

KIC 011823054

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})
011823054-01	OBS	0543.01	4.302129	134.720997	735.3	2.201	53.7	60.8	0.86	5041	2.84	182.83
011823054-02	OBS	0543.02	3.137847	133.555527	293.8	1.990	25.5	28.0	0.86	5041	1.69	278.47

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011823054-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
011823054-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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.

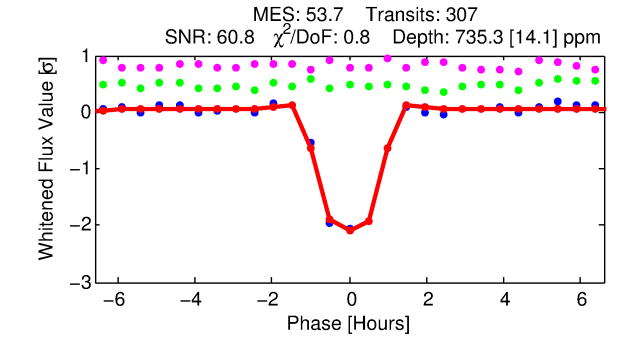
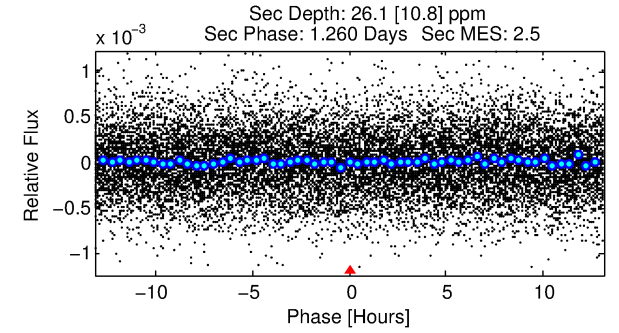
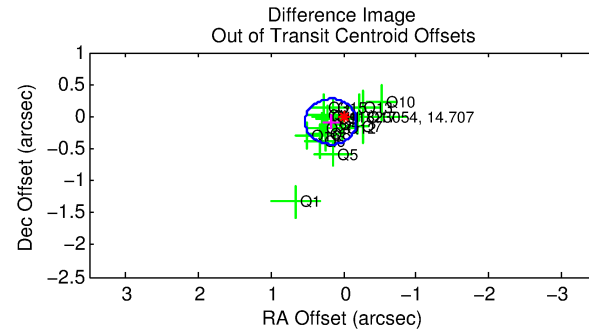
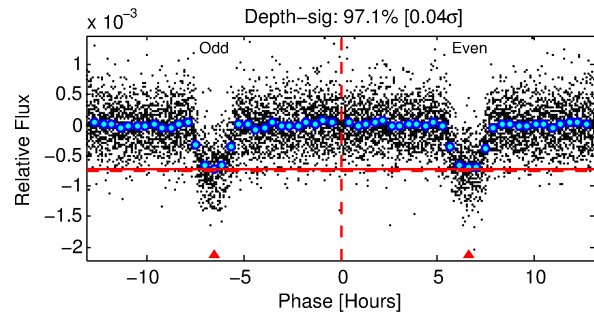
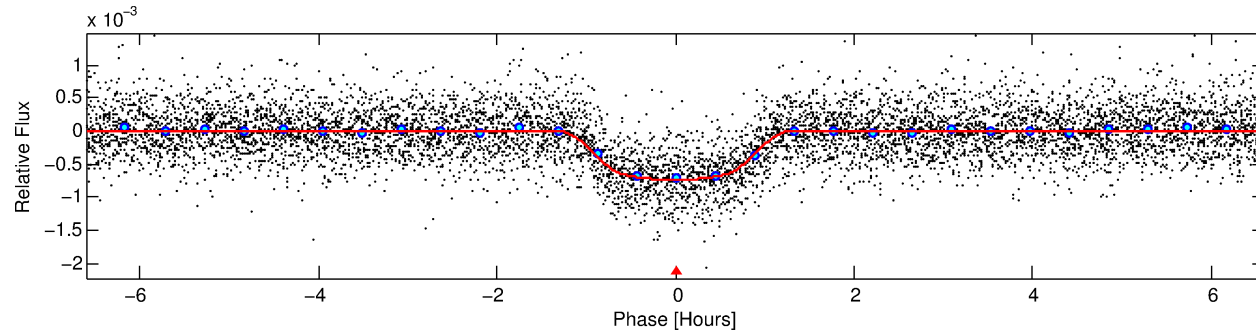
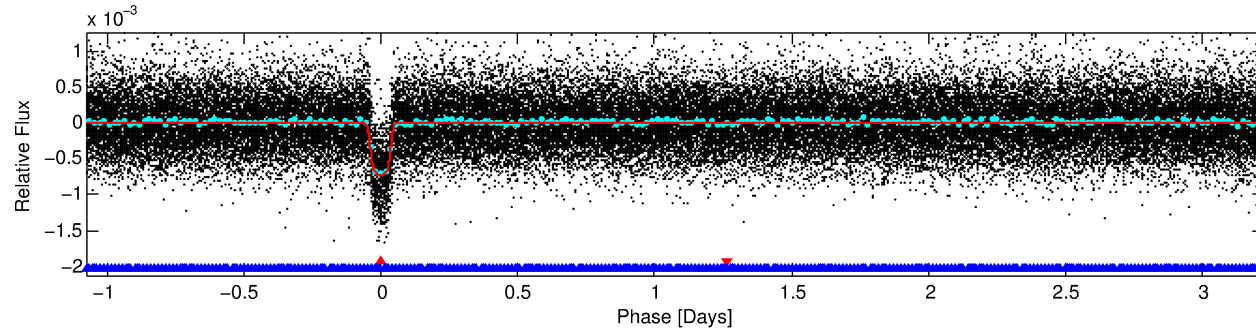
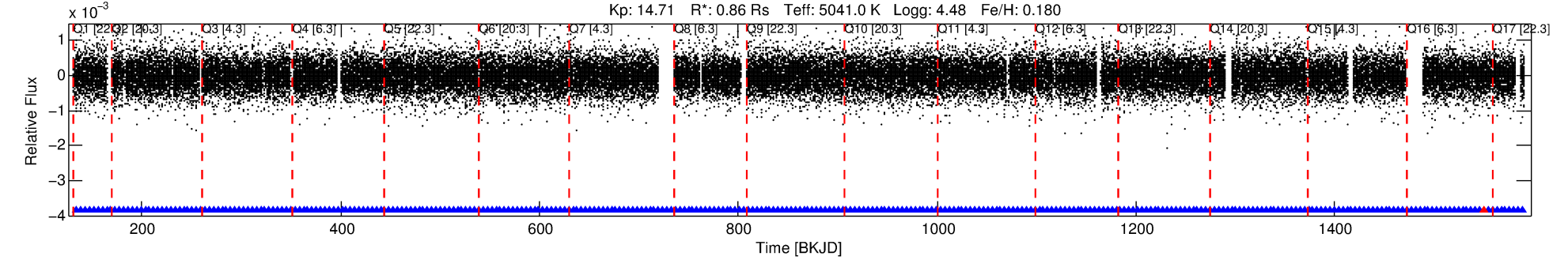
Ephemeris Match Information For 011823054-01

No Significant Match Found

DV One-Page Summary

KIC: 11823054 Candidate: 1 of 2 Period: 4.302 d
KOI: K00543.01 Name: Kepler-181c Corr: 0.946

Kp: 14.71 R*: 0.86 Rs Teff: 5041.0 K Logg: 4.48 Fe/H: 0.180



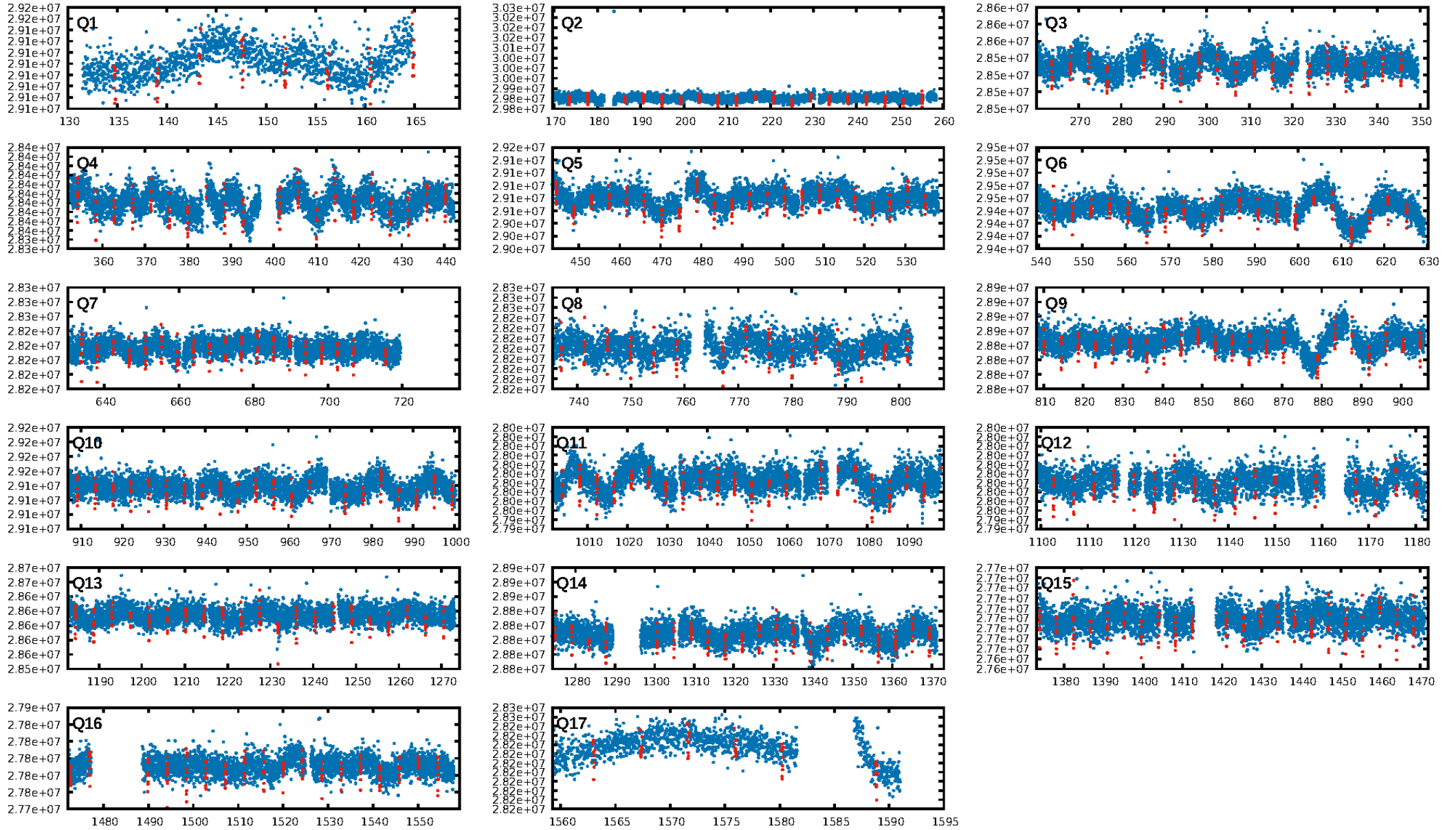
DV Fit Results:

Period = 4.30213 [0.00000] d
Epoch = 134.7210 [0.0007] BKJD
Rp/R* = 0.0304 [0.0021]
a/R* = 7.56 [1.98]
b = 0.90 [0.06]
Seff = 182.83 [26.46]
Teff = 938 [34] K
Rp = 2.84 [0.30] Re
a = 0.0482 [0.0038] AU
Ag = 4.14 [1.89] [1.66σ]
Teffp = 2068 [229] K [4.88σ]

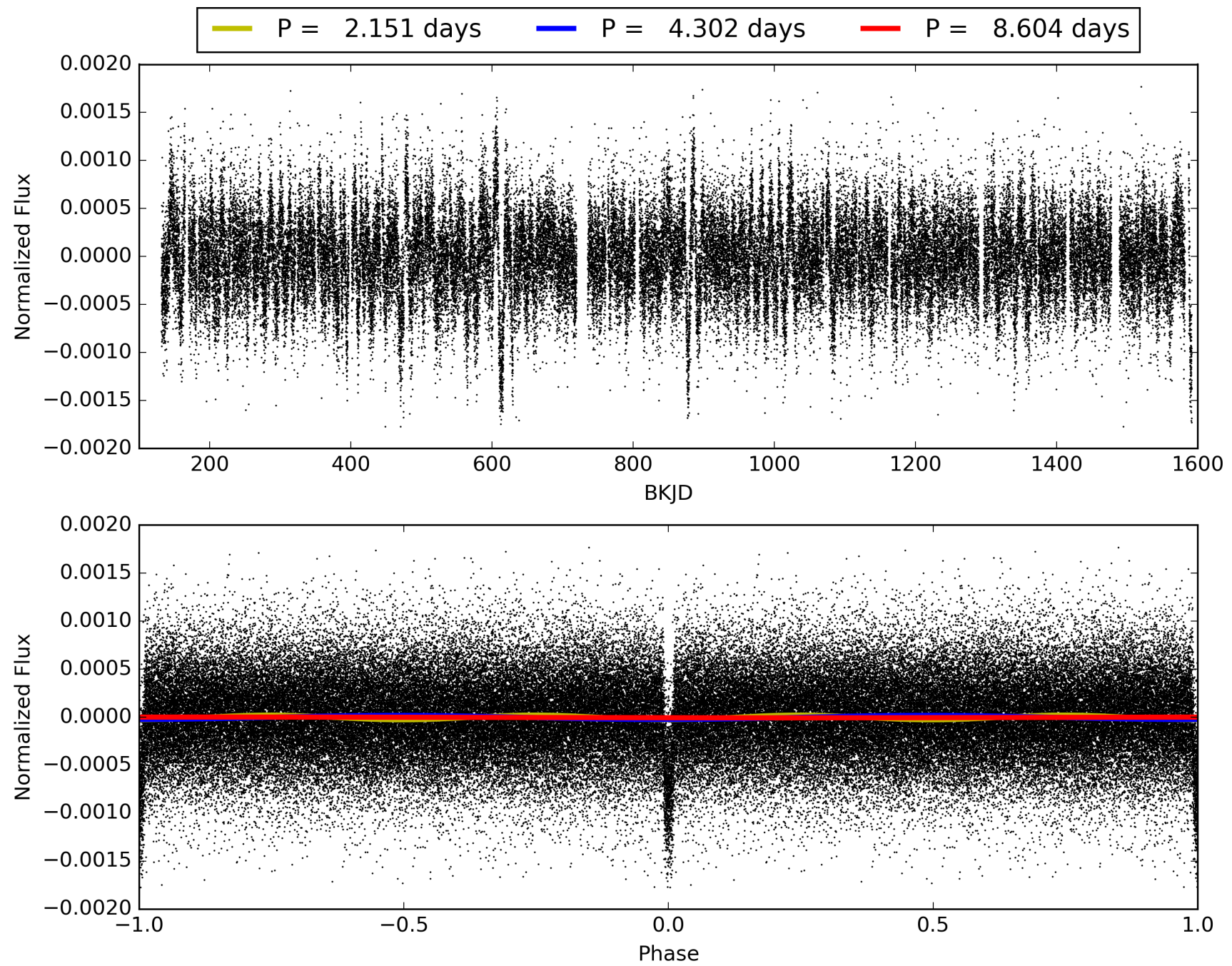
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [9.42σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [292/293]
GhostDiagnostic-chr: 7.163
Centroid-sig: 9.1%
Centroid-so: 0.685 arcsec [2.81σ]
OotOffset-rm: 0.192 arcsec [1.63σ]
KicOffset-rm: 0.121 arcsec [1.13σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 011823054-01, PDC Light Curves

