

KIC 002452440

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})
002452440-01	OBS	3687.01	8.097040	138.425357	62250.9	5.749	636.4	464.0	0.89	5753	23.47	149.60
002452440-02	OBS	No	8.097119	134.369411	3379.0	5.250	39.0	41.2	0.89	5753	5.84	149.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002452440-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_KIC_POS
002452440-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_FEW_DIFFS

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.

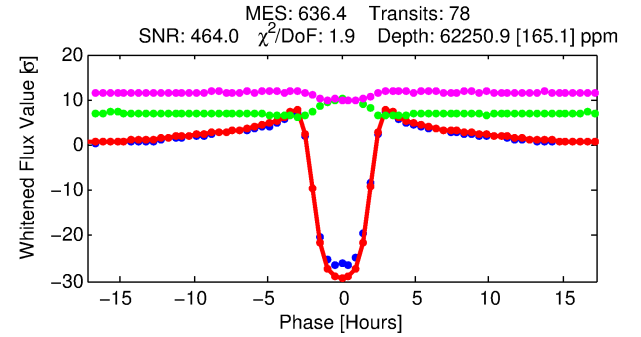
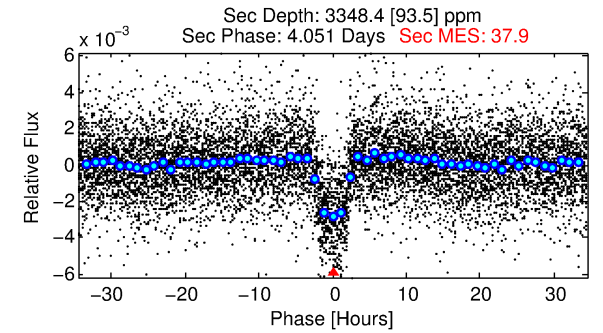
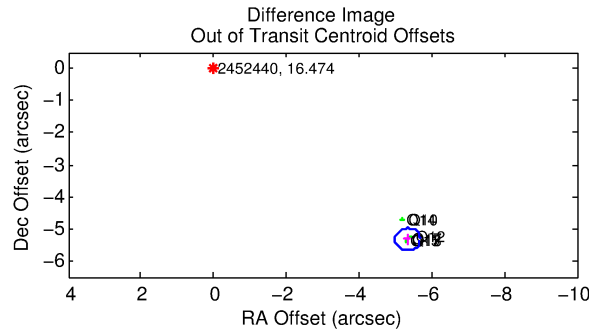
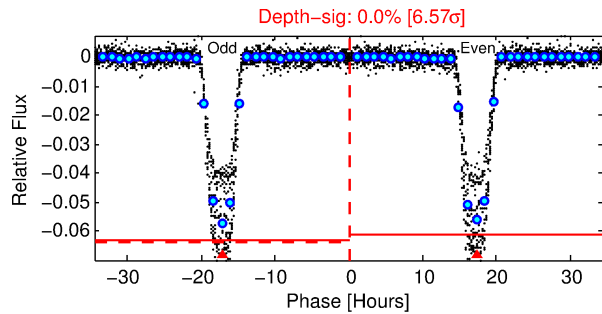
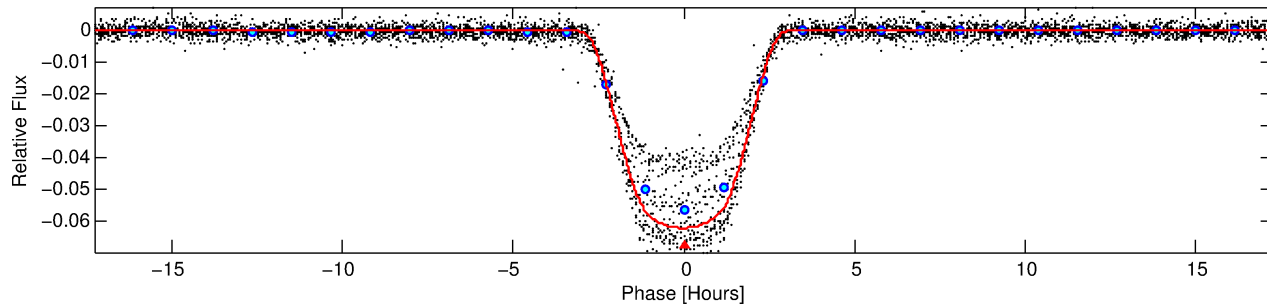
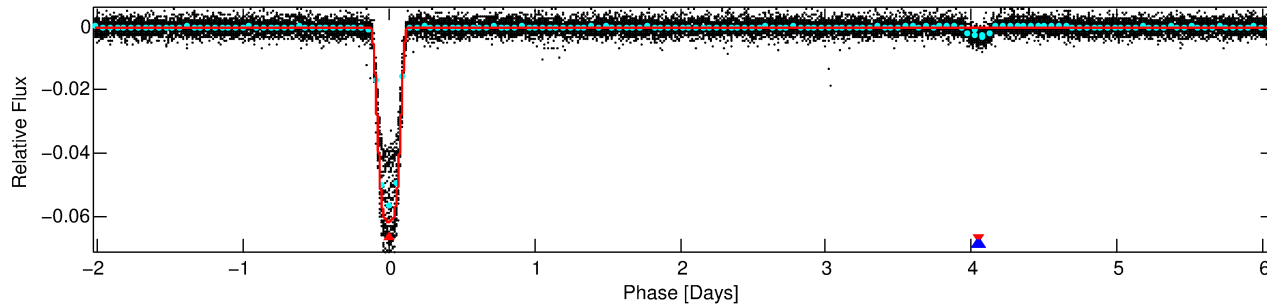
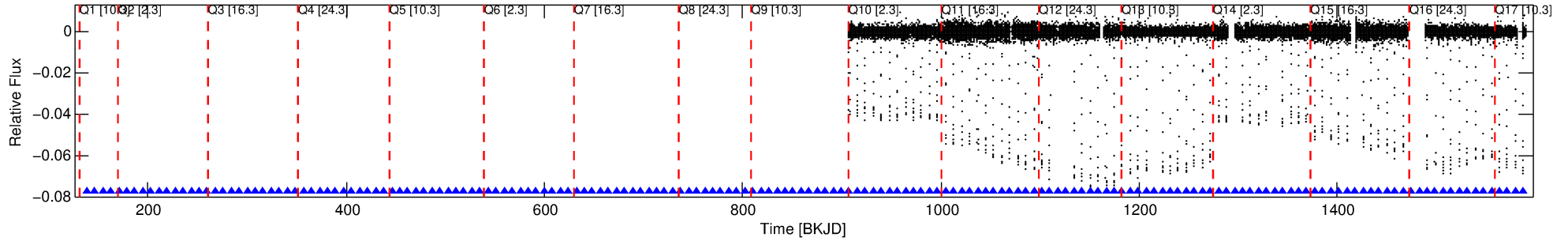
Ephemeris Match Information For 002452440-01

No Significant Match Found

DV One-Page Summary

KIC: 2452440 Candidate: 1 of 2 Period: 8.097 d
KOI: K03687.01 Corr: 0.995

Kp: 16.47 R*: 0.89 Rs Teff: 5753.0 K Logg: 4.42 Fe/H: -0.560



DV Fit Results:

Period = 8.09704 [0.00000] d
Epoch = 138.4254 [0.0006] BKJD
Rp/R* = 0.2406 [0.0005]
a/R* = 11.69 [0.07]
b = 0.60 [0.01]
Seff = 149.60 [53.24]
Teq = 892 [79] K
Rp = 23.47 [5.72] Re
a = 0.0724 [0.0157] AU
Ag = 17.53 [5.80] [2.85σ]
Teffp = 2821 [96] K [15.47σ]

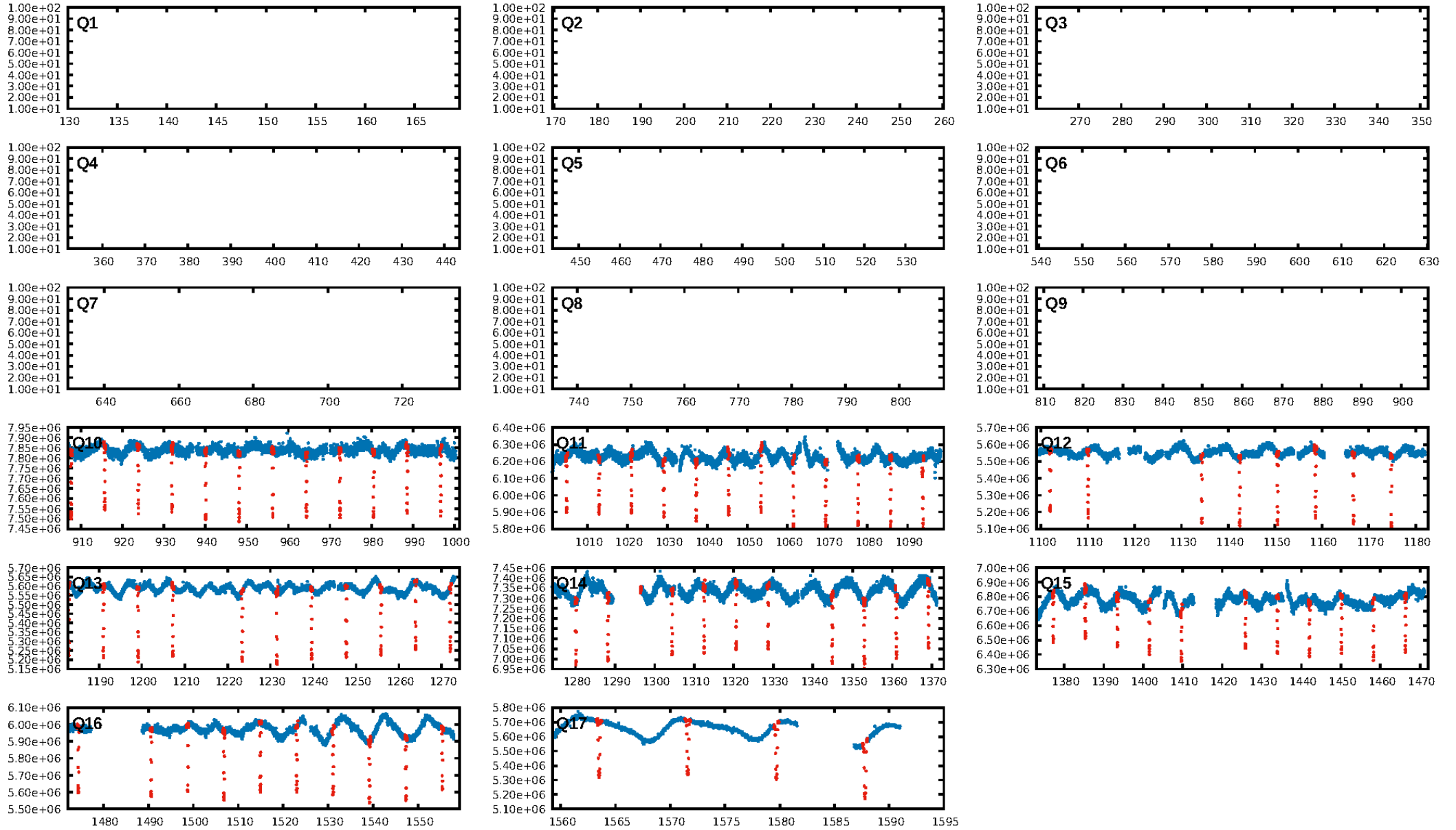
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [74/74]
GhostDiagnostic-chr: 1.776
Centroid-sig: 0.0%
Centroid-so: 3.351 arcsec [1258.96σ]
OotOffset-rm: 7.539 arcsec [64.78σ]
KicOffset-rm: 0.082 arcsec [1.10σ]
OotOffset-st: 2/2/1/2 [7]
KicOffset-st: 2/2/2/2 [8]
DiffImageQuality-fgm: 1.00 [8/8]
DiffImageOverlap-fno: 1.00 [8/8]

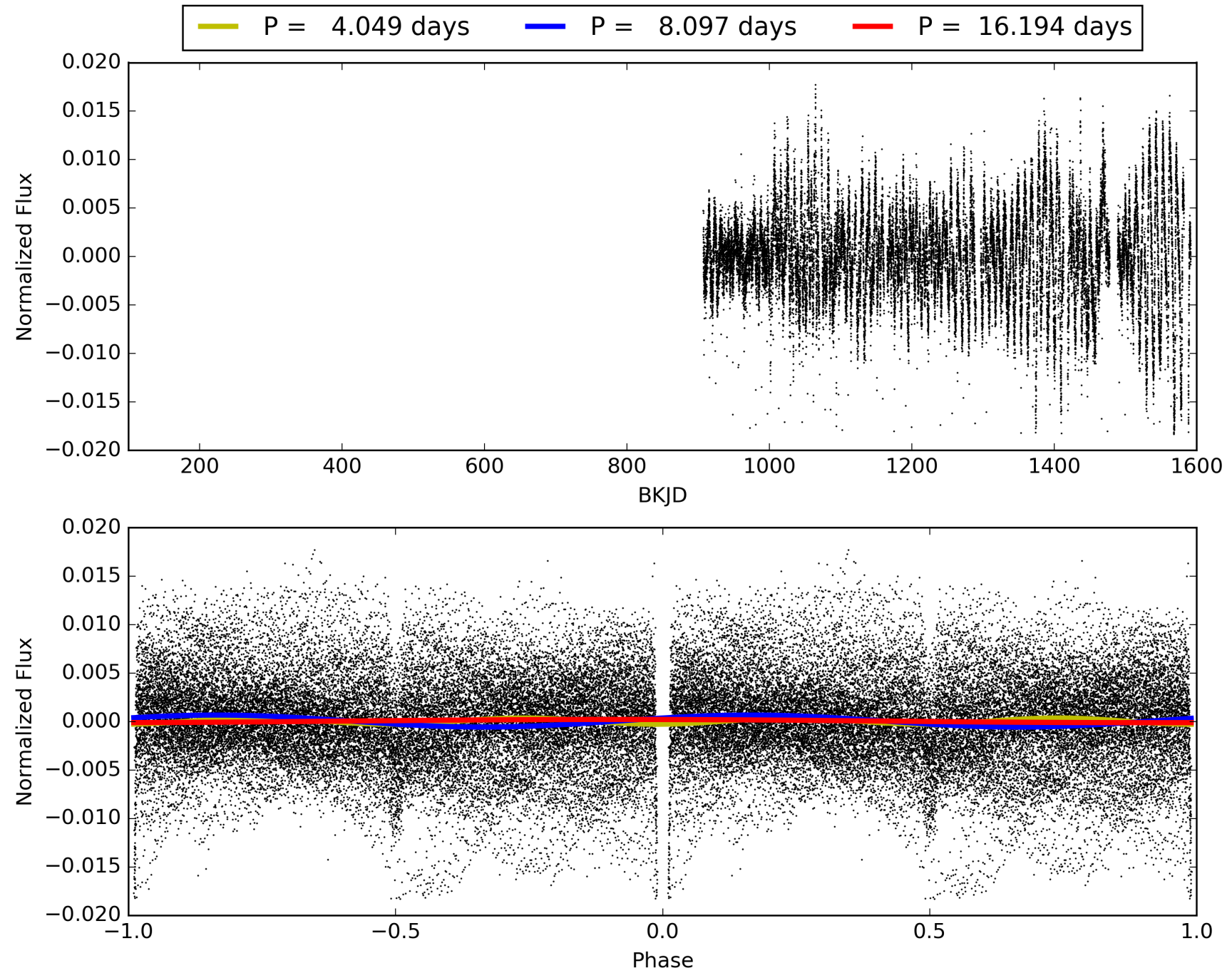
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:34:25 Z

