

KIC 006864893

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})
006864893-01	OBS	2375.01	40.878661	158.302388	511.1	8.911	18.6	19.5	0.72	5383	2.79	8.61
006864893-02	OBS	No	40.879025	163.421311	401.2	7.067	18.7	18.6	0.72	5383	1.61	8.61

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006864893-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
006864893-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—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 006864893-01

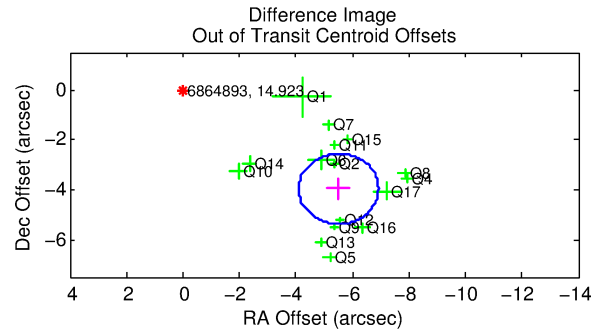
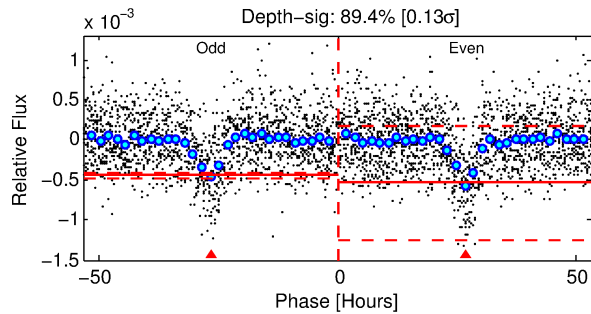
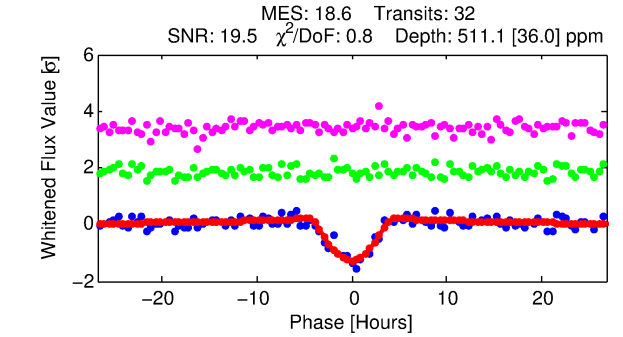
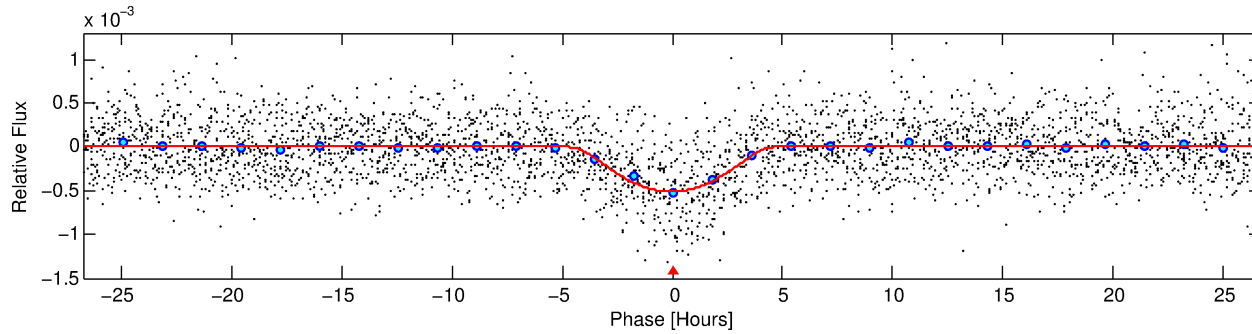
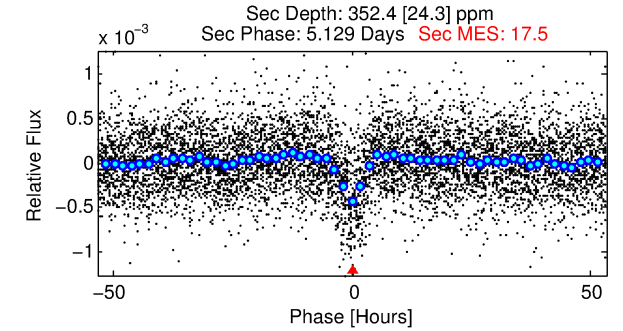
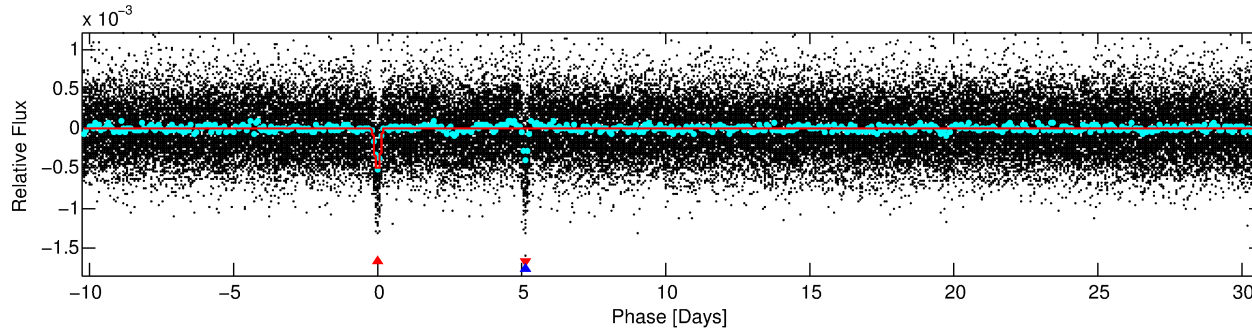
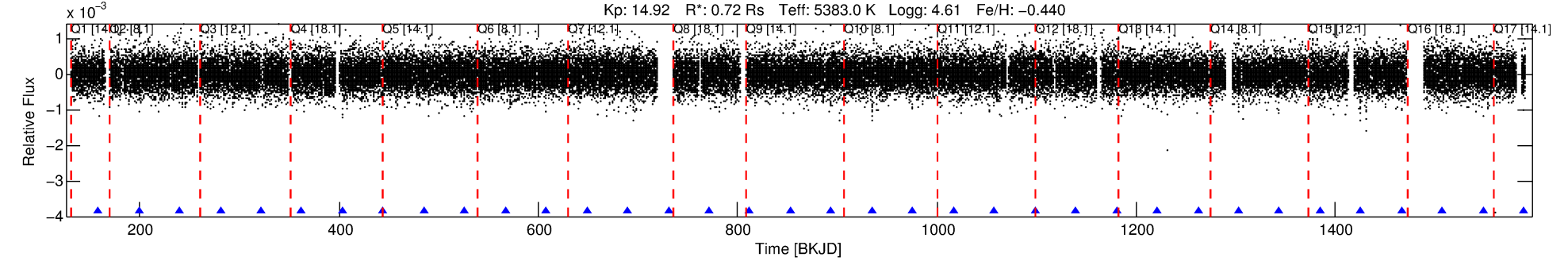
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
006864893-01	6864893	006864859-01	6864859	1:1	31.3	0	8	11.66	14.92	503.84	Direct-PRF	0	0.23	0.14

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: 6864893 Candidate: 1 of 2 Period: 40.879 d
KOI: K02375 Corr: No Ephemeris Match

Kp: 14.92 R*: 0.72 Rs Teff: 5383.0 K Logg: 4.61 Fe/H: -0.440



DV Fit Results:

Period = 40.87866 [0.00047] d
Epoch = 158.3024 [0.0101] BKJD
Rp/R* = 0.0356 [0.0305]
a/R* = 10.69 [2.97]
b = 0.99 [0.05]
Seff = 8.61 [1.82]
Teq = 437 [23] K
Rp = 2.79 [2.44] Re
a = 0.2128 [0.0269] AU
Ag = 1124.46 [1939.60] [0.58σ]
Teffp = 3911 [1682] K [2.07σ]

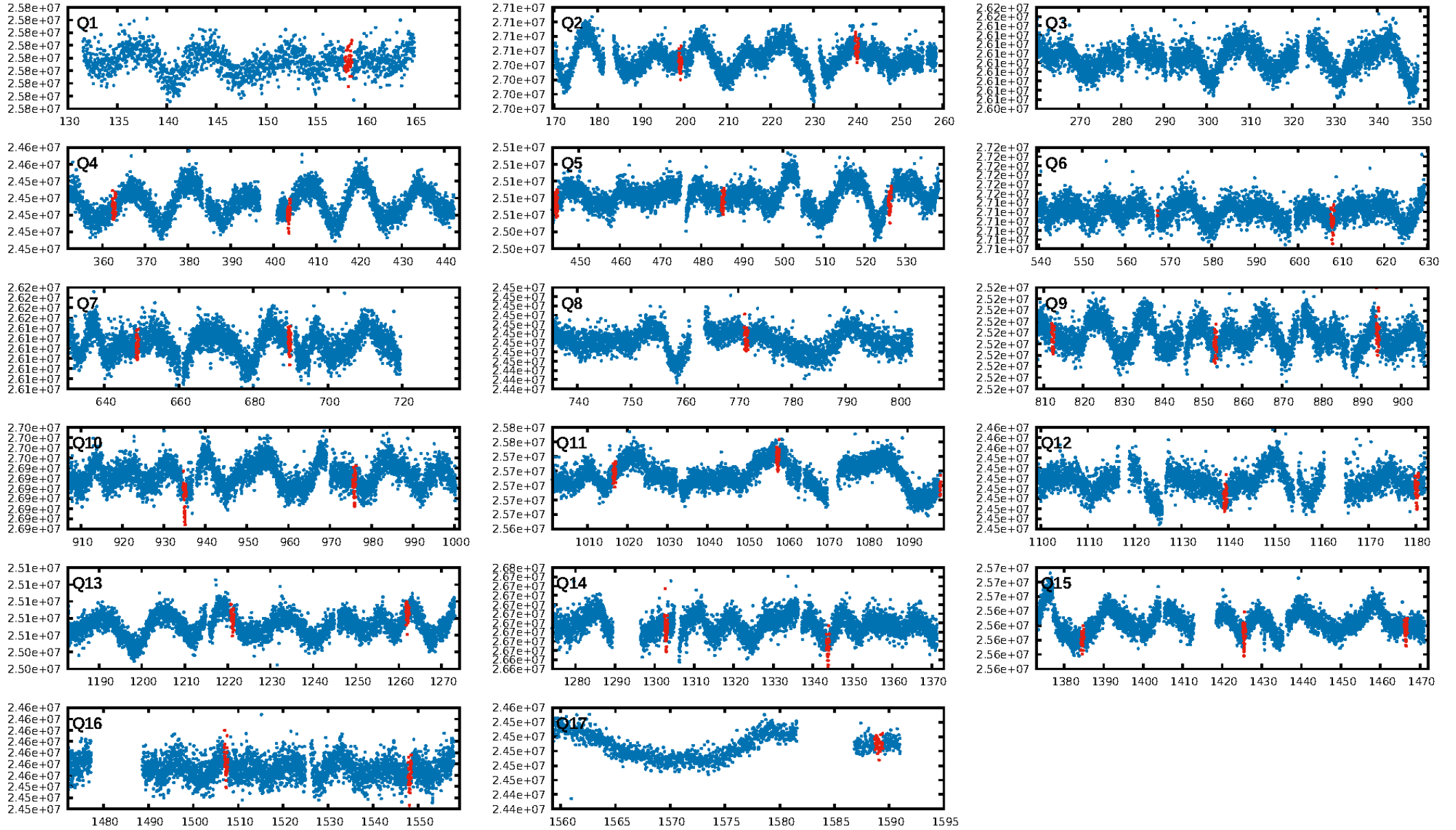
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.14e-70
RollingBand-fgt: 1.00 [30/30]
GhostDiagnostic-chr: 0.1427
Centroid-sig: 0.0%
Centroid-so: 4.491 arcsec [7.36σ]
OotOffset-rm: 6.793 arcsec [14.43σ]
KicOffset-rm: 6.609 arcsec [14.07σ]
OotOffset-st: 4/3/4/5 [16]
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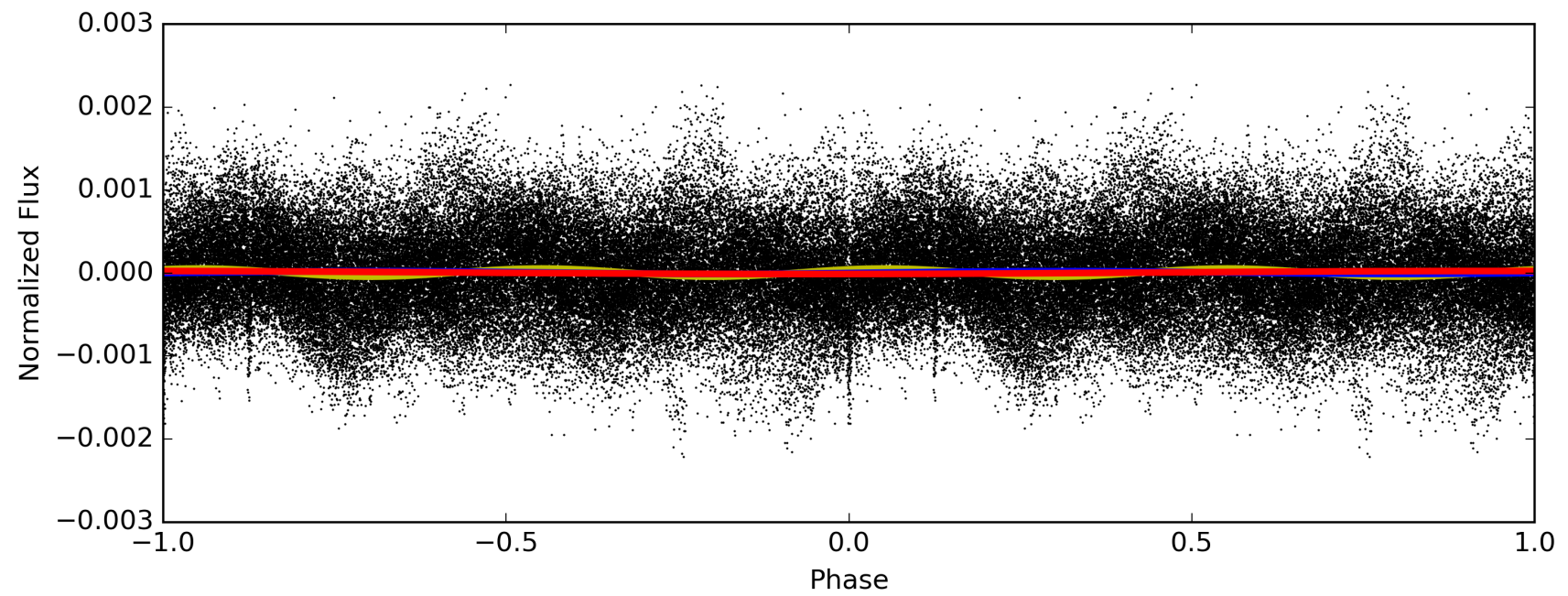
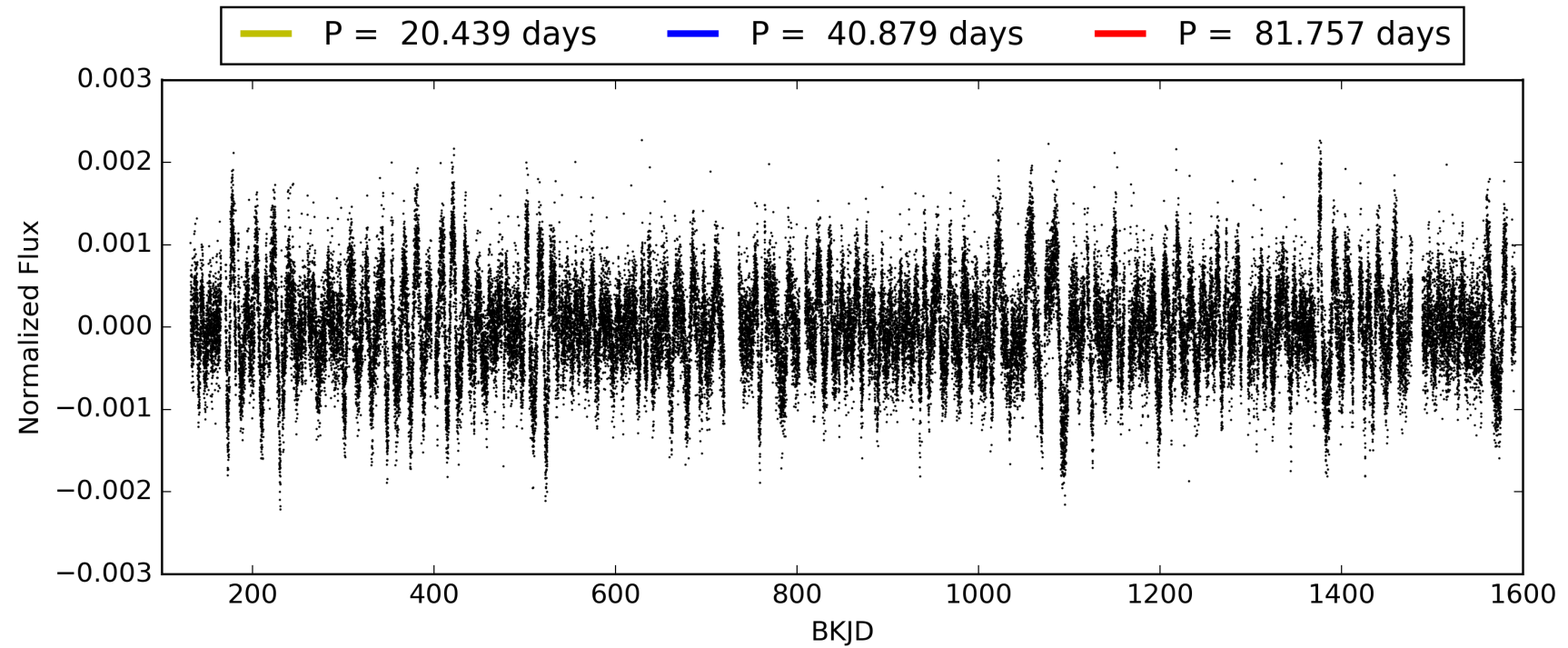
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 09:24:35 Z

