

KIC 009394762

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})
009394762-01	OBS	5664.01	77.138212	166.595259	522.1	5.309	11.2	12.6	0.91	5778	2.24	6.47
009394762-02	OBS	No	154.277029	178.961911	494.8	2.953	8.9	9.0	0.91	5778	2.32	2.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009394762-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST
009394762-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST

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

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

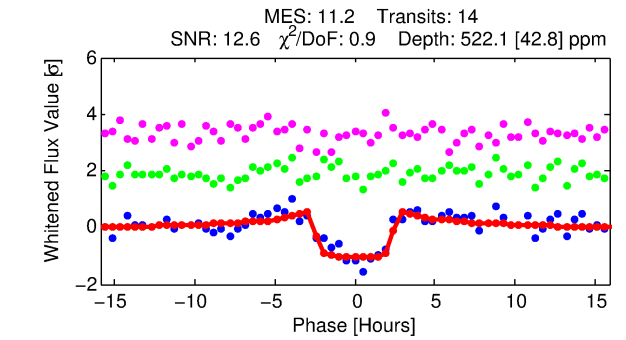
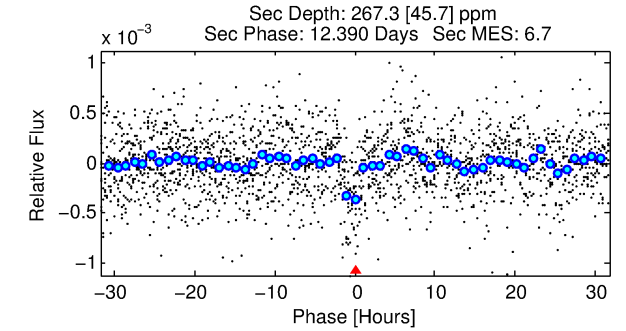
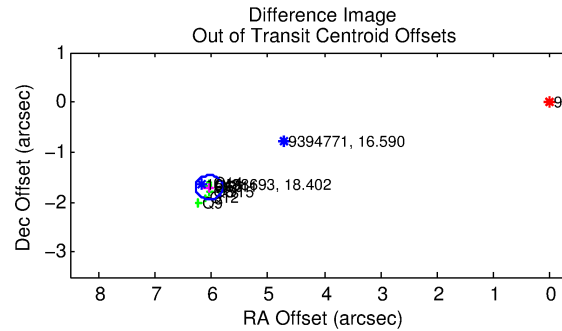
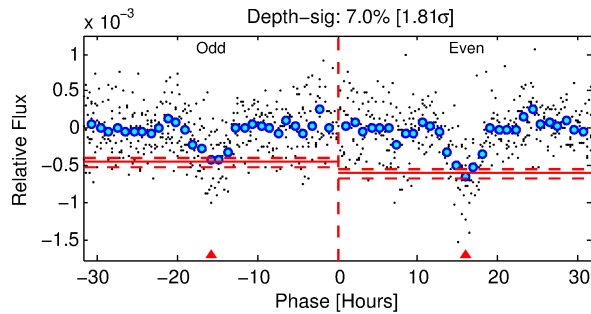
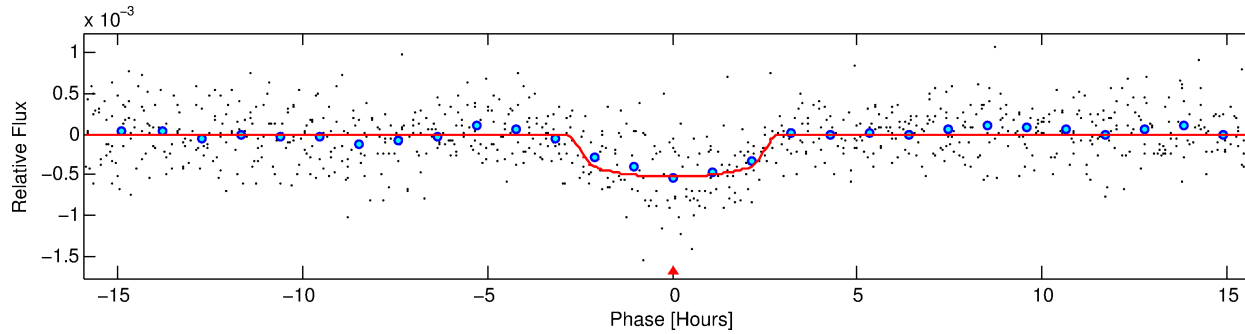
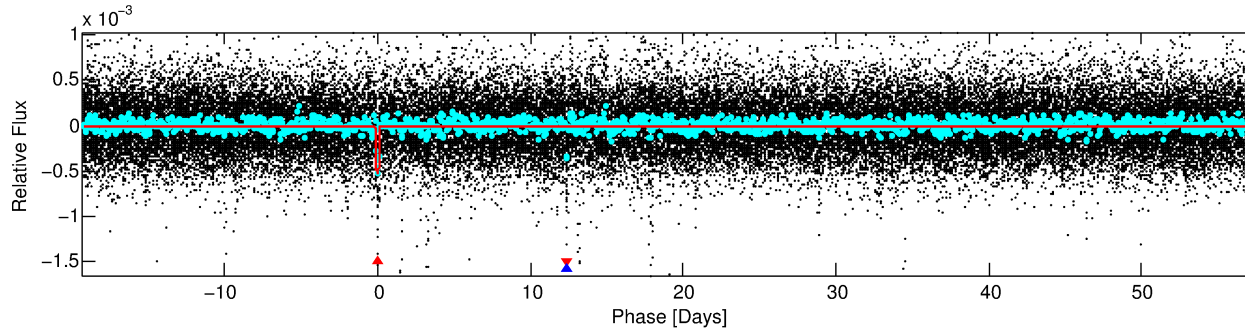
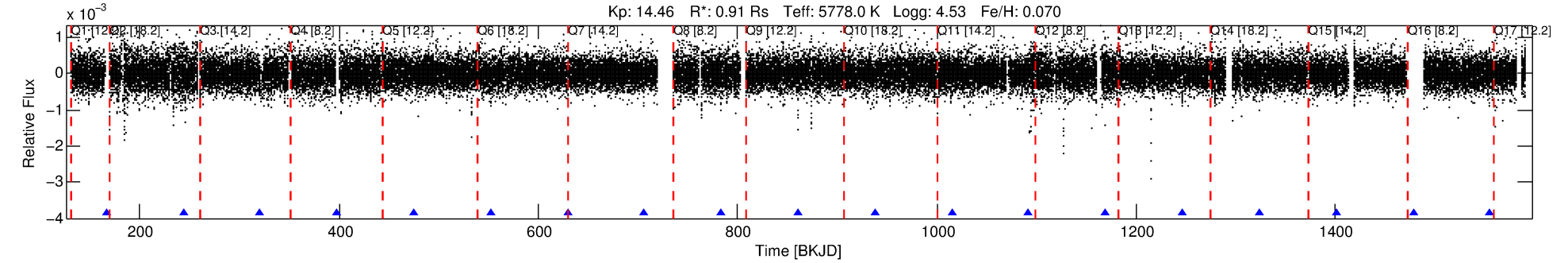
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009394762-01

No Significant Match Found

DV One-Page Summary

KIC: 9394762 Candidate: 1 of 2 Period: 77.138 d
KOI: K05664 Corr: No Ephemeris Match



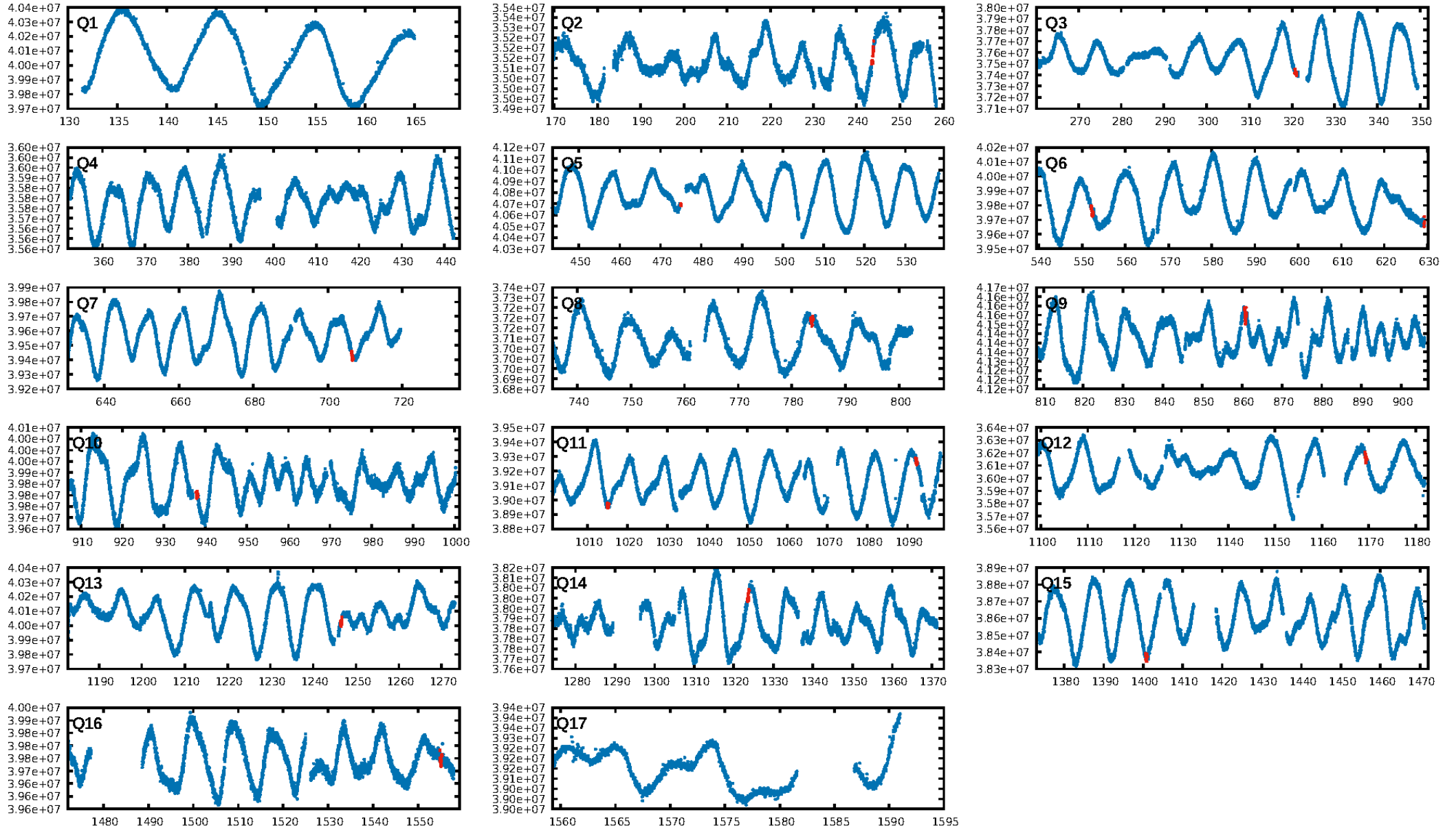
DV Fit Results:

Period = 77.13821 [0.00059] d
Epoch = 166.5953 [0.0070] BKJD
Rp/R* = 0.0226 [0.0109]
a/R* = 79.79 [166.30]
b = 0.73 [1.37]
Seff = 6.47 [2.60]
Teq = 407 [41] K
Rp = 2.24 [1.27] Re
a = 0.3580 [0.0924] AU
Ag = 3748.60 [3935.05] [0.95 σ]
Teffp = 4919 [1211] K [3.72 σ]

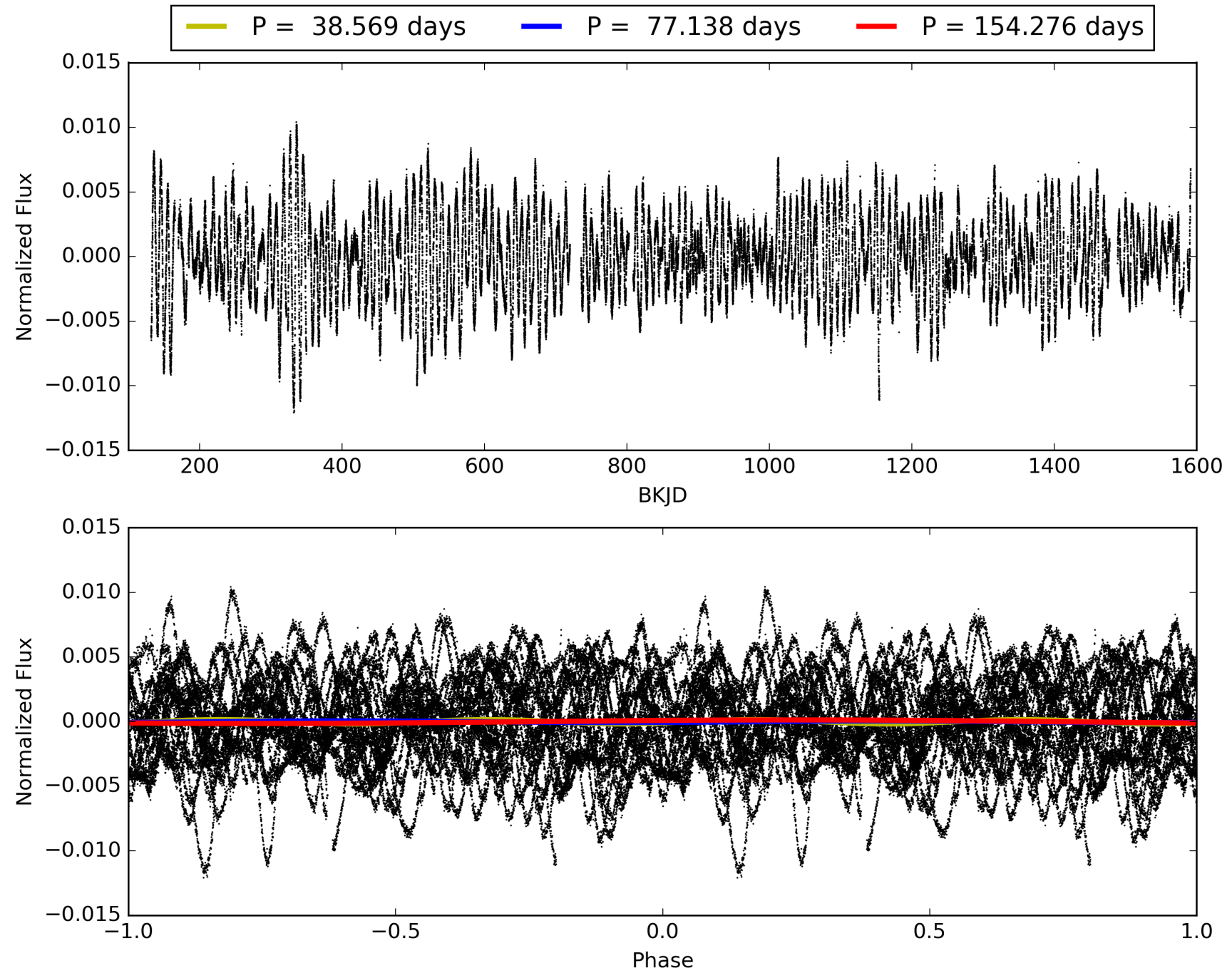
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [304.73 σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 6.10e-23
RollingBand-fgt: 1.00 [14/14]
GhostDiagnostic-chr: -0.1539
Centroid-sig: 0.0%
Centroid-so: 42.234 arcsec [64.52 σ]
OotOffset-rm: 6.276 arcsec [78.87 σ]
KicOffset-rm: 6.425 arcsec [73.65 σ]
OotOffset-st: 3/2/3/1 [9]
KicOffset-st: 3/2/3/1 [9]
DiffImageQuality-fgm: 1.00 [9/9]
DiffImageOverlap-fno: 1.00 [11/11]

