

KIC 008880123

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})
008880123-01	OBS	3493.01	46.716388	145.501274	341.0	7.320	12.3	13.6	1.09	5856	2.16	18.77
008880123-02	OBS	No	374.747335	174.326443	480.3	15.701	7.6	7.9	1.09	5856	2.60	1.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008880123-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008880123-02	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQU_ALT—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.

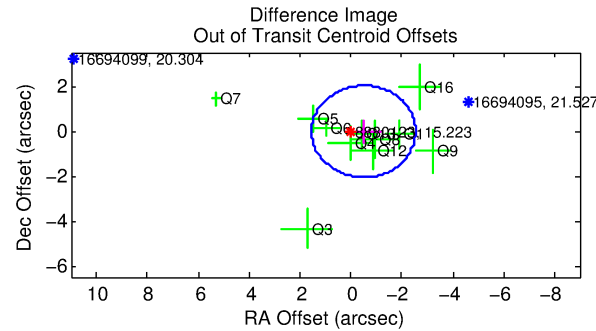
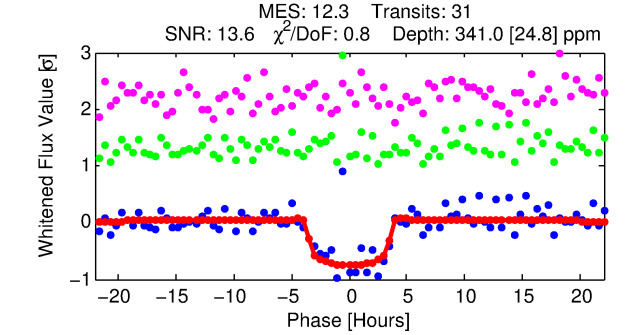
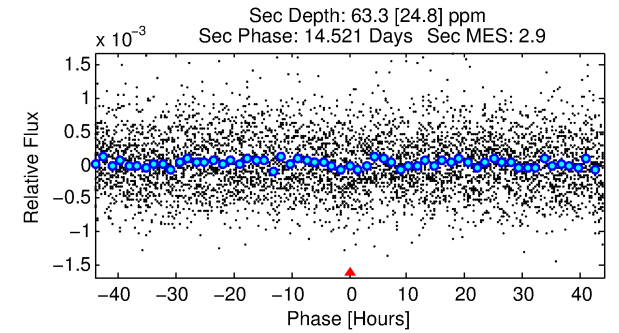
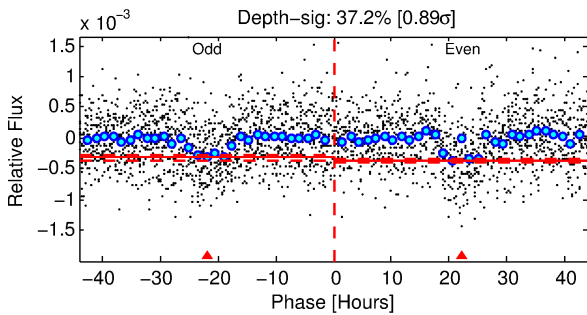
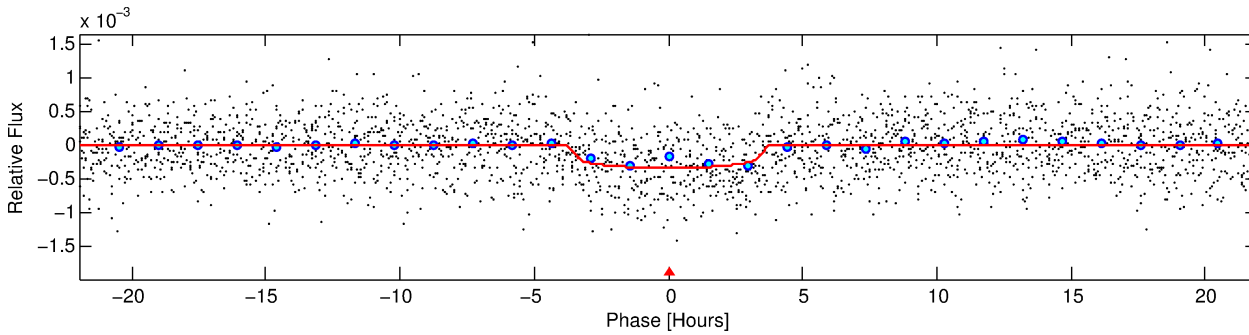
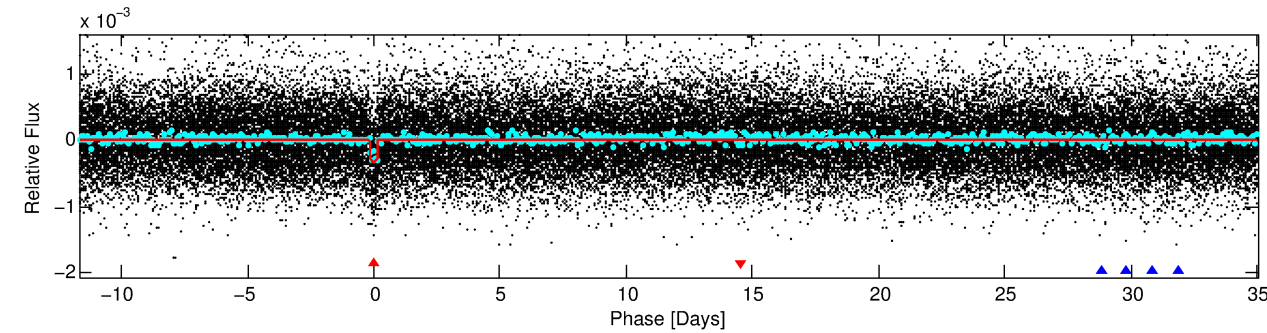
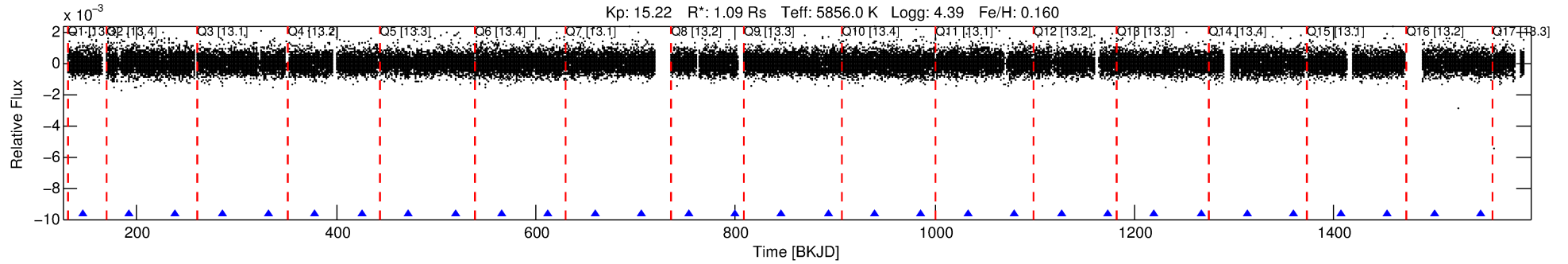
Ephemeris Match Information For 008880123-01

No Significant Match Found

DV One-Page Summary

KIC: 8880123 Candidate: 1 of 2 Period: 46.716 d

KOI: K03493.01 Corr: 0.986



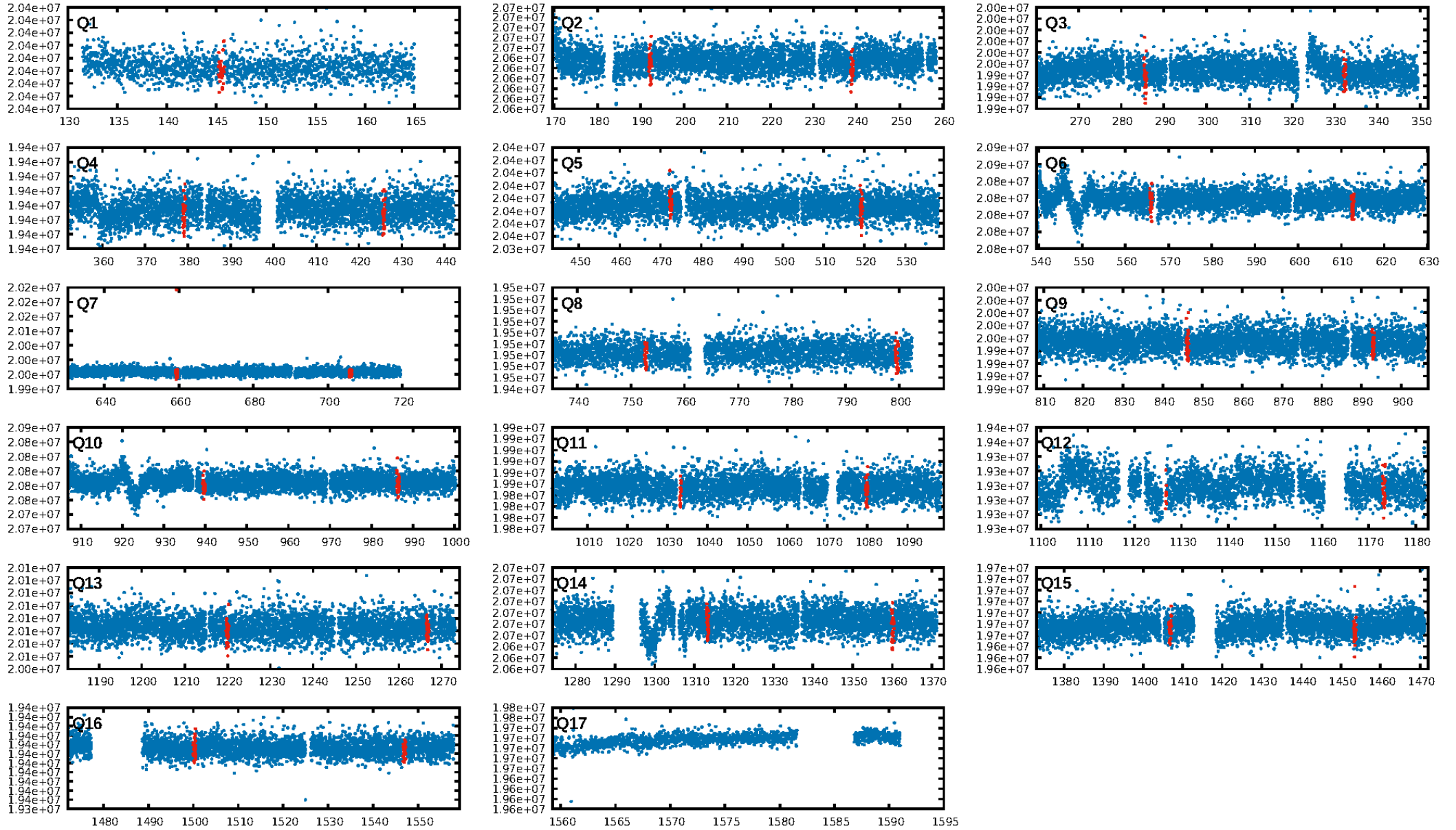
DV Fit Results:

Period = 46.71639 [0.00055] d
Epoch = 145.5013 [0.0096] BKJD
Rp/R* = 0.0181 [0.0098]
a/R* = 35.46 [84.48]
b = 0.71 [1.67]
Seff = 18.77 [4.22]
Teff = 531 [30] K
Rp = 2.16 [1.22] Re
a = 0.2587 [0.0375] AU
Ag = 499.27 [581.90] [0.86 σ]
Teffp = 3879 [1111] K [3.01 σ]

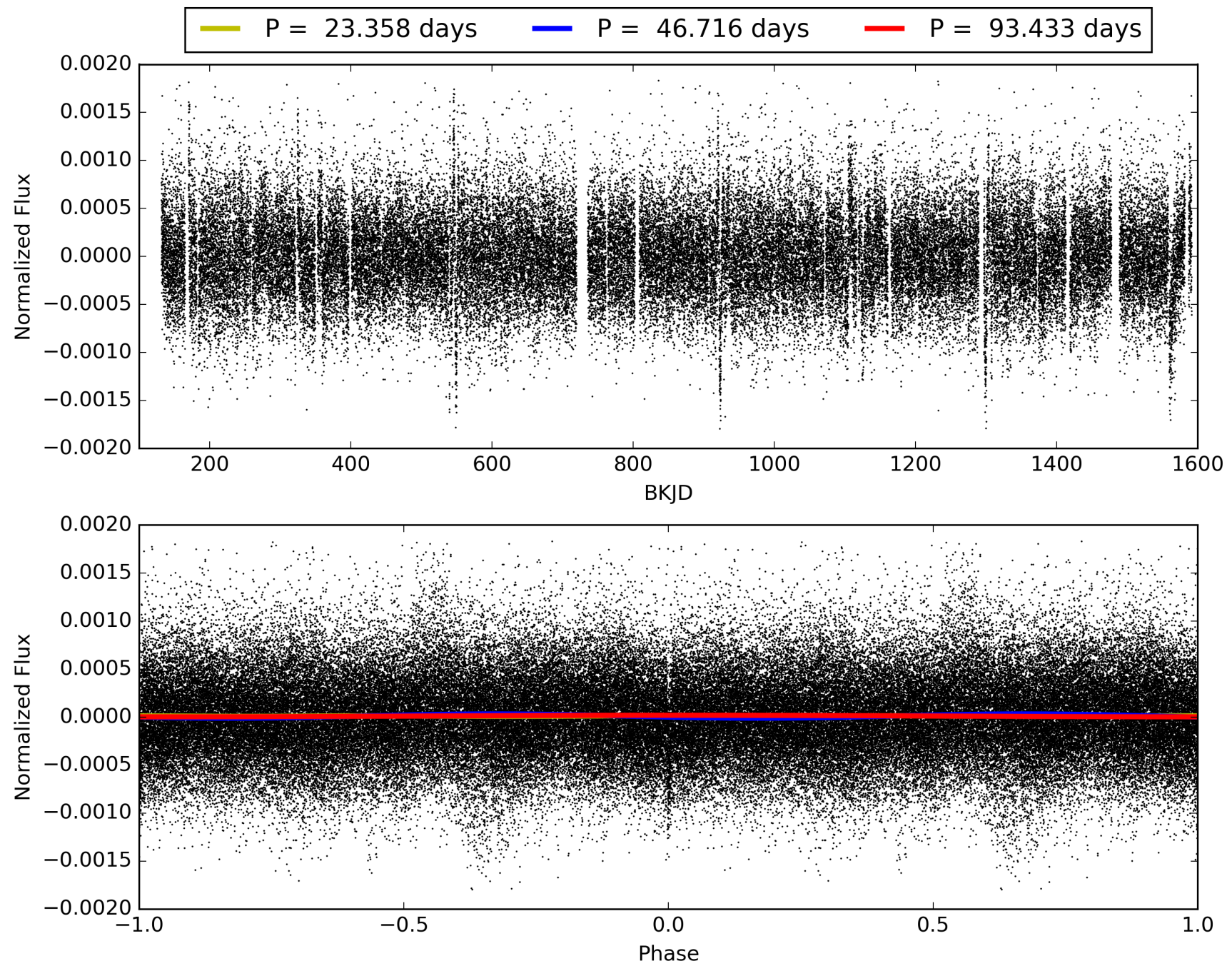
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [454.46 σ]
ModelChiSquare2-sig: 98.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.39e-33
RollingBand-fgt: 1.00 [30/30]
GhostDiagnostic-chr: 4.122
Centroid-sig: 36.3%
Centroid-so: 1.191 arcsec [1.16 σ]
OotOffset-rm: 0.499 arcsec [0.73 σ]
KicOffset-rm: 0.684 arcsec [0.99 σ]
OotOffset-st: 1/2/4/4 [11]
KicOffset-st: 1/2/4/4 [11]
DiffImageQuality-fgm: 0.64 [7/11]
DiffImageOverlap-fno: 1.00 [16/16]

