

KIC 006780052

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})
006780052-01	OBS	No	375.052340	192.005617	1228.1	2.913	15.8	8.1	0.78	5232	2.74	0.46
006780052-02	OBS	No	394.801392	416.371957	1085.4	4.433	14.5	5.3	0.78	5232	2.61	0.43
006780052-03	OBS	No	439.461527	508.935312	398.8	0.614	11.6	2.2	0.78	5232	1.99	0.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006780052-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
006780052-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006780052-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

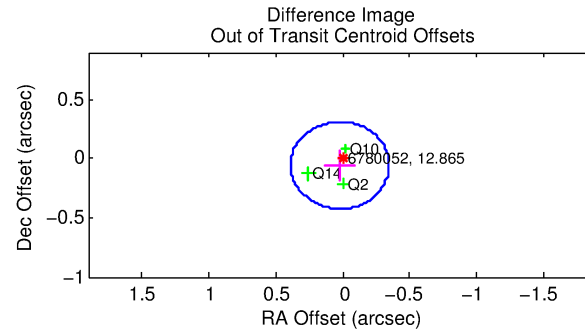
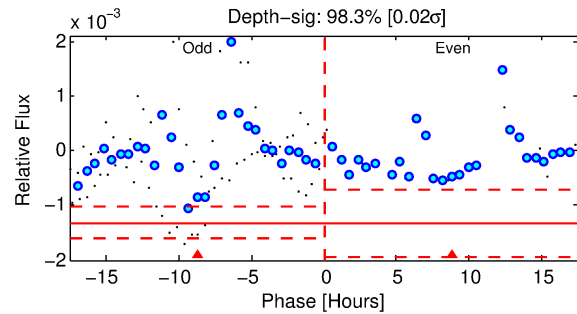
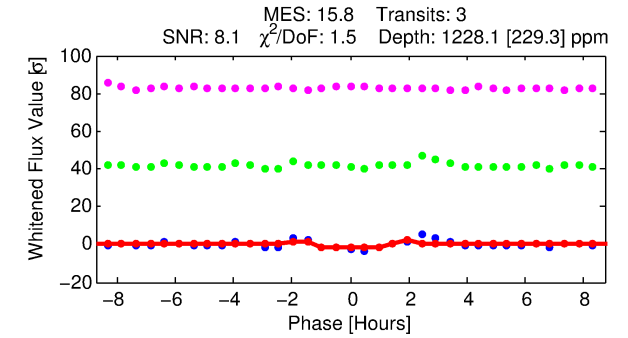
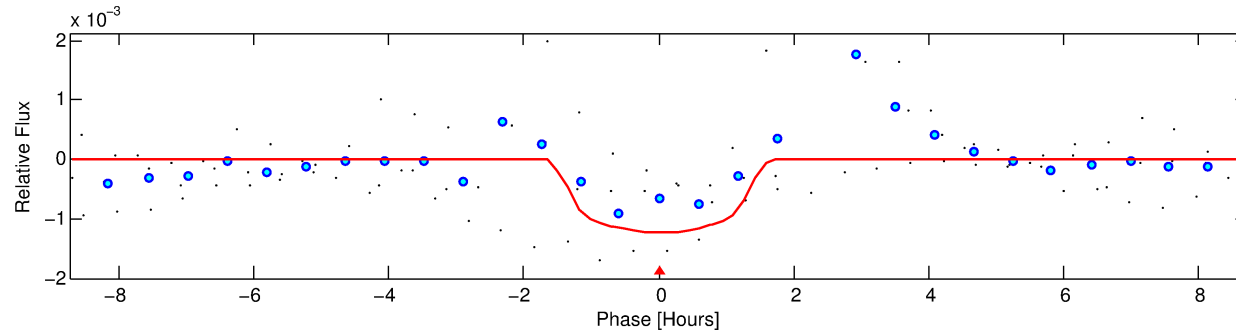
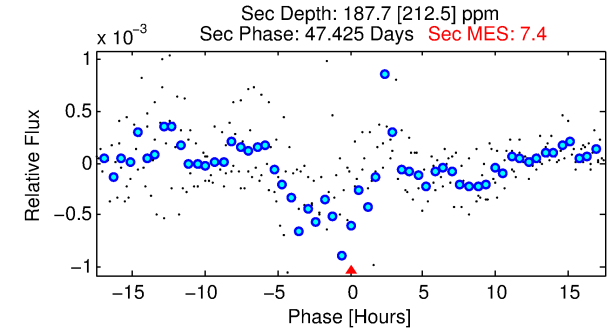
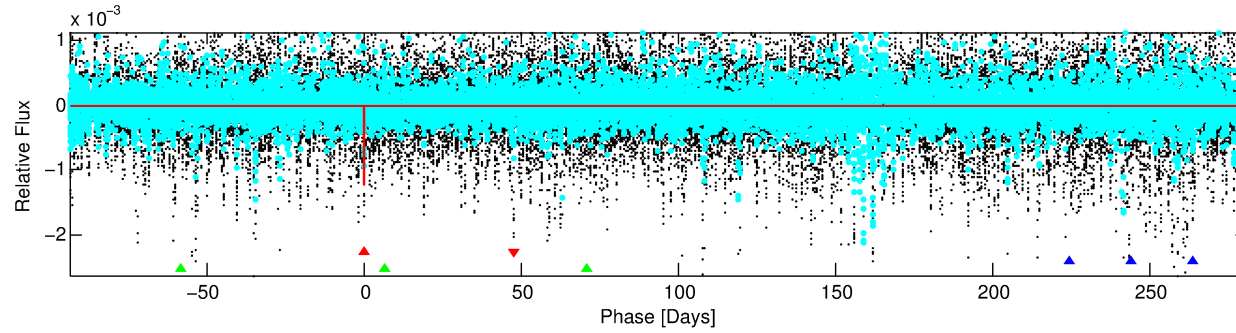
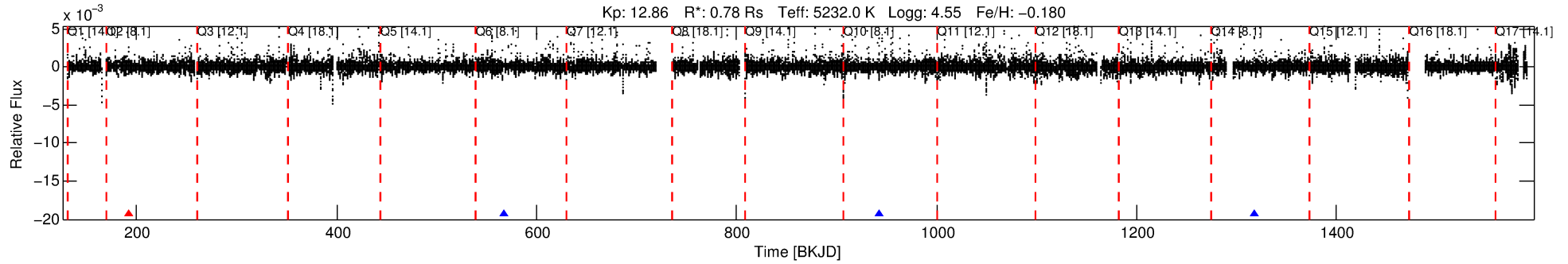
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006780052-01

No Significant Match Found

DV One-Page Summary

KIC: 6780052 Candidate: 1 of 3 Period: 375.052 d



DV Fit Results:

Period = 375.05234 [0.00219] d
Epoch = 192.0056 [0.0047] BKJD
Rp/R* = 0.0321 [0.0491]
a/R* = 932.28 [5284.16]
b = 0.41 [11.72]
Seff = 0.46 [0.05]
Teq = 210 [6] K
Rp = 2.74 [4.19] Re
a = 0.9379 [0.0534] AU
Ag = 12139.23 [39597.77] [0.31 σ]
Teffp = 3416 [2785] K [1.15 σ]

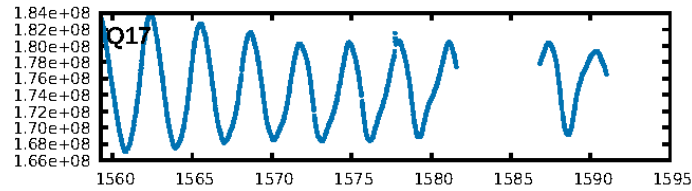
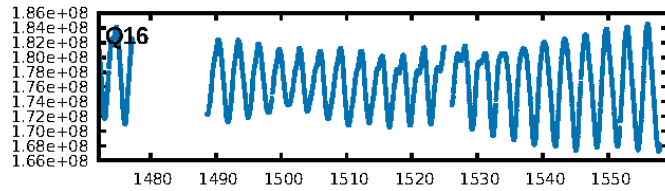
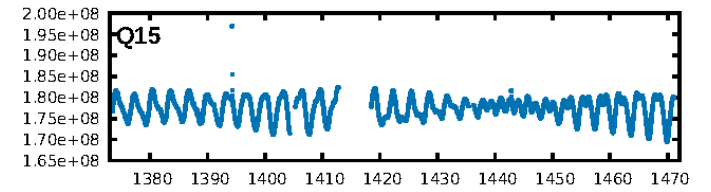
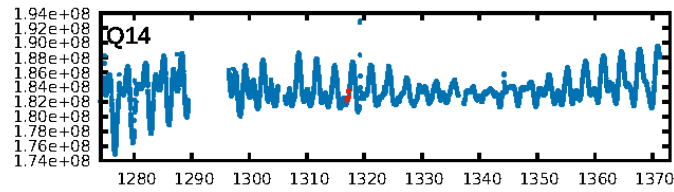
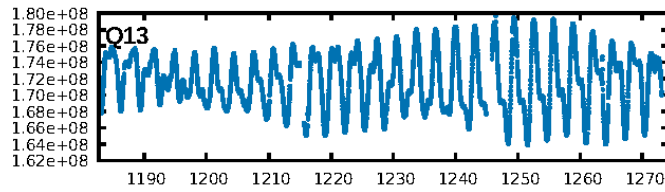
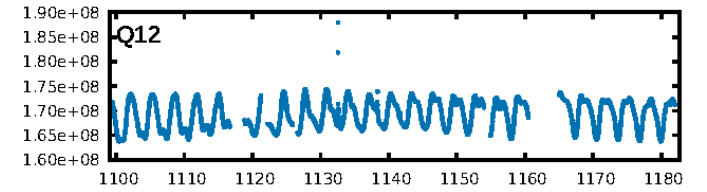
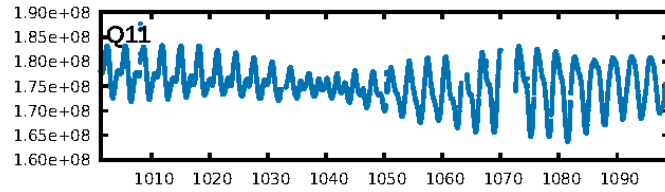
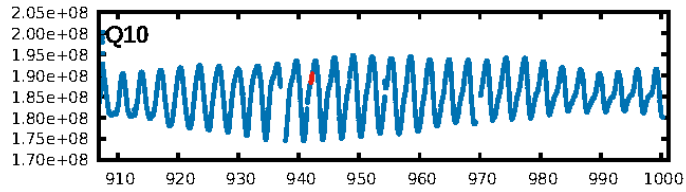
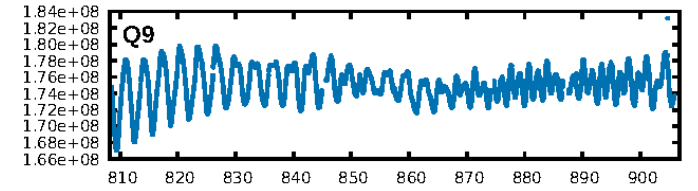
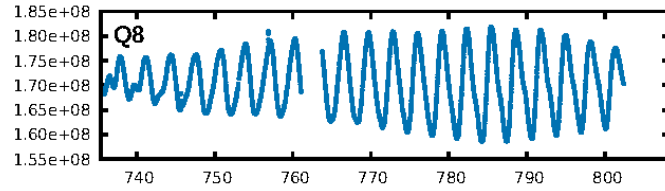
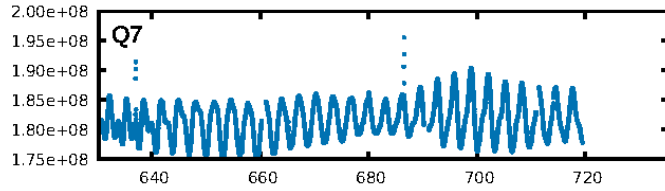
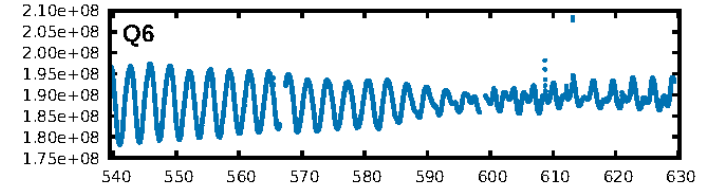
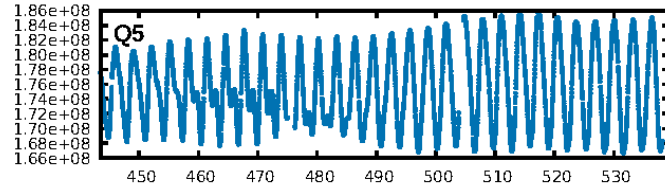
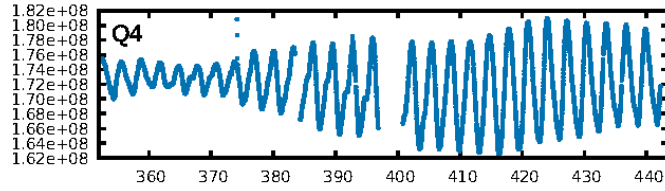
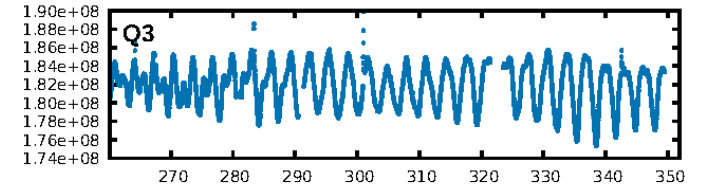
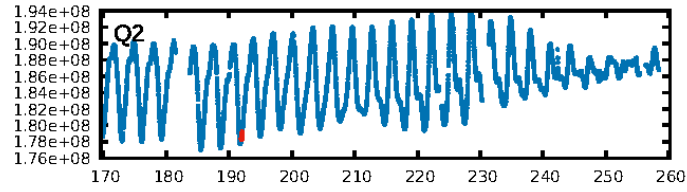
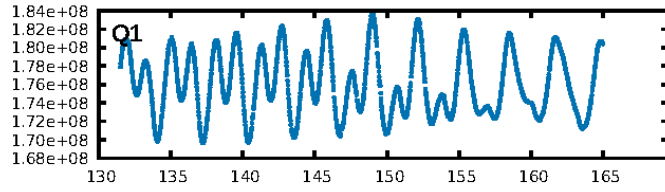
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [89.36 σ]
ModelChiSquare2-sig: 21.6%
ModelChiSquareGof-sig: 87.0%
Bootstrap-pfa: 1.00e-10
RollingBand-fgt: 0.67 [2/3]
GhostDiagnostic-chr: 1.097
Centroid-sig: N/A
Centroid-so: 0.126 arcsec [0.35 σ]
OotOffset-rm: 0.060 arcsec [0.49 σ]
OotOffset-st: 3/0/0/0 [3]
KicOffset-rm: 0.195 arcsec [1.65 σ]
KicOffset-st: 3/0/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

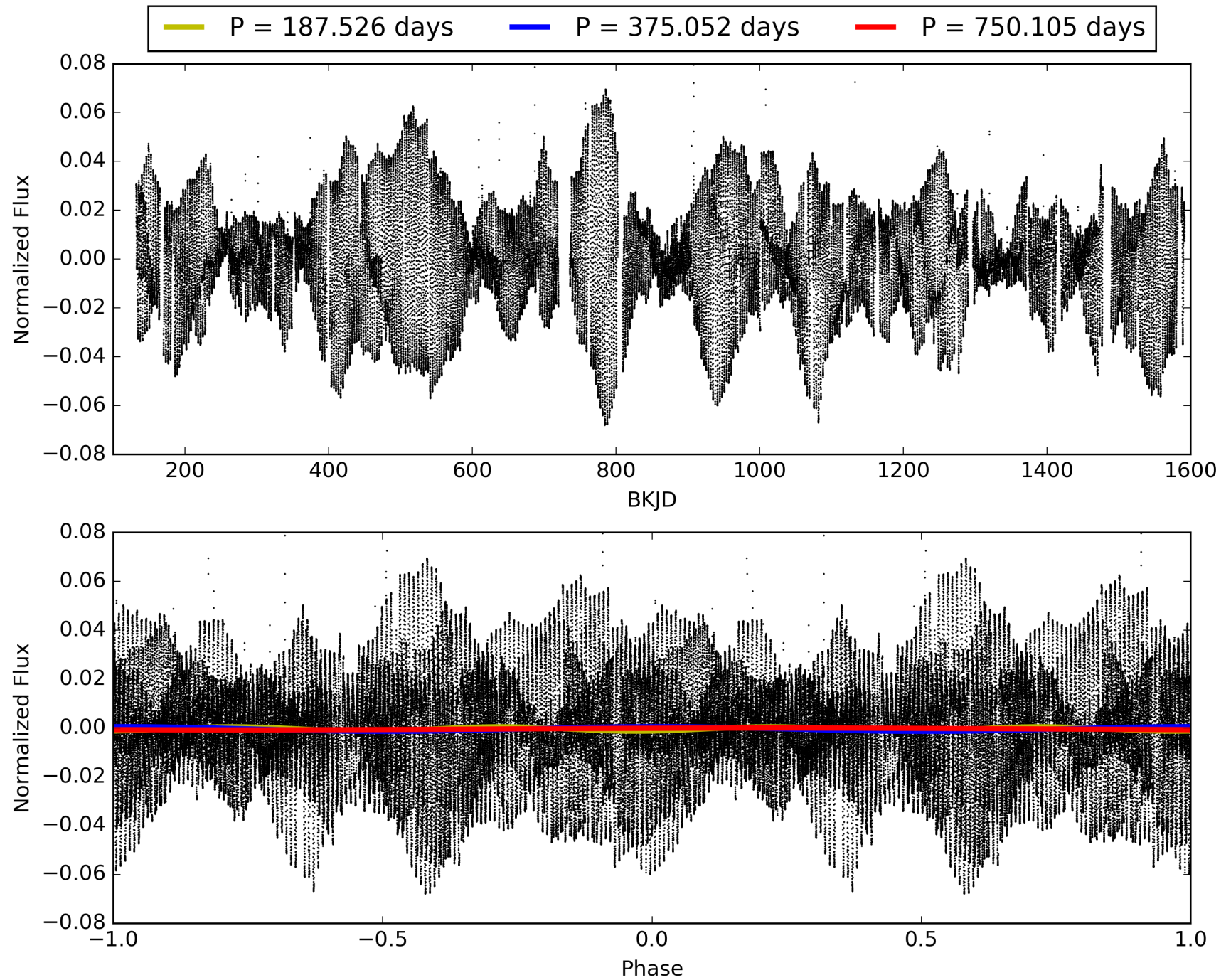
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:00:55 Z

