

KIC 012004872

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})
012004872-01	OBS	No	523.565233	319.160294	1587.7	5.248	13.1	7.8	0.36	3514	1.50	0.02
012004872-02	OBS	No	378.696215	230.867511	1155.8	3.298	11.1	6.8	0.36	3514	1.28	0.03
012004872-03	OBS	No	419.511191	157.716424	1134.3	3.907	10.9	6.5	0.36	3514	1.32	0.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012004872-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012004872-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012004872-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—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.

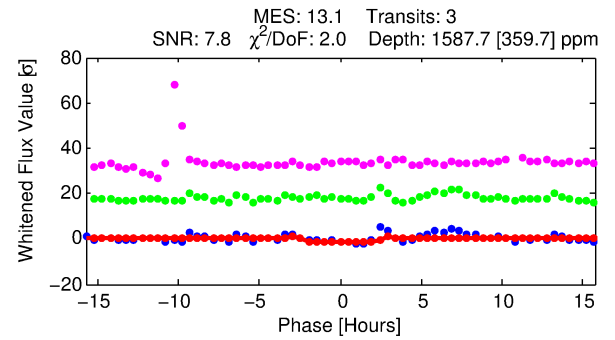
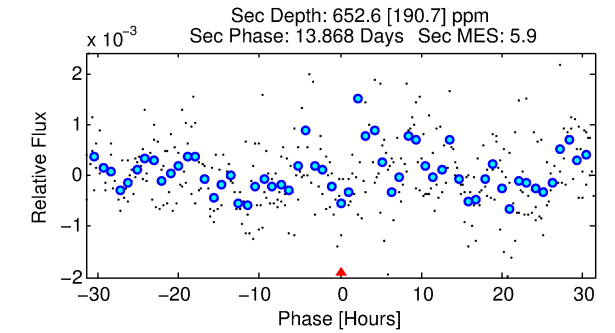
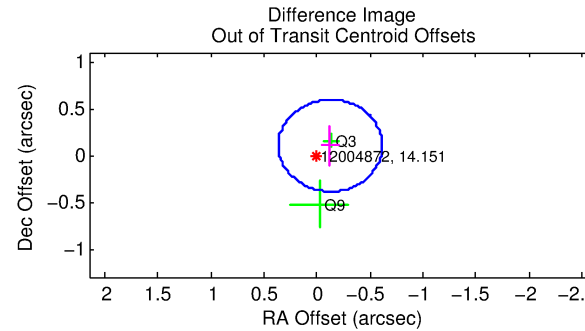
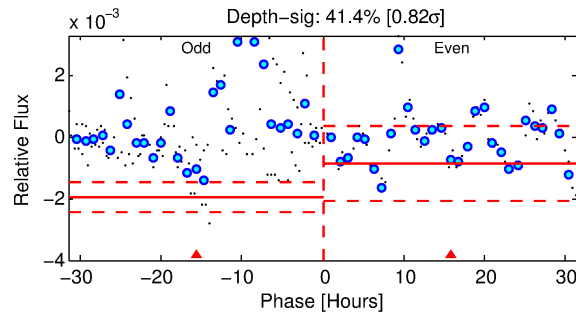
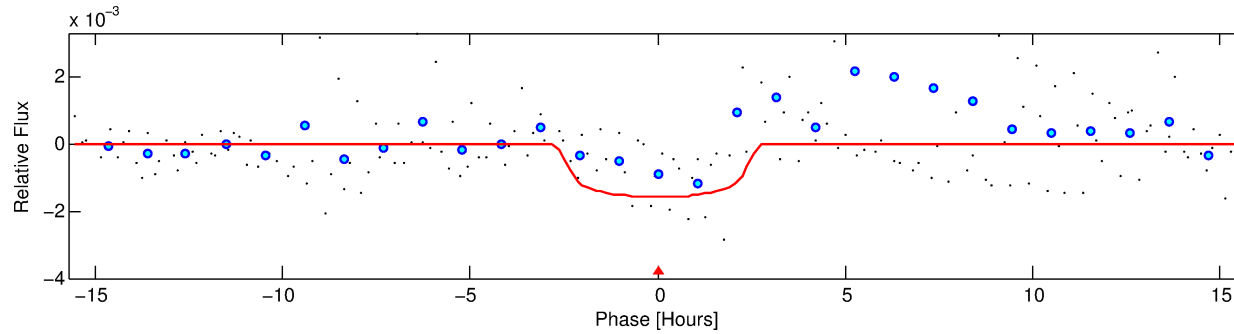
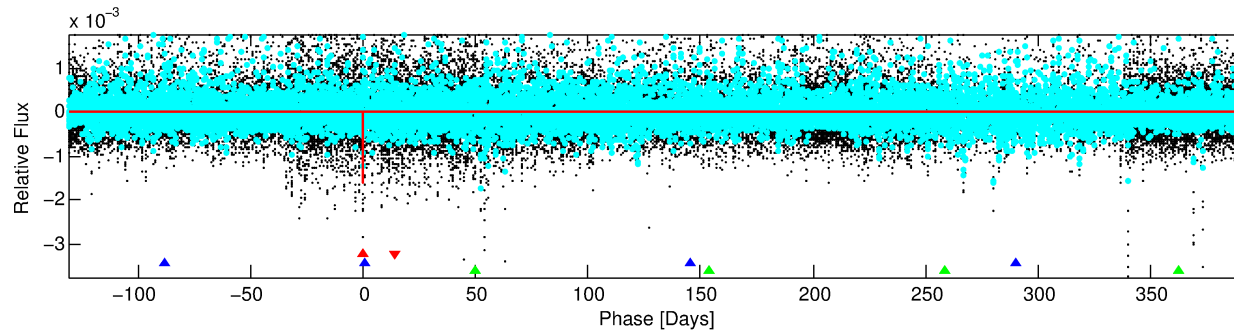
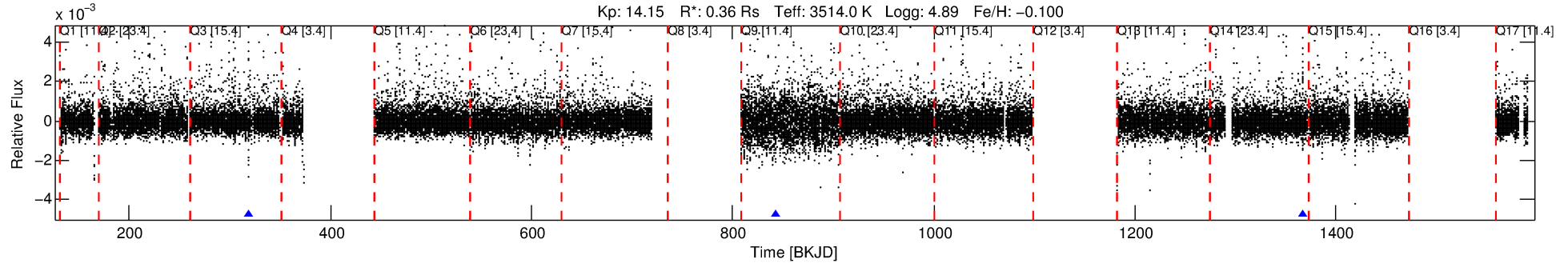
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012004872-01

No Significant Match Found

DV One-Page Summary

KIC: 12004872 Candidate: 1 of 3 Period: 523.565 d



DV Fit Results:

Period = 523.56523 [0.00819] d
Epoch = 319.1603 [0.0105] BKJD
Rp/R* = 0.0377 [0.0299]
a/R* = 657.31 [2166.35]
b = 0.58 [3.82]
Seff = 0.02 [0.00]
Teq = 98 [4] K
Rp = 1.50 [1.21] Re
a = 0.9174 [0.1015] AU
Ag = 133724.40 [215878.80] [0.62 σ]
Teffp = 2891 [1165] K [2.40 σ]

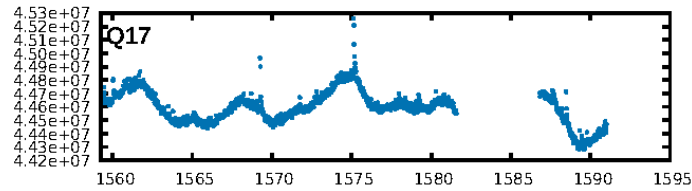
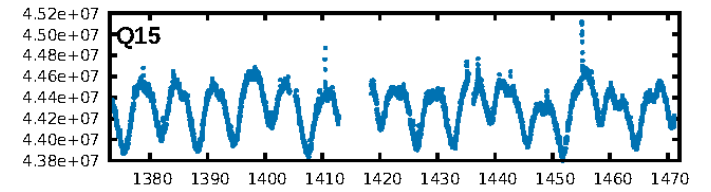
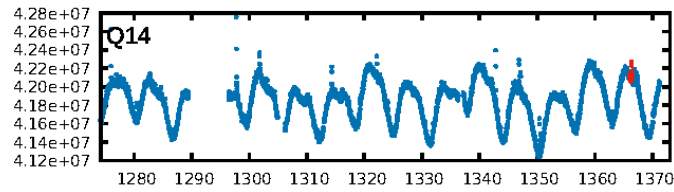
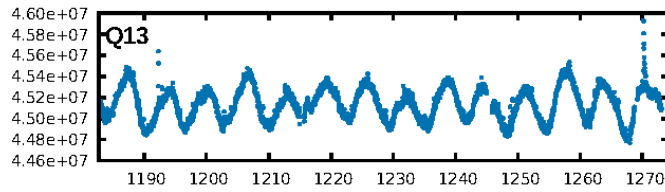
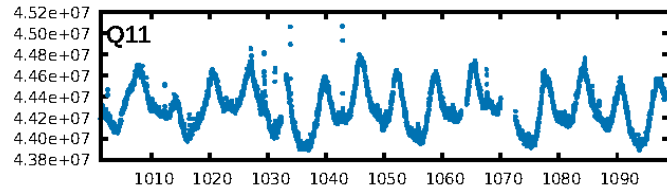
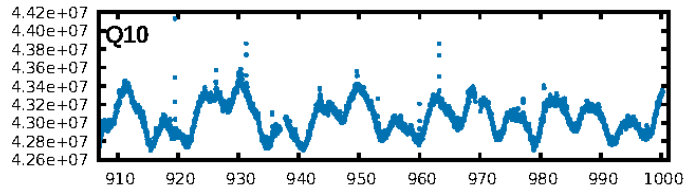
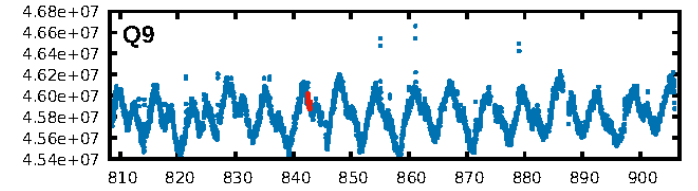
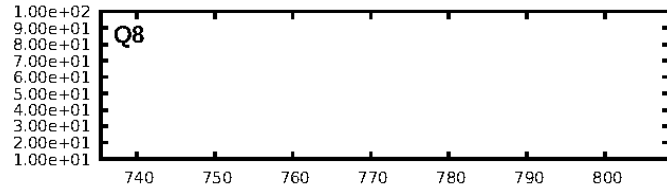
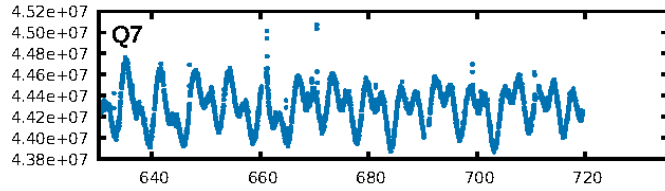
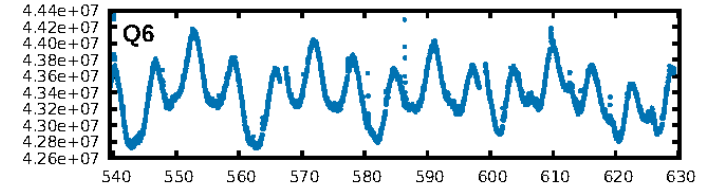
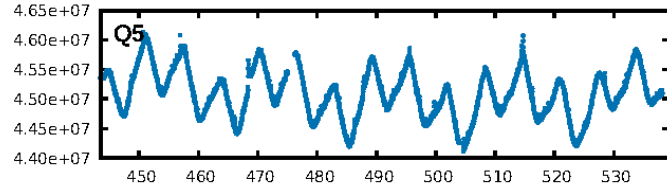
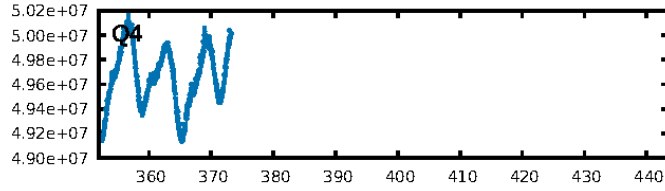
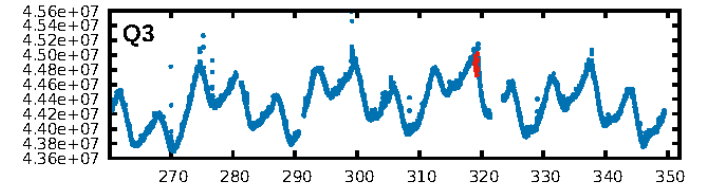
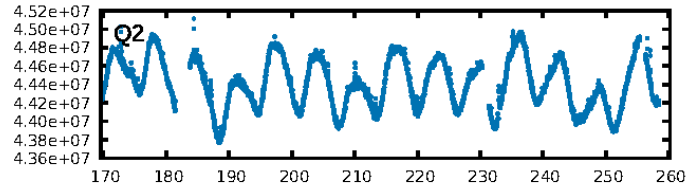
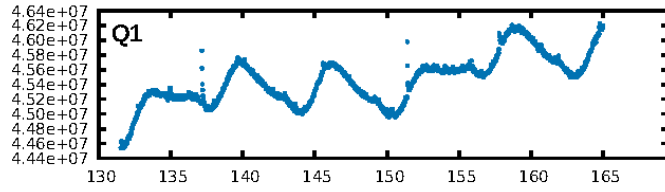
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [381.70 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 55.3%
Bootstrap-pfa: 6.10e-14
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.6947
Centroid-sig: 25.3%
Centroid-so: 1.694 arcsec [2.15 σ]
OotOffset-rm: 0.161 arcsec [0.99 σ]
KicOffset-rm: 0.107 arcsec [0.70 σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-st: 0/1/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

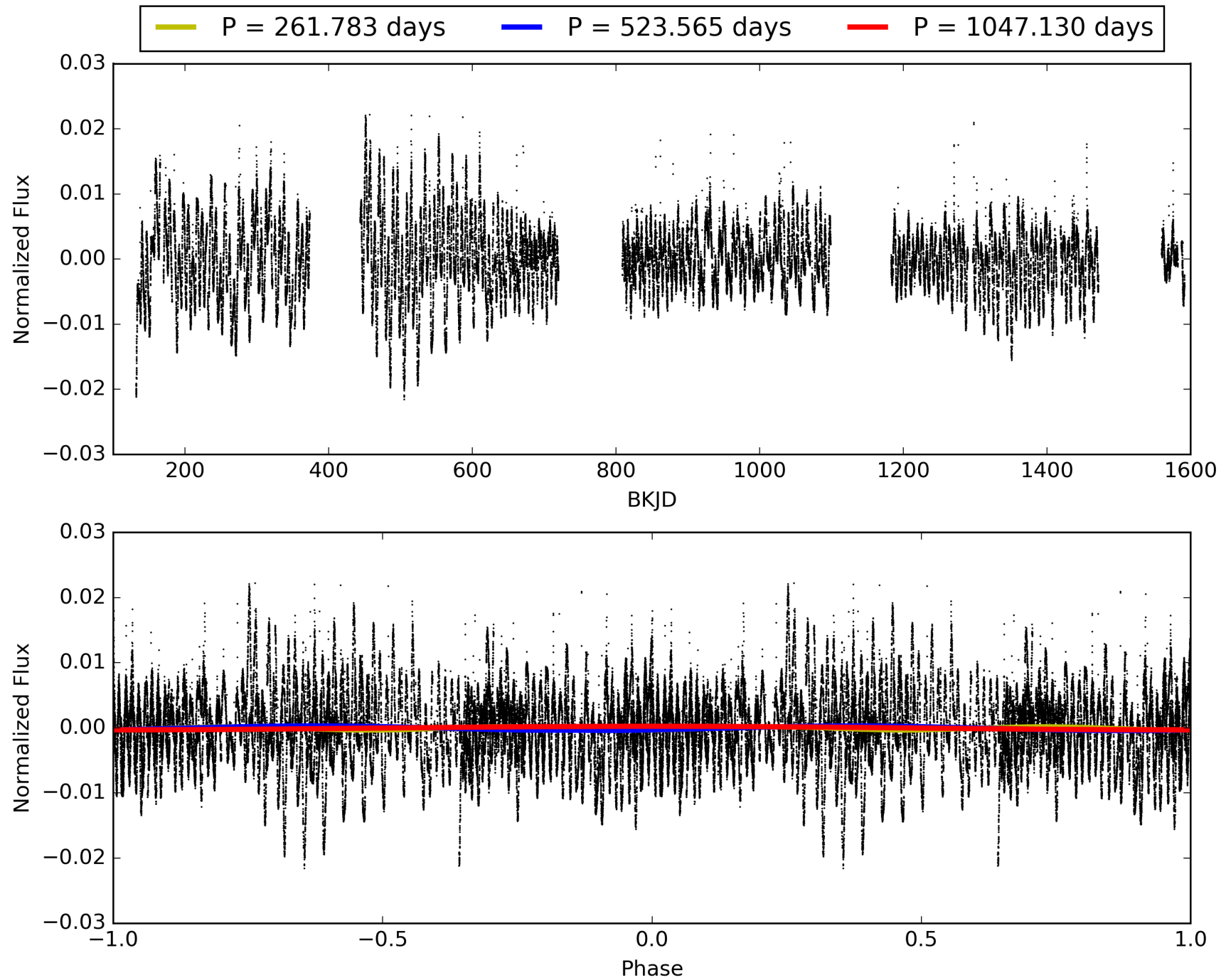
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:45:34 Z