TCE 008880123-01, PDC Light Curves

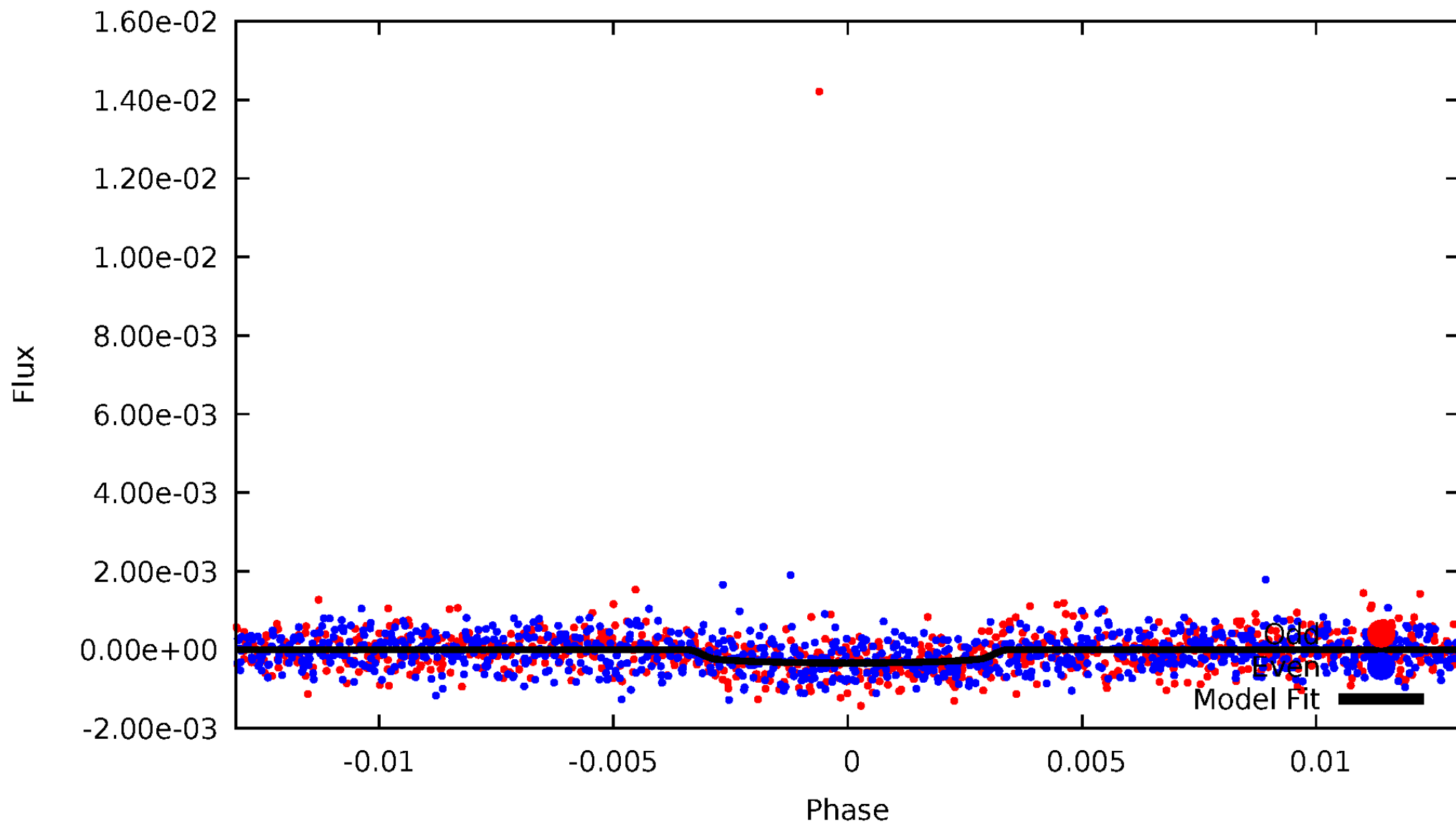


TCE 008880123-01



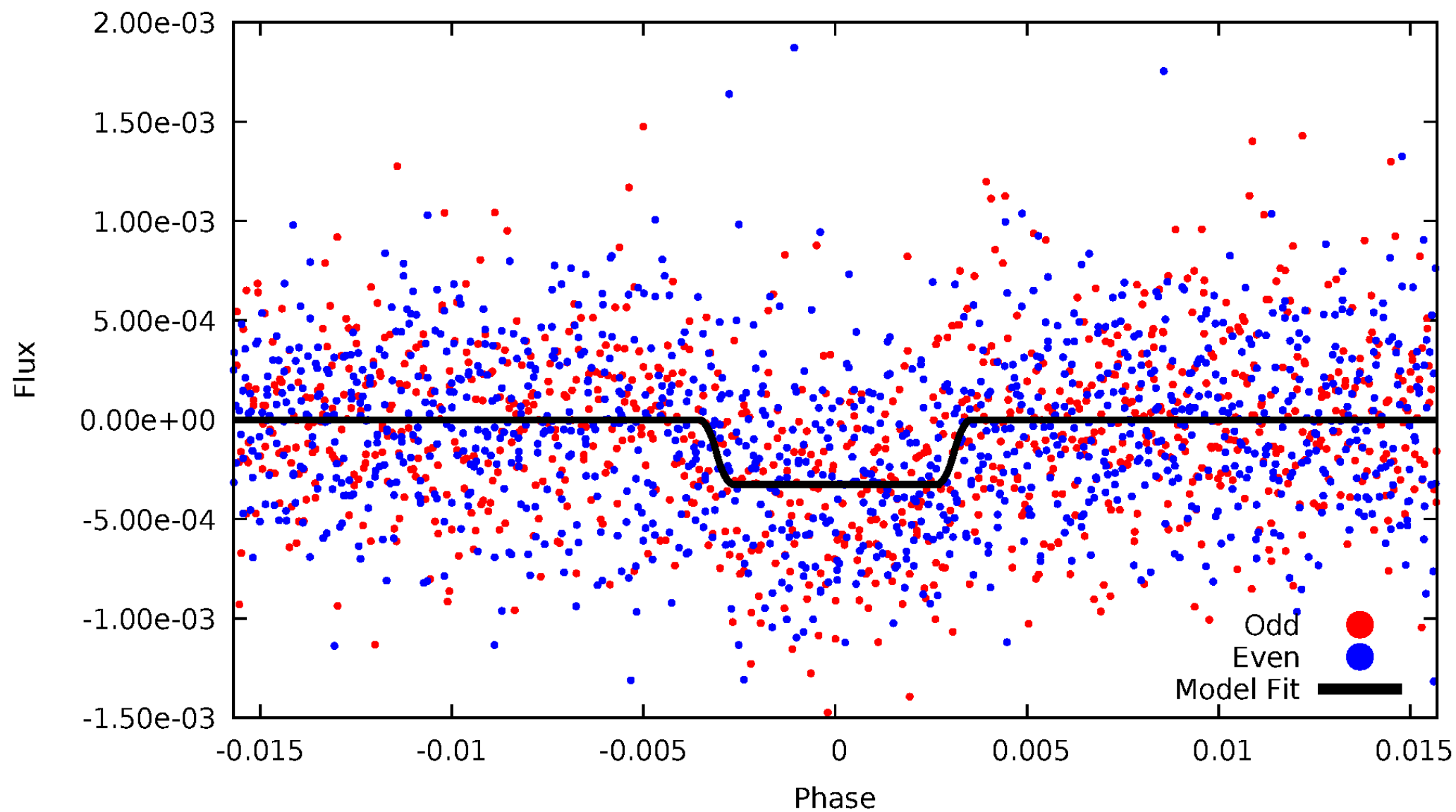
DV Odd/Even

TCE 008880123-01

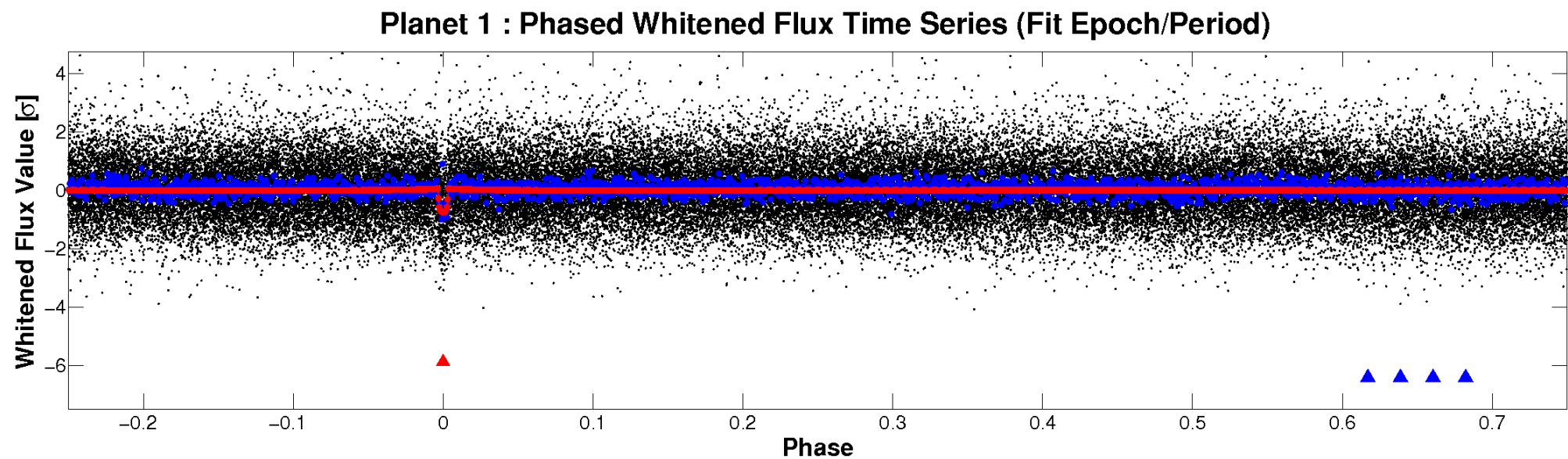
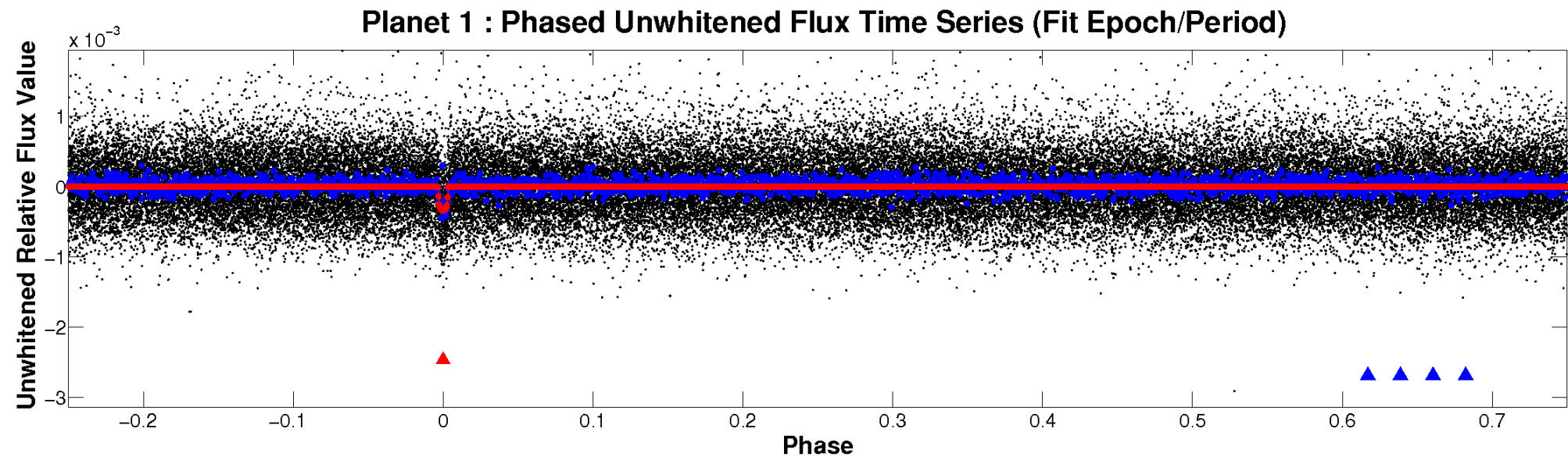


ALT Odd/Even

TCE 008880123-01

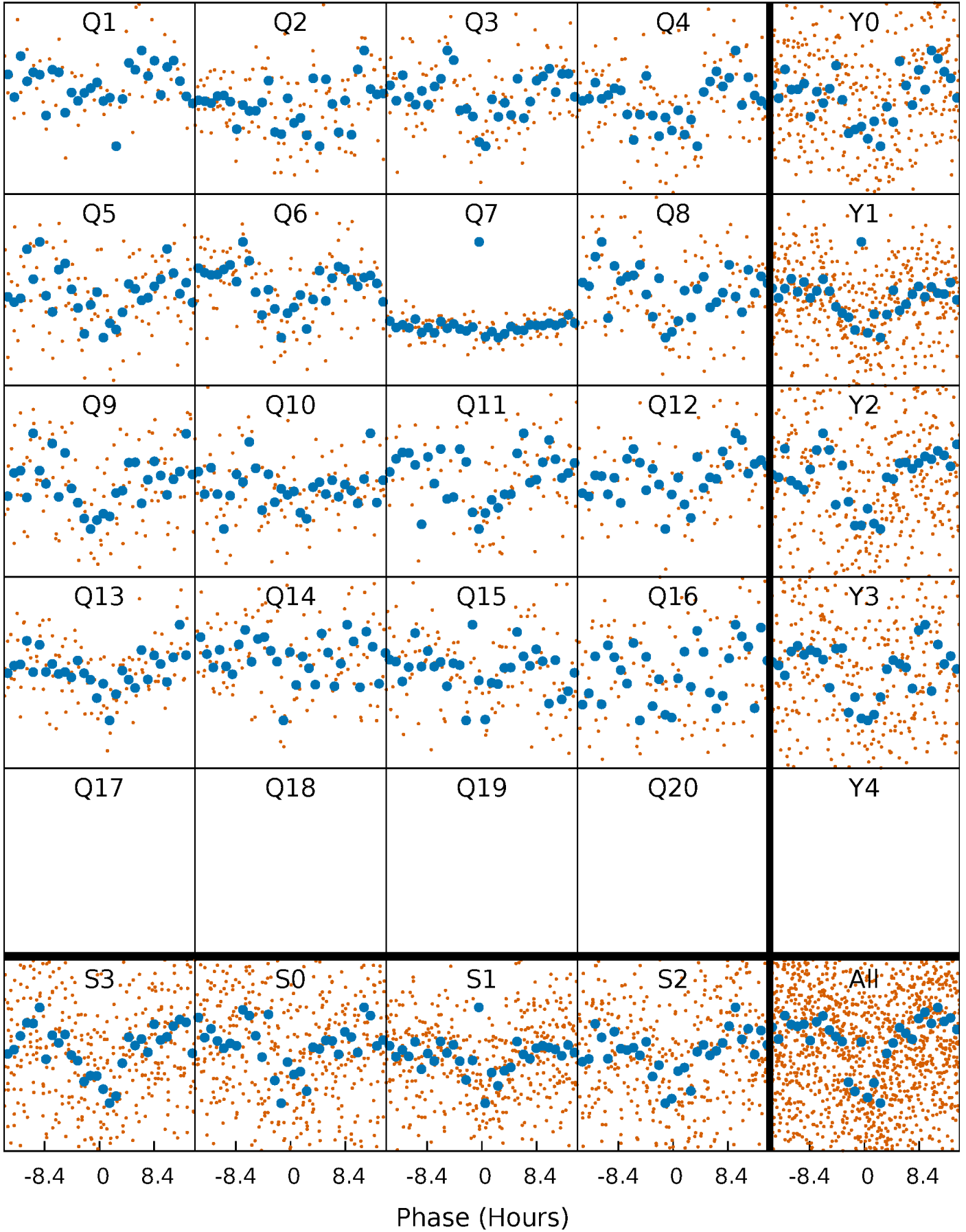


Non-Whitened Vs. Whitened Light Curve



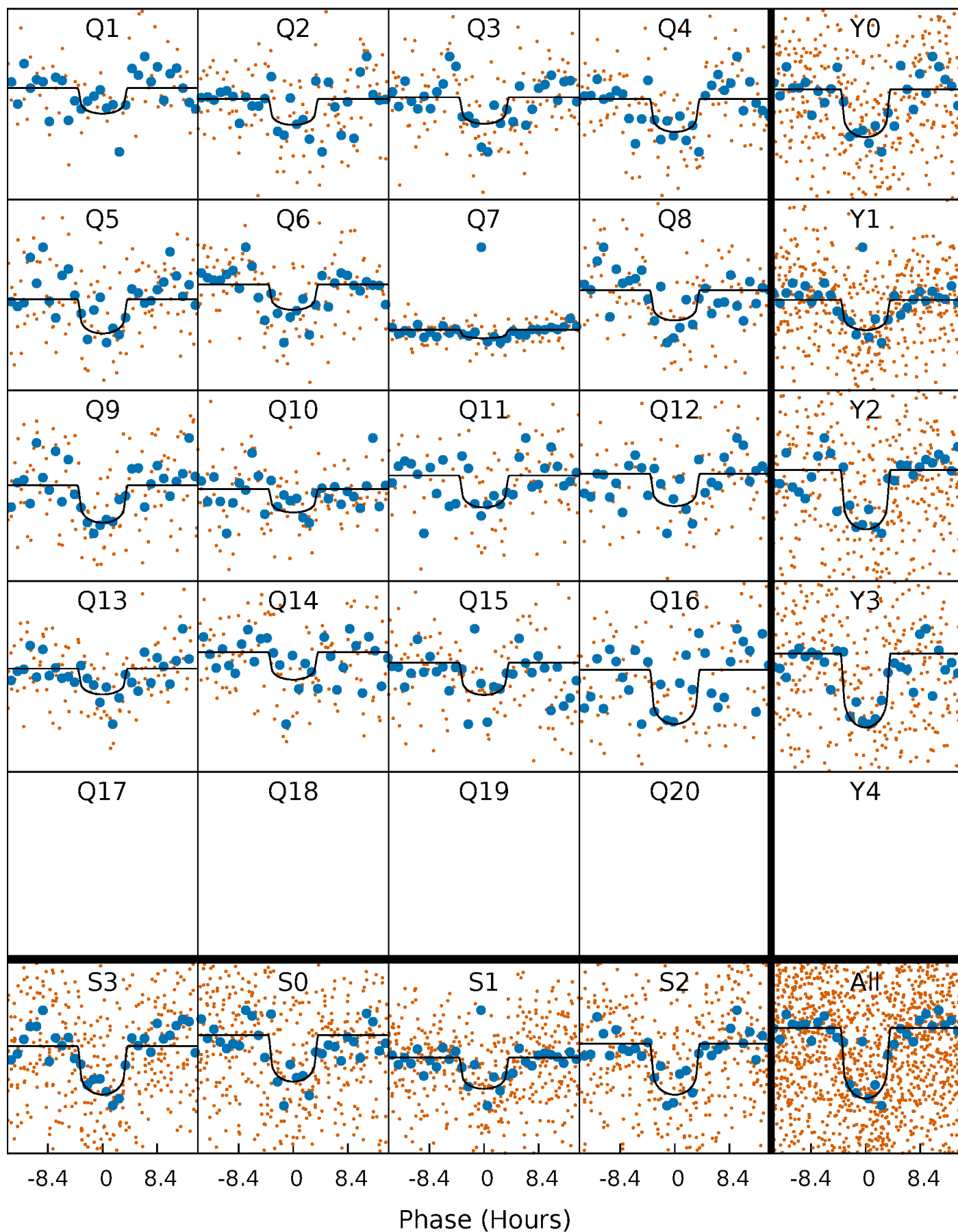
PDC Quarter-Phased Transit Curves

TCE 008880123-01 P= 46.716388 Days $T_0=145.501274$ (BKJD)



