

KIC 009453114

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})
009453114-01	OBS	No	433.343520	365.349171	3349.4	2.328	26.9	1.7	3.38	7570	20.01	18.36
009453114-02	OBS	No	340.865257	251.193008	17981.0	3.929	22.6	9.9	3.38	7570	45.83	25.28
009453114-03	OBS	No	376.676392	250.901126	5862.1	21.337	23.3	9.6	3.38	7570	36.19	22.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009453114-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009453114-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009453114-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

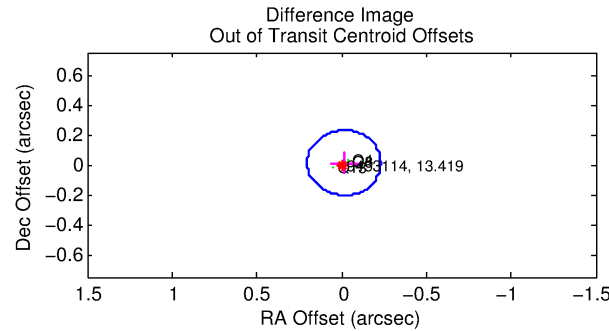
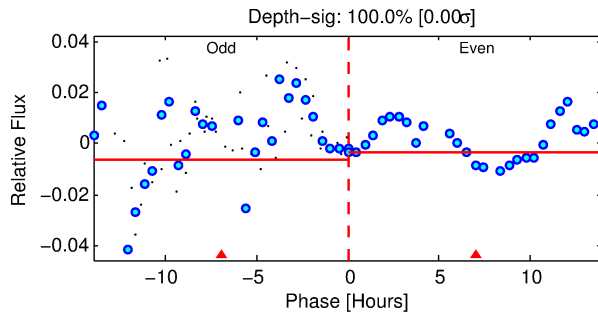
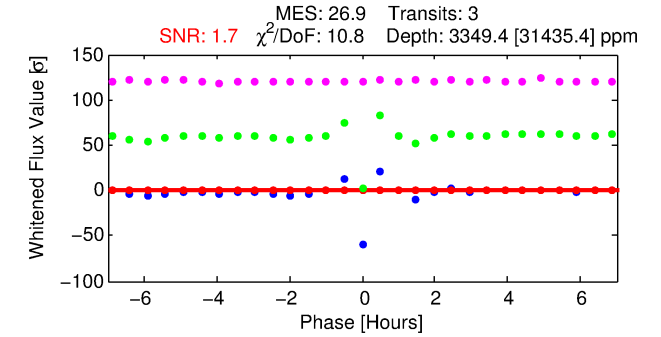
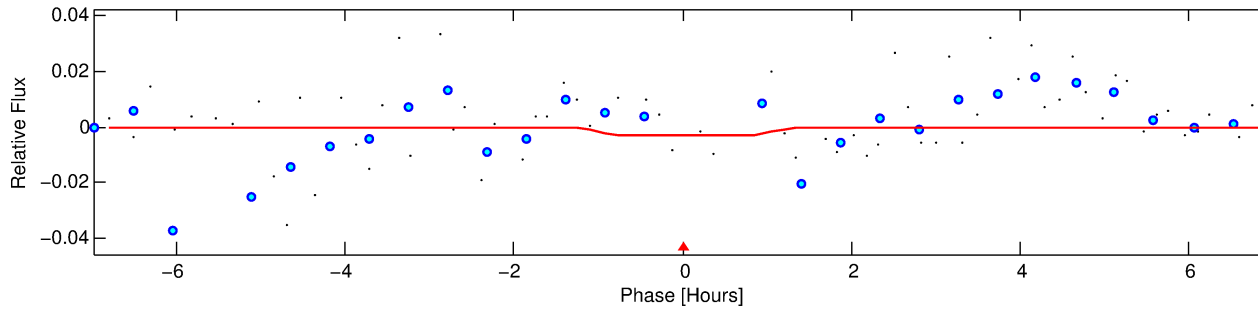
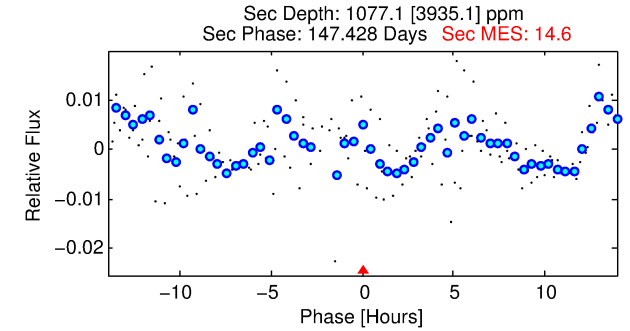
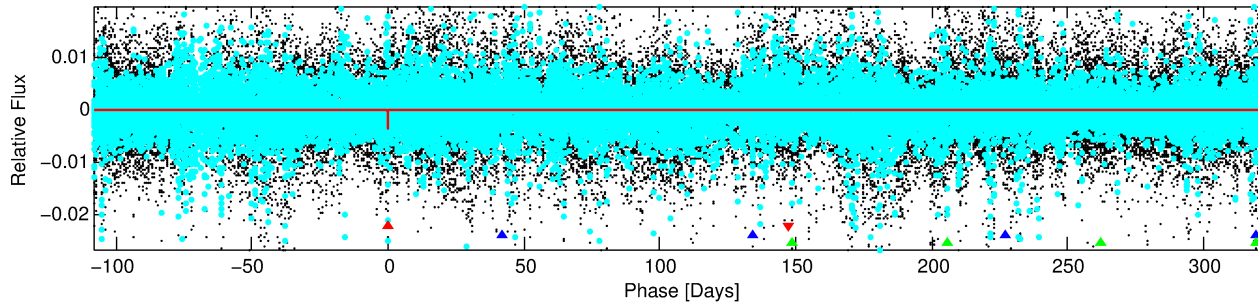
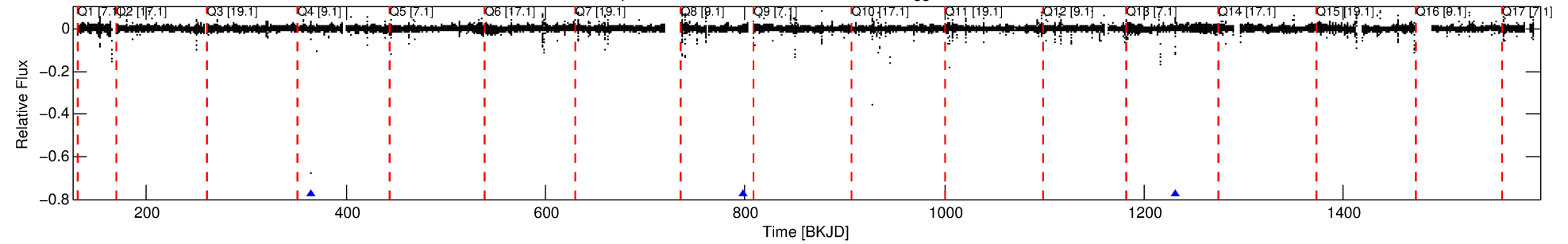
Ephemeris Match Information For 009453114-01

No Significant Match Found

DV One-Page Summary

KIC: 9453114 Candidate: 1 of 3 Period: 433.344 d

Kp: 13.42 R*: 3.38 Rs Teff: 7570.0 K Logg: 3.62 Fe/H: -0.500



DV Fit Results:

Period = 433.34352 [0.23074] d
Epoch = 365.3492 [0.2814] BKJD
Rp/R* = 0.0543 [2.3985]
a/R* = 1417.71 [353633.26]
b = 0.34 [647.91]
Seff = 18.36 [17.69]
Teq = 528 [127] K
Rp = 20.01 [883.69] Re
a = 1.3516 [0.7753] AU
Ag = 2702.51 [238844.21] [0.01sigma]
Teffp = 5884 [129991] K [0.04sigma]

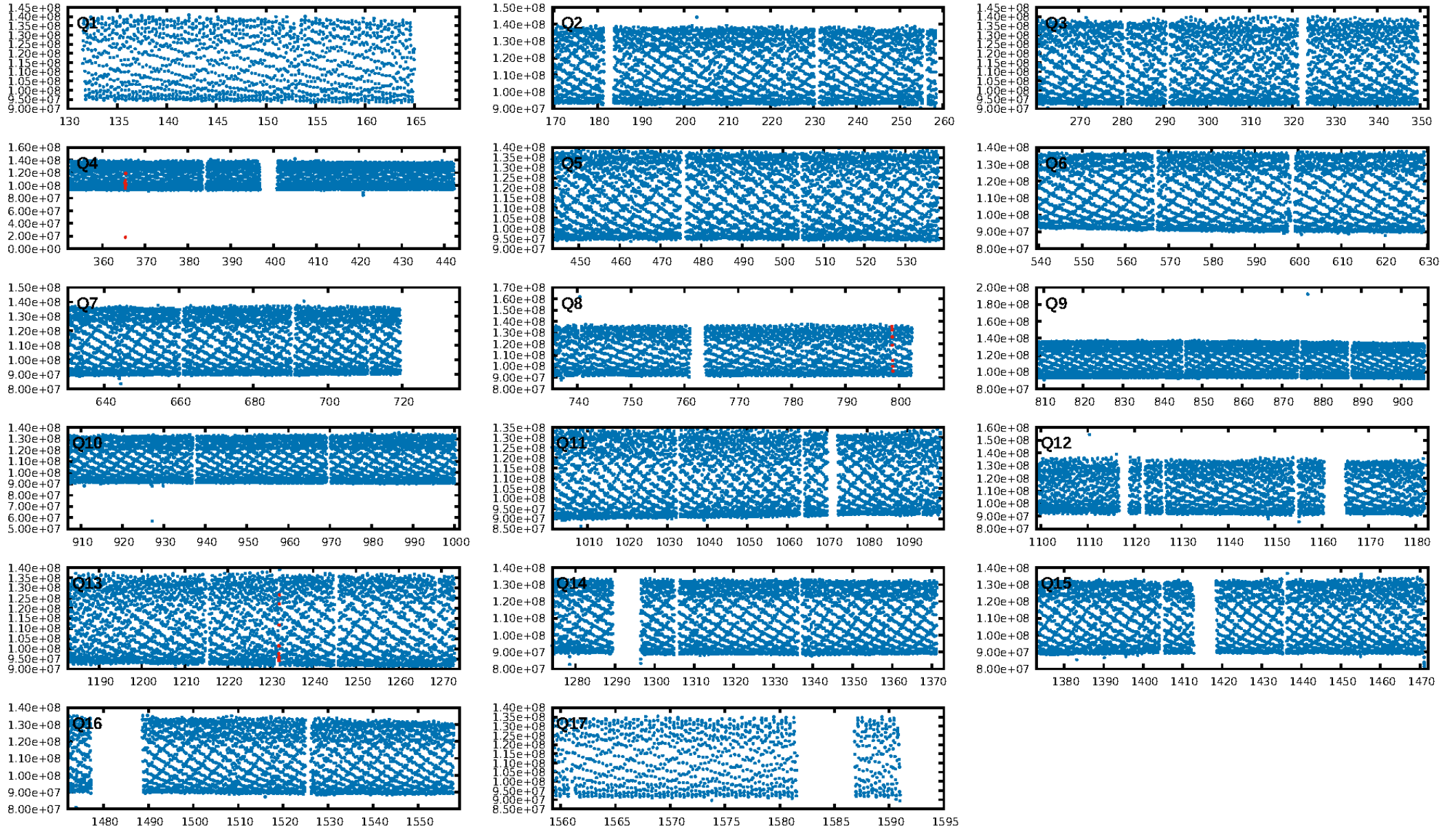
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [63.36sigma]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 59.9%
ModelChiSquareGof-sig: 93.3%
Bootstrap-pfa: 9.11e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.8513
Centroid-sig: 29.2%
Centroid-so: 0.285 arcsec [1.32sigma]
OotOffset-rm: 0.020 arcsec [0.27sigma]
KicOffset-rm: 0.070 arcsec [1.00sigma]
OotOffset-st: 0/0/2/1 [3]
KicOffset-st: 0/0/2/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

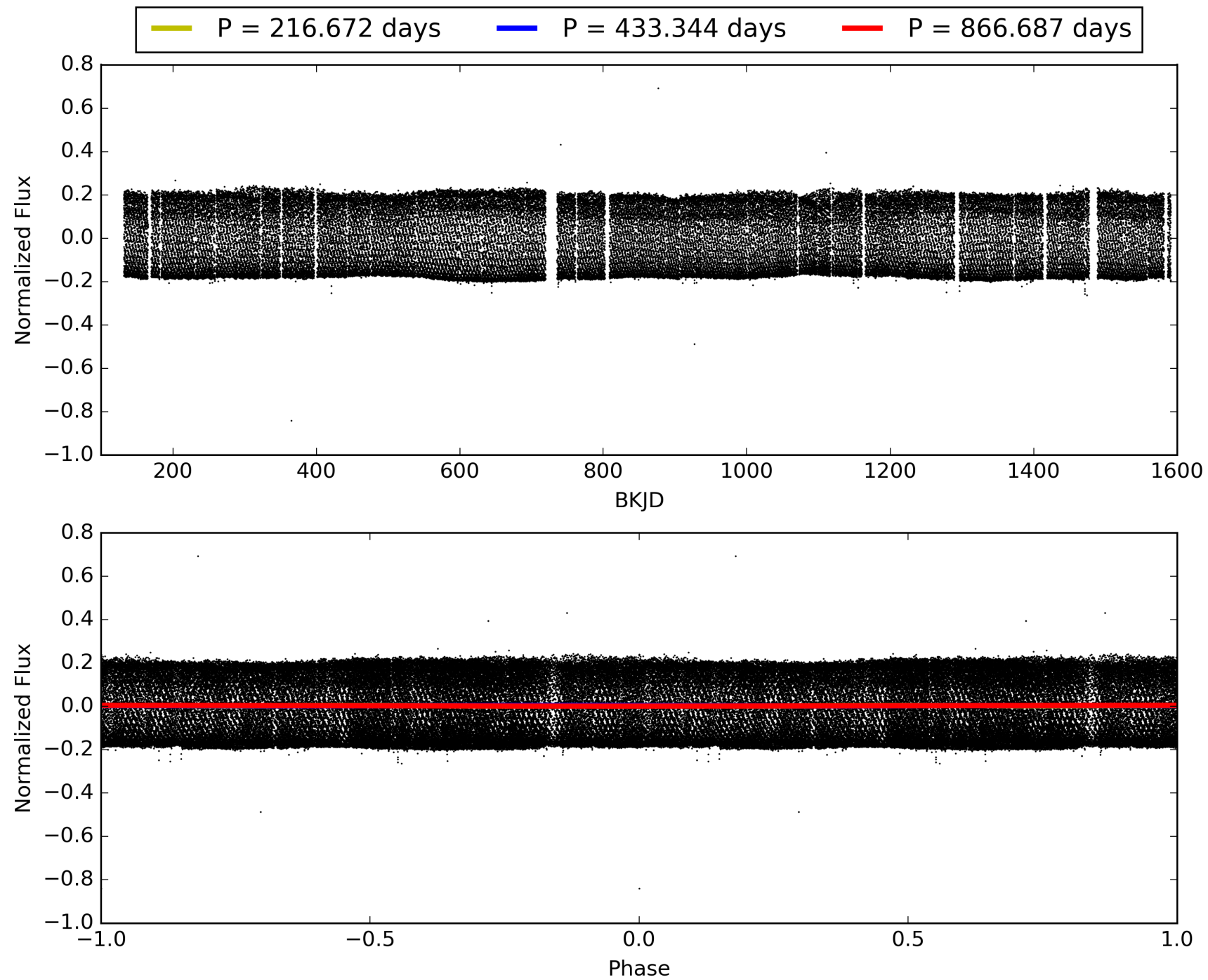
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 03:11:33 Z

