

KIC 008509694

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})
008509694-01	OBS	No	1.847802	132.660492	30.4	3.825	17.2	15.1	3.02	8617	1.93	32603.01
008509694-02	OBS	No	1.847743	131.667833	7.1	3.113	14.3	3.5	3.02	8617	0.93	32604.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008509694-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008509694-02	OBS	FP	0.00	1	0	0	1	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—EPHEM_MATCH

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

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

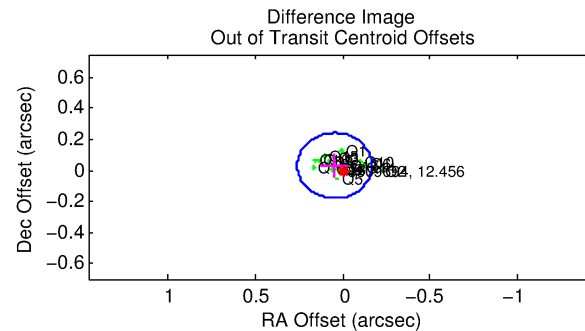
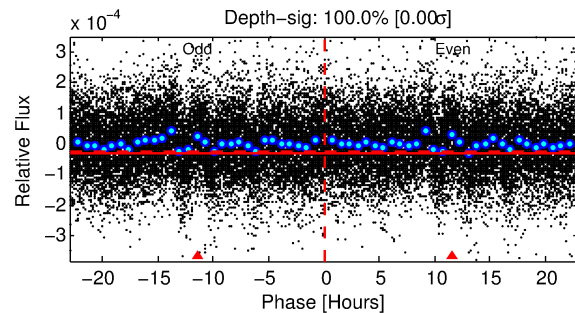
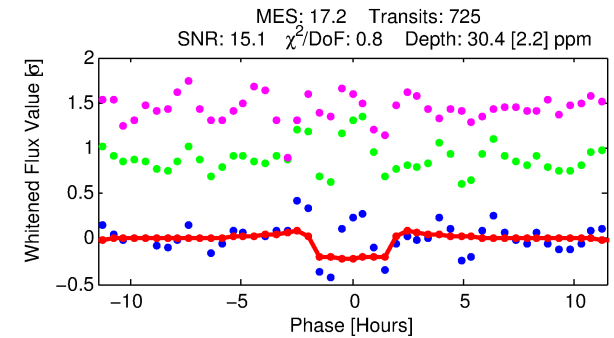
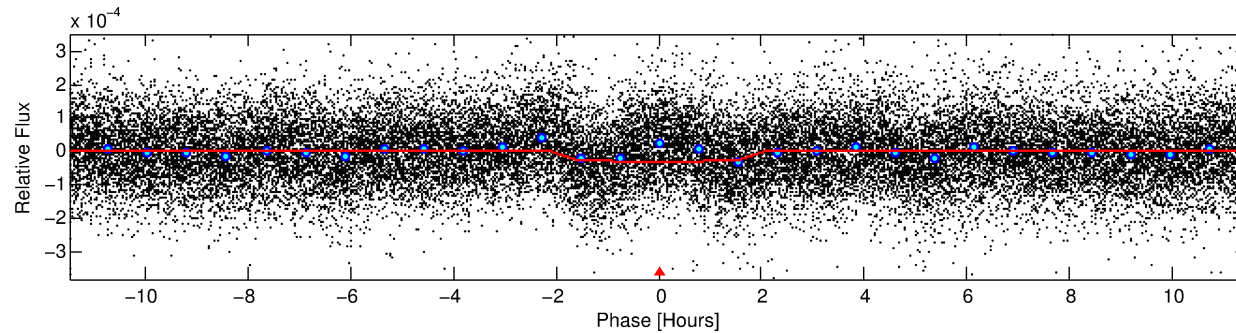
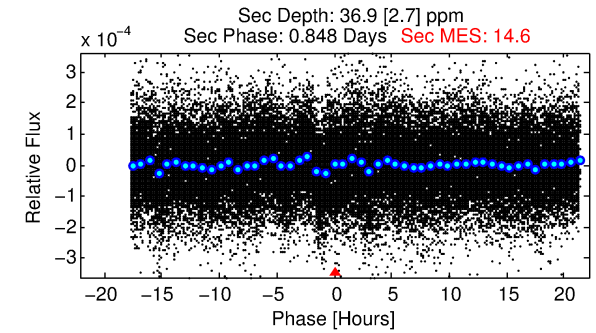
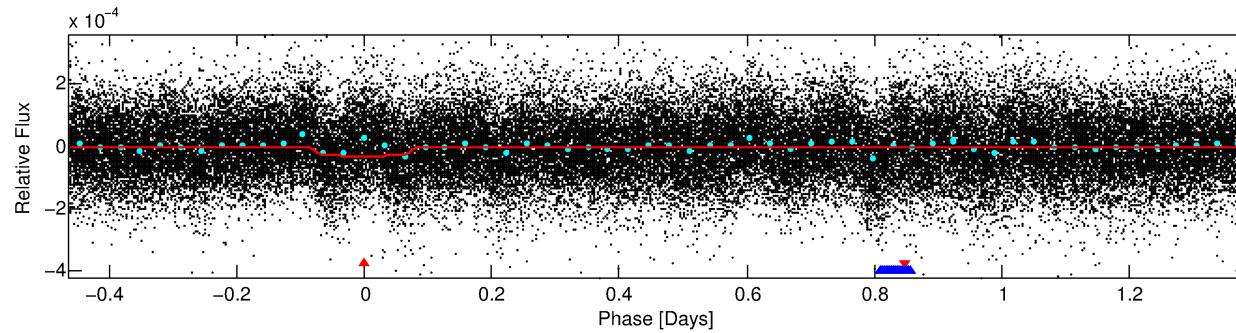
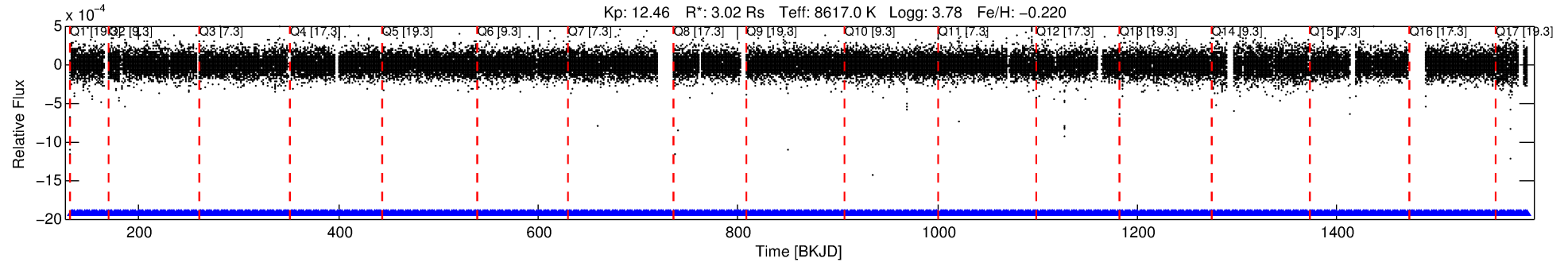
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008509694-01

No Significant Match Found

DV One-Page Summary

KIC: 8509694 Candidate: 1 of 2 Period: 1.848 d



DV Fit Results:

Period = 1.84780 [0.00001] d
Epoch = 132.6605 [0.0021] BKJD
Rp/R* = 0.0058 [0.0008]
a/R* = 1.90 [1.29]
b = 0.90 [0.20]
Seff = 32603.01 [22231.82]
Teq = 3426 [584] K
Rp = 1.93 [0.84] Re
a = 0.0371 [0.0151] AU
Ag = 7.55 [5.46] [1.20σ]
Teffp = 8781 [738] K [5.69σ]

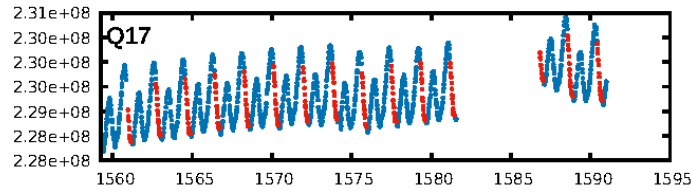
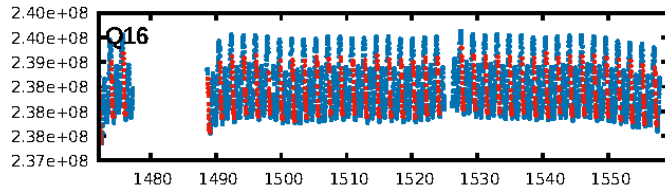
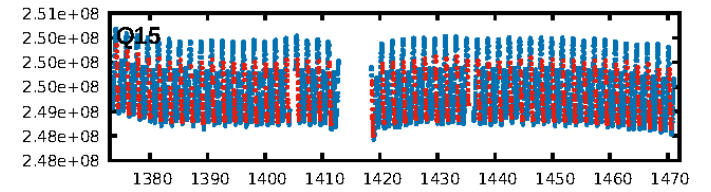
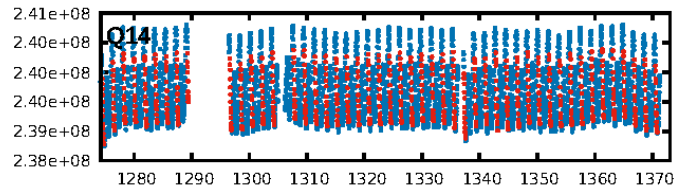
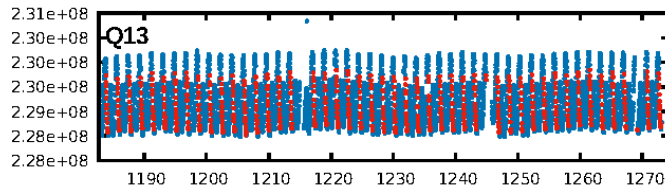
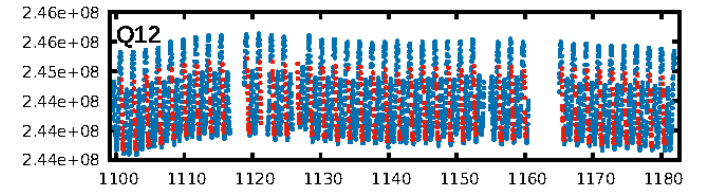
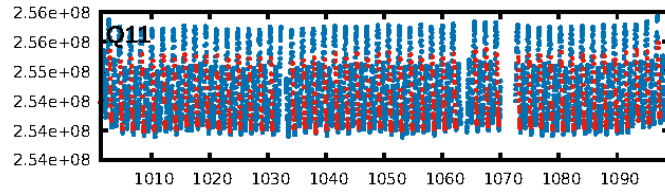
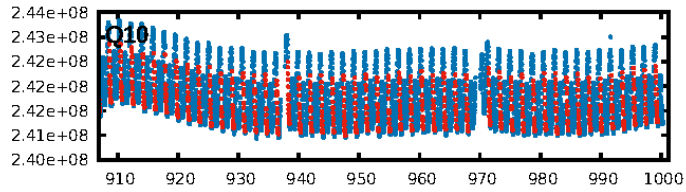
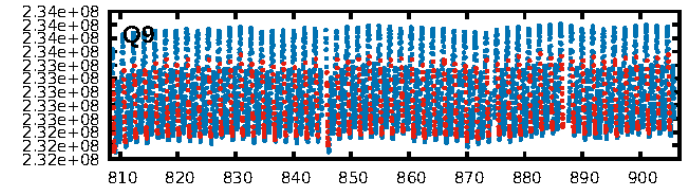
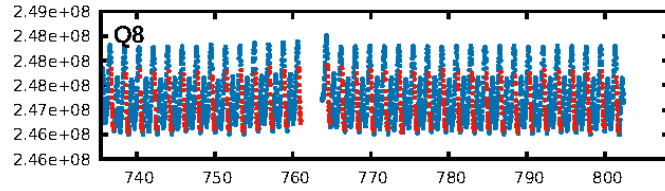
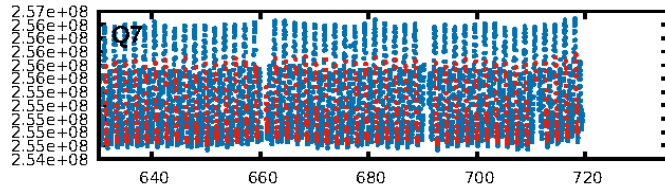
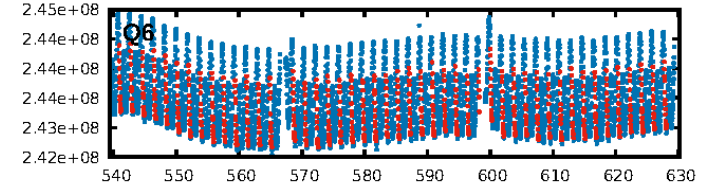
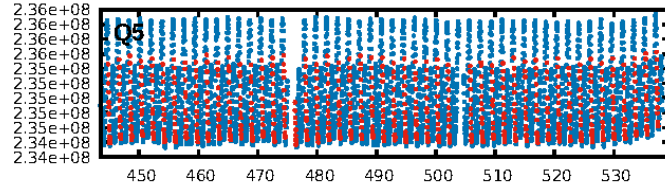
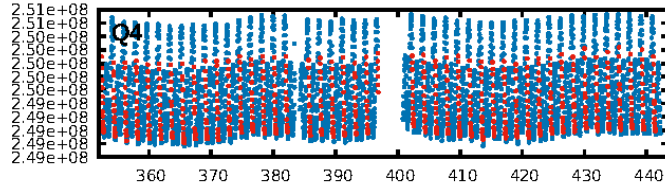
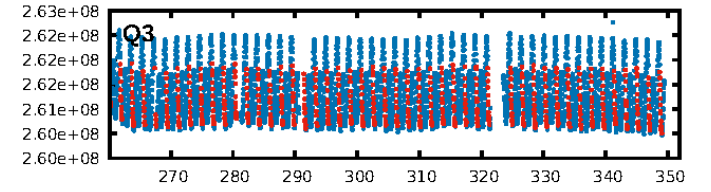
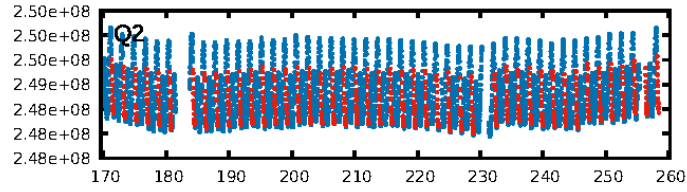
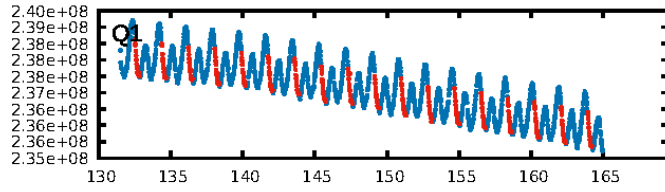
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.56e-56
RollingBand-fgt: 1.00 [691/691]
GhostDiagnostic-chr: 0.6109
Centroid-sig: 0.6%
Centroid-so: 0.720 arcsec [1.43σ]
OotOffset-rm: 0.056 arcsec [0.80σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.079 arcsec [1.14σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

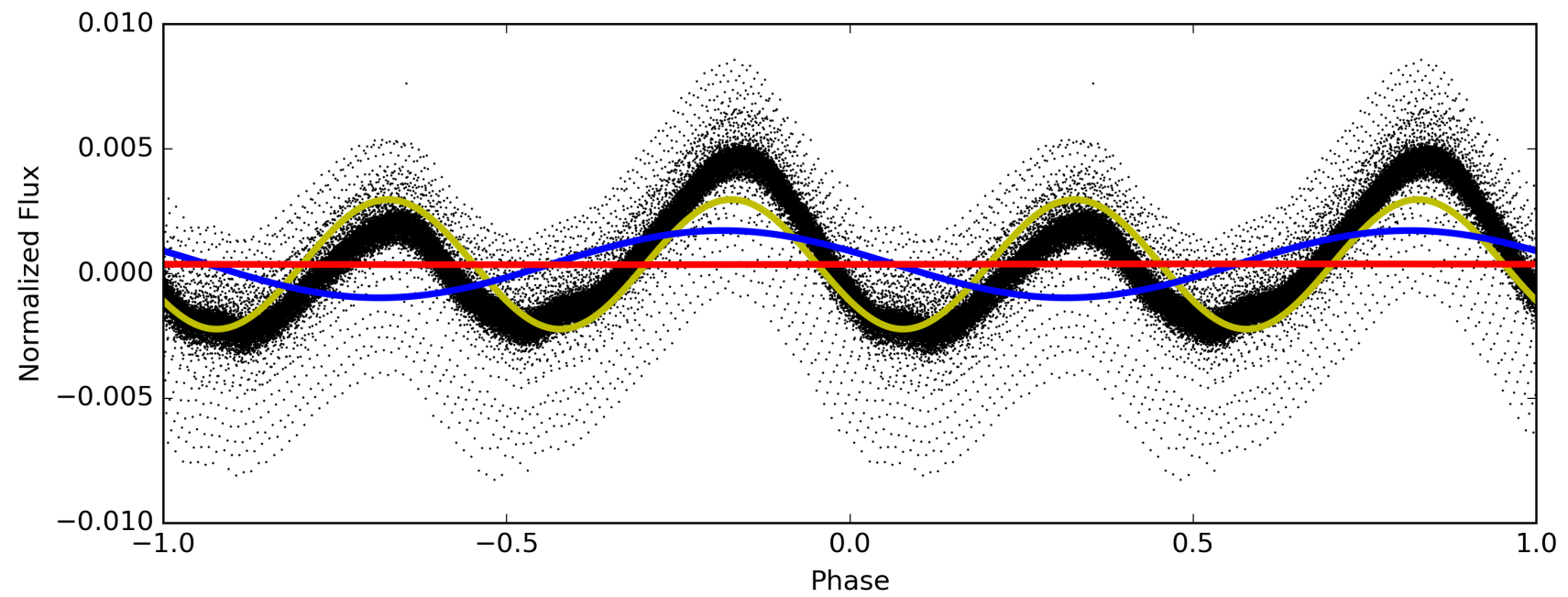
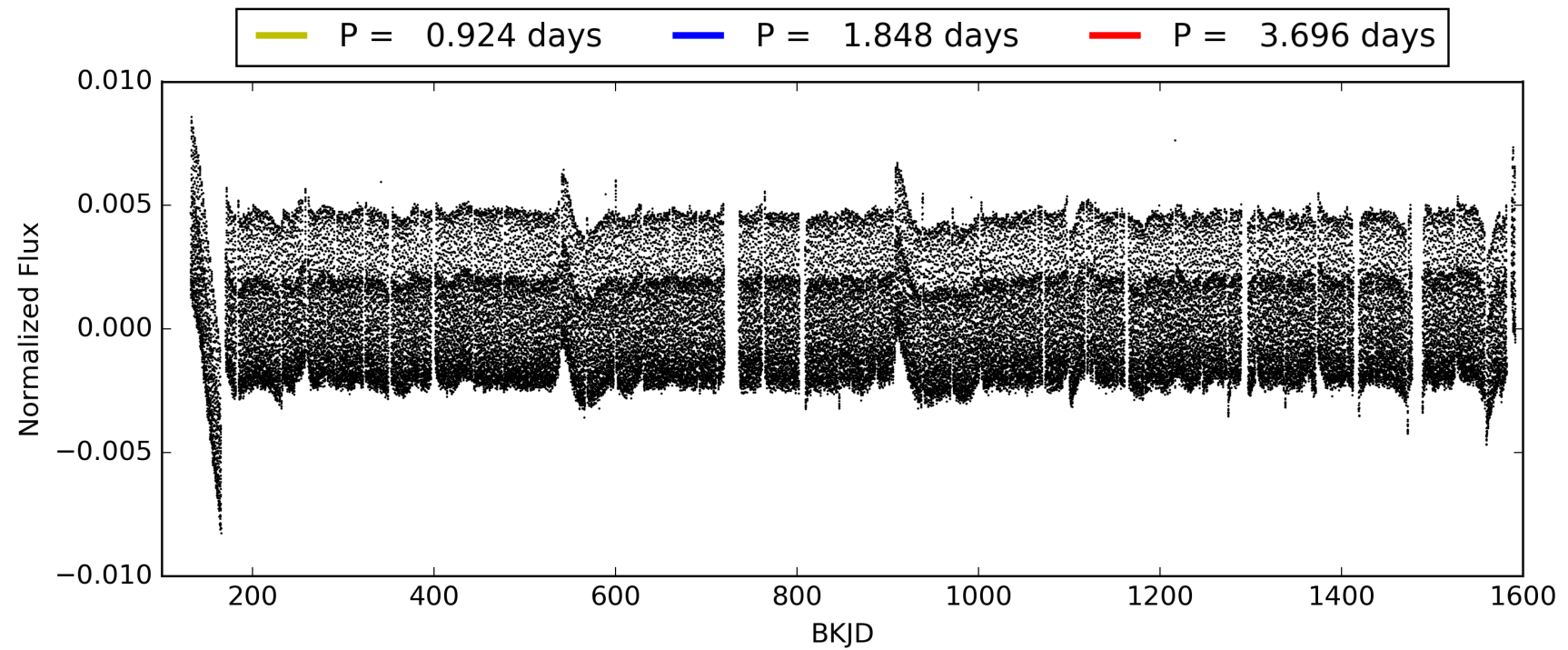
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:12:27 Z

