

KIC 004247023

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})
004247023-01	OBS	No	60.829395	154.314320	341411.6	11.396	2301.1	1658.5	0.97	5458	72.68	9.29
004247023-02	OBS	No	34.329191	151.838517	849.2	2.925	56.1	2.9	0.97	5458	2.93	19.92
004247023-03	OBS	No	32.554926	157.693195	3413.9	15.000	27.2	-1.0	0.97	5458	5.58	21.38
004247023-04	OBS	No	31.782211	162.512680	36040.5	13.320	39.5	35.2	0.97	5458	32.26	22.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004247023-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—CENT_FEW_DIFFS
004247023-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004247023-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
004247023-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_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.

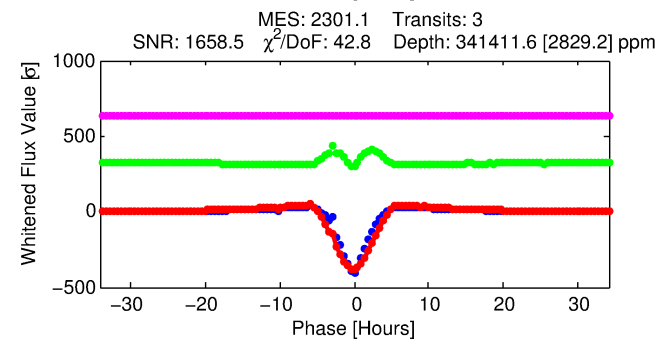
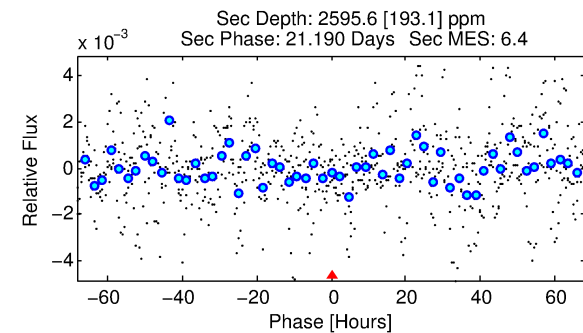
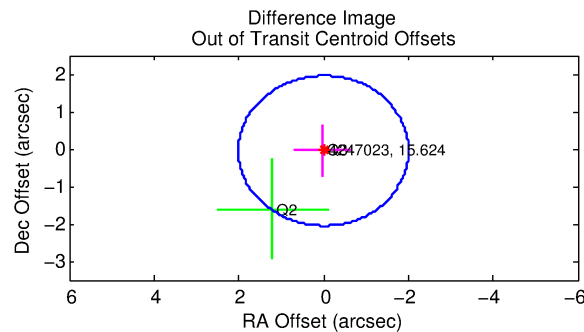
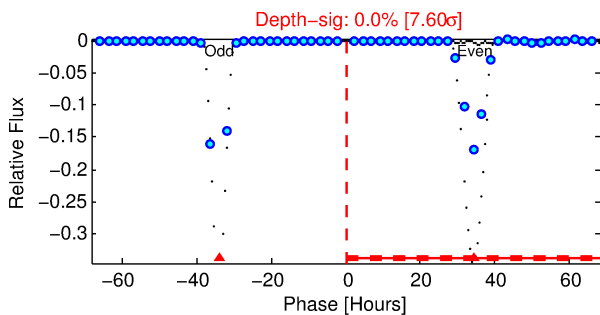
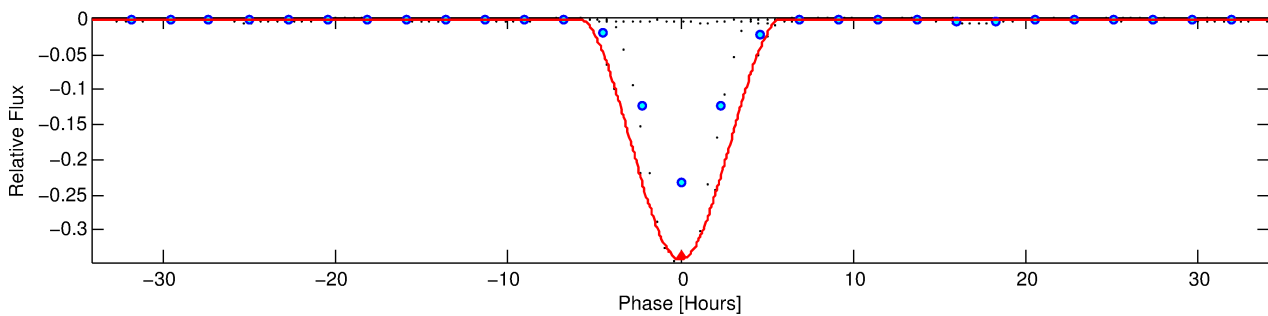
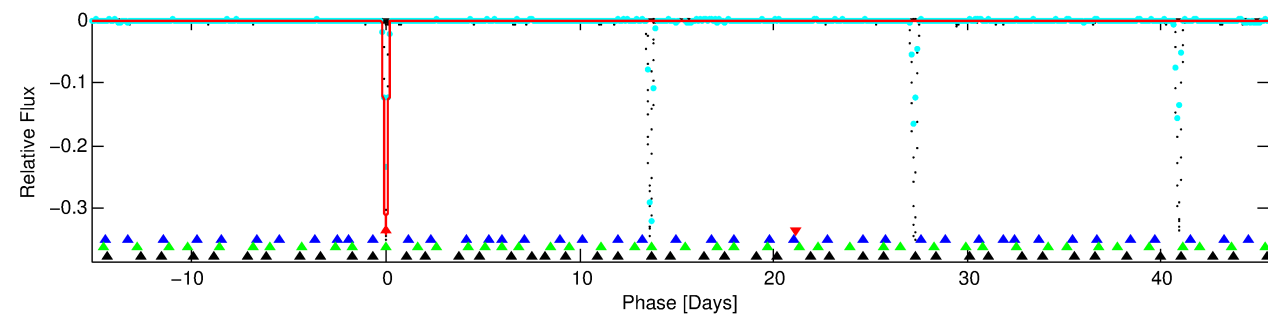
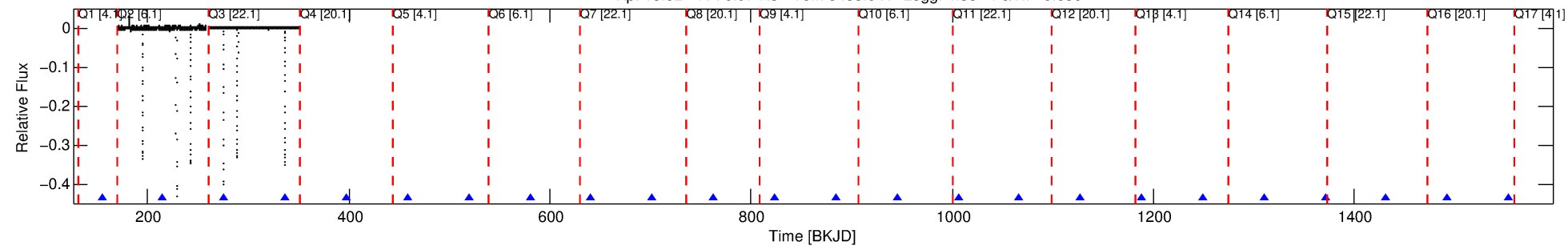
Ephemeris Match Information For 004247023-01

No Significant Match Found

DV One-Page Summary

KIC: 4247023 Candidate: 1 of 4 Period: 60.829 d
KOI: K03559 Corr: No Ephemeris Match

Kp: 15.62 R*: 0.97 Rs Teff: 5458.0 K Logg: 4.38 Fe/H: -0.080



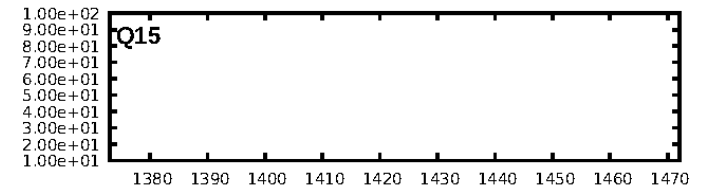
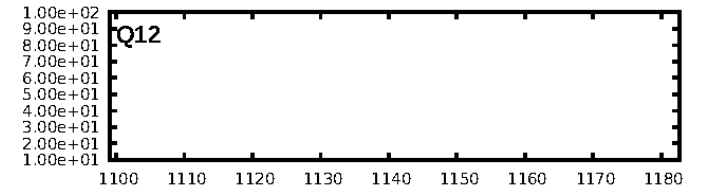
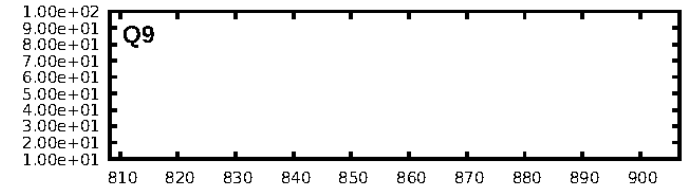
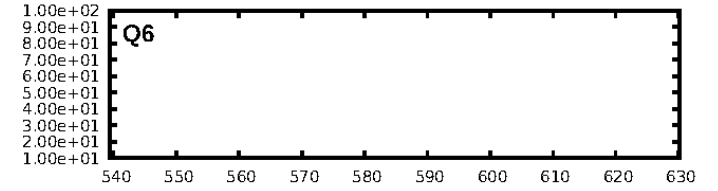
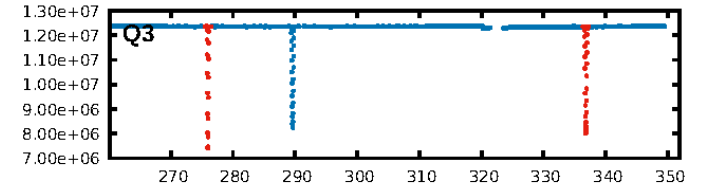
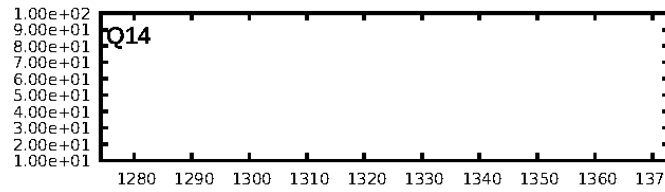
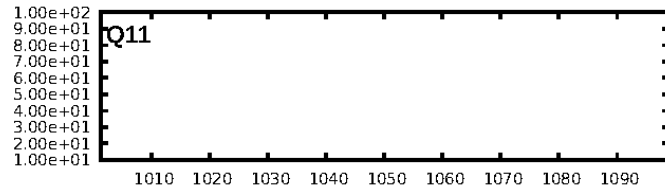
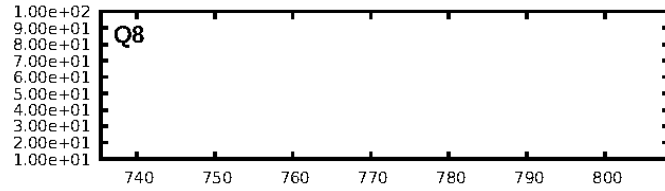
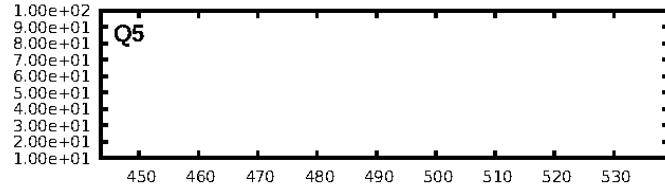
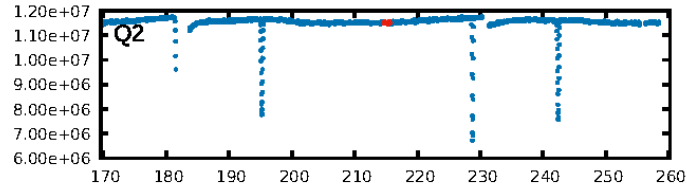
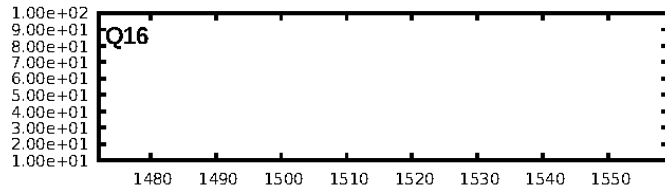
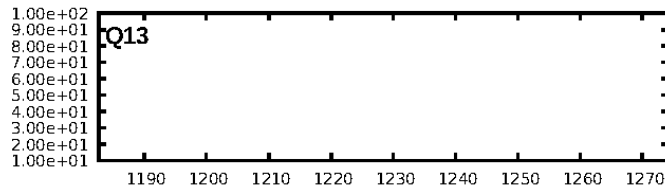
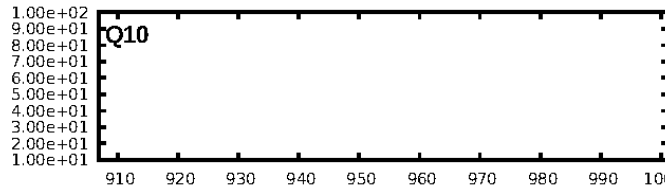
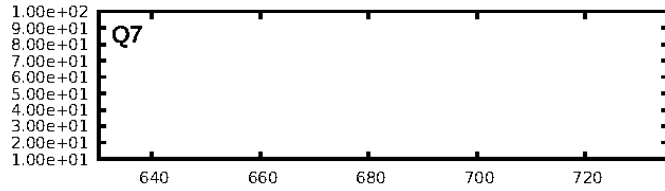
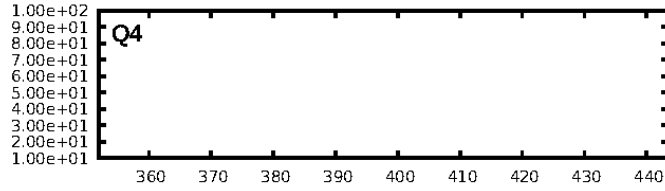
DV Fit Results:

Period = 60.82939 [0.00128] d
Epoch = 154.3143 [0.0033] BKJD
Rp/R* = 0.6852 [0.1603]
a/R* = 62.66 [3.45]
b = 0.69 [0.24]
Seff = 9.29 [3.77]
Teq = 445 [45] K
Rp = 72.68 [27.09] Re
a = 0.2844 [0.0724] AU
Ag = 21.86 [13.33] [1.57σ]
Teffp = 1488 [183] K [5.54σ]

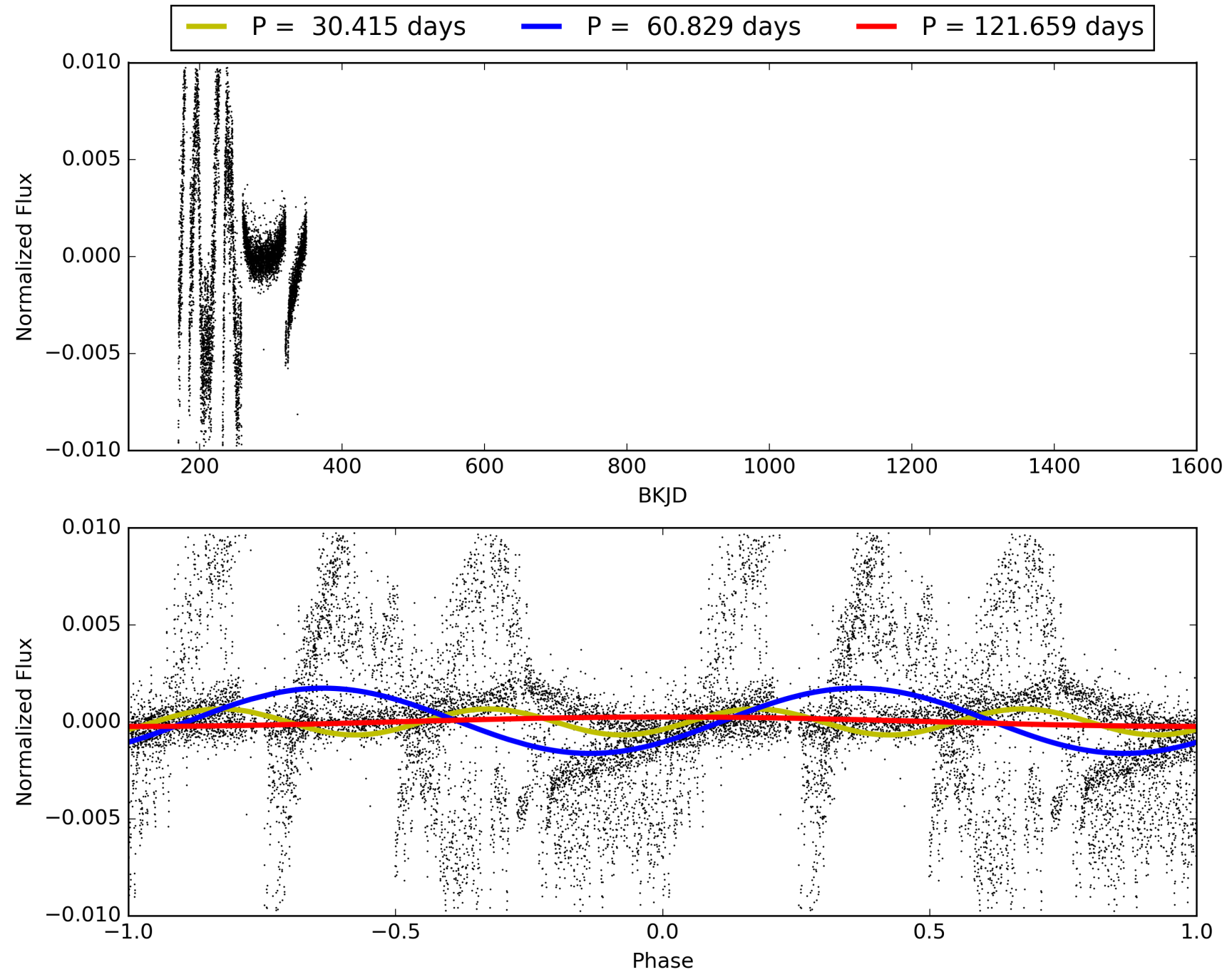
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [54.06σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.6189
Centroid-sig: 0.0%
Centroid-so: 0.076 arcsec [13.67σ]
OotOffset-rm: 0.048 arcsec [0.07σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-rm: 0.193 arcsec [0.29σ]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