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

TCE 002452440-01, PDC Light Curves

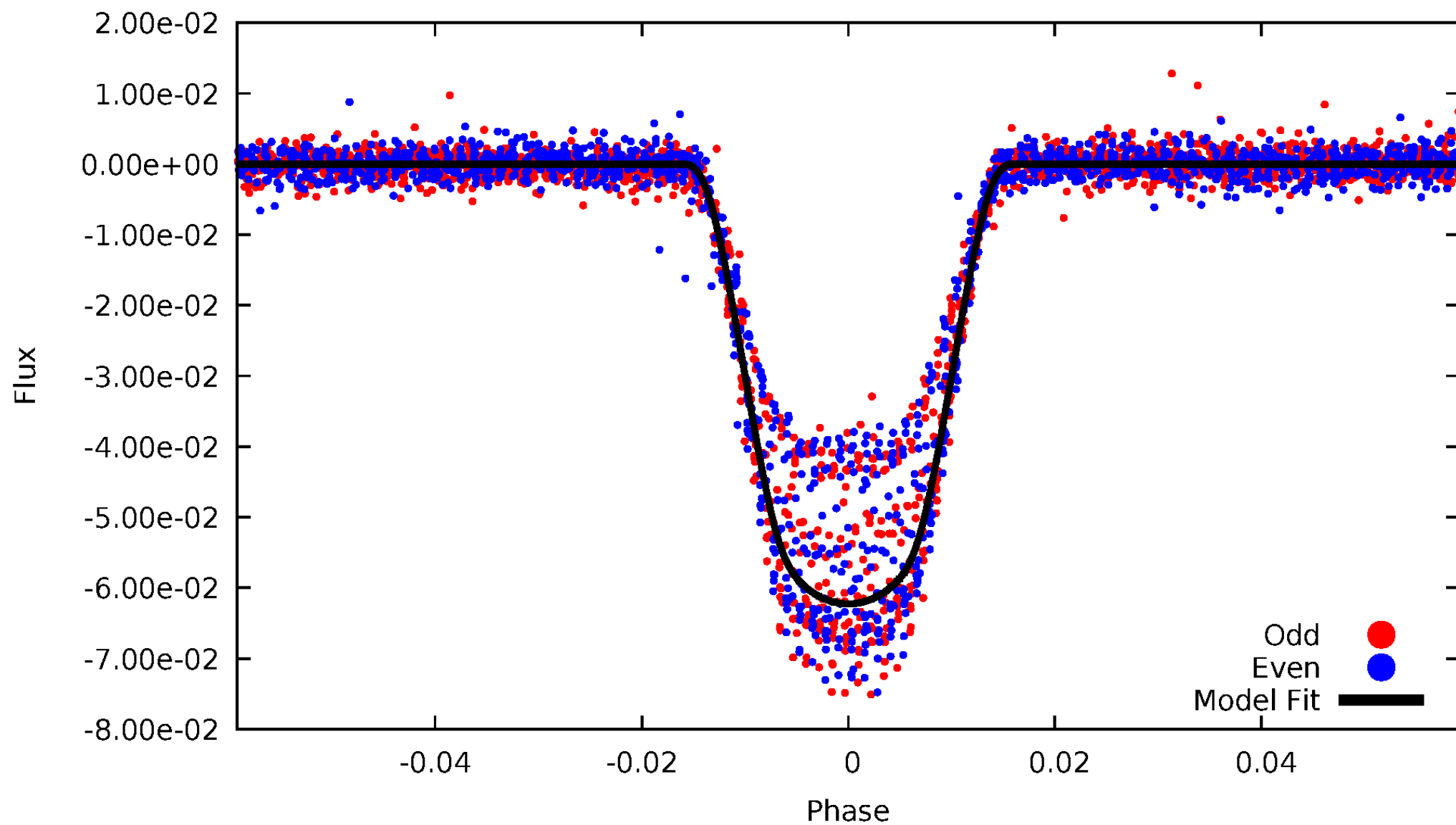


TCE 002452440-01



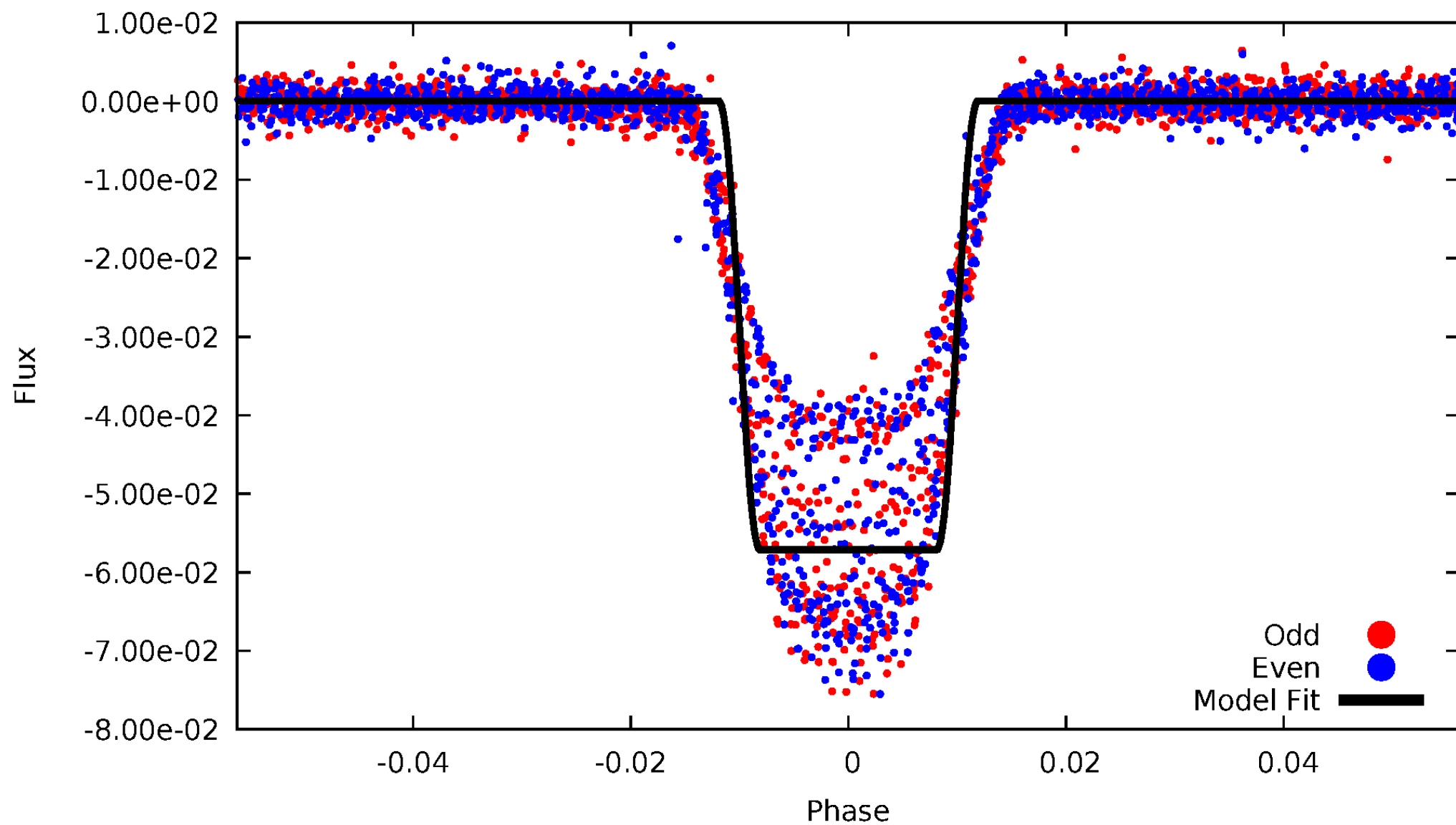
DV Odd/Even

TCE 002452440-01



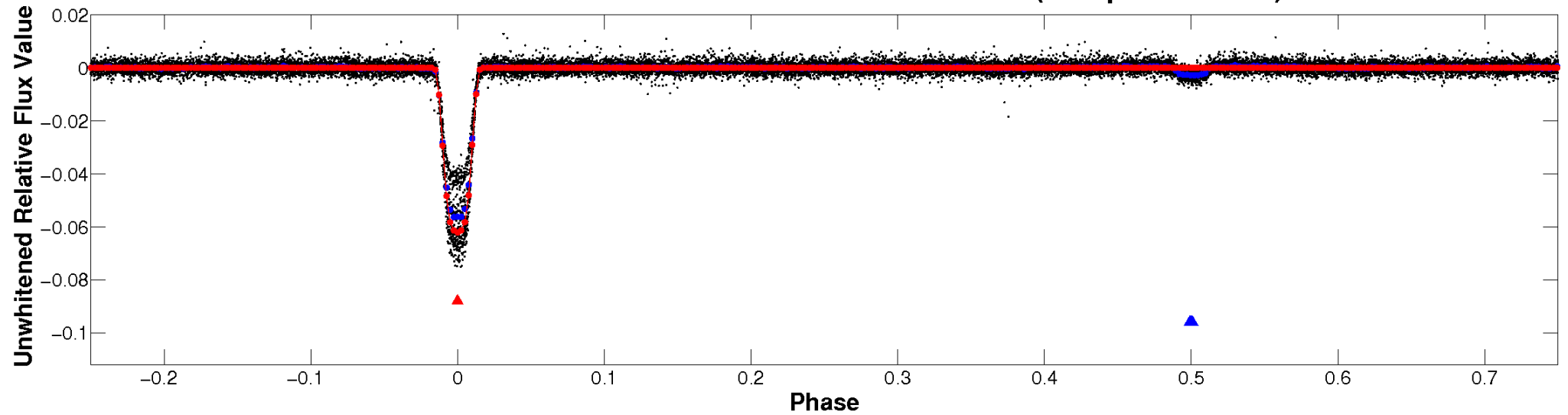
ALT Odd/Even

TCE 002452440-01

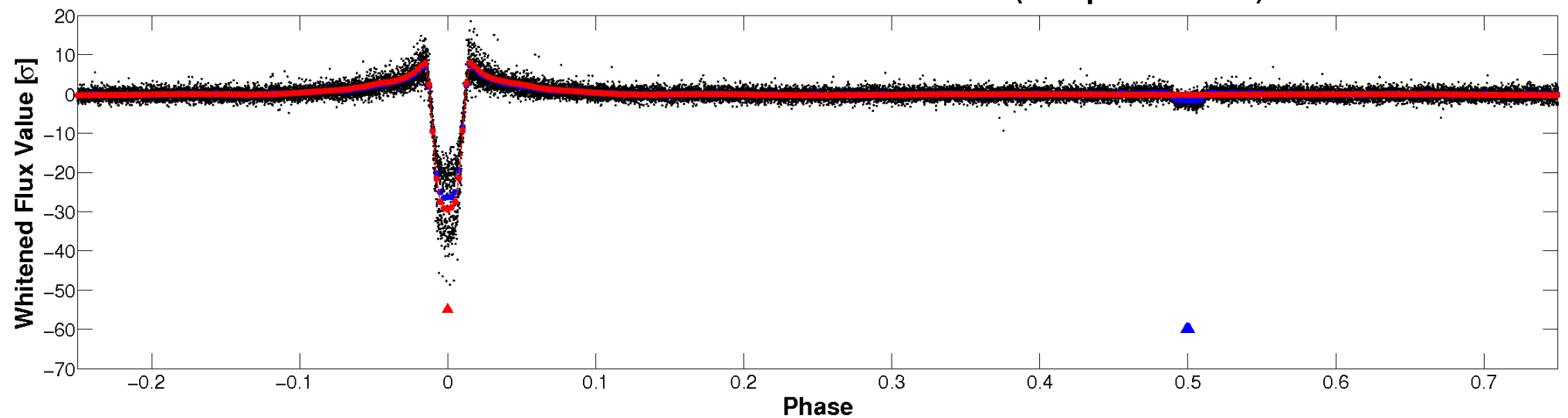


Non-Whitened Vs. Whitened Light Curve

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

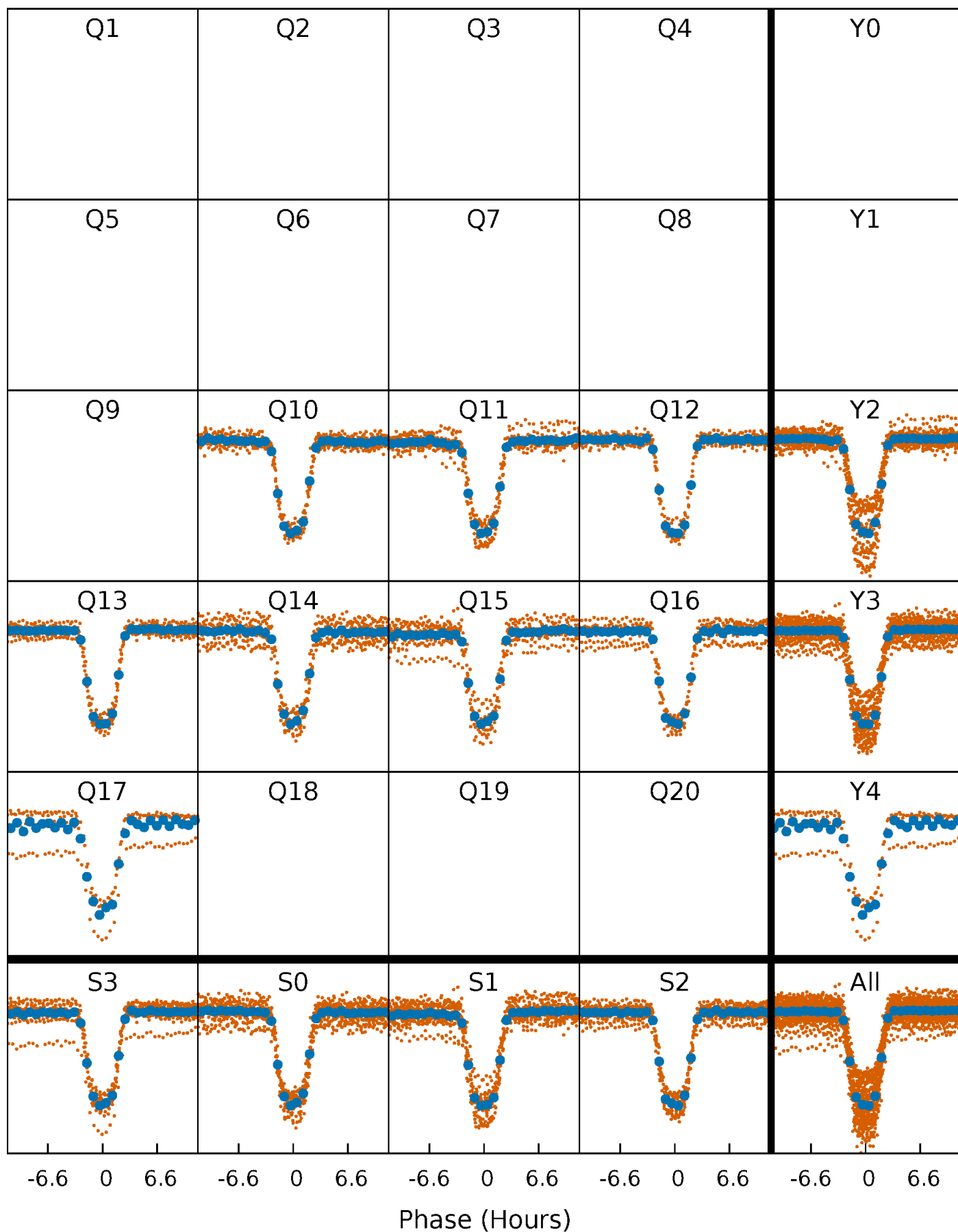


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



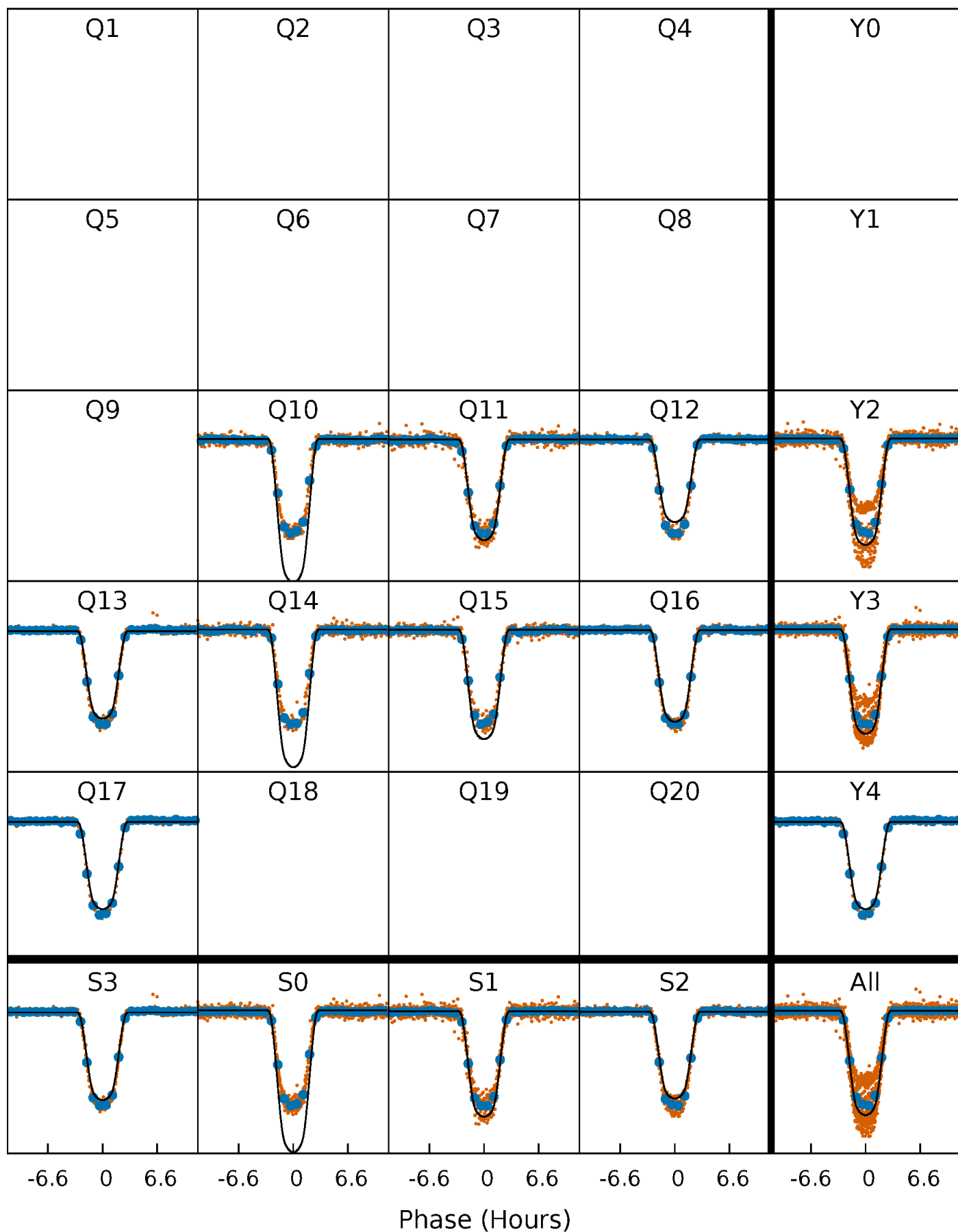
PDC Quarter-Phased Transit Curves

TCE 002452440-01 P= 8.097040 Days $T_0=138.425357$ (BKJD)