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

TCE 009453114-01, PDC Light Curves

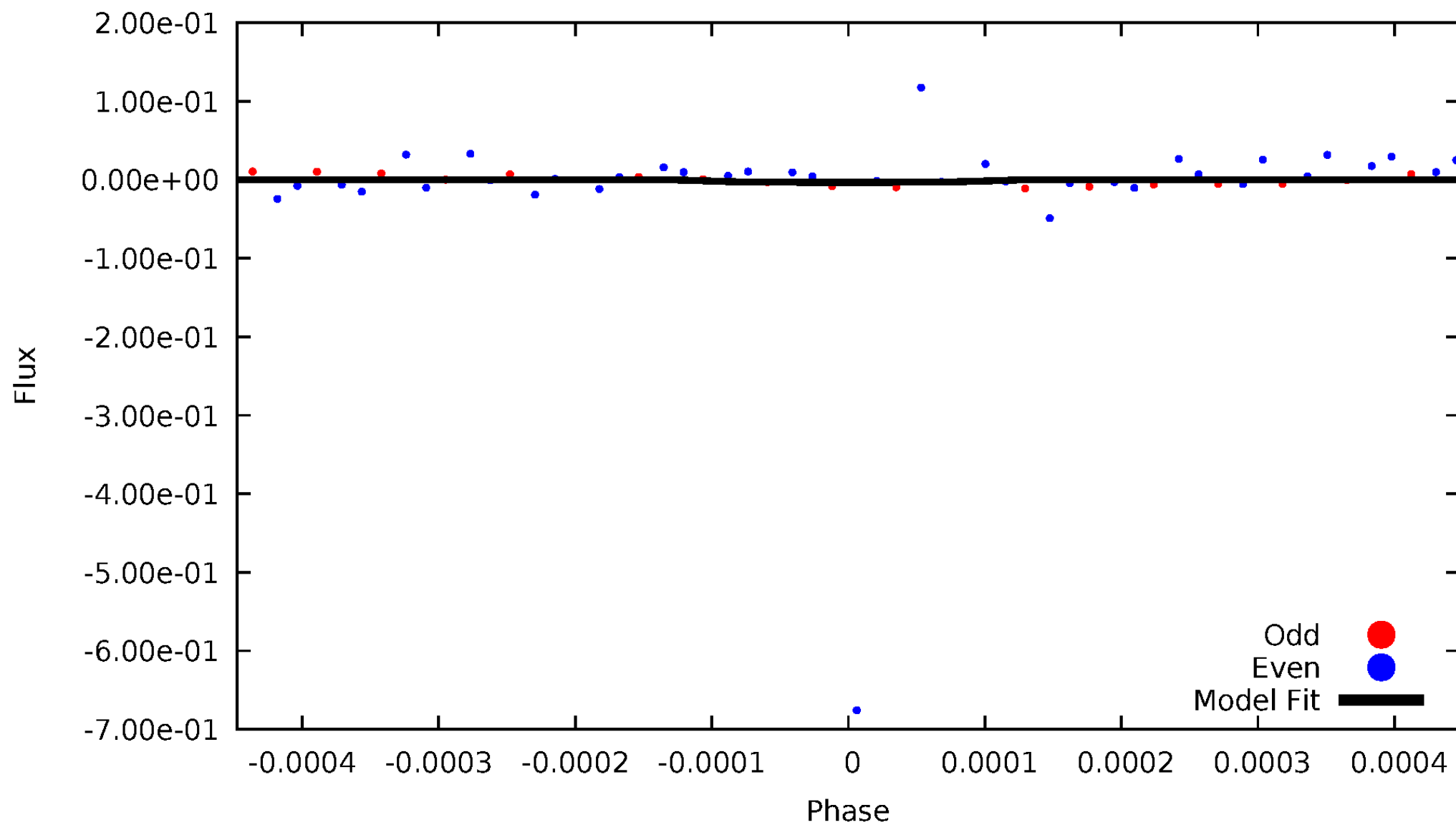


TCE 009453114-01



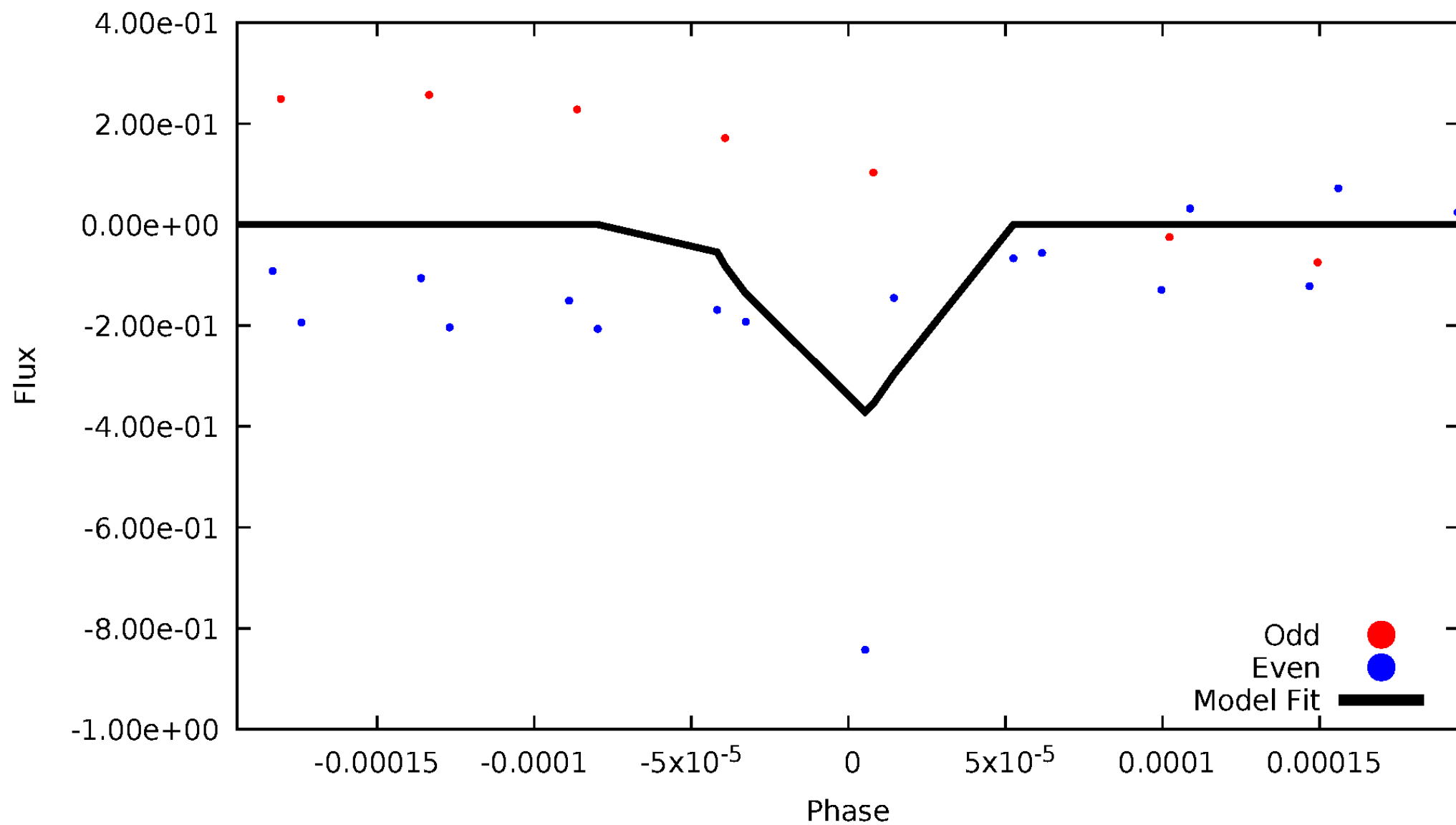
DV Odd/Even

TCE 009453114-01



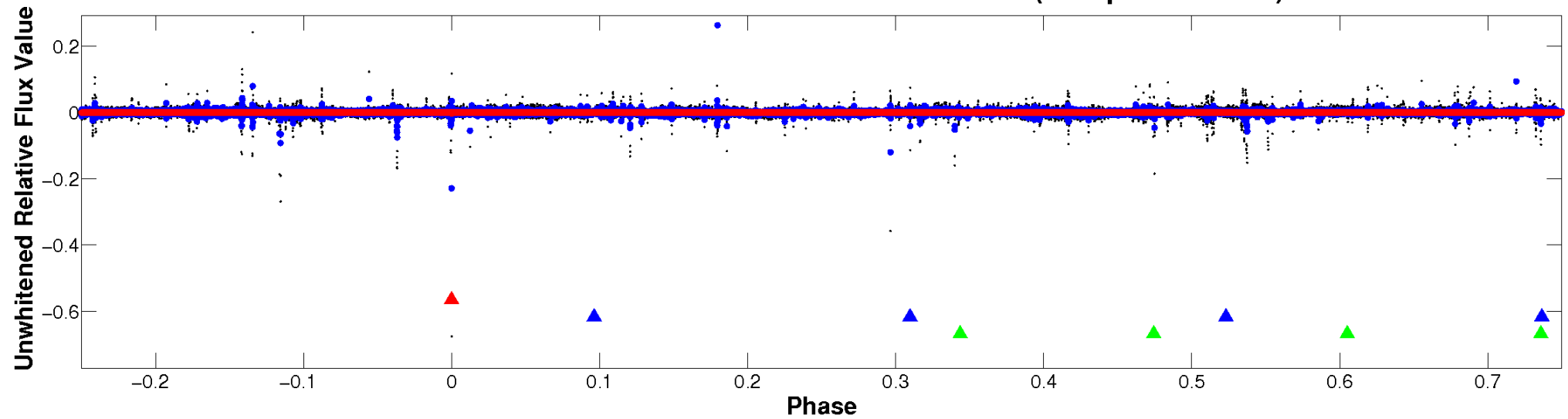
ALT Odd/Even

TCE 009453114-01

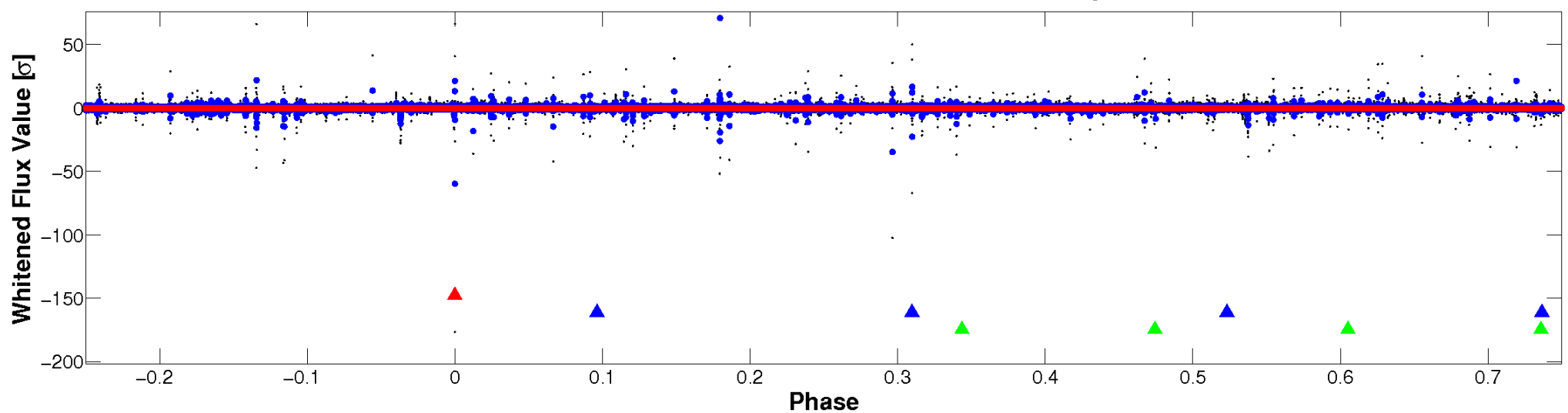


Non-Whitened Vs. Whitened Light Curve

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

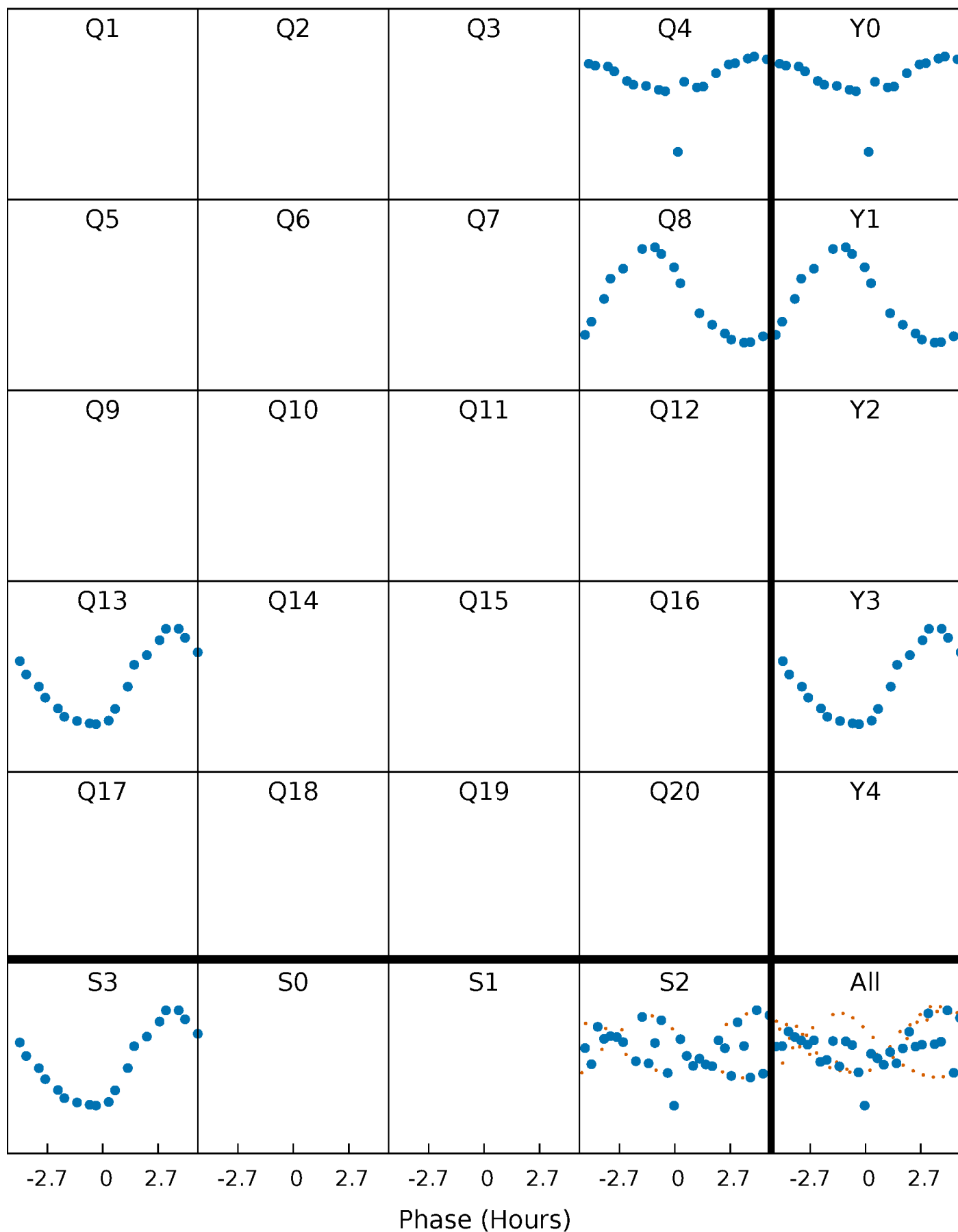


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



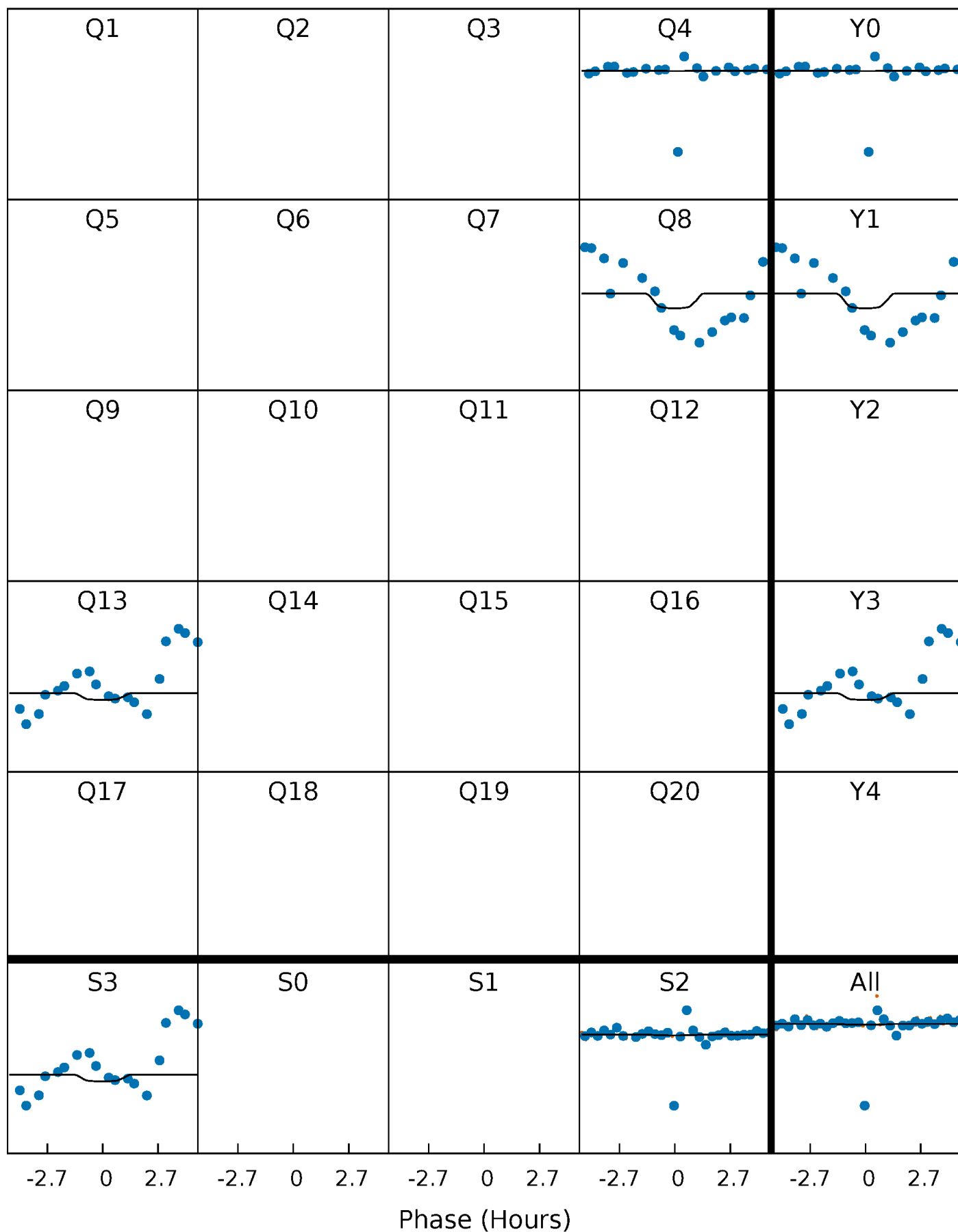
PDC Quarter-Phased Transit Curves

TCE 009453114-01 P=433.343520 Days $T_0=365.349171$ (BKJD)



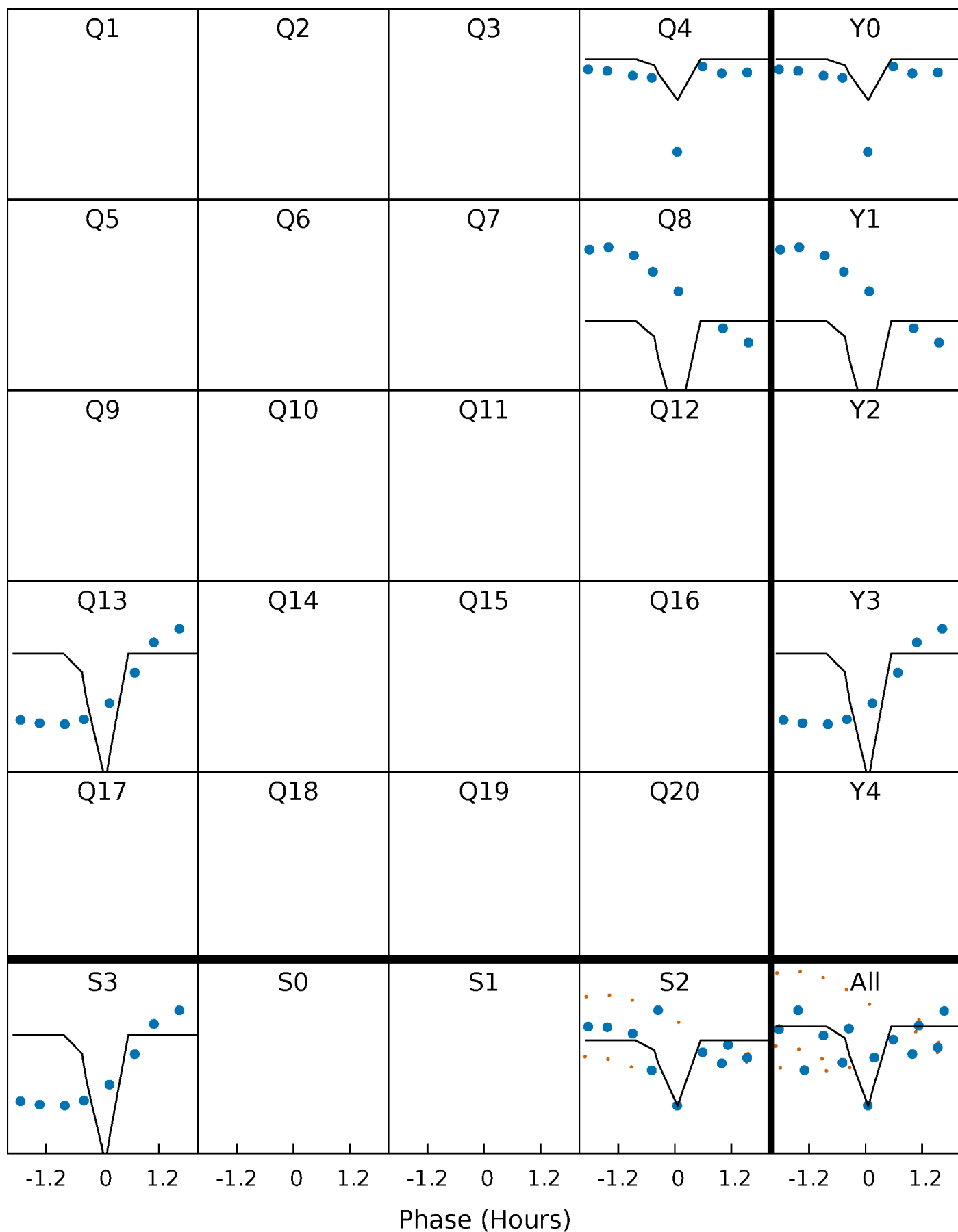
DV Quarter-Phased Transit Curves

TCE 009453114-01 P=433.343520 Days $T_0=365.349171$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

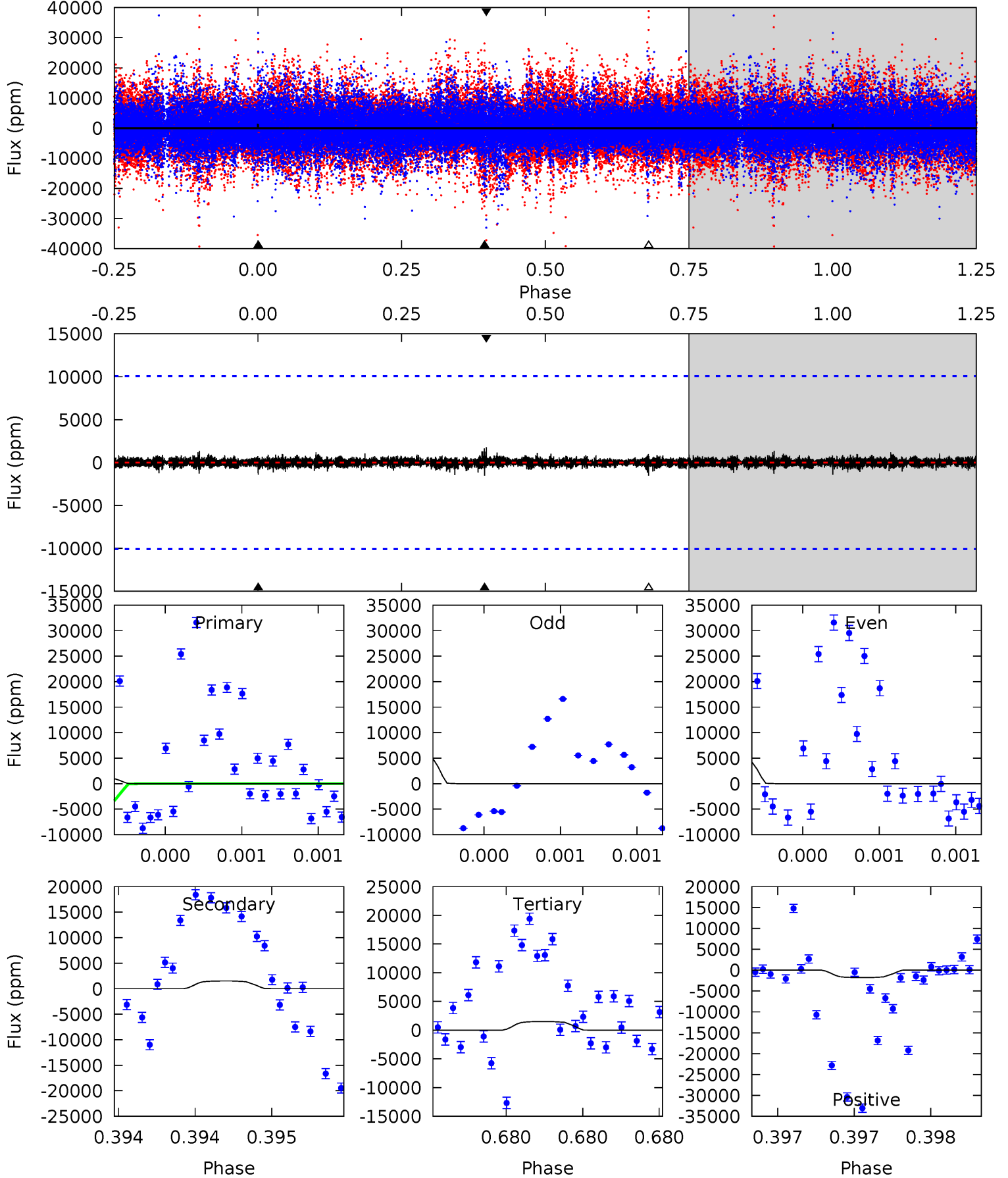
TCE 009453114-01 P=433.354940 Days $T_0=365.349511$ (BKJD)



DV Model-Shift Uniqueness Test

009453114-01, P = 433.343520 Days, E = 365.349171 Days

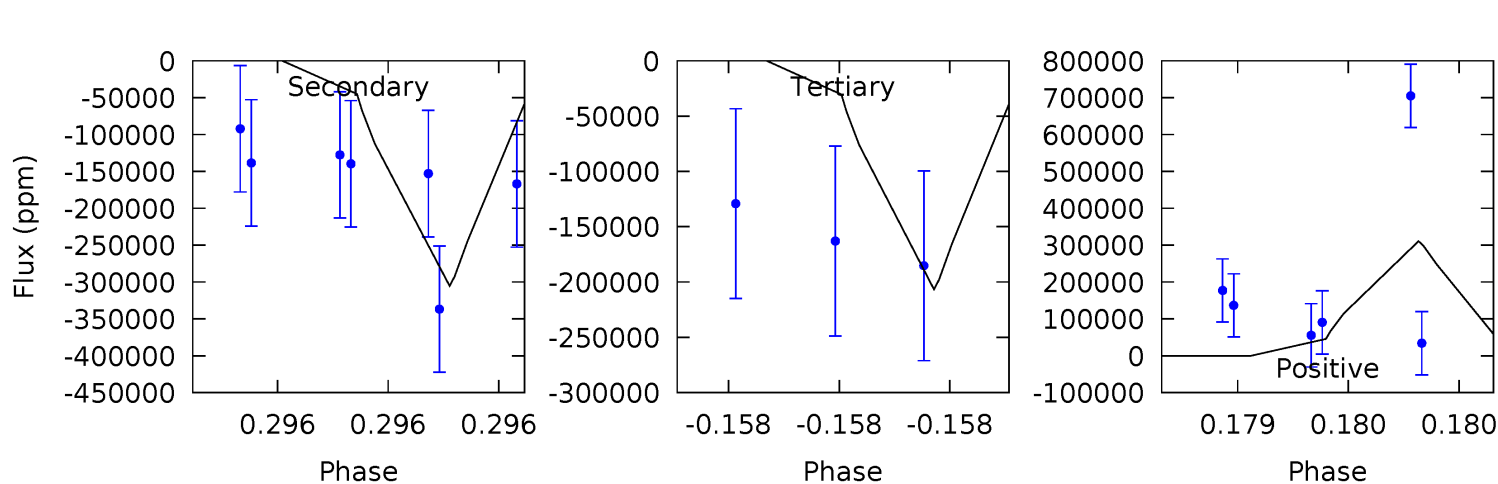
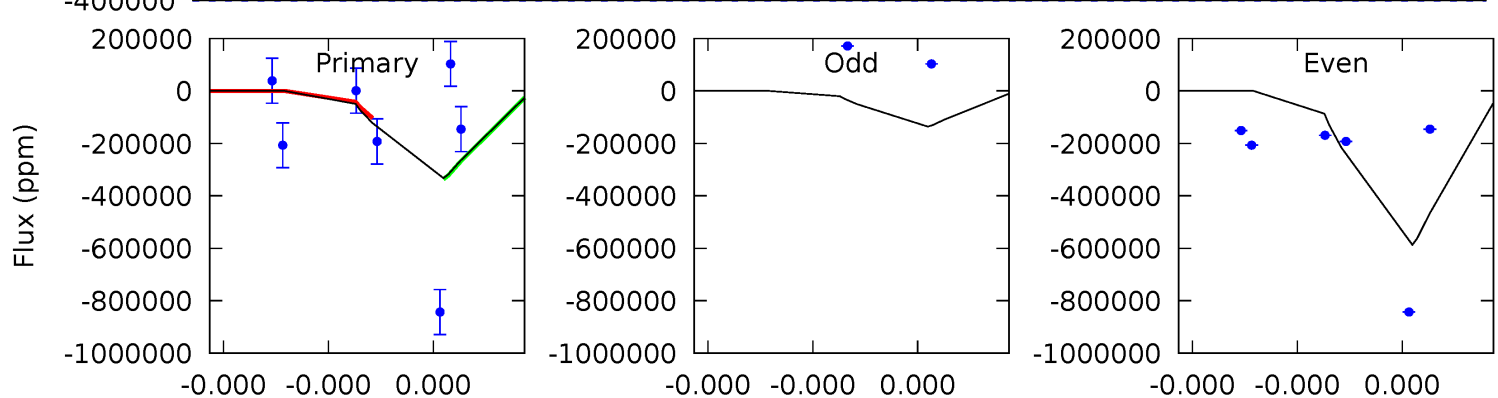
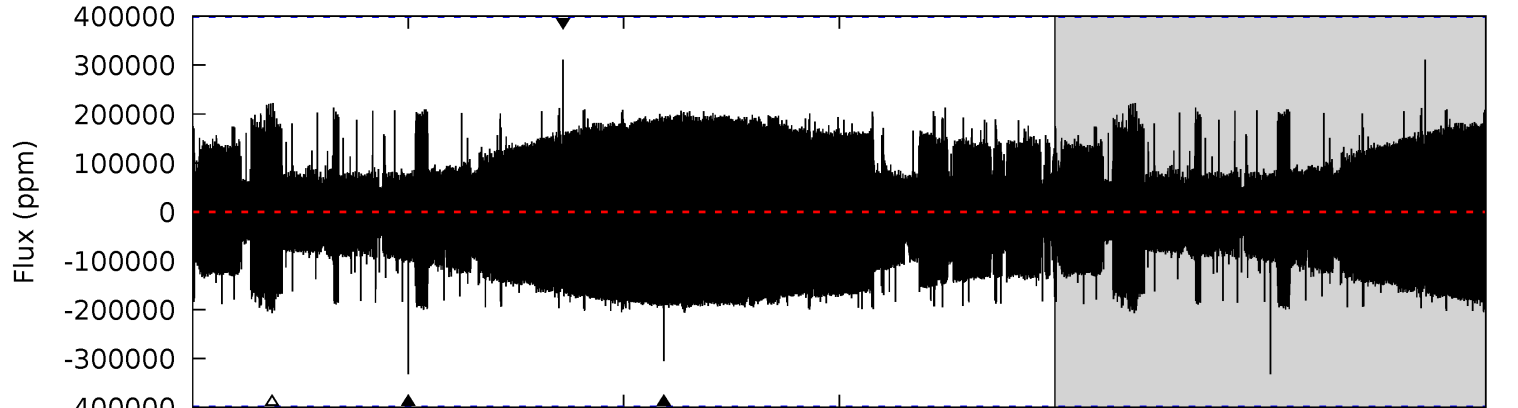
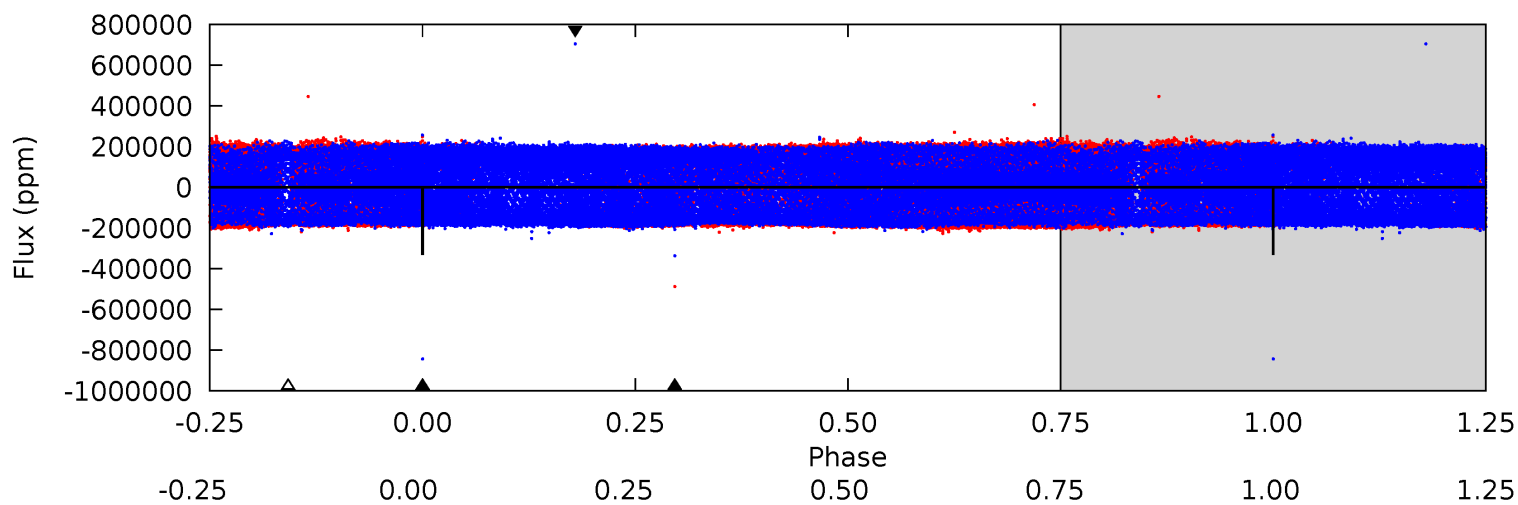
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.79	0.85	0.85	1.00	5.69	3.66	0.15	-0.06	-0.22	0.01	-0.15	0.21	7.48	0.54	0.48



Alt Model-Shift Uniqueness Test

009453114-01, P = 433.354940 Days, E = 365.349511 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.94	4.54	3.07	4.63	5.94	4.03	1.35	1.87	0.31	1.47	-0.08	3.66	1.31	0.48	1.73



Stellar Parameters For KIC 009453114

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	7570^{+234}_{-313}	$3.625^{+0.569}_{-0.100}$	$-0.500^{+0.250}_{-0.300}$	$3.376^{+0.332}_{-1.883}$	$1.752^{+0.164}_{-0.491}$	$0.064^{+0.493}_{-0.019}$
	+3%/-4%	+16%/-3%	+50%/-60%	+10%/-56%	+9%/-28%	+768%/-29%
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 009453114-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1513 ± 1770	$525.96^{+601.03}_{-386.49}$	718^{+46}_{-95}	2035^{+787}_{-3755}	$3.776^{+57.143}_{-4.016}$
Alt.	-305258 ± 67205	$587.46^{+671.94}_{-419.09}$	717^{+49}_{-108}	4636^{+3984}_{-1090}	1259^{+13501}_{-987}