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

TCE 006780052-01, PDC Light Curves

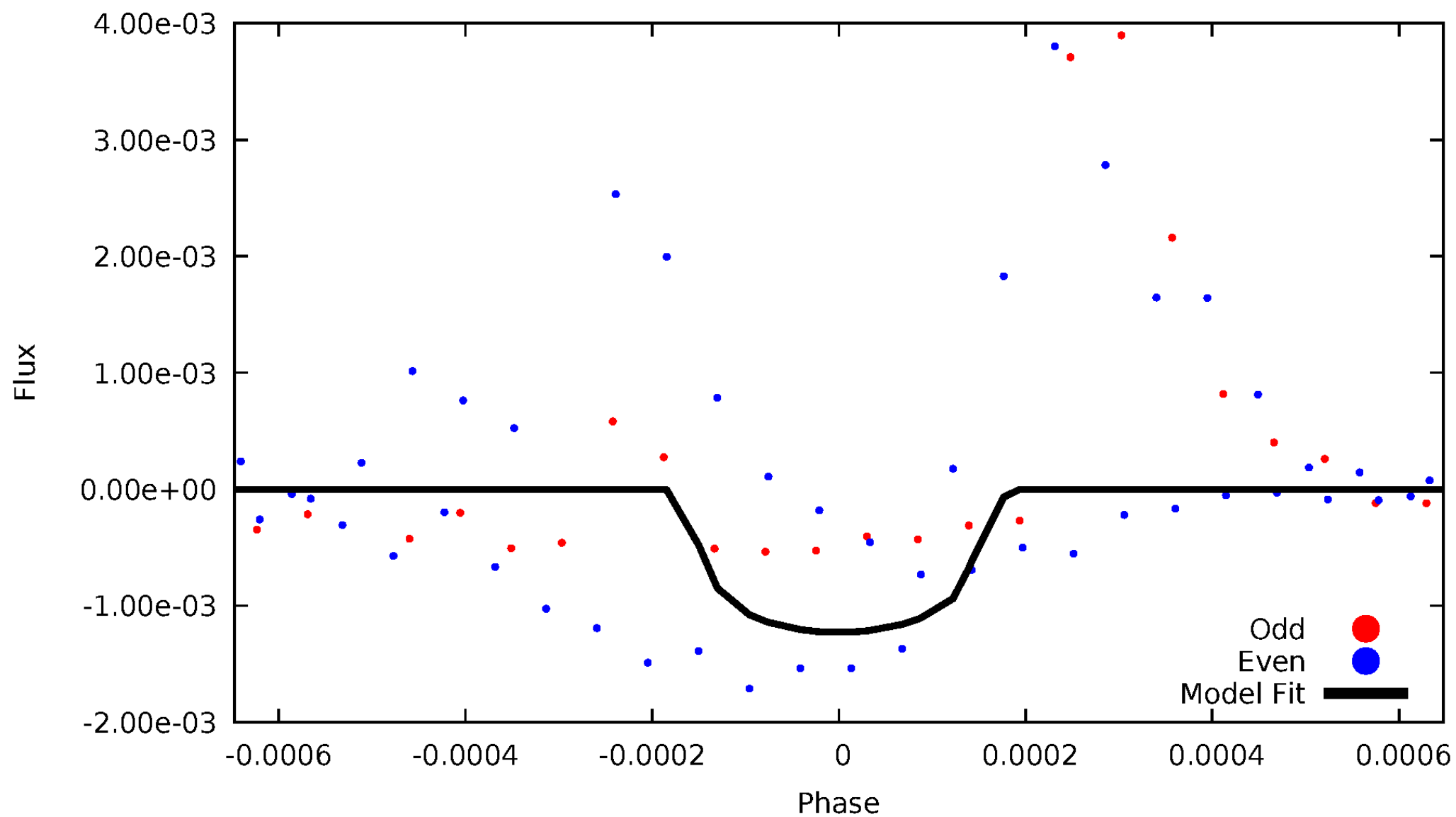


TCE 006780052-01



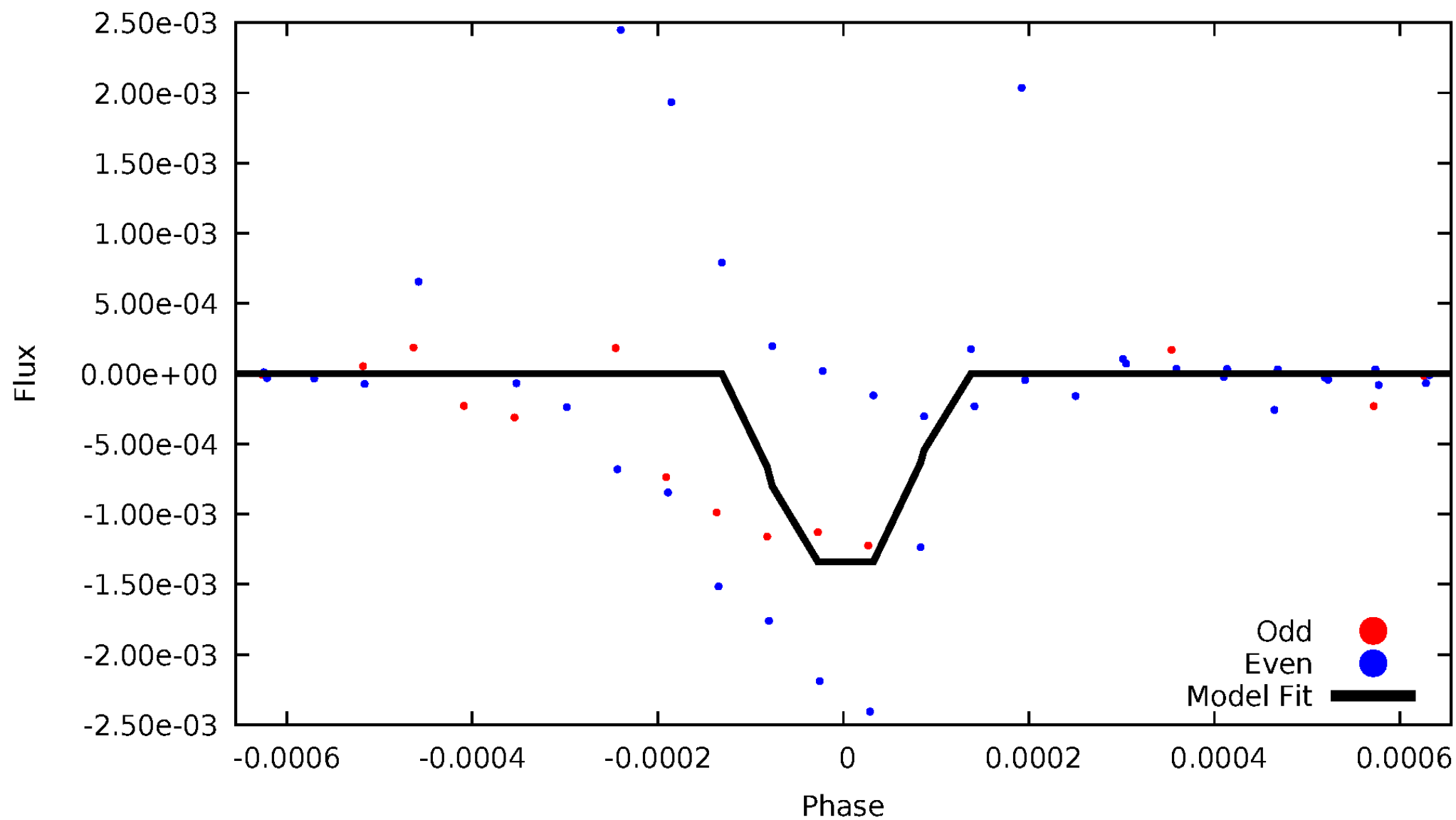
DV Odd/Even

TCE 006780052-01



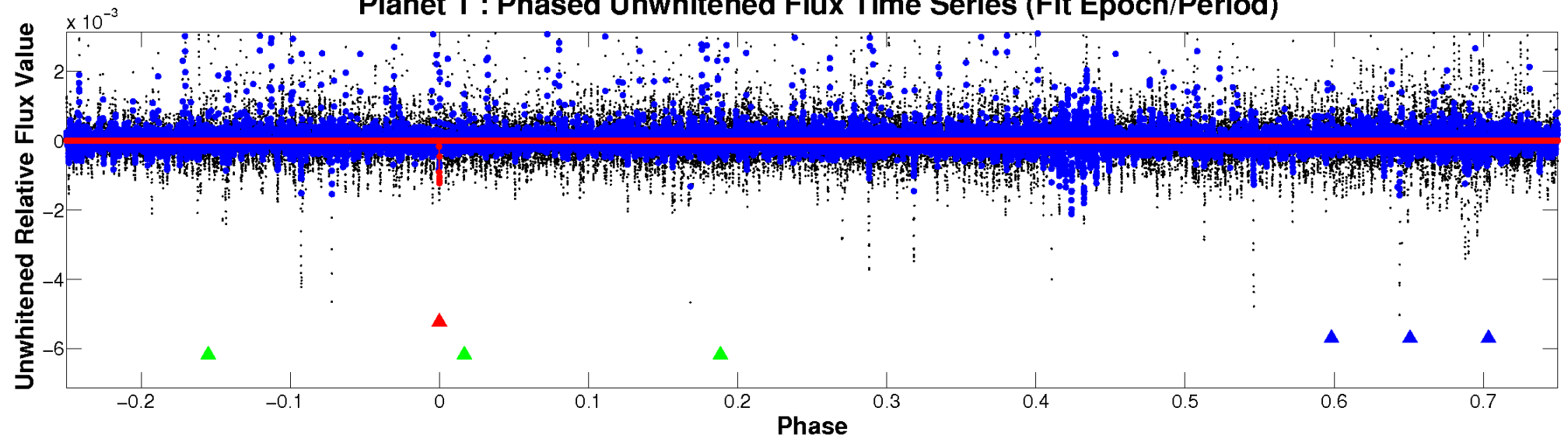
ALT Odd/Even

TCE 006780052-01

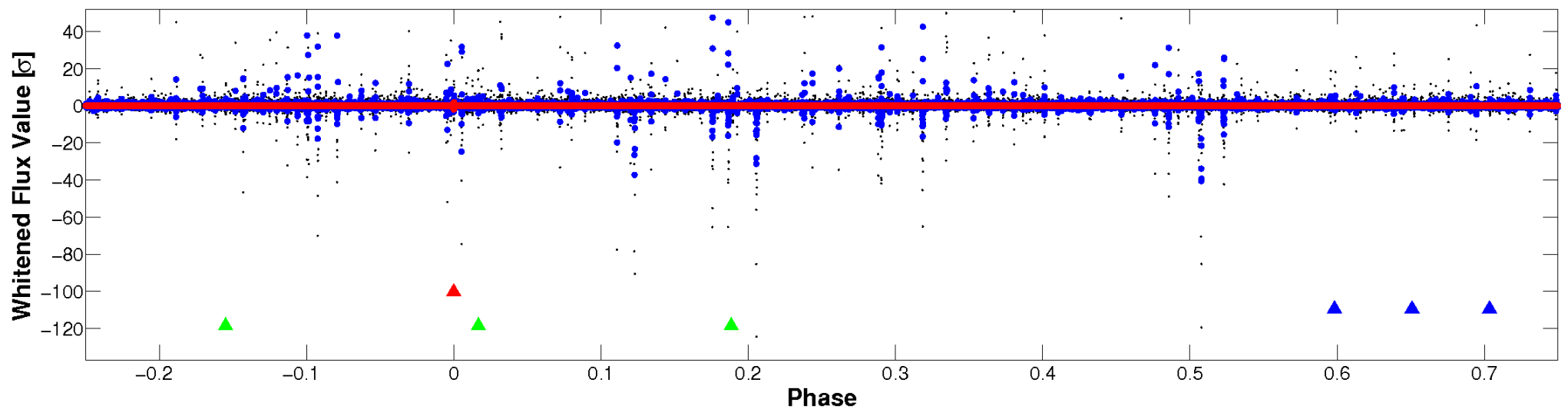


Non-Whitened Vs. Whitened Light Curve

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

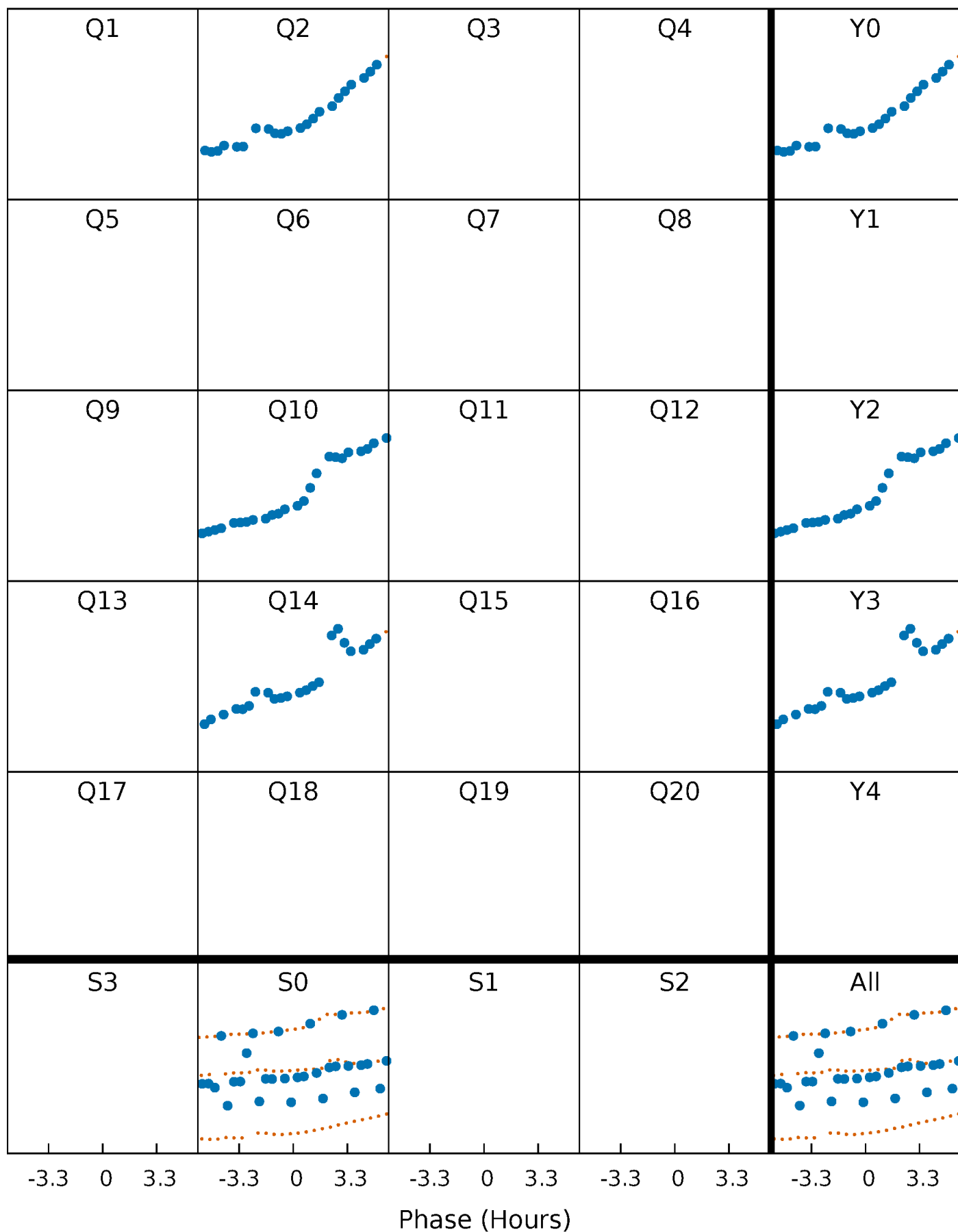


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



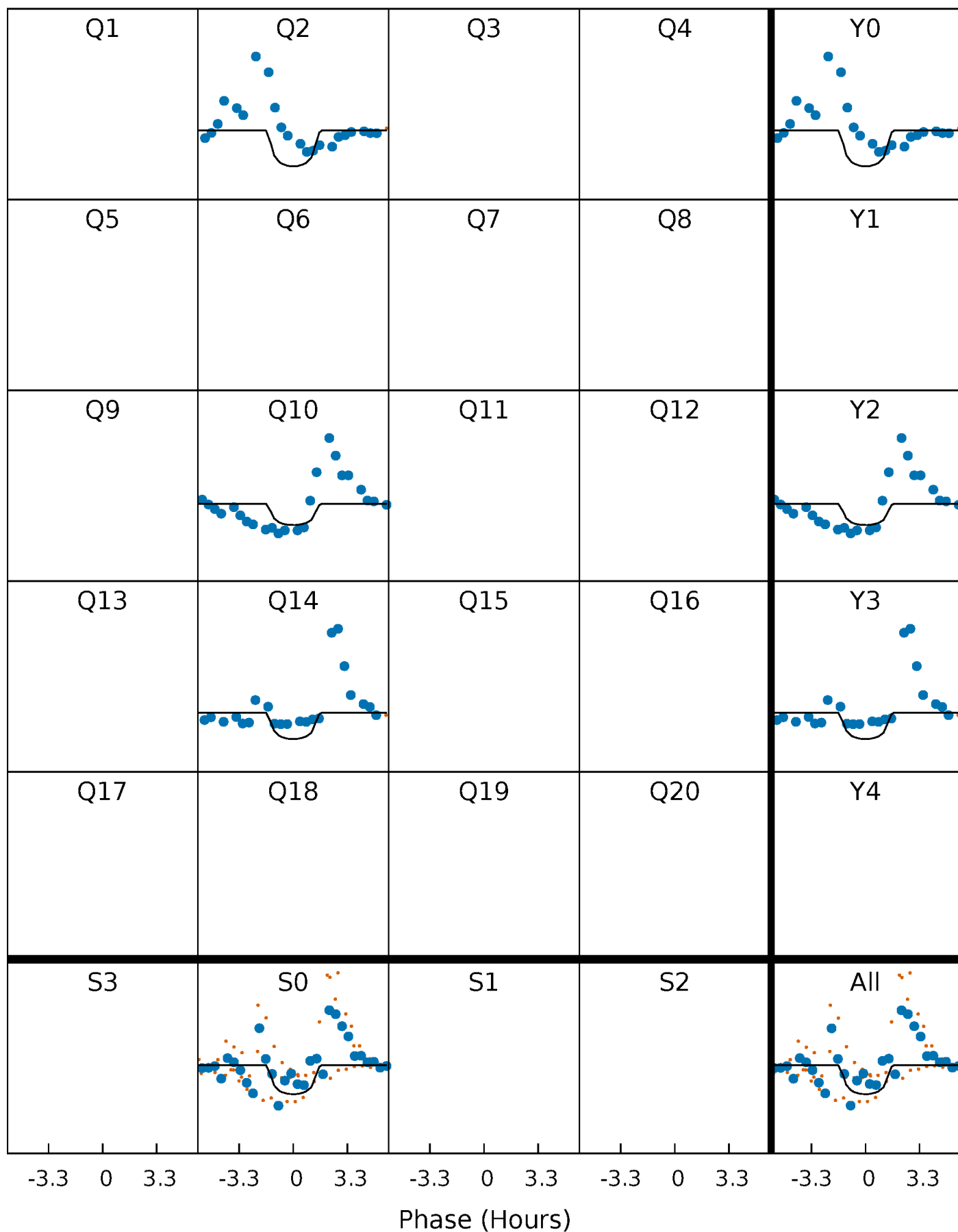
PDC Quarter-Phased Transit Curves

TCE 006780052-01 P=375.052340 Days $T_0=192.005617$ (BKJD)



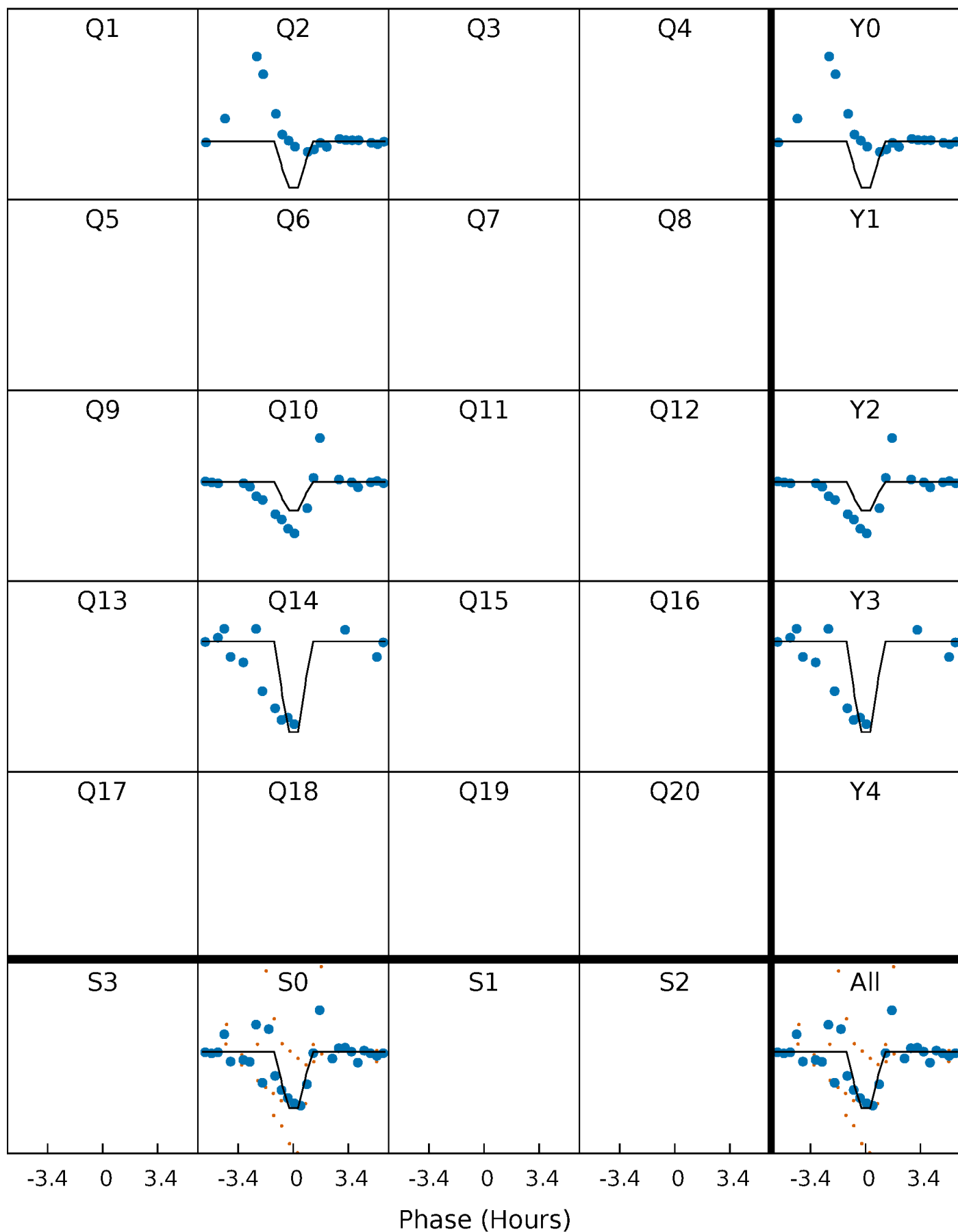
DV Quarter-Phased Transit Curves

TCE 006780052-01 P=375.052340 Days $T_0=192.005617$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

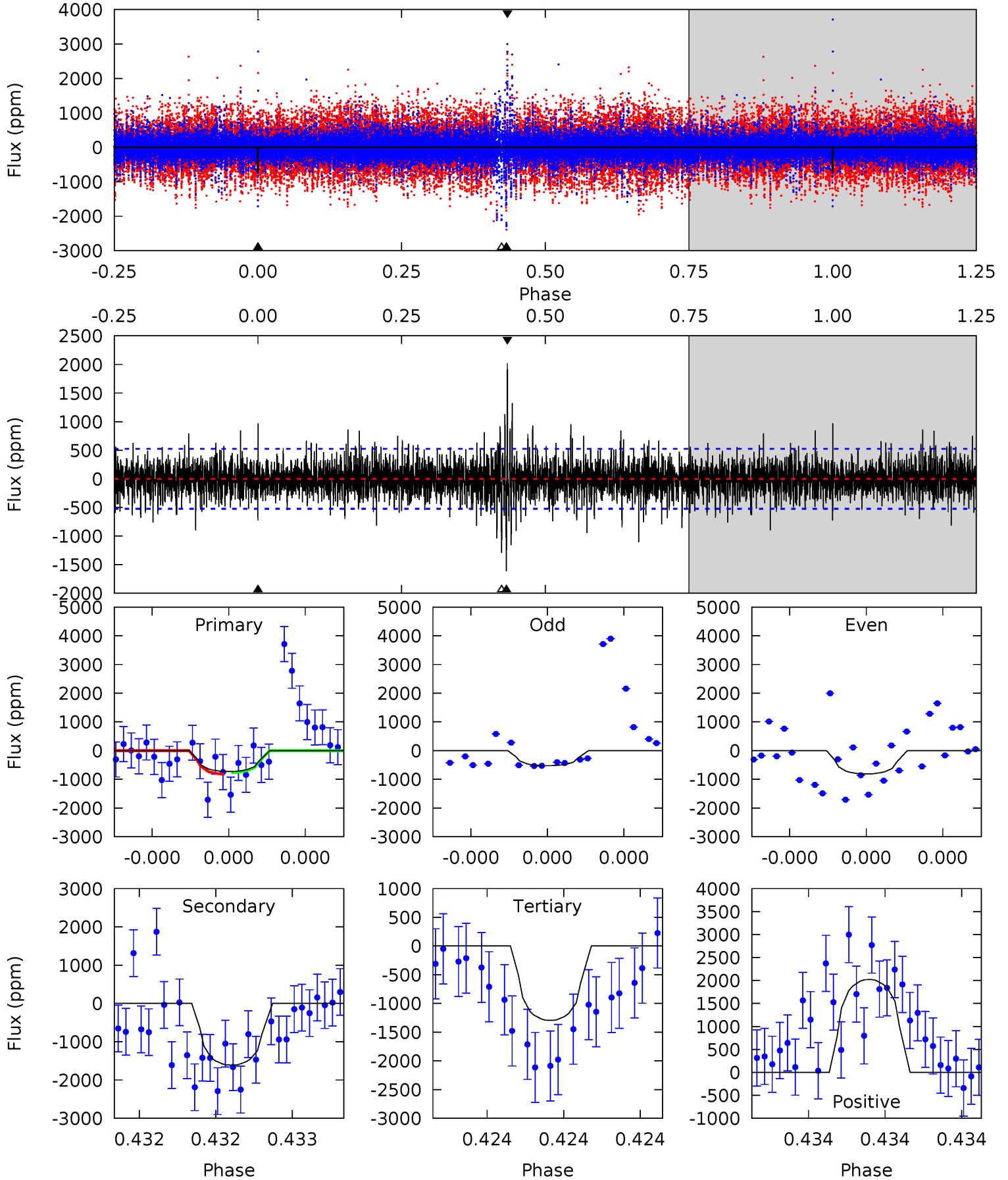
TCE 006780052-01 P=375.059439 Days $T_0=192.006014$ (BKJD)



DV Model-Shift Uniqueness Test

006780052-01, P = 375.052340 Days, E = 192.005617 Days

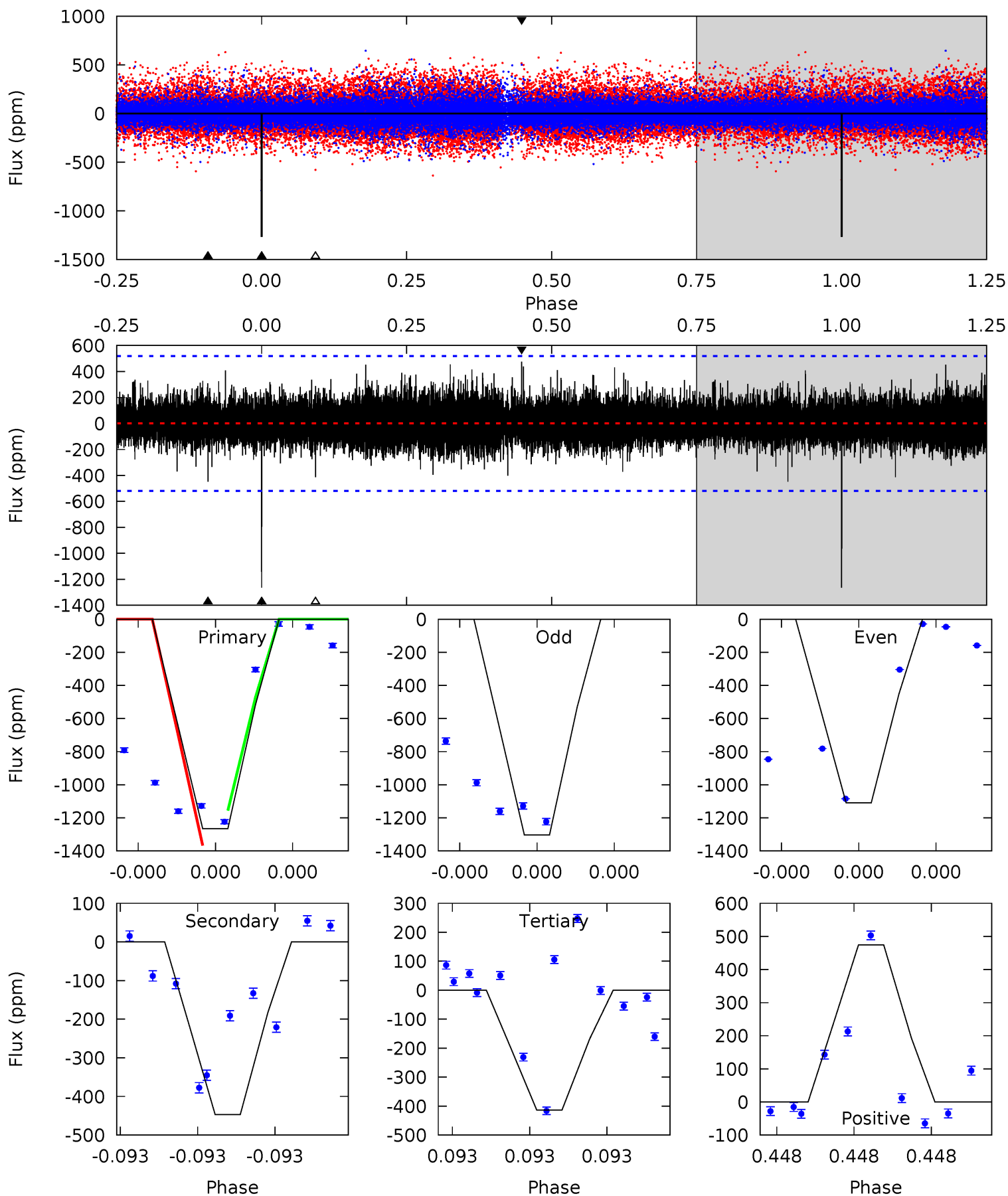
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.82	17.3	13.9	21.7	5.63	3.57	2.33	-6.09	-13.9	3.40	-4.40	0.86	1.36	0.56	0.29



Alt Model-Shift Uniqueness Test

006780052-01, P = 375.059439 Days, E = 192.006014 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	4.96	4.60	5.27	5.76	3.76	0.93	9.45	8.78	0.36	-0.31	1.62	0.97	0.27	0



Stellar Parameters For KIC 006780052

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5232^{+83}_{-73}	$4.547^{+0.049}_{-0.045}$	$-0.180^{+0.150}_{-0.150}$	$0.780^{+0.050}_{-0.045}$	$0.782^{+0.054}_{-0.038}$	$2.321^{+0.406}_{-0.345}$
	+2%/-1%	+1%/-1%	+83%/-83%	+6%/-6%	+7%/-5%	+17%/-15%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 006780052-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1612 ± 93	$4.10^{+3.92}_{-2.72}$	294^{+7}_{-6}	4854^{+3607}_{-1062}	$46960^{+367746}_{-34835}$
Alt.	-447 ± 90	$4.32^{+3.45}_{-2.76}$	295^{+7}_{-7}	3755^{+1820}_{-638}	11630^{+75813}_{-8057}

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

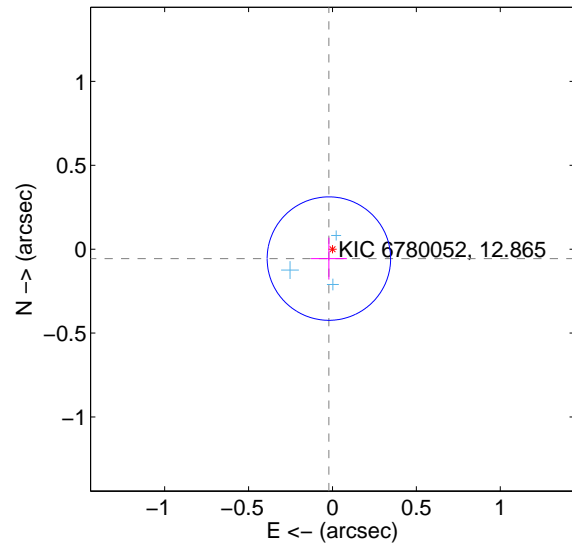
Supplemental centroid analysis for 006780052-01. Kepler magnitude: 12.87. Transit SNR 8.08

