

KIC 009048145

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})
009048145-01	OBS	6063.01	8.667827	137.341527	43413.3	5.063	5860.7	4925.3	1.54	6712	37.87	532.59
009048145-02	OBS	No	8.667814	133.009441	1264.9	4.885	183.5	181.5	1.54	6712	7.04	532.59

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009048145-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
009048145-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

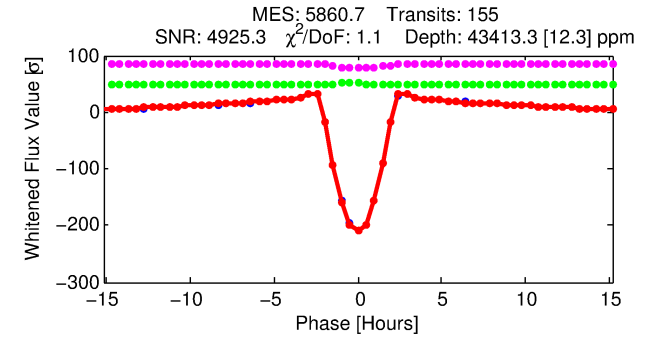
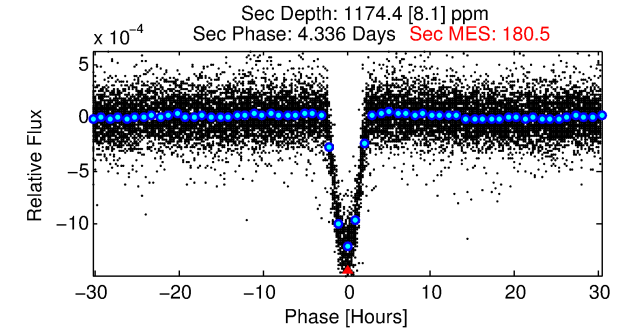
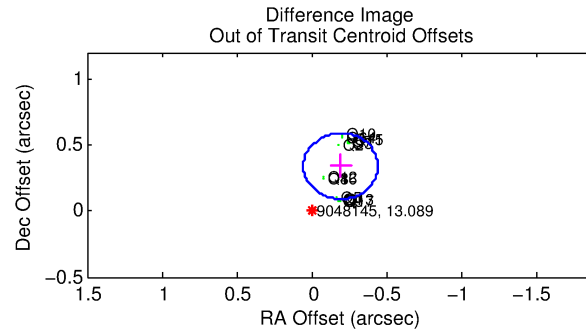
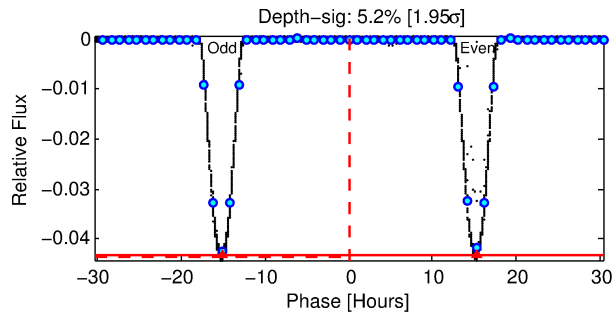
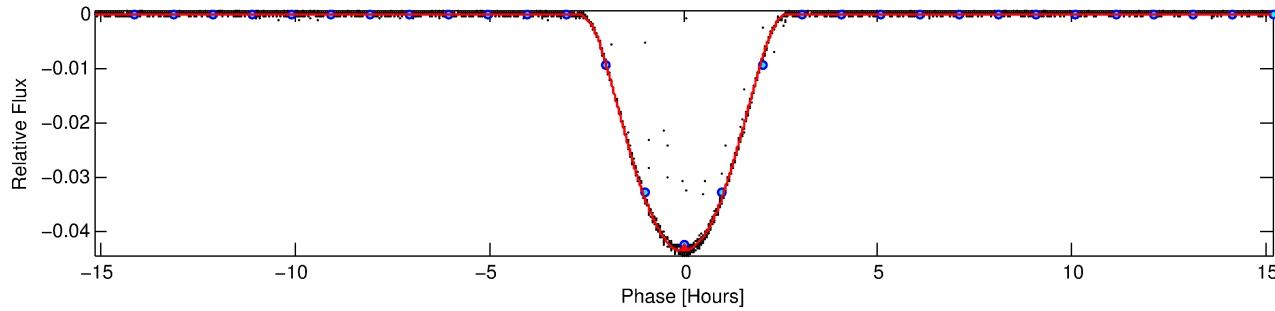
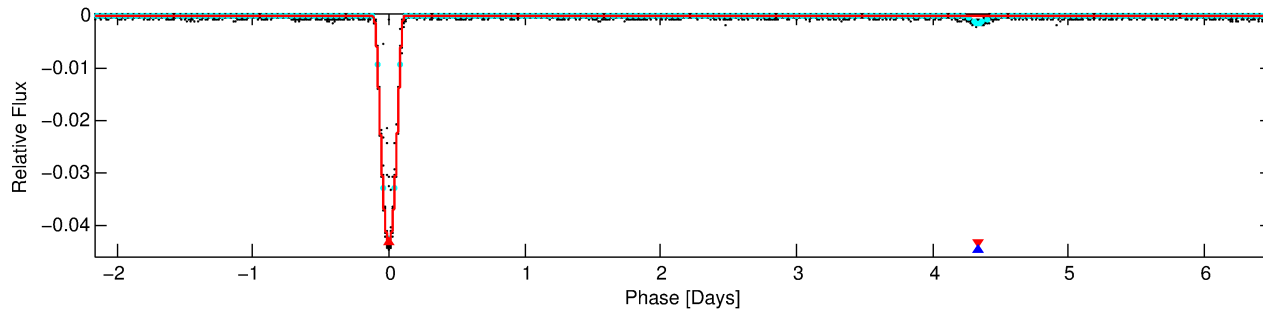
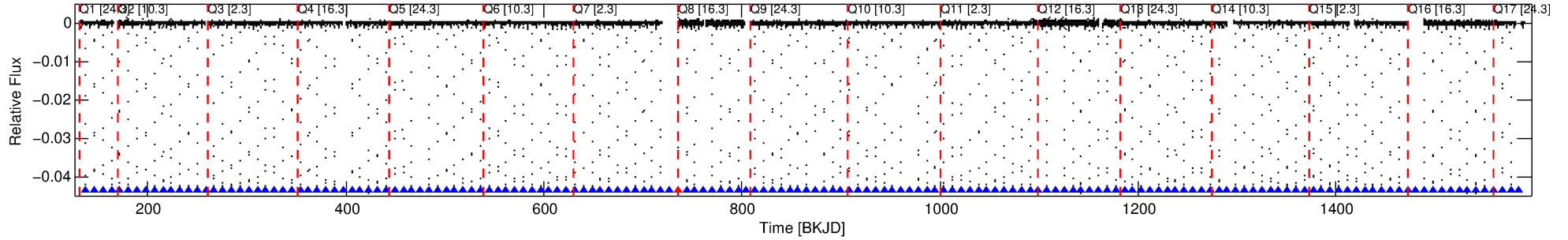
Ephemeris Match Information For 009048145-01

No Significant Match Found

DV One-Page Summary

KIC: 9048145 Candidate: 1 of 2 Period: 8.668 d
KOI: K06063.01 Corr: 1.000

Kp: 13.09 R*: 1.54 Rs Teff: 6712.0 K Logg: 4.17 Fe/H: -0.200



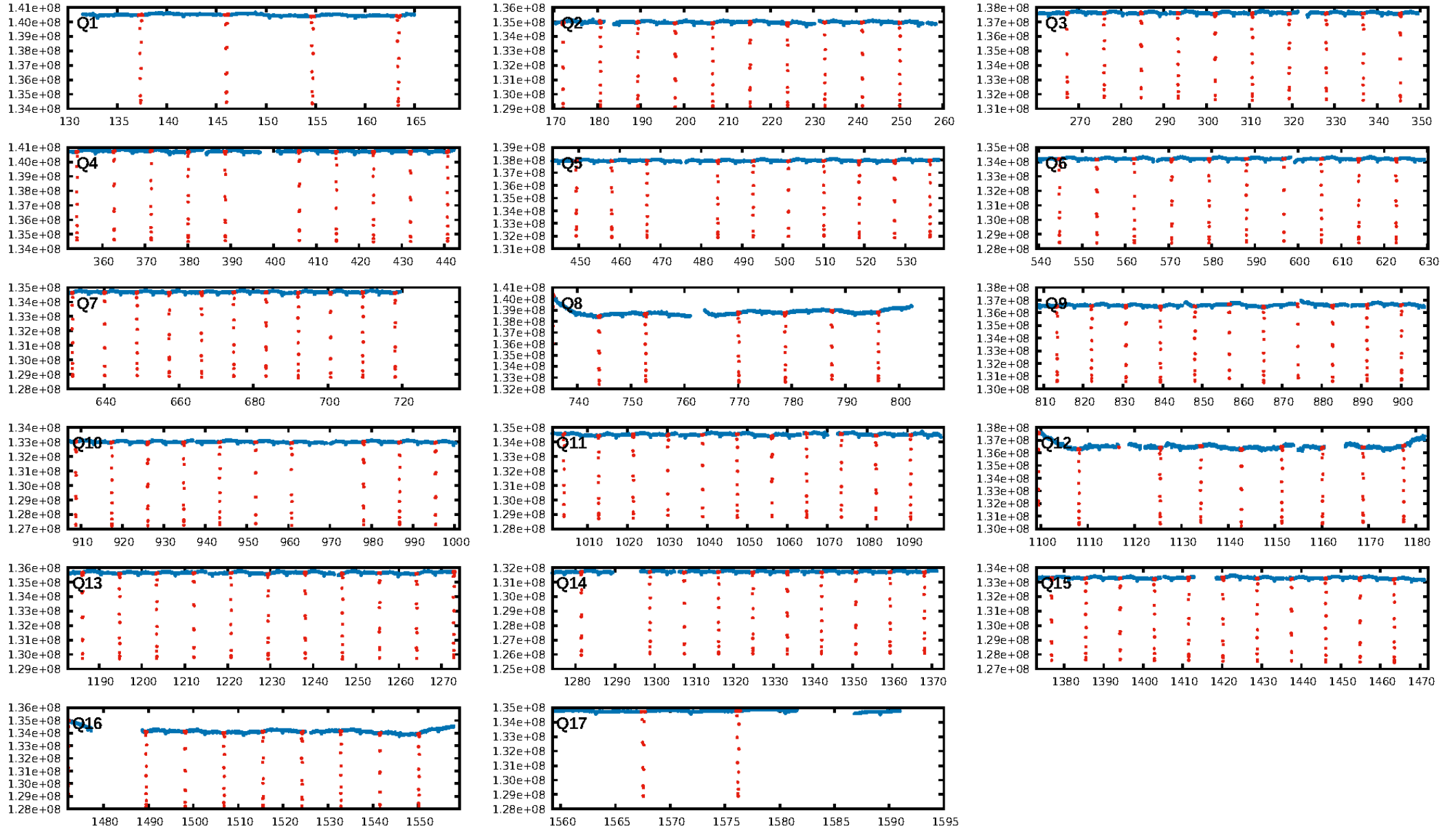
DV Fit Results:

Period = 8.66783 [0.00000] d
Epoch = 137.3415 [0.0000] BKJD
Rp/R* = 0.2256 [0.0003]
a/R* = 11.84 [0.01]
b = 0.83 [0.00]
Seff = 532.59 [207.18]
Teff = 1225 [119] K
Rp = 37.87 [11.74] Re
a = 0.0899 [0.0229] AU
Ag = 3.64 [1.31] [2.01σ]
Teffp = 2616 [94] K [9.15σ]

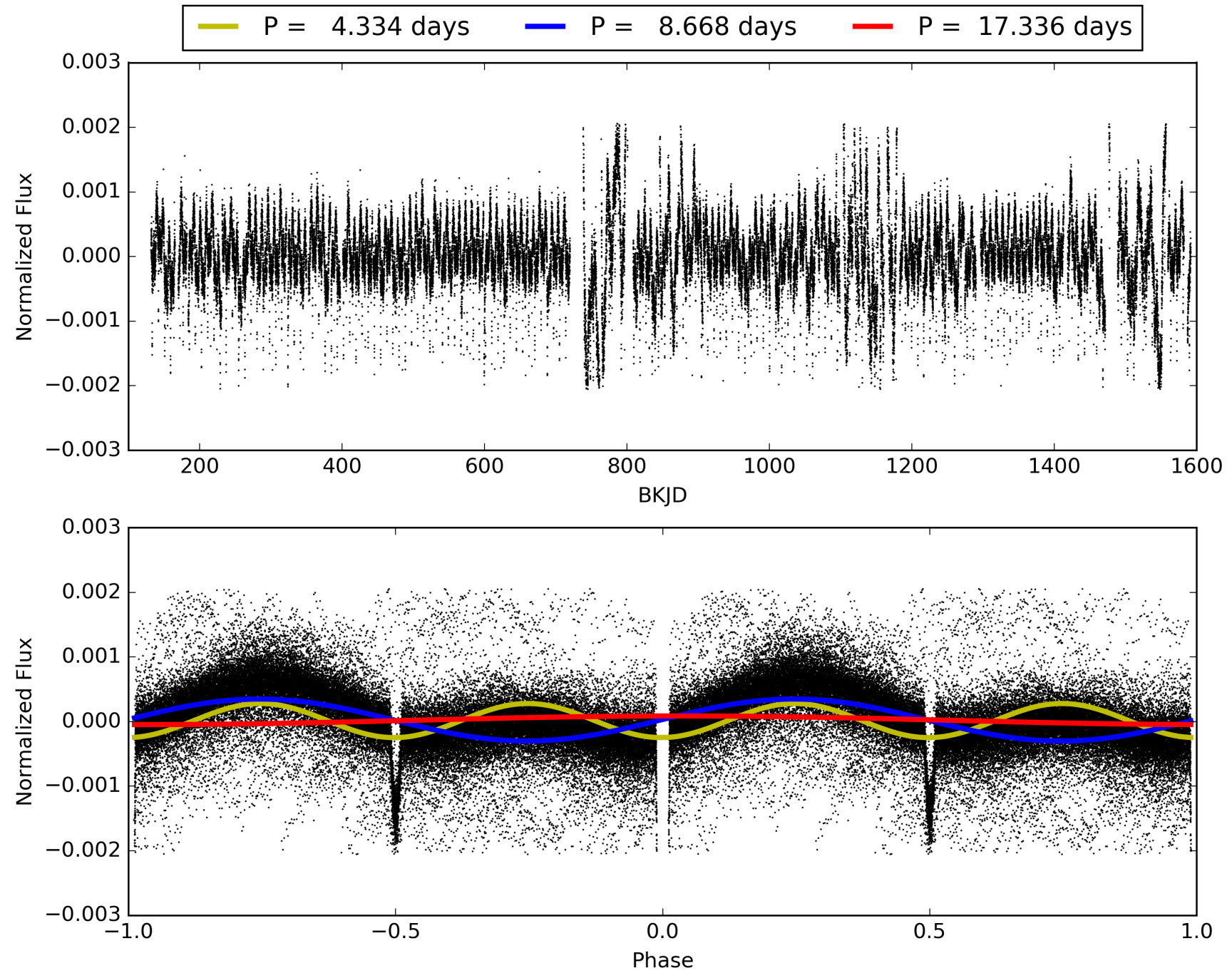
DV Diagnostic Results:

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: 0.99 [148/149]
GhostDiagnostic-chr: 7.988
Centroid-sig: 0.0%
Centroid-so: 0.871 arcsec [540.86σ]
OotOffset-rm: 0.391 arcsec [4.72σ]
KicOffset-rm: 0.160 arcsec [2.31σ]
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 009048145-01, PDC Light Curves