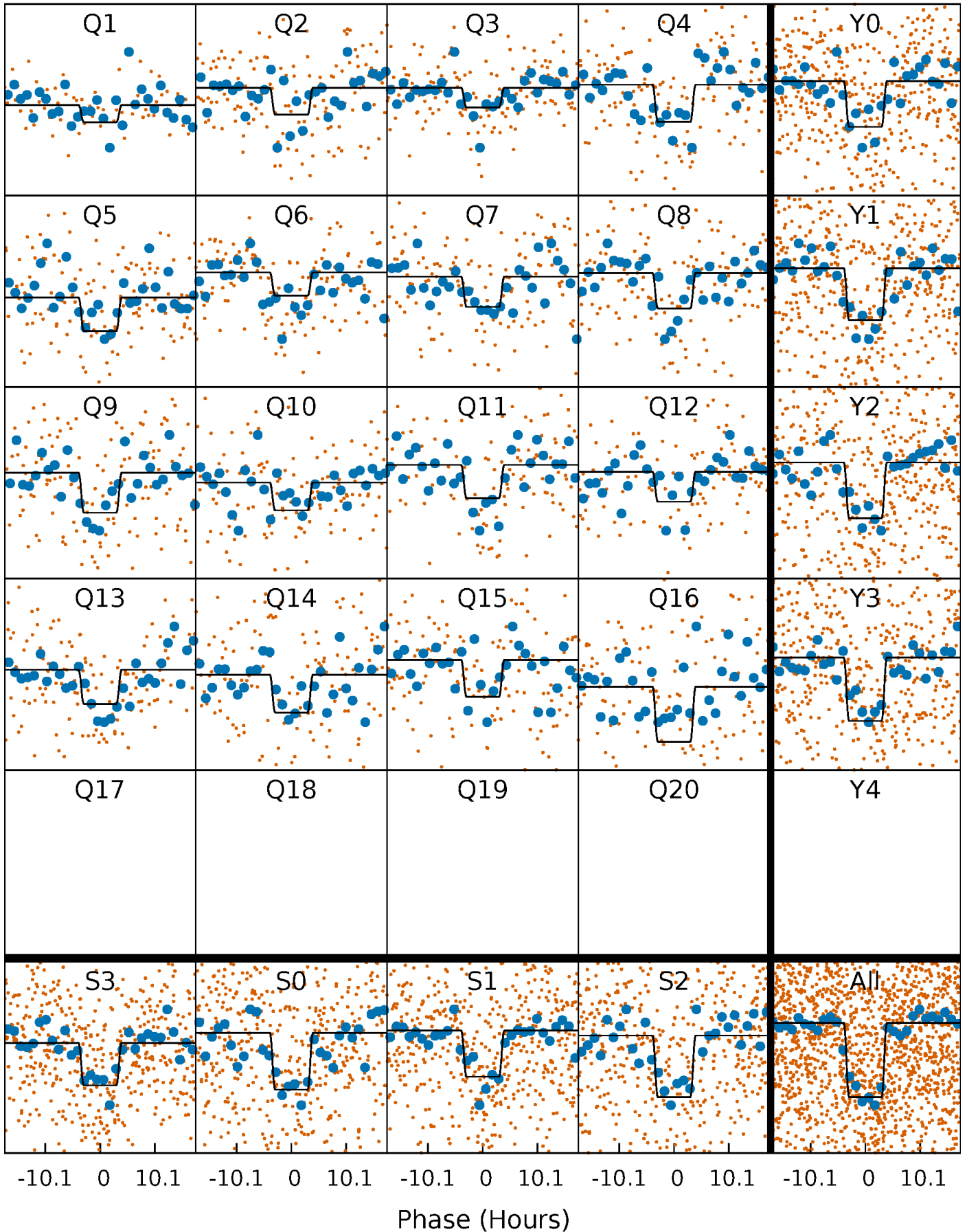
DV Quarter-Phased Transit Curves

TCE 008880123-01 P= 46.716388 Days $T_0=145.501274$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

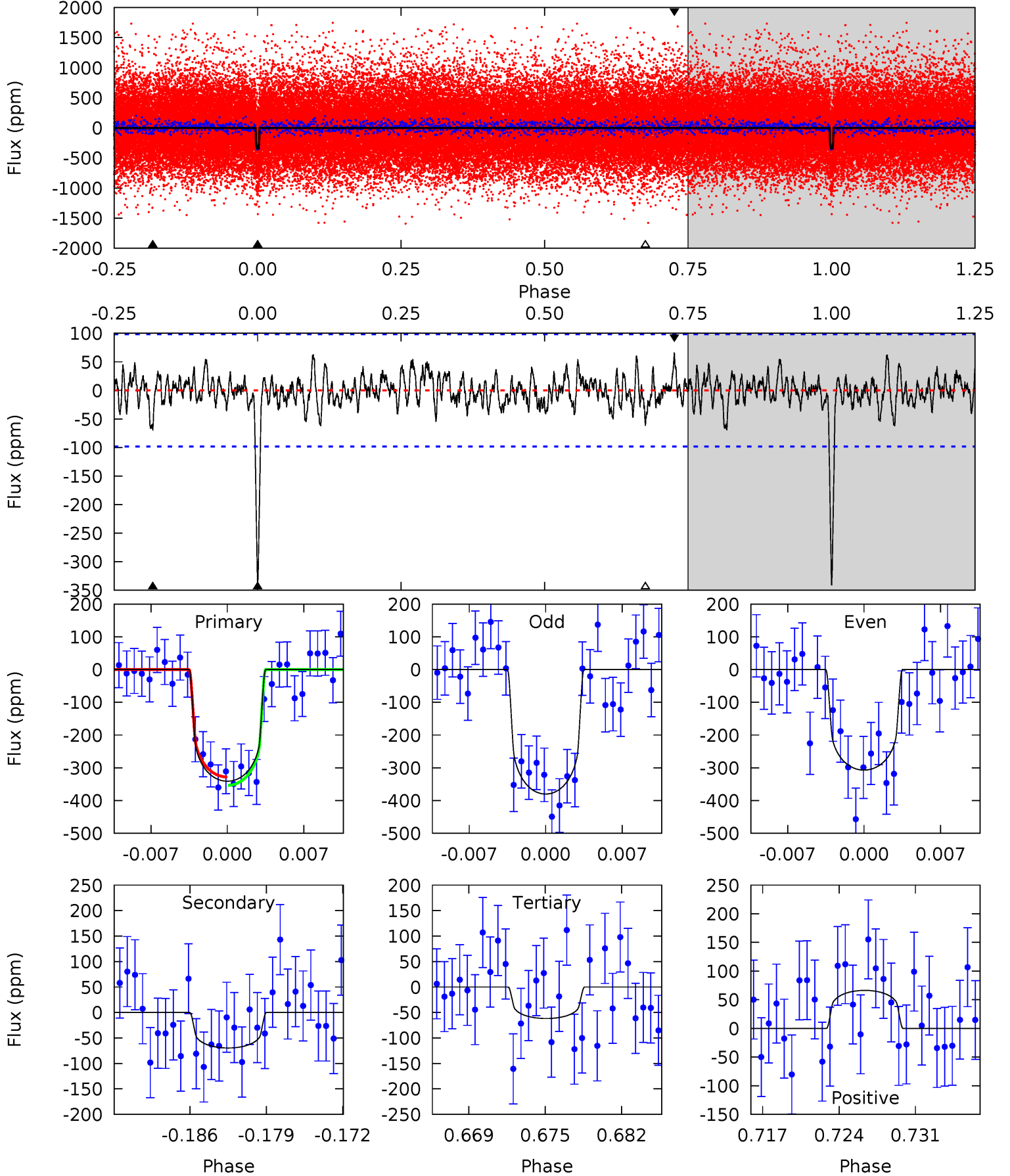
TCE 008880123-01 P= 46.715209 Days $T_0=145.527203$ (BKJD)



DV Model-Shift Uniqueness Test

008880123-01, P = 46.716388 Days, E = 98.784886 Days

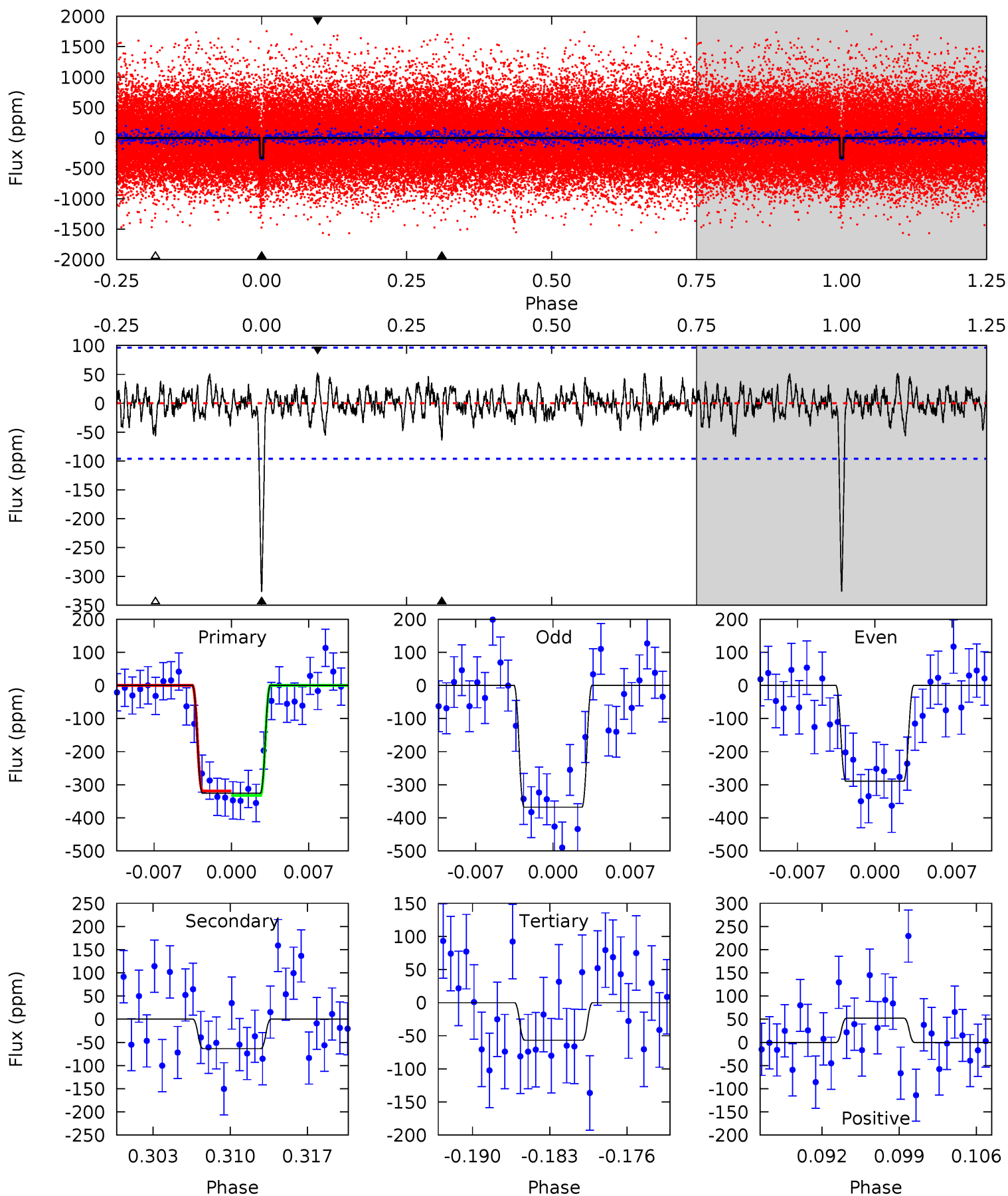
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.7	3.62	3.21	3.44	5.10	2.70	1.11	14.5	14.3	0.41	0.17	1.90	1.01	0.16	0.67



Alt Model-Shift Uniqueness Test

008880123-01, P = 46.715209 Days, E = 98.811994 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.2	3.36	3.00	2.75	5.09	2.69	0.95	14.2	14.5	0.36	0.62	2.07	1.21	0.14	0.37



Stellar Parameters For KIC 008880123

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5856^{+79}_{-79}	$4.386^{+0.066}_{-0.123}$	$0.160^{+0.150}_{-0.150}$	$1.092^{+0.180}_{-0.097}$	$1.057^{+0.070}_{-0.064}$	$1.144^{+0.354}_{-0.407}$
	+1%/-1%	+2%/-3%	+94%/-94%	+16%/-9%	+7%/-6%	+31%/-36%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 008880123-01 / KOI 3493.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-70 ± 19	$2.30^{+1.16}_{-1.22}$	744^{+34}_{-23}	4186^{+1386}_{-630}	505^{+1617}_{-308}
Alt.	-64 ± 19	$2.20^{+1.12}_{-1.14}$	744^{+31}_{-23}	4127^{+1535}_{-574}	465^{+1646}_{-271}

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 $A_{obs} \gg 1.0$

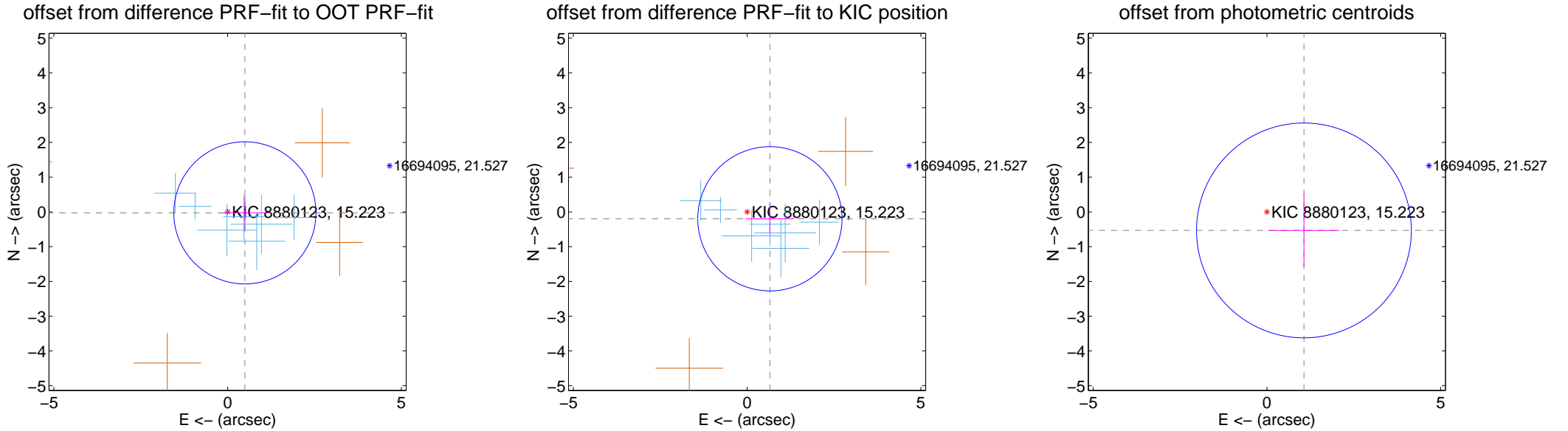
DV Centroid Data

Supplemental centroid analysis for 008880123-01. Kepler magnitude: 15.22. Transit SNR 13.56

There are 7 quarters with good PRF difference image offsets

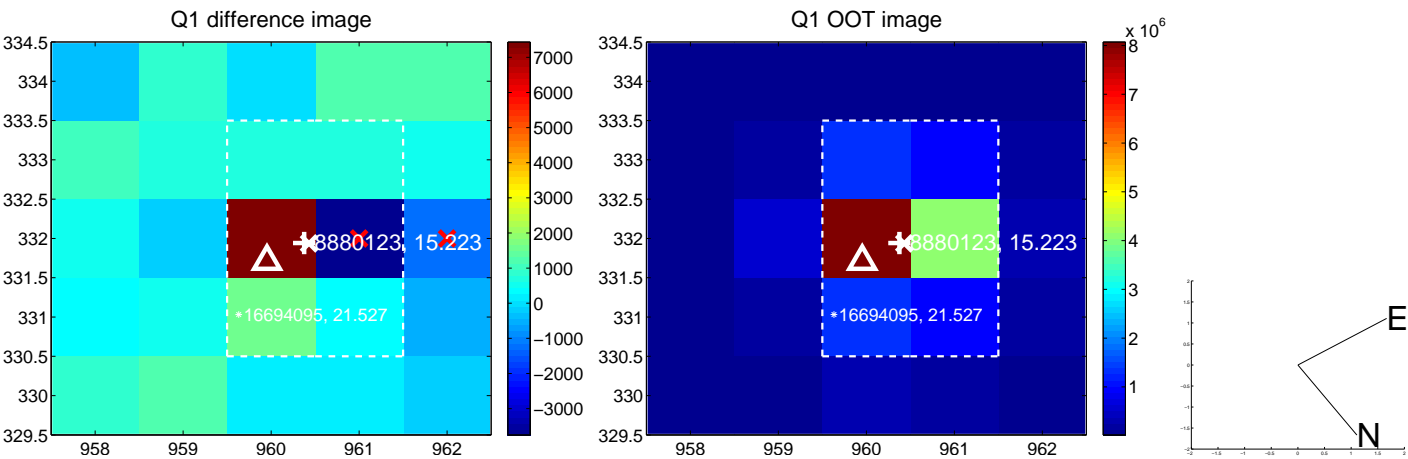
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.499 ± 0.682	0.73	-0.498 ± 0.683	-0.027 ± 0.475
PRF-fit source offset from KIC position	0.684 ± 0.692	0.99	-0.655 ± 0.697	-0.198 ± 0.449
photometric centroid source offset	1.19 ± 1.03	1.16	-1.07 ± 1.02	-0.53 ± 1.05

