

KIC 008740378

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})
008740378-01	OBS	No	370.834430	185.245460	10502.0	3.341	99.7	72.4	89.23	3960	1777.69	752.38
008740378-02	OBS	No	363.323186	186.819540	2138.6	3.000	55.3	-1.0	89.23	3960	386.10	773.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008740378-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
008740378-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

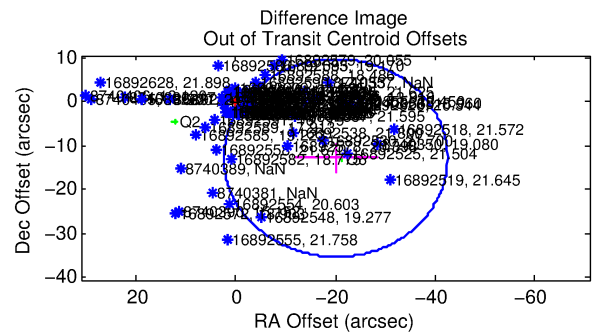
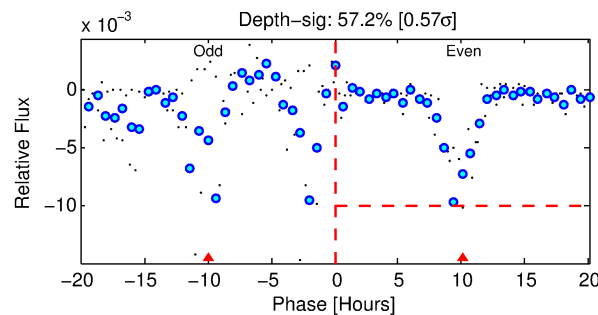
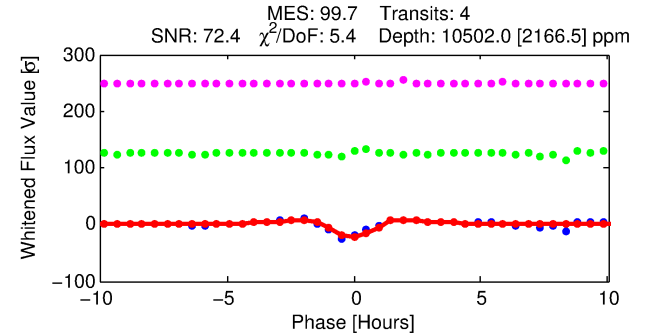
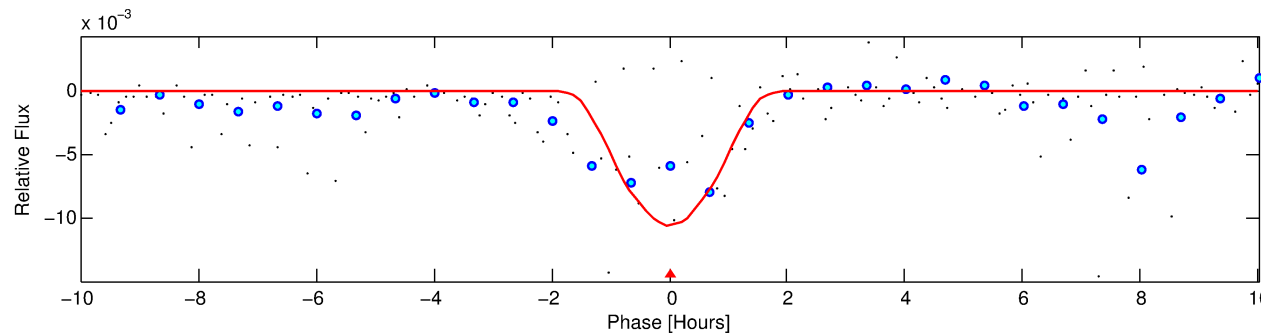
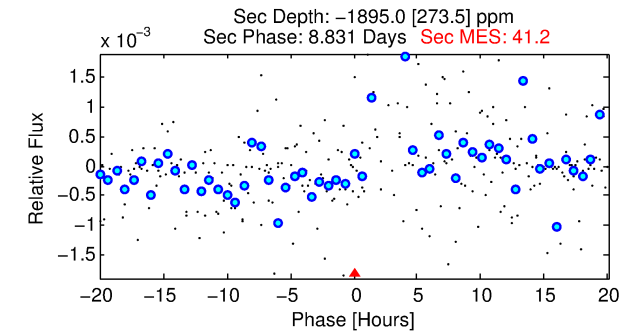
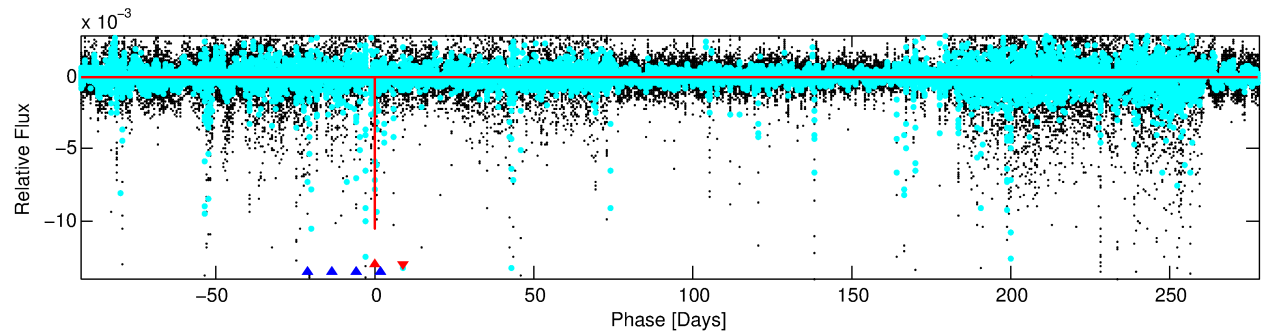
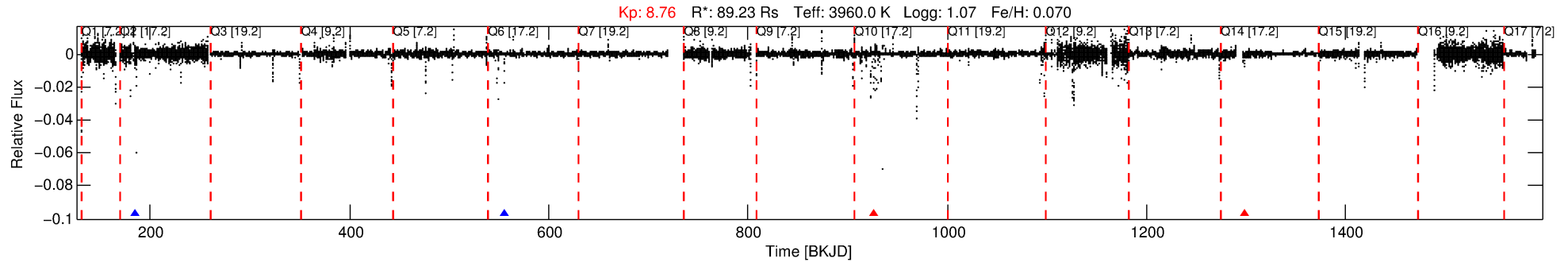
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008740378-01

No Significant Match Found

DV One-Page Summary

KIC: 8740378 Candidate: 1 of 2 Period: 370.834 d



DV Fit Results:

Period = 370.83443 [0.00205] d
Epoch = 185.2455 [0.0030] BKJD
Rp/R* = 0.1826 [0.6937]
a/R* = 535.61 [241.47]
b = 1.00 [0.92]
Seff = 752.38 [525.56]
Teff = 1335 [233] K
Rp = 1777.69 [6832.81] Re
a = 1.5269 [0.7371] AU
Ag = N/A
Teffp = N/A

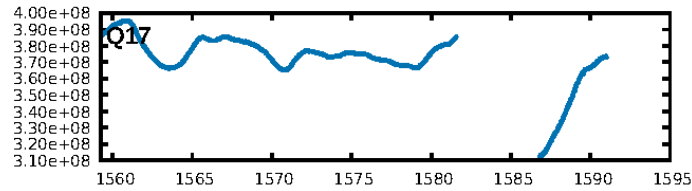
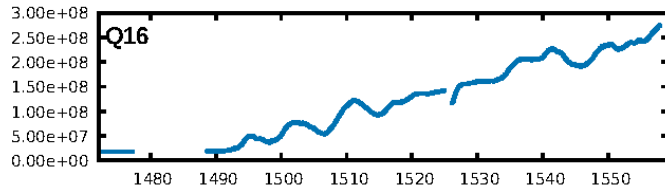
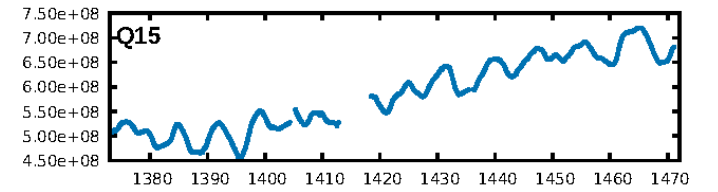
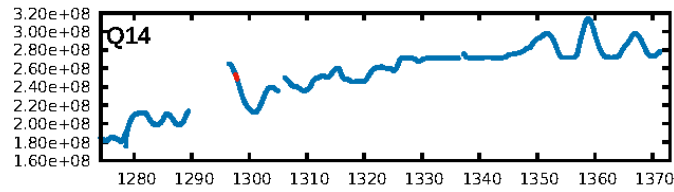
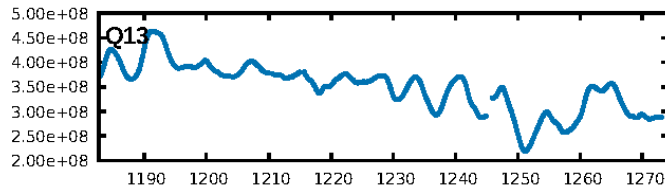
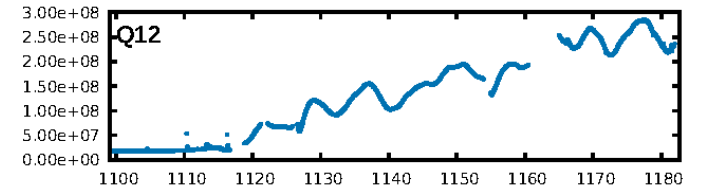
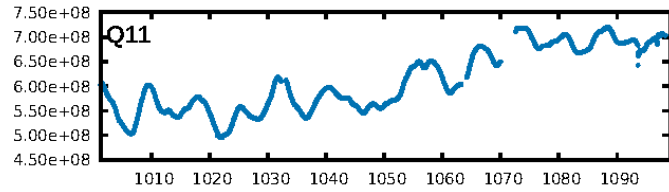
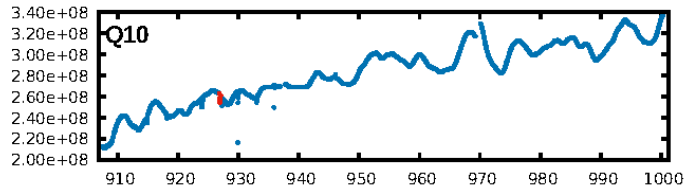
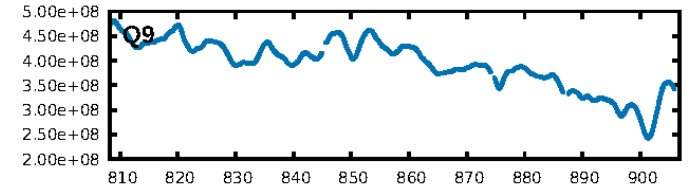
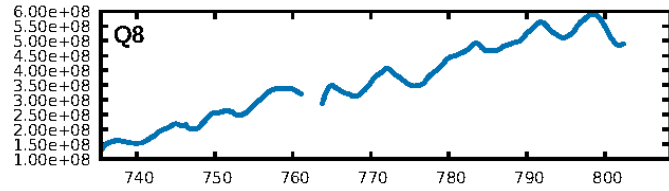
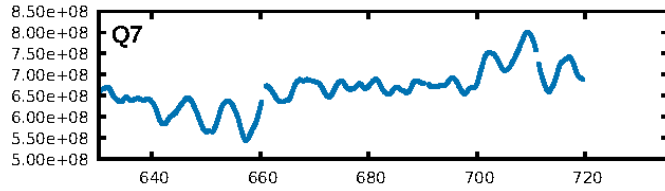
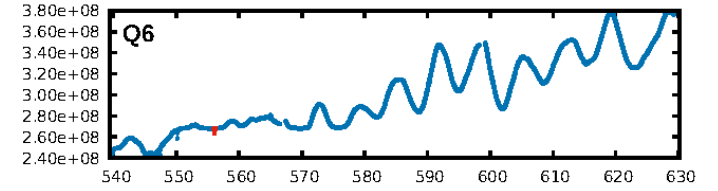
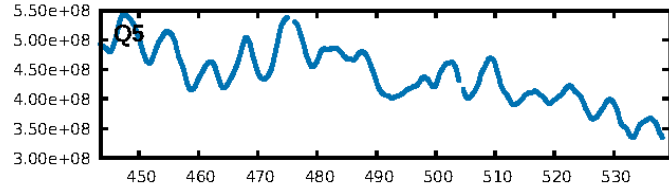
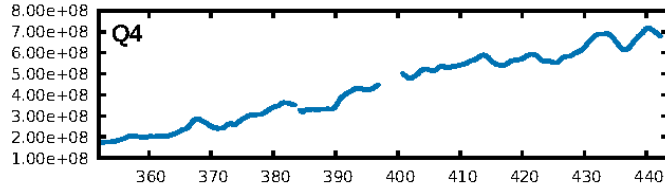
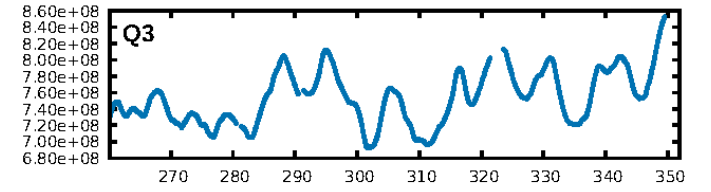
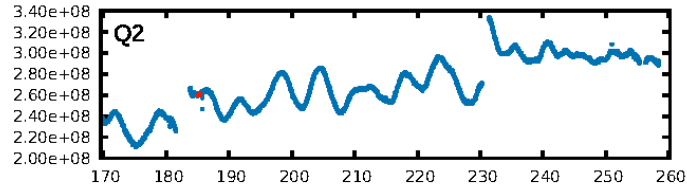
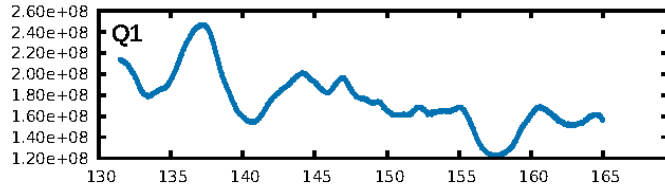
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [40.15σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 1.79e-22
RollingBand-fgt: 0.50 [2/4]
GhostDiagnostic-chr: N/A
Centroid-sig: 0.0%
Centroid-so: 4.344 arcsec [44.13σ]
OotOffset-rm: 23.831 arcsec [3.19σ]
KicOffset-rm: 27.803 arcsec [3.03σ]
OotOffset-st: 3/0/0/0 [3]
KicOffset-st: 3/0/0/0 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 1.00 [4/4]