TCE 009394762-01, PDC Light Curves

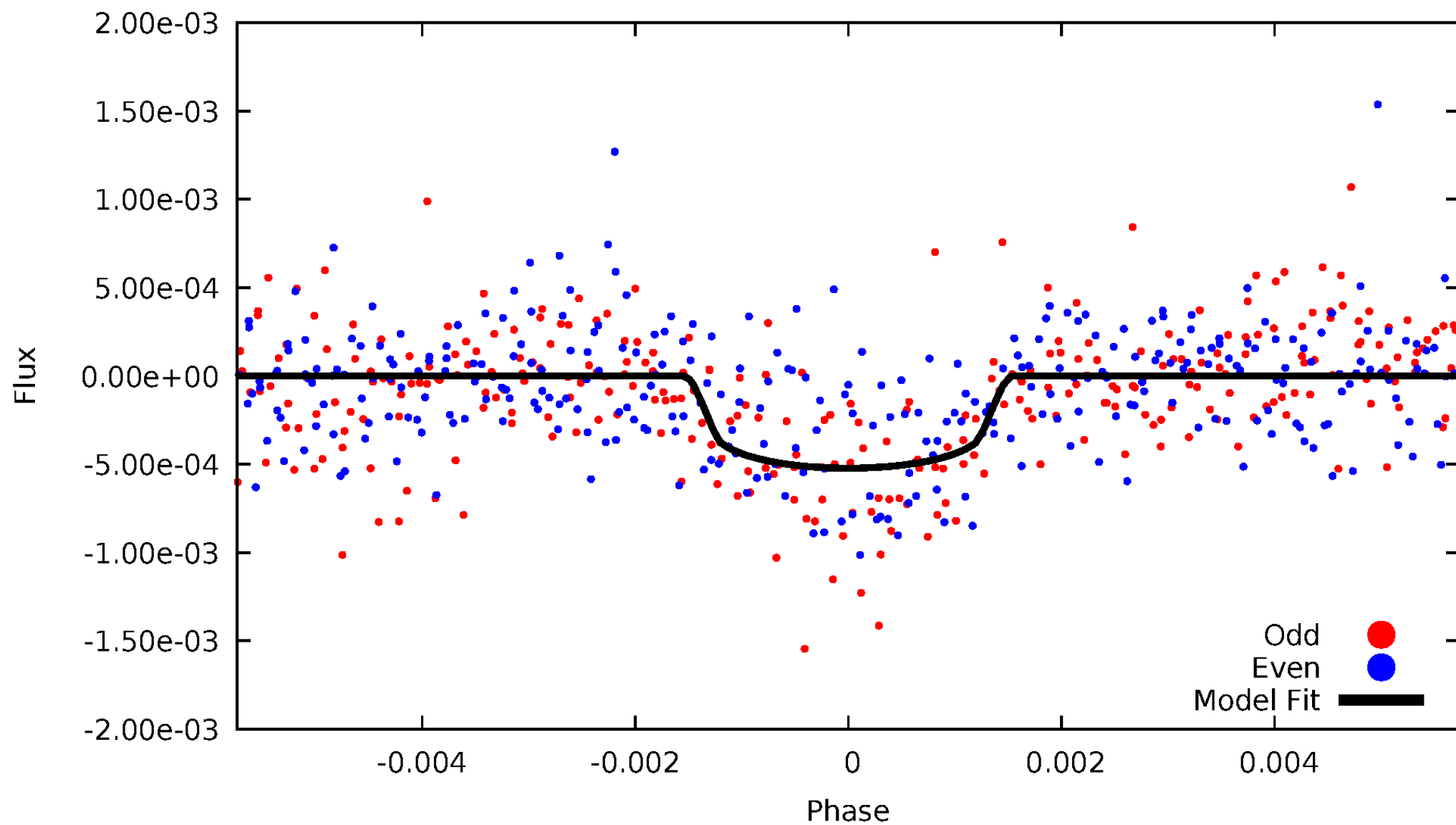


TCE 009394762-01



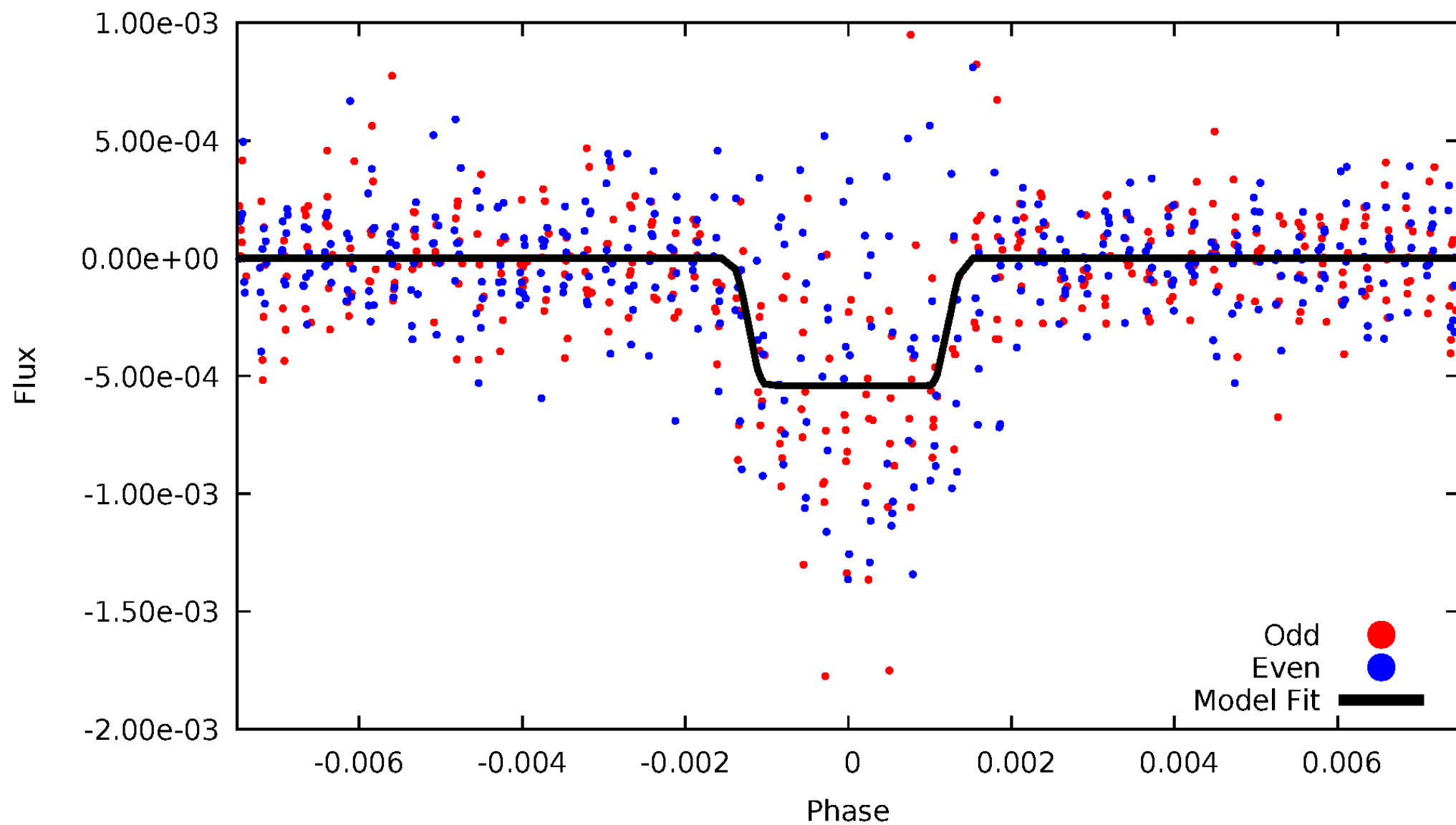
DV Odd/Even

TCE 009394762-01



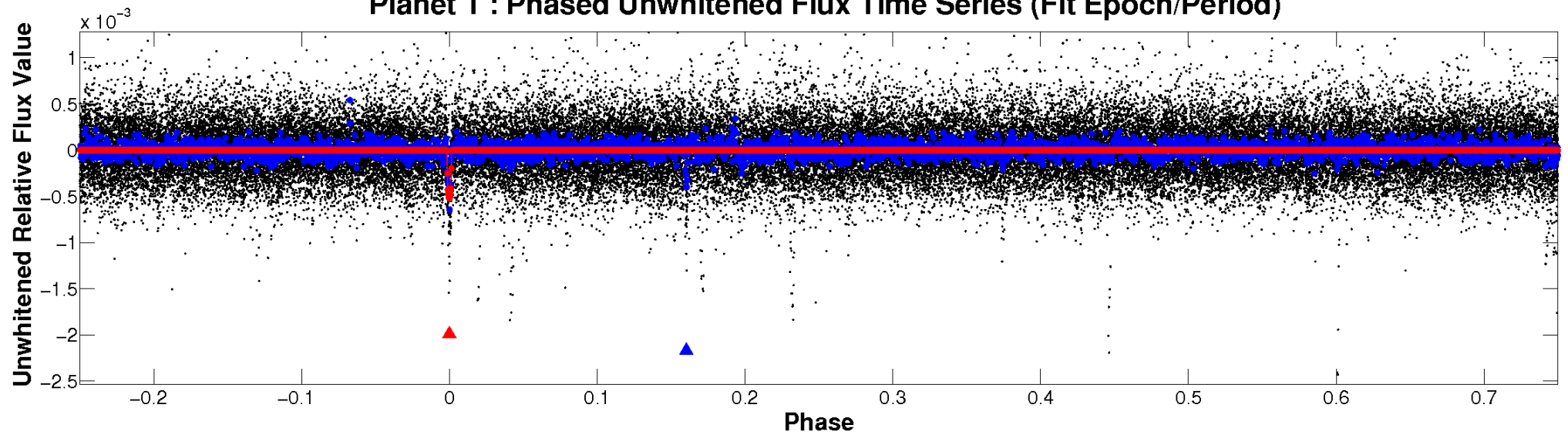
ALT Odd/Even

TCE 009394762-01

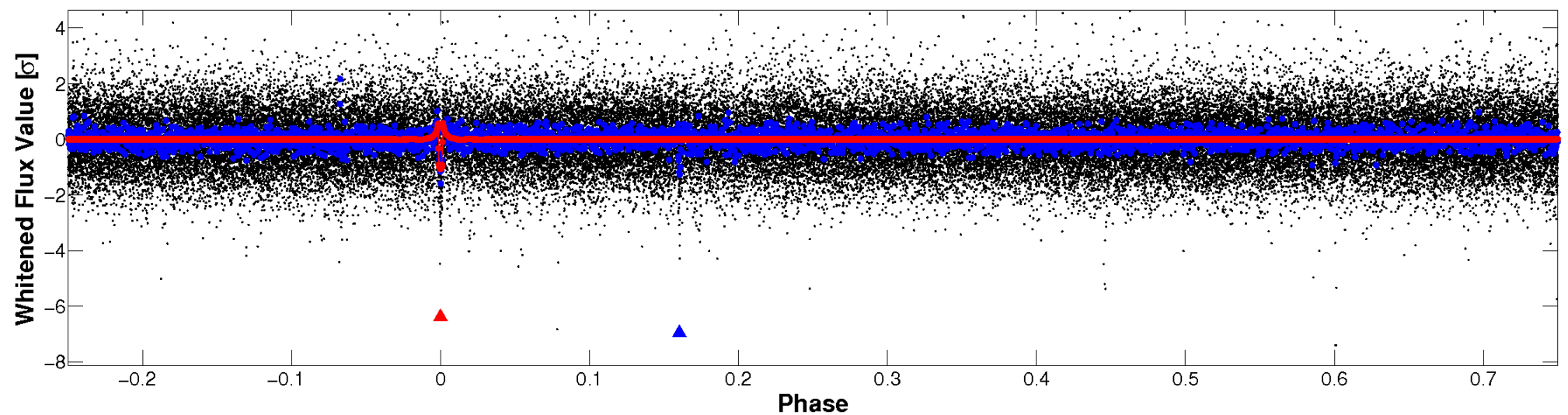


Non-Whitened Vs. Whitened Light Curve

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

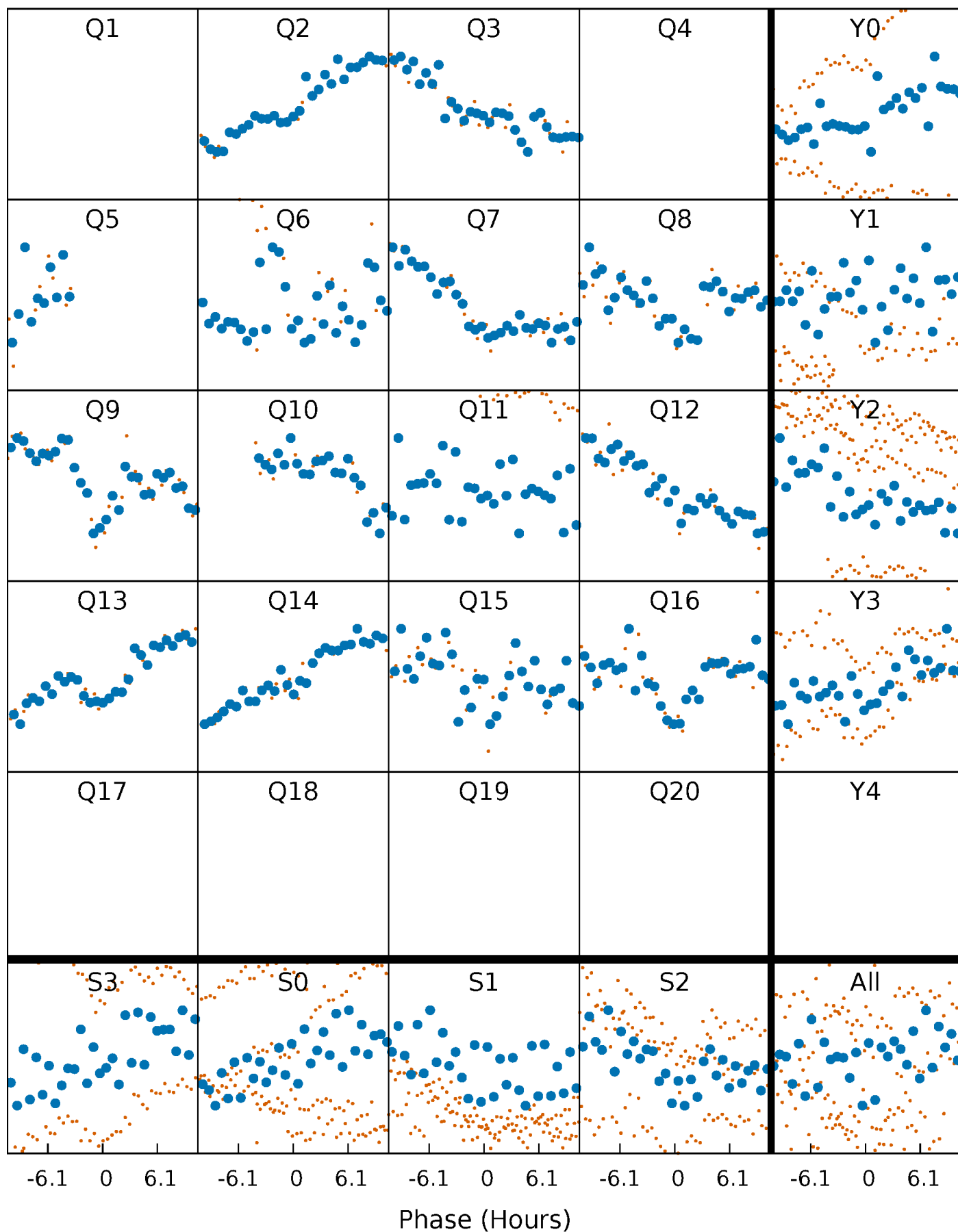


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



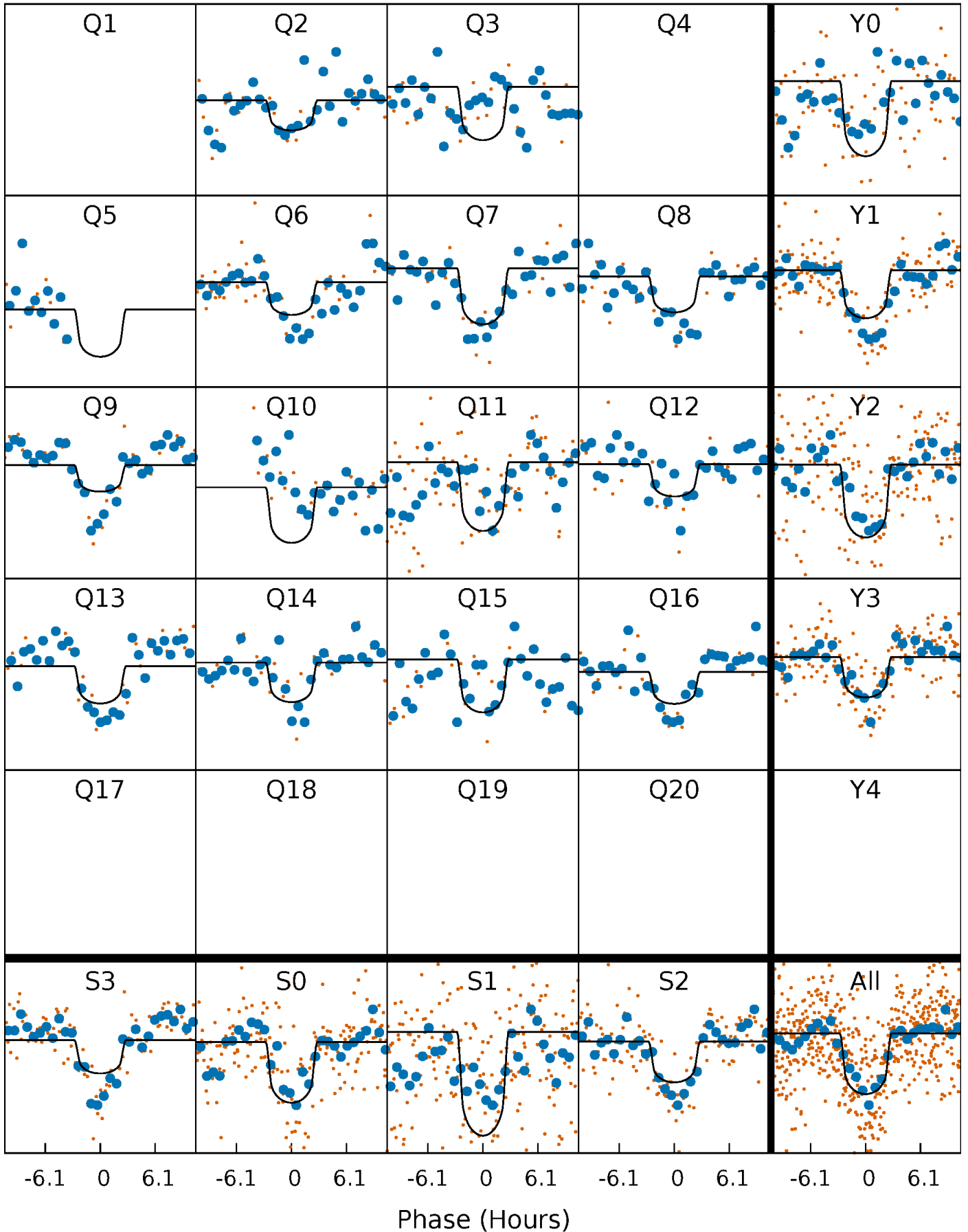
PDC Quarter-Phased Transit Curves

TCE 009394762-01 P= 77.138212 Days $T_0=166.595259$ (BKJD)



