

KIC 012644774

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})
012644774-01	OBS	1555.01	41.077442	132.662978	1108.4	5.671	82.4	28.8	0.94	5665	3.57	17.77
012644774-02	OBS	No	369.705038	152.698235	1267.7	3.873	9.9	10.1	0.94	5665	3.46	0.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012644774-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
012644774-02	OBS	FP	0.00	1	1	0	1	IS_SEC_TCE—CENT_FEW_DIFFS—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 012644774-01

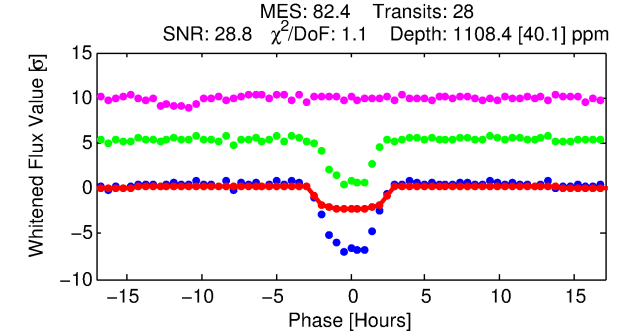
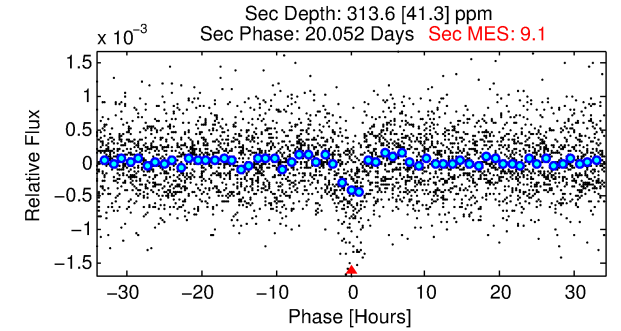
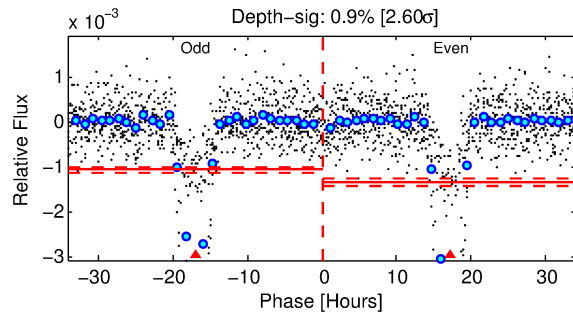
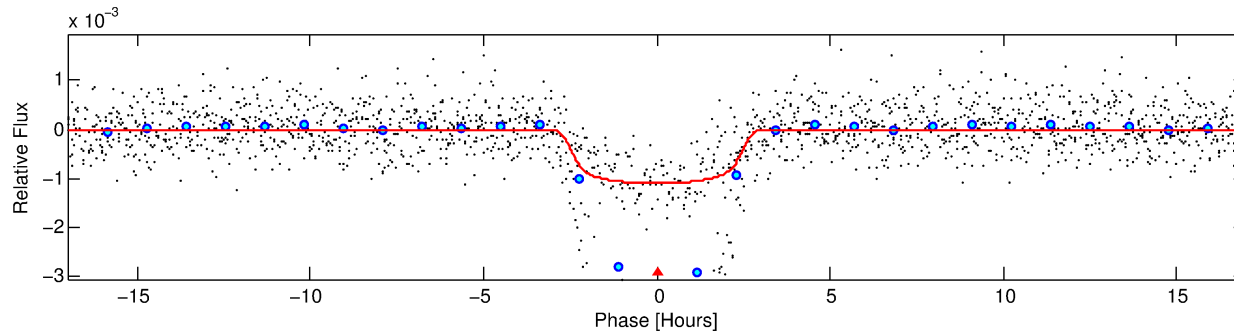
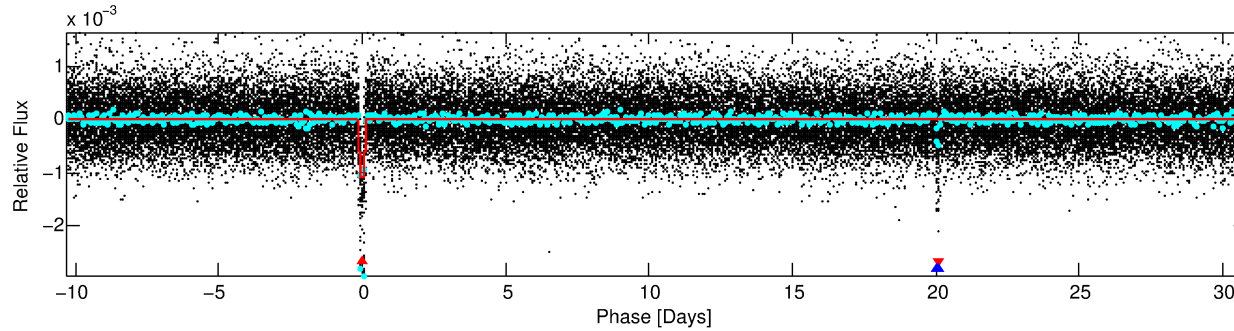
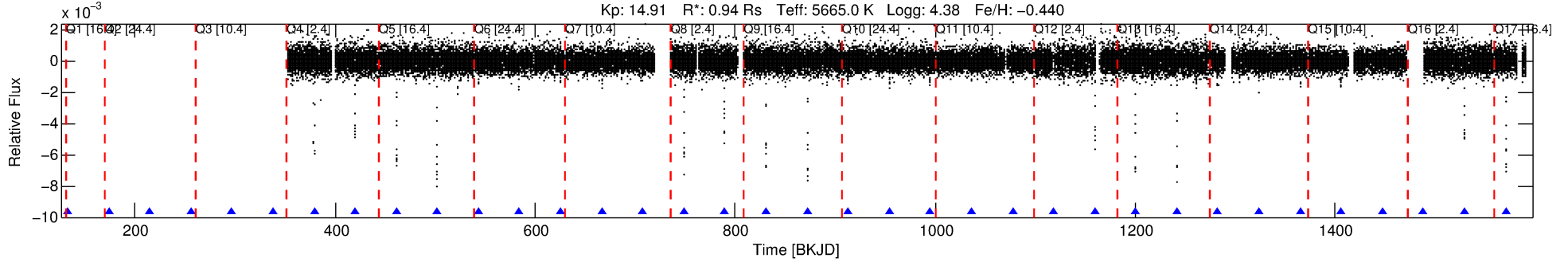
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
012644774-01	12644774	1611.01	12644769	1:1	16.1	-3	-3	11.76	14.90	123.62	Direct-PRF	0	0.08	0.09

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: 12644774 Candidate: 1 of 2 Period: 41.077 d
KOI: K01555.01 Corr: 0.991

Kp: 14.91 R*: 0.94 Rs Teff: 5665.0 K Logg: 4.38 Fe/H: -0.440



DV Fit Results:

Period = 41.07744 [0.00024] d
Epoch = 132.6630 [0.0052] BKJD
Rp/R* = 0.0349 [0.0022]
a/R* = 32.21 [8.56]
b = 0.86 [0.08]
Seff = 17.77 [7.12]
Teq = 524 [52] K
Rp = 3.57 [1.03] Re
a = 0.2137 [0.0532] AU
Ag = 617.15 [258.62] [2.38σ]
Teff = 4034 [227] K [15.08σ]

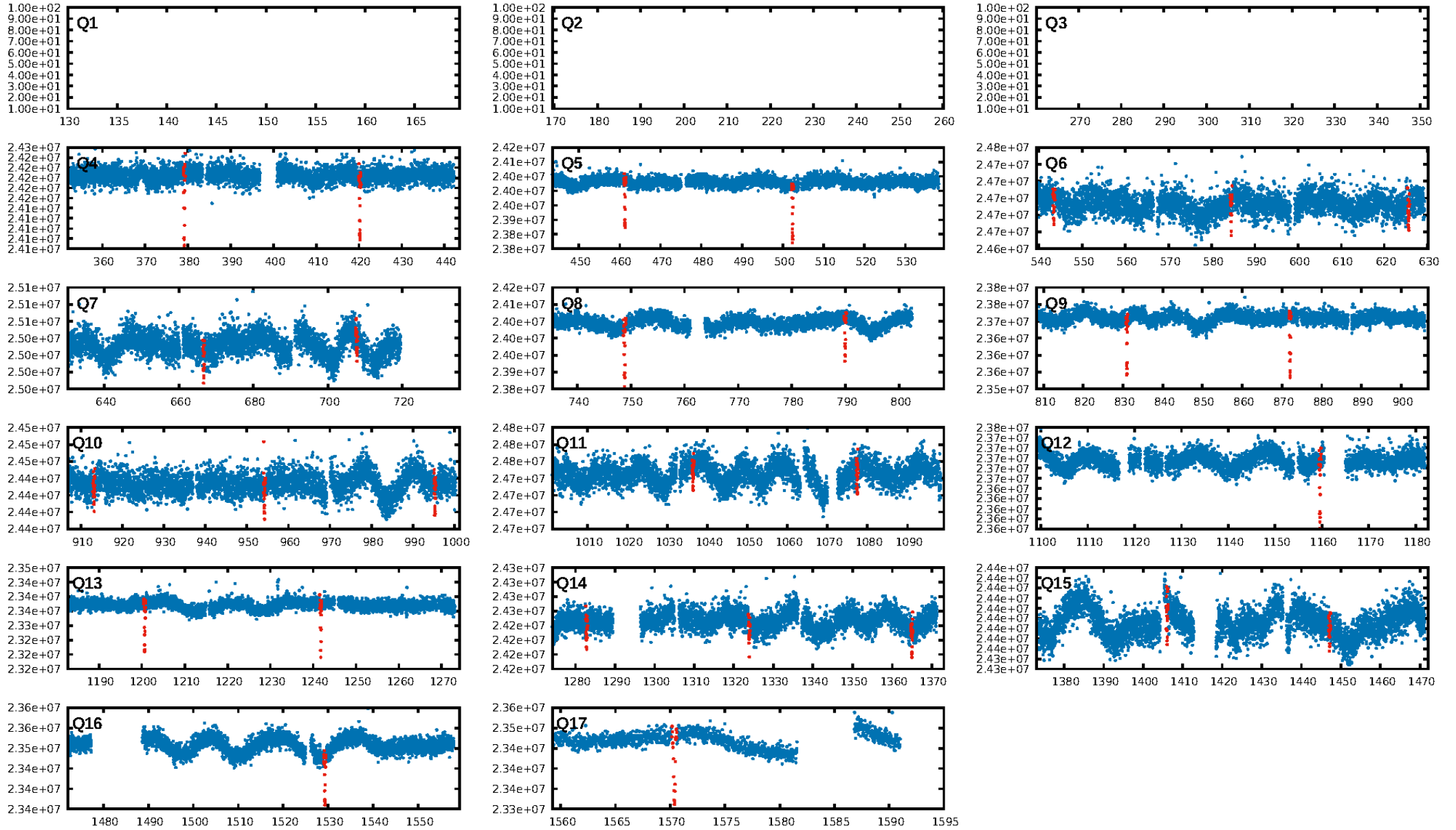
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1148.53σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [27/27]
GhostDiagnostic-chr: -0.1467
Centroid-sig: 0.0%
Centroid-so: 57.764 arcsec [212.46σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [13/13]

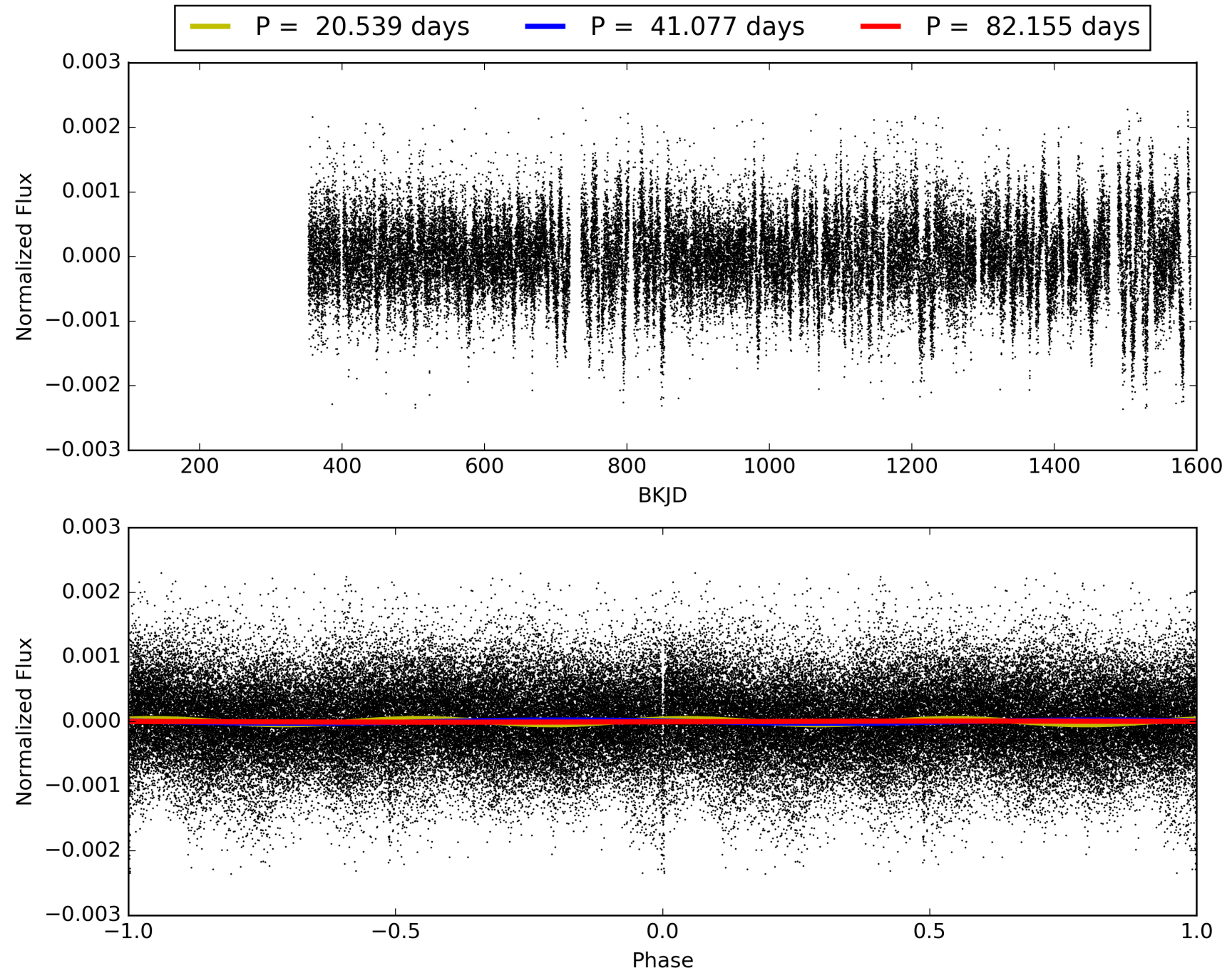
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:24:28 Z

