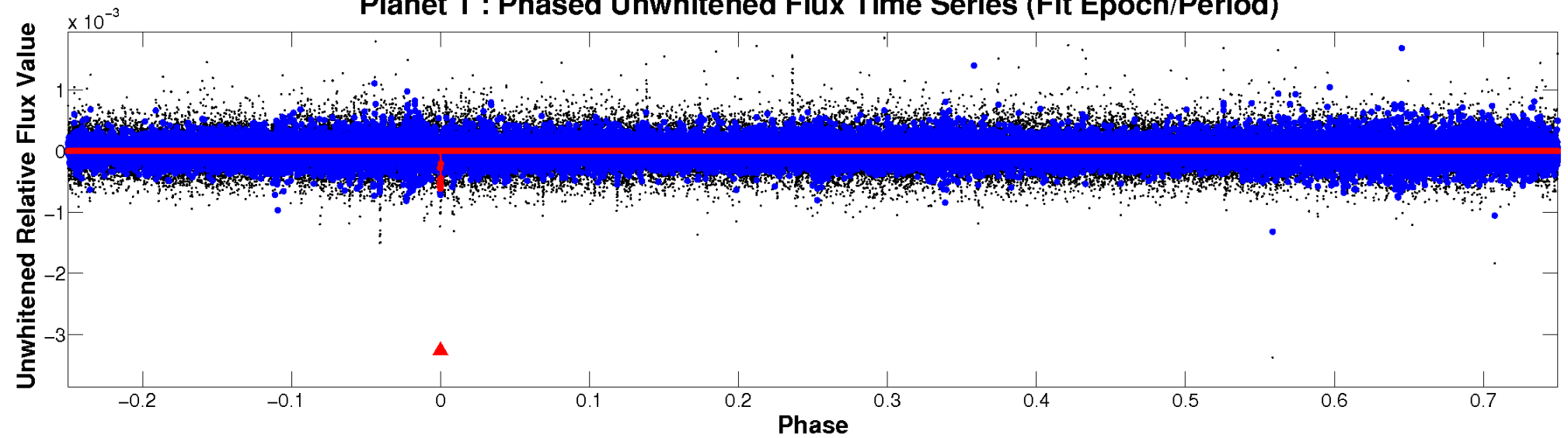
ALT Odd/Even

TCE 002309404-01

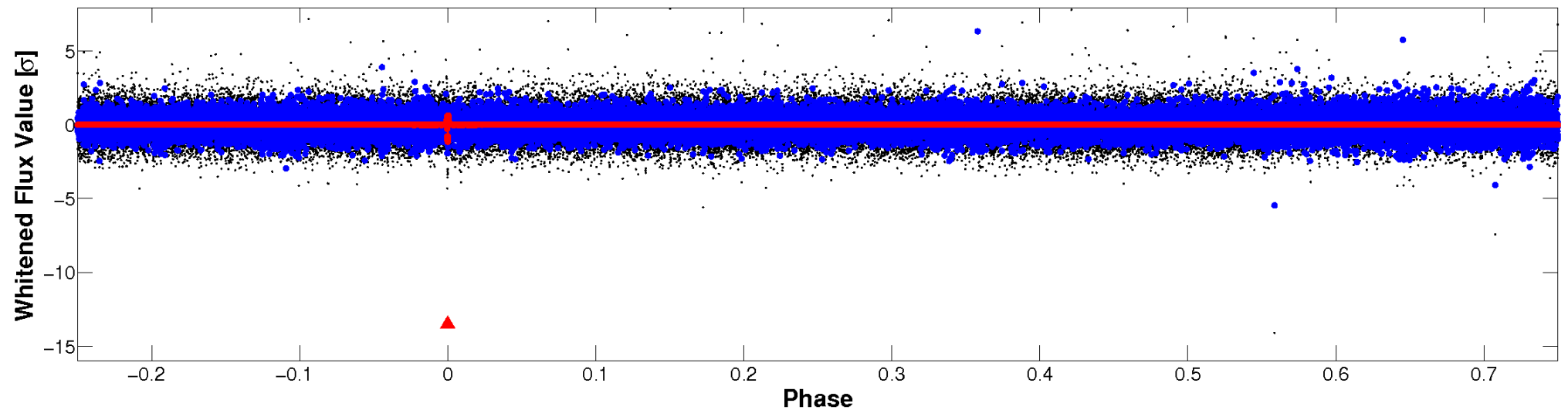


Non-Whitened Vs. Whitened Light Curve

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