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

TCE 008509694-01, PDC Light Curves

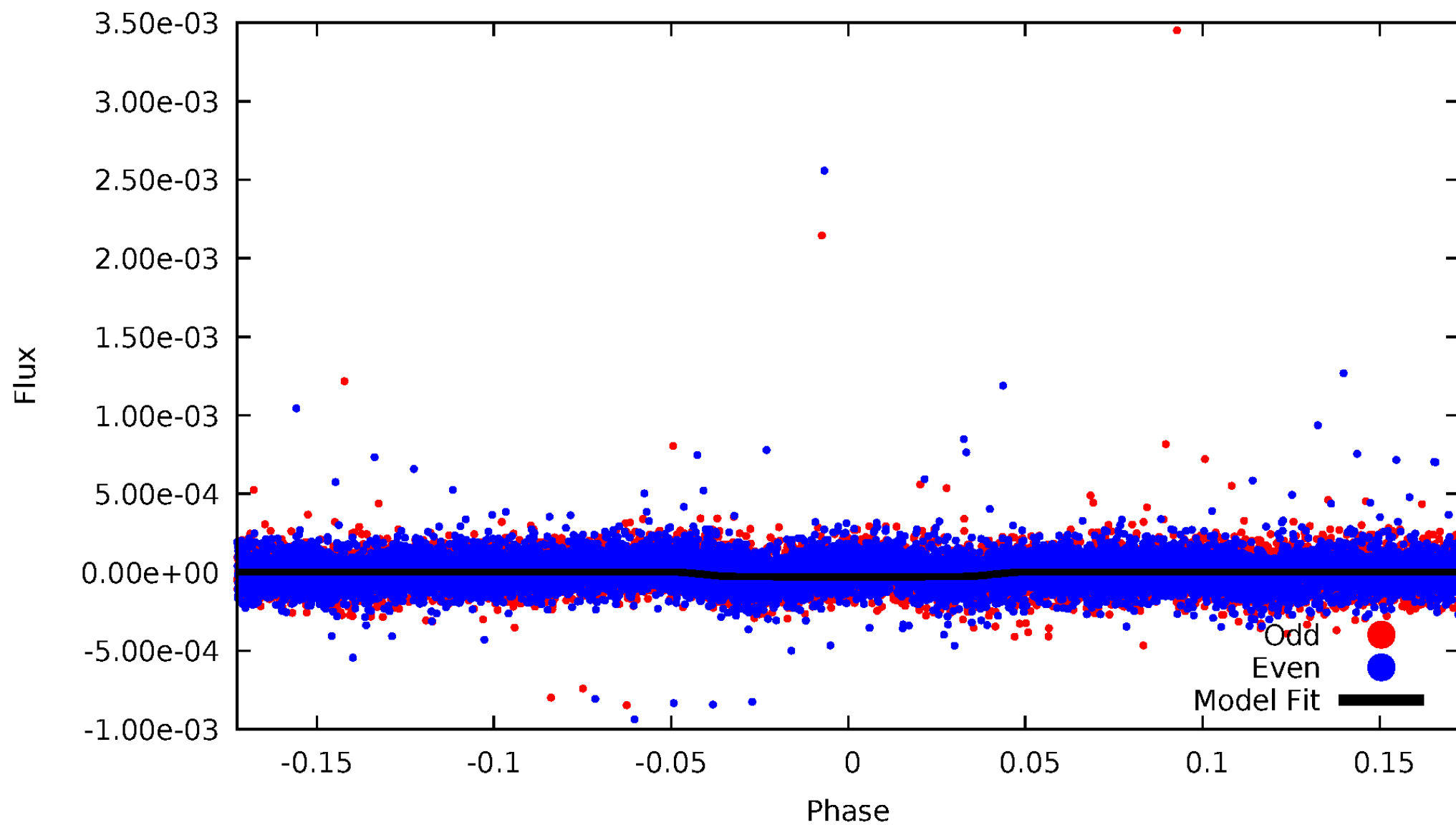


TCE 008509694-01



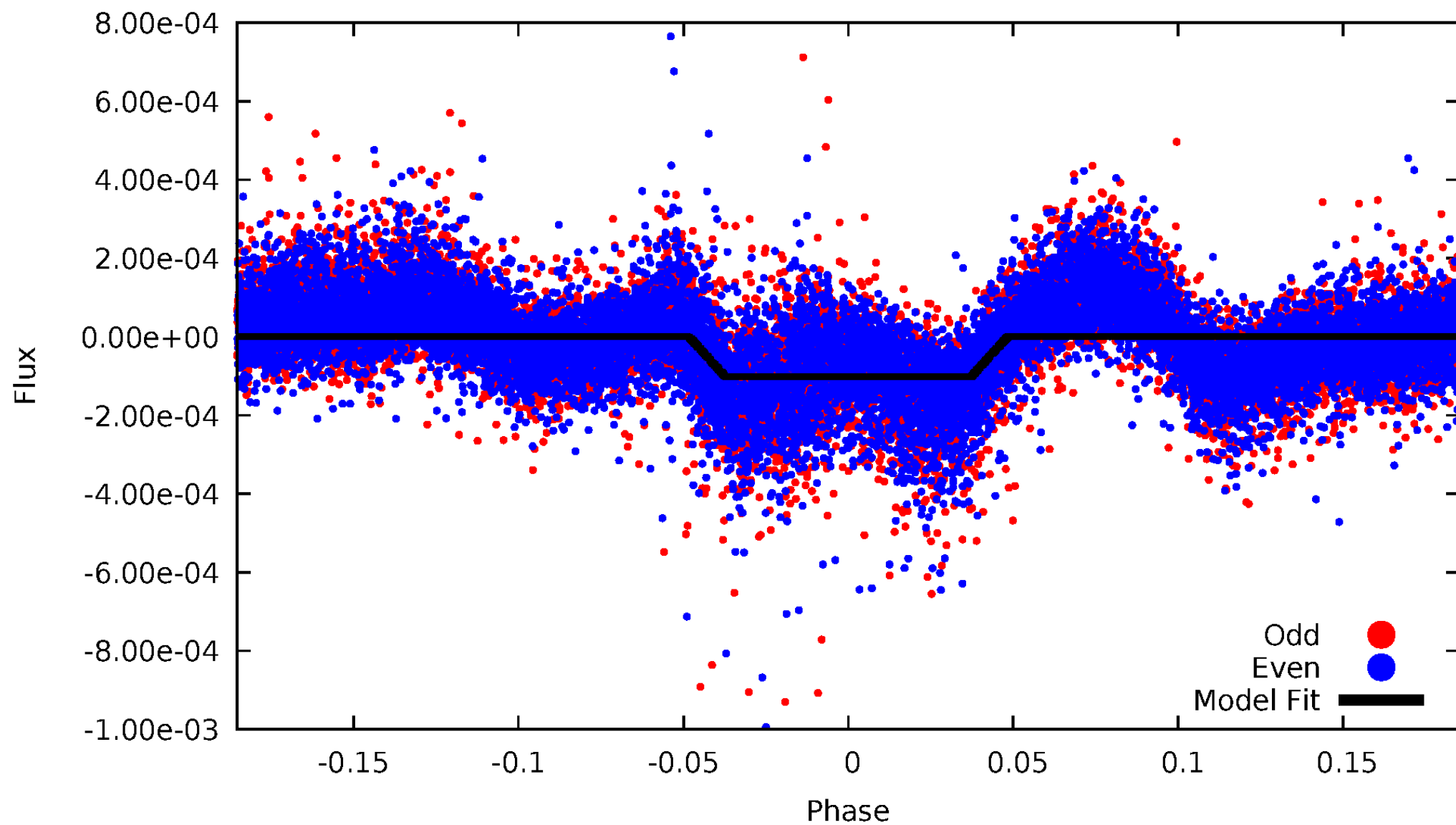
DV Odd/Even

TCE 008509694-01



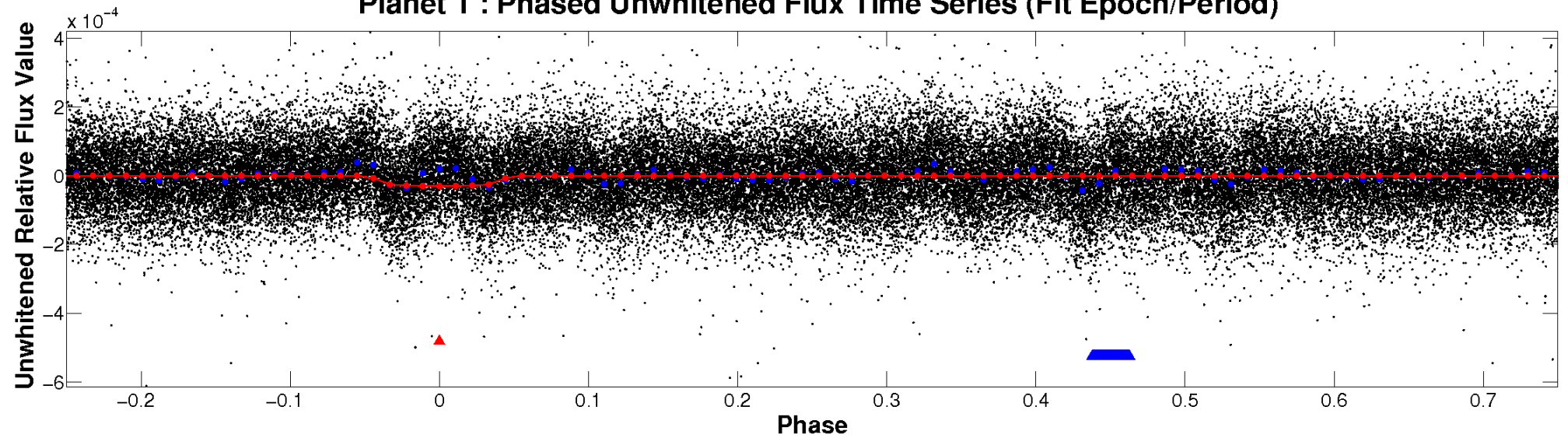
ALT Odd/Even

TCE 008509694-01

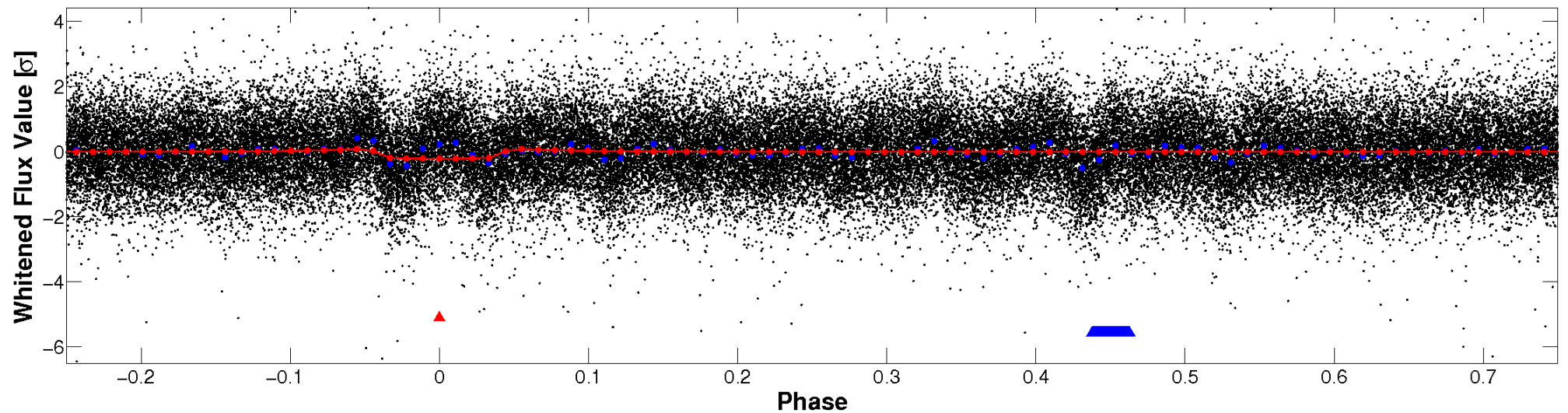


Non-Whitened Vs. Whitened Light Curve

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

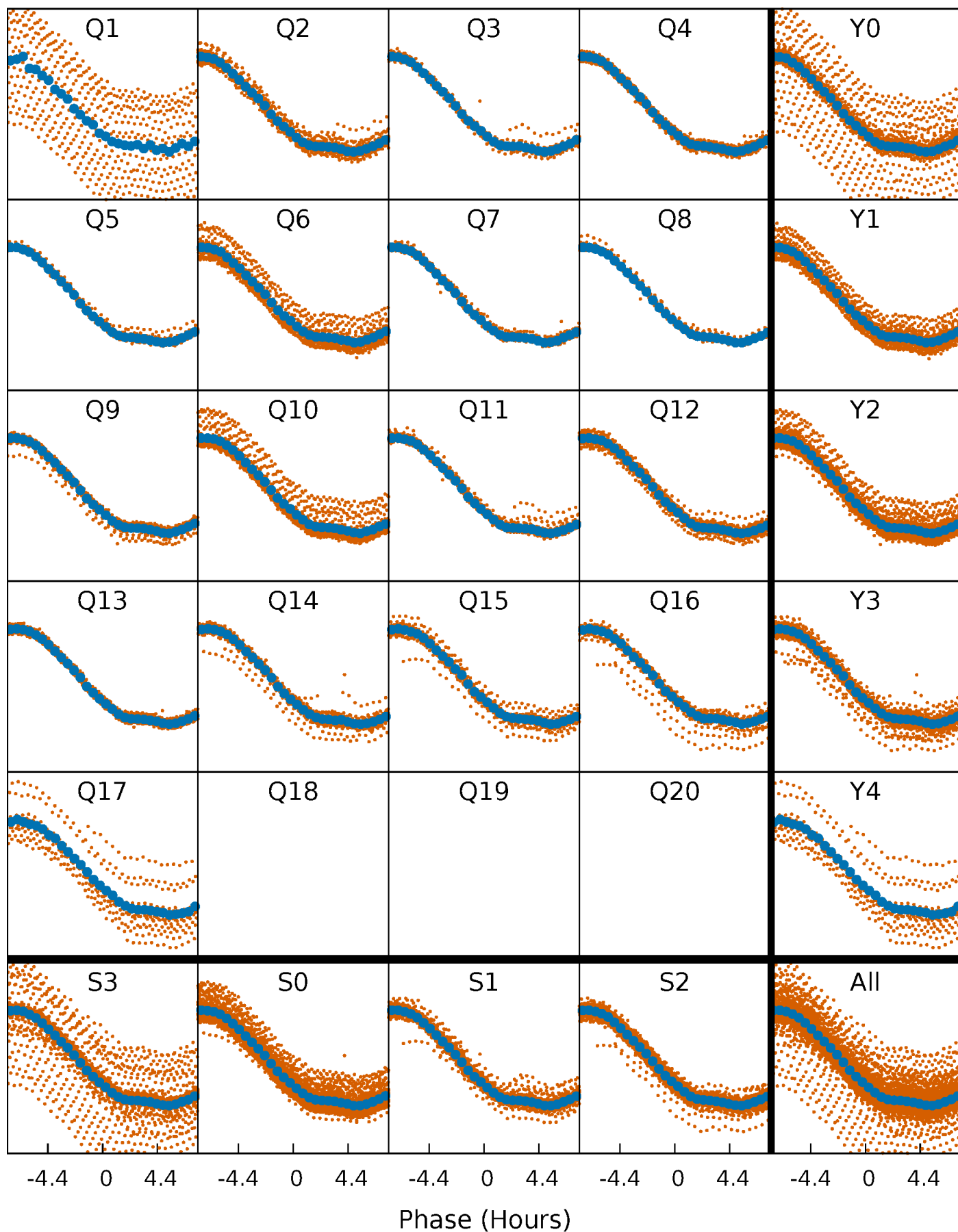


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



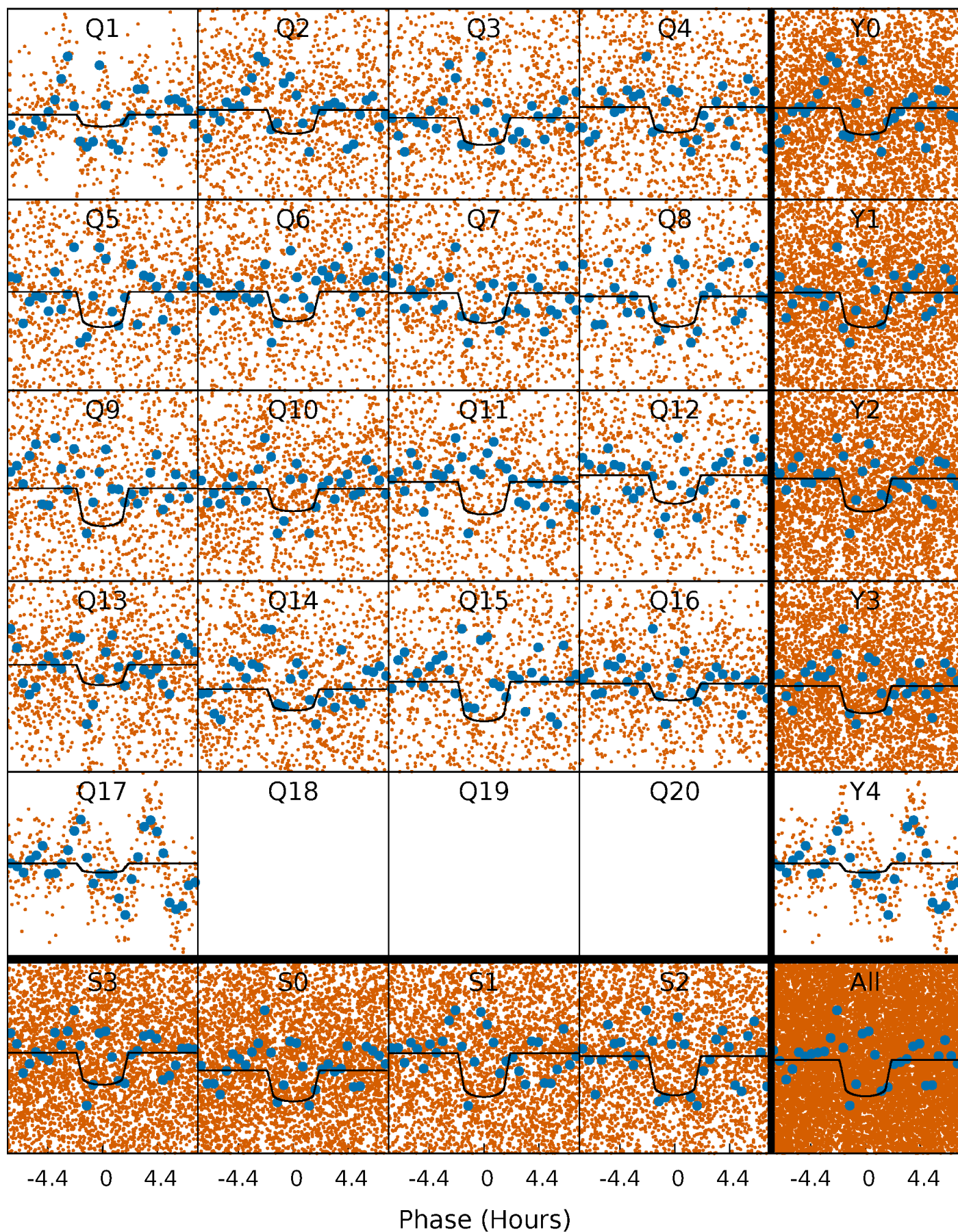
PDC Quarter-Phased Transit Curves

TCE 008509694-01 P= 1.847802 Days $T_0=132.660492$ (BKJD)