There are 3 quarters with good PRF difference image offsets

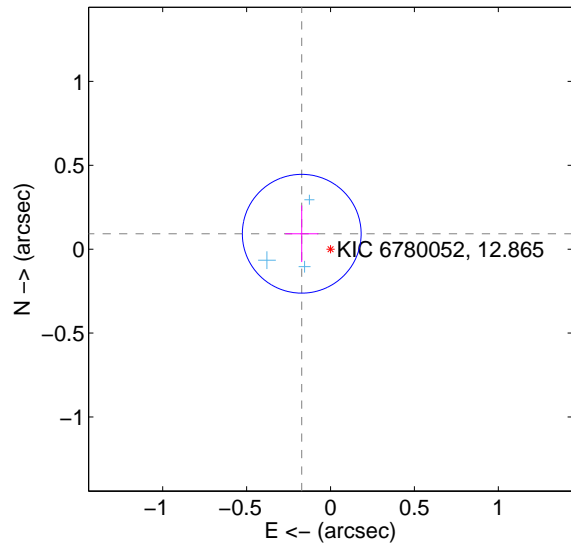
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.060 ± 0.123	0.49	0.021 ± 0.107	-0.056 ± 0.125
PRF-fit source offset from KIC position	0.195 ± 0.118	1.65	0.172 ± 0.099	0.092 ± 0.168
photometric centroid source offset	0.13 ± 0.36	0.35	0.07 ± 0.50	-0.10 ± 0.27

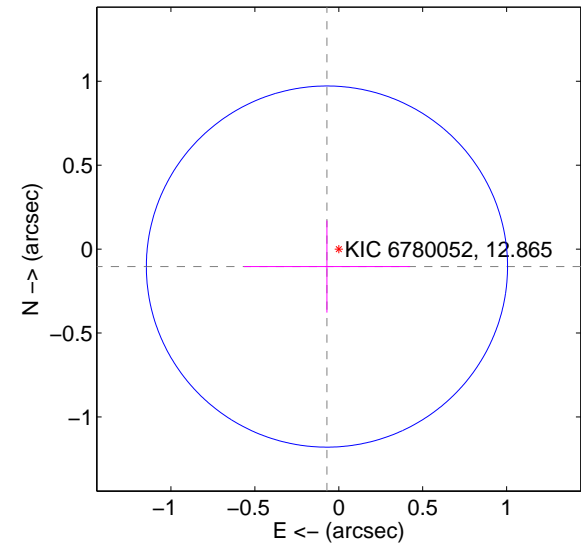
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

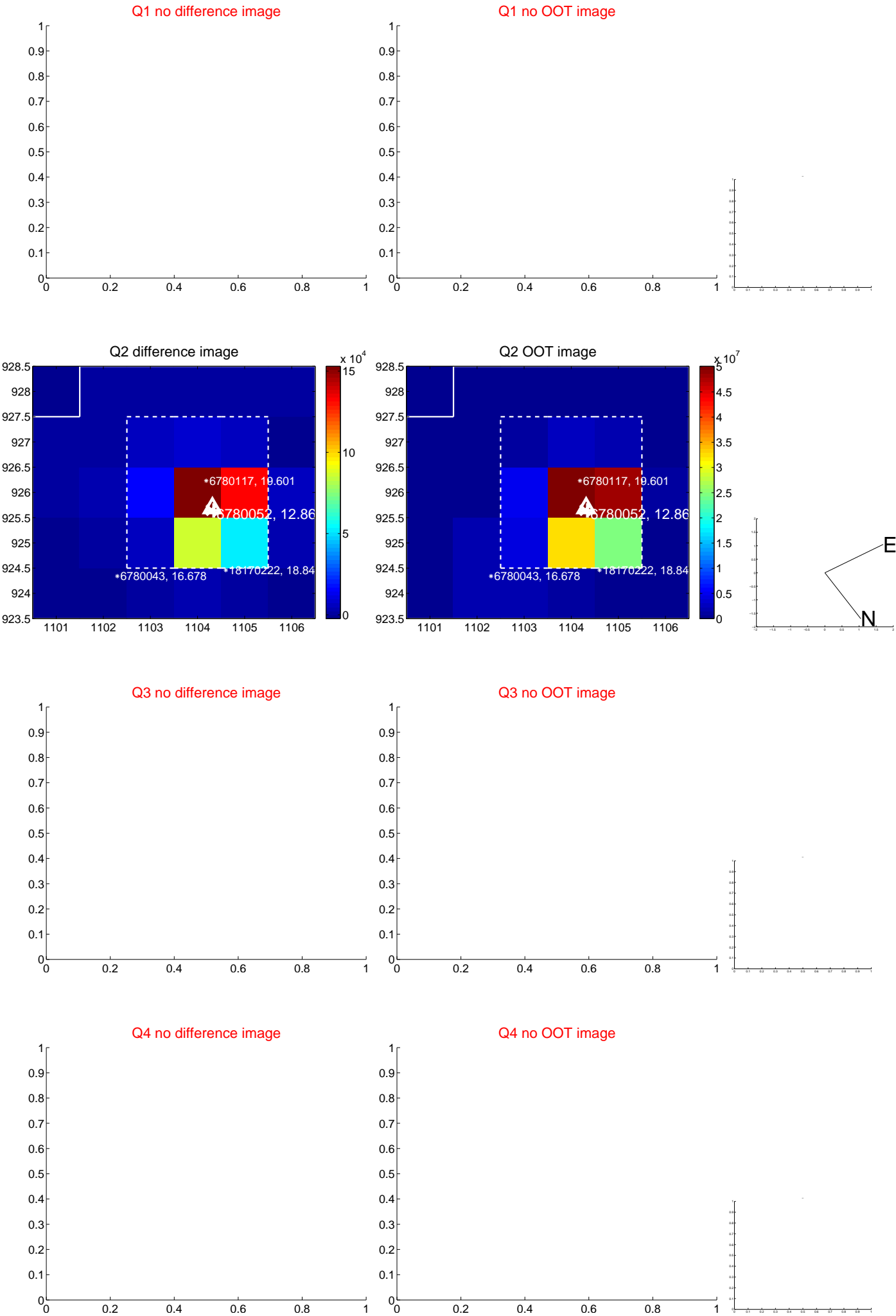


offset from photometric centroids



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.

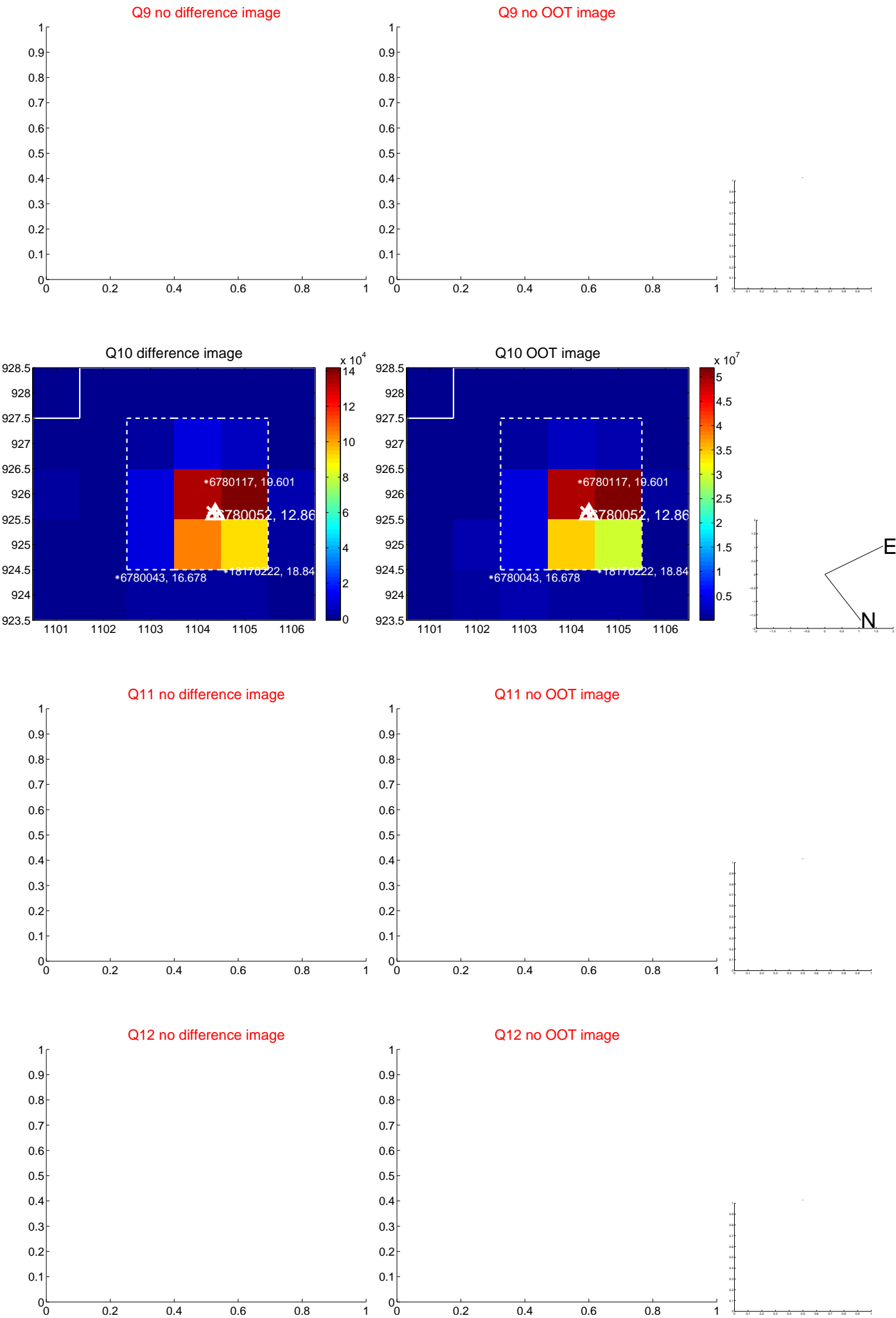
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



white ×: 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.

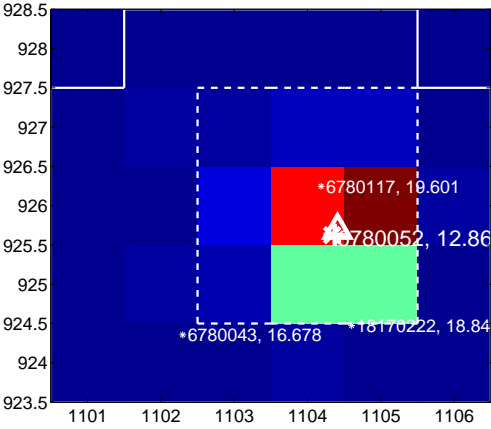
Q13 no difference image



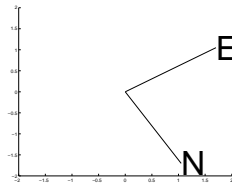
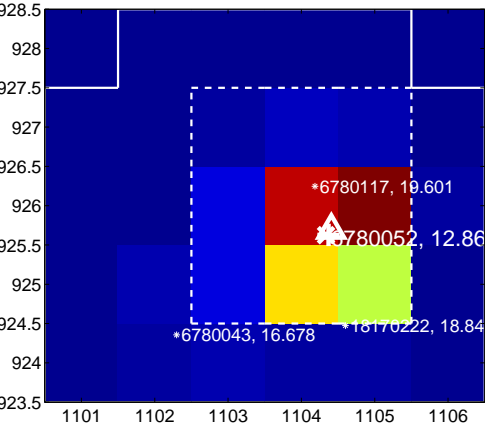
Q13 no OOT image



Q14 difference image



Q14 OOT image



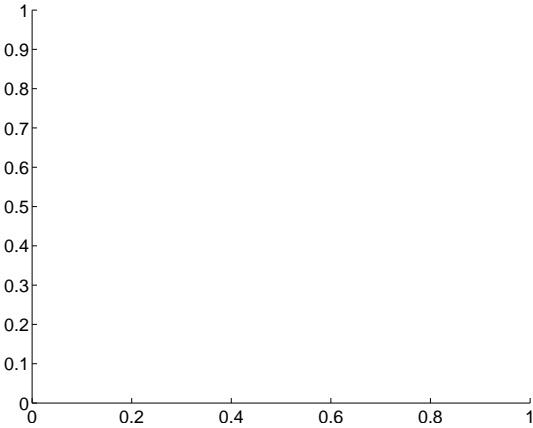
Q15 no difference image



Q15 no OOT image



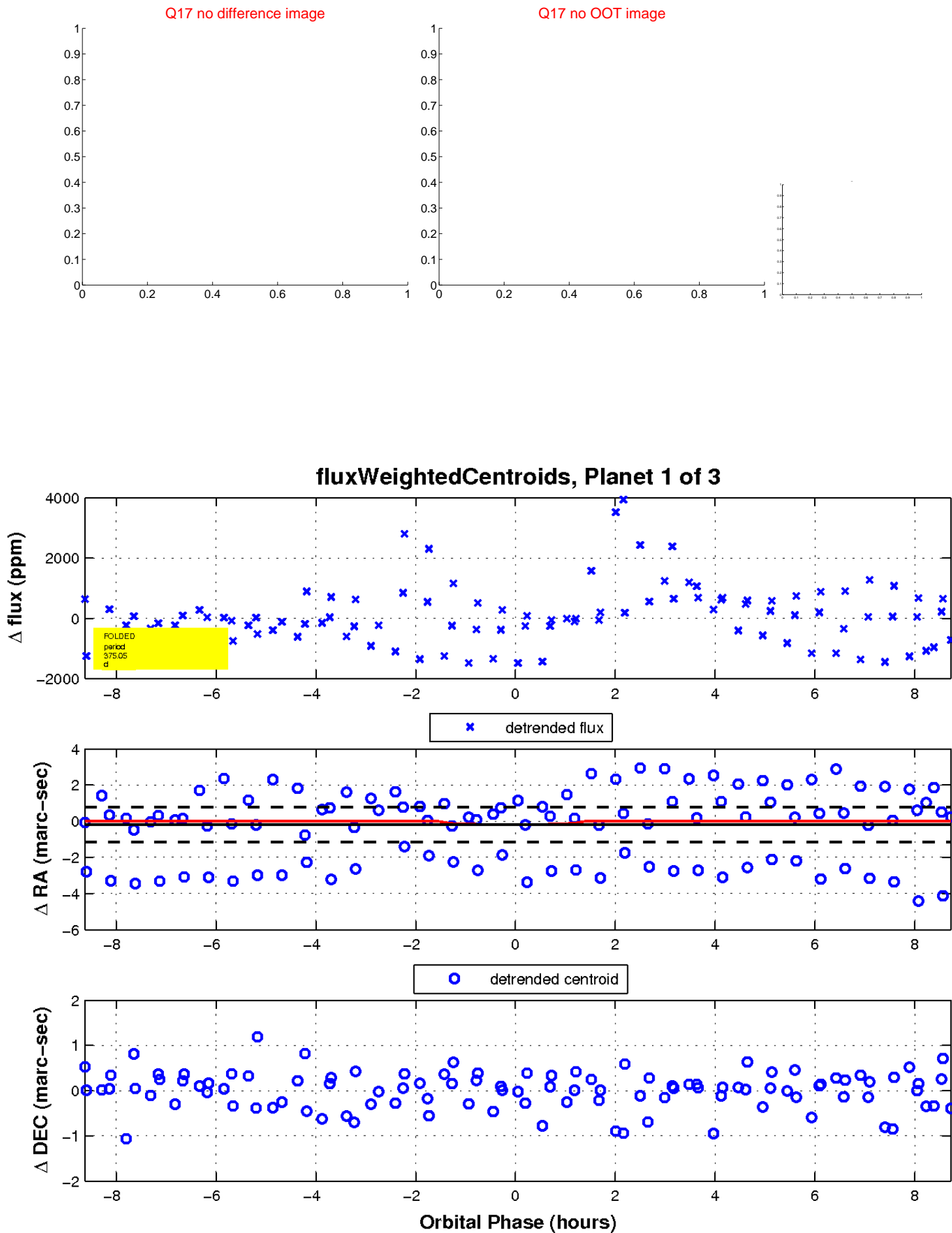
Q16 no difference image



Q16 no OOT image

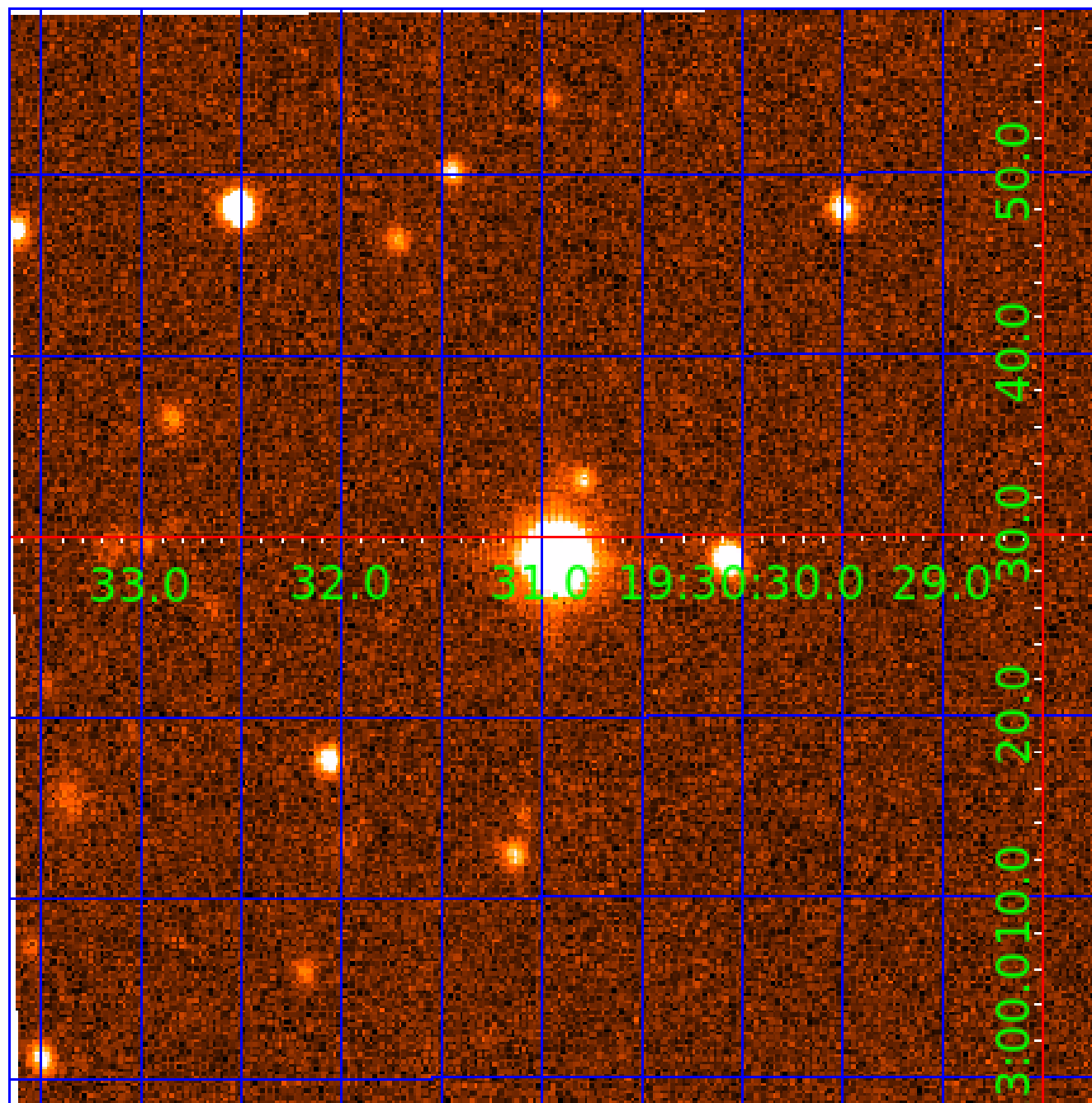


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006780052

Q1-17 DR25 TCE Parameters

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Robovetter Results

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006780052-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006780052-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

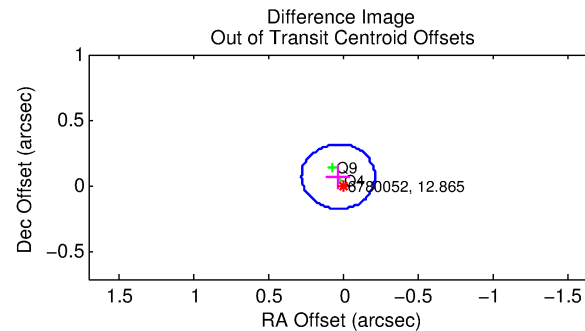
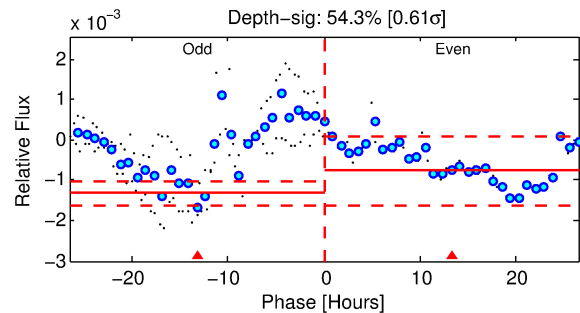
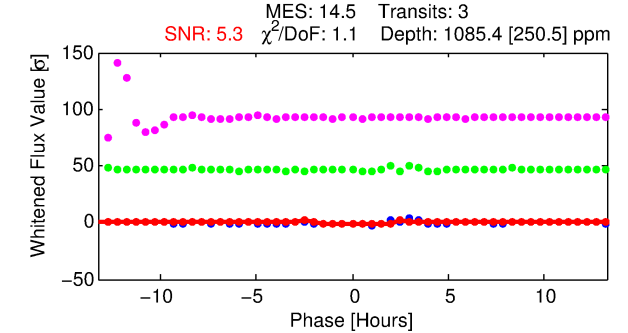
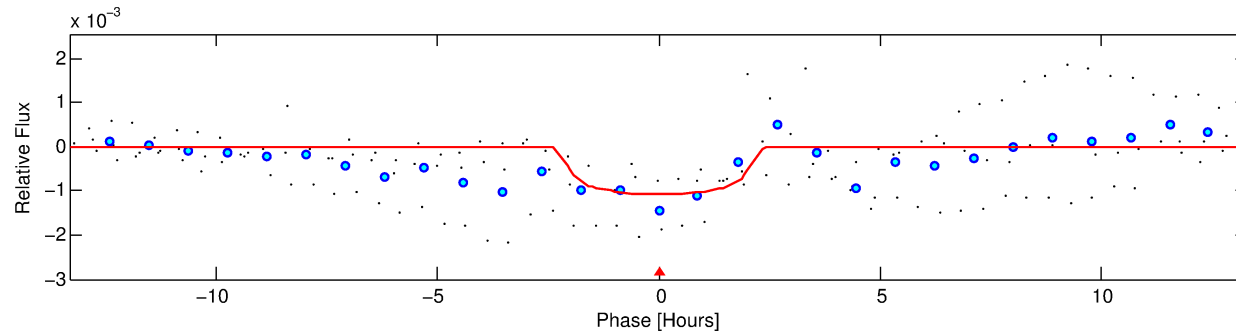
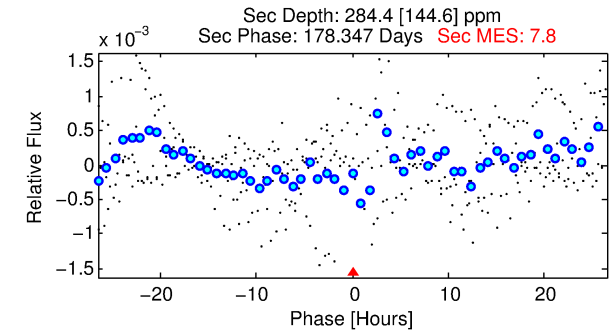
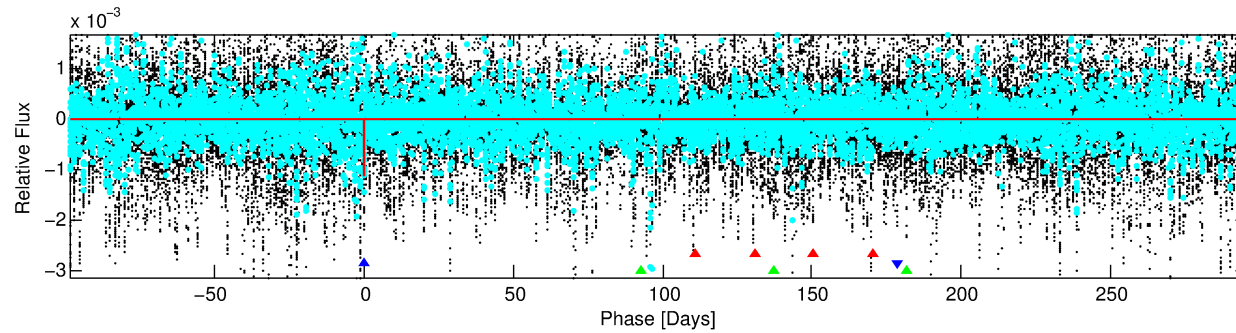
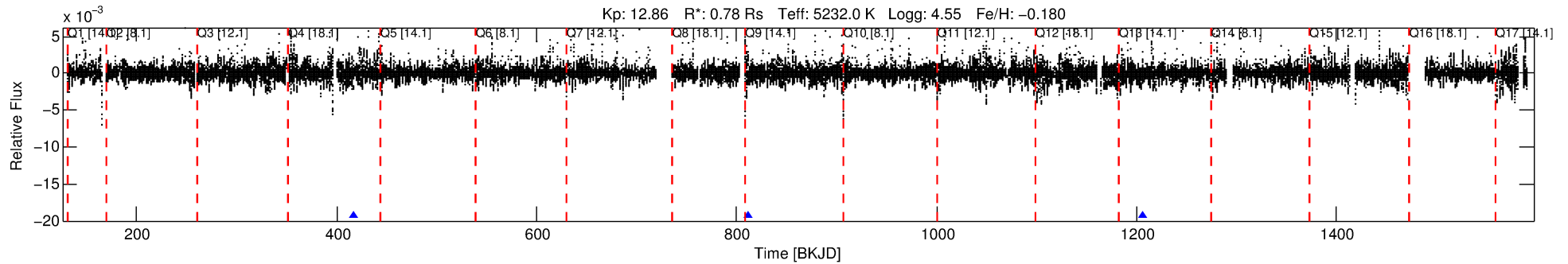
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006780052-02

