

KIC 004459068

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})
004459068-01	OBS	6114.01	24.955999	149.094517	4851.0	2.774	976.1	959.1	3.02	8617	34.47	1013.67
004459068-02	OBS	No	24.955658	148.866905	356.4	44.704	54.3	79.3	3.02	8617	10.71	1013.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004459068-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—CENT_SATURATED
004459068-02	OBS	FP	0.00	1	0	0	0	LPP_DV—RESIDUAL_TCE—CENT_SATURATED

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 004459068-01

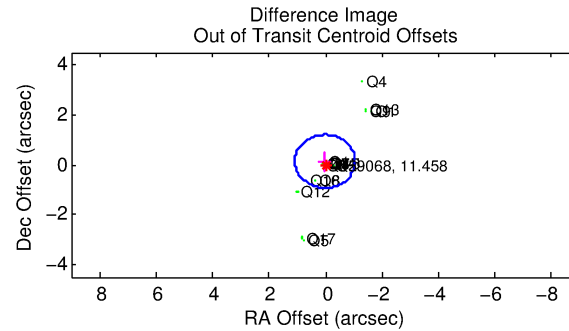
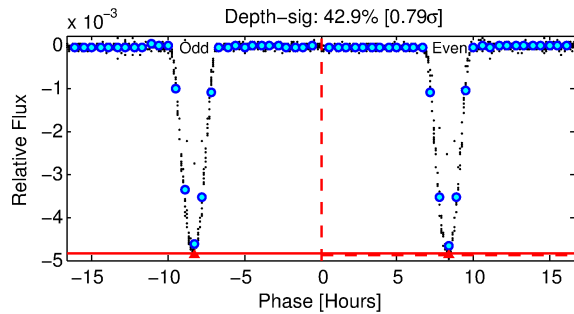
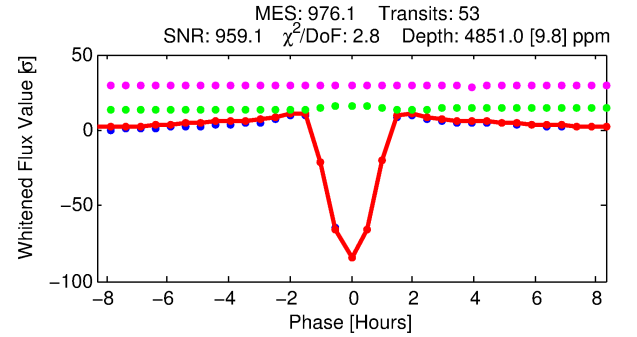
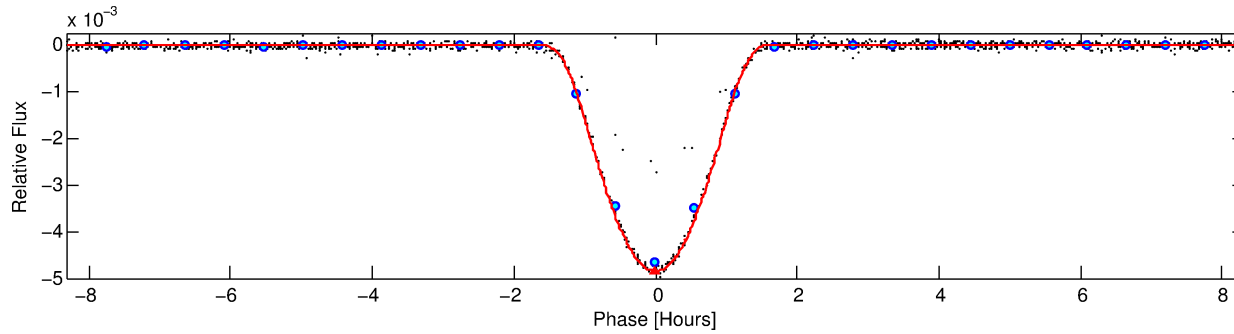
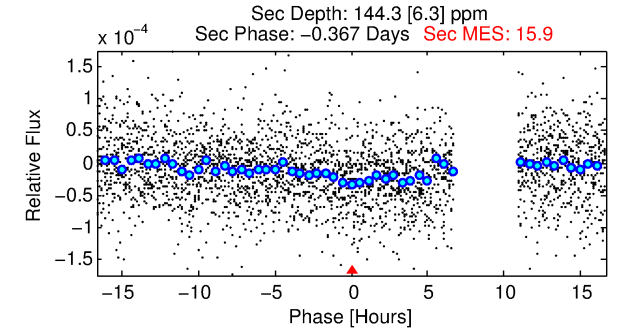
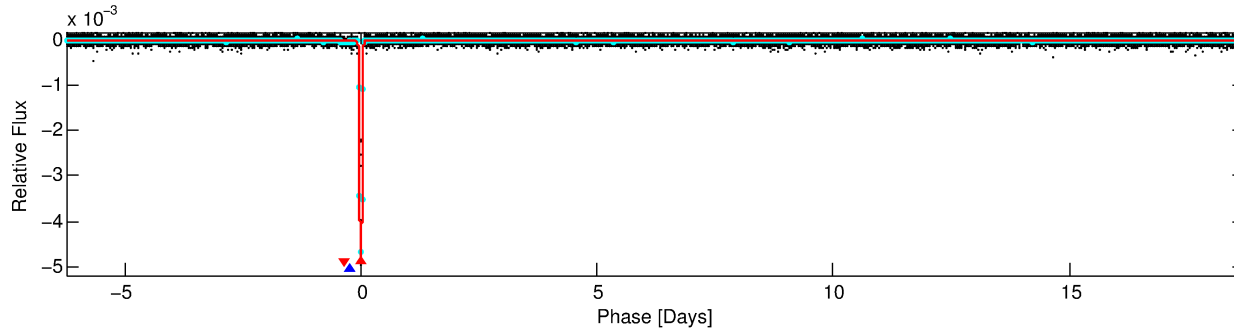
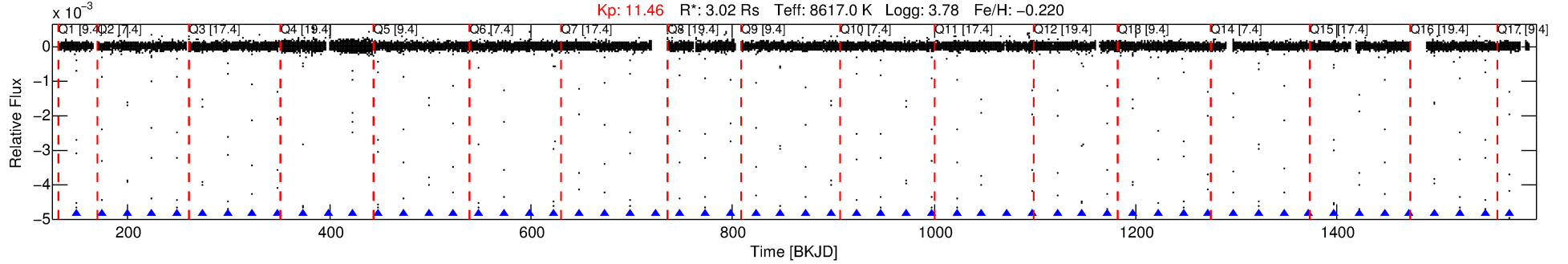
No Significant Match Found

DV One-Page Summary

KIC: 4459068 Candidate: 1 of 2 Period: 24.956 d

KOI: K06114.01 Corr: 0.995

Kp: 11.46 R*: 3.02 Rs Teff: 8617.0 K Logg: 3.78 Fe/H: -0.220



DV Fit Results:

Period = 24.95600 [0.00000] d
Epoch = 149.0945 [0.0001] BKJD
Rp/R* = 0.1047 [0.0071]
a/R* = 34.18 [0.54]
b = 0.99 [0.01]
Seff = 1013.67 [782.33]
Teq = 1439 [278] K
Rp = 34.47 [14.77] Re
a = 0.2107 [0.0888] AU
Ag = 2.97 [2.08] [0.94σ]
Teffp = 2919 [277] K [3.77σ]

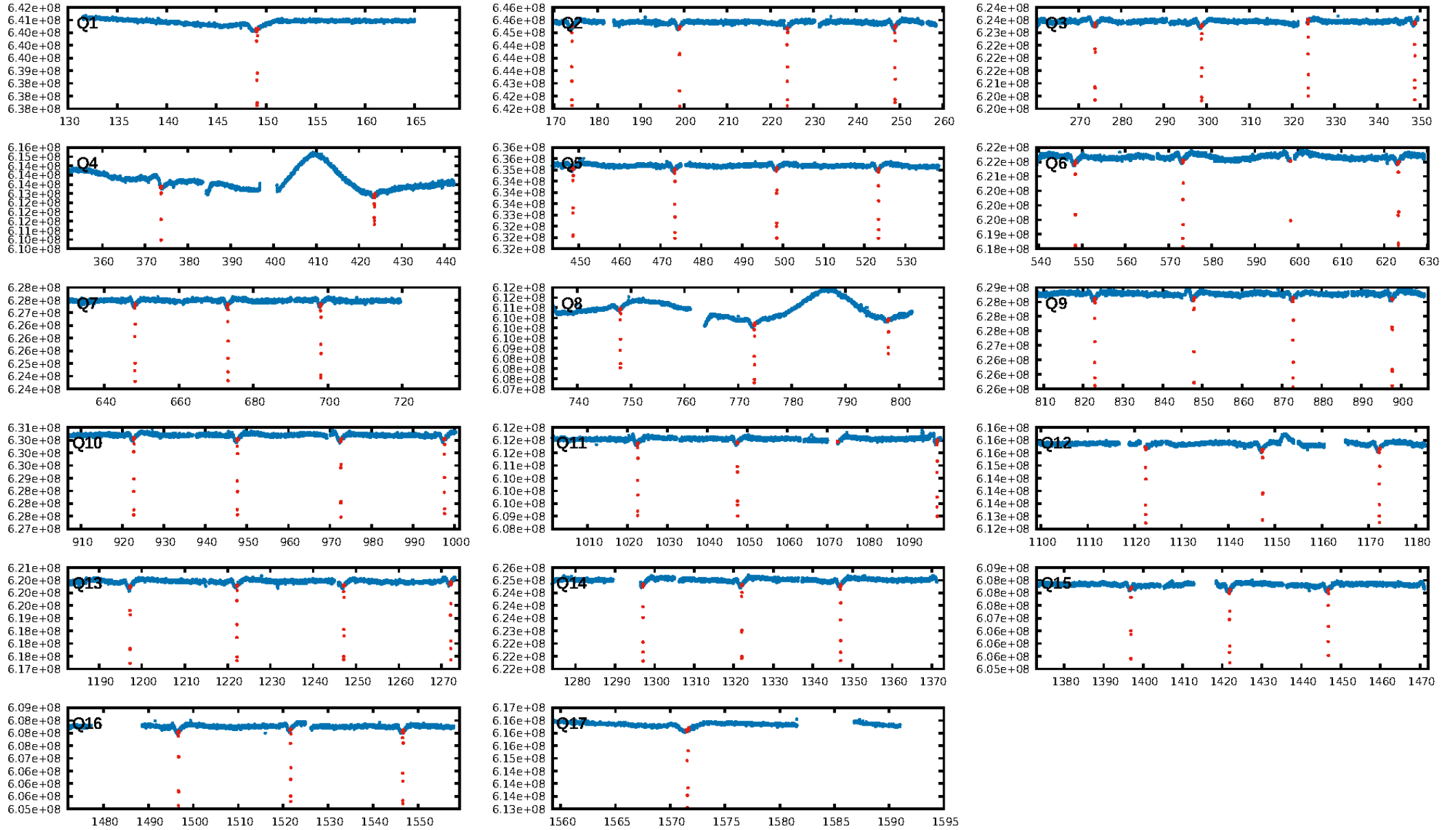
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [51/51]
GhostDiagnostic-chr: 9.014
Centroid-sig: N/A
Centroid-so: 0.112 arcsec [8.27σ]
OotOffset-rm: 0.135 arcsec [0.38σ]
KicOffset-rm: 0.125 arcsec [0.30σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.88 [15/17]
DiffImageOverlap-fno: 0.00 [0/17]

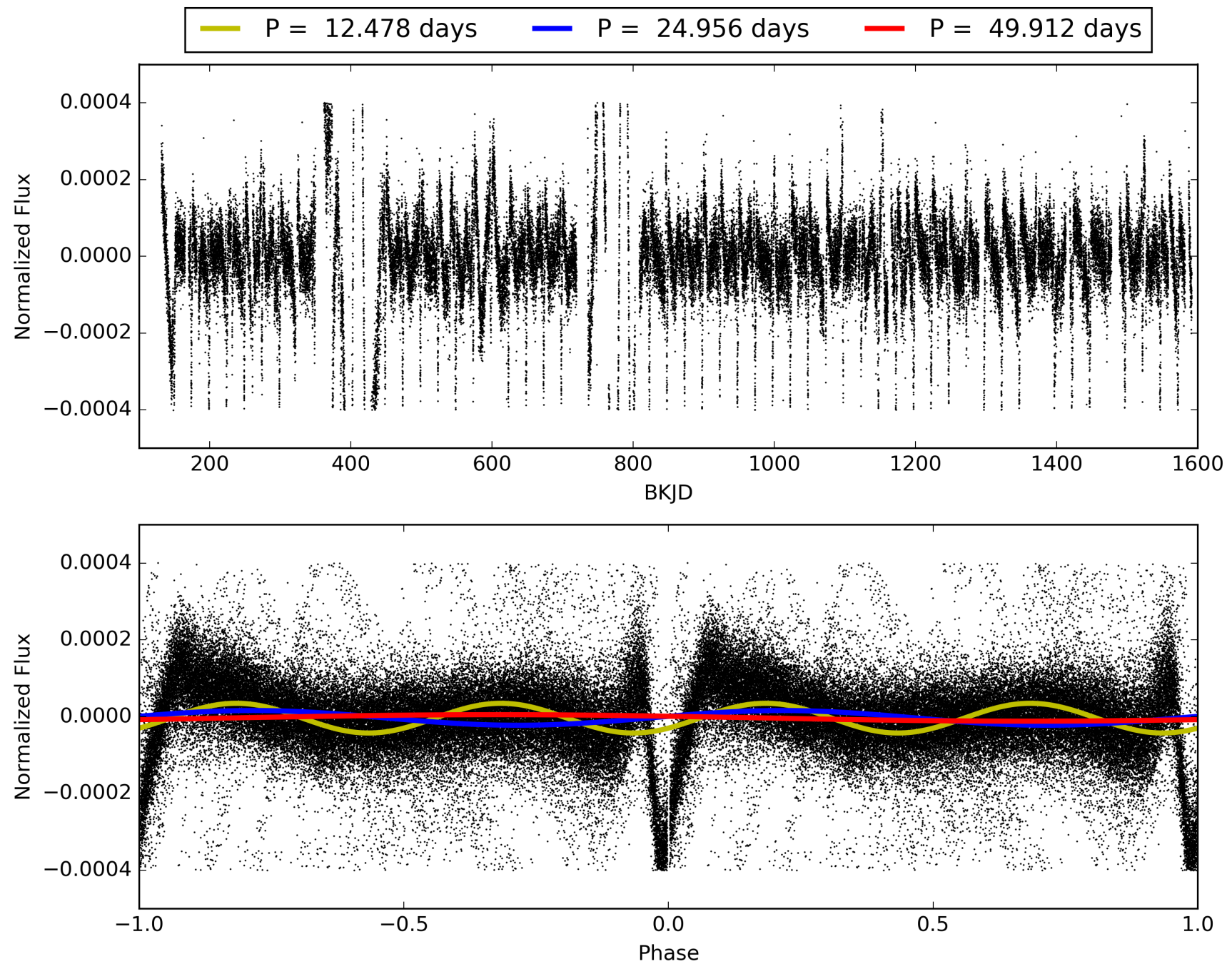
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:50:04 Z

