

KIC 008806123

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})
008806123-01	OBS	0523.01	49.411267	148.826973	3153.7	5.226	113.2	108.8	1.01	5768	6.71	14.51
008806123-02	OBS	0523.02	36.856912	138.906618	702.0	8.228	33.1	36.3	1.01	5768	3.18	21.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008806123-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
008806123-02	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.

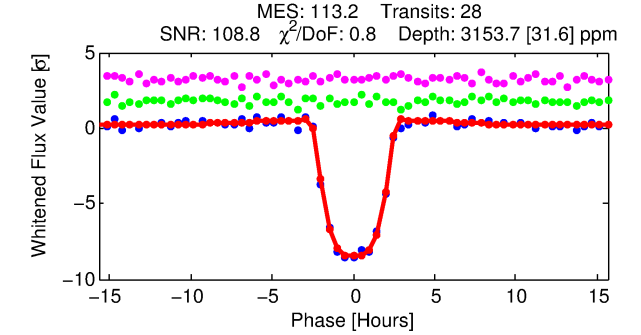
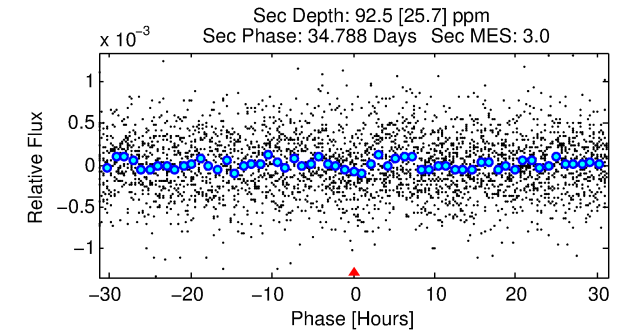
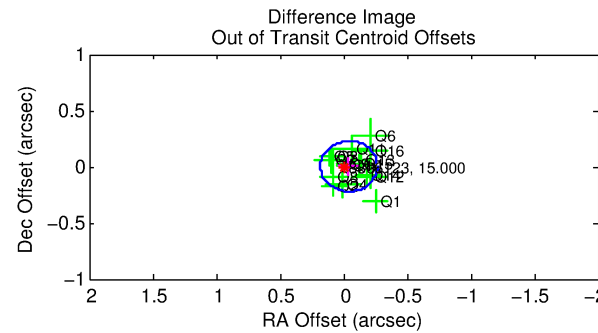
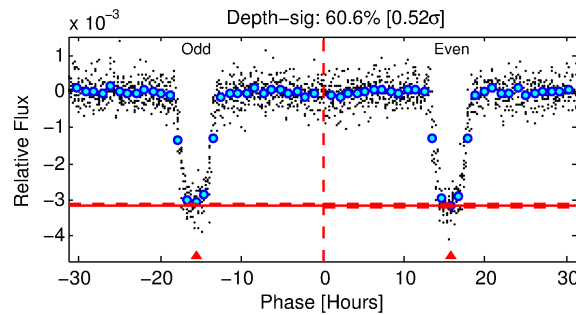
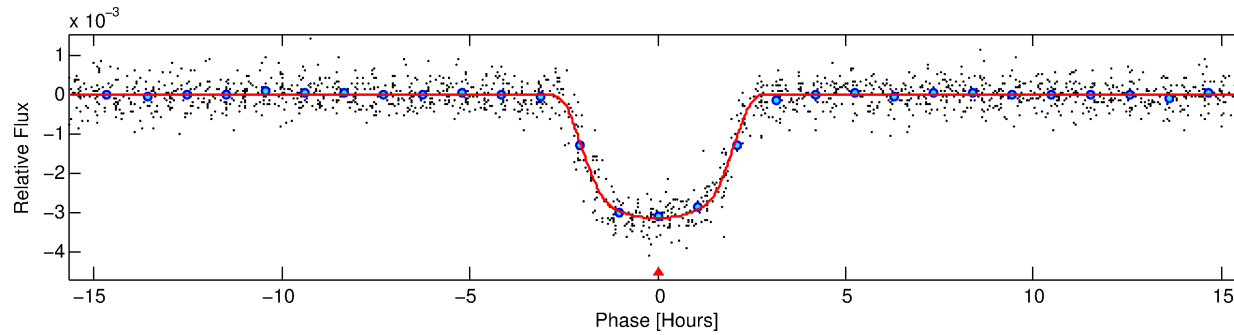
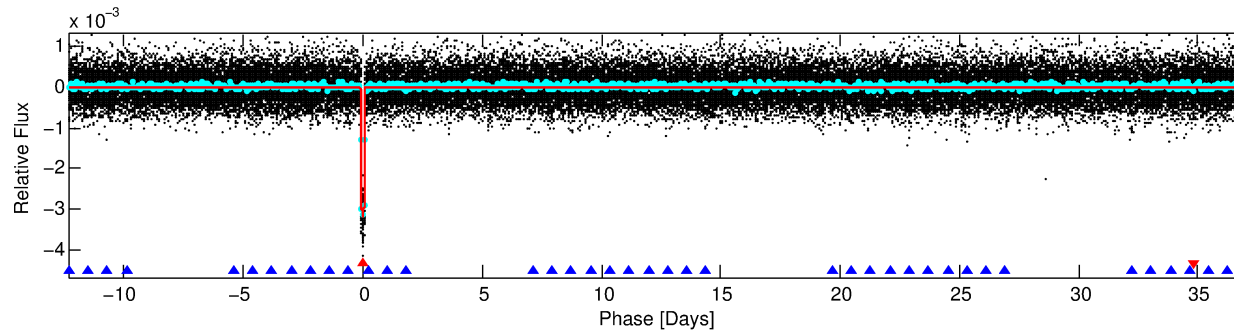
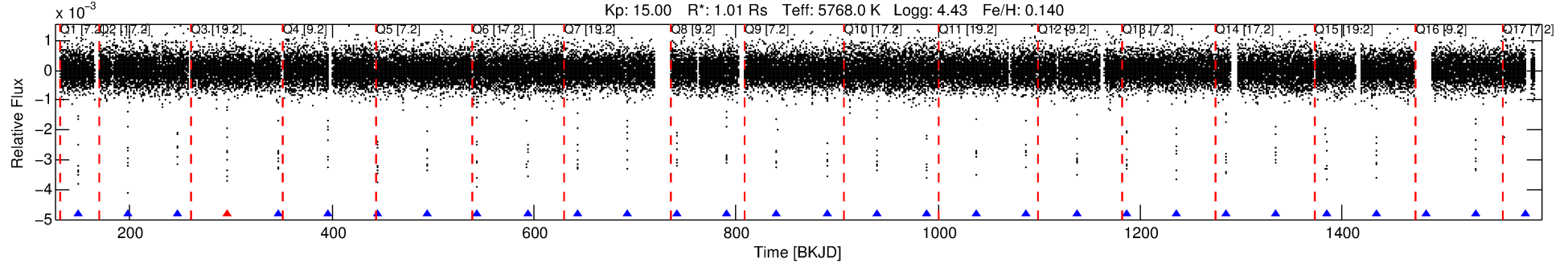
Ephemeris Match Information For 008806123-01

No Significant Match Found

DV One-Page Summary

KIC: 8806123 Candidate: 1 of 2 Period: 49.411 d
KOI: K00523.01 Name: Kepler-177c Corr: 0.992

Kp: 15.00 R*: 1.01 Rs Teff: 5768.0 K Logg: 4.43 Fe/H: 0.140



DV Fit Results:

Period = 49.41127 [0.00007] d
Epoch = 148.8270 [0.0010] BKJD
Rp/R* = 0.0606 [0.0006]
a/R* = 42.30 [1.25]
b = 0.88 [0.01]
Seff = 14.51 [3.31]
Teq = 498 [28] K
Rp = 6.71 [1.07] Re
a = 0.2654 [0.0380] AU
Ag = 79.56 [28.29] [2.78σ]
Teffp = 2298 [164] K [10.82σ]

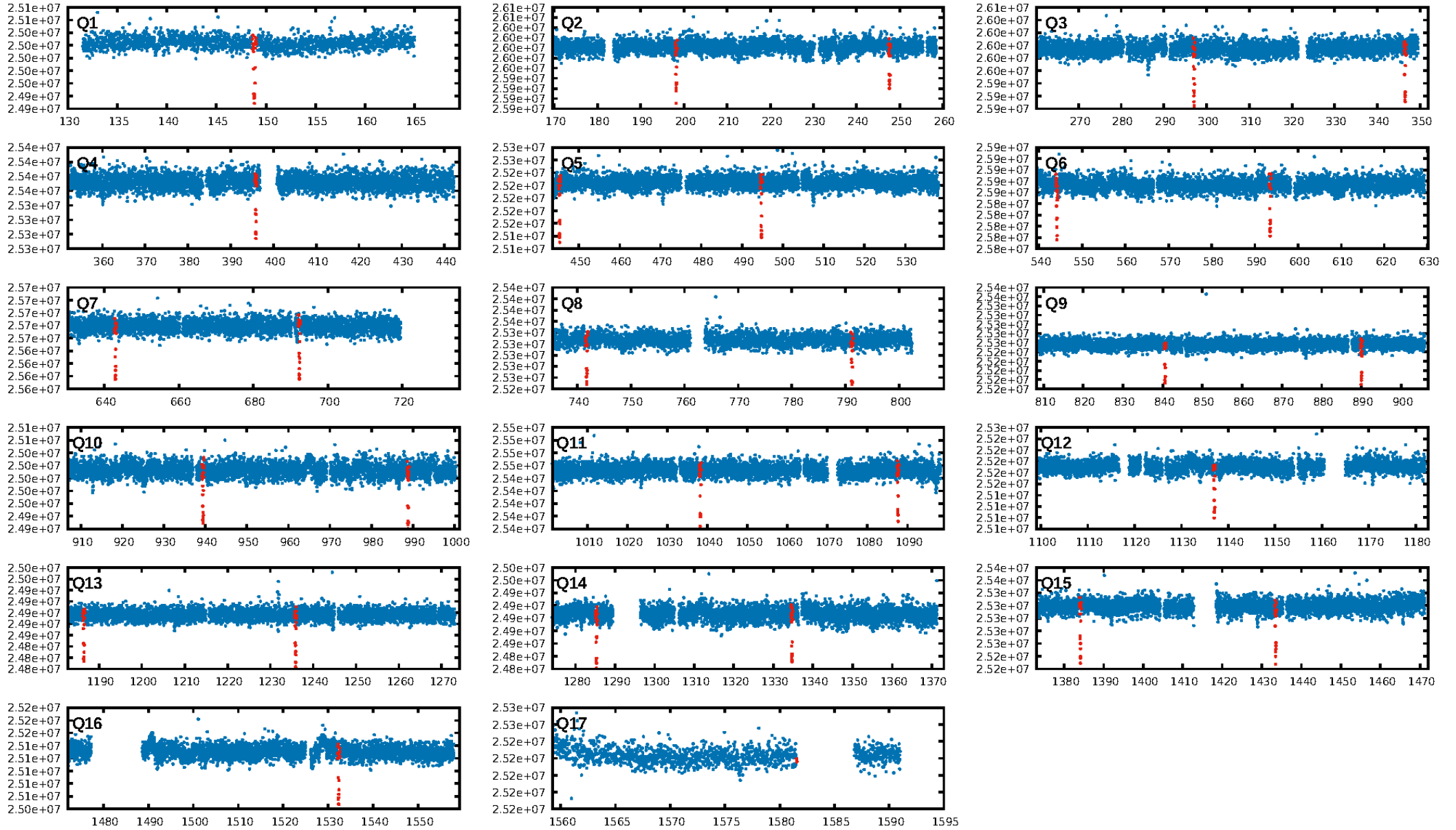
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [30.91σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 89.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.96 [26/27]
GhostDiagnostic-chr: 8.408
Centroid-sig: 56.2%
Centroid-so: 0.061 arcsec [0.43σ]
OotOffset-rm: 0.042 arcsec [0.56σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-rm: 0.012 arcsec [0.16σ]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [16/16]

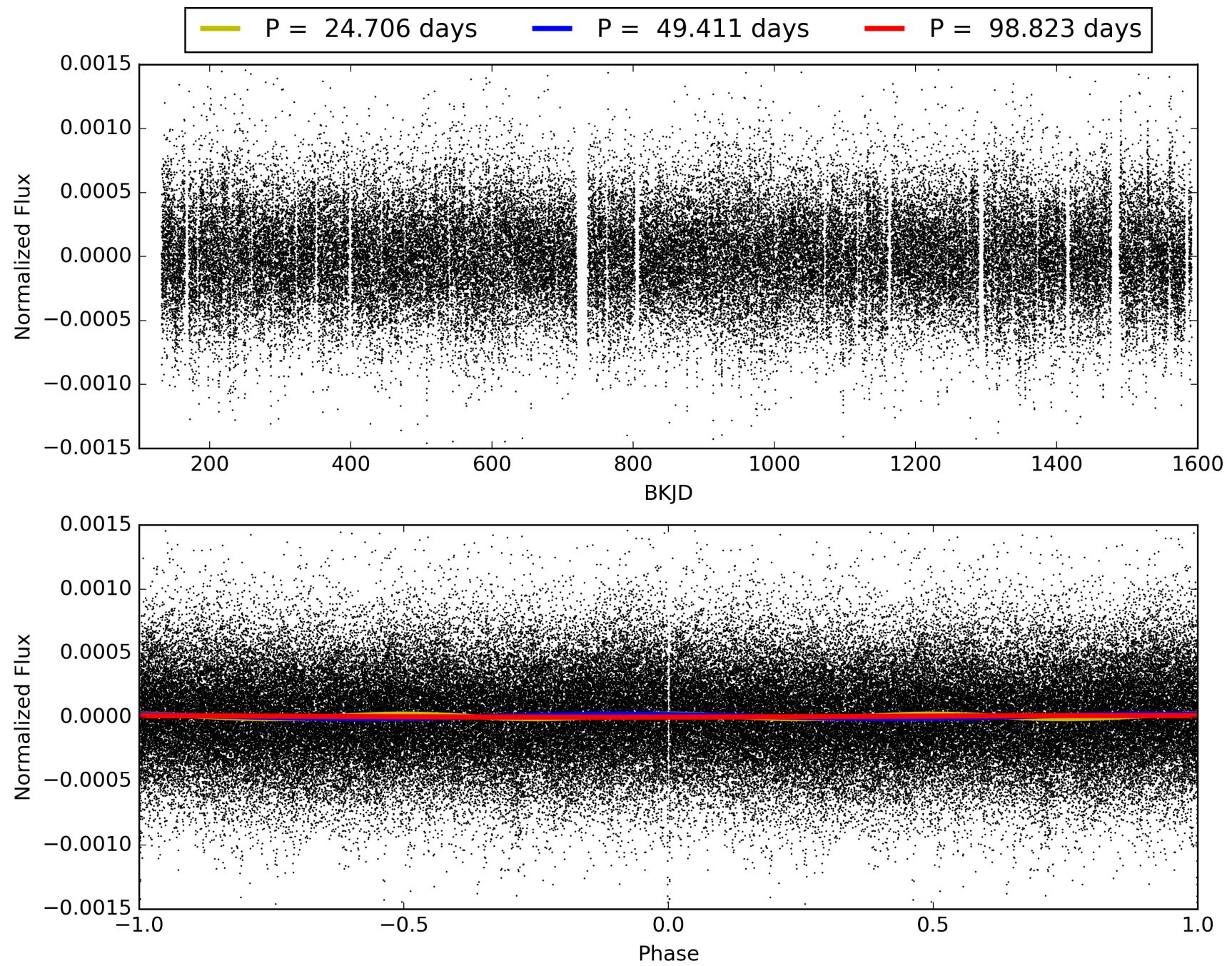
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:01:32 Z