TCE 004247023-01, PDC Light Curves

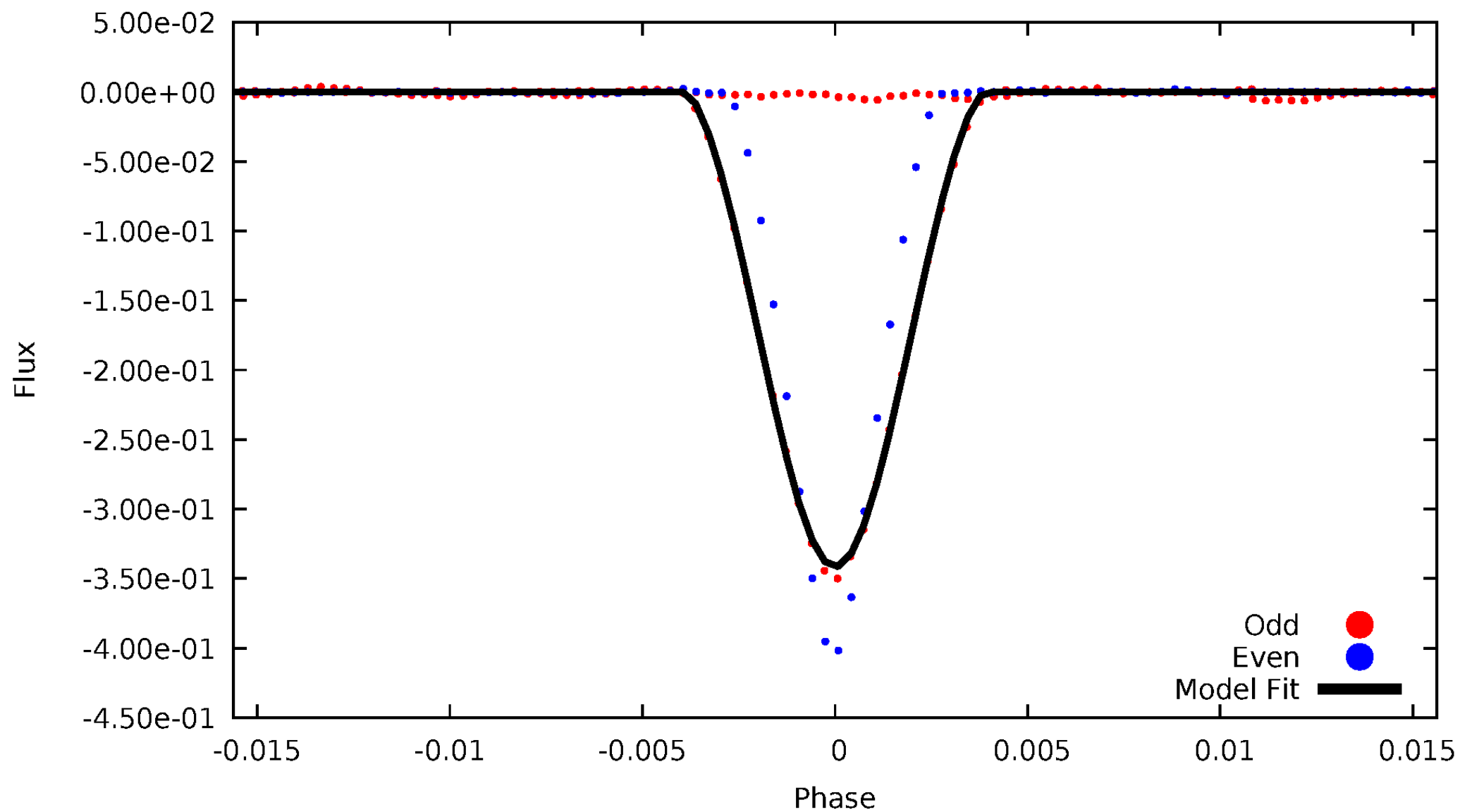


TCE 004247023-01



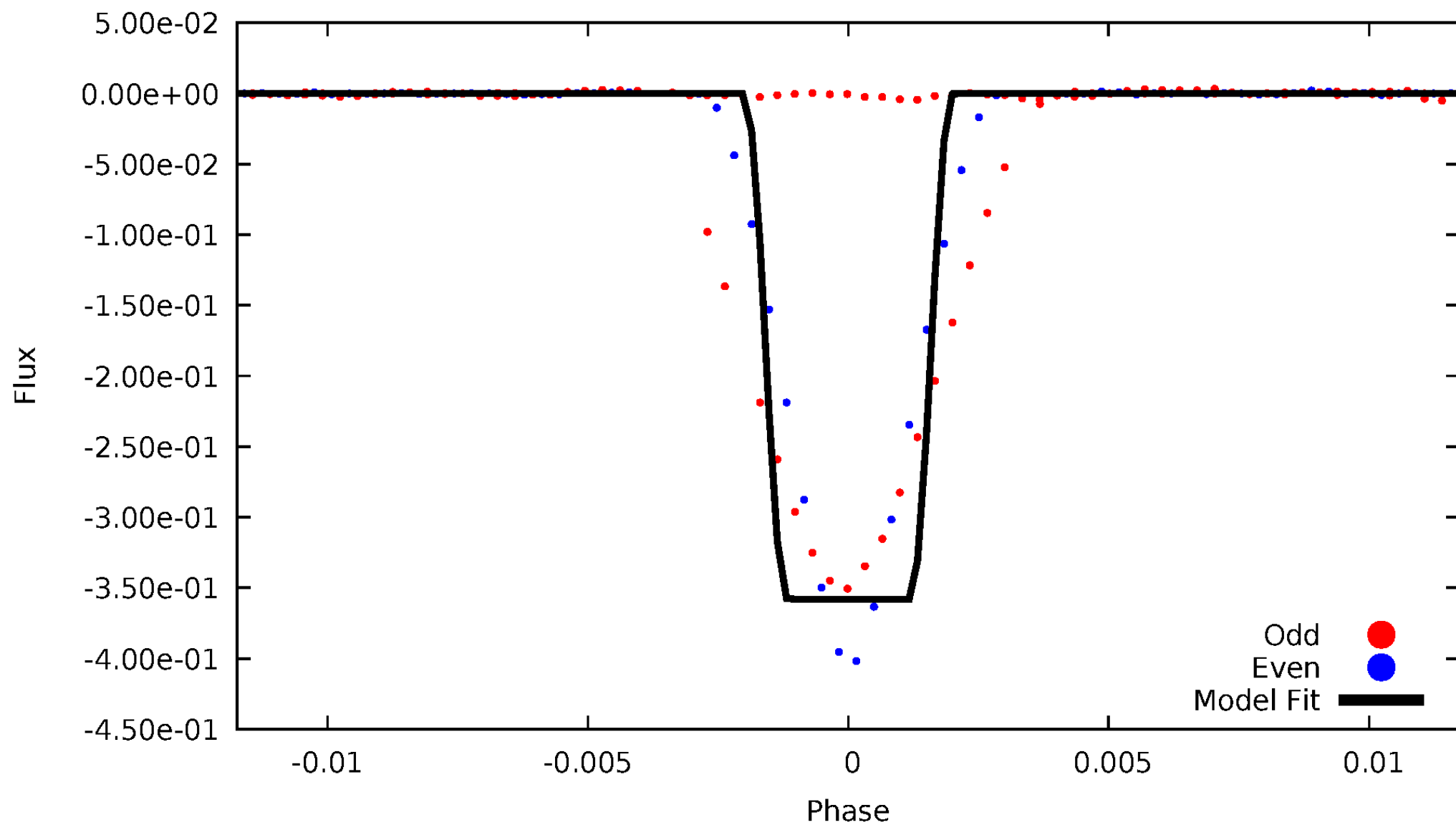
DV Odd/Even

TCE 004247023-01



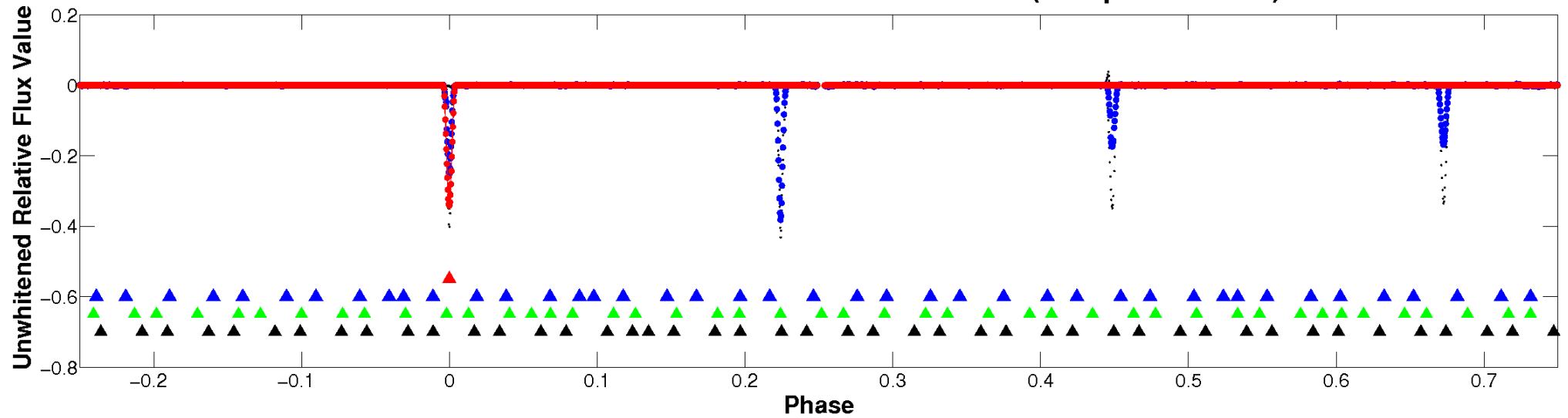
ALT Odd/Even

TCE 004247023-01

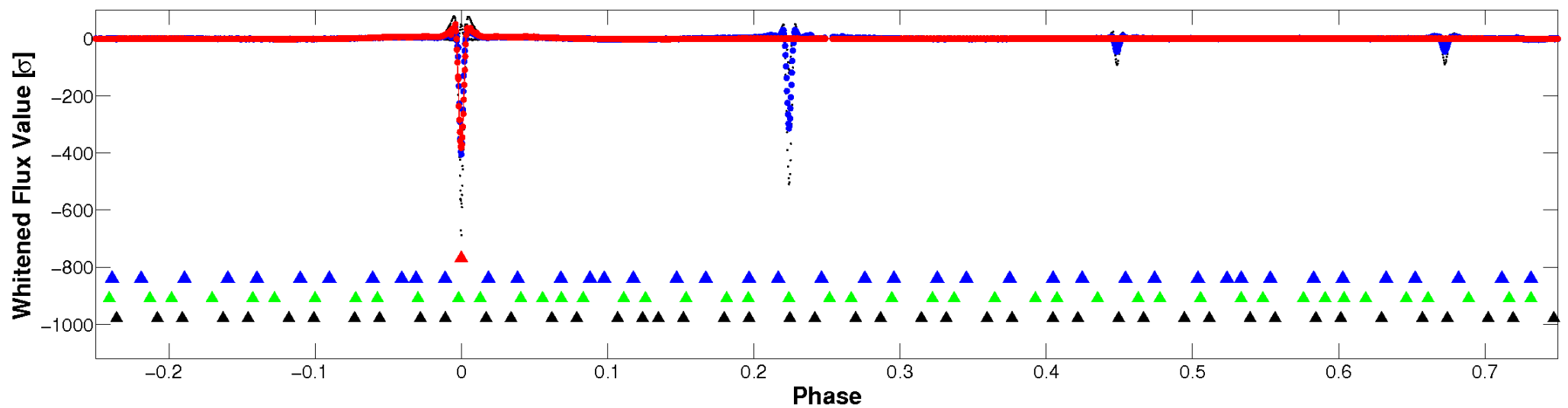


Non-Whitened Vs. Whitened Light Curve

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

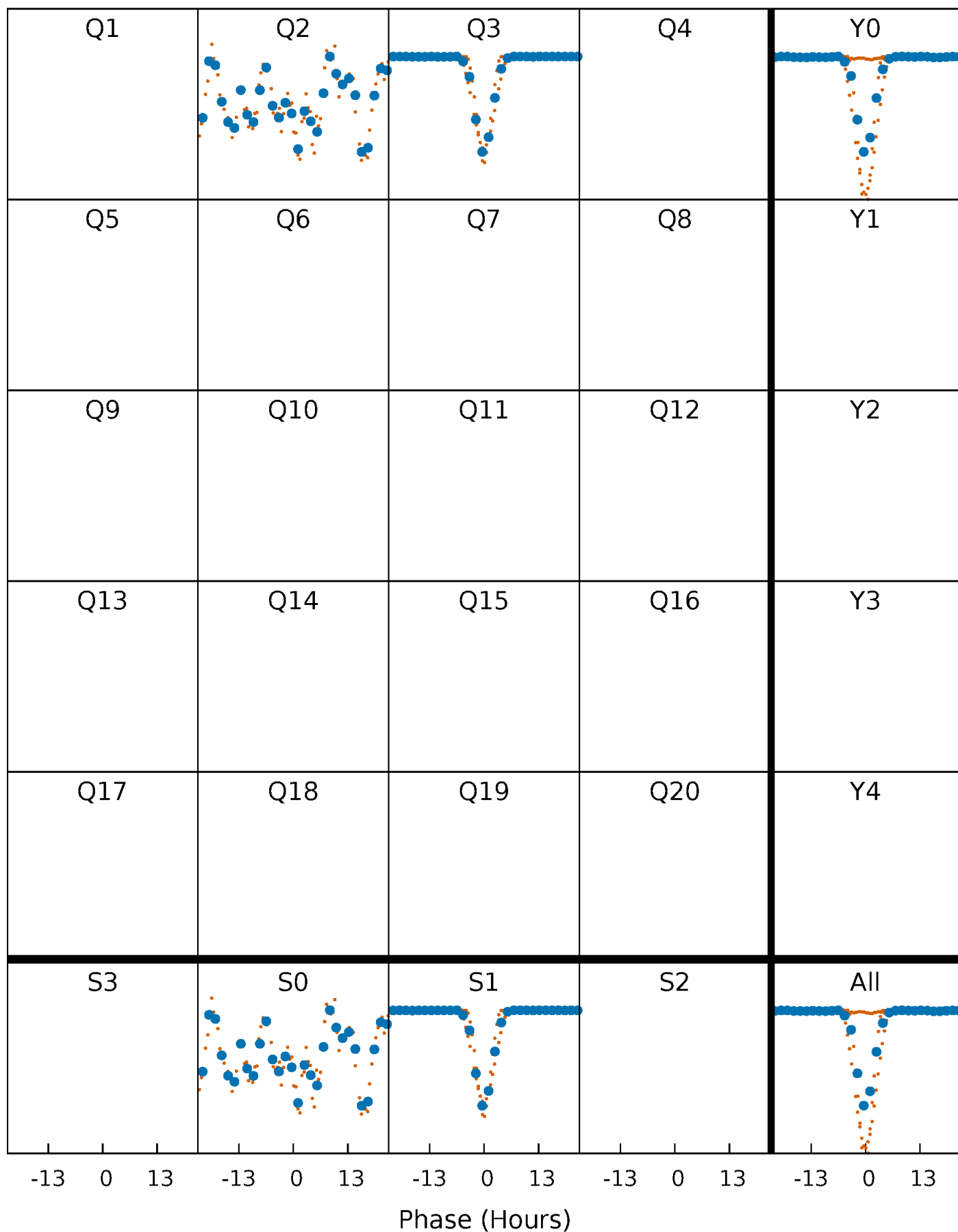


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



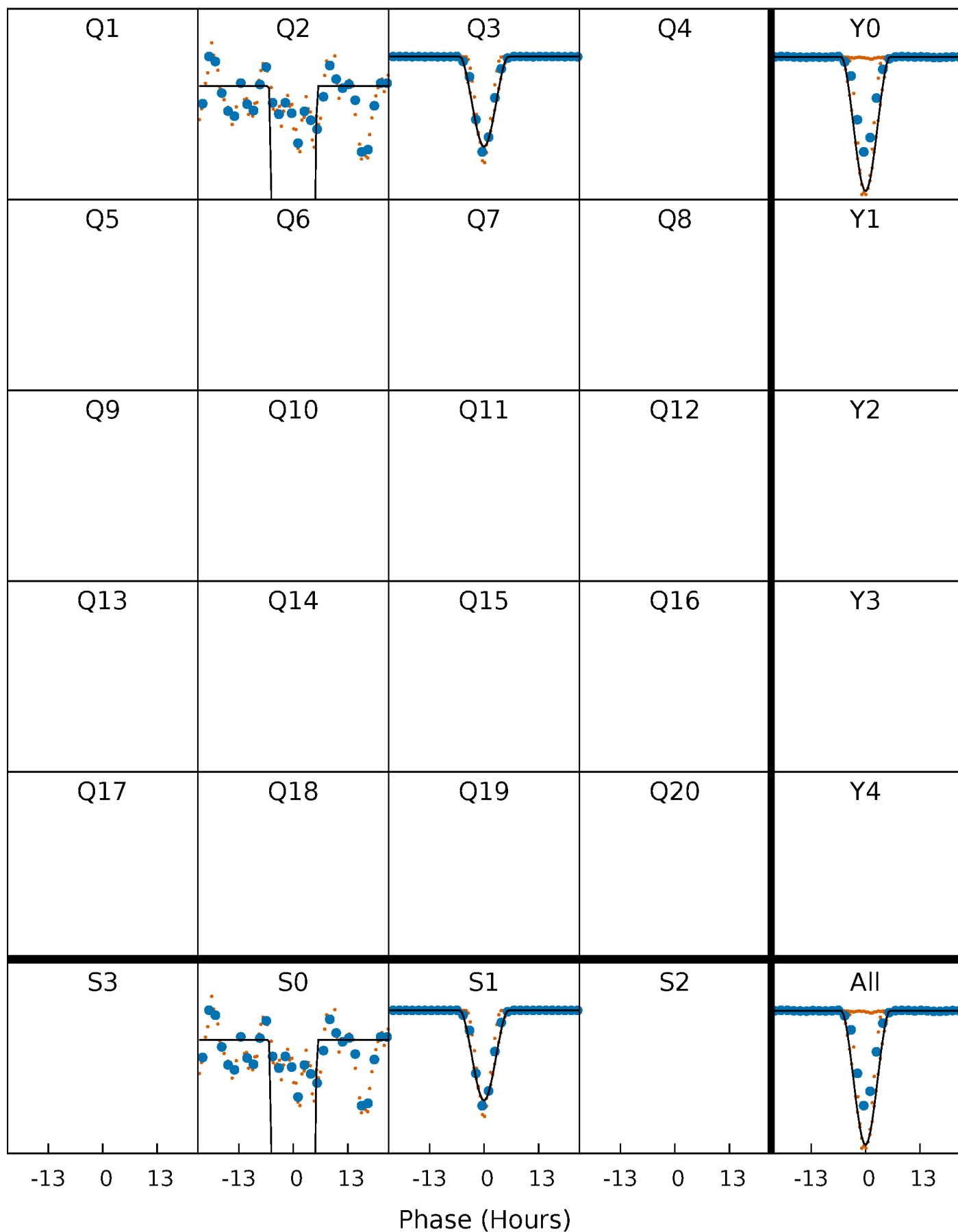
PDC Quarter-Phased Transit Curves

TCE 004247023-01 P= 60.829395 Days $T_0=154.314320$ (BKJD)



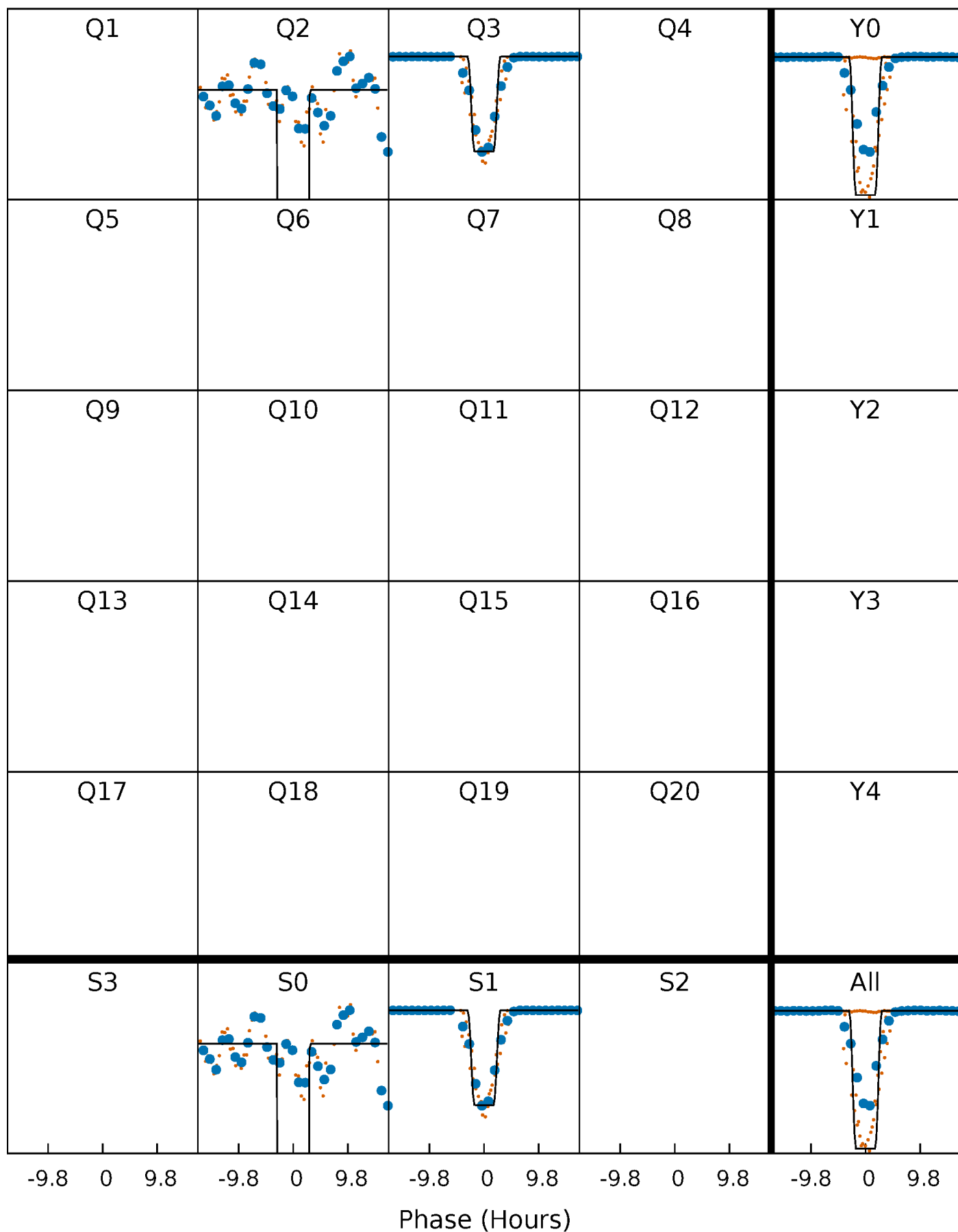
DV Quarter-Phased Transit Curves

TCE 004247023-01 P= 60.829395 Days $T_0=154.314320$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

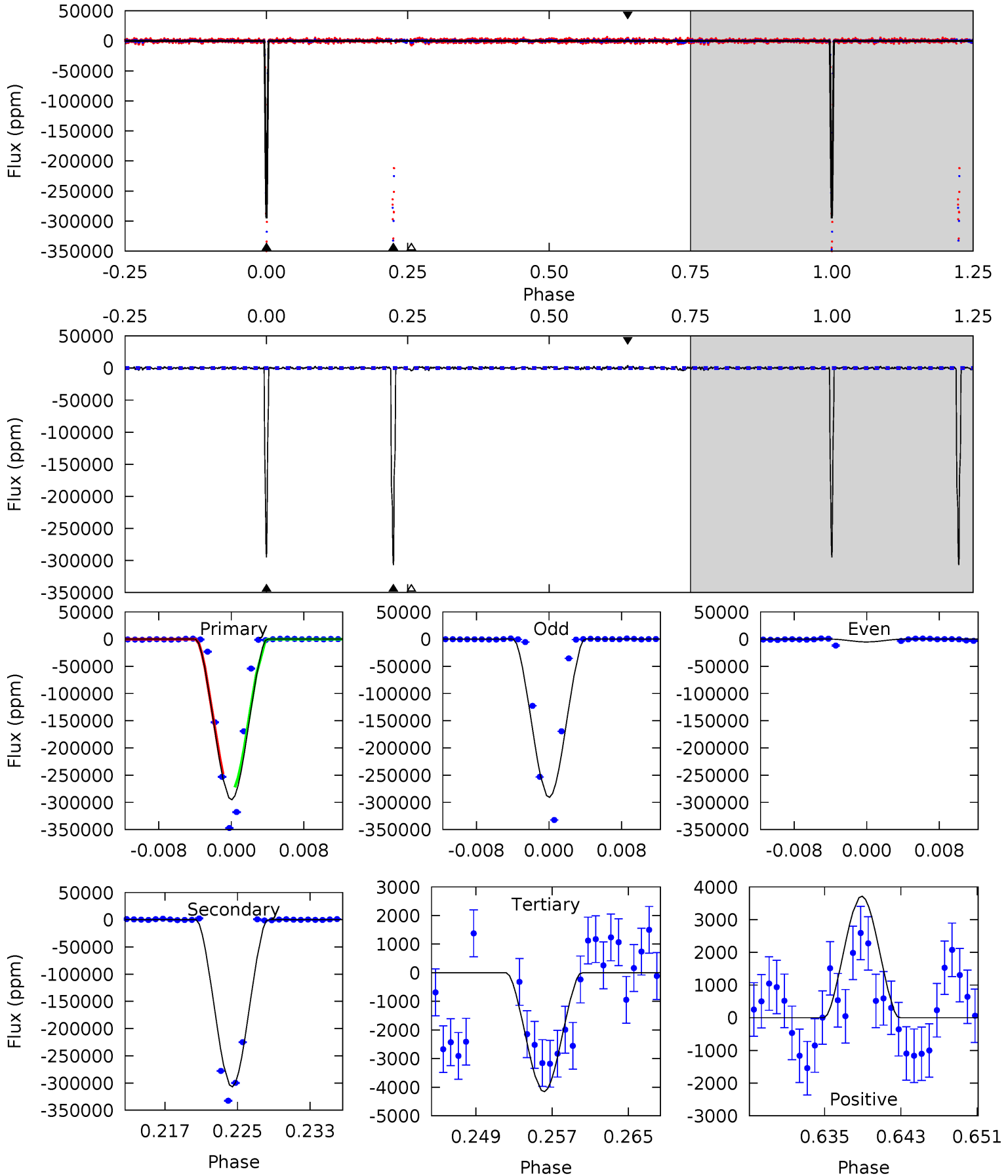
TCE 004247023-01 P= 60.838641 Days $T_0=154.291455$ (BKJD)



DV Model-Shift Uniqueness Test

004247023-01, P = 60.829395 Days, E = 154.314320 Days

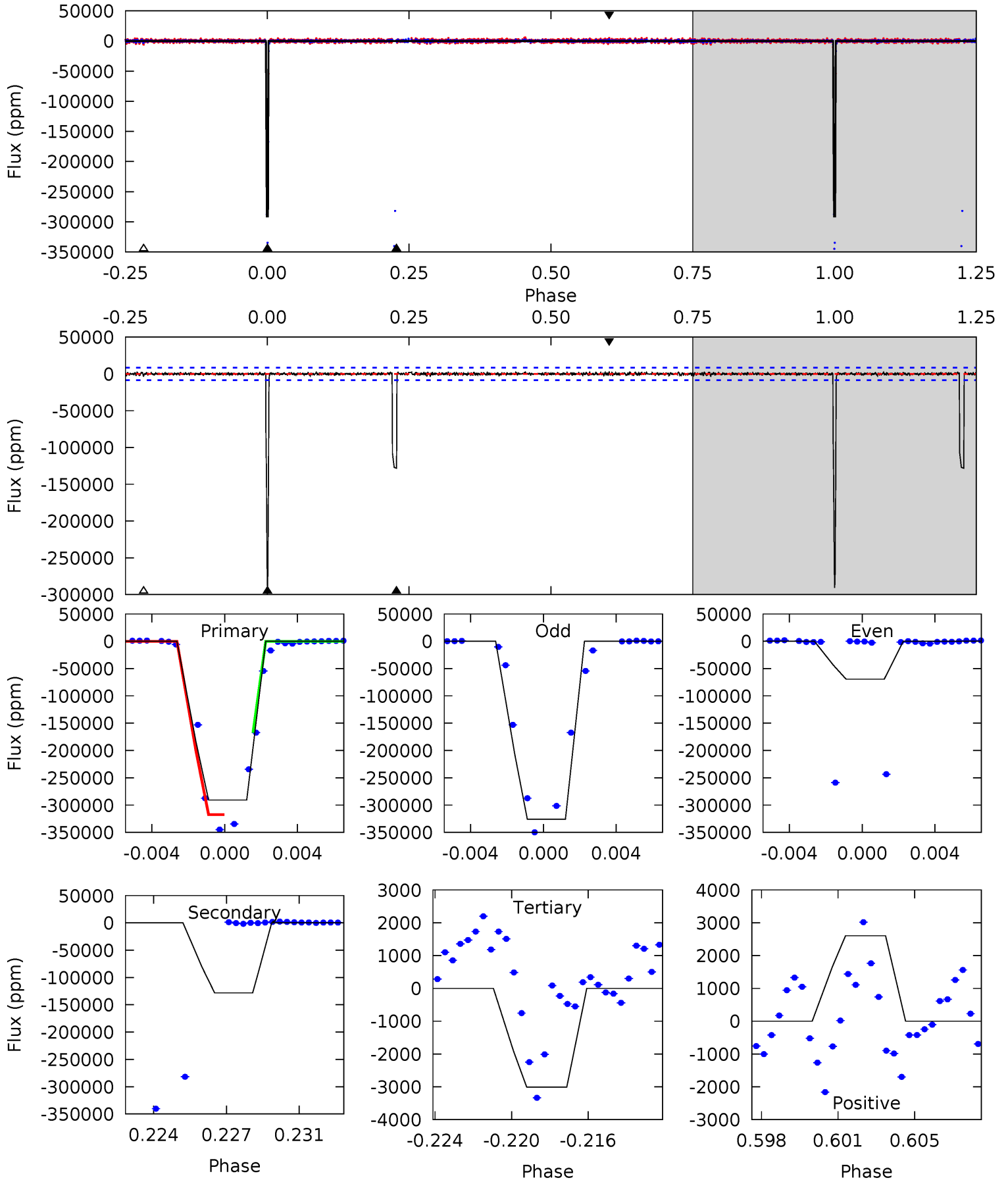
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
908.9	945.4	12.8	11.4	5.07	2.65	2.97	896.1	897.4	932.6	934.0	40.1	0.71	0.01	0



Alt Model-Shift Uniqueness Test

004247023-01, P = 60.838641 Days, E = 154.291455 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
177.1	78.0	1.83	1.59	5.21	2.89	1.27	175.2	175.5	76.2	76.4	96.3	0.68	0.01	111.9



Stellar Parameters For KIC 004247023

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5458^{+180}_{-164}	$4.381^{+0.162}_{-0.216}$	$-0.080^{+0.300}_{-0.300}$	$0.972^{+0.282}_{-0.173}$	$0.828^{+0.119}_{-0.064}$	$1.272^{+0.959}_{-0.664}$
	+3%/-3%	+4%/-5%	+375%/-375%	+29%/-18%	+14%/-8%	+75%/-52%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004247023-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-306990 ± 325	$73.49^{+21.08}_{-18.74}$	624^{+52}_{-38}	5383^{+800}_{-483}	3633^{+3046}_{-1349}
Alt.	-128152 ± 1642	$64.84^{+20.94}_{-18.39}$	628^{+51}_{-40}	4547^{+637}_{-429}	1562^{+1563}_{-662}

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 $A_{obs} \gg 1.0$

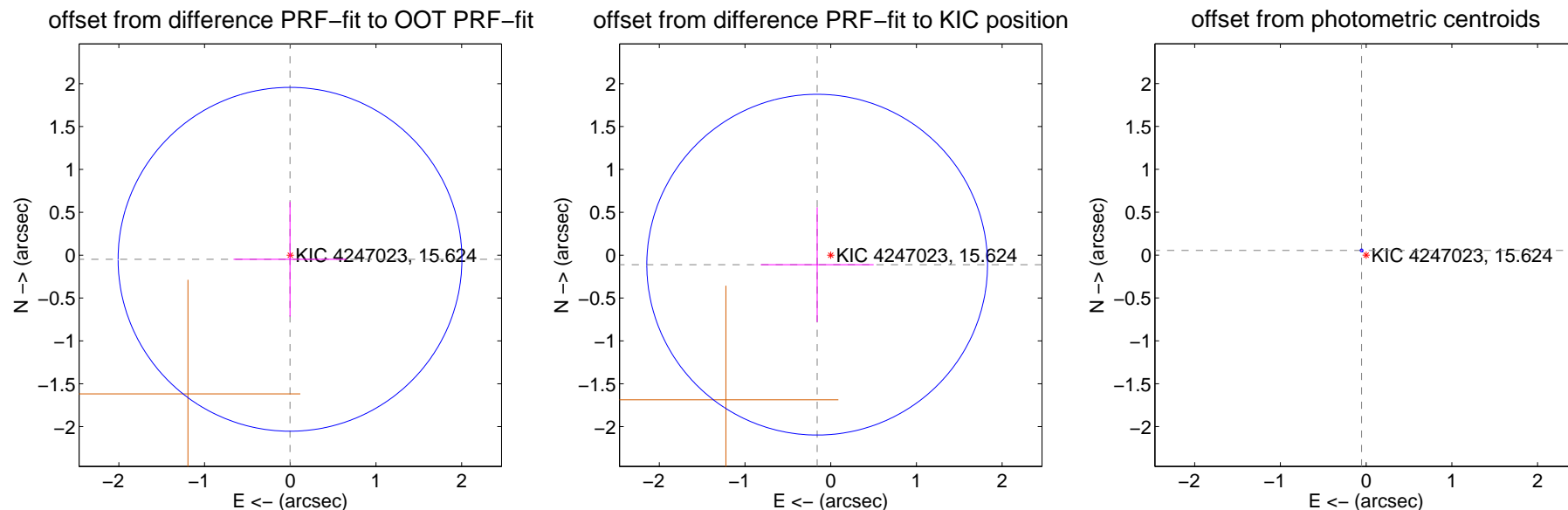
DV Centroid Data

Supplemental centroid analysis for 004247023-01. Kepler magnitude: 15.62. Transit SNR 1658.47

There are 1 quarters with good PRF difference image offsets

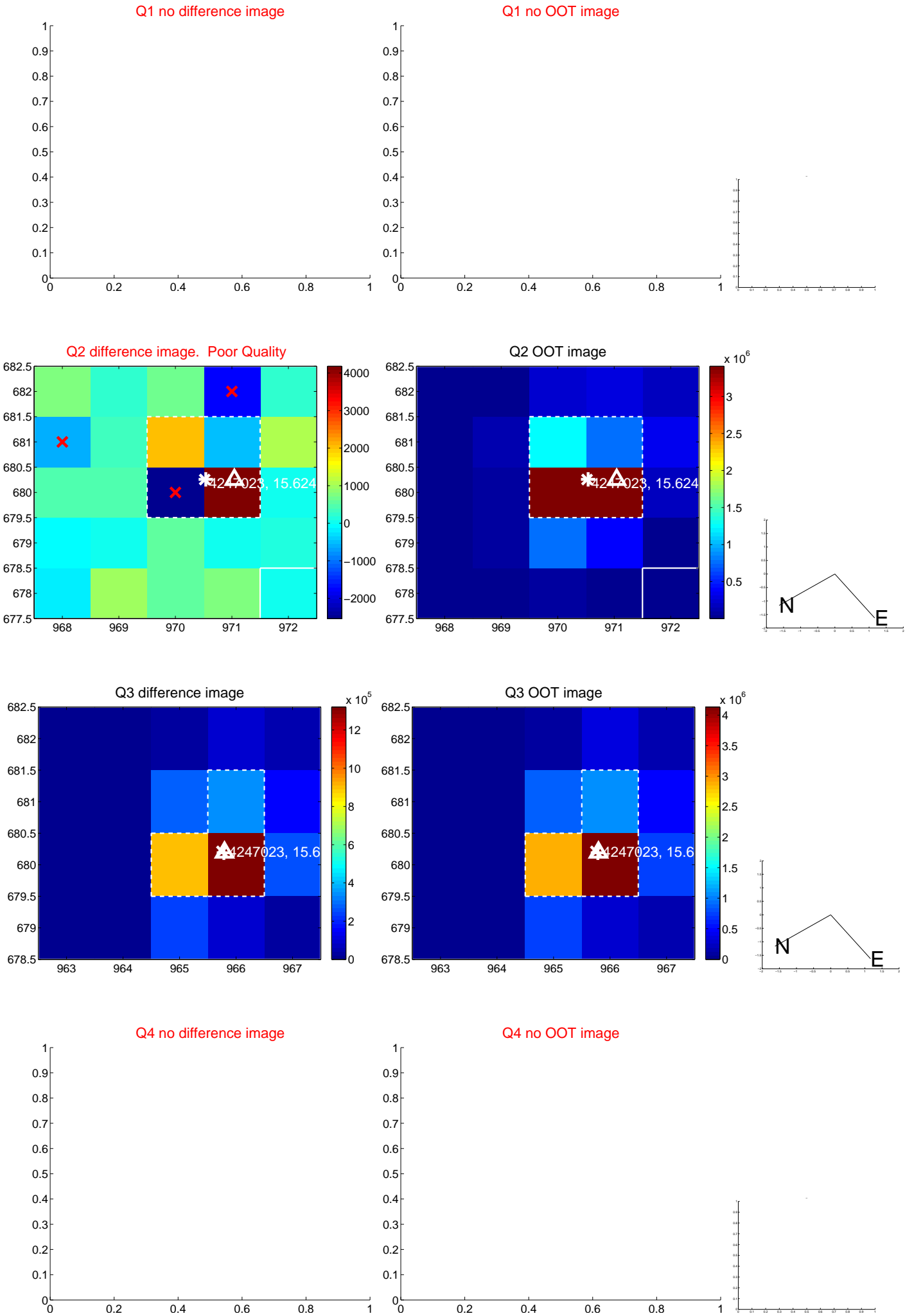
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.048 ± 0.668	0.07	0.003 ± 0.659	-0.048 ± 0.668
PRF-fit source offset from KIC position	0.193 ± 0.662	0.29	0.158 ± 0.659	-0.111 ± 0.668
photometric centroid source offset	0.08 ± 0.01	13.67	0.05 ± 0.01	0.05 ± 0.01



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.



