

KIC 012303977

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})
012303977-01	OBS	No	437.256032	183.779067	0.1	0.826	22.8	0.0	0.54	4653	0.03	0.14
012303977-02	OBS	No	462.187027	581.993847	2530.4	5.463	21.8	8.9	0.54	4653	2.85	0.13
012303977-03	OBS	No	685.751776	196.005185	3067.0	8.086	16.4	10.4	0.54	4653	2.90	0.08
012303977-04	OBS	No	644.472213	178.648080	2478.0	8.057	17.6	8.4	0.54	4653	2.60	0.09
012303977-05	OBS	No	308.830814	186.310556	3201.0	2.912	15.7	11.4	0.54	4653	3.01	0.23

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012303977-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012303977-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012303977-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
012303977-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
012303977-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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

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

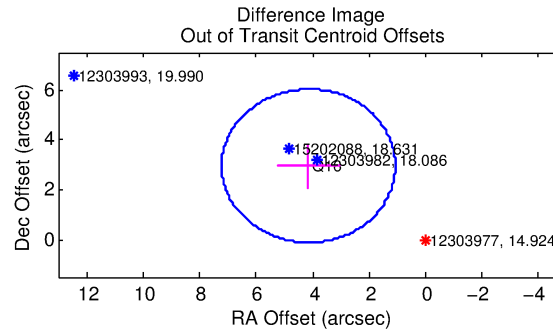
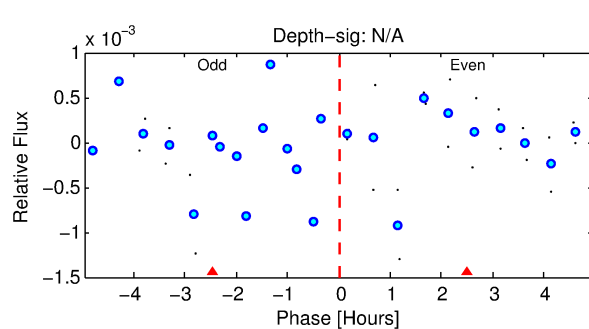
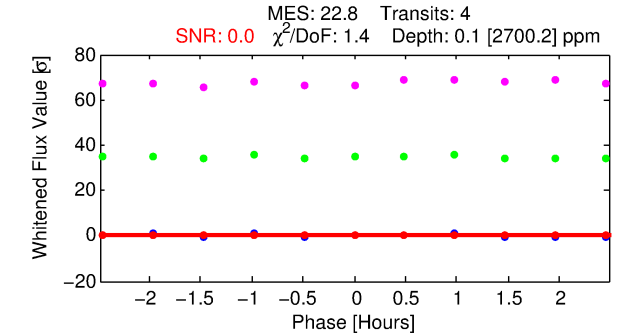
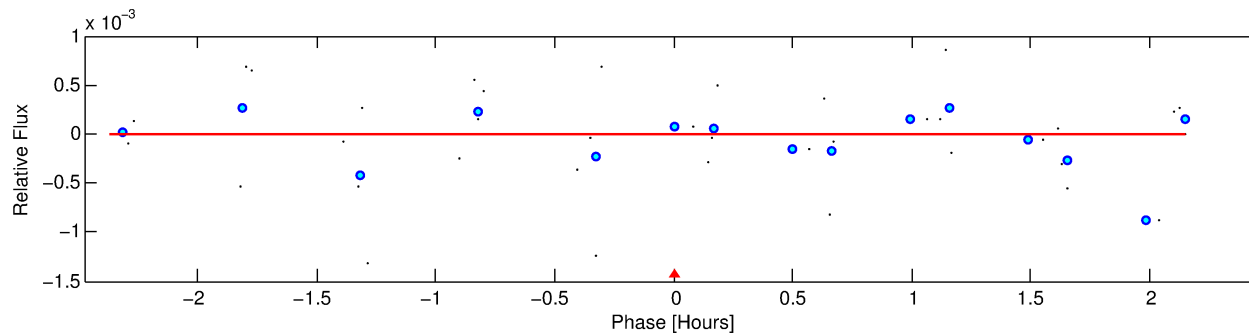
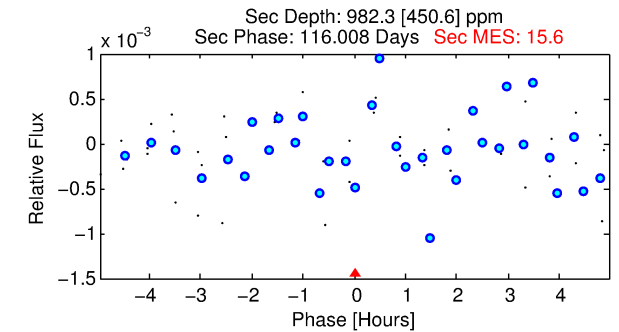
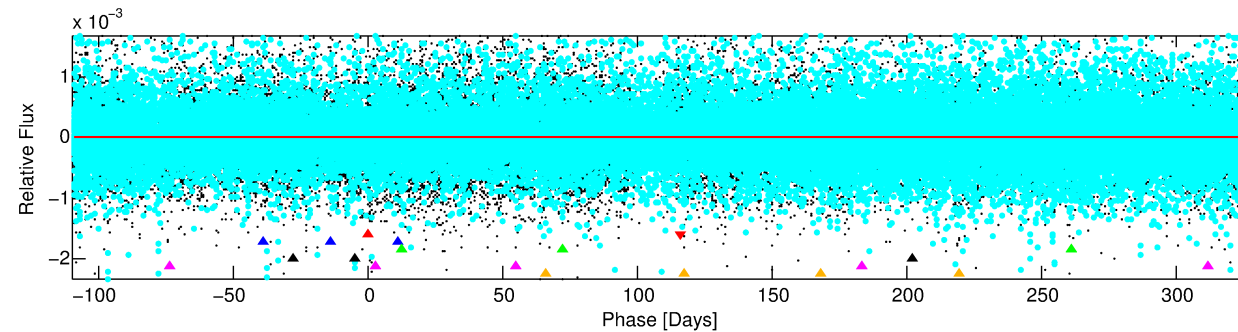
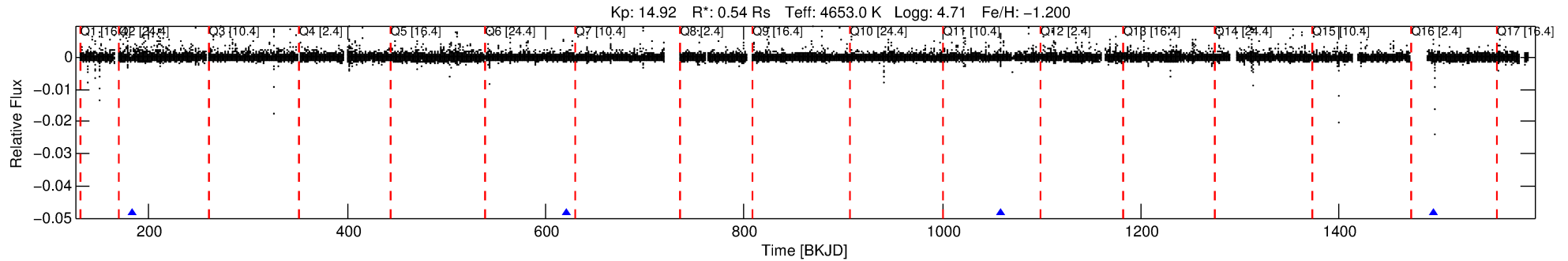
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012303977-01

No Significant Match Found

DV One-Page Summary

KIC: 12303977 Candidate: 1 of 6 Period: 437.256 d



DV Fit Results:

Period = 437.25603 [183.11569] d
Epoch = 183.7791 [367.0452] BKJD
Rp/R* = 0.0005 [6.9015]
a/R* = 954.17 [41577827.94]
b = 0.97 [2745.18]
Seff = 0.14 [0.08]
Teq = 157 [23] K
Rp = 0.03 [402.91] Re
a = 0.9178 [0.2619] AU
Ag = 556882161.08 [15695025588855.03] [0.000]
Teffp = 37223 [262269807] K [0.000]

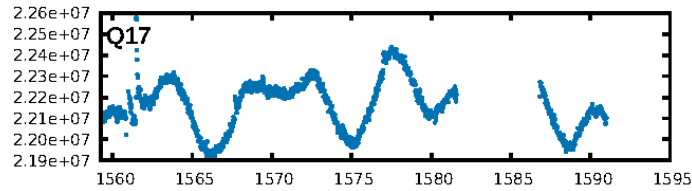
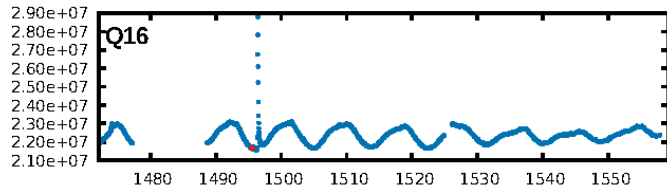
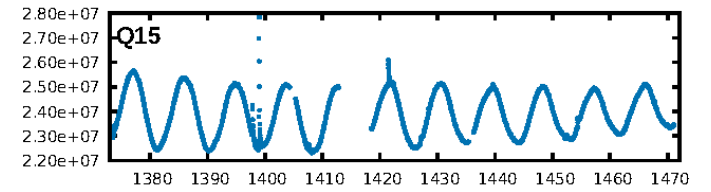
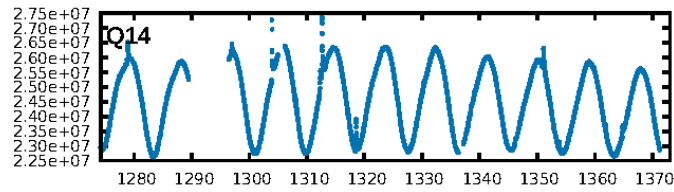
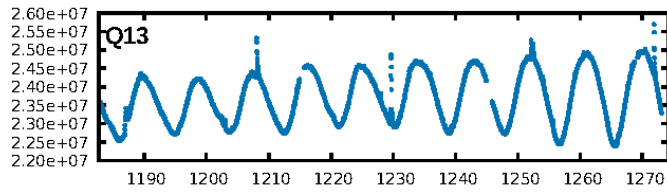
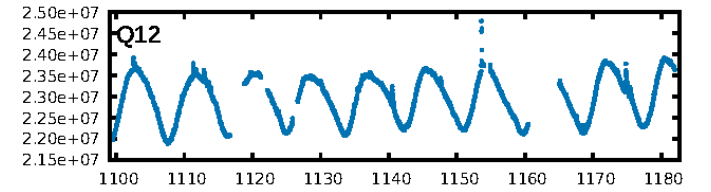
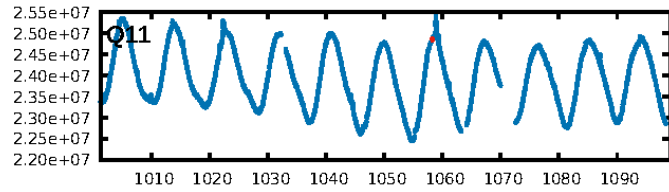
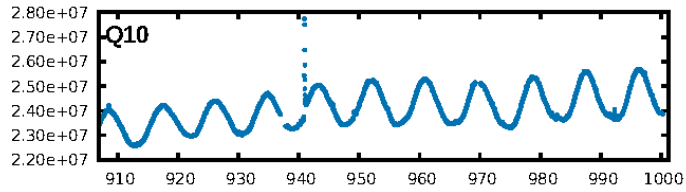
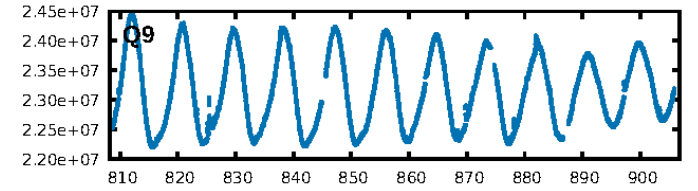
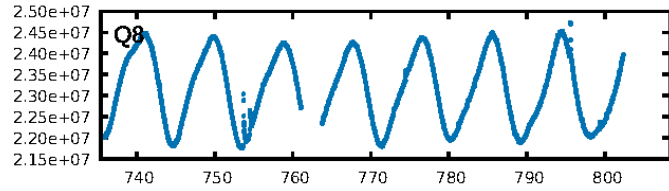
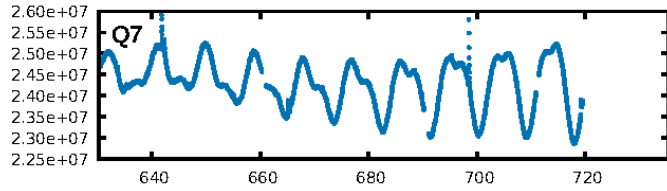
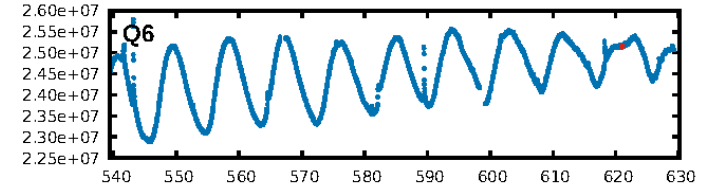
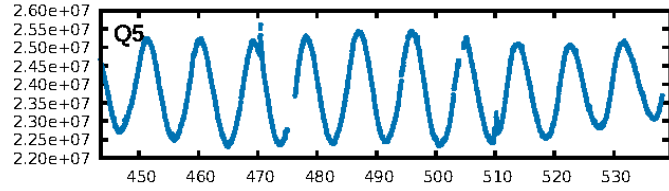
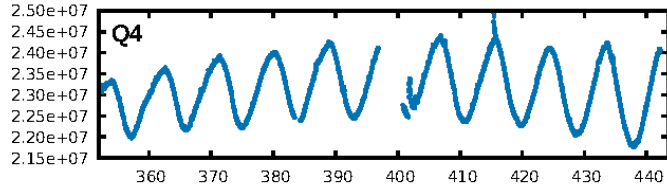
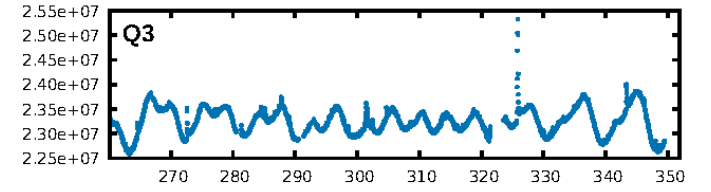
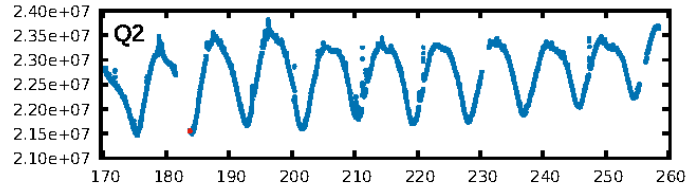
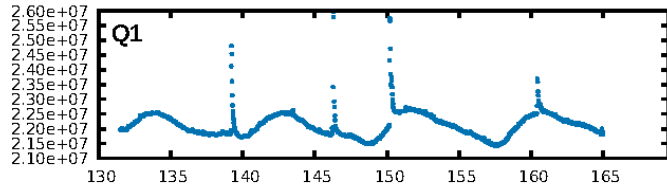
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [162.74σ]
LongPeriod-sig: 100.0% [108.30σ]
ModelChiSquare2-sig: 7.9%
ModelChiSquareGof-sig: 43.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 5.086 arcsec [4.97σ]
KicOffset-rm: 5.142 arcsec [5.02σ]
OotOffset-st: 0/0/1/0 [1]
KicOffset-st: 0/0/1/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [3/3]

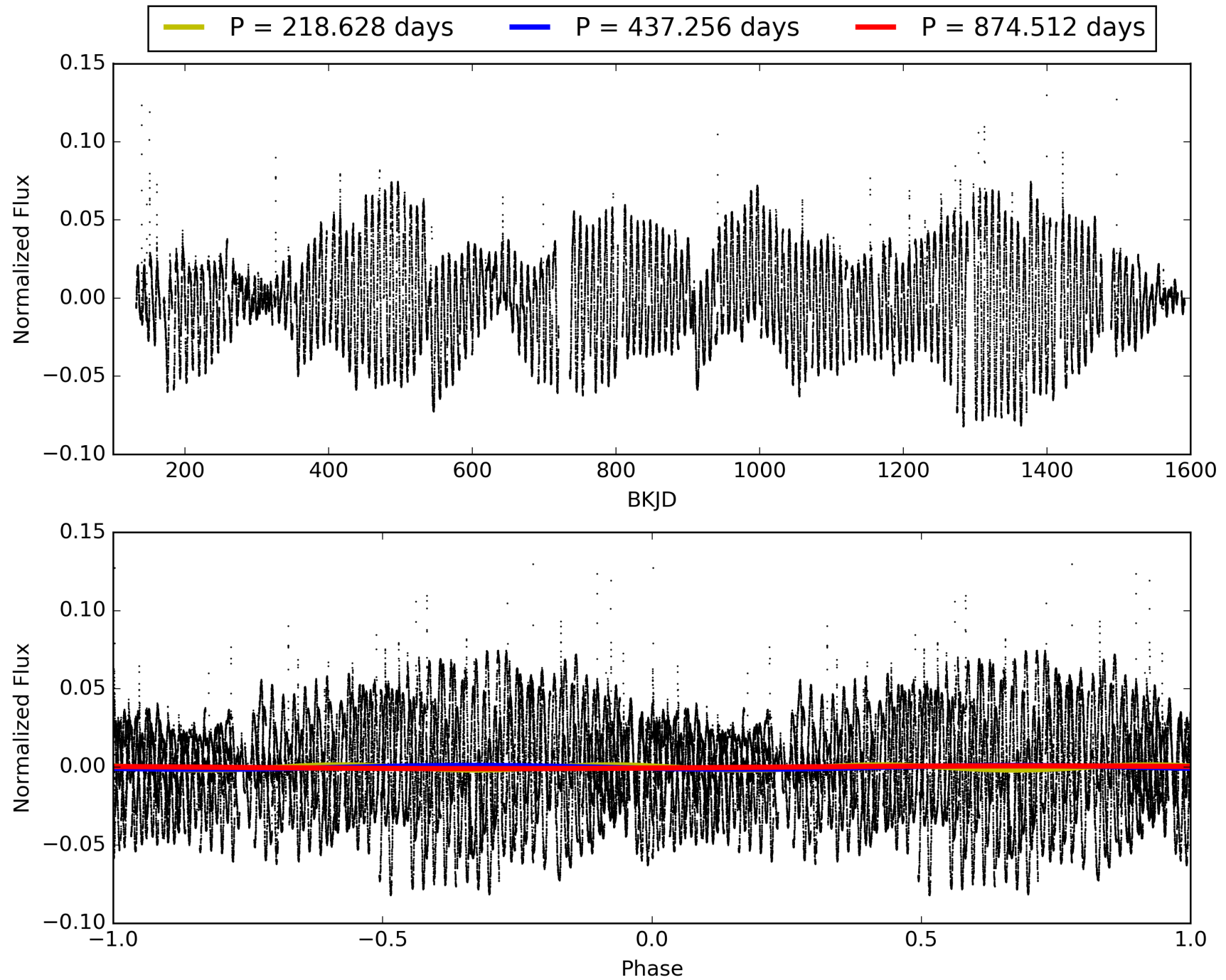
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:03:18 Z

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

TCE 012303977-01, PDC Light Curves

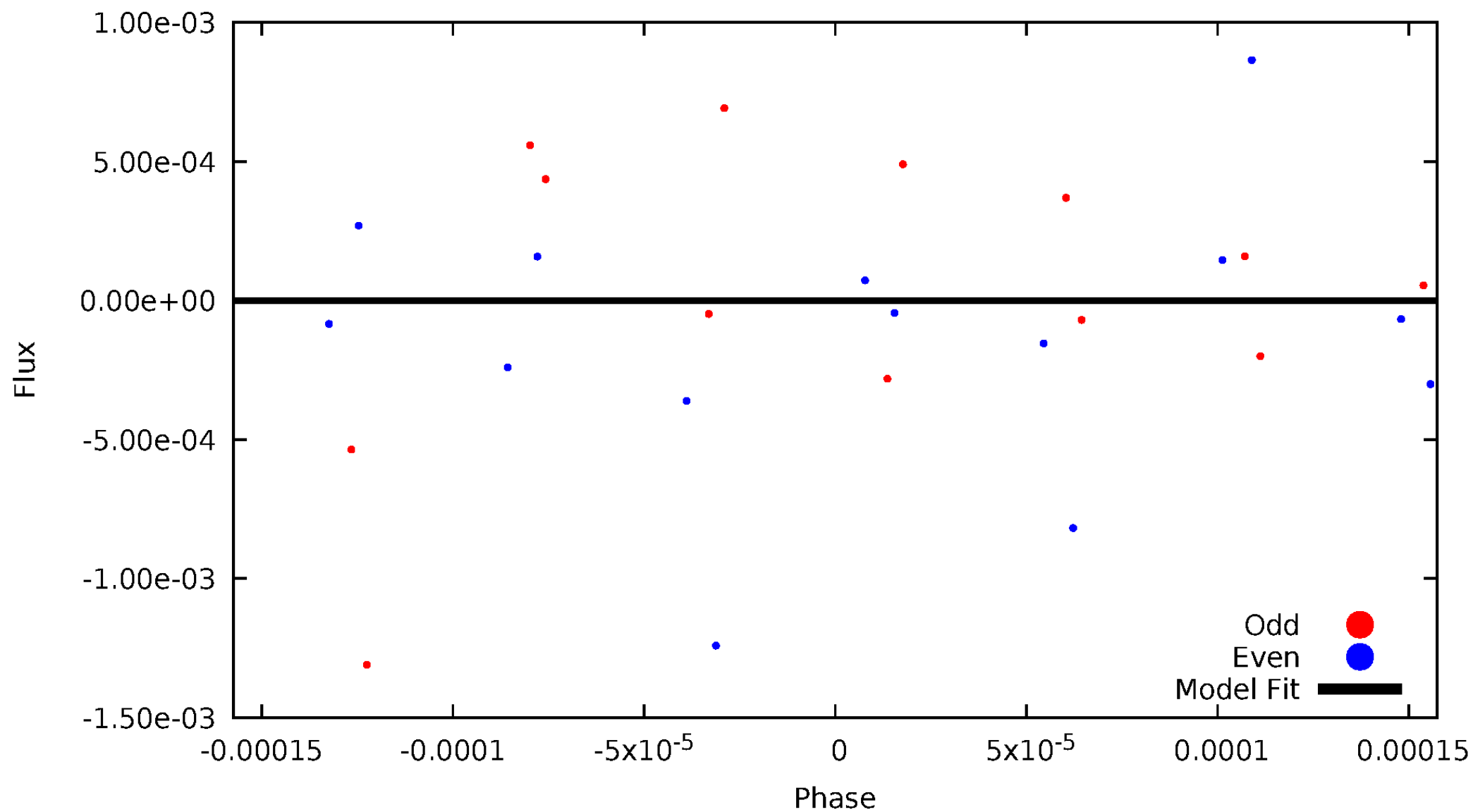


TCE 012303977-01



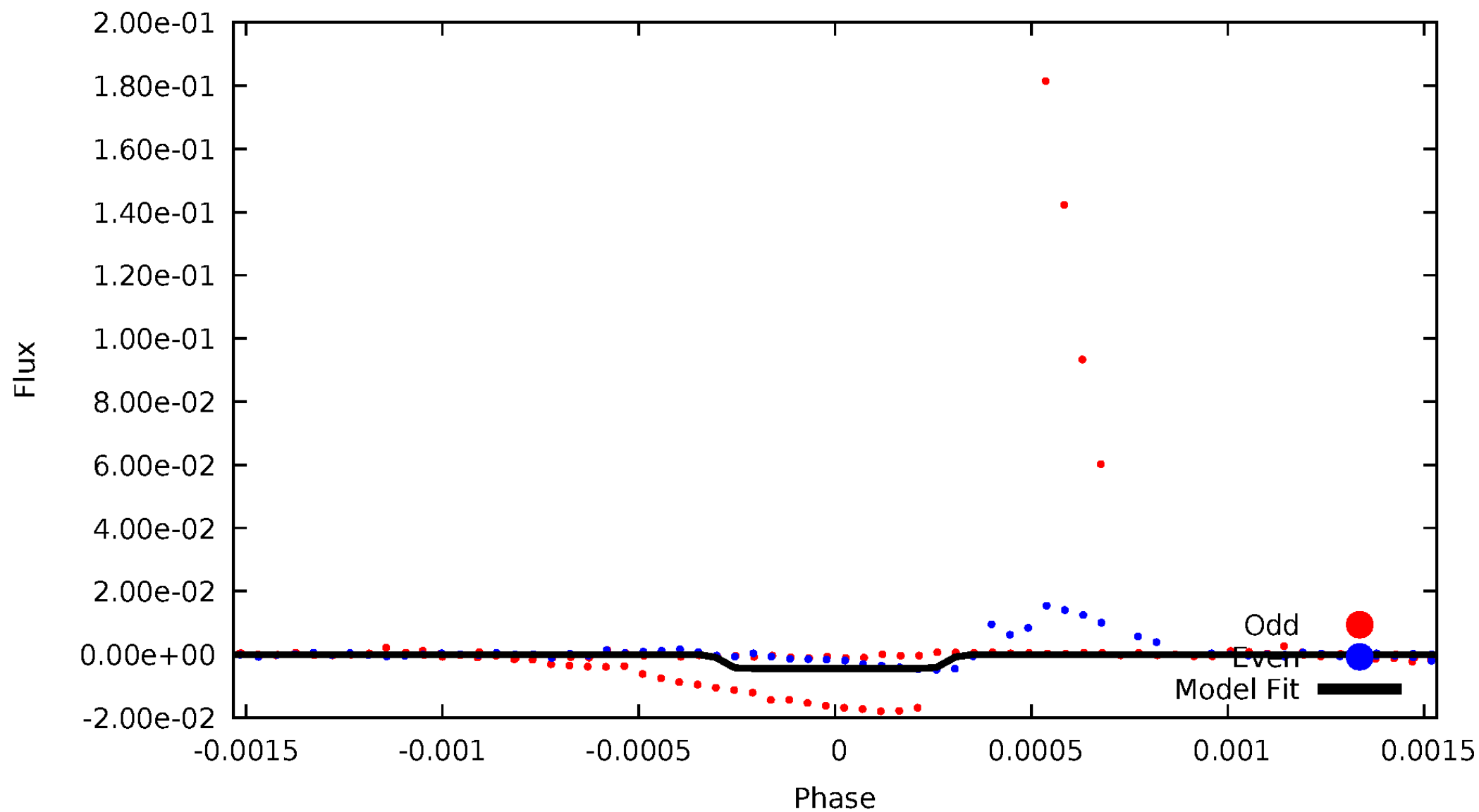
DV Odd/Even

TCE 012303977-01



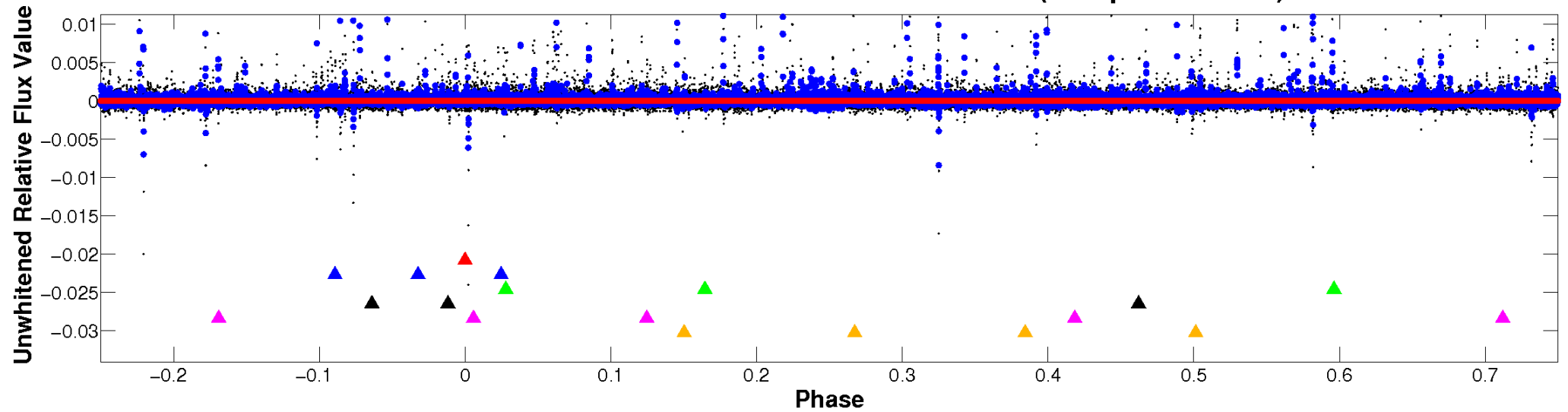
ALT Odd/Even

TCE 012303977-01

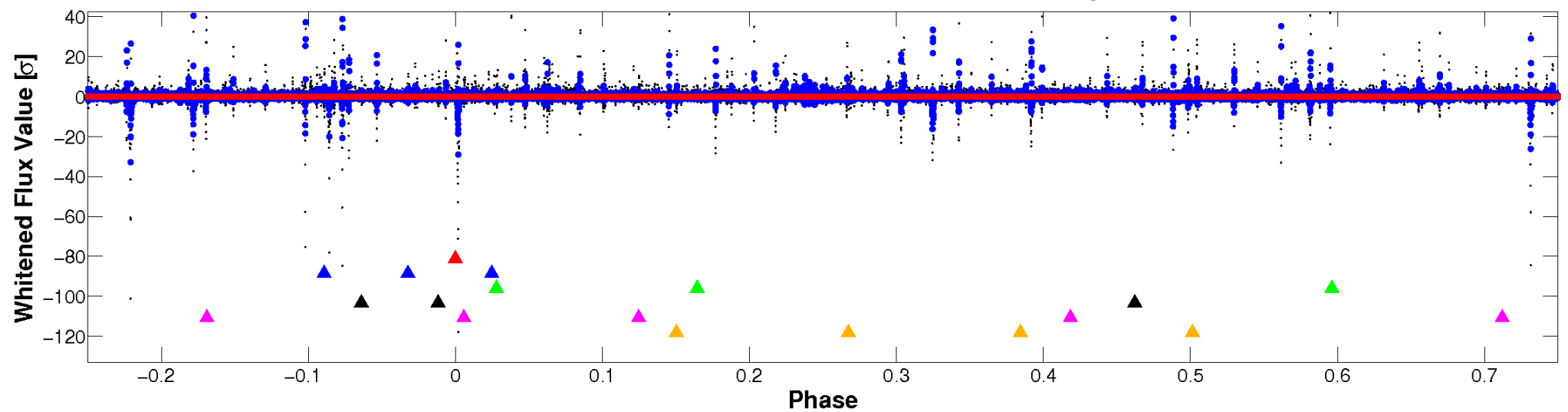


Non-Whitened Vs. Whitened Light Curve

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

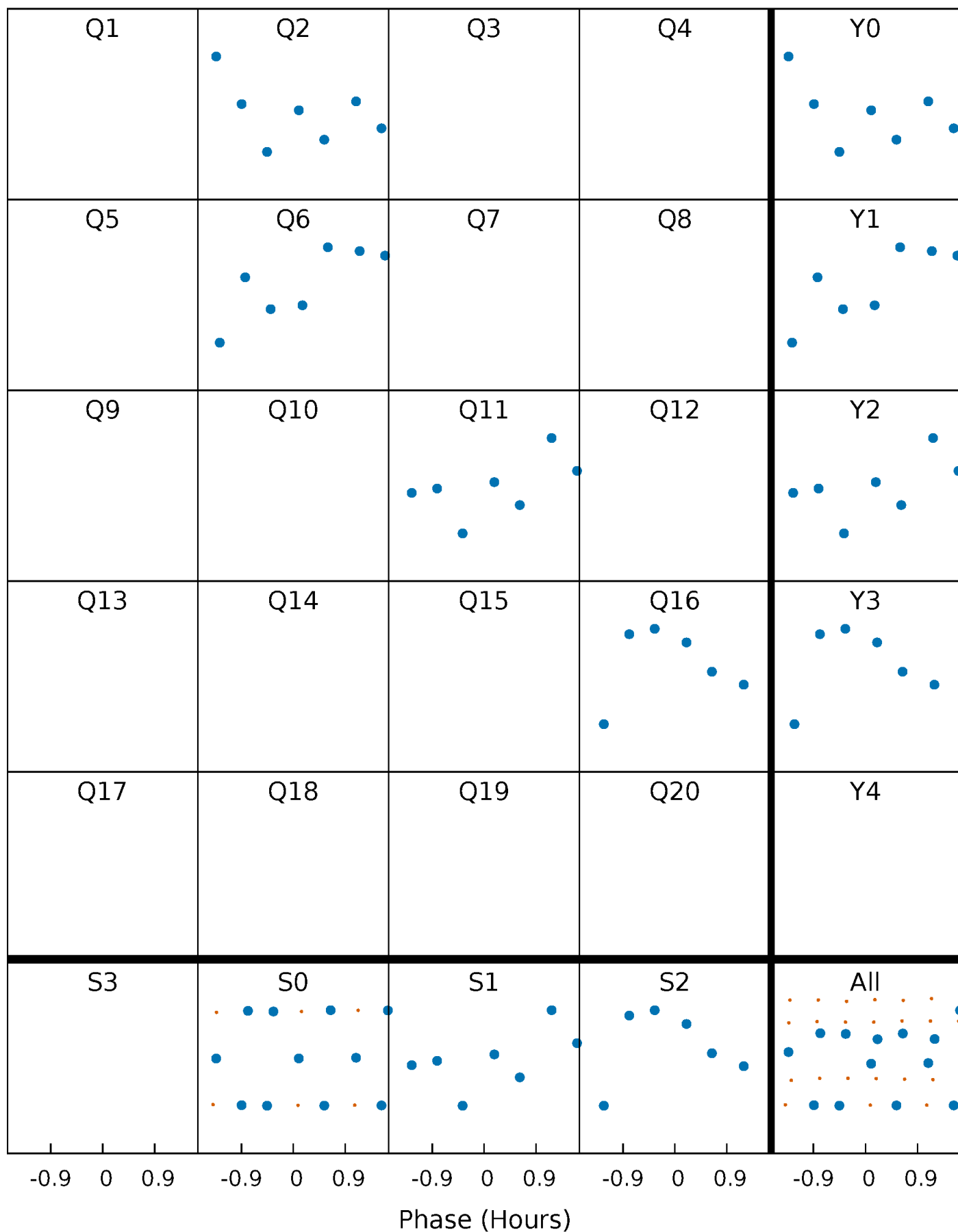


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



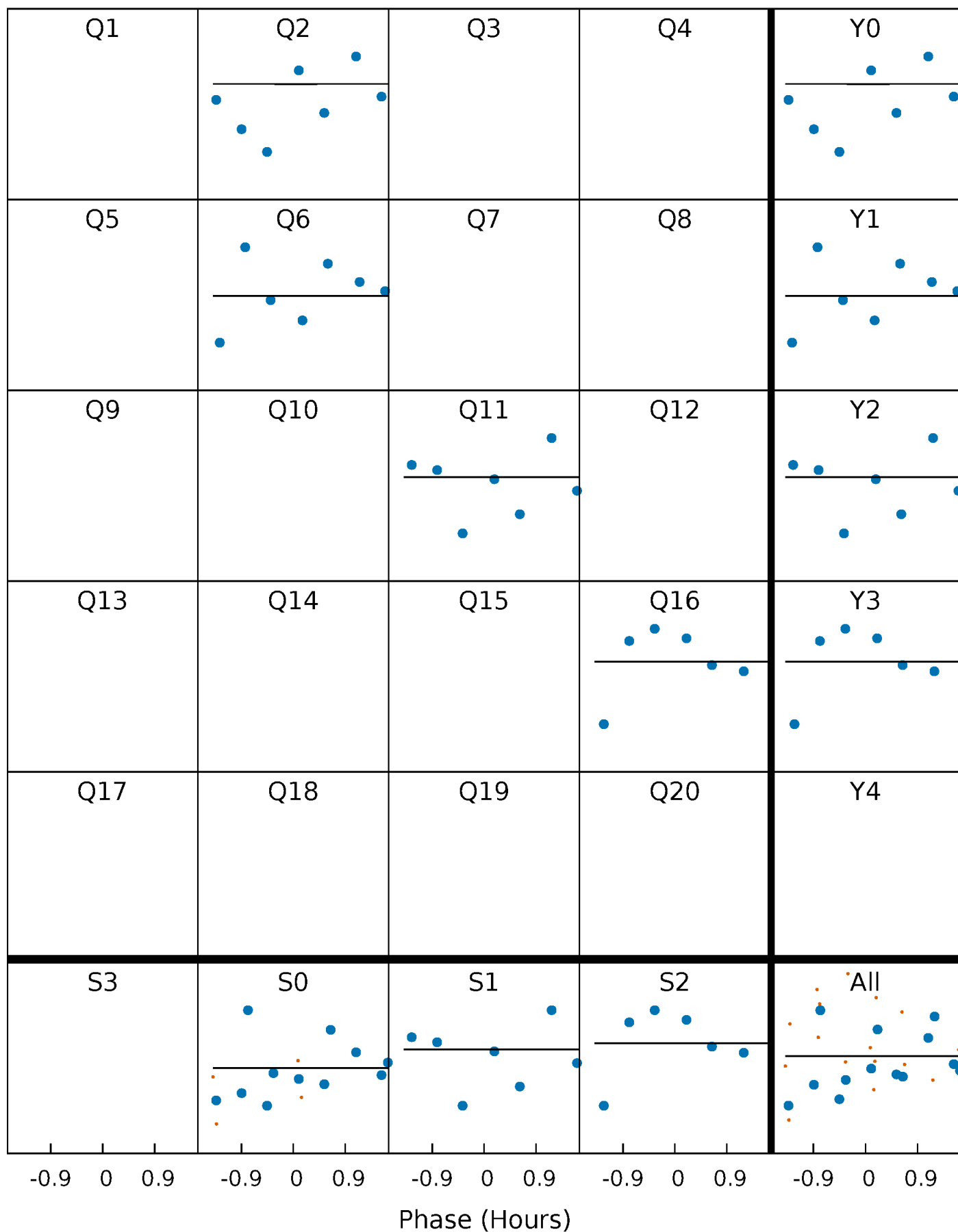
PDC Quarter-Phased Transit Curves

TCE 012303977-01 P=437.256032 Days $T_0=183.779066$ (BKJD)



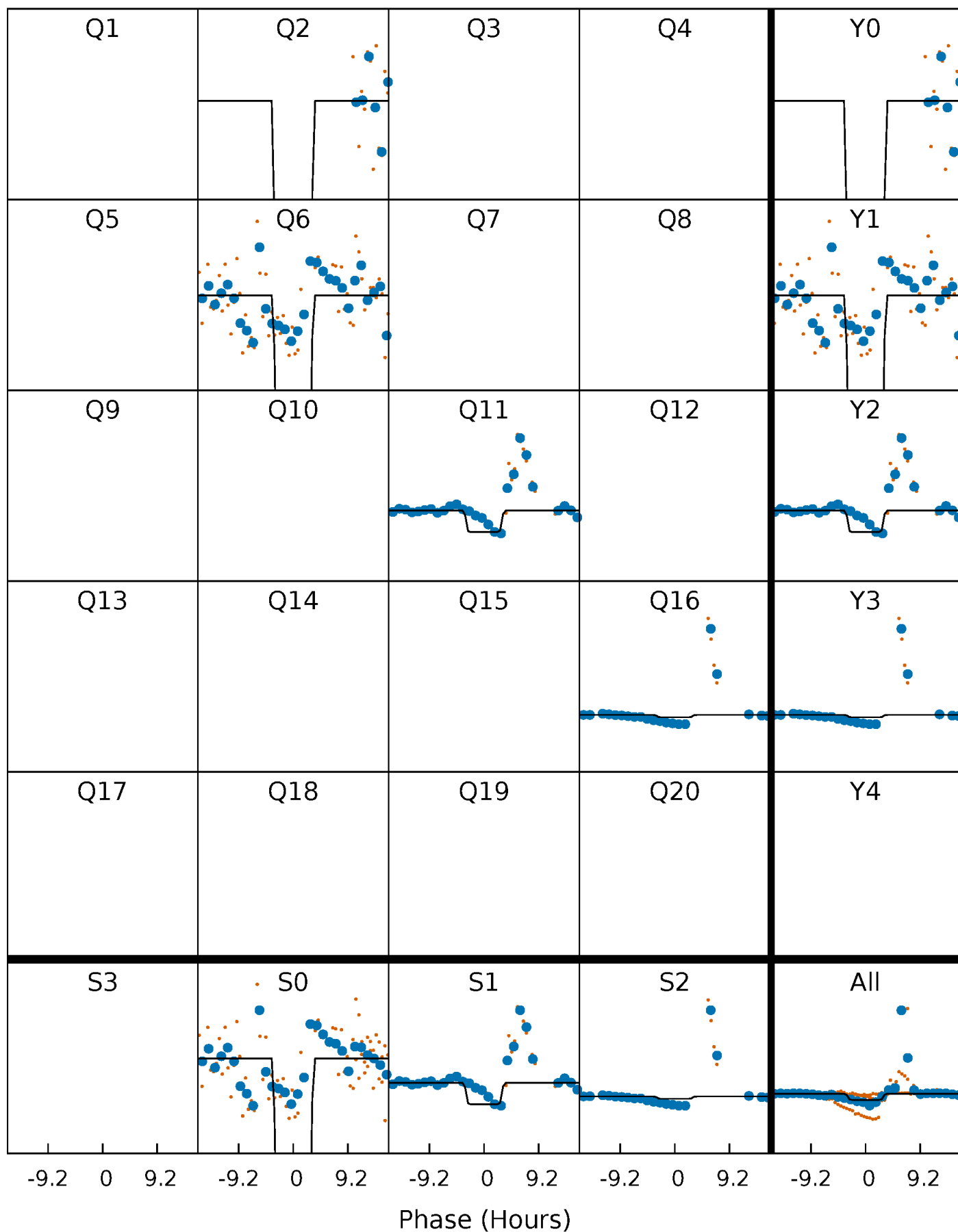
DV Quarter-Phased Transit Curves

TCE 012303977-01 P=437.256032 Days $T_0=183.779066$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

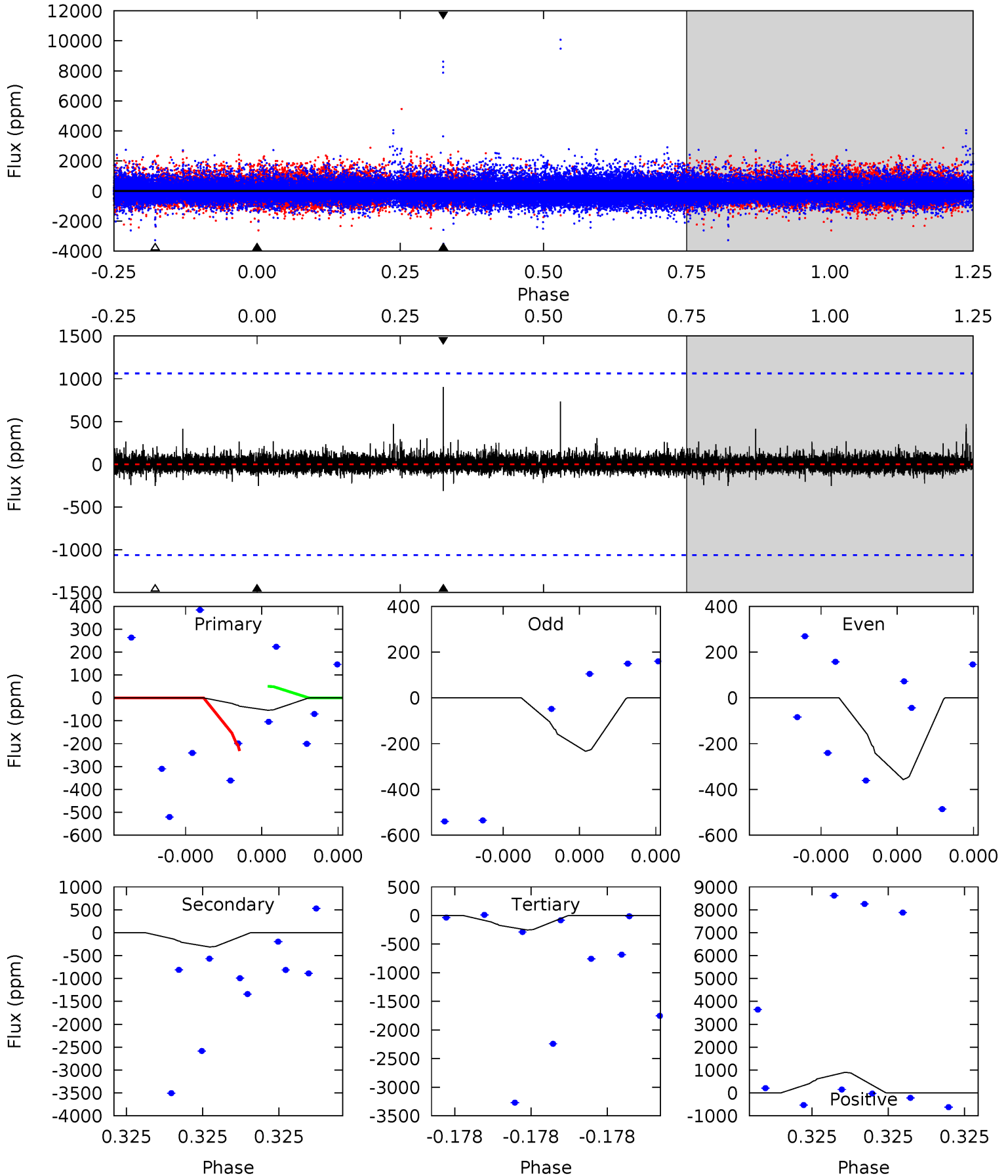
TCE 012303977-01 P=437.645988 Days $T_0=183.301442$ (BKJD)



