

KIC 010723750

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})
010723750-01	OBS	0209.01	50.790362	135.632434	5715.3	10.892	376.4	369.6	1.41	6163	10.68	33.19
010723750-02	OBS	0209.02	18.795917	145.822888	2406.7	7.514	224.4	221.6	1.41	6163	7.39	124.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010723750-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
010723750-02	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.

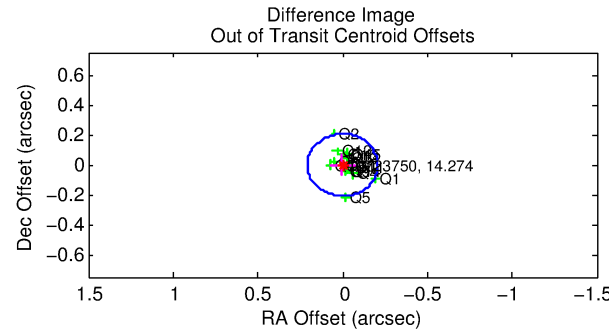
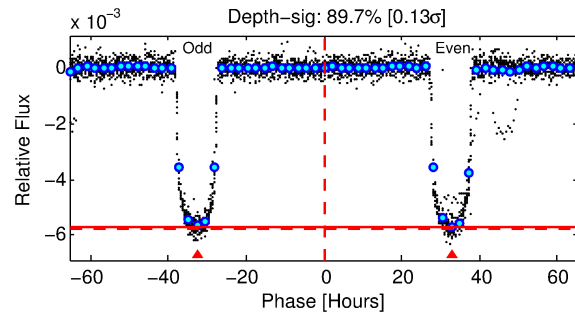
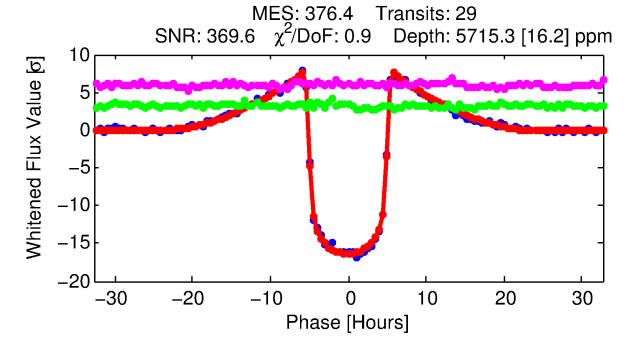
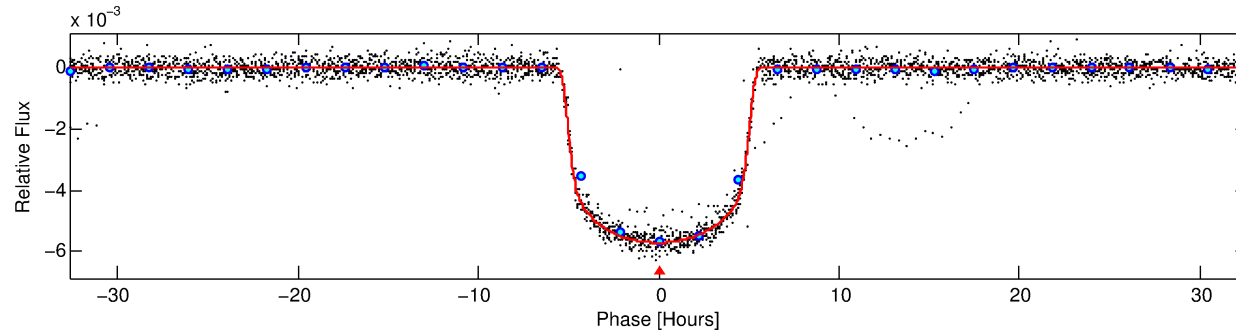
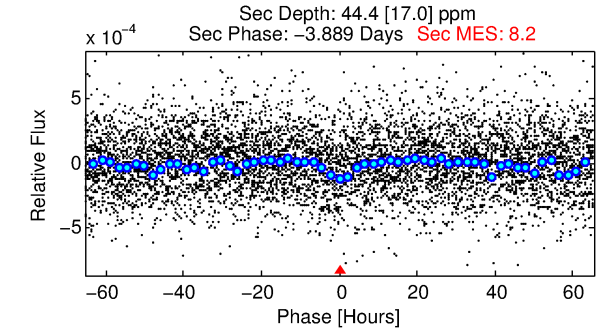
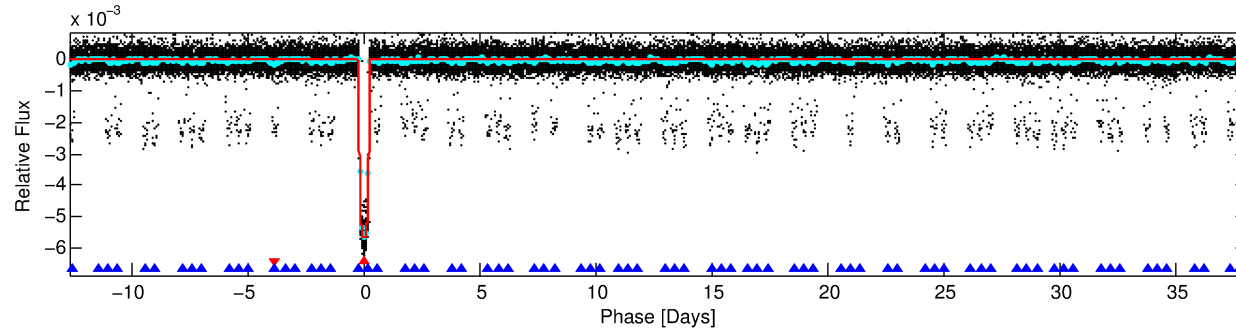
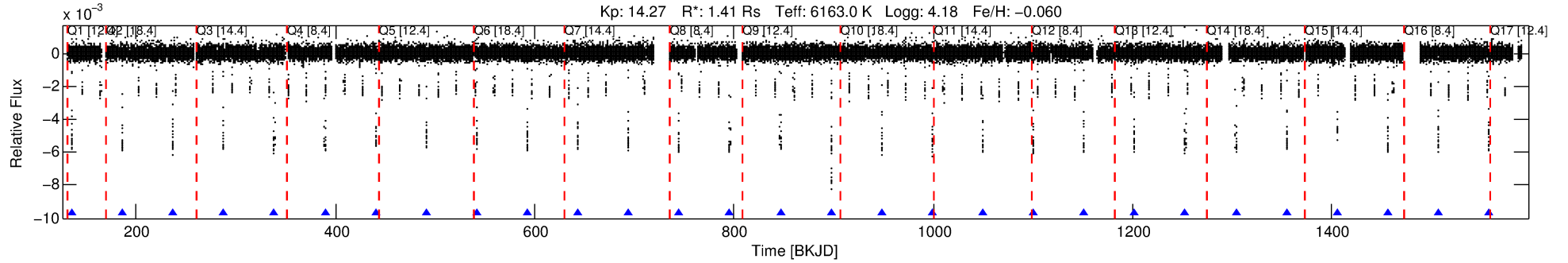
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010723750-01

No Significant Match Found

DV One-Page Summary

KIC: 10723750 Candidate: 1 of 2 Period: 50.790 d
KOI: K00209.01 Name: Kepler-117c Corr: 0.999



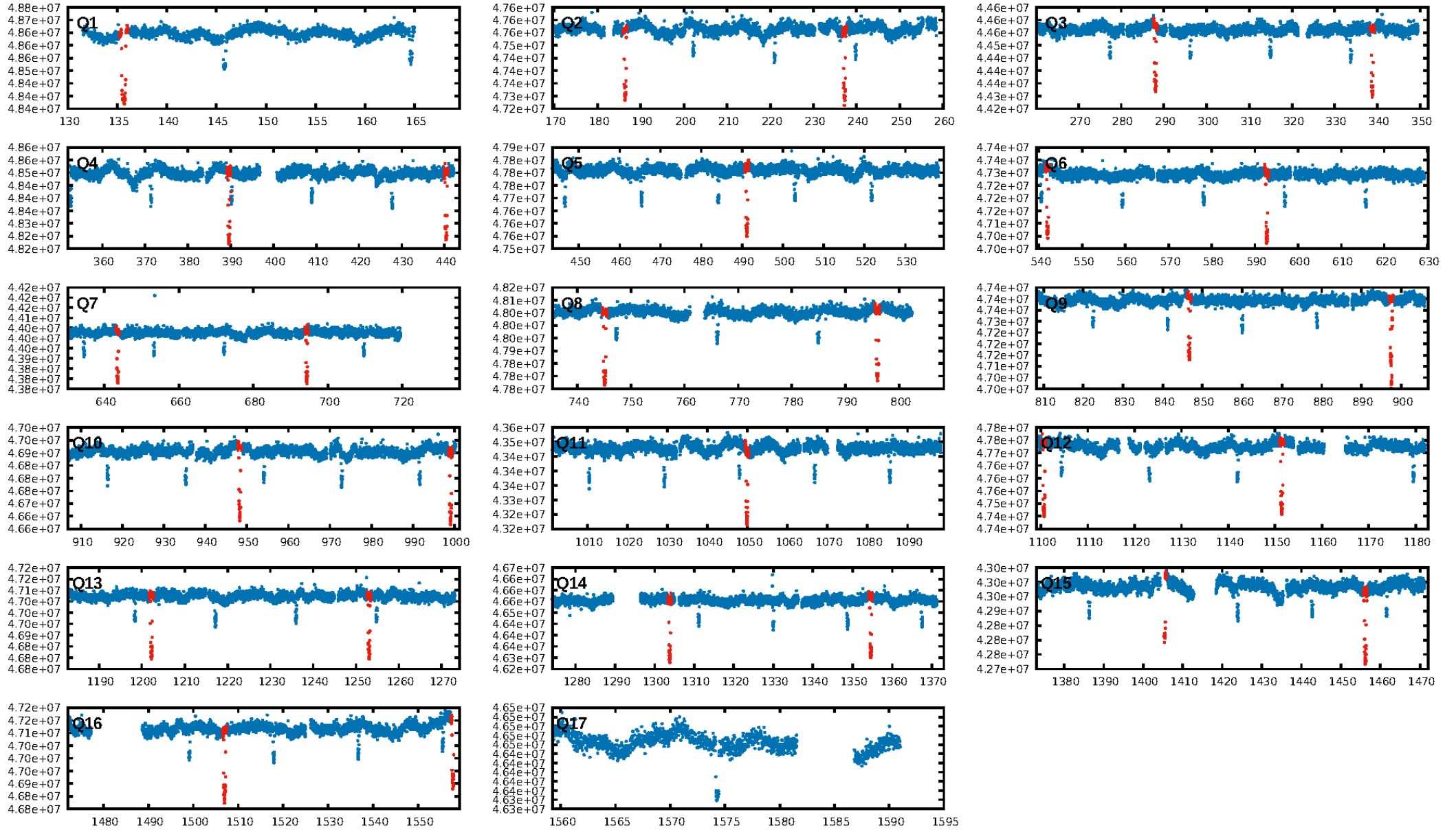
DV Fit Results:

Period = 50.79036 [0.00003] d
Epoch = 135.6324 [0.0004] BKJD
Rp/R* = 0.0696 [0.0004]
a/R* = 37.10 [0.88]
b = 0.24 [0.09]
Seff = 33.19 [9.19]
Teq = 612 [42] K
Rp = 10.68 [1.92] Re
a = 0.2775 [0.0467] AU
Ag = 16.48 [7.67] [2.02 σ]
Teffp = 1907 [186] K [6.78 σ]

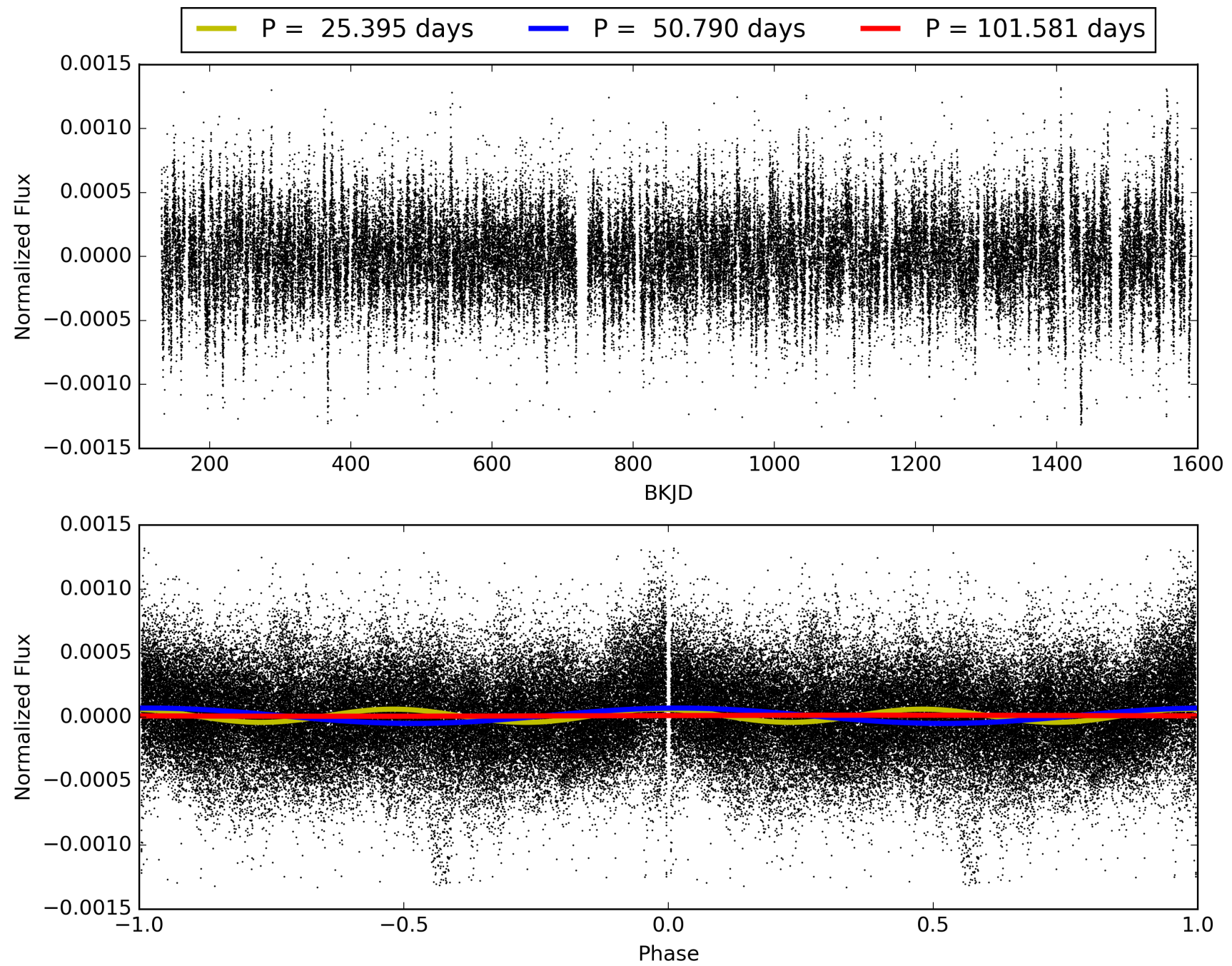
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [58.03 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 65.3%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [28/28]
GhostDiagnostic-chr: 5.798
Centroid-sig: 6.2%
Centroid-so: 0.181 arcsec [7.10 σ]
OotOffset-rm: 0.002 arcsec [0.03 σ]
KicOffset-rm: 0.087 arcsec [1.25 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 0.94 [15/16]