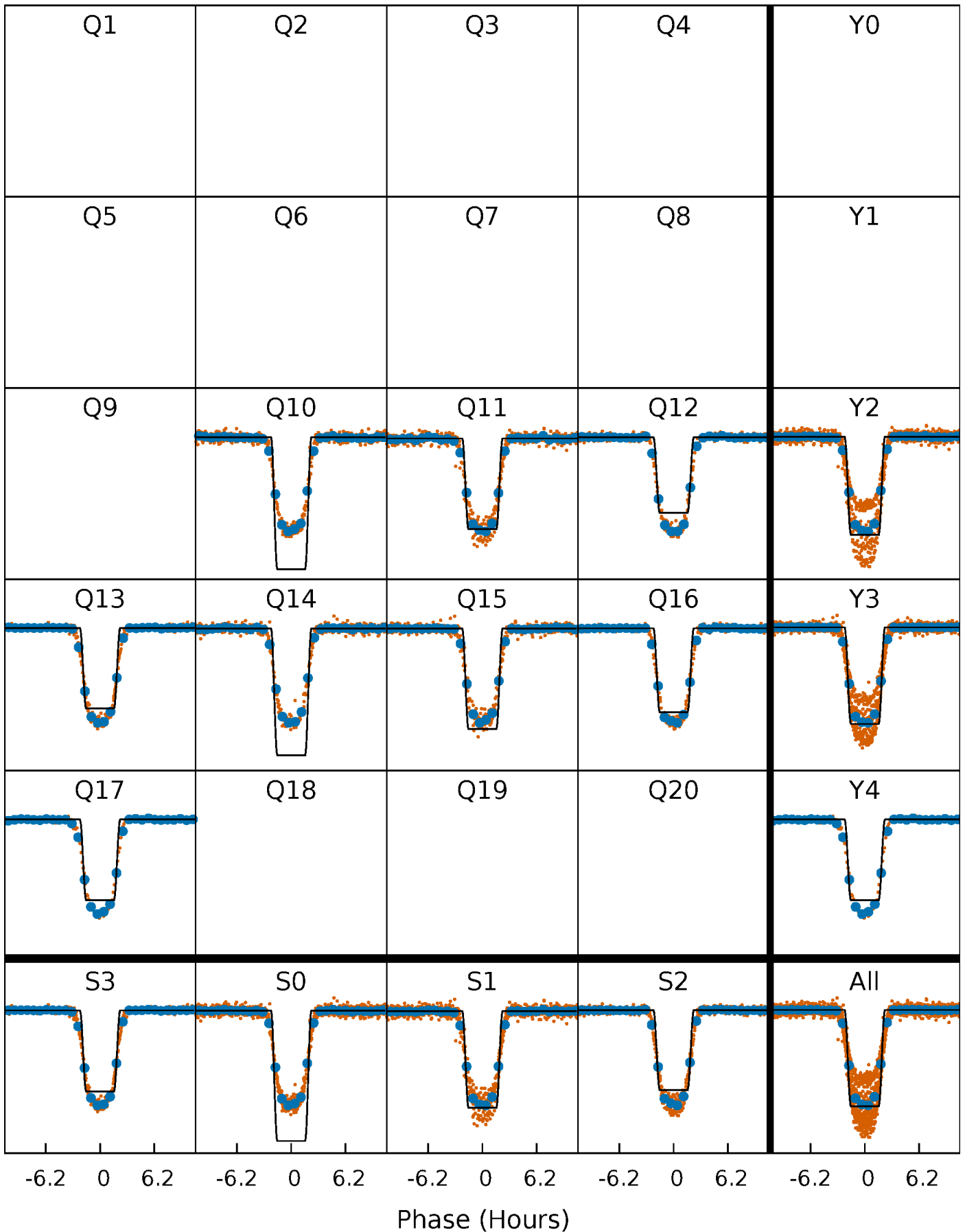
DV Quarter-Phased Transit Curves

TCE 002452440-01 P= 8.097040 Days $T_0=138.425357$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

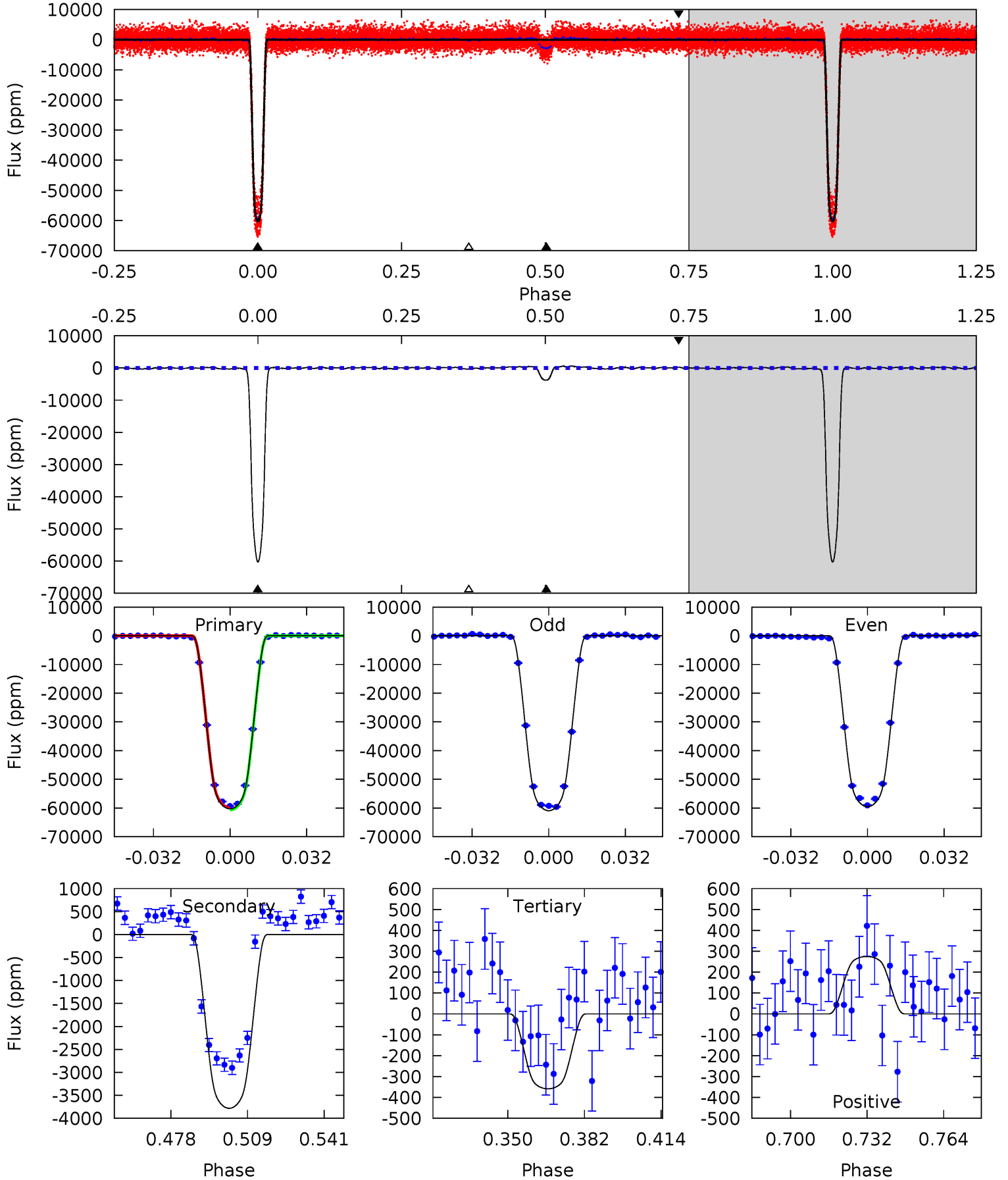
TCE 002452440-01 P= 8.097066 Days $T_0=138.421109$ (BKJD)



DV Model-Shift Uniqueness Test

002452440-01, P = 8.097040 Days, E = 138.425357 Days

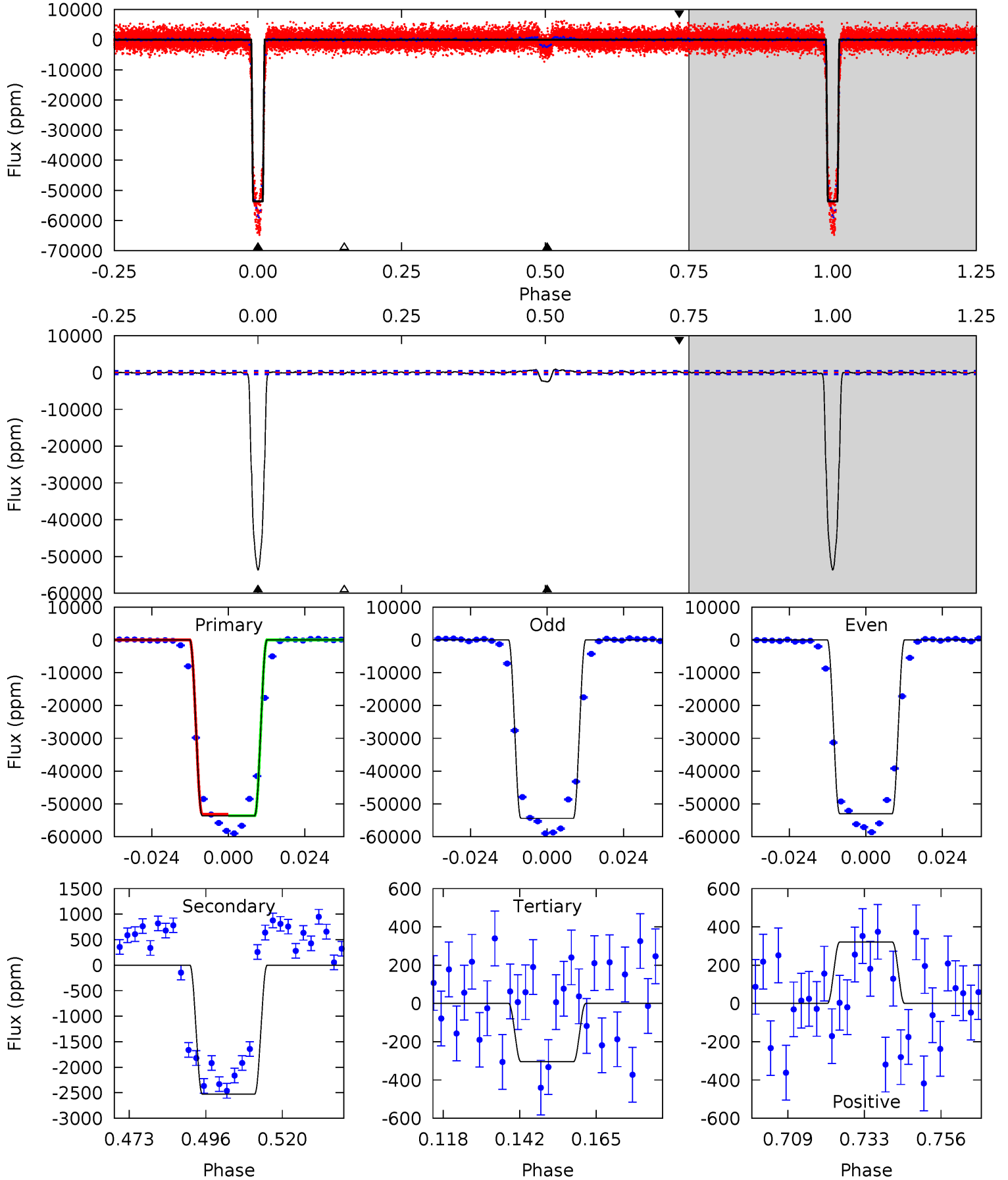
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
911.8	57.2	5.42	4.16	4.80	2.15	2.44	906.3	907.6	51.8	53.0	10.8	0.96	0.01	5.04



Alt Model-Shift Uniqueness Test

002452440-01, P = 8.097066 Days, E = 138.421109 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
564.7	26.6	3.21	3.38	4.86	2.26	1.60	561.5	561.3	23.4	23.2	7.34	0.95	0.02	0



Stellar Parameters For KIC 002452440

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5753^{+192}_{-192}	$4.423^{+0.153}_{-0.187}$	$-0.560^{+0.300}_{-0.300}$	$0.894^{+0.218}_{-0.145}$	$0.771^{+0.112}_{-0.052}$	$1.519^{+1.075}_{-0.734}$
	+3%/-3%	+3%/-4%	+54%/-54%	+24%/-16%	+15%/-7%	+71%/-48%
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 002452440-01 / KOI 3687.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-3782 ± 66	$23.46^{+3.74}_{-2.14}$	1250^{+88}_{-78}	3414^{+75}_{-71}	20^{+5}_{-5}
Alt.	-2526 ± 95	$23.47^{+3.34}_{-2.44}$	1249^{+90}_{-79}	3212^{+75}_{-71}	13^{+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 $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

DV Centroid Data

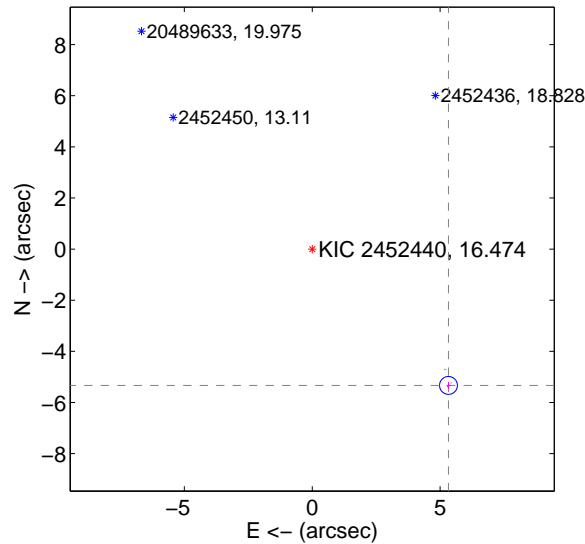
Supplemental centroid analysis for 002452440-01. Kepler magnitude: 16.47. Transit SNR 463.99

There are 8 quarters with good PRF difference image offsets

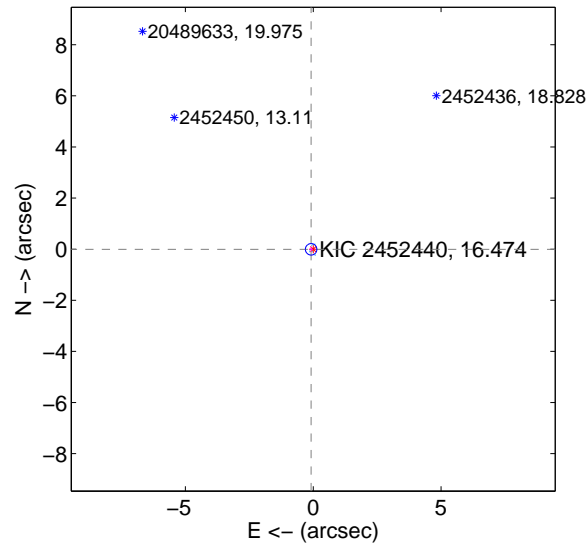
The OOT PRF centroid is offset from the target star catalog position by about 7.57 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	7.539 ± 0.116	64.78	-5.329 ± 0.072	-5.332 ± 0.131
PRF-fit source offset from KIC position	0.082 ± 0.075	1.10	0.082 ± 0.075	-0.006 ± 0.087
photometric centroid source offset	3.35 ± 0.00	1258.96	2.81 ± 0.00	1.82 ± 0.00

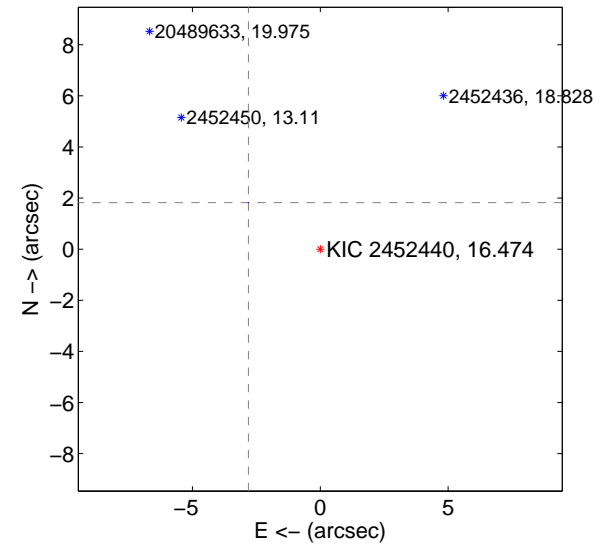
offset from difference PRF-fit to OOT PRF-fit



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.