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

TCE 006864893-01, PDC Light Curves

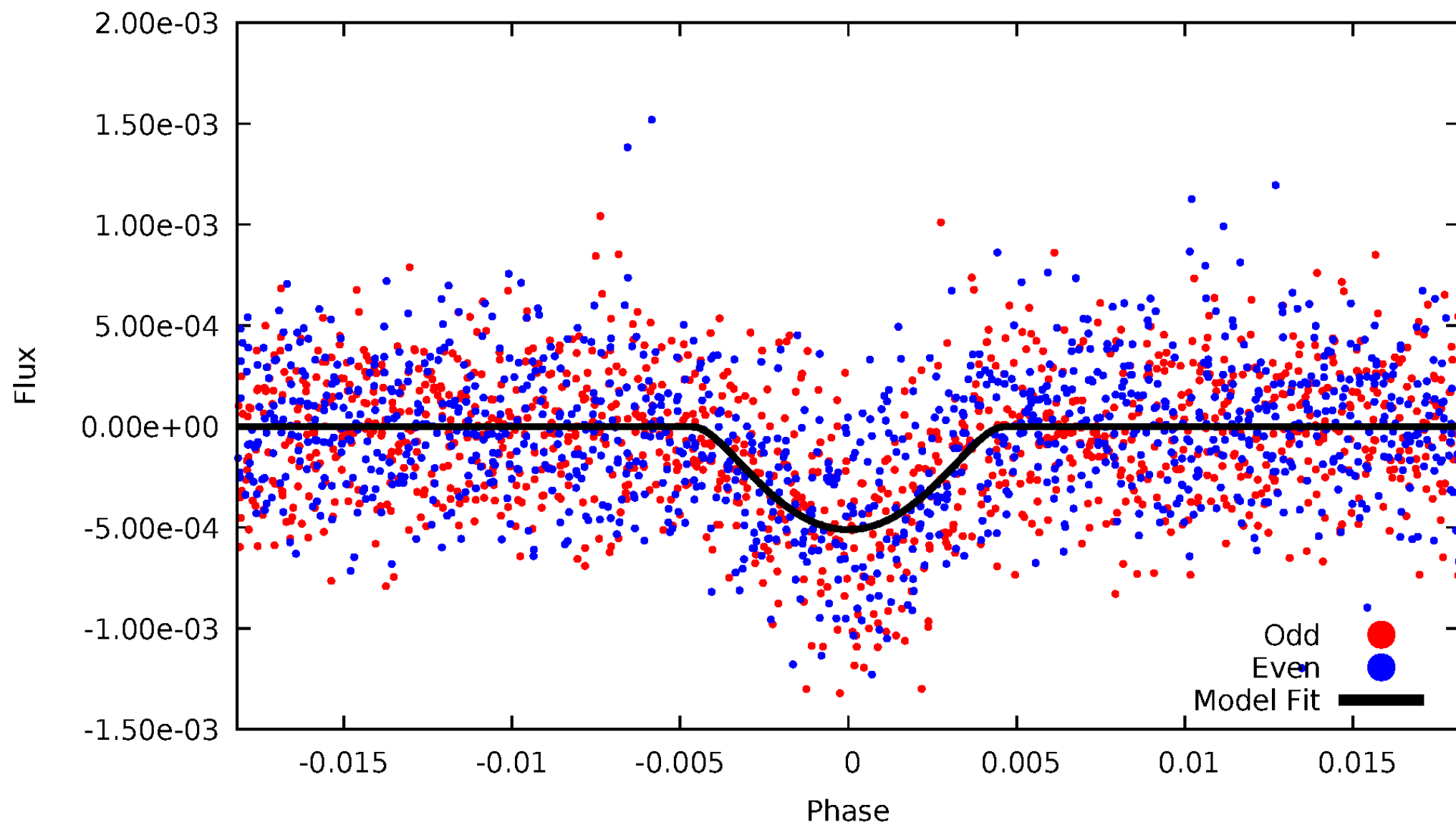


TCE 006864893-01



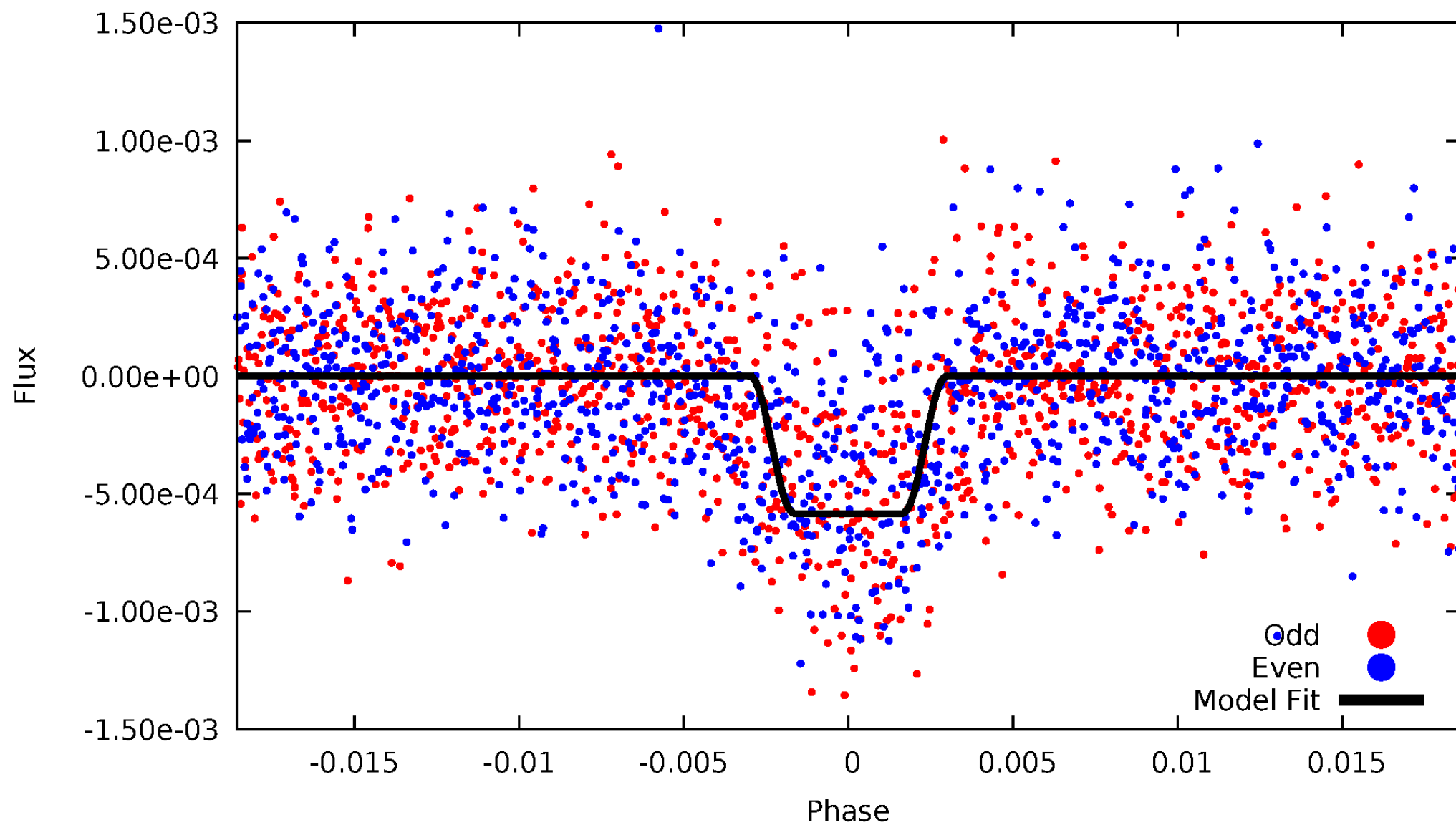
DV Odd/Even

TCE 006864893-01



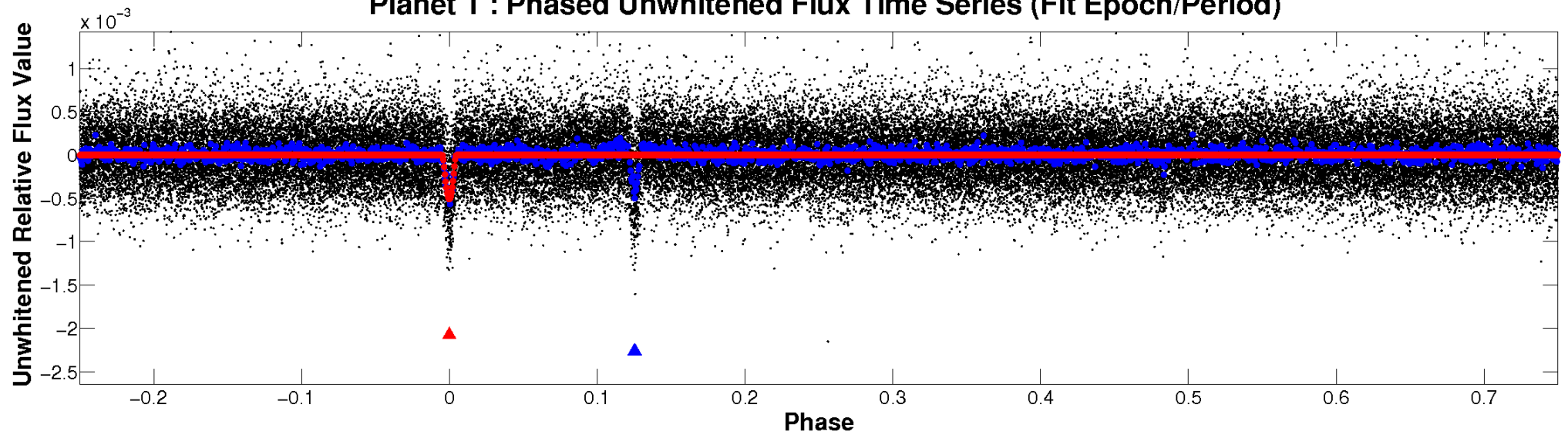
ALT Odd/Even

TCE 006864893-01

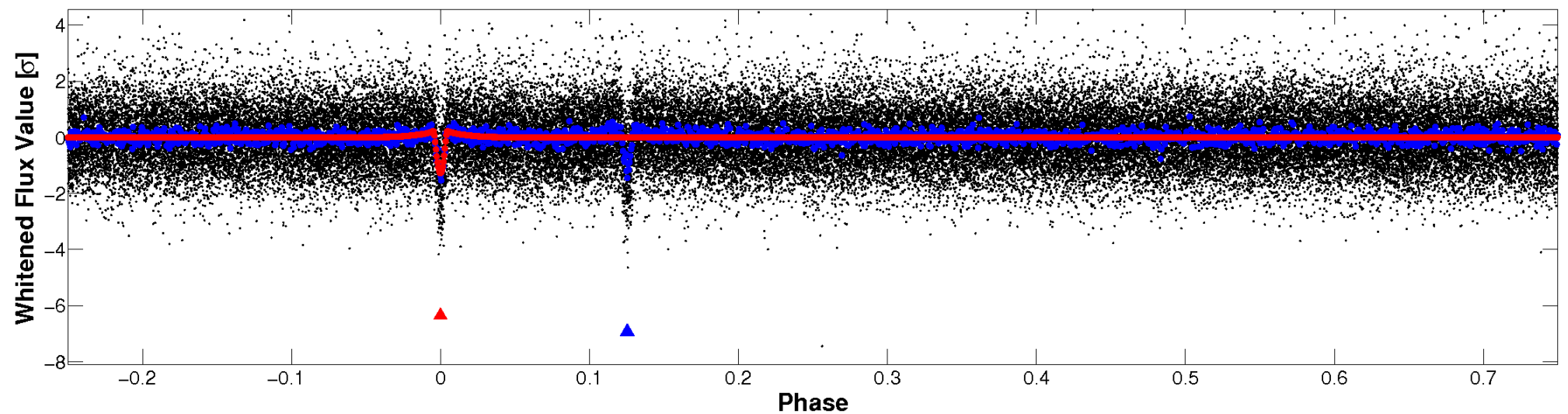


Non-Whitened Vs. Whitened Light Curve

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

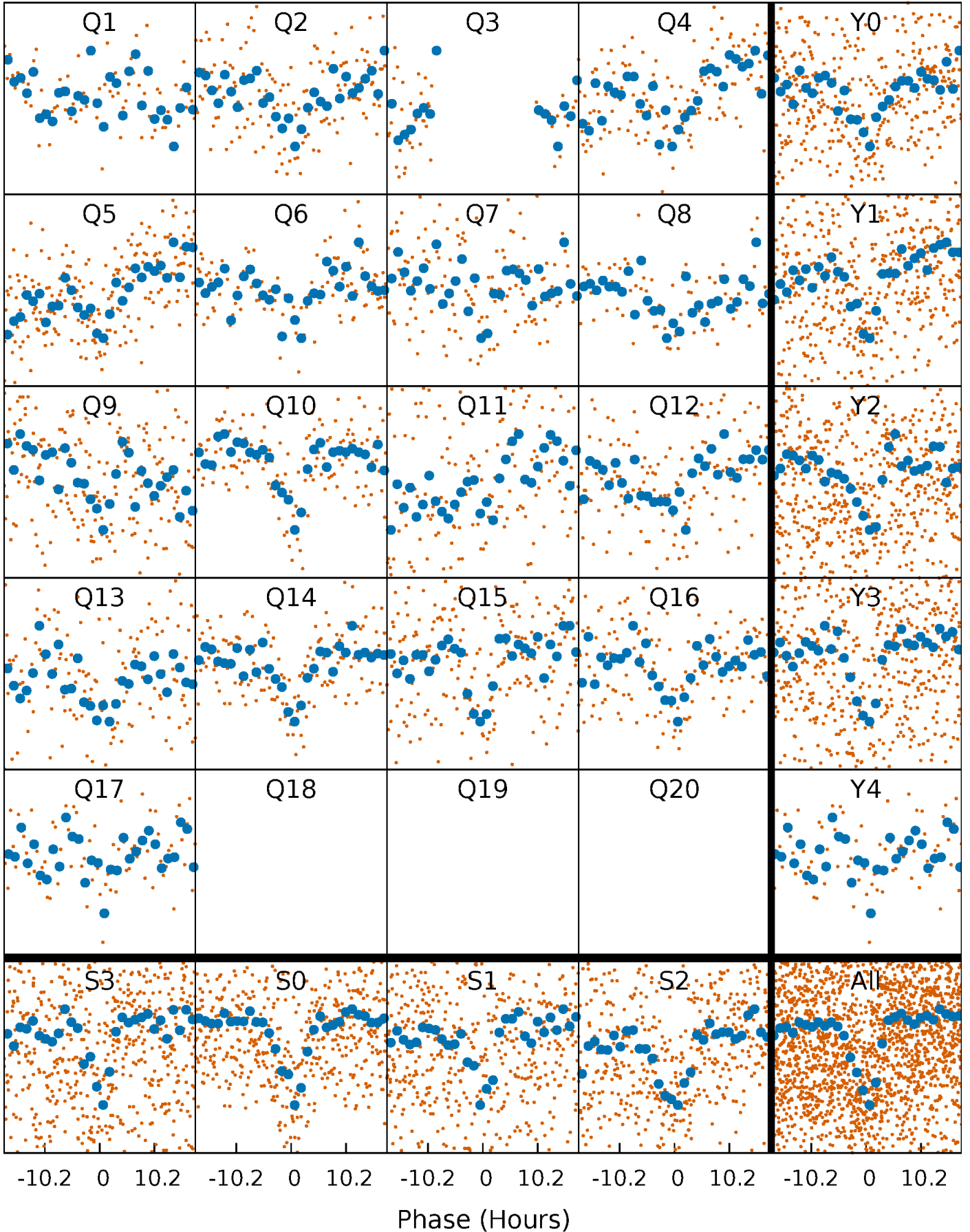


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



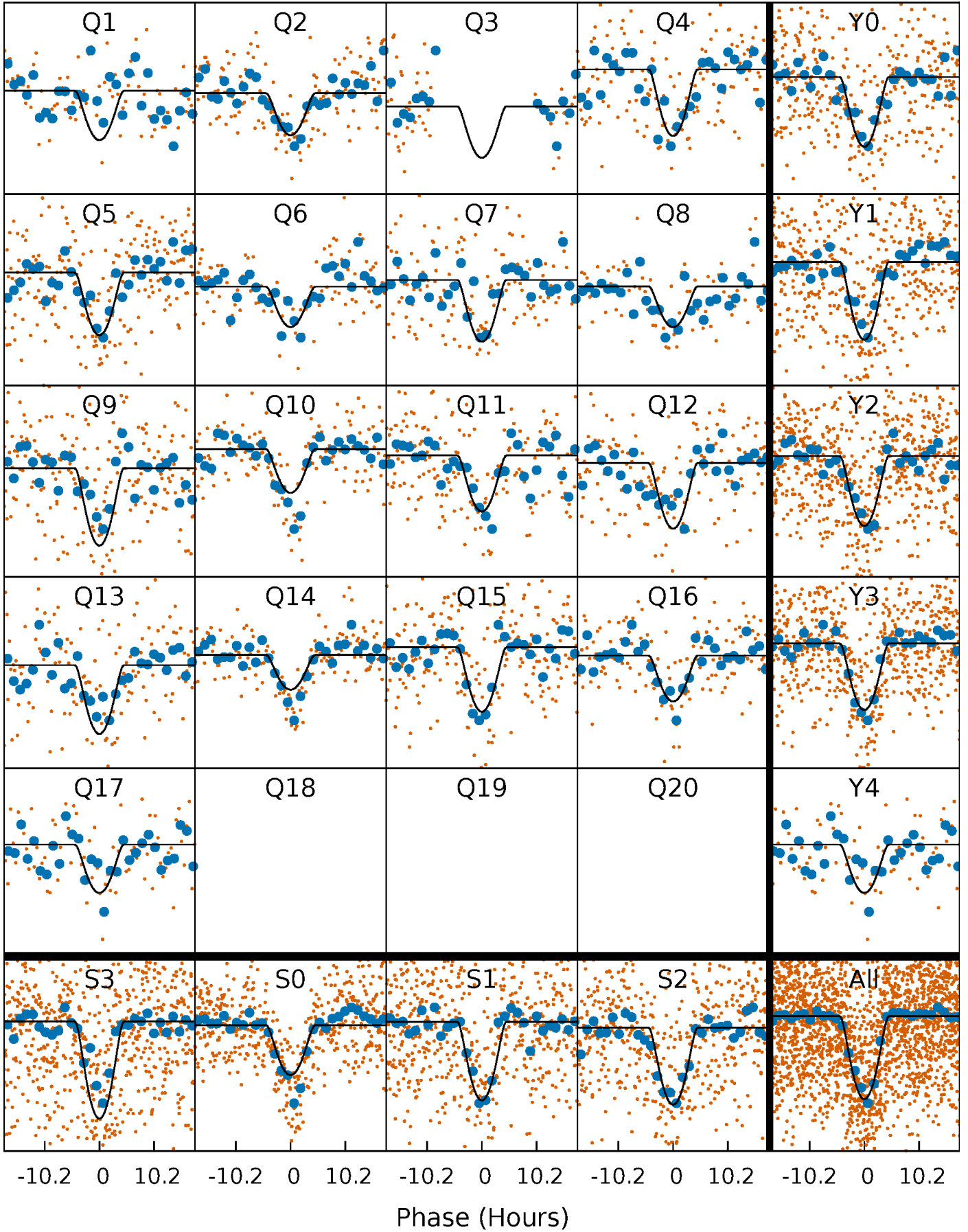
PDC Quarter-Phased Transit Curves

TCE 006864893-01 P= 40.878661 Days $T_0=158.302388$ (BKJD)



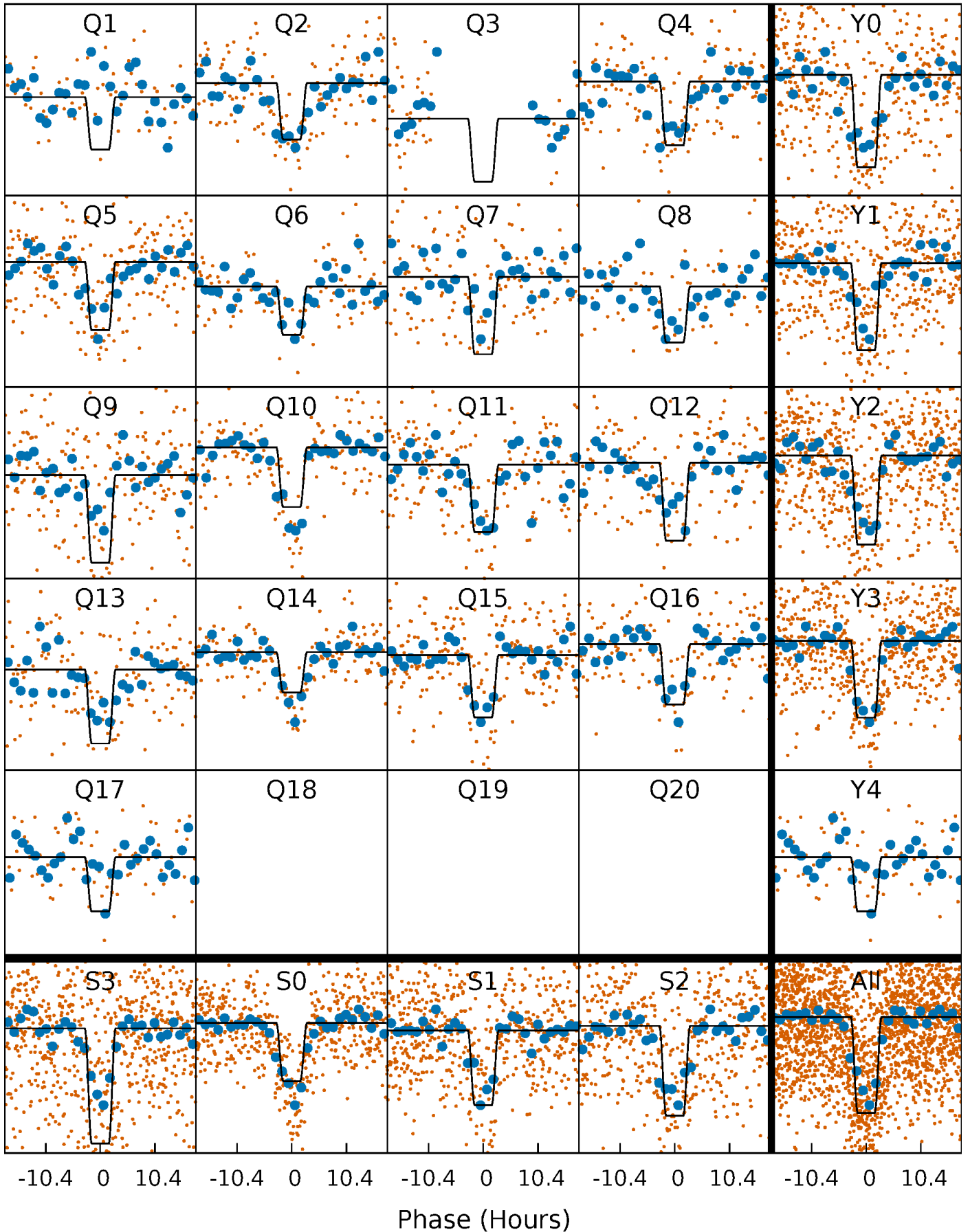
DV Quarter-Phased Transit Curves

TCE 006864893-01 $P = 40.878661$ Days $T_0 = 158.302388$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