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

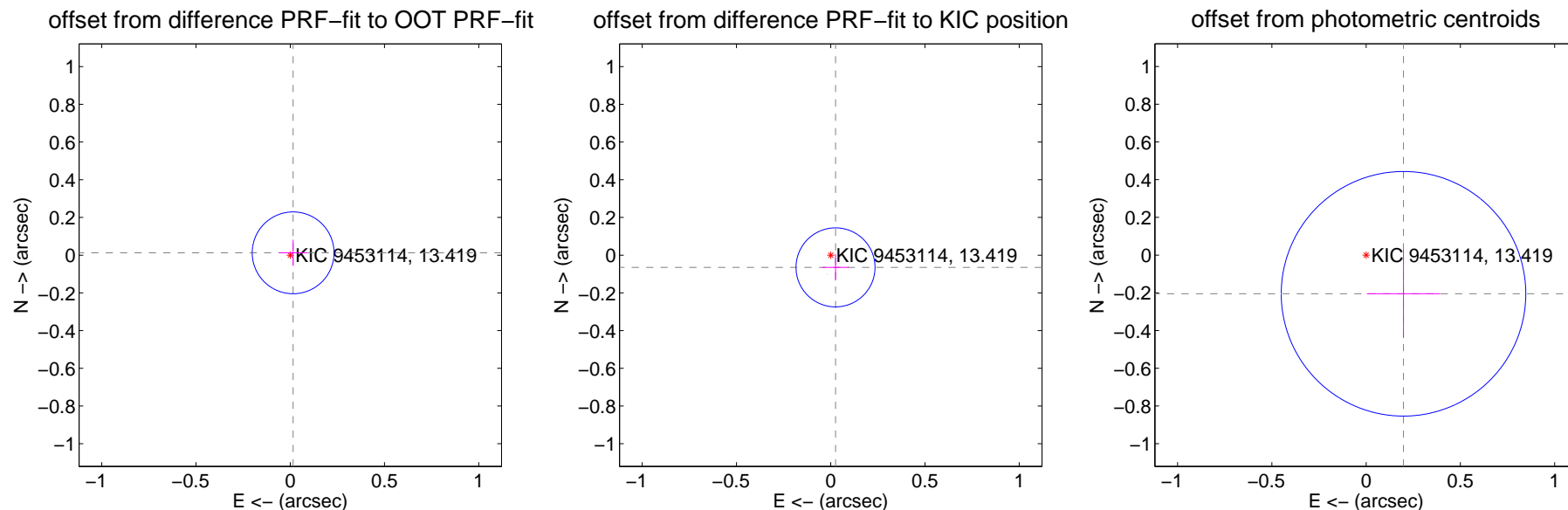
DV Centroid Data

Supplemental centroid analysis for 009453114-01. Kepler magnitude: 13.42. Transit SNR 1.66

There are 2 quarters with good PRF difference image offsets

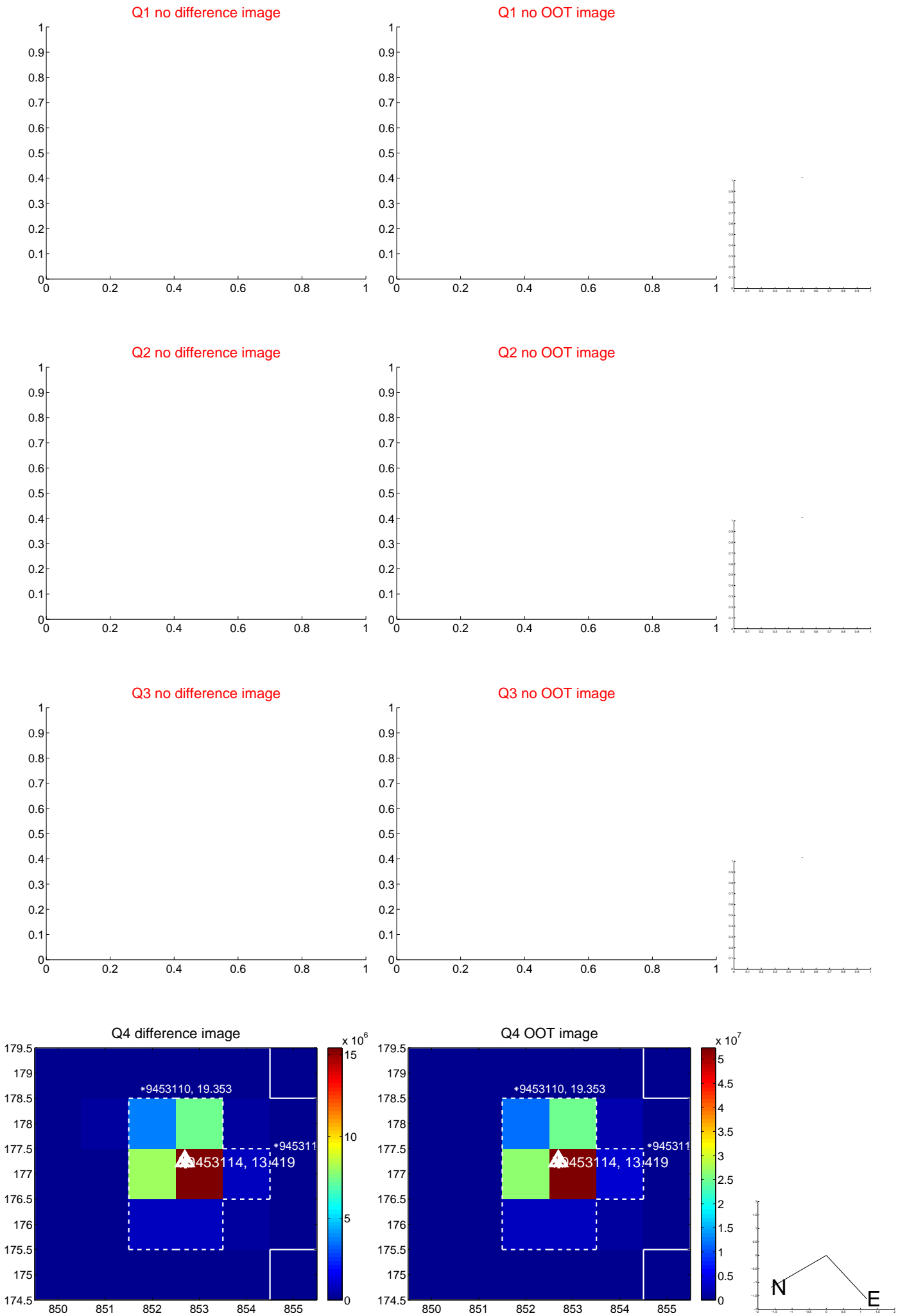
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.020 ± 0.072	0.27	-0.015 ± 0.074	0.012 ± 0.069
PRF-fit source offset from KIC position	0.070 ± 0.070	1.00	-0.025 ± 0.071	-0.065 ± 0.070
photometric centroid source offset	0.29 ± 0.22	1.32	-0.20 ± 0.19	-0.21 ± 0.23

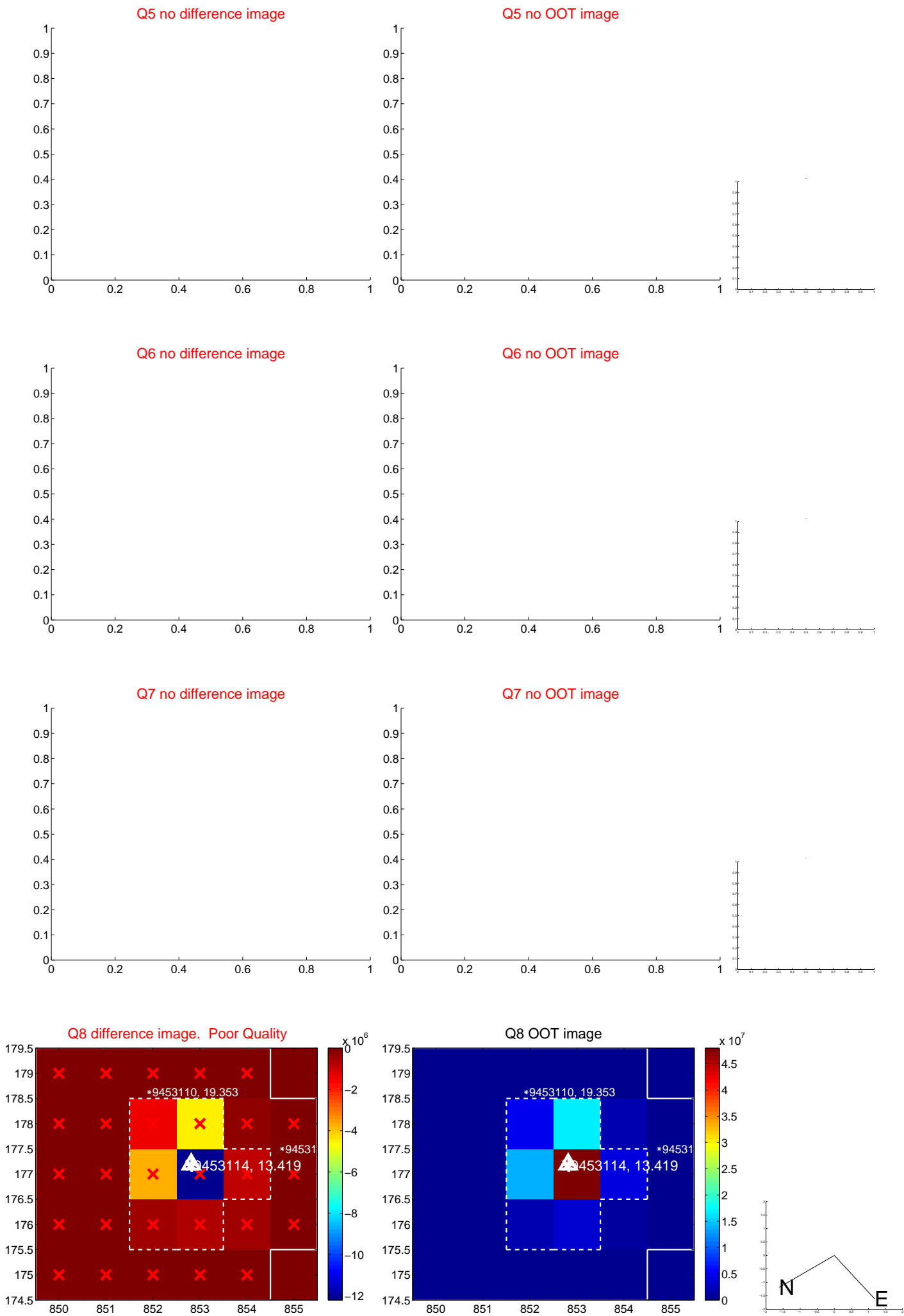


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



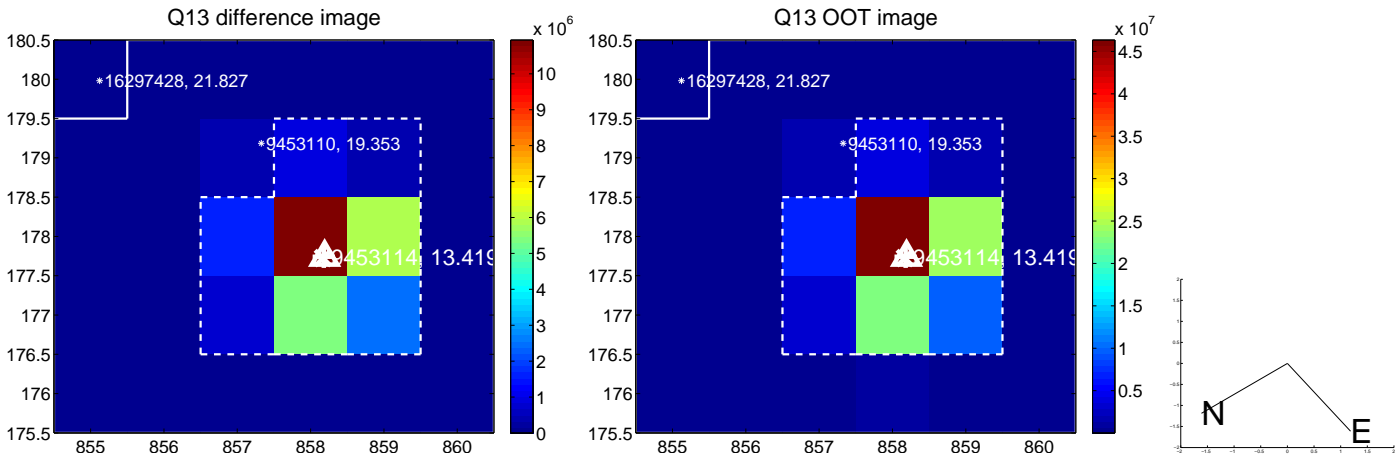
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



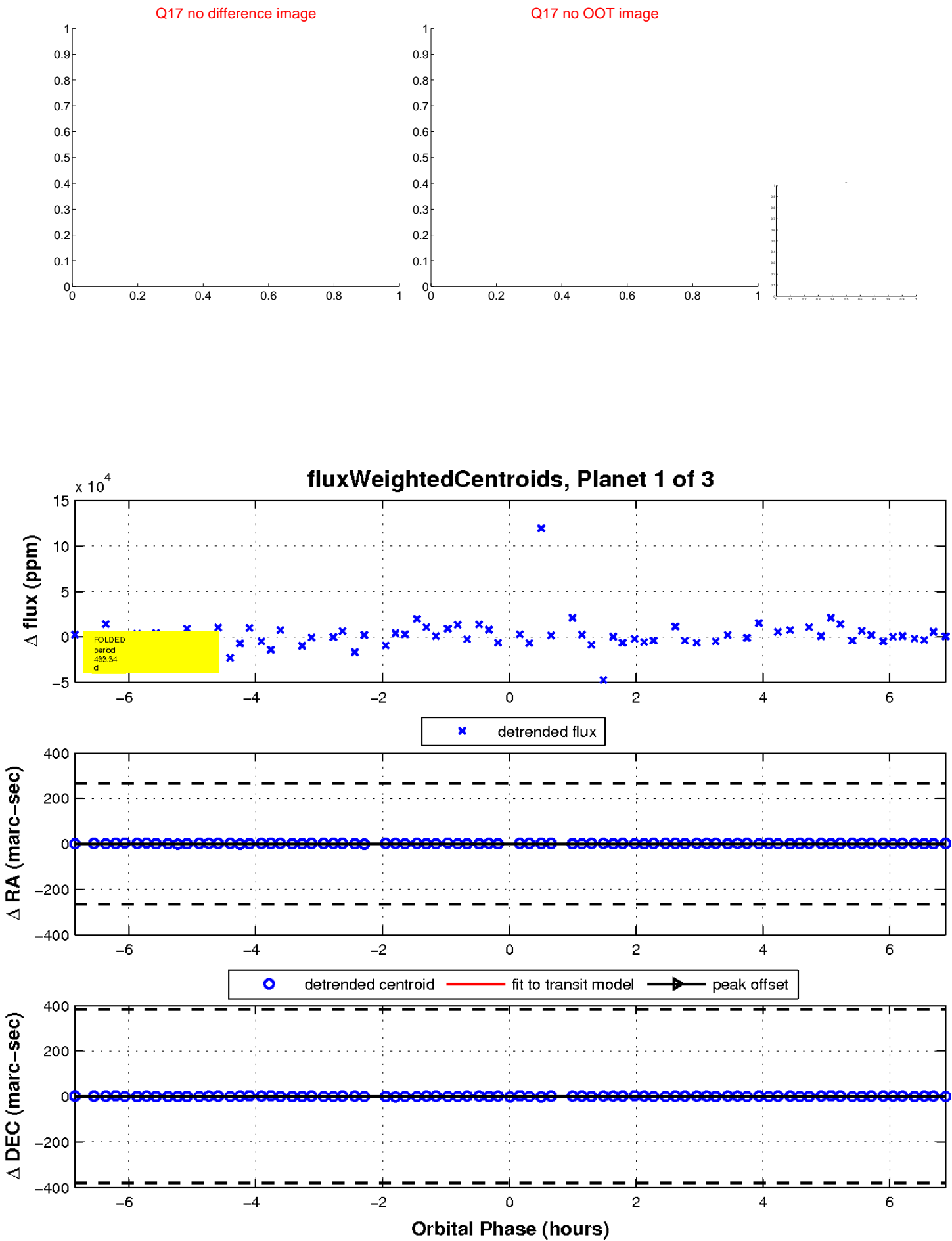
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

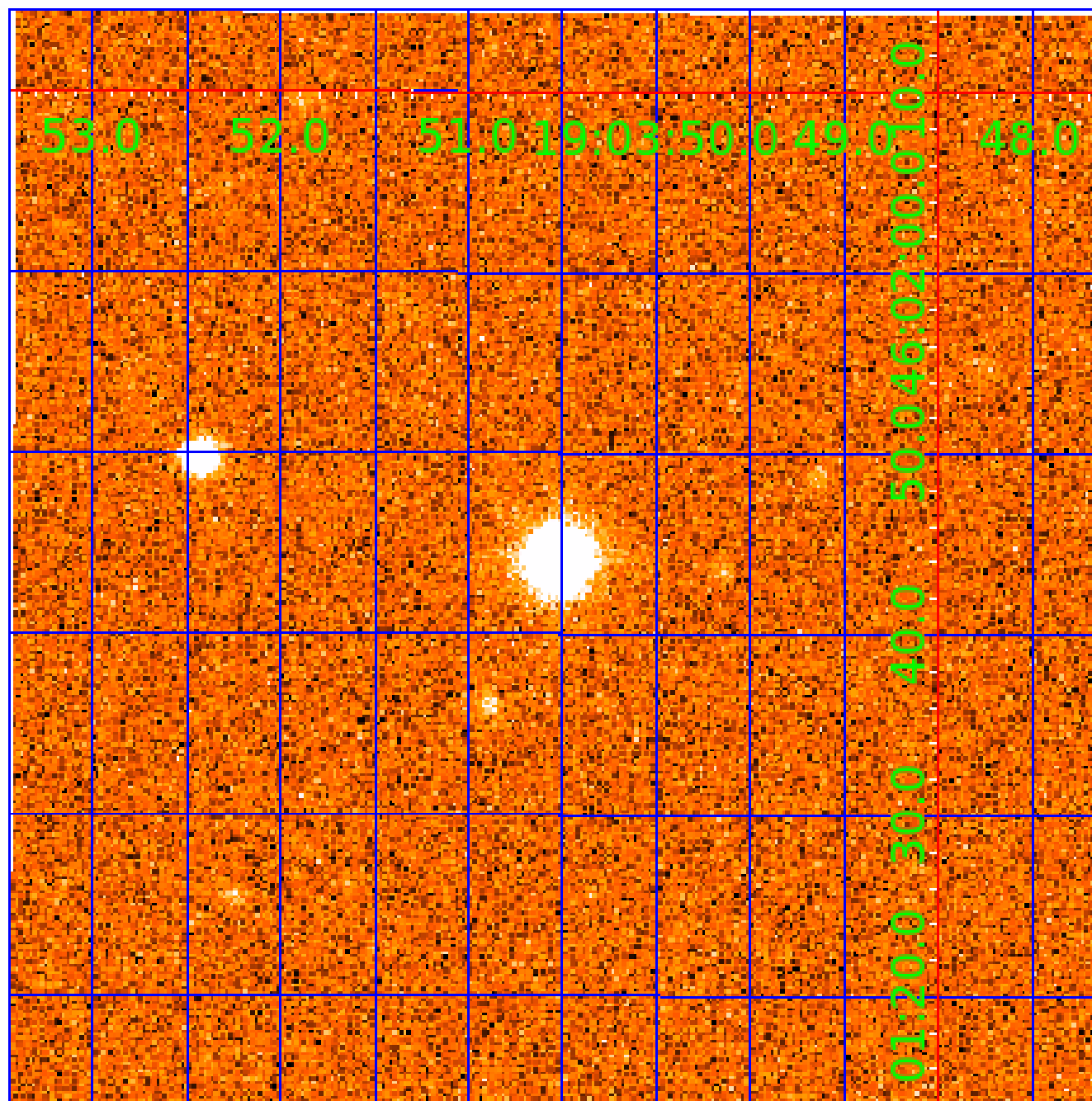


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009453114

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})
009453114-01	OBS	No	433.343520	365.349171	3349.4	2.328	26.9	1.7	3.38	7570	20.01	18.36
009453114-02	OBS	No	340.865257	251.193008	17981.0	3.929	22.6	9.9	3.38	7570	45.83	25.28
009453114-03	OBS	No	376.676392	250.901126	5862.1	21.337	23.3	9.6	3.38	7570	36.19	22.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009453114-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009453114-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009453114-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

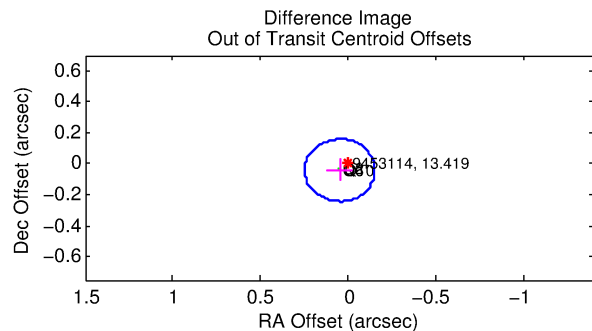
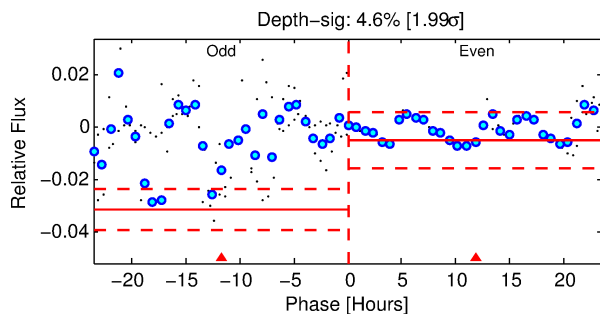
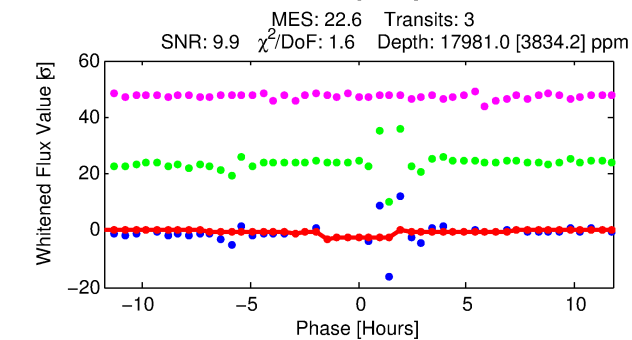
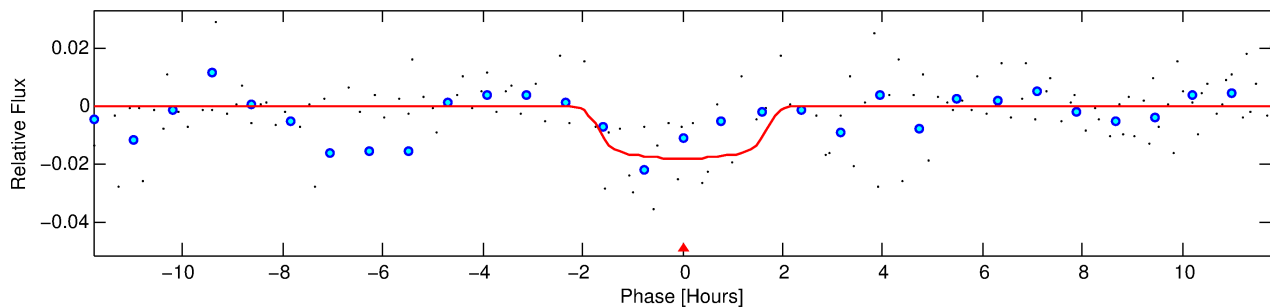
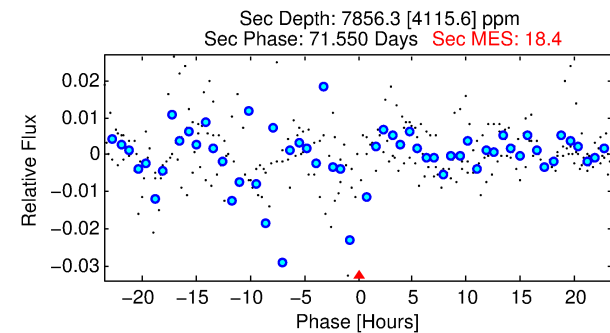
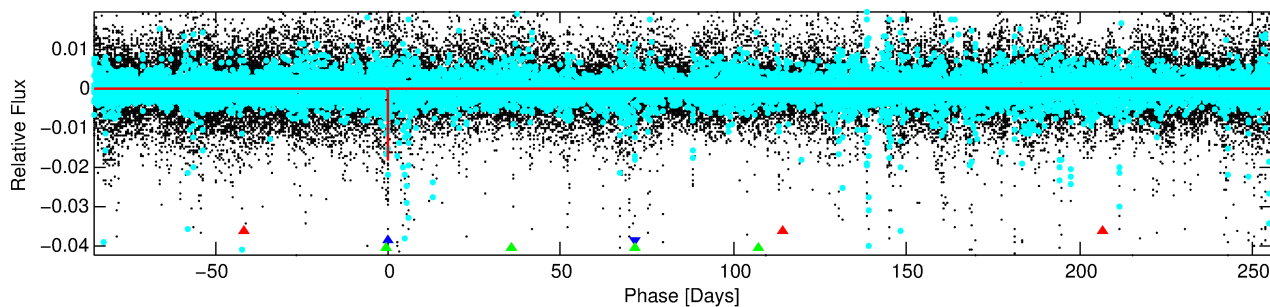
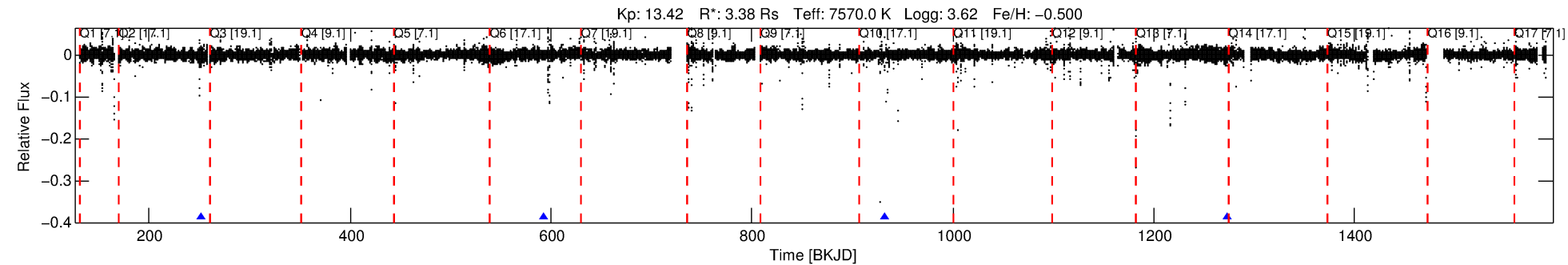
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009453114-02