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

TCE 012004872-01, PDC Light Curves

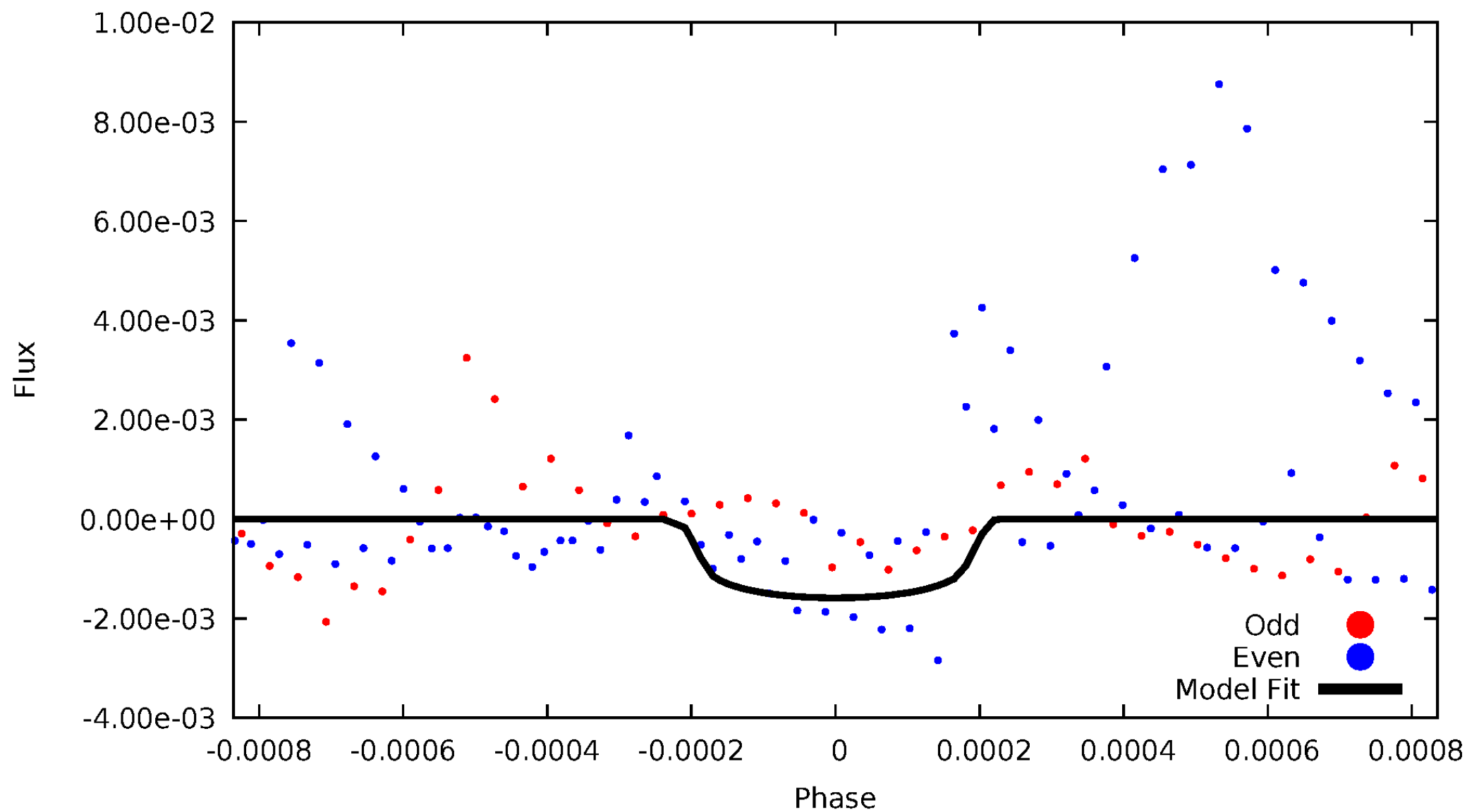


TCE 012004872-01



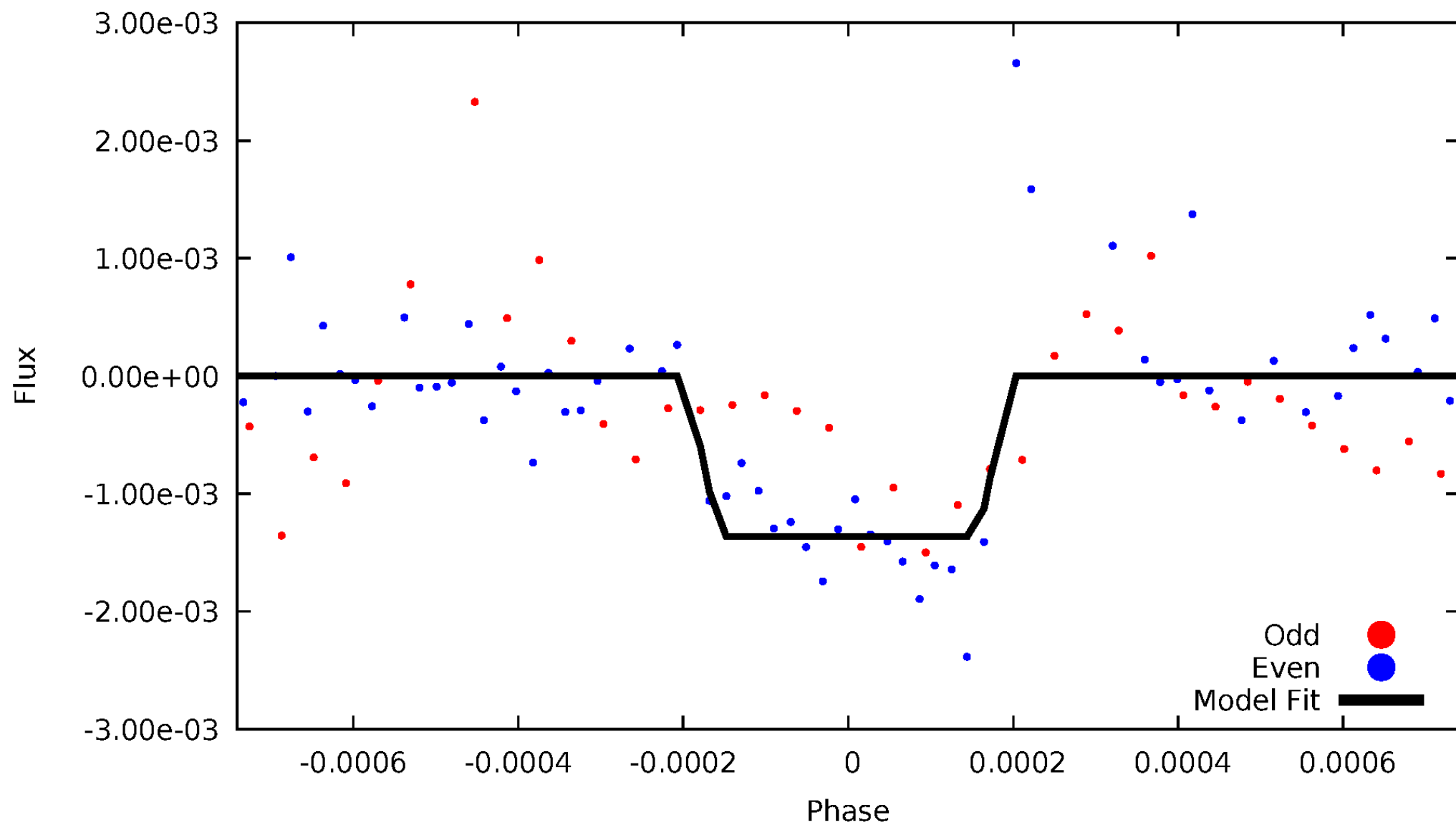
DV Odd/Even

TCE 012004872-01



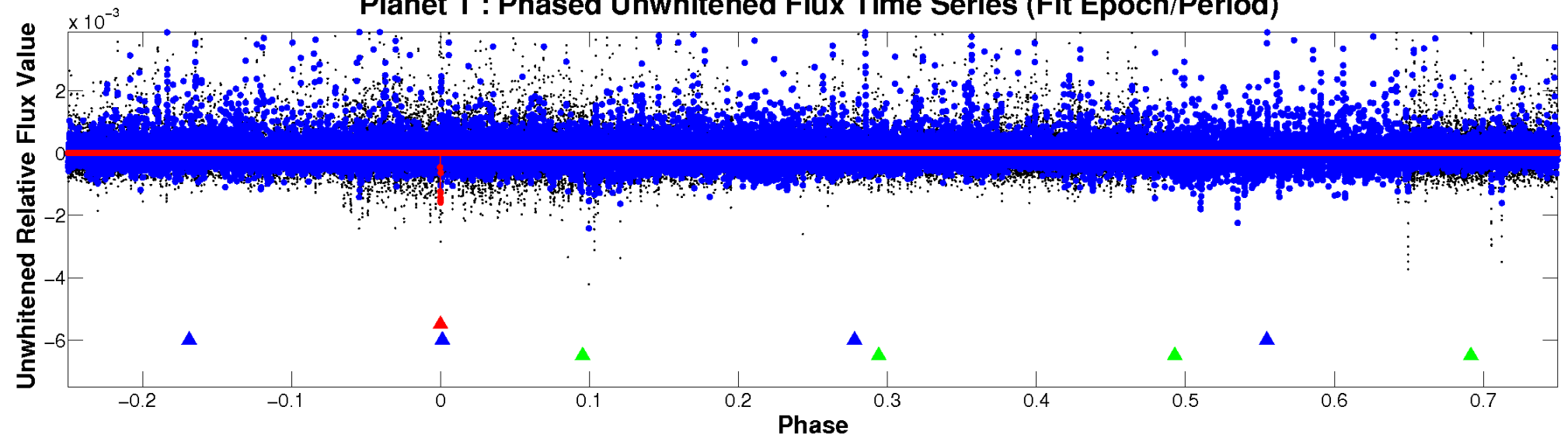
ALT Odd/Even

TCE 012004872-01

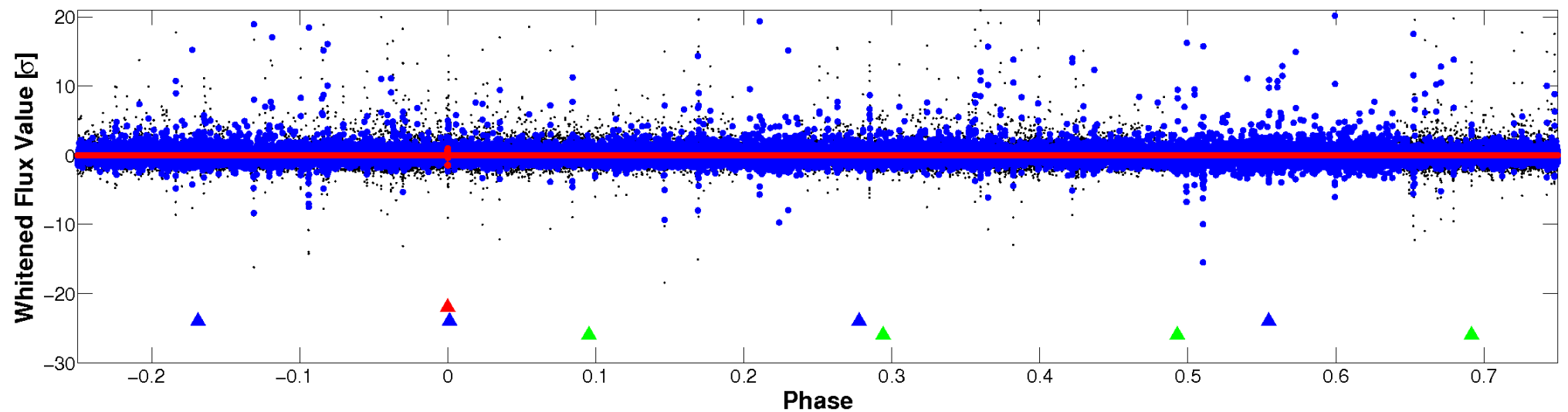


Non-Whitened Vs. Whitened Light Curve

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

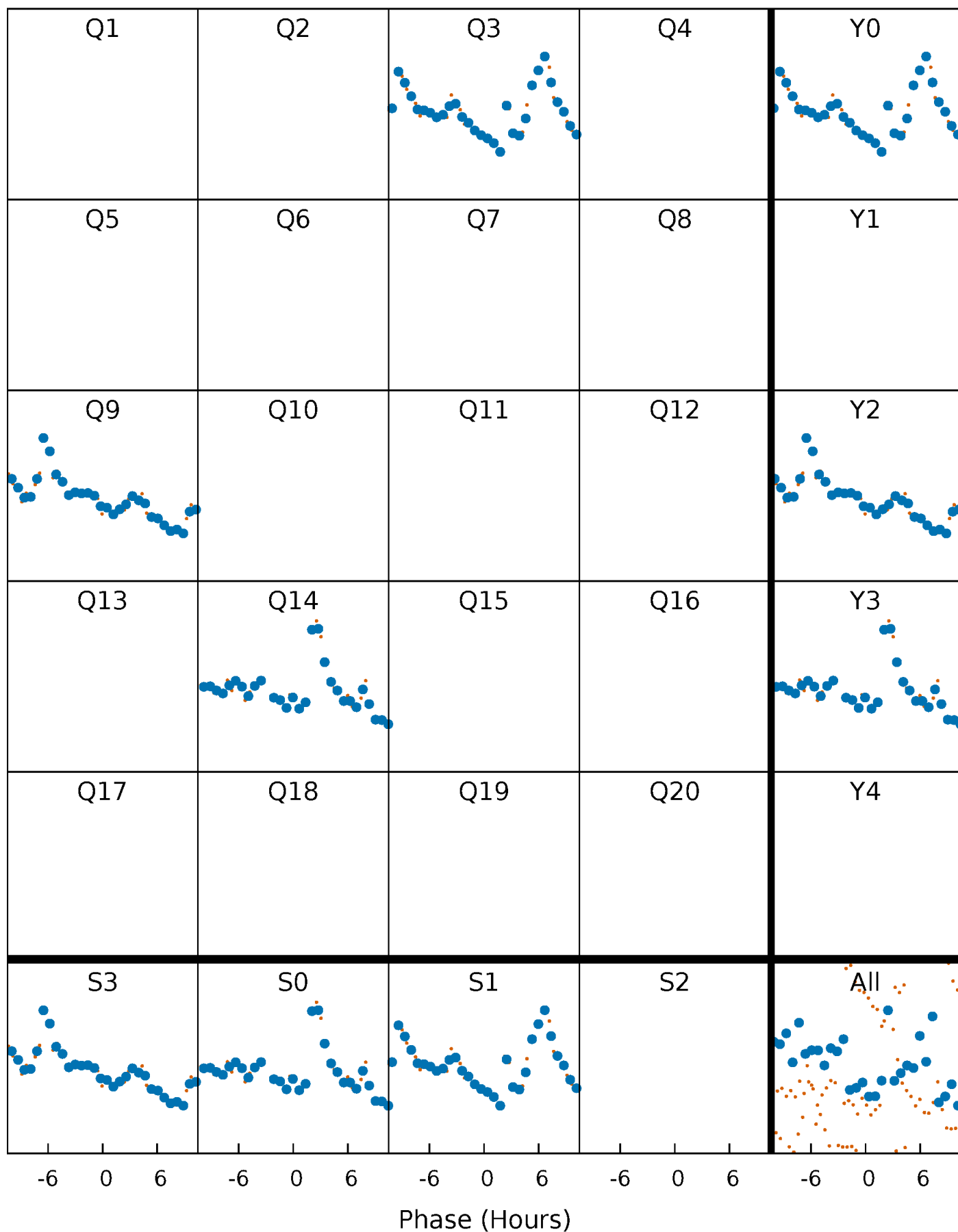


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



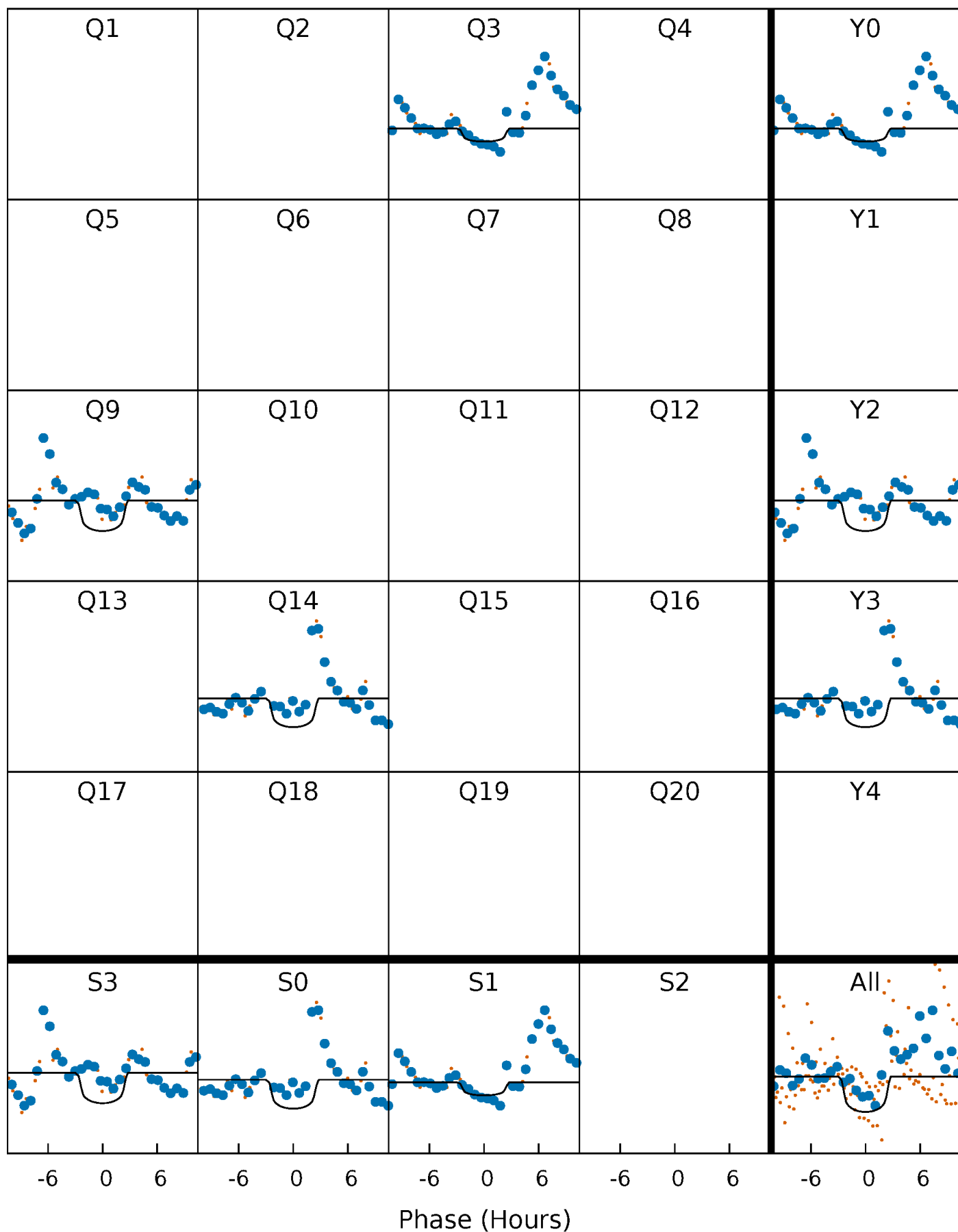
PDC Quarter-Phased Transit Curves

TCE 012004872-01 P=523.565233 Days $T_0=319.160294$ (BKJD)



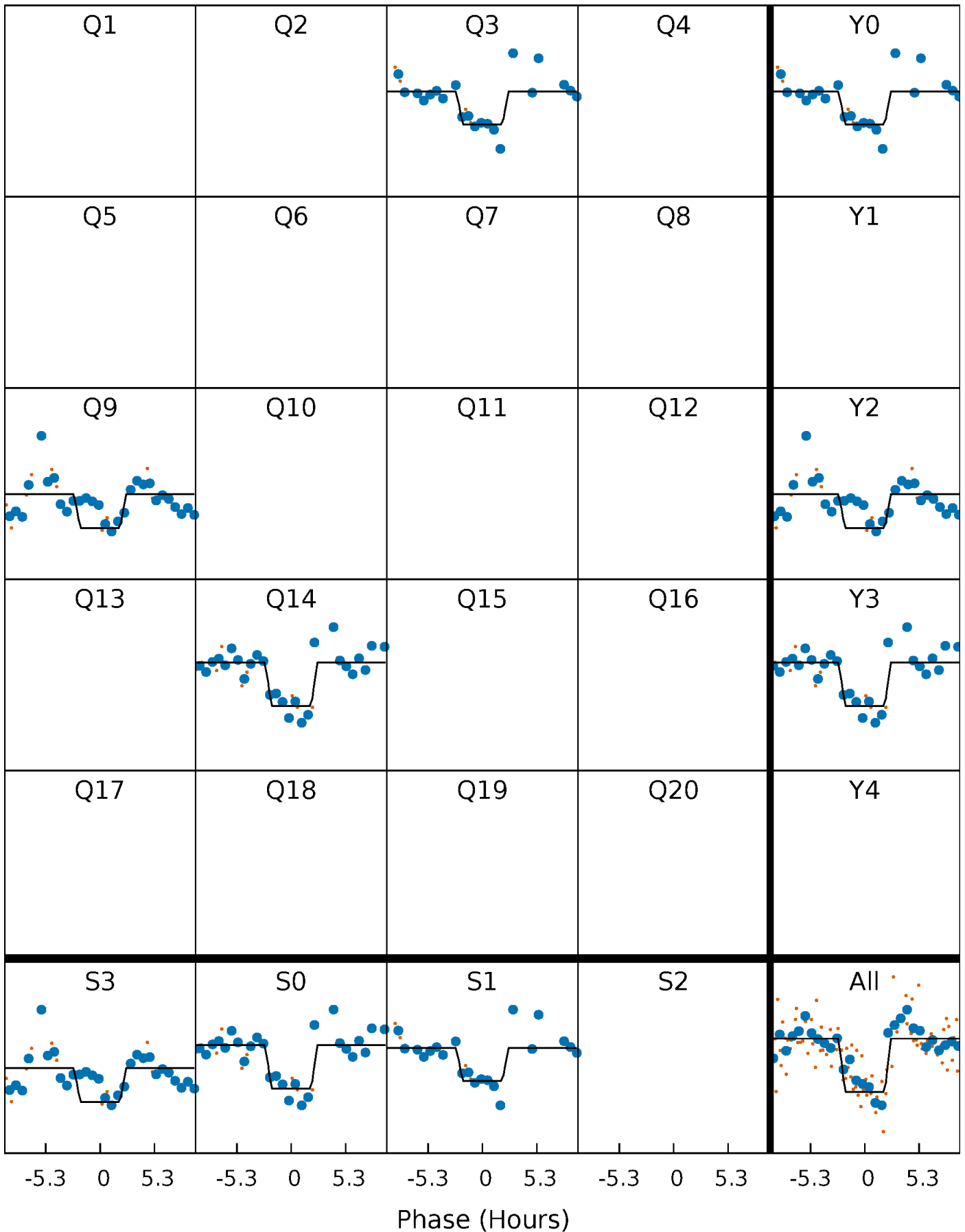
DV Quarter-Phased Transit Curves

TCE 012004872-01 P=523.565233 Days $T_0=319.160294$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

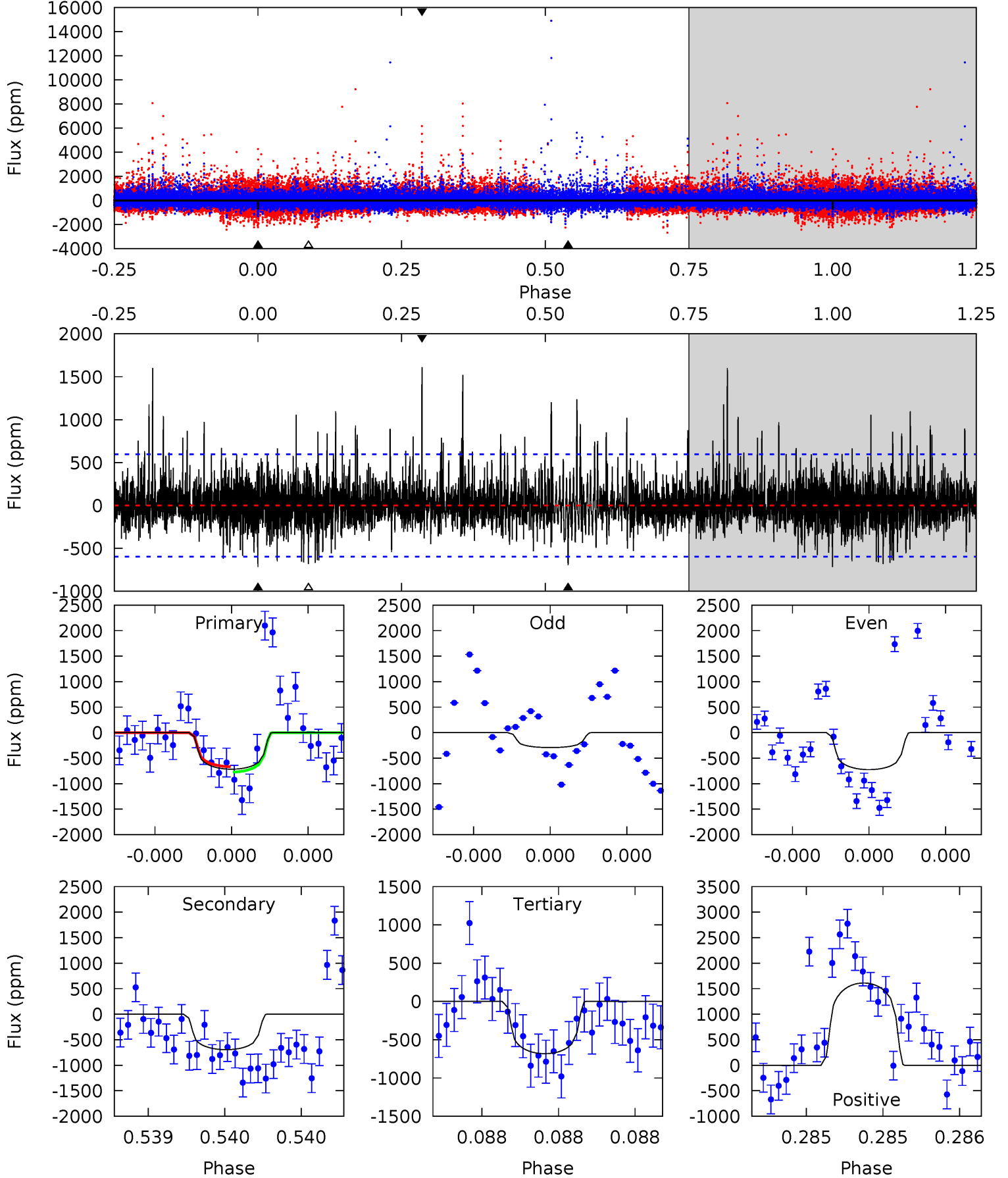
TCE 012004872-01 P=523.555486 Days $T_0=319.159469$ (BKJD)



DV Model-Shift Uniqueness Test

012004872-01, P = 523.565233 Days, E = 319.160294 Days

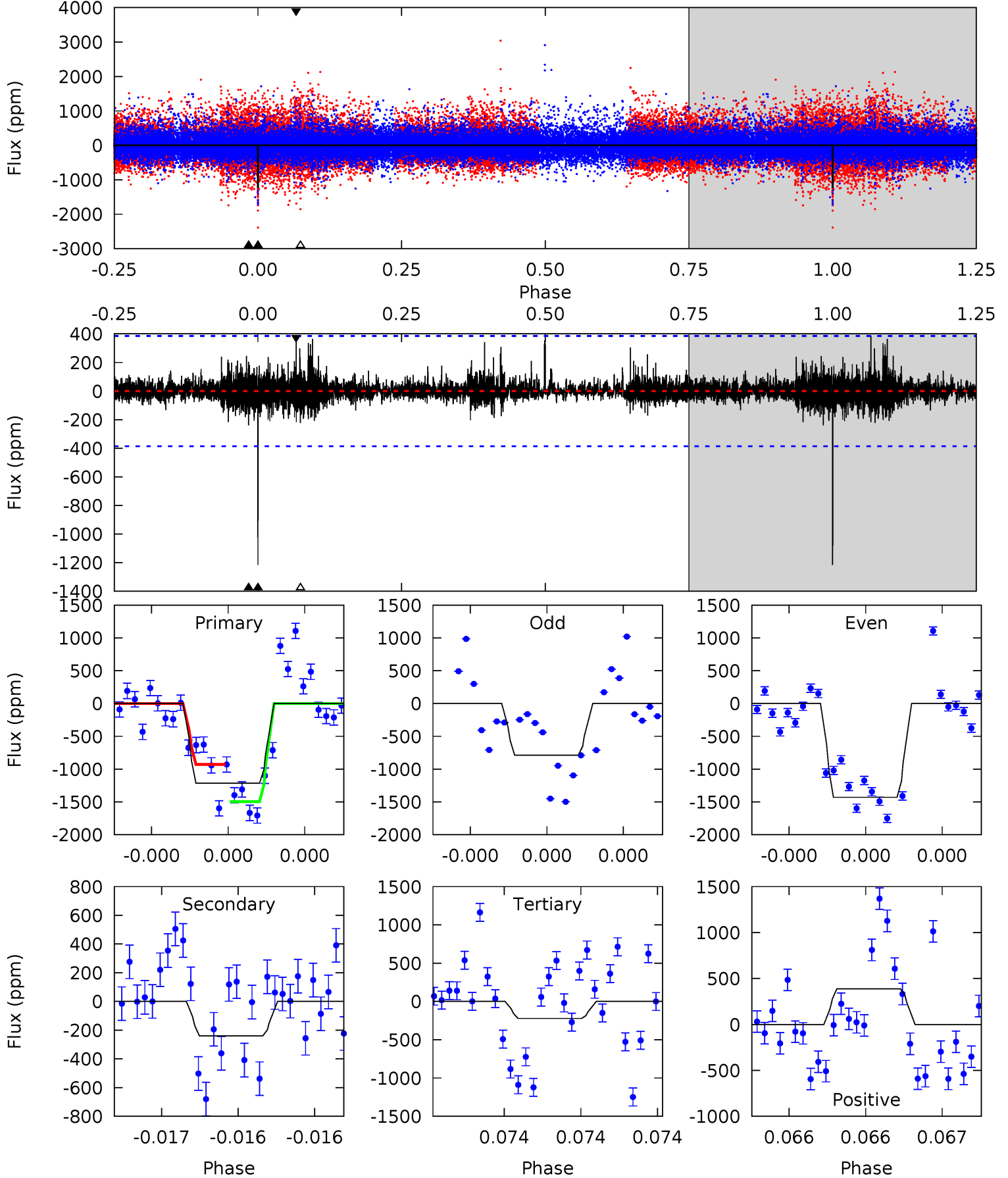
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.73	6.53	6.41	15.1	5.60	3.52	1.97	0.32	-8.42	0.12	-8.62	1.53	2.25	0.69	0.49



Alt Model-Shift Uniqueness Test

012004872-01, P = 523.555486 Days, E = 319.159469 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.8	3.49	3.25	5.67	5.63	3.57	0.77	14.5	12.1	0.25	-2.18	3.98	0.87	0.24	4.17



Stellar Parameters For KIC 012004872

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3514^{+78}_{-78}	$4.888^{+0.055}_{-0.044}$	$-0.100^{+0.100}_{-0.100}$	$0.365^{+0.046}_{-0.056}$	$0.379^{+0.055}_{-0.068}$	$10.940^{+3.523}_{-2.235}$
	+2%/-2%	+1%/-1%	+100%/-100%	+13%/-15%	+15%/-18%	+32%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 012004872-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-695 ± 106	$1.65^{+1.08}_{-0.93}$	136^{+4}_{-4}	3049^{+955}_{-381}	$114842^{+519383}_{-71420}$
Alt.	-239 ± 68	$1.66^{+1.12}_{-1.03}$	136^{+4}_{-5}	2652^{+819}_{-330}	$42004^{+219672}_{-28022}$

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

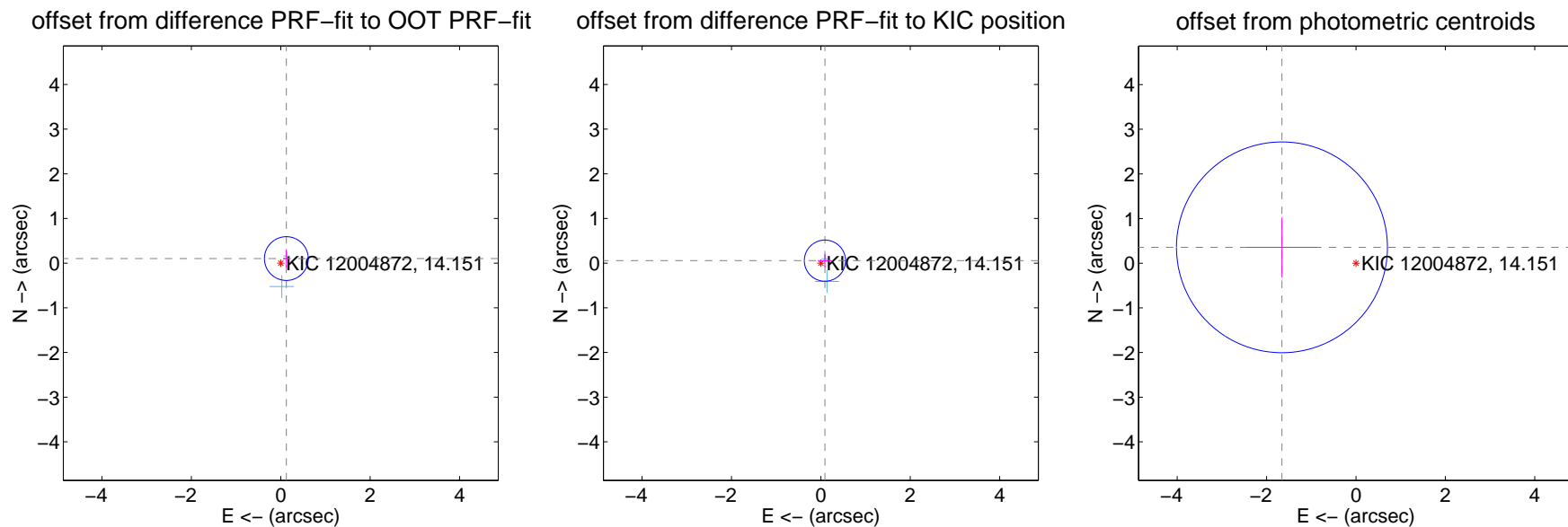
DV Centroid Data

Supplemental centroid analysis for 012004872-01. Kepler magnitude: 14.15. Transit SNR 7.76

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.161 ± 0.163	0.99	-0.125 ± 0.074	0.102 ± 0.208
PRF-fit source offset from KIC position	0.107 ± 0.154	0.70	-0.091 ± 0.155	0.056 ± 0.149
photometric centroid source offset	1.69 ± 0.79	2.15	1.66 ± 0.79	0.36 ± 0.67