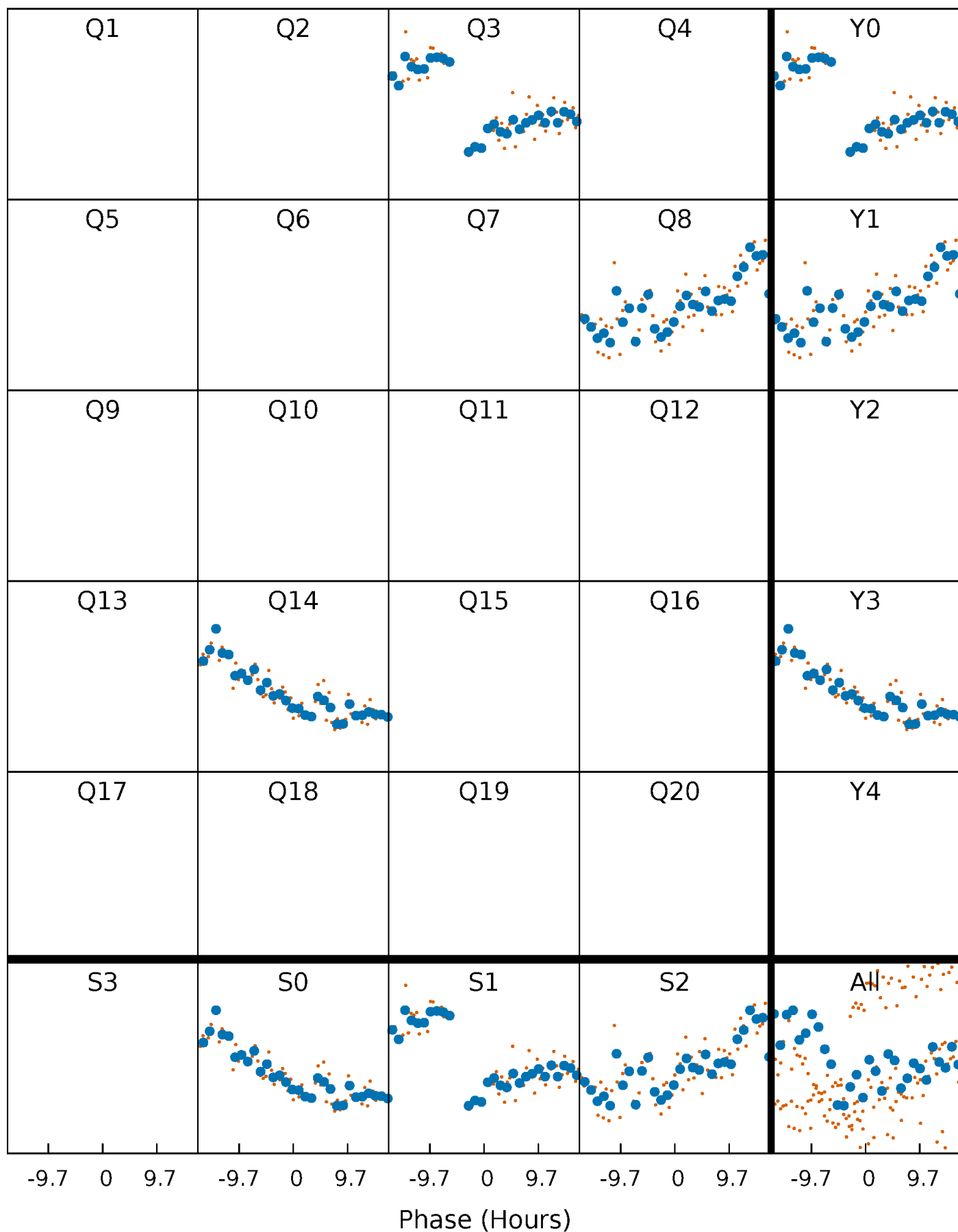


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 002309404-01 P=517.199016 Days $T_0=267.674384$ (BKJD)