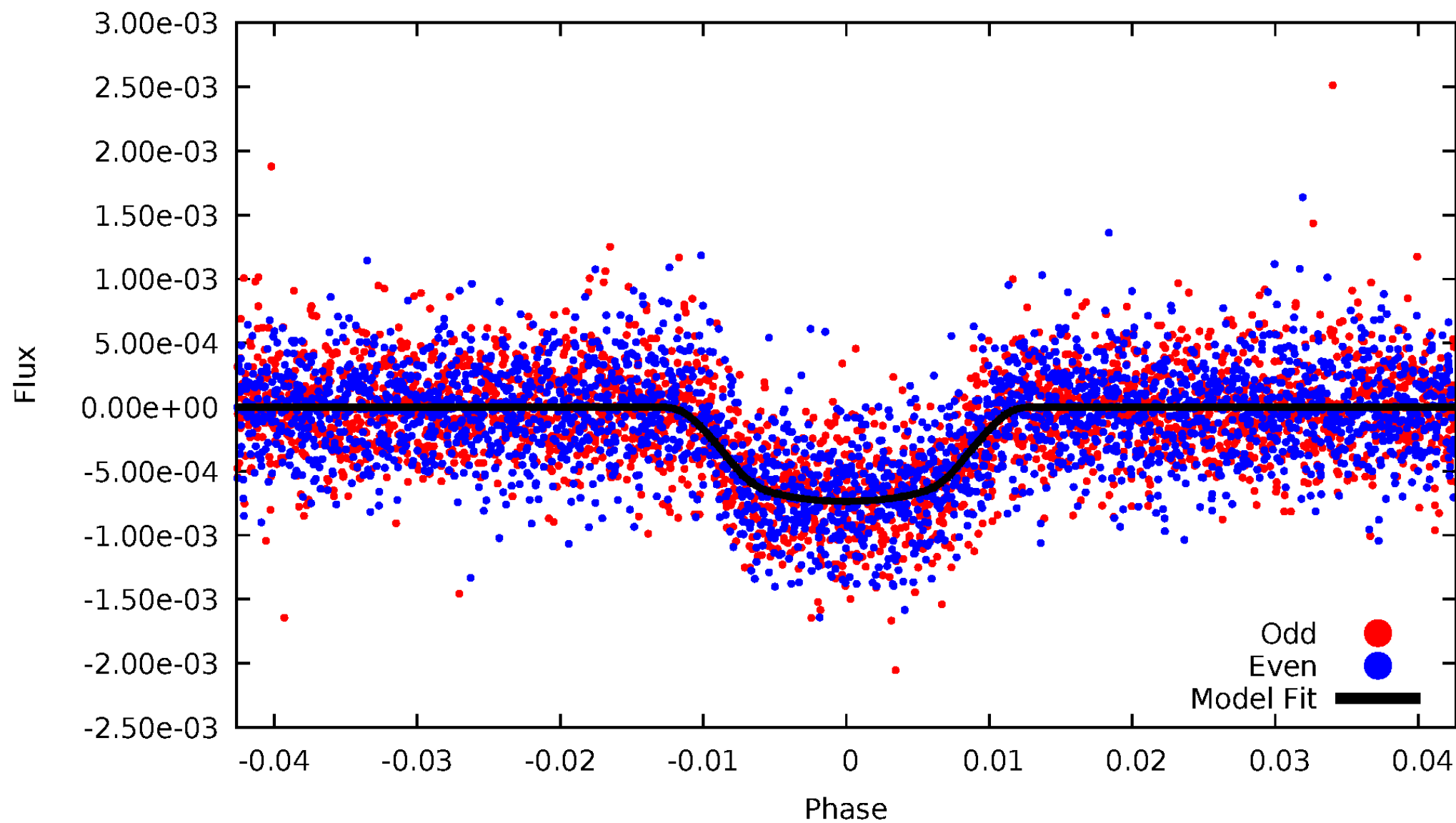


TCE 011823054-01



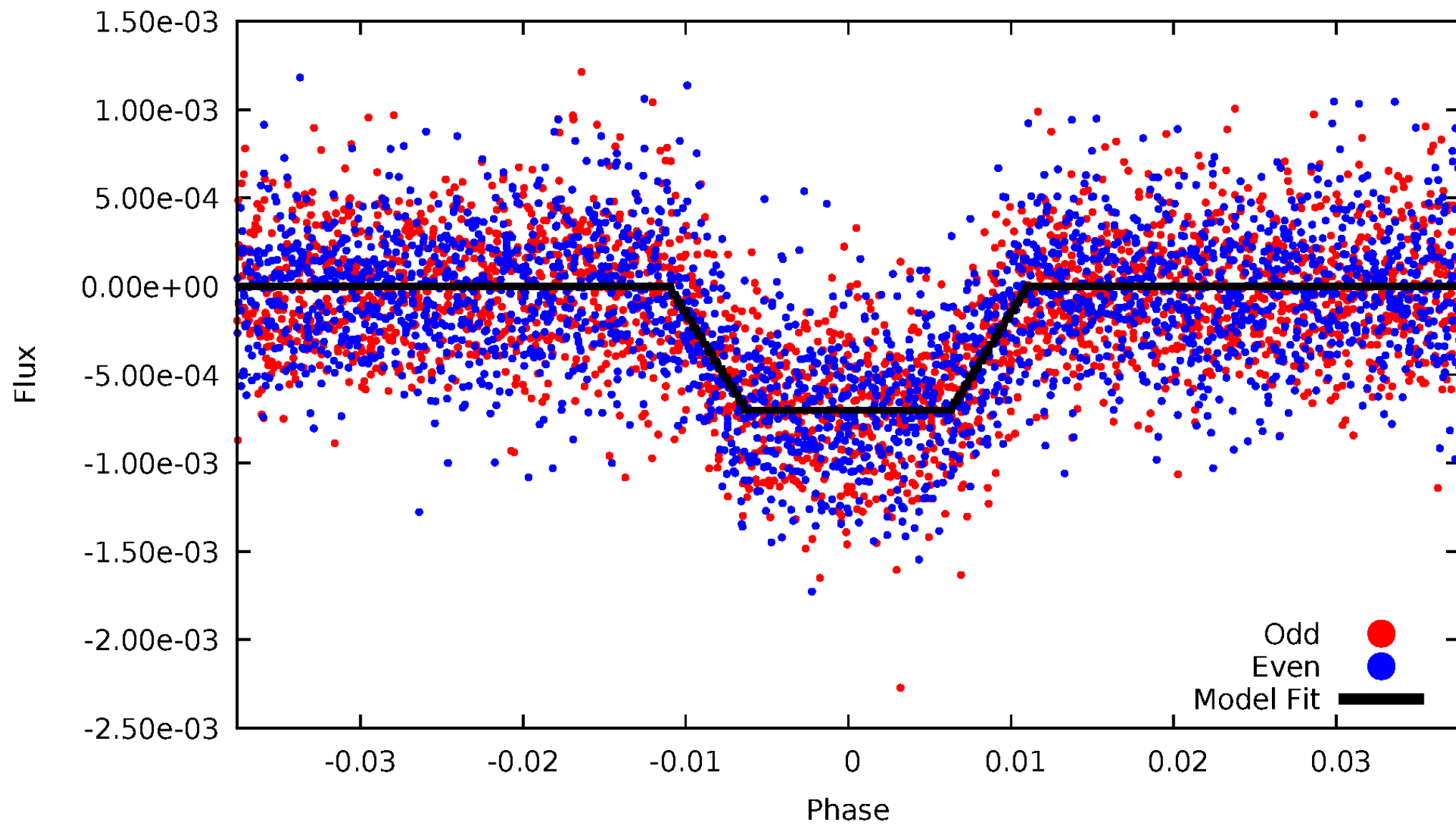
DV Odd/Even

TCE 011823054-01



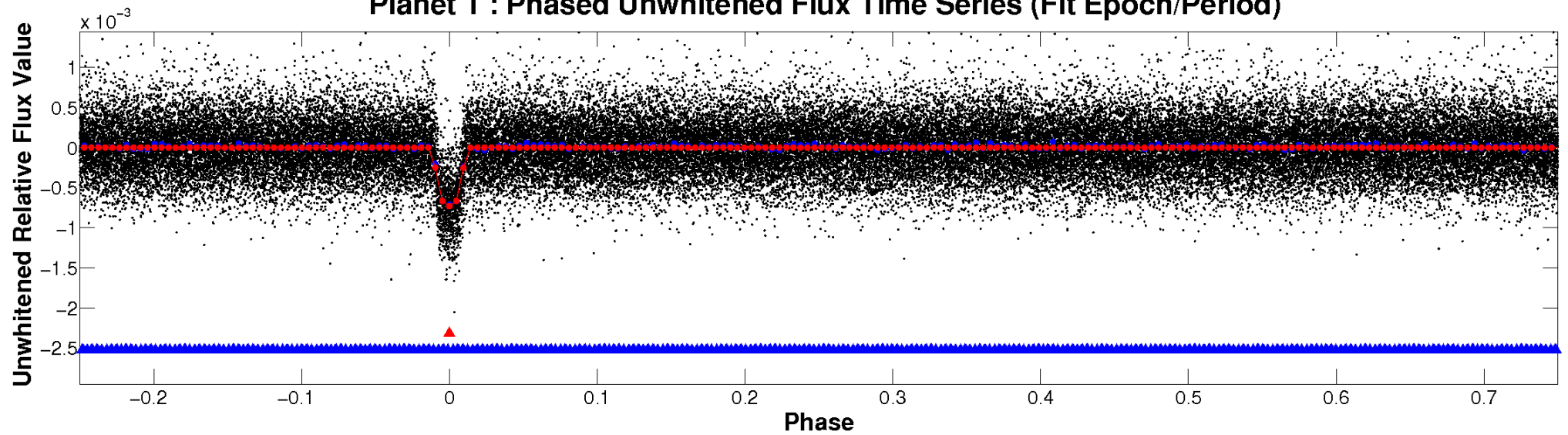
ALT Odd/Even

TCE 011823054-01

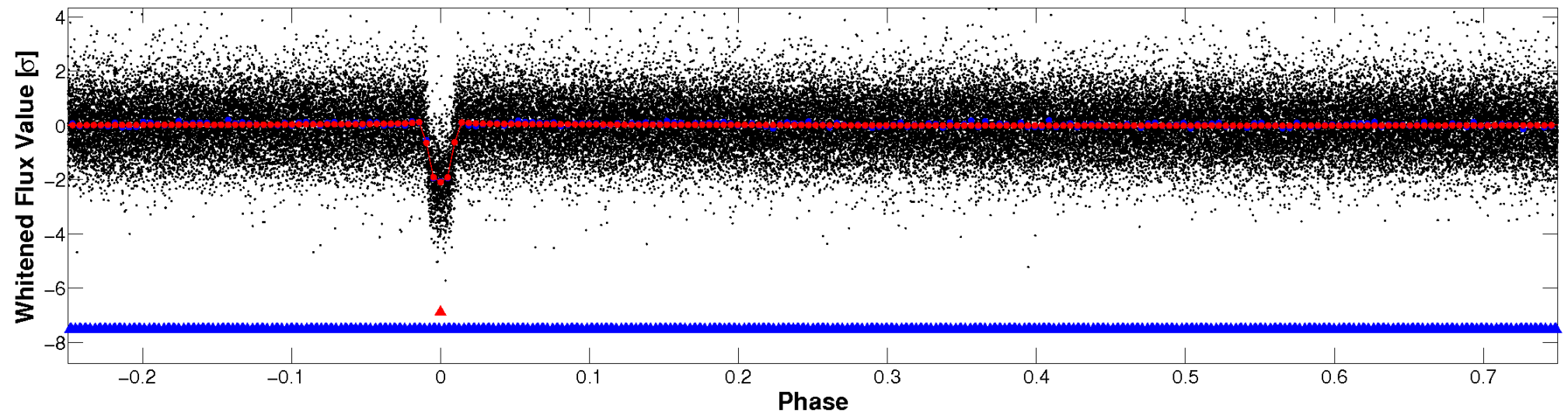


Non-Whitened Vs. Whitened Light Curve

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

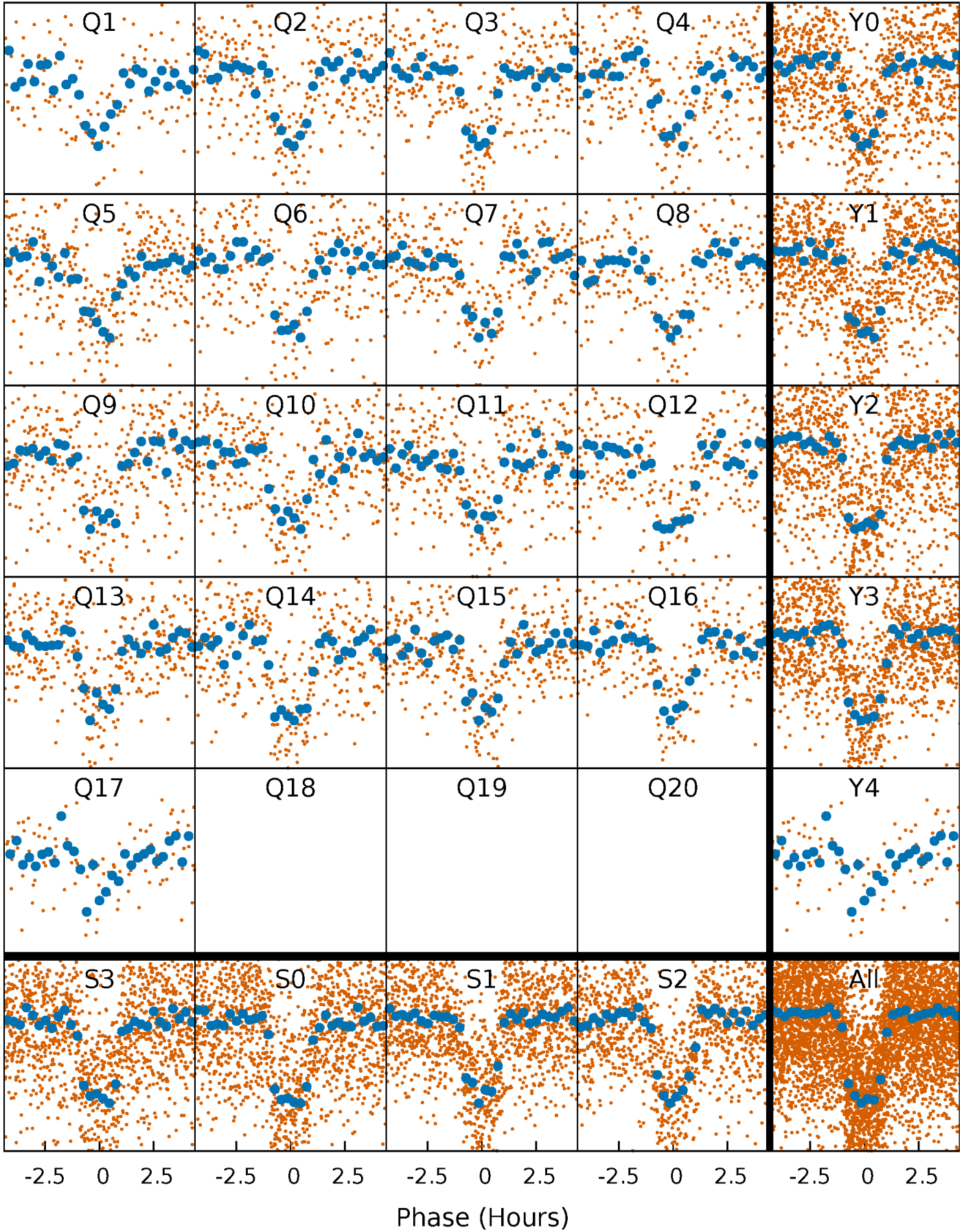


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



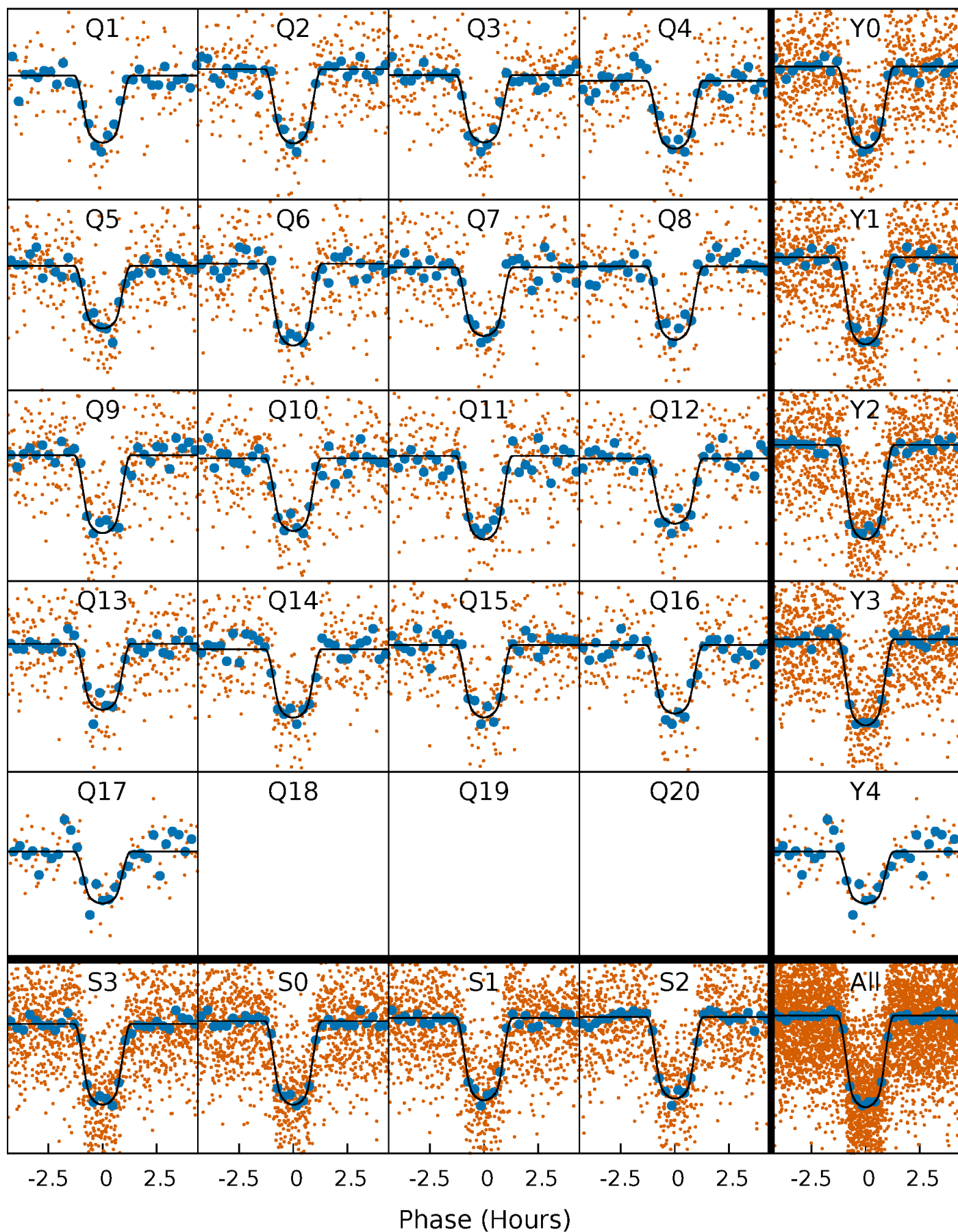
PDC Quarter-Phased Transit Curves

TCE 011823054-01 P= 4.302129 Days $T_0=134.720997$ (BKJD)



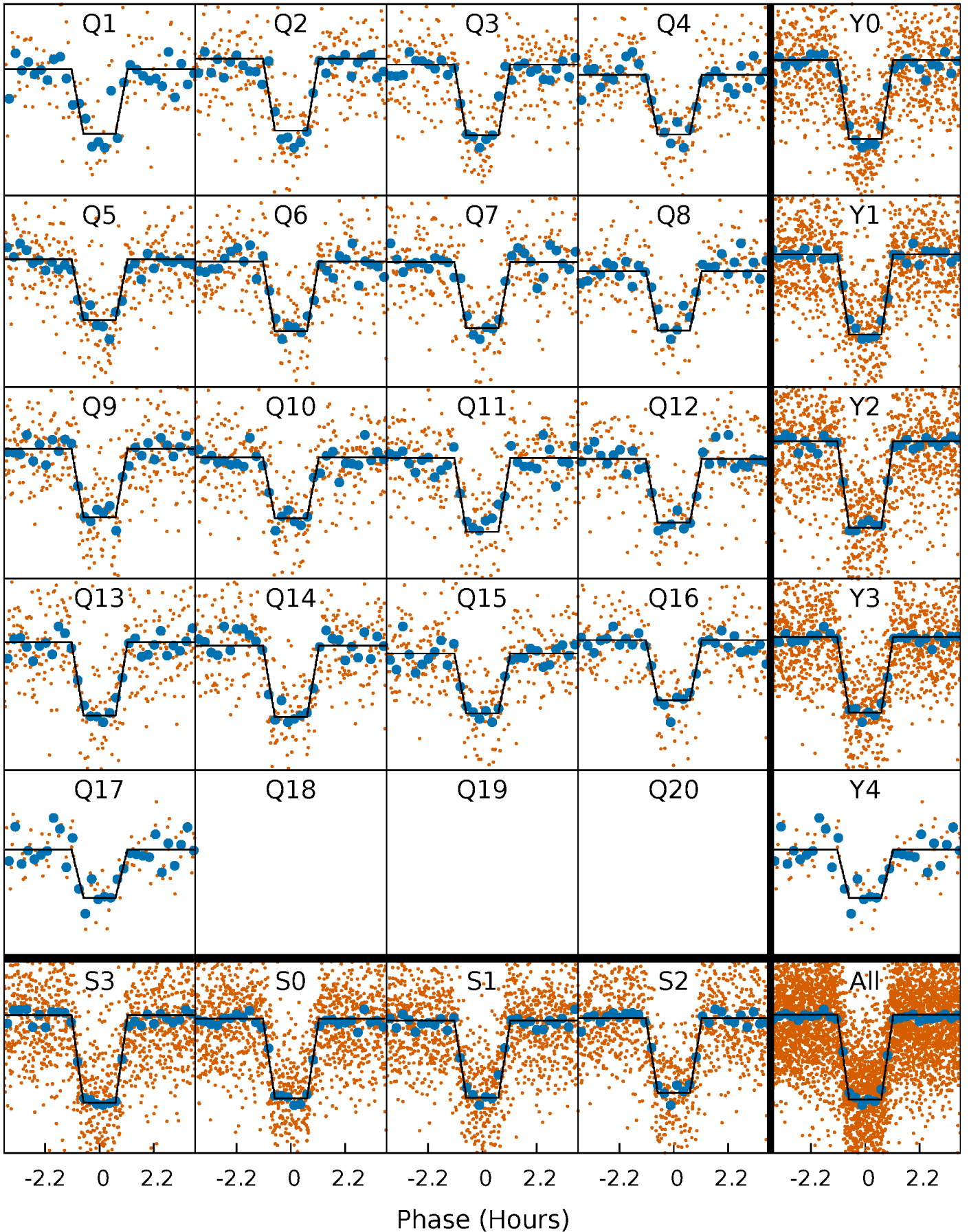
DV Quarter-Phased Transit Curves

TCE 011823054-01 P= 4.302129 Days $T_0=134.720997$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

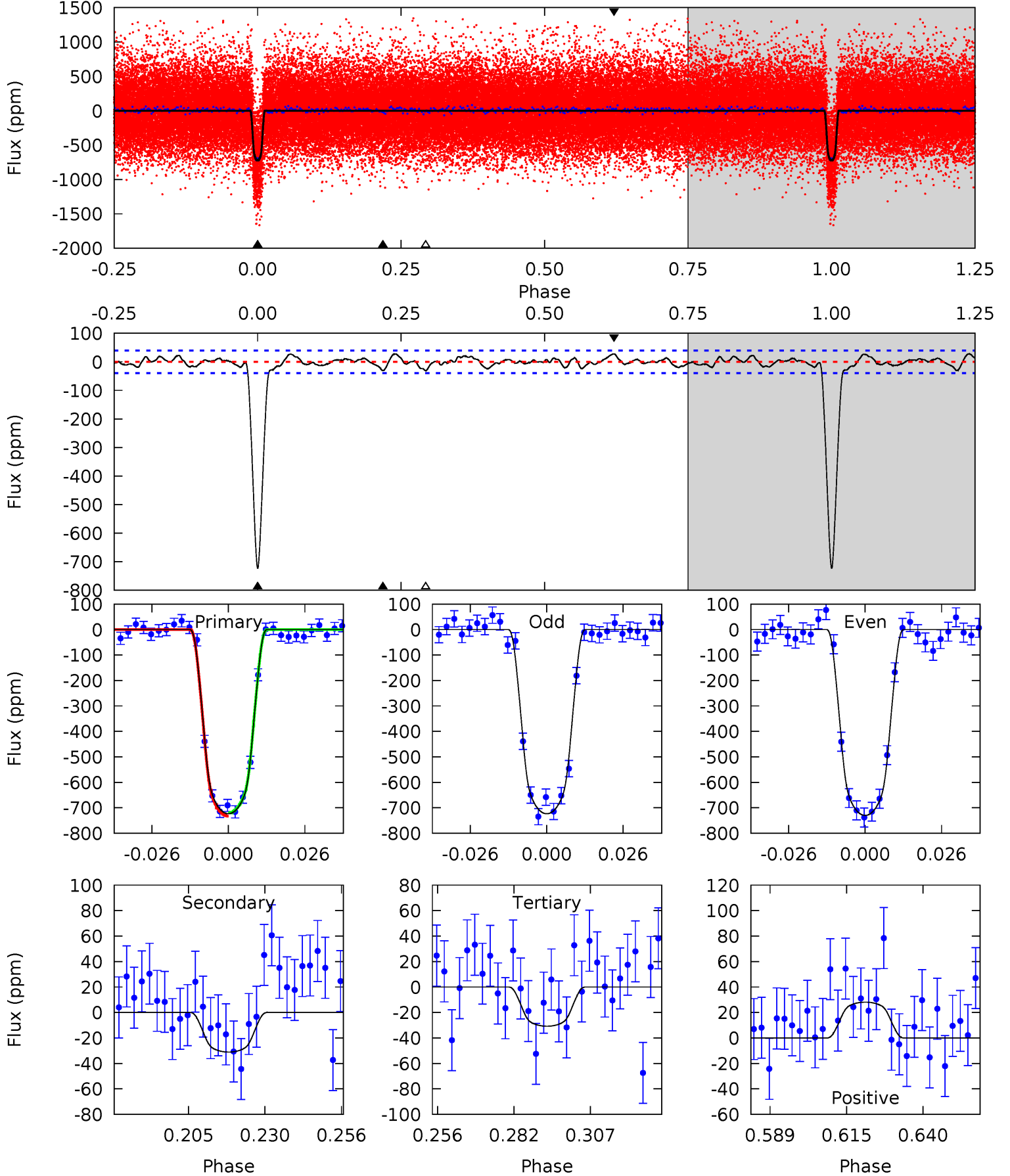
TCE 011823054-01 P= 4.302138 Days $T_0=134.719659$ (BKJD)



DV Model-Shift Uniqueness Test

011823054-01, P = 4.302129 Days, E = 130.418868 Days

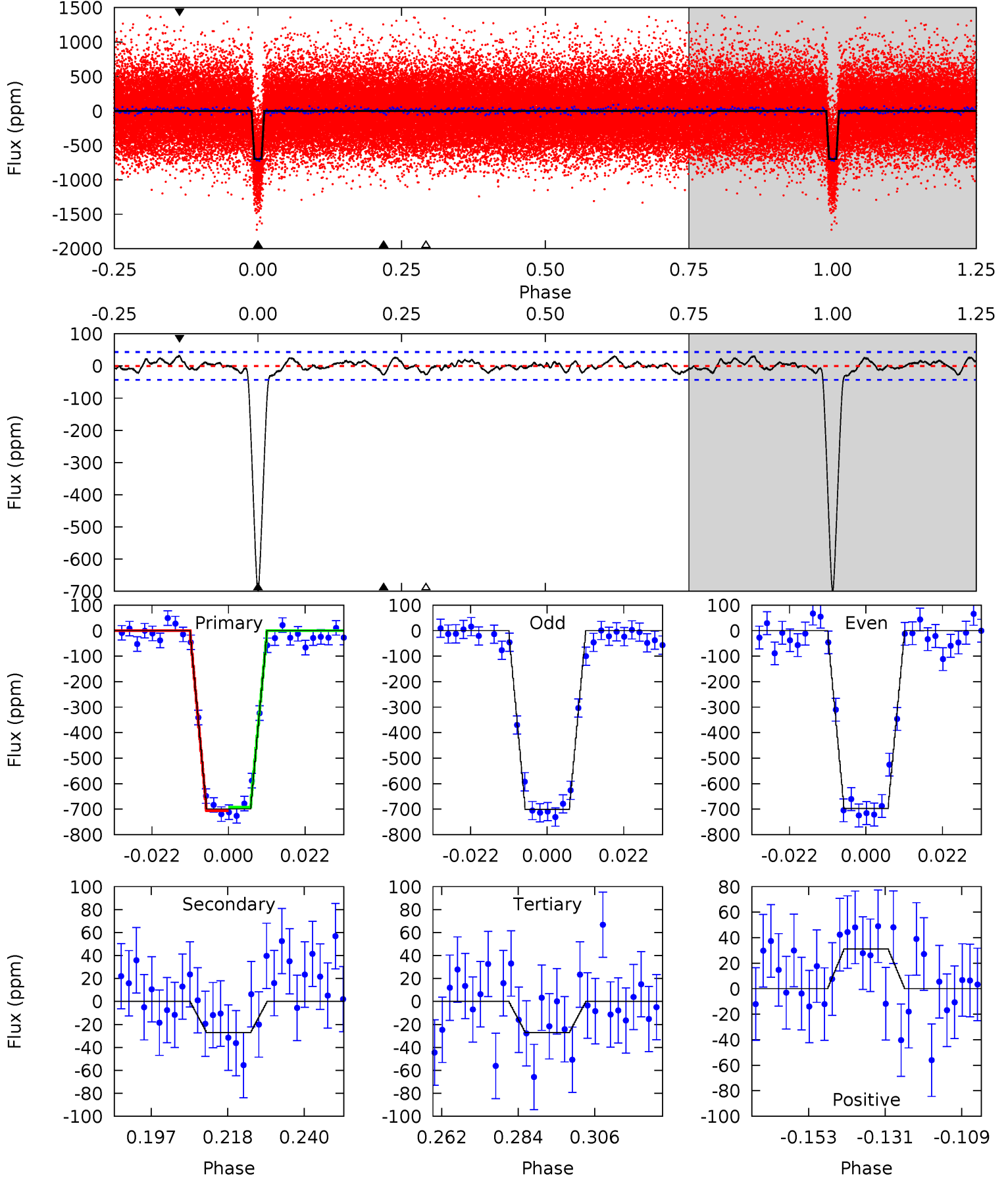
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
88.8	3.82	3.78	3.46	4.84	2.23	1.40	85.0	85.4	0.04	0.36	0.40	1.00	0.04	0.78