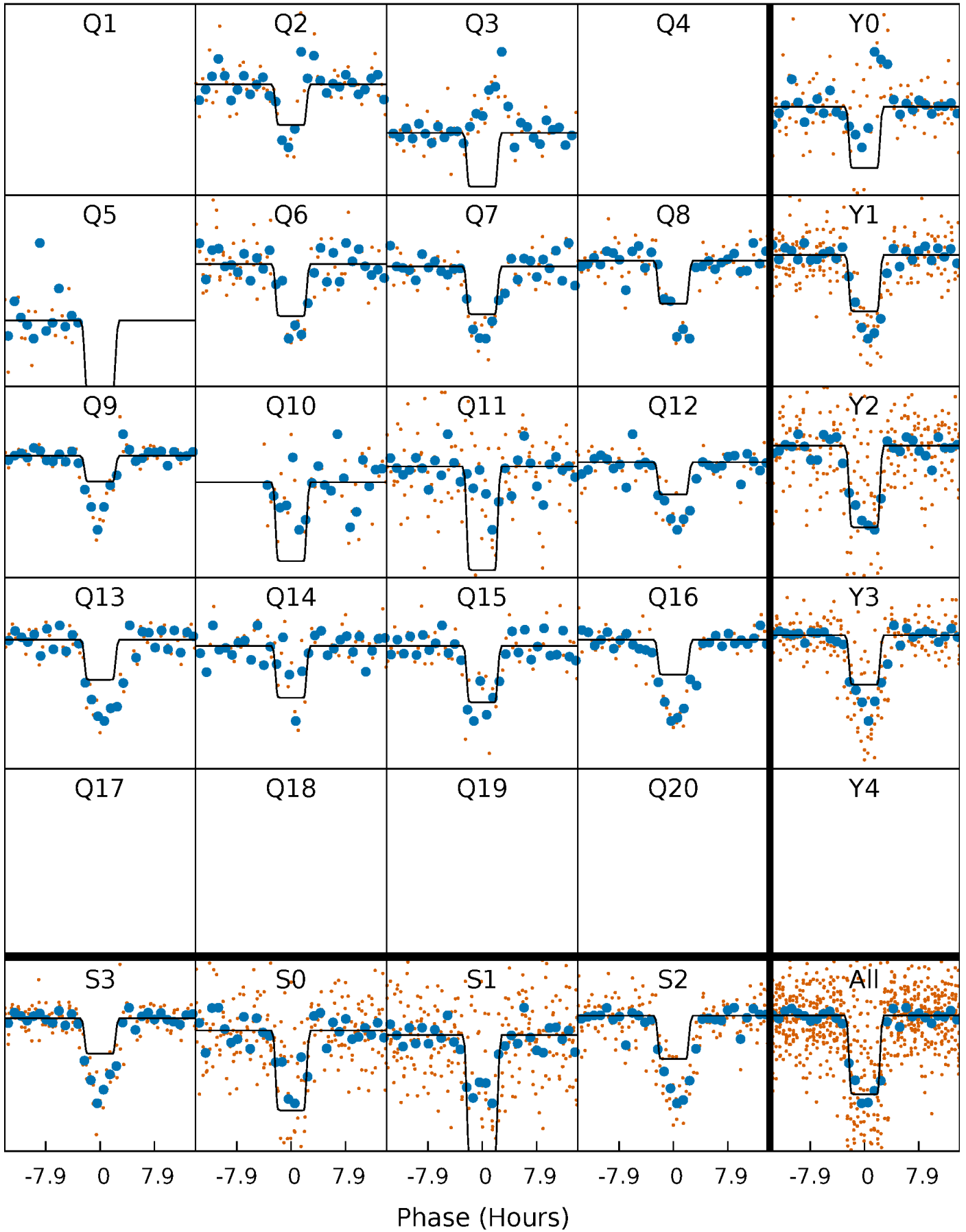
DV Quarter-Phased Transit Curves

TCE 009394762-01 P= 77.138212 Days $T_0=166.595259$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

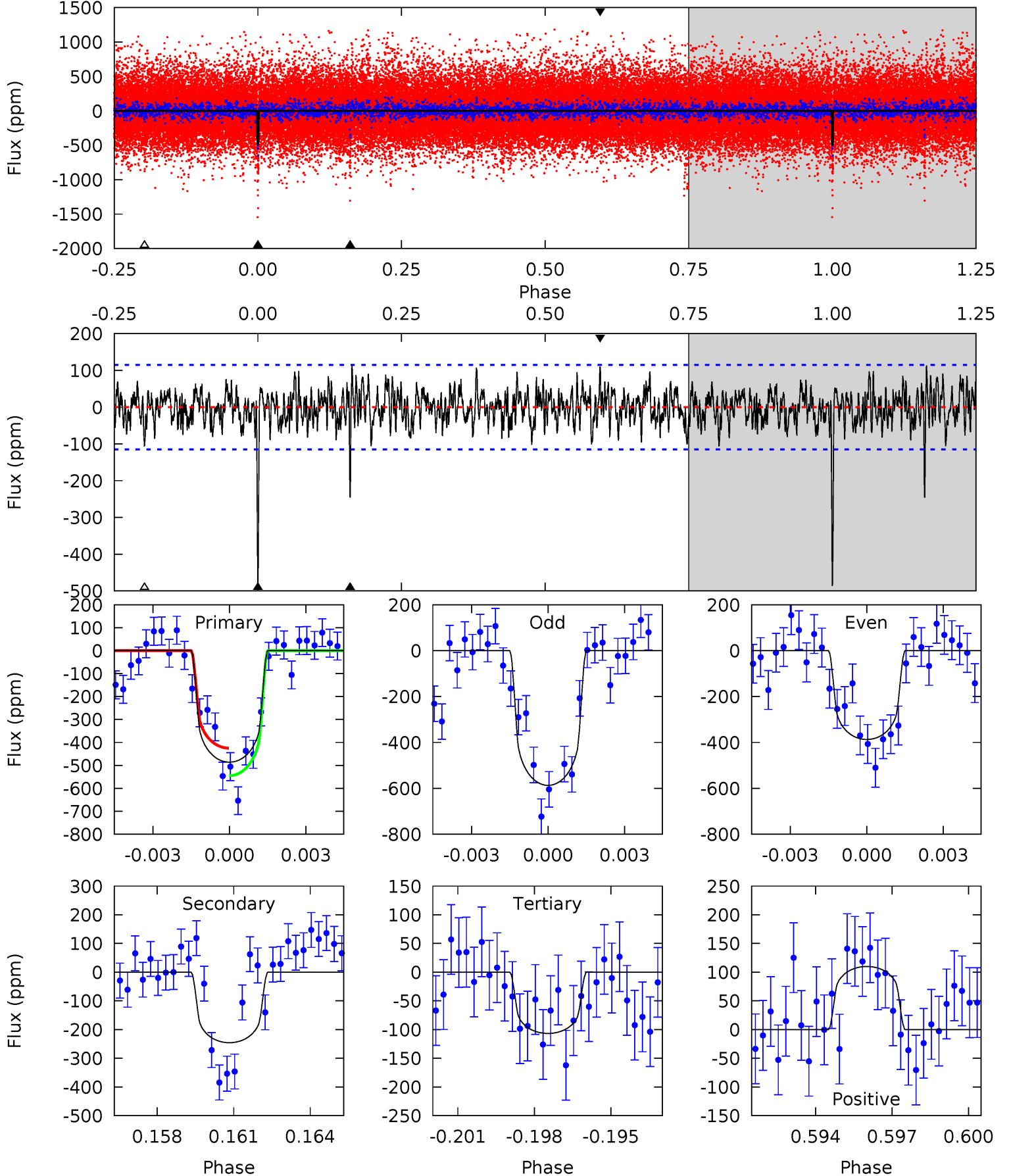
TCE 009394762-01 P= 77.136501 Days $T_0=166.600927$ (BKJD)



DV Model-Shift Uniqueness Test

009394762-01, P = 77.138212 Days, E = 89.457047 Days

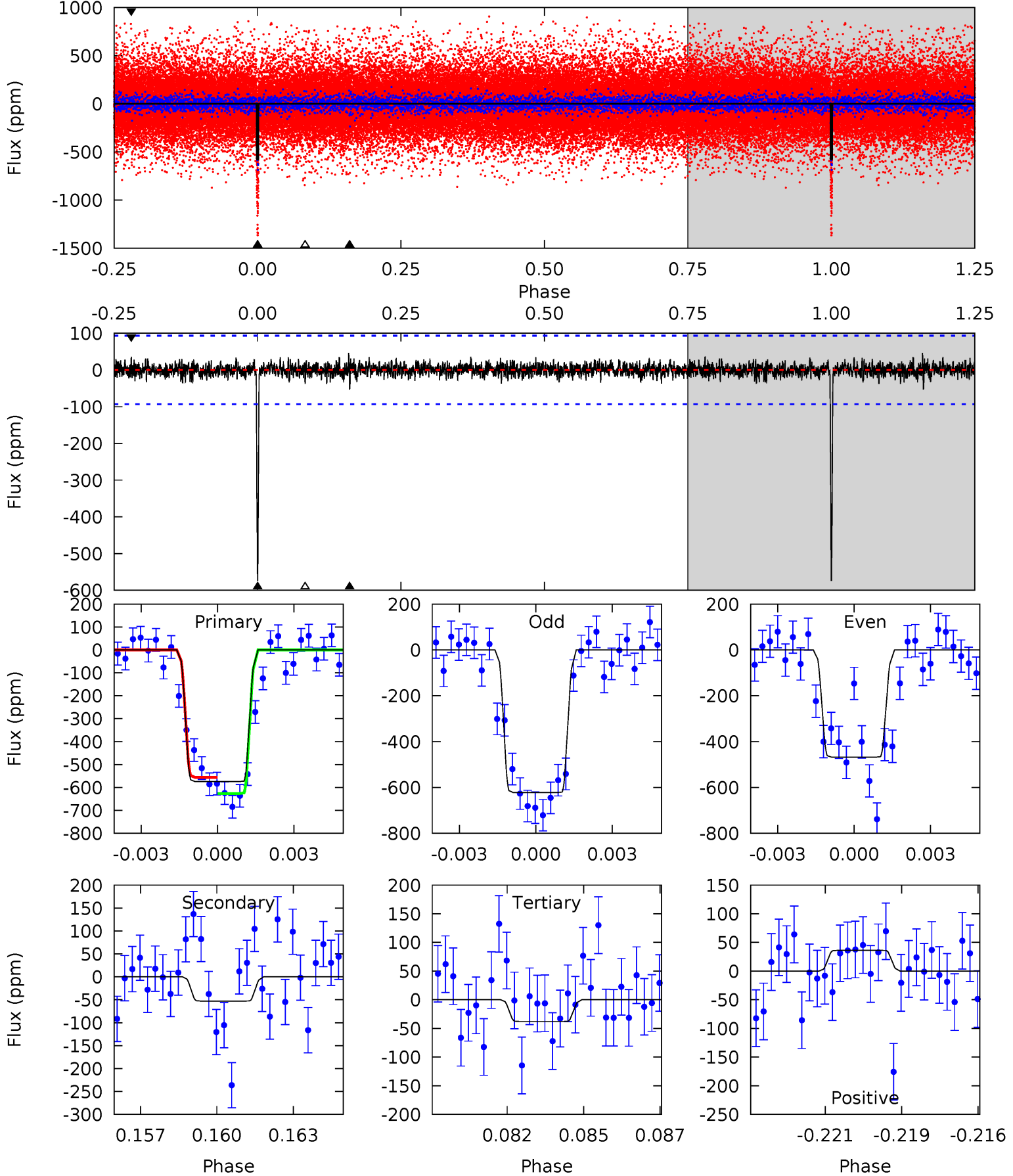
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.2	11.2	4.87	5.02	5.25	2.96	1.71	17.3	17.2	6.35	6.20	4.57	0.95	0.19	2.73



Alt Model-Shift Uniqueness Test

009394762-01, P = 77.136501 Days, E = 89.464426 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.4	2.98	2.13	2.03	5.26	2.98	0.62	30.3	30.4	0.84	0.94	4.34	0.97	0.07	1.96



Stellar Parameters For KIC 009394762

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5778^{+139}_{-174}	$4.531^{+0.037}_{-0.213}$	$0.070^{+0.250}_{-0.300}$	$0.911^{+0.273}_{-0.073}$	$1.028^{+0.100}_{-0.125}$	$1.914^{+0.373}_{-0.971}$
	+2%/-3%	+1%/-5%	+357%/-429%	+30%/-8%	+10%/-12%	+19%/-51%
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 009394762-01 / KOI 5664.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-246 ± 22	$2.42^{+1.28}_{-1.10}$	582^{+42}_{-26}	4826^{+1592}_{-653}	2846^{+6689}_{-1564}
Alt.	-53 ± 18	$2.46^{+1.19}_{-1.07}$	583^{+40}_{-26}	3662^{+838}_{-497}	596^{+1416}_{-355}

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 $A_{obs} \gg 1.0$

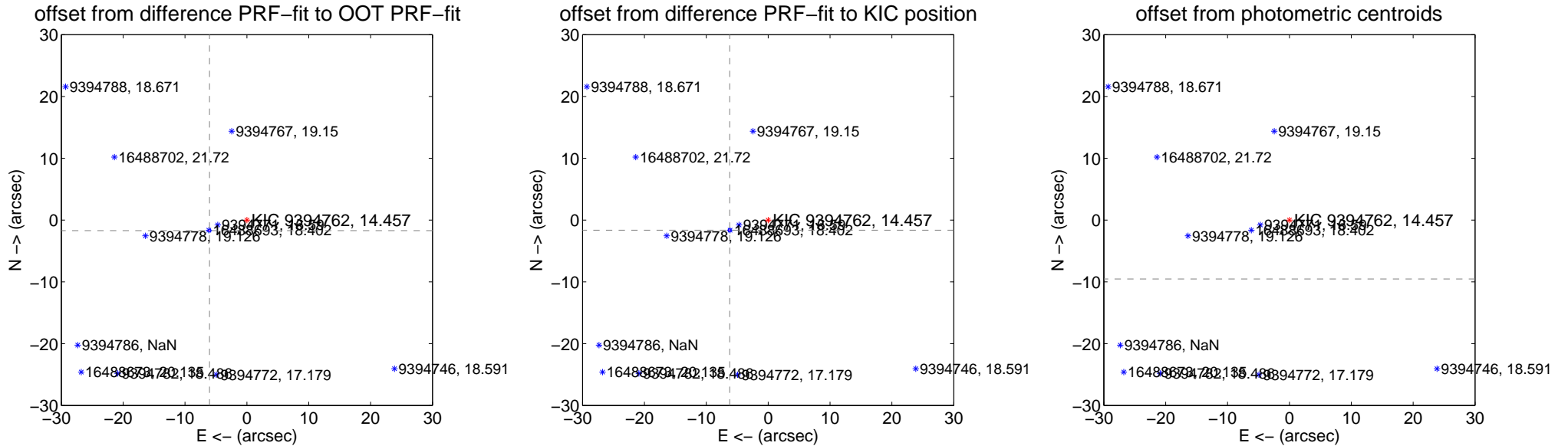
DV Centroid Data

Supplemental centroid analysis for 009394762-01. Kepler magnitude: 14.46. Transit SNR 12.57

There are 9 quarters with good PRF difference image offsets

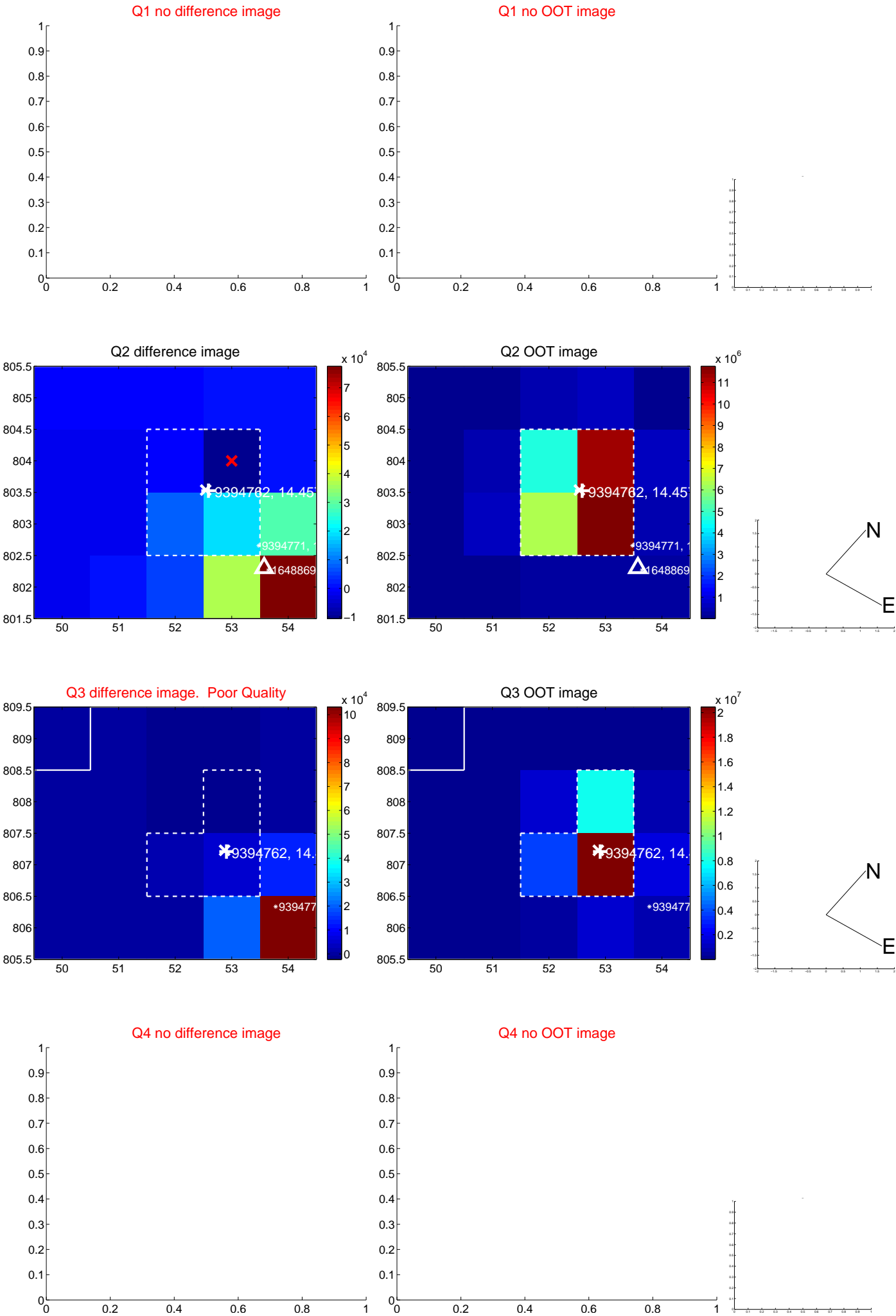
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.276 \pm 0.080	78.87	6.041 \pm 0.078	-1.704 \pm 0.078
PRF-fit source offset from KIC position	6.425 \pm 0.087	73.65	6.212 \pm 0.085	-1.642 \pm 0.081
photometric centroid source offset	42.24 \pm 0.65	64.52	41.15 \pm 0.66	-9.53 \pm 0.63