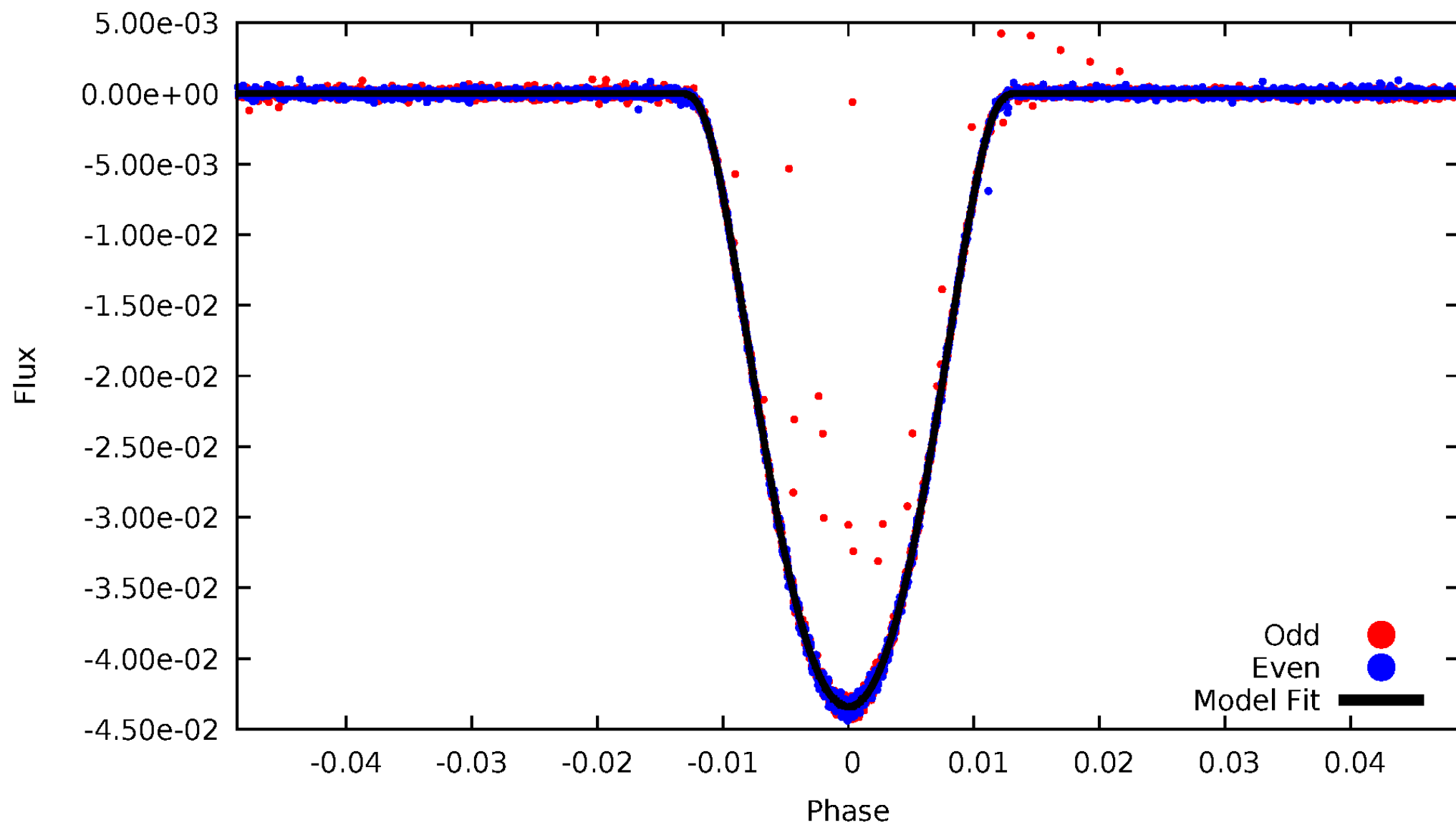


TCE 009048145-01



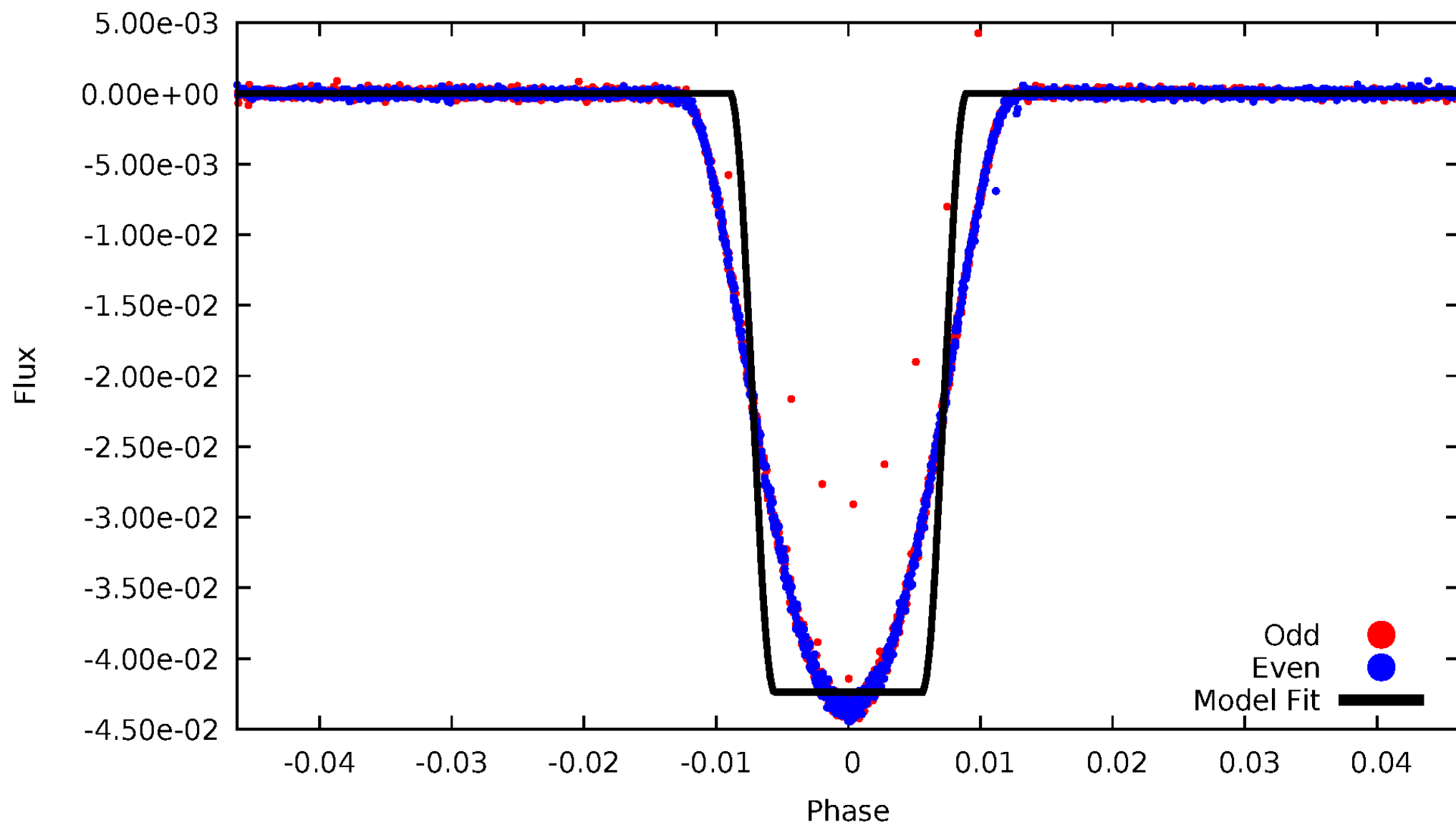
DV Odd/Even

TCE 009048145-01



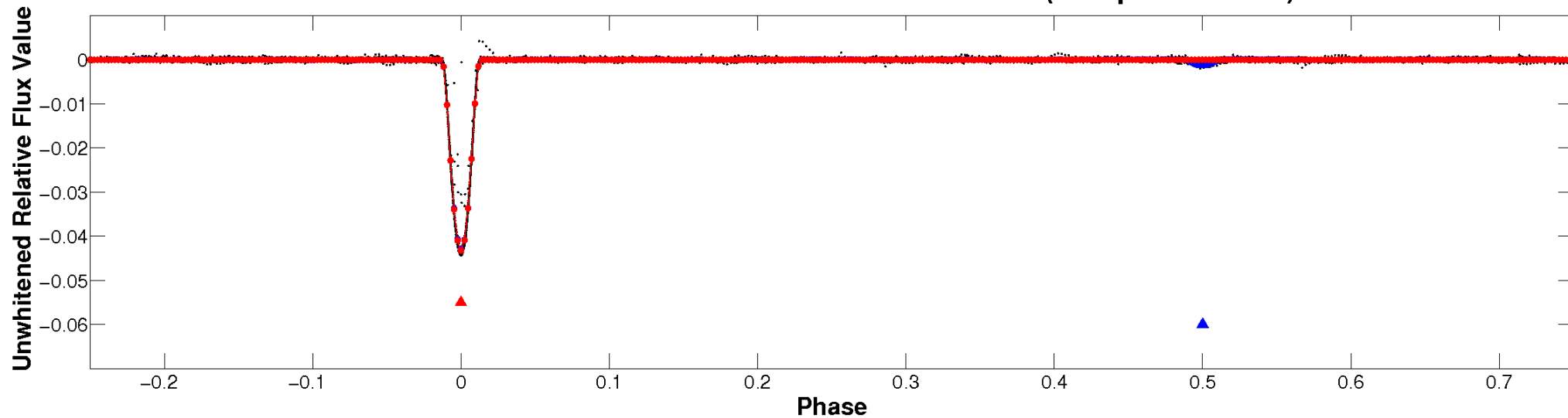
ALT Odd/Even

TCE 009048145-01

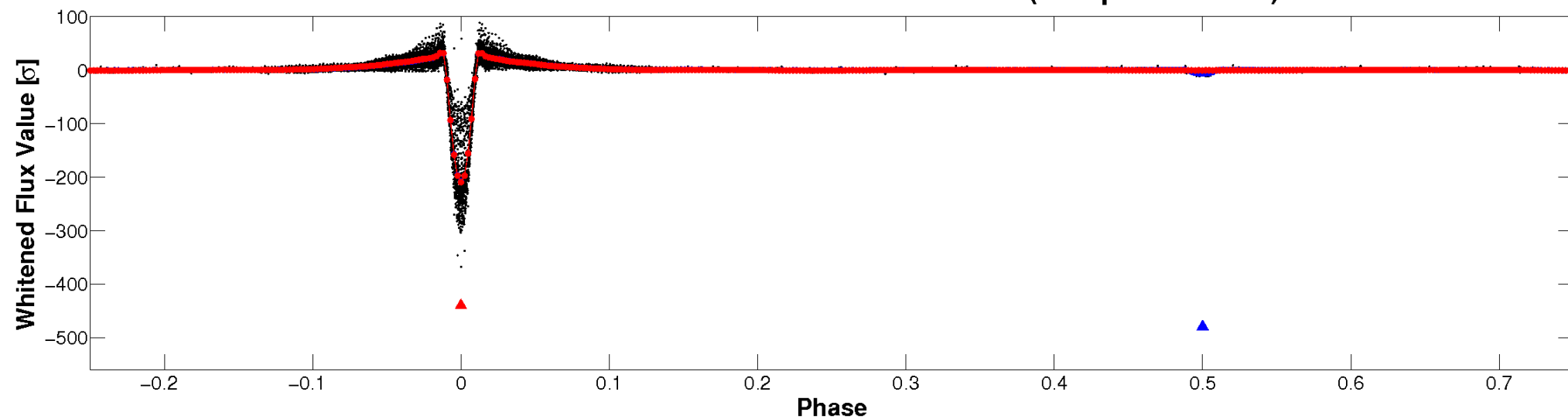


Non-Whitened Vs. Whitened Light Curve

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

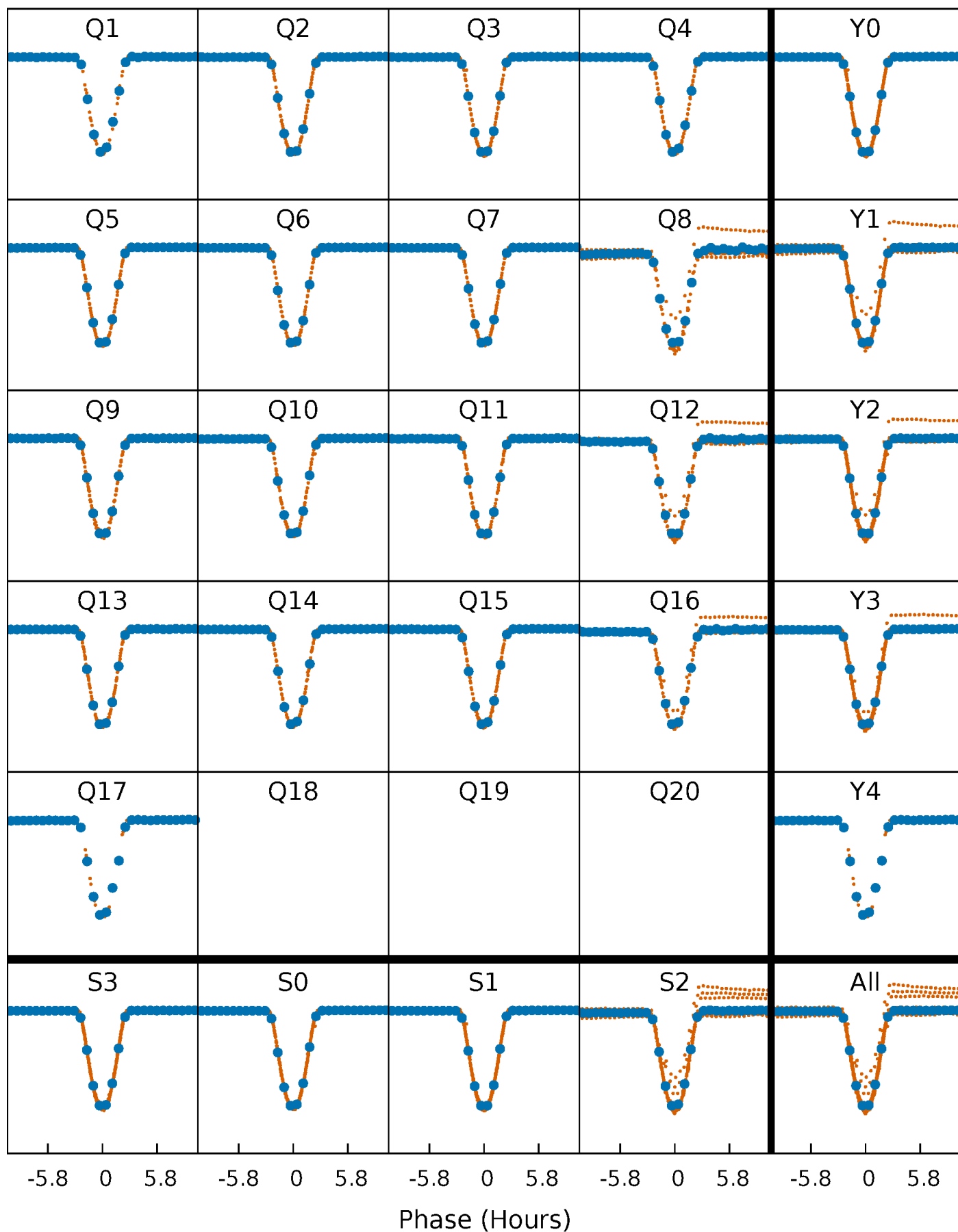


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



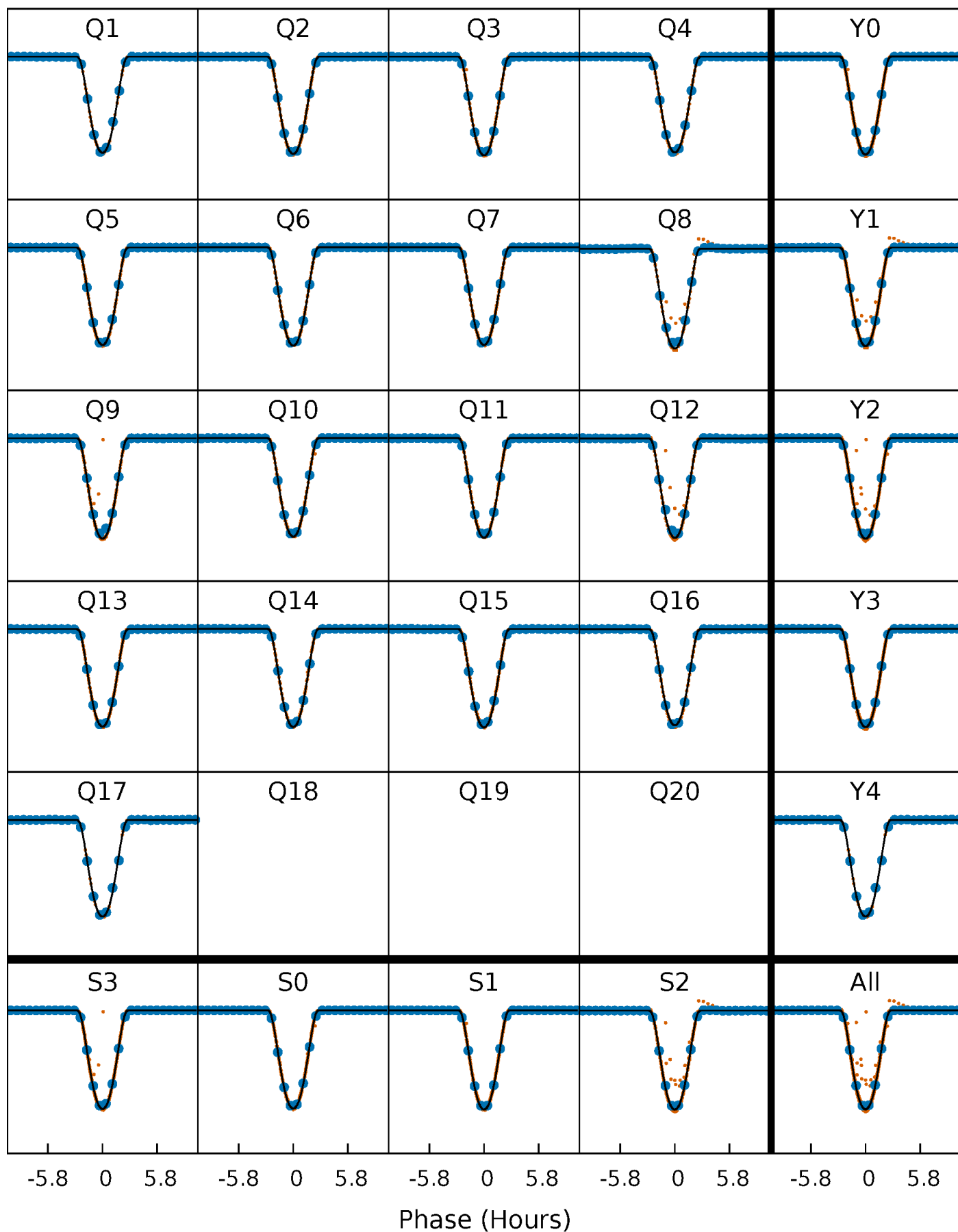
PDC Quarter-Phased Transit Curves

TCE 009048145-01 P= 8.667827 Days $T_0=137.341527$ (BKJD)