Alt Model-Shift Uniqueness Test

011823054-01, P = 4.302138 Days, E = 130.417521 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
79.0	3.07	3.06	3.52	4.87	2.29	1.33	75.9	75.5	0.01	-0.45	0.21	0.99	0.04	0.84



Stellar Parameters For KIC 011823054

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5041^{+83}_{-75}	$4.479^{+0.077}_{-0.033}$	$0.180^{+0.150}_{-0.150}$	$0.857^{+0.041}_{-0.066}$	$0.807^{+0.052}_{-0.028}$	$1.804^{+0.535}_{-0.190}$
	+2%/-1%	+2%/-1%	+83%/-83%	+5%/-8%	+6%/-3%	+30%/-11%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 011823054-01 / KOI 0543.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-31 ± 8	$2.81^{+0.27}_{-0.23}$	1305^{+28}_{-32}	2826^{+120}_{-128}	$5.033^{+1.662}_{-1.425}$
Alt.	-27 ± 9	$2.46^{+0.22}_{-0.23}$	1303^{+30}_{-33}	2884^{+151}_{-166}	$5.853^{+2.416}_{-2.017}$

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

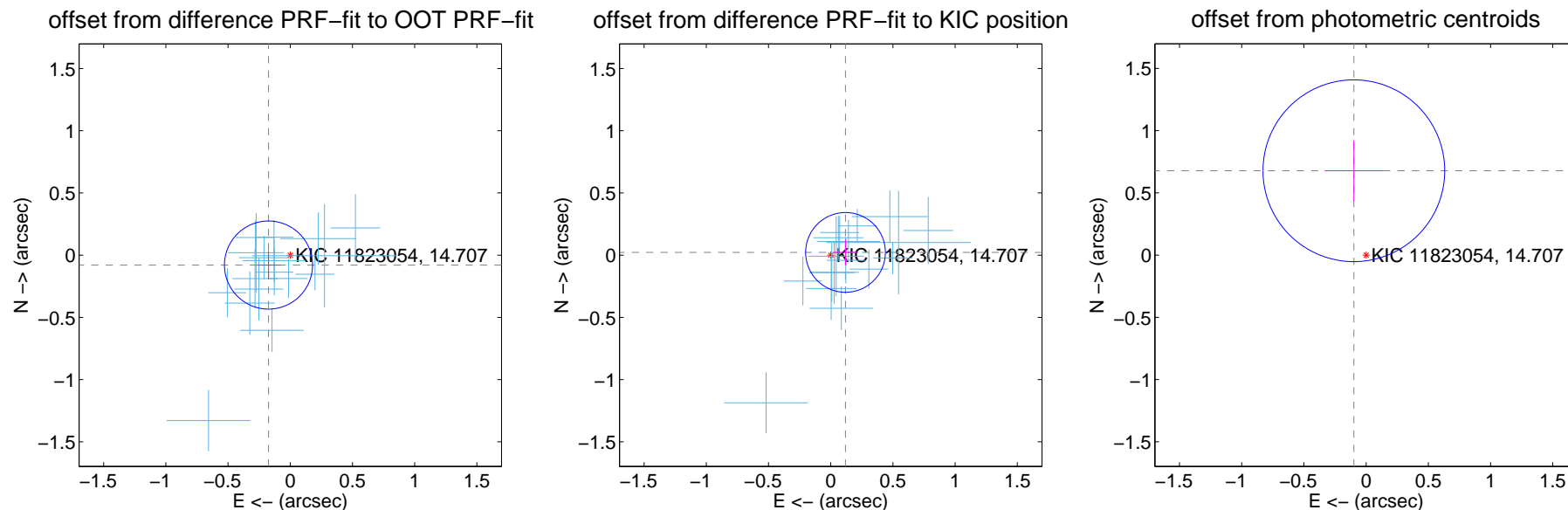
DV Centroid Data

Supplemental centroid analysis for 011823054-01. Kepler magnitude: 14.71. Transit SNR 60.81

There are 17 quarters with good PRF difference image offsets

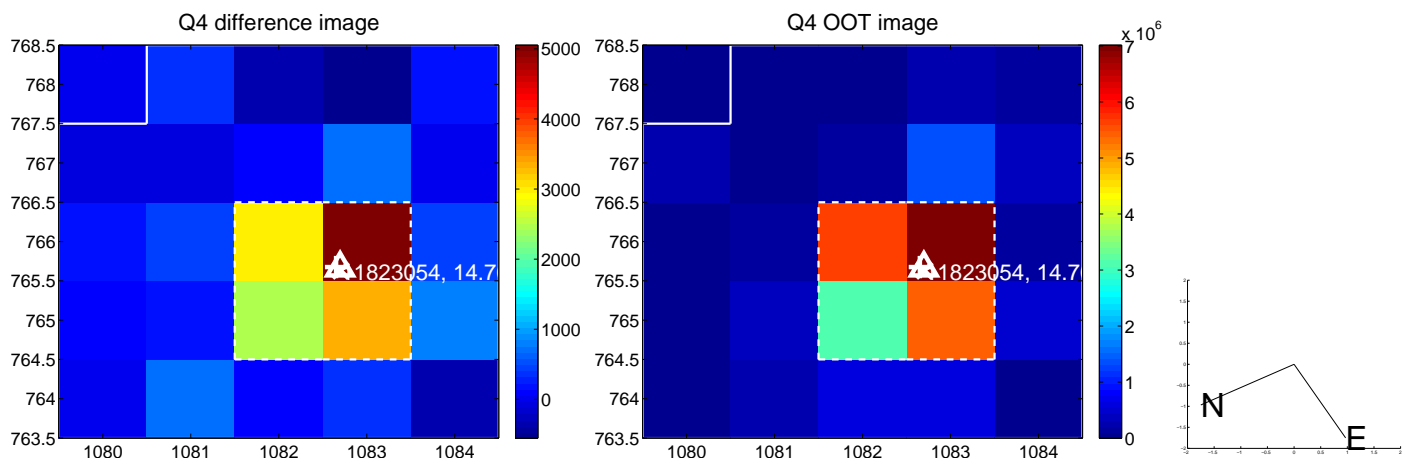
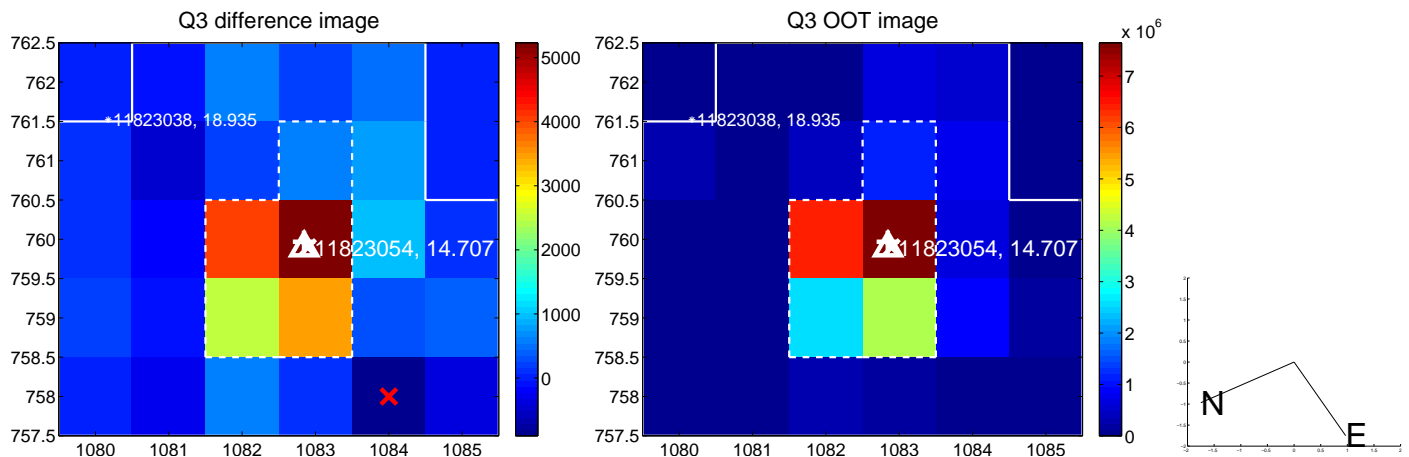
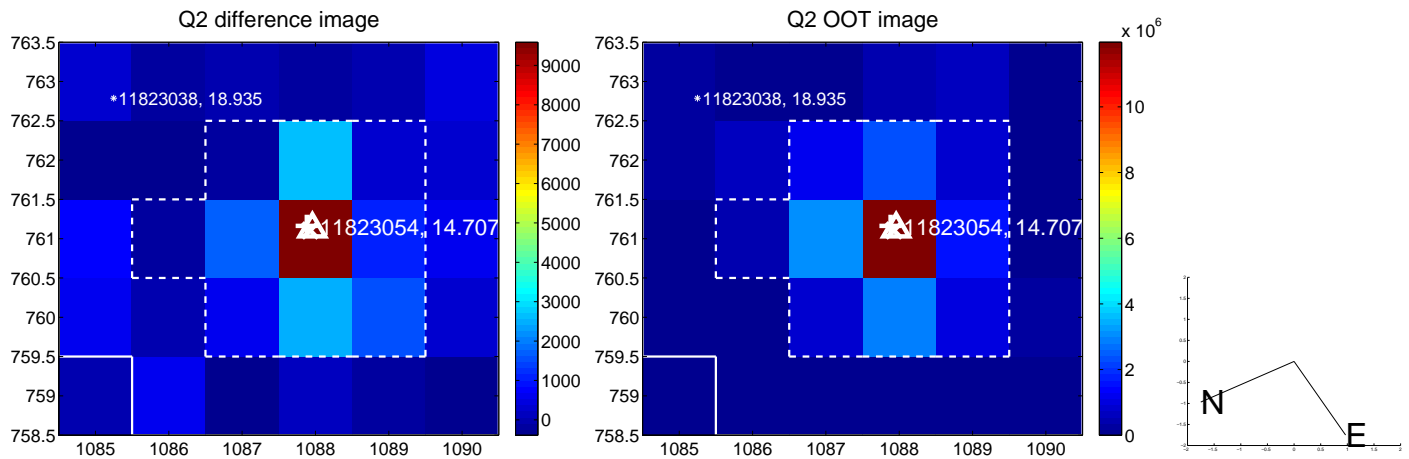
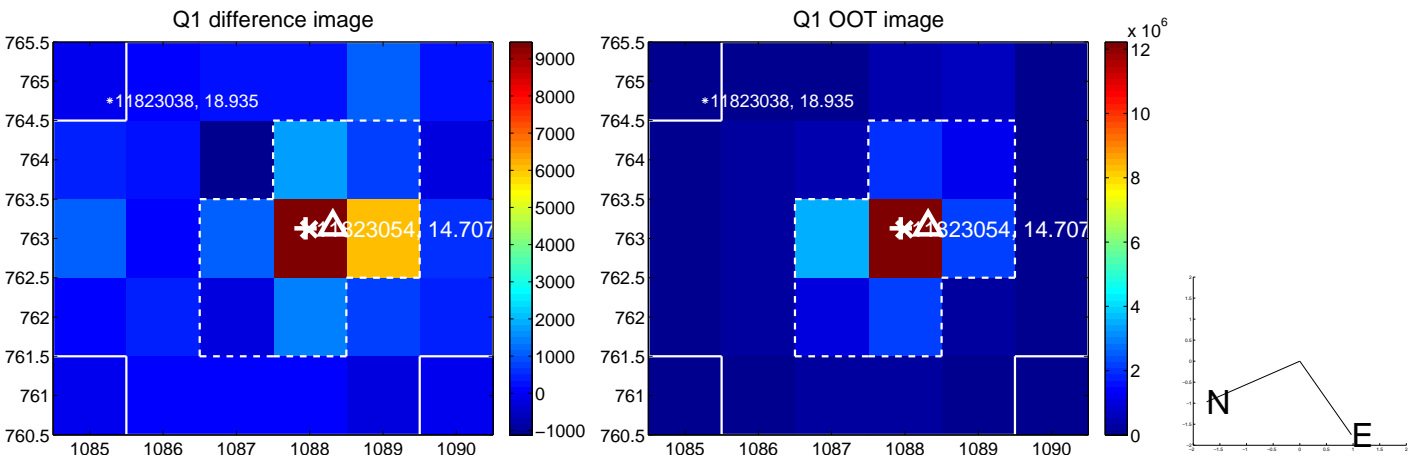
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.192 ± 0.118	1.63	0.175 ± 0.099	-0.080 ± 0.113
PRF-fit source offset from KIC position	0.121 ± 0.107	1.13	-0.119 ± 0.099	0.022 ± 0.105
photometric centroid source offset	0.68 ± 0.24	2.81	0.10 ± 0.23	0.68 ± 0.24

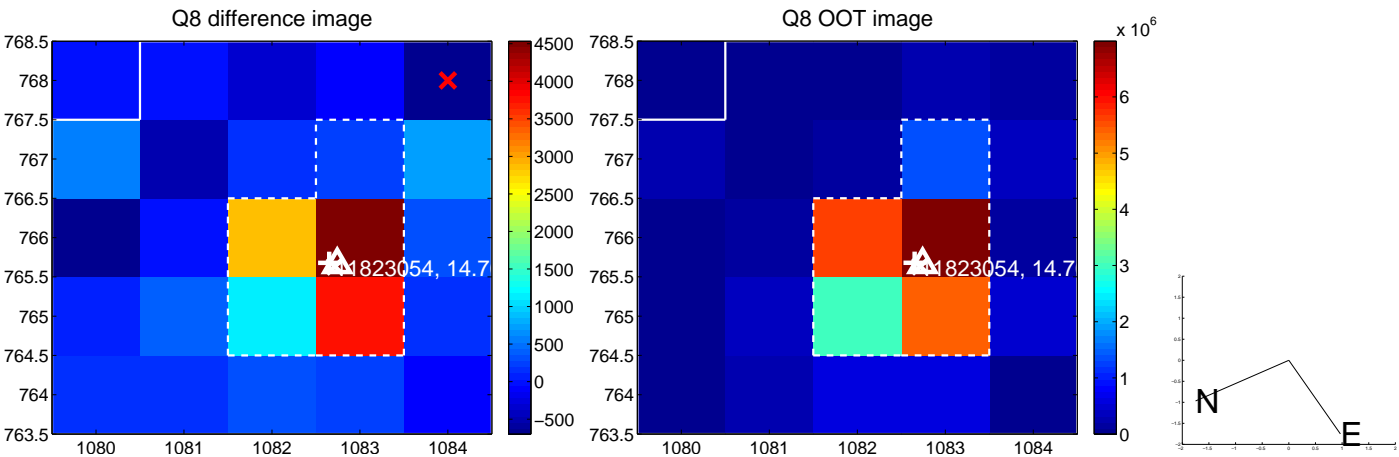
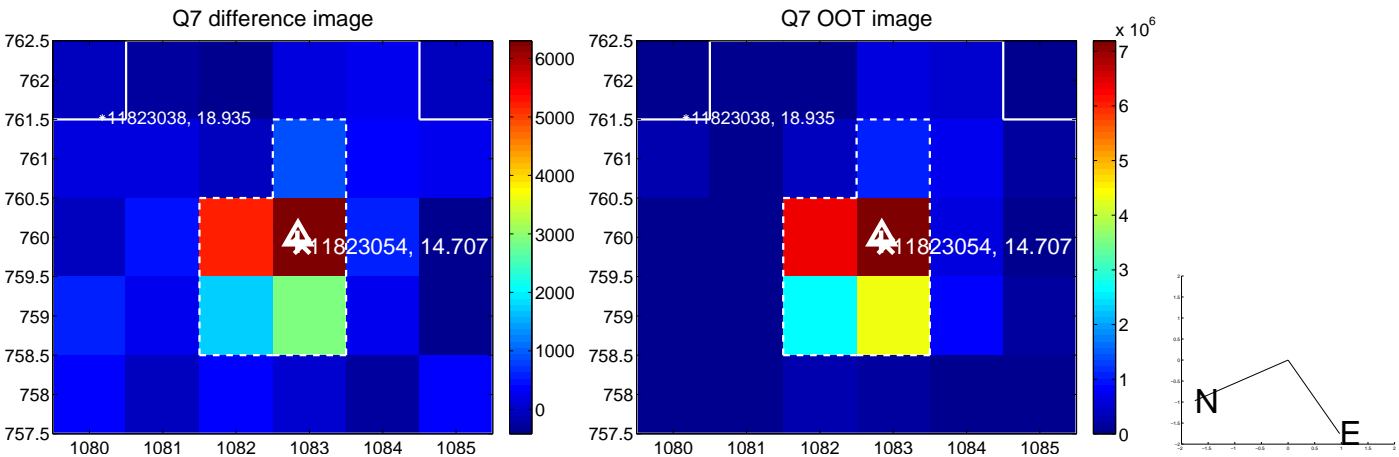
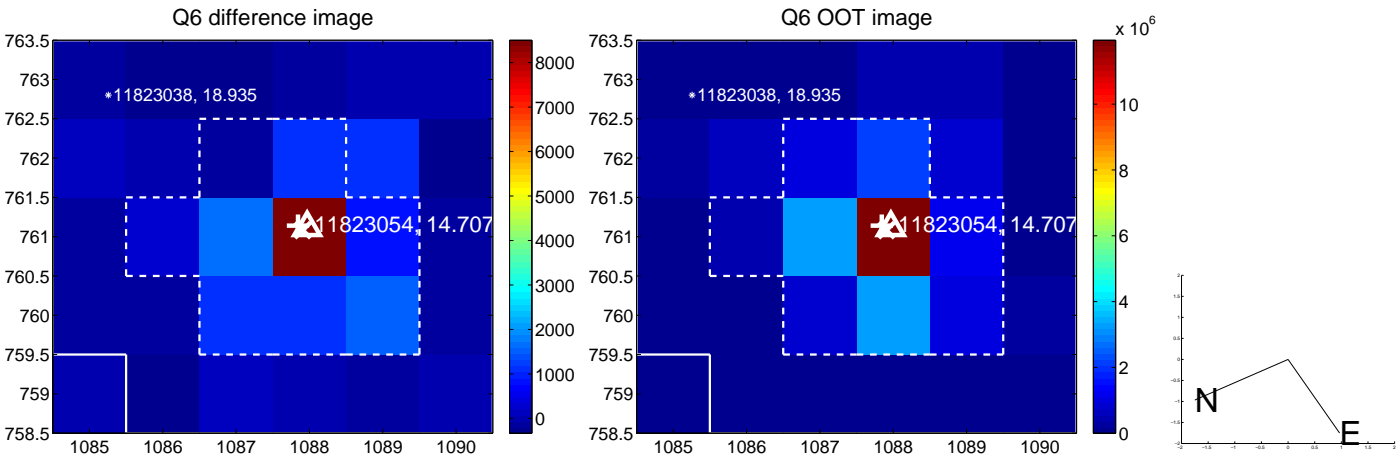
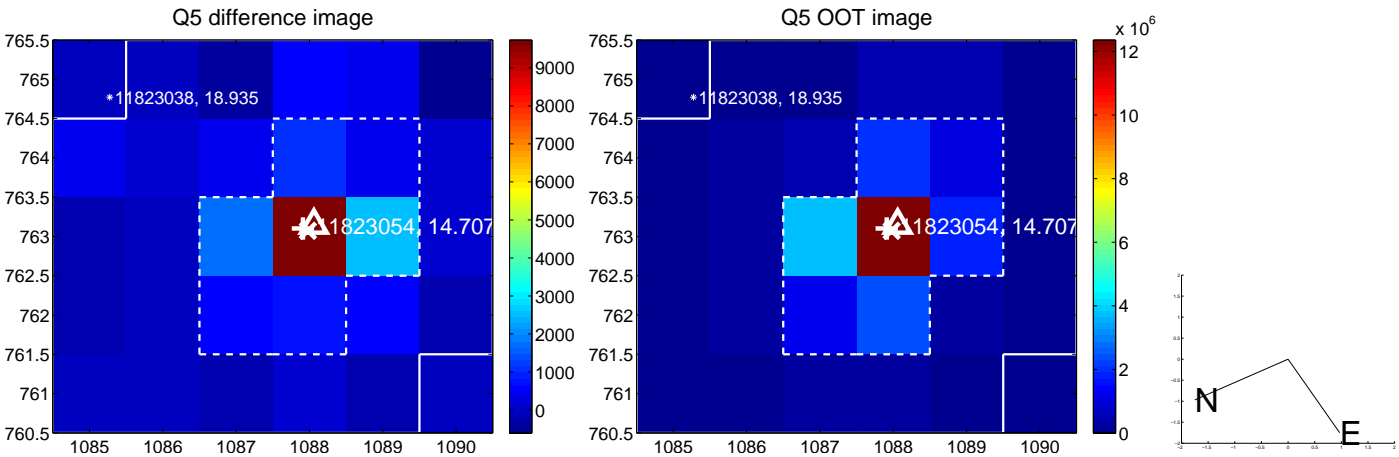