TCE 010723750-01, PDC Light Curves

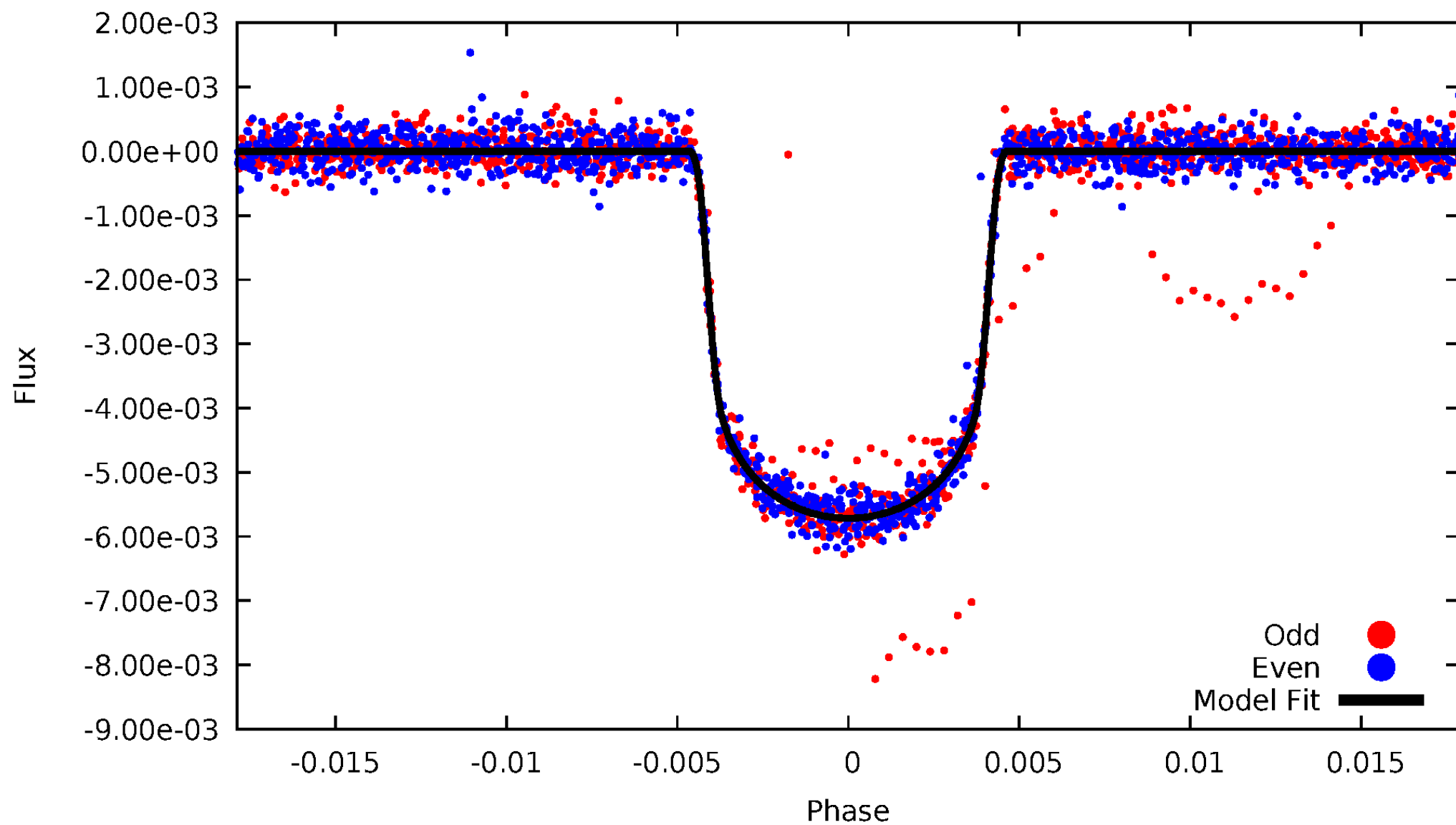


TCE 010723750-01



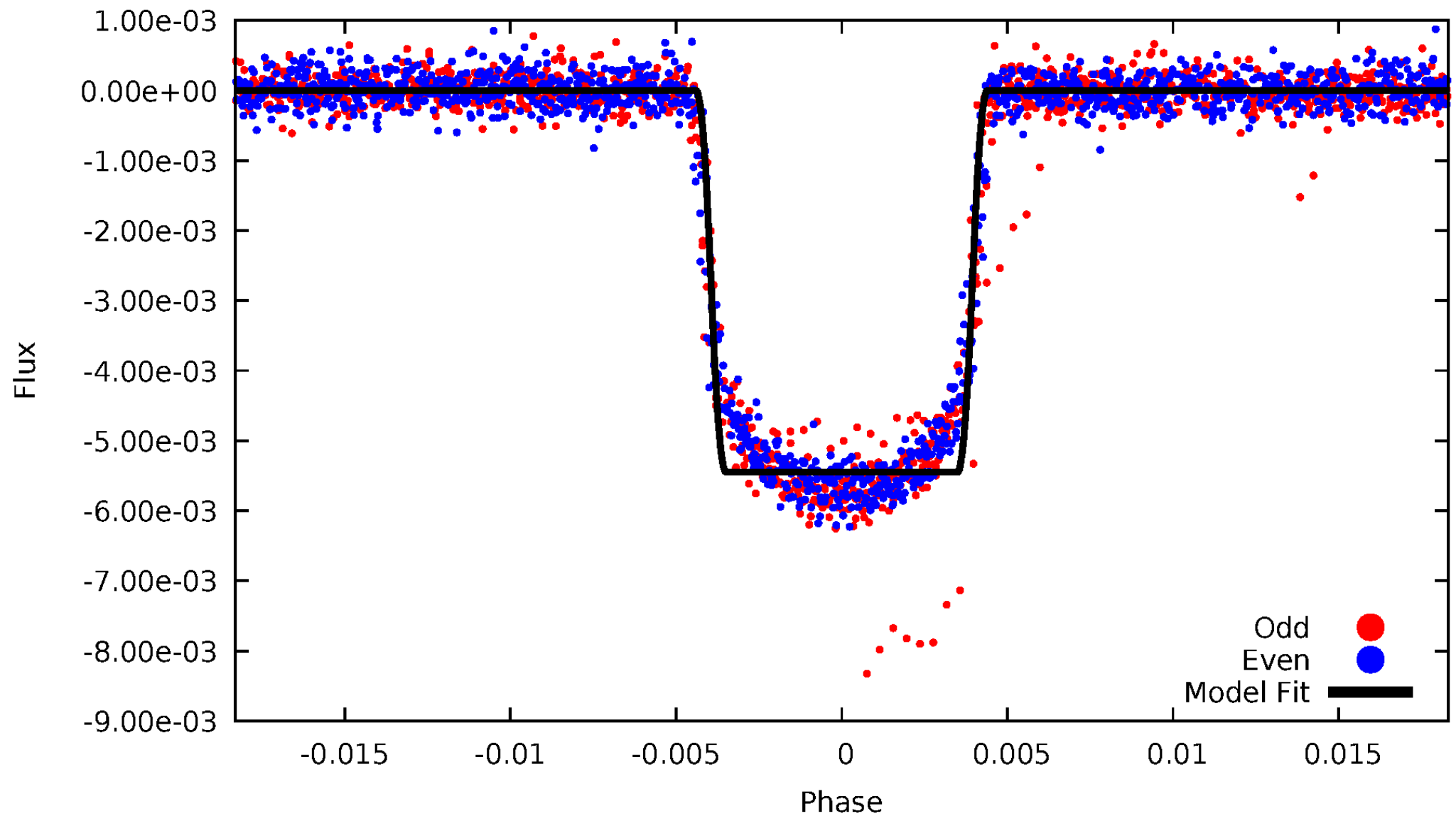
DV Odd/Even

TCE 010723750-01

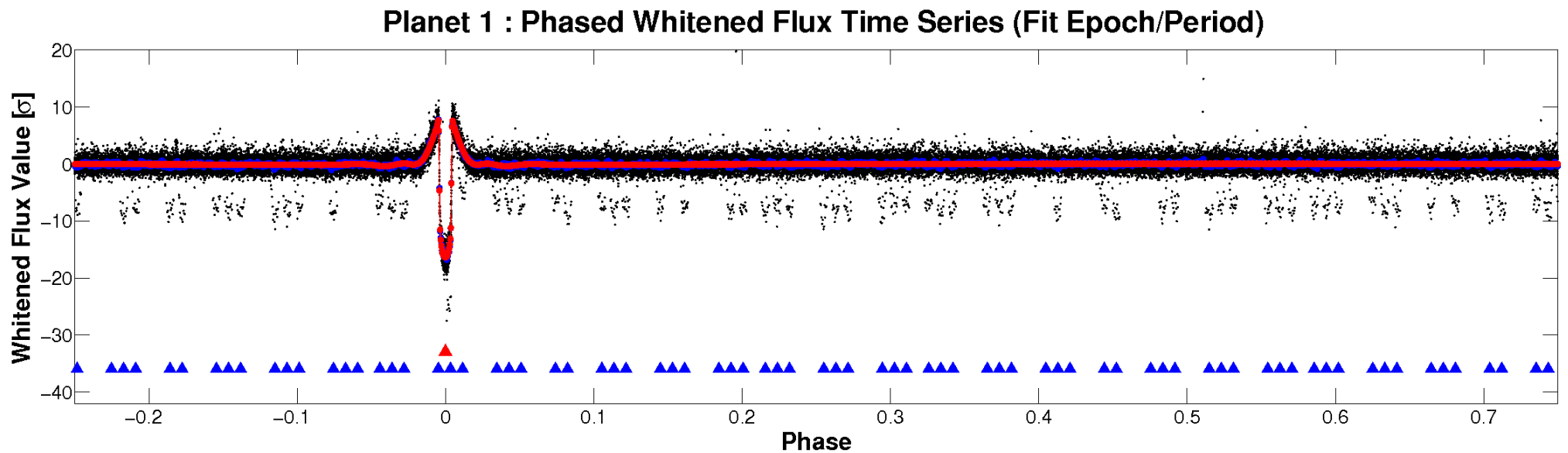
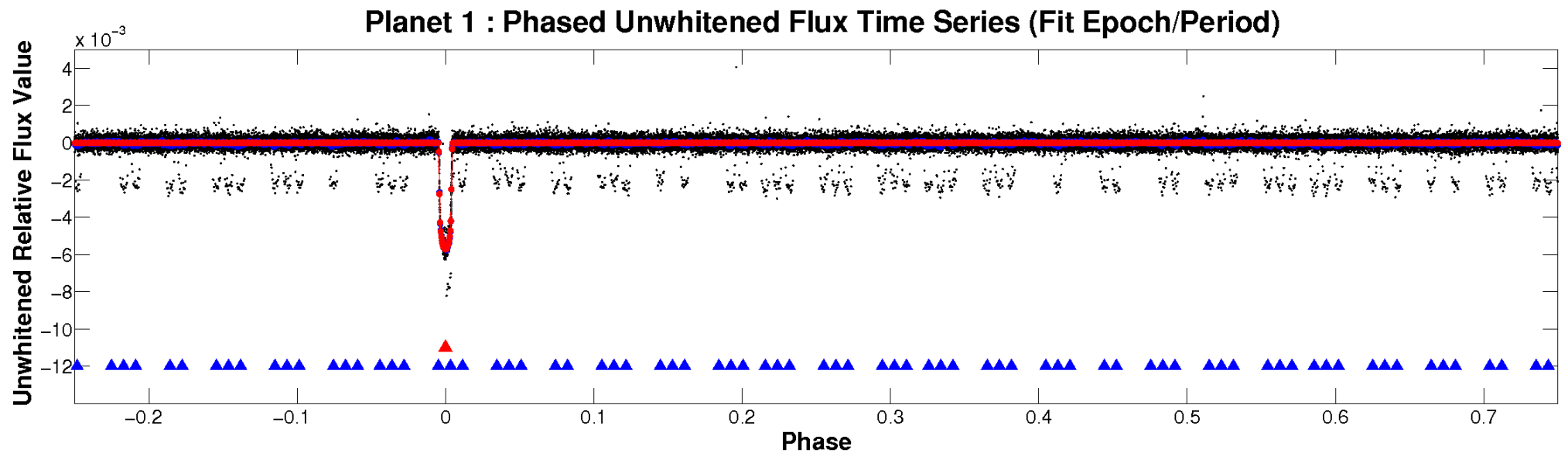


ALT Odd/Even

TCE 010723750-01

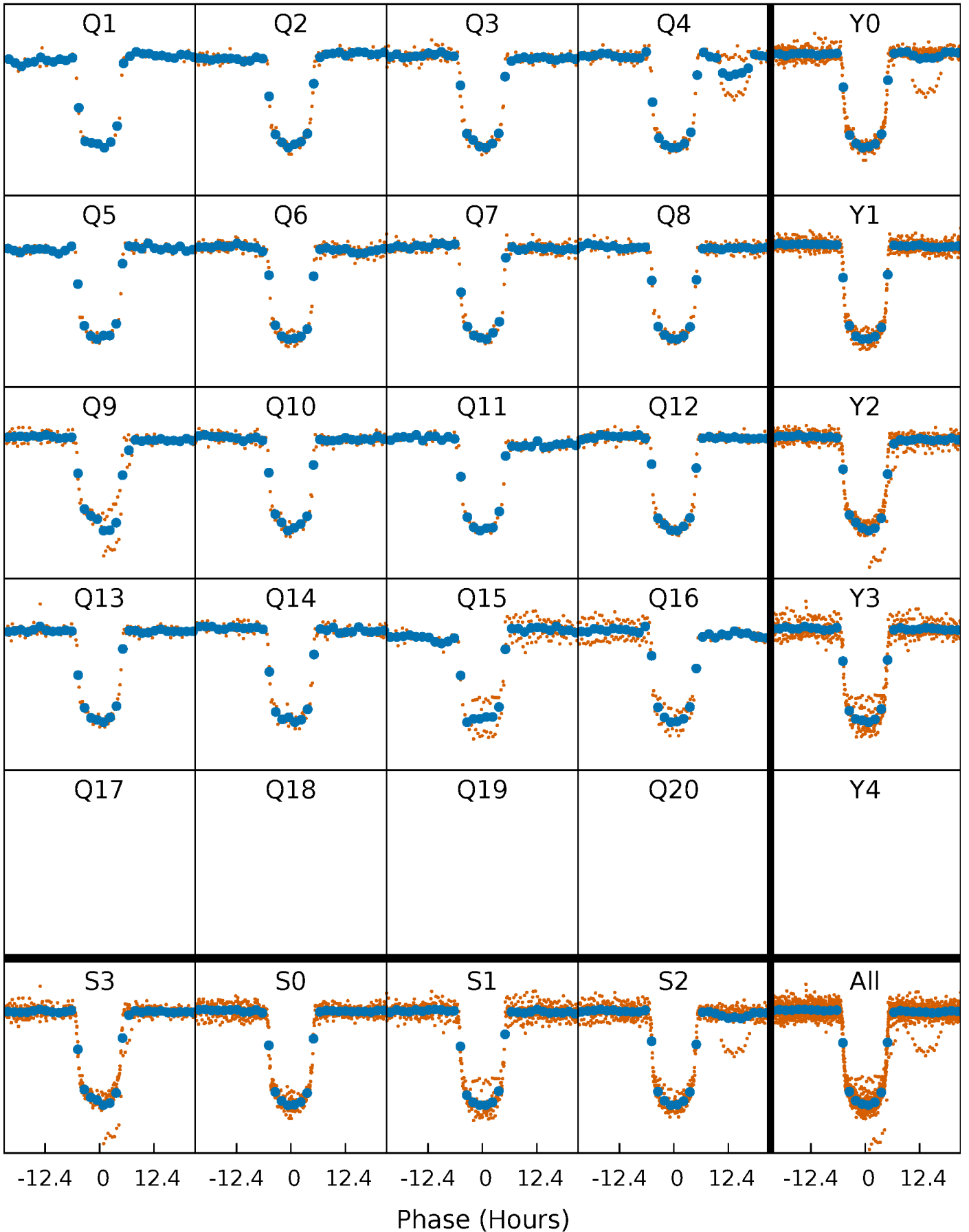


Non-Whitened Vs. Whitened Light Curve



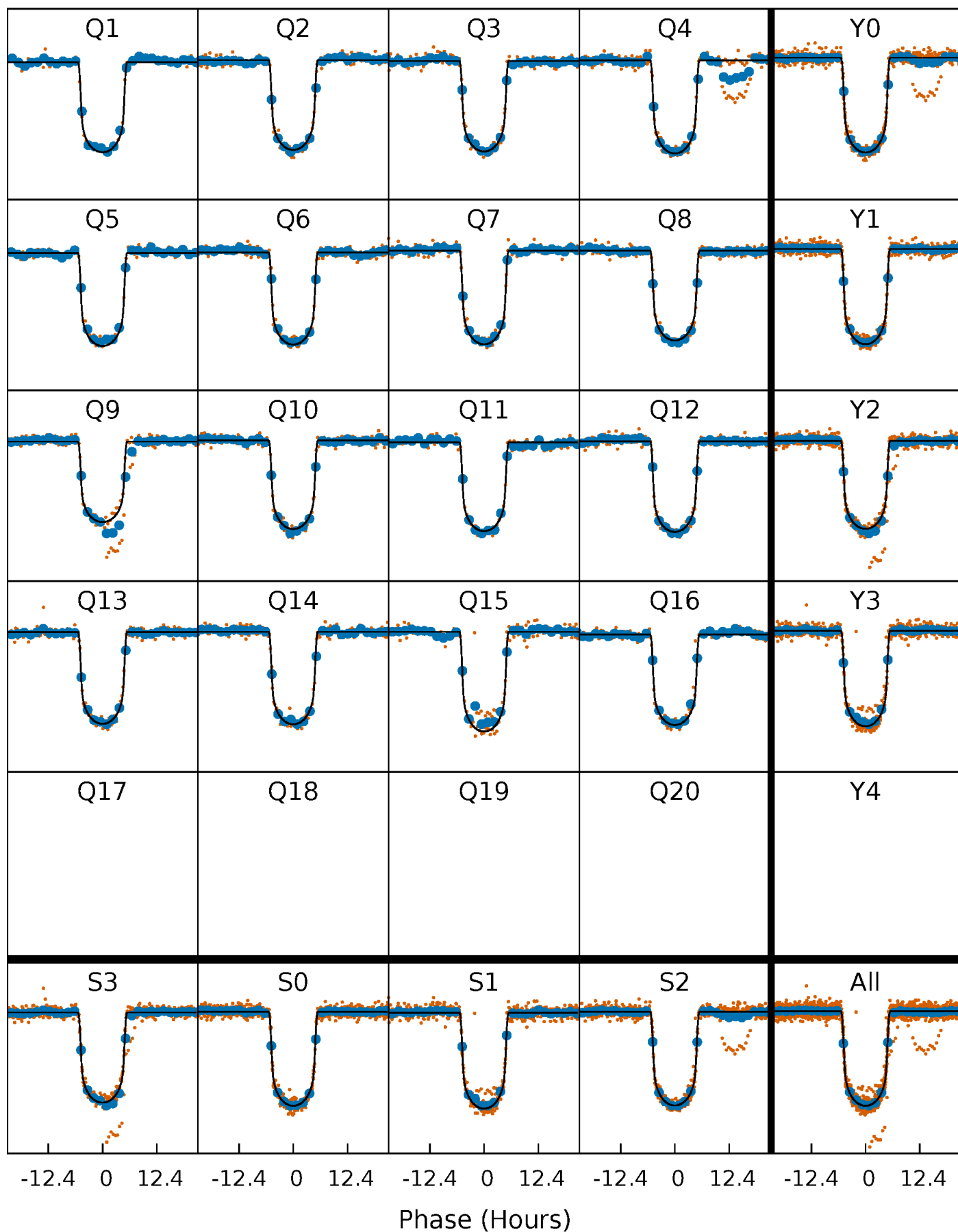
PDC Quarter-Phased Transit Curves

TCE 010723750-01 P= 50.790362 Days $T_0=135.632434$ (BKJD)



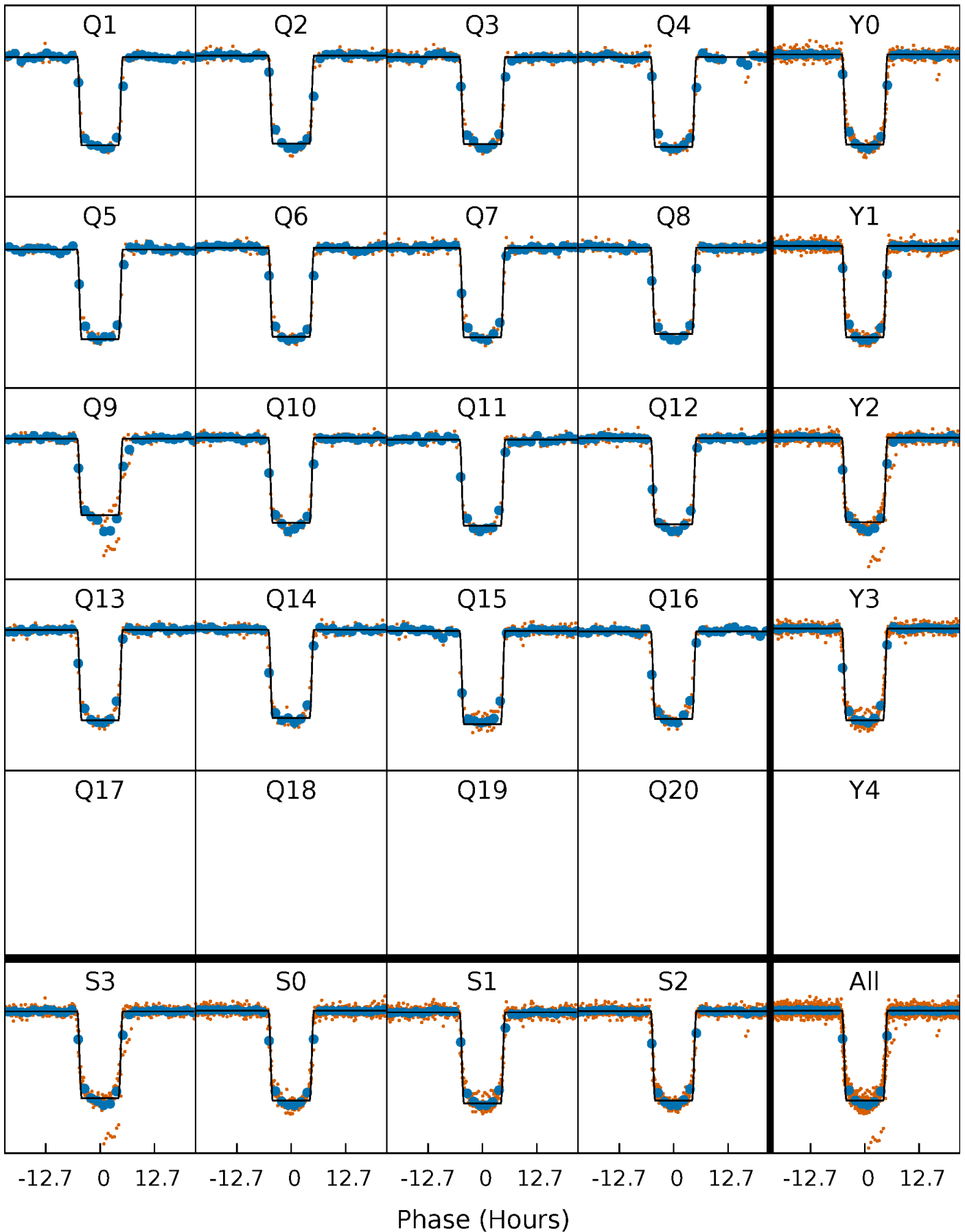
DV Quarter-Phased Transit Curves

TCE 010723750-01 P= 50.790362 Days $T_0=135.632434$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

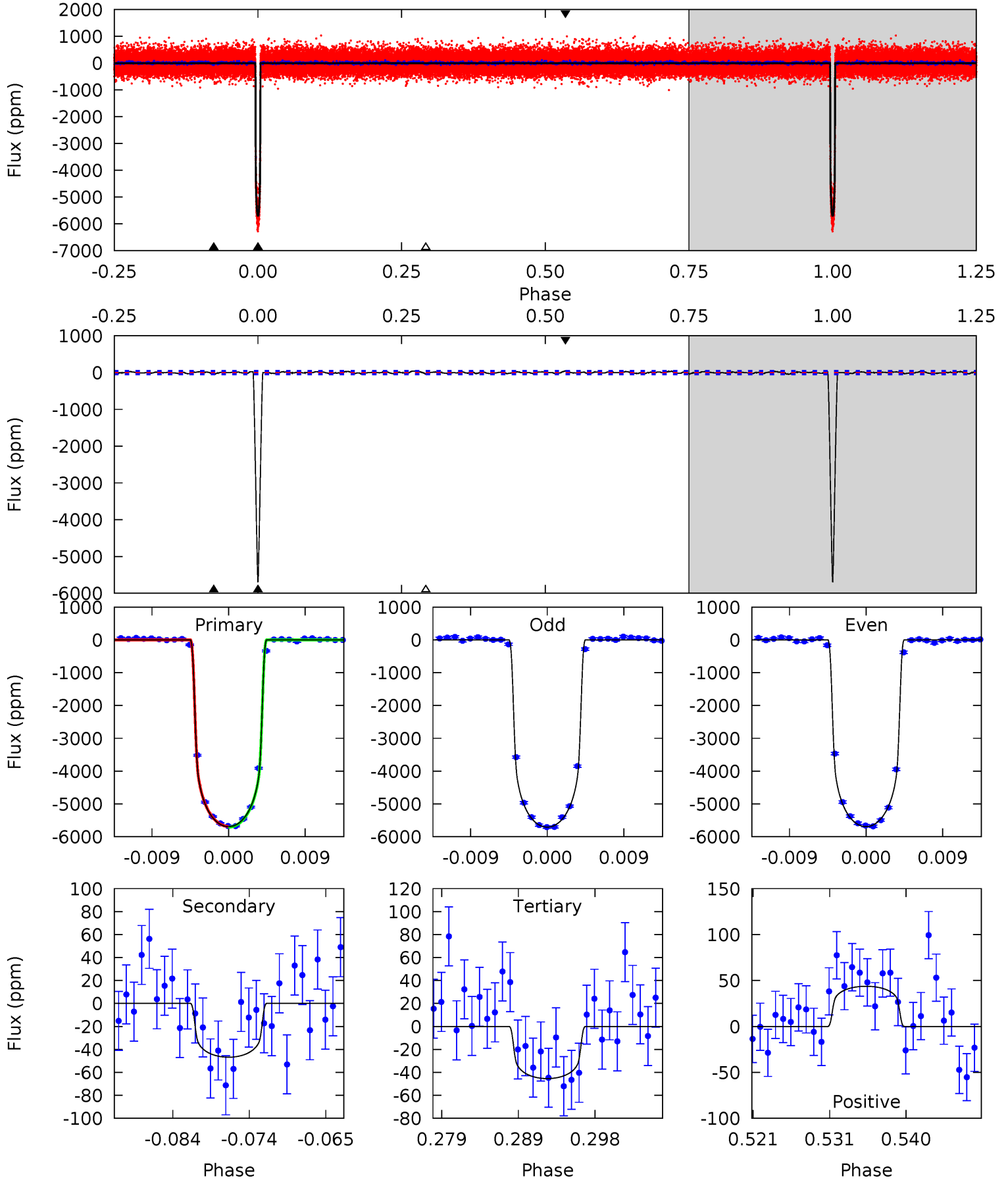
TCE 010723750-01 P= 50.791156 Days $T_0=135.622156$ (BKJD)