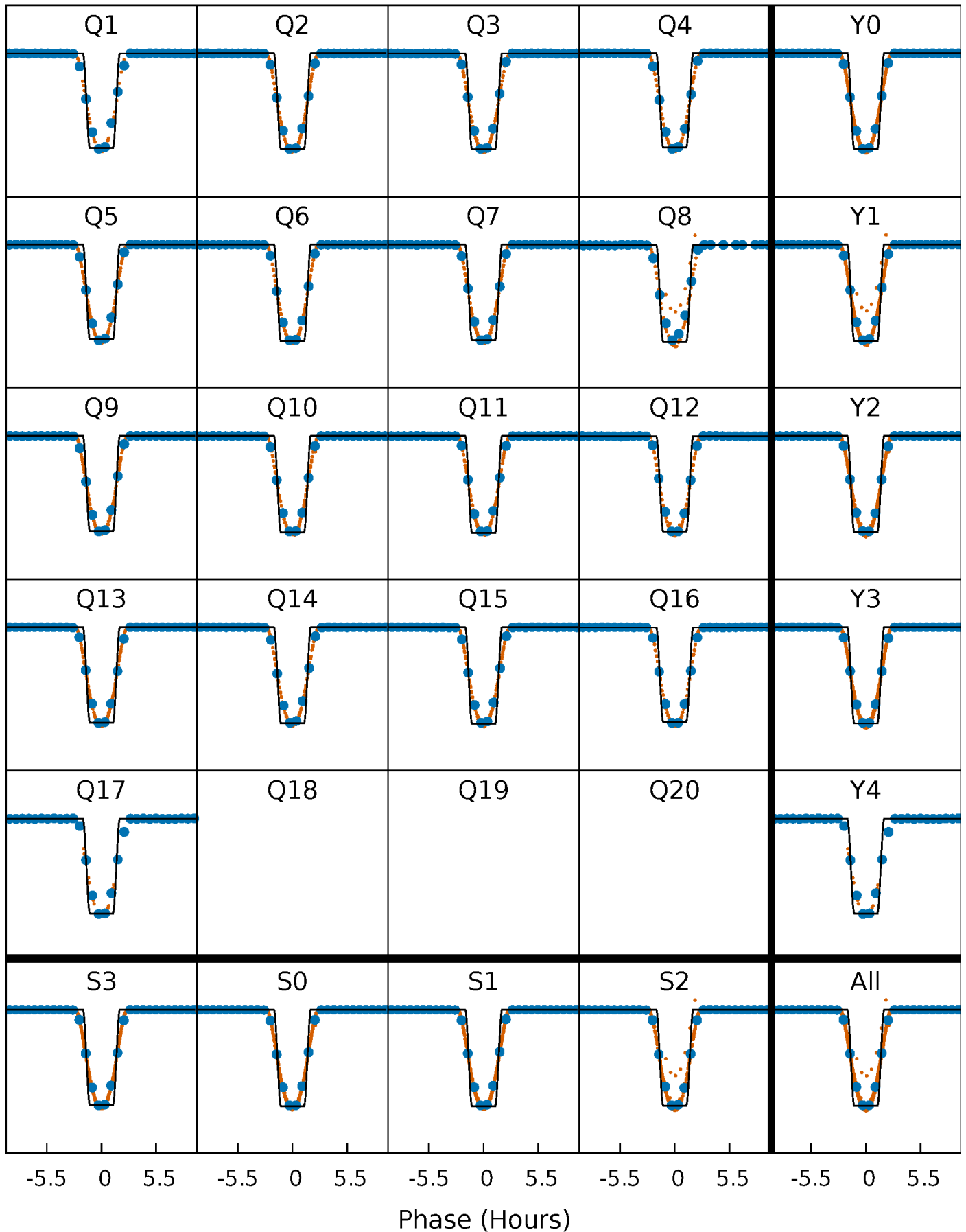
DV Quarter-Phased Transit Curves

TCE 009048145-01 P= 8.667827 Days $T_0=137.341527$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

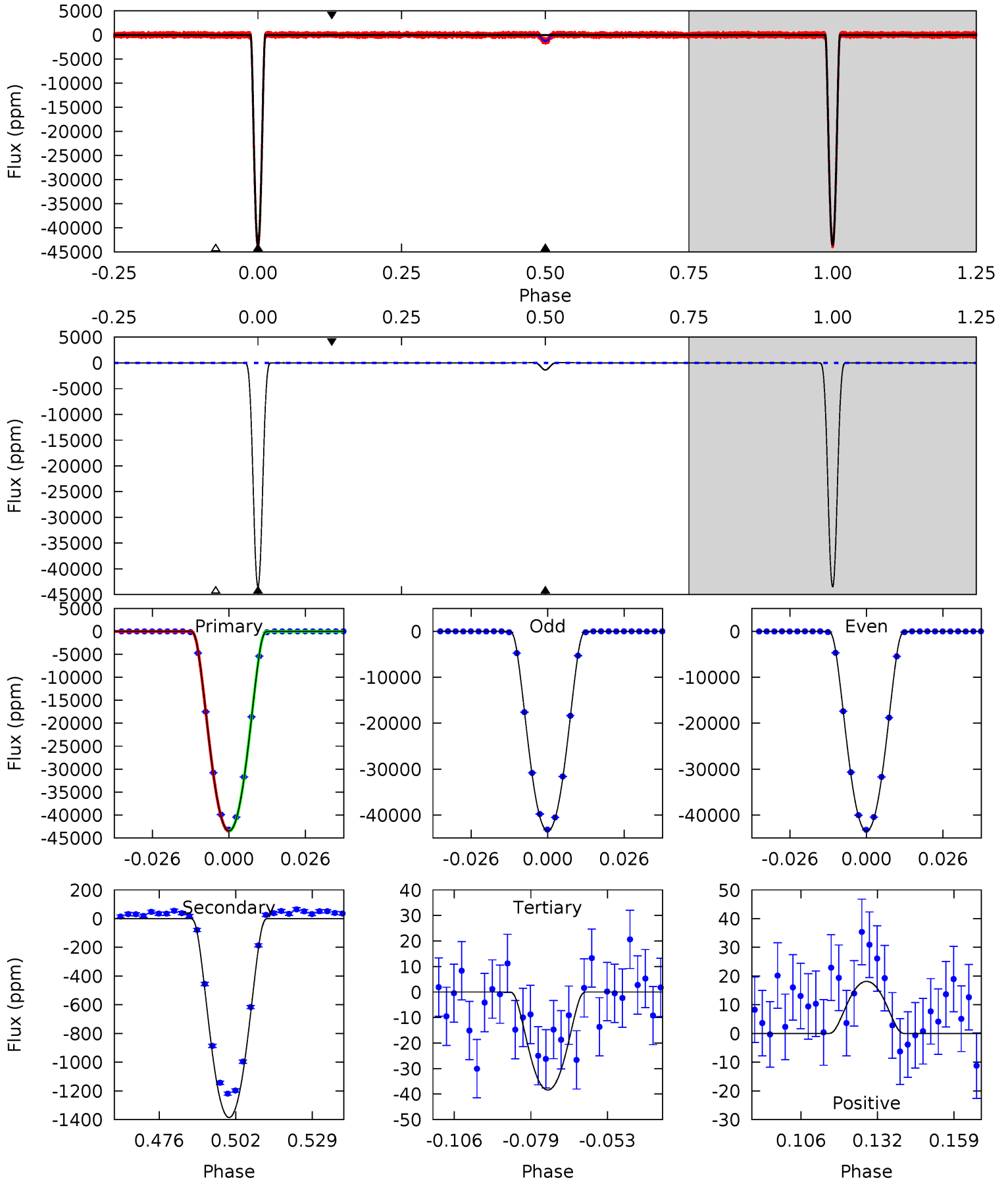
TCE 009048145-01 P= 8.667817 Days $T_0=137.342283$ (BKJD)



DV Model-Shift Uniqueness Test

009048145-01, P = 8.667827 Days, E = 128.673700 Days

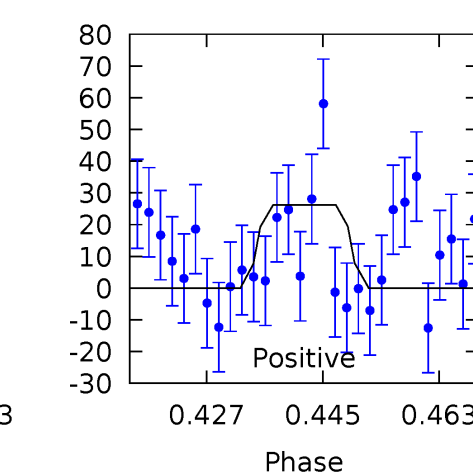
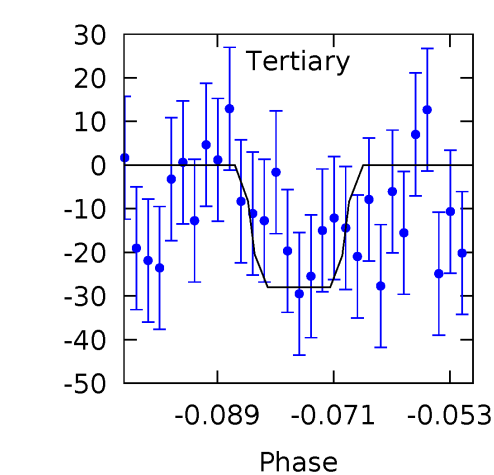
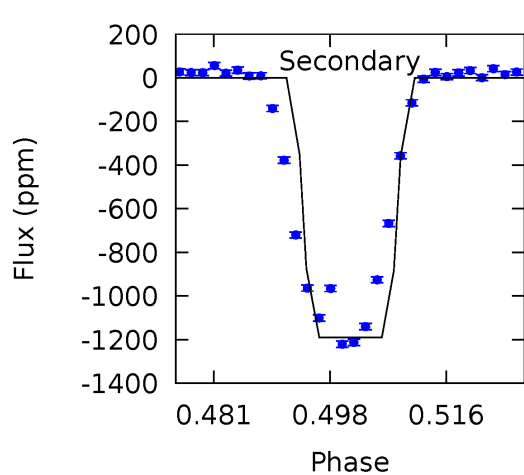
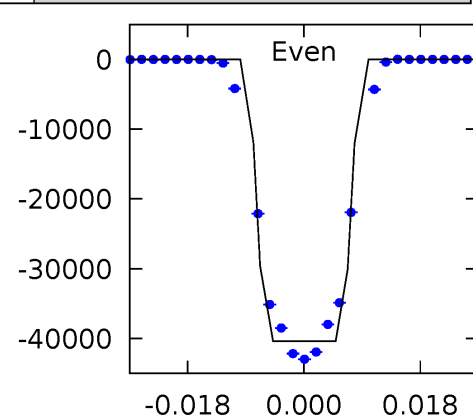
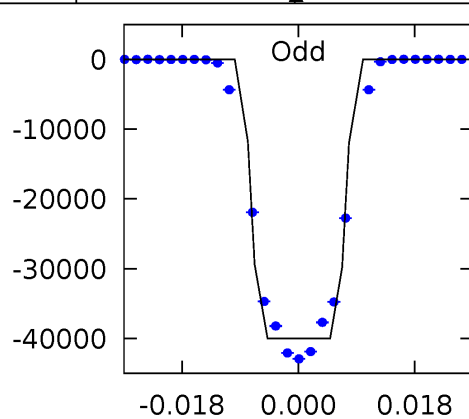
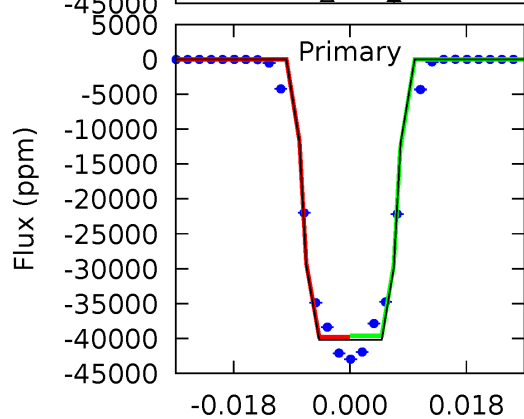
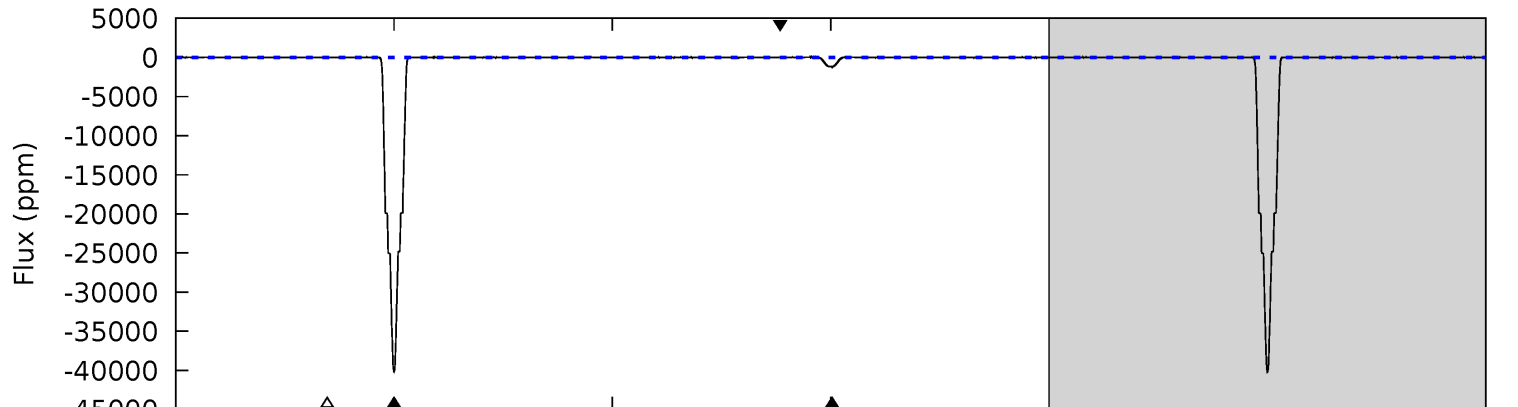
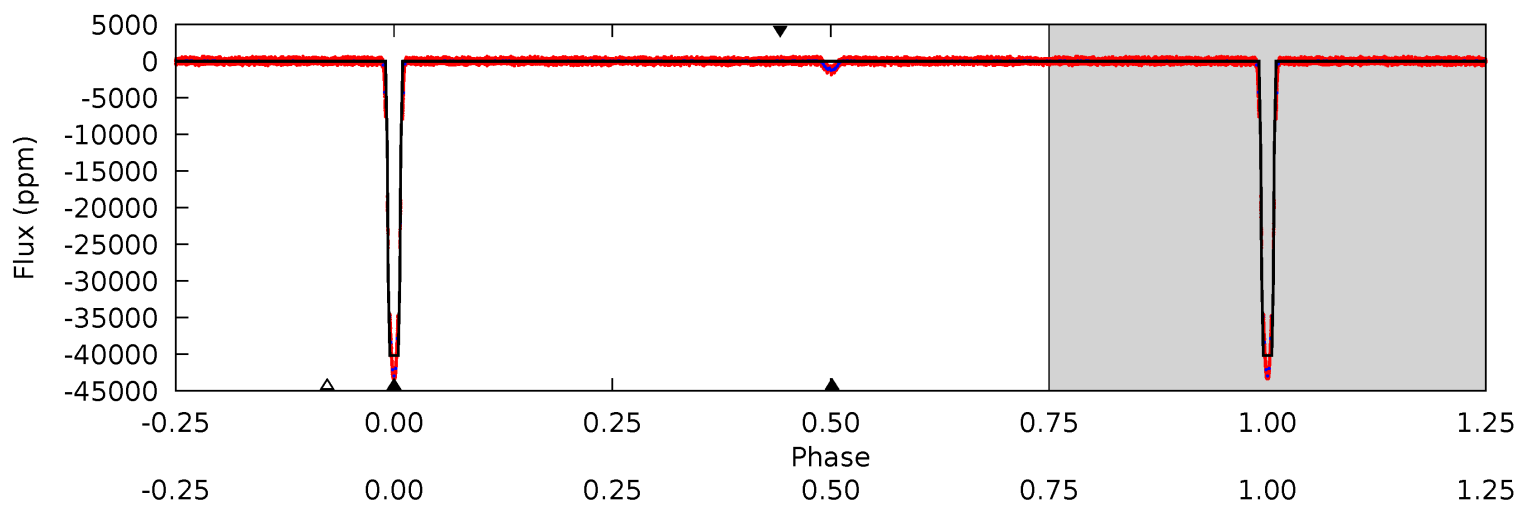
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10715	341.4	9.46	4.47	4.84	2.22	3.53	10705	10710	332.0	337.0	4.09	0.99	0.00	0



Alt Model-Shift Uniqueness Test

009048145-01, P = 8.667817 Days, E = 128.674466 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6071	179.9	4.23	3.96	4.91	2.37	1.57	6066	6067	175.6	175.9	28.7	1.00	0.00	0



Stellar Parameters For KIC 009048145

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6712^{+161}_{-242}	$4.174^{+0.175}_{-0.193}$	$-0.200^{+0.250}_{-0.300}$	$1.538^{+0.477}_{-0.358}$	$1.294^{+0.183}_{-0.224}$	$0.501^{+0.477}_{-0.244}$
	+2%/-4%	+4%/-5%	+125%/-150%	+31%/-23%	+14%/-17%	+95%/-49%
Source	PHO1	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 009048145-01 / KOI 6063.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1385 ± 4	$38.48^{+6.28}_{-5.18}$	1721^{+124}_{-123}	3245^{+52}_{-72}	$4.177^{+1.260}_{-1.039}$
Alt.	-1190 ± 7	$34.66^{+6.08}_{-4.67}$	1709^{+143}_{-112}	3261^{+47}_{-63}	$4.355^{+1.244}_{-1.089}$

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

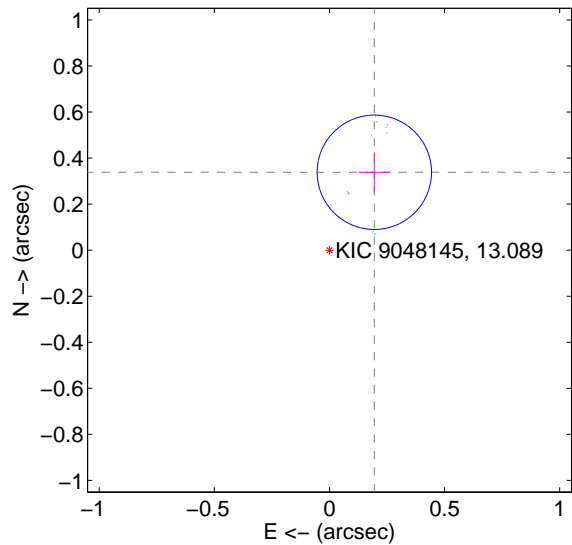
Supplemental centroid analysis for 009048145-01. Kepler magnitude: 13.09. Transit SNR 4925.28

There are 17 quarters with good PRF difference image offsets

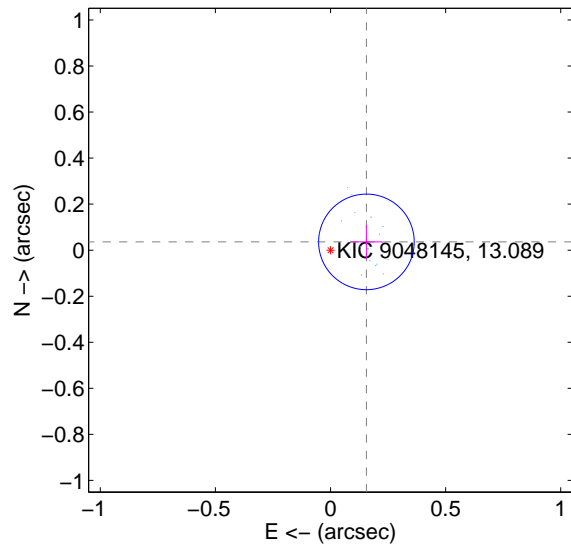
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.391 ± 0.083	4.72	-0.195 ± 0.068	0.338 ± 0.087
PRF-fit source offset from KIC position	0.160 ± 0.069	2.31	-0.156 ± 0.069	0.036 ± 0.074
photometric centroid source offset	0.87 ± 0.00	540.86	0.12 ± 0.00	-0.86 ± 0.00