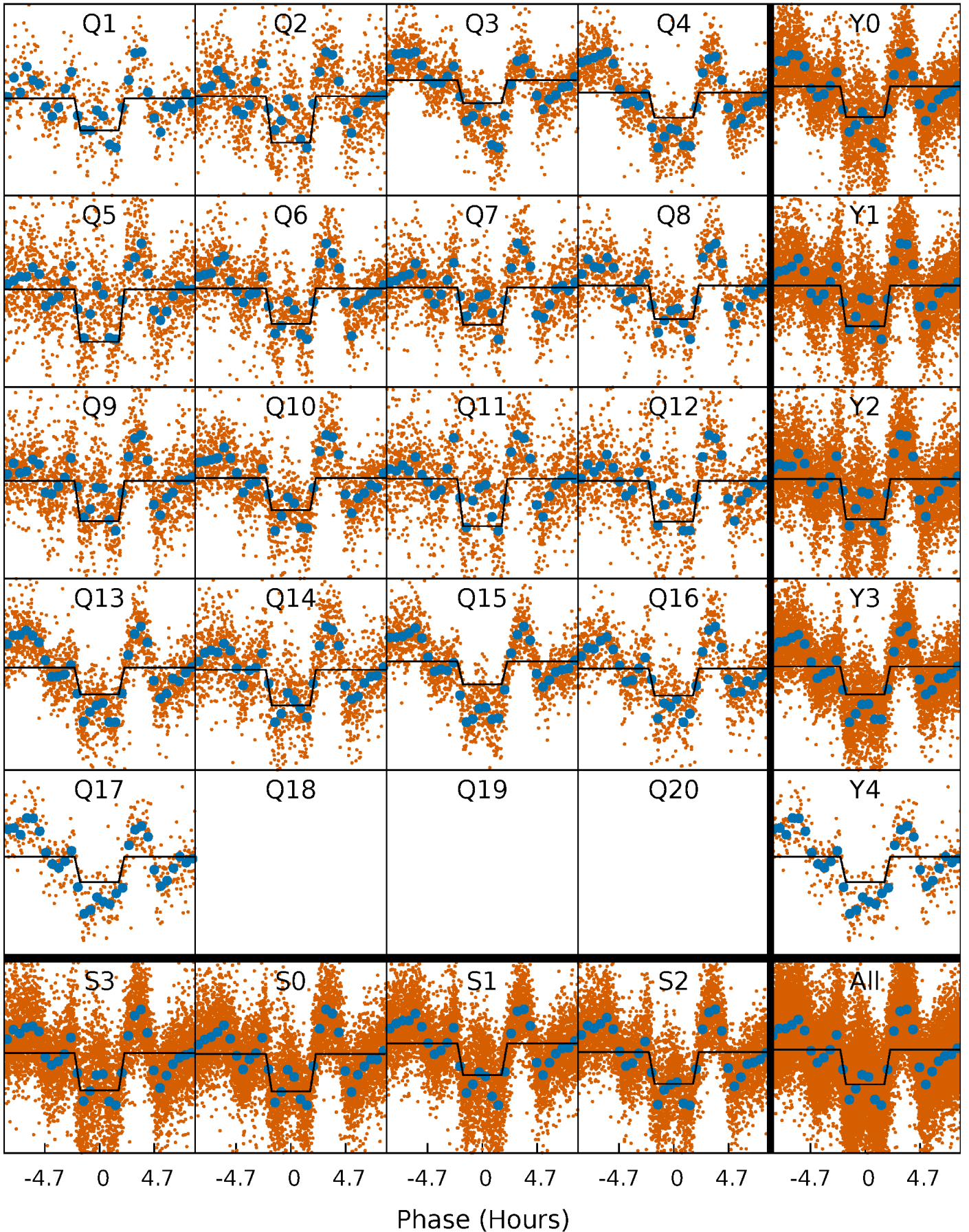
DV Quarter-Phased Transit Curves

TCE 008509694-01 P= 1.847802 Days $T_0=132.660492$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

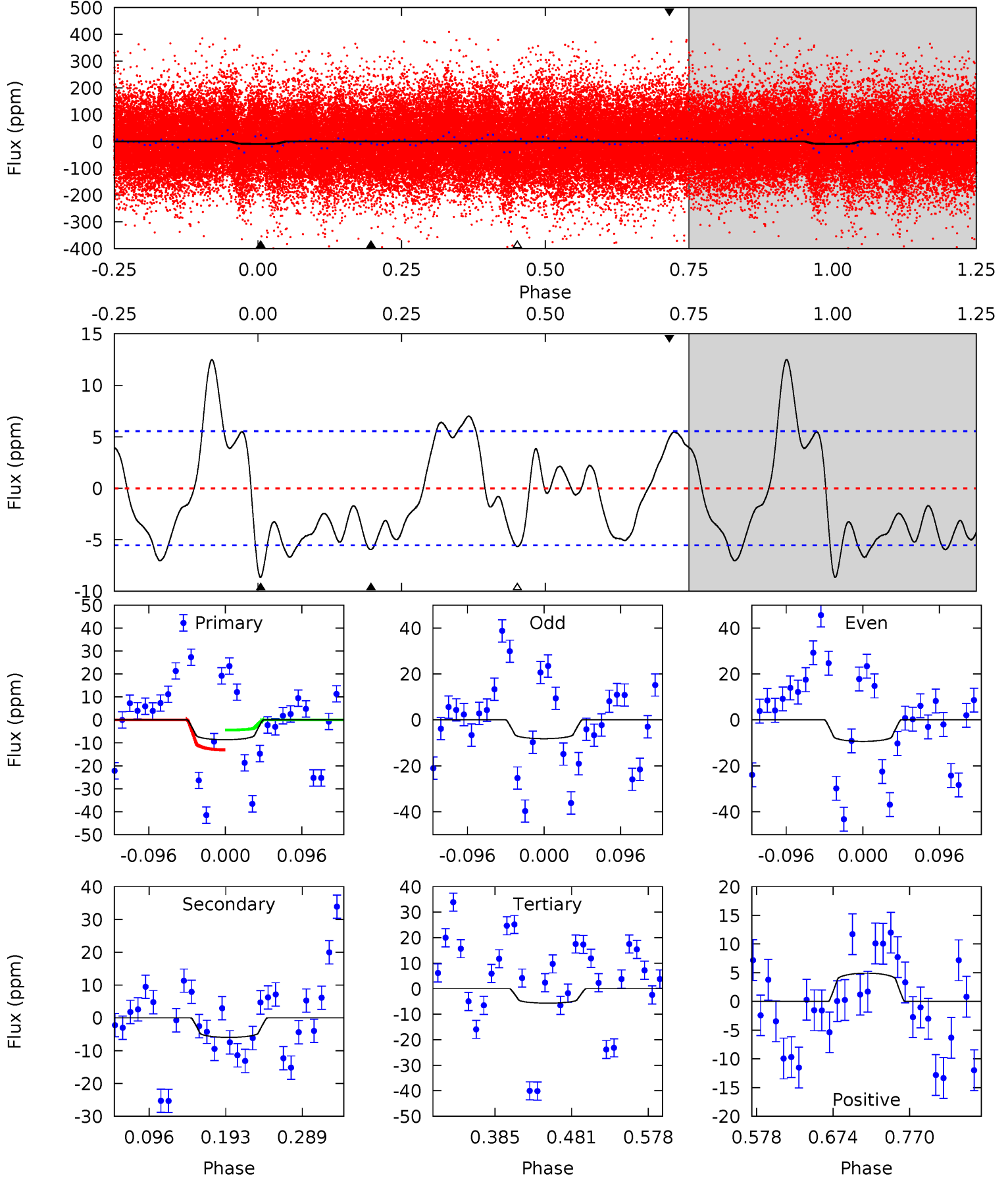
TCE 008509694-01 P= 1.847842 Days $T_0=132.652200$ (BKJD)



DV Model-Shift Uniqueness Test

008509694-01, P = 1.847802 Days, E = 130.812690 Days

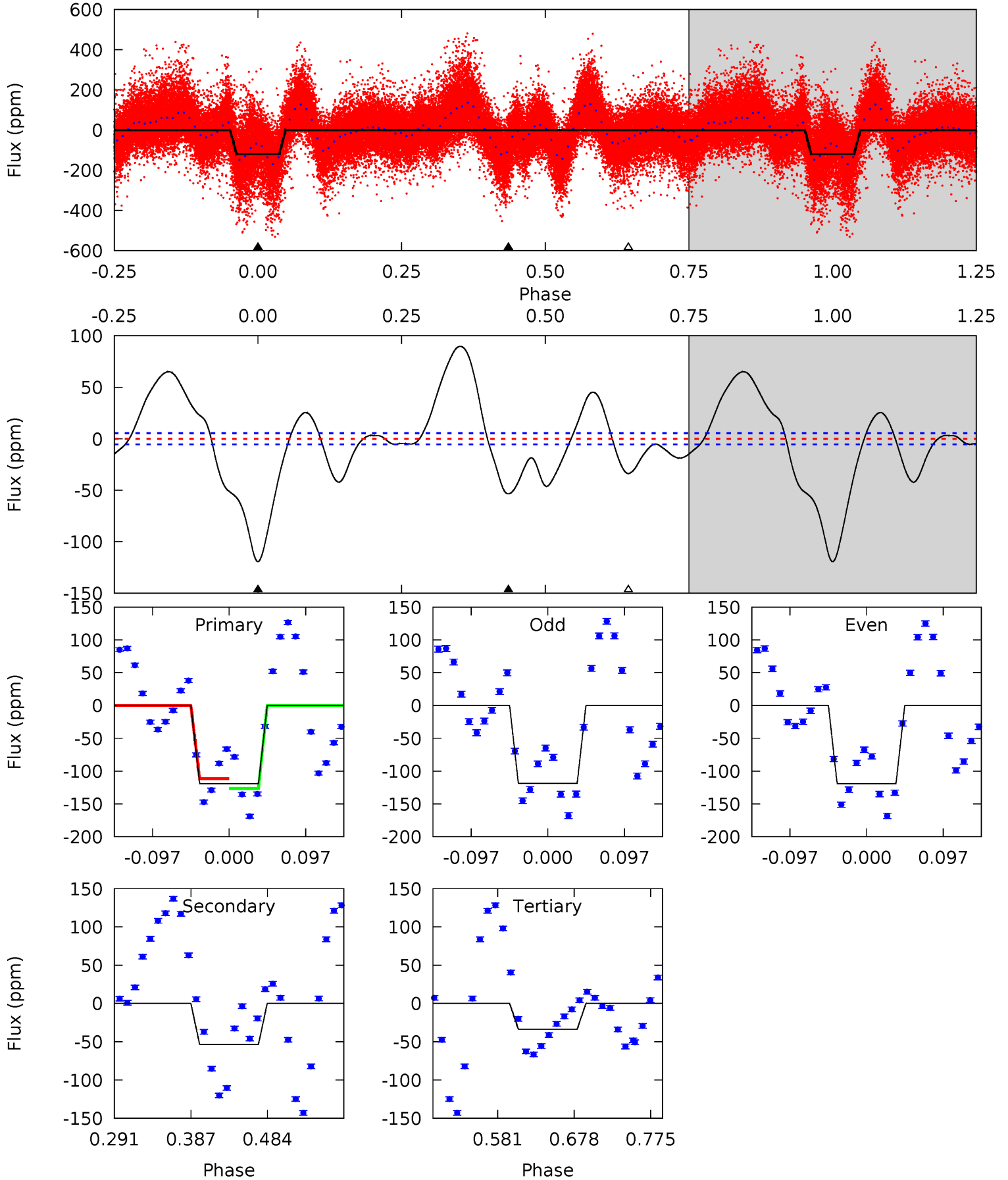
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.13	4.91	4.67	4.06	4.57	1.66	3.16	2.46	3.06	0.24	0.84	0.49	0.74	0.59	3.66



Alt Model-Shift Uniqueness Test

008509694-01, P = 1.847842 Days, E = 130.804358 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
101.0	45.3	28.6	0	4.57	1.66	24.8	72.5	101.0	16.7	45.3	0.28	1.13	0.43	6.18



Stellar Parameters For KIC 008509694

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8617^{+268}_{-358}	$3.780^{+0.392}_{-0.168}$	$-0.220^{+0.450}_{-0.300}$	$3.018^{+1.016}_{-1.242}$	$2.002^{+0.434}_{-0.434}$	$0.102^{+0.333}_{-0.046}$
	+3%/-4%	+10%/-4%	+205%/-136%	+34%/-41%	+22%/-22%	+325%/-45%
Source	KIC0	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 008509694-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-6 ± 1	$1.83^{+0.47}_{-0.48}$	4684^{+437}_{-529}	5077^{+494}_{-557}	$1.346^{+0.955}_{-0.534}$
Alt.	-53 ± 1	$3.20^{+0.70}_{-0.73}$	4666^{+477}_{-548}	6926^{+445}_{-375}	$4.031^{+2.591}_{-1.263}$

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

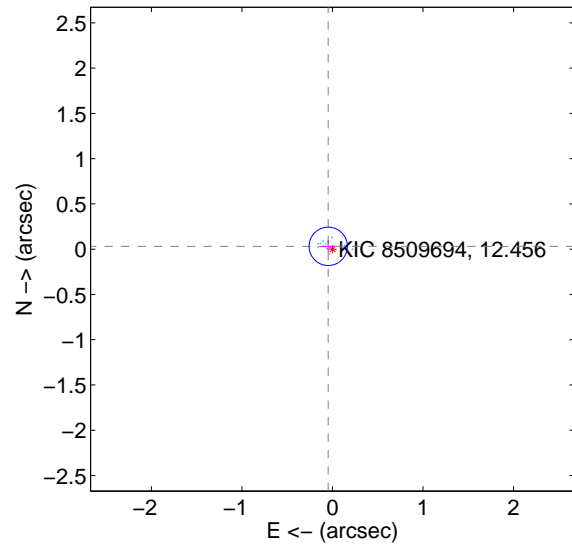
Supplemental centroid analysis for 008509694-01. Kepler magnitude: 12.46. Transit SNR 15.13

There are 17 quarters with good PRF difference image offsets

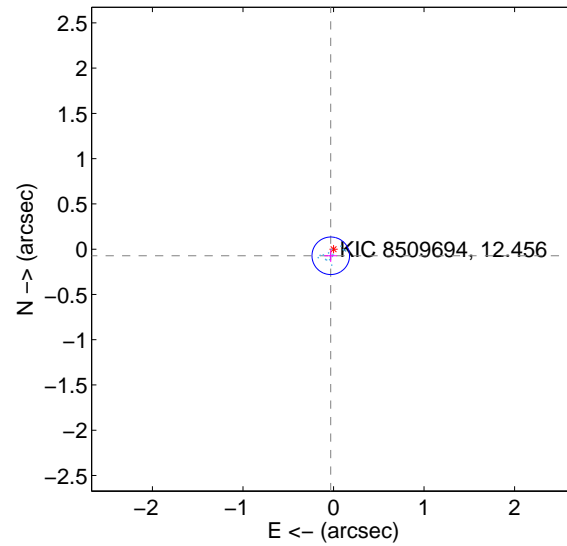
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.056 ± 0.071	0.80	0.047 ± 0.071	0.031 ± 0.067
PRF-fit source offset from KIC position	0.079 ± 0.069	1.14	0.030 ± 0.070	-0.073 ± 0.068
photometric centroid source offset	0.72 ± 0.50	1.43	-0.44 ± 0.52	0.57 ± 0.49

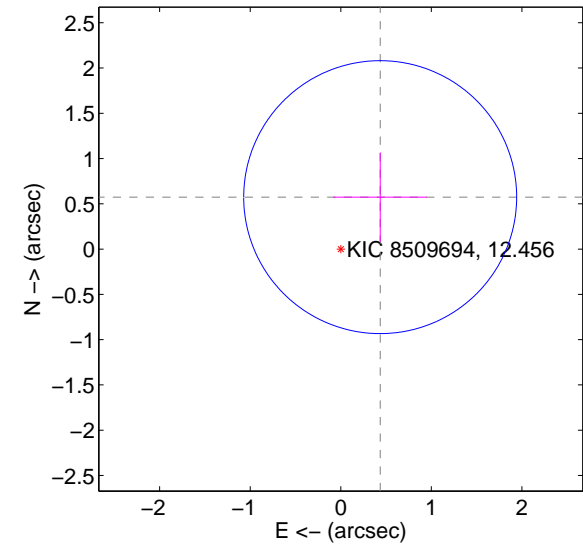
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