DV Model-Shift Uniqueness Test

010723750-01, P = 50.790362 Days, E = 84.842072 Days

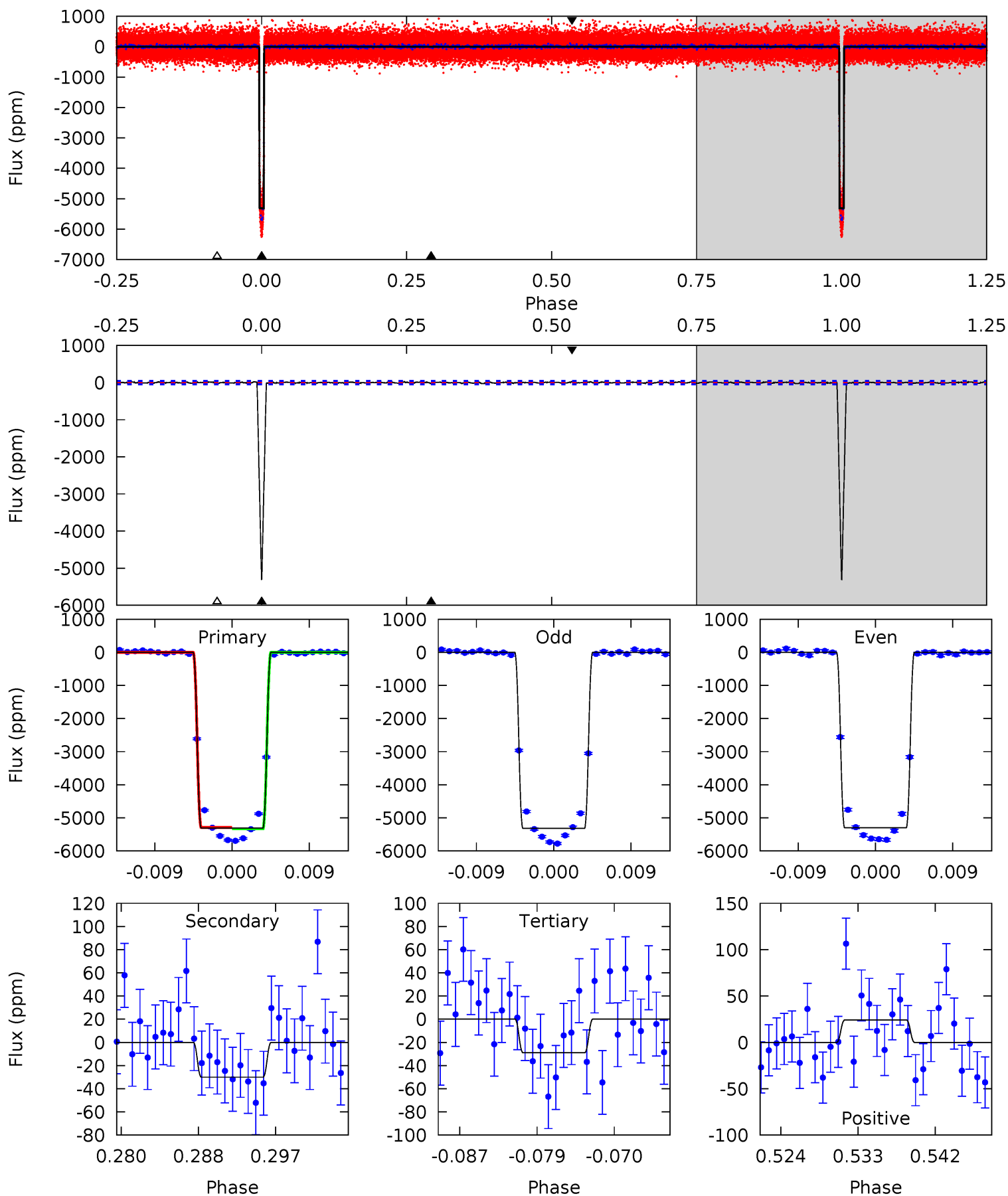
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
639.7	5.26	5.10	4.91	5.04	2.60	1.73	634.6	634.8	0.15	0.35	0.90	1.00	0.01	1.33



Alt Model-Shift Uniqueness Test

010723750-01, P = 50.791156 Days, E = 84.831000 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
598.1	3.38	3.26	2.72	5.05	2.62	1.05	594.8	595.4	0.12	0.66	1.17	1.00	0.00	2.13



Stellar Parameters For KIC 010723750

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6163^{+123}_{-123}	$4.185^{+0.154}_{-0.112}$	$-0.060^{+0.150}_{-0.150}$	$1.406^{+0.253}_{-0.253}$	$1.102^{+0.122}_{-0.081}$	$0.559^{+0.407}_{-0.202}$
	+2%/-2%	+4%/-3%	+250%/-250%	+18%/-18%	+11%/-7%	+73%/-36%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 010723750-01 / KOI 0209.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-47 ± 9	$10.63^{+1.07}_{-1.07}$	850^{+43}_{-45}	2707^{+70}_{-80}	18^{+5}_{-4}
Alt.	-30 ± 9	$11.33^{+1.16}_{-1.08}$	852^{+47}_{-41}	2518^{+89}_{-103}	$9.993^{+3.566}_{-3.140}$

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 $A_{obs} \gg 1.0$

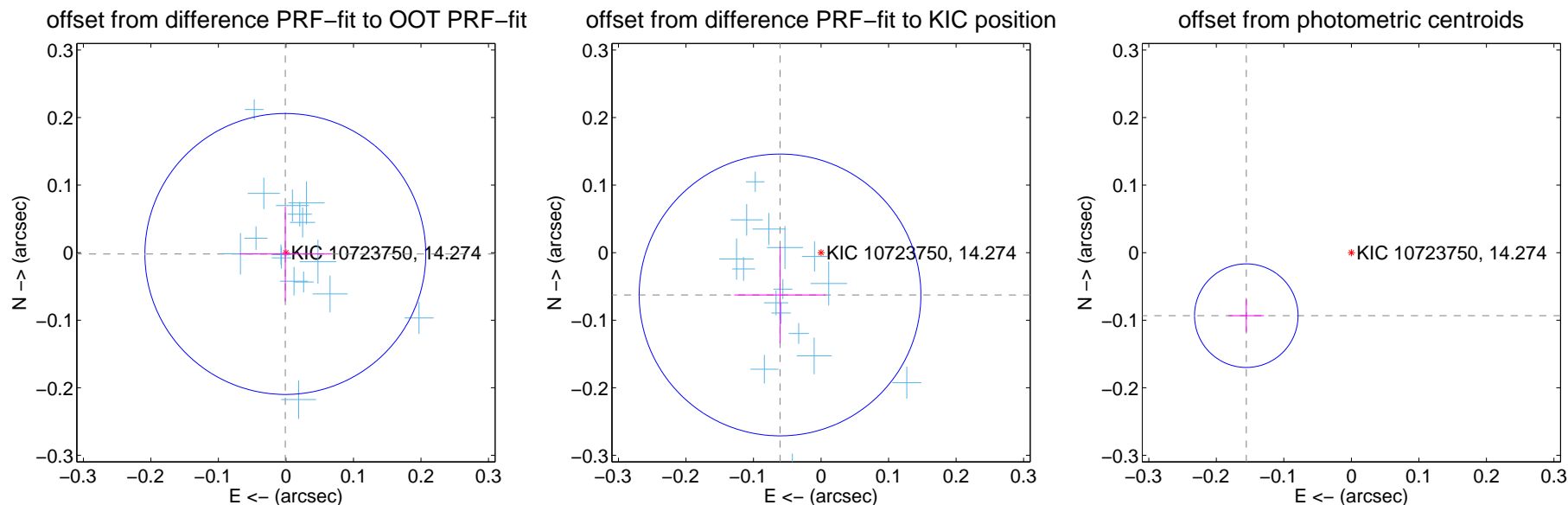
DV Centroid Data

Supplemental centroid analysis for 010723750-01. Kepler magnitude: 14.27. Transit SNR 369.57

There are 16 quarters with good PRF difference image offsets

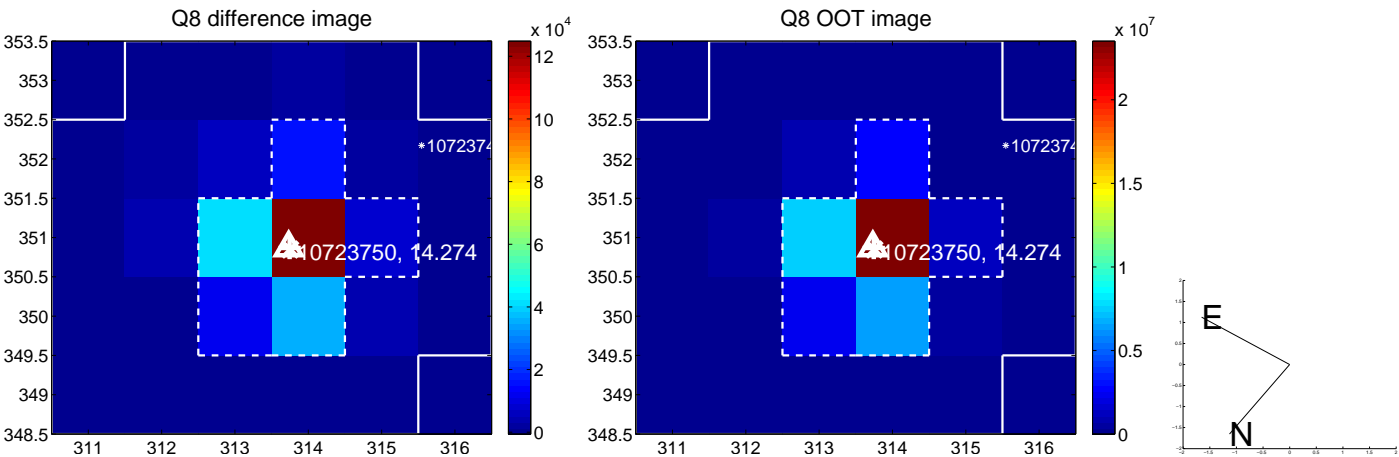
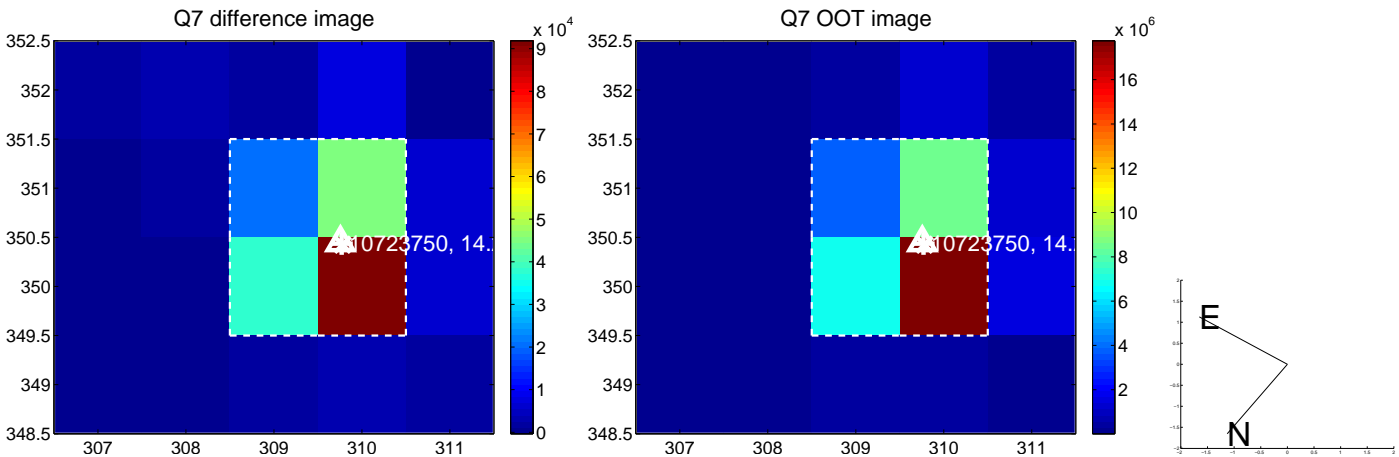
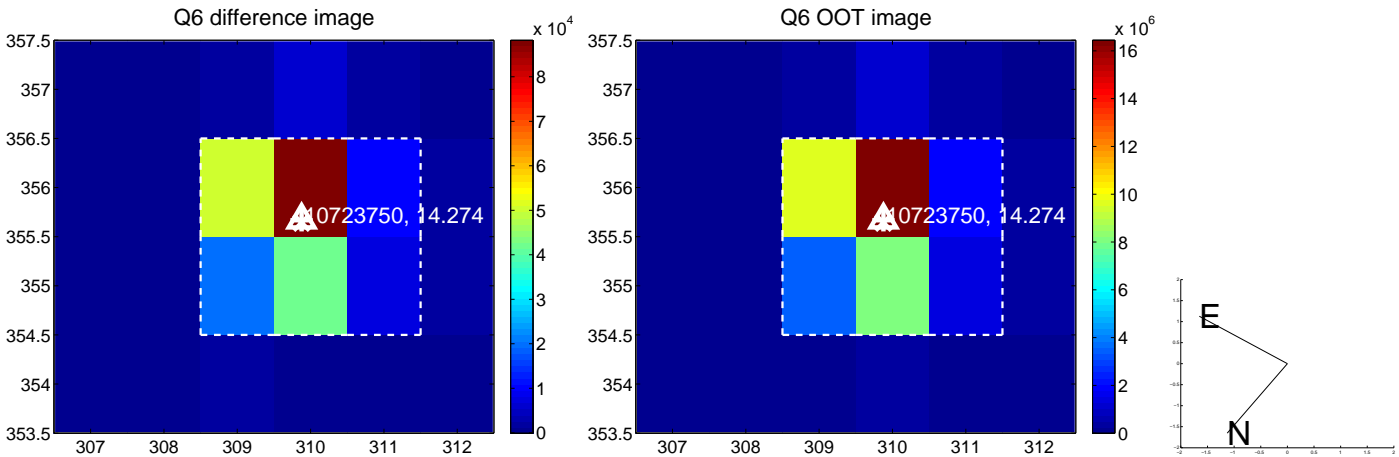
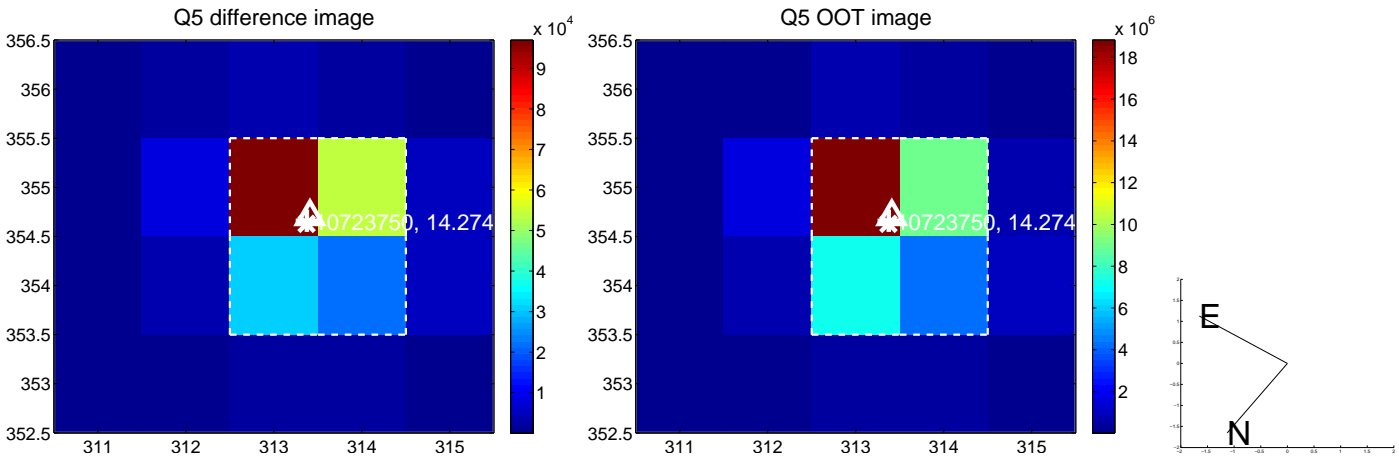
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.002 ± 0.069	0.03	0.001 ± 0.068	-0.002 ± 0.070
PRF-fit source offset from KIC position	0.087 ± 0.070	1.25	0.061 ± 0.068	-0.063 ± 0.071
photometric centroid source offset	0.18 ± 0.03	7.10	0.16 ± 0.03	-0.09 ± 0.02

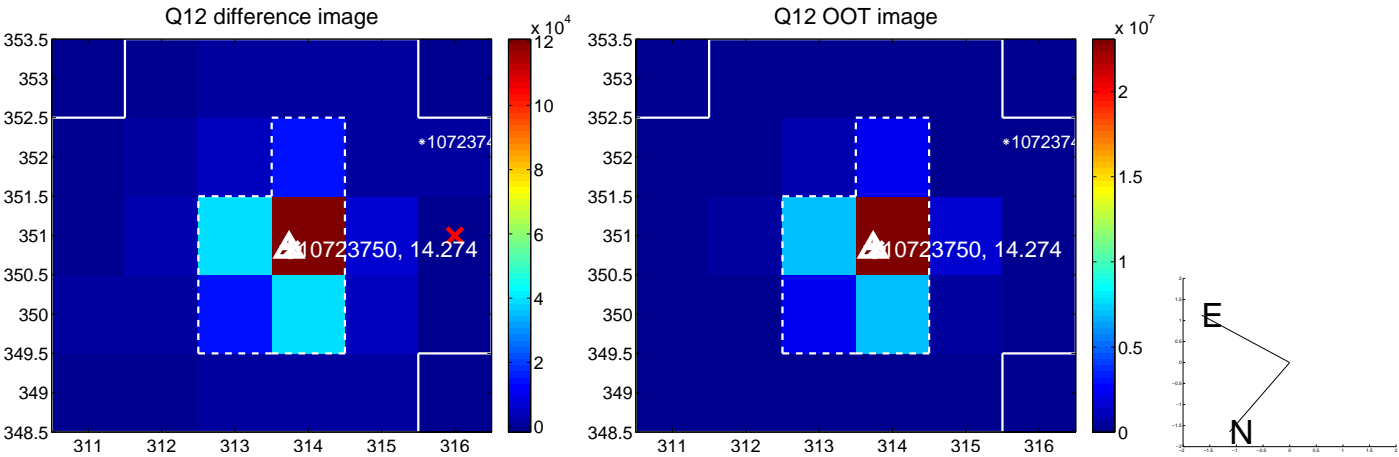
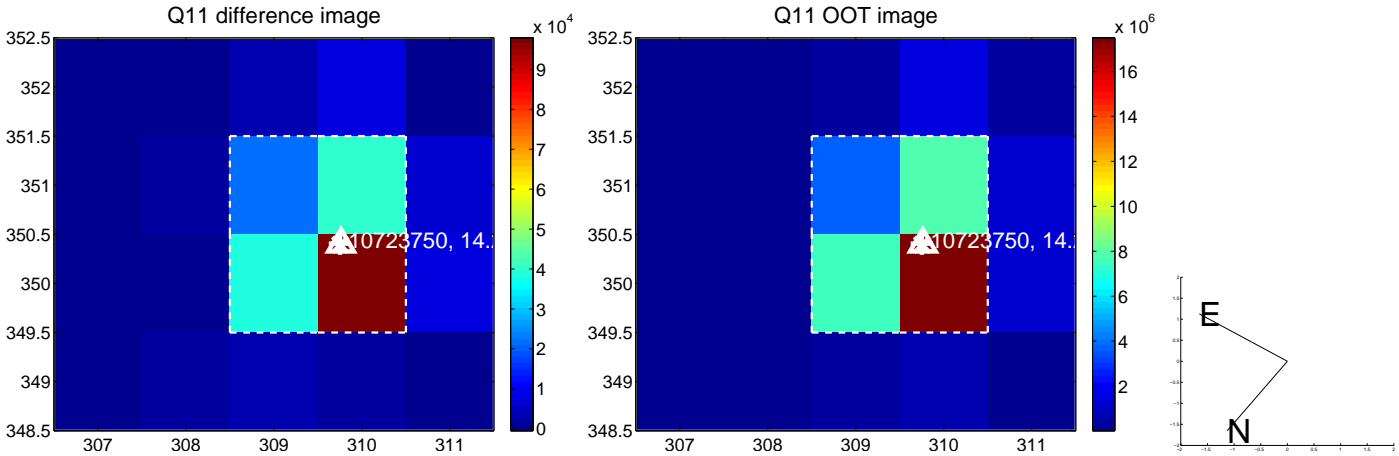
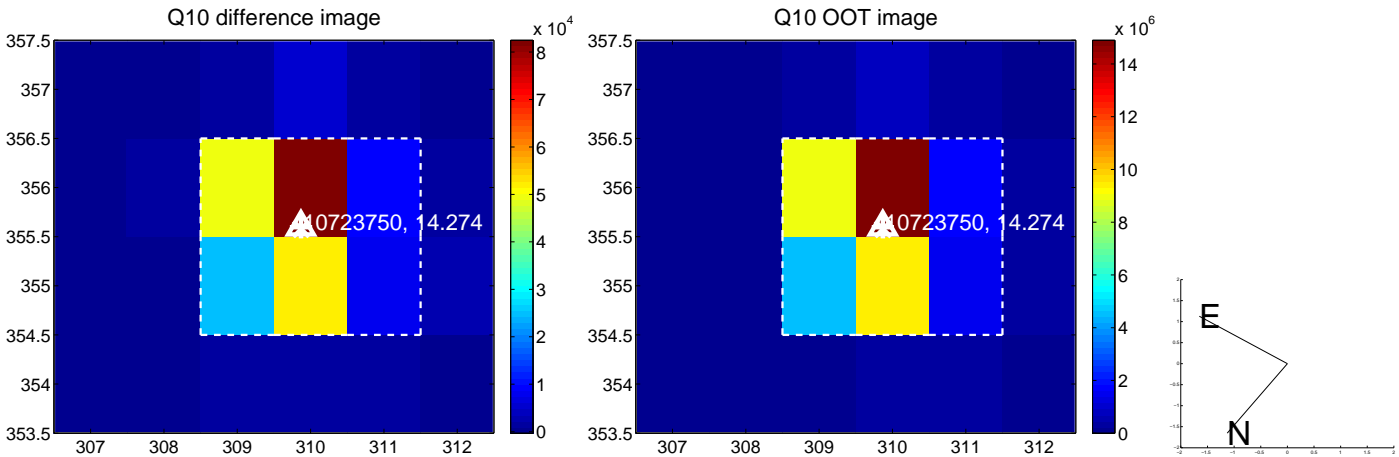
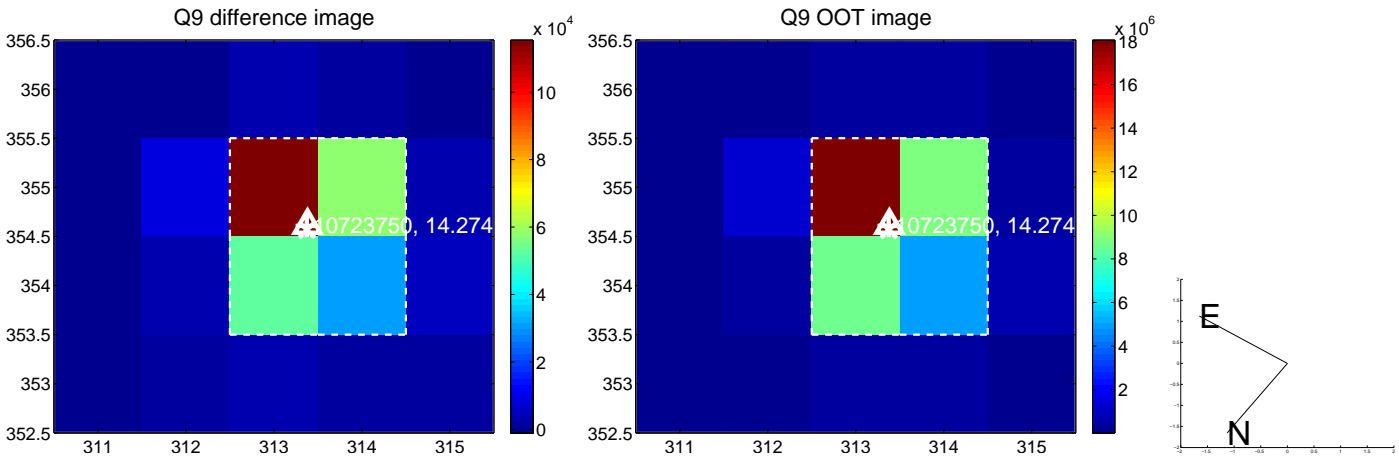