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

TCE 012644774-01, PDC Light Curves

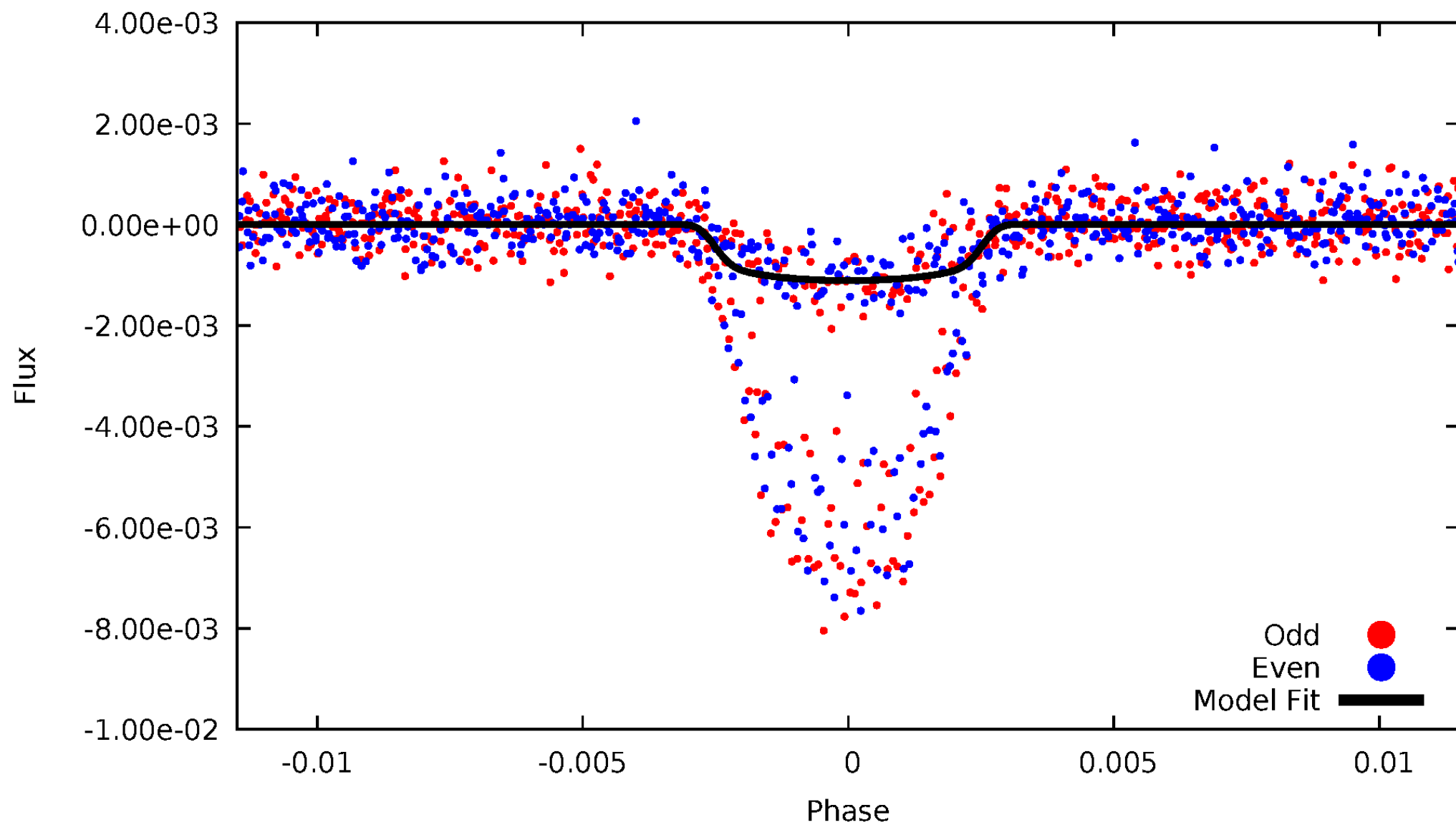


TCE 012644774-01



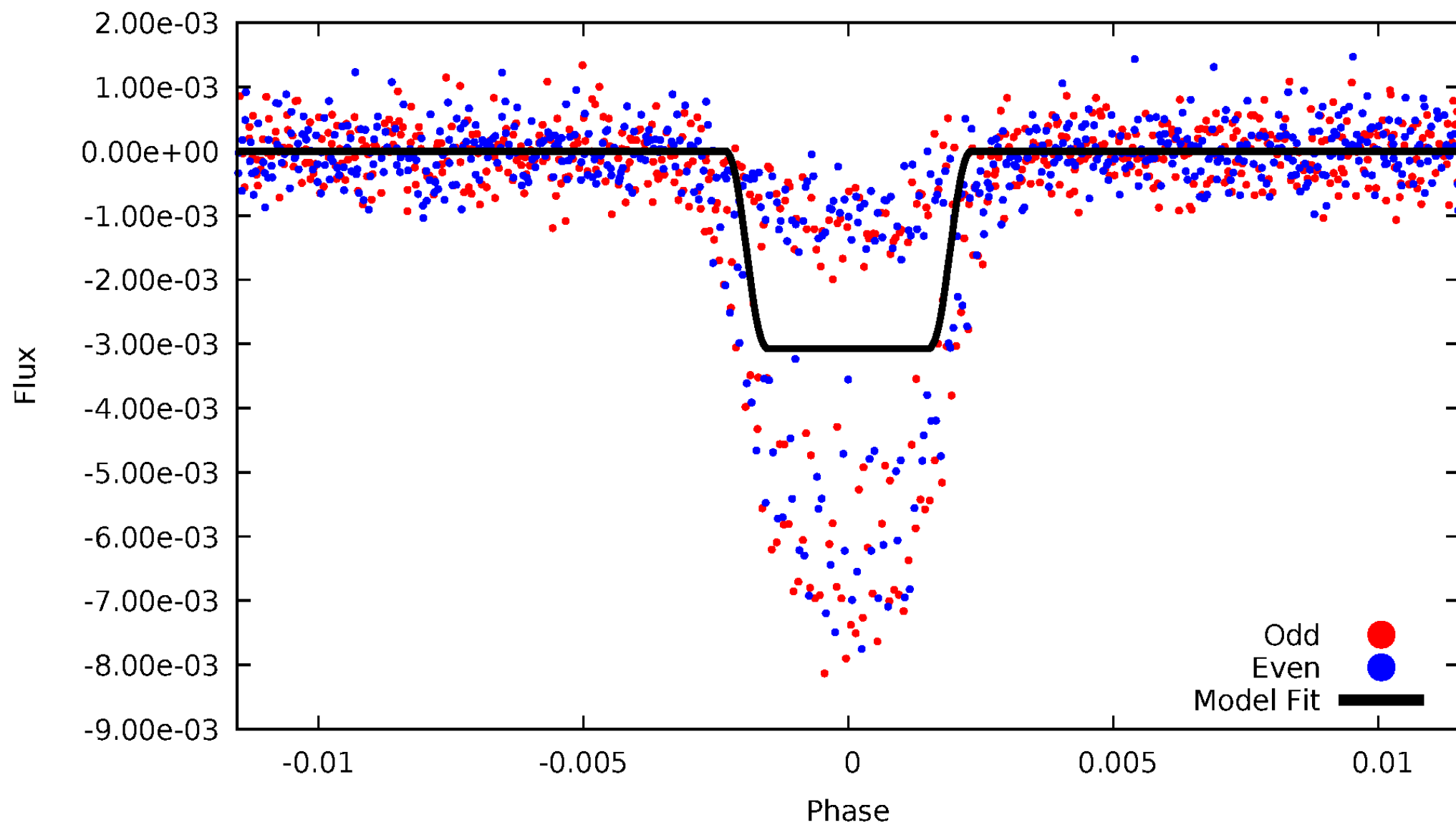
DV Odd/Even

TCE 012644774-01

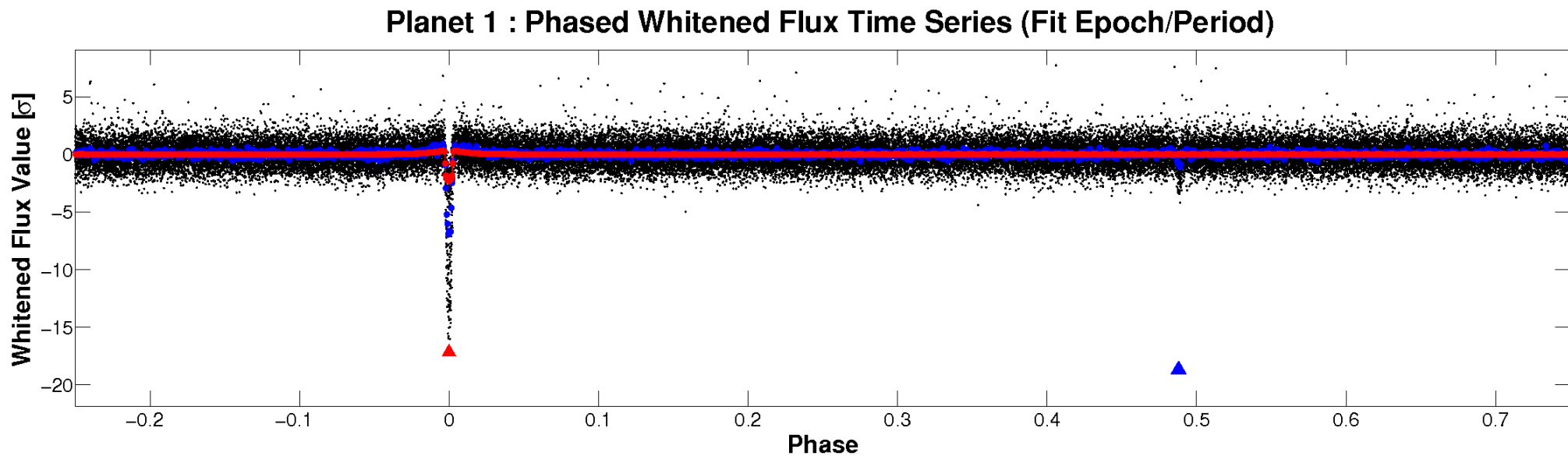
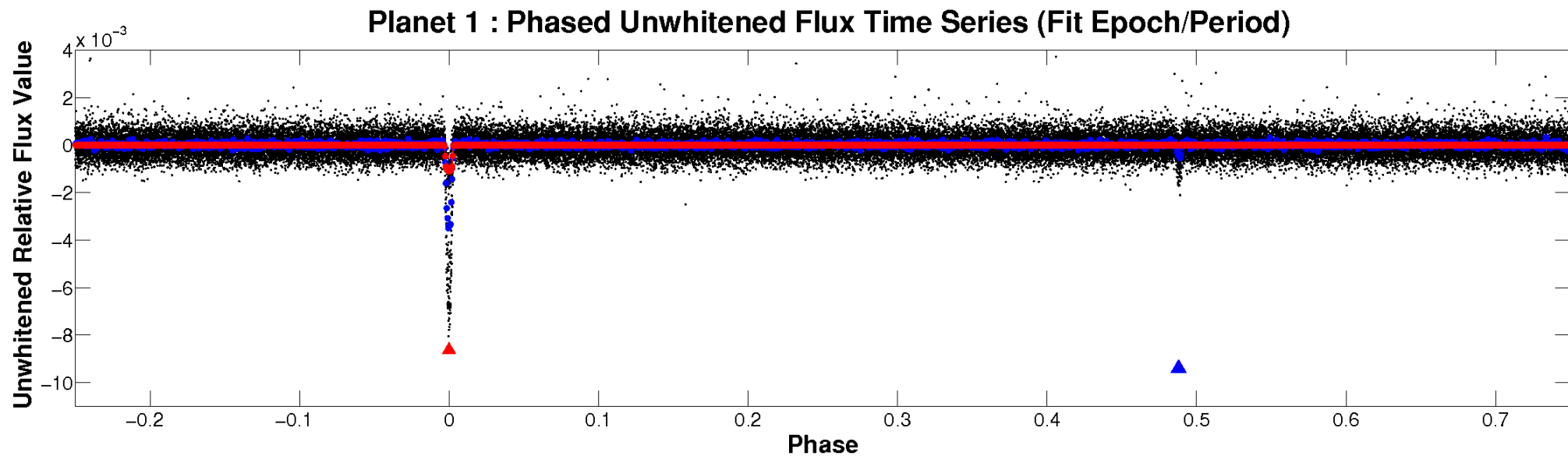


ALT Odd/Even

TCE 012644774-01

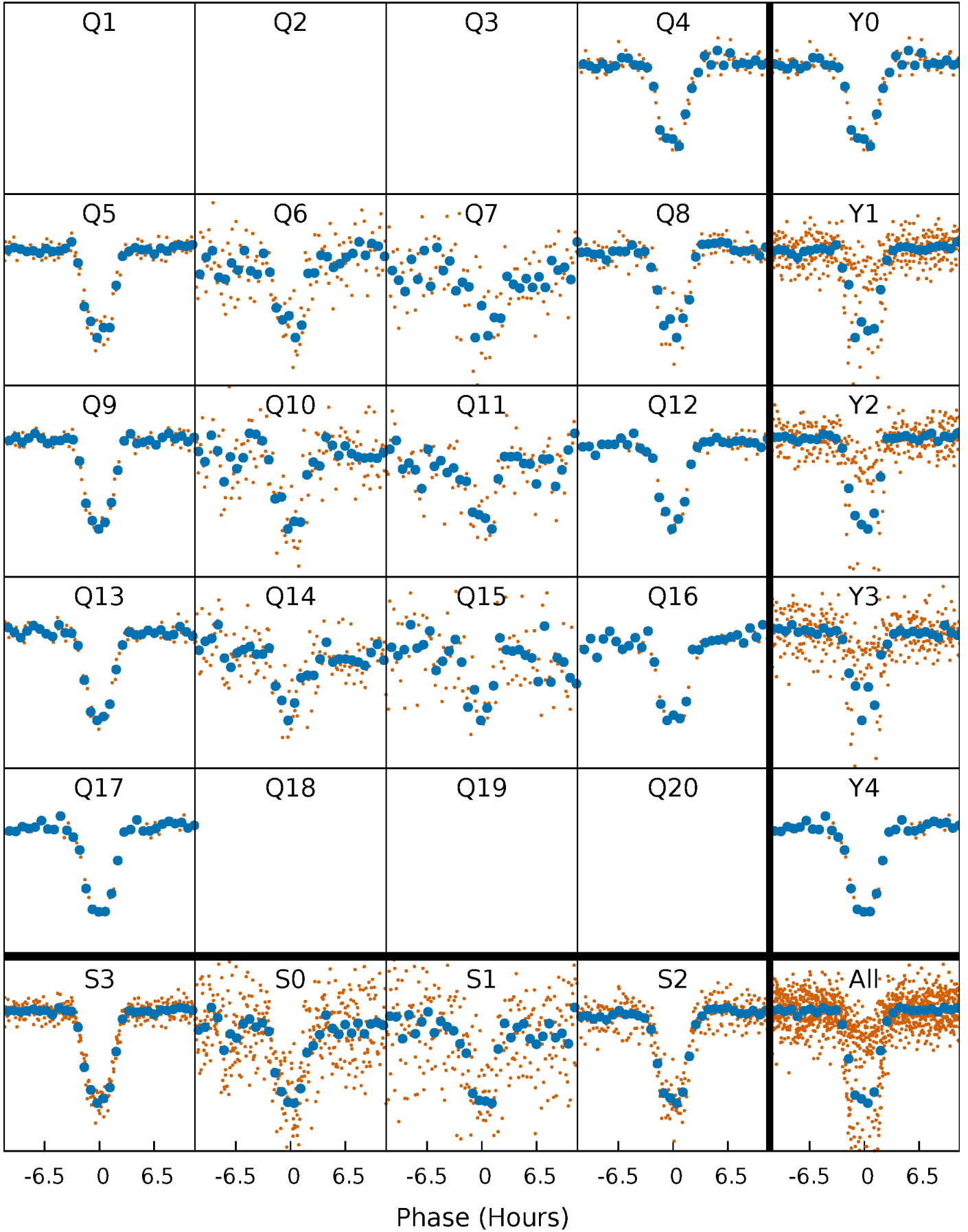


Non-Whitened Vs. Whitened Light Curve



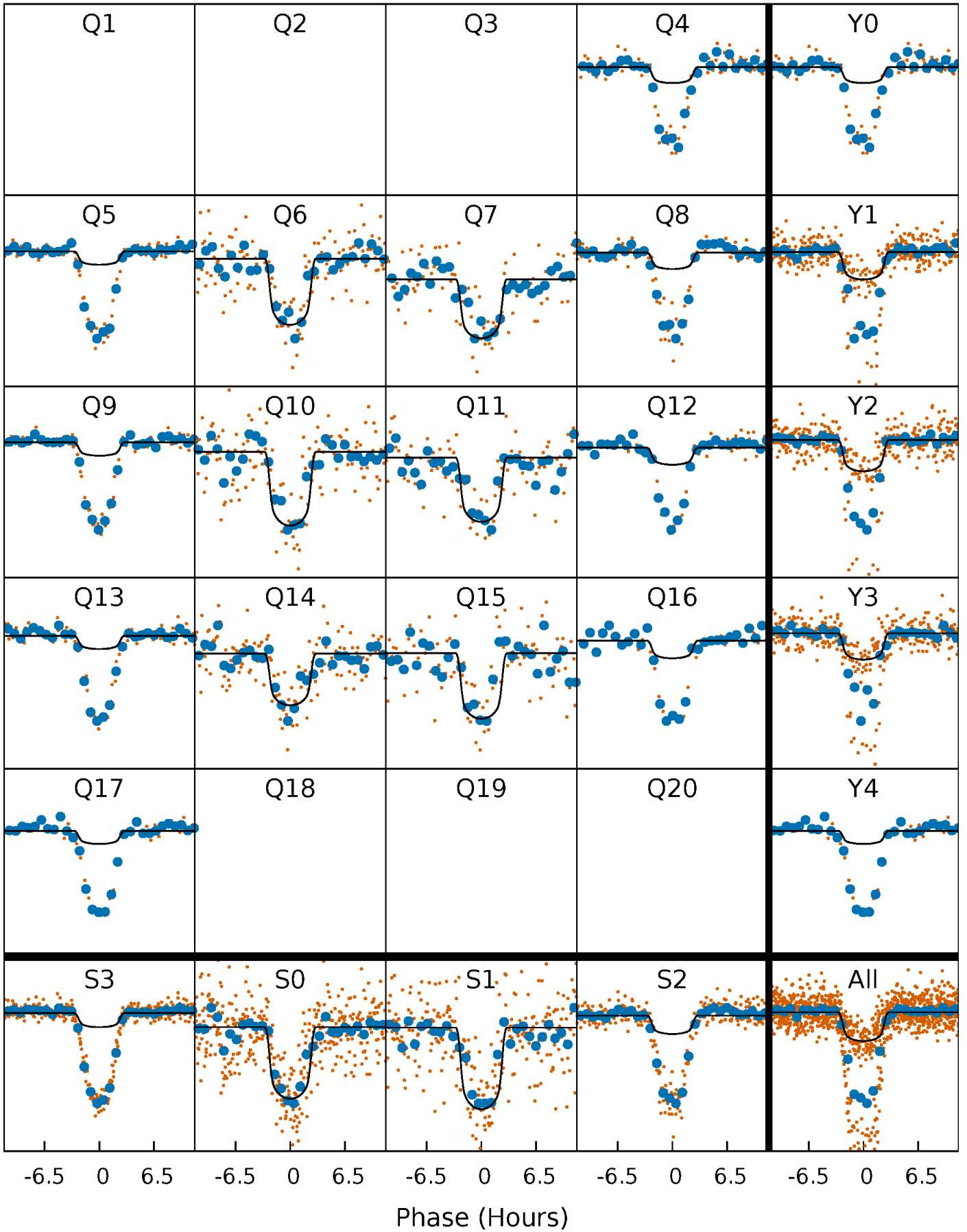
PDC Quarter-Phased Transit Curves

TCE 012644774-01 P= 41.077442 Days $T_0=132.662978$ (BKJD)



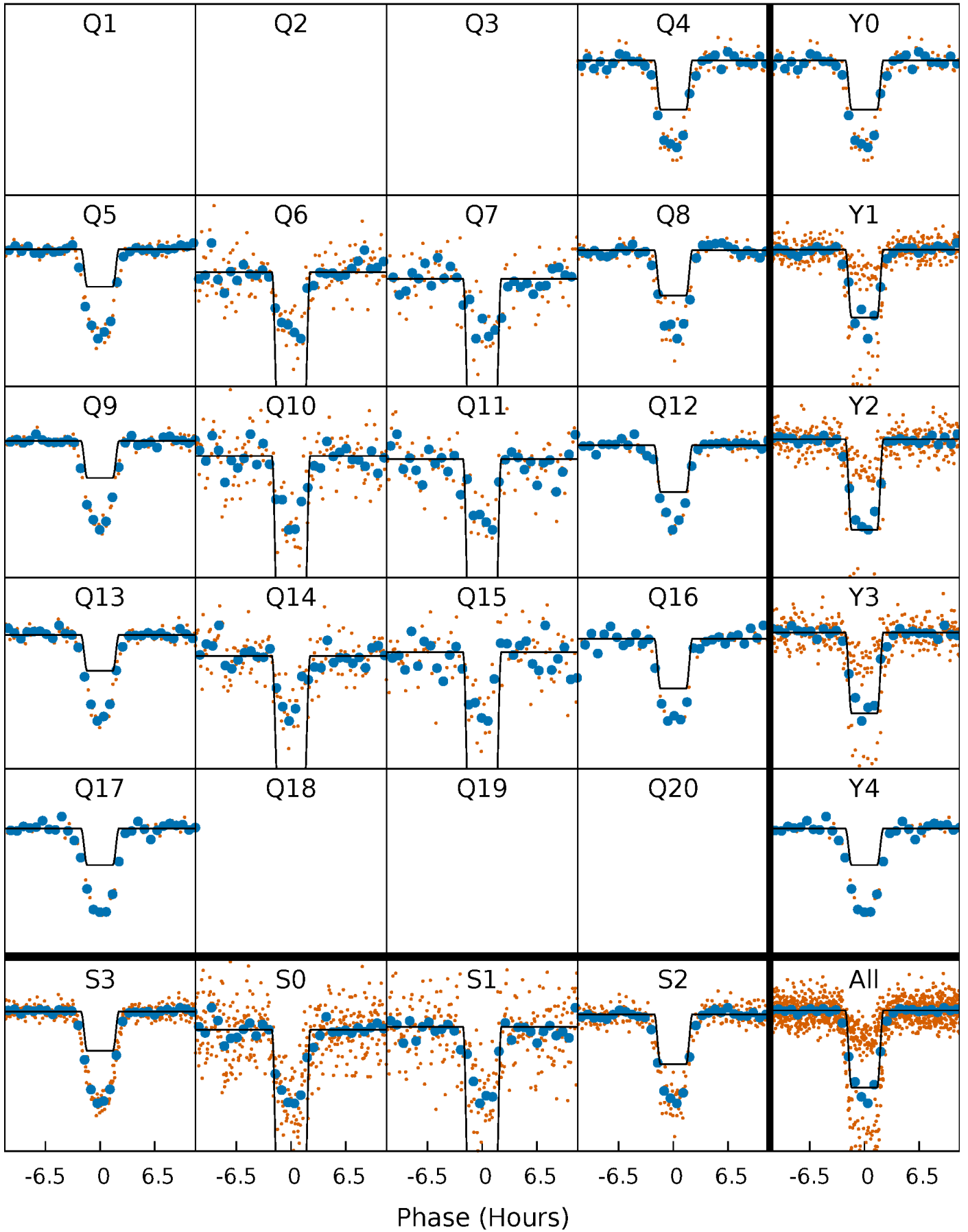
DV Quarter-Phased Transit Curves

TCE 012644774-01 P= 41.077442 Days $T_0=132.662978$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