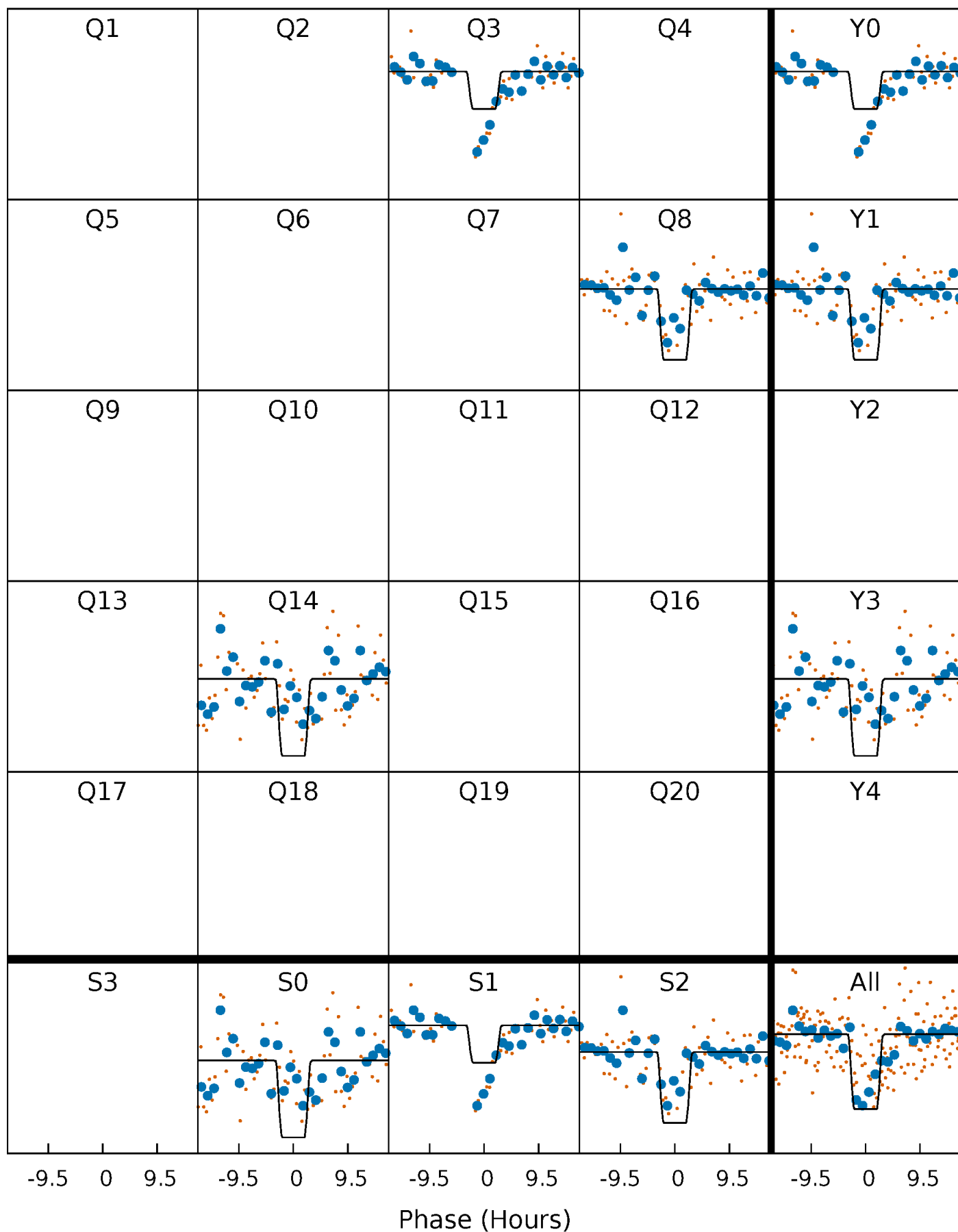
DV Quarter-Phased Transit Curves

TCE 002309404-01 P=517.199016 Days $T_0=267.674384$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

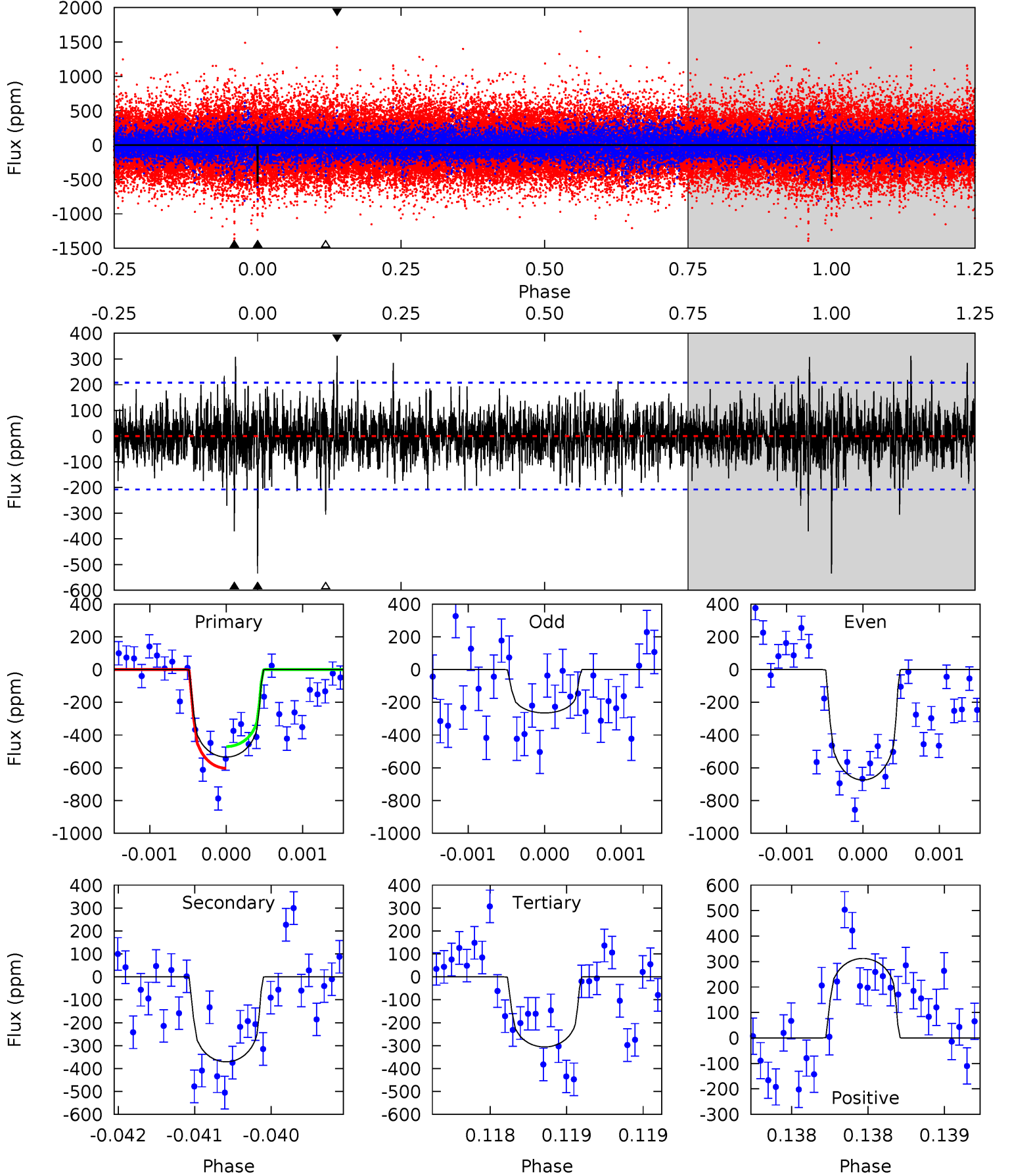
TCE 002309404-01 P=517.193837 Days $T_0=267.622521$ (BKJD)