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

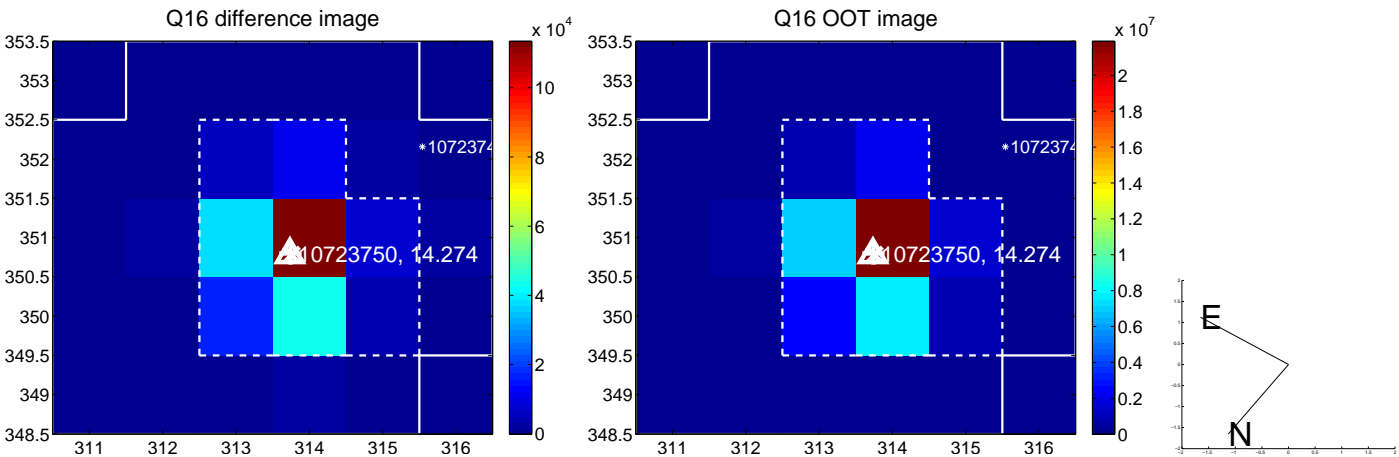
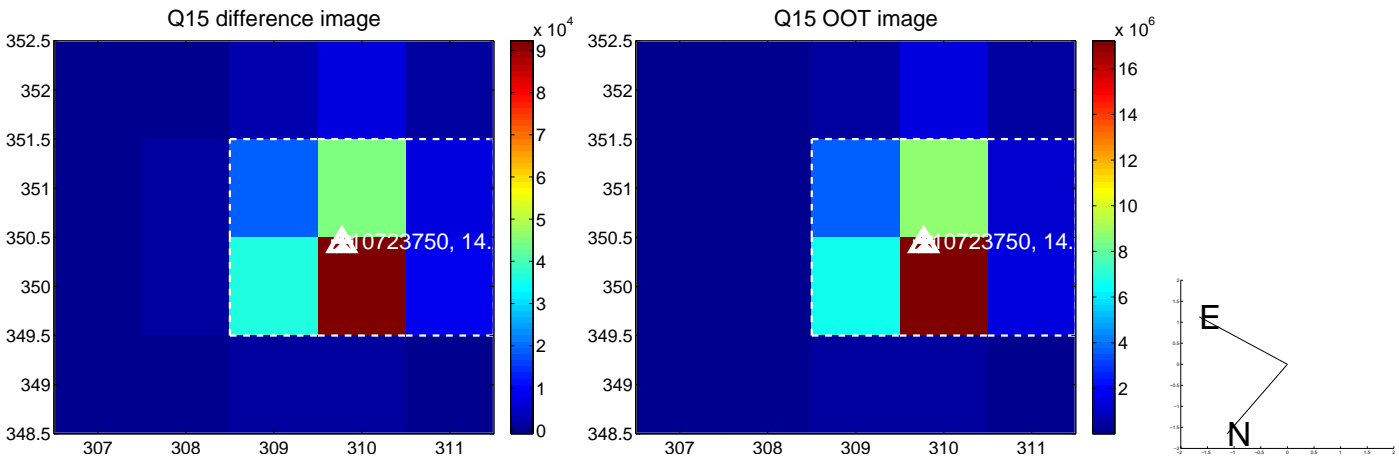
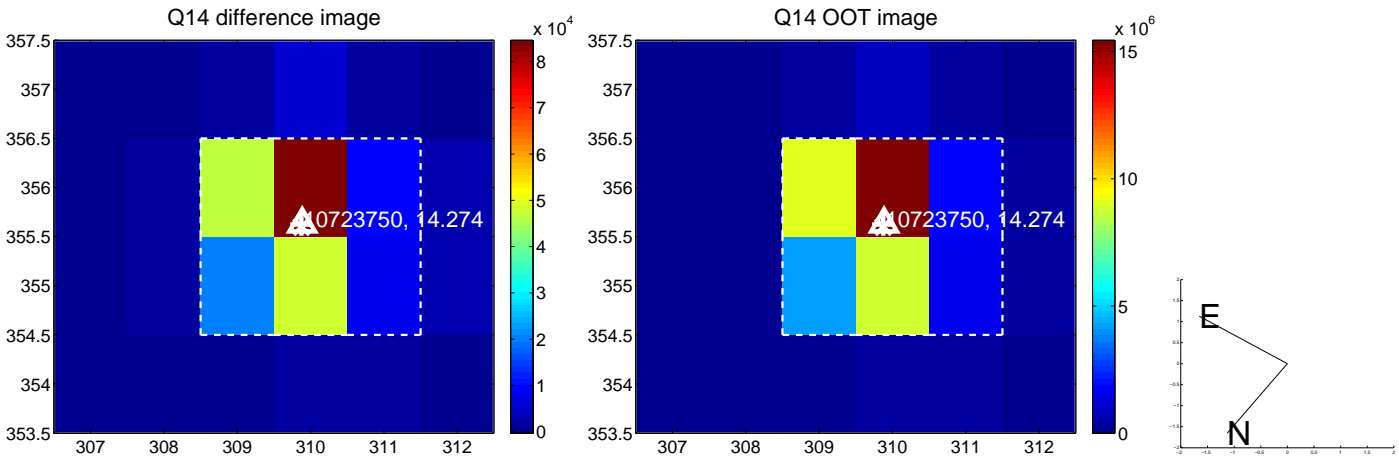
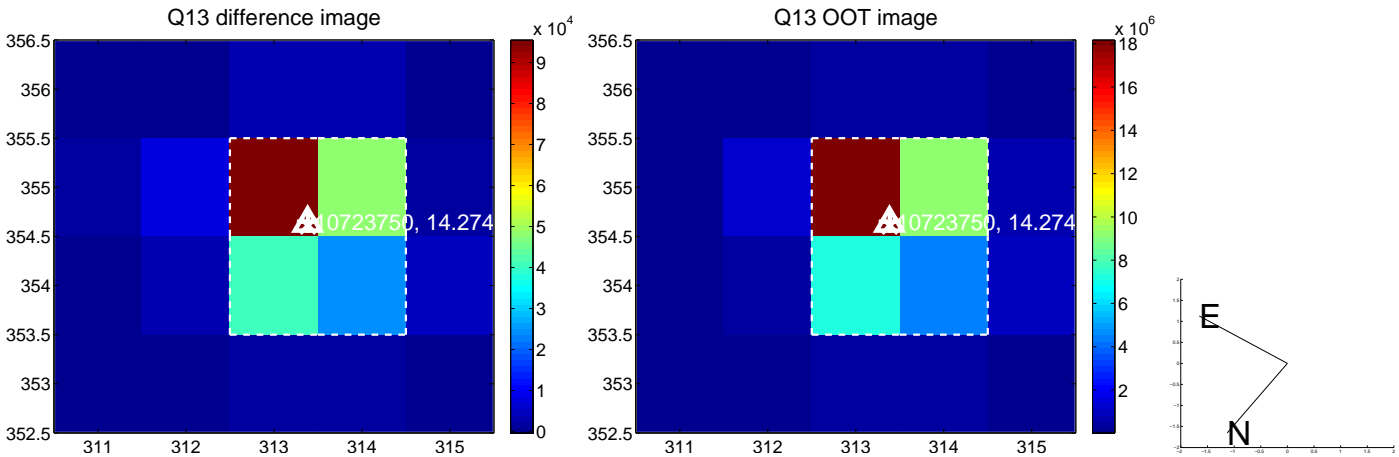
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



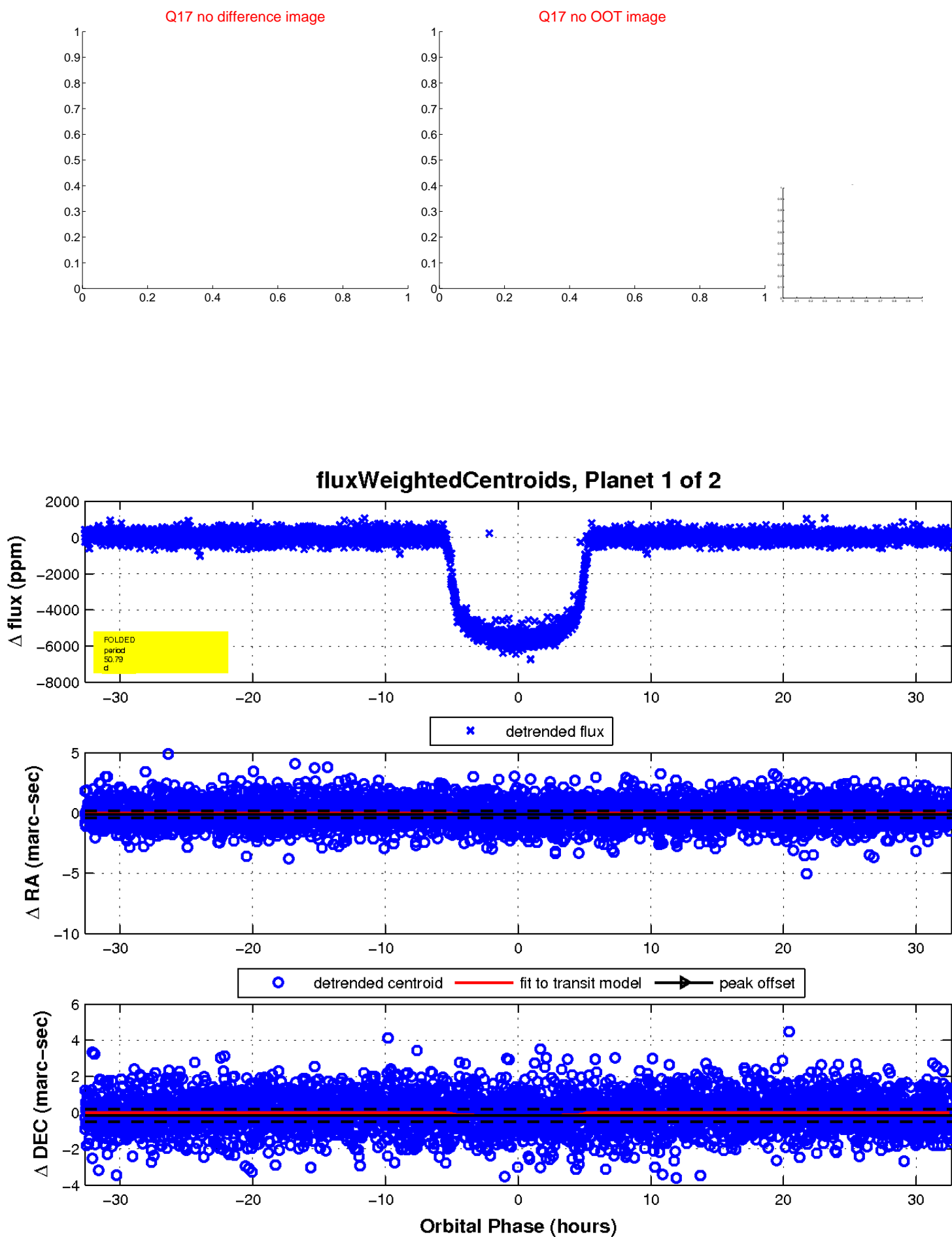
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

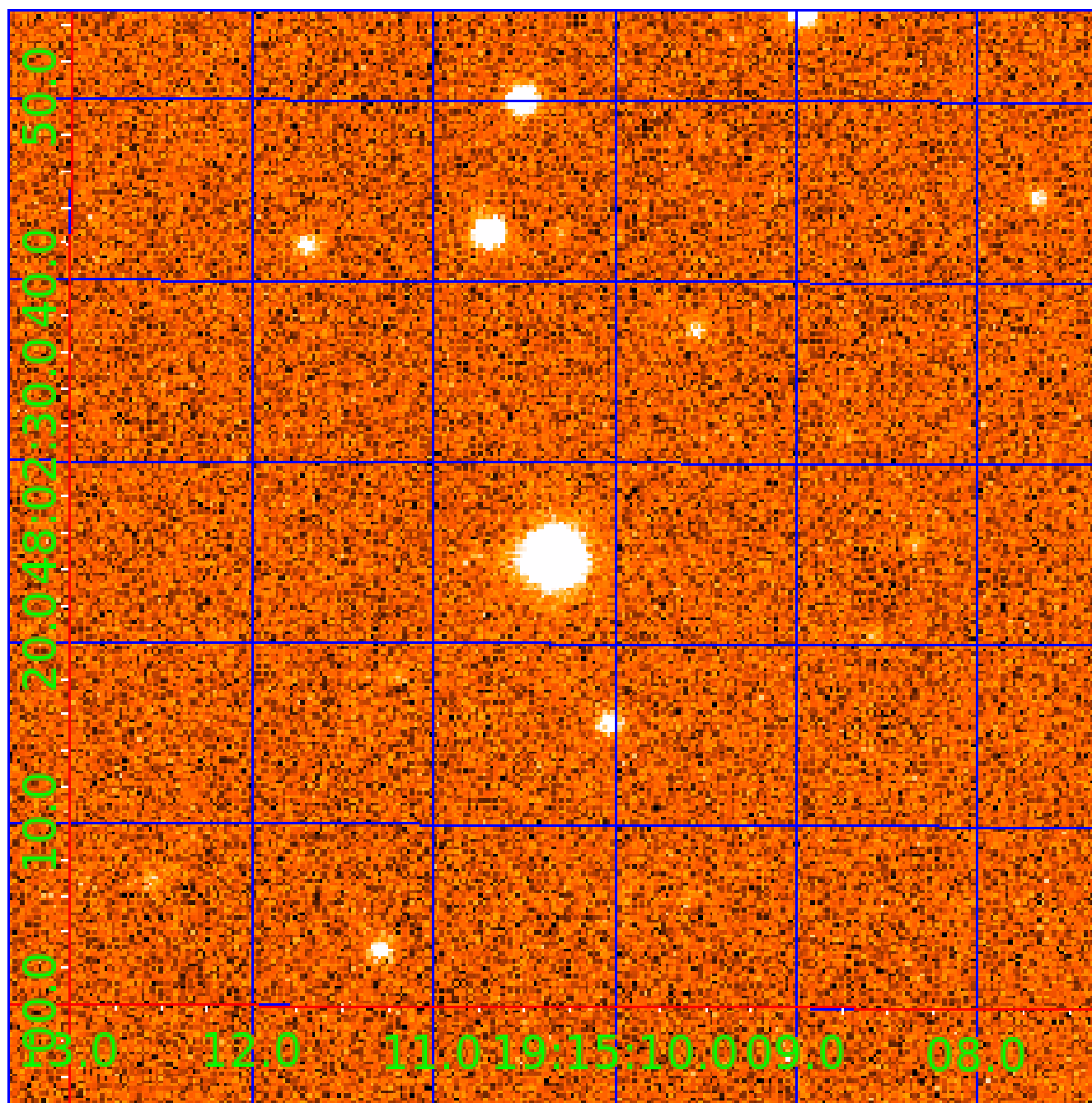


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010723750

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})
010723750-01	OBS	0209.01	50.790362	135.632434	5715.3	10.892	376.4	369.6	1.41	6163	10.68	33.19
010723750-02	OBS	0209.02	18.795917	145.822888	2406.7	7.514	224.4	221.6	1.41	6163	7.39	124.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010723750-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
010723750-02	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.

