

KIC 011973944

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})
011973944-01	OBS	No	495.599757	584.129167	398.5	3.489	12.5	8.7	0.68	4739	1.35	0.17
011973944-02	OBS	No	368.396942	410.530733	437.4	7.460	13.0	7.3	0.68	4739	1.39	0.26

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011973944-01	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
011973944-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—INCONSISTENT_TRANS

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

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

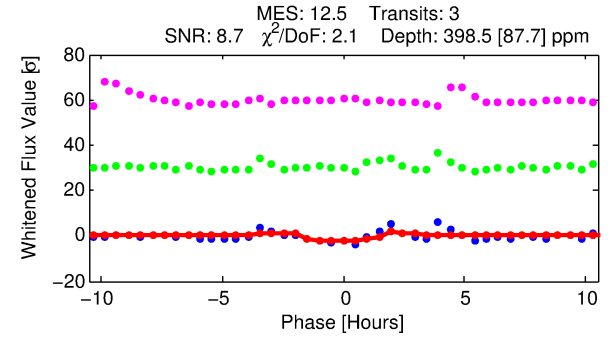
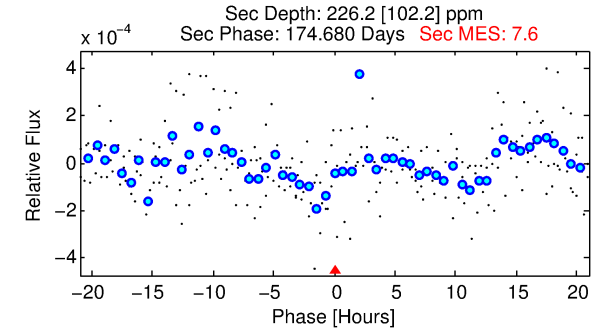
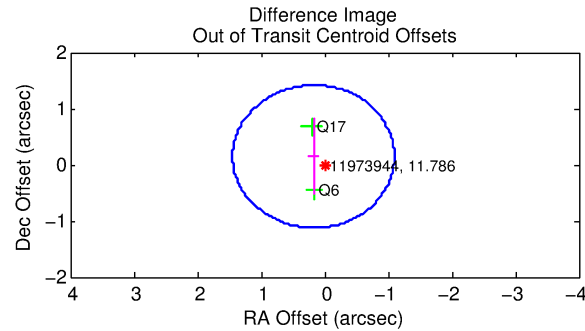
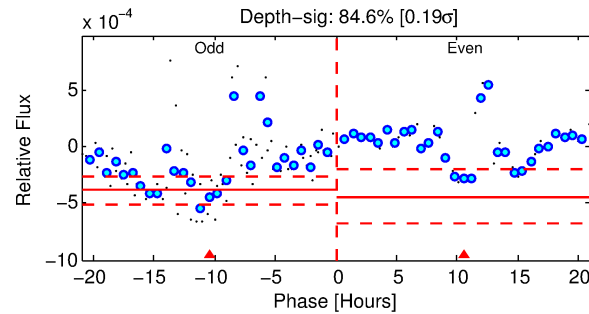
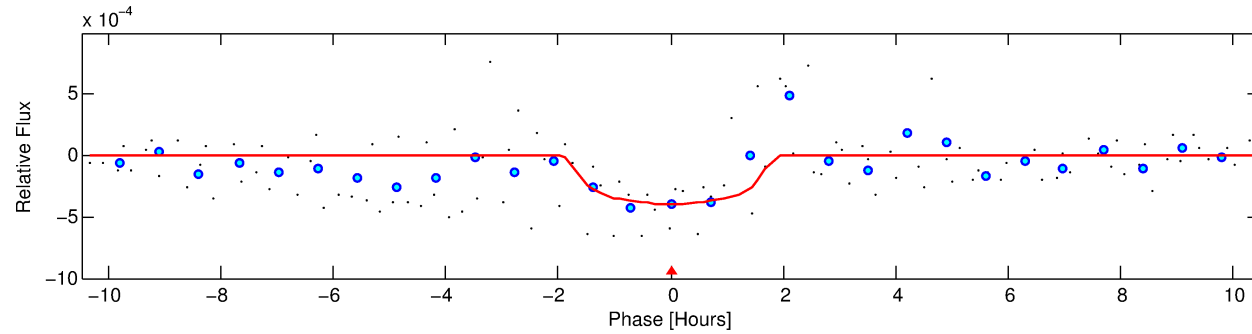
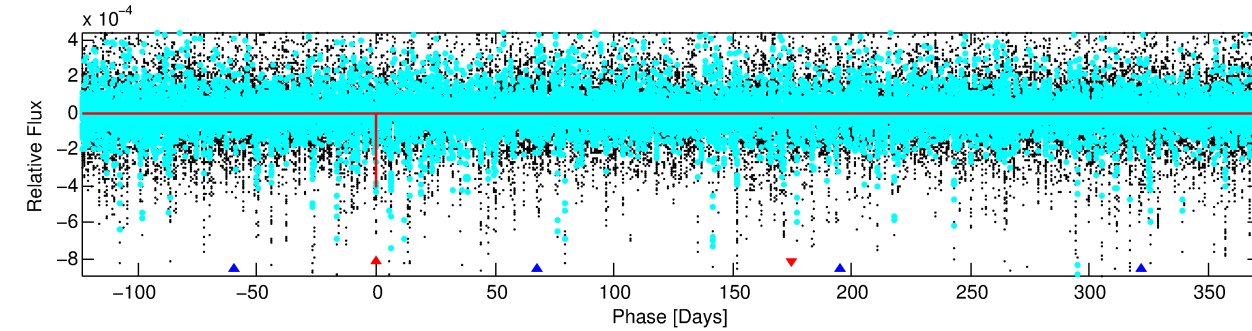
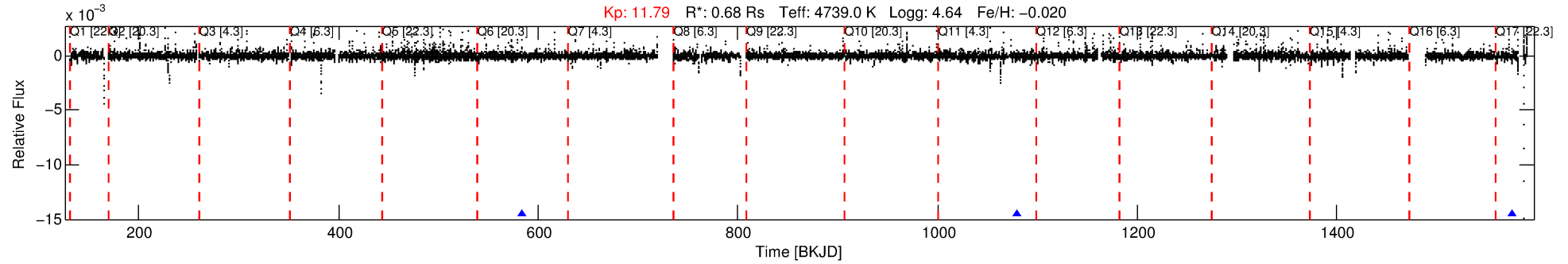
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011973944-01

No Significant Match Found

DV One-Page Summary

KIC: 11973944 Candidate: 1 of 2 Period: 495.600 d



DV Fit Results:

Period = 495.59976 [0.00646] d
Epoch = 584.1292 [0.0079] BKJD
Rp/R* = 0.0182 [0.0414]
a/R* = 993.62 [7029.57]
b = 0.45 [13.08]
Seff = 0.17 [0.02]
Teq = 164 [5] K
Rp = 1.35 [3.08] Re
a = 1.1057 [0.0677] AU
Ag = 83035.41 [379904.18] [0.22 σ]
Teffp = 4309 [4929] K [0.84 σ]

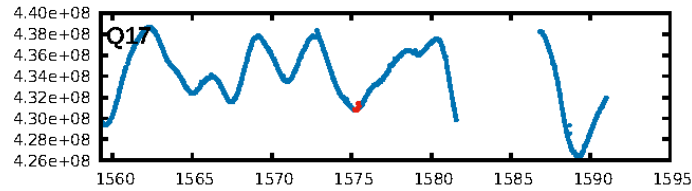
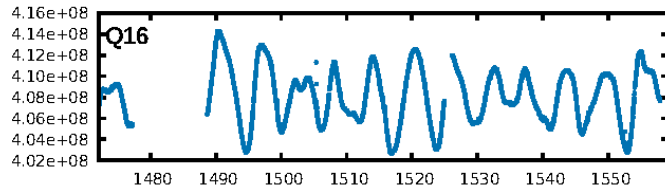
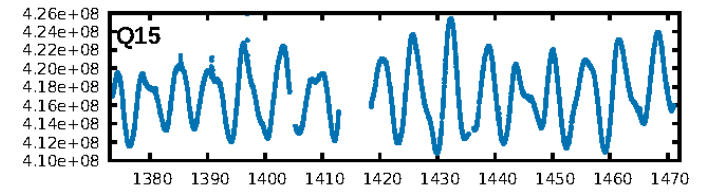
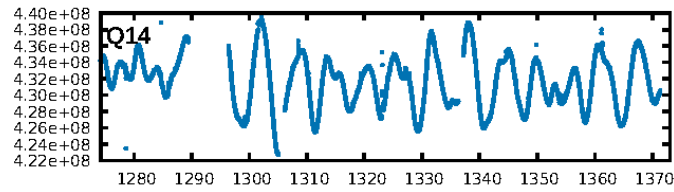
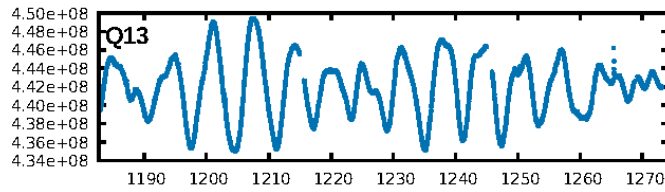
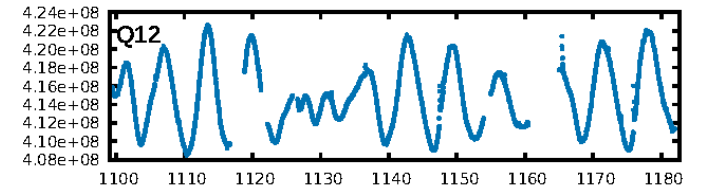
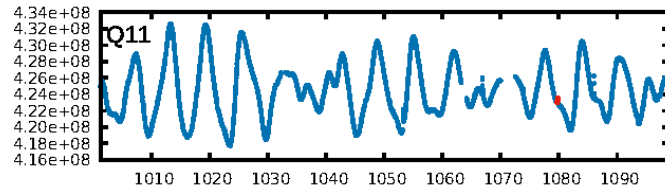
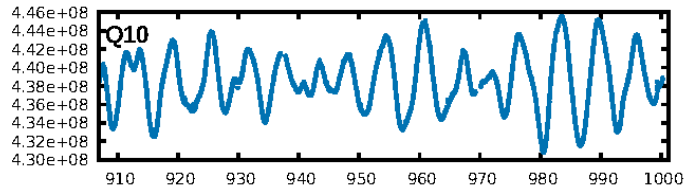
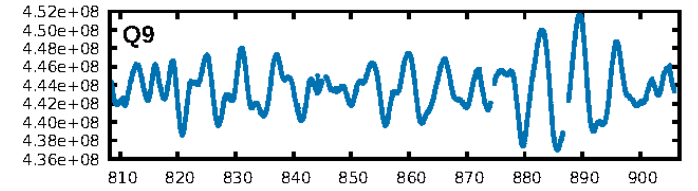
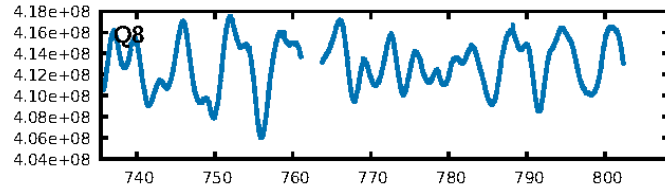
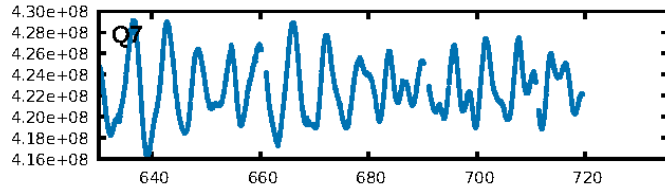
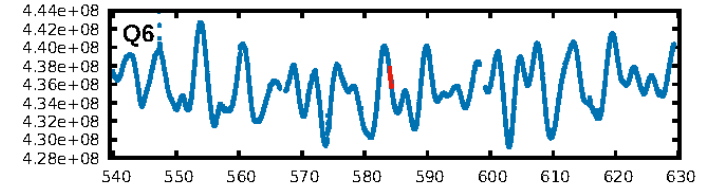
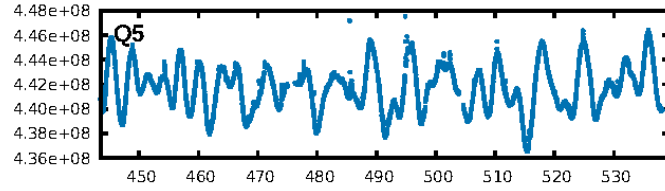
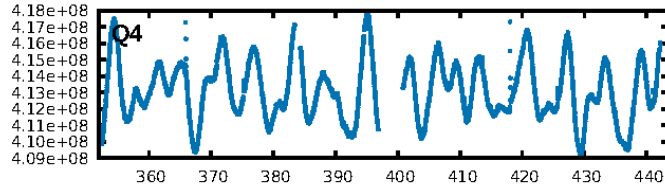
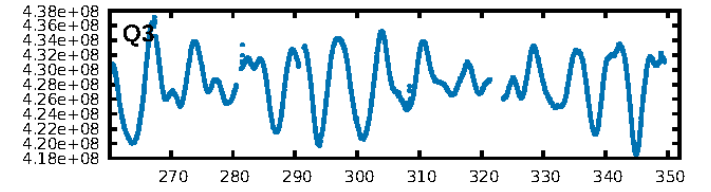
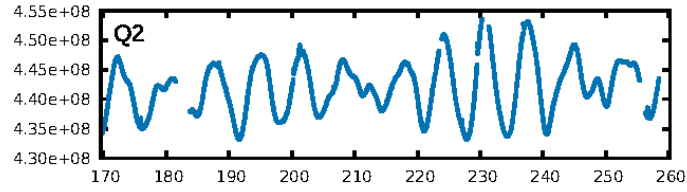
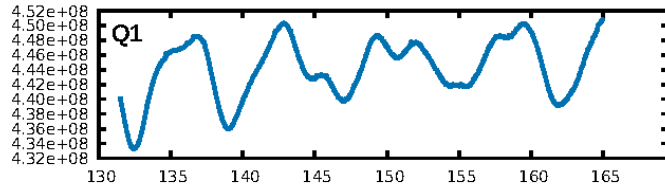
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [370.70 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 41.7%
ModelChiSquareGof-sig: 86.4%
Bootstrap-pfa: 8.93e-05
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.3695
Centroid-sig: 85.5%
Centroid-so: 0.085 arcsec [0.11 σ]
OotOffset-rm: 0.228 arcsec [0.54 σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-rm: 0.228 arcsec [1.34 σ]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

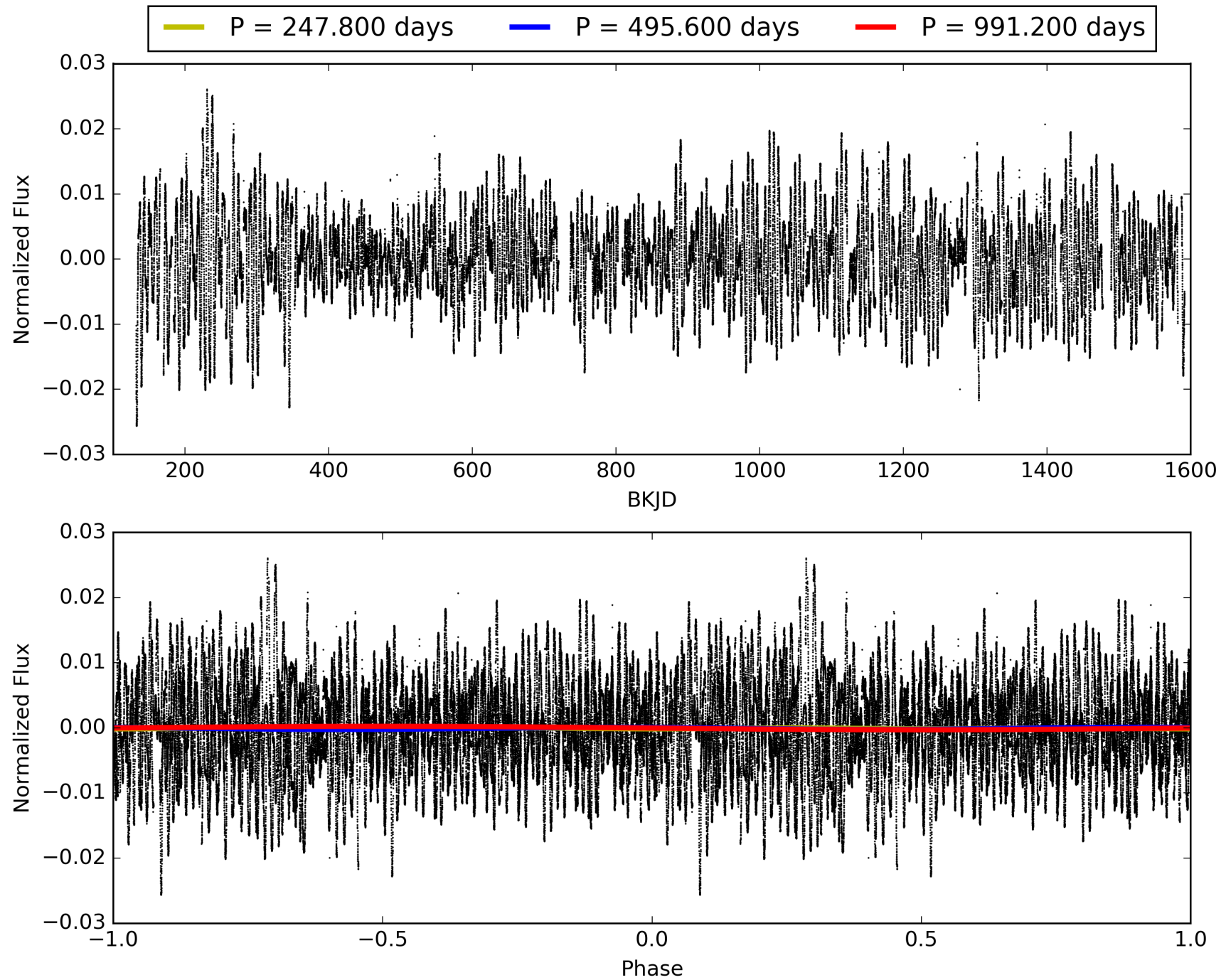
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 011973944-01, PDC Light Curves