DV Model-Shift Uniqueness Test

012303977-01, P = 437.256032 Days, E = 183.779066 Days

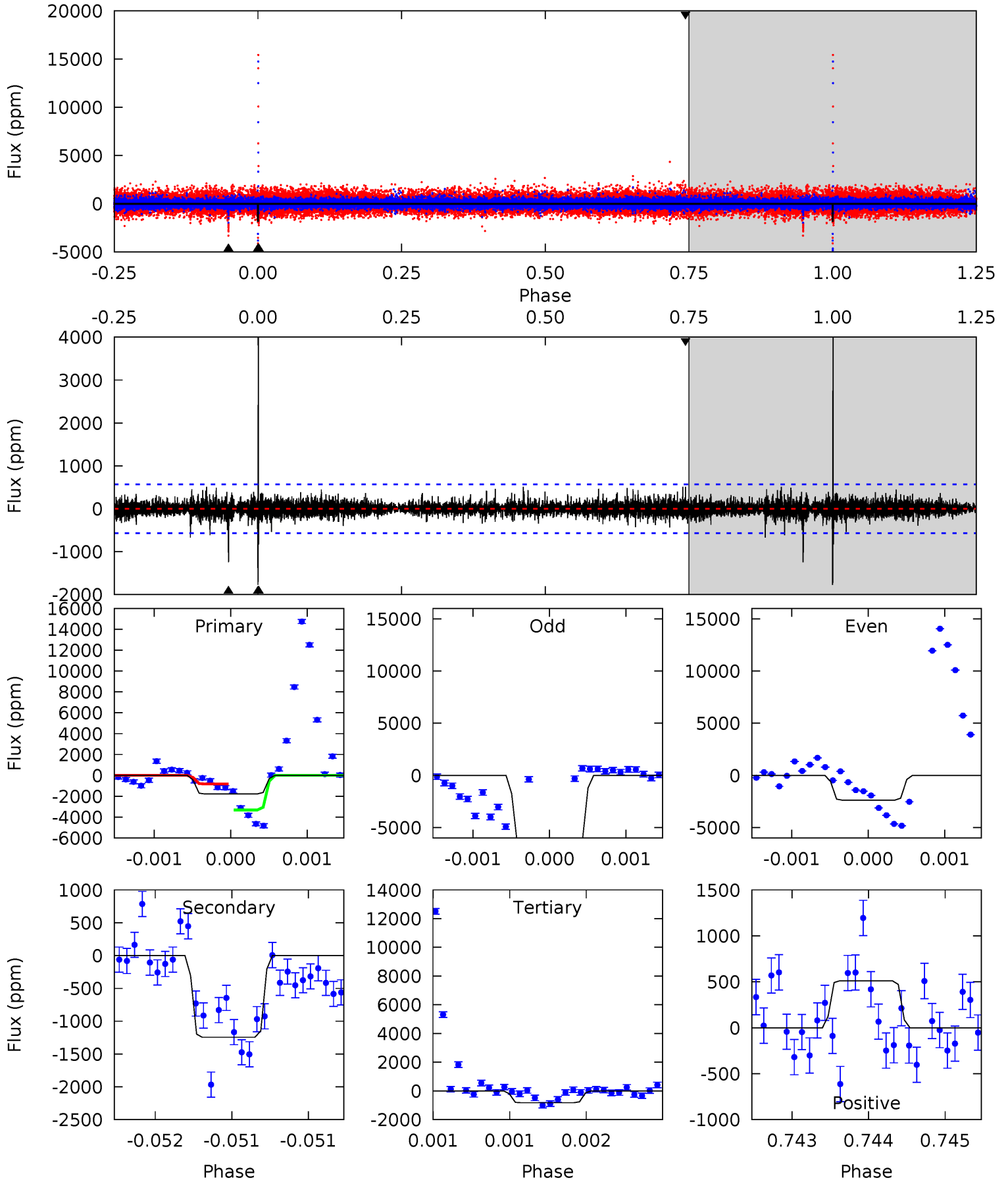
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.30	1.72	1.40	4.97	5.85	3.89	0.28	-1.10	-4.67	0.32	-3.25	0.22	0.35	0.74	0.49



Alt Model-Shift Uniqueness Test

012303977-01, P = 437.645988 Days, E = 183.301442 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.3	12.1	8.04	4.98	5.54	3.43	1.09	9.24	12.3	4.08	7.14	28.4	2.62	0.69	11.8



Stellar Parameters For KIC 012303977

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4653^{+139}_{-139}	$4.713^{+0.048}_{-0.028}$	$-1.200^{+0.300}_{-0.300}$	$0.535^{+0.033}_{-0.037}$	$0.538^{+0.040}_{-0.023}$	$4.955^{+0.982}_{-0.563}$
	+3%/-3%	+1%/-1%	+25%/-25%	+6%/-7%	+7%/-4%	+20%/-11%
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 012303977-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-311 ± 181	$262.65^{+304.28}_{-178.24}$	217^{+45}_{-25}	1267^{+277}_{-2267}	$1.721^{+18.763}_{-1.451}$
Alt.	-1245 ± 103	$258.62^{+300.76}_{-182.57}$	219^{+46}_{-24}	1440^{+337}_{-181}	$7.395^{+83.053}_{-5.993}$

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 $A_{\text{obs}} \gg 1.0$

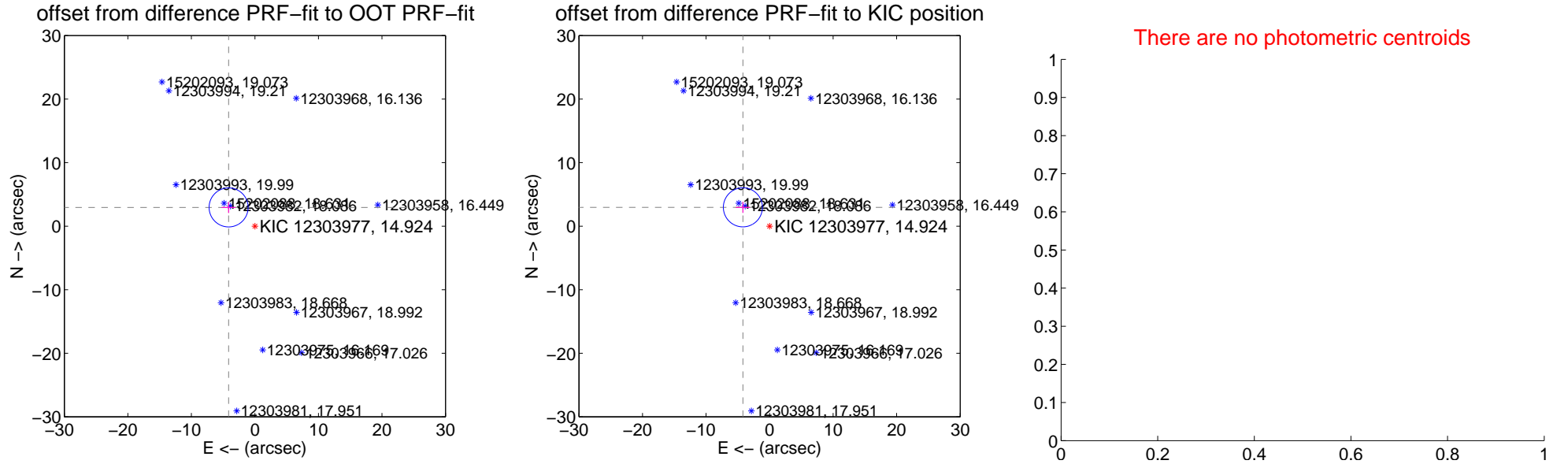
DV Centroid Data

Supplemental centroid analysis for 012303977-01. Kepler magnitude: 14.92. Transit SNR 0.00

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.086 ± 1.024	4.97	4.142 ± 1.095	2.952 ± 0.867
PRF-fit source offset from KIC position	5.142 ± 1.025	5.02	4.201 ± 1.095	2.966 ± 0.867
photometric centroid source offset	—	—	—	—

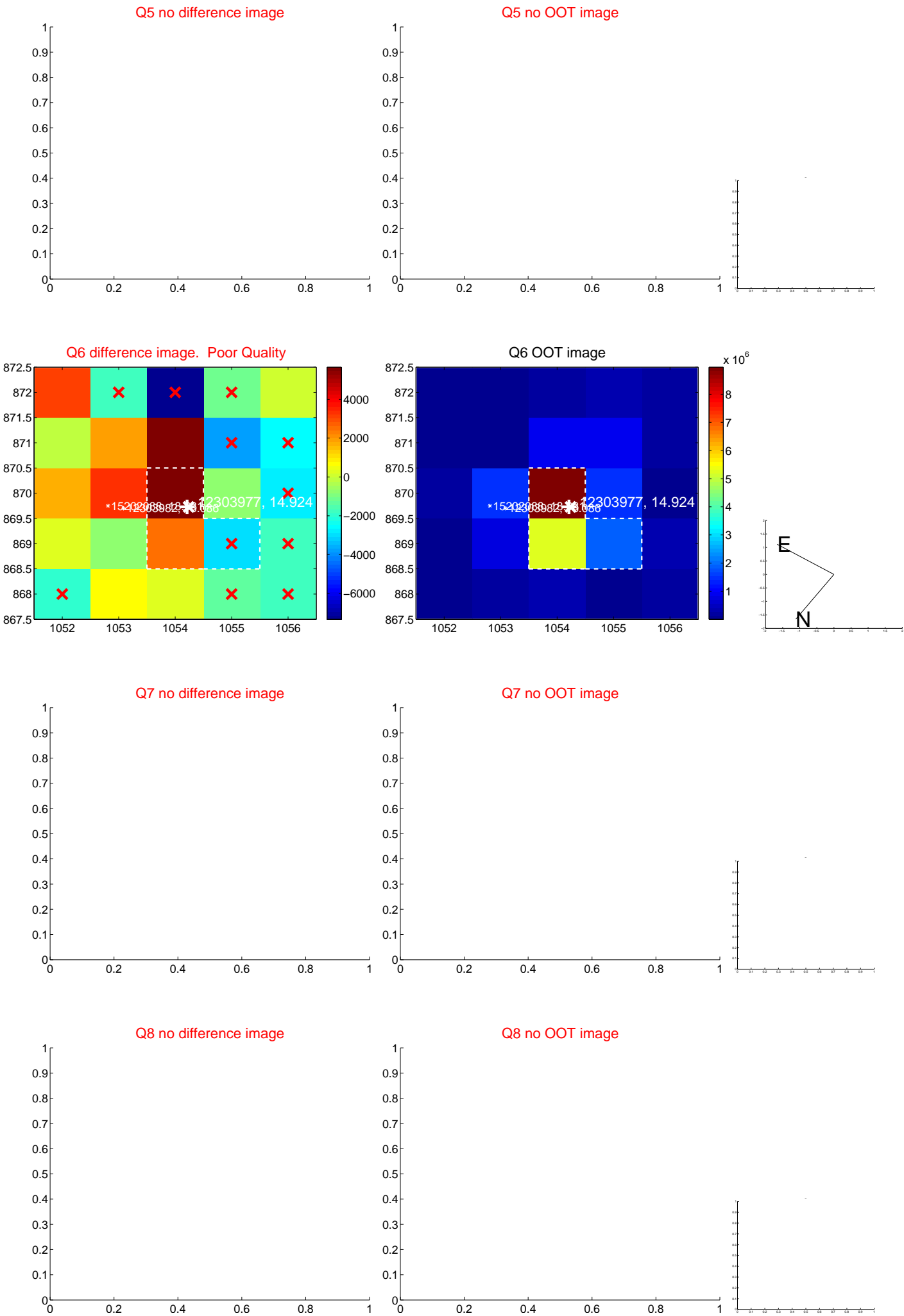


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

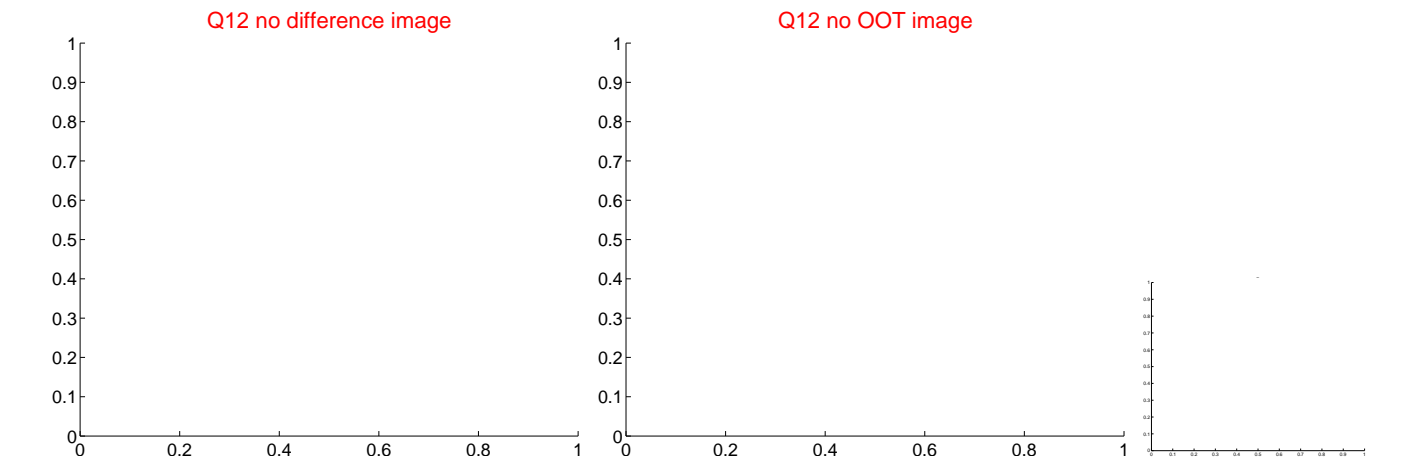
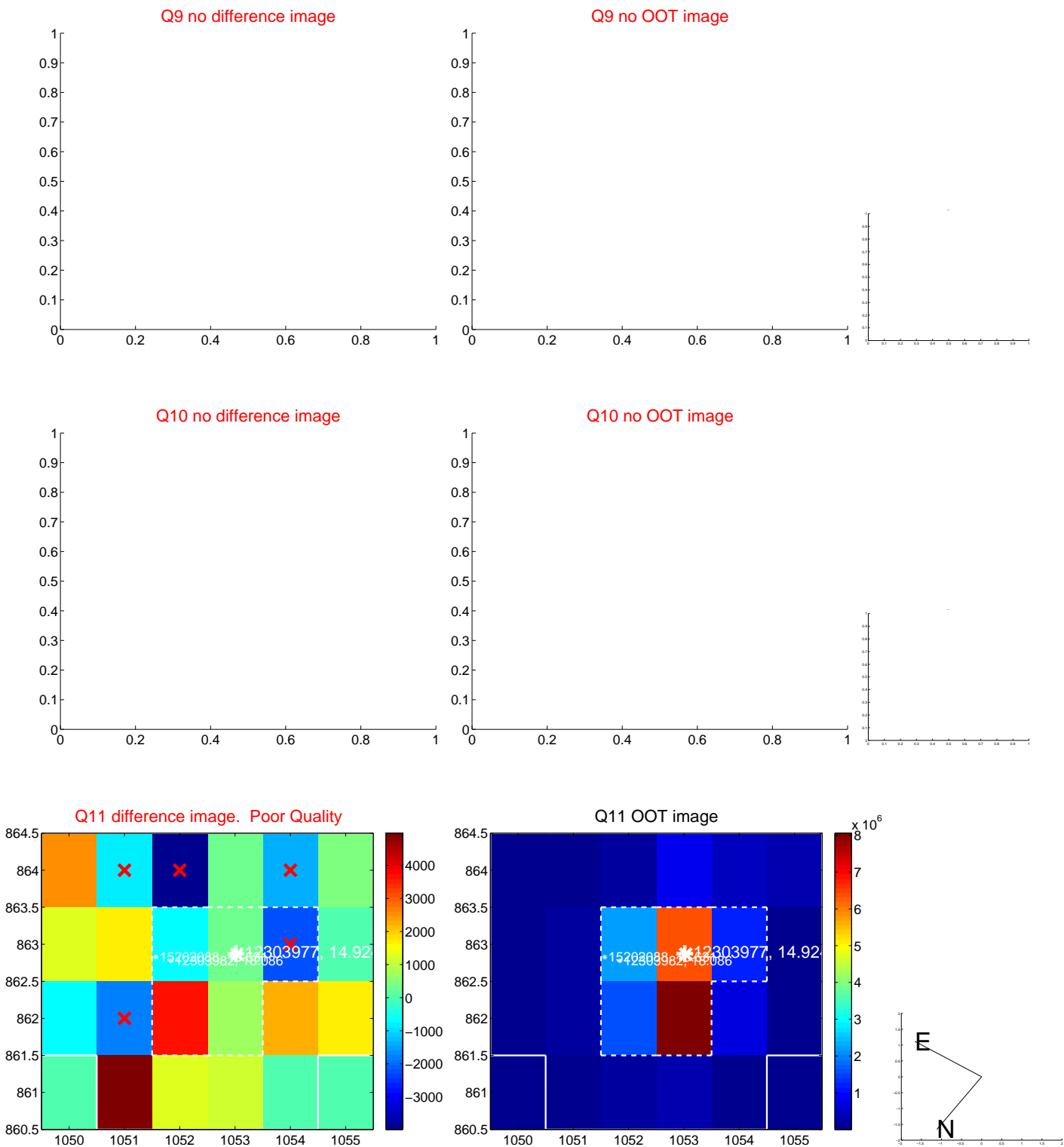
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



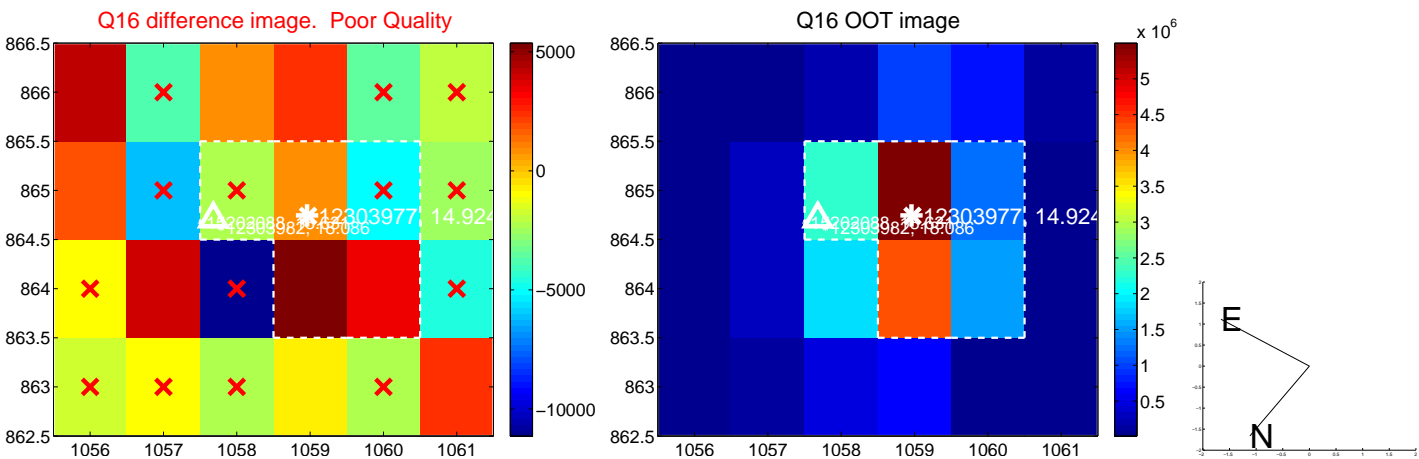
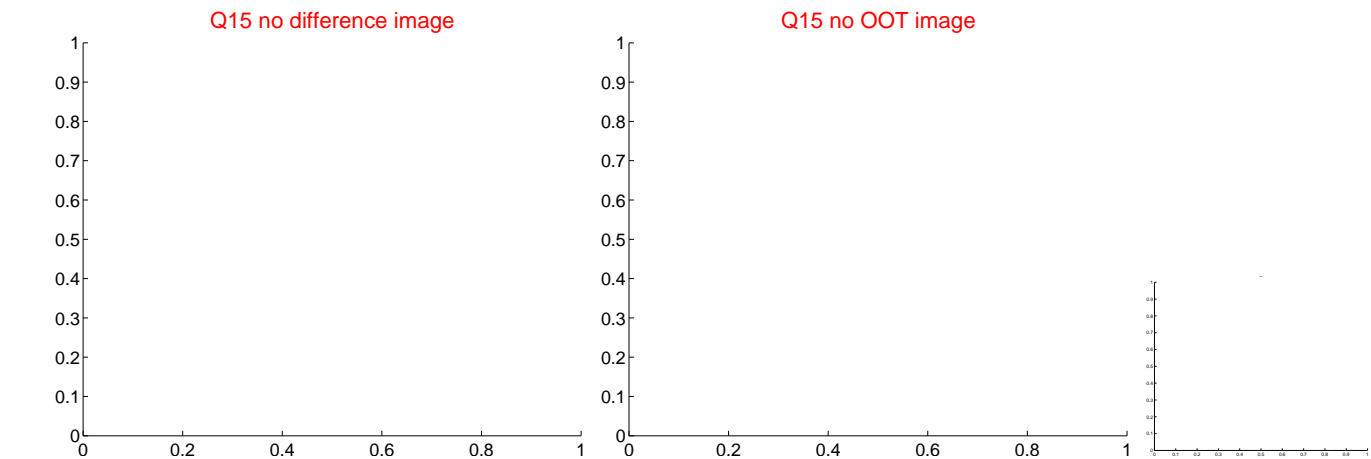
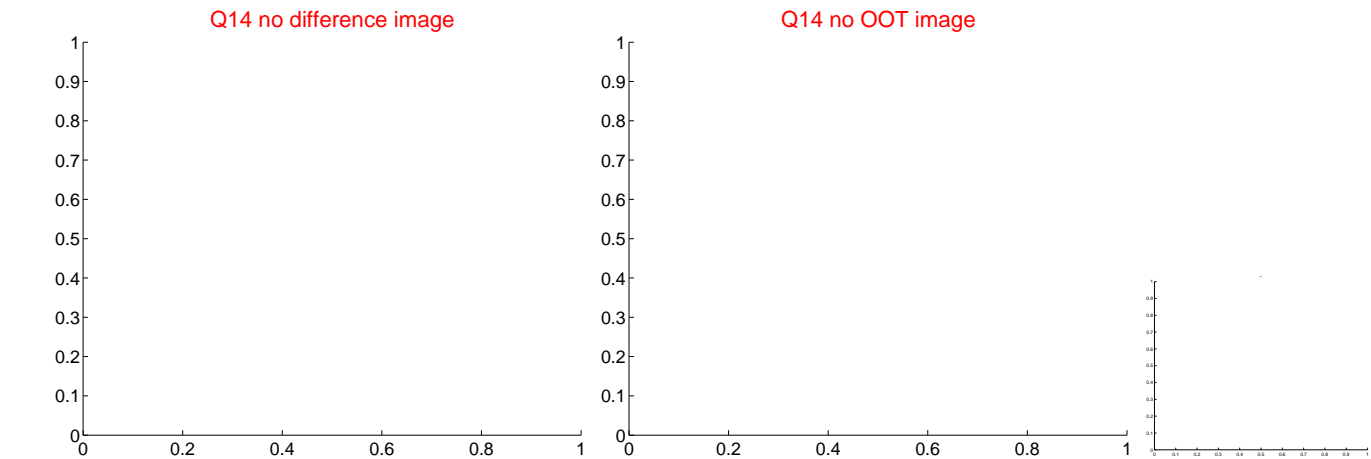
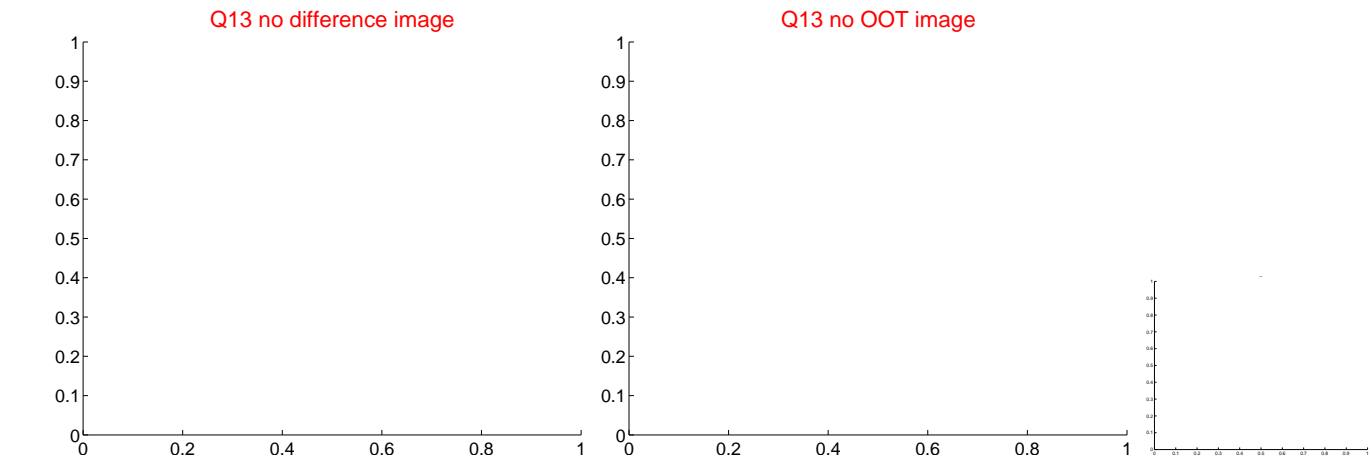
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



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



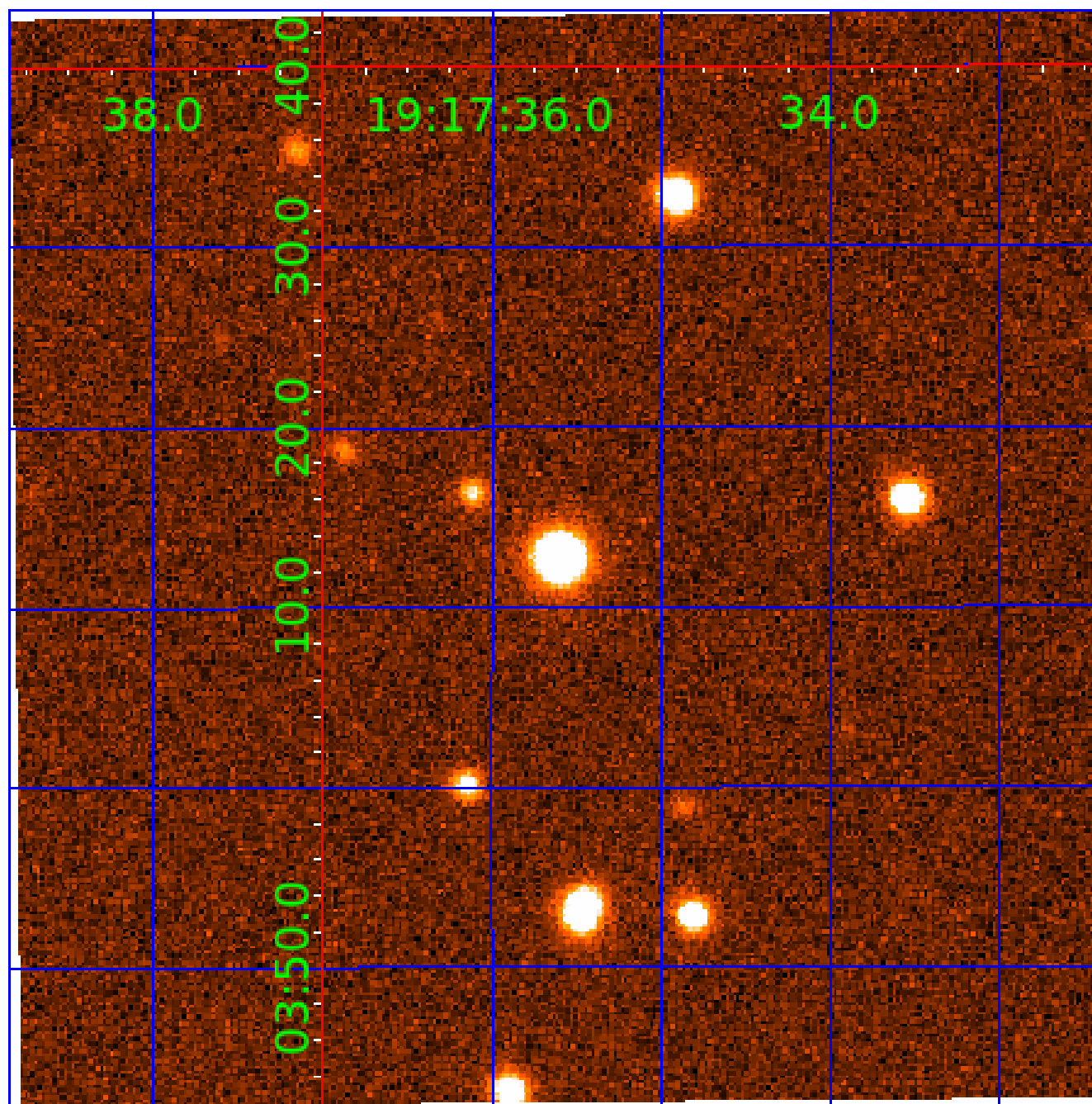
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 012303977

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})
012303977-01	OBS	No	437.256032	183.779067	0.1	0.826	22.8	0.0	0.54	4653	0.03	0.14
012303977-02	OBS	No	462.187027	581.993847	2530.4	5.463	21.8	8.9	0.54	4653	2.85	0.13
012303977-03	OBS	No	685.751776	196.005185	3067.0	8.086	16.4	10.4	0.54	4653	2.90	0.08
012303977-04	OBS	No	644.472213	178.648080	2478.0	8.057	17.6	8.4	0.54	4653	2.60	0.09
012303977-05	OBS	No	308.830814	186.310556	3201.0	2.912	15.7	11.4	0.54	4653	3.01	0.23

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012303977-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012303977-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012303977-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
012303977-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
012303977-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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

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

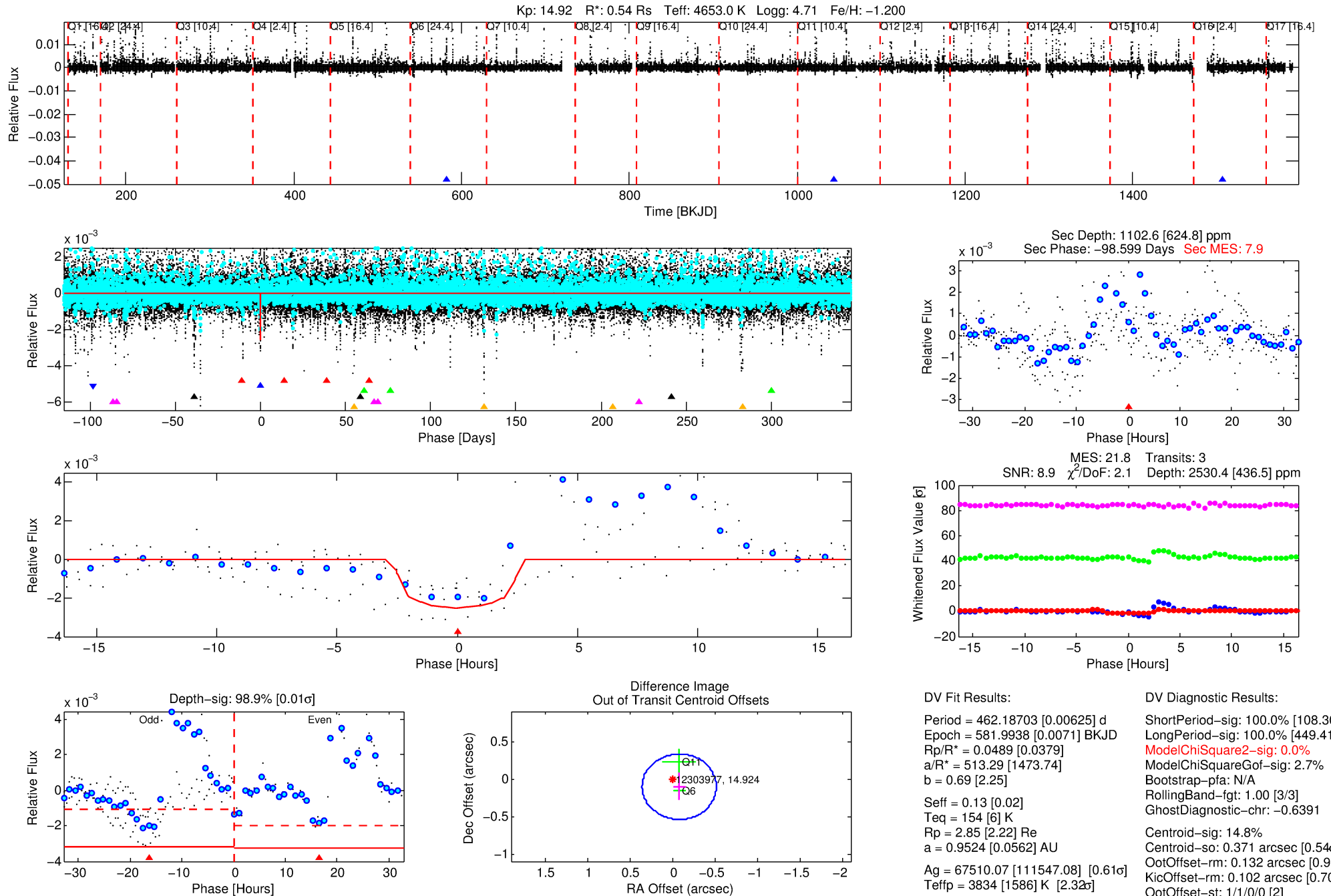
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012303977-02

No Significant Match Found

DV One-Page Summary

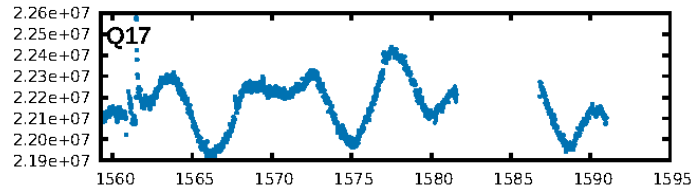
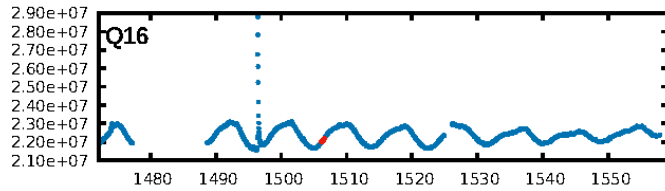
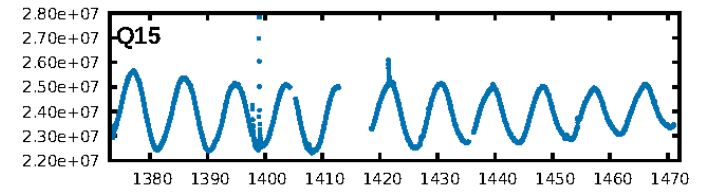
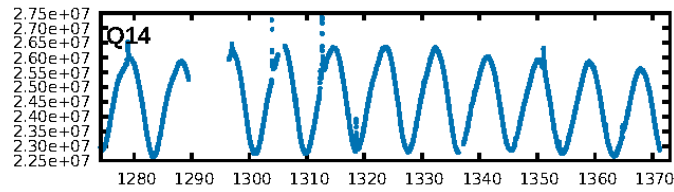
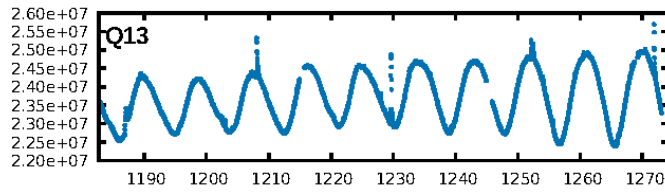
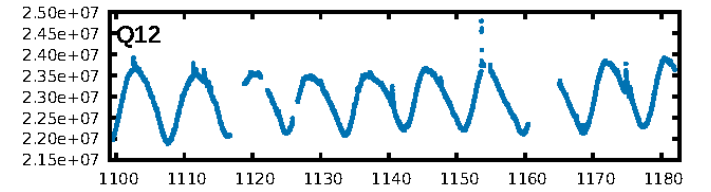
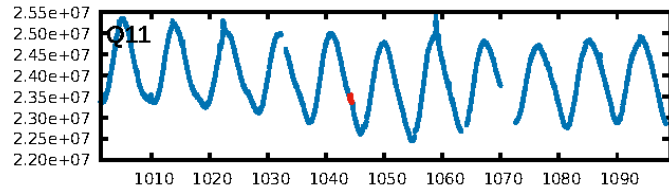
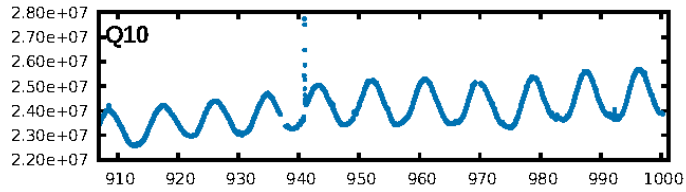
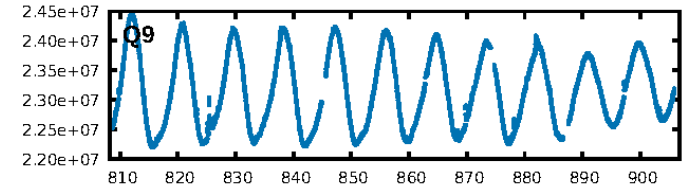
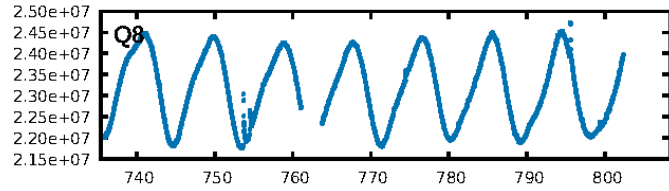
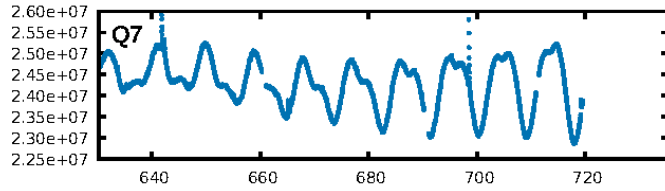
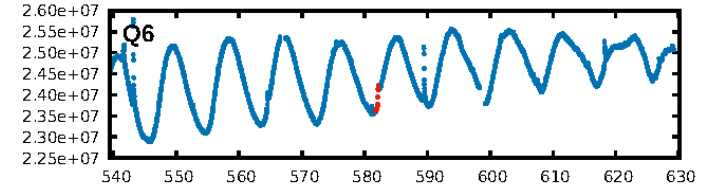
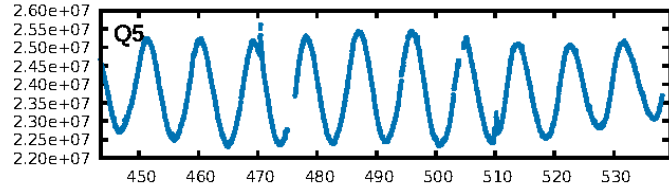
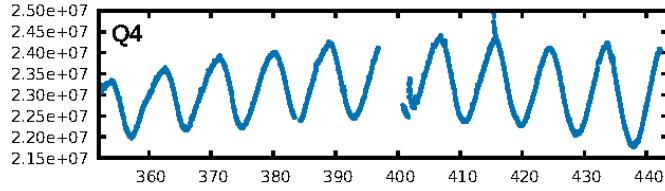
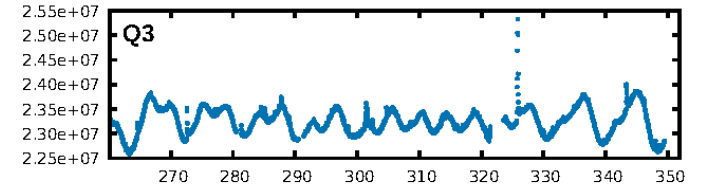
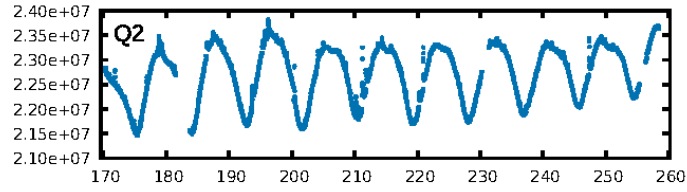
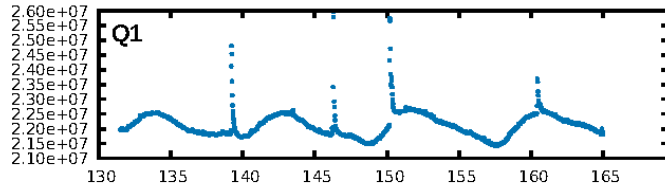
KIC: 12303977 Candidate: 2 of 6 Period: 462.187 d



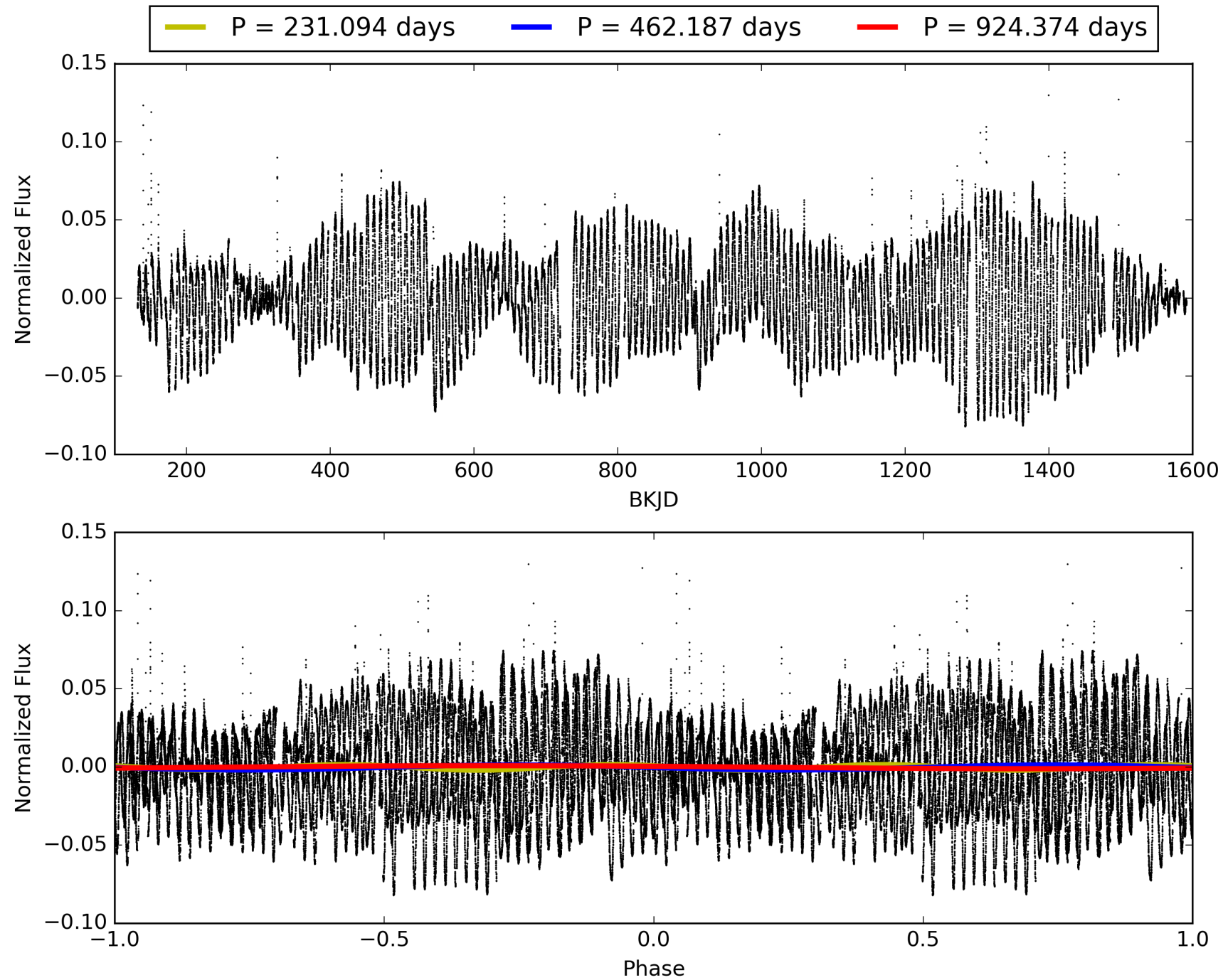
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:03:34 Z