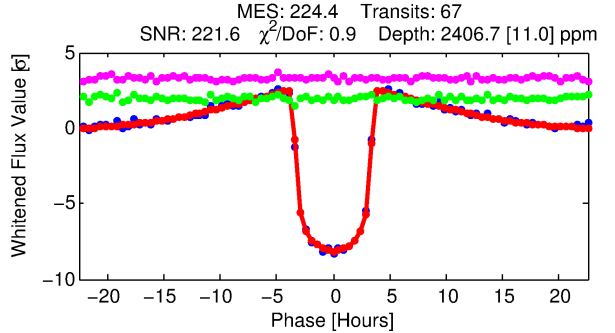
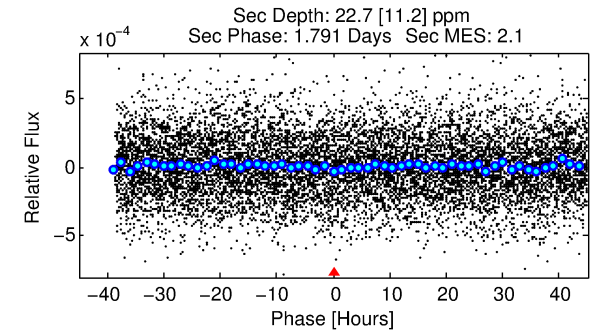
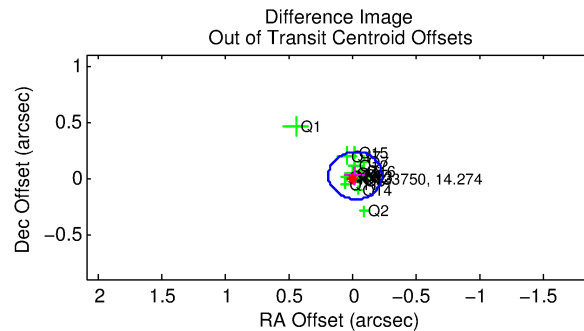
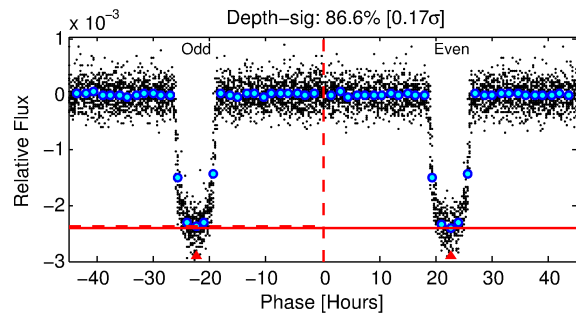
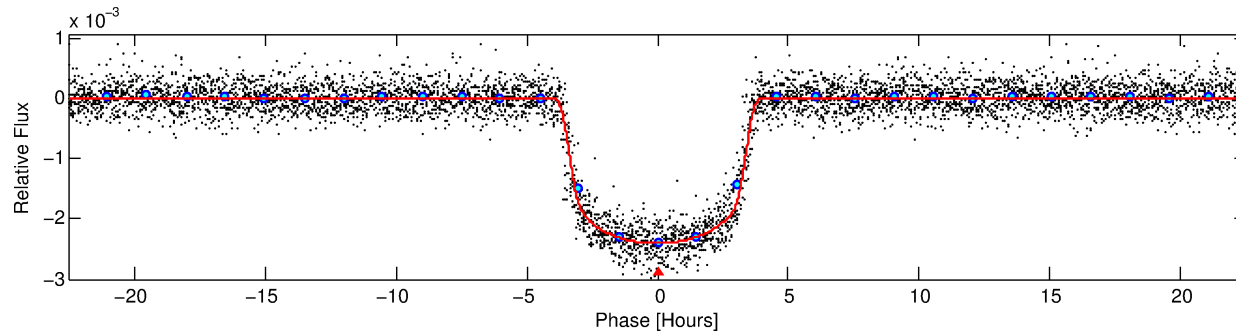
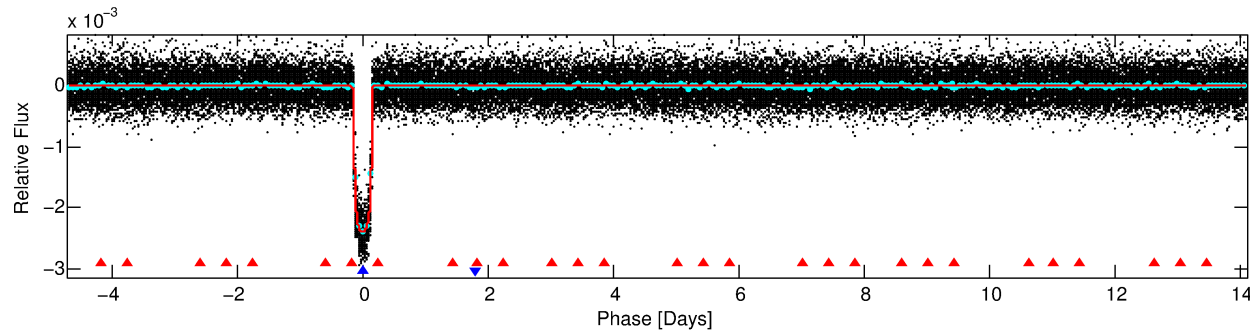
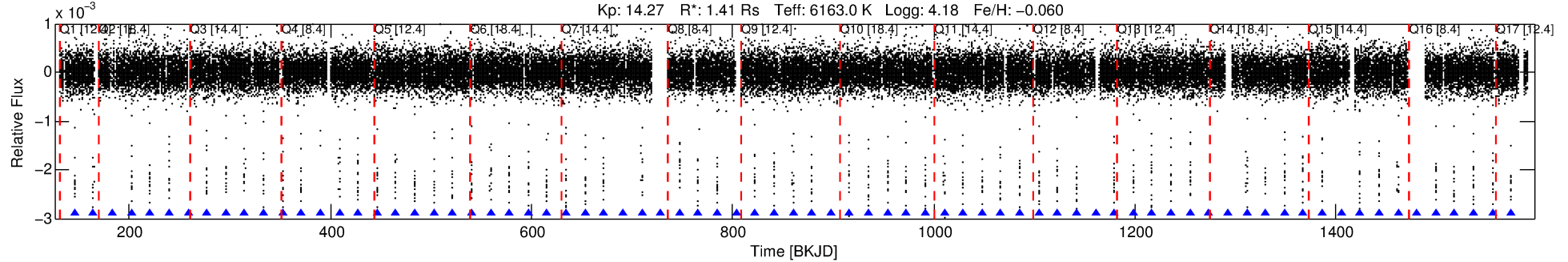
Ephemeris Match Information For 010723750-02

No Significant Match Found

DV One-Page Summary

KIC: 10723750 Candidate: 2 of 2 Period: 18.796 d
KOI: K00209.02 Name: Kepler-117b Corr: 0.984

Kp: 14.27 R*: 1.41 Rs Teff: 6163.0 K Logg: 4.18 Fe/H: -0.060



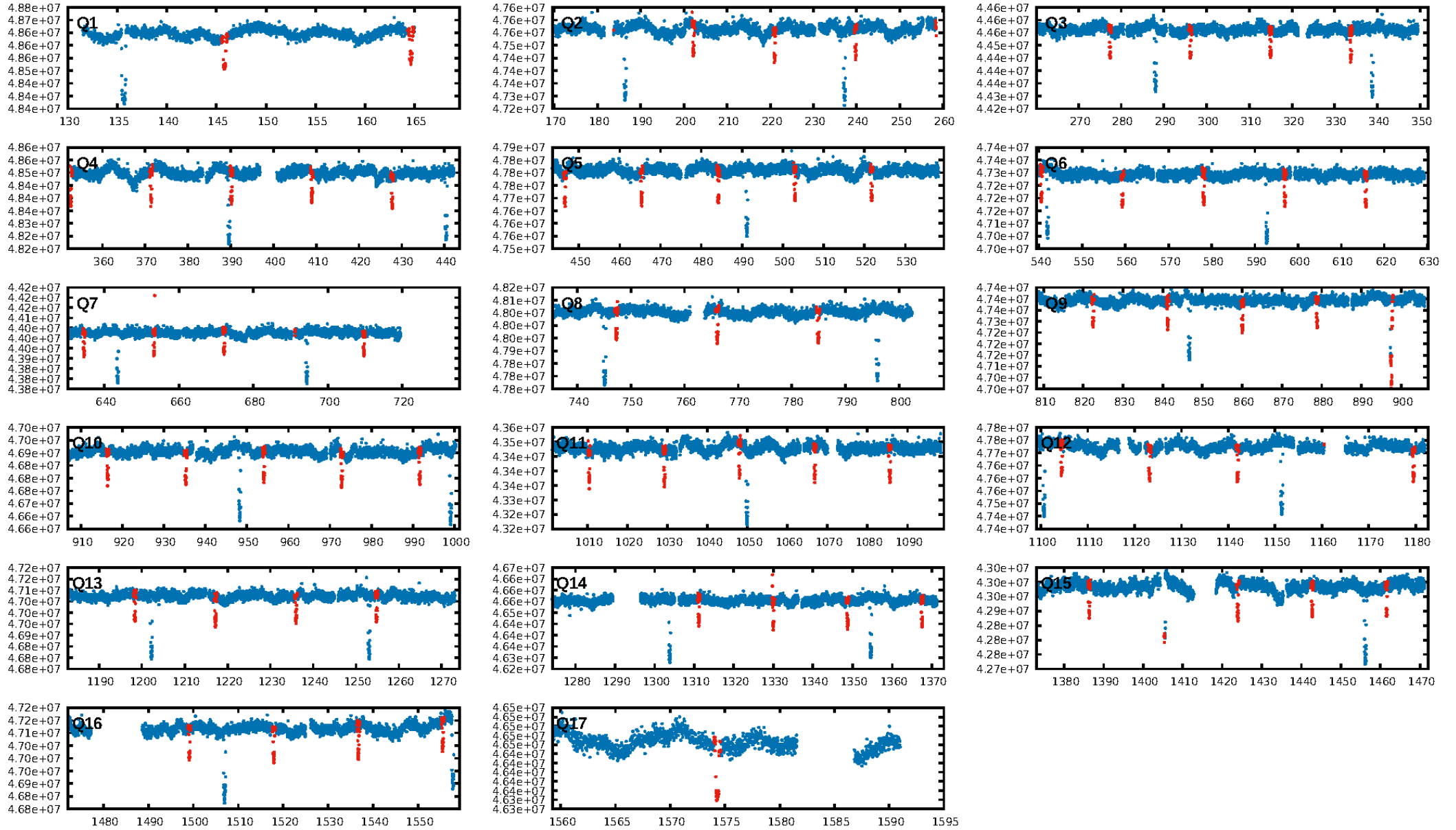
DV Fit Results:

Period = 18.79592 [0.00001] d
Epoch = 145.8229 [0.0006] BKJD
Rp/R* = 0.0482 [0.0004]
a/R* = 14.79 [0.54]
b = 0.71 [0.03]
Seff = 124.92 [34.58]
Teq = 852 [59] K
Rp = 7.39 [1.33] Re
a = 0.1430 [0.0241] AU
Ag = 4.68 [2.63] [1.40σ]
Teffp = 1938 [243] K [4.34σ]

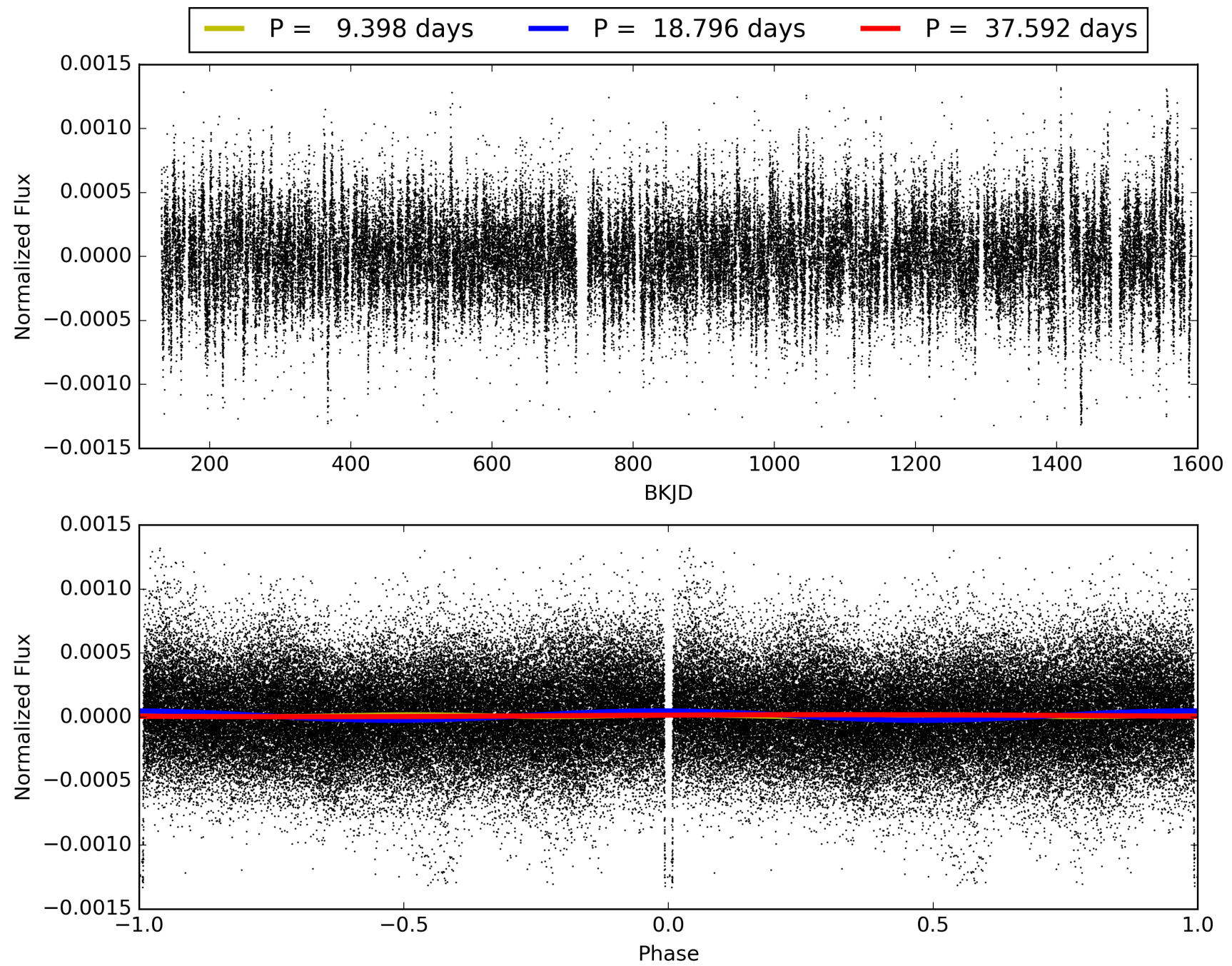
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [58.03σ]
ModelChiSquare2-sig: 36.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [64/64]
GhostDiagnostic-chr: 6.104
Centroid-sig: 0.0%
Centroid-so: 0.285 arcsec [6.11σ]
OotOffset-rm: 0.026 arcsec [0.37σ]
KicOffset-rm: 0.075 arcsec [1.05σ]
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 010723750-02, PDC Light Curves