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

TCE 004459068-01, PDC Light Curves

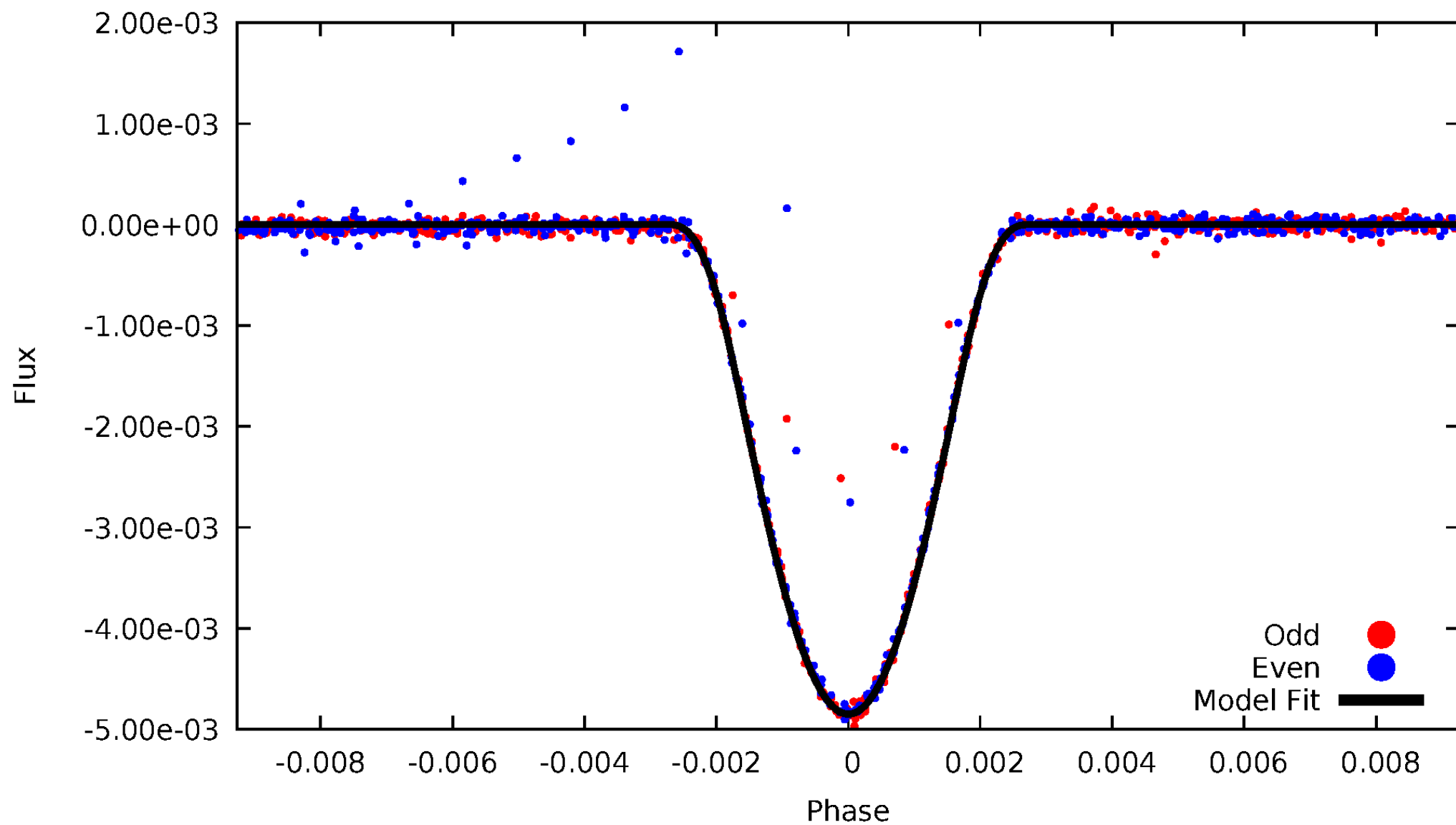


TCE 004459068-01



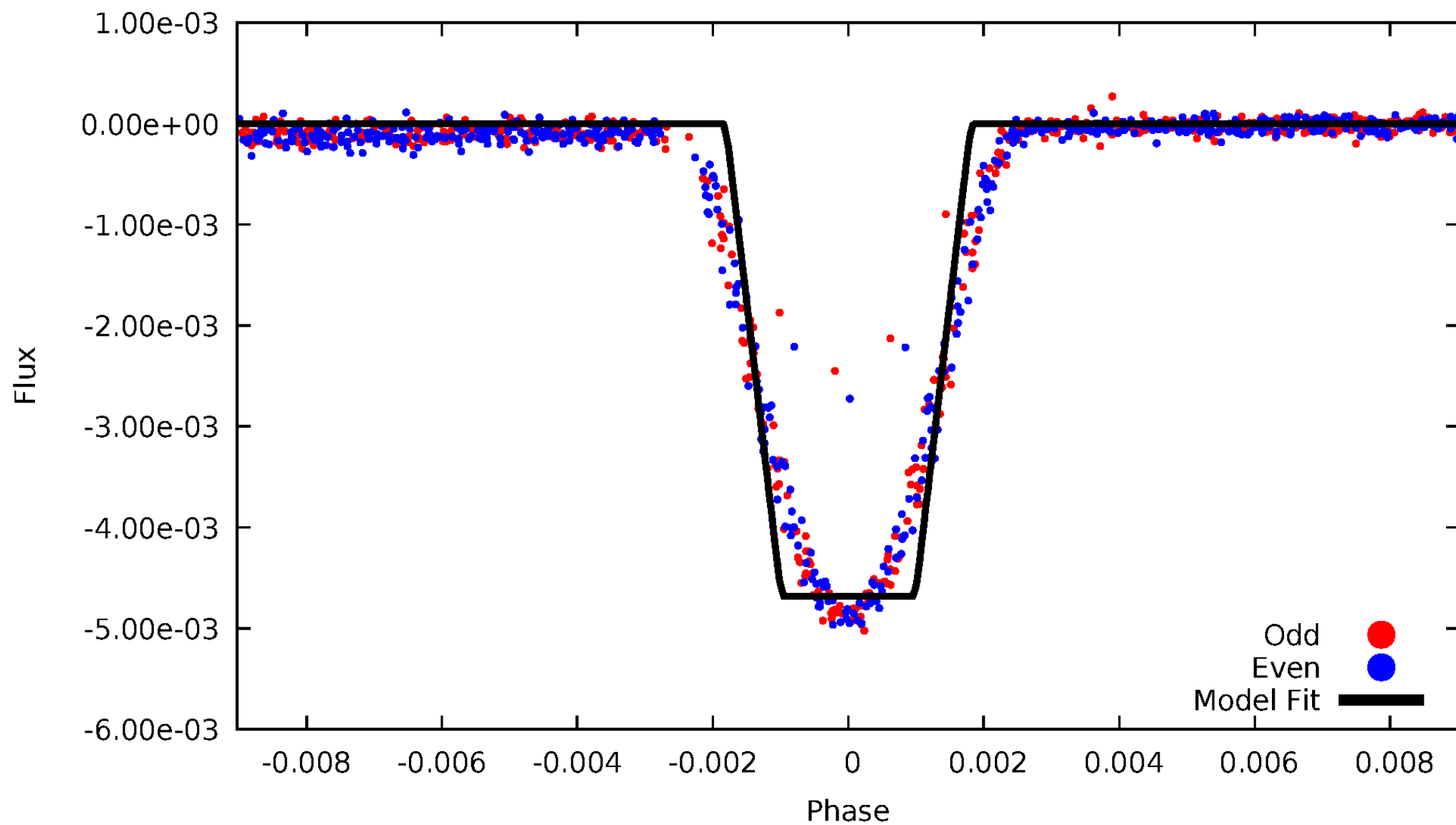
DV Odd/Even

TCE 004459068-01



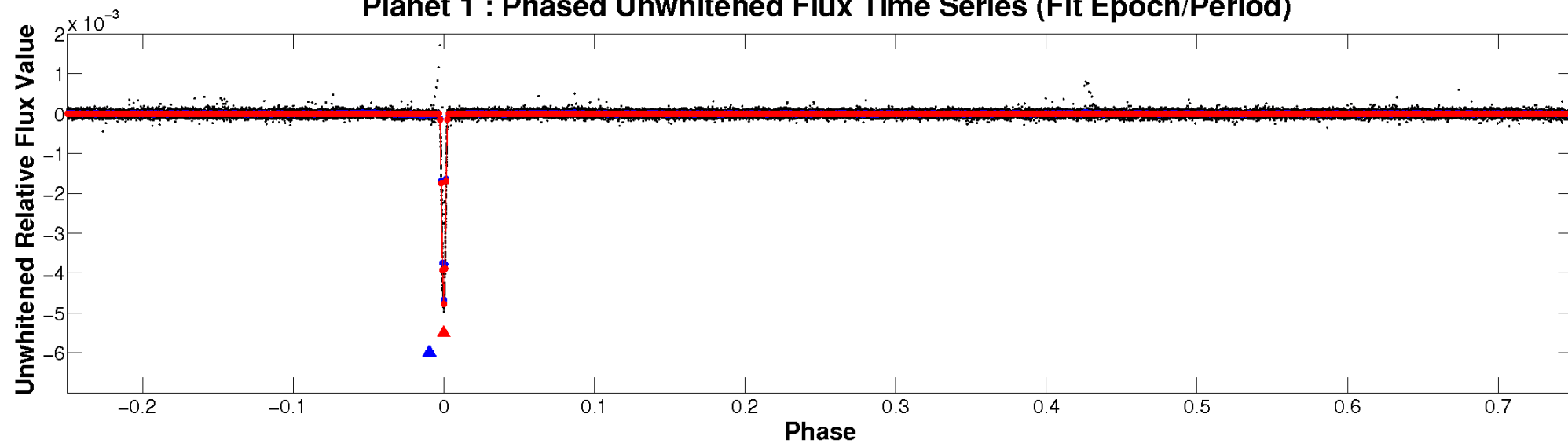
ALT Odd/Even

TCE 004459068-01

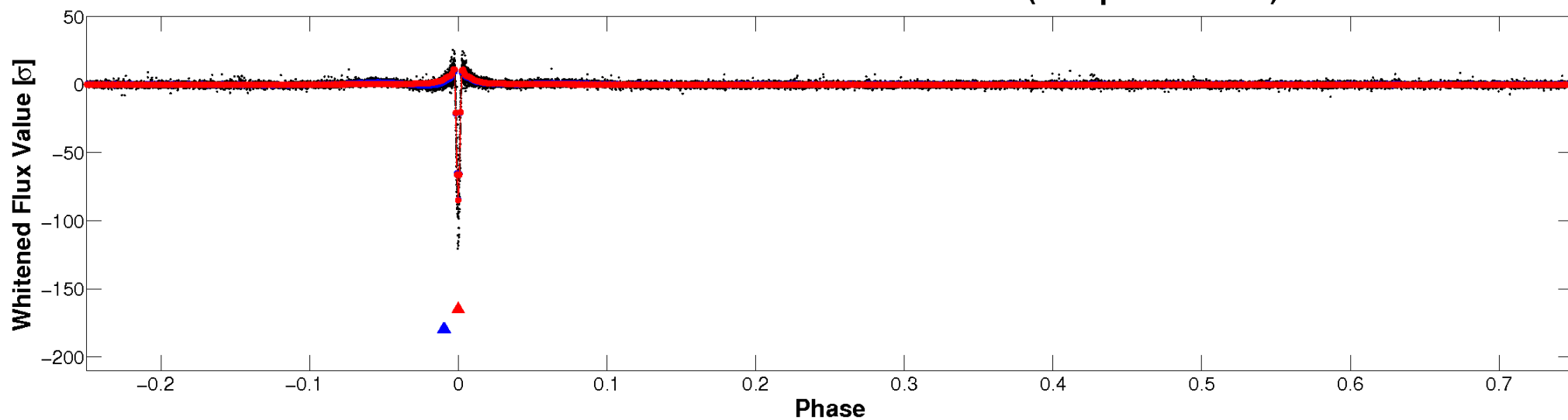


Non-Whitened Vs. Whitened Light Curve

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

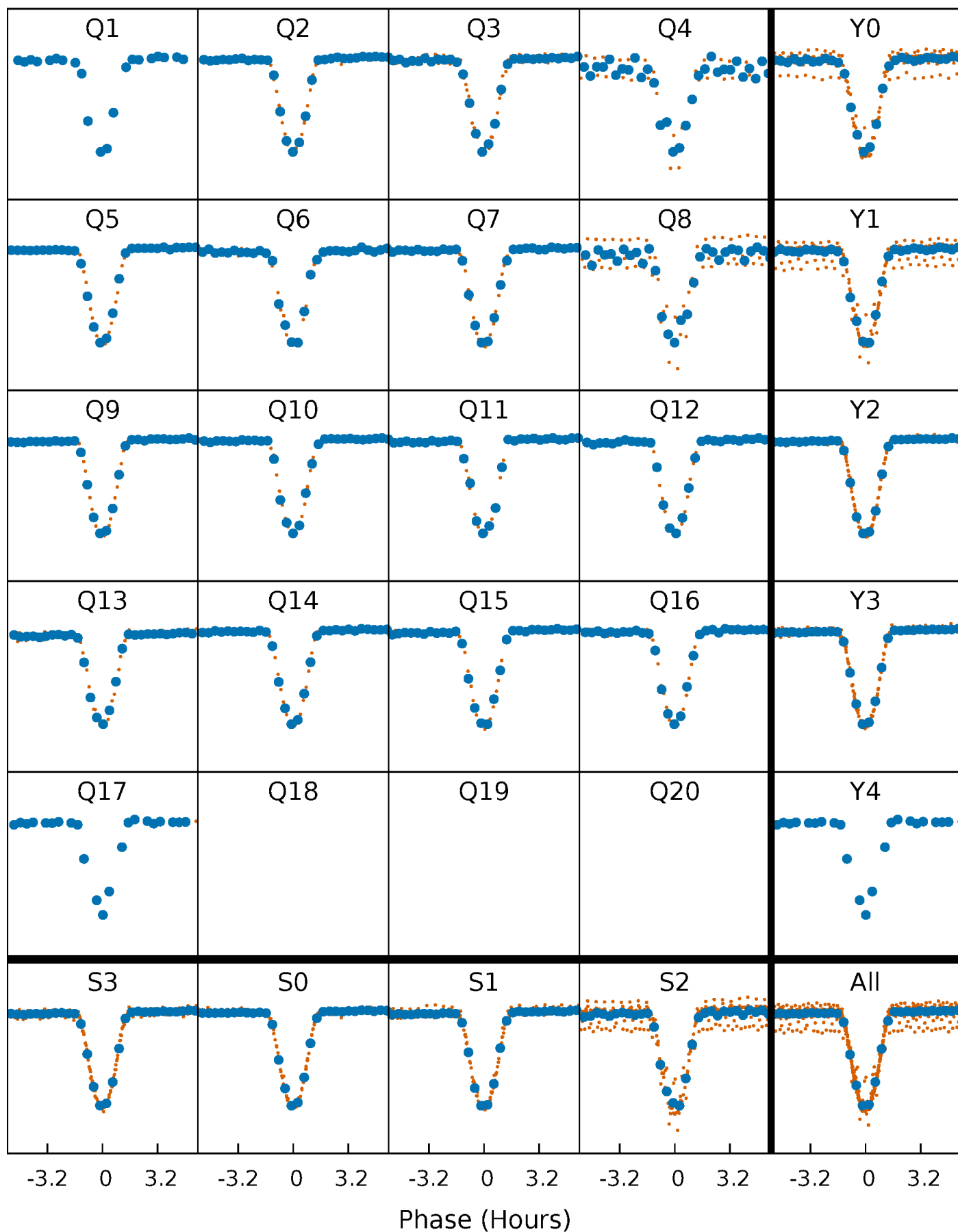


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



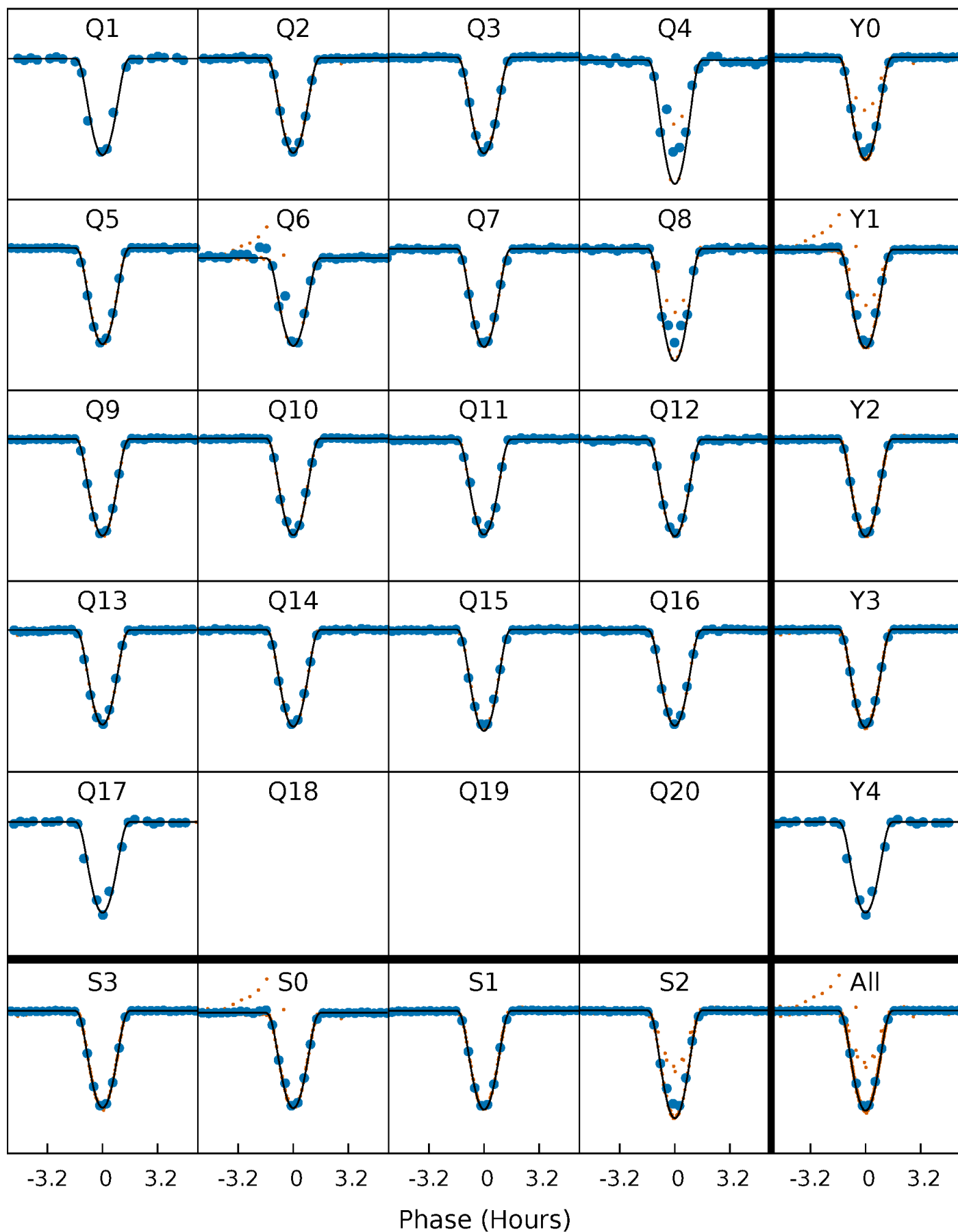
PDC Quarter-Phased Transit Curves

TCE 004459068-01 P= 24.955999 Days $T_0=149.094517$ (BKJD)



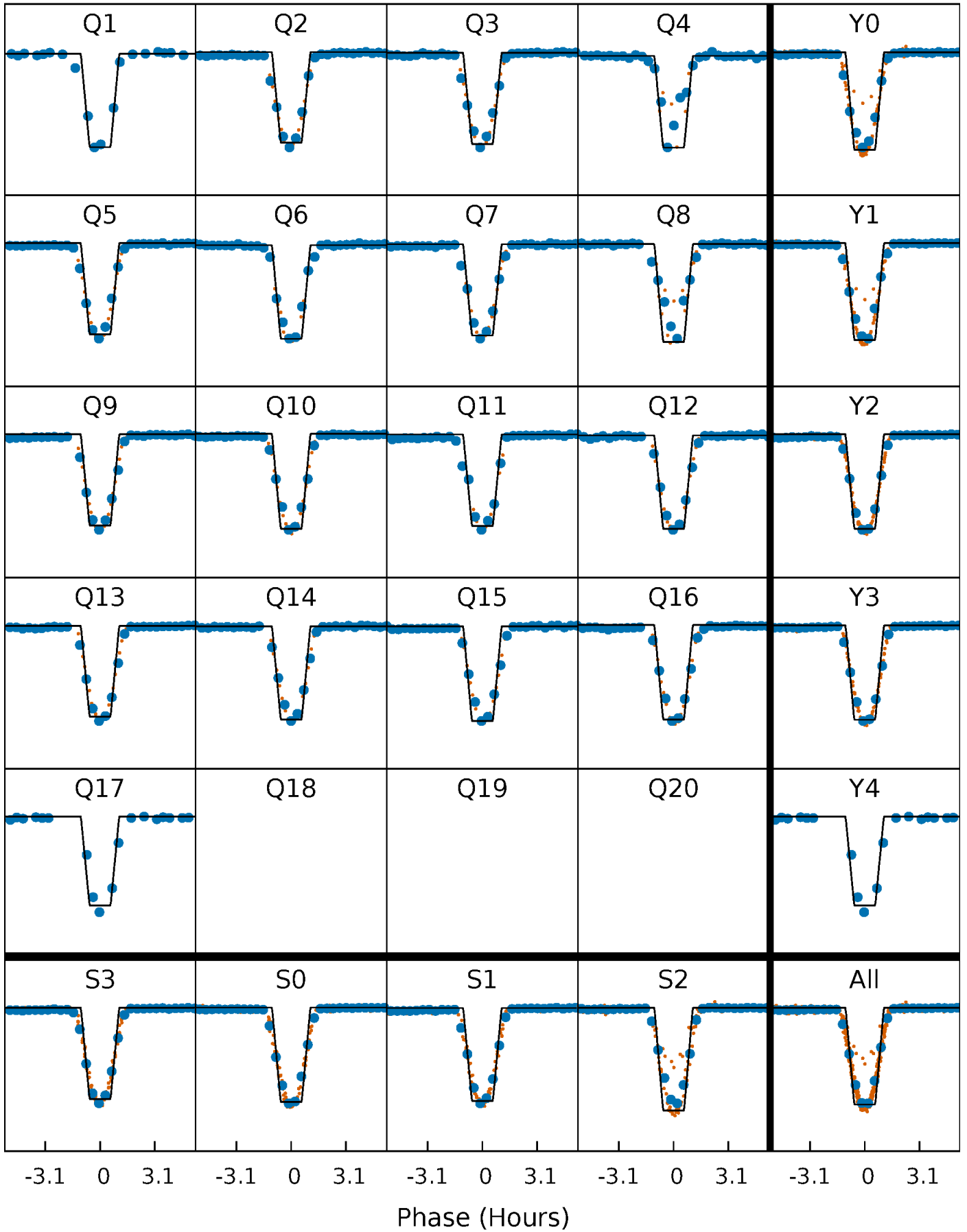
DV Quarter-Phased Transit Curves

TCE 004459068-01 P= 24.955999 Days $T_0=149.094517$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

