

KIC 010809677

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})
010809677-01	OBS	7374.01	3.521062	134.216660	4805.6	3.489	290.1	267.0	6.62	5149	86.86	8319.22
010809677-02	OBS	No	232.162916	182.362105	682.2	3.824	7.3	8.1	6.62	5149	18.06	31.23

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010809677-01	OBS	FP	0.00	0	1	0	0	DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED
010809677-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT

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

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

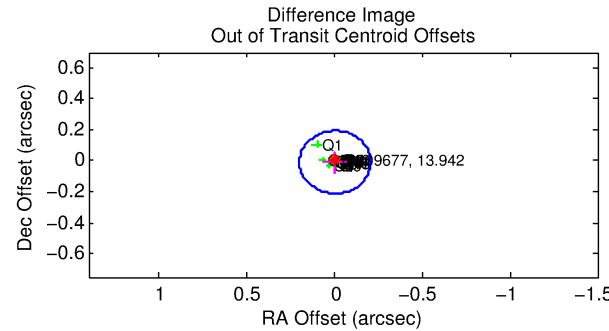
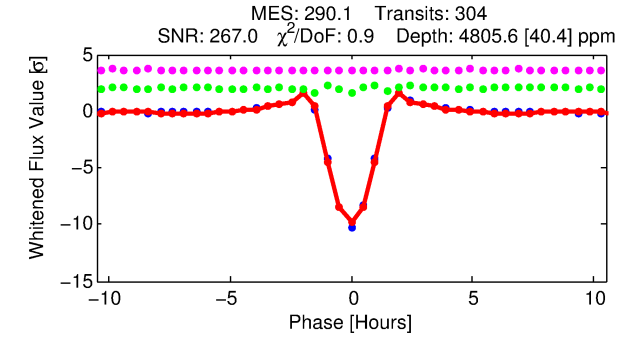
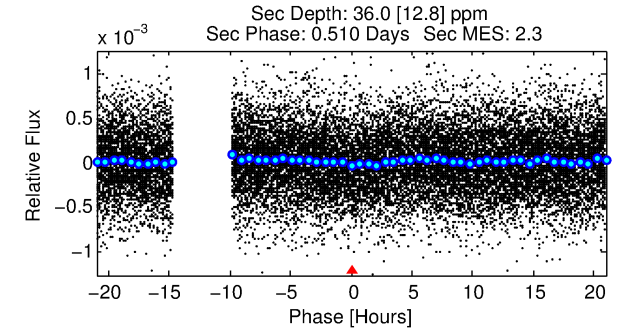
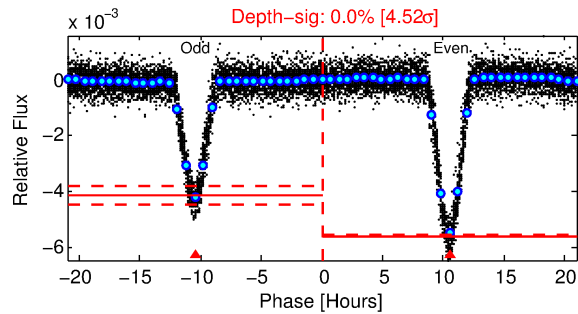
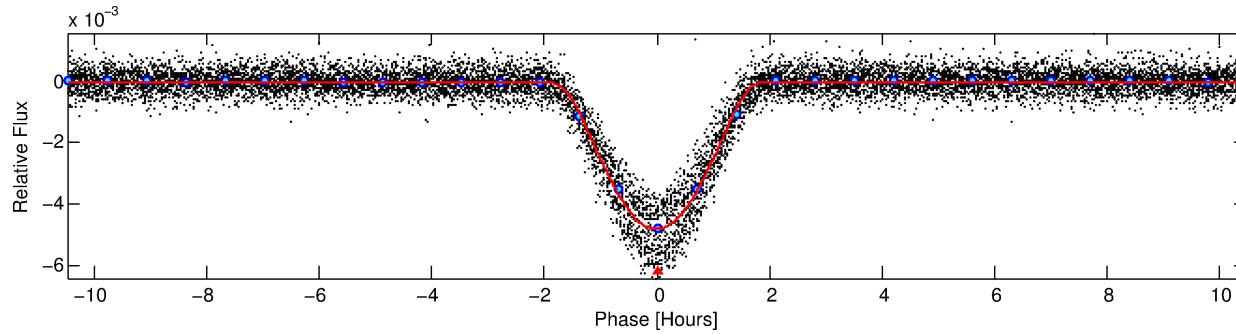
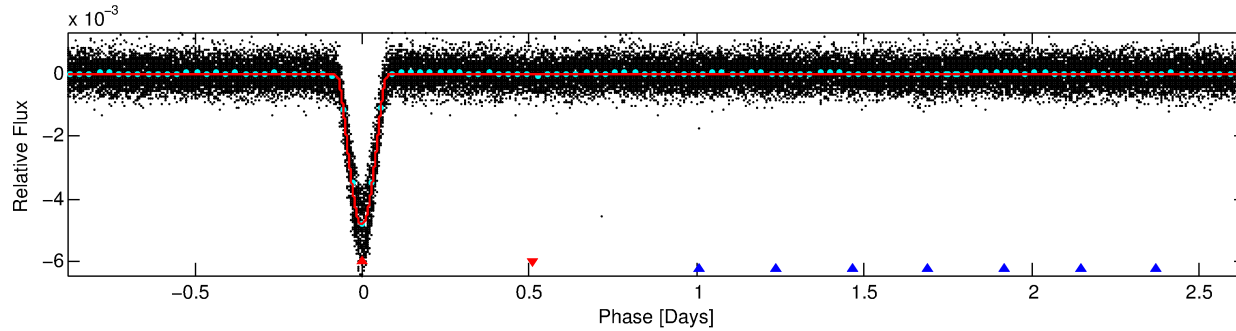
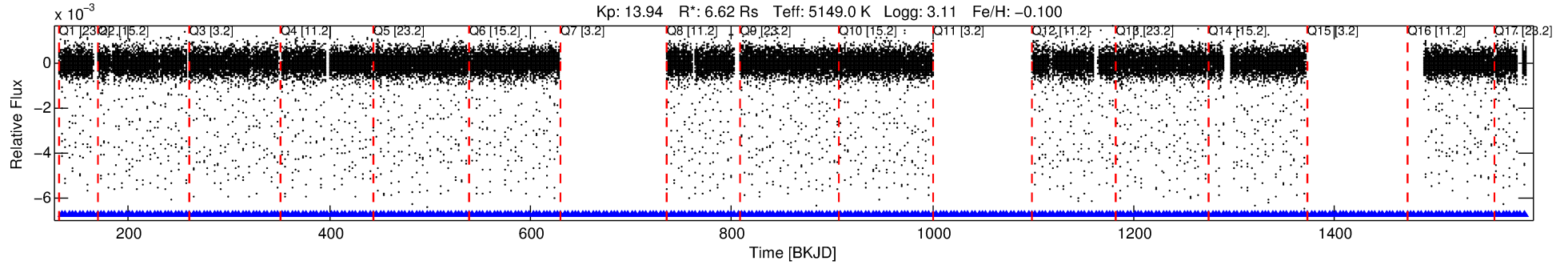
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010809677-01

No Significant Match Found

DV One-Page Summary

KIC: 10809677 Candidate: 1 of 2 Period: 3.521 d
KOI: K07374.01 Corr: 0.990



DV Fit Results:

Period = 3.52106 [0.00000] d
Epoch = 134.2167 [0.0002] BKJD
Rp/R* = 0.1203 [0.0122]
a/R* = 4.04 [0.06]
b = 1.00 [0.02]
Seff = 8319.22 [6550.97]
Teq = 2435 [479] K
Rp = 86.86 [49.02] Re
a = 0.0576 [0.0289] AU
Ag = 0.01 [0.01] [-130.20σ]
Teffp = 1150 [125] K [-2.59σ]

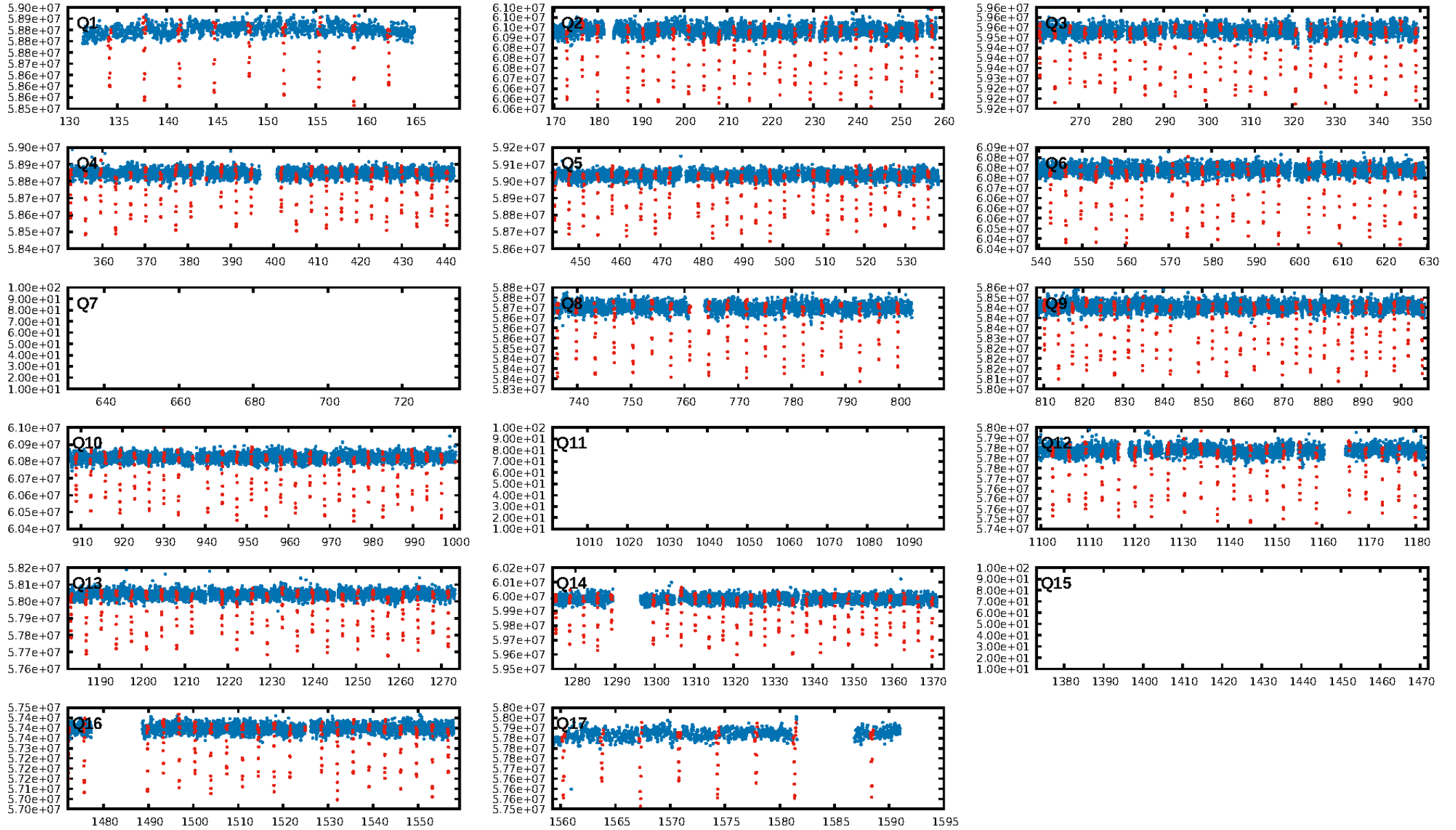
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1060.08σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [287/287]
GhostDiagnostic-chr: 2.434
Centroid-sig: N/A
Centroid-so: 0.018 arcsec [0.99σ]
OotOffset-rm: 0.009 arcsec [0.14σ]
KicOffset-rm: 0.028 arcsec [0.42σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

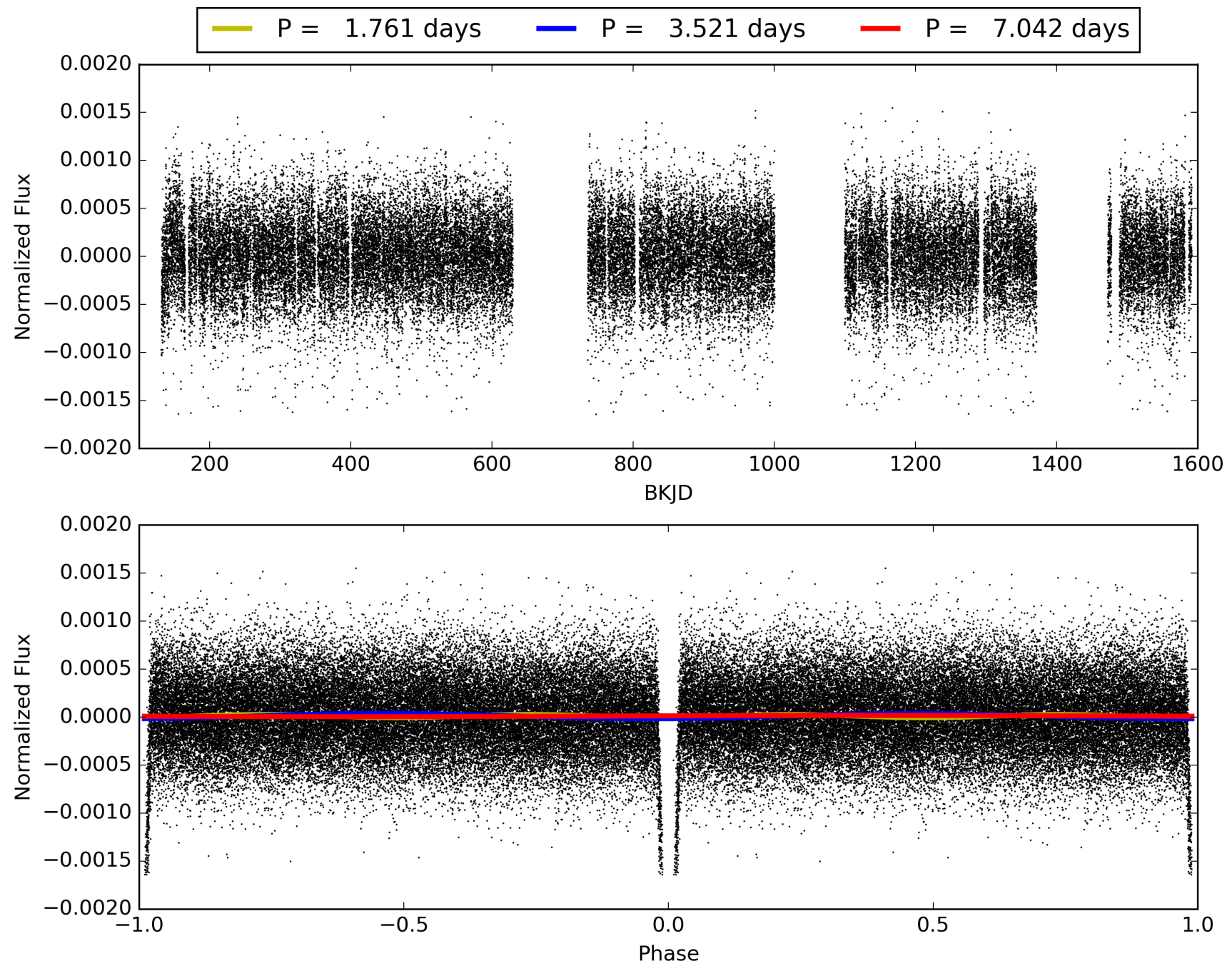
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 04:59:42 Z