No Significant Match Found

DV One-Page Summary

KIC: 6780052 Candidate: 2 of 3 Period: 394.801 d



DV Fit Results:

Period = 394.80139 [0.00492] d
Epoch = 416.3720 [0.0056] BKJD
Rp/R* = 0.0307 [0.0353]
a/R* = 607.13 [2549.02]
b = 0.52 [6.04]
Seff = 0.43 [0.05]
Teq = 207 [6] K
Rp = 2.61 [3.01] Re
a = 0.9705 [0.0553] AU
Ag = 21583.56 [50923.20] [0.42 σ]
Teffp = 3878 [2287] K [1.61 σ]

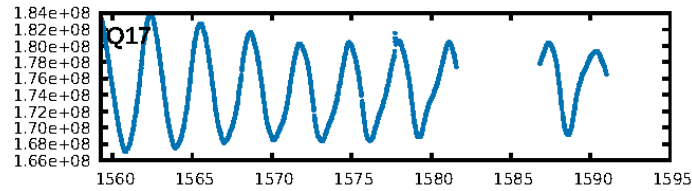
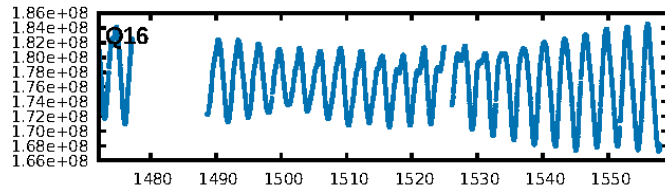
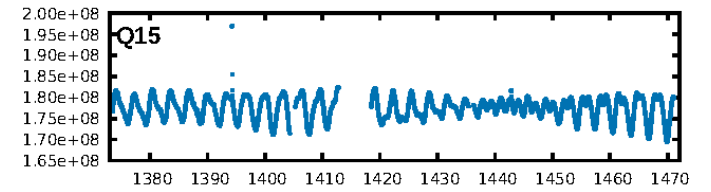
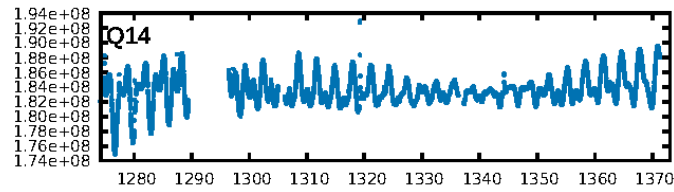
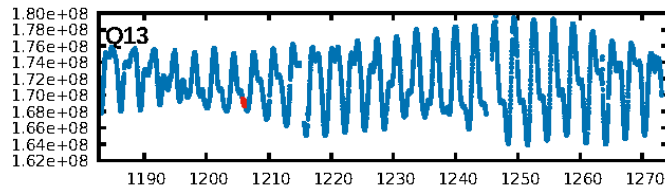
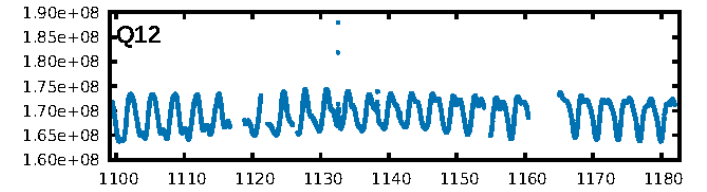
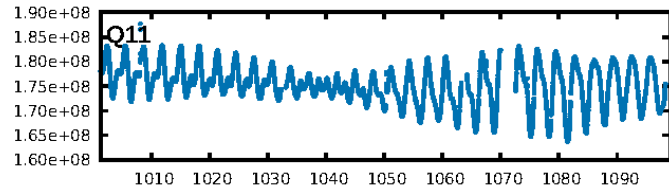
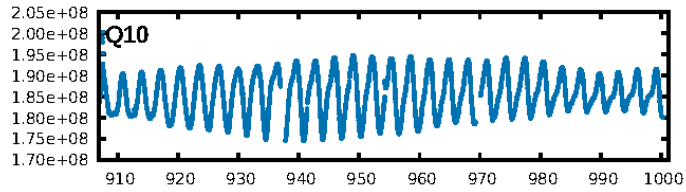
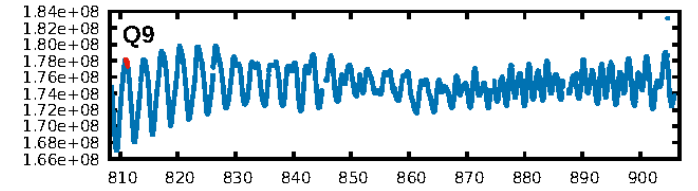
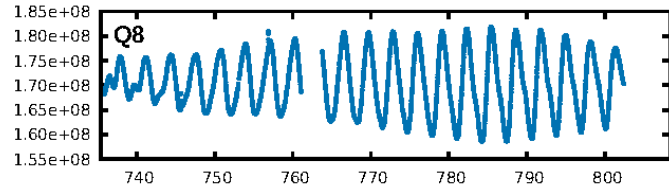
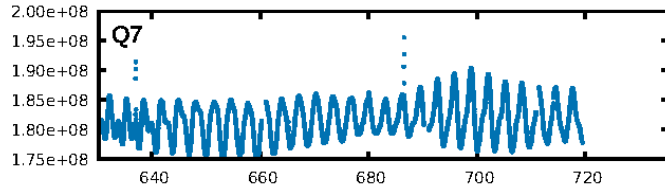
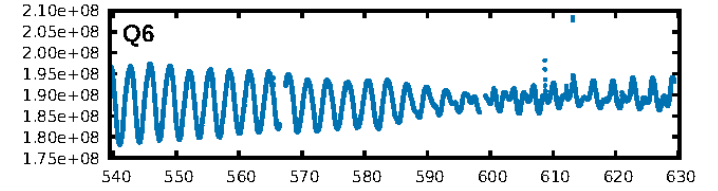
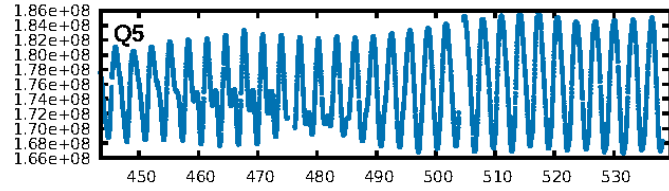
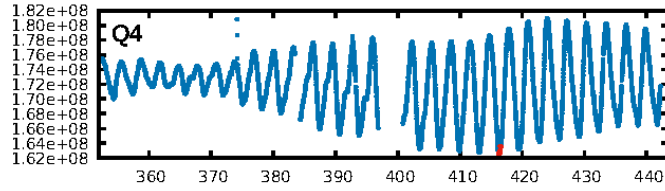
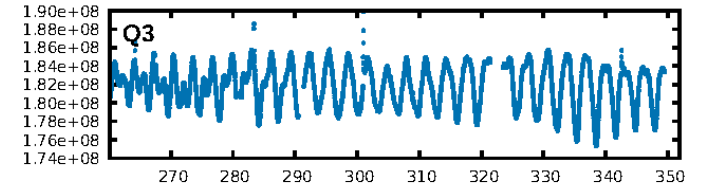
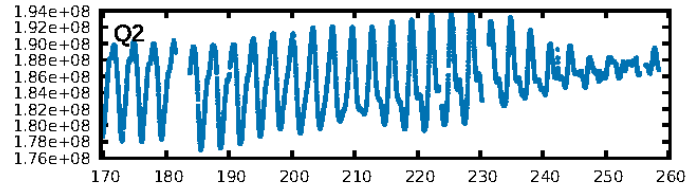
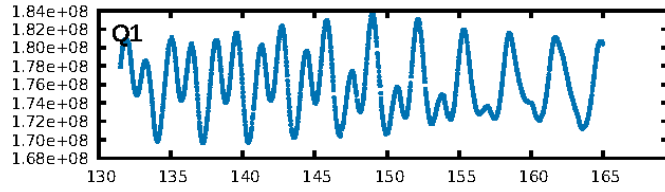
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [89.36 σ]
LongPeriod-sig: 100.0% [239.52 σ]
ModelChiSquare2-sig: 36.8%
ModelChiSquareGof-sig: 94.0%
Bootstrap-pfa: 5.86e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.7235
Centroid-sig: N/A
Centroid-so: 0.678 arcsec [1.44 σ]
OotOffset-rm: 0.080 arcsec [0.98 σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-rm: 0.157 arcsec [1.83 σ]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

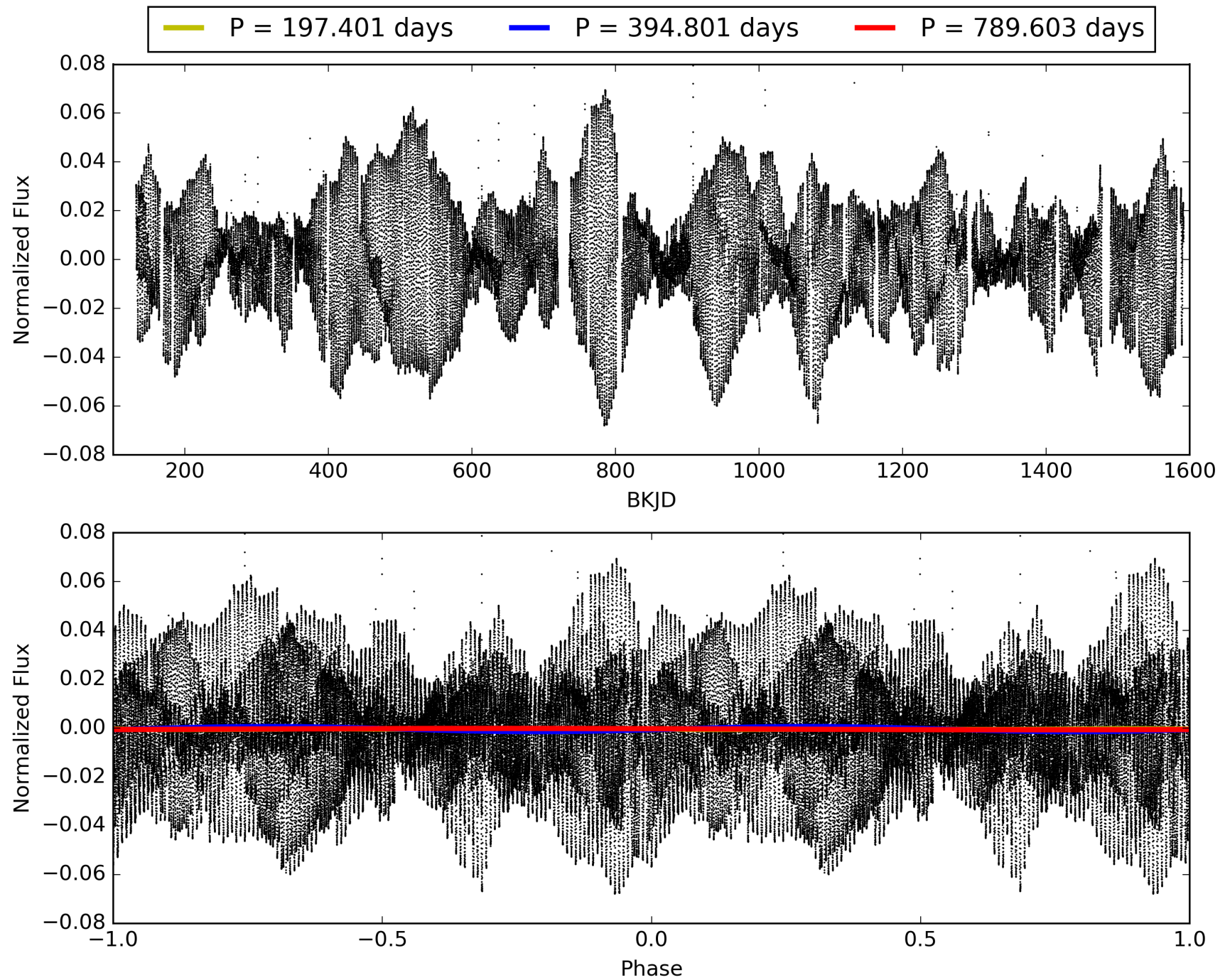
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:01:10 Z