DV Model-Shift Uniqueness Test

002309404-01, P = 517.199016 Days, E = 267.674384 Days

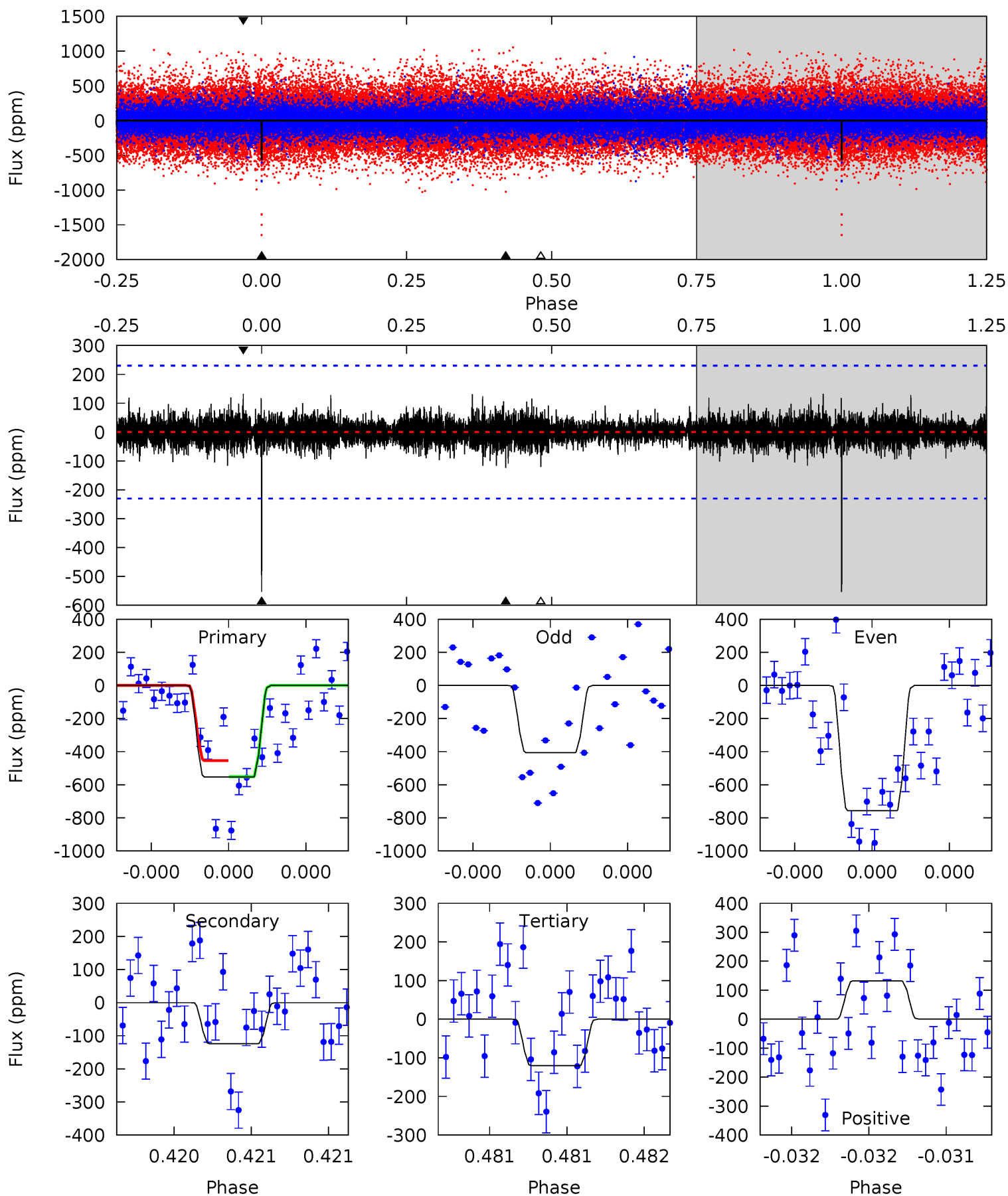
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.2	9.84	8.12	8.28	5.51	3.38	1.77	6.07	5.91	1.72	1.56	5.03	0.97	0.37	1.75