No Significant Match Found

DV One-Page Summary

KIC: 9453114 Candidate: 2 of 3 Period: 340.865 d



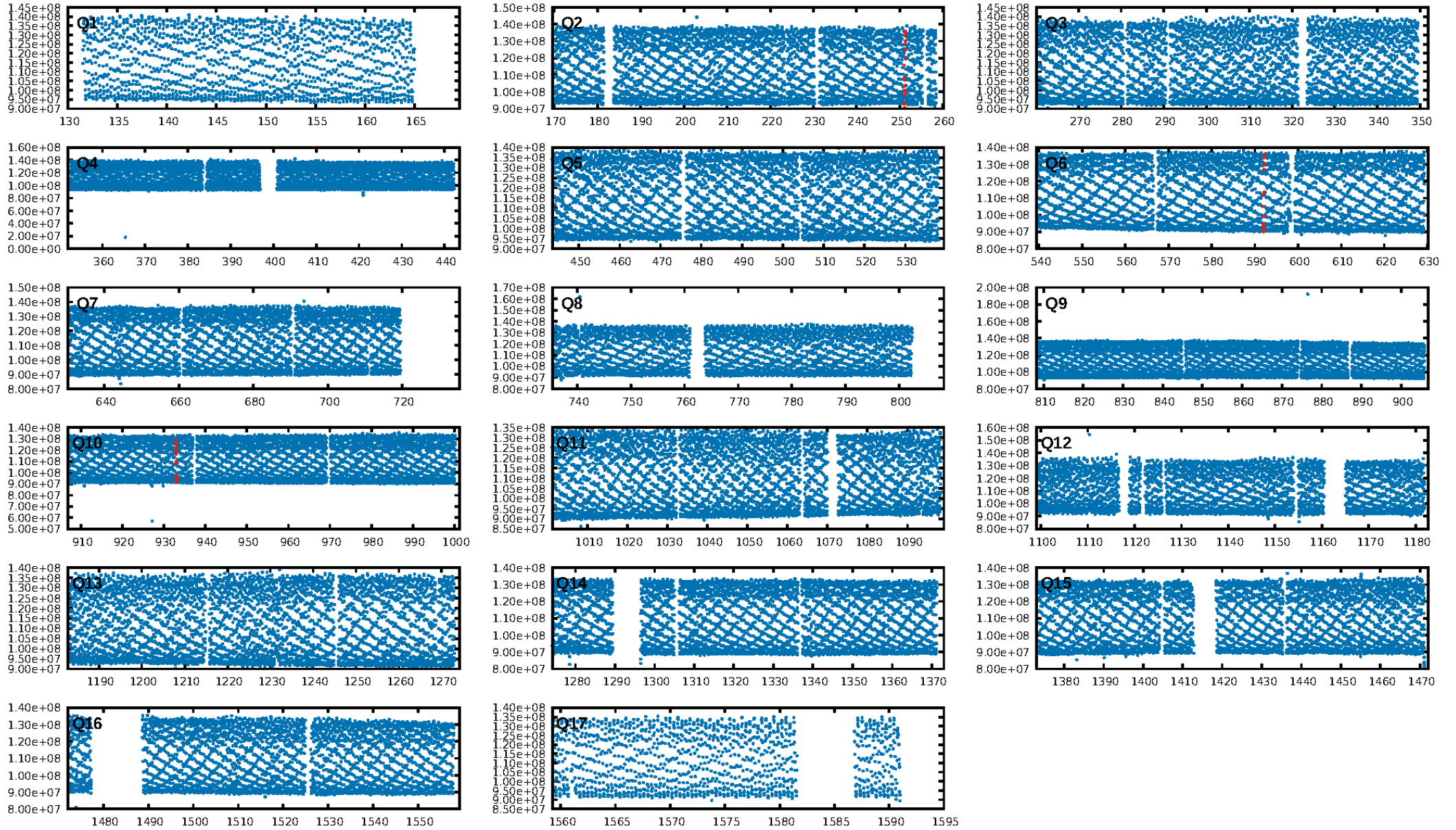
DV Fit Results:

Period = 340.86526 [0.01239] d
Epoch = 251.1930 [0.0156] BKJD
Rp/R* = 0.1244 [0.0363]
a/R* = 745.17 [1037.52]
b = 0.02 [63.95]
Seff = 25.28 [24.36]
Teq = 572 [138] K
Rp = 45.83 [28.85] Re
a = 1.1517 [0.6606] AU
Ag = 2729.29 [3361.18] [0.81σ]
Teffp = 6390 [1281] K [4.52σ]

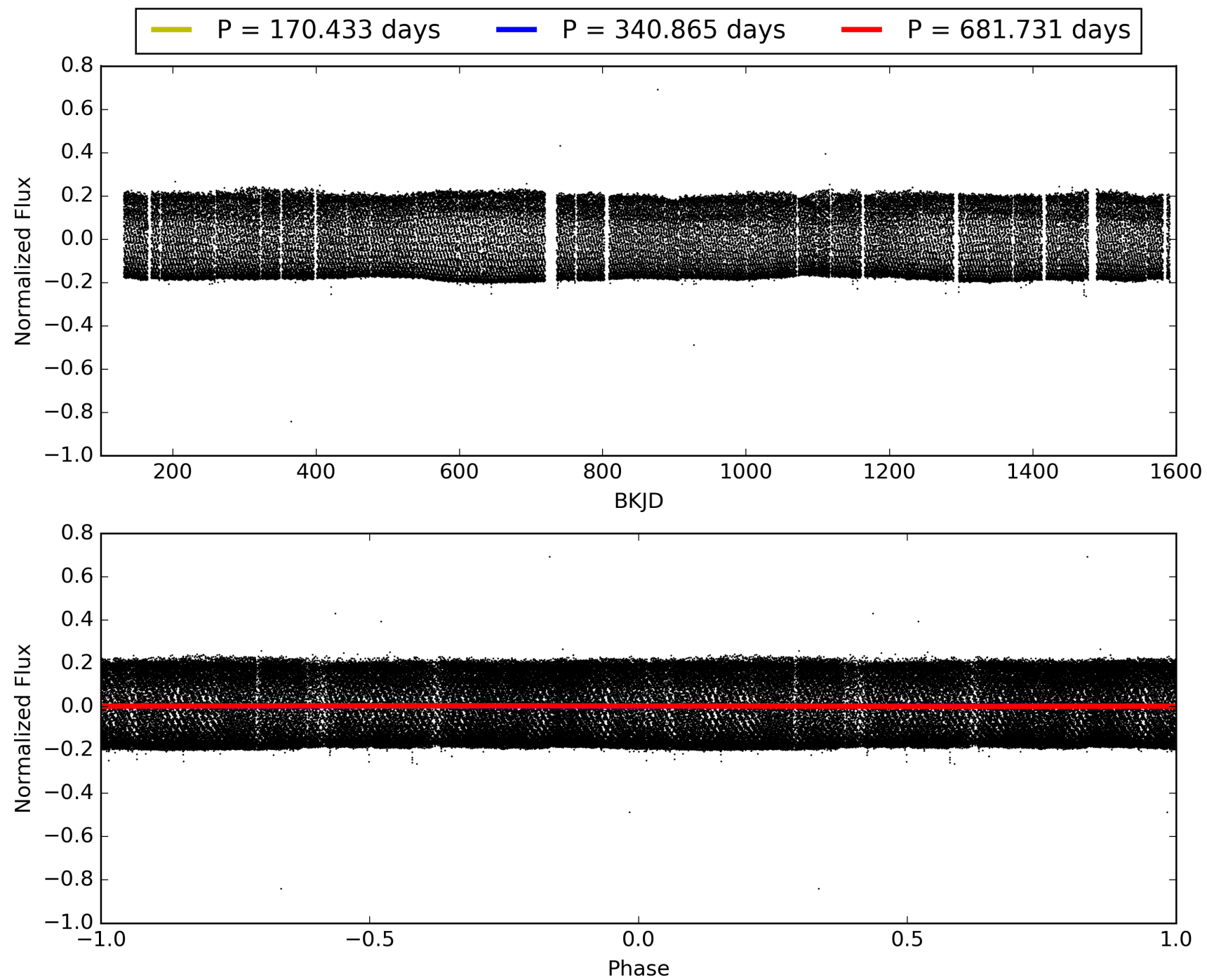
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [39.61σ]
ModelChiSquare2-sig: 0.3%
ModelChiSquareGof-sig: 19.2%
Bootstrap-pfa: 1.06e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.771
Centroid-sig: 44.8%
Centroid-so: 0.068 arcsec [2.34σ]
OotOffset-rm: 0.064 arcsec [0.96σ]
OotOffset-st: 3/0/0/0 [3]
KicOffset-rm: 0.086 arcsec [1.23σ]
KicOffset-st: 3/0/0/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.67 [2/3]

TCE 009453114-02, PDC Light Curves

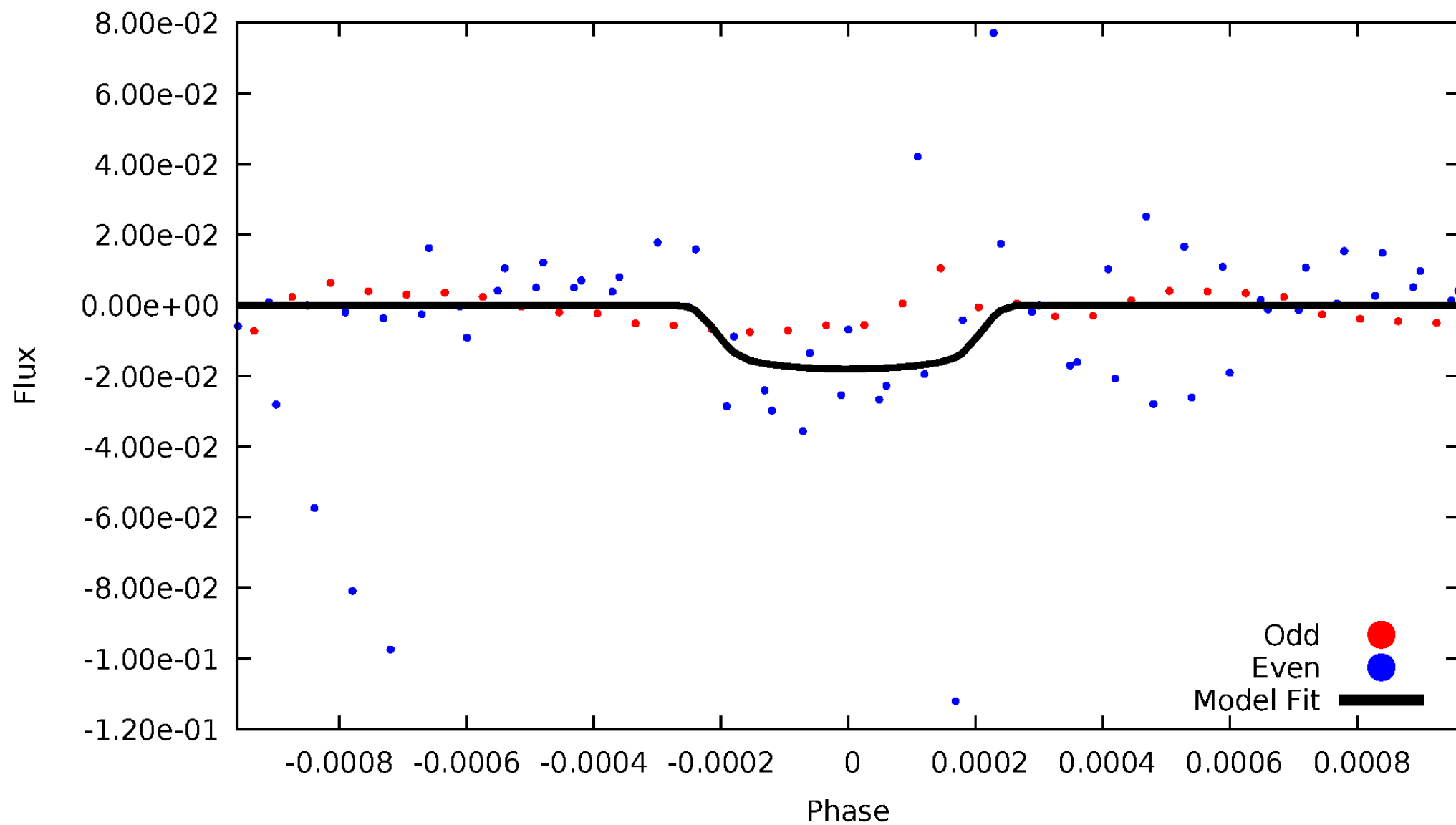


TCE 009453114-02



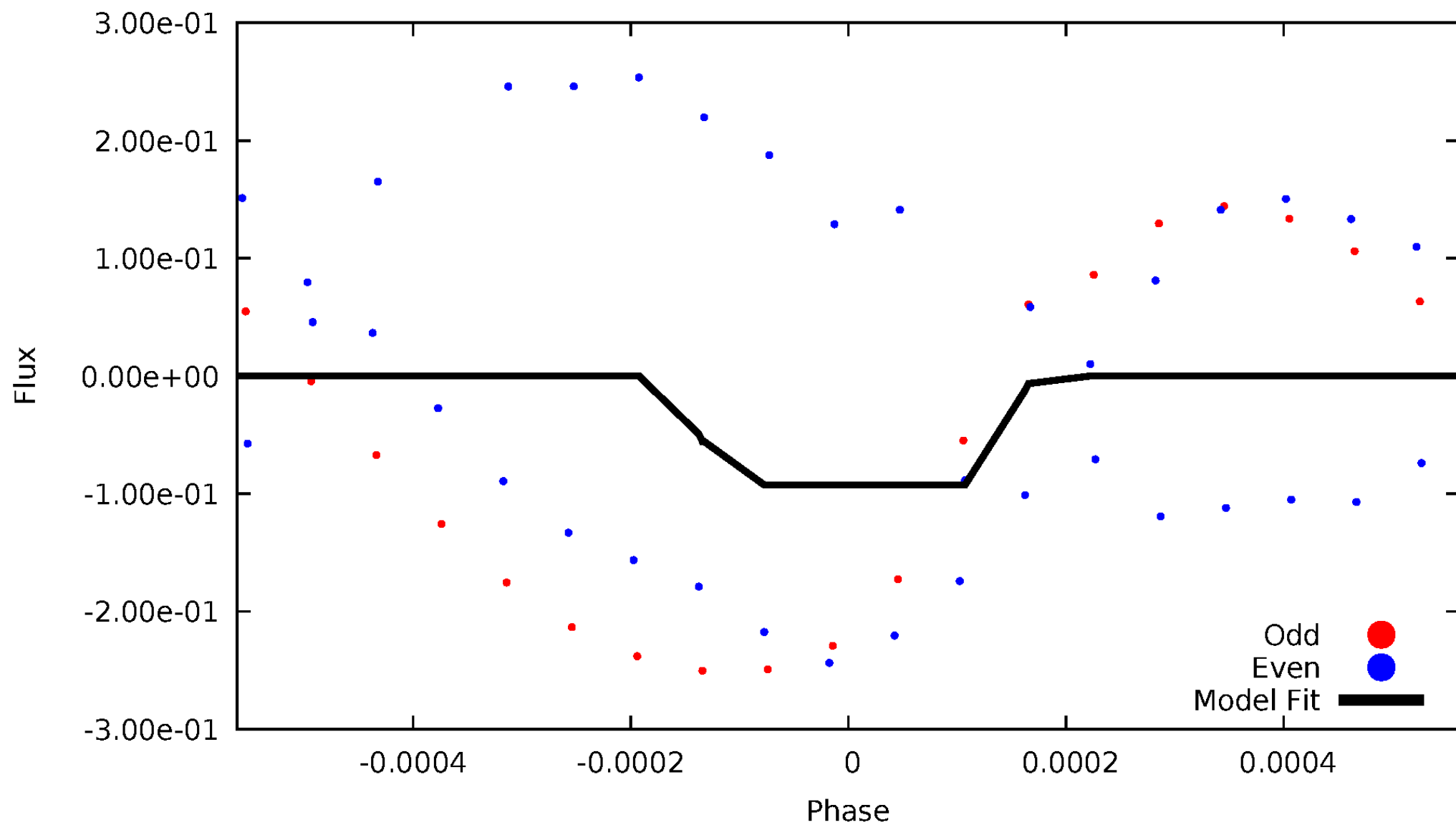
DV Odd/Even

TCE 009453114-02



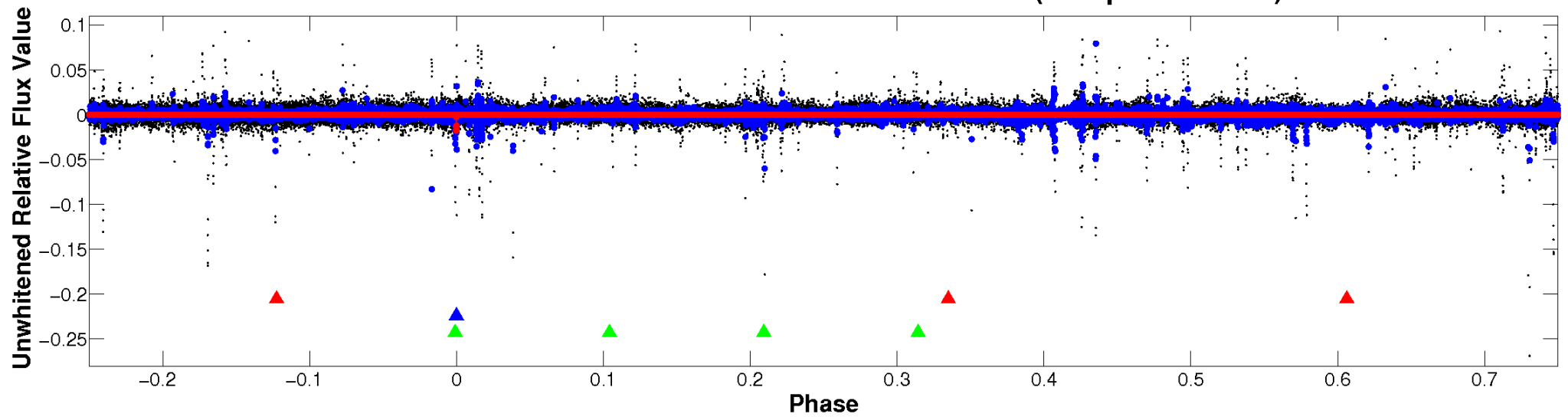
ALT Odd/Even

TCE 009453114-02

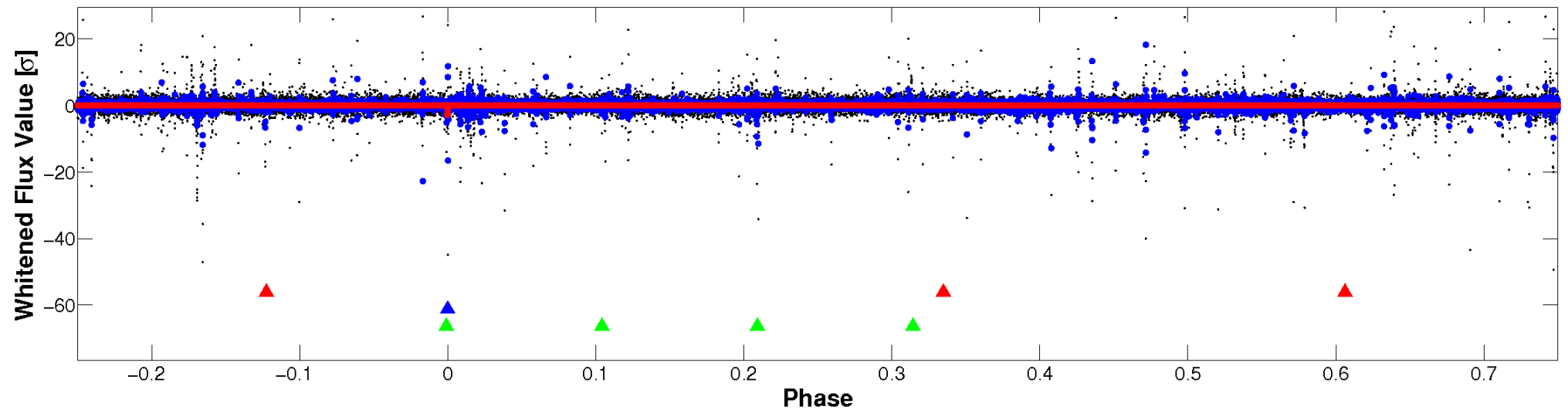


Non-Whitened Vs. Whitened Light Curve

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

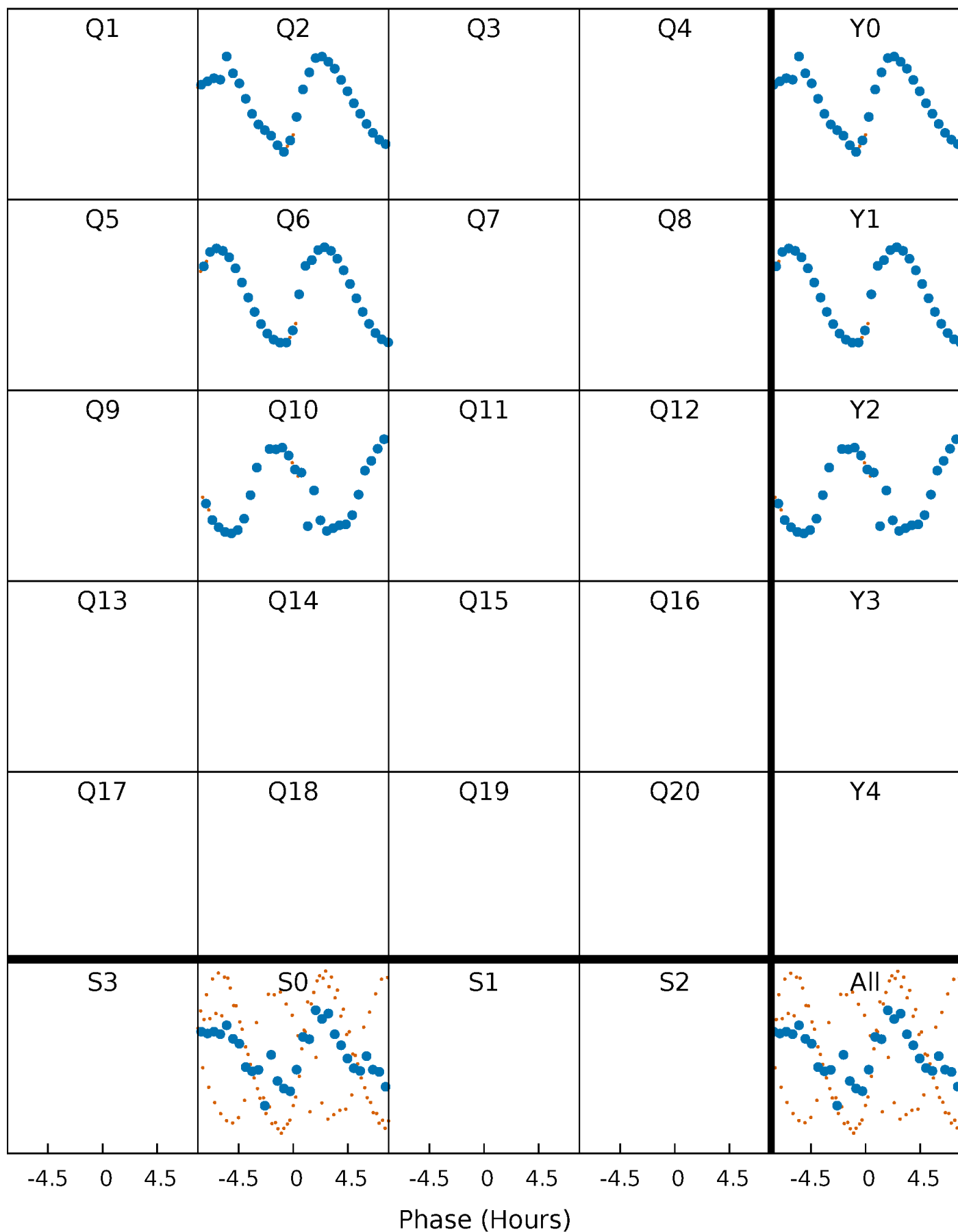


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



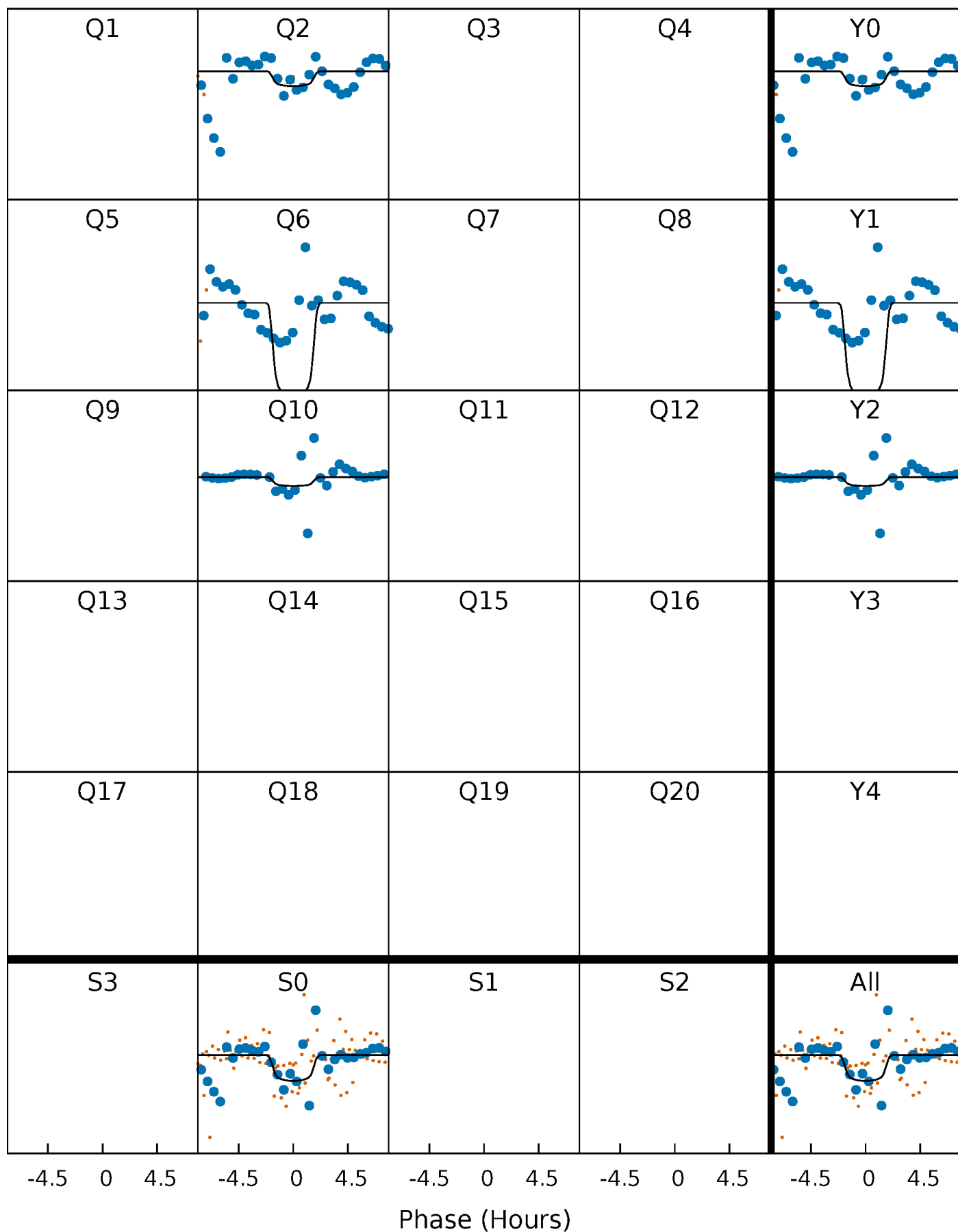
PDC Quarter-Phased Transit Curves

TCE 009453114-02 P=340.865257 Days $T_0=251.193008$ (BKJD)