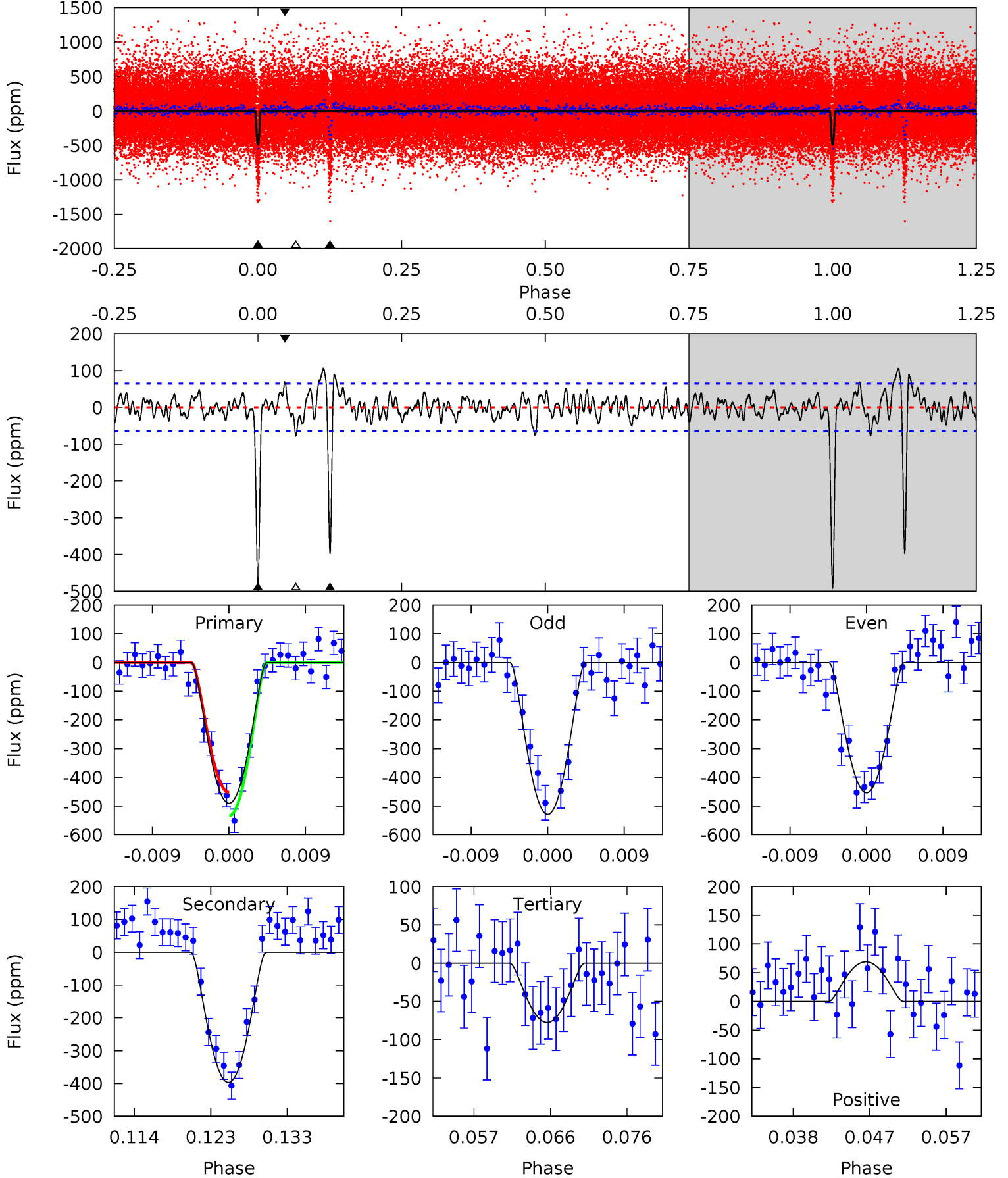
TCE 006864893-01 P= 40.877884 Days $T_0=158.320961$ (BKJD)



DV Model-Shift Uniqueness Test

006864893-01, P = 40.878661 Days, E = 117.423727 Days

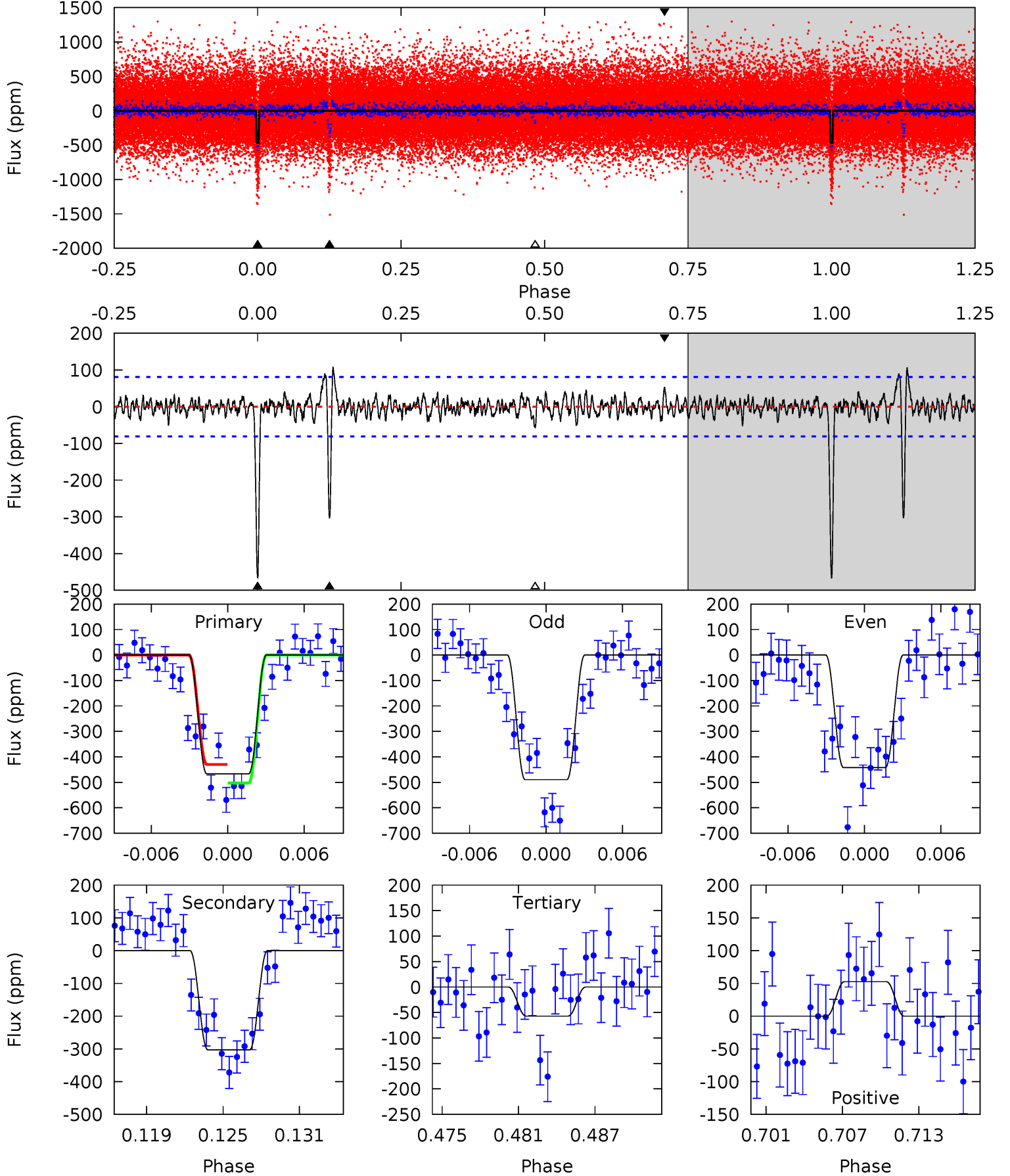
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.1	30.8	6.01	5.36	5.04	2.59	1.96	32.1	32.7	24.8	25.5	2.95	1.03	0.18	3.19



Alt Model-Shift Uniqueness Test

006864893-01, P = 40.877884 Days, E = 117.443077 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.5	19.1	3.60	3.32	5.13	2.75	1.23	25.9	26.2	15.5	15.8	1.48	1.01	0.19	2.31



Stellar Parameters For KIC 006864893

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5383^{+160}_{-160}	$4.609^{+0.039}_{-0.091}$	$-0.440^{+0.300}_{-0.300}$	$0.720^{+0.114}_{-0.061}$	$0.769^{+0.084}_{-0.069}$	$2.901^{+0.588}_{-0.841}$
	+3%/-3%	+1%/-2%	+68%/-68%	+16%/-8%	+11%/-9%	+20%/-29%
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 006864893-01 / KOI 2375.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-397 ± 13	$3.35^{+2.24}_{-1.95}$	615^{+25}_{-21}	4009^{+1697}_{-626}	879^{+4104}_{-561}
Alt.	-303 ± 16	$2.54^{+2.16}_{-1.61}$	617^{+26}_{-23}	4217^{+2282}_{-790}	1151^{+7412}_{-812}

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 $A_{\text{obs}} \gg 1.0$

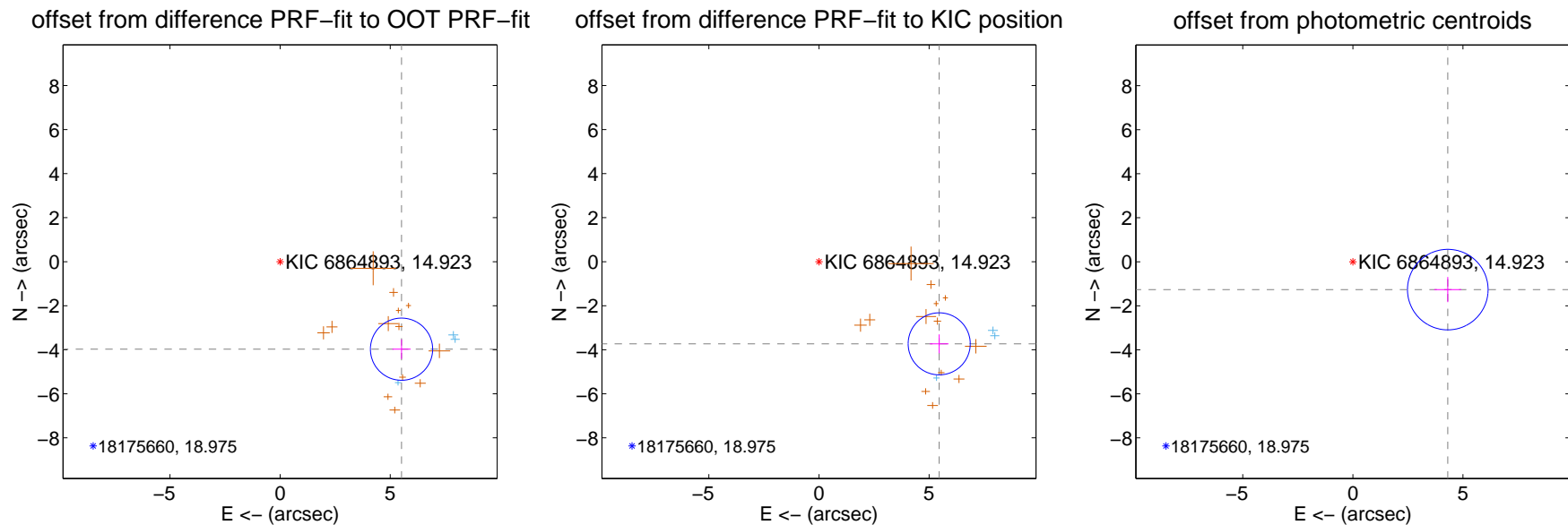
DV Centroid Data

Supplemental centroid analysis for 006864893-01. Kepler magnitude: 14.92. Transit SNR 19.49

There are 3 quarters with good PRF difference image offsets

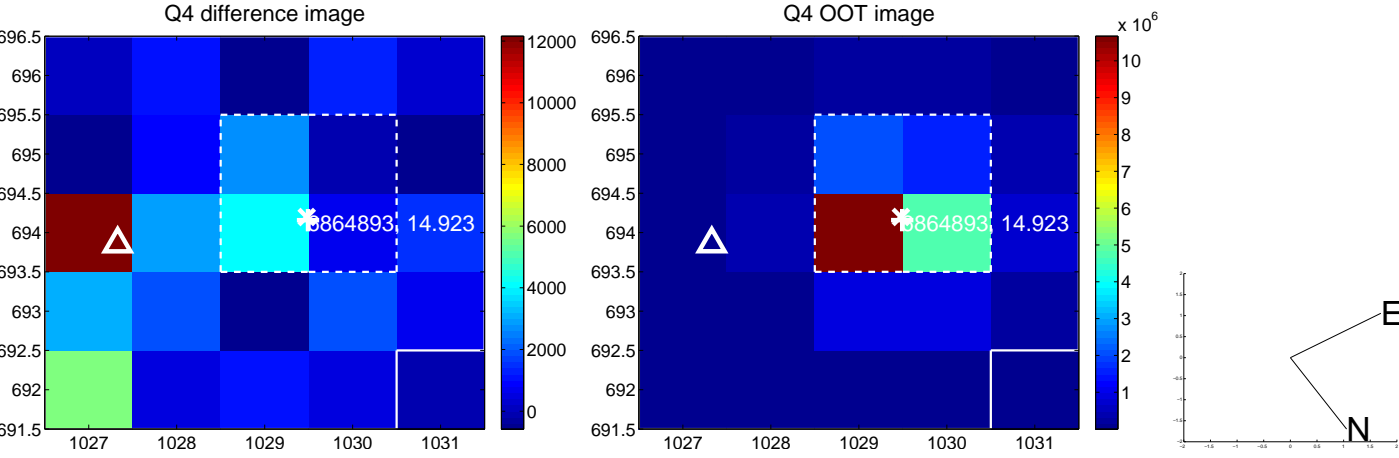
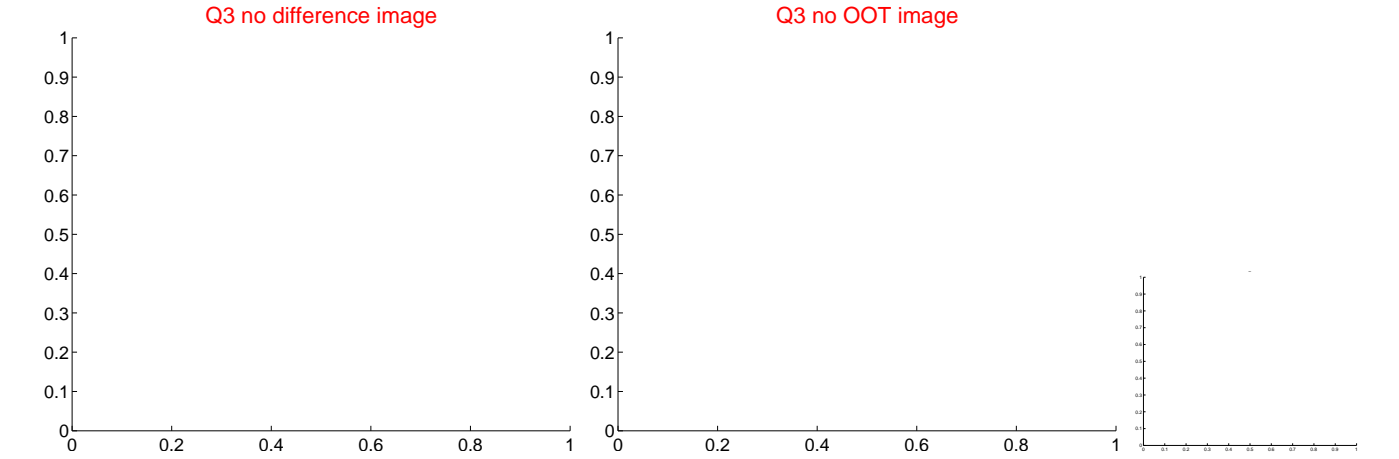
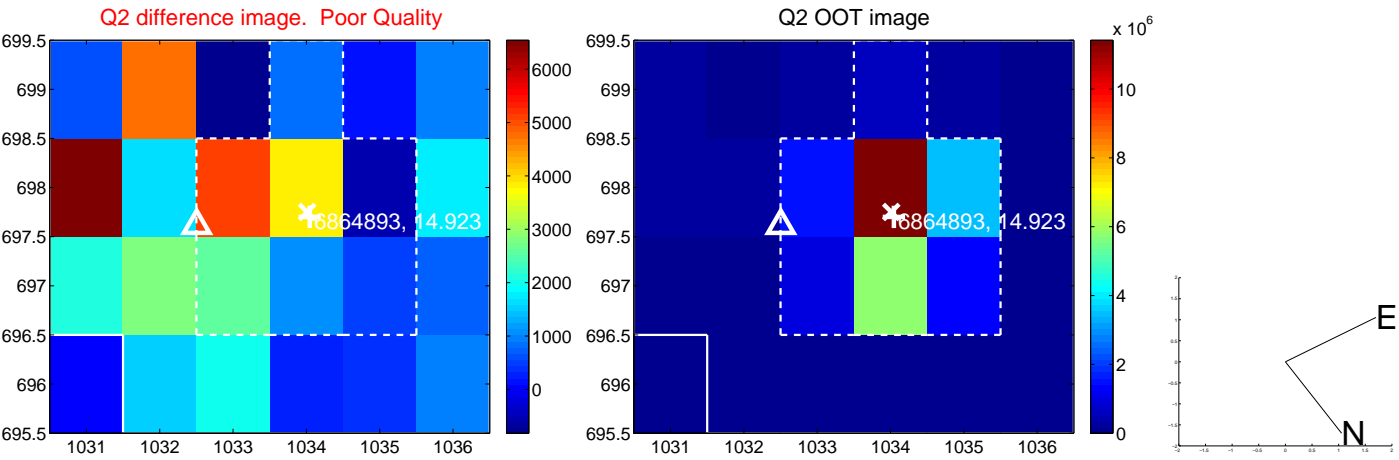
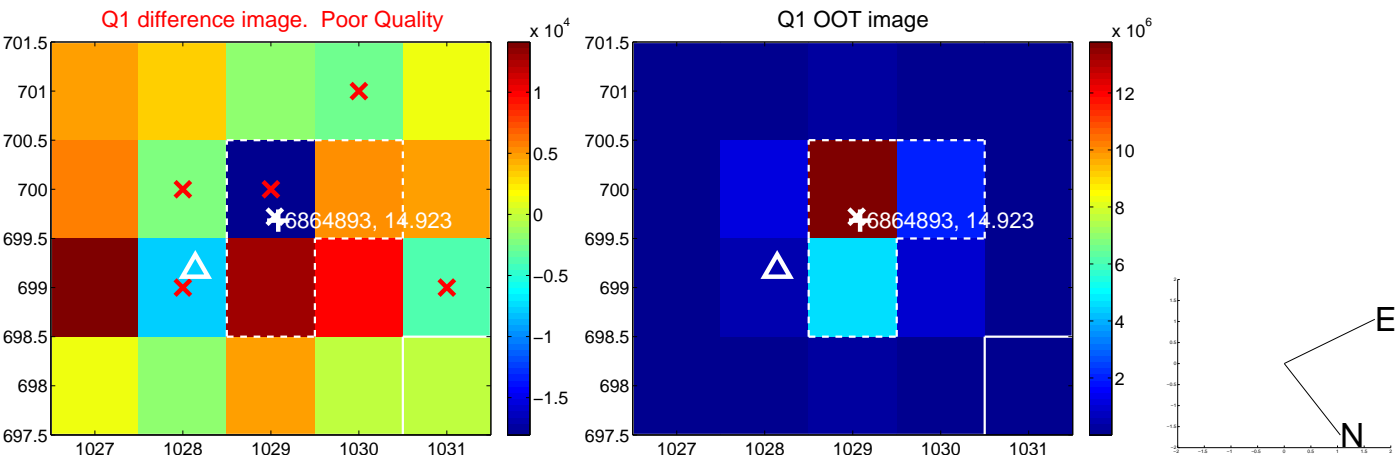
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.793 ± 0.471	14.43	-5.510 ± 0.415	-3.973 ± 0.443
PRF-fit source offset from KIC position	6.609 ± 0.470	14.07	-5.455 ± 0.425	-3.730 ± 0.427
photometric centroid source offset	4.49 ± 0.61	7.36	-4.31 ± 0.61	-1.26 ± 0.57