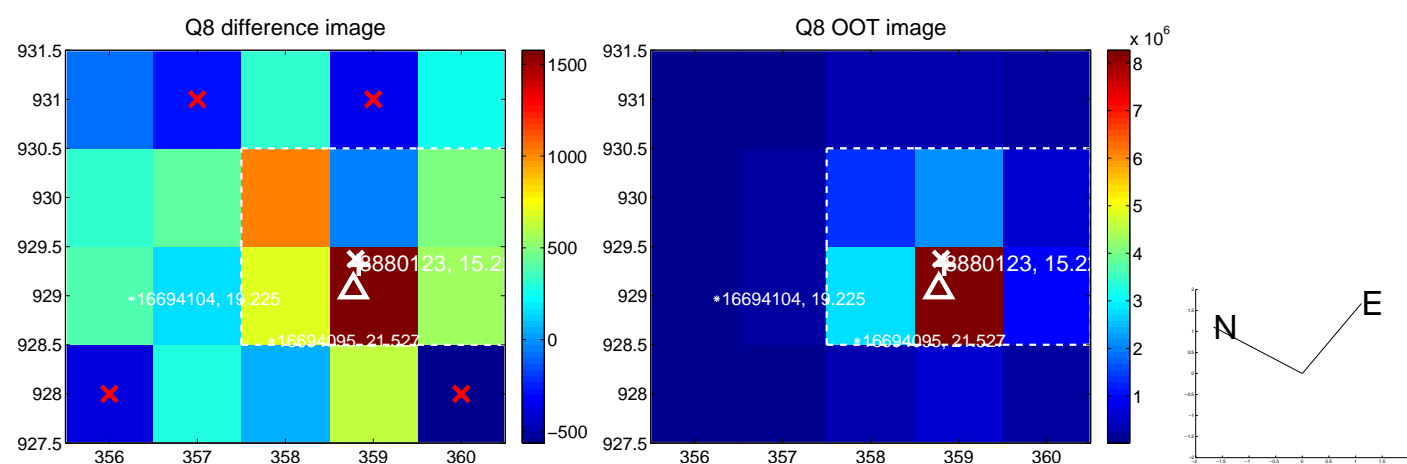
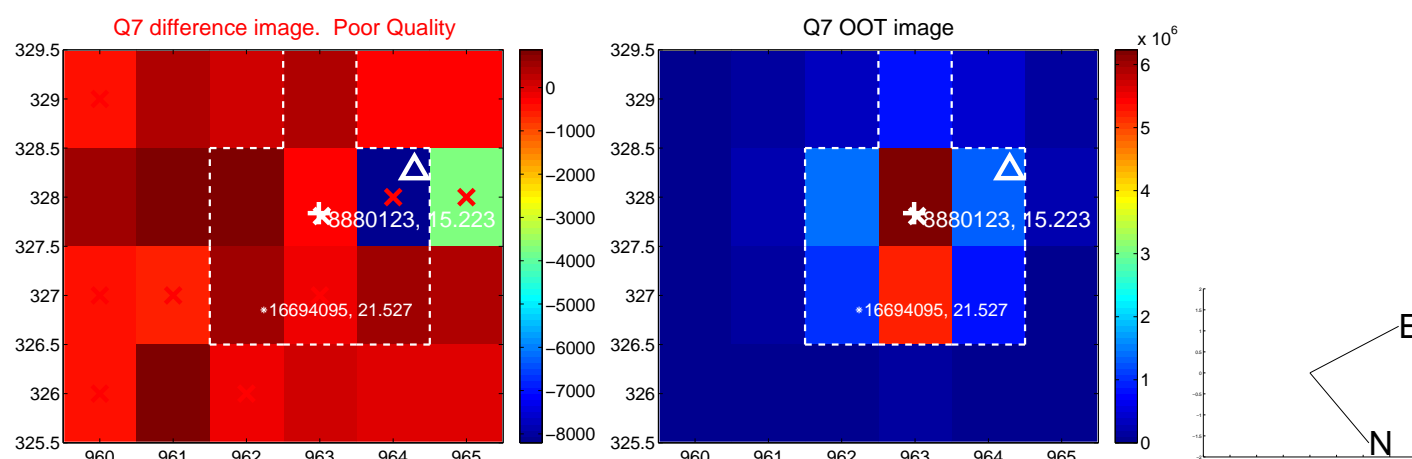
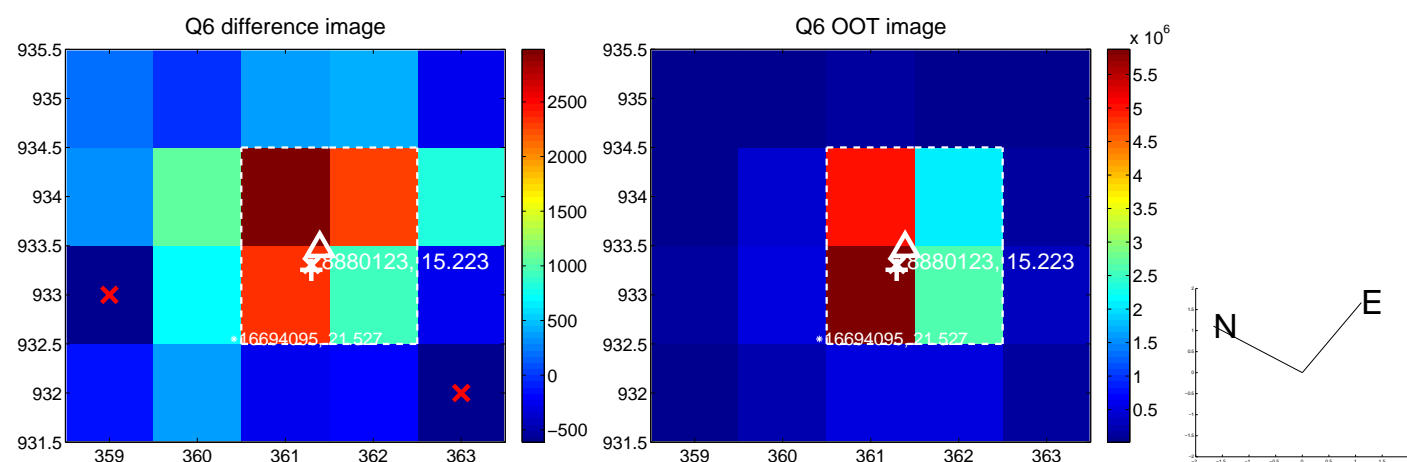
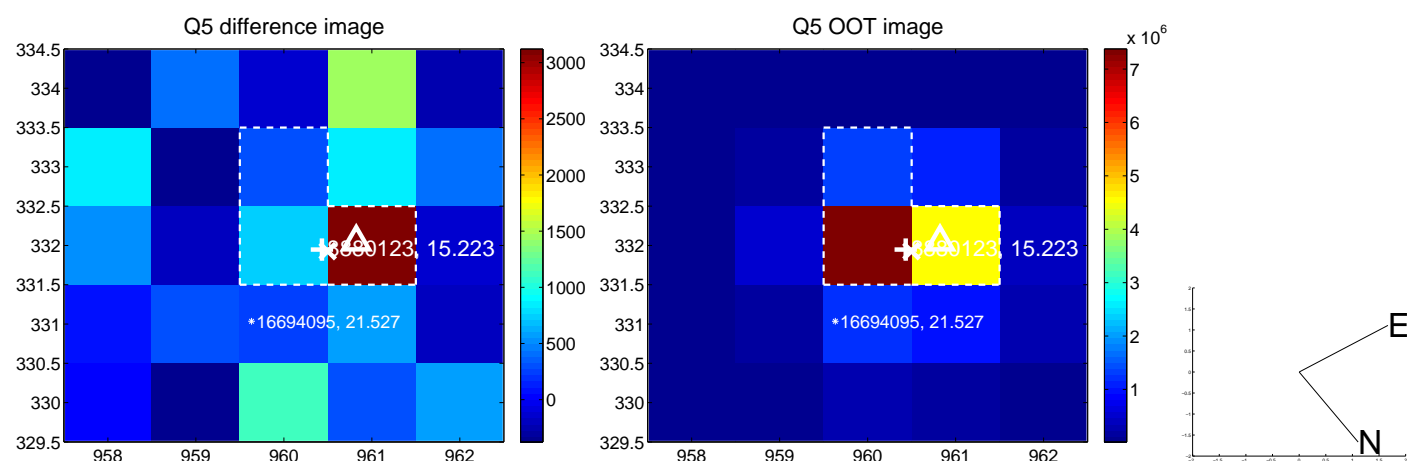


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

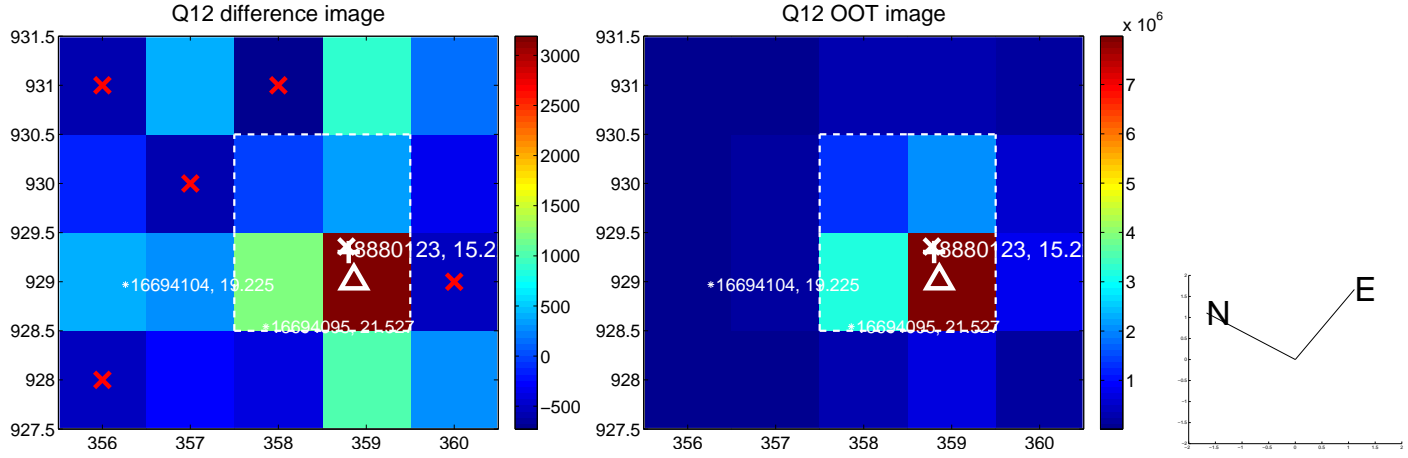
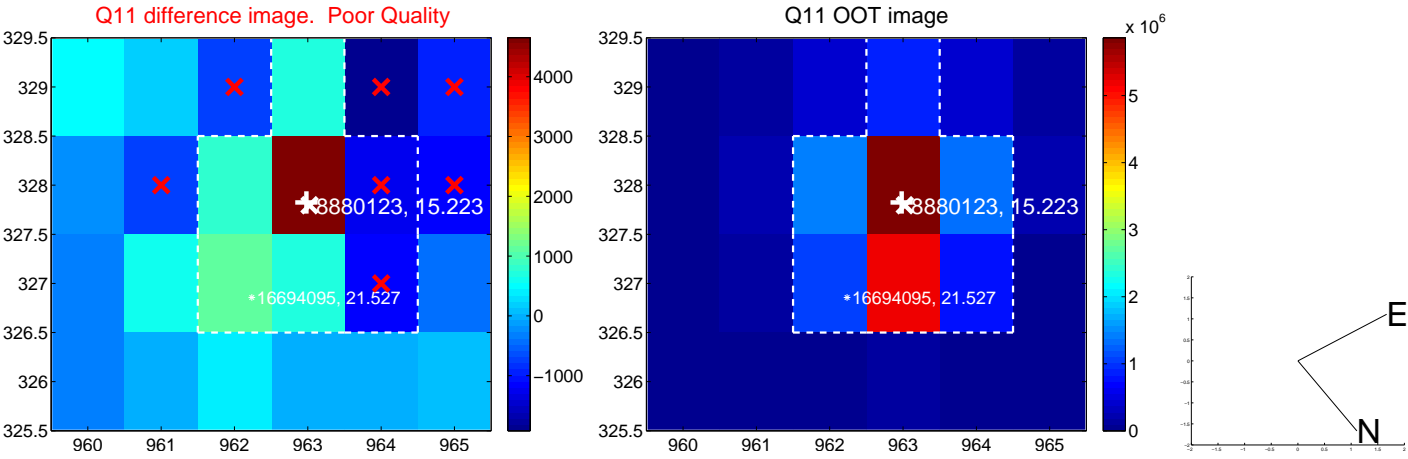
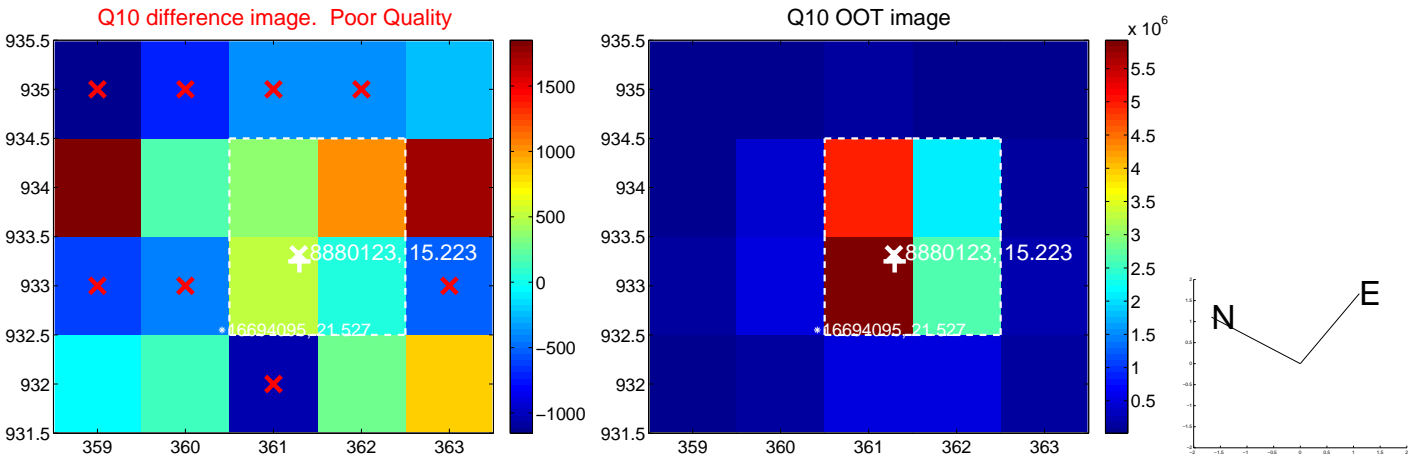
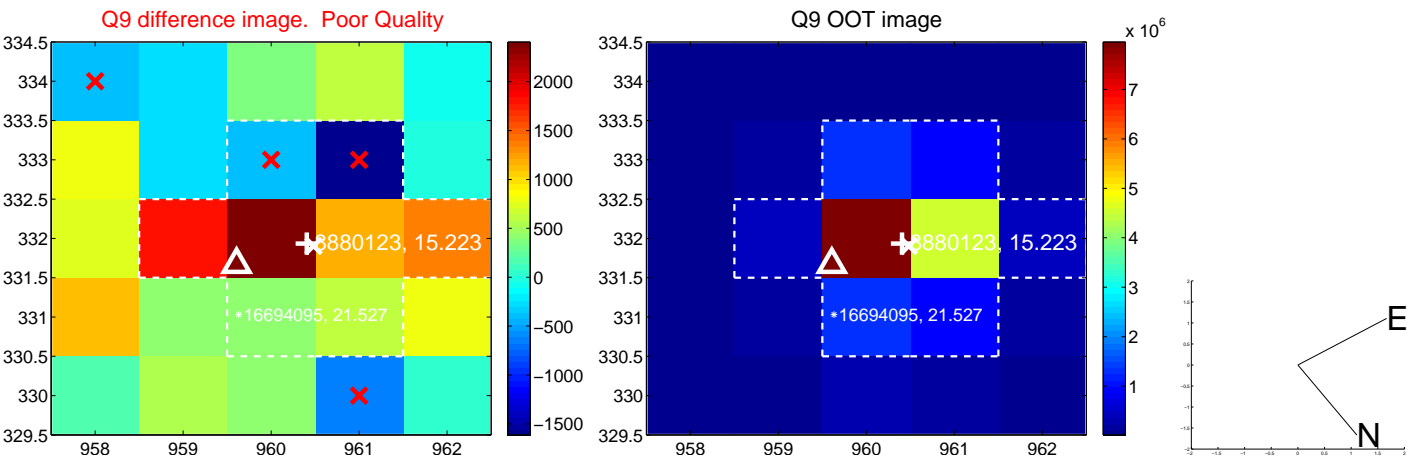
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



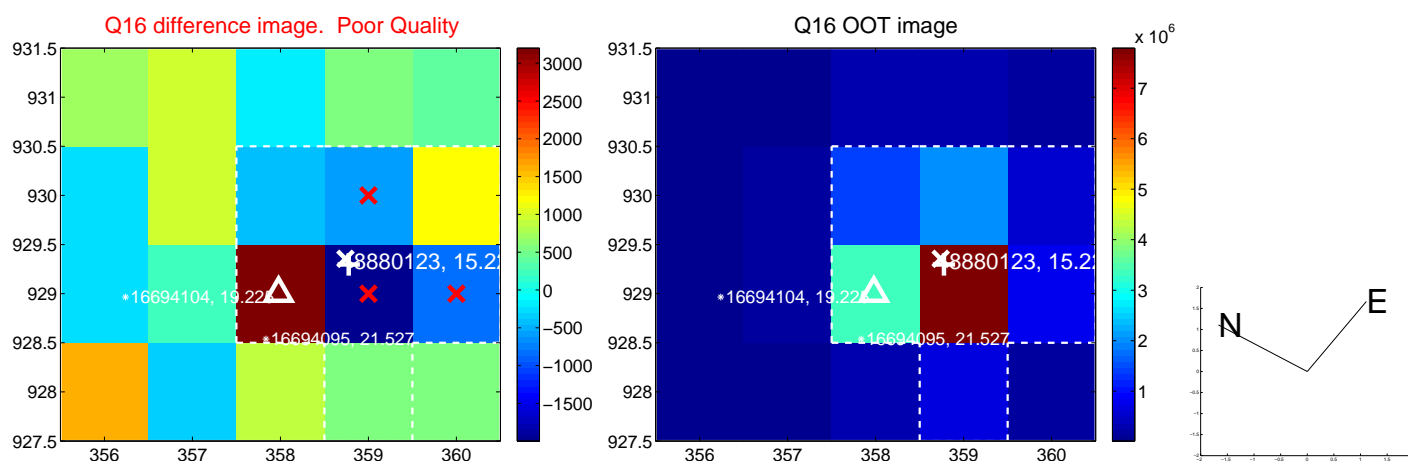
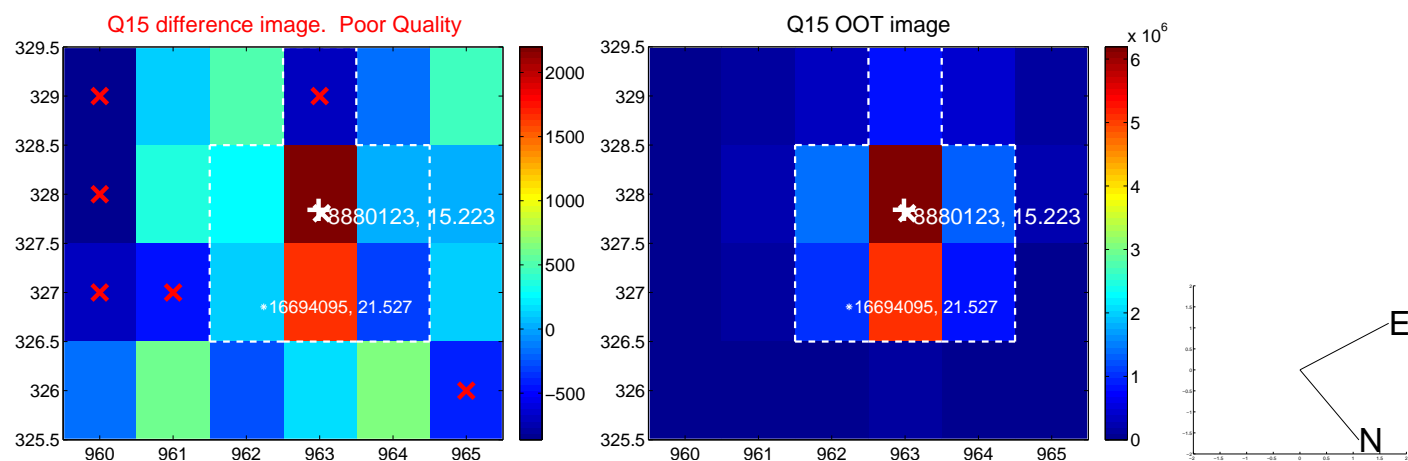
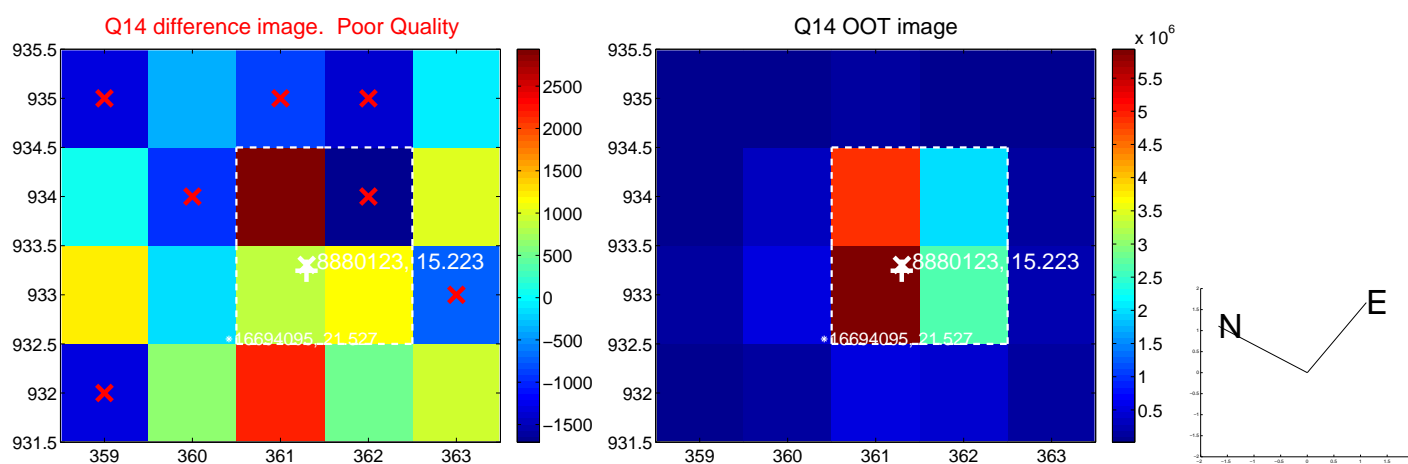
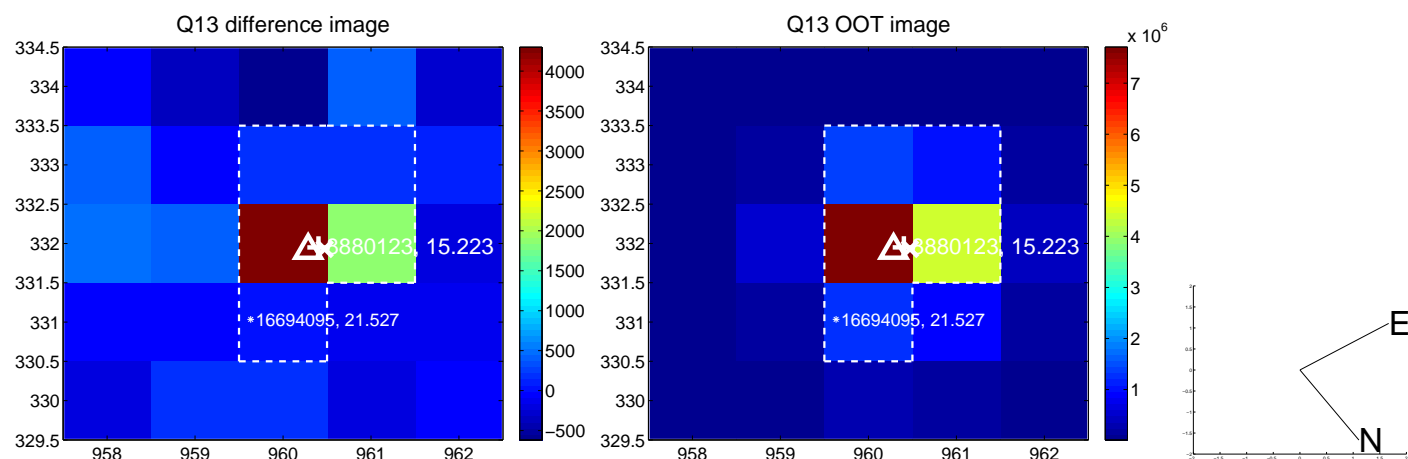
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