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

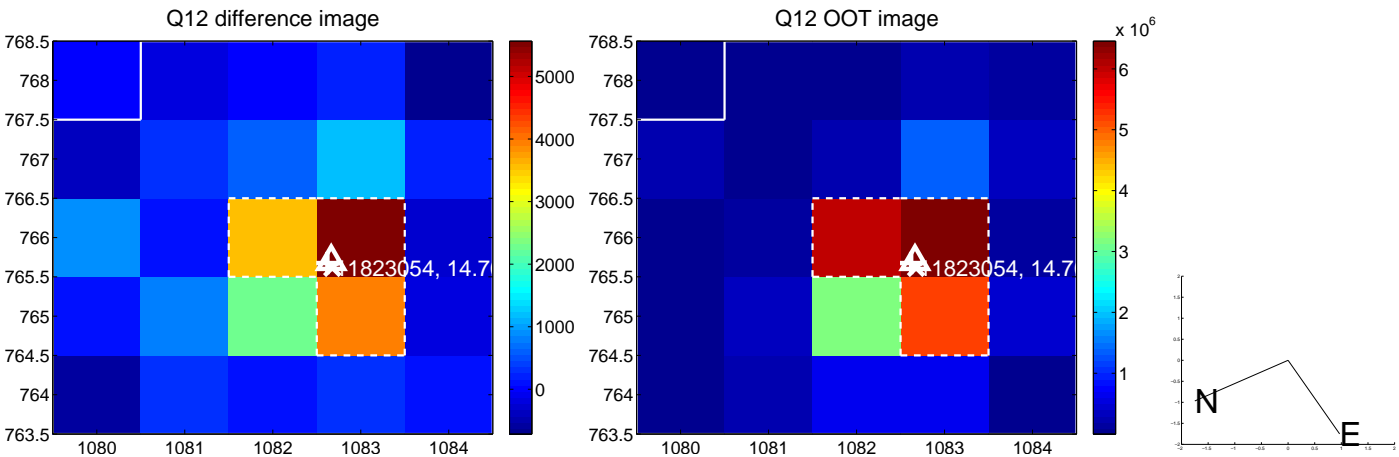
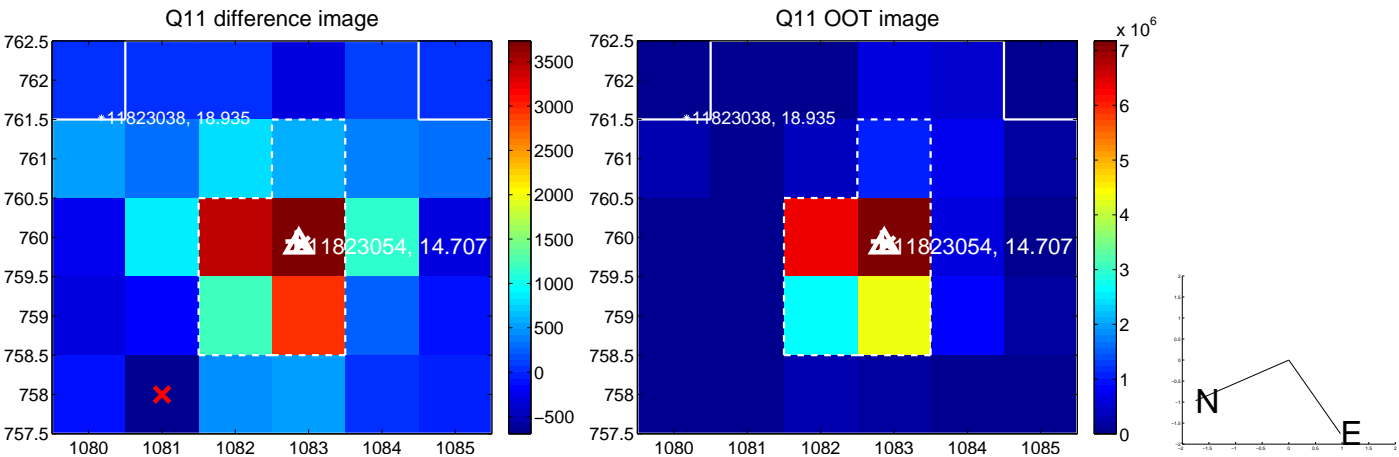
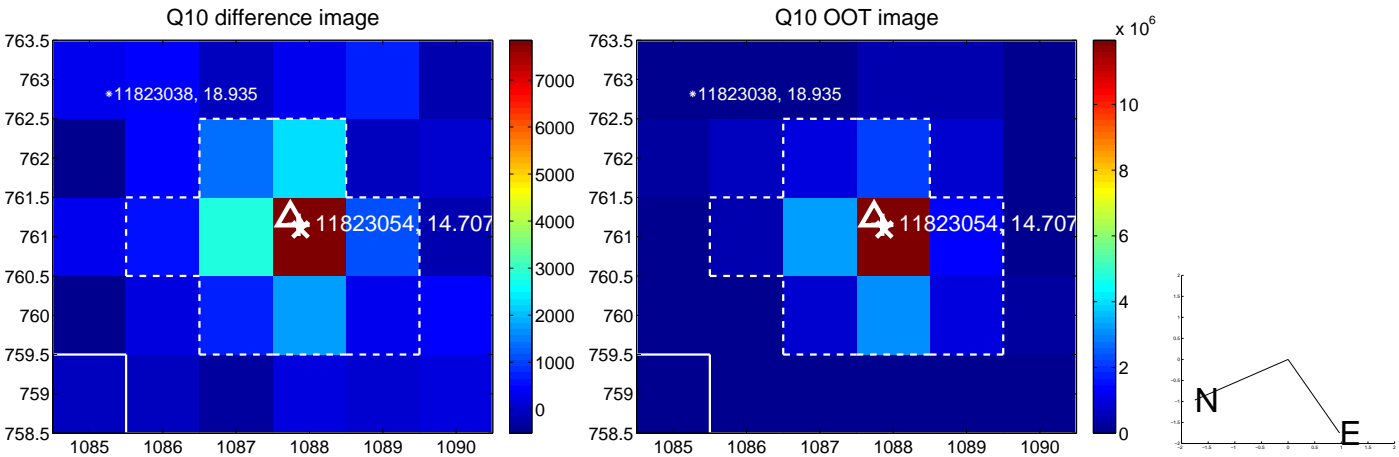
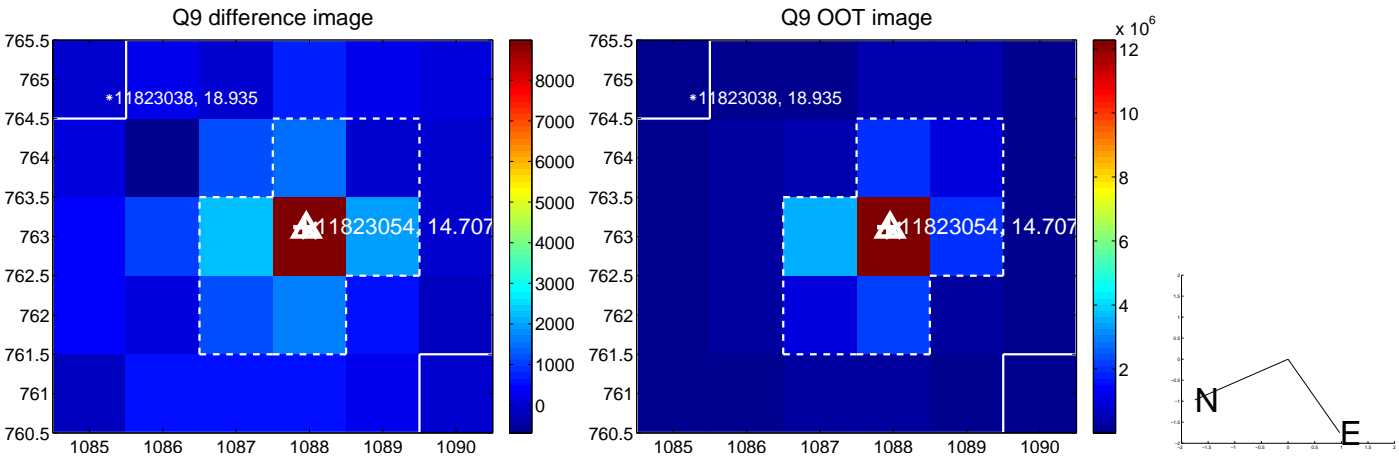
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



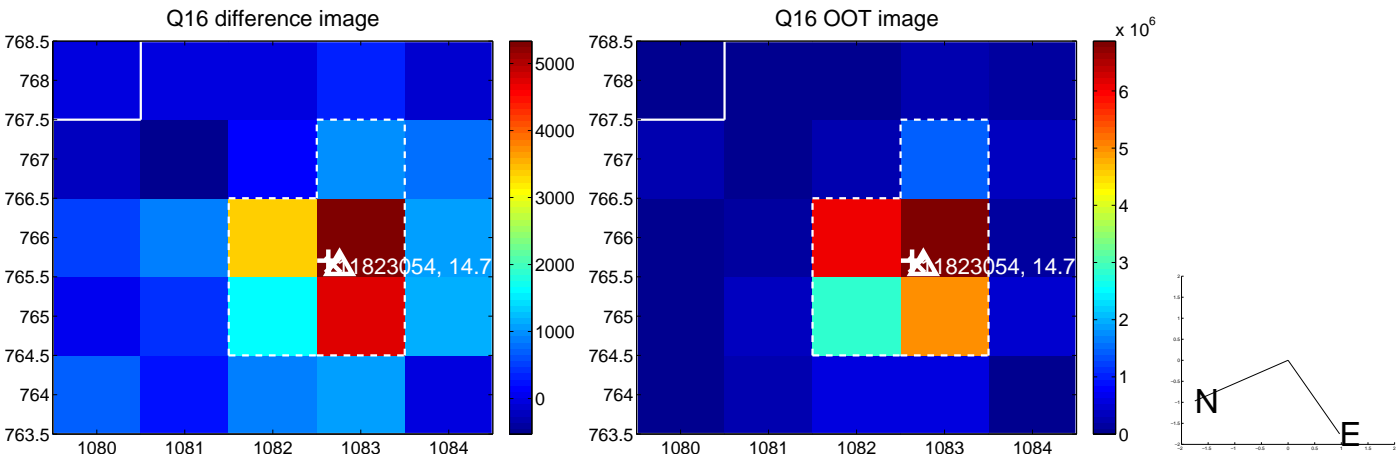
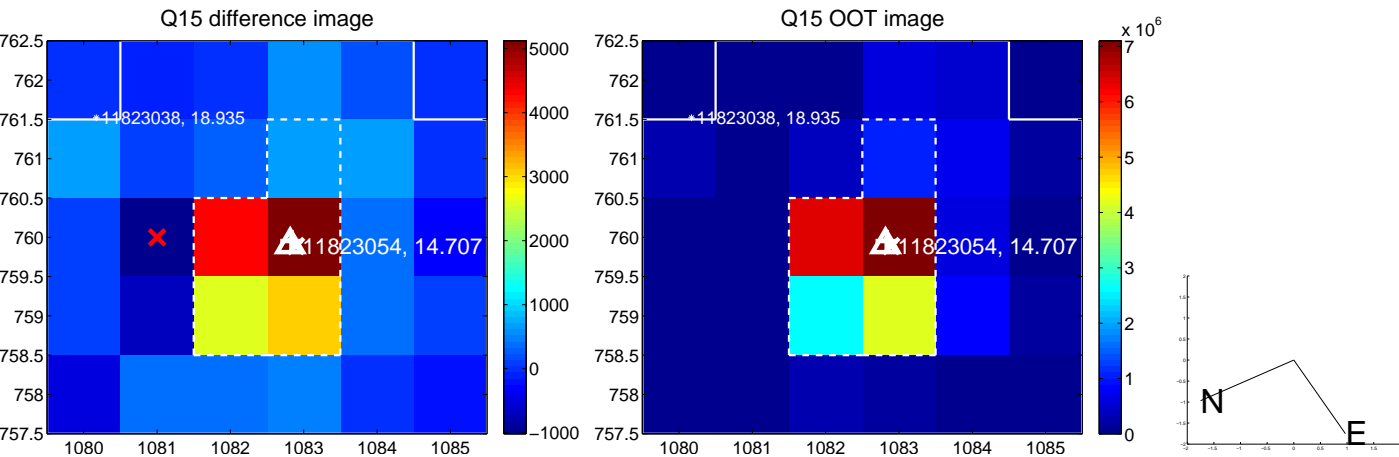
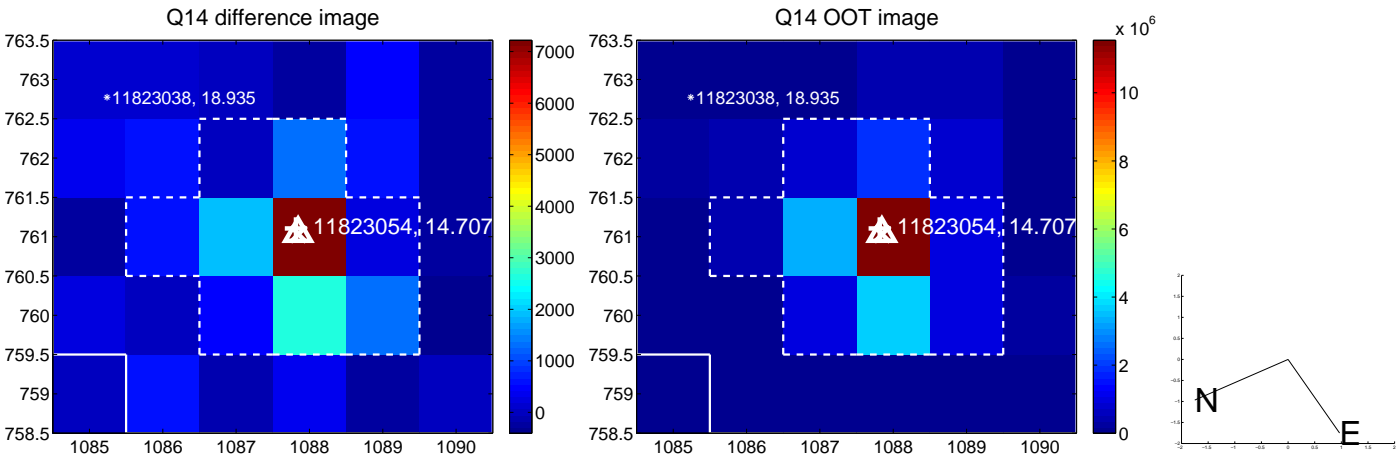
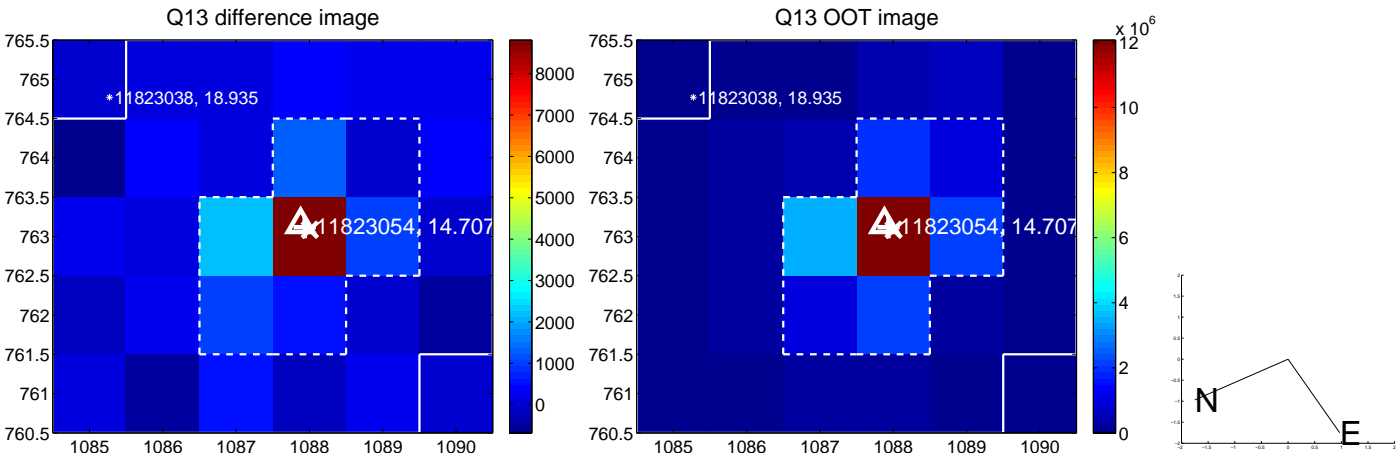
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



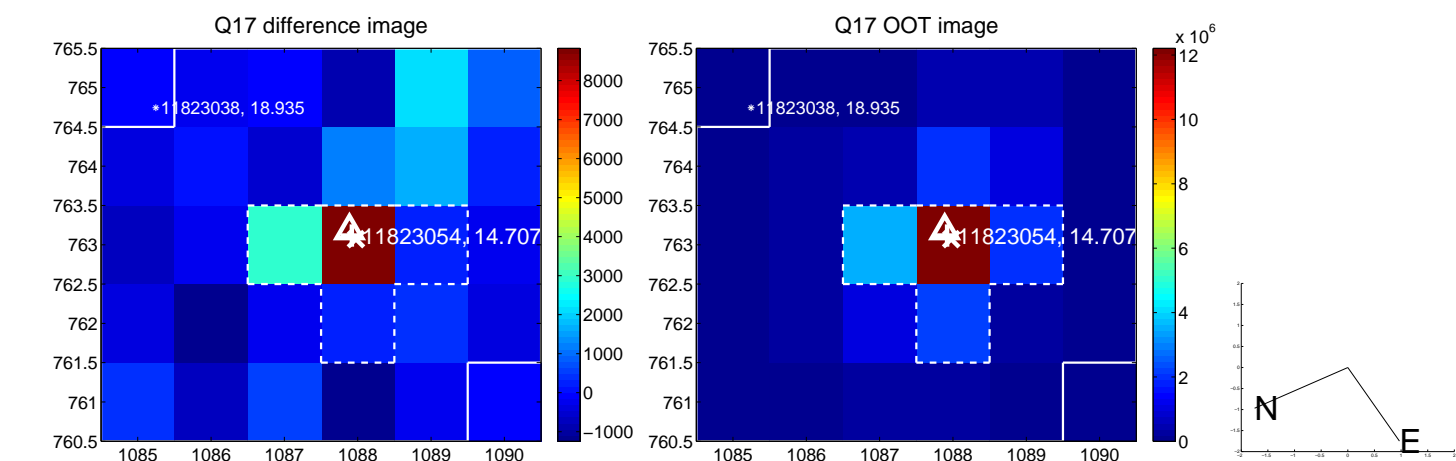
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



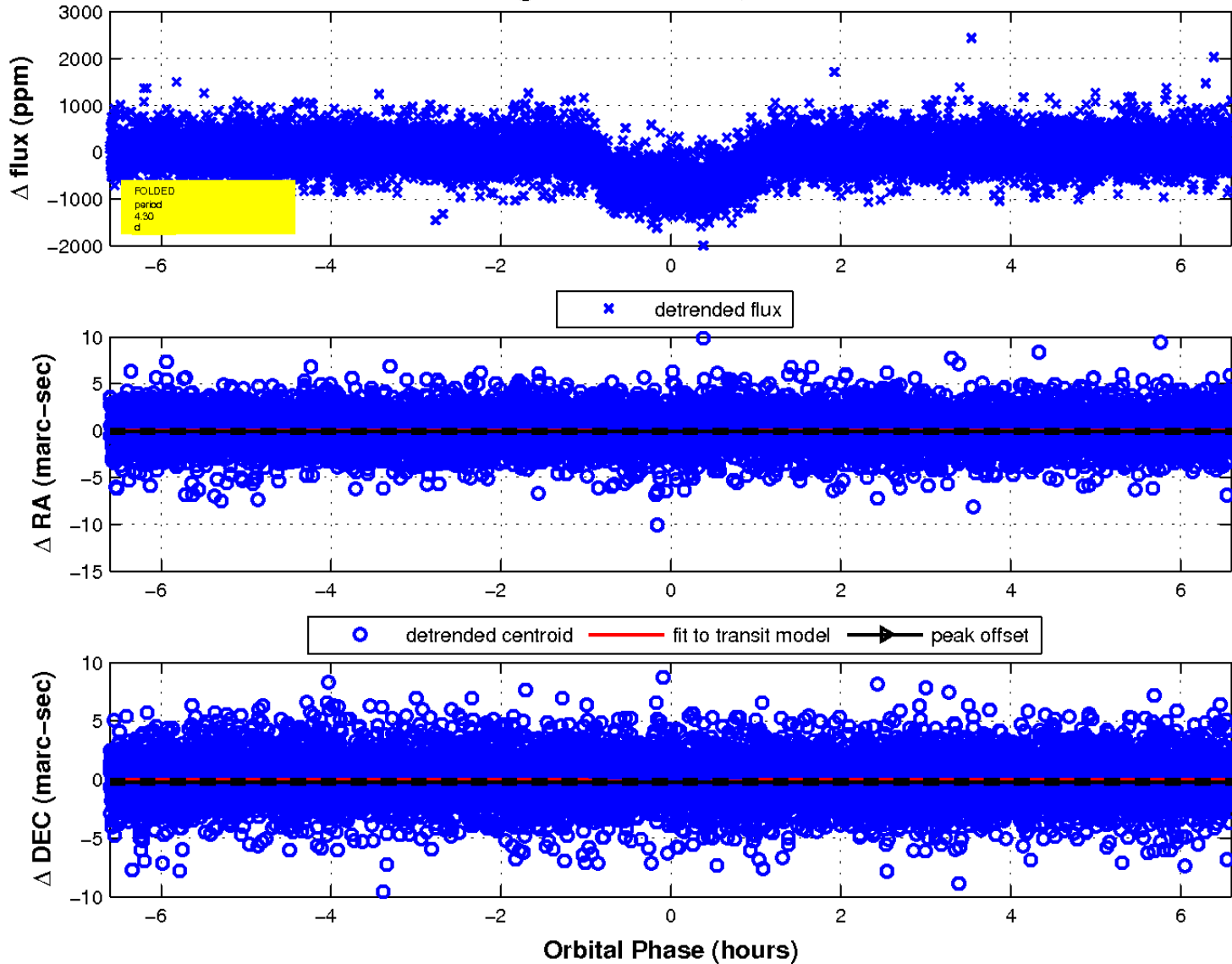
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