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



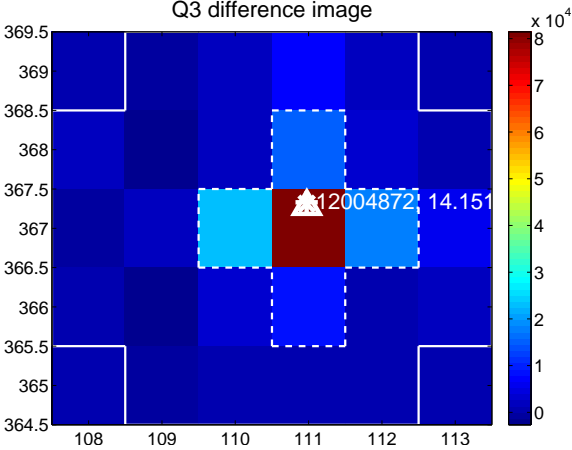
Q2 no difference image



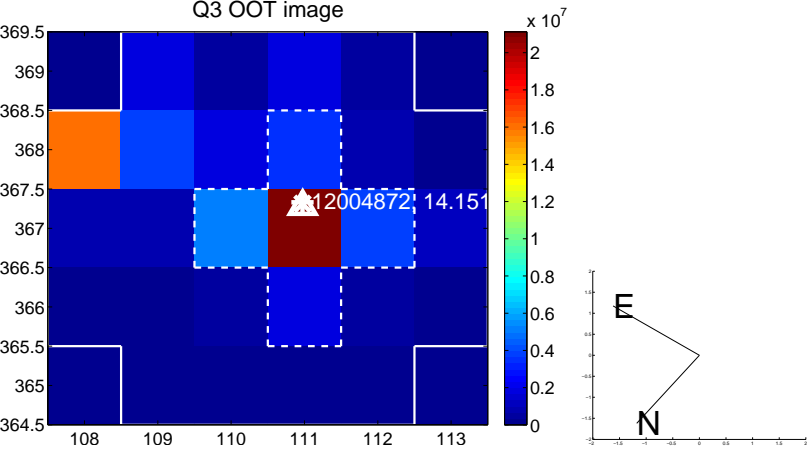
Q2 no OOT image



Q3 difference image



Q3 OOT image



Q4 no difference image



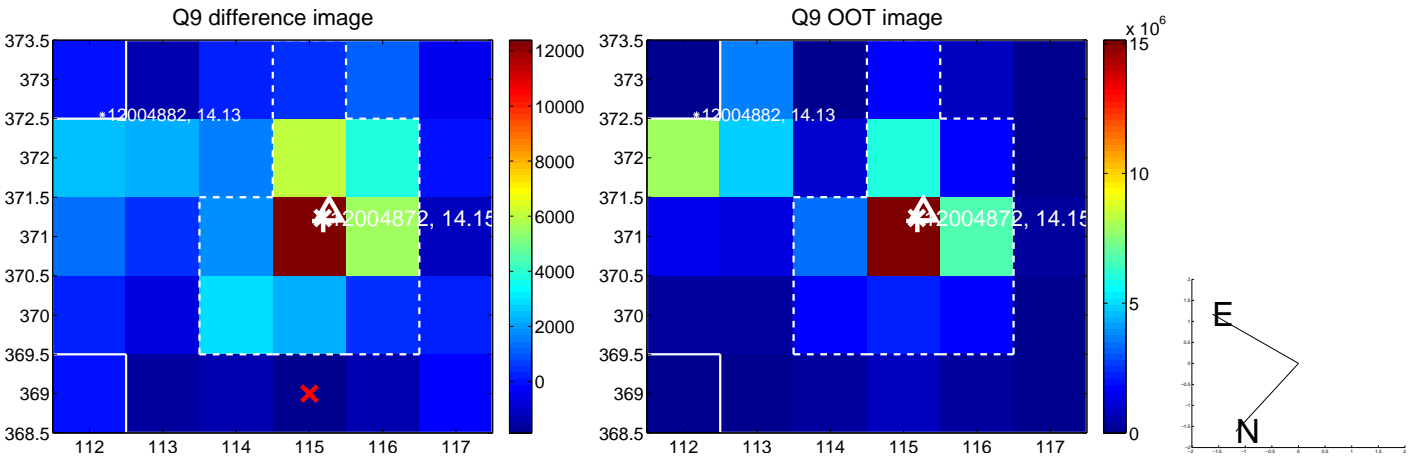
Q4 no OOT image



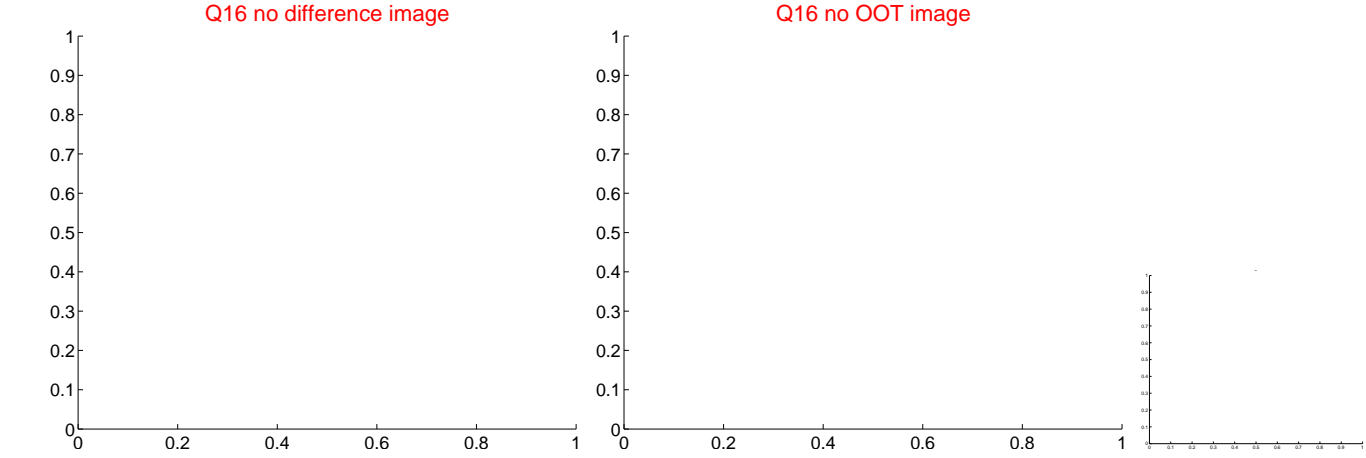
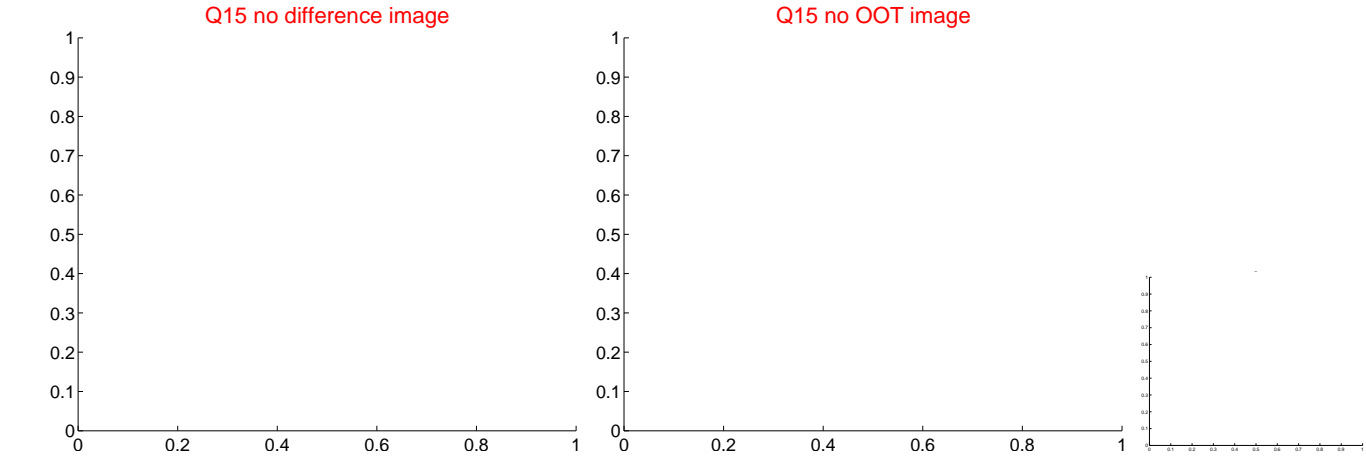
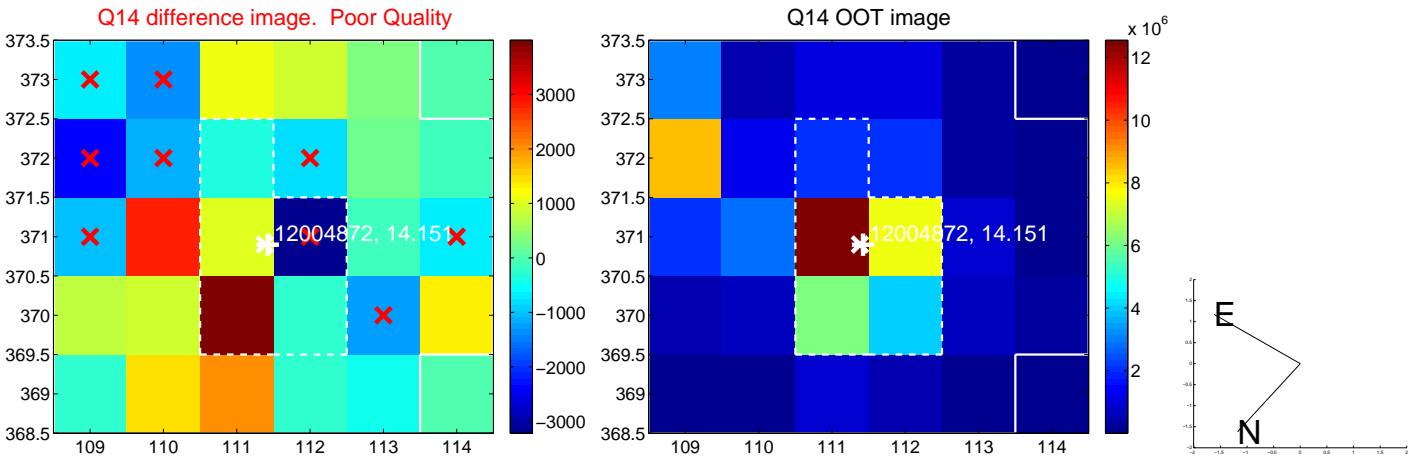
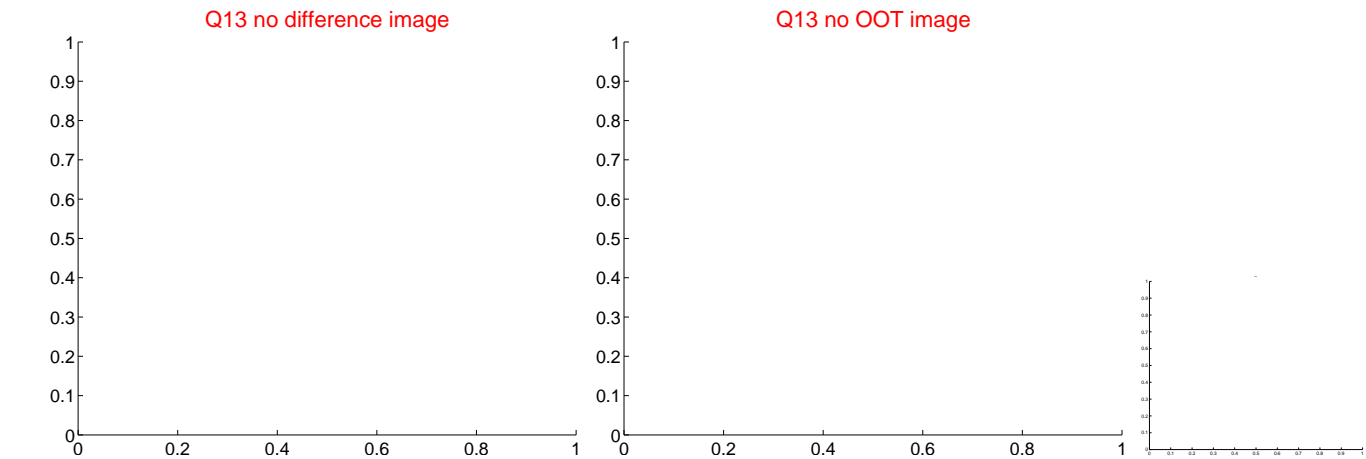
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



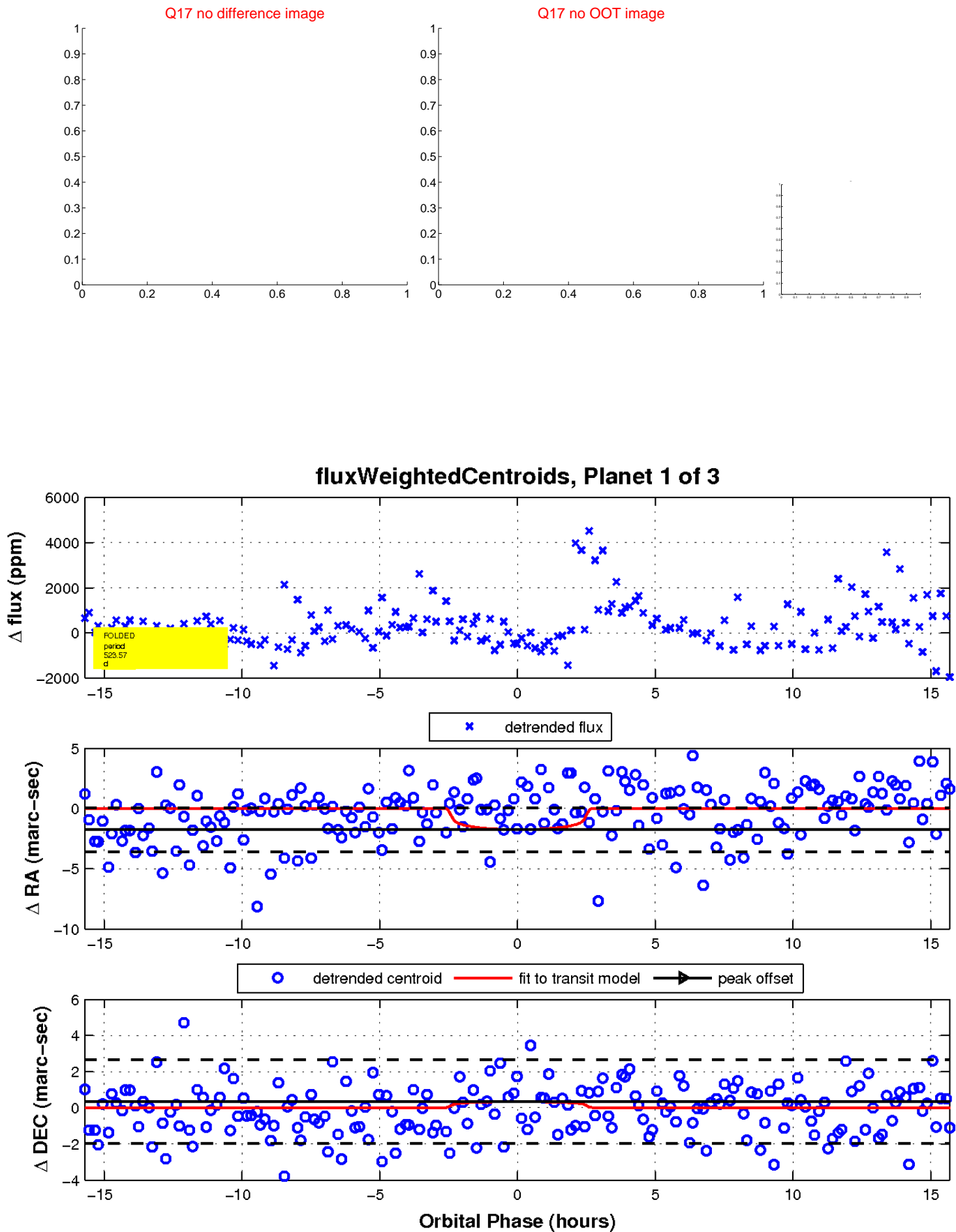
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

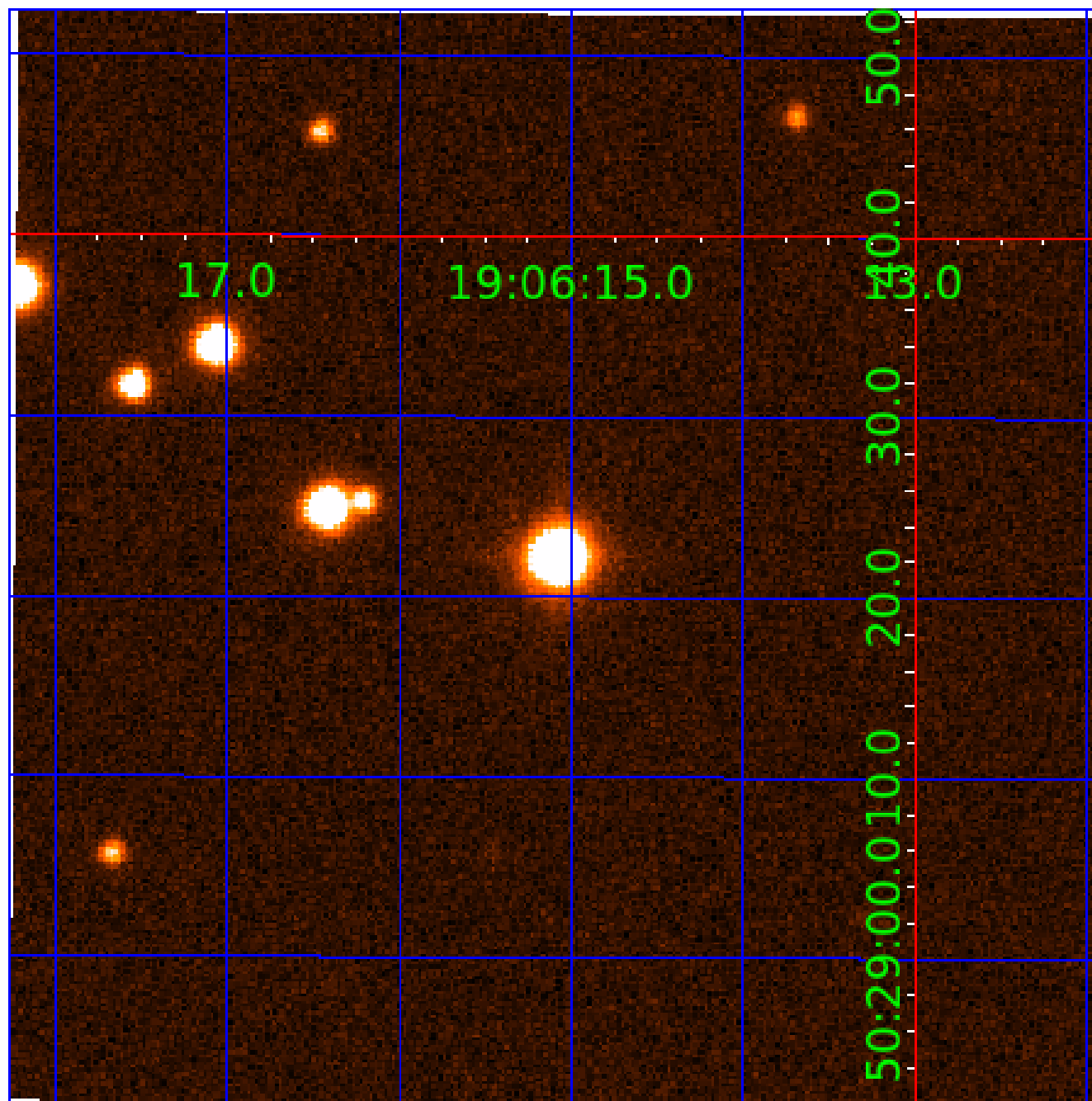


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012004872

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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012004872-03	OBS	No	419.511191	157.716424	1134.3	3.907	10.9	6.5	0.36	3514	1.32	0.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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012004872-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012004872-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—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.

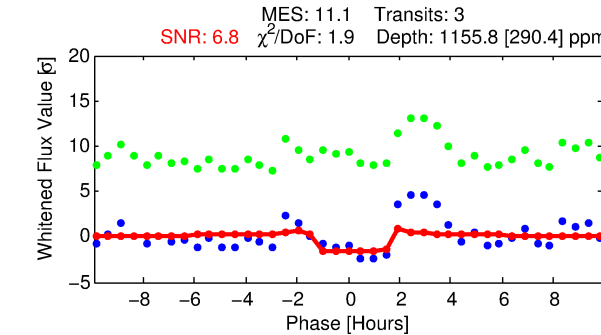
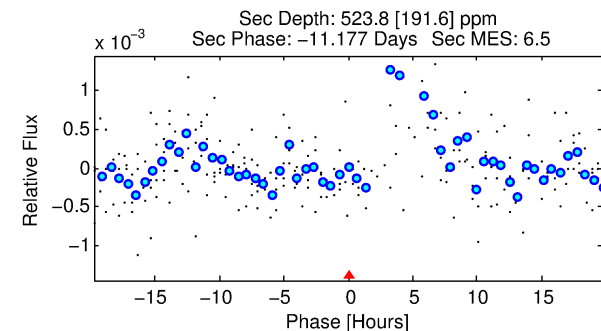
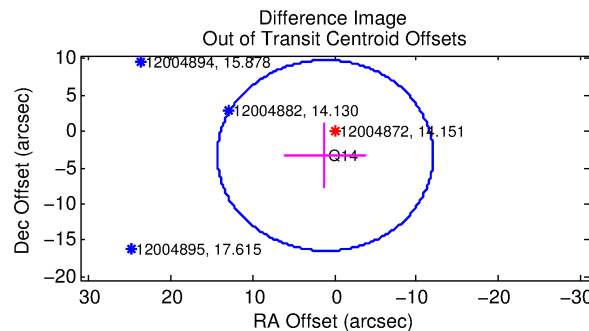
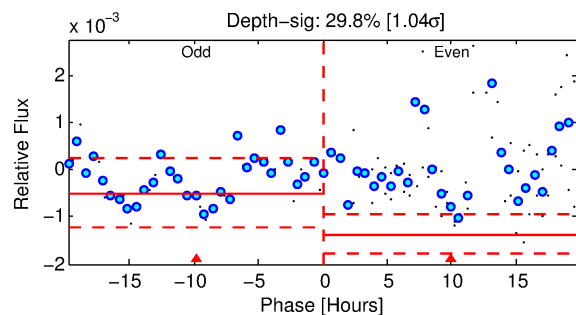
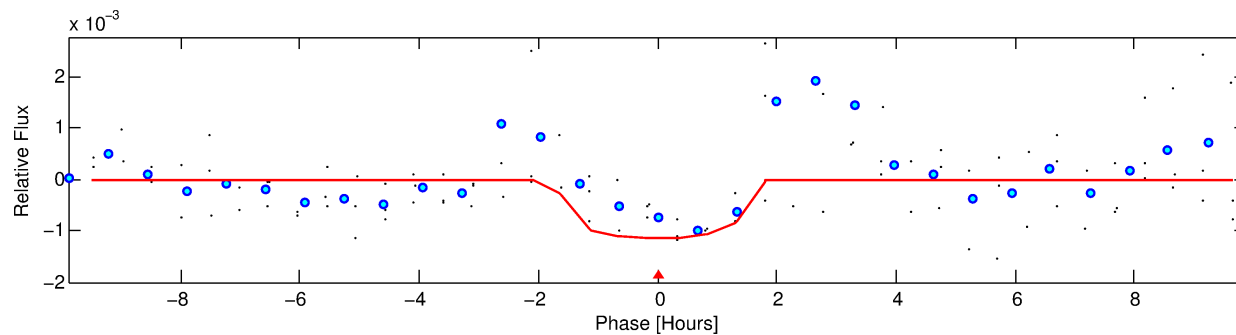
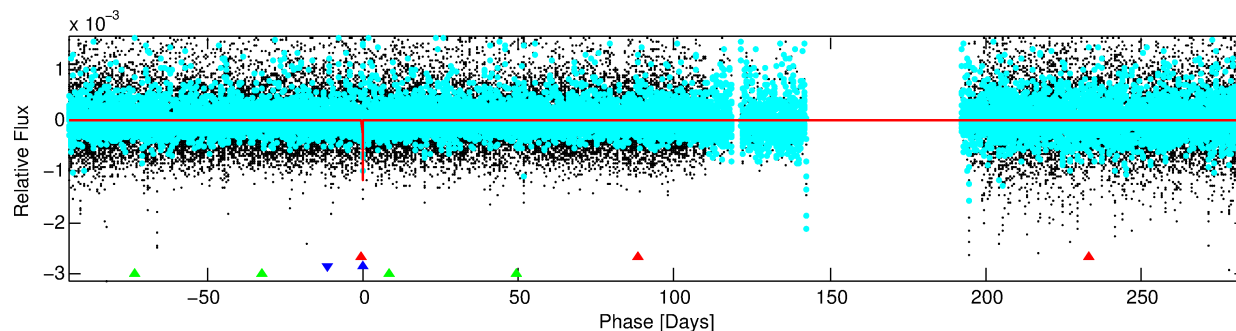
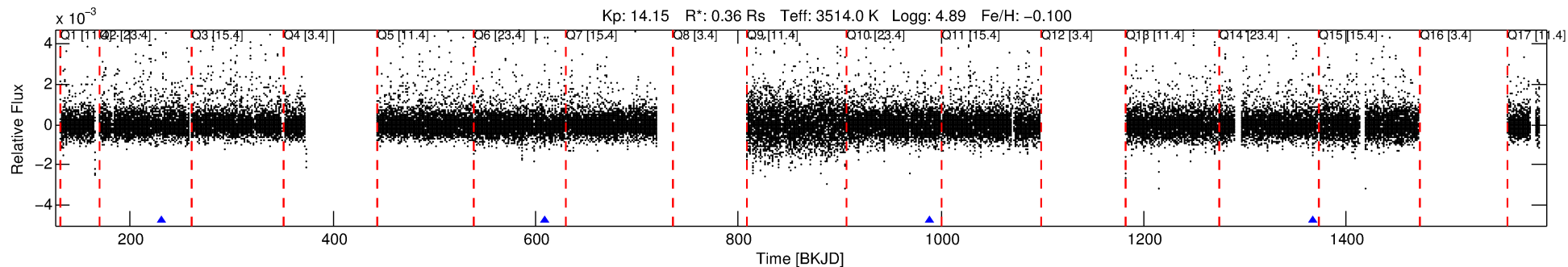
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012004872-02

No Significant Match Found

DV One-Page Summary

KIC: 12004872 Candidate: 2 of 3 Period: 378.696 d



DV Fit Results:

Period = 378.69621 [0.00838] d
Epoch = 230.8675 [0.0173] BKJD
Rp/R* = 0.0321 [0.0471]
a/R* = 763.09 [4793.05]
b = 0.56 [7.86]
Seff = 0.03 [0.01]
Teq = 109 [4] K
Rp = 1.28 [1.89] Re
a = 0.7392 [0.0818] AU
Ag = 96240.53 [284917.55] [0.34 σ]
Teffp = 2967 [2194] K [1.30 σ]

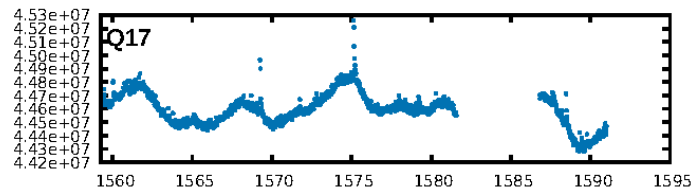
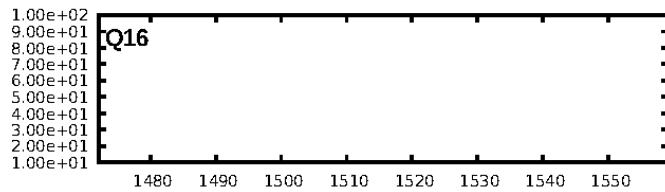
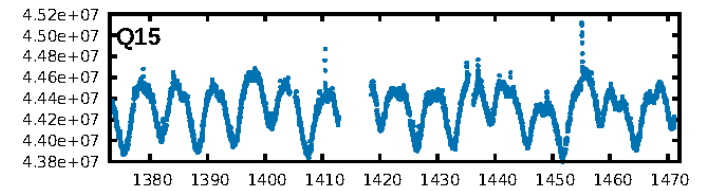
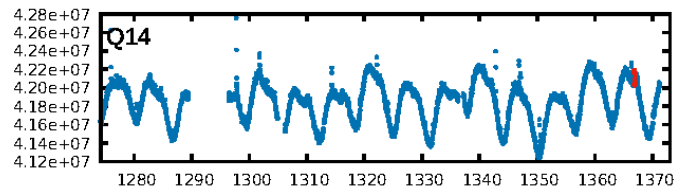
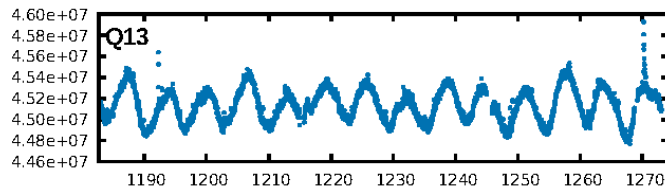
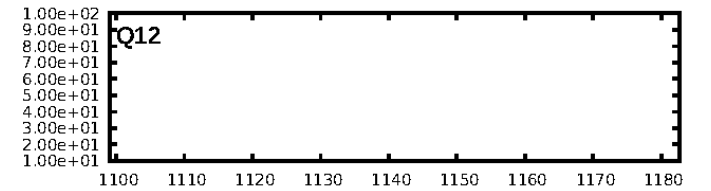
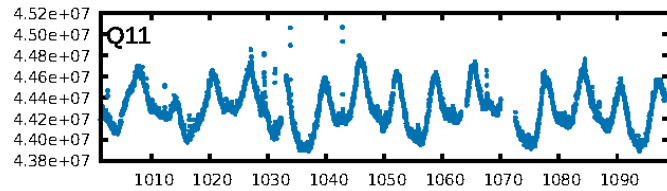
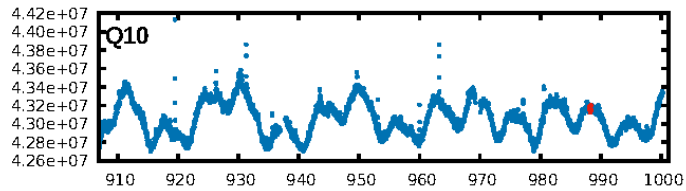
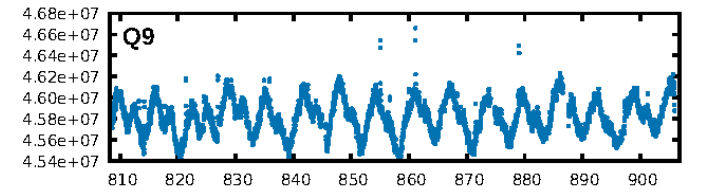
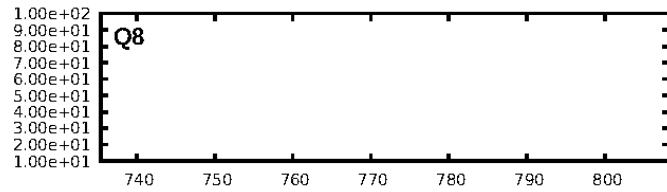
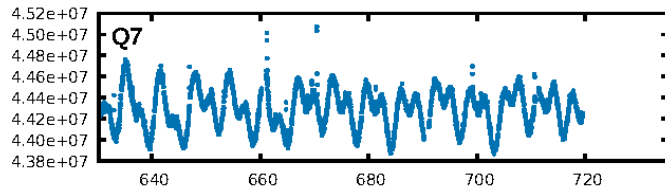
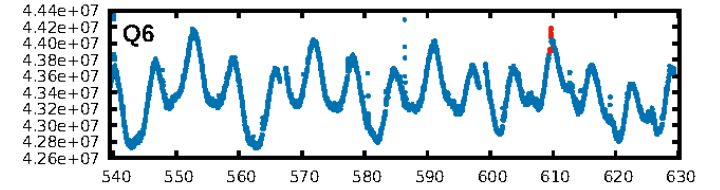
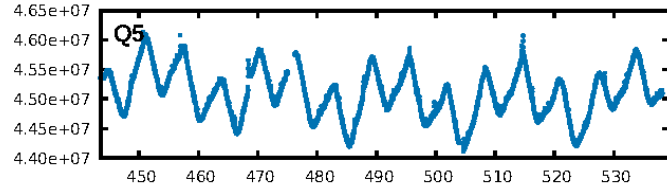
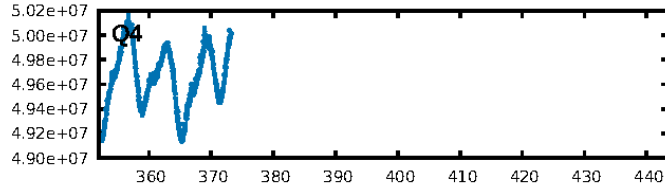
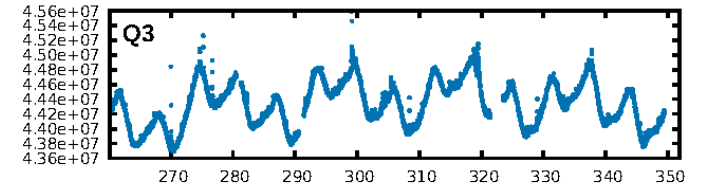
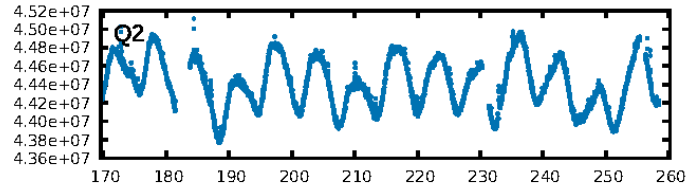
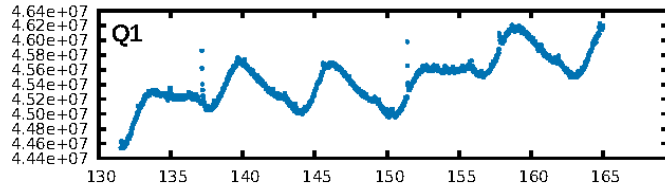
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [191.59 σ]
ModelChiSquare2-sig: 8.3%
ModelChiSquareGof-sig: 75.9%
Bootstrap-pfa: 6.34e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 12.12
Centroid-sig: 43.6%
Centroid-so: 0.764 arcsec [0.83 σ]
OotOffset-rm: 3.508 arcsec [0.80 σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-rm: 3.554 arcsec [0.81 σ]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [3/3]