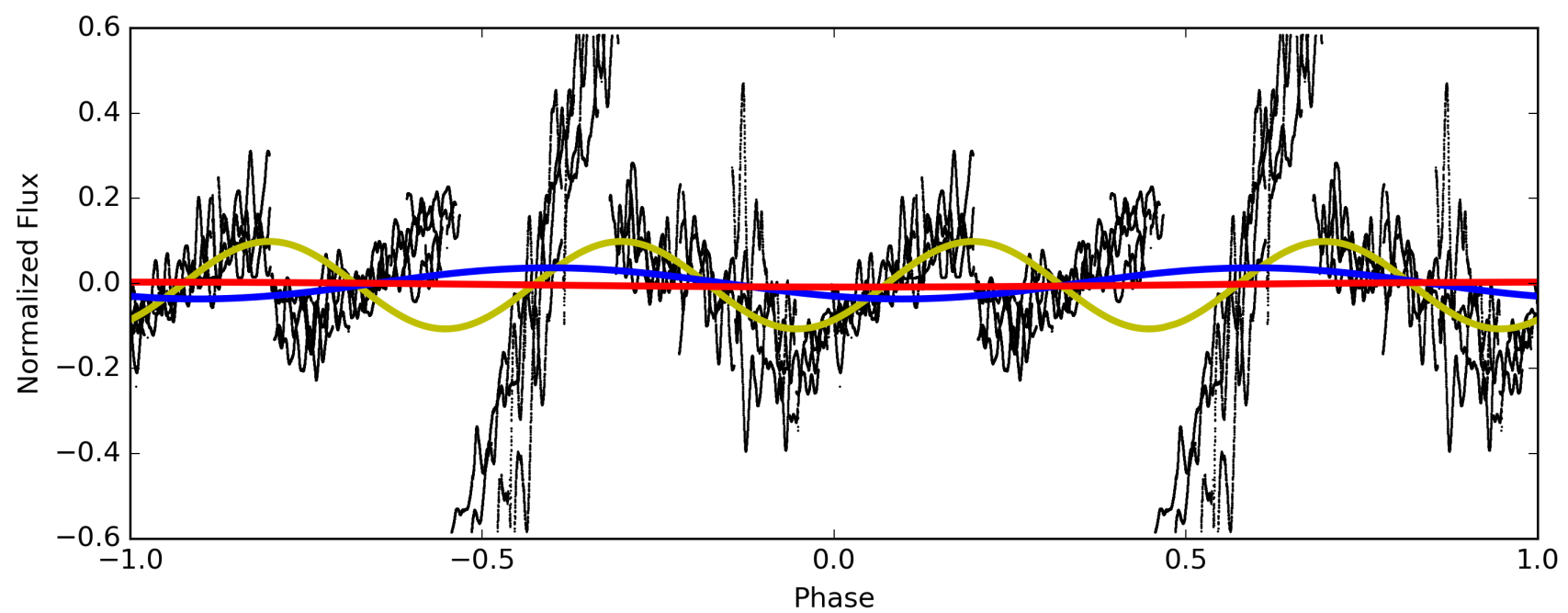
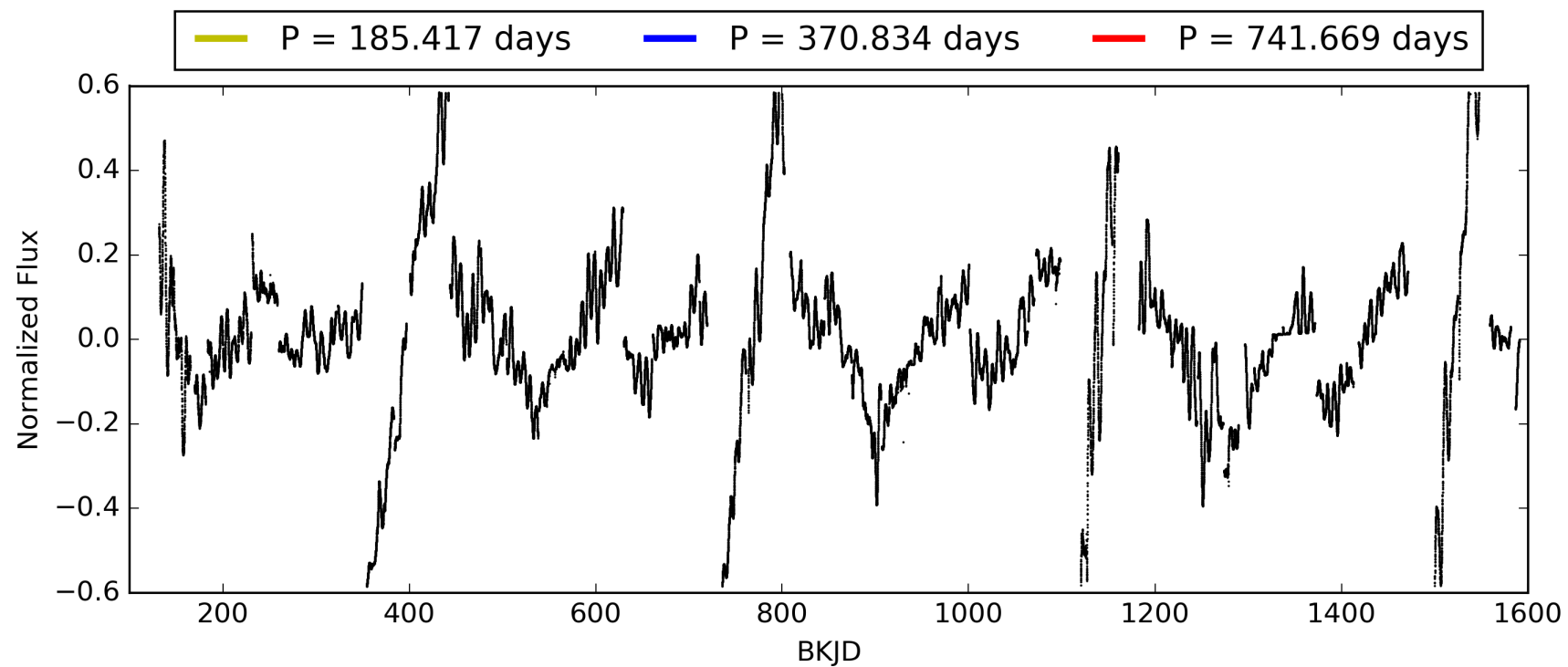
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:12:54 Z