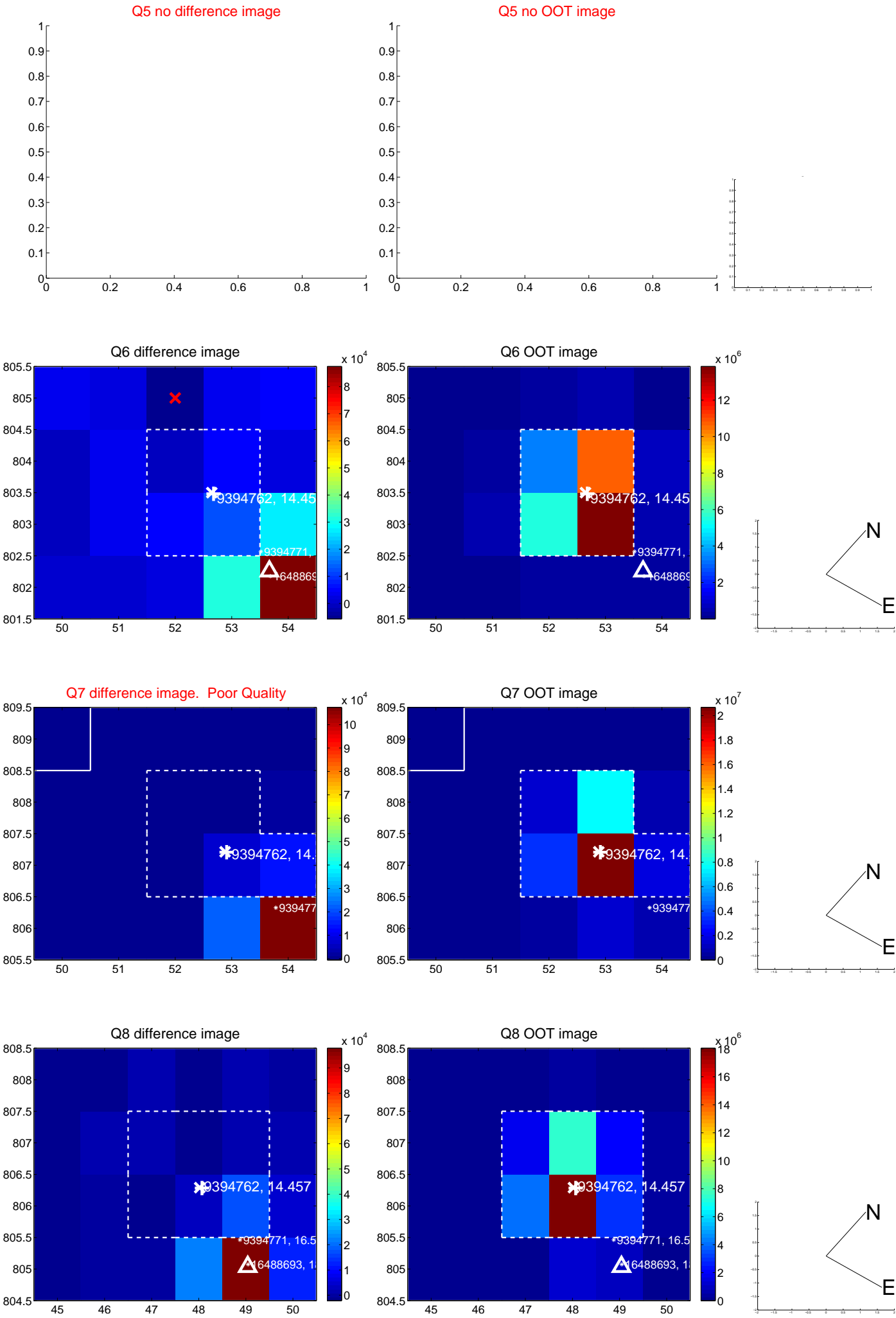


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

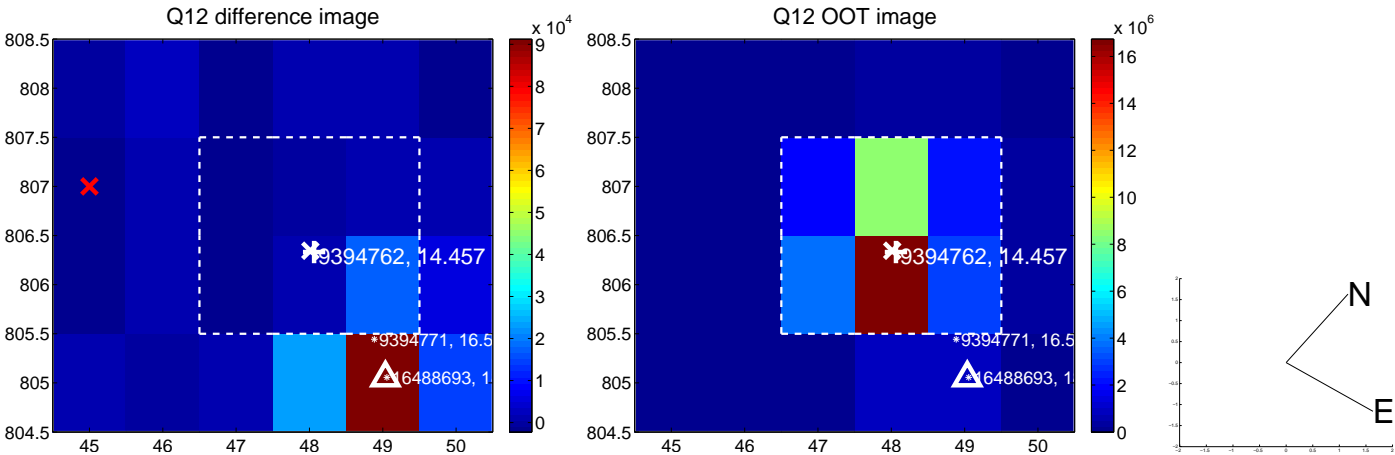
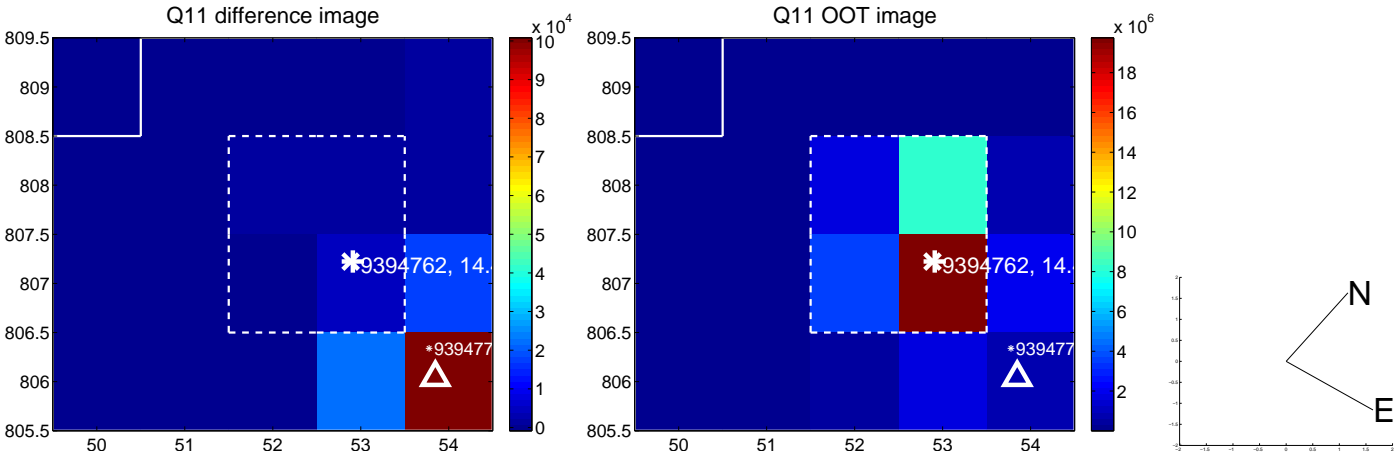
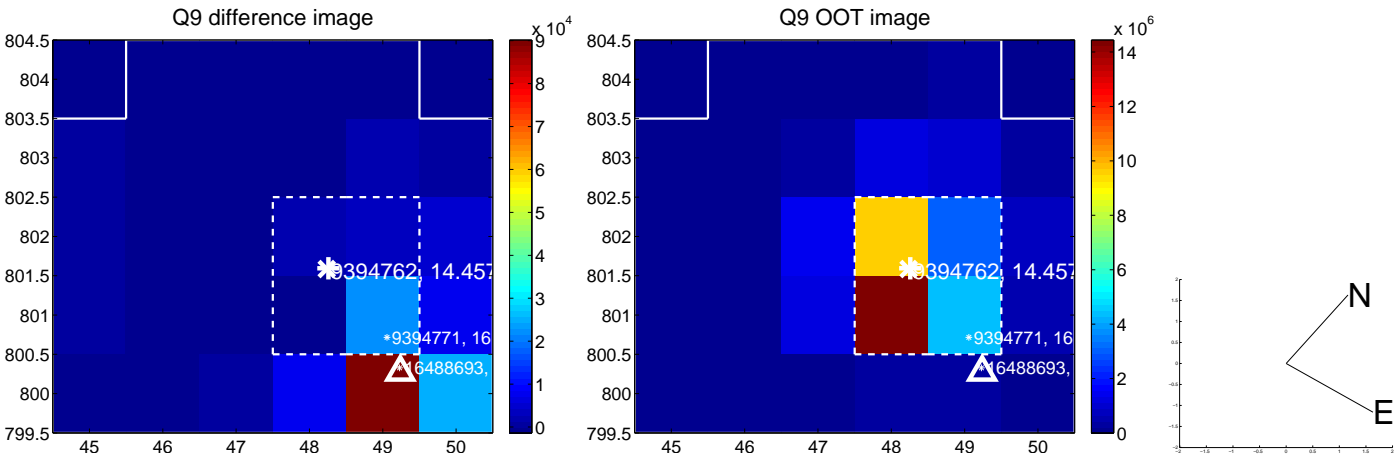
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



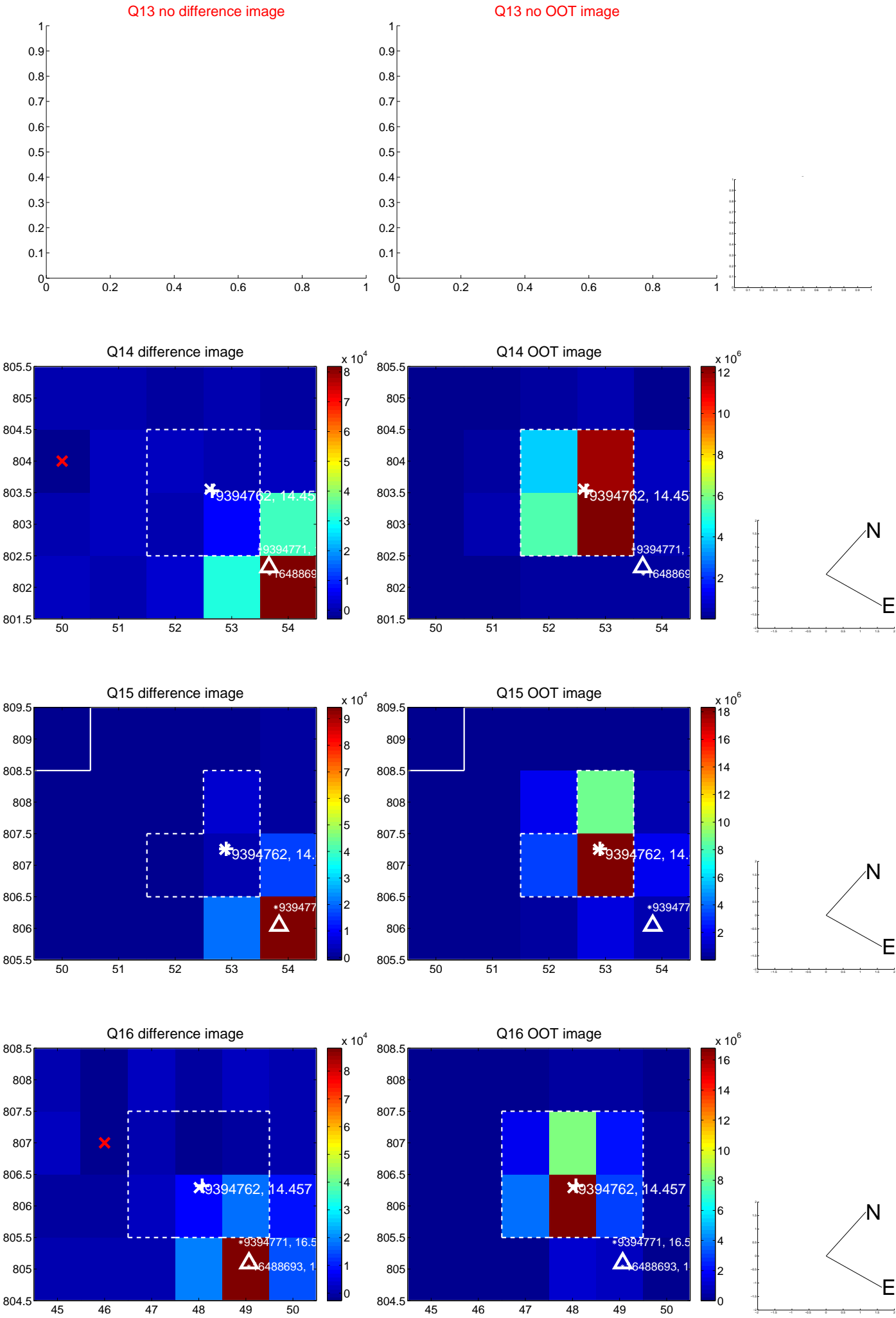
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



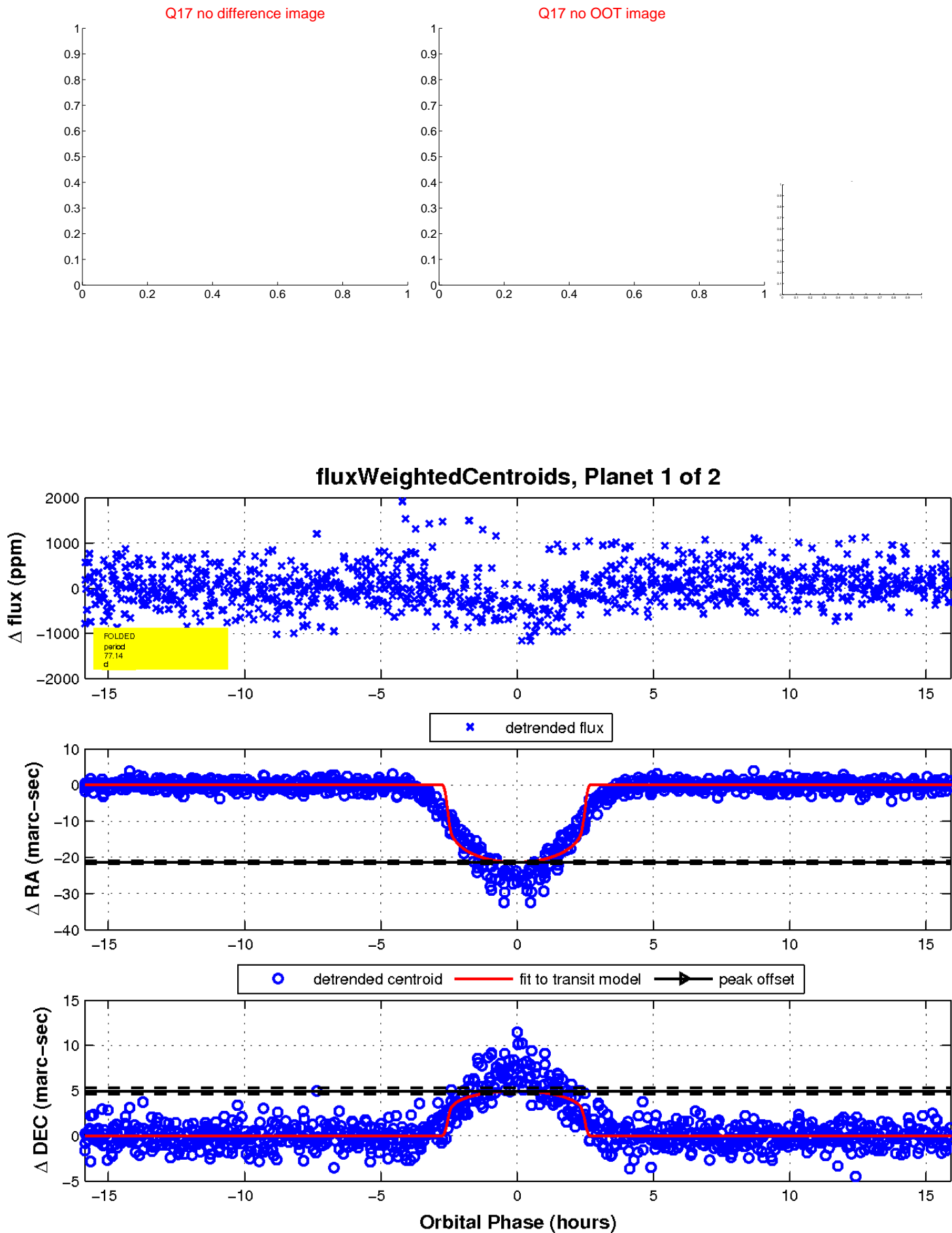
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