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

TCE 010809677-01, PDC Light Curves

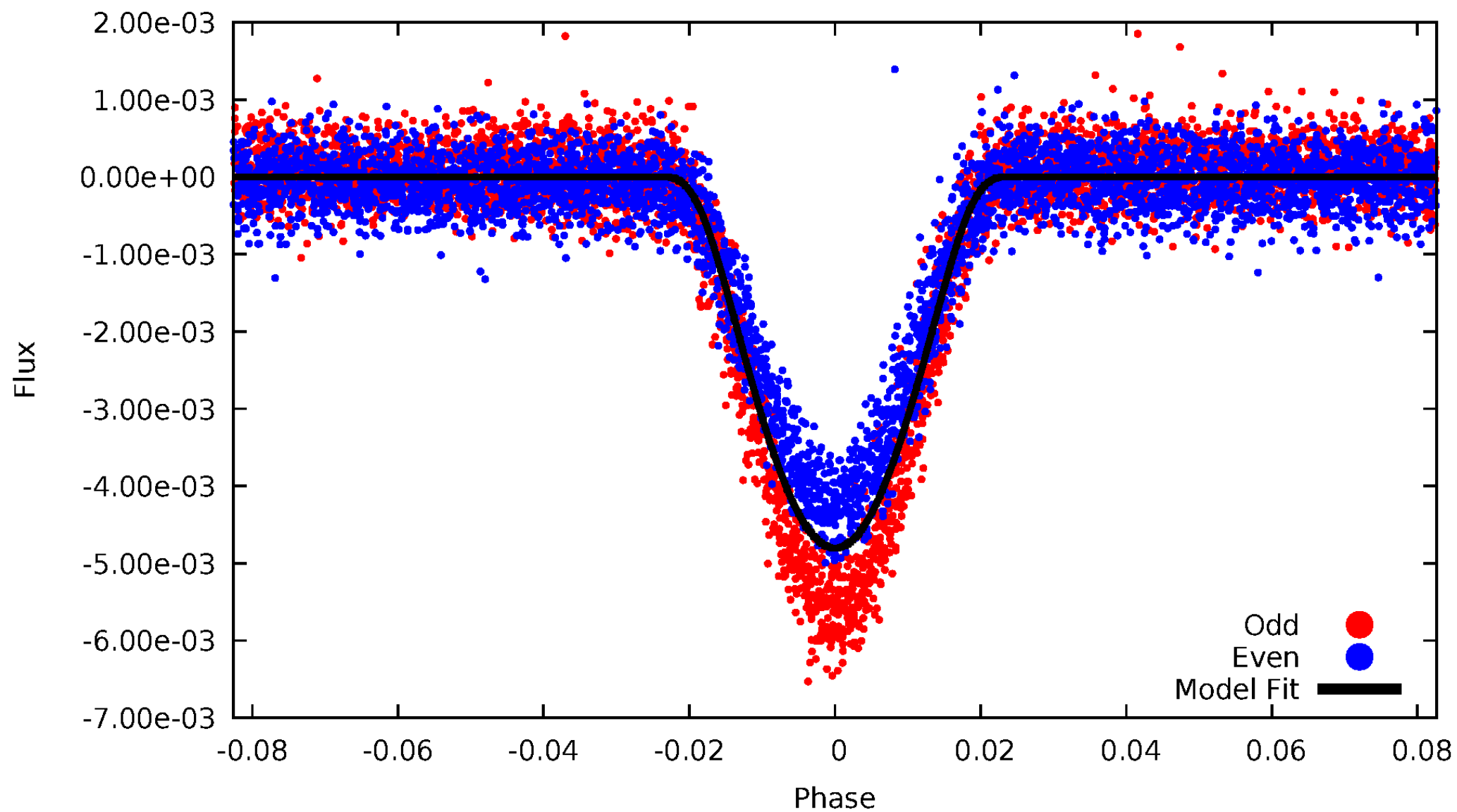


TCE 010809677-01



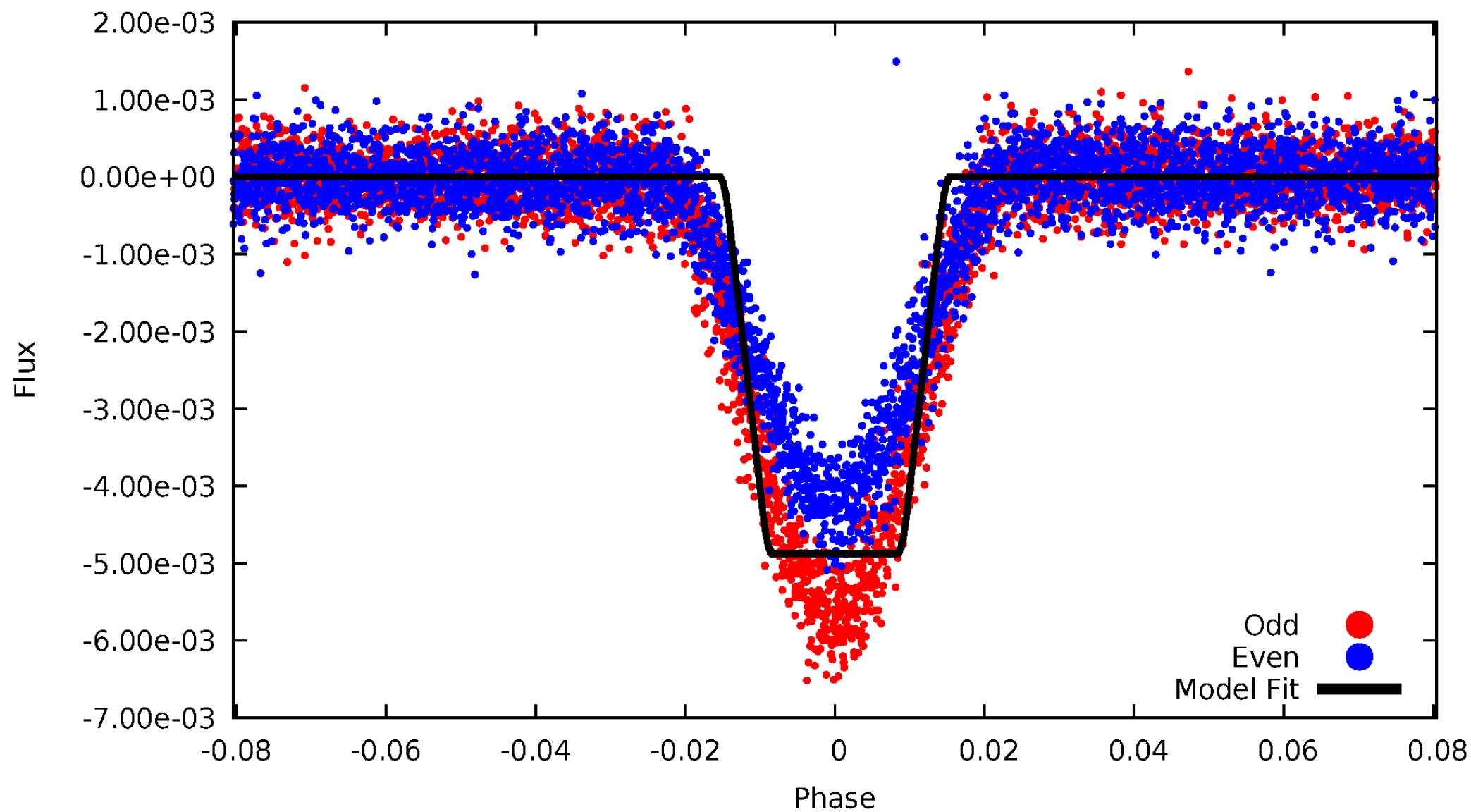
DV Odd/Even

TCE 010809677-01



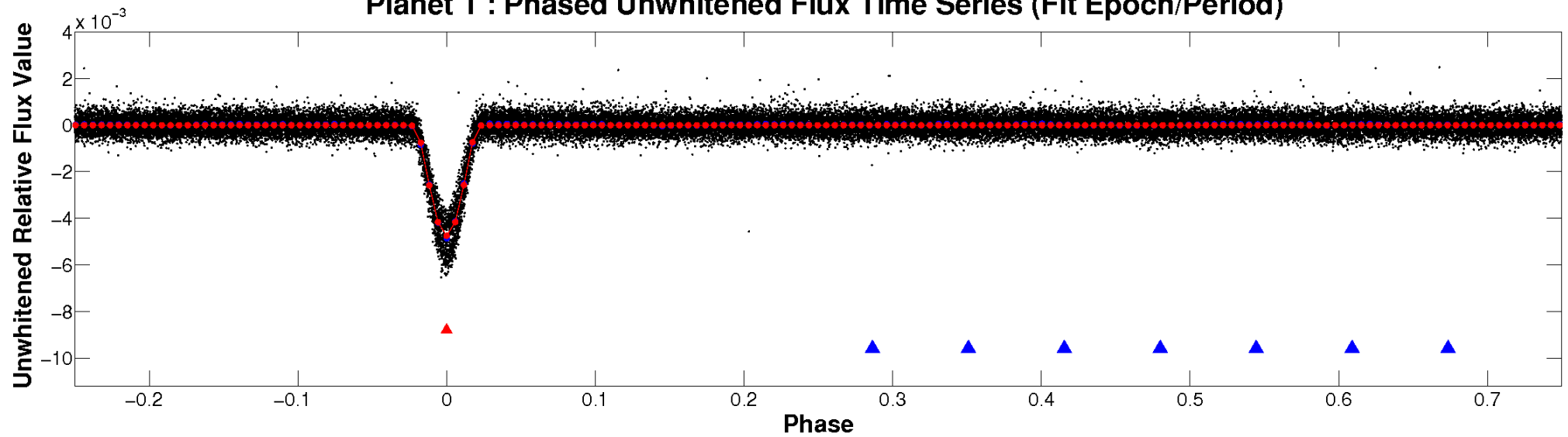
ALT Odd/Even

TCE 010809677-01

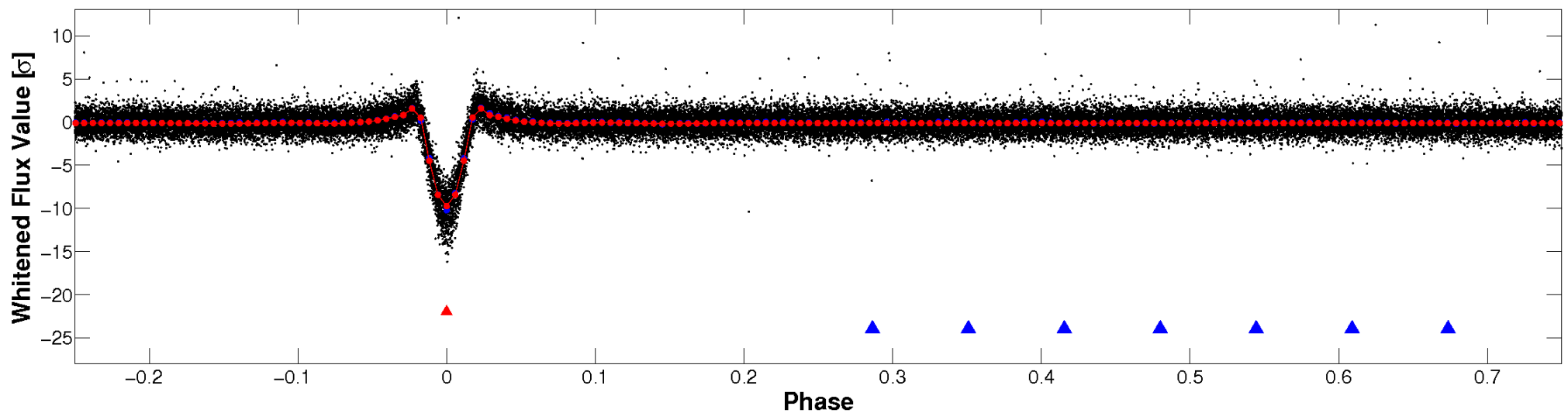


Non-Whitened Vs. Whitened Light Curve

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

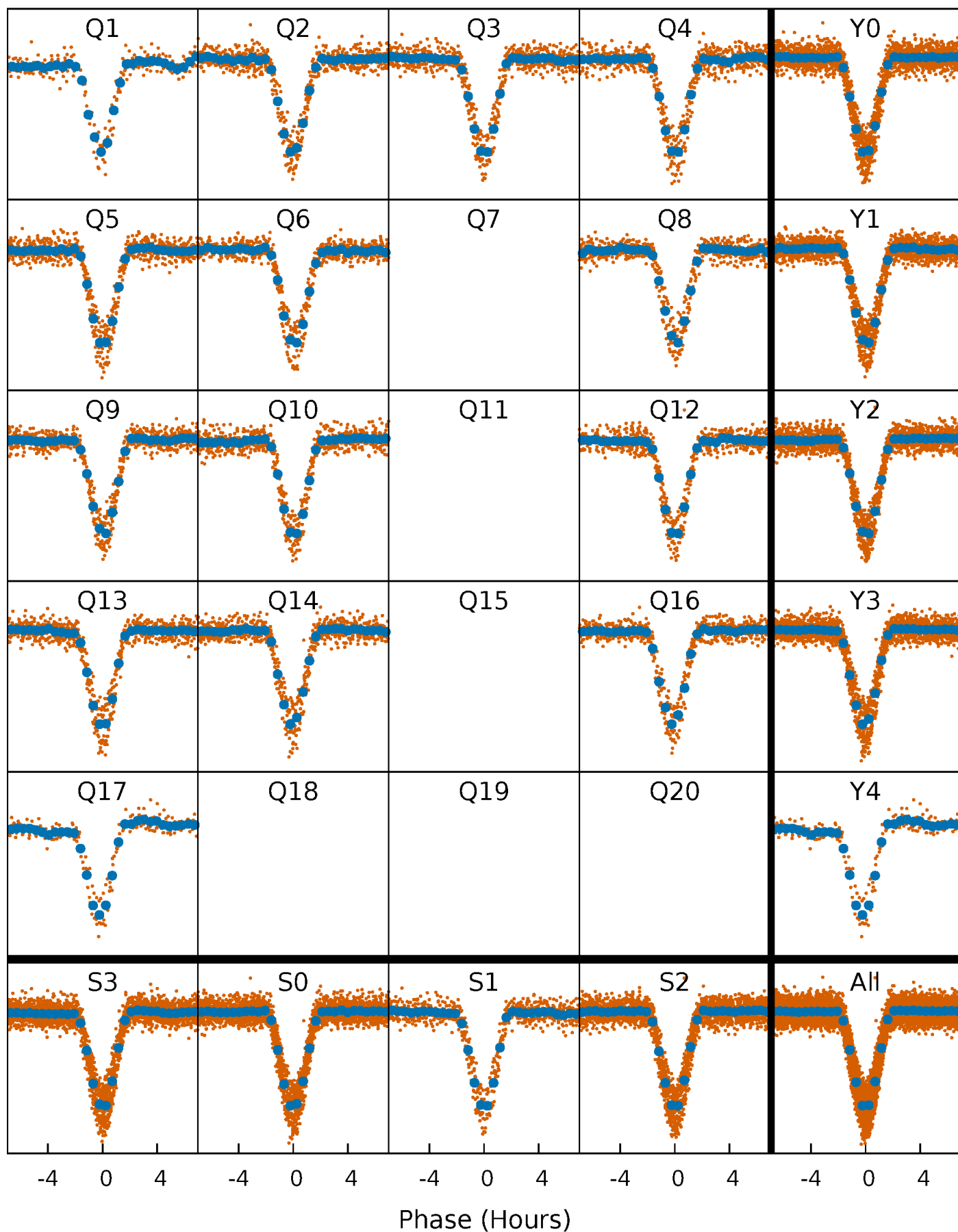


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



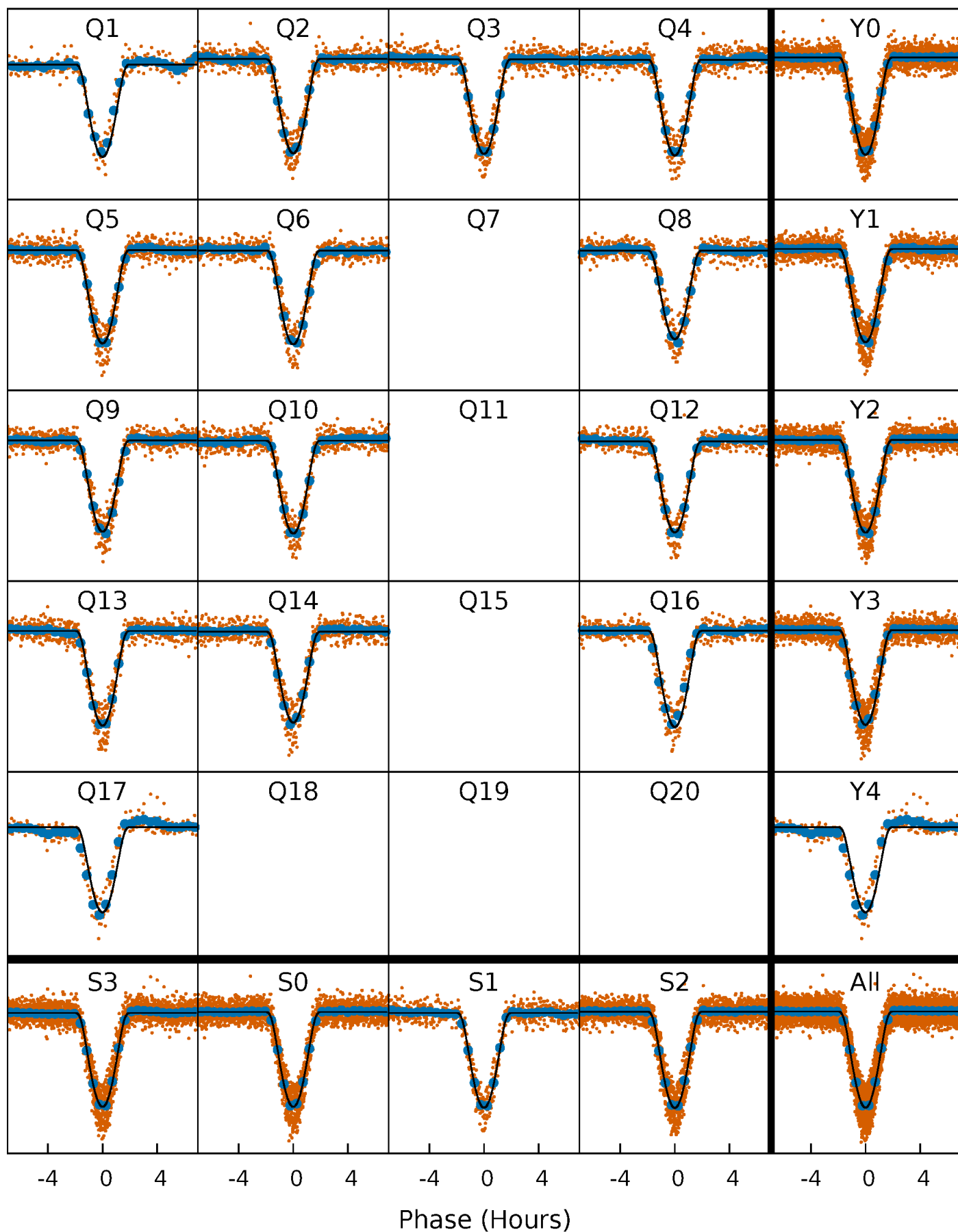
PDC Quarter-Phased Transit Curves

TCE 010809677-01 P= 3.521062 Days $T_0=134.216660$ (BKJD)



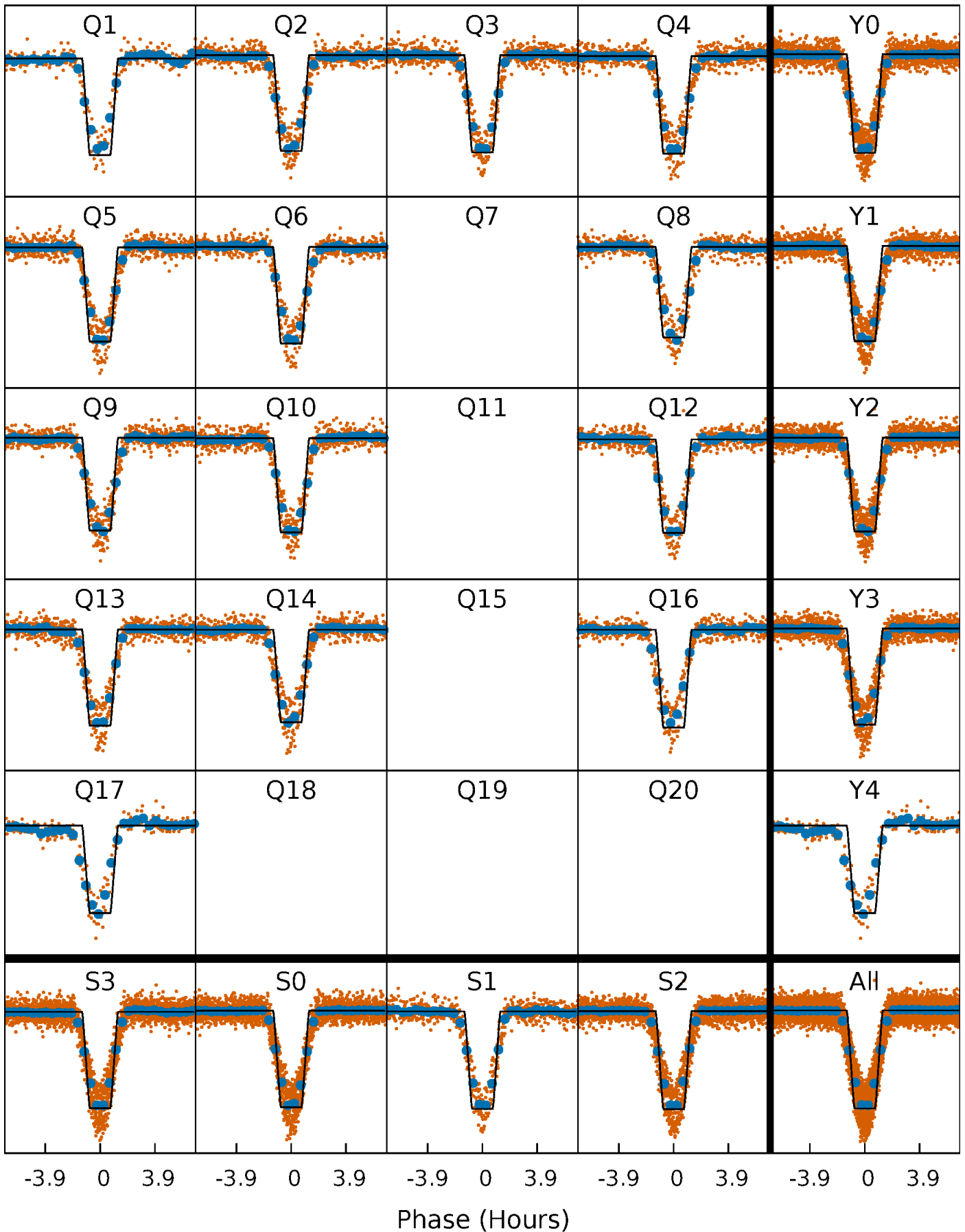
DV Quarter-Phased Transit Curves

TCE 010809677-01 P= 3.521062 Days $T_0=134.216660$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

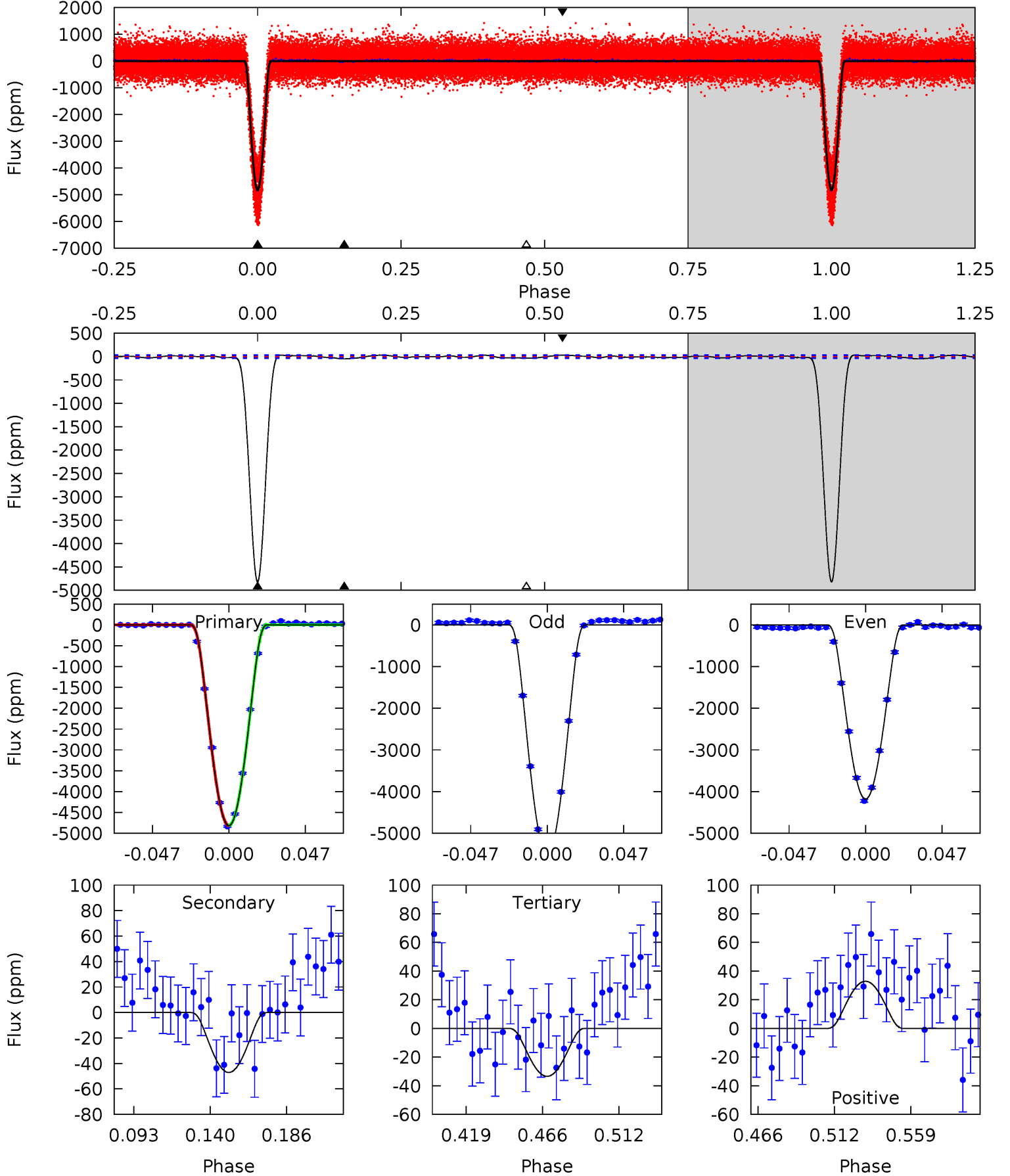
TCE 010809677-01 P= 3.521066 Days $T_0=134.215608$ (BKJD)