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

TCE 008806123-01, PDC Light Curves

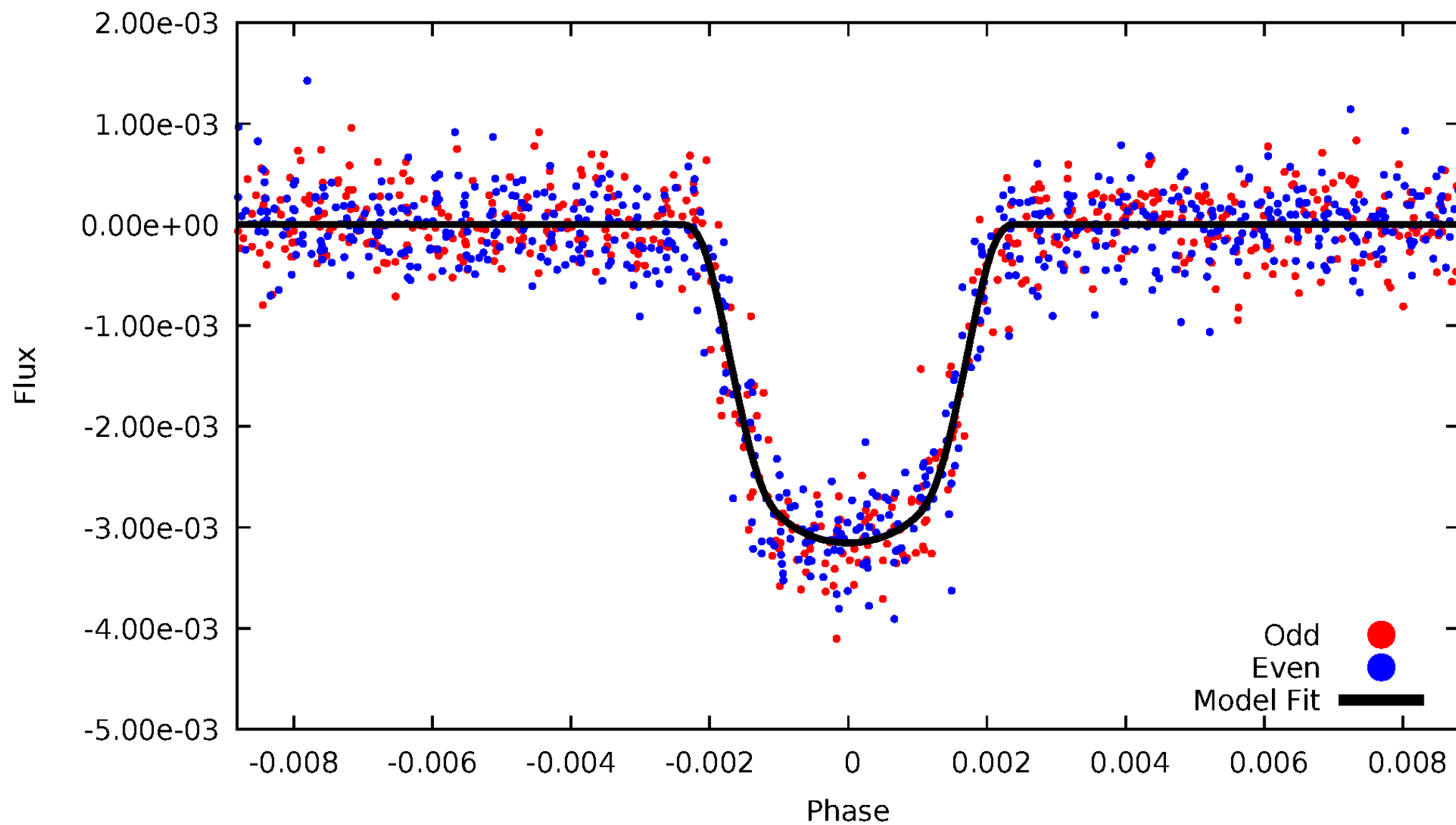


TCE 008806123-01



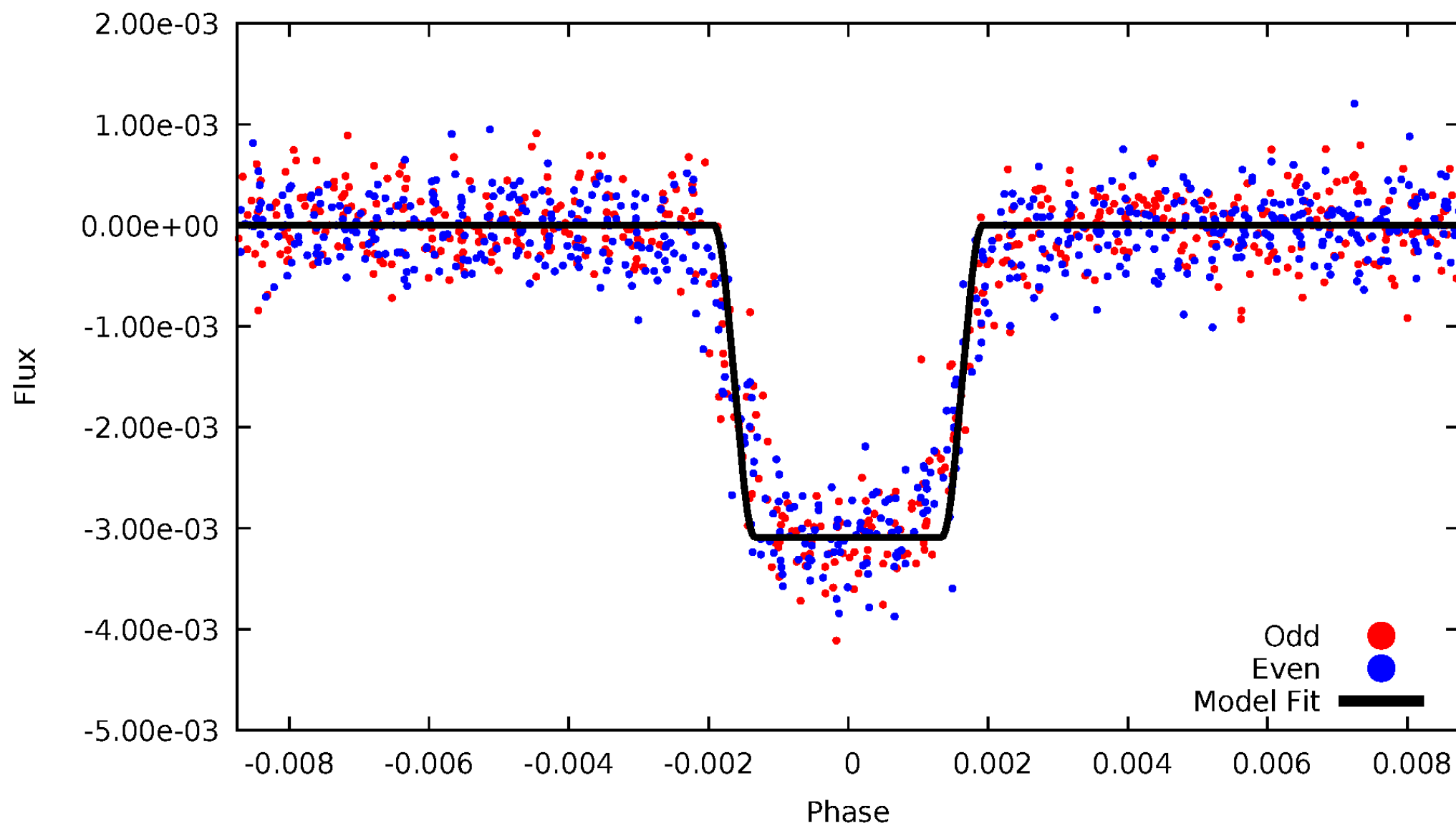
DV Odd/Even

TCE 008806123-01



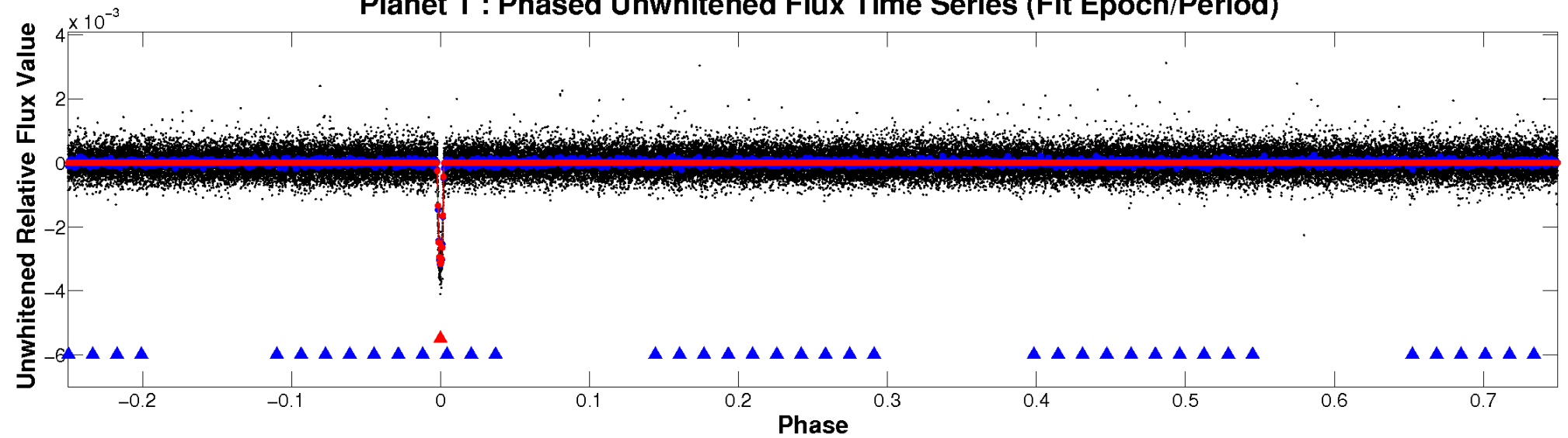
ALT Odd/Even

TCE 008806123-01

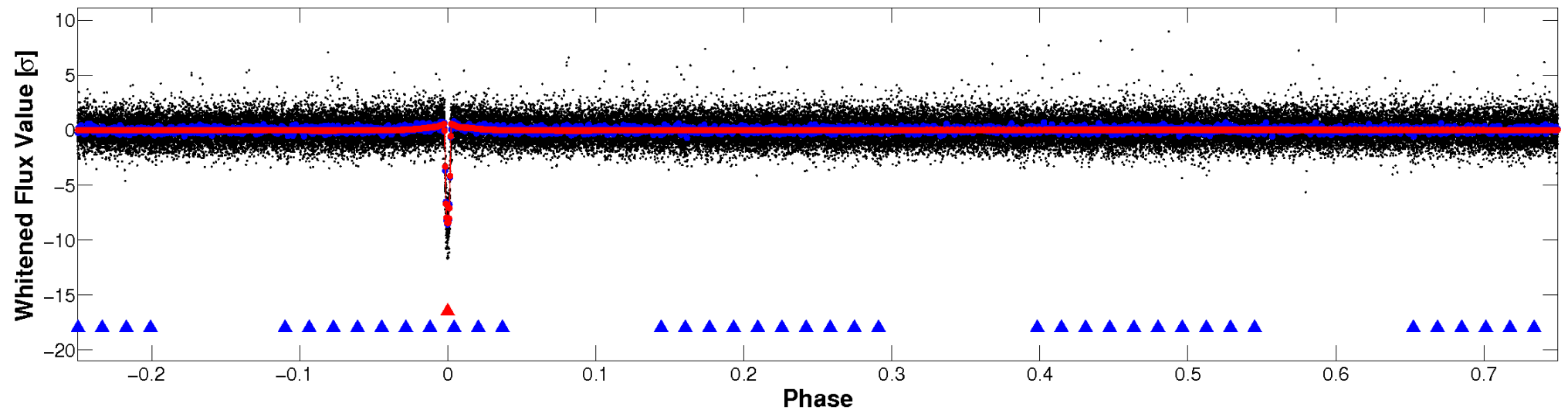


Non-Whitened Vs. Whitened Light Curve

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

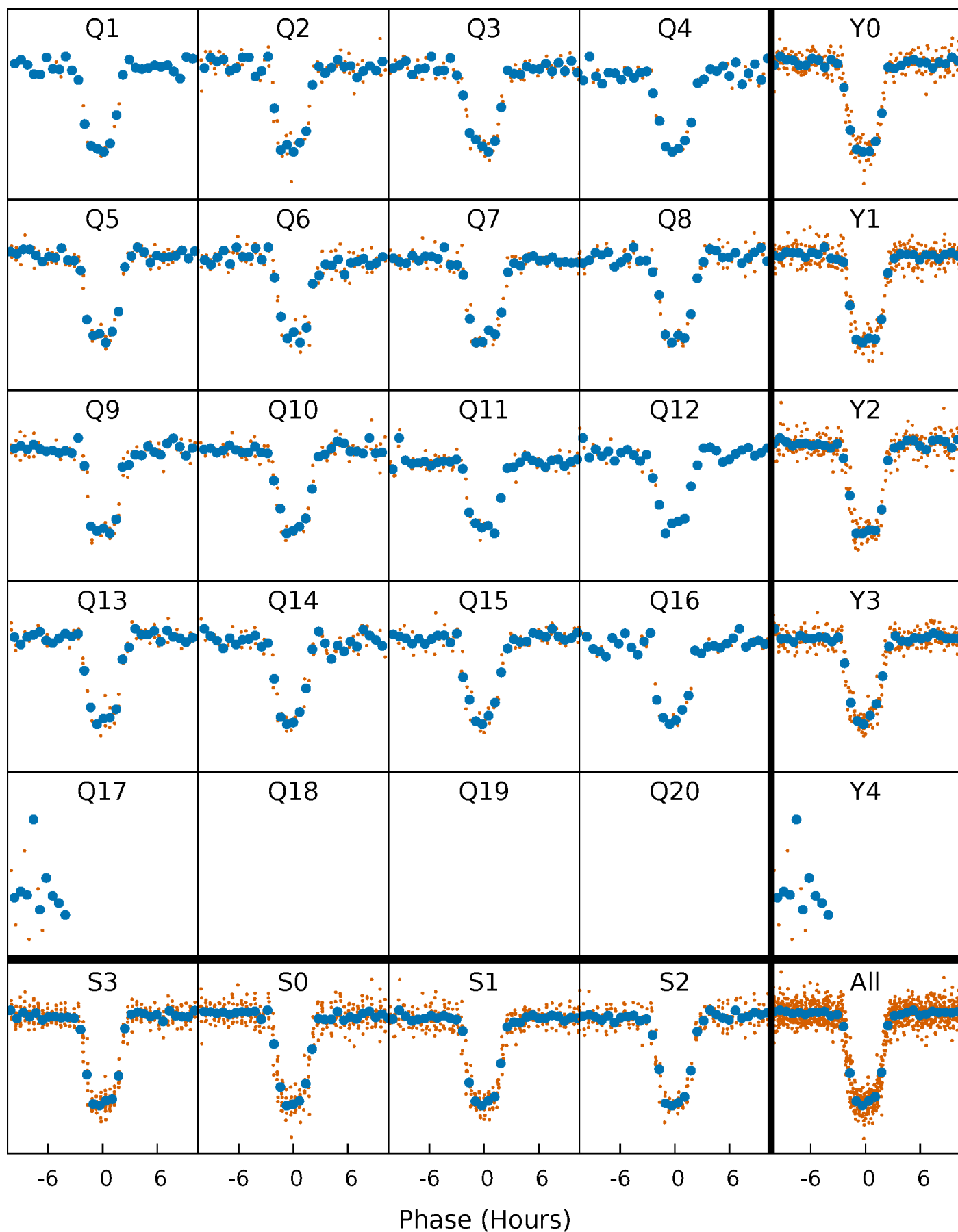


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



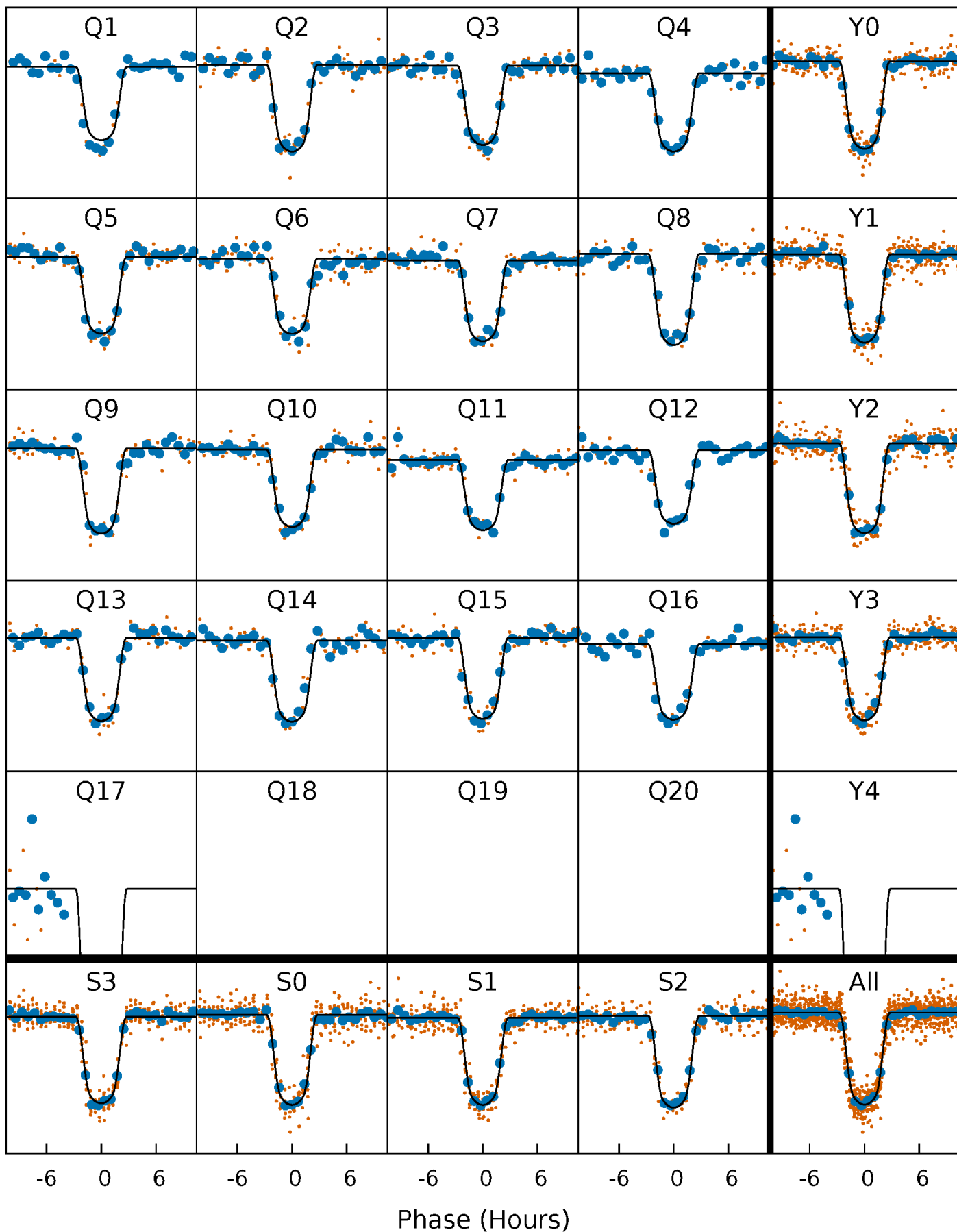
PDC Quarter-Phased Transit Curves

TCE 008806123-01 P= 49.411267 Days $T_0=148.826973$ (BKJD)



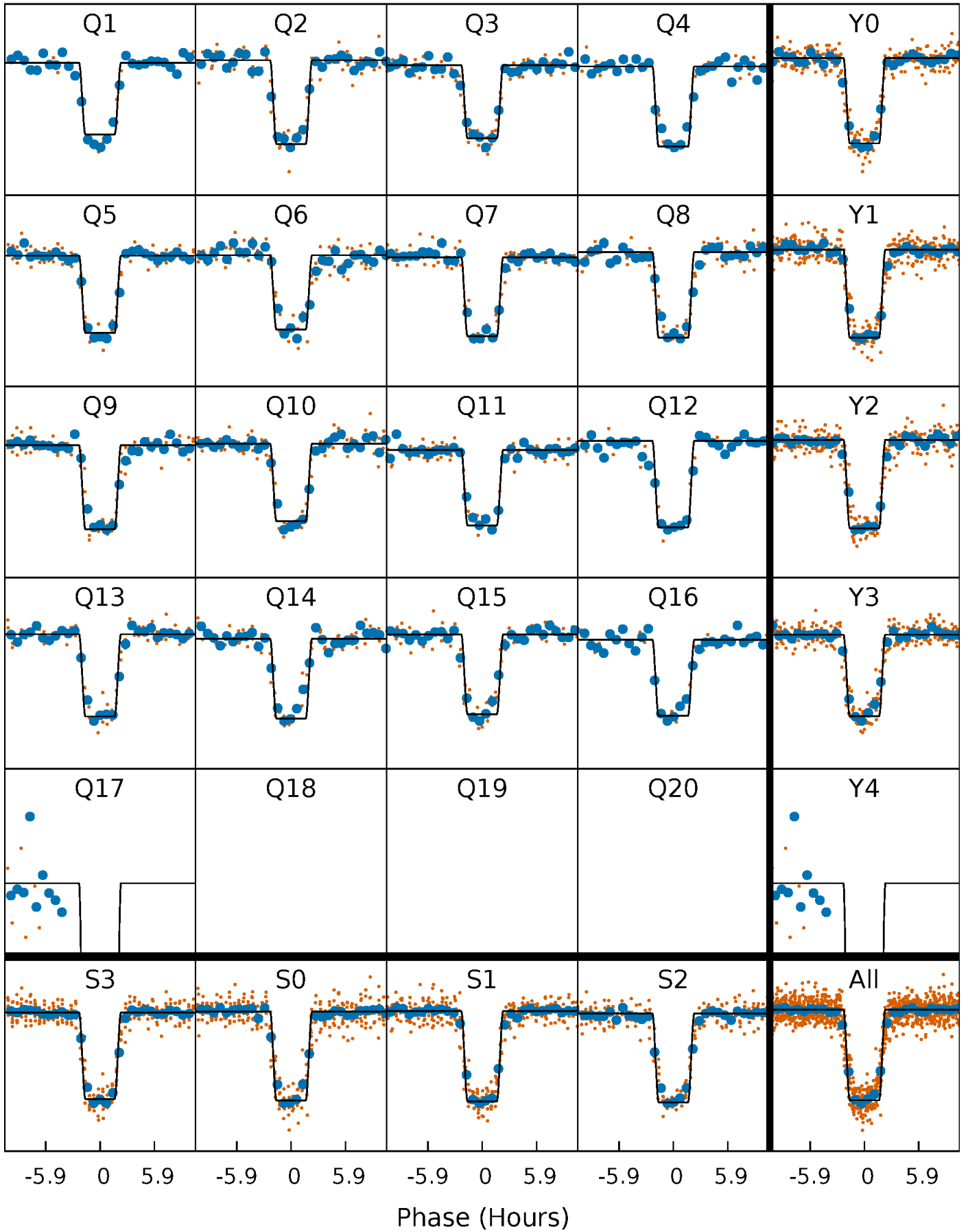
DV Quarter-Phased Transit Curves

TCE 008806123-01 P= 49.411267 Days $T_0=148.826973$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

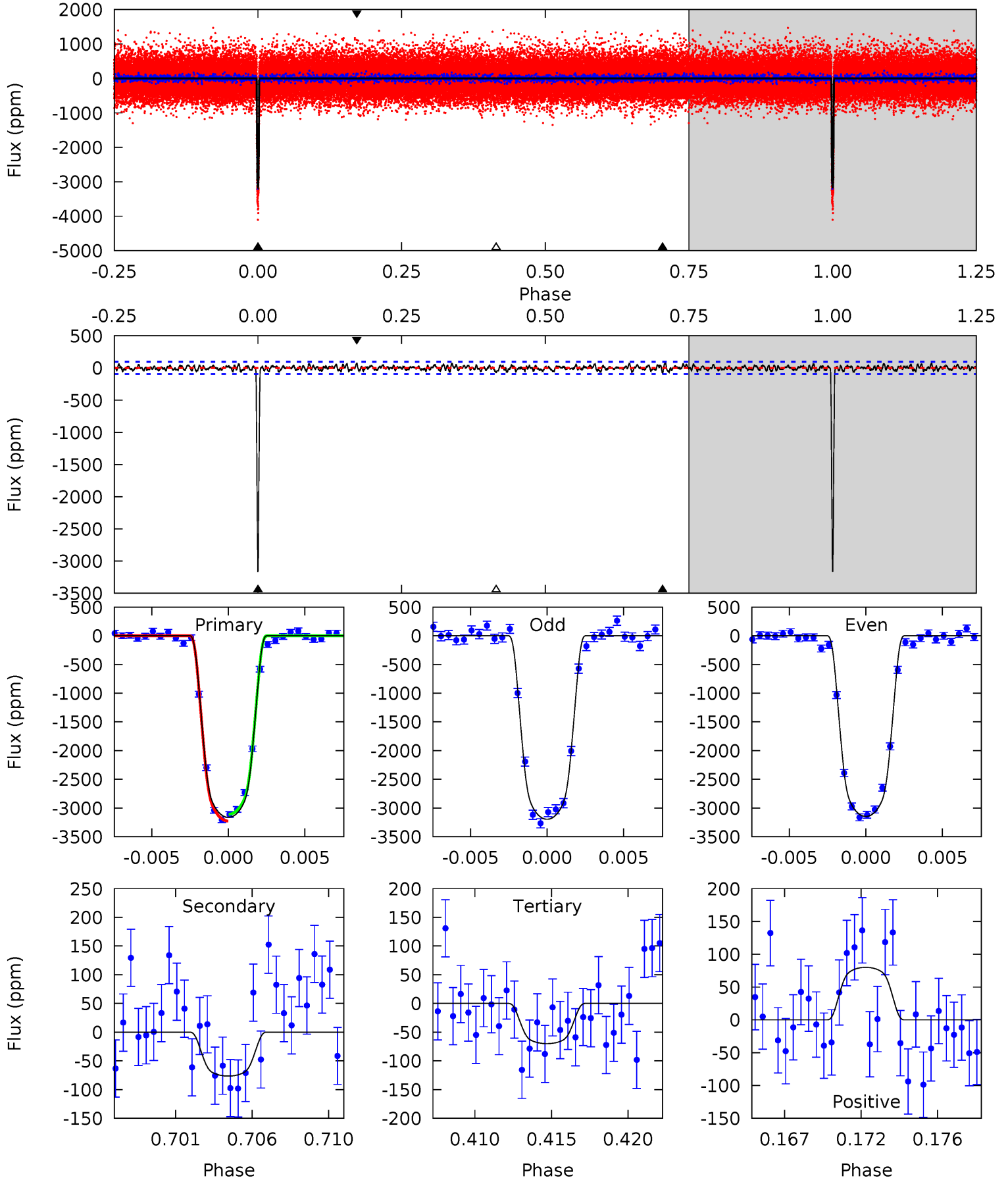
TCE 008806123-01 P= 49.411269 Days $T_0=148.826967$ (BKJD)