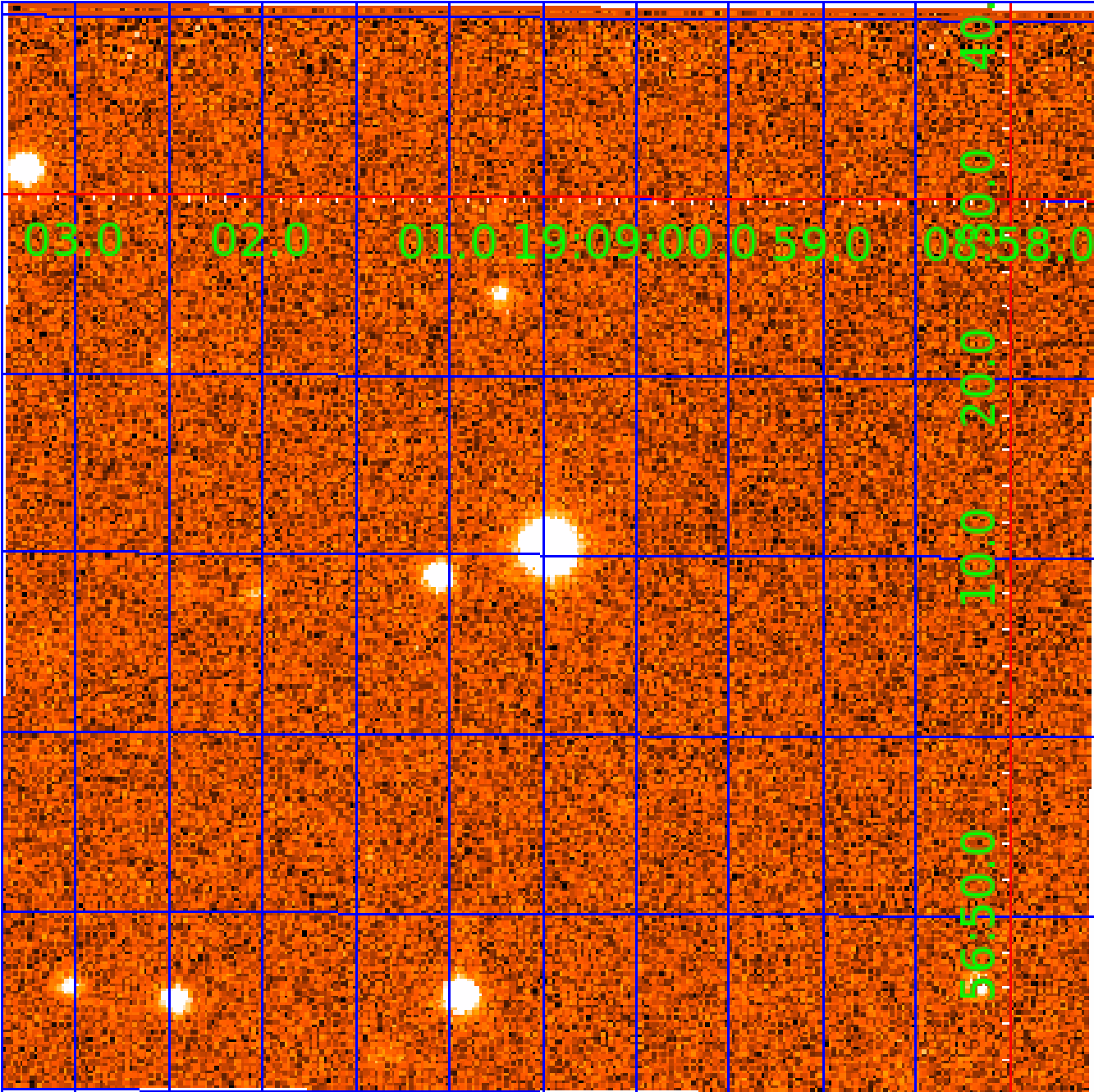


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009394762

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})
009394762-01	OBS	5664.01	77.138212	166.595259	522.1	5.309	11.2	12.6	0.91	5778	2.24	6.47
009394762-02	OBS	No	154.277029	178.961911	494.8	2.953	8.9	9.0	0.91	5778	2.32	2.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009394762-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST
009394762-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST

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 009394762-02

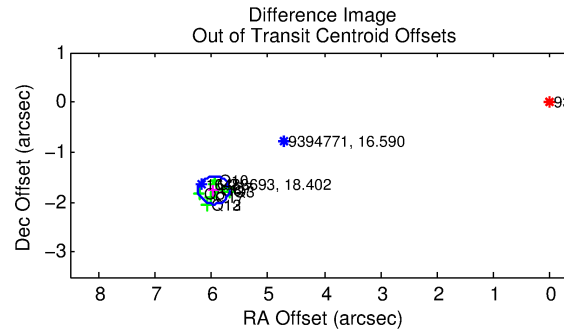
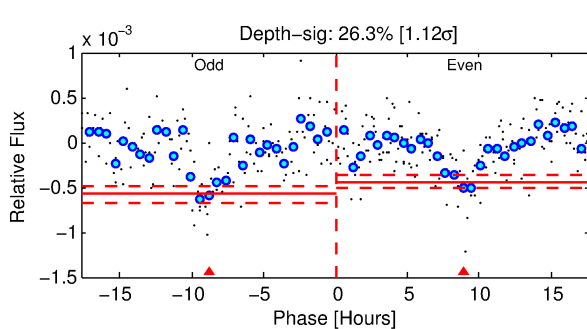
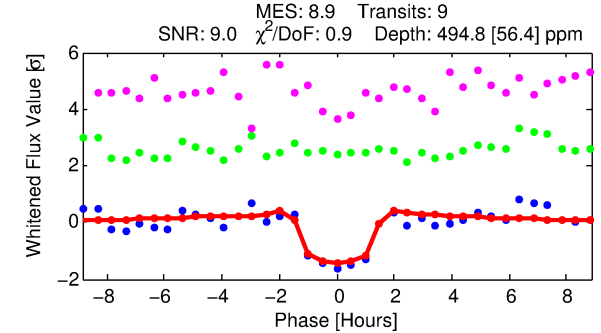
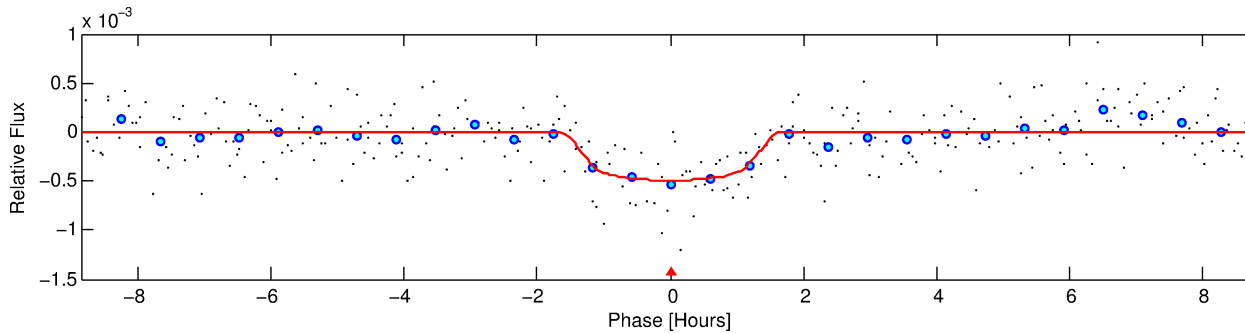
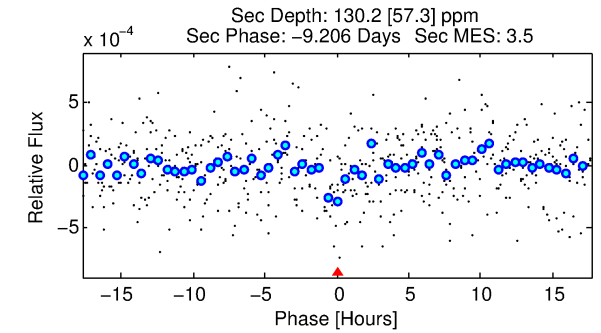
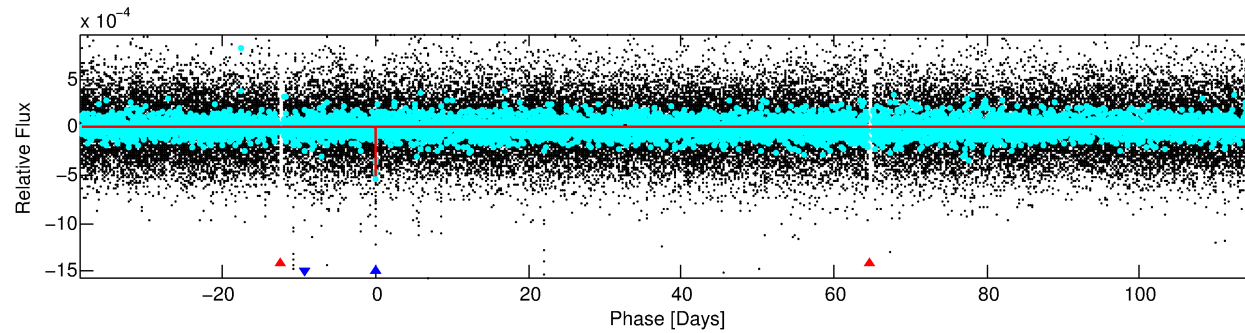
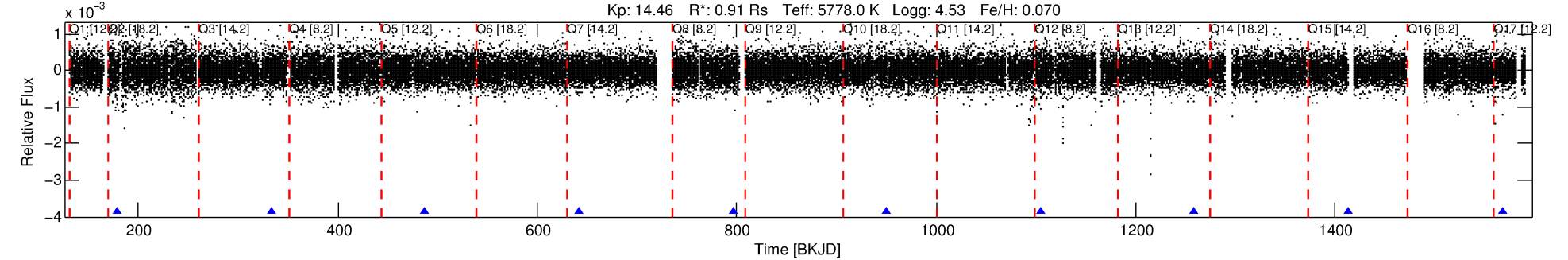
No Significant Match Found

DV One-Page Summary

KIC: 9394762 Candidate: 2 of 2 Period: 154.277 d

KOI: K05664 Corr: No Ephemeris Match

Kp: 14.46 R*: 0.91 Rs Teff: 5778.0 K Logg: 4.53 Fe/H: 0.070



DV Fit Results:

Period = 154.27703 [0.00124] d
Epoch = 178.9619 [0.0062] BKJD
Rp/R* = 0.0233 [0.0151]
a/R* = 227.89 [660.15]
b = 0.85 [0.97]
Seff = 2.57 [1.03]
Teq = 323 [32] K
Rp = 2.32 [1.65] Re
a = 0.5683 [0.1467] AU
Ag = 4311.45 [6123.39] [0.70σ]
Teffp = 4043 [1388] K [2.68σ]

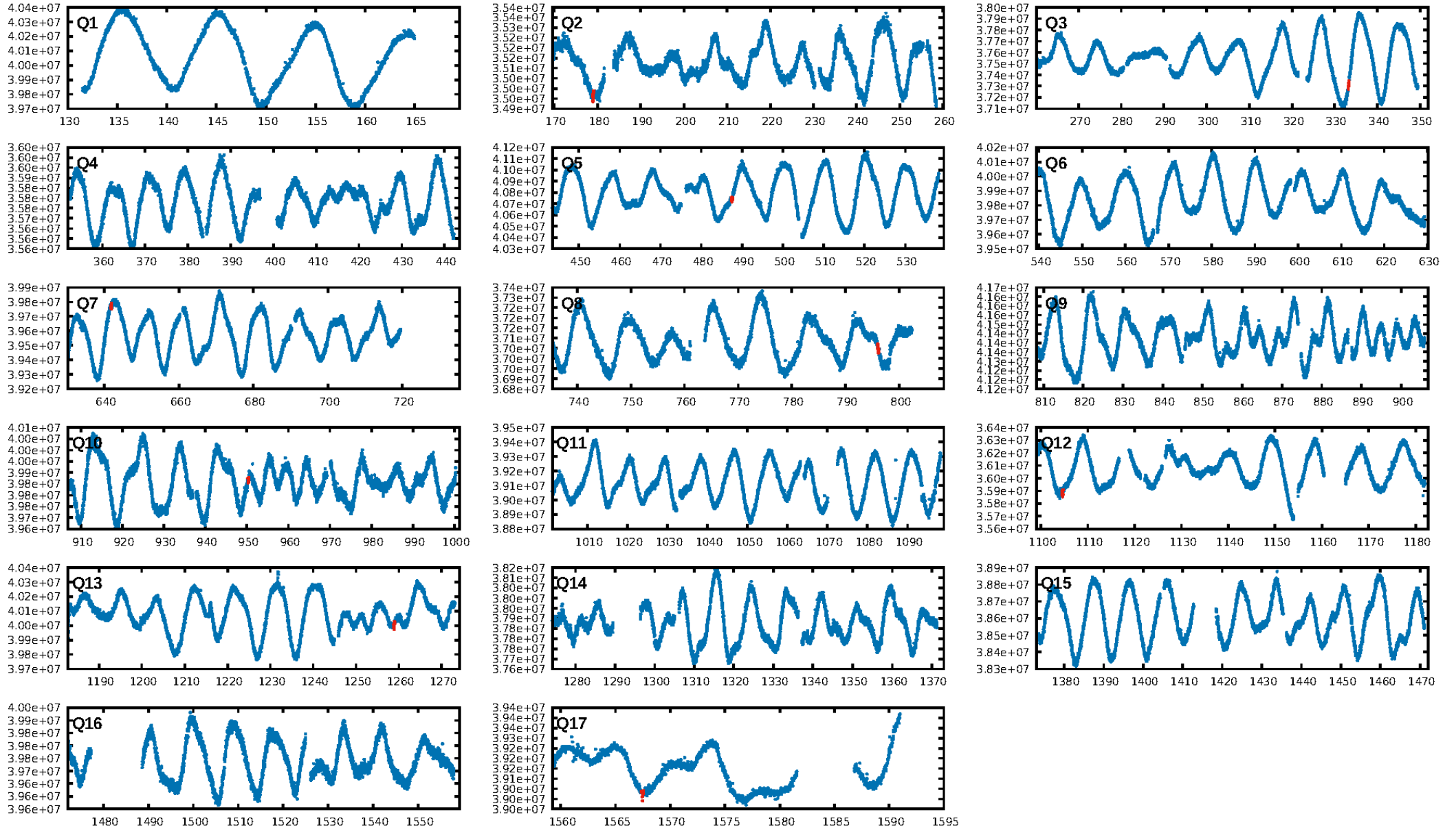
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [304.73σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 28.1%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 5.16e-13
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 0.01883
Centroid-sig: 0.0%
Centroid-so: 28.430 arcsec [23.65σ]
OotOffset-rm: 6.213 arcsec [67.18σ]
KicOffset-rm: 6.337 arcsec [70.54σ]
OotOffset-st: 2/2/2/3 [9]
KicOffset-st: 2/2/2/3 [9]
DiffImageQuality-fgm: 1.00 [9/9]
DiffImageOverlap-fno: 1.00 [9/9]