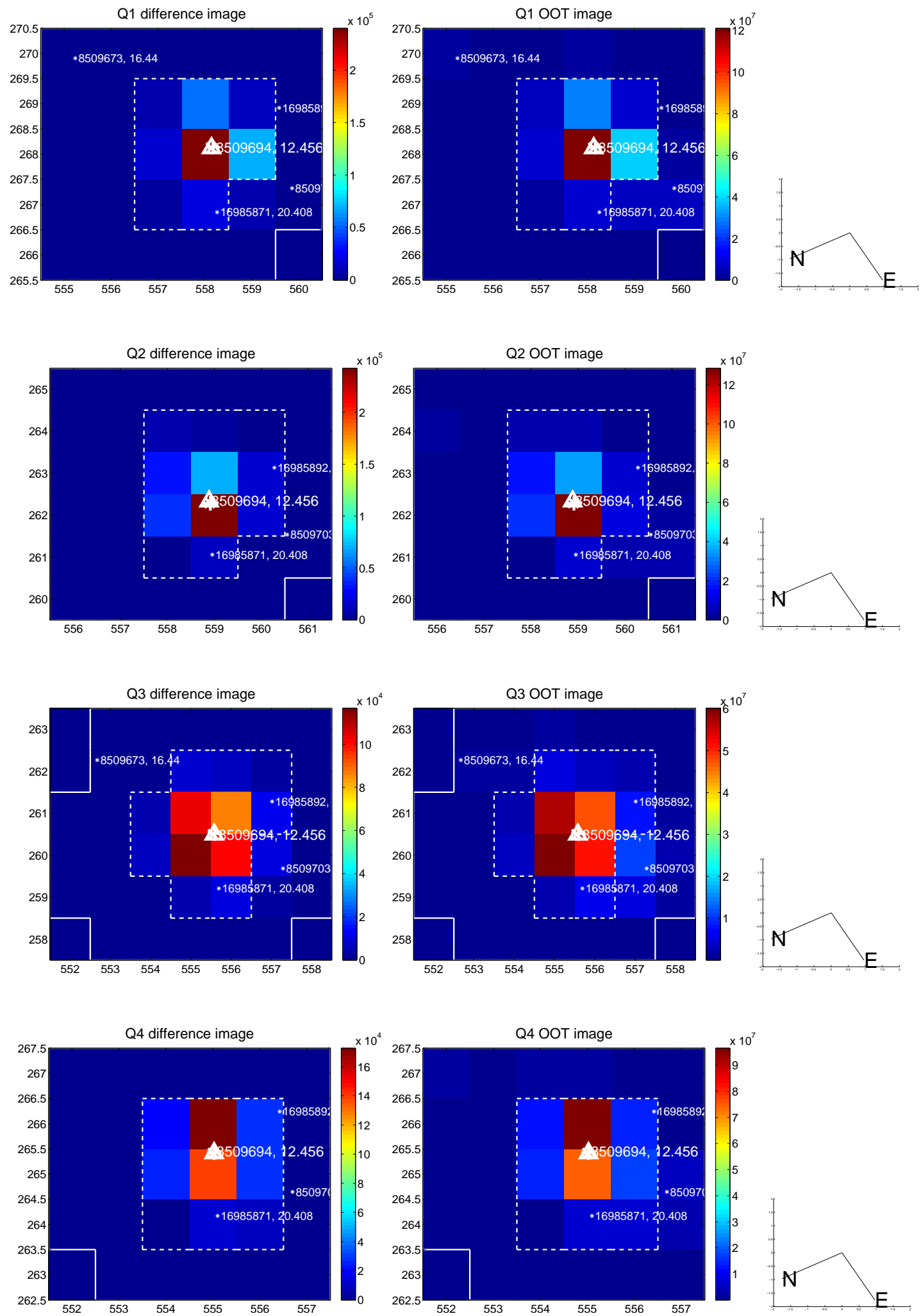


offset from photometric centroids

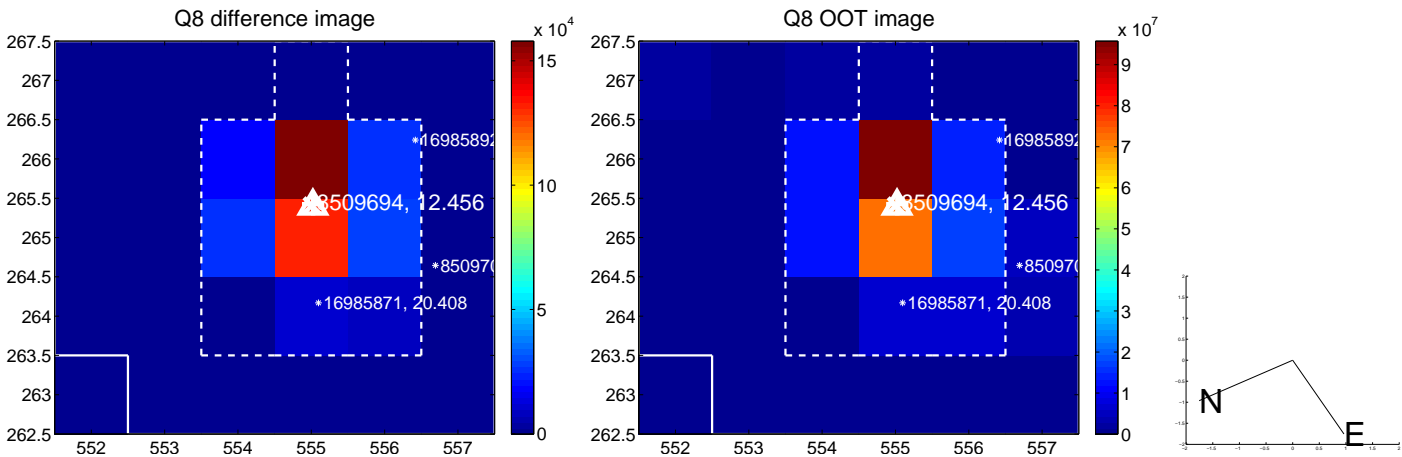
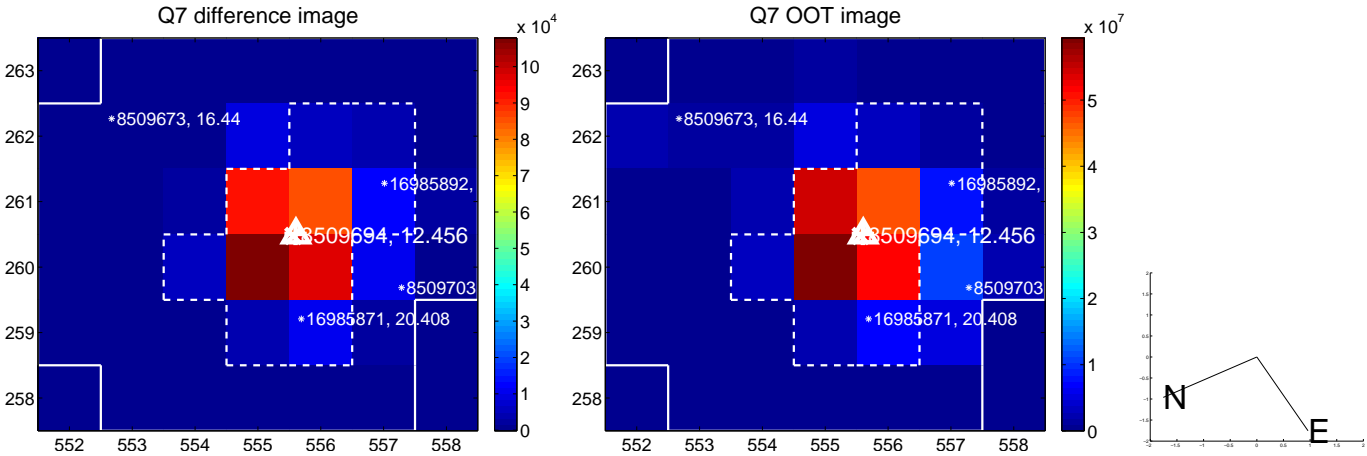
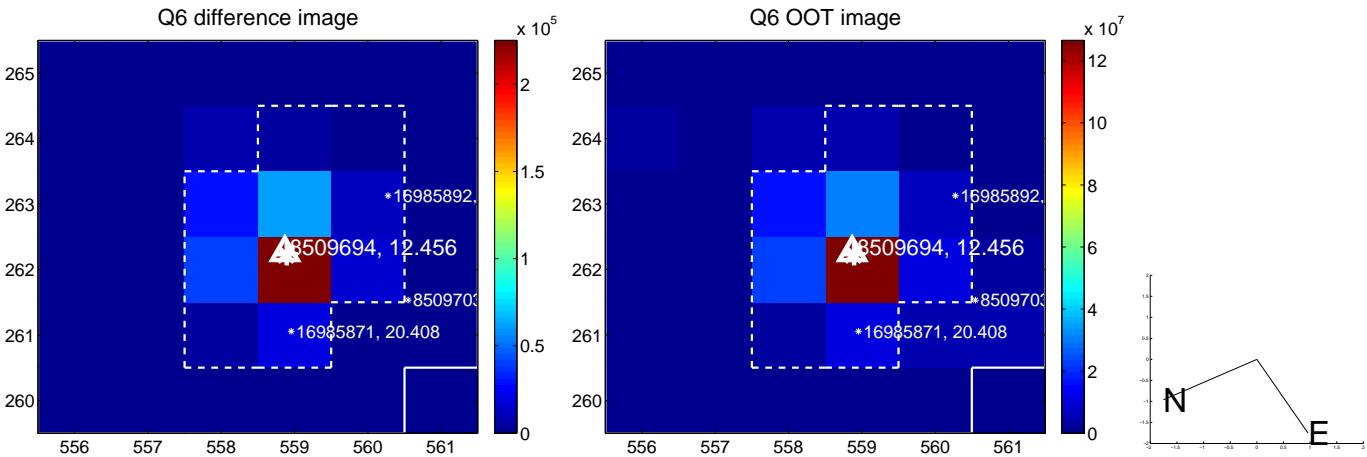
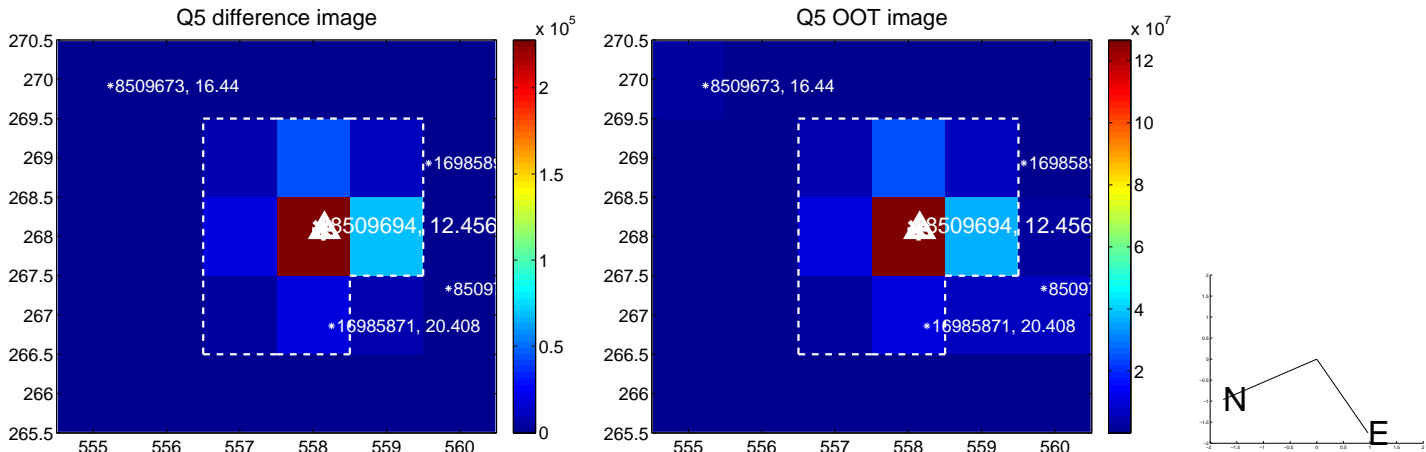


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

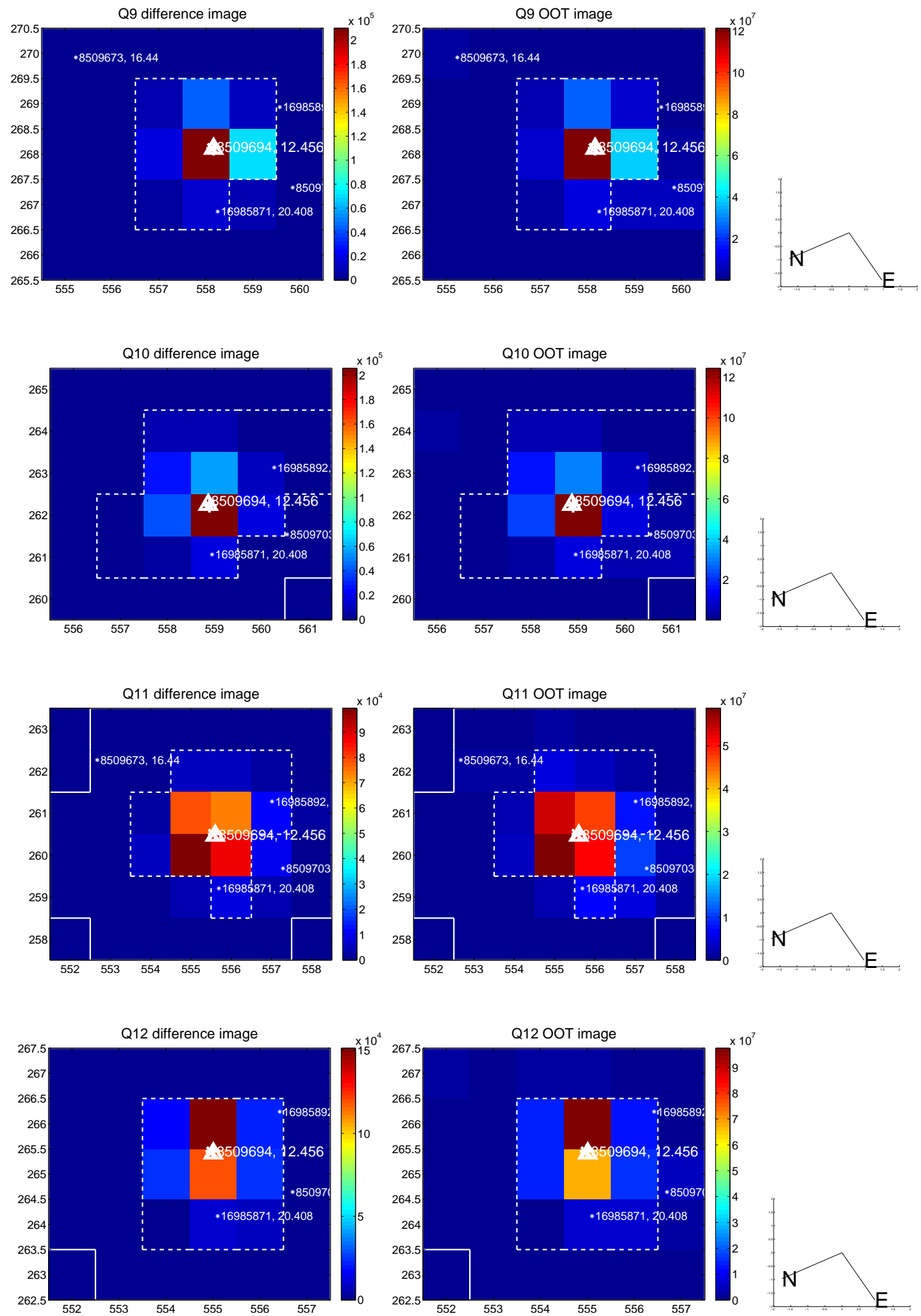
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



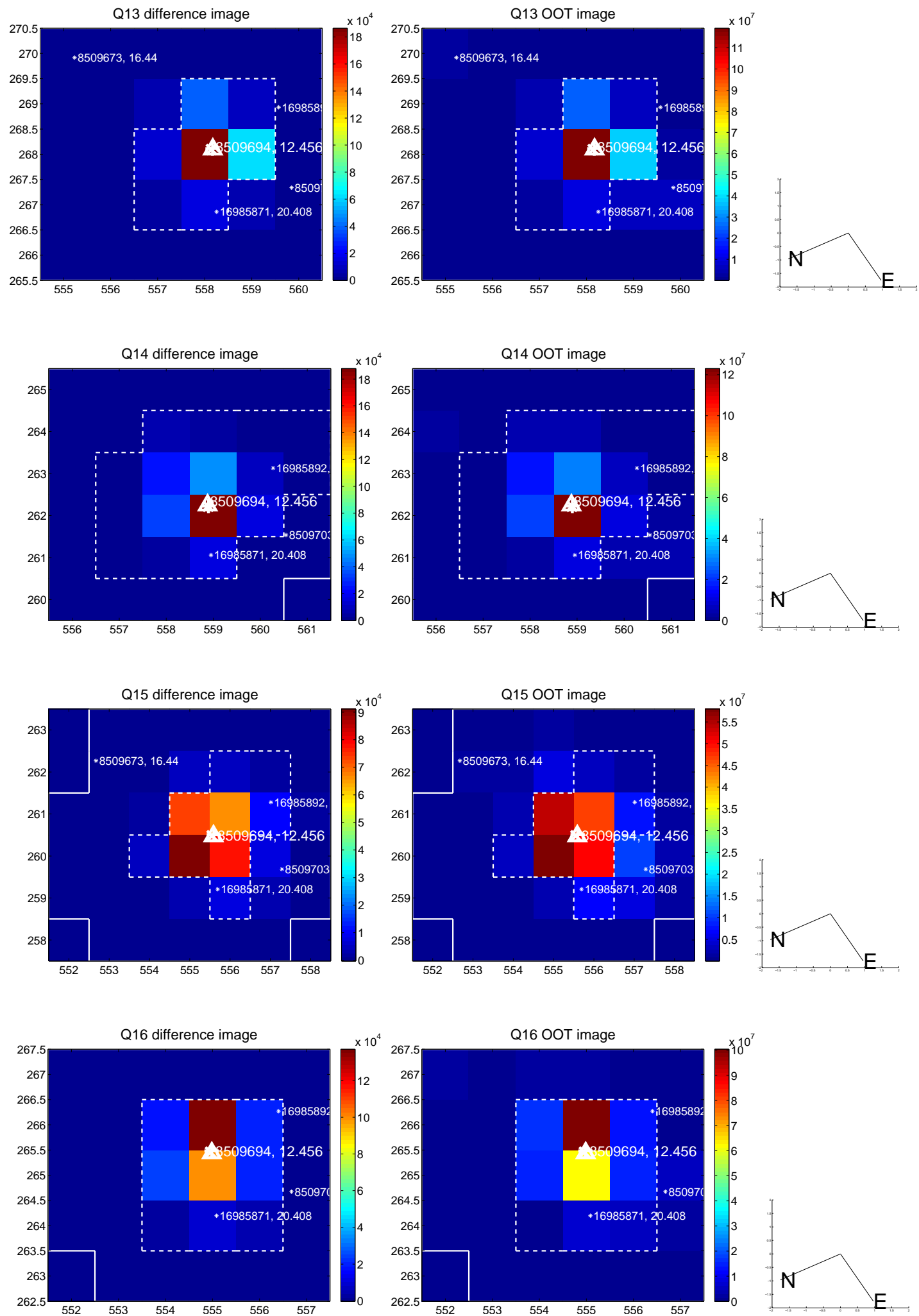
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



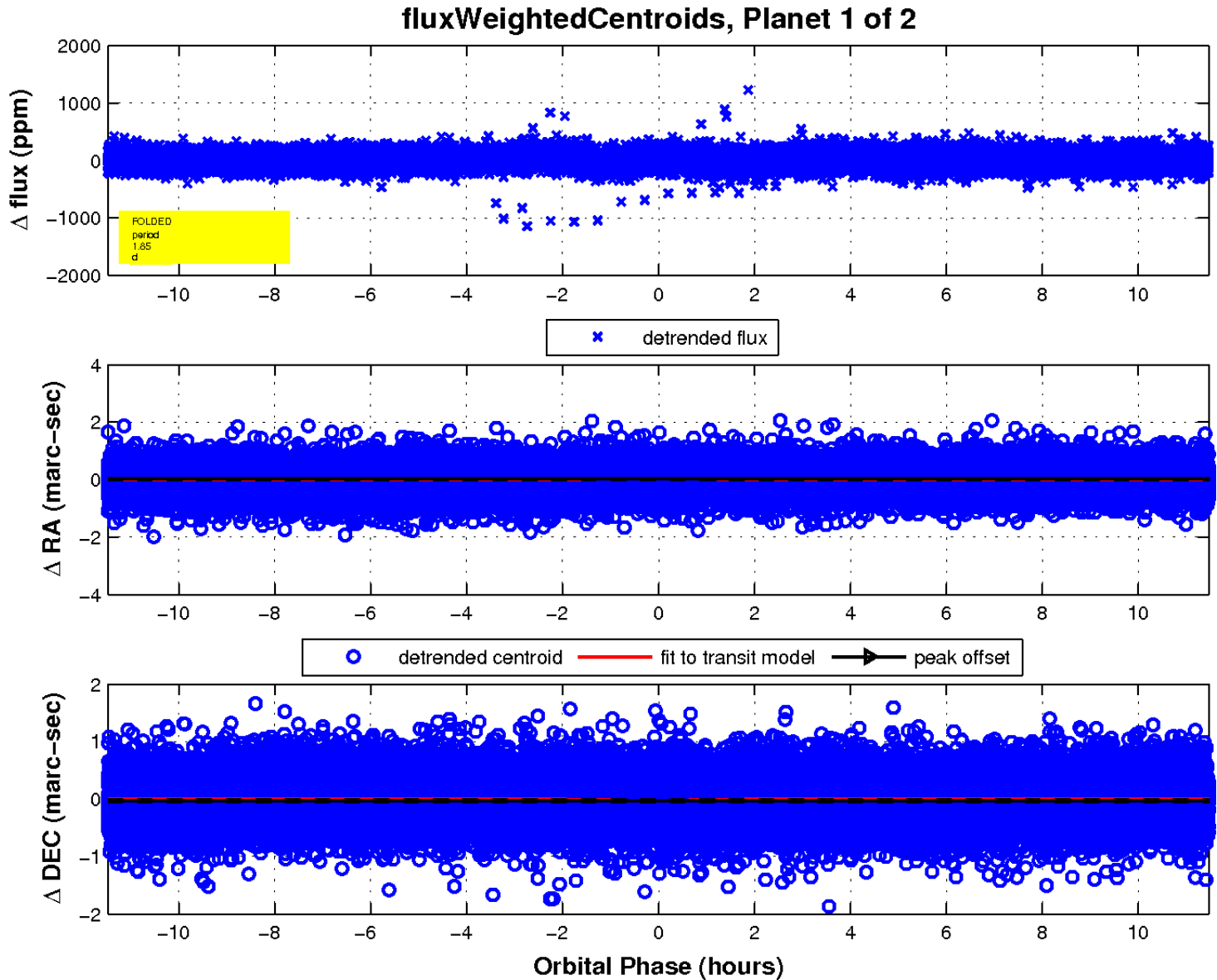
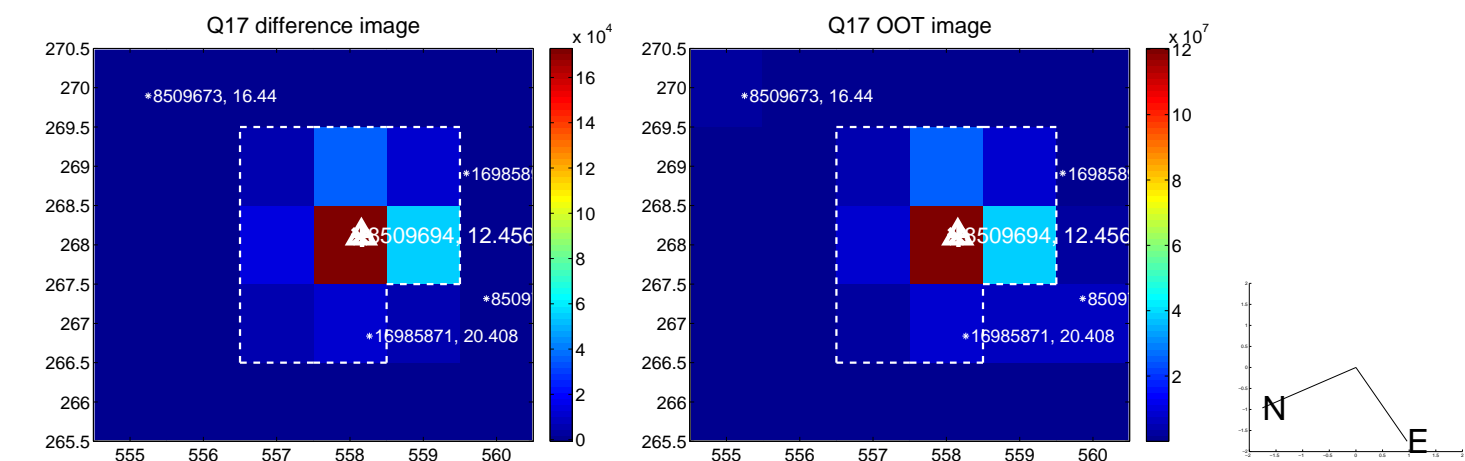
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