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

TCE 006780052-02, PDC Light Curves

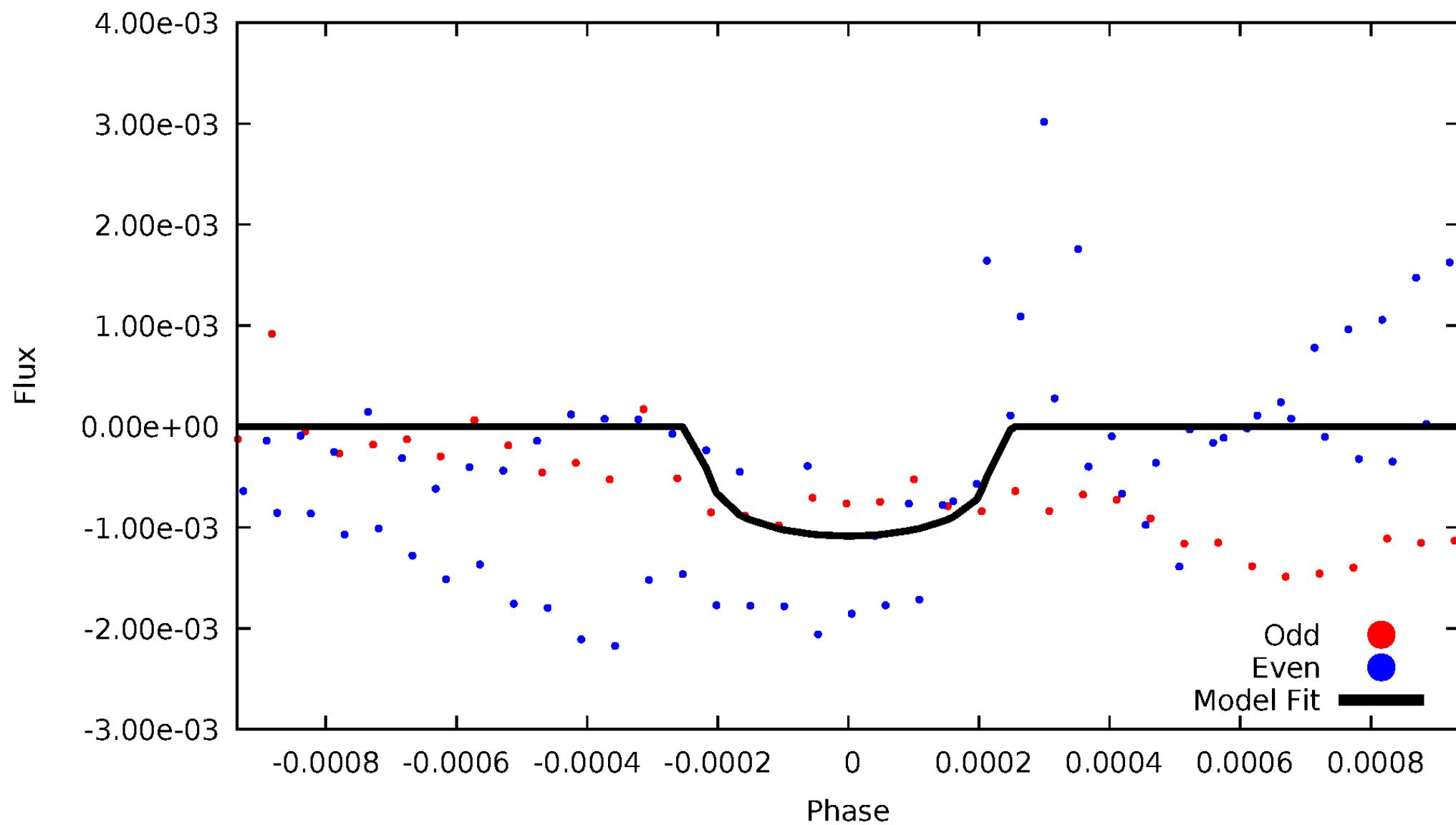


TCE 006780052-02



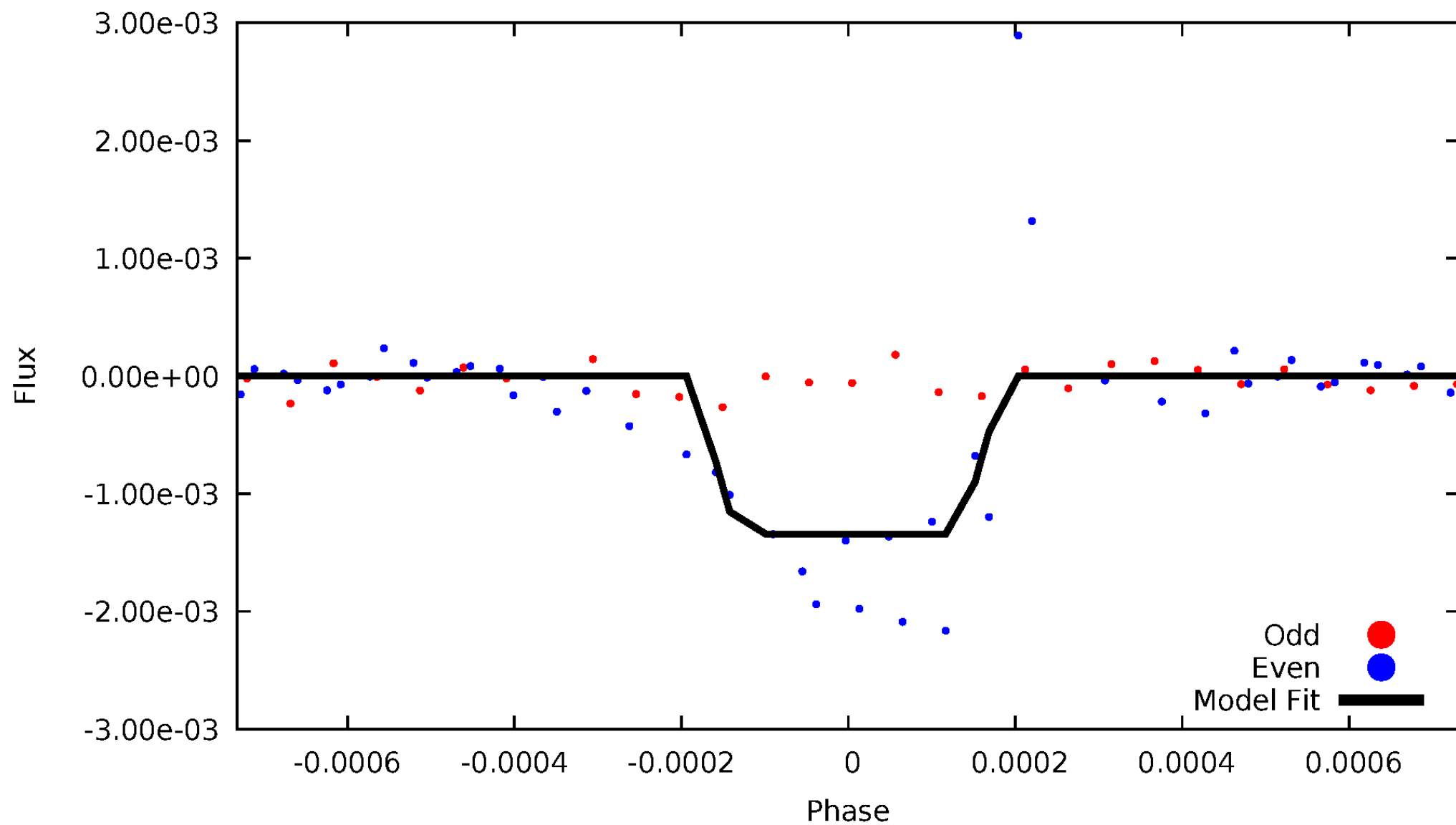
DV Odd/Even

TCE 006780052-02



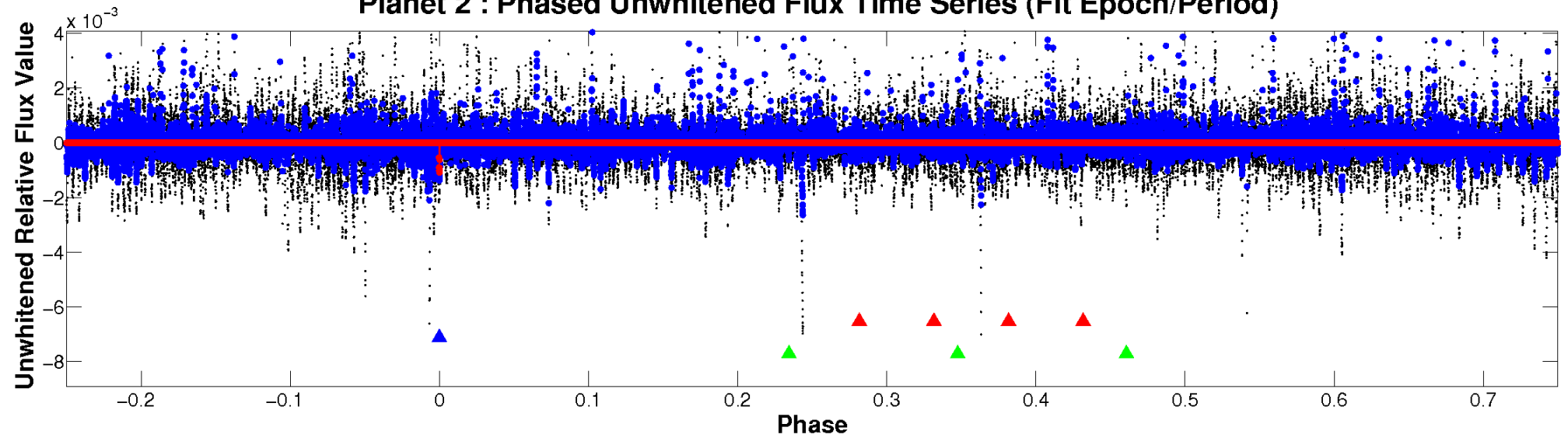
ALT Odd/Even

TCE 006780052-02

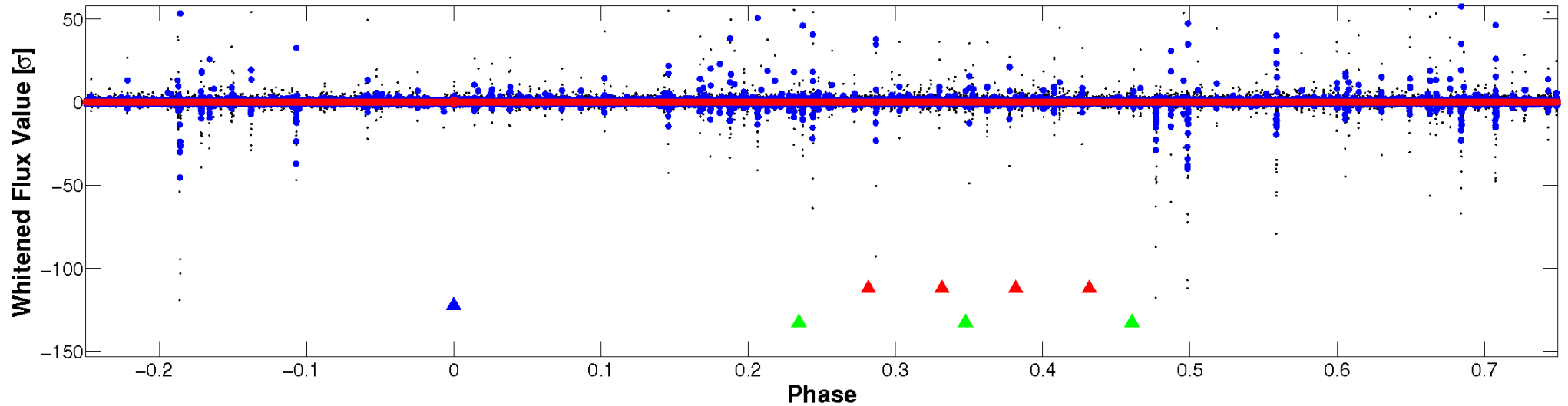


Non-Whitened Vs. Whitened Light Curve

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

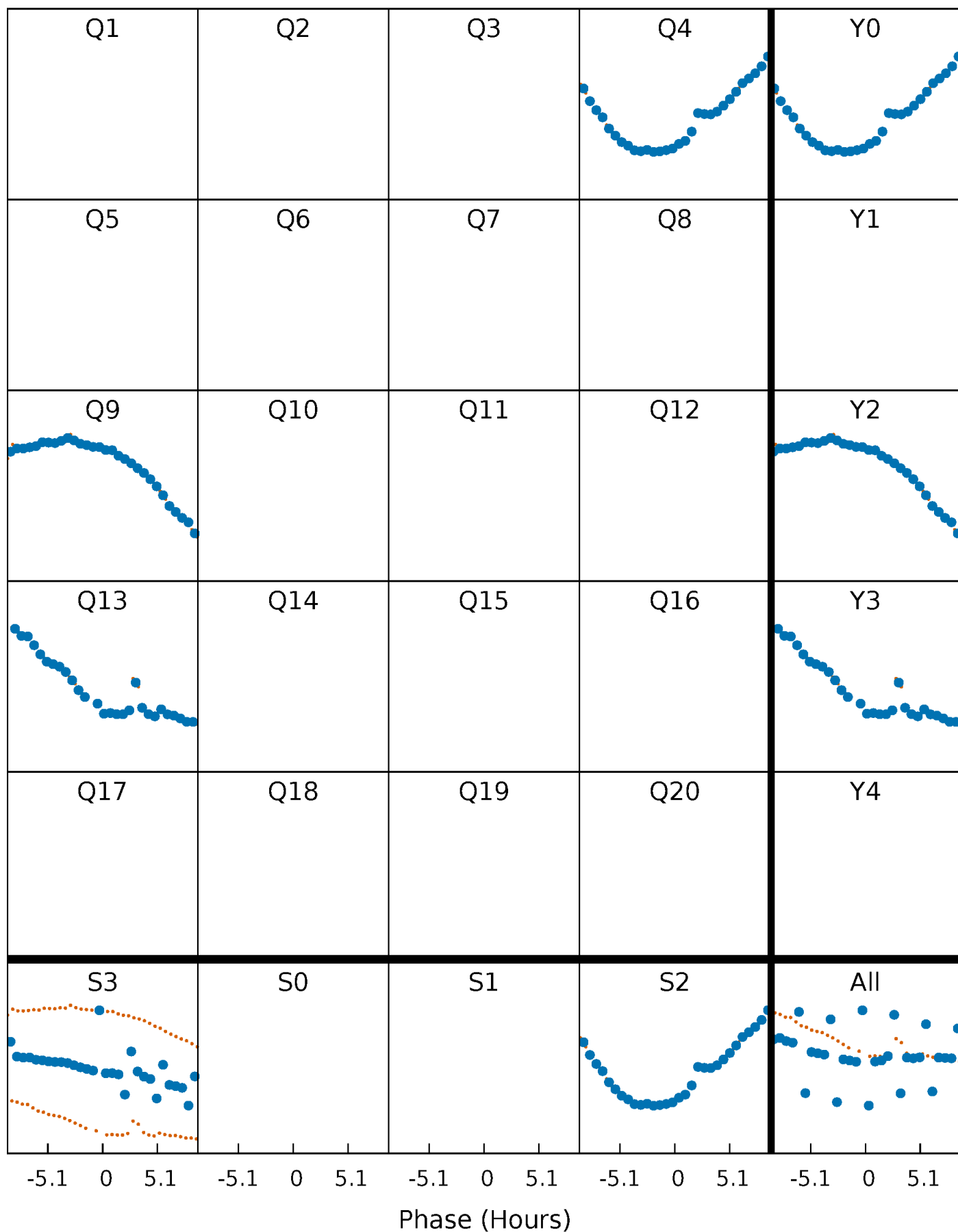


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



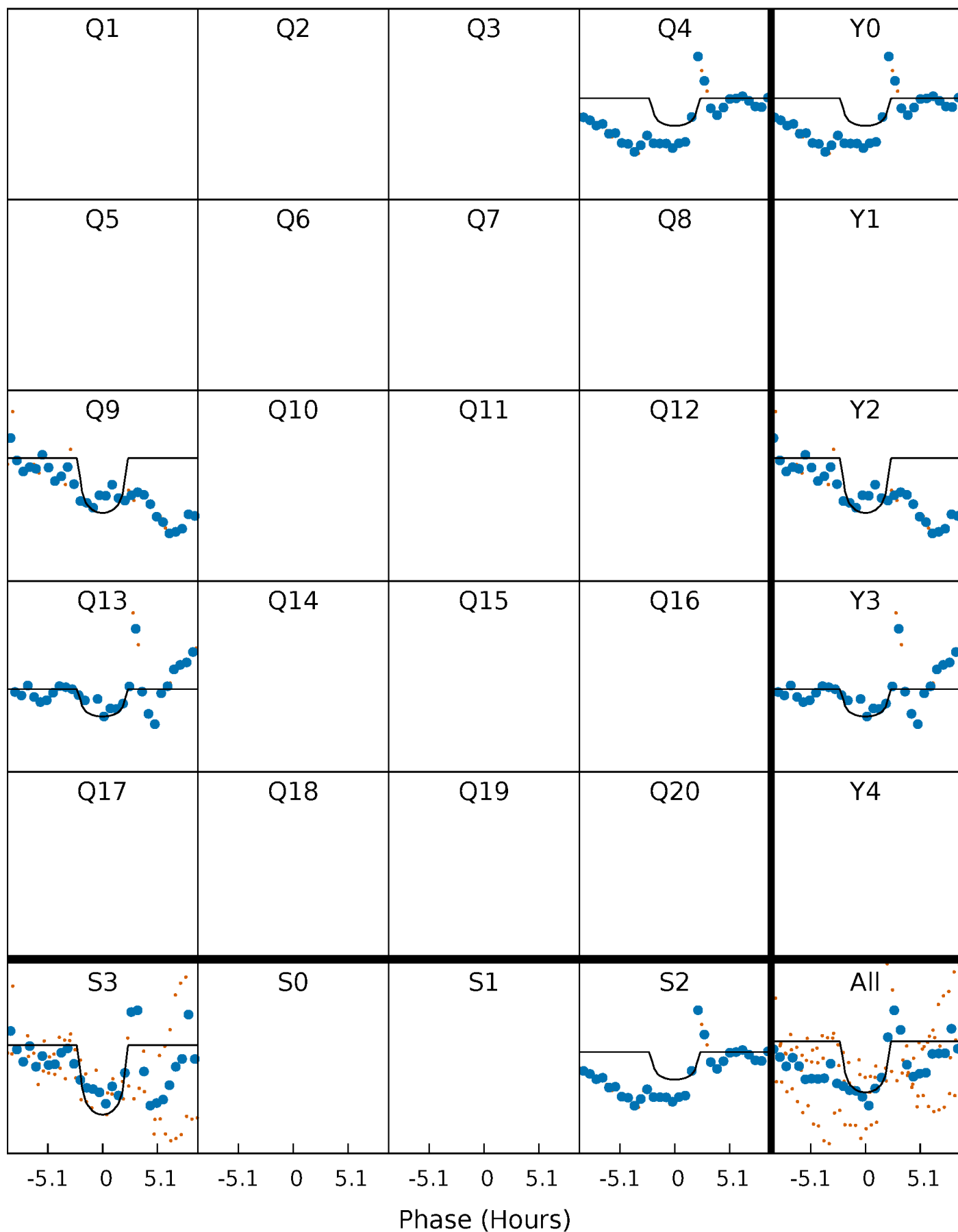
PDC Quarter-Phased Transit Curves

TCE 006780052-02 $P=394.801392$ Days $T_0=416.371957$ (BKJD)



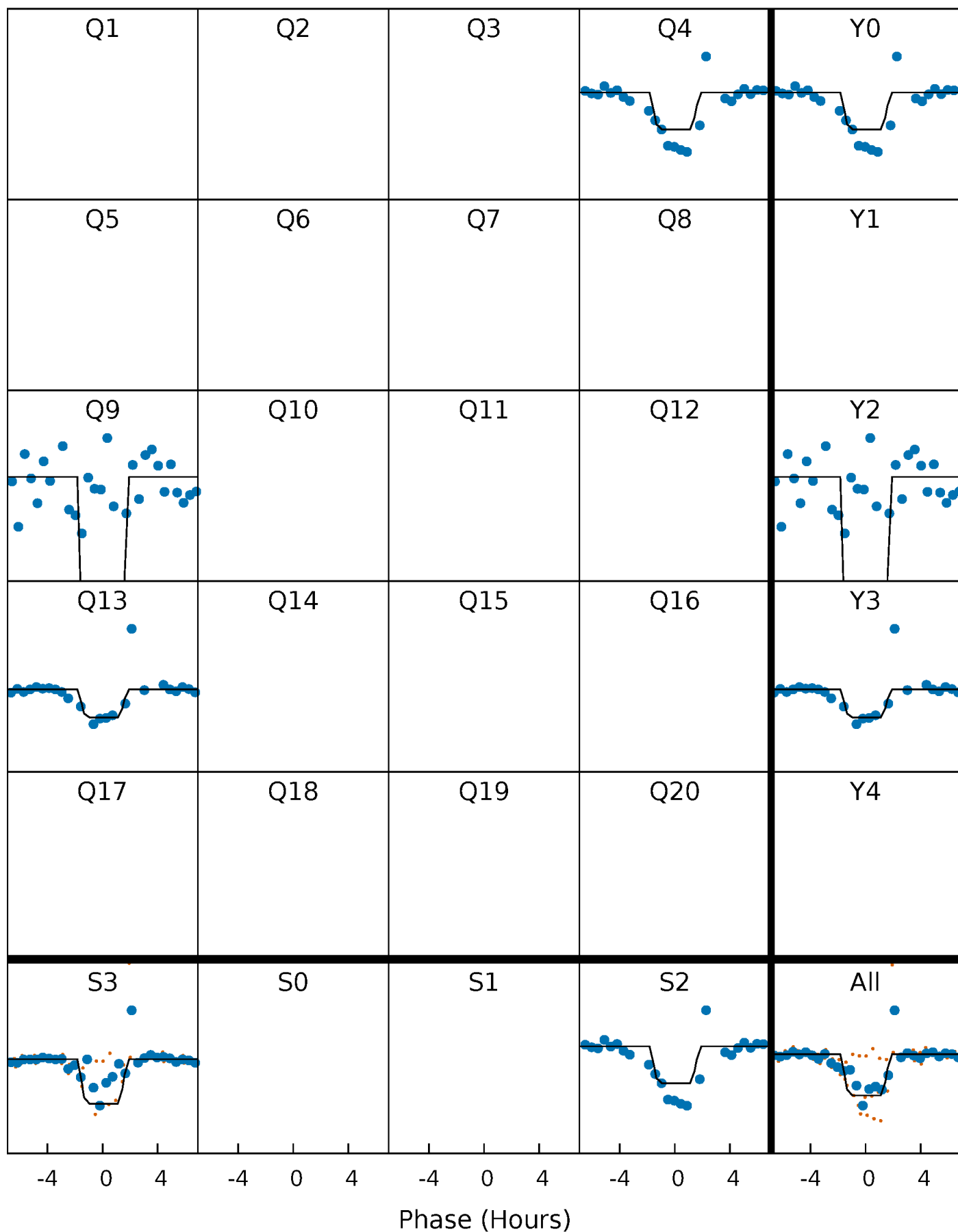
DV Quarter-Phased Transit Curves

TCE 006780052-02 $P=394.801392$ Days $T_0=416.371957$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

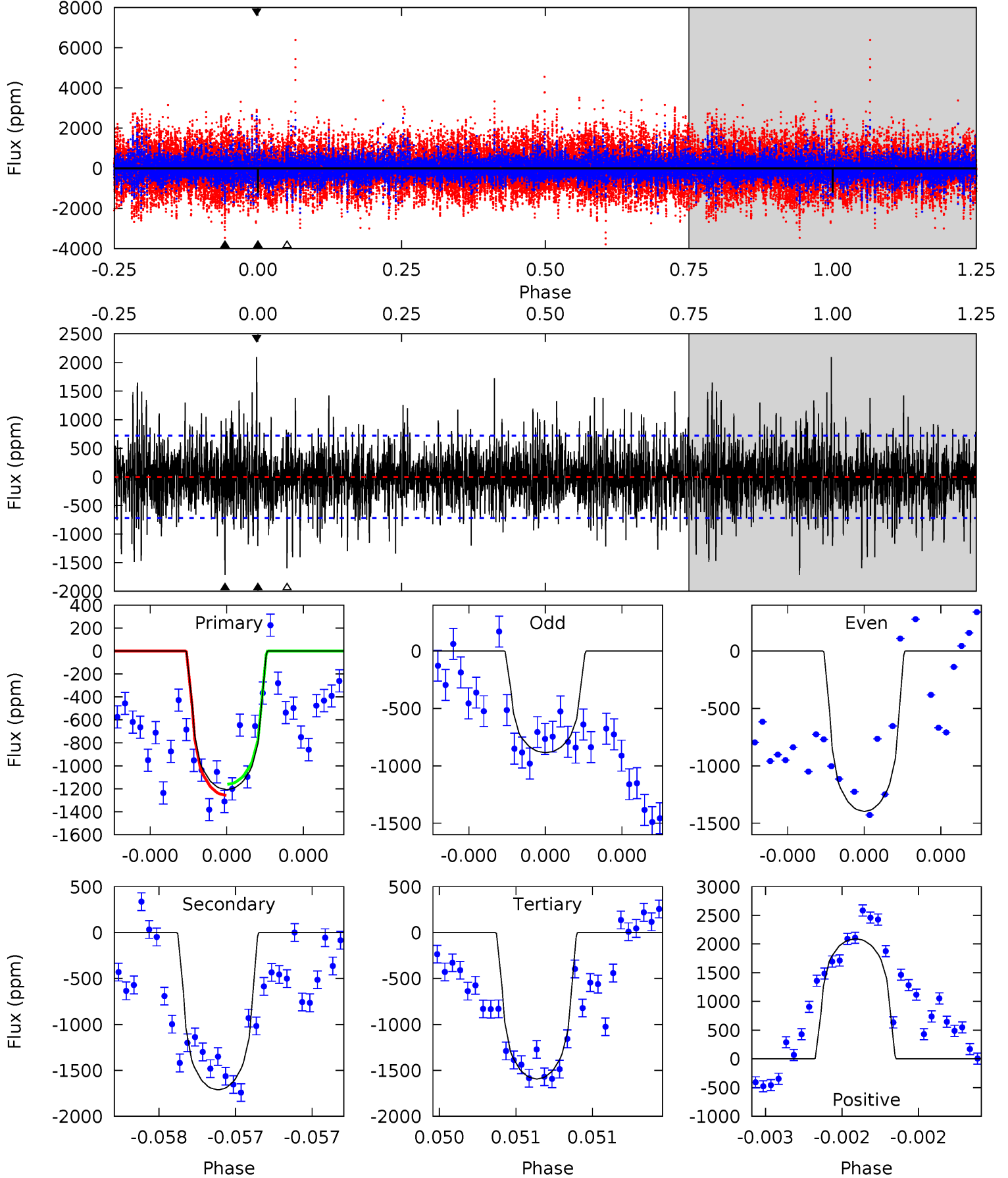
TCE 006780052-02 P=394.821944 Days $T_0=416.368820$ (BKJD)



DV Model-Shift Uniqueness Test

006780052-02, P = 394.801392 Days, E = 21.570565 Days

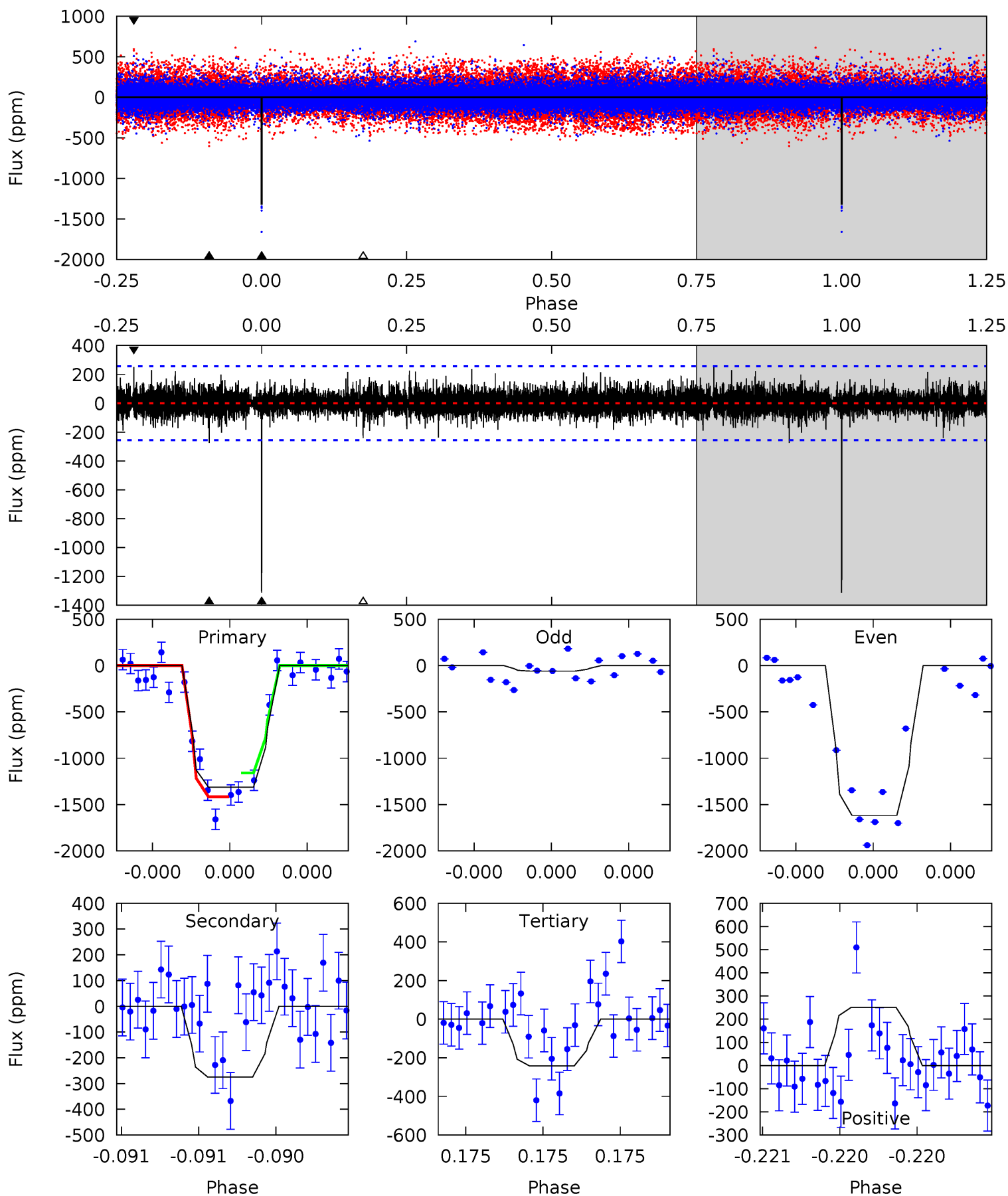
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.33	13.2	12.3	16.2	5.58	3.49	2.89	-2.99	-6.84	0.91	-2.93	1.57	1.26	0.55	0.37



Alt Model-Shift Uniqueness Test

006780052-02, P = 394.821944 Days, E = 21.546876 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.0	6.06	5.34	5.54	5.65	3.59	1.02	23.7	23.5	0.73	0.52	24.5	0.79	0.16	2.87



Stellar Parameters For KIC 006780052

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5232^{+83}_{-73}	$4.547^{+0.049}_{-0.045}$	$-0.180^{+0.150}_{-0.150}$	$0.780^{+0.050}_{-0.045}$	$0.782^{+0.054}_{-0.038}$	$2.321^{+0.406}_{-0.345}$
	+2%/-1%	+1%/-1%	+83%/-83%	+6%/-6%	+7%/-5%	+17%/-15%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 006780052-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1712 ± 129	$3.35^{+2.69}_{-2.11}$	289^{+7}_{-6}	5349^{+3819}_{-1116}	$80600^{+483757}_{-56267}$
Alt.	-274 ± 45	$3.73^{+2.71}_{-2.32}$	289^{+6}_{-6}	3618^{+1593}_{-549}	9830^{+62587}_{-6362}

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 $A_{obs} \gg 1.0$

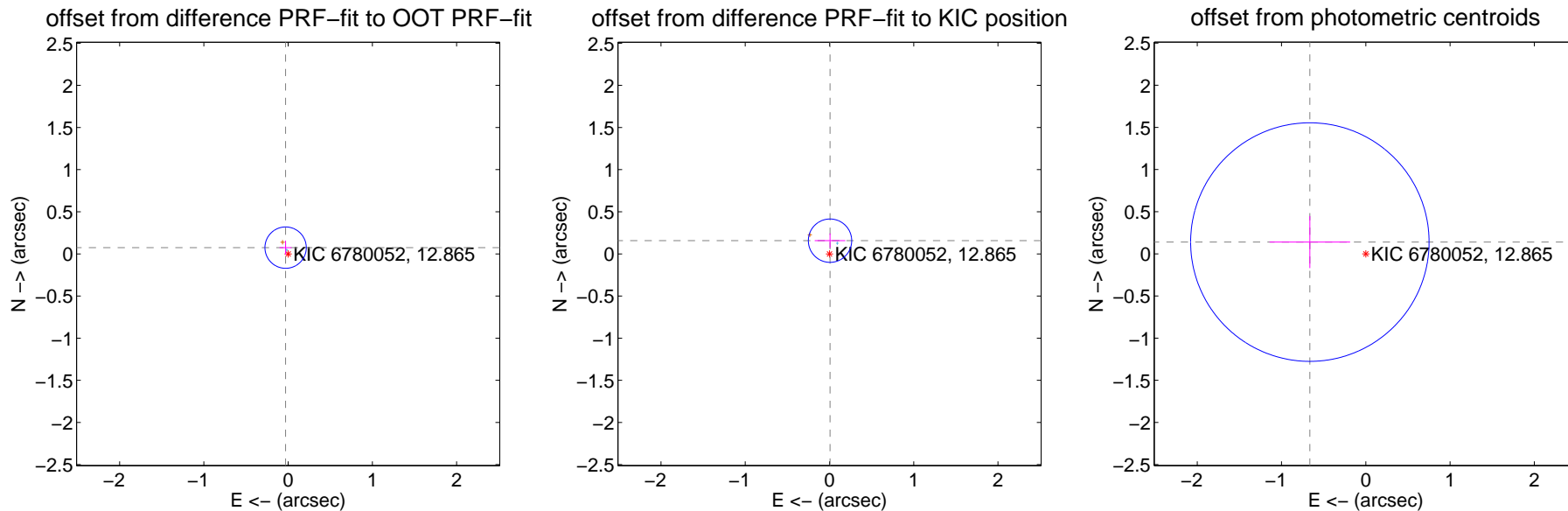
DV Centroid Data

Supplemental centroid analysis for 006780052-02. Kepler magnitude: 12.87. Transit SNR 5.26

There are 1 quarters with good PRF difference image offsets

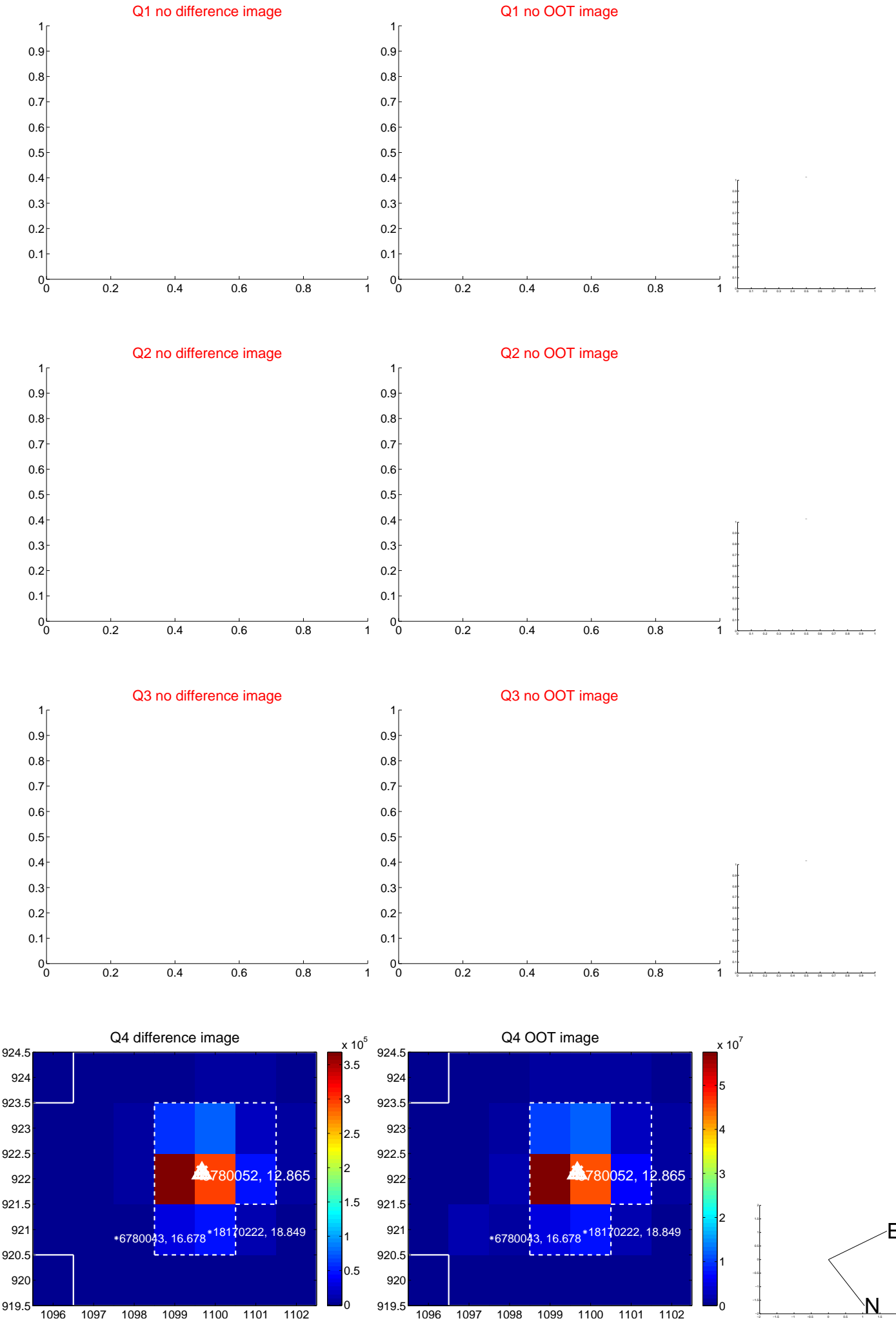
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.080 ± 0.082	0.98	0.030 ± 0.071	0.074 ± 0.083
PRF-fit source offset from KIC position	0.157 ± 0.086	1.83	-0.006 ± 0.181	0.157 ± 0.086
photometric centroid source offset	0.68 ± 0.47	1.44	0.66 ± 0.48	0.14 ± 0.31



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.