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

TCE 008740378-01, PDC Light Curves

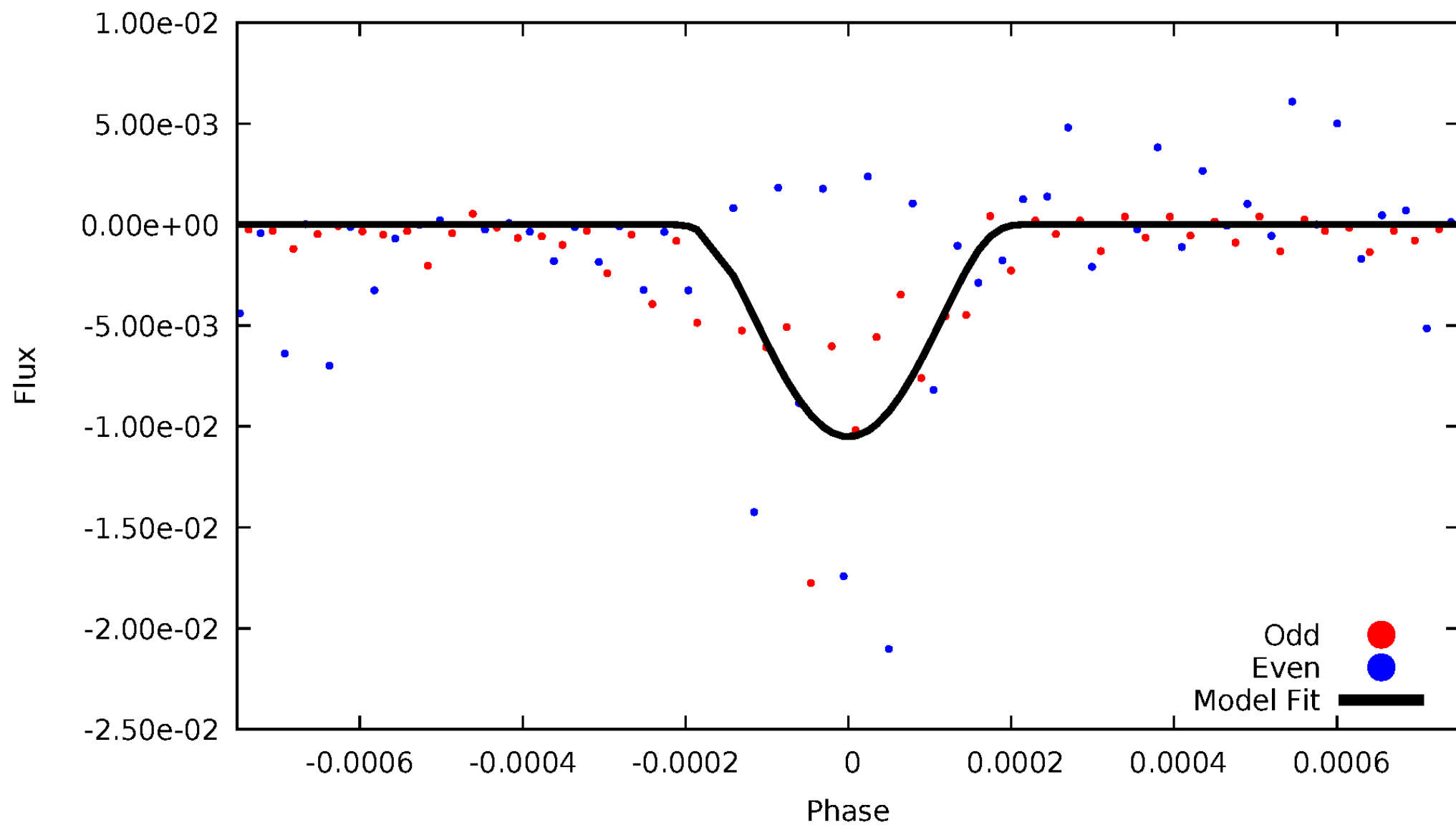


TCE 008740378-01



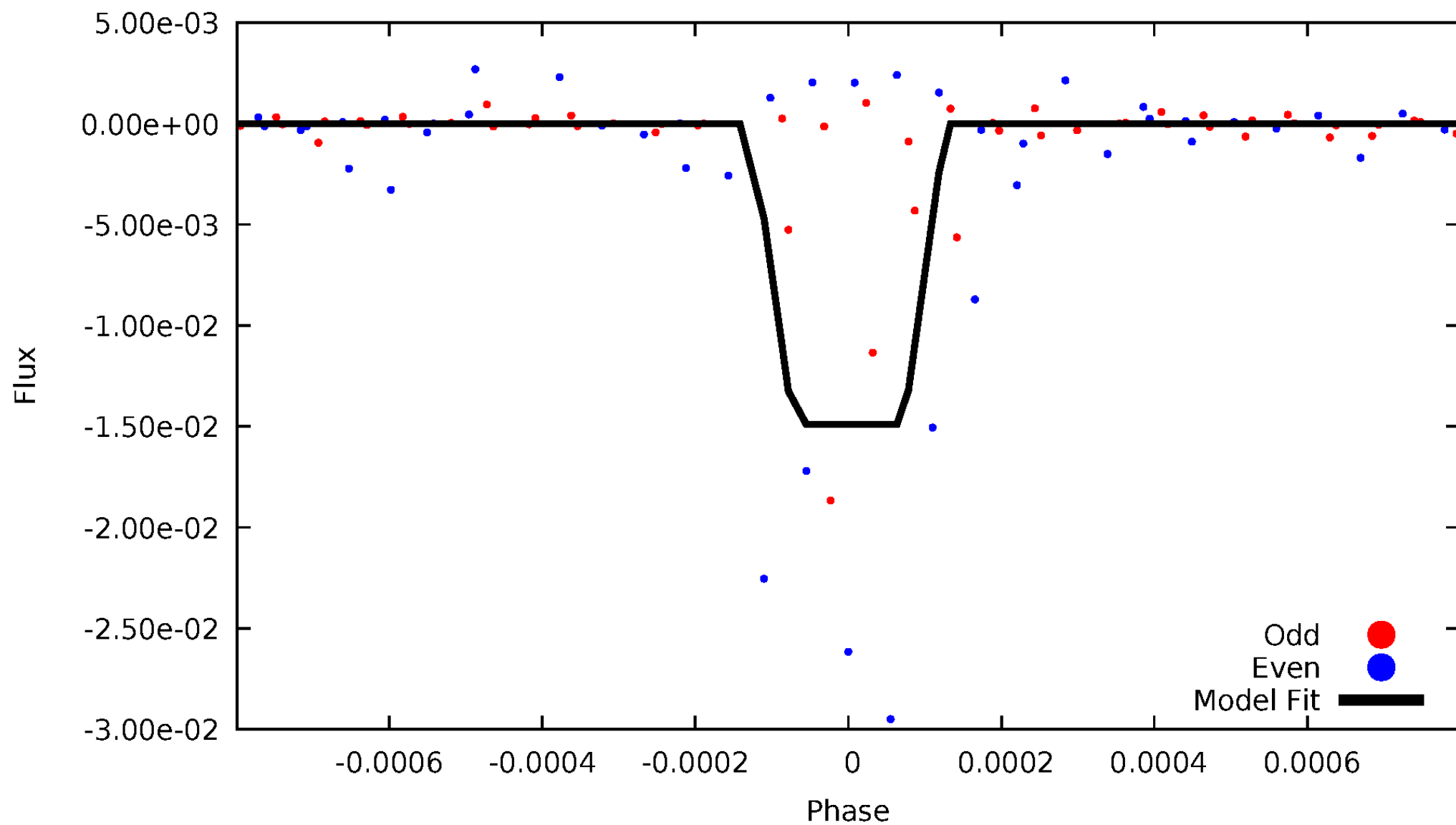
DV Odd/Even

TCE 008740378-01



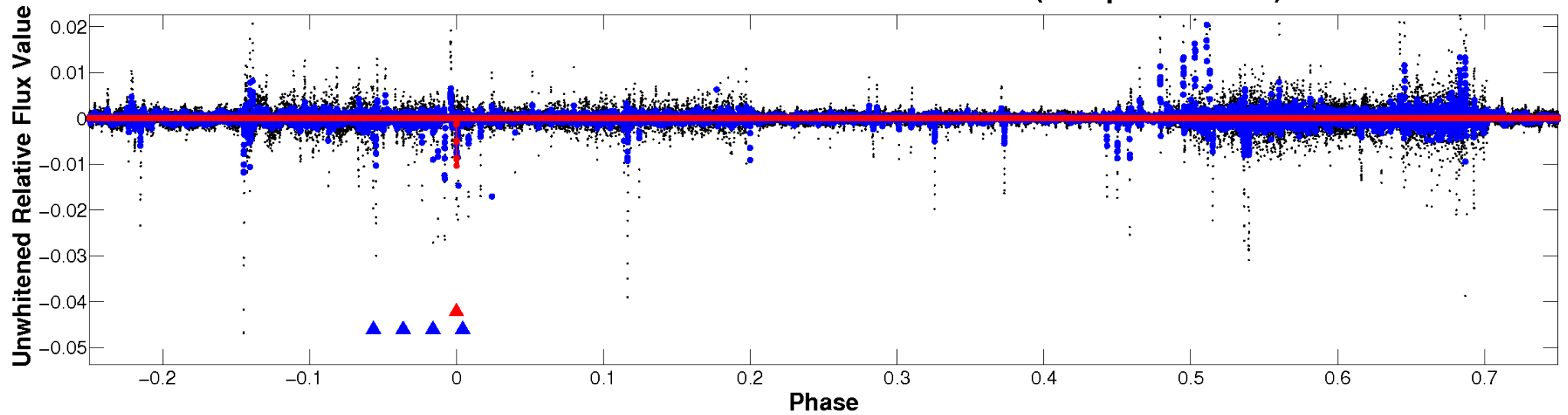
ALT Odd/Even

TCE 008740378-01

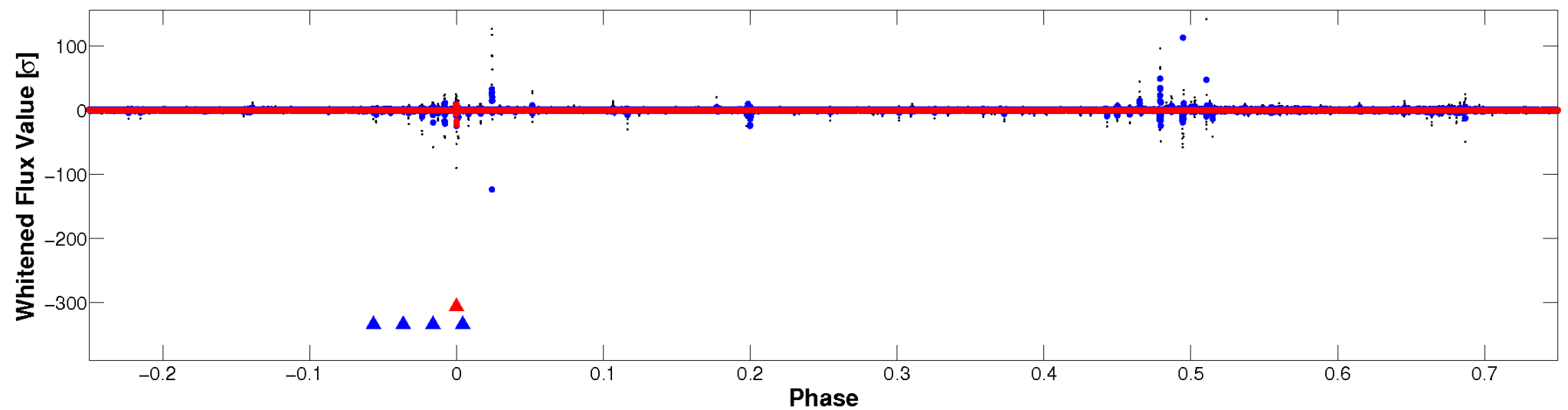


Non-Whitened Vs. Whitened Light Curve

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

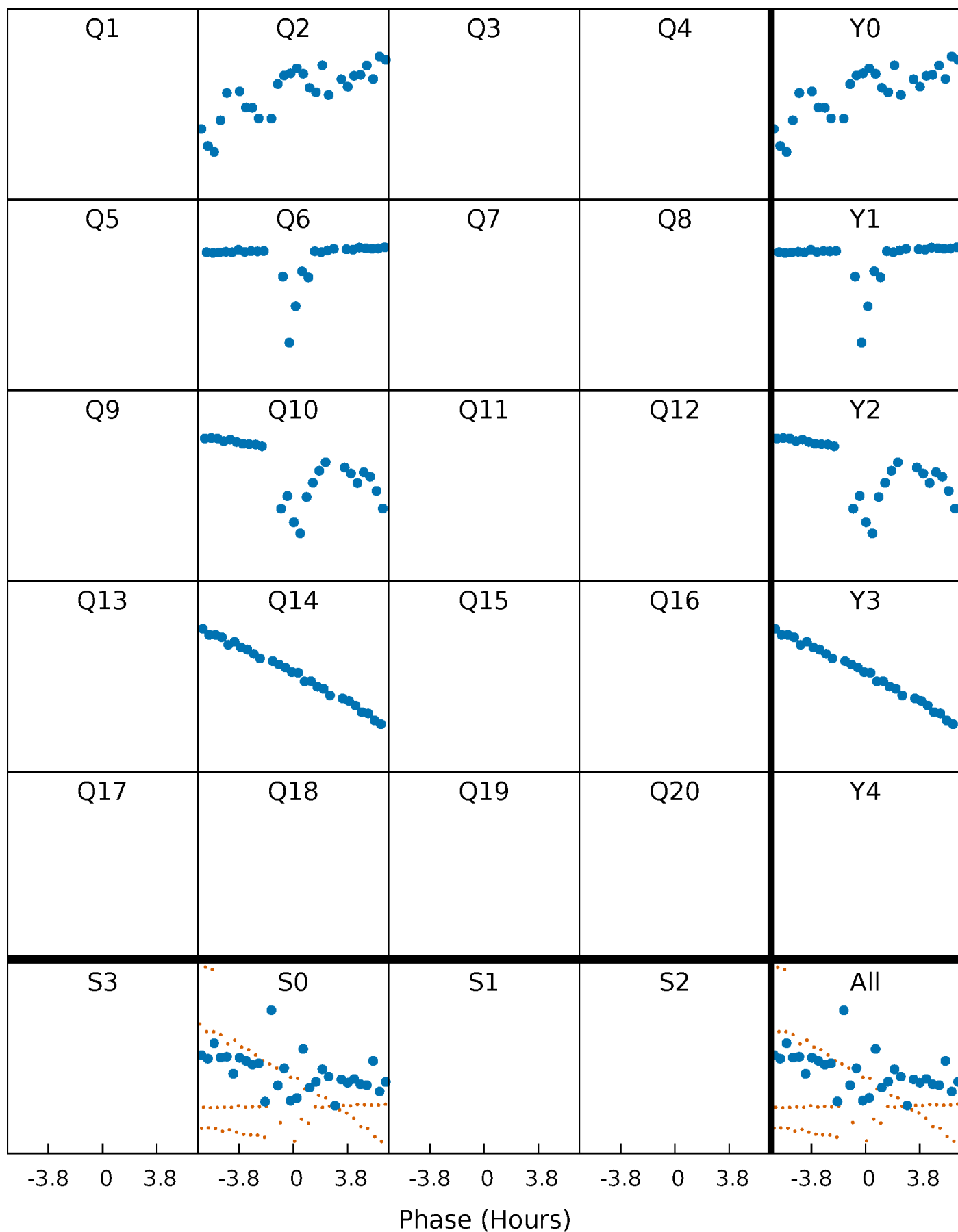


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



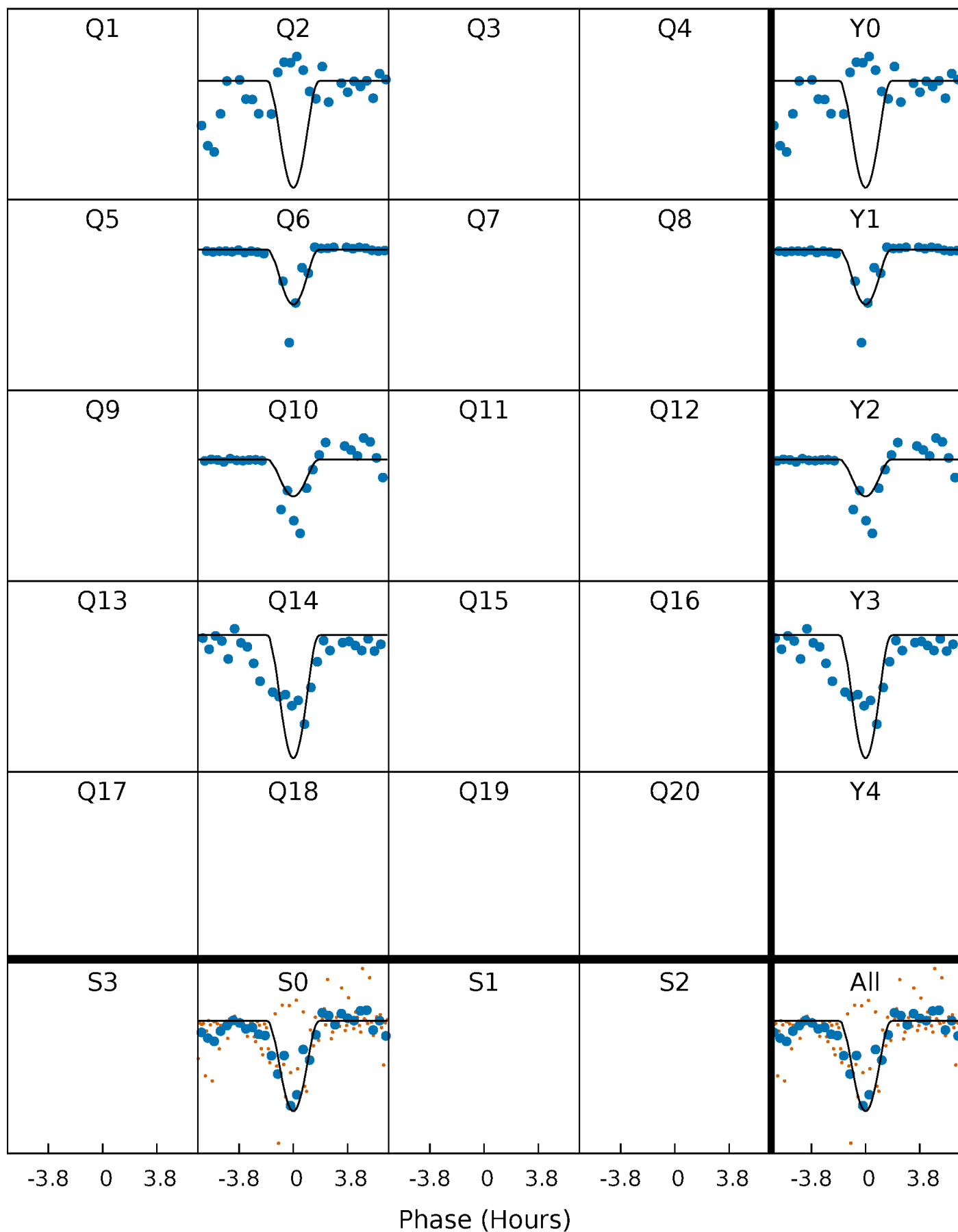
PDC Quarter-Phased Transit Curves

TCE 008740378-01 P=370.834430 Days $T_0=185.245460$ (BKJD)



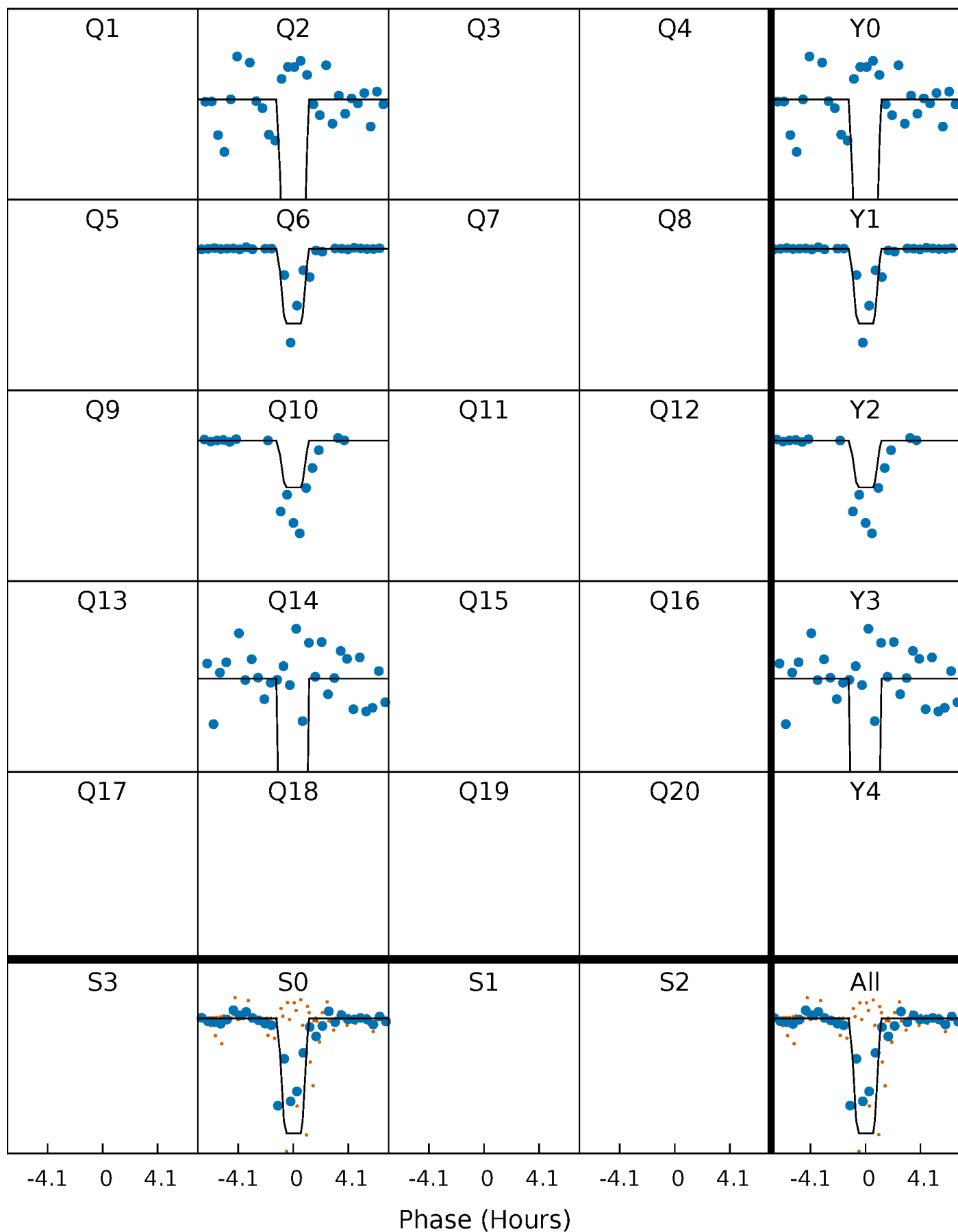
DV Quarter-Phased Transit Curves

TCE 008740378-01 P=370.834430 Days $T_0=185.245460$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

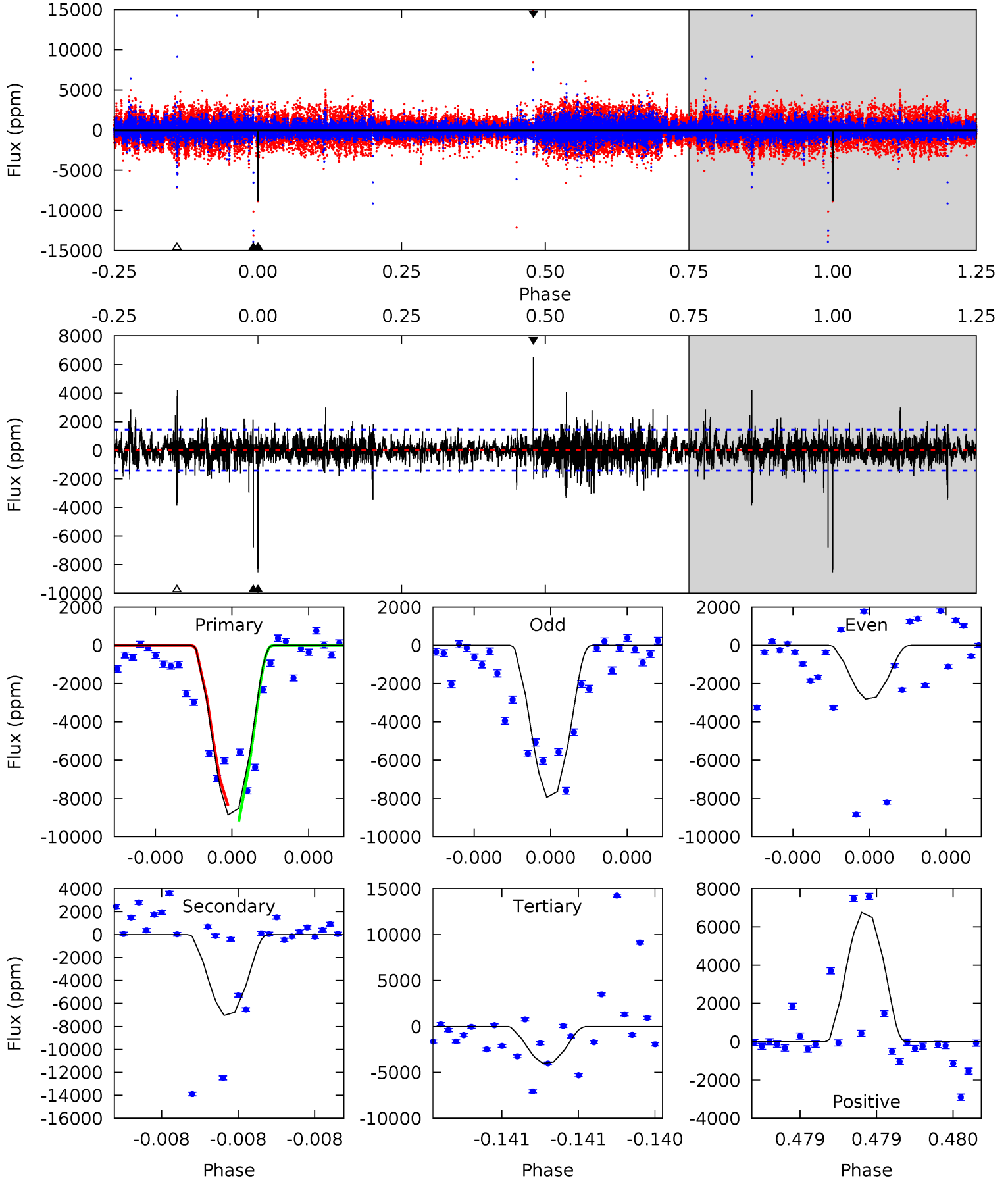
TCE 008740378-01 P=370.840688 Days $T_0=185.230820$ (BKJD)



DV Model-Shift Uniqueness Test

008740378-01, P = 370.834430 Days, E = 185.245460 Days

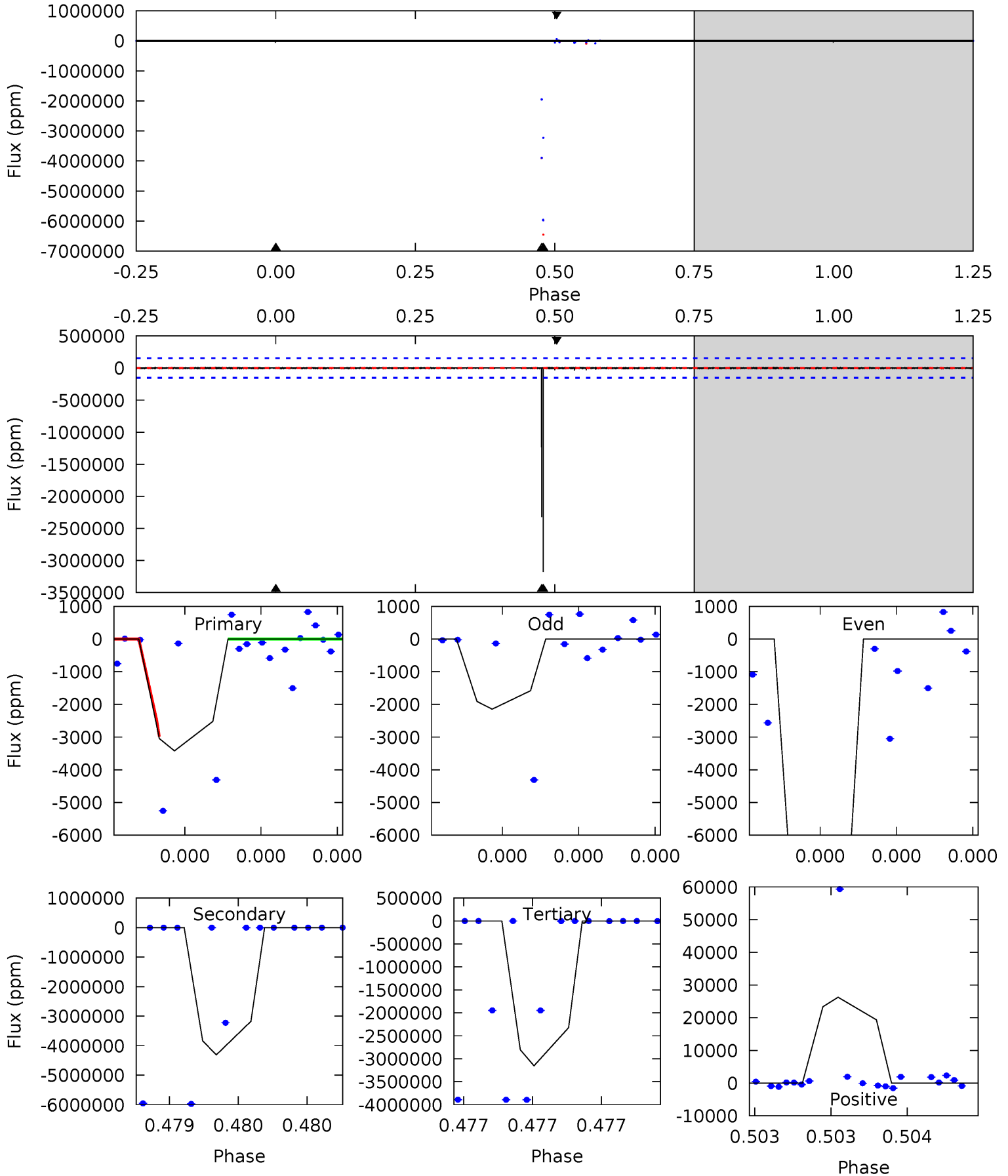
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.7	26.7	15.3	25.6	5.61	3.54	2.16	18.4	8.03	11.5	1.11	7.85	0.93	0.43	0



Alt Model-Shift Uniqueness Test

008740378-01, P = 370.840688 Days, E = 185.230820 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.09	117.6	86.0	0.72	5.70	3.68	0.95	-85.9	-0.62	31.6	116.8	0.12	1.58	0.01	0



Stellar Parameters For KIC 008740378

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3960^{+79}_{-79}	$1.075^{+0.375}_{-0.125}$	$0.070^{+0.200}_{-0.300}$	$89.229^{+9.154}_{-51.872}$	$3.452^{+0.118}_{-2.362}$	$0.000^{+0.000}_{-0.000}$
	+2%/-2%	+35%/-12%	+286%/-429%	+10%/-58%	+3%/-68%	+459%/-33%
Source	SPE14	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 008740378-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-6771±253	$4997.96^{+5477.58}_{-3553.46}$	1871^{+84}_{-196}	1840^{+1284}_{-4084}	$0.338^{+3.538}_{-0.259}$
Alt.	-3177324±27028	$4303.19^{+5215.55}_{-2998.80}$	1873^{+83}_{-216}	-5651^{+1435}_{-6572}	$-95.262^{+75.334}_{-942.984}$