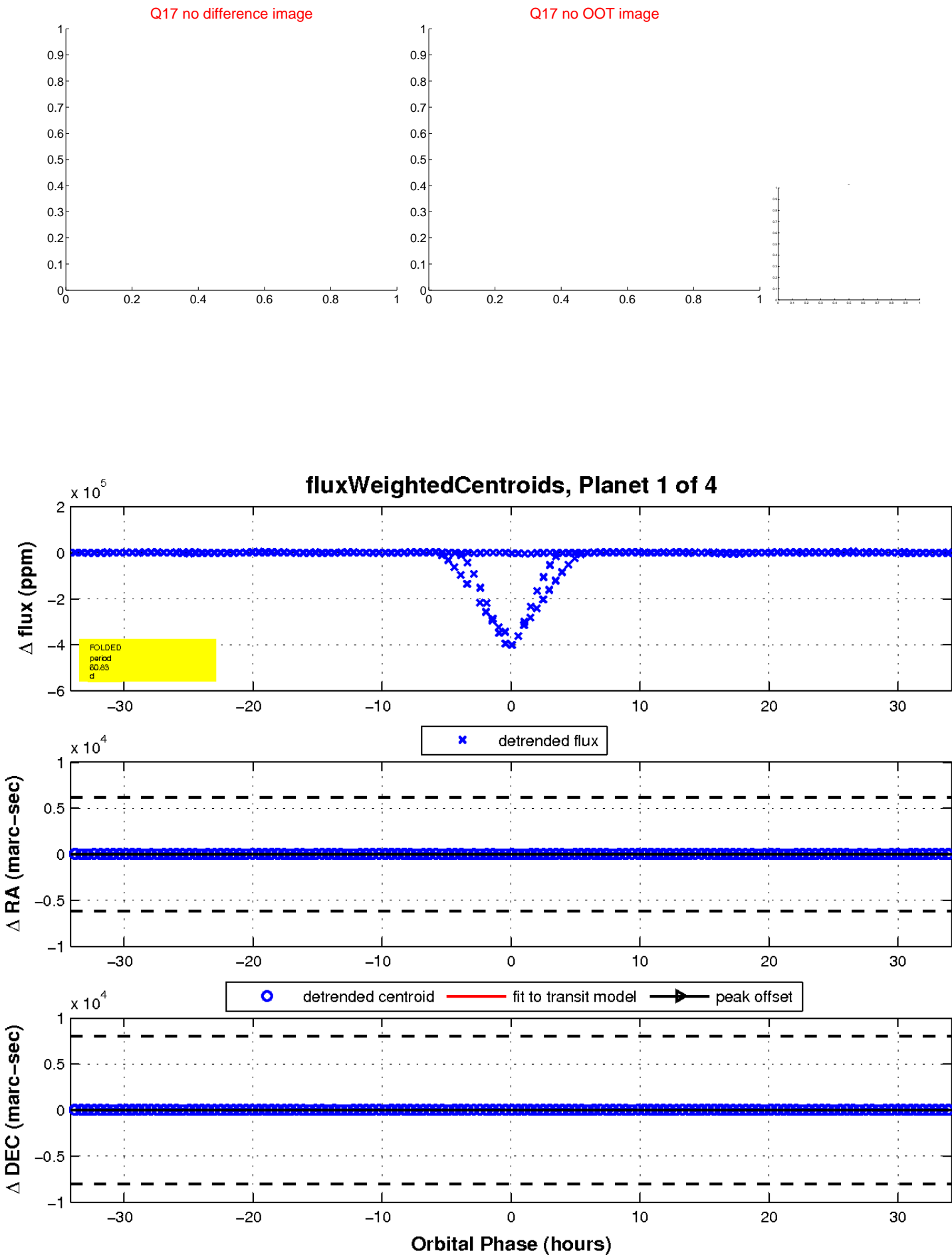
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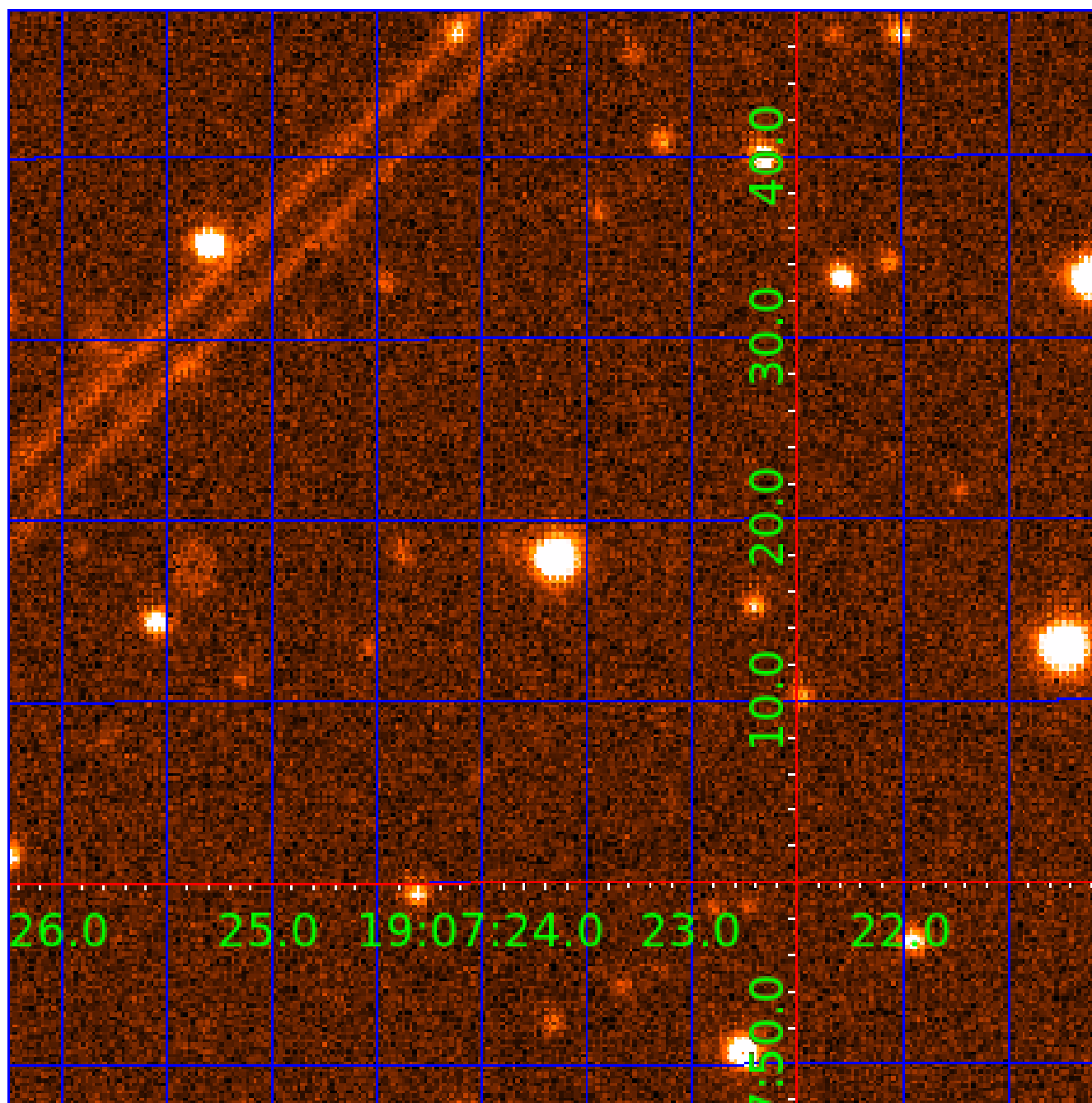


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UKIRT Image

Declination



KIC 004247023

Q1-17 DR25 TCE Parameters

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004247023-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004247023-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
004247023-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_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.

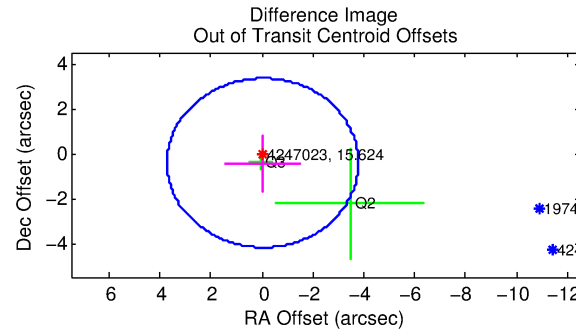
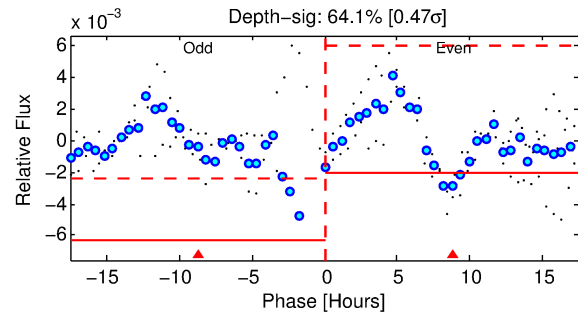
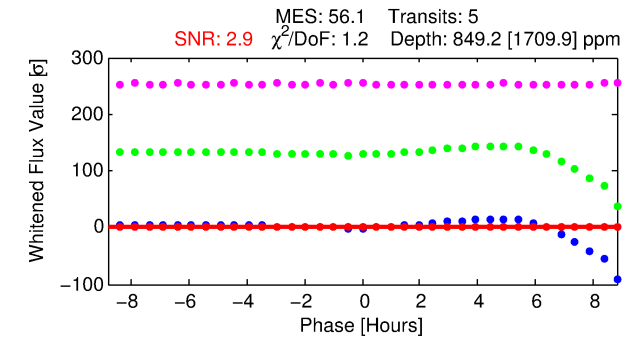
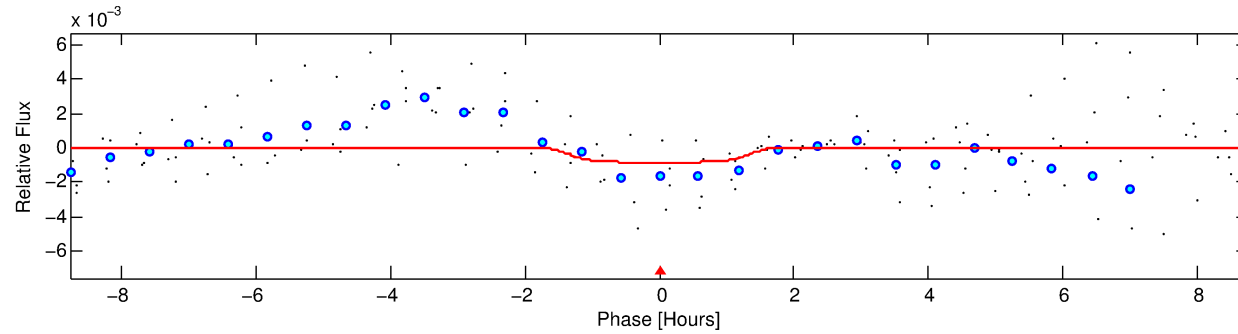
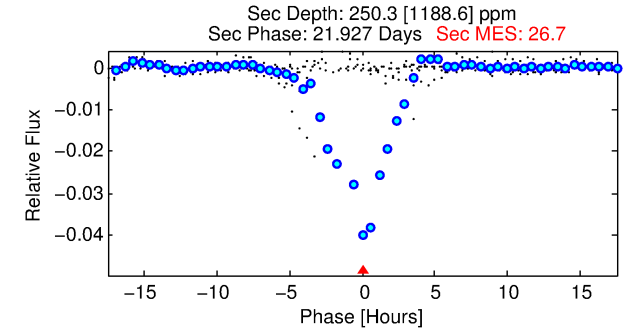
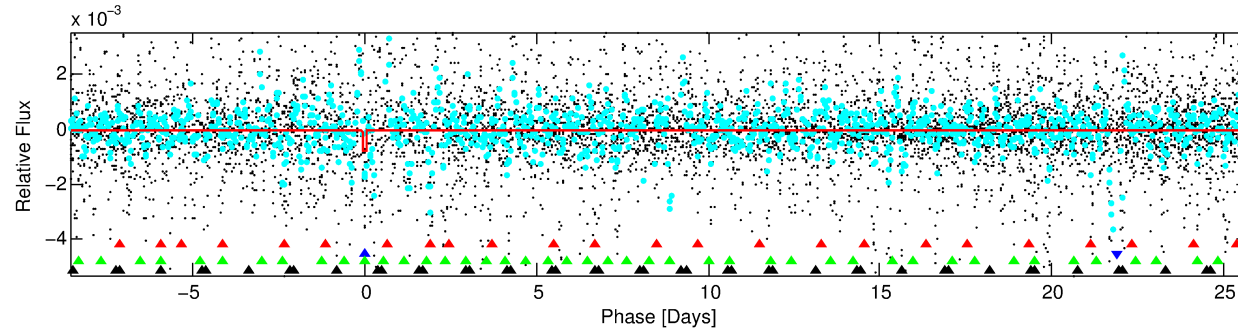
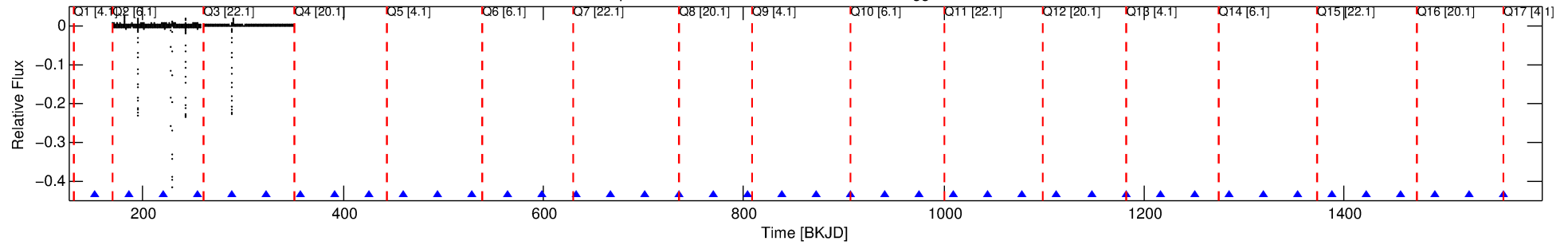
Ephemeris Match Information For 004247023-02

No Significant Match Found

DV One-Page Summary

KIC: 4247023 Candidate: 2 of 4 Period: 34.329 d
KOI: K03559 Corr: No Ephemeris Match

Kp: 15.62 R*: 0.97 Rs Teff: 5458.0 K Logg: 4.38 Fe/H: -0.080



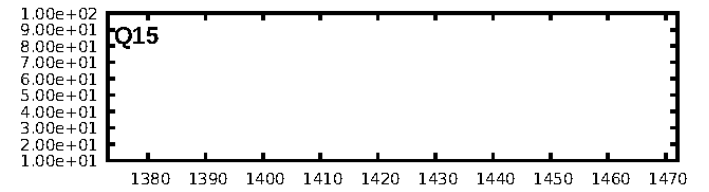
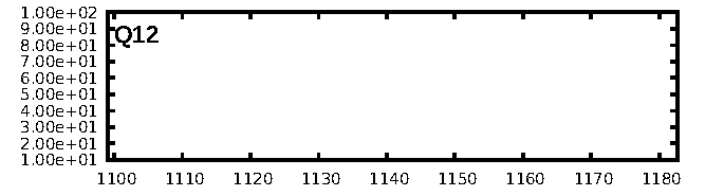
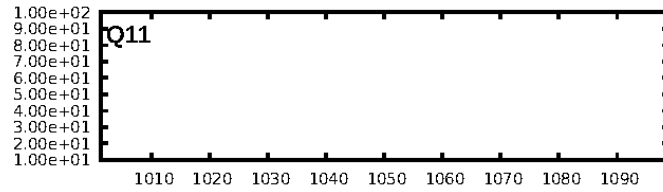
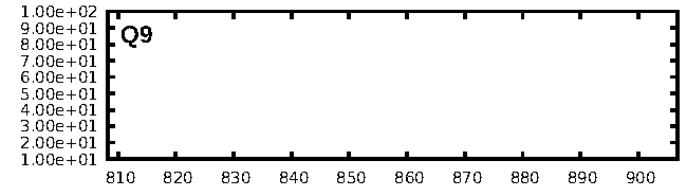
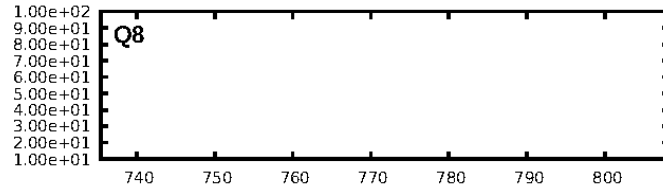
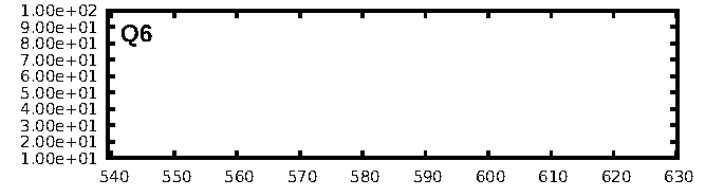
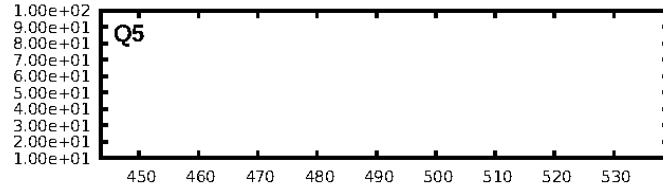
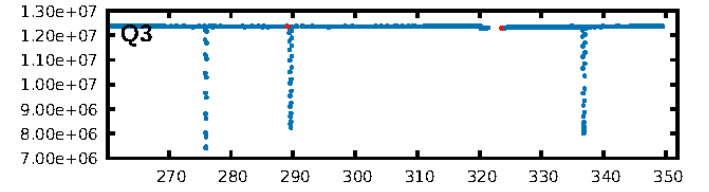
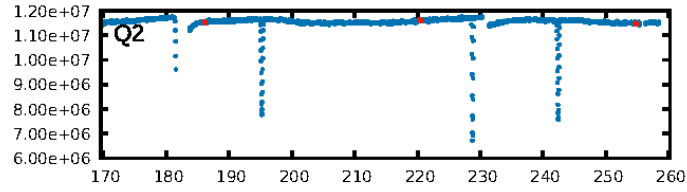
DV Fit Results:

Period = 34.32919 [0.05471] d
Epoch = 151.8385 [0.1930] BKJD
Rp/R* = 0.0276 [0.7635]
a/R* = 76.30 [8406.83]
b = 0.58 [129.98]
Seff = 19.92 [8.08]
Teq = 539 [55] K
Rp = 2.93 [80.98] Re
a = 0.1942 [0.0495] AU
Ag = 606.72 [33712.75] [0.02σ]
Teffp = 4134 [57420] K [0.06σ]

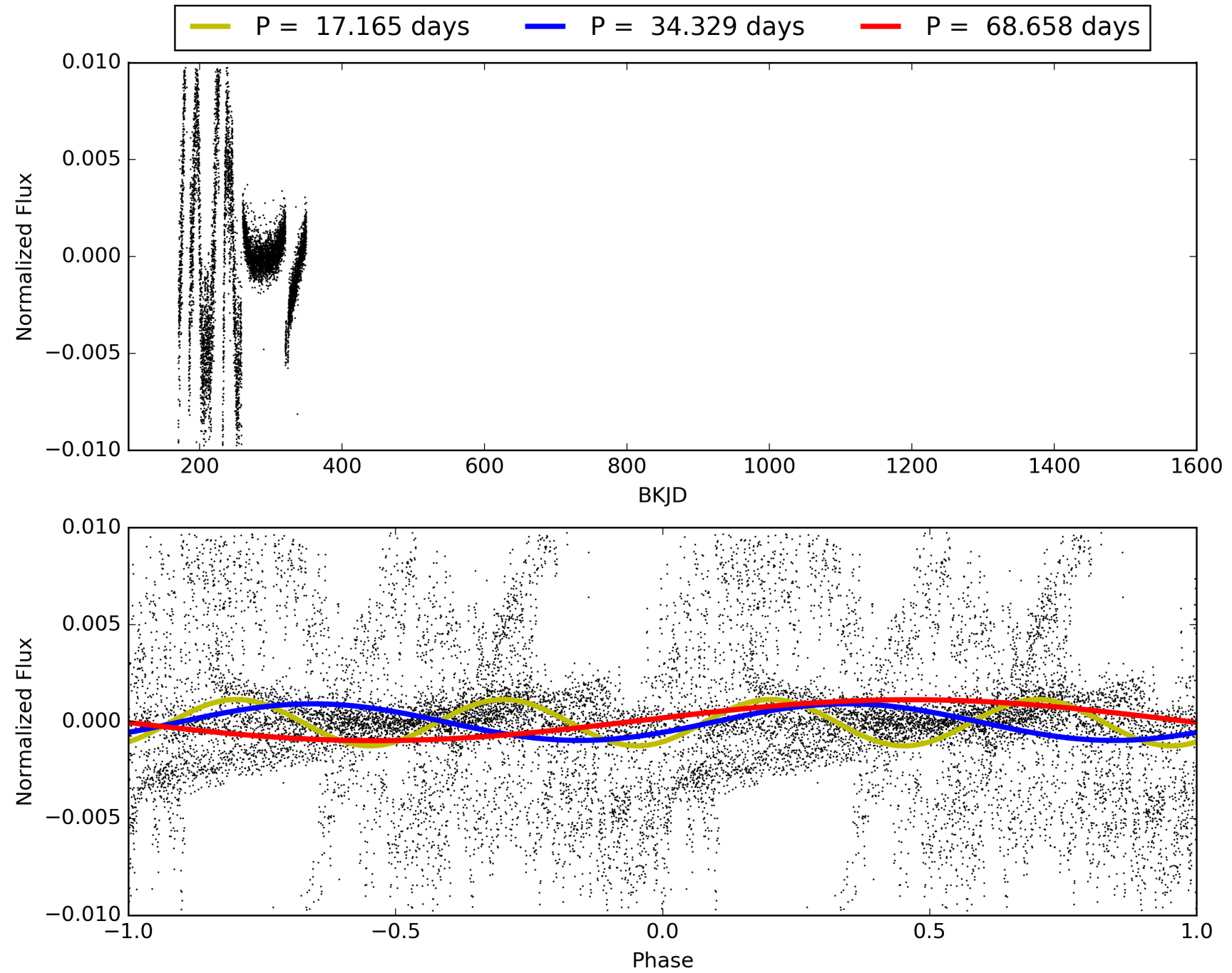
DV Diagnostic Results:

ShortPeriod-sig: 99.5% [2.79σ]
LongPeriod-sig: 100.0% [54.06σ]
ModelChiSquare2-sig: 32.8%
ModelChiSquareGof-sig: 99.1%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 1.462
Centroid-sig: 4.2%
Centroid-so: 4.193 arcsec [1.67σ]
OotOffset-rm: 0.421 arcsec [0.34σ]
KicOffset-rm: 0.497 arcsec [0.39σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 0.50 [1/2]