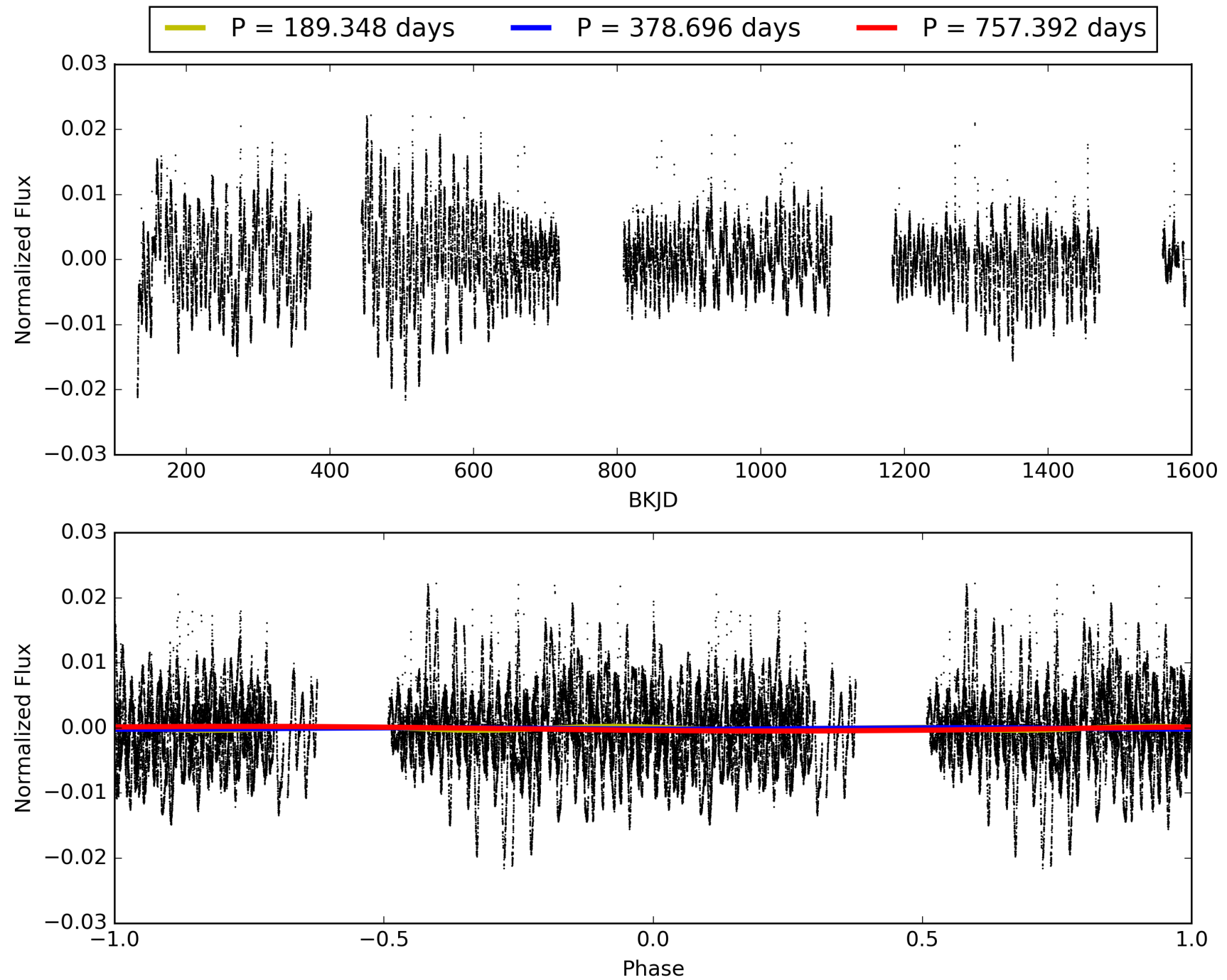
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:45:49 Z

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

TCE 012004872-02, PDC Light Curves

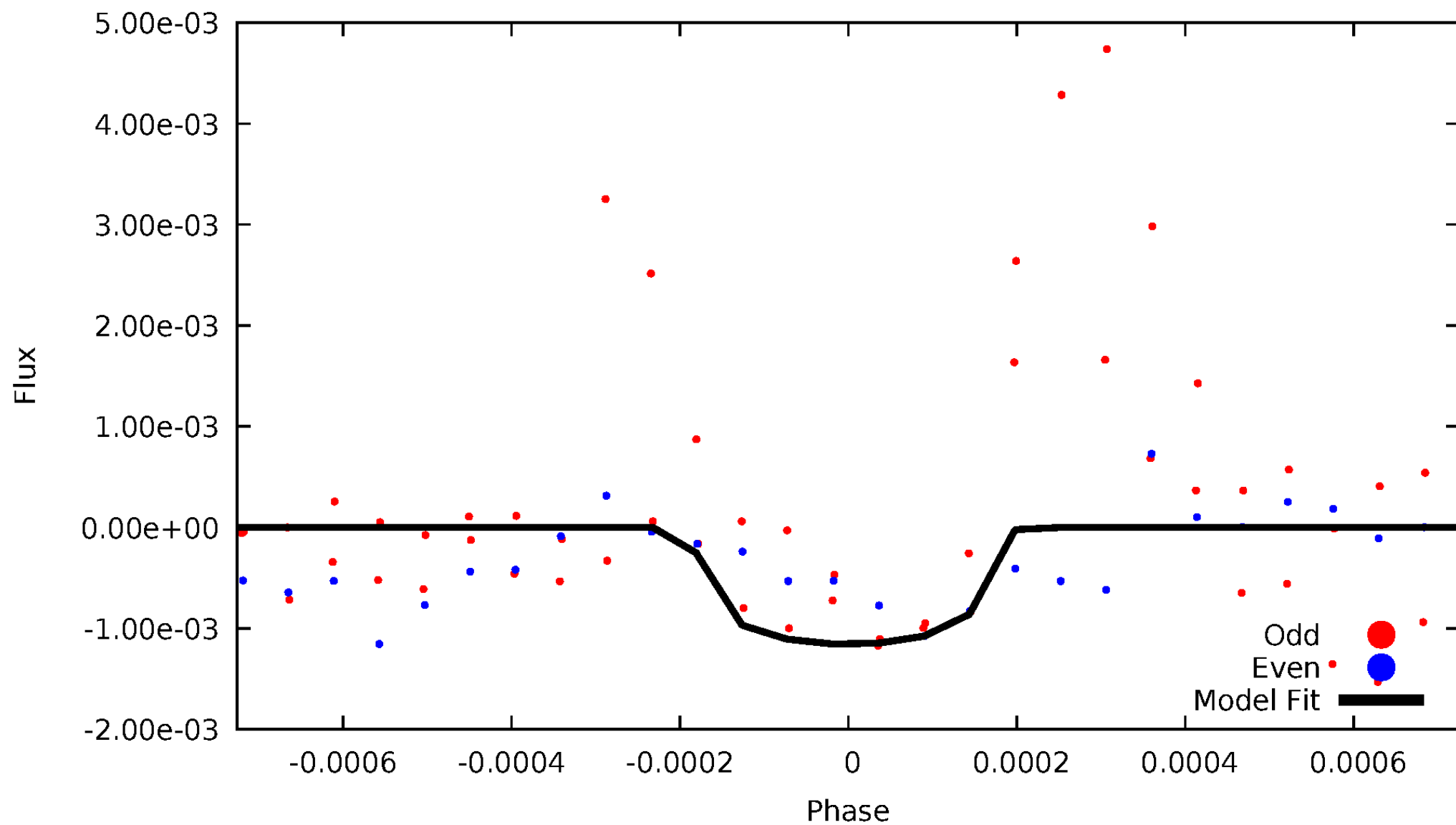


TCE 012004872-02



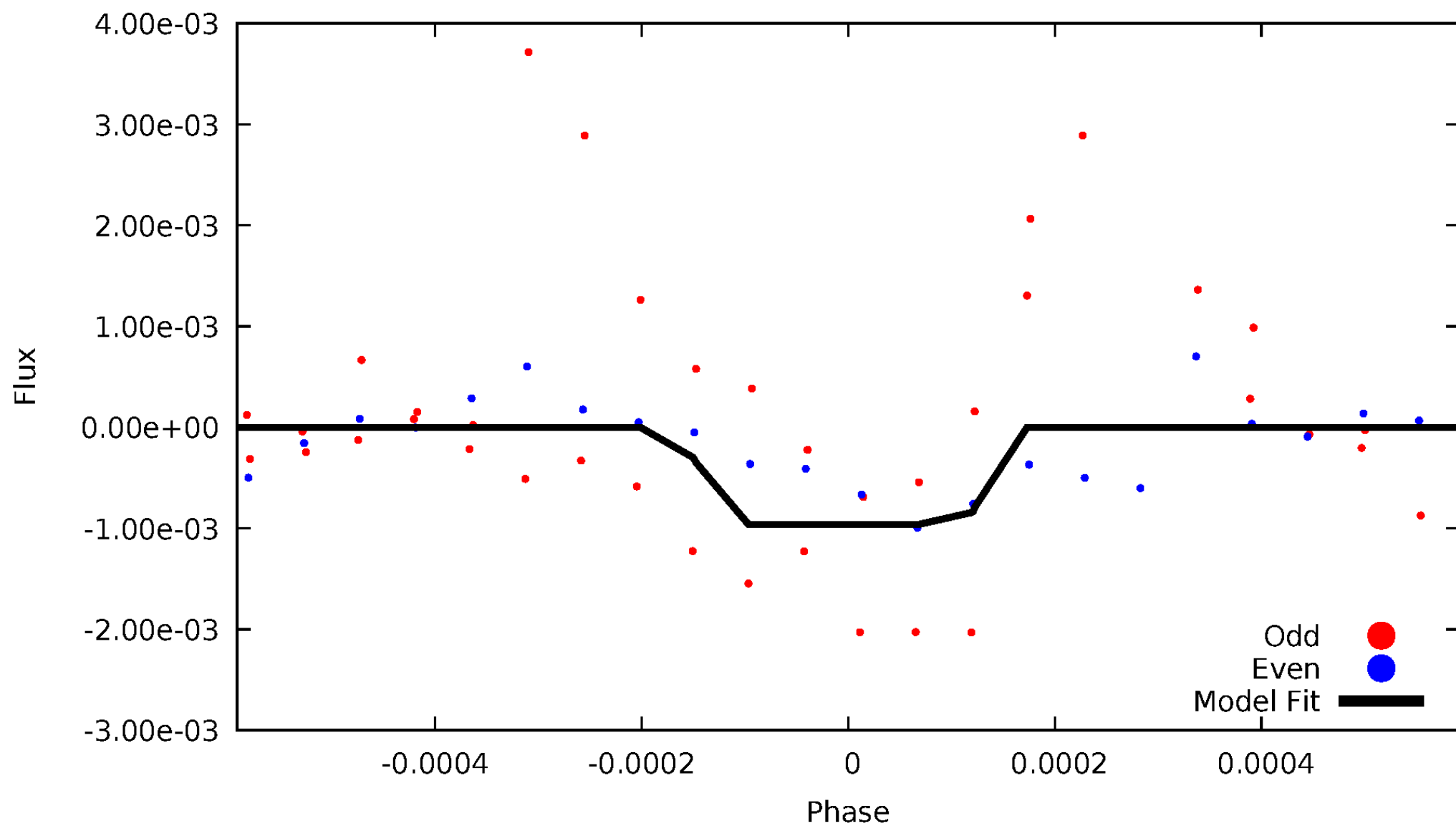
DV Odd/Even

TCE 012004872-02



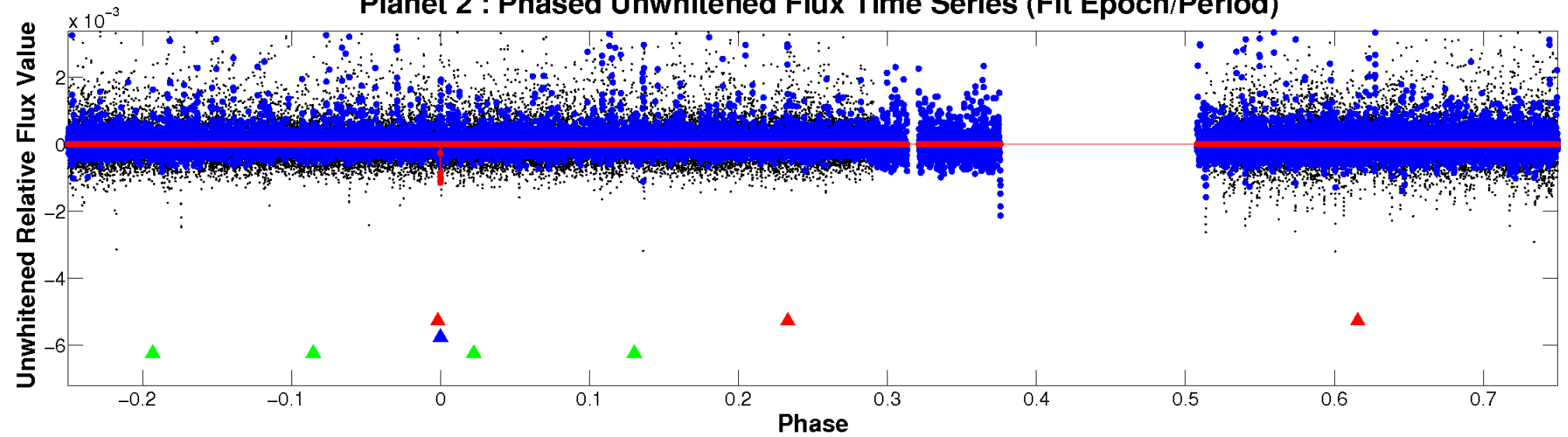
ALT Odd/Even

TCE 012004872-02

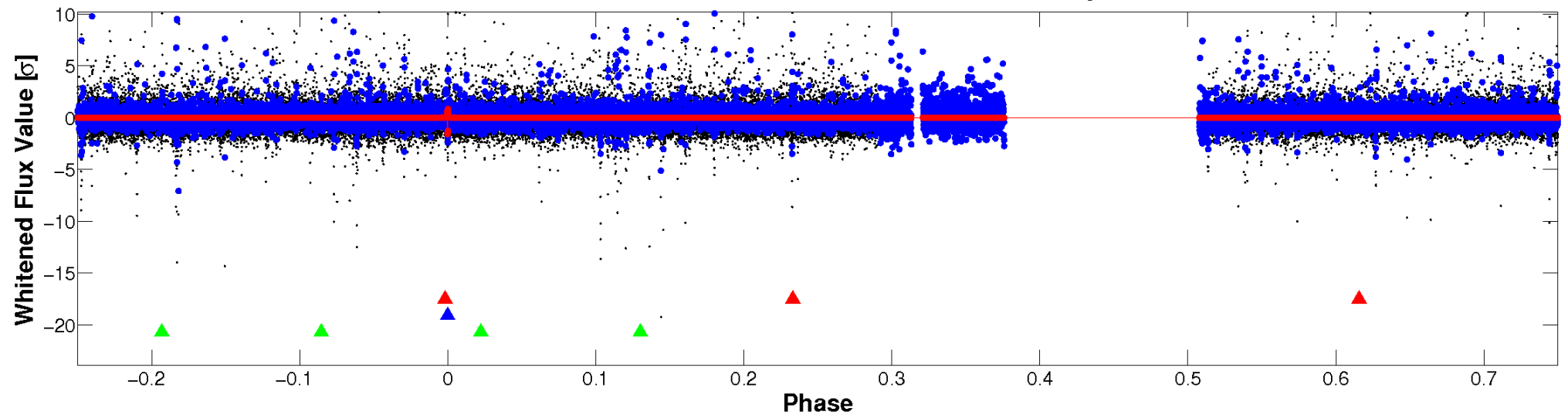


Non-Whitened Vs. Whitened Light Curve

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

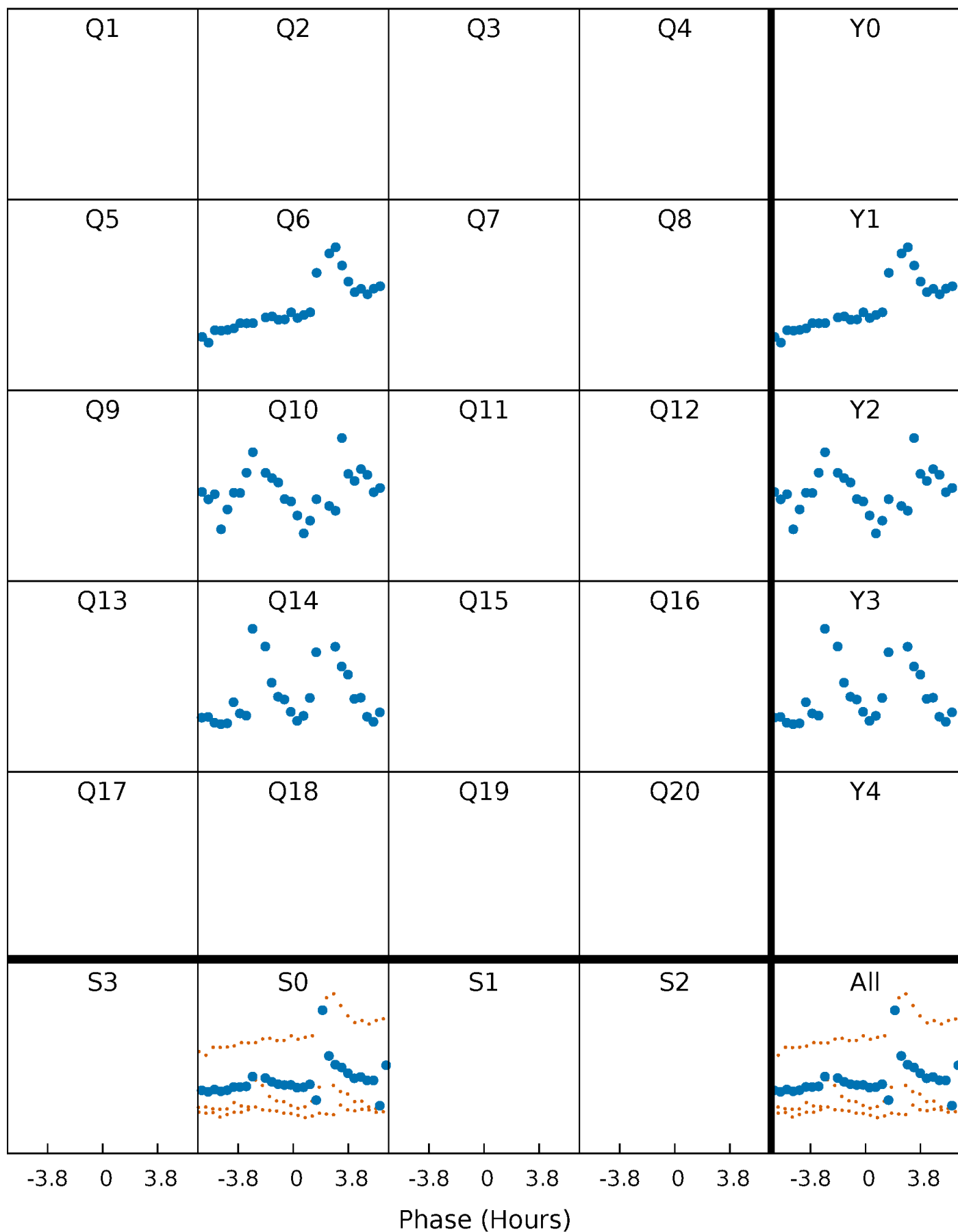


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



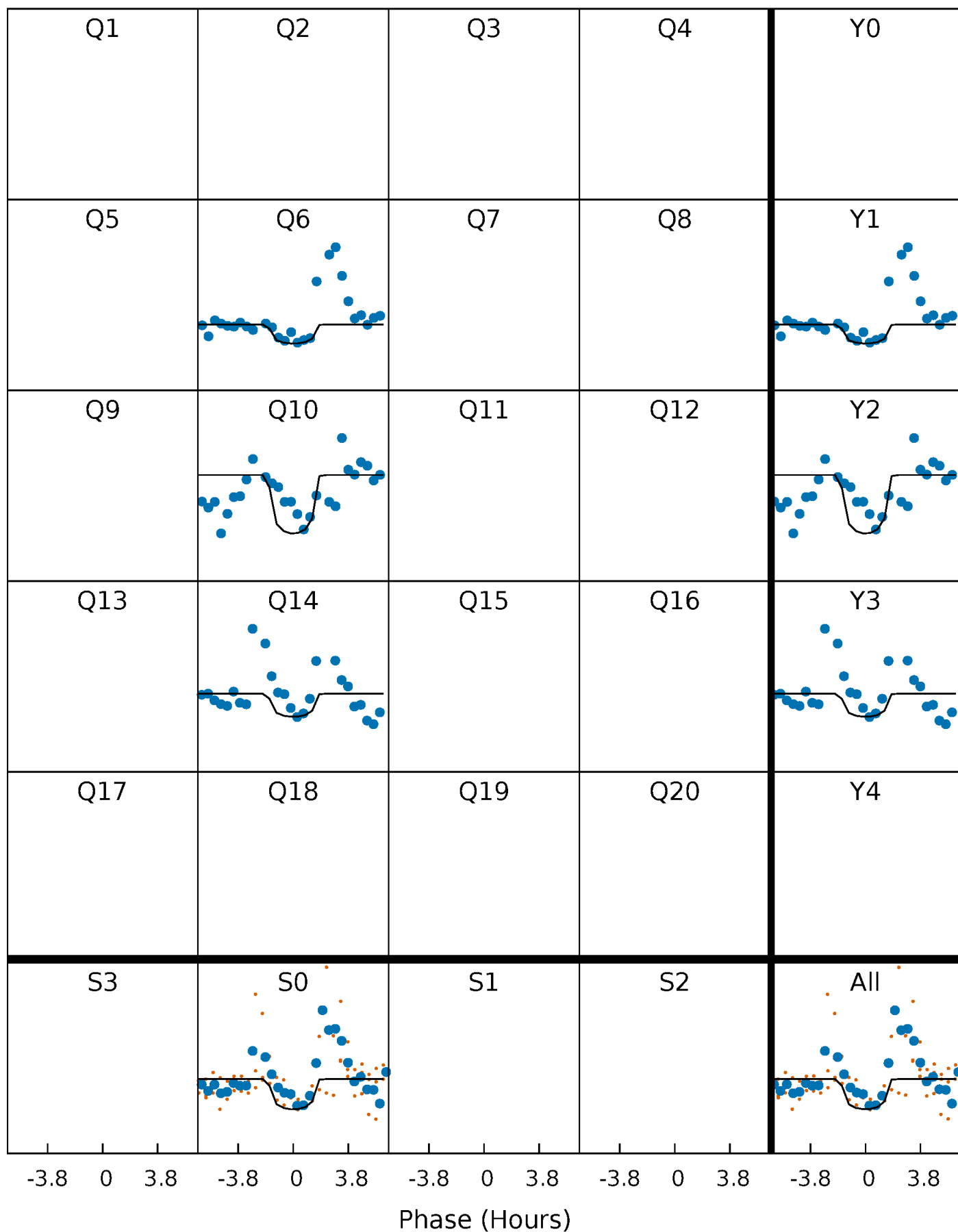
PDC Quarter-Phased Transit Curves

TCE 012004872-02 $P=378.696215$ Days $T_0=230.867511$ (BKJD)



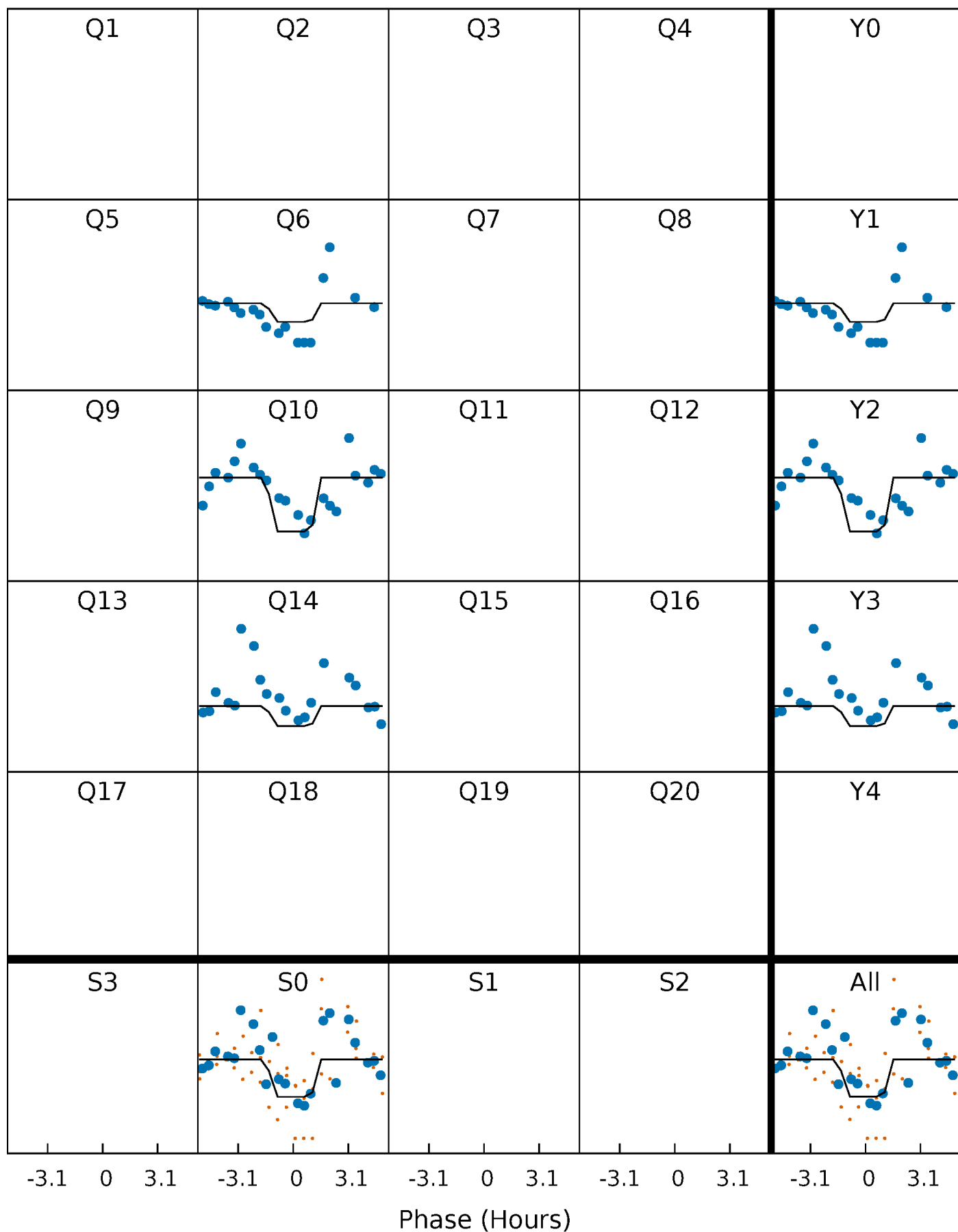
DV Quarter-Phased Transit Curves

TCE 012004872-02 P=378.696215 Days $T_0=230.867511$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