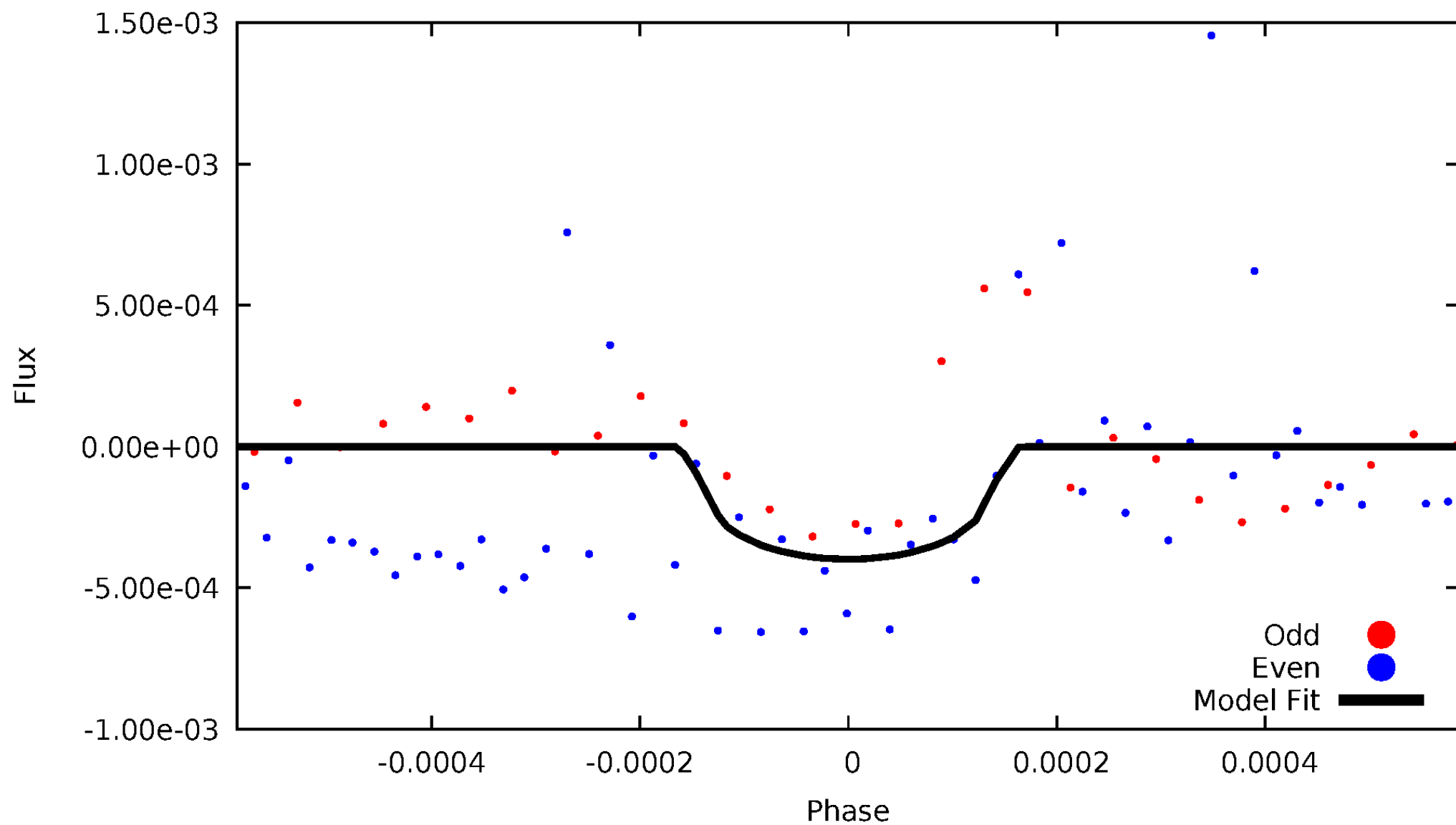


TCE 011973944-01



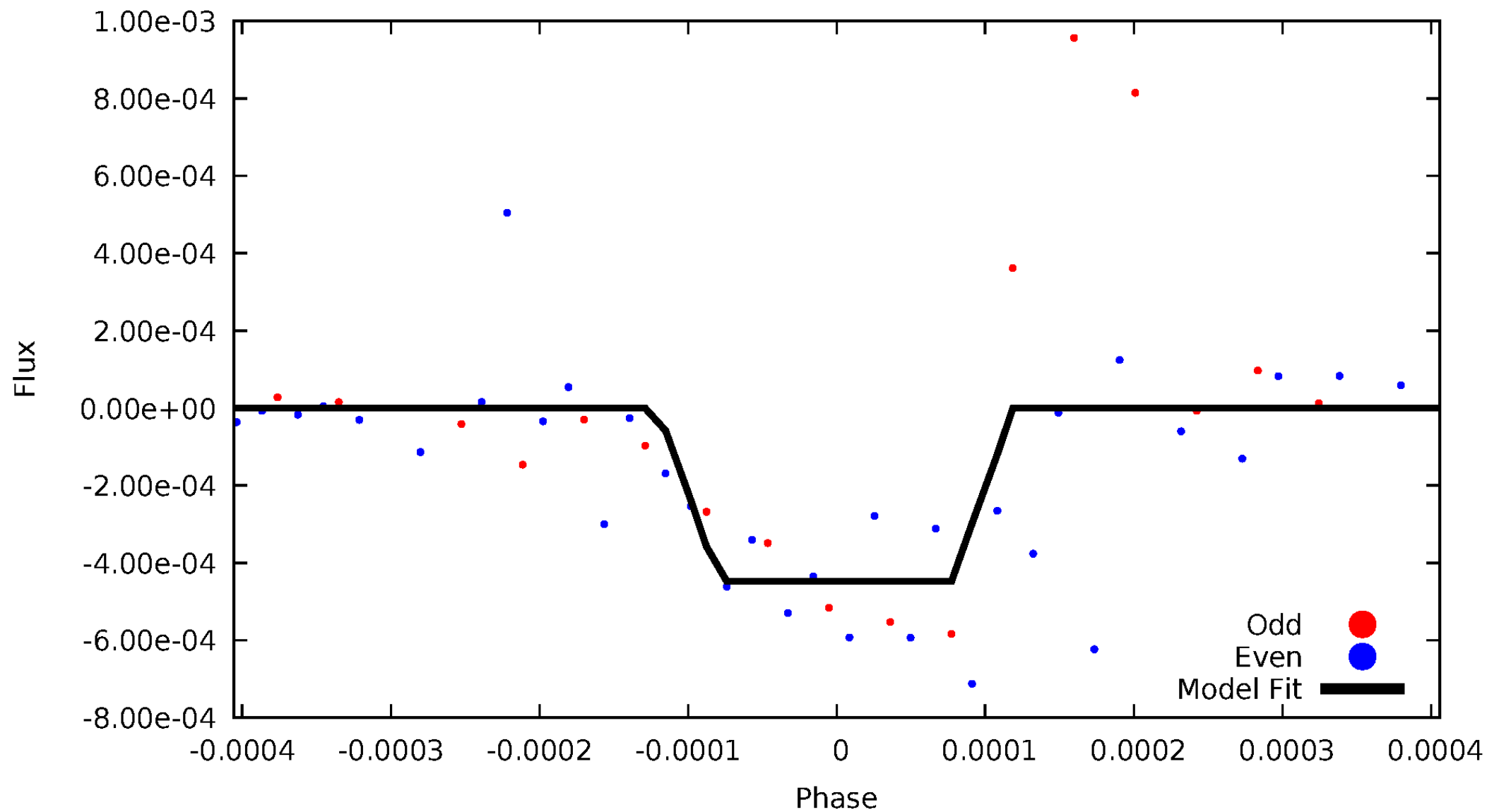
DV Odd/Even

TCE 011973944-01

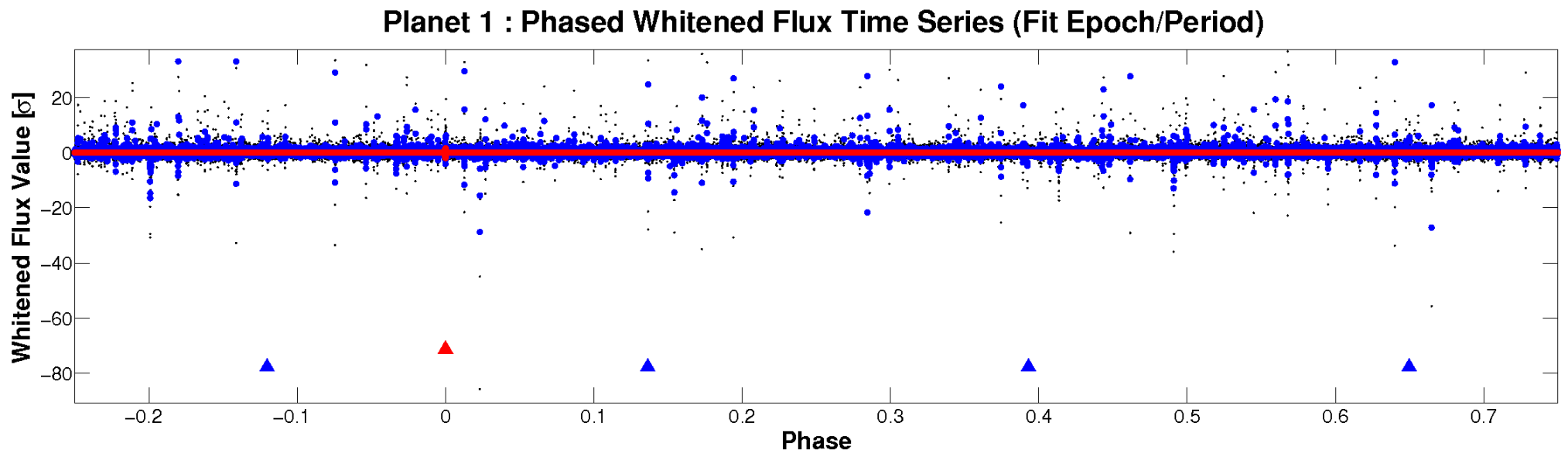
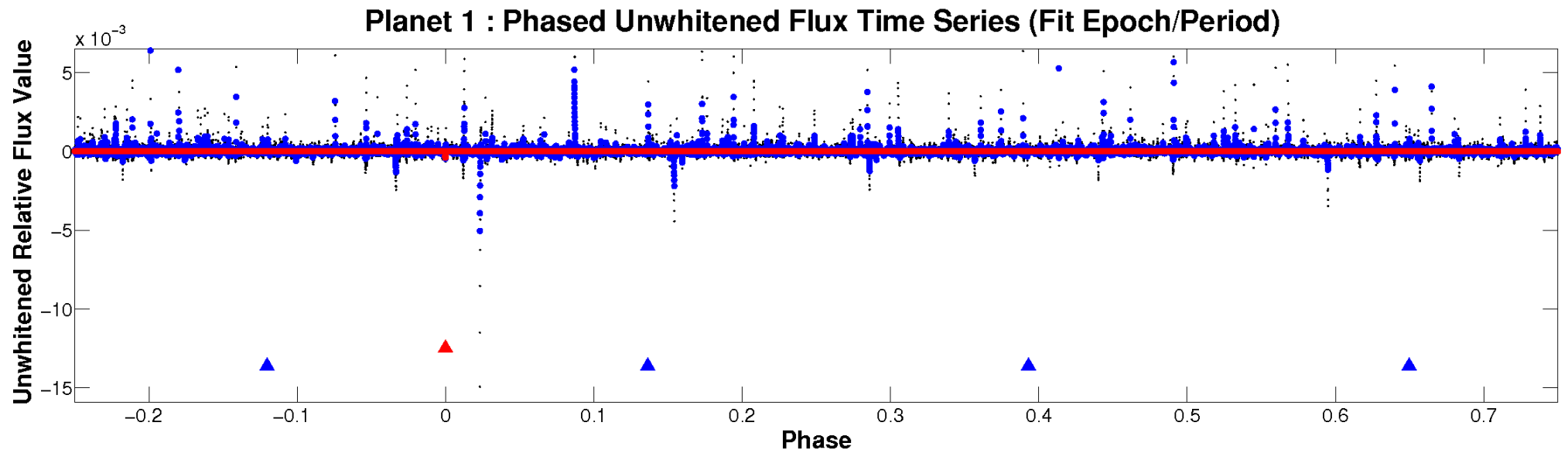


ALT Odd/Even

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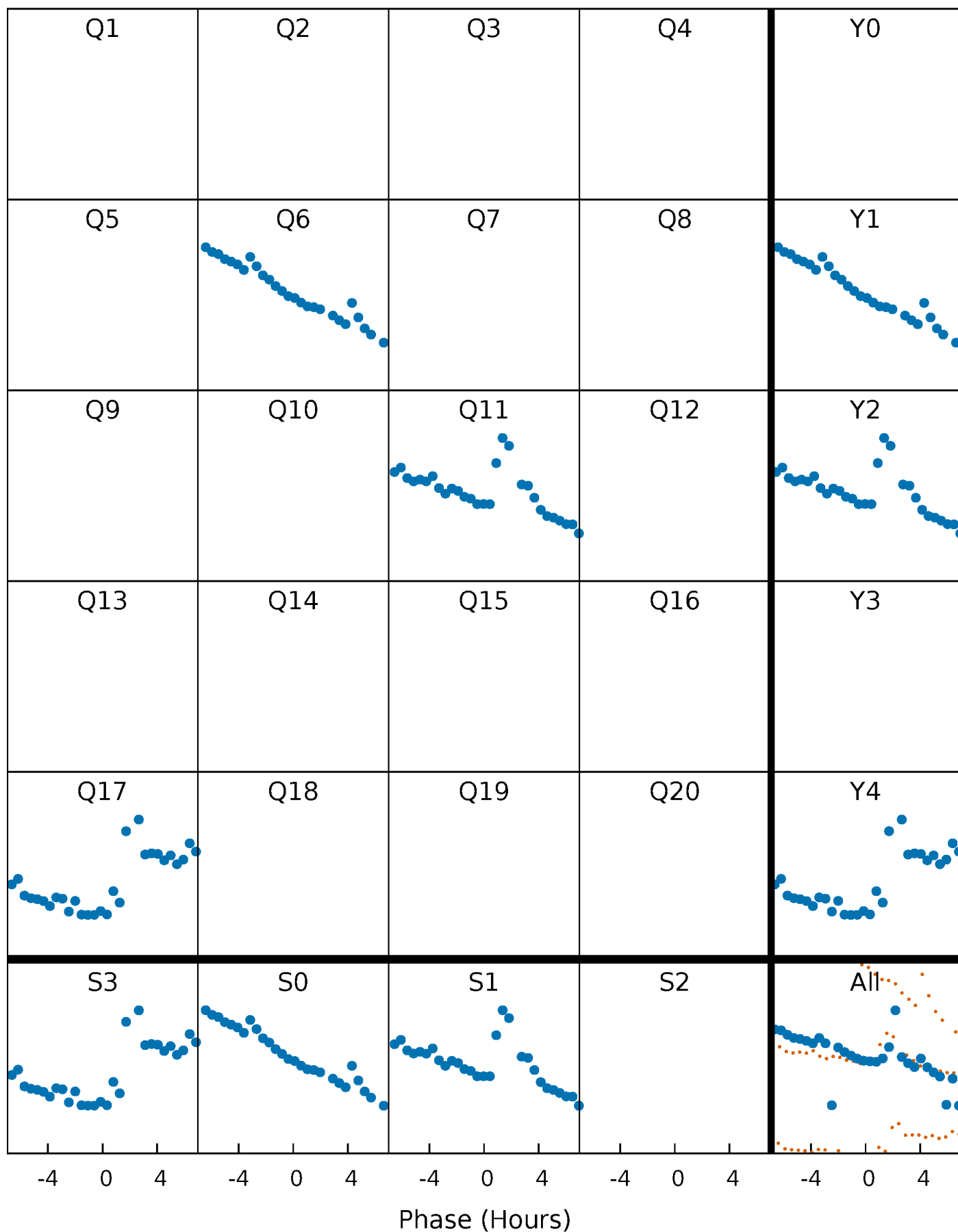