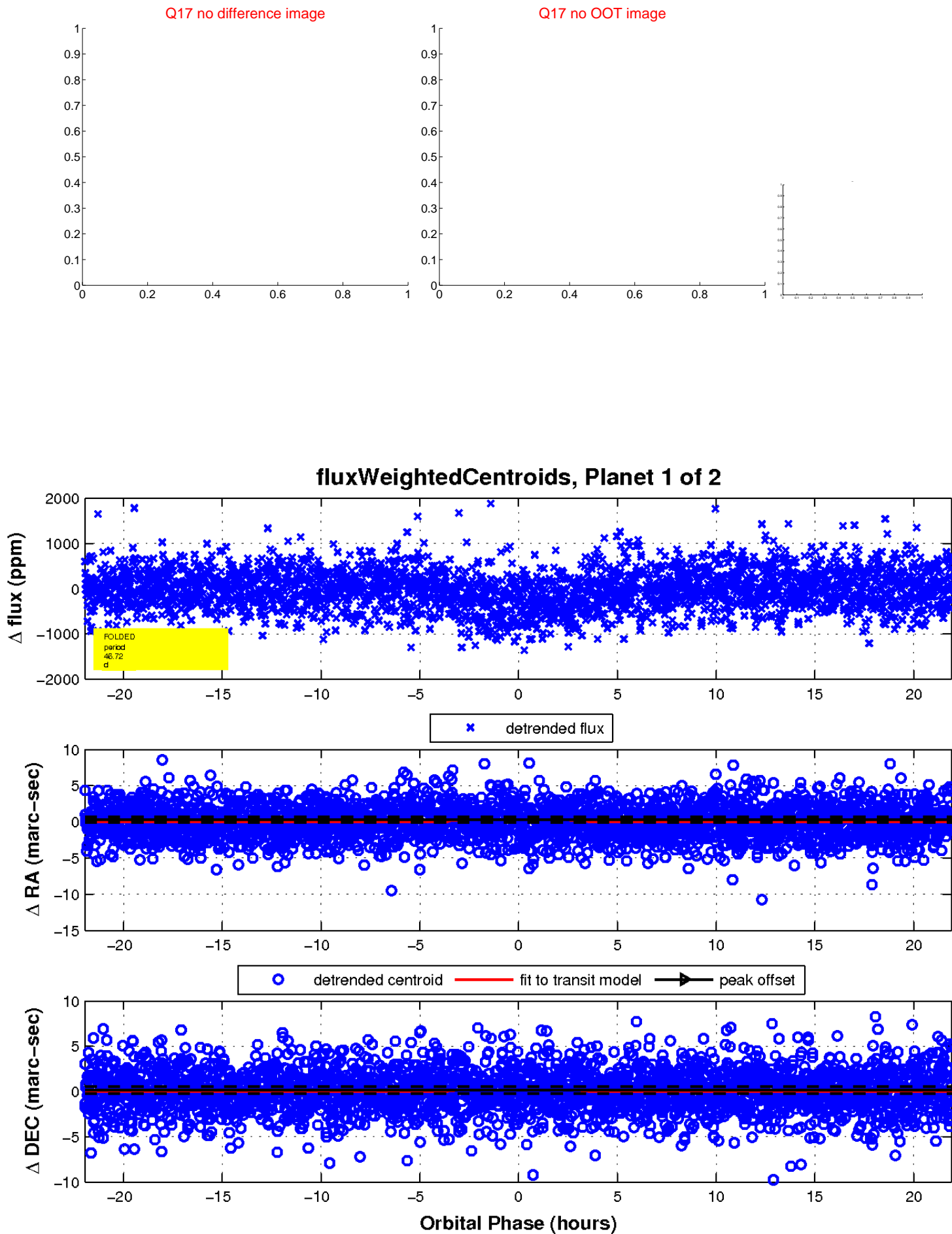
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

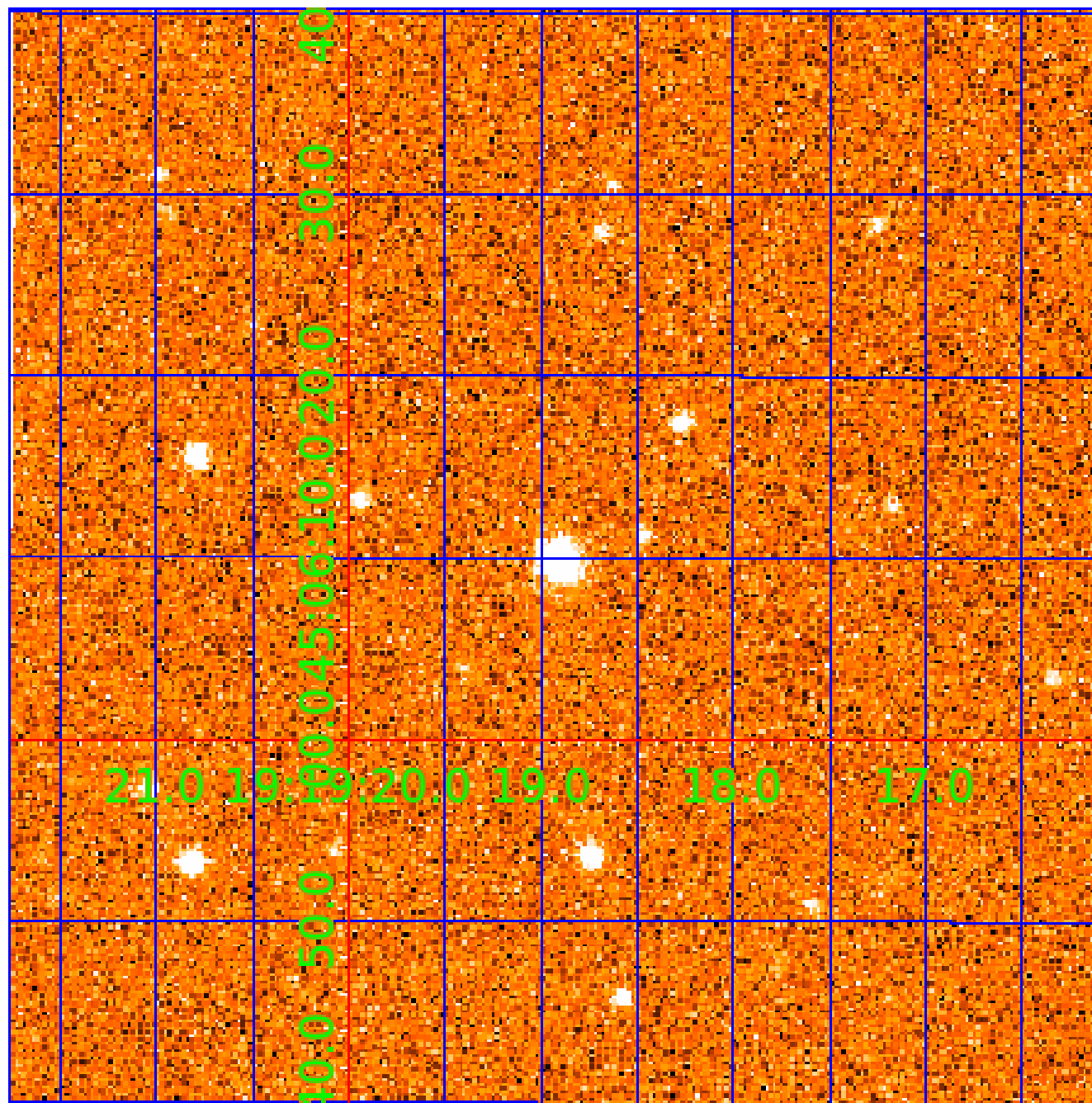


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008880123

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})
008880123-01	OBS	3493.01	46.716388	145.501274	341.0	7.320	12.3	13.6	1.09	5856	2.16	18.77
008880123-02	OBS	No	374.747335	174.326443	480.3	15.701	7.6	7.9	1.09	5856	2.60	1.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008880123-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008880123-02	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—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 008880123-02

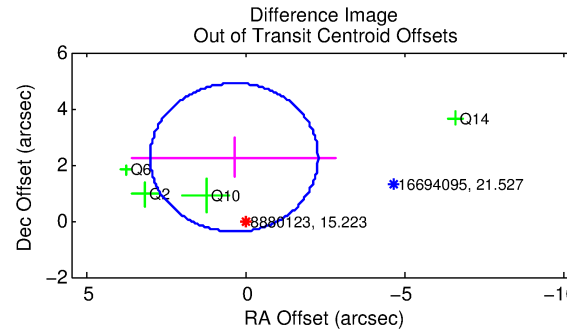
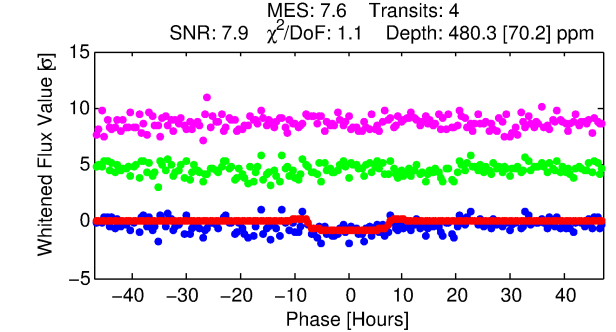
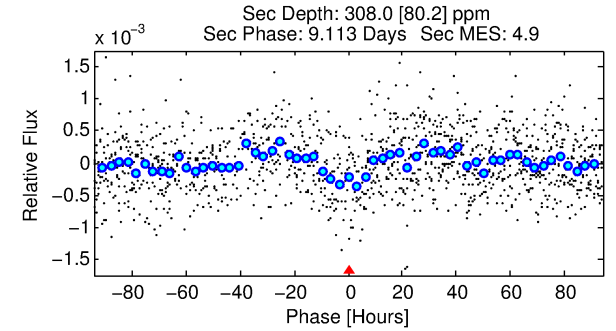
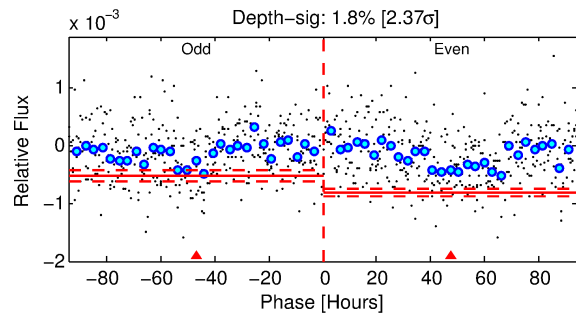
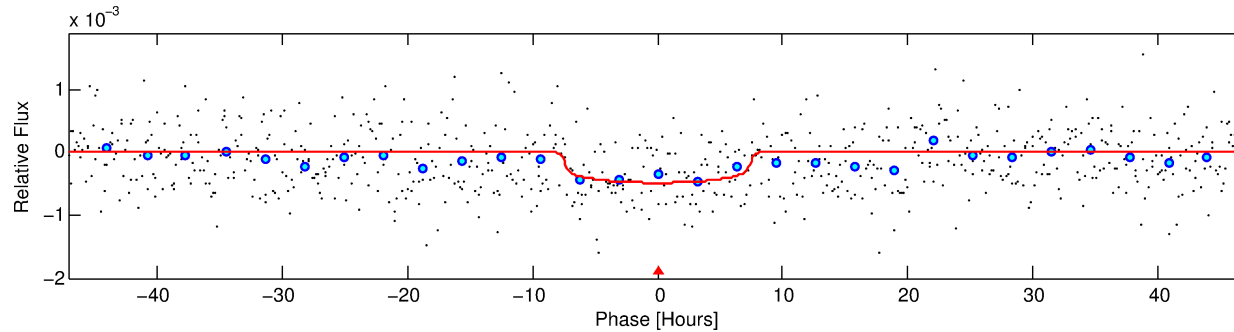
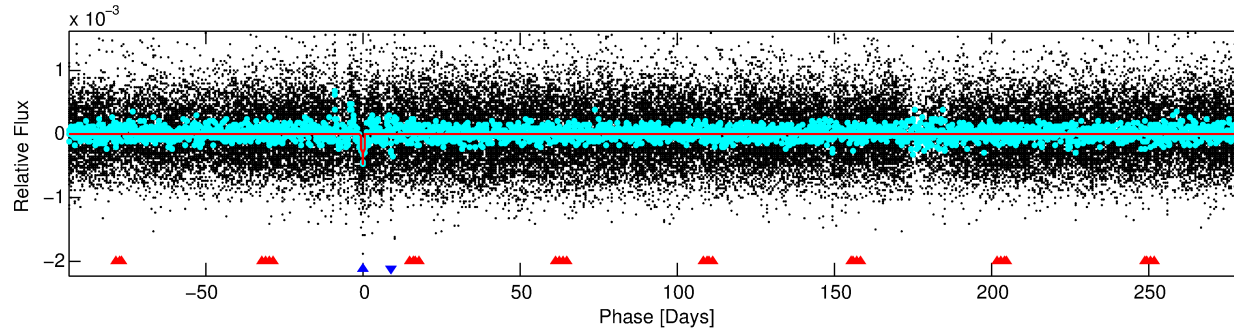
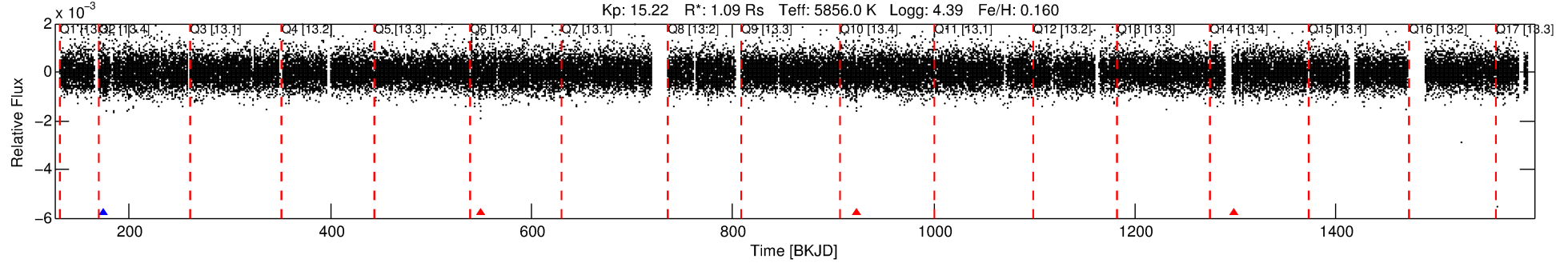
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
008880123-02	8880123	008620348-01	8620348	1:1	1721.7	2	-433	15.75	15.22	2.05	Col-Anomaly	1	2.05	1.59

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: 8880123 Candidate: 2 of 2 Period: 374.747 d
KOI: K03493 Corr: No Ephemeris Match

Kp: 15.22 R*: 1.09 Rs Teff: 5856.0 K Logg: 4.39 Fe/H: 0.160



DV Fit Results:

Period = 374.74733 [0.01494] d
Epoch = 174.3264 [0.0273] BKJD
Rp/R* = 0.0218 [0.0075]
a/R* = 126.45 [187.78]
b = 0.75 [0.87]
Seff = 1.17 [0.26]
Teq = 265 [15] K
Rp = 2.60 [0.99] Re
a = 1.0367 [0.1502] AU
Ag = 26958.94 [20642.73] [1.31σ]
Teffp = 5253 [966] K [5.16σ]