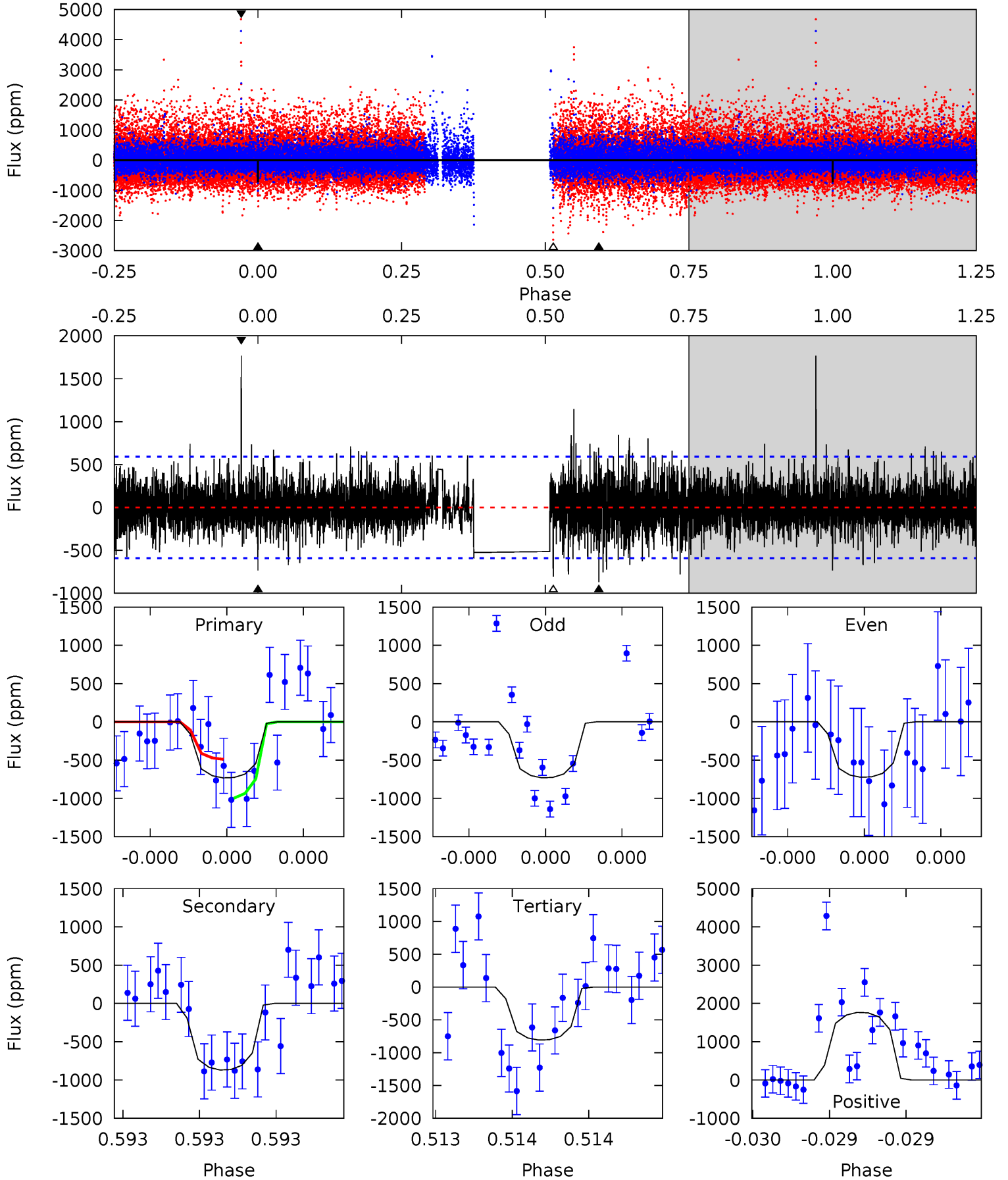
TCE 012004872-02 P=378.695168 Days $T_0=230.878501$ (BKJD)



DV Model-Shift Uniqueness Test

012004872-02, P = 378.696215 Days, E = 230.867511 Days

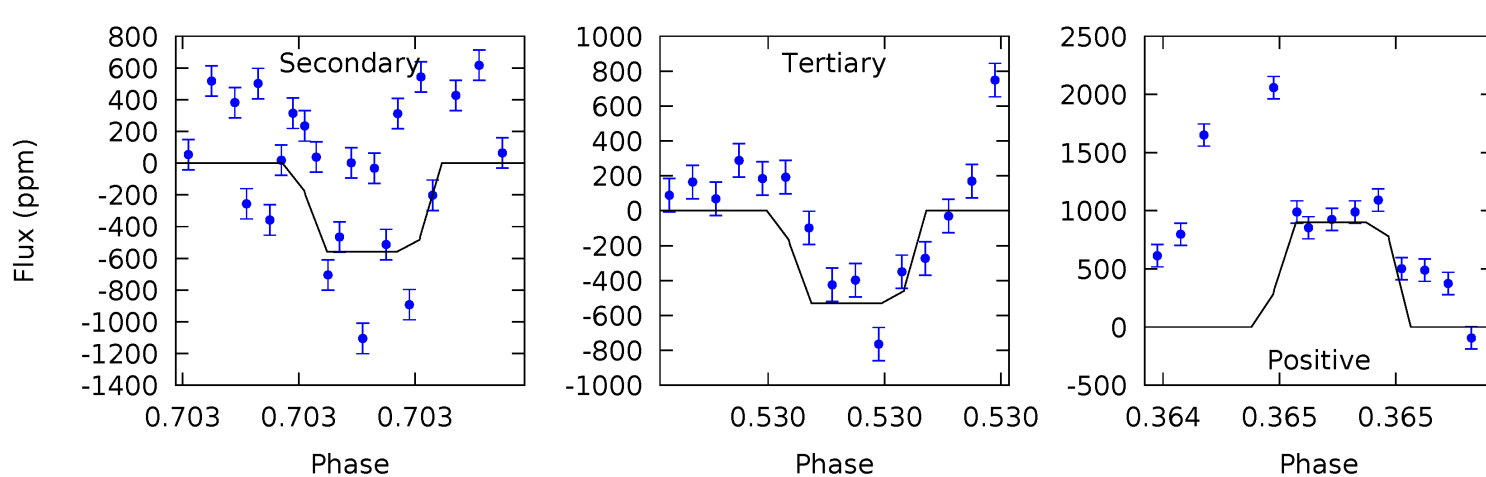
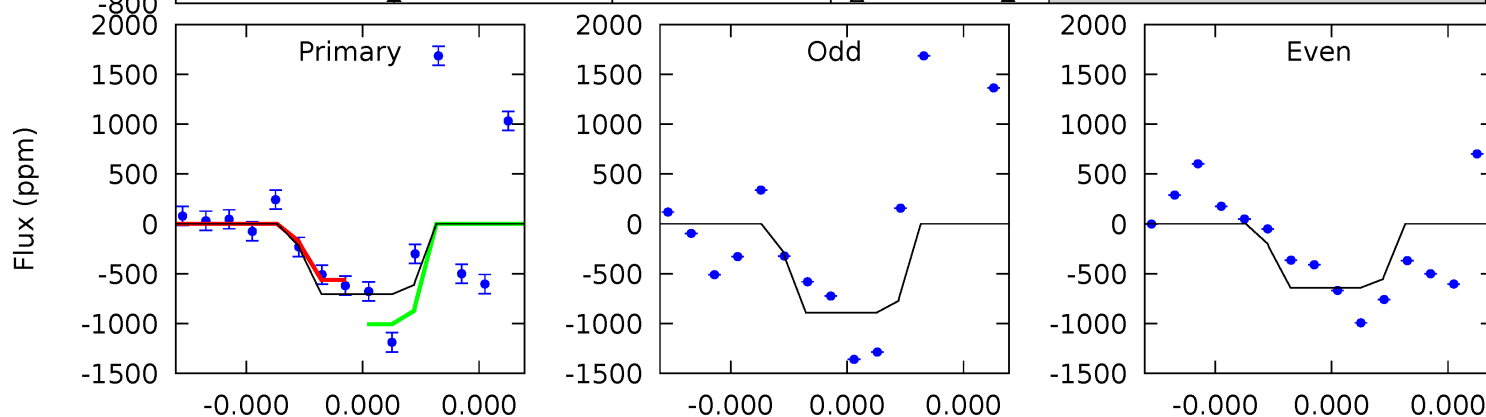
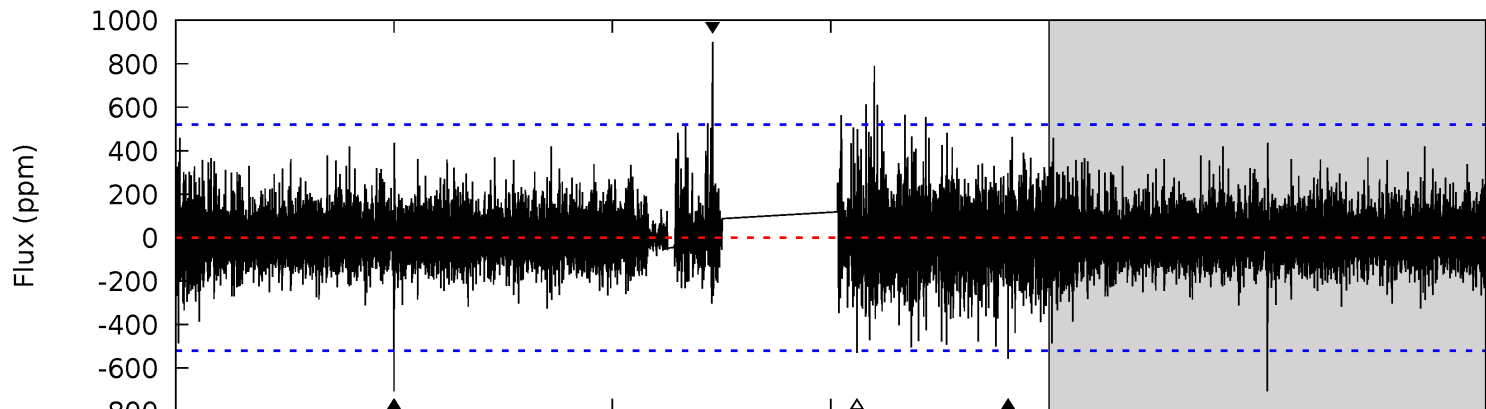
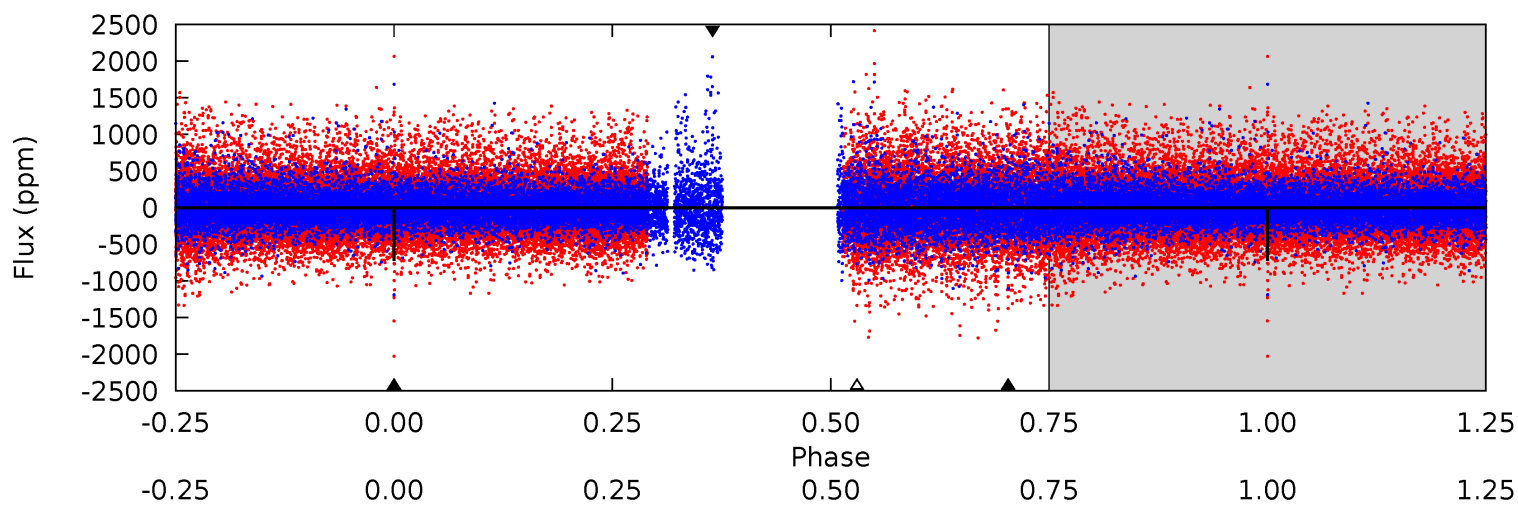
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.95	8.26	7.67	16.8	5.62	3.55	1.80	-0.72	-9.84	0.58	-8.54	0.03	1.01	0.67	2.45



Alt Model-Shift Uniqueness Test

012004872-02, P = 378.695168 Days, E = 230.878501 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.71	6.08	5.78	9.82	5.68	3.64	1.18	1.93	-2.11	0.30	-3.74	1.34	1.38	0.56	2.56



Stellar Parameters For KIC 012004872

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3514^{+78}_{-78}	$4.888^{+0.055}_{-0.044}$	$-0.100^{+0.100}_{-0.100}$	$0.365^{+0.046}_{-0.056}$	$0.379^{+0.055}_{-0.068}$	$10.940^{+3.523}_{-2.235}$
	+2%/-2%	+1%/-1%	+100%/-100%	+13%/-15%	+15%/-18%	+32%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 012004872-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-869 ± 105	$1.95^{+1.72}_{-1.27}$	152^{+5}_{-5}	3014^{+1214}_{-453}	$69904^{+500717}_{-50137}$
Alt.	-557 ± 92	$1.86^{+1.64}_{-1.22}$	152^{+5}_{-5}	2874^{+1182}_{-433}	$46955^{+380122}_{-33076}$

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 $A_{obs} \gg 1.0$

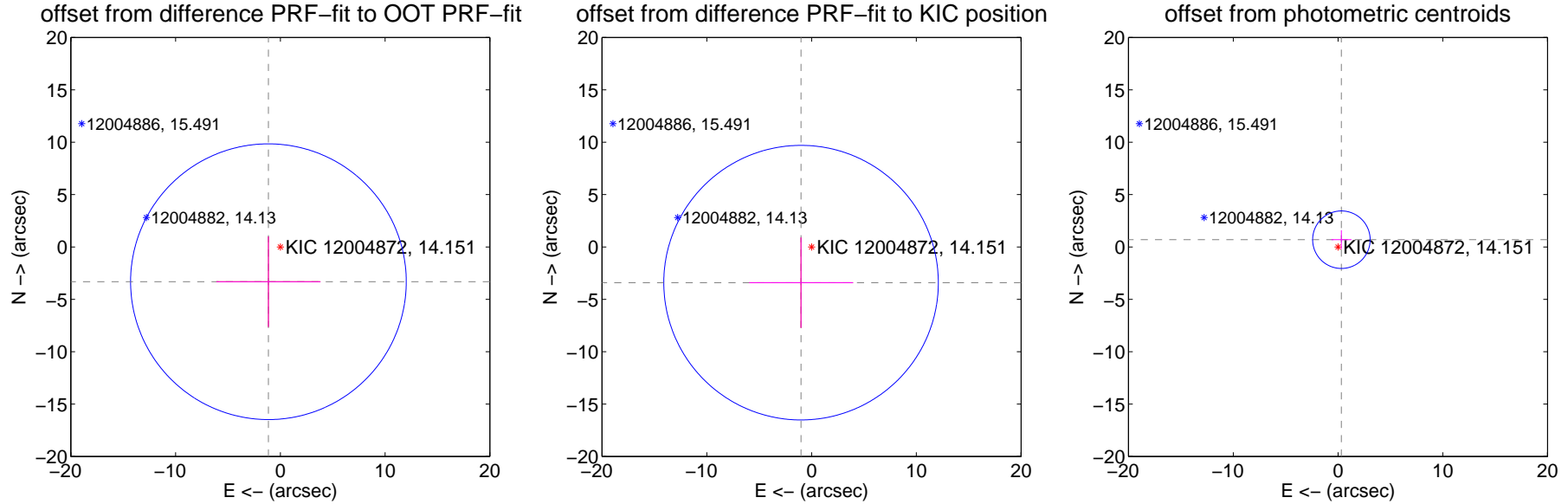
DV Centroid Data

Supplemental centroid analysis for 012004872-02. Kepler magnitude: 14.15. Transit SNR 6.81

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.508 ± 4.387	0.80	1.140 ± 4.969	-3.318 ± 4.313
PRF-fit source offset from KIC position	3.554 ± 4.369	0.81	1.004 ± 4.969	-3.409 ± 4.313
photometric centroid source offset	0.76 ± 0.92	0.83	-0.32 ± 0.96	0.69 ± 0.90

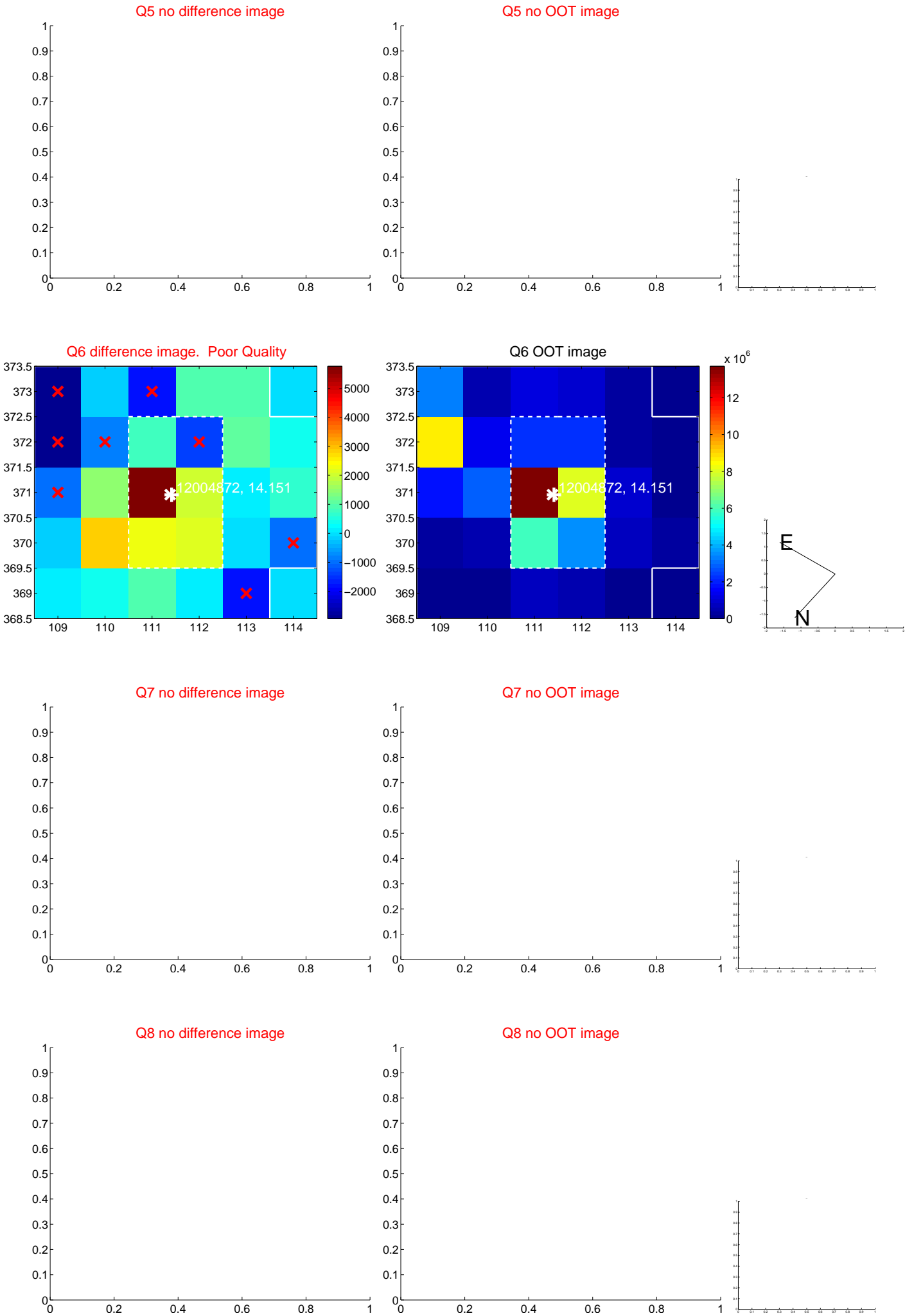


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

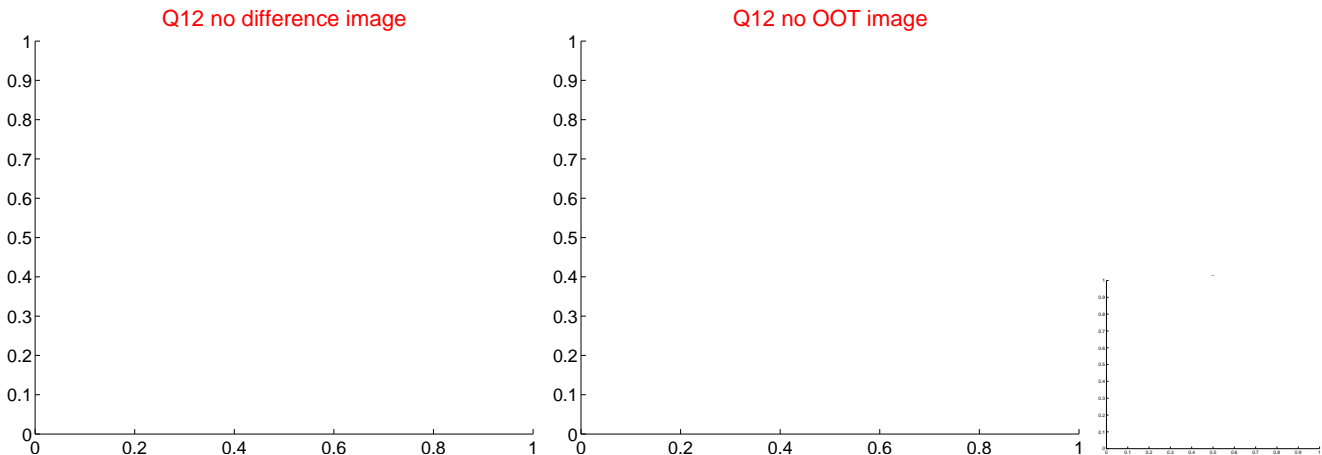
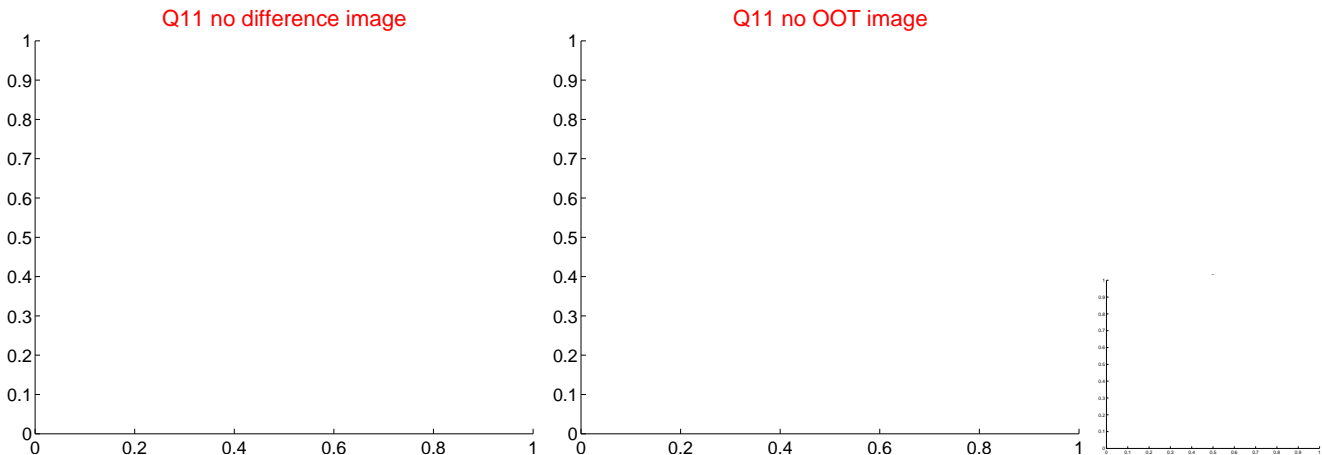
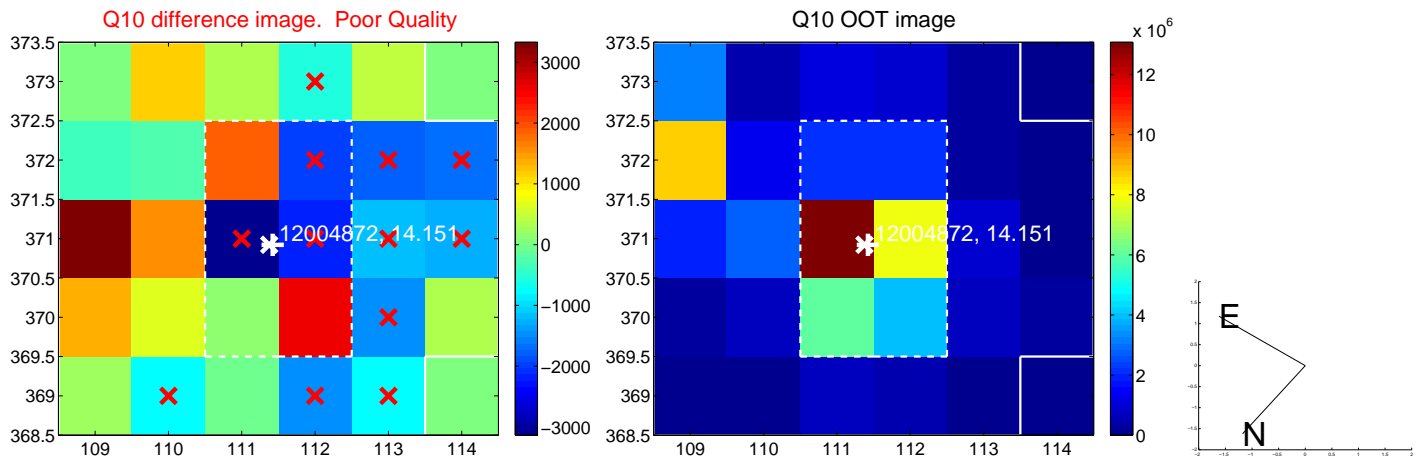
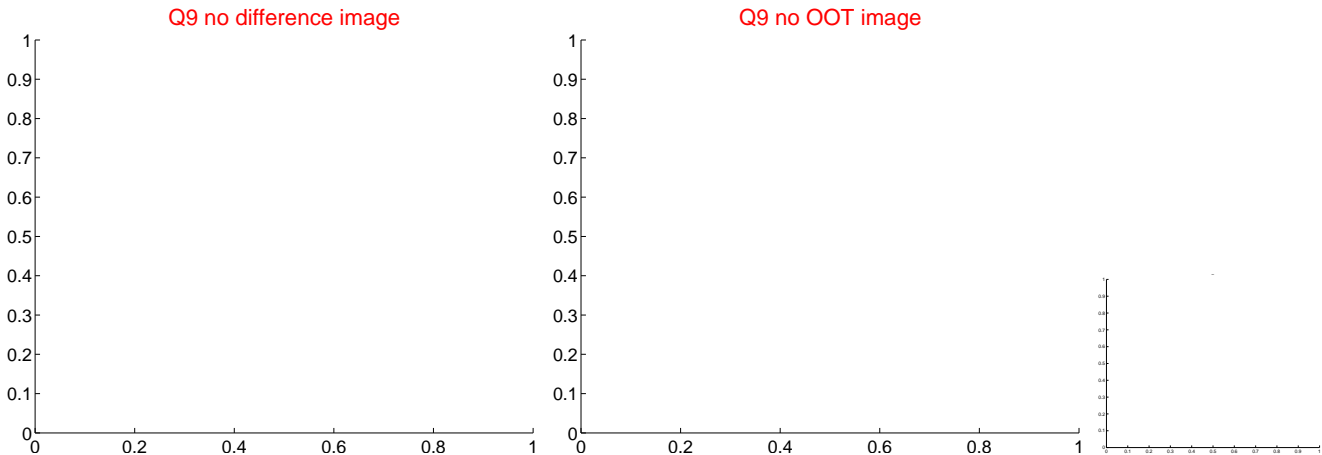
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