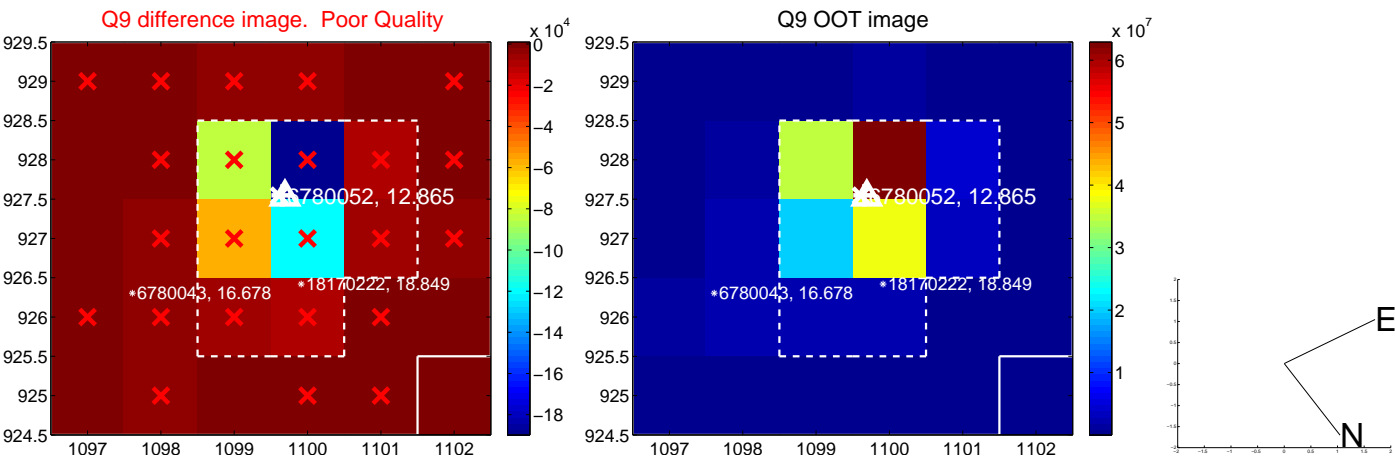
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



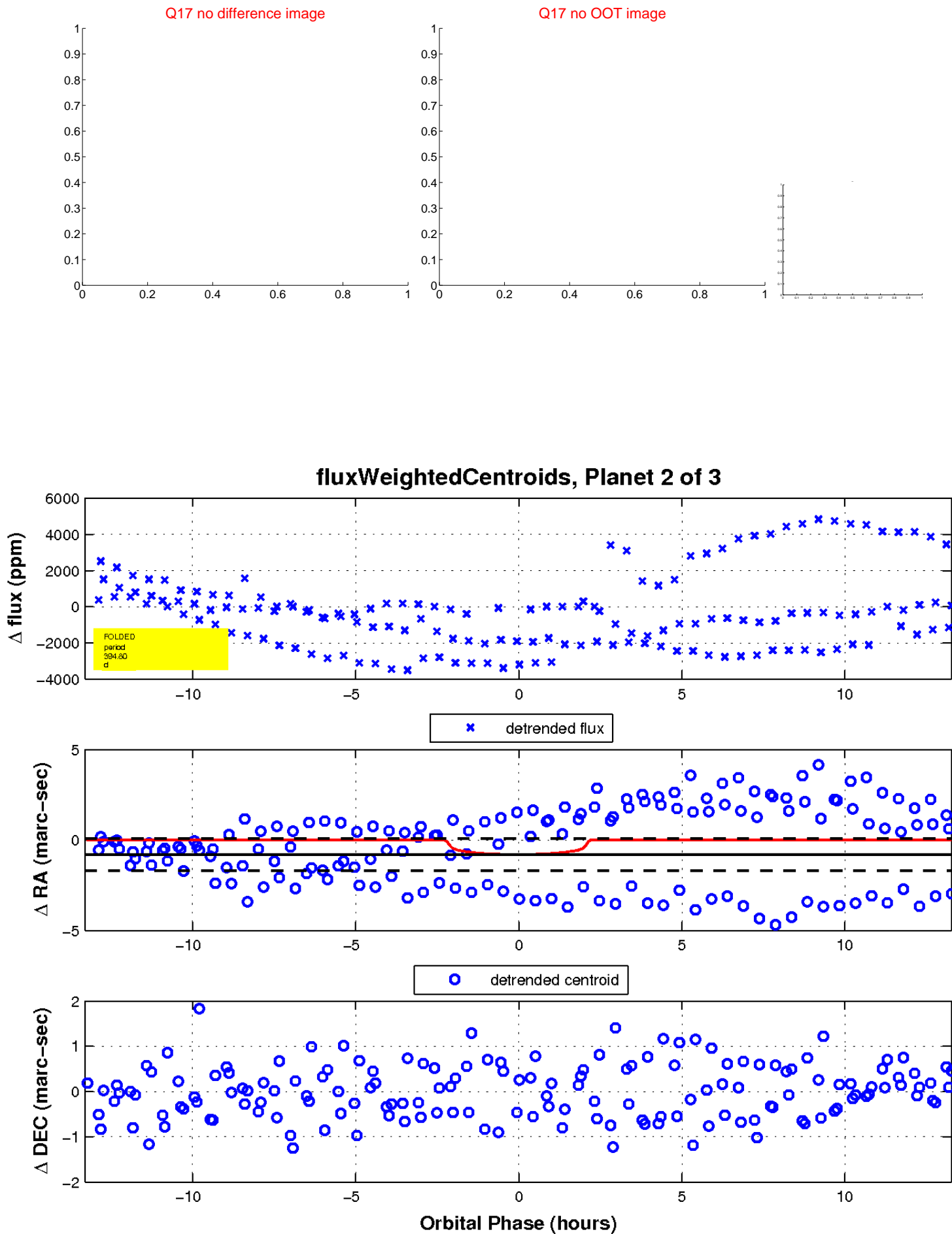
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

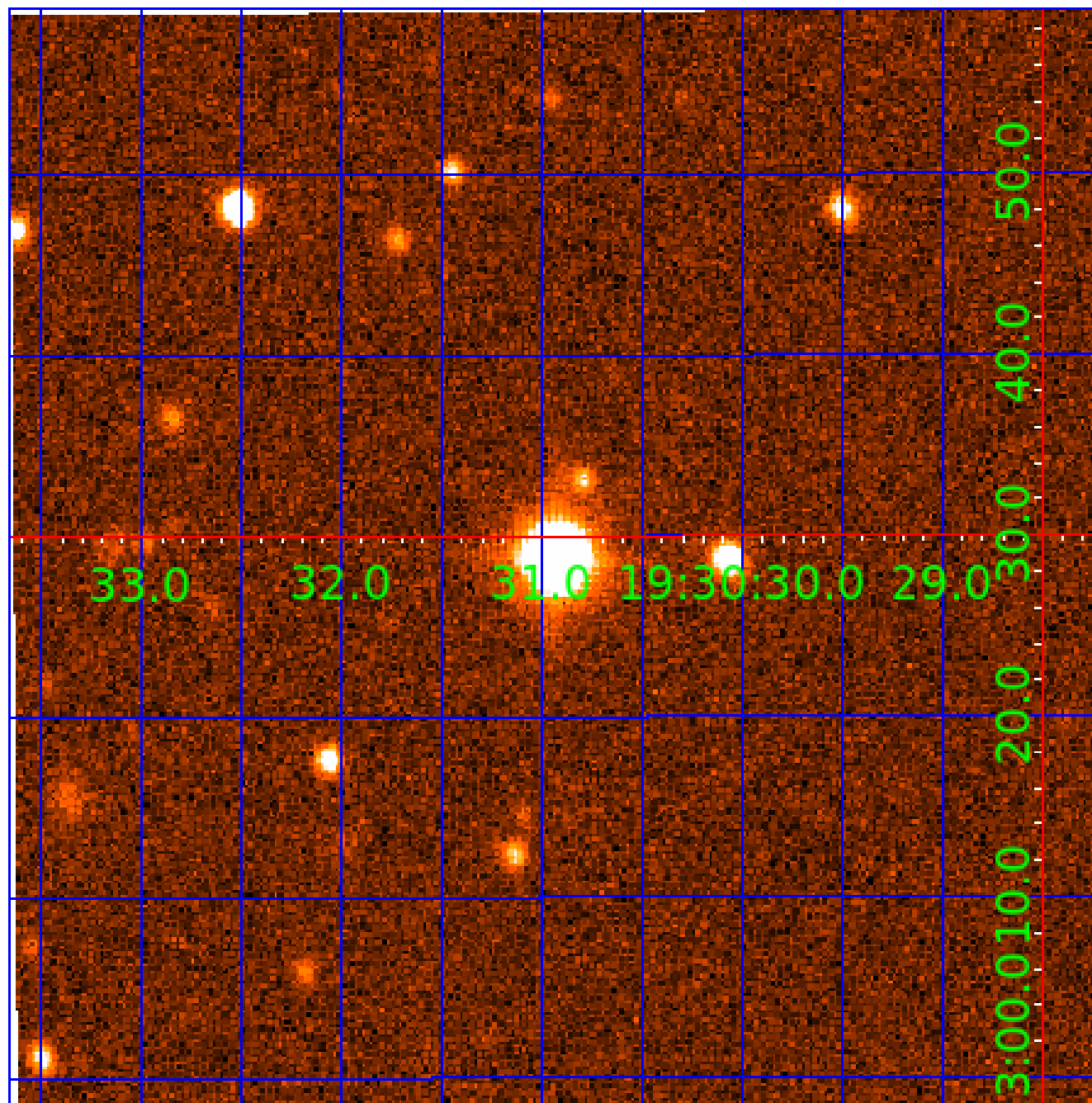


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006780052

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})
006780052-01	OBS	No	375.052340	192.005617	1228.1	2.913	15.8	8.1	0.78	5232	2.74	0.46
006780052-02	OBS	No	394.801392	416.371957	1085.4	4.433	14.5	5.3	0.78	5232	2.61	0.43
006780052-03	OBS	No	439.461527	508.935312	398.8	0.614	11.6	2.2	0.78	5232	1.99	0.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006780052-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
006780052-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006780052-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

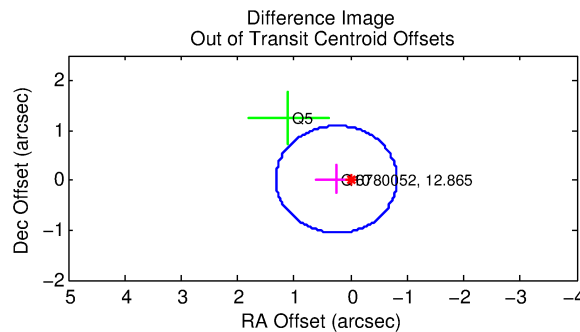
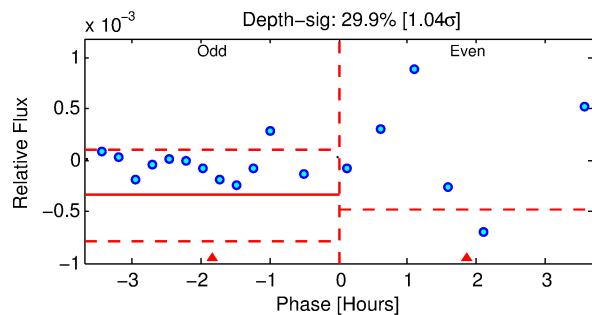
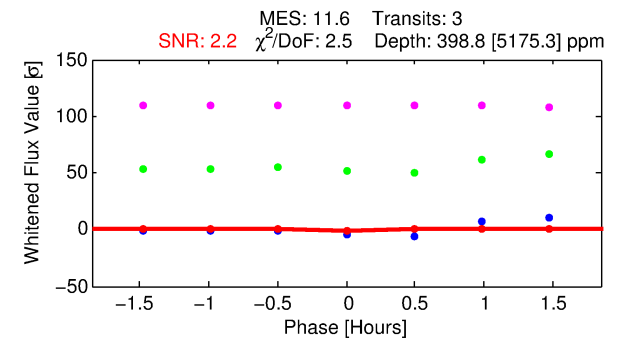
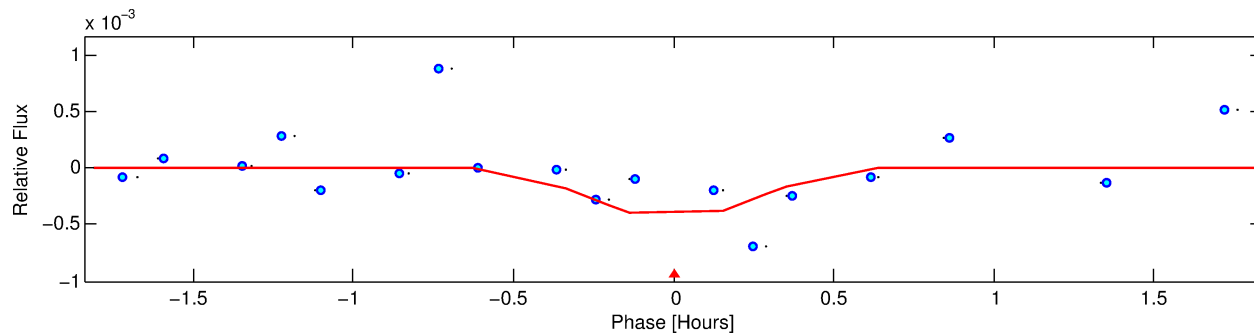
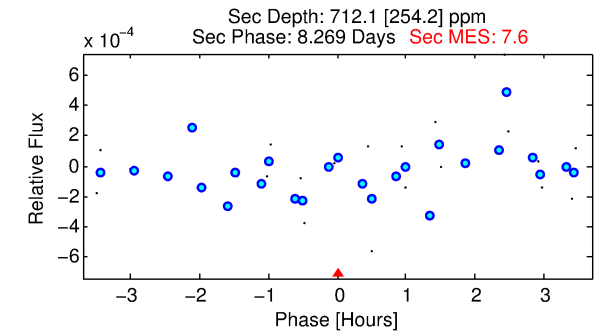
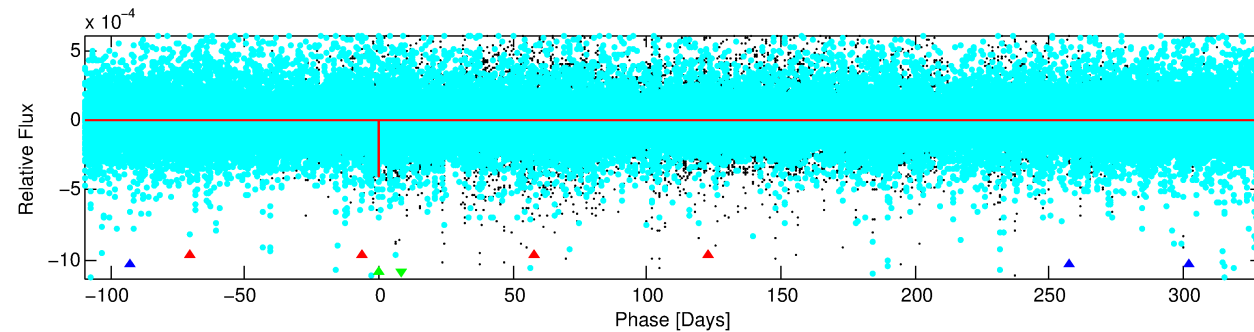
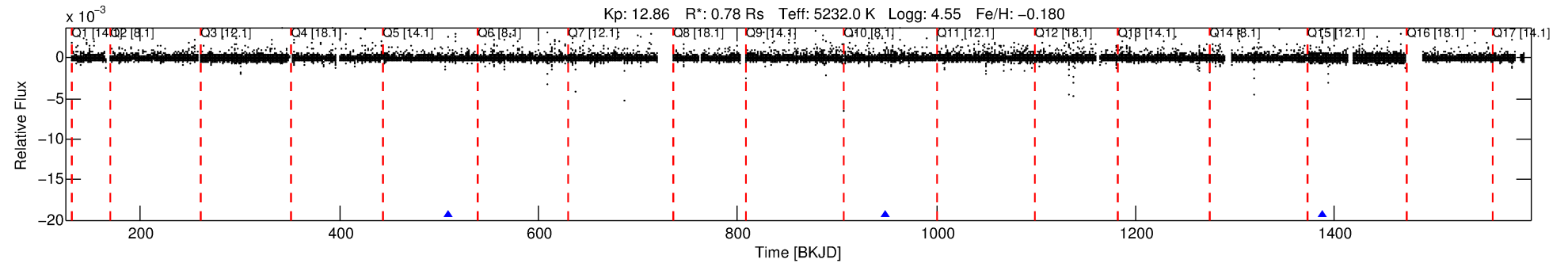
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006780052-03

No Significant Match Found

DV One-Page Summary

KIC: 6780052 Candidate: 3 of 3 Period: 439.462 d



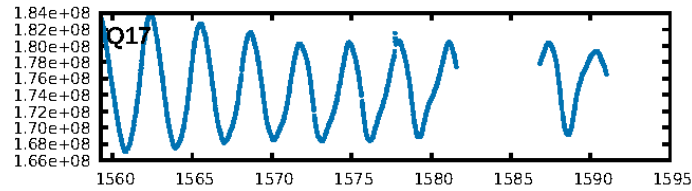
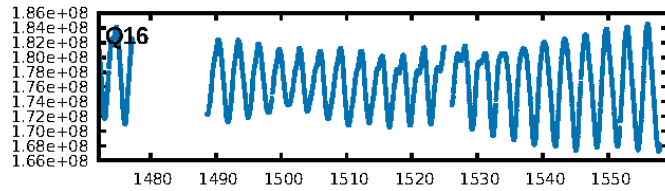
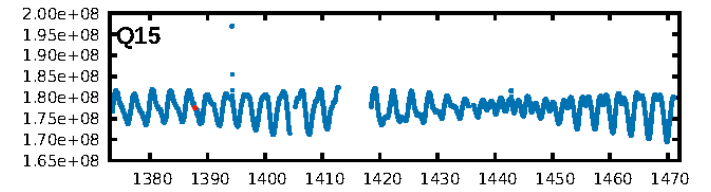
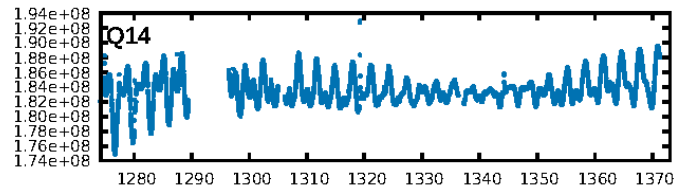
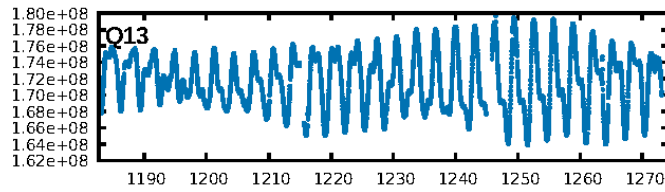
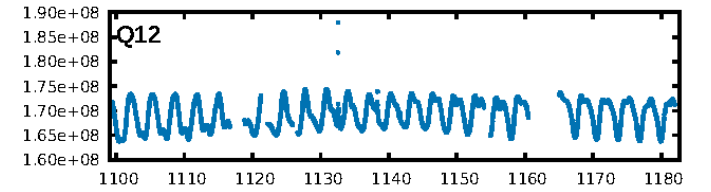
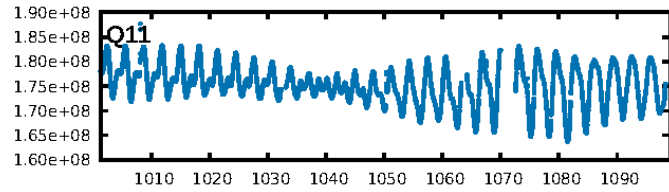
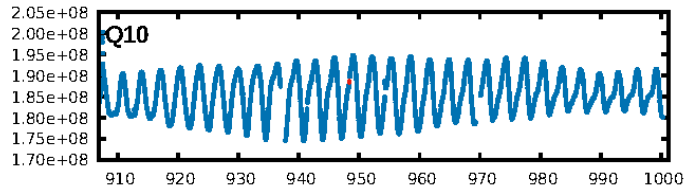
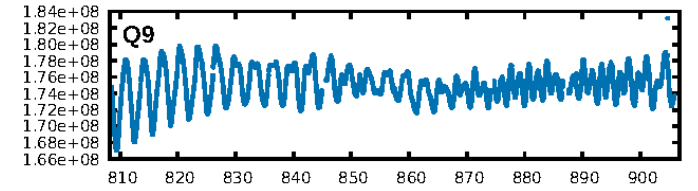
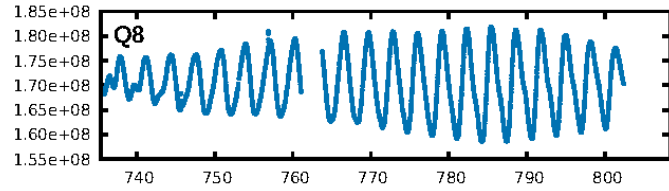
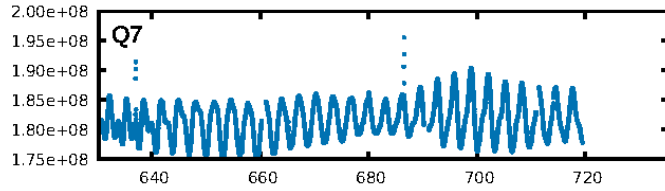
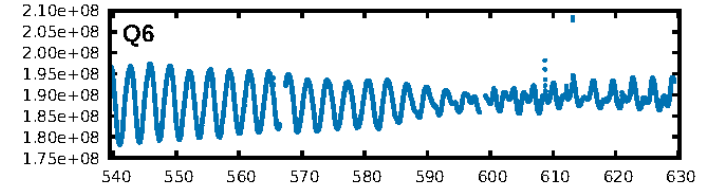
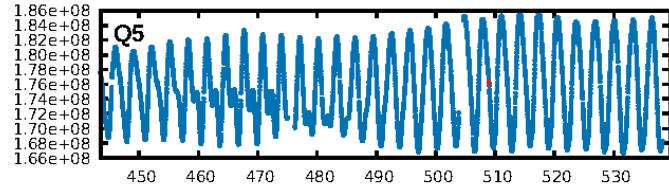
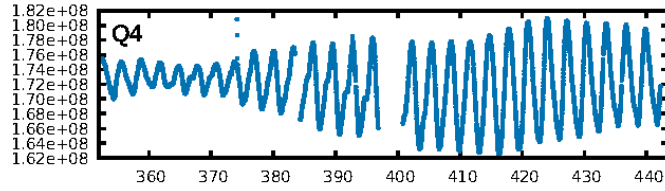
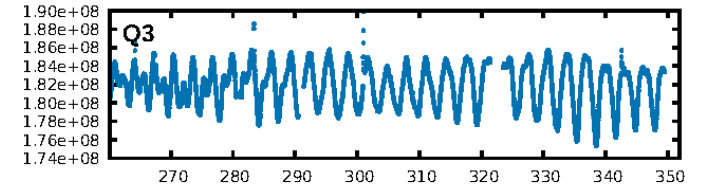
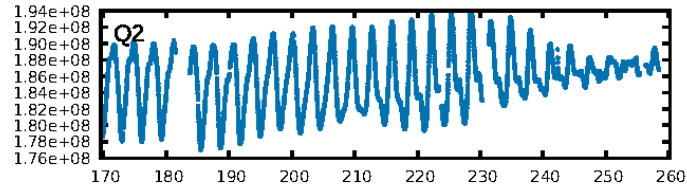
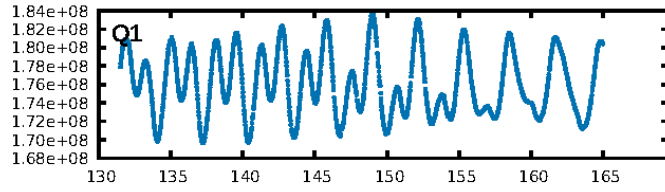
DV Fit Results:

Period = 439.46153 [0.05079] d
Epoch = 508.9353 [0.0647] BKJD
Rp/R* = 0.0234 [0.9802]
a/R* = 3625.02 [587203.53]
b = 0.78 [83.71]
Seff = 0.38 [0.04]
Teq = 200 [5] K
Rp = 1.99 [83.43] Re
a = 1.0424 [0.0593] AU
Ag = 107358.54 [8996467.30] [0.01σ]
Teffp = 5588 [117062] K [0.05σ]

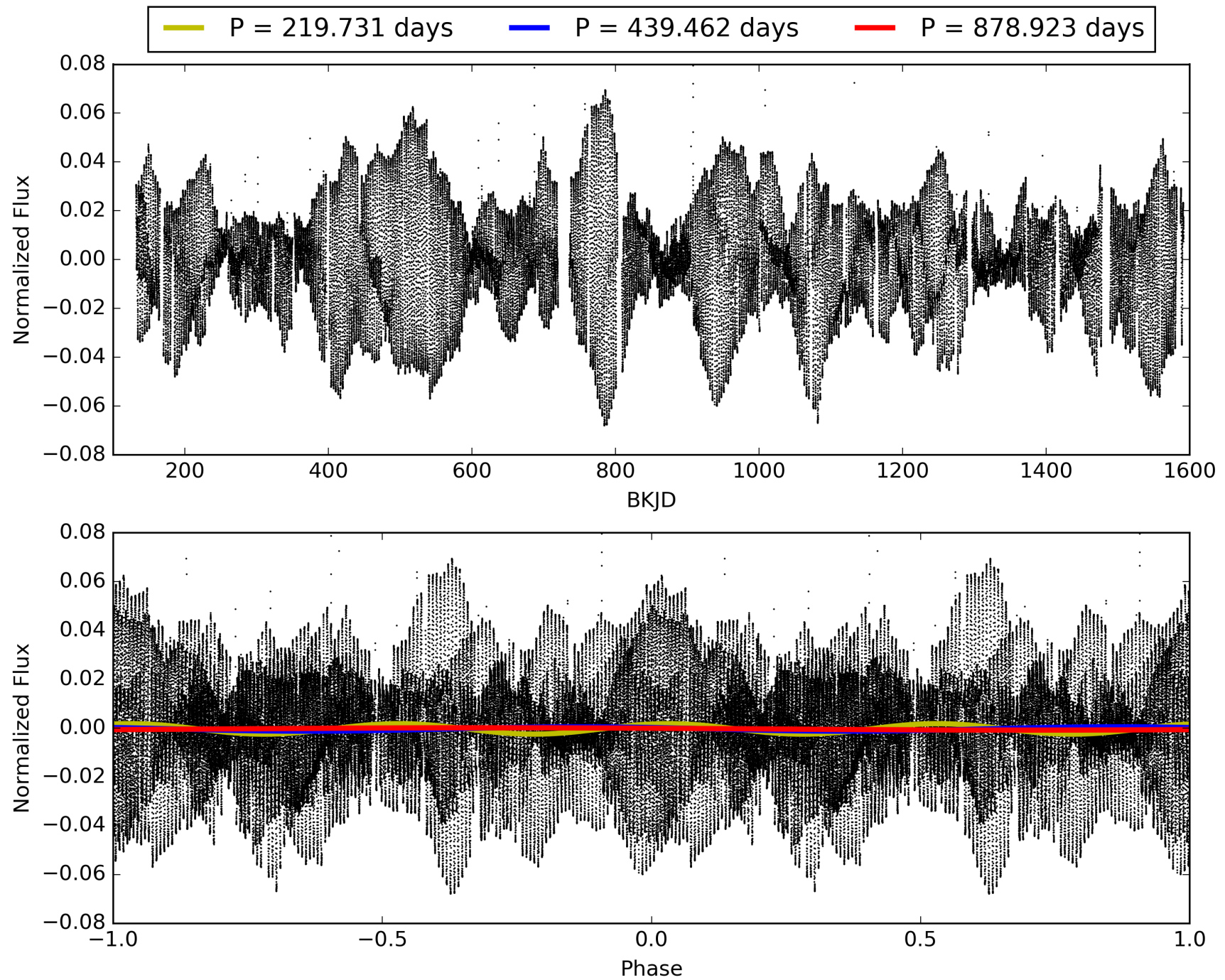
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [239.52σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 3.3%
ModelChiSquareGof-sig: 21.1%
Bootstrap-pfa: 3.59e-07
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.787
Centroid-sig: N/A
Centroid-so: 1.075 arcsec [0.55σ]
OotOffset-rm: 0.252 arcsec [0.71σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-rm: 0.463 arcsec [0.73σ]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 006780052-03, PDC Light Curves