Non-Whitened Vs. Whitened Light Curve



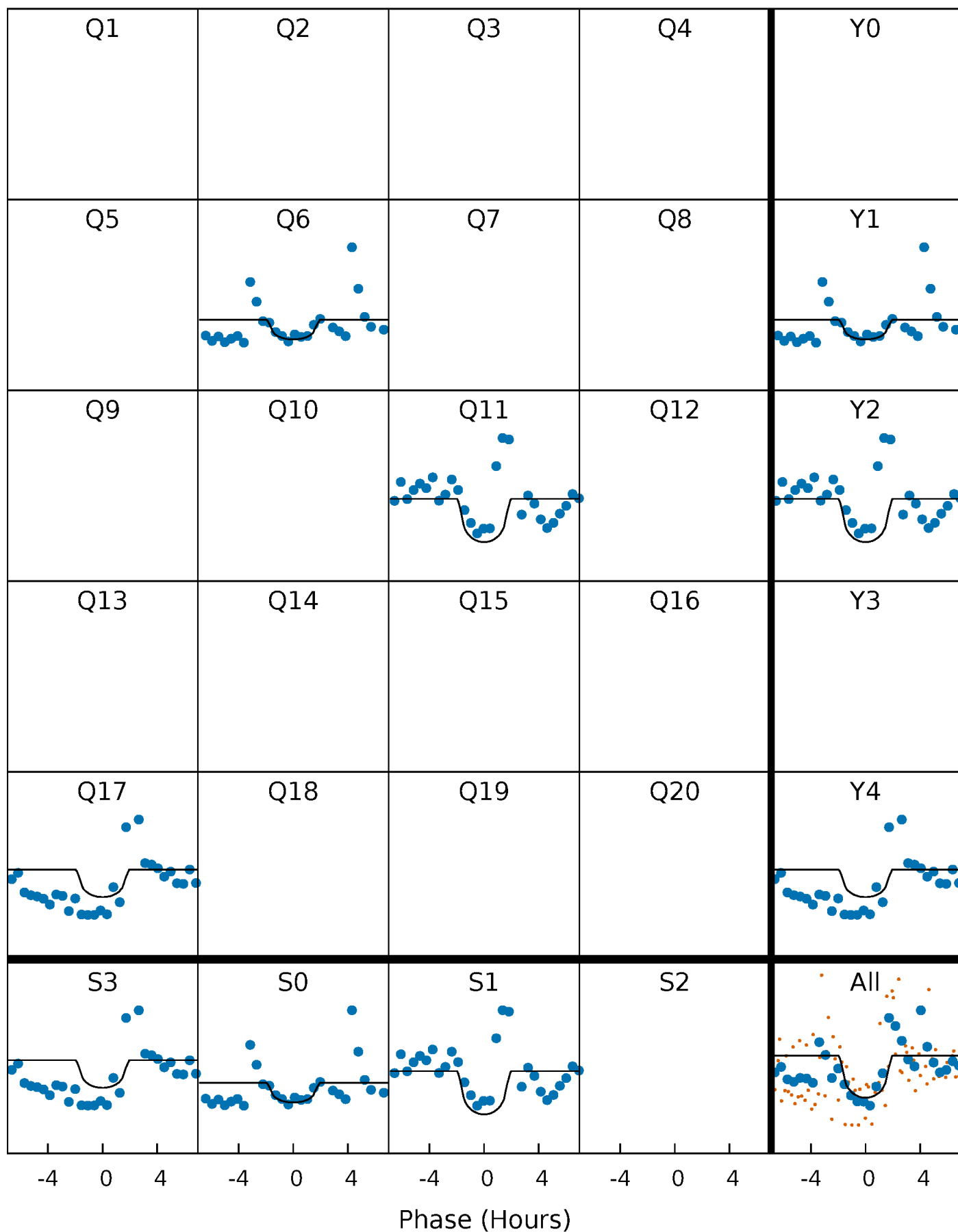
PDC Quarter-Phased Transit Curves

TCE 011973944-01 P=495.599757 Days $T_0=584.129167$ (BKJD)



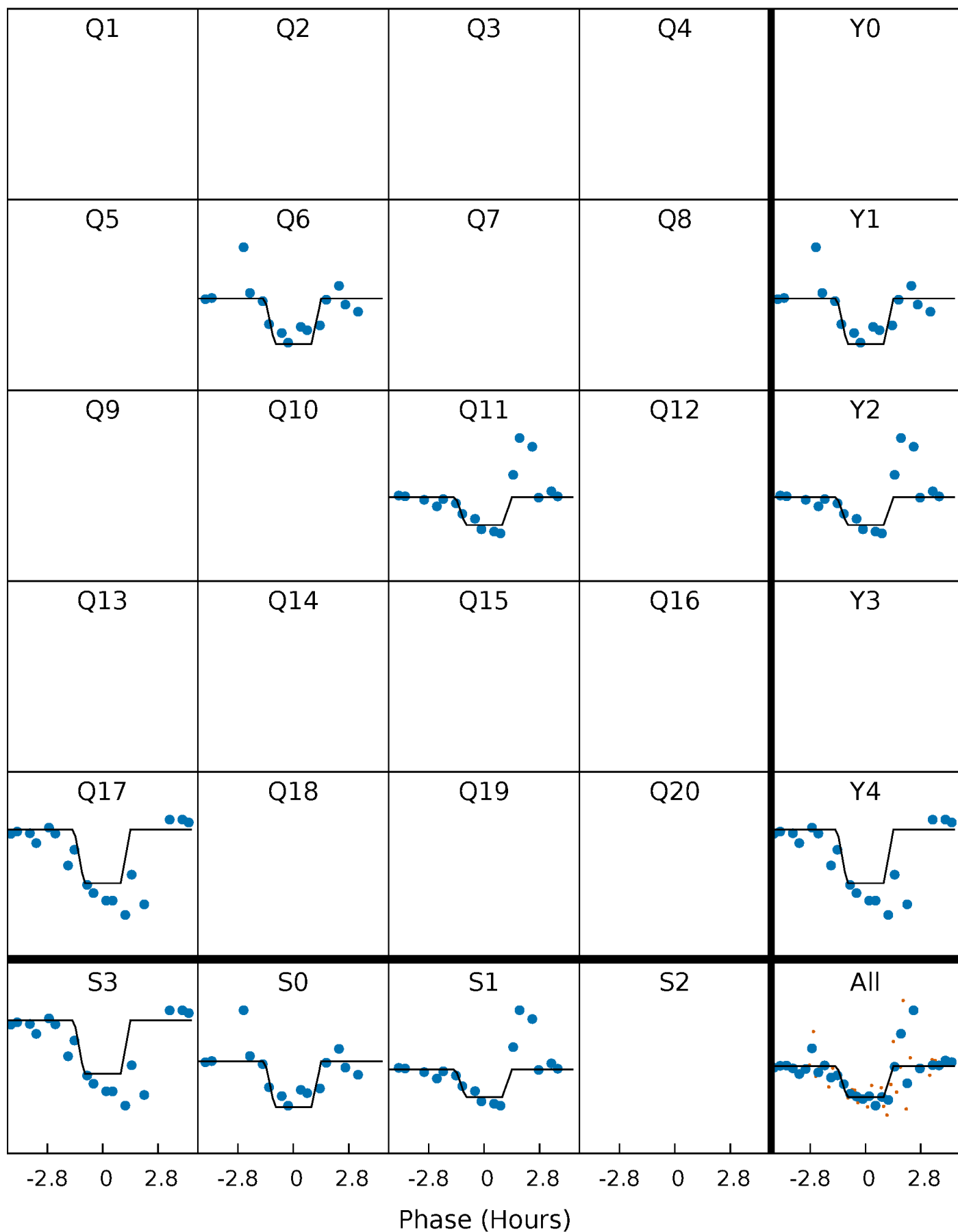
DV Quarter-Phased Transit Curves

TCE 011973944-01 P=495.599757 Days $T_0=584.129167$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

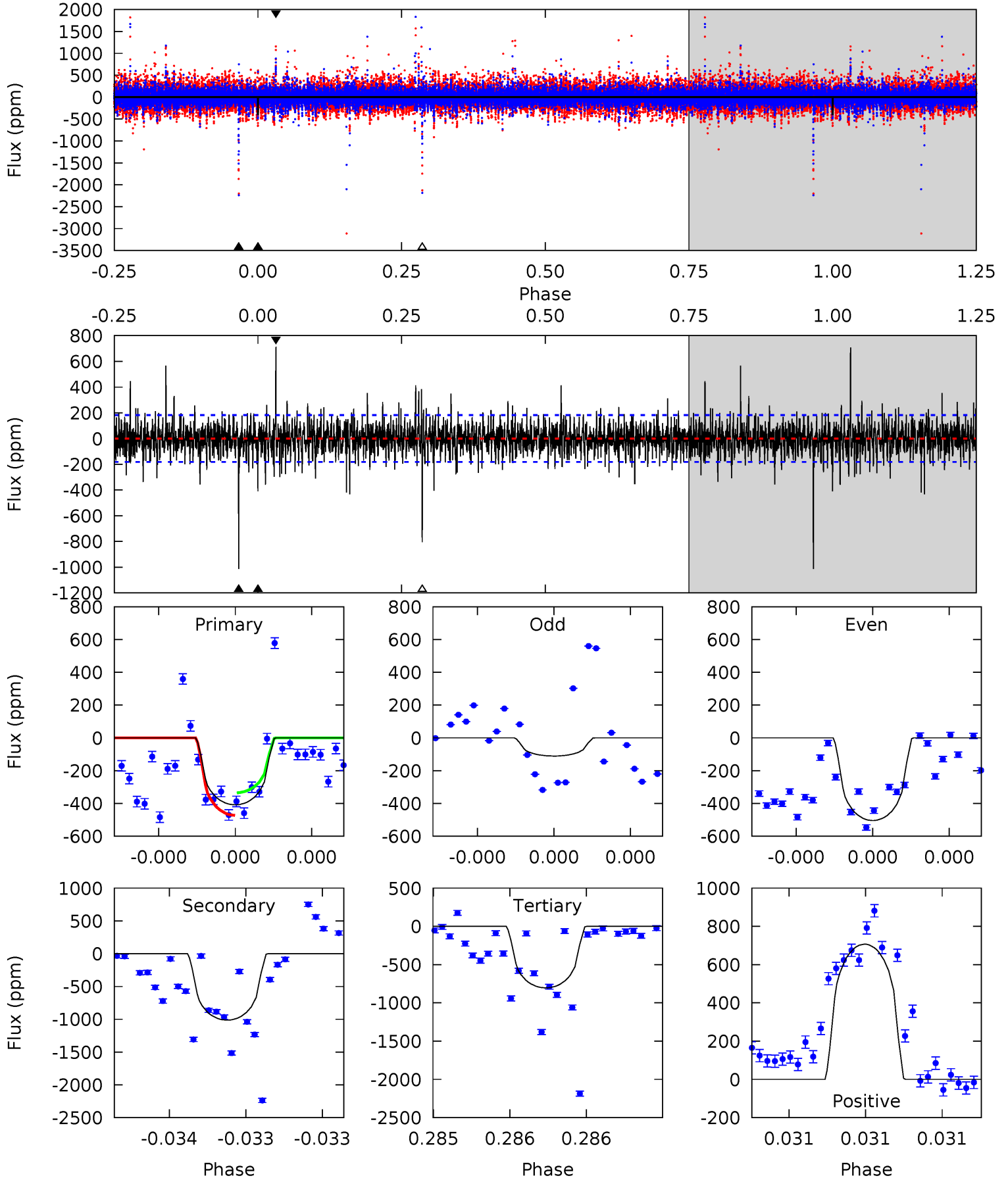
TCE 011973944-01 P=495.588753 Days $T_0=584.125785$ (BKJD)



DV Model-Shift Uniqueness Test

011973944-01, P = 495.599757 Days, E = 88.529410 Days

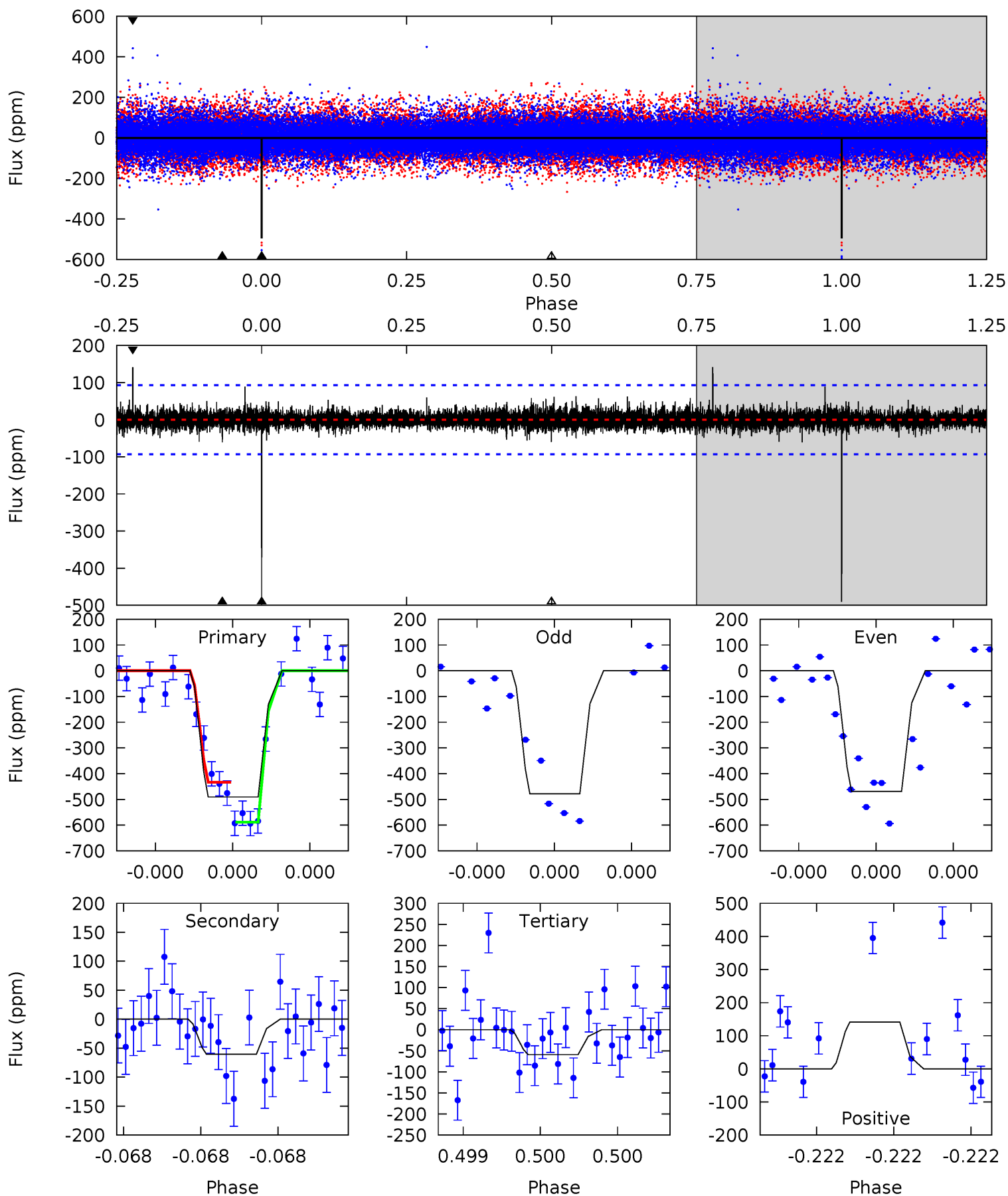
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	31.4	24.9	21.9	5.65	3.60	2.48	-12.3	-9.25	6.49	9.50	4.70	1.02	0.41	2.16



Alt Model-Shift Uniqueness Test

011973944-01, P = 495.588753 Days, E = 88.537032 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.0	3.70	3.62	8.65	5.70	3.68	0.76	26.4	21.4	0.08	-4.95	0.26	1.00	0.22	4.70