Alt Model-Shift Uniqueness Test

002309404-01, P = 517.193837 Days, E = 267.622521 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.4	3.00	2.91	3.20	5.58	3.49	0.67	10.5	10.2	0.08	-0.20	4.14	1.64	0.19	1.14



Stellar Parameters For KIC 002309404

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5502^{+73}_{-82}	$4.567^{+0.018}_{-0.108}$	$-0.040^{+0.150}_{-0.150}$	$0.825^{+0.100}_{-0.033}$	$0.921^{+0.038}_{-0.071}$	$2.307^{+0.210}_{-0.677}$
	+1%/-1%	+0%/-2%	+375%/-375%	+12%/-4%	+4%/-8%	+9%/-29%
Source	SPE68	SPE68	SPE68	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 002309404-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-371 ± 38	$2.42^{+1.48}_{-1.33}$	282^{+9}_{-6}	4811^{+2186}_{-816}	$50806^{+203588}_{-31426}$
Alt.	-124 ± 41	$2.81^{+1.59}_{-1.56}$	282^{+9}_{-6}	3722^{+1276}_{-527}	12513^{+50105}_{-7695}

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

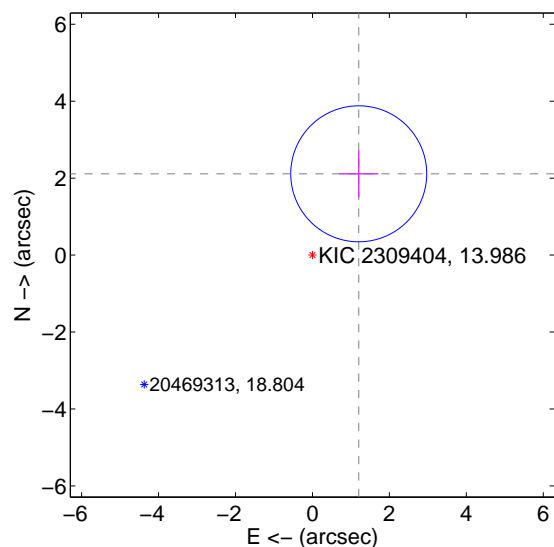
Supplemental centroid analysis for 002309404-01. Kepler magnitude: 13.99. Transit SNR 7.36

There are 1 quarters with good PRF difference image offsets

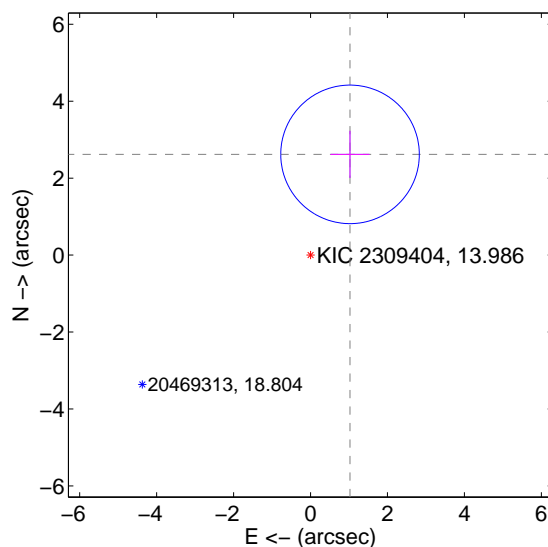
The direct PRF centroid is offset from the target star catalog position by about 0.54 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.432 ± 0.589	4.13	-1.203 ± 0.507	2.113 ± 0.613
PRF-fit source offset from KIC position	2.812 ± 0.600	4.69	-1.027 ± 0.507	2.618 ± 0.613
photometric centroid source offset	2.19 ± 1.02	2.16	0.44 ± 1.08	-2.15 ± 1.01