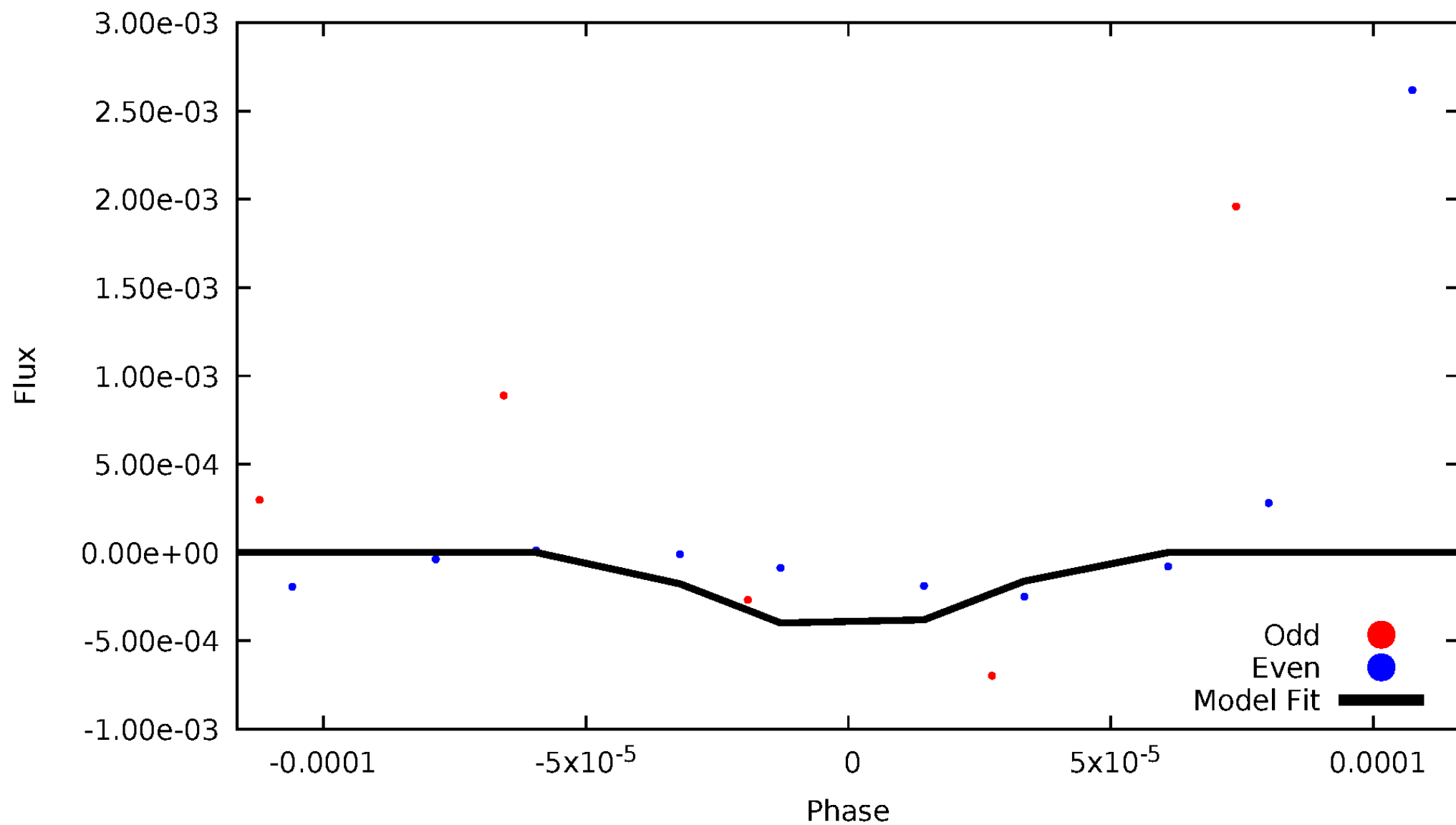


TCE 006780052-03



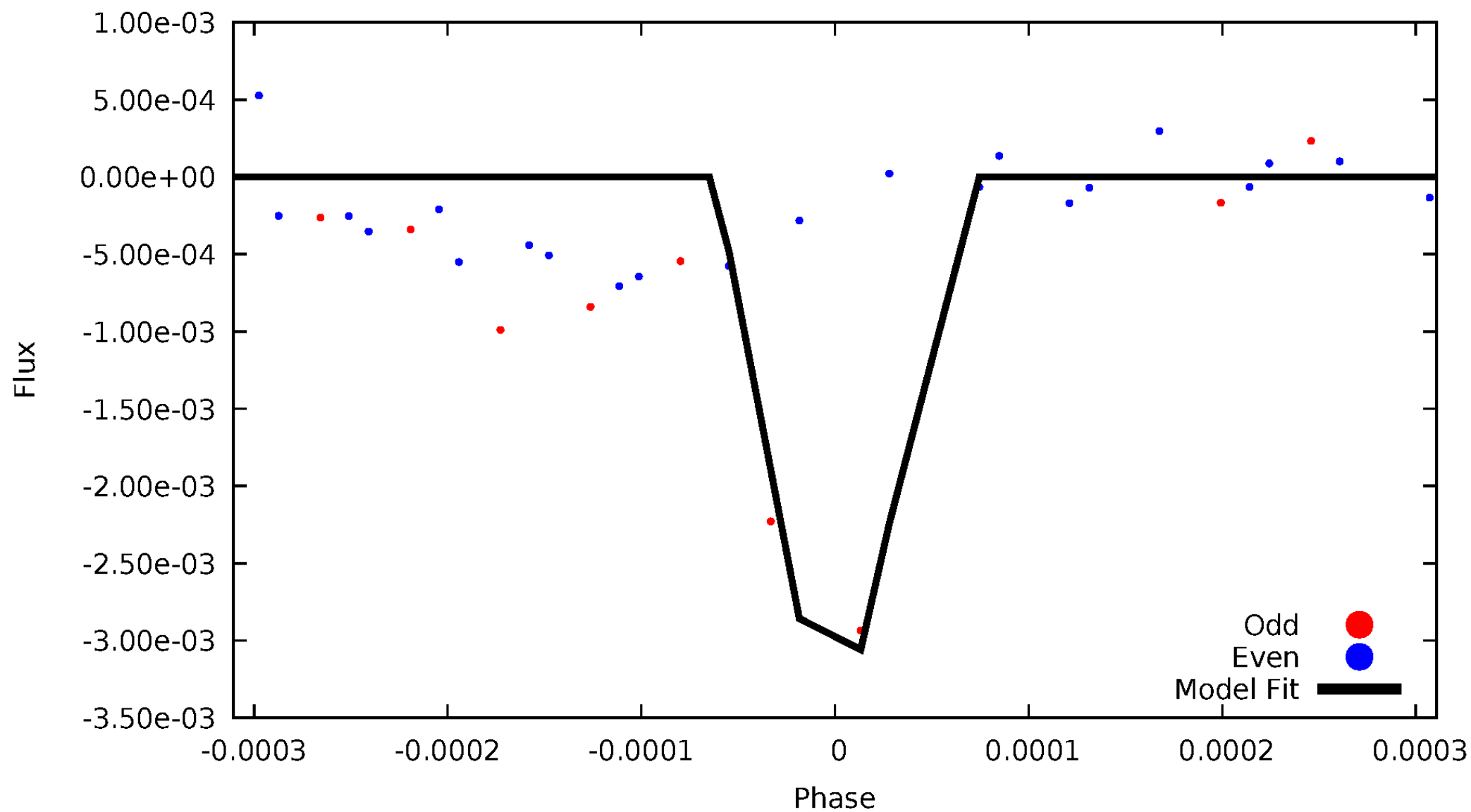
DV Odd/Even

TCE 006780052-03



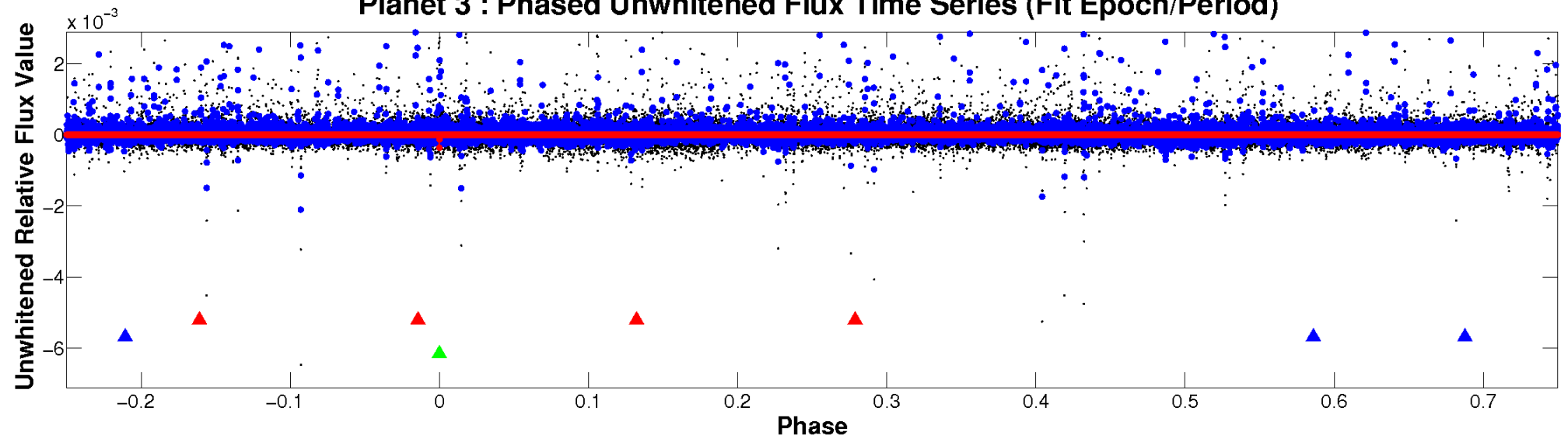
ALT Odd/Even

TCE 006780052-03

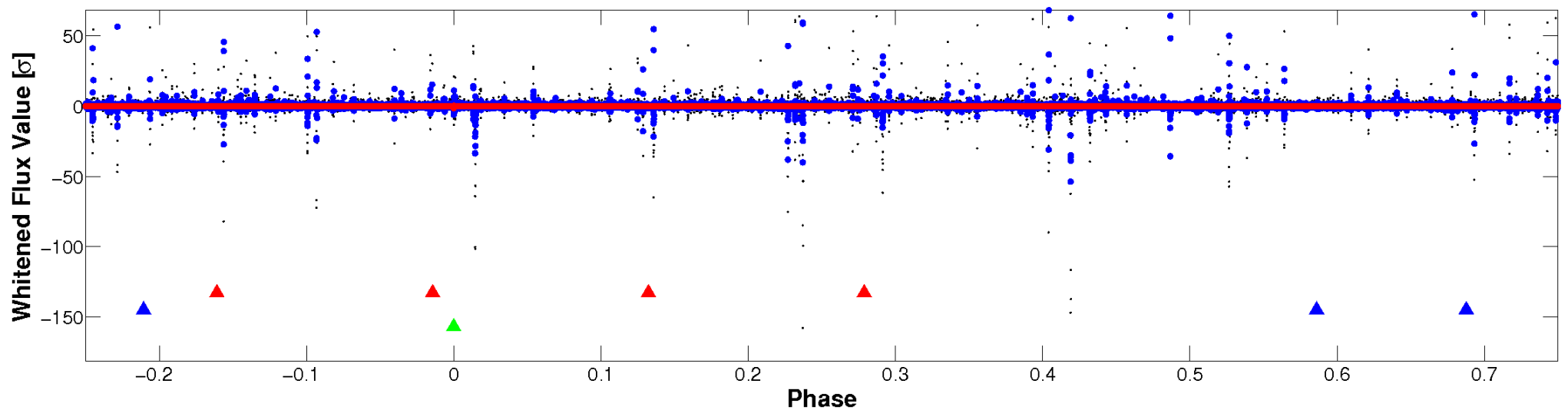


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

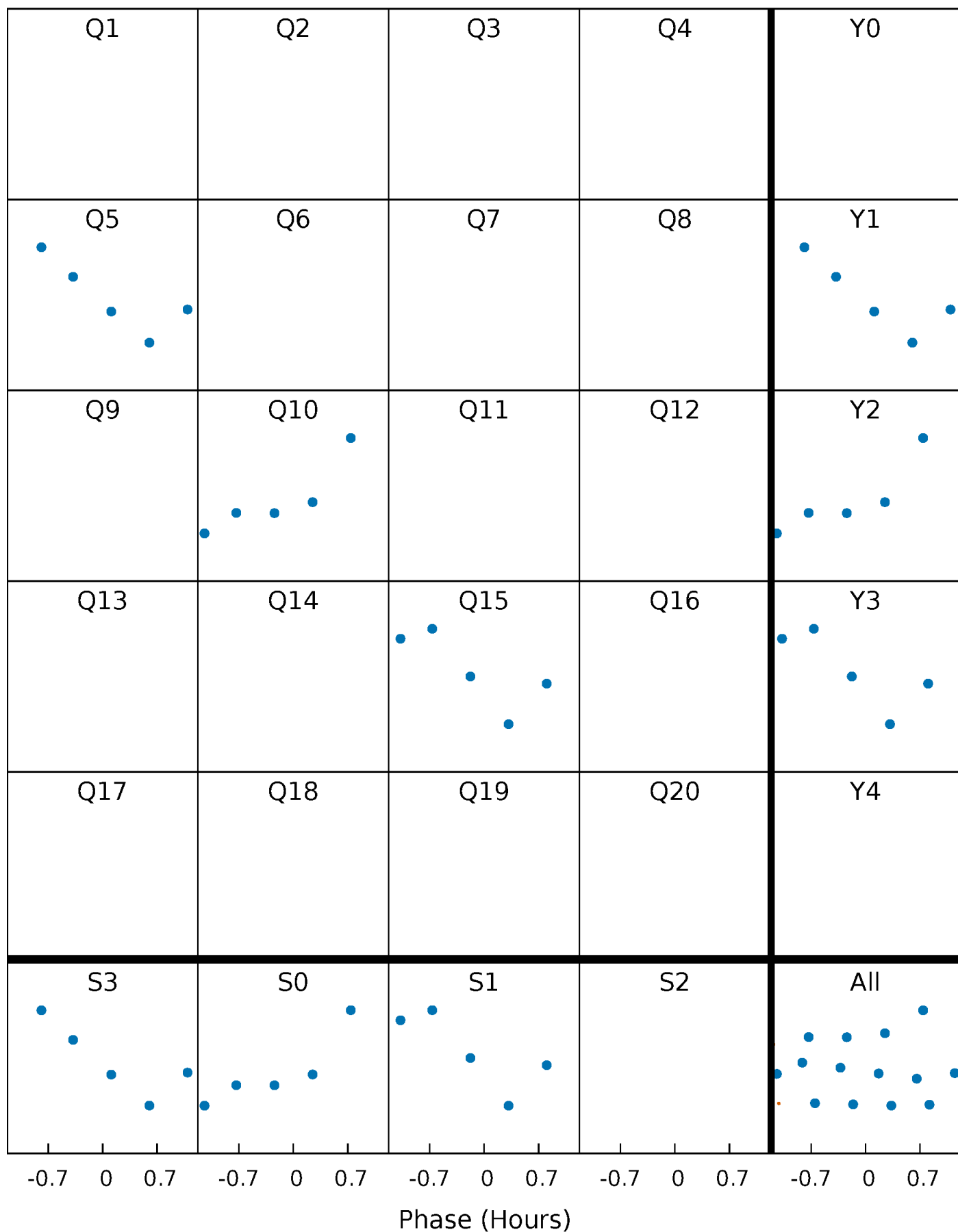


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



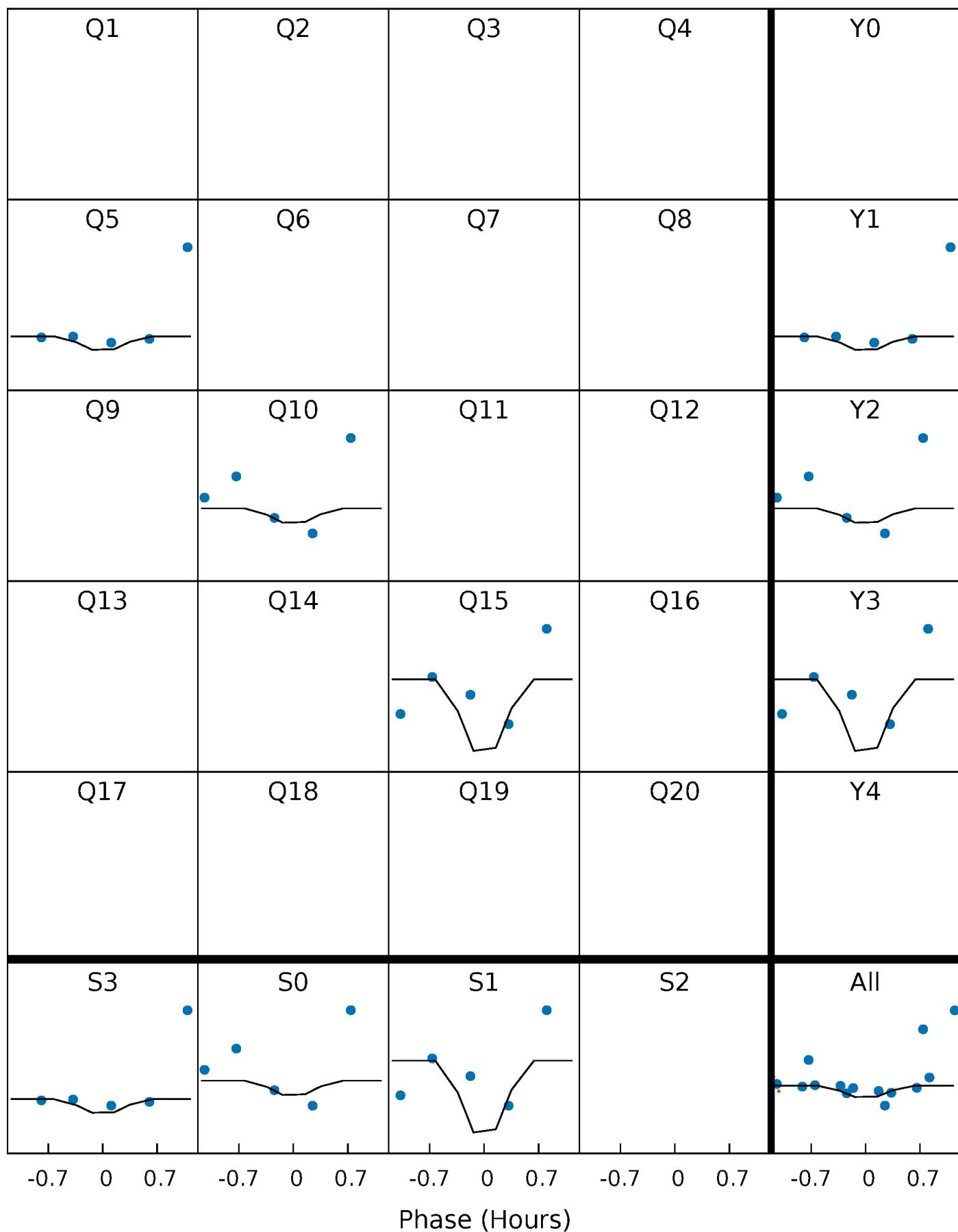
PDC Quarter-Phased Transit Curves

TCE 006780052-03 $P=439.461527$ Days $T_0=508.935312$ (BKJD)



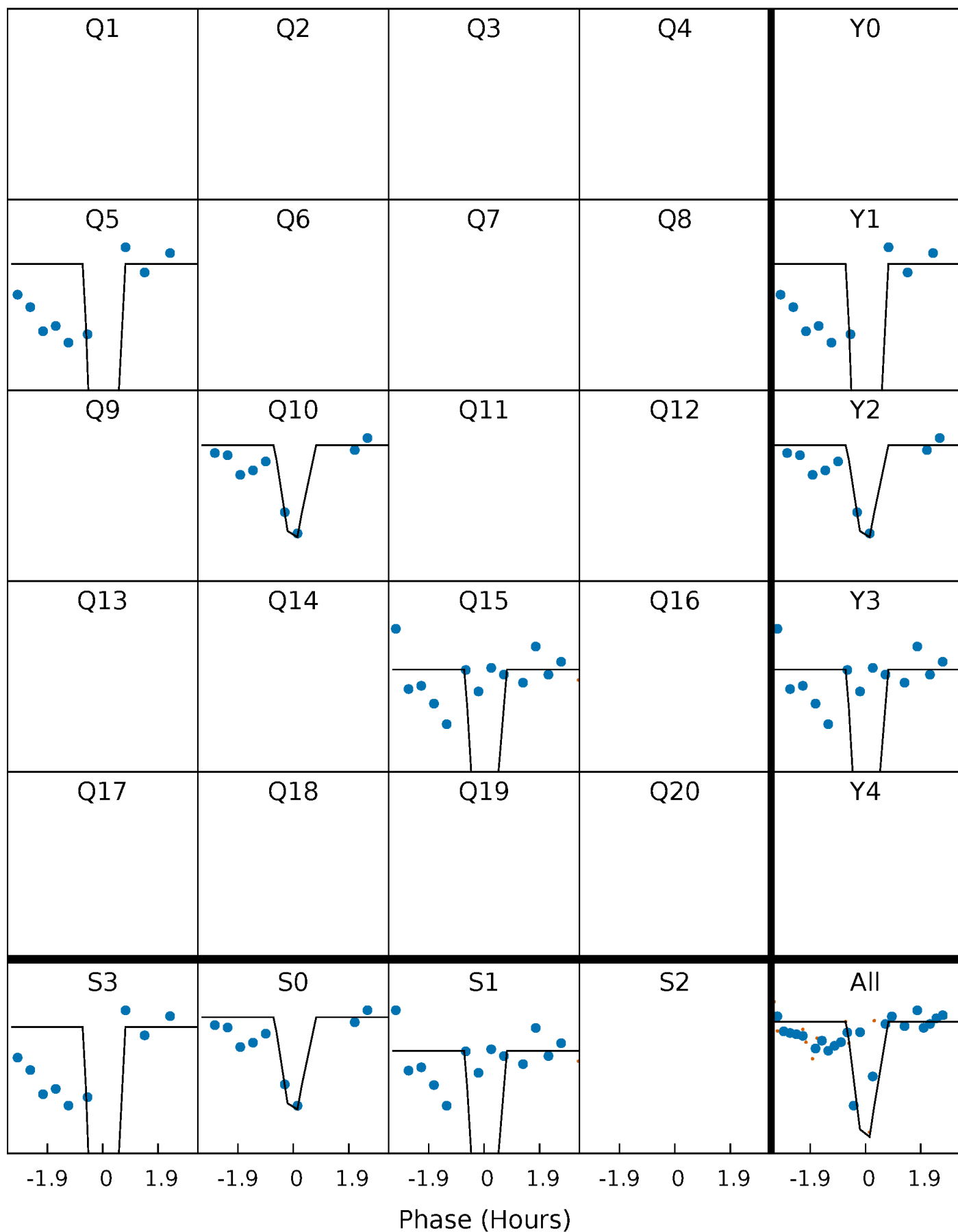
DV Quarter-Phased Transit Curves

TCE 006780052-03 $P=439.461527$ Days $T_0=508.935312$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