TCE 004247023-02, PDC Light Curves

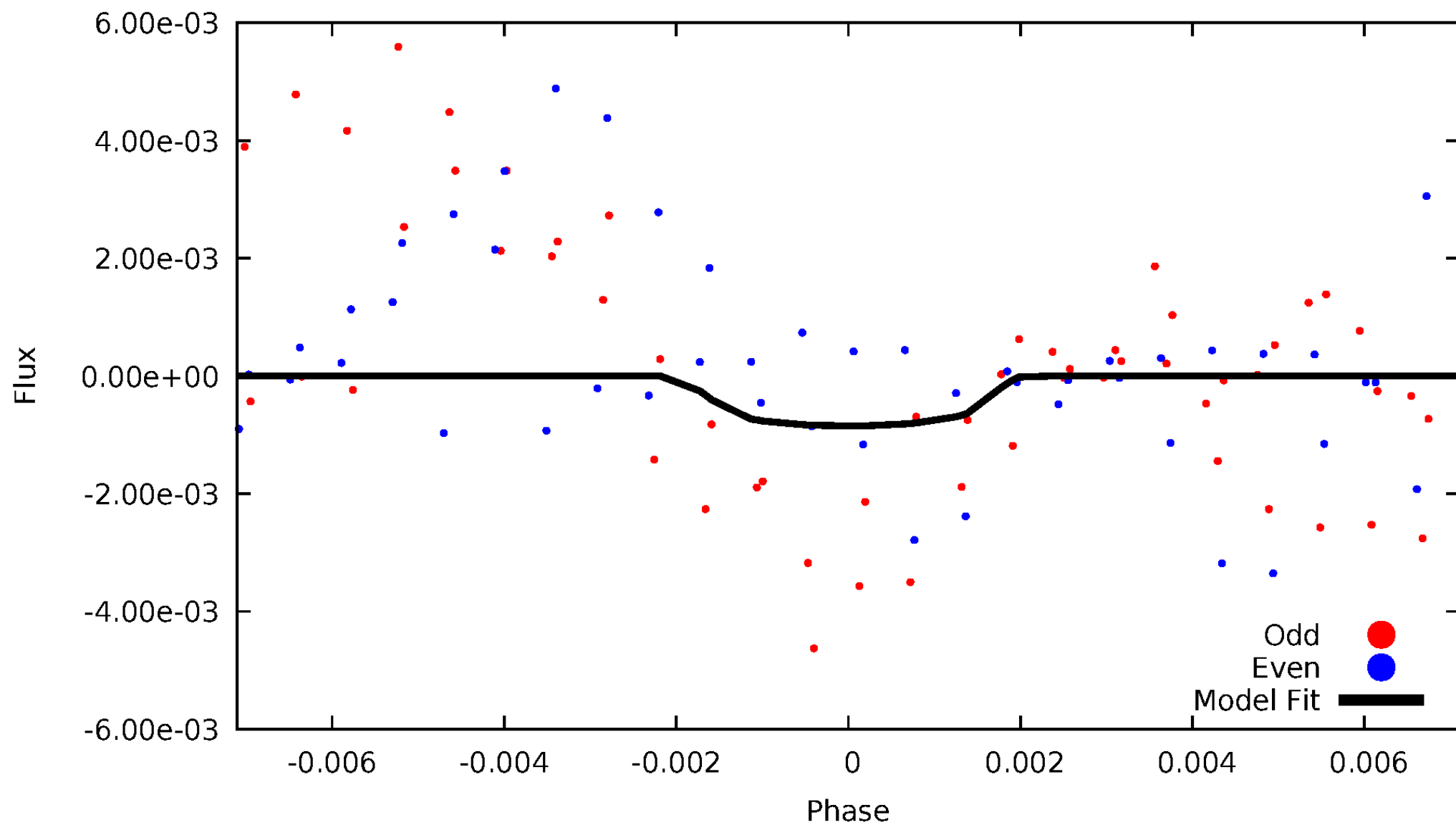


TCE 004247023-02



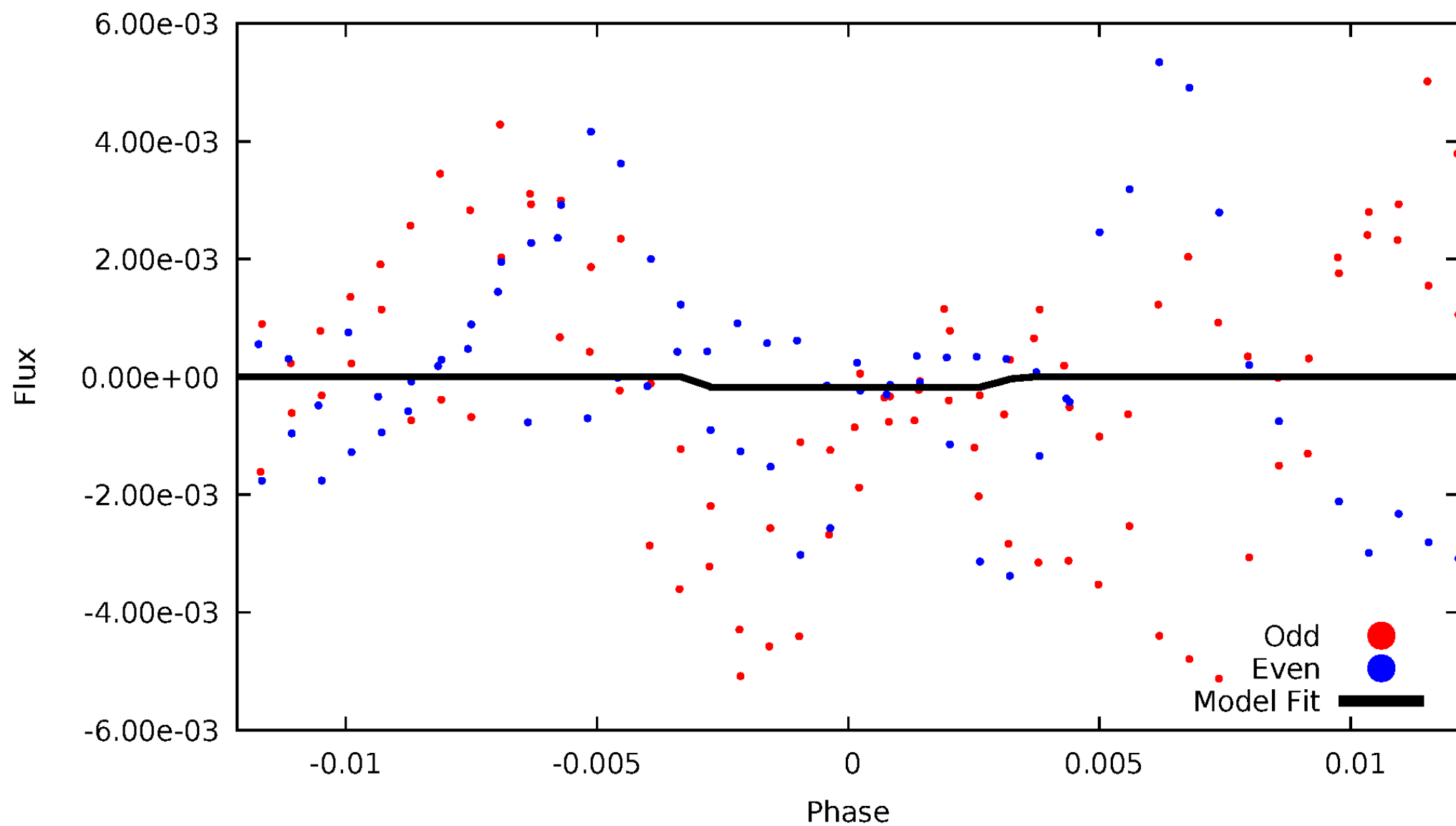
DV Odd/Even

TCE 004247023-02



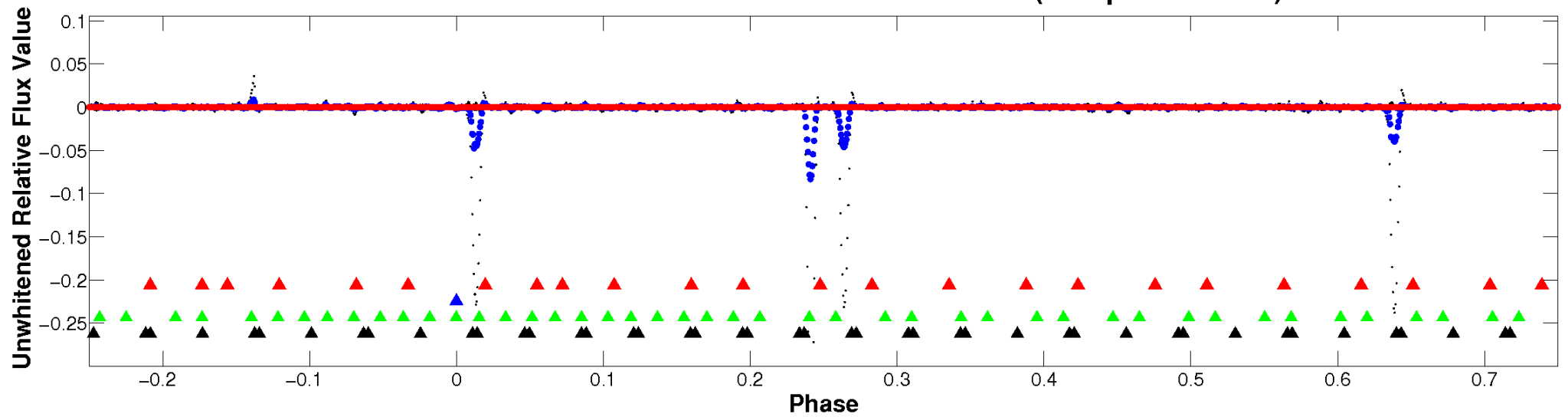
ALT Odd/Even

TCE 004247023-02

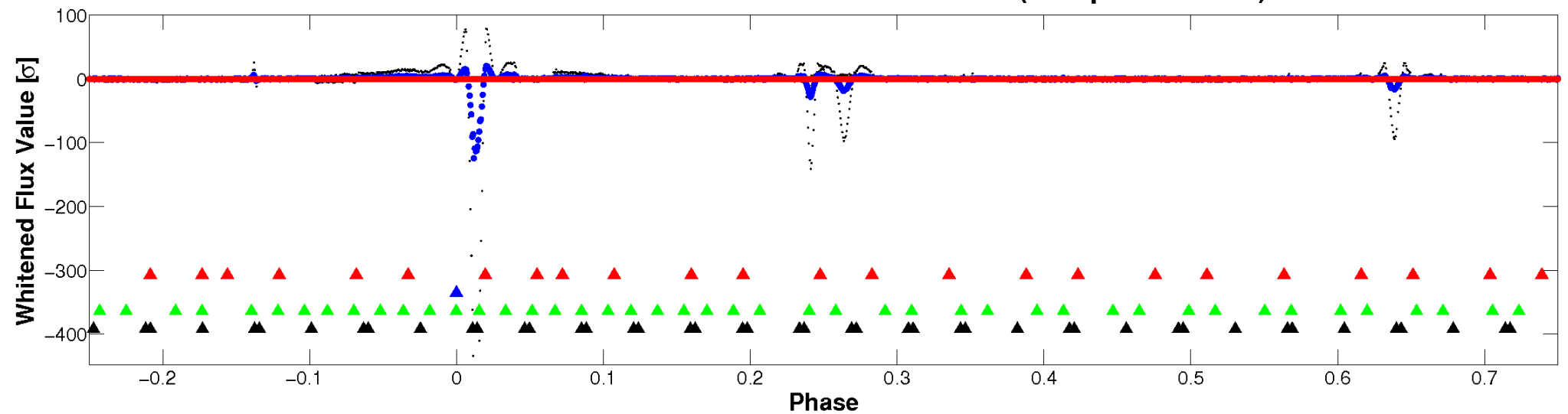


Non-Whitened Vs. Whitened Light Curve

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

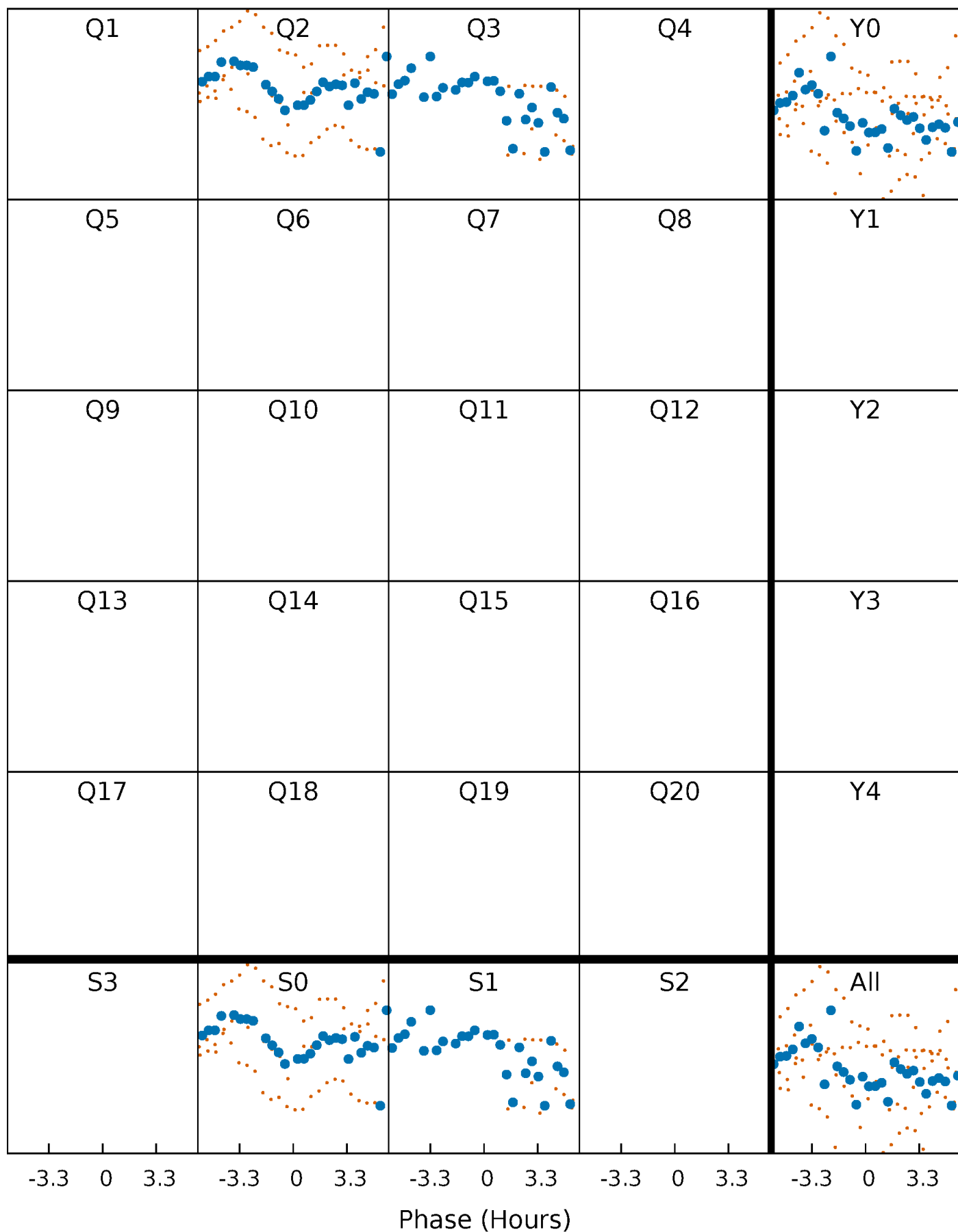


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



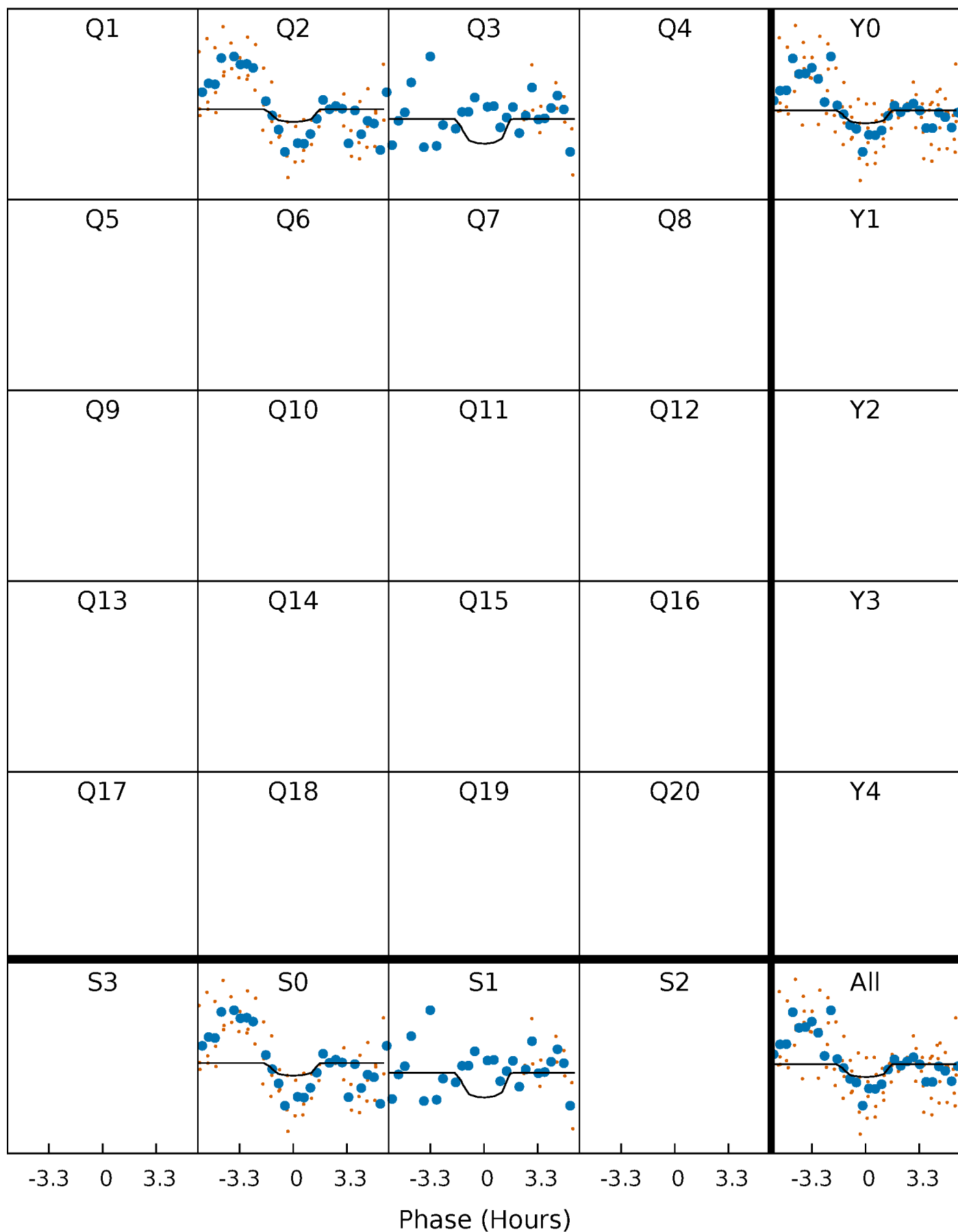
PDC Quarter-Phased Transit Curves

TCE 004247023-02 P= 34.329191 Days $T_0=151.838517$ (BKJD)



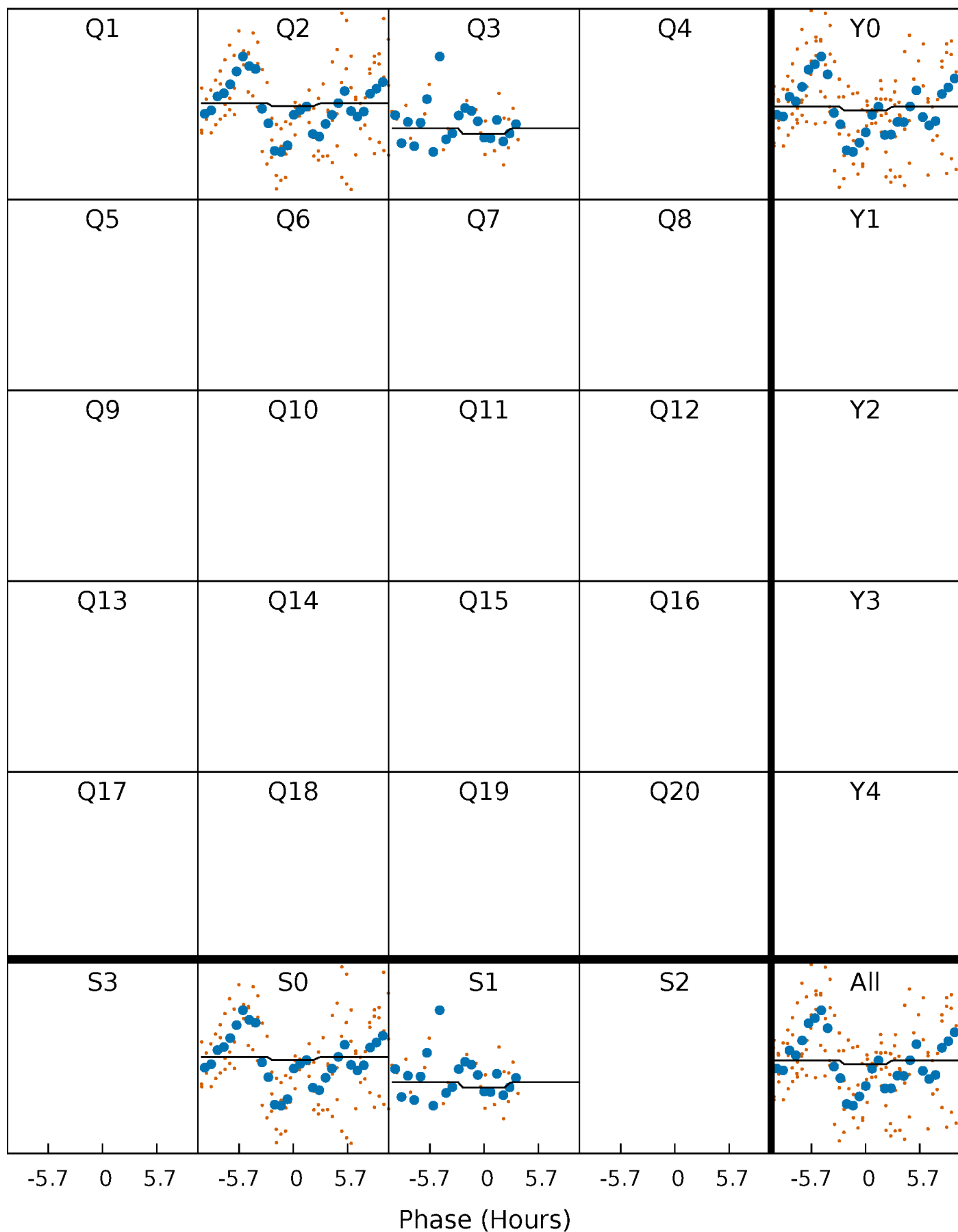
DV Quarter-Phased Transit Curves

TCE 004247023-02 P= 34.329191 Days $T_0=151.838517$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

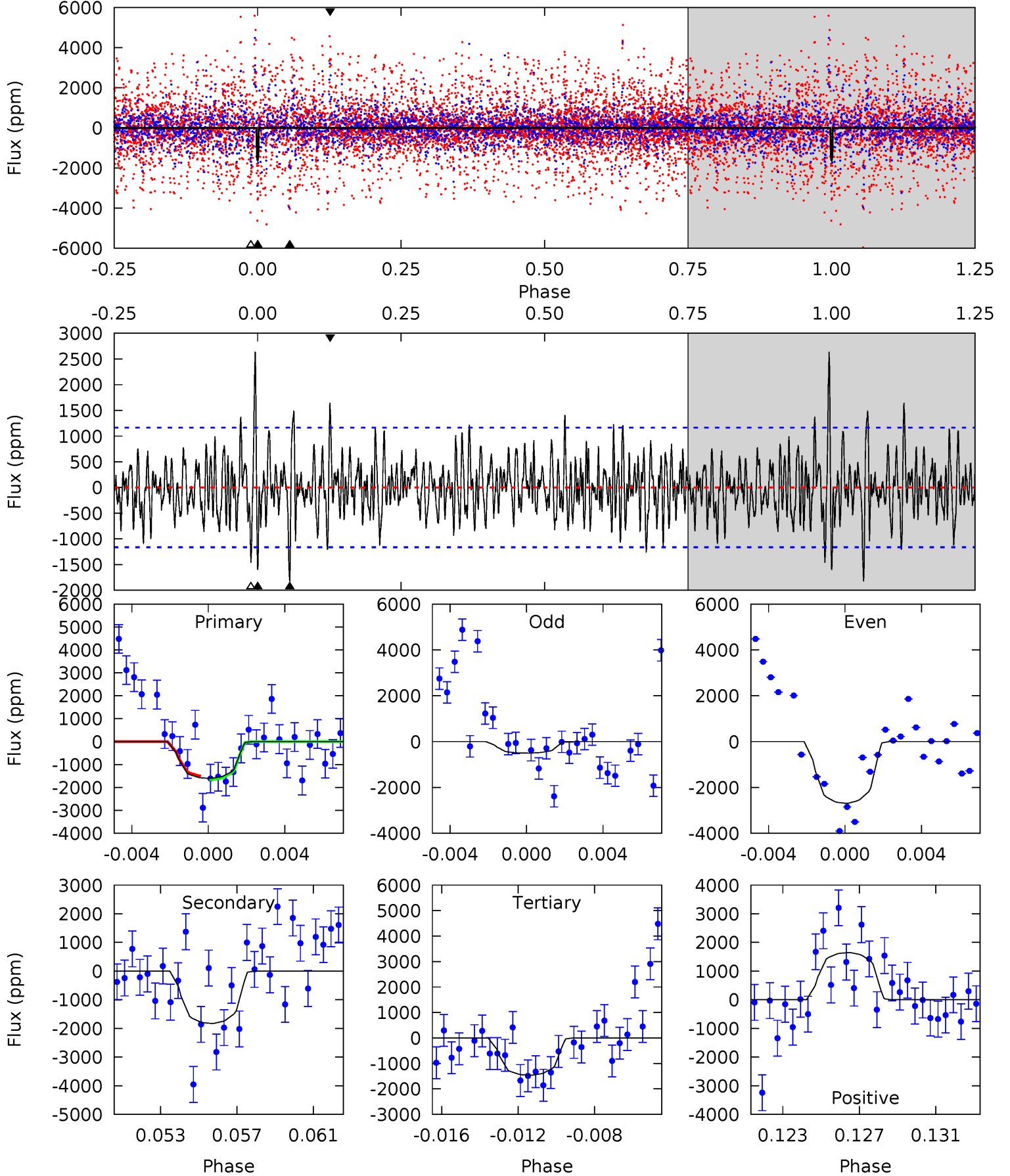
TCE 004247023-02 P= 34.328398 Days $T_0=151.899233$ (BKJD)



DV Model-Shift Uniqueness Test

004247023-02, P = 34.329191 Days, E = 151.838517 Days

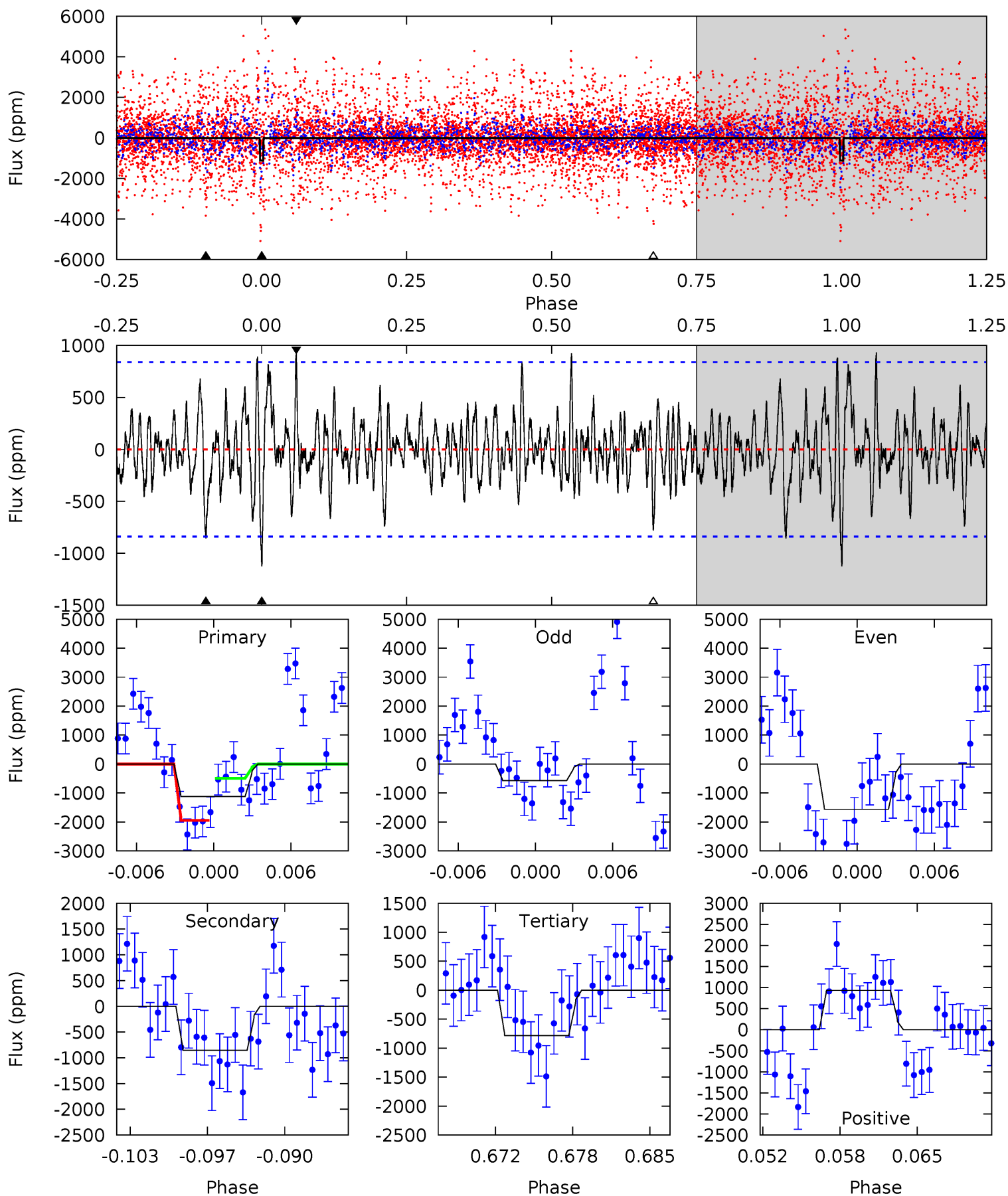
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.16	8.16	6.53	7.35	5.19	2.87	2.05	0.63	-0.19	1.63	0.81	4.44	0.89	0.59	0.36



Alt Model-Shift Uniqueness Test

004247023-02, P = 34.328398 Days, E = 151.899233 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.85	5.21	4.76	5.68	5.11	2.72	1.53	2.09	1.17	0.44	-0.47	2.80	0.88	0.45	4.32



Stellar Parameters For KIC 004247023

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5458^{+180}_{-164}	$4.381^{+0.162}_{-0.216}$	$-0.080^{+0.300}_{-0.300}$	$0.972^{+0.282}_{-0.173}$	$0.828^{+0.119}_{-0.064}$	$1.272^{+0.959}_{-0.664}$
	+3%/-3%	+4%/-5%	+375%/-375%	+29%/-18%	+14%/-8%	+75%/-52%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004247023-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1827 ± 224	$55.63^{+66.43}_{-39.84}$	760^{+62}_{-48}	2433^{+1021}_{-412}	12^{+138}_{-10}
Alt.	-854 ± 164	$55.64^{+67.68}_{-40.21}$	758^{+59}_{-51}	2206^{+875}_{-354}	$5.353^{+68.205}_{-4.166}$

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 $A_{obs} \gg 1.0$

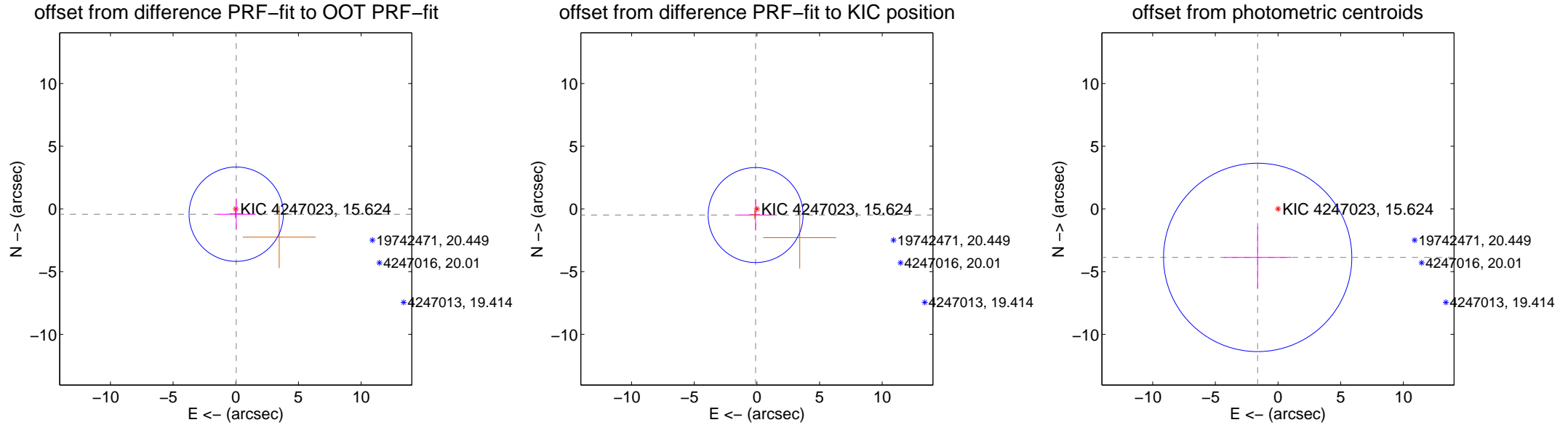
DV Centroid Data

Supplemental centroid analysis for 004247023-02. Kepler magnitude: 15.62. Transit SNR 2.88

There are 0 quarters with good PRF difference image offsets

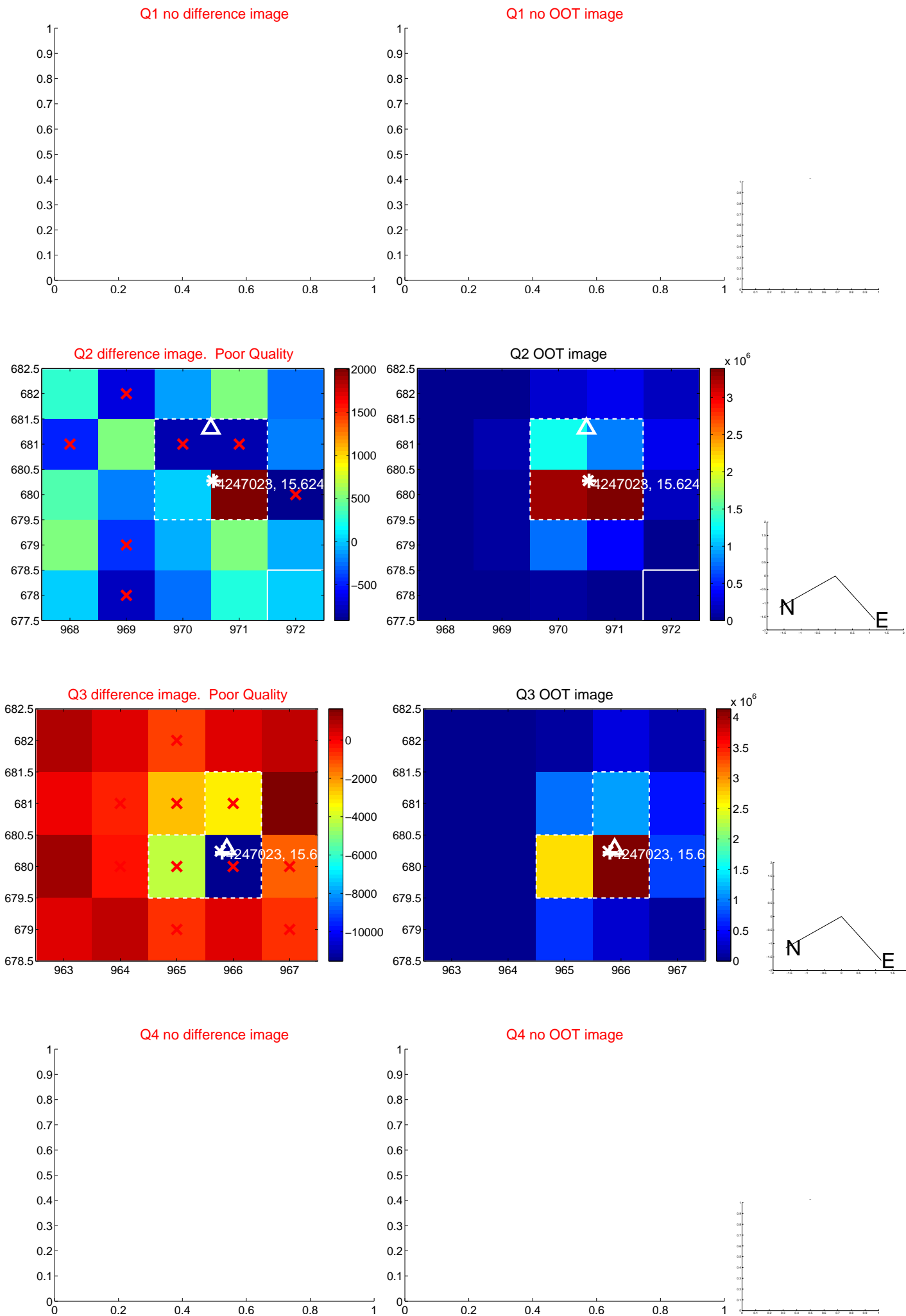
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.421 ± 1.254	0.34	-0.035 ± 1.471	-0.420 ± 1.253
PRF-fit source offset from KIC position	0.497 ± 1.262	0.39	0.102 ± 1.471	-0.487 ± 1.253
photometric centroid source offset	4.19 ± 2.50	1.67	1.62 ± 2.71	-3.87 ± 2.46



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.