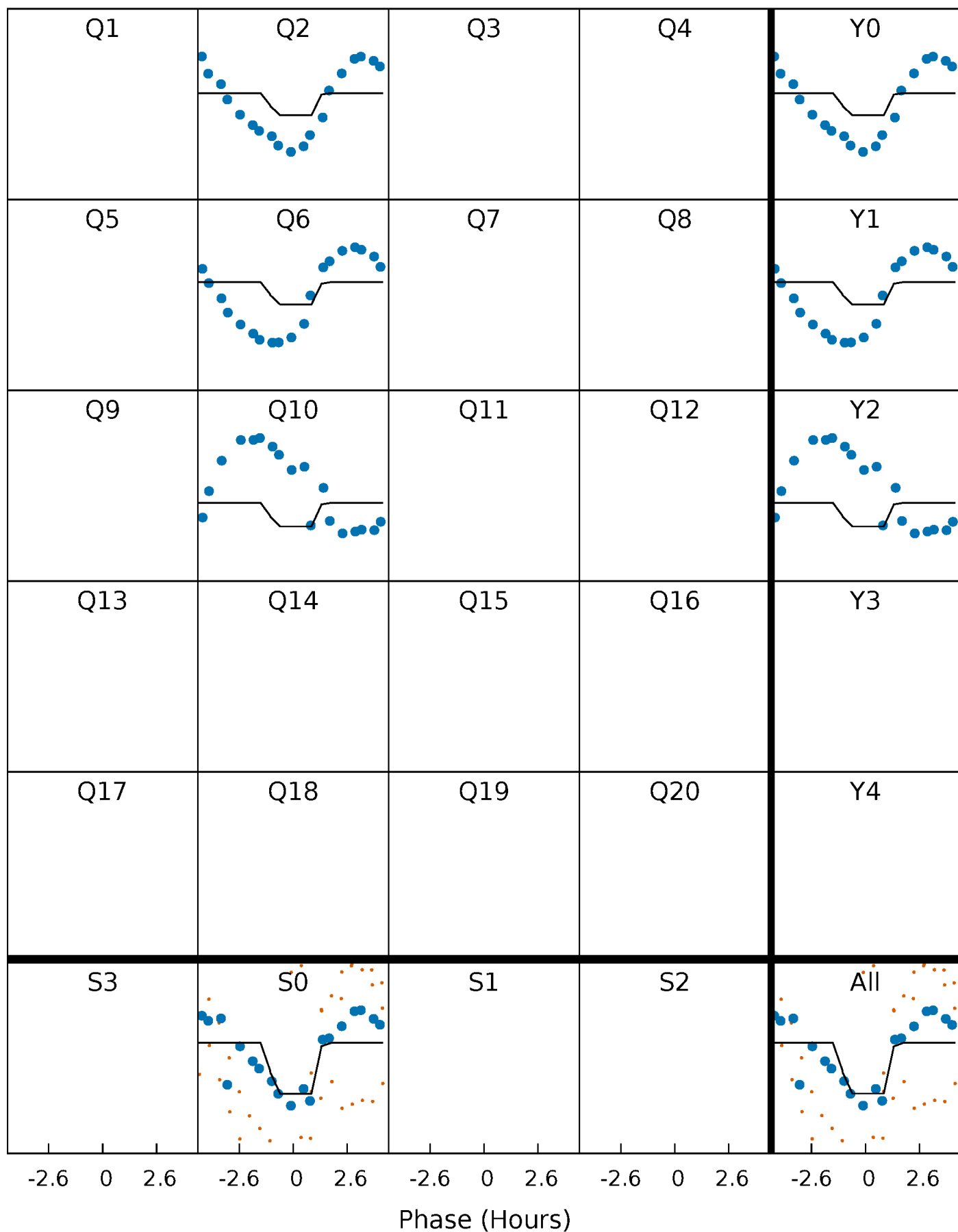
DV Quarter-Phased Transit Curves

TCE 009453114-02 P=340.865257 Days $T_0=251.193008$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

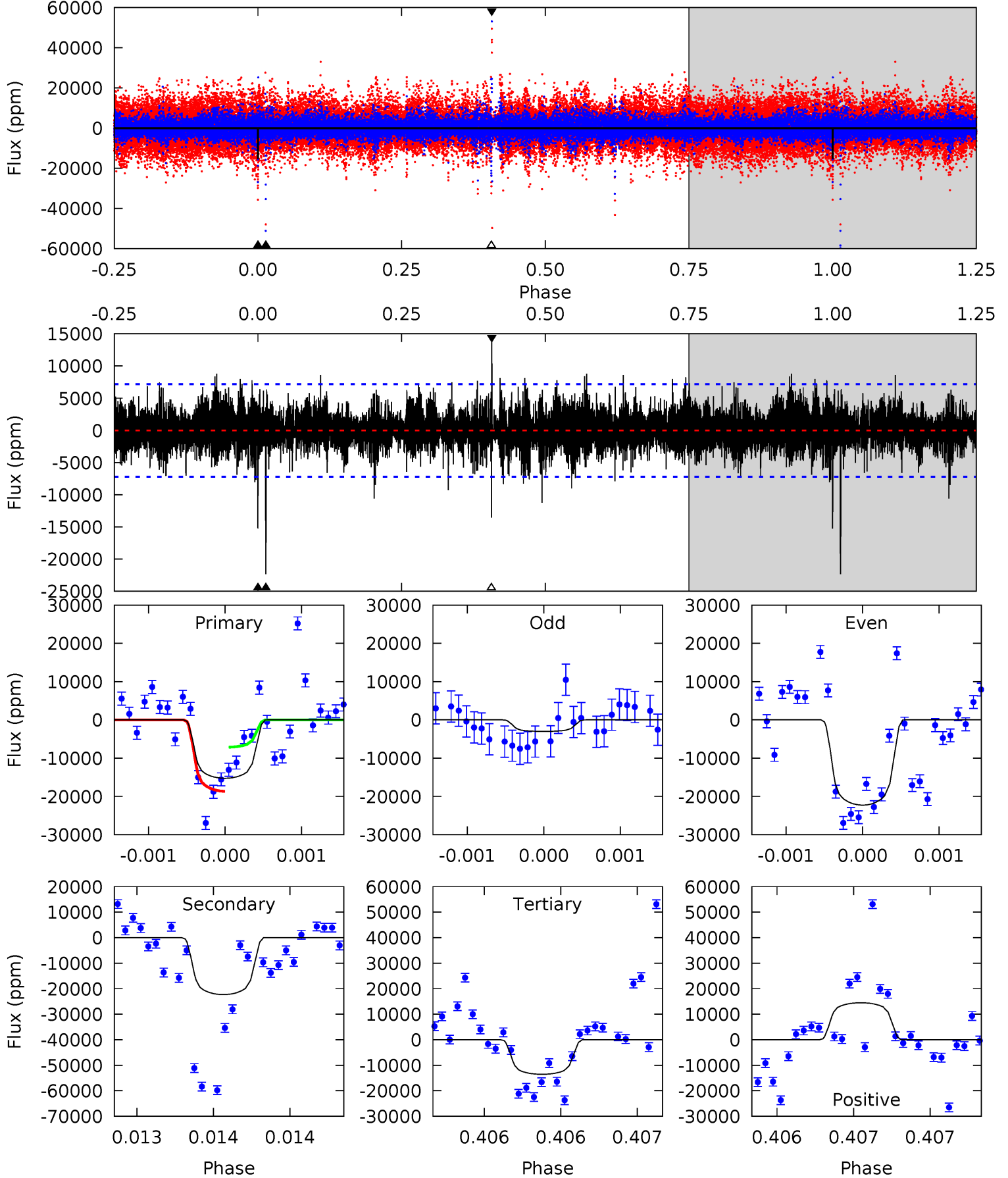
TCE 009453114-02 P=340.893181 Days $T_0=251.158065$ (BKJD)



DV Model-Shift Uniqueness Test

009453114-02, P = 340.865257 Days, E = 251.193008 Days

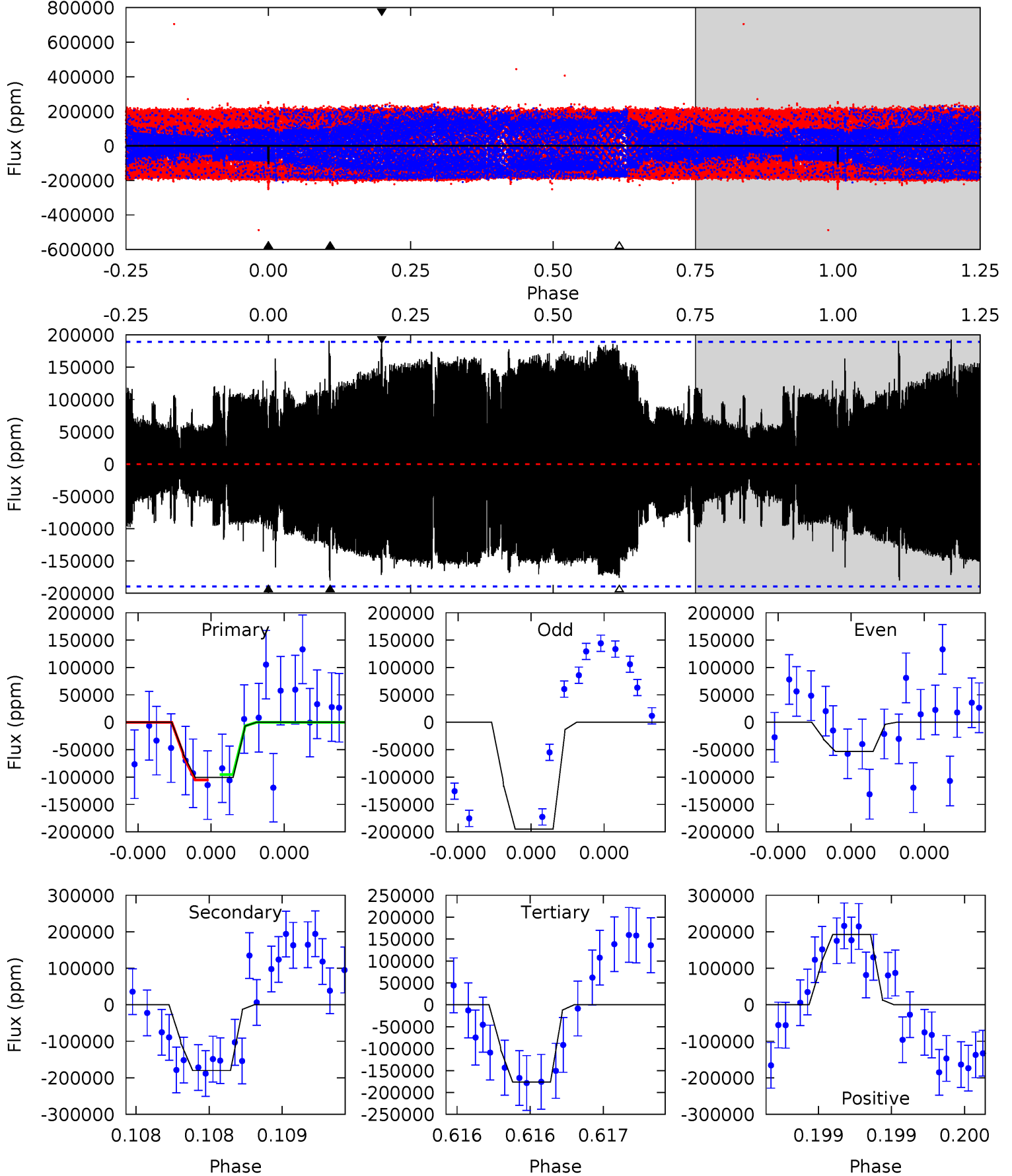
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.8	17.3	10.5	11.2	5.57	3.48	1.75	1.32	0.59	6.78	6.06	6.69	0.97	0.39	4.32



Alt Model-Shift Uniqueness Test

009453114-02, P = 340.893181 Days, E = 251.158065 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.00	5.35	5.24	5.73	5.63	3.57	2.39	-2.24	-2.73	0.11	-0.37	1.95	0.52	0.52	0.14



Stellar Parameters For KIC 009453114

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7570^{+234}_{-313}	$3.625^{+0.569}_{-0.100}$	$-0.500^{+0.250}_{-0.300}$	$3.376^{+0.332}_{-1.883}$	$1.752^{+0.164}_{-0.491}$	$0.064^{+0.493}_{-0.019}$
	+3%/-4%	+16%/-3%	+50%/-60%	+10%/-56%	+9%/-28%	+768%/-29%
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 009453114-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-22317 ± 1291	$42.14^{+15.15}_{-15.83}$	784^{+51}_{-116}	8387^{+2185}_{-1149}	9188^{+13624}_{-4141}
Alt.	-179931 ± 33616	$105.95^{+21.25}_{-29.18}$	780^{+53}_{-101}	9920^{+1403}_{-1113}	14172^{+11839}_{-4907}

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 $A_{obs} \gg 1.0$

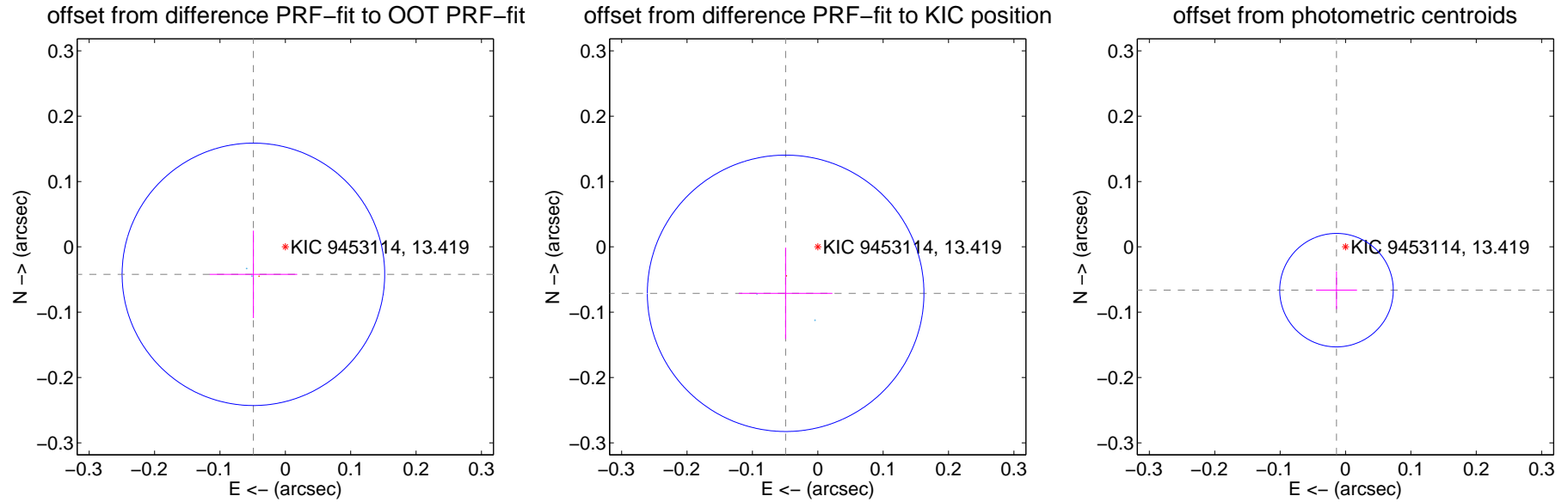
DV Centroid Data

Supplemental centroid analysis for 009453114-02. Kepler magnitude: 13.42. Transit SNR 9.92

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.064 ± 0.067	0.96	0.049 ± 0.067	-0.042 ± 0.067
PRF-fit source offset from KIC position	0.086 ± 0.070	1.23	0.049 ± 0.072	-0.071 ± 0.070
photometric centroid source offset	0.07 ± 0.03	2.34	0.01 ± 0.03	-0.07 ± 0.03



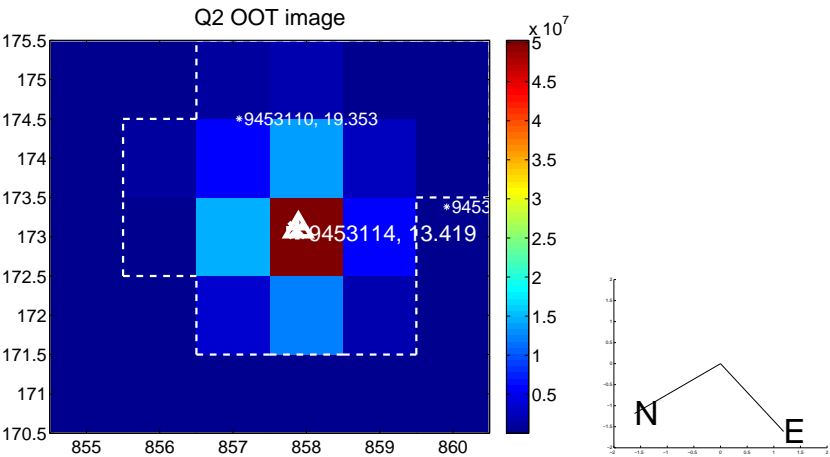
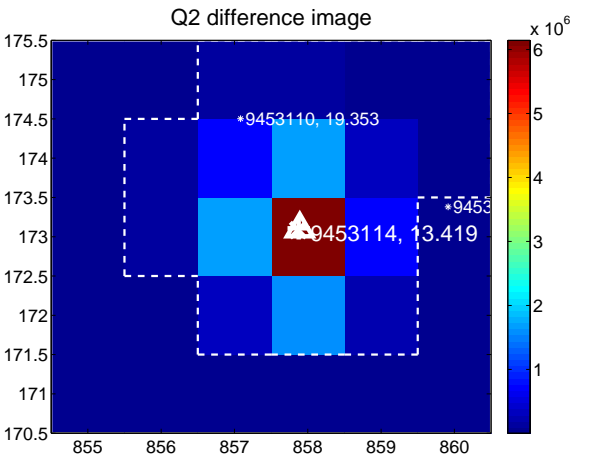
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

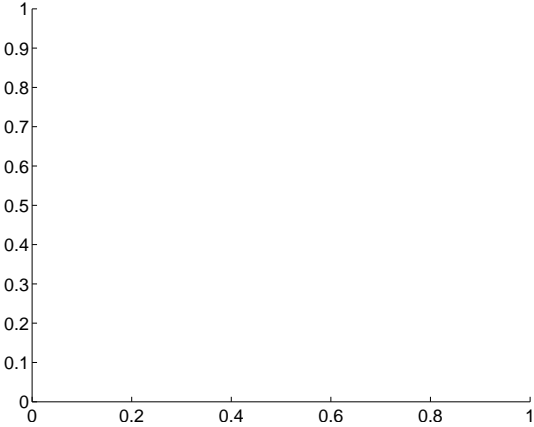
Q1 no difference image



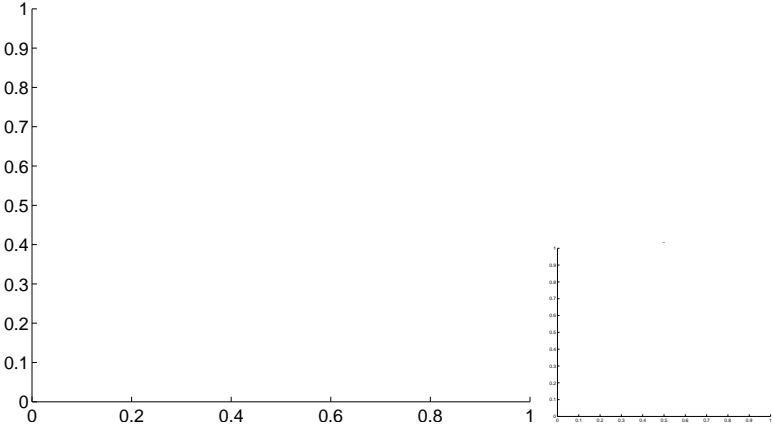
Q1 no OOT image



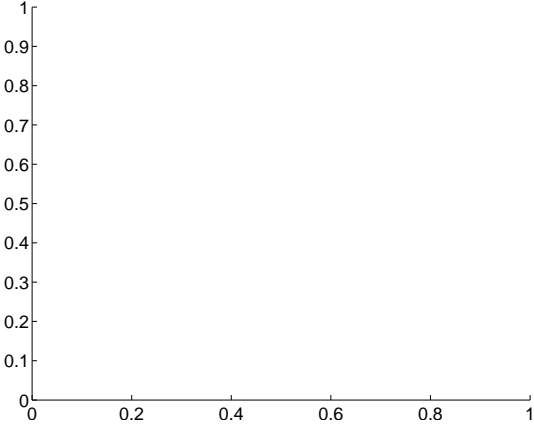
Q3 no difference image



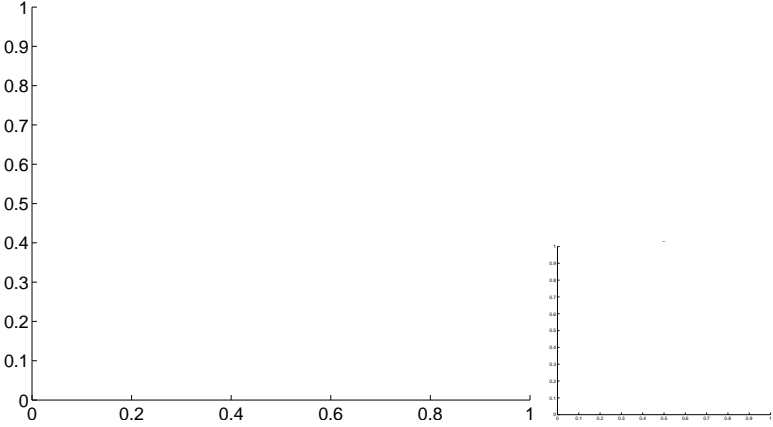
Q3 no OOT image



Q4 no difference image



Q4 no OOT image



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

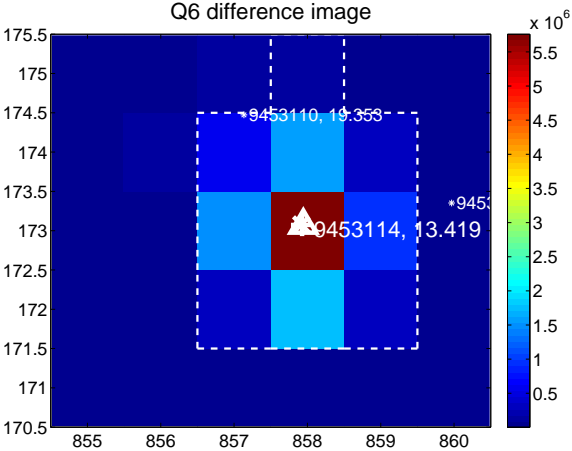
Q5 no difference image



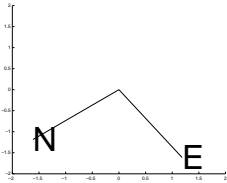
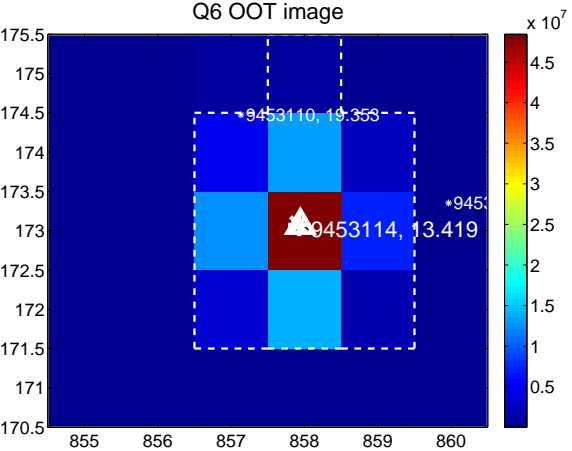
Q5 no OOT image