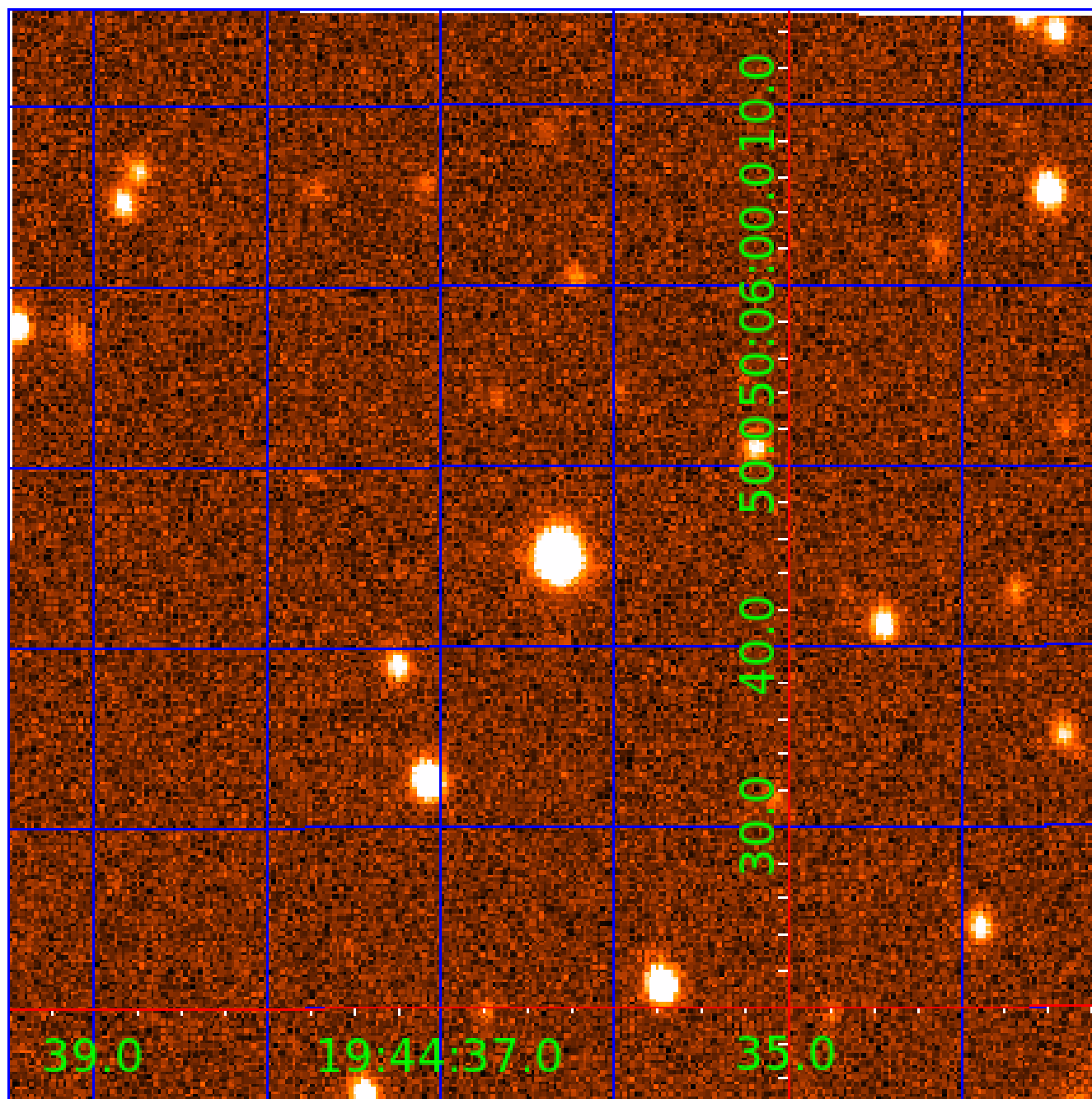


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 011823054

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})
011823054-01	OBS	0543.01	4.302129	134.720997	735.3	2.201	53.7	60.8	0.86	5041	2.84	182.83
011823054-02	OBS	0543.02	3.137847	133.555527	293.8	1.990	25.5	28.0	0.86	5041	1.69	278.47

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011823054-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
011823054-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

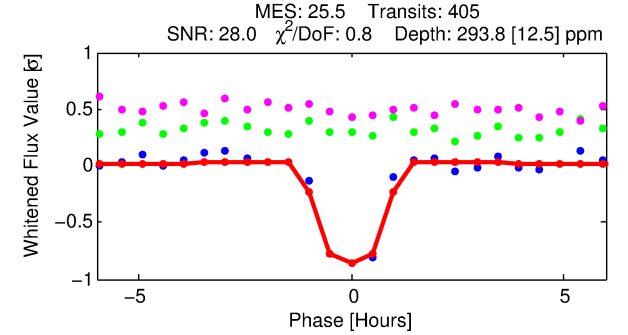
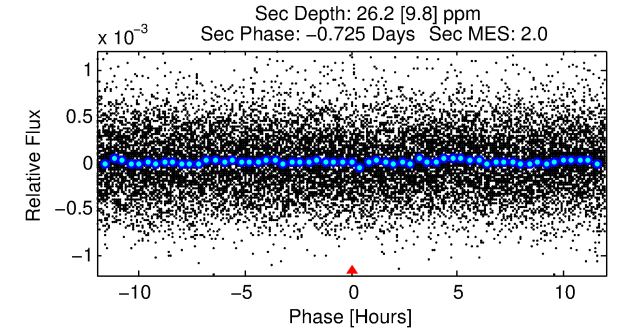
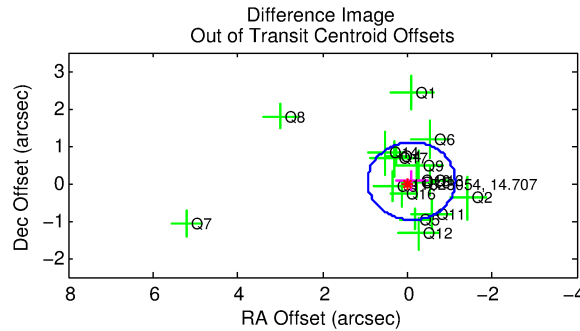
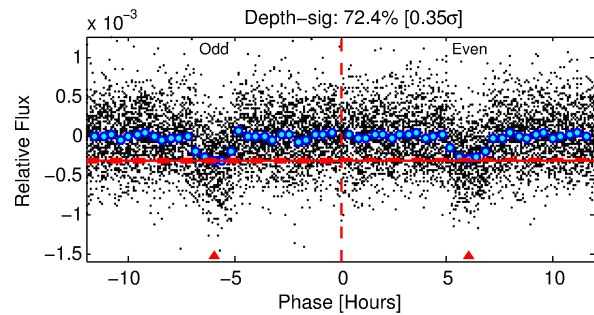
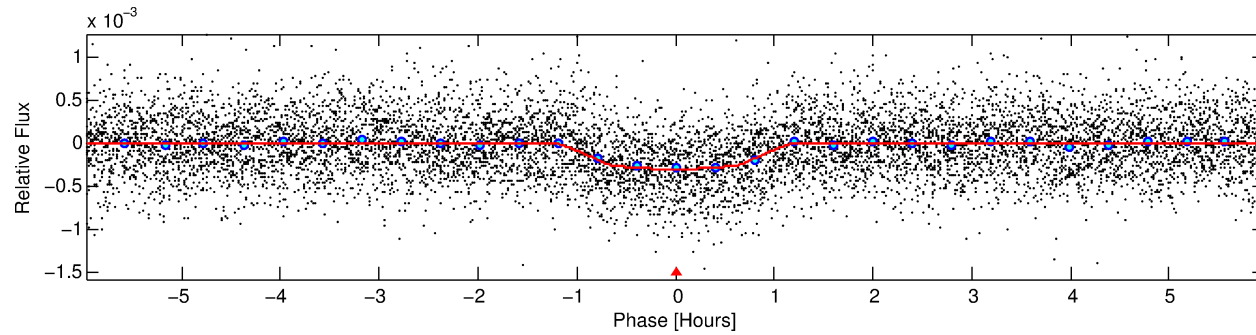
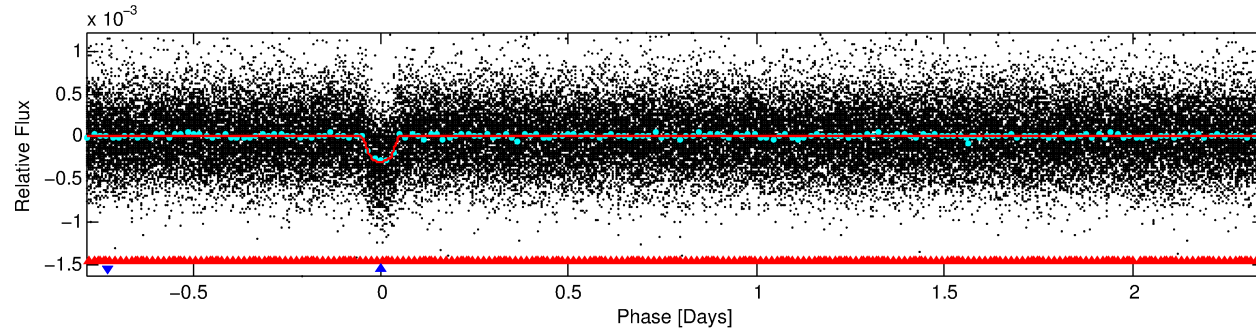
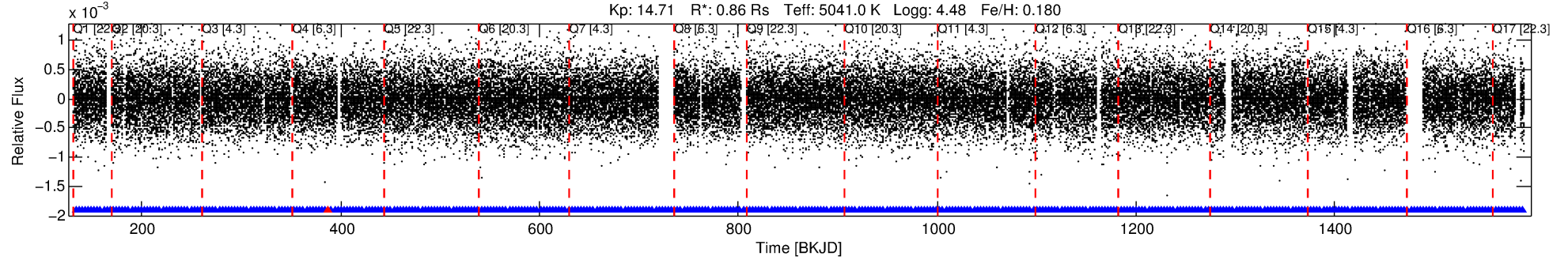
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011823054-02

No Significant Match Found

DV One-Page Summary

KIC: 11823054 Candidate: 2 of 2 Period: 3.138 d
KOI: K00543.02 Name: Kepler-181b Corr: 0.981



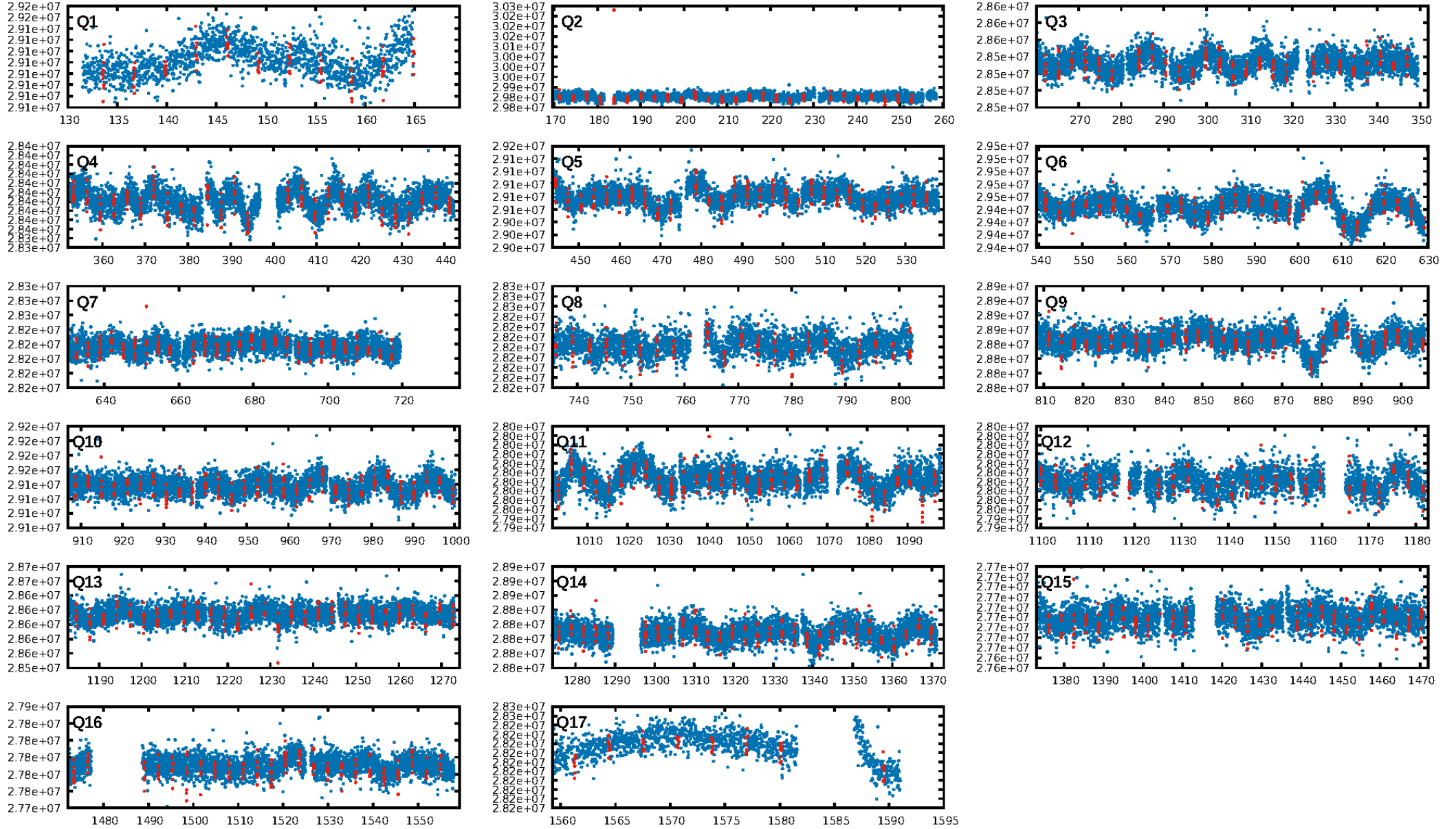
DV Fit Results:

Period = 3.13785 [0.00001] d
Epoch = 133.5555 [0.0013] BKJD
Rp/R* = 0.0181 [0.0086]
a/R* = 7.06 [12.16]
b = 0.84 [0.65]
Seff = 278.47 [40.30]
Teff = 1042 [38] K
Rp = 1.69 [0.82] Re
a = 0.0391 [0.0031] AU
Ag = 7.70 [7.96] [0.84 σ]
Teffp = 2683 [689] K [2.38 σ]

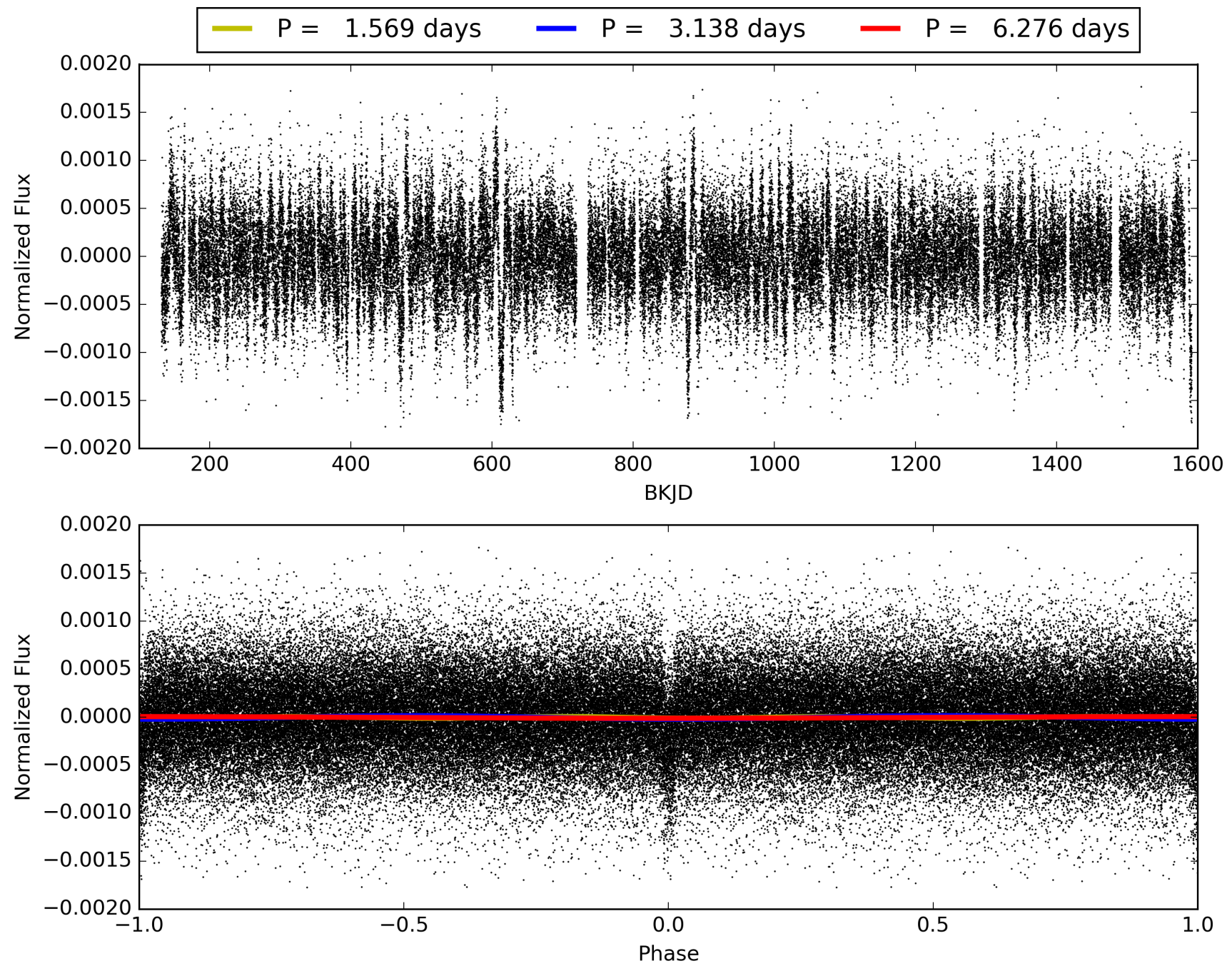
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [9.42 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.51e-143
RollingBand-fgt: 1.00 [386/387]
GhostDiagnostic-chr: 8.772
Centroid-sig: 34.2%
Centroid-so: 0.539 arcsec [1.07 σ]
OotOffset-rm: 0.117 arcsec [0.34 σ]
KicOffset-rm: 0.400 arcsec [1.11 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 011823054-02, PDC Light Curves