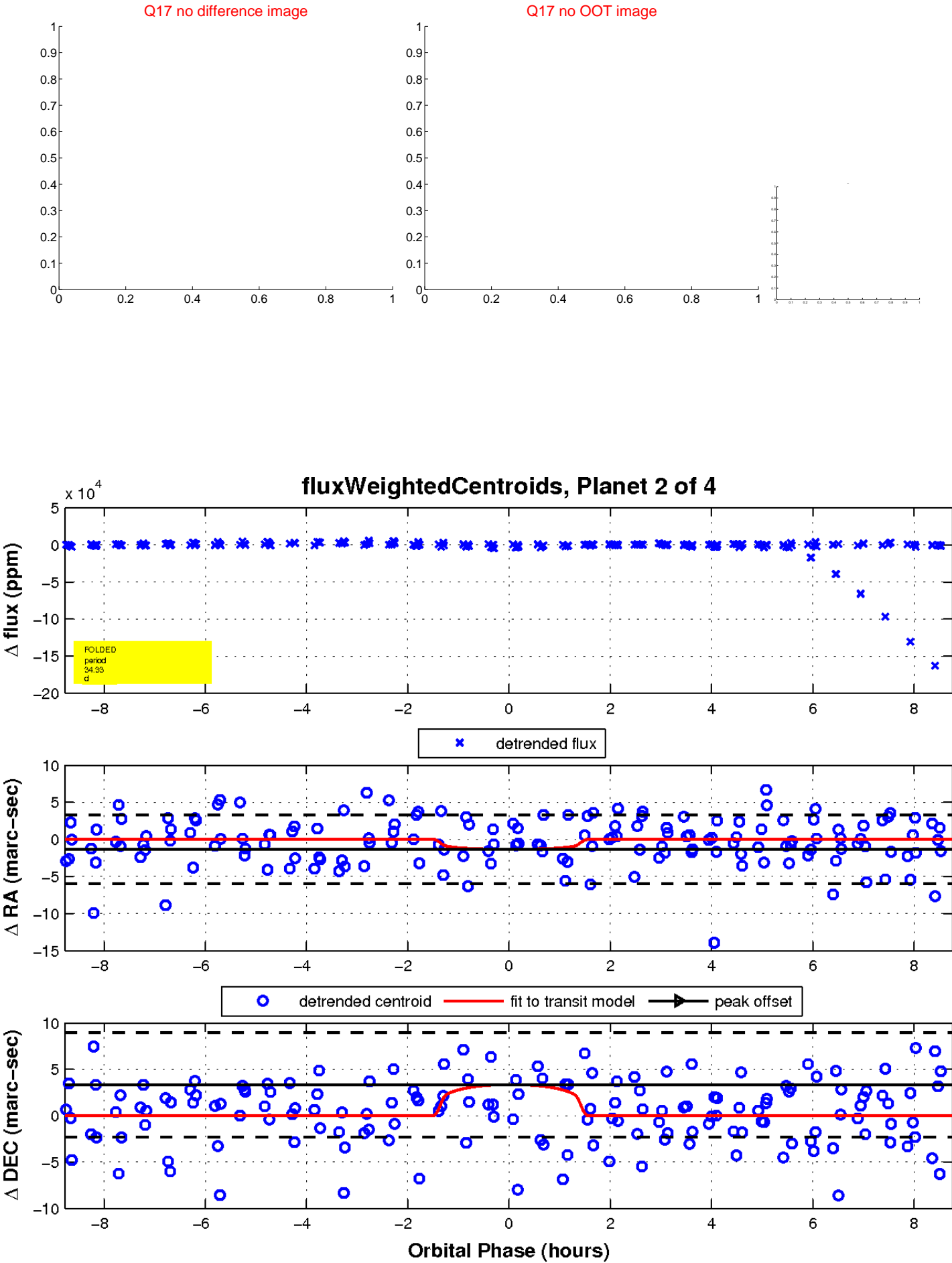
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

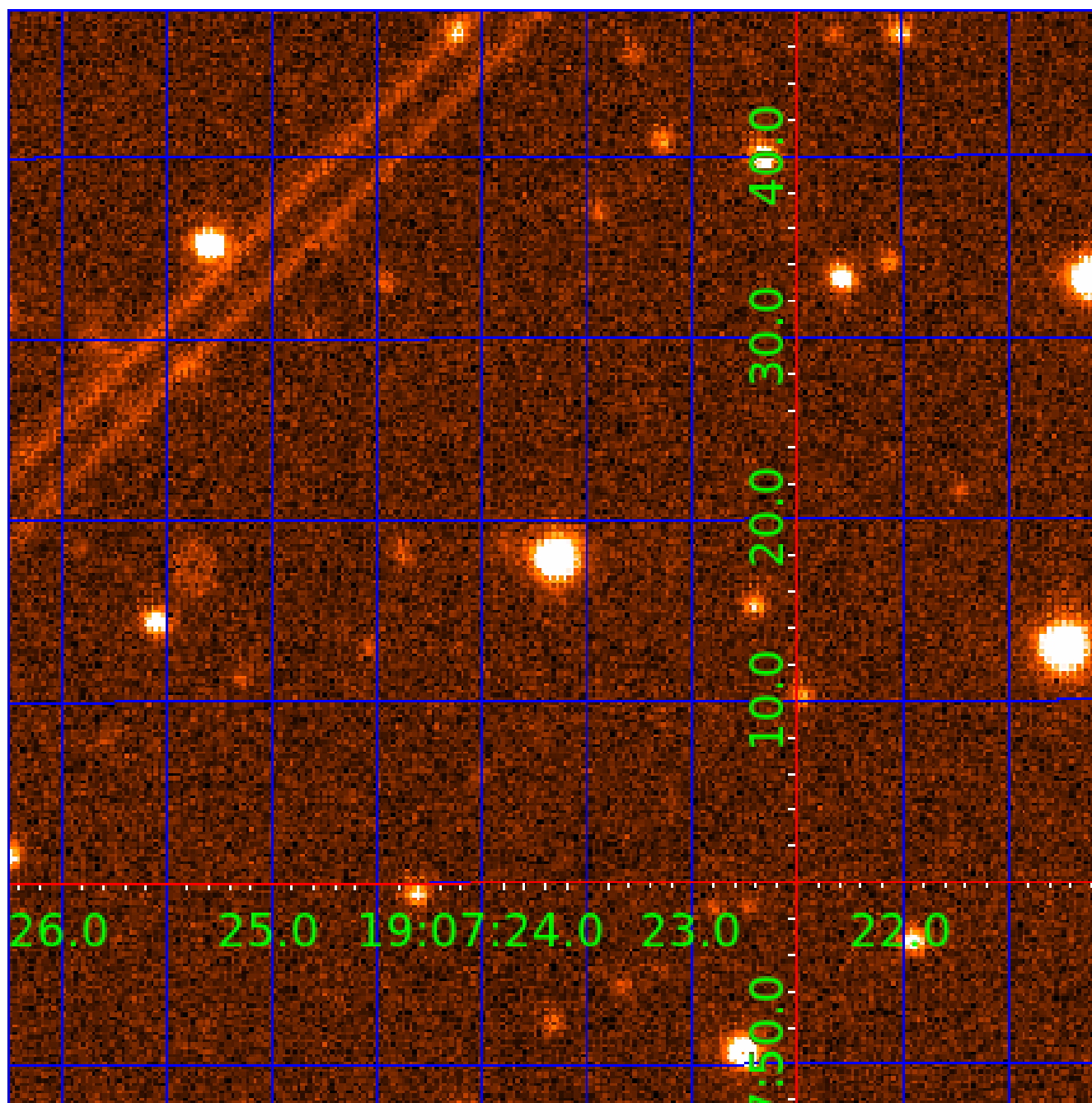


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004247023

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})
004247023-01	OBS	No	60.829395	154.314320	341411.6	11.396	2301.1	1658.5	0.97	5458	72.68	9.29
004247023-02	OBS	No	34.329191	151.838517	849.2	2.925	56.1	2.9	0.97	5458	2.93	19.92
004247023-03	OBS	No	32.554926	157.693195	3413.9	15.000	27.2	-1.0	0.97	5458	5.58	21.38
004247023-04	OBS	No	31.782211	162.512680	36040.5	13.320	39.5	35.2	0.97	5458	32.26	22.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004247023-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—CENT_FEW_DIFFS
004247023-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004247023-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
004247023-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_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.

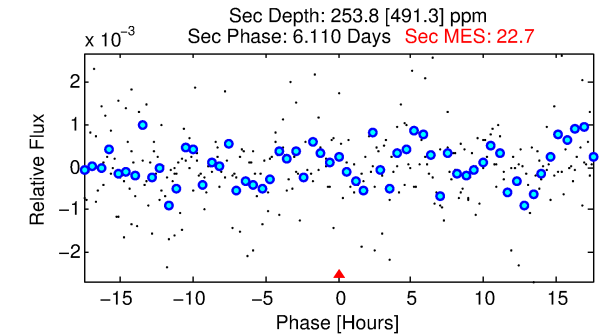
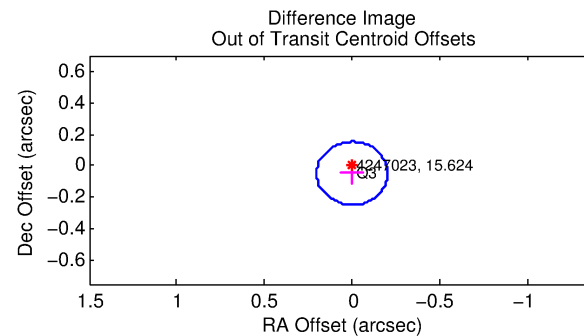
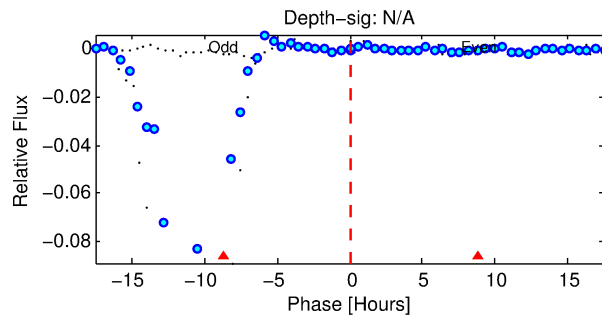
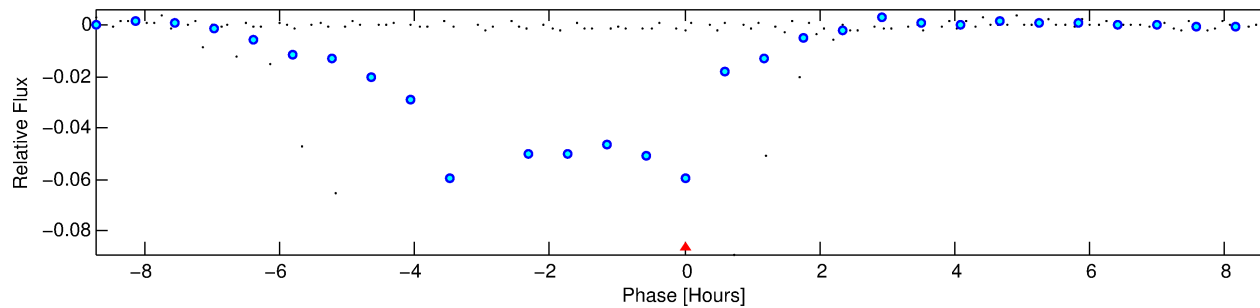
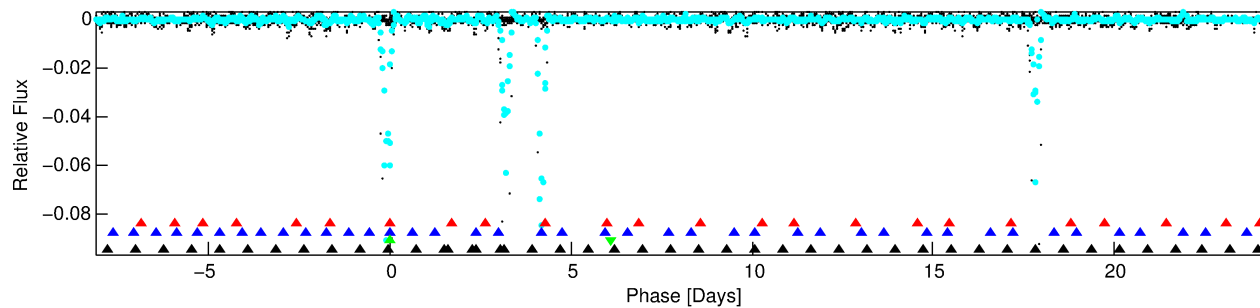
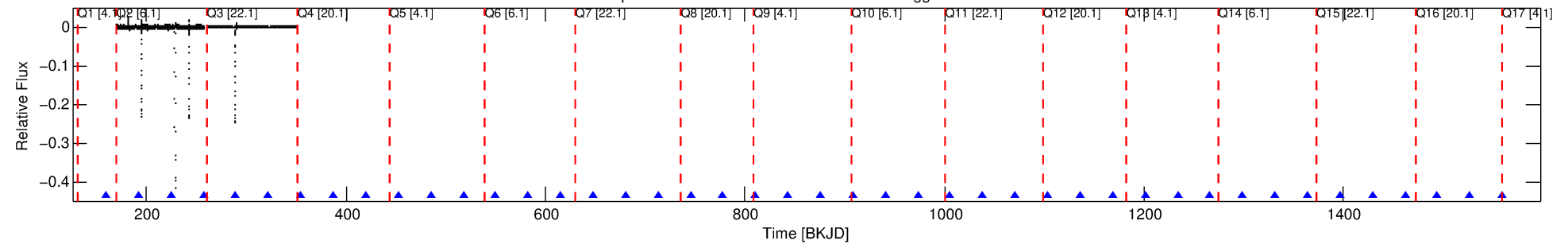
Ephemeris Match Information For 004247023-03

No Significant Match Found

DV One-Page Summary

KIC: 4247023 Candidate: 3 of 4 Period: 32.555 d
KOI: K03559 Corr: No Ephemeris Match

Kp: 15.62 R*: 0.97 Rs Teff: 5458.0 K Logg: 4.38 Fe/H: -0.080



TPS TCE Results:

Period = 32.55493 d
Epoch = 157.6932 BKJD

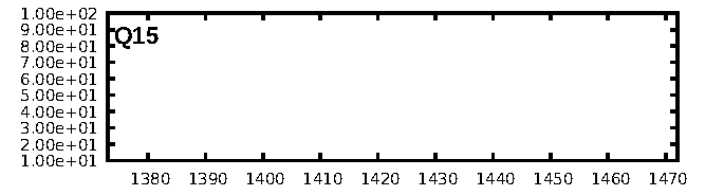
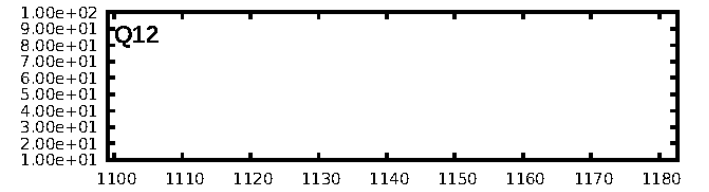
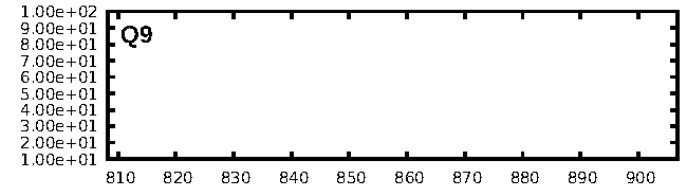
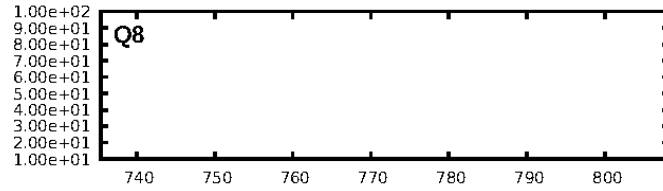
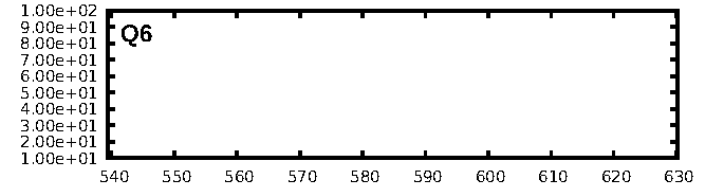
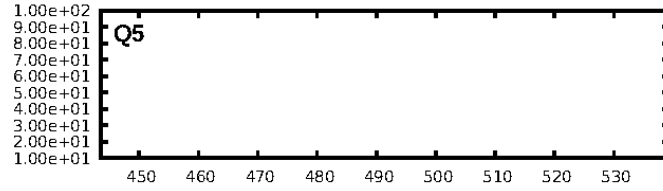
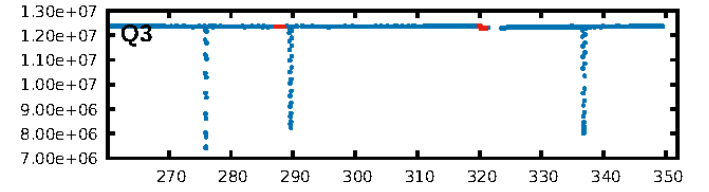
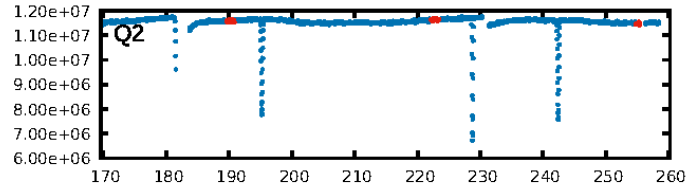
DV fit results are unavailable

DV Diagnostic Results:

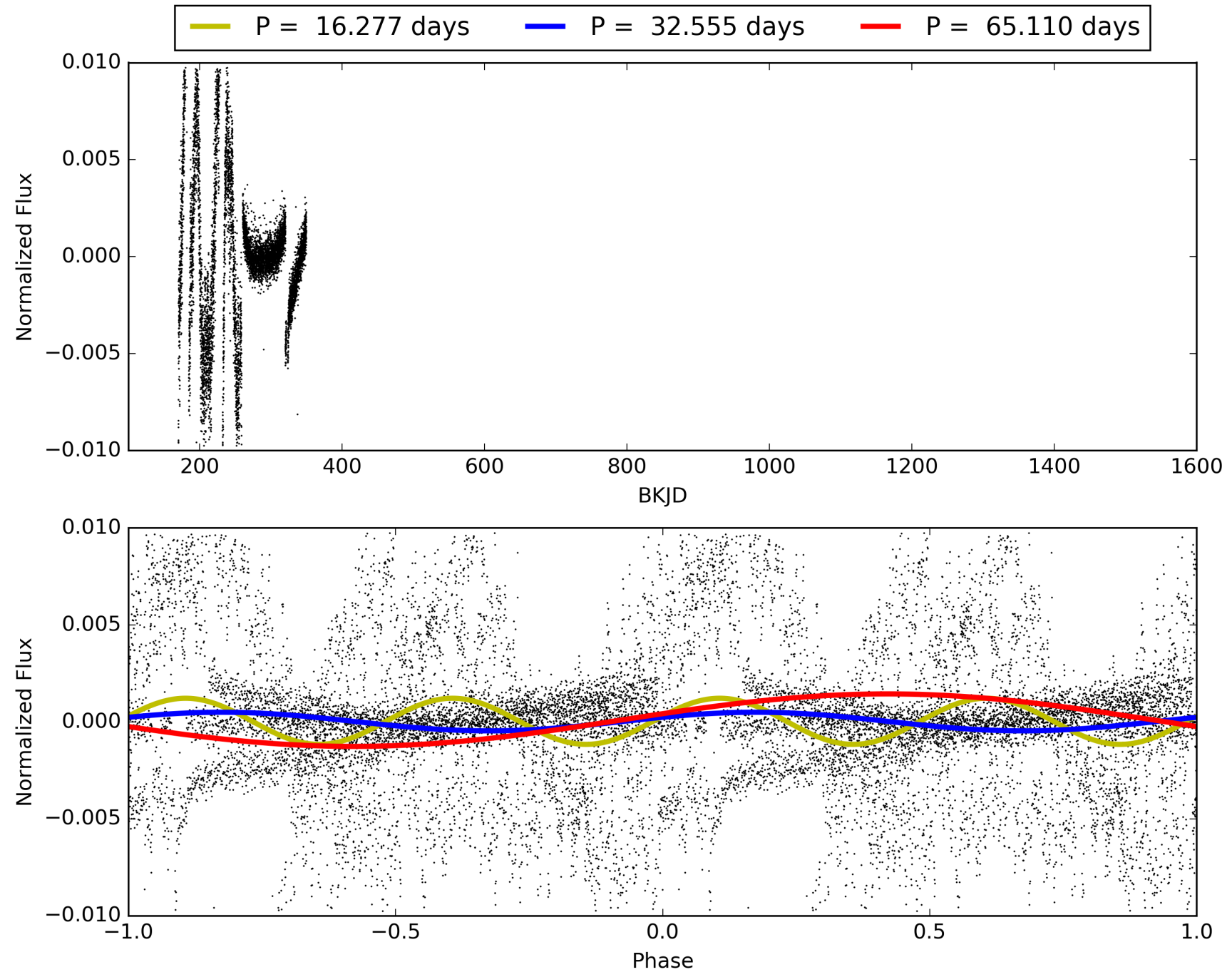
ShortPeriod-sig: 64.5% [0.92 σ]
LongPeriod-sig: 99.5% [2.79 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 9.34e-174
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 3.021

Centroid-sig: 4.3%
Centroid-so: 0.070 arcsec [2.85 σ]
OotOffset-rm: 0.047 arcsec [0.71 σ]
KicOffset-rm: 0.178 arcsec [2.65 σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-st: 0/1/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 0.50 [1/2]

TCE 004247023-03, PDC Light Curves

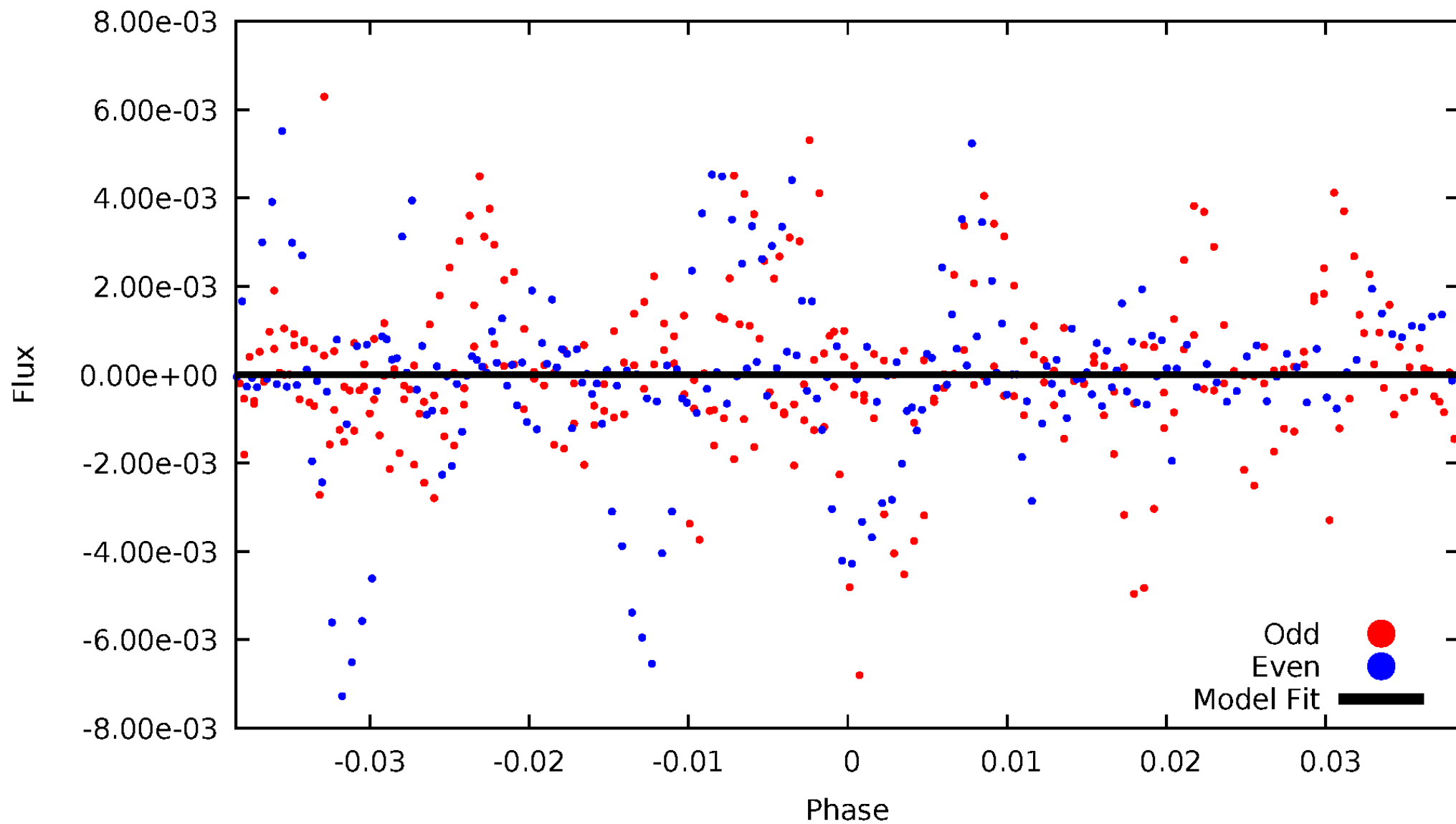


TCE 004247023-03



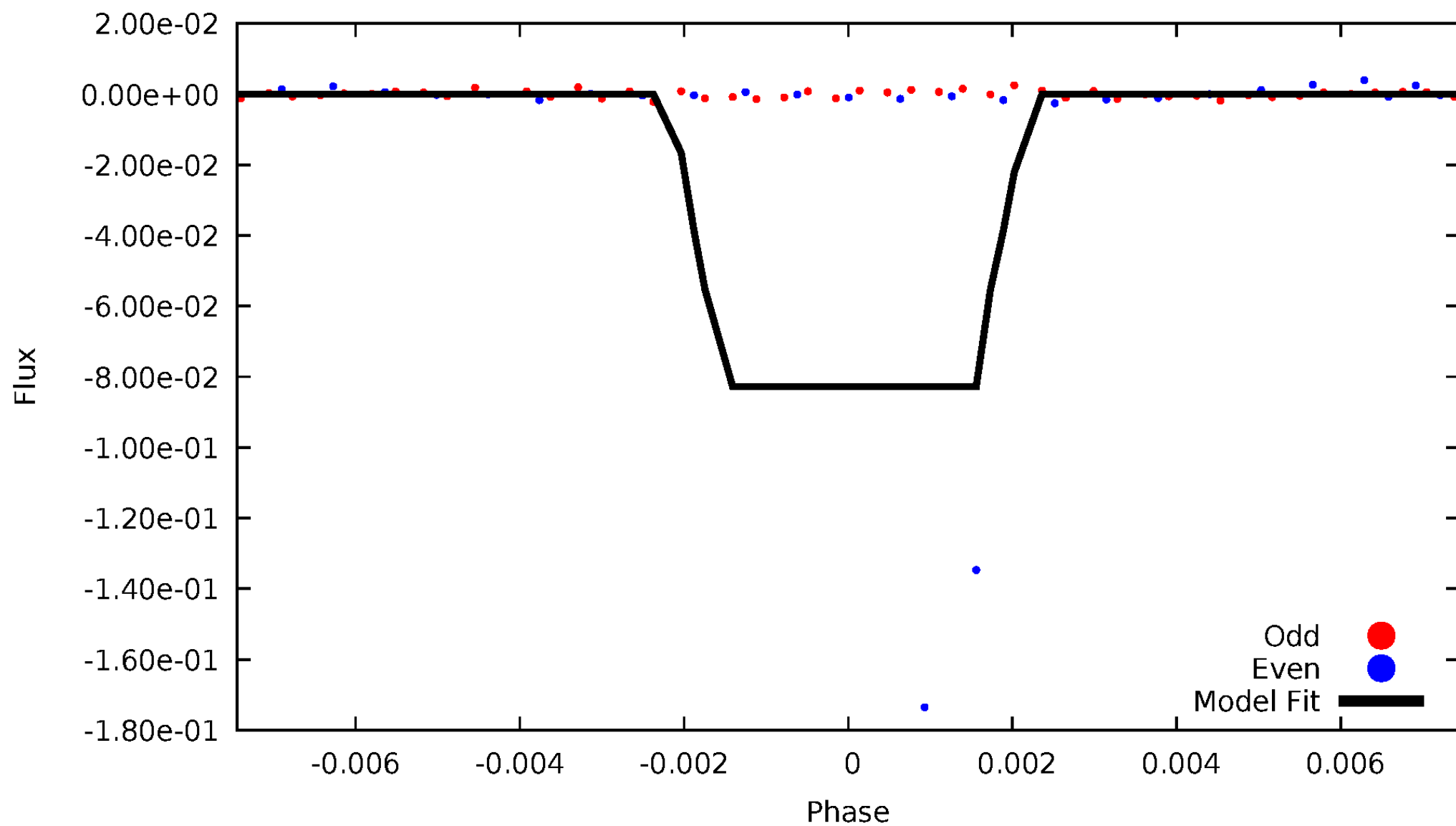
DV Odd/Even

TCE 004247023-03



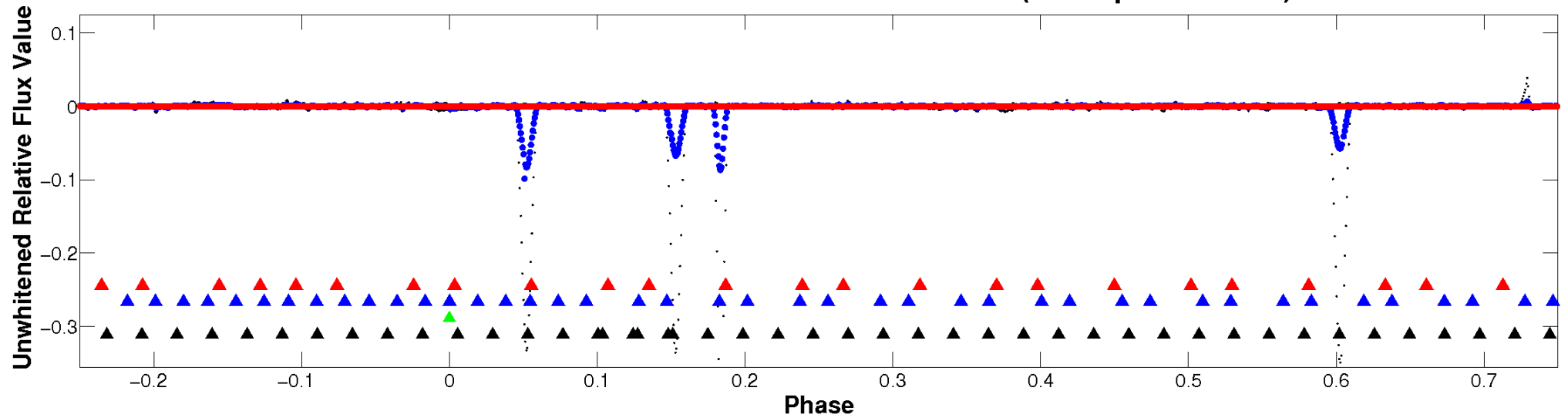
ALT Odd/Even

TCE 004247023-03



Non-Whitened Vs. Whitened Light Curve

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

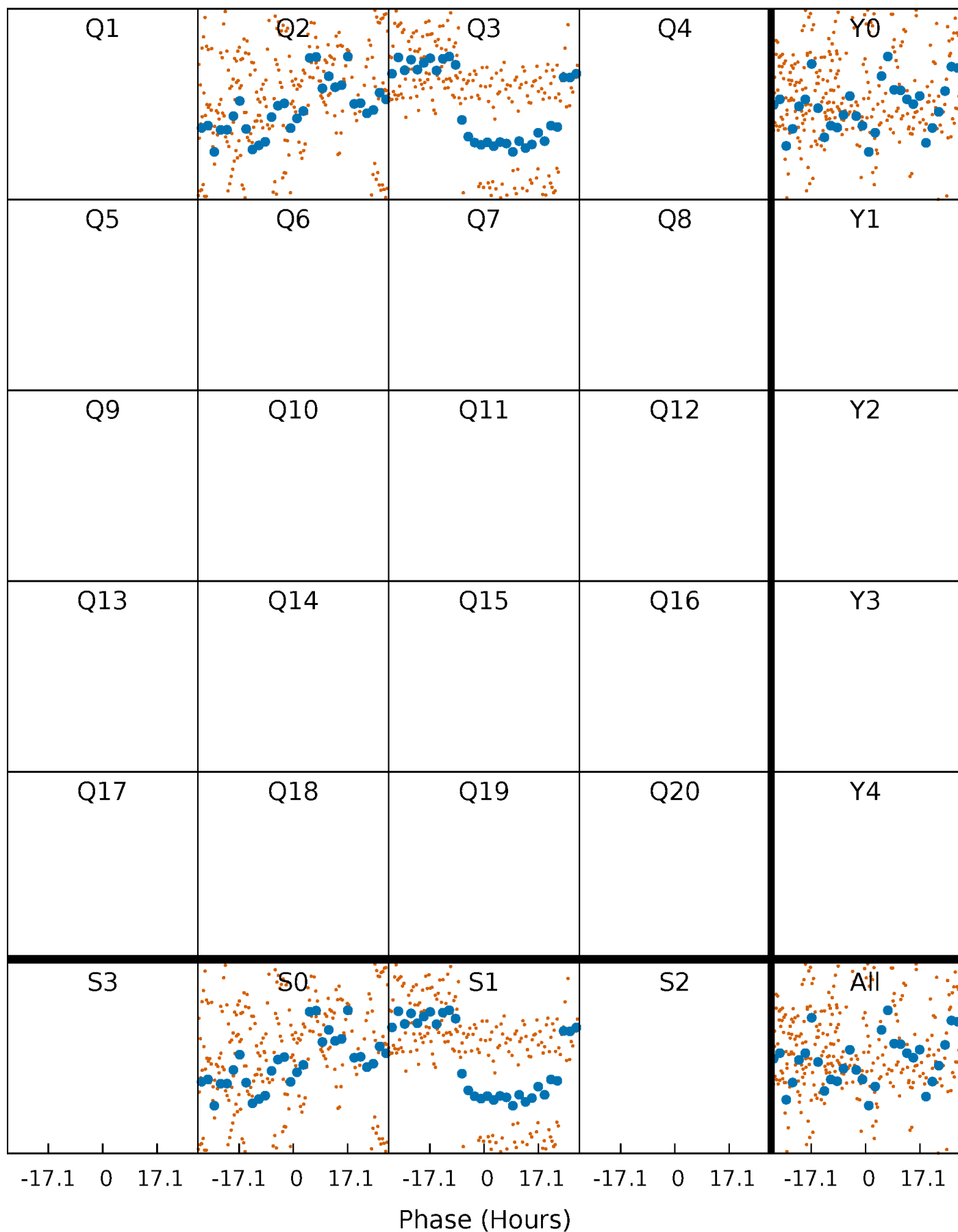


Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 004247023-03 P= 32.554926 Days $T_0=157.693195$ (BKJD)