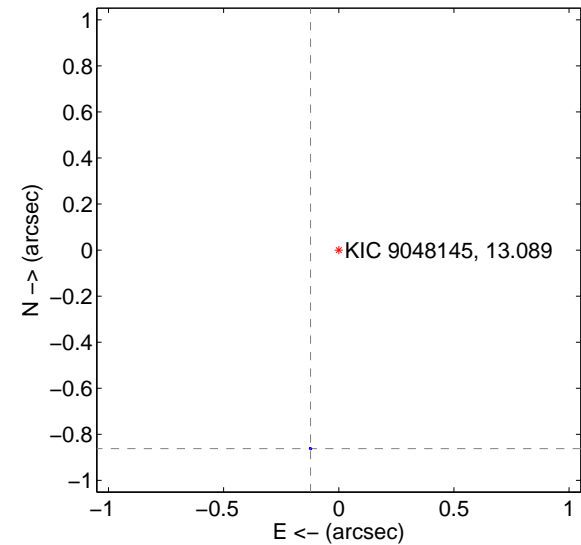
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

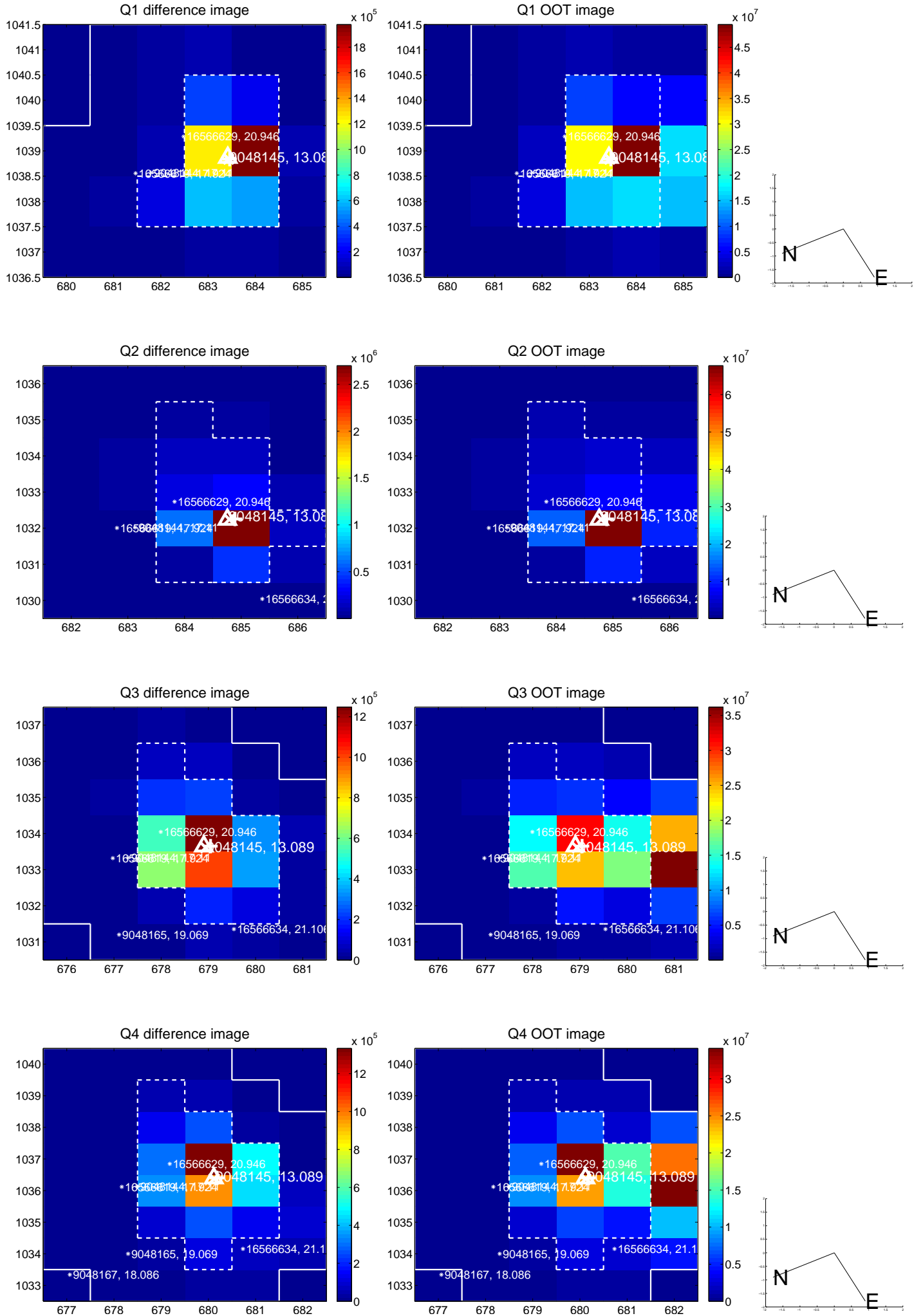


offset from photometric centroids

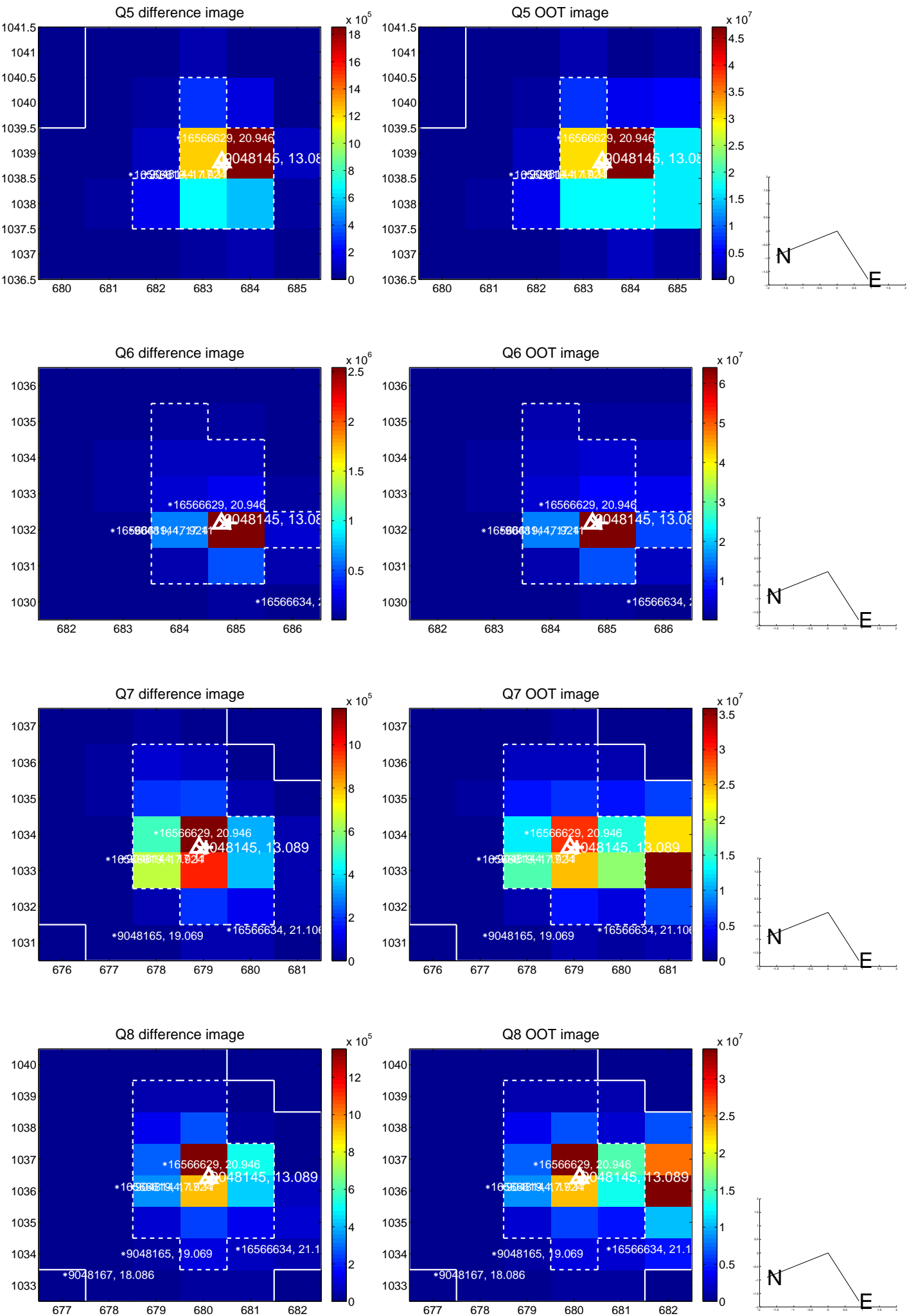


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

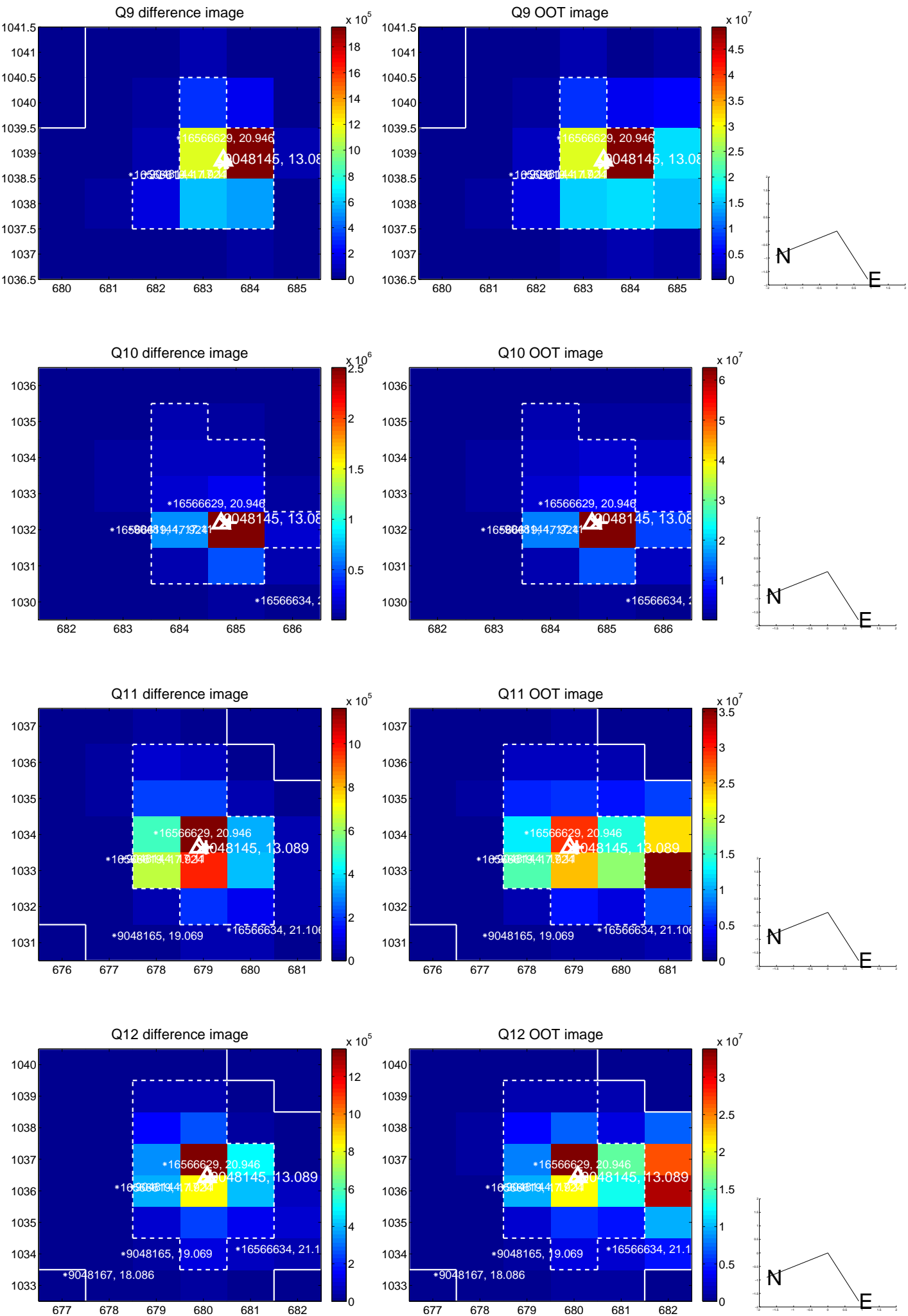
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



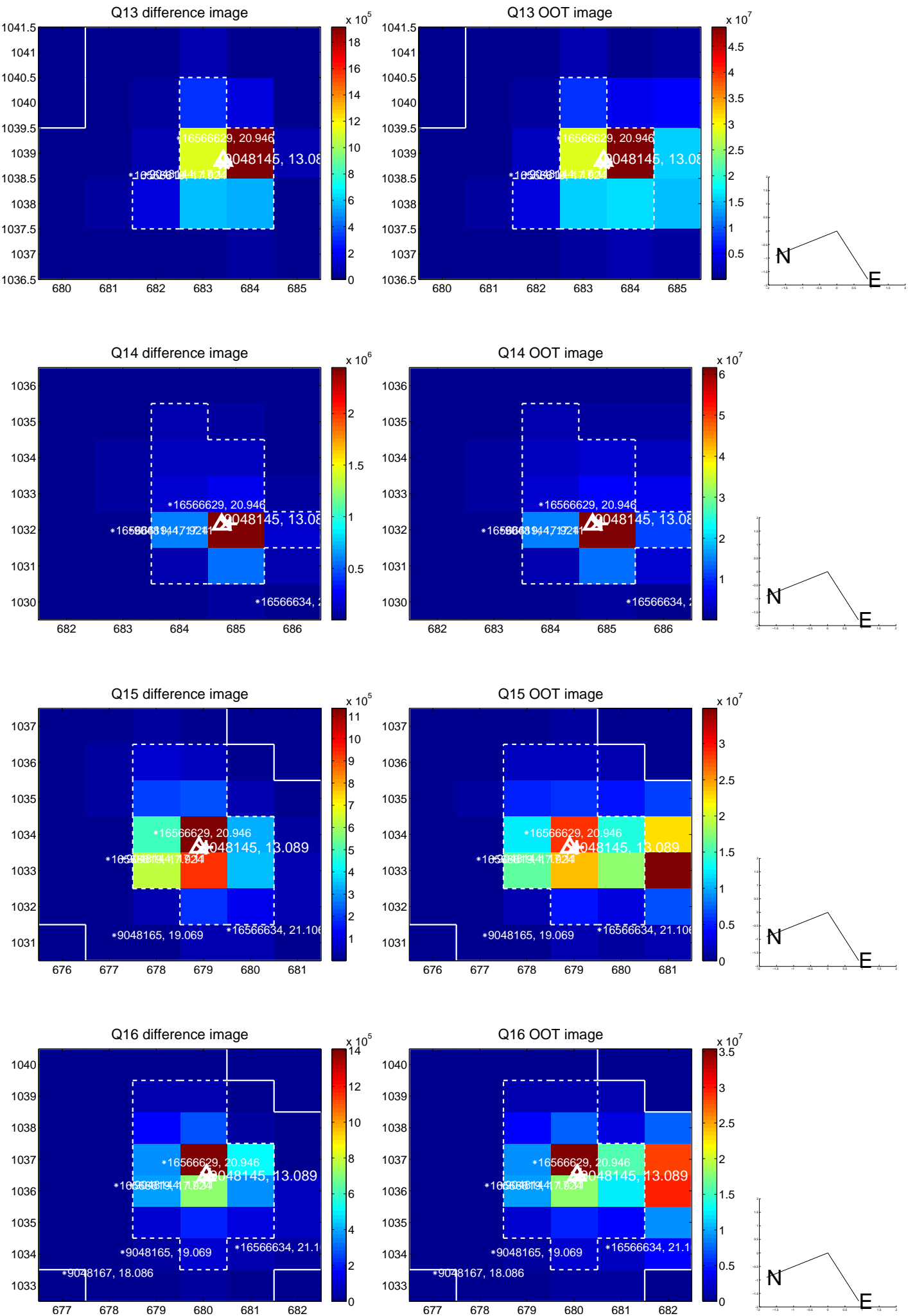
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