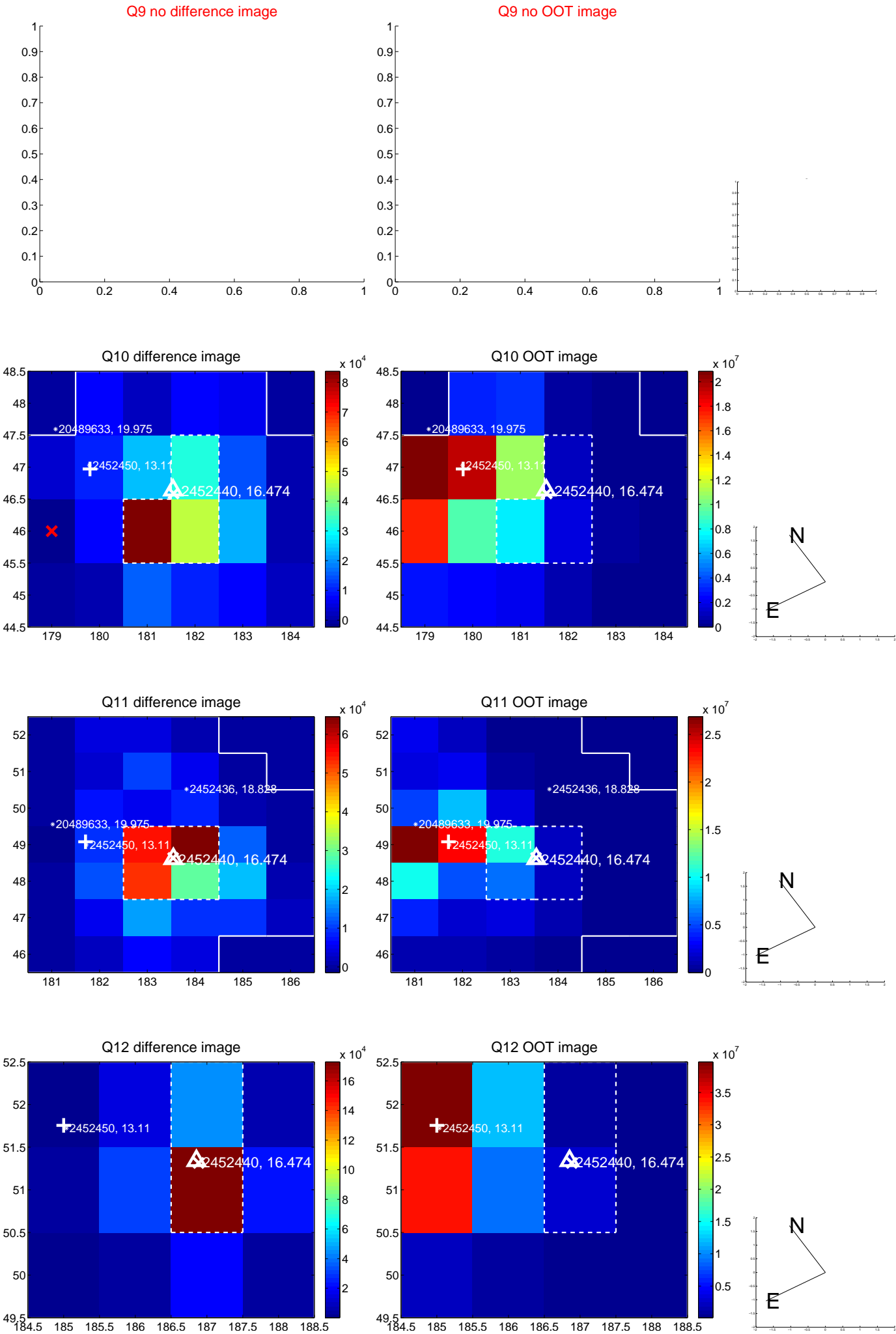
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



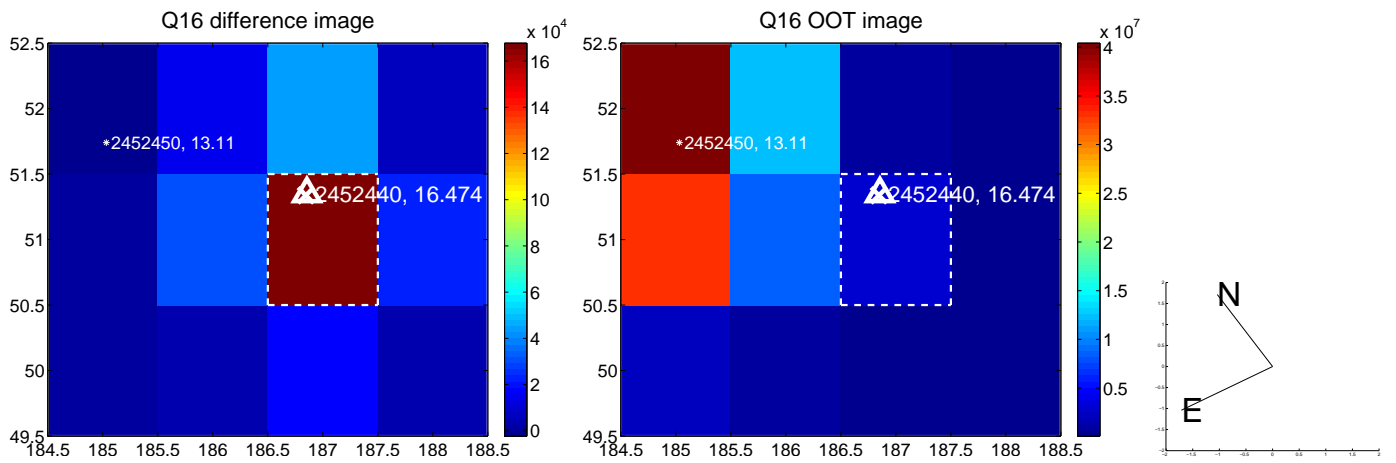
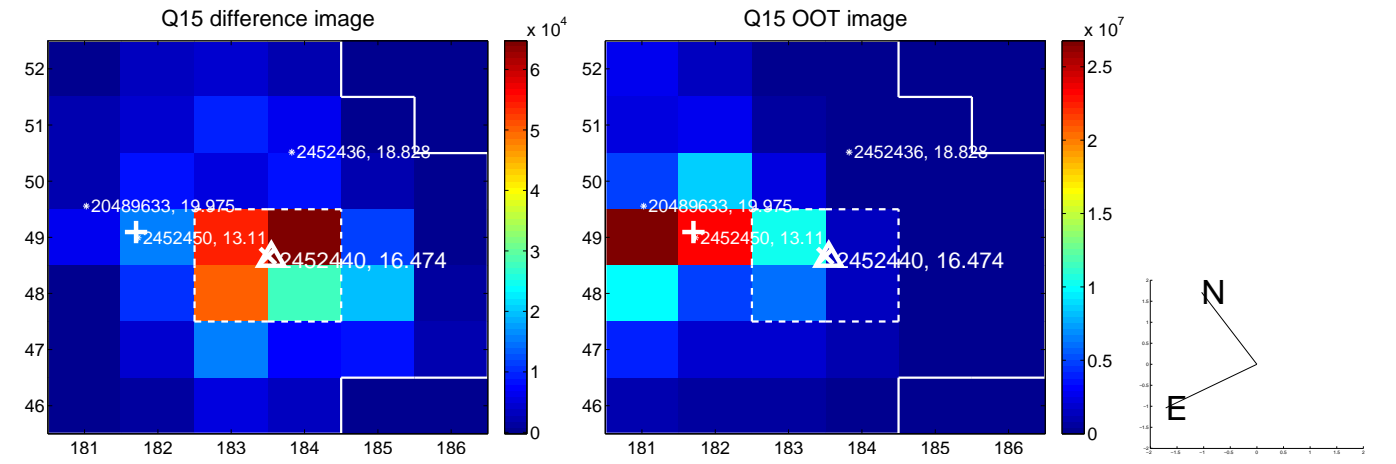
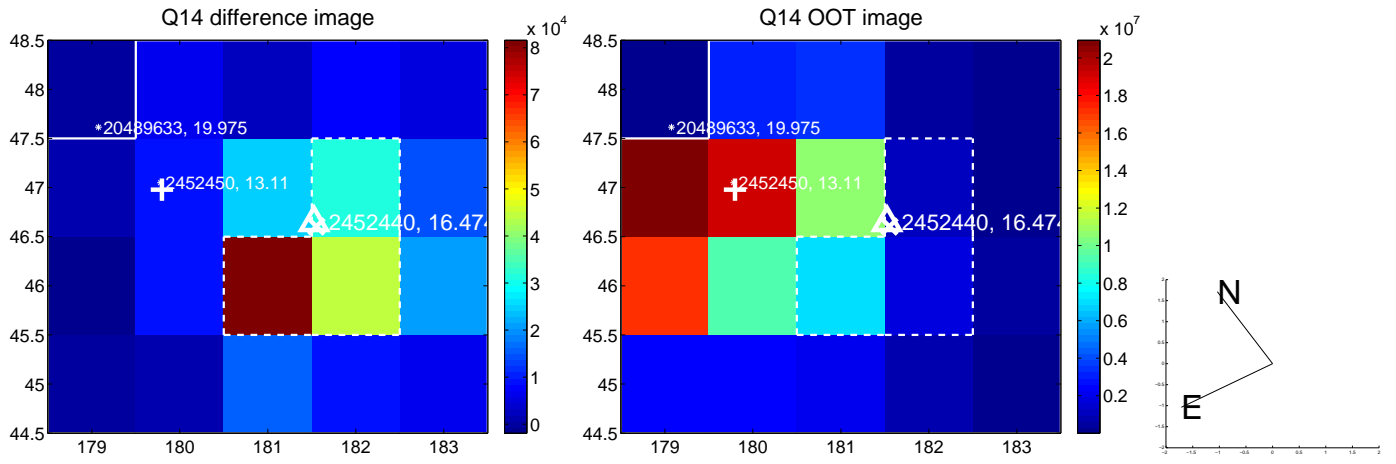
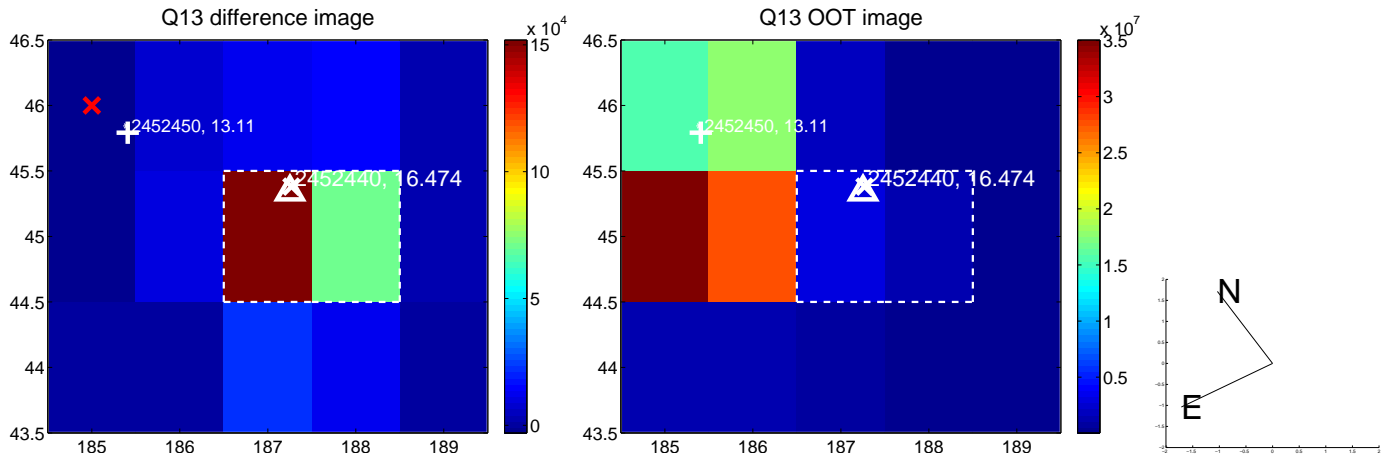
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



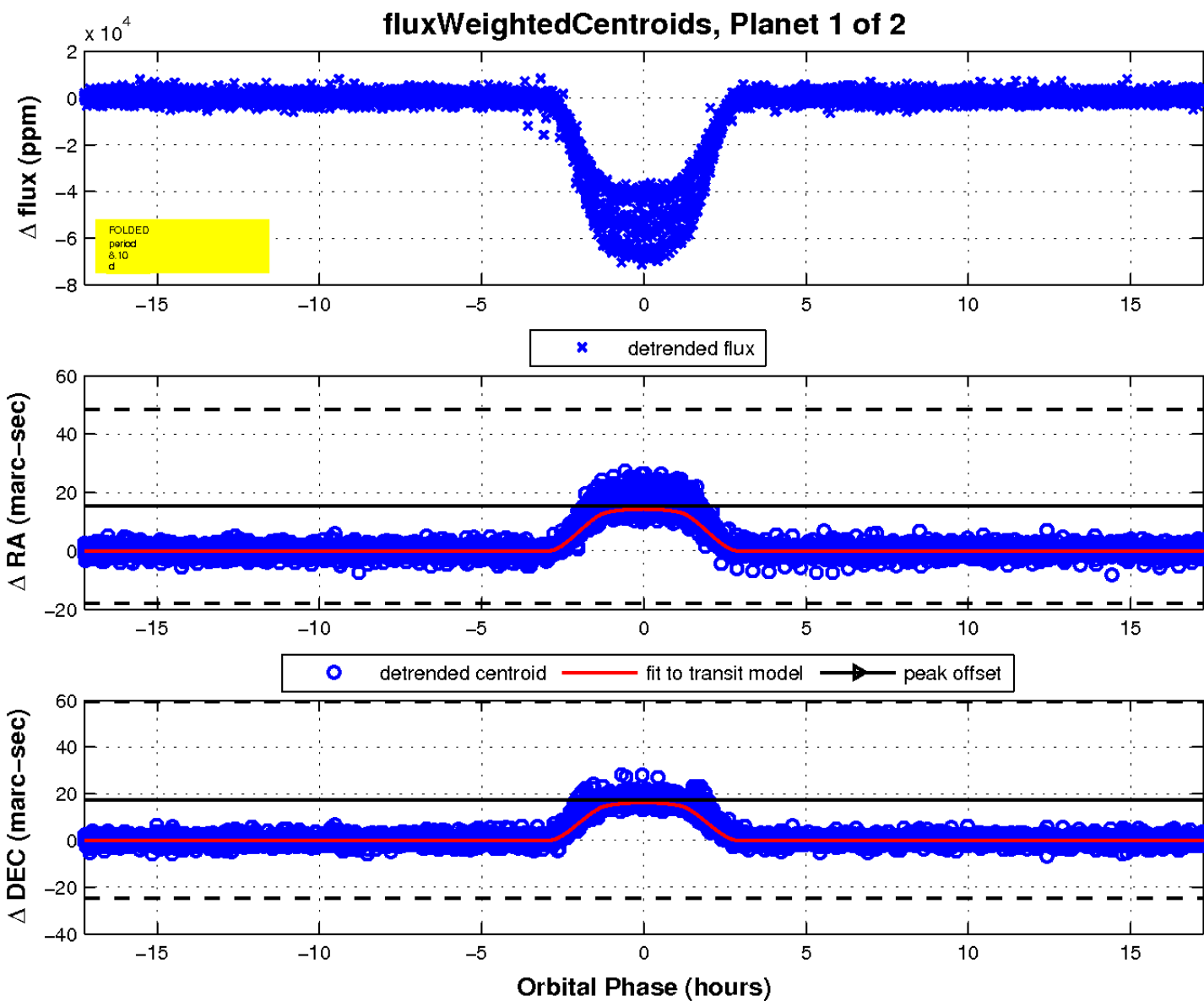
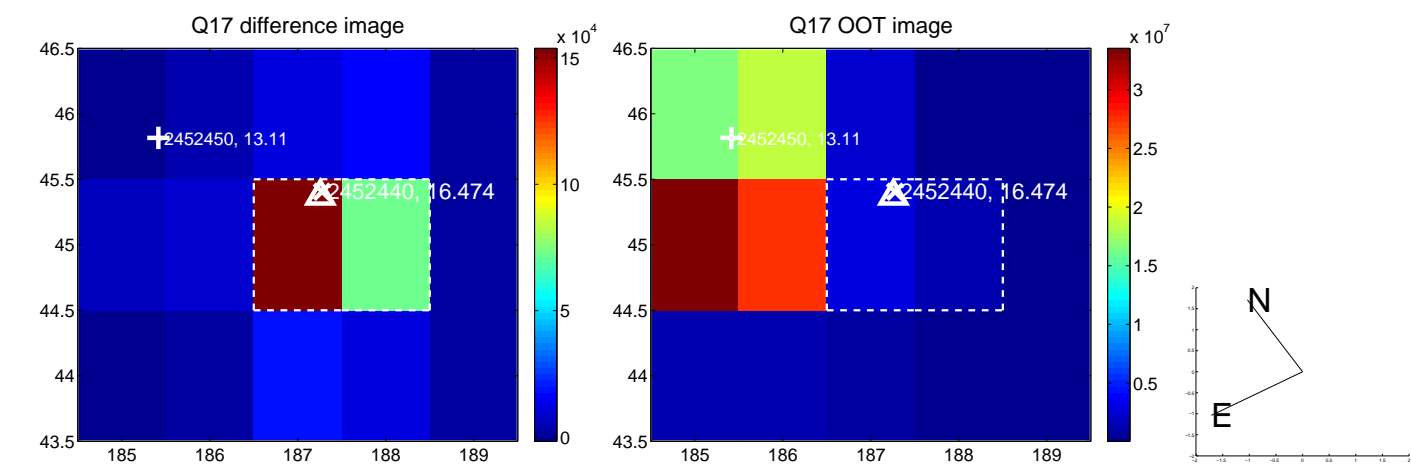
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

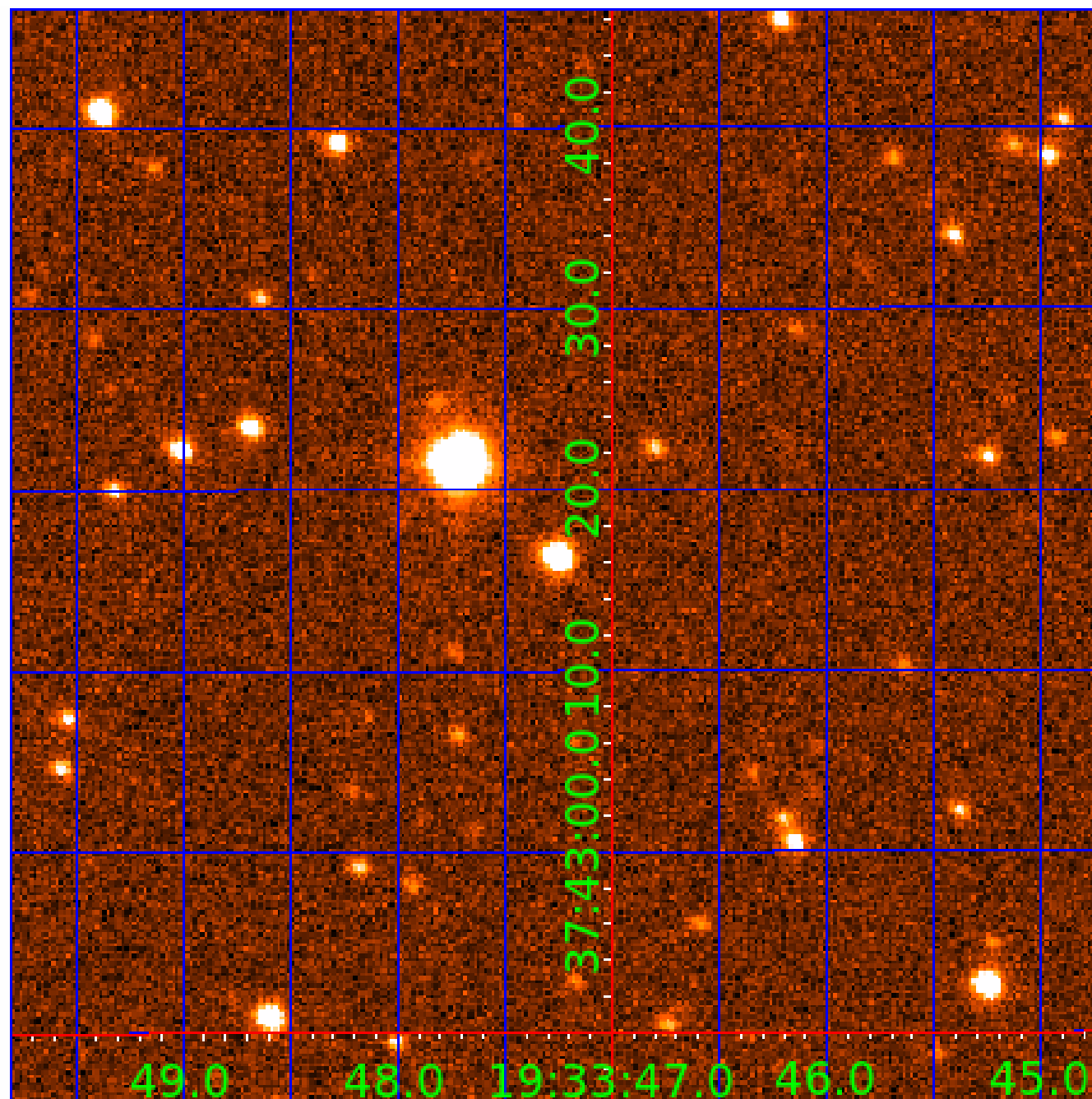


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002452440

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})
002452440-01	OBS	3687.01	8.097040	138.425357	62250.9	5.749	636.4	464.0	0.89	5753	23.47	149.60
002452440-02	OBS	No	8.097119	134.369411	3379.0	5.250	39.0	41.2	0.89	5753	5.84	149.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002452440-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_KIC_POS
002452440-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_FEW_DIFFS

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.