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

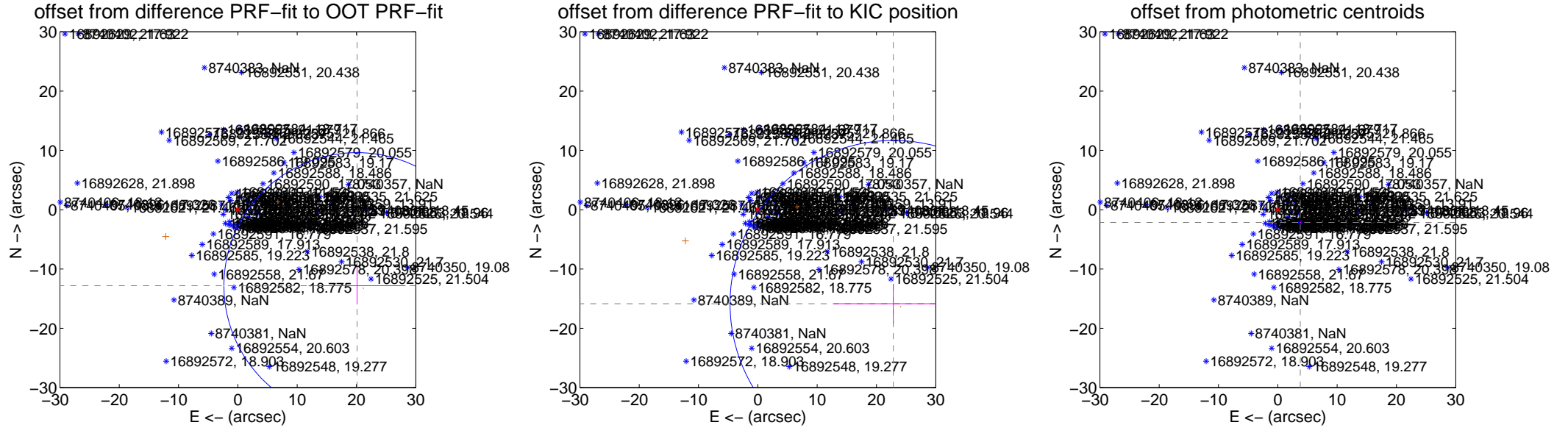
DV Centroid Data

Supplemental centroid analysis for 008740378-01. **Kepler magnitude: 8.76.** Transit SNR 72.39

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.88 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	23.831 \pm 7.480	3.19	-20.091 \pm 8.167	-12.817 \pm 3.145
PRF-fit source offset from KIC position	27.803 \pm 9.175	3.03	-22.843 \pm 10.039	-15.851 \pm 3.369
photometric centroid source offset	4.34 \pm 0.10	44.13	-3.78 \pm 0.11	-2.15 \pm 0.07



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.

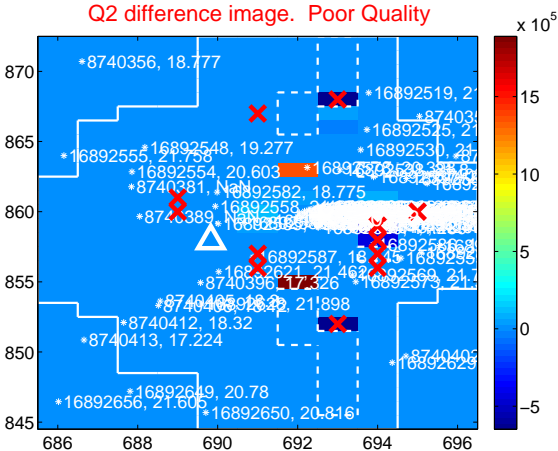
Q1 no difference image



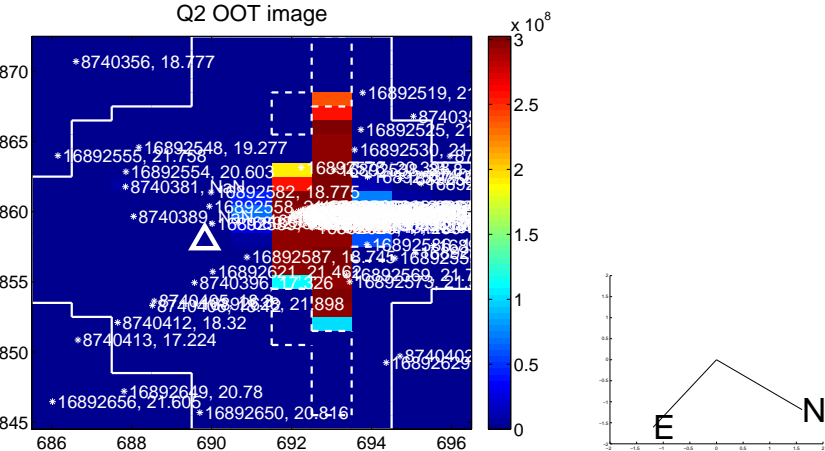
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



Q3 no difference image



Q3 no OOT image



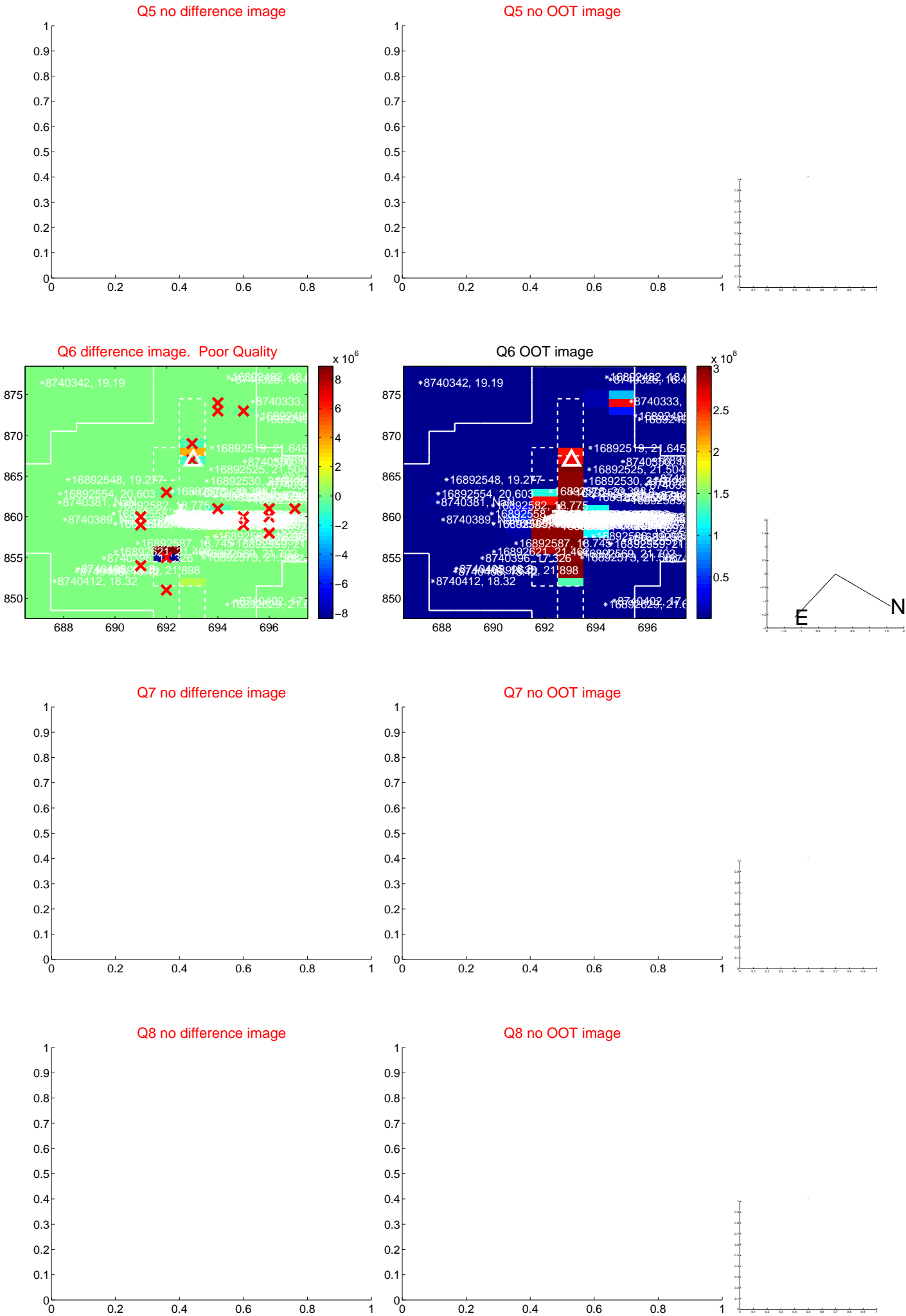
Q4 no difference image



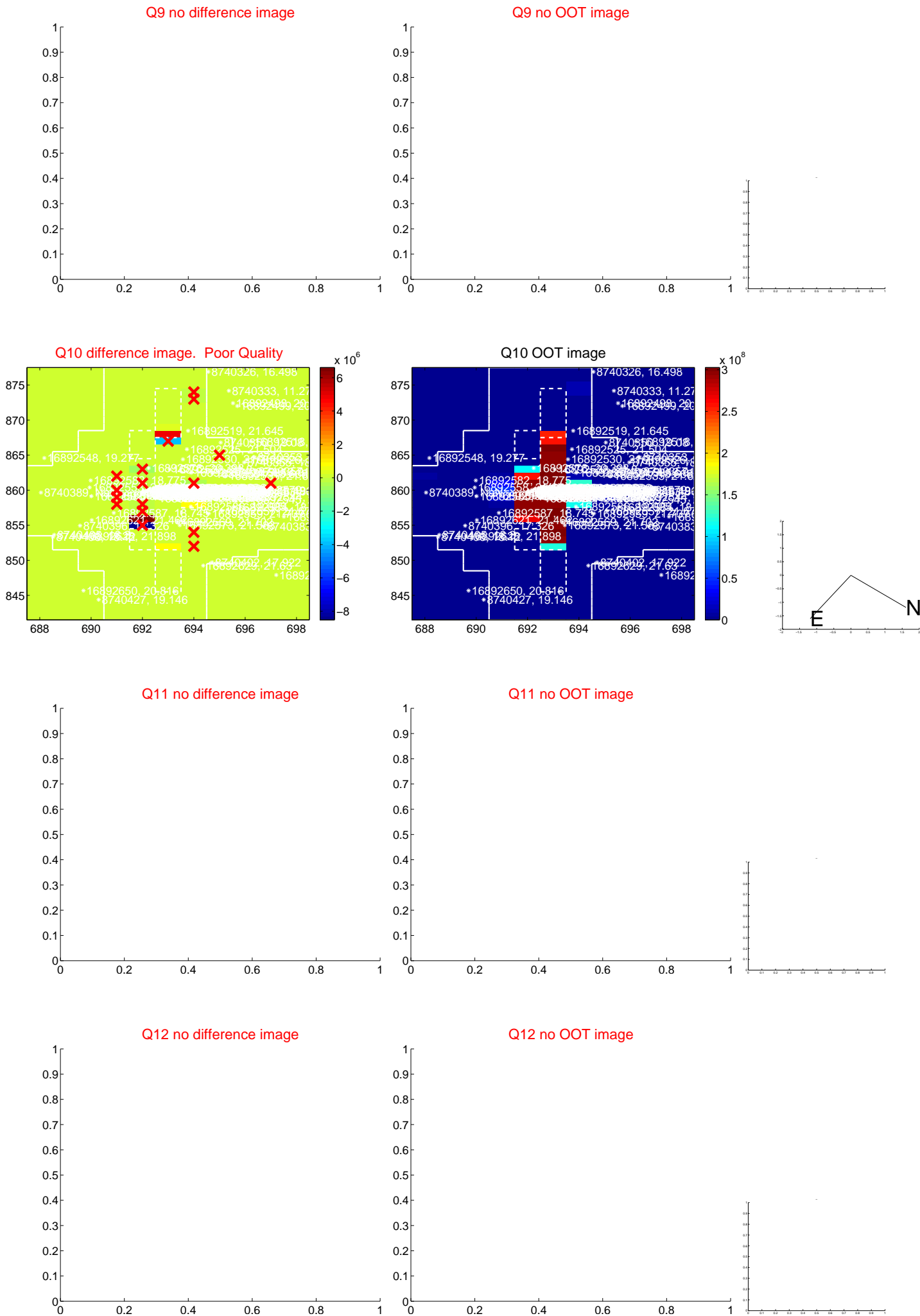
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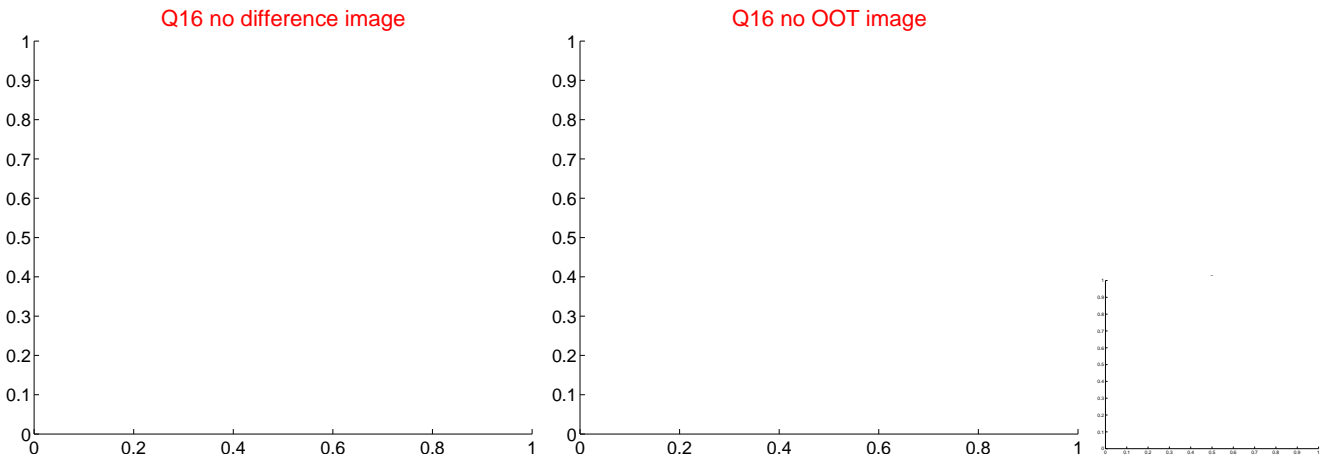
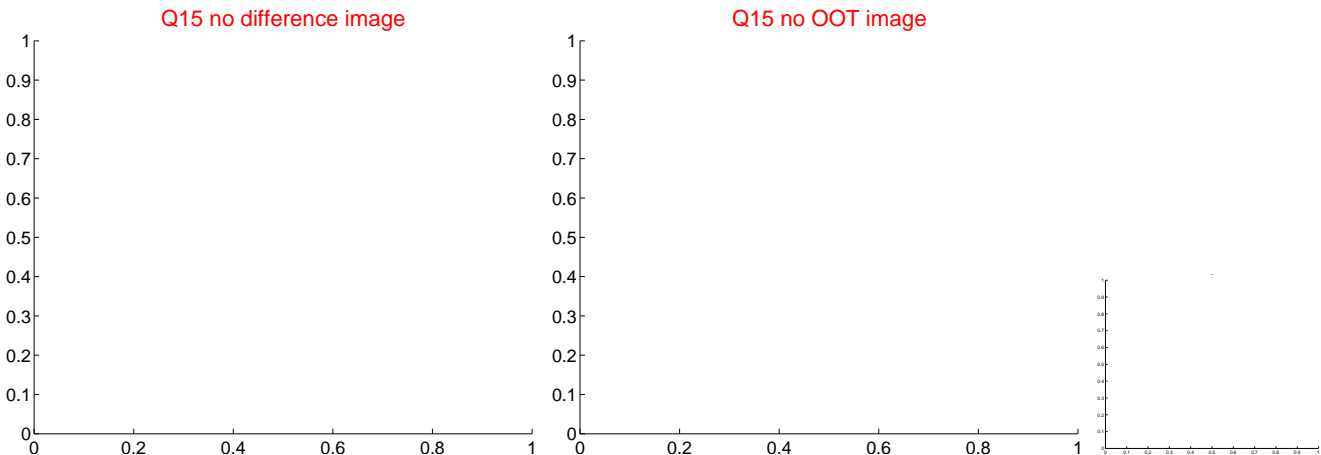
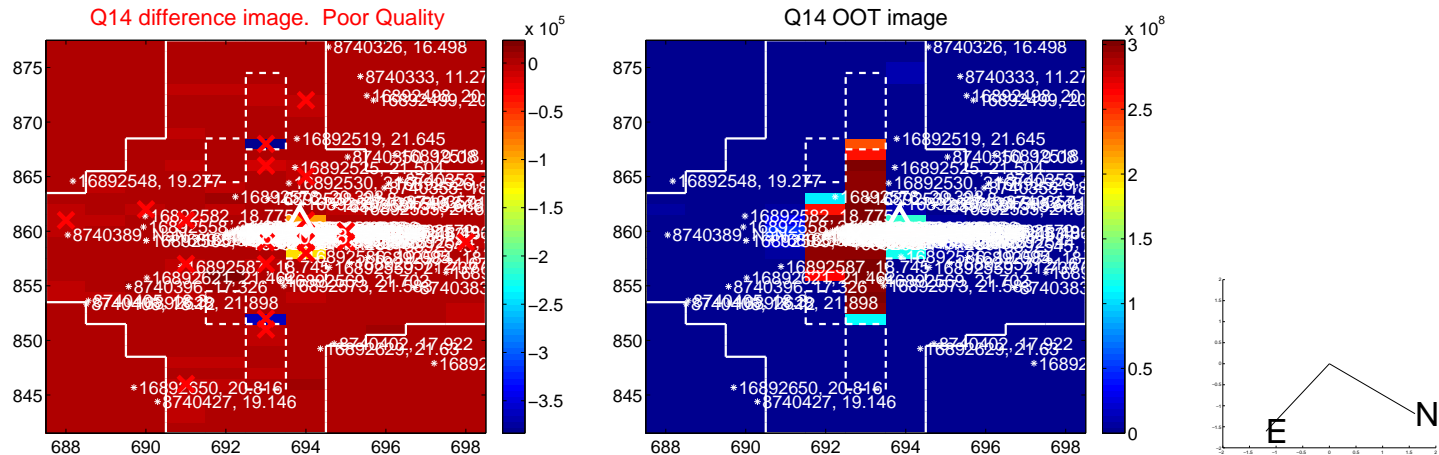
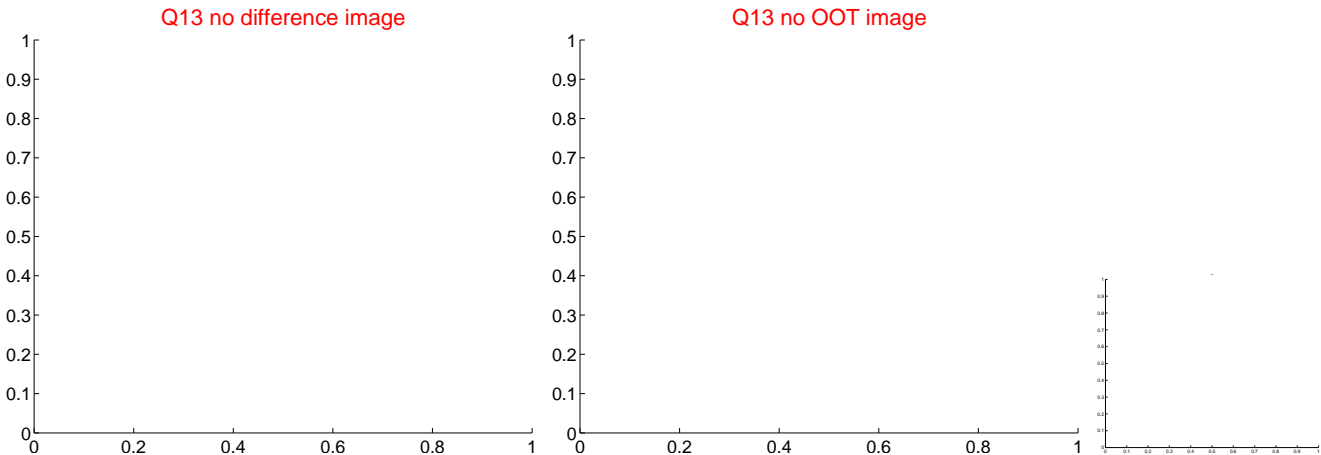
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