Q6 difference image



Q6 OOT image



Q7 no difference image



Q7 no OOT image



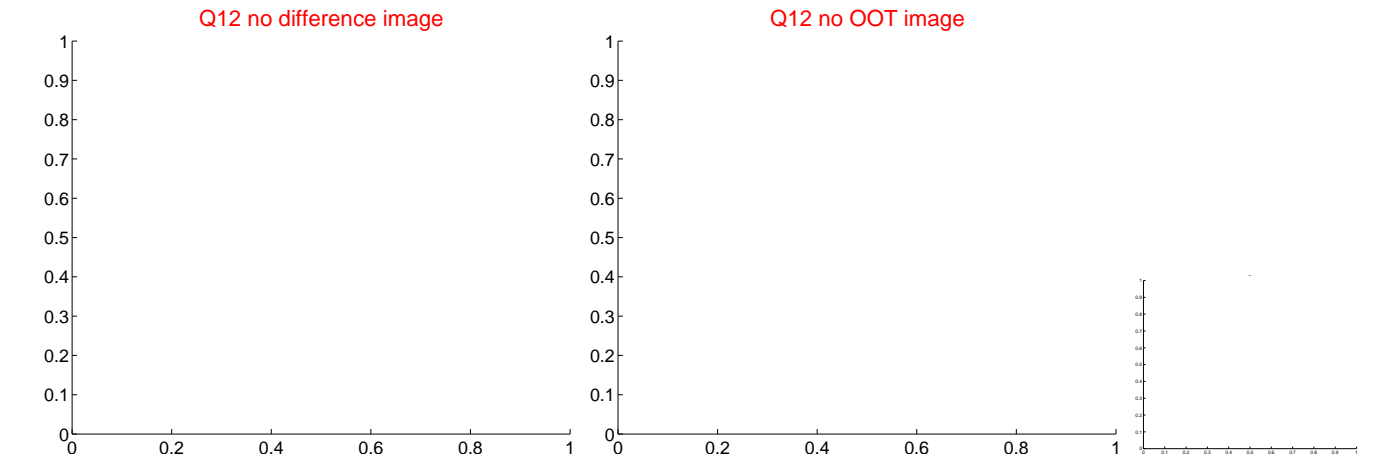
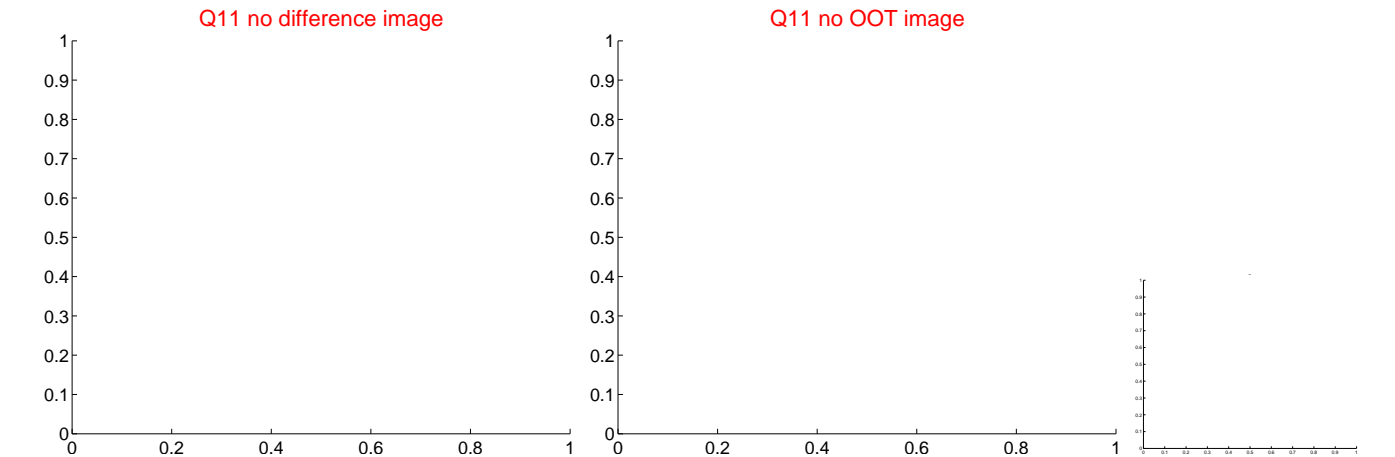
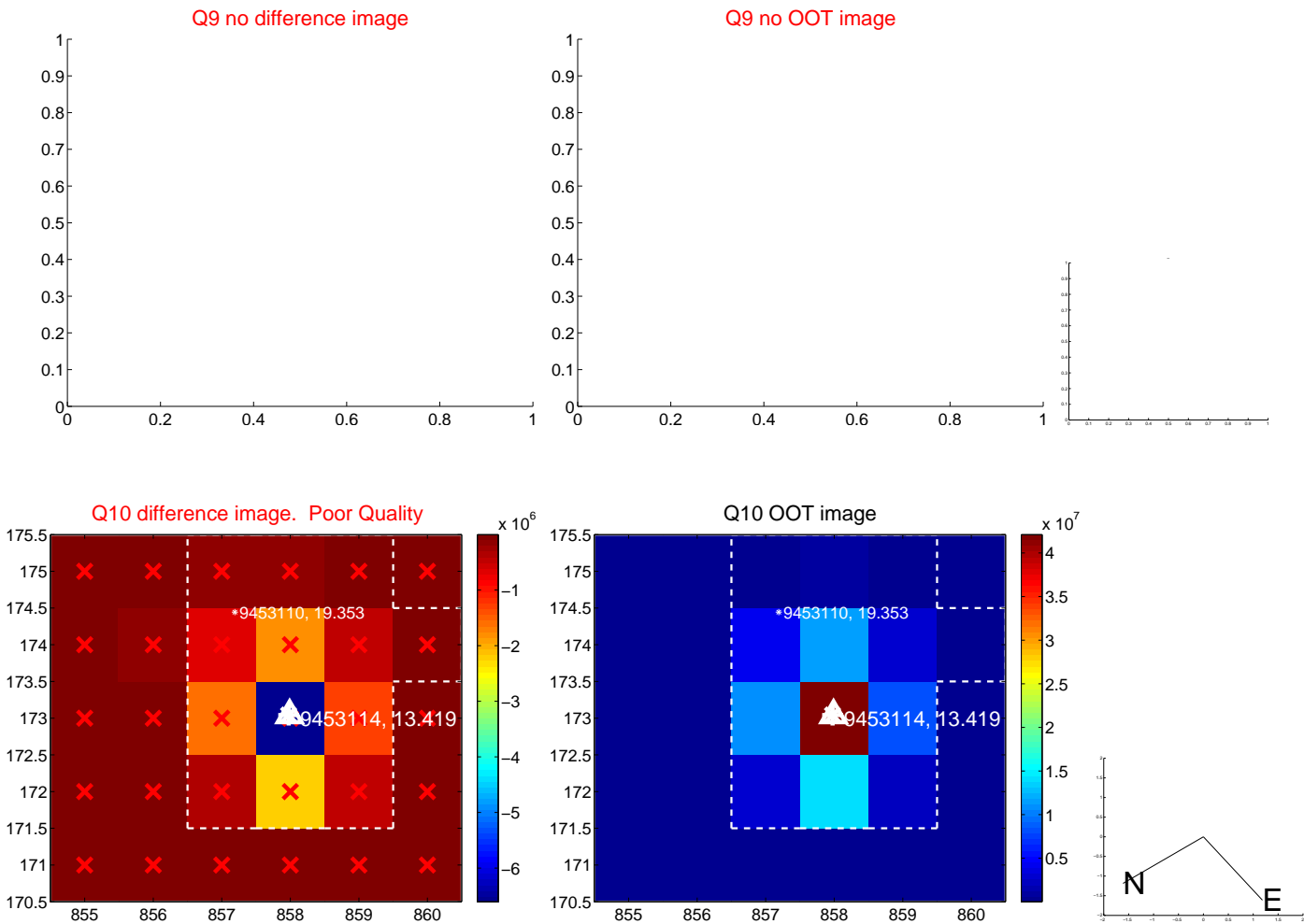
Q8 no difference image



Q8 no OOT image



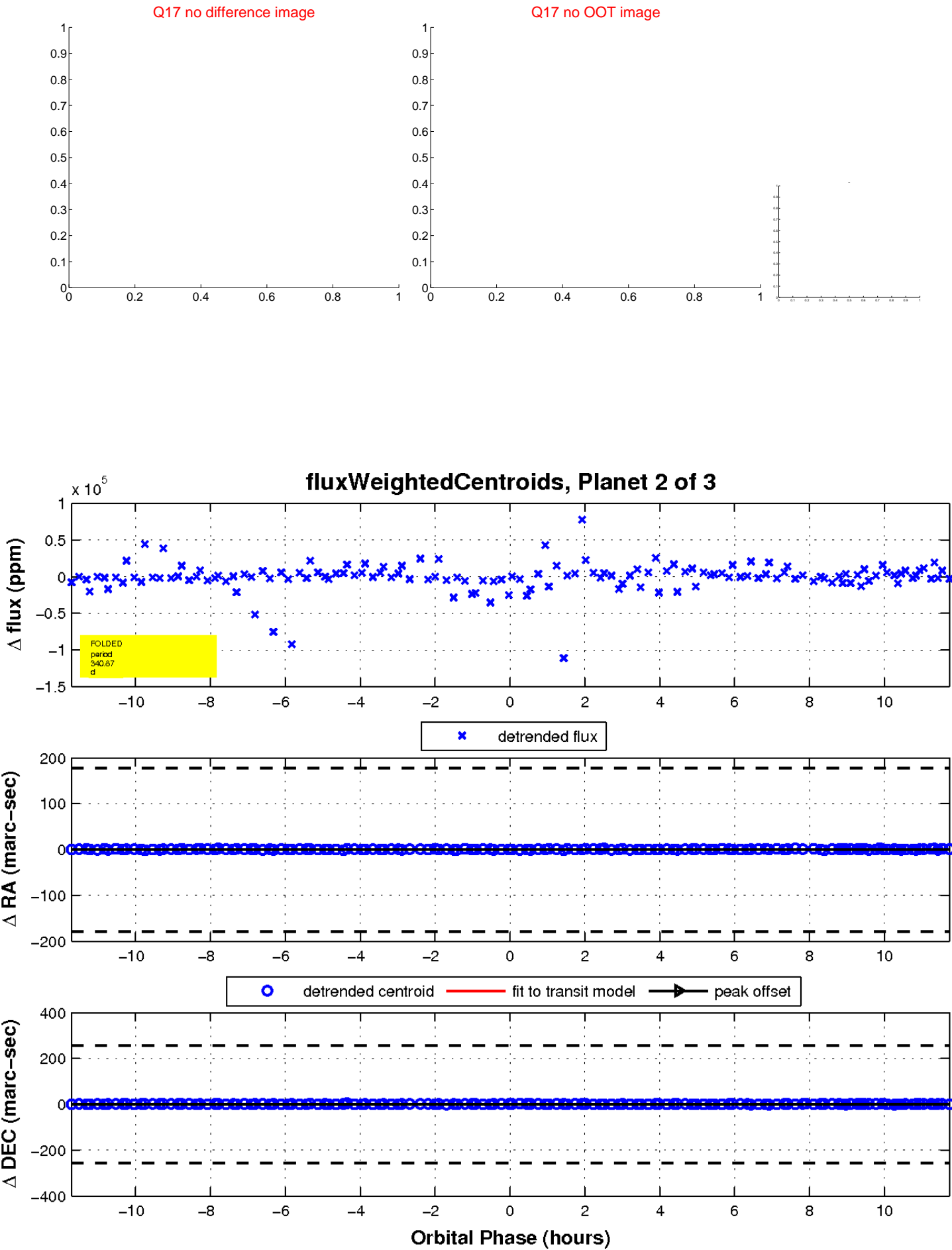
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

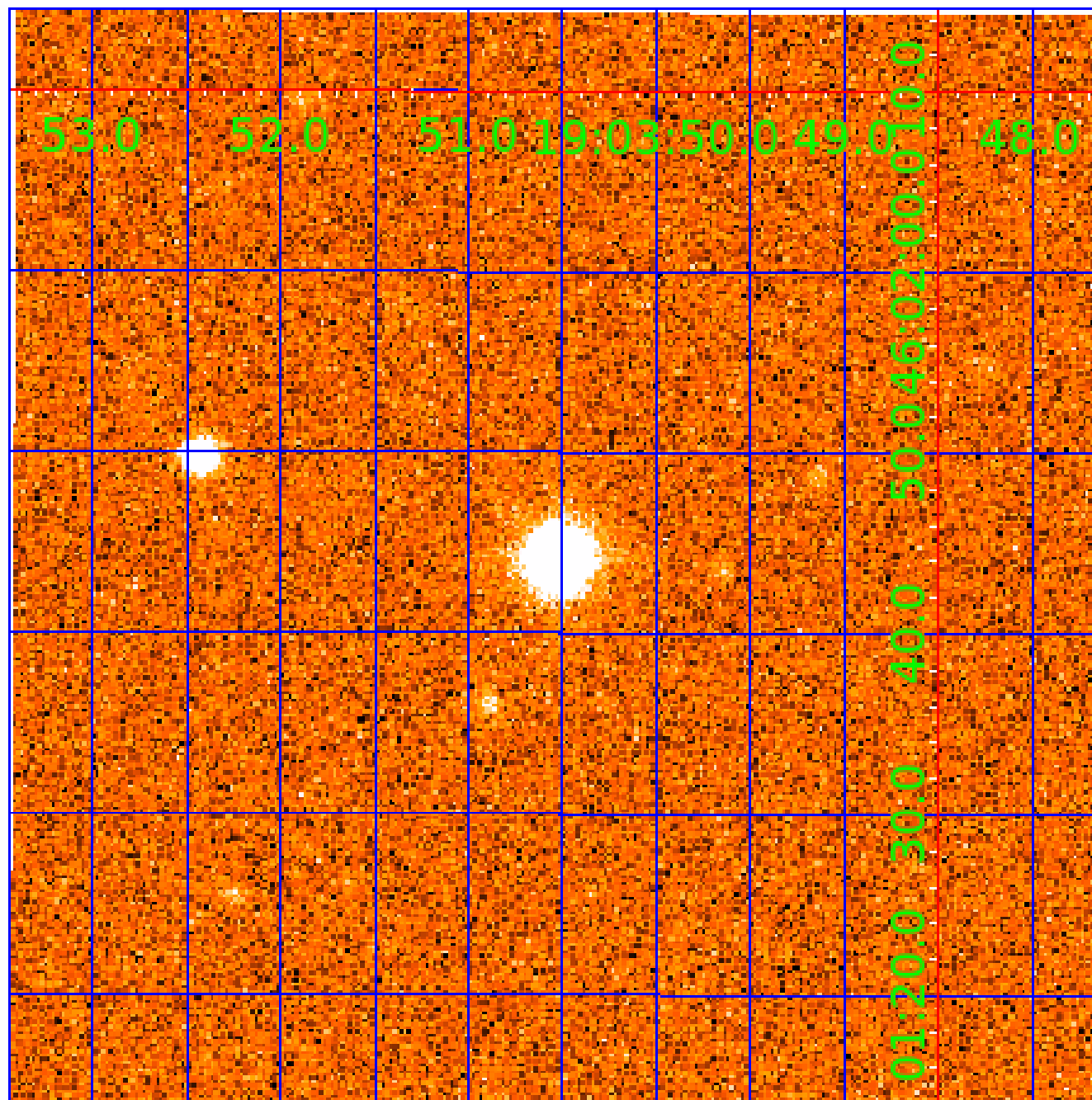


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009453114

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})
009453114-01	OBS	No	433.343520	365.349171	3349.4	2.328	26.9	1.7	3.38	7570	20.01	18.36
009453114-02	OBS	No	340.865257	251.193008	17981.0	3.929	22.6	9.9	3.38	7570	45.83	25.28
009453114-03	OBS	No	376.676392	250.901126	5862.1	21.337	23.3	9.6	3.38	7570	36.19	22.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009453114-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009453114-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009453114-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

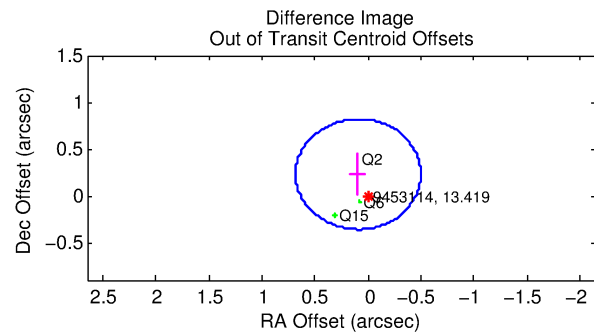
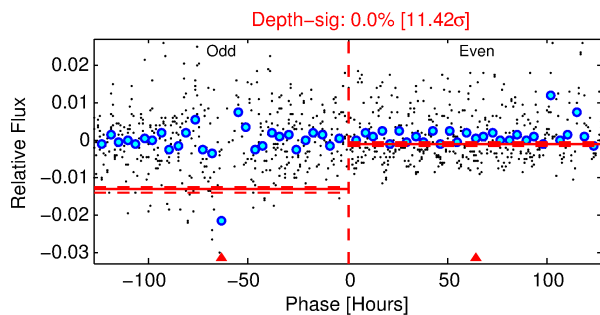
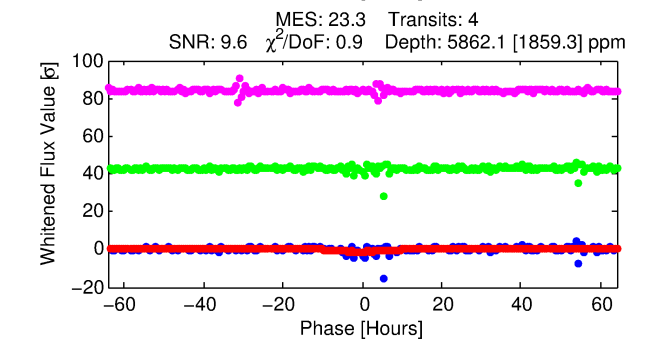
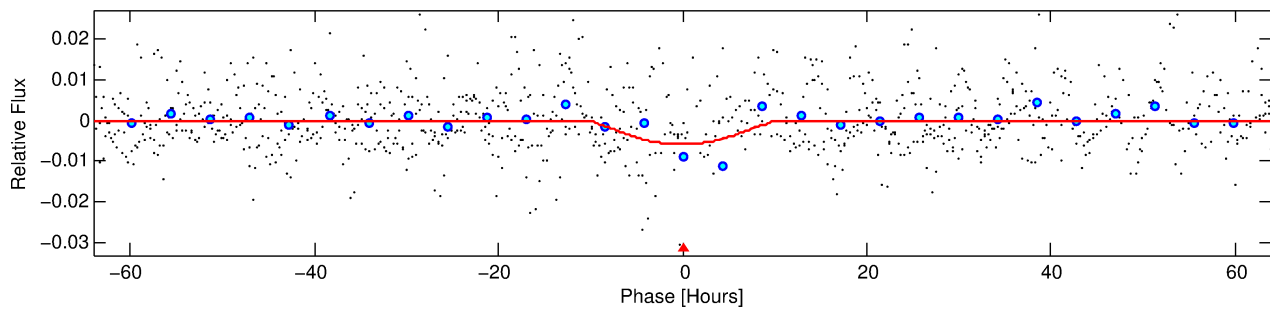
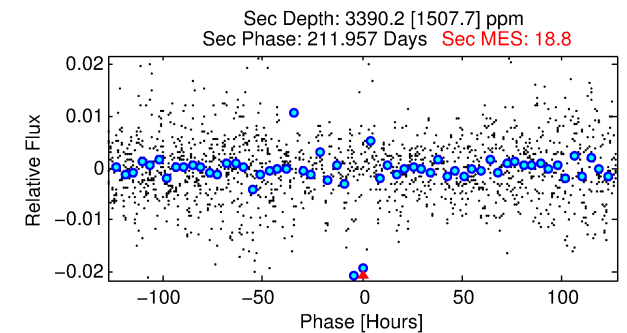
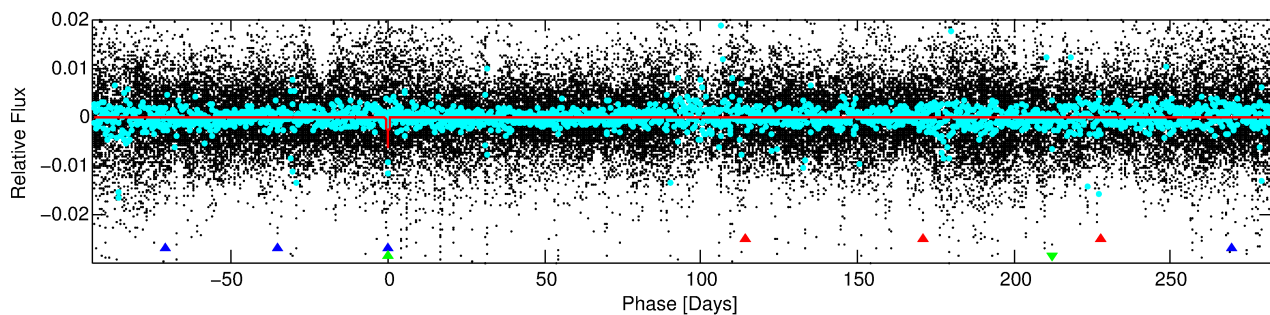
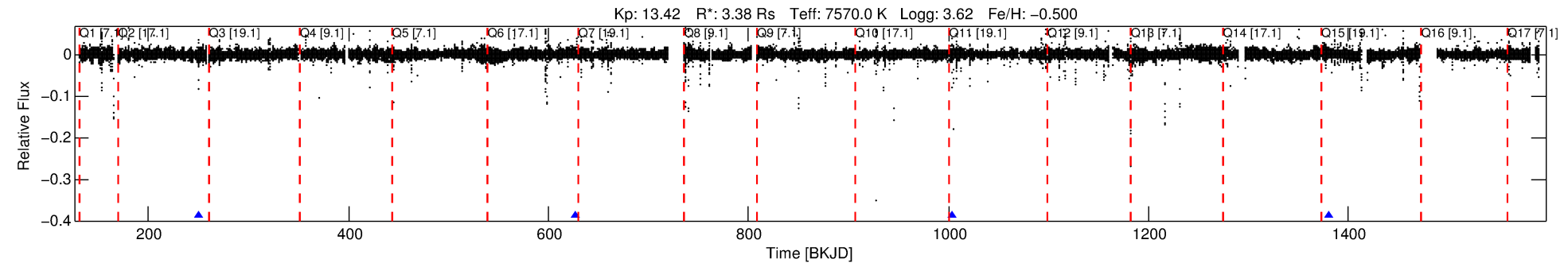
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009453114-03

No Significant Match Found

DV One-Page Summary

KIC: 9453114 Candidate: 3 of 3 Period: 376.676 d



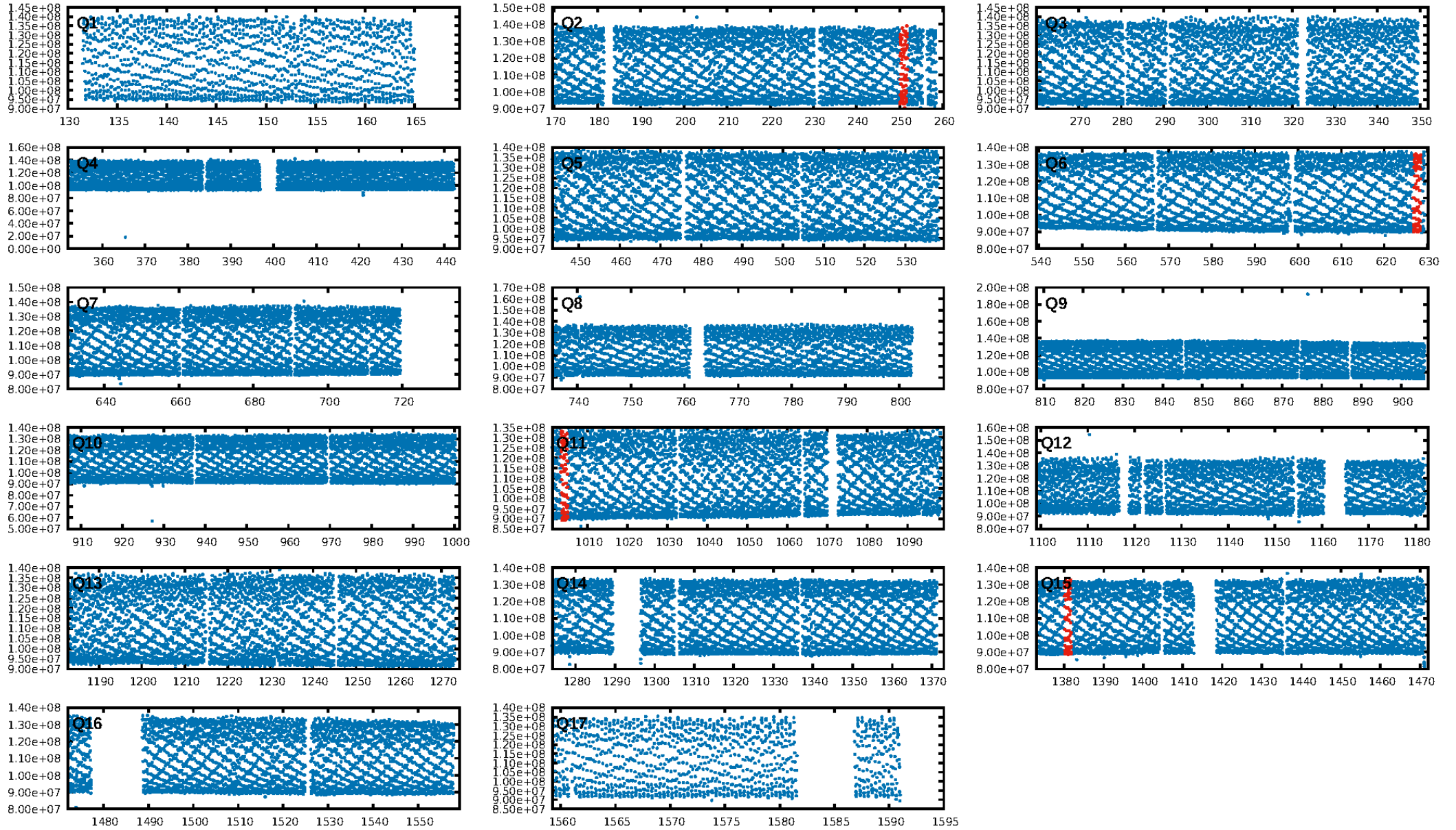
DV Fit Results:

Period = 376.67639 [0.02931] d
Epoch = 250.9011 [0.0511] BKJD
Rp/R* = 0.0982 [0.3931]
a/R* = 72.57 [94.06]
b = 0.96 [0.74]
Seff = 22.13 [21.32]
Teq = 553 [133] K
Rp = 36.19 [146.21] Re
a = 1.2311 [0.7061] AU
Ag = 2157.84 [17414.95] [0.12σ]
Teffp = 5828 [11679] K [0.45σ]