DV Model-Shift Uniqueness Test

010809677-01, P = 3.521062 Days, E = 130.695598 Days

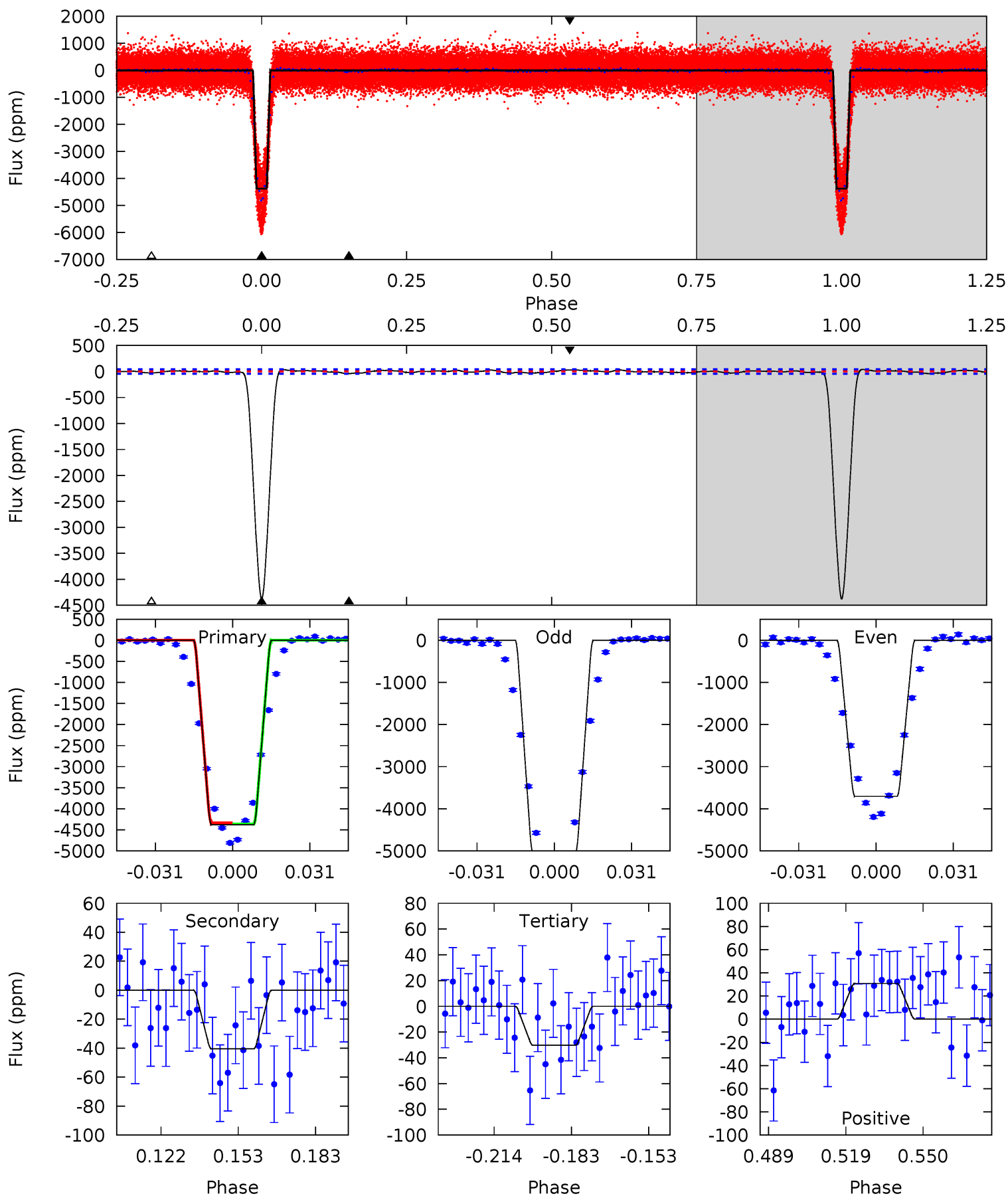
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
708.8	6.93	4.92	4.84	4.72	1.99	2.48	703.9	704.0	2.00	2.09	98.6	1.01	0.01	0.08



Alt Model-Shift Uniqueness Test

010809677-01, P = 3.521066 Days, E = 130.694542 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
501.6	4.64	3.47	3.53	4.81	2.16	1.78	498.1	498.1	1.16	1.11	79.9	0.99	0.01	1.52



Stellar Parameters For KIC 010809677

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5149^{+123}_{-194}	$3.109^{+0.442}_{-0.238}$	$-0.100^{+0.200}_{-0.350}$	$6.619^{+1.979}_{-3.675}$	$2.055^{+0.684}_{-0.941}$	$0.010^{+0.053}_{-0.006}$
	+2%/-4%	+14%/-8%	+200%/-350%	+30%/-56%	+33%/-46%	+528%/-57%
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 010809677-01 / KOI 7374.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-47 ± 7	$86.35^{+21.16}_{-26.02}$	3354^{+337}_{-434}	-3254^{+264}_{-208}	$0.012^{+0.009}_{-0.004}$
Alt.	-40 ± 9	$50.18^{+15.77}_{-14.47}$	3382^{+320}_{-412}	-3243^{+286}_{-205}	$0.031^{+0.027}_{-0.013}$

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 $A_{obs} \gg 1.0$

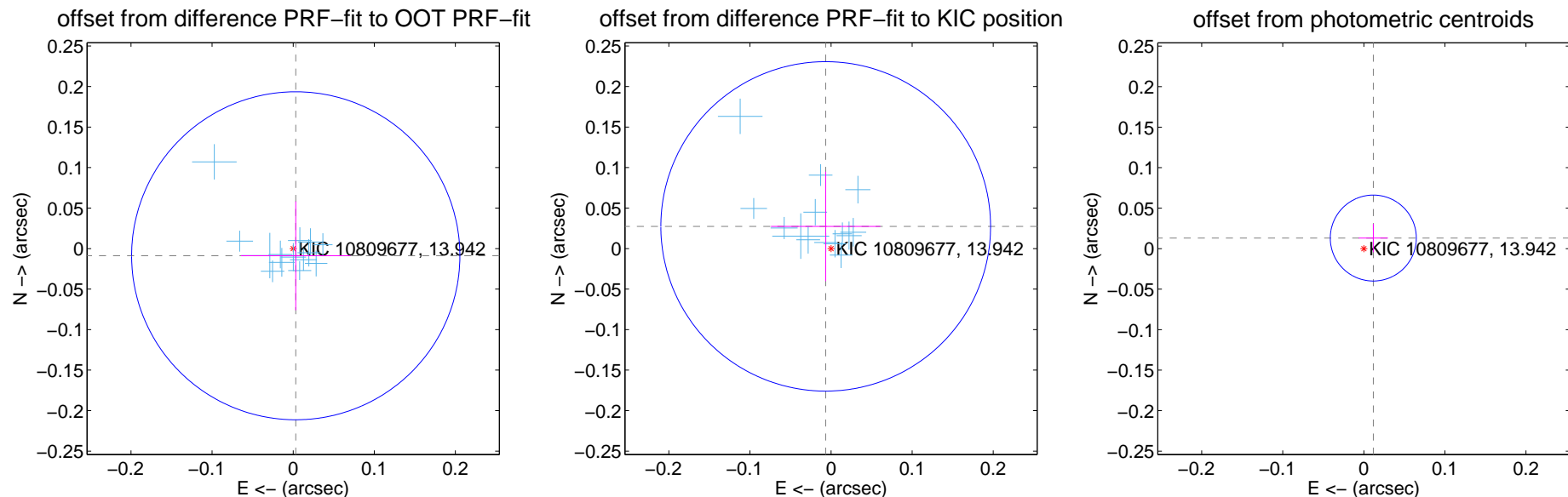
DV Centroid Data

Supplemental centroid analysis for 010809677-01. Kepler magnitude: 13.94. Transit SNR 267.03

There are 14 quarters with good PRF difference image offsets

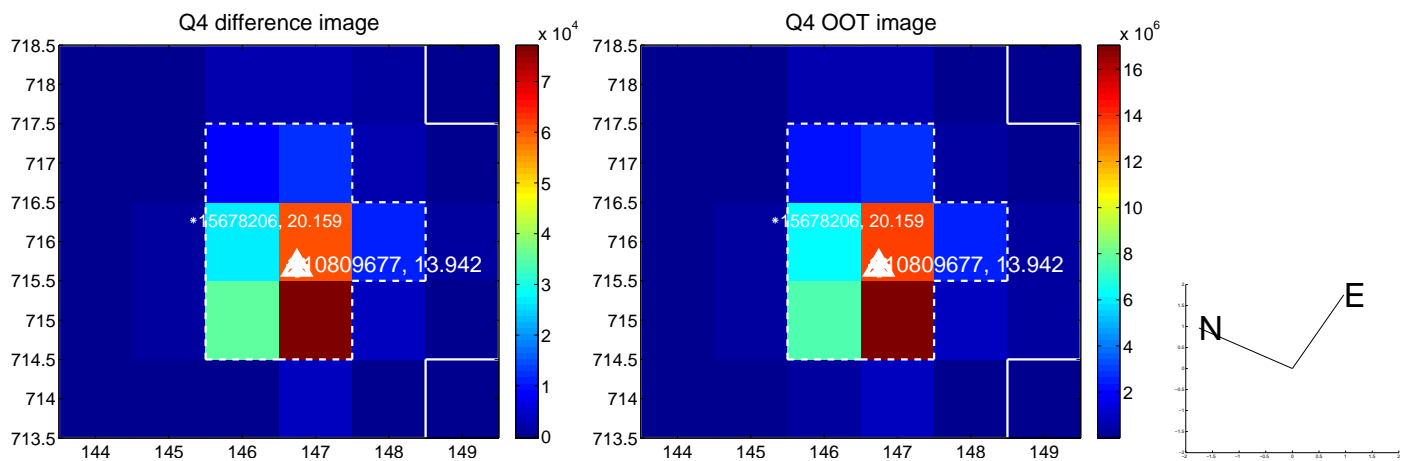
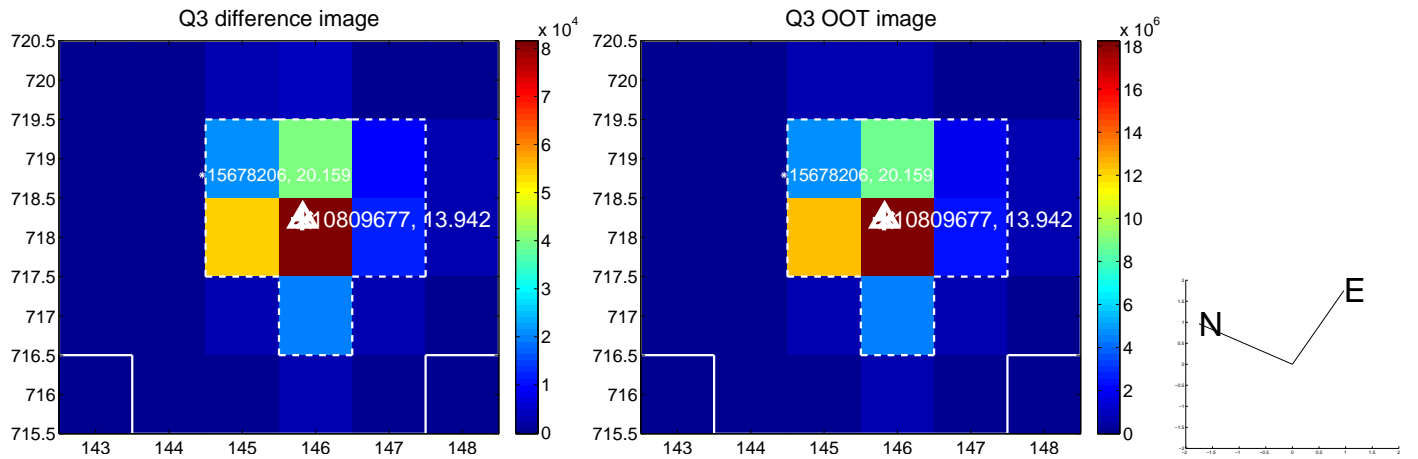
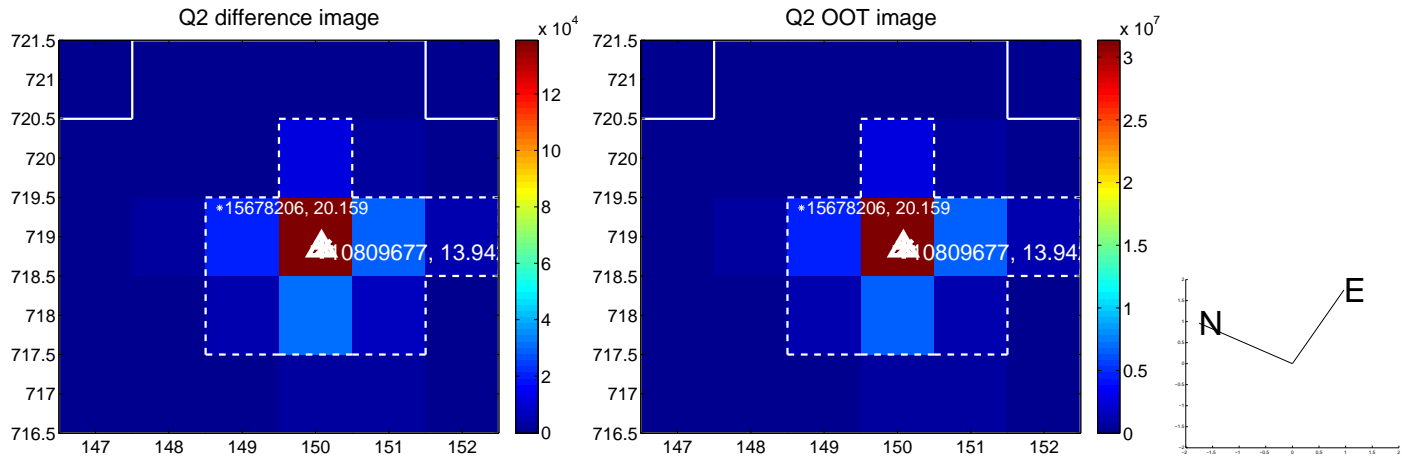
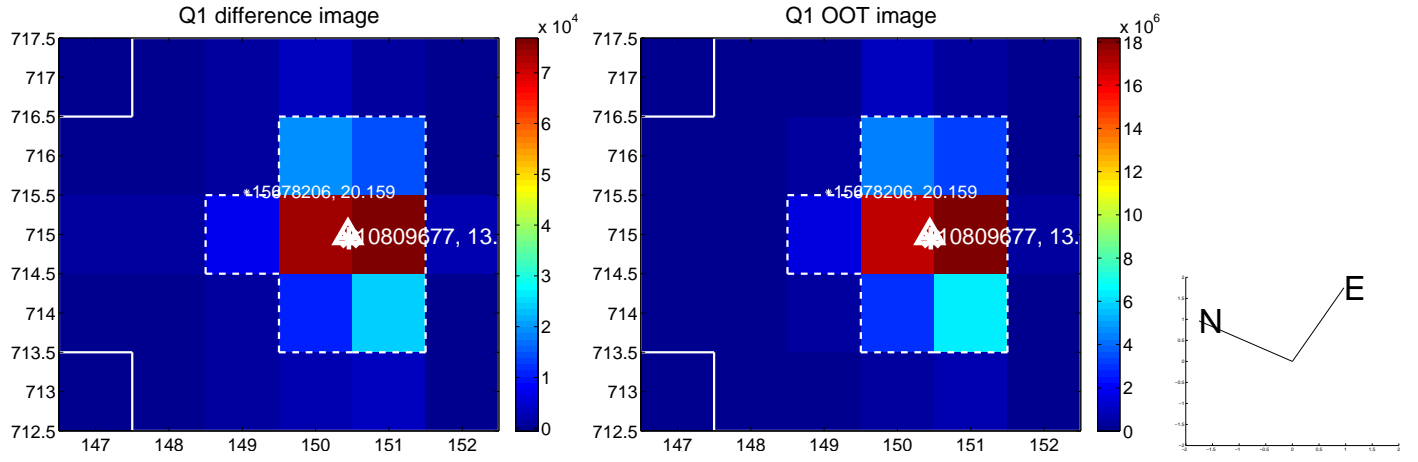
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.009 ± 0.067	0.14	-0.003 ± 0.067	-0.009 ± 0.067
PRF-fit source offset from KIC position	0.028 ± 0.068	0.42	0.007 ± 0.067	0.027 ± 0.068
photometric centroid source offset	0.02 ± 0.02	0.99	-0.01 ± 0.02	0.01 ± 0.02