Stellar Parameters For KIC 011973944

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4739^{+85}_{-76}	$4.636^{+0.012}_{-0.048}$	$-0.020^{+0.150}_{-0.150}$	$0.682^{+0.050}_{-0.021}$	$0.763^{+0.027}_{-0.050}$	$3.390^{+0.175}_{-0.654}$
	+2%/-2%	+0%/-1%	+750%/-750%	+7%/-3%	+4%/-7%	+5%/-19%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 011973944-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1014 ± 32	$2.80^{+2.63}_{-1.91}$	232^{+5}_{-5}	4477^{+3359}_{-914}	$88208^{+818181}_{-64718}$
Alt.	-60 ± 16	$2.86^{+2.50}_{-1.88}$	232^{+5}_{-4}	2805^{+1190}_{-426}	4728^{+37790}_{-3483}

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

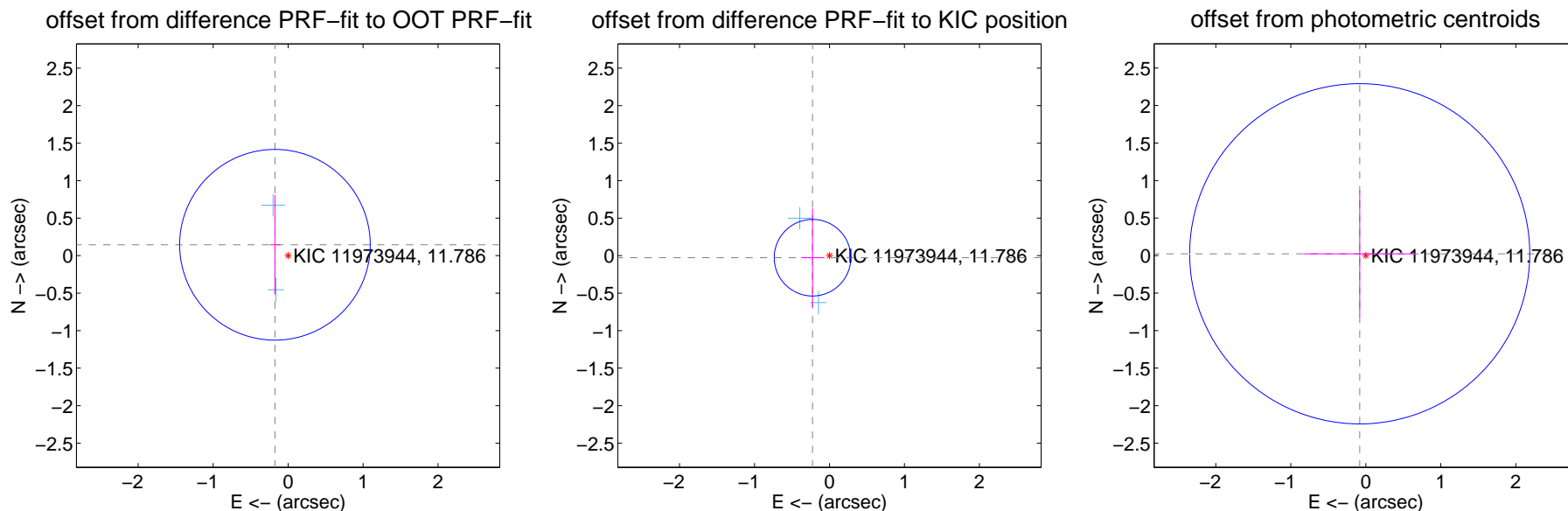
DV Centroid Data

Supplemental centroid analysis for 011973944-01. **Kepler magnitude: 11.79.** Transit SNR 8.74

There are 2 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.228 ± 0.424	0.54	0.176 ± 0.070	0.145 ± 0.661
PRF-fit source offset from KIC position	0.228 ± 0.170	1.34	0.226 ± 0.152	-0.027 ± 0.659
photometric centroid source offset	0.08 ± 0.76	0.11	0.08 ± 0.75	0.02 ± 0.84

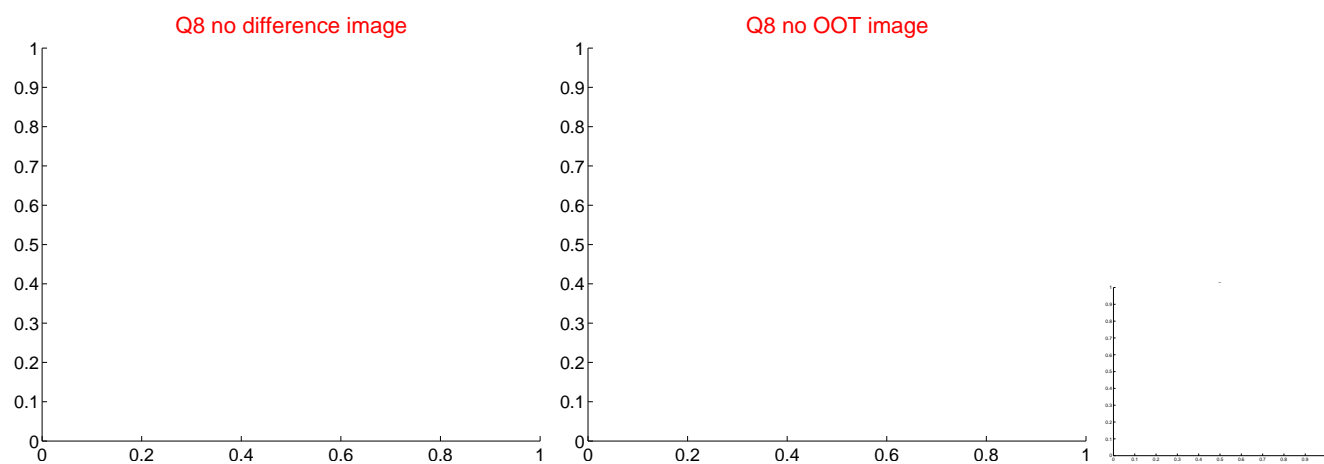
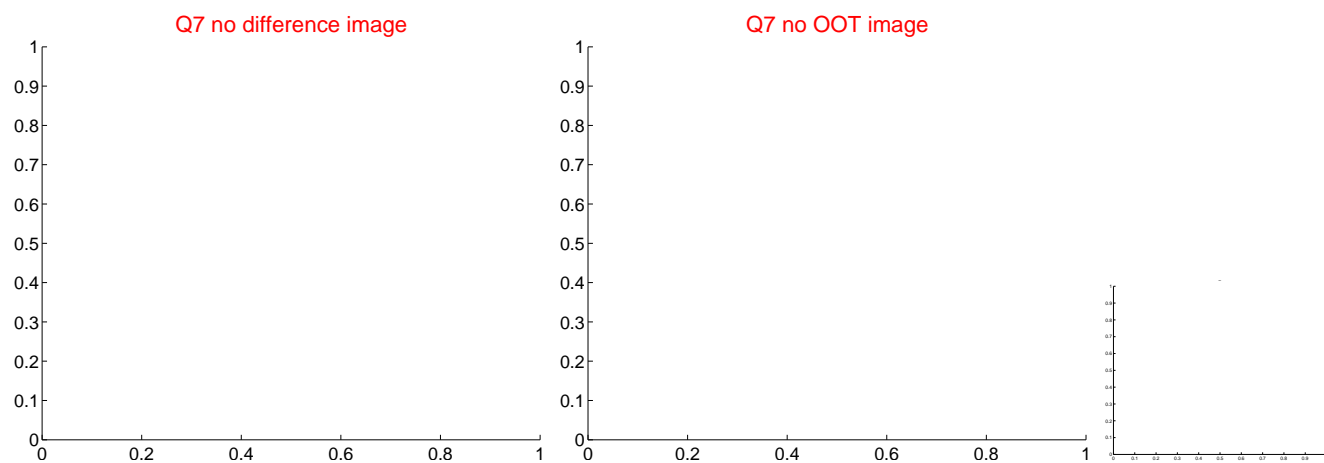
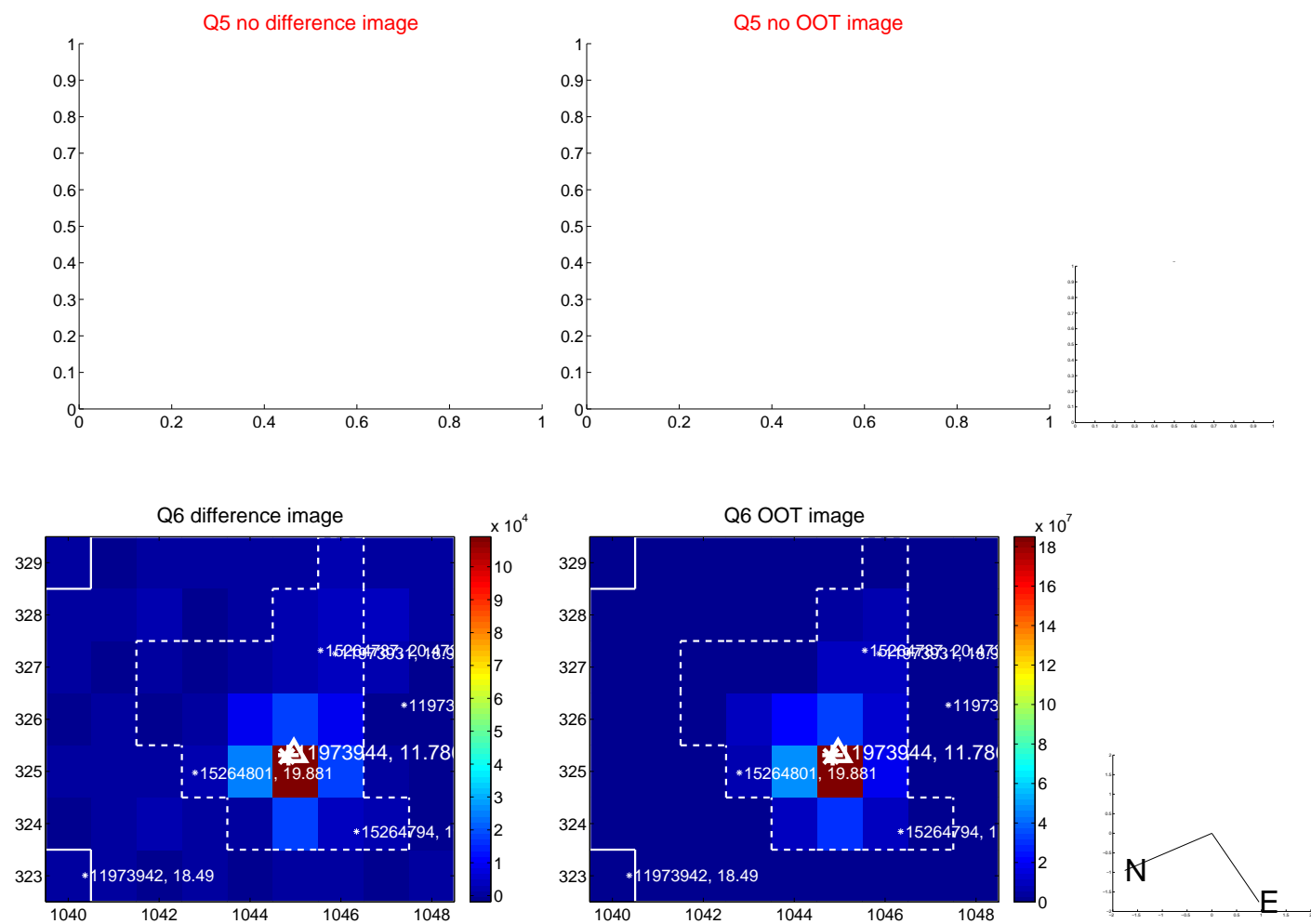


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

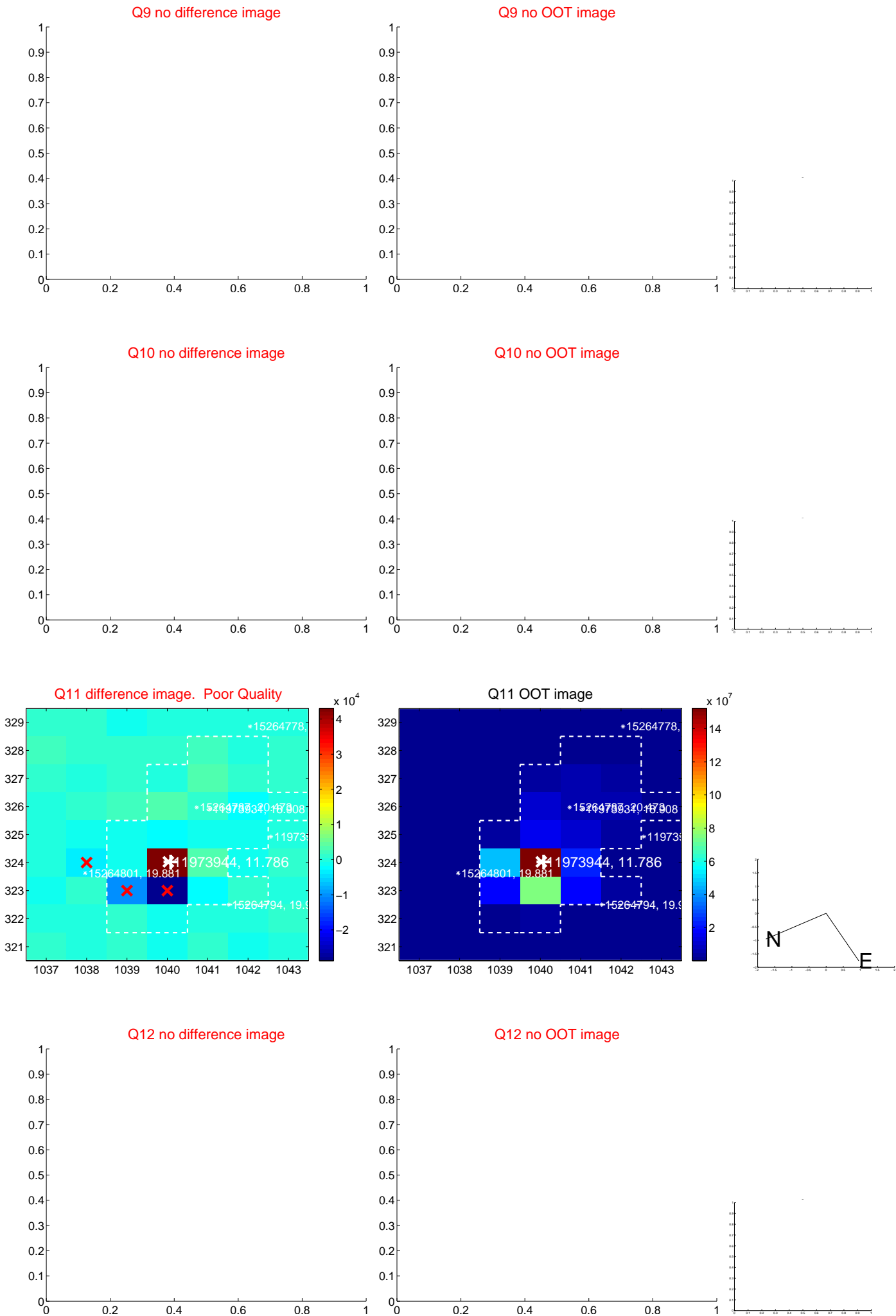
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



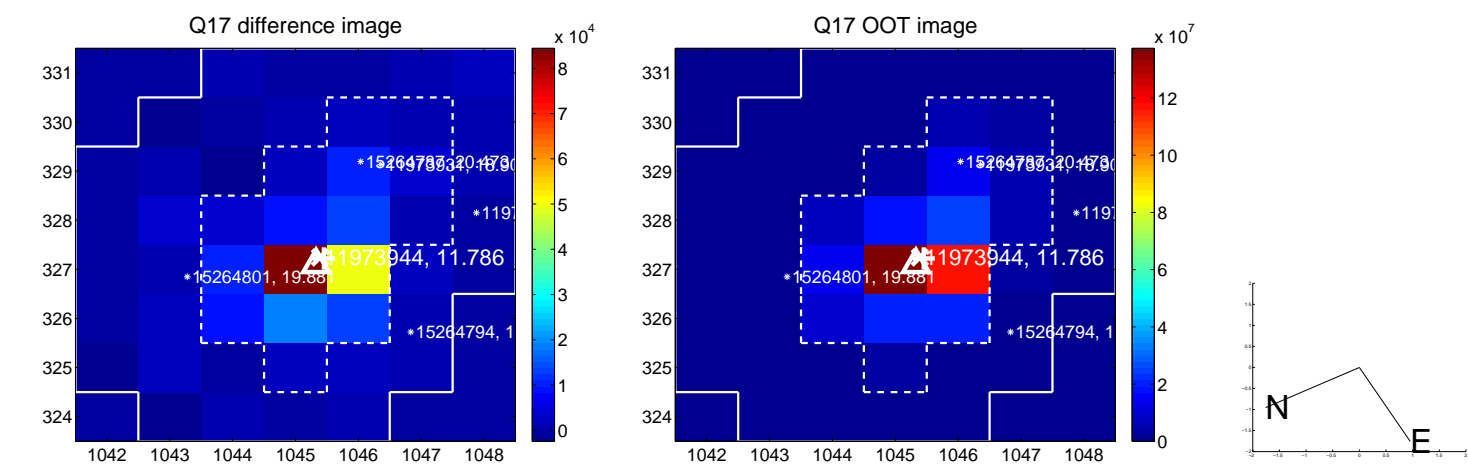
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