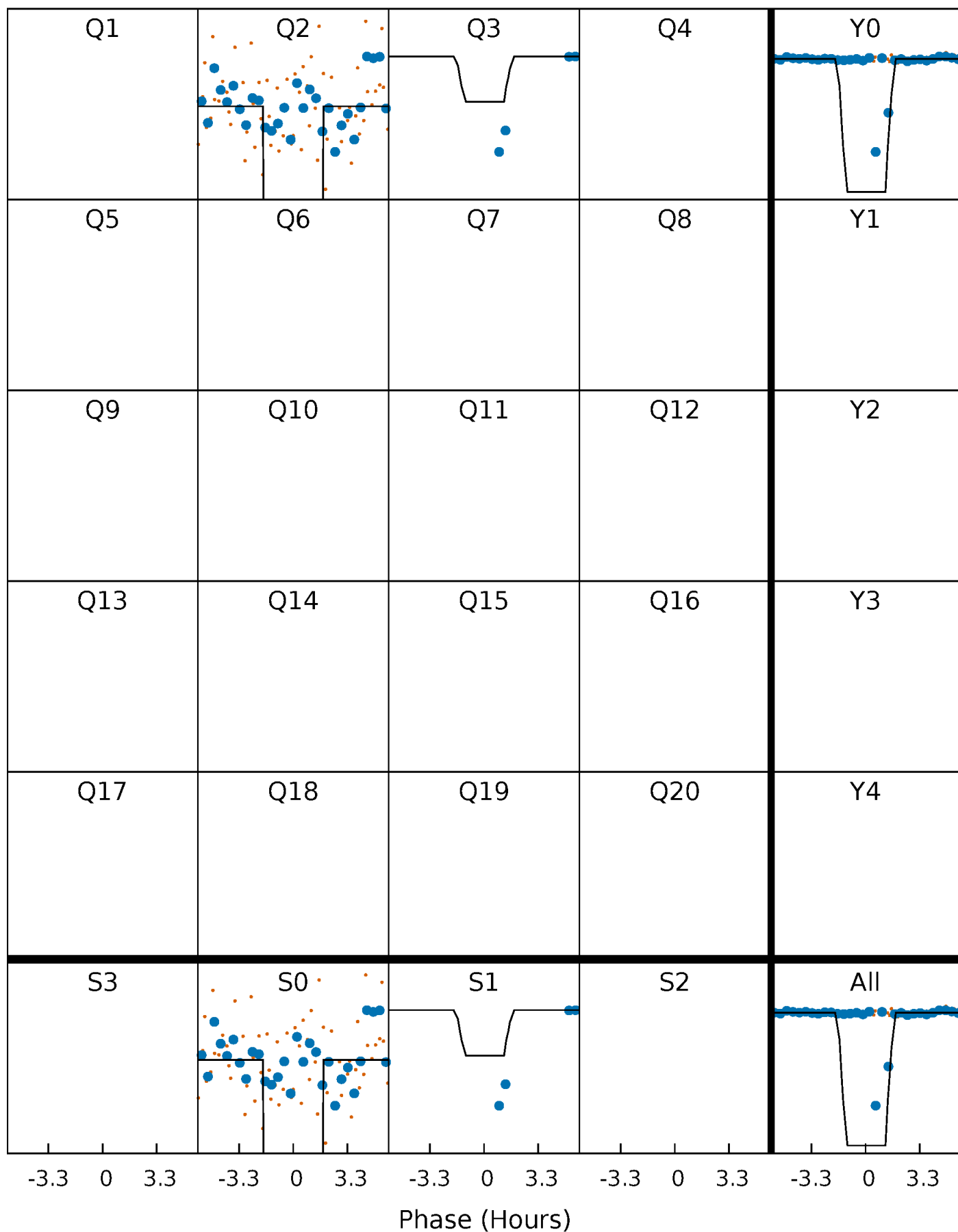
DV Quarter-Phased Transit Curves

TCE 004247023-03 P= 32.554926 Days $T_0=157.693195$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

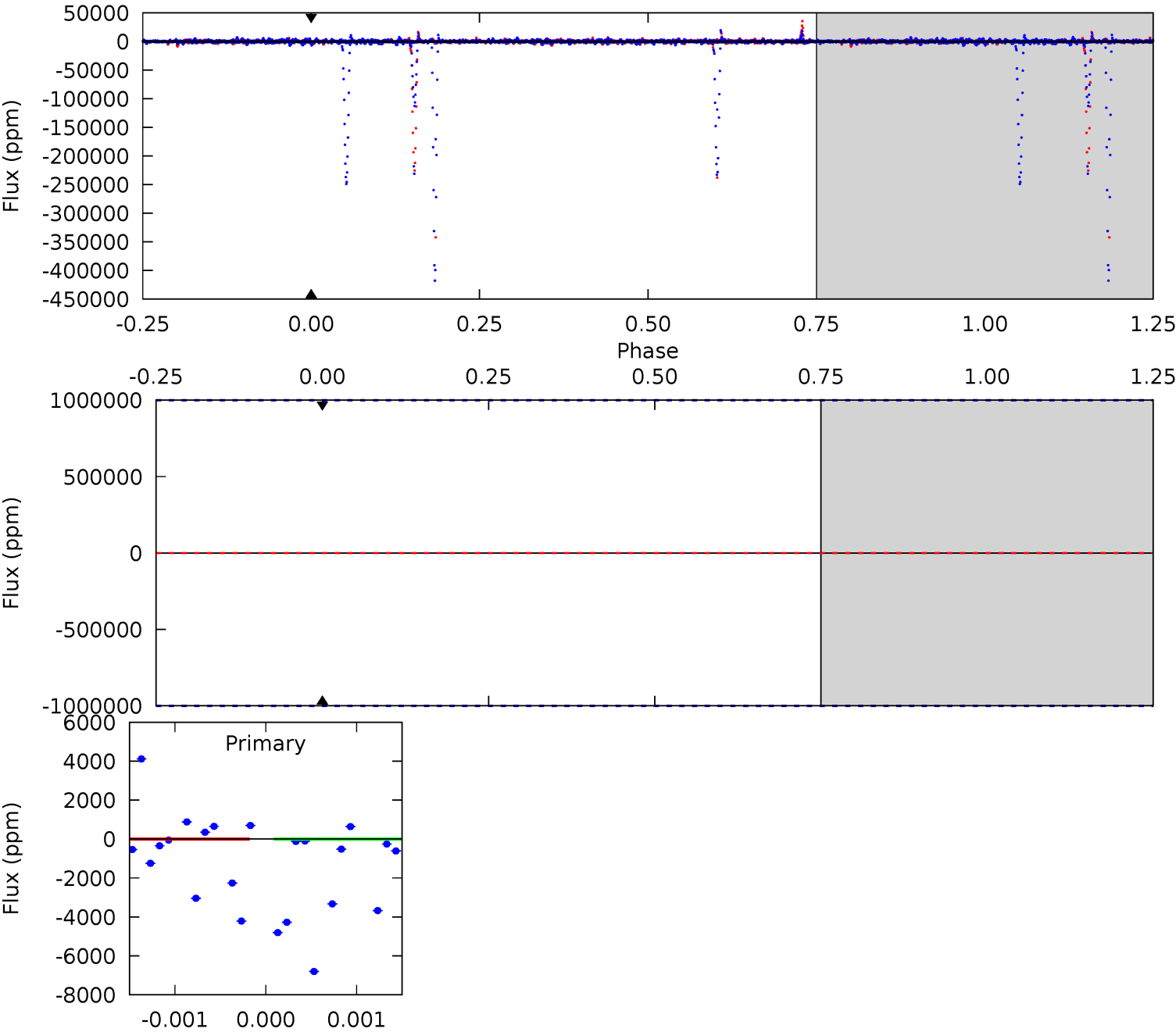
TCE 004247023-03 P= 32.554926 Days $T_0=159.479511$ (BKJD)



DV Model-Shift Uniqueness Test

004247023-03, P = 32.554926 Days, E = 157.693195 Days

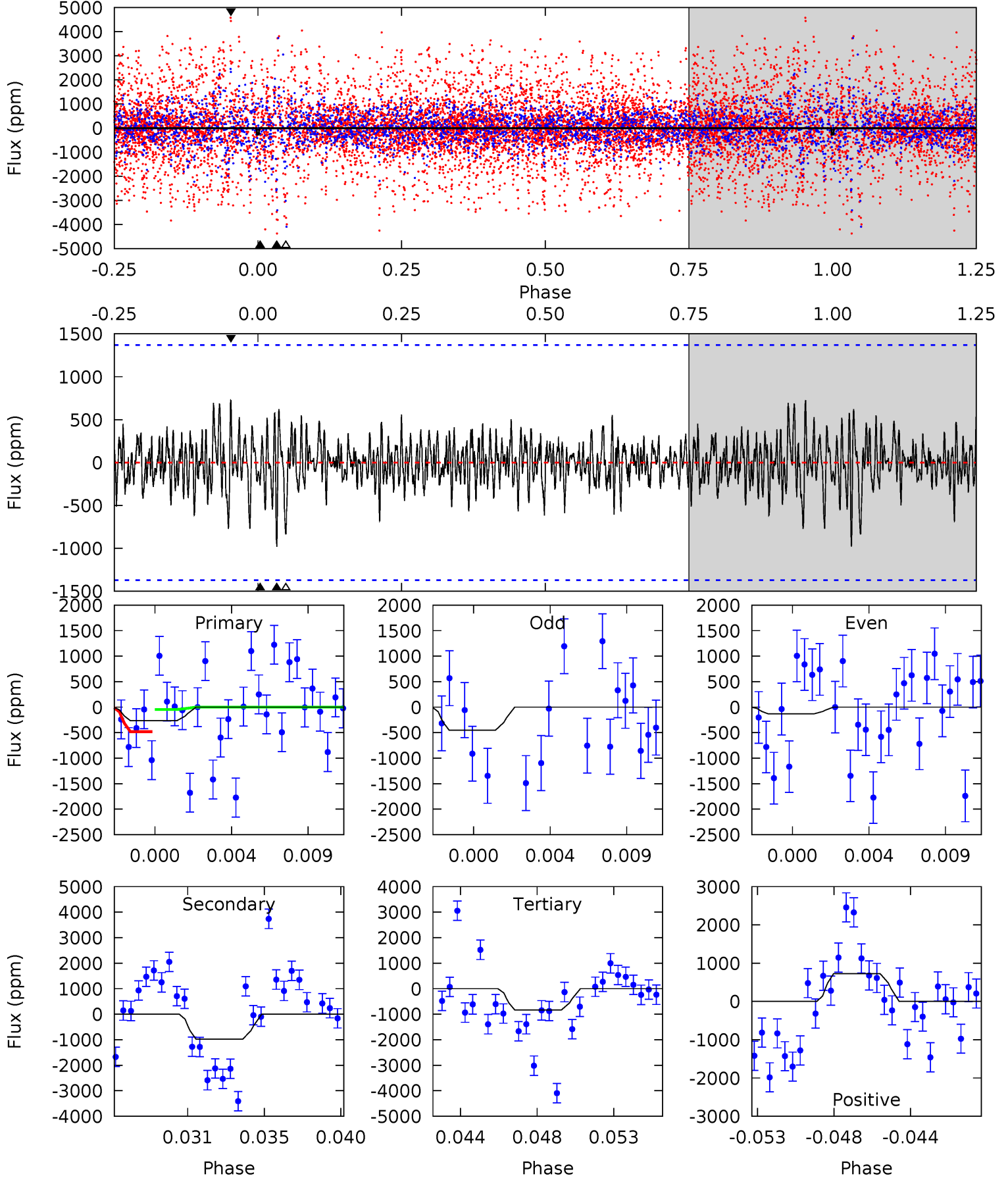
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

004247023-03, P = 32.554926 Days, E = 159.479511 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.00	3.71	3.16	2.75	5.18	2.85	0.82	-2.16	-1.75	0.55	0.96	0.51	85.0	0.43	0.81



Stellar Parameters For KIC 004247023

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5458^{+180}_{-164}	$4.381^{+0.162}_{-0.216}$	$-0.080^{+0.300}_{-0.300}$	$0.972^{+0.282}_{-0.173}$	$0.828^{+0.119}_{-0.064}$	$1.272^{+0.959}_{-0.664}$
	+3%/-3%	+4%/-5%	+375%/-375%	+29%/-18%	+14%/-8%	+75%/-52%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004247023-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$10.43^{+8.81}_{-6.78}$	765^{+65}_{-48}	-3748^{+17567}_{-9305}	$-221.416^{+31993.856}_{-27668.726}$
Alt.	-981 ± 264	$30.84^{+12.52}_{-10.72}$	772^{+56}_{-51}	2599^{+324}_{-216}	20^{+29}_{-11}

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 $A_{obs} \gg 1.0$

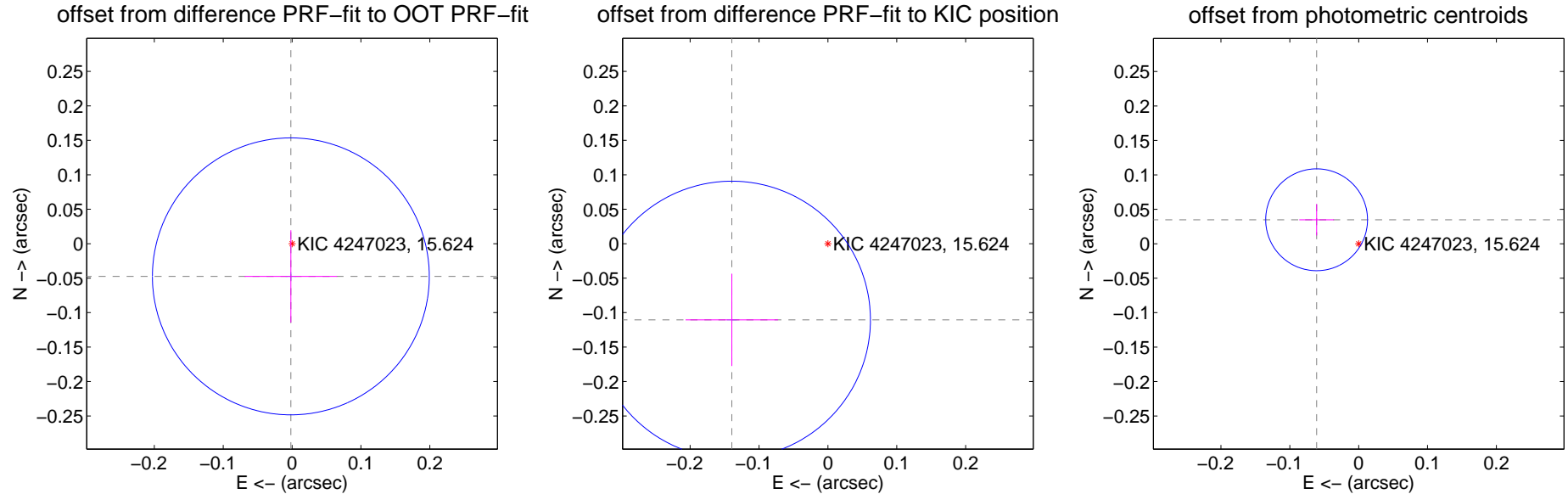
DV Centroid Data

Supplemental centroid analysis for 004247023-03. Kepler magnitude: 15.62. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

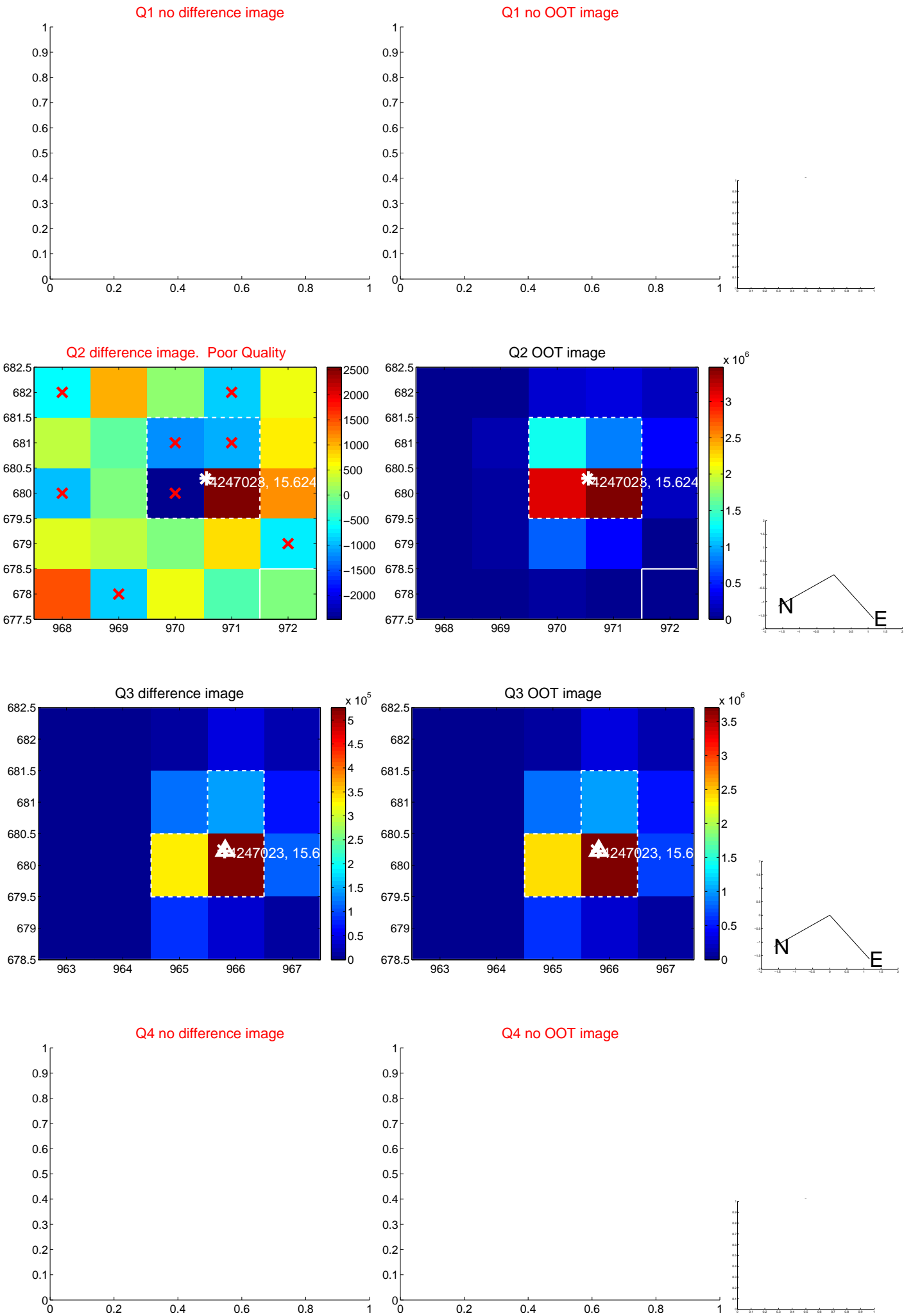
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.047 ± 0.067	0.71	0.002 ± 0.067	-0.047 ± 0.067
PRF-fit source offset from KIC position	0.178 ± 0.067	2.65	0.139 ± 0.067	-0.110 ± 0.067
photometric centroid source offset	0.07 ± 0.02	2.85	0.06 ± 0.03	0.03 ± 0.02



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.



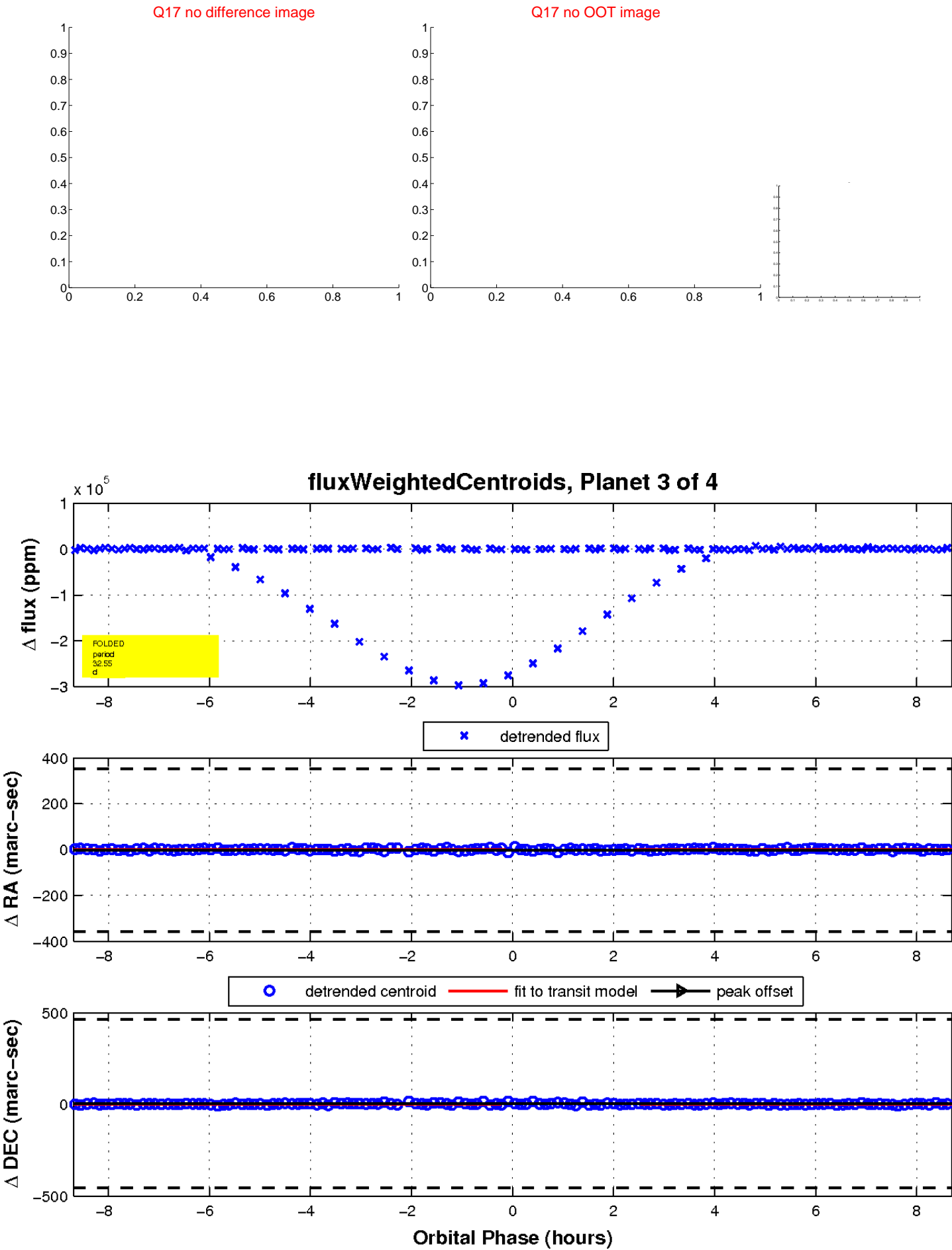
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

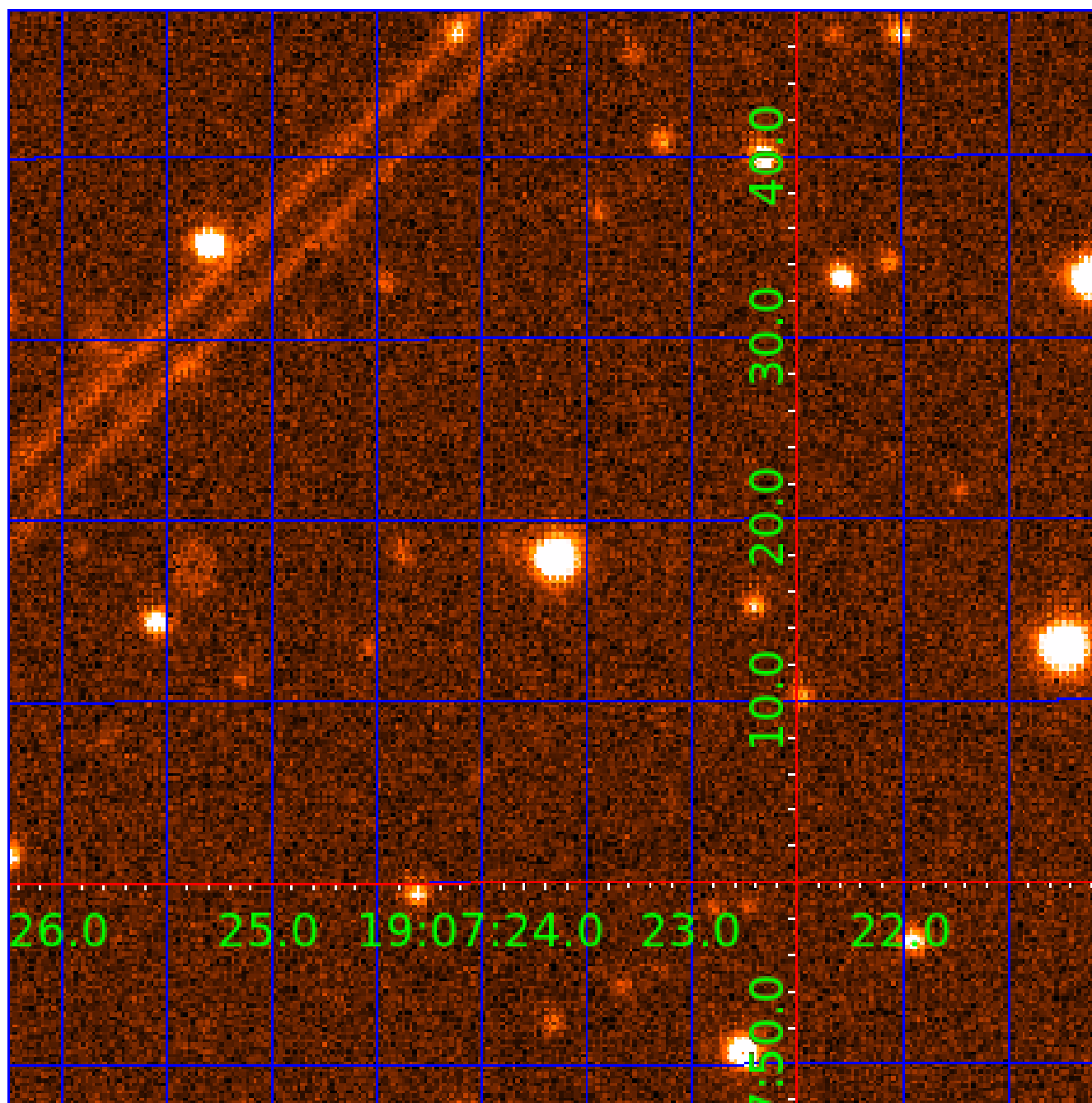


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004247023

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})
004247023-01	OBS	No	60.829395	154.314320	341411.6	11.396	2301.1	1658.5	0.97	5458	72.68	9.29
004247023-02	OBS	No	34.329191	151.838517	849.2	2.925	56.1	2.9	0.97	5458	2.93	19.92
004247023-03	OBS	No	32.554926	157.693195	3413.9	15.000	27.2	-1.0	0.97	5458	5.58	21.38
004247023-04	OBS	No	31.782211	162.512680	36040.5	13.320	39.5	35.2	0.97	5458	32.26	22.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004247023-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—CENT_FEW_DIFFS
004247023-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004247023-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
004247023-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_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.