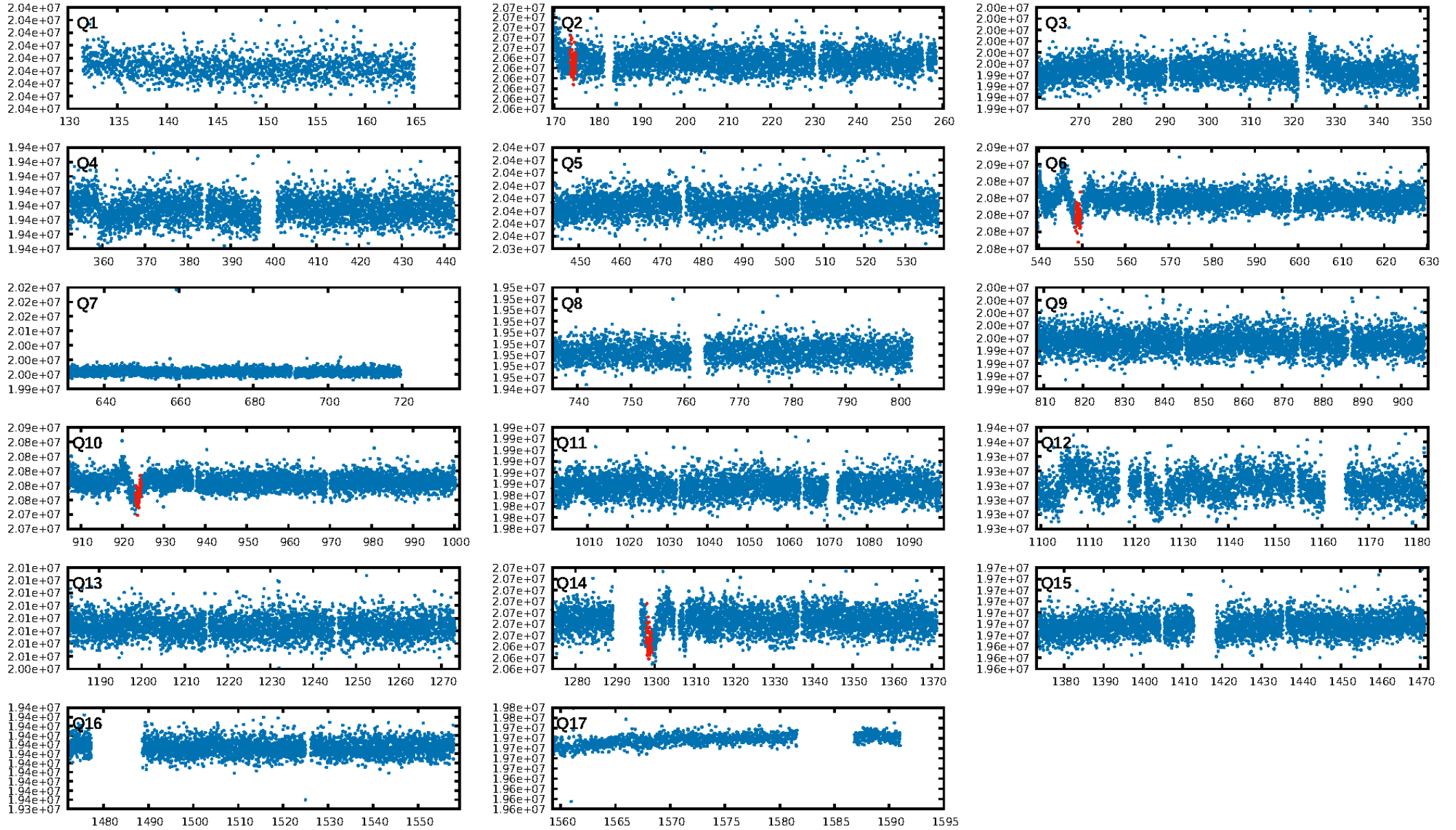
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [454.46σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 3.7%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 1.99e-12
RollingBand-fgt: 0.25 [1/4]
GhostDiagnostic-chr: -0.5073
Centroid-sig: 0.0%
Centroid-so: 5.095 arcsec [2.65σ]
OotOffset-rm: 2.287 arcsec [2.60σ]
KicOffset-rm: 2.145 arcsec [2.74σ]
OotOffset-st: 4/0/0/0 [4]
KicOffset-st: 4/0/0/0 [4]
DiffImageQuality-fgm: 0.25 [1/4]
DiffImageOverlap-fno: 1.00 [4/4]

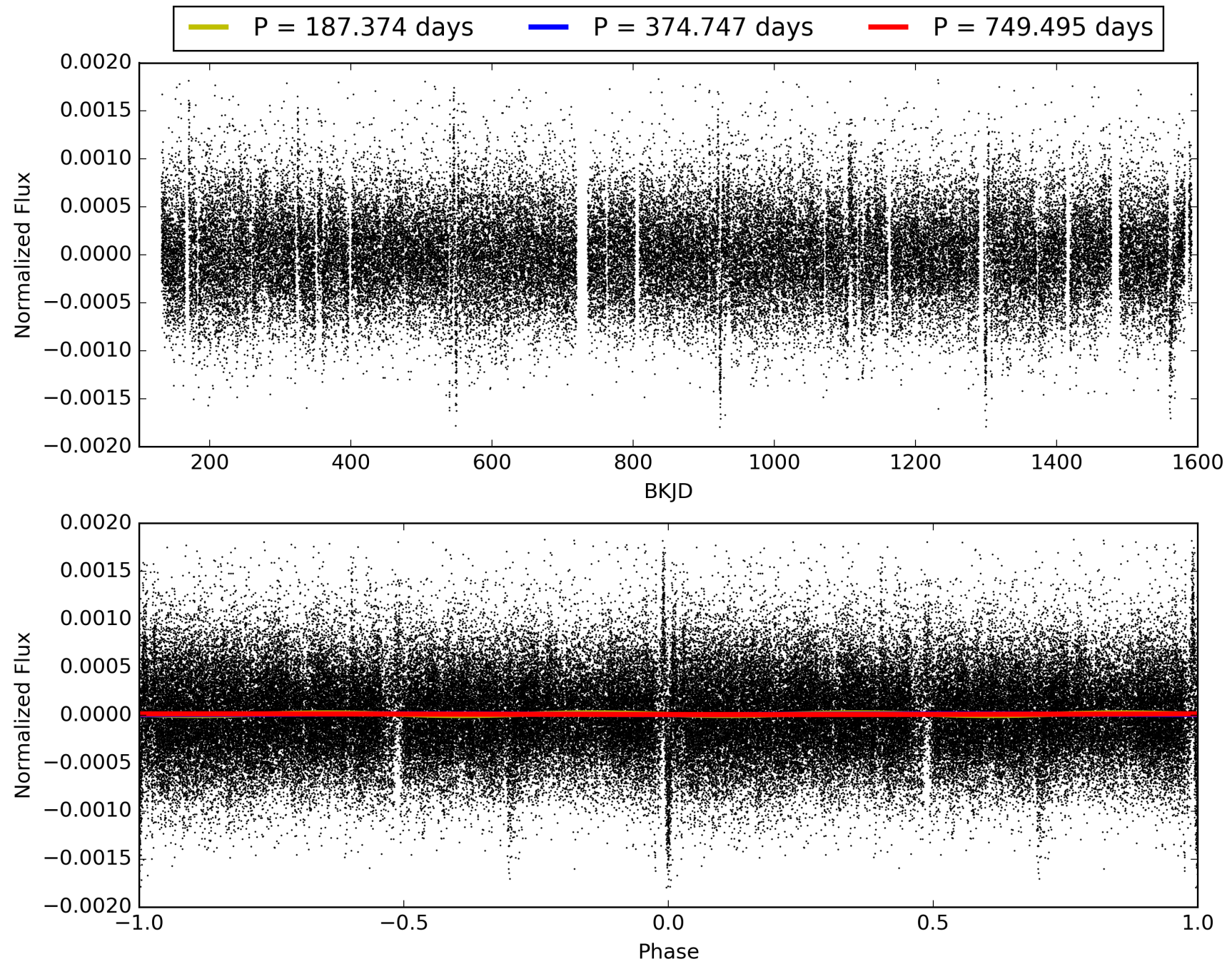
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 19:23:19 Z

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

TCE 008880123-02, PDC Light Curves

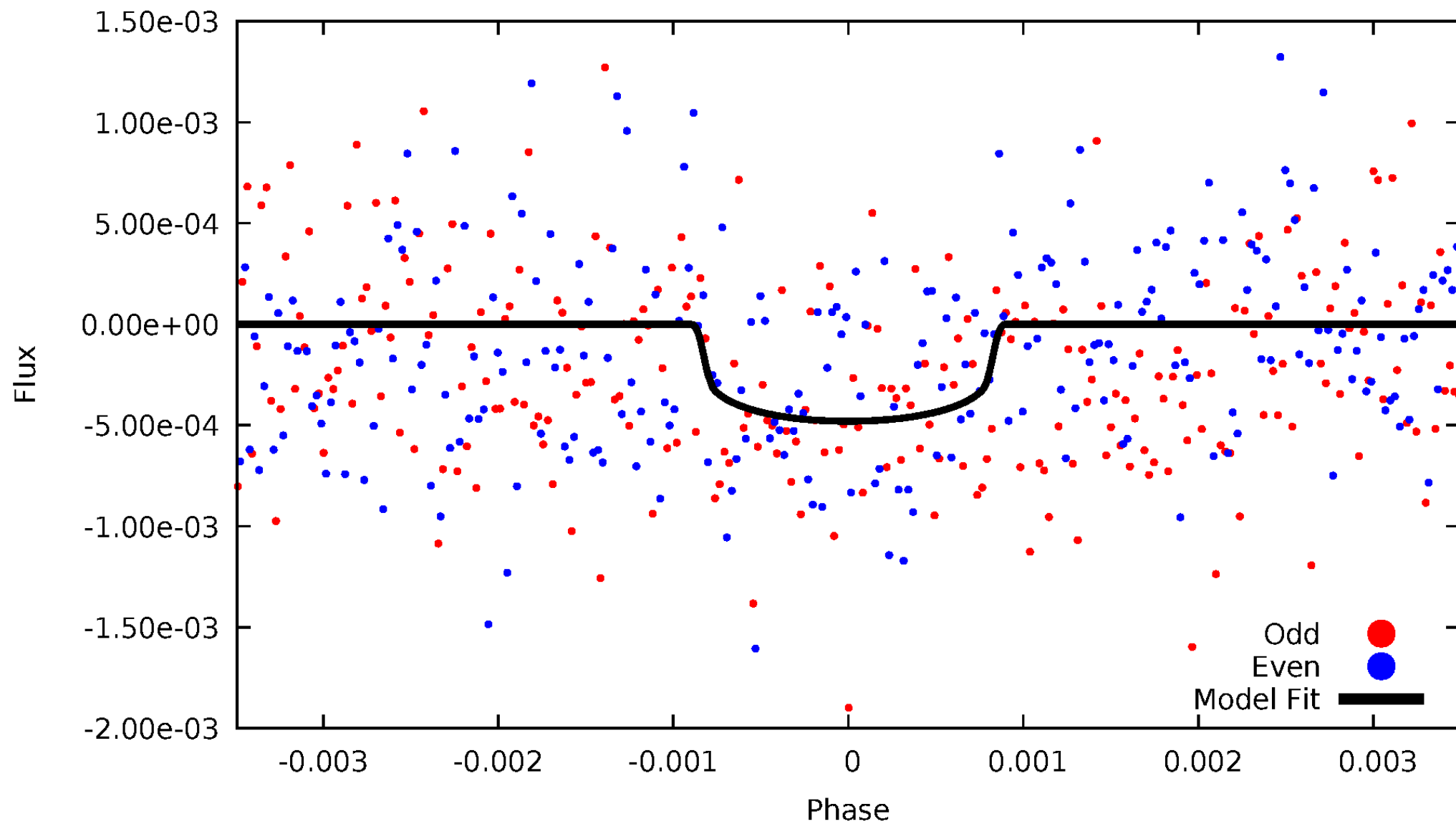


TCE 008880123-02



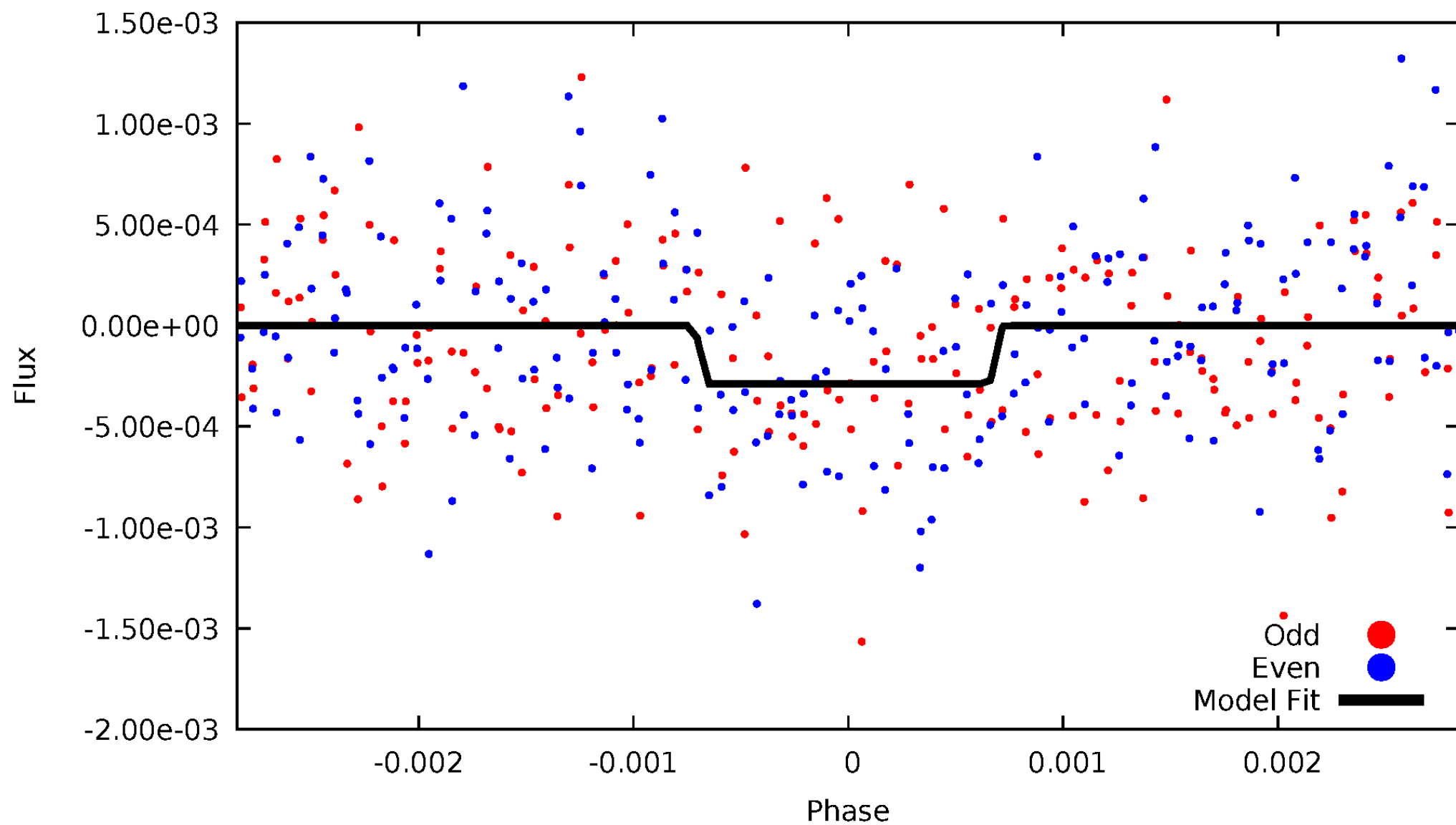
DV Odd/Even

TCE 008880123-02



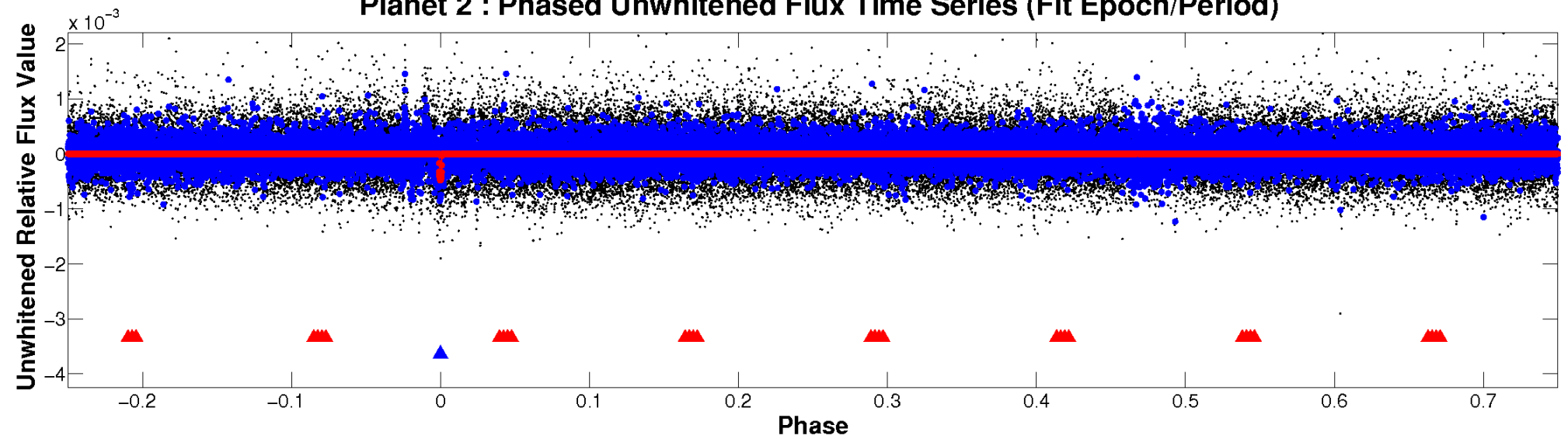
ALT Odd/Even

TCE 008880123-02

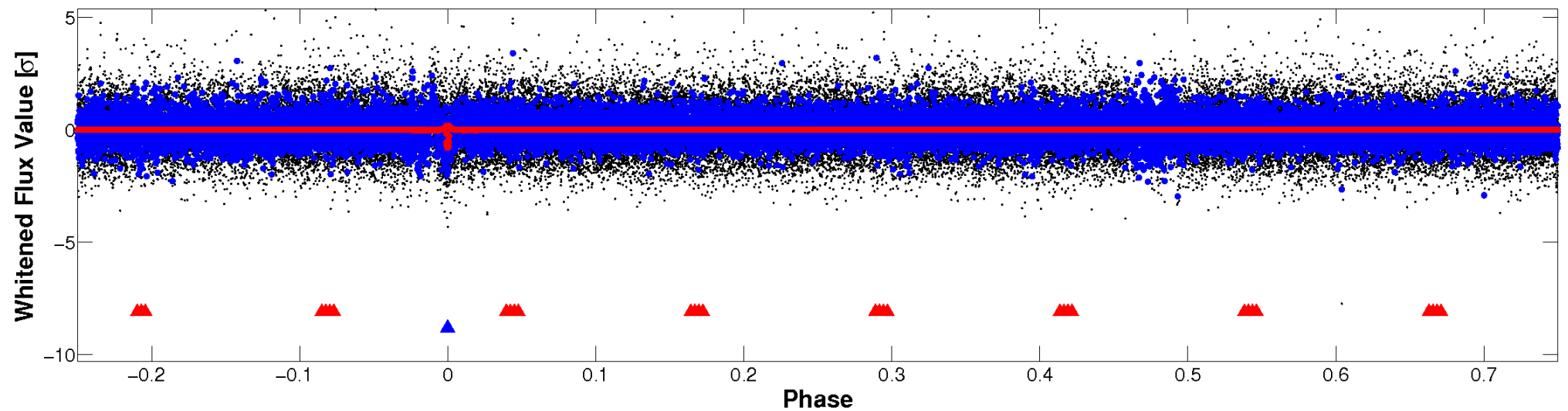


Non-Whitened Vs. Whitened Light Curve

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 008880123-02 P=374.747335 Days $T_0=174.326443$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 008880123-02 P=374.747335 Days $T_0=174.326443$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