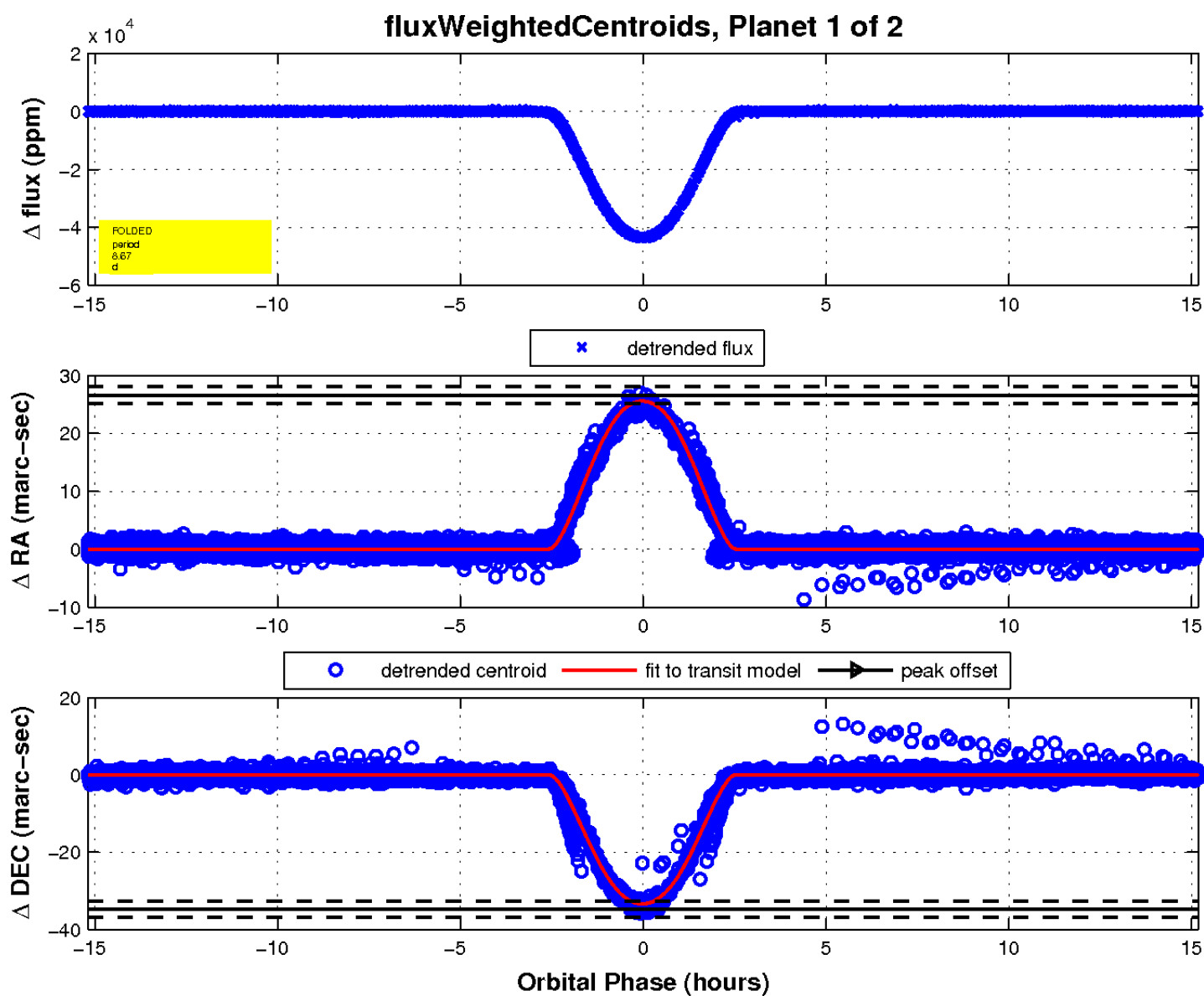
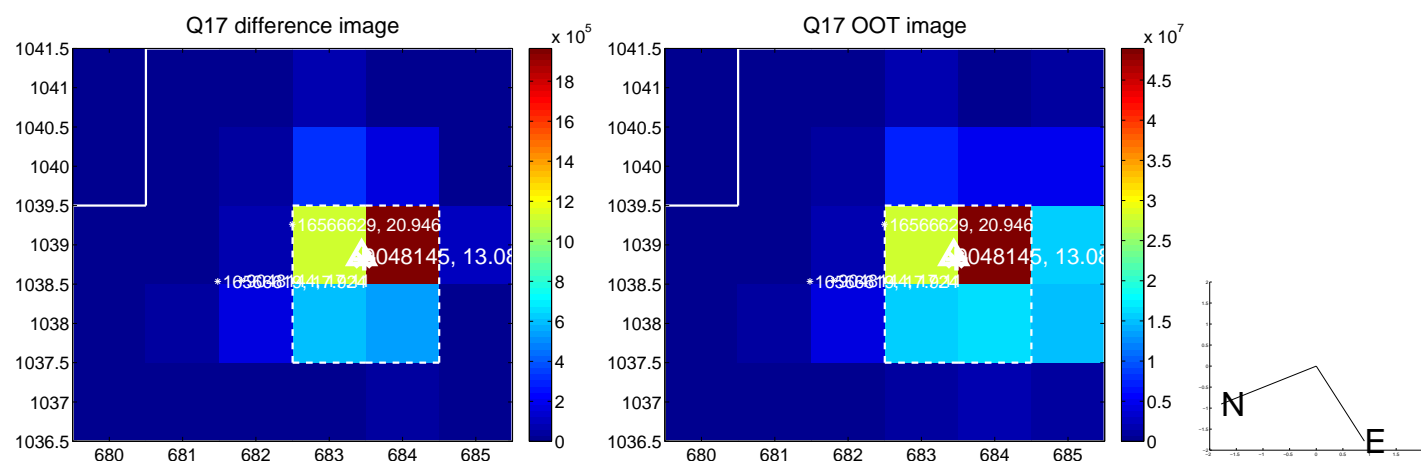
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

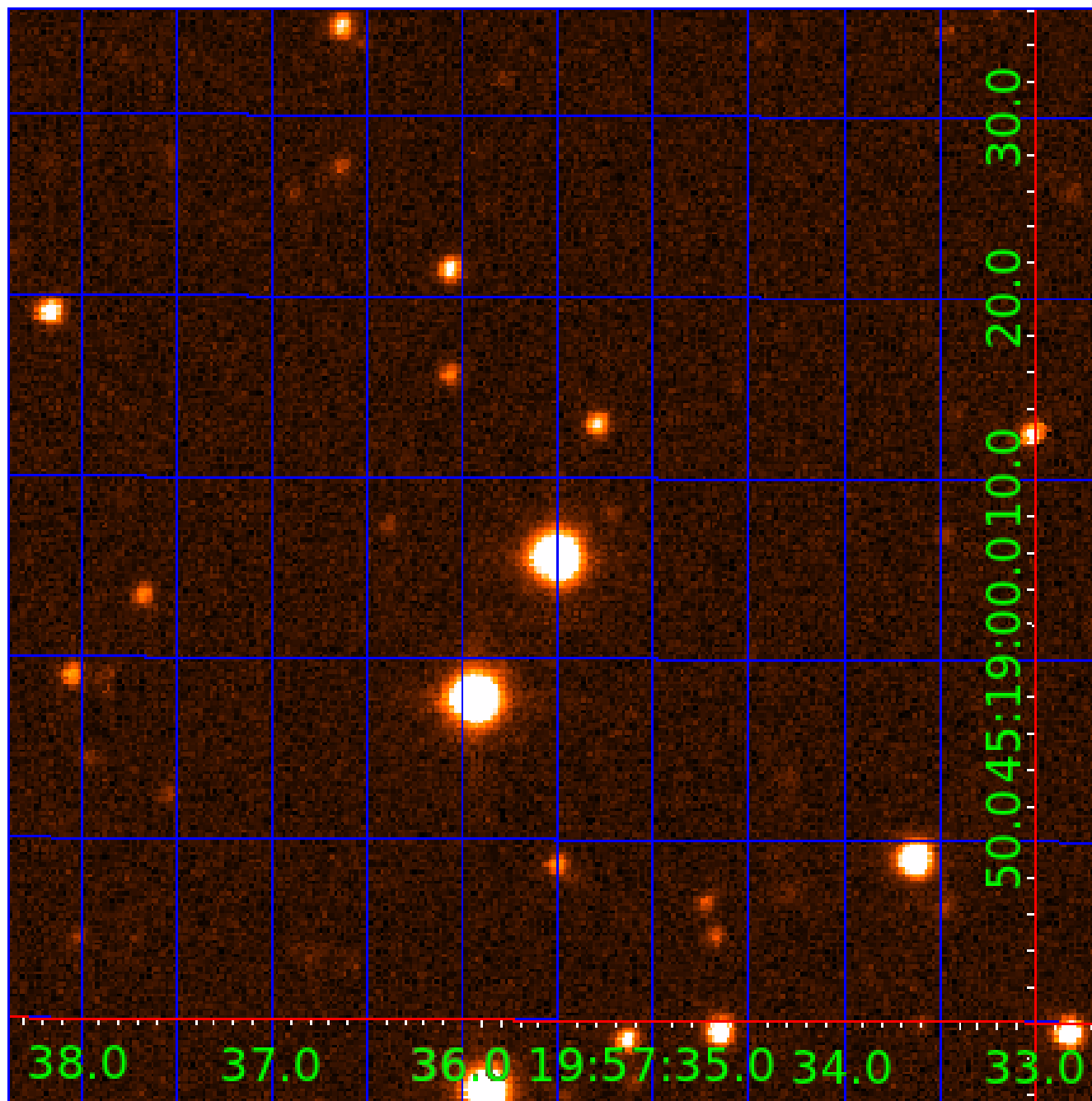


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009048145

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})
009048145-01	OBS	6063.01	8.667827	137.341527	43413.3	5.063	5860.7	4925.3	1.54	6712	37.87	532.59
009048145-02	OBS	No	8.667814	133.009441	1264.9	4.885	183.5	181.5	1.54	6712	7.04	532.59

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009048145-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
009048145-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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

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

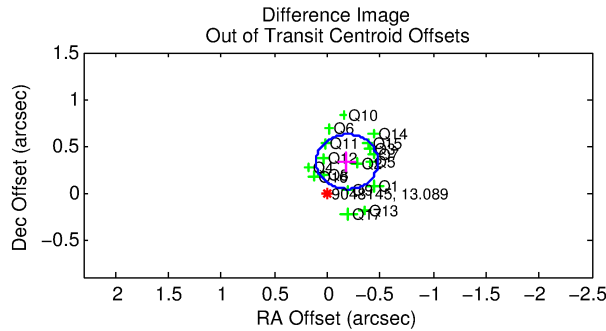
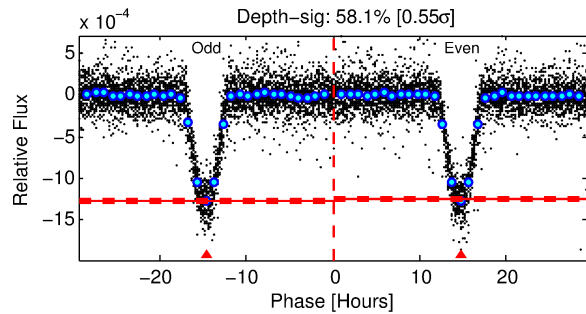
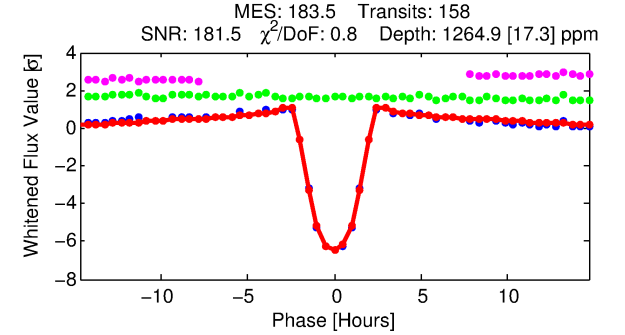
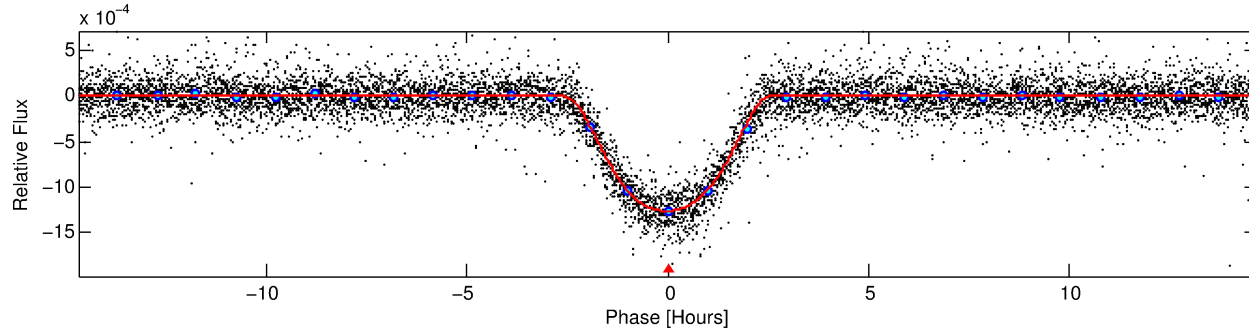
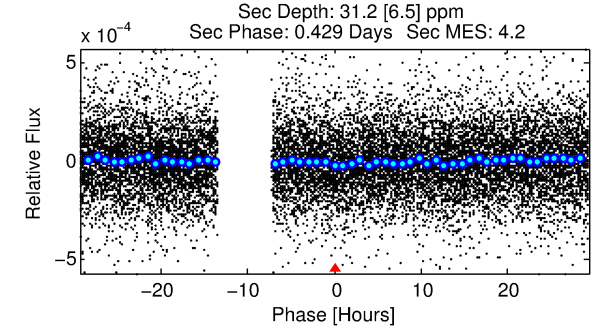
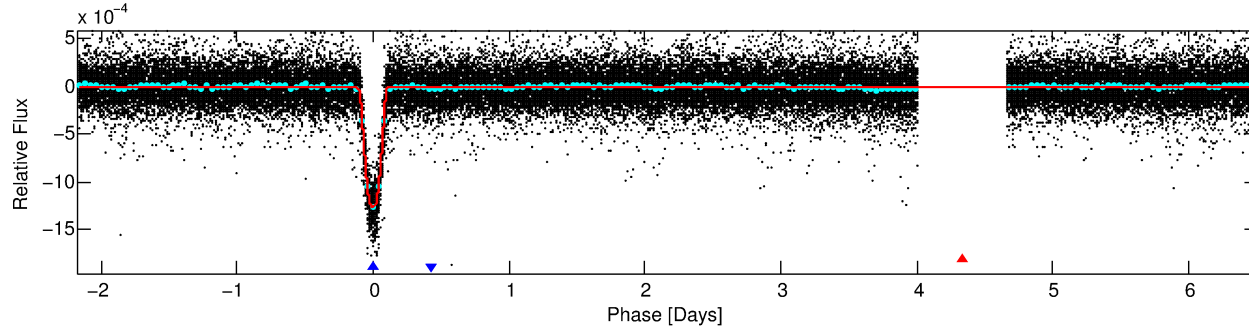
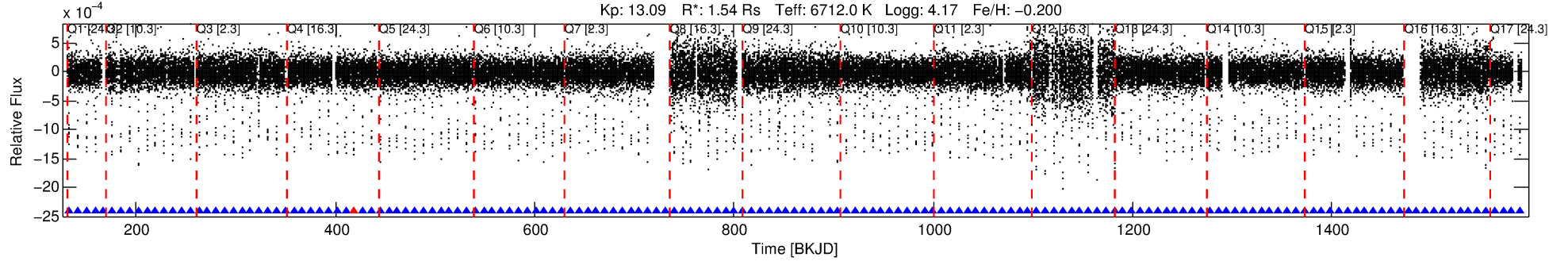
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009048145-02

No Significant Match Found

DV One-Page Summary

KIC: 9048145 Candidate: 2 of 2 Period: 8.668 d
KOI: K06063 Corr: No Ephemeris Match



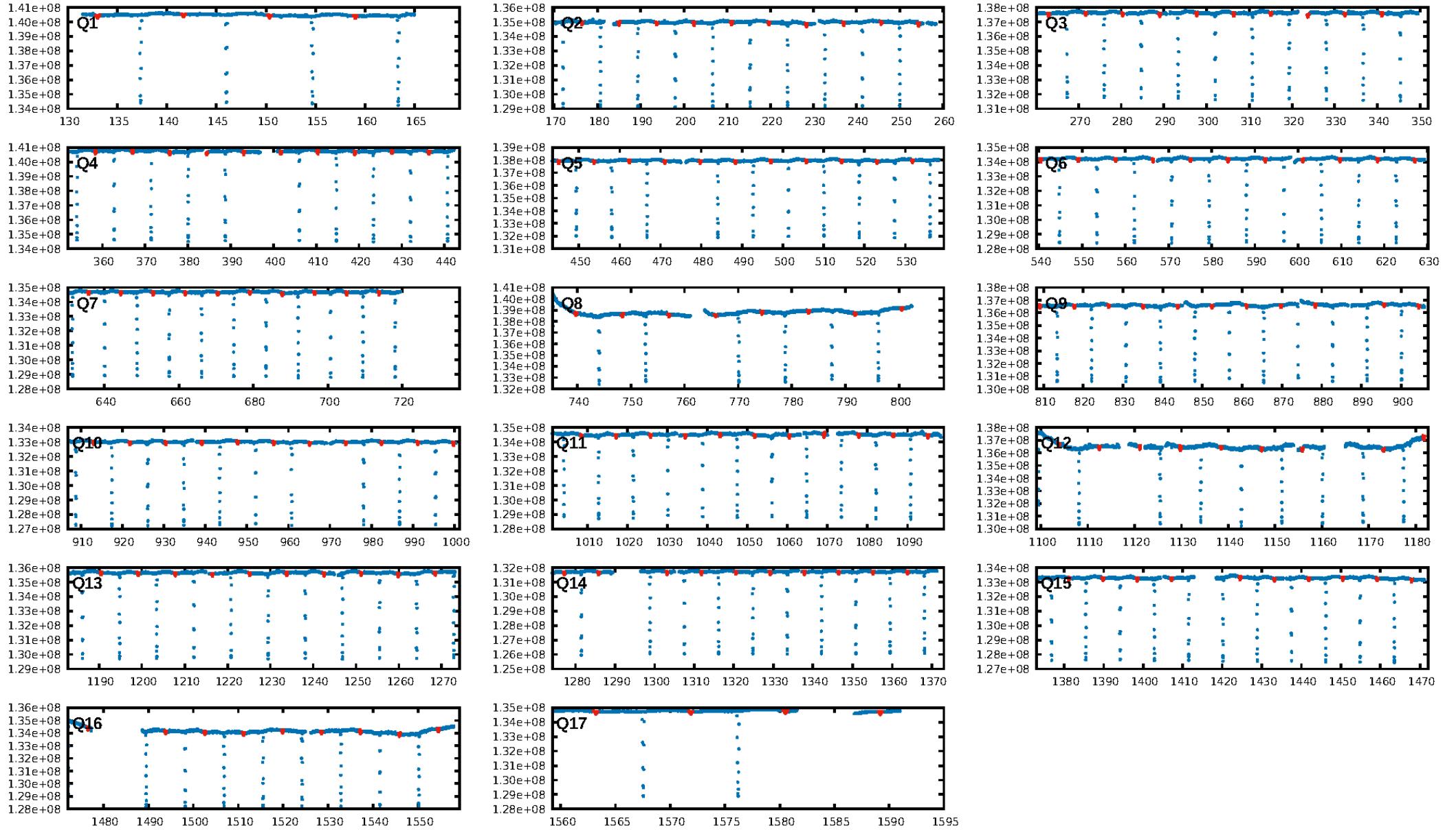
DV Fit Results:

Period = 8.66781 [0.00001] d
Epoch = 133.0094 [0.0005] BKJD
Rp/R* = 0.0419 [0.0007]
a/R* = 5.48 [0.07]
b = 0.96 [0.00]
Seff = 532.59 [207.18]
Teq = 1225 [119] K
Rp = 7.04 [2.18] Re
a = 0.0899 [0.0229] AU
Ag = 2.80 [1.17] [1.54 σ]
Teffp = 2450 [156] K [6.24 σ]

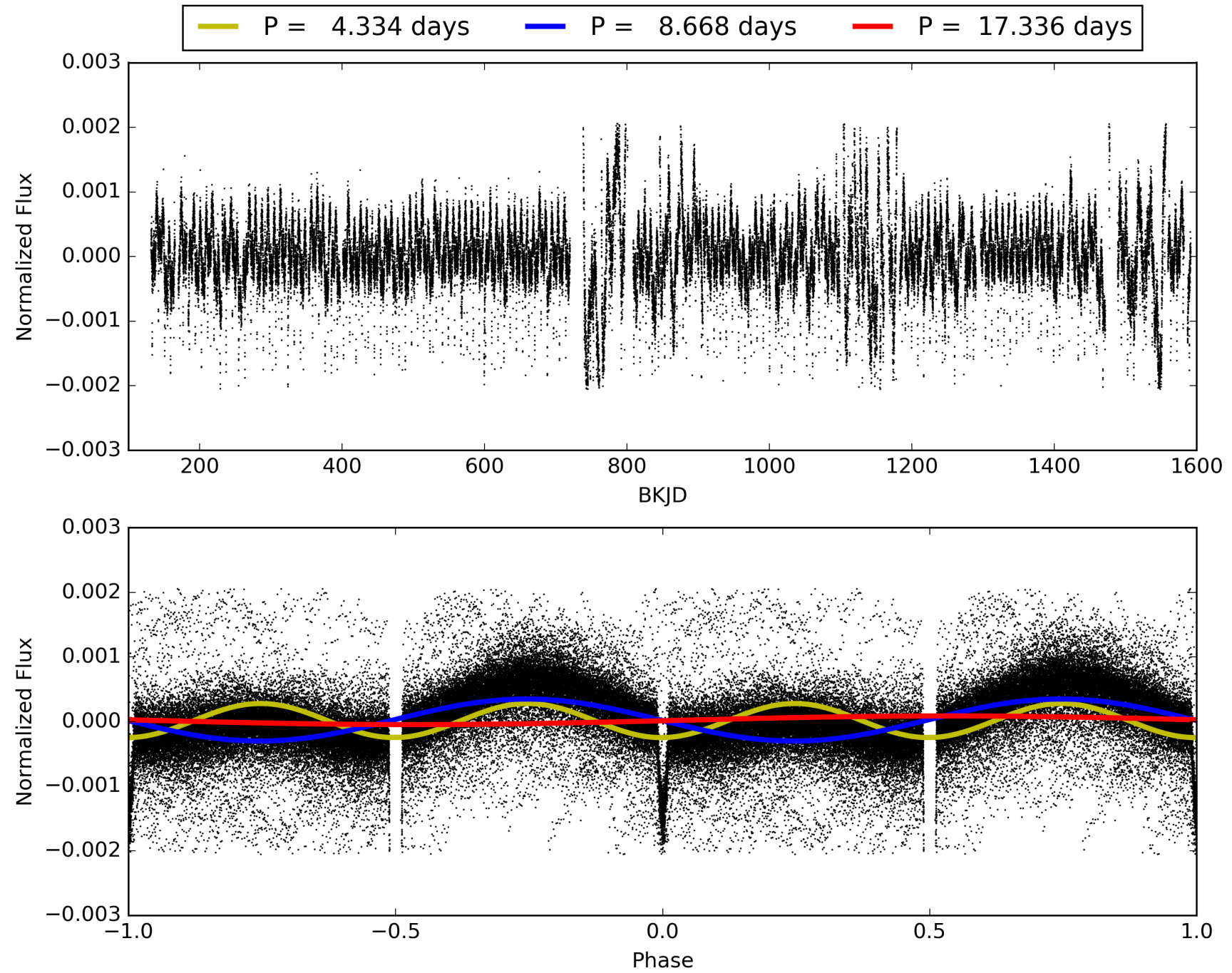
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: 82.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.99 [149/150]
GhostDiagnostic-chr: 7.603
Centroid-sig: 0.0%
Centroid-so: 0.891 arcsec [16.46 σ]
OotOffset-rm: 0.381 arcsec [3.91 σ]
KicOffset-rm: 0.159 arcsec [1.83 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 009048145-02, PDC Light Curves