DV Model-Shift Uniqueness Test

008806123-01, P = 49.411267 Days, E = 99.415706 Days

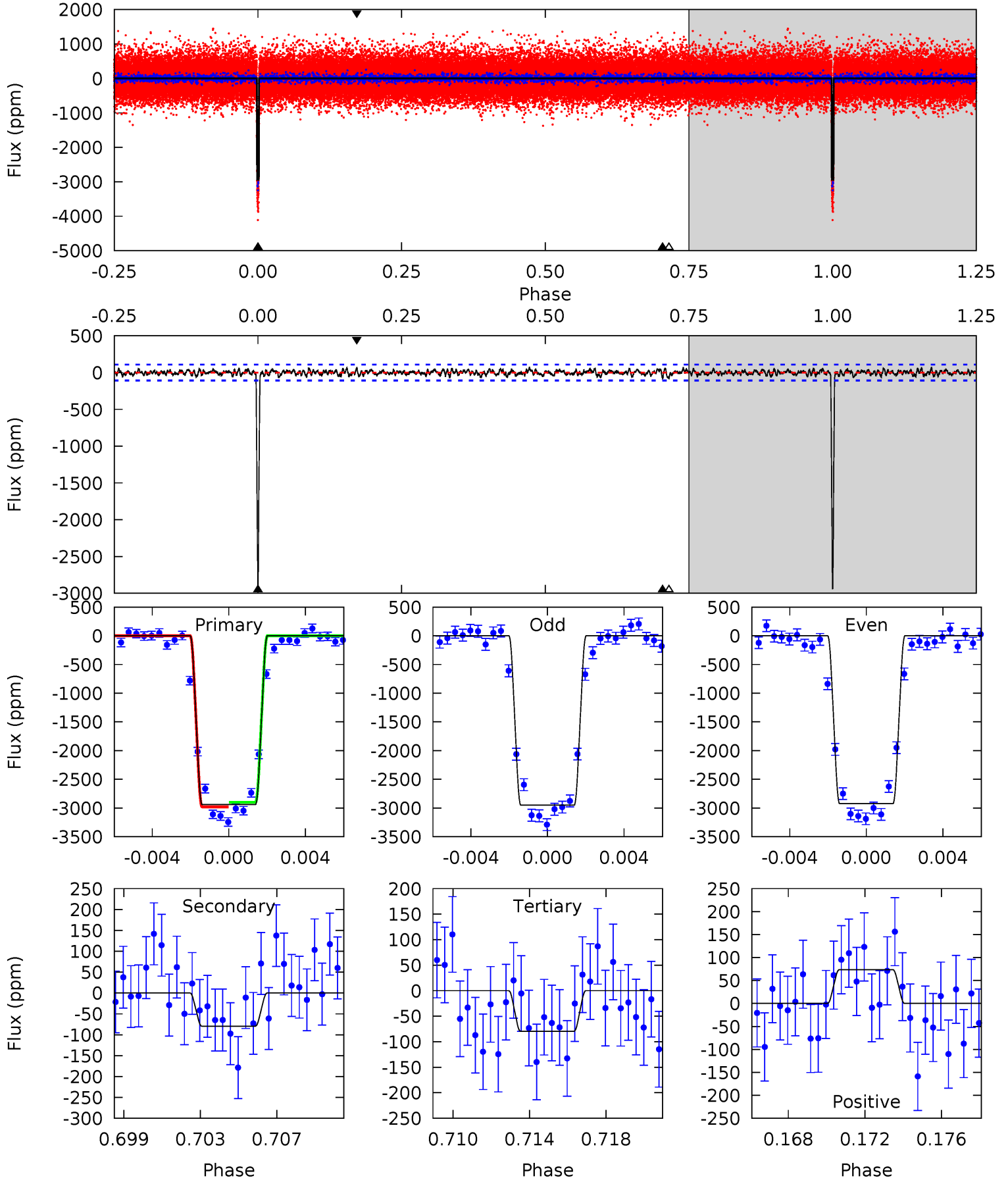
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
169.4	4.10	3.75	4.29	5.17	2.82	1.41	165.7	165.2	0.35	-0.19	1.31	1.00	0.02	3.13



Alt Model-Shift Uniqueness Test

008806123-01, P = 49.411269 Days, E = 99.415698 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
141.2	3.81	3.81	3.53	5.21	2.89	1.19	137.3	137.6	0.00	0.28	0.65	1.00	0.02	1.89



Stellar Parameters For KIC 008806123

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5768^{+78}_{-86}	$4.434^{+0.054}_{-0.126}$	$0.140^{+0.150}_{-0.150}$	$1.015^{+0.161}_{-0.069}$	$1.021^{+0.062}_{-0.062}$	$1.374^{+0.279}_{-0.480}$
	+1%/-1%	+1%/-3%	+107%/-107%	+16%/-7%	+6%/-6%	+20%/-35%
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 008806123-01 / KOI 0523.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-76 ± 19	$6.75^{+0.61}_{-0.29}$	699^{+28}_{-20}	2887^{+100}_{-107}	62^{+18}_{-17}
Alt.	-79 ± 21	$6.22^{+0.55}_{-0.30}$	700^{+28}_{-20}	2982^{+98}_{-121}	77^{+22}_{-22}

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 $A_{obs} \gg 1.0$

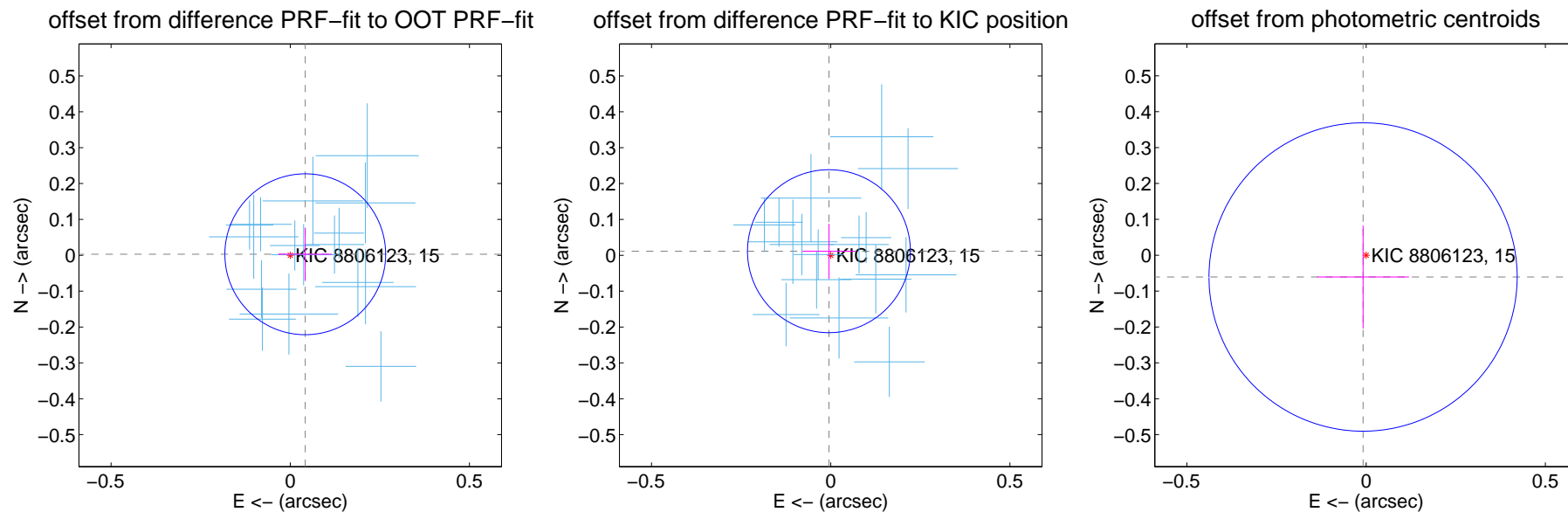
DV Centroid Data

Supplemental centroid analysis for 008806123-01. Kepler magnitude: 15.00. Transit SNR 108.83

There are 16 quarters with good PRF difference image offsets

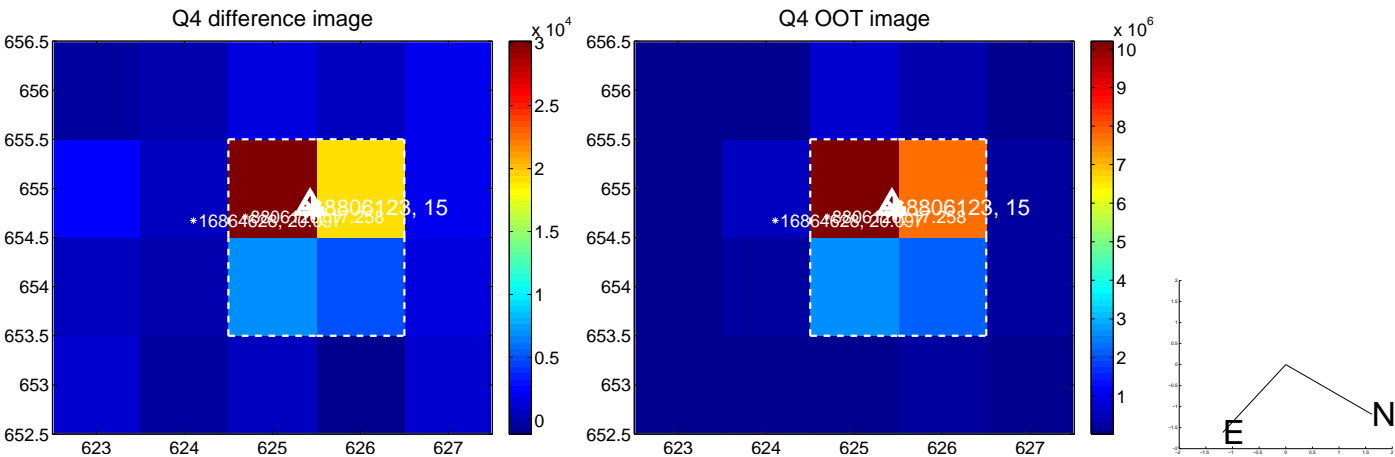
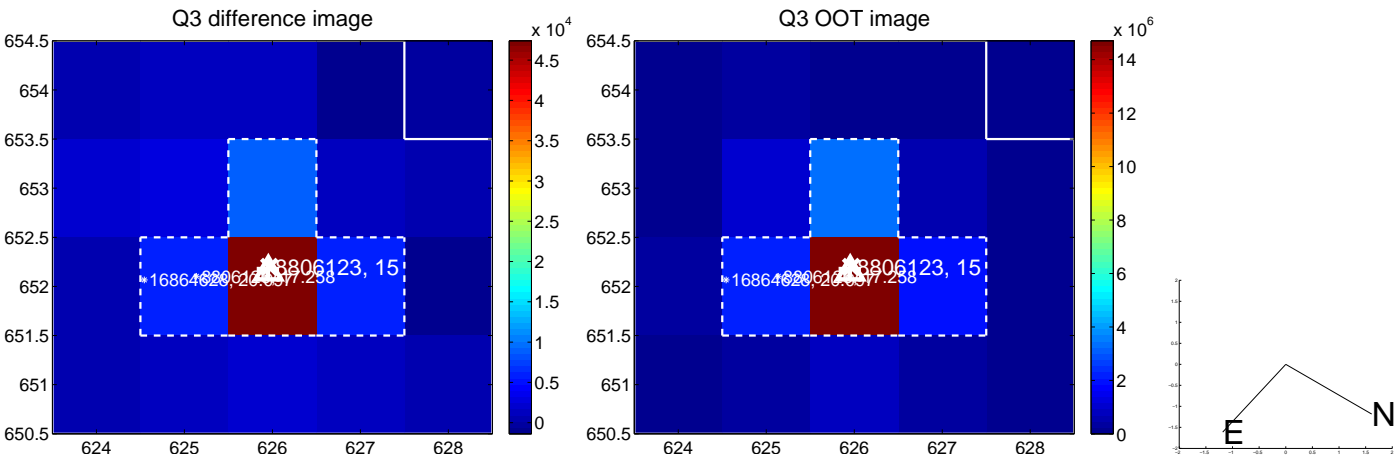
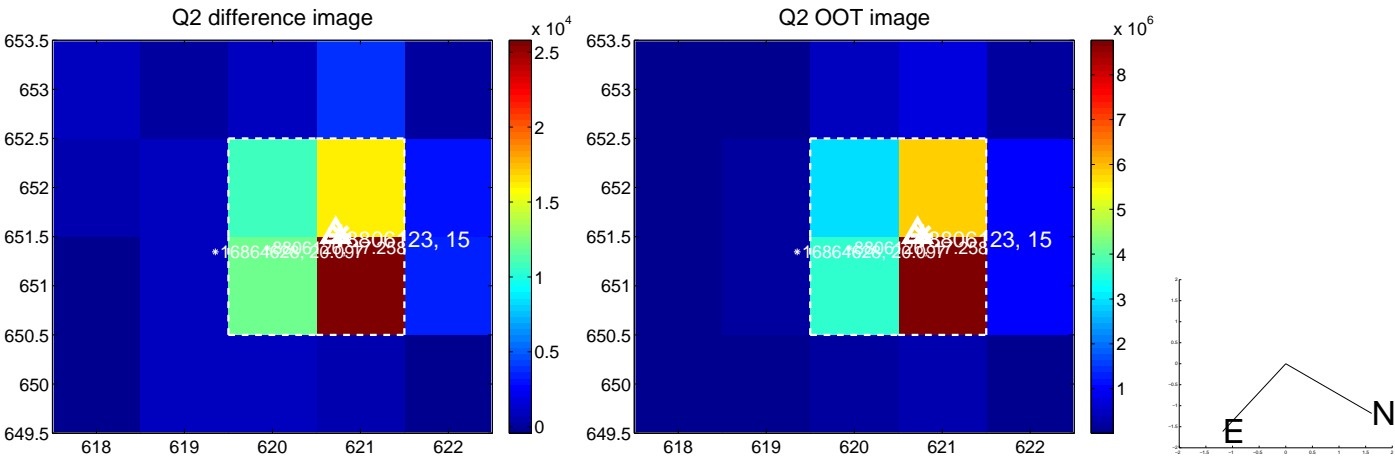
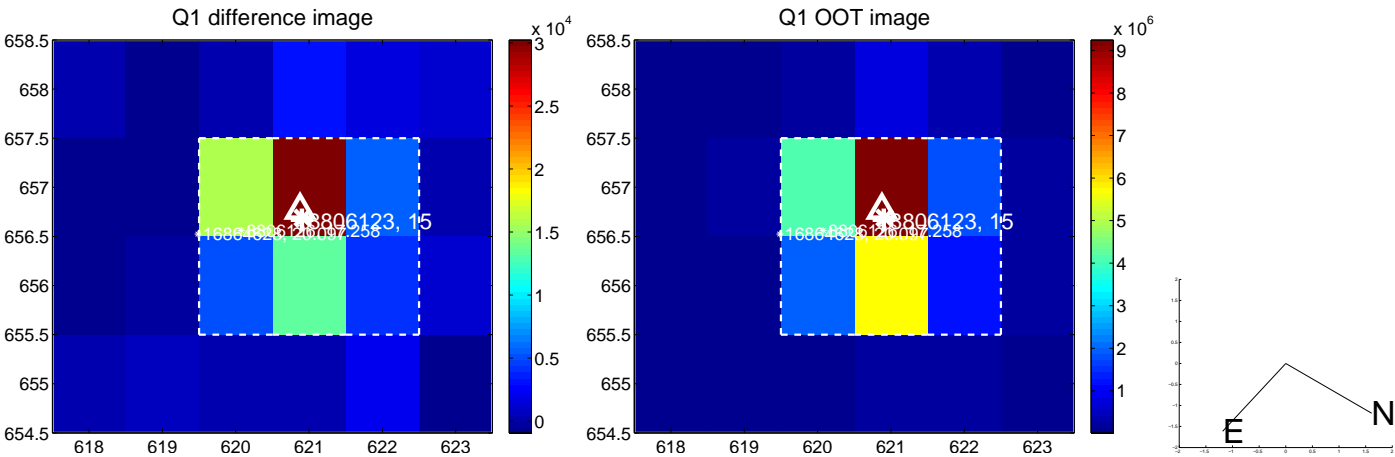
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.042 ± 0.075	0.56	-0.042 ± 0.075	0.003 ± 0.074
PRF-fit source offset from KIC position	0.012 ± 0.076	0.16	0.005 ± 0.074	0.011 ± 0.076
photometric centroid source offset	0.06 ± 0.14	0.43	0.01 ± 0.13	-0.06 ± 0.14

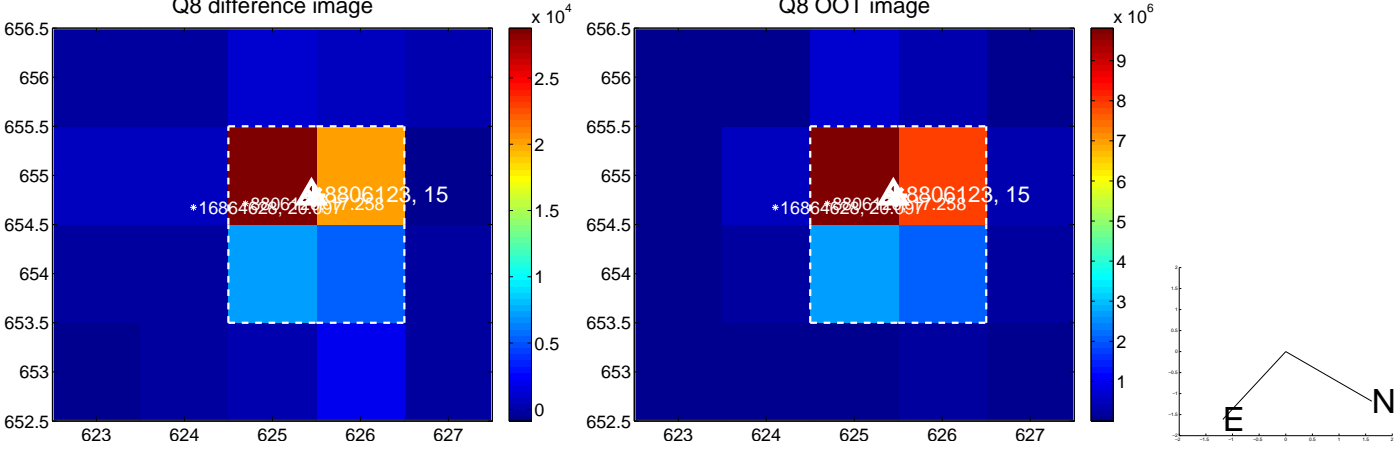
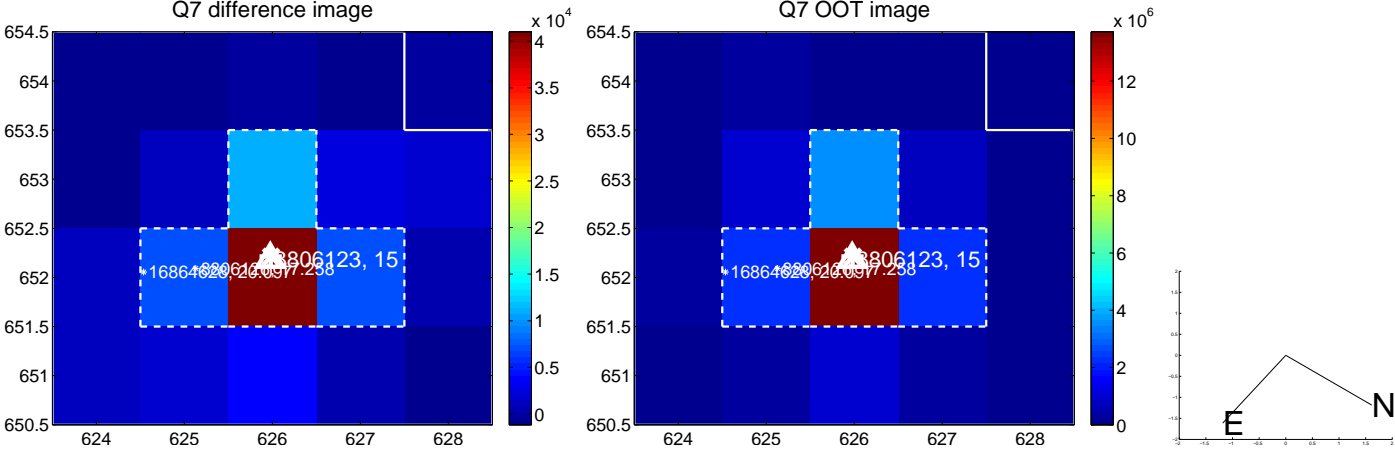
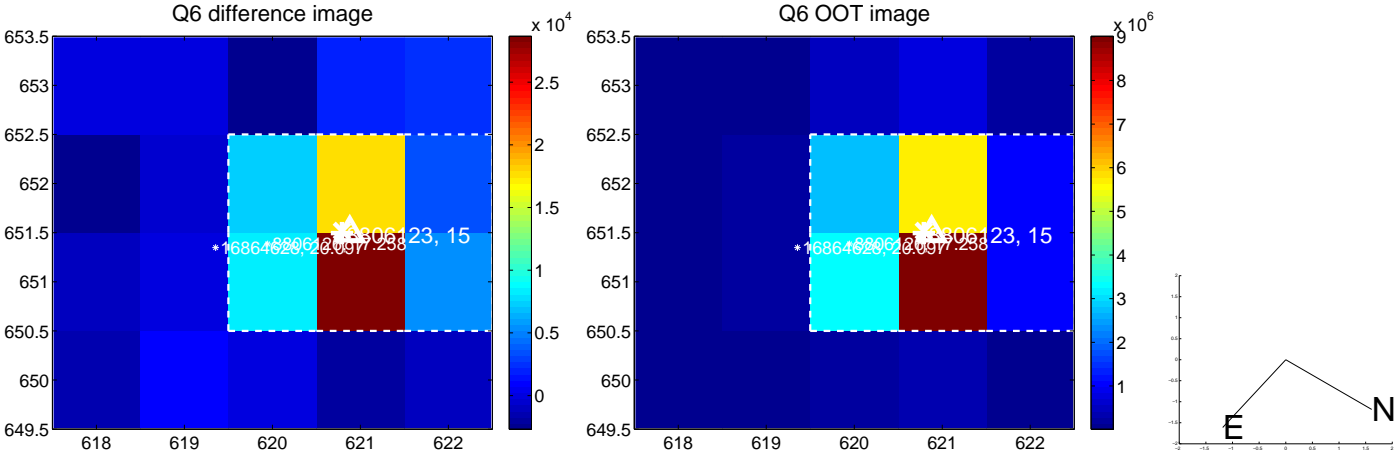
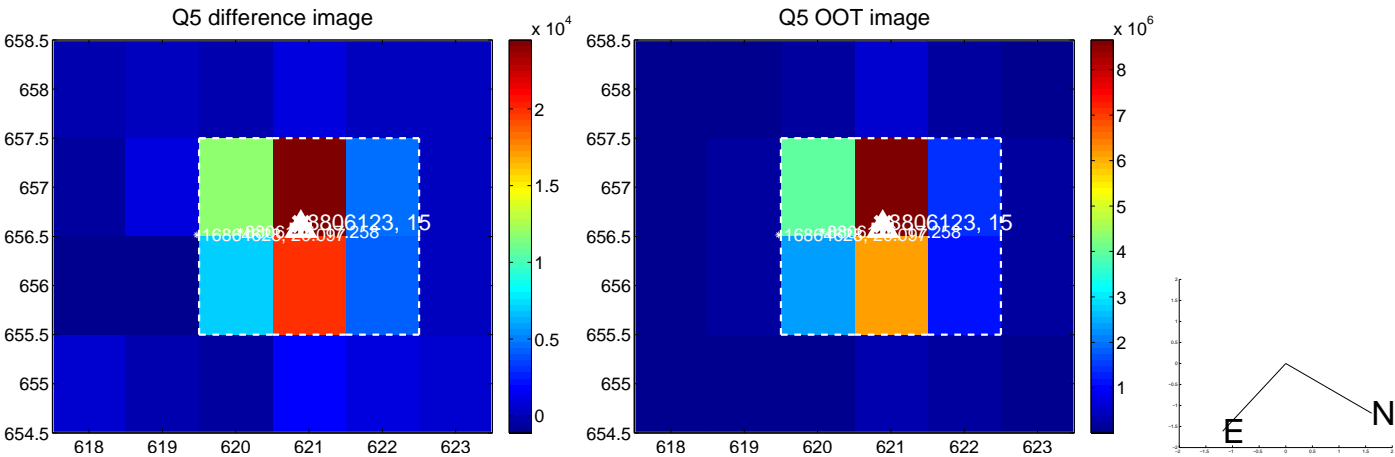