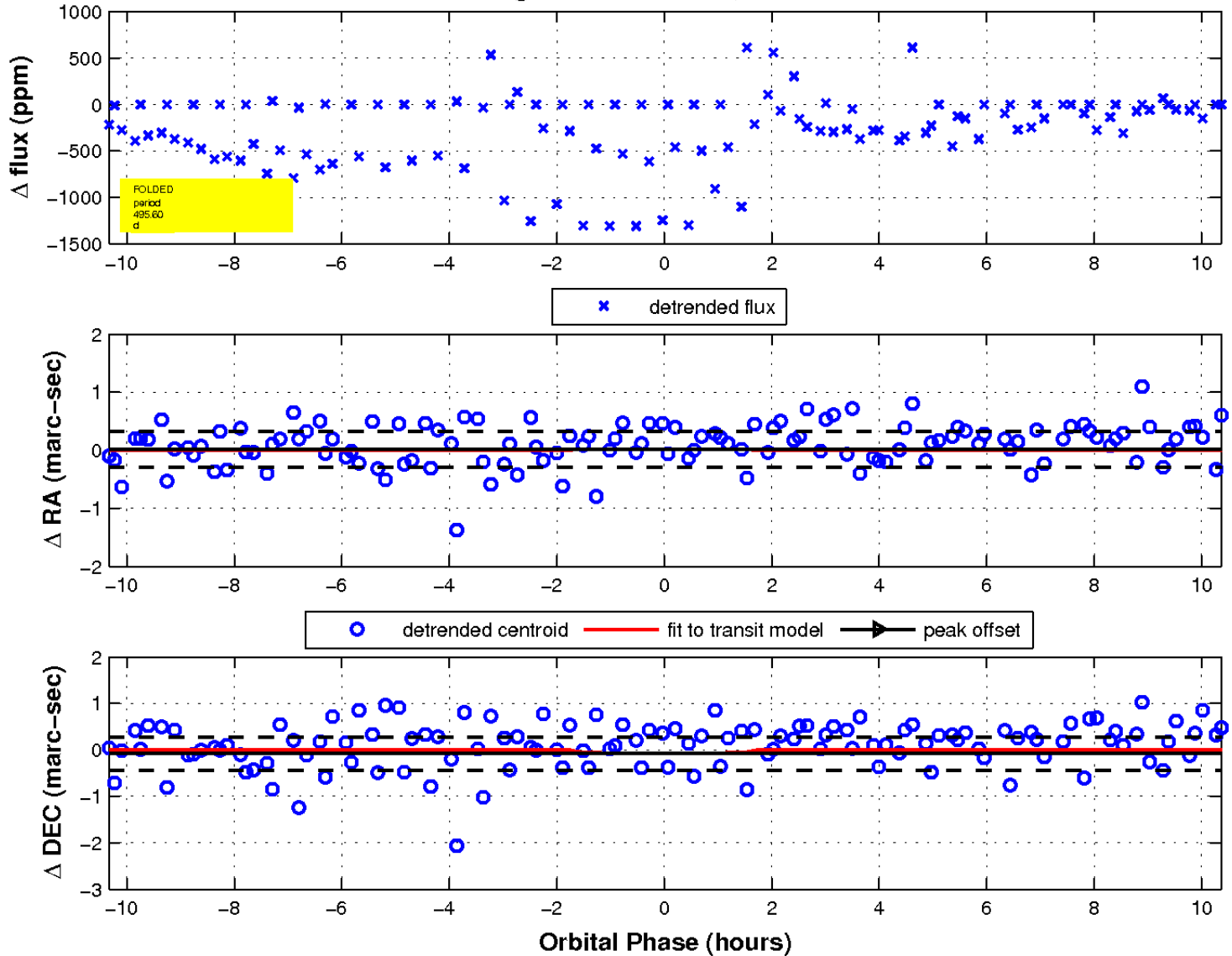
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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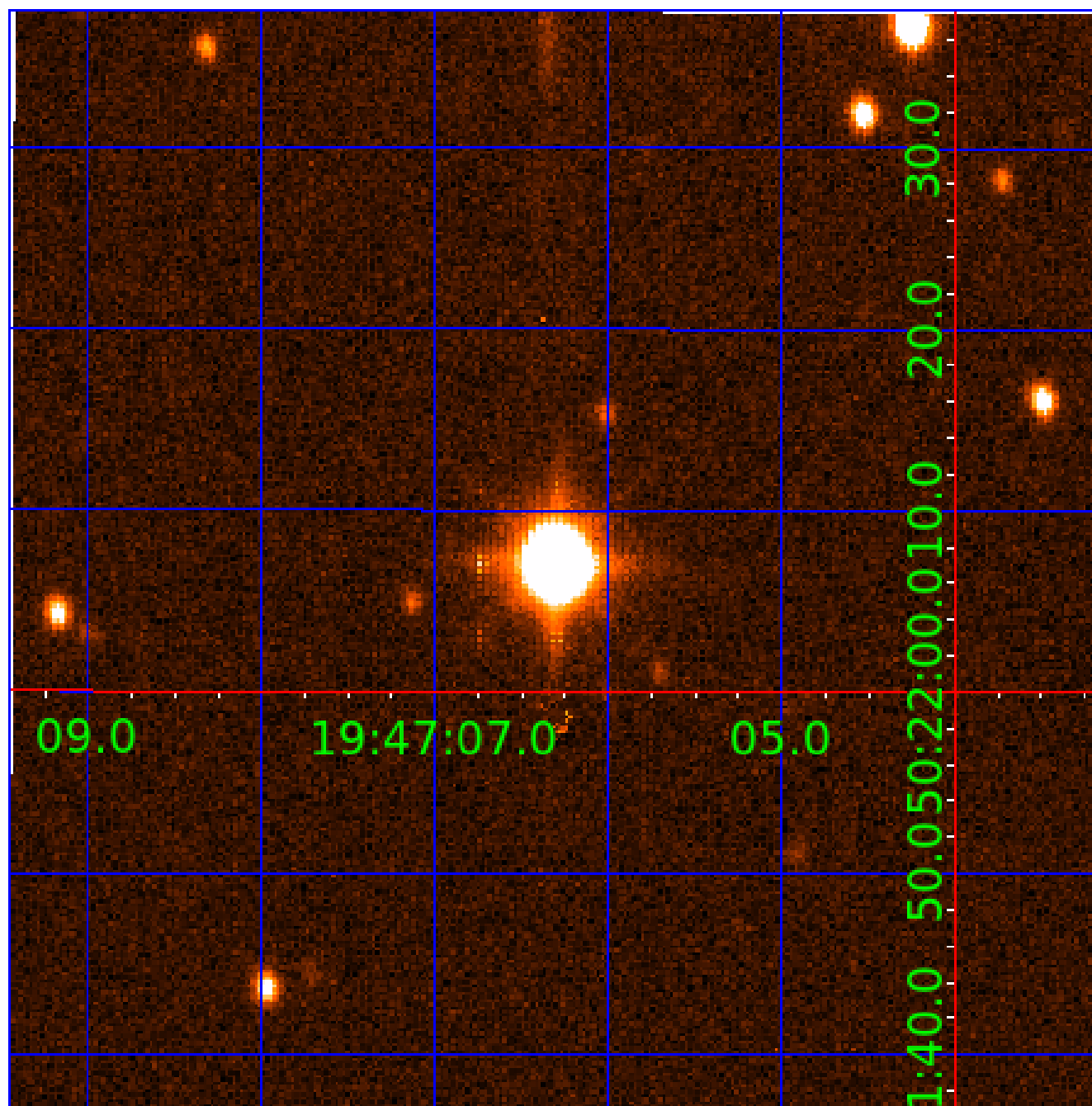


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 011973944

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})
011973944-01	OBS	No	495.599757	584.129167	398.5	3.489	12.5	8.7	0.68	4739	1.35	0.17
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Robovetter Results

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011973944-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—INCONSISTENT_TRANS

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

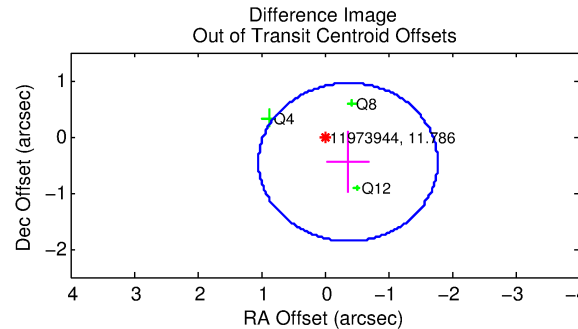
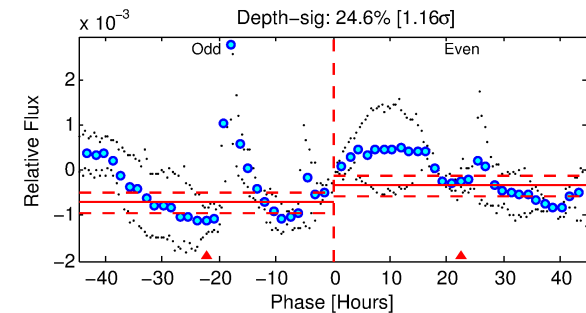
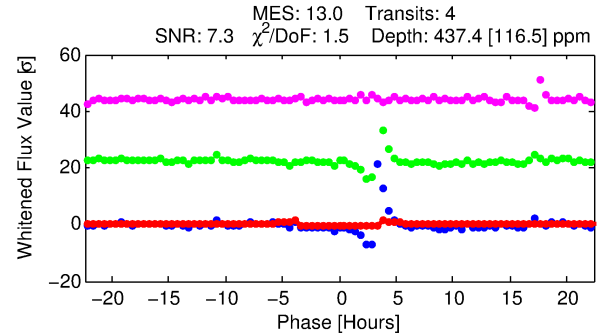
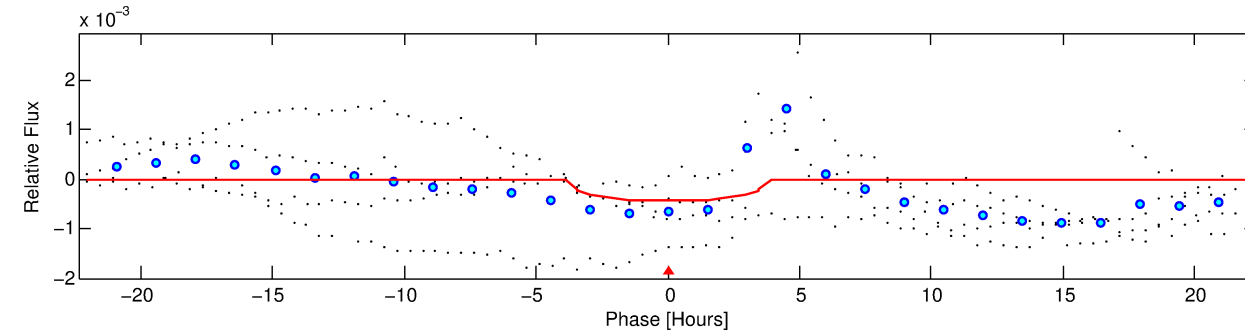
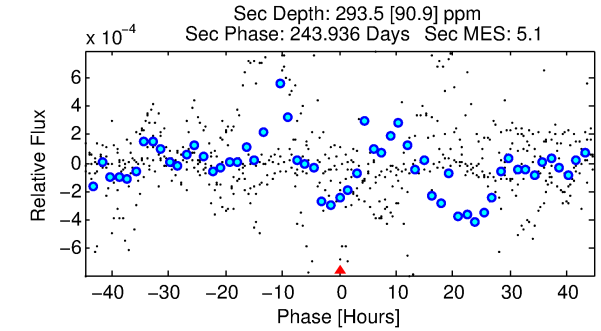
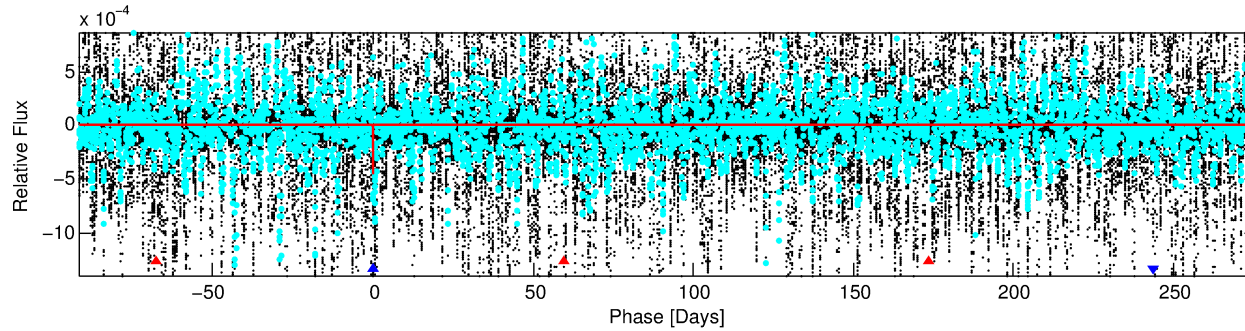
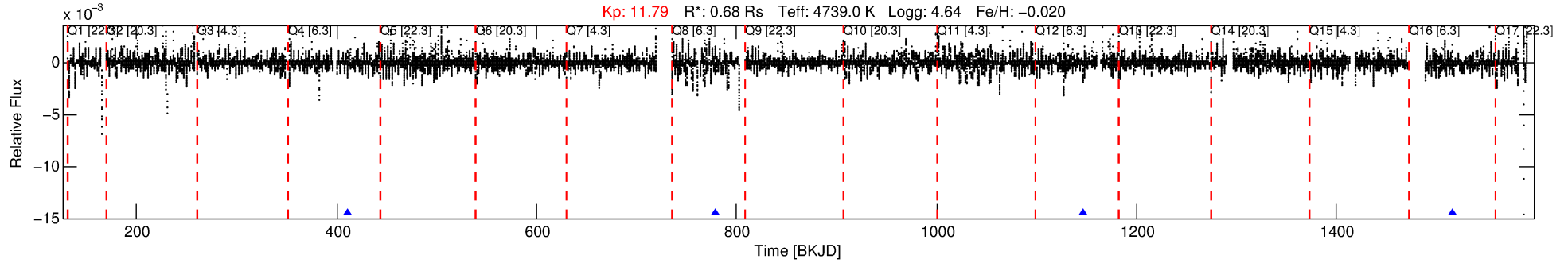
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011973944-02

No Significant Match Found

DV One-Page Summary

KIC: 11973944 Candidate: 2 of 2 Period: 368.397 d



DV Fit Results:

Period = 368.39694 [0.00580] d
Epoch = 410.5307 [0.0119] BKJD
Rp/R* = 0.0186 [0.0307]
a/R* = 369.51 [1898.14]
b = 0.28 [17.16]
Seff = 0.26 [0.03]
Teq = 181 [5] K
Rp = 1.39 [2.29] Re
a = 0.9073 [0.0555] AU
Ag = 69210.75 [229545.48] [0.30 σ]
Teffp = 4545 [3768] K [1.16 σ]