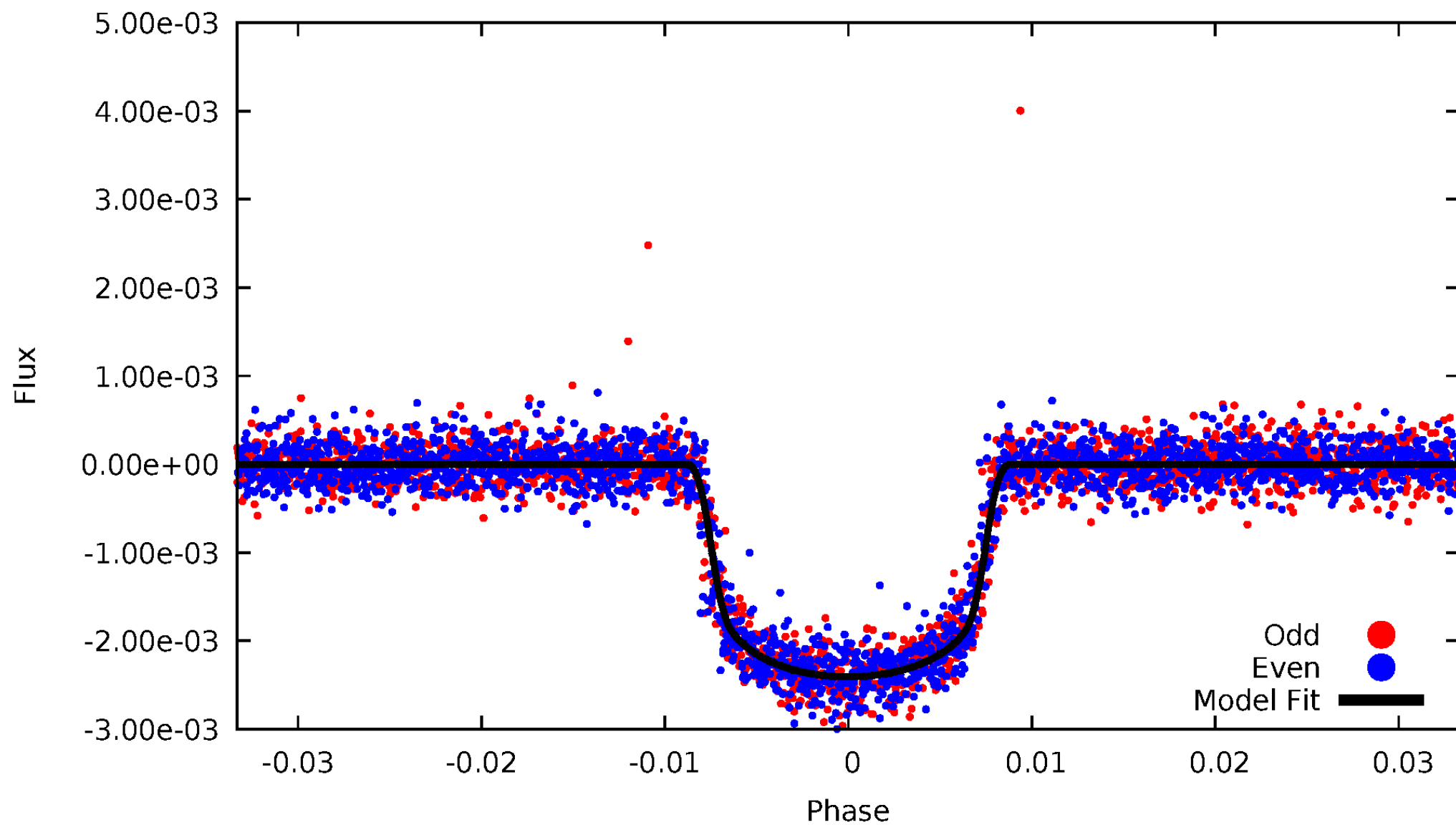


TCE 010723750-02



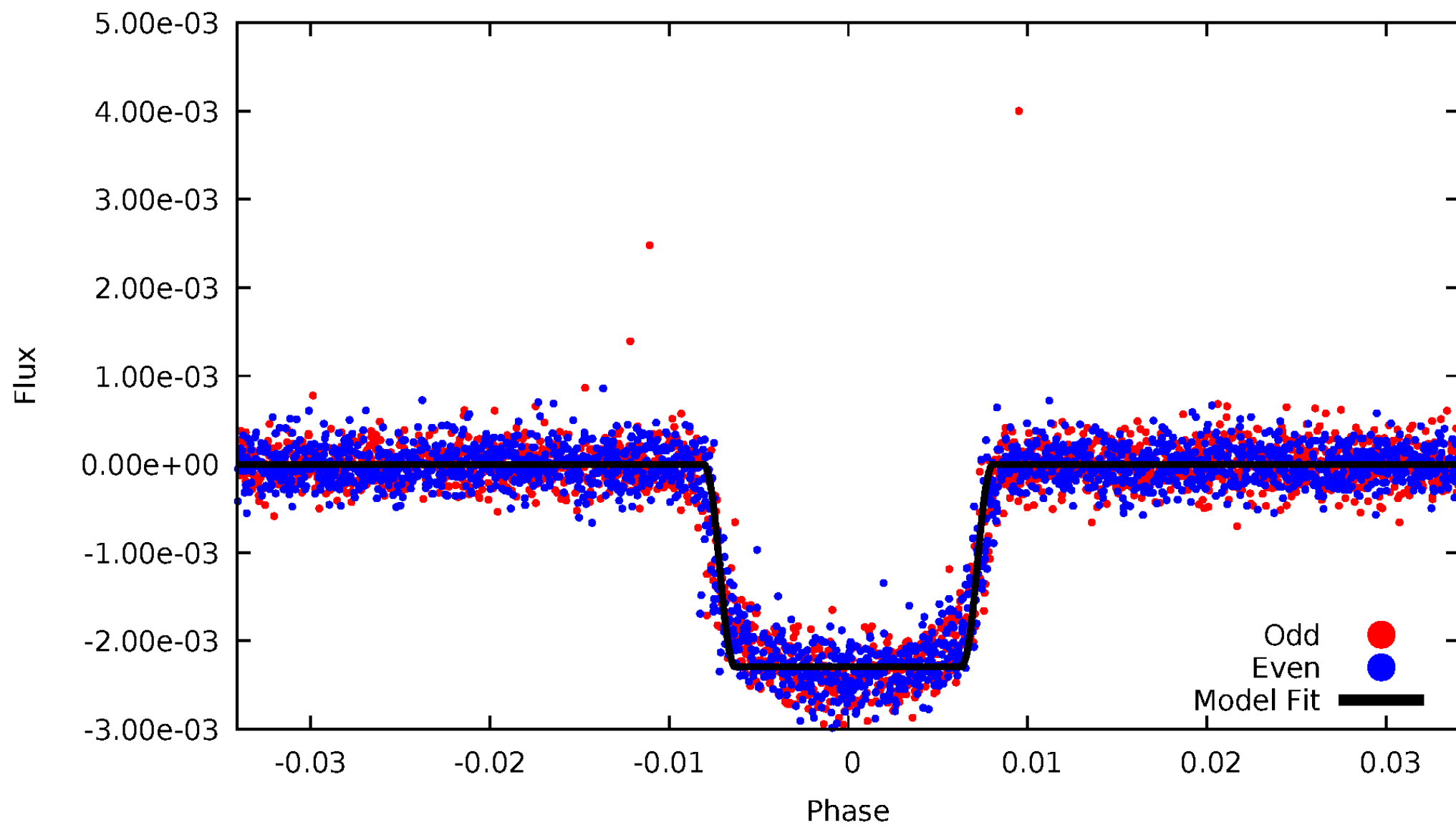
DV Odd/Even

TCE 010723750-02



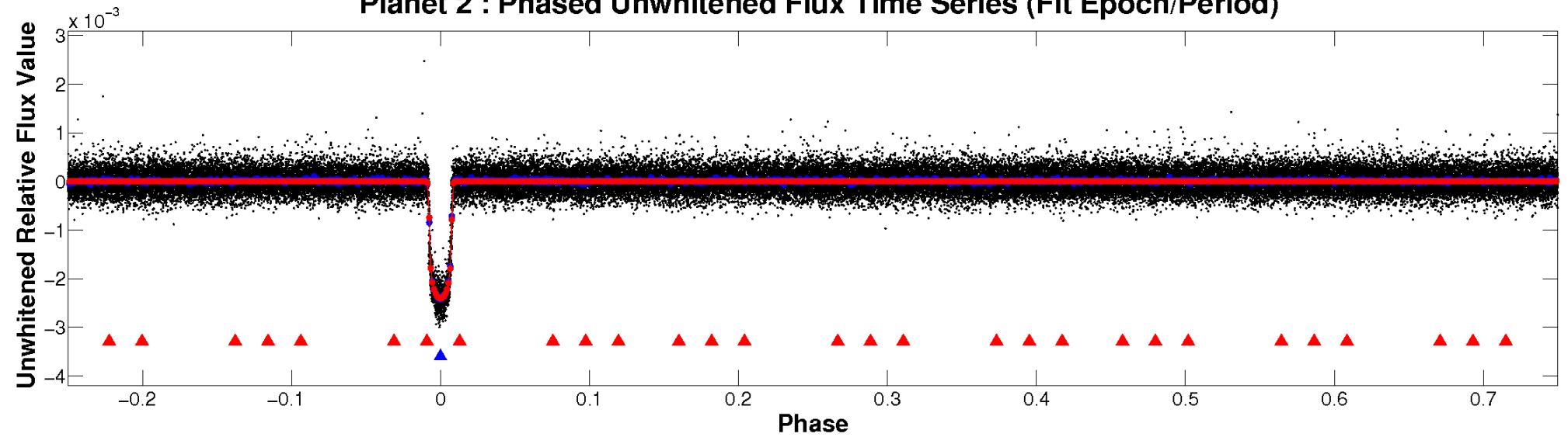
ALT Odd/Even

TCE 010723750-02

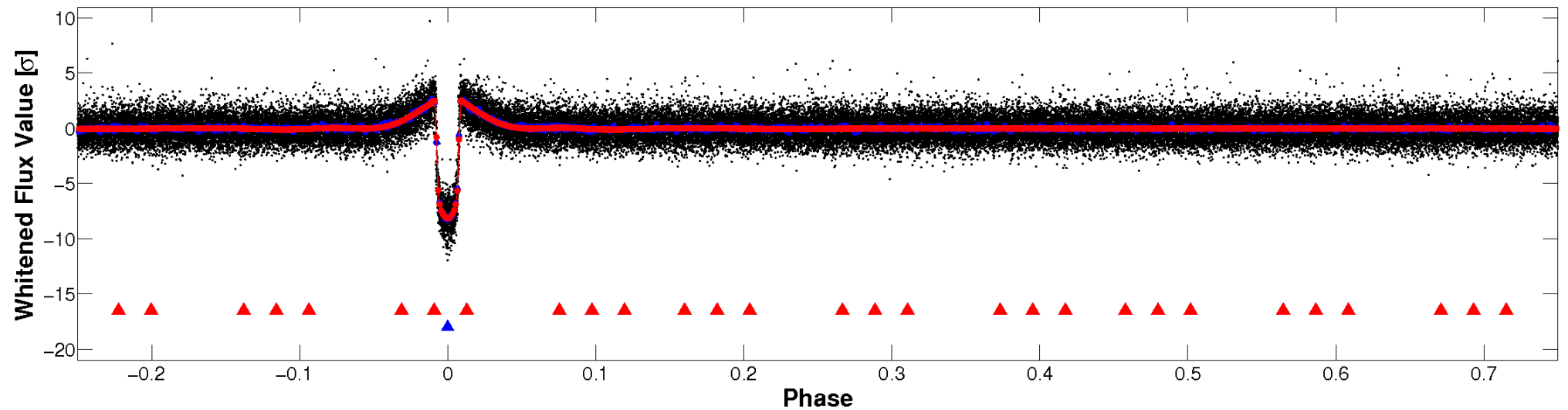


Non-Whitened Vs. Whitened Light Curve

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

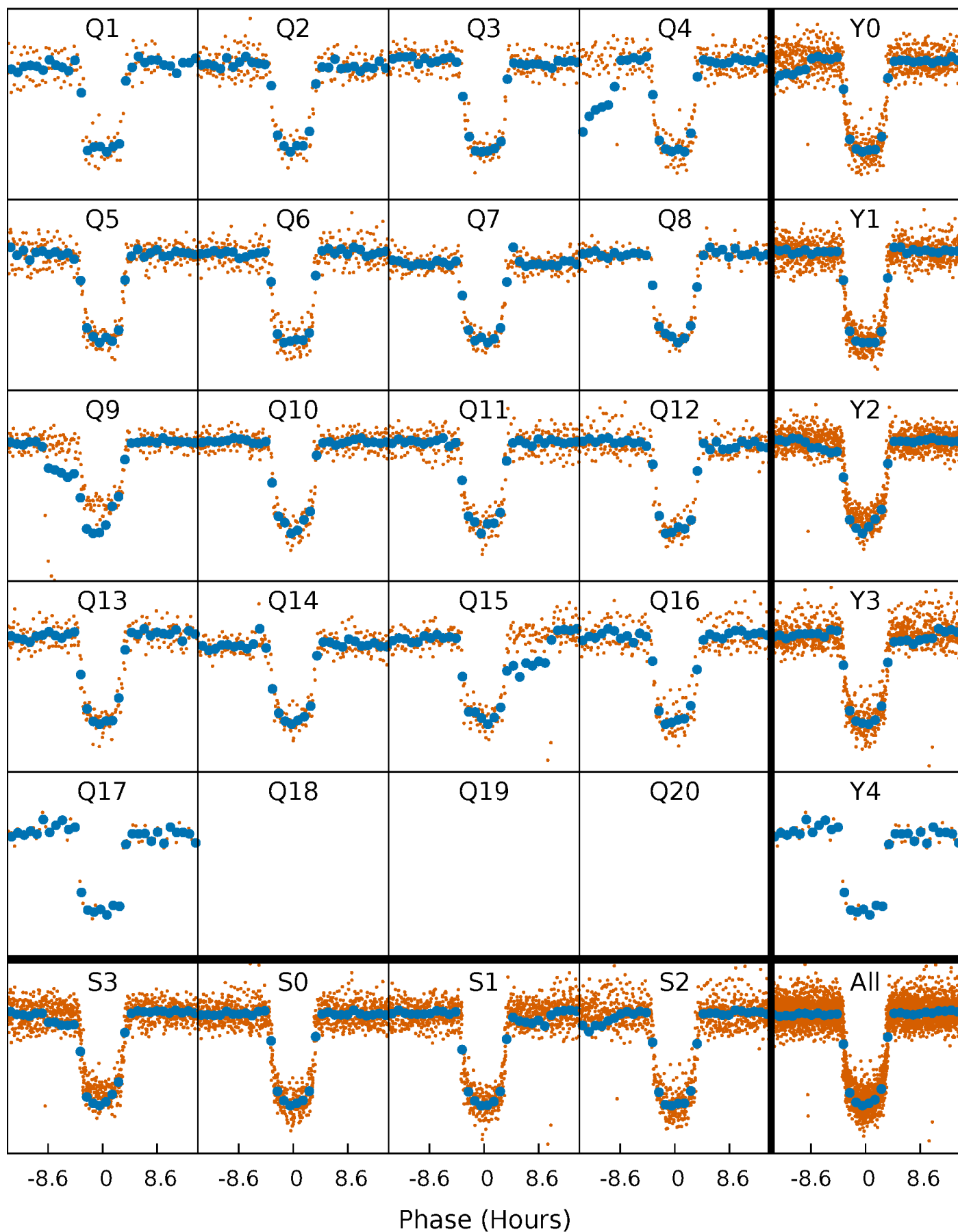


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



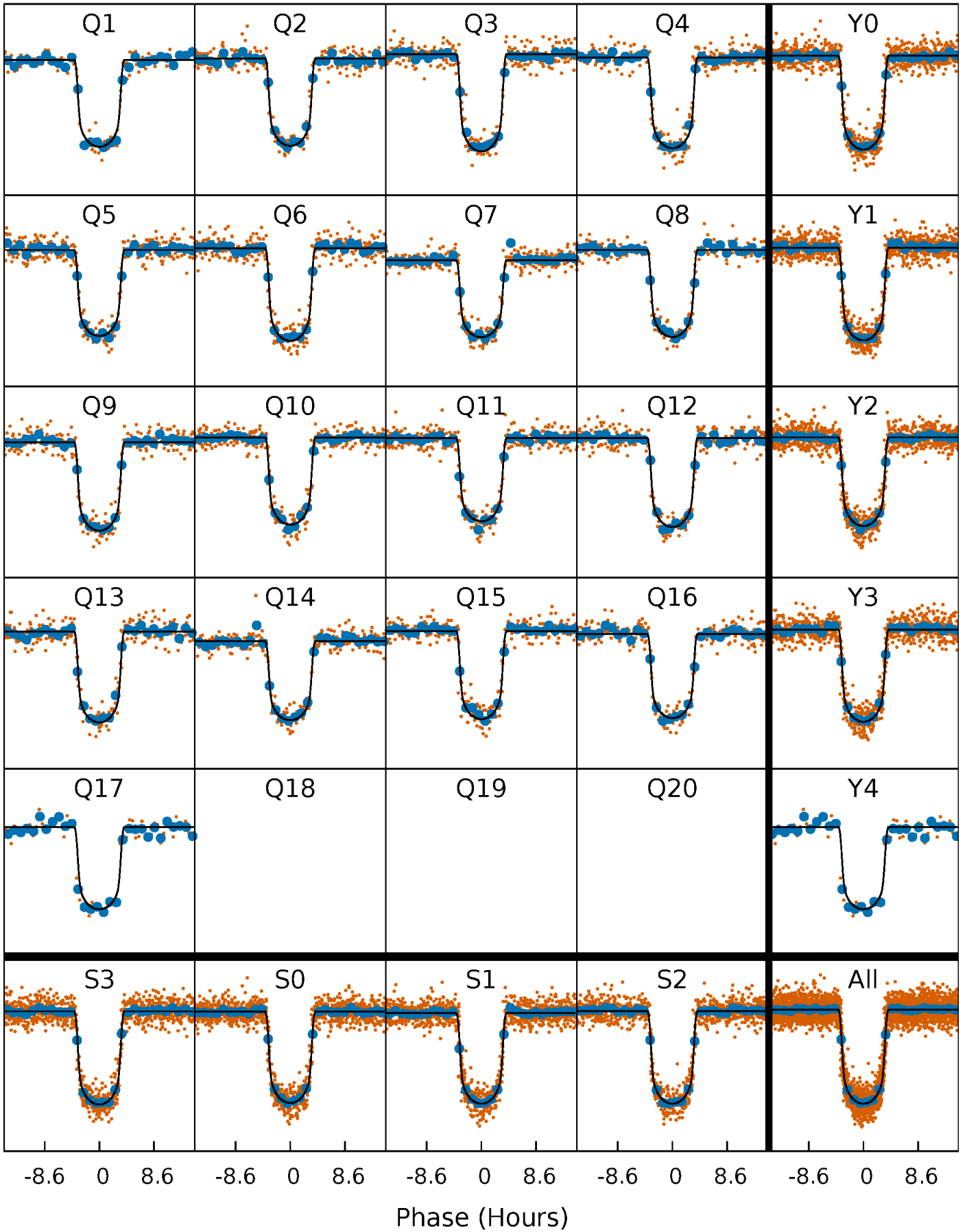
PDC Quarter-Phased Transit Curves

TCE 010723750-02 P= 18.795917 Days $T_0=145.822888$ (BKJD)



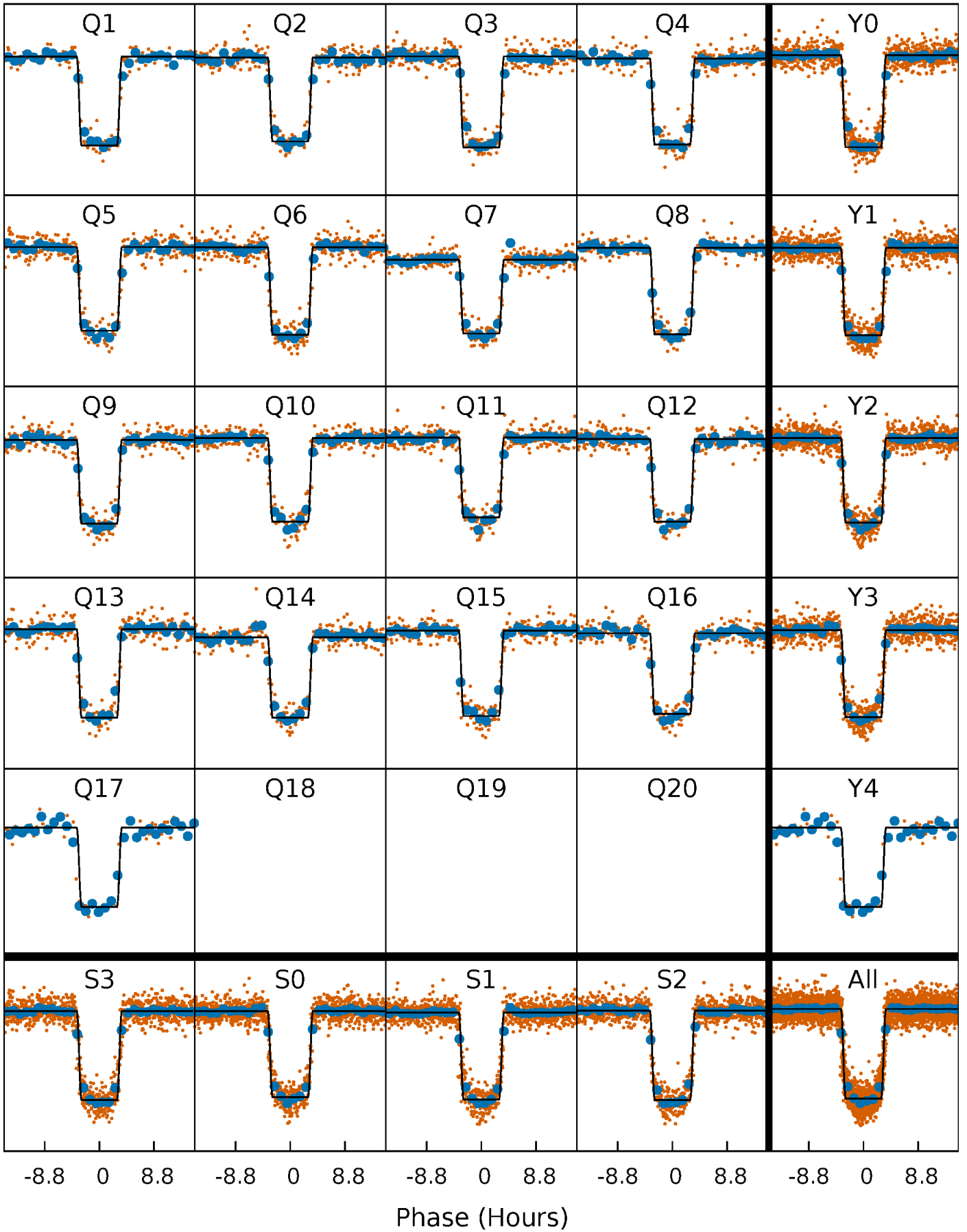
DV Quarter-Phased Transit Curves

TCE 010723750-02 P= 18.795917 Days $T_0=145.822888$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

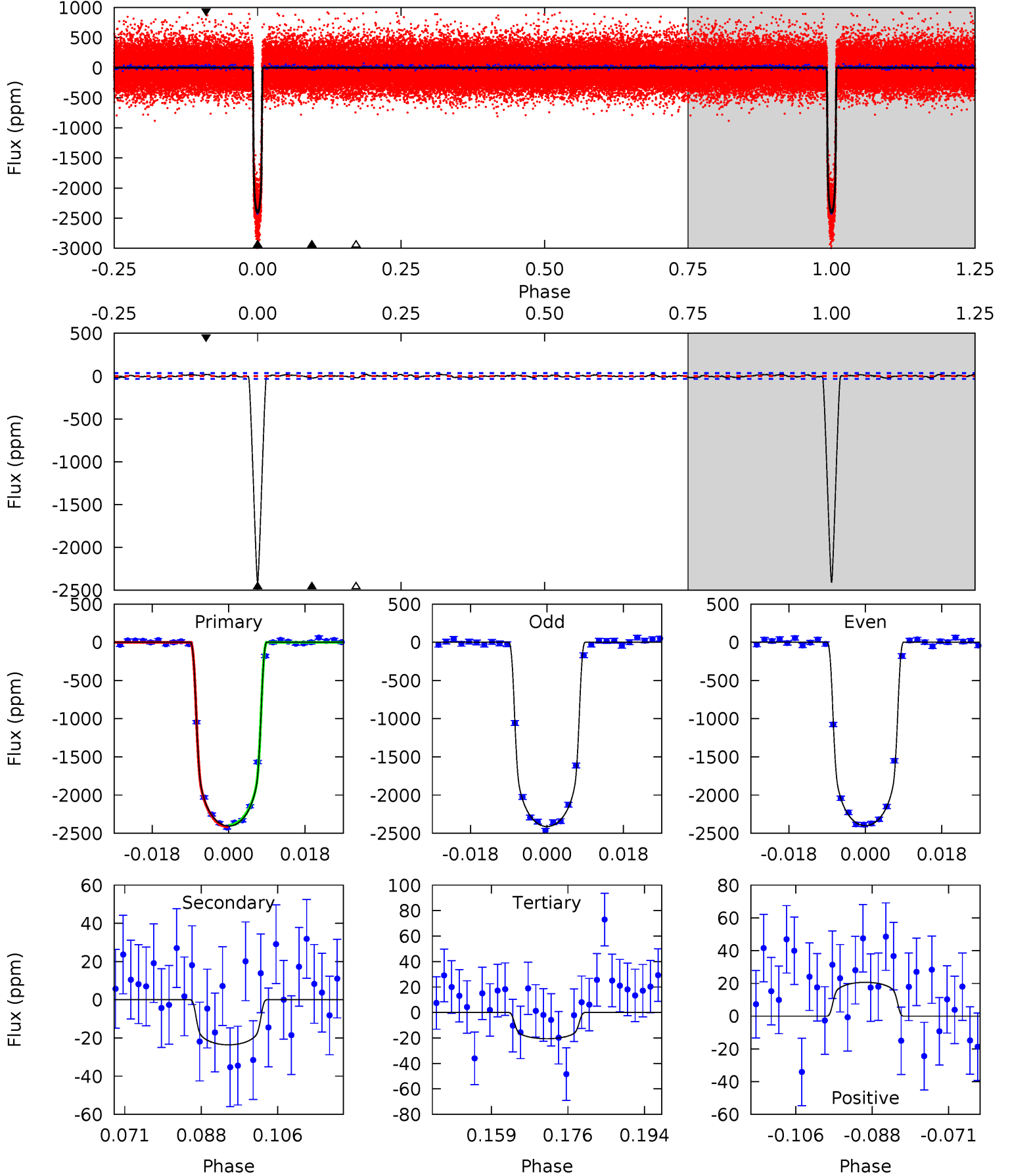
TCE 010723750-02 $P = 18.796080$ Days $T_0 = 145.815834$ (BKJD)



DV Model-Shift Uniqueness Test

010723750-02, P = 18.795917 Days, E = 127.026971 Days

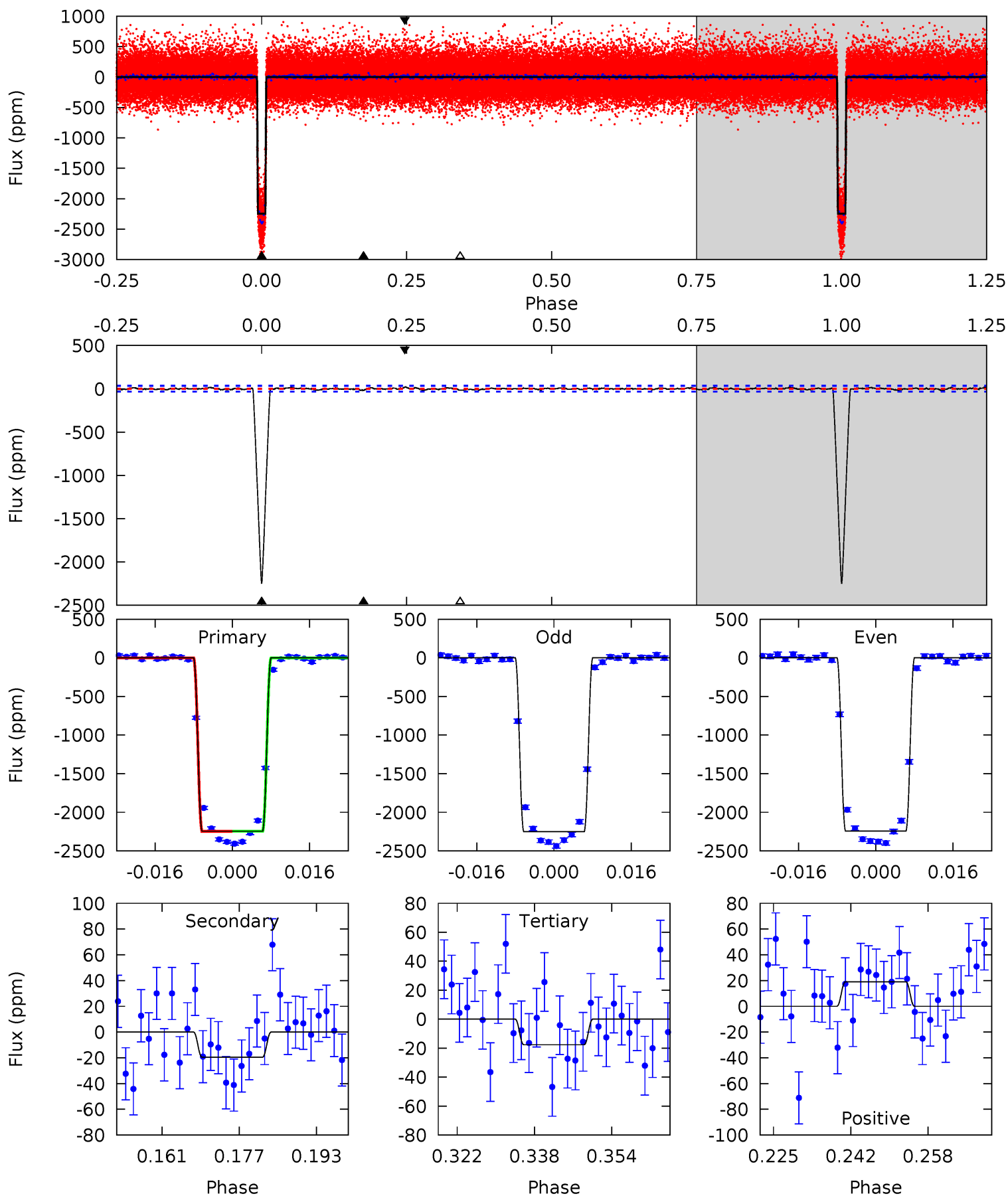
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
355.8	3.49	3.04	3.06	4.92	2.37	1.24	352.8	352.7	0.45	0.43	0.82	0.99	0.01	1.52