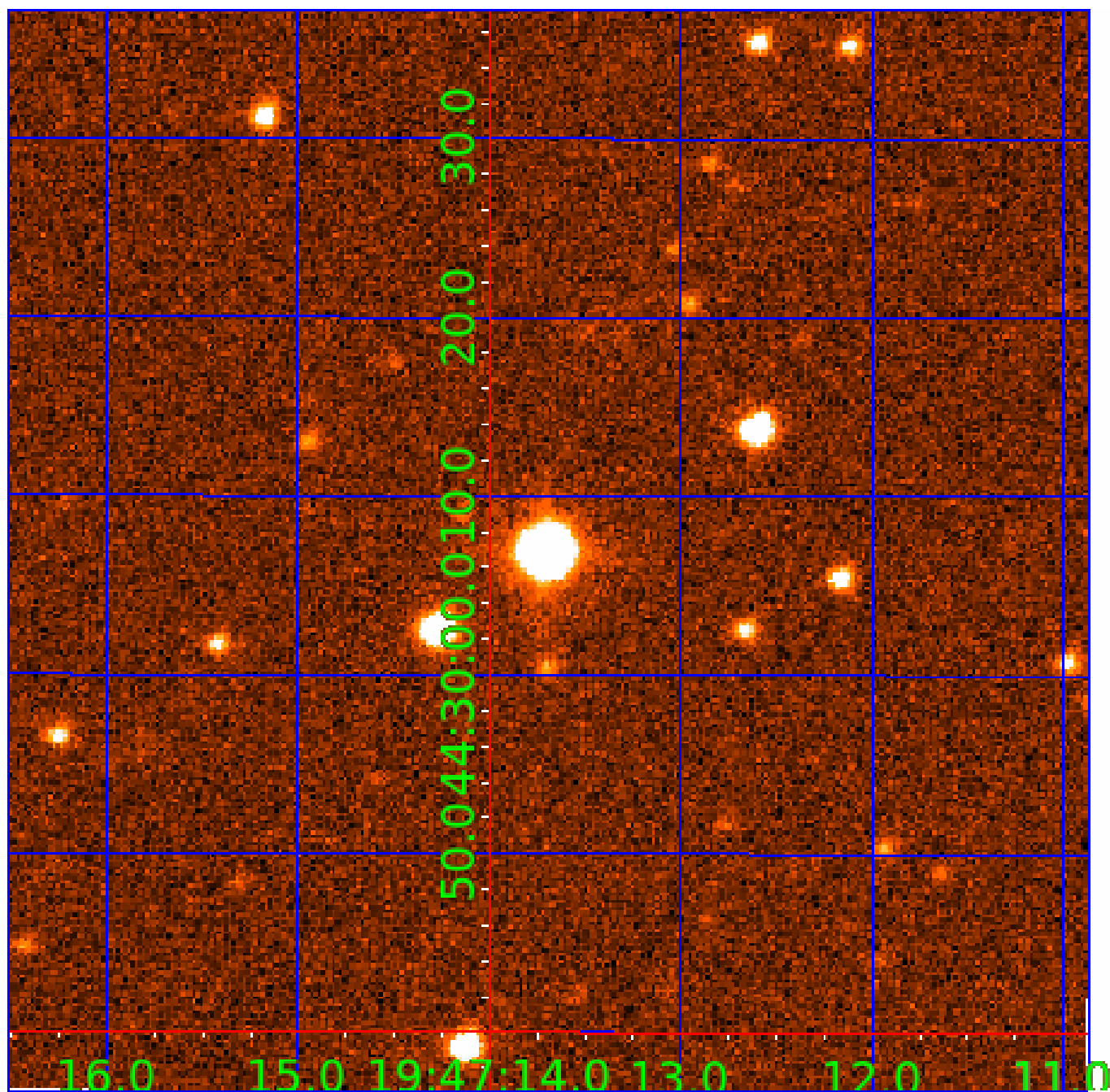


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008509694

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})
008509694-01	OBS	No	1.847802	132.660492	30.4	3.825	17.2	15.1	3.02	8617	1.93	32603.01
008509694-02	OBS	No	1.847743	131.667833	7.1	3.113	14.3	3.5	3.02	8617	0.93	32604.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008509694-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008509694-02	OBS	FP	0.00	1	0	0	1	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—EPHEM_MATCH

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.

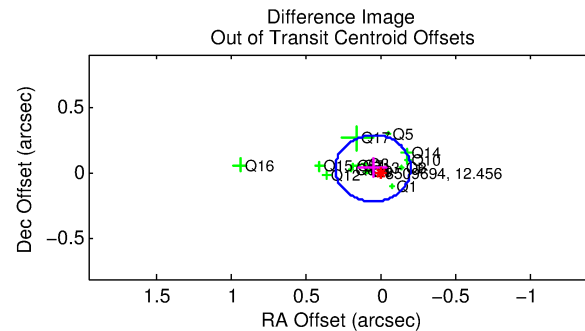
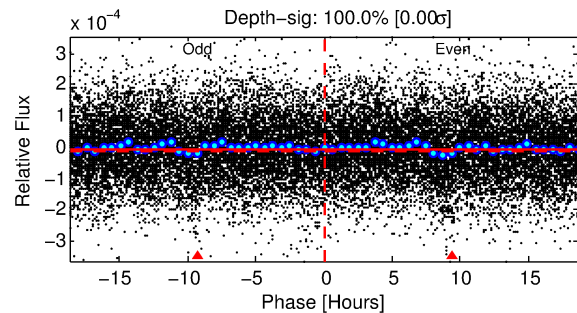
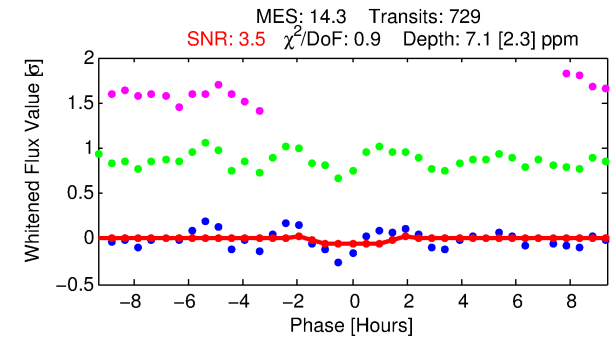
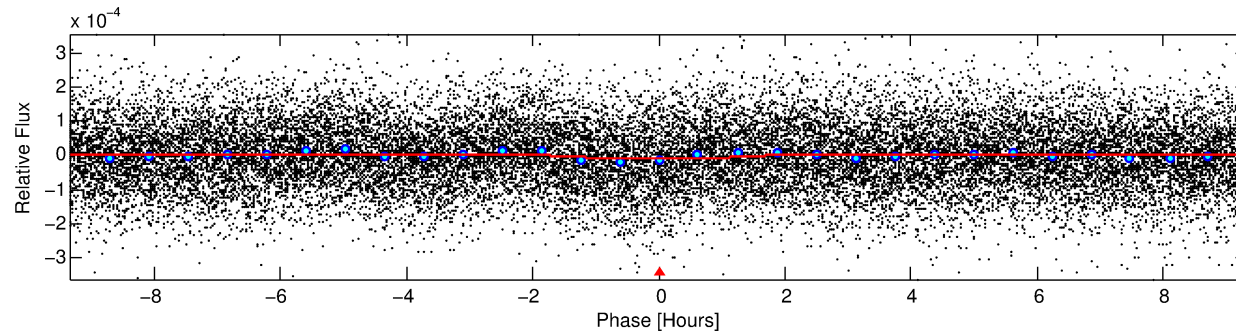
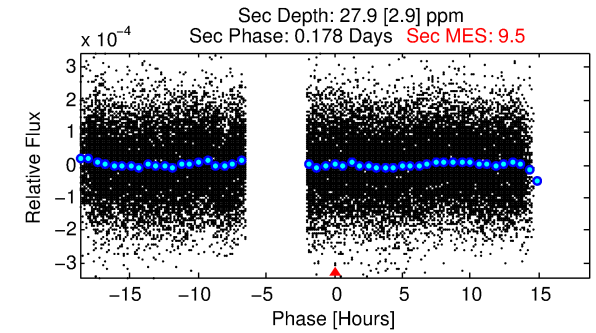
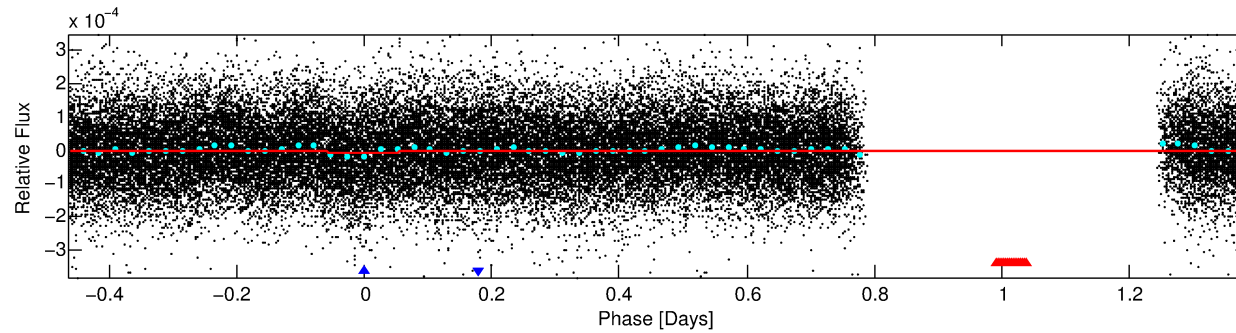
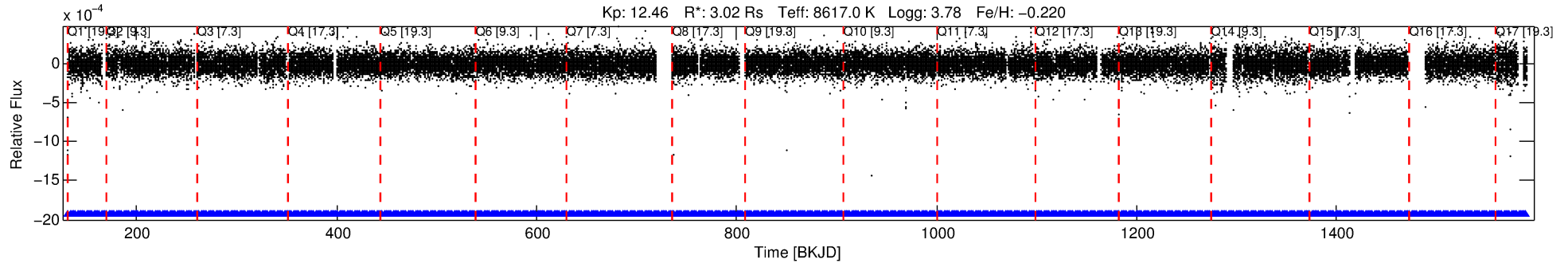
Ephemeris Match Information For 008509694-02

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
008509694-02	8509694	008509703-01	8509703	1:1	7.5	0	-2	15.74	12.45	92.00	Direct-PRF	0	3.81	1.40

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 8509694 Candidate: 2 of 2 Period: 1.848 d



DV Fit Results:

Period = 1.84774 [0.00004] d
Epoch = 131.6678 [0.0088] BKJD
Rp/R* = 0.0028 [0.0009]
a/R* = 2.21 [3.42]
b = 0.90 [0.41]
Seff = 32604.39 [22232.76]
Teq = 3426 [584] K
Rp = 0.93 [0.49] Re
a = 0.0371 [0.0151] AU
Ag = 24.39 [22.73] [1.03σ]
Teffp = 11773 [1994] K [4.02σ]

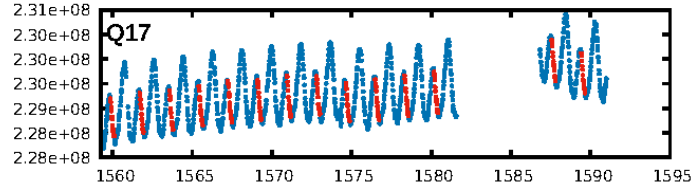
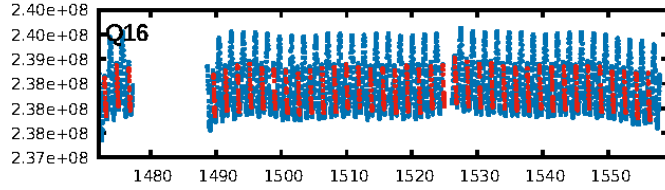
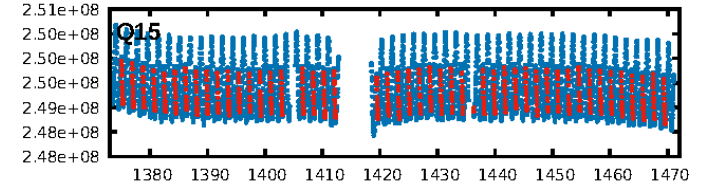
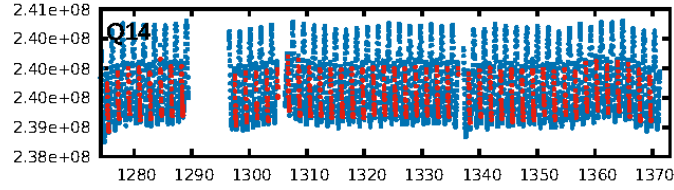
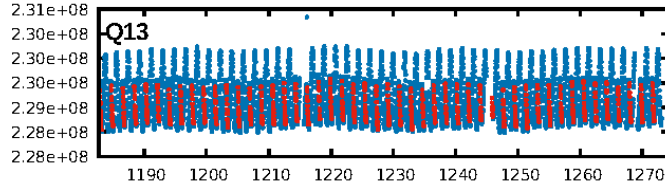
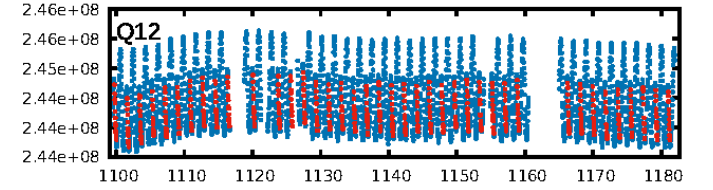
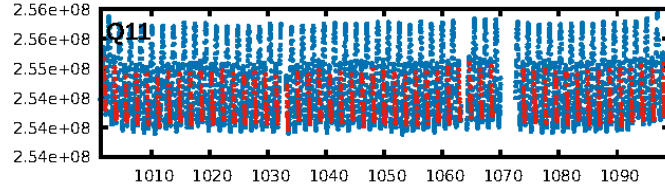
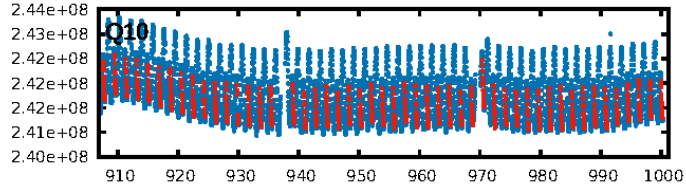
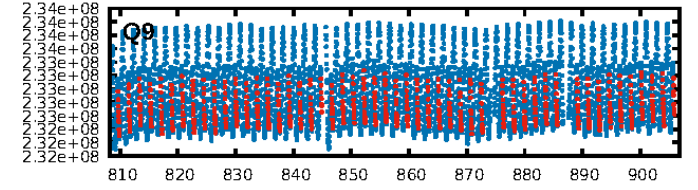
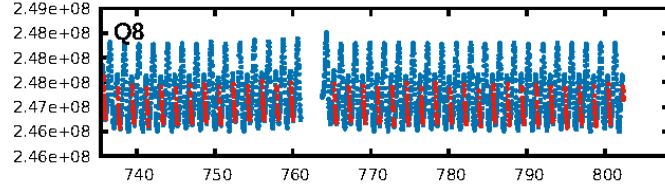
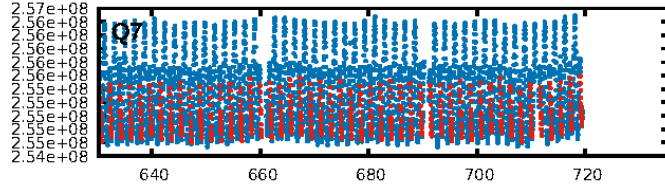
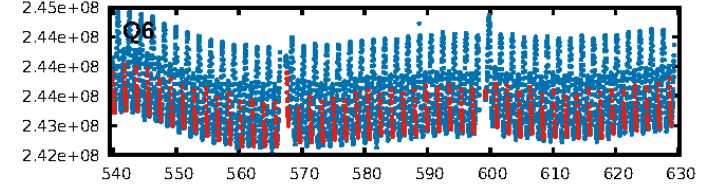
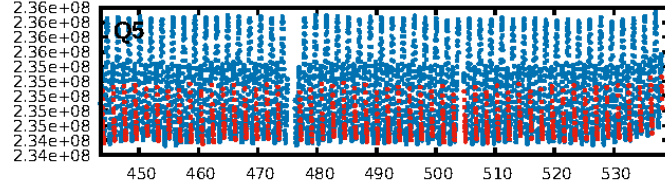
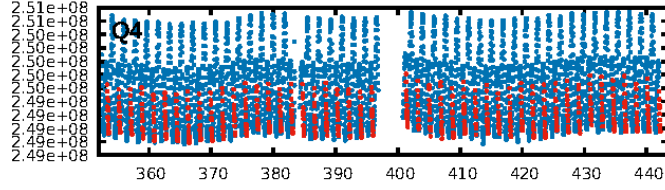
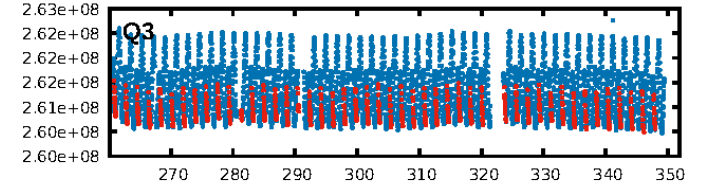
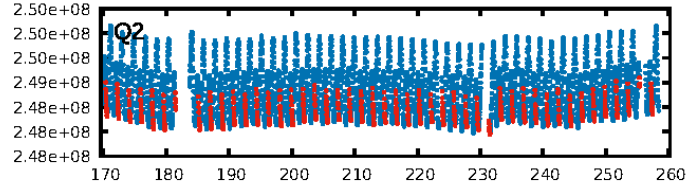
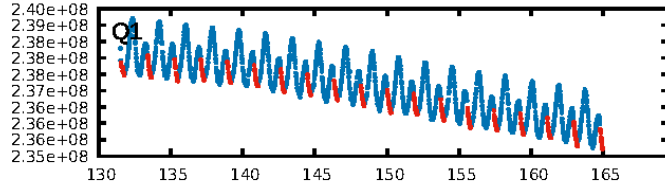
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.02e-40
RollingBand-fgt: 1.00 [696/696]
GhostDiagnostic-chr: 0.7382
Centroid-sig: 0.0%
Centroid-so: 14.567 arcsec [6.33σ]
OotOffset-rm: 0.060 arcsec [0.72σ]
KicOffset-rm: 0.086 arcsec [1.02σ]
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]