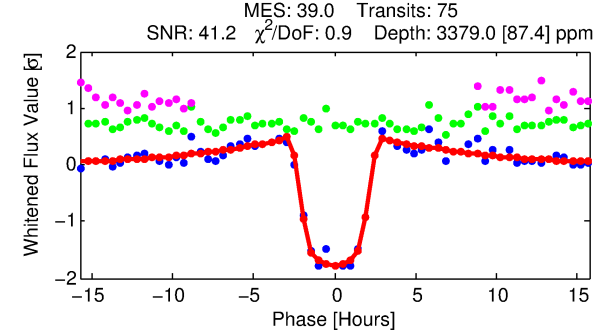
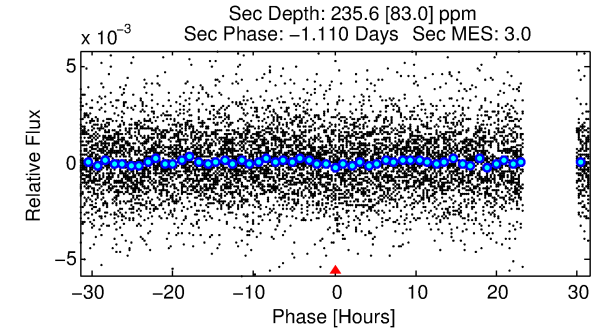
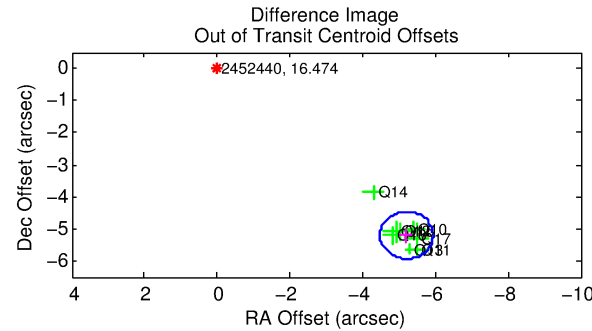
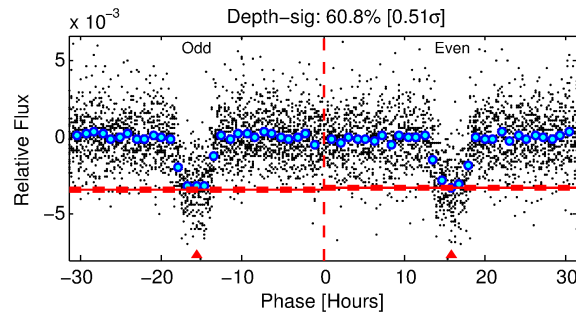
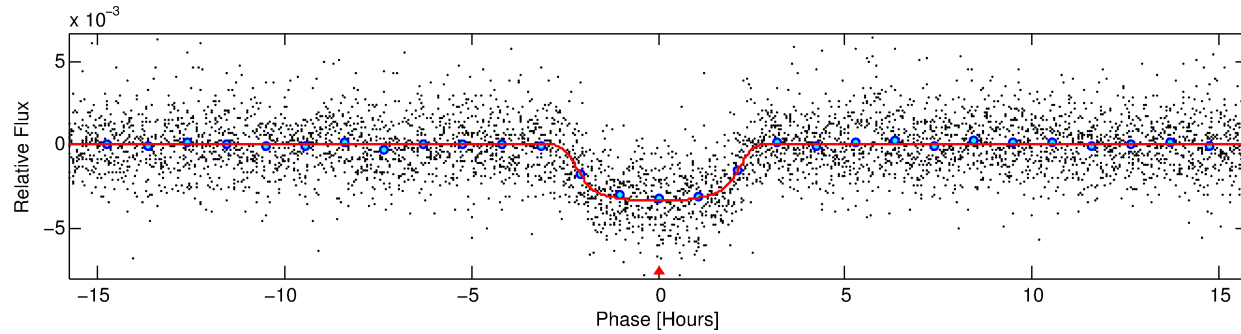
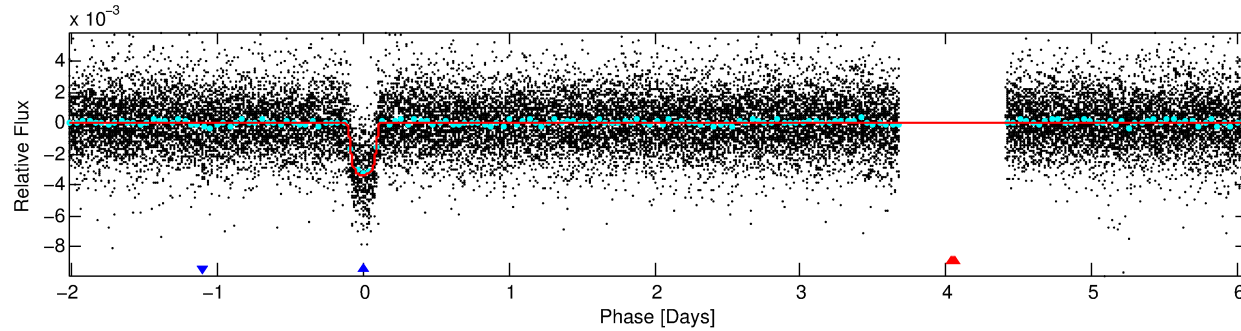
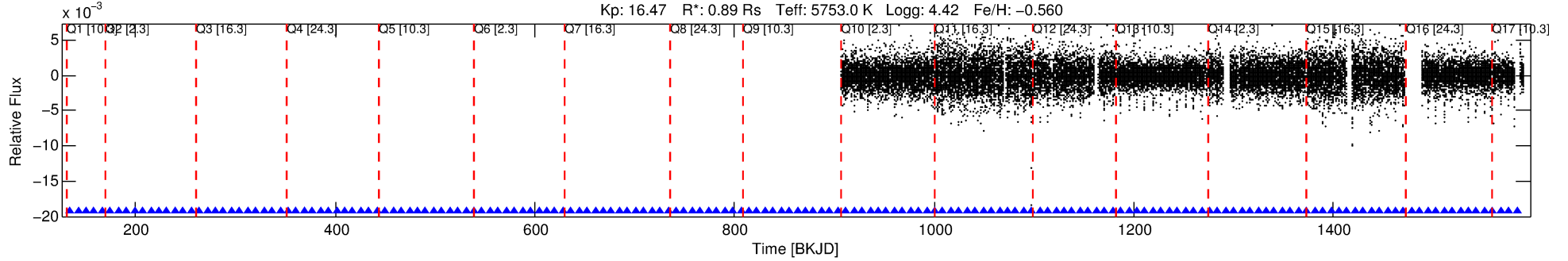
Ephemeris Match Information For 002452440-02

No Significant Match Found

DV One-Page Summary

KIC: 2452440 Candidate: 2 of 2 Period: 8.097 d
KOI: K03687 Corr: No Ephemeris Match

Kp: 16.47 R*: 0.89 Rs Teff: 5753.0 K Logg: 4.42 Fe/H: -0.560



DV Fit Results:

Period = 8.09712 [0.00004] d
Epoch = 134.3694 [0.0051] BKJD
Rp/R* = 0.0599 [0.0020]
a/R* = 7.86 [1.12]
b = 0.83 [0.06]
Seff = 149.60 [53.24]
Teq = 892 [79] K
Rp = 5.84 [1.44] Re
a = 0.0724 [0.0157] AU
Ag = 19.93 [9.71] [1.95σ]
Teffp = 2913 [279] K [6.98σ]

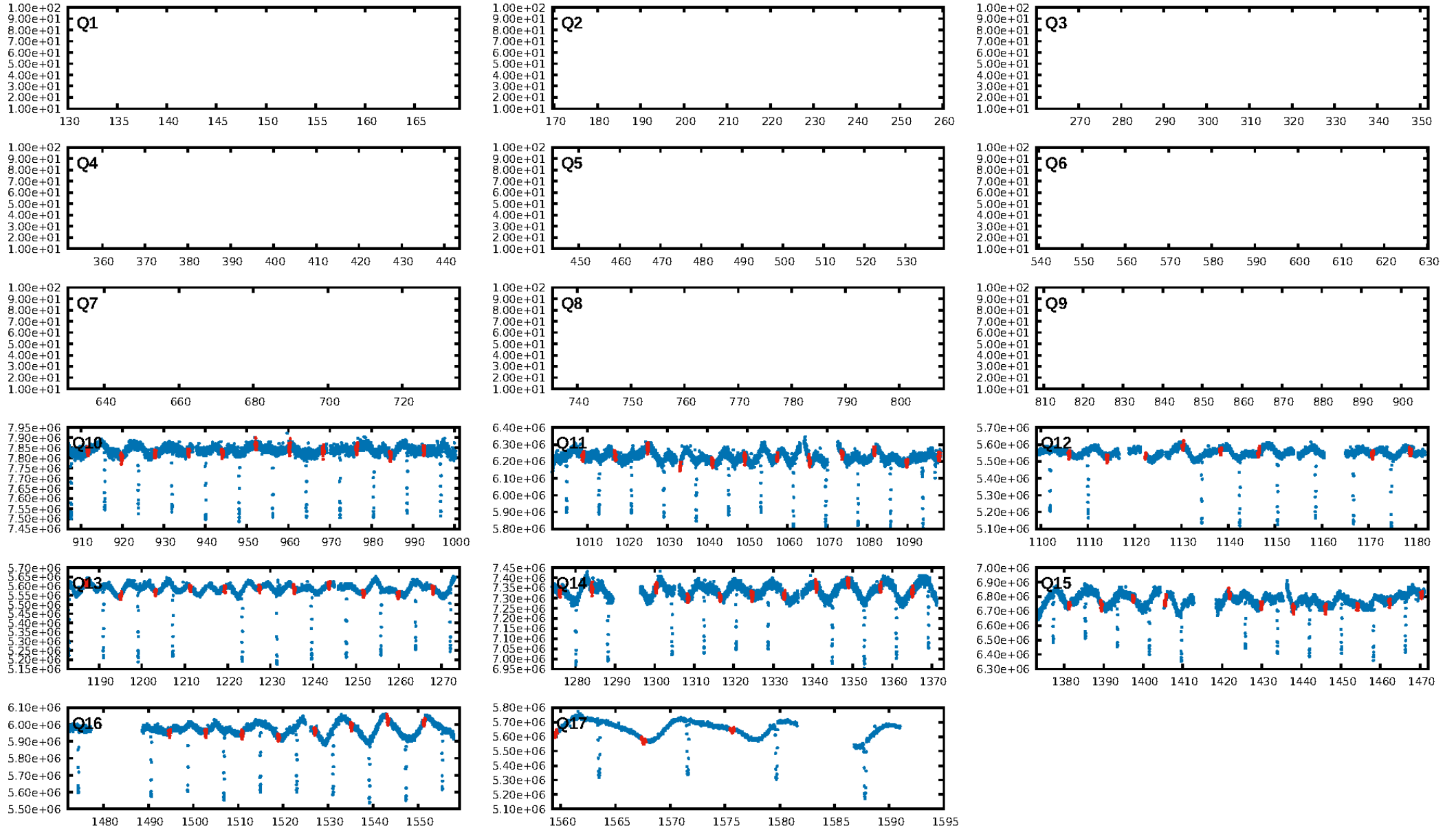
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 11.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.29e-303
RollingBand-fgt: 1.00 [72/72]
GhostDiagnostic-chr: 1.564
Centroid-sig: 0.0%
Centroid-so: 3.285 arcsec [70.65σ]
OotOffset-rm: 7.355 arcsec [30.05σ]
KicOffset-rm: 0.294 arcsec [2.19σ]
OotOffset-st: 2/2/2/2 [8]
KicOffset-st: 2/2/2/2 [8]
DiffImageQuality-fgm: 0.75 [6/8]
DiffImageOverlap-fno: 1.00 [8/8]

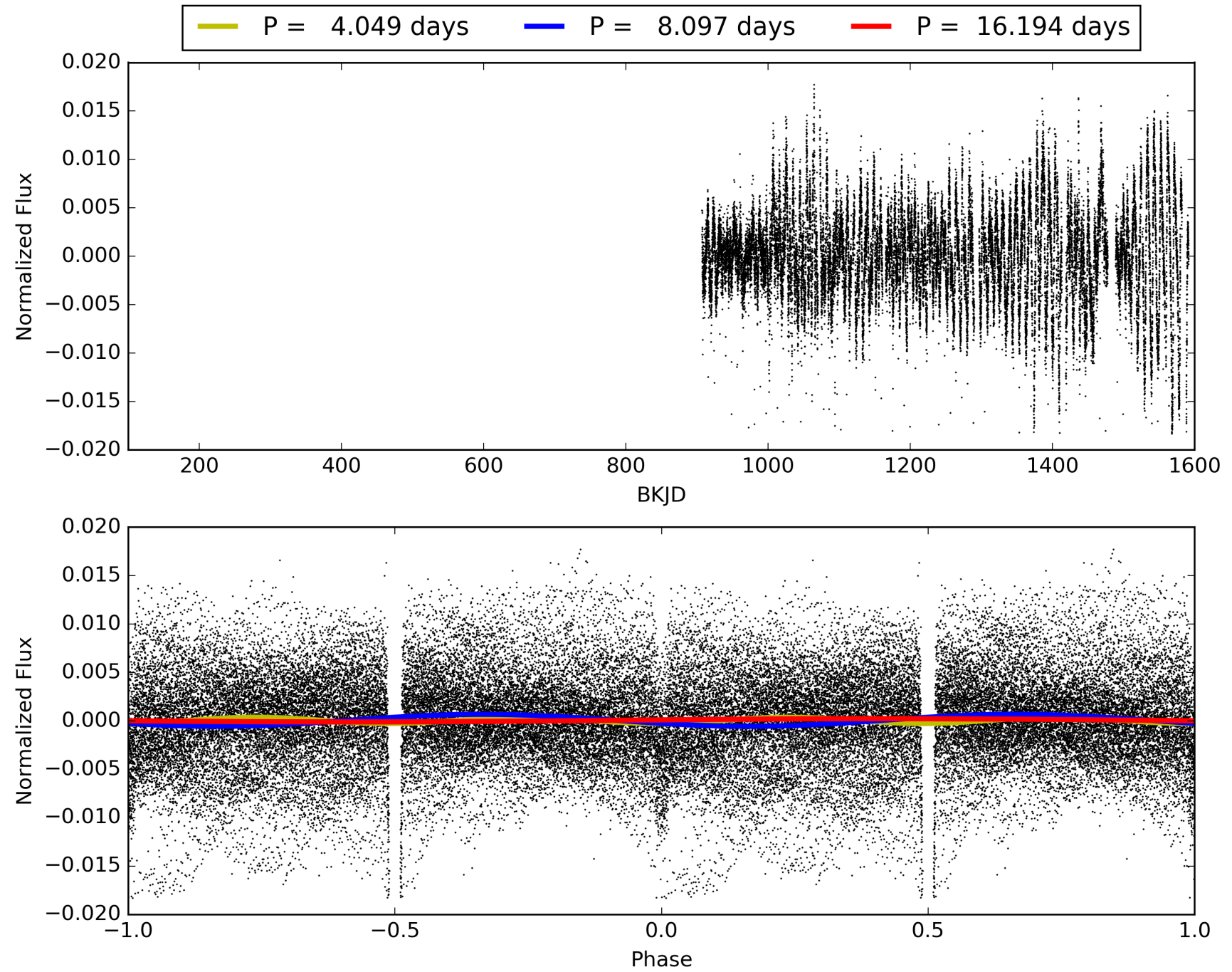
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:34:30 Z