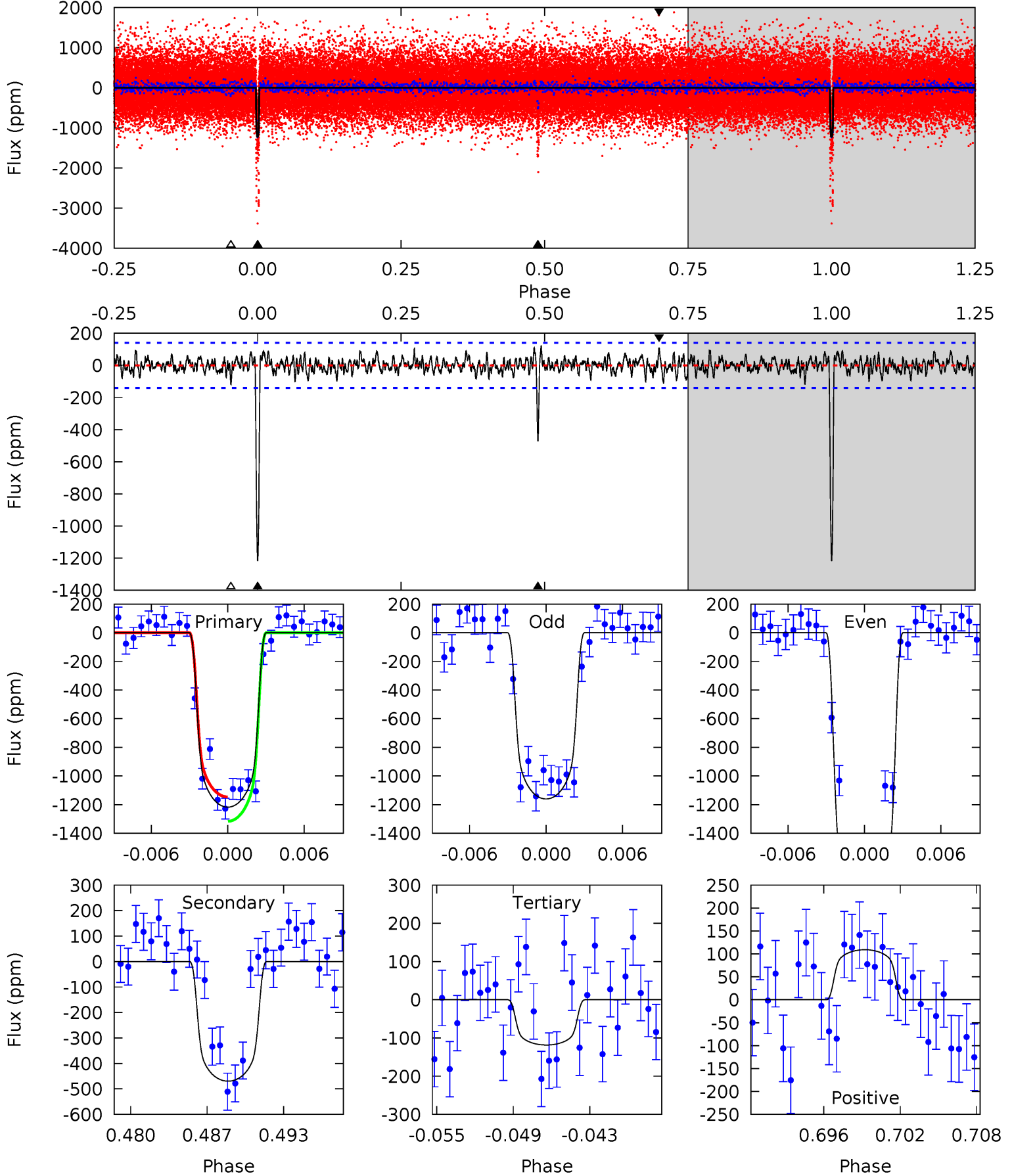
TCE 012644774-01 P= 41.077412 Days $T_0=132.662707$ (BKJD)



DV Model-Shift Uniqueness Test

012644774-01, P = 41.077442 Days, E = 132.662978 Days

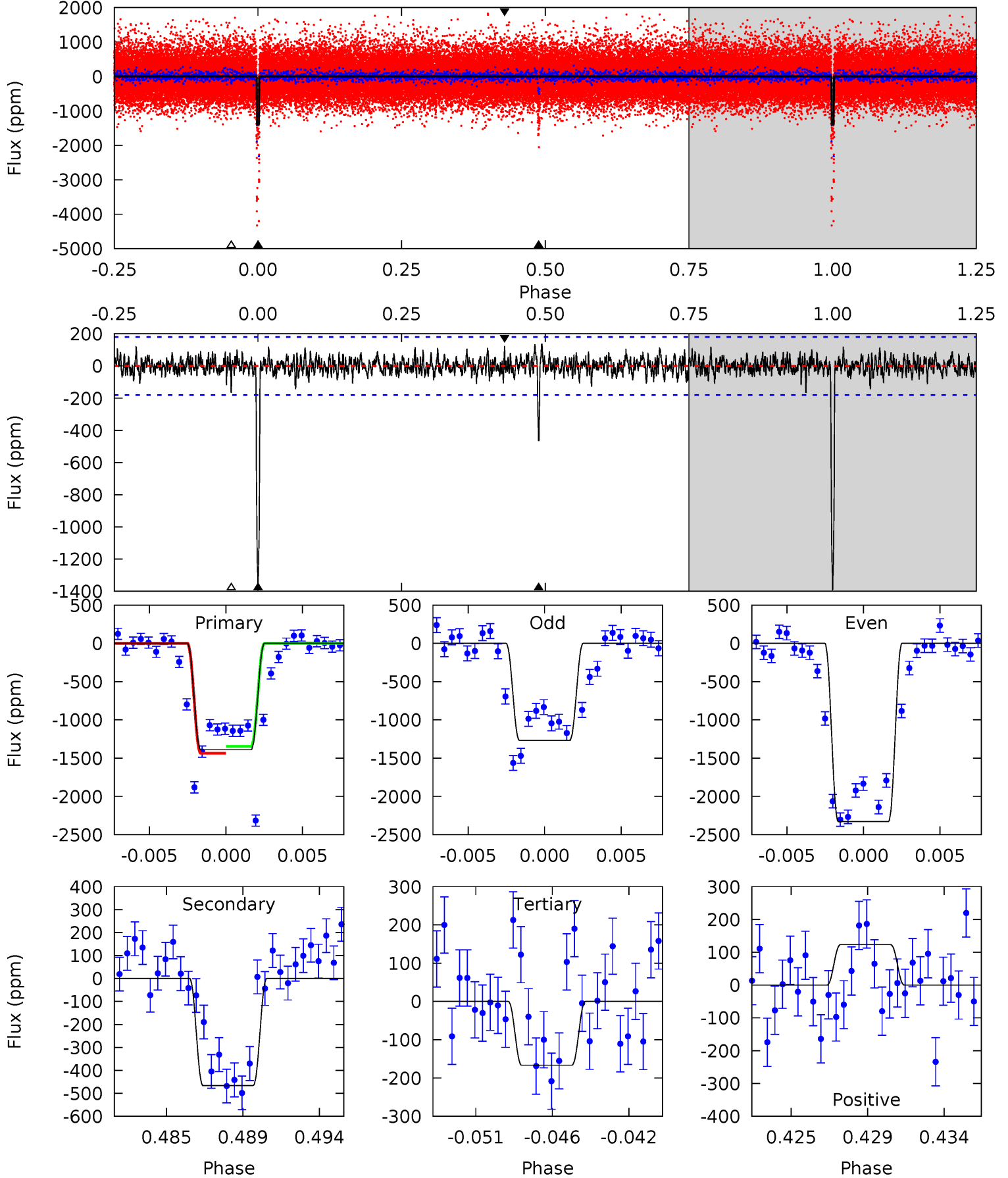
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
44.4	17.1	4.32	3.98	5.12	2.74	1.30	40.1	40.4	12.8	13.2	14.1	2.66	0.09	3.10



Alt Model-Shift Uniqueness Test

012644774-01, P = 41.077412 Days, E = 132.662707 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.8	13.3	4.77	3.52	5.17	2.83	1.16	35.0	36.3	8.58	9.82	15.8	2.80	0.09	1.25



Stellar Parameters For KIC 012644774

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5665^{+189}_{-189}	$4.381^{+0.195}_{-0.214}$	$-0.440^{+0.300}_{-0.300}$	$0.938^{+0.263}_{-0.197}$	$0.773^{+0.125}_{-0.054}$	$1.319^{+1.104}_{-0.689}$
	+3%/-3%	+4%/-5%	+68%/-68%	+28%/-21%	+16%/-7%	+84%/-52%
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 012644774-01 / KOI 1555.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-470 ± 27	$3.61^{+0.66}_{-0.49}$	733^{+61}_{-51}	4615^{+181}_{-169}	922^{+307}_{-255}
Alt.	-466 ± 35	$5.78^{+0.99}_{-0.71}$	736^{+59}_{-50}	3881^{+117}_{-123}	358^{+110}_{-102}

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

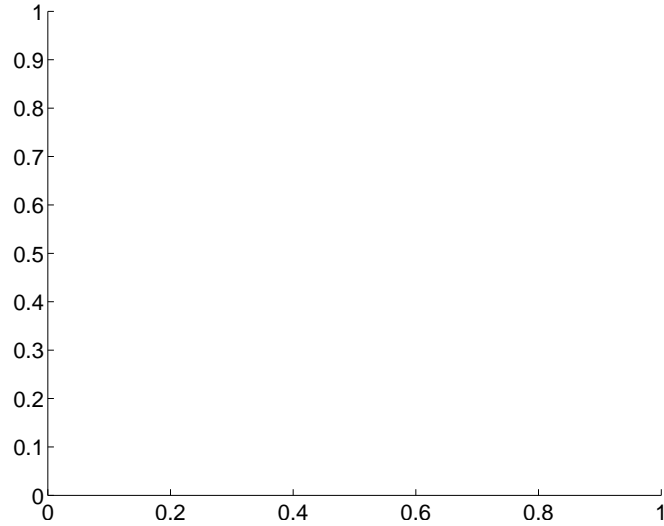
Supplemental centroid analysis for 012644774-01. Kepler magnitude: 14.91. Transit SNR 28.78

There are 0 quarters with good PRF difference image offsets

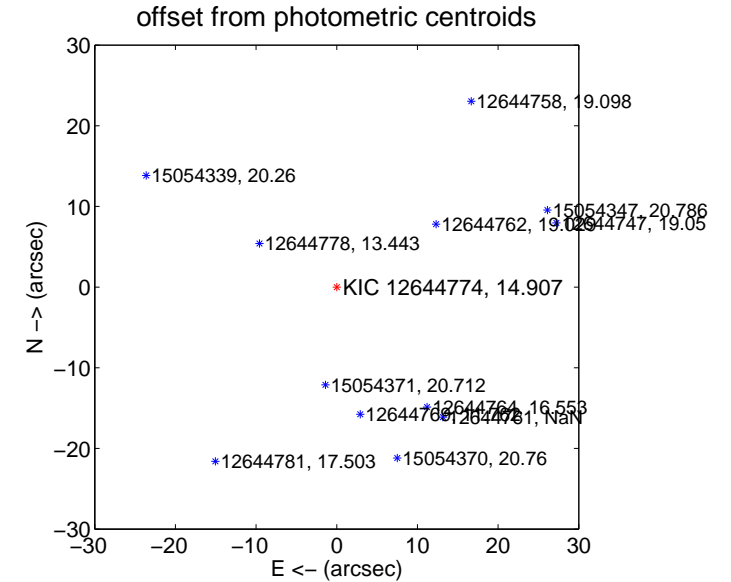
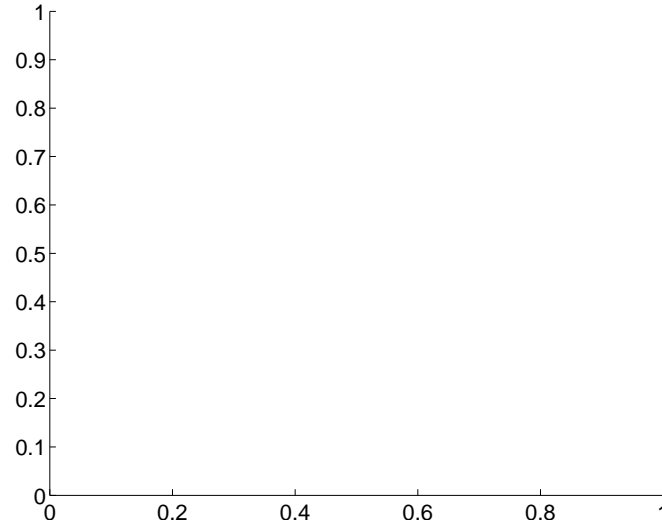
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	57.77 ± 0.27	212.45	-43.39 ± 0.29	-38.15 ± 0.25