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

TCE 012303977-02, PDC Light Curves

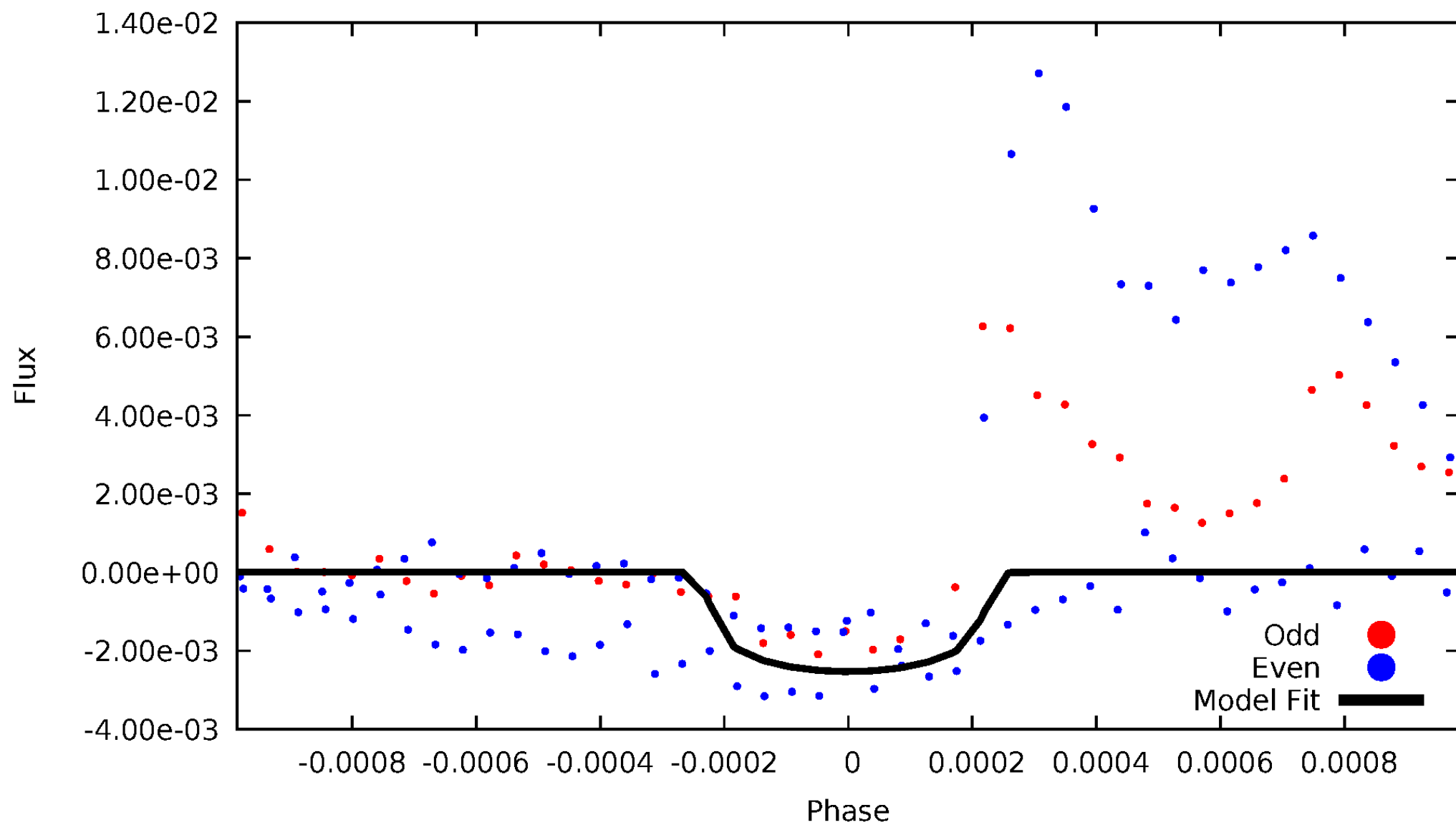


TCE 012303977-02



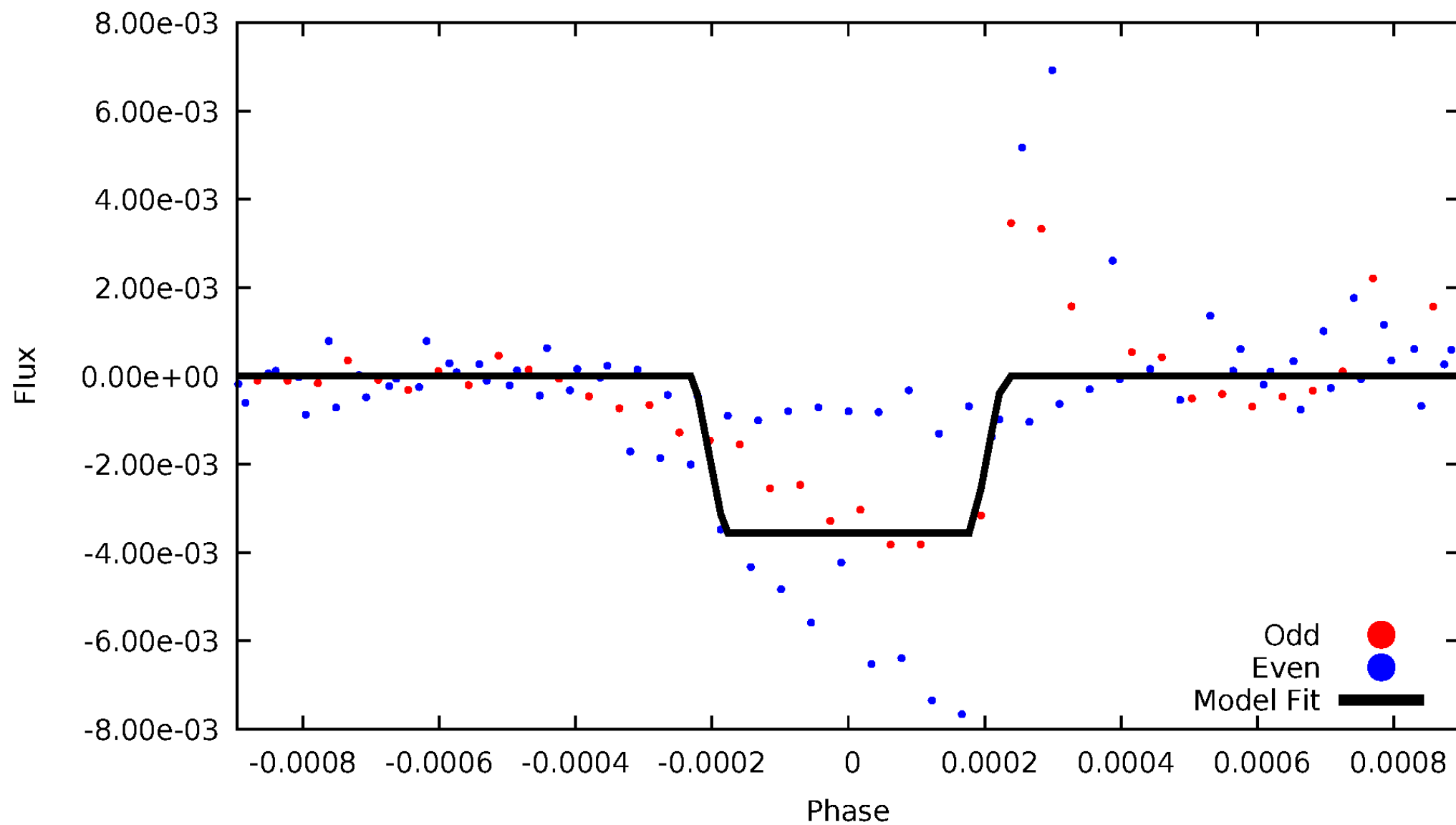
DV Odd/Even

TCE 012303977-02



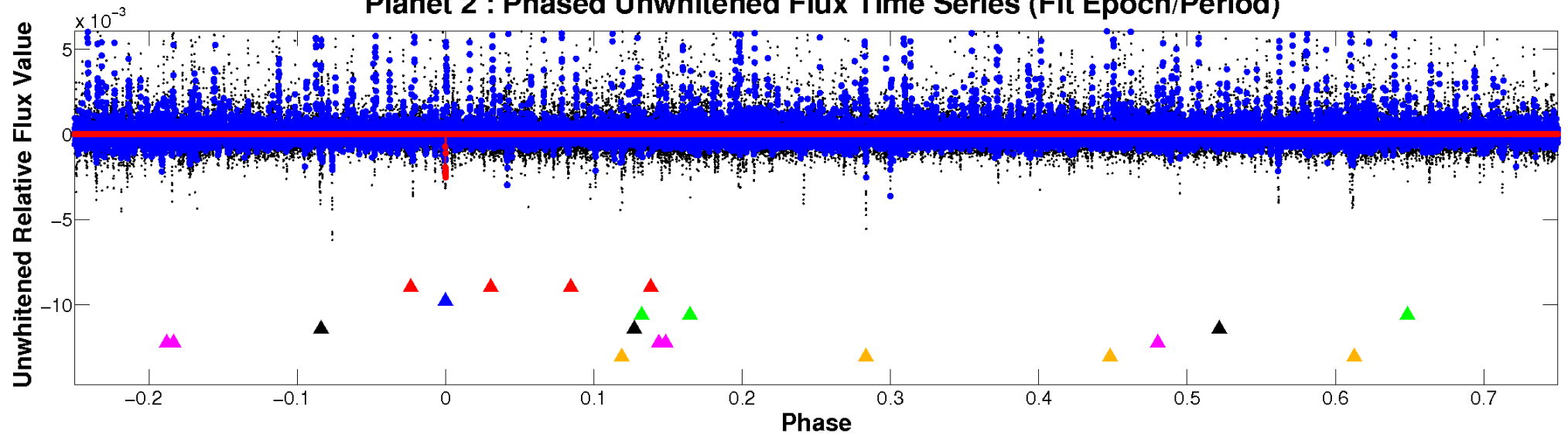
ALT Odd/Even

TCE 012303977-02

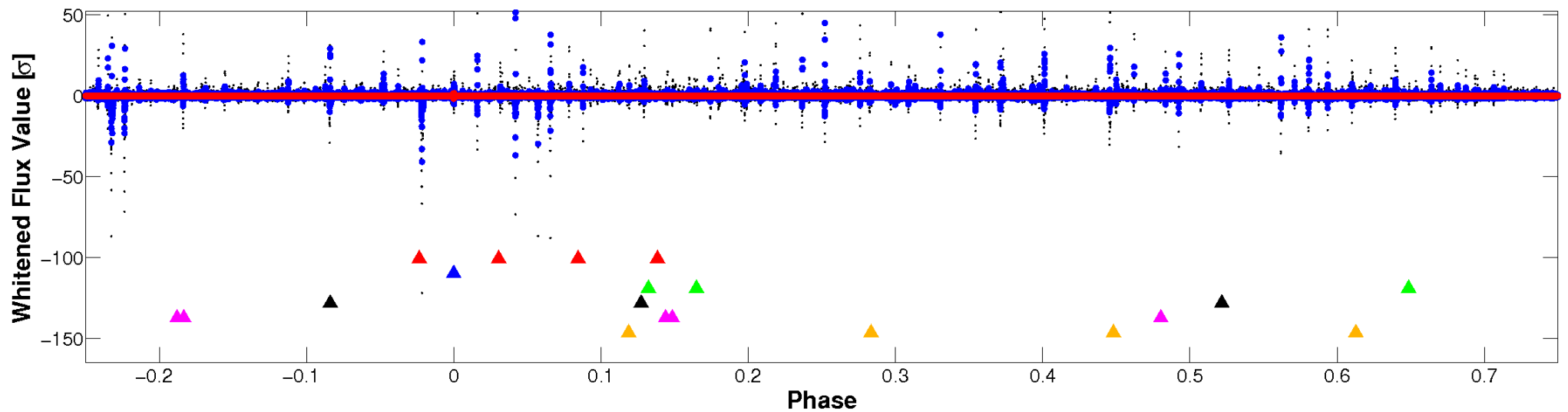


Non-Whitened Vs. Whitened Light Curve

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



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



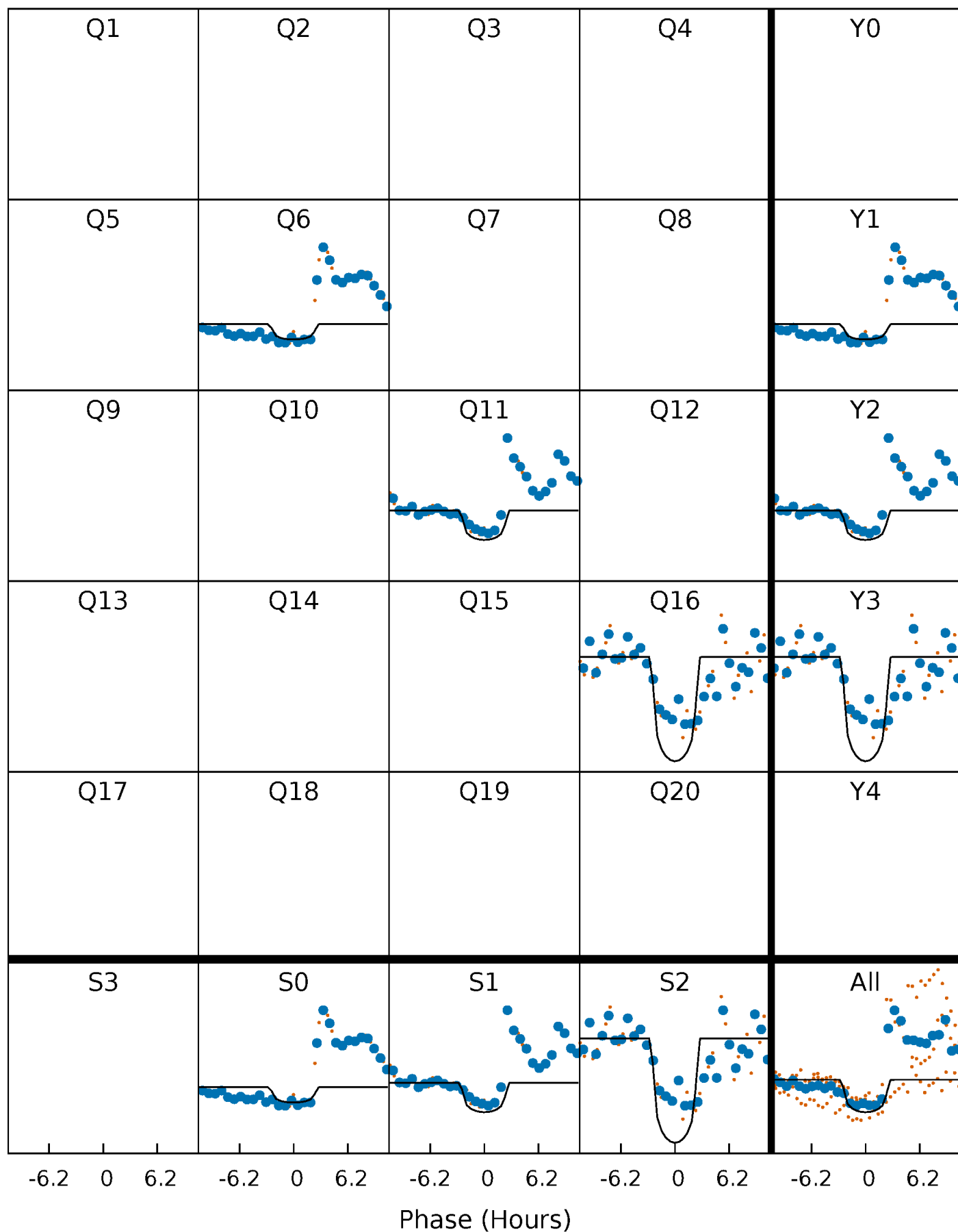
PDC Quarter-Phased Transit Curves

TCE 012303977-02 P=462.187027 Days $T_0=581.993847$ (BKJD)



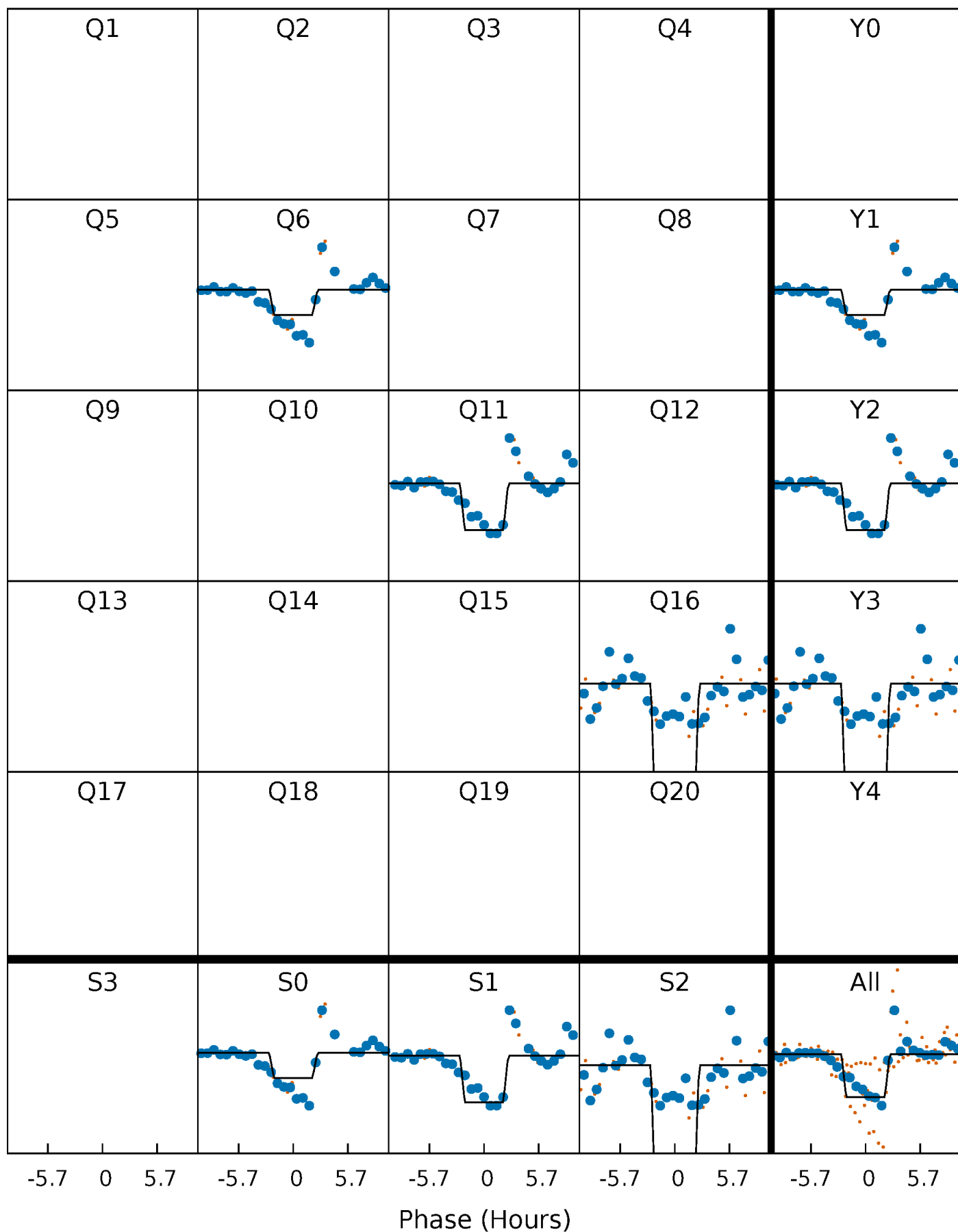
DV Quarter-Phased Transit Curves

TCE 012303977-02 P=462.187027 Days $T_0=581.993847$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

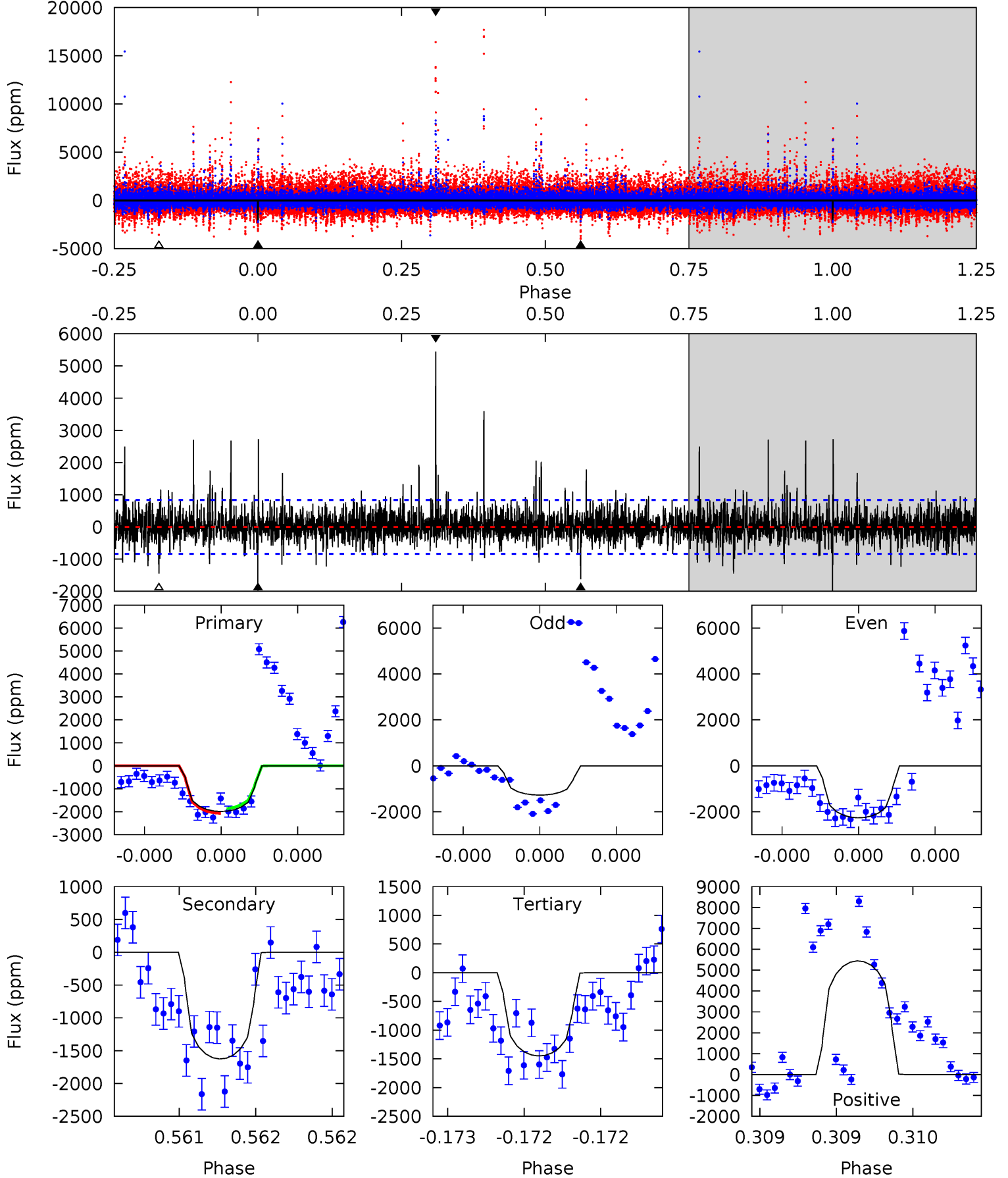
TCE 012303977-02 P=462.173071 Days $T_0=581.997484$ (BKJD)



DV Model-Shift Uniqueness Test

012303977-02, P = 462.187027 Days, E = 119.806820 Days

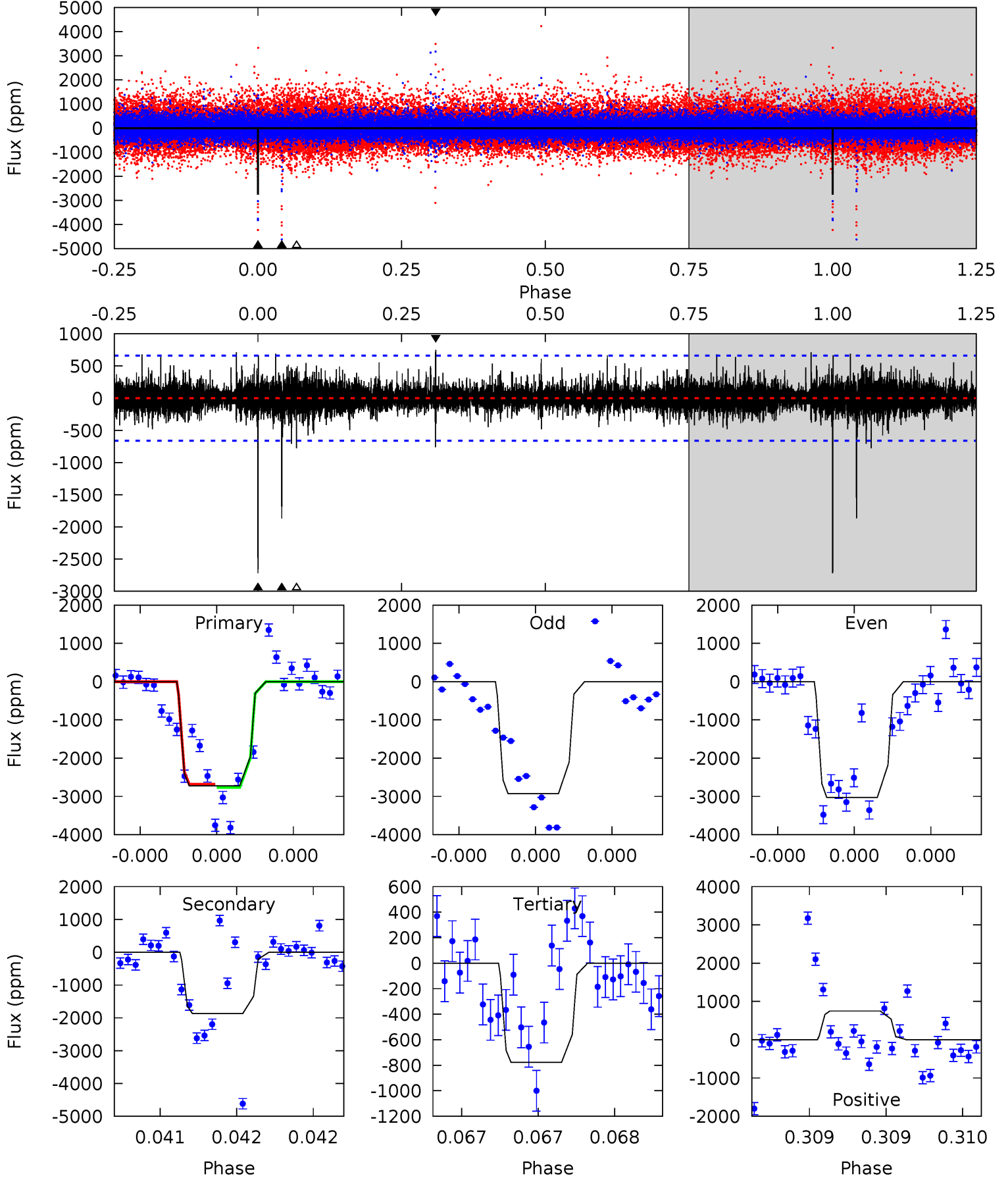
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	10.8	9.66	36.3	5.58	3.49	2.39	3.59	-23.1	1.18	-25.5	1.35	1.13	0.73	0.68



Alt Model-Shift Uniqueness Test

012303977-02, P = 462.173071 Days, E = 119.824413 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.0	15.8	6.58	6.34	5.59	3.51	1.07	16.4	16.7	9.21	9.44	0.40	1.05	0.22	0.34



Stellar Parameters For KIC 012303977

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4653^{+139}_{-139}	$4.713^{+0.048}_{-0.028}$	$-1.200^{+0.300}_{-0.300}$	$0.535^{+0.033}_{-0.037}$	$0.538^{+0.040}_{-0.023}$	$4.955^{+0.982}_{-0.563}$
	+3%/-3%	+1%/-1%	+25%/-25%	+6%/-7%	+7%/-4%	+20%/-11%
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 012303977-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1626 ± 150	$3.05^{+2.17}_{-1.66}$	214^{+7}_{-8}	4210^{+1671}_{-701}	$87866^{+344859}_{-57449}$
Alt.	-1866 ± 118	$3.59^{+2.28}_{-1.98}$	214^{+7}_{-7}	4056^{+1617}_{-607}	$72874^{+293147}_{-45022}$

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 $A_{\text{obs}} \gg 1.0$

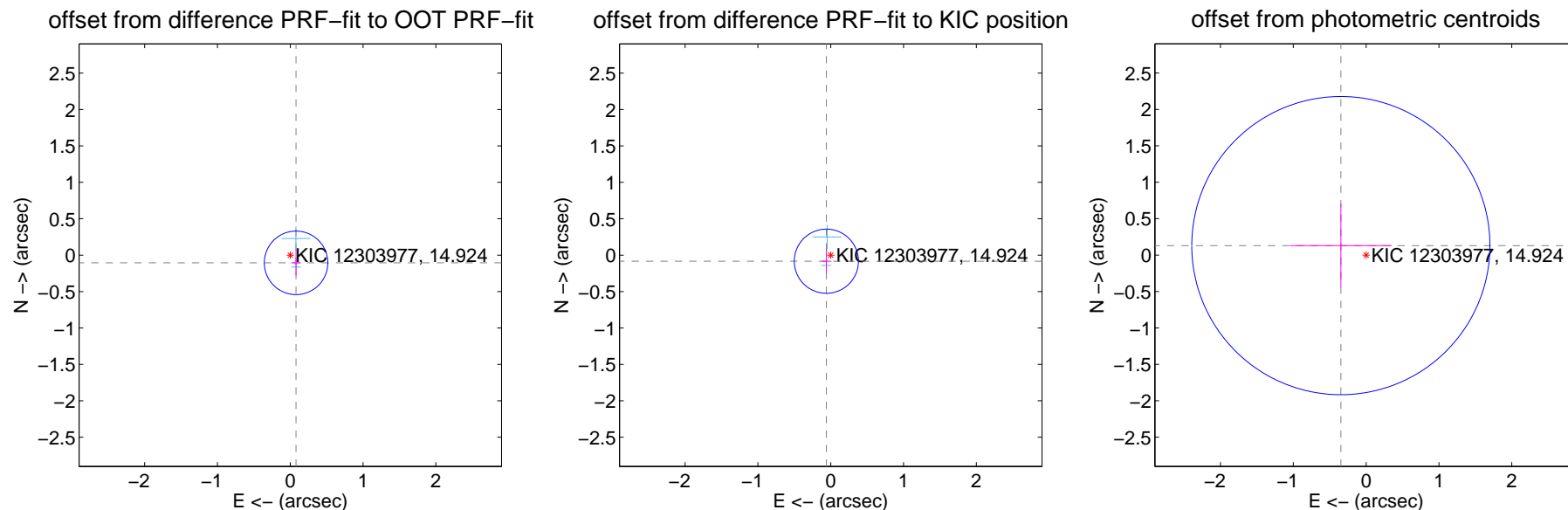
DV Centroid Data

Supplemental centroid analysis for 012303977-02. Kepler magnitude: 14.92. Transit SNR 8.89

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.132 ± 0.145	0.91	-0.080 ± 0.067	-0.106 ± 0.175
PRF-fit source offset from KIC position	0.102 ± 0.147	0.70	0.060 ± 0.067	-0.083 ± 0.174
photometric centroid source offset	0.37 ± 0.68	0.54	0.35 ± 0.70	0.13 ± 0.57



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.

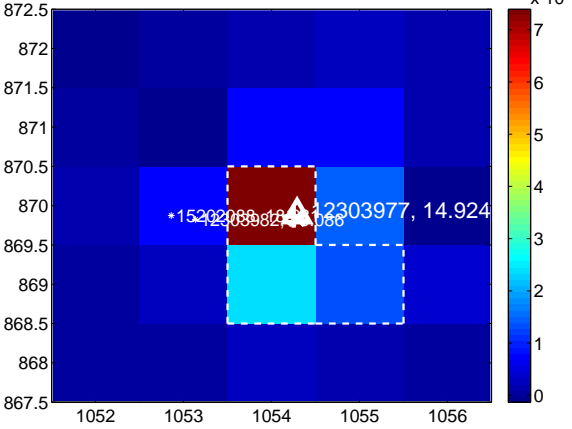
Q5 no difference image



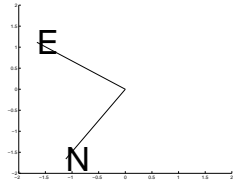
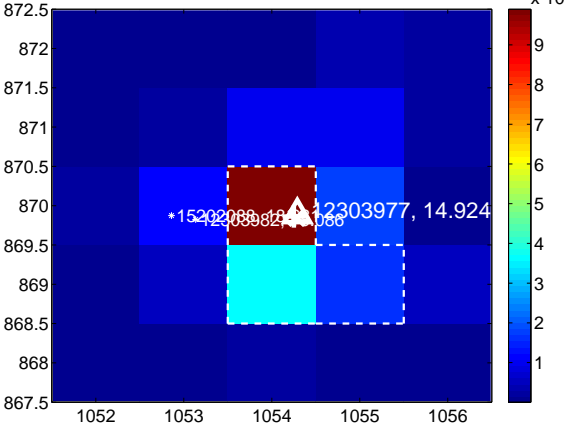
Q5 no OOT image



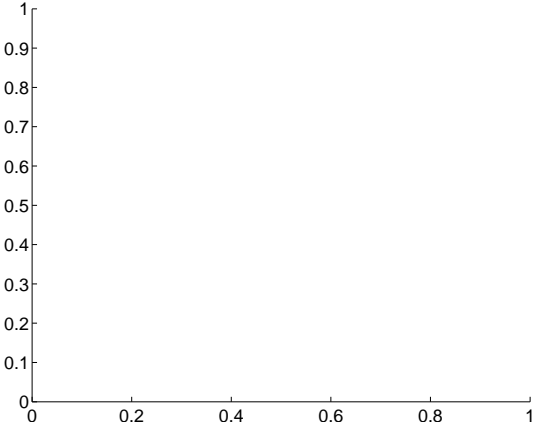
Q6 difference image



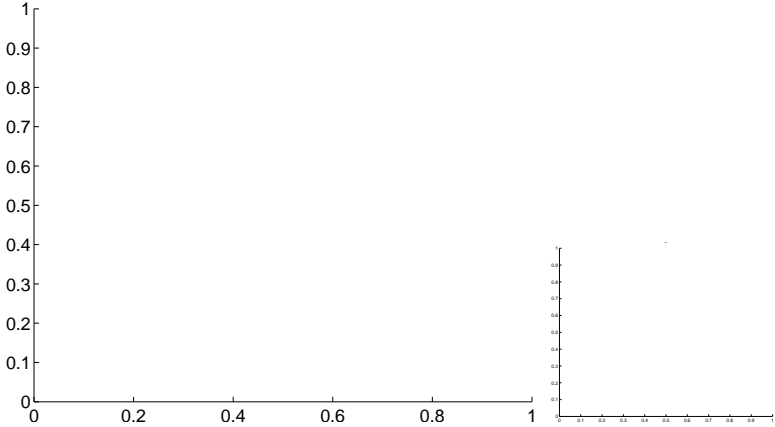
Q6 OOT image



Q7 no difference image



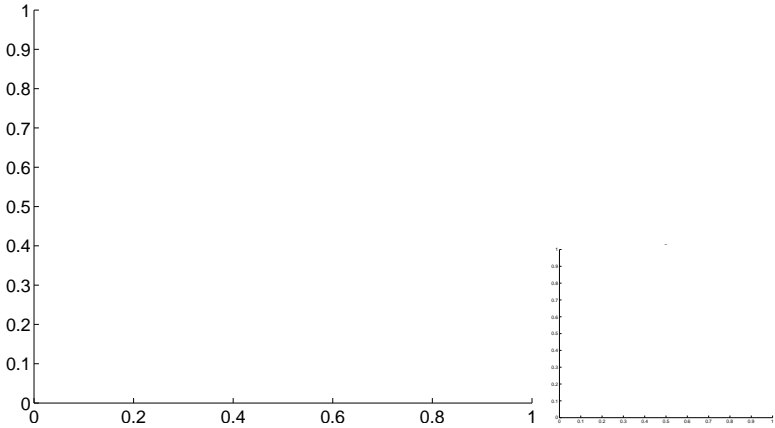
Q7 no OOT image



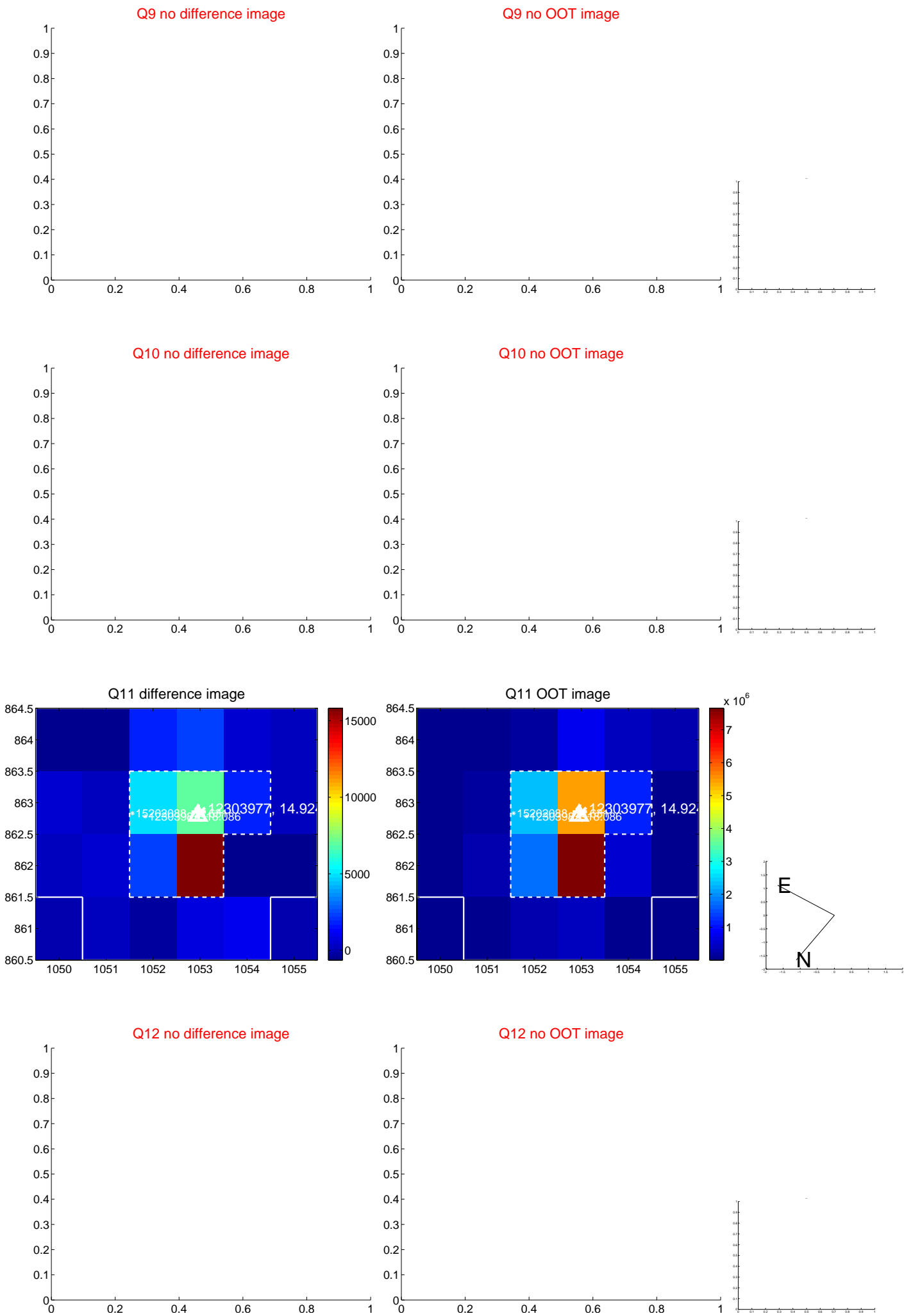
Q8 no difference image



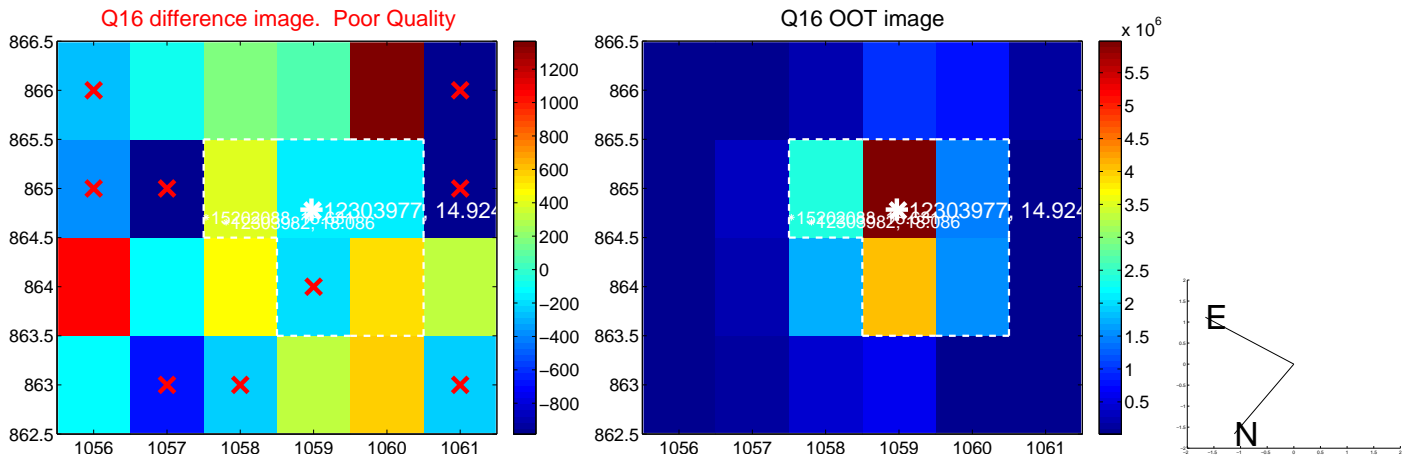
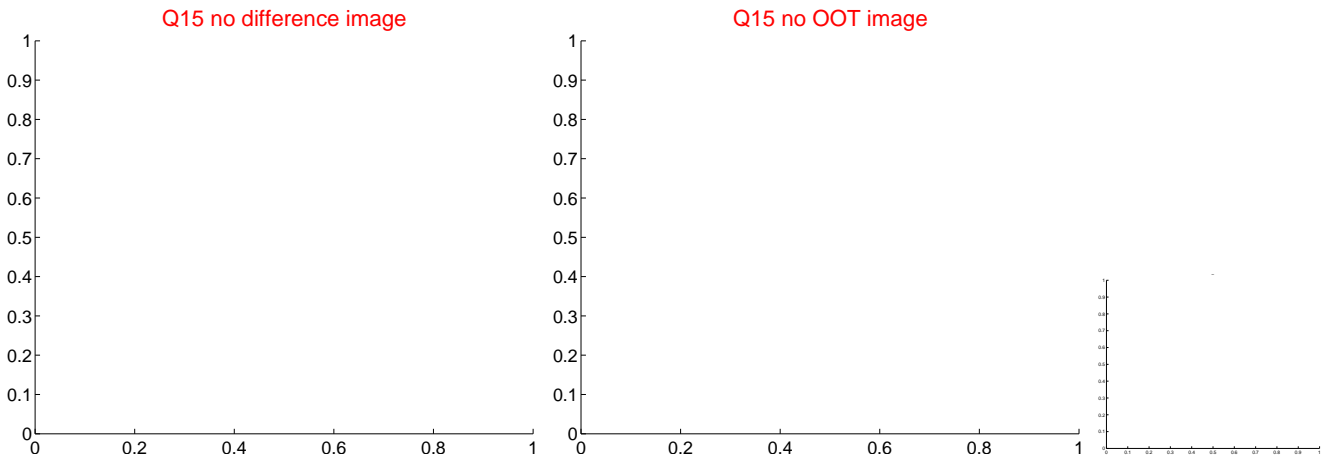
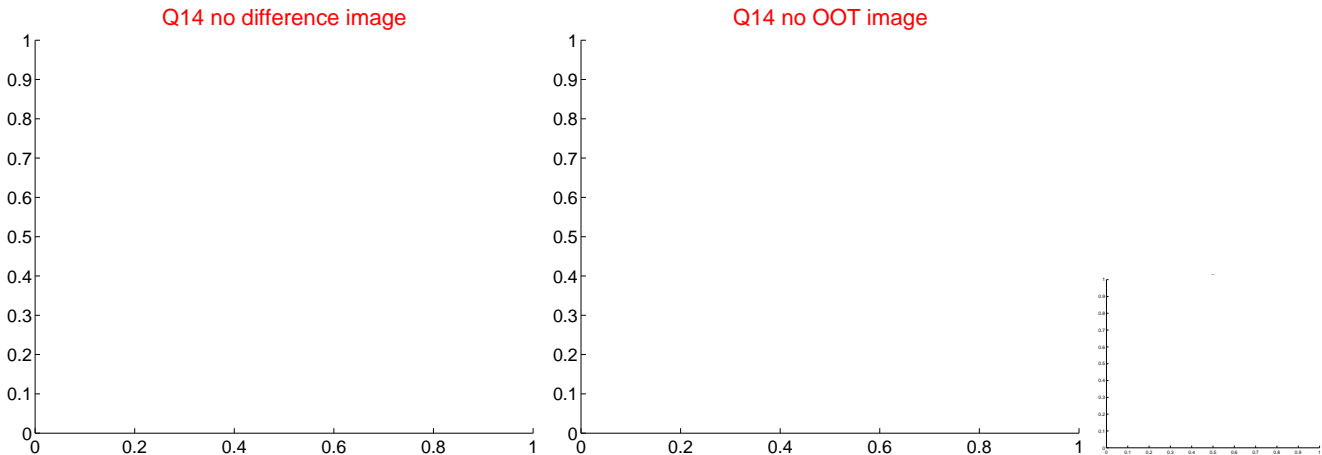
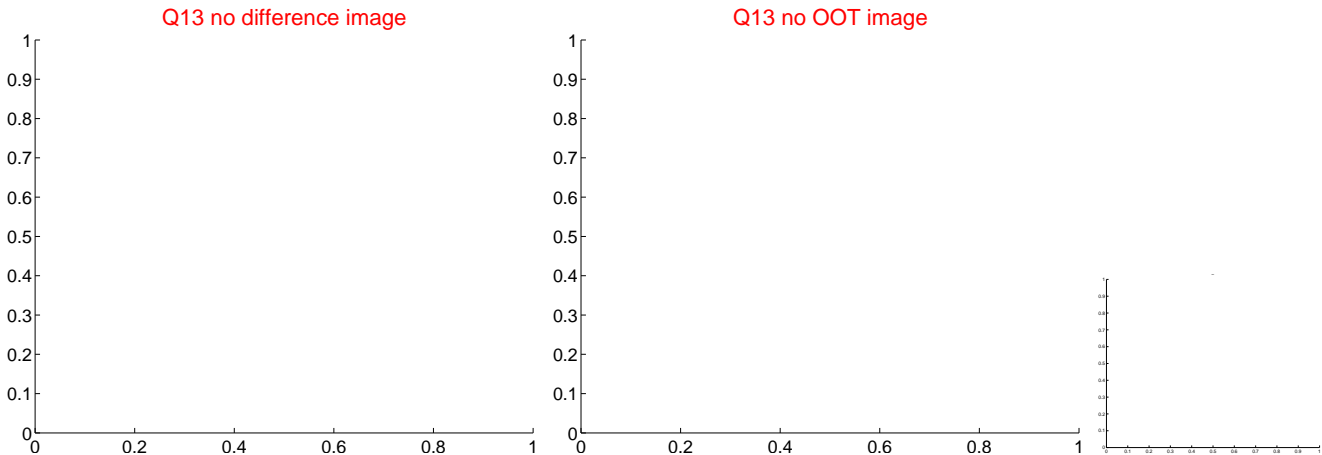
Q8 no OOT image