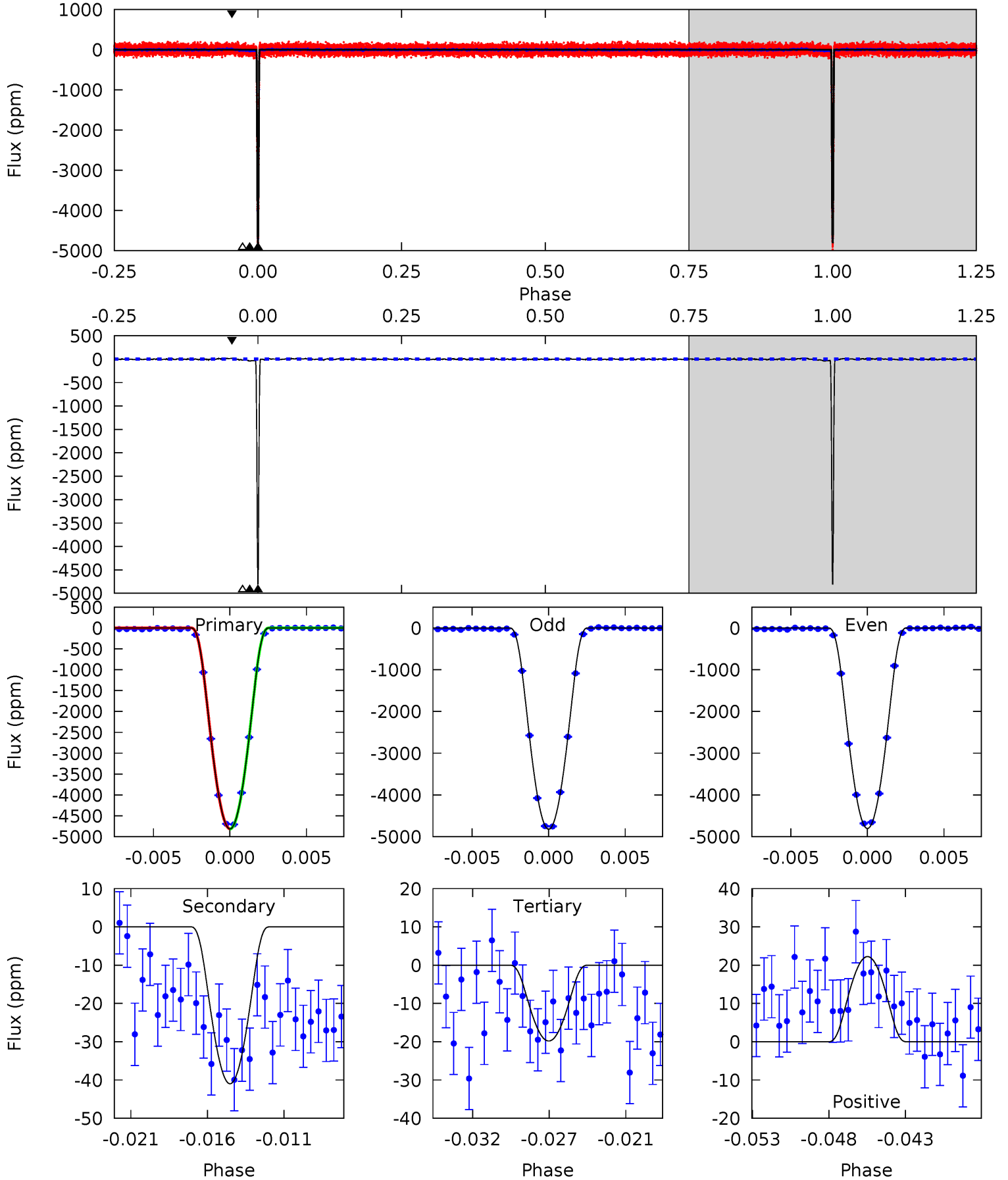
TCE 004459068-01 P= 24.955877 Days $T_0=149.097905$ (BKJD)



DV Model-Shift Uniqueness Test

004459068-01, P = 24.955999 Days, E = 124.138518 Days

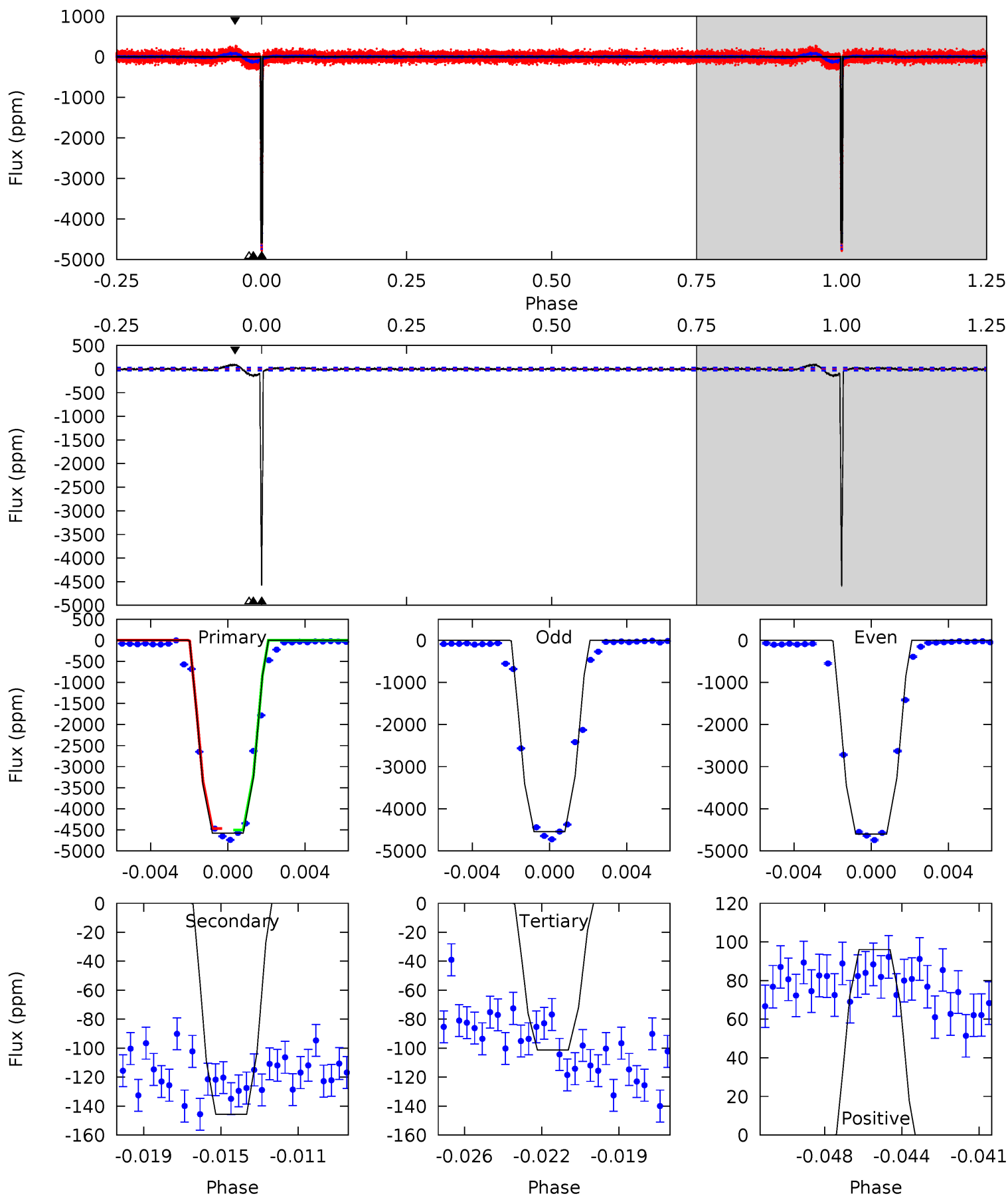
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1753	14.9	7.22	8.10	5.15	2.79	2.24	1746	1745	7.71	6.83	3.33	0.96	0.00	1.10



Alt Model-Shift Uniqueness Test

004459068-01, P = 24.955877 Days, E = 124.142028 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
798.7	25.4	17.7	16.8	5.21	2.90	3.62	781.0	781.9	7.74	8.65	5.38	0.98	0.02	0



Stellar Parameters For KIC 004459068

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8617^{+325}_{-758}	$3.780^{+0.408}_{-0.072}$	$-0.220^{+0.150}_{-0.200}$	$3.018^{+0.426}_{-1.277}$	$2.002^{+0.319}_{-0.439}$	$0.102^{+0.353}_{-0.023}$
	+4%/-9%	+11%/-2%	+68%/-91%	+14%/-42%	+16%/-22%	+345%/-23%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004459068-01 / KOI 6114.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-41 ± 3	$32.46^{+5.10}_{-8.10}$	1894^{+174}_{-233}	2640^{+117}_{-117}	$0.967^{+0.593}_{-0.247}$
Alt.	-146 ± 6	$21.06^{+4.18}_{-4.91}$	1897^{+177}_{-229}	3783^{+192}_{-195}	$8.138^{+5.162}_{-2.297}$

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

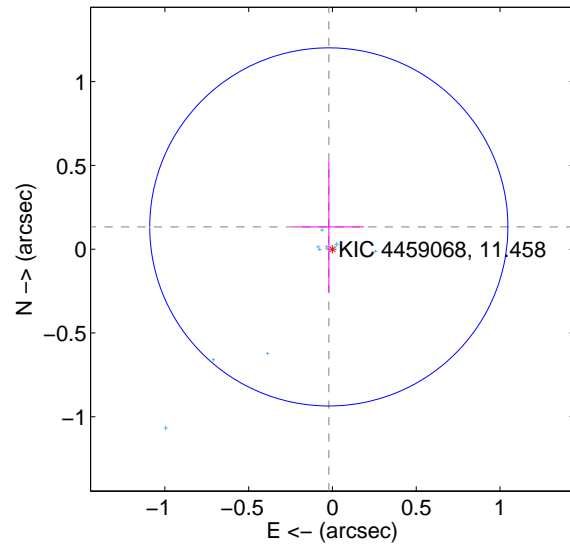
Supplemental centroid analysis for 004459068-01. **Kepler magnitude: 11.46.** Transit SNR 959.11

There are 15 quarters with good PRF difference image offsets

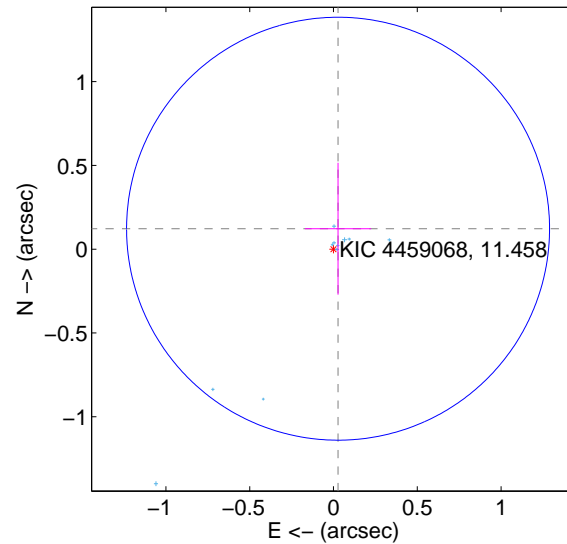
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.135 ± 0.356	0.38	0.022 ± 0.209	0.133 ± 0.389
PRF-fit source offset from KIC position	0.125 ± 0.421	0.30	-0.027 ± 0.197	0.122 ± 0.394
photometric centroid source offset	0.11 ± 0.01	8.27	-0.09 ± 0.01	-0.07 ± 0.02

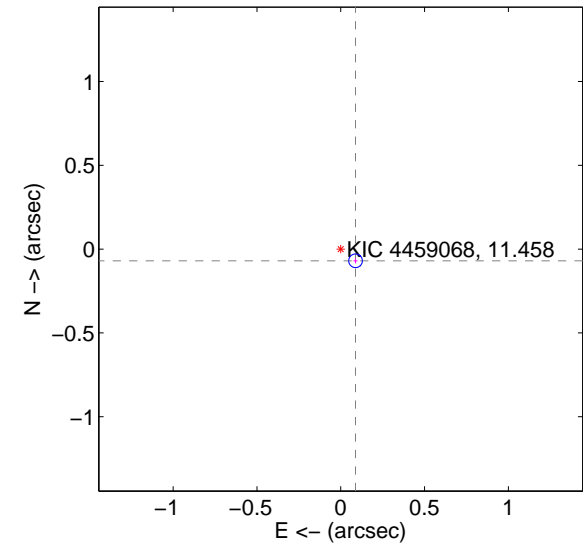
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