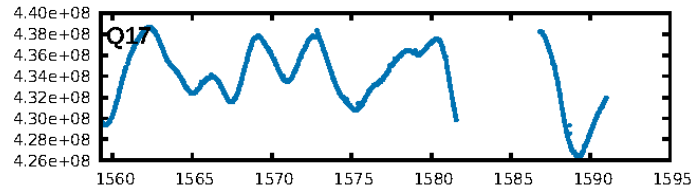
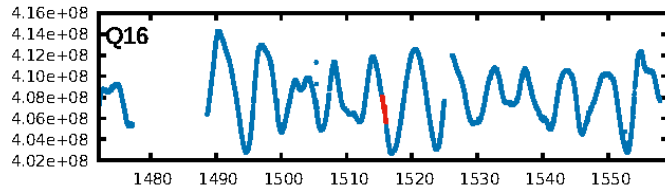
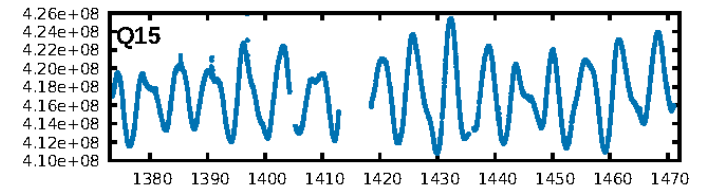
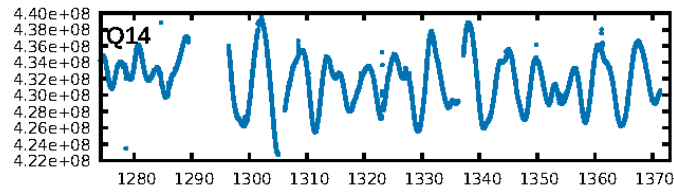
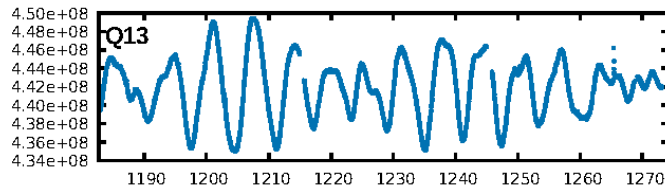
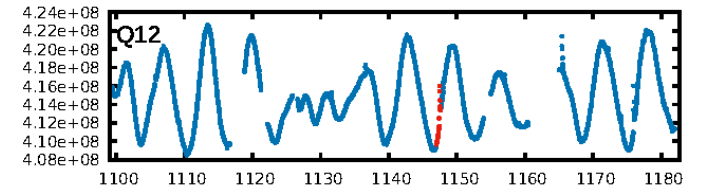
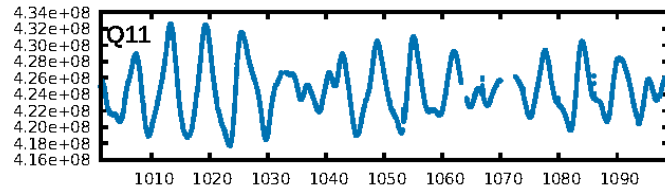
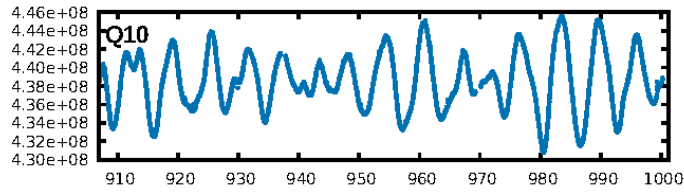
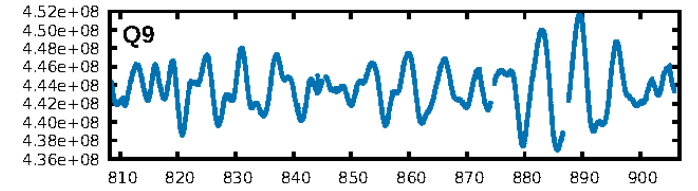
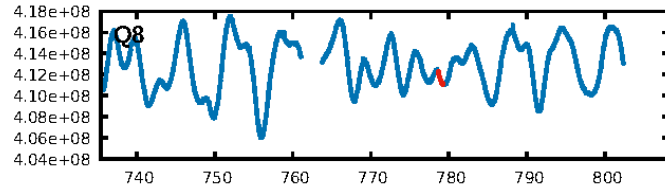
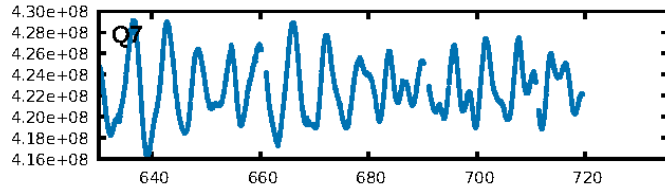
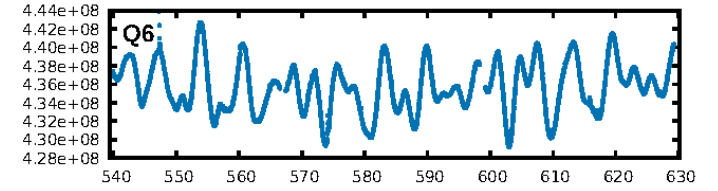
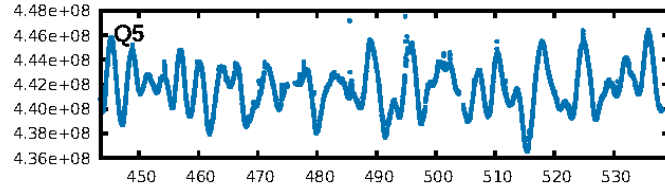
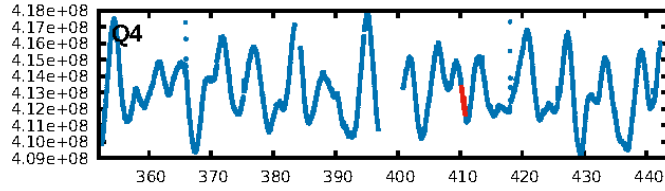
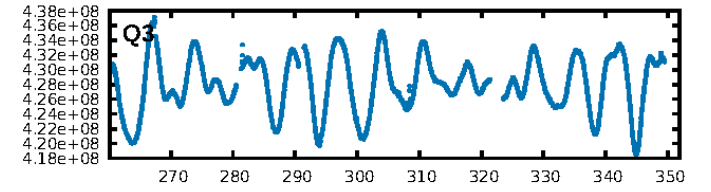
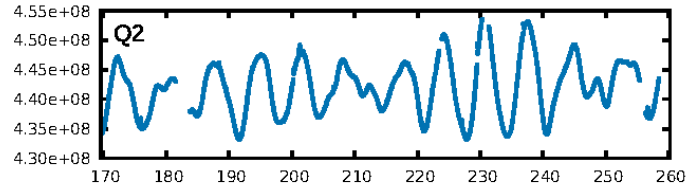
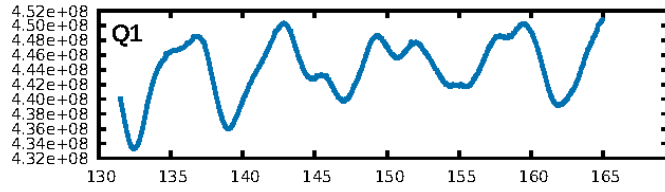
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [370.70 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 34.1%
Bootstrap-pfa: 6.37e-05
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -1.087
Centroid-sig: 13.6%
Centroid-so: 0.504 arcsec [1.14 σ]
OotOffset-rm: 0.586 arcsec [1.25 σ]
OotOffset-st: 0/0/3/0 [3]
KicOffset-rm: 0.580 arcsec [1.21 σ]
KicOffset-st: 0/0/3/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

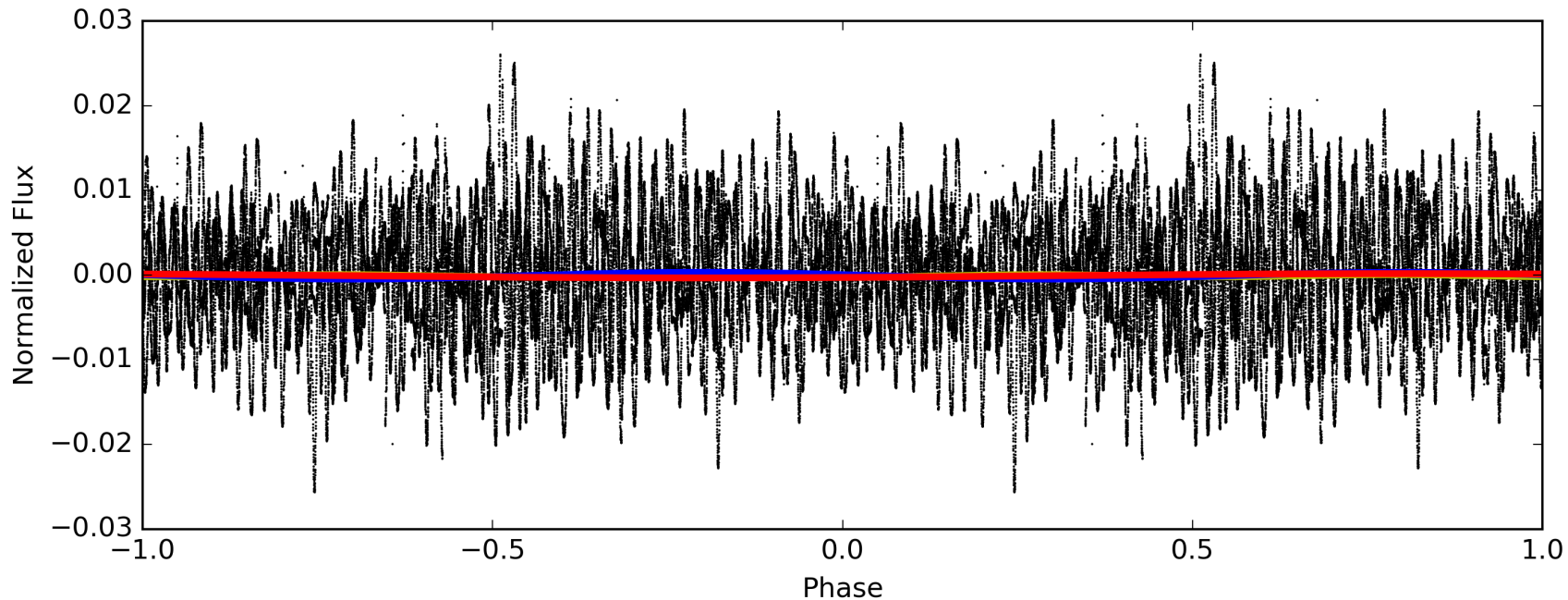
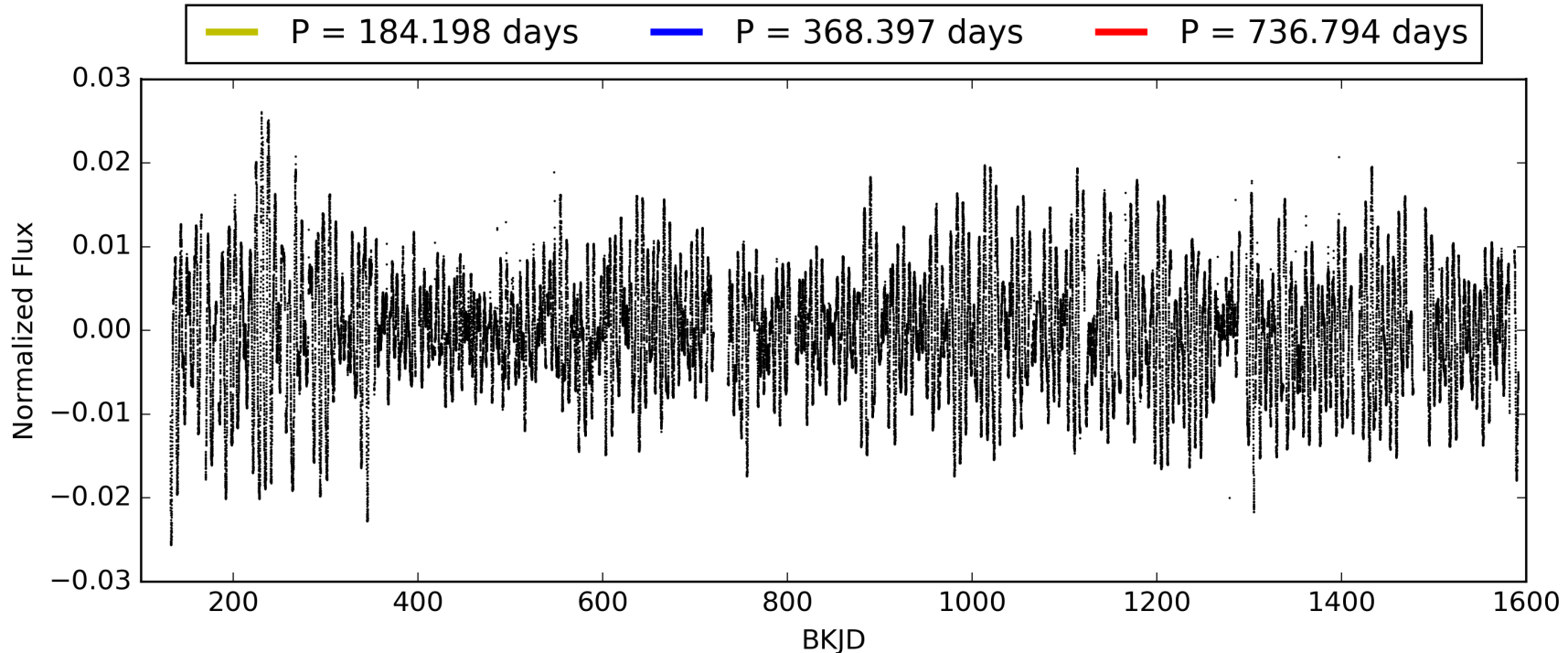
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:53:34 Z