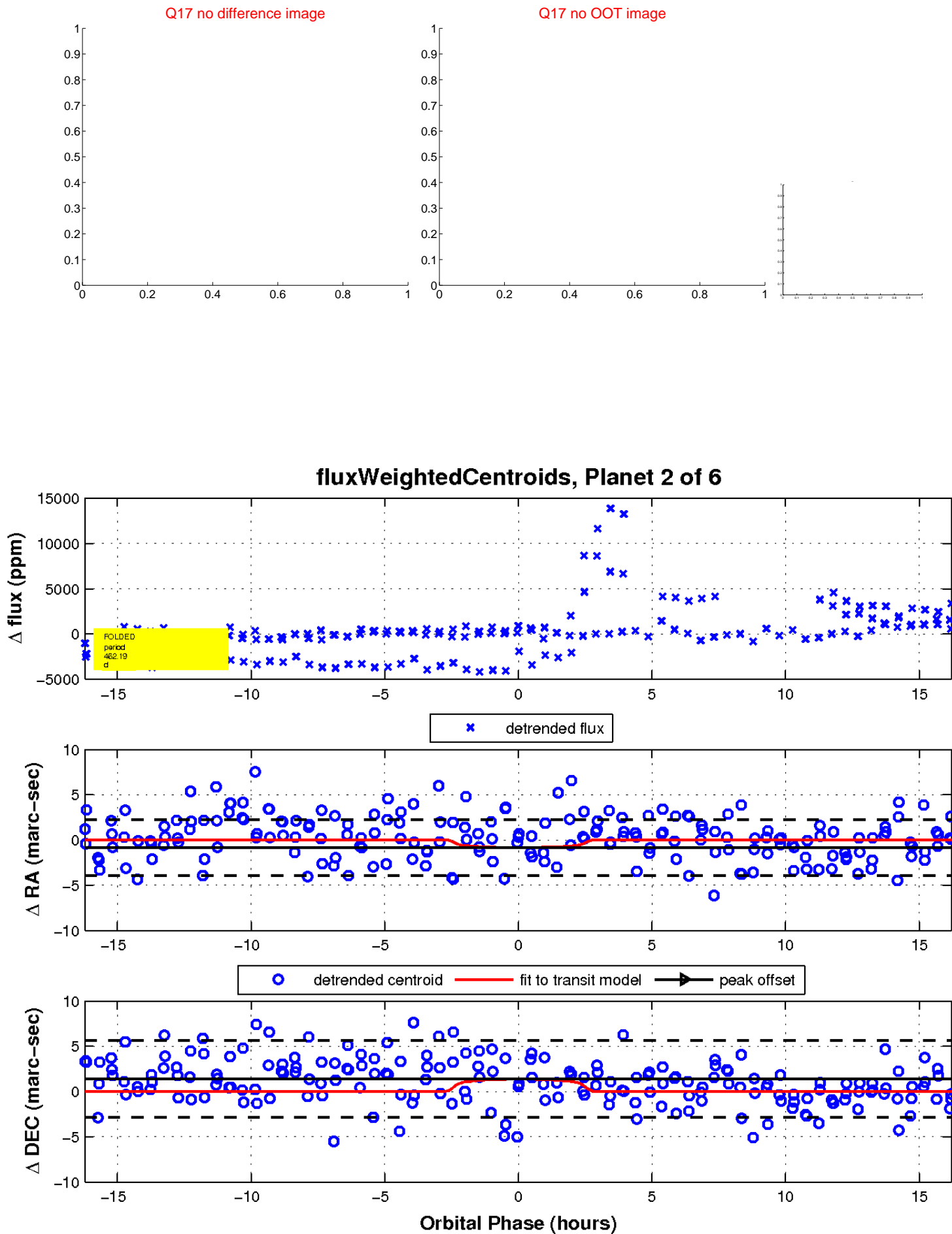
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

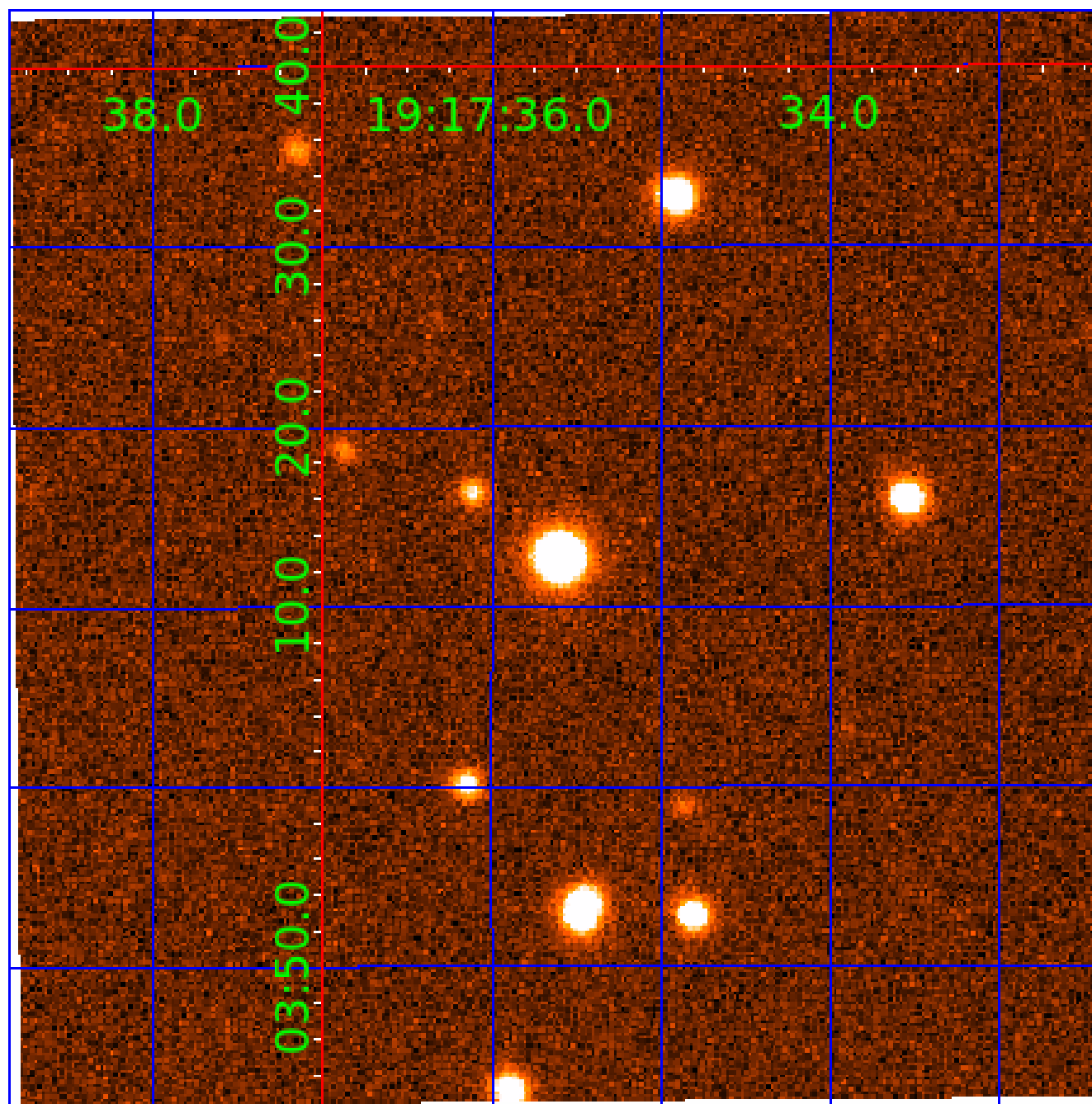


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012303977

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})
012303977-01	OBS	No	437.256032	183.779067	0.1	0.826	22.8	0.0	0.54	4653	0.03	0.14
012303977-02	OBS	No	462.187027	581.993847	2530.4	5.463	21.8	8.9	0.54	4653	2.85	0.13
012303977-03	OBS	No	685.751776	196.005185	3067.0	8.086	16.4	10.4	0.54	4653	2.90	0.08
012303977-04	OBS	No	644.472213	178.648080	2478.0	8.057	17.6	8.4	0.54	4653	2.60	0.09
012303977-05	OBS	No	308.830814	186.310556	3201.0	2.912	15.7	11.4	0.54	4653	3.01	0.23

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012303977-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012303977-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012303977-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
012303977-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
012303977-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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

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

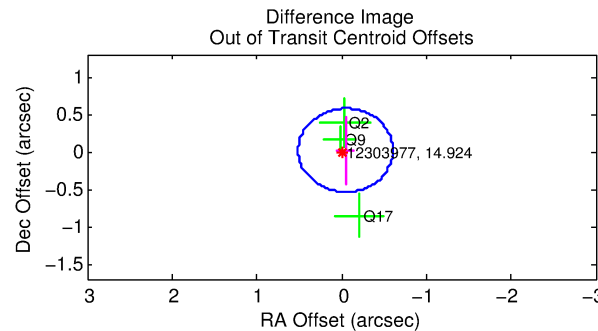
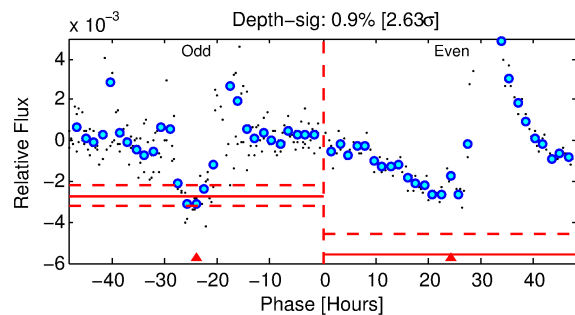
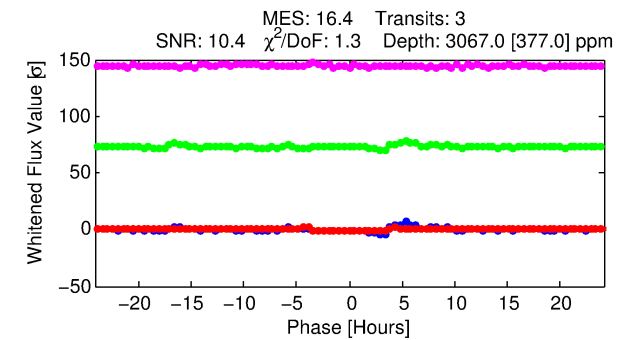
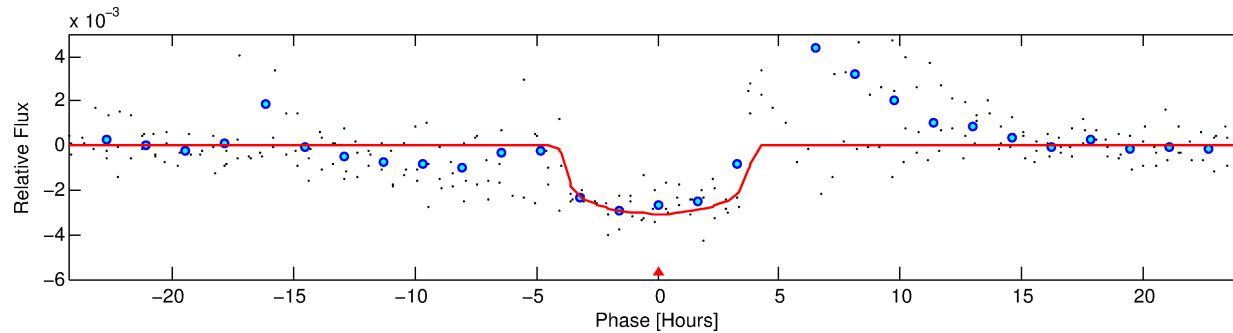
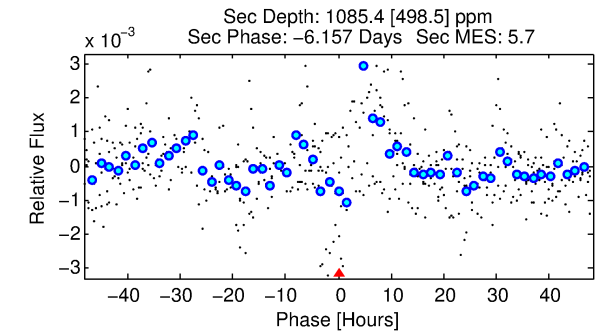
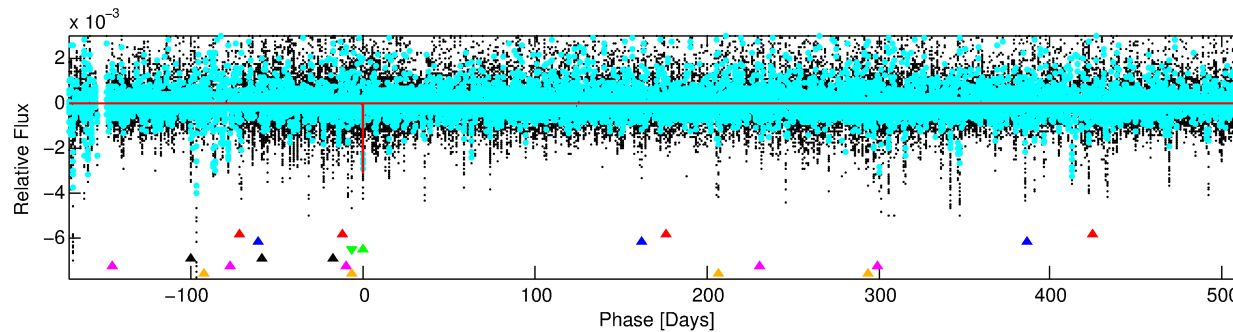
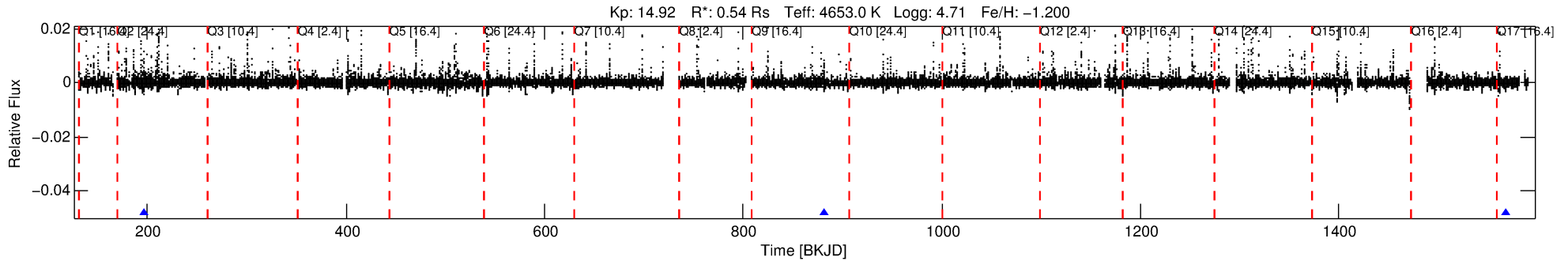
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012303977-03

No Significant Match Found

DV One-Page Summary

KIC: 12303977 Candidate: 3 of 6 Period: 685.752 d



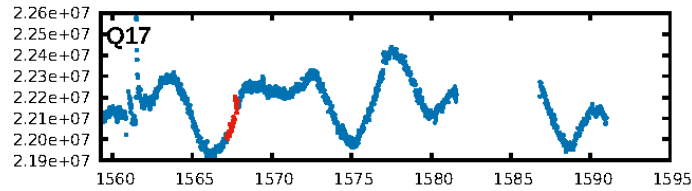
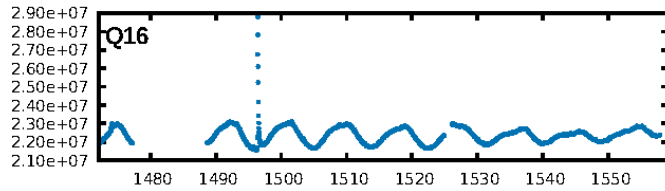
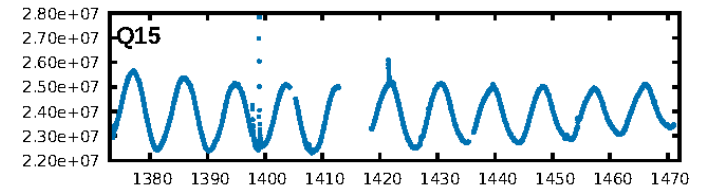
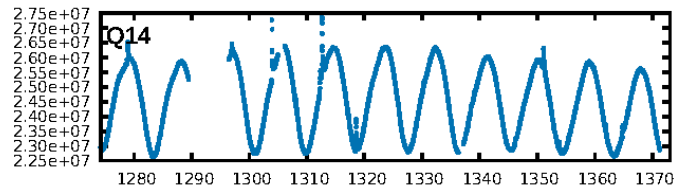
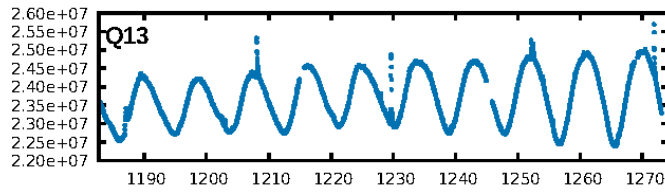
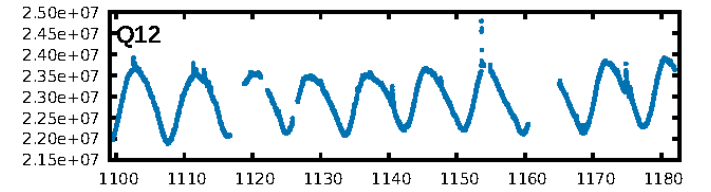
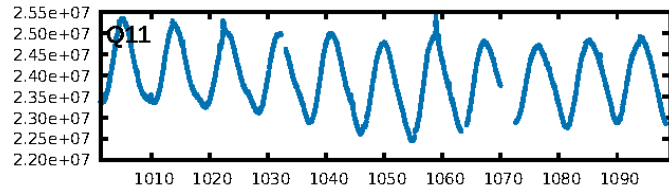
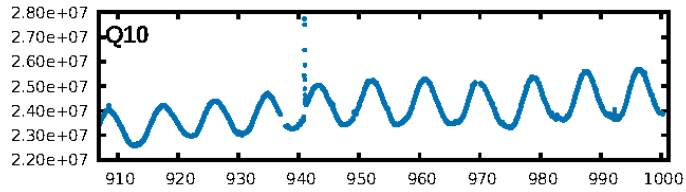
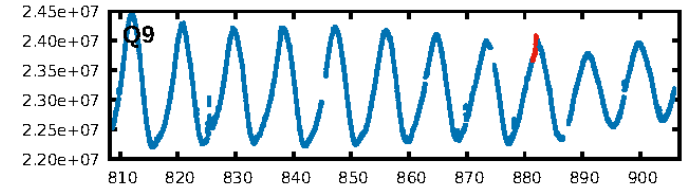
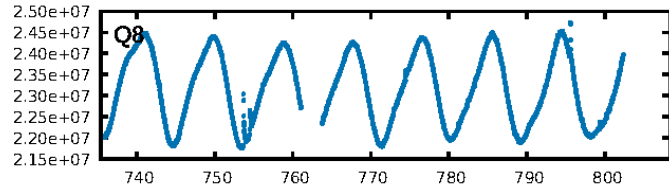
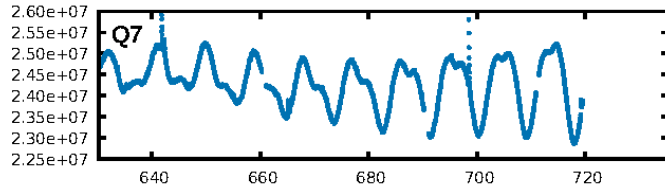
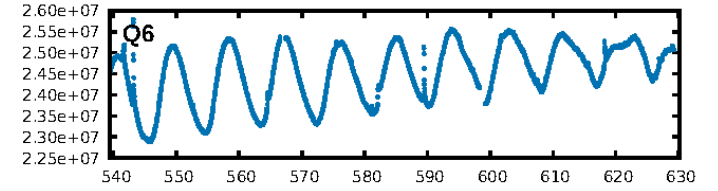
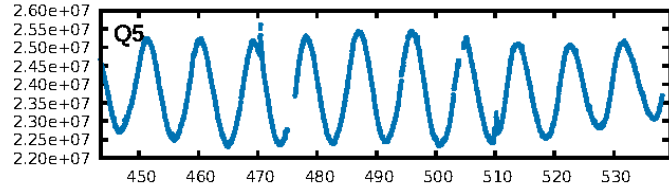
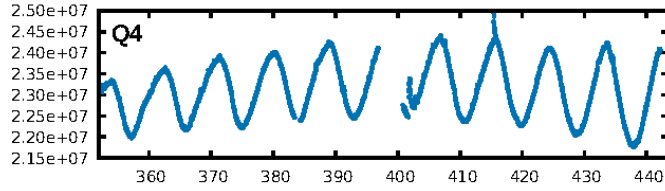
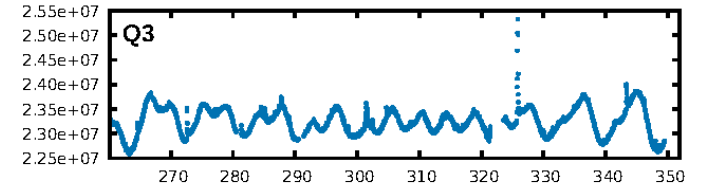
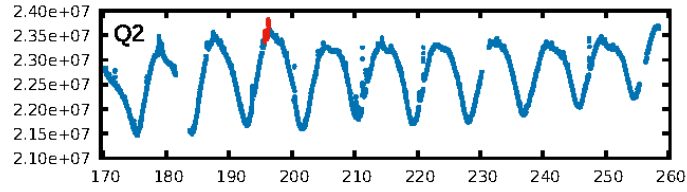
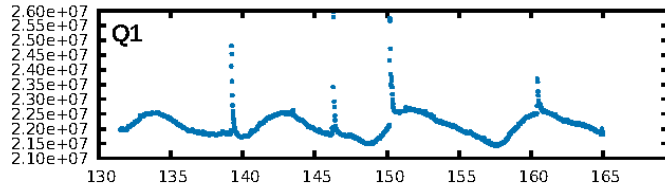
DV Fit Results:

Period = 685.75178 [0.00537] d
Epoch = 196.0052 [0.0076] BKJD
Rp/R* = 0.0497 [0.0178]
a/R* = 676.19 [885.63]
b = 0.11 [11.63]
Seff = 0.08 [0.01]
Teq = 135 [5] K
Rp = 2.90 [1.06] Re
a = 1.2389 [0.0731] AU
Ag = 108973.72 [93367.55] [1.17σ]
Teffp = 3789 [815] K [4.48σ]

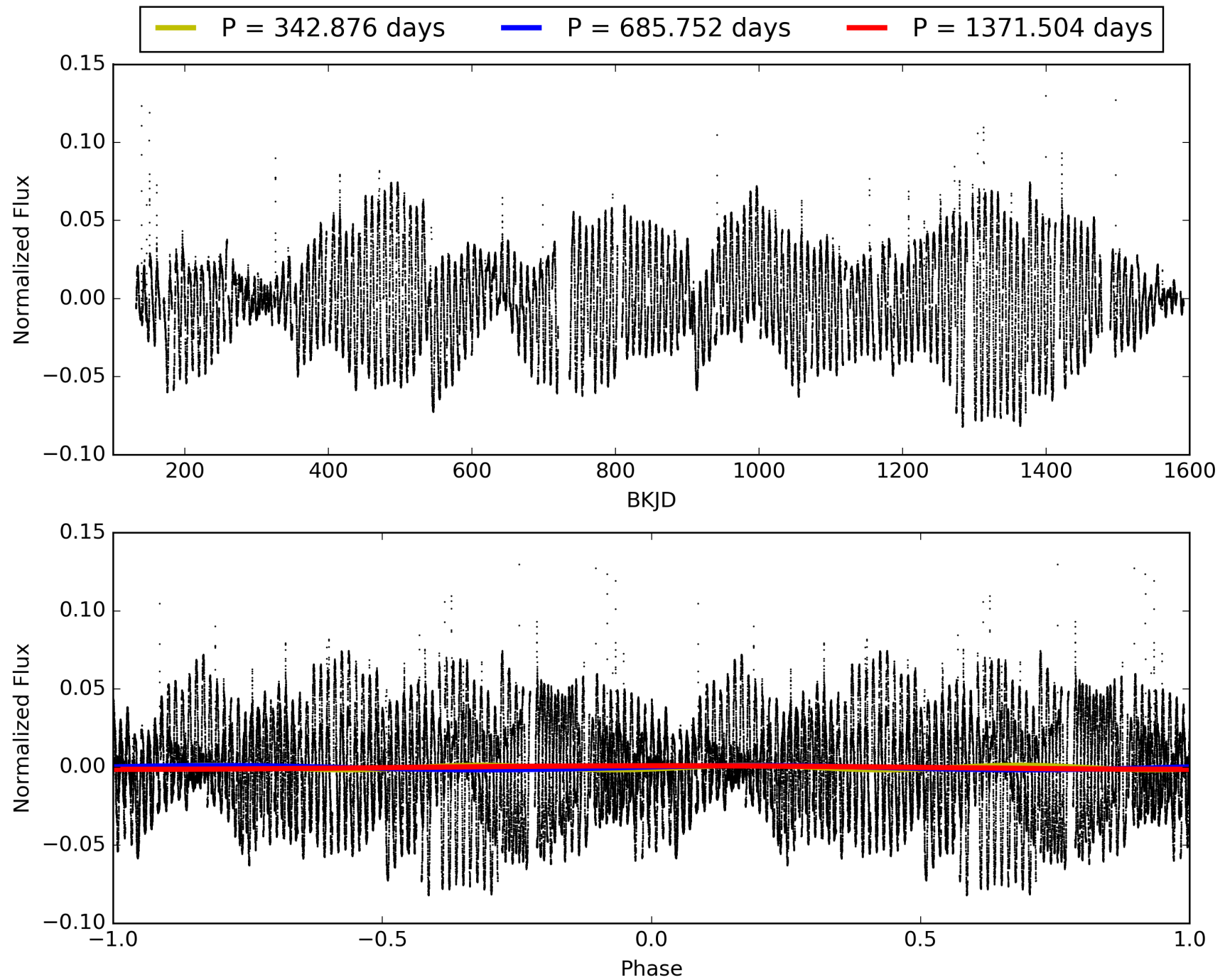
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [86.79σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 35.4%
ModelChiSquareGof-sig: 73.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.9438
Centroid-sig: 53.3%
Centroid-so: 0.892 arcsec [2.41σ]
OotOffset-rm: 0.051 arcsec [0.27σ]
OotOffset-st: 1/0/0/2 [3]
KicOffset-rm: 0.184 arcsec [0.95σ]
KicOffset-st: 1/0/0/2 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 012303977-03, PDC Light Curves

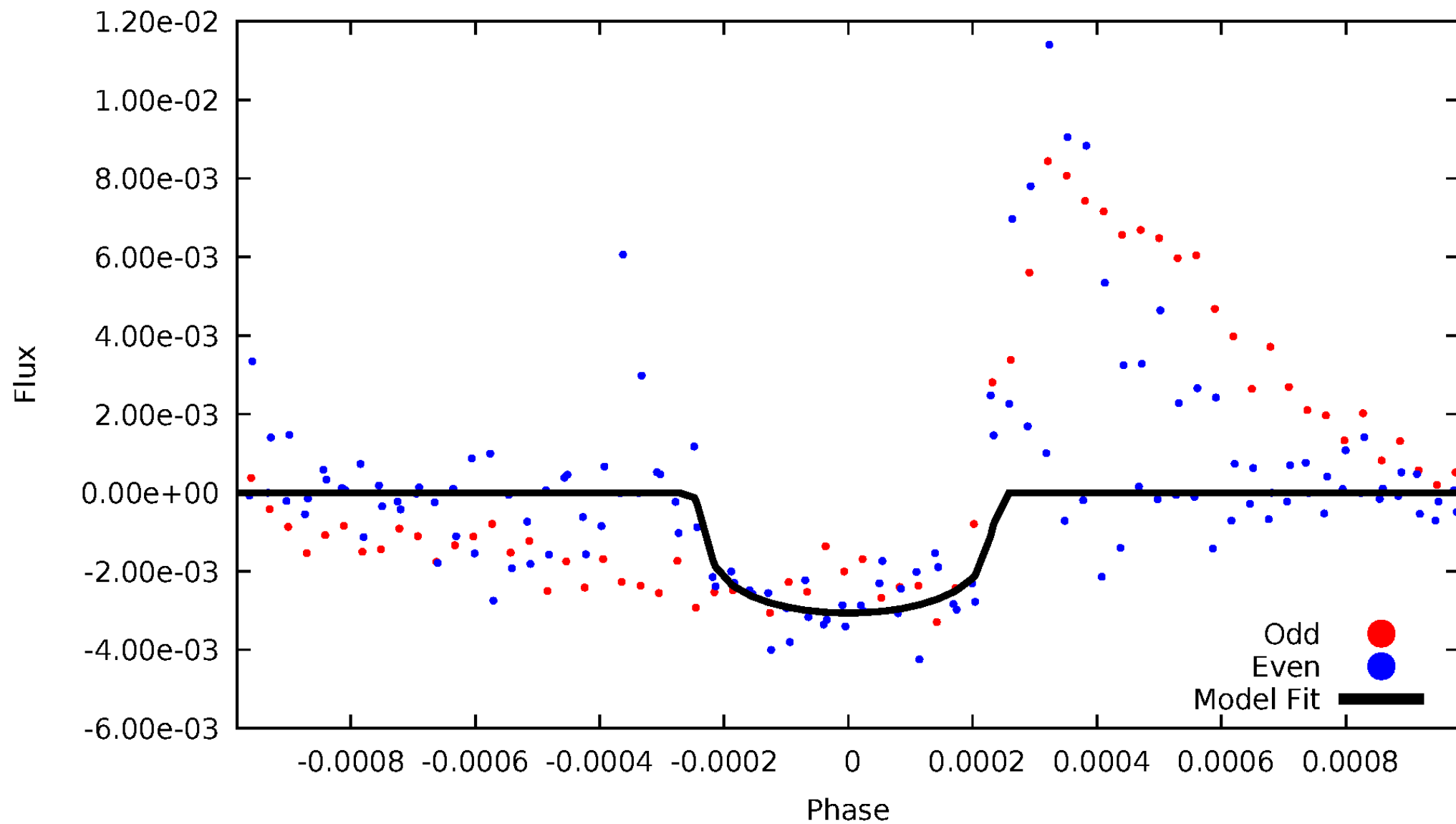


TCE 012303977-03



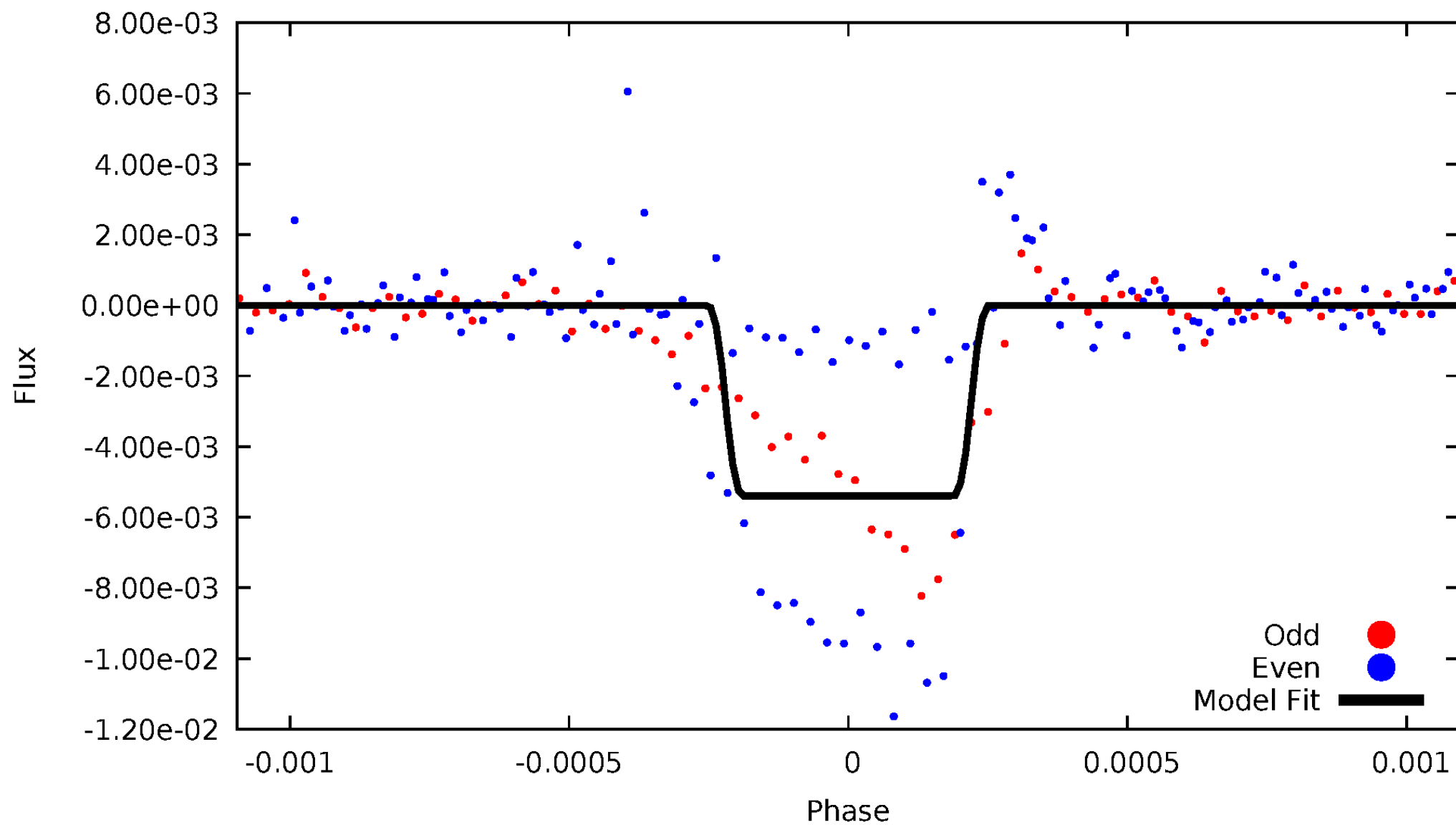
DV Odd/Even

TCE 012303977-03



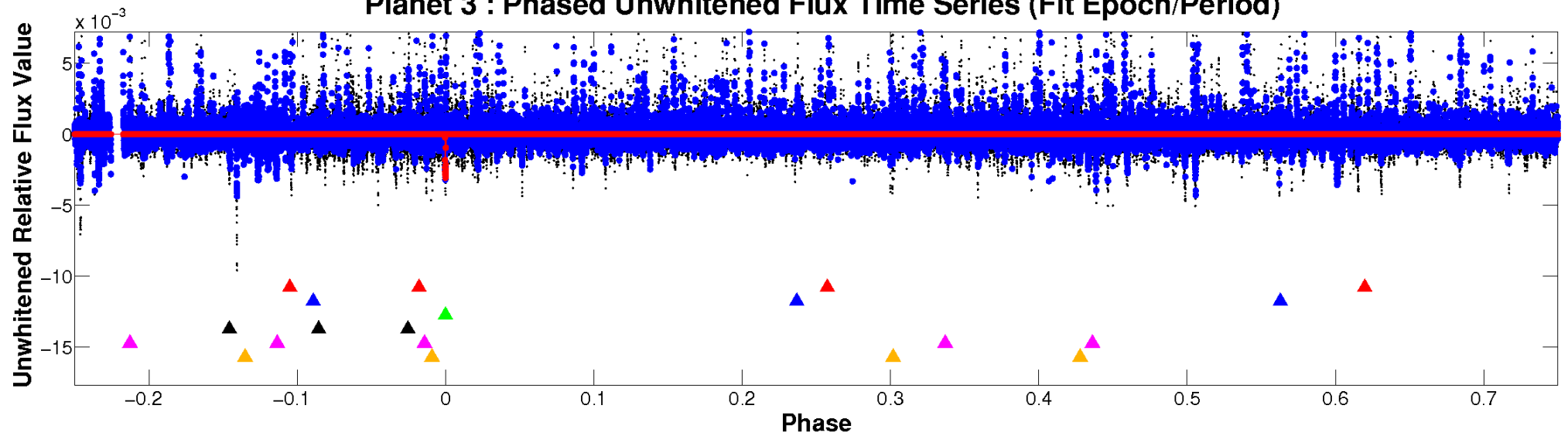
ALT Odd/Even

TCE 012303977-03

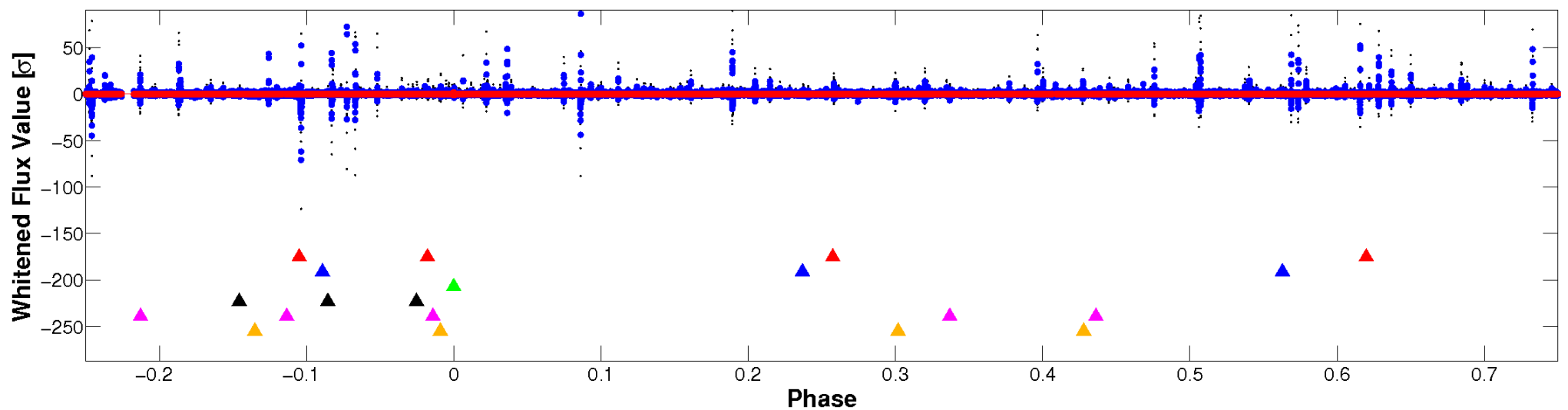


Non-Whitened Vs. Whitened Light Curve

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

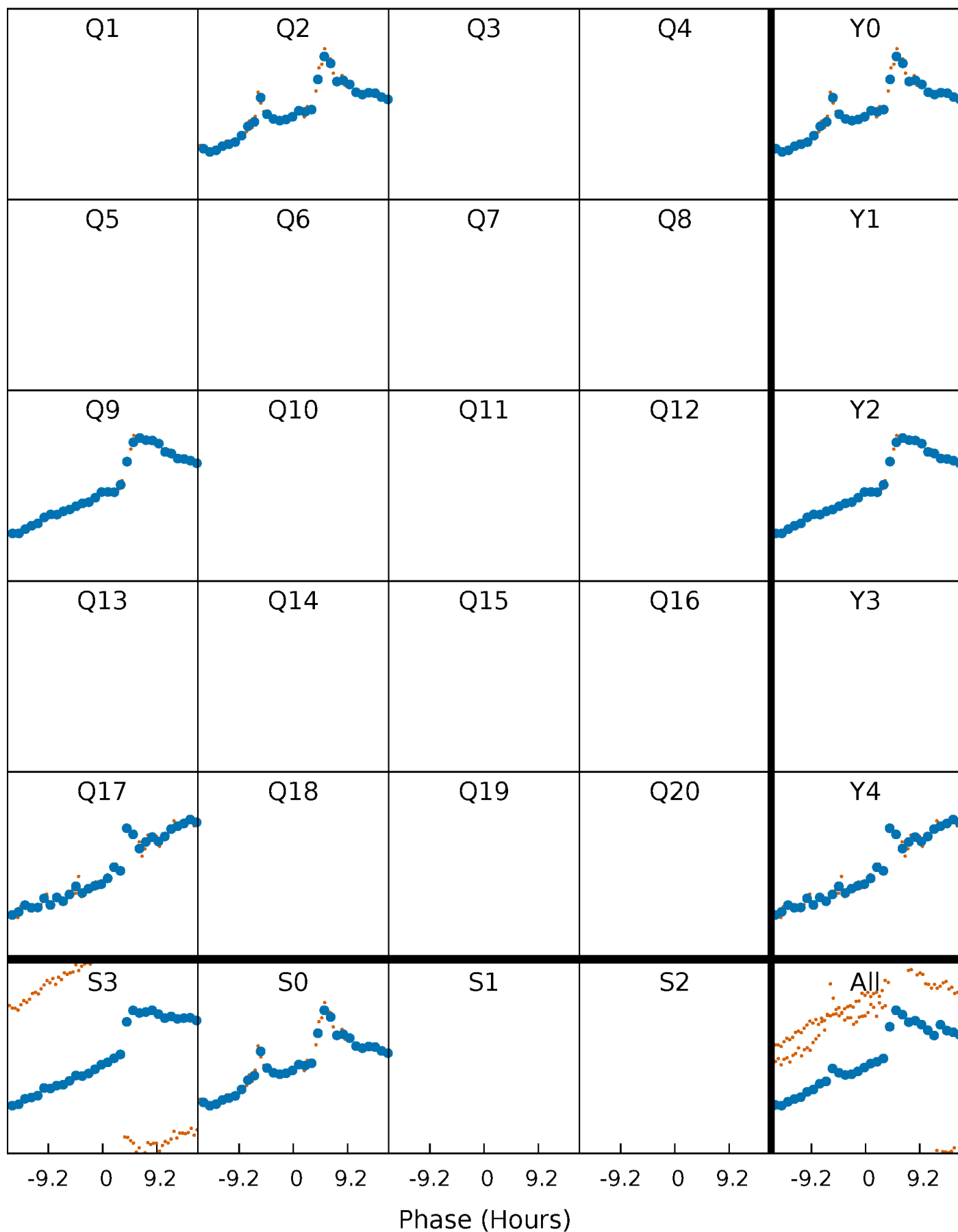


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



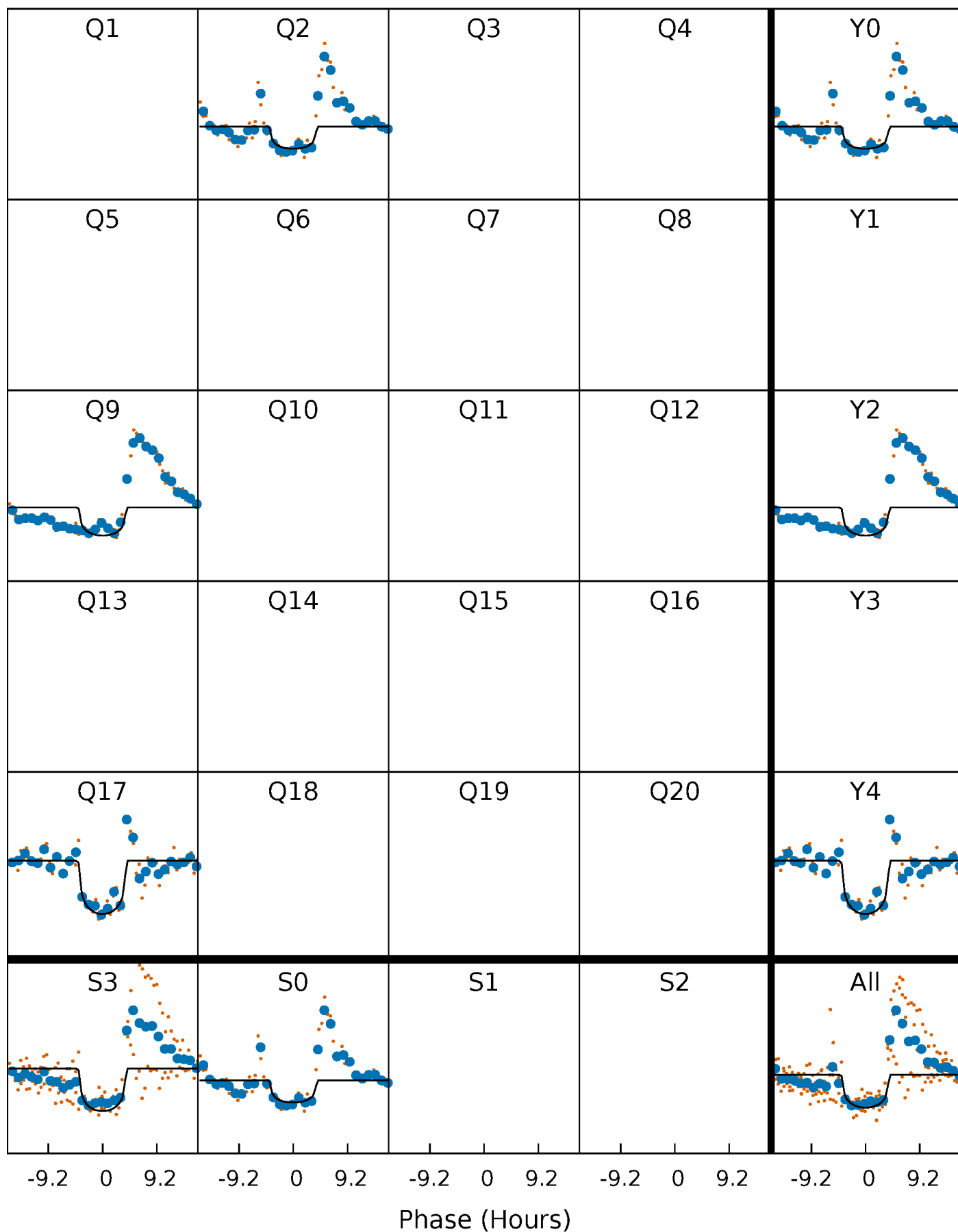
PDC Quarter-Phased Transit Curves

TCE 012303977-03 $P=685.751776$ Days $T_0=196.005185$ (BKJD)