Alt Model-Shift Uniqueness Test

010723750-02, P = 18.796080 Days, E = 127.019754 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
325.3	2.83	2.55	2.76	4.93	2.41	0.90	322.8	322.6	0.28	0.07	0.68	0.99	0.01	0.14



Stellar Parameters For KIC 010723750

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6163^{+123}_{-123}	$4.185^{+0.154}_{-0.112}$	$-0.060^{+0.150}_{-0.150}$	$1.406^{+0.253}_{-0.253}$	$1.102^{+0.122}_{-0.081}$	$0.559^{+0.407}_{-0.202}$
	+2%/-2%	+4%/-3%	+250%/-250%	+18%/-18%	+11%/-7%	+73%/-36%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 010723750-02 / KOI 0209.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-24 ± 7	$7.36^{+0.76}_{-0.74}$	1187^{+56}_{-63}	2714^{+104}_{-128}	$5.013^{+1.955}_{-1.537}$
Alt.	-20 ± 7	$7.29^{+0.81}_{-0.65}$	1187^{+60}_{-64}	2634^{+120}_{-164}	$3.968^{+1.791}_{-1.526}$

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 $A_{obs} \gg 1.0$

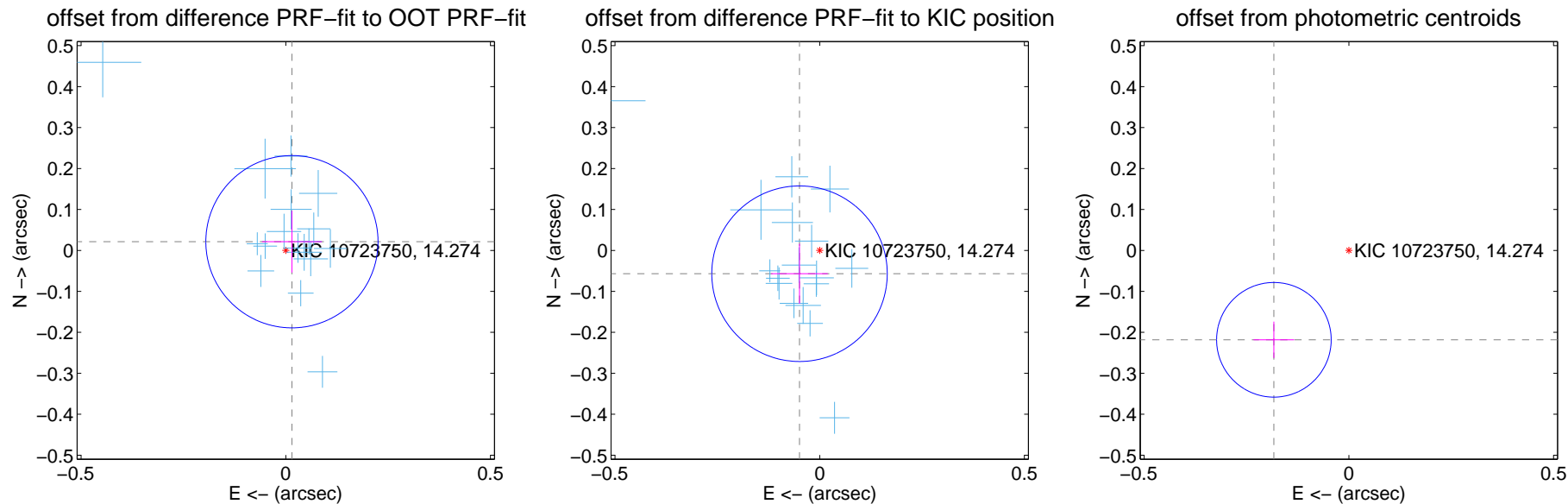
DV Centroid Data

Supplemental centroid analysis for 010723750-02. Kepler magnitude: 14.27. Transit SNR 221.63

There are 17 quarters with good PRF difference image offsets

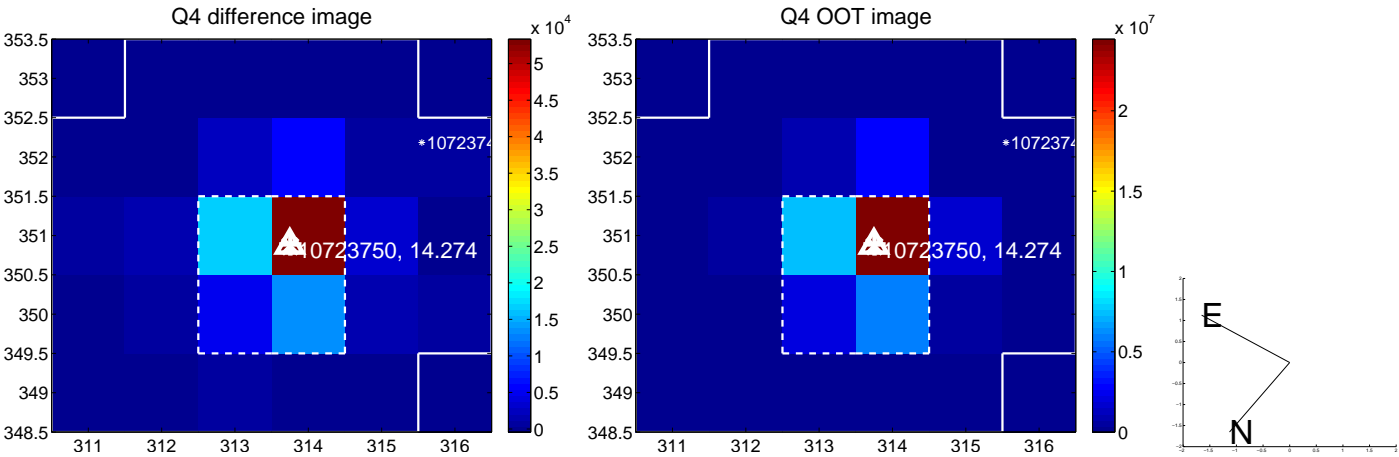
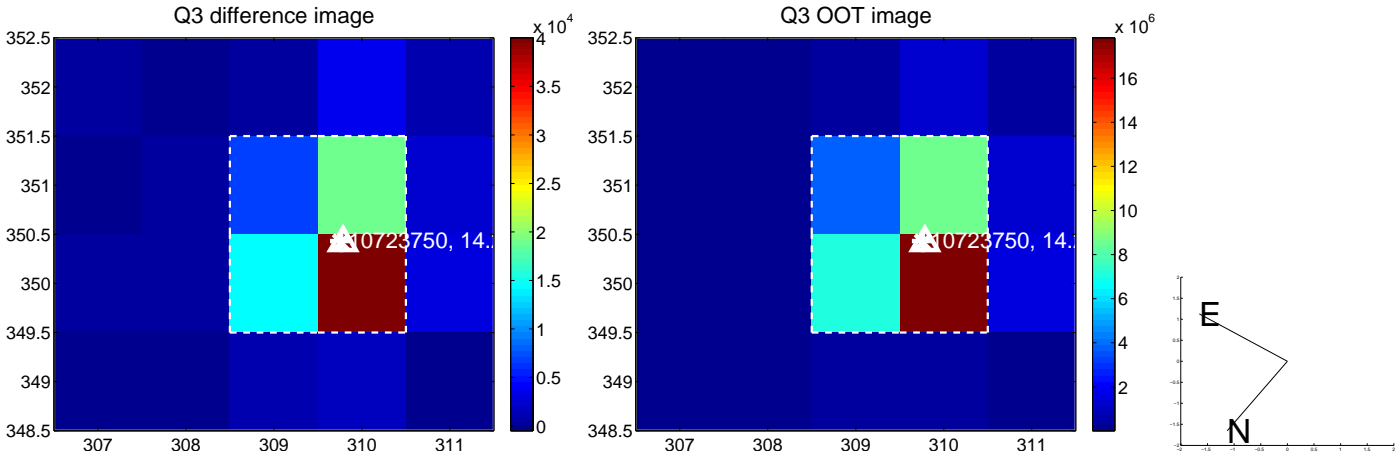
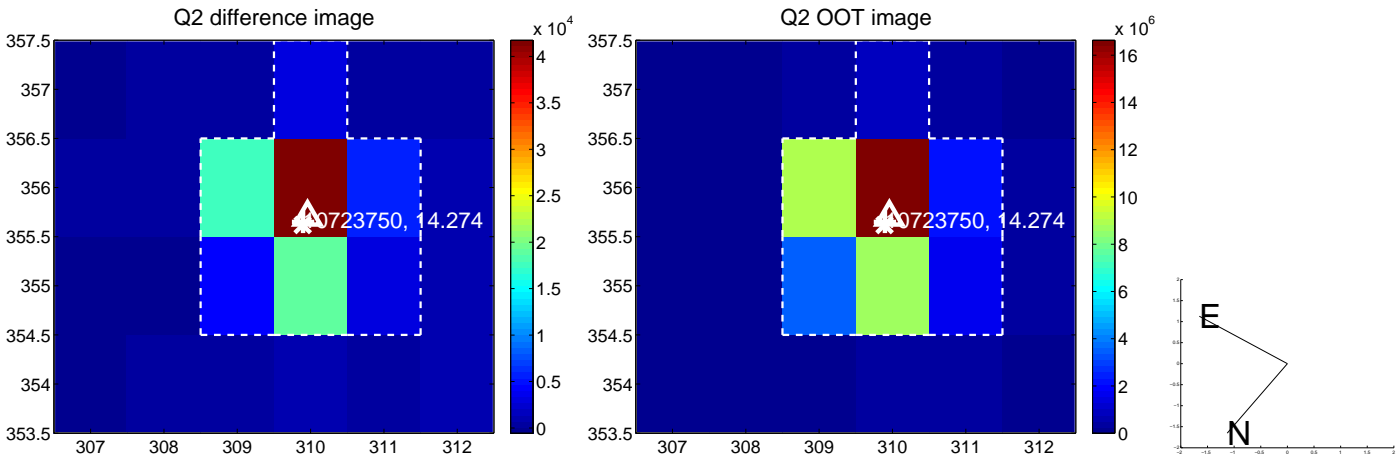
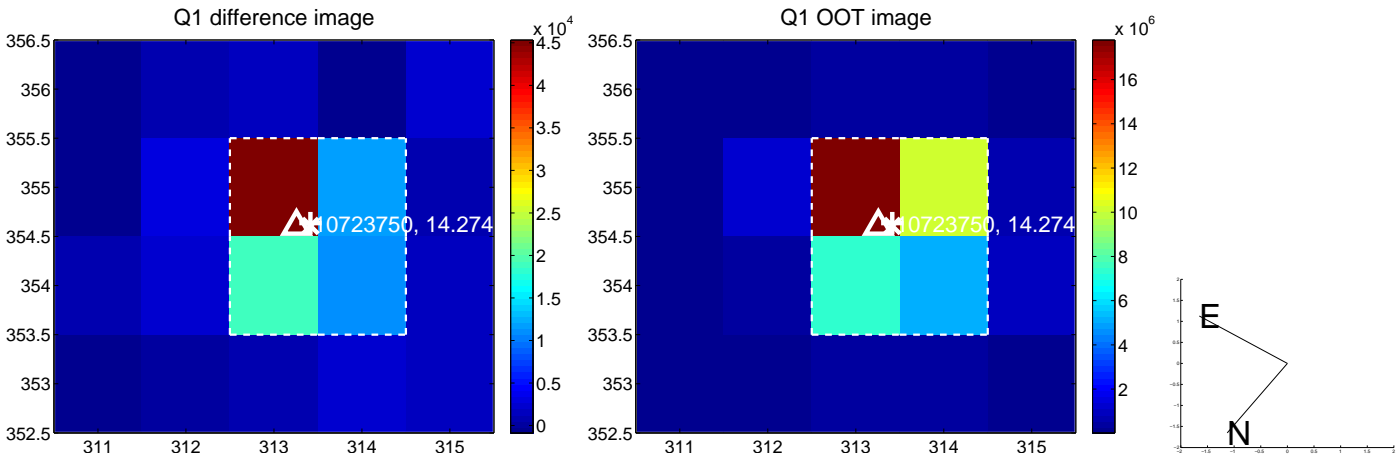
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.026 ± 0.070	0.37	-0.015 ± 0.073	0.021 ± 0.075
PRF-fit source offset from KIC position	0.075 ± 0.071	1.05	0.049 ± 0.069	-0.057 ± 0.073
photometric centroid source offset	0.28 ± 0.05	6.11	0.18 ± 0.05	-0.22 ± 0.04

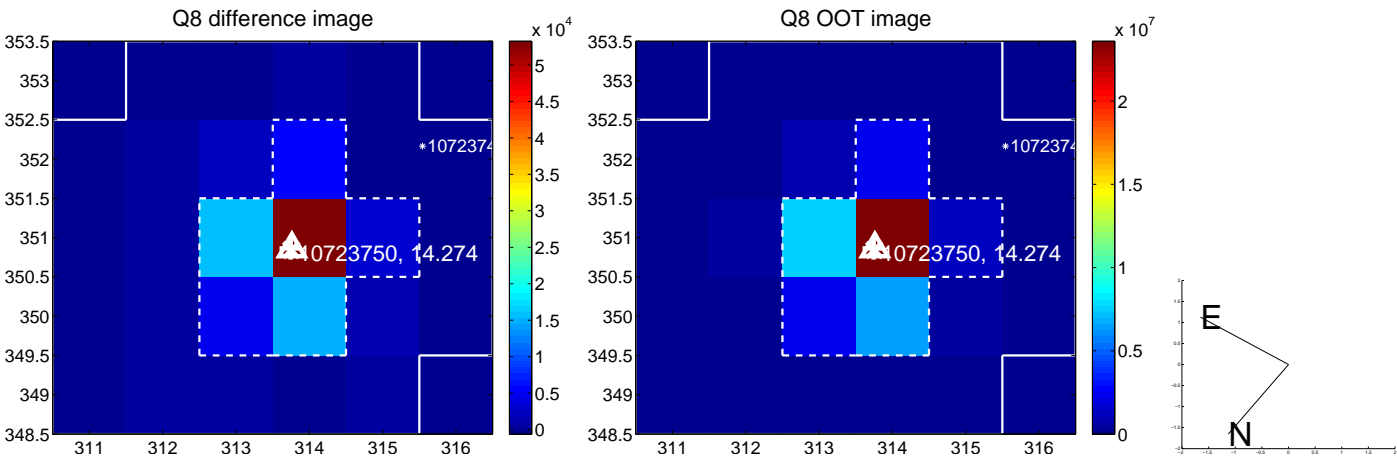
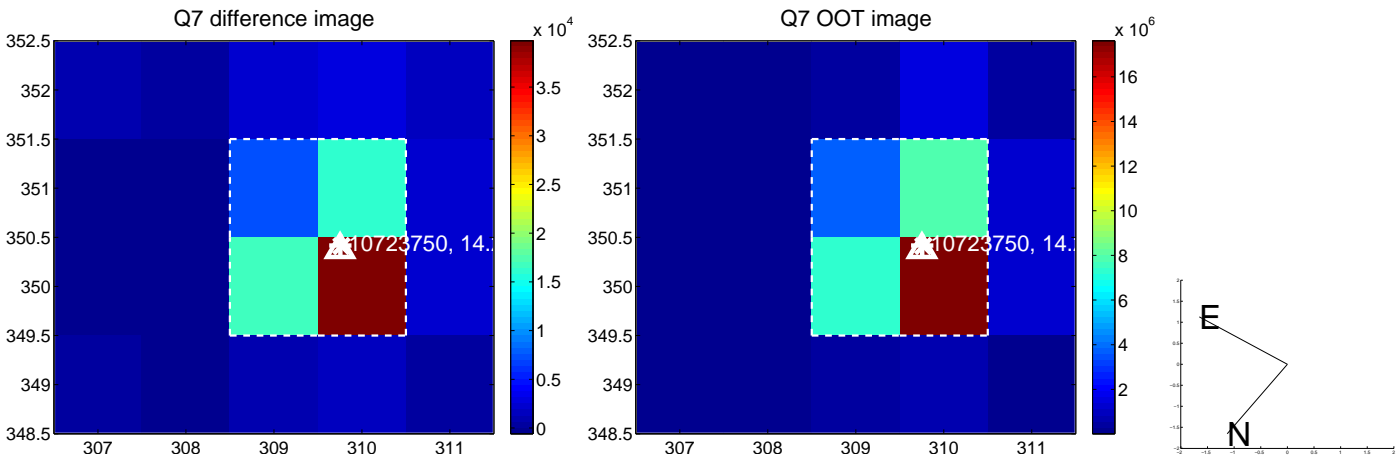
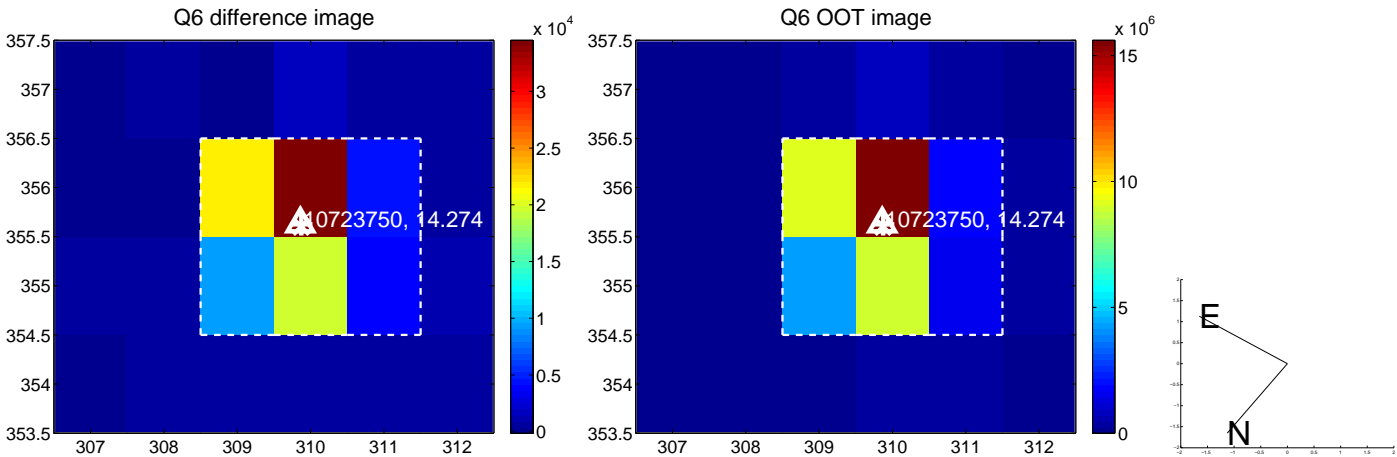
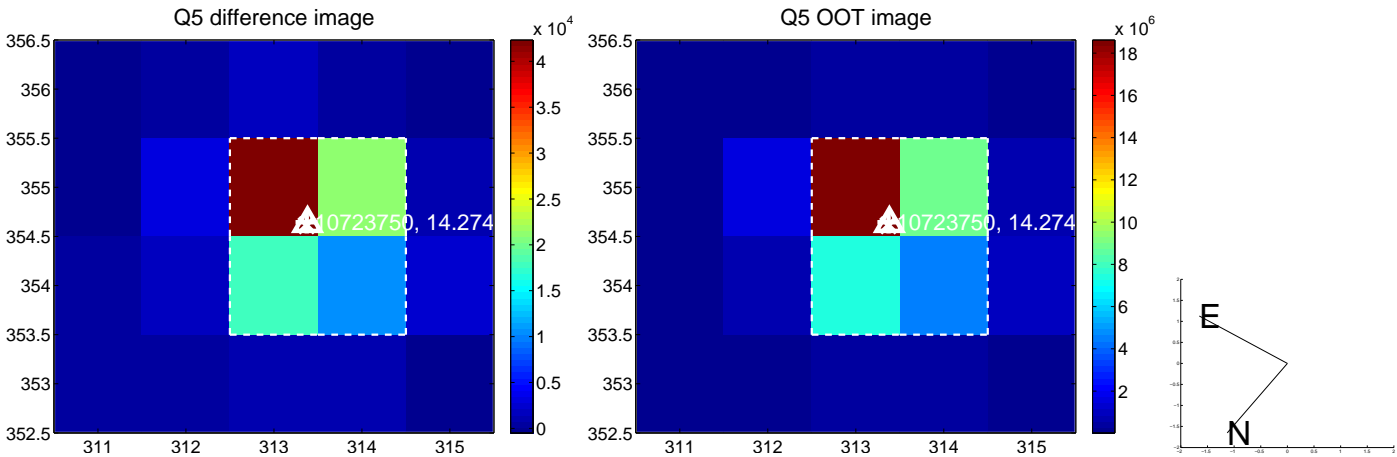