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

TCE 011973944-02, PDC Light Curves

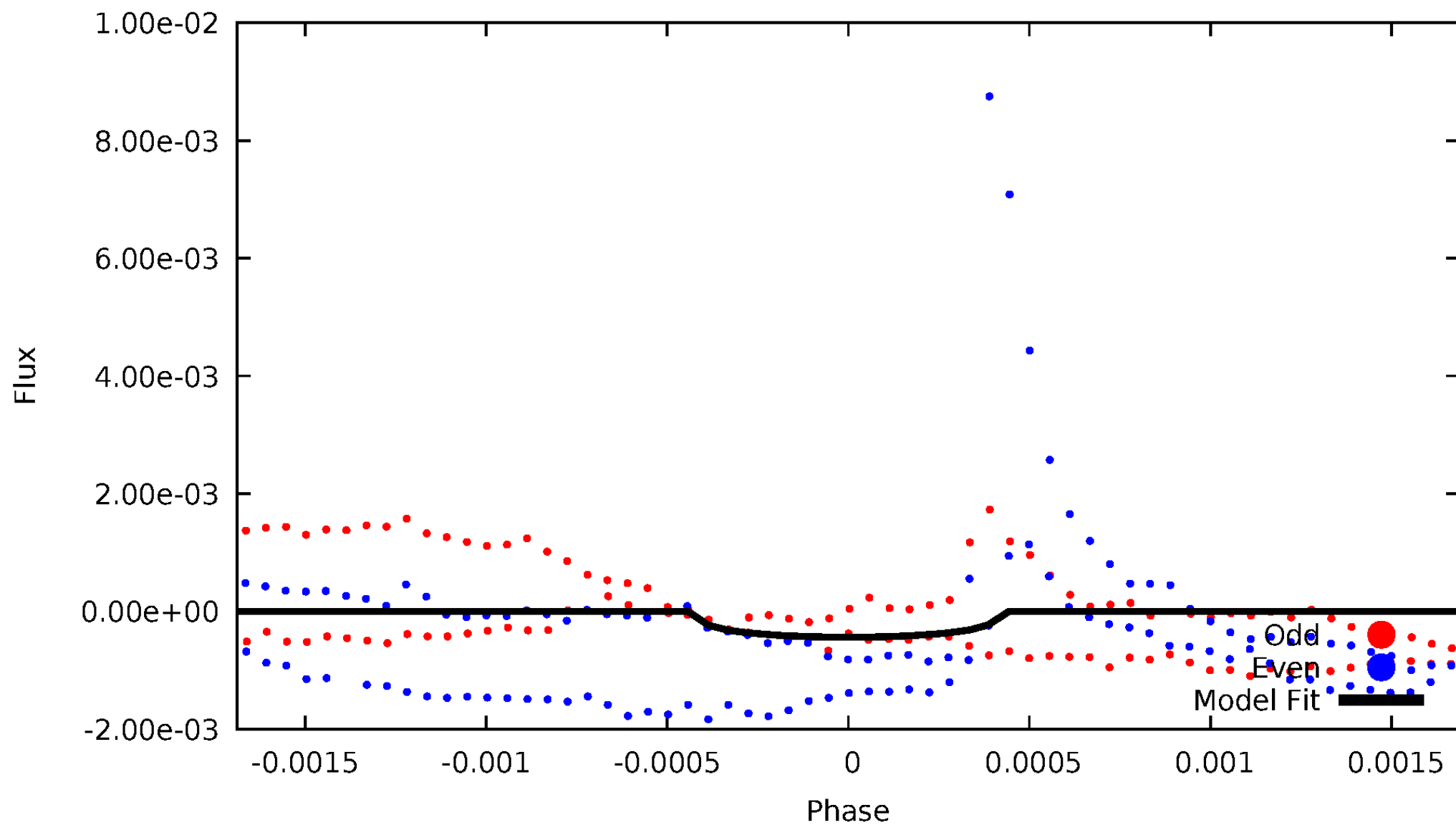


TCE 011973944-02



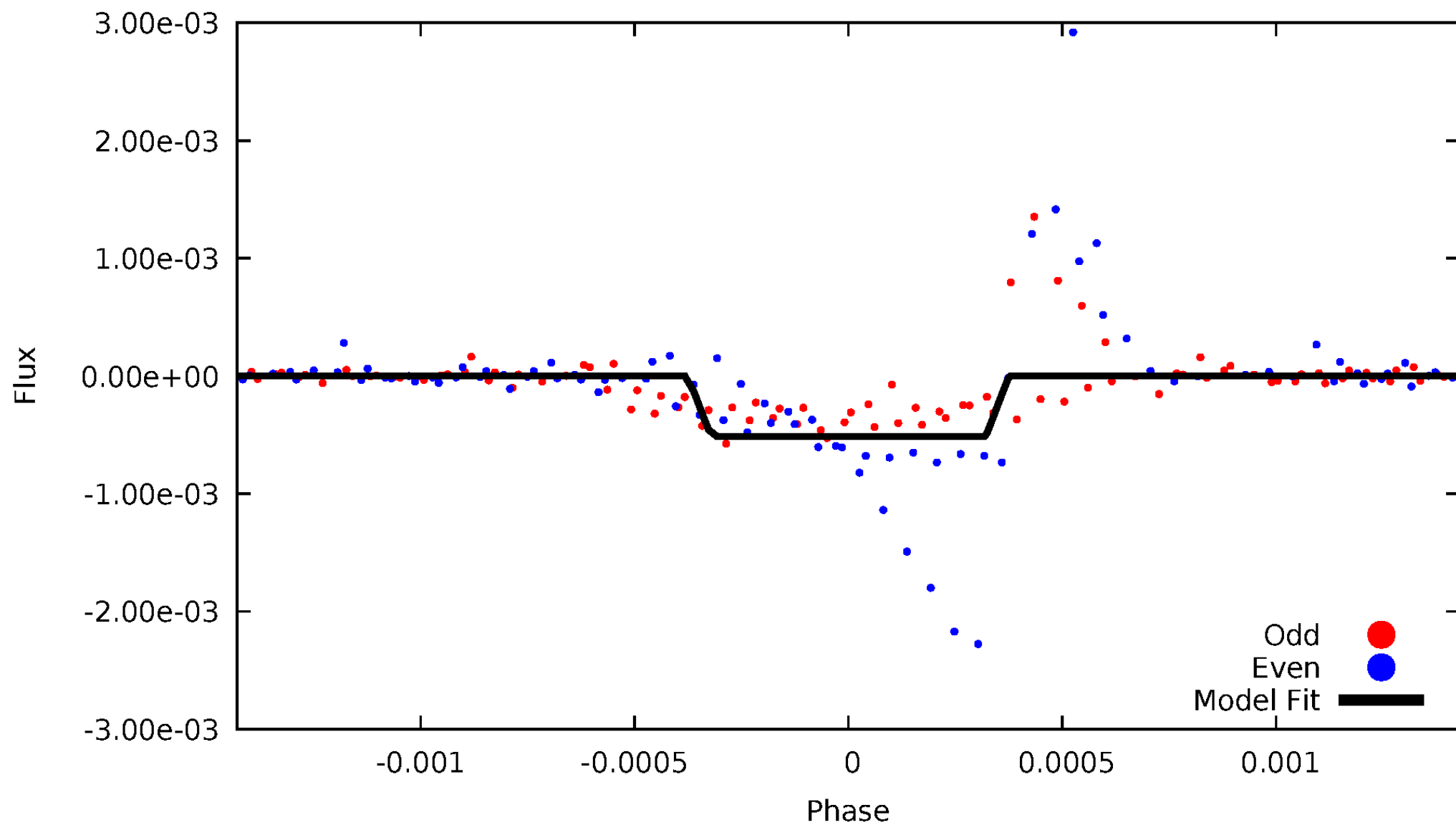
DV Odd/Even

TCE 011973944-02



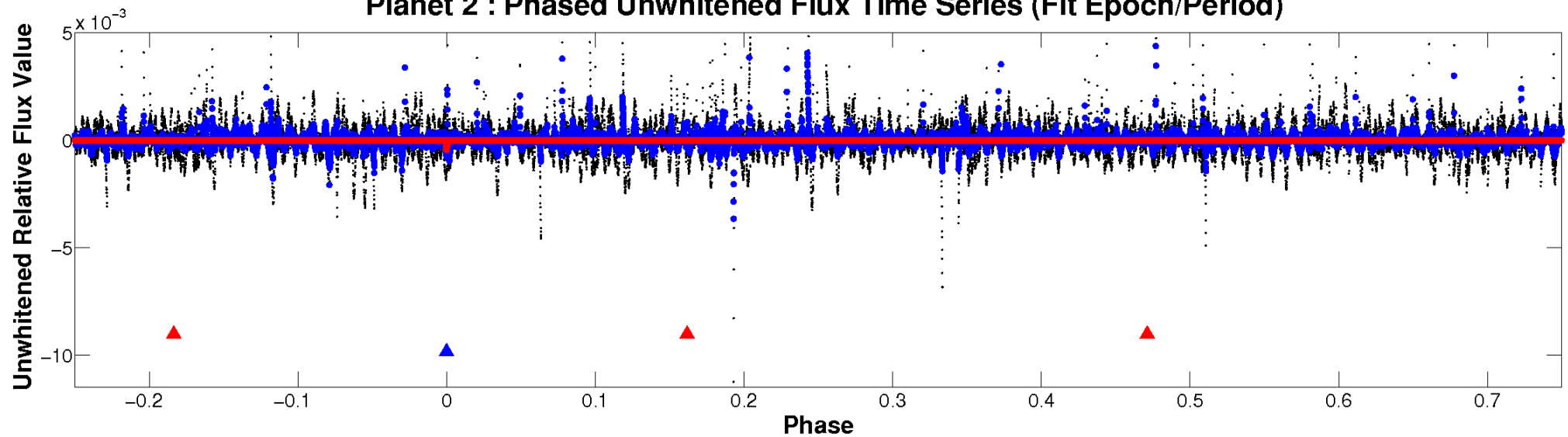
ALT Odd/Even

TCE 011973944-02

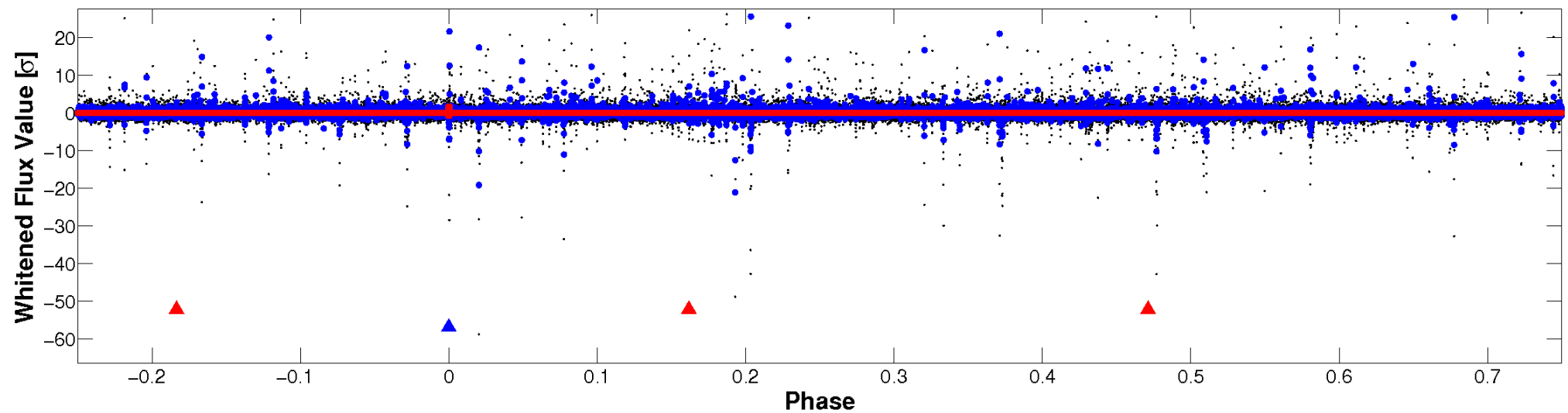


Non-Whitened Vs. Whitened Light Curve

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

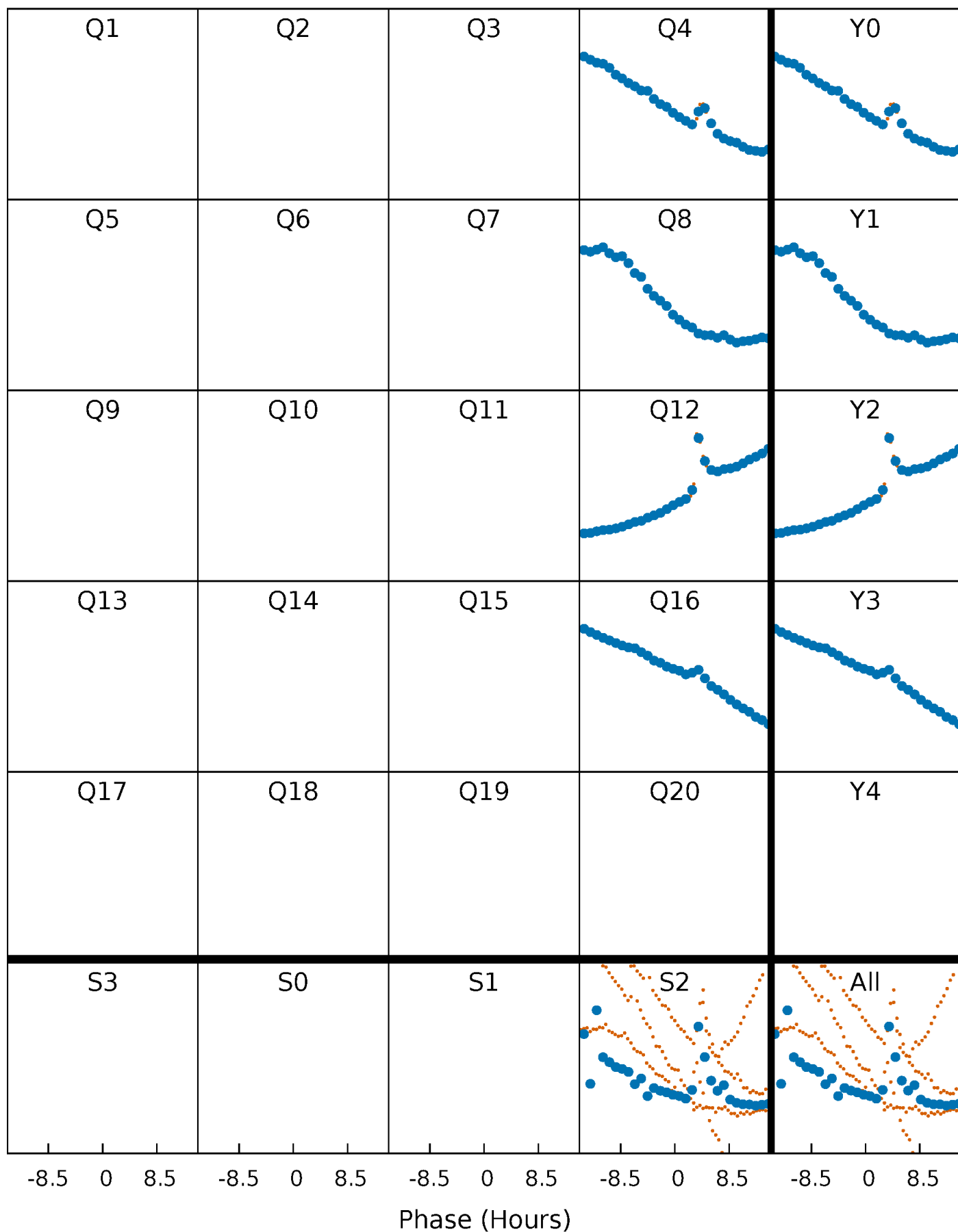


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



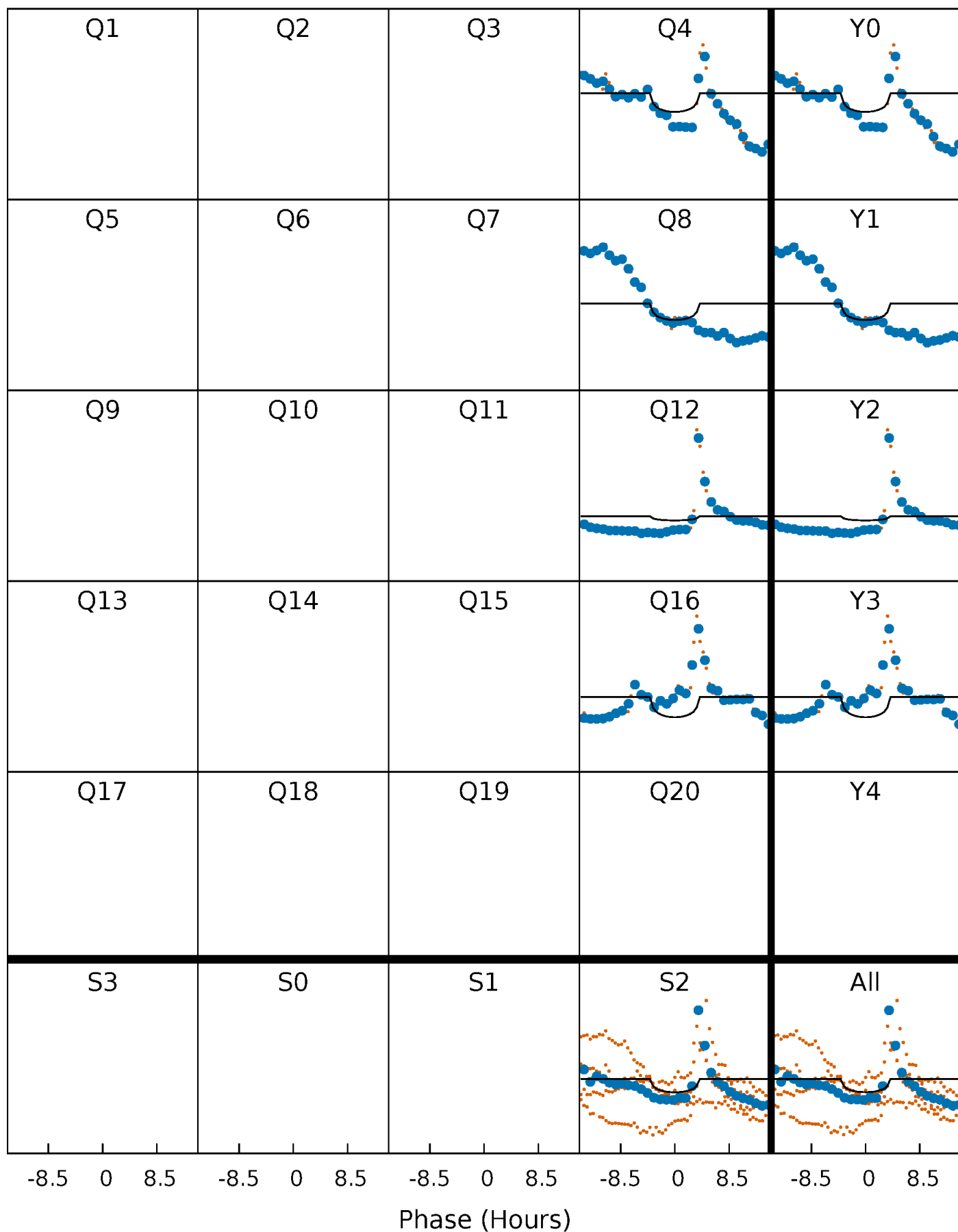
PDC Quarter-Phased Transit Curves

TCE 011973944-02 $P=368.396942$ Days $T_0=410.530733$ (BKJD)



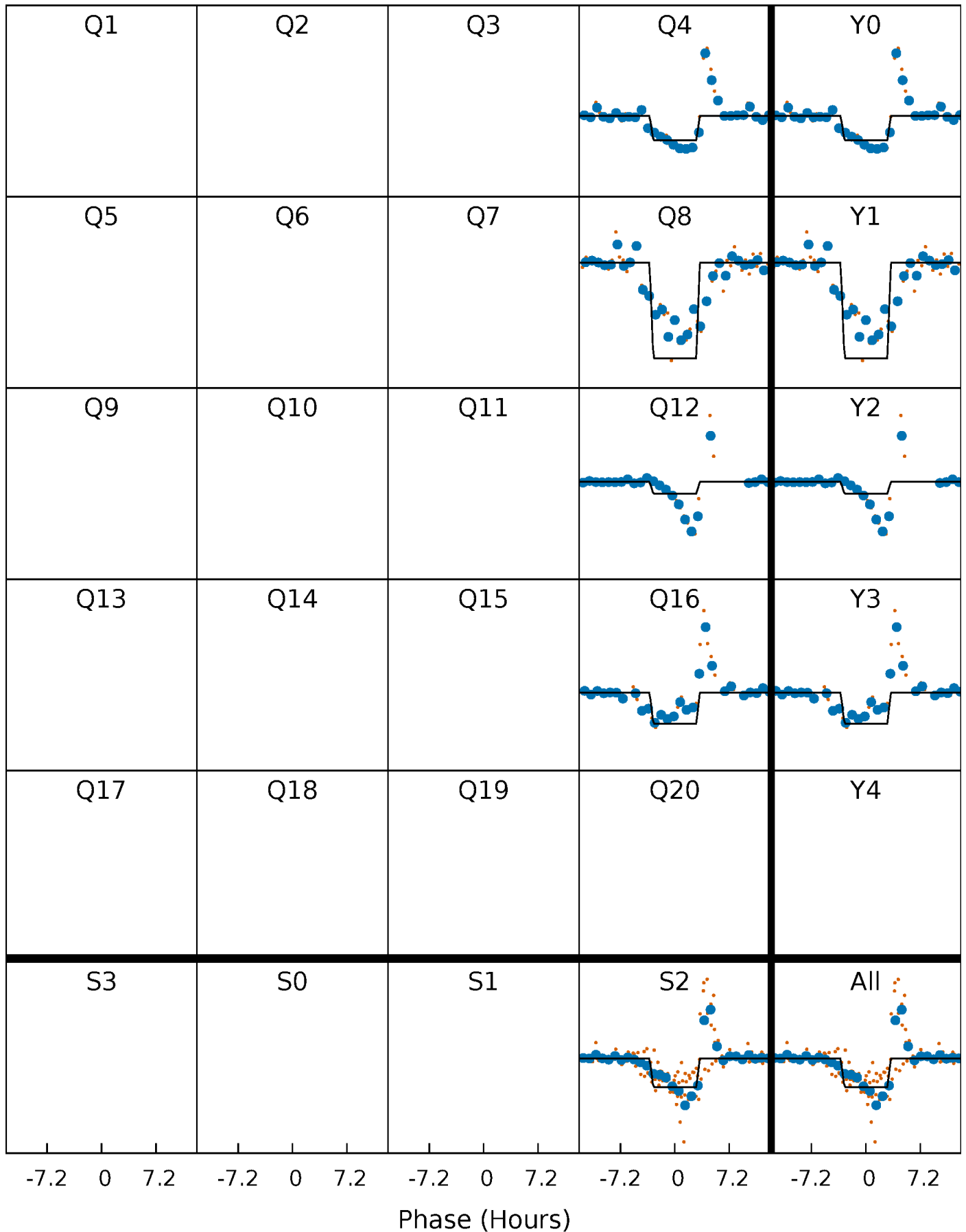
DV Quarter-Phased Transit Curves

TCE 011973944-02 P=368.396942 Days $T_0=410.530733$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