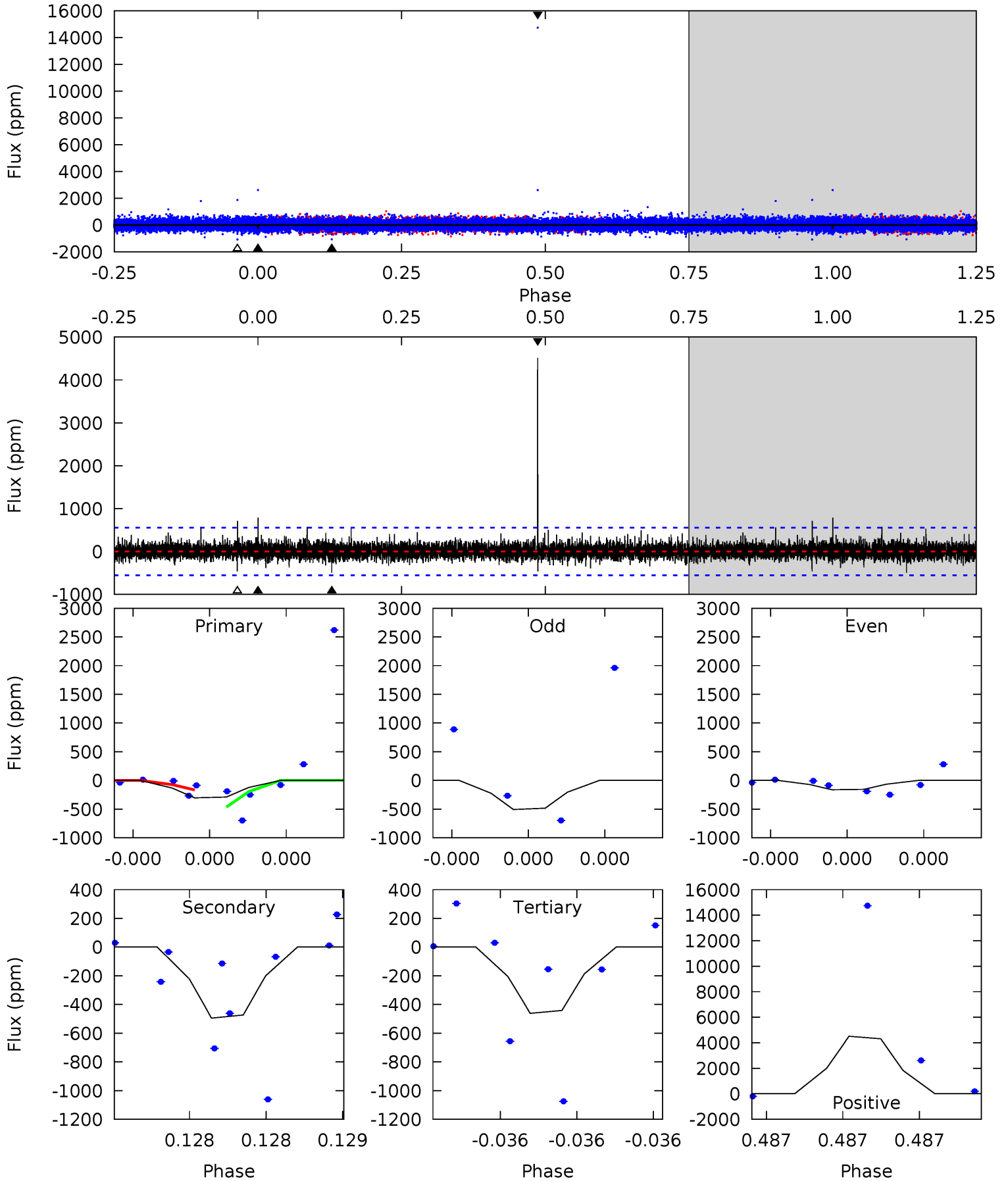
TCE 006780052-03 P=439.416897 Days $T_0=508.986110$ (BKJD)



DV Model-Shift Uniqueness Test

006780052-03, P = 439.461527 Days, E = 69.473785 Days

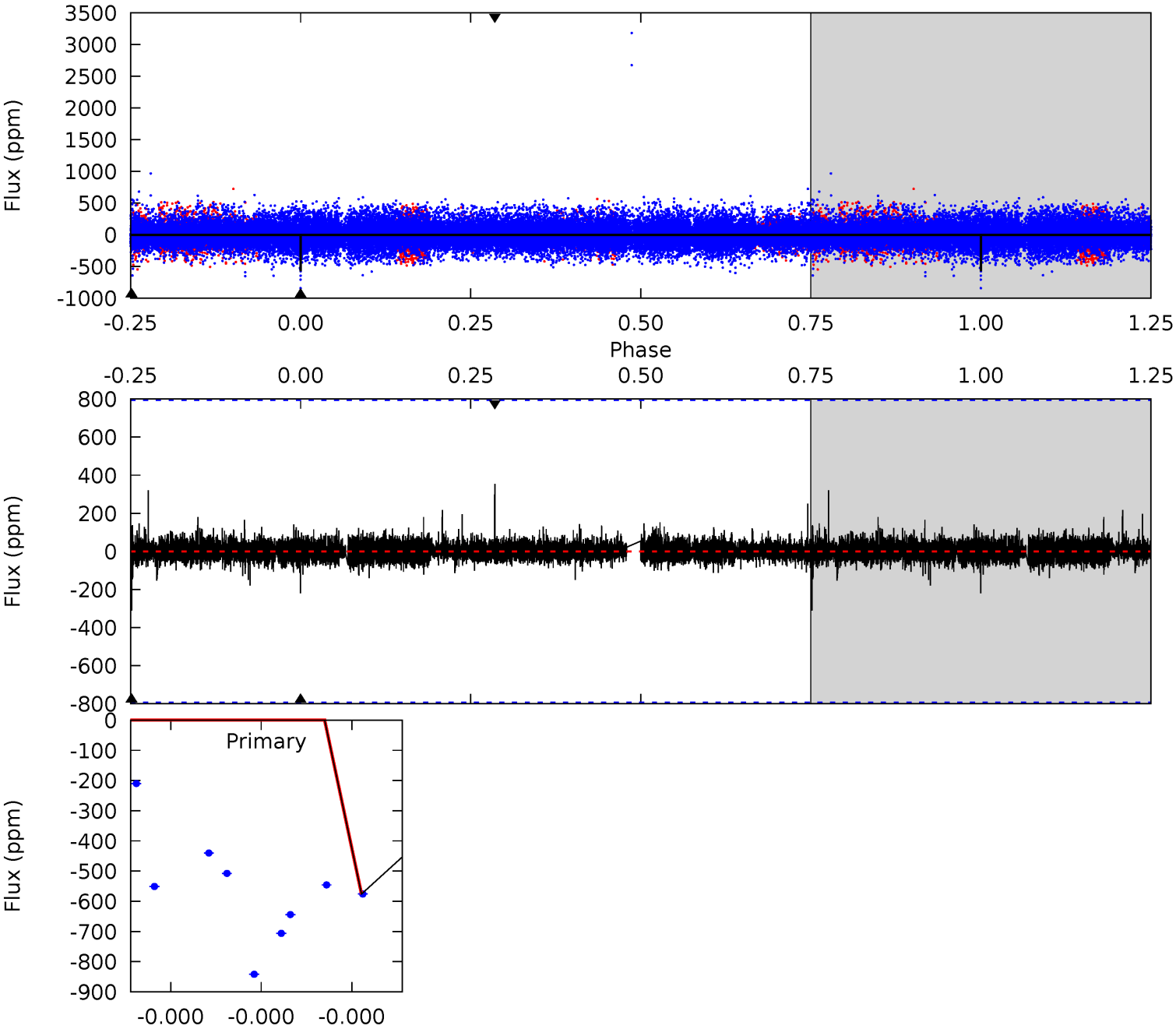
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.24	5.28	4.92	48.1	5.92	3.99	1.01	-1.68	-44.9	0.35	-42.8	0.97	1.90	0.90	1.62



Alt Model-Shift Uniqueness Test

006780052-03, P = 439.416897 Days, E = 69.569213 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.64	2.31	1.38	2.63	5.93	4.01	0.22	0.26	-0.99	0.93	-0.32	14.7	1.00	0.53	0



Stellar Parameters For KIC 006780052

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5232^{+83}_{-73}	$4.547^{+0.049}_{-0.045}$	$-0.180^{+0.150}_{-0.150}$	$0.780^{+0.050}_{-0.045}$	$0.782^{+0.054}_{-0.038}$	$2.321^{+0.406}_{-0.345}$
	+2%/-1%	+1%/-1%	+83%/-83%	+6%/-6%	+7%/-5%	+17%/-15%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 006780052-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-495 ± 94	$56.77^{+63.67}_{-39.67}$	279^{+6}_{-6}	1955^{+605}_{-265}	91^{+945}_{-70}
Alt.	-0 ± 134	$58.53^{+65.73}_{-40.20}$	279^{+6}_{-6}	1283^{+550}_{-3062}	$0.869^{+44.955}_{-35.370}$

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

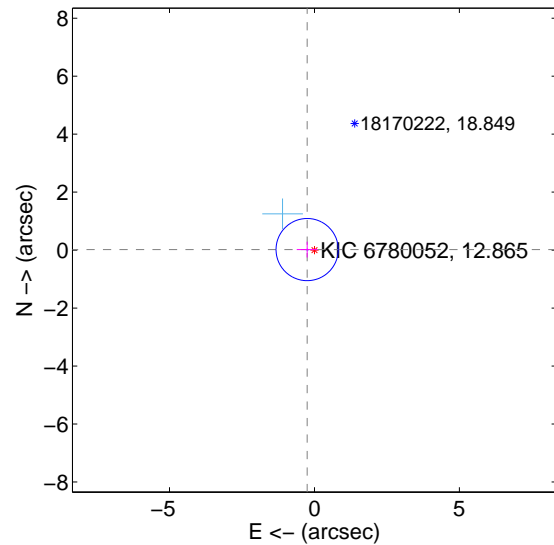
Supplemental centroid analysis for 006780052-03. Kepler magnitude: 12.87. Transit SNR 2.18

There are 2 quarters with good PRF difference image offsets

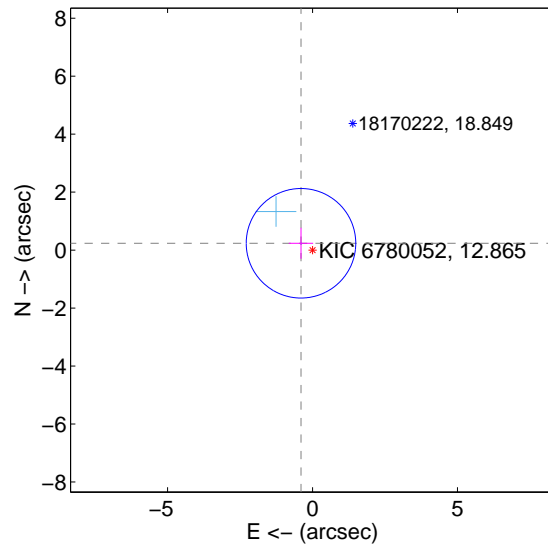
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.252 ± 0.358	0.71	0.252 ± 0.358	0.018 ± 0.273
PRF-fit source offset from KIC position	0.463 ± 0.630	0.73	0.398 ± 0.420	0.236 ± 0.533
photometric centroid source offset	1.07 ± 1.96	0.55	-0.49 ± 2.46	-0.96 ± 1.81

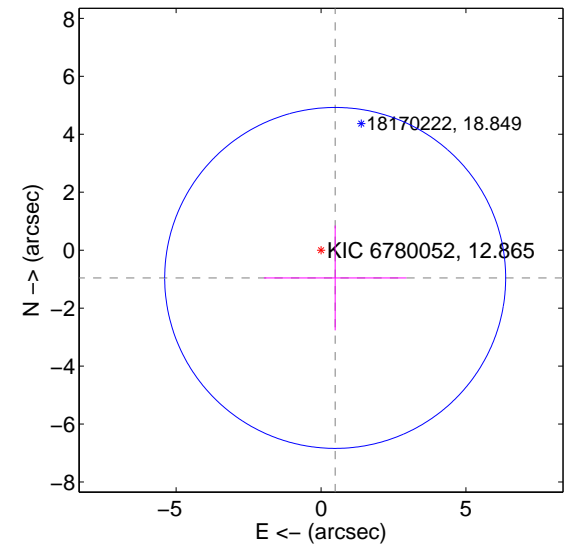
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

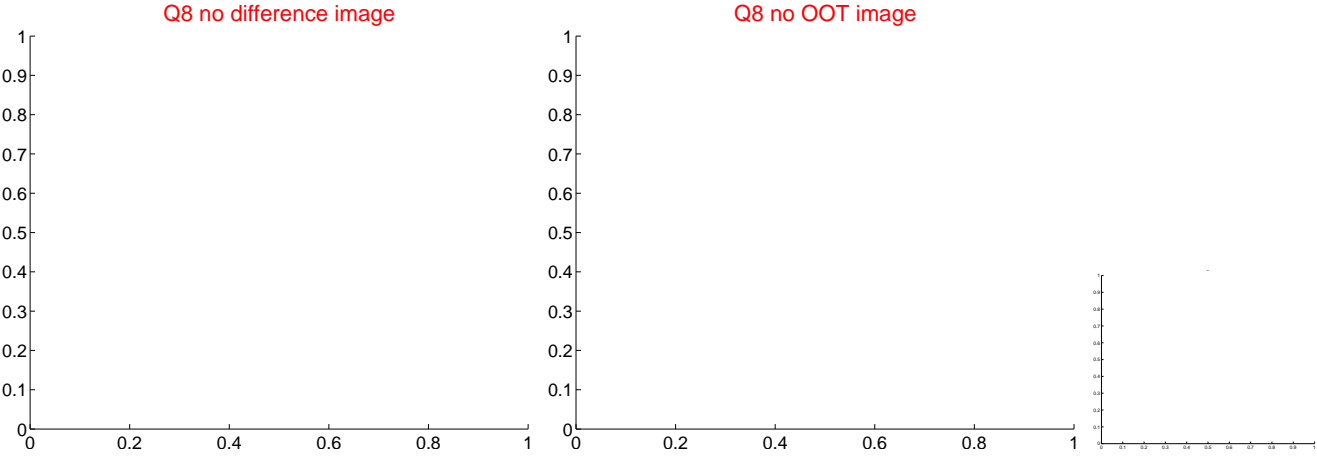
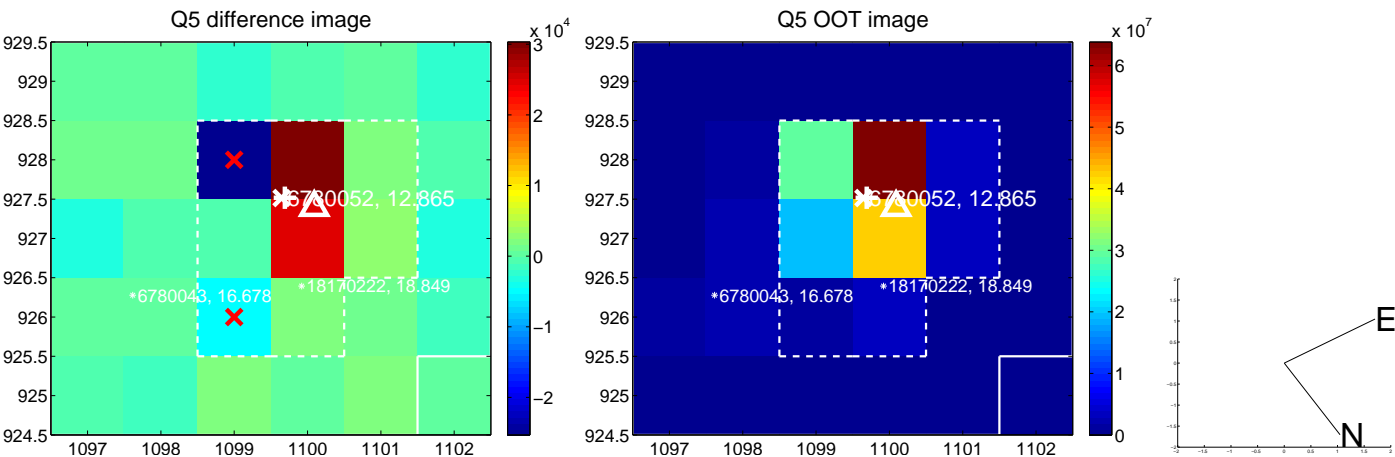


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

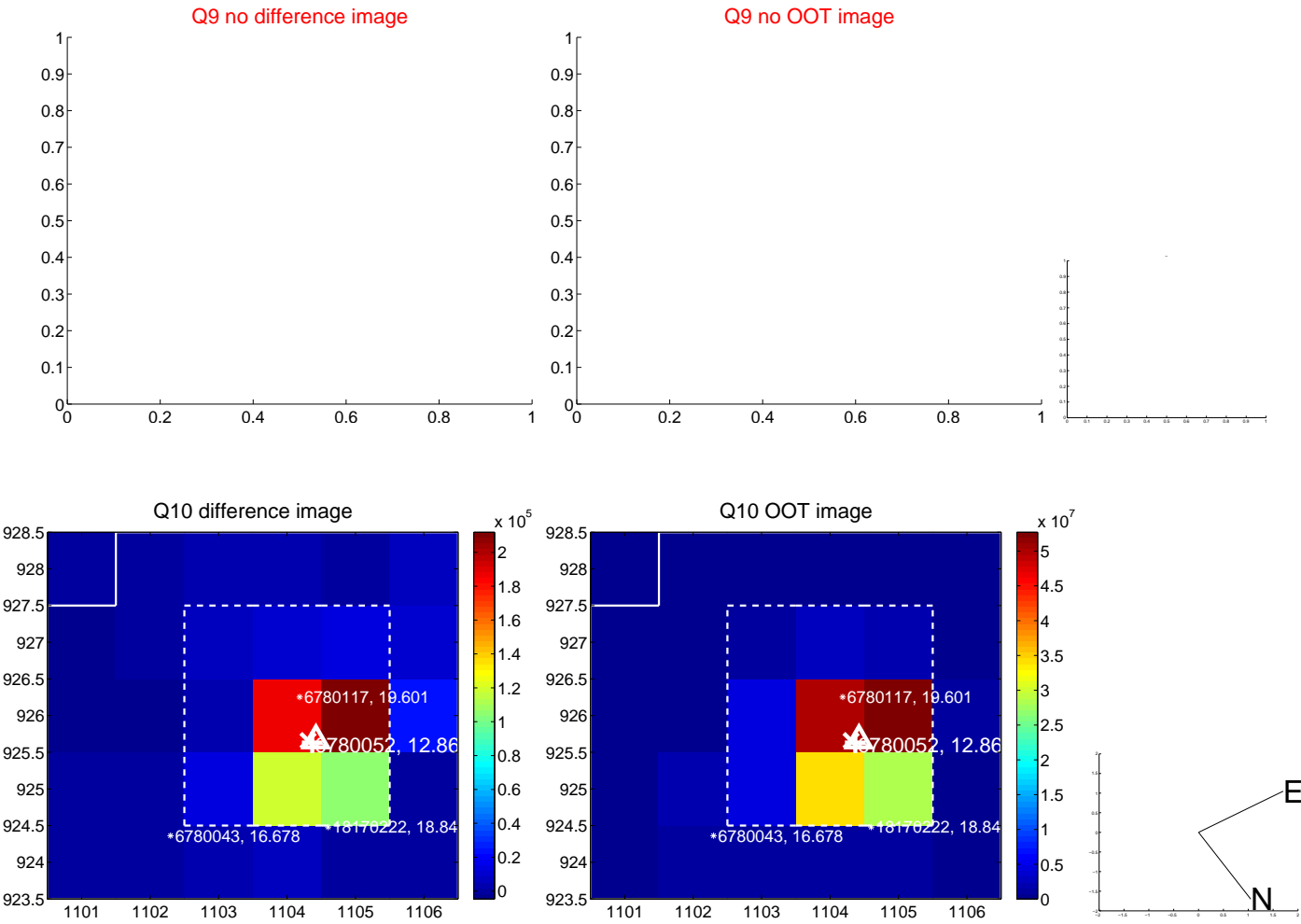
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

Q13 no difference image



Q13 no OOT image



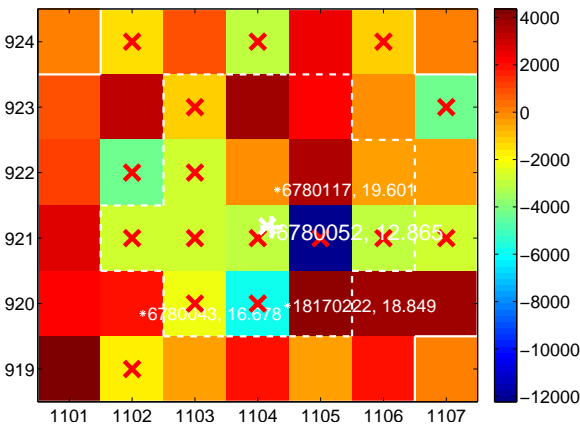
Q14 no difference image



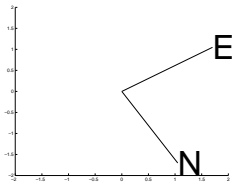
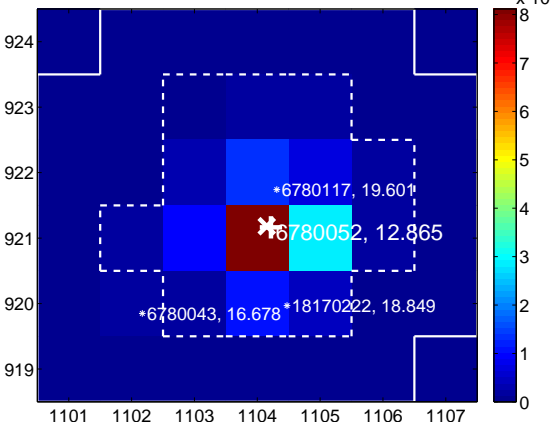
Q14 no OOT image



Q15 difference image. Poor Quality



Q15 OOT image



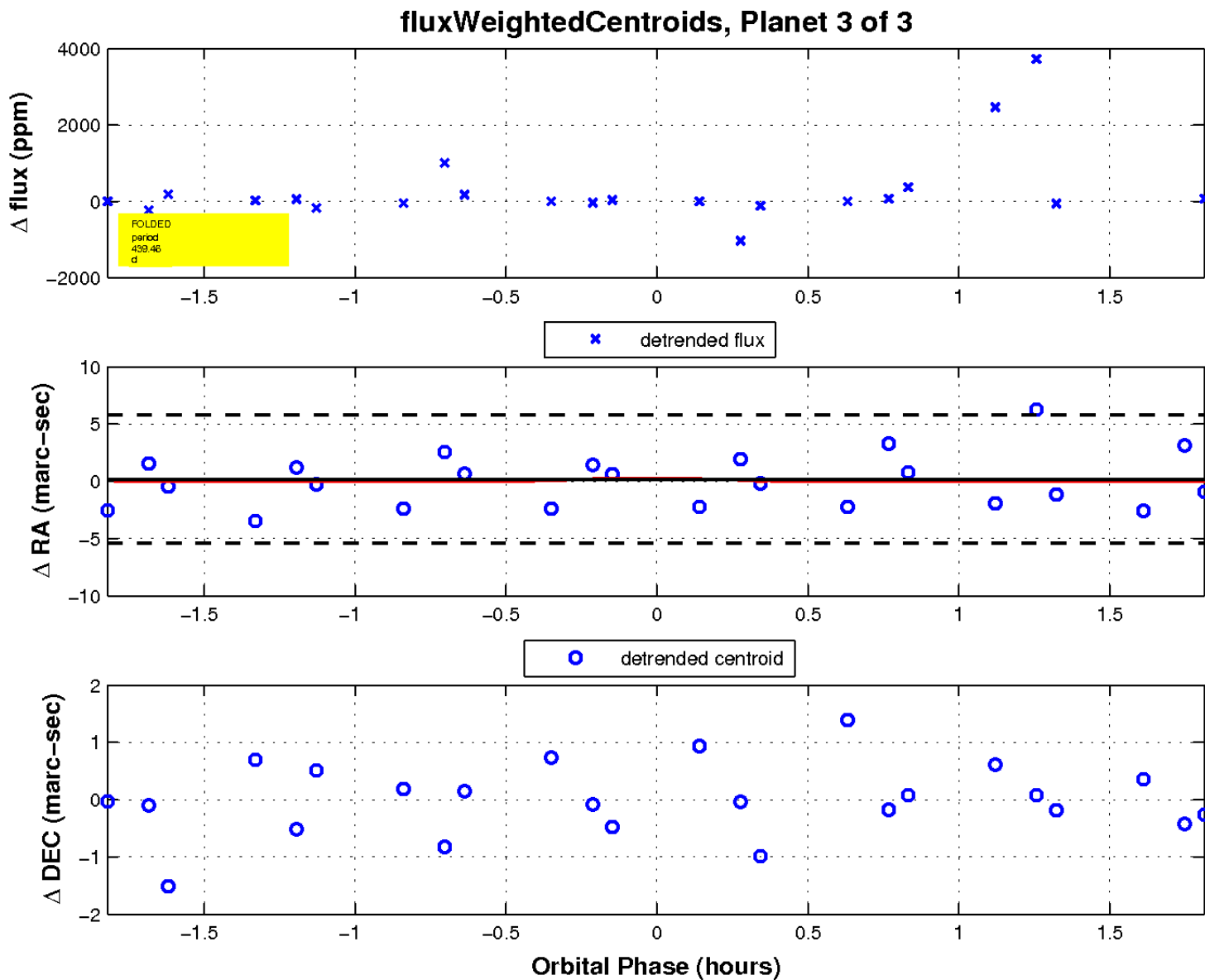
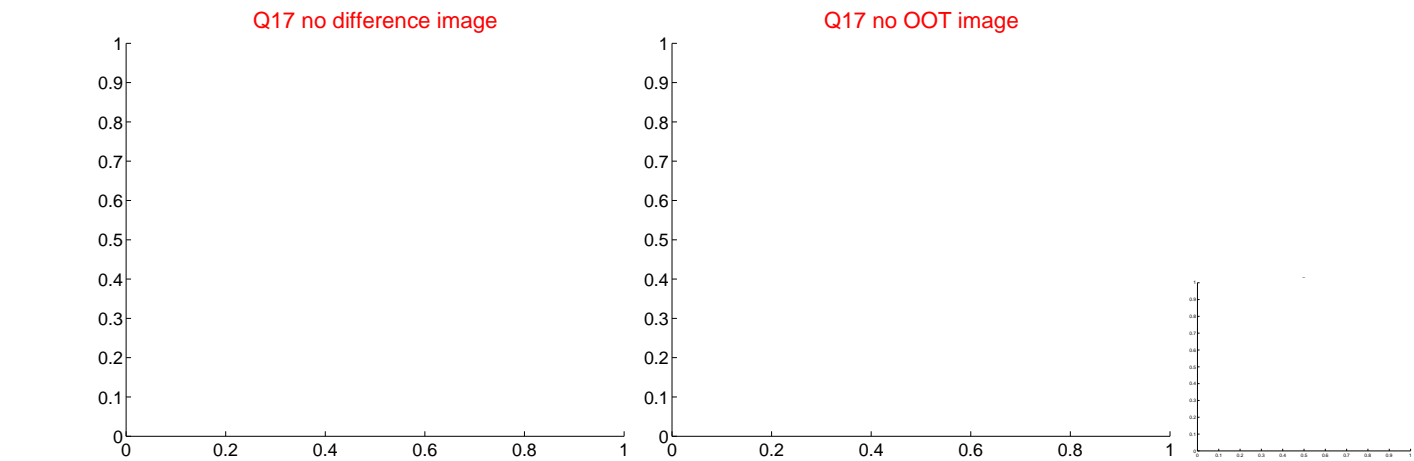
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