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

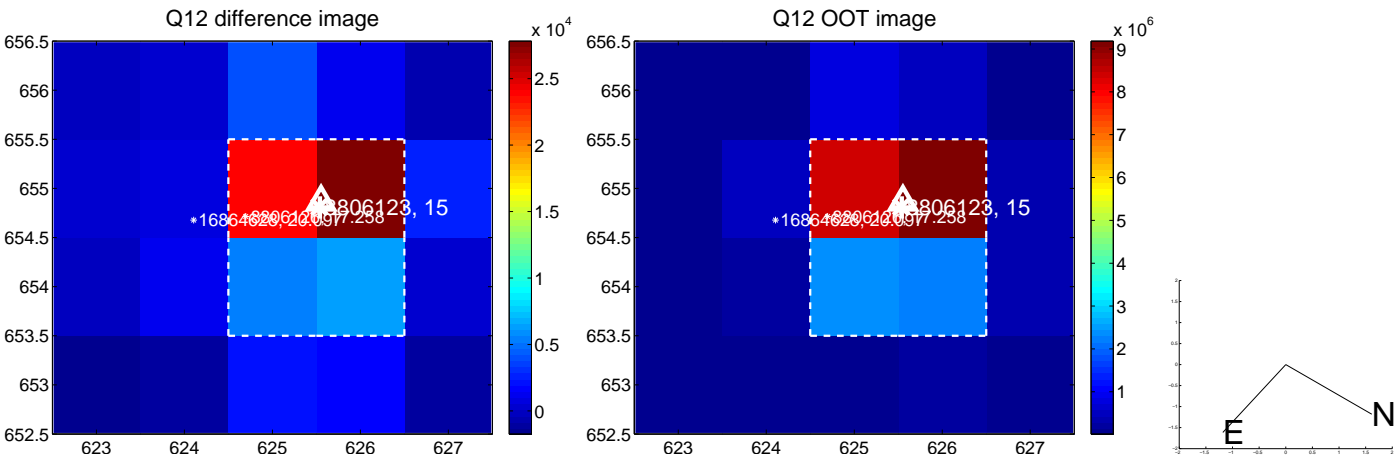
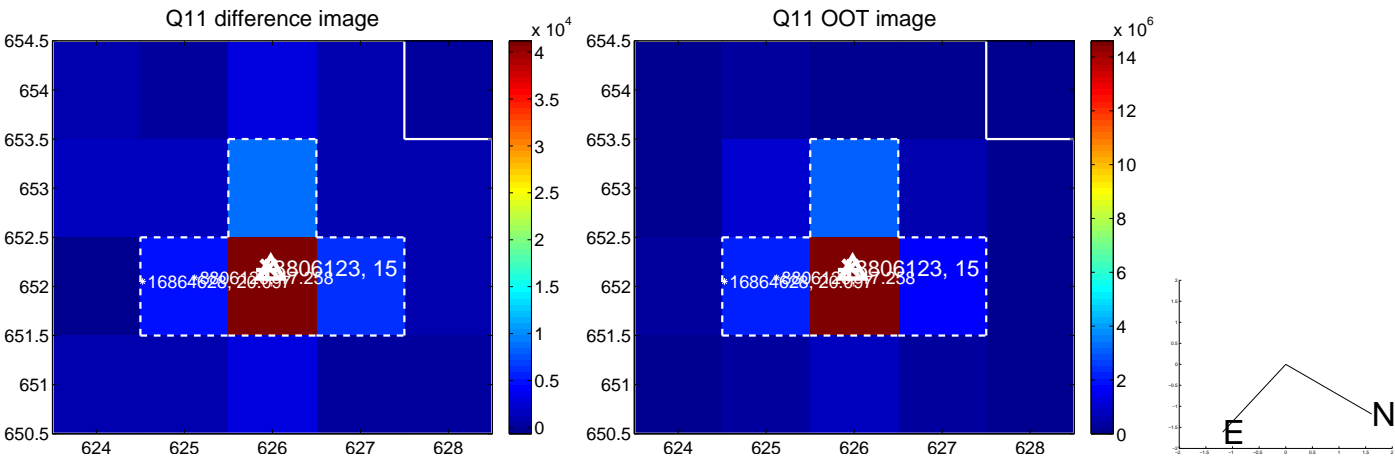
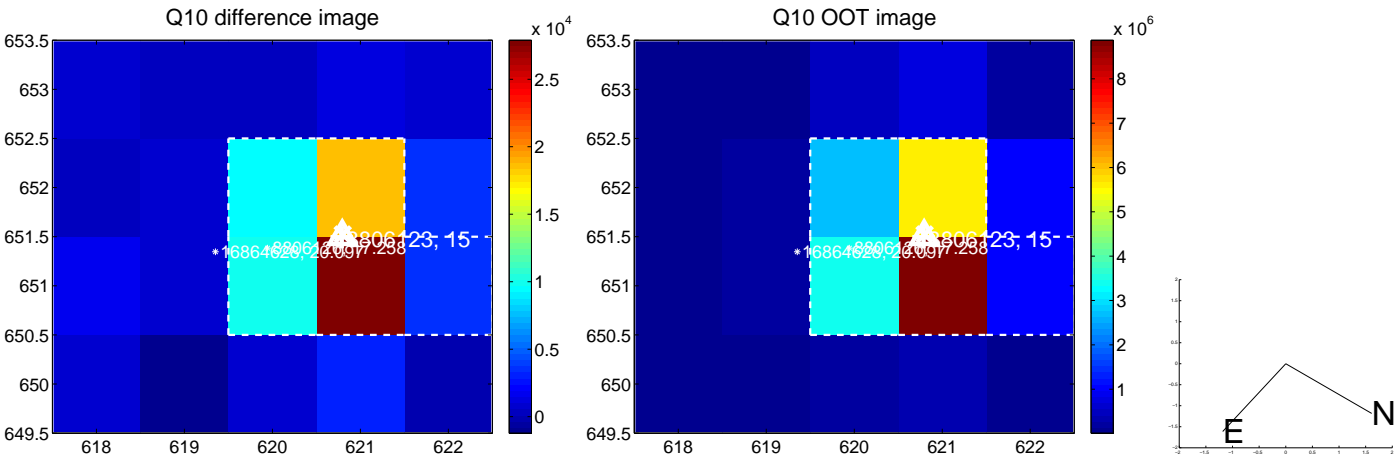
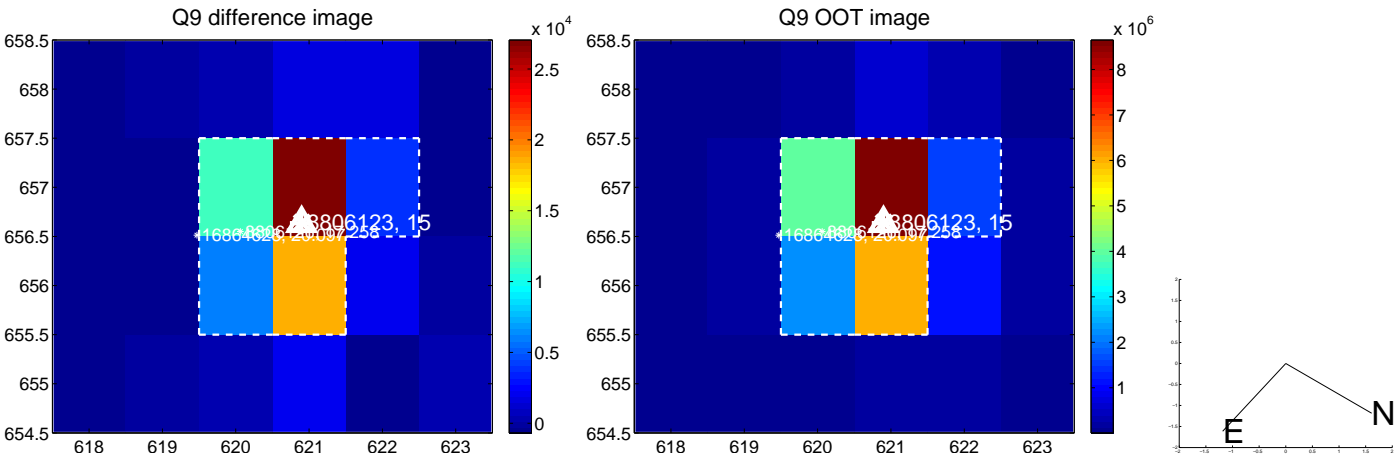
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



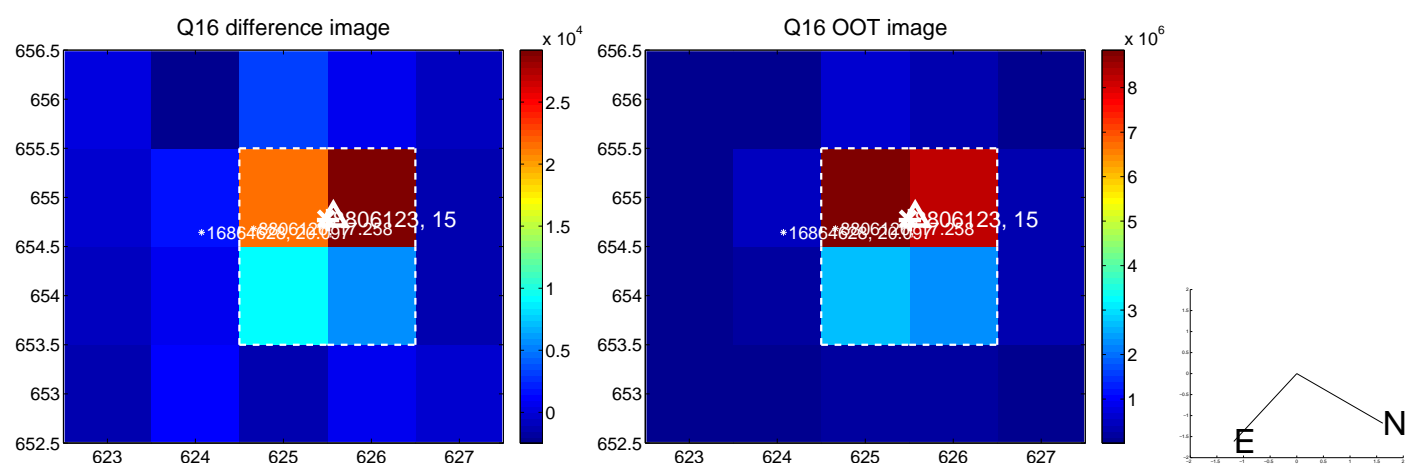
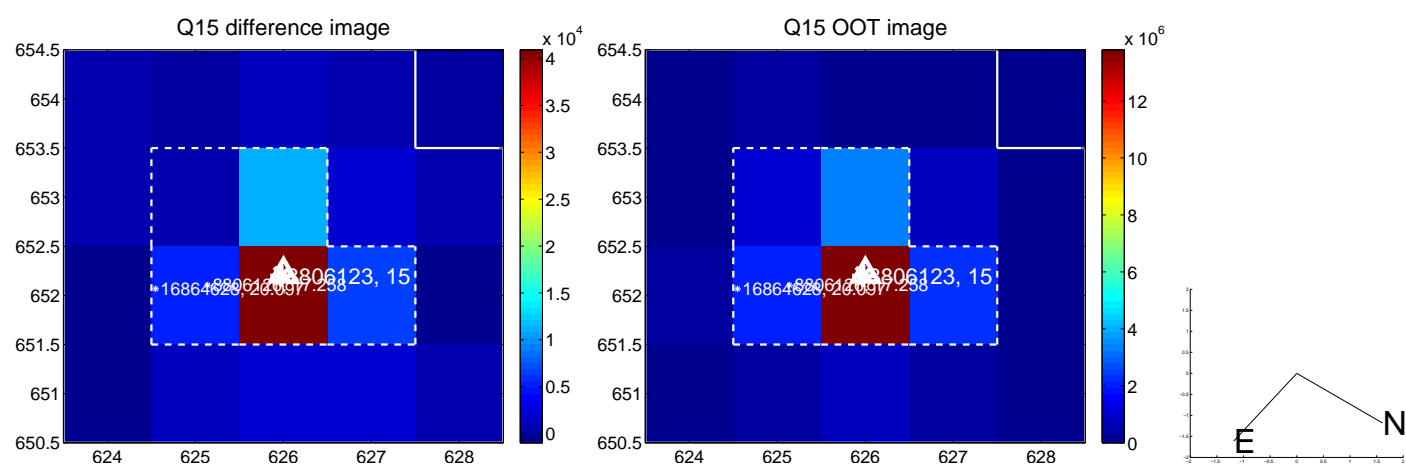
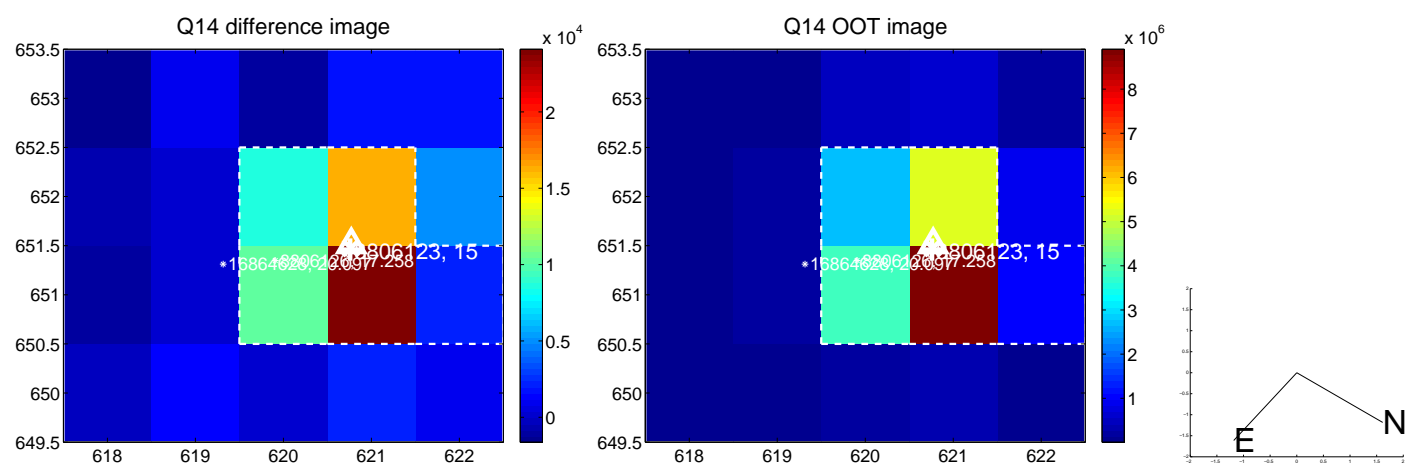
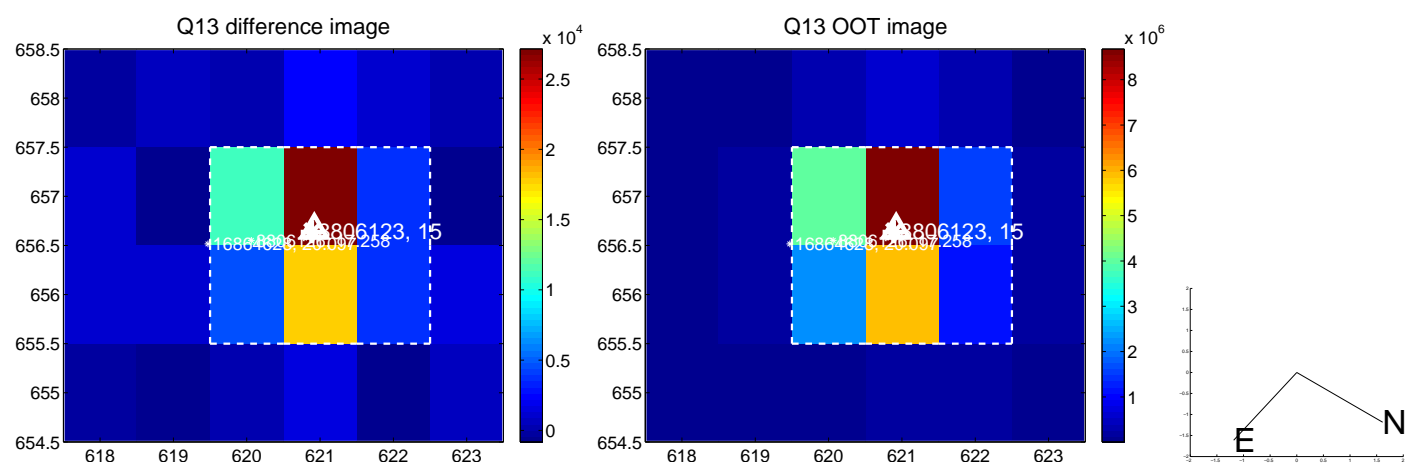
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



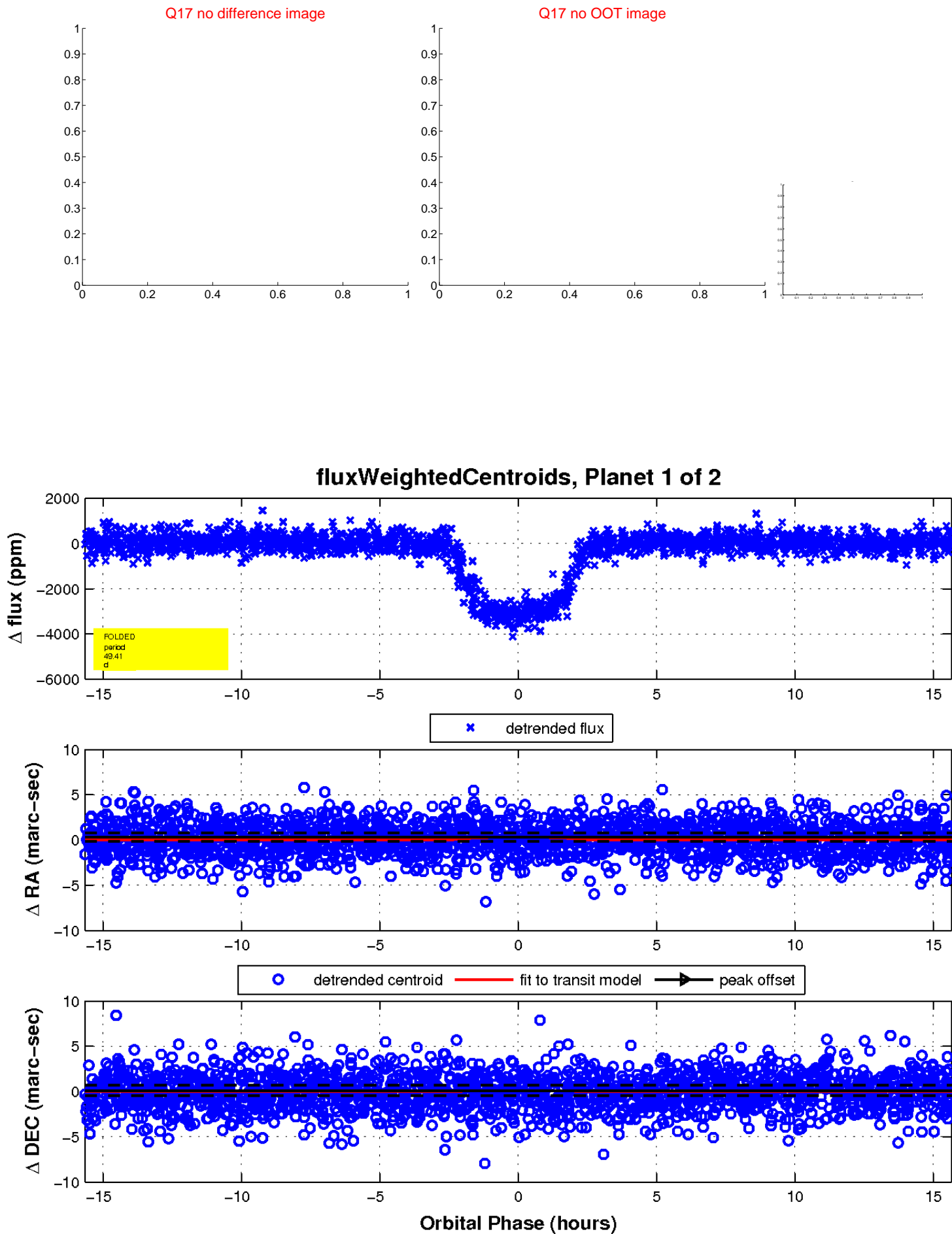
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

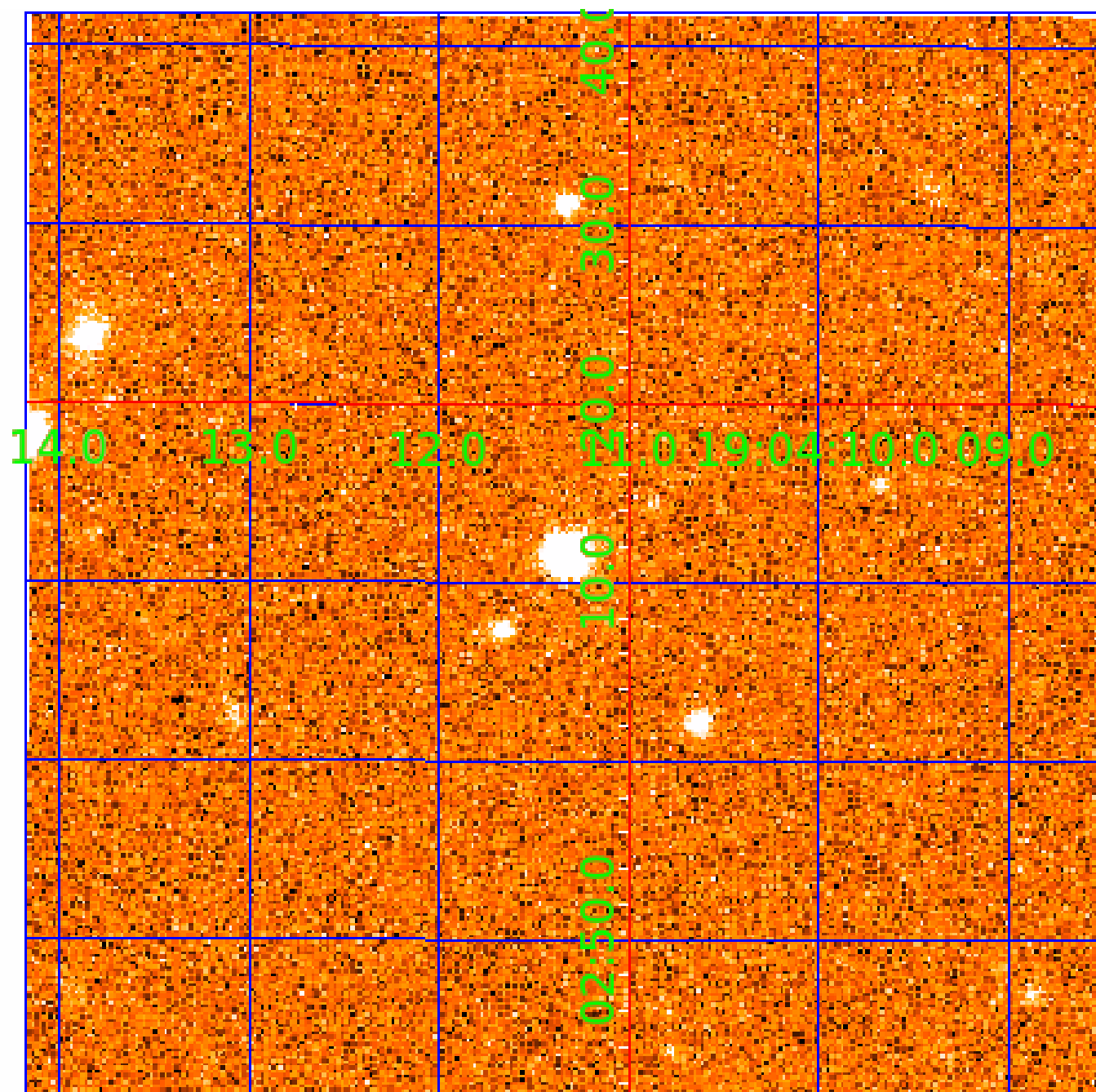


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008806123

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})
008806123-01	OBS	0523.01	49.411267	148.826973	3153.7	5.226	113.2	108.8	1.01	5768	6.71	14.51
008806123-02	OBS	0523.02	36.856912	138.906618	702.0	8.228	33.1	36.3	1.01	5768	3.18	21.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008806123-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
008806123-02	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.