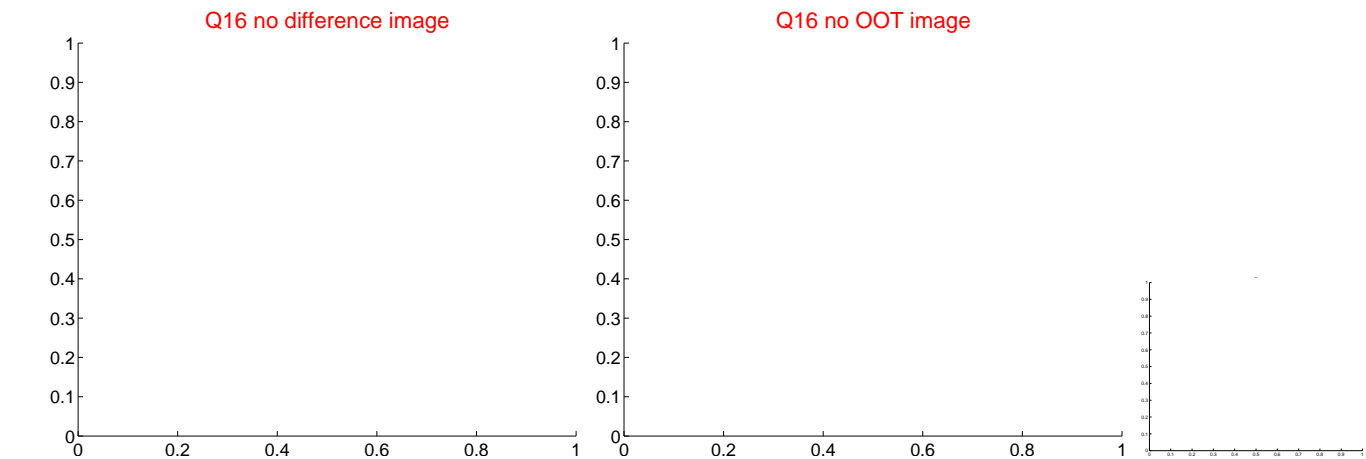
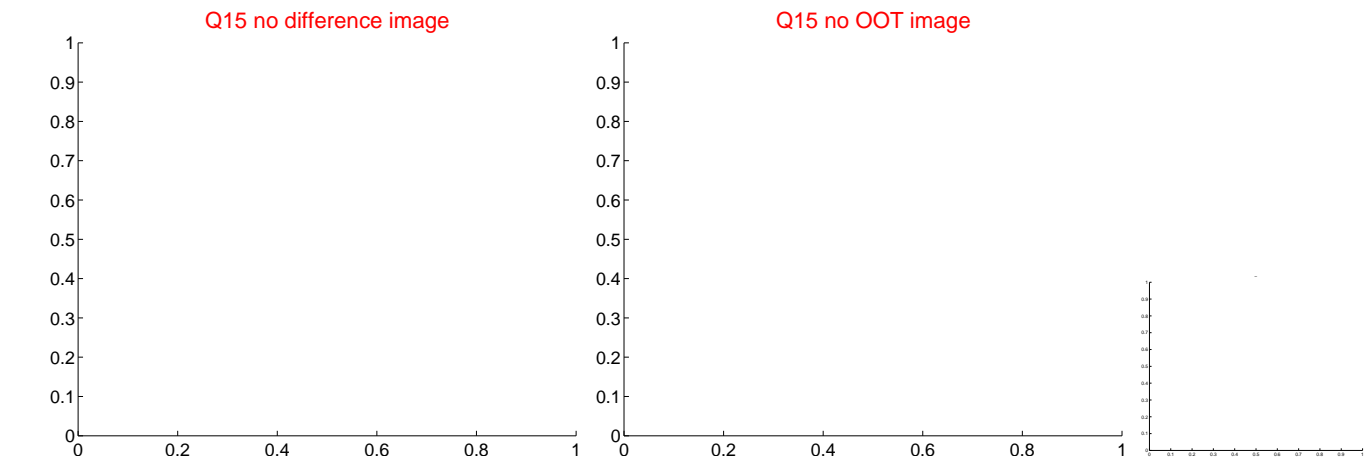
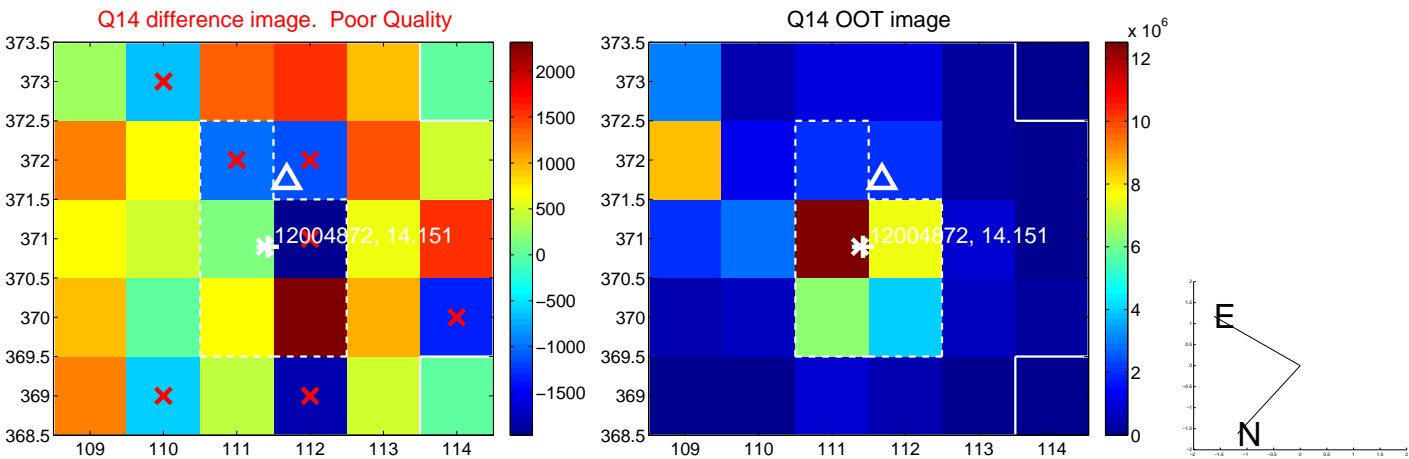
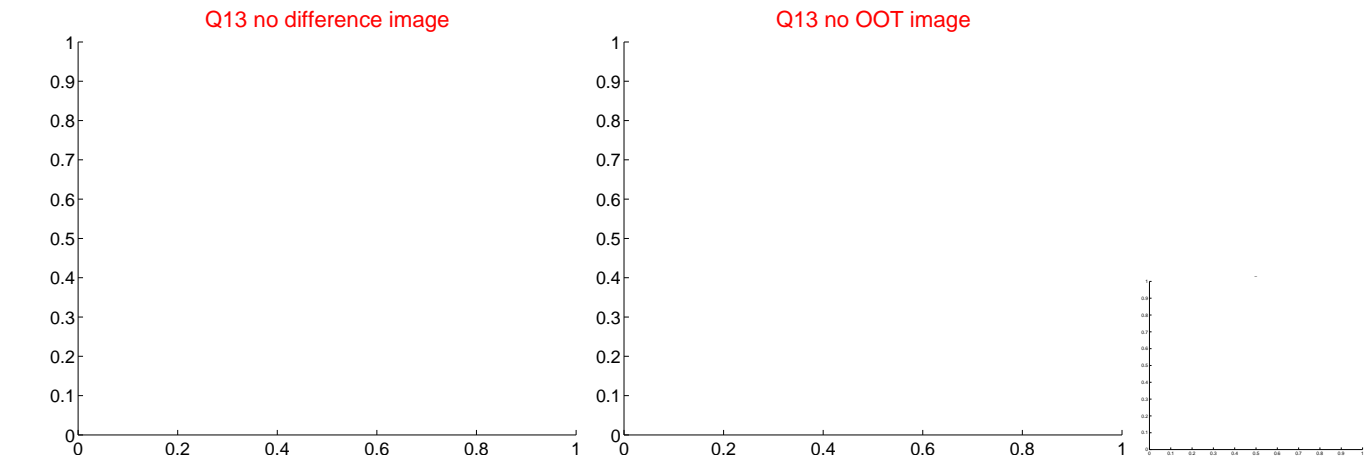
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



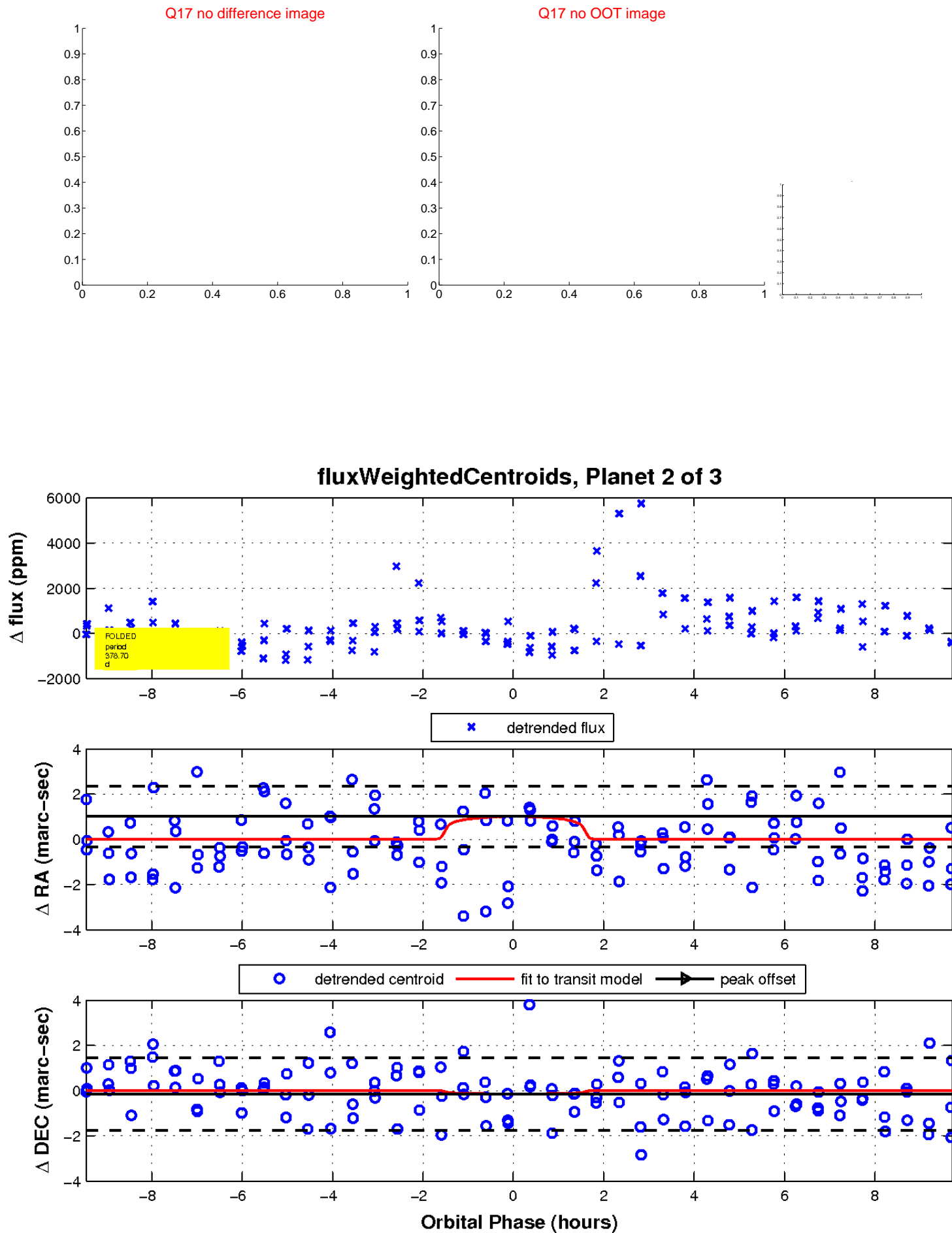
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

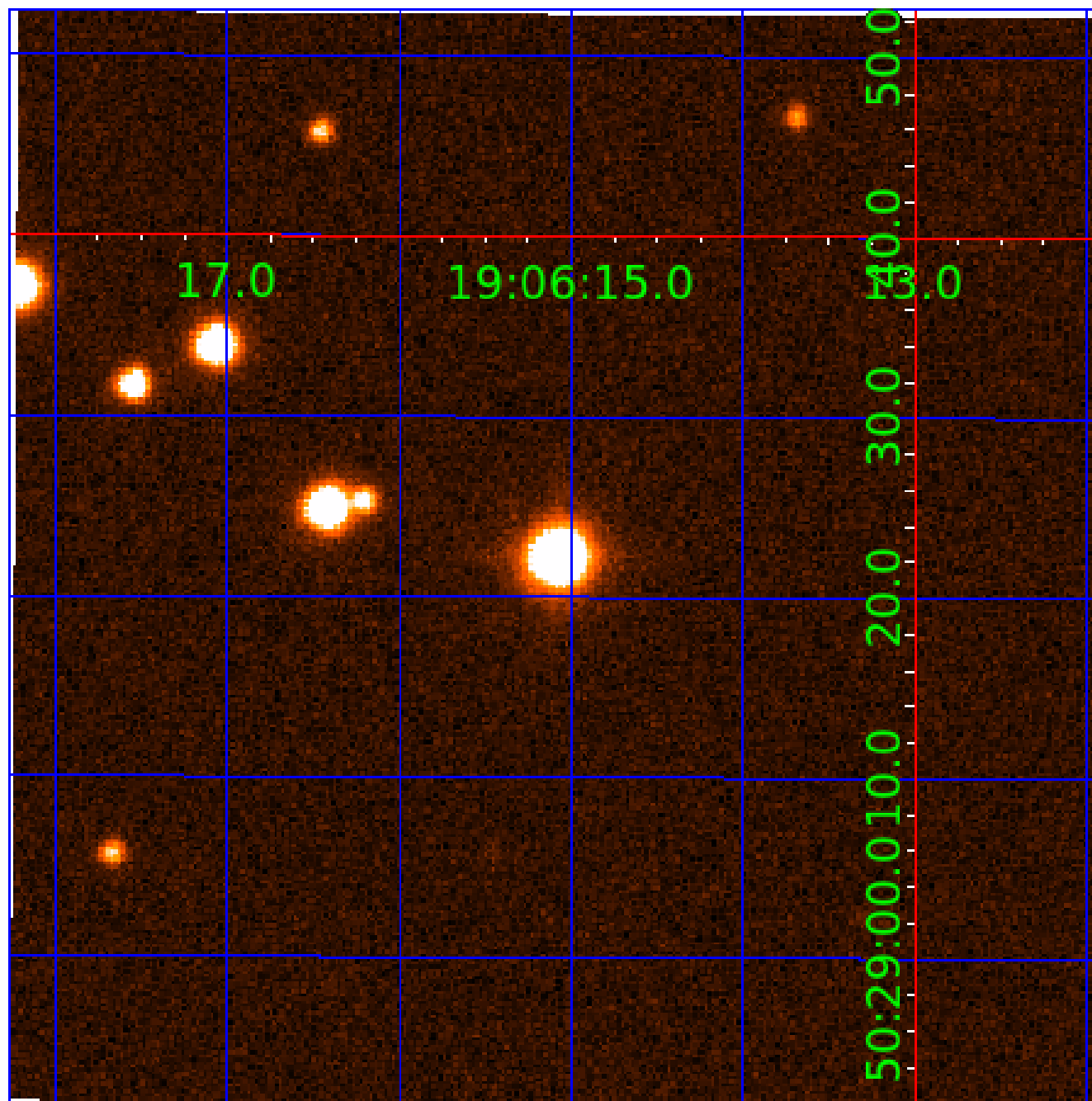


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012004872

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})
012004872-01	OBS	No	523.565233	319.160294	1587.7	5.248	13.1	7.8	0.36	3514	1.50	0.02
012004872-02	OBS	No	378.696215	230.867511	1155.8	3.298	11.1	6.8	0.36	3514	1.28	0.03
012004872-03	OBS	No	419.511191	157.716424	1134.3	3.907	10.9	6.5	0.36	3514	1.32	0.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012004872-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012004872-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012004872-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—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.

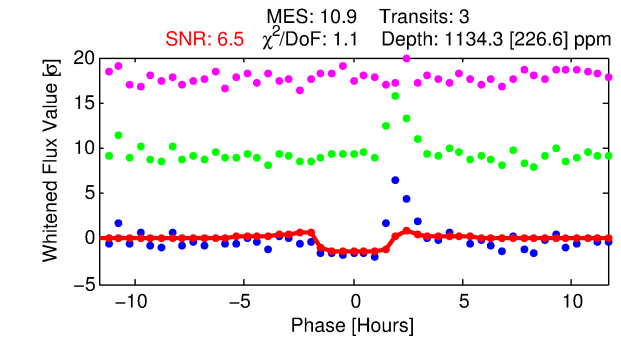
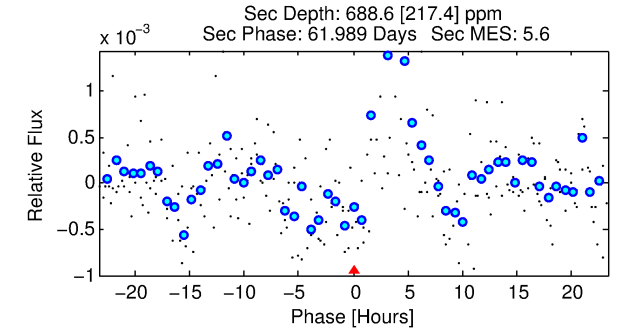
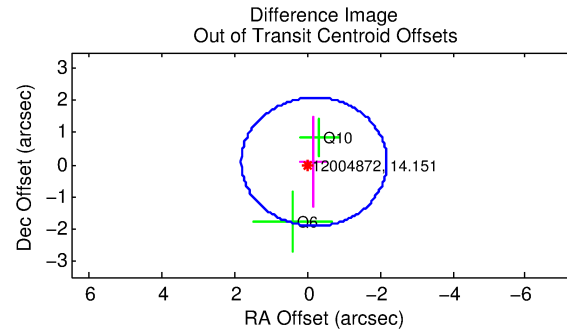
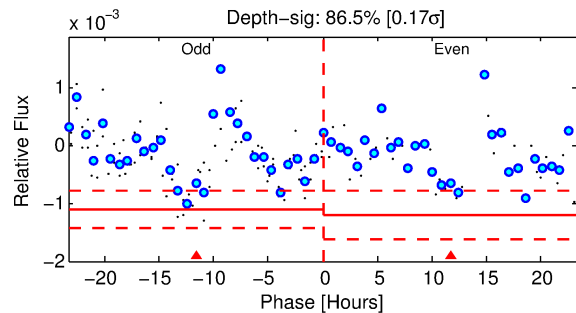
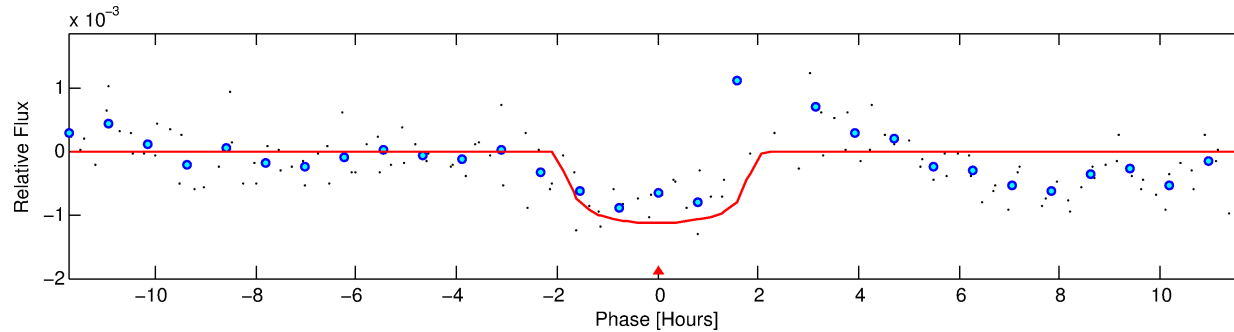
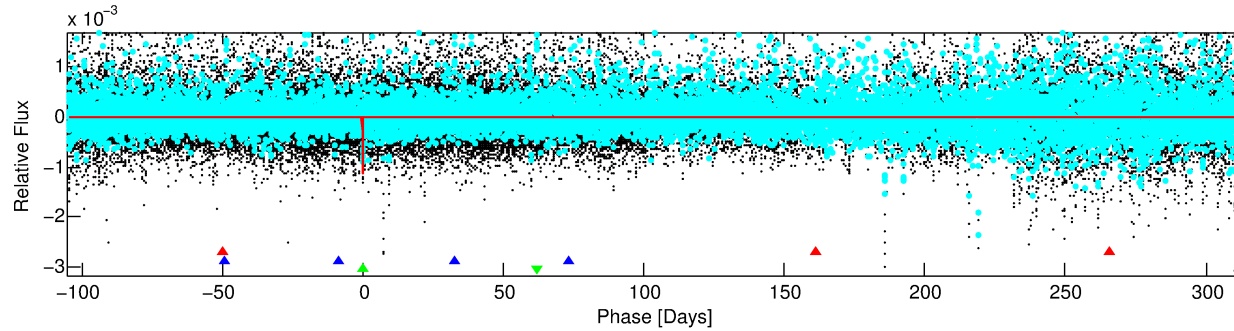
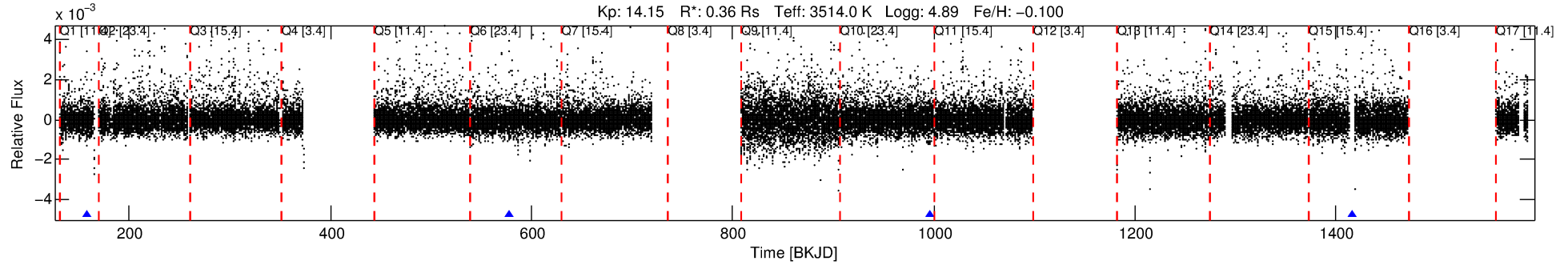
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012004872-03

No Significant Match Found

DV One-Page Summary

KIC: 12004872 Candidate: 3 of 3 Period: 419.511 d



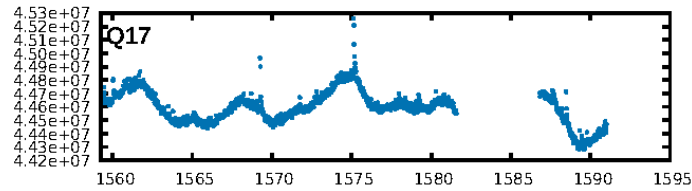
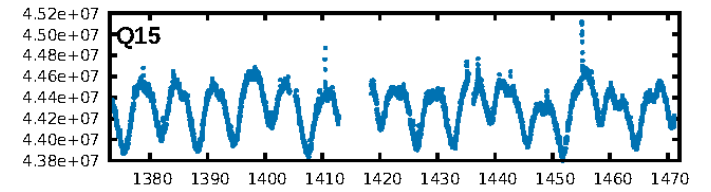
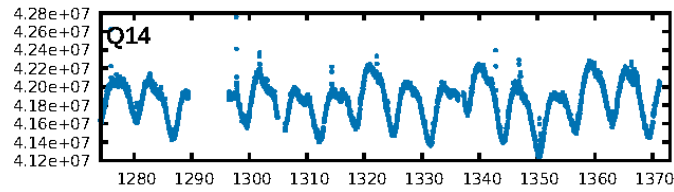
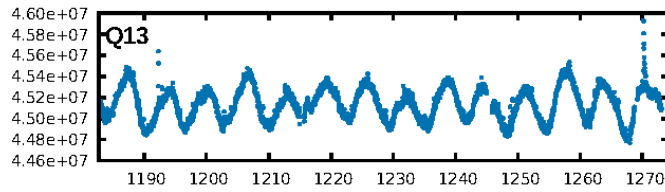
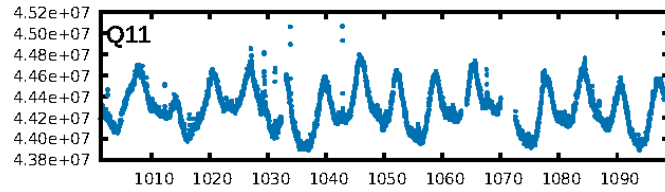
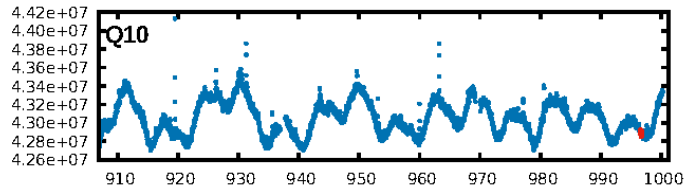
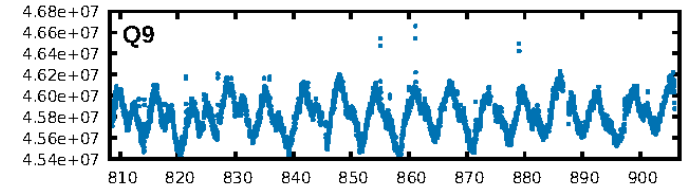
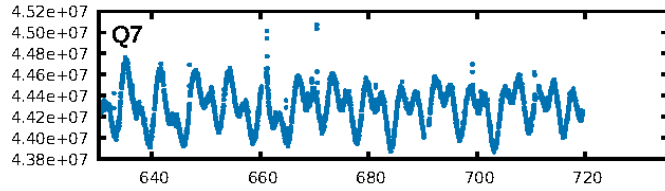
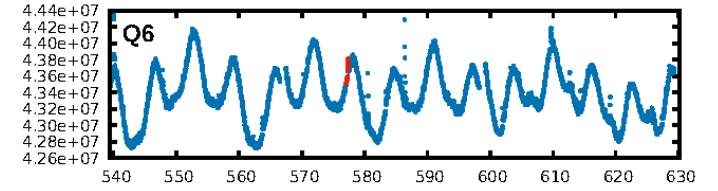
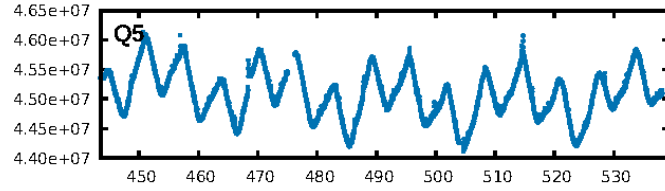
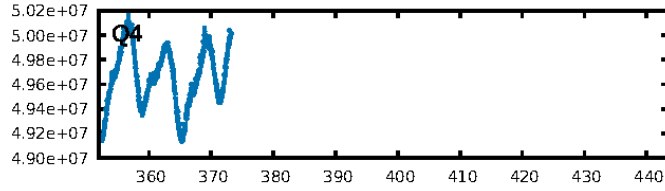
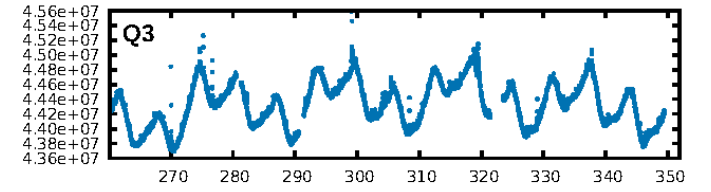
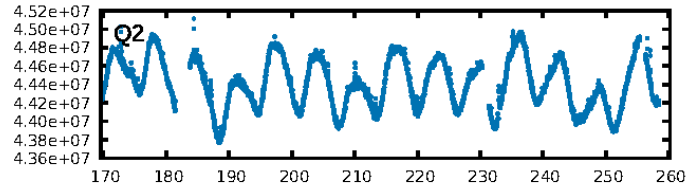
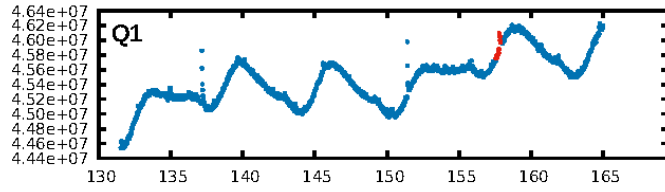
DV Fit Results:

Period = 419.51119 [0.00599] d
Epoch = 157.7164 [0.0080] BKJD
Rp/R* = 0.0332 [0.0208]
a/R* = 600.62 [1572.31]
b = 0.73 [1.68]
Seff = 0.03 [0.00]
Teq = 105 [4] K
Rp = 1.32 [0.85] Re
a = 0.7914 [0.0876] AU
Ag = 135565.05 [176091.89] [0.77 σ]
Teffp = 3123 [1011] K [2.98 σ]