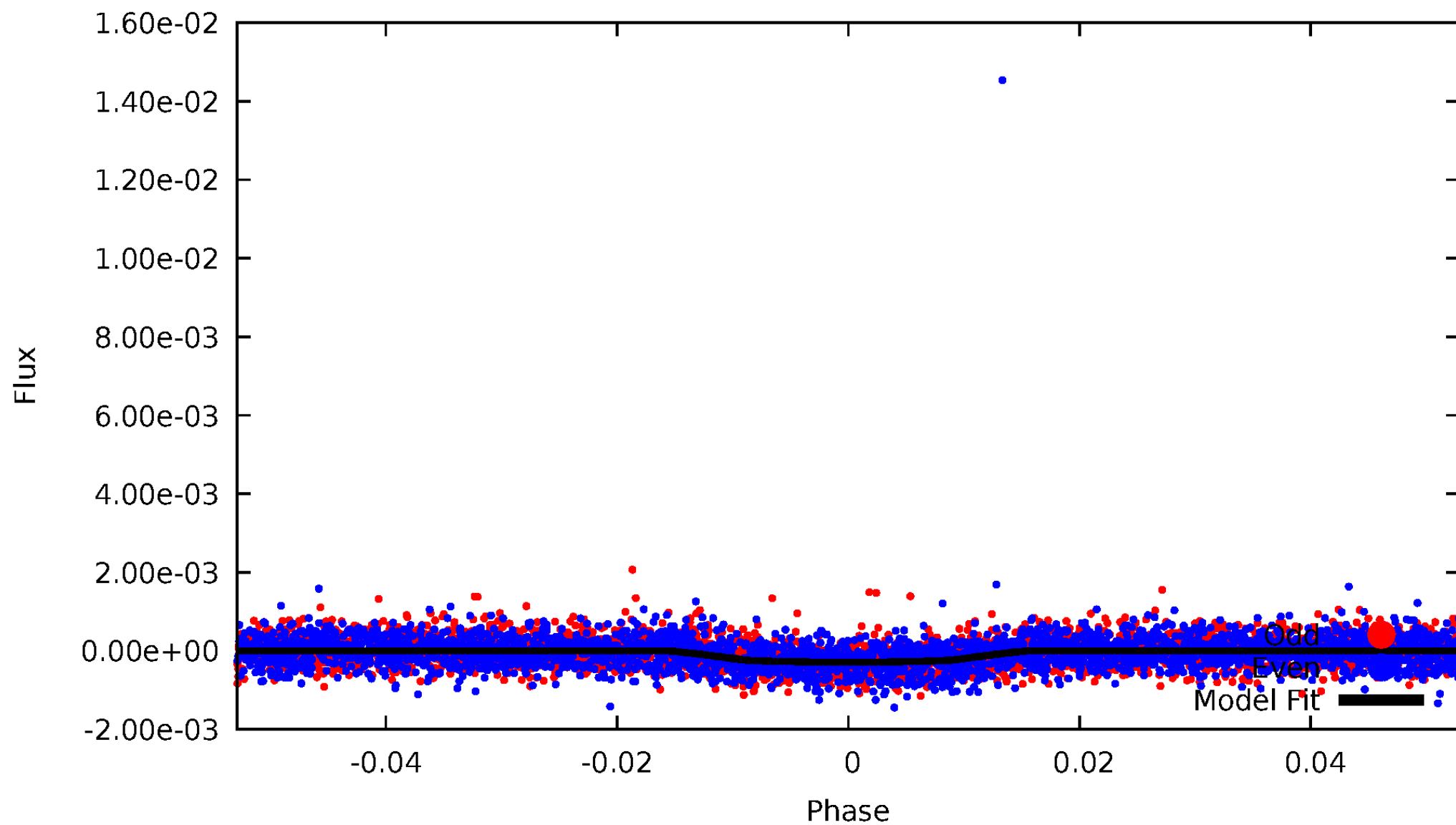


TCE 011823054-02



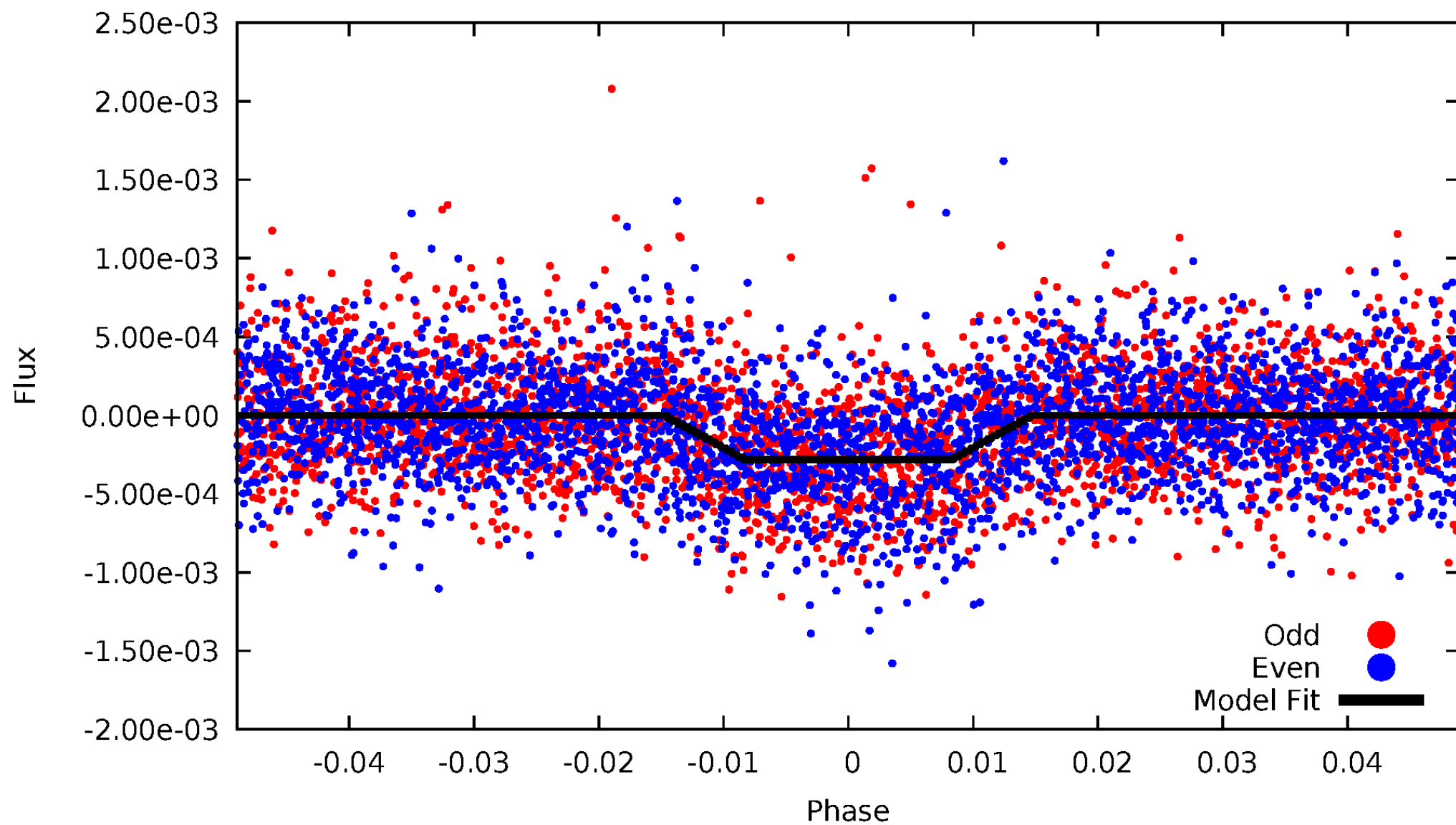
DV Odd/Even

TCE 011823054-02



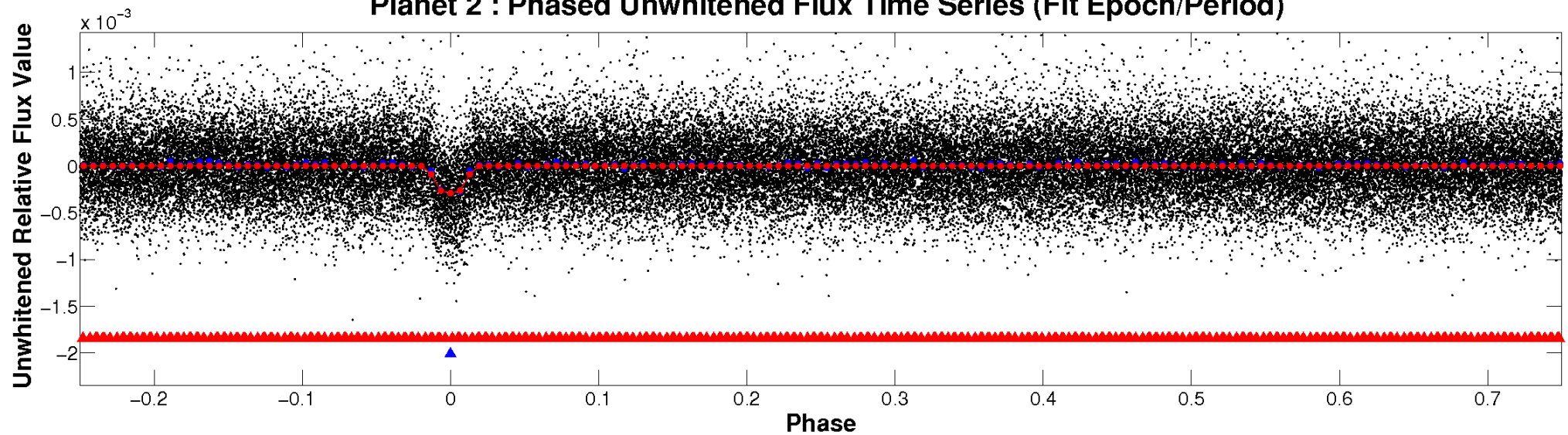
ALT Odd/Even

TCE 011823054-02

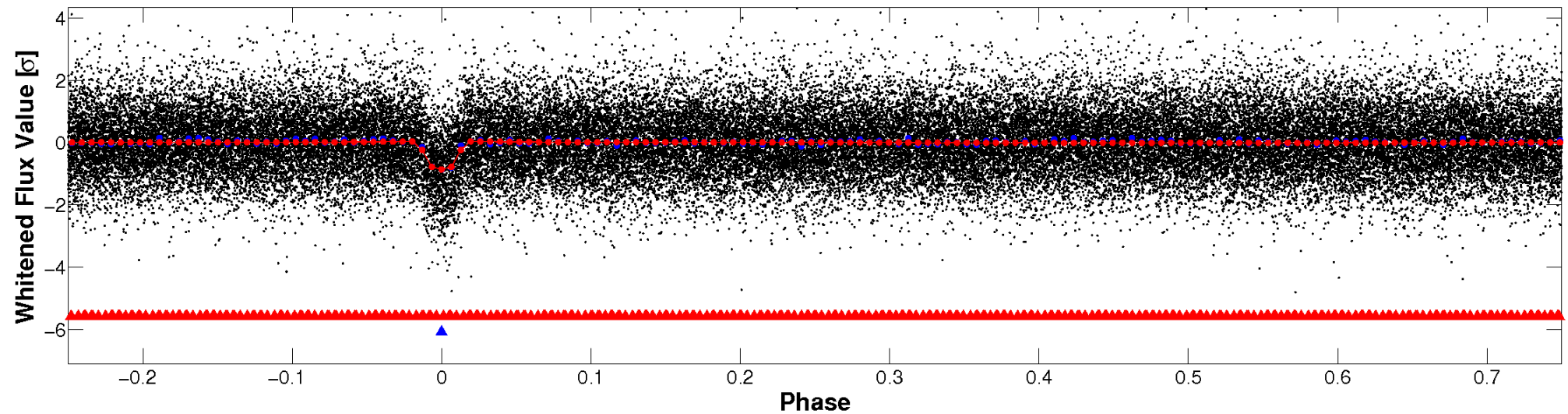


Non-Whitened Vs. Whitened Light Curve

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

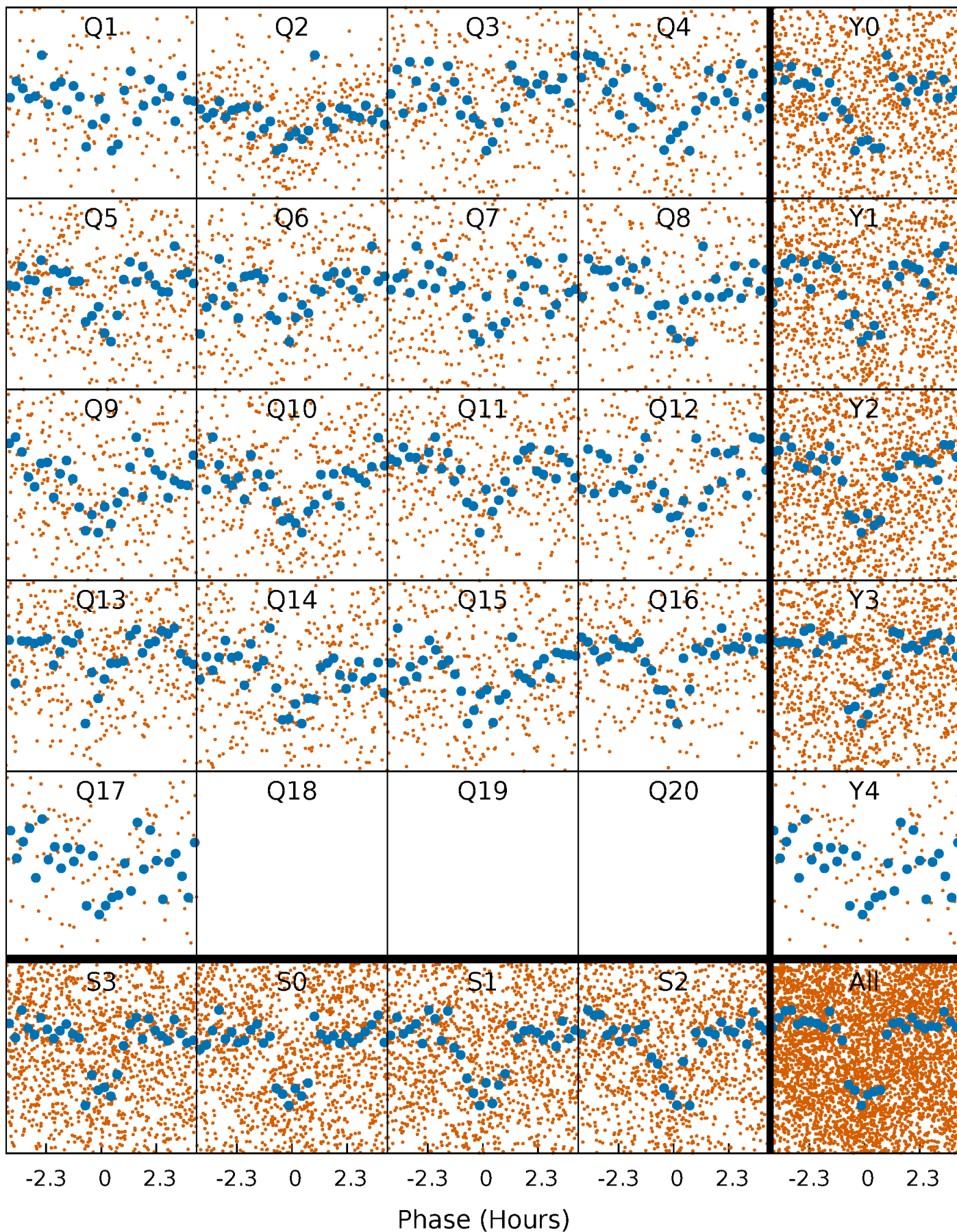


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



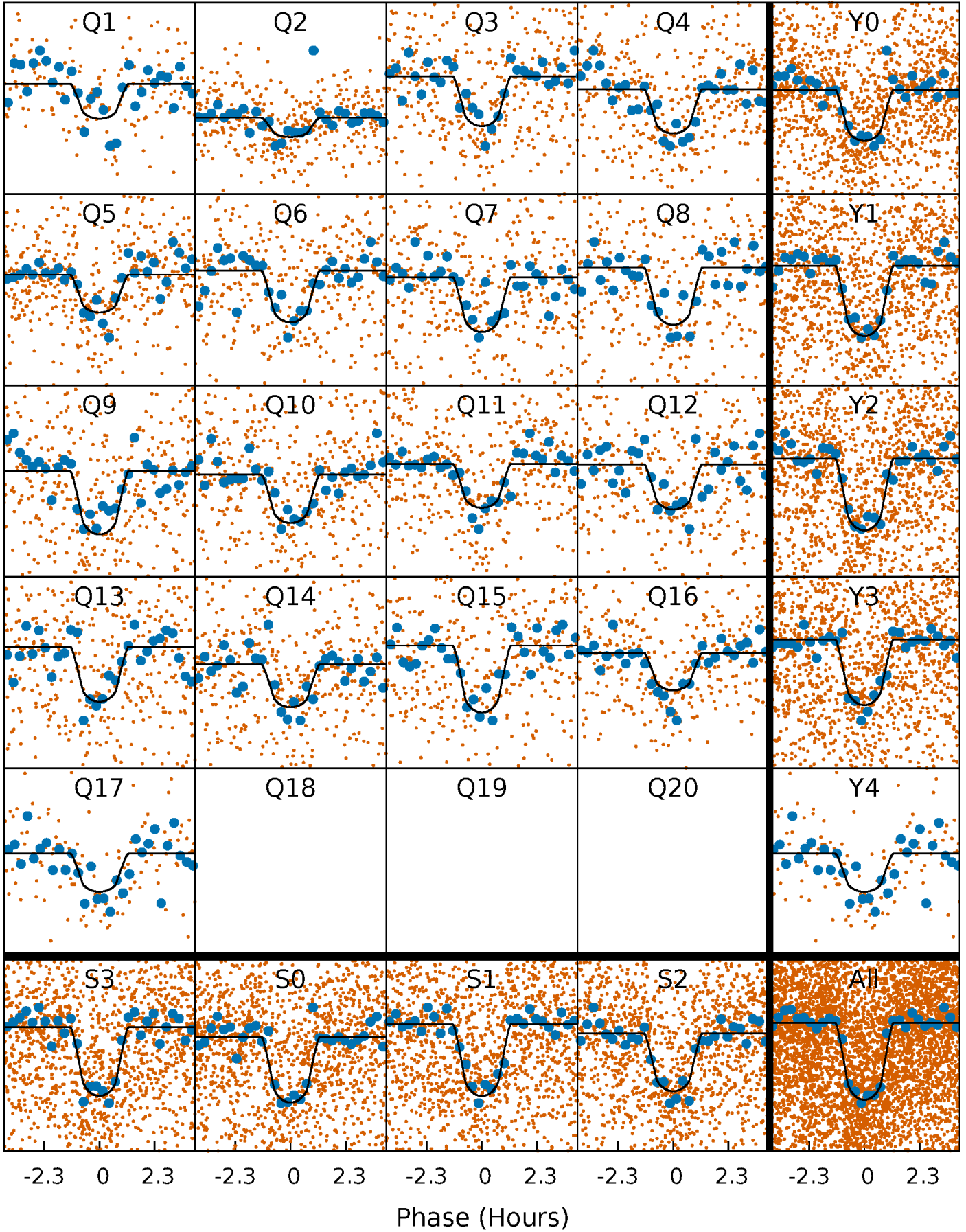
PDC Quarter-Phased Transit Curves

TCE 011823054-02 P= 3.137847 Days $T_0=133.555527$ (BKJD)



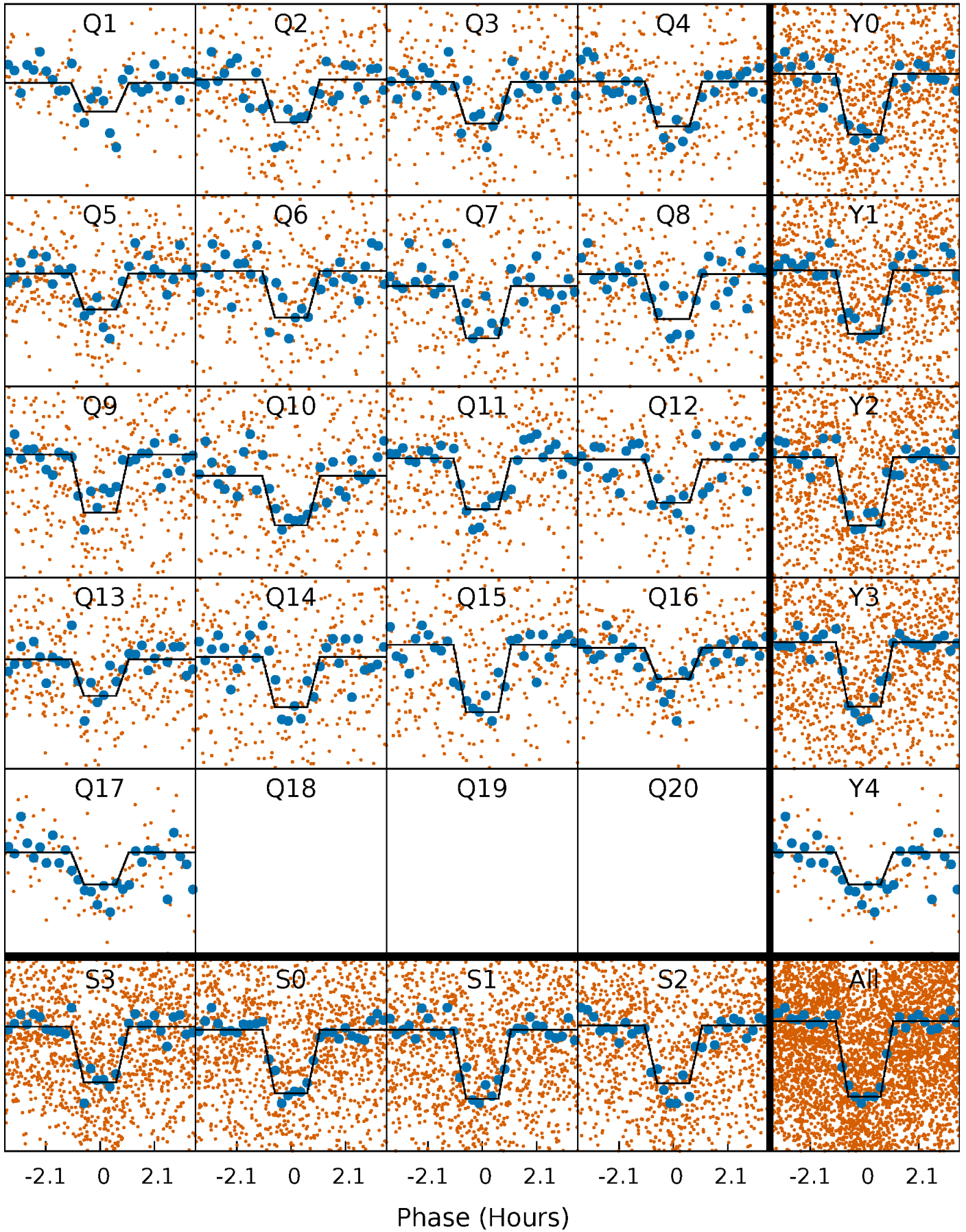
DV Quarter-Phased Transit Curves

TCE 011823054-02 P= 3.137847 Days $T_0=133.555527$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

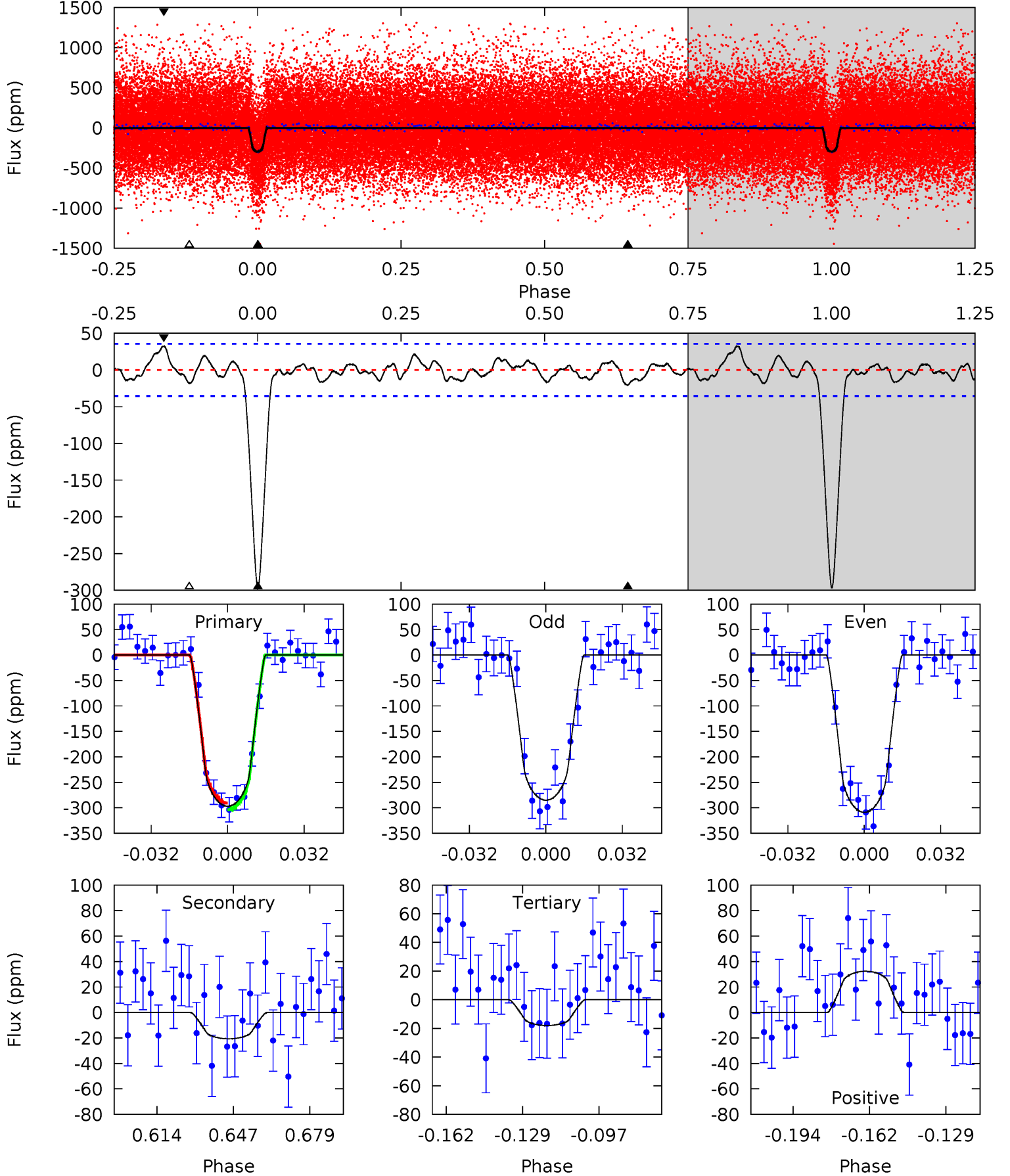
TCE 011823054-02 P= 3.137852 Days $T_0=133.555564$ (BKJD)