There is no PRF-fit offset from OOT-fit

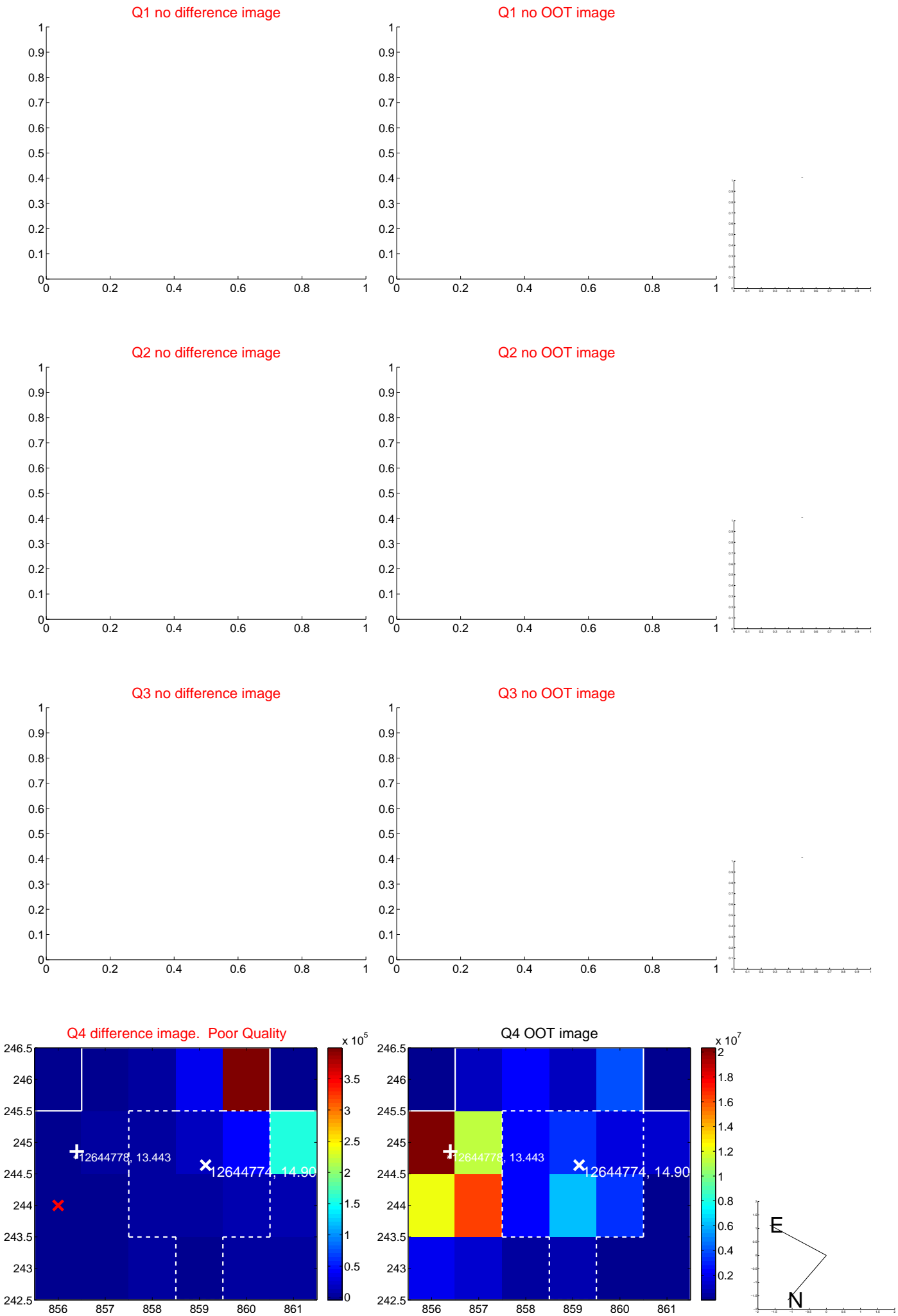


There is no PRF-fit offset from KIC

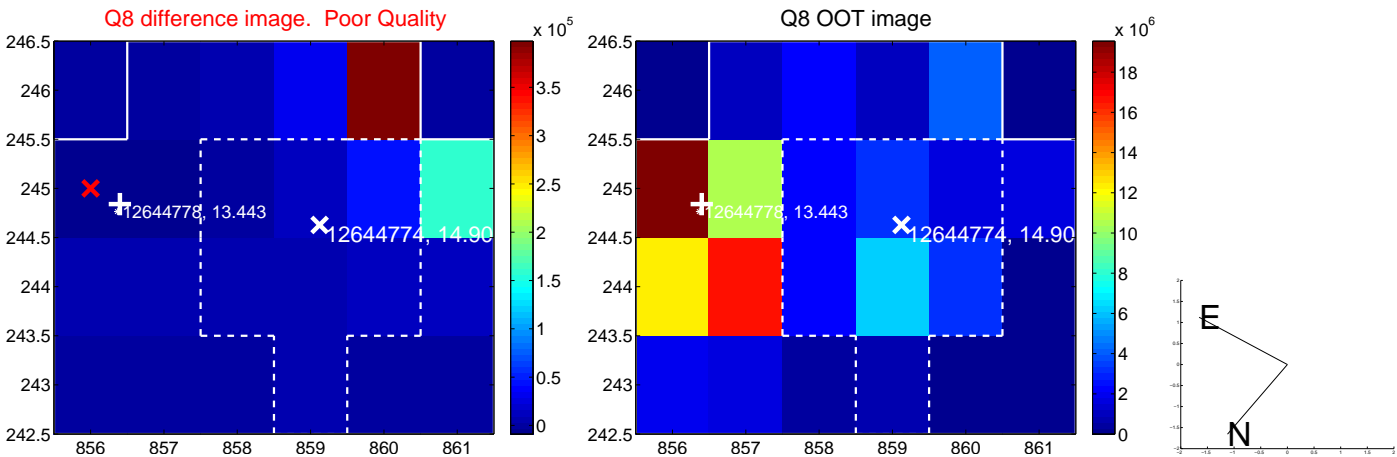
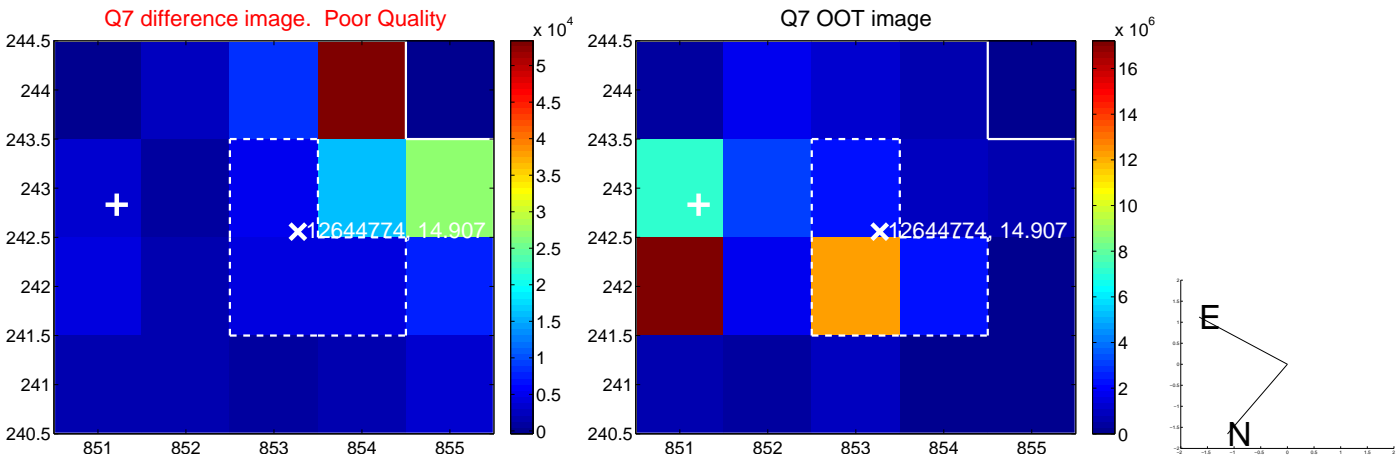
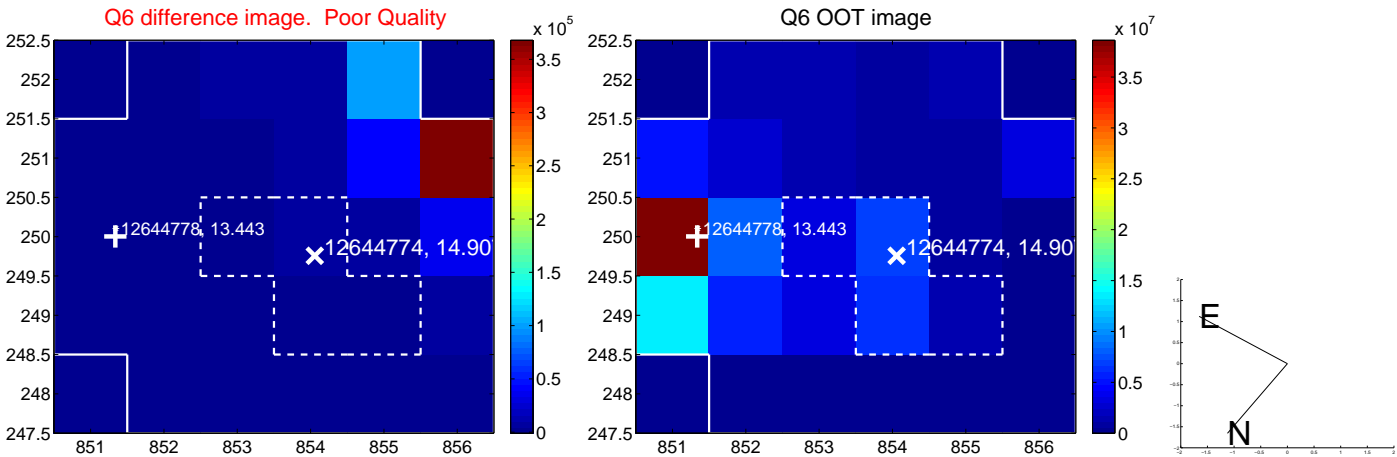
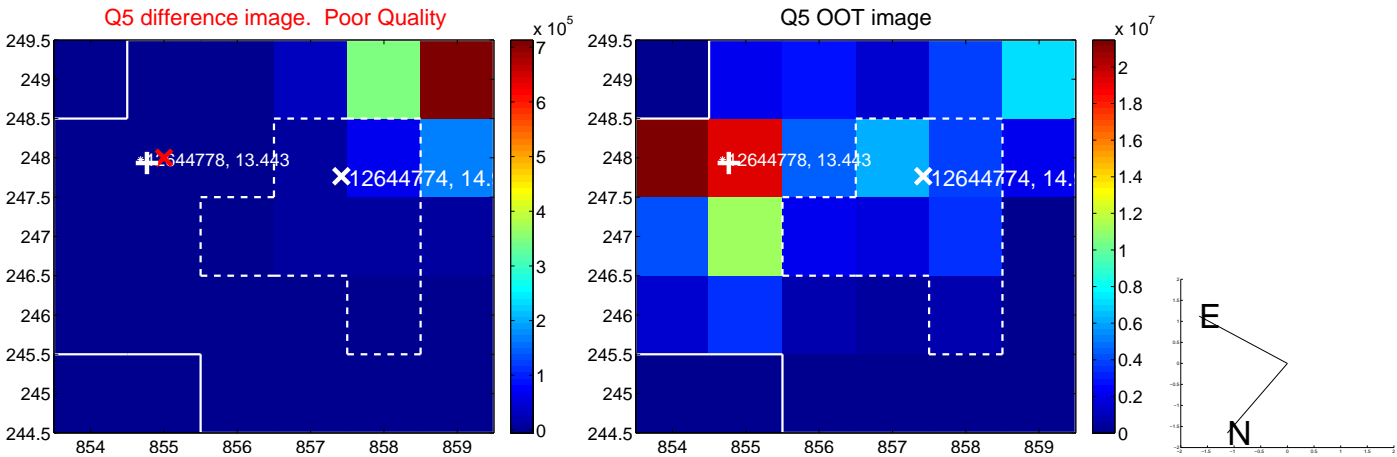


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

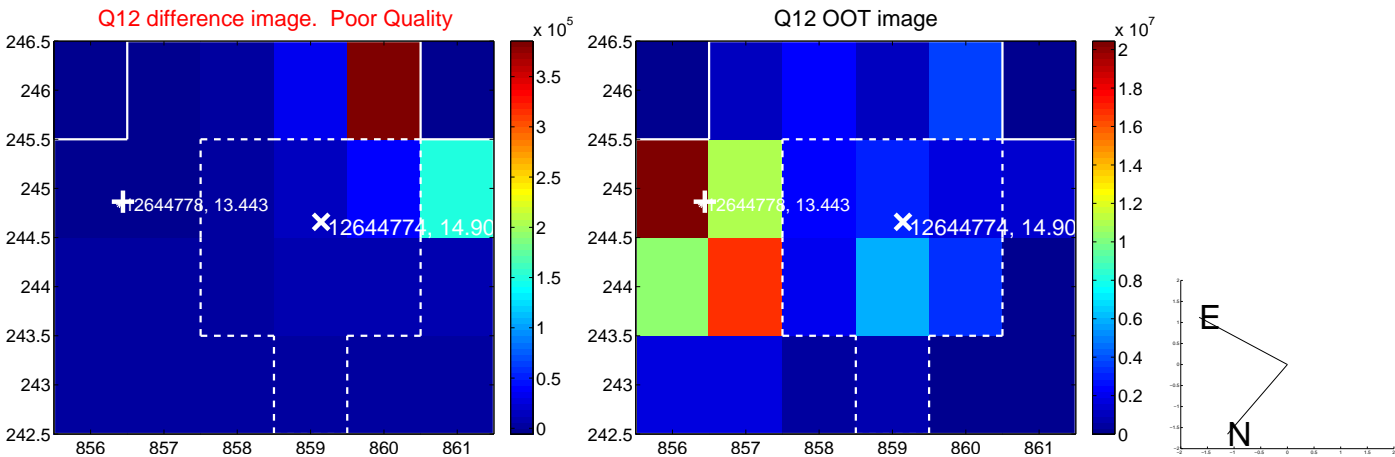
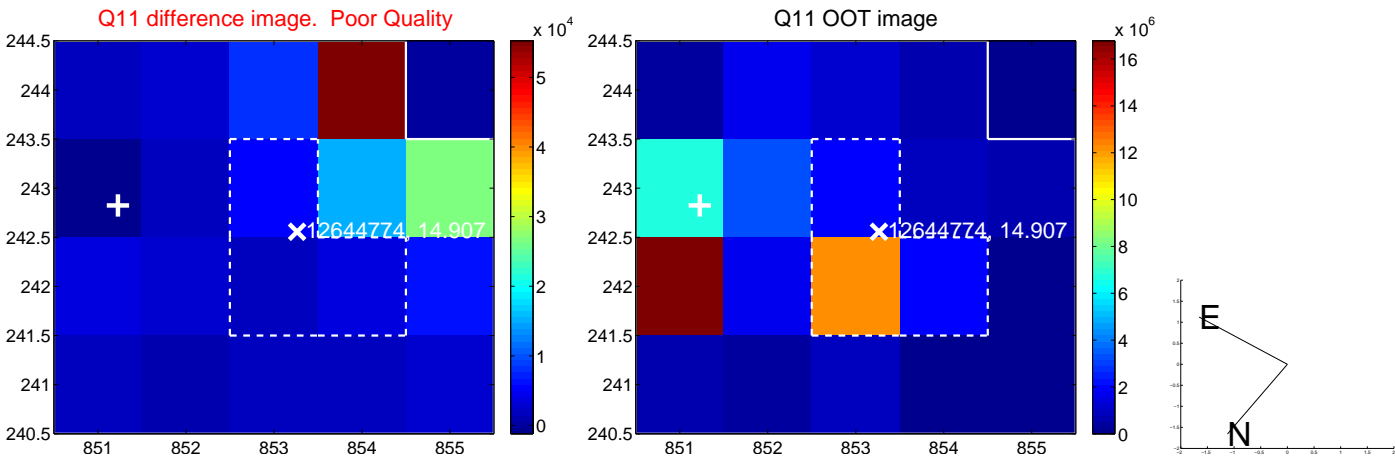
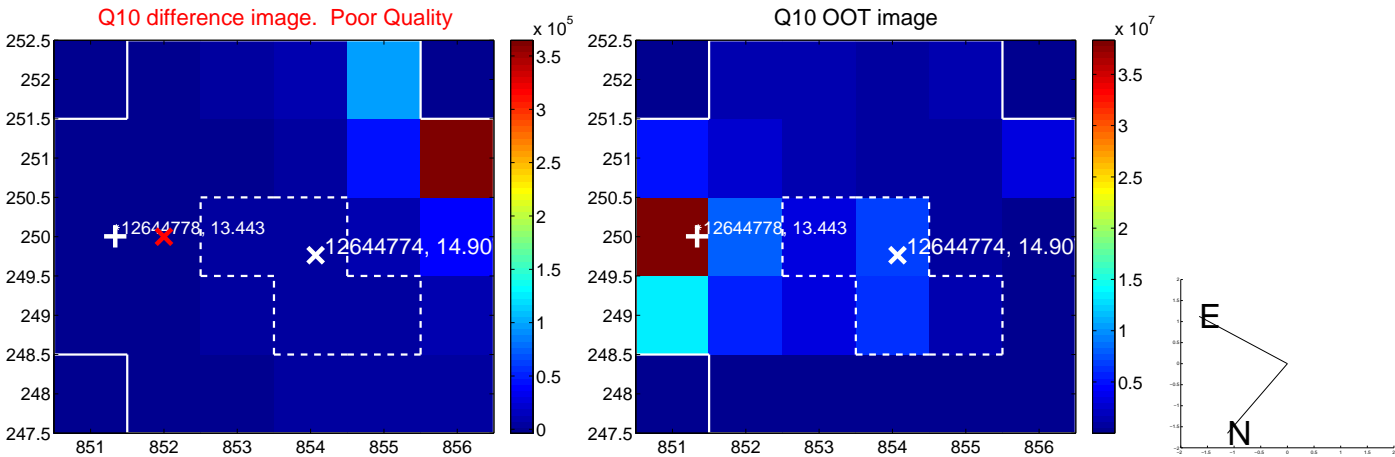
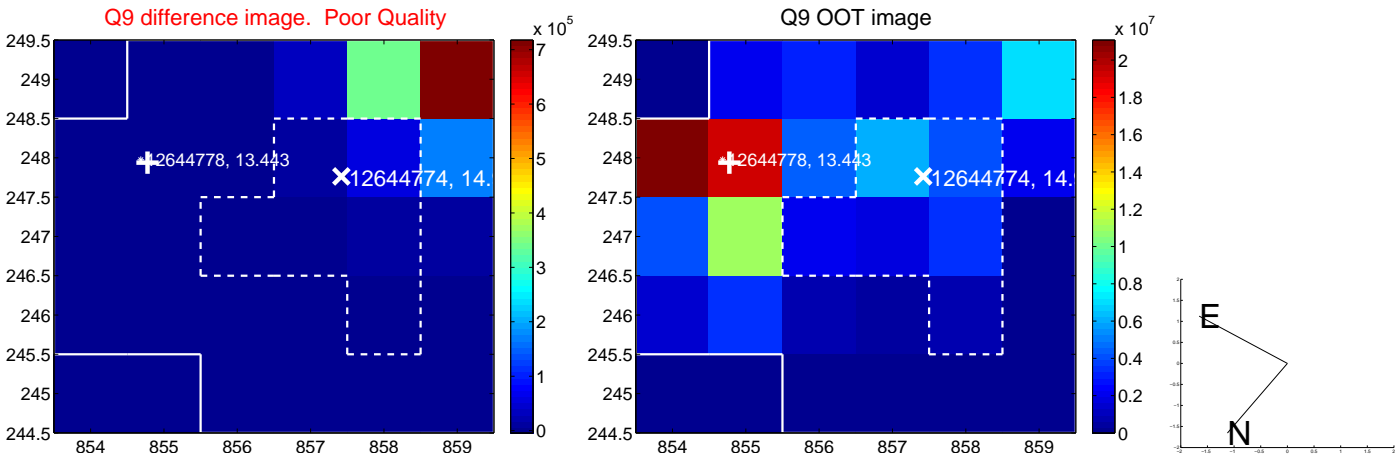
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



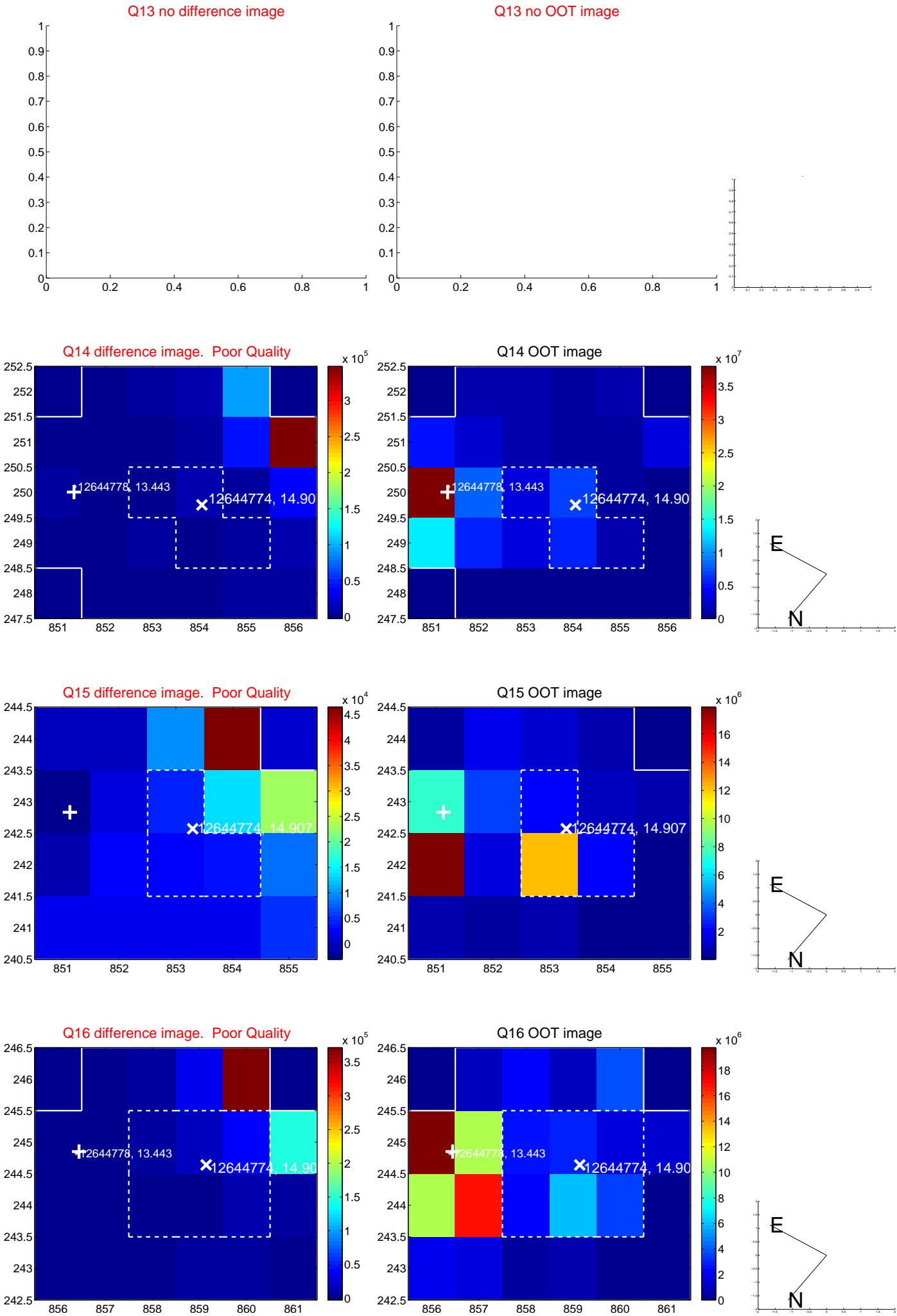
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