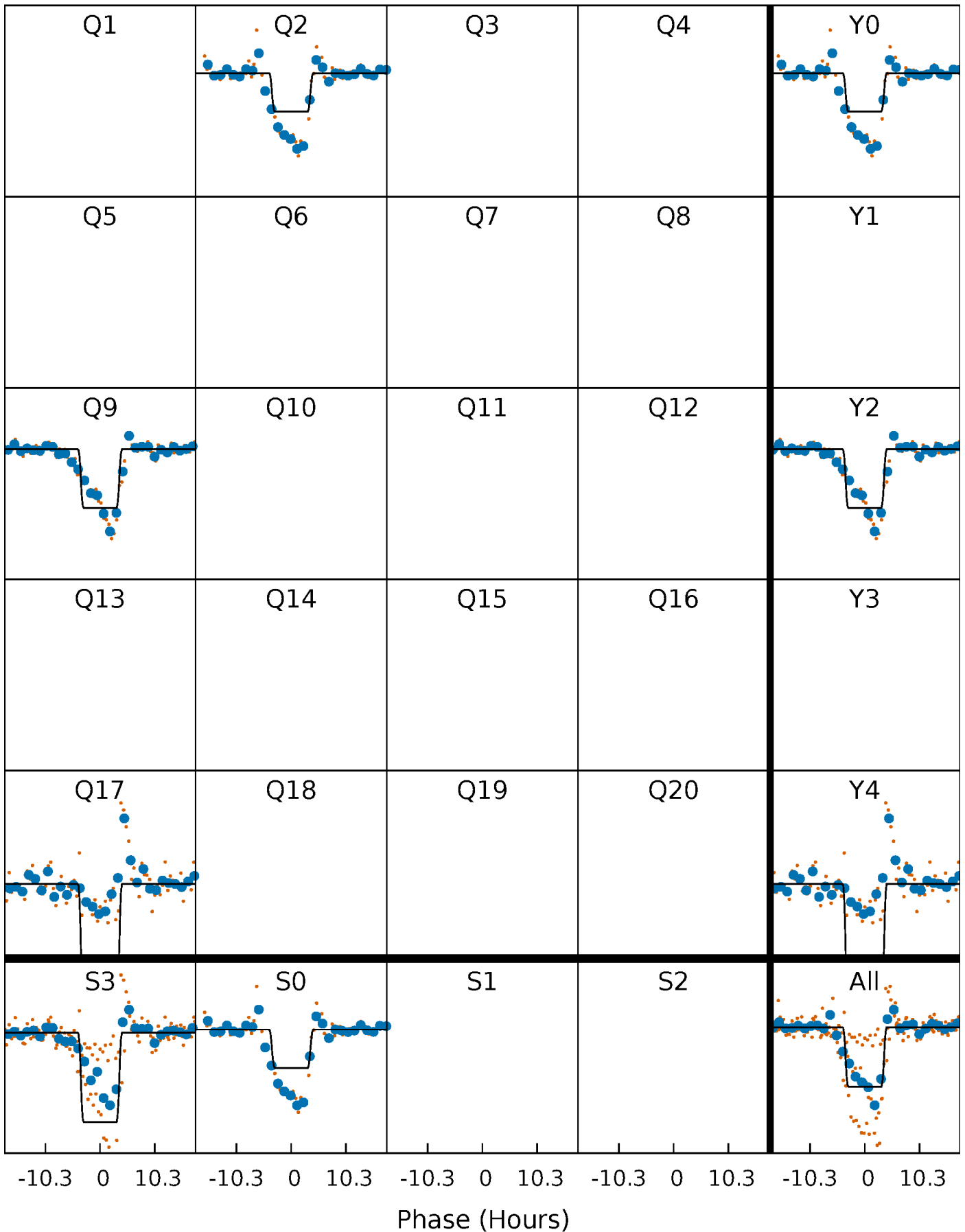
DV Quarter-Phased Transit Curves

TCE 012303977-03 $P=685.751776$ Days $T_0=196.005185$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

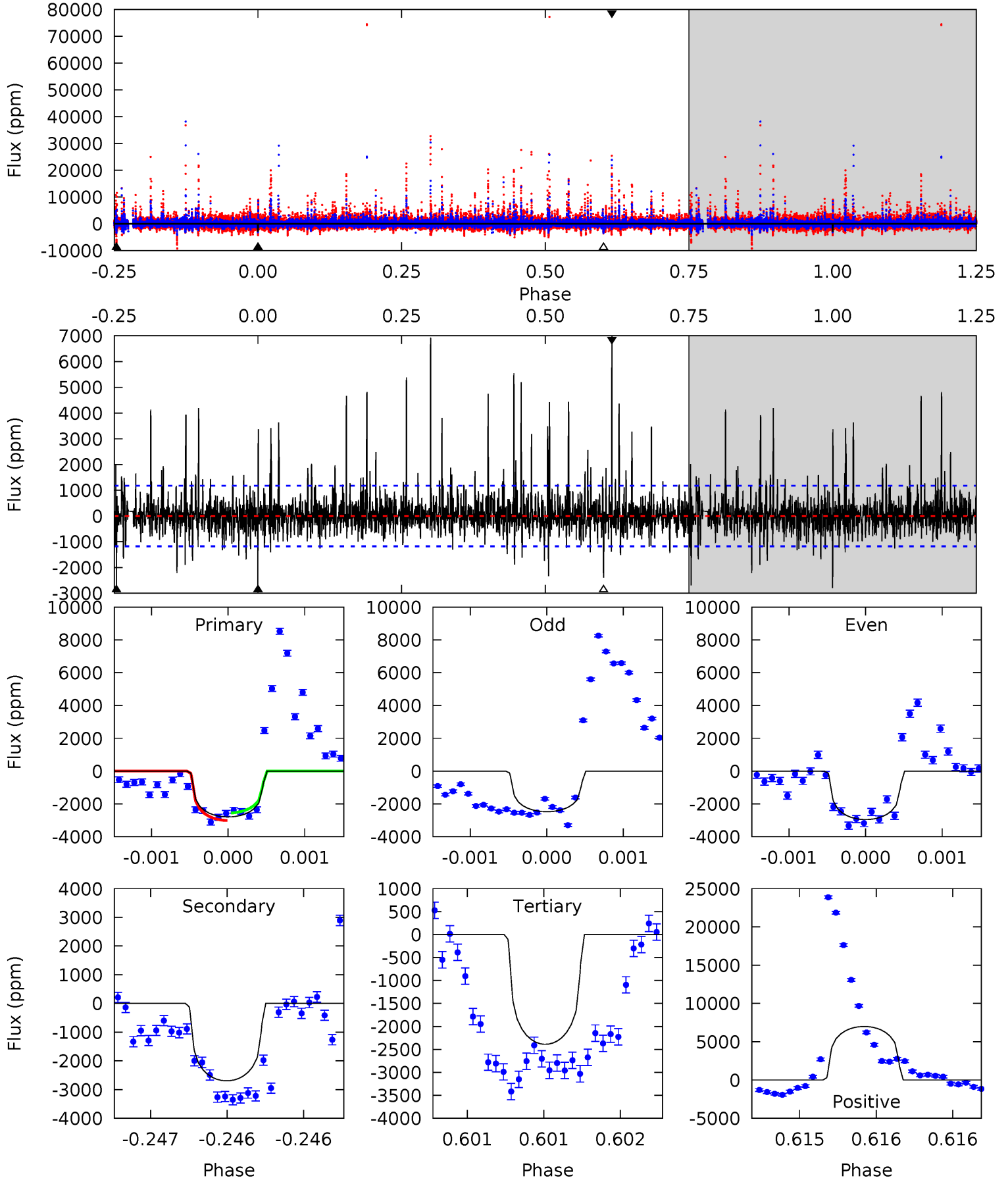
TCE 012303977-03 $P=685.736651$ Days $T_0=196.027896$ (BKJD)



DV Model-Shift Uniqueness Test

012303977-03, P = 685.751776 Days, E = 196.005185 Days

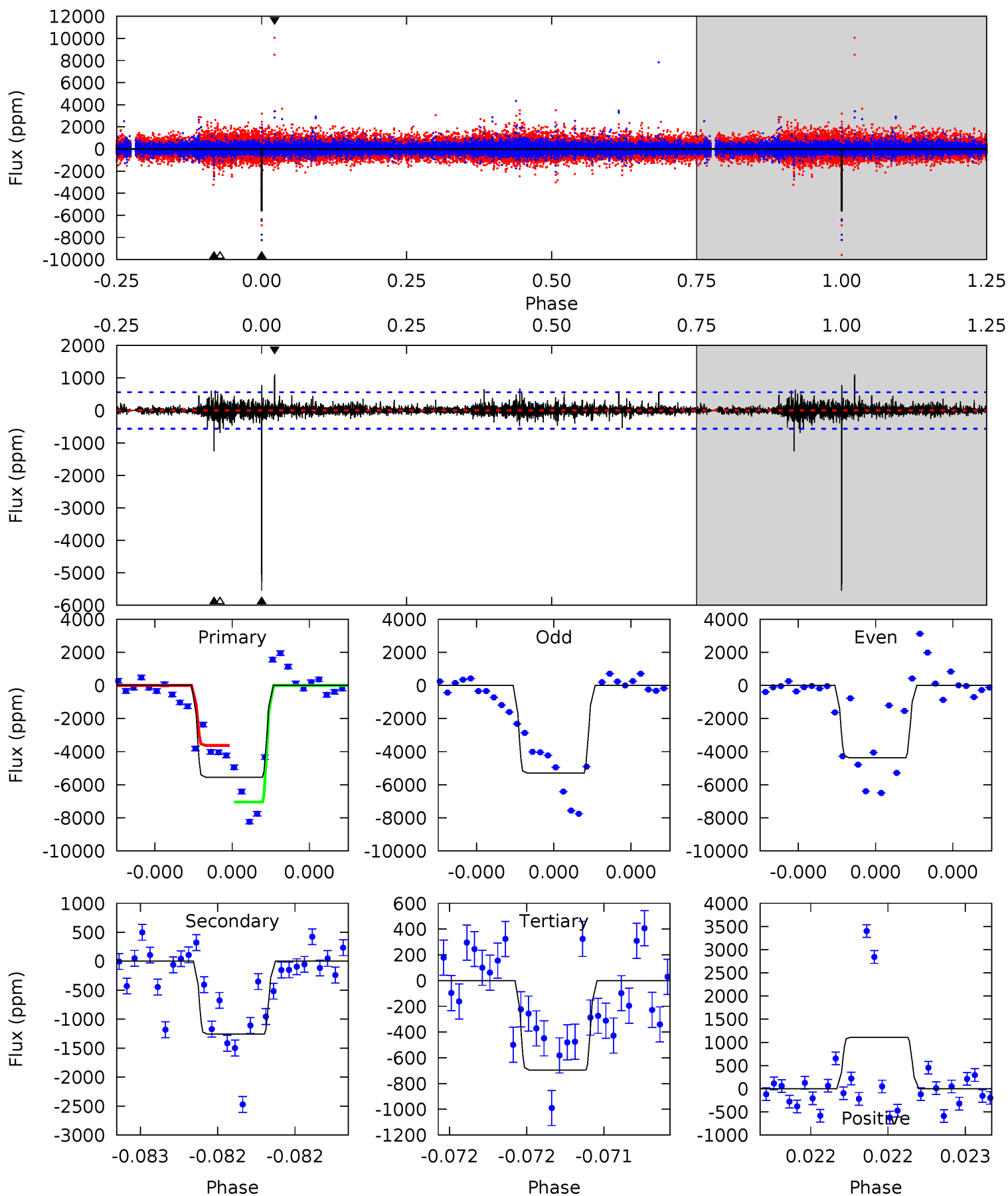
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	12.8	11.3	33.1	5.57	3.48	3.22	1.93	-19.9	1.45	-20.4	0.51	1.04	0.71	1.09



Alt Model-Shift Uniqueness Test

012303977-03, P = 685.736651 Days, E = 196.027896 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
55.1	12.5	6.90	11.0	5.58	3.49	0.91	48.2	44.1	5.60	1.48	5.53	0.97	0.17	0



Stellar Parameters For KIC 012303977

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	4653^{+139}_{-139}	$4.713^{+0.048}_{-0.028}$	$-1.200^{+0.300}_{-0.300}$	$0.535^{+0.033}_{-0.037}$	$0.538^{+0.040}_{-0.023}$	$4.955^{+0.982}_{-0.563}$
	+3%/-3%	+1%/-1%	+25%/-25%	+6%/-7%	+7%/-4%	+20%/-11%
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 012303977-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-2695 ± 211	$2.84^{+1.06}_{-1.01}$	187^{+6}_{-6}	4785^{+995}_{-591}	$284624^{+412867}_{-134539}$
Alt.	-1259 ± 101	$4.26^{+1.02}_{-1.01}$	188^{+7}_{-6}	3591^{+358}_{-246}	59467^{+43384}_{-21460}

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 $A_{\text{obs}} \gg 1.0$

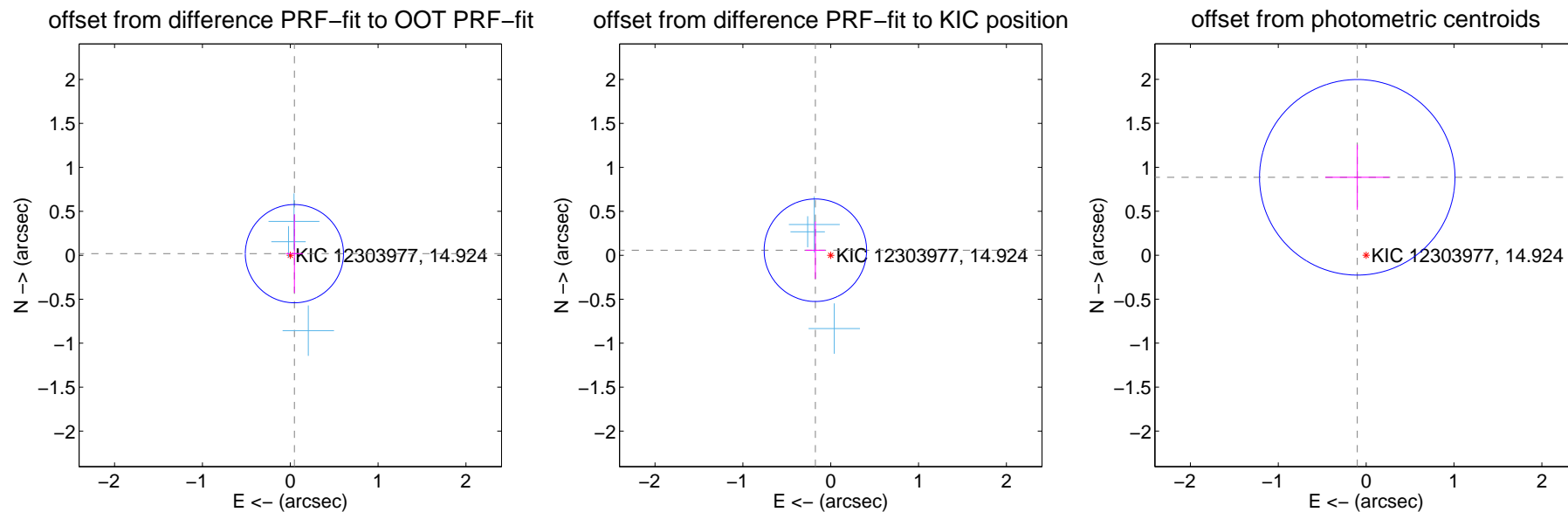
DV Centroid Data

Supplemental centroid analysis for 012303977-03. Kepler magnitude: 14.92. Transit SNR 10.40

There are 3 quarters with good PRF difference image offsets

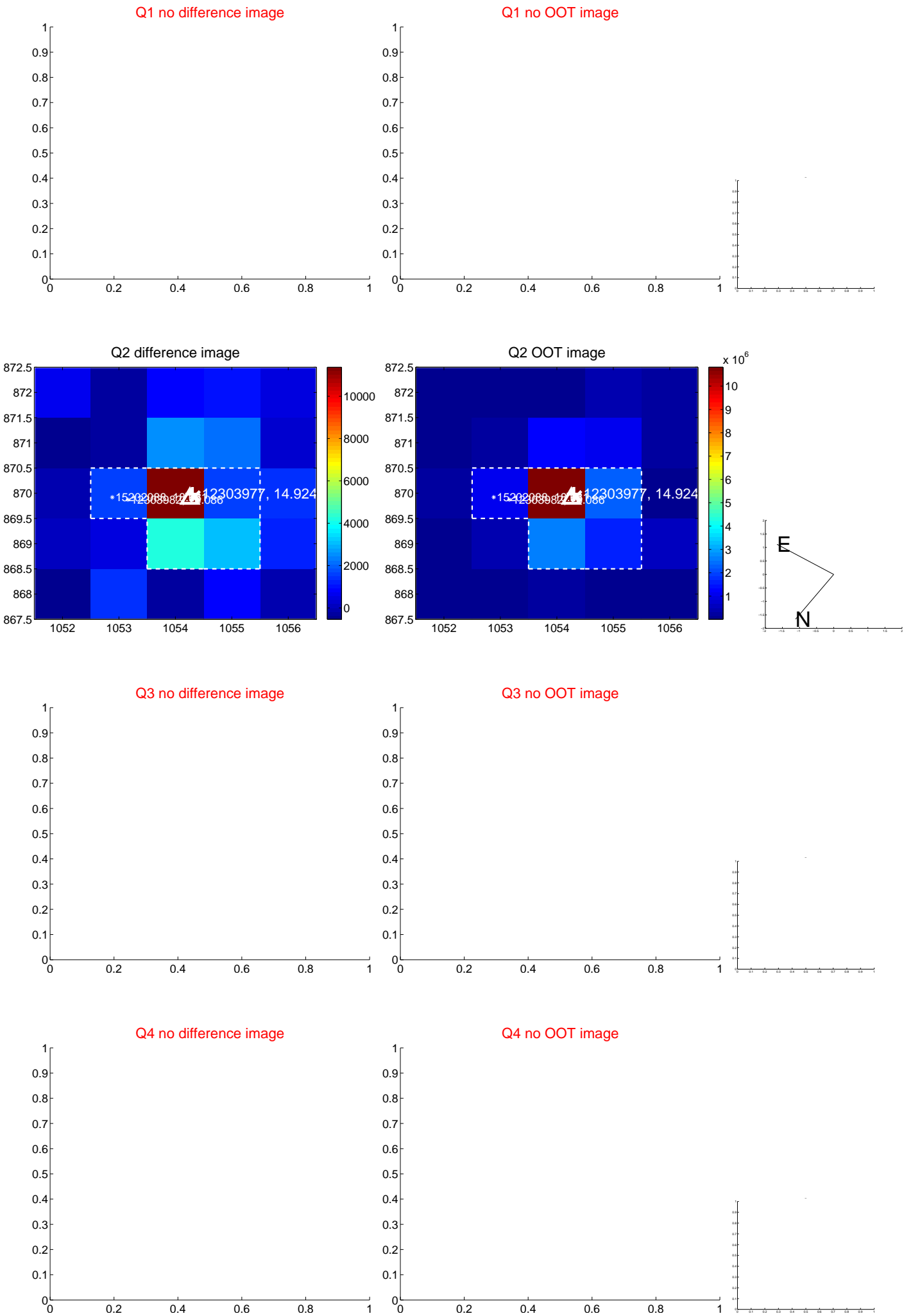
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.051 ± 0.186	0.27	-0.047 ± 0.097	0.018 ± 0.447
PRF-fit source offset from KIC position	0.184 ± 0.194	0.95	0.175 ± 0.111	0.057 ± 0.325
photometric centroid source offset	0.89 ± 0.37	2.41	0.10 ± 0.37	0.89 ± 0.37



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.

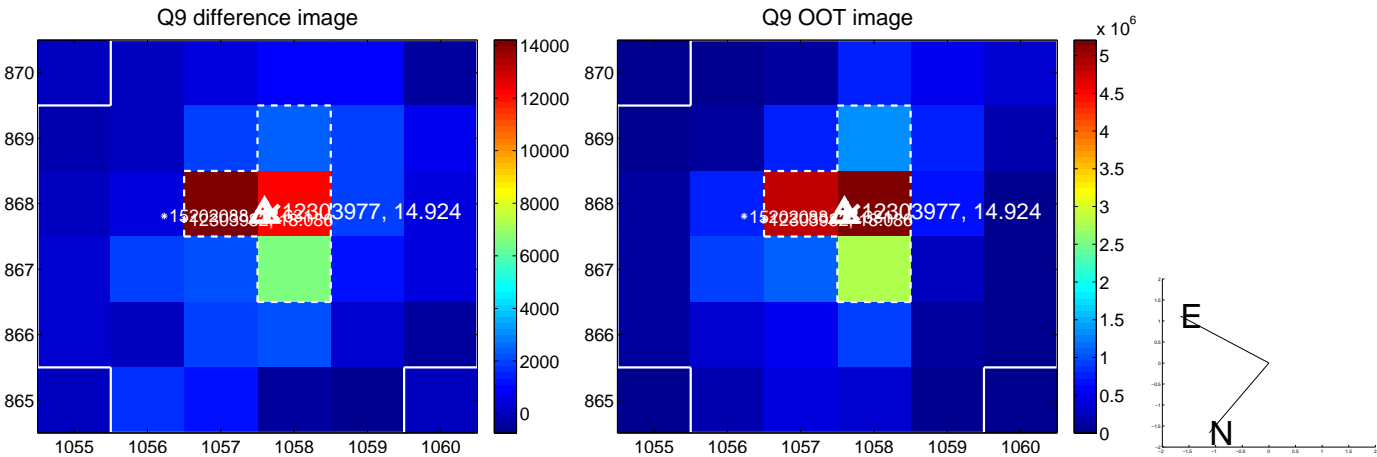
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



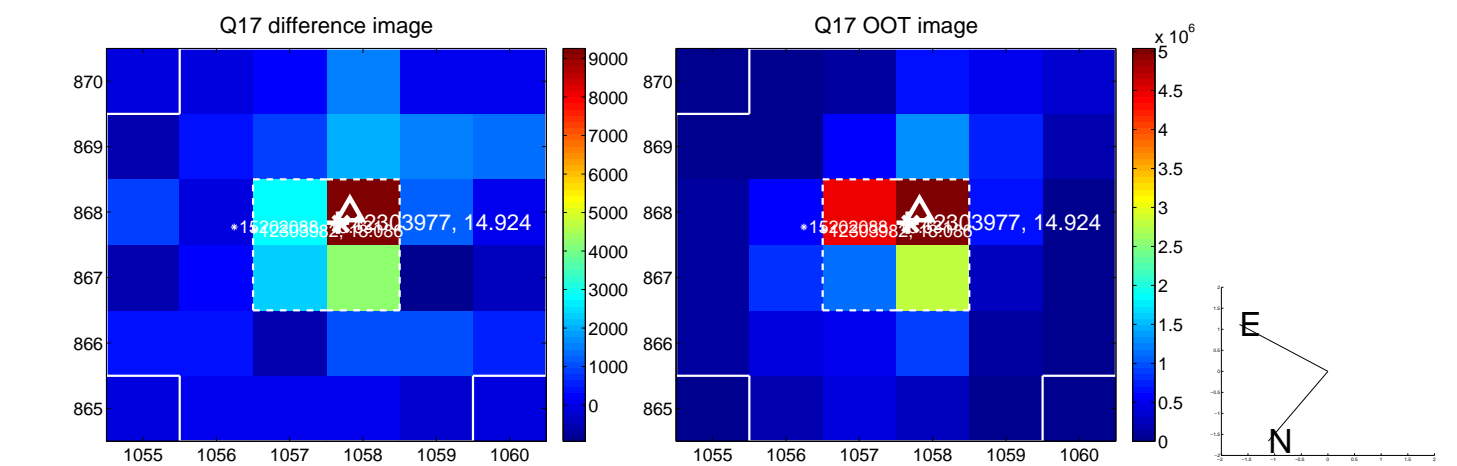
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



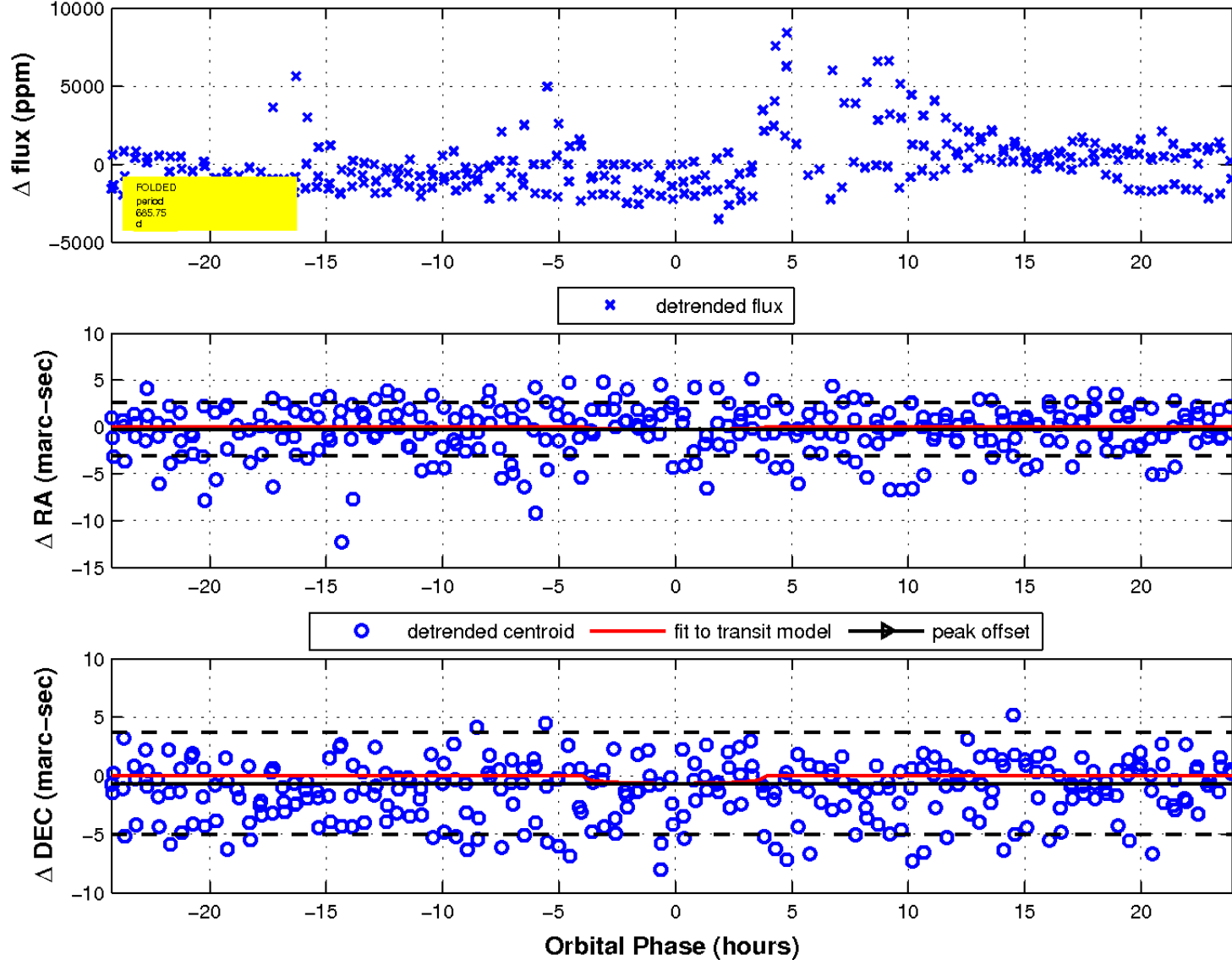
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

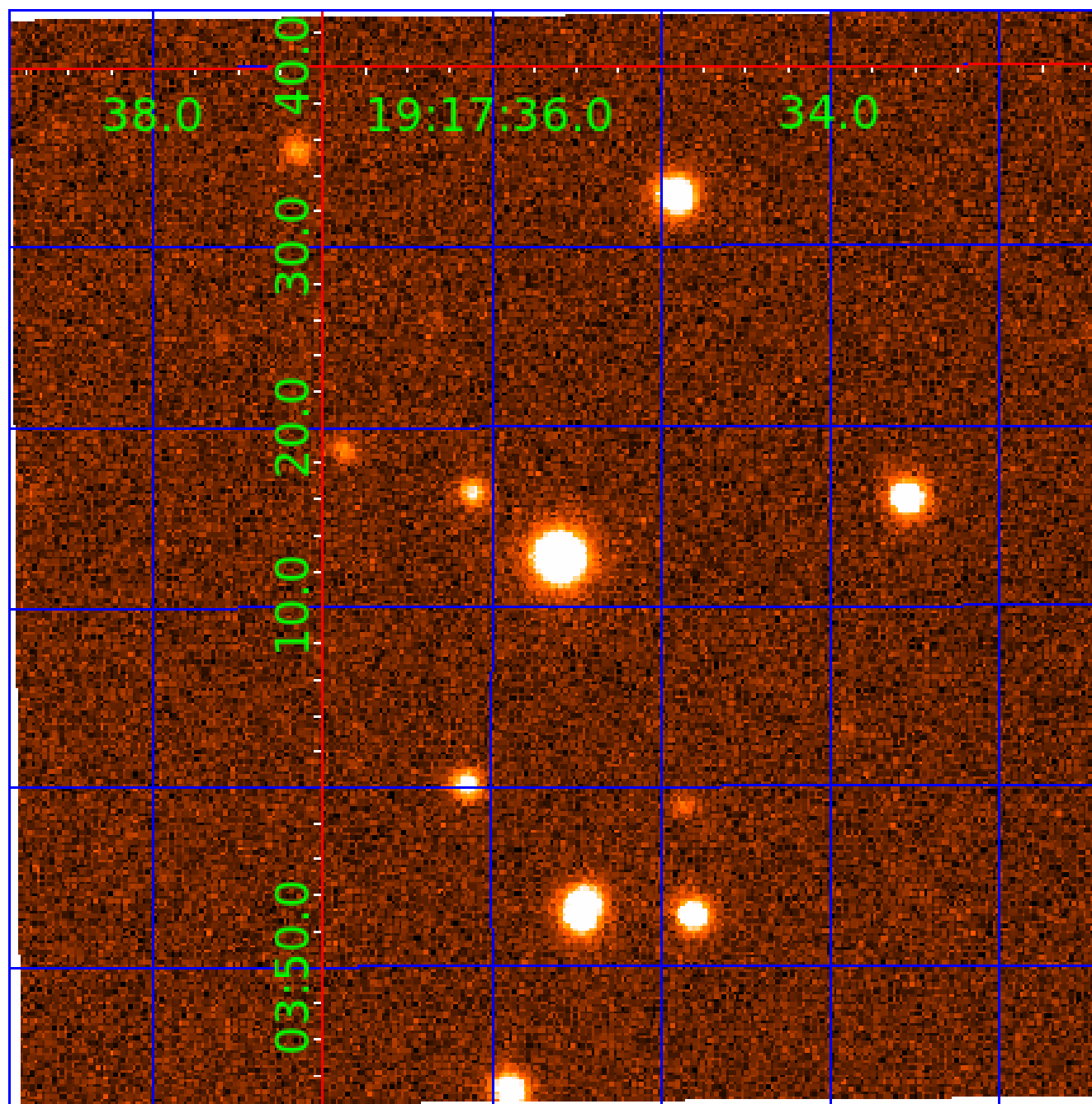


fluxWeightedCentroids, Planet 3 of 6



UKIRT Image

Declination



KIC 012303977

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})
012303977-01	OBS	No	437.256032	183.779067	0.1	0.826	22.8	0.0	0.54	4653	0.03	0.14
012303977-02	OBS	No	462.187027	581.993847	2530.4	5.463	21.8	8.9	0.54	4653	2.85	0.13
012303977-03	OBS	No	685.751776	196.005185	3067.0	8.086	16.4	10.4	0.54	4653	2.90	0.08
012303977-04	OBS	No	644.472213	178.648080	2478.0	8.057	17.6	8.4	0.54	4653	2.60	0.09
012303977-05	OBS	No	308.830814	186.310556	3201.0	2.912	15.7	11.4	0.54	4653	3.01	0.23

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012303977-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012303977-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012303977-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
012303977-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
012303977-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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

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

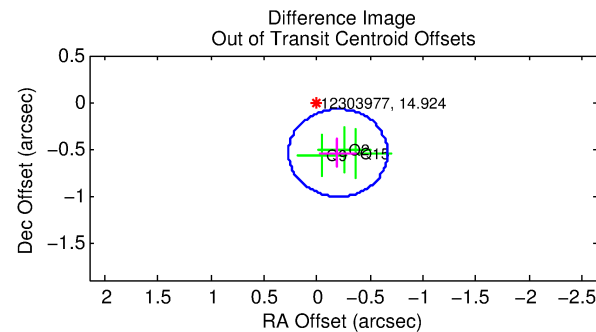
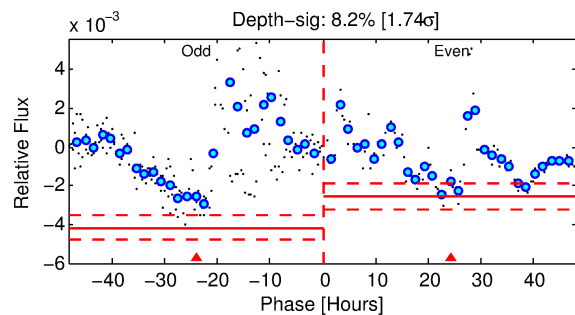
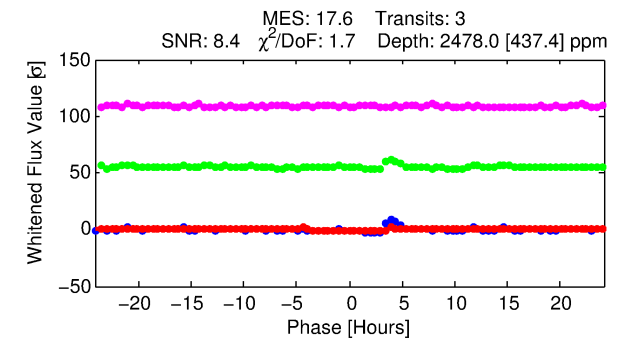
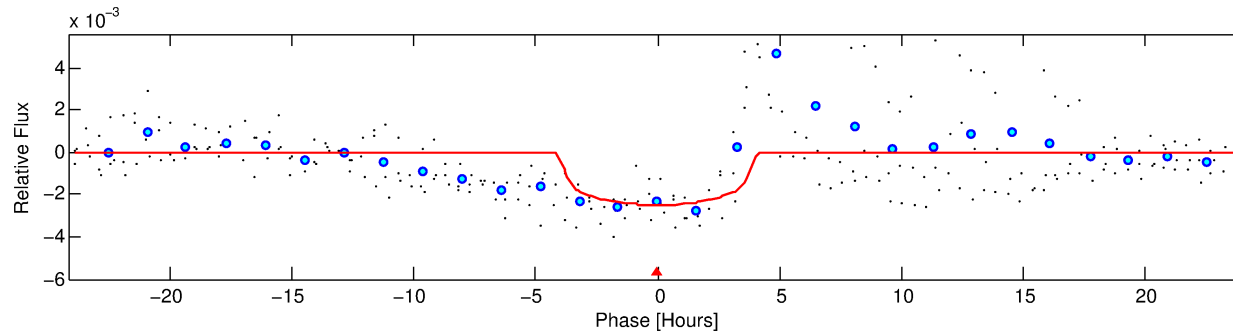
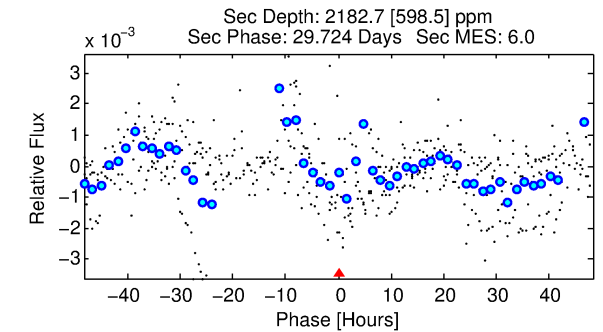
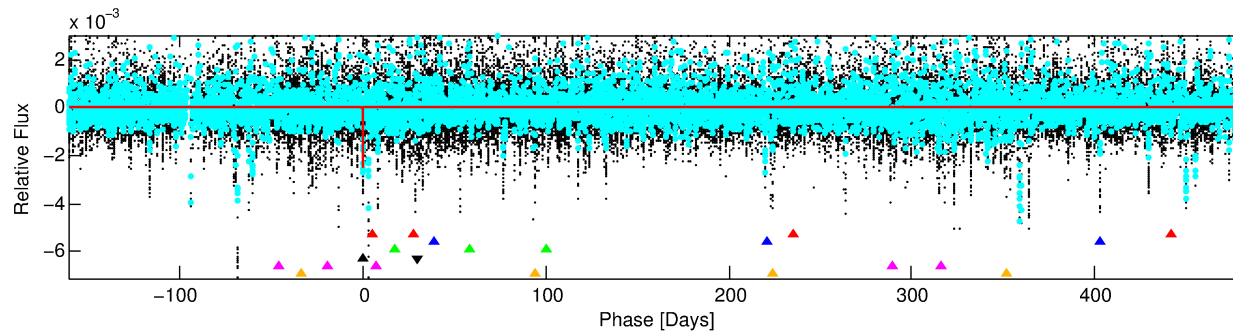
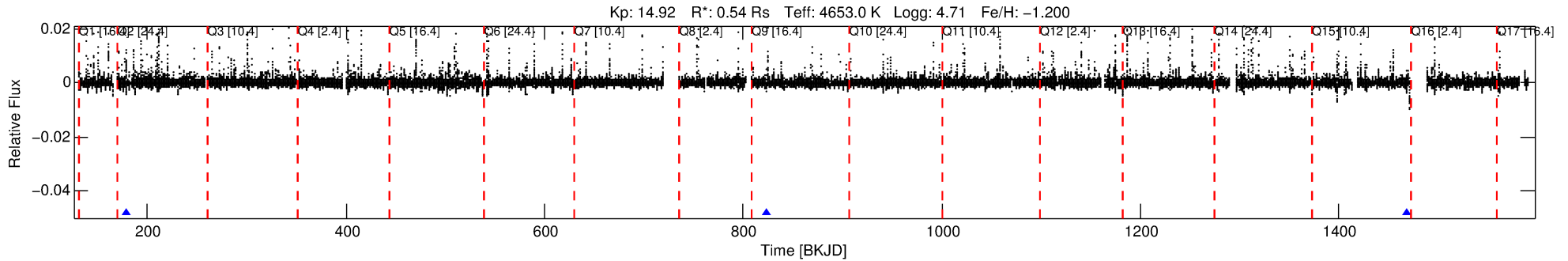
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012303977-04

No Significant Match Found

DV One-Page Summary

KIC: 12303977 Candidate: 4 of 6 Period: 644.472 d



DV Fit Results:

Period = 644.47221 [0.00656] d
Epoch = 178.6481 [0.0097] BKJD
Rp/R* = 0.0446 [0.0227]
a/R* = 638.20 [1180.18]
b = 0.02 [99.67]
Seff = 0.09 [0.01]
Teq = 138 [5] K
Rp = 2.60 [1.34] Re
a = 1.1887 [0.0702] AU
Ag = 250420.93 [264546.53] [0.95σ]
Teffp = 4763 [1262] K [3.67σ]

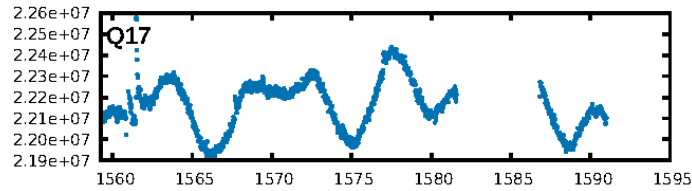
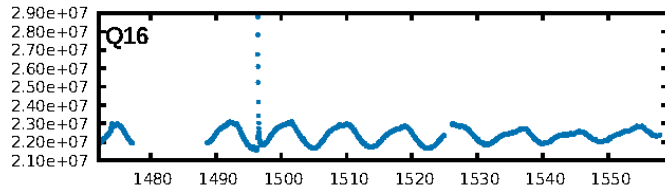
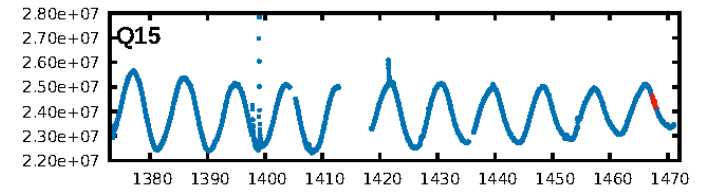
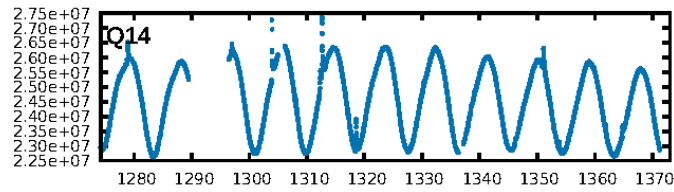
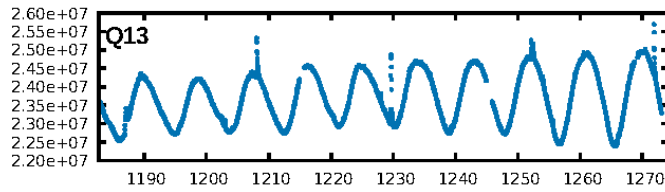
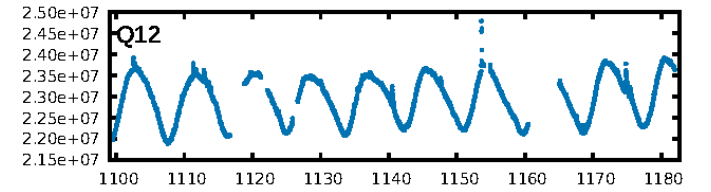
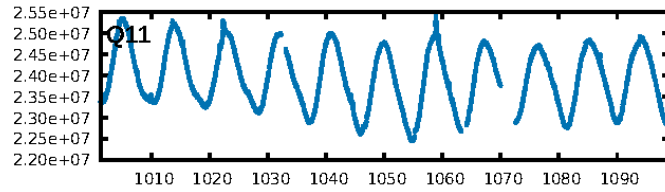
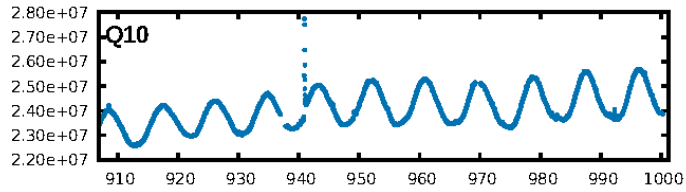
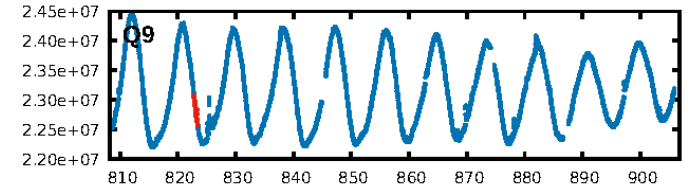
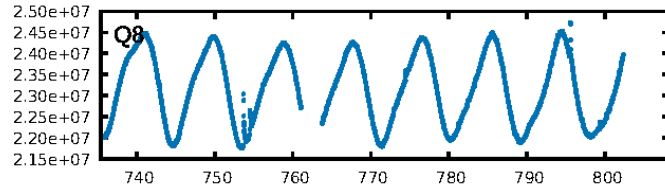
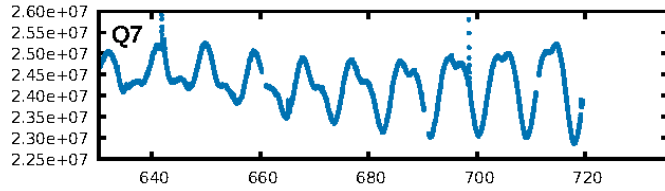
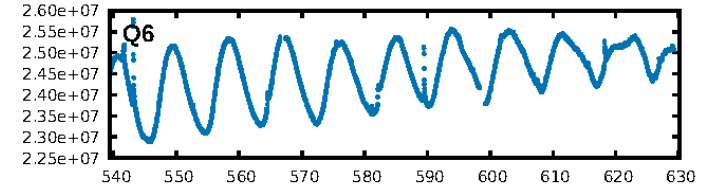
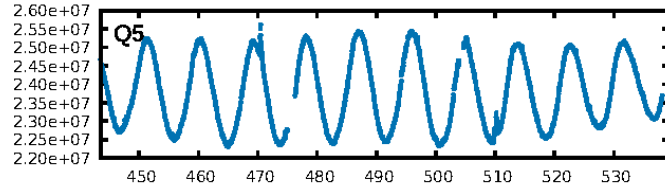
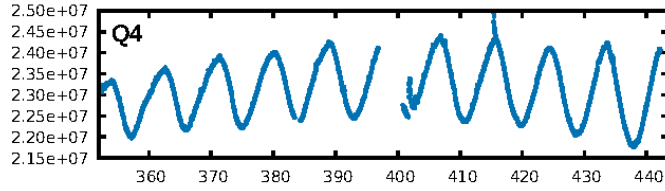
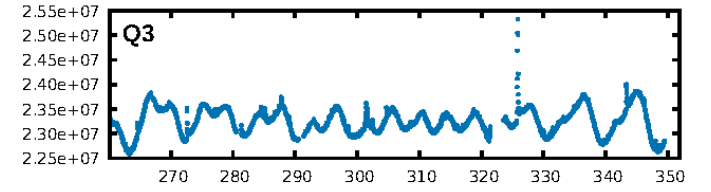
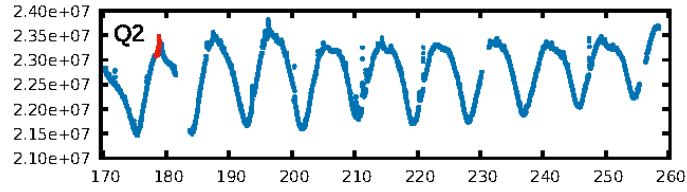
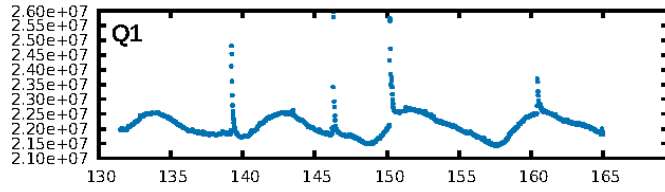
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [449.41σ]
LongPeriod-sig: 100.0% [86.79σ]
ModelChiSquare2-sig: 4.5%
ModelChiSquareGof-sig: 31.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.019
Centroid-sig: 0.1%
Centroid-so: 1.902 arcsec [3.44σ]
OotOffset-rm: 0.577 arcsec [3.70σ]
KicOffset-rm: 0.515 arcsec [3.35σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