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

TCE 002452440-02, PDC Light Curves

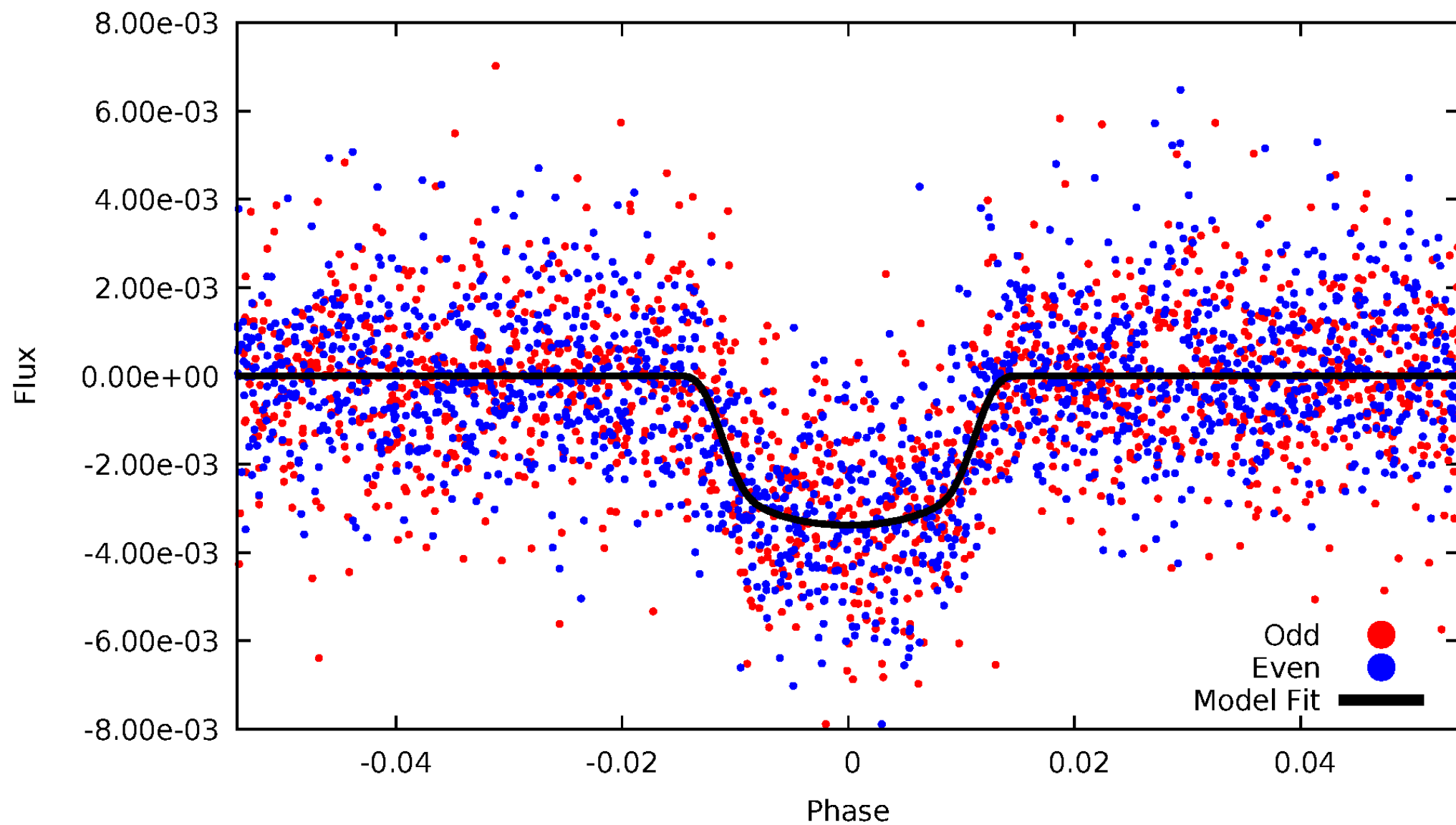


TCE 002452440-02



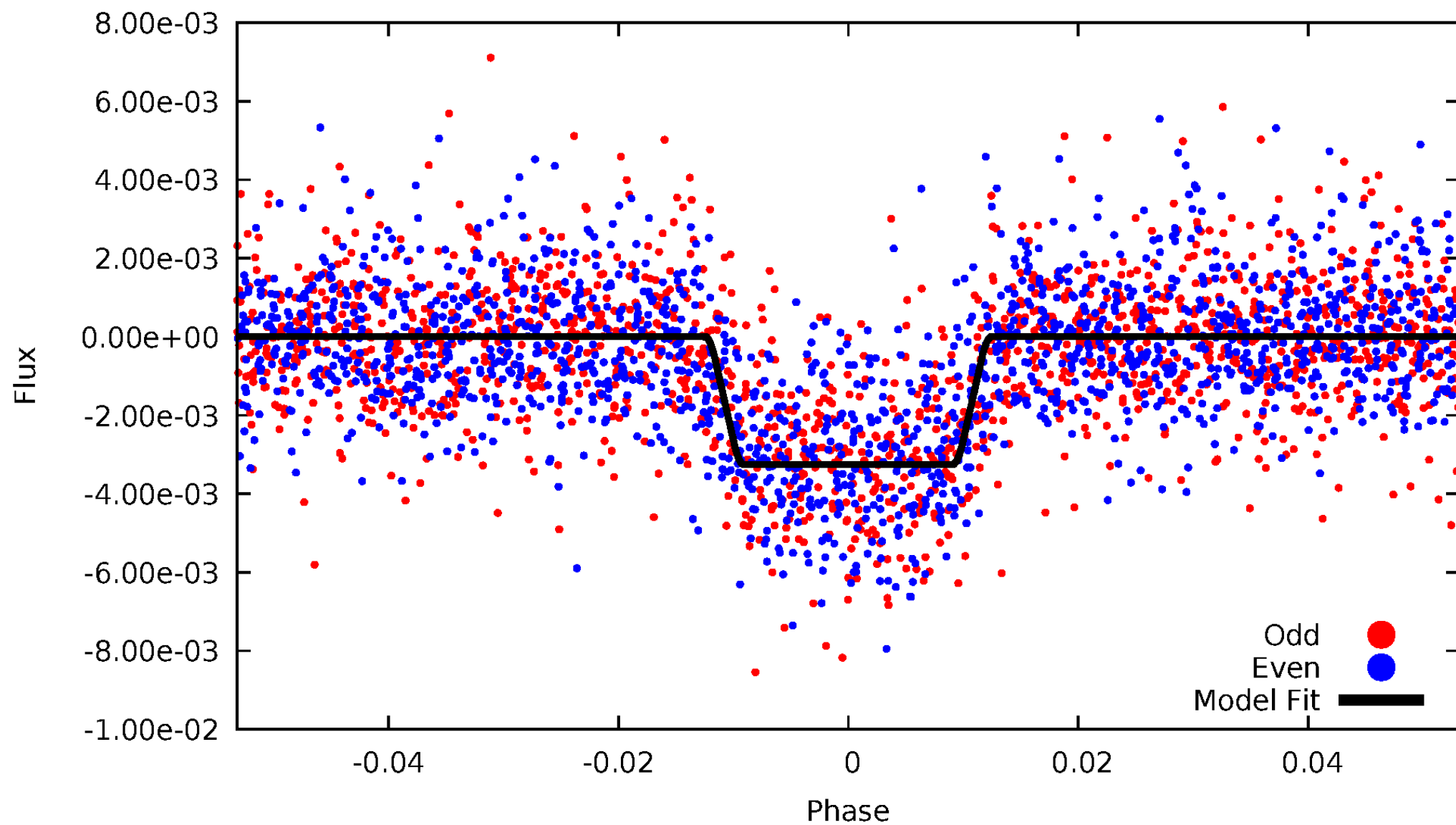
DV Odd/Even

TCE 002452440-02



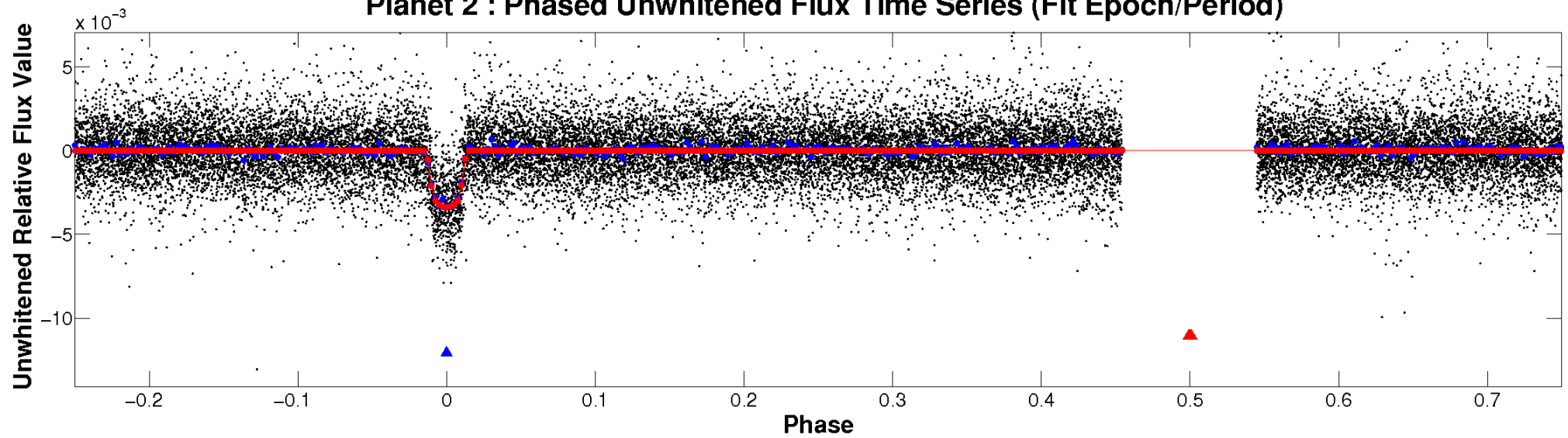
ALT Odd/Even

TCE 002452440-02

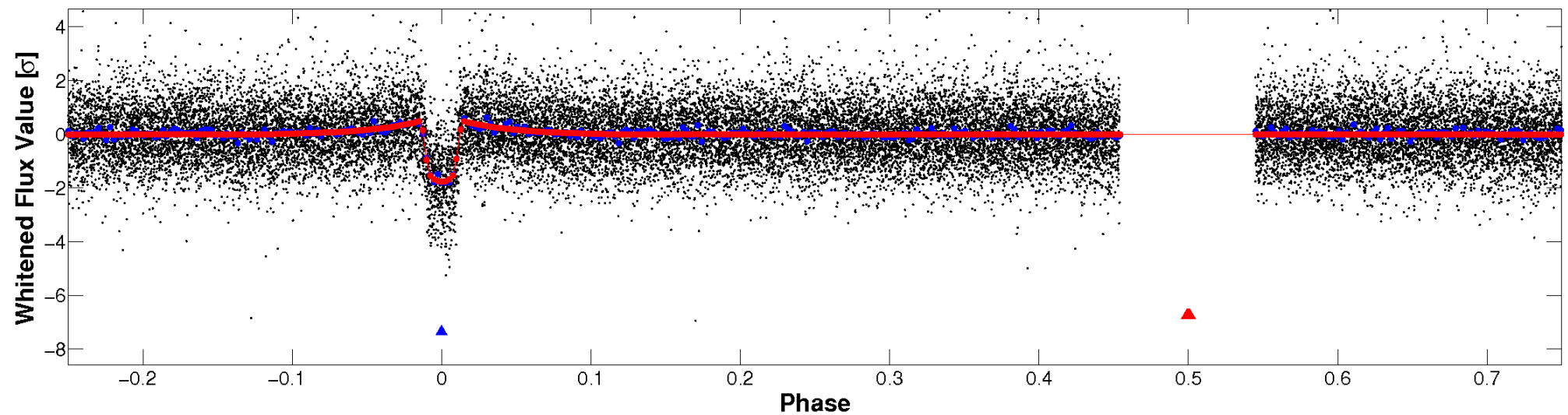


Non-Whitened Vs. Whitened Light Curve

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

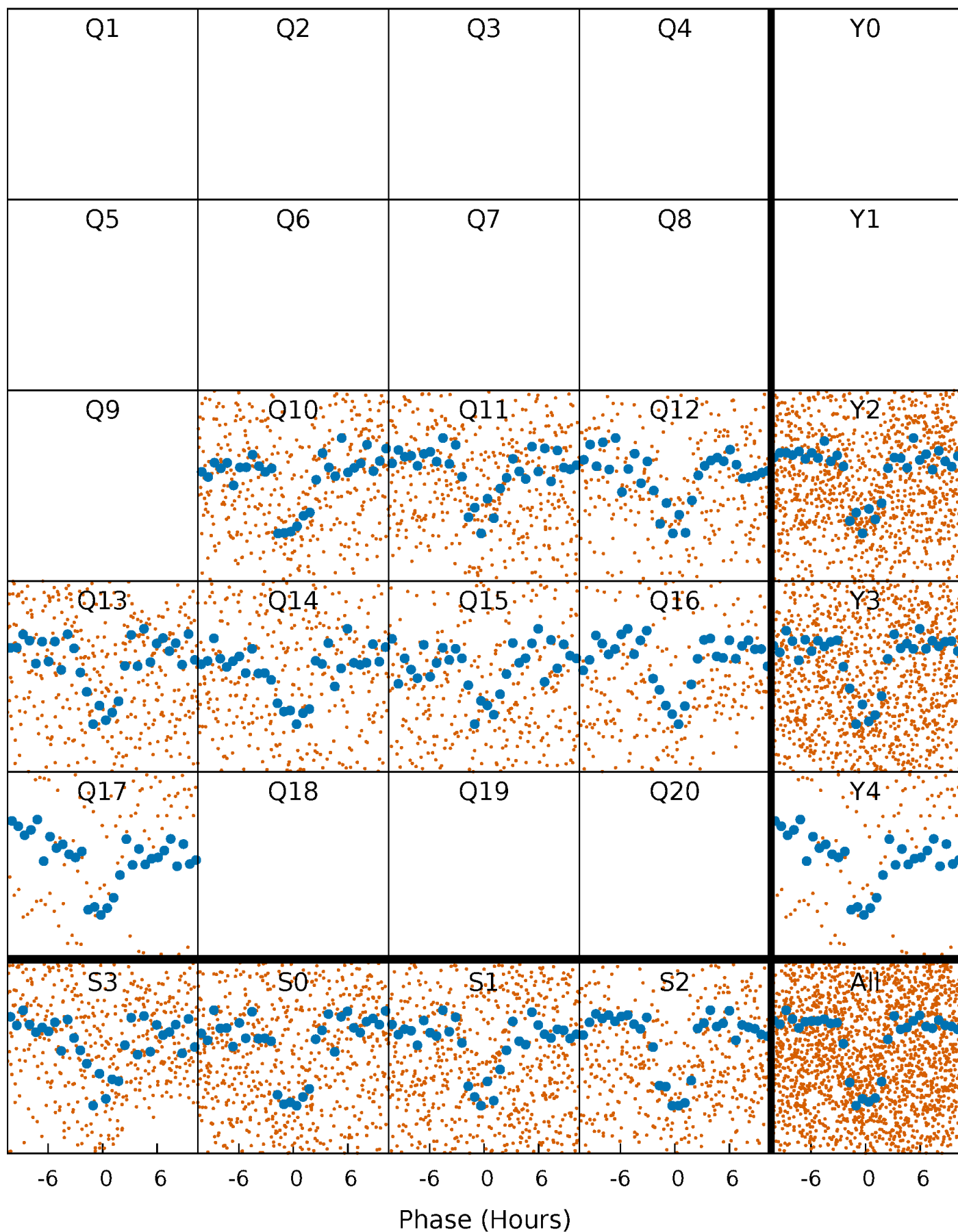


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



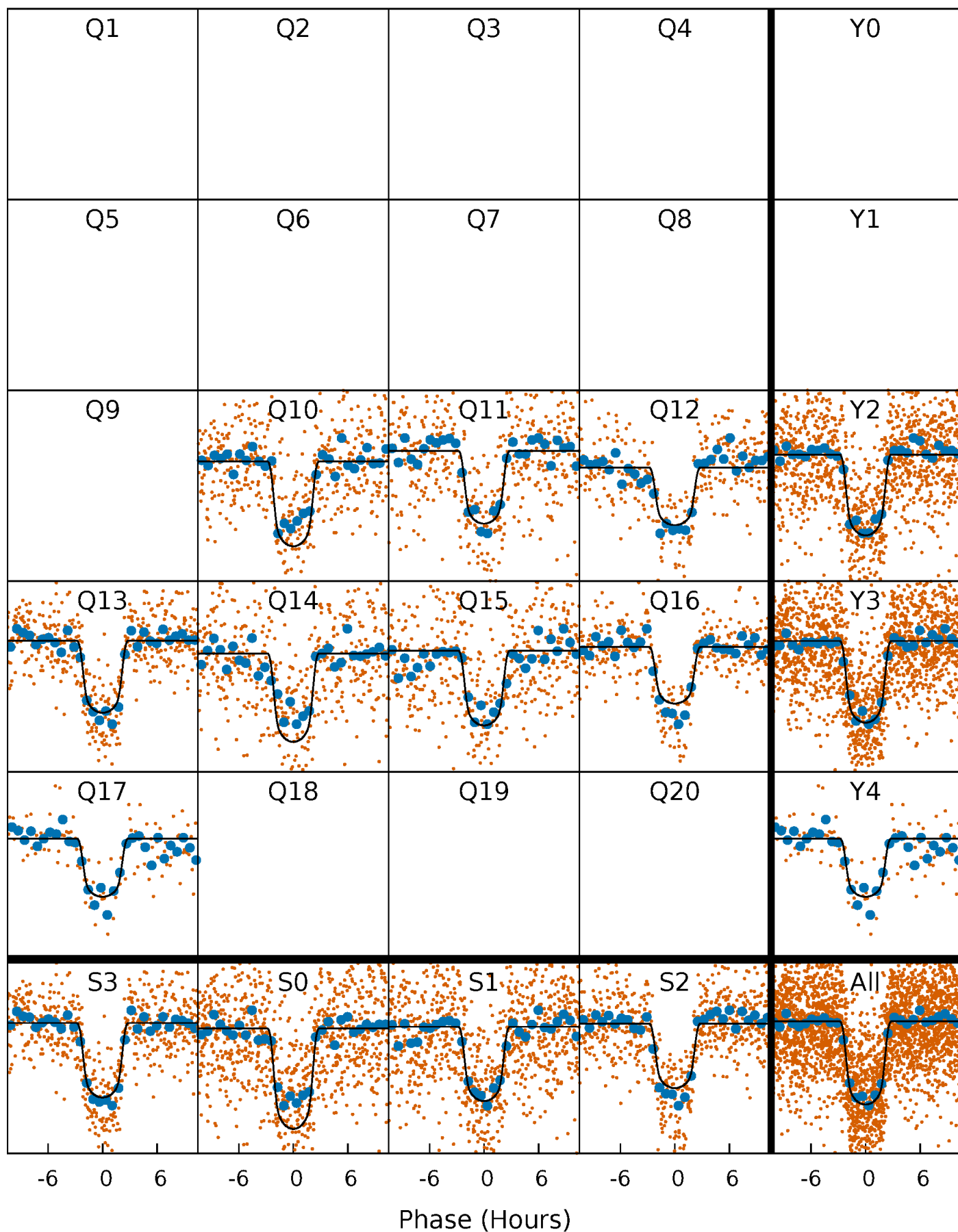
PDC Quarter-Phased Transit Curves

TCE 002452440-02 P= 8.097119 Days $T_0=134.369411$ (BKJD)