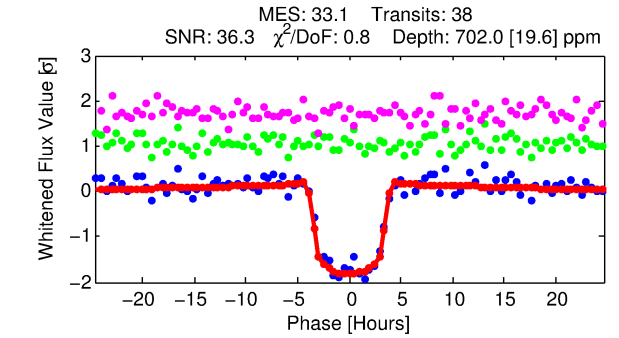
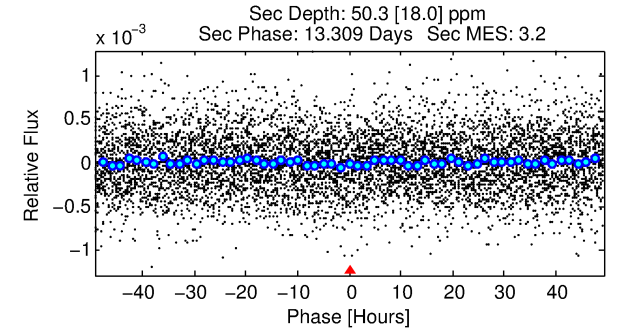
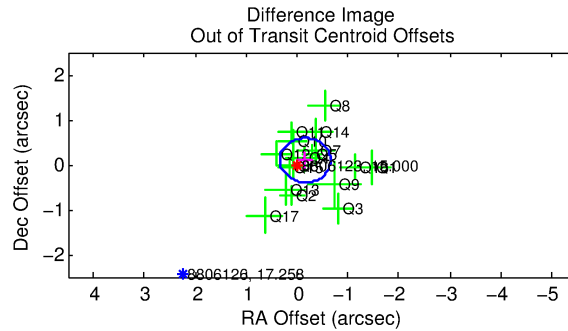
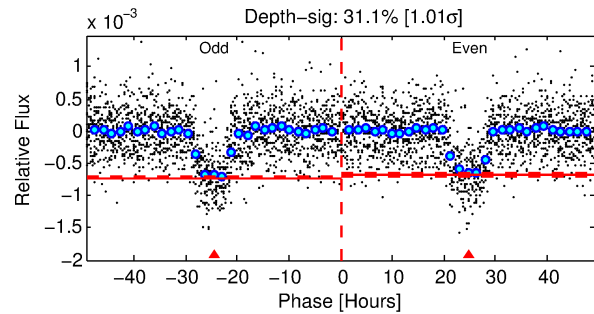
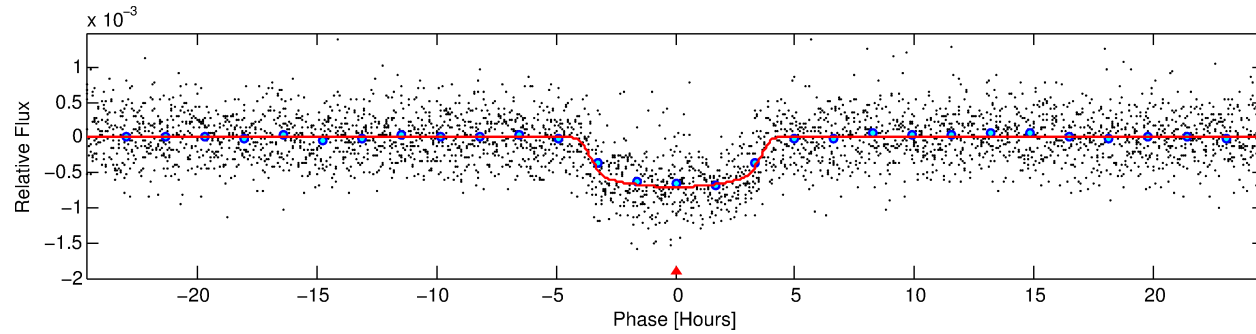
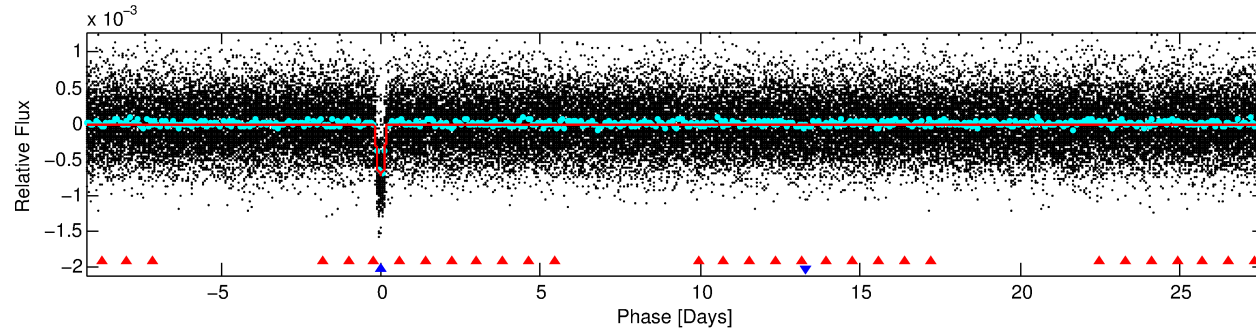
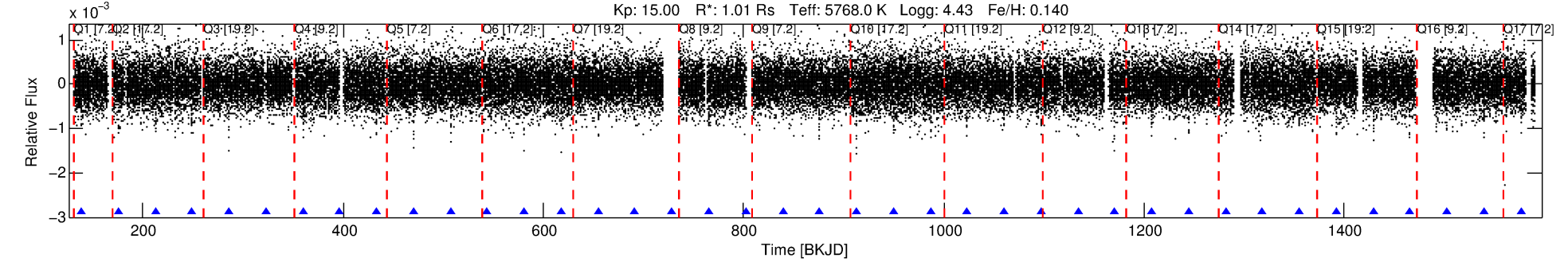
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008806123-02

No Significant Match Found

DV One-Page Summary

KIC: 8806123 Candidate: 2 of 2 Period: 36.857 d
KOI: K00523.02 Name: Kepler-177b Corr: 0.974



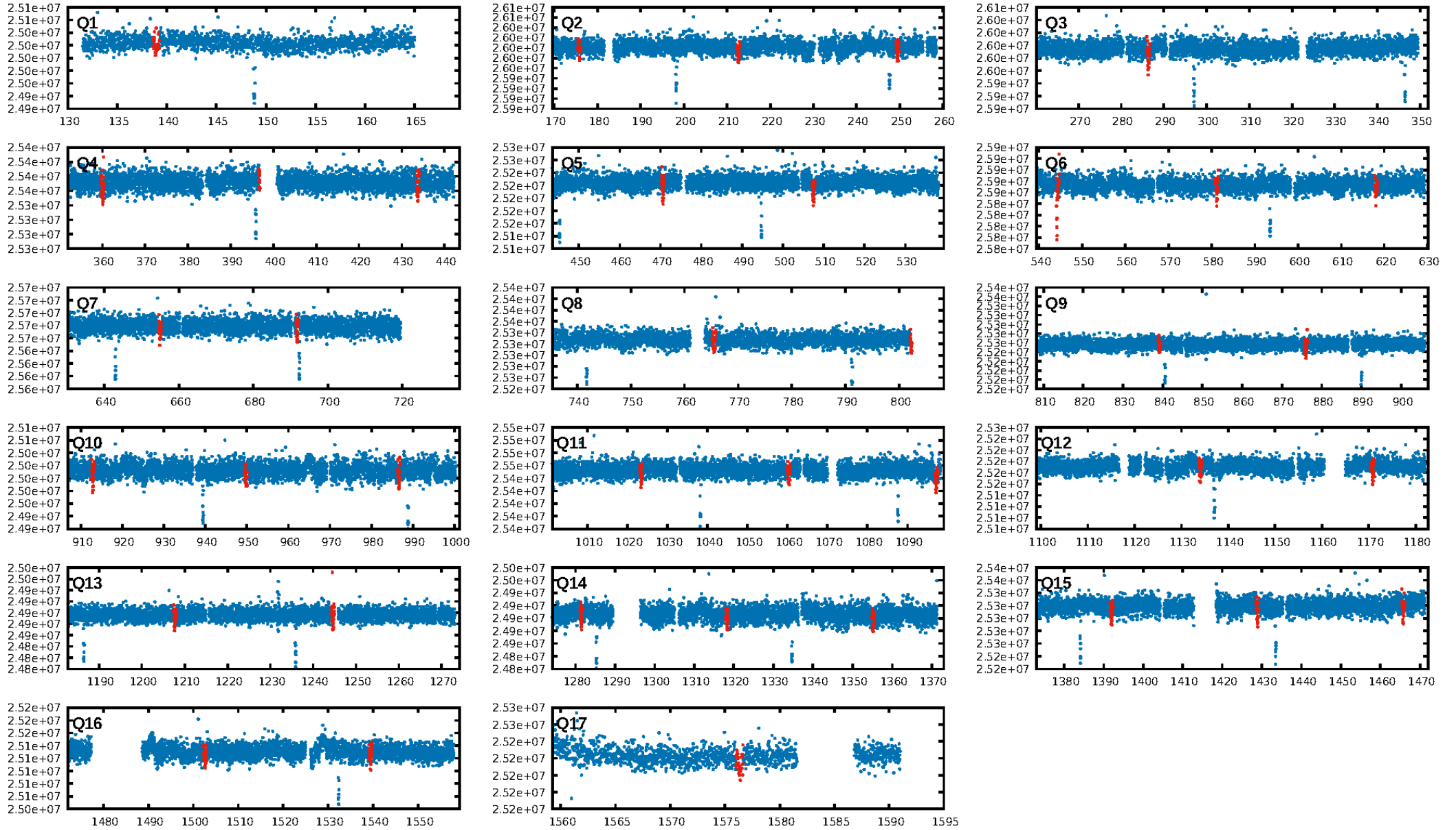
DV Fit Results:

Period = 36.85691 [0.00018] d
Epoch = 138.9066 [0.0043] BKJD
Rp/R* = 0.0287 [0.0010]
a/R* = 17.51 [2.57]
b = 0.89 [0.03]
Seff = 21.44 [4.90]
Teff = 549 [31] K
Rp = 3.18 [0.52] Re
a = 0.2183 [0.0313] AU
Ag = 130.29 [55.50] [2.33 σ]
Teffp = 2866 [265] K [8.70 σ]

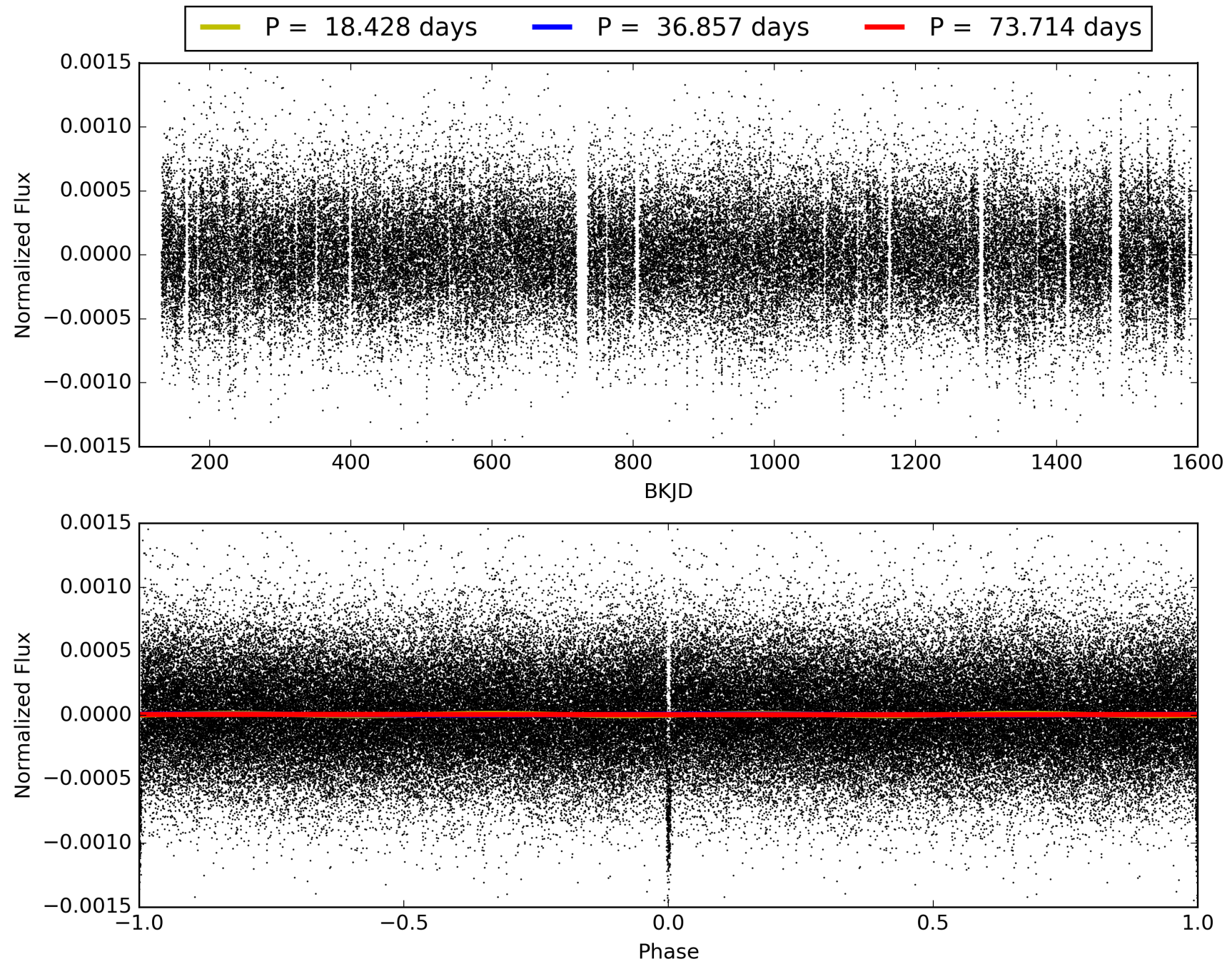
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [30.91 σ]
ModelChiSquare2-sig: 66.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.17e-226
RollingBand-fgt: 1.00 [36/36]
GhostDiagnostic-chr: 7.163
Centroid-sig: 58.5%
Centroid-so: 0.300 arcsec [0.69 σ]
OotOffset-rm: 0.187 arcsec [1.14 σ]
KicOffset-rm: 0.162 arcsec [0.97 σ]
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 008806123-02, PDC Light Curves