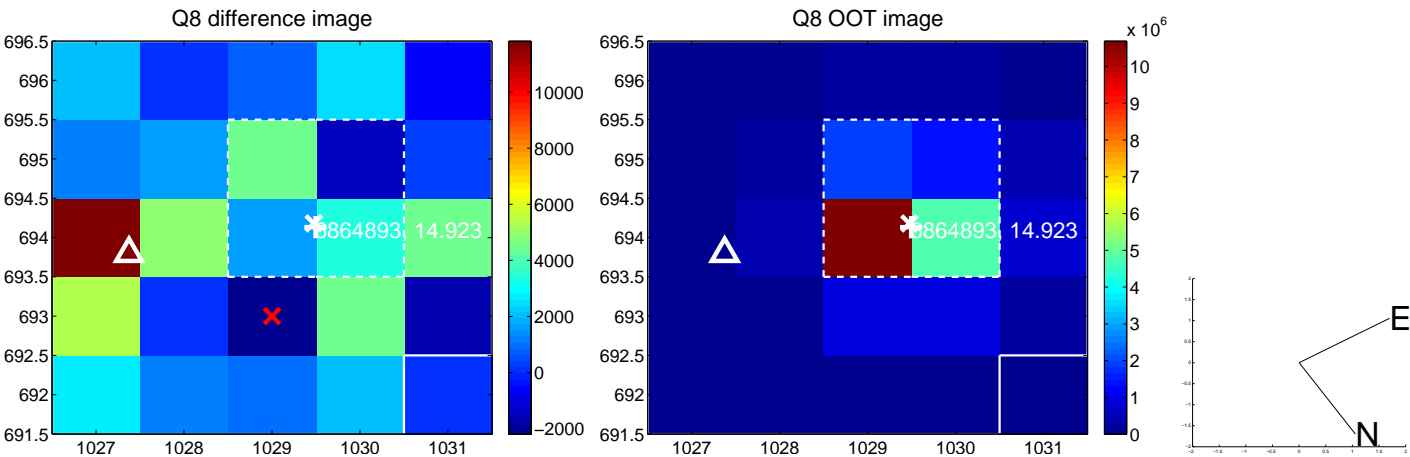
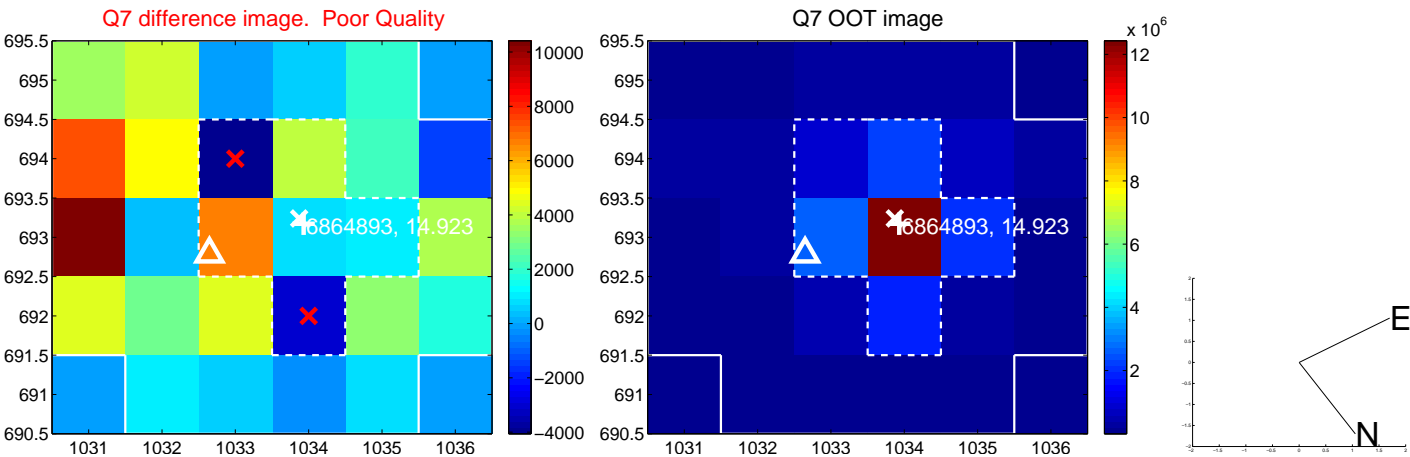
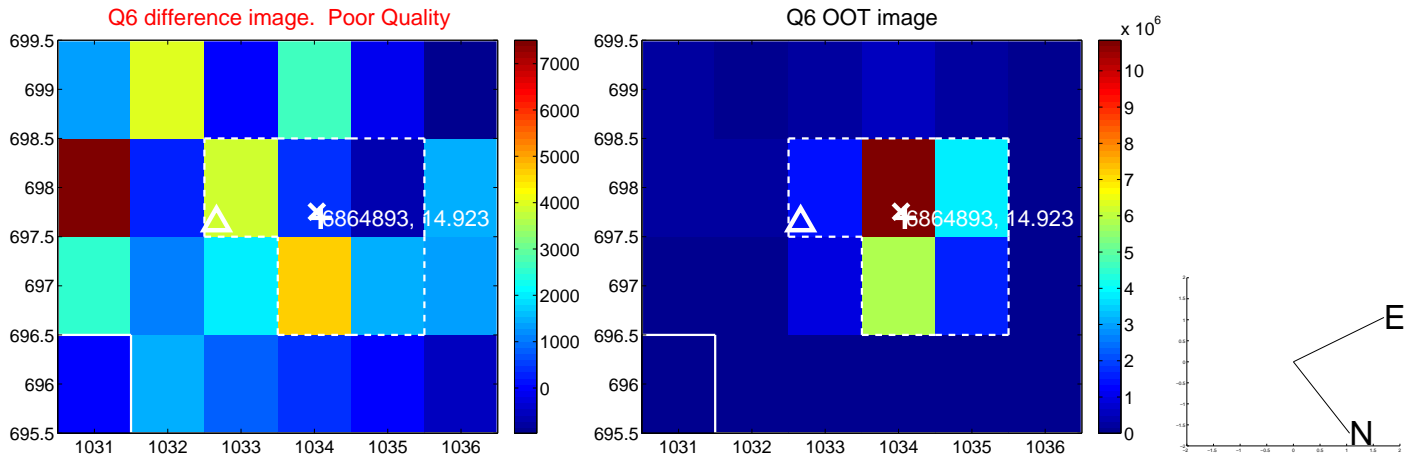
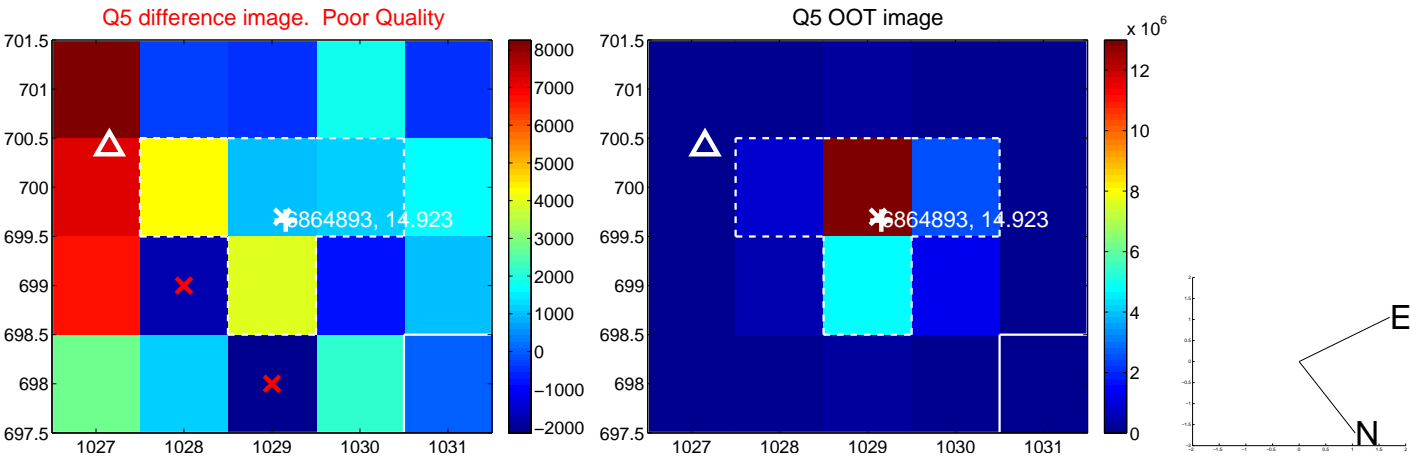


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

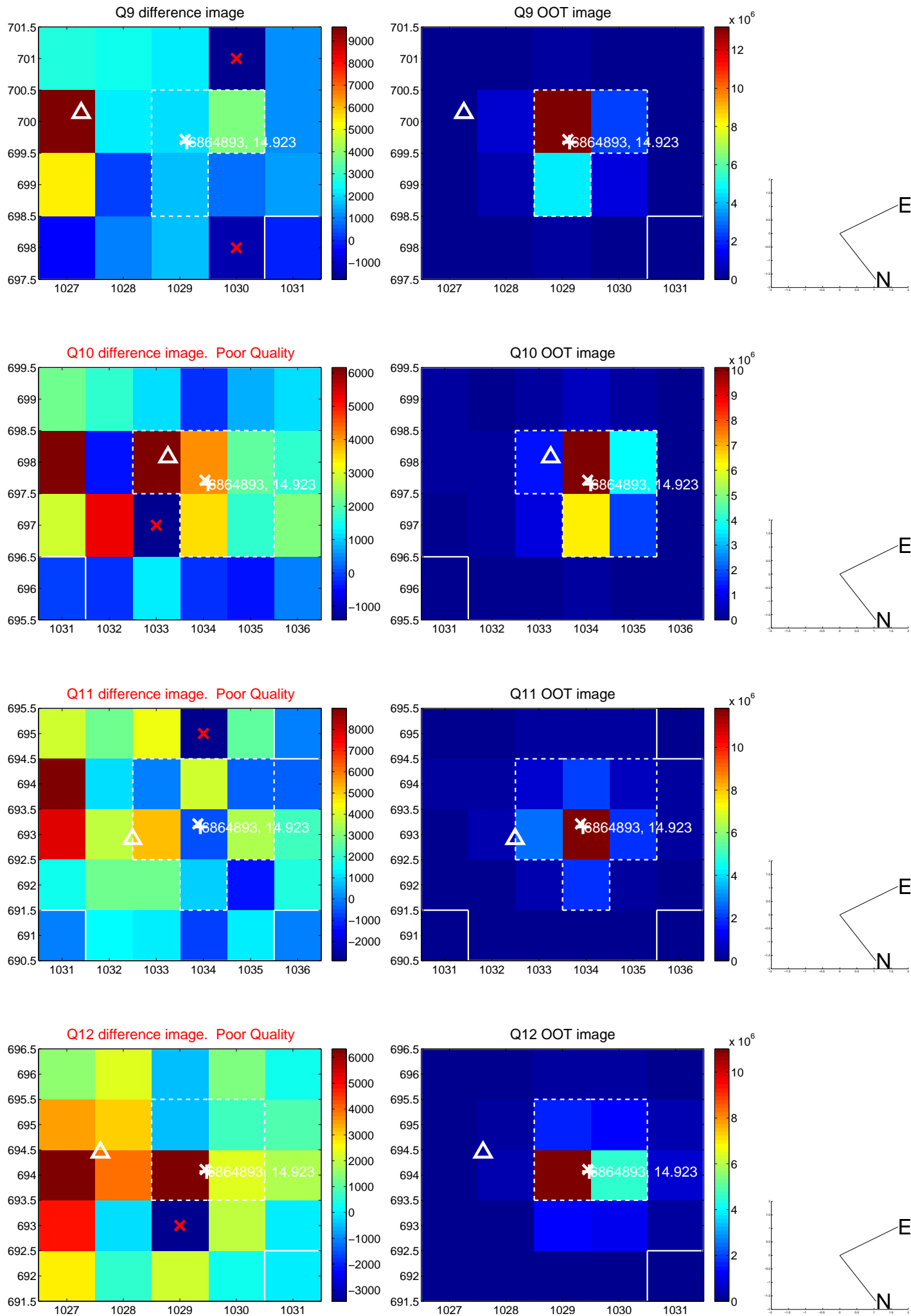
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



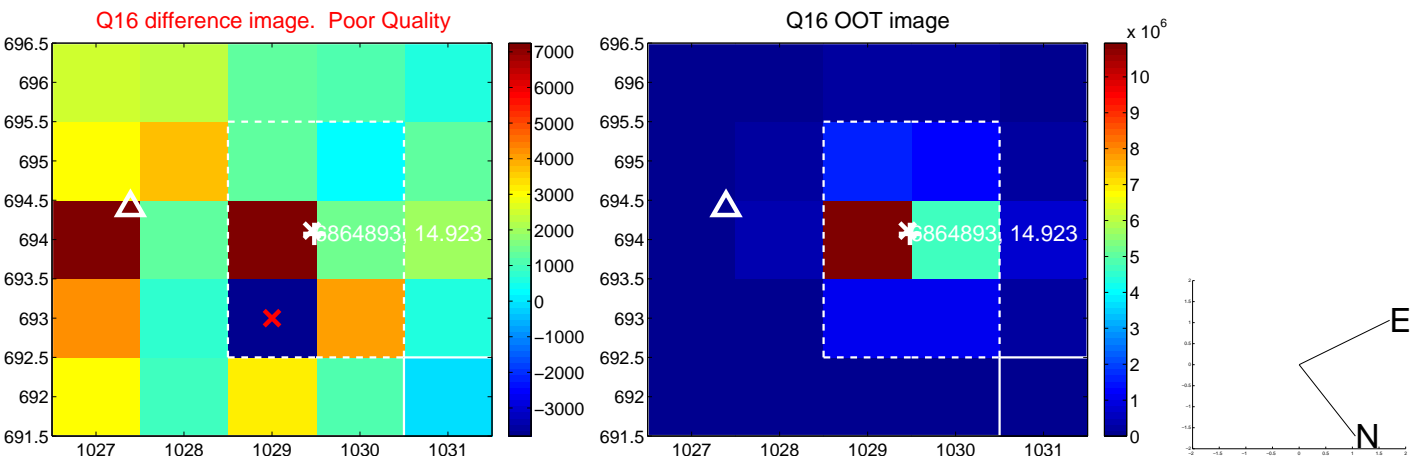
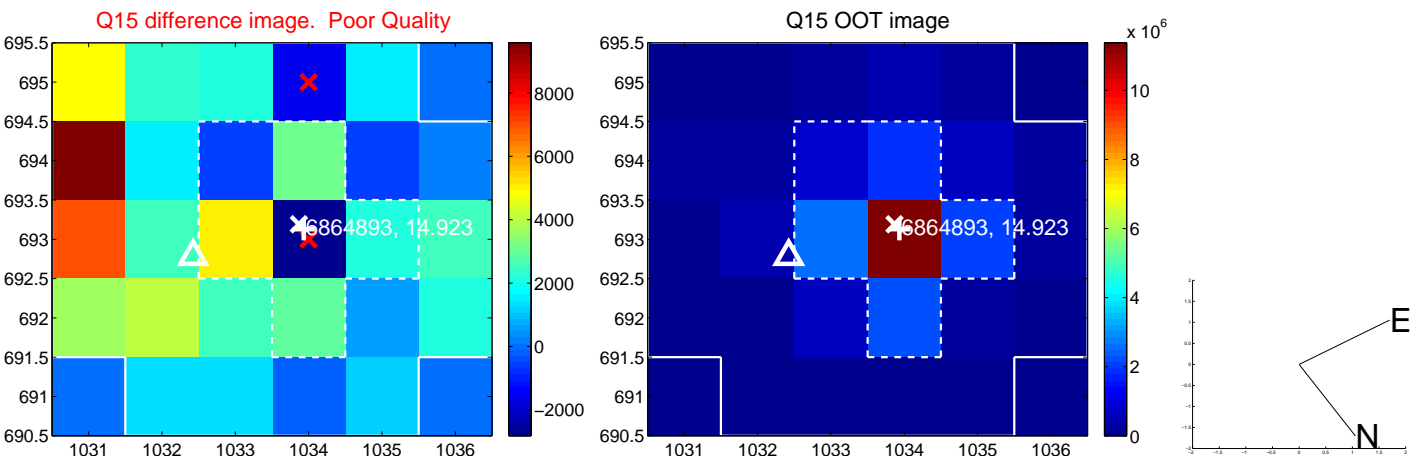
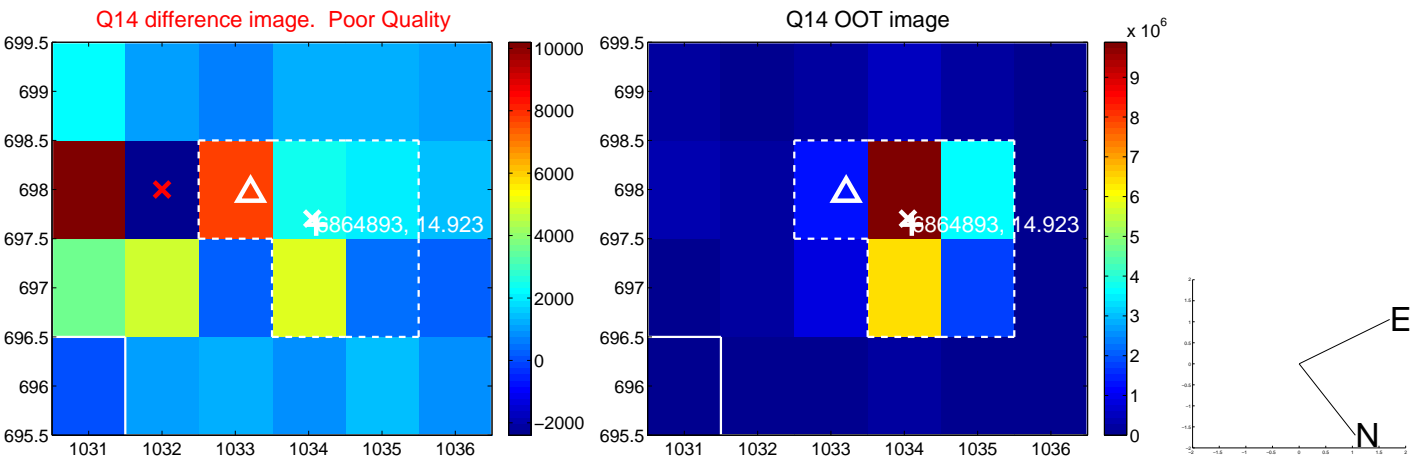
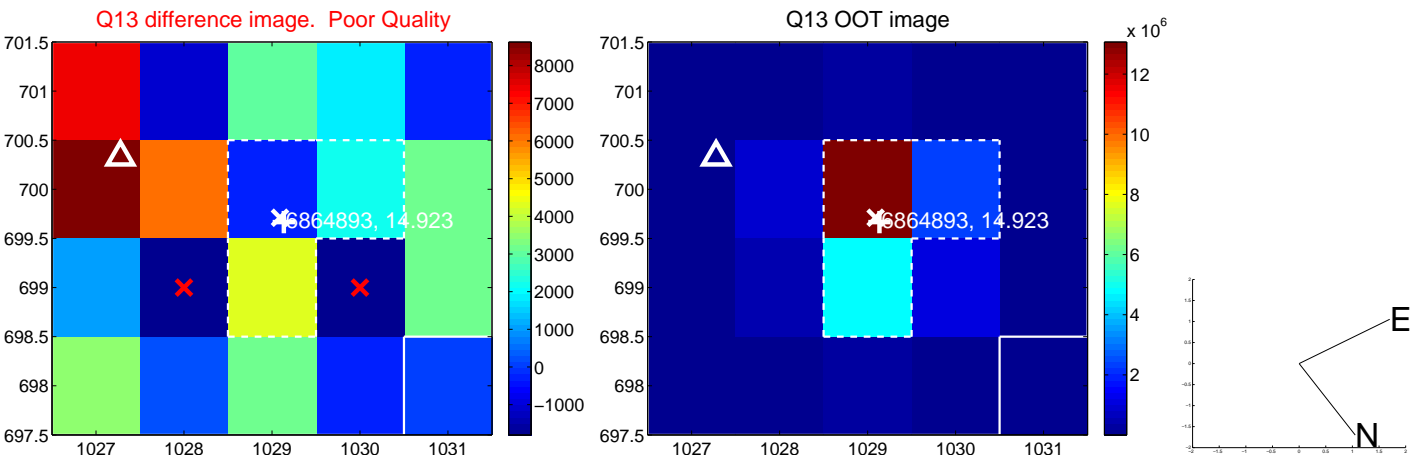
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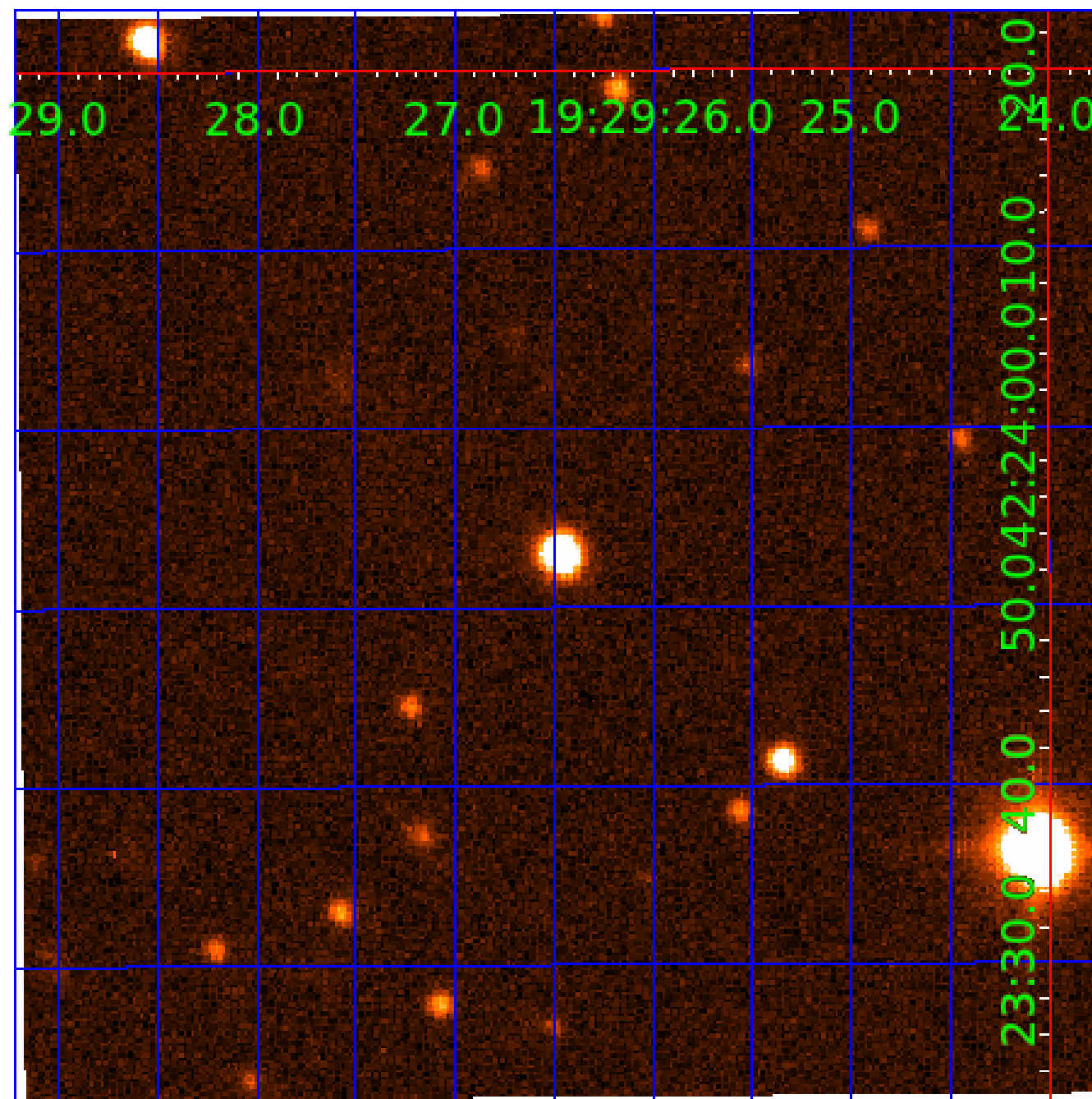