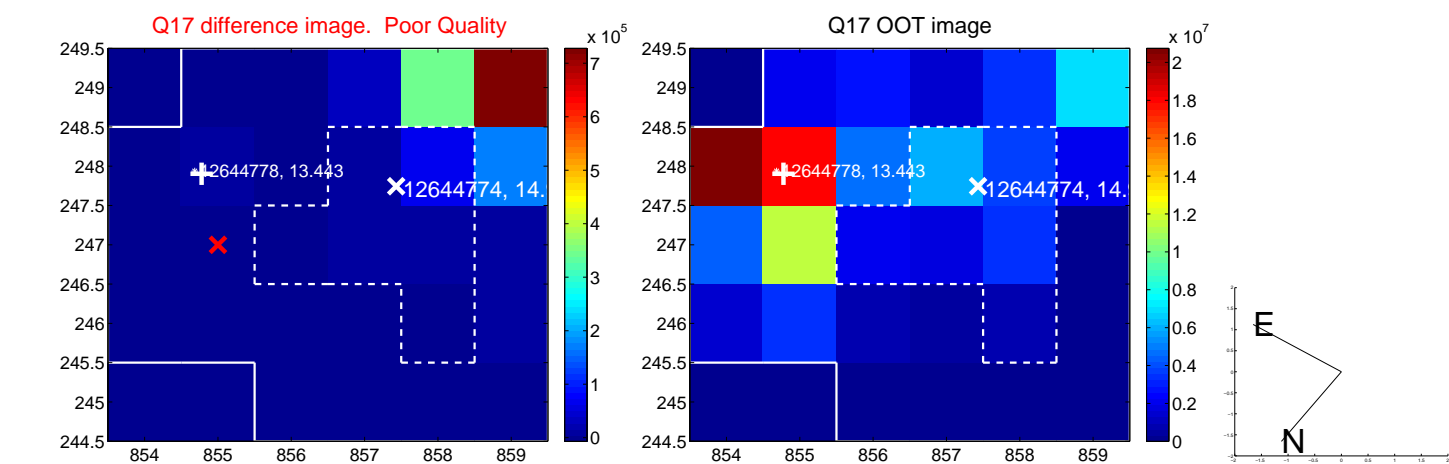
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



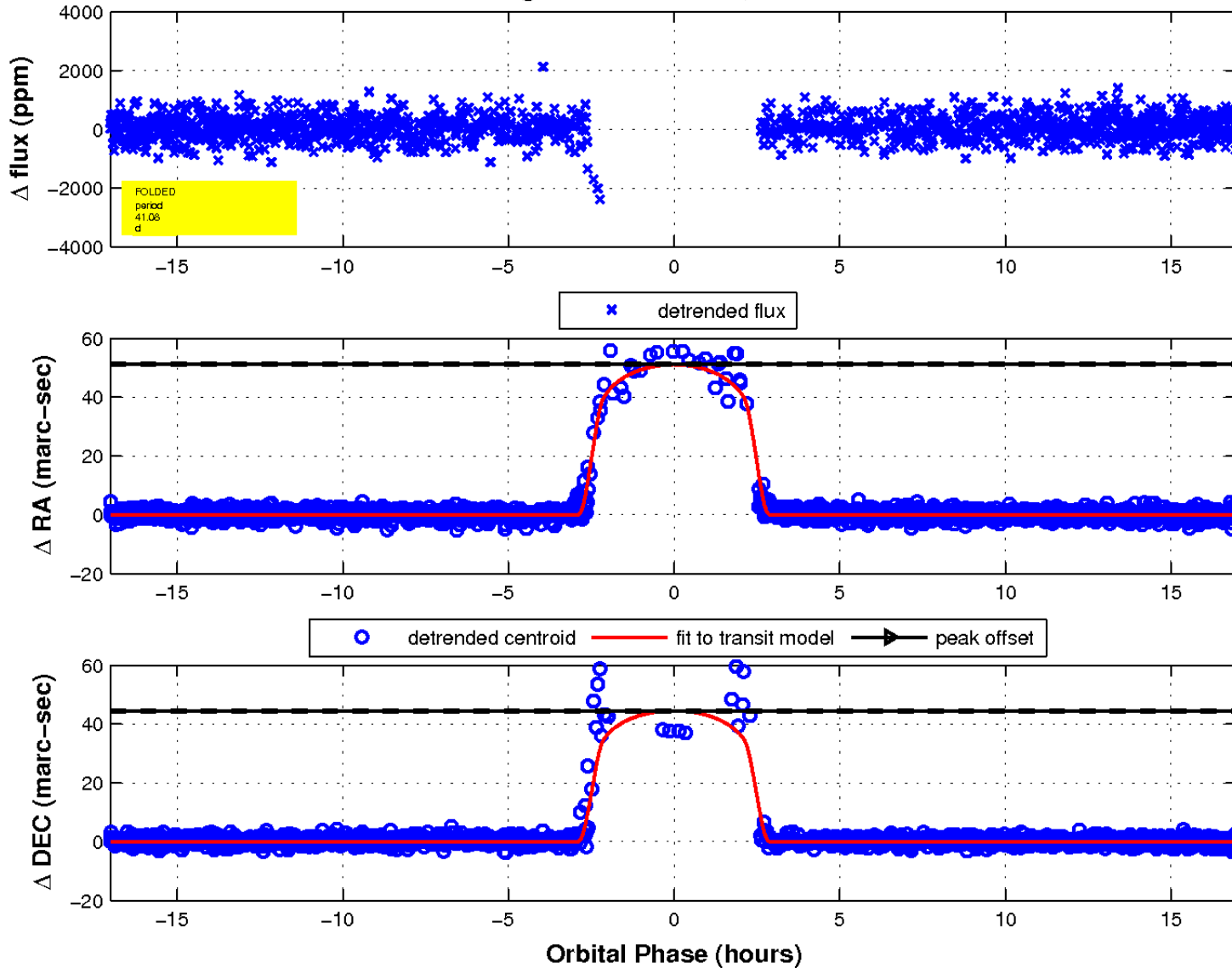
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



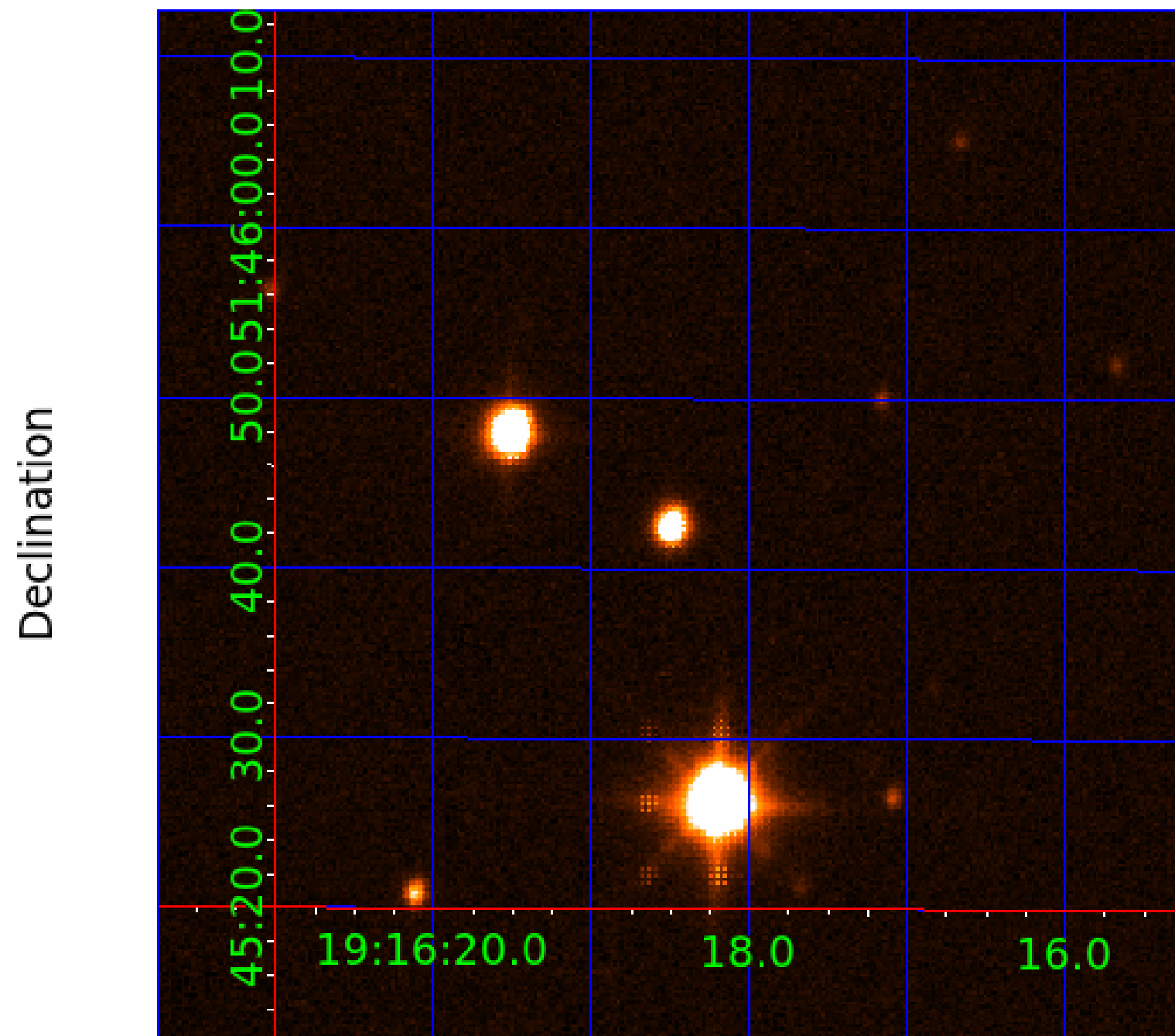
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



KIC 012644774

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})
012644774-01	OBS	1555.01	41.077442	132.662978	1108.4	5.671	82.4	28.8	0.94	5665	3.57	17.77
012644774-02	OBS	No	369.705038	152.698235	1267.7	3.873	9.9	10.1	0.94	5665	3.46	0.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012644774-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
012644774-02	OBS	FP	0.00	1	1	0	1	IS_SEC_TCE—CENT_FEW_DIFFS—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 012644774-02

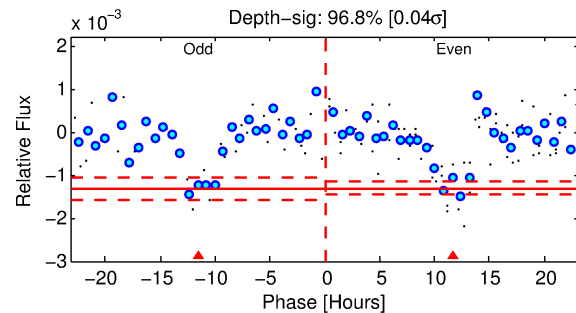
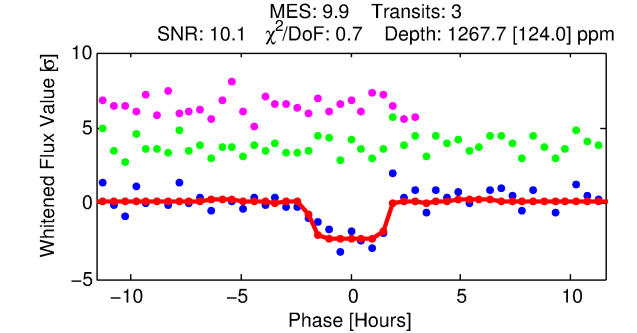
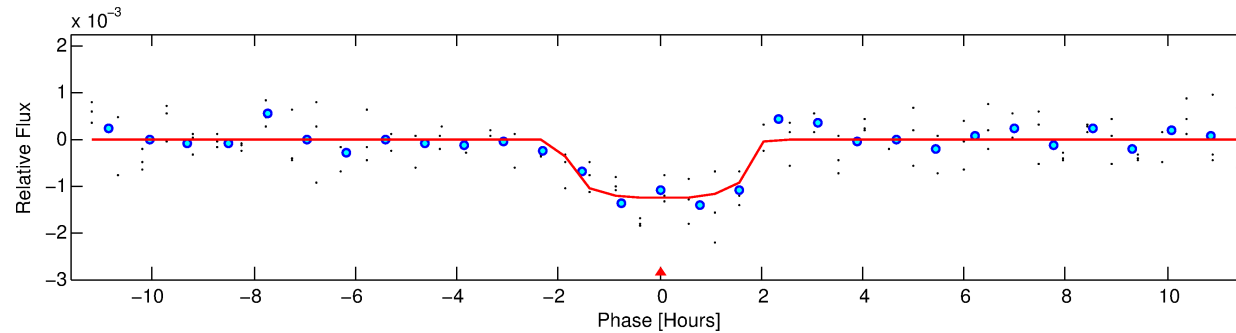
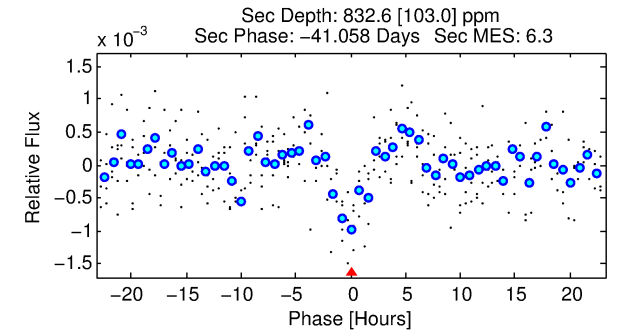
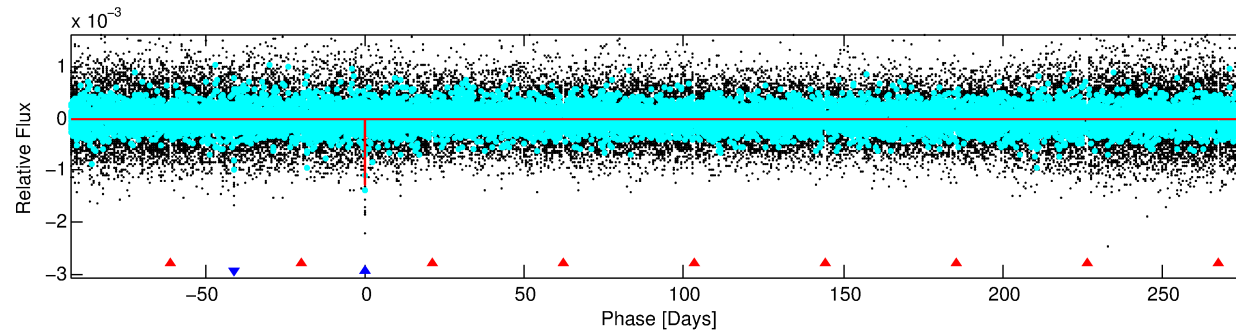
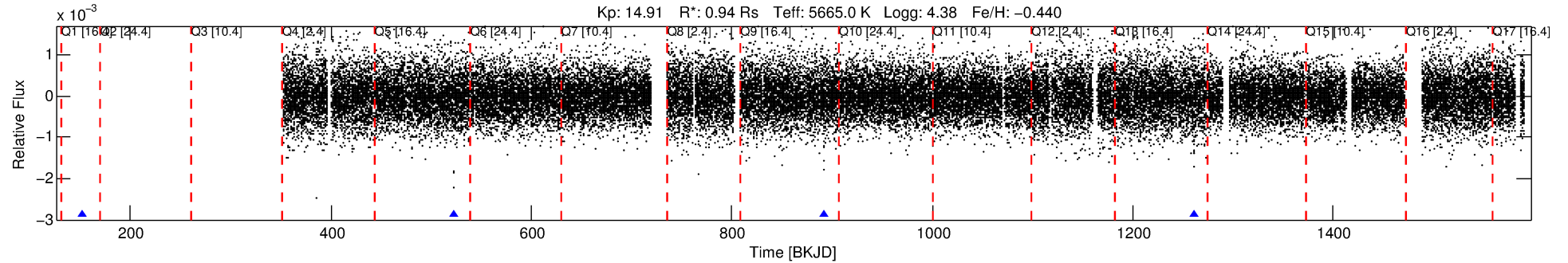
TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist ($''$)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
012644774-02	12644774	012644769-sec	12644769	9:1	16.1	-3	-3	11.76	14.90	13.41	Direct-PRF	0	3.73	0.49

Notes: P₁:P₂ 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. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ 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: 12644774 Candidate: 2 of 2 Period: 369.705 d
KOI: K01555 Corr: No Ephemeris Match

Kp: 14.91 R*: 0.94 Rs Teff: 5665.0 K Logg: 4.38 Fe/H: -0.440



DV Fit Results:

Period = 369.70504 [0.00548] d
Epoch = 152.6982 [0.0120] BKJD
Rp/R* = 0.0338 [0.0342]
a/R* = 630.34 [2853.45]
b = 0.57 [5.49]
Seff = 0.95 [0.38]
Teq = 252 [25] K
Rp = 3.46 [3.63] Re
a = 0.9248 [0.2301] AU
Ag = 32727.92 [67440.83] [0.49σ]
Teff = 5234 [2656] K [1.88σ]