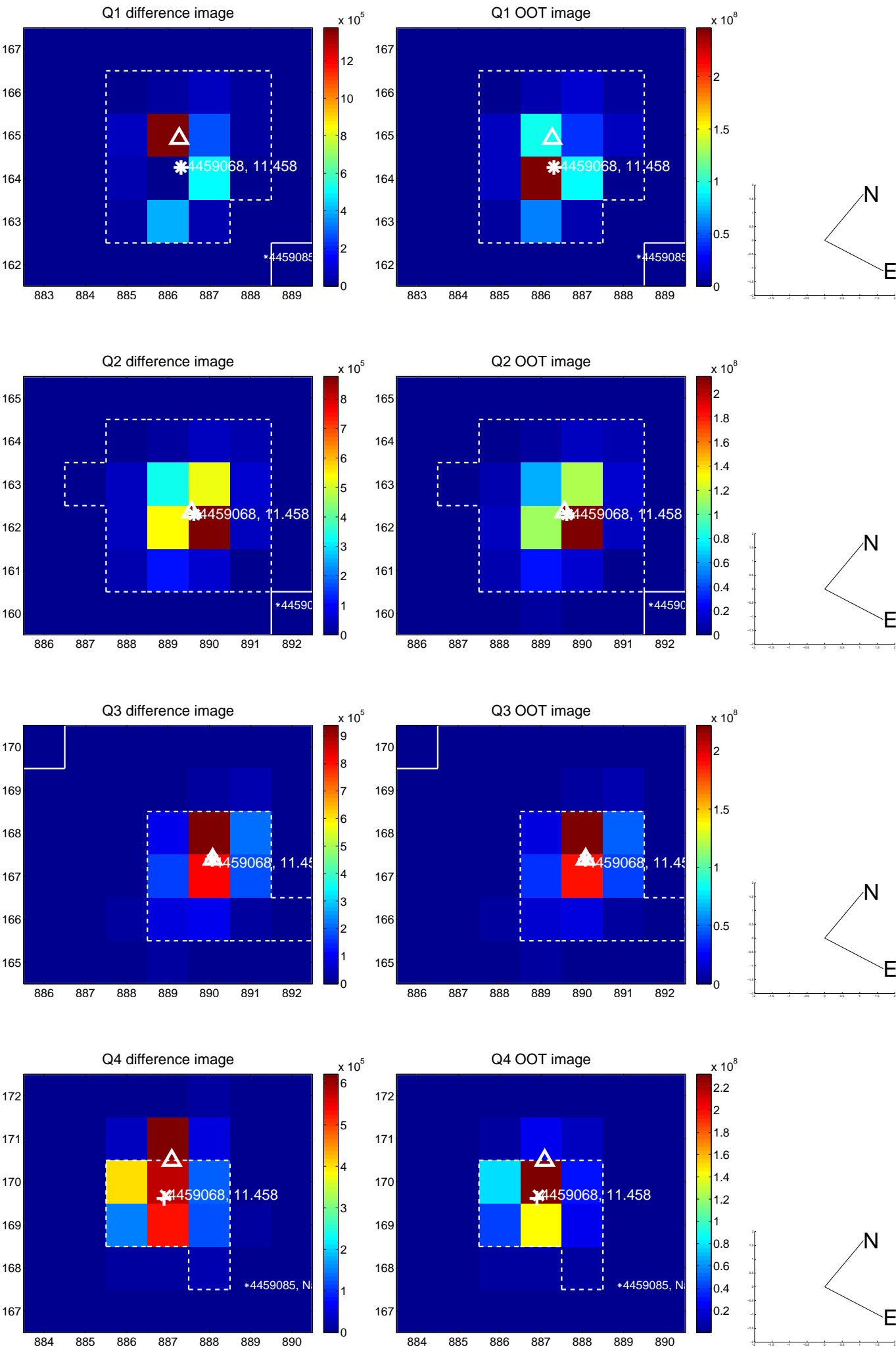


offset from photometric centroids

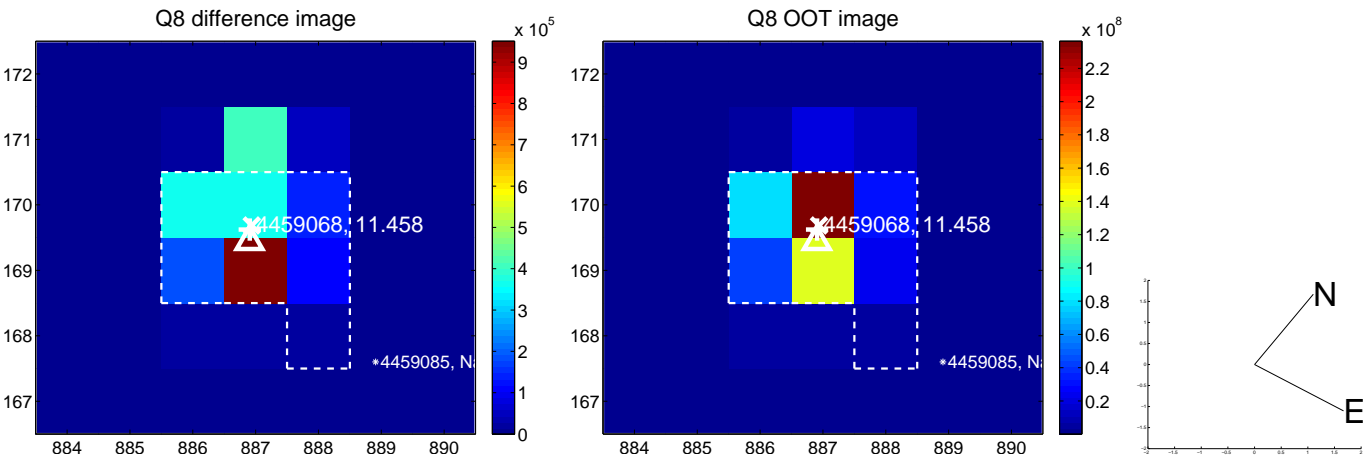
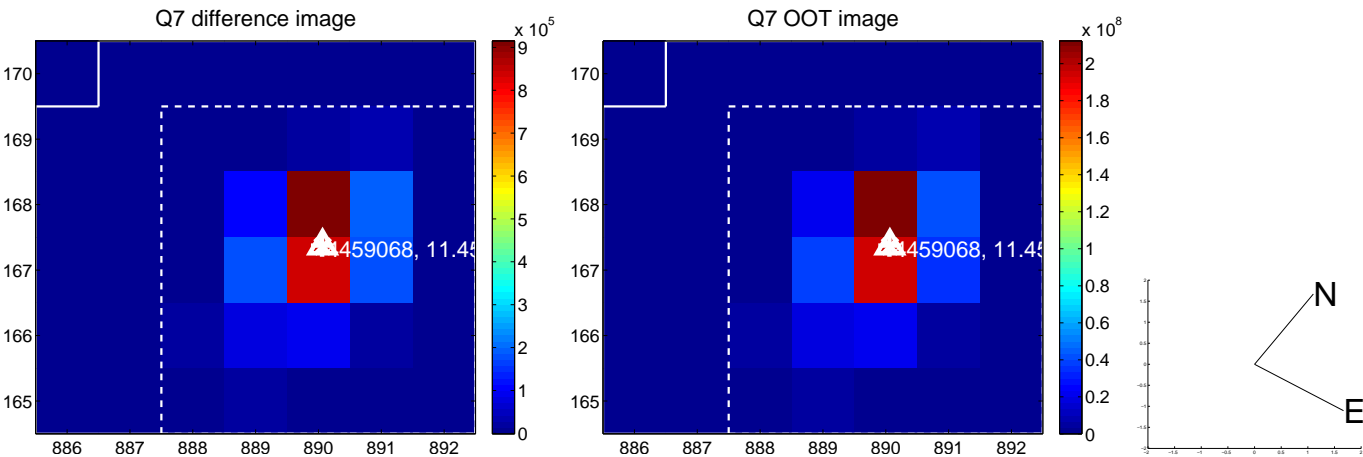
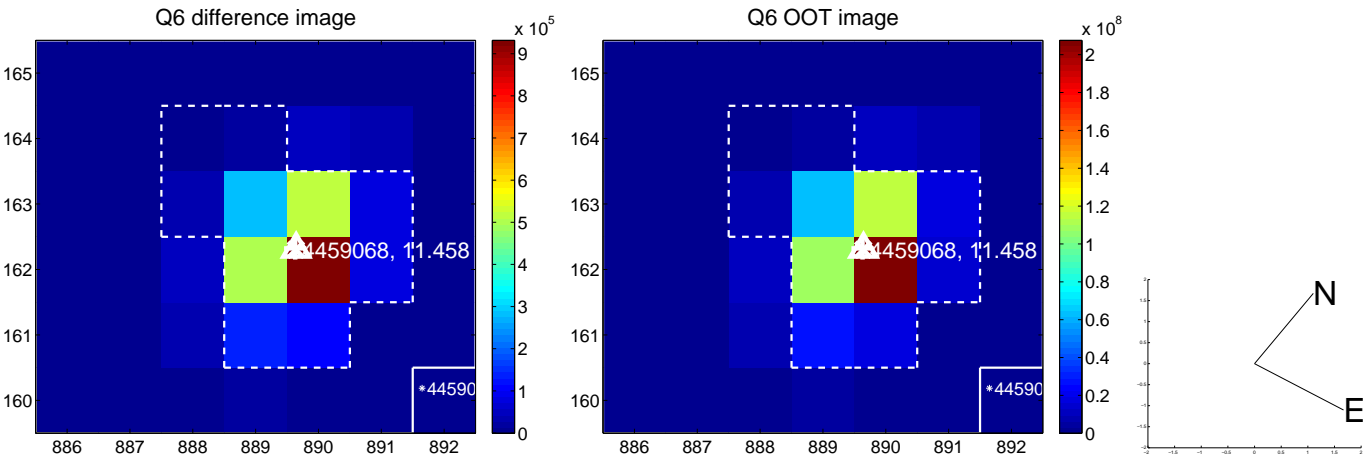
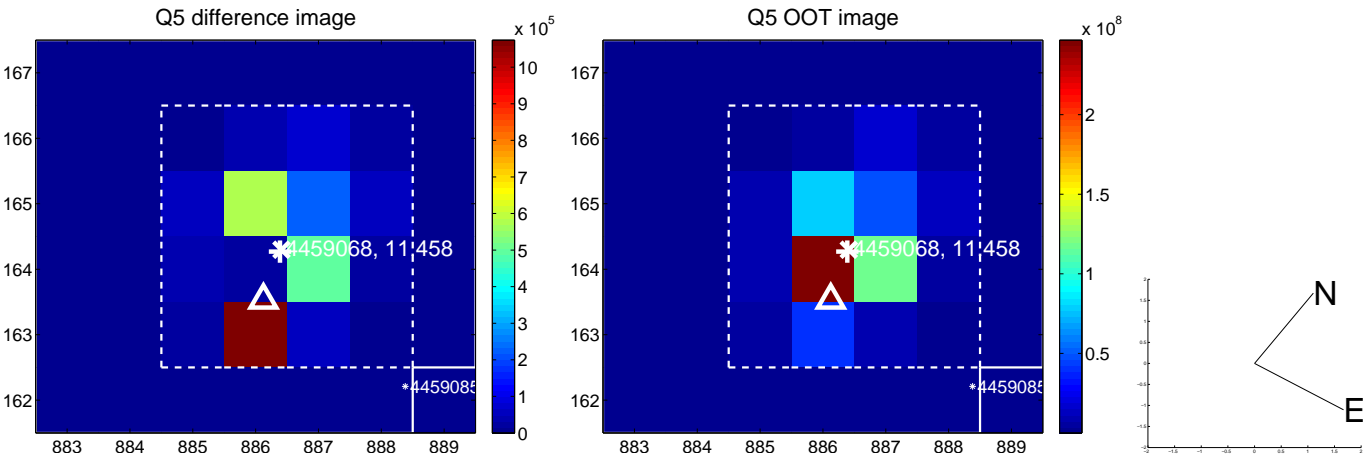


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

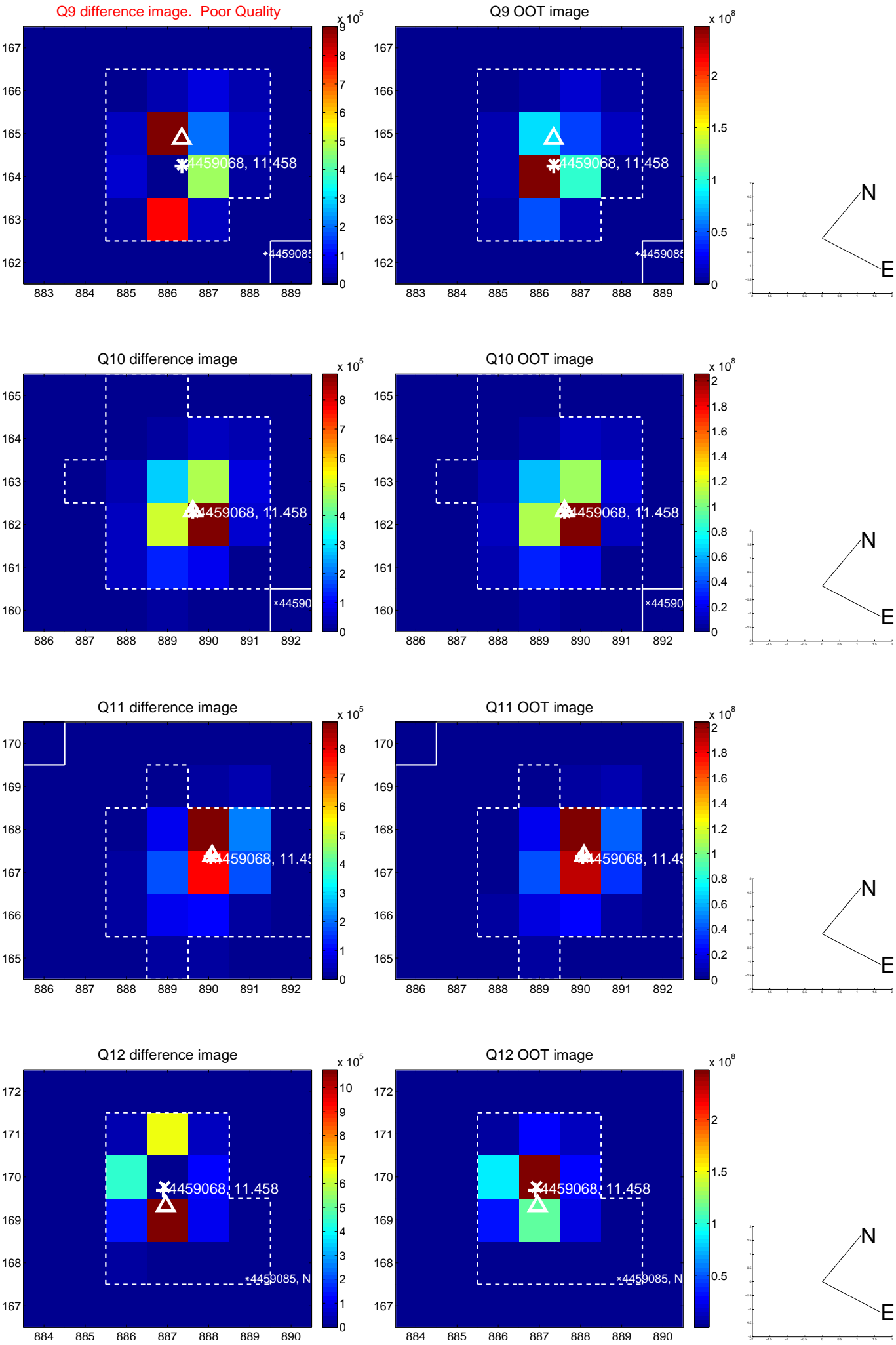
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



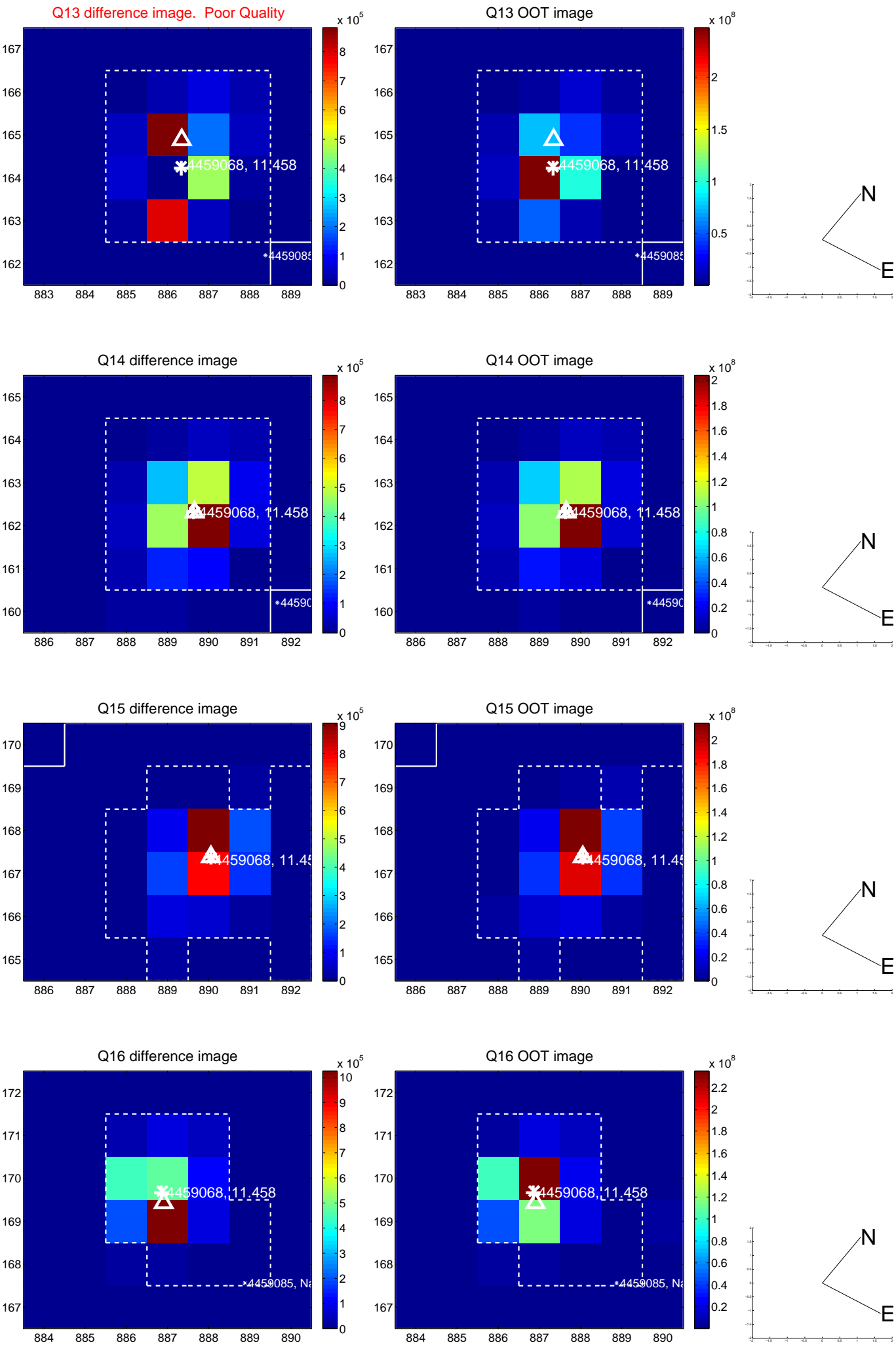
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



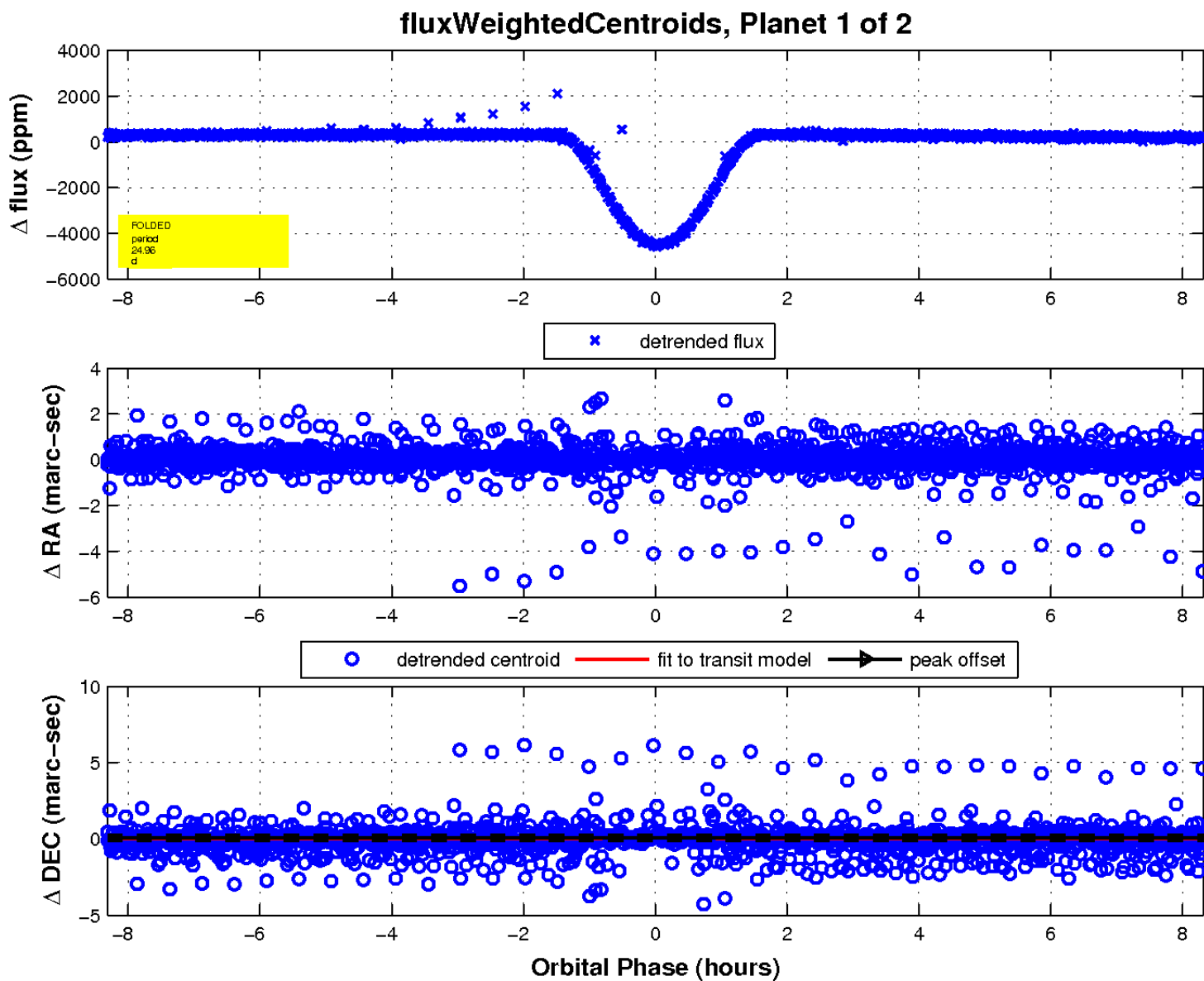
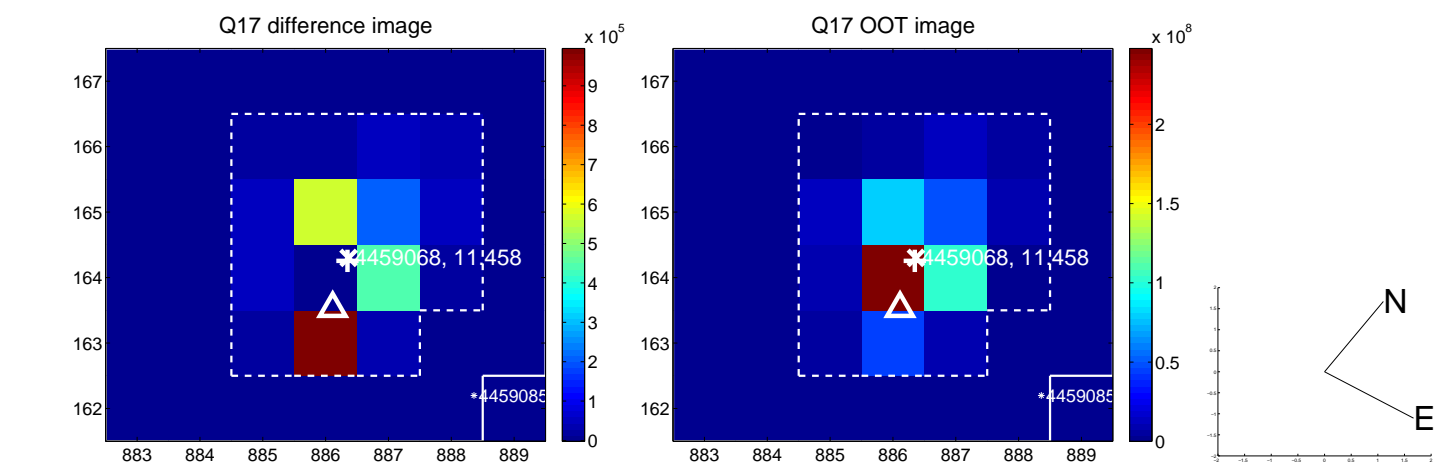
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

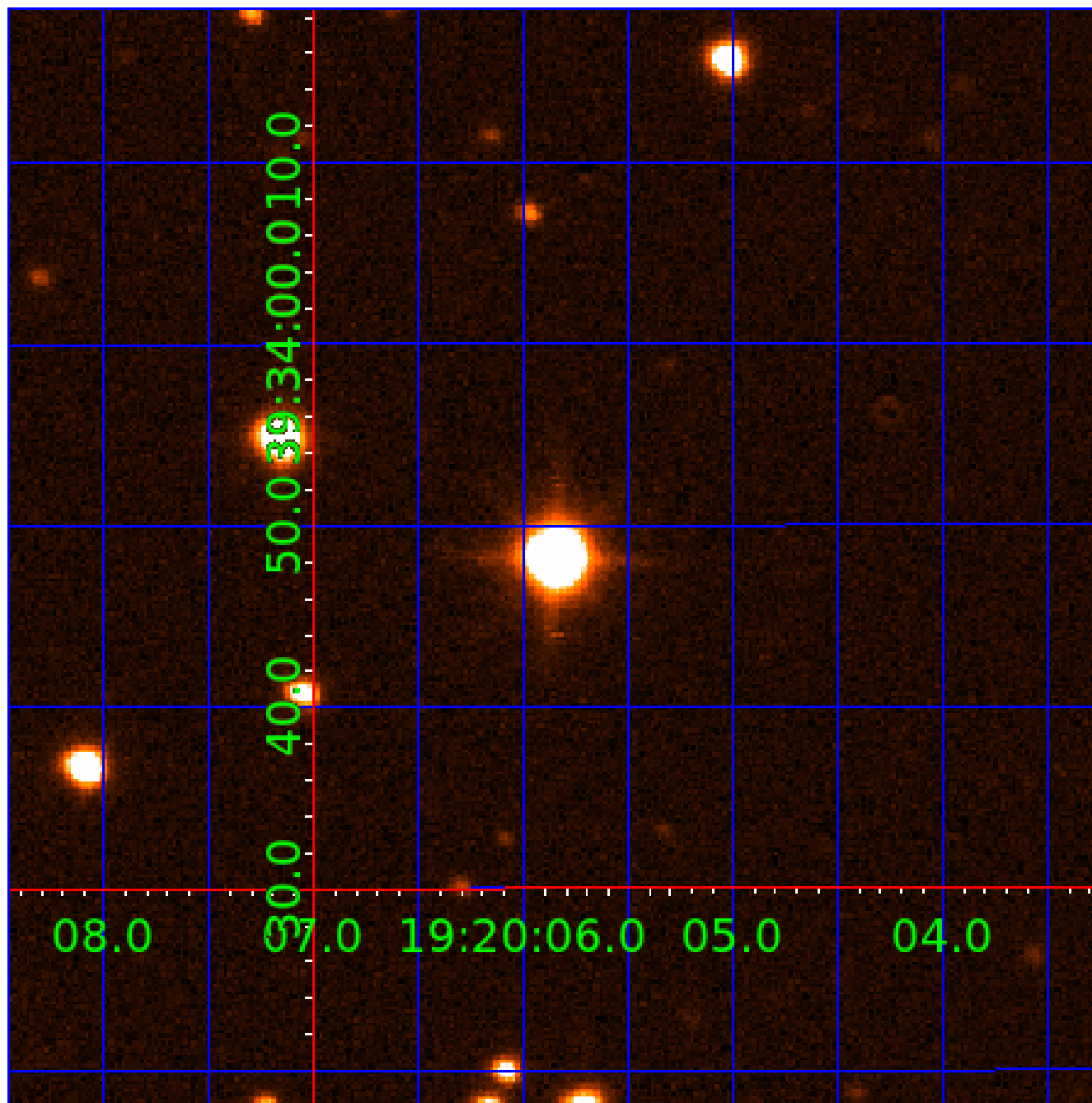


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004459068

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})
004459068-01	OBS	6114.01	24.955999	149.094517	4851.0	2.774	976.1	959.1	3.02	8617	34.47	1013.67
004459068-02	OBS	No	24.955658	148.866905	356.4	44.704	54.3	79.3	3.02	8617	10.71	1013.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004459068-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—CENT_SATURATED
004459068-02	OBS	FP	0.00	1	0	0	0	LPP_DV—RESIDUAL_TCE—CENT_SATURATED

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.