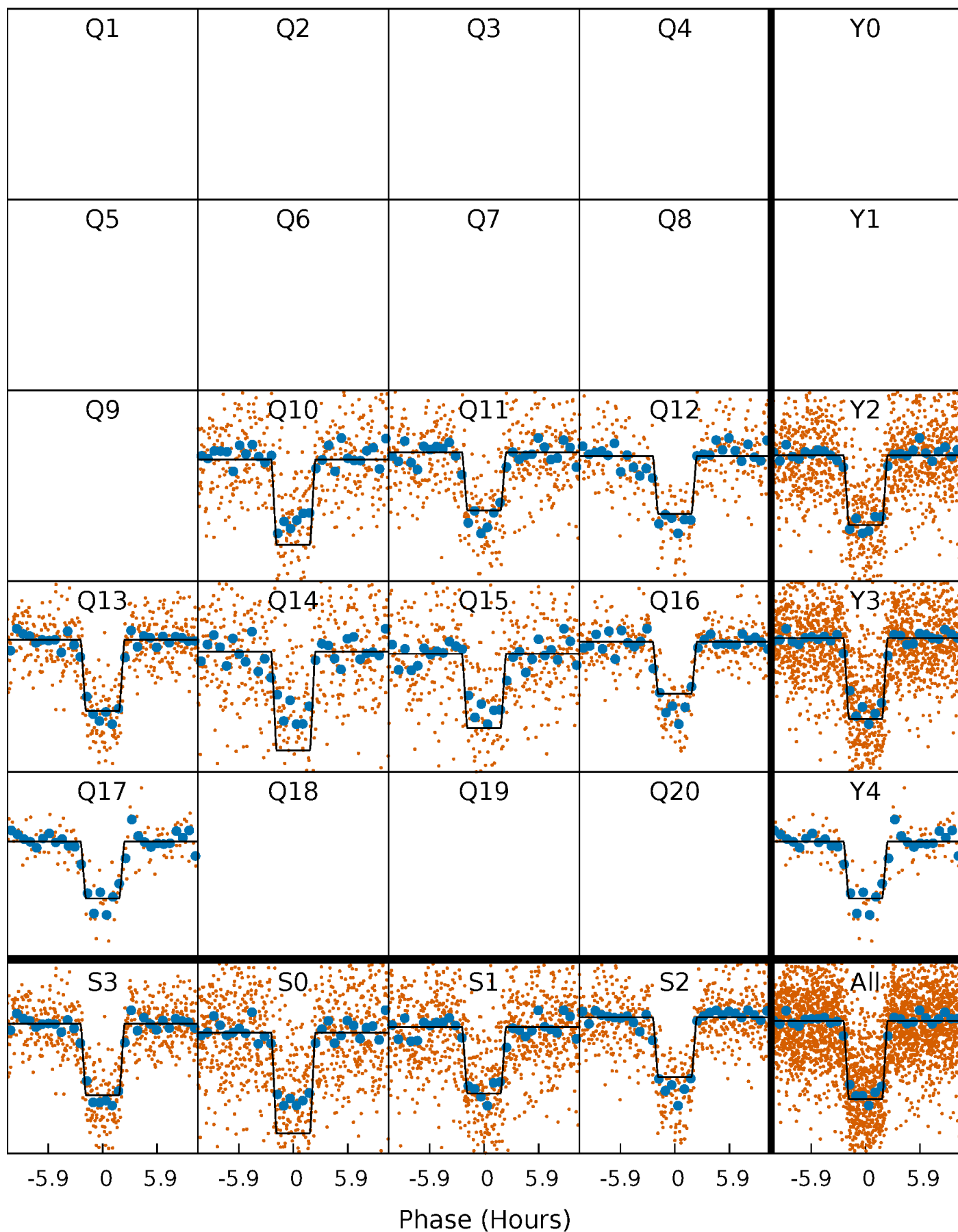
DV Quarter-Phased Transit Curves

TCE 002452440-02 P= 8.097119 Days $T_0=134.369411$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

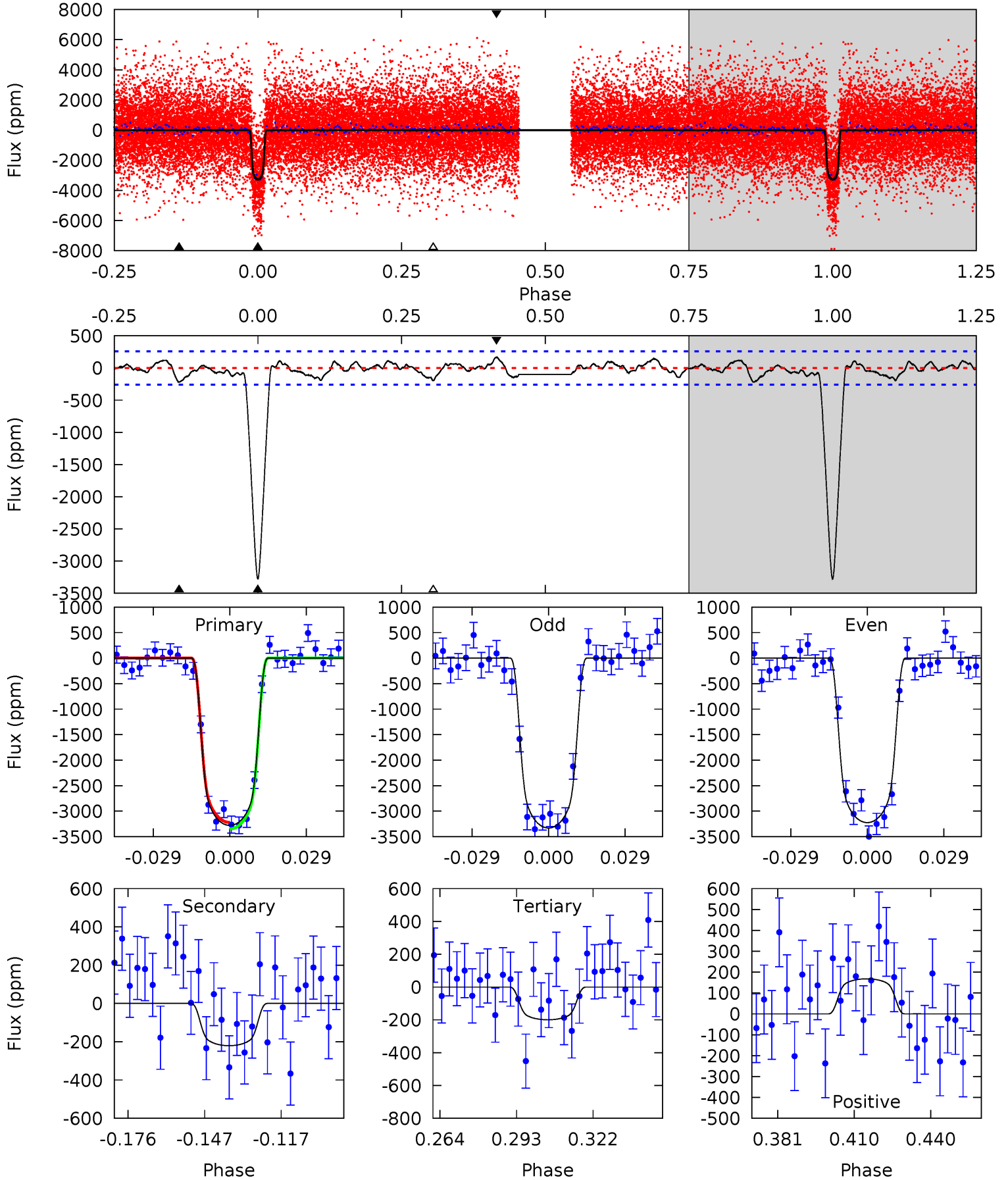
TCE 002452440-02 $P = 8.097066$ Days $T_0 = 134.375013$ (BKJD)



DV Model-Shift Uniqueness Test

002452440-02, P = 8.097119 Days, E = 134.369411 Days

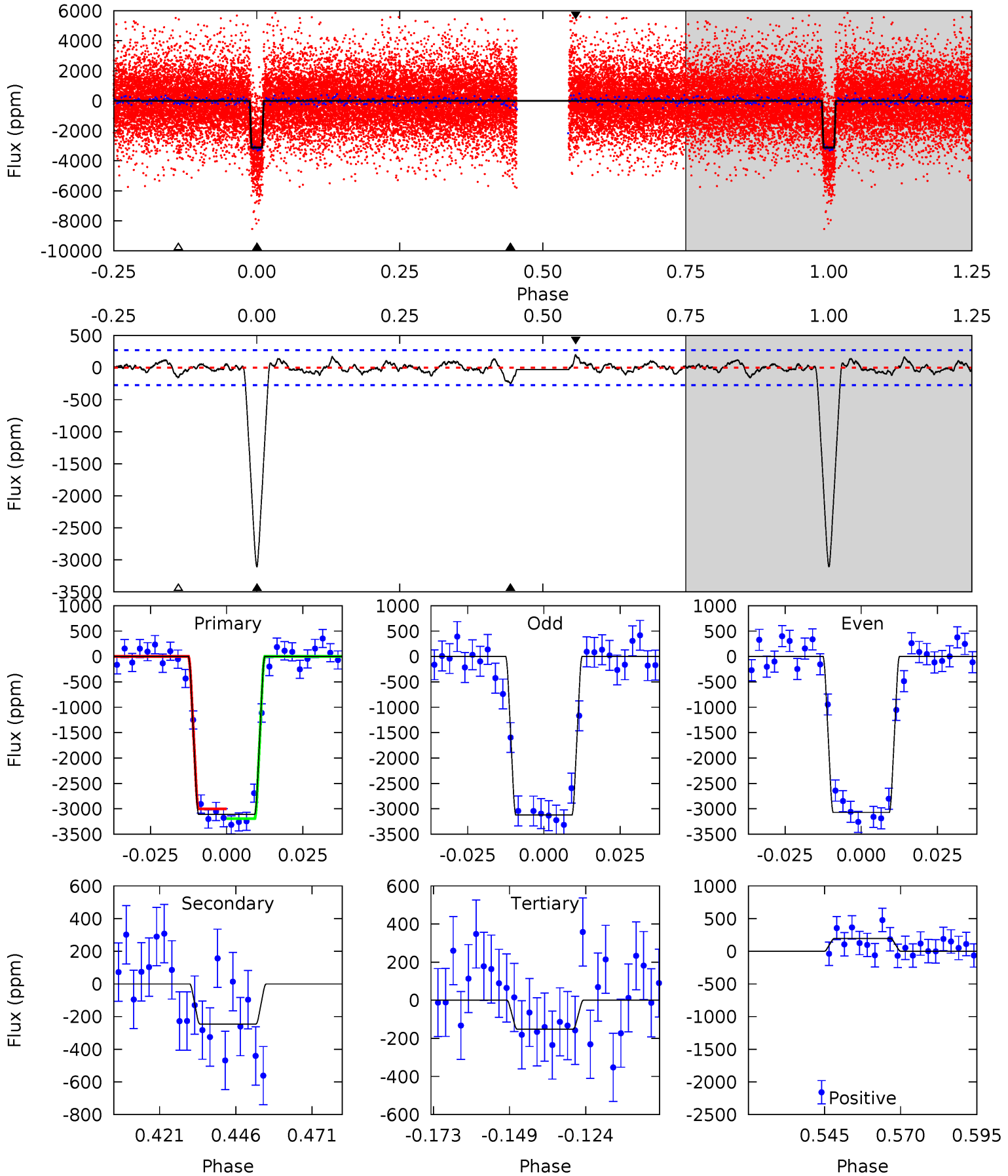
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
60.9	4.10	3.70	3.12	4.82	2.18	1.34	57.2	57.7	0.39	0.98	0.98	1.01	0.05	1.18



Alt Model-Shift Uniqueness Test

002452440-02, P = 8.097066 Days, E = 134.375013 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
55.2	4.37	2.70	3.47	4.85	2.24	1.04	52.5	51.7	1.67	0.90	0.47	0.97	0.06	1.71



Stellar Parameters For KIC 002452440

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5753^{+192}_{-192}	$4.423^{+0.153}_{-0.187}$	$-0.560^{+0.300}_{-0.300}$	$0.894^{+0.218}_{-0.145}$	$0.771^{+0.112}_{-0.052}$	$1.519^{+1.075}_{-0.734}$
	+3%/-3%	+3%/-4%	+54%/-54%	+24%/-16%	+15%/-7%	+71%/-48%
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 002452440-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-221 ± 54	$5.87^{+0.89}_{-0.59}$	1251^{+87}_{-75}	3389^{+152}_{-166}	19^{+7}_{-6}
Alt.	-246 ± 56	$5.64^{+0.77}_{-0.59}$	1252^{+90}_{-76}	3489^{+155}_{-159}	22^{+8}_{-7}

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

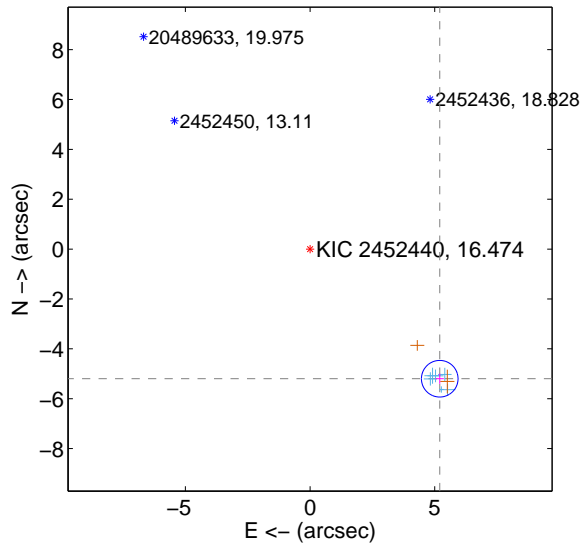
Supplemental centroid analysis for 002452440-02. Kepler magnitude: 16.47. Transit SNR 41.20

There are 6 quarters with good PRF difference image offsets

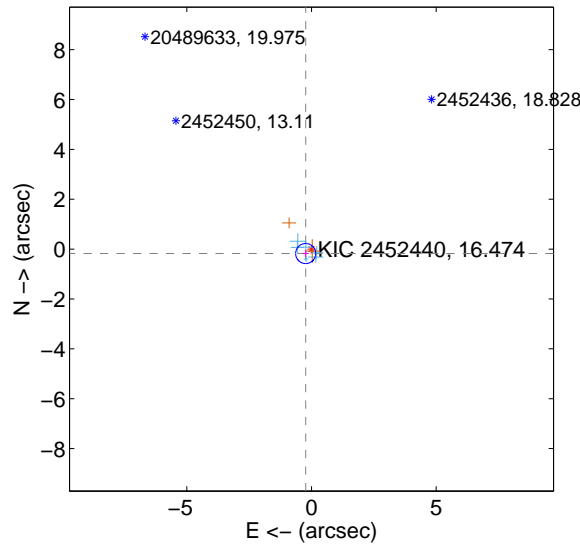
The OOT PRF centroid is offset from the target star catalog position by about 7.57 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	7.355 ± 0.245	30.05	-5.202 ± 0.165	-5.200 ± 0.205
PRF-fit source offset from KIC position	0.294 ± 0.134	2.19	0.234 ± 0.127	-0.178 ± 0.145
photometric centroid source offset	3.29 ± 0.05	70.65	2.76 ± 0.05	1.79 ± 0.05

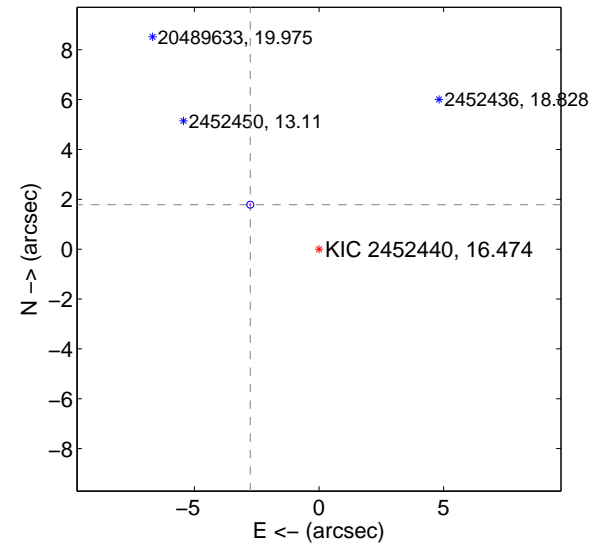
offset from difference PRF-fit to OOT PRF-fit



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.