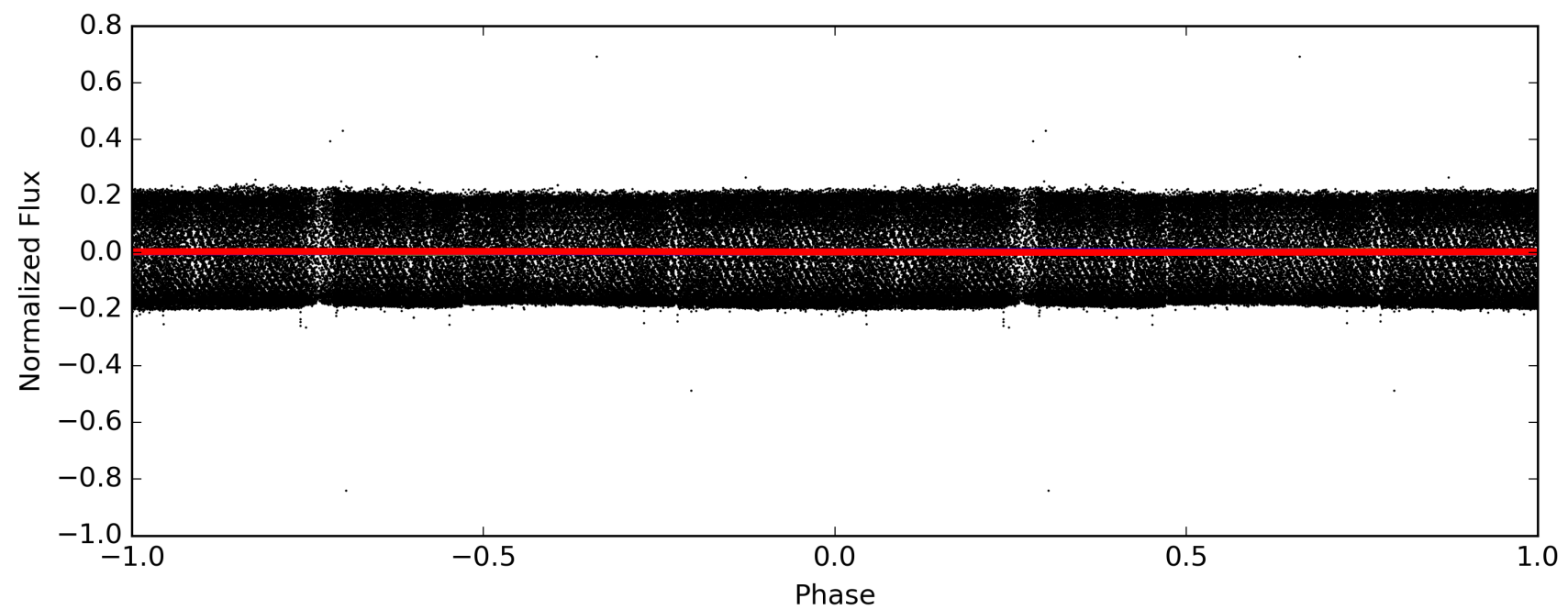
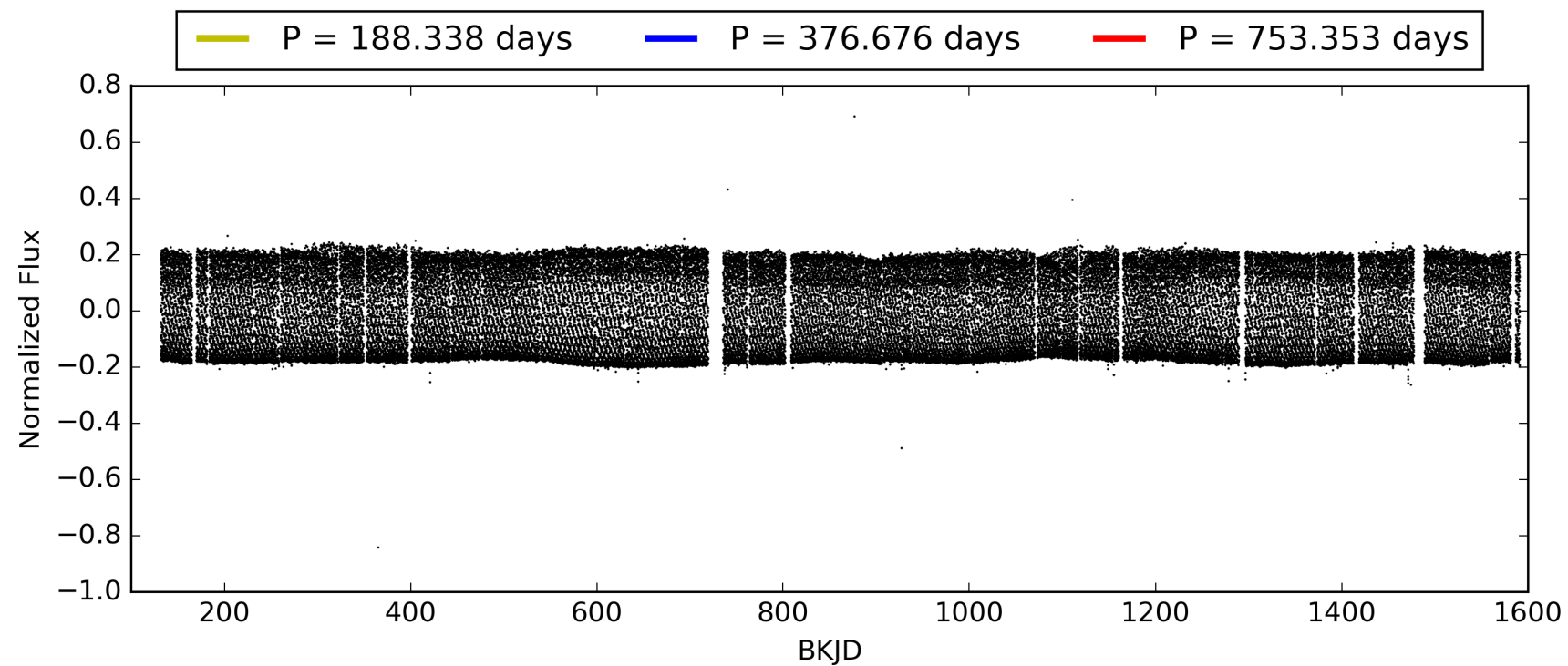
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [39.61σ]
LongPeriod-sig: 100.0% [63.36σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.73e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.191
Centroid-sig: 0.8%
Centroid-so: 0.016 arcsec [0.37σ]
OotOffset-rm: 0.248 arcsec [1.26σ]
KicOffset-rm: 0.180 arcsec [1.01σ]
OotOffset-st: 2/1/0/0 [3]
KicOffset-st: 2/1/0/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.67 [2/3]

TCE 009453114-03, PDC Light Curves

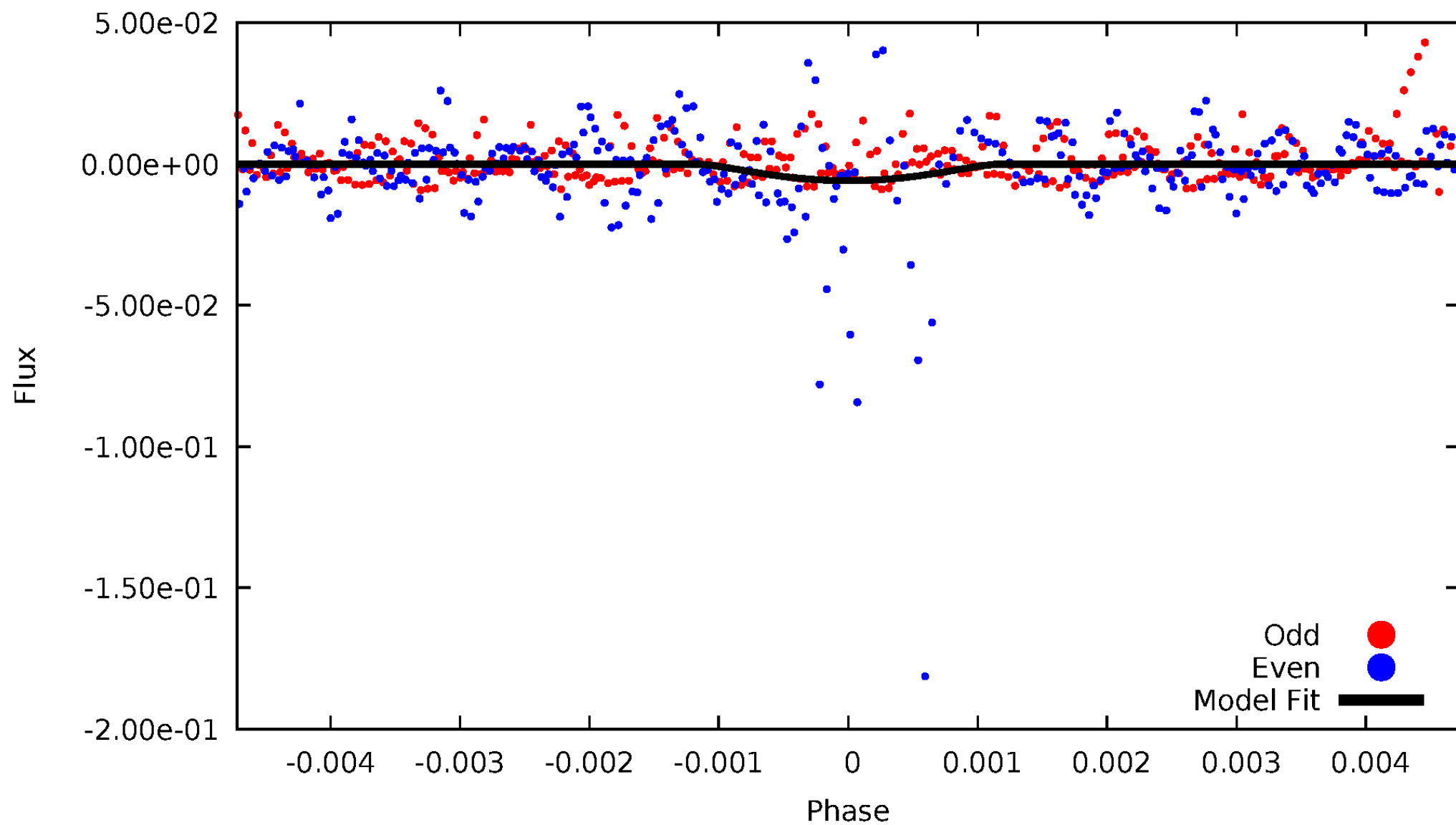


TCE 009453114-03



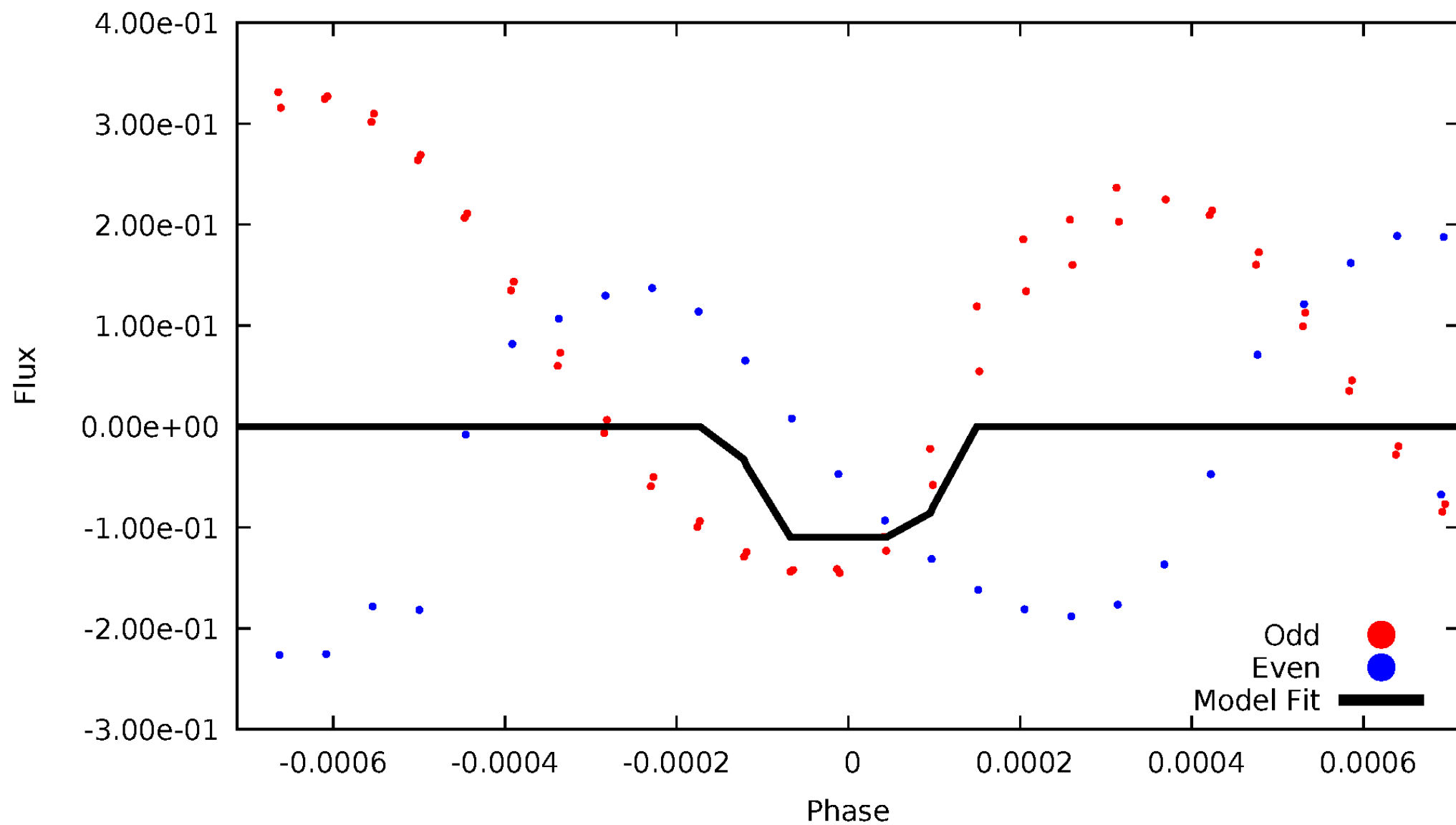
DV Odd/Even

TCE 009453114-03



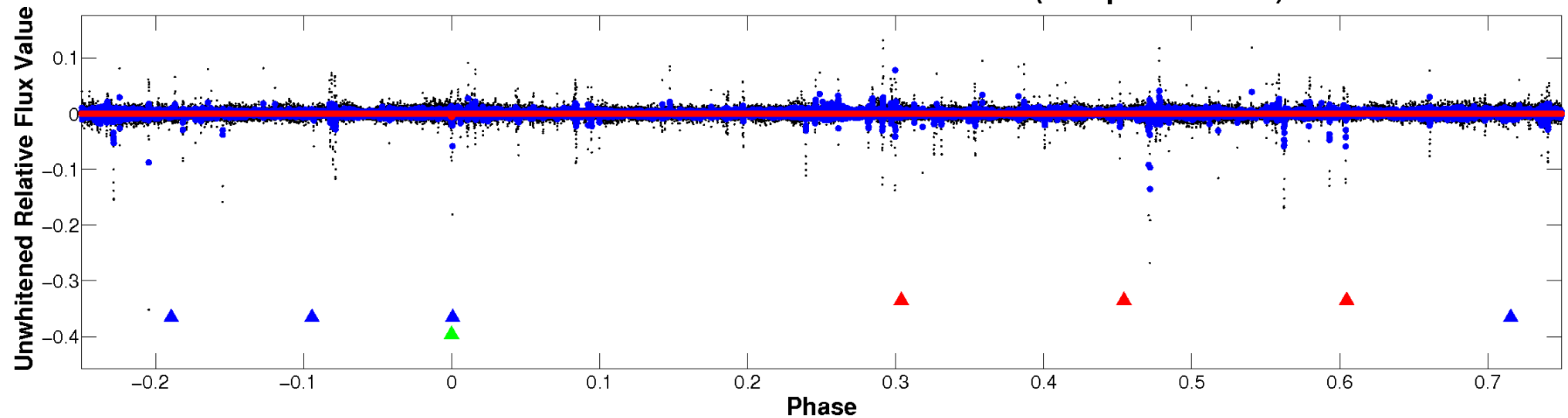
ALT Odd/Even

TCE 009453114-03

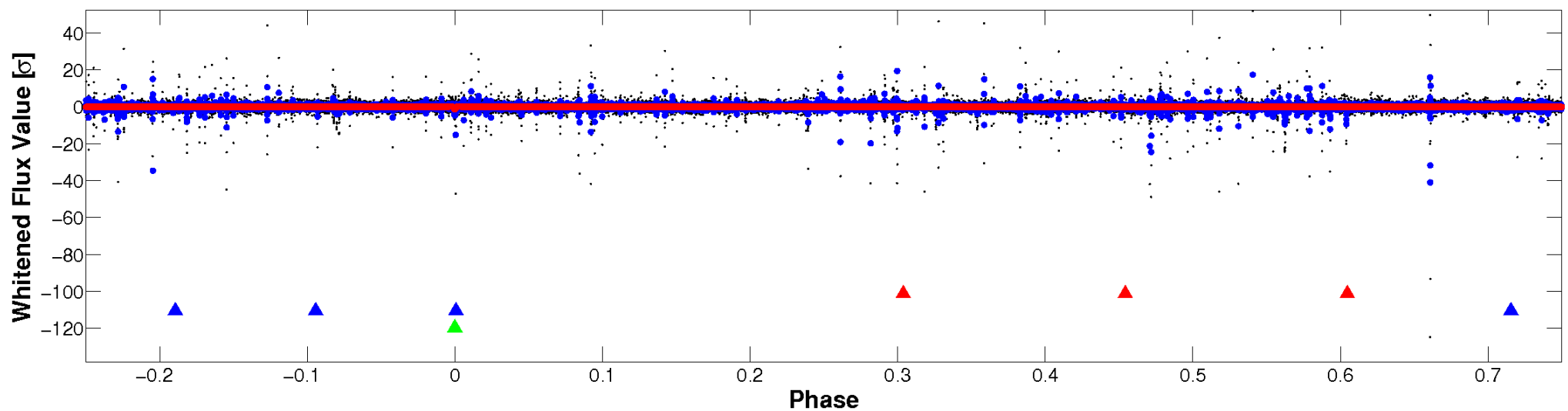


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

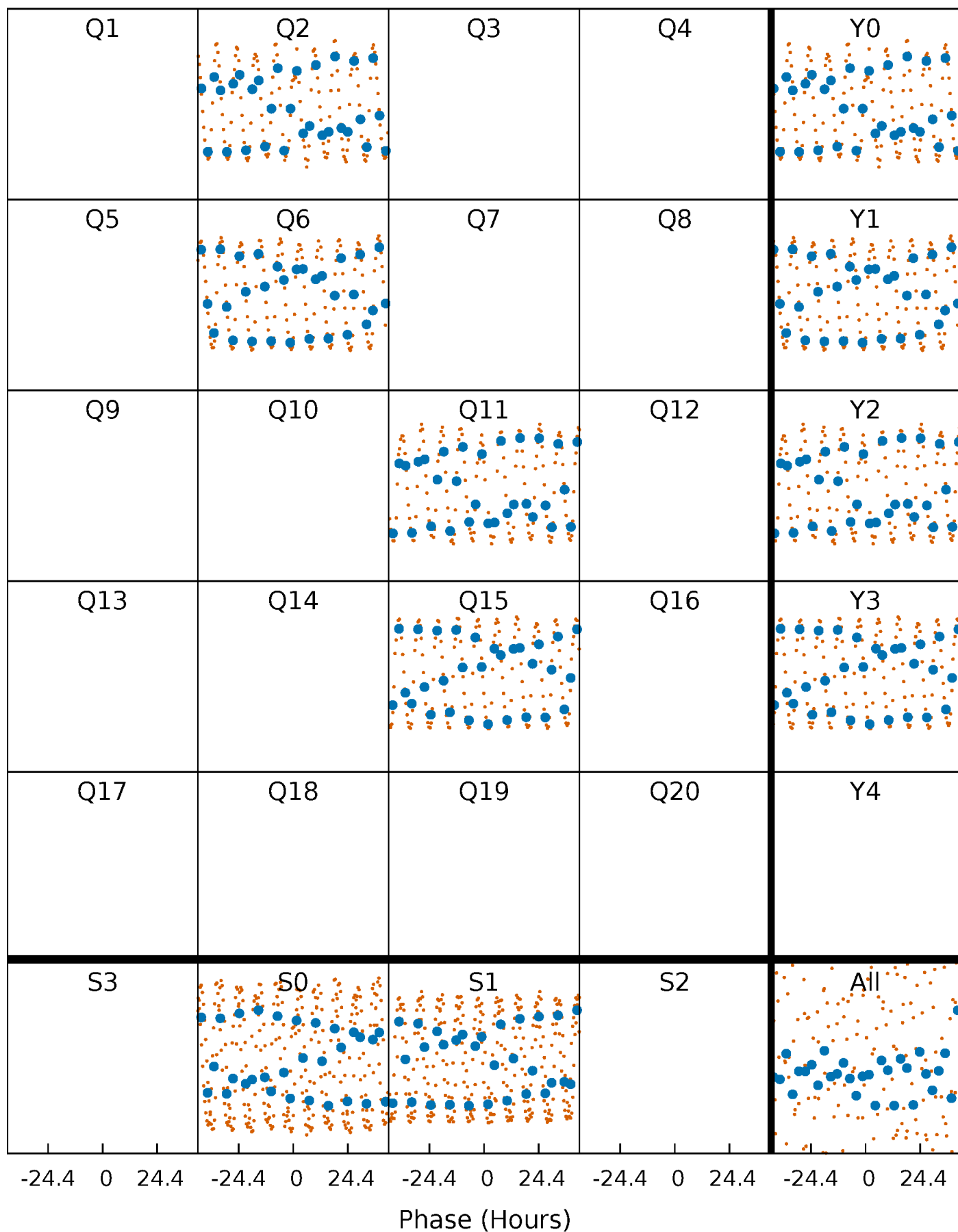


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



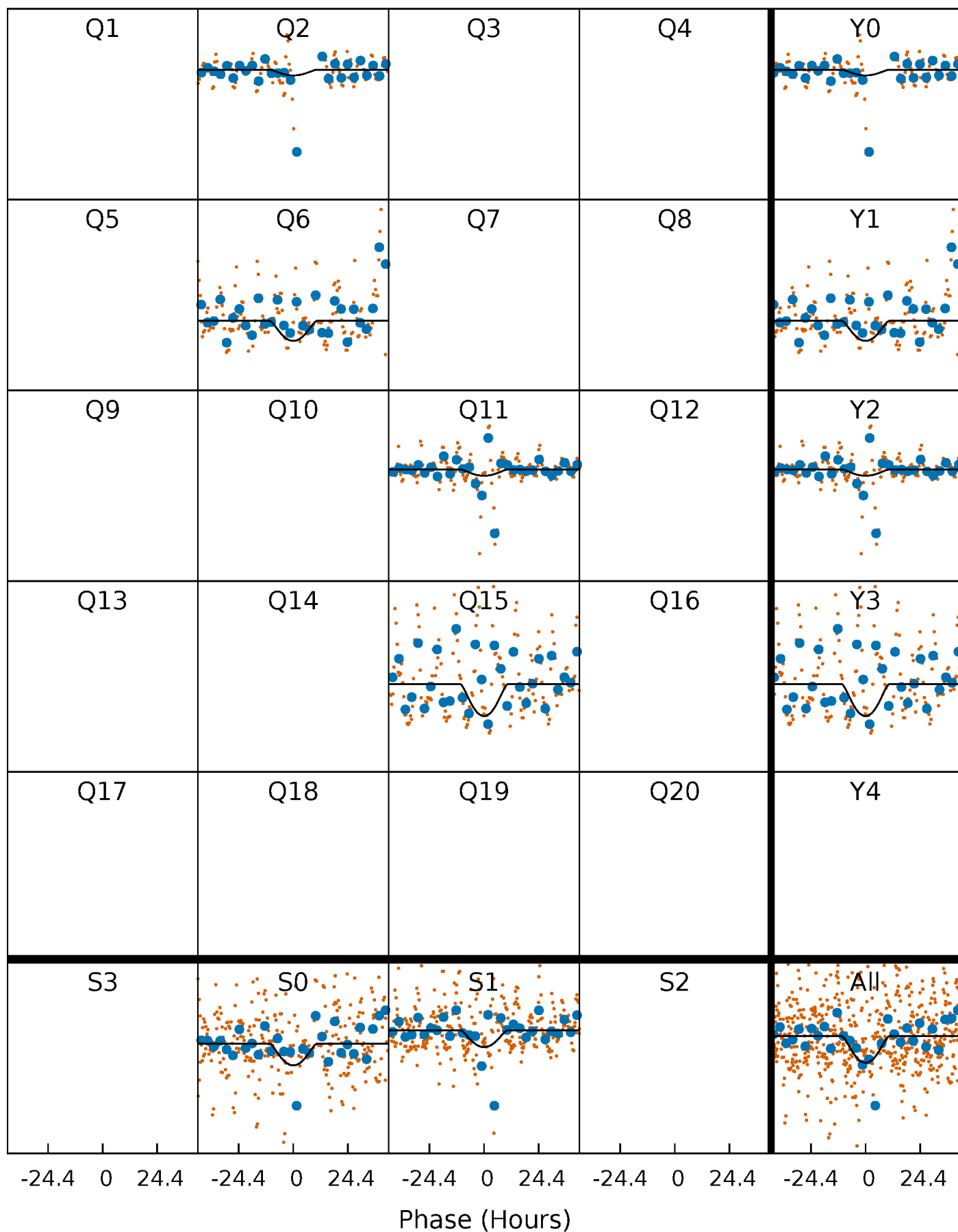
PDC Quarter-Phased Transit Curves

TCE 009453114-03 P=376.676392 Days $T_0=250.901126$ (BKJD)



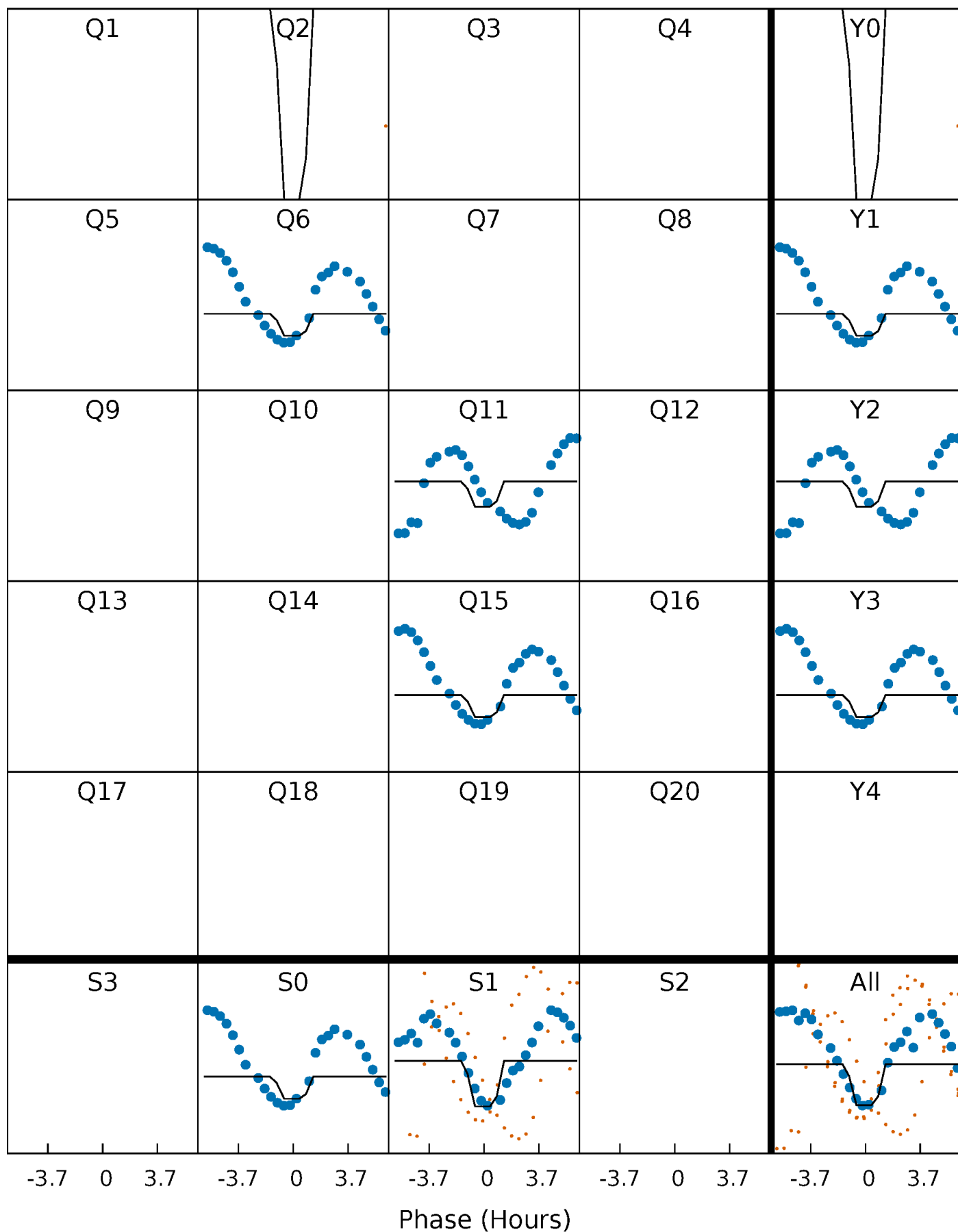
DV Quarter-Phased Transit Curves

TCE 009453114-03 P=376.676392 Days $T_0=250.901126$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