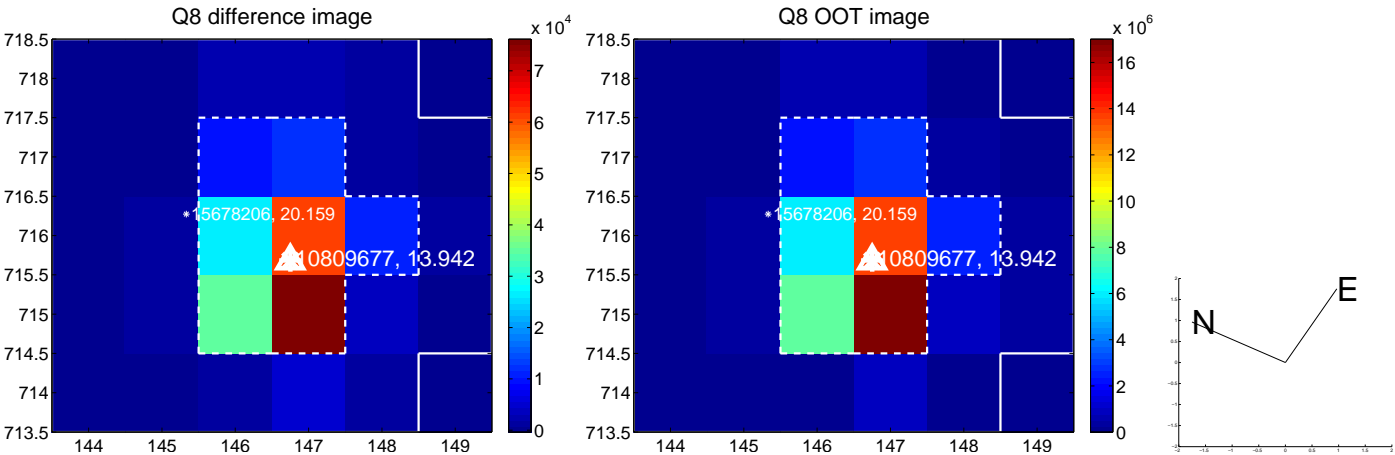
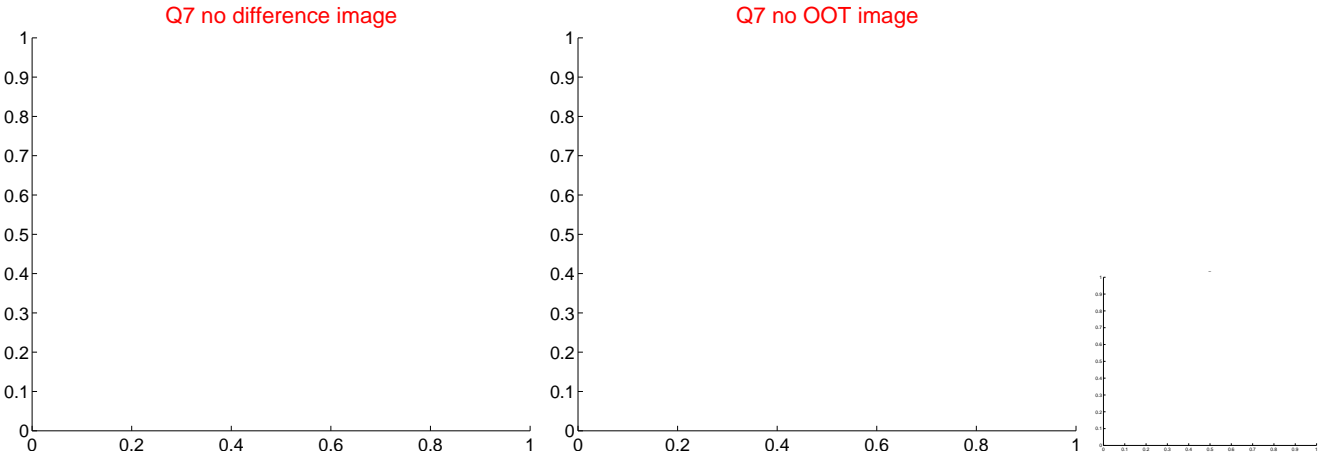
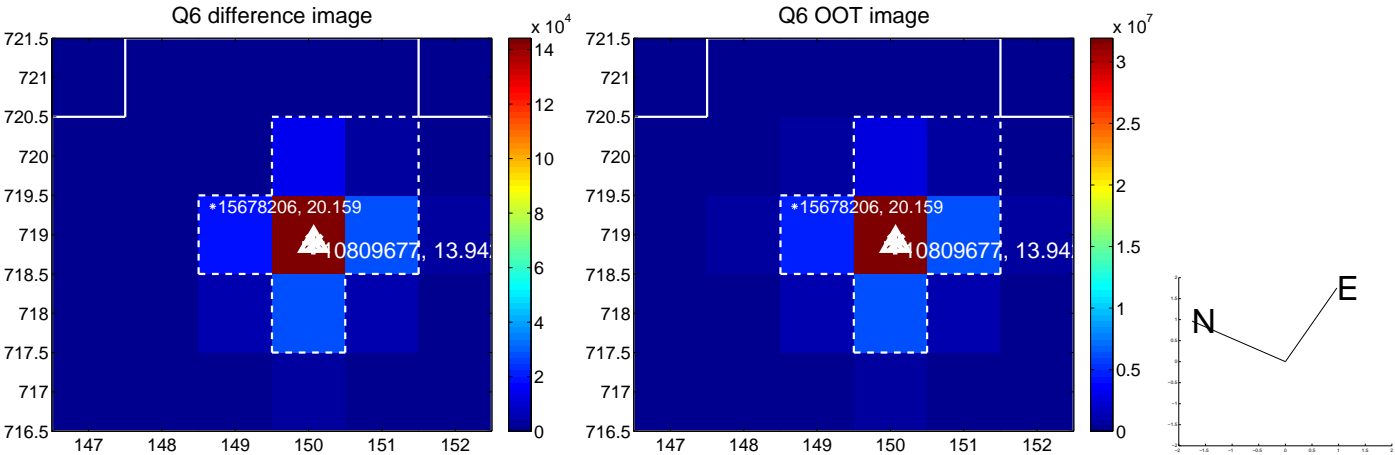
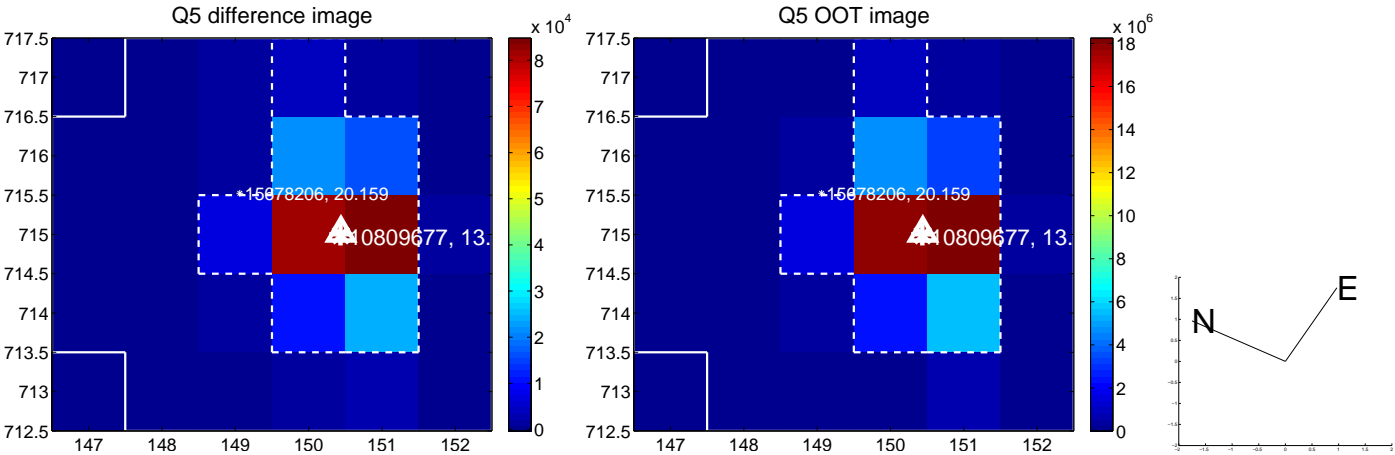


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

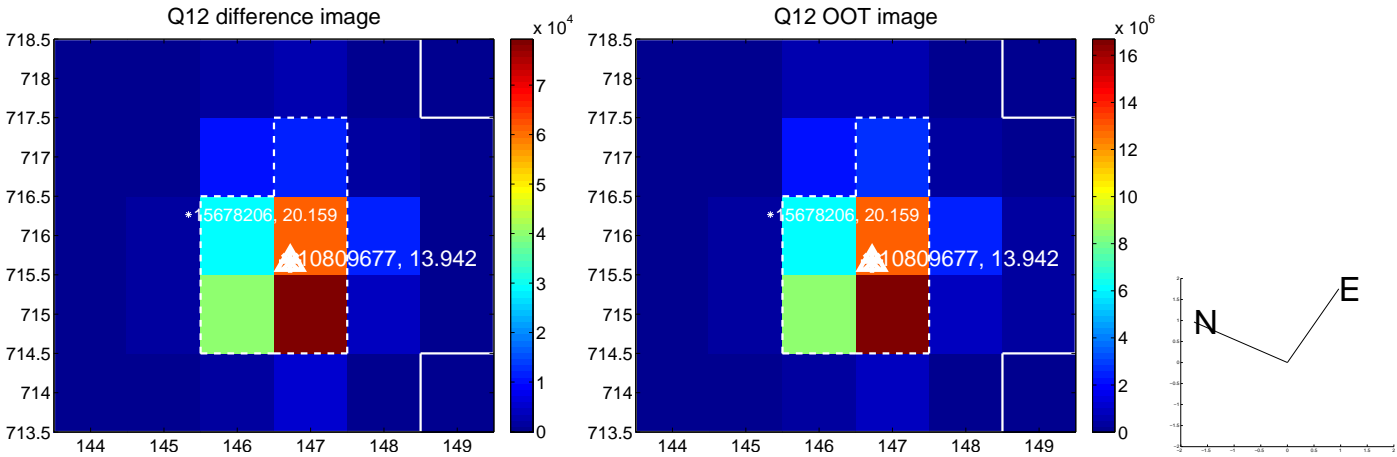
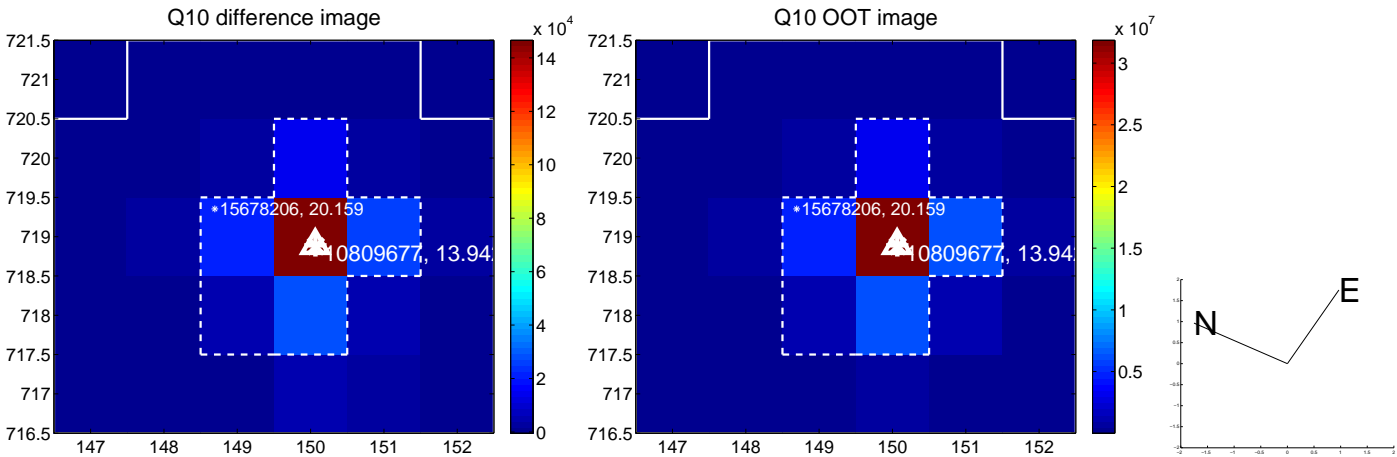
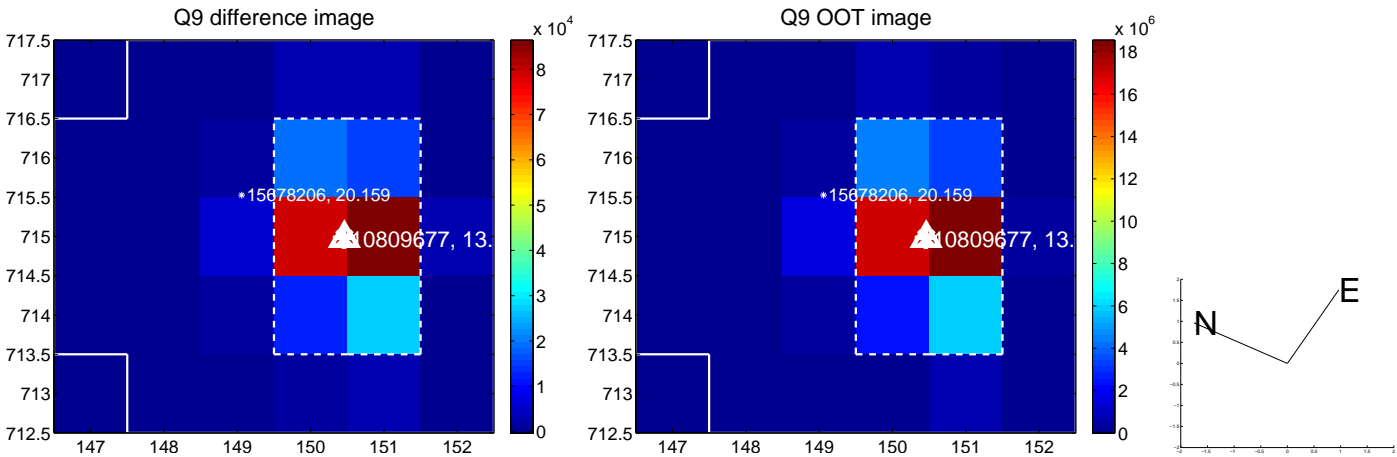
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



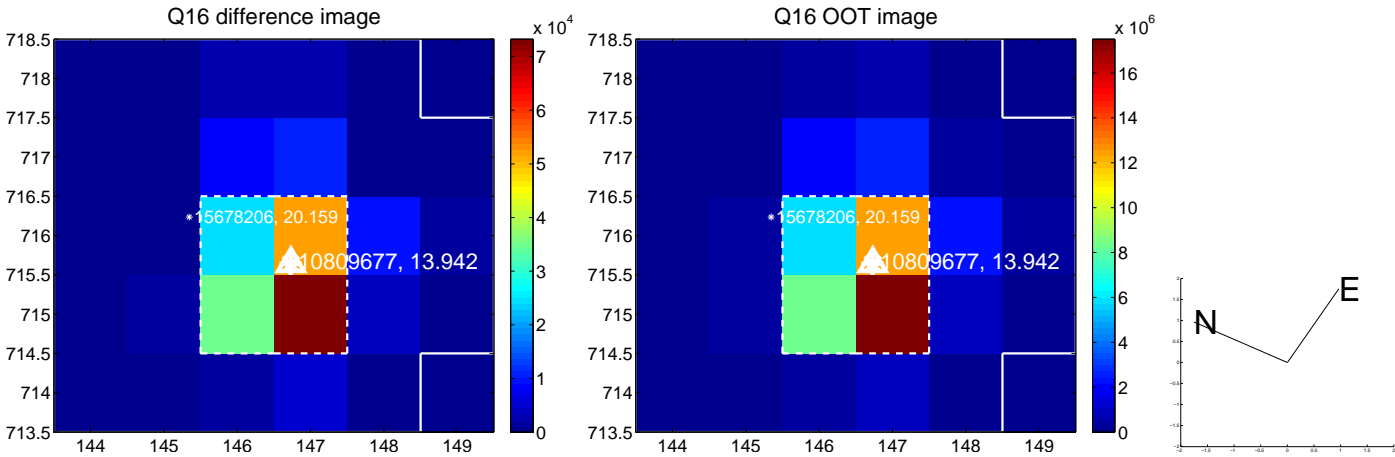
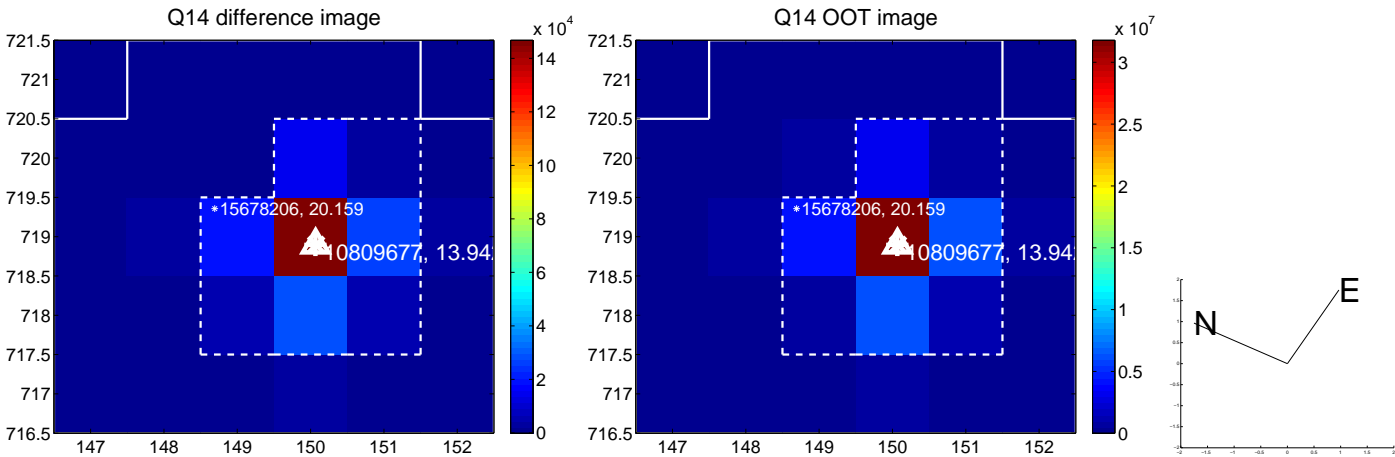
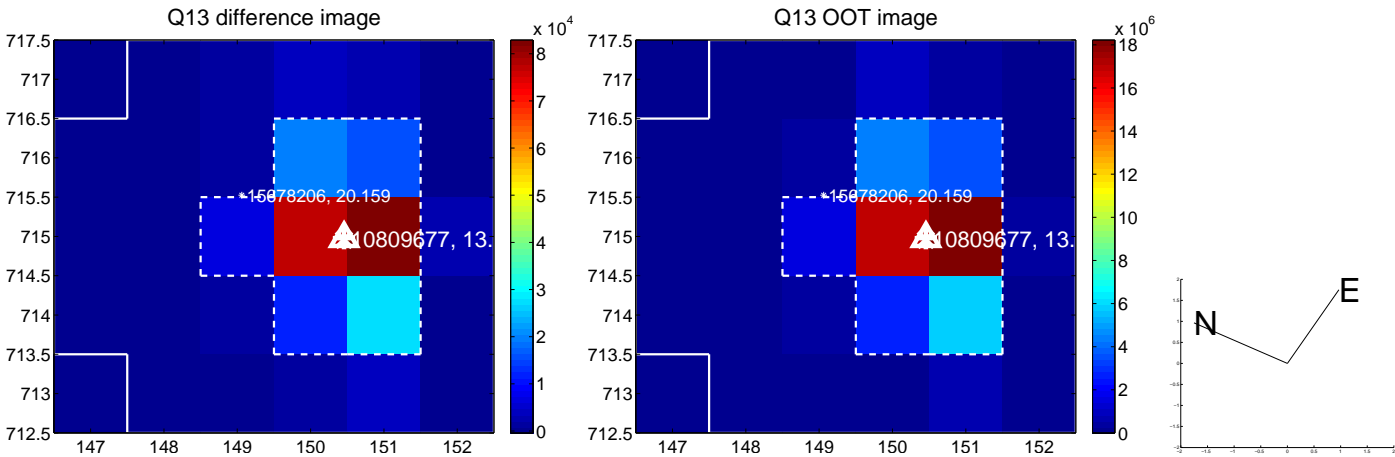
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



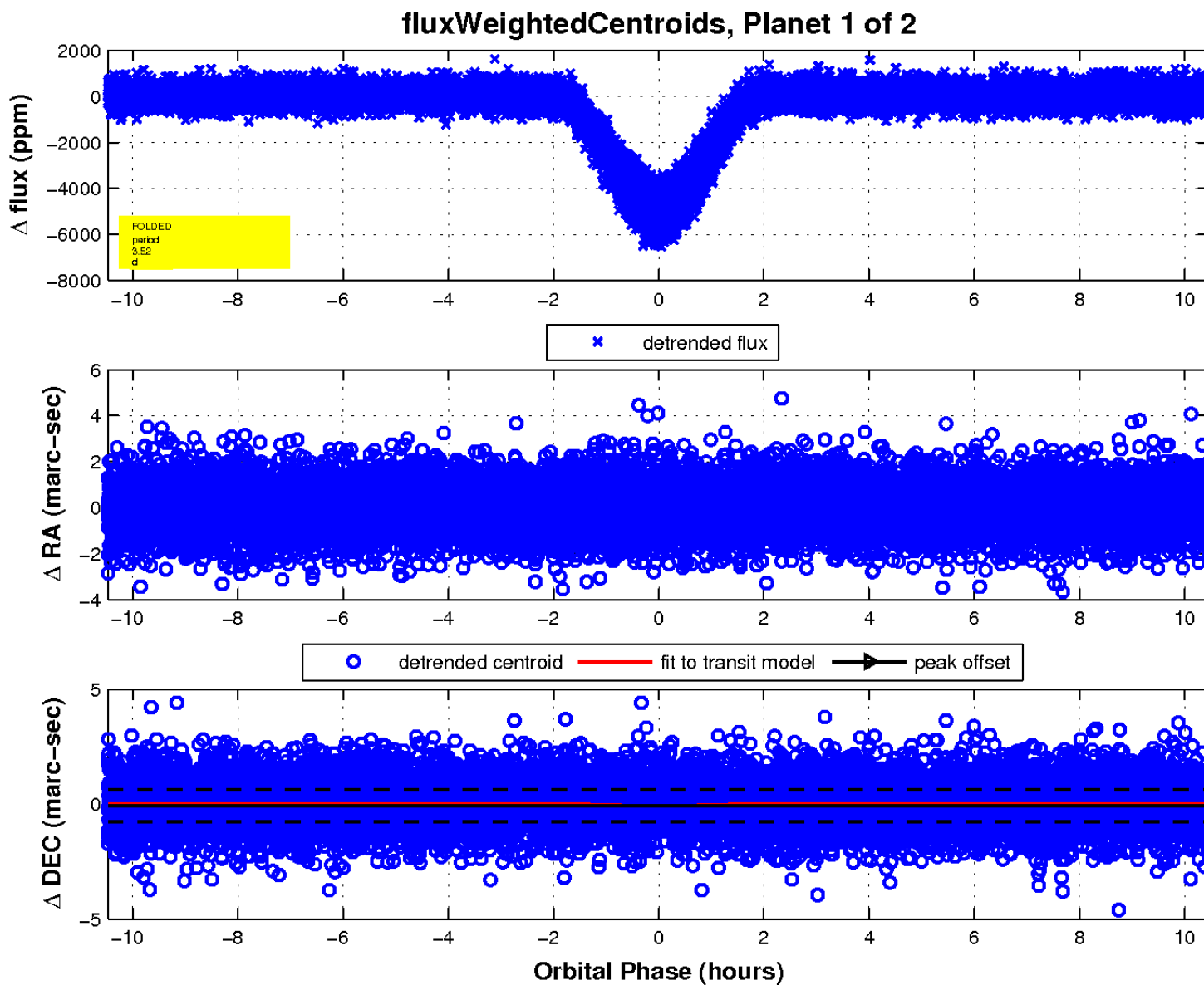
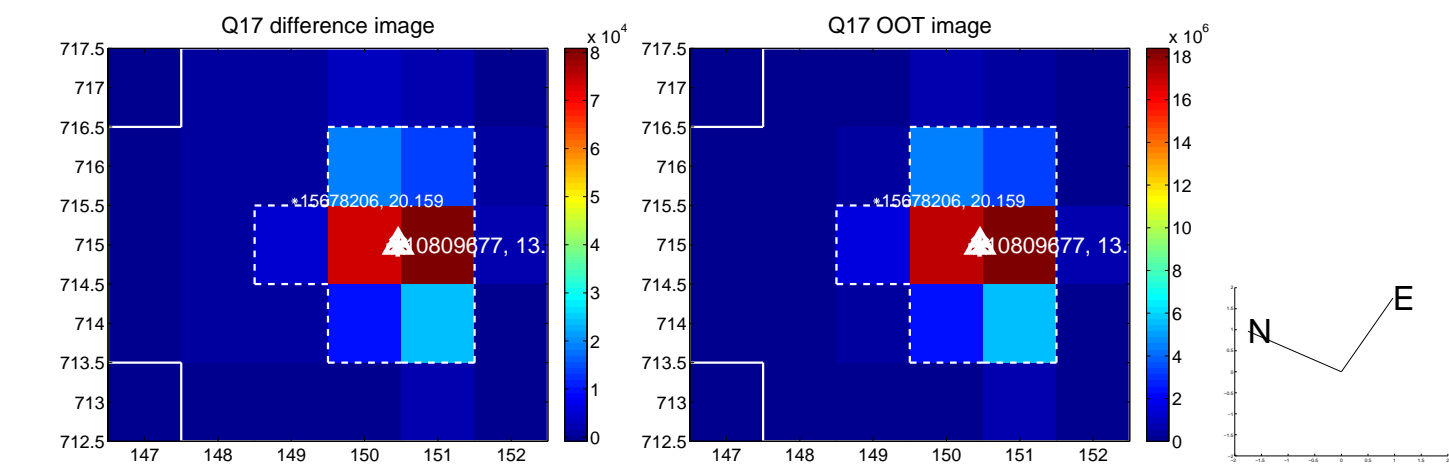
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