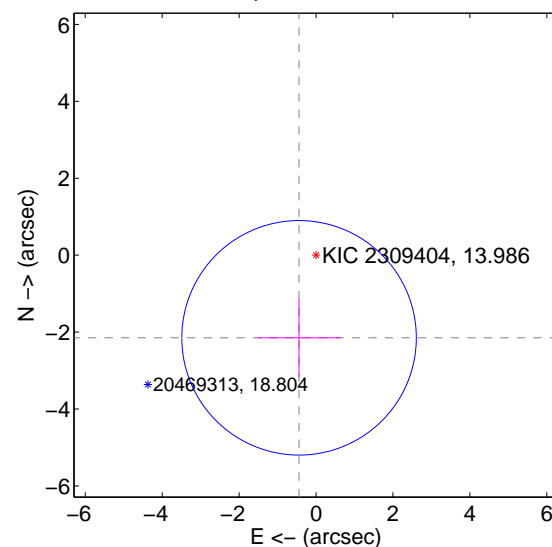
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

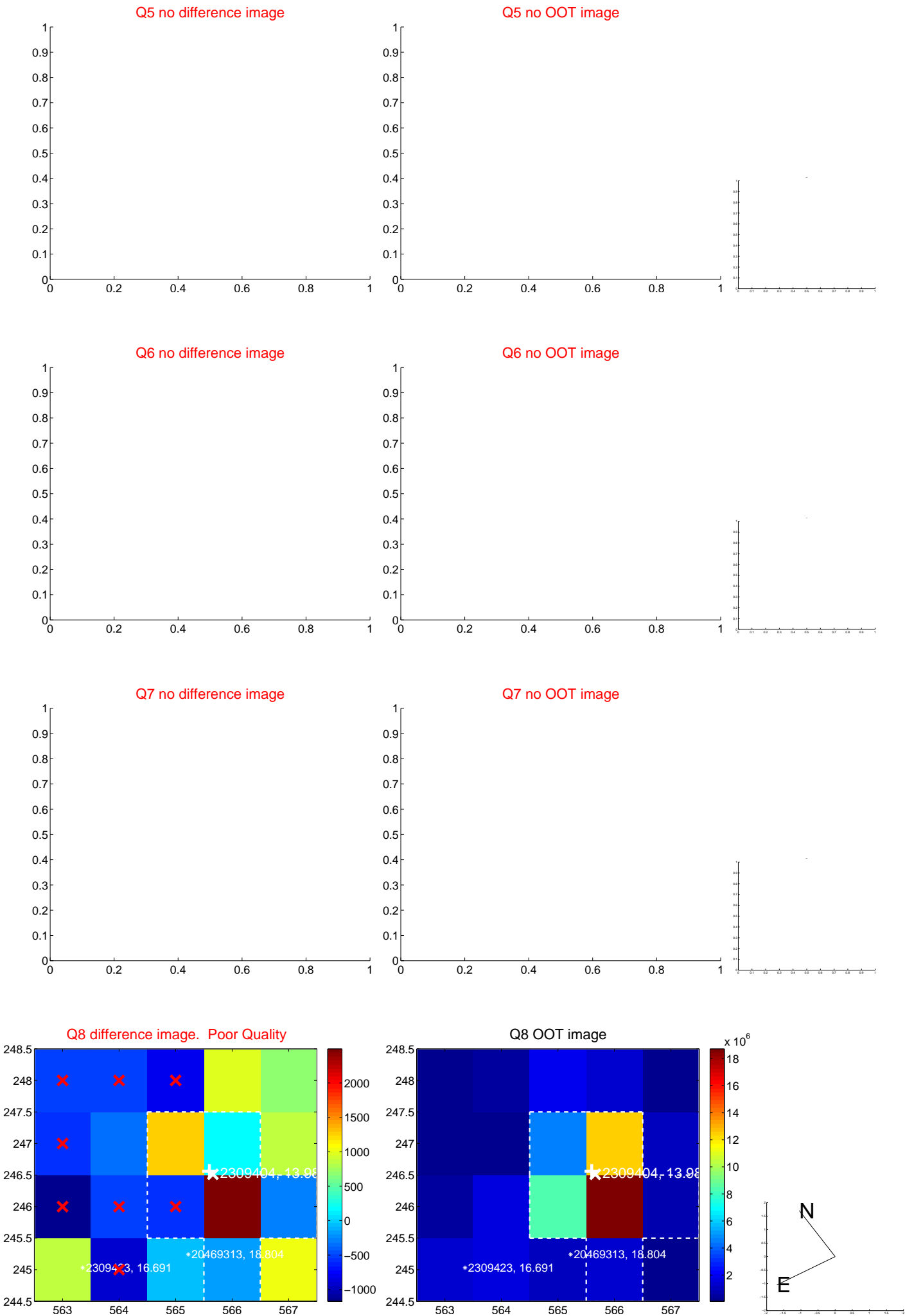


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

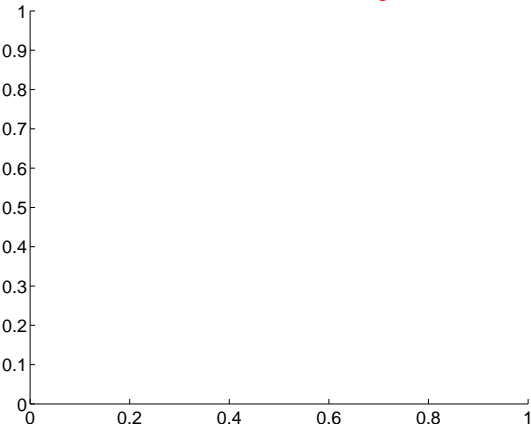