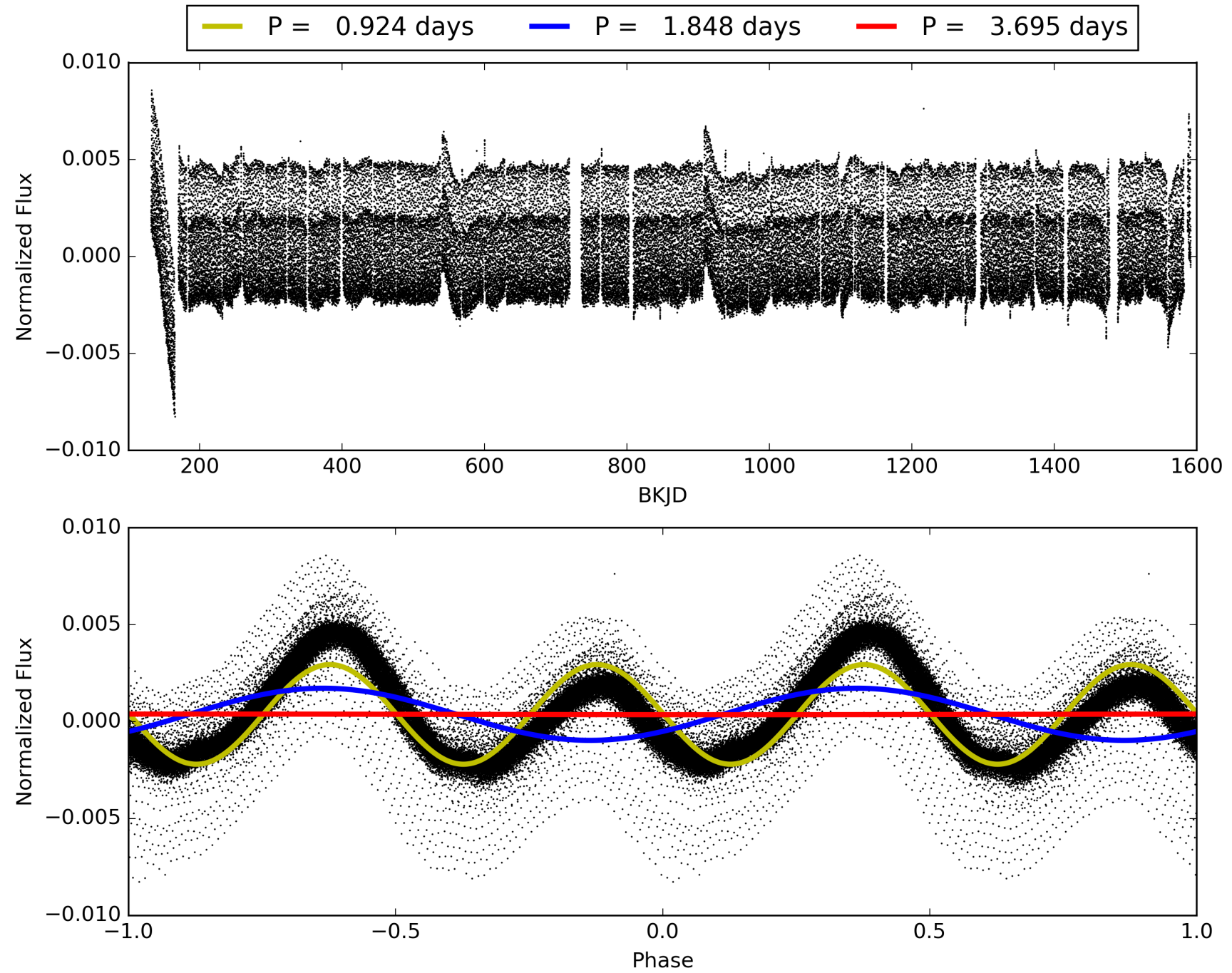
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:12:36 Z

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

TCE 008509694-02, PDC Light Curves

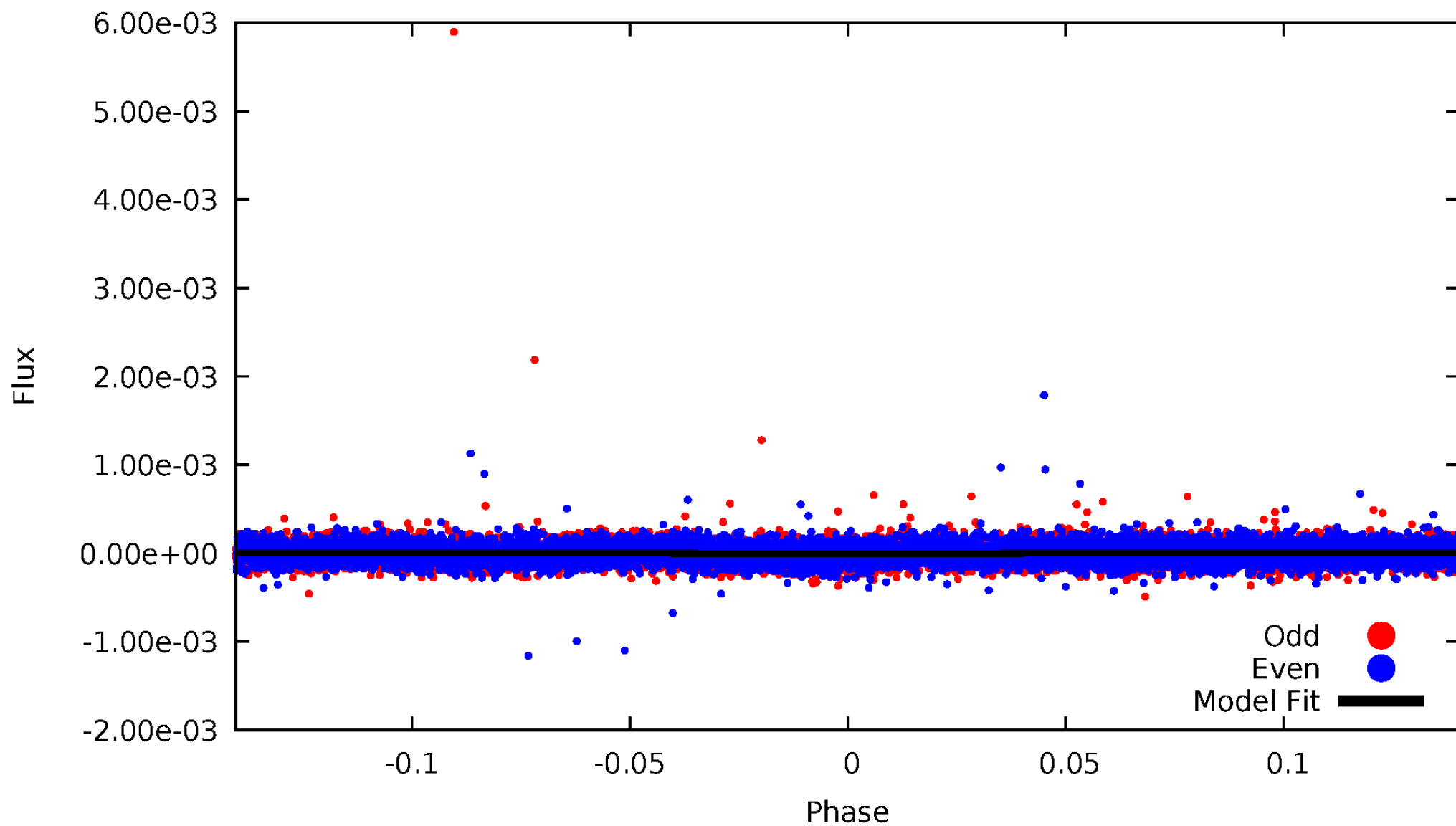


TCE 008509694-02



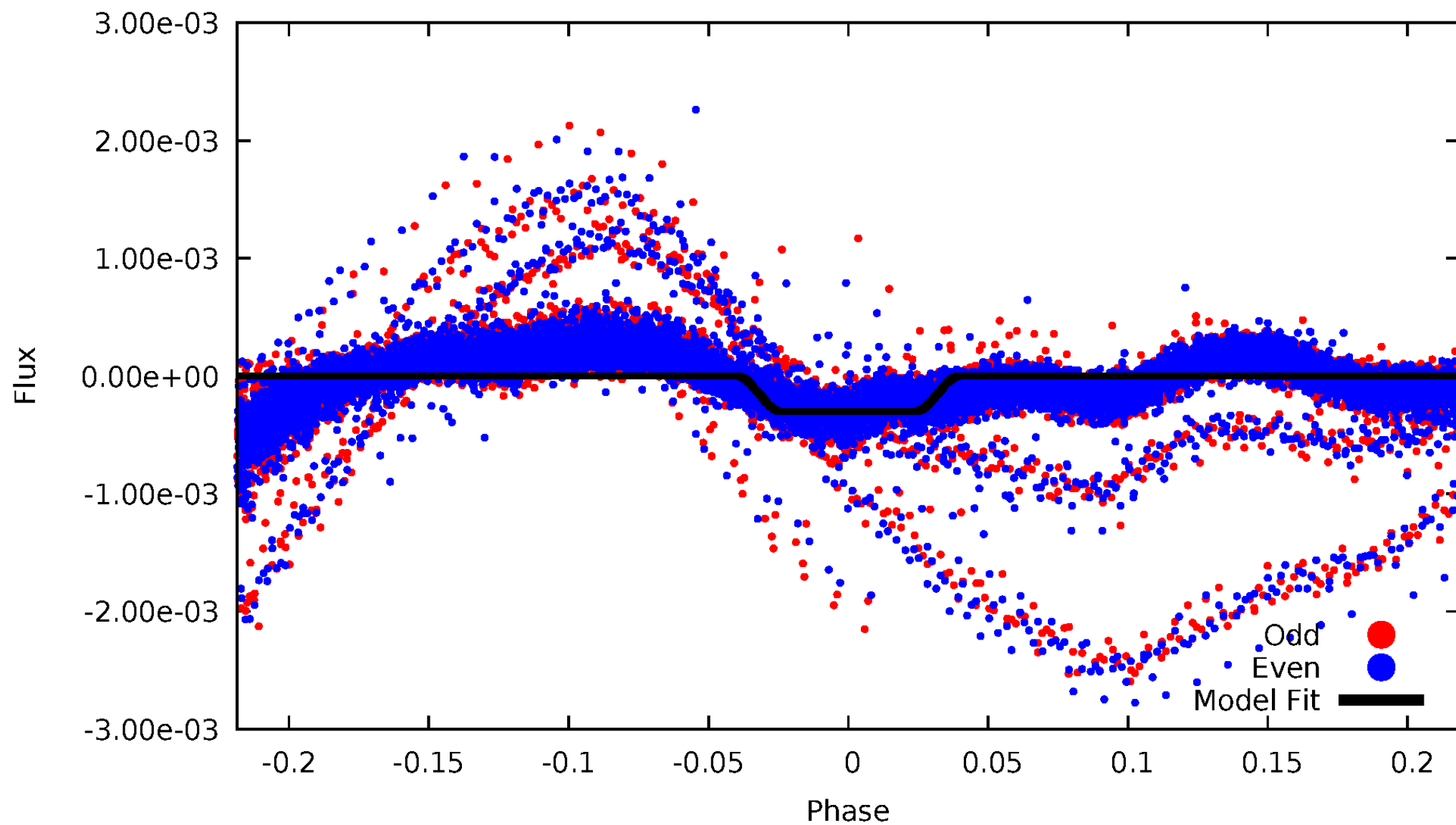
DV Odd/Even

TCE 008509694-02



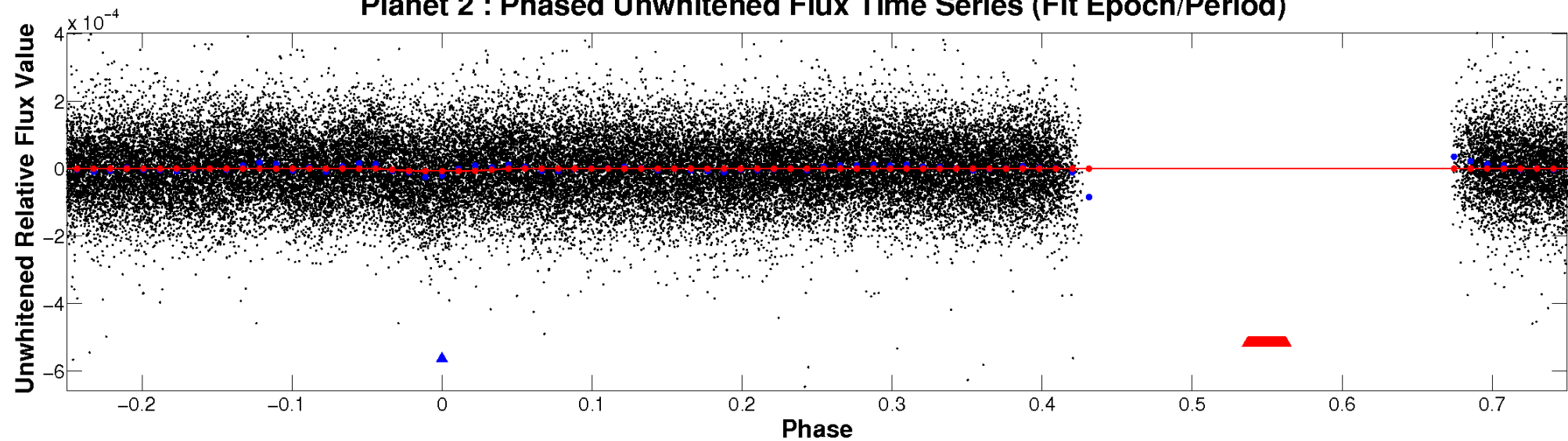
ALT Odd/Even

TCE 008509694-02

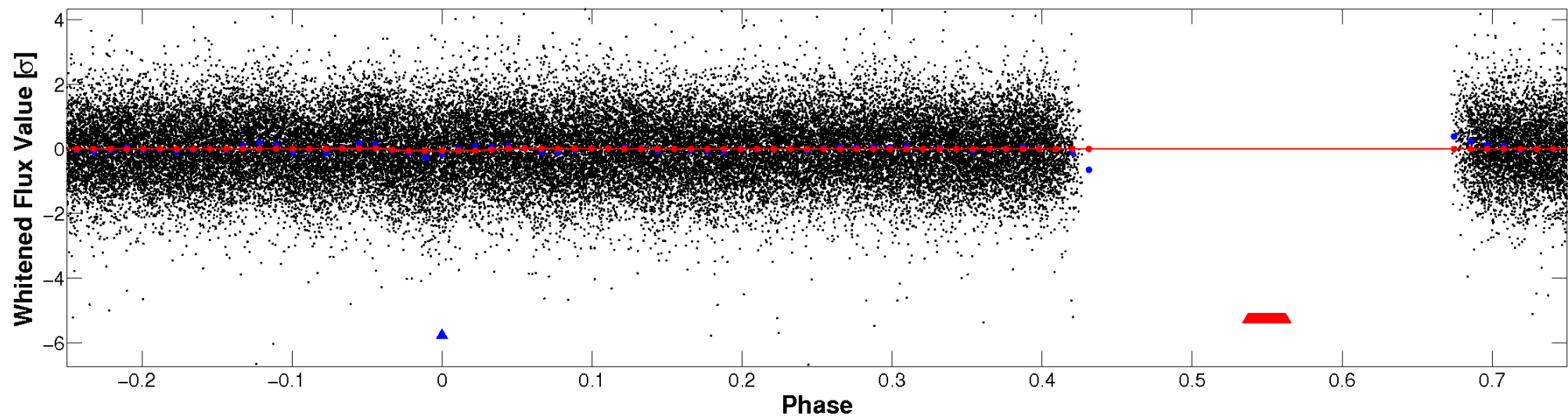


Non-Whitened Vs. Whitened Light Curve

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

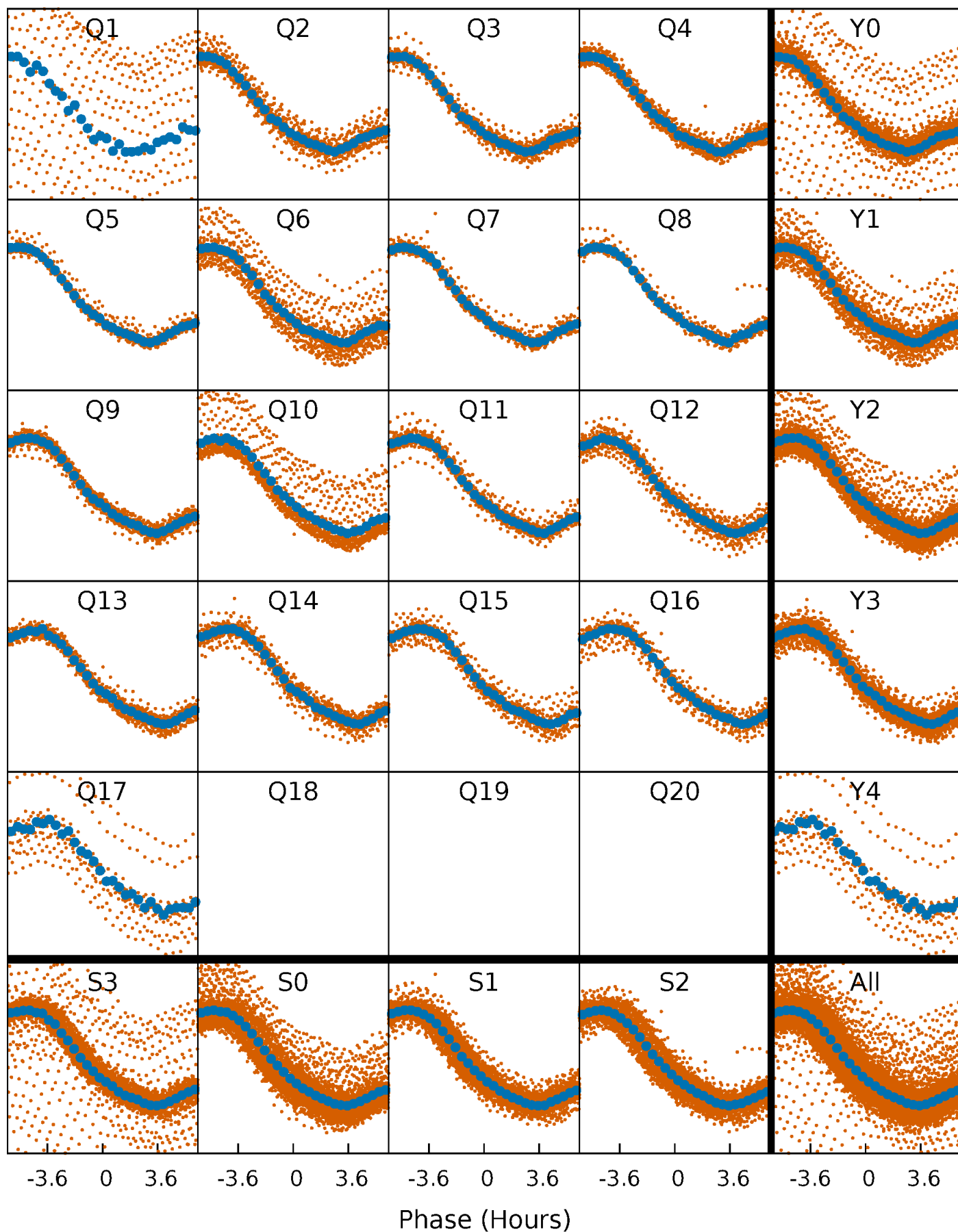


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



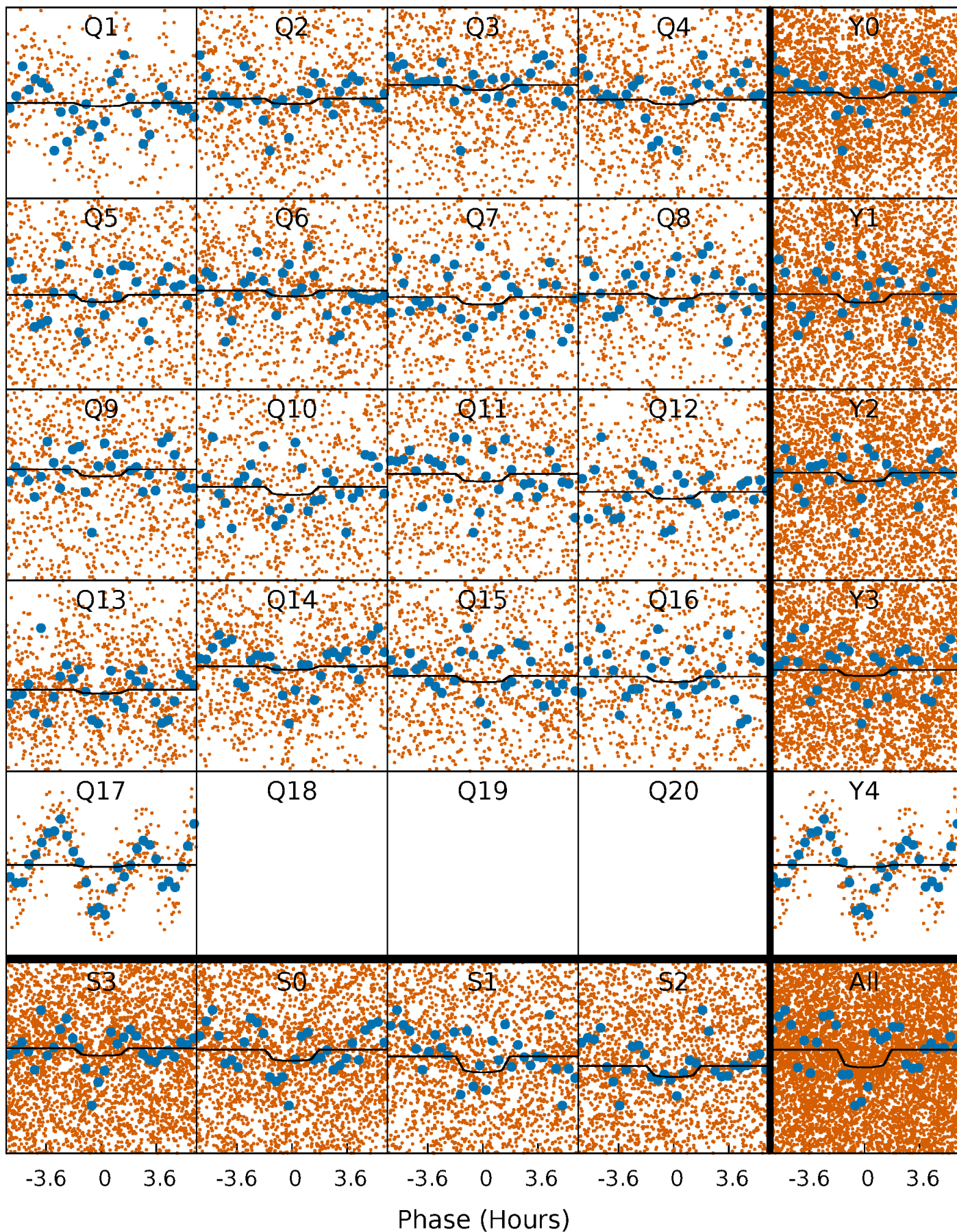
PDC Quarter-Phased Transit Curves

TCE 008509694-02 P= 1.847743 Days $T_0=131.667833$ (BKJD)