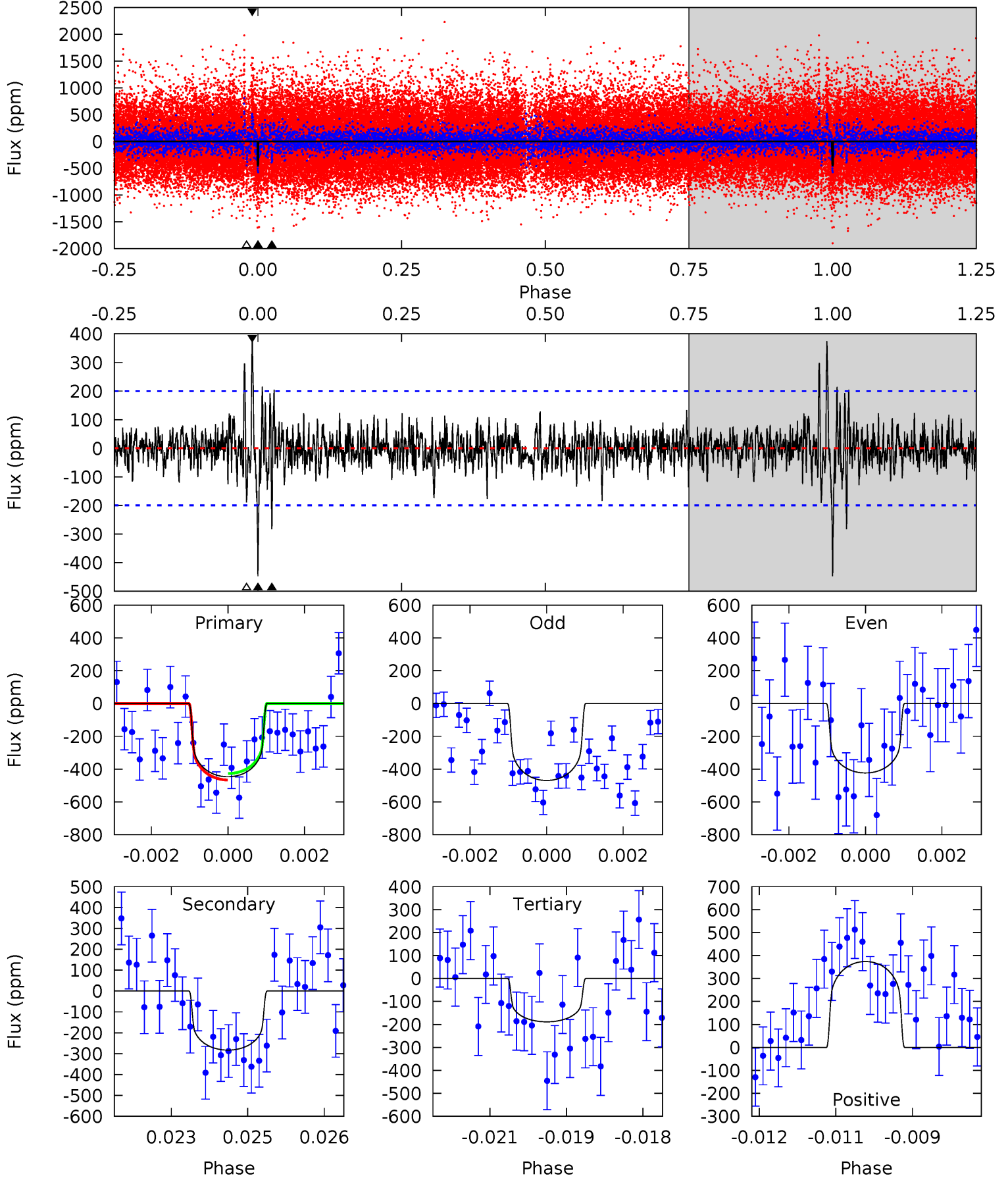
TCE 008880123-02 P=374.731057 Days $T_0=174.319745$ (BKJD)



DV Model-Shift Uniqueness Test

008880123-02, P = 374.747335 Days, E = 174.326443 Days

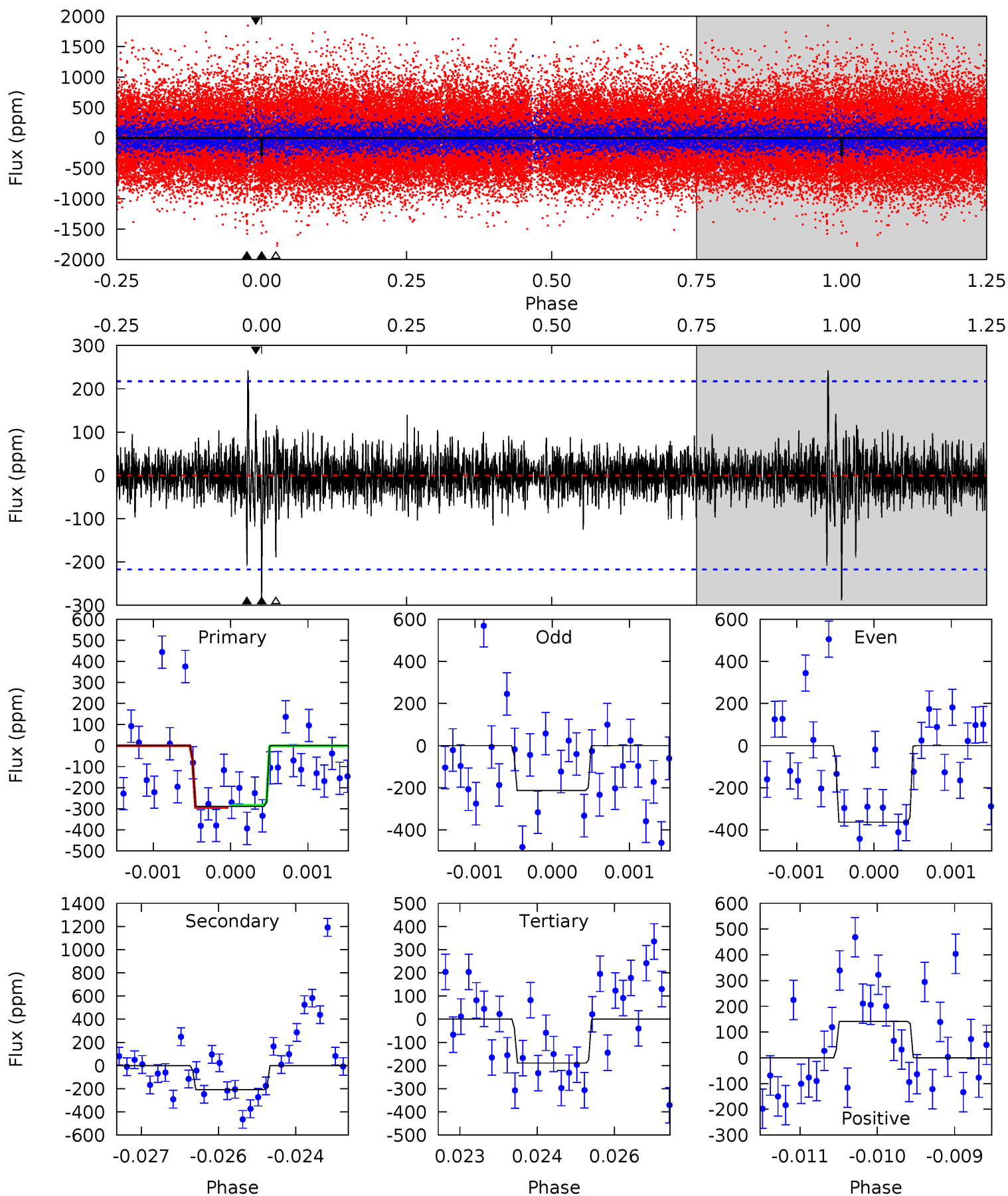
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.0	7.58	5.06	10.0	5.35	3.13	1.36	6.92	1.95	2.52	-2.44	0.62	0.95	0.46	0.52



Alt Model-Shift Uniqueness Test

008880123-02, P = 374.731057 Days, E = 174.319745 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.15	5.16	4.69	3.50	5.39	3.19	0.83	2.46	3.65	0.47	1.66	1.87	0.87	0.46	0.12



Stellar Parameters For KIC 008880123

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5856^{+79}_{-79}	$4.386^{+0.066}_{-0.123}$	$0.160^{+0.150}_{-0.150}$	$1.092^{+0.180}_{-0.097}$	$1.057^{+0.070}_{-0.064}$	$1.144^{+0.354}_{-0.407}$
	+1%/-1%	+2%/-3%	+94%/-94%	+16%/-9%	+7%/-6%	+31%/-36%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 008880123-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-283 ± 37	$2.58^{+0.92}_{-0.86}$	372^{+14}_{-12}	5236^{+1192}_{-603}	24978^{+31942}_{-11352}
Alt.	-208 ± 40	$2.08^{+0.88}_{-0.97}$	372^{+15}_{-11}	5385^{+1968}_{-793}	27776^{+68955}_{-14148}

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

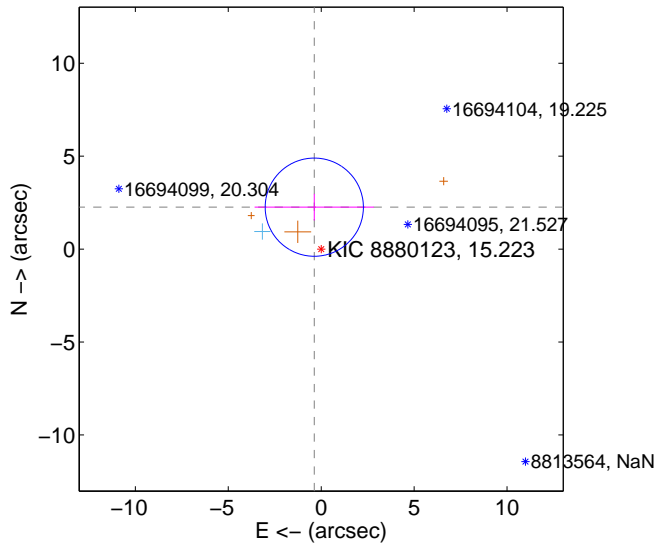
Supplemental centroid analysis for 008880123-02. Kepler magnitude: 15.22. Transit SNR 7.86

There are 1 quarters with good PRF difference image offsets

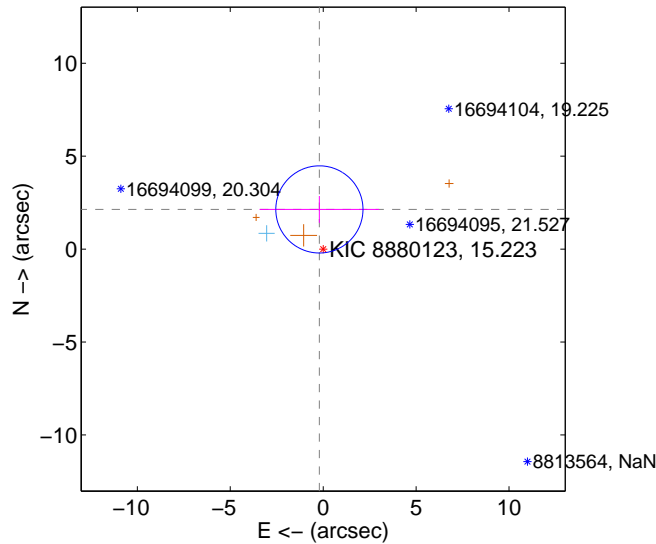
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.287 ± 0.881	2.60	0.372 ± 3.213	2.256 ± 0.719
PRF-fit source offset from KIC position	2.145 ± 0.782	2.74	0.204 ± 3.222	2.135 ± 0.723
photometric centroid source offset	5.09 ± 1.92	2.65	2.09 ± 1.99	-4.65 ± 1.91

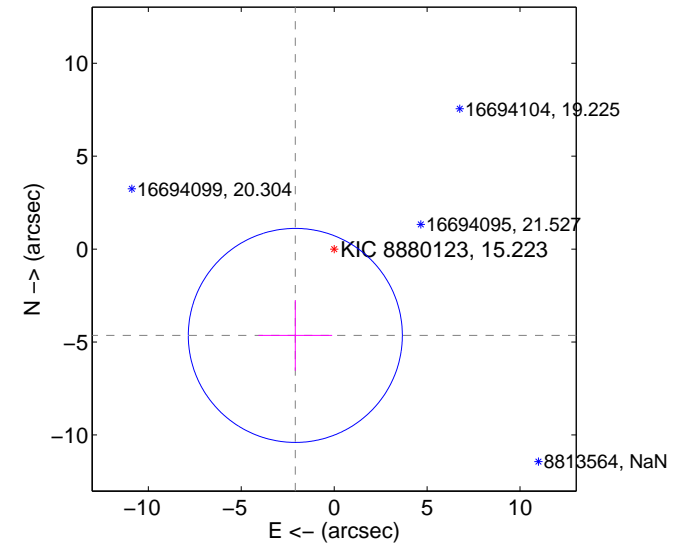
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