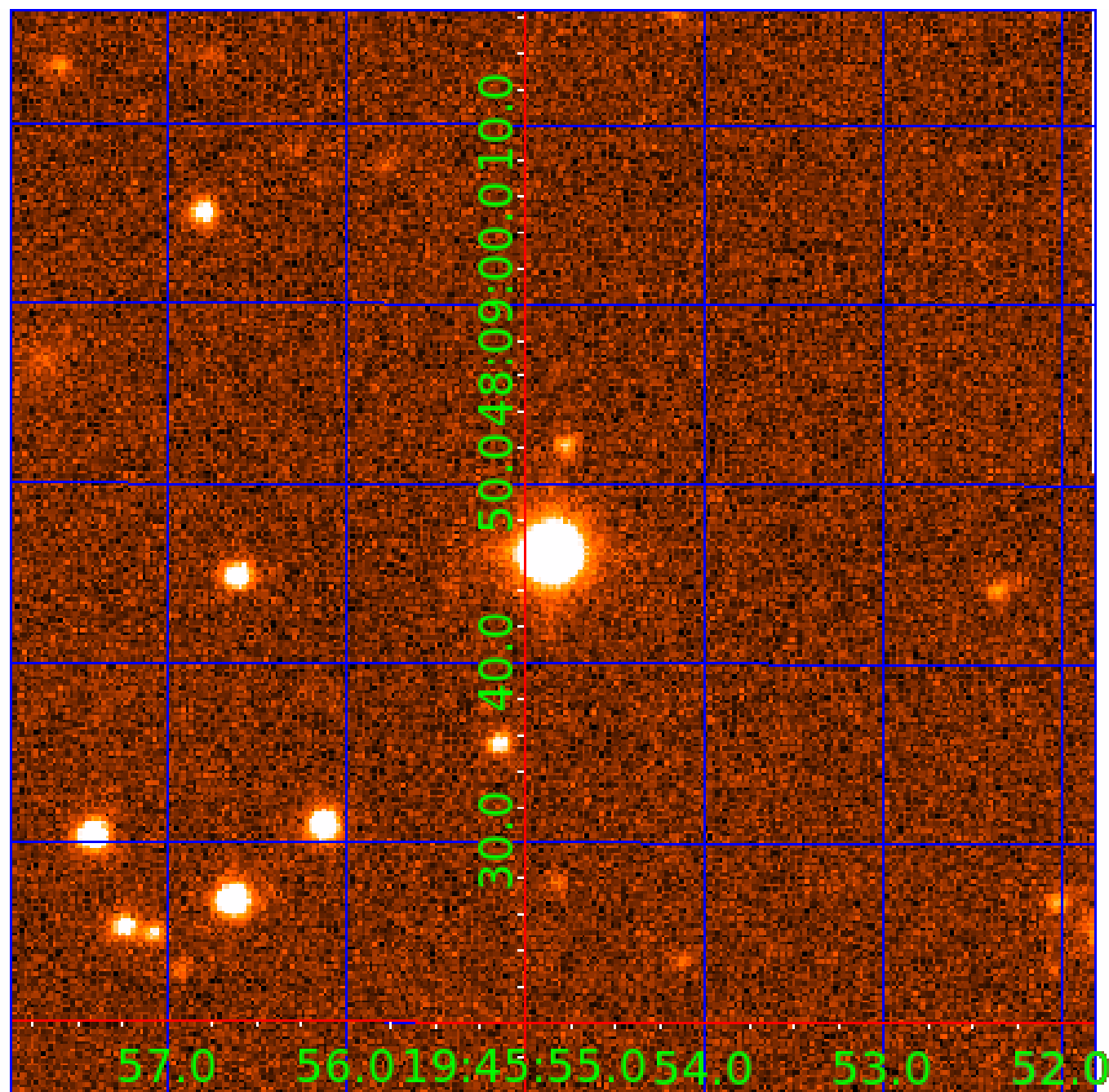


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010809677

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})
010809677-01	OBS	7374.01	3.521062	134.216660	4805.6	3.489	290.1	267.0	6.62	5149	86.86	8319.22
010809677-02	OBS	No	232.162916	182.362105	682.2	3.824	7.3	8.1	6.62	5149	18.06	31.23

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010809677-01	OBS	FP	0.00	0	1	0	0	DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED
010809677-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT

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

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

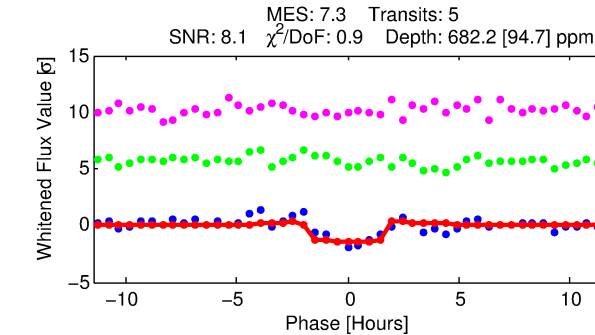
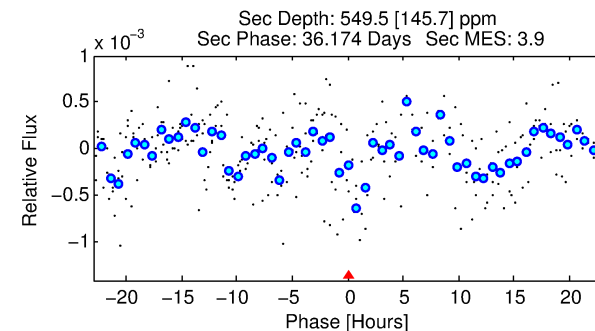
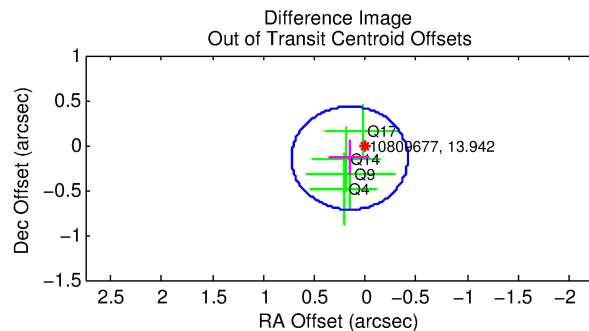
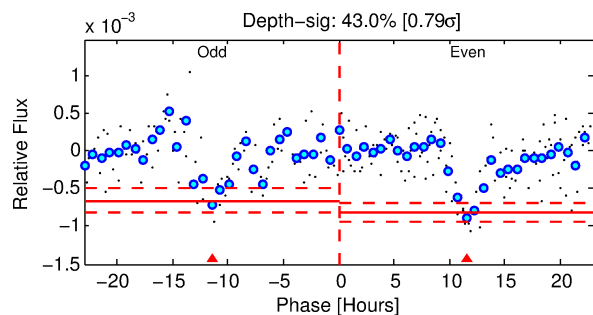
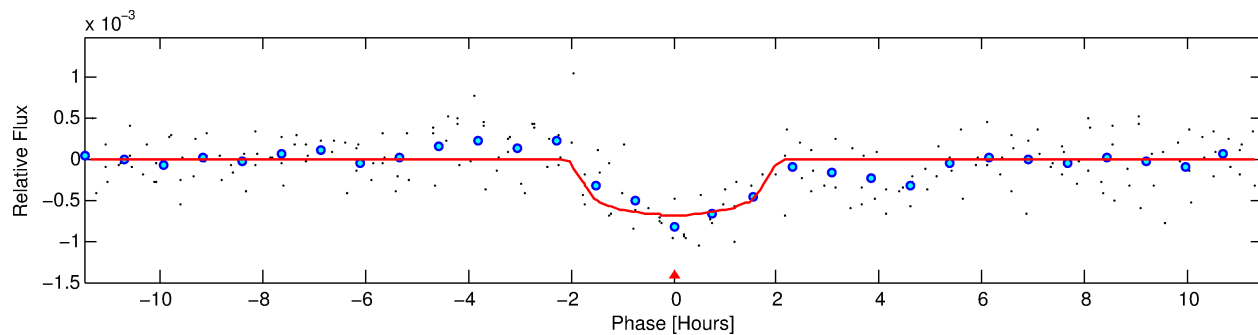
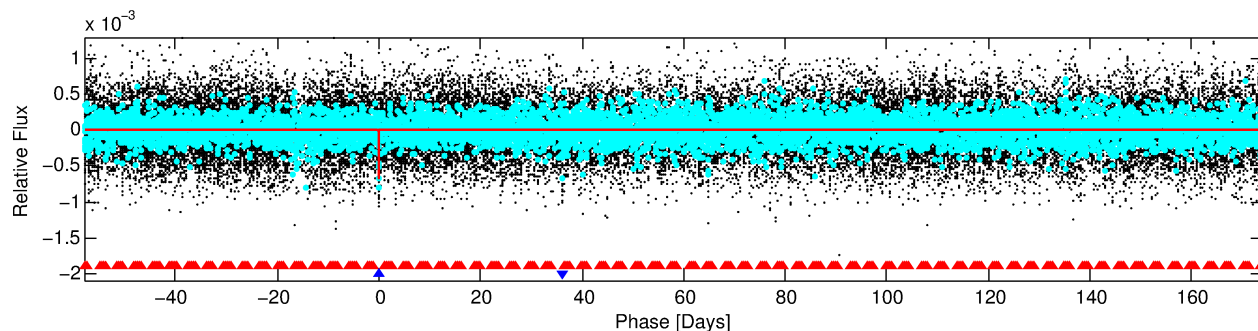
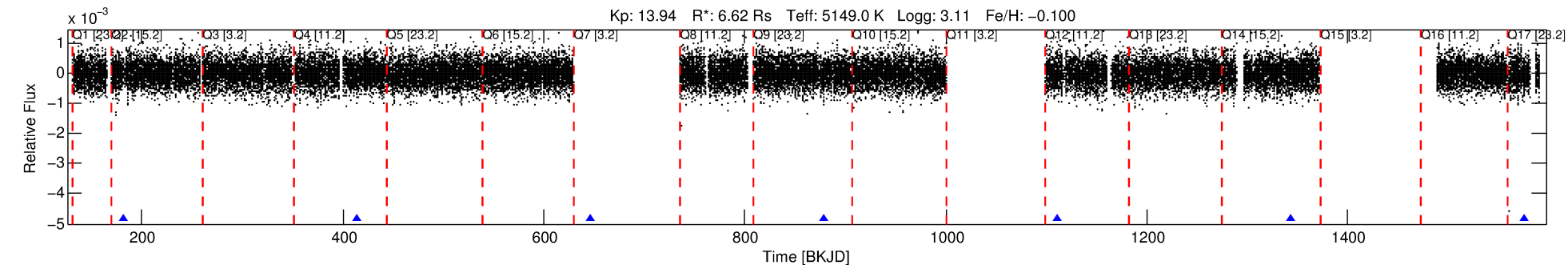
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010809677-02

No Significant Match Found

DV One-Page Summary

KIC: 10809677 Candidate: 2 of 2 Period: 232.163 d
KOI: K07374 Corr: No Ephemeris Match



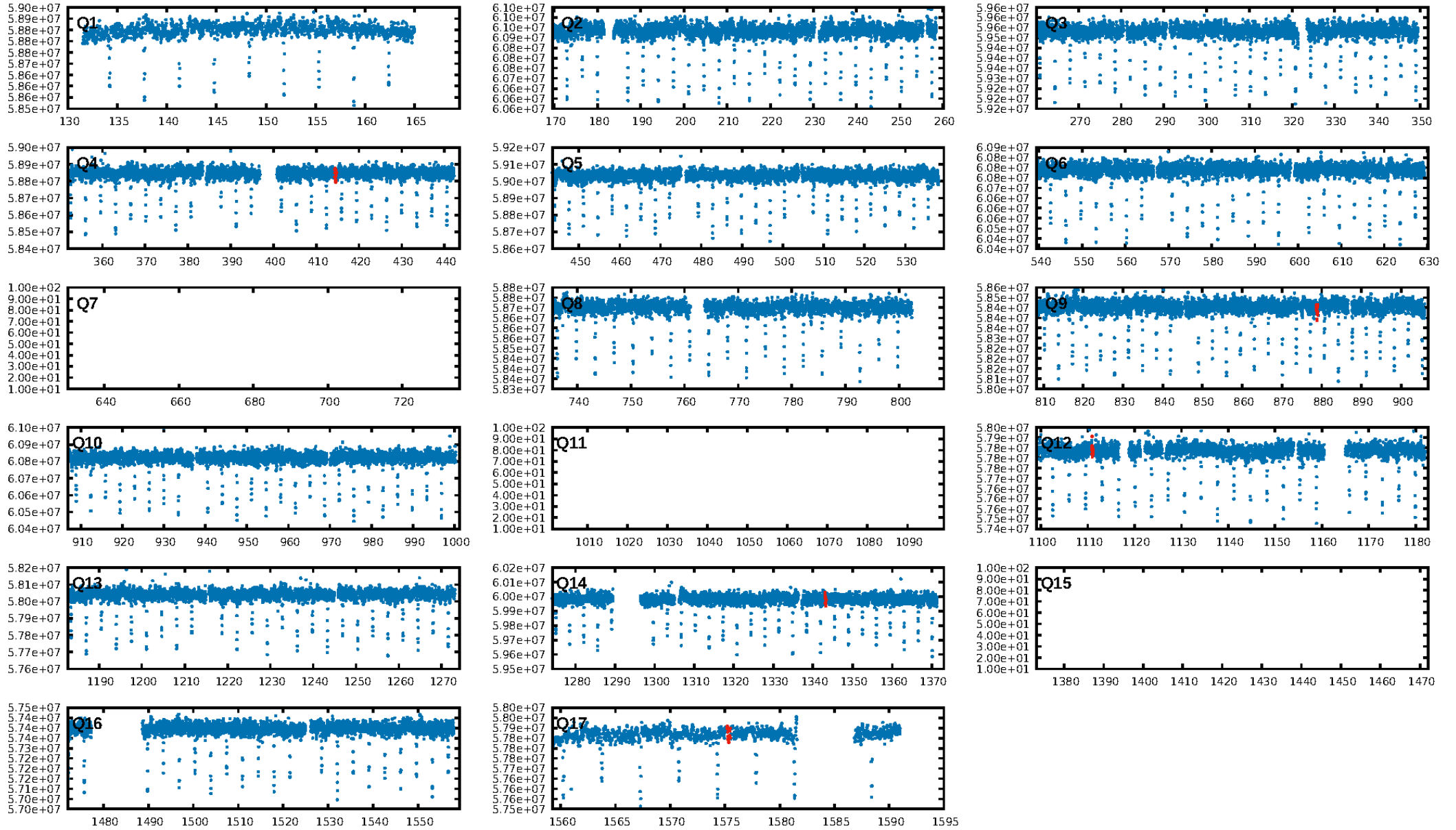
DV Fit Results:

Period = 232.16292 [0.00181] d
Epoch = 182.3621 [0.0081] BKJD
Rp/R* = 0.0250 [0.0371]
a/R* = 373.20 [2075.19]
b = 0.64 [5.32]
Seff = 31.23 [24.59]
Teq = 603 [119] K
Rp = 18.06 [28.60] Re
a = 0.9399 [0.4719] AU
Ag = 818.39 [2516.99] [0.32σ]
Teffp = 4985 [3715] K [1.18σ]

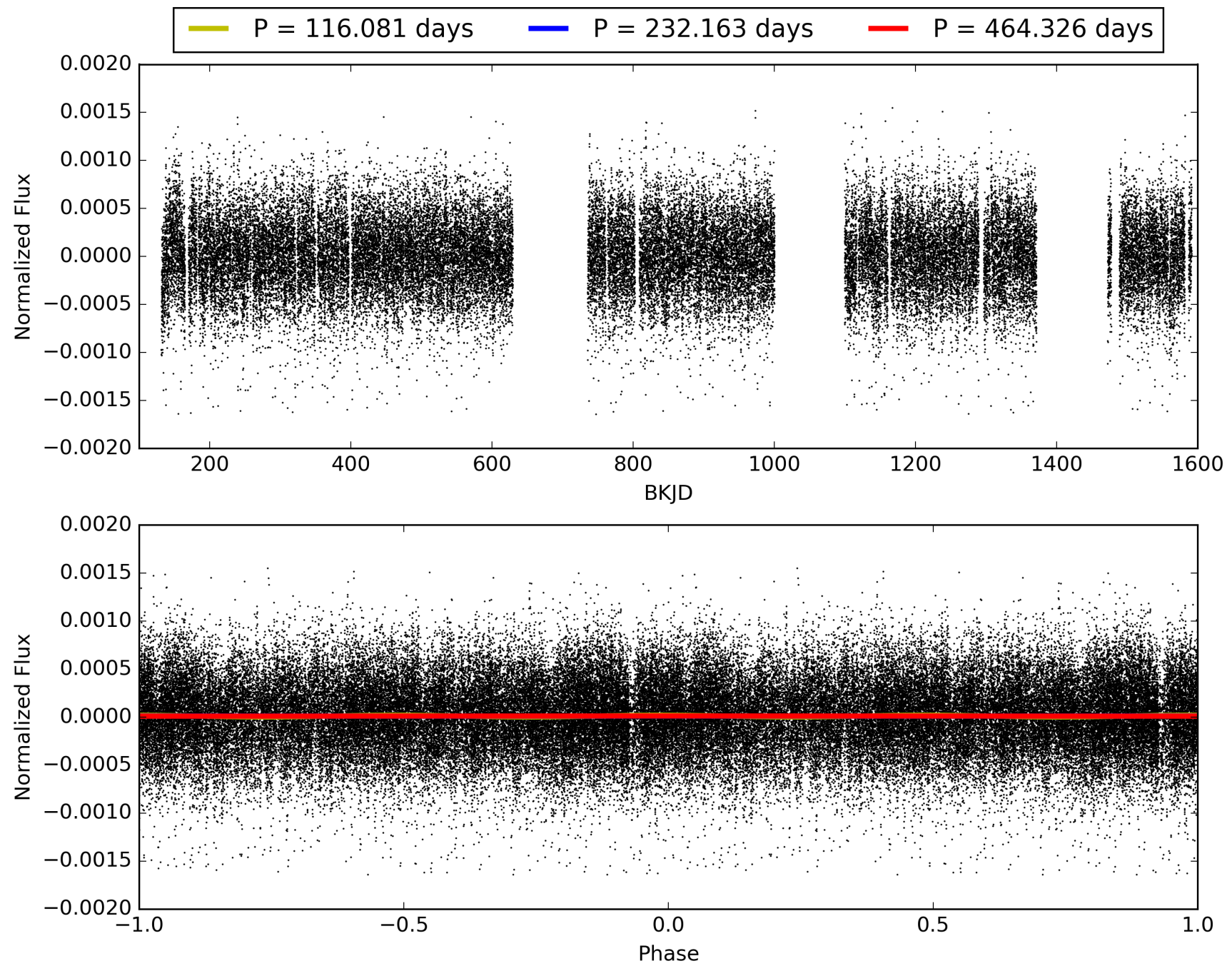
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1060.08σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 95.7%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 1.77e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 2.793
Centroid-sig: N/A
Centroid-so: 0.887 arcsec [1.13σ]
OotOffset-rm: 0.211 arcsec [1.10σ]
KicOffset-rm: 0.183 arcsec [0.96σ]
OotOffset-st: 1/0/1/2 [4]
KicOffset-st: 1/0/1/2 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [5/5]