DV Model-Shift Uniqueness Test

011823054-02, P = 3.137847 Days, E = 130.417680 Days

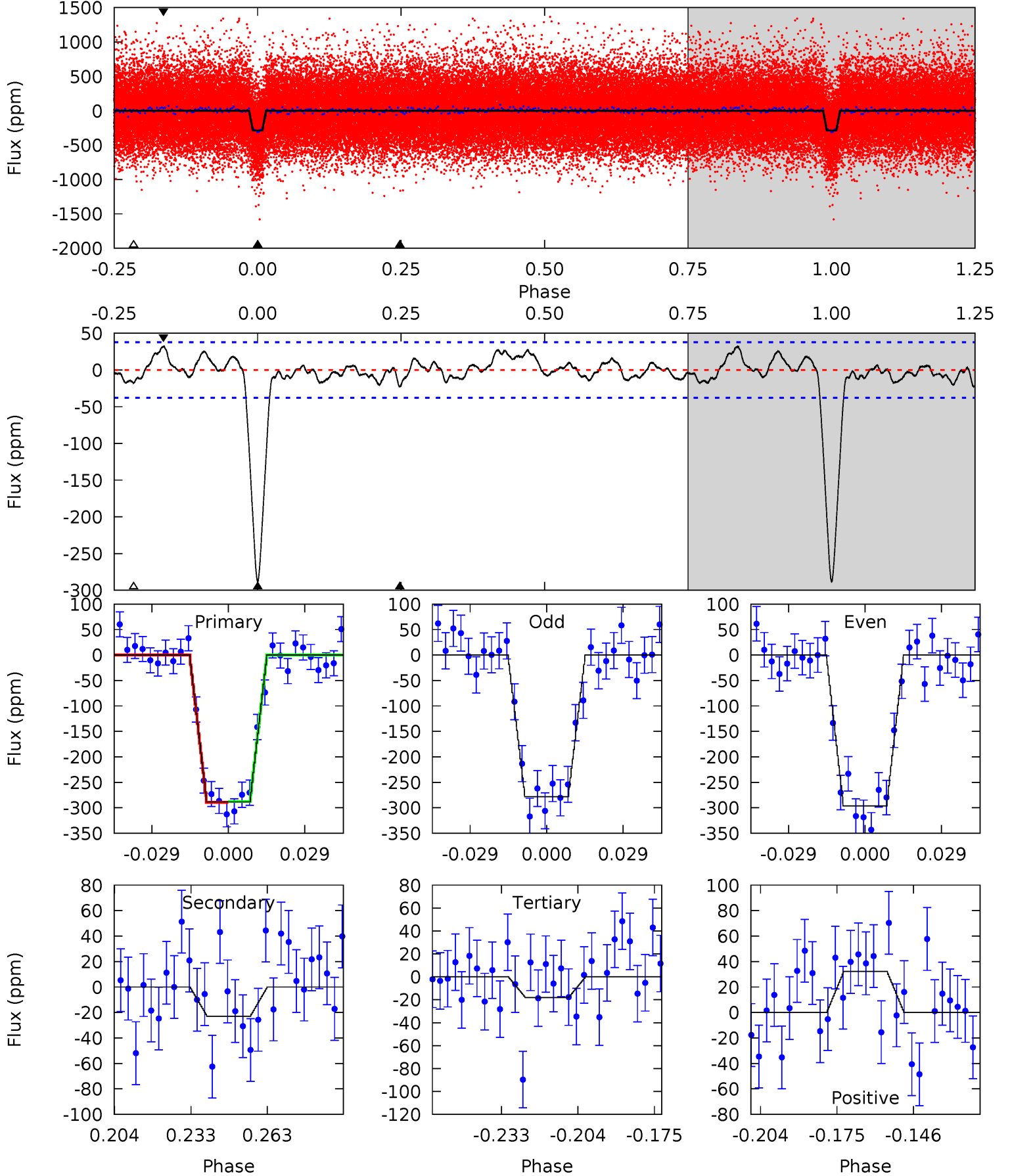
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.0	2.78	2.42	4.37	4.80	2.14	1.31	37.6	35.7	0.36	-1.59	1.61	0.94	0.10	0.88



Alt Model-Shift Uniqueness Test

011823054-02, P = 3.137852 Days, E = 130.417712 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.7	2.92	2.29	4.10	4.82	2.18	1.45	34.4	32.6	0.63	-1.18	1.15	0.97	0.10	0.11



Stellar Parameters For KIC 011823054

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5041^{+83}_{-75}	$4.479^{+0.077}_{-0.033}$	$0.180^{+0.150}_{-0.150}$	$0.857^{+0.041}_{-0.066}$	$0.807^{+0.052}_{-0.028}$	$1.804^{+0.535}_{-0.190}$
	+2%/-1%	+2%/-1%	+83%/-83%	+5%/-8%	+6%/-3%	+30%/-11%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 011823054-02 / KOI 0543.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-21 ± 7	$1.68^{+0.80}_{-0.78}$	1450^{+30}_{-41}	3071^{+730}_{-382}	$5.973^{+15.931}_{-3.522}$
Alt.	-23 ± 8	$1.55^{+0.84}_{-0.84}$	1447^{+35}_{-35}	3200^{+969}_{-413}	$7.942^{+28.425}_{-4.850}$

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 $A_{obs} \gg 1.0$

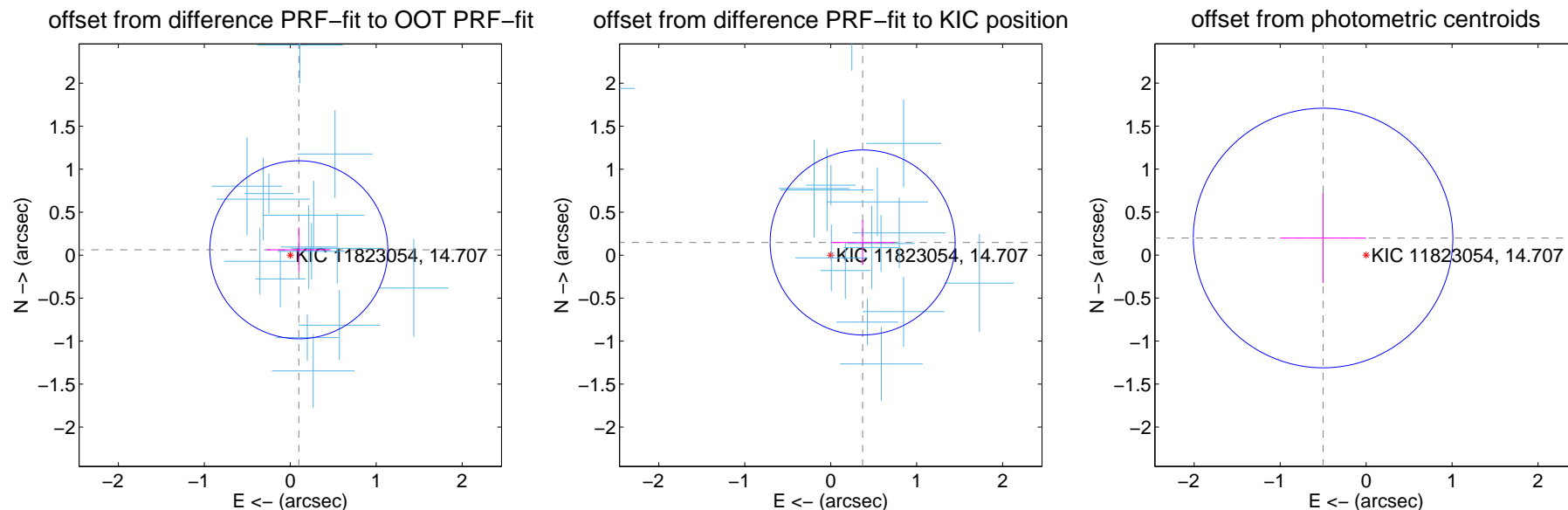
DV Centroid Data

Supplemental centroid analysis for 011823054-02. Kepler magnitude: 14.71. Transit SNR 28.04

There are 16 quarters with good PRF difference image offsets

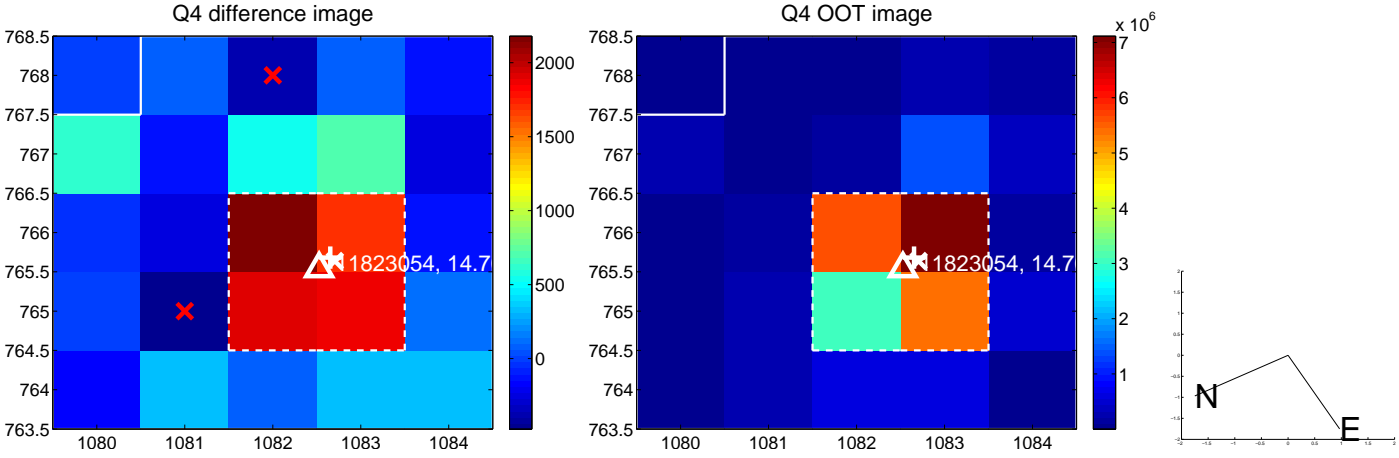
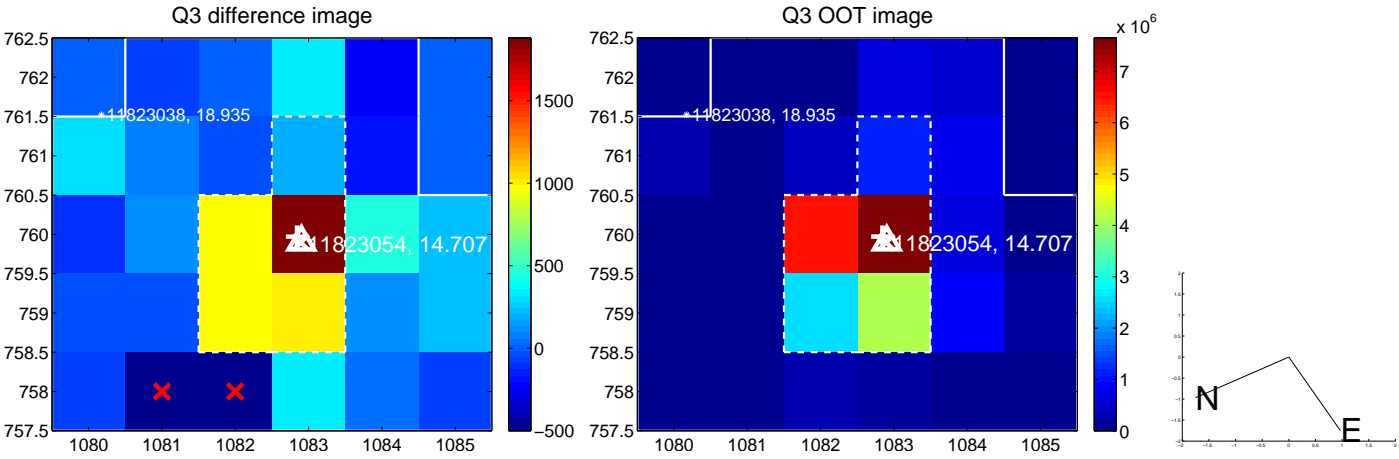
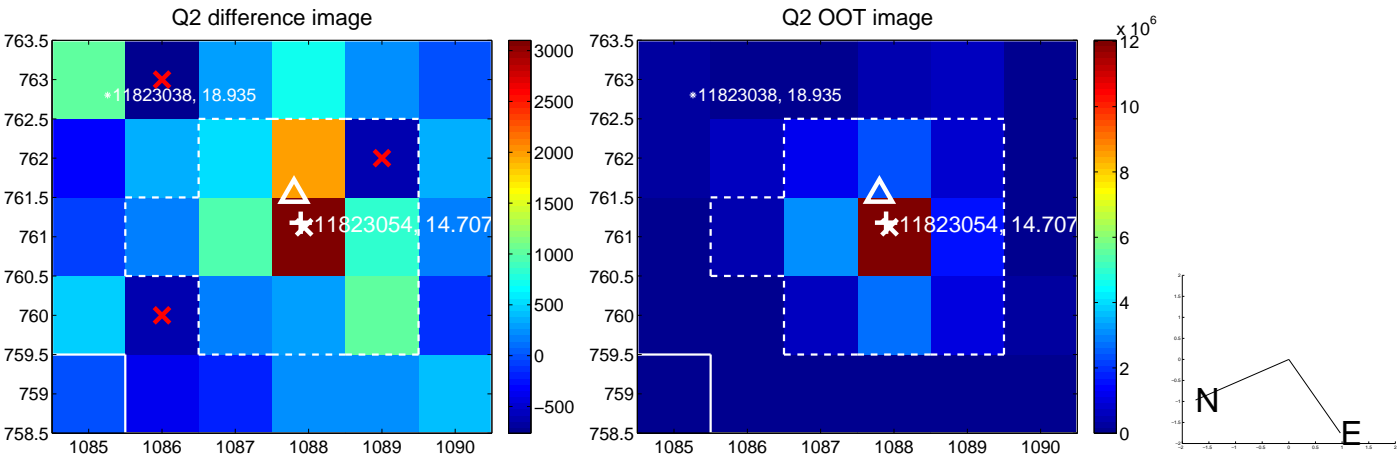
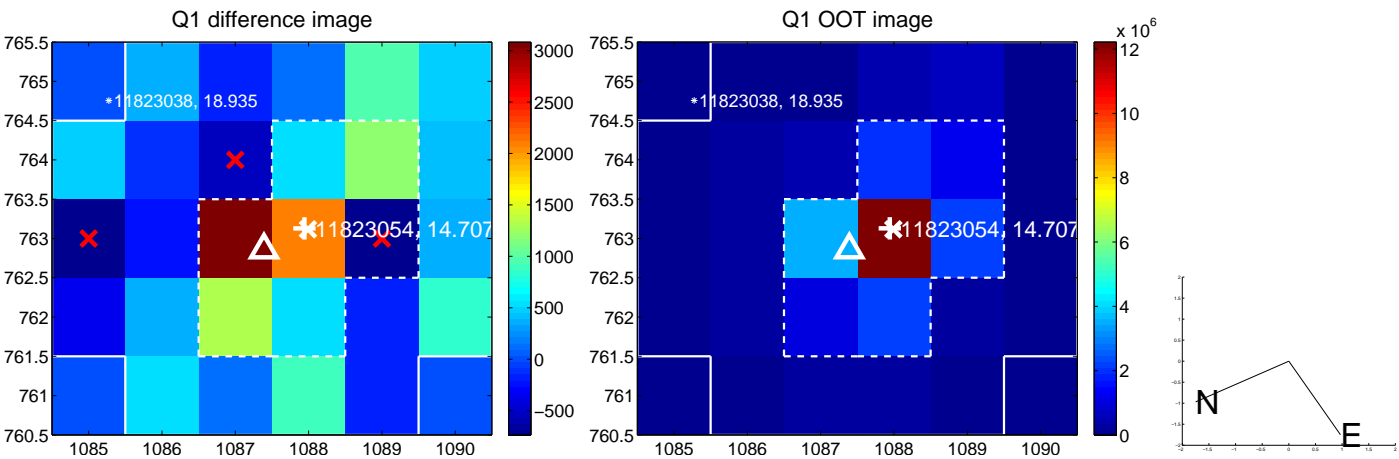
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.117 ± 0.345	0.34	-0.099 ± 0.372	0.062 ± 0.259
PRF-fit source offset from KIC position	0.400 ± 0.359	1.11	-0.371 ± 0.369	0.148 ± 0.259
photometric centroid source offset	0.54 ± 0.50	1.07	0.50 ± 0.50	0.20 ± 0.52

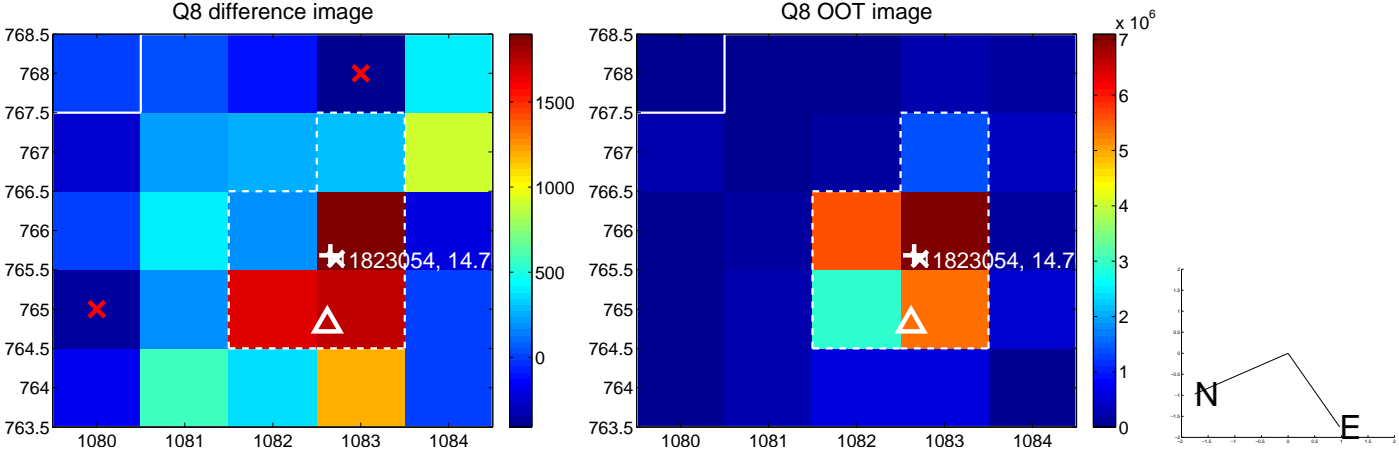
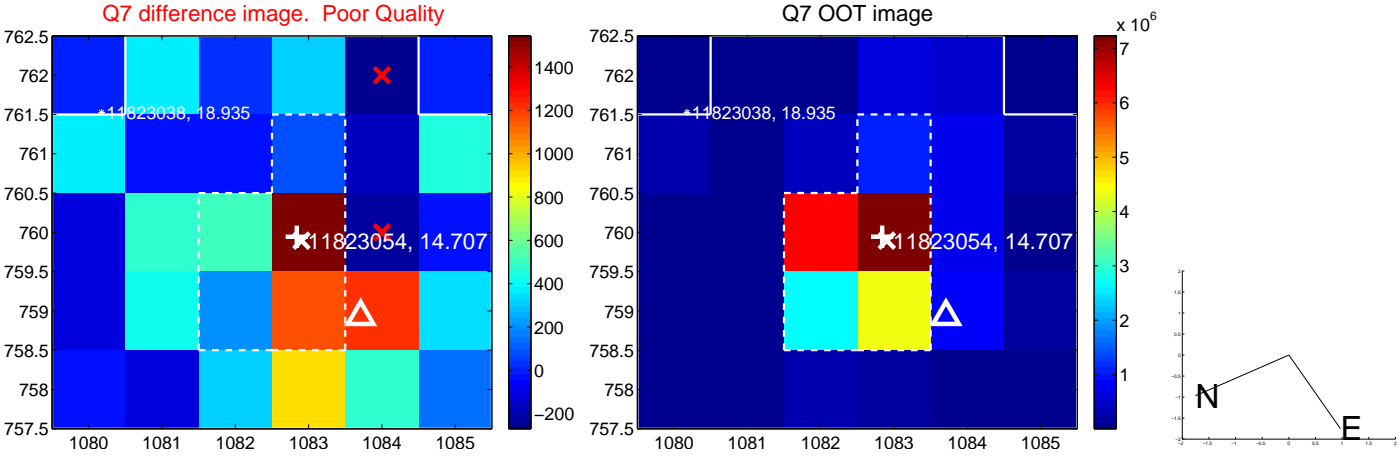
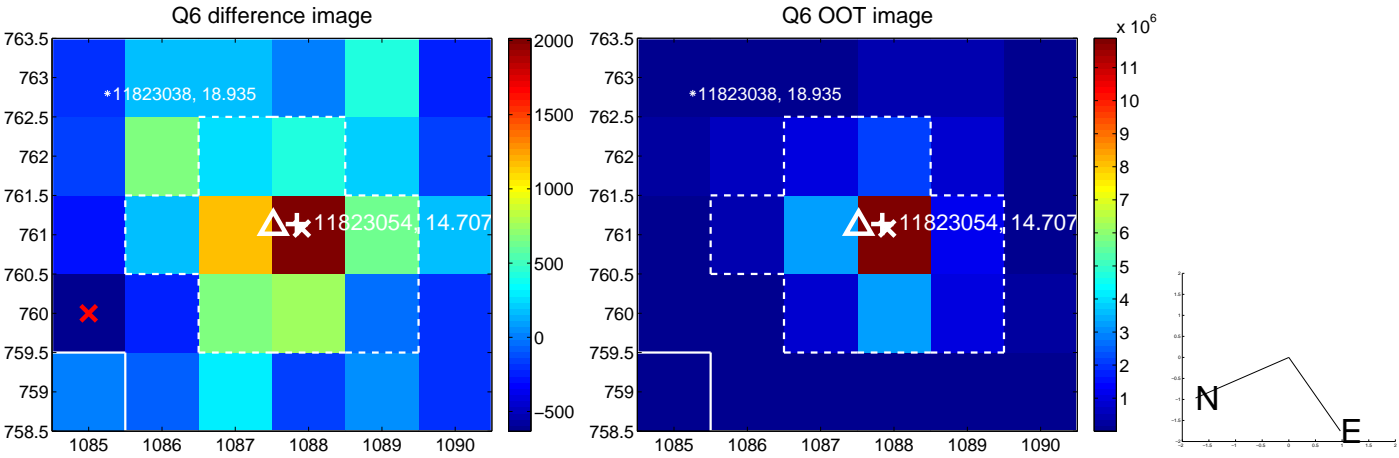
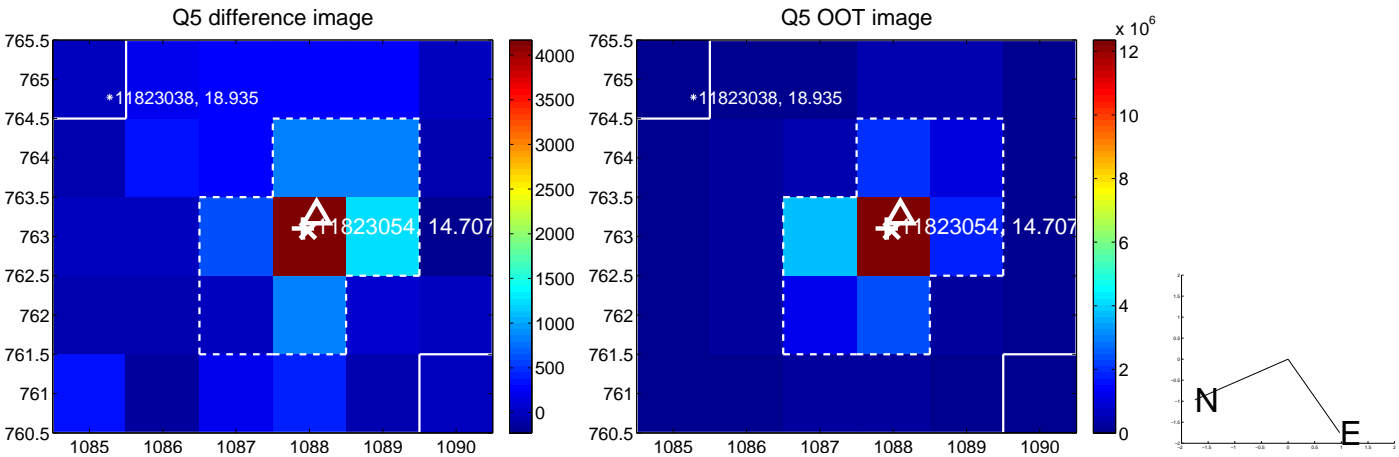