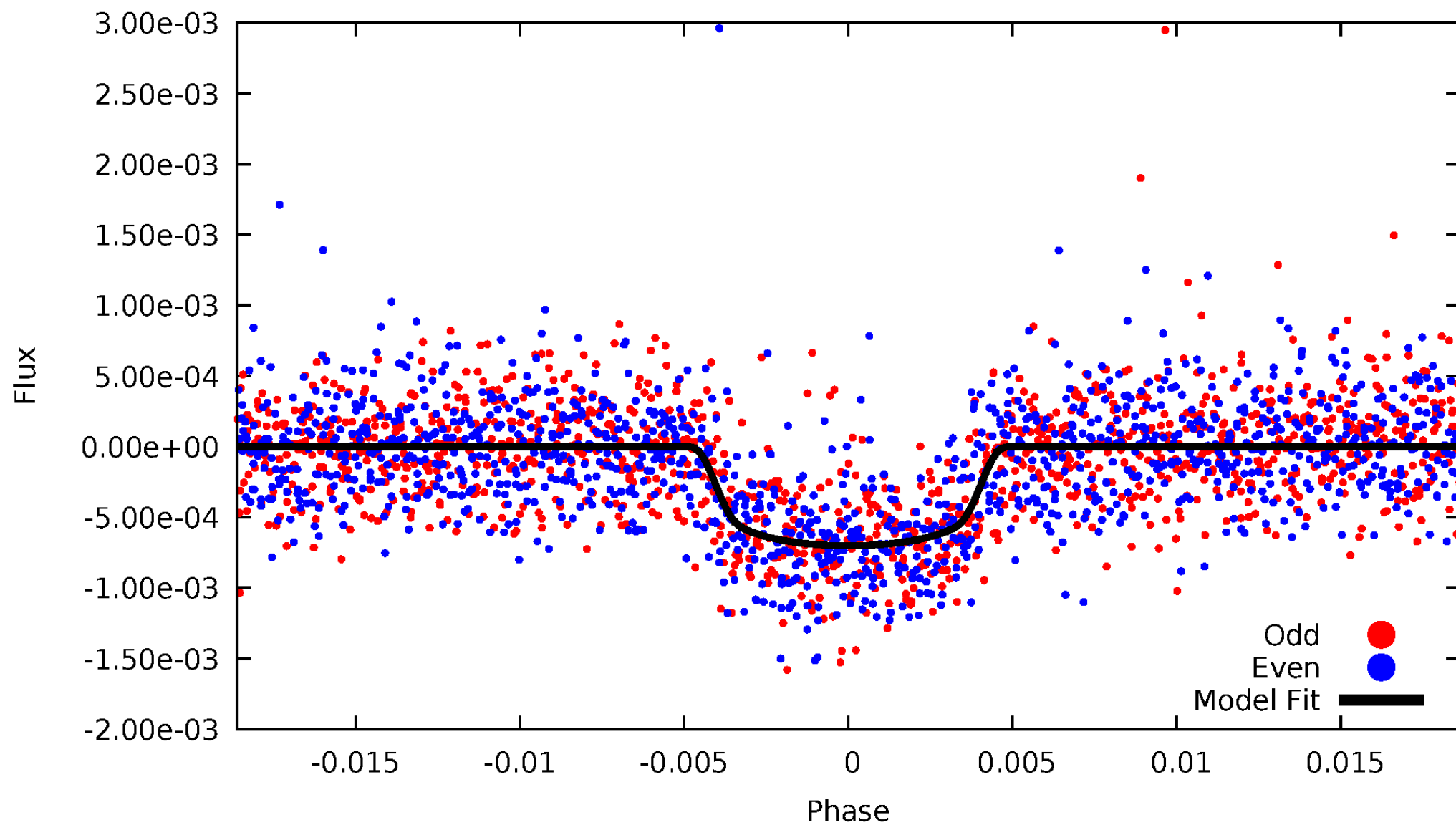


TCE 008806123-02



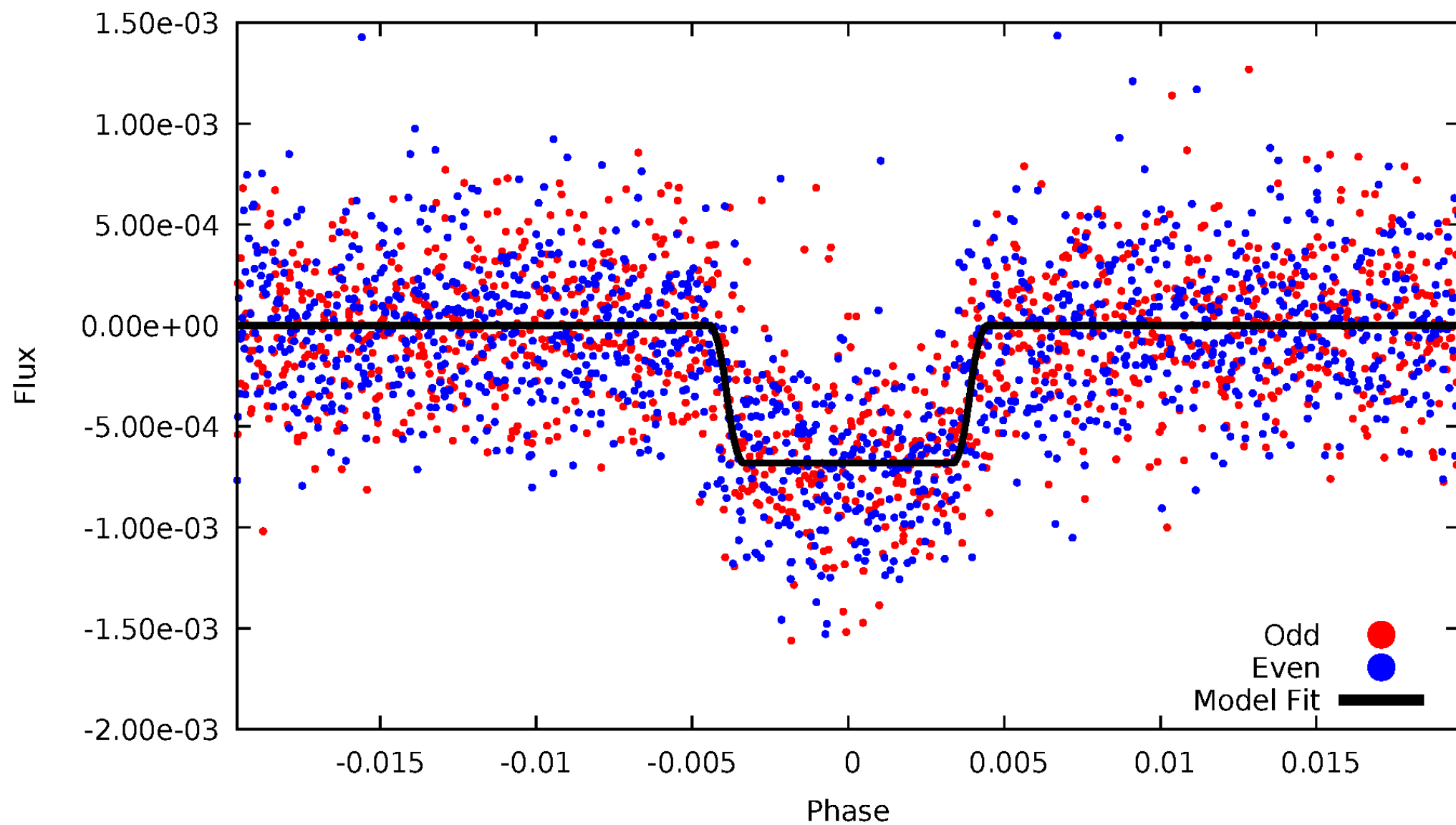
DV Odd/Even

TCE 008806123-02



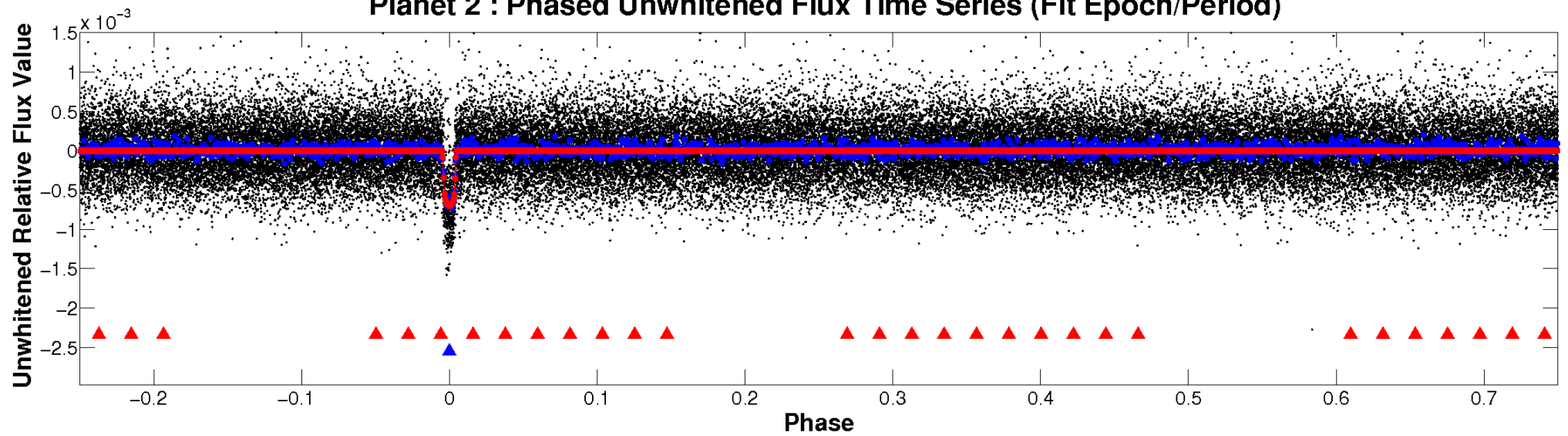
ALT Odd/Even

TCE 008806123-02

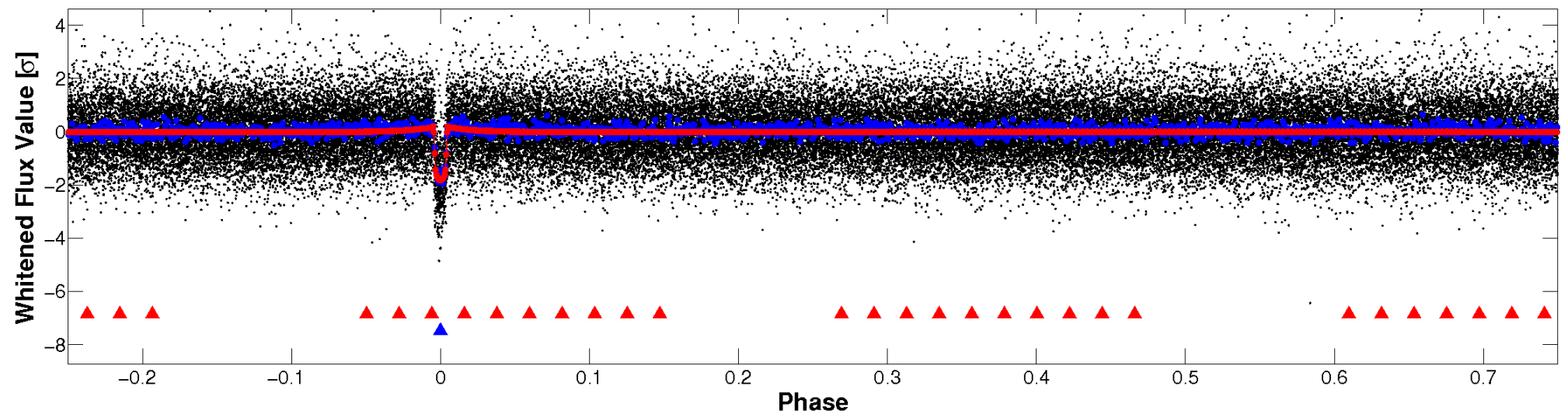


Non-Whitened Vs. Whitened Light Curve

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

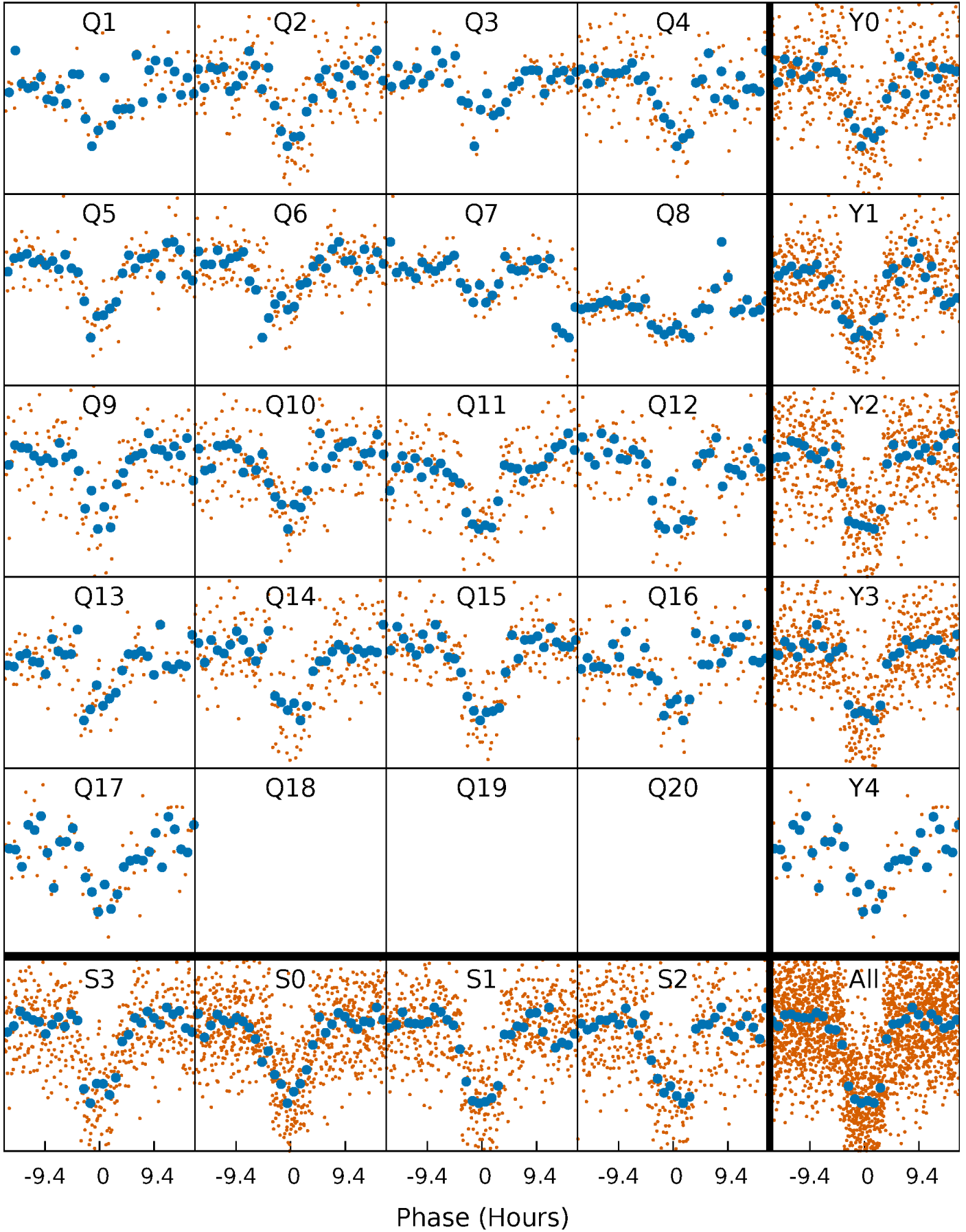


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



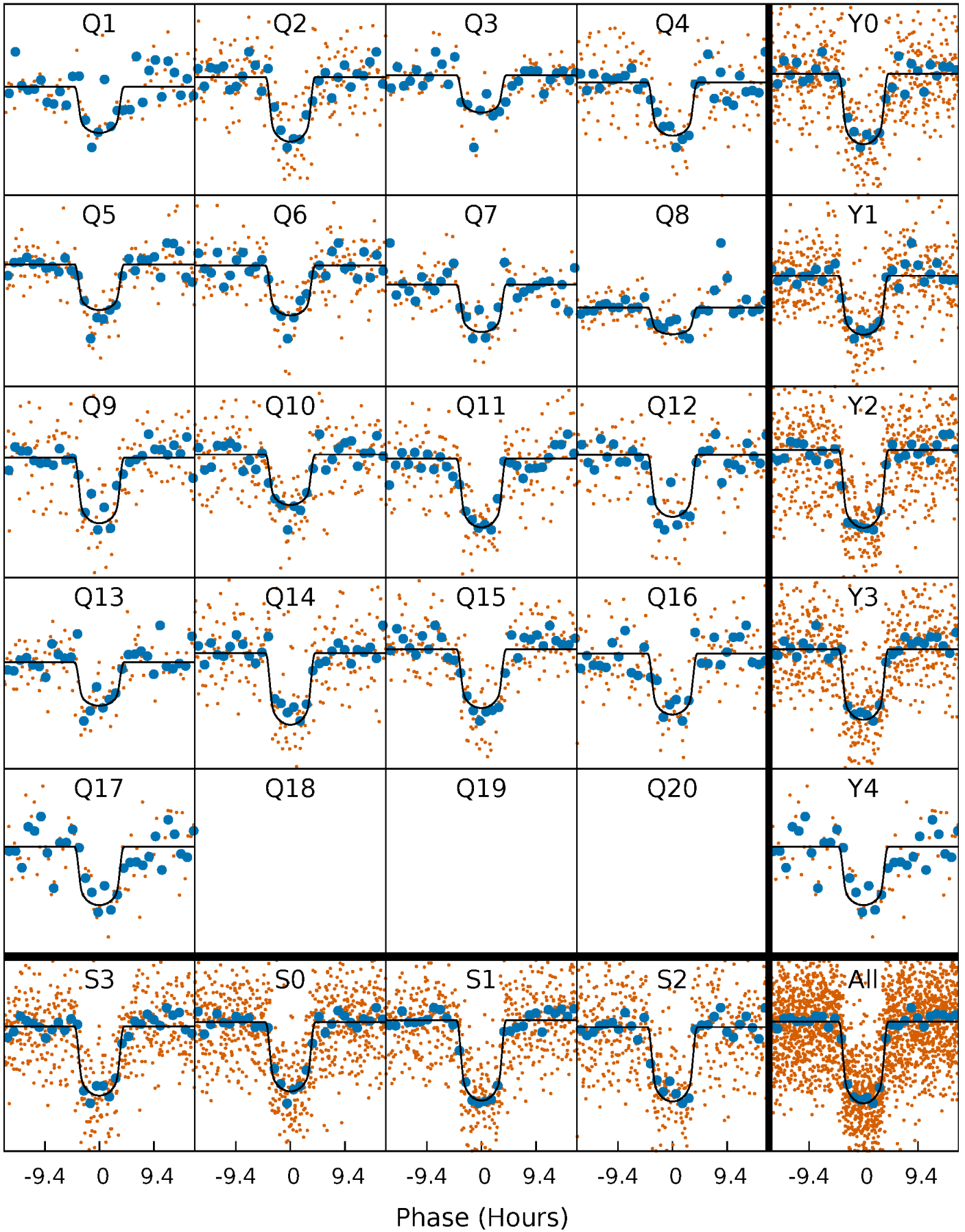
PDC Quarter-Phased Transit Curves

TCE 008806123-02 P= 36.856912 Days $T_0=138.906618$ (BKJD)



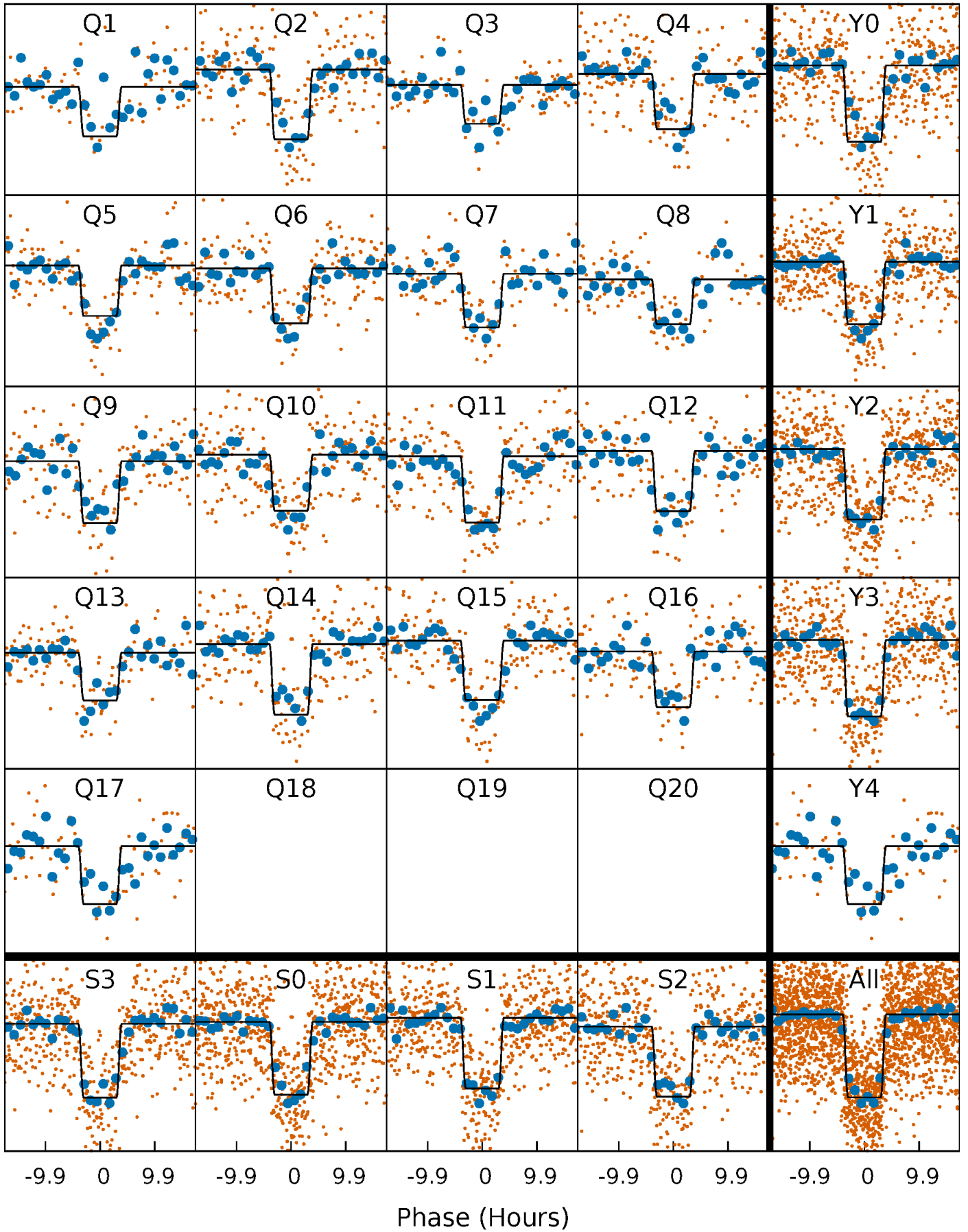
DV Quarter-Phased Transit Curves

TCE 008806123-02 P= 36.856912 Days $T_0=138.906618$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

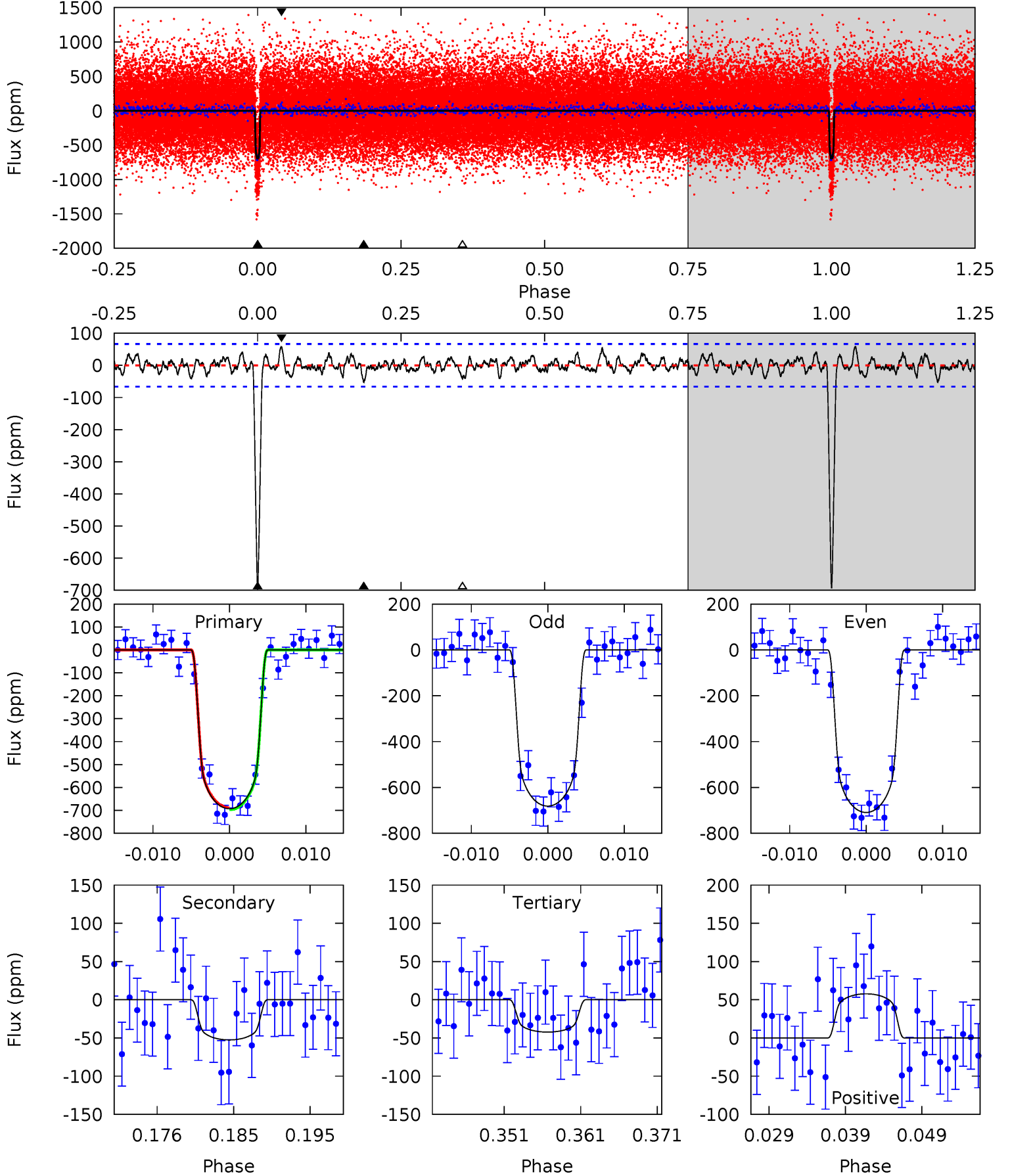
TCE 008806123-02 P= 36.857539 Days $T_0=138.892128$ (BKJD)