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006864893

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})
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006864893-02	OBS	No	40.879025	163.421311	401.2	7.067	18.7	18.6	0.72	5383	1.61	8.61

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006864893-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
006864893-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—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 006864893-02

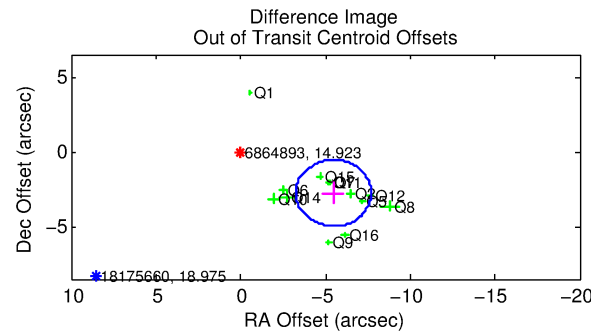
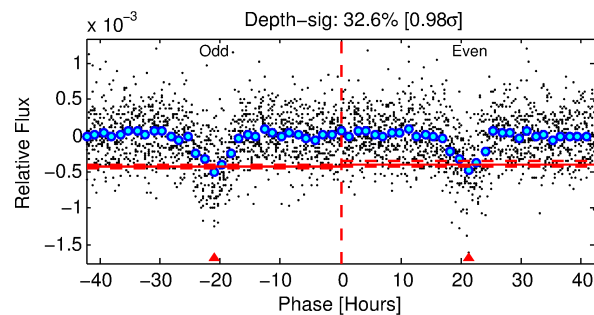
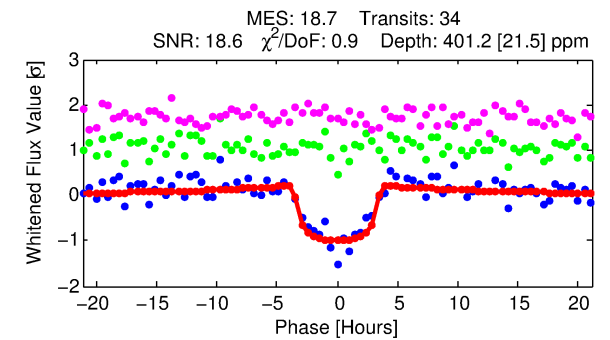
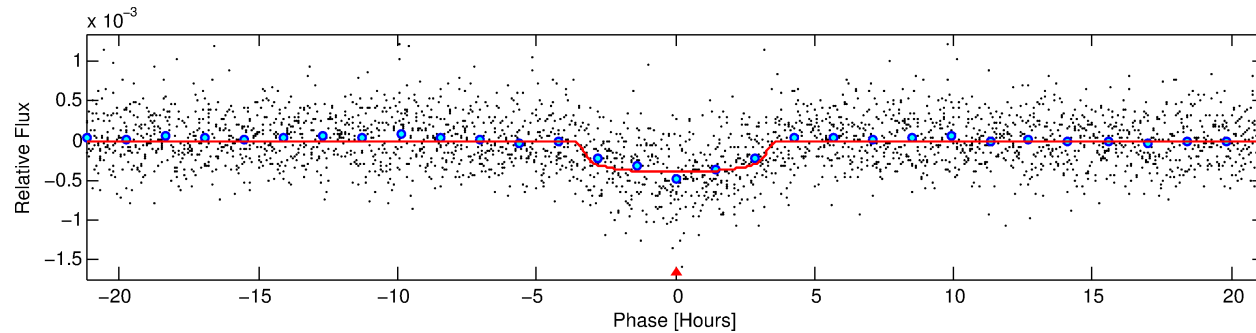
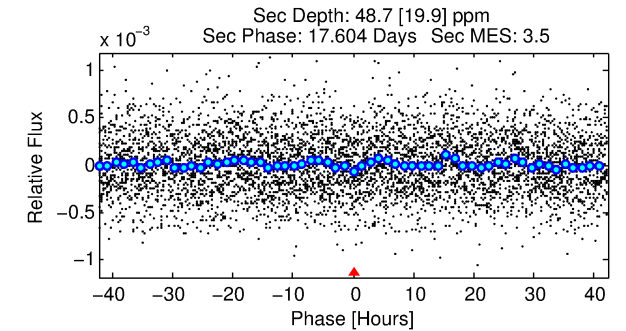
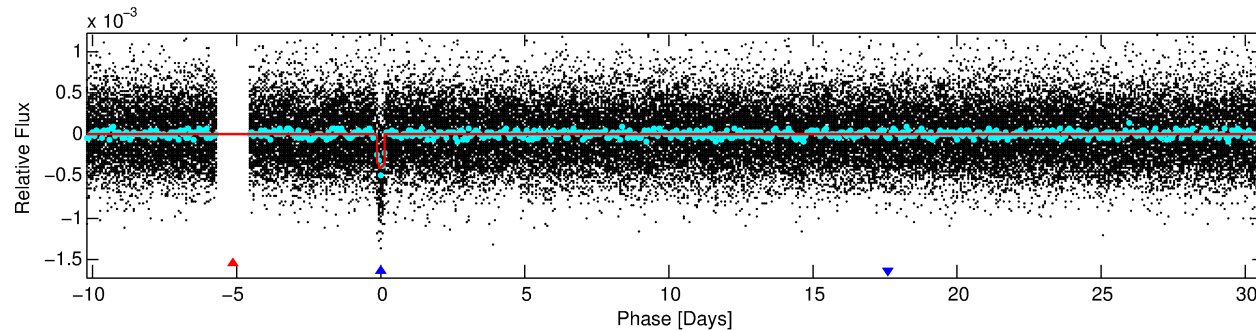
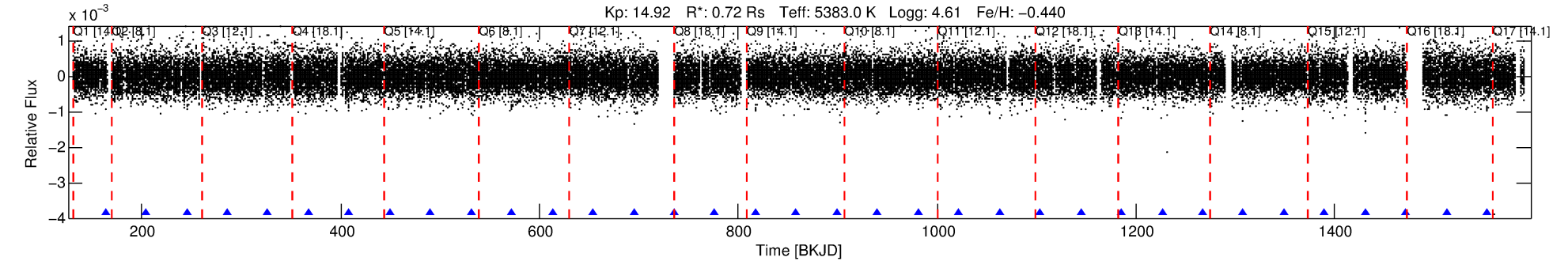
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
006864893-02	6864893	006864859-02	6864859	1:1	31.3	0	8	11.66	14.92	634.49	Direct-PRF	0	0.63	0.13

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: 6864893 Candidate: 2 of 2 Period: 40.879 d

KOI: K02375.01 Corr: 0.989



DV Fit Results:

Period = 40.87903 [0.00032] d
Epoch = 163.4213 [0.0063] BKJD
Rp/R* = 0.0206 [0.0042]
a/R* = 27.22 [23.45]
b = 0.81 [0.36]
Seff = 8.61 [1.82]
Teq = 437 [23] K
Rp = 1.61 [0.42] Re
a = 0.2128 [0.0269] AU
Ag = 465.04 [280.45] [1.65σ]
Teffp = 3136 [462] K [5.84σ]

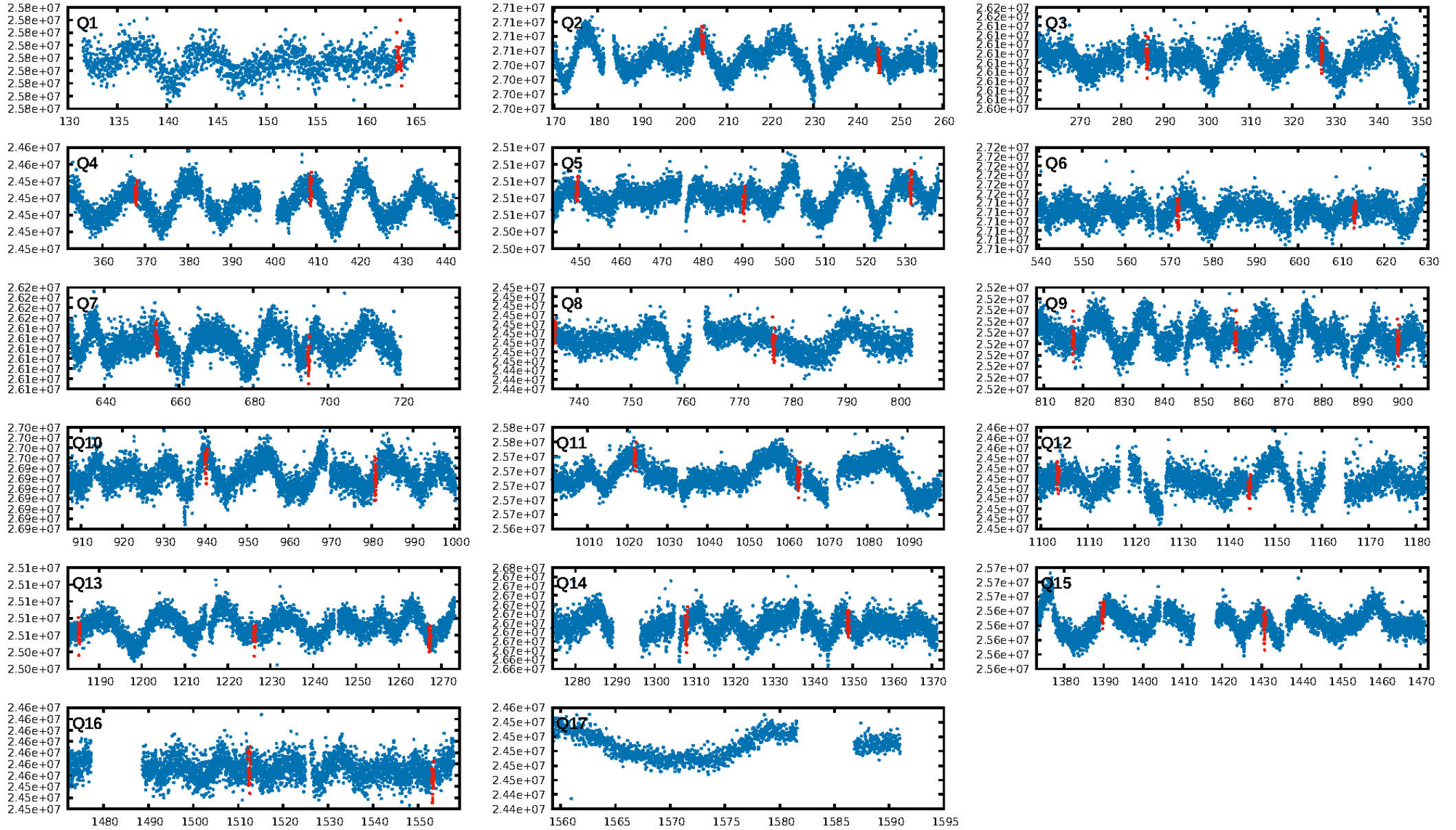
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.32e-70
RollingBand-fgt: 1.00 [33/33]
GhostDiagnostic-chr: 0.1721
Centroid-sig: 91.7%
Centroid-so: 0.149 arcsec [0.23σ]
OotOffset-rm: 6.126 arcsec [8.29σ]
KicOffset-rm: 5.976 arcsec [7.54σ]
OotOffset-st: 4/3/3/3 [13]
KicOffset-st: 4/3/3/3 [13]
DiffImageQuality-fgm: 0.23 [3/13]
DiffImageOverlap-fno: 1.00 [15/15]

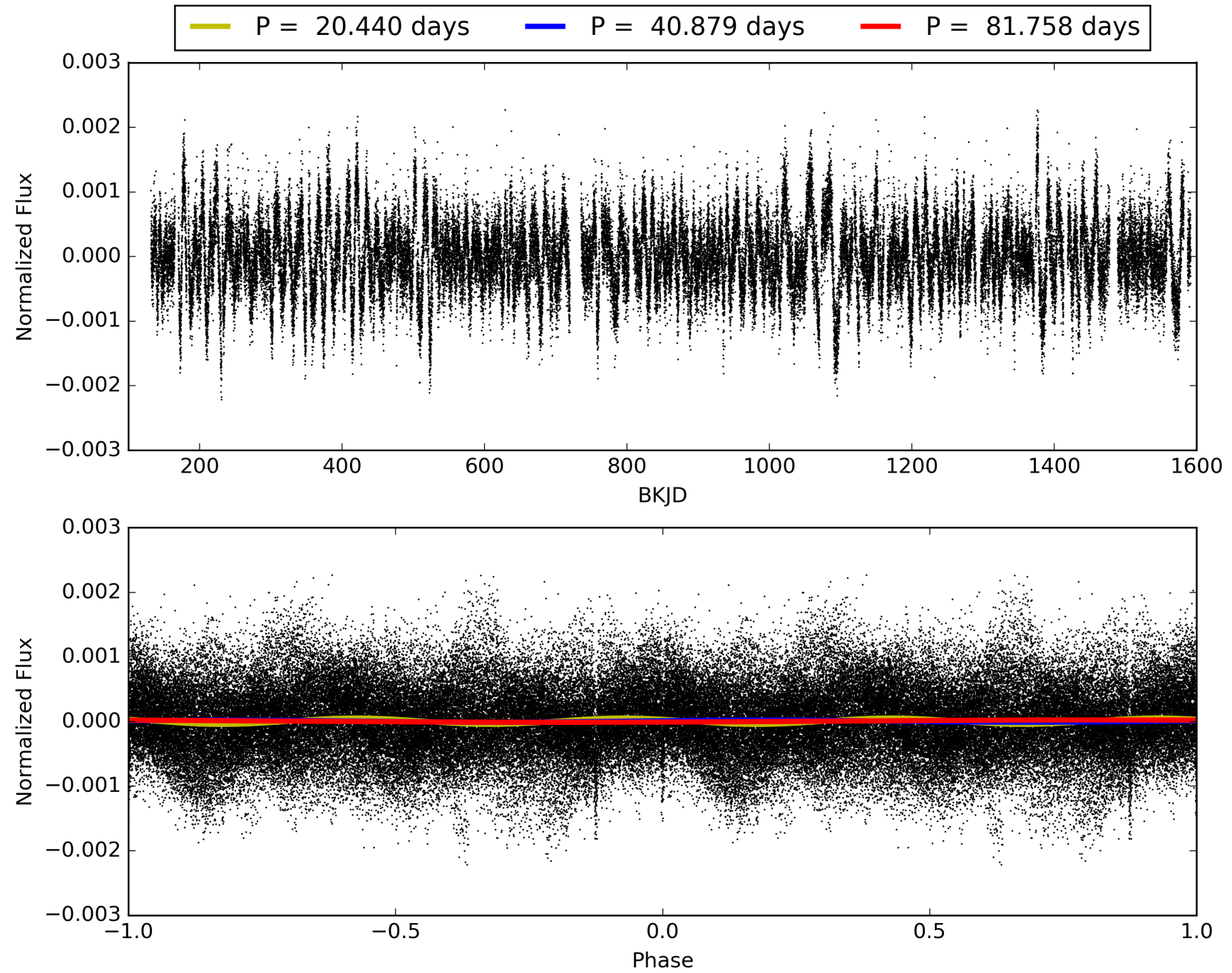
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 09:24:47 Z