TCE 010809677-02, PDC Light Curves

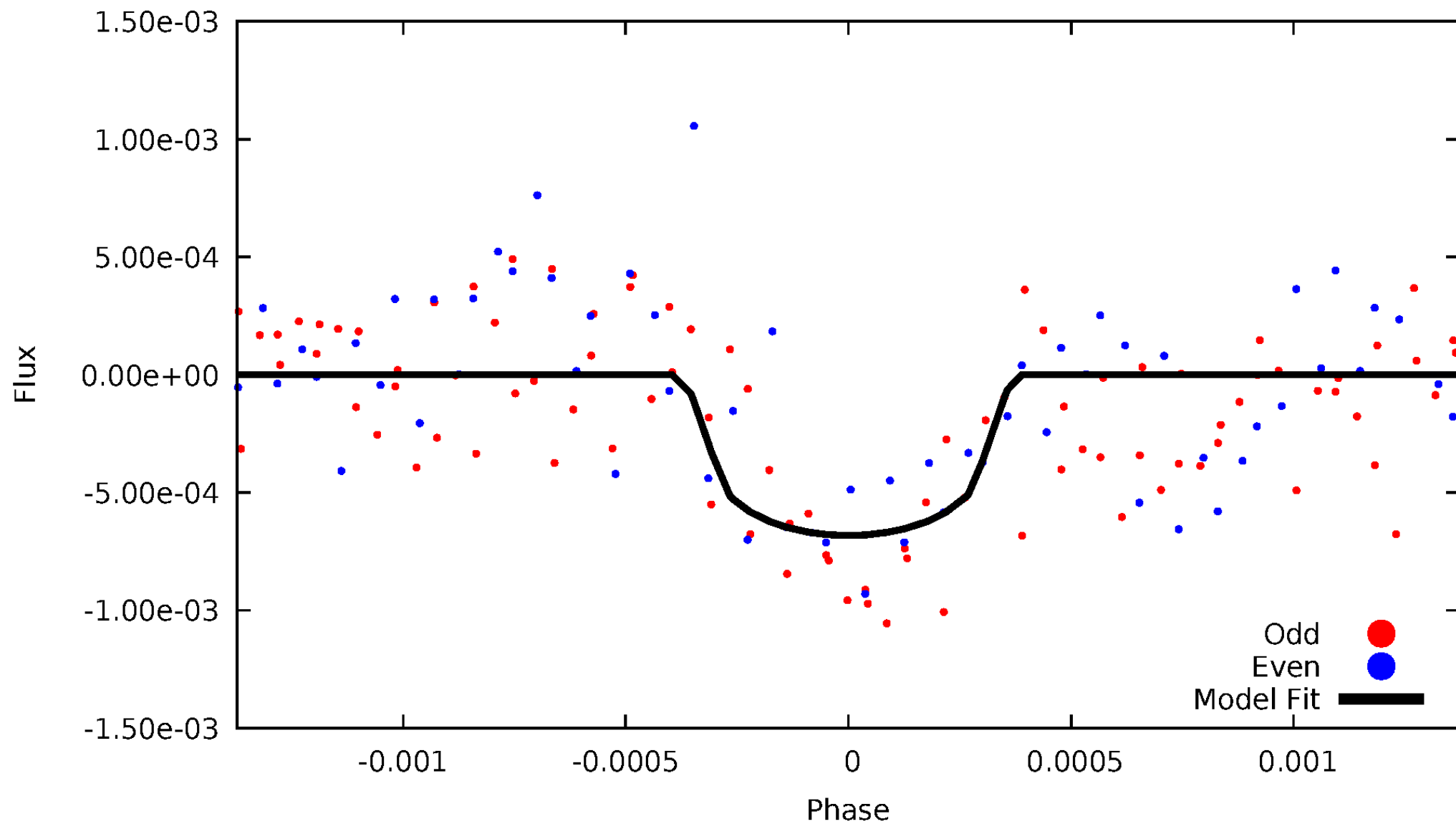


TCE 010809677-02



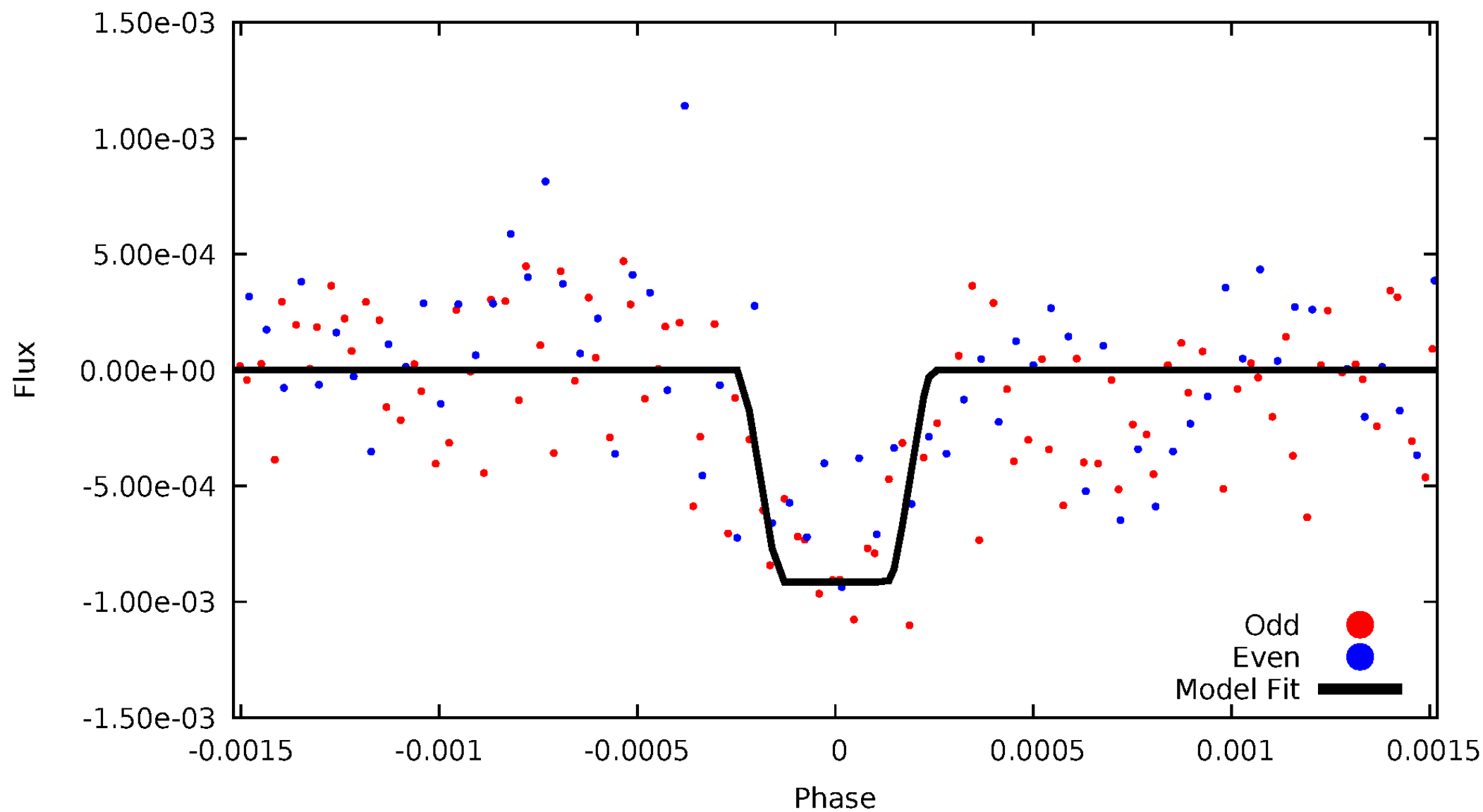
DV Odd/Even

TCE 010809677-02



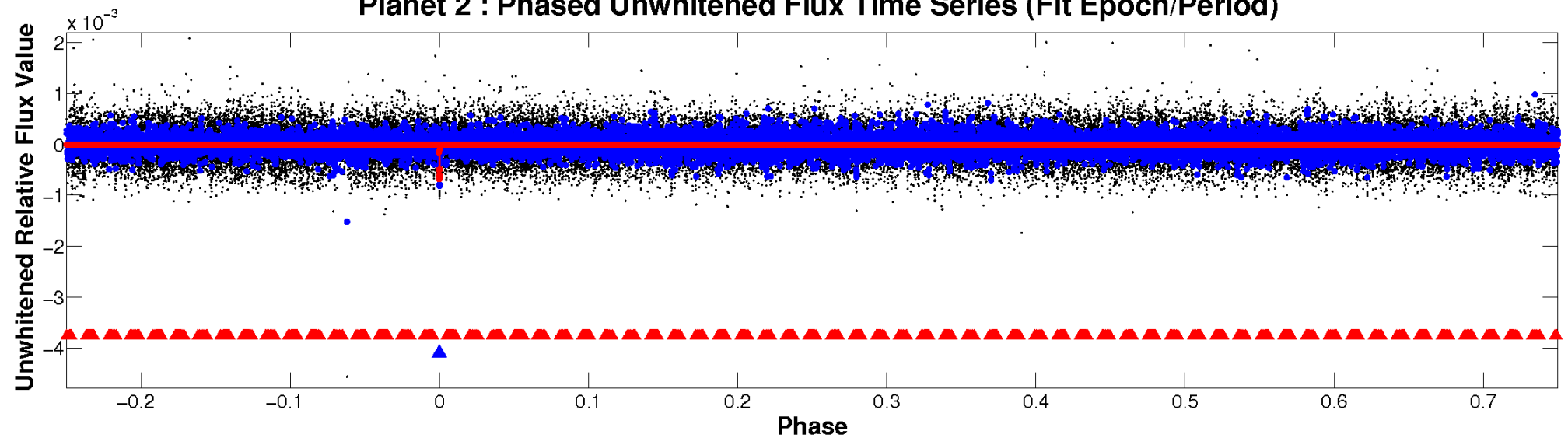
ALT Odd/Even

TCE 010809677-02

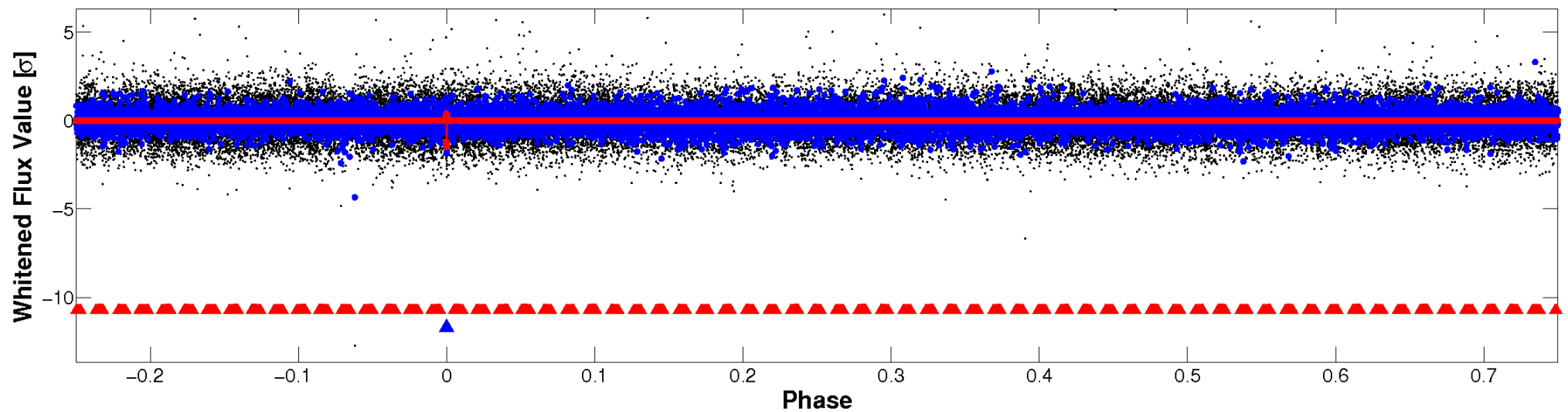


Non-Whitened Vs. Whitened Light Curve

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

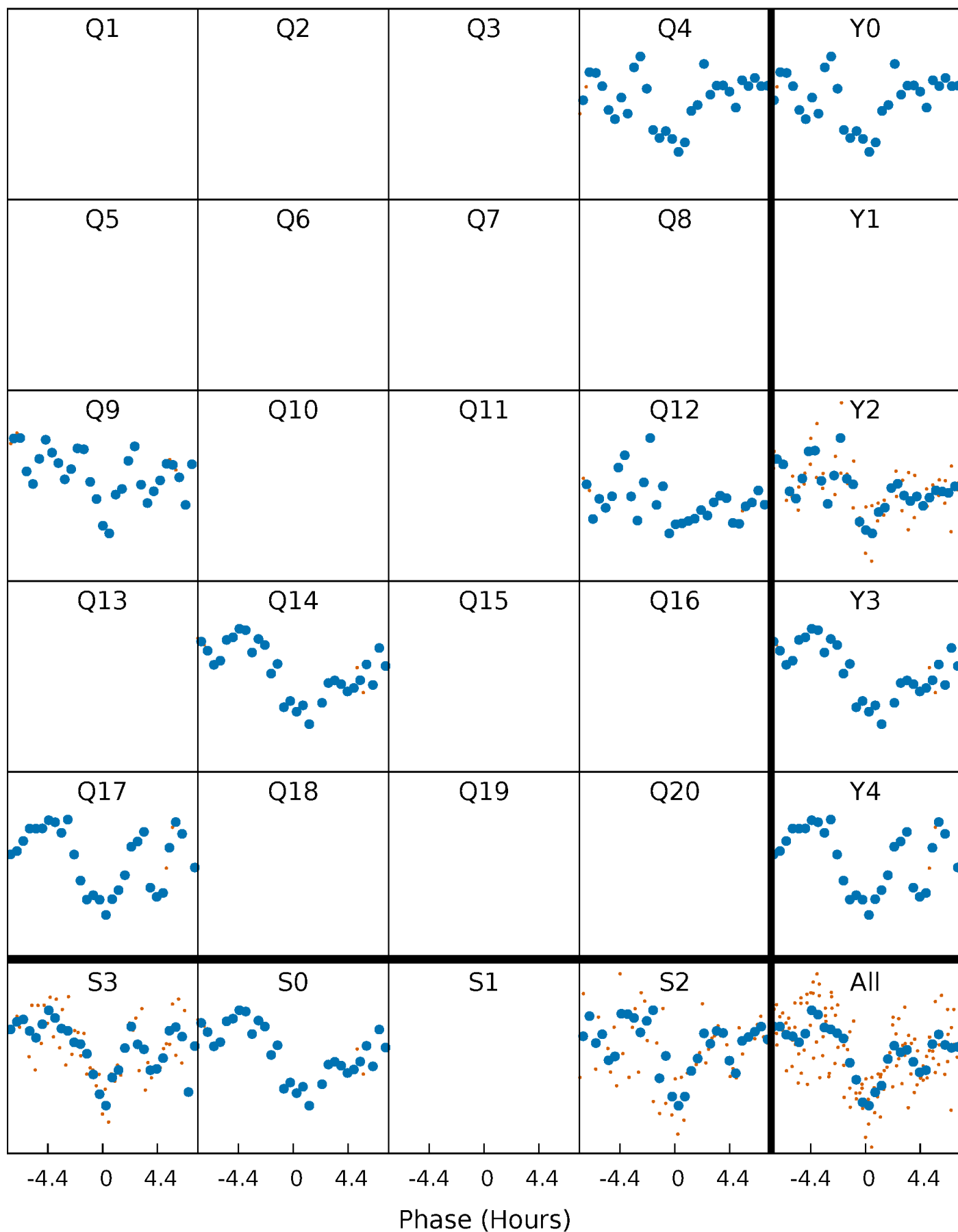


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



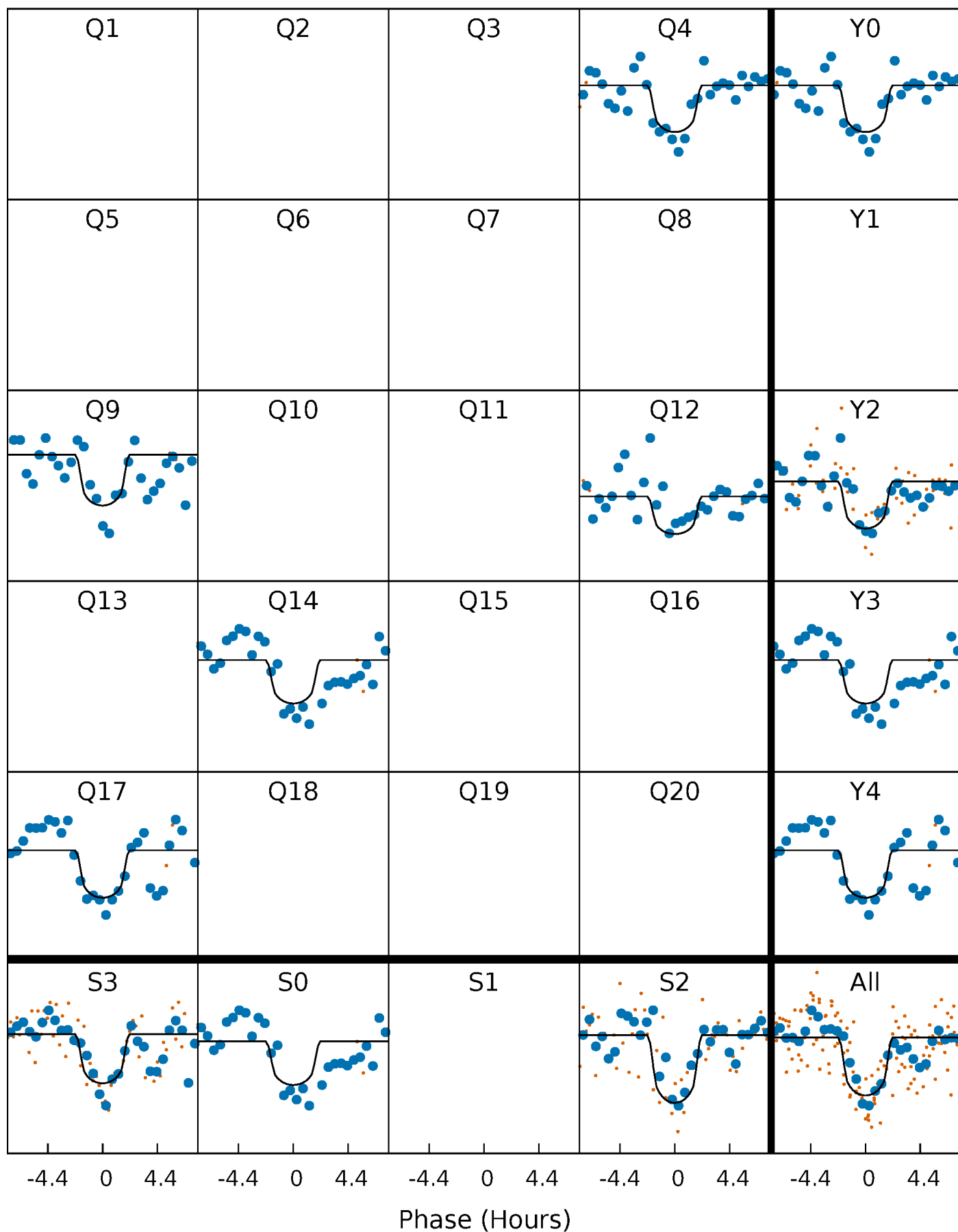
PDC Quarter-Phased Transit Curves

TCE 010809677-02 $P=232.162916$ Days $T_0=182.362105$ (BKJD)