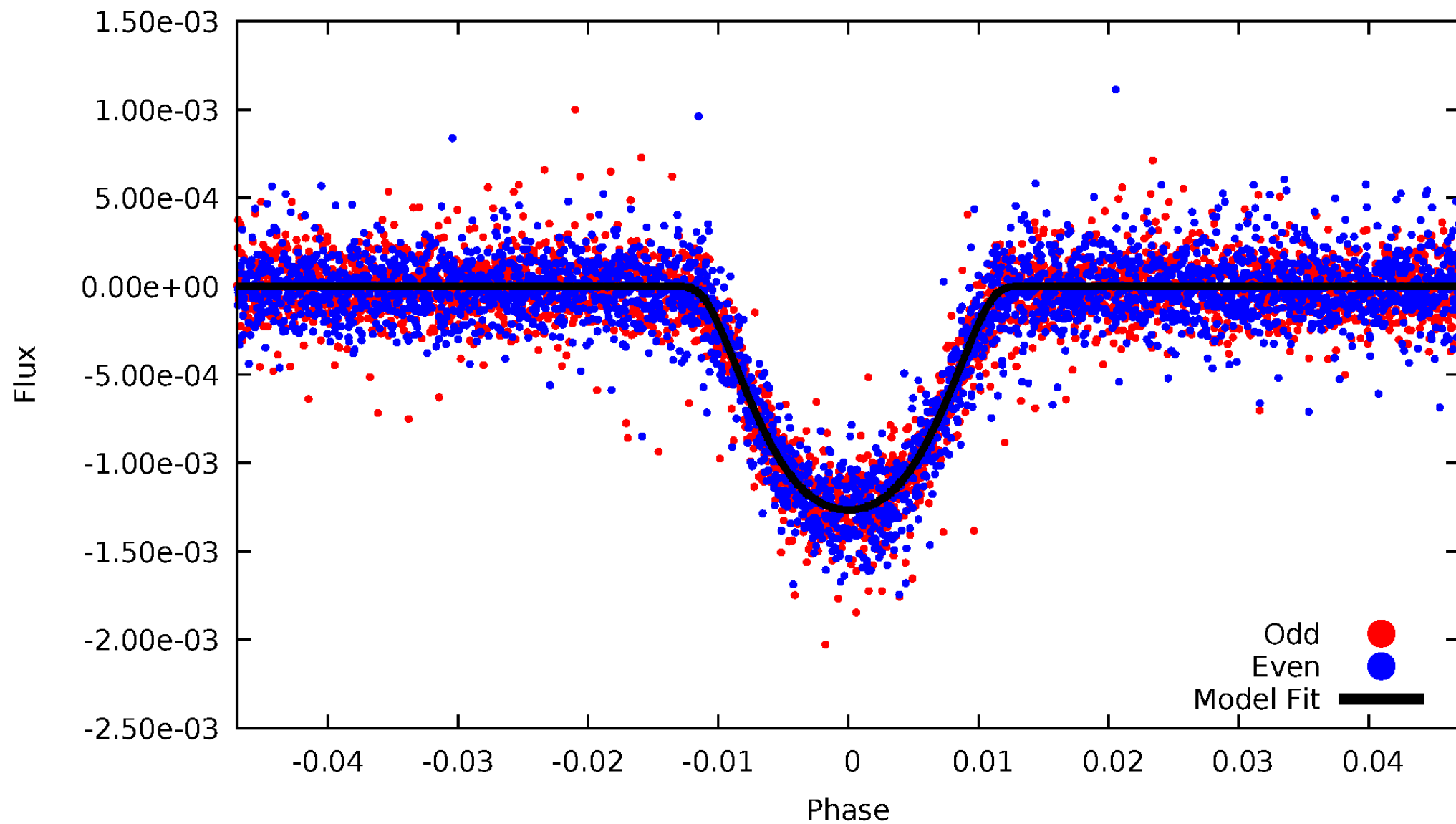


TCE 009048145-02



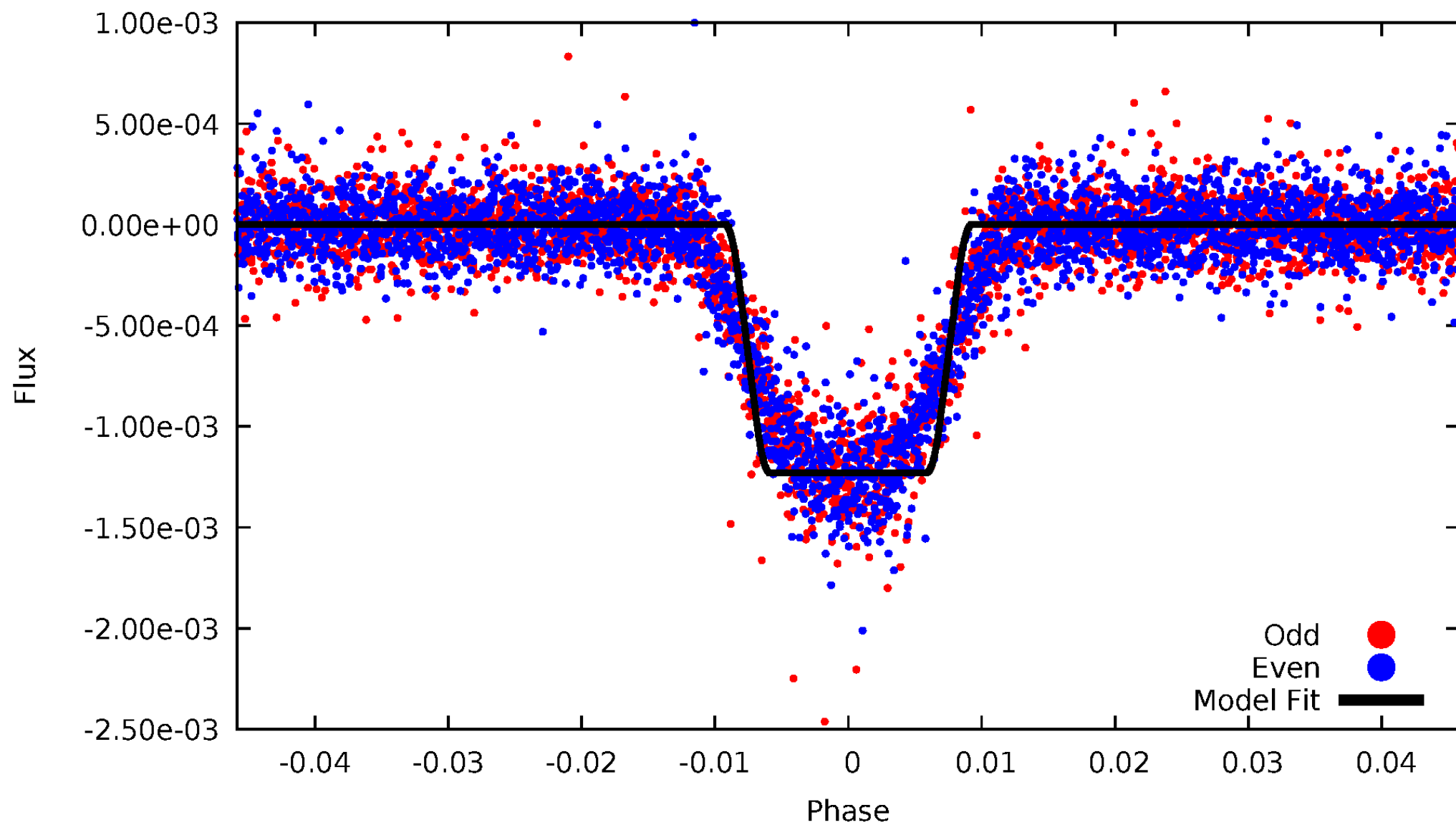
DV Odd/Even

TCE 009048145-02



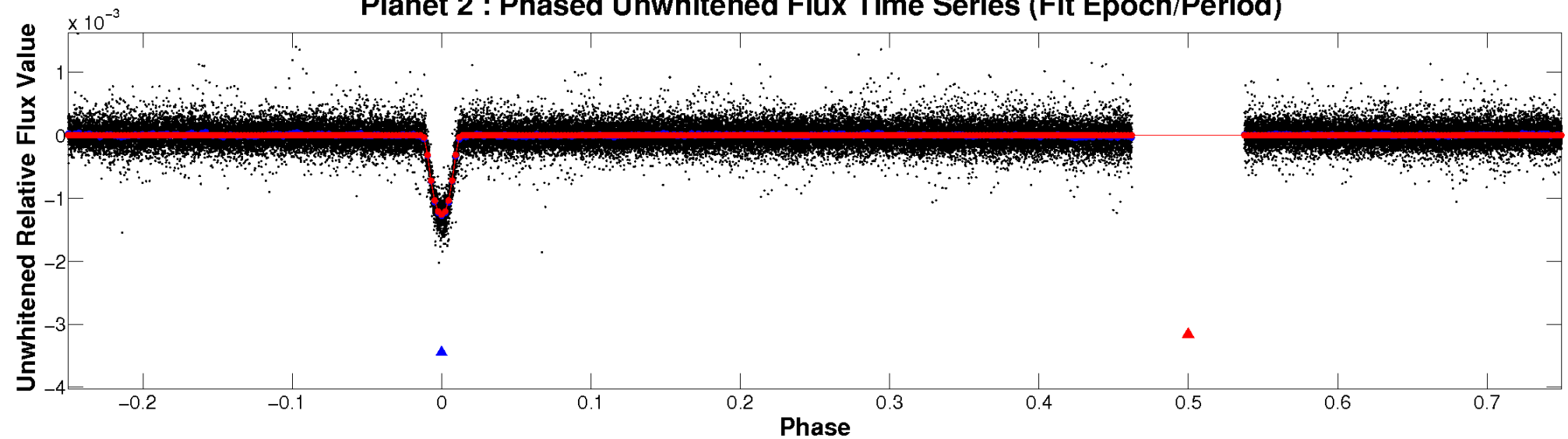
ALT Odd/Even

TCE 009048145-02

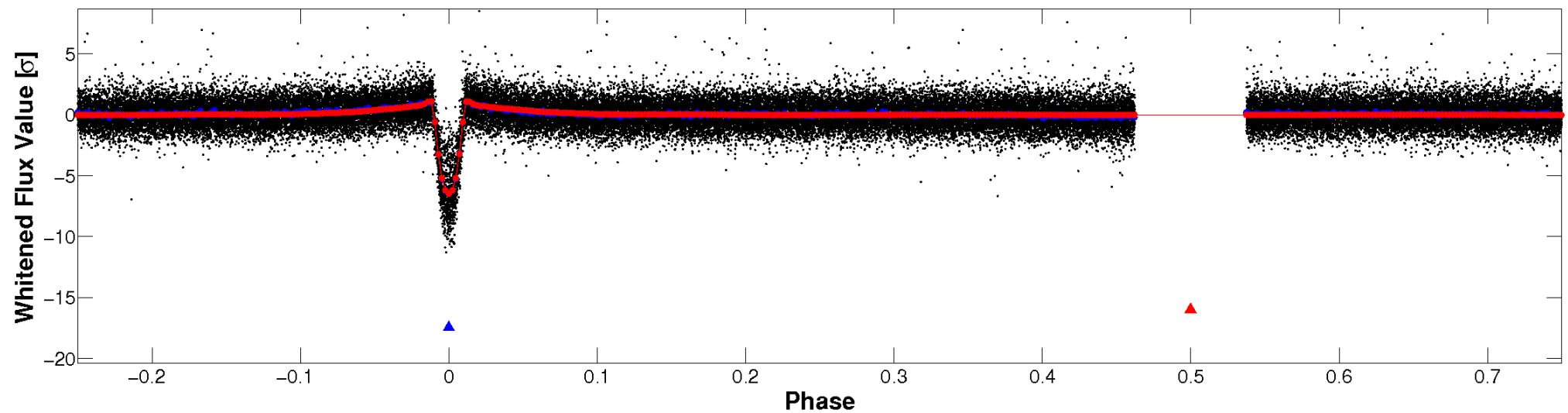


Non-Whitened Vs. Whitened Light Curve

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

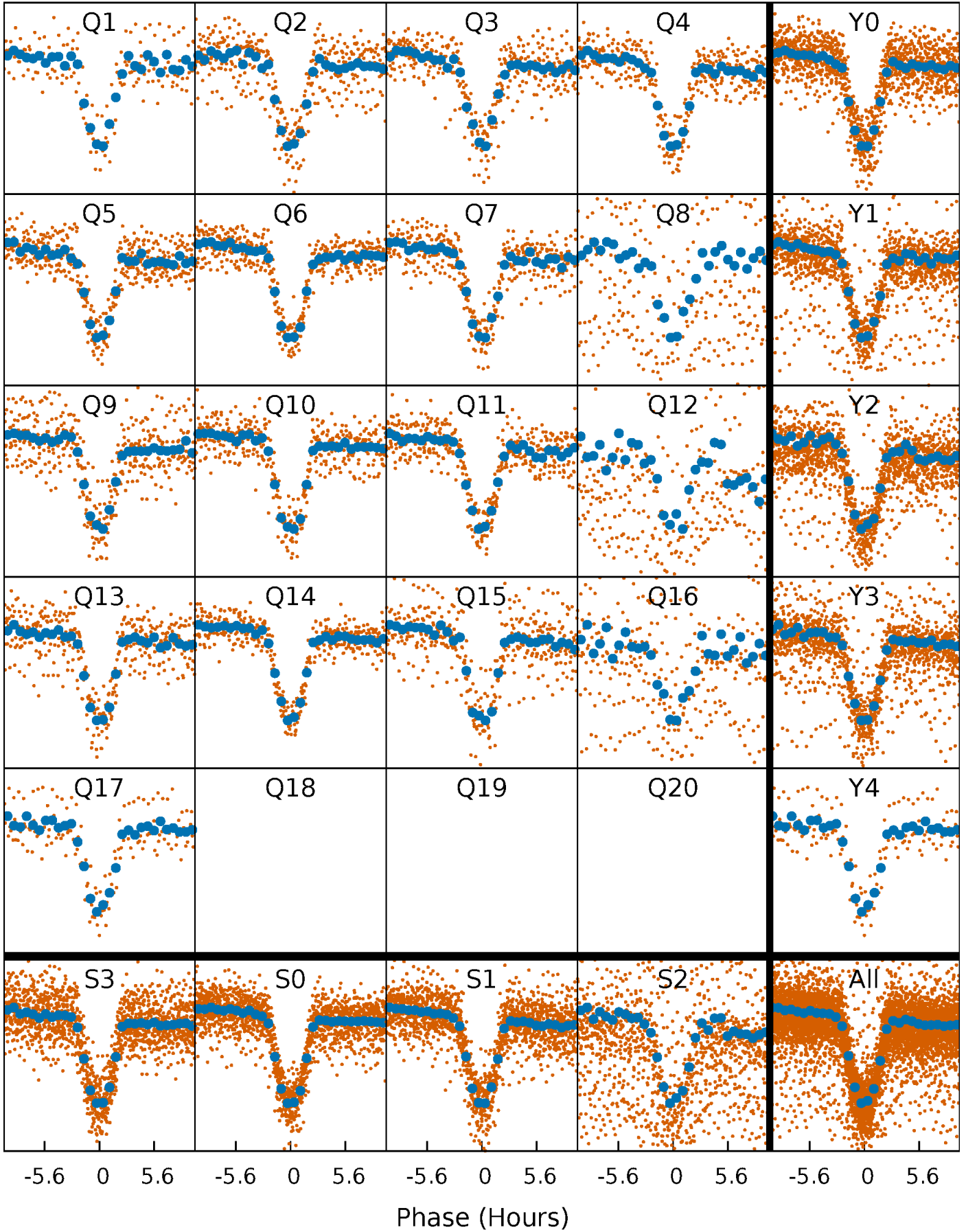


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



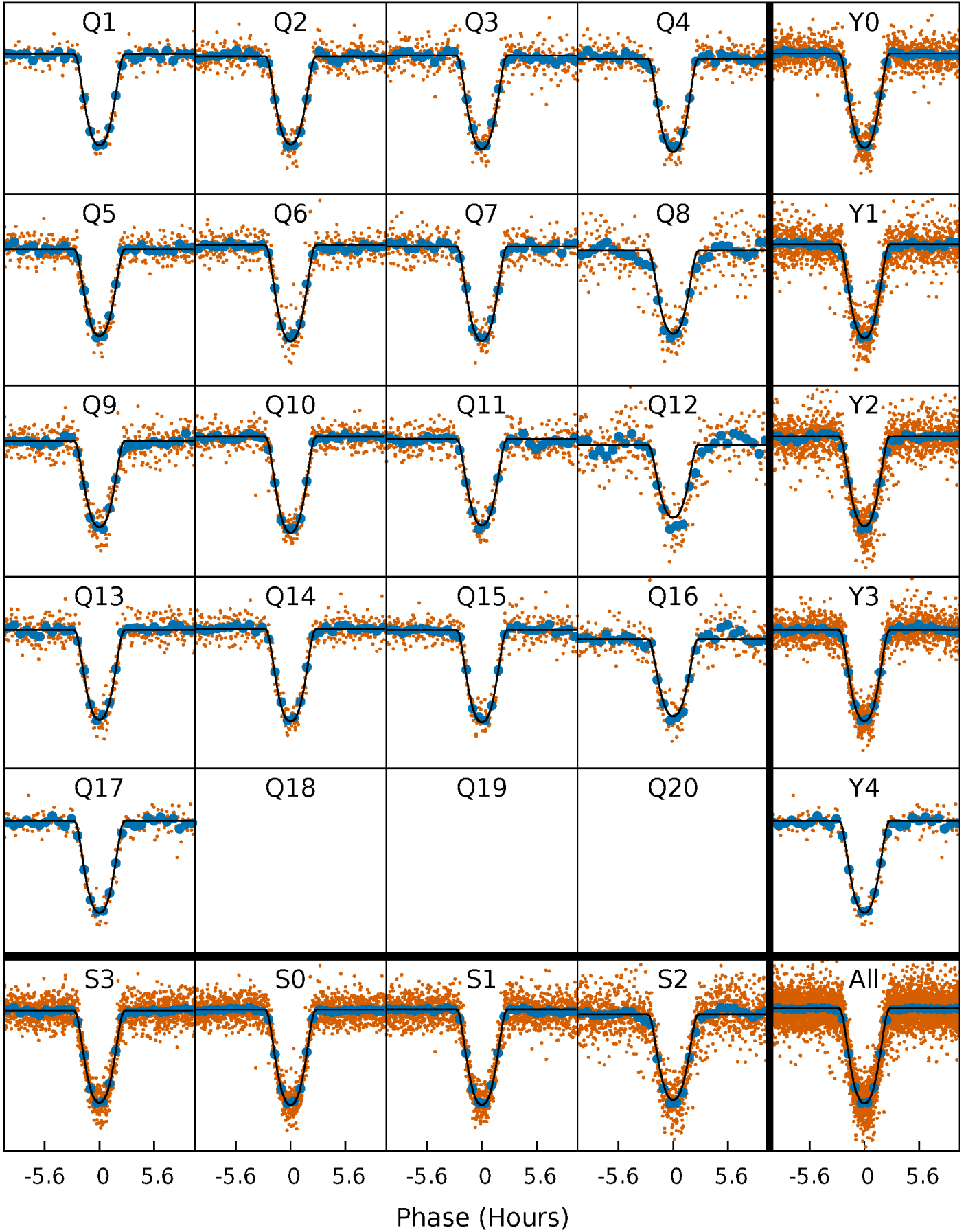
PDC Quarter-Phased Transit Curves

TCE 009048145-02 P= 8.667814 Days $T_0=133.009441$ (BKJD)



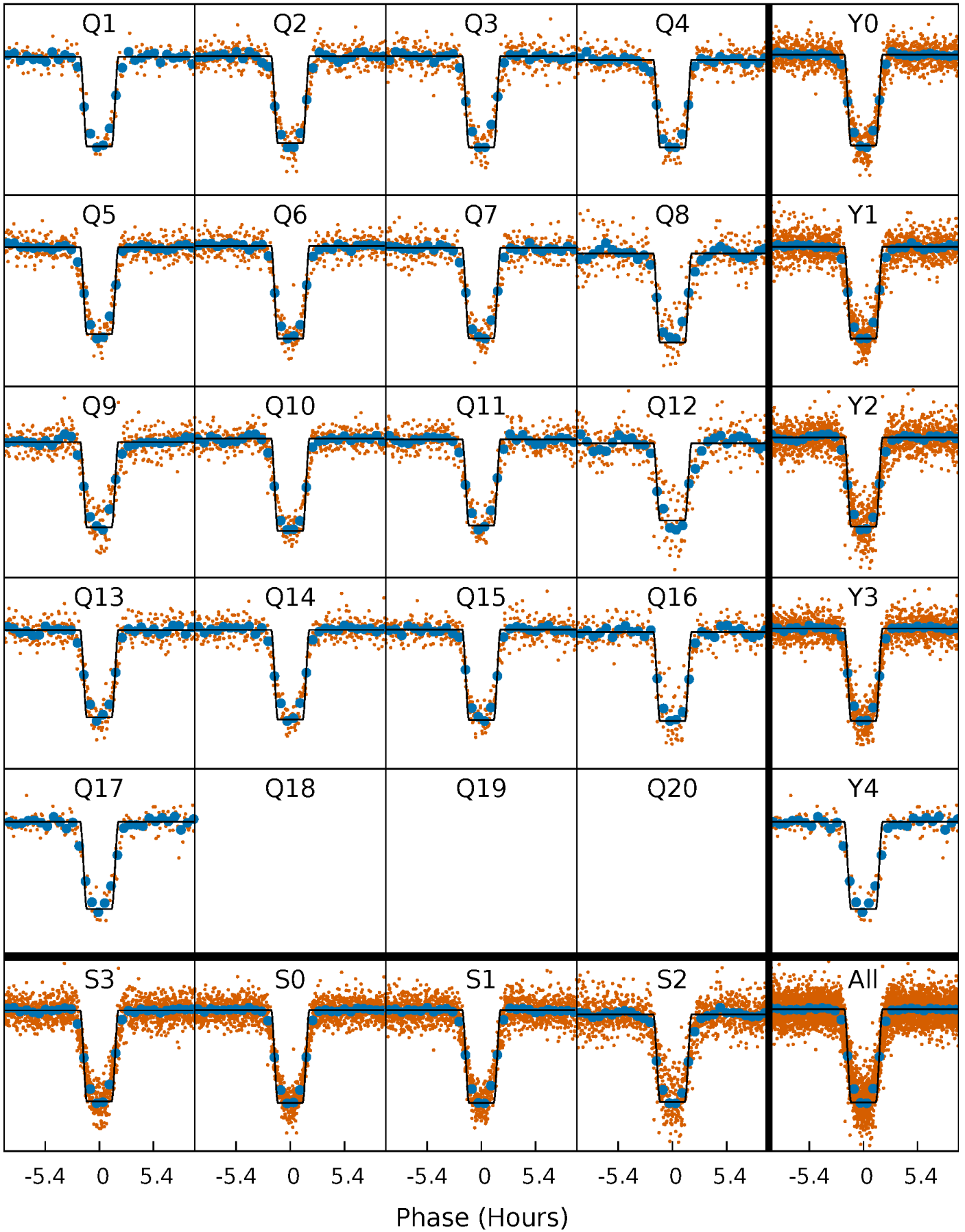
DV Quarter-Phased Transit Curves

TCE 009048145-02 P= 8.667814 Days $T_0=133.009441$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

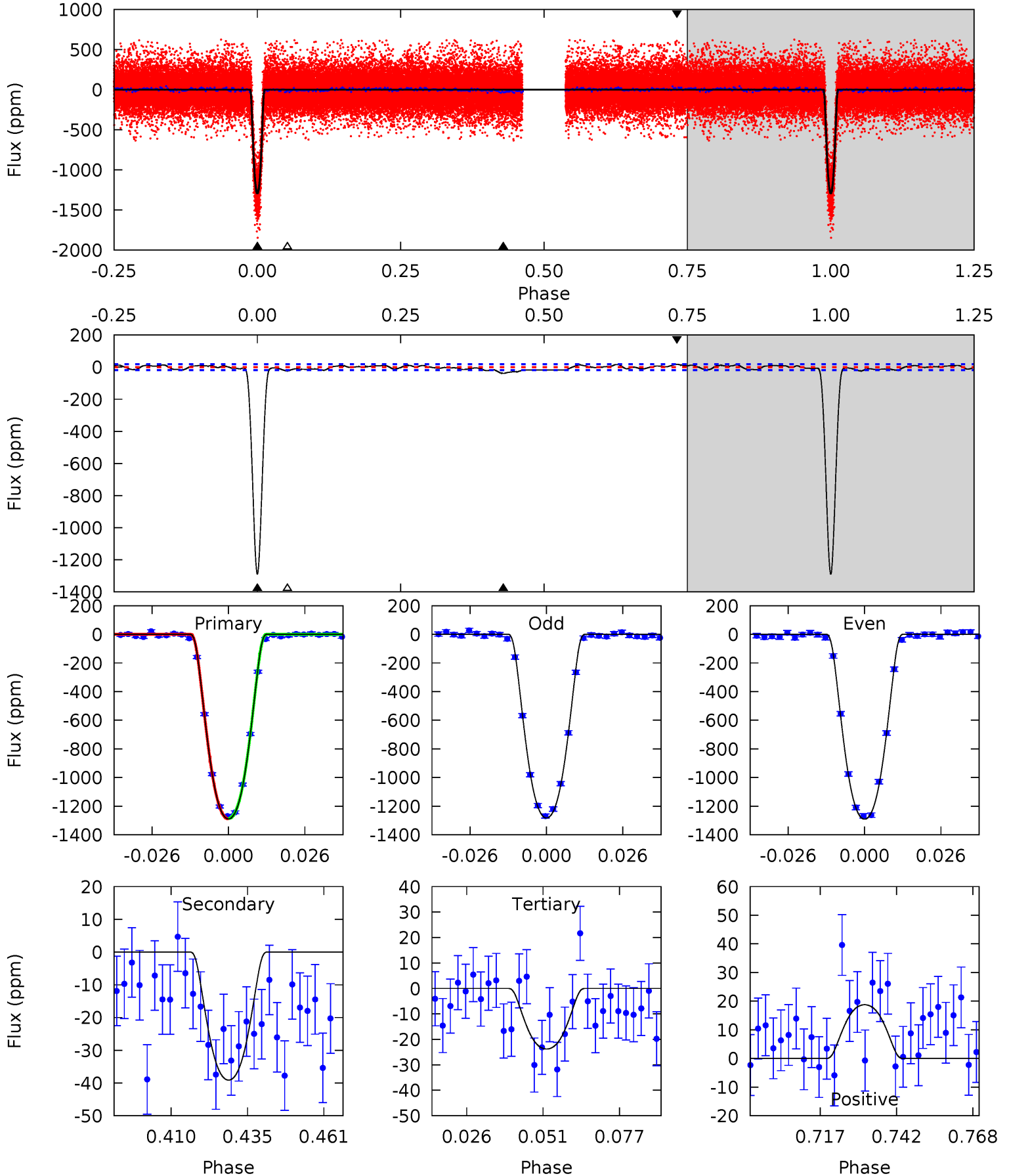
TCE 009048145-02 P= 8.667817 Days $T_0=133.009240$ (BKJD)



DV Model-Shift Uniqueness Test

009048145-02, P = 8.667814 Days, E = 124.341627 Days

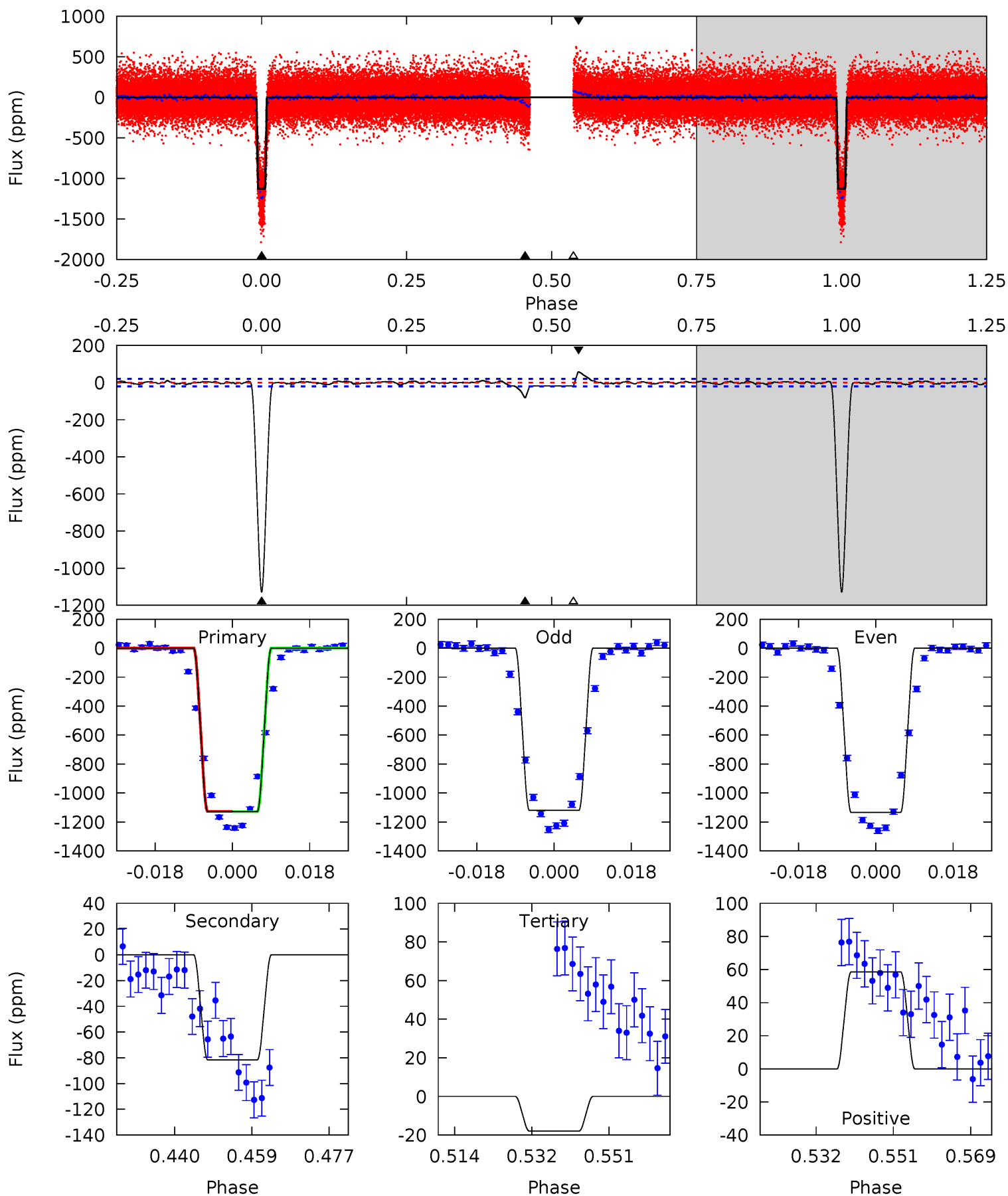
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
333.5	10.1	6.16	4.85	4.84	2.23	2.50	327.3	328.6	3.96	5.26	1.10	1.00	0.01	0.34



Alt Model-Shift Uniqueness Test

009048145-02, P = 8.667817 Days, E = 124.341423 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
275.7	19.9	4.39	14.3	4.91	2.36	2.06	271.3	261.4	15.6	5.64	1.73	1.00	0.05	0.23



Stellar Parameters For KIC 009048145

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6712^{+161}_{-242}	$4.174^{+0.175}_{-0.193}$	$-0.200^{+0.250}_{-0.300}$	$1.538^{+0.477}_{-0.358}$	$1.294^{+0.183}_{-0.224}$	$0.501^{+0.477}_{-0.244}$
	+2%/-4%	+4%/-5%	+125%/-150%	+31%/-23%	+14%/-17%	+95%/-49%
Source	PHO1	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 009048145-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-39 ± 4	$7.05^{+1.22}_{-0.88}$	1715^{+136}_{-120}	3134^{+76}_{-81}	$3.449^{+1.057}_{-0.918}$
Alt.	-82 ± 4	$5.91^{+0.98}_{-0.77}$	1708^{+142}_{-127}	3761^{+67}_{-100}	10^{+3}_{-3}