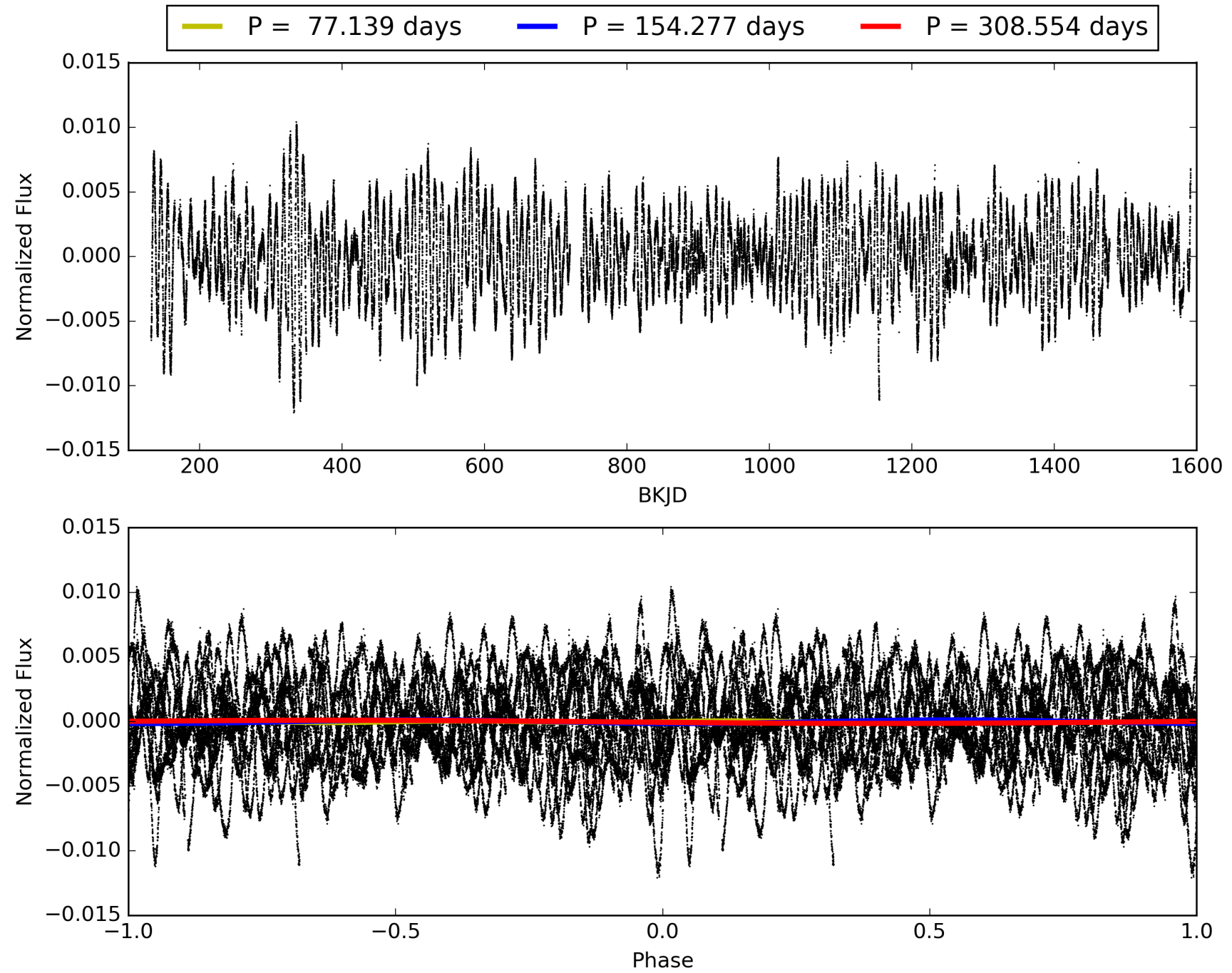
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 00:49:15 Z