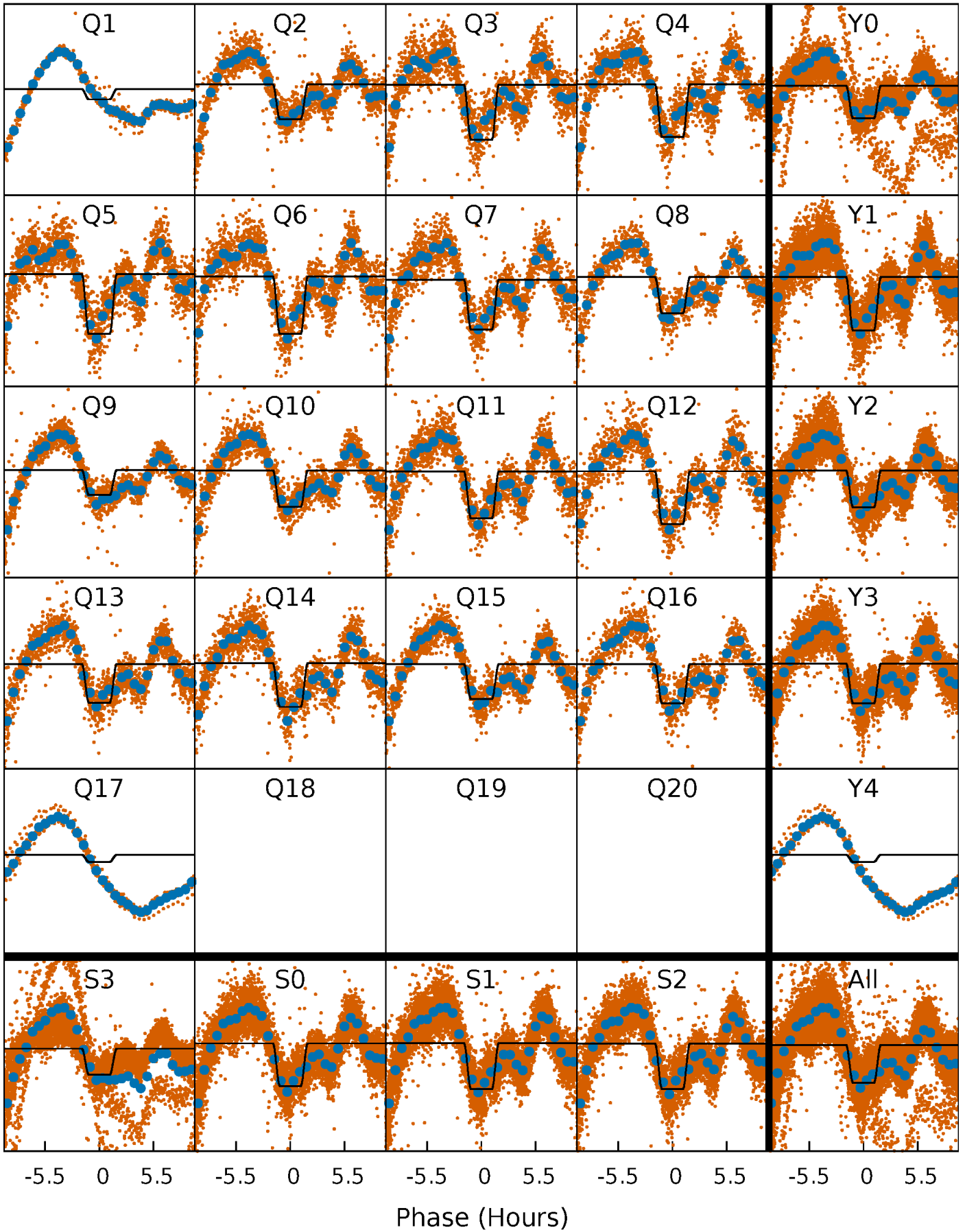
DV Quarter-Phased Transit Curves

TCE 008509694-02 P= 1.847743 Days $T_0=131.667833$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

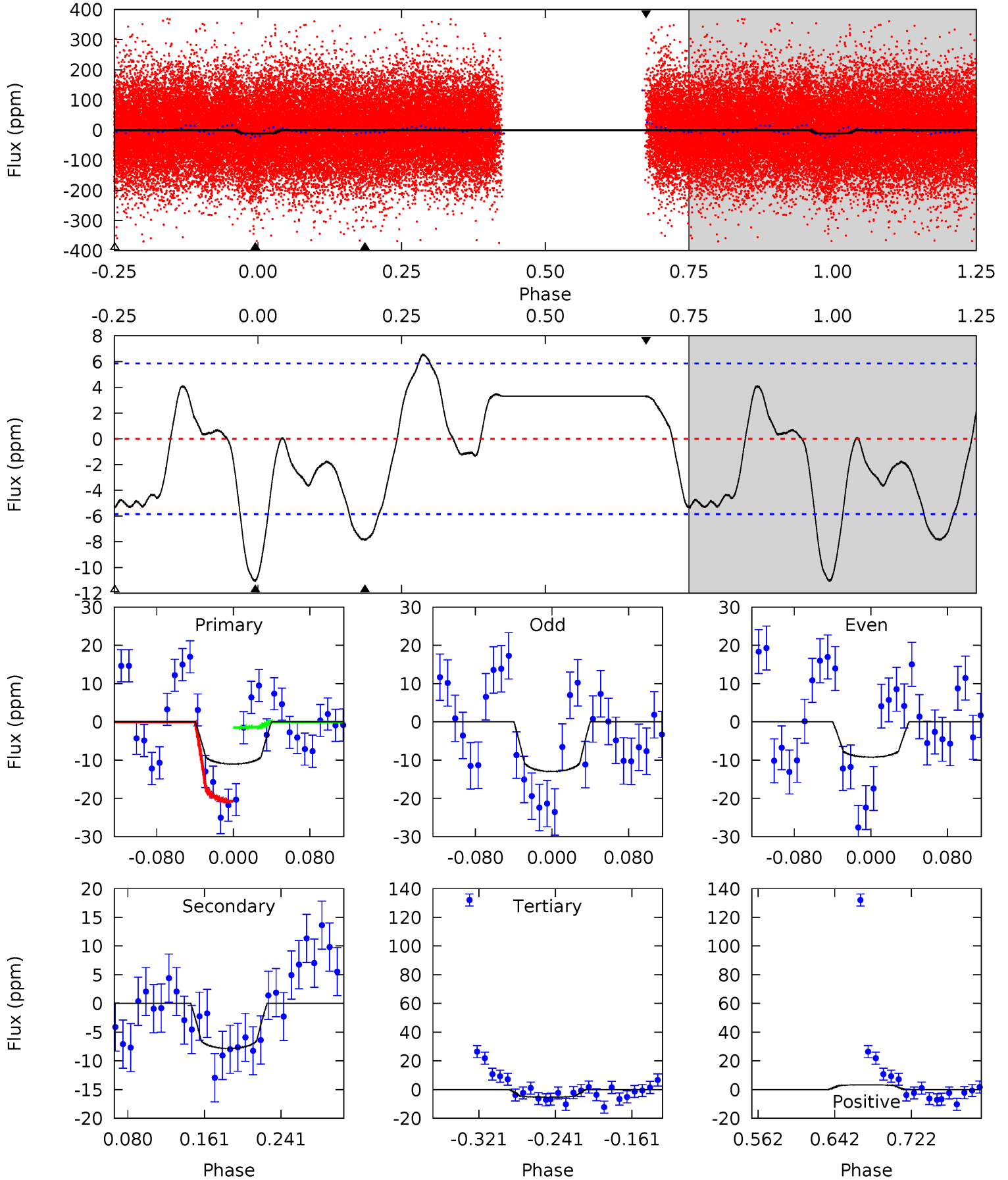
TCE 008509694-02 P= 1.847826 Days $T_0=131.612719$ (BKJD)



DV Model-Shift Uniqueness Test

008509694-02, P = 1.847743 Days, E = 129.820090 Days

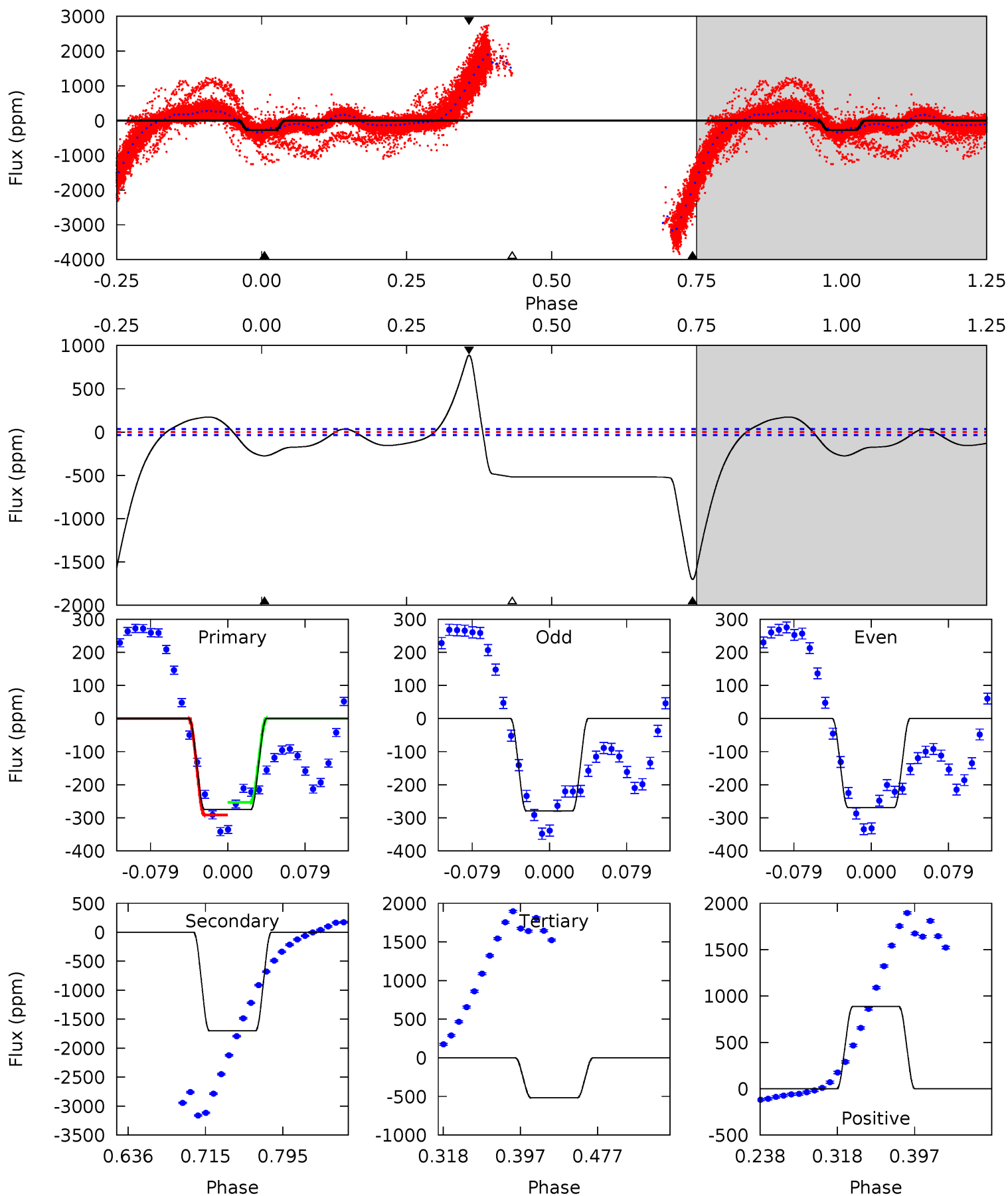
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.67	6.18	4.21	2.61	4.61	1.75	2.80	4.47	6.06	1.97	3.56	1.49	0.91	0.37	7.62



Alt Model-Shift Uniqueness Test

008509694-02, P = 1.847826 Days, E = 129.764893 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.1	223.4	68.0	116.4	4.61	1.75	31.6	-31.9	-80.3	155.3	107.0	0.69	1.08	0.34	5.15



Stellar Parameters For KIC 008509694

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8617^{+268}_{-358}	$3.780^{+0.392}_{-0.168}$	$-0.220^{+0.450}_{-0.300}$	$3.018^{+1.016}_{-1.242}$	$2.002^{+0.434}_{-0.434}$	$0.102^{+0.333}_{-0.046}$
	+3%/-4%	+10%/-4%	+205%/-136%	+34%/-41%	+22%/-22%	+325%/-45%
Source	KIC0	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 008509694-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-8 ± 1	$0.86^{+0.37}_{-0.32}$	4658^{+422}_{-505}	8544^{+2948}_{-1586}	$8.166^{+11.963}_{-4.280}$
Alt.	-1701 ± 8	$5.48^{+1.08}_{-1.22}$	4688^{+412}_{-528}	17581^{+1527}_{-1331}	43^{+24}_{-12}

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

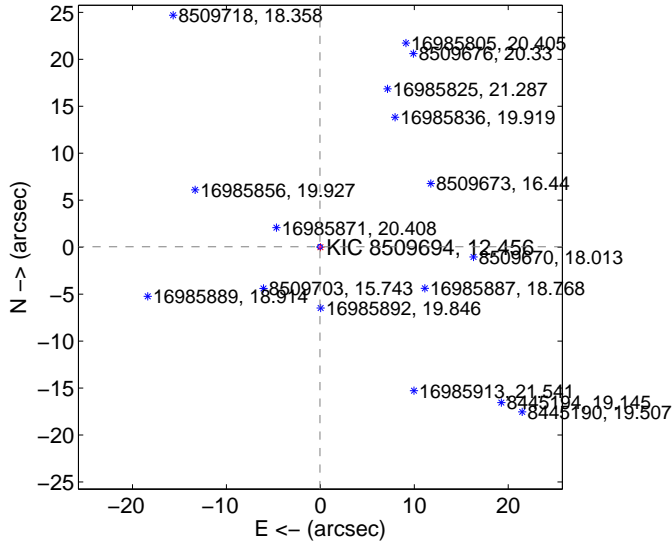
Supplemental centroid analysis for 008509694-02. Kepler magnitude: 12.46. Transit SNR 3.54

There are 17 quarters with good PRF difference image offsets

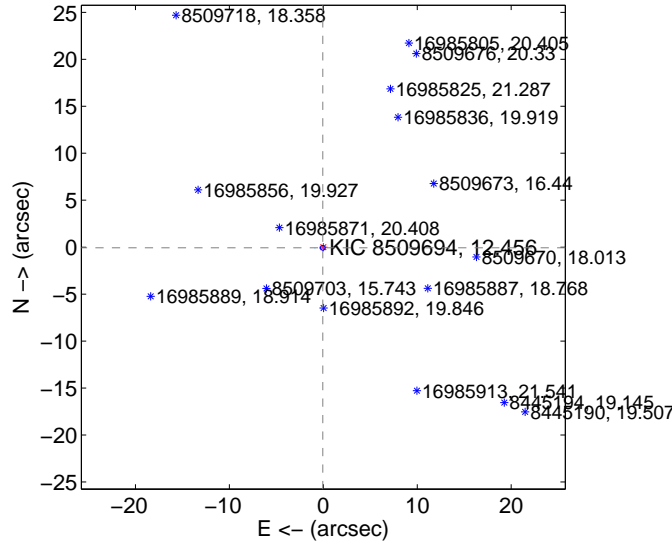
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.060 ± 0.084	0.72	0.048 ± 0.091	0.037 ± 0.071
PRF-fit source offset from KIC position	0.086 ± 0.084	1.02	0.055 ± 0.091	-0.066 ± 0.073
photometric centroid source offset	14.57 ± 2.30	6.33	-6.48 ± 2.37	13.05 ± 2.28

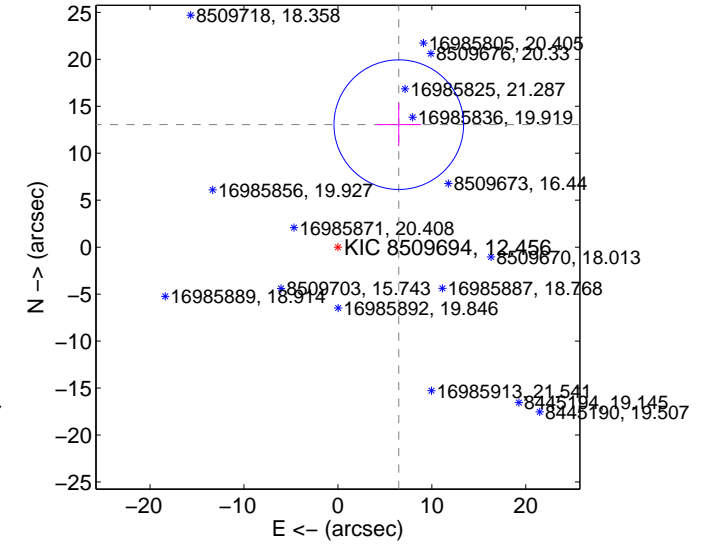
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