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

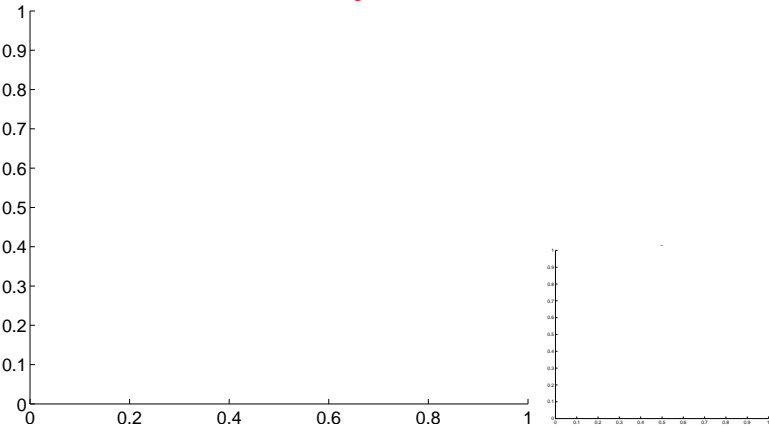


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

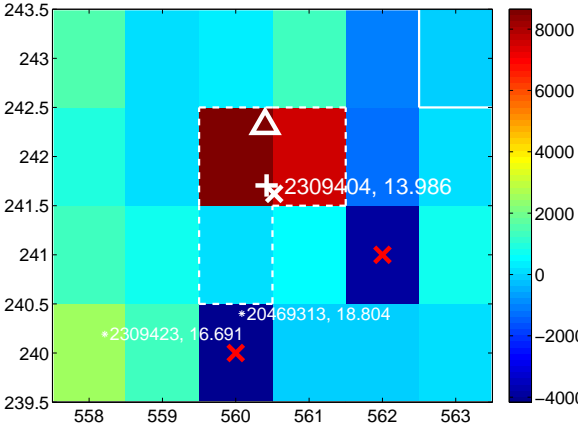
Q13 no difference image



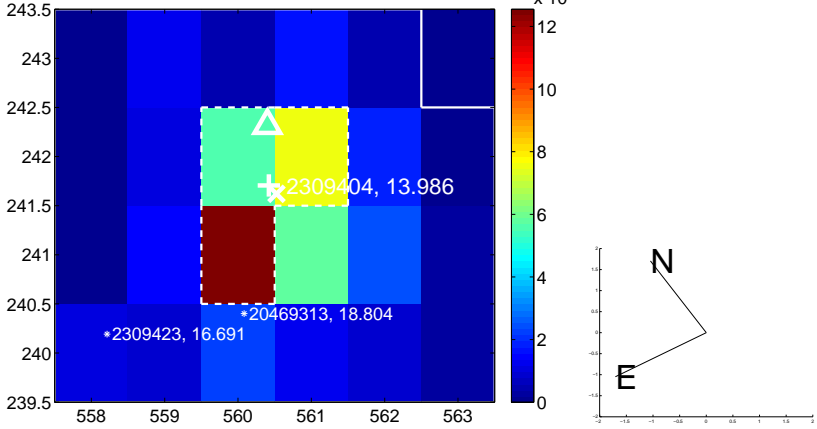
Q13 no OOT image