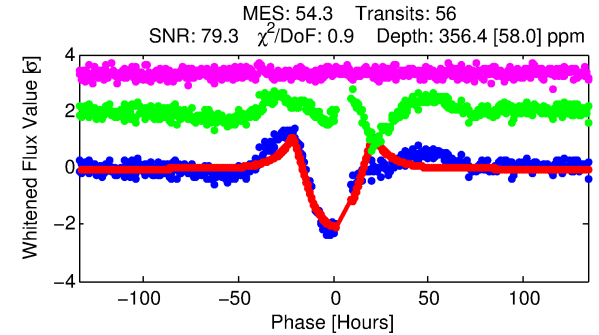
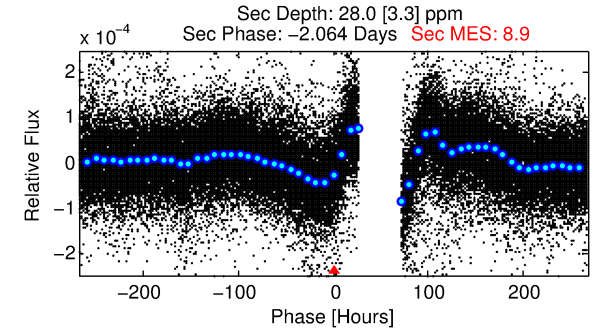
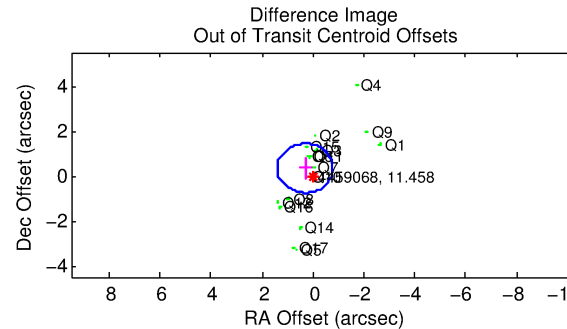
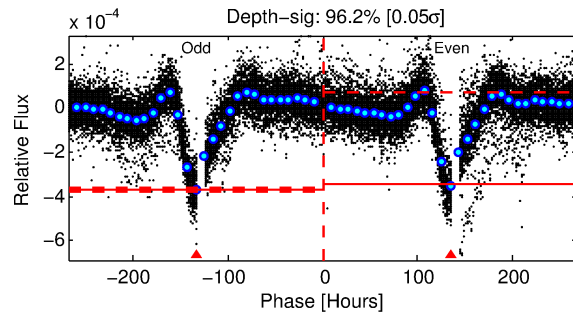
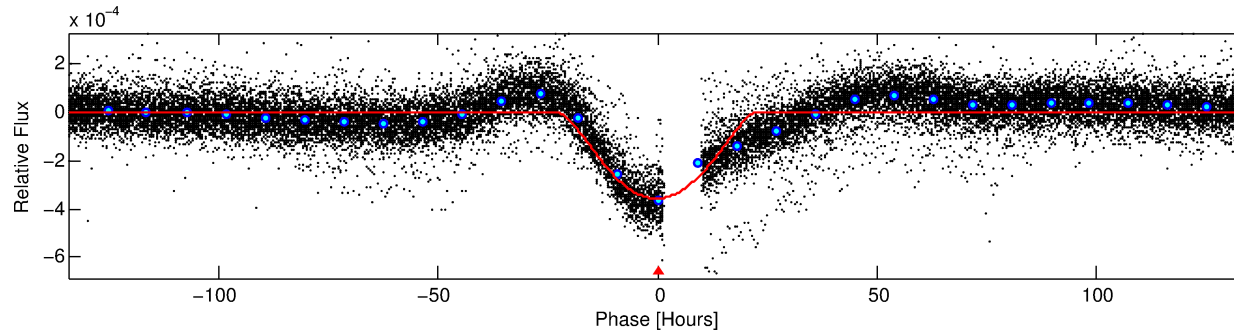
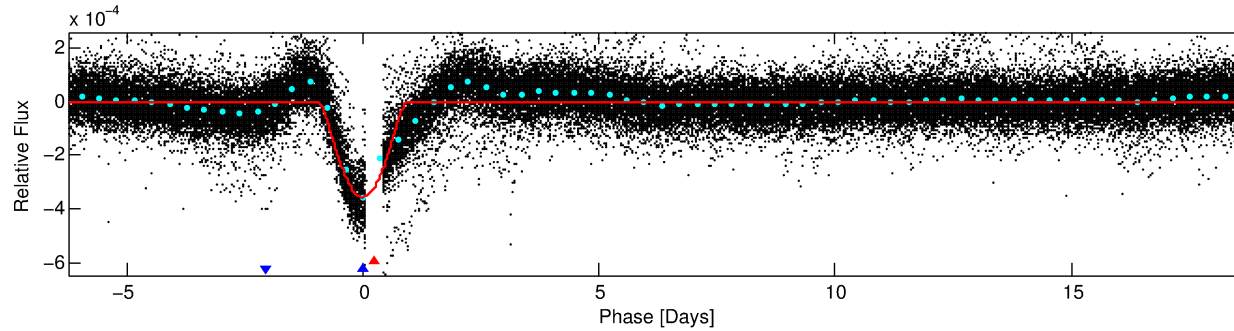
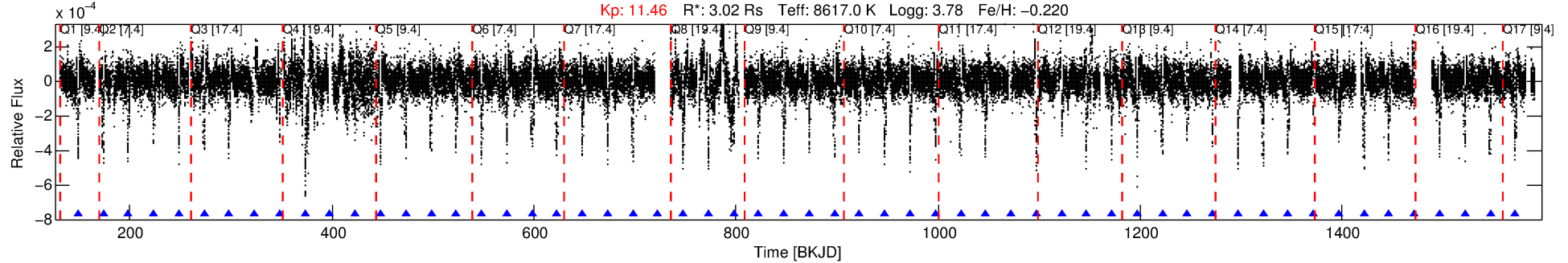
Ephemeris Match Information For 004459068-02

No Significant Match Found

DV One-Page Summary

KIC: 4459068 Candidate: 2 of 2 Period: 24.956 d
KOI: K06114 Corr: No Ephemeris Match

Kp: 11.46 R*: 3.02 Rs Teff: 8617.0 K Logg: 3.78 Fe/H: -0.220



DV Fit Results:

Period = 24.95566 [0.00024] d
Epoch = 148.8669 [0.0083] BKJD
Rp/R* = 0.0325 [0.0055]
a/R* = 1.49 [0.03]
b = 1.00 [0.01]
Seff = 1013.69 [782.34]
Teq = 1439 [278] K
Rp = 10.71 [4.88] Re
a = 0.2107 [0.0888] AU
Ag = 5.97 [4.62] [1.08σ]
Teffp = 3478 [435] K [3.95σ]

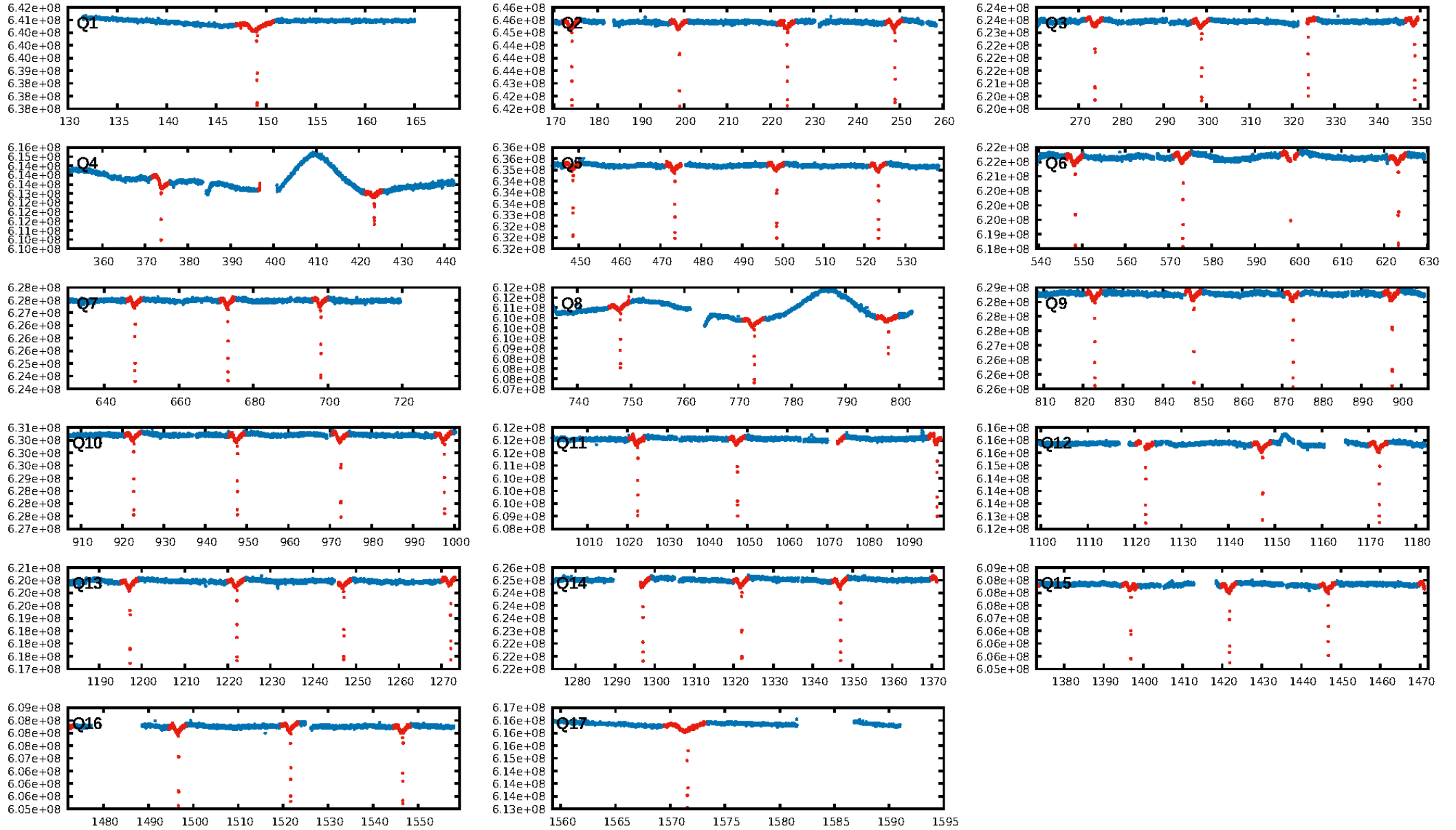
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [54/54]
GhostDiagnostic-chr: 3.809
Centroid-sig: N/A
Centroid-so: 0.176 arcsec [1.72σ]
OotOffset-rm: 0.455 arcsec [1.25σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-rm: 0.395 arcsec [1.07σ]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 0.00 [0/16]

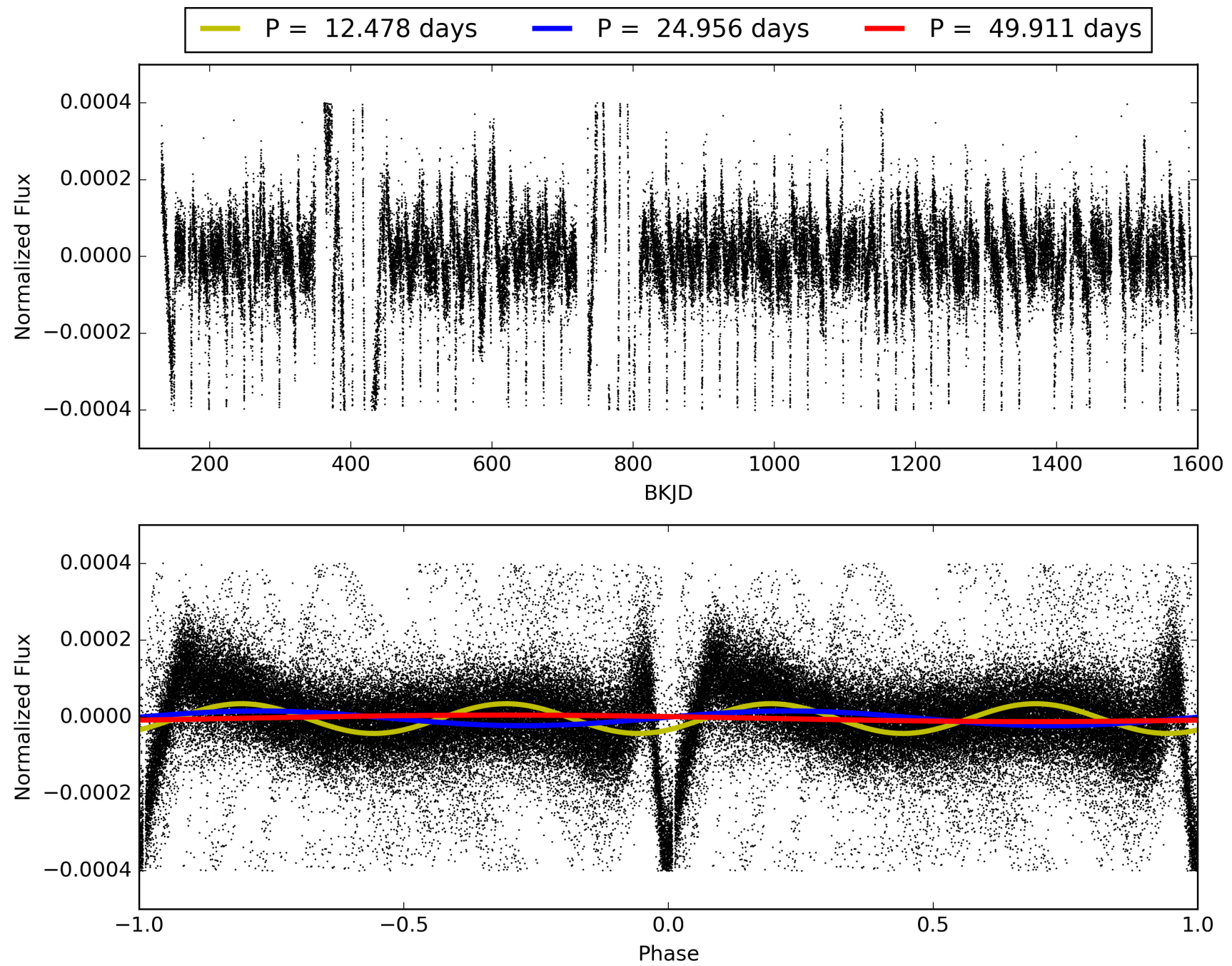
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:50:11 Z