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

TCE 006864893-02, PDC Light Curves

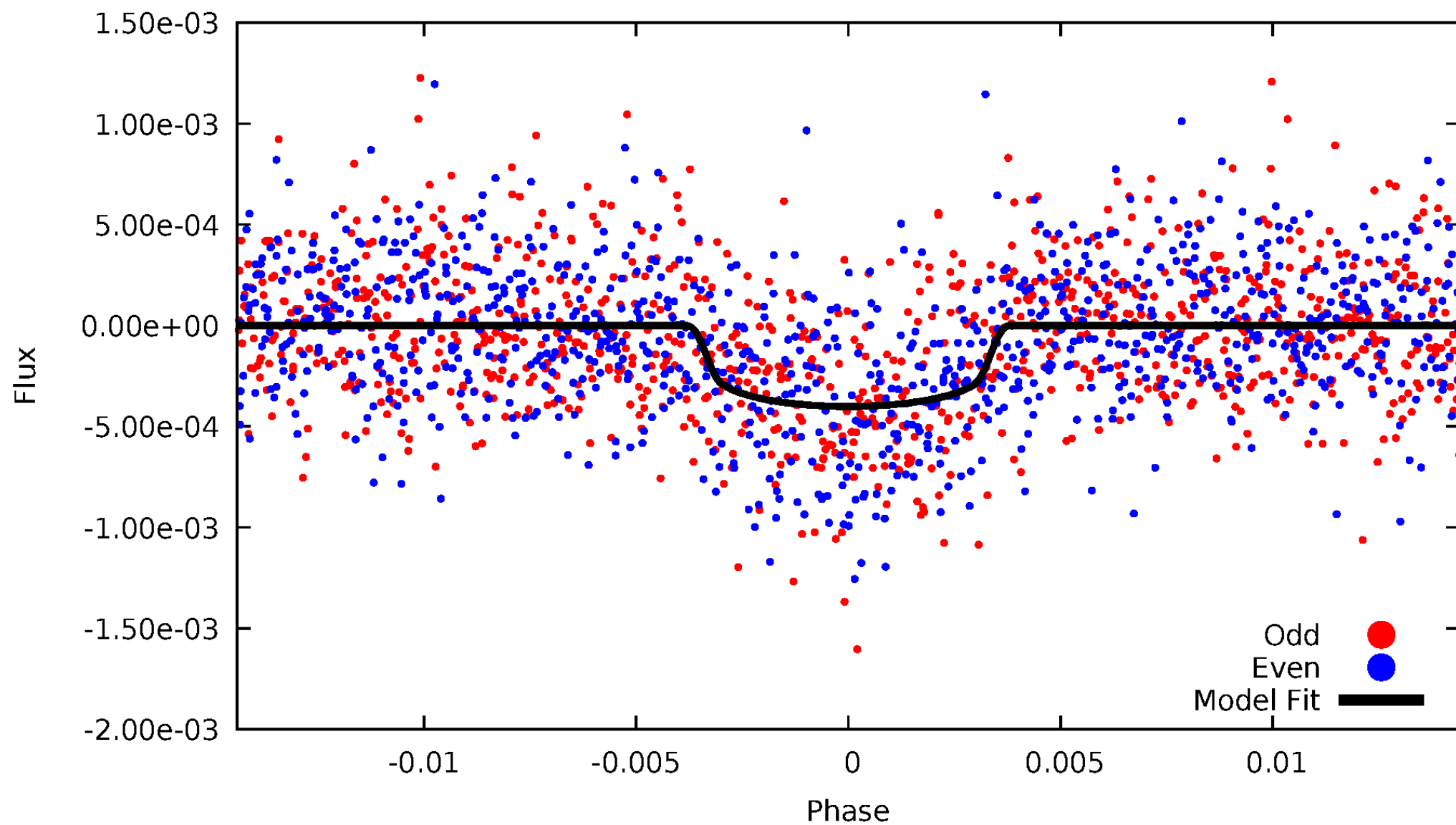


TCE 006864893-02



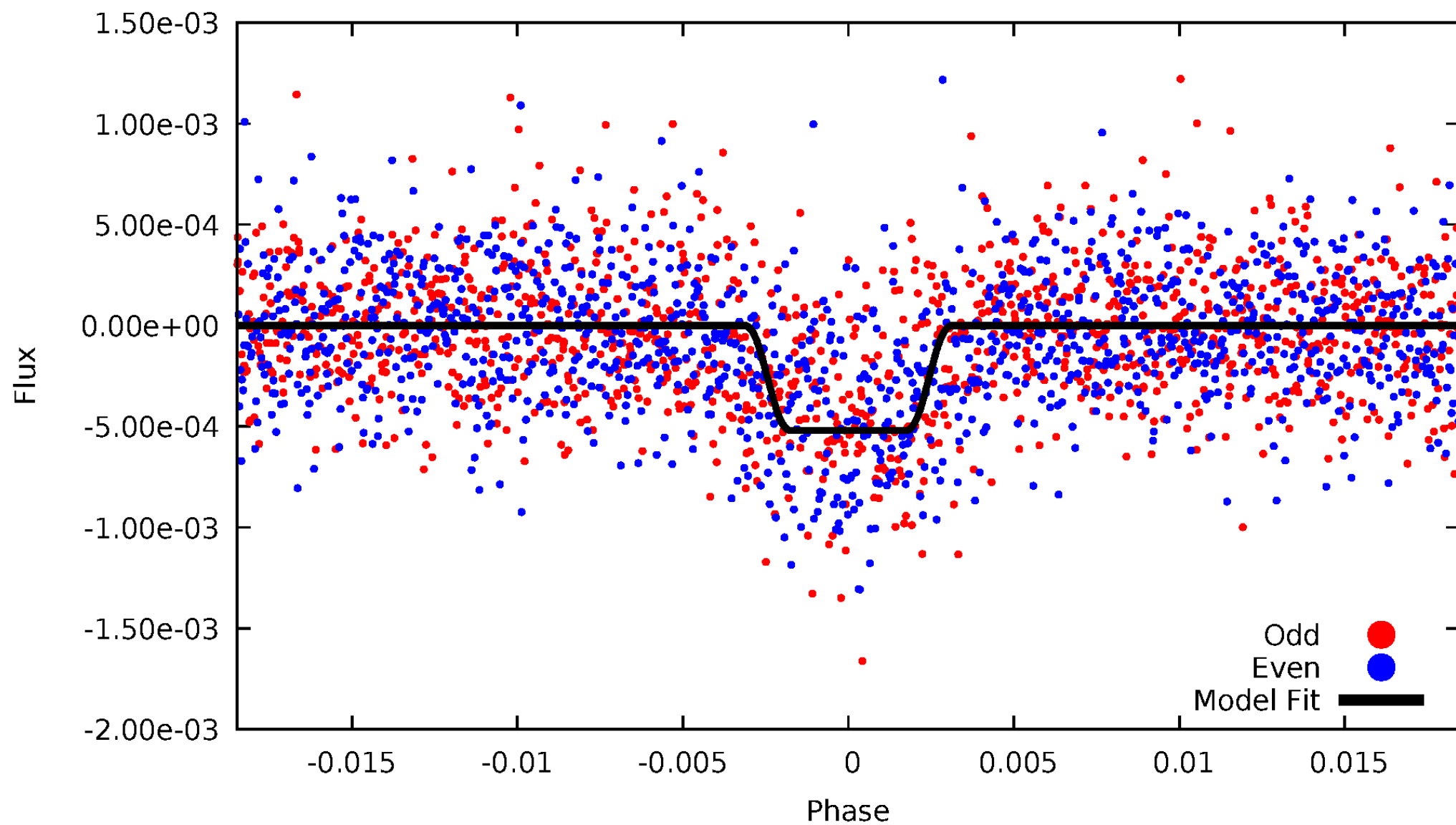
DV Odd/Even

TCE 006864893-02



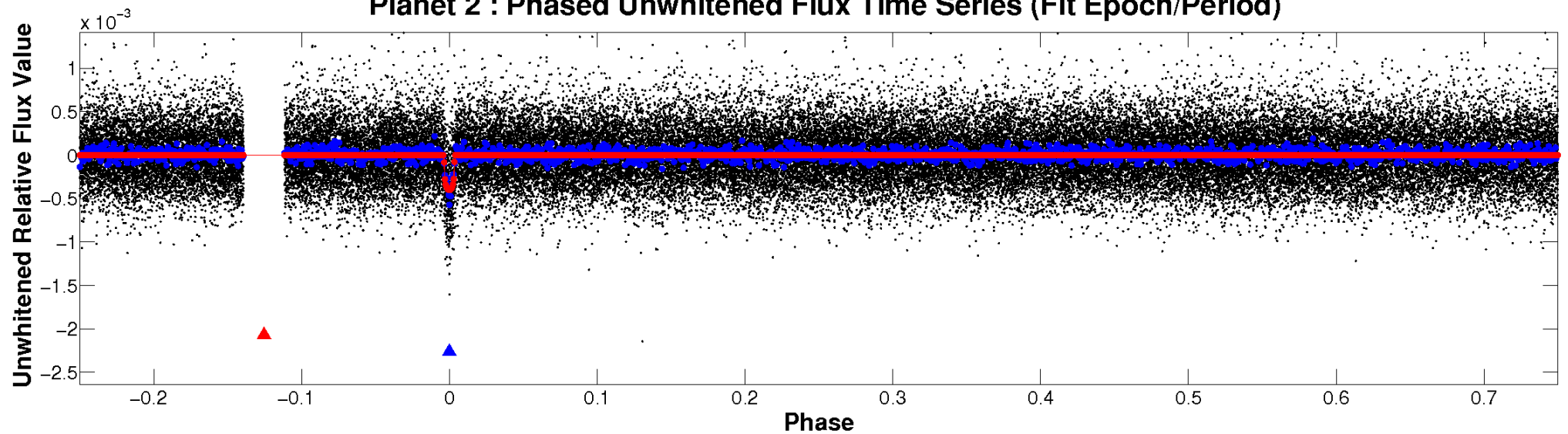
ALT Odd/Even

TCE 006864893-02

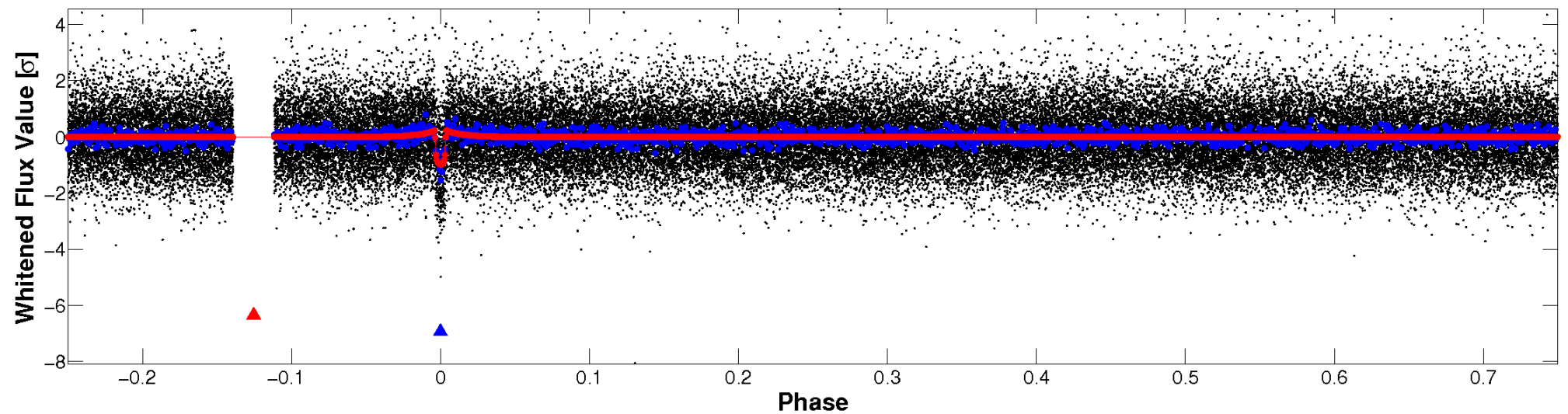


Non-Whitened Vs. Whitened Light Curve

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

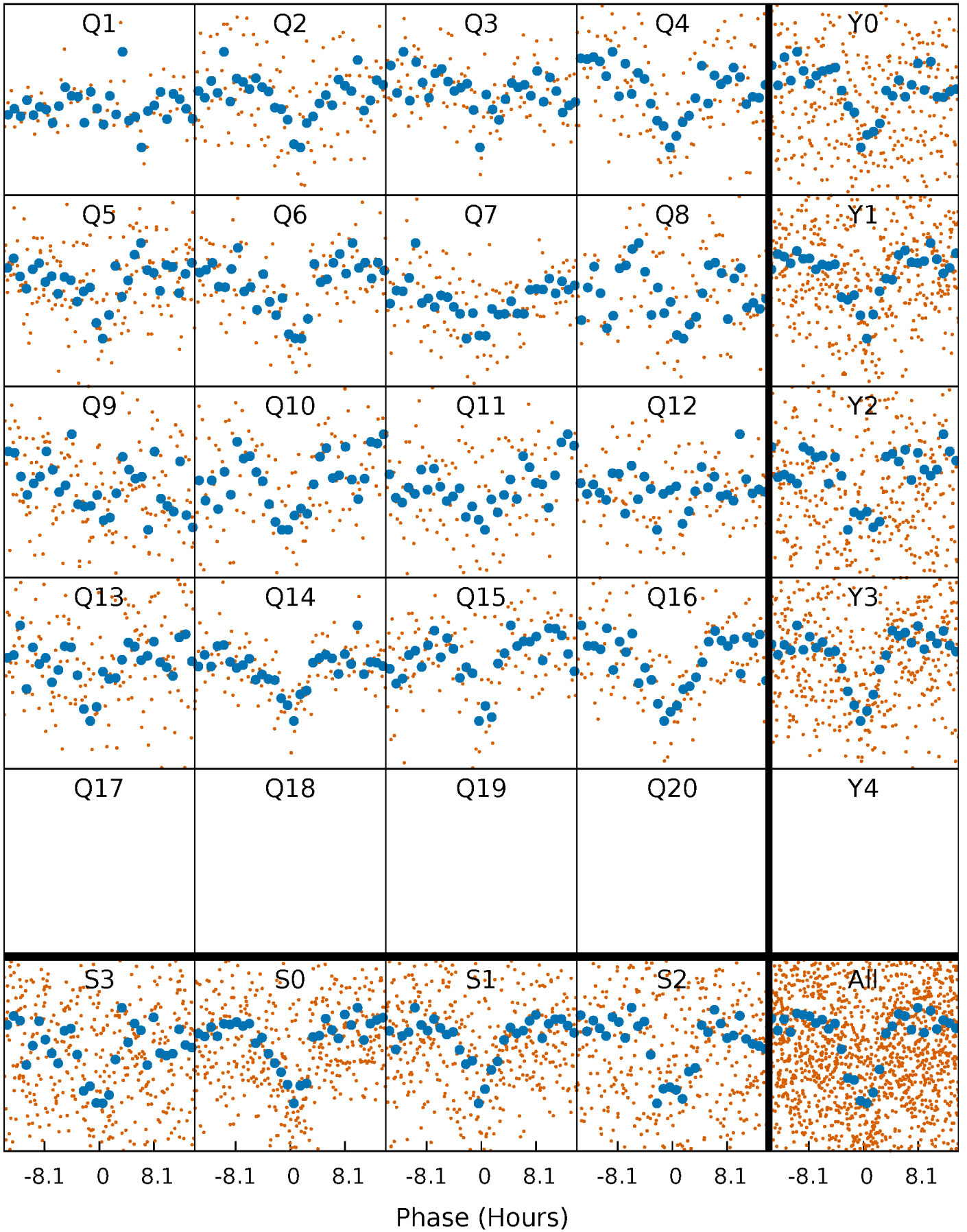


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



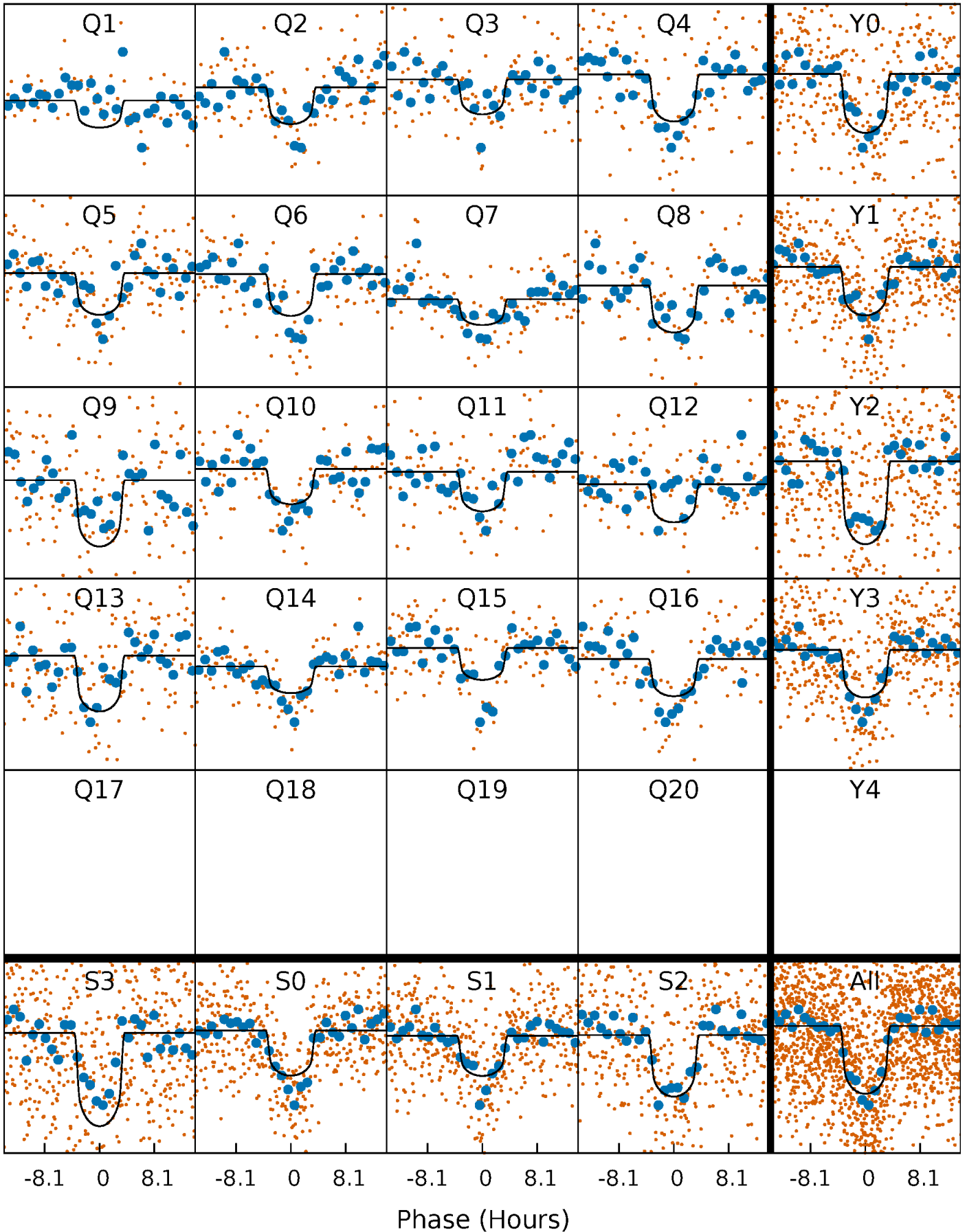
PDC Quarter-Phased Transit Curves

TCE 006864893-02 P= 40.879025 Days $T_0=163.421312$ (BKJD)



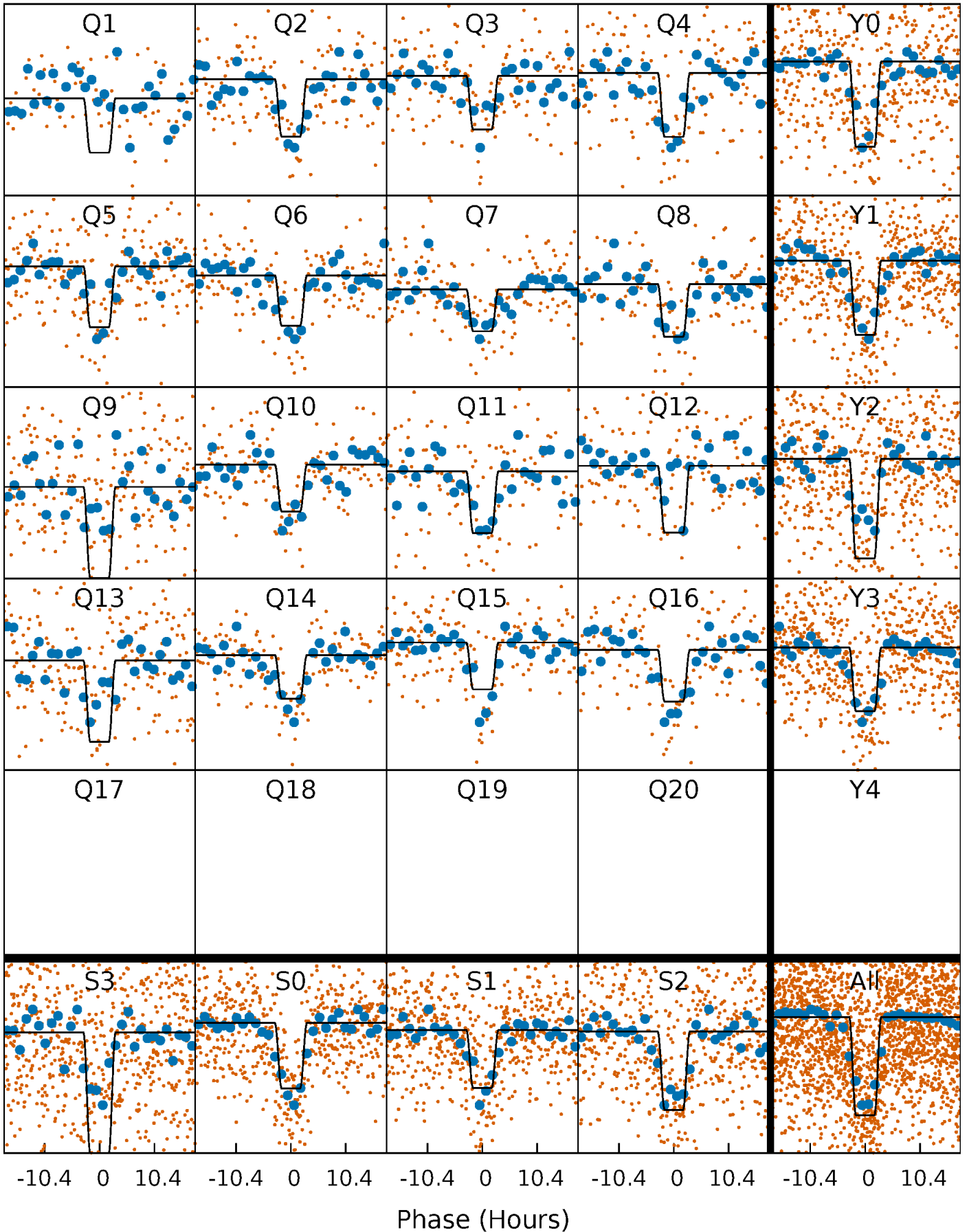
DV Quarter-Phased Transit Curves

TCE 006864893-02 $P = 40.879025$ Days $T_0 = 163.421312$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

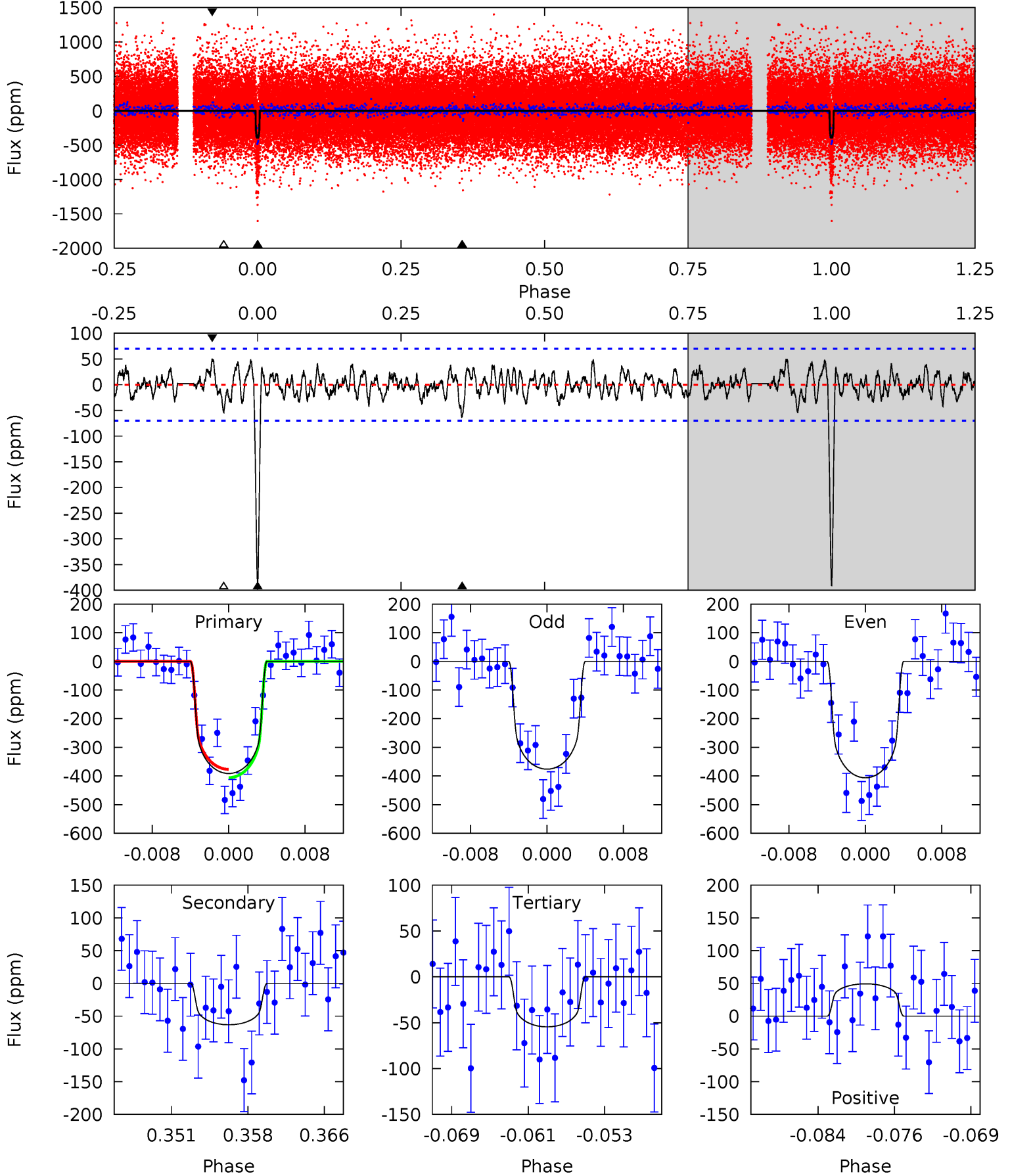
TCE 006864893-02 P= 40.878244 Days $T_0=163.436764$ (BKJD)