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

TCE 009394762-02, PDC Light Curves

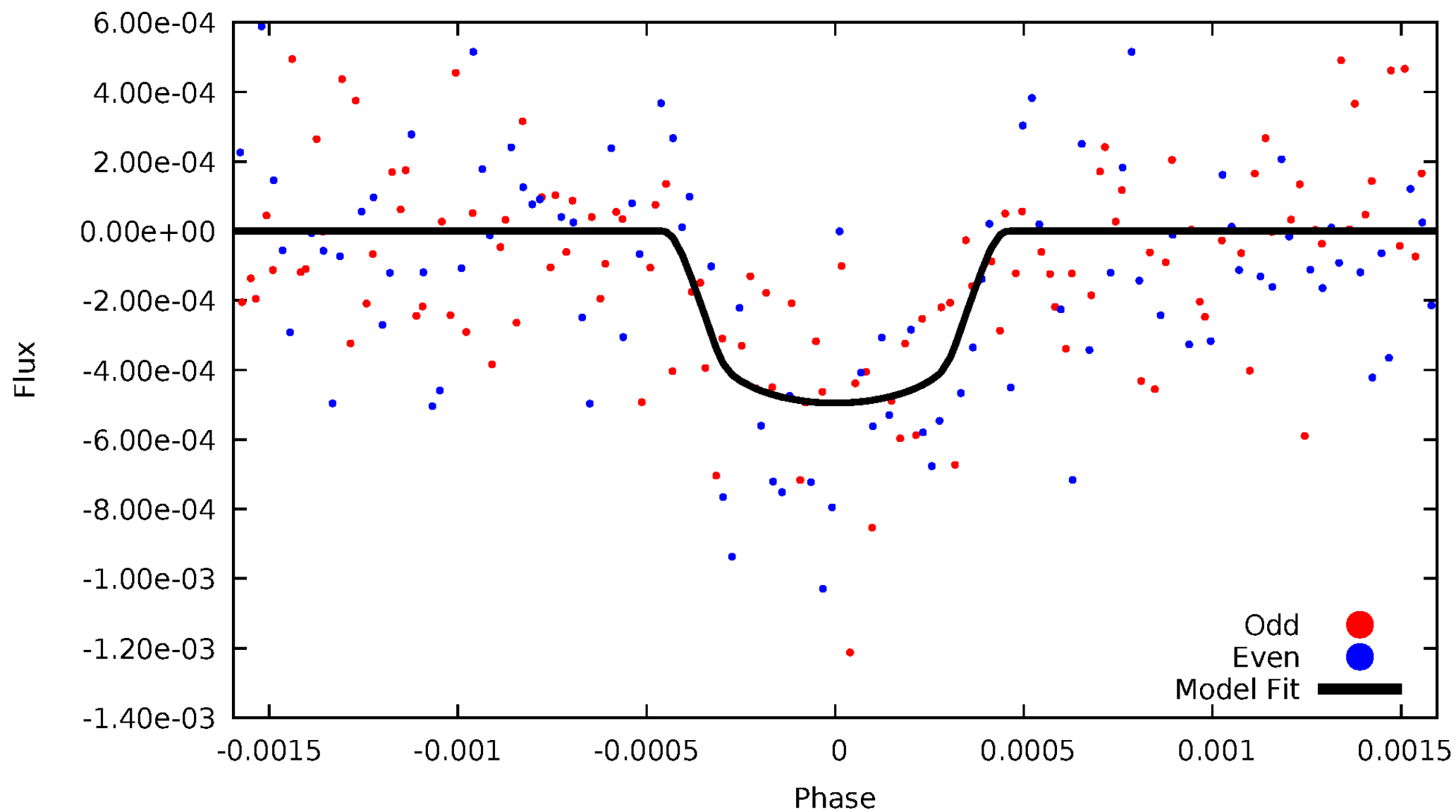


TCE 009394762-02



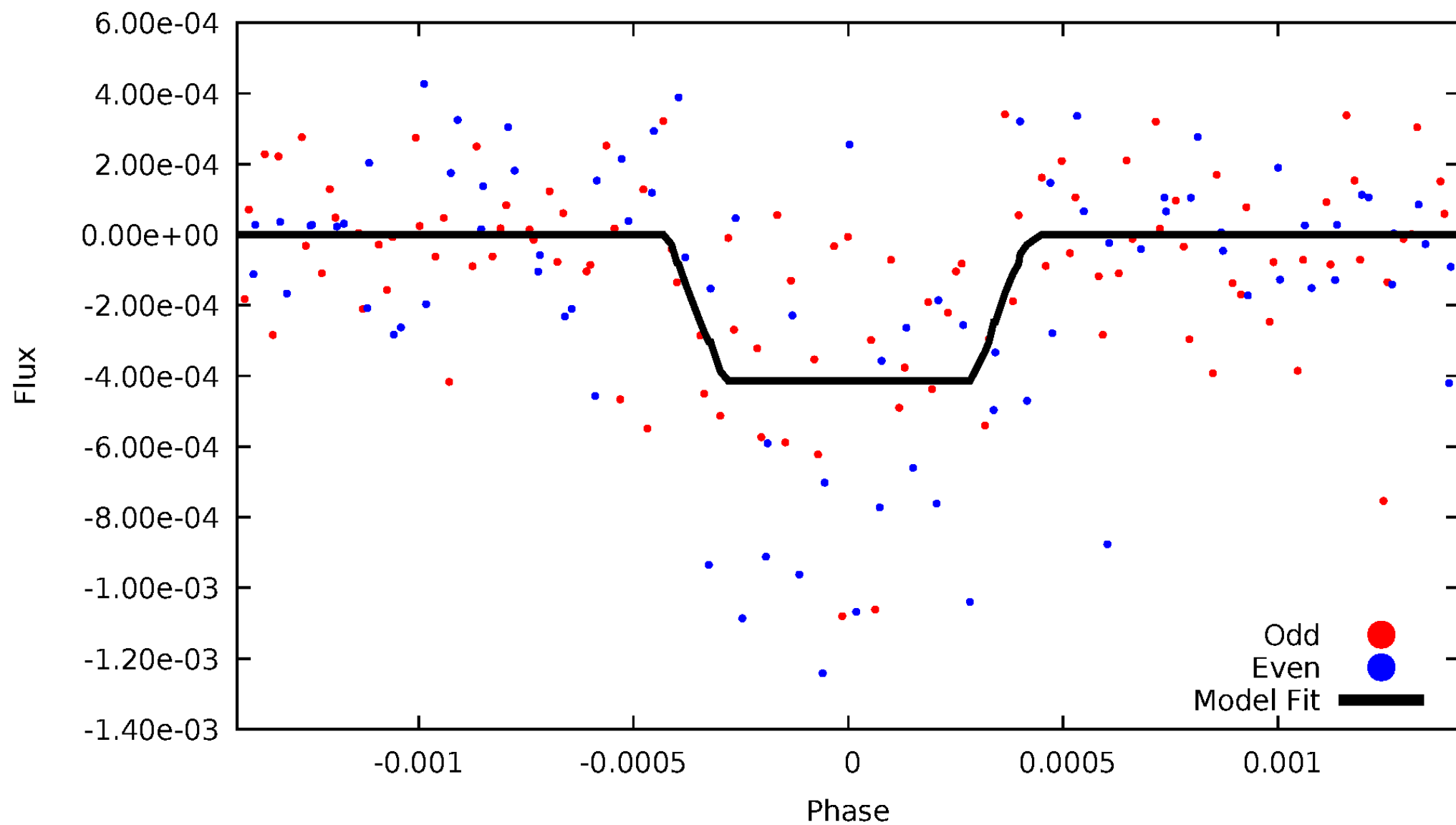
DV Odd/Even

TCE 009394762-02



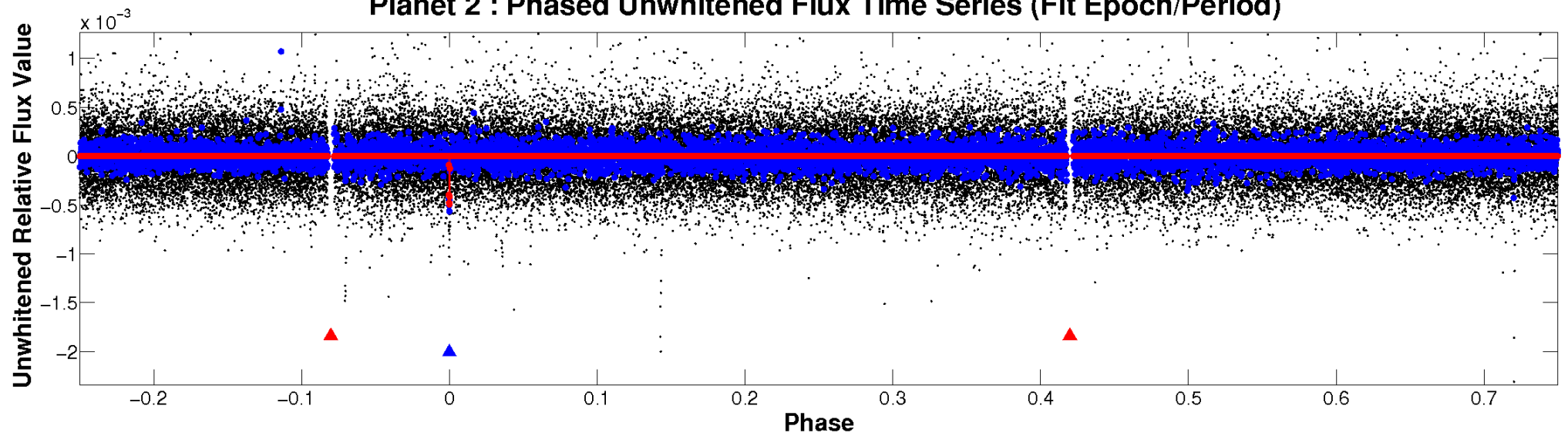
ALT Odd/Even

TCE 009394762-02

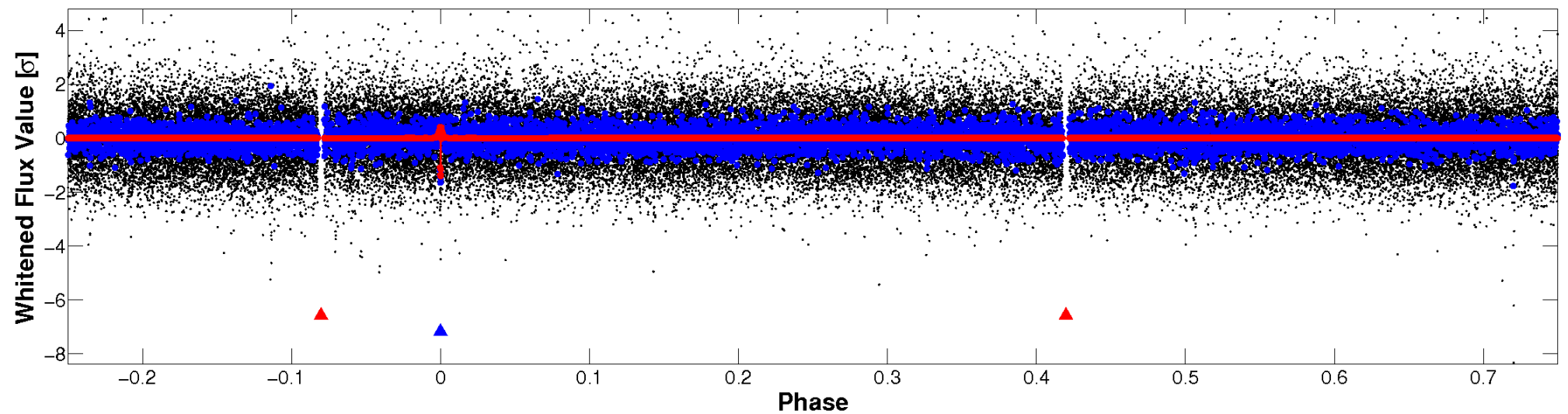


Non-Whitened Vs. Whitened Light Curve

Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

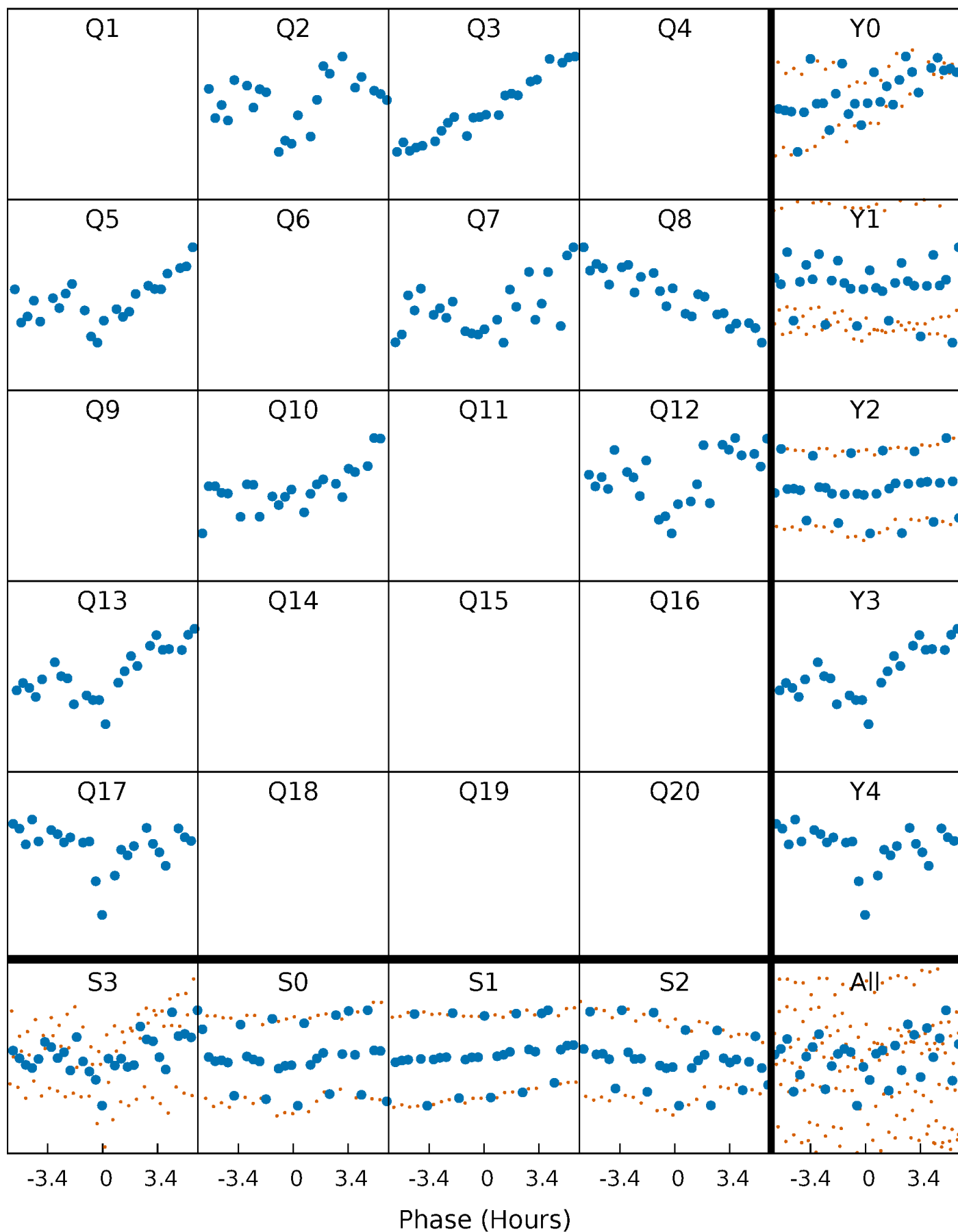


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



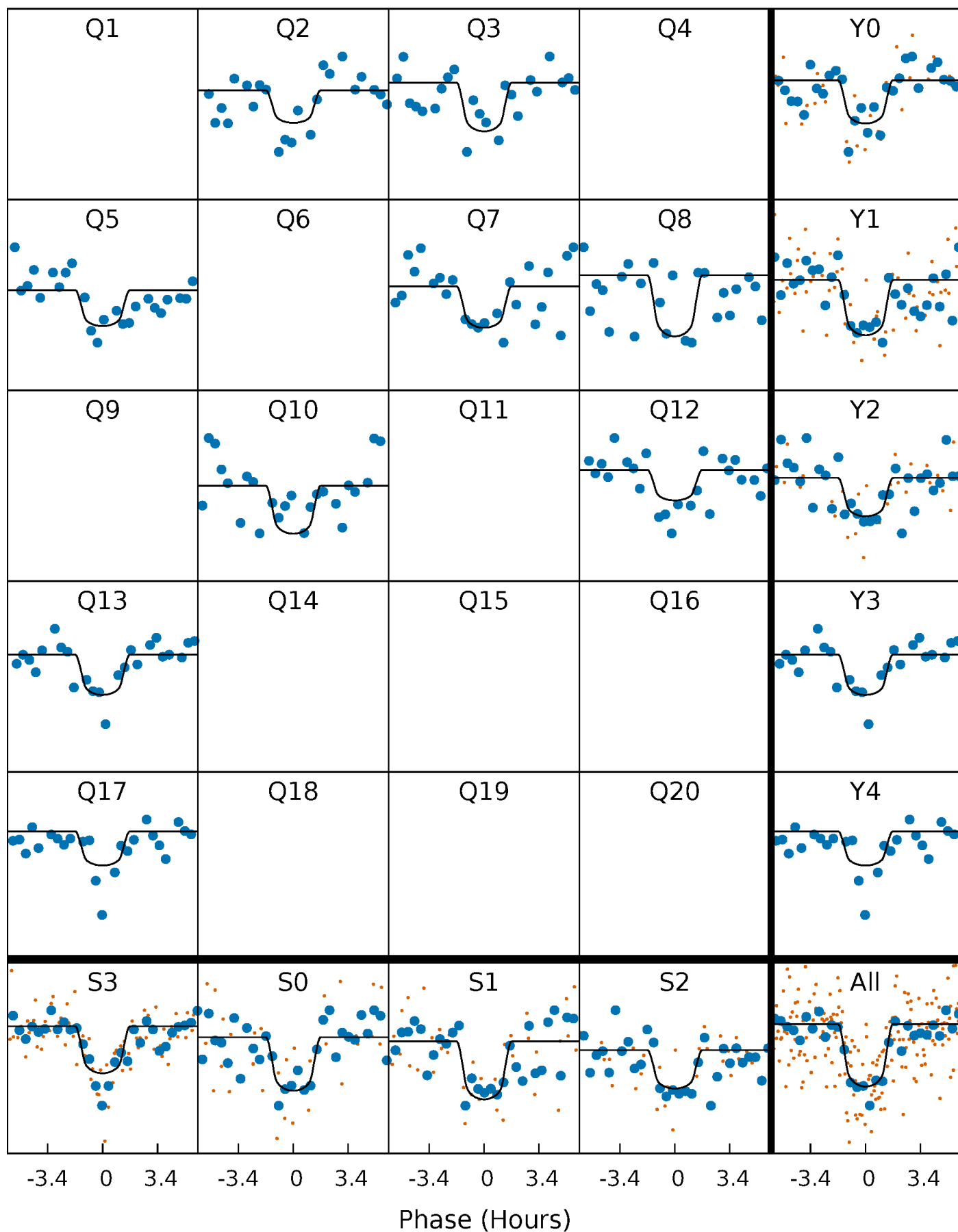
PDC Quarter-Phased Transit Curves

TCE 009394762-02 P=154.277029 Days $T_0=178.961911$ (BKJD)



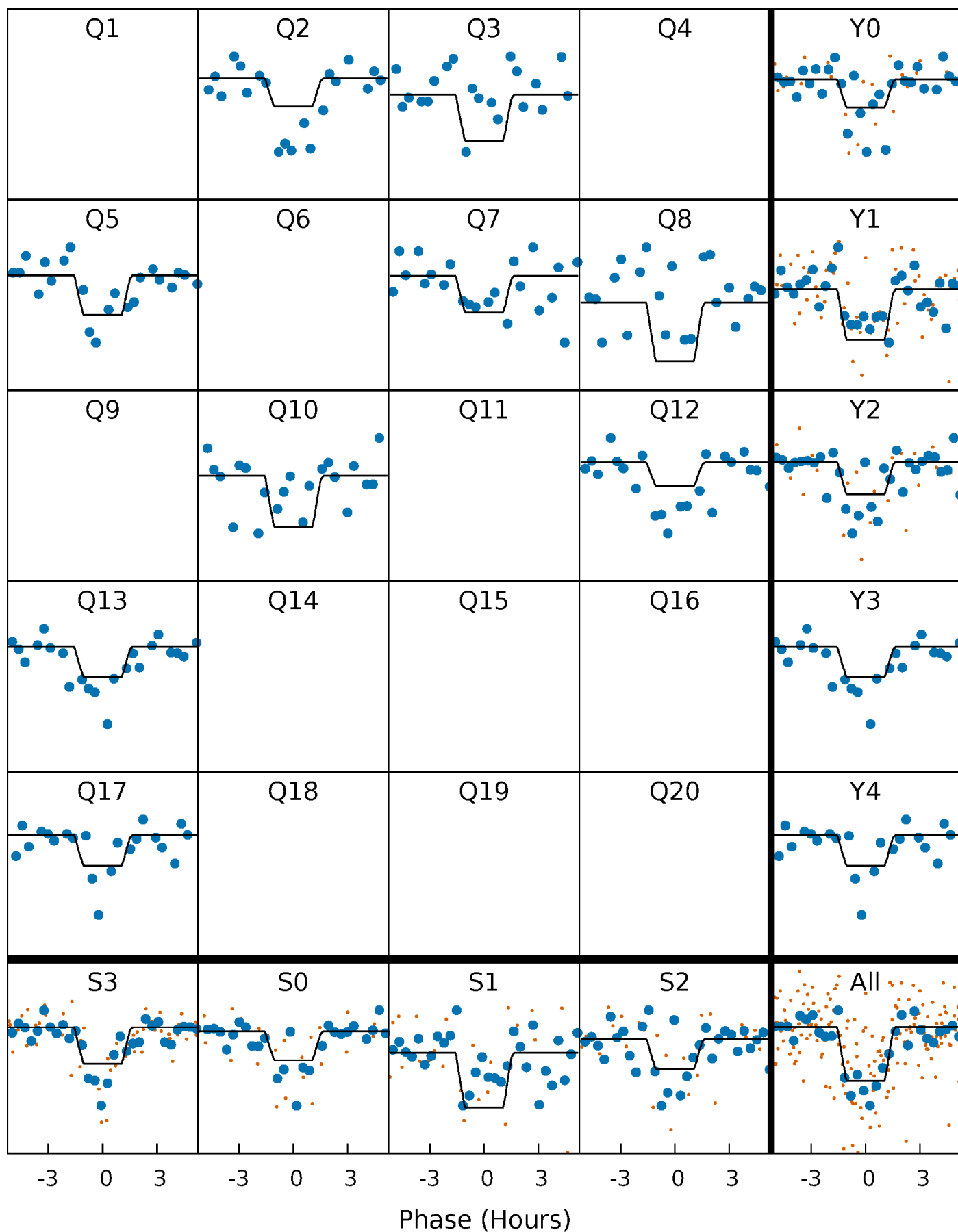
DV Quarter-Phased Transit Curves

TCE 009394762-02 P=154.277029 Days $T_0=178.961911$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

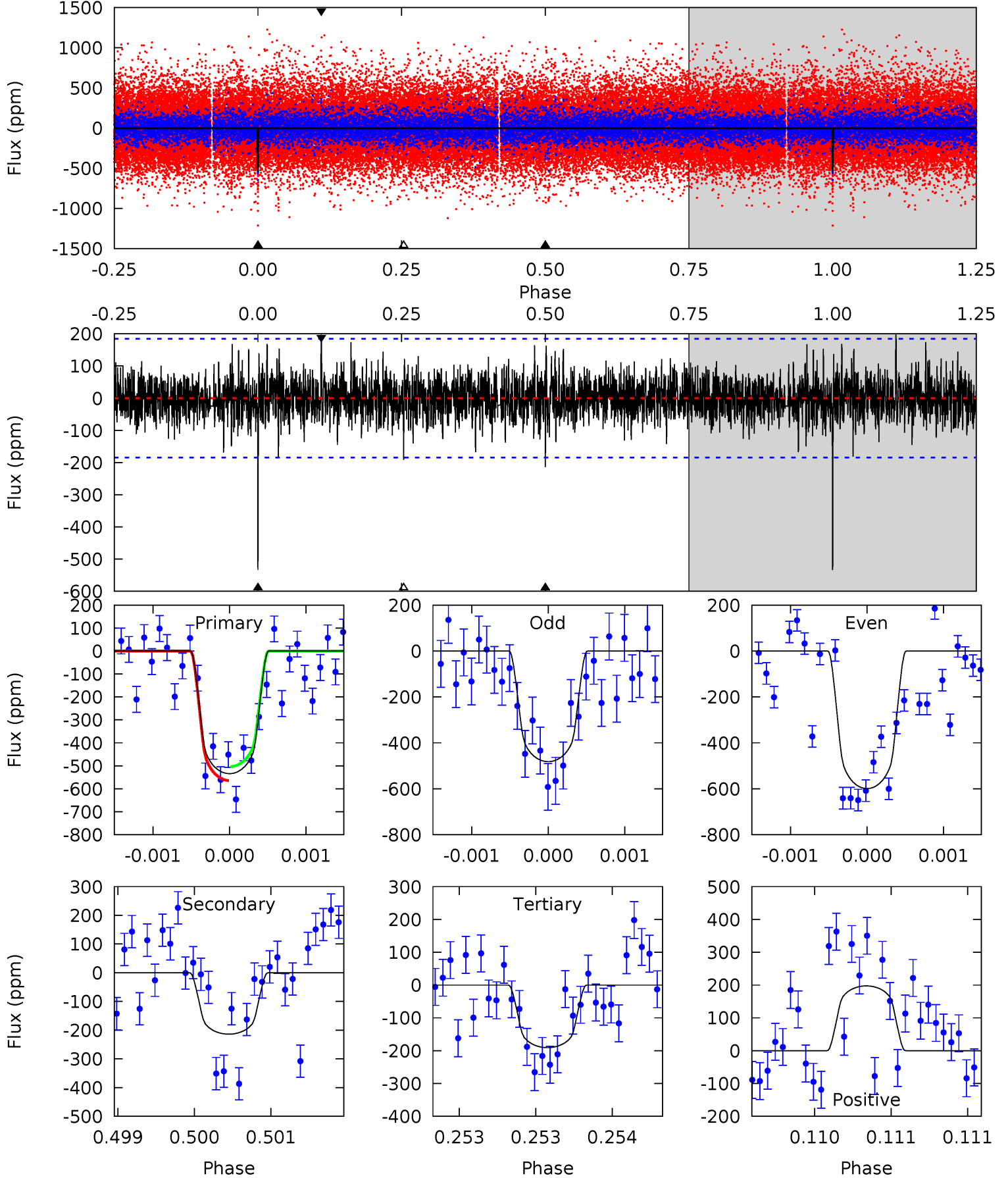
TCE 009394762-02 $P=154.278414$ Days $T_0=178.957776$ (BKJD)



DV Model-Shift Uniqueness Test

009394762-02, $P = 154.277029$ Days, $E = 24.684882$ Days

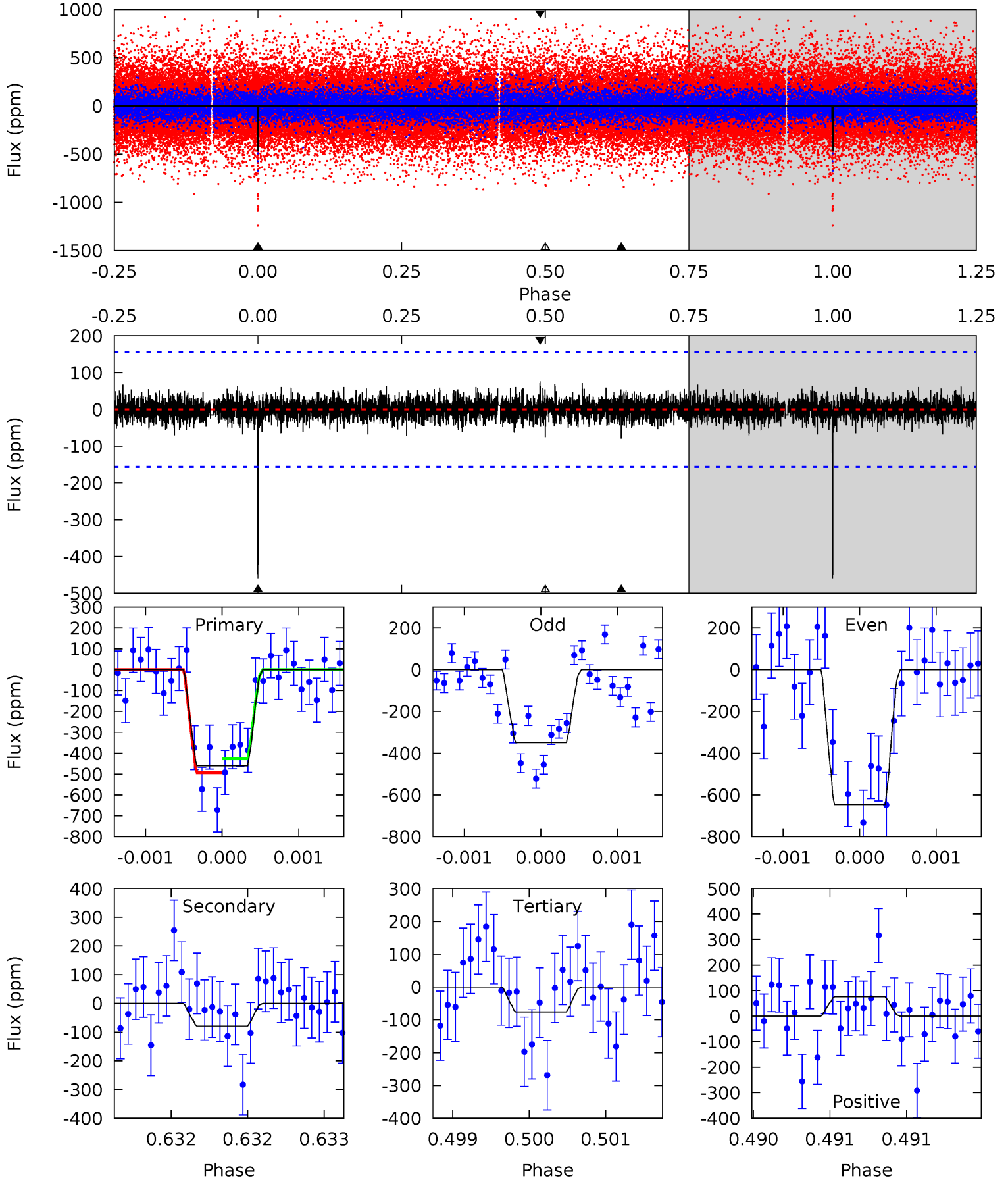
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	6.33	5.65	5.85	5.47	3.32	1.42	10.2	9.97	0.69	0.49	1.72	1.04	0.27	0.90



Alt Model-Shift Uniqueness Test

009394762-02, $P = 154.278414$ Days, $E = 24.679362$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.2	2.77	2.65	2.67	5.48	3.34	0.68	13.5	13.5	0.12	0.11	5.15	1.05	0.14	1.17



Stellar Parameters For KIC 009394762

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5778^{+139}_{-174}	$4.531^{+0.037}_{-0.213}$	$0.070^{+0.250}_{-0.300}$	$0.911^{+0.273}_{-0.073}$	$1.028^{+0.100}_{-0.125}$	$1.914^{+0.373}_{-0.971}$
	+2%/-3%	+1%/-5%	+357%/-429%	+30%/-8%	+10%/-12%	+19%/-51%
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 009394762-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-214 ± 34	$2.55^{+1.74}_{-1.45}$	459^{+36}_{-18}	4571^{+2294}_{-761}	5567^{+25802}_{-3613}
Alt.	-79 ± 28	$2.26^{+1.54}_{-1.29}$	460^{+32}_{-19}	3975^{+1584}_{-645}	2500^{+11664}_{-1617}