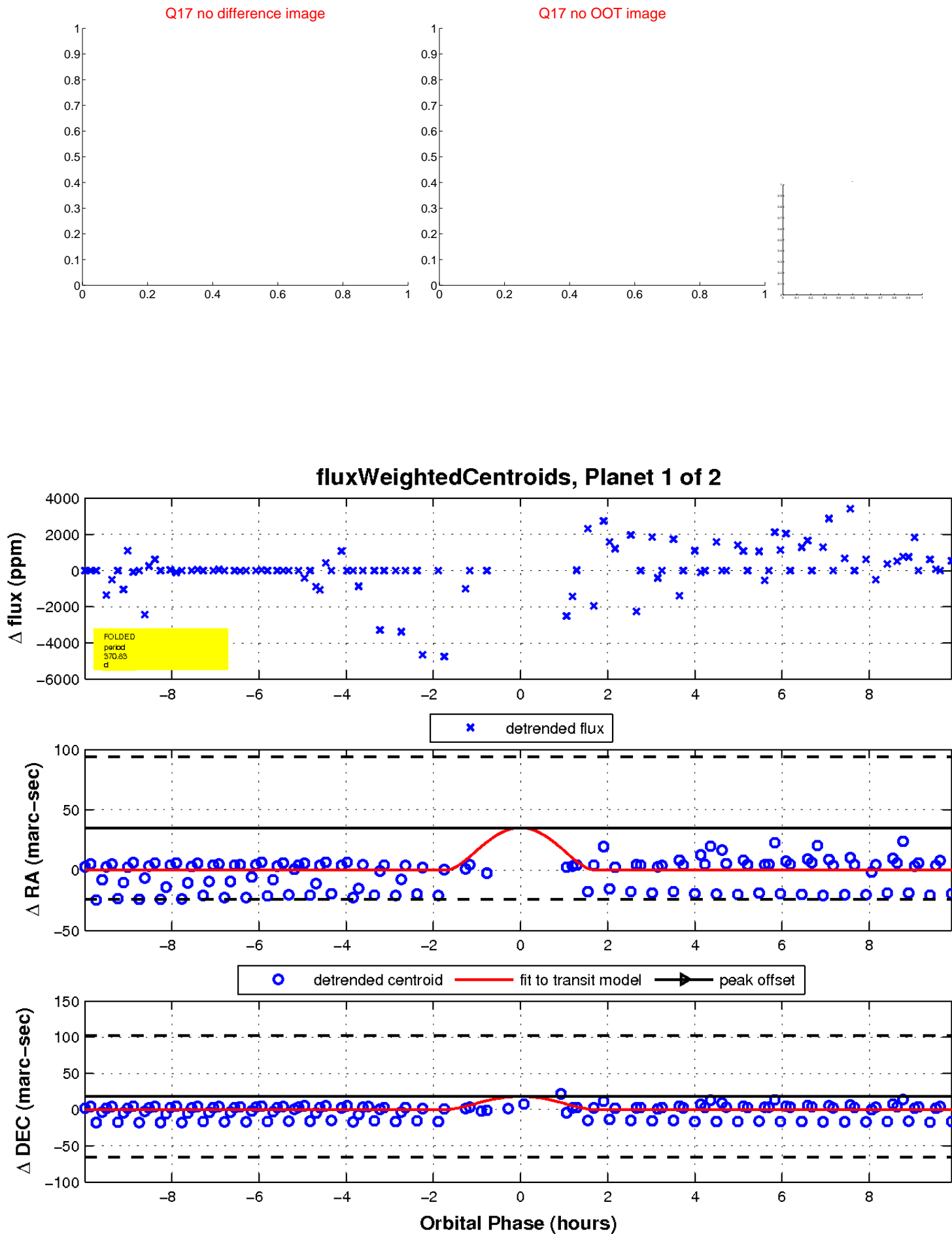
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



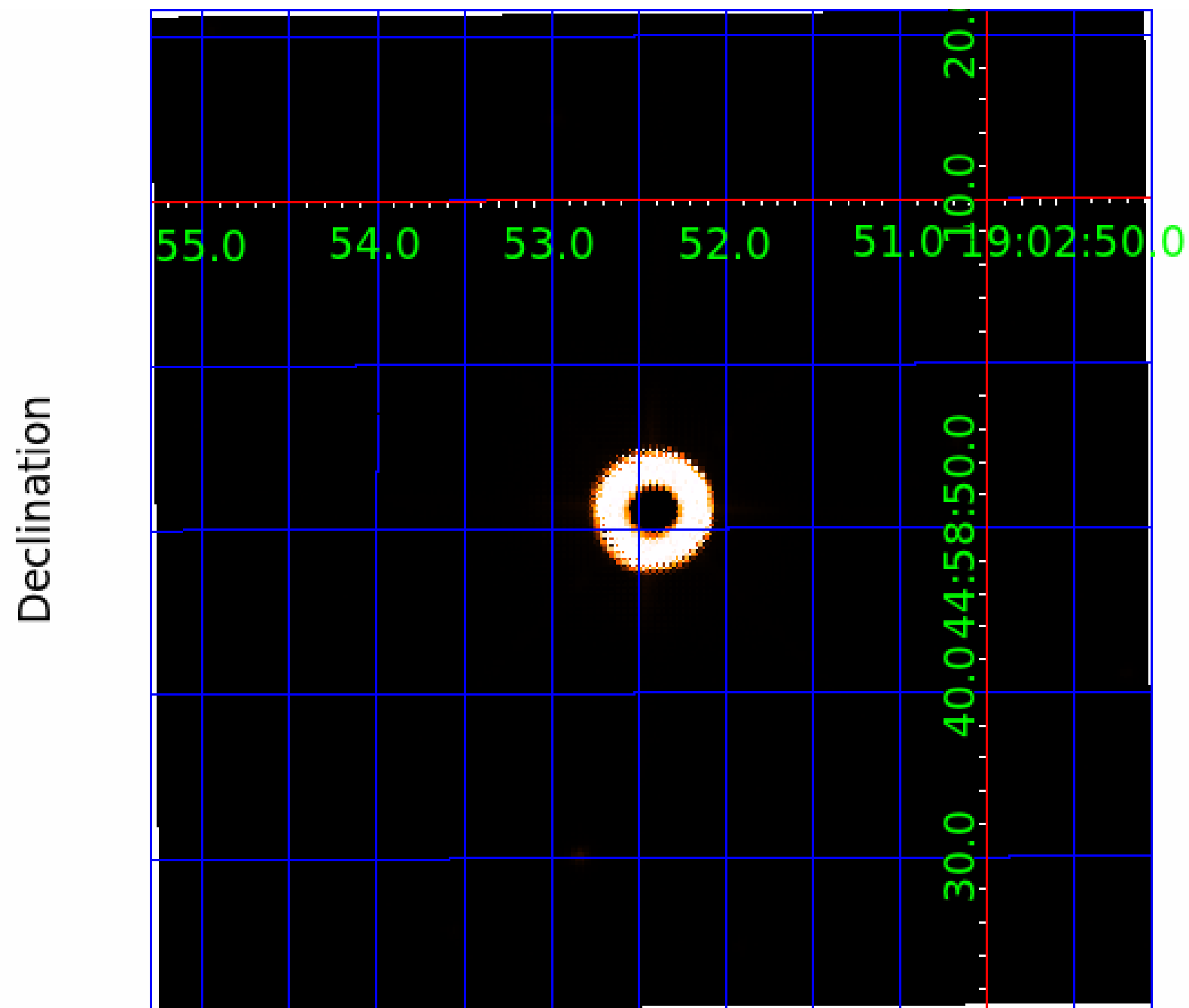
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008740378

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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008740378-02	OBS	No	363.323186	186.819540	2138.6	3.000	55.3	-1.0	89.23	3960	386.10	773.19

Robovetter Results

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008740378-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
008740378-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

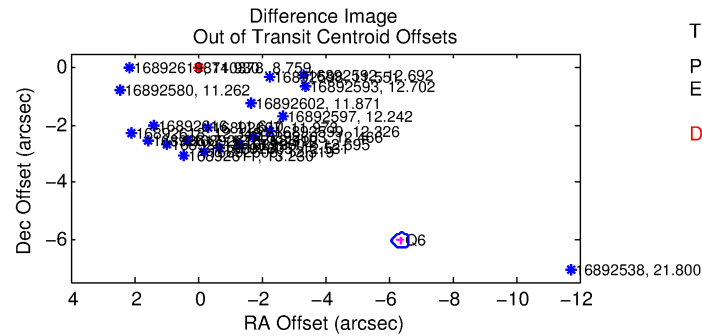
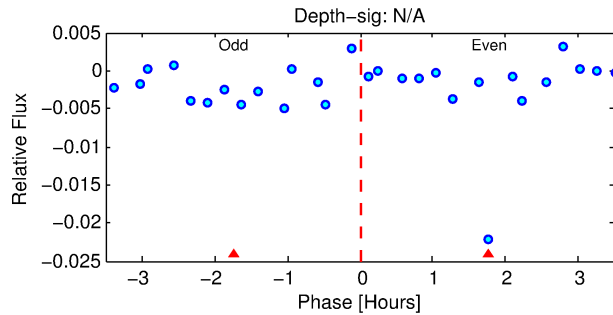
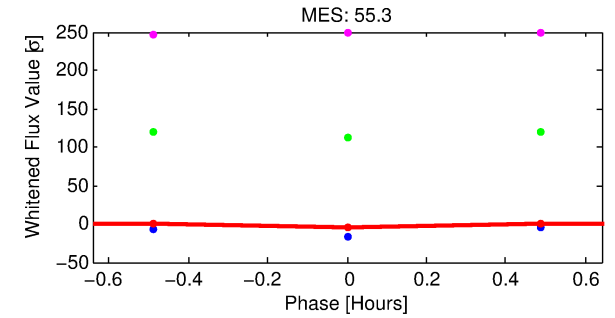
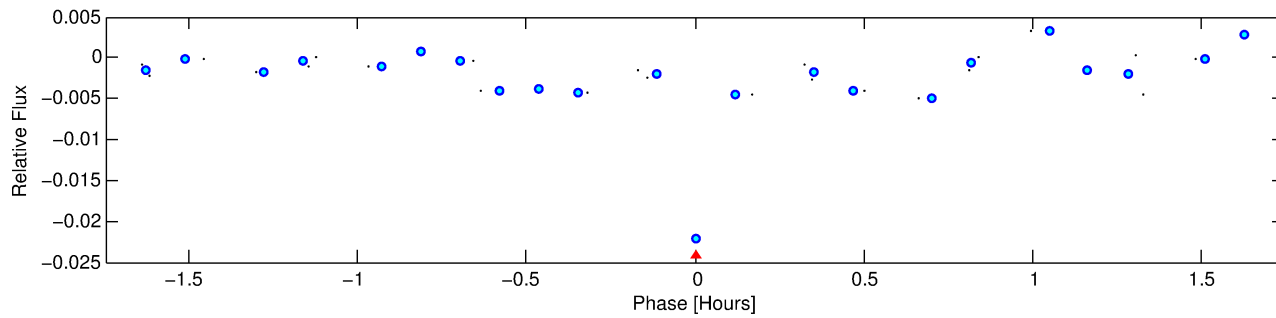
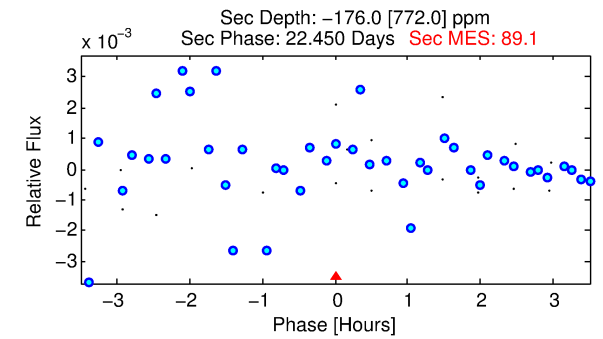
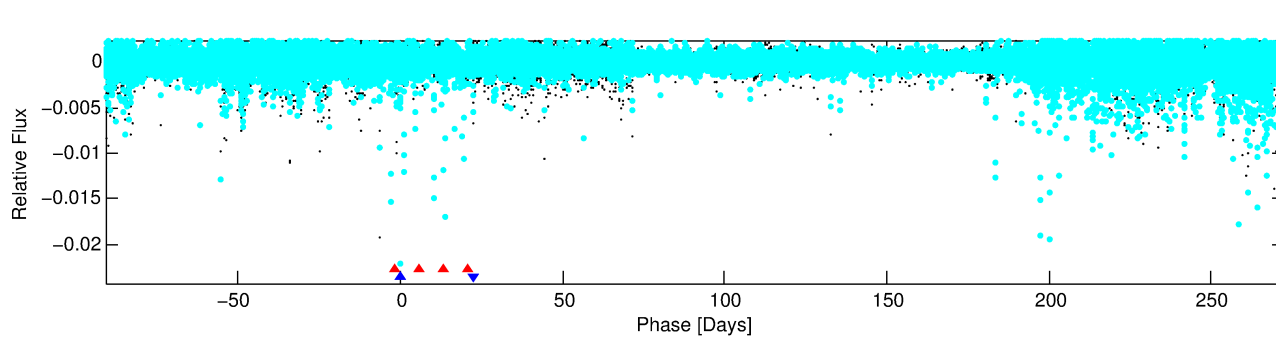
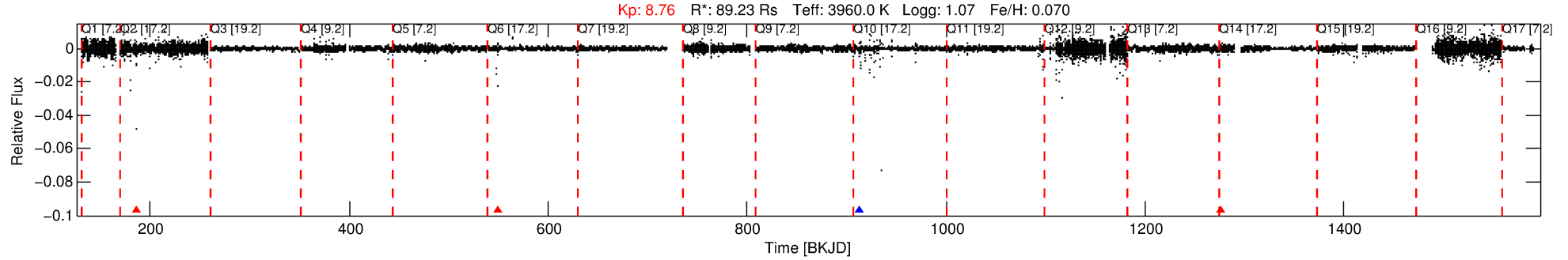
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008740378-02

No Significant Match Found

DV One-Page Summary

KIC: 8740378 Candidate: 2 of 2 Period: 363.323 d



TPS TCE Results:

Period = 363.32319 d
Epoch = 186.8195 BKJD

DV fit results are unavailable

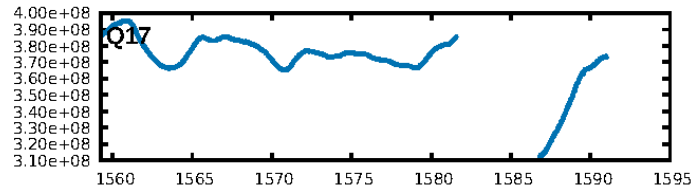
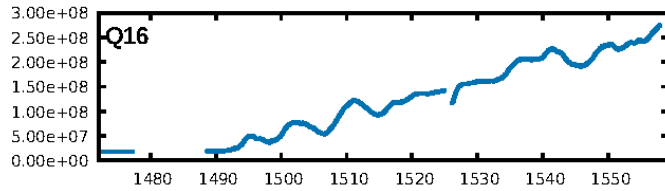
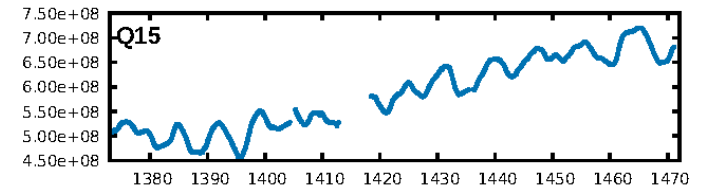
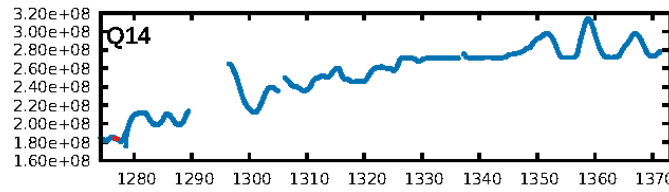
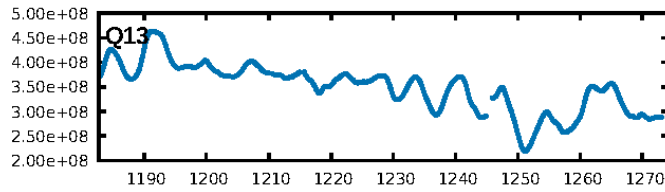
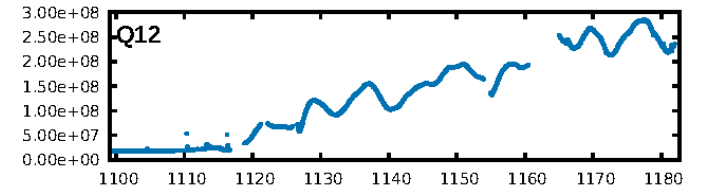
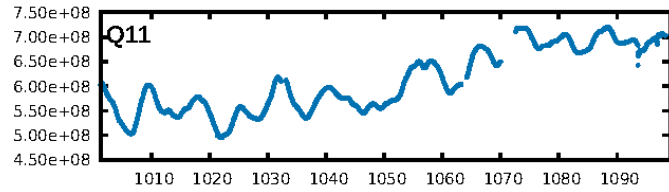
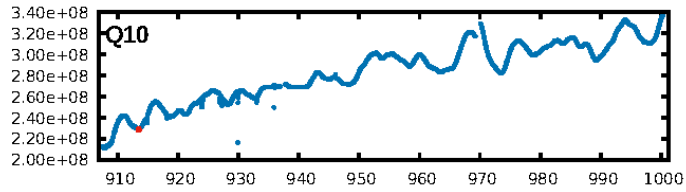
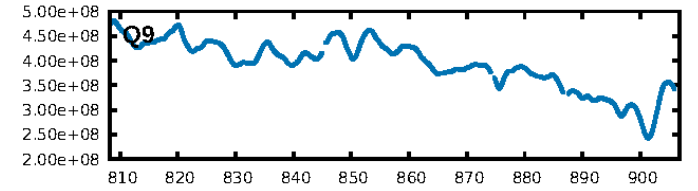
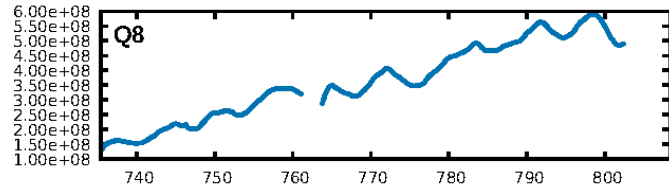
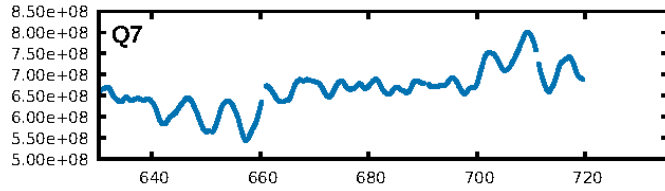
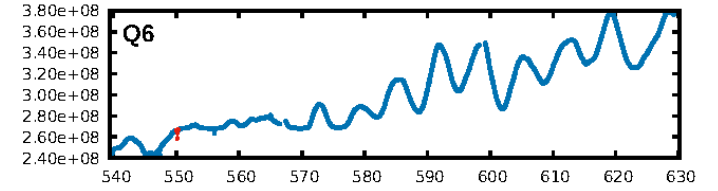
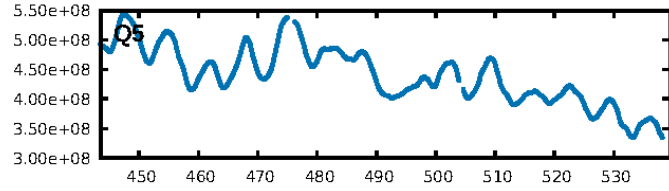
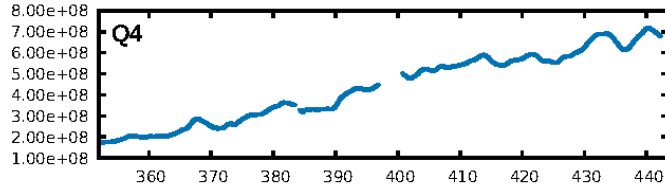
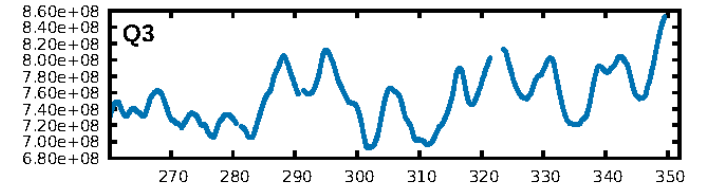
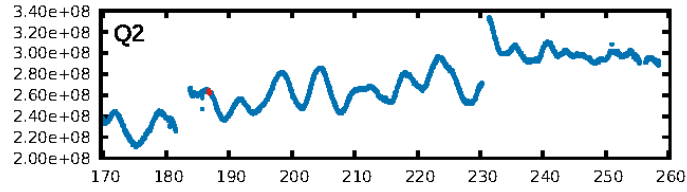
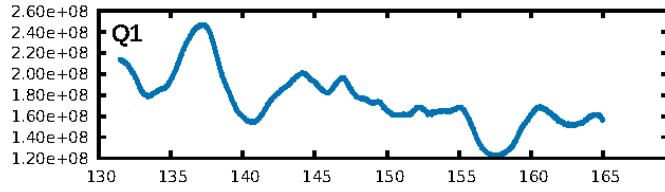
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [40.15σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.94e-10
RollingBand-fgt: 0.25 [1/4]
GhostDiagnostic-chr: N/A
Centroid-sig: 0.0%
Centroid-so: 2.604 arcsec [20.72σ]
OotOffset-rm: 8.788 arcsec [100.03σ]
KicOffset-rm: 13.083 arcsec [148.93σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [1/1]

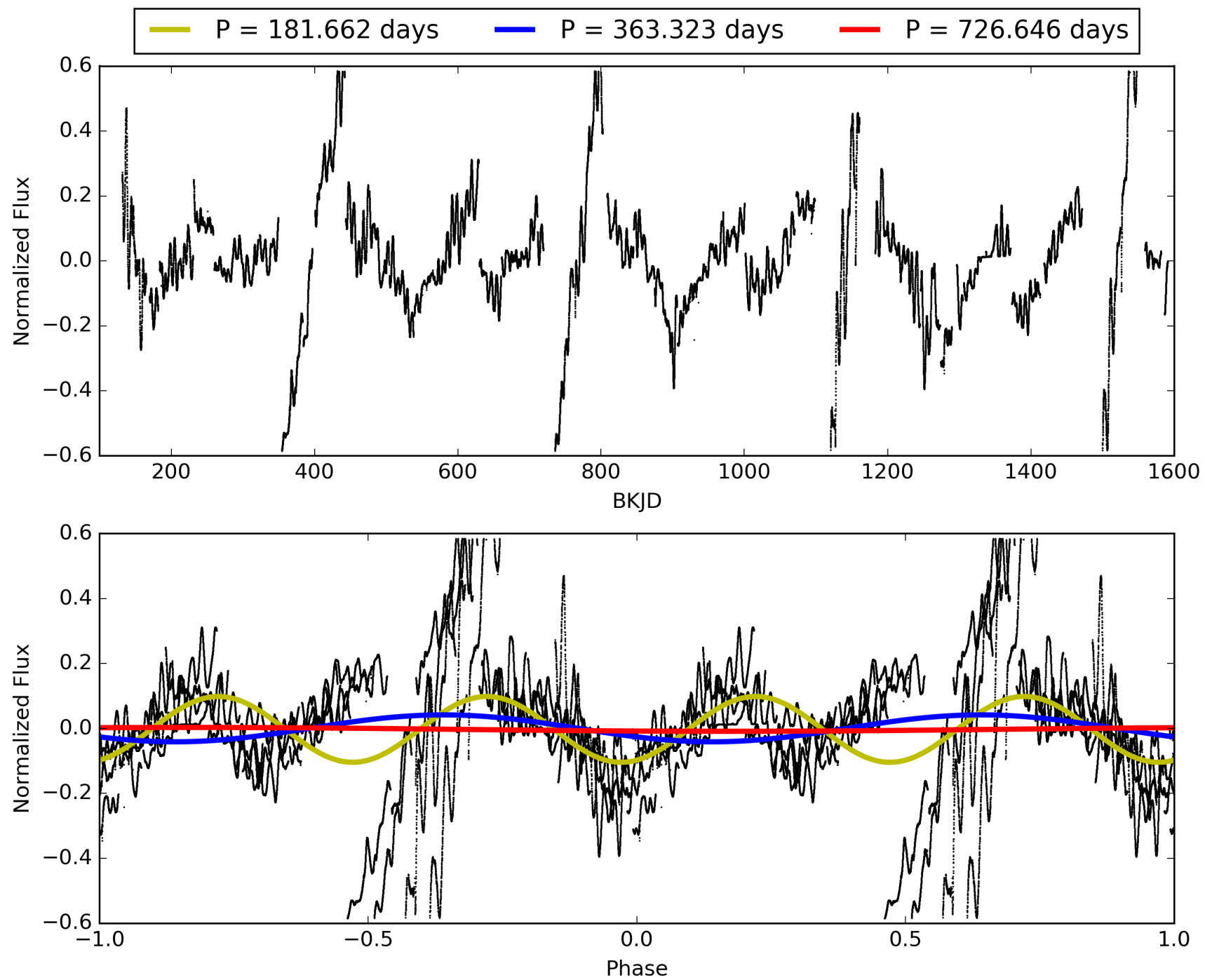
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:14:01 Z