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

TCE 004459068-02, PDC Light Curves

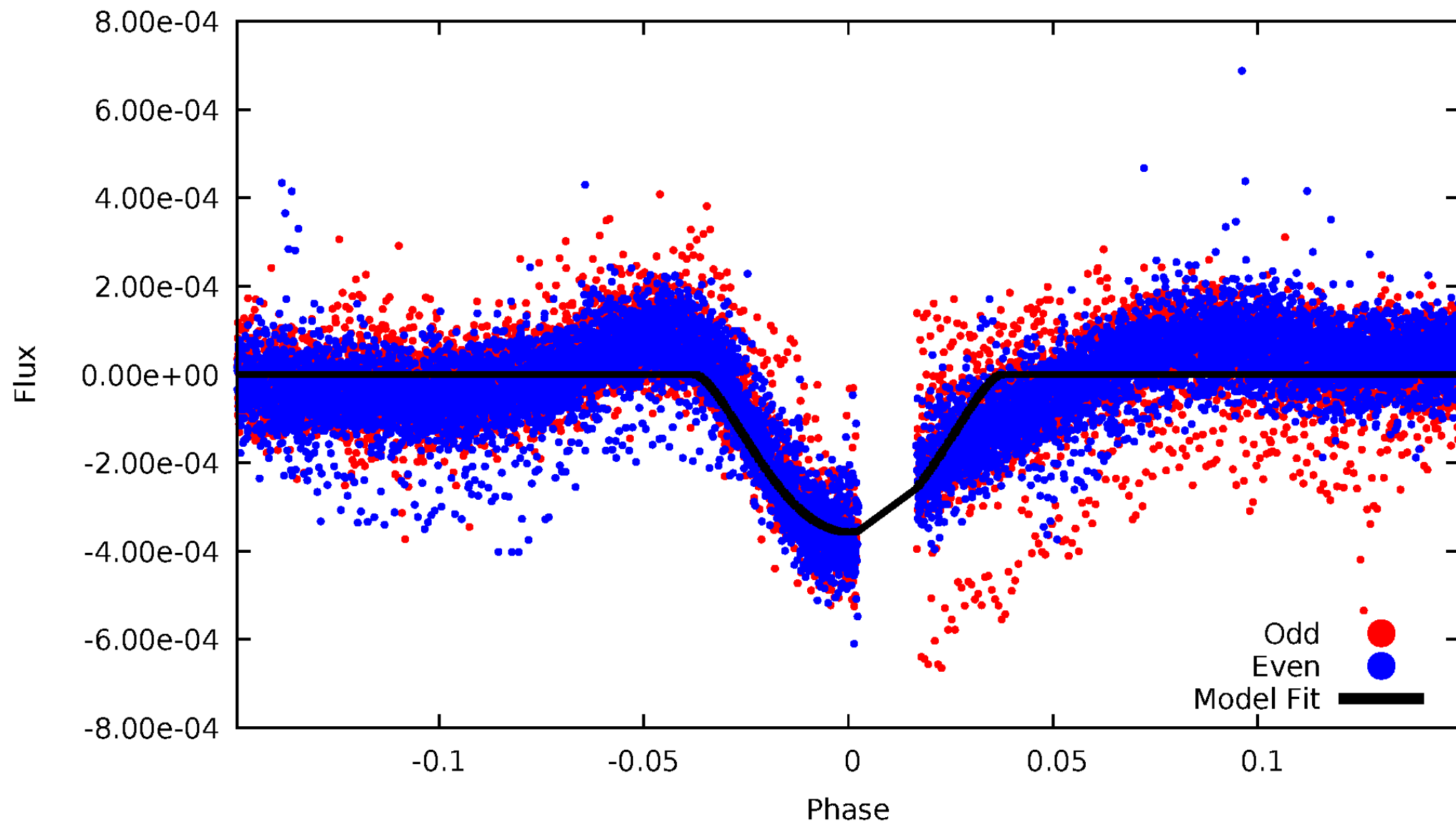


TCE 004459068-02



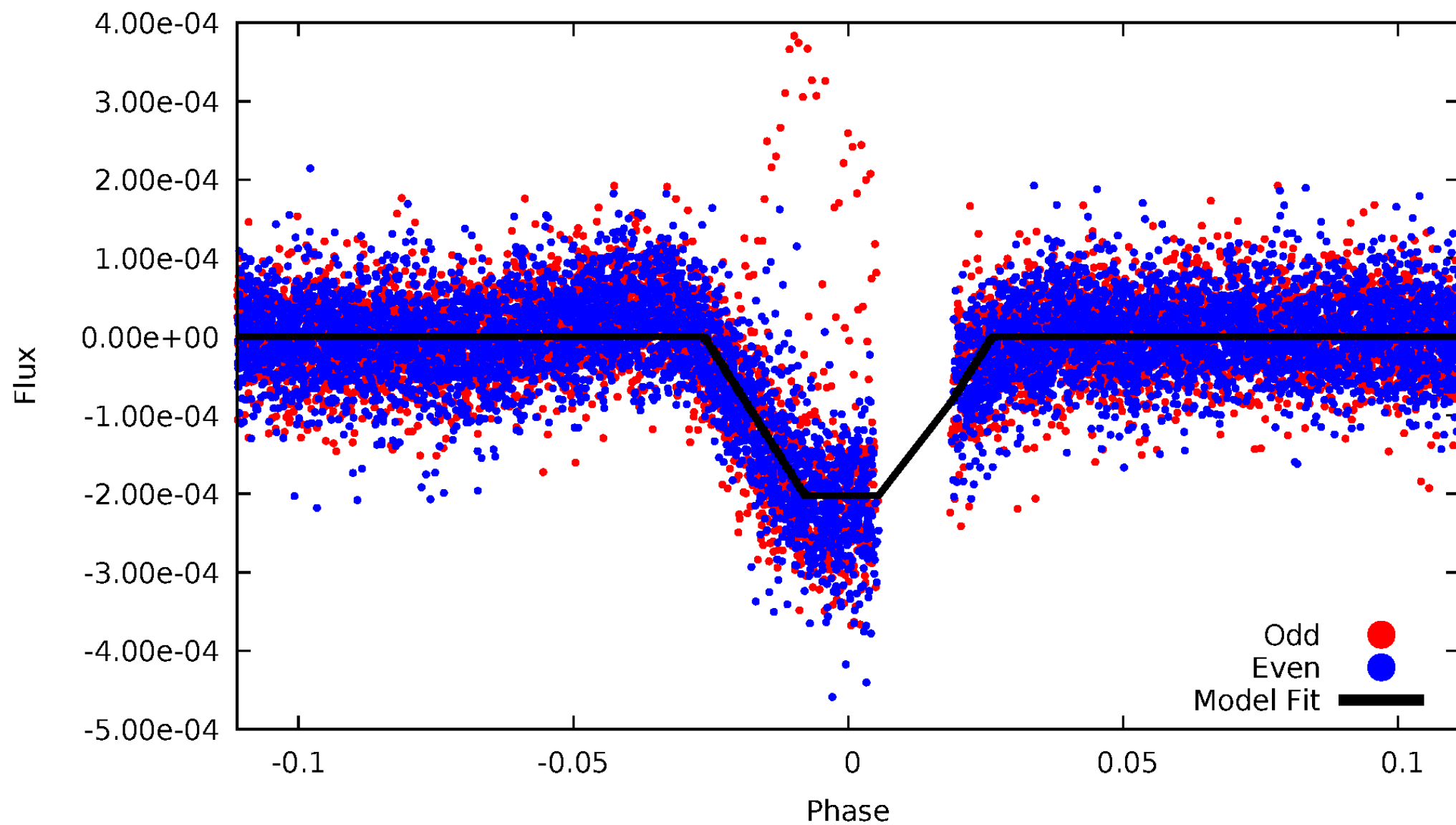
DV Odd/Even

TCE 004459068-02



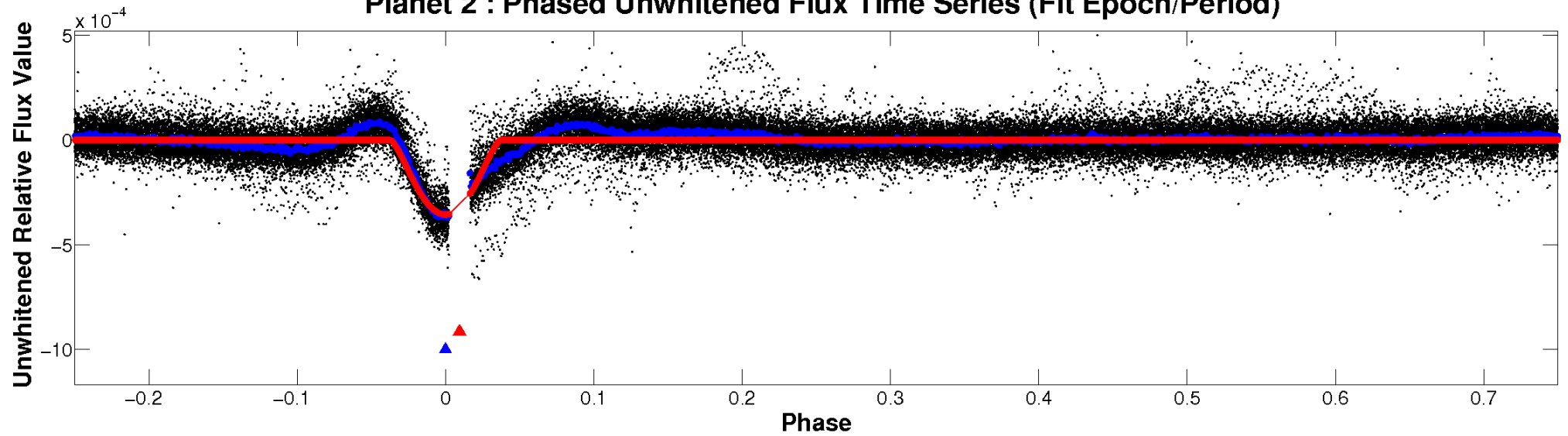
ALT Odd/Even

TCE 004459068-02

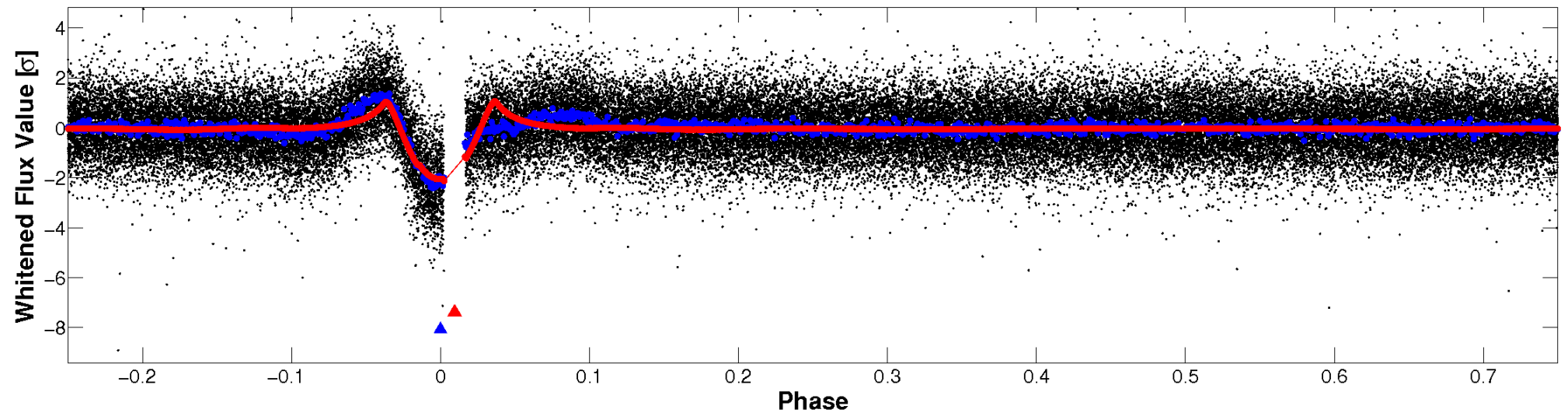


Non-Whitened Vs. Whitened Light Curve

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

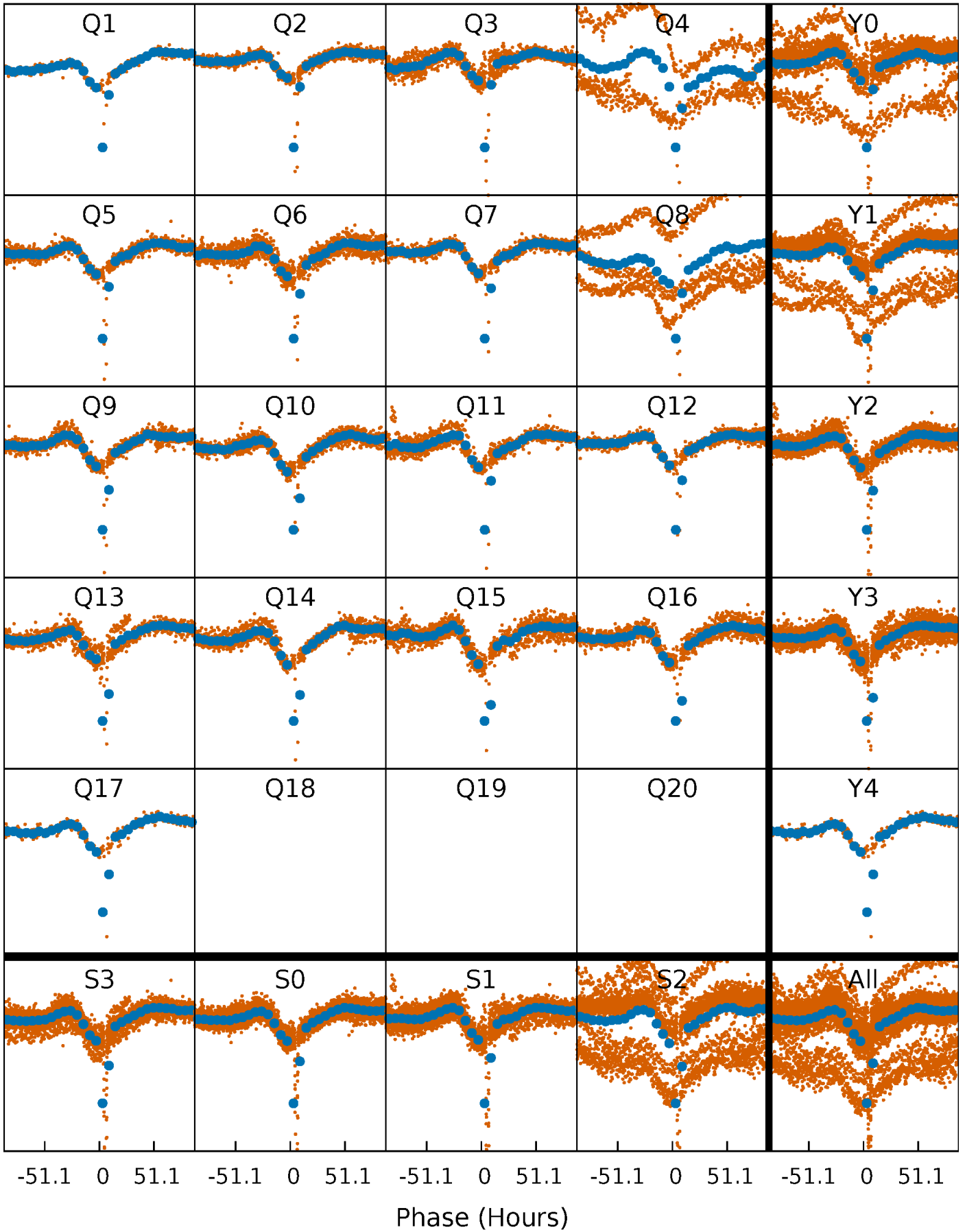


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



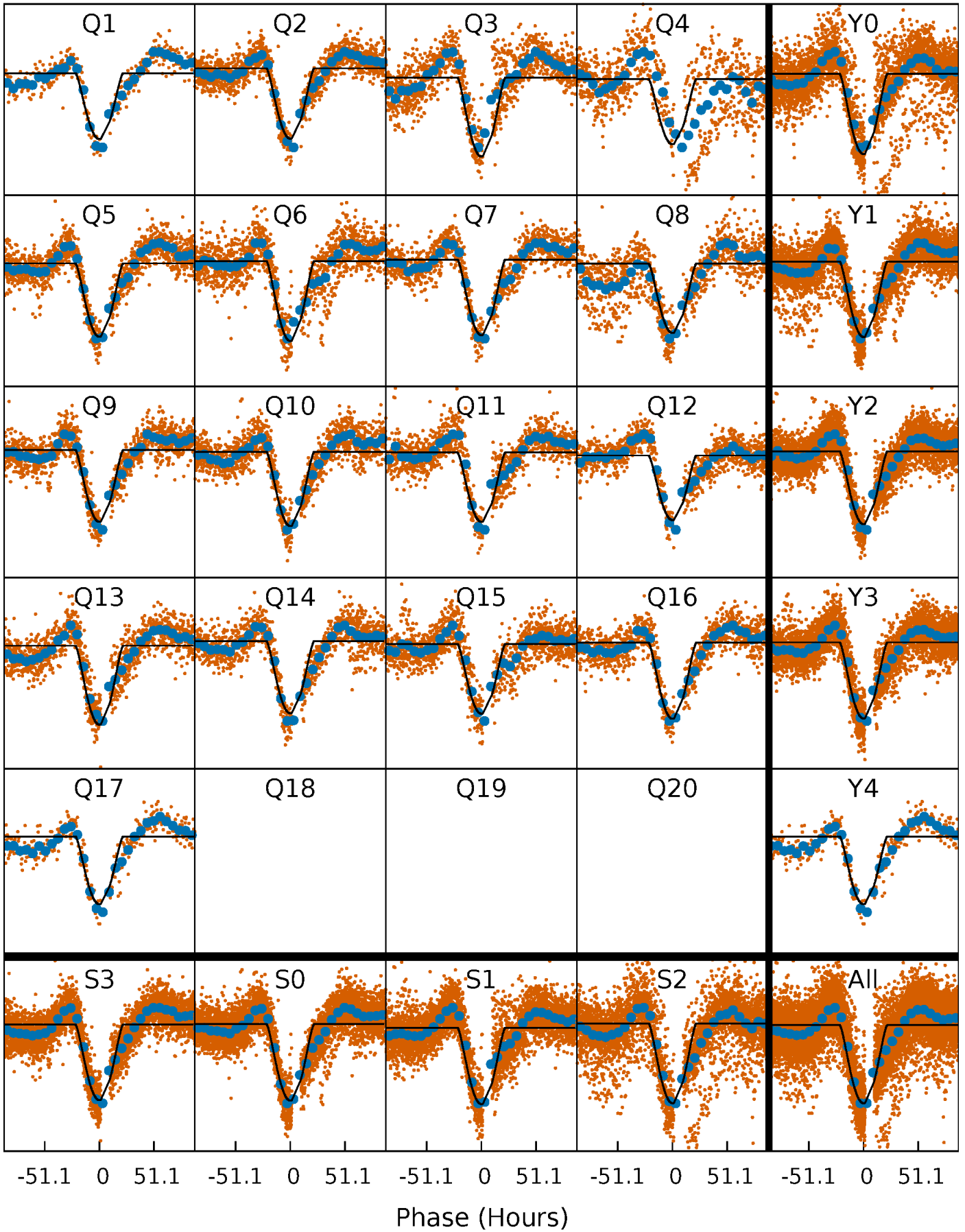
PDC Quarter-Phased Transit Curves

TCE 004459068-02 P= 24.955658 Days $T_0=148.866905$ (BKJD)



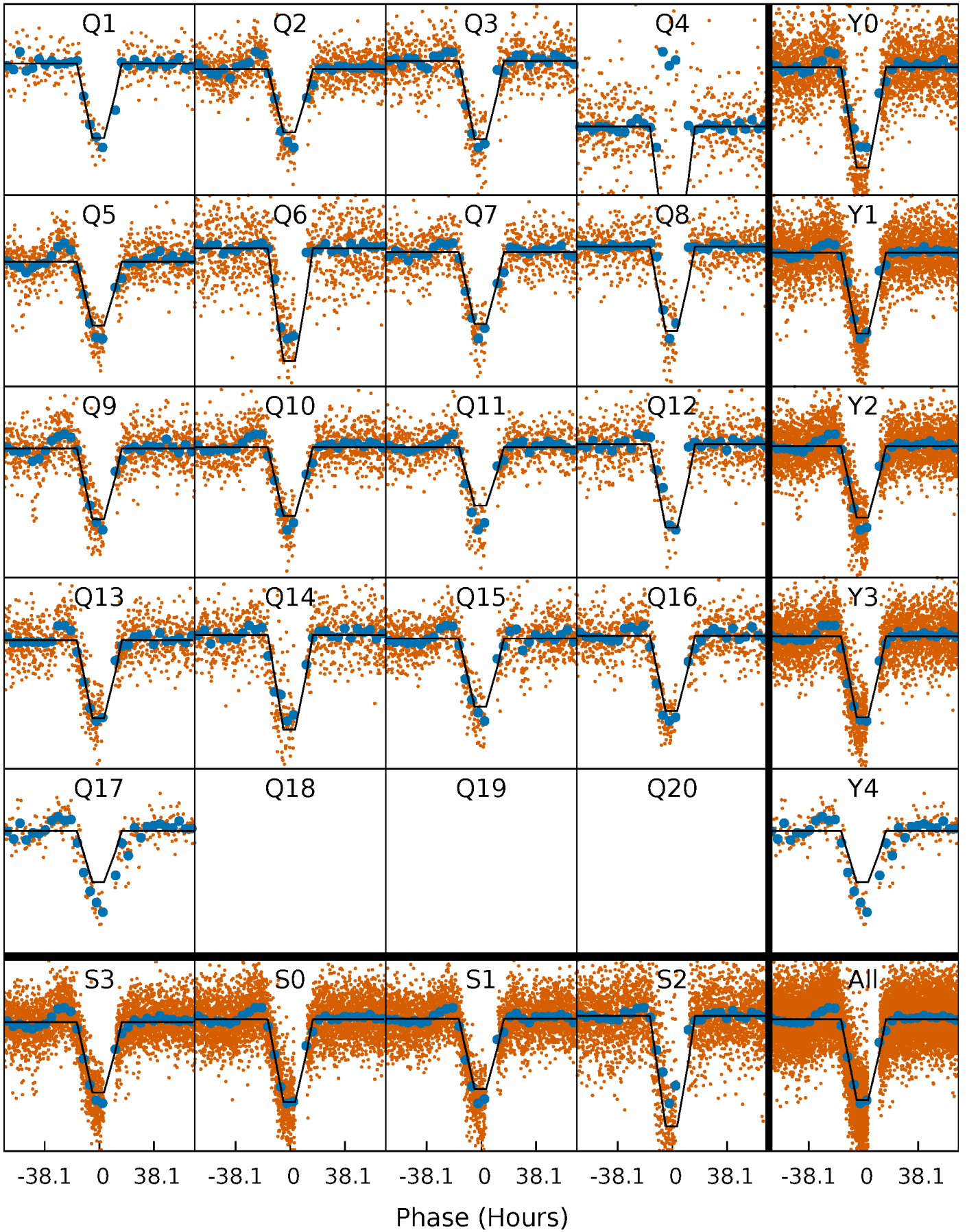
DV Quarter-Phased Transit Curves

TCE 004459068-02 P= 24.955658 Days $T_0=148.866905$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