DV Model-Shift Uniqueness Test

006864893-02, P = 40.879025 Days, E = 122.542287 Days

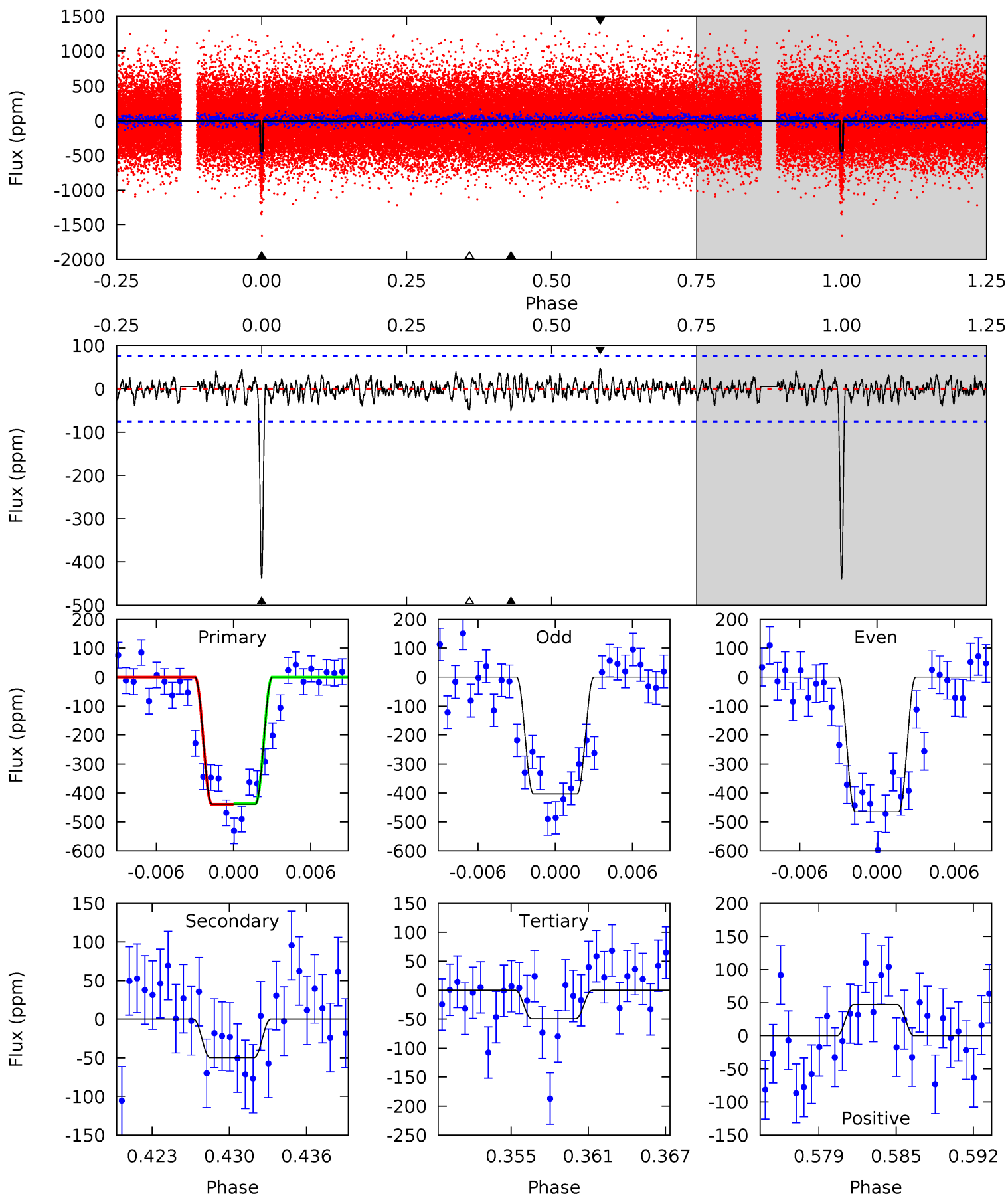
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.4	4.58	3.96	3.58	5.08	2.67	1.30	24.4	24.8	0.63	1.00	1.09	1.02	0.11	1.06



Alt Model-Shift Uniqueness Test

006864893-02, $P = 40.878244$ Days, $E = 122.558520$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.4	3.34	3.32	3.15	5.12	2.74	1.06	26.0	26.2	0.02	0.19	2.08	1.01	0.10	0.10



Stellar Parameters For KIC 006864893

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5383^{+160}_{-160}	$4.609^{+0.039}_{-0.091}$	$-0.440^{+0.300}_{-0.300}$	$0.720^{+0.114}_{-0.061}$	$0.769^{+0.084}_{-0.069}$	$2.901^{+0.588}_{-0.841}$
	+3%/-3%	+1%/-2%	+68%/-68%	+16%/-8%	+11%/-9%	+20%/-29%
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 006864893-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-63 ± 14	$1.67^{+0.34}_{-0.36}$	616^{+27}_{-23}	3697^{+342}_{-254}	551^{+377}_{-195}
Alt.	-50 ± 15	$1.81^{+0.38}_{-0.33}$	616^{+25}_{-22}	3478^{+291}_{-258}	373^{+239}_{-147}

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 $A_{obs} \gg 1.0$

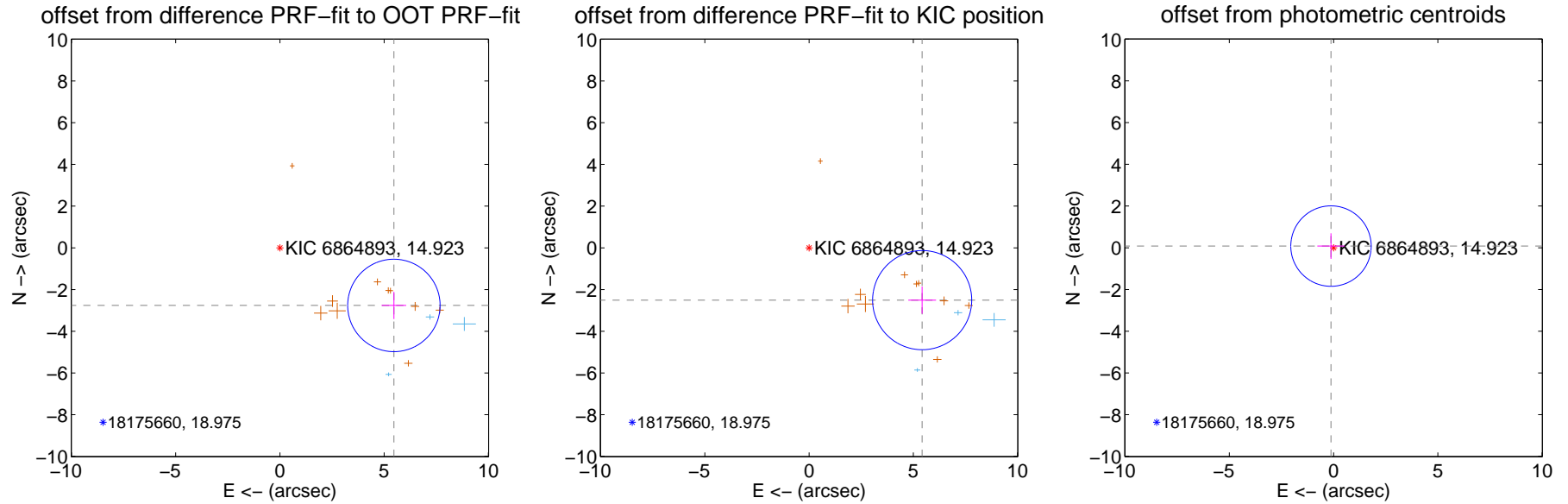
DV Centroid Data

Supplemental centroid analysis for 006864893-02. Kepler magnitude: 14.92. Transit SNR 18.59

There are 3 quarters with good PRF difference image offsets

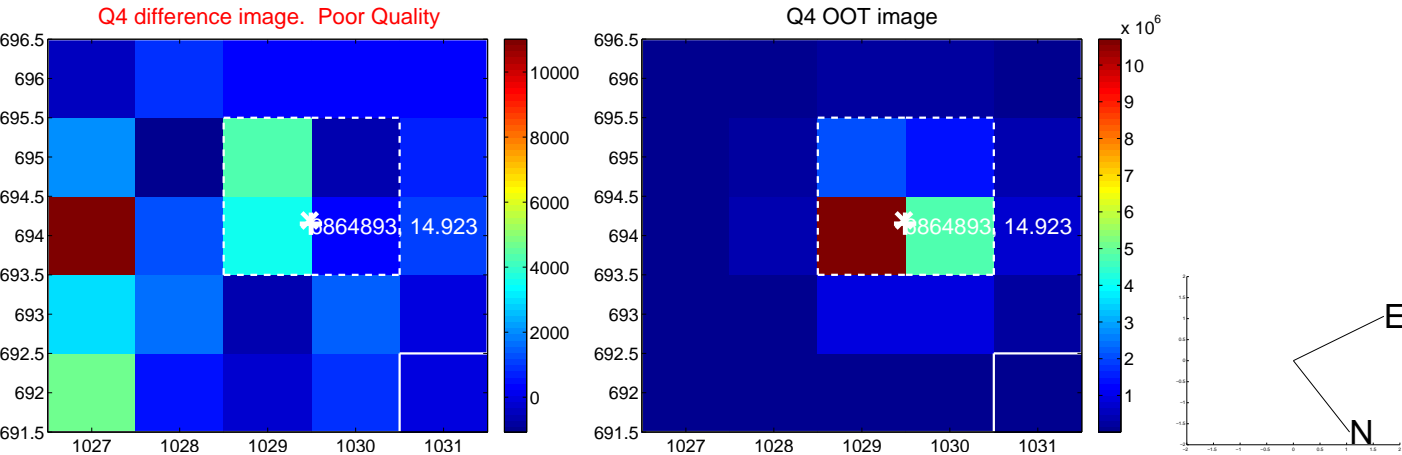
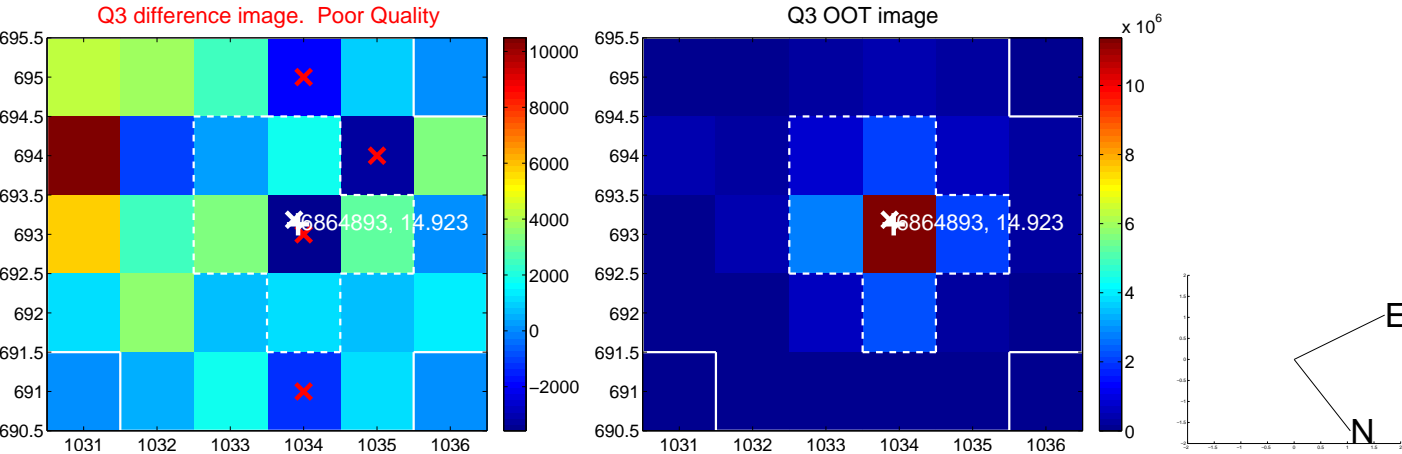
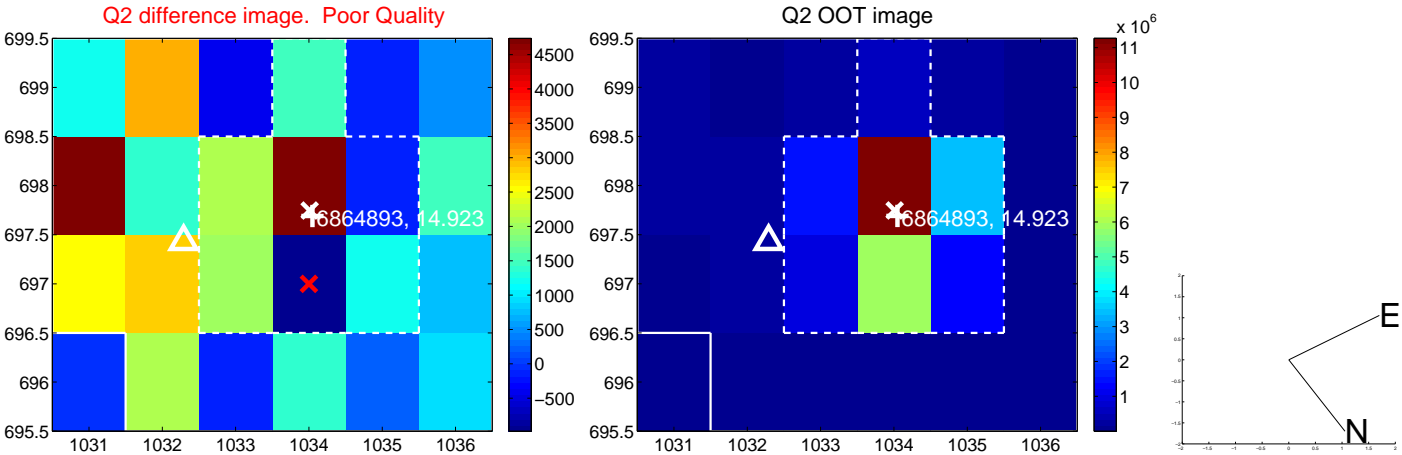
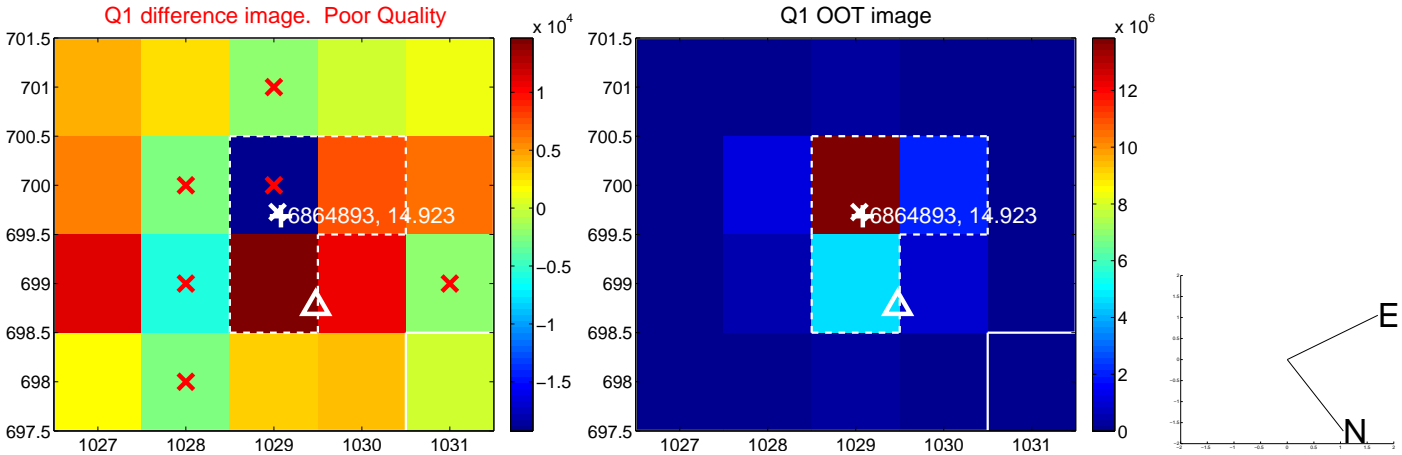
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.126 ± 0.739	8.29	-5.468 ± 0.590	-2.761 ± 0.651
PRF-fit source offset from KIC position	5.976 ± 0.792	7.54	-5.425 ± 0.667	-2.507 ± 0.653
photometric centroid source offset	0.15 ± 0.64	0.23	0.12 ± 0.65	0.08 ± 0.61