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

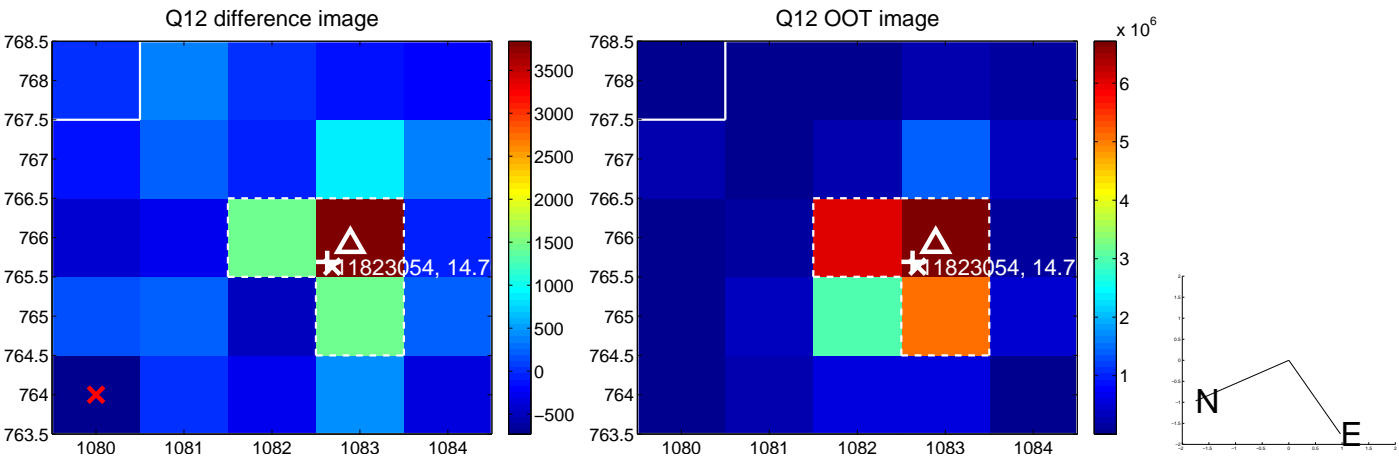
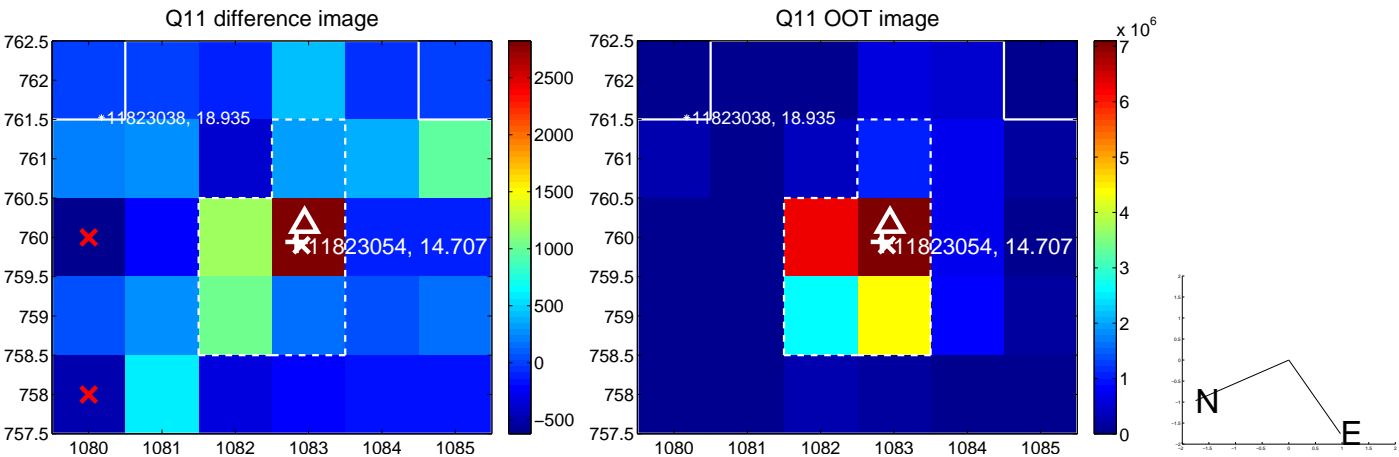
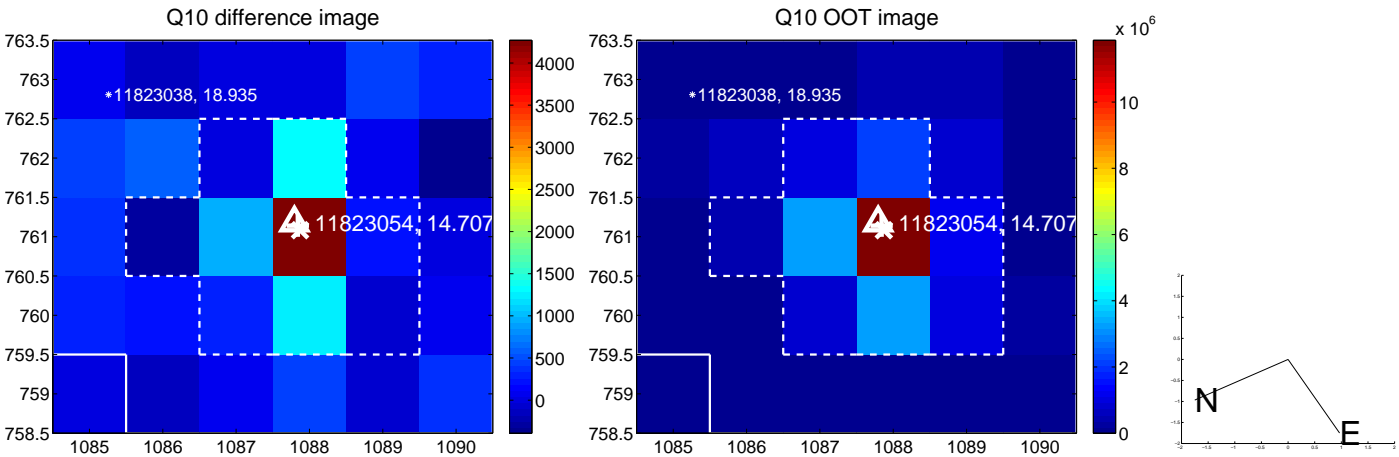
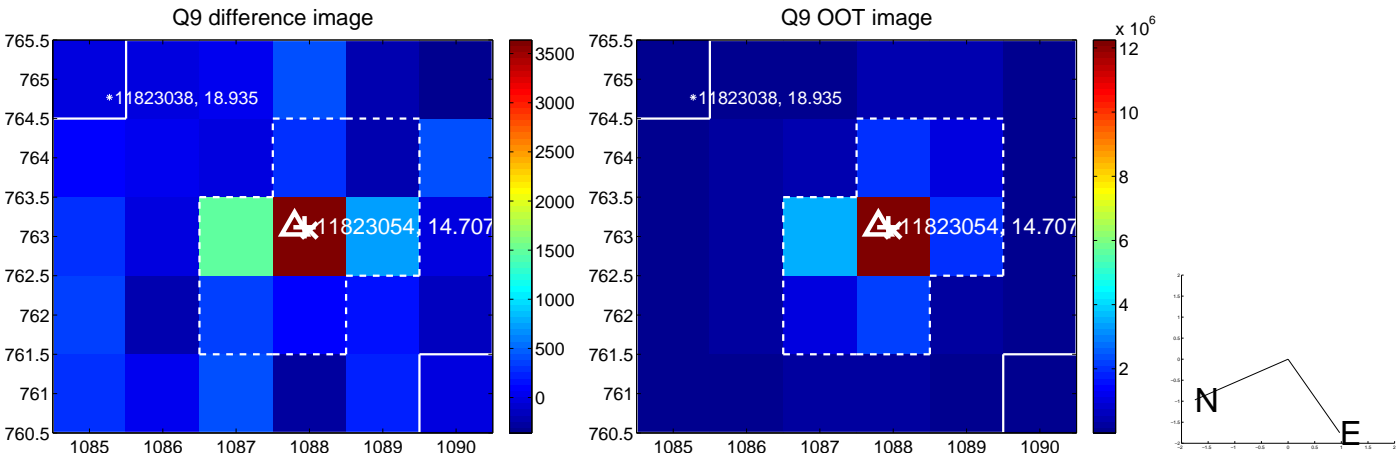
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



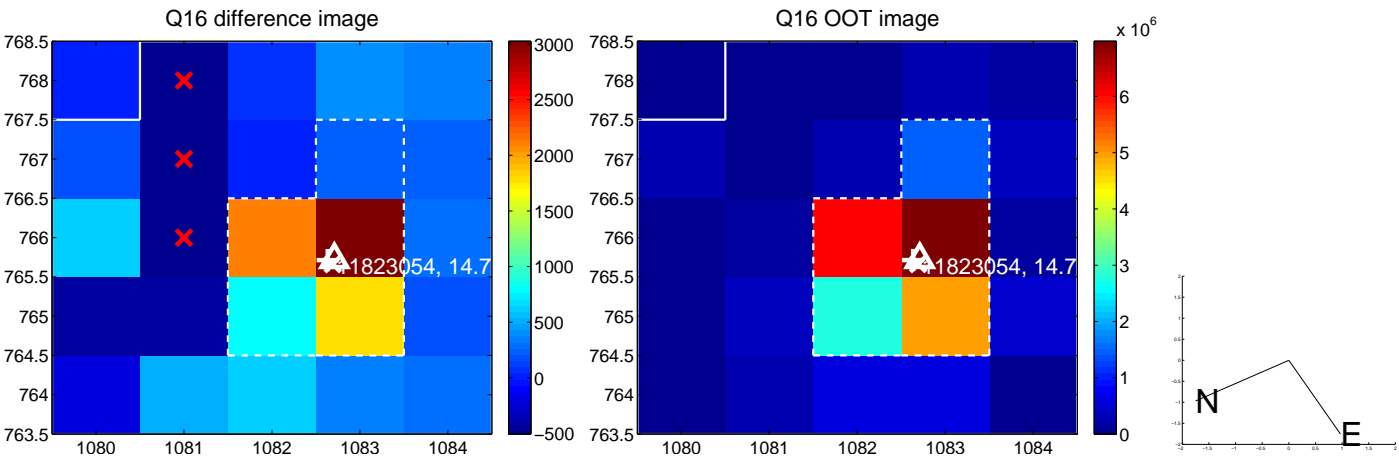
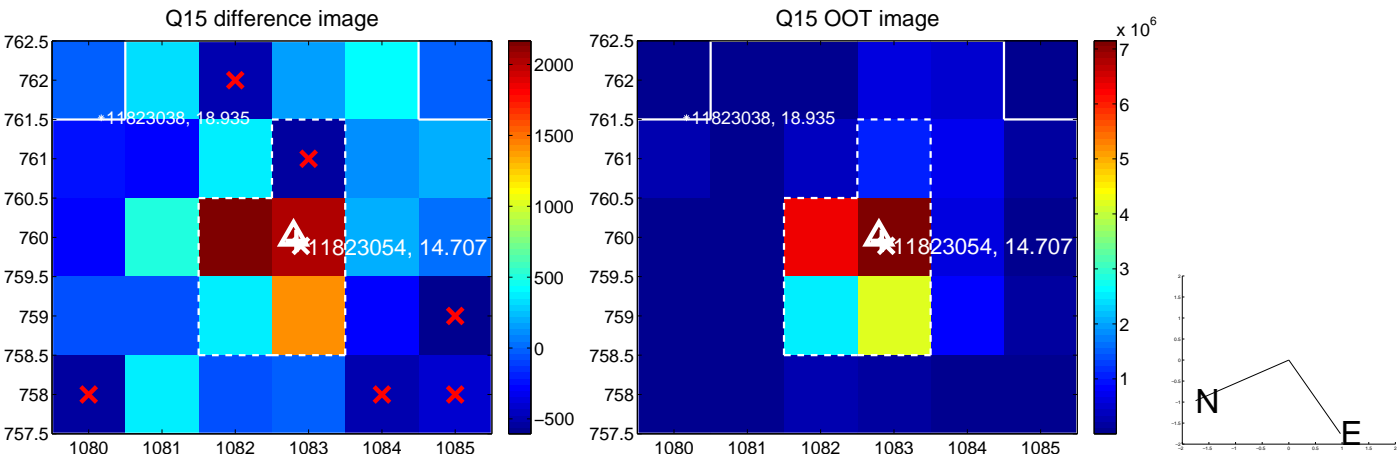
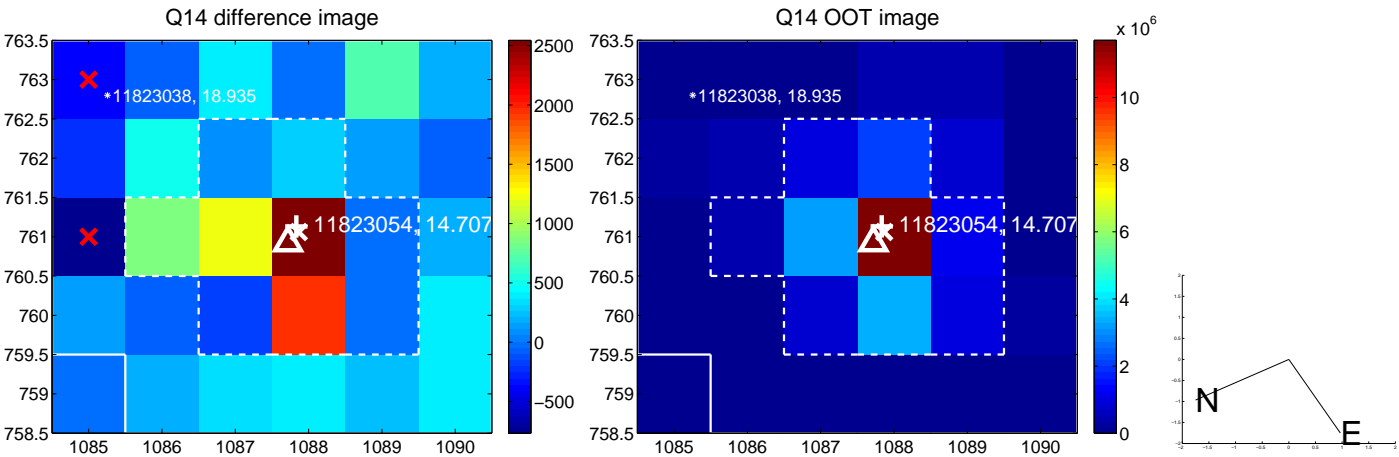
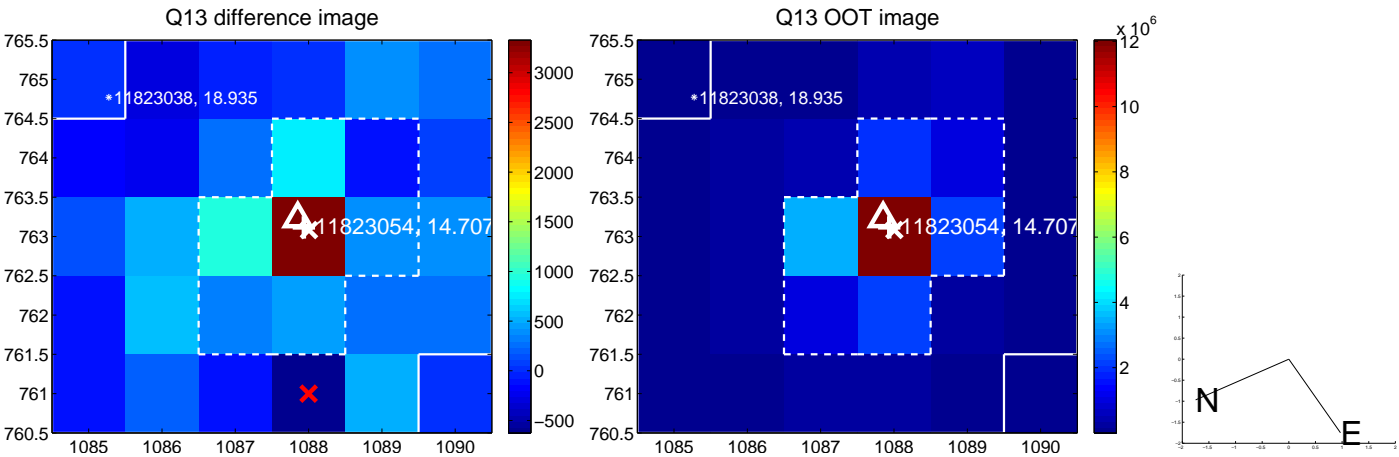
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



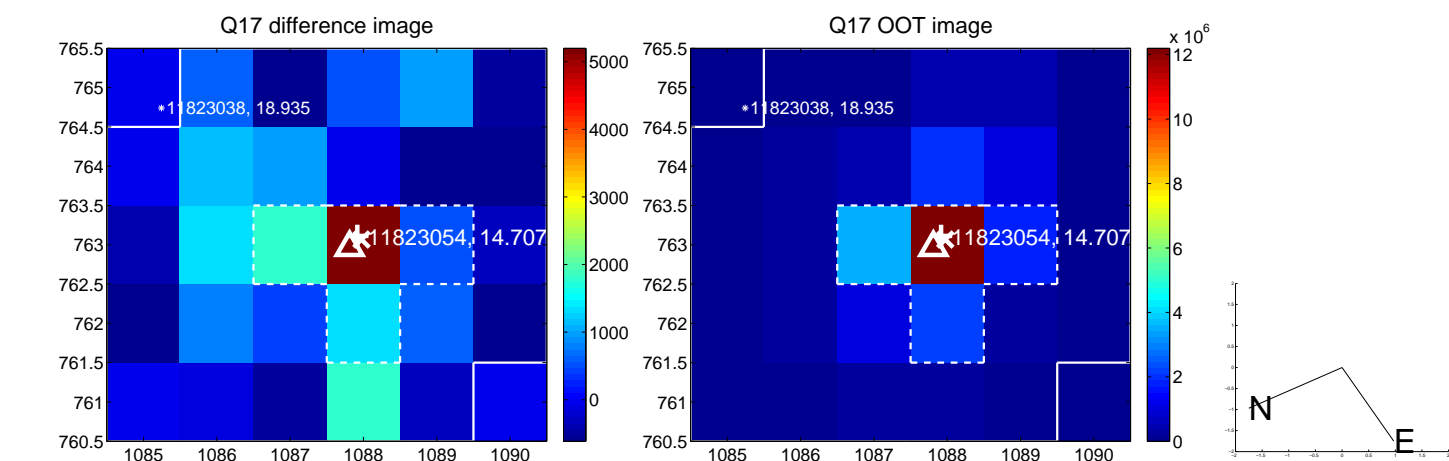
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



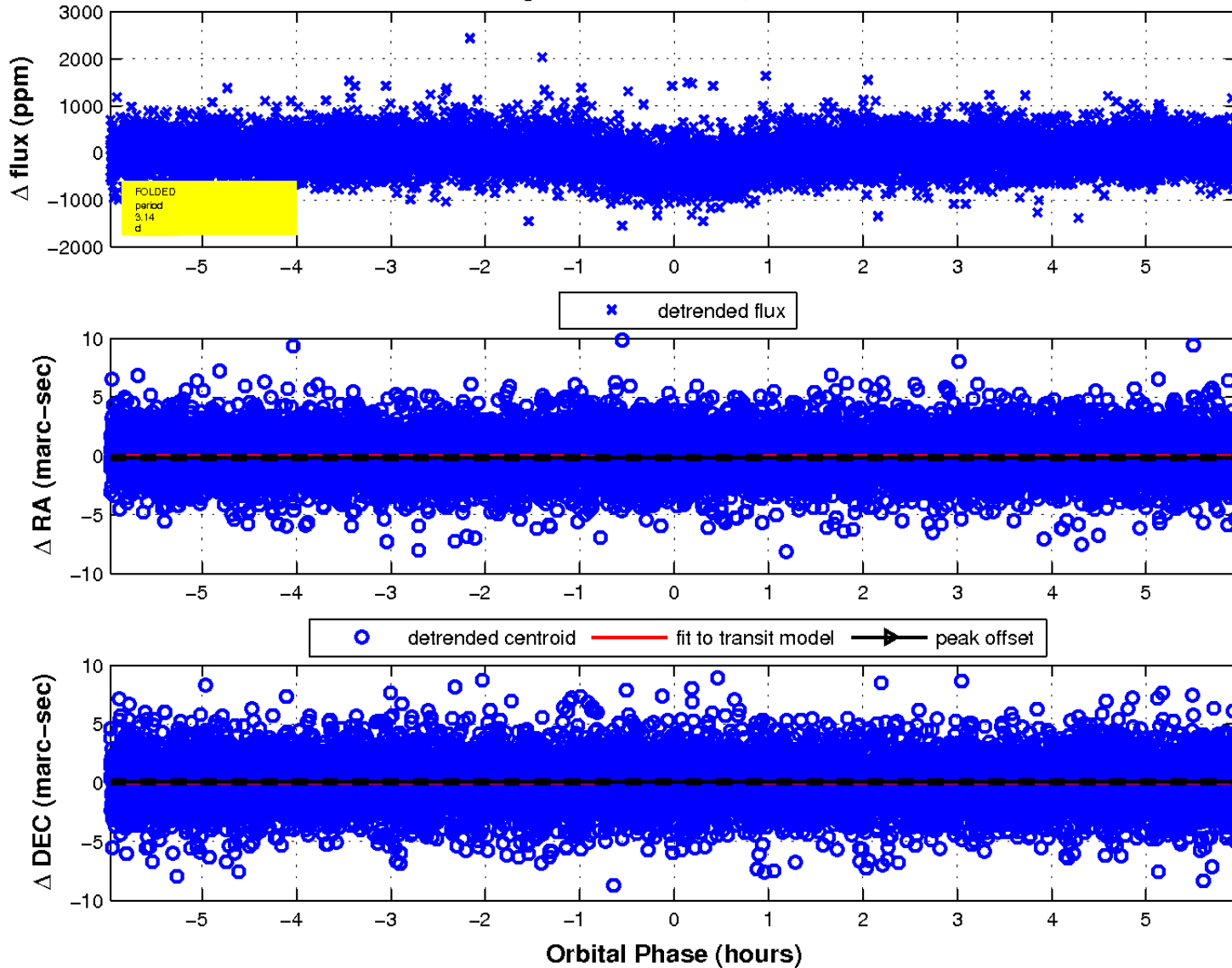
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