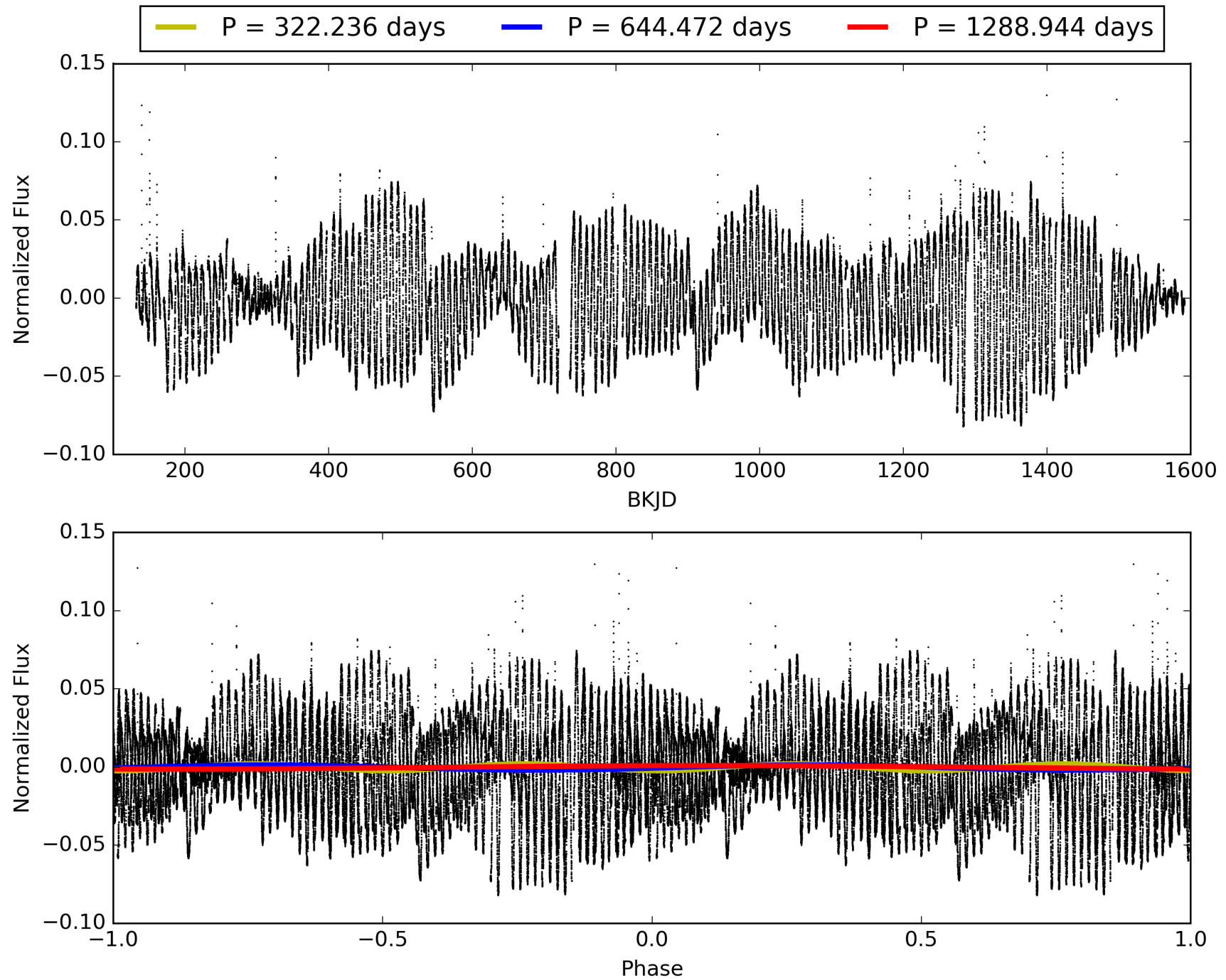
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:04:01 Z

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

TCE 012303977-04, PDC Light Curves

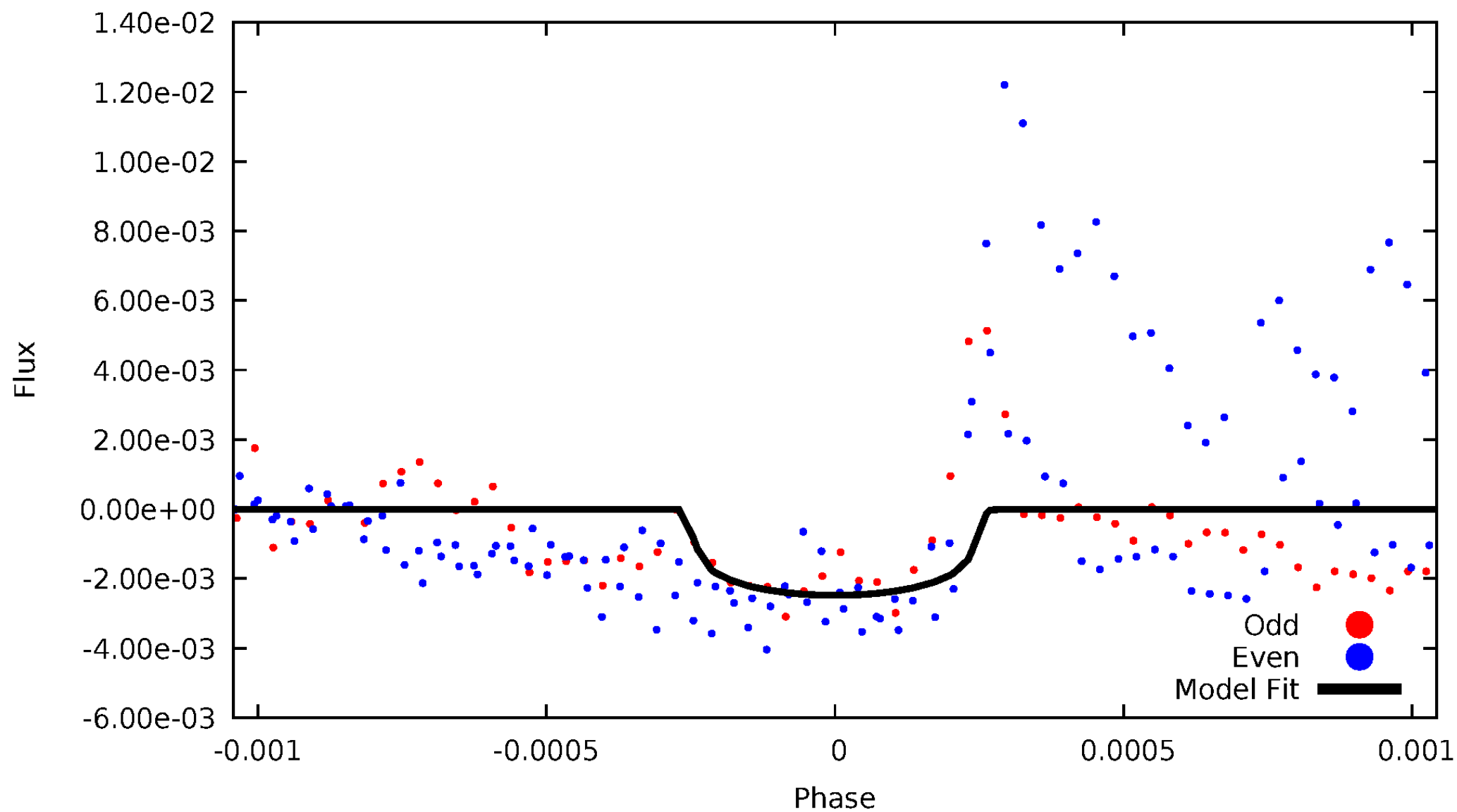


TCE 012303977-04



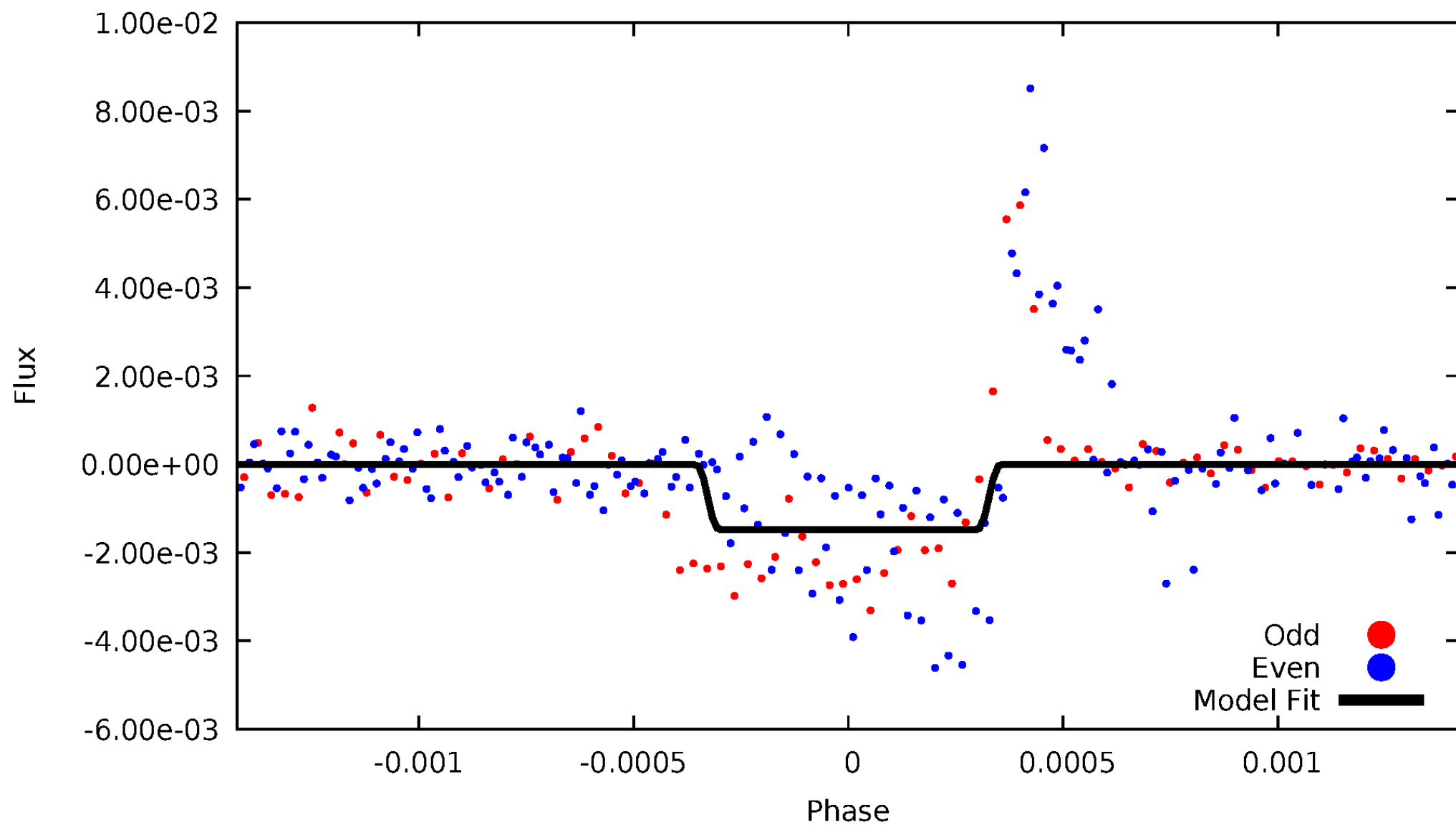
DV Odd/Even

TCE 012303977-04



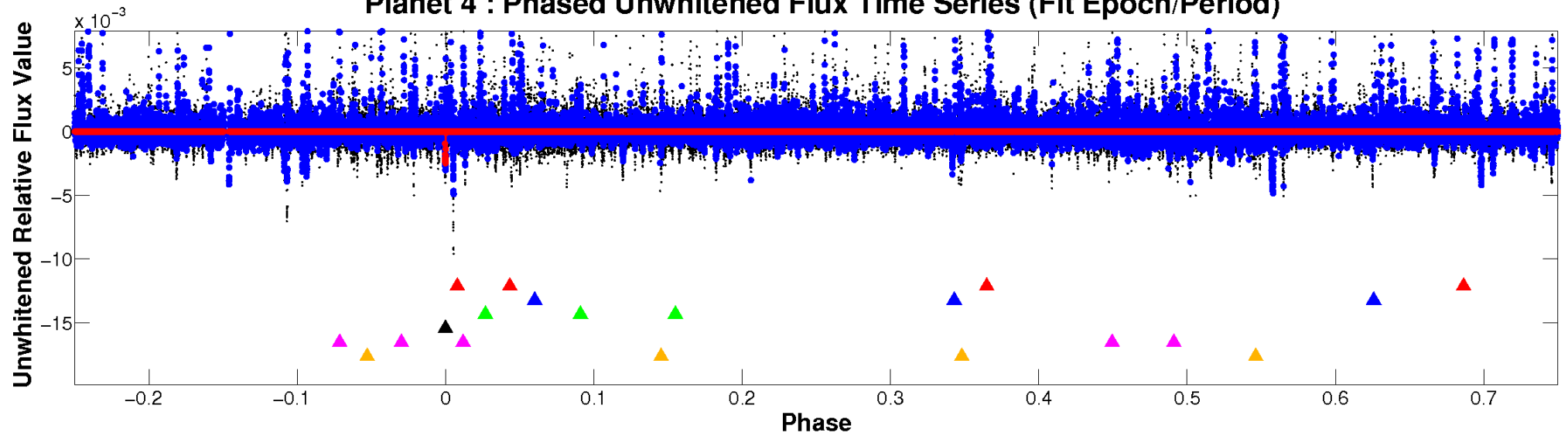
ALT Odd/Even

TCE 012303977-04

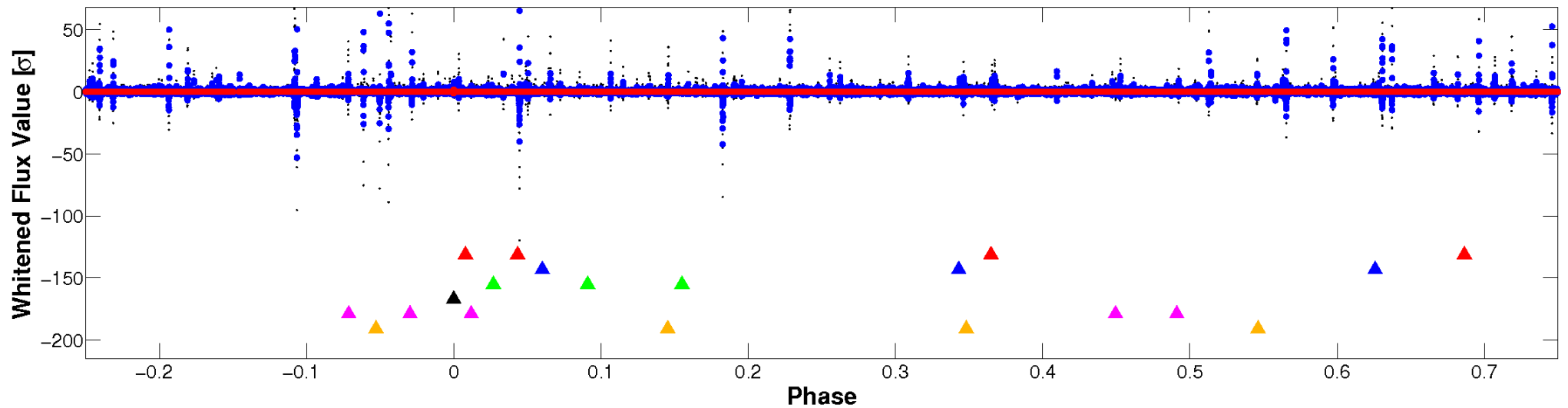


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

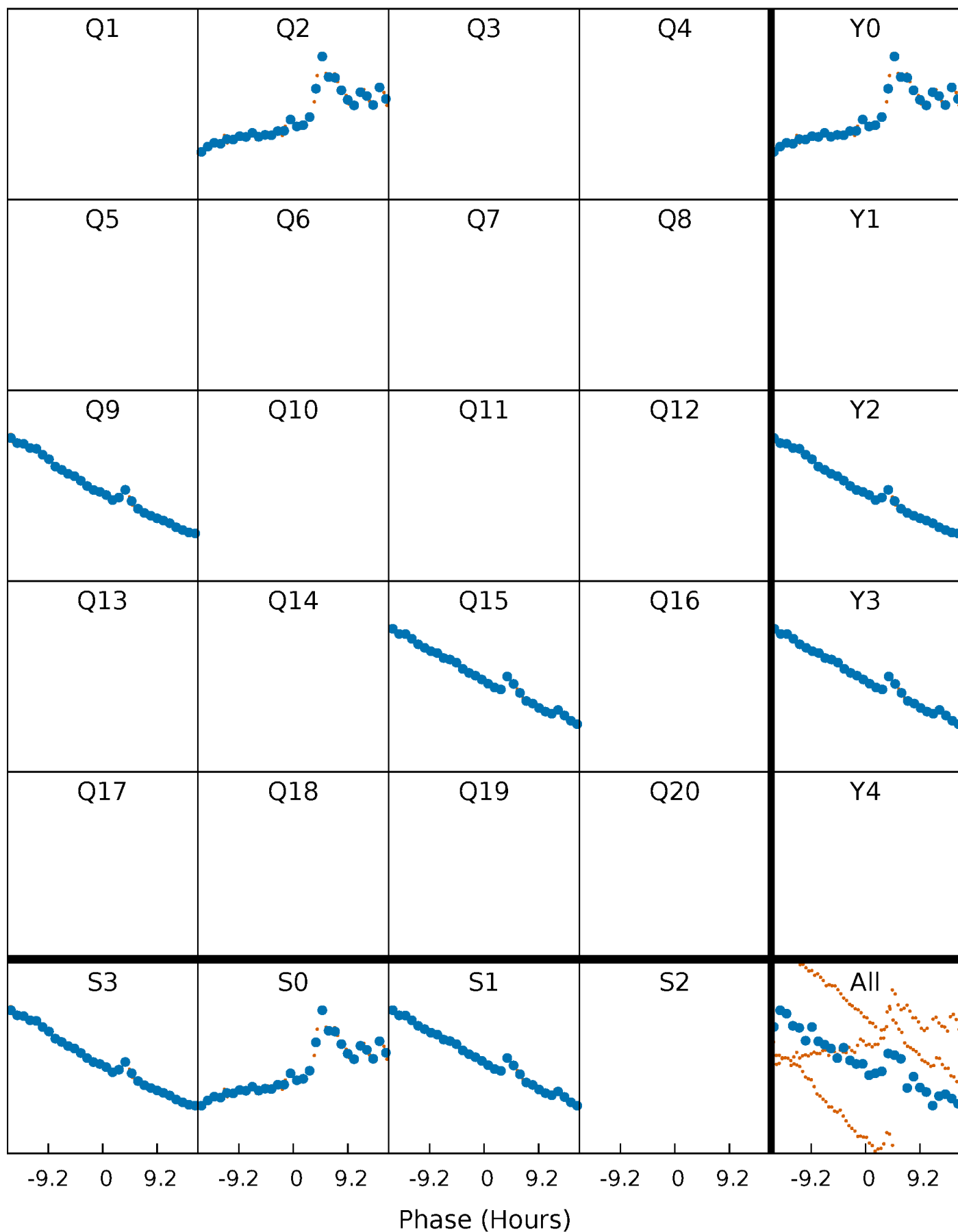


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



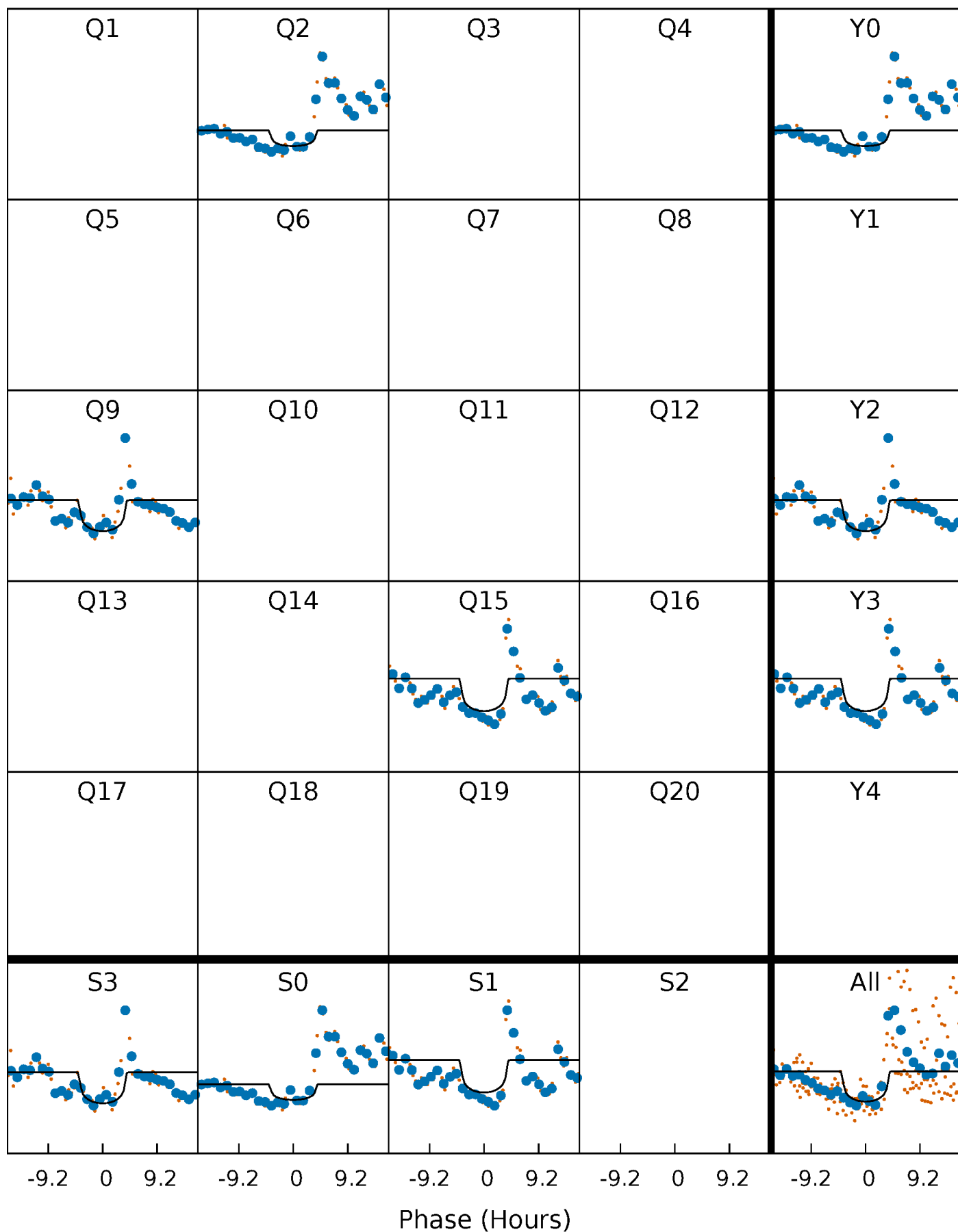
PDC Quarter-Phased Transit Curves

TCE 012303977-04 $P=644.472212$ Days $T_0=178.648080$ (BKJD)



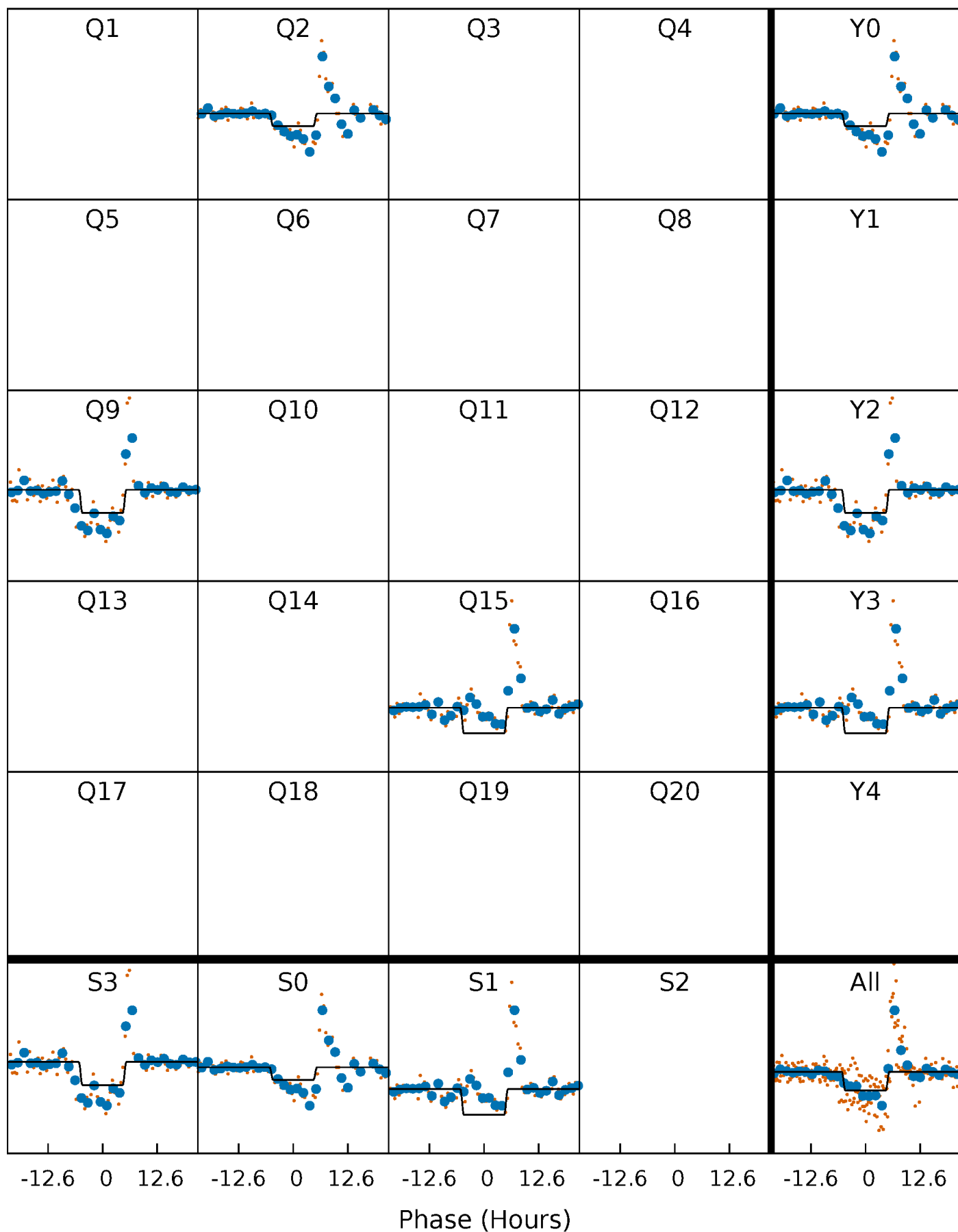
DV Quarter-Phased Transit Curves

TCE 012303977-04 $P=644.472212$ Days $T_0=178.648080$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

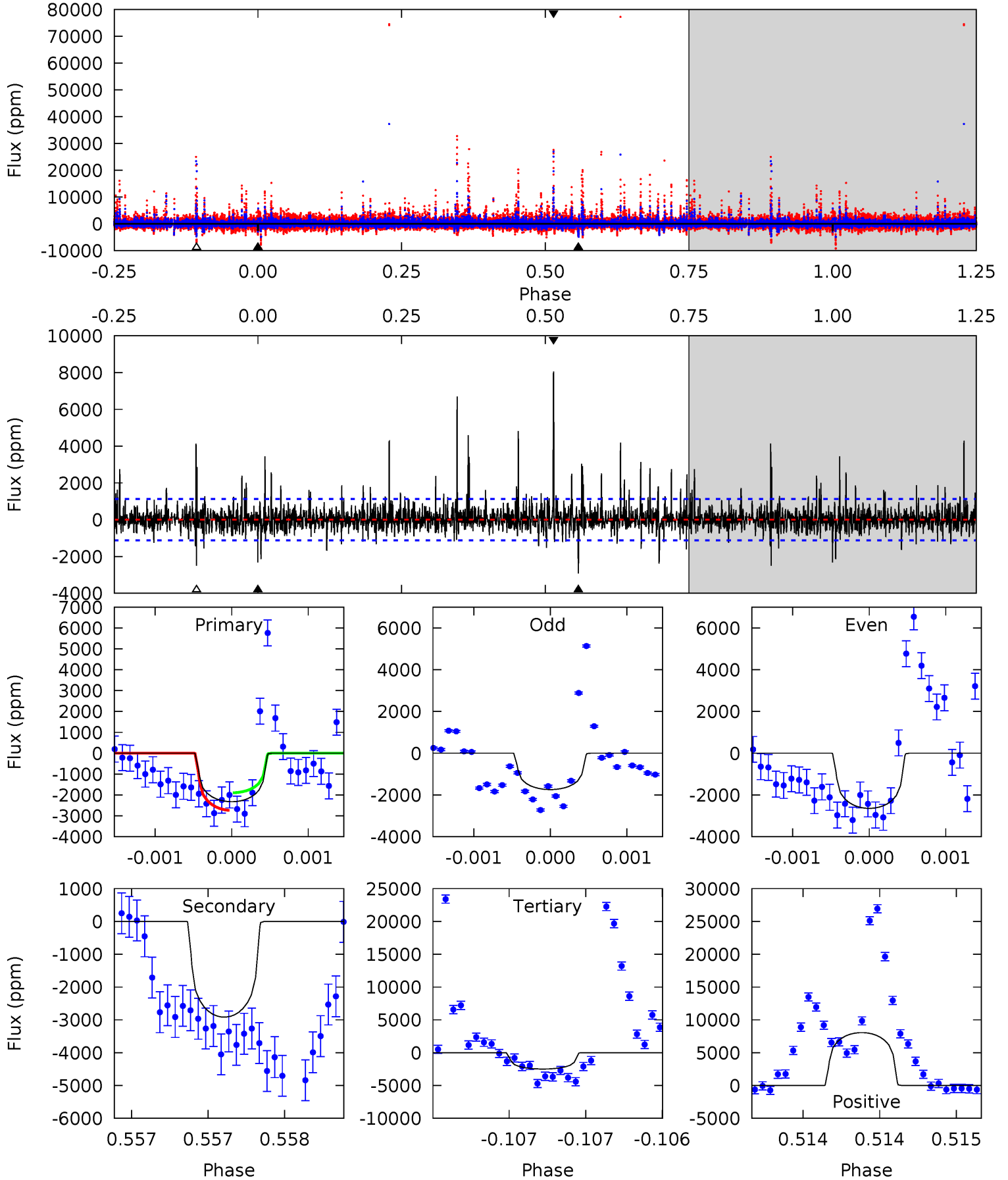
TCE 012303977-04 $P=644.467671$ Days $T_0=178.564513$ (BKJD)



DV Model-Shift Uniqueness Test

012303977-04, P = 644.472212 Days, E = 178.648080 Days

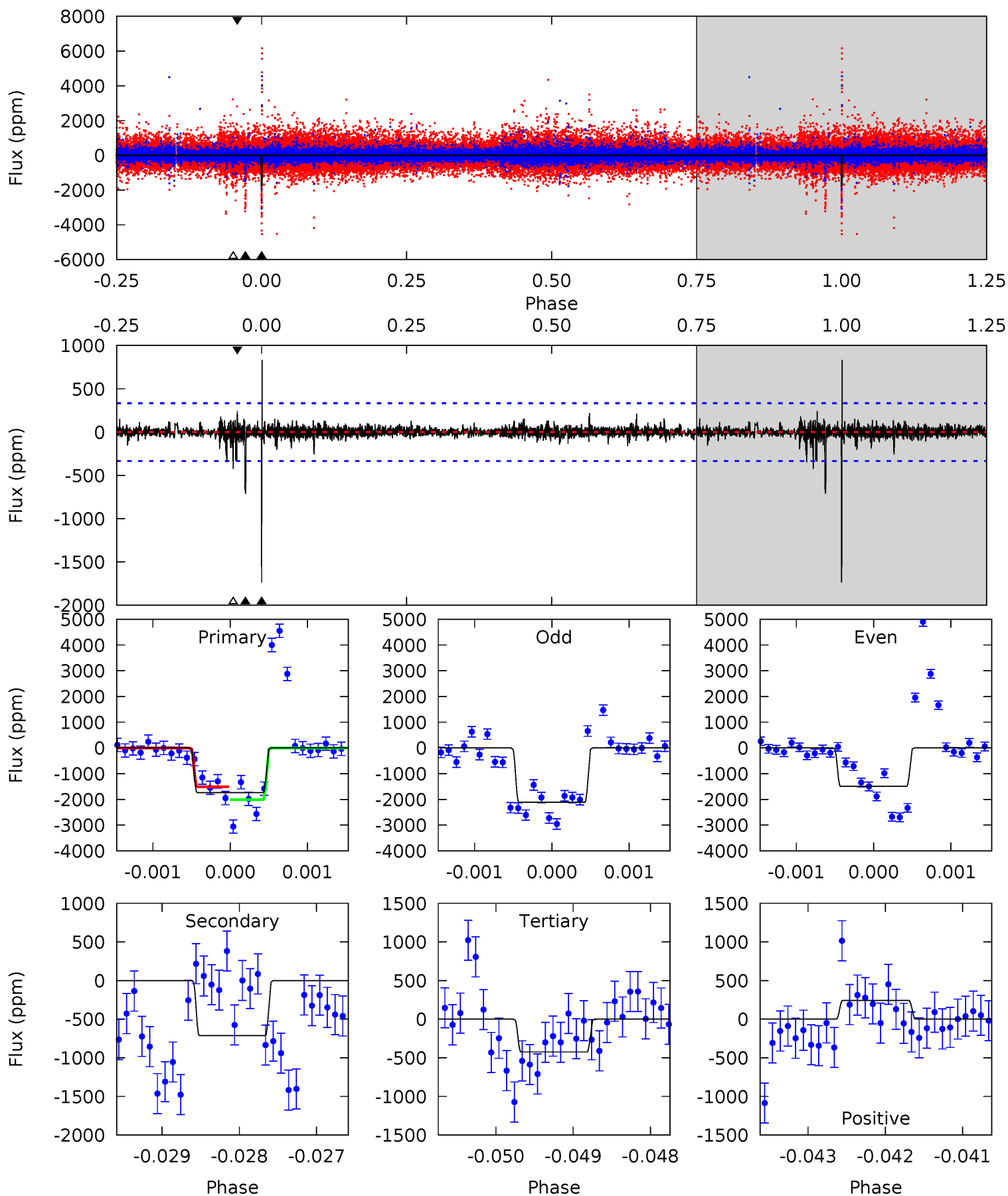
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	14.4	12.3	39.8	5.55	3.45	2.89	-0.85	-28.3	2.08	-25.4	1.14	1.00	0.73	2.09



Alt Model-Shift Uniqueness Test

012303977-04, P = 644.467671 Days, E = 178.564513 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.6	11.8	7.00	4.01	5.52	3.39	0.71	21.7	24.6	4.76	7.75	3.93	0.81	0.32	4.10



Stellar Parameters For KIC 012303977

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	4653^{+139}_{-139}	$4.713^{+0.048}_{-0.028}$	$-1.200^{+0.300}_{-0.300}$	$0.535^{+0.033}_{-0.037}$	$0.538^{+0.040}_{-0.023}$	$4.955^{+0.982}_{-0.563}$
	+3%/-3%	+1%/-1%	+25%/-25%	+6%/-7%	+7%/-4%	+20%/-11%
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 012303977-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-2915 ± 202	$2.69^{+1.26}_{-1.37}$	192^{+7}_{-7}	4959^{+2005}_{-714}	$320163^{+1031850}_{-174579}$
Alt.	-713 ± 61	$2.27^{+1.22}_{-1.22}$	192^{+6}_{-6}	4013^{+1475}_{-574}	$106948^{+401634}_{-62781}$

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 $A_{\text{obs}} \gg 1.0$

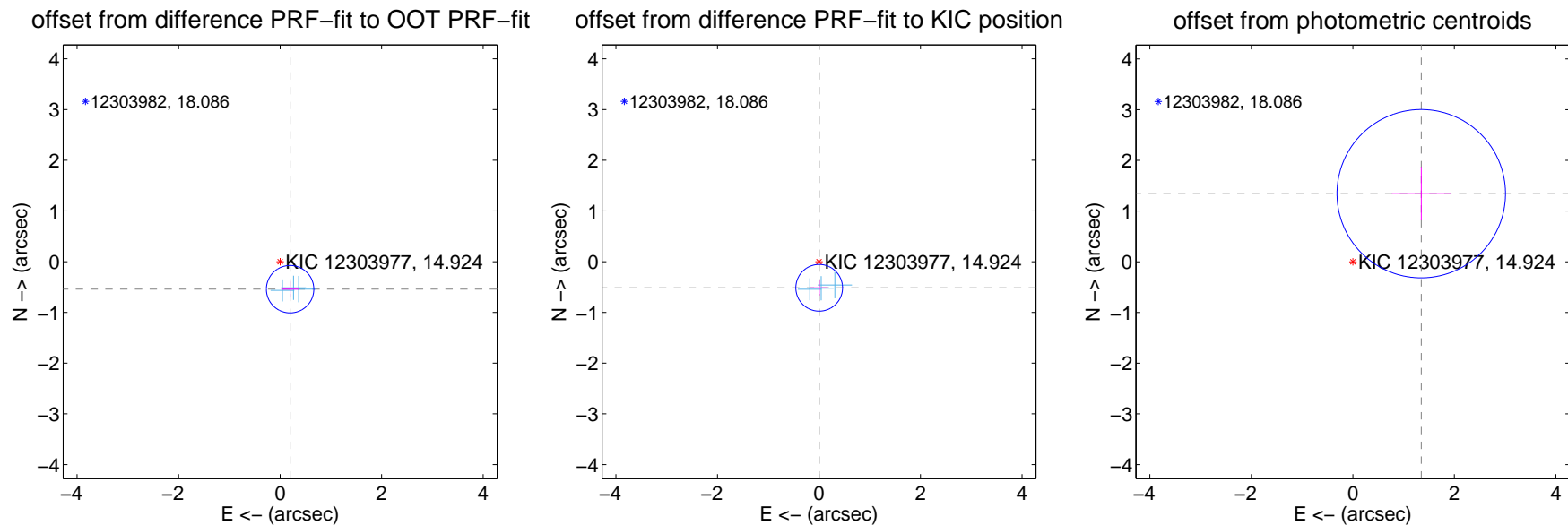
DV Centroid Data

Supplemental centroid analysis for 012303977-04. Kepler magnitude: 14.92. Transit SNR 8.35

There are 3 quarters with good PRF difference image offsets

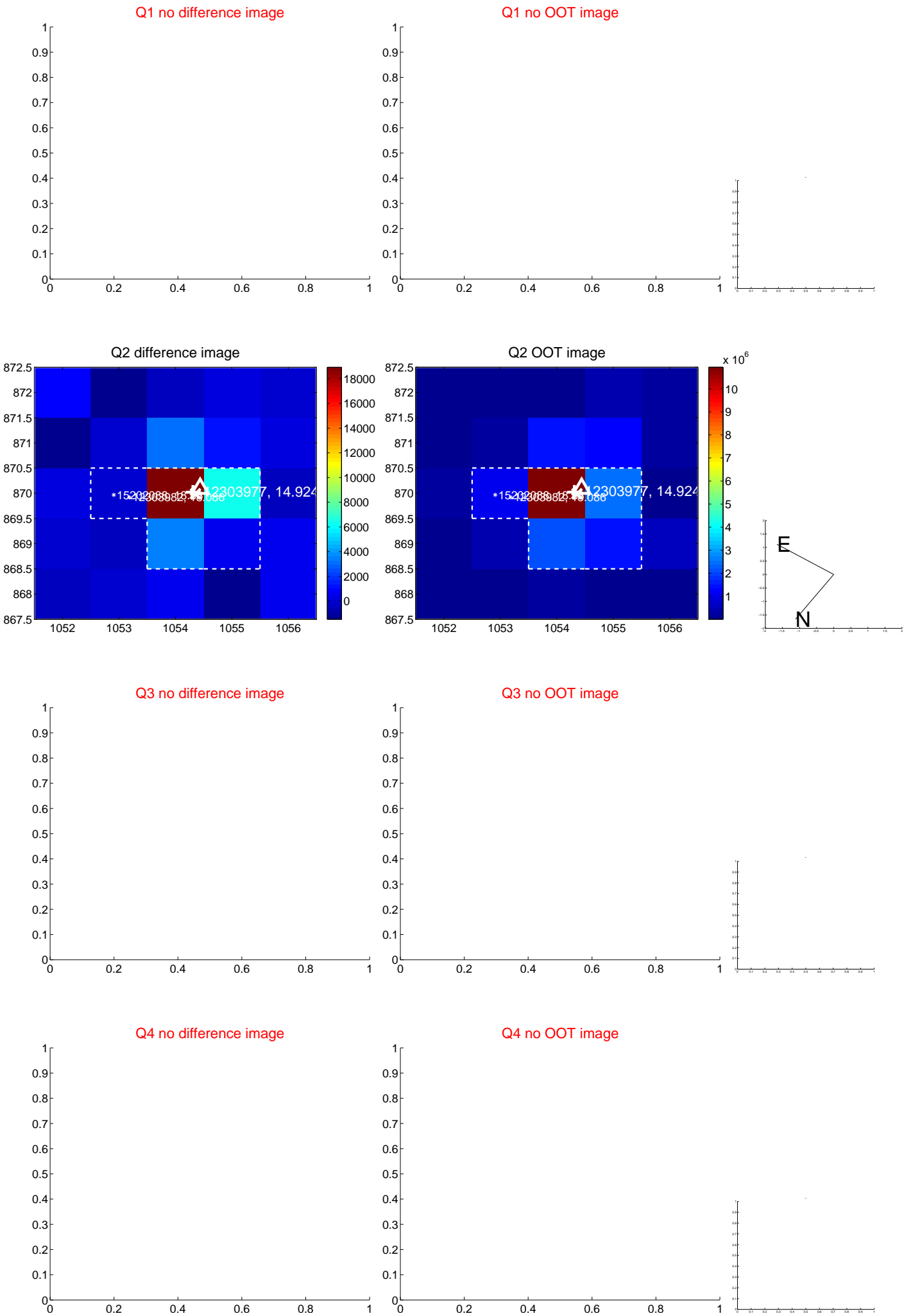
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.577 ± 0.156	3.70	-0.197 ± 0.173	-0.542 ± 0.153
PRF-fit source offset from KIC position	0.515 ± 0.153	3.35	-0.004 ± 0.173	-0.515 ± 0.153
photometric centroid source offset	1.90 ± 0.55	3.44	-1.35 ± 0.58	1.34 ± 0.53



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.