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 $A_{obs} \gg 1.0$

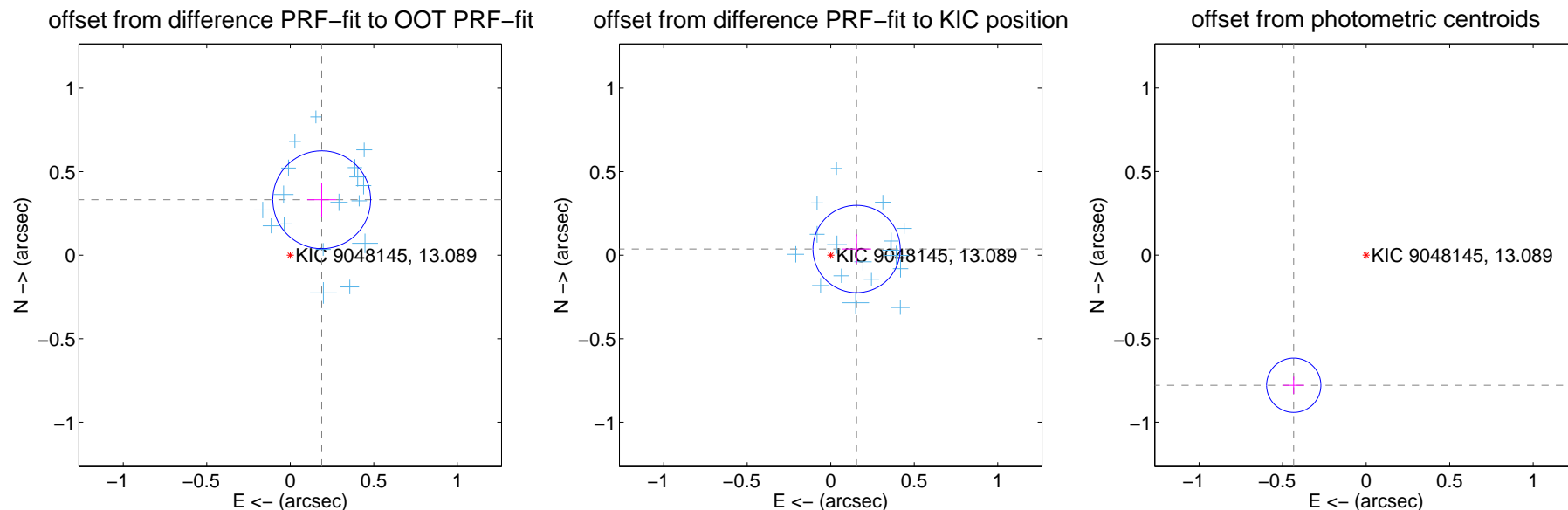
DV Centroid Data

Supplemental centroid analysis for 009048145-02. Kepler magnitude: 13.09. Transit SNR 181.47

There are 17 quarters with good PRF difference image offsets

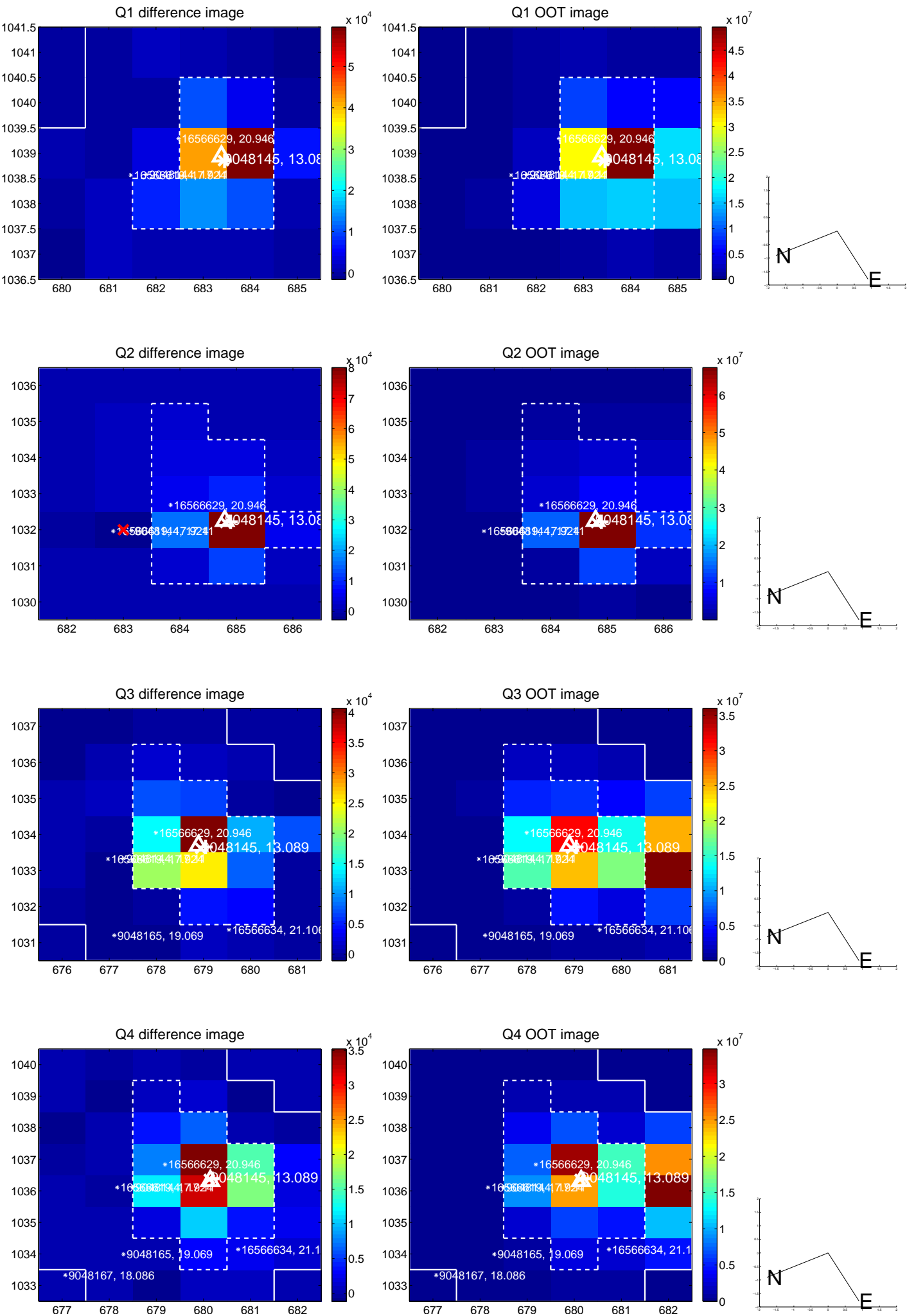
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.381 ± 0.098	3.91	-0.188 ± 0.086	0.332 ± 0.101
PRF-fit source offset from KIC position	0.159 ± 0.087	1.83	-0.155 ± 0.087	0.037 ± 0.088
photometric centroid source offset	0.89 ± 0.05	16.46	0.43 ± 0.06	-0.78 ± 0.05

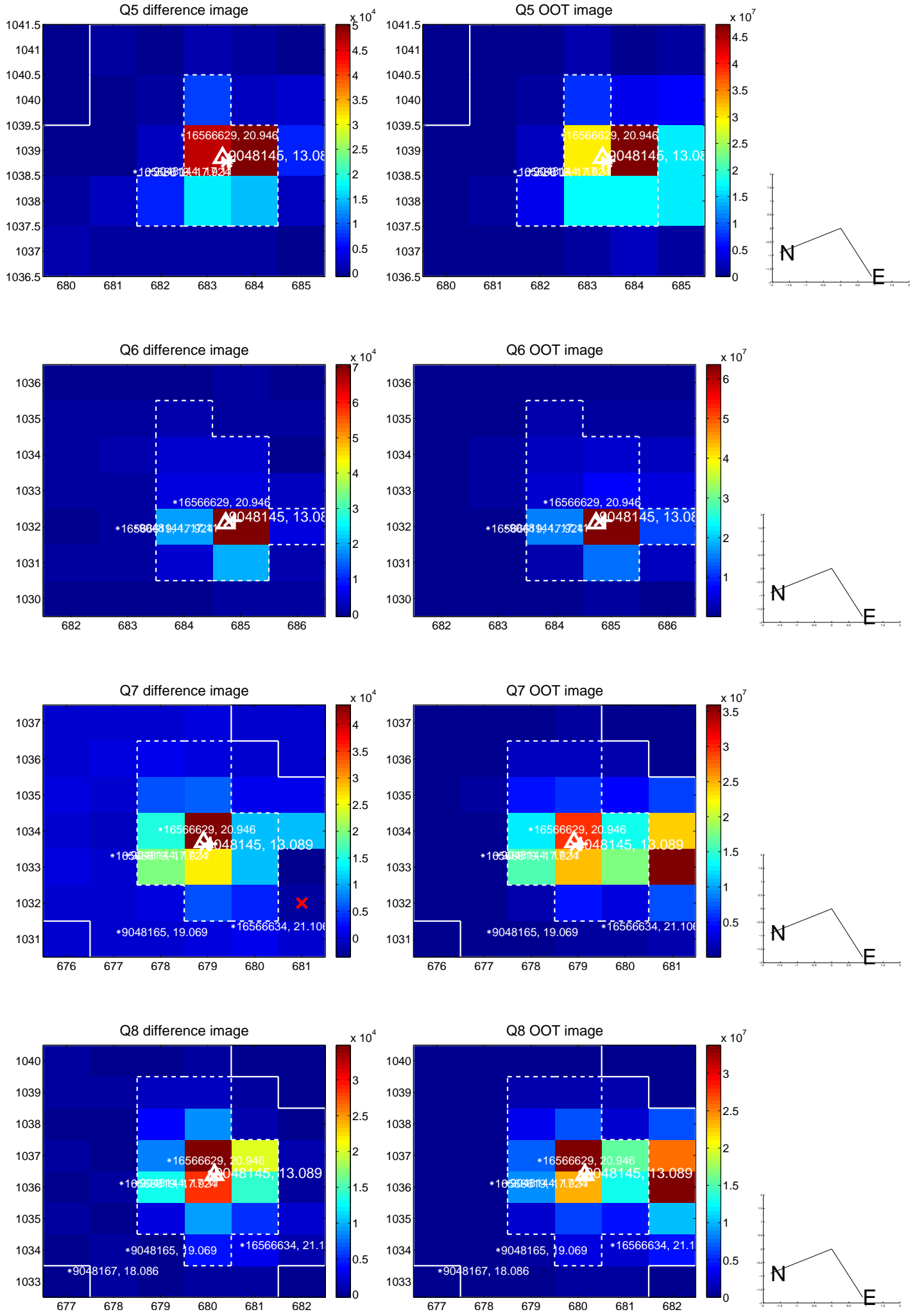


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

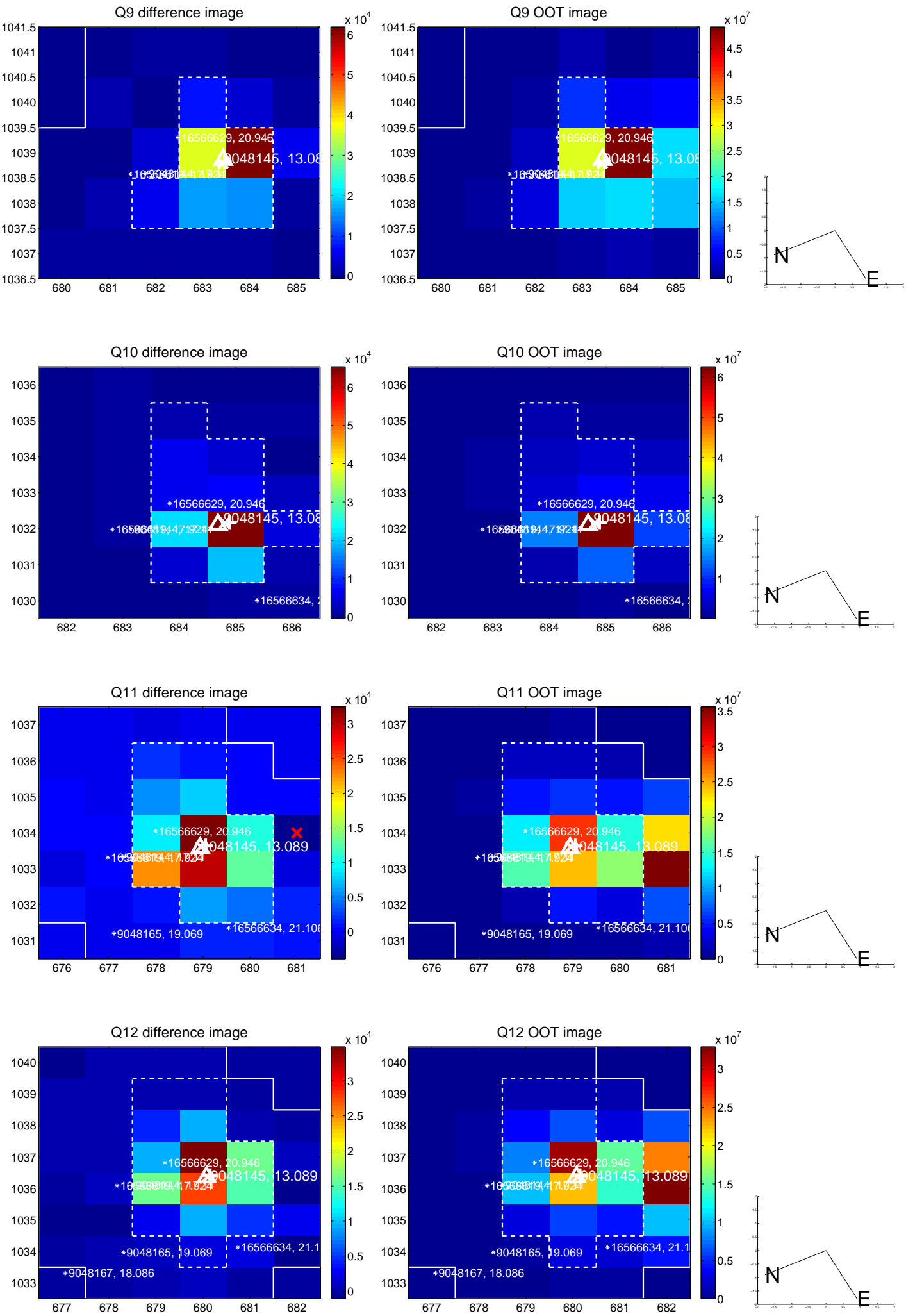
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



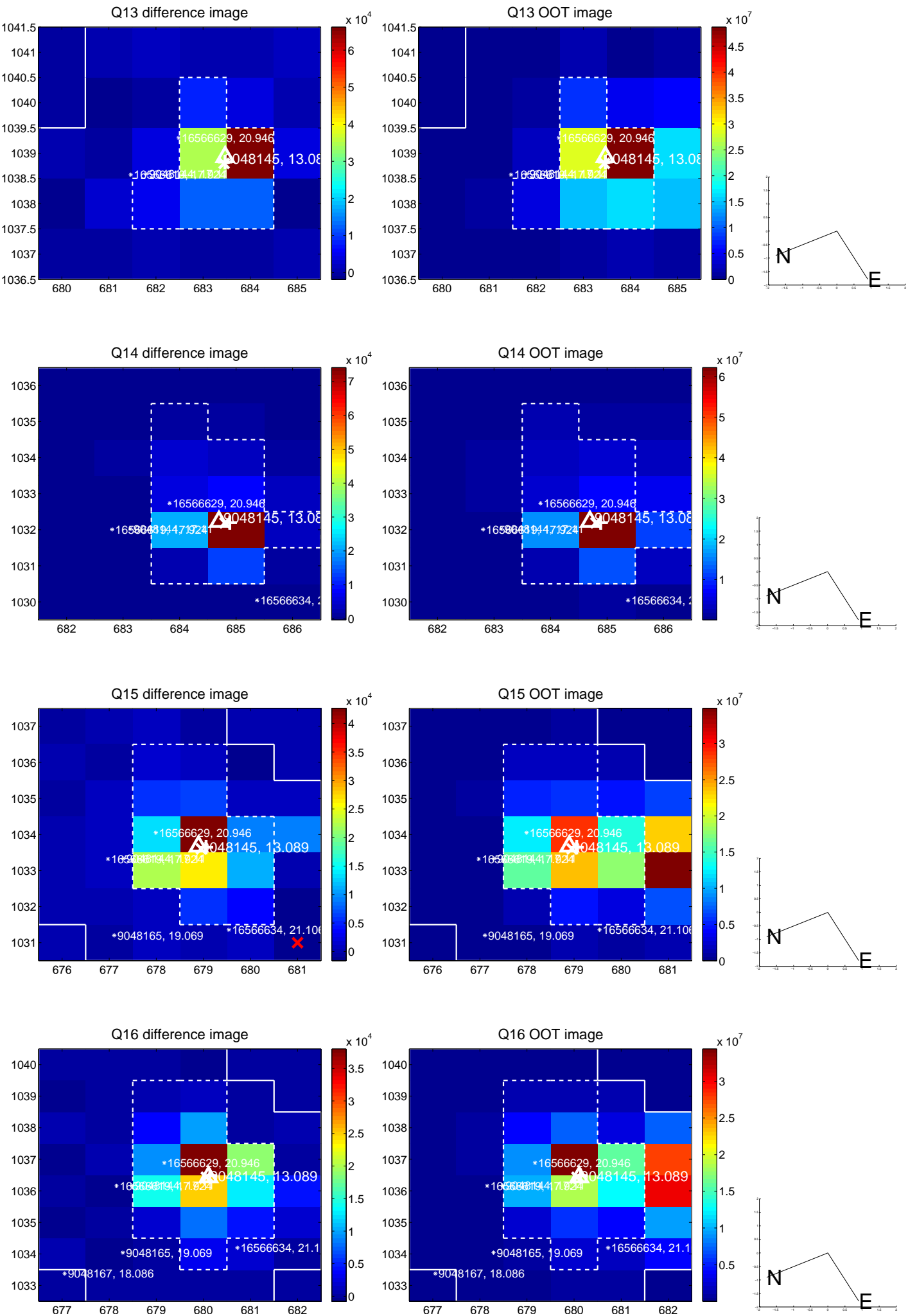
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