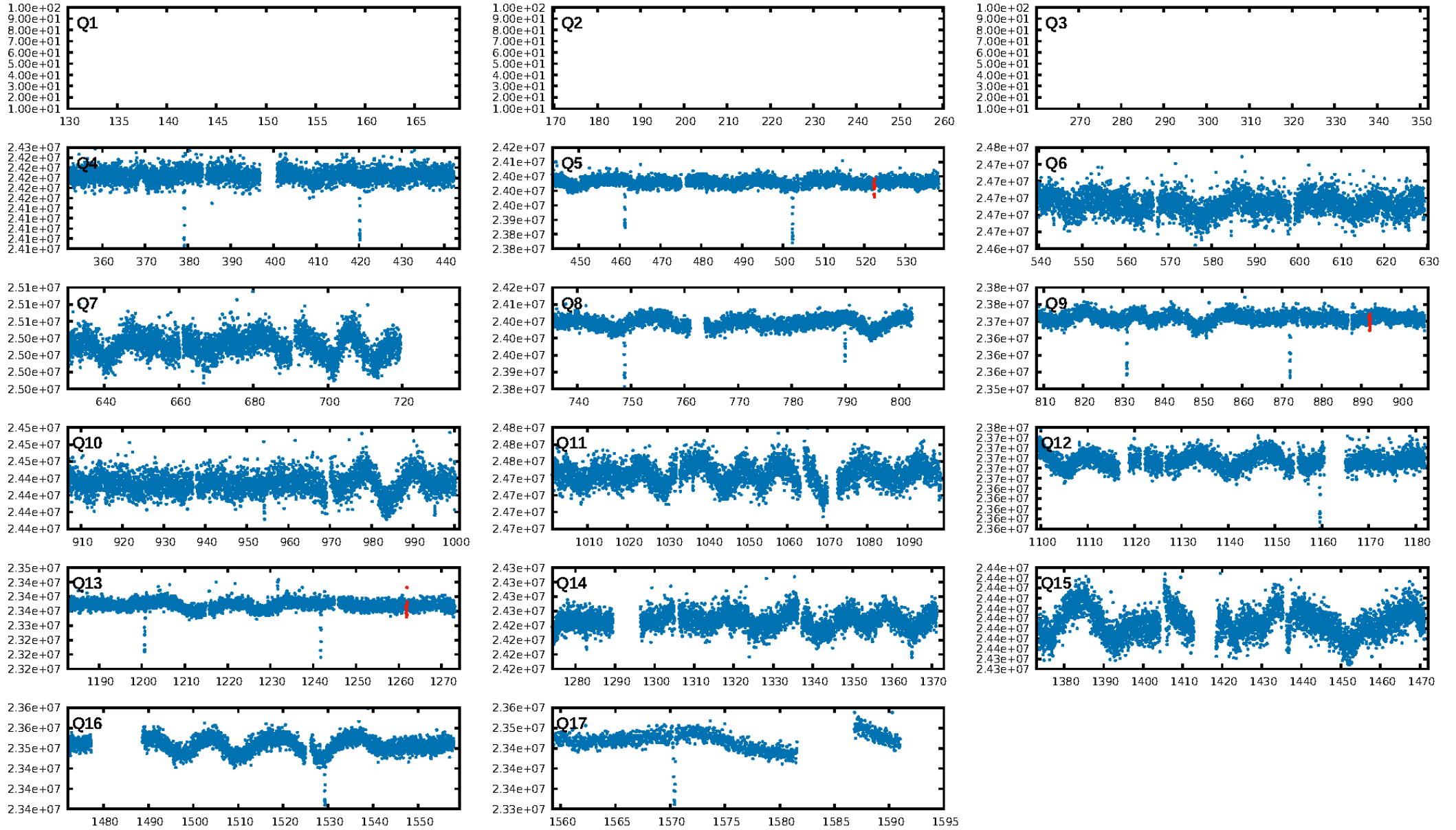
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1148.53σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 94.9%
ModelChiSquareGoF-sig: 96.9%
Bootstrap-pfa: 6.21e-18
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.4414
Centroid-sig: 0.0%
Centroid-so: 21.052 arcsec [27.79σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0 [0]
KicOffset-st: 0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [3/3]

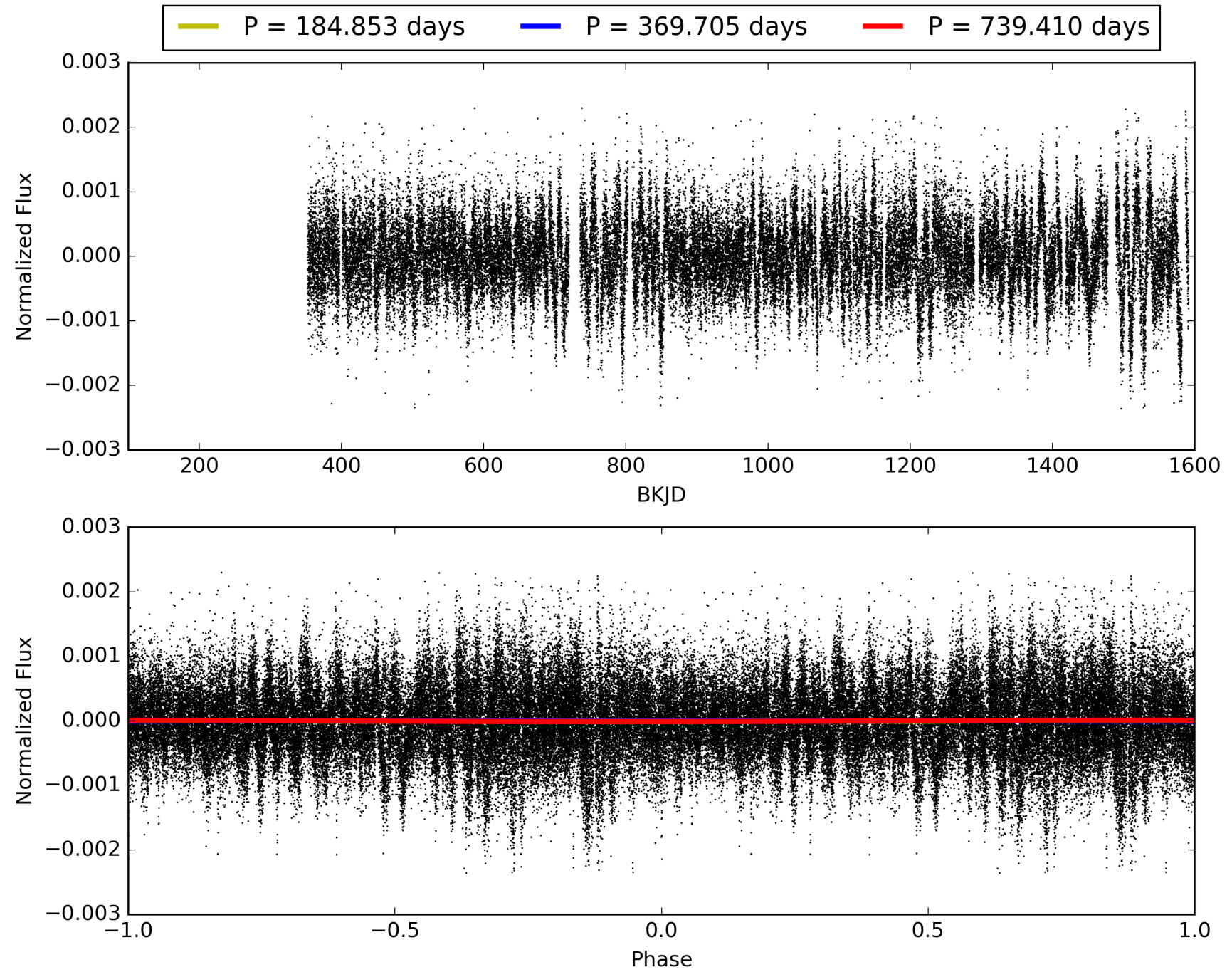
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:24:41 Z