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 $A_{obs} \gg 1.0$

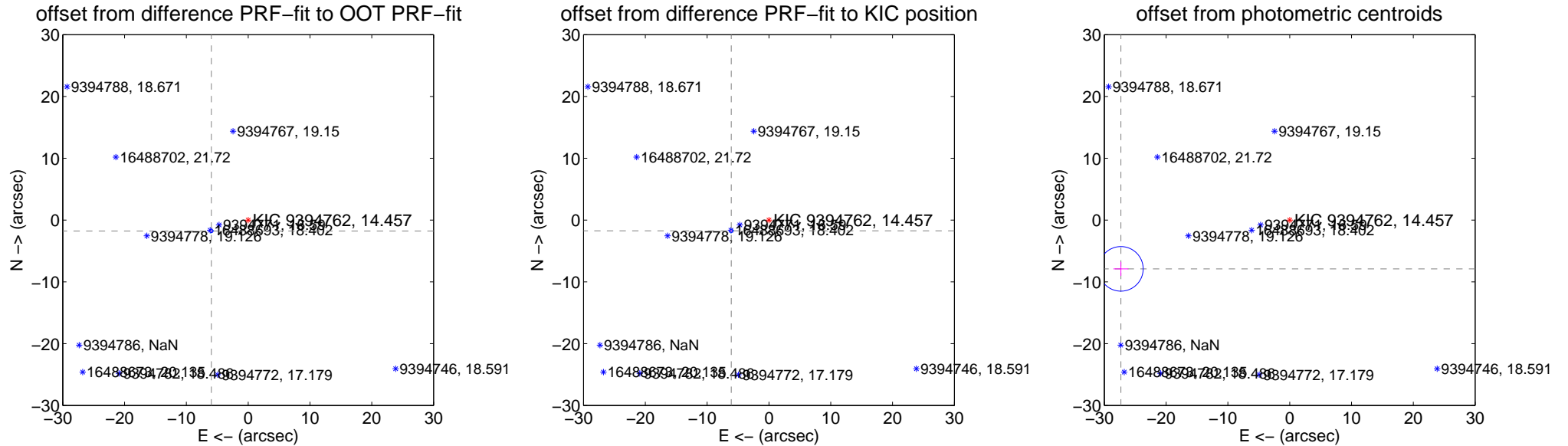
DV Centroid Data

Supplemental centroid analysis for 009394762-02. Kepler magnitude: 14.46. Transit SNR 9.01

There are 9 quarters with good PRF difference image offsets

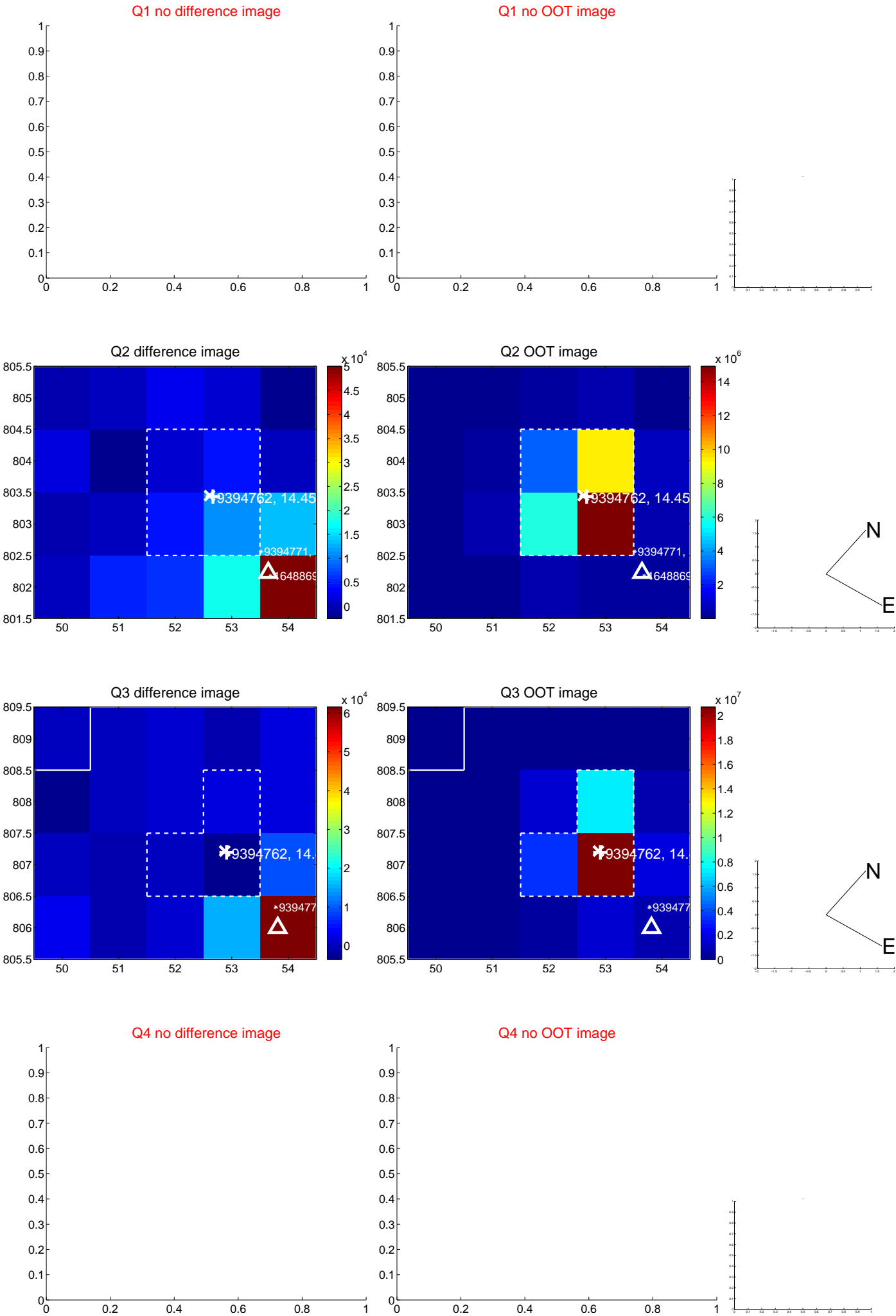
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.213 \pm 0.092	67.18	5.958 \pm 0.092	-1.762 \pm 0.094
PRF-fit source offset from KIC position	6.337 \pm 0.090	70.54	6.094 \pm 0.090	-1.740 \pm 0.091
photometric centroid source offset	28.43 \pm 1.20	23.65	27.31 \pm 1.21	-7.89 \pm 1.13

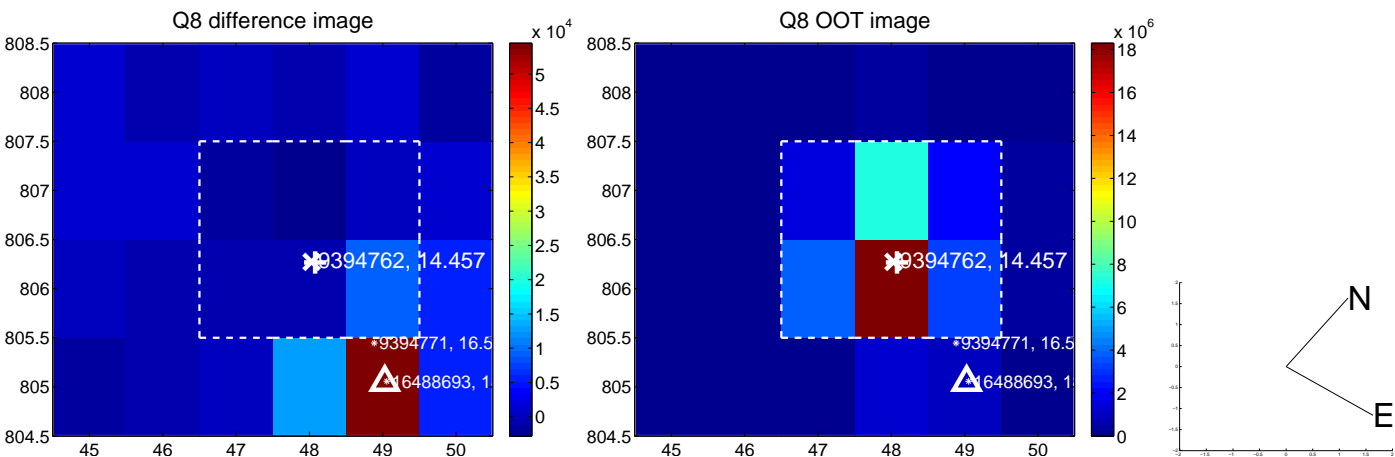
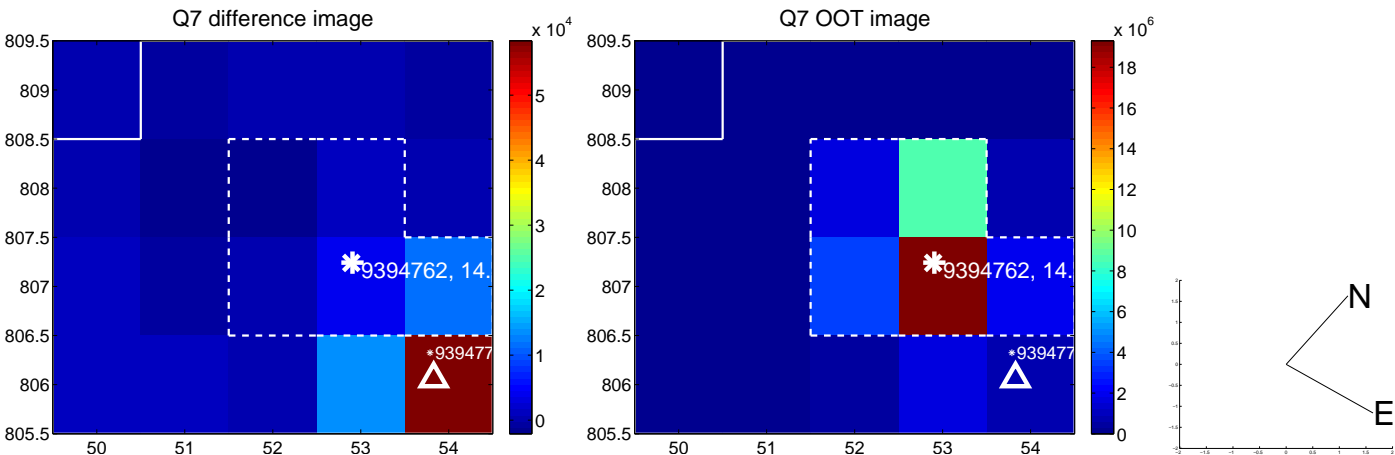
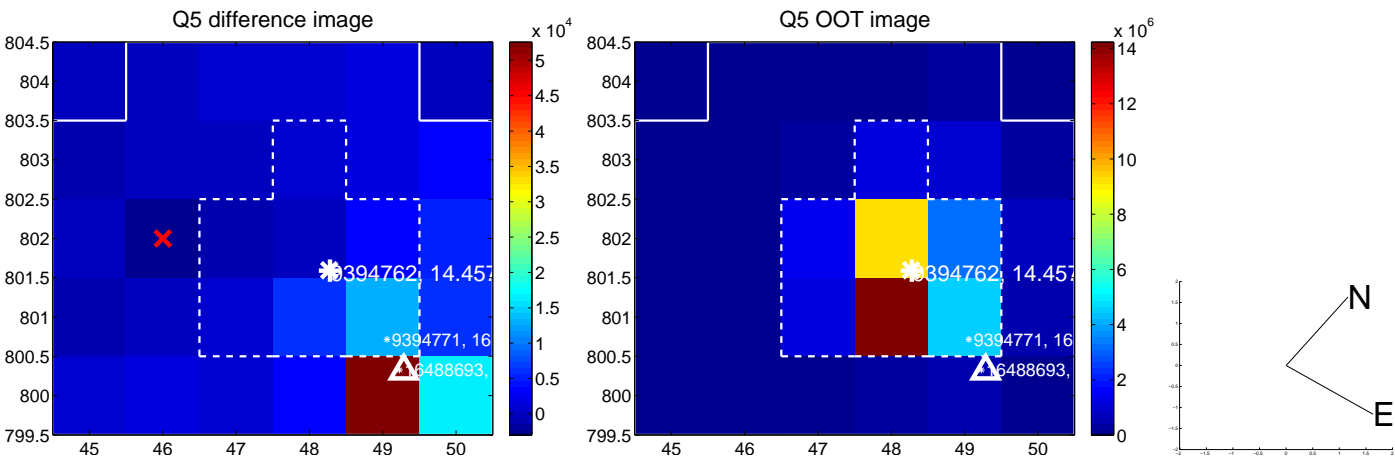


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

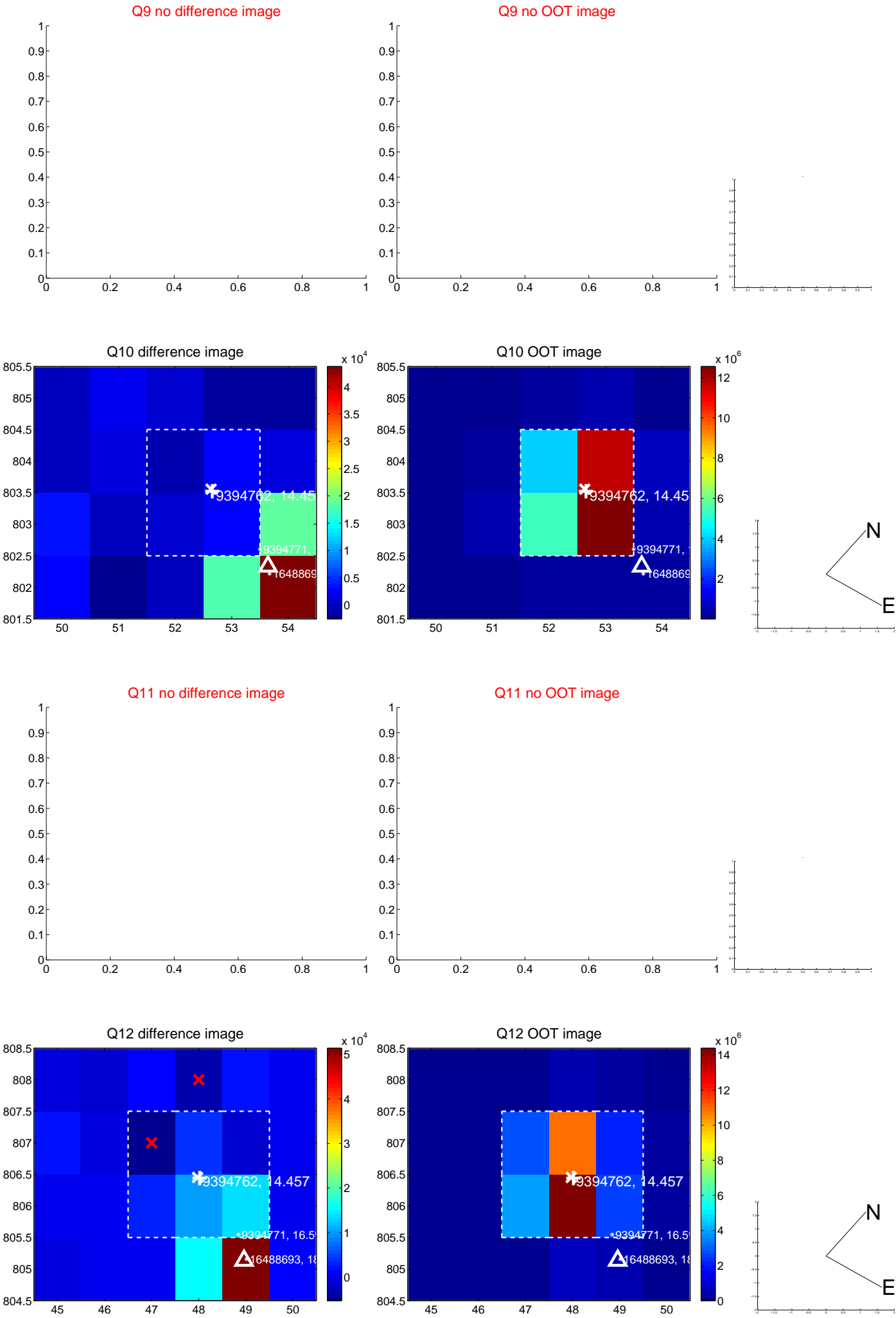
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



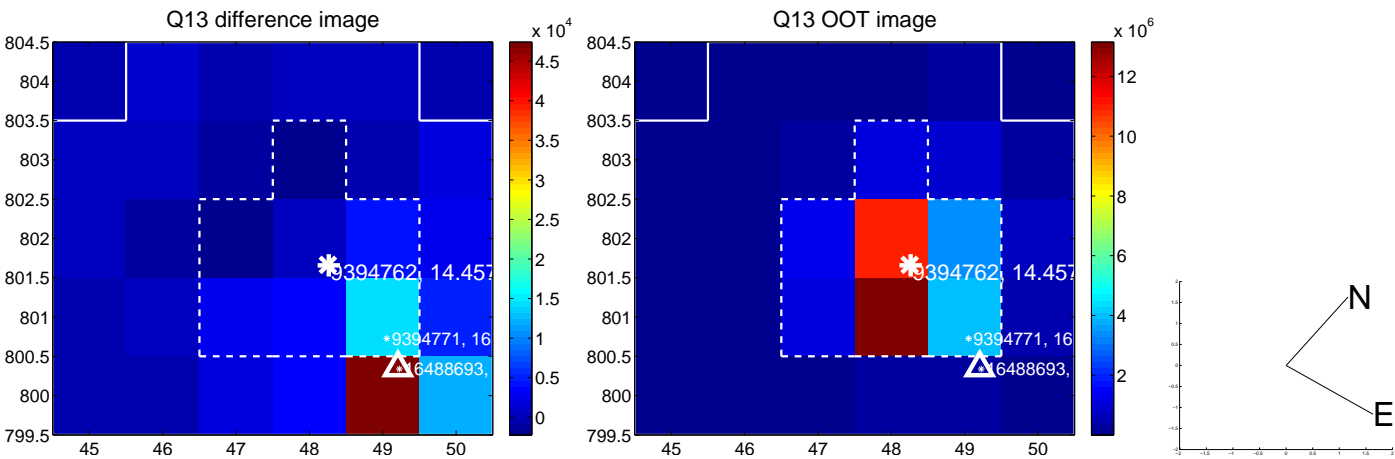
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