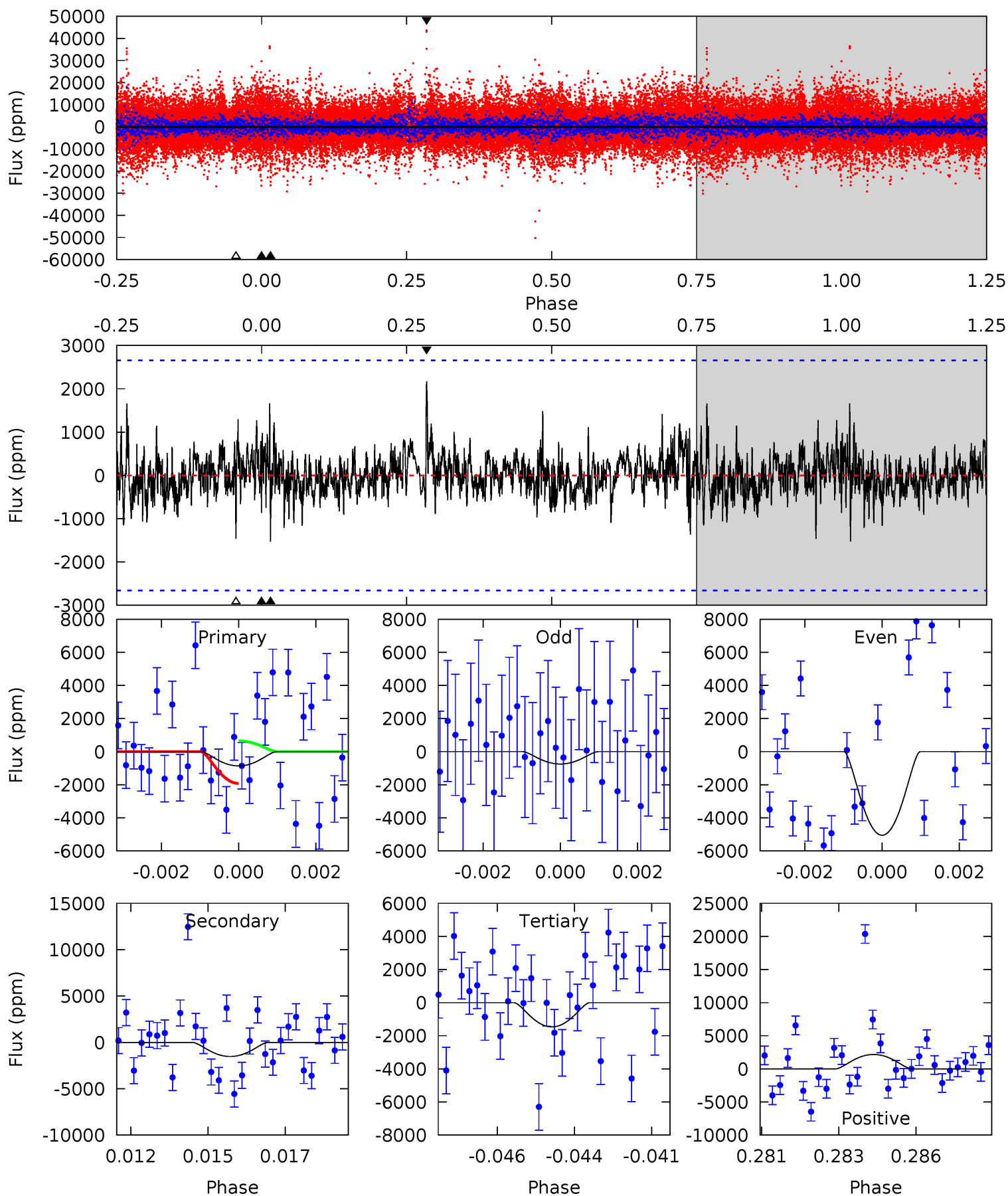
TCE 009453114-03 P=376.733546 Days $T_0=251.198494$ (BKJD)



DV Model-Shift Uniqueness Test

009453114-03, P = 376.676392 Days, E = 250.901126 Days

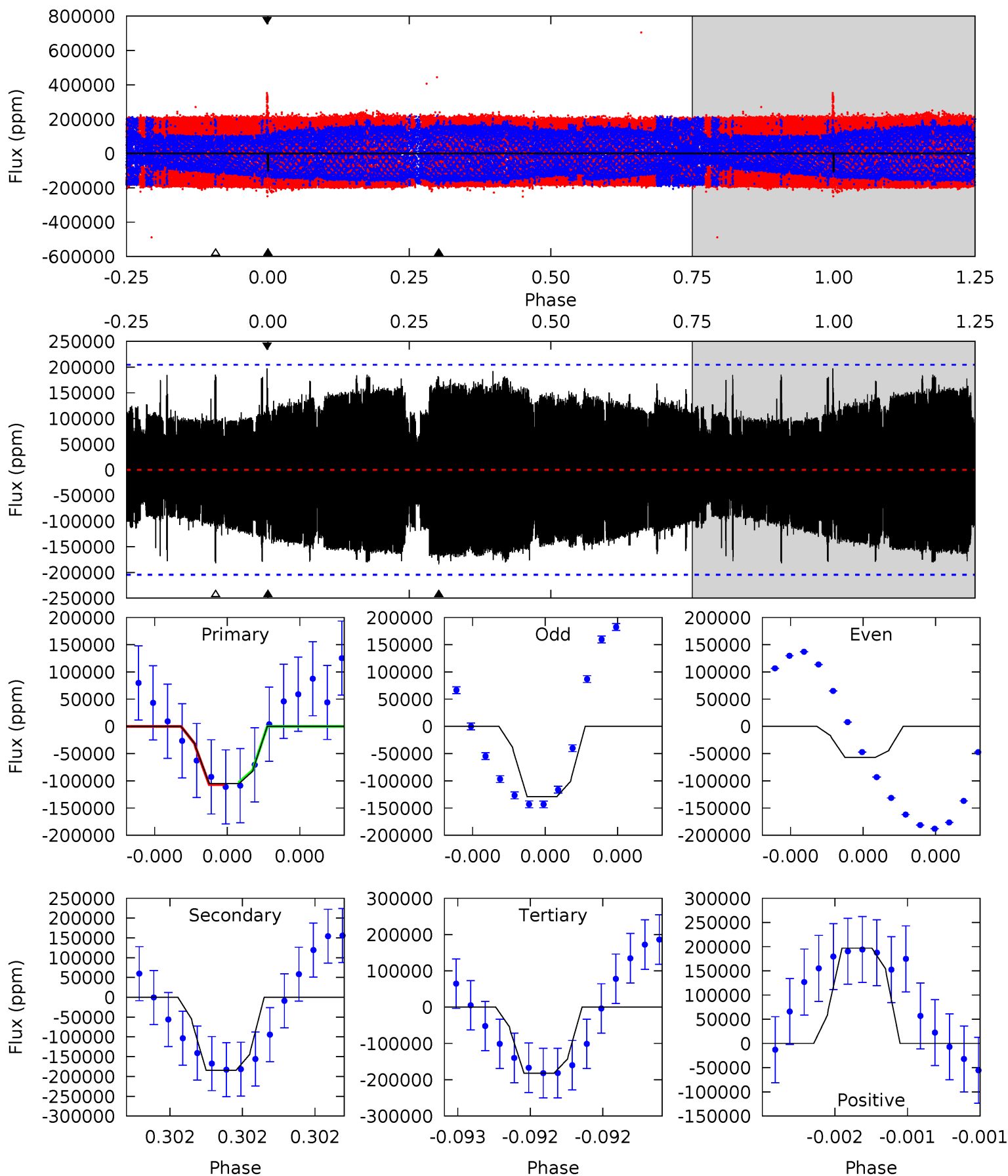
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.72	3.03	2.91	4.32	5.29	3.03	0.77	-1.19	-2.60	0.12	-1.28	3.89	1.09	0.59	1.27



Alt Model-Shift Uniqueness Test

009453114-03, P = 376.733546 Days, E = 251.198494 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.92	5.12	5.06	5.47	5.68	3.64	2.49	-2.14	-2.56	0.06	-0.35	0.96	0.86	0.52	0.05



Stellar Parameters For KIC 009453114

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7570^{+234}_{-313}	$3.625^{+0.569}_{-0.100}$	$-0.500^{+0.250}_{-0.300}$	$3.376^{+0.332}_{-1.883}$	$1.752^{+0.164}_{-0.491}$	$0.064^{+0.493}_{-0.019}$
	+3%/-4%	+16%/-3%	+50%/-60%	+10%/-56%	+9%/-28%	+768%/-29%
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 009453114-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1523 ± 502	$97.73^{+100.33}_{-69.32}$	751^{+51}_{-99}	3244^{+1673}_{-605}	128^{+1409}_{-99}
Alt.	-184383 ± 35980	$140.19^{+139.47}_{-93.07}$	753^{+52}_{-98}	7915^{+11435}_{-2250}	9460^{+80382}_{-7227}

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

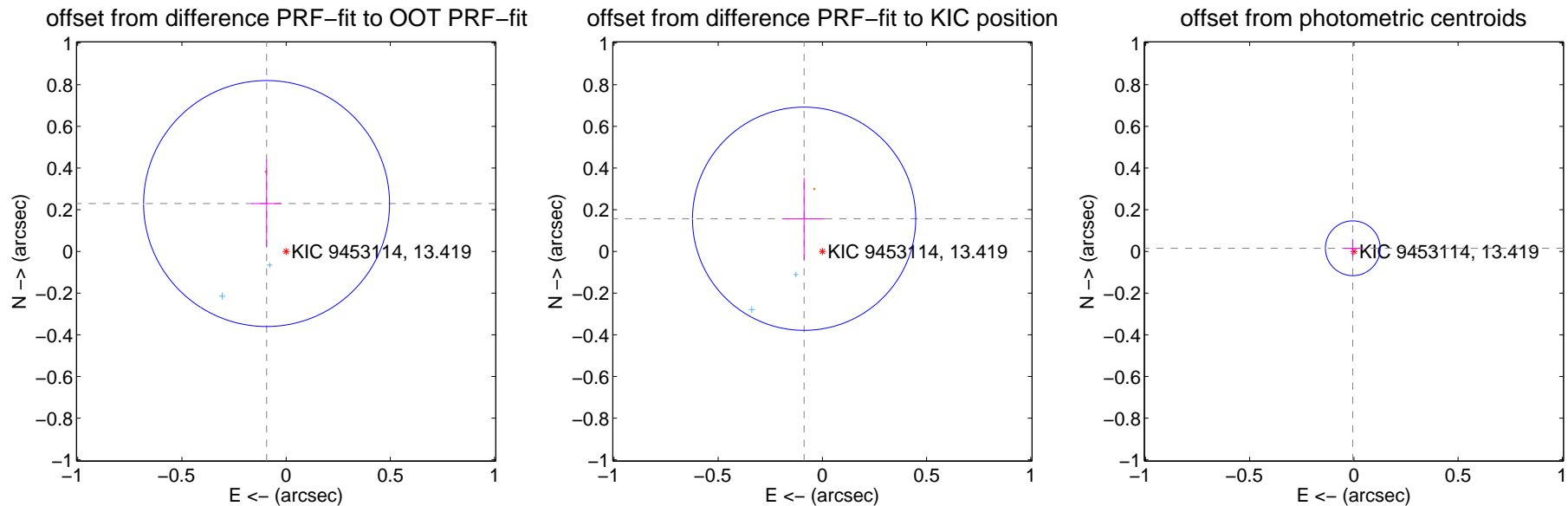
DV Centroid Data

Supplemental centroid analysis for 009453114-03. Kepler magnitude: 13.42. Transit SNR 9.56

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.248 ± 0.197	1.26	0.094 ± 0.071	0.230 ± 0.210
PRF-fit source offset from KIC position	0.180 ± 0.179	1.01	0.088 ± 0.099	0.157 ± 0.197
photometric centroid source offset	0.02 ± 0.04	0.37	0.01 ± 0.04	0.02 ± 0.04



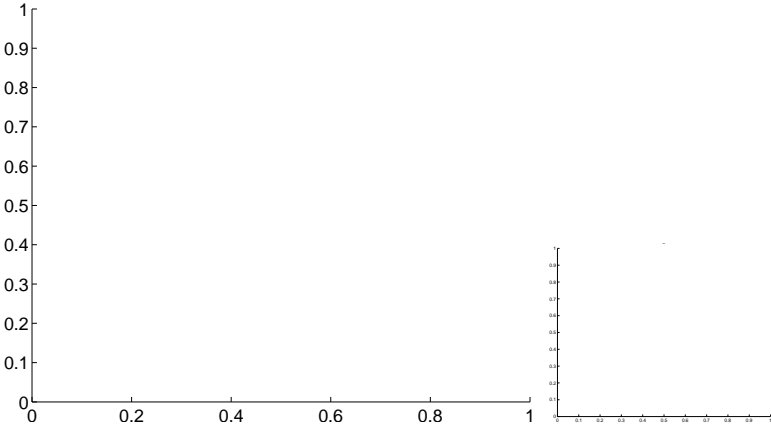
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

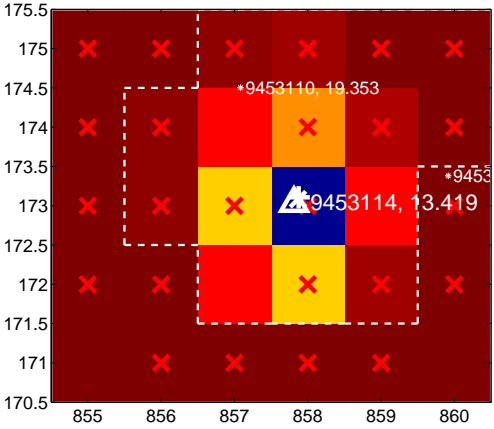
Q1 no difference image



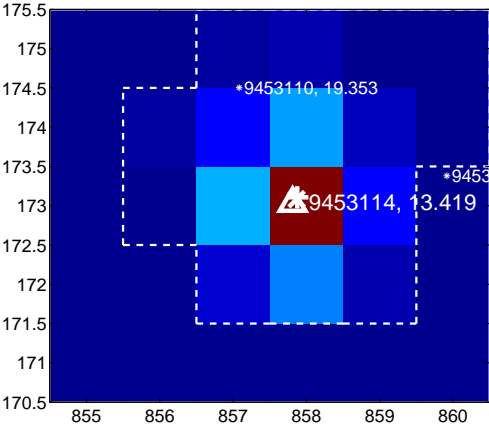
Q1 no OOT image



Q2 difference image. Poor Quality



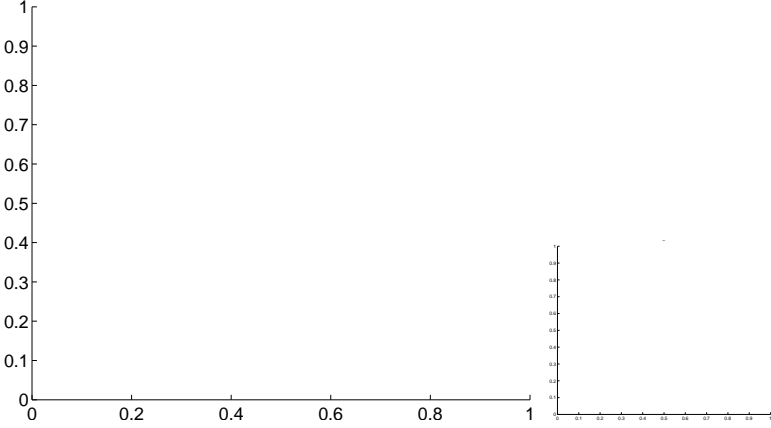
Q2 OOT image



Q3 no difference image



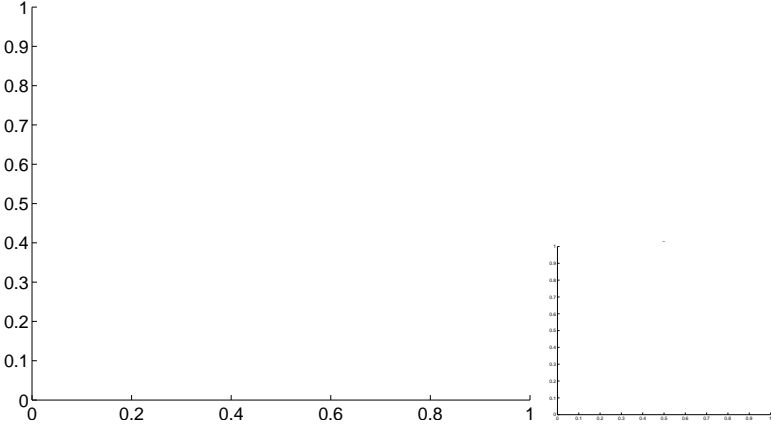
Q3 no OOT image



Q4 no difference image



Q4 no OOT image



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

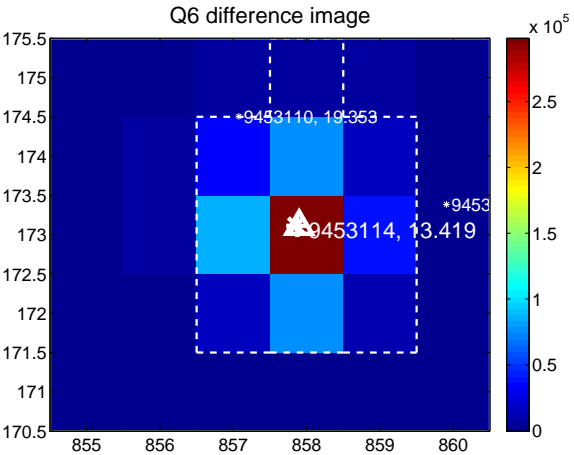
Q5 no difference image



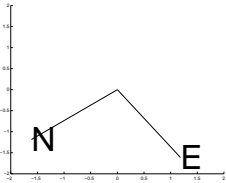
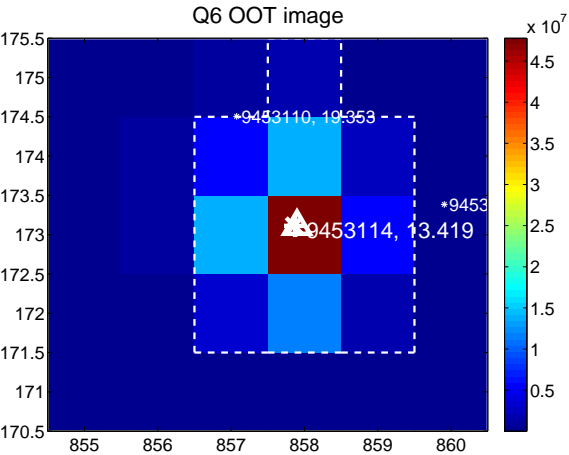
Q5 no OOT image



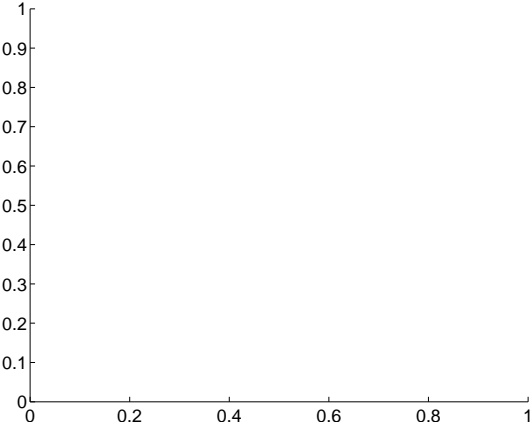
Q6 difference image



Q6 OOT image



Q7 no difference image



Q7 no OOT image



Q8 no difference image



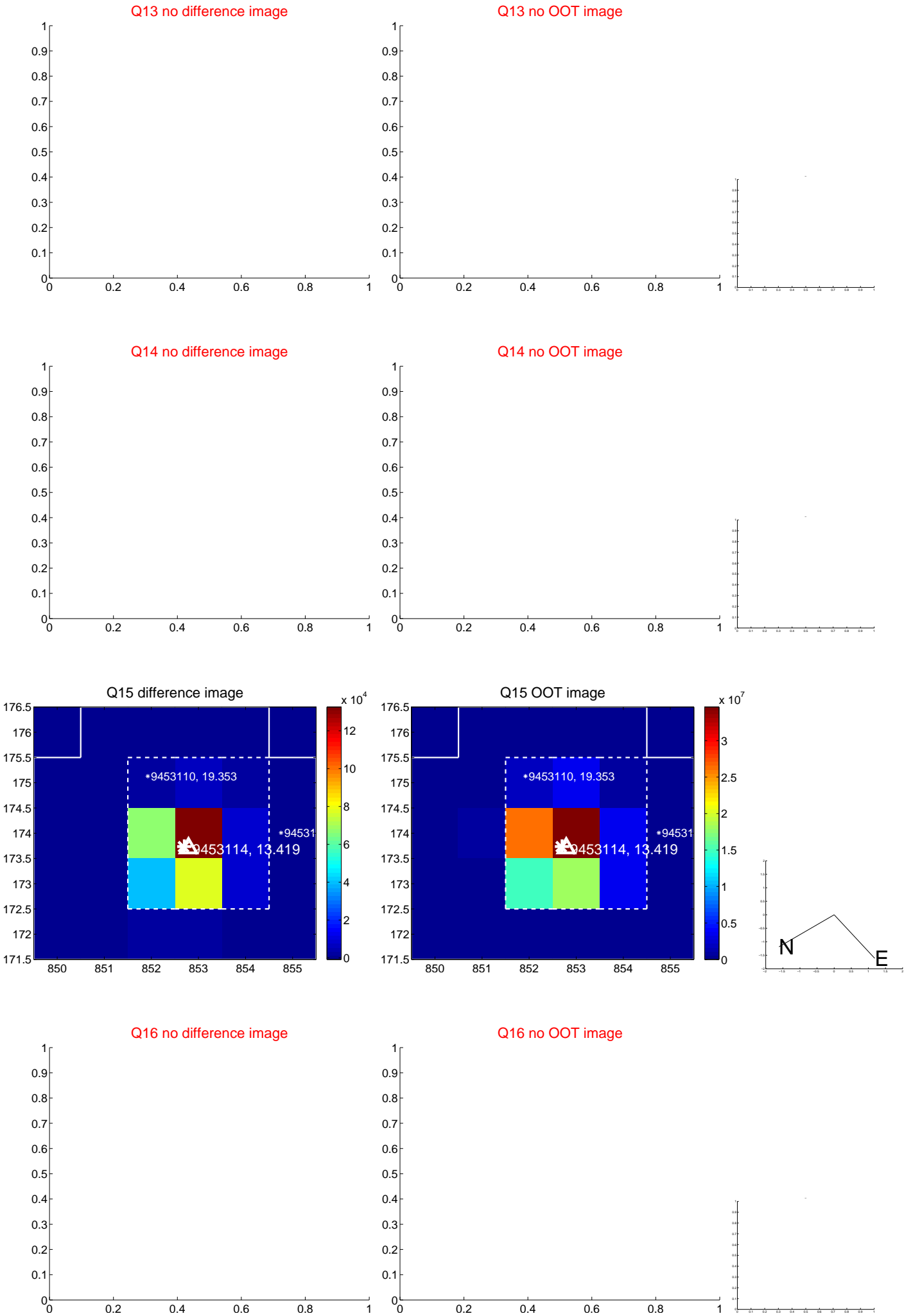
Q8 no OOT image



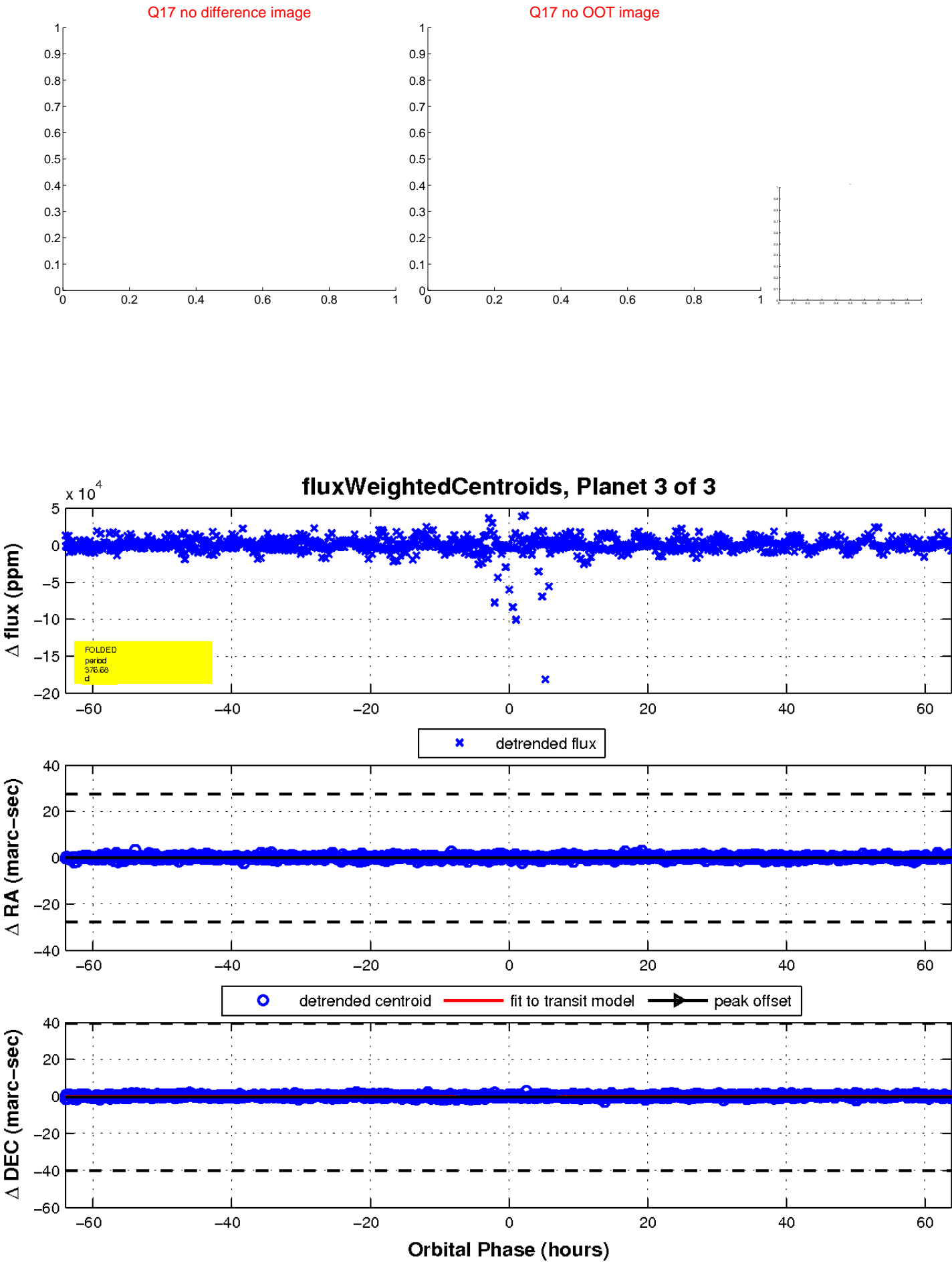
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