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

TCE 008740378-02, PDC Light Curves

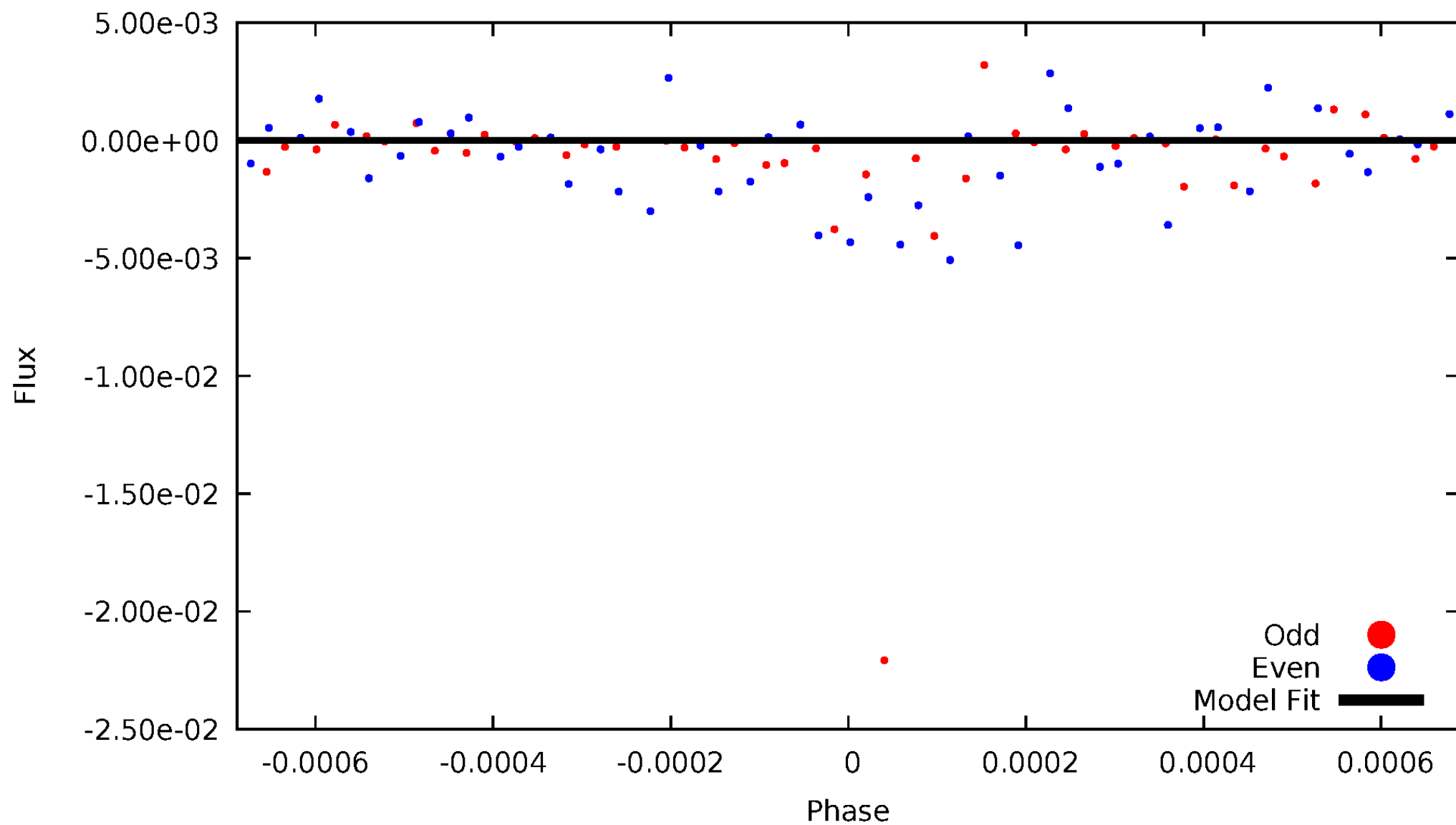


TCE 008740378-02



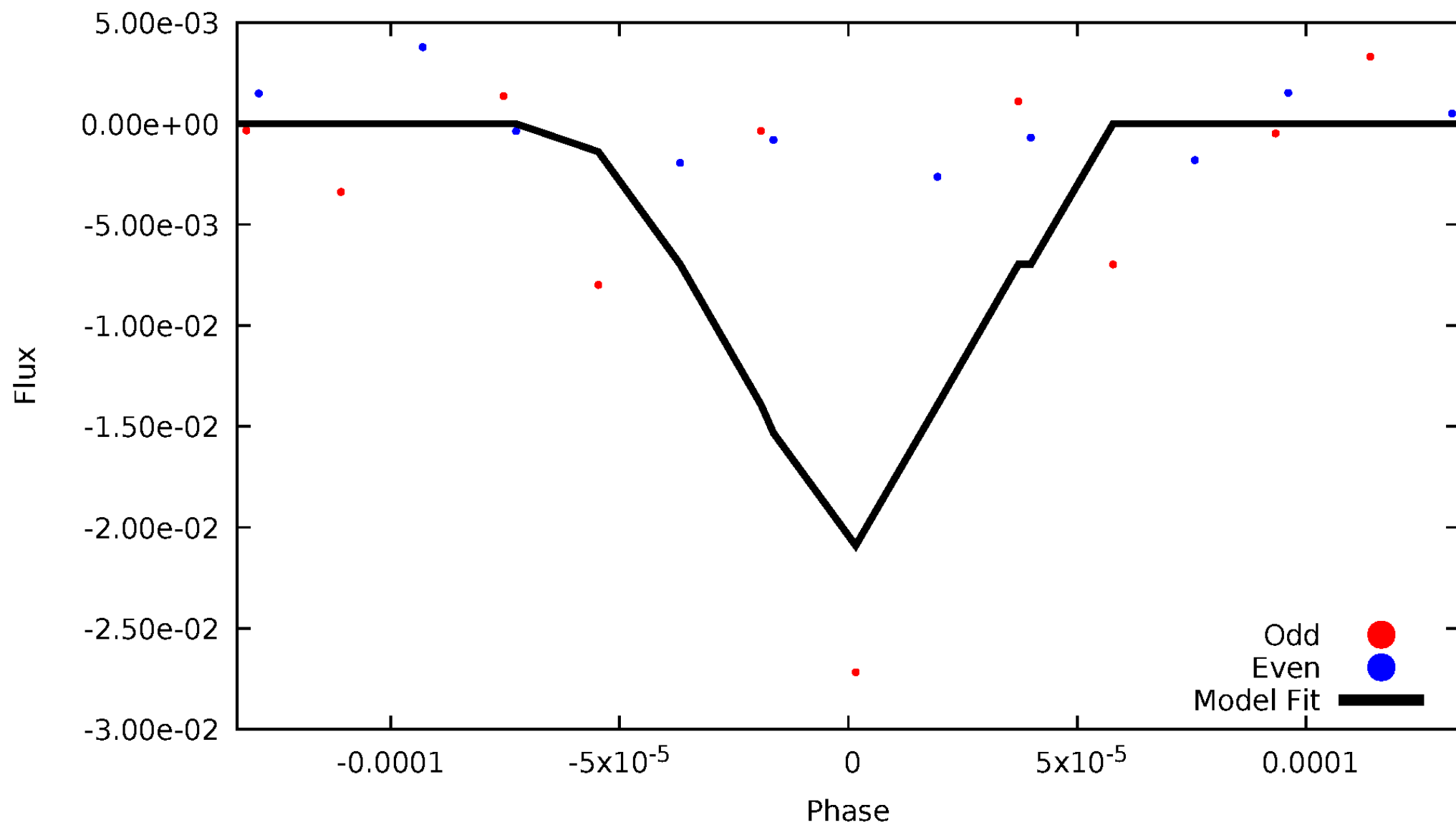
DV Odd/Even

TCE 008740378-02



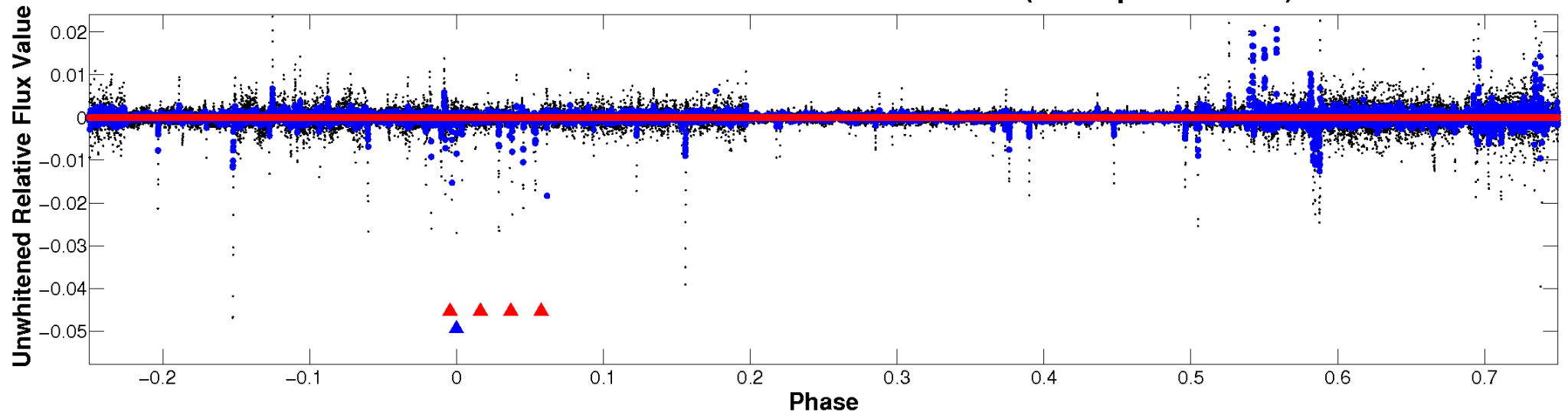
ALT Odd/Even

TCE 008740378-02

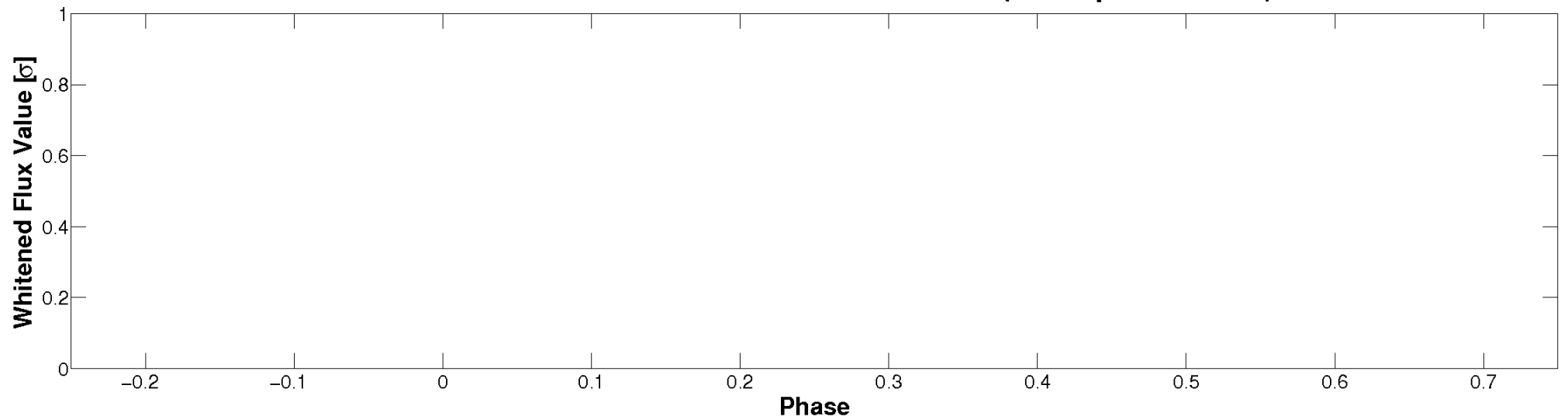


Non-Whitened Vs. Whitened Light Curve

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

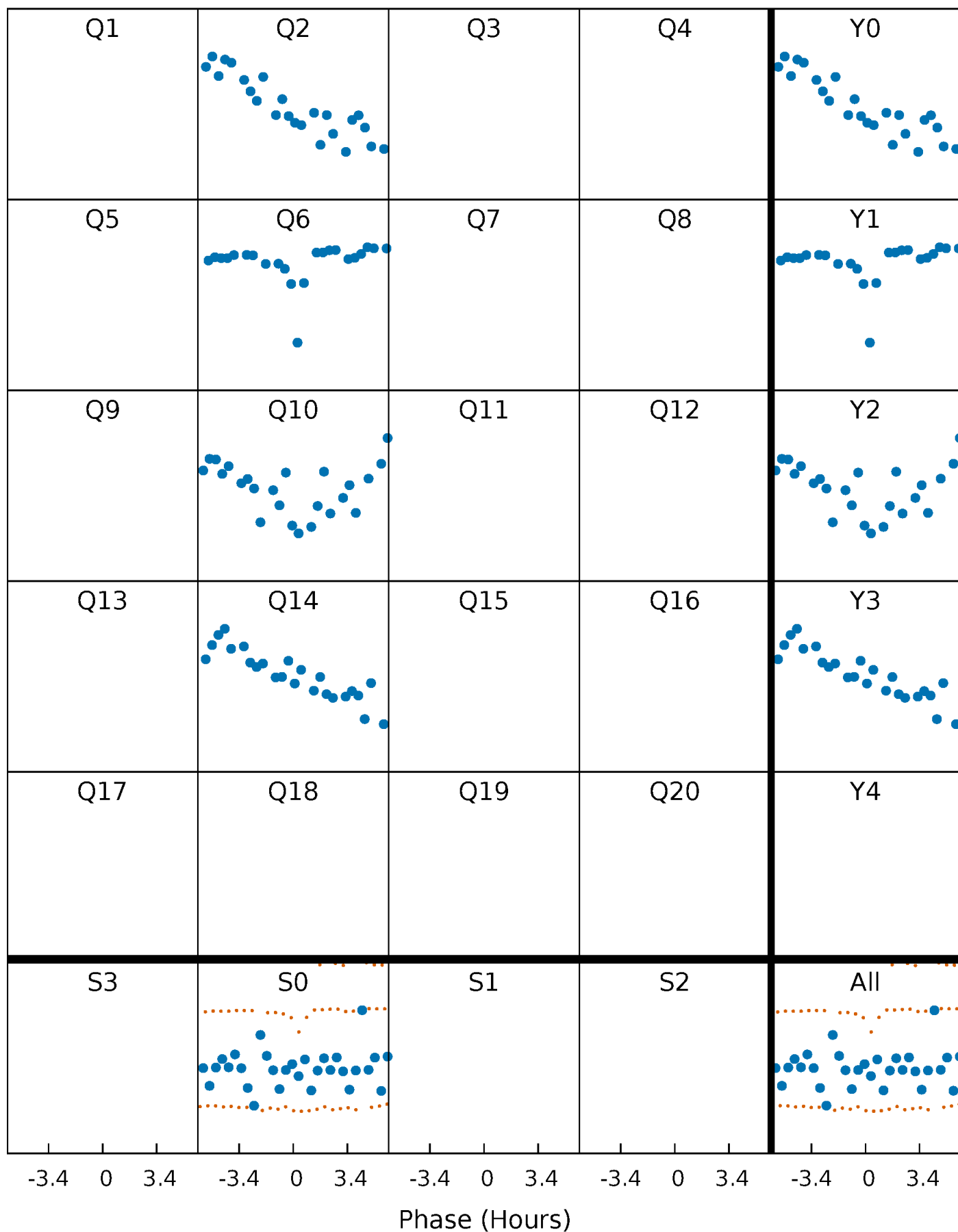


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



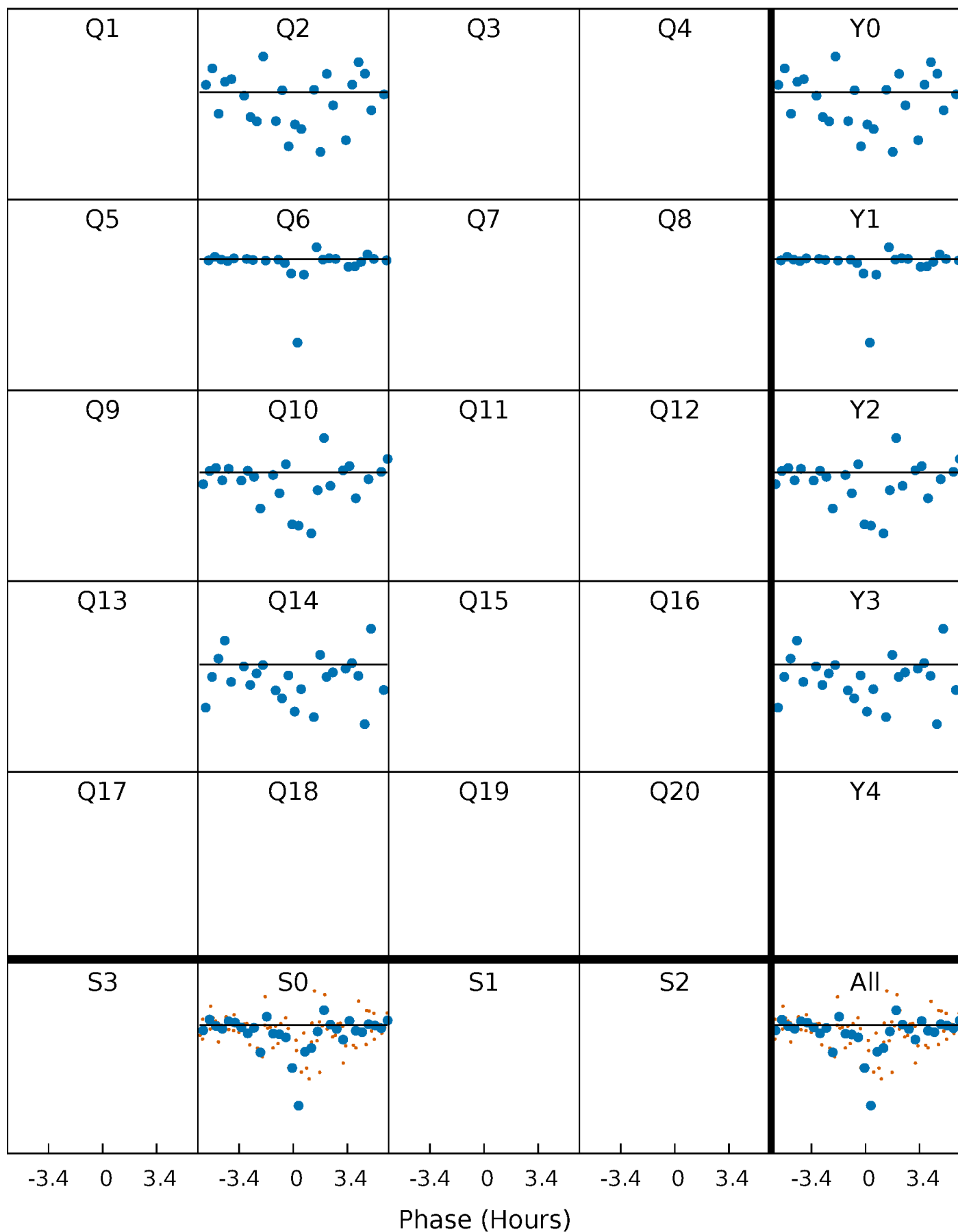
PDC Quarter-Phased Transit Curves

TCE 008740378-02 P=363.323186 Days $T_0=186.819540$ (BKJD)



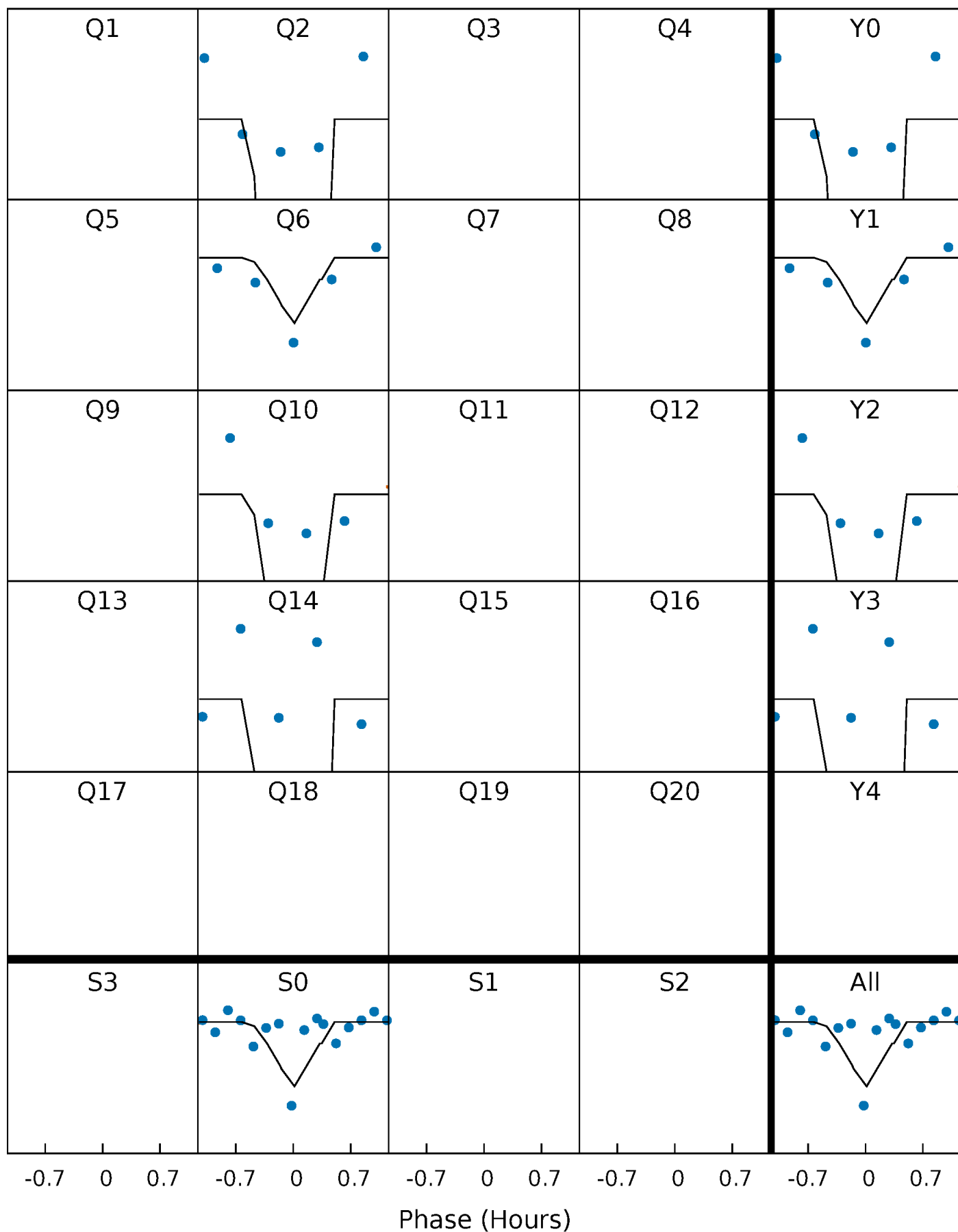
DV Quarter-Phased Transit Curves

TCE 008740378-02 $P=363.323186$ Days $T_0=186.819540$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