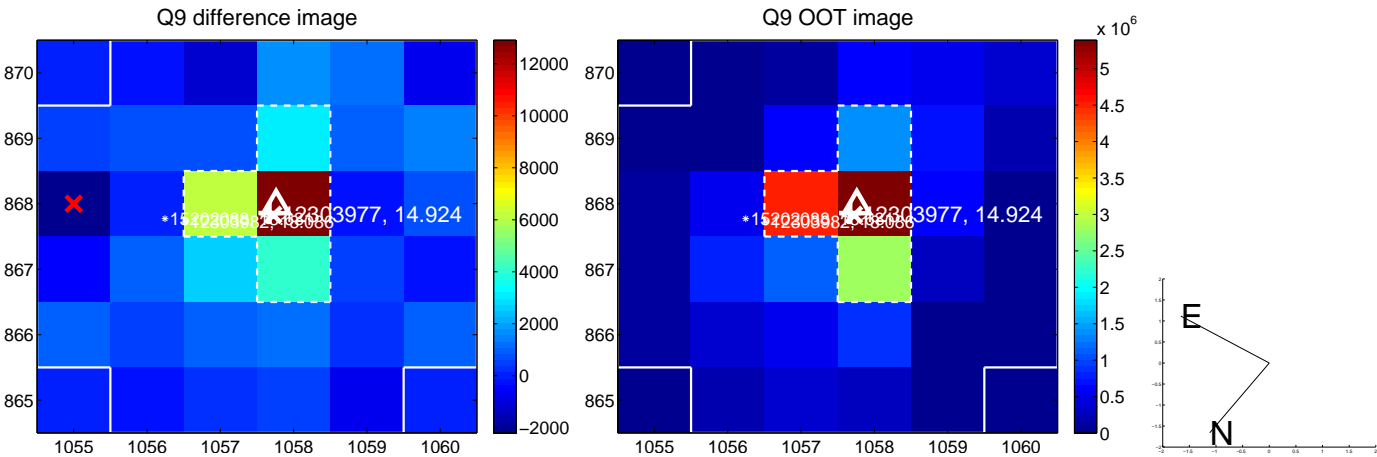
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



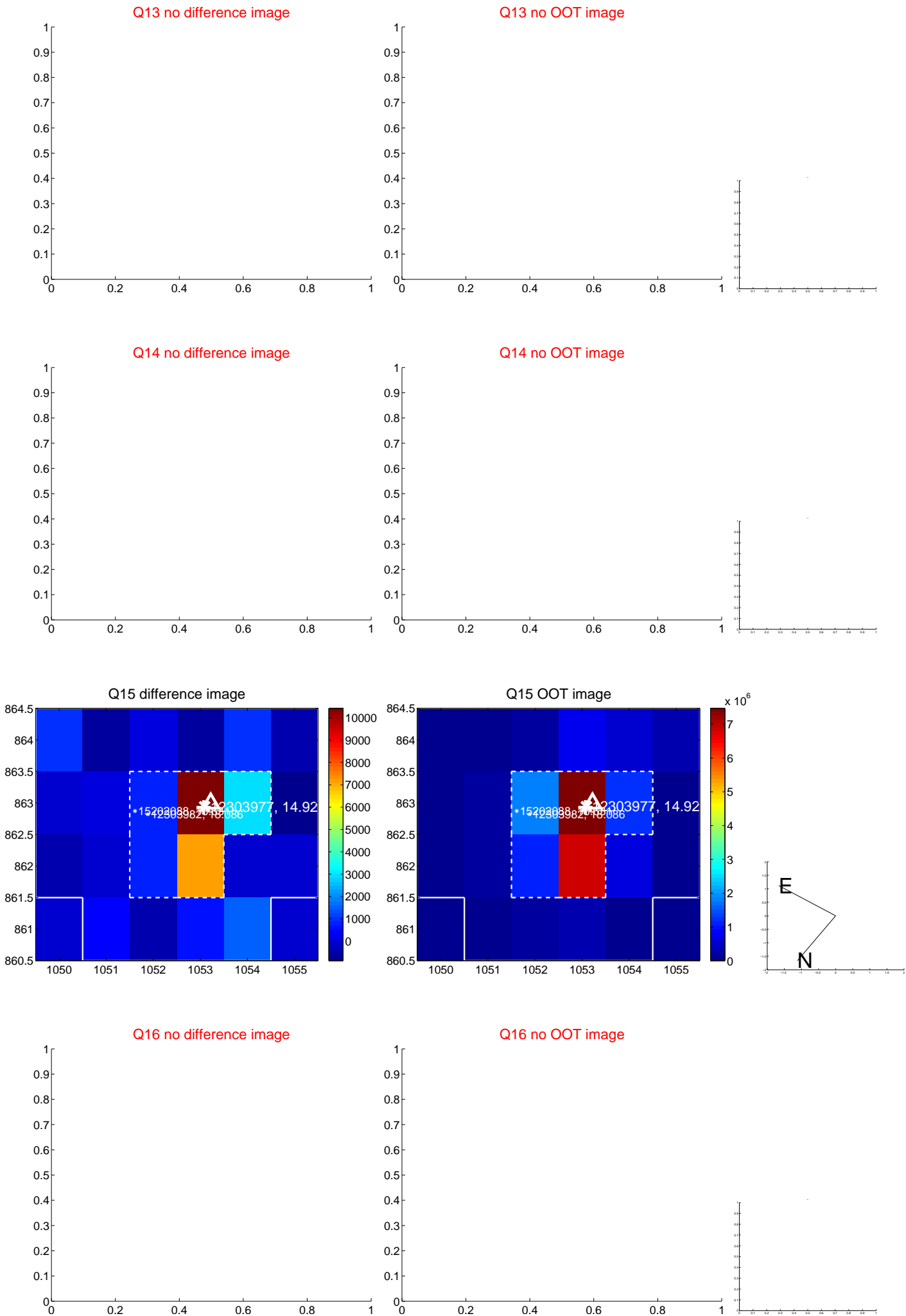
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



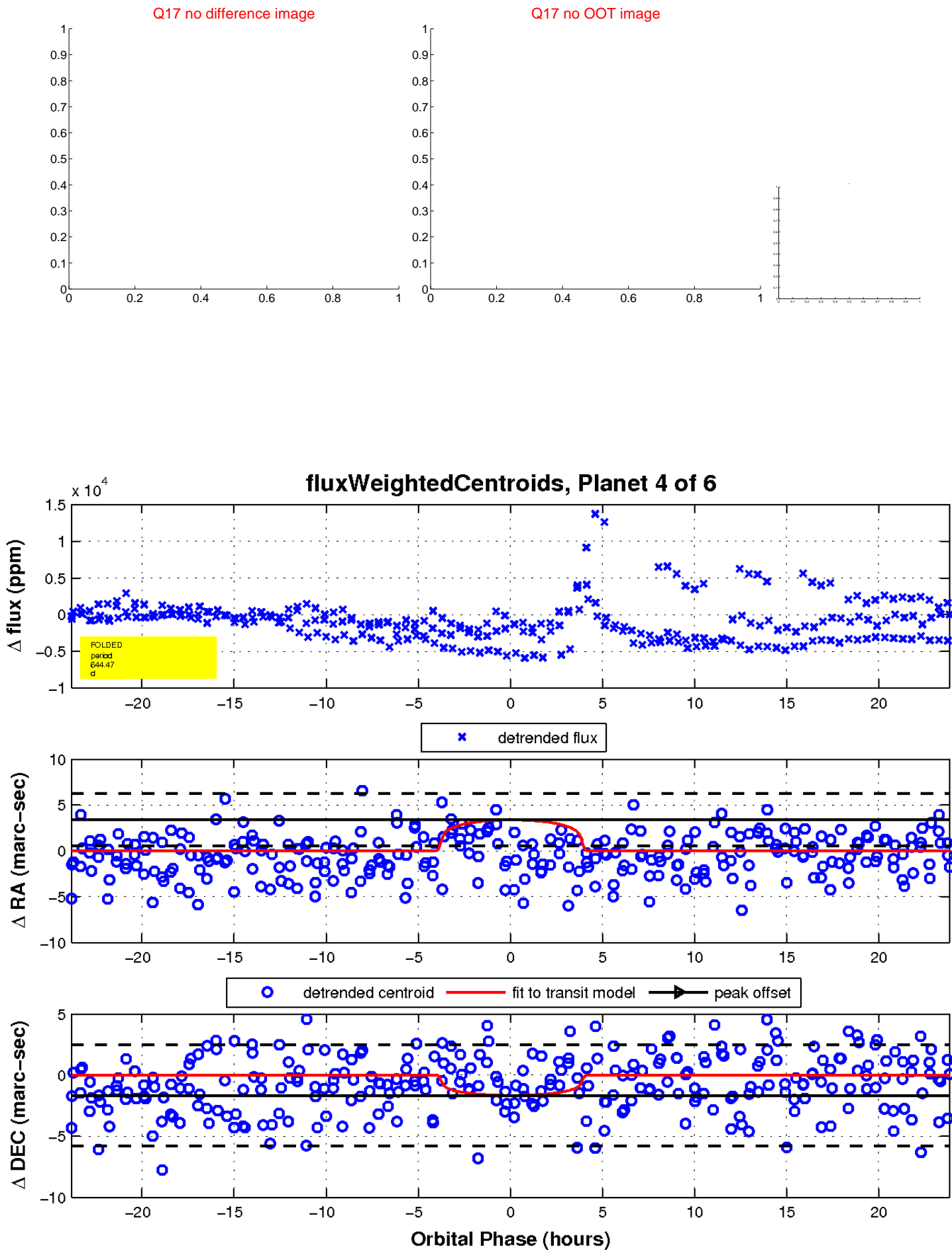
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

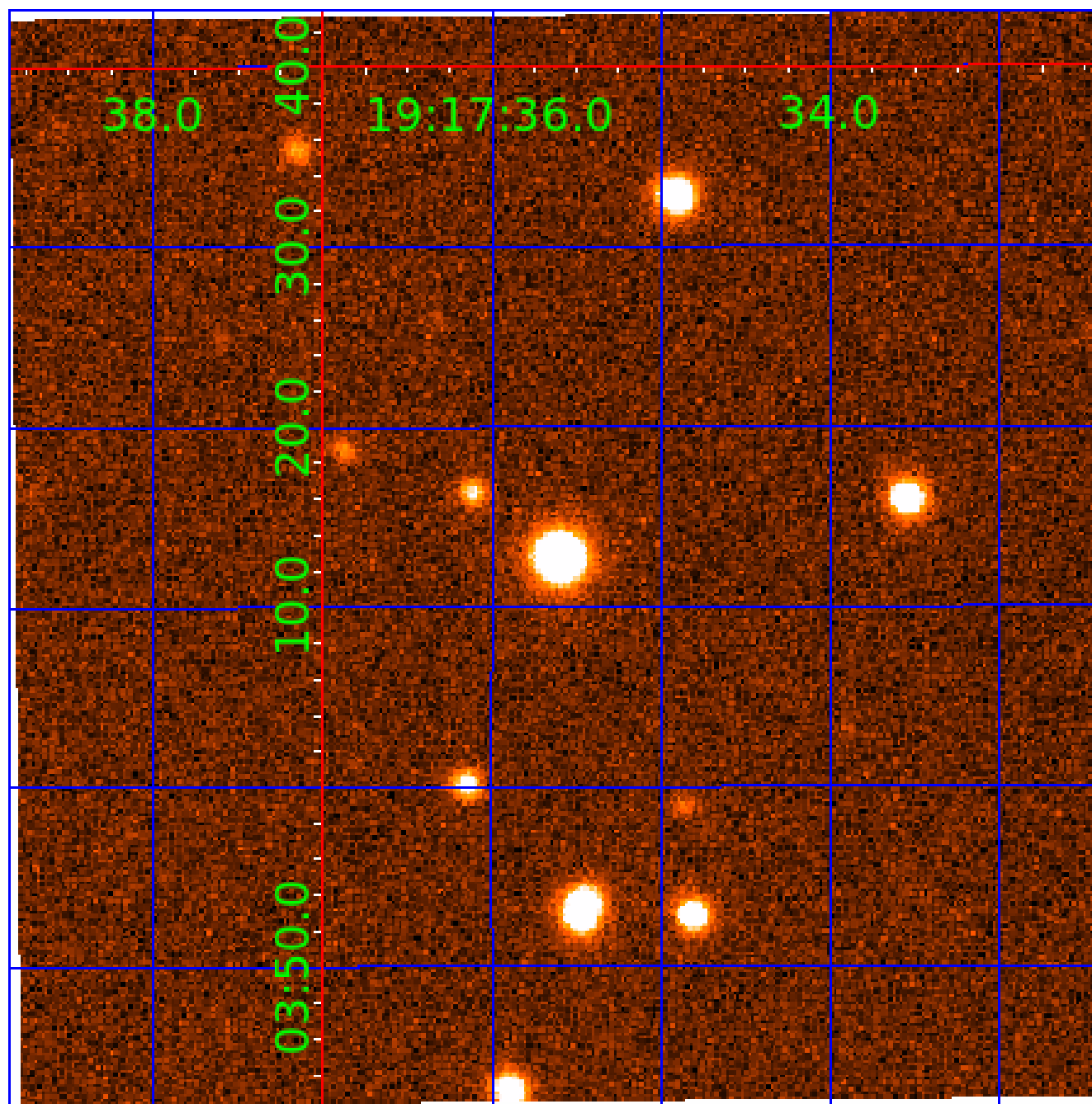


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012303977

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})
012303977-01	OBS	No	437.256032	183.779067	0.1	0.826	22.8	0.0	0.54	4653	0.03	0.14
012303977-02	OBS	No	462.187027	581.993847	2530.4	5.463	21.8	8.9	0.54	4653	2.85	0.13
012303977-03	OBS	No	685.751776	196.005185	3067.0	8.086	16.4	10.4	0.54	4653	2.90	0.08
012303977-04	OBS	No	644.472213	178.648080	2478.0	8.057	17.6	8.4	0.54	4653	2.60	0.09
012303977-05	OBS	No	308.830814	186.310556	3201.0	2.912	15.7	11.4	0.54	4653	3.01	0.23

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012303977-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012303977-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012303977-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
012303977-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
012303977-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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

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

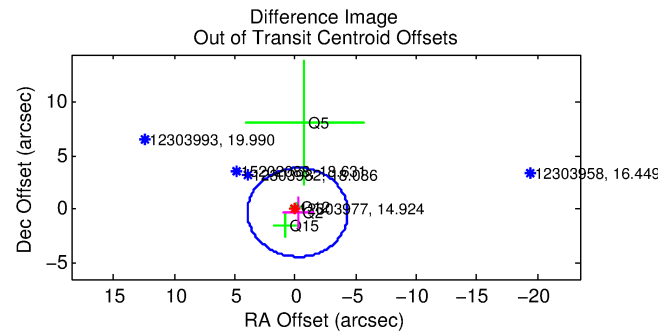
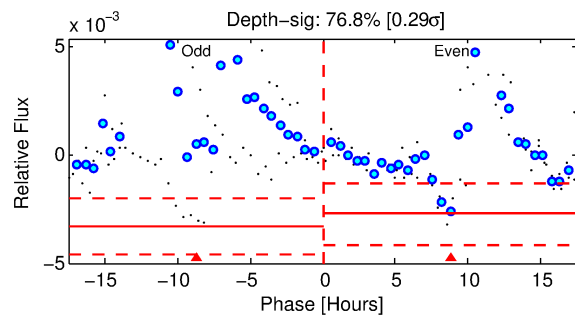
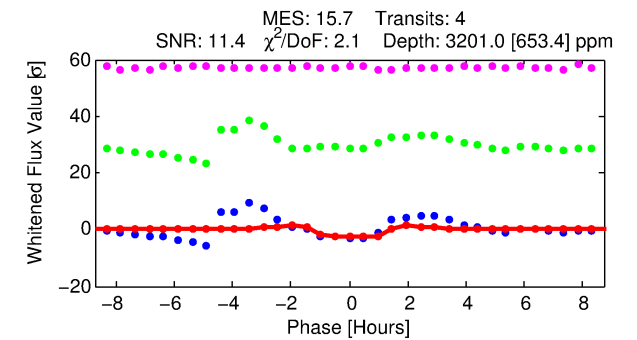
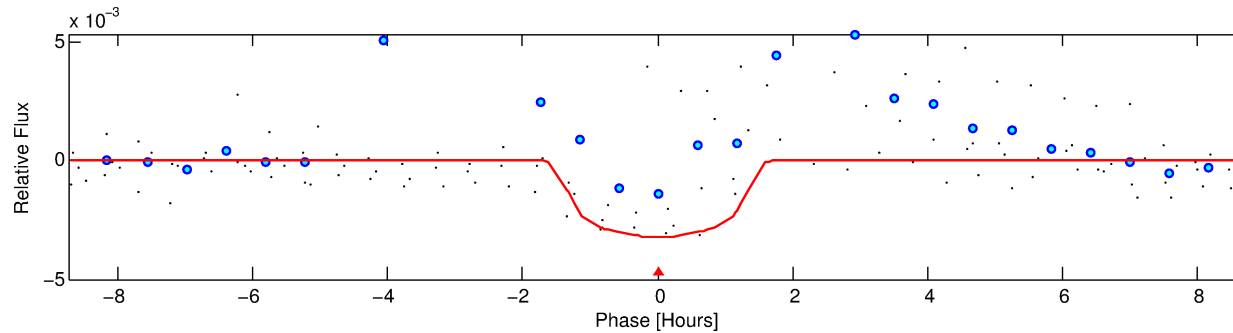
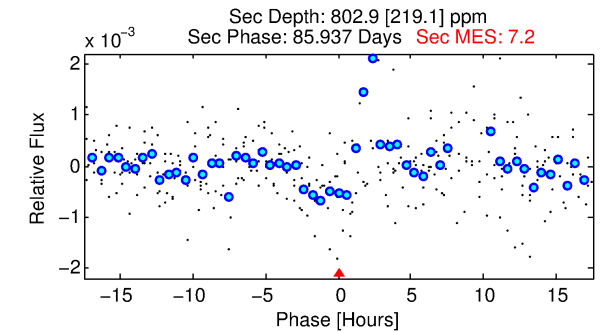
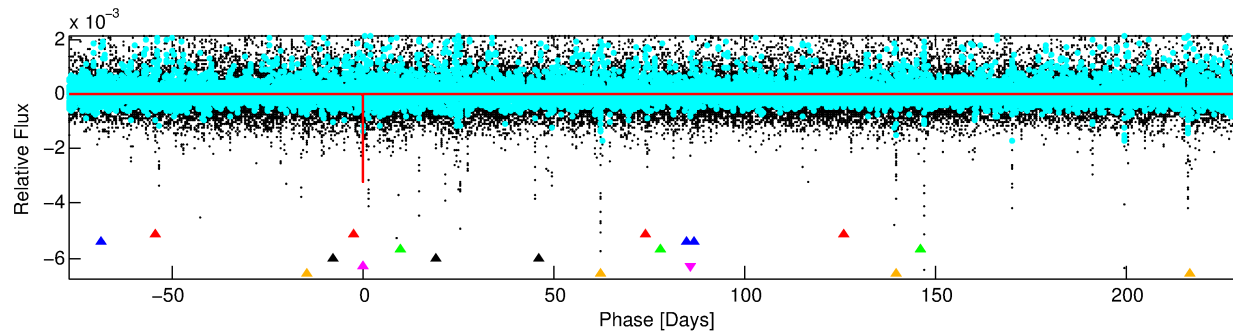
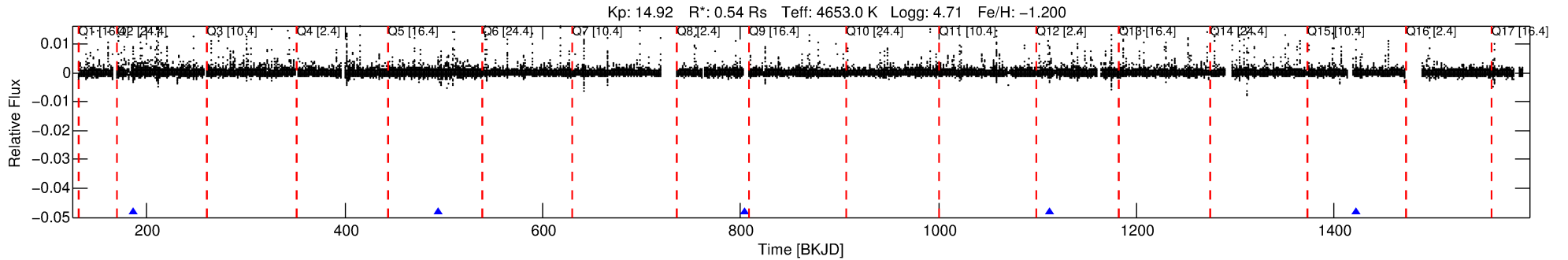
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012303977-05

No Significant Match Found

DV One-Page Summary

KIC: 12303977 Candidate: 5 of 6 Period: 308.831 d



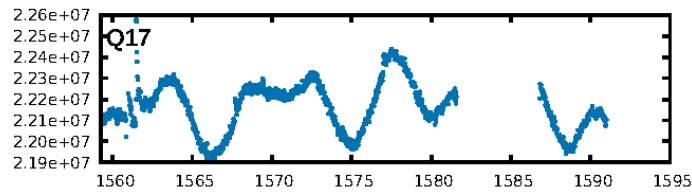
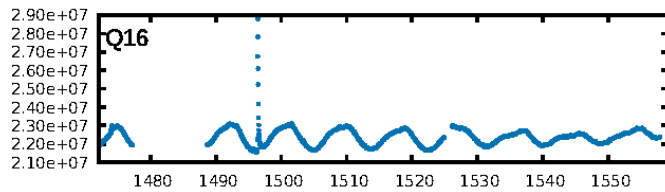
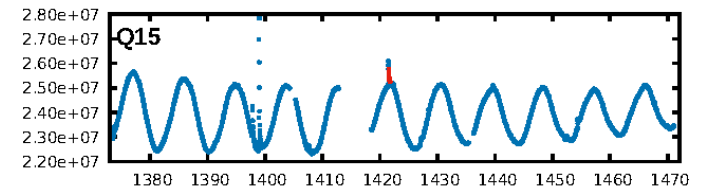
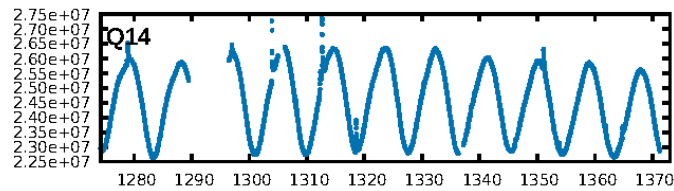
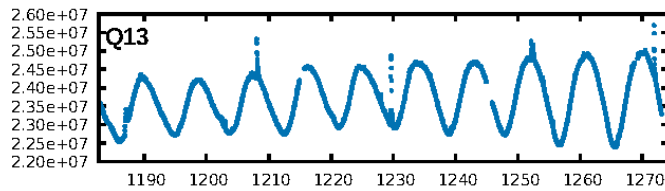
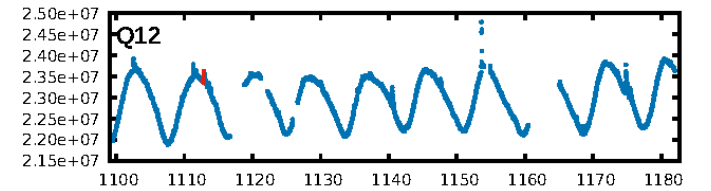
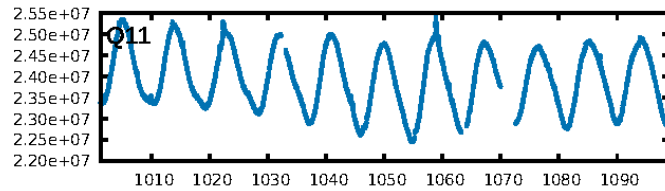
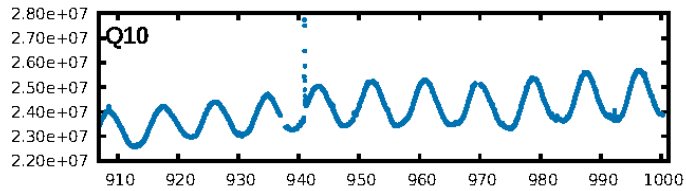
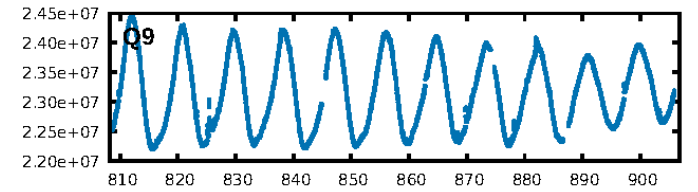
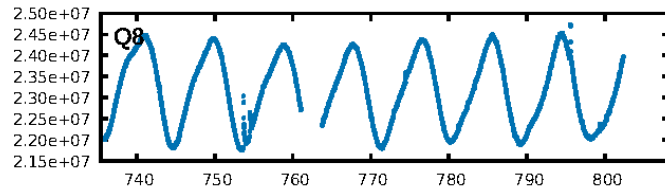
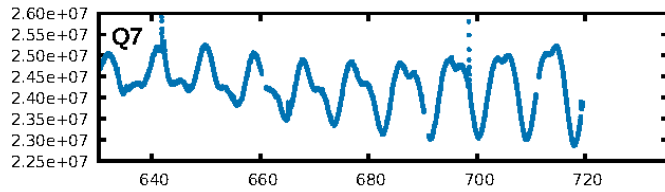
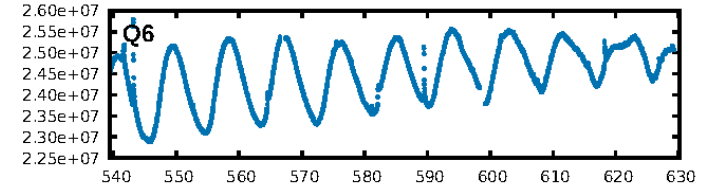
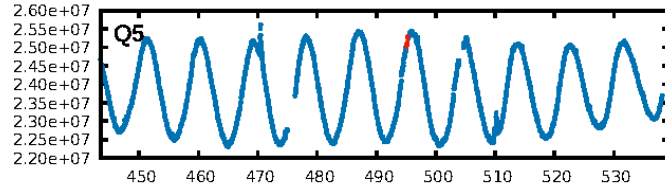
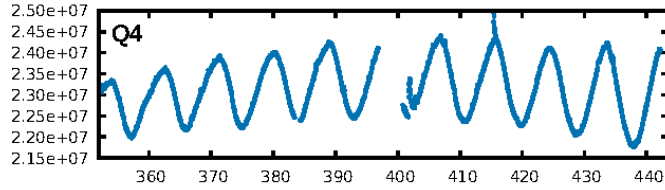
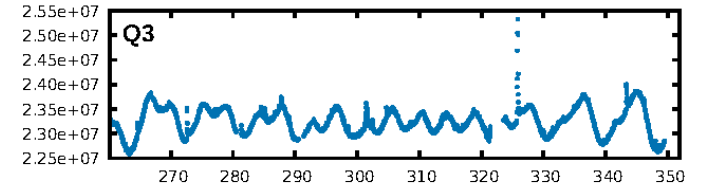
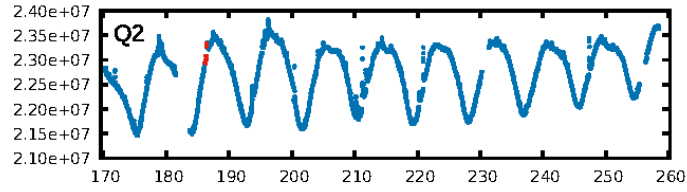
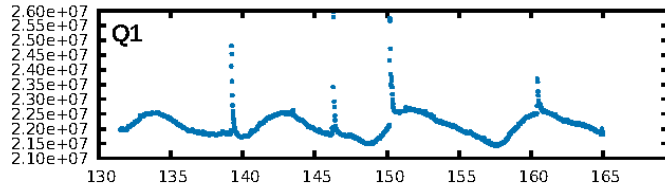
DV Fit Results:

Period = 308.83081 [0.00330] d
Epoch = 186.3106 [0.0095] BKJD
Rp/R* = 0.0516 [0.0682]
a/R* = 805.87 [3980.84]
b = 0.34 [12.90]
Seff = 0.23 [0.03]
Teq = 176 [7] K
Rp = 3.01 [3.99] Re
a = 0.7279 [0.0430] AU
Ag = 25784.68 [68539.11] [0.38σ]
Teffp = 3448 [2292] K [1.43σ]

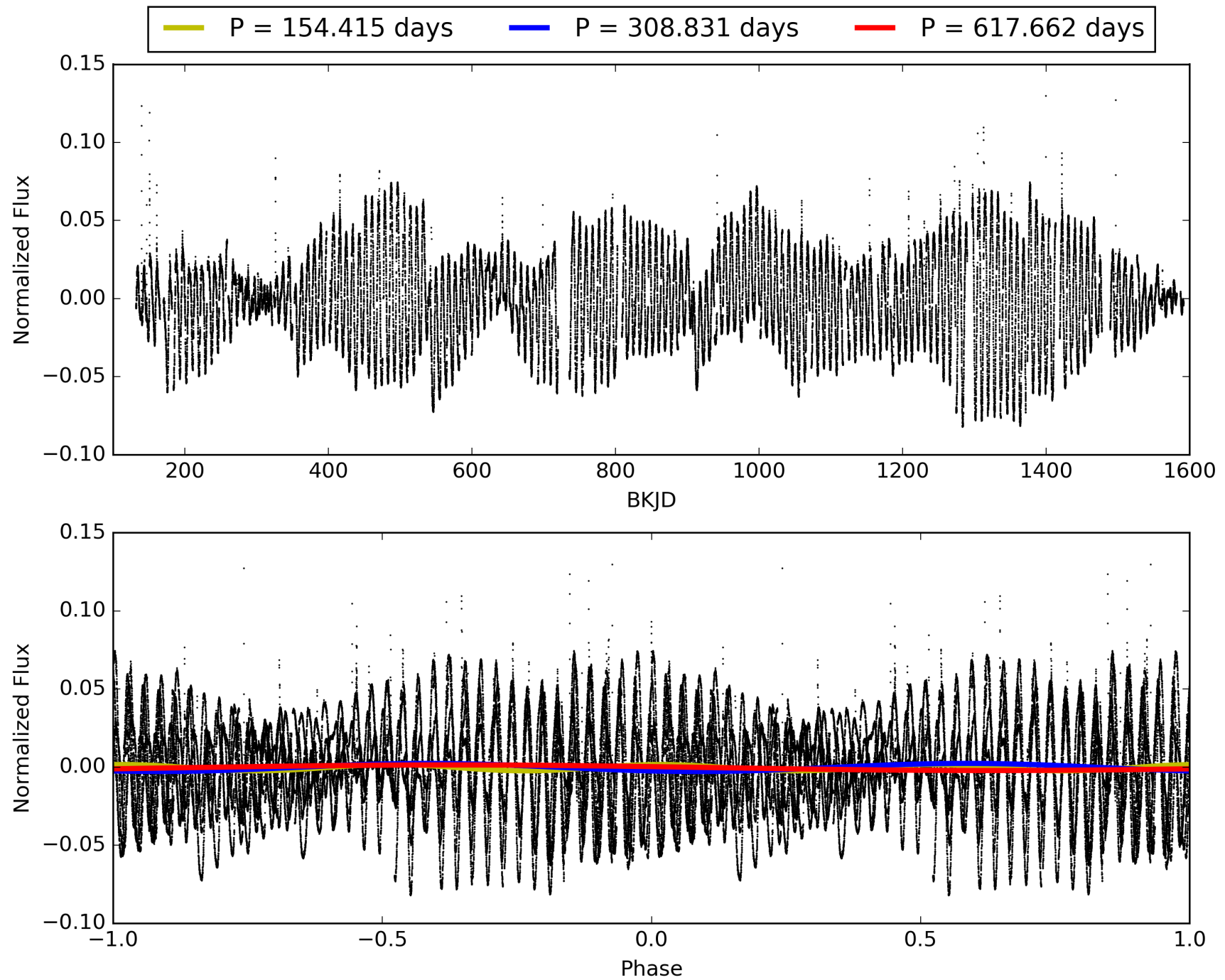
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [230.48σ]
ModelChiSquare2-sig: 24.3%
ModelChiSquareGof-sig: 36.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.8756
Centroid-sig: 88.1%
Centroid-so: 0.620 arcsec [1.01σ]
OotOffset-rm: 0.342 arcsec [0.25σ]
KicOffset-rm: 0.294 arcsec [0.18σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 1.00 [4/4]