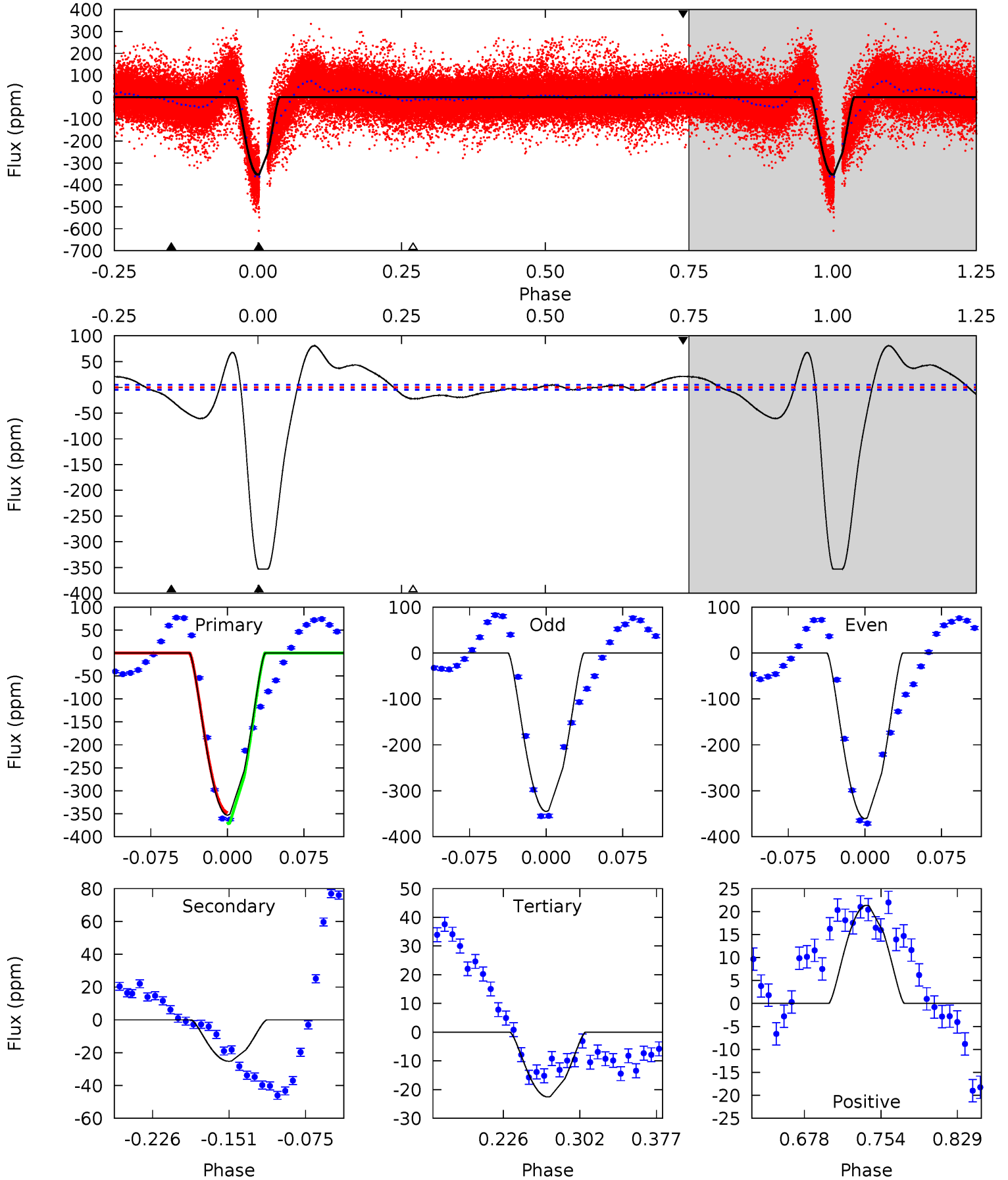
TCE 004459068-02 $P = 24.956822$ Days $T_0 = 148.771803$ (BKJD)



DV Model-Shift Uniqueness Test

004459068-02, P = 24.955658 Days, E = 123.911247 Days

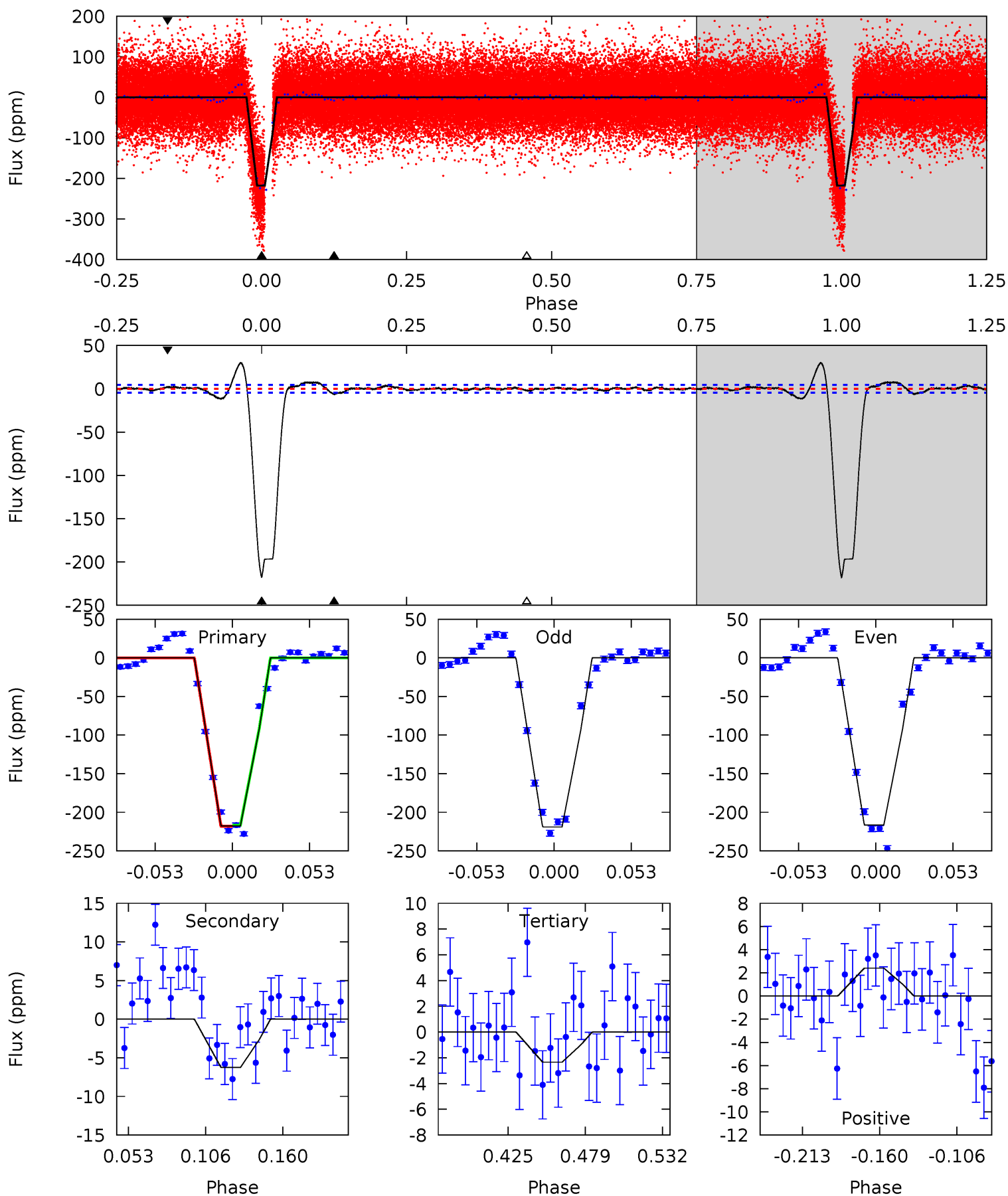
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
341.2	24.4	21.8	20.7	4.62	1.78	22.6	319.4	320.6	2.60	3.75	7.45	0.92	0.19	11.0



Alt Model-Shift Uniqueness Test

004459068-02, P = 24.956822 Days, E = 123.814981 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
223.5	6.42	2.40	2.47	4.70	1.93	2.22	221.1	221.0	4.02	3.94	1.20	0.91	0.12	0.60



Stellar Parameters For KIC 004459068

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8617^{+325}_{-758}	$3.780^{+0.408}_{-0.072}$	$-0.220^{+0.150}_{-0.200}$	$3.018^{+0.426}_{-1.277}$	$2.002^{+0.319}_{-0.439}$	$0.102^{+0.353}_{-0.023}$
	+4%/-9%	+11%/-2%	+68%/-91%	+14%/-42%	+16%/-22%	+345%/-23%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004459068-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-25 ± 1	$9.89^{+2.73}_{-2.53}$	1905^{+180}_{-240}	3608^{+276}_{-230}	$6.319^{+4.678}_{-2.223}$
Alt.	-6 ± 1	$4.20^{+2.09}_{-1.76}$	1915^{+160}_{-230}	3785^{+799}_{-428}	$8.811^{+16.599}_{-4.819}$

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 $A_{obs} \gg 1.0$

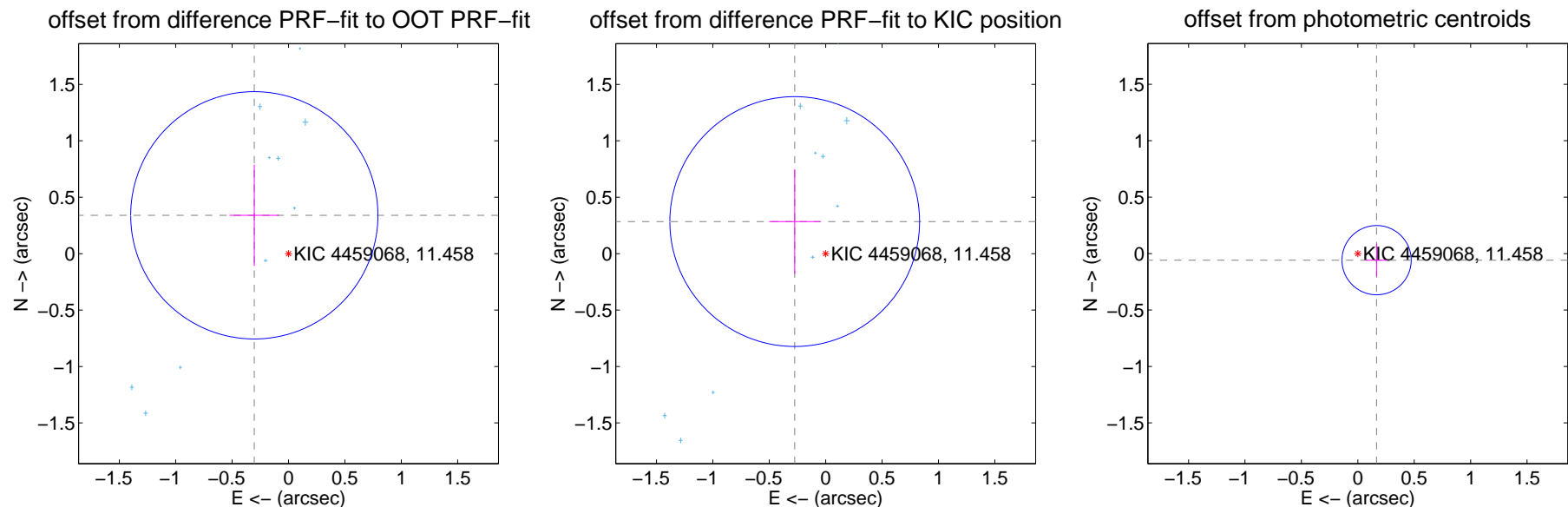
DV Centroid Data

Supplemental centroid analysis for 004459068-02. **Kepler magnitude: 11.46.** Transit SNR 79.31

There are 16 quarters with good PRF difference image offsets

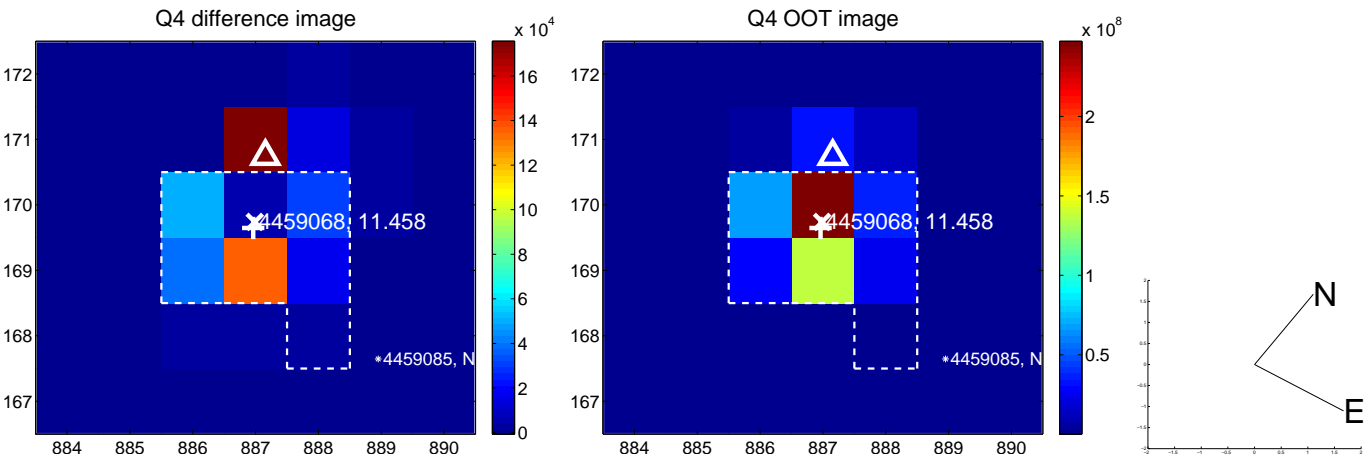
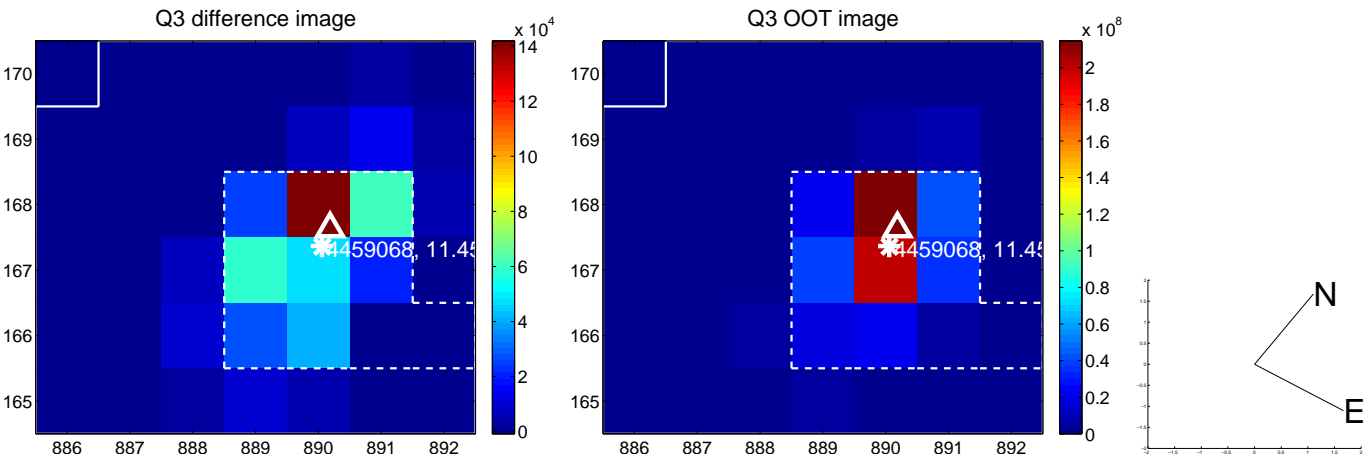
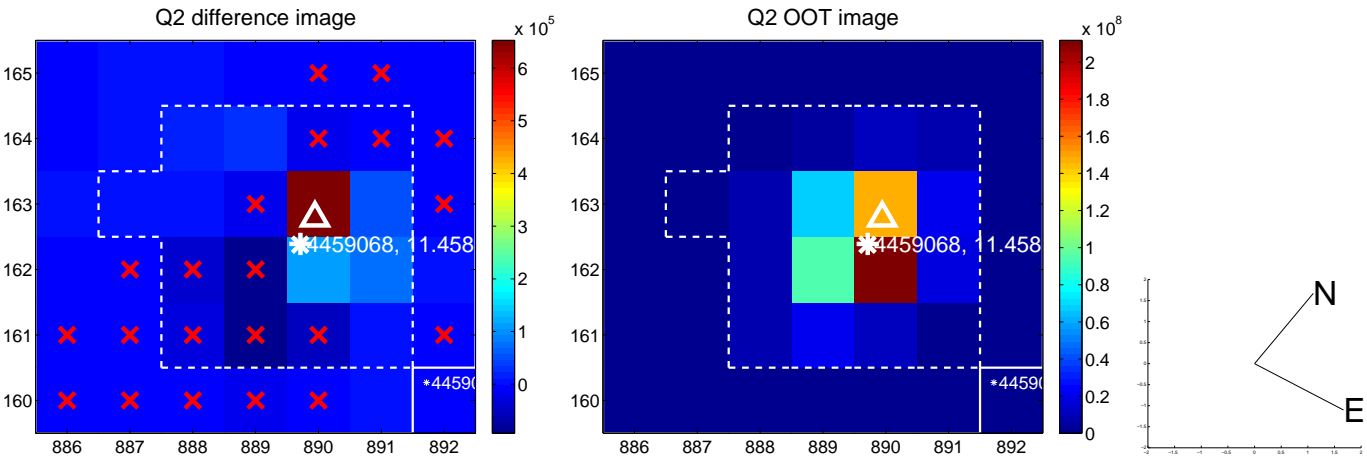
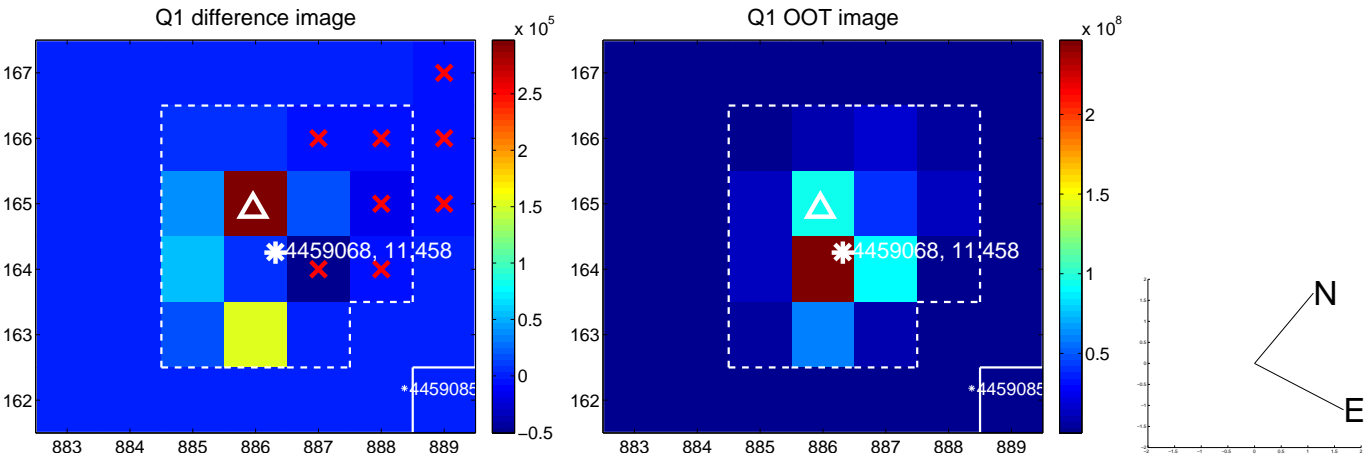
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.455 ± 0.365	1.25	0.303 ± 0.219	0.340 ± 0.449
PRF-fit source offset from KIC position	0.395 ± 0.369	1.07	0.274 ± 0.226	0.284 ± 0.464
photometric centroid source offset	0.18 ± 0.10	1.72	-0.17 ± 0.10	-0.06 ± 0.14