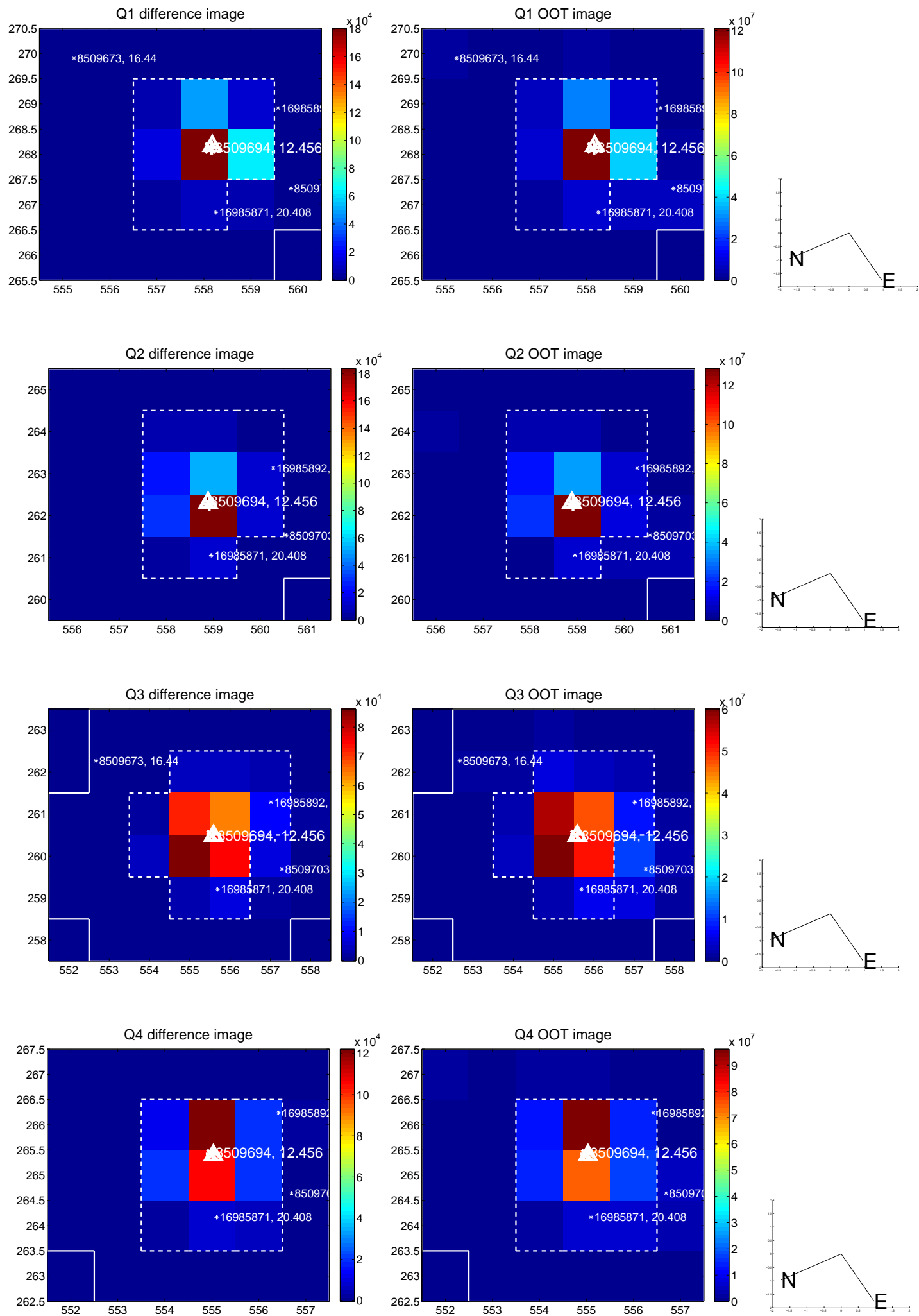


offset from photometric centroids

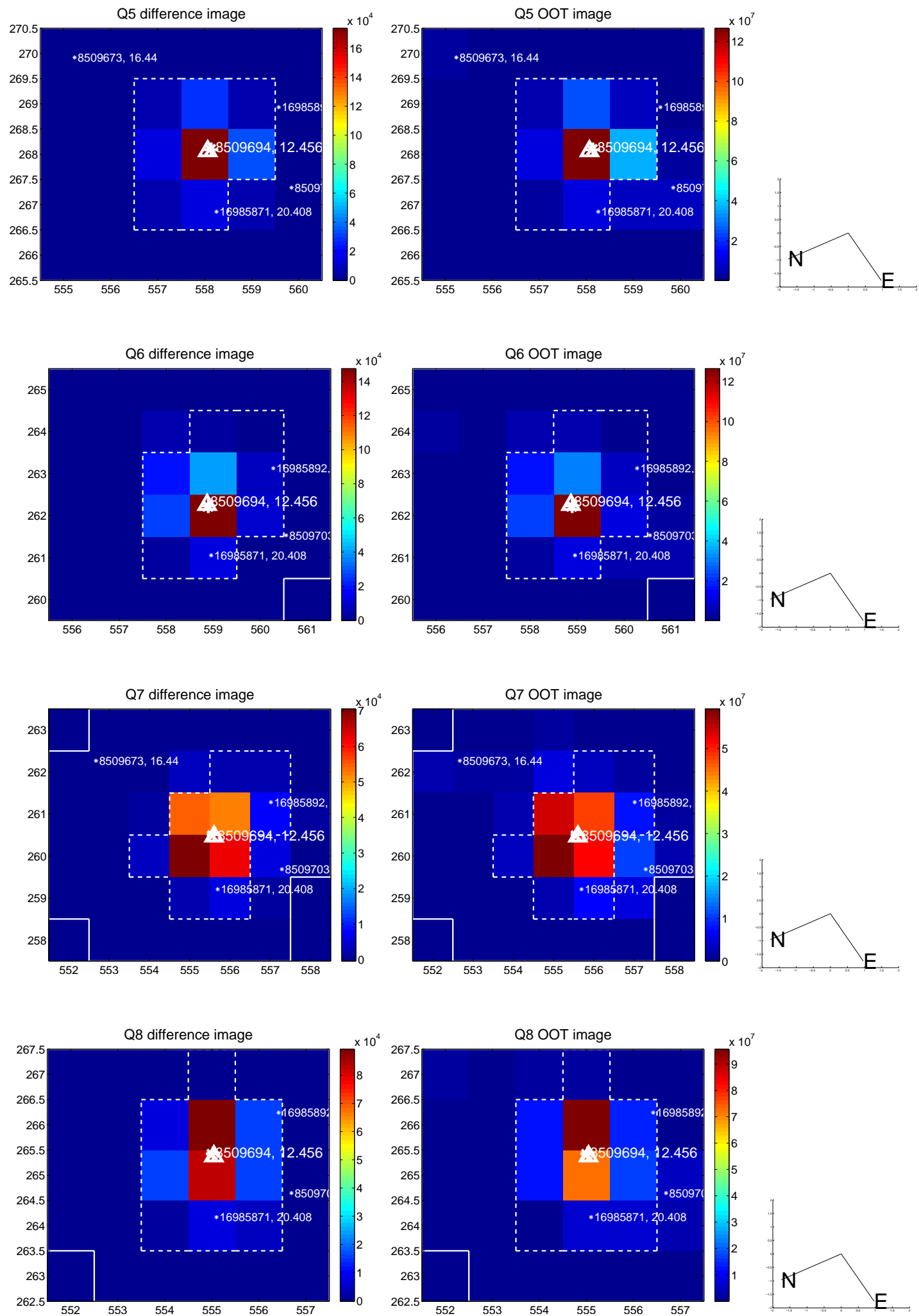


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

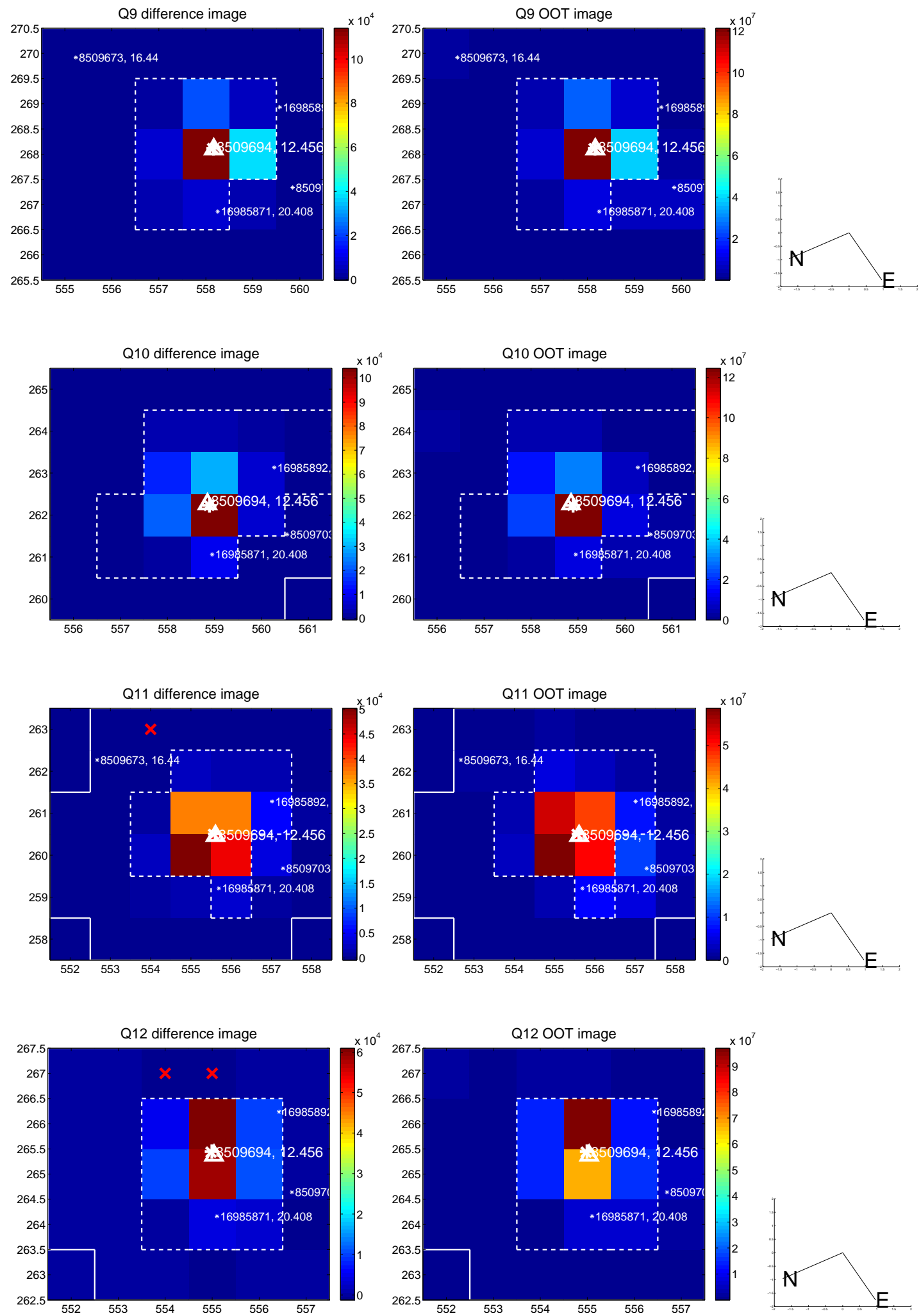
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



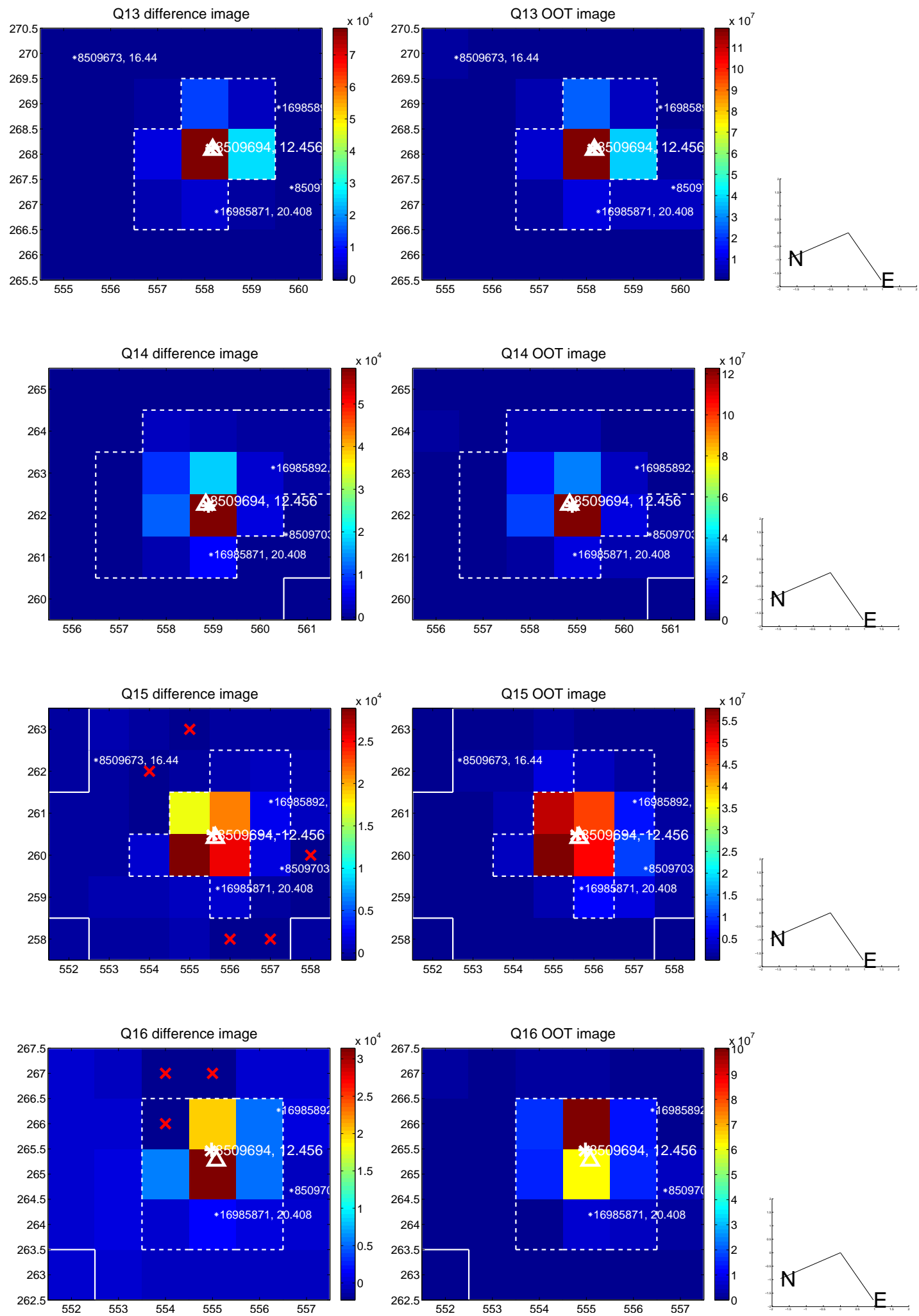
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



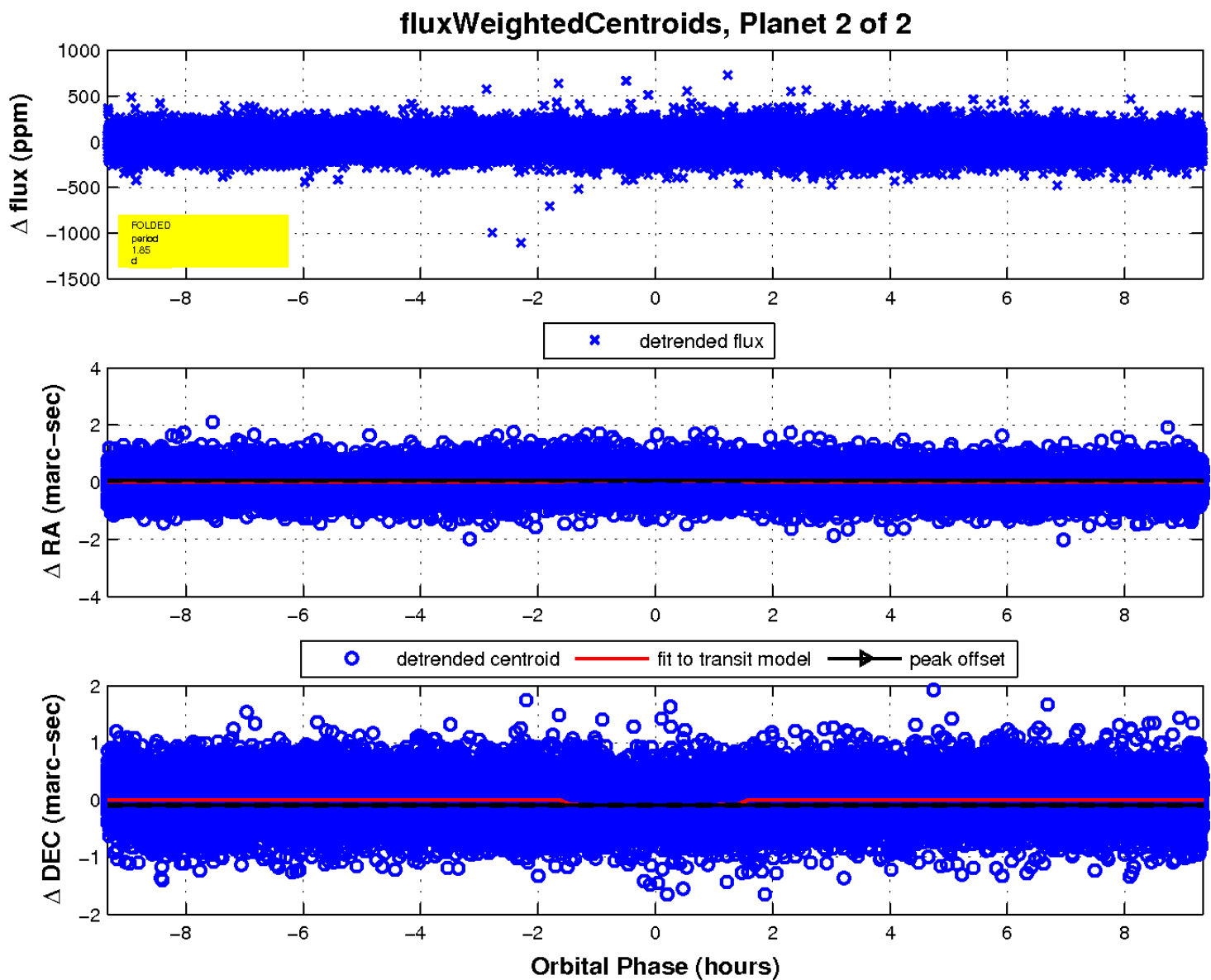
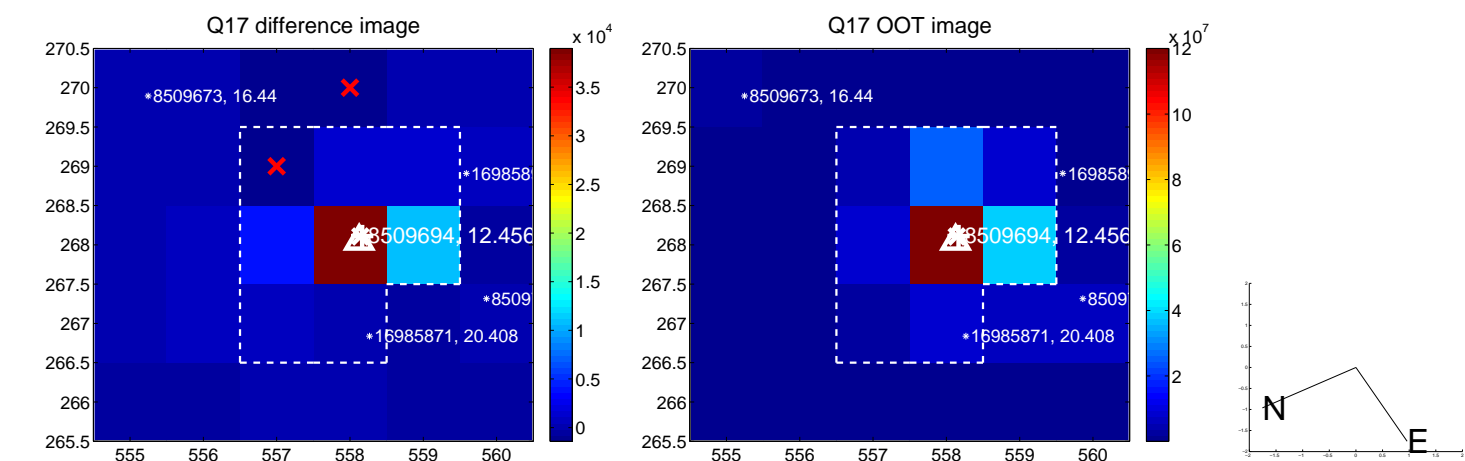
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