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

TCE 012644774-02, PDC Light Curves

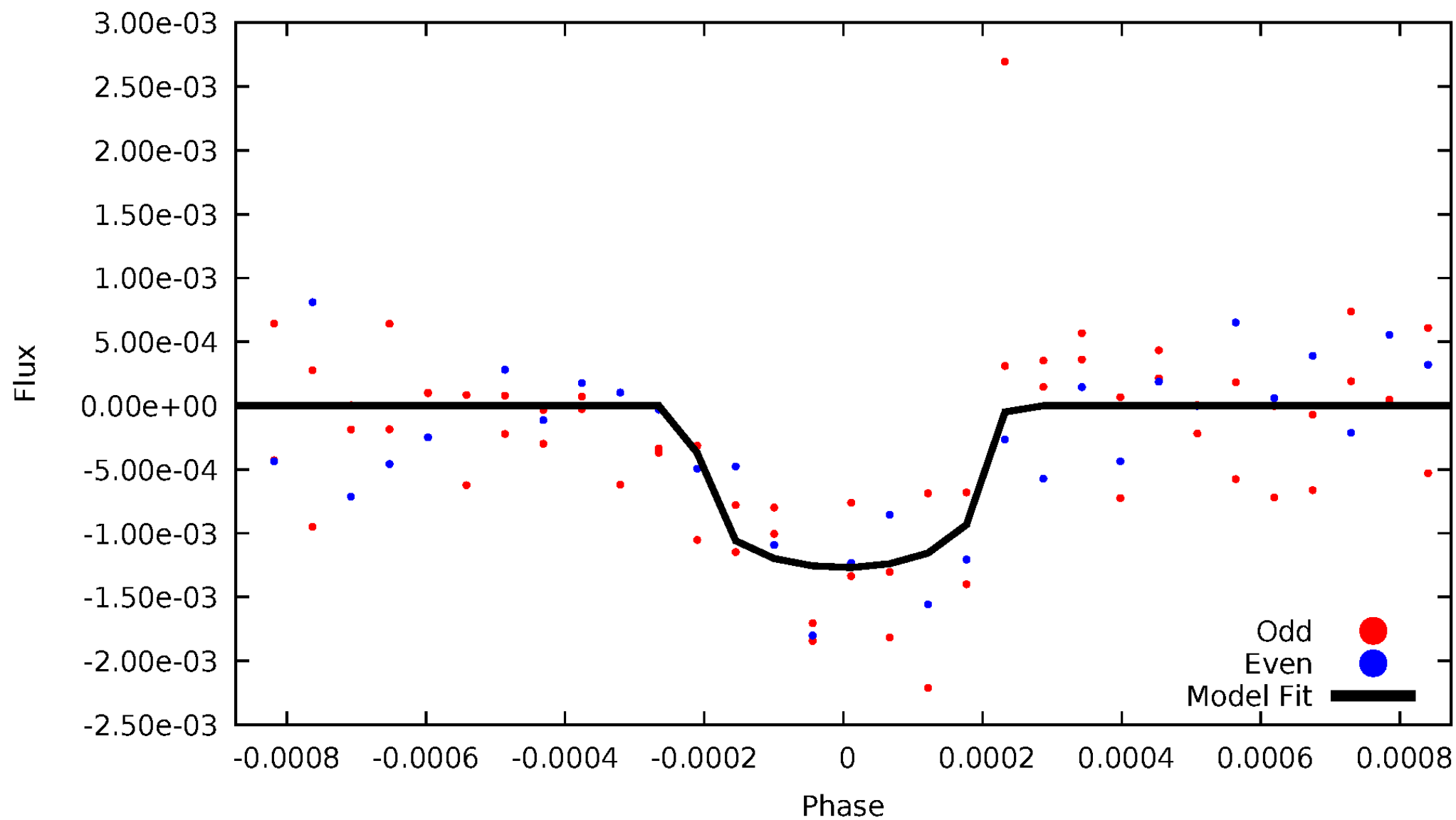


TCE 012644774-02



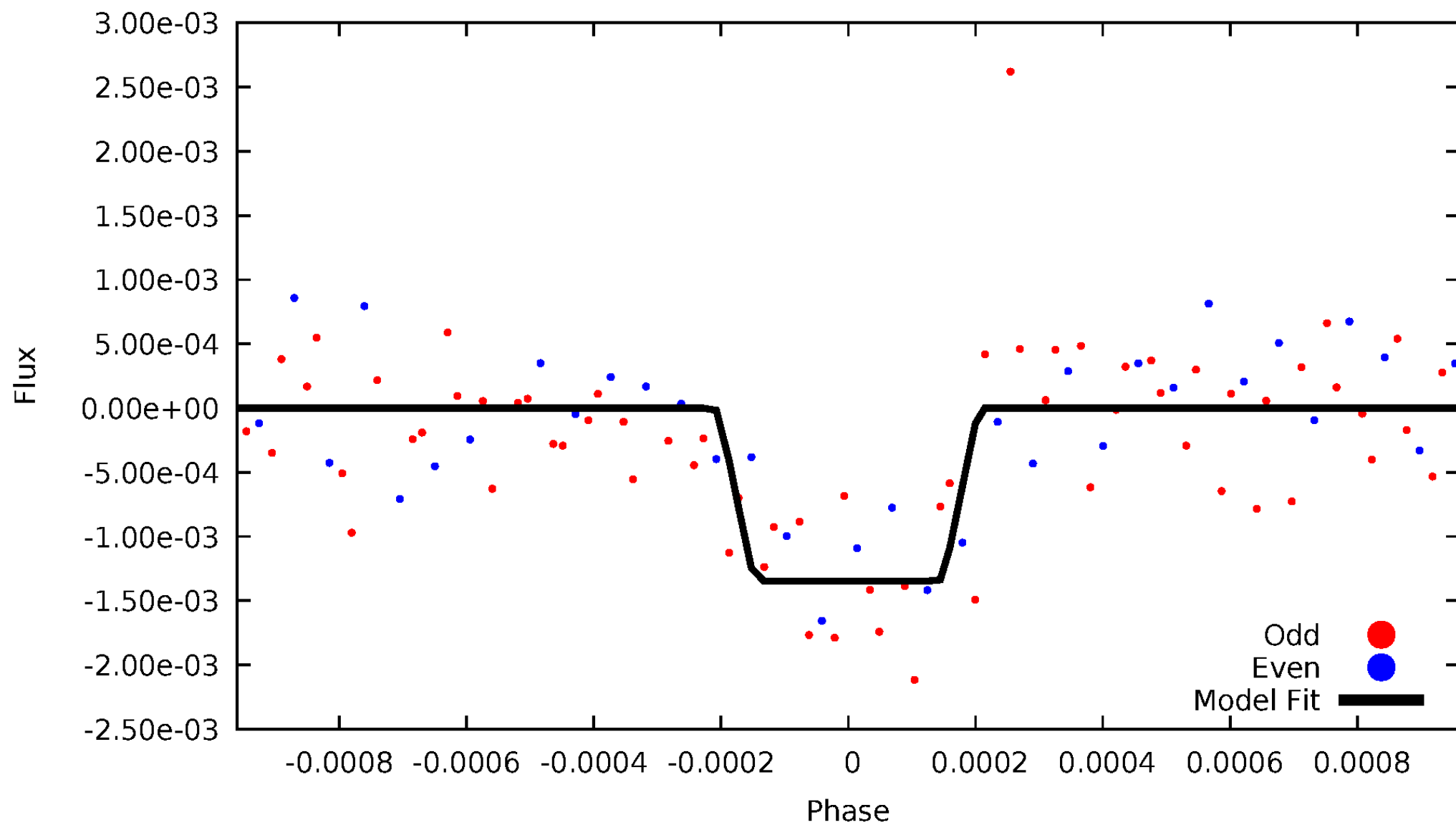
DV Odd/Even

TCE 012644774-02



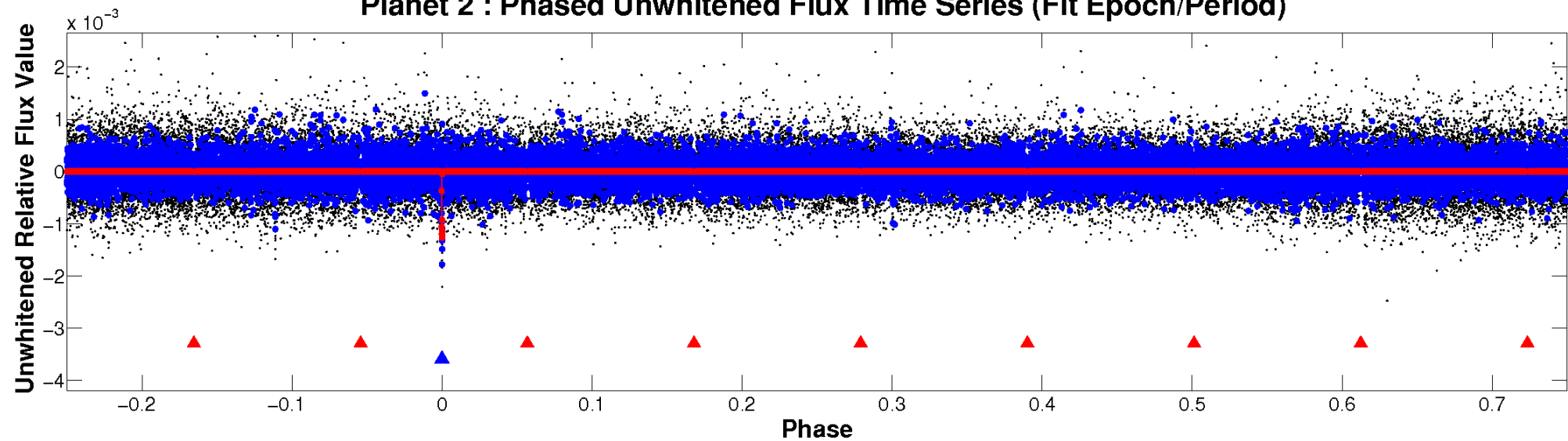
ALT Odd/Even

TCE 012644774-02

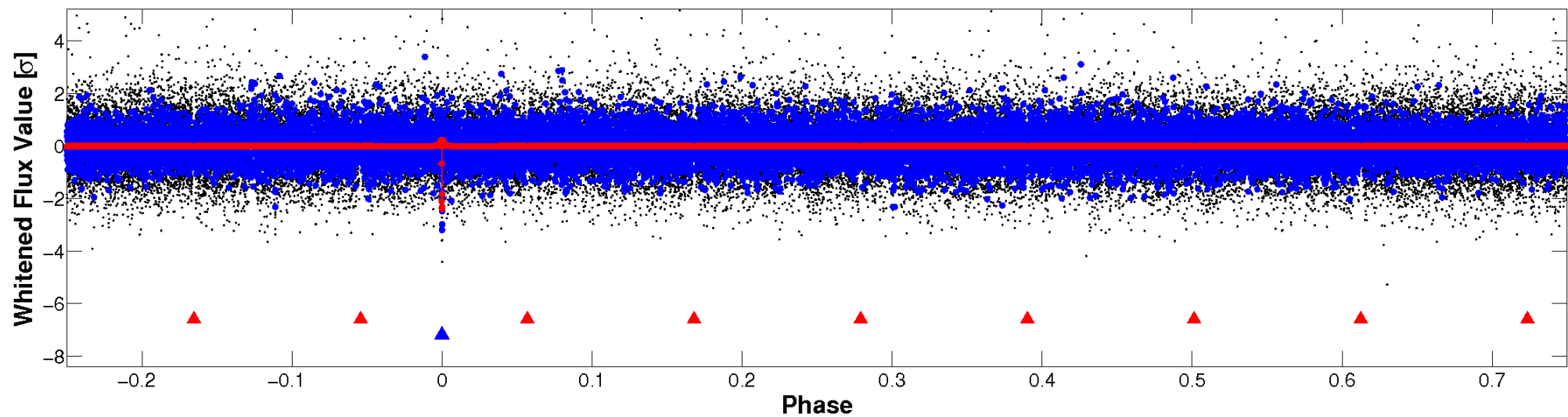


Non-Whitened Vs. Whitened Light Curve

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

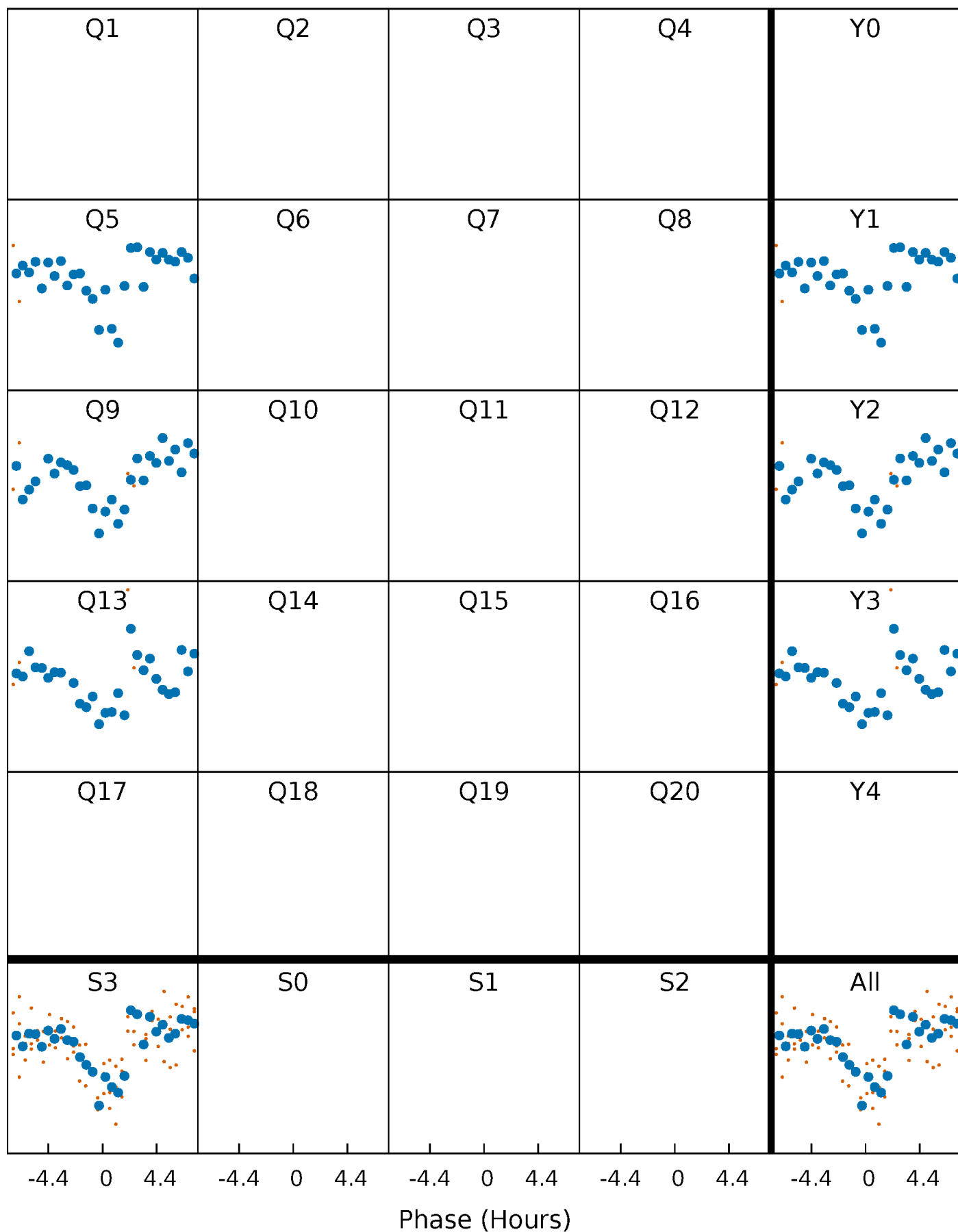


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



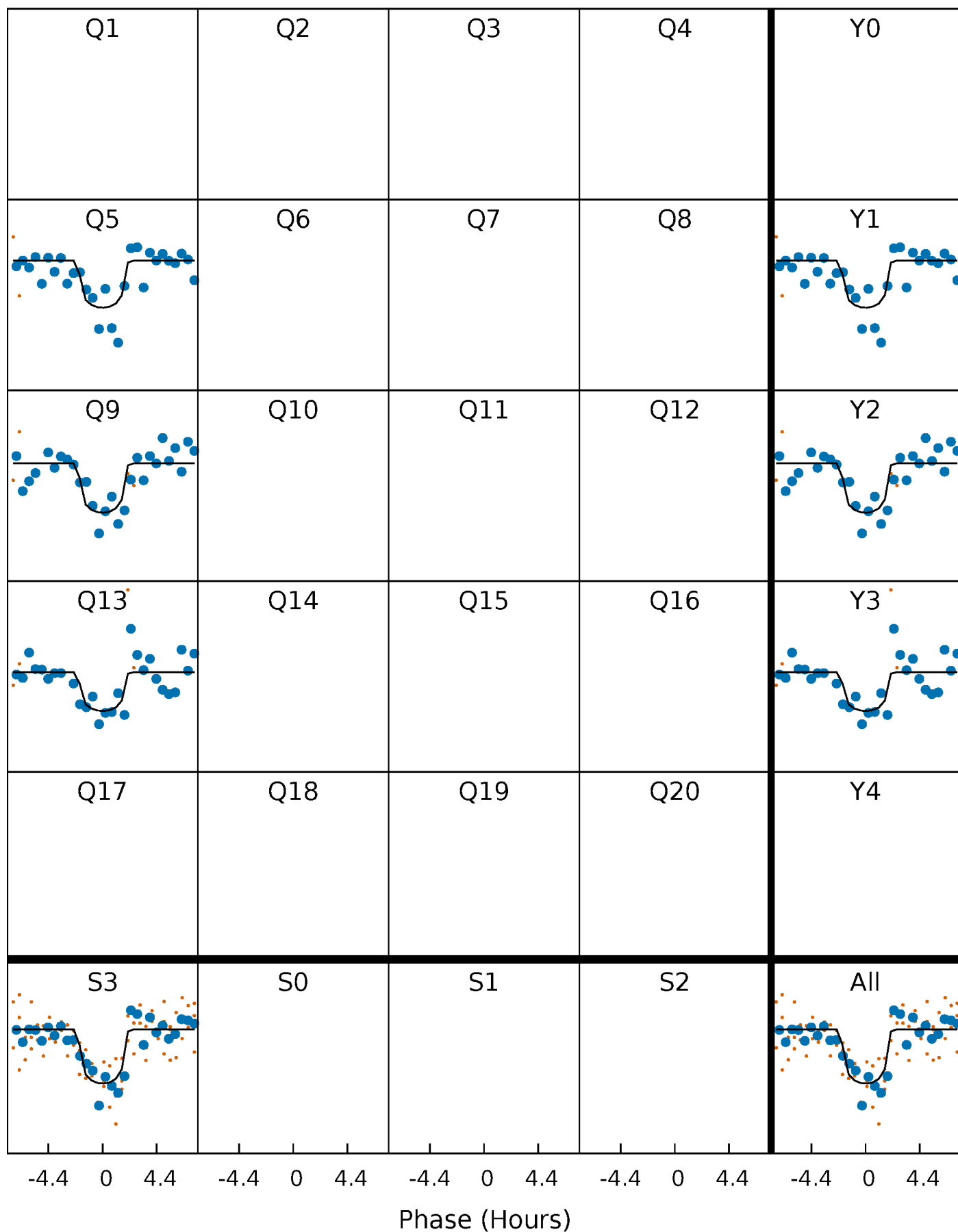
PDC Quarter-Phased Transit Curves

TCE 012644774-02 P=369.705038 Days $T_0=152.698235$ (BKJD)



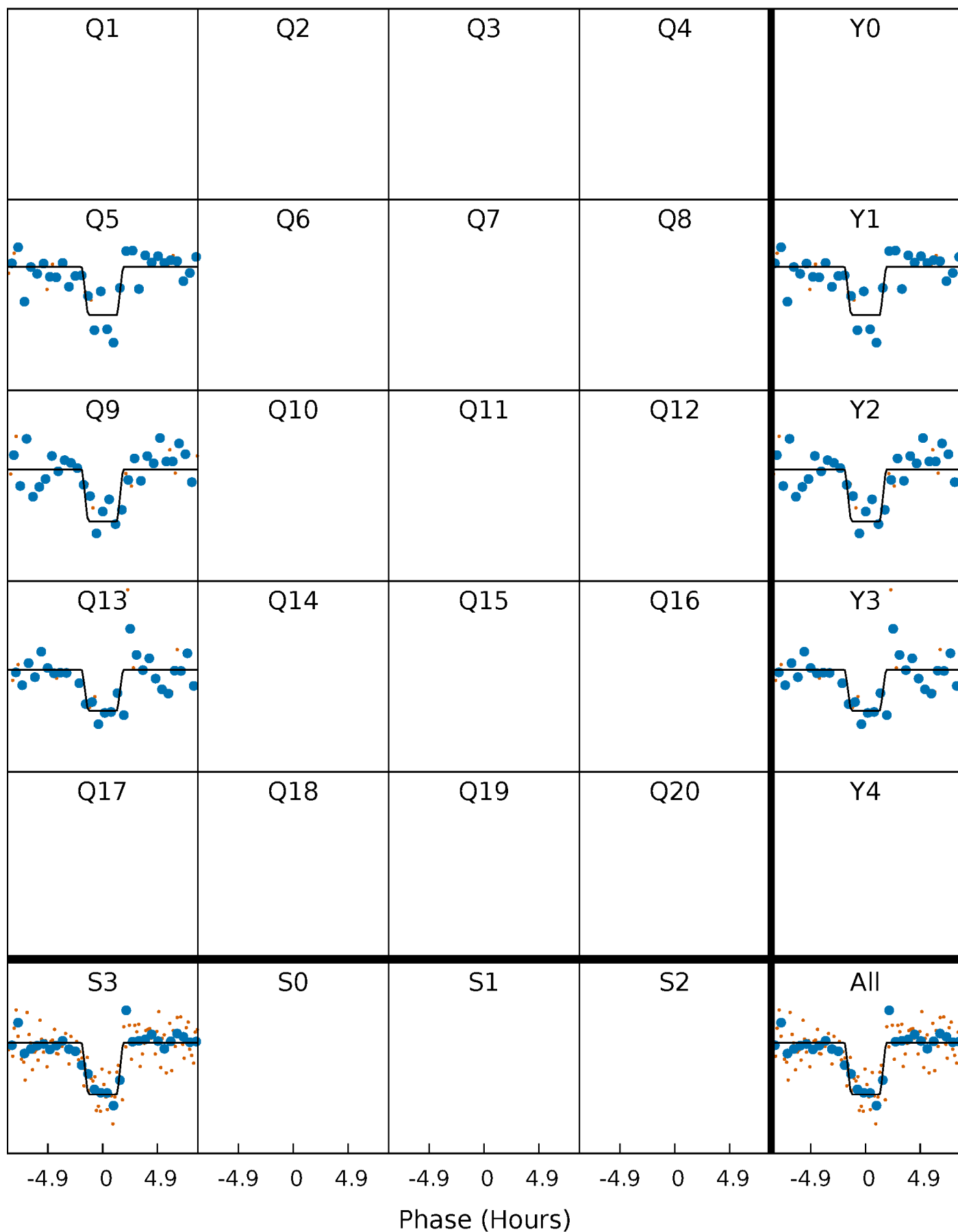
DV Quarter-Phased Transit Curves

TCE 012644774-02 $P=369.705038$ Days $T_0=152.698235$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

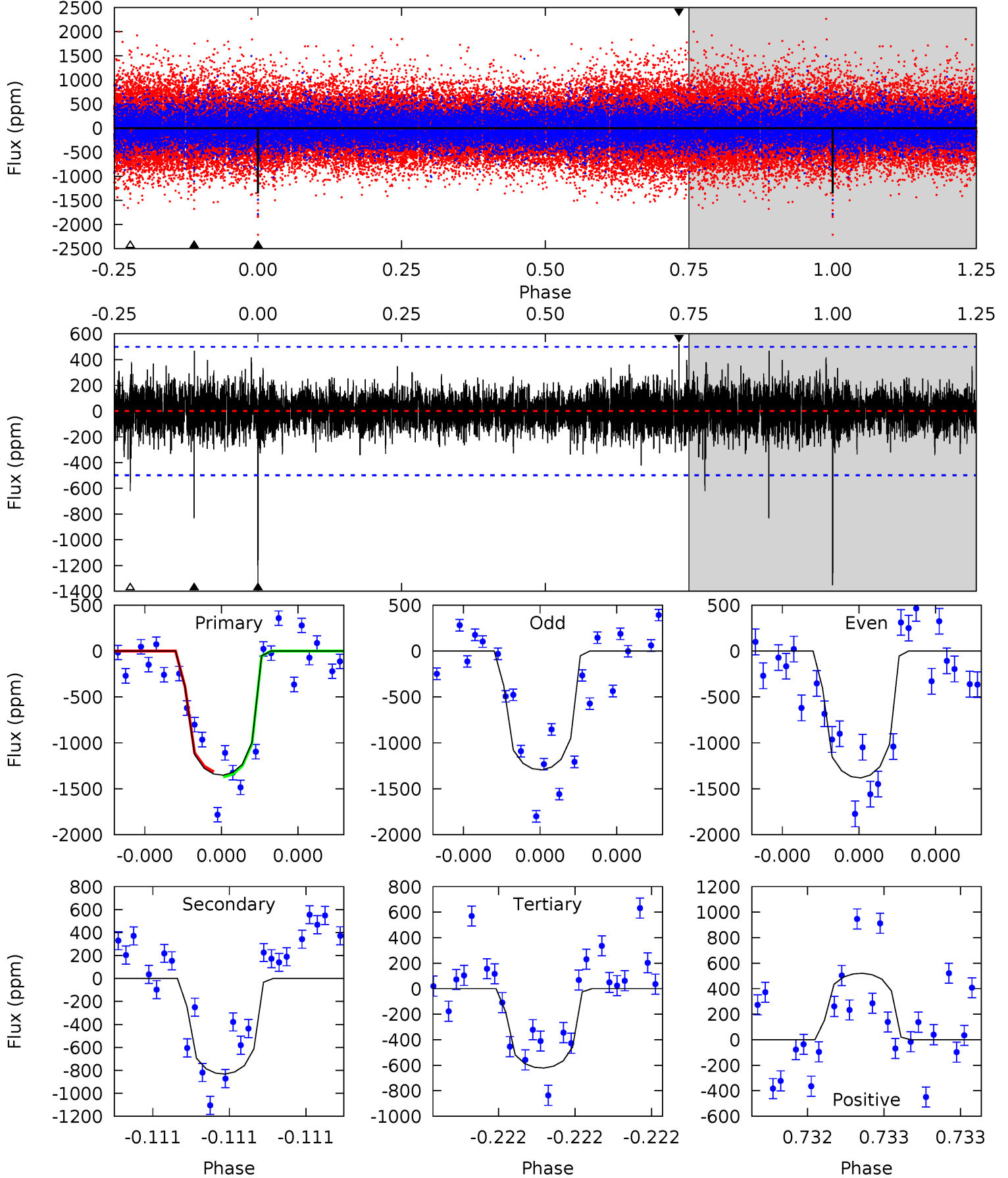
TCE 012644774-02 $P=369.697590$ Days $T_0=152.712200$ (BKJD)



DV Model-Shift Uniqueness Test

012644774-02, P = 369.705038 Days, E = 152.698235 Days

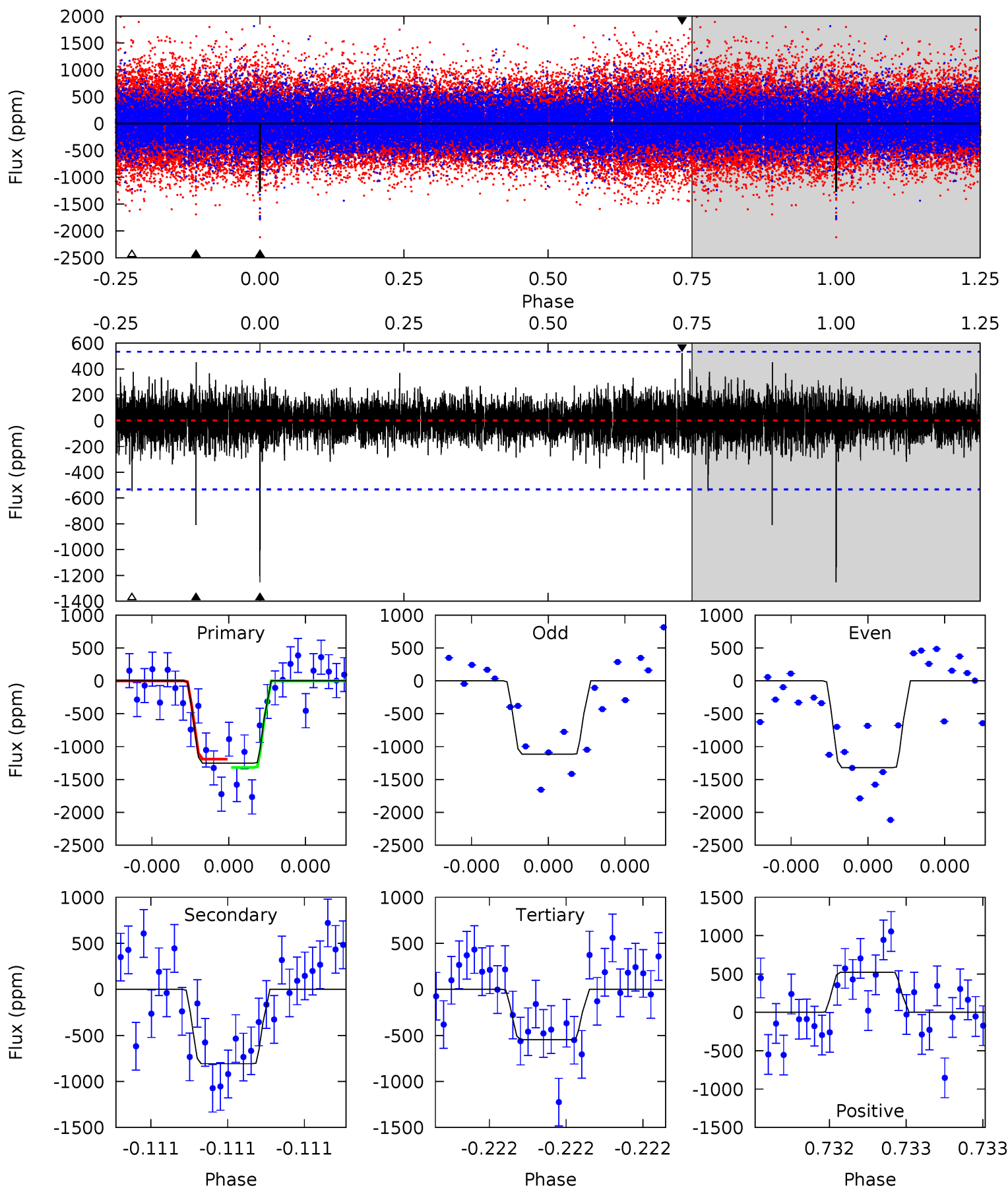
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.2	9.33	6.97	5.84	5.59	3.51	1.12	8.19	9.32	2.36	3.49	0.47	1.02	0.28	0.31