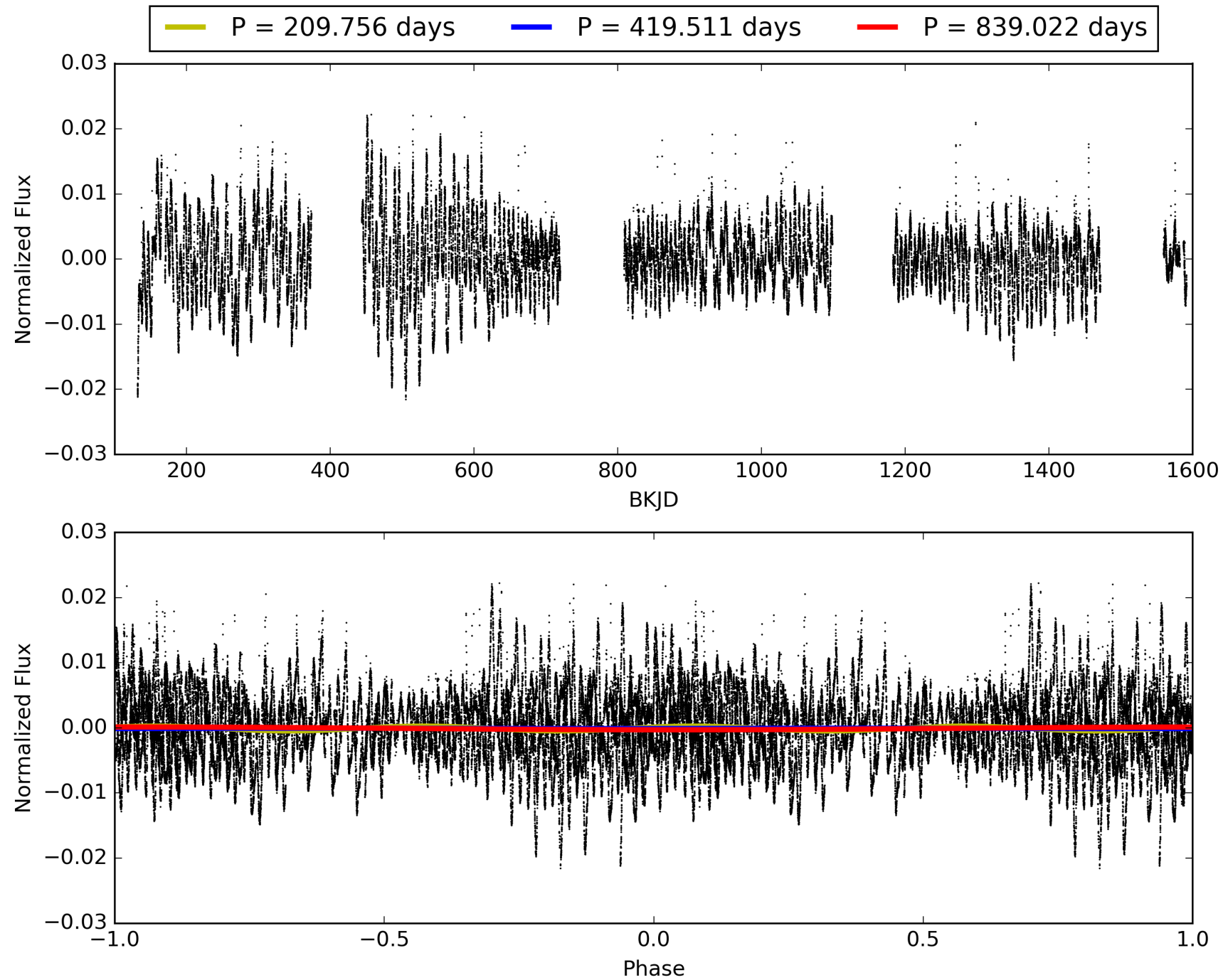
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [191.59 σ]
LongPeriod-sig: 100.0% [381.70 σ]
ModelChiSquare2-sig: 88.4%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 1.08e-10
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: -2.833
Centroid-sig: 74.3%
Centroid-so: 1.238 arcsec [1.18 σ]
OotOffset-rm: 0.202 arcsec [0.30 σ]
KicOffset-rm: 0.329 arcsec [0.54 σ]
OotOffset-st: 2/0/0/0 [2]
KicOffset-st: 2/0/0/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 012004872-03, PDC Light Curves

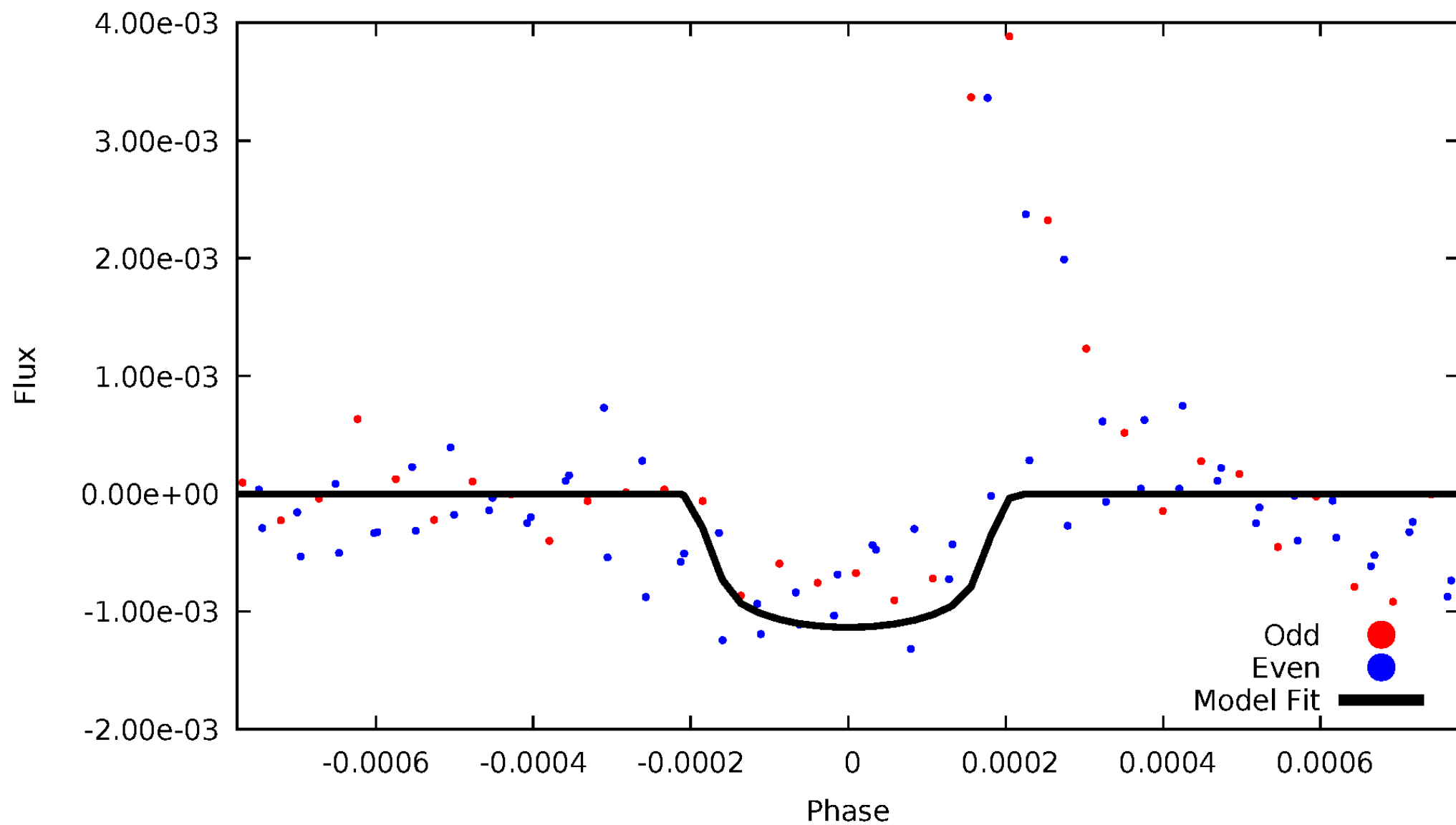


TCE 012004872-03



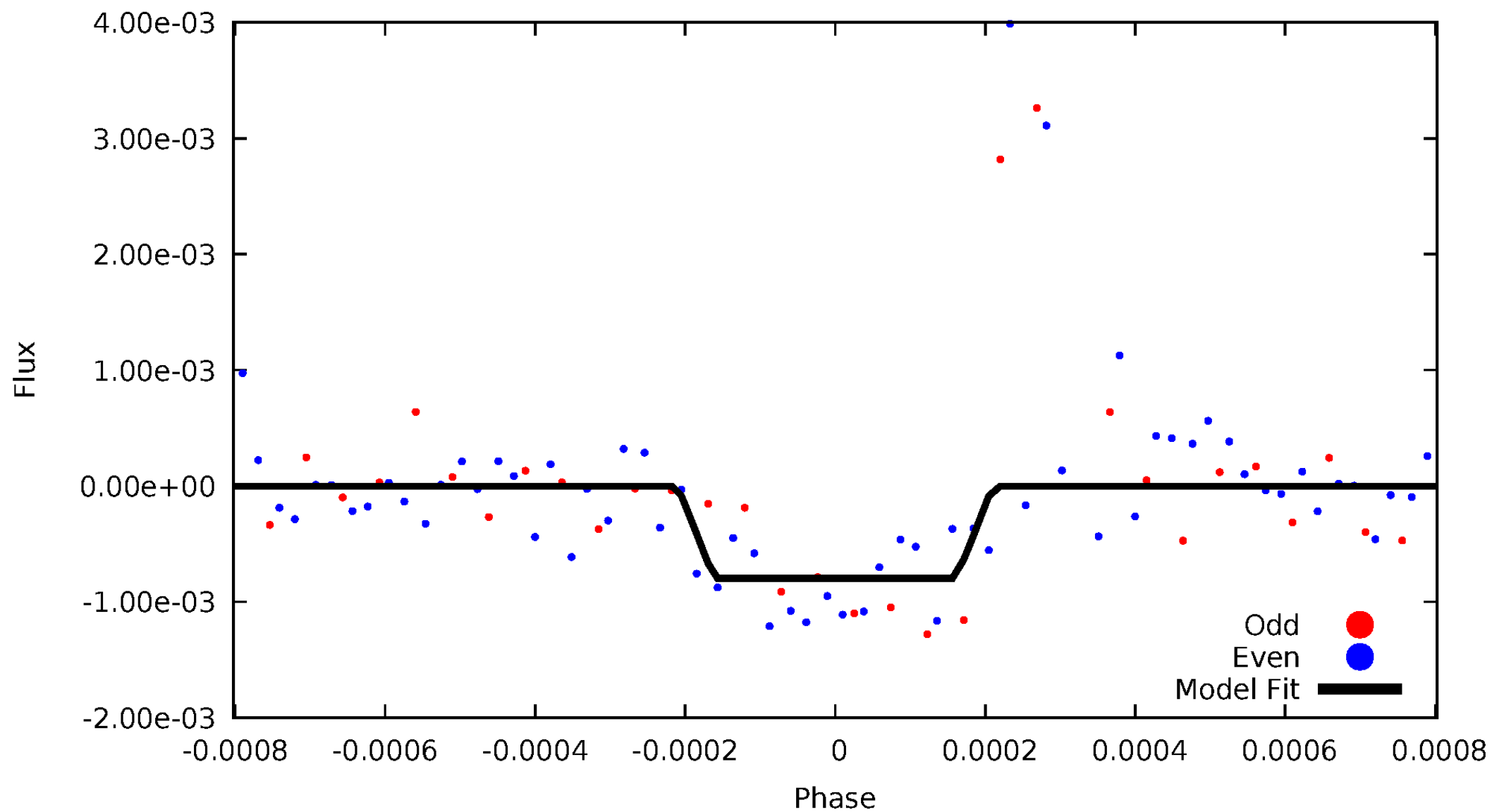
DV Odd/Even

TCE 012004872-03



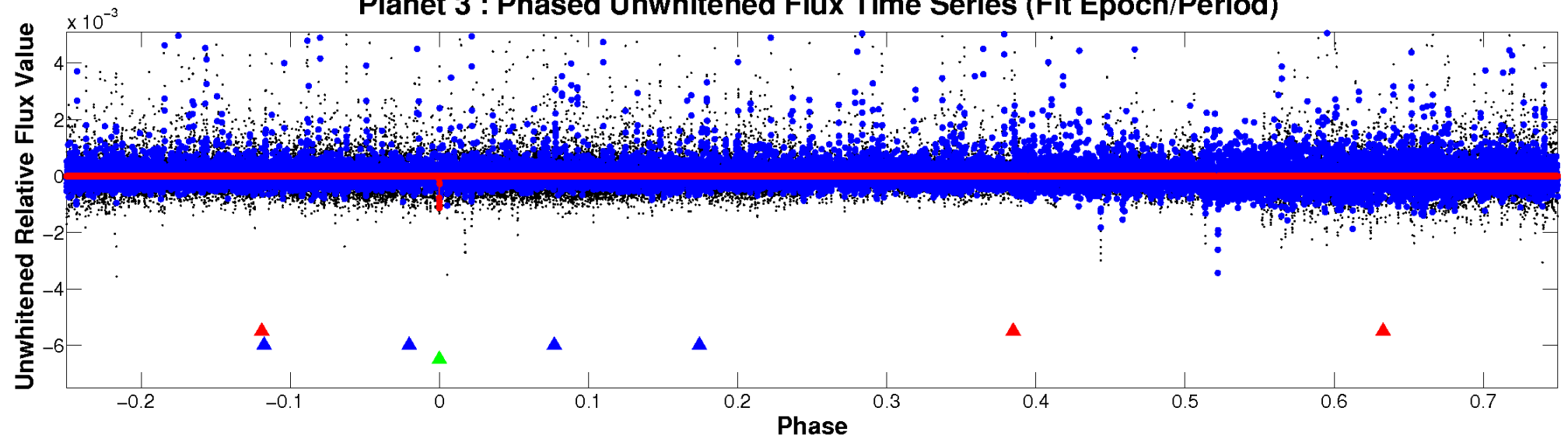
ALT Odd/Even

TCE 012004872-03

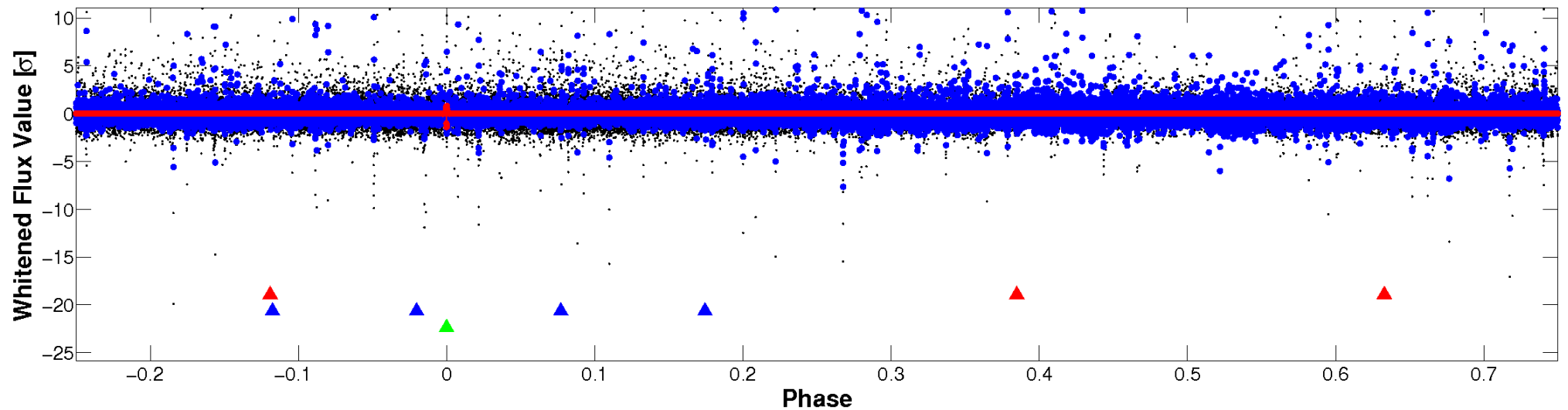


Non-Whitened Vs. Whitened Light Curve

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

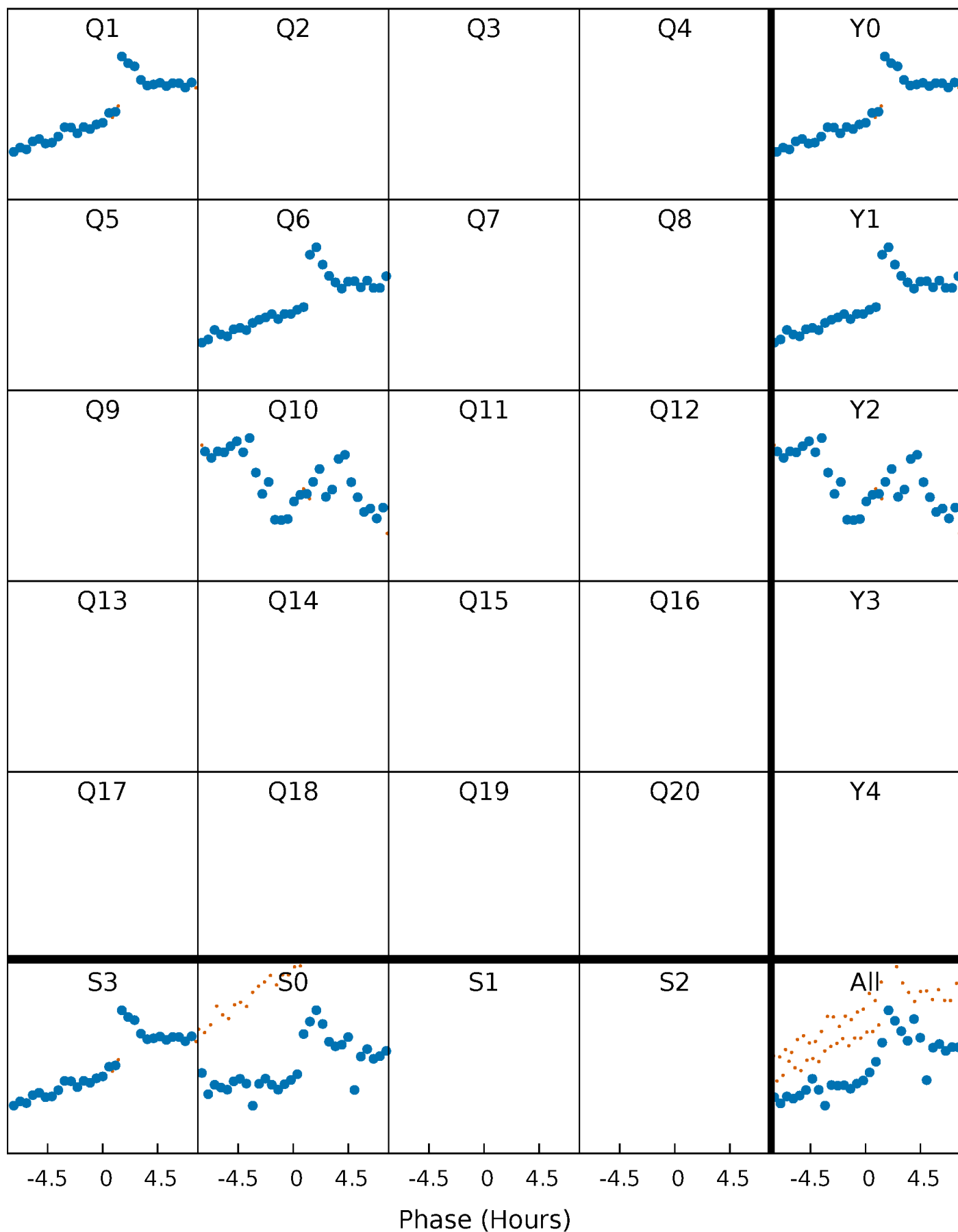


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



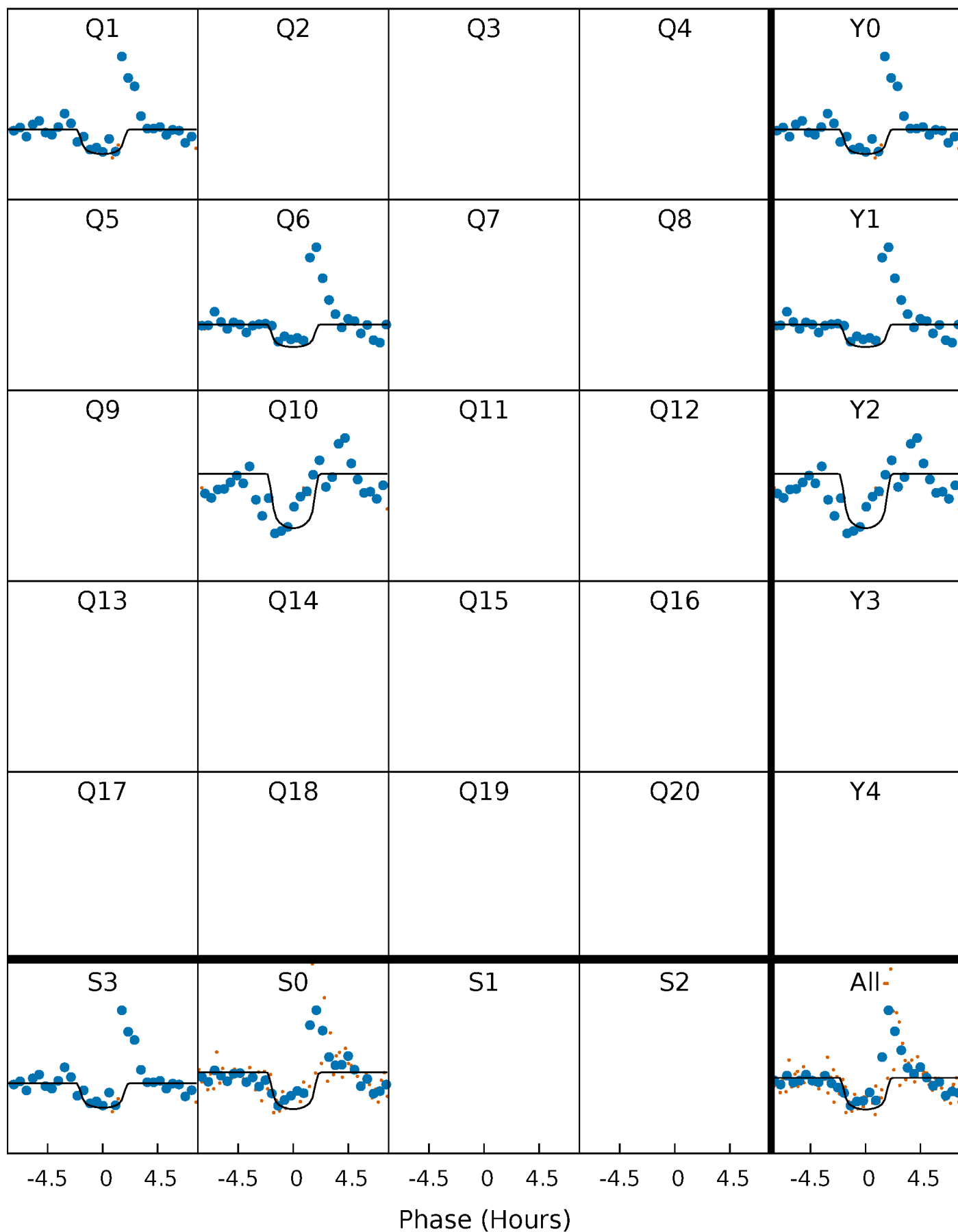
PDC Quarter-Phased Transit Curves

TCE 012004872-03 P=419.511191 Days $T_0=157.716424$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 012004872-03 P=419.511191 Days $T_0=157.716424$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

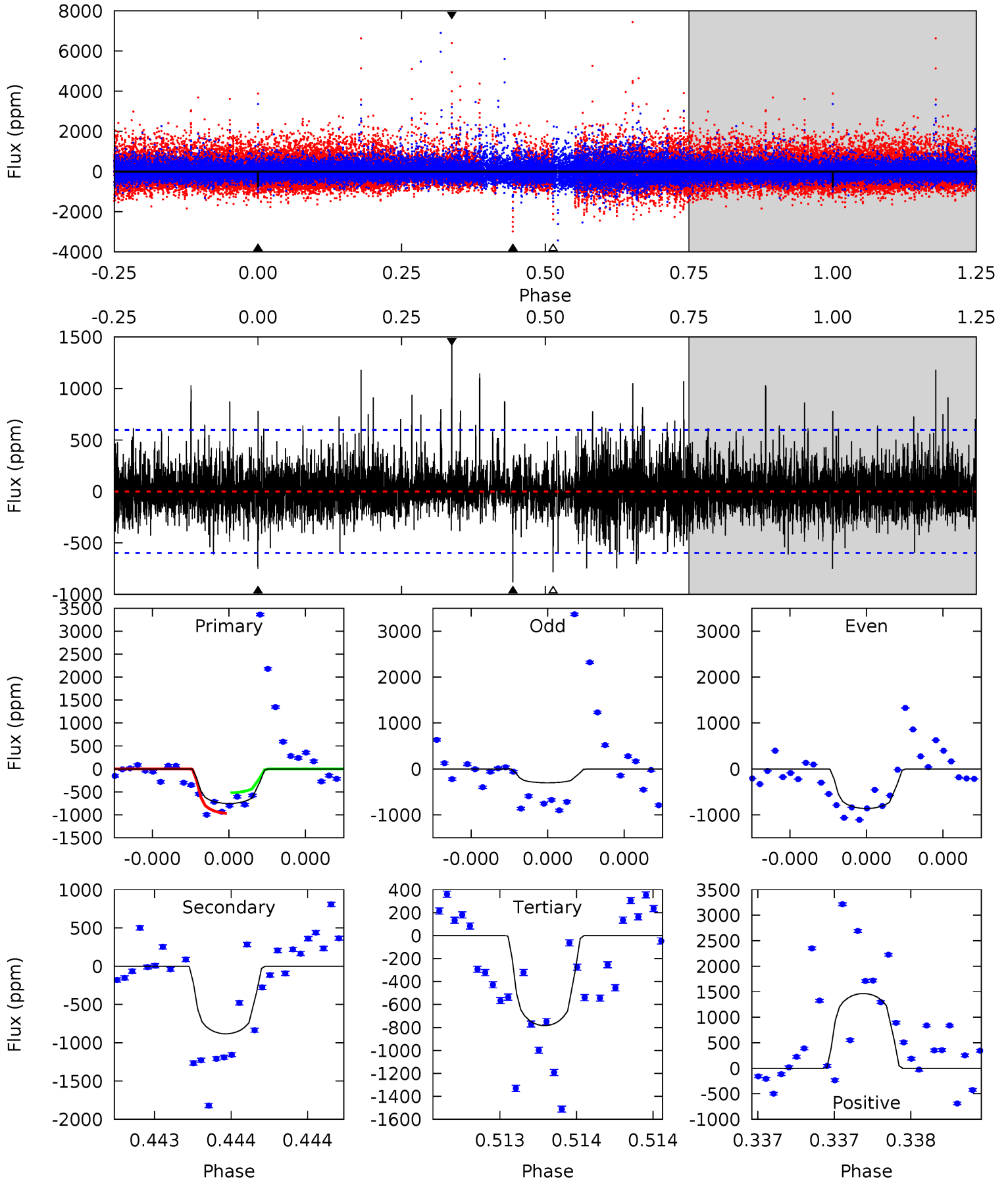
TCE 012004872-03 $P=419.507798$ Days $T_0=157.692829$ (BKJD)