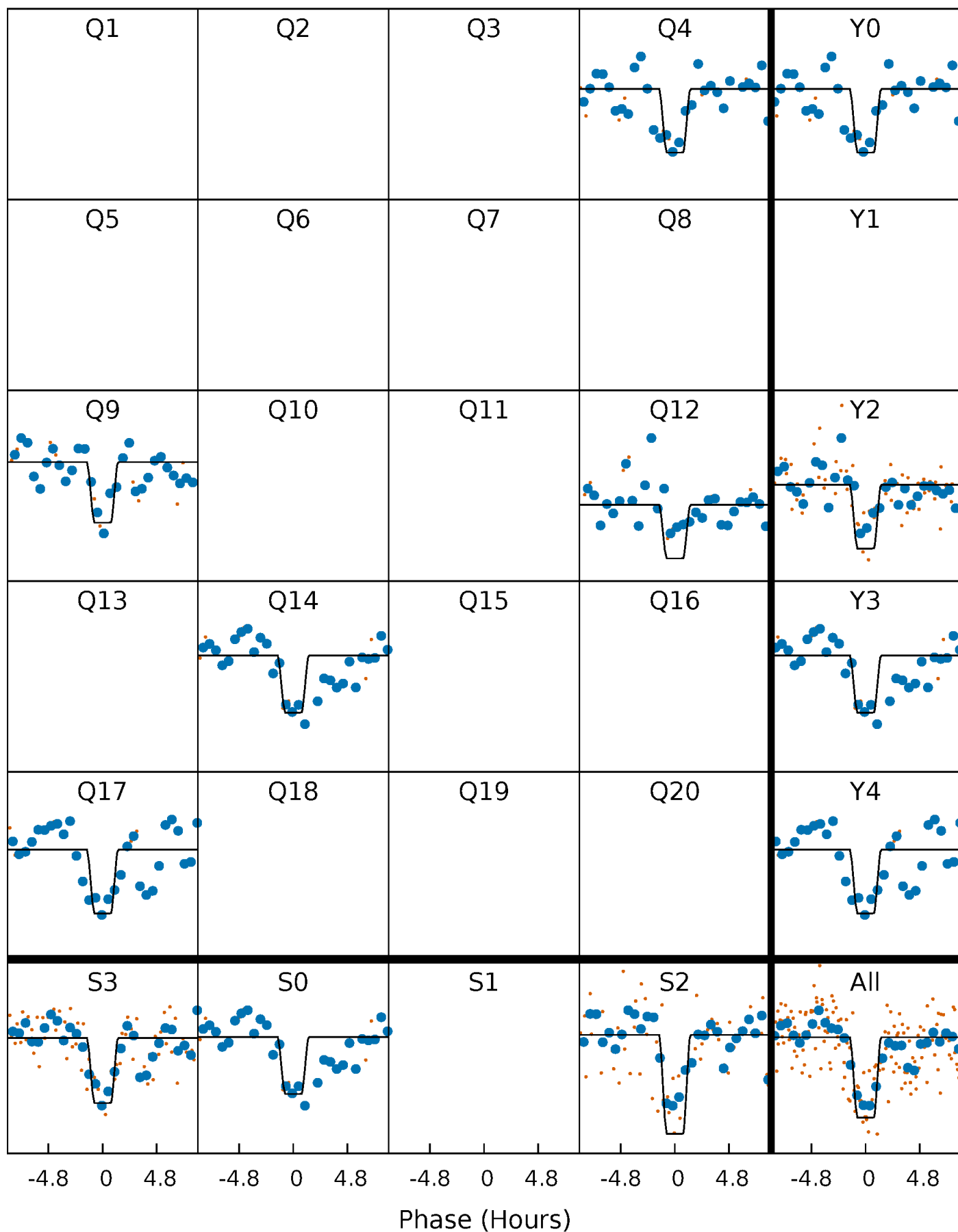
DV Quarter-Phased Transit Curves

TCE 010809677-02 $P=232.162916$ Days $T_0=182.362105$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

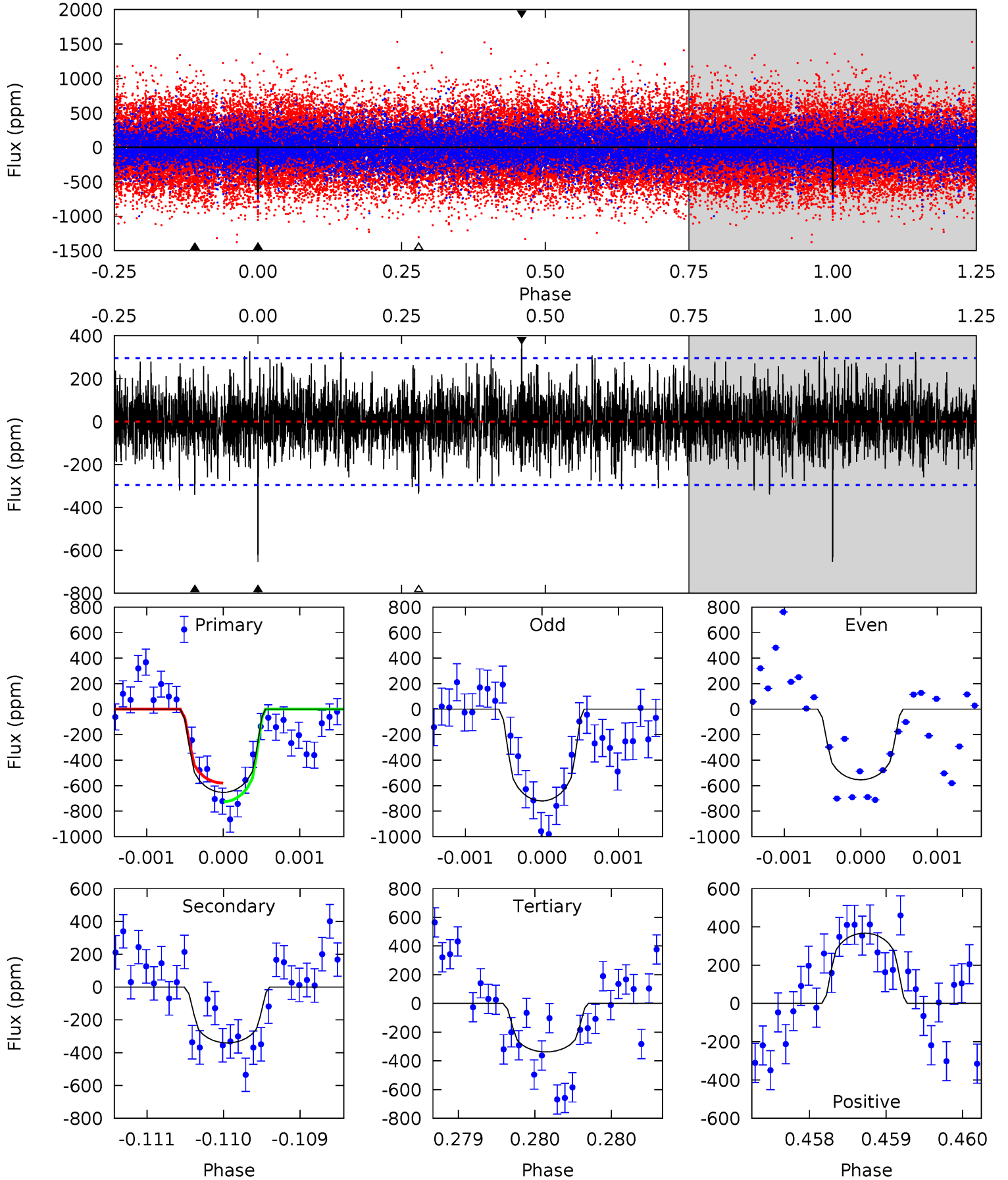
TCE 010809677-02 P=232.161549 Days $T_0=182.375263$ (BKJD)



DV Model-Shift Uniqueness Test

010809677-02, P = 232.162916 Days, E = 182.362105 Days

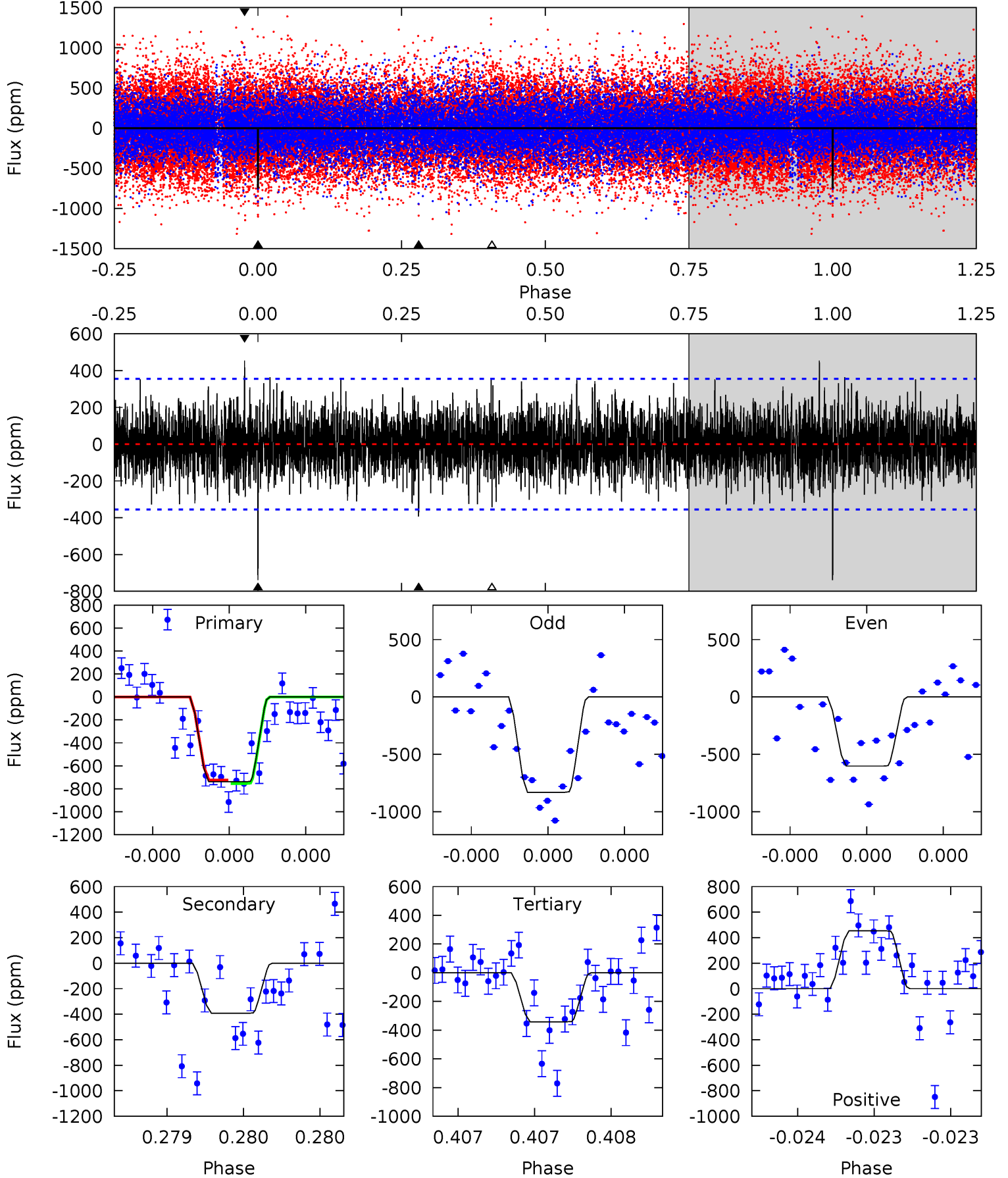
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	6.35	6.29	6.85	5.51	3.39	1.84	5.88	5.33	0.06	-0.50	1.51	0.88	0.36	1.36



Alt Model-Shift Uniqueness Test

010809677-02, P = 232.161549 Days, E = 182.375263 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	6.17	5.37	7.13	5.58	3.49	1.70	6.25	4.49	0.80	-0.96	1.80	0.94	0.38	0.25



Stellar Parameters For KIC 010809677

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5149^{+123}_{-194}	$3.109^{+0.442}_{-0.238}$	$-0.100^{+0.200}_{-0.350}$	$6.619^{+1.979}_{-3.675}$	$2.055^{+0.684}_{-0.941}$	$0.010^{+0.053}_{-0.006}$
	+2%/-4%	+14%/-8%	+200%/-350%	+30%/-56%	+33%/-46%	+528%/-57%
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 010809677-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-340 ± 54	$26.12^{+24.90}_{-17.42}$	837^{+83}_{-106}	3881^{+2231}_{-700}	251^{+2074}_{-189}
Alt.	-392 ± 64	$28.11^{+26.08}_{-19.05}$	833^{+83}_{-104}	3858^{+2228}_{-669}	239^{+2082}_{-173}

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

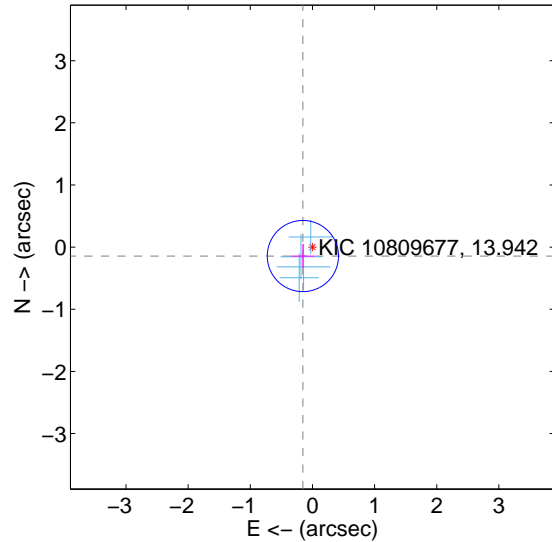
Supplemental centroid analysis for 010809677-02. Kepler magnitude: 13.94. Transit SNR 8.09

There are 4 quarters with good PRF difference image offsets

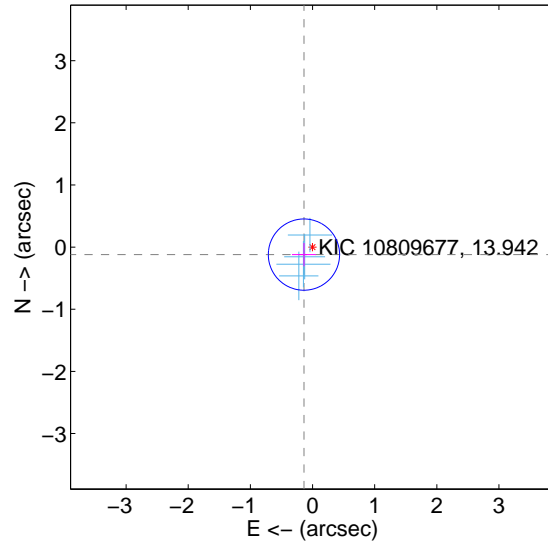
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.211 ± 0.191	1.10	0.154 ± 0.193	-0.144 ± 0.189
PRF-fit source offset from KIC position	0.183 ± 0.191	0.96	0.138 ± 0.193	-0.121 ± 0.189
photometric centroid source offset	0.89 ± 0.79	1.13	0.86 ± 0.79	0.20 ± 0.68

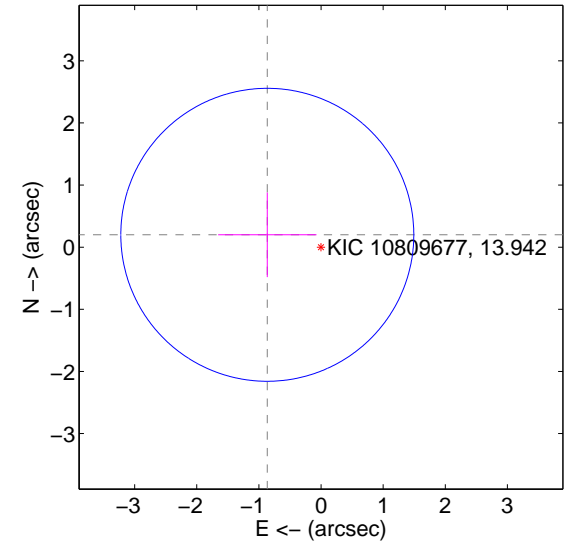
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