DV Model-Shift Uniqueness Test

008806123-02, P = 36.856912 Days, E = 102.049706 Days

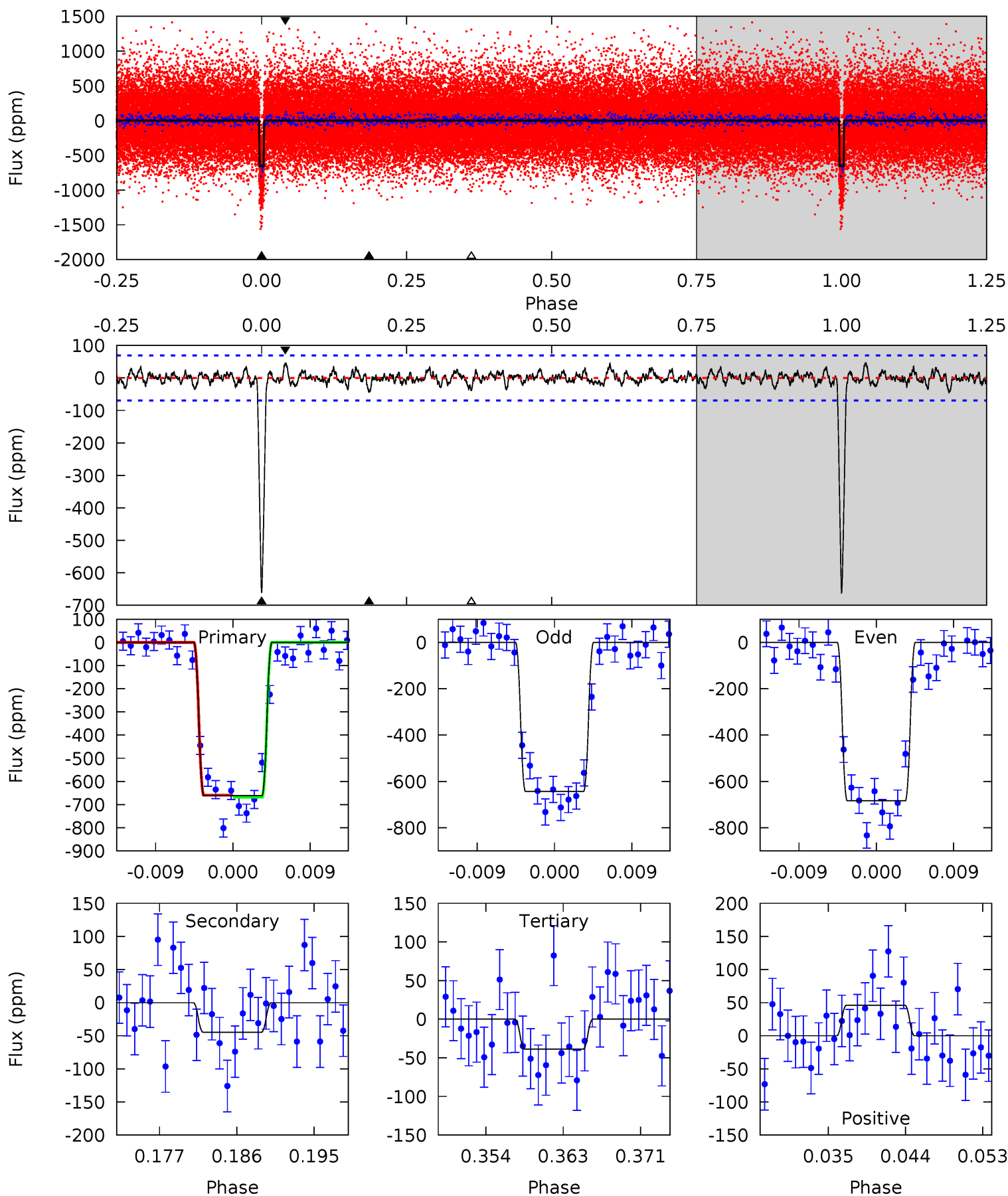
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
52.6	3.99	3.21	4.39	5.03	2.58	1.25	49.4	48.2	0.78	-0.40	1.05	0.98	0.08	0.32



Alt Model-Shift Uniqueness Test

008806123-02, $P = 36.857539$ Days, $E = 102.034589$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
48.1	3.25	2.83	3.36	5.05	2.62	0.98	45.3	44.7	0.43	-0.11	1.46	0.99	0.07	0.36



Stellar Parameters For KIC 008806123

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5768^{+78}_{-86}	$4.434^{+0.054}_{-0.126}$	$0.140^{+0.150}_{-0.150}$	$1.015^{+0.161}_{-0.069}$	$1.021^{+0.062}_{-0.062}$	$1.374^{+0.279}_{-0.480}$
	+1%/-1%	+1%/-3%	+107%/-107%	+16%/-7%	+6%/-6%	+20%/-35%
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 008806123-02 / KOI 0523.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-53 ± 13	$3.22^{+0.31}_{-0.22}$	771^{+31}_{-22}	3414^{+131}_{-155}	132^{+42}_{-36}
Alt.	-45 ± 14	$2.93^{+0.26}_{-0.20}$	770^{+34}_{-21}	3421^{+162}_{-174}	134^{+49}_{-42}

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 $A_{obs} \gg 1.0$

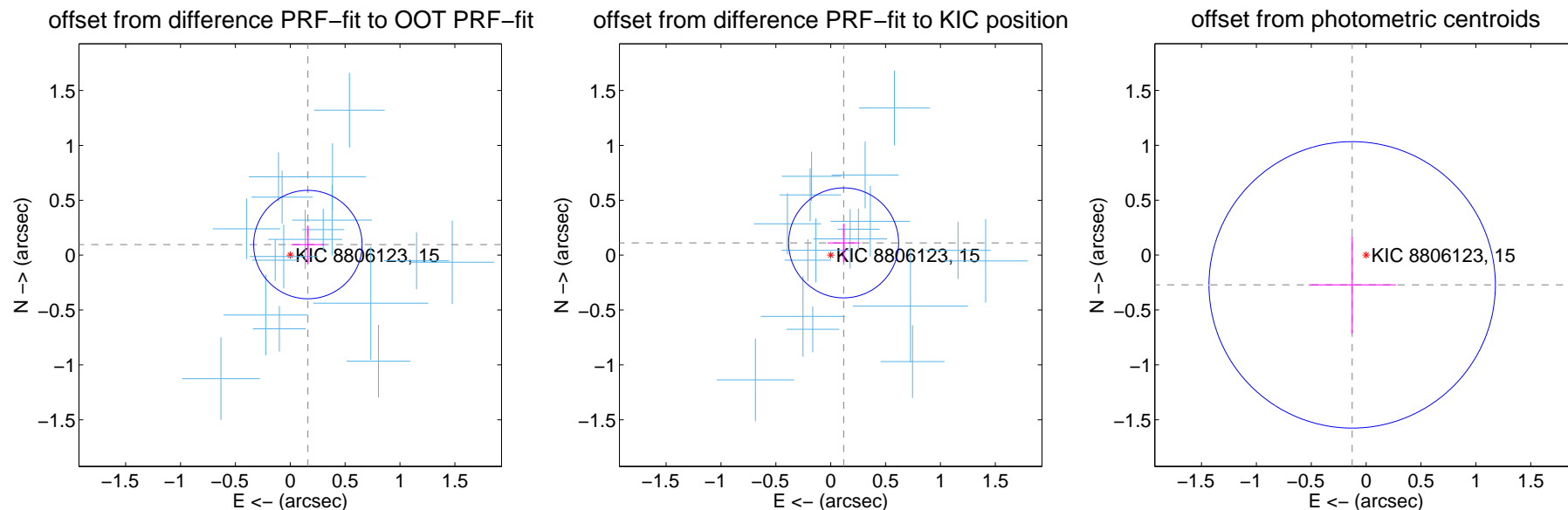
DV Centroid Data

Supplemental centroid analysis for 008806123-02. Kepler magnitude: 15.00. Transit SNR 36.33

There are 17 quarters with good PRF difference image offsets

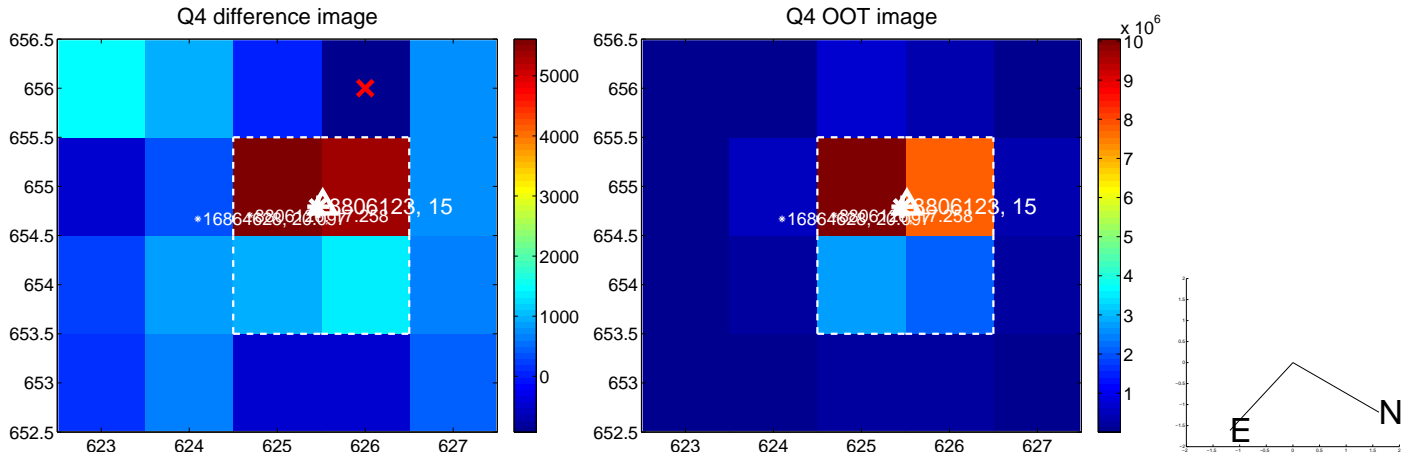
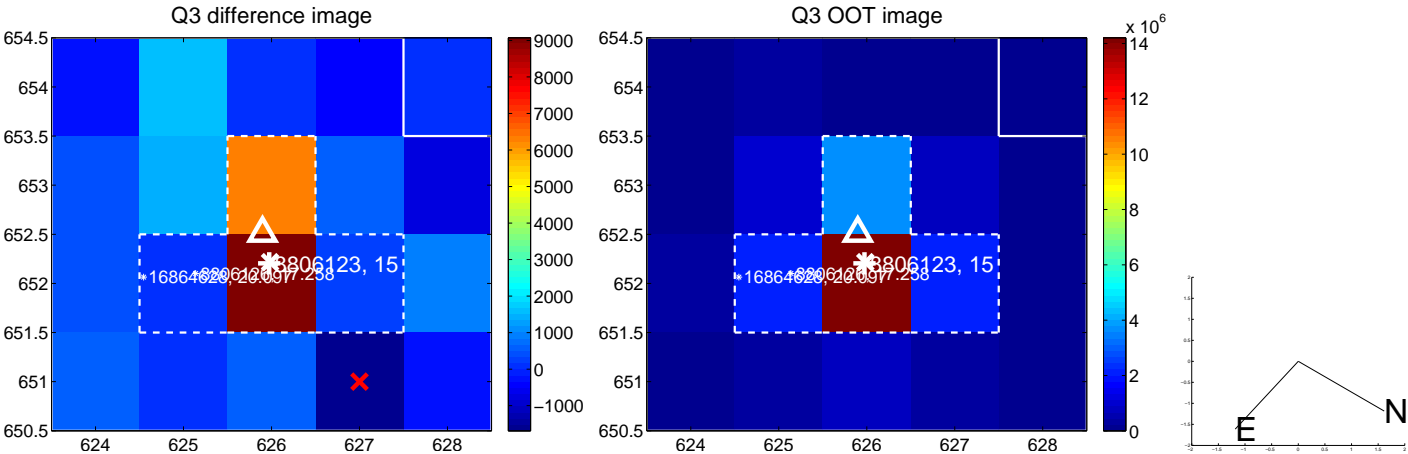
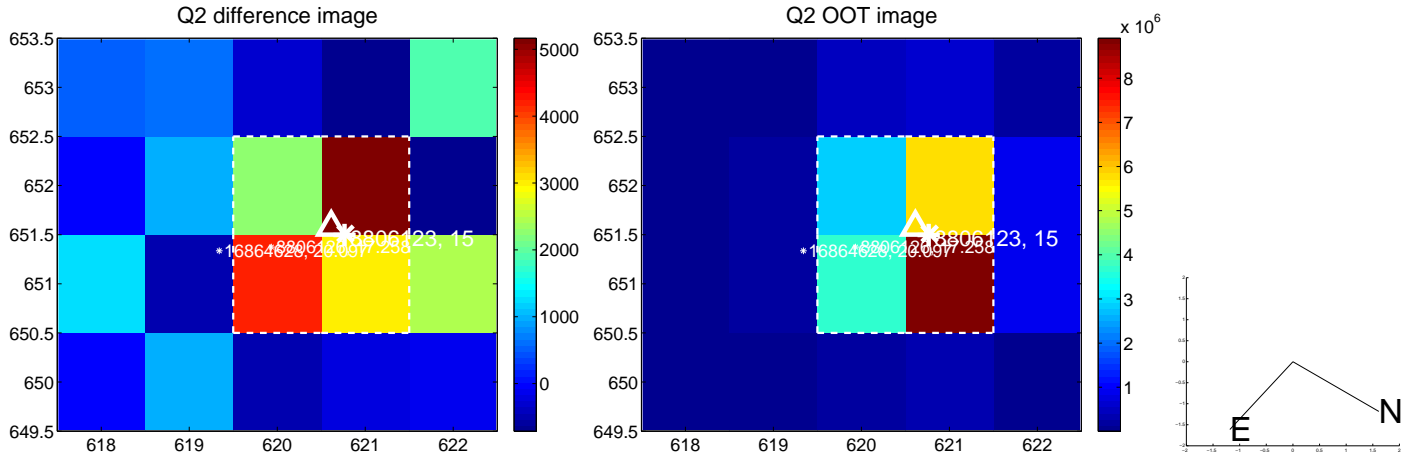
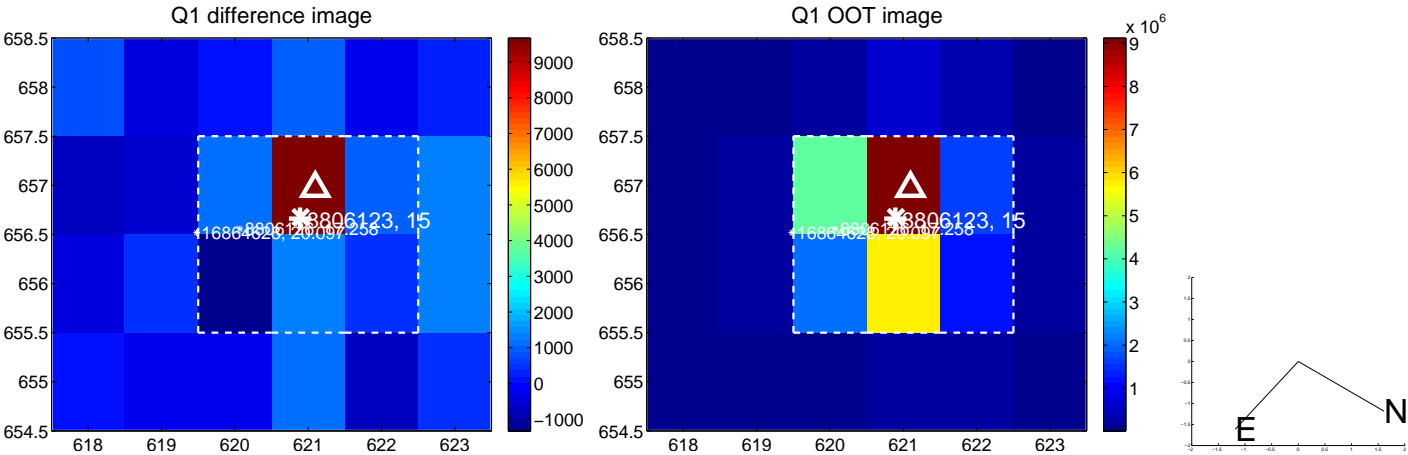
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.187 ± 0.165	1.14	-0.160 ± 0.150	0.096 ± 0.173
PRF-fit source offset from KIC position	0.162 ± 0.167	0.97	-0.118 ± 0.147	0.112 ± 0.175
photometric centroid source offset	0.30 ± 0.43	0.69	0.13 ± 0.40	-0.27 ± 0.44