DV Model-Shift Uniqueness Test

012004872-03, P = 419.511191 Days, E = 157.716424 Days

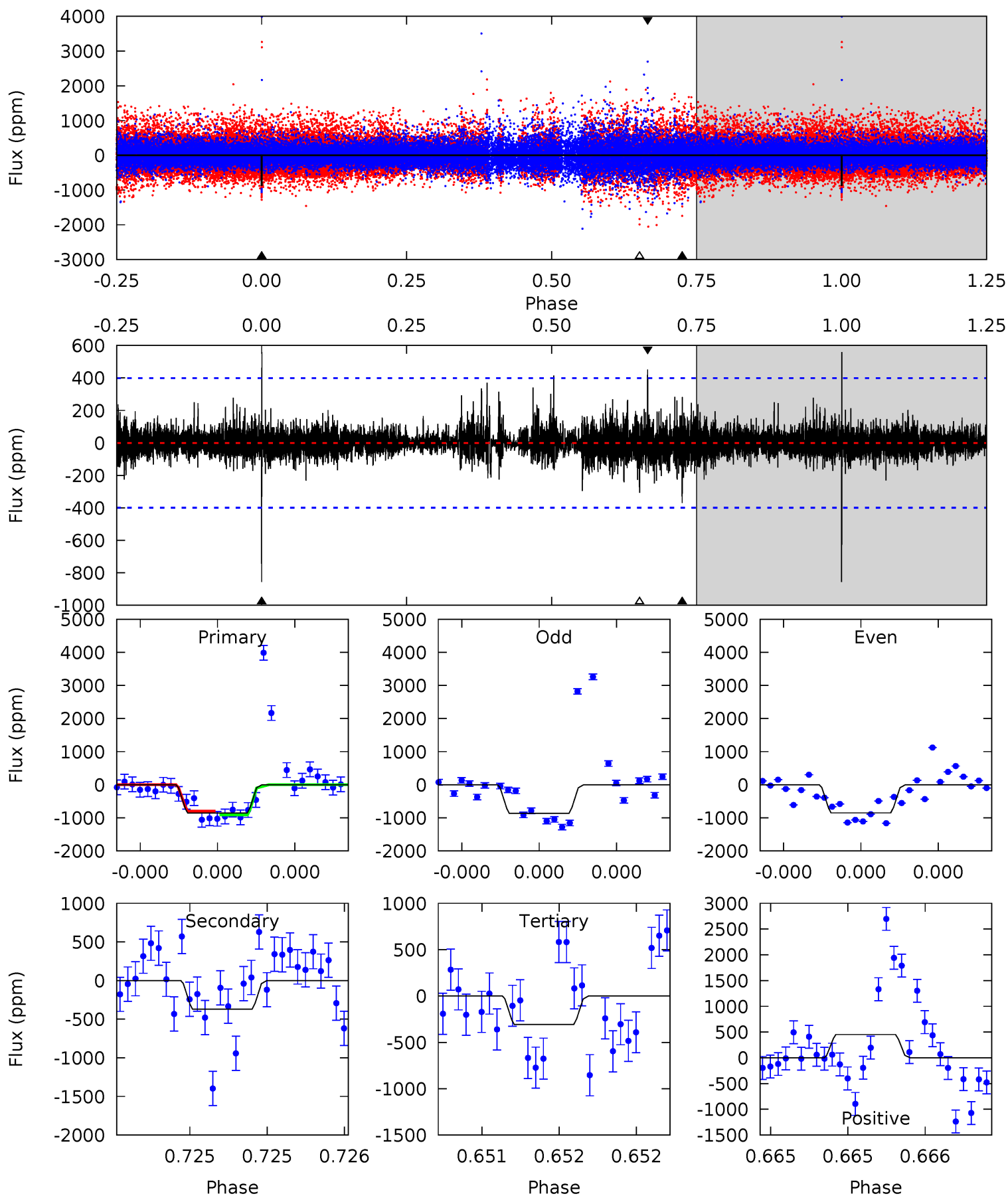
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.05	8.26	7.34	13.7	5.60	3.52	1.72	-0.29	-6.66	0.92	-5.45	2.14	0.89	0.62	2.11



Alt Model-Shift Uniqueness Test

012004872-03, P = 419.507798 Days, E = 157.692829 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.0	5.19	4.30	6.36	5.61	3.54	0.86	7.73	5.67	0.89	-1.17	0.12	0.99	0.39	0.84



Stellar Parameters For KIC 012004872

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3514^{+78}_{-78}	$4.888^{+0.055}_{-0.044}$	$-0.100^{+0.100}_{-0.100}$	$0.365^{+0.046}_{-0.056}$	$0.379^{+0.055}_{-0.068}$	$10.940^{+3.523}_{-2.235}$
	+2%/-2%	+1%/-1%	+100%/-100%	+13%/-15%	+15%/-18%	+32%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 012004872-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-883 ± 107	$1.38^{+0.82}_{-0.76}$	147^{+5}_{-4}	3346^{+1034}_{-428}	$157308^{+603572}_{-93410}$
Alt.	-369 ± 71	$1.27^{+0.76}_{-0.74}$	147^{+5}_{-5}	3029^{+894}_{-370}	$79480^{+372905}_{-50430}$

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

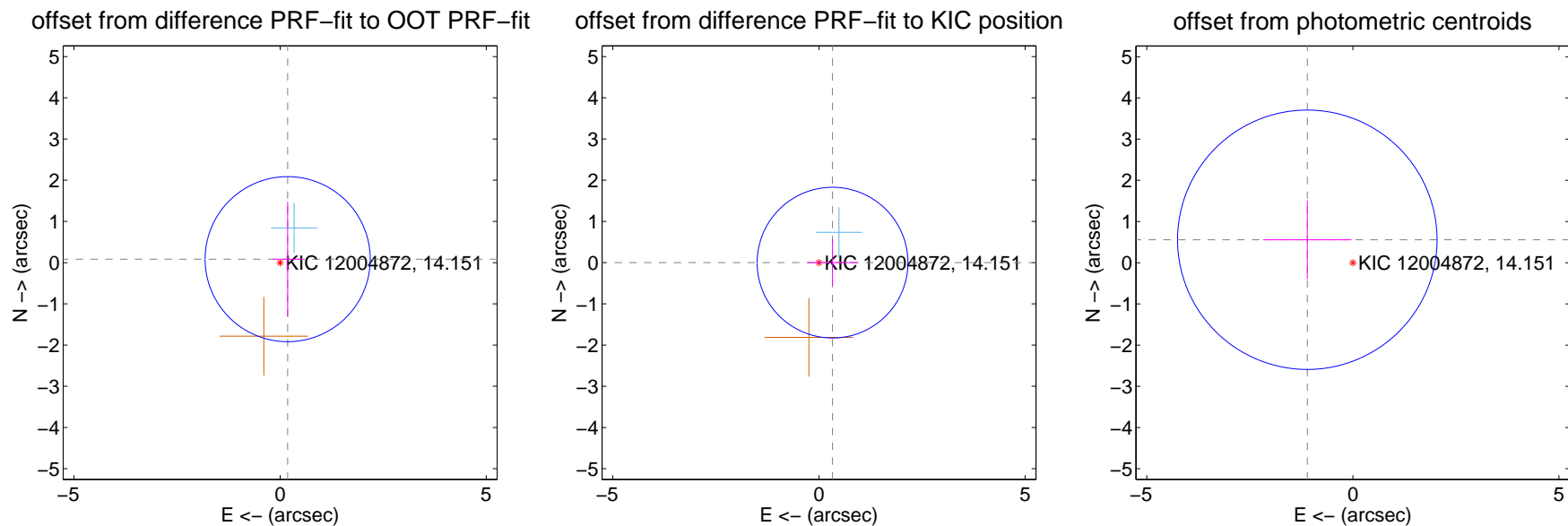
DV Centroid Data

Supplemental centroid analysis for 012004872-03. Kepler magnitude: 14.15. Transit SNR 6.46

There are 1 quarters with good PRF difference image offsets

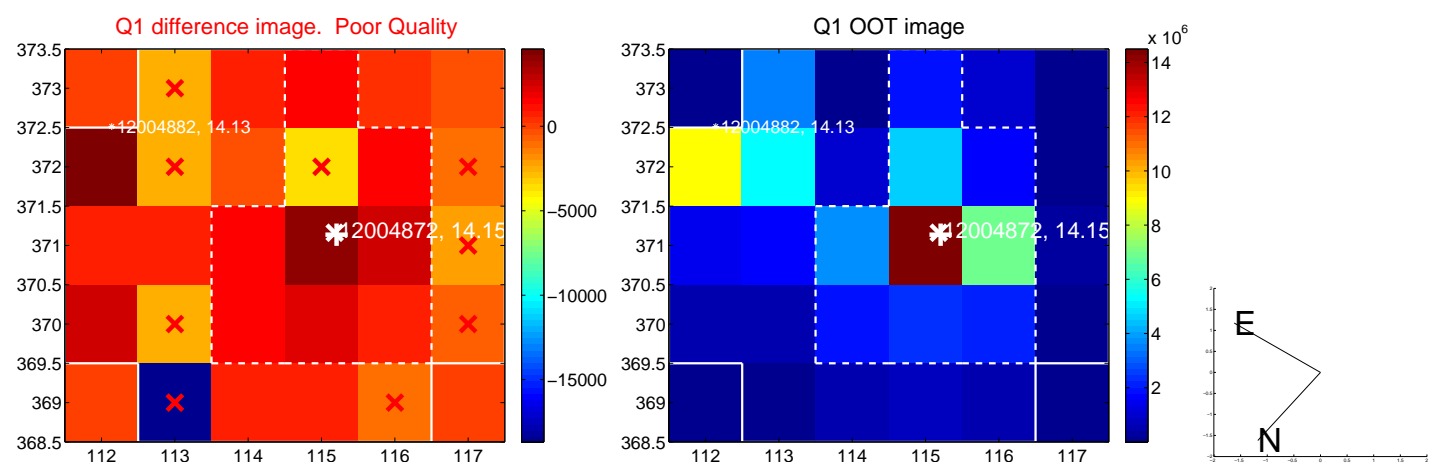
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.202 ± 0.668	0.30	-0.184 ± 0.359	0.085 ± 1.393
PRF-fit source offset from KIC position	0.329 ± 0.609	0.54	-0.329 ± 0.609	0.000 ± 0.569
photometric centroid source offset	1.24 ± 1.05	1.18	1.10 ± 1.07	0.56 ± 0.95

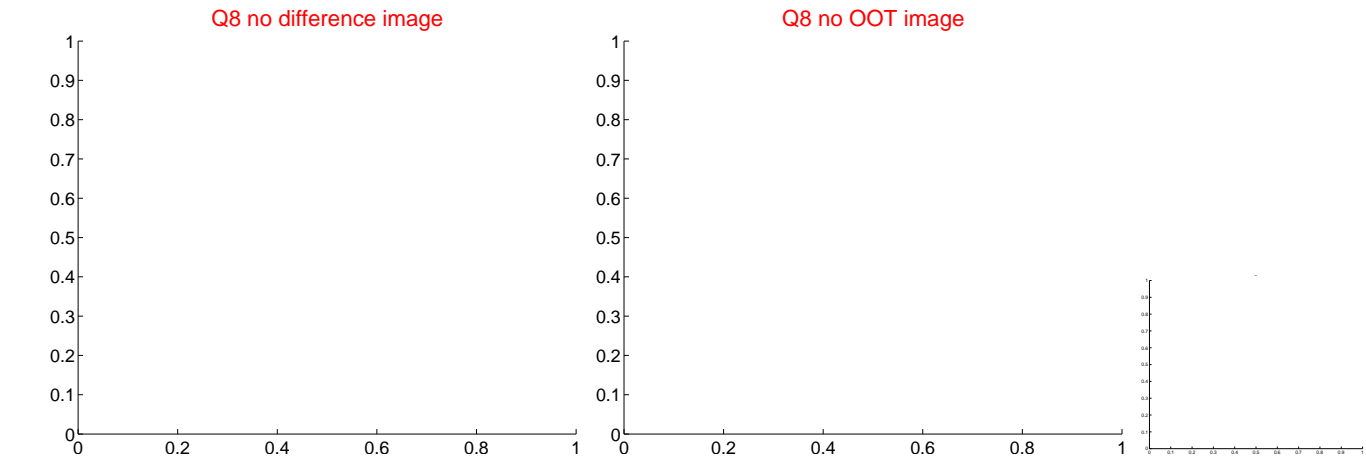
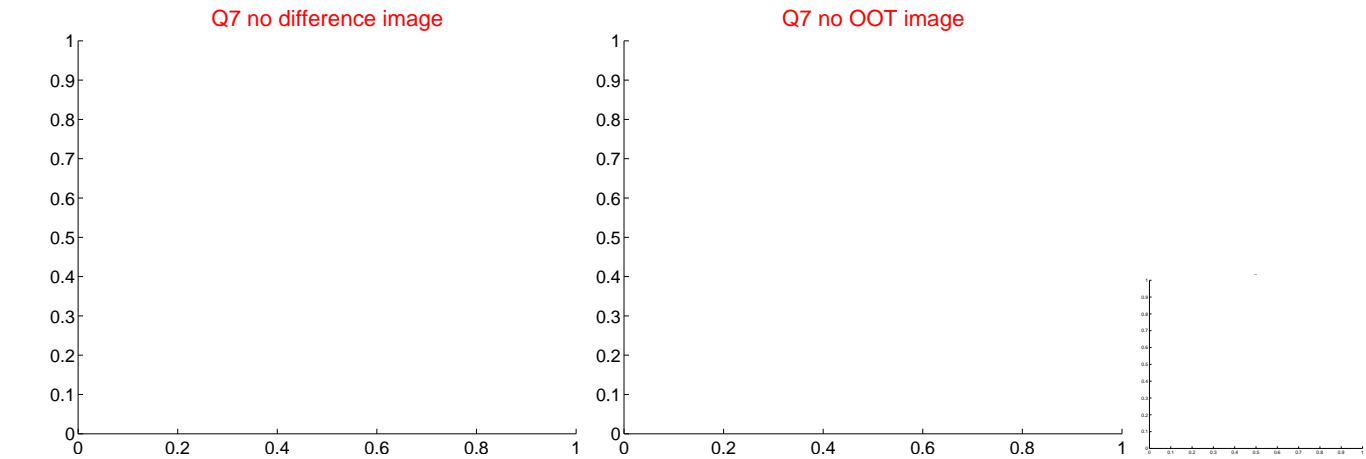
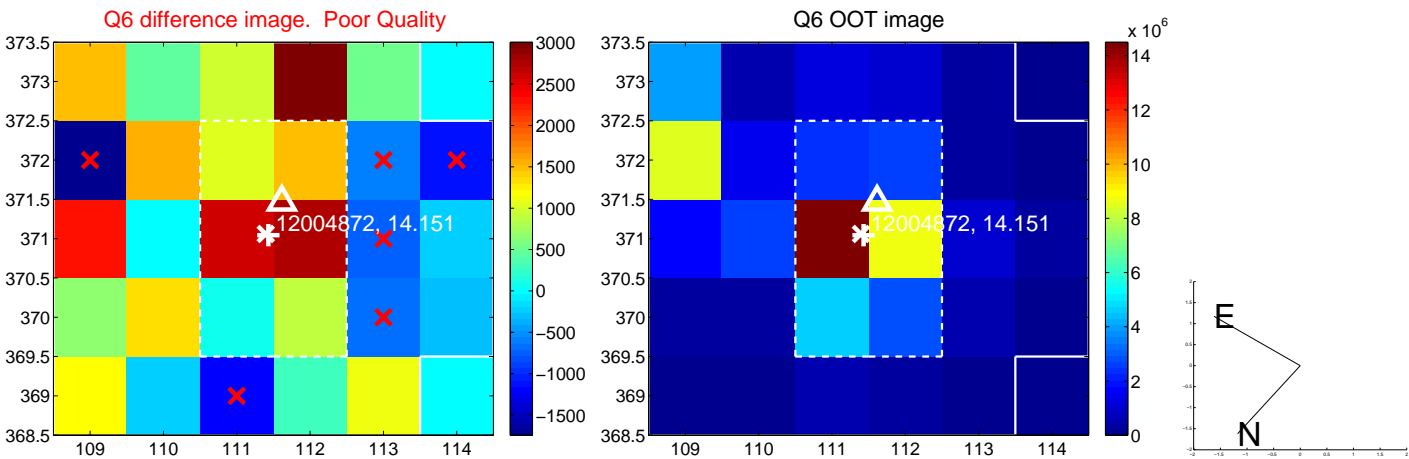
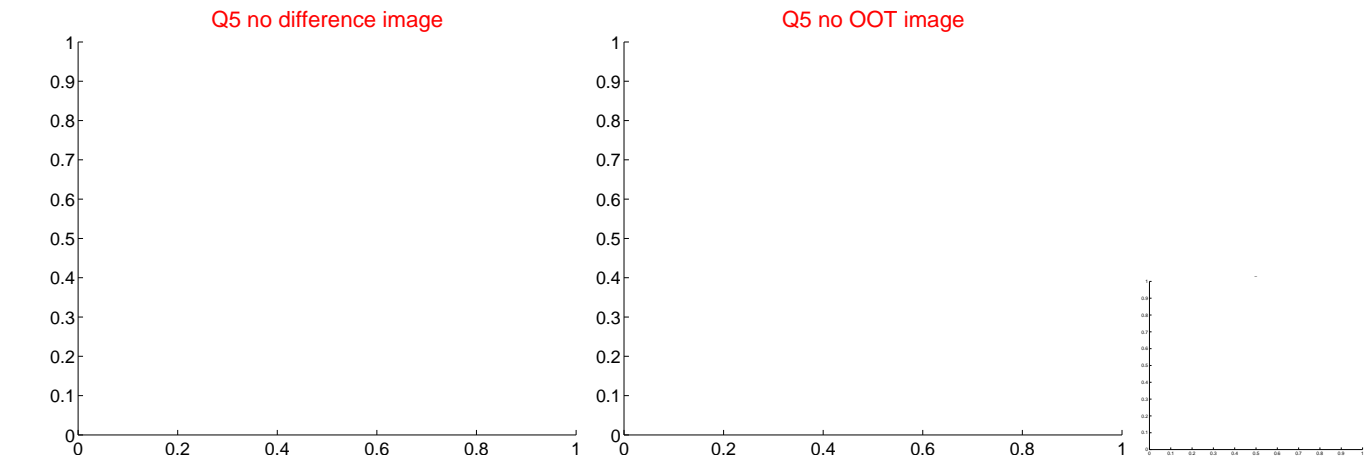


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

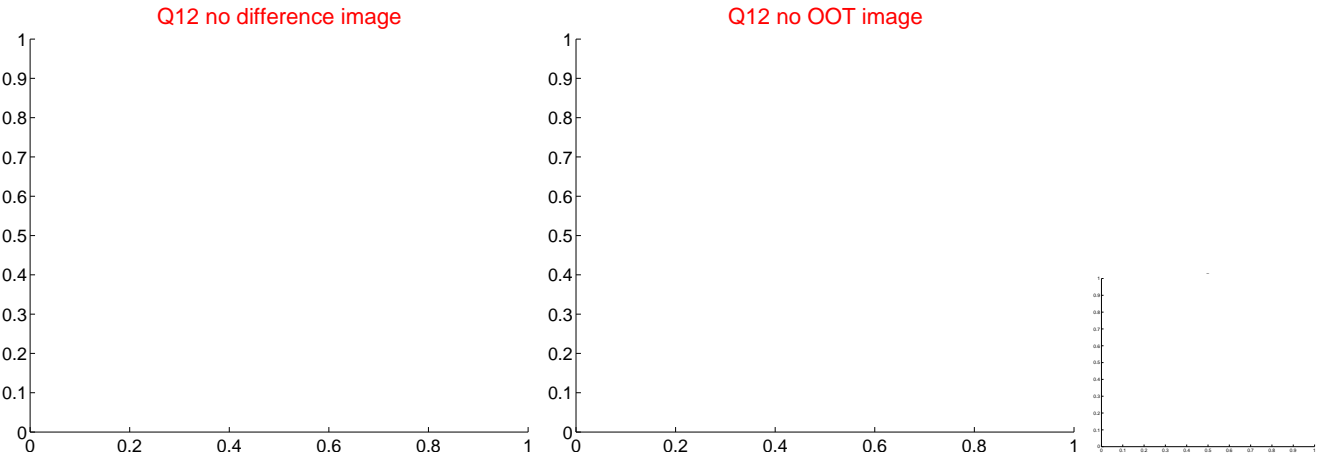
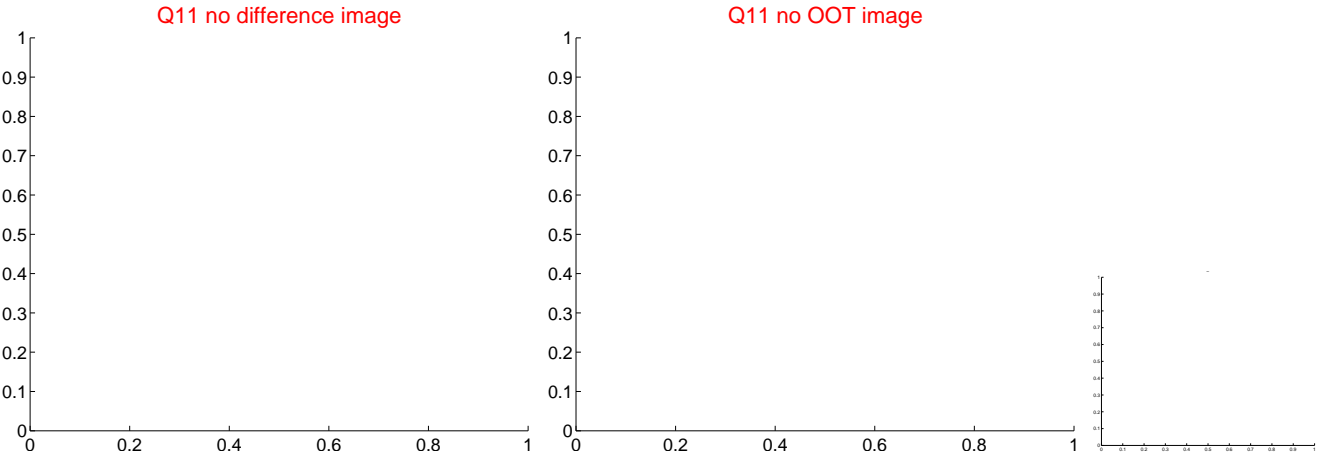
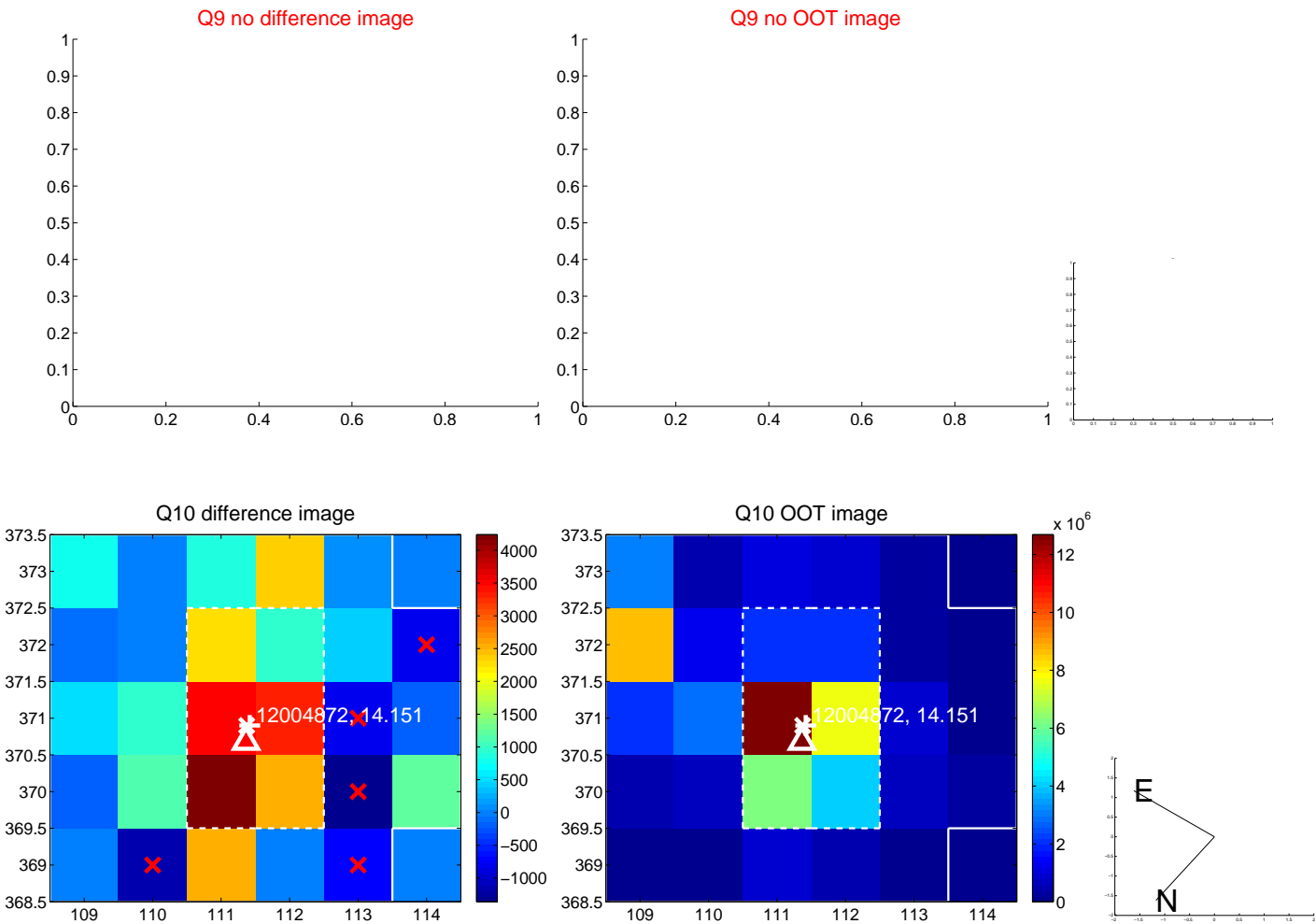
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



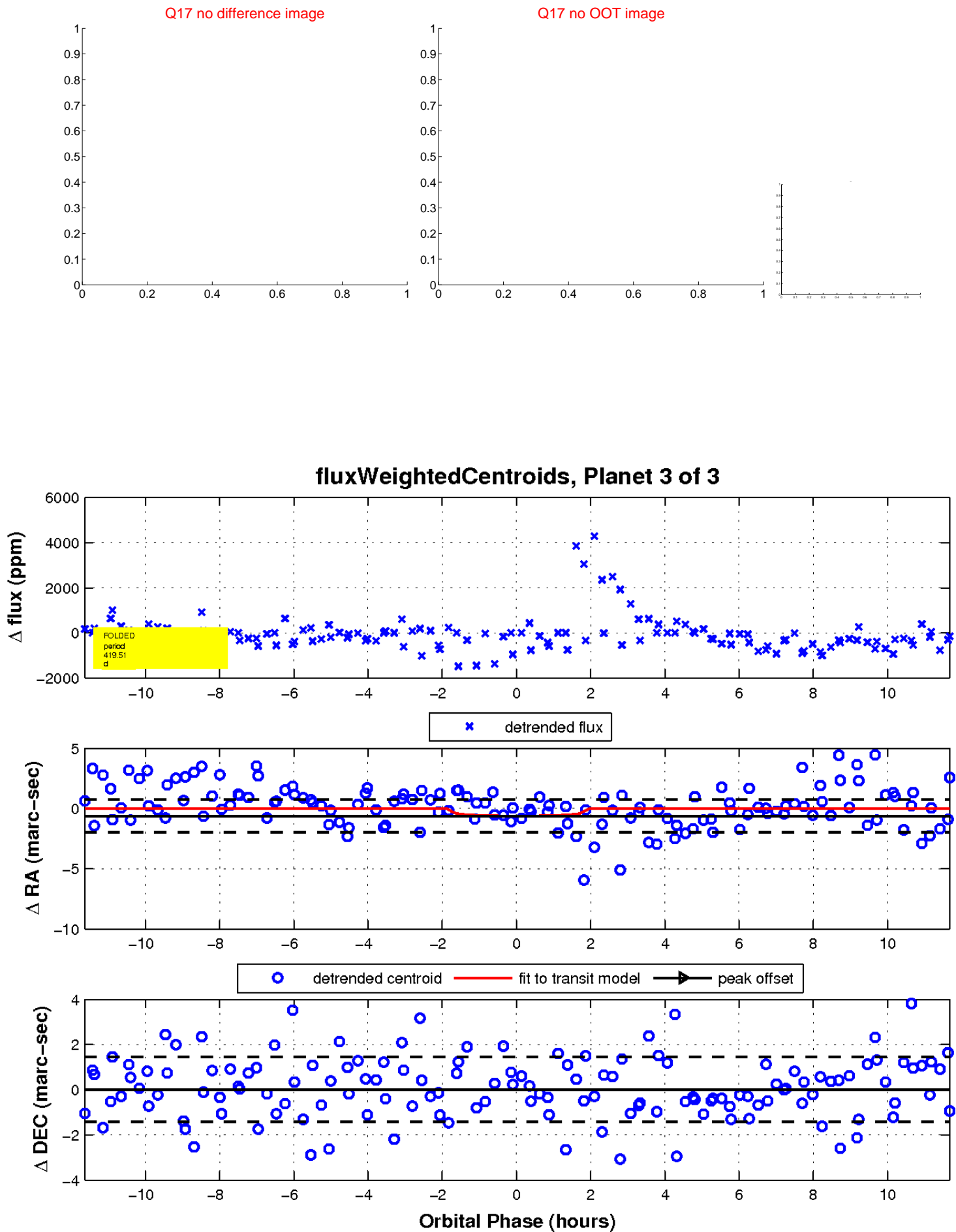
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

Declination