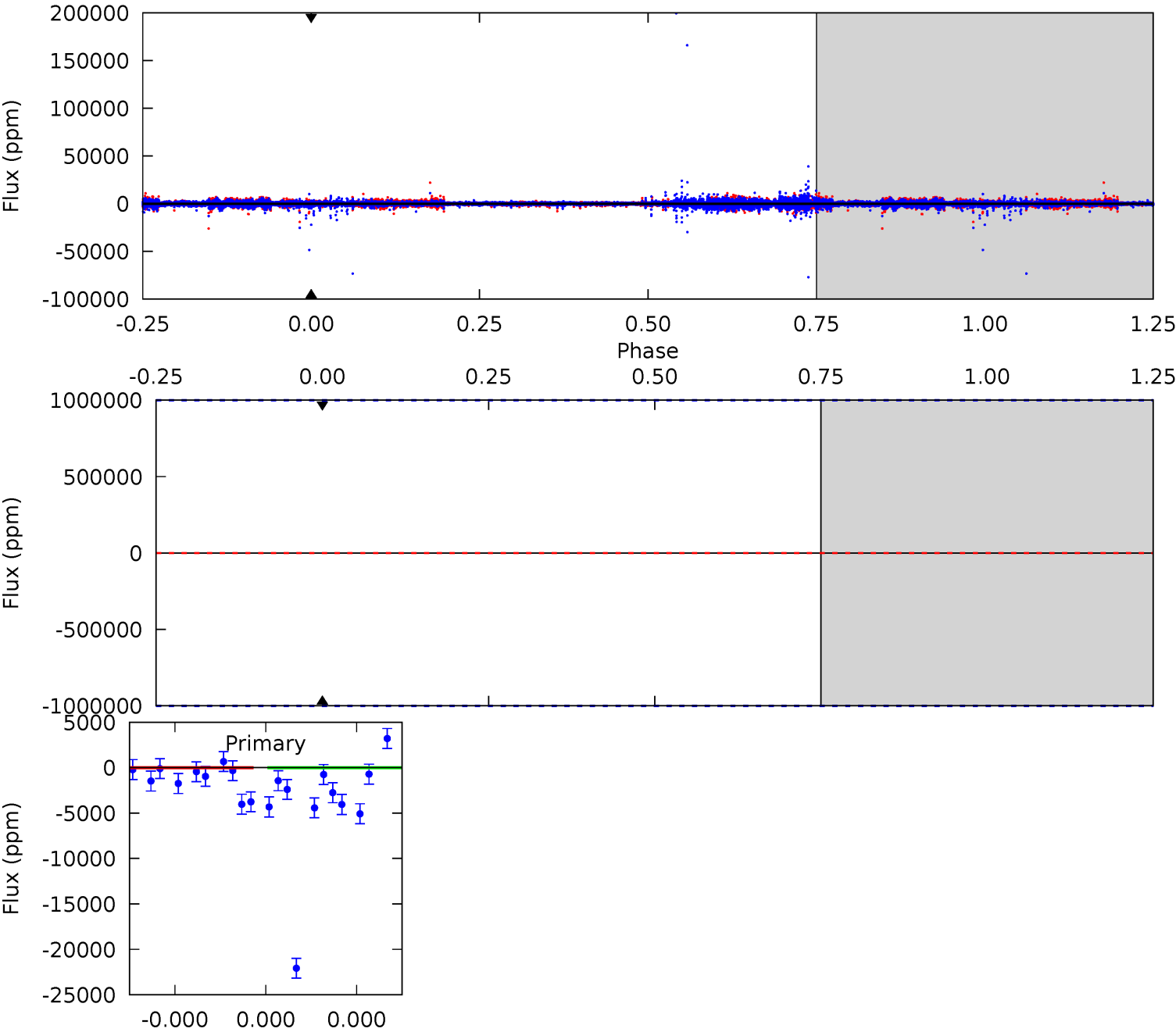
TCE 008740378-02 P=363.323186 Days $T_0=186.833688$ (BKJD)



DV Model-Shift Uniqueness Test

008740378-02, P = 363.323186 Days, E = 186.819540 Days

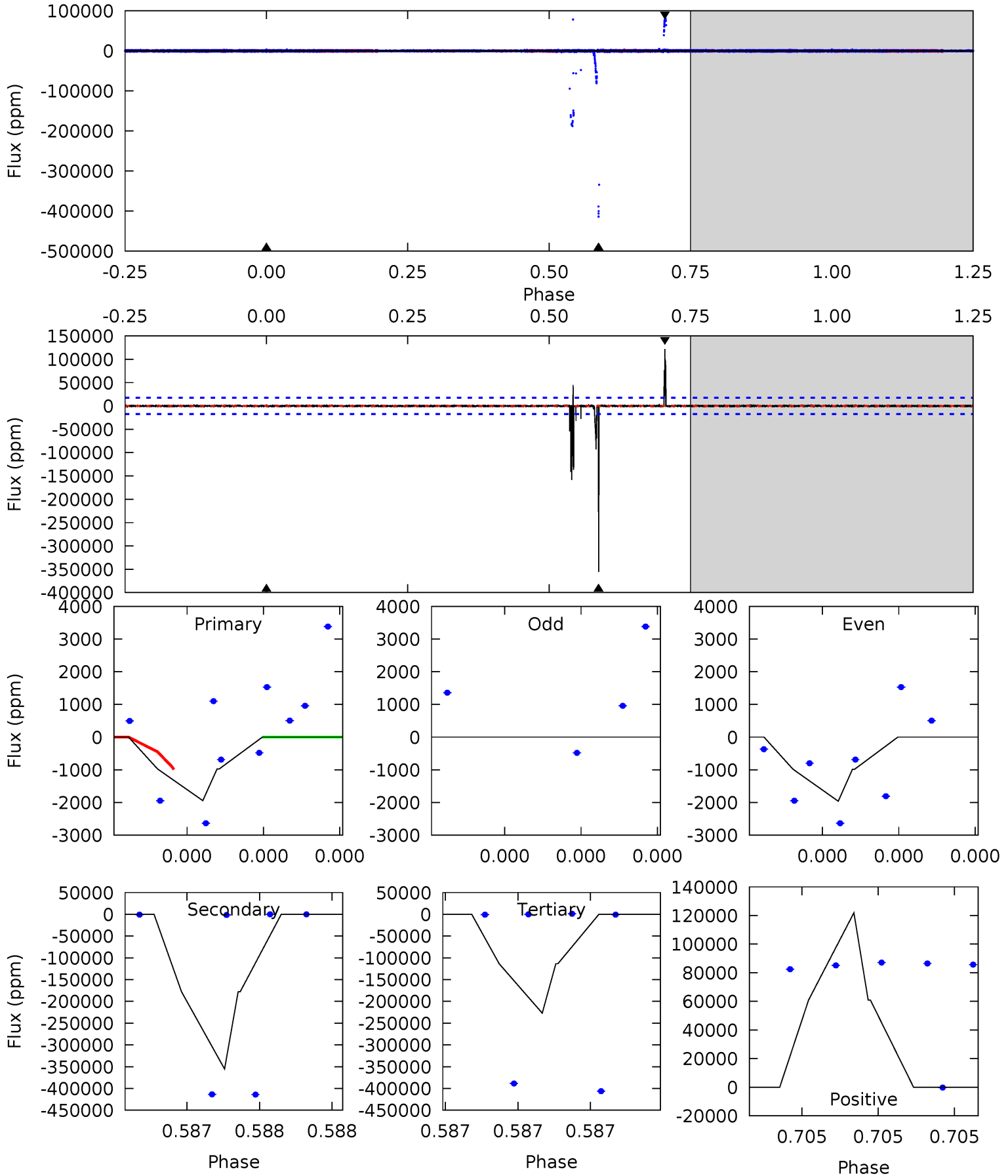
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

008740378-02, P = 363.323186 Days, E = 186.833688 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.65	119.3	76.2	40.9	5.86	3.90	1.66	-75.5	-40.2	43.1	78.4	0	2.95	0.26	0



Stellar Parameters For KIC 008740378

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3960^{+79}_{-79}	$1.075^{+0.375}_{-0.125}$	$0.070^{+0.200}_{-0.300}$	$89.229^{+9.154}_{-51.872}$	$3.452^{+0.118}_{-2.362}$	$0.000^{+0.000}_{-0.000}$
	+2%/-2%	+35%/-12%	+286%/-429%	+10%/-58%	+3%/-68%	+459%/-33%
Source	SPE14	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 008740378-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$739.02^{+874.66}_{-512.47}$	1882^{+87}_{-216}	2822^{+5760}_{-11384}	$1.720^{+407.842}_{-424.625}$
Alt.	-355446 ± 2980	$1351.35^{+985.11}_{-790.43}$	1879^{+87}_{-223}	8285^{+8508}_{-2081}	354^{+1723}_{-231}

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

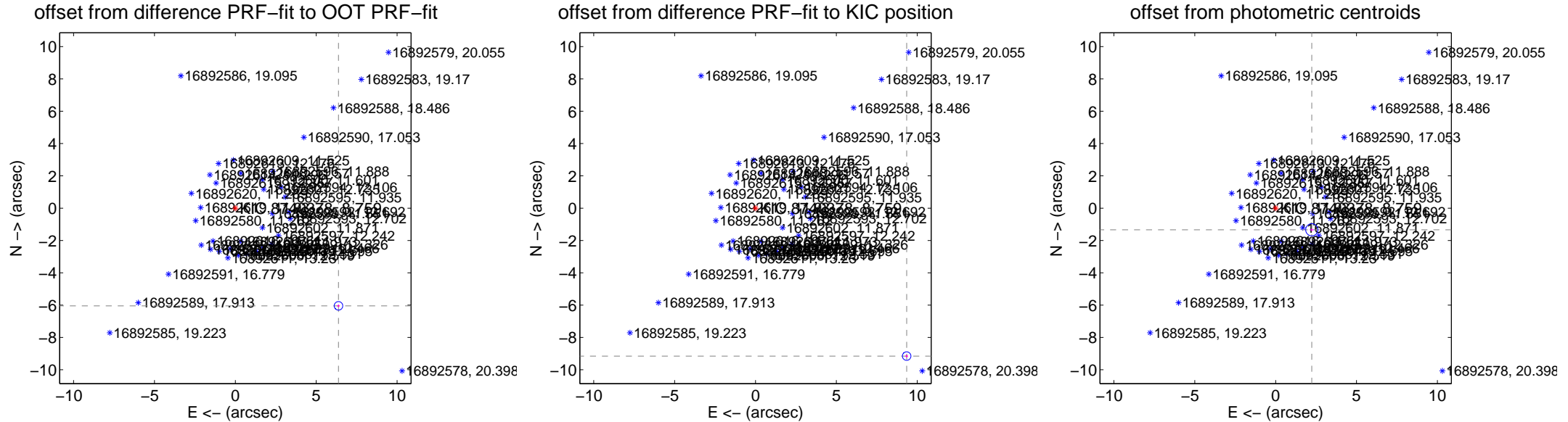
DV Centroid Data

Supplemental centroid analysis for 008740378-02. **Kepler magnitude: 8.76.** Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 4.30 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	8.788 ± 0.088	100.03	-6.378 ± 0.088	-6.046 ± 0.088
PRF-fit source offset from KIC position	13.083 ± 0.088	148.93	-9.346 ± 0.088	-9.156 ± 0.088
photometric centroid source offset	2.60 ± 0.13	20.72	-2.23 ± 0.14	-1.34 ± 0.09

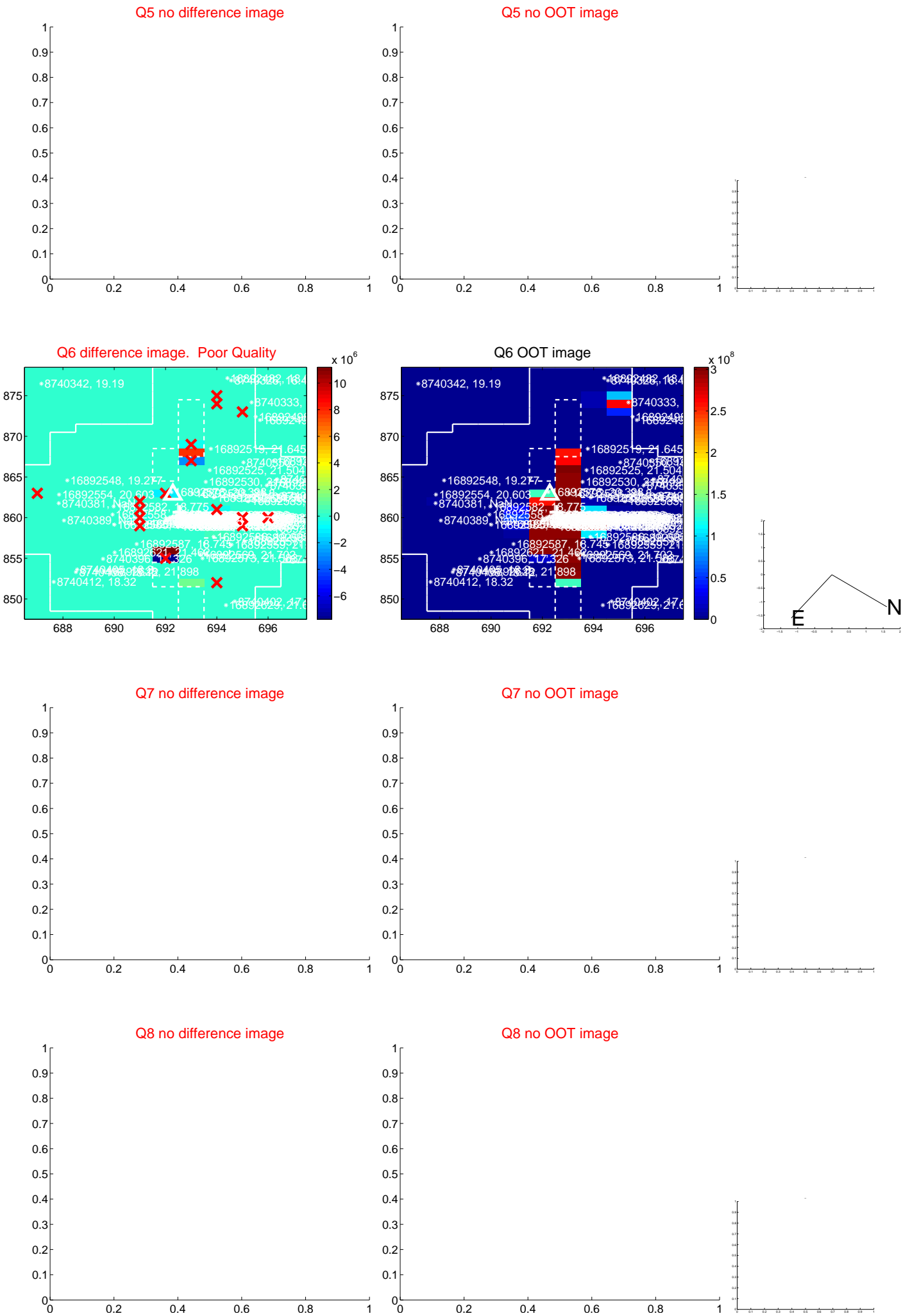


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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



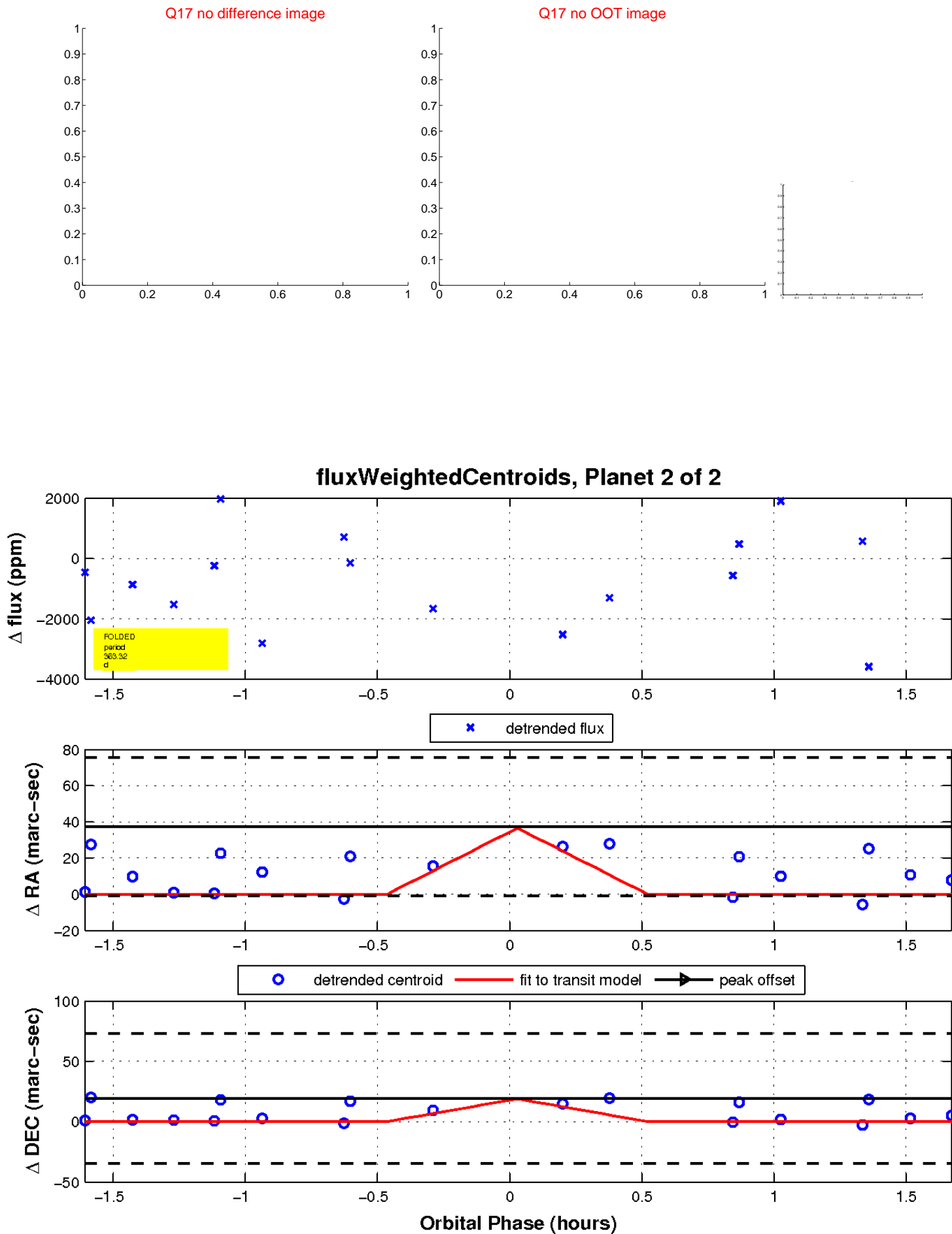
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