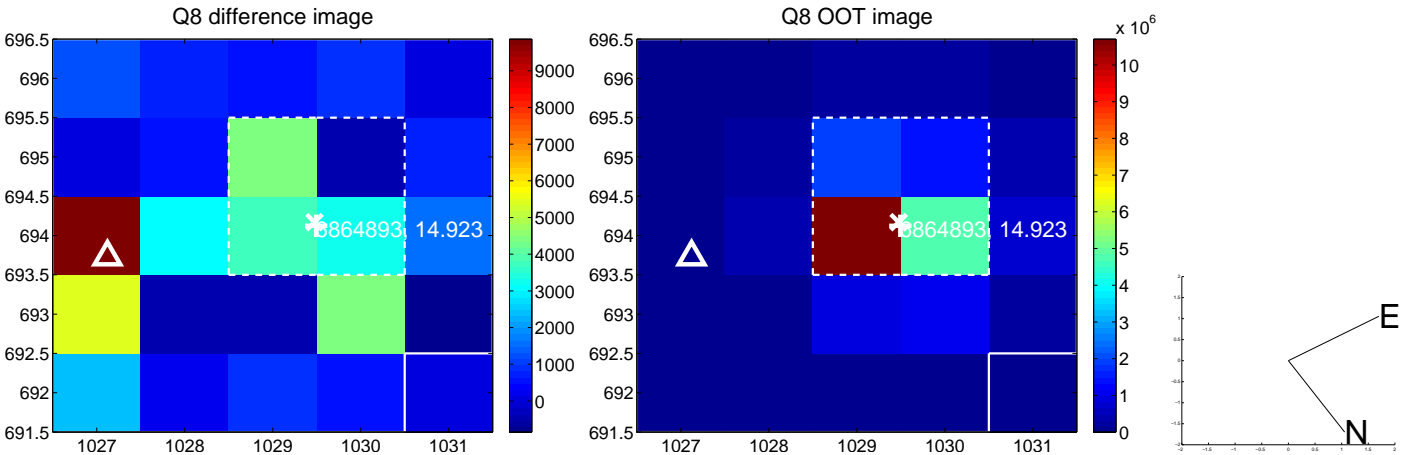
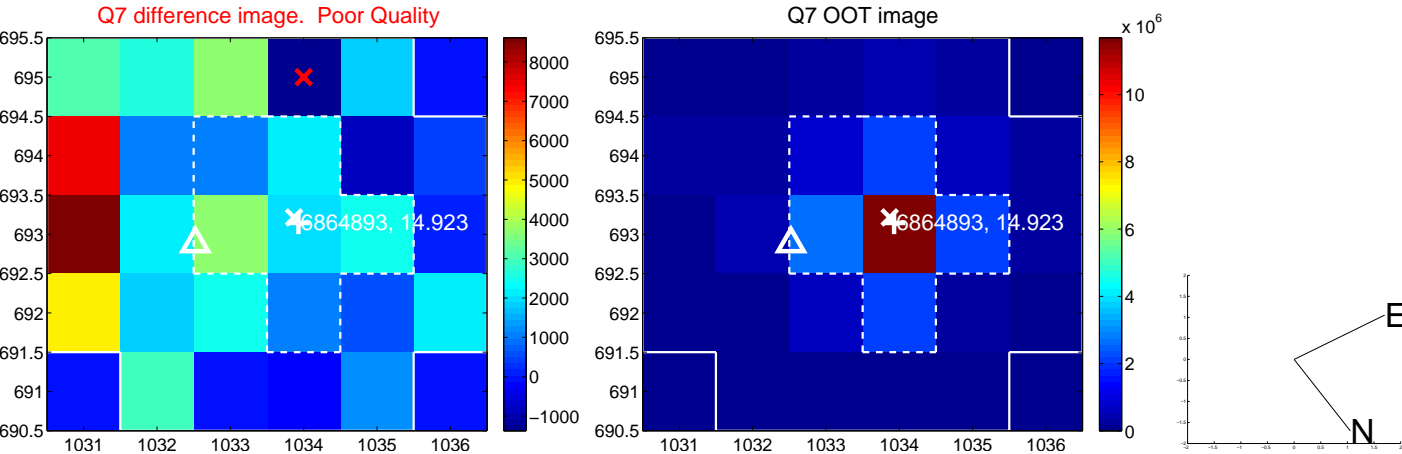
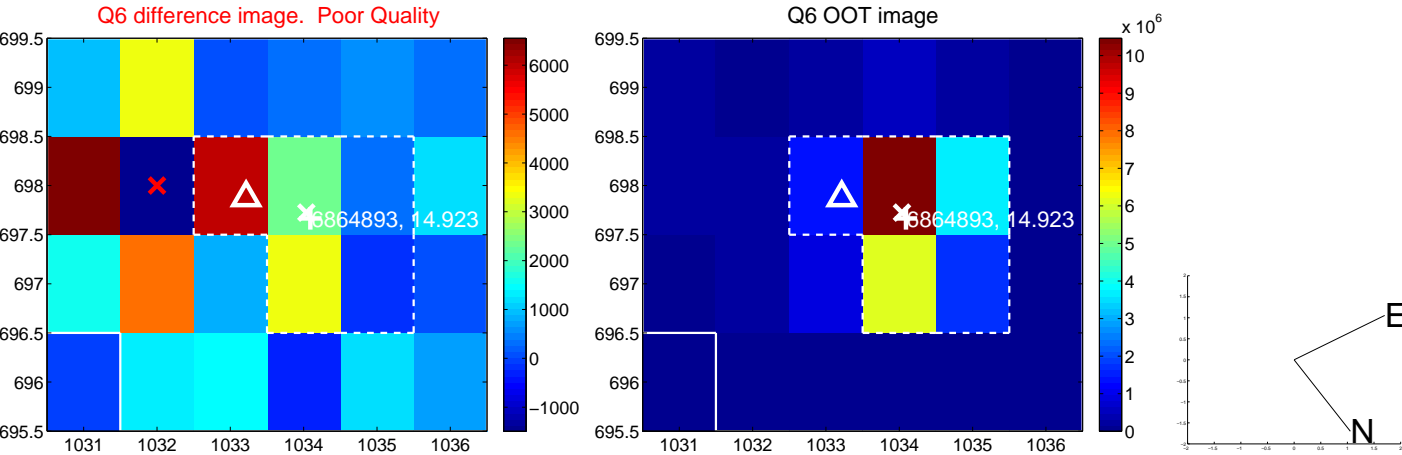
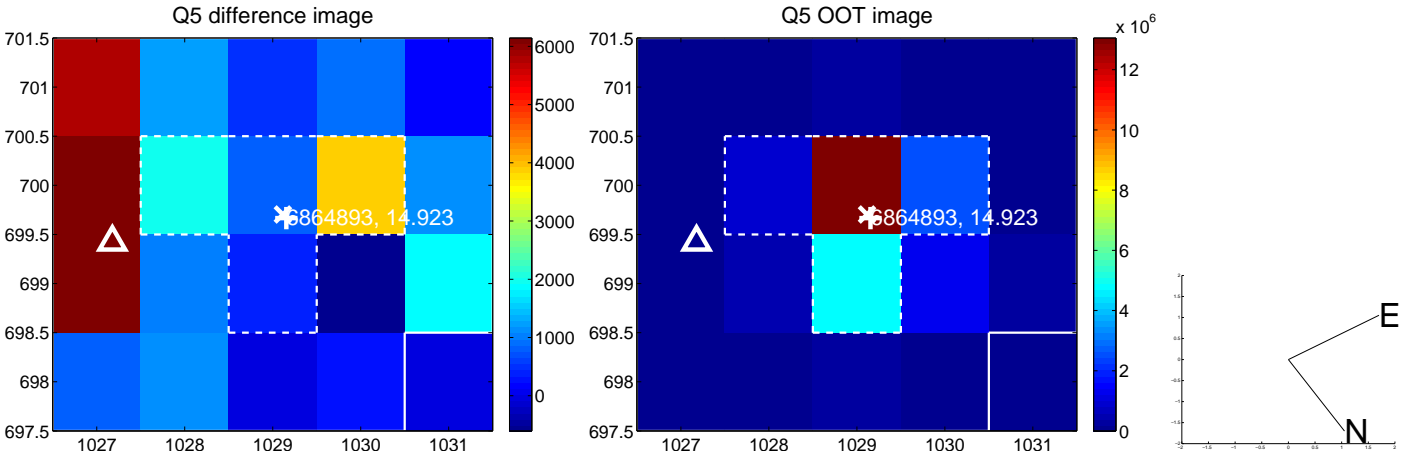


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

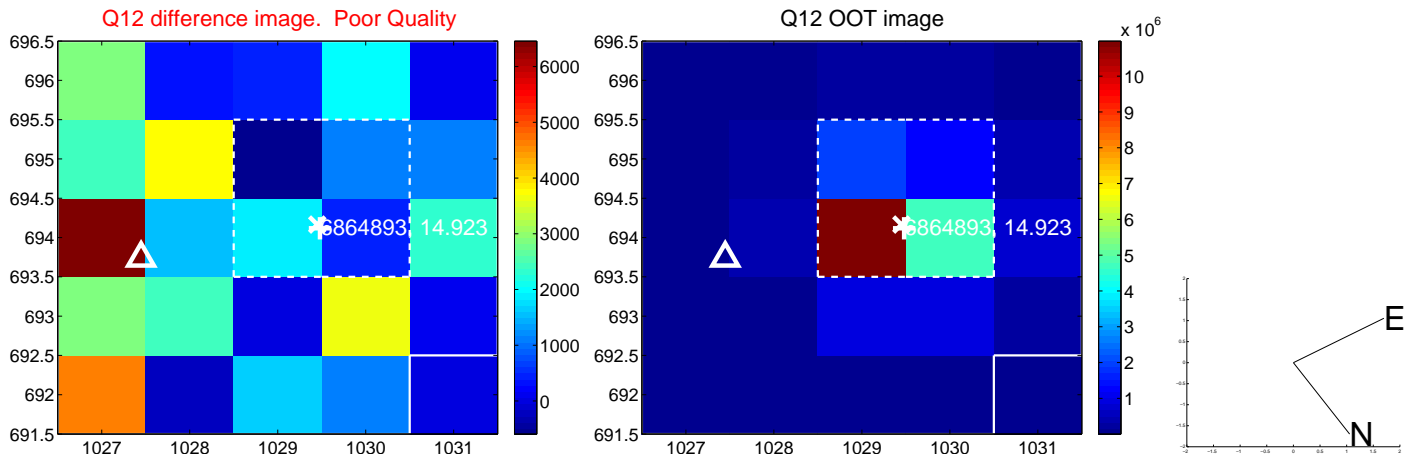
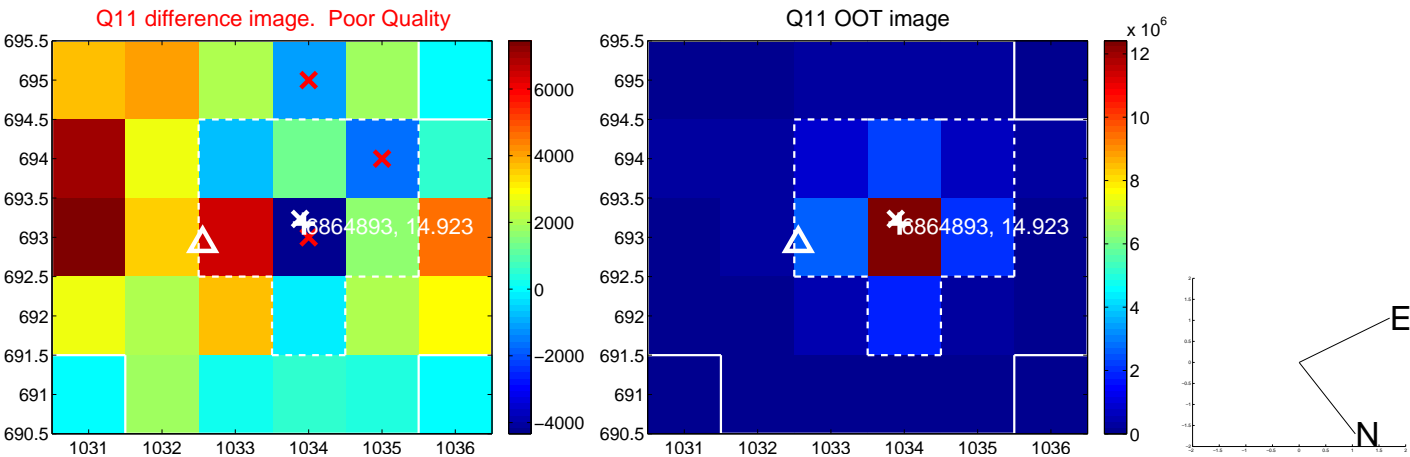
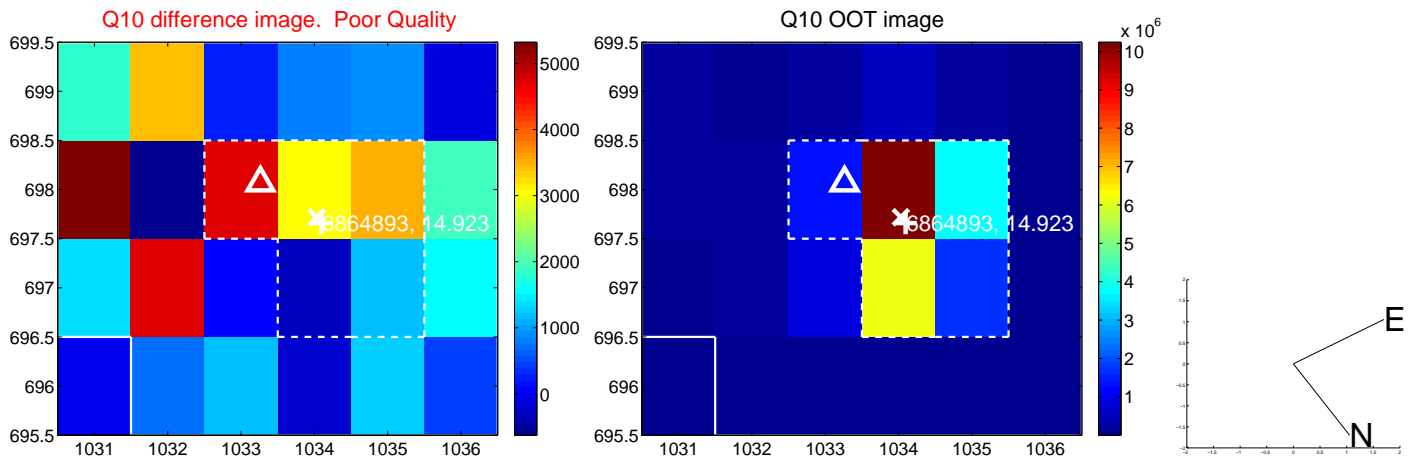
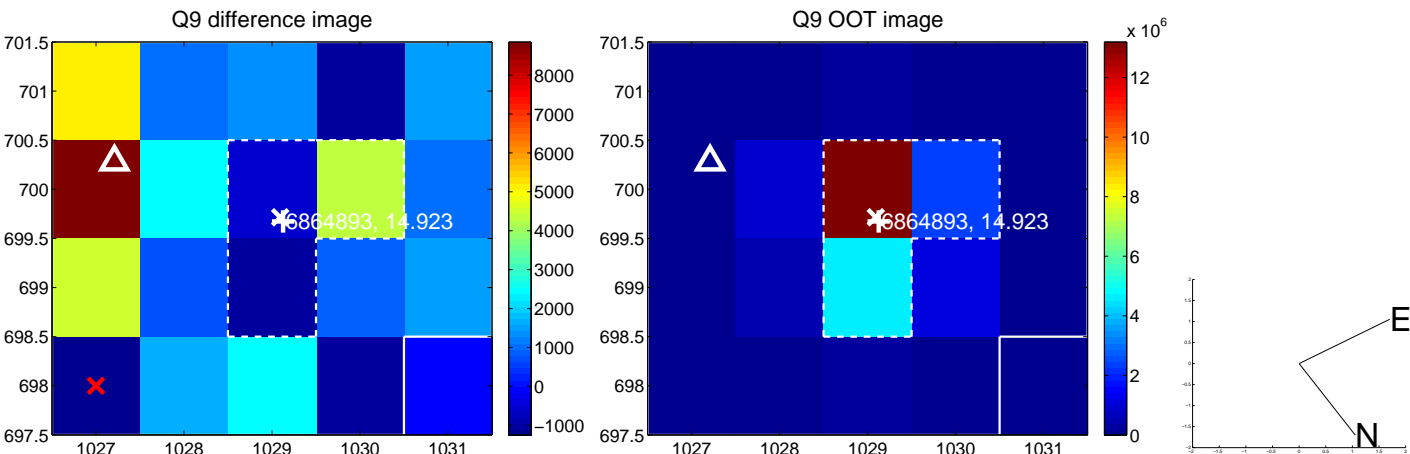
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



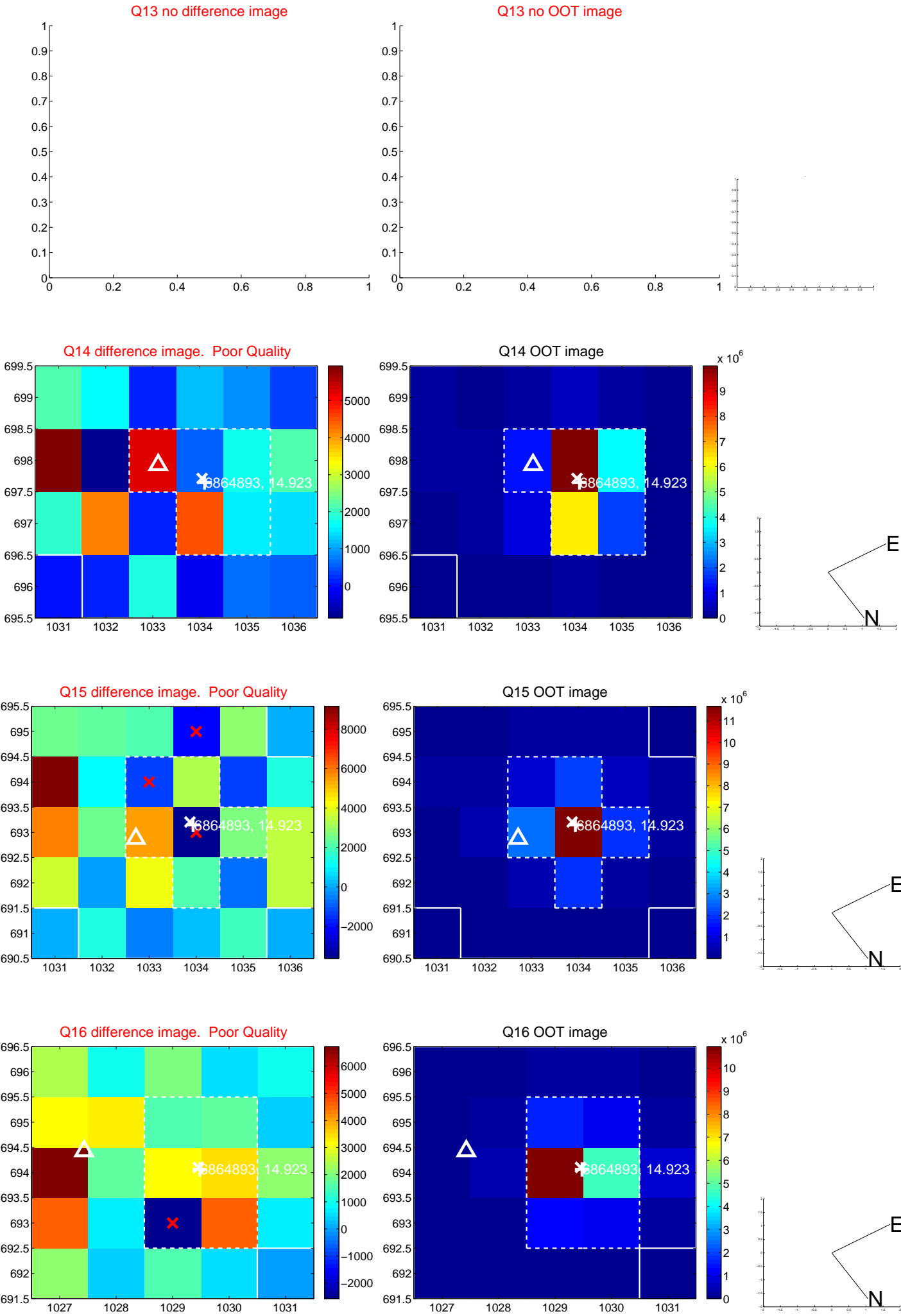
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



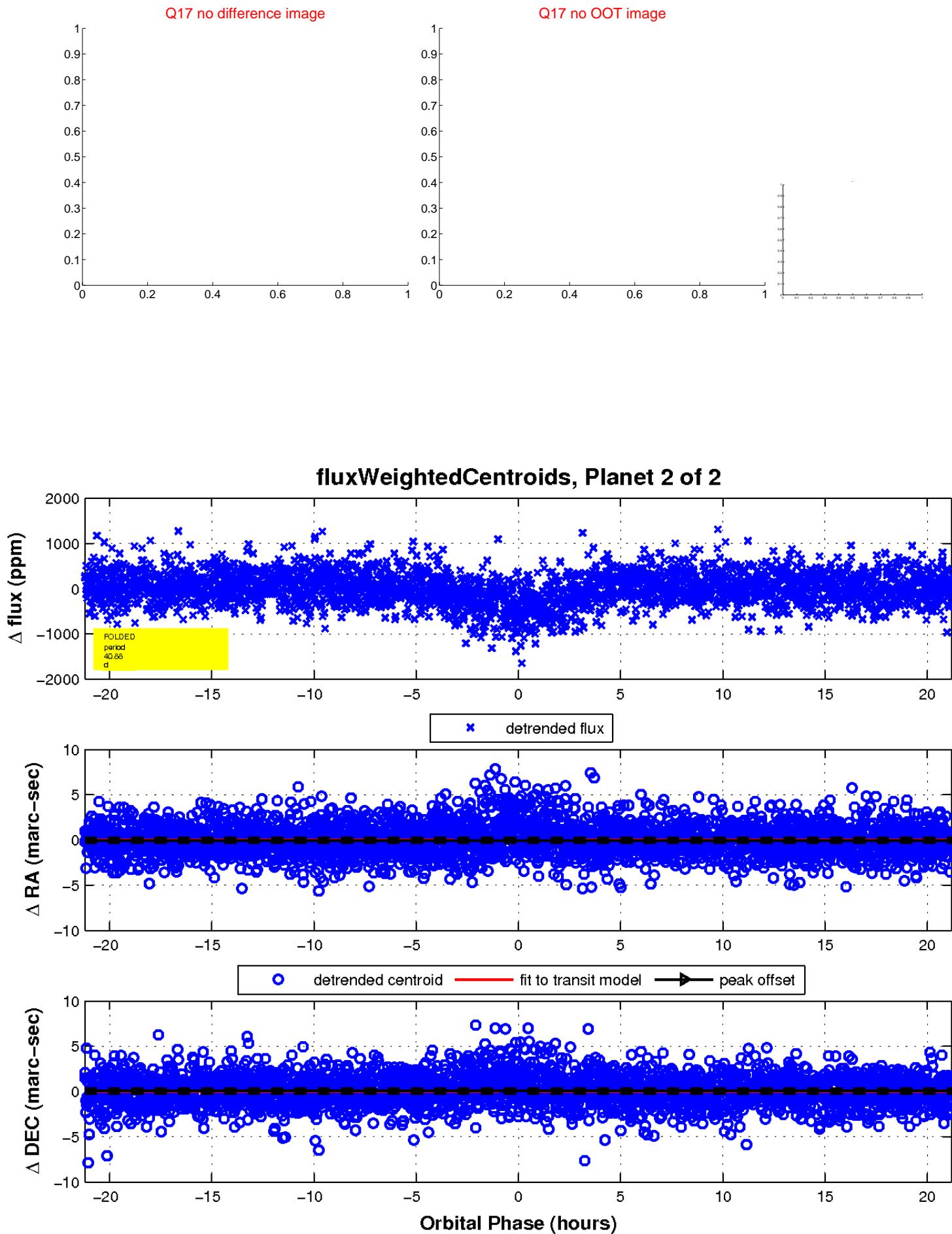
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