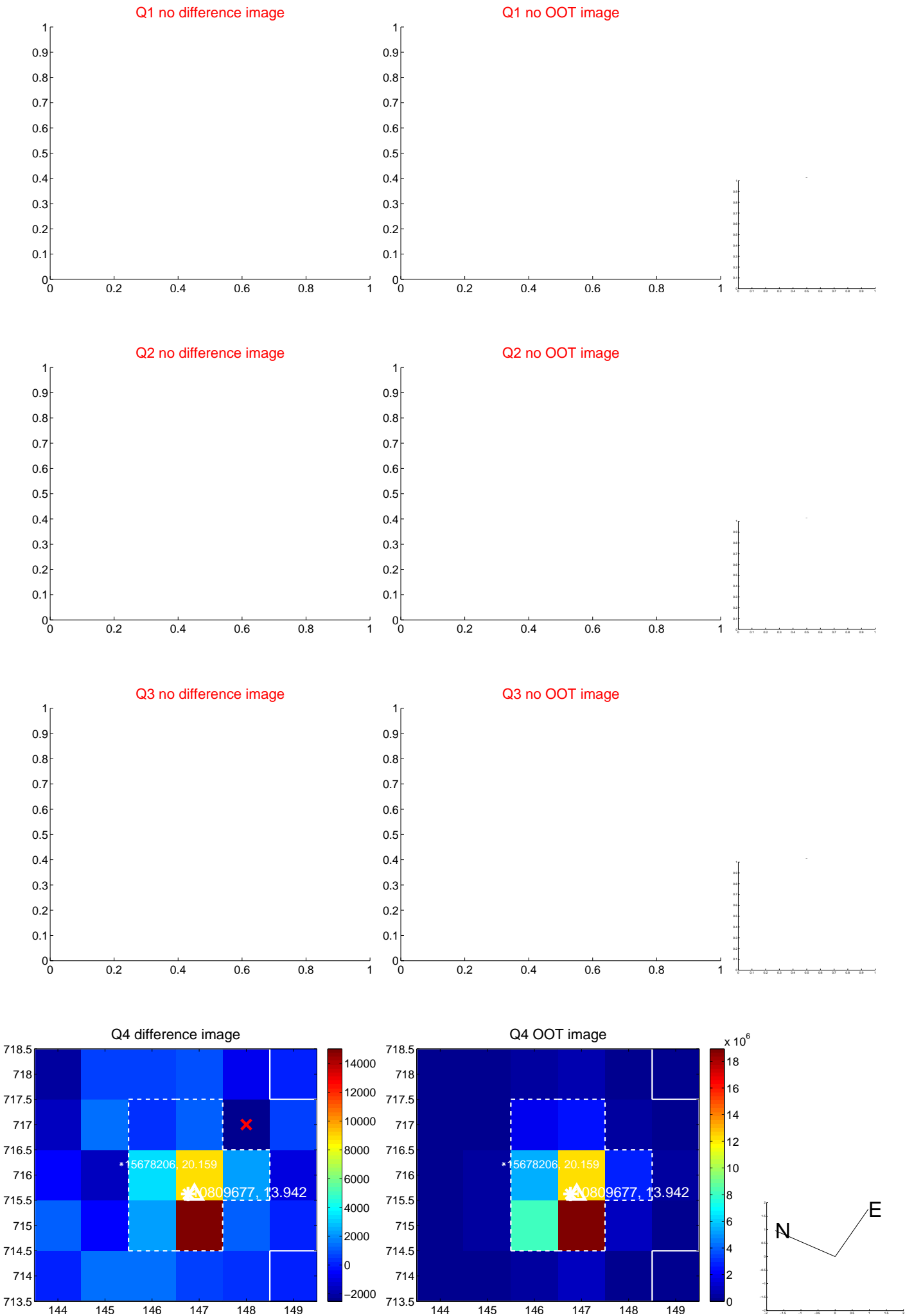


offset from photometric centroids

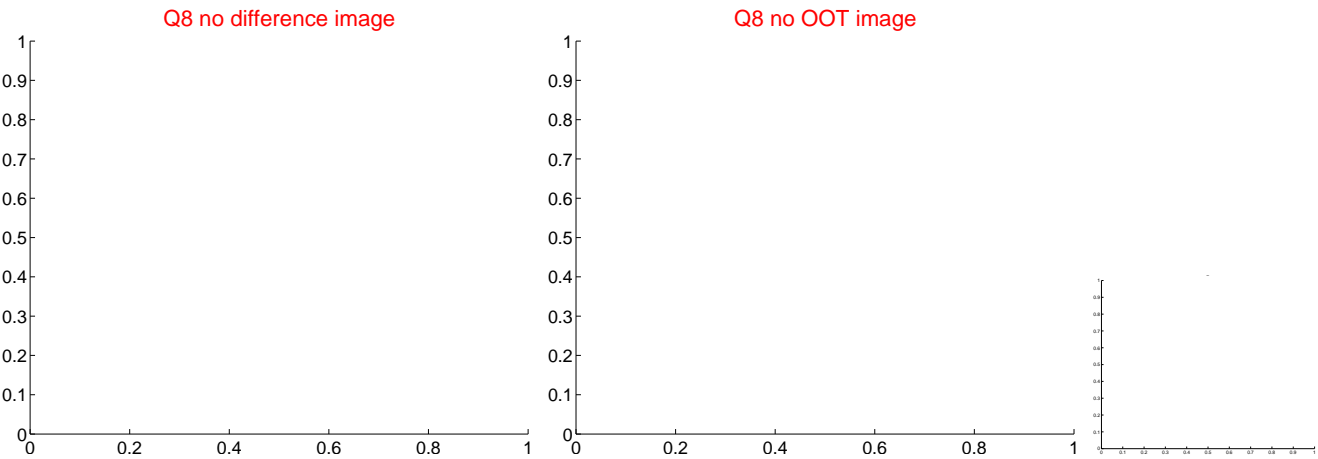
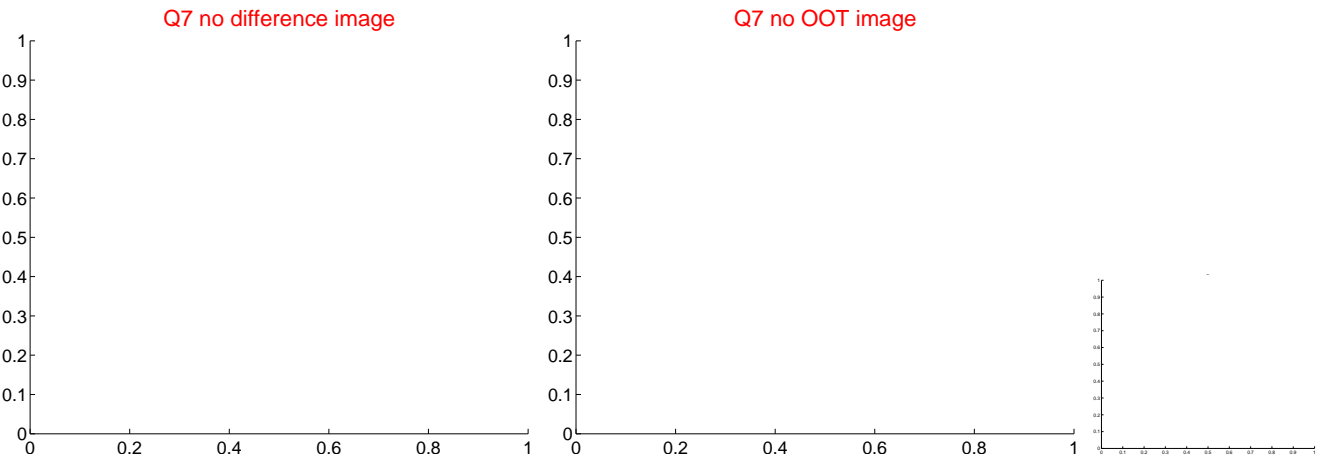
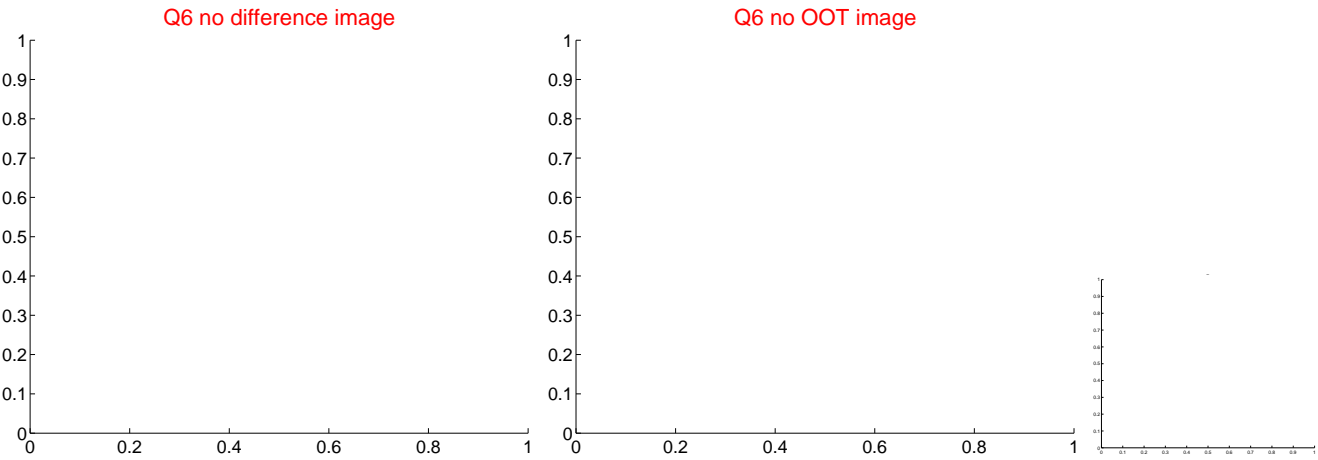
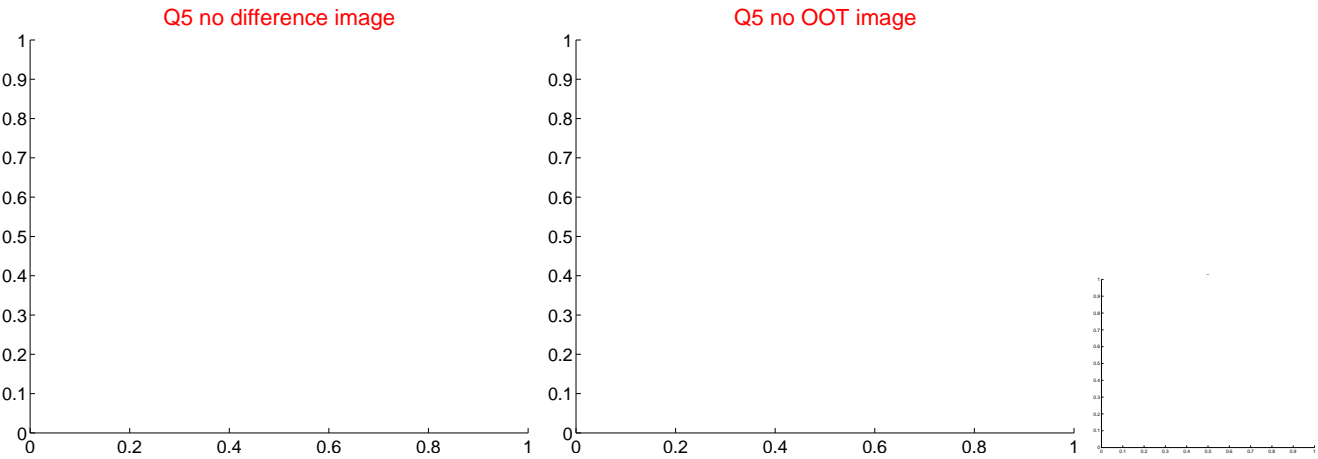


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

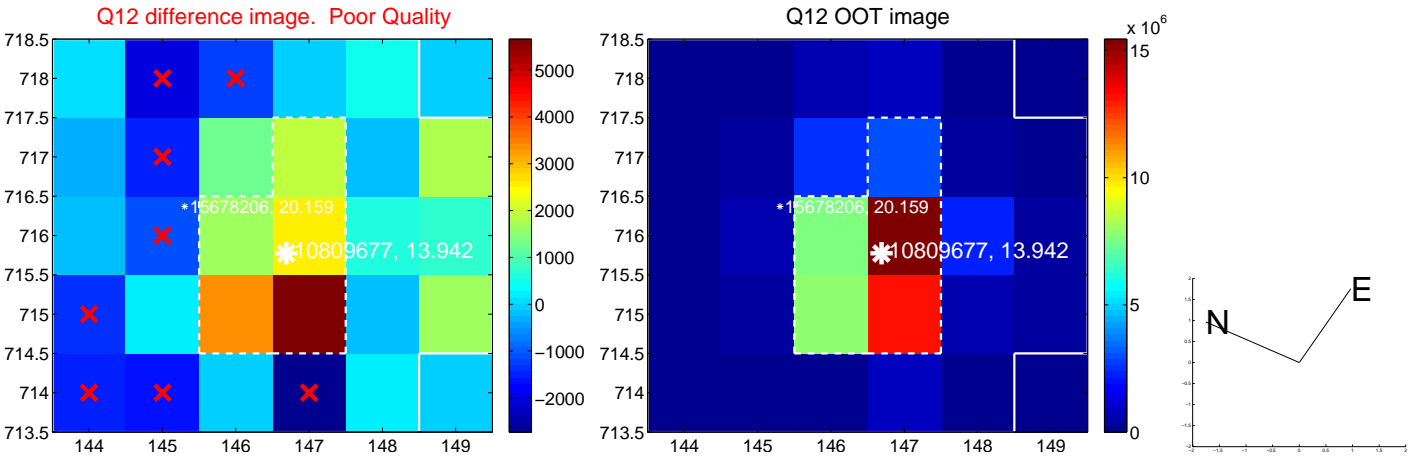
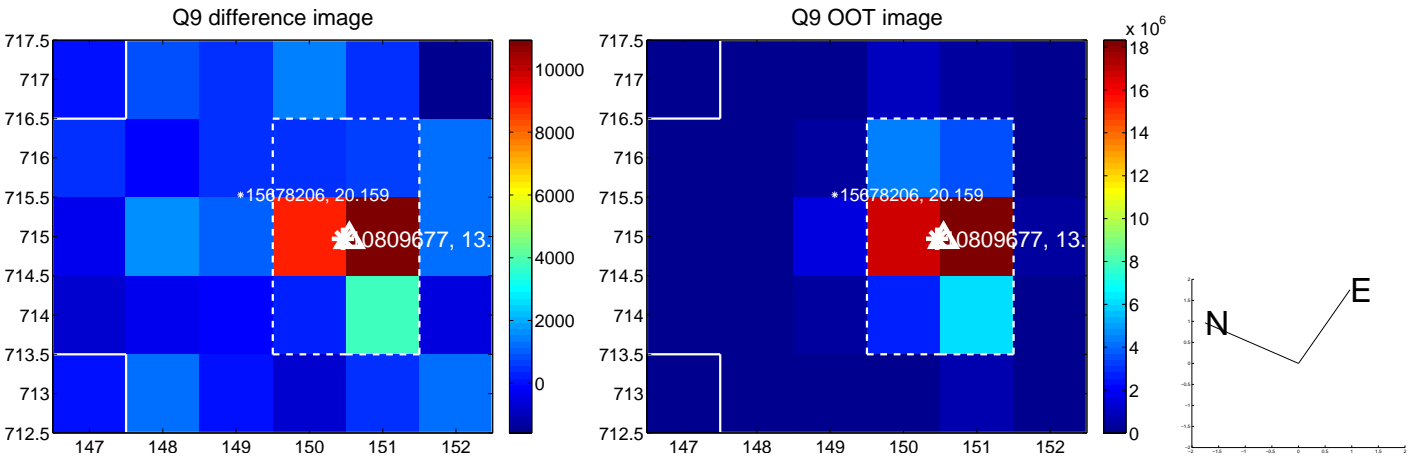
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



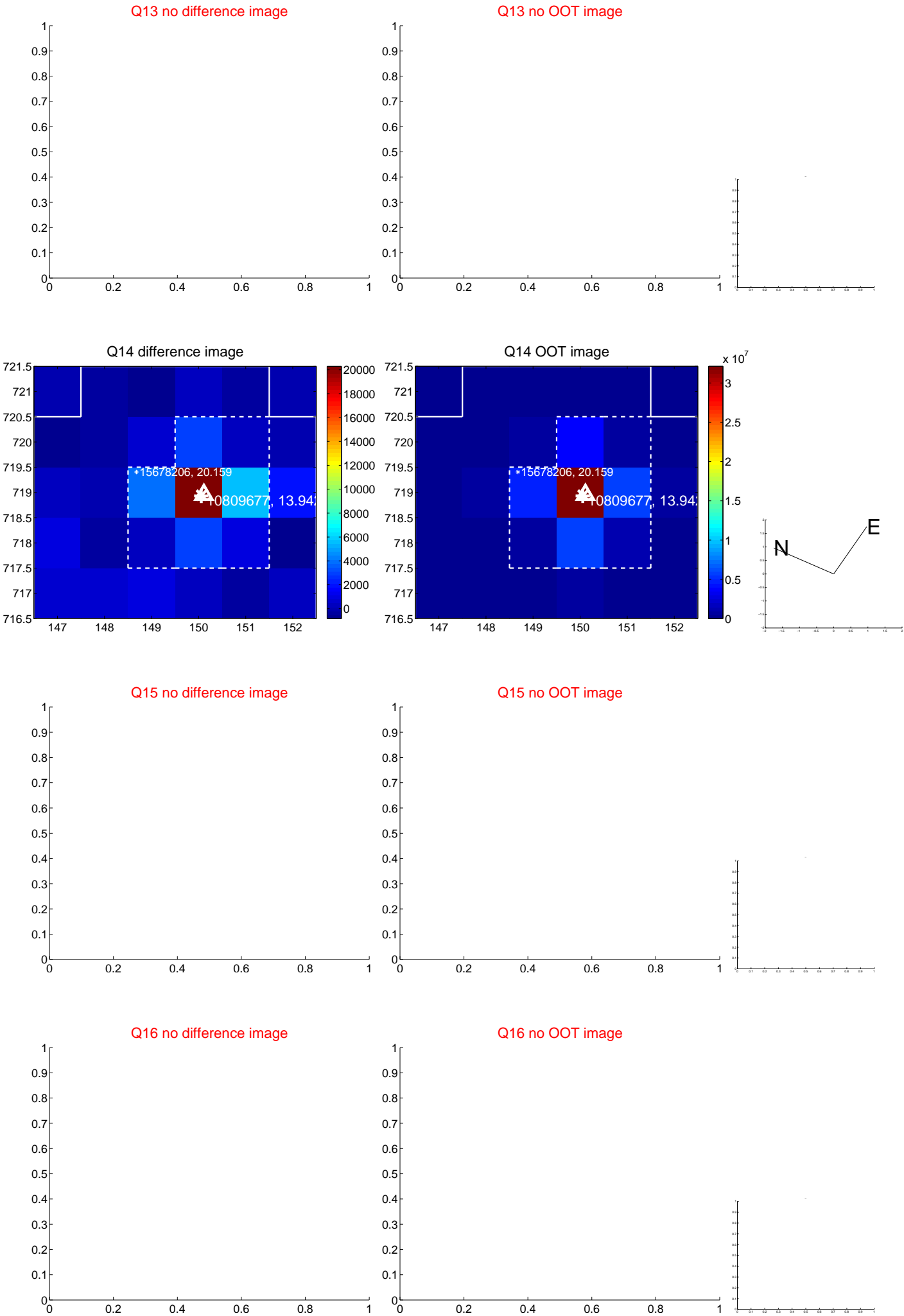
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



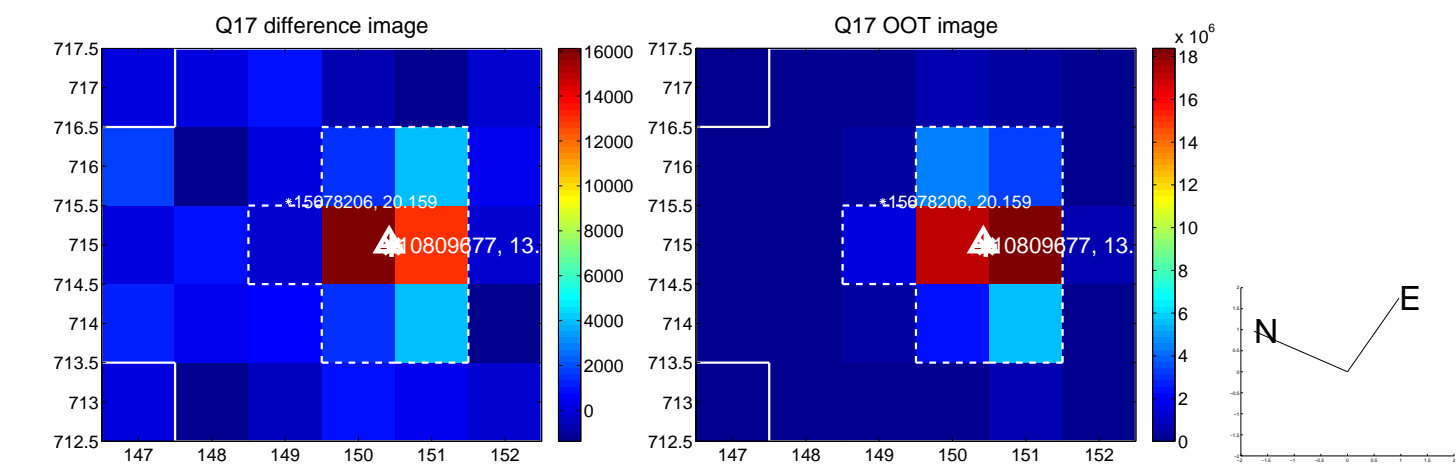
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



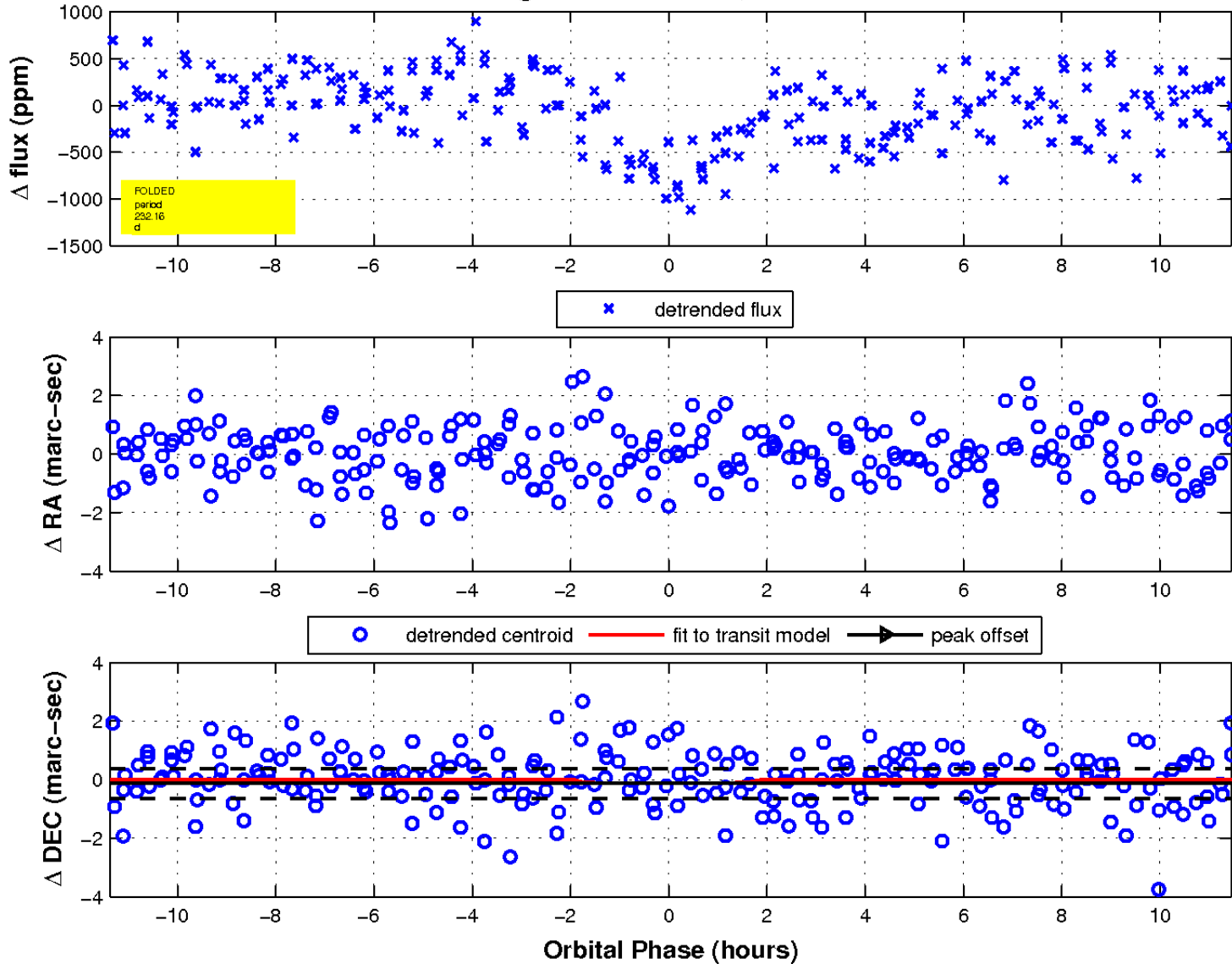
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