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

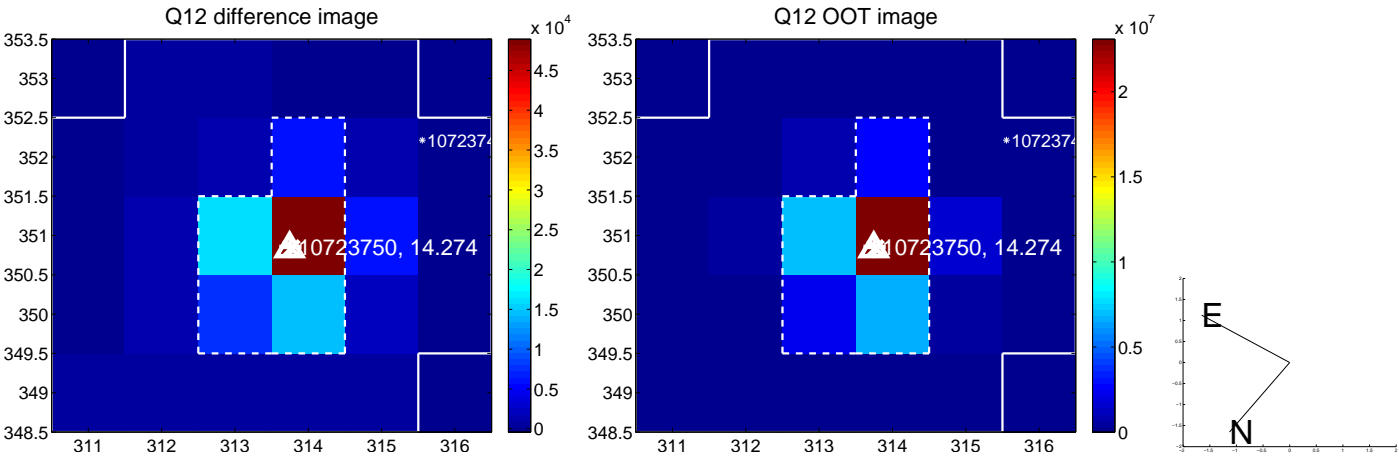
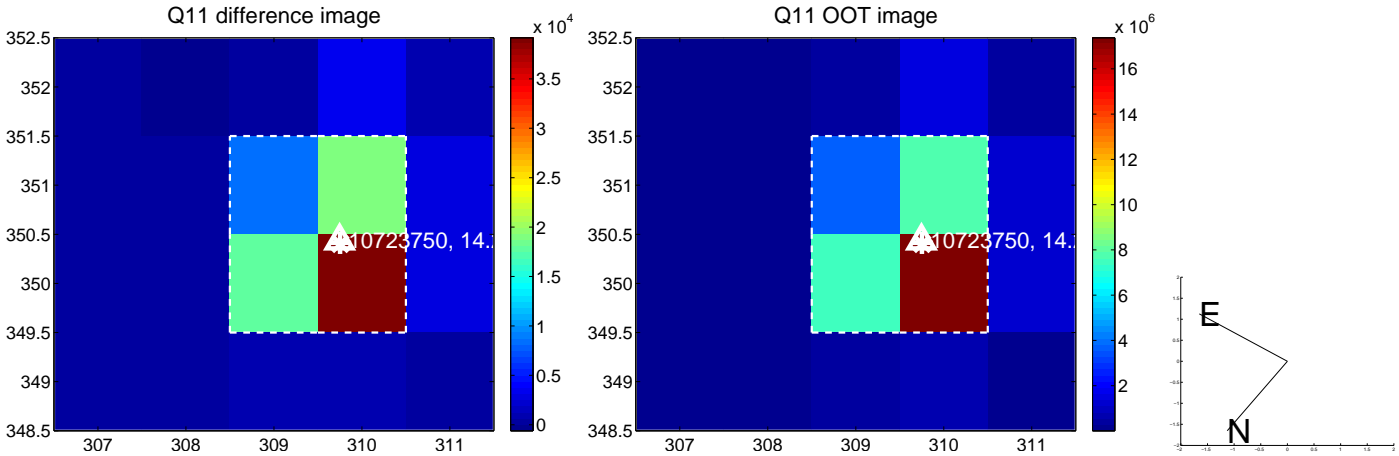
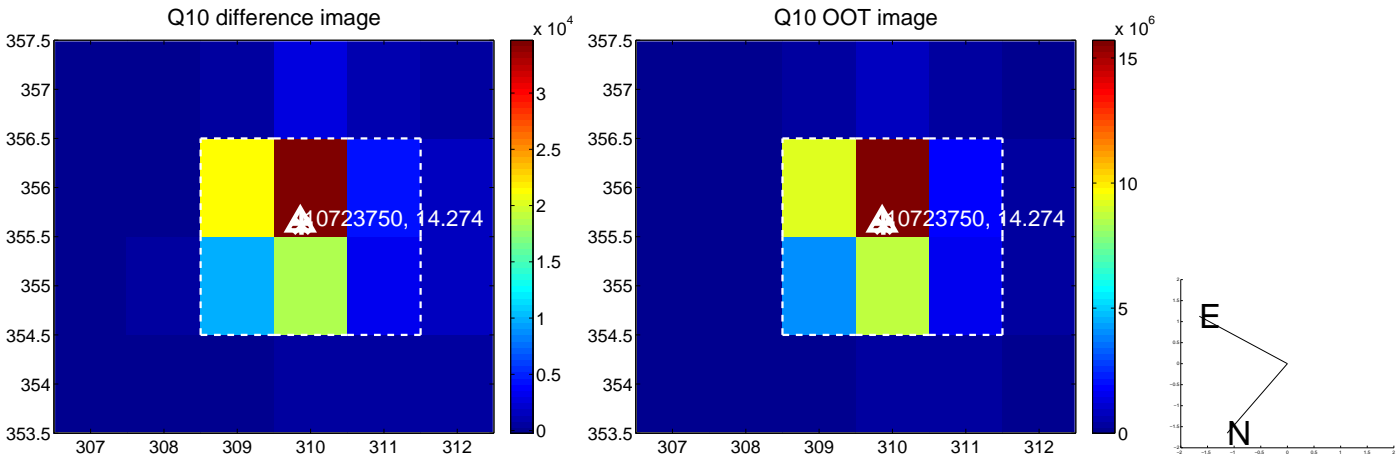
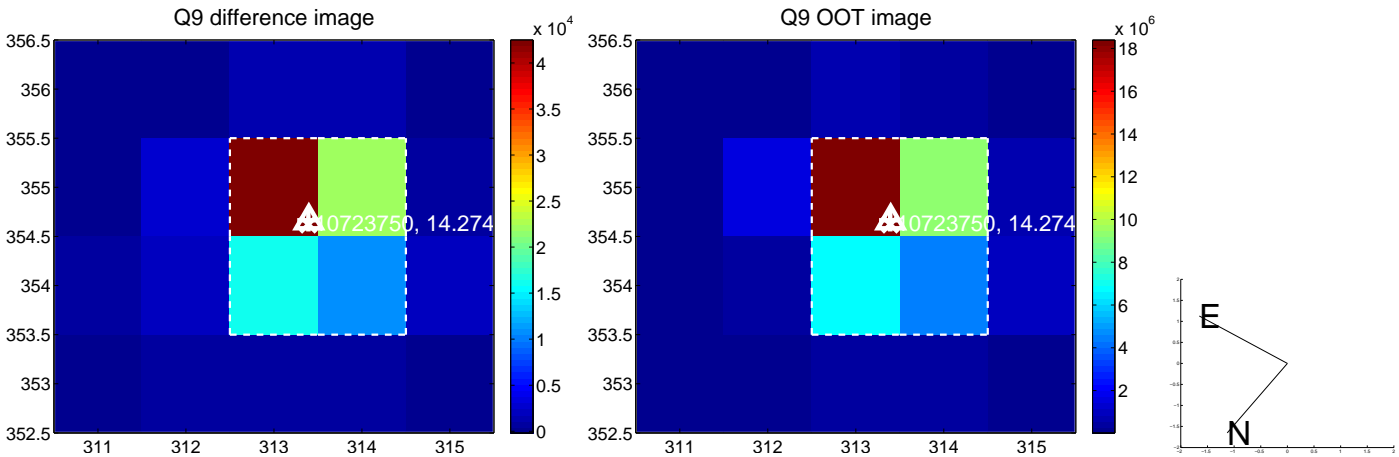
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



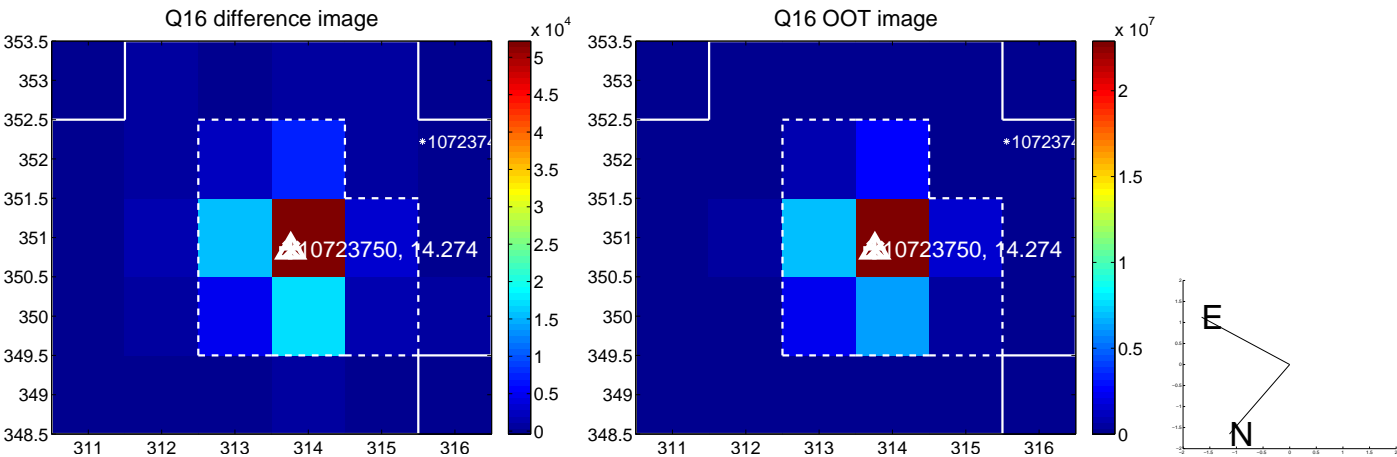
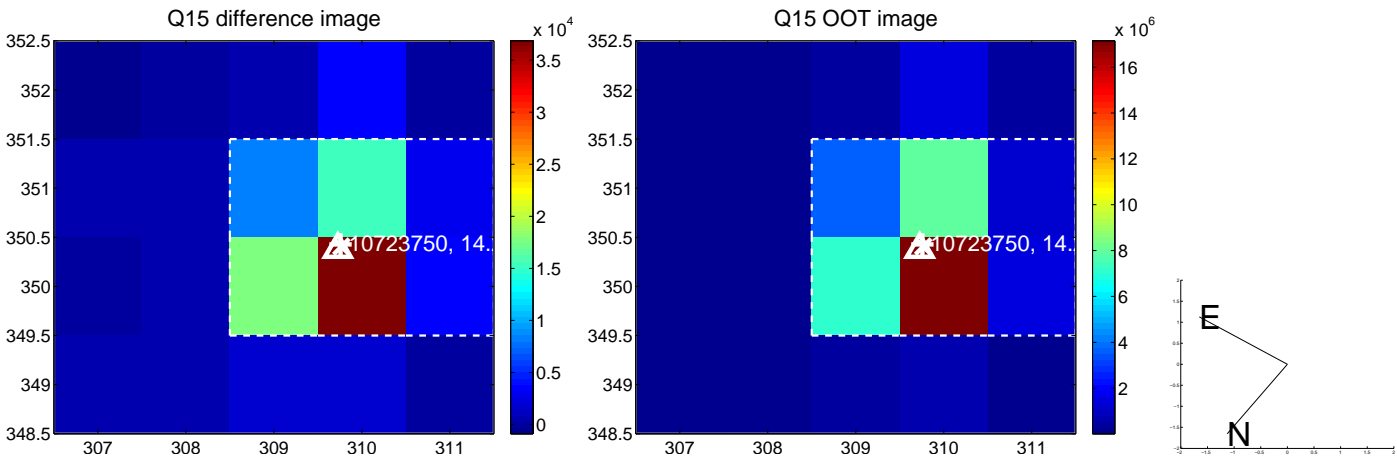
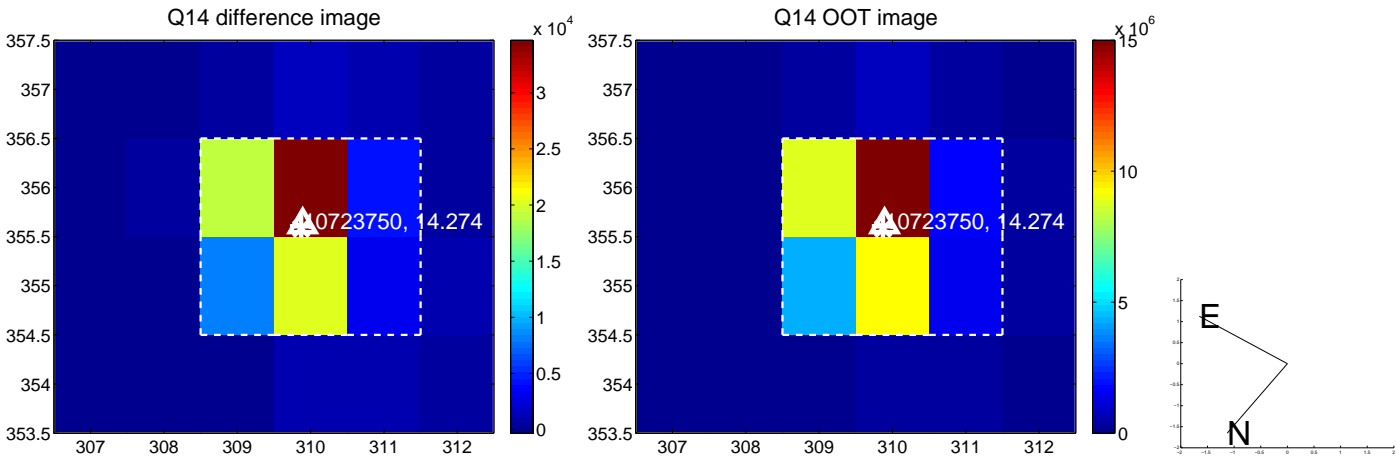
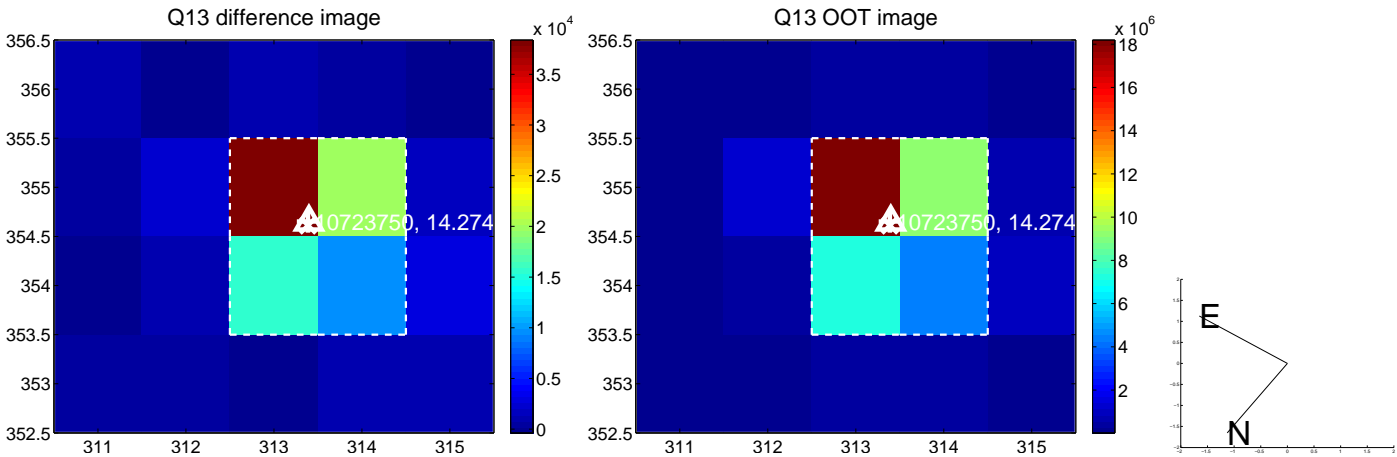
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



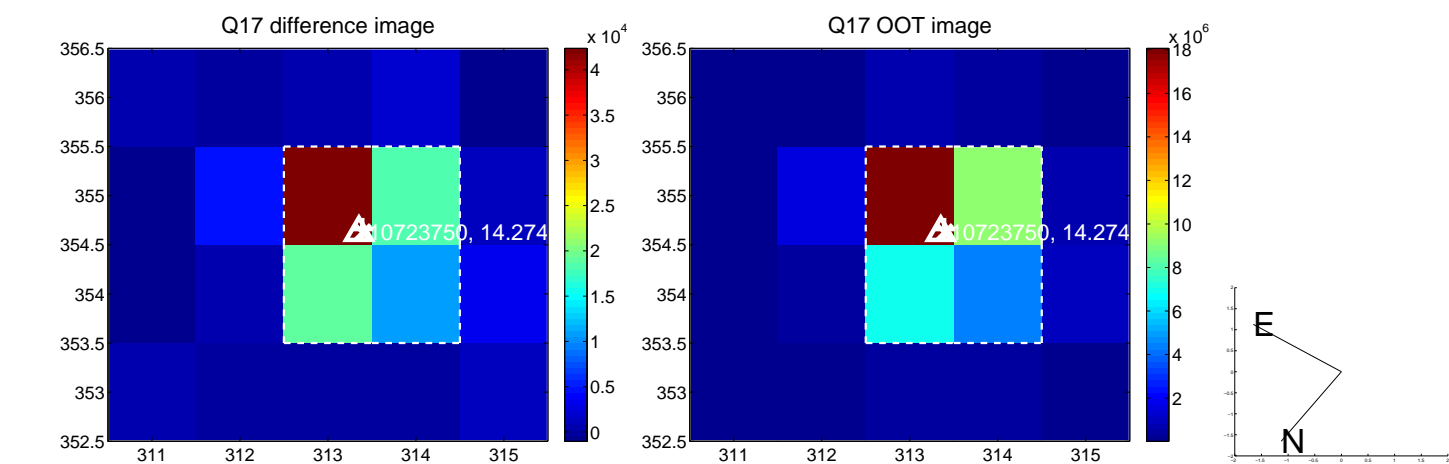
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



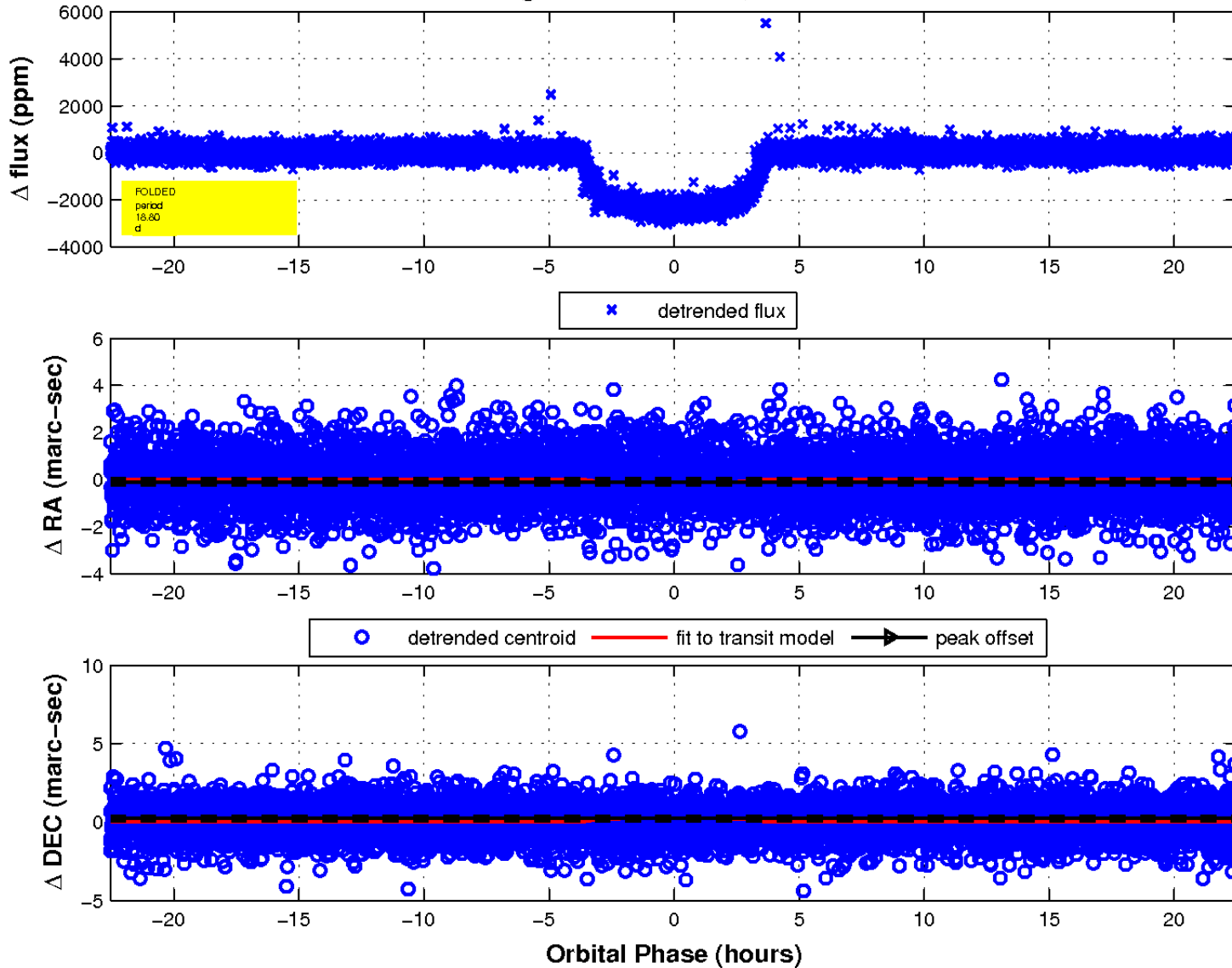
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