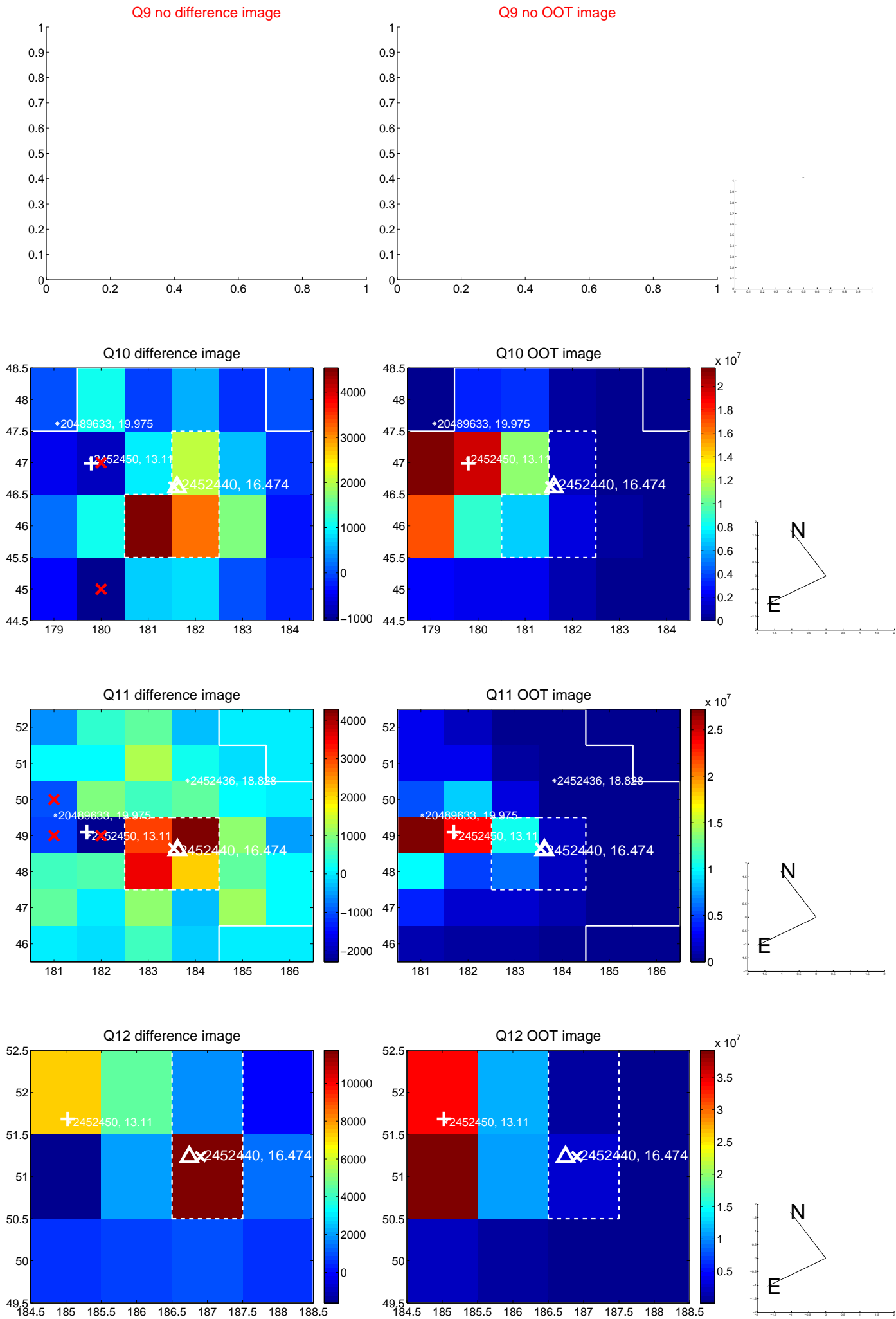
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



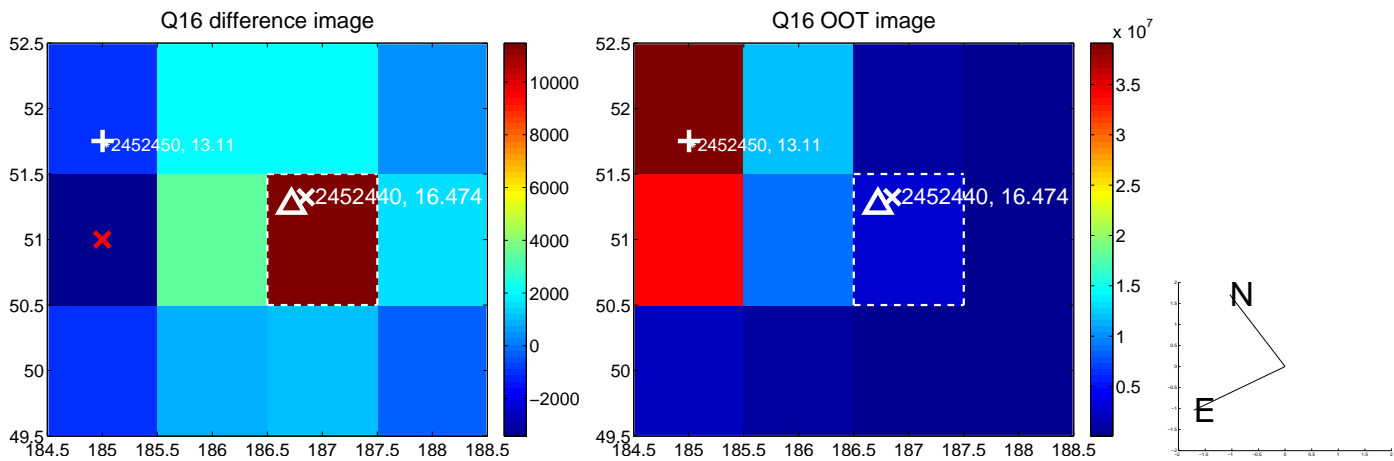
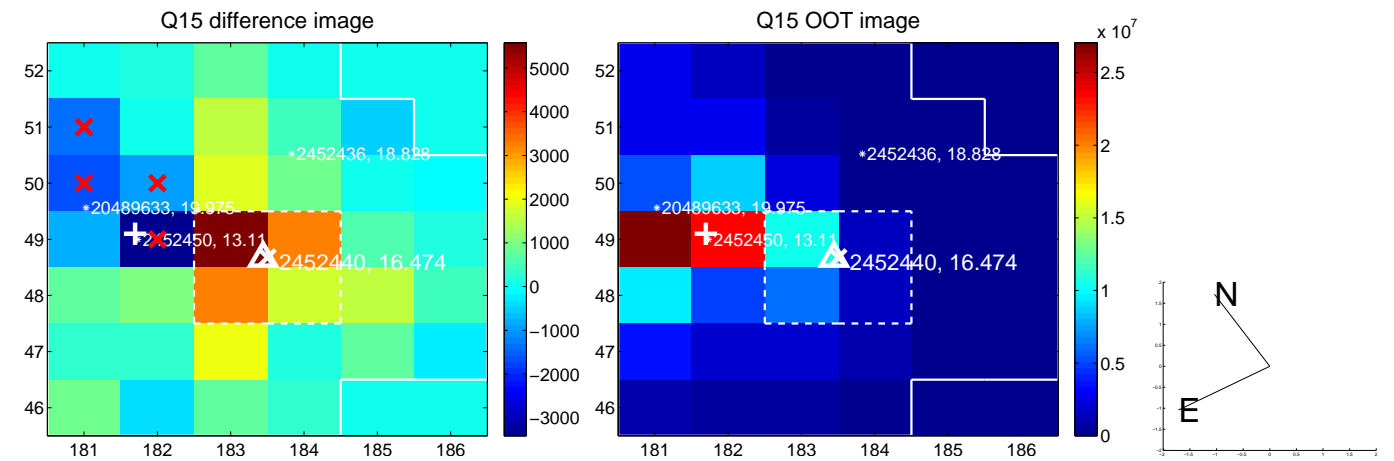
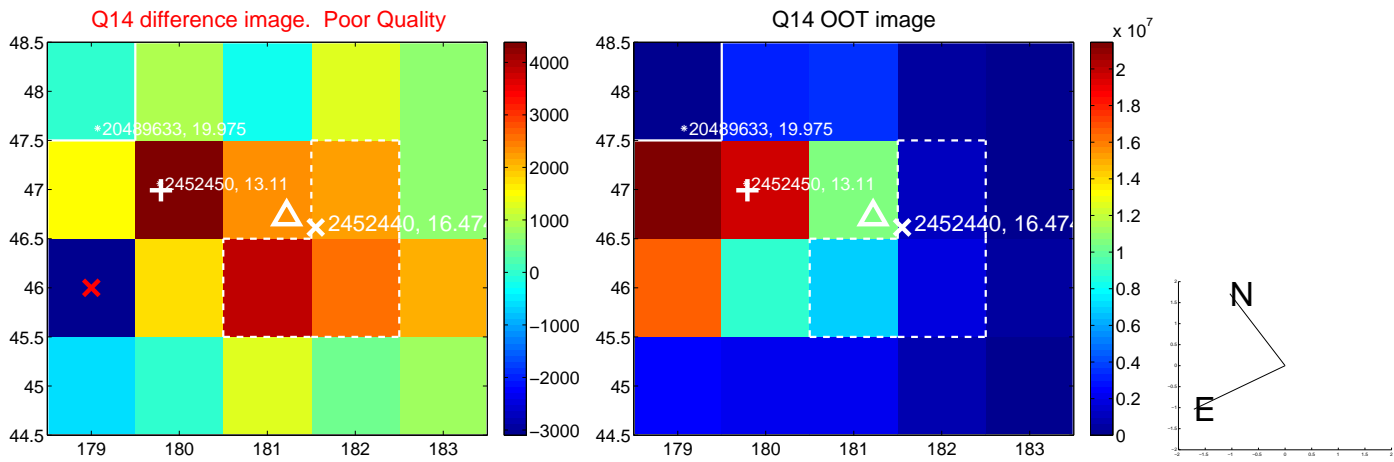
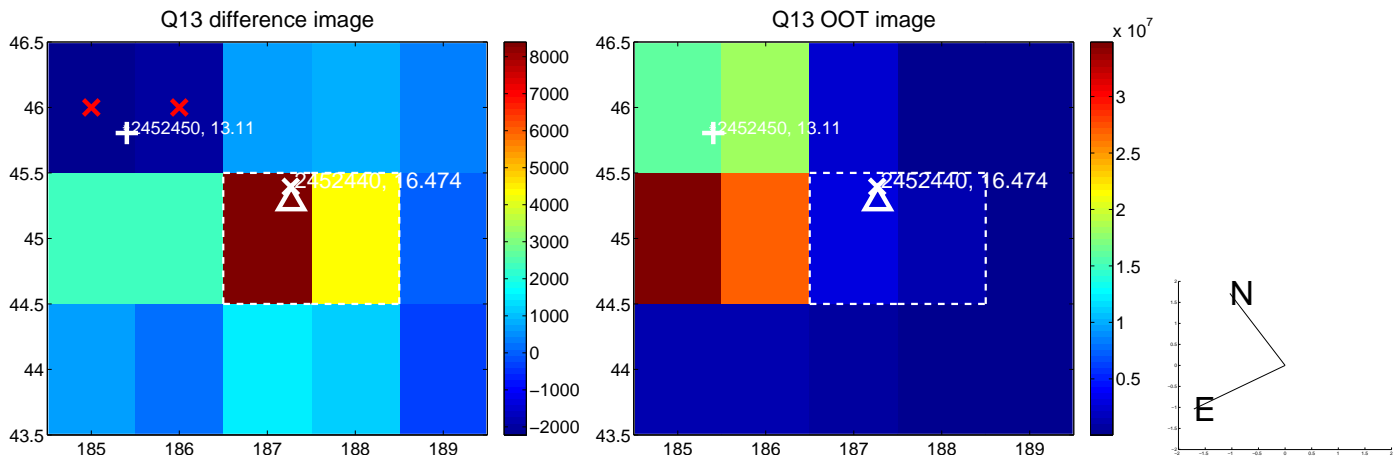
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



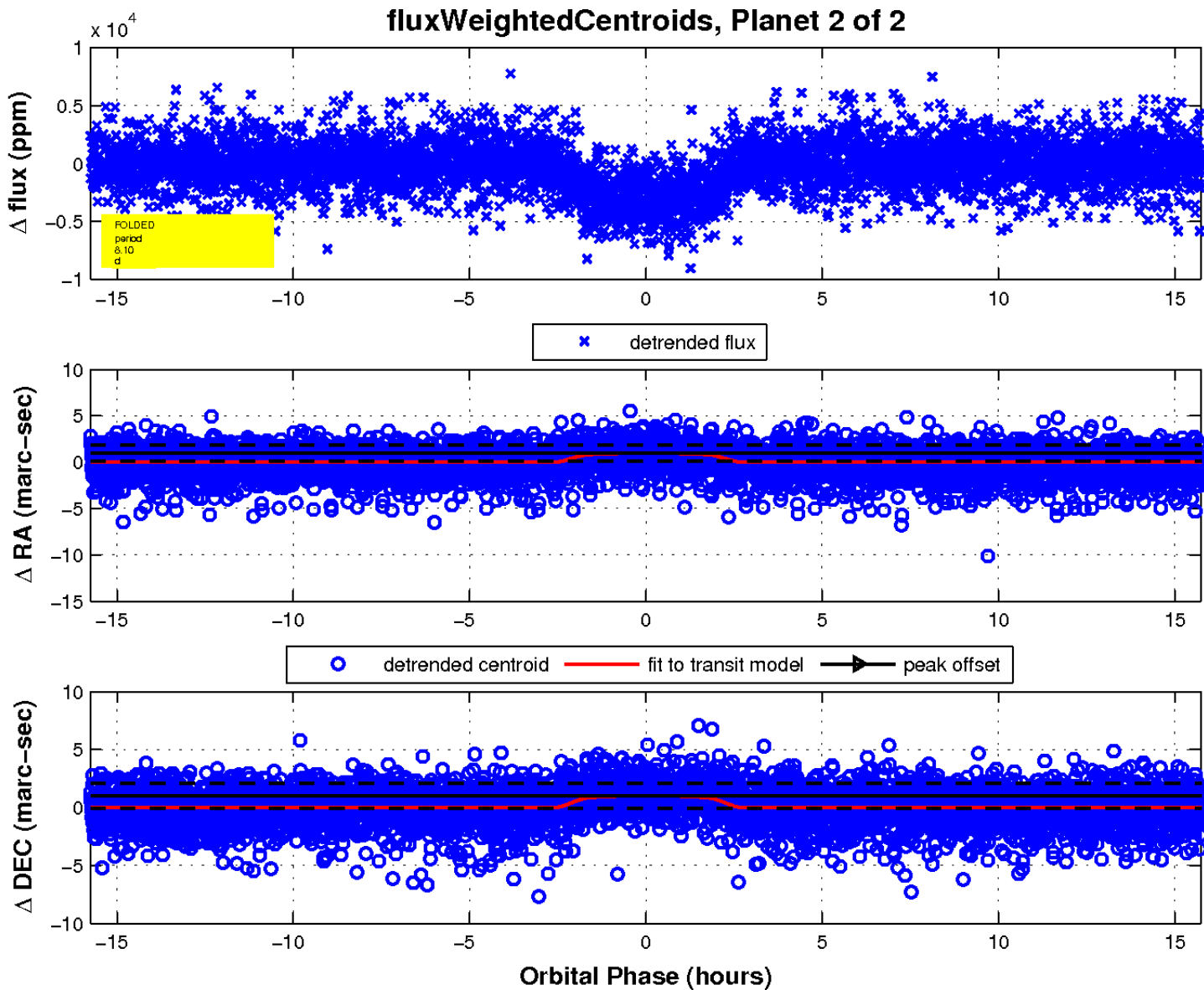
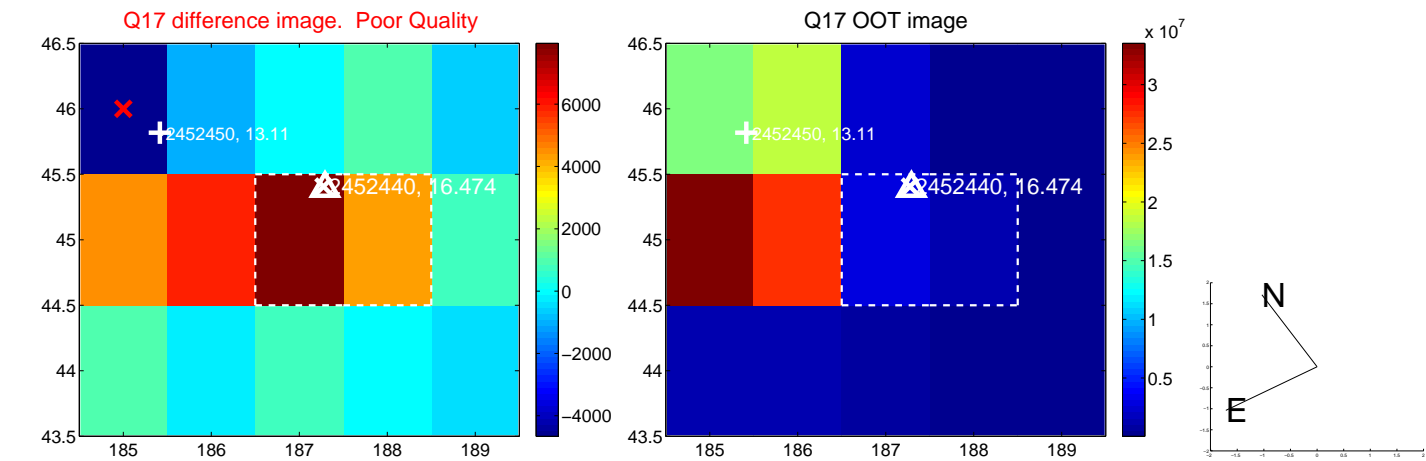
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