TCE 012303977-05, PDC Light Curves

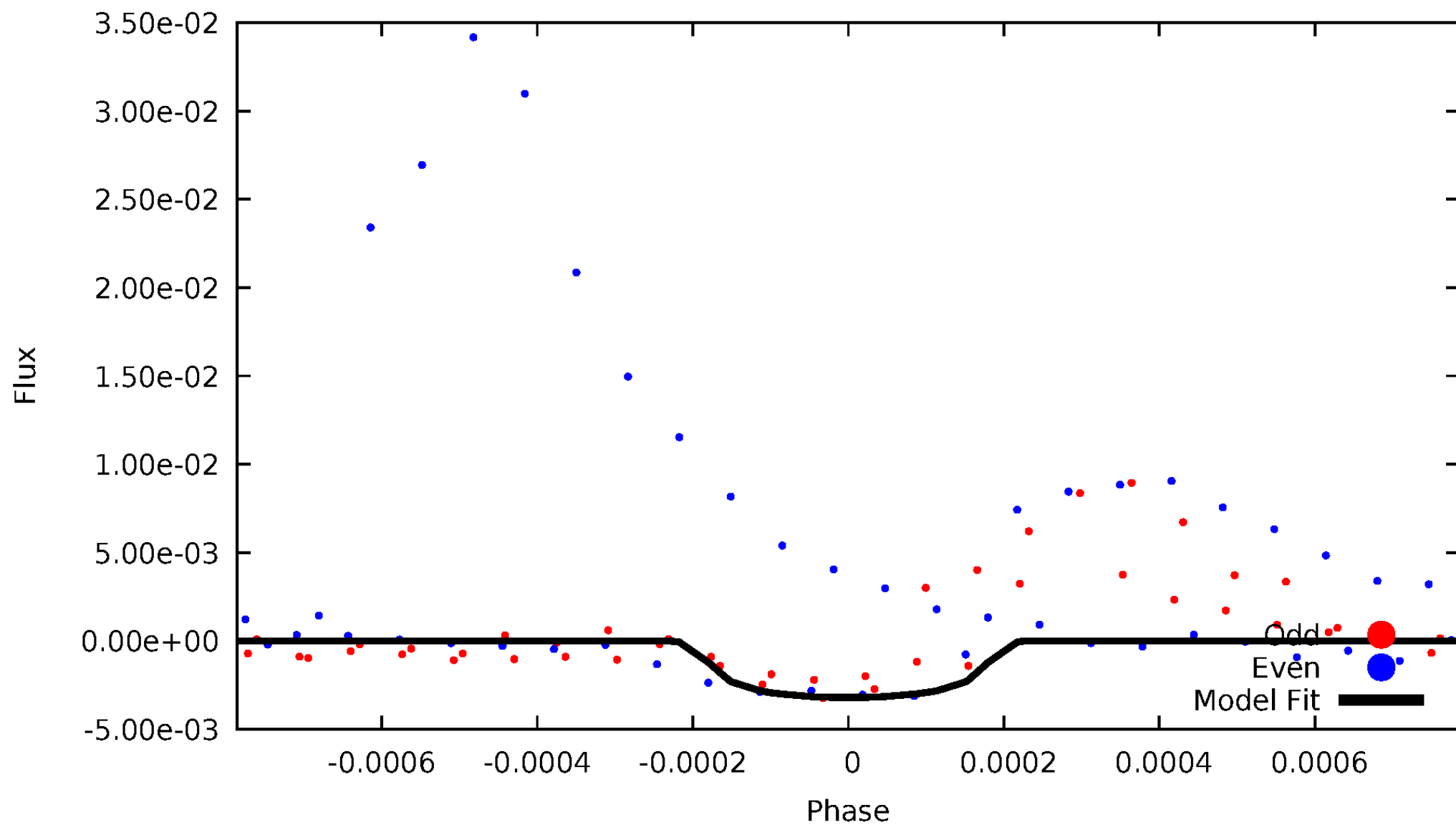


TCE 012303977-05



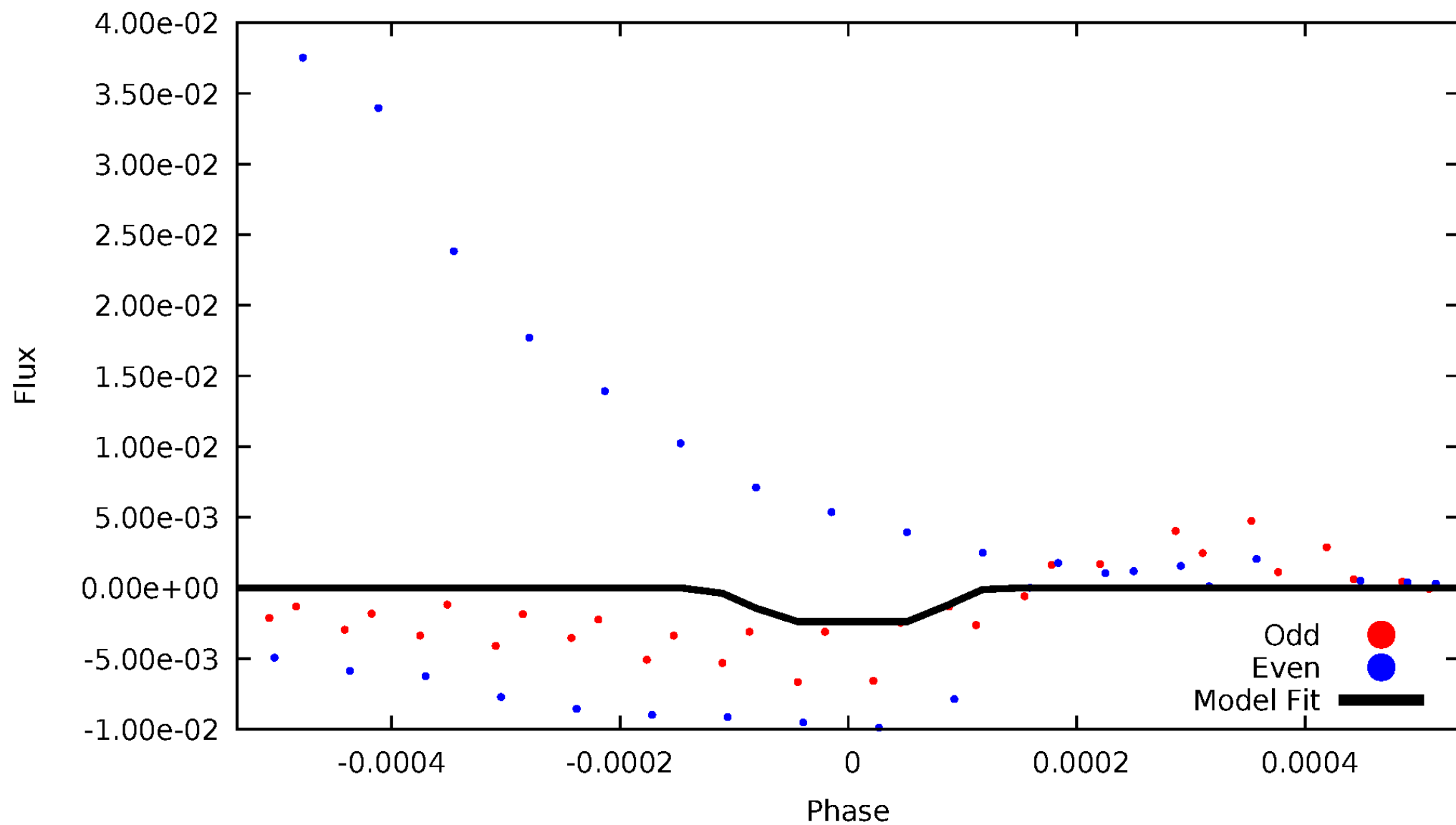
DV Odd/Even

TCE 012303977-05



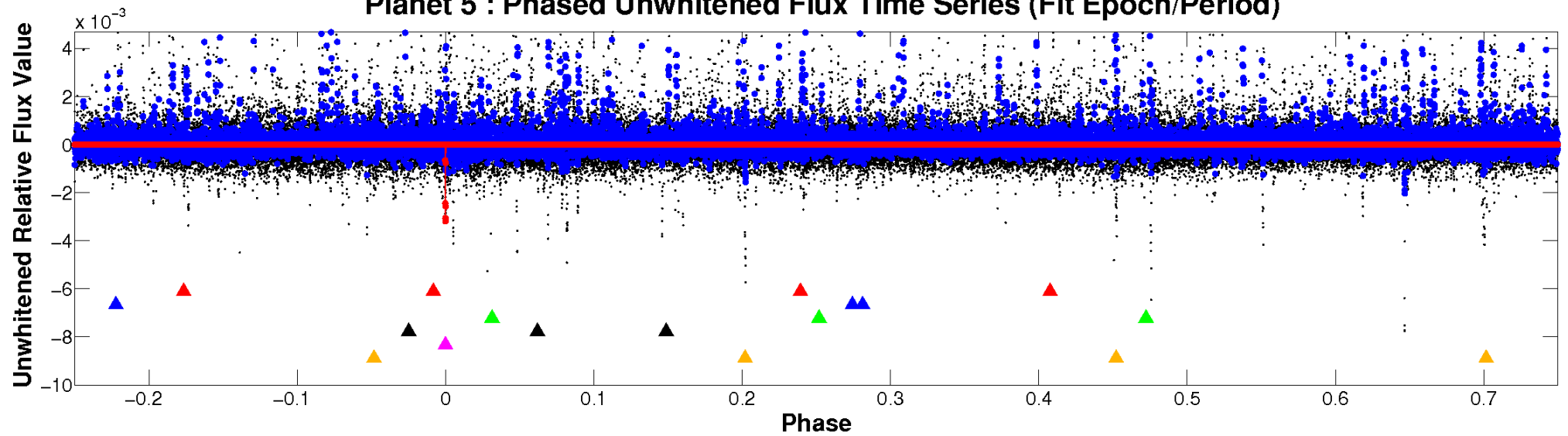
ALT Odd/Even

TCE 012303977-05

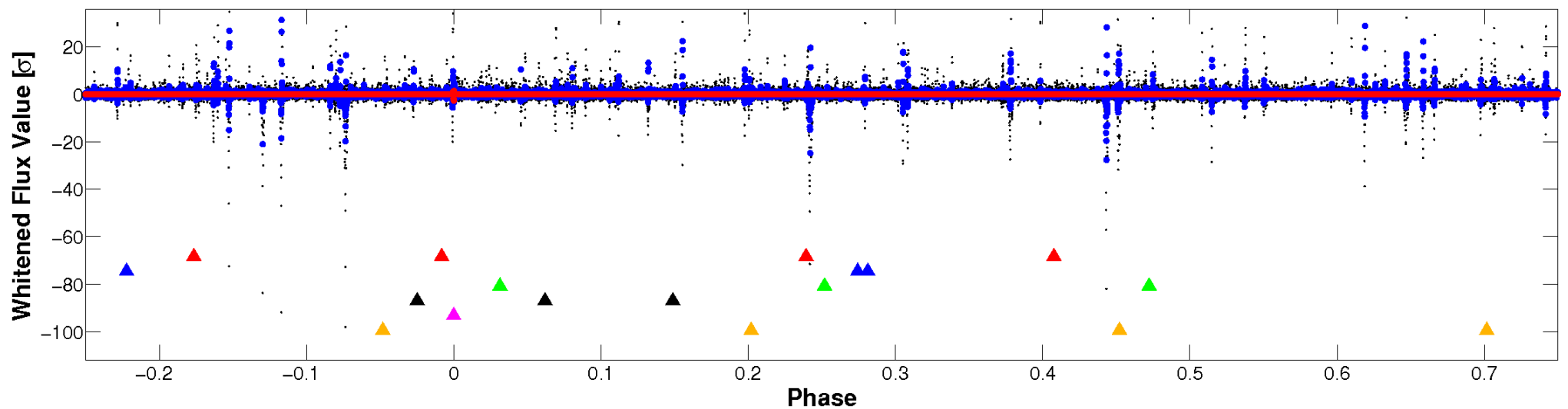


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

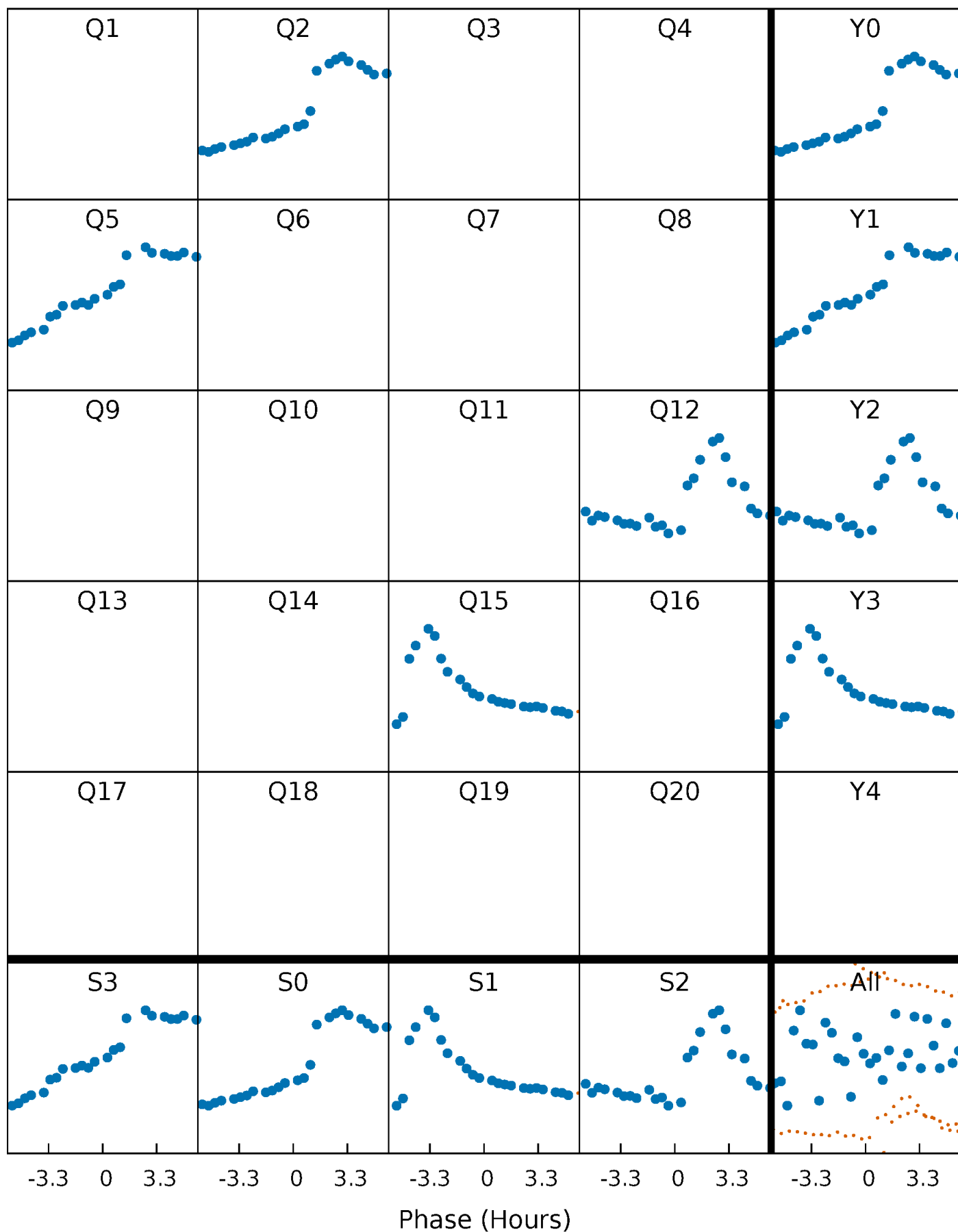


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



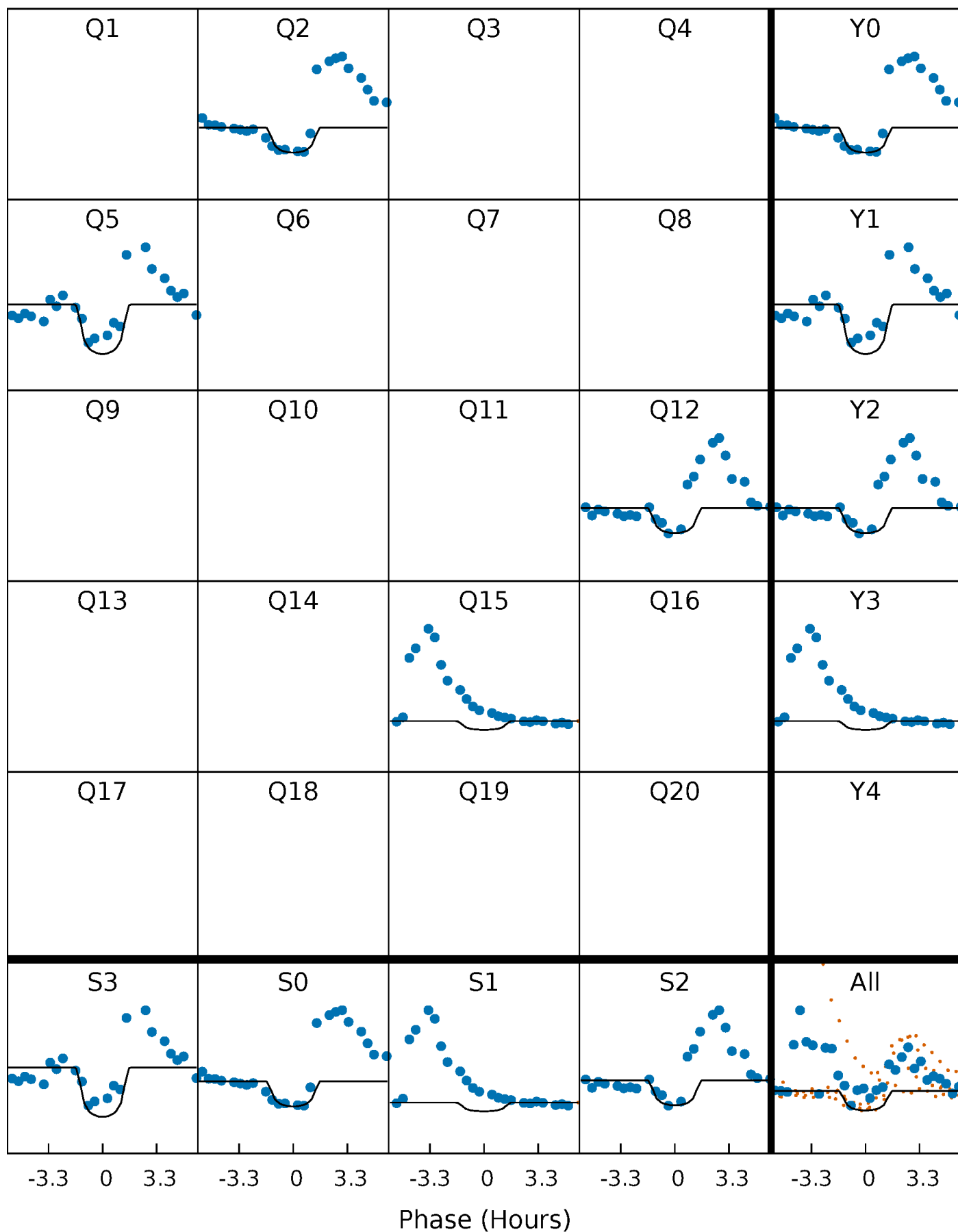
PDC Quarter-Phased Transit Curves

TCE 012303977-05 $P=308.830814$ Days $T_0=186.310556$ (BKJD)



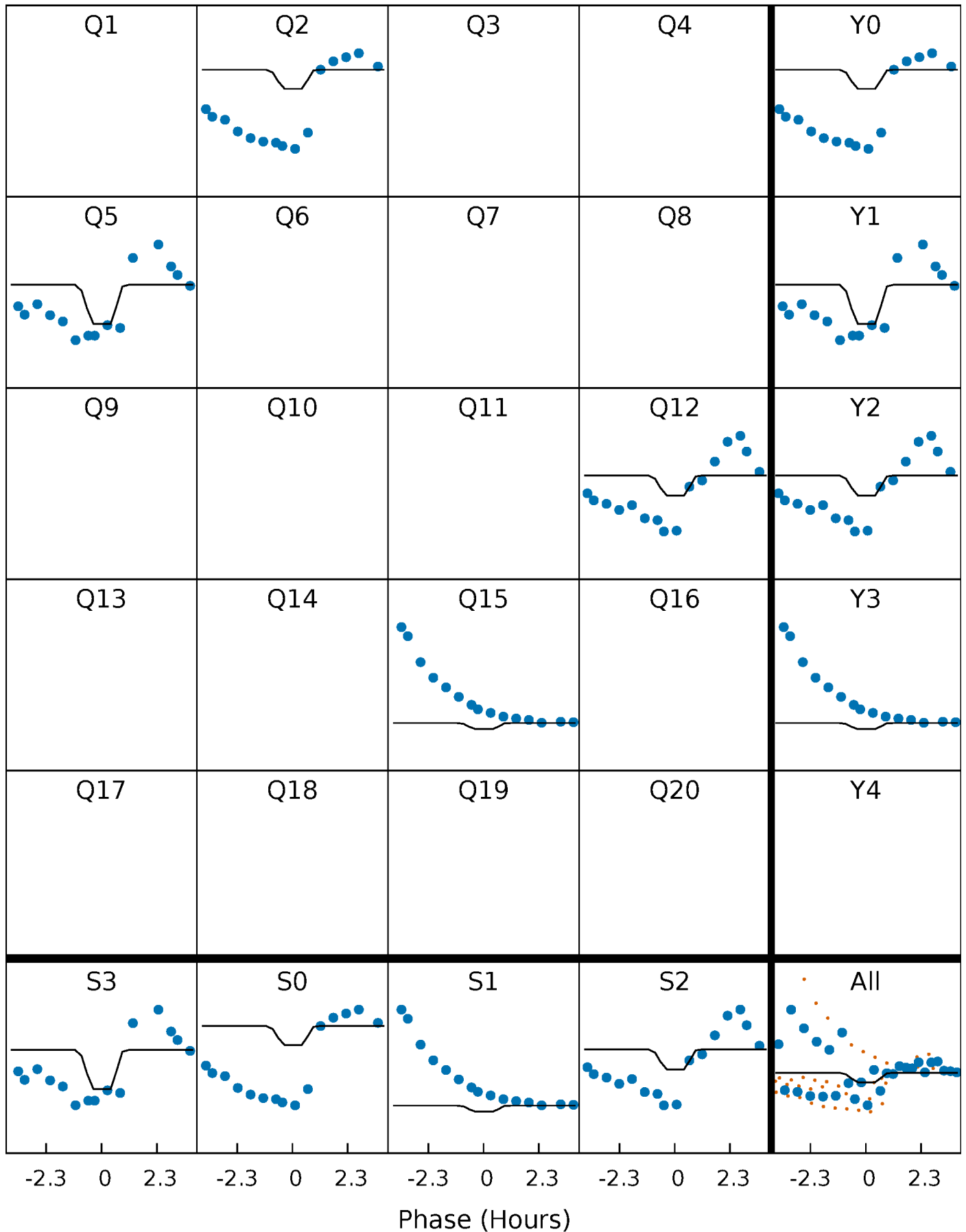
DV Quarter-Phased Transit Curves

TCE 012303977-05 $P=308.830814$ Days $T_0=186.310556$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

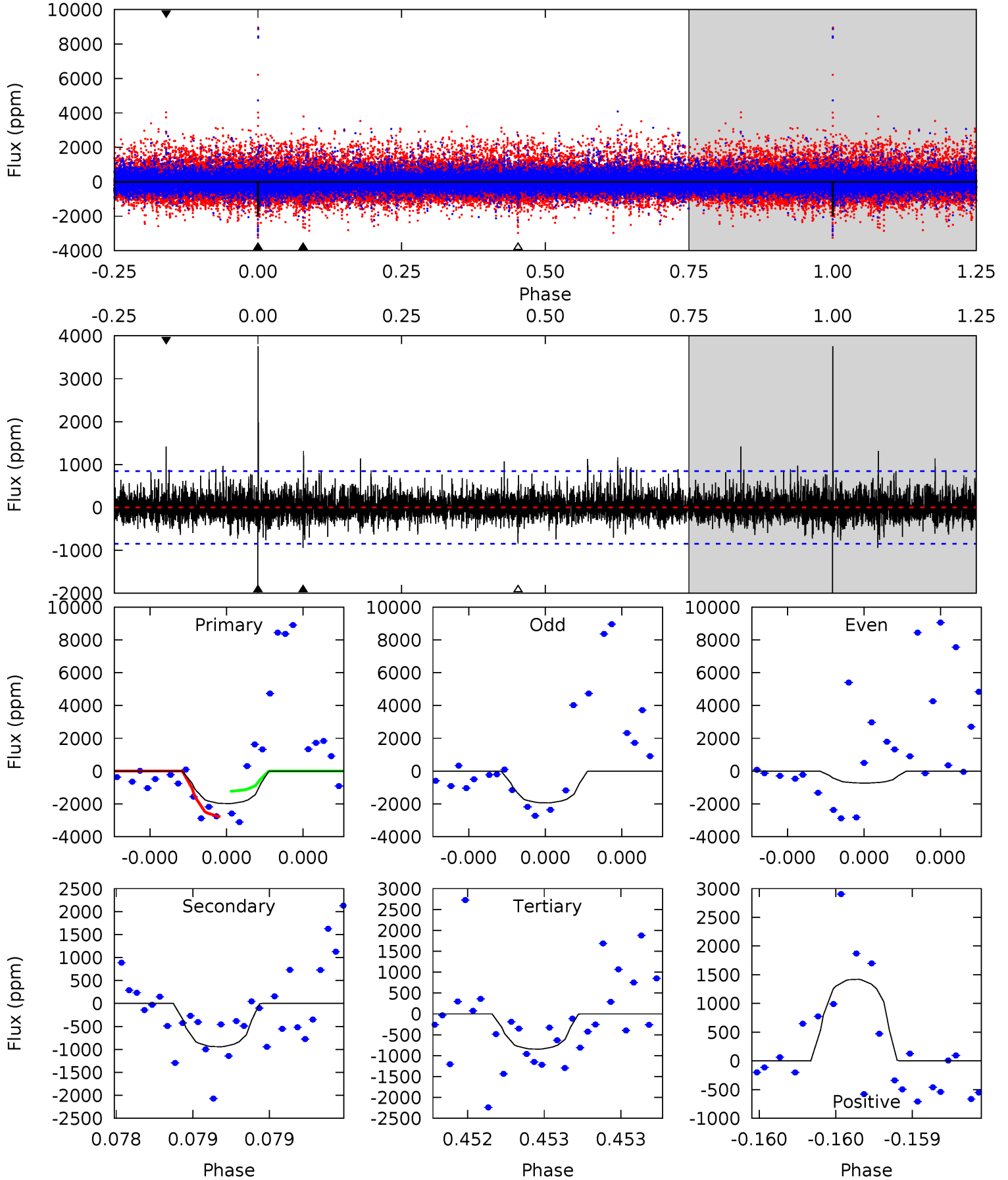
TCE 012303977-05 $P=308.826015$ Days $T_0=186.328484$ (BKJD)



DV Model-Shift Uniqueness Test

012303977-05, P = 308.830814 Days, E = 186.310556 Days

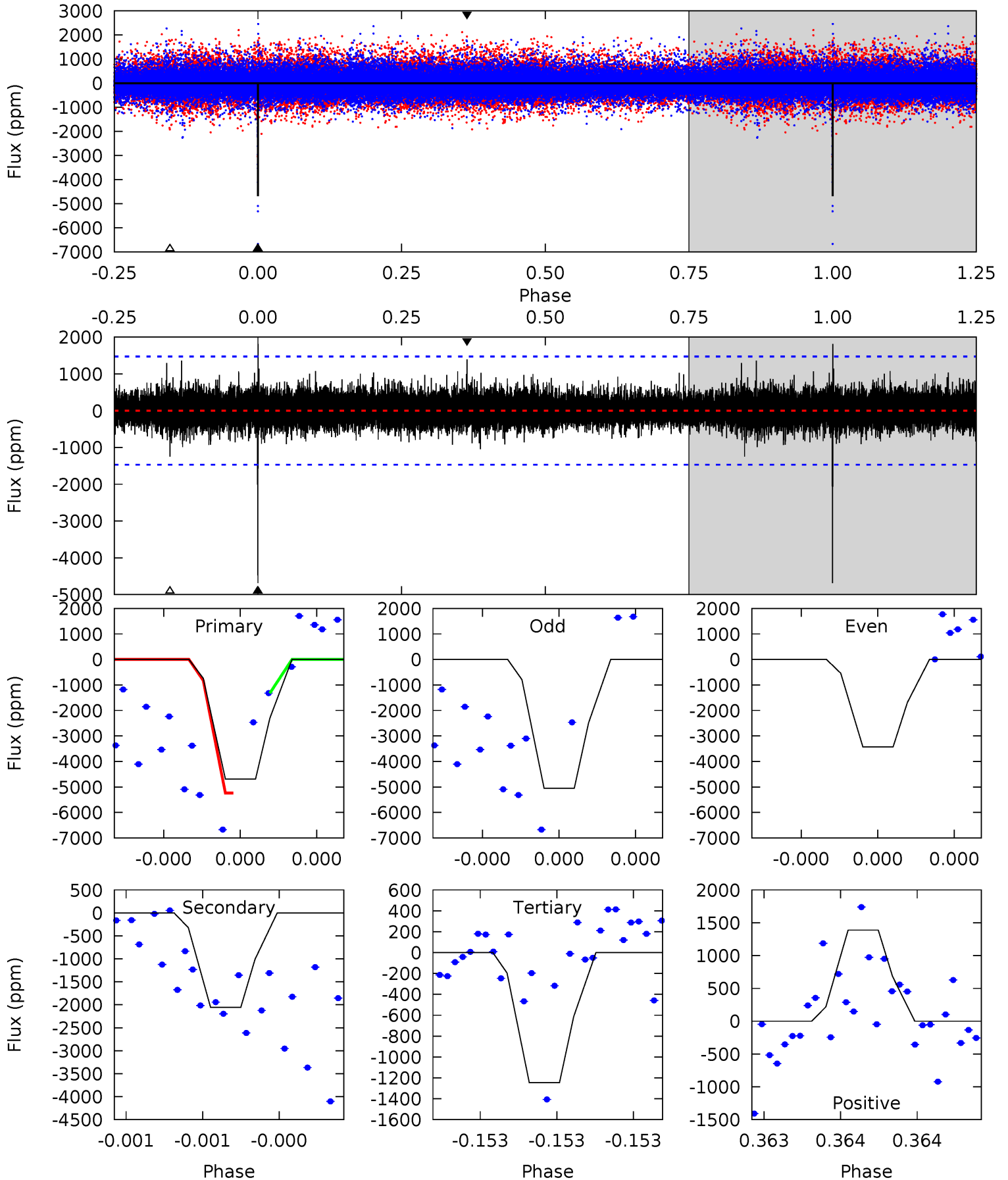
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	6.24	5.59	9.41	5.61	3.54	1.41	7.53	3.71	0.66	-3.16	2.62	0.19	0.65	0



Alt Model-Shift Uniqueness Test

012303977-05, P = 308.826015 Days, E = 186.328484 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.2	7.98	4.84	5.39	5.71	3.69	0.90	13.3	12.8	3.14	2.60	4.41	0.77	0.28	0



Stellar Parameters For KIC 012303977

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4653^{+139}_{-139}	$4.713^{+0.048}_{-0.028}$	$-1.200^{+0.300}_{-0.300}$	$0.535^{+0.033}_{-0.037}$	$0.538^{+0.040}_{-0.023}$	$4.955^{+0.982}_{-0.563}$
	+3%/-3%	+1%/-1%	+25%/-25%	+6%/-7%	+7%/-4%	+20%/-11%
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 012303977-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-943 ± 151	$4.17^{+3.43}_{-2.64}$	246^{+8}_{-9}	3442^{+1414}_{-550}	15793^{+90693}_{-11061}
Alt.	-2057 ± 258	$4.27^{+3.46}_{-2.84}$	245^{+9}_{-9}	3919^{+2254}_{-693}	$34533^{+264714}_{-24165}$

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 $A_{obs} \gg 1.0$

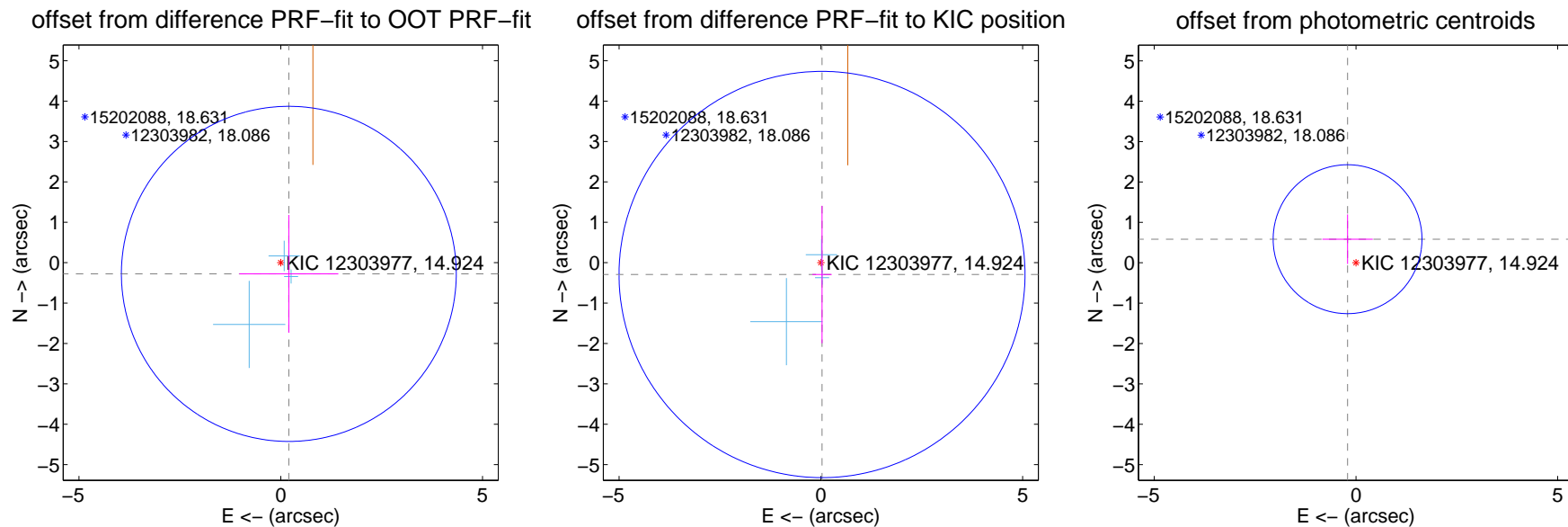
DV Centroid Data

Supplemental centroid analysis for 012303977-05. Kepler magnitude: 14.92. Transit SNR 11.42

There are 3 quarters with good PRF difference image offsets

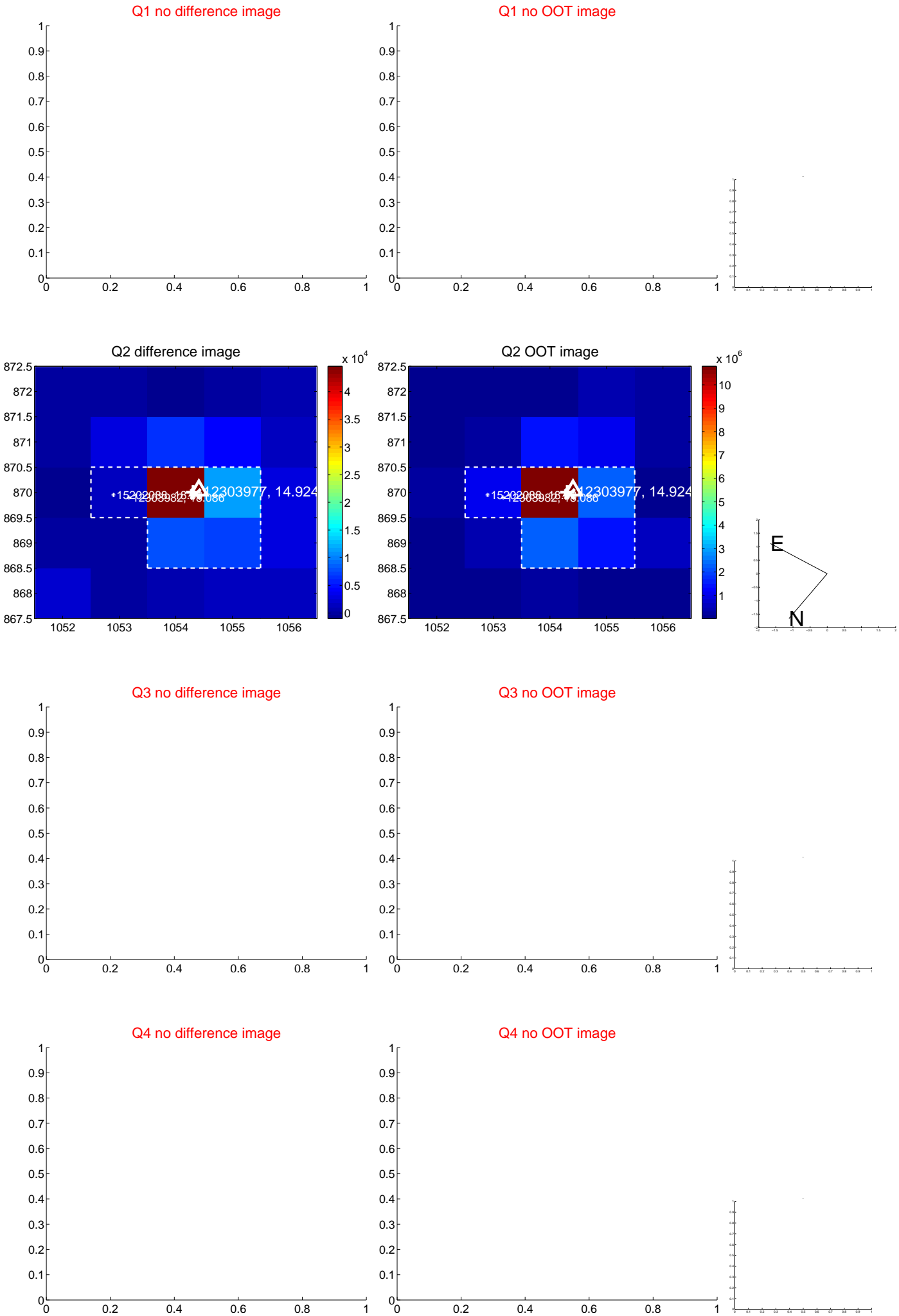
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.342 ± 1.383	0.25	-0.200 ± 1.227	-0.277 ± 1.458
PRF-fit source offset from KIC position	0.294 ± 1.677	0.18	-0.029 ± 0.240	-0.293 ± 1.702
photometric centroid source offset	0.62 ± 0.61	1.01	0.21 ± 0.63	0.58 ± 0.61

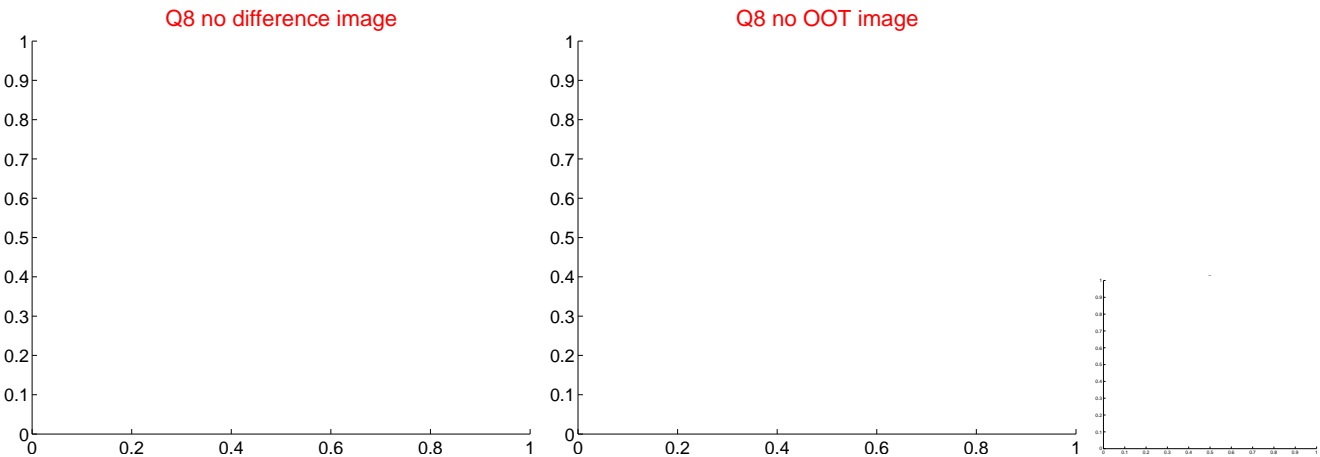
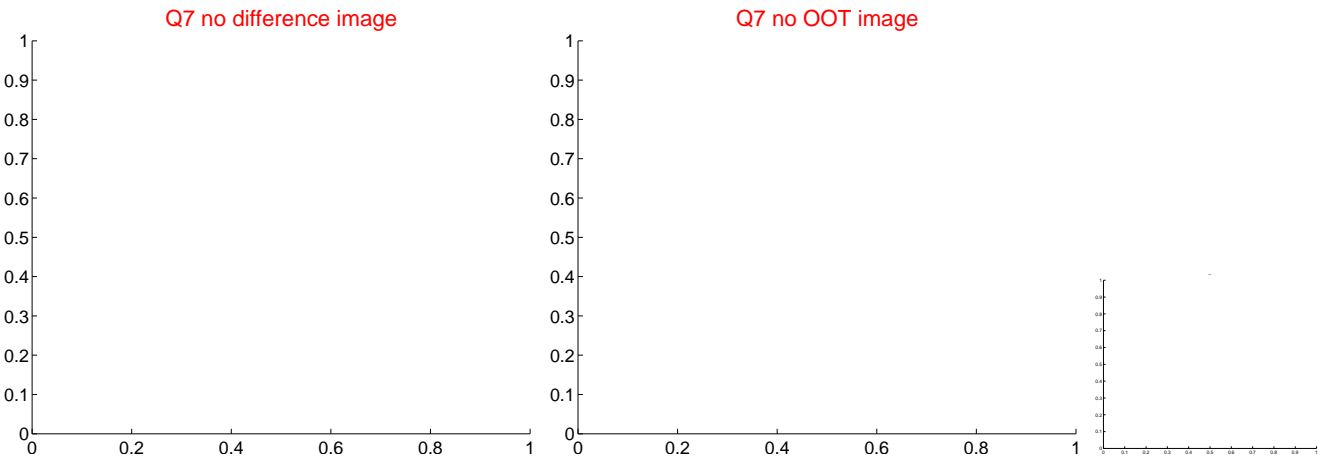
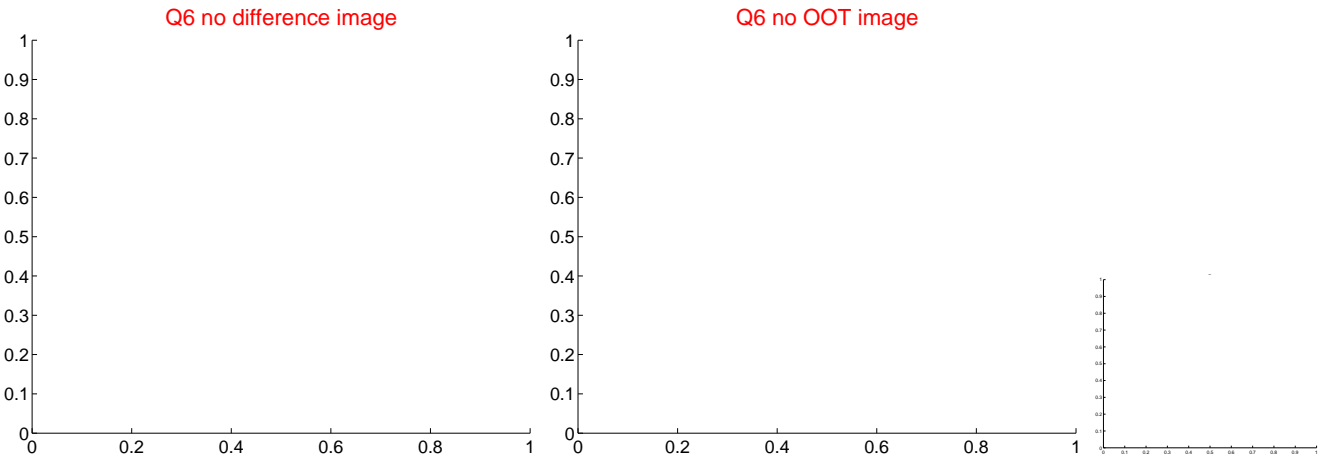
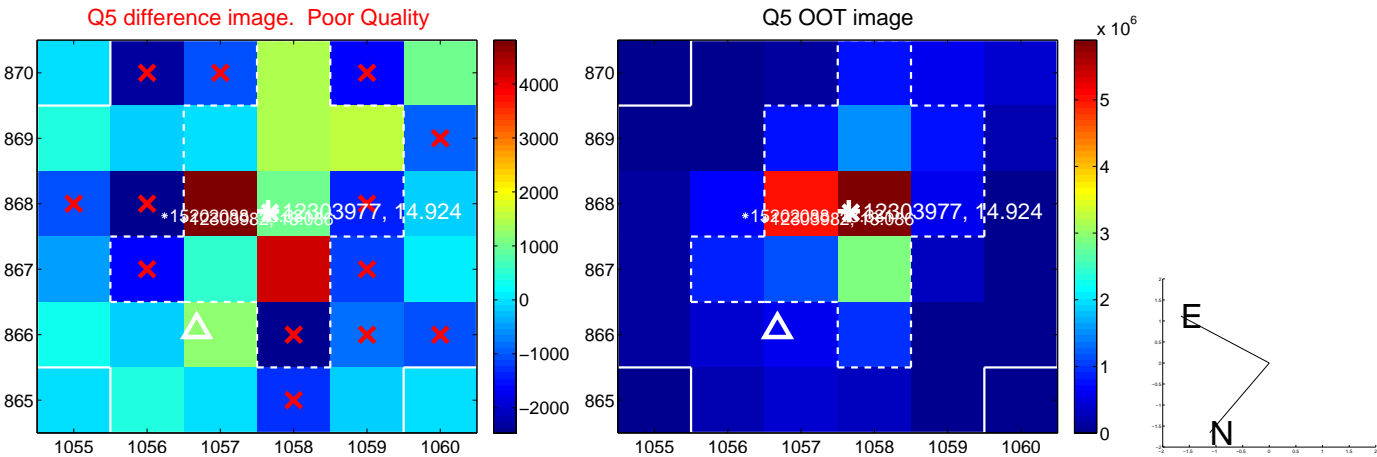


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

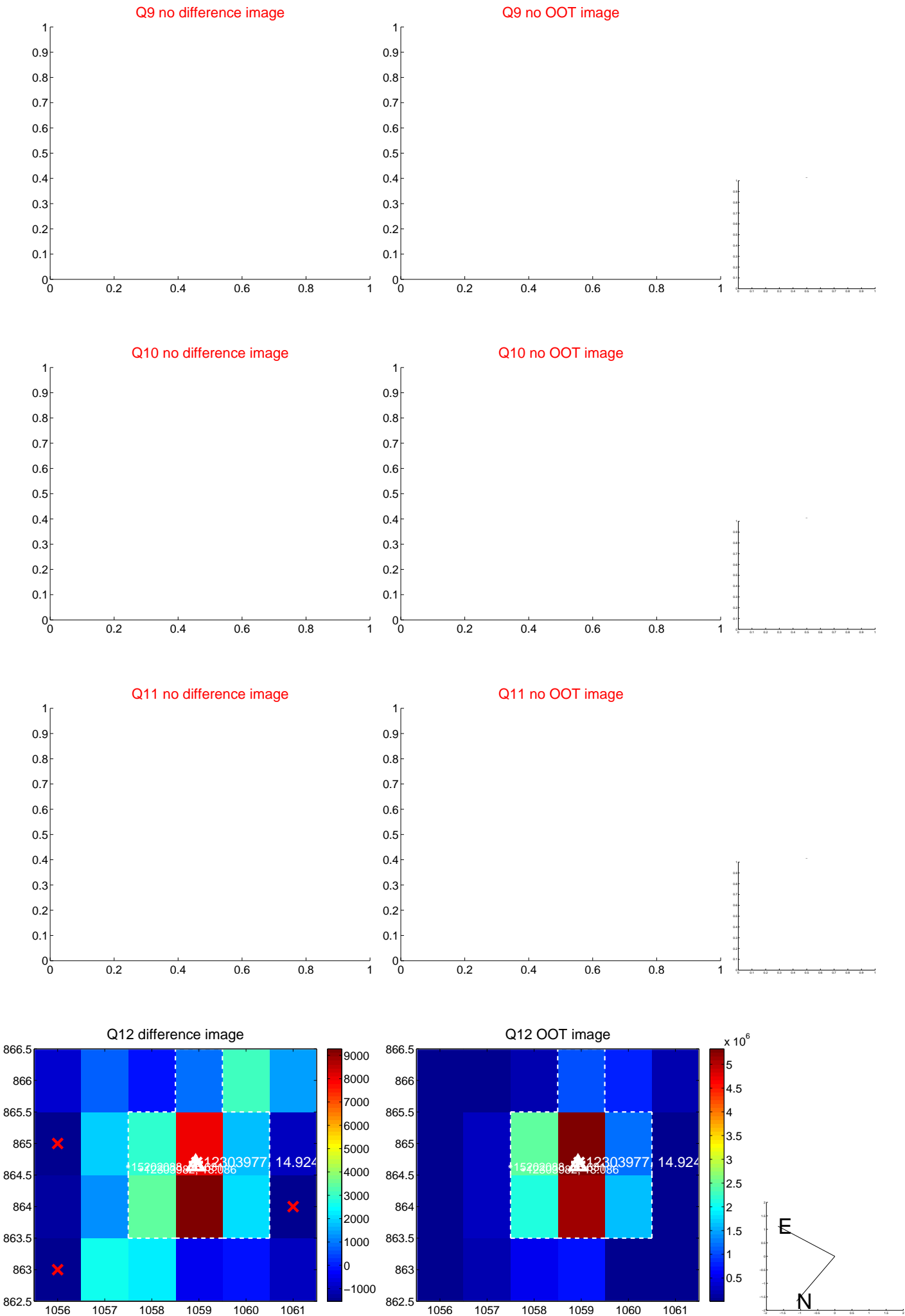
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



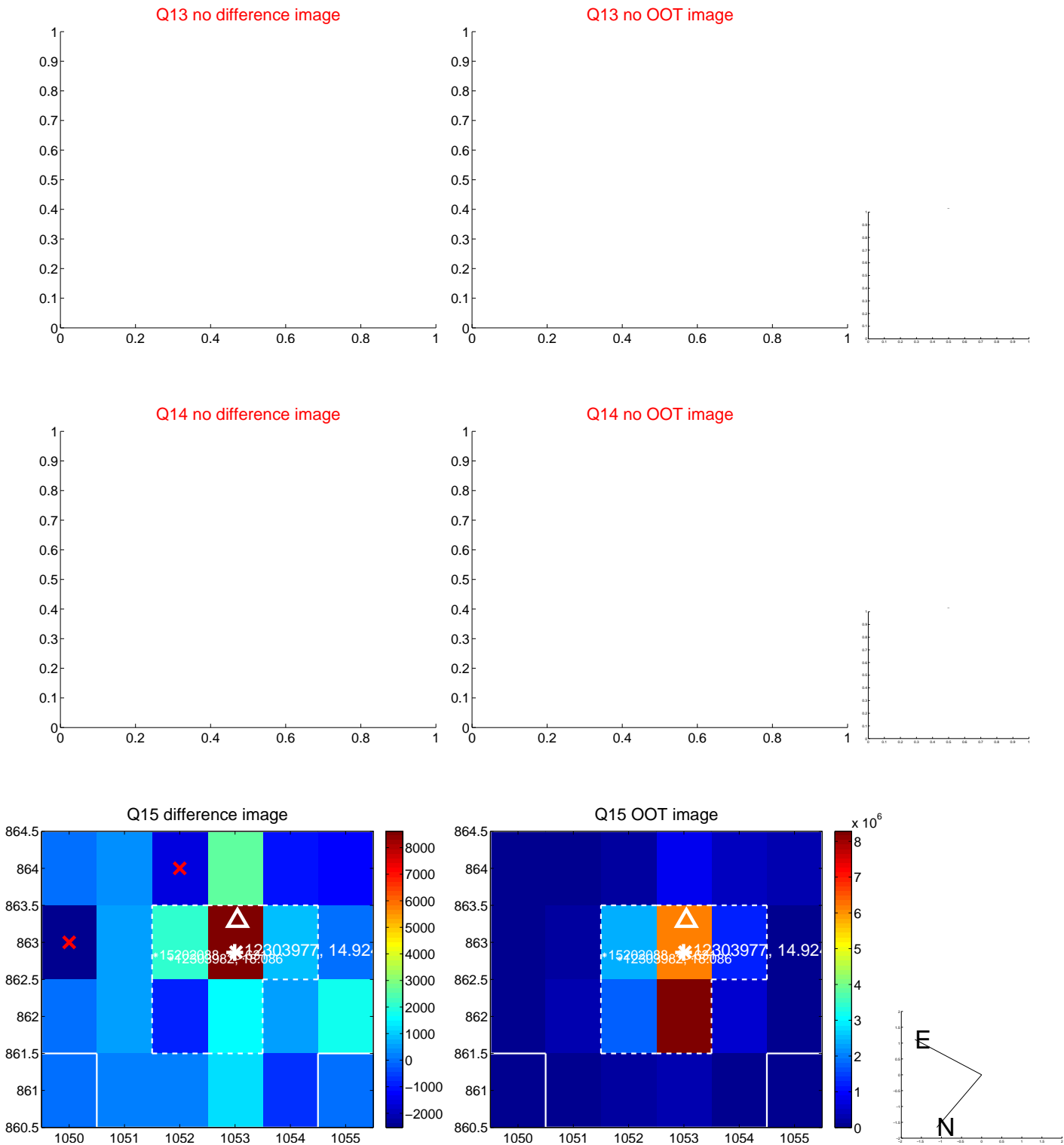
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



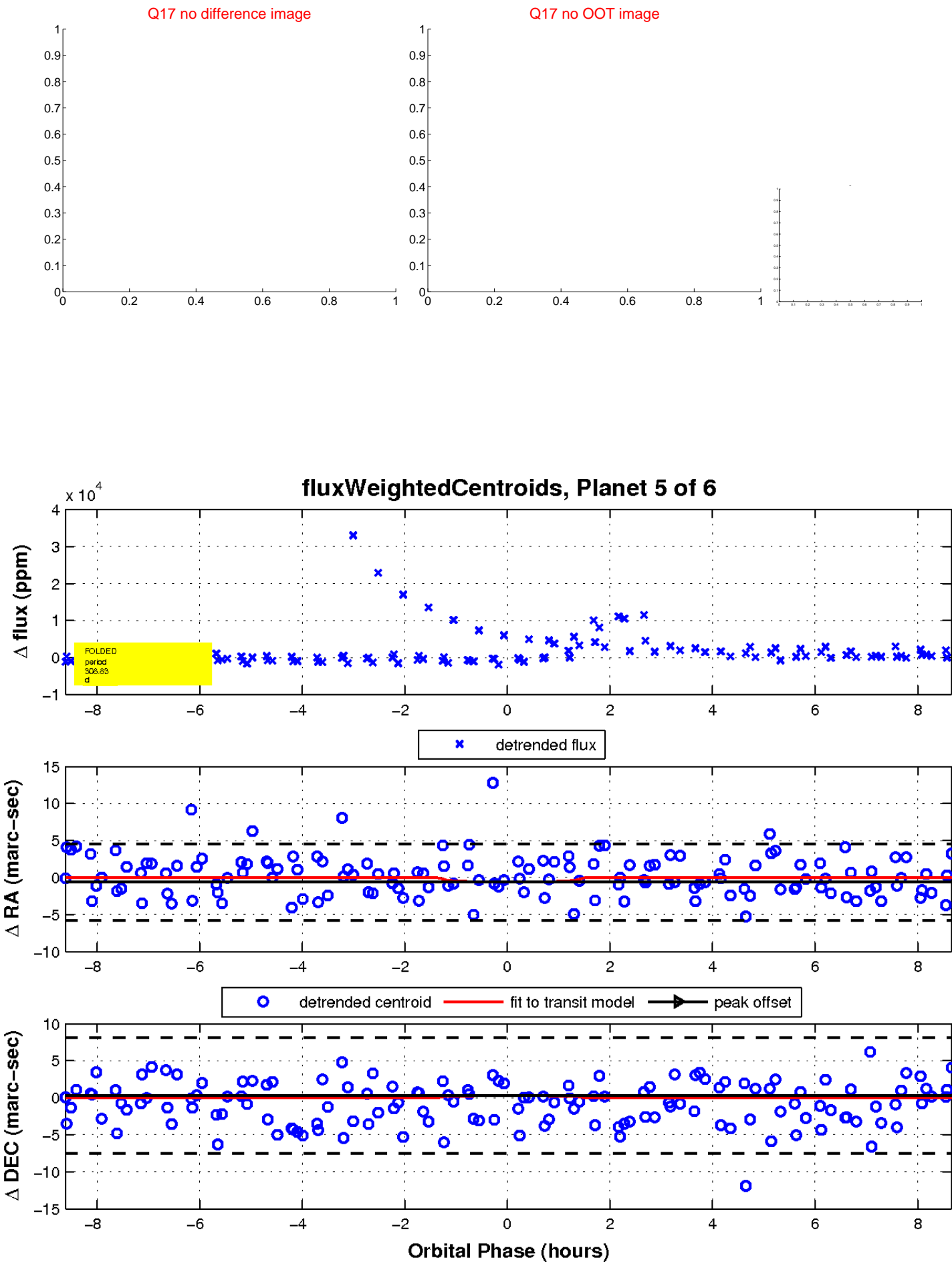
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