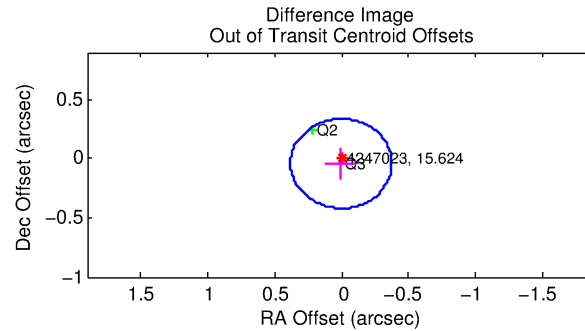
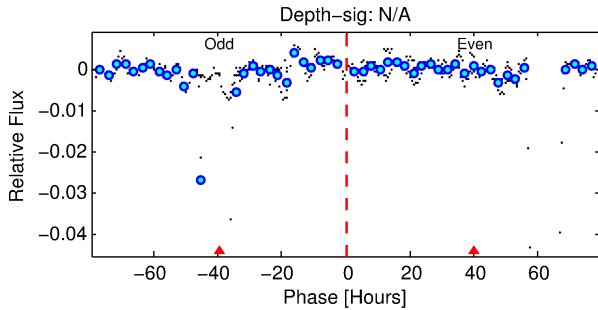
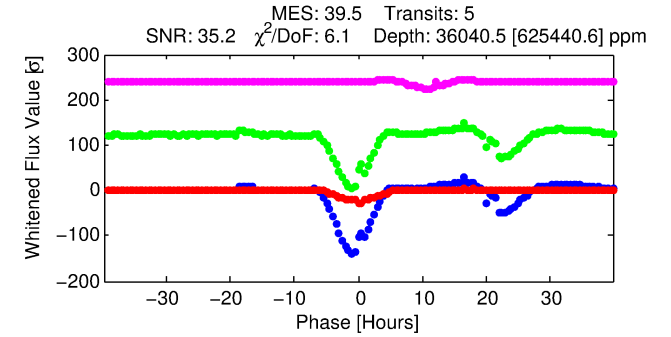
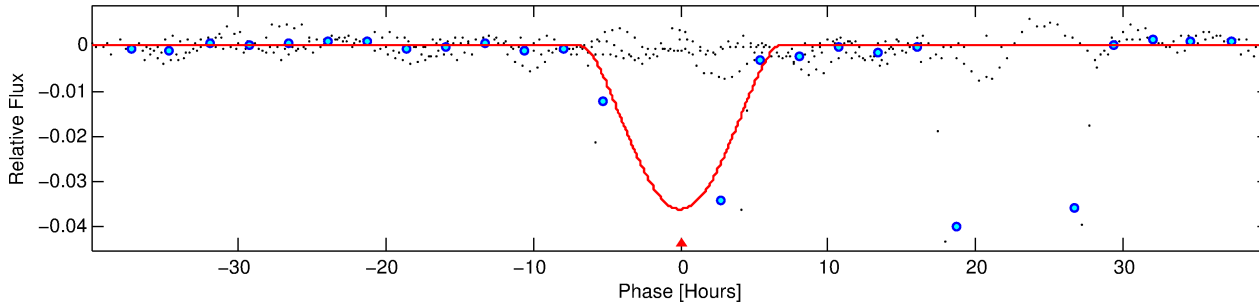
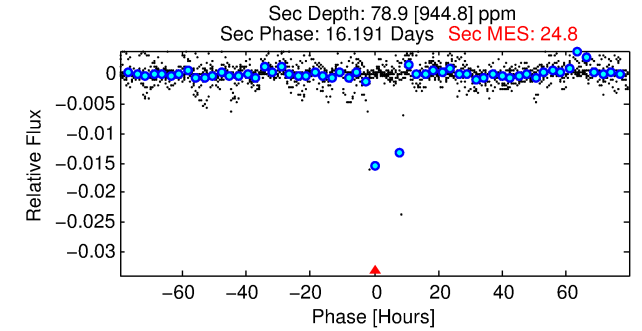
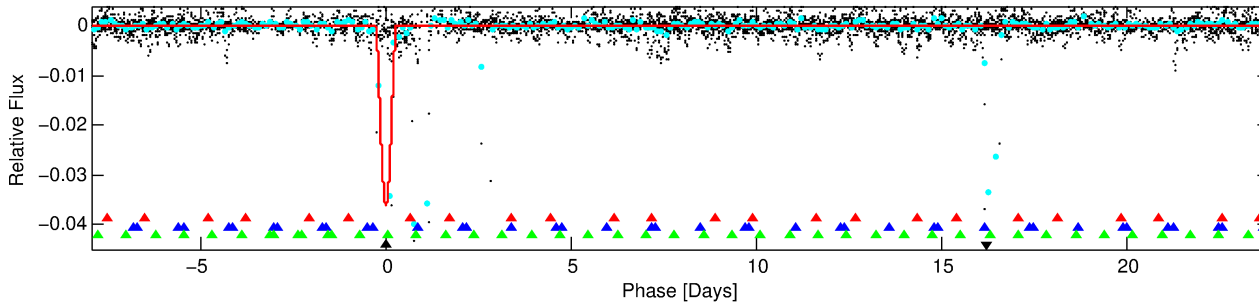
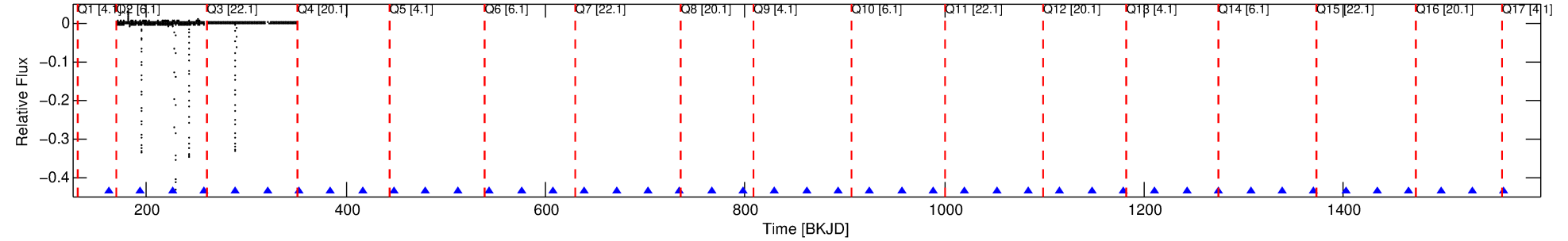
Ephemeris Match Information For 004247023-04

No Significant Match Found

DV One-Page Summary

KIC: 4247023 Candidate: 4 of 4 Period: 31.782 d
KOI: K03559 Corr: No Ephemeris Match

Kp: 15.62 R*: 0.97 Rs Teff: 5458.0 K Logg: 4.38 Fe/H: -0.080



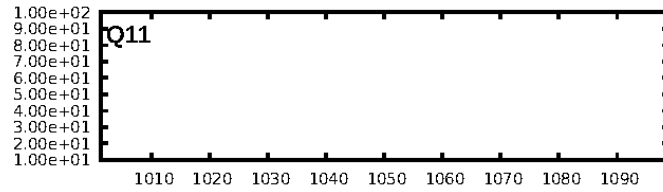
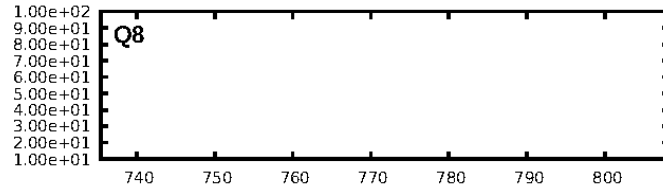
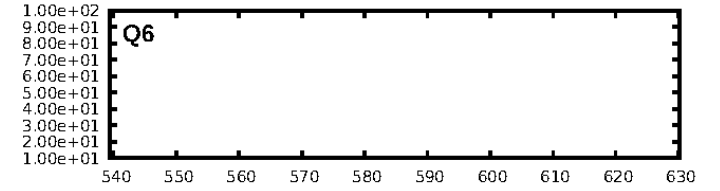
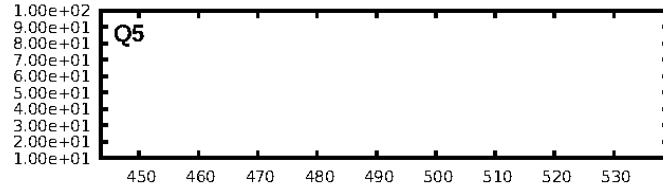
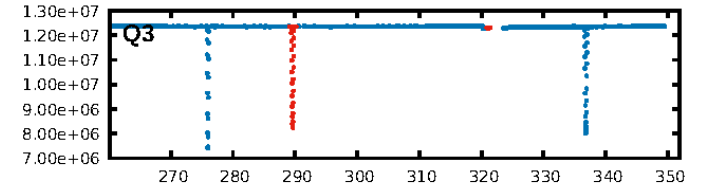
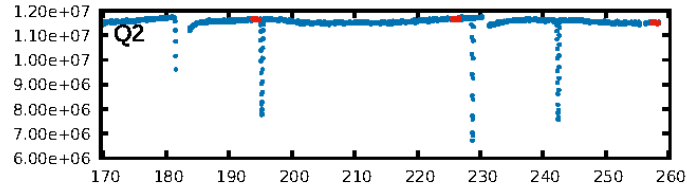
DV Fit Results:

Period = 31.78221 [0.00622] d
Epoch = 162.5127 [0.0237] BKJD
Rp/R* = 0.3041 [0.9116]
a/R* = 15.30 [1.79]
b = 1.00 [2.13]
Seff = 22.07 [8.96]
Teq = 553 [56] K
Rp = 32.26 [97.15] Re
a = 0.1845 [0.0470] AU
Ag = 1.42 [19.02] [0.02σ]
Teffp = 933 [3124] K [0.12σ]

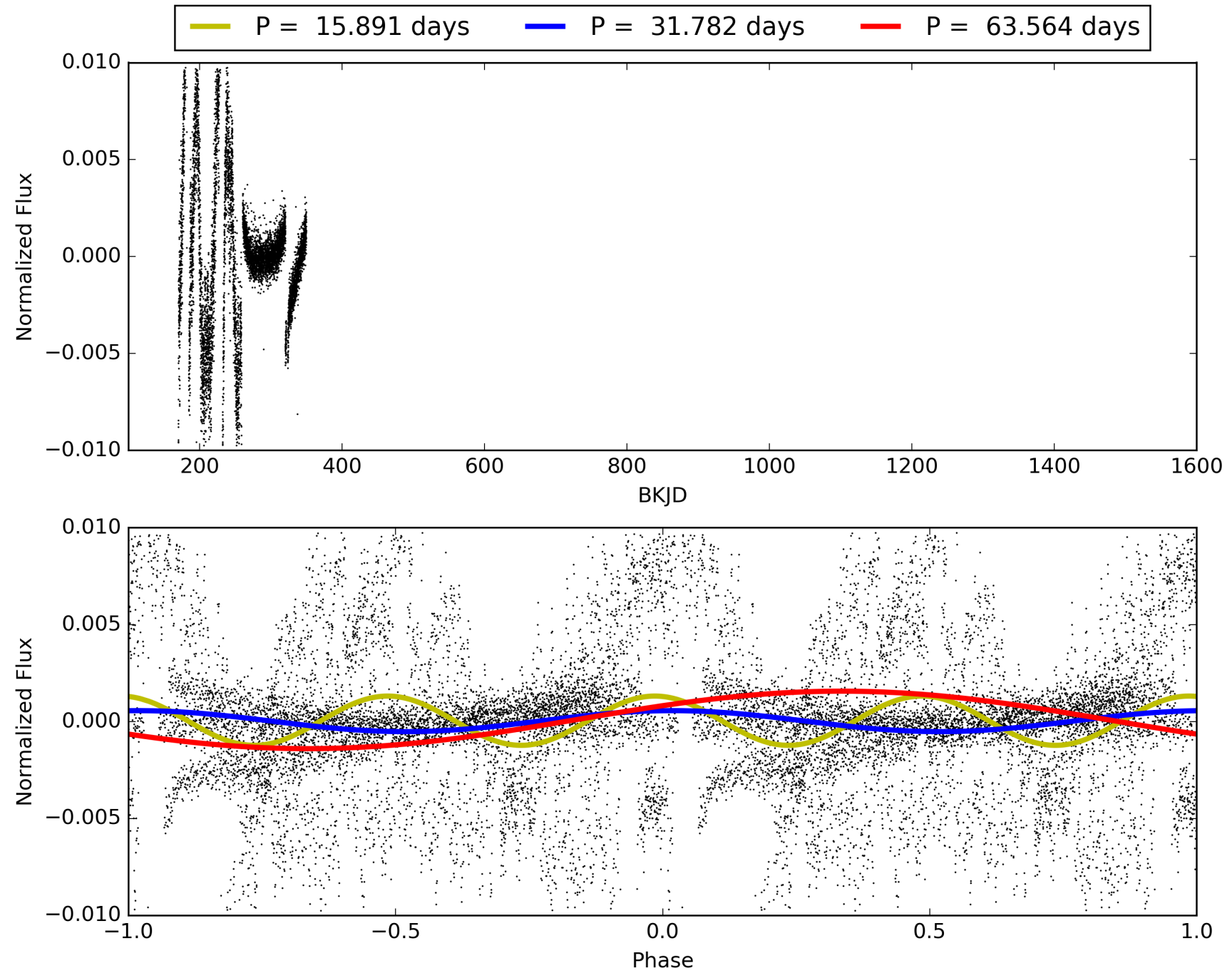
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 64.5% [0.92σ]
ModelChiSquare2-sig: 55.6%
ModelChiSquareGof-sig: 99.2%
Bootstrap-pfa: 2.50e-220
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 1.77
Centroid-sig: 92.2%
Centroid-so: 0.071 arcsec [1.93σ]
OotOffset-rm: 0.041 arcsec [0.33σ]
KicOffset-rm: 0.179 arcsec [2.08σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.50 [1/2]

TCE 004247023-04, PDC Light Curves

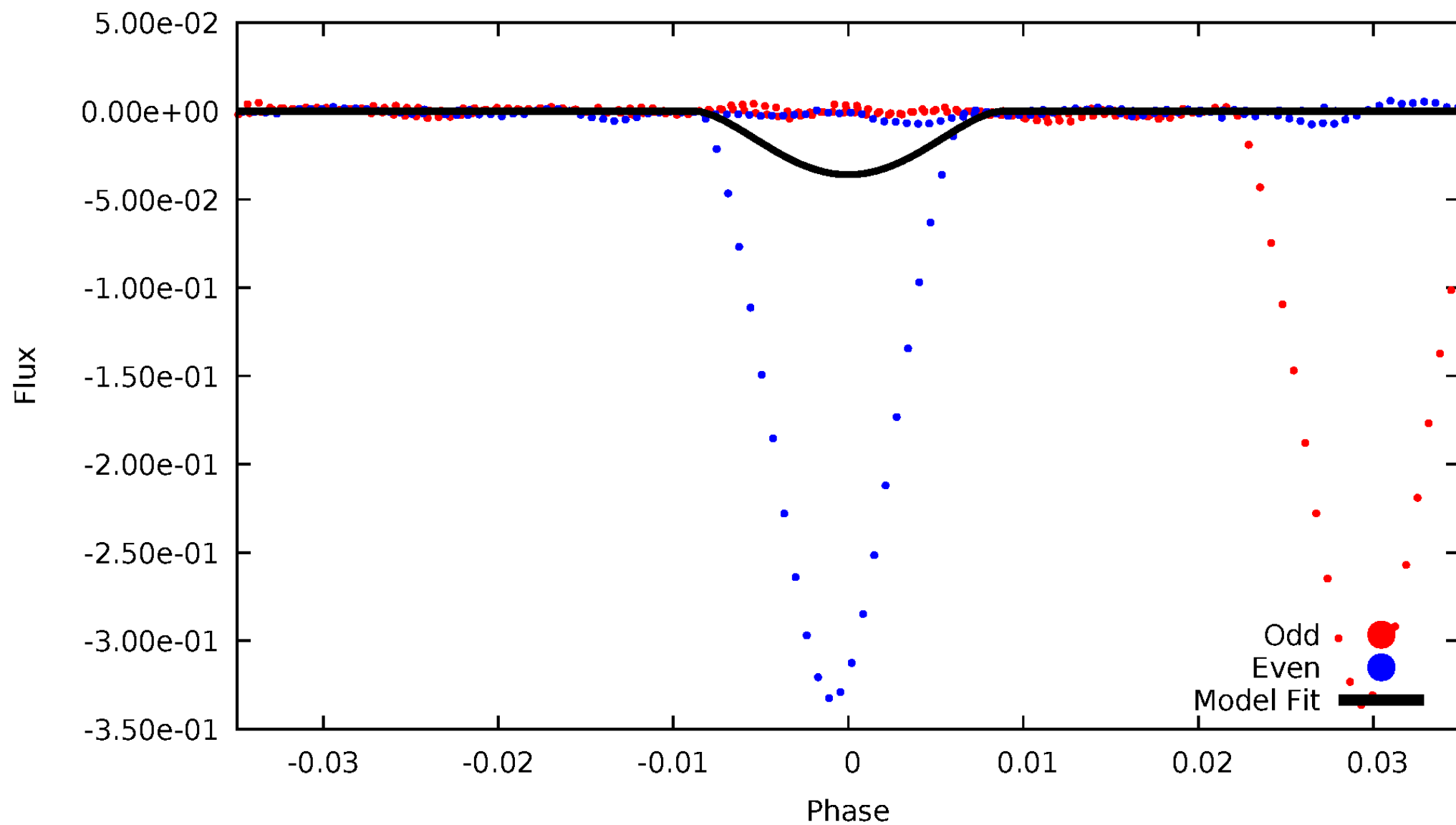


TCE 004247023-04



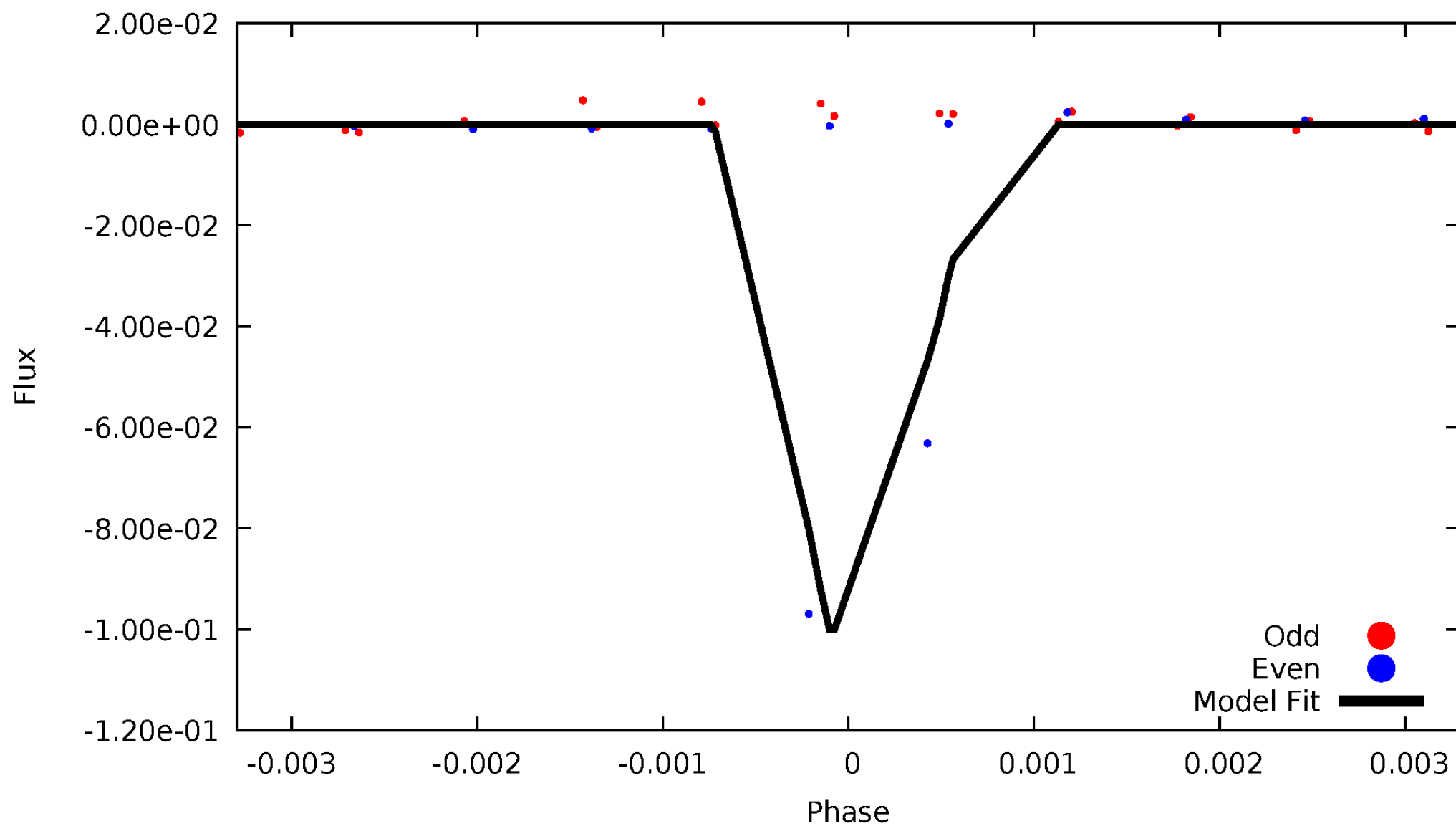
DV Odd/Even

TCE 004247023-04



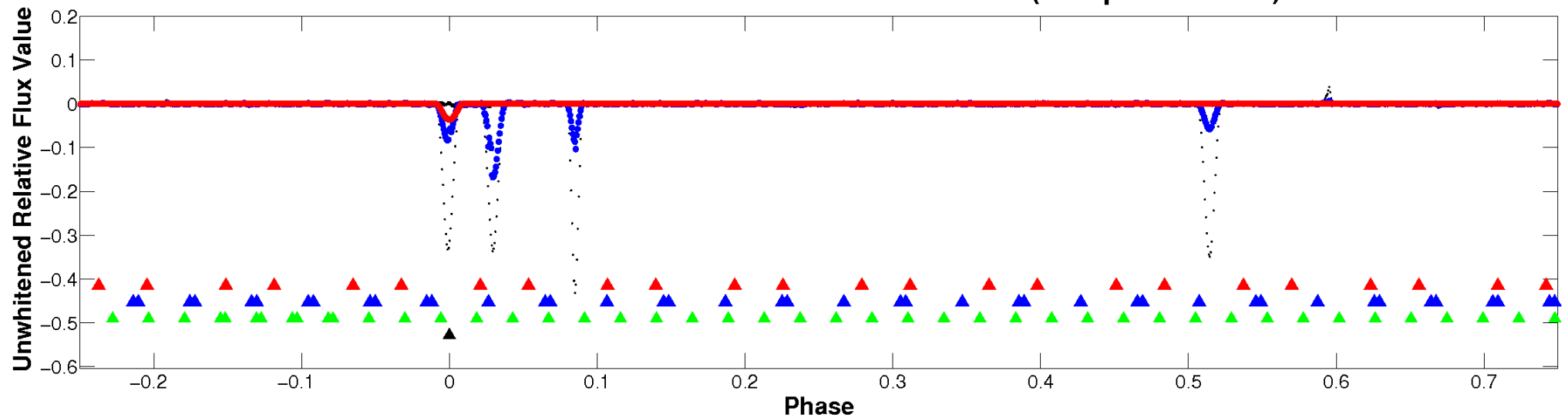
ALT Odd/Even

TCE 004247023-04

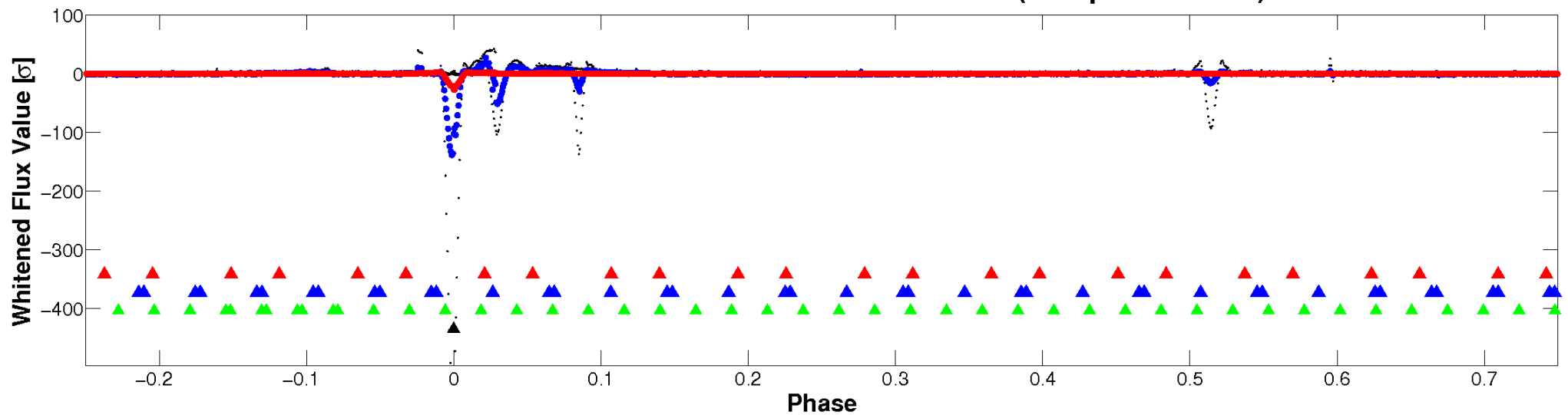


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

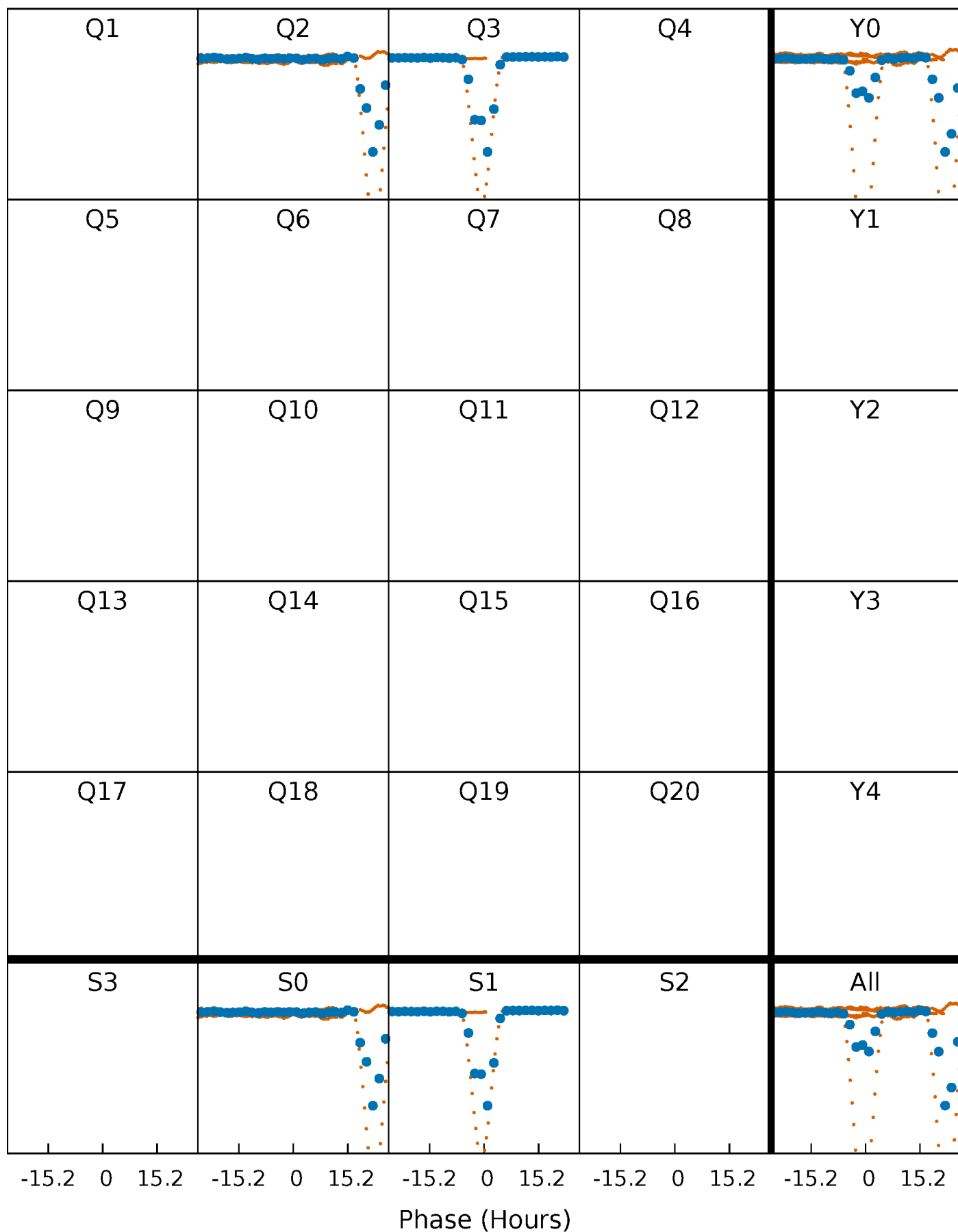


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



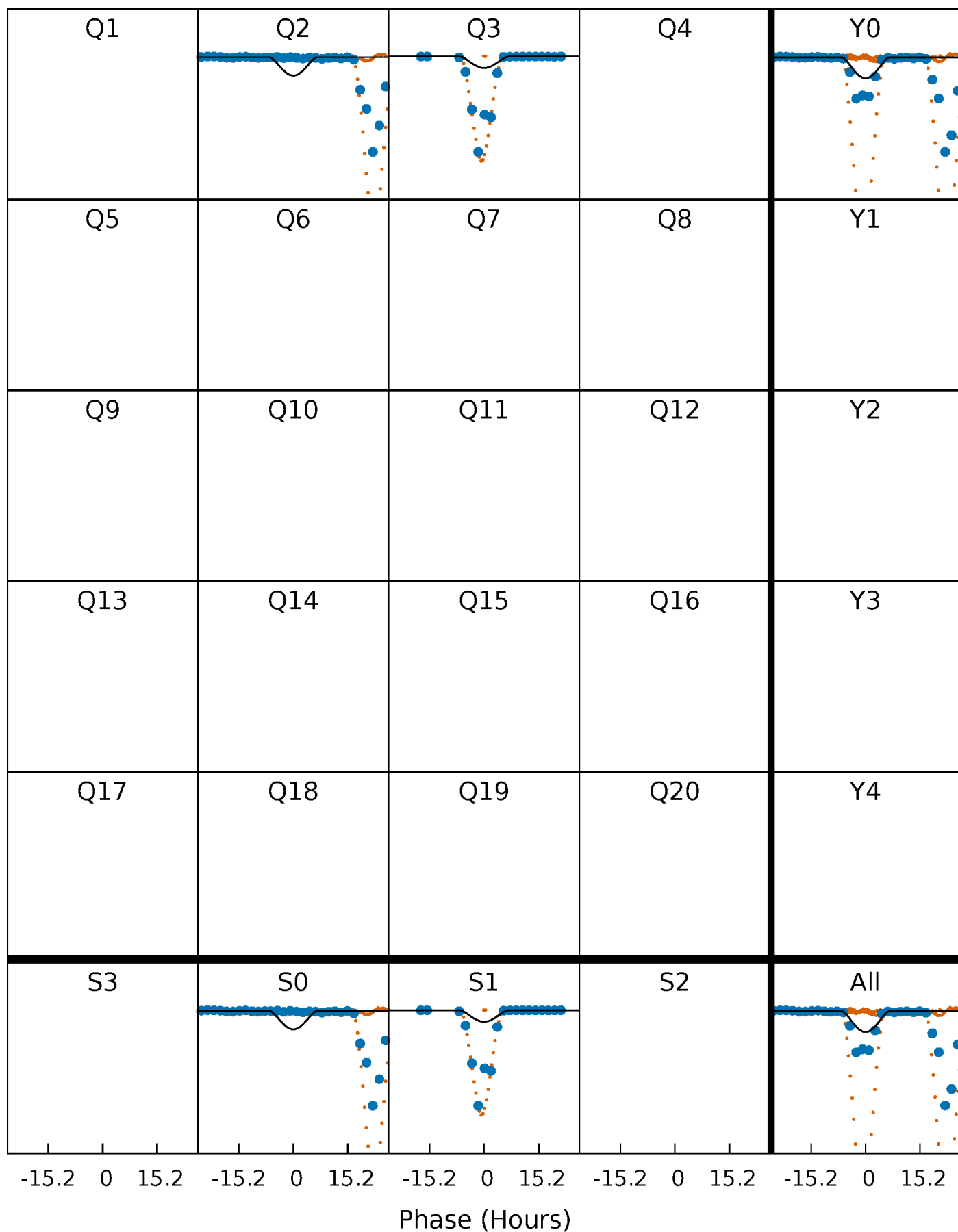
PDC Quarter-Phased Transit Curves

TCE 004247023-04 P= 31.782211 Days $T_0=162.512680$ (BKJD)