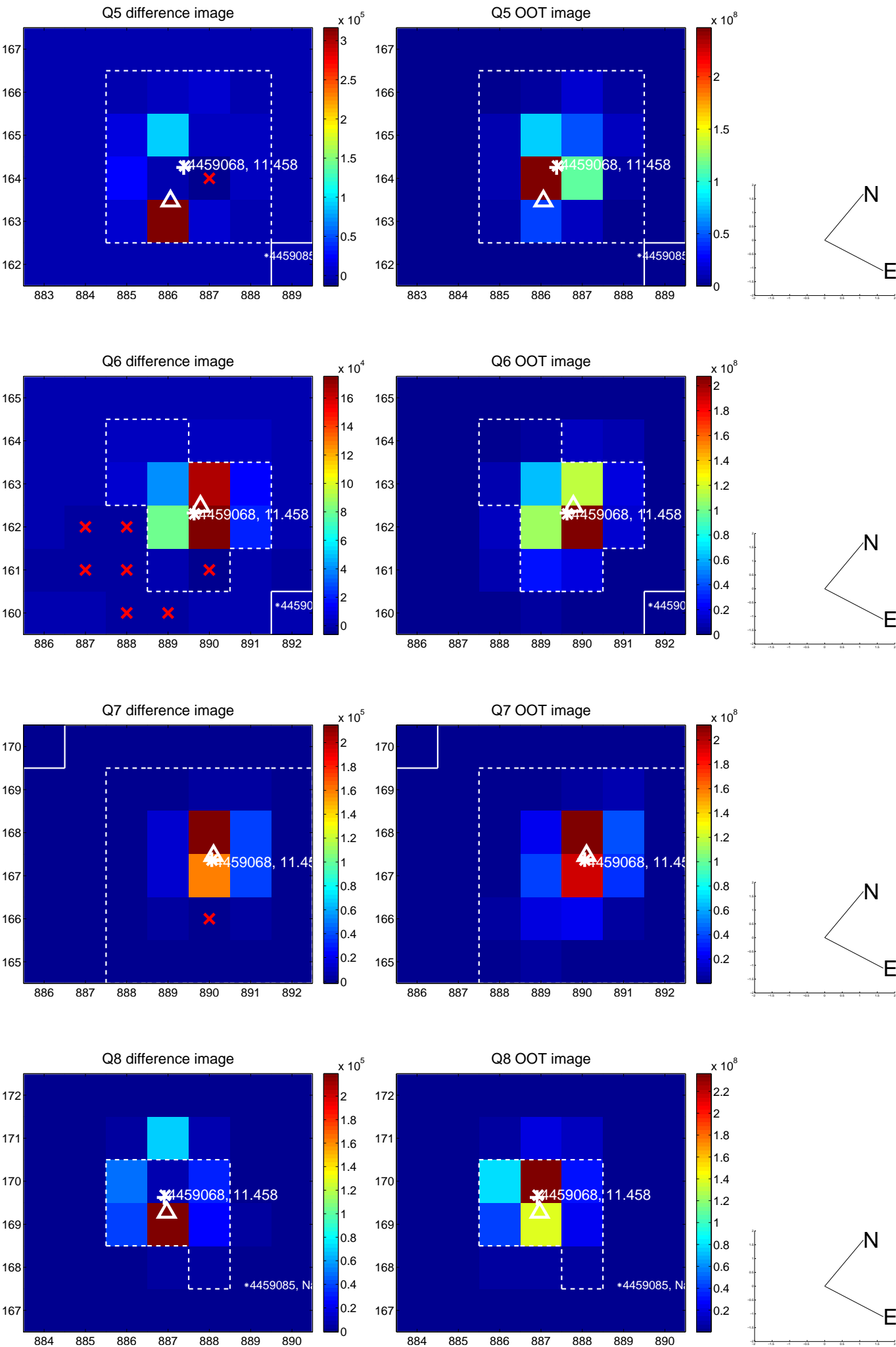


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

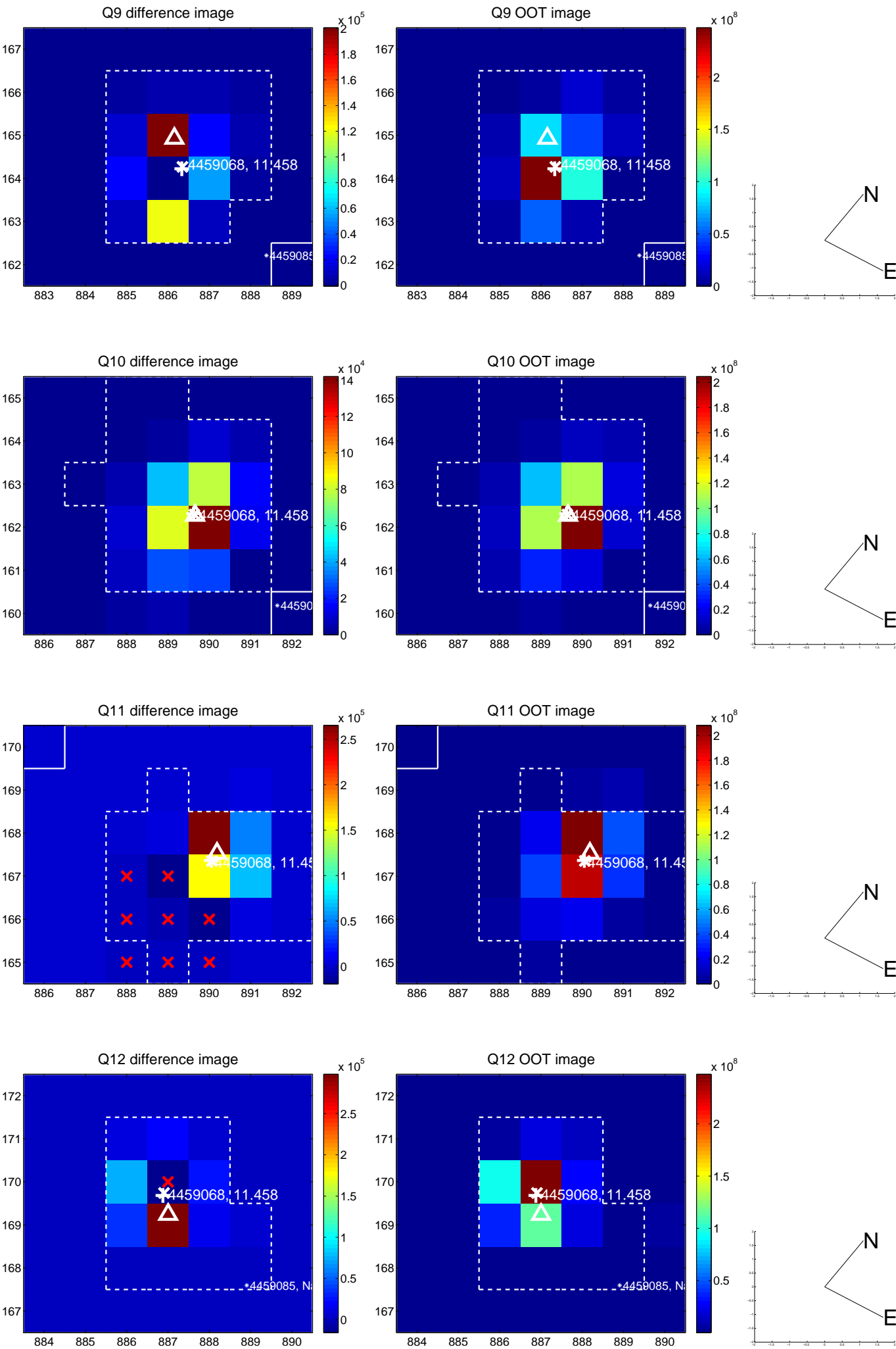
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



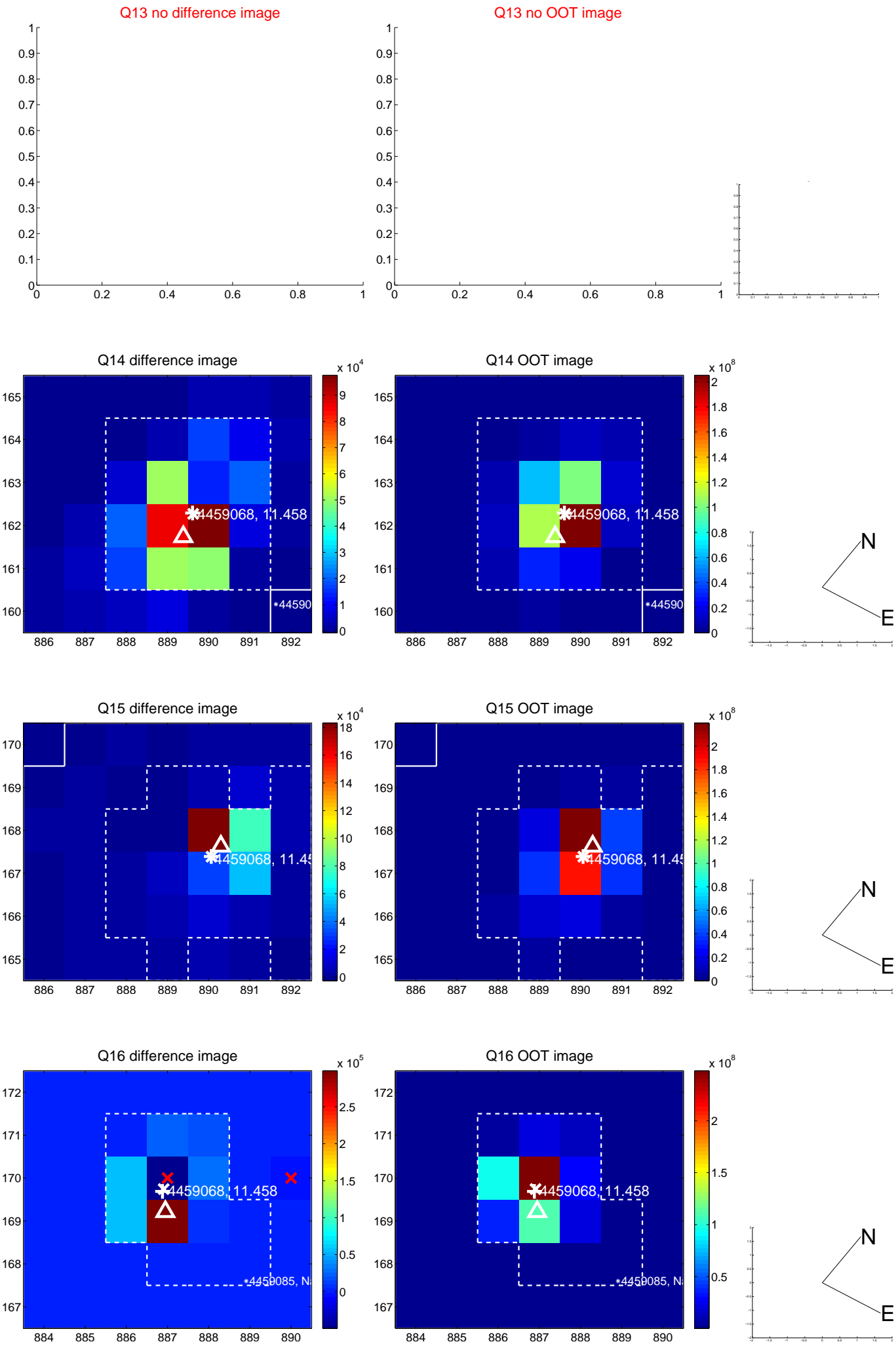
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



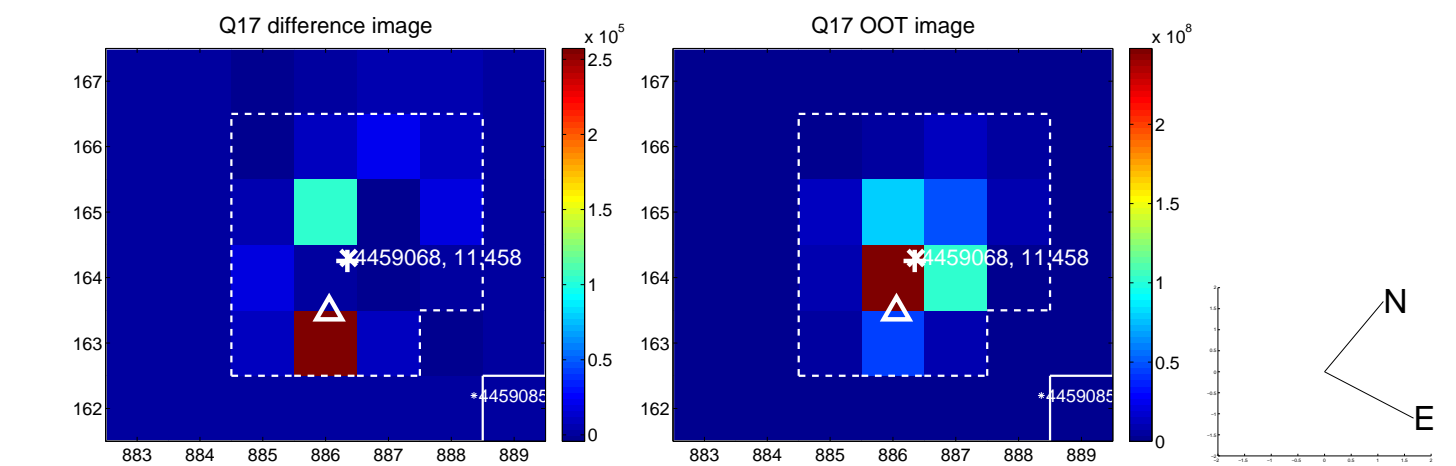
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



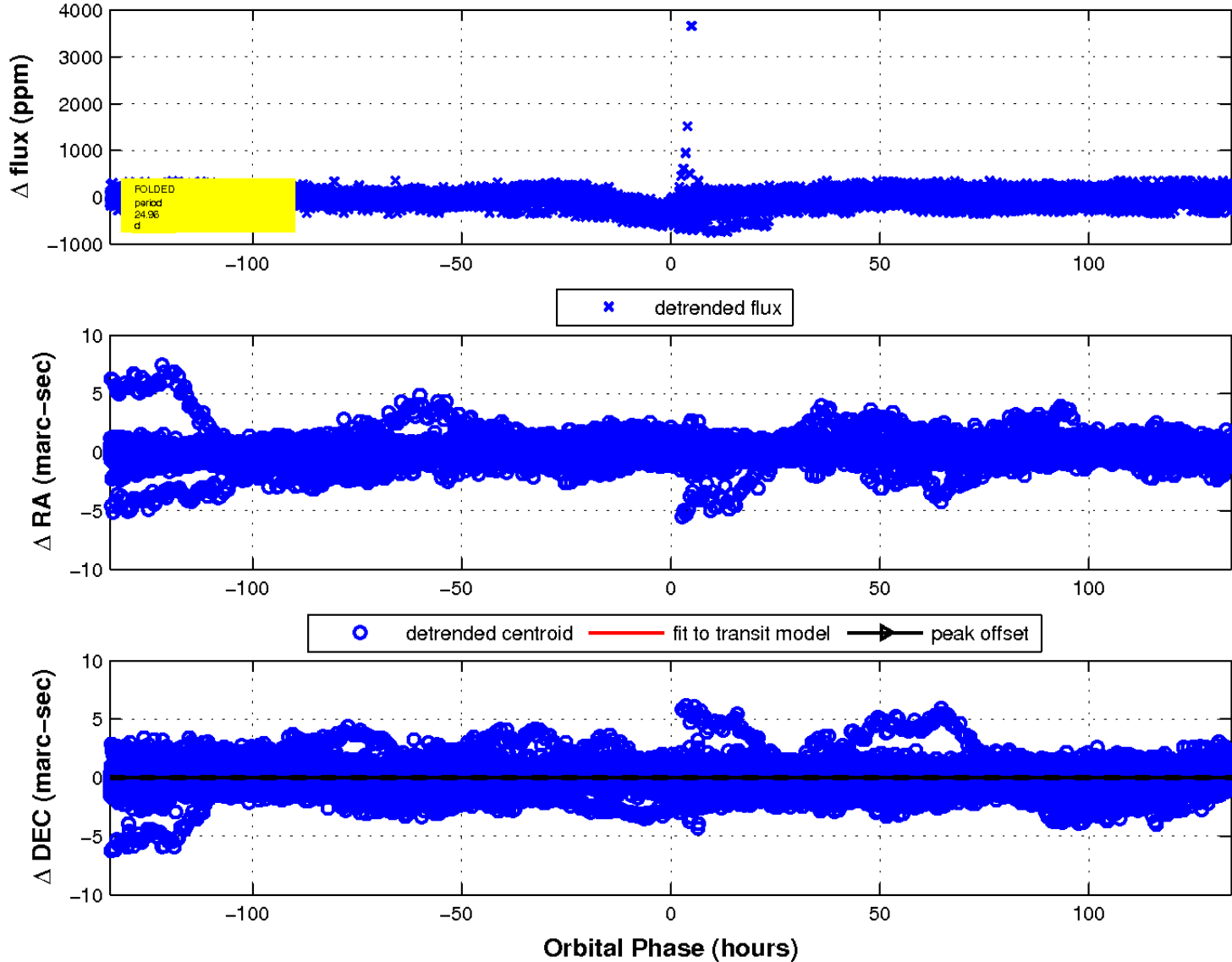
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