Alt Model-Shift Uniqueness Test

012644774-02, P = 369.697590 Days, E = 152.712200 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	8.51	5.76	5.51	5.62	3.55	1.03	7.42	7.68	2.75	3.00	1.02	0.96	0.29	0.67



Stellar Parameters For KIC 012644774

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5665^{+189}_{-189}	$4.381^{+0.195}_{-0.214}$	$-0.440^{+0.300}_{-0.300}$	$0.938^{+0.263}_{-0.197}$	$0.773^{+0.125}_{-0.054}$	$1.319^{+1.104}_{-0.689}$
	+3%/-3%	+4%/-5%	+68%/-68%	+28%/-21%	+16%/-7%	+84%/-52%
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 012644774-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-832 ± 89	$4.25^{+3.36}_{-2.62}$	353^{+28}_{-26}	4866^{+2697}_{-932}	$22122^{+124041}_{-15249}$
Alt.	-808 ± 95	$4.27^{+3.36}_{-2.76}$	352^{+27}_{-24}	4872^{+3098}_{-1023}	$21907^{+141274}_{-15595}$

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 012644774-02. Kepler magnitude: 14.91. Transit SNR 10.11

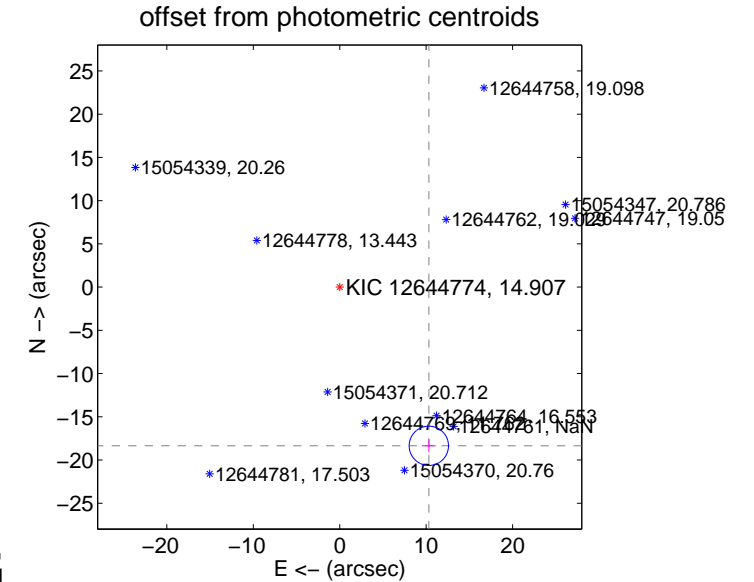
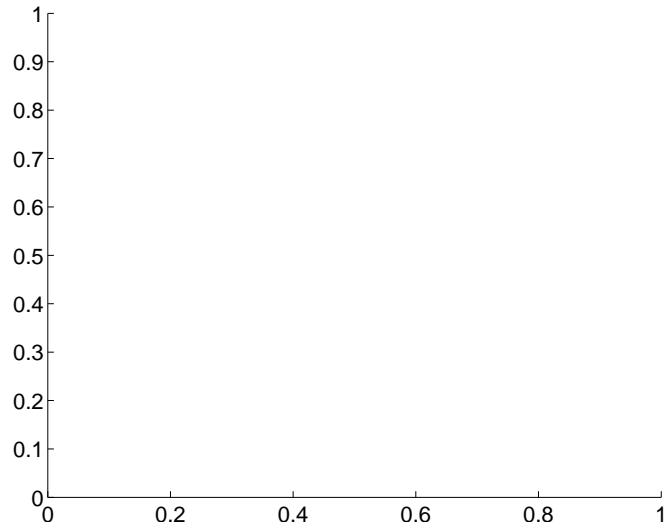
There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	21.05 ± 0.76	27.79	-10.31 ± 0.80	-18.36 ± 0.74

There is no PRF-fit offset from OOT-fit

There is no PRF-fit offset from KIC

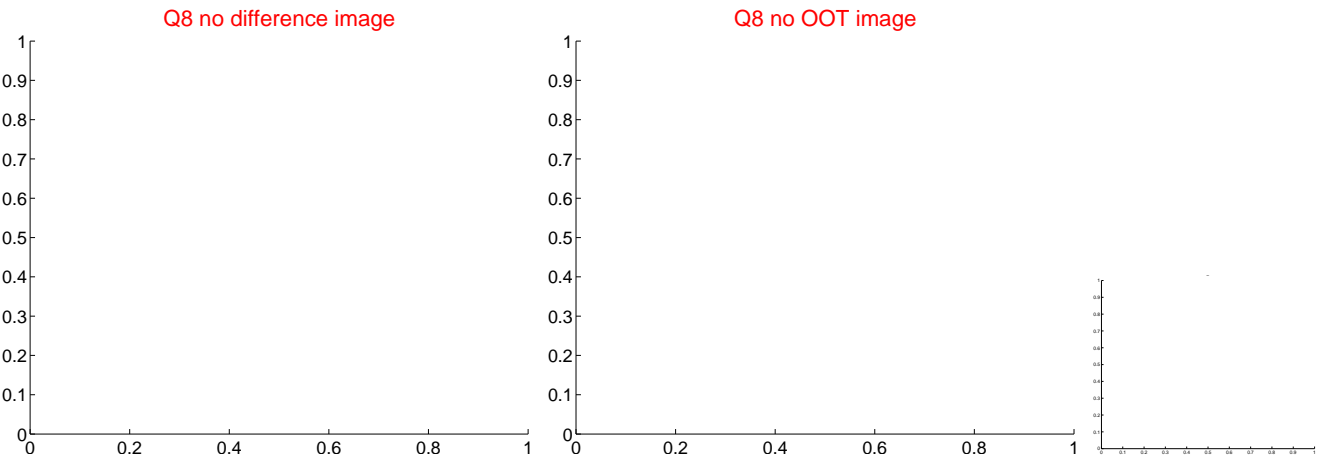
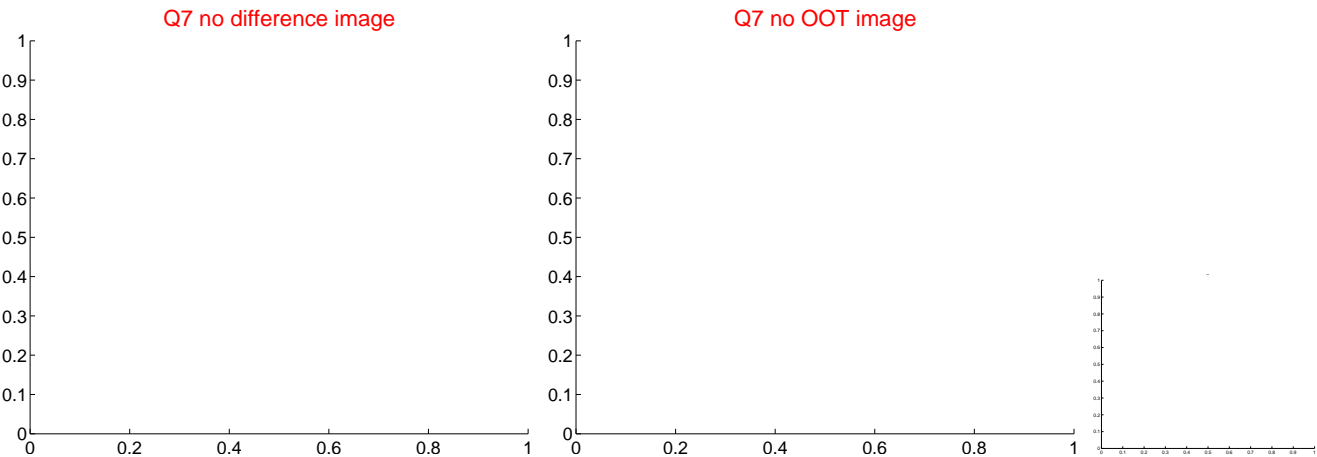
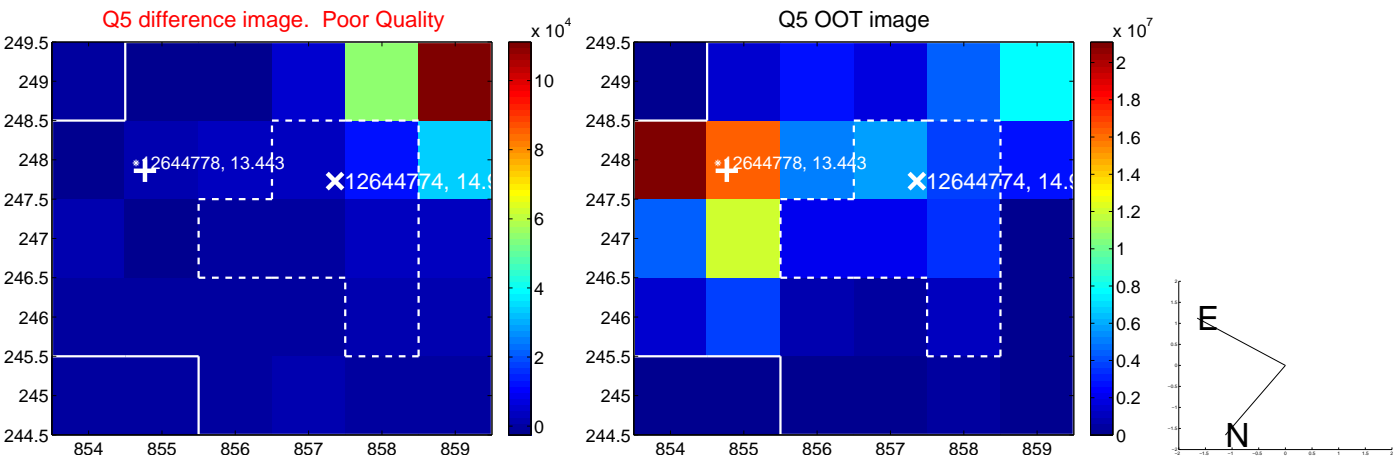


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

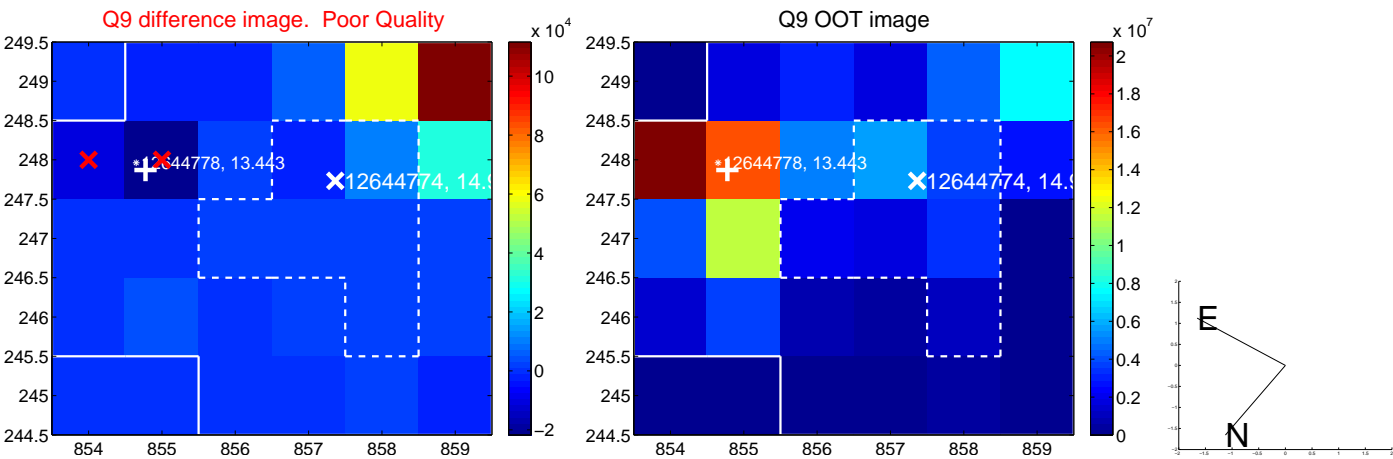
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



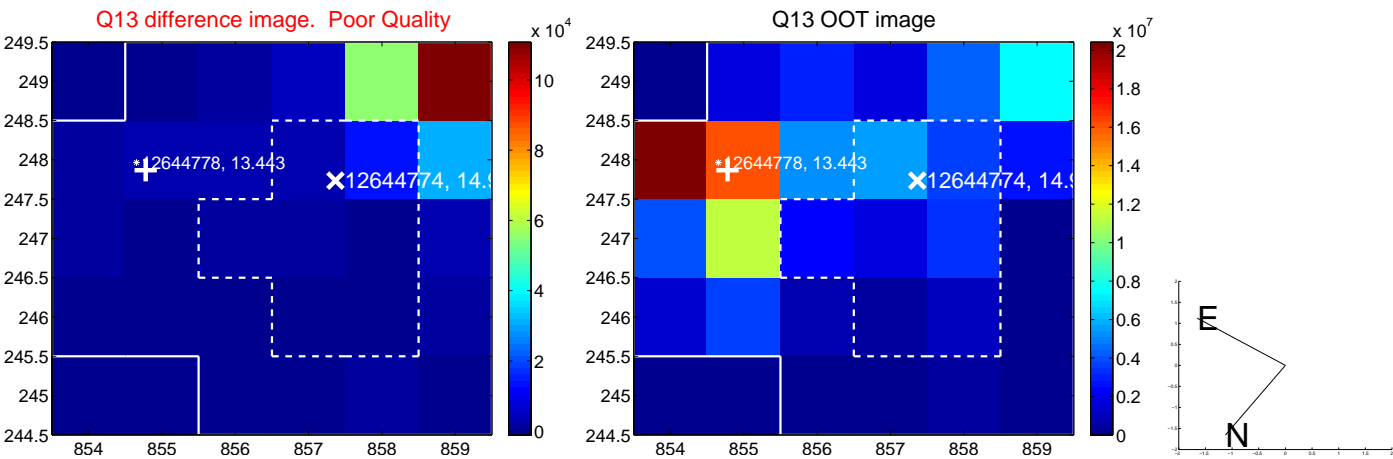
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



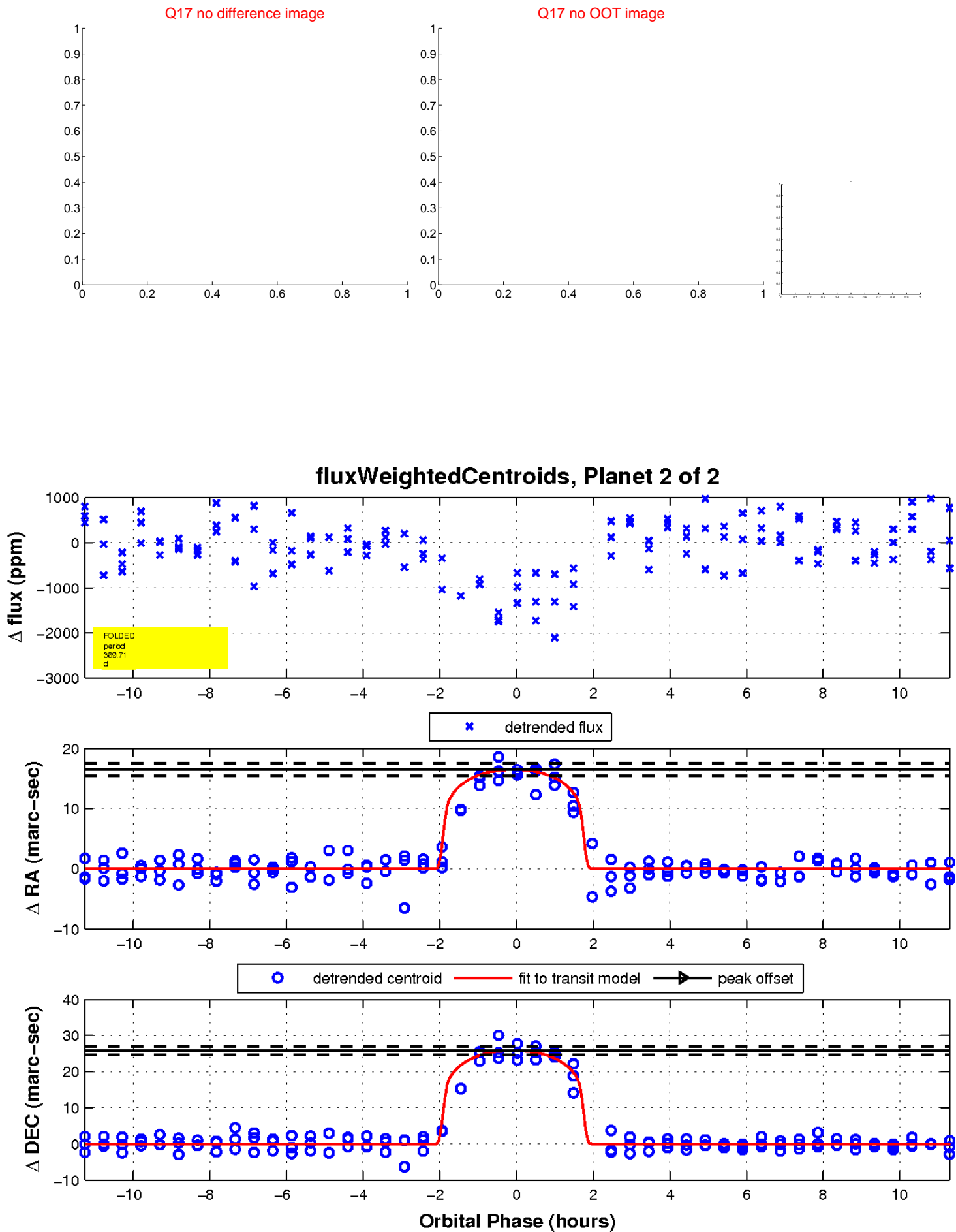
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