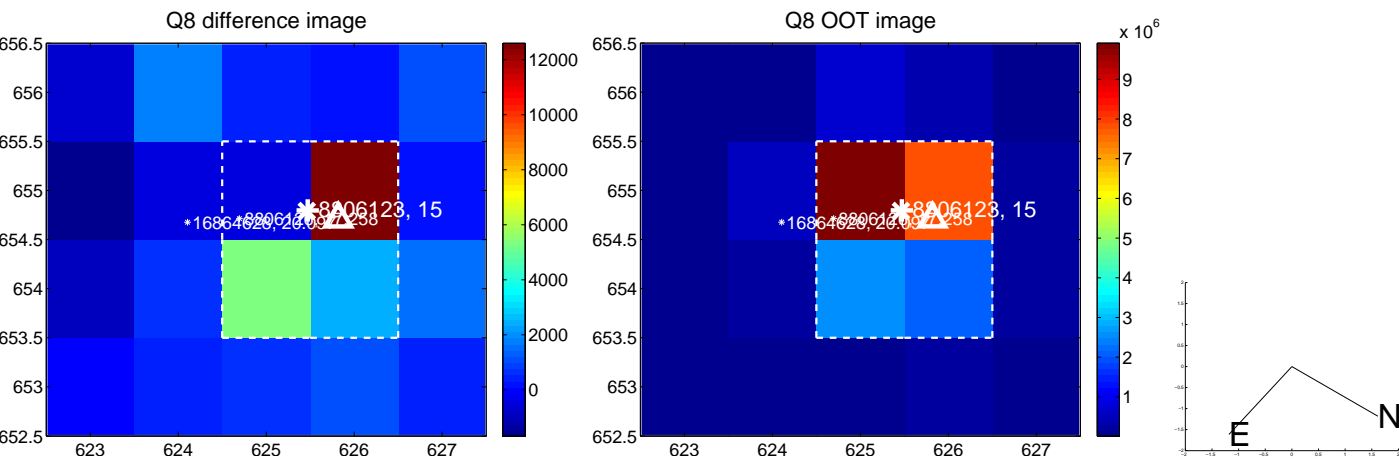
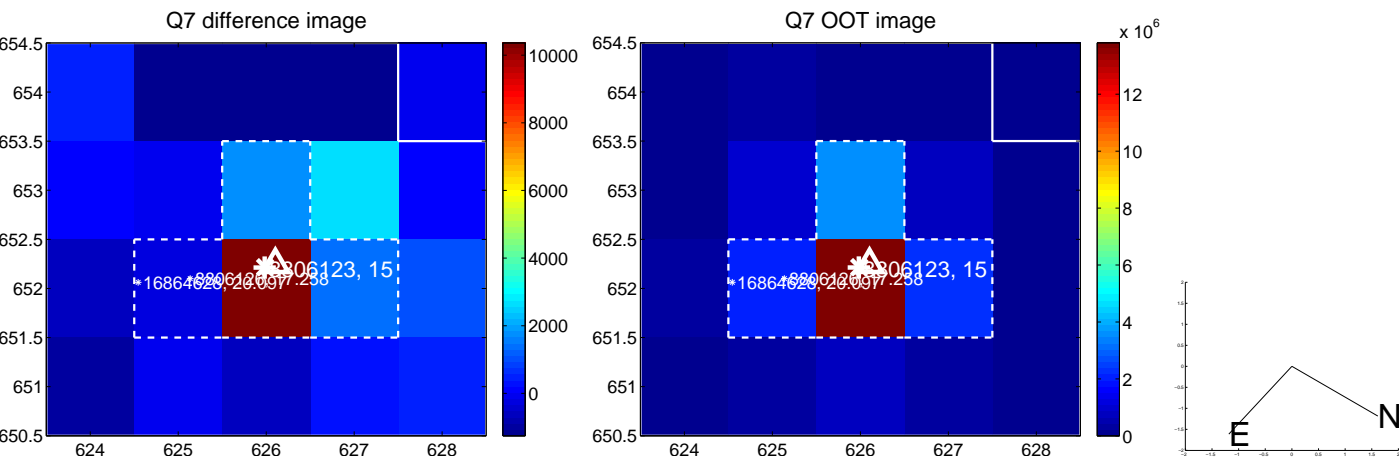
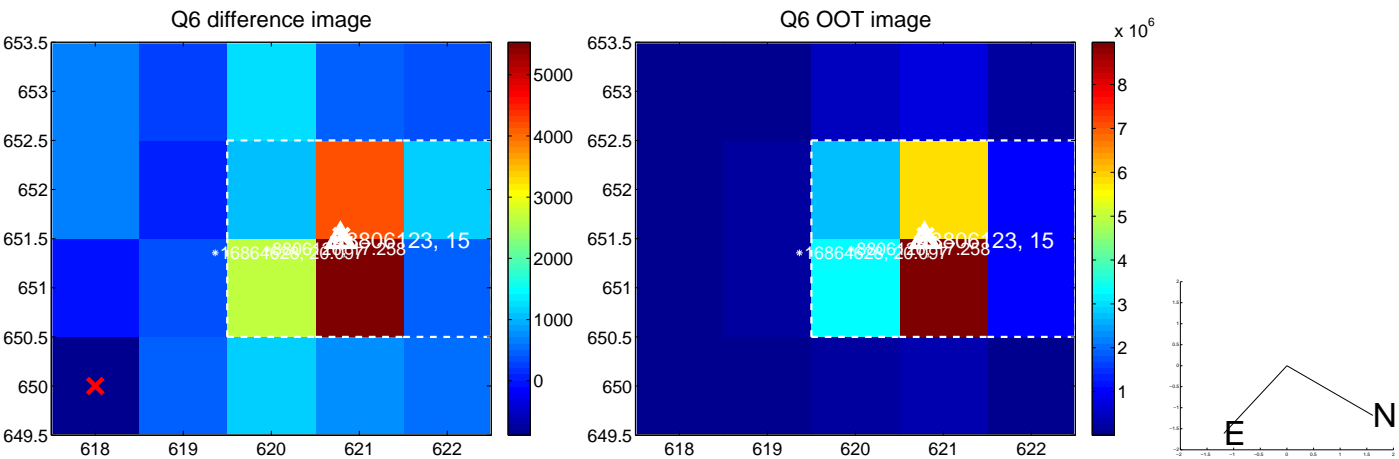
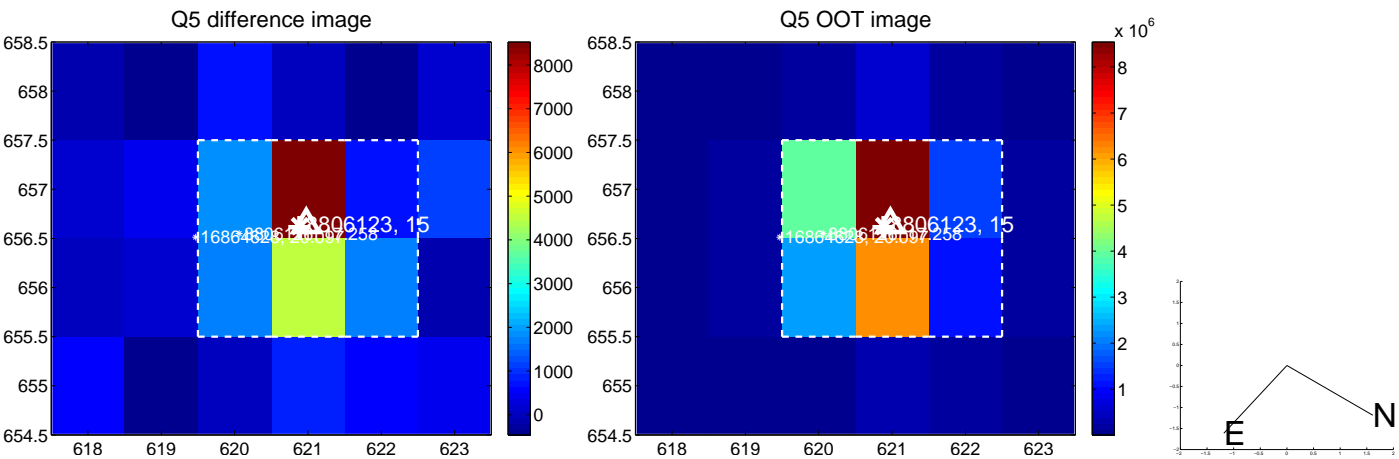


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

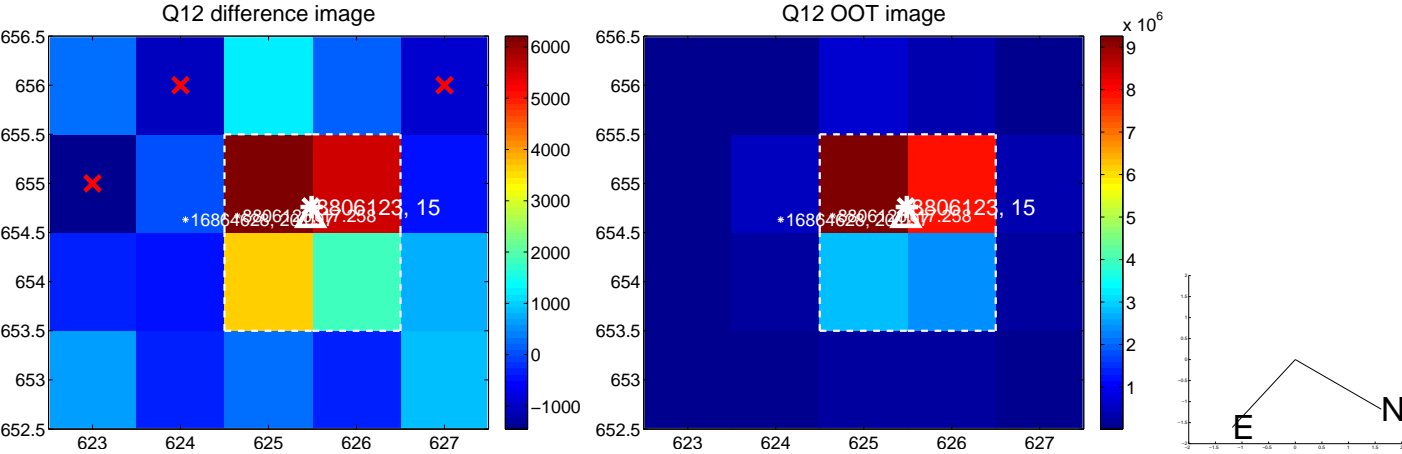
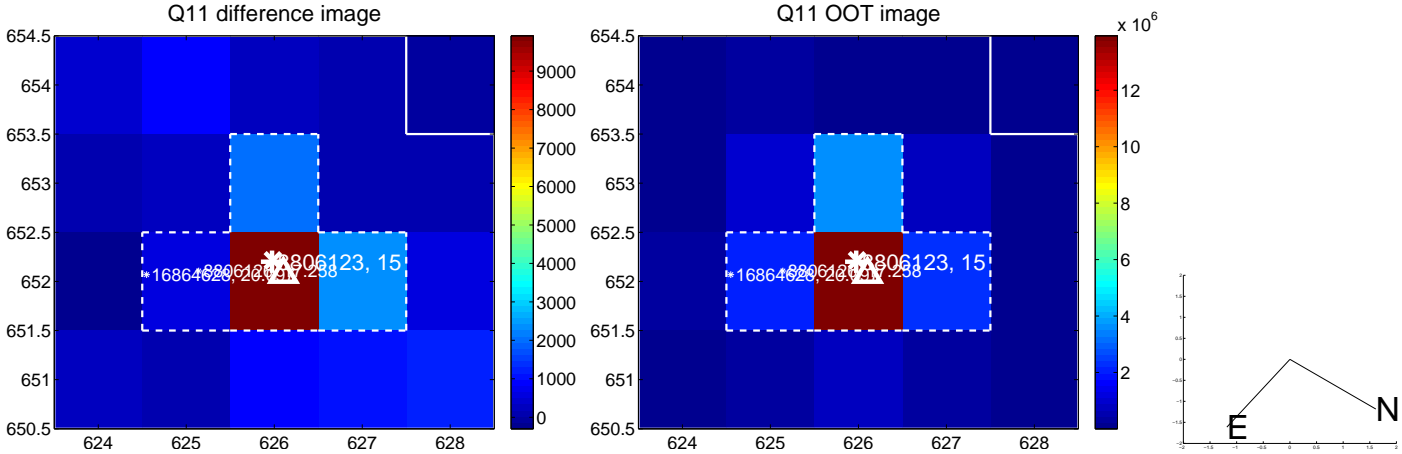
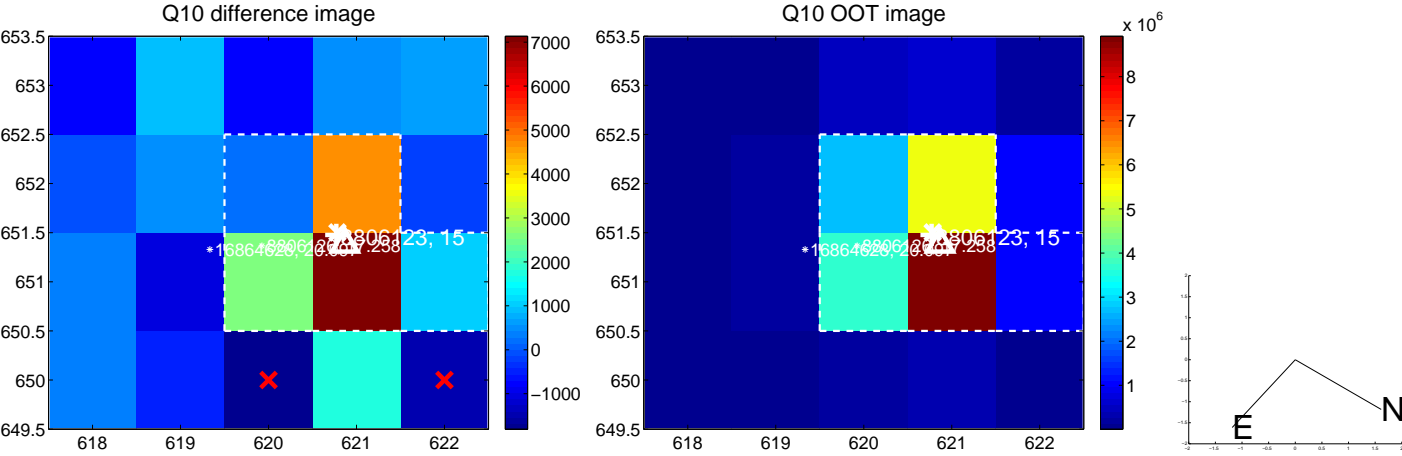
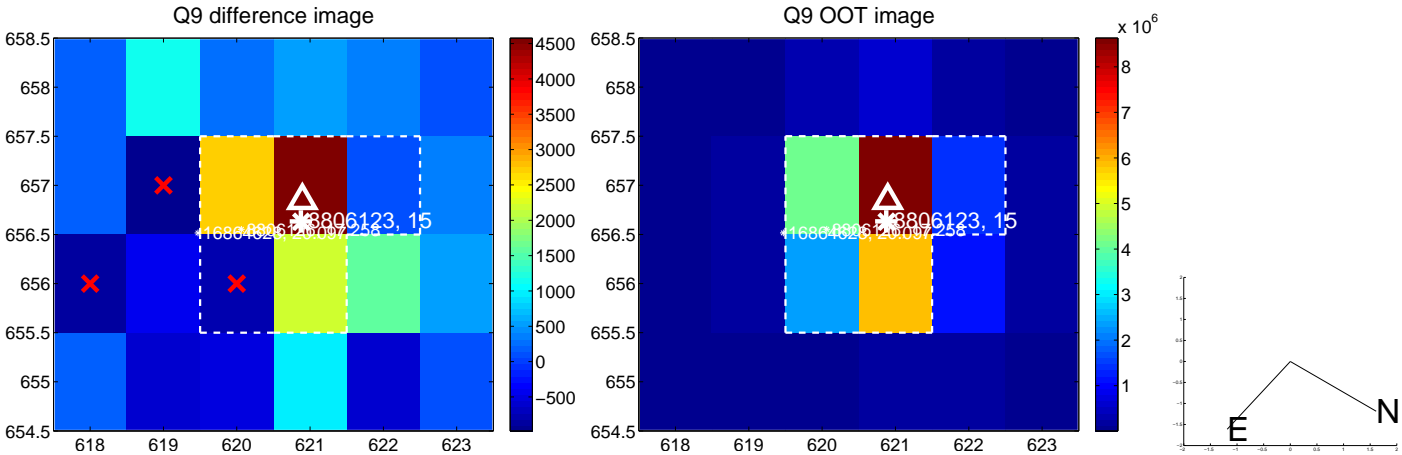
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



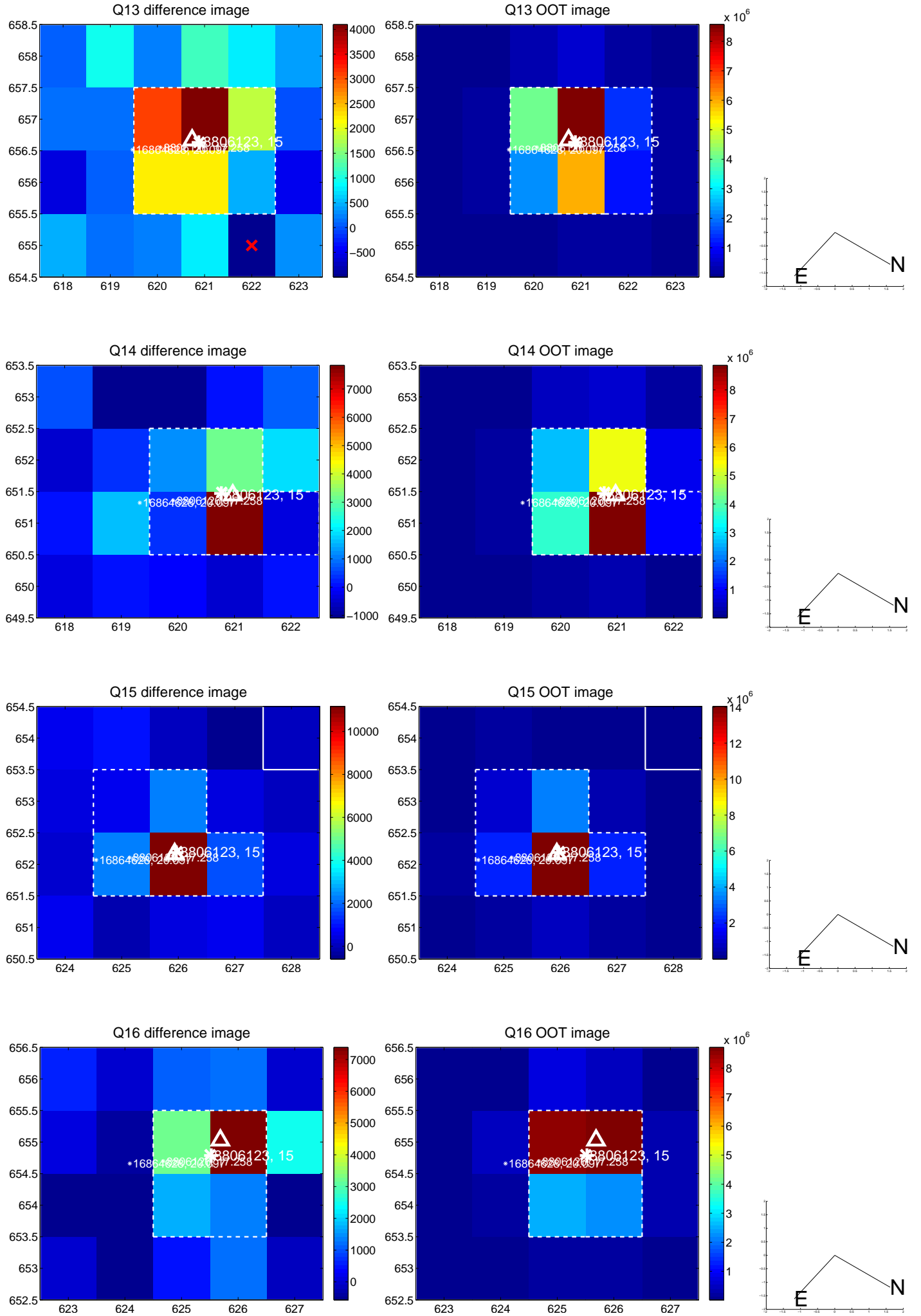
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



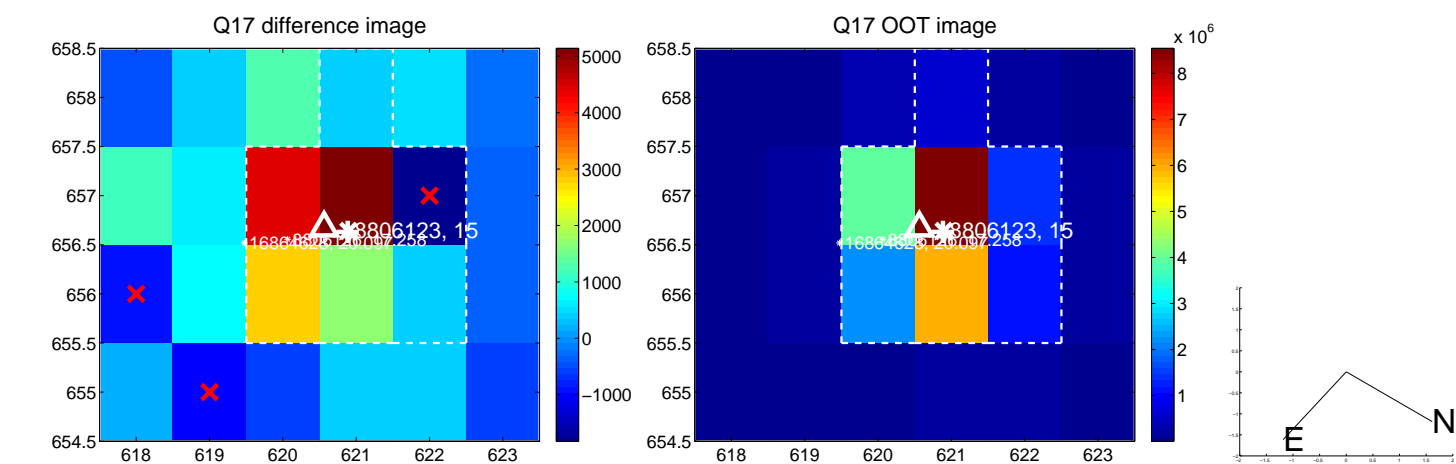
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



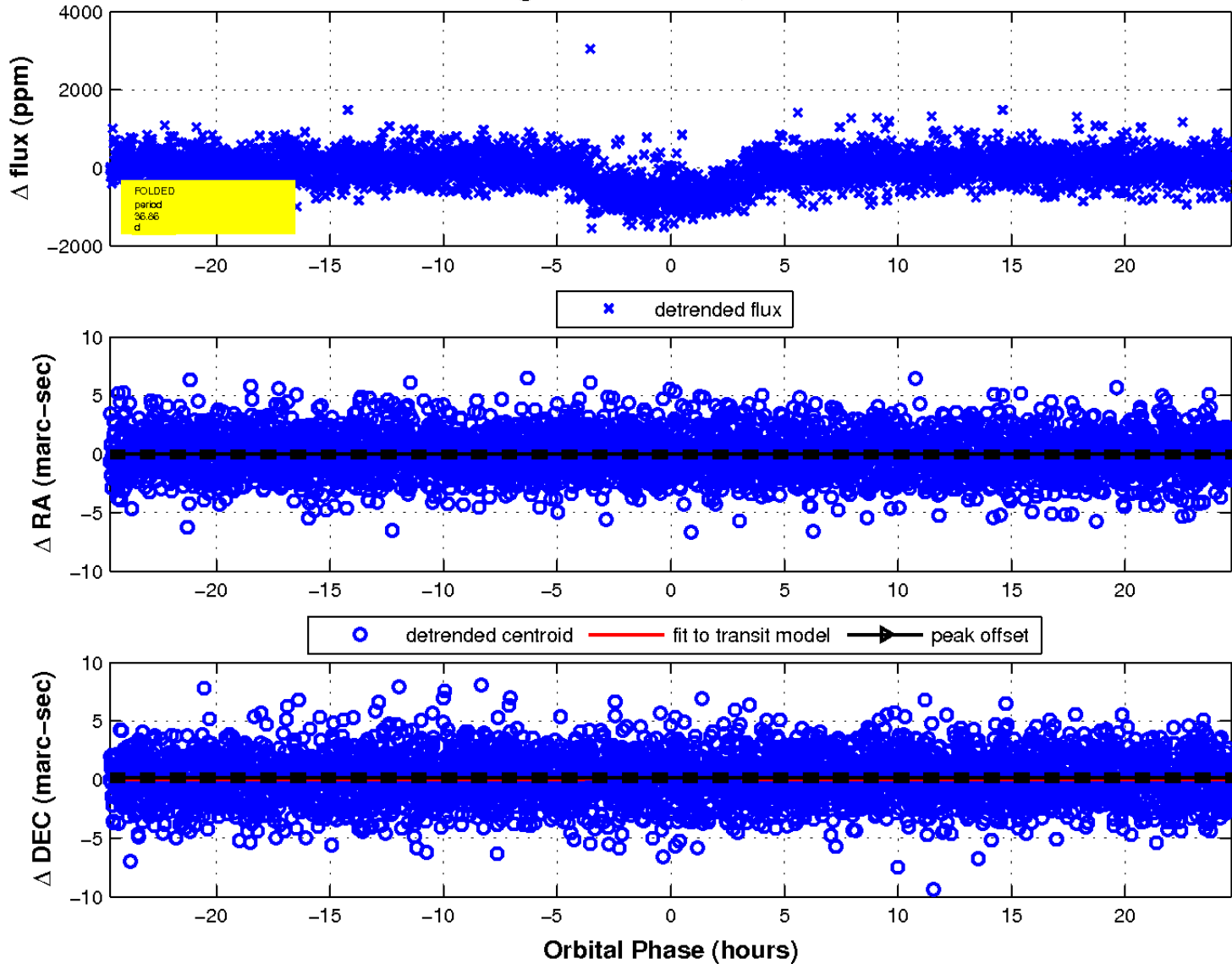
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