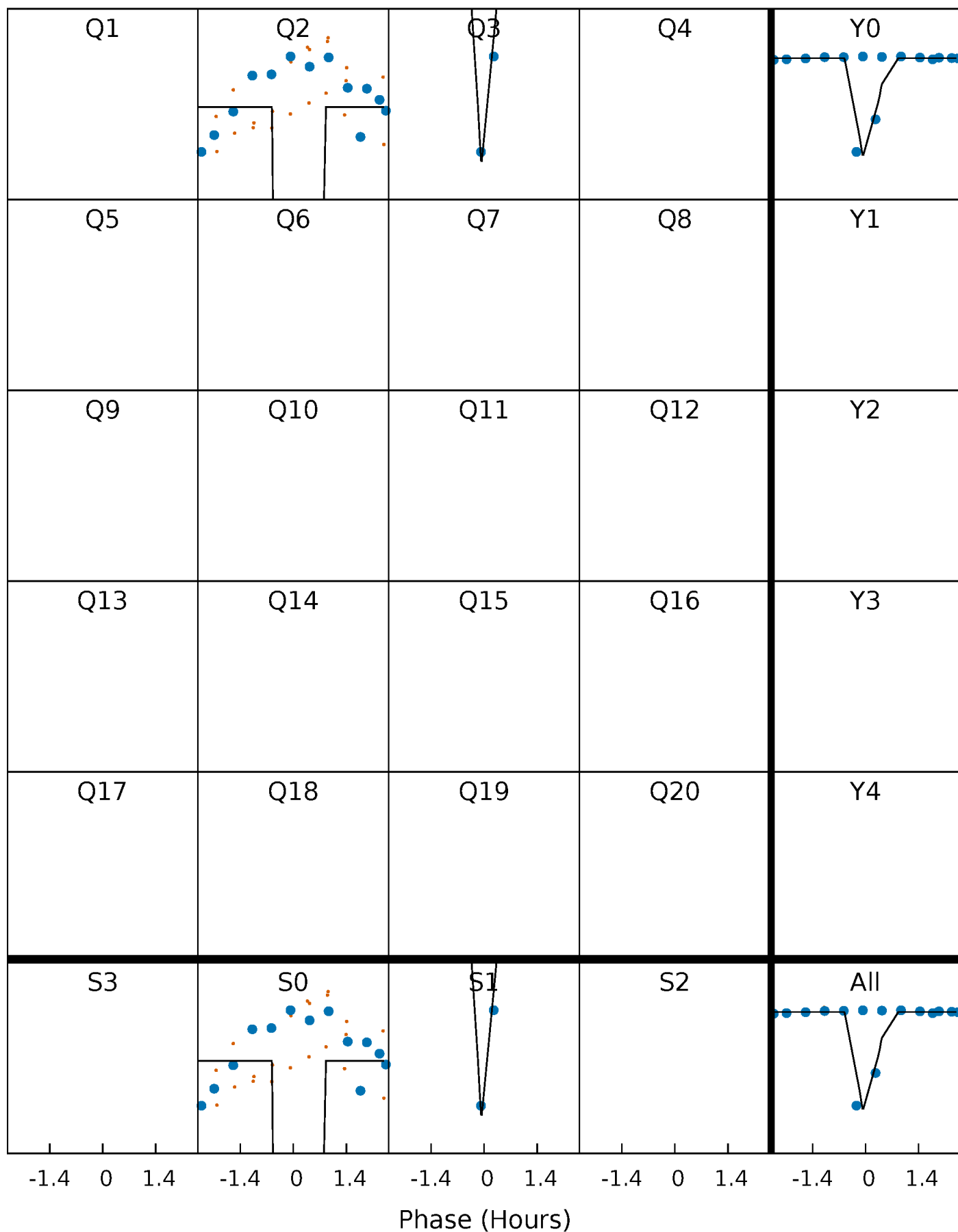
DV Quarter-Phased Transit Curves

TCE 004247023-04 P= 31.782211 Days $T_0=162.512680$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

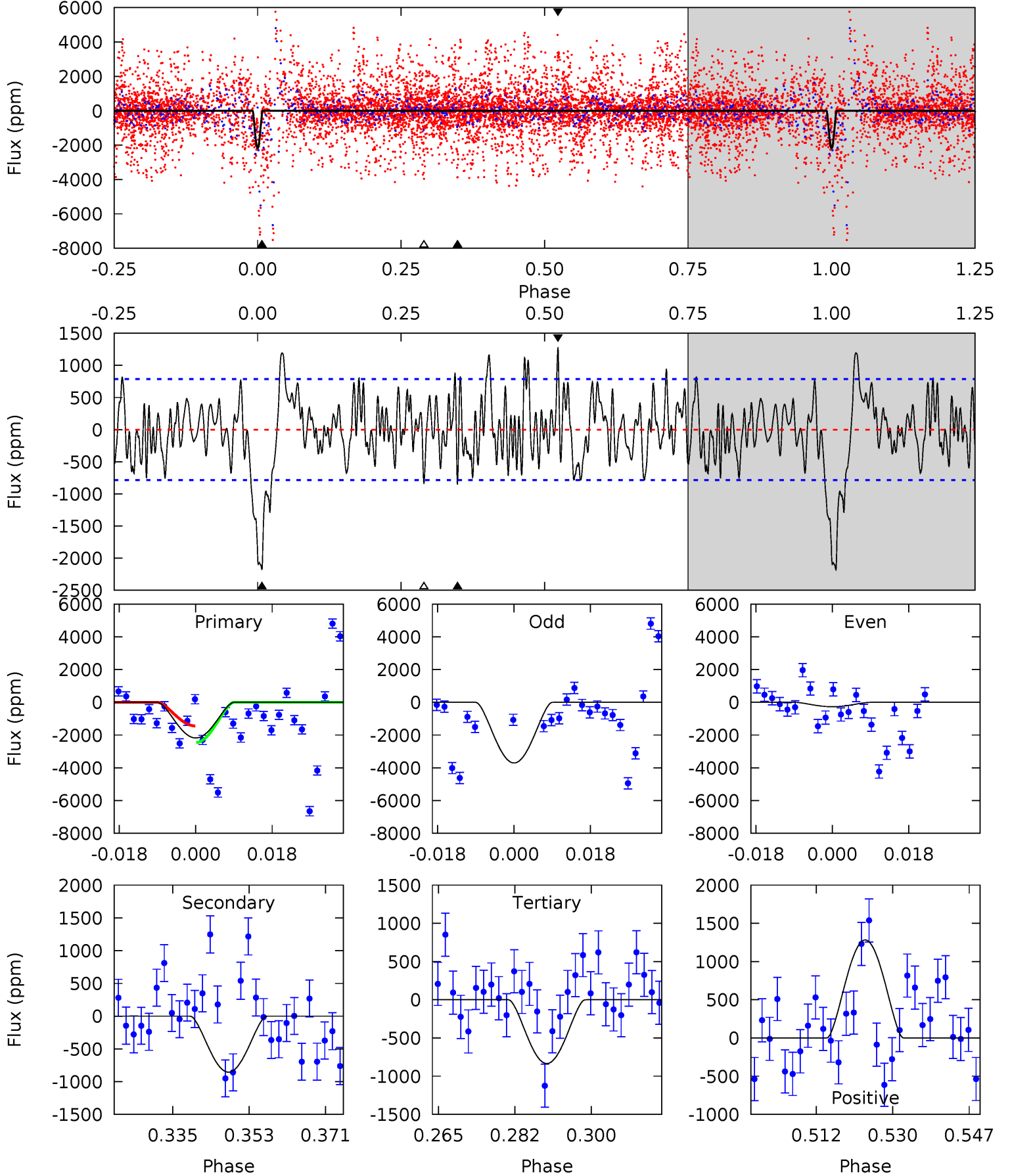
TCE 004247023-04 $P = 31.897488$ Days $T_0 = 162.187218$ (BKJD)



DV Model-Shift Uniqueness Test

004247023-04, P = 31.782211 Days, E = 162.512680 Days

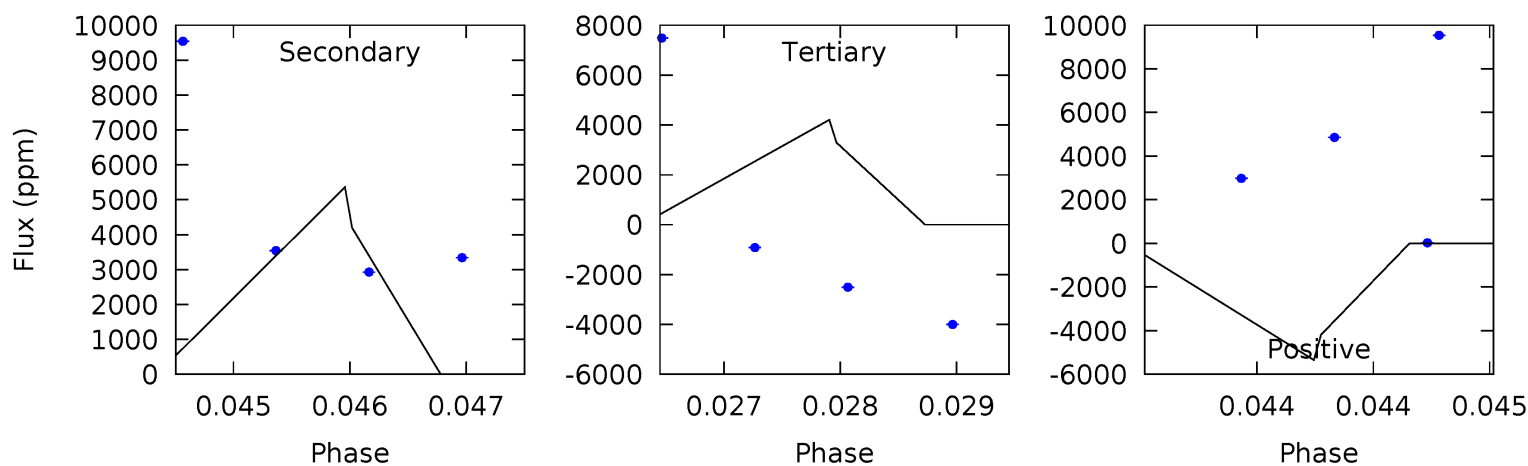
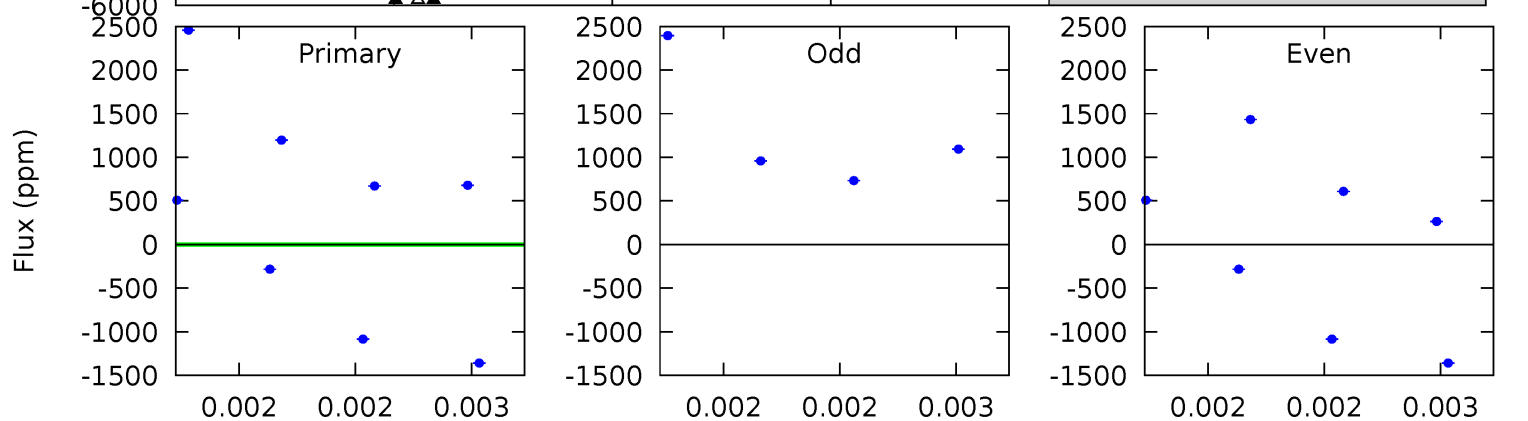
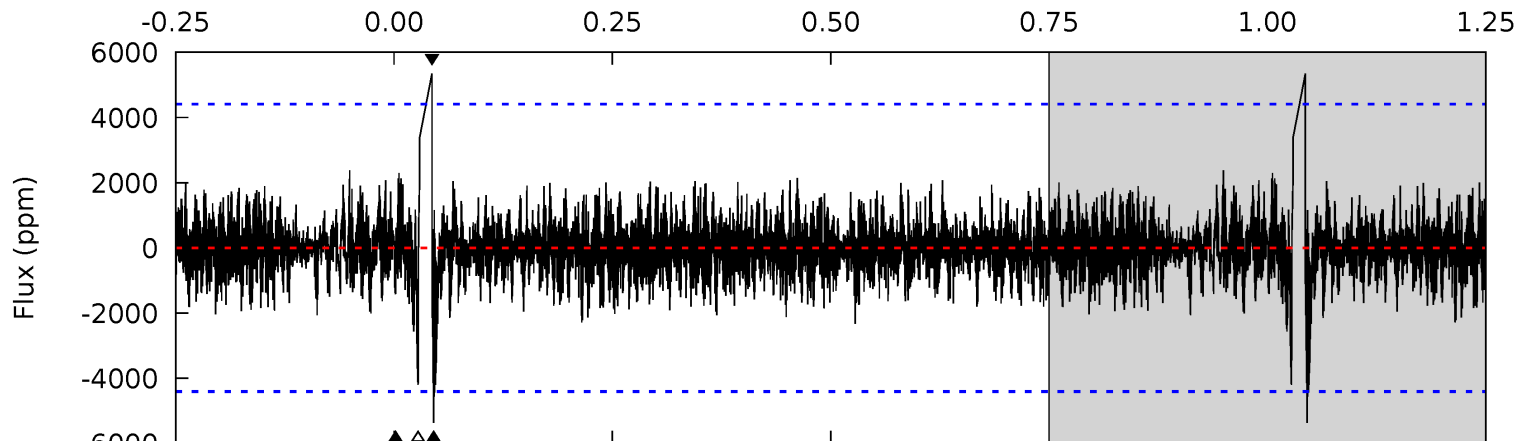
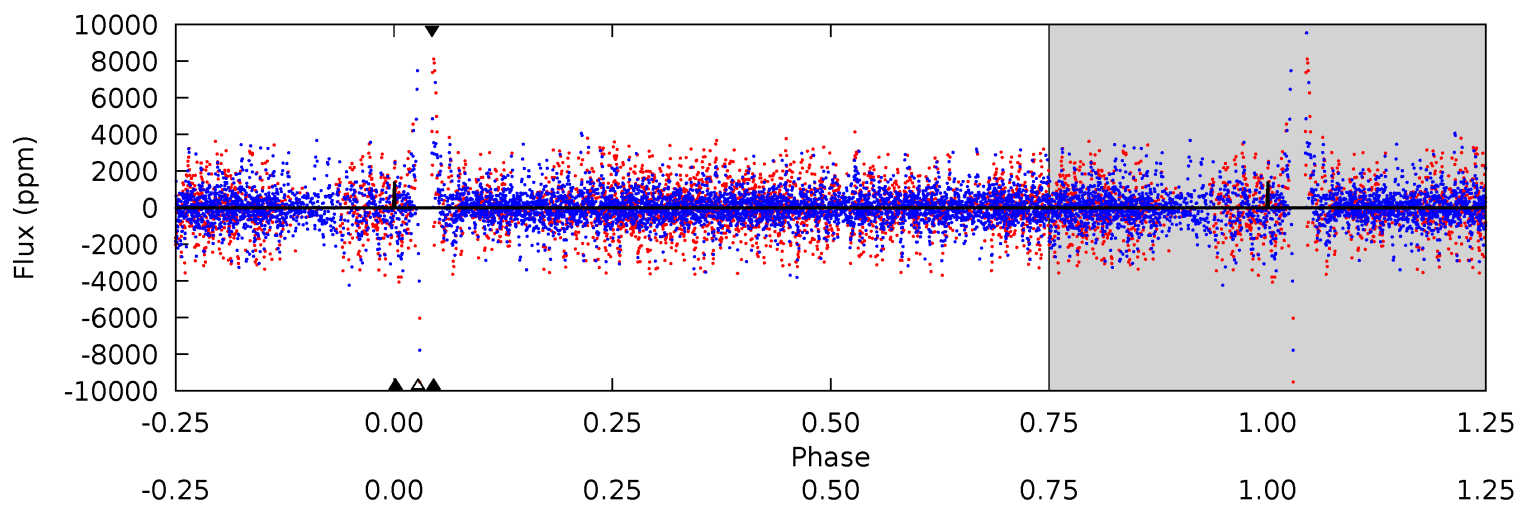
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.6	5.34	5.21	8.02	4.92	2.37	2.49	8.40	5.60	0.13	-2.67	7.96	215.5	0.37	3.21



Alt Model-Shift Uniqueness Test

004247023-04, P = 31.897488 Days, E = 162.187218 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.76	6.68	5.24	6.67	5.50	3.36	0.79	-3.48	-4.90	1.44	0.01	0	-31.6	0.50	0



Stellar Parameters For KIC 004247023

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5458^{+180}_{-164}	$4.381^{+0.162}_{-0.216}$	$-0.080^{+0.300}_{-0.300}$	$0.972^{+0.282}_{-0.173}$	$0.828^{+0.119}_{-0.064}$	$1.272^{+0.959}_{-0.664}$
	+3%/-3%	+4%/-5%	+375%/-375%	+29%/-18%	+14%/-8%	+75%/-52%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004247023-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-855 ± 160	$79.74^{+84.94}_{-53.48}$	777^{+62}_{-45}	2028^{+668}_{-345}	$2.436^{+20.998}_{-1.873}$
Alt.	-5360 ± 802	$81.47^{+83.85}_{-55.15}$	775^{+68}_{-50}	2542^{+920}_{-394}	15^{+127}_{-12}

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 $A_{obs} \gg 1.0$

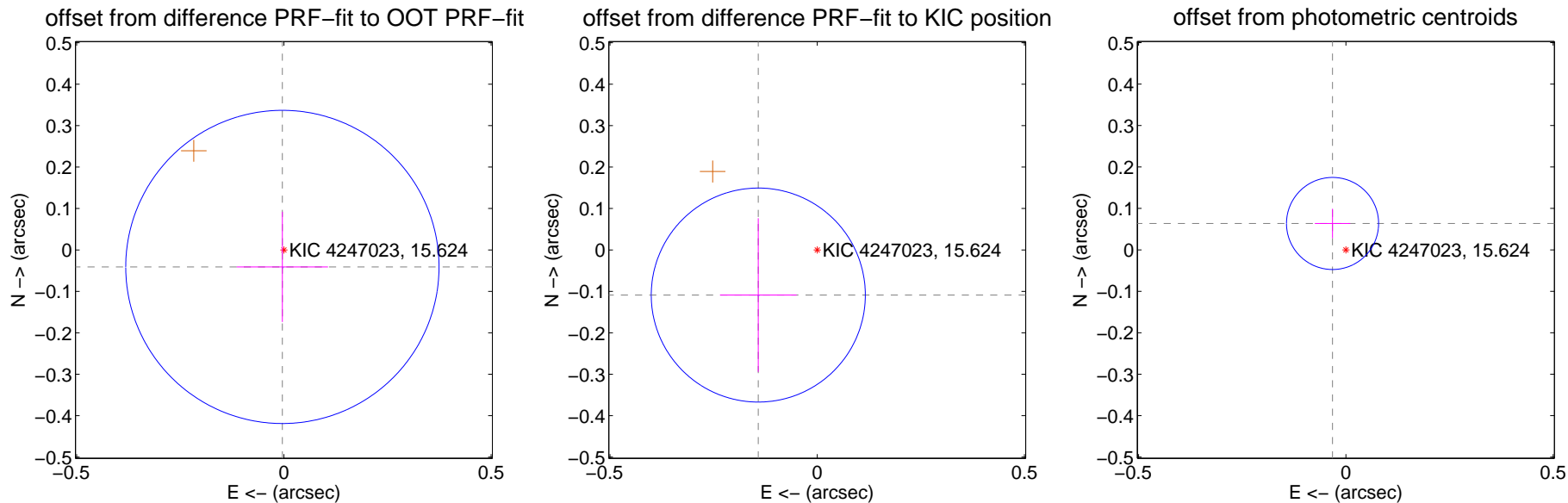
DV Centroid Data

Supplemental centroid analysis for 004247023-04. Kepler magnitude: 15.62. Transit SNR 35.19

There are 1 quarters with good PRF difference image offsets

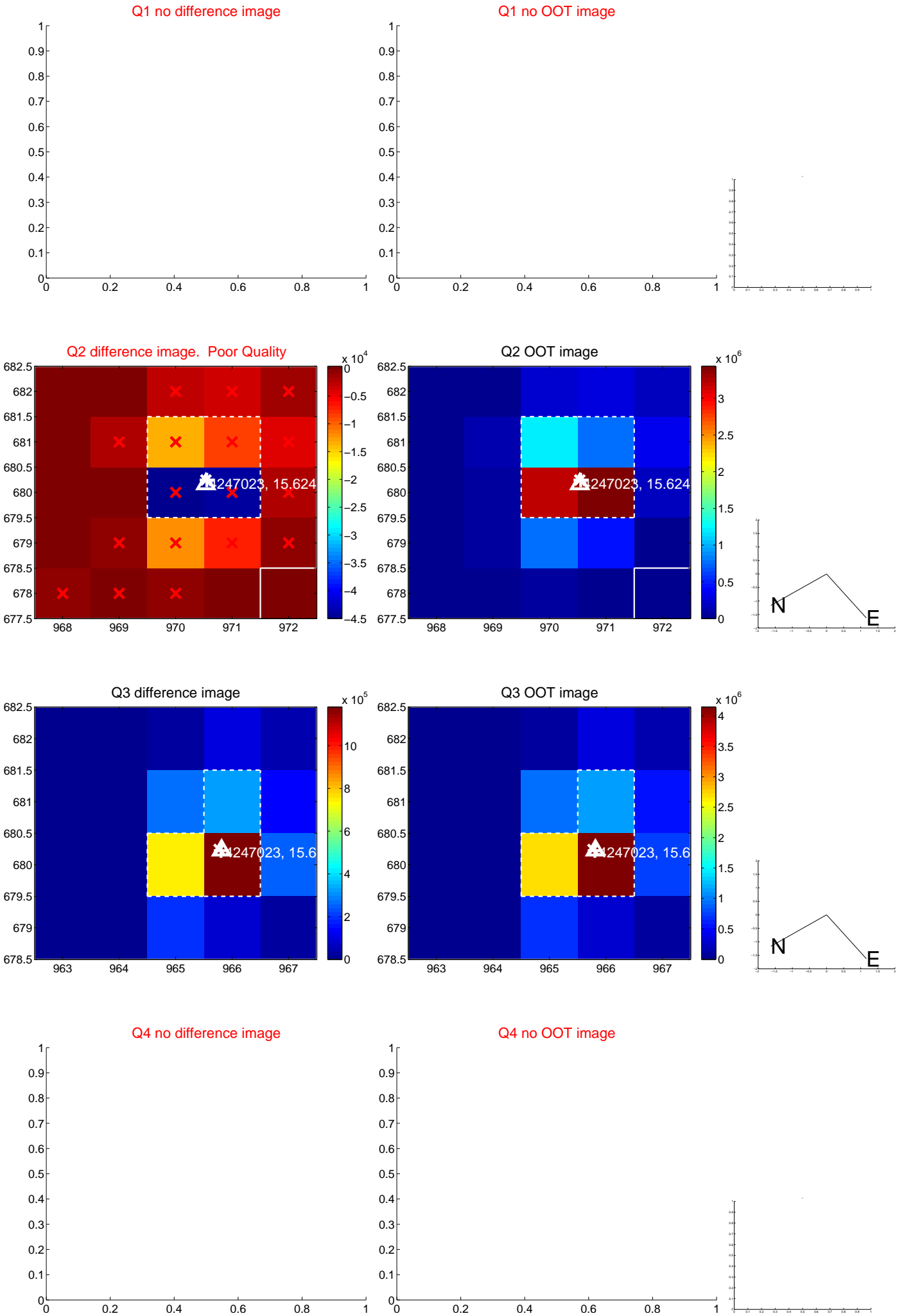
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.041 ± 0.126	0.33	0.004 ± 0.110	-0.041 ± 0.133
PRF-fit source offset from KIC position	0.179 ± 0.086	2.08	0.142 ± 0.092	-0.109 ± 0.185
photometric centroid source offset	0.07 ± 0.04	1.93	0.03 ± 0.04	0.06 ± 0.04



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.



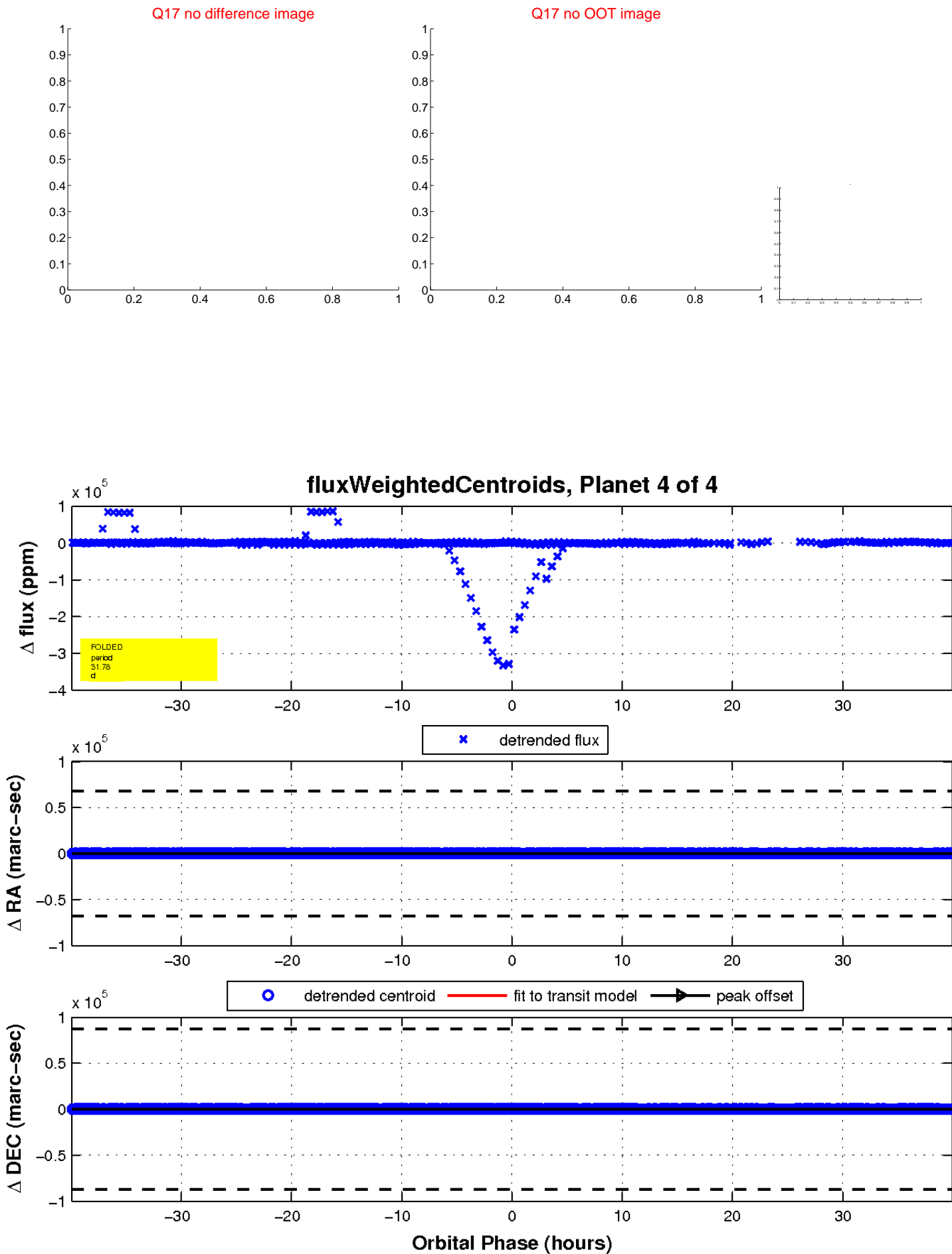
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