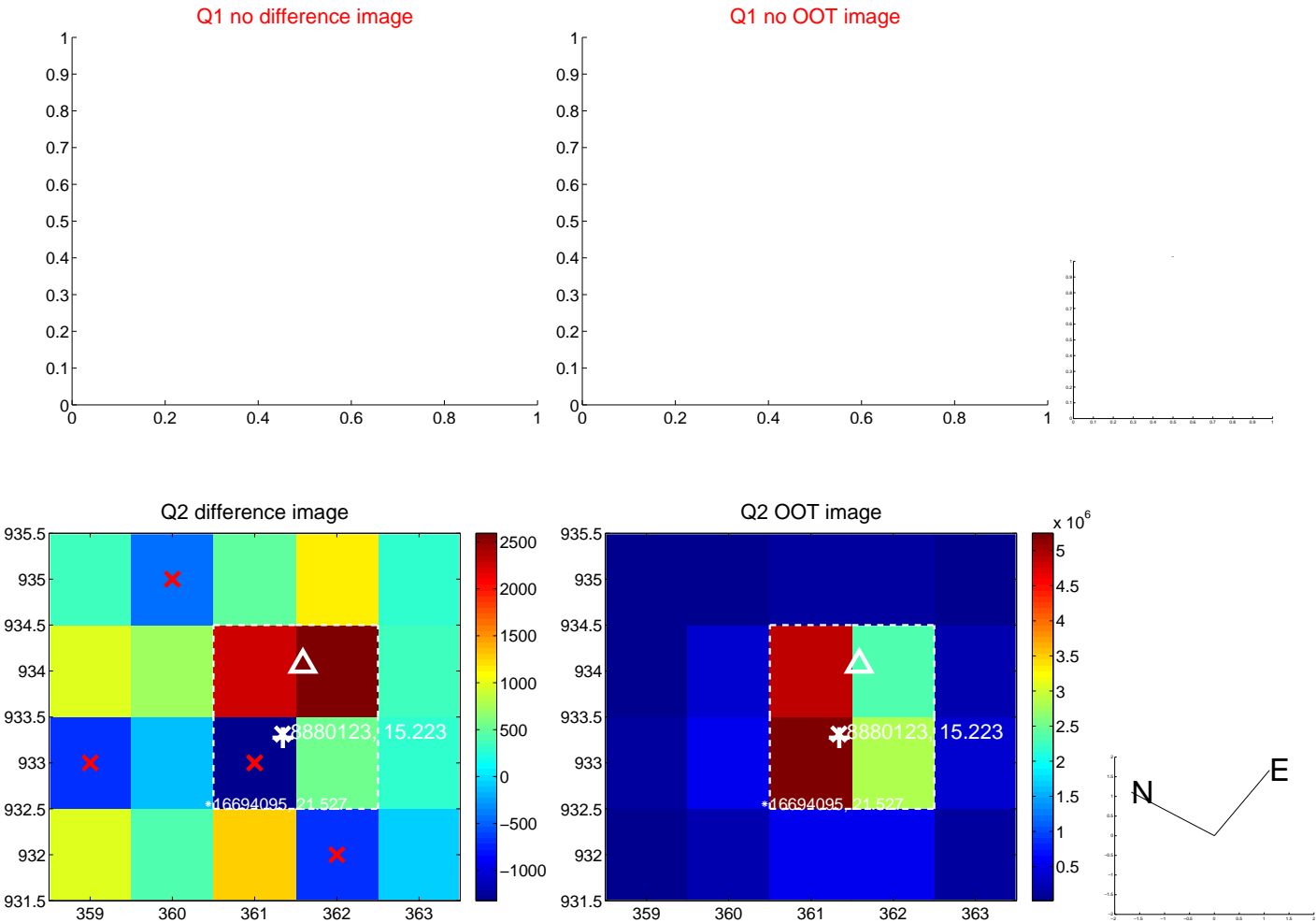


offset from photometric centroids

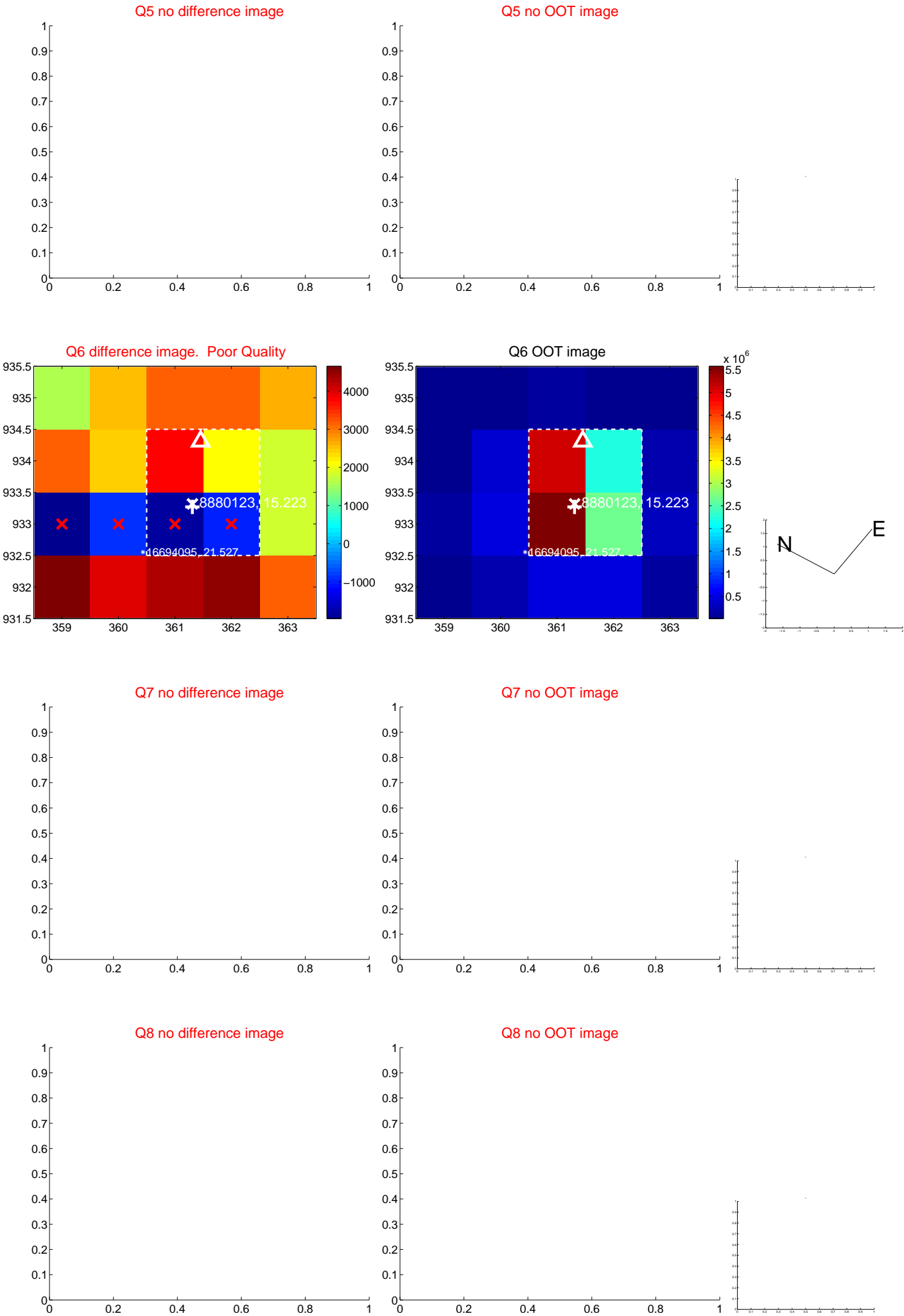


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

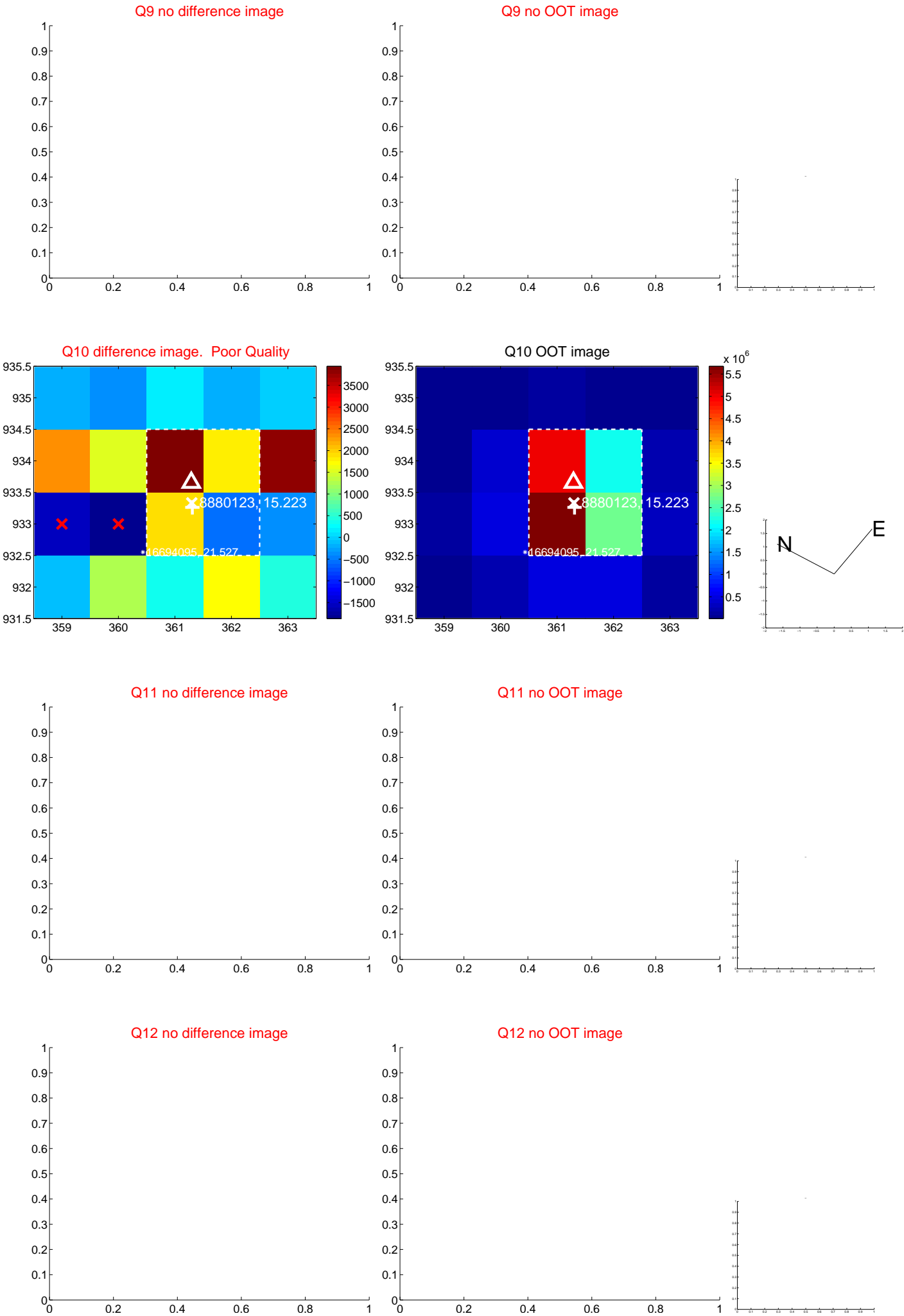
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



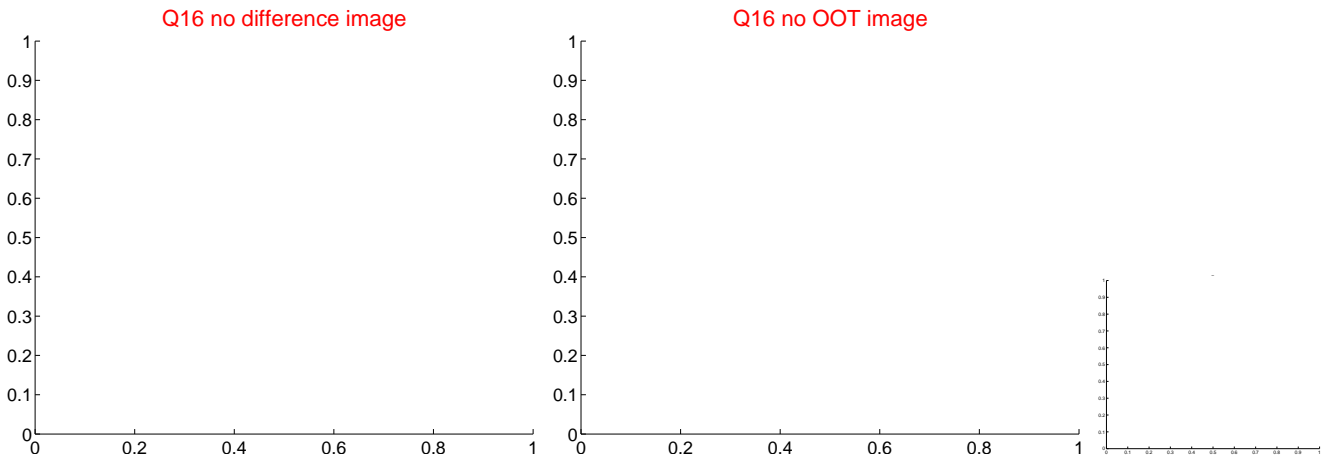
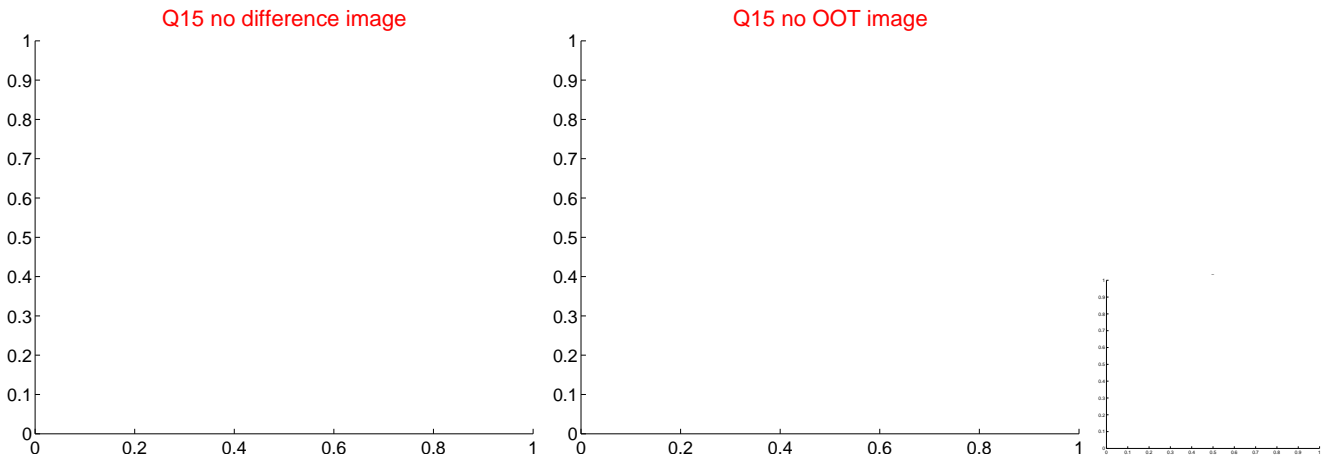
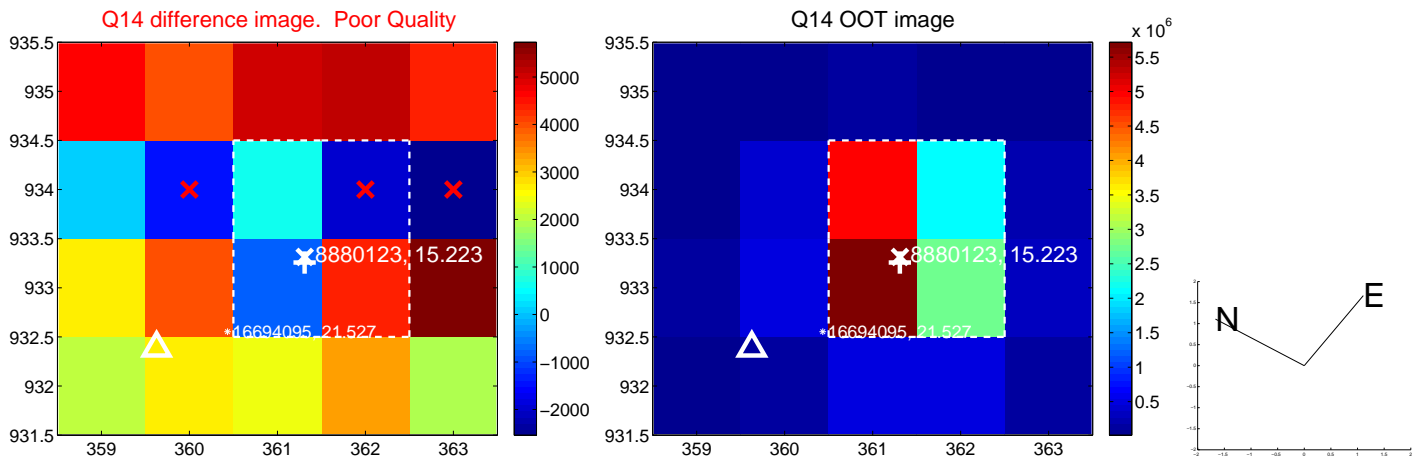
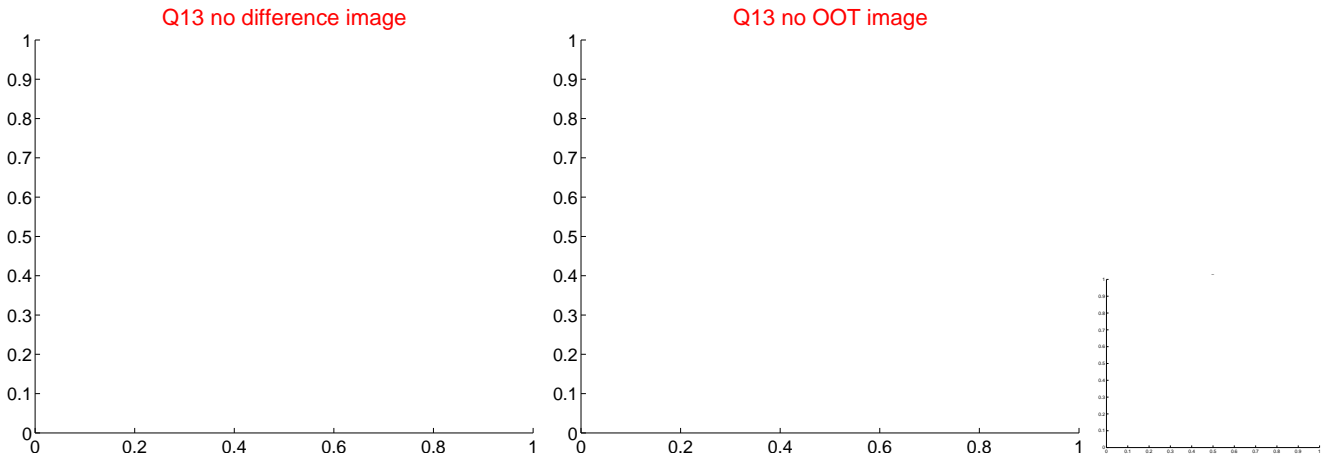
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



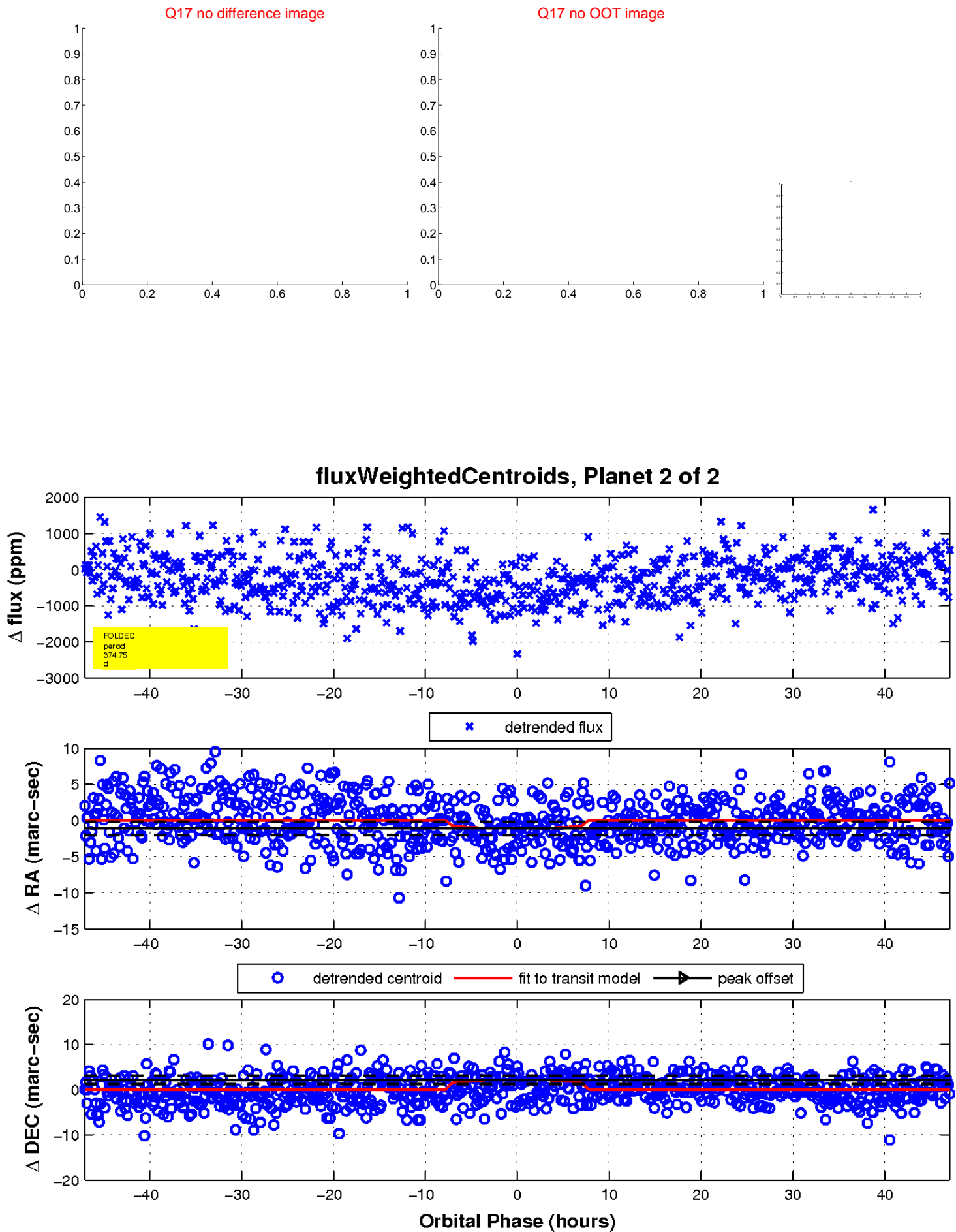
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



21.0 19.0 18.0 17.0

30.0 31.0 32.0 33.0 34.0 35.0 36.0 37.0 38.0 39.0 40.0

Declination