Q14 difference image



Q14 OOT image



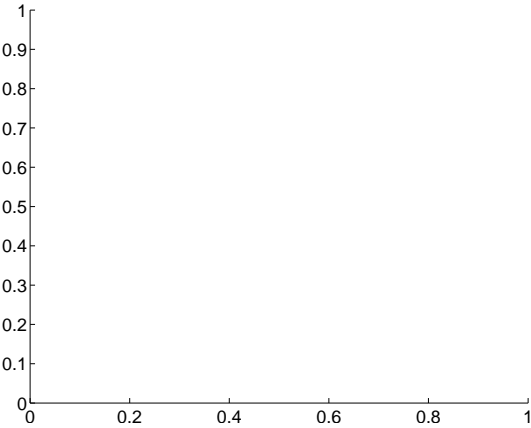
Q15 no difference image



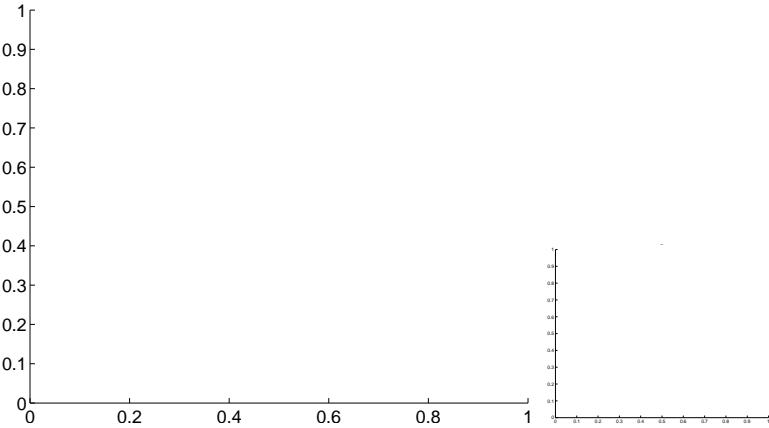
Q15 no OOT image



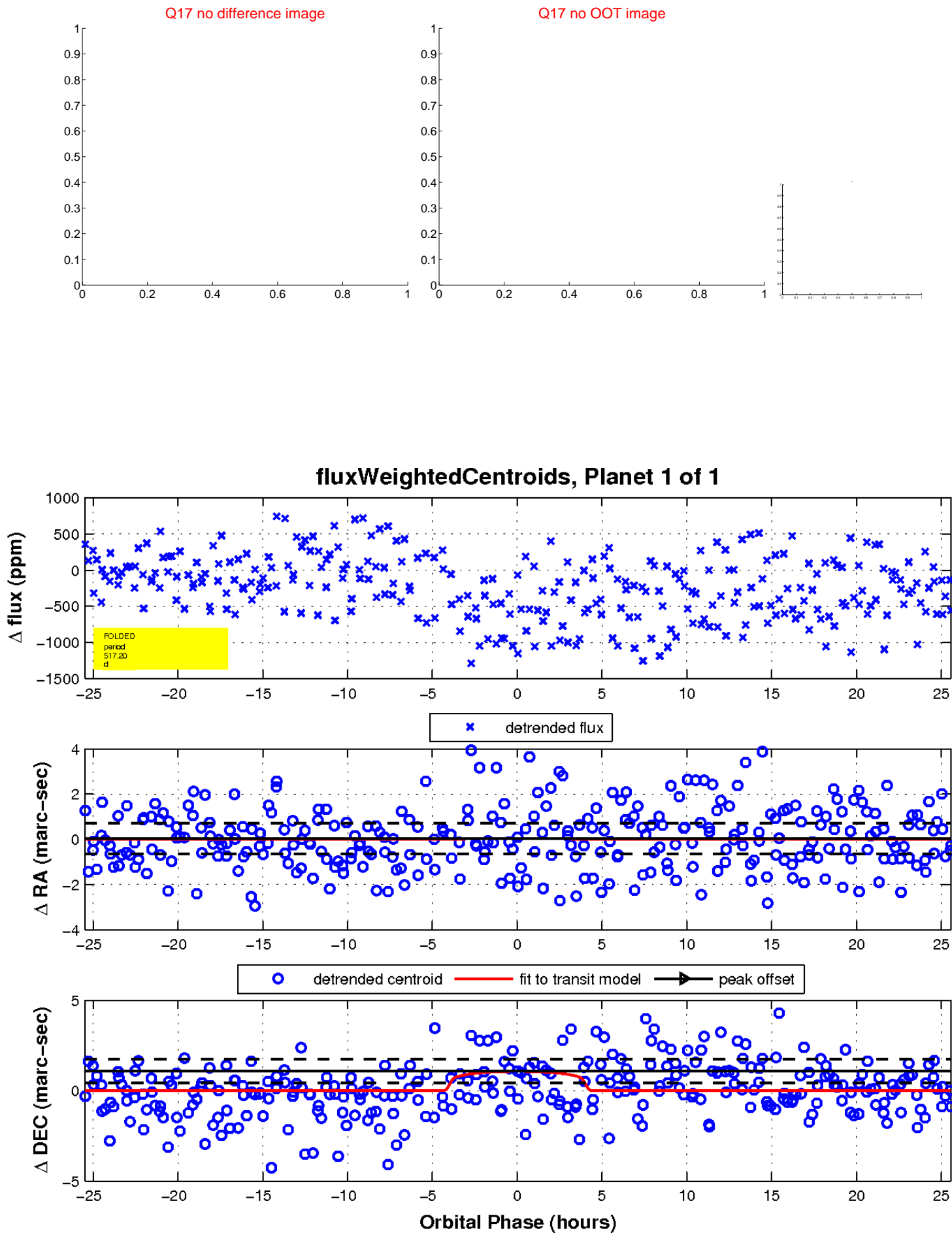
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