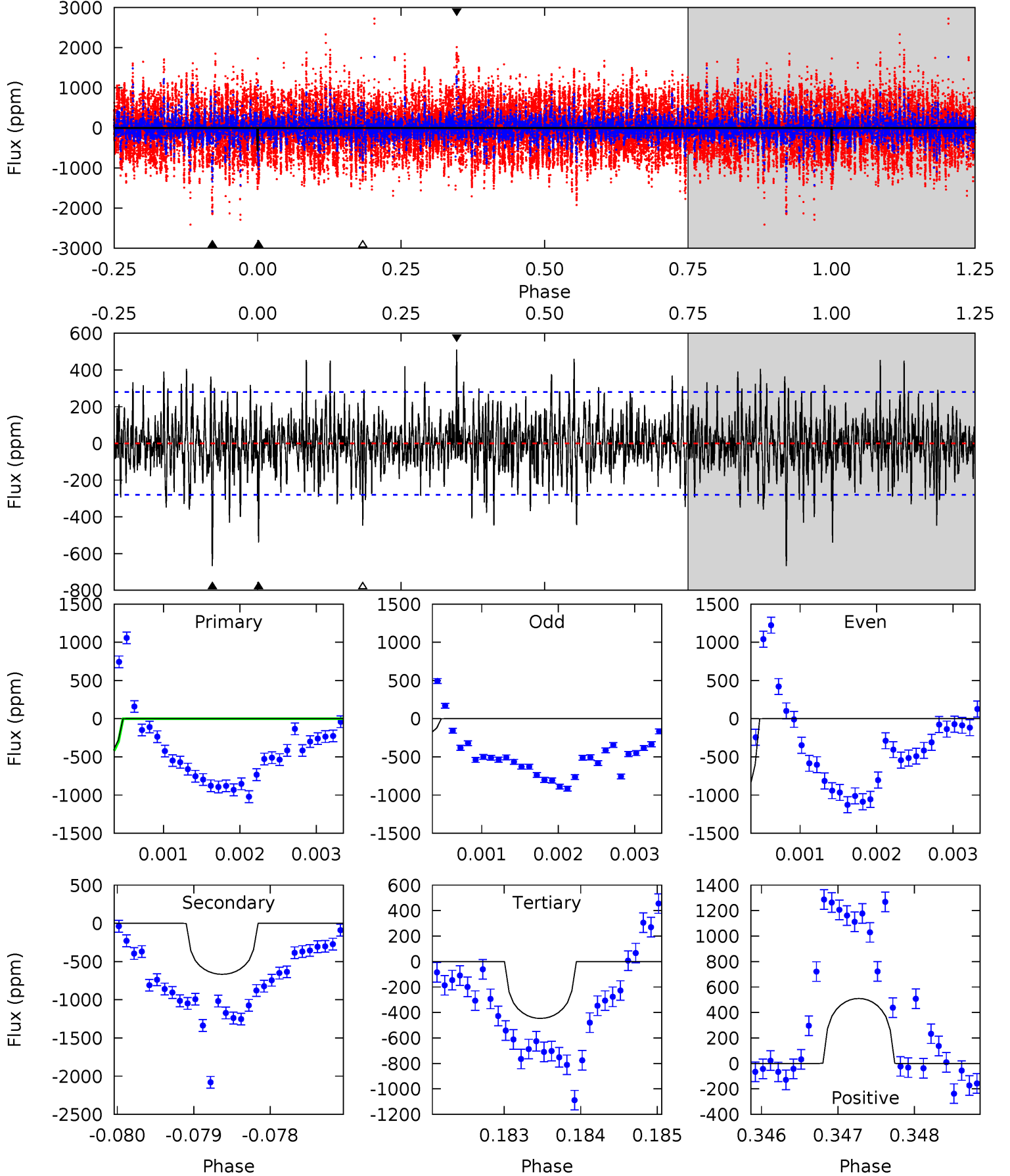
TCE 011973944-02 $P=368.389842$ Days $T_0=410.535841$ (BKJD)



DV Model-Shift Uniqueness Test

011973944-02, $P = 368.396942$ Days, $E = 42.133791$ Days

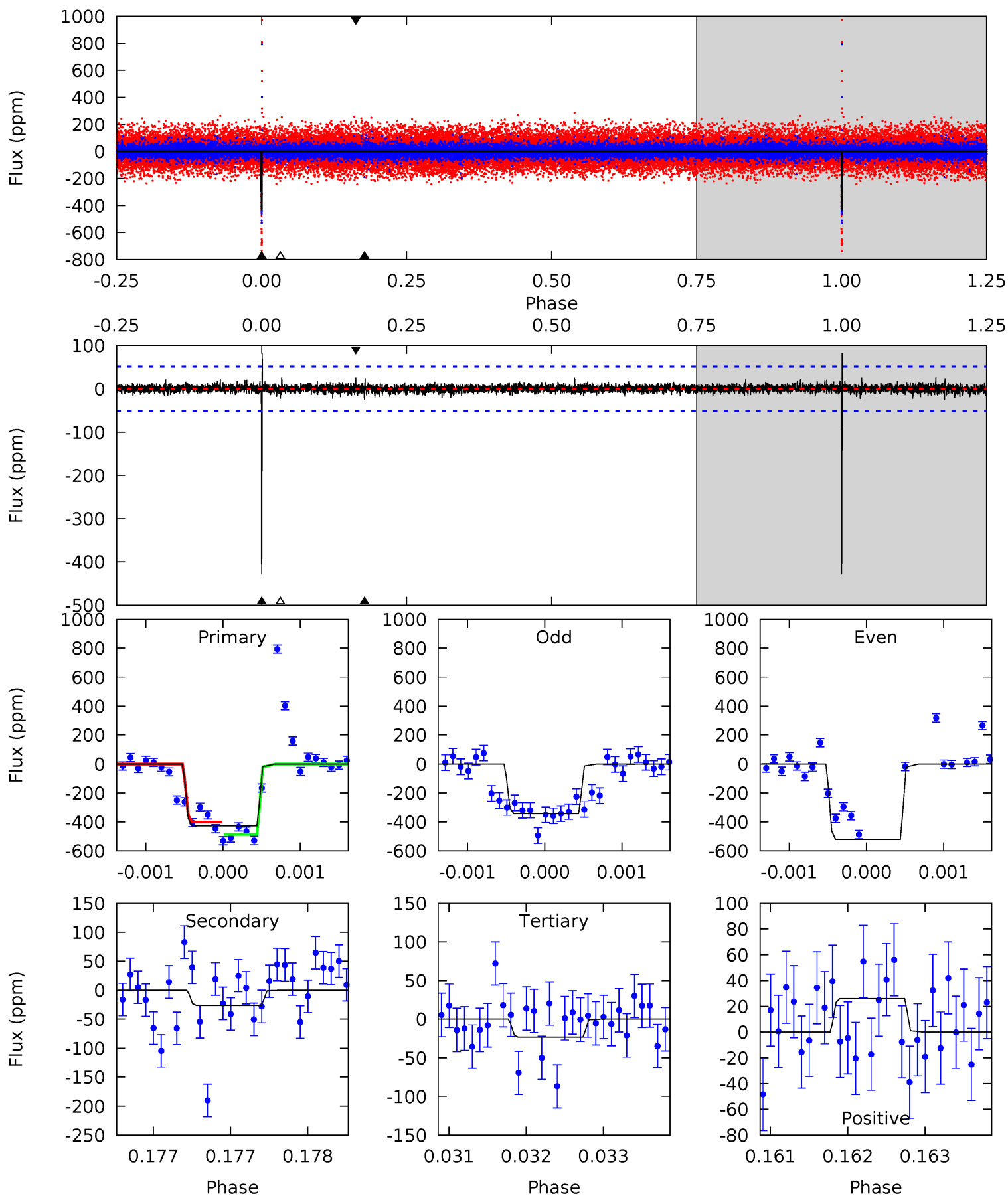
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	13.0	8.72	9.96	5.46	3.31	2.33	1.81	0.57	4.31	3.07	6.83	0.90	0.43	0.30



Alt Model-Shift Uniqueness Test

011973944-02, P = 368.389842 Days, E = 42.145999 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.8	2.82	2.48	2.76	5.51	3.38	0.54	43.3	43.0	0.34	0.06	9.59	1.19	0.16	4.37



Stellar Parameters For KIC 011973944

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4739^{+85}_{-76}	$4.636^{+0.012}_{-0.048}$	$-0.020^{+0.150}_{-0.150}$	$0.682^{+0.050}_{-0.021}$	$0.763^{+0.027}_{-0.050}$	$3.390^{+0.175}_{-0.654}$
	+2%/-2%	+0%/-1%	+750%/-750%	+7%/-3%	+4%/-7%	+5%/-19%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 011973944-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-667 ± 51	$2.30^{+1.98}_{-1.53}$	256^{+6}_{-5}	4449^{+2893}_{-862}	$57367^{+433155}_{-40400}$
Alt.	-26 ± 9	$2.42^{+2.09}_{-1.64}$	256^{+6}_{-5}	2639^{+1054}_{-384}	1956^{+18141}_{-1440}

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 $A_{obs} \gg 1.0$

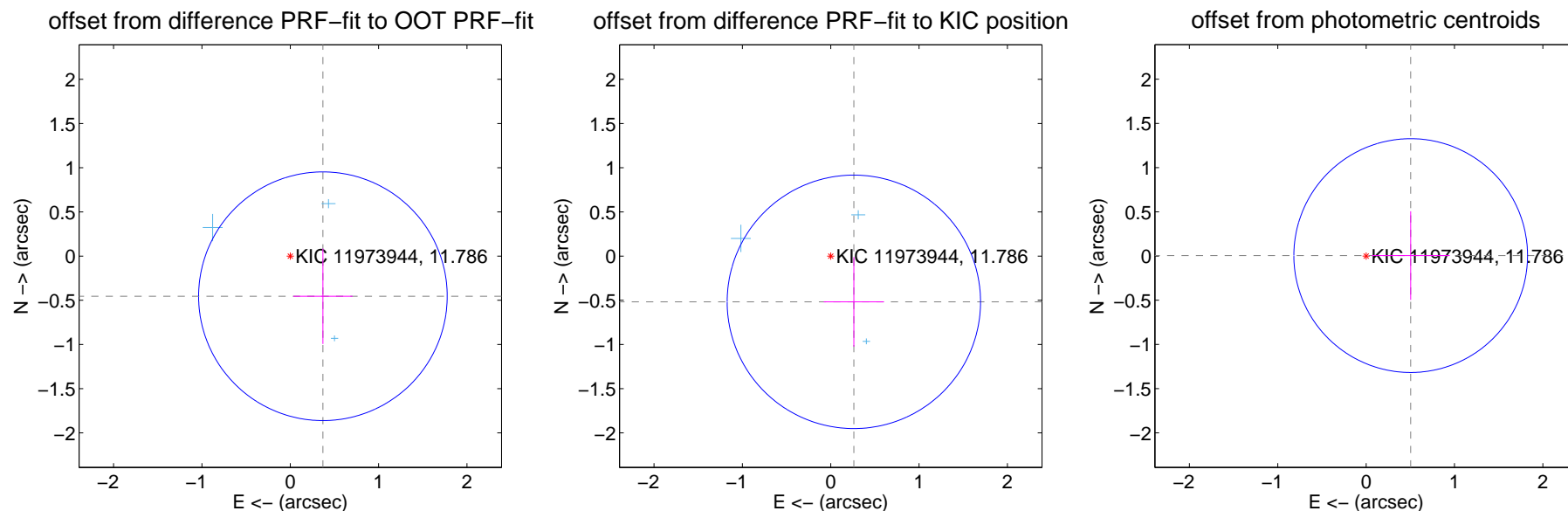
DV Centroid Data

Supplemental centroid analysis for 011973944-02. **Kepler magnitude: 11.79.** Transit SNR 7.28

There are 3 quarters with good PRF difference image offsets

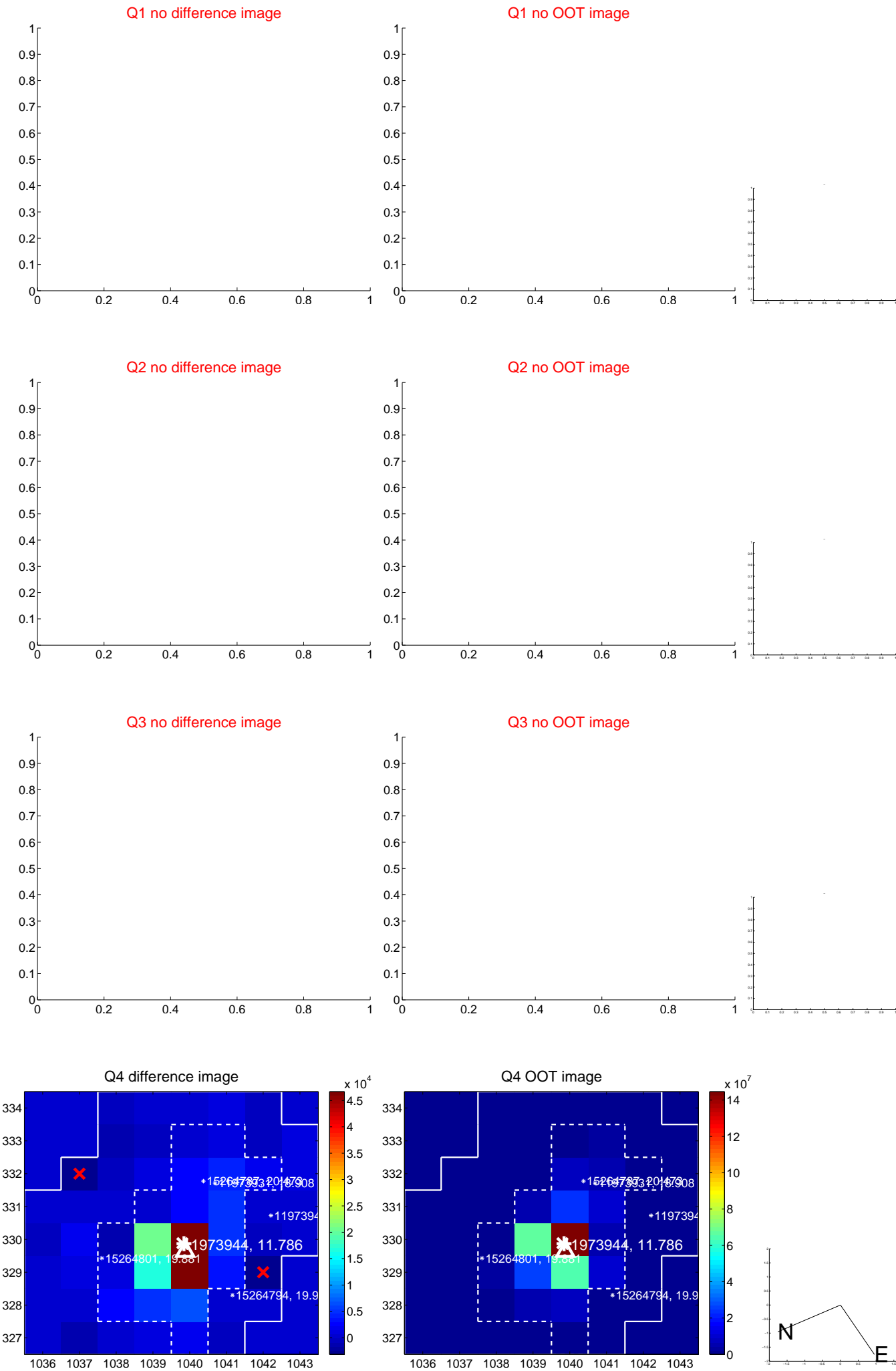
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.586 ± 0.469	1.25	-0.370 ± 0.335	-0.454 ± 0.540
PRF-fit source offset from KIC position	0.580 ± 0.478	1.21	-0.262 ± 0.341	-0.518 ± 0.507
photometric centroid source offset	0.50 ± 0.44	1.14	-0.50 ± 0.44	0.00 ± 0.50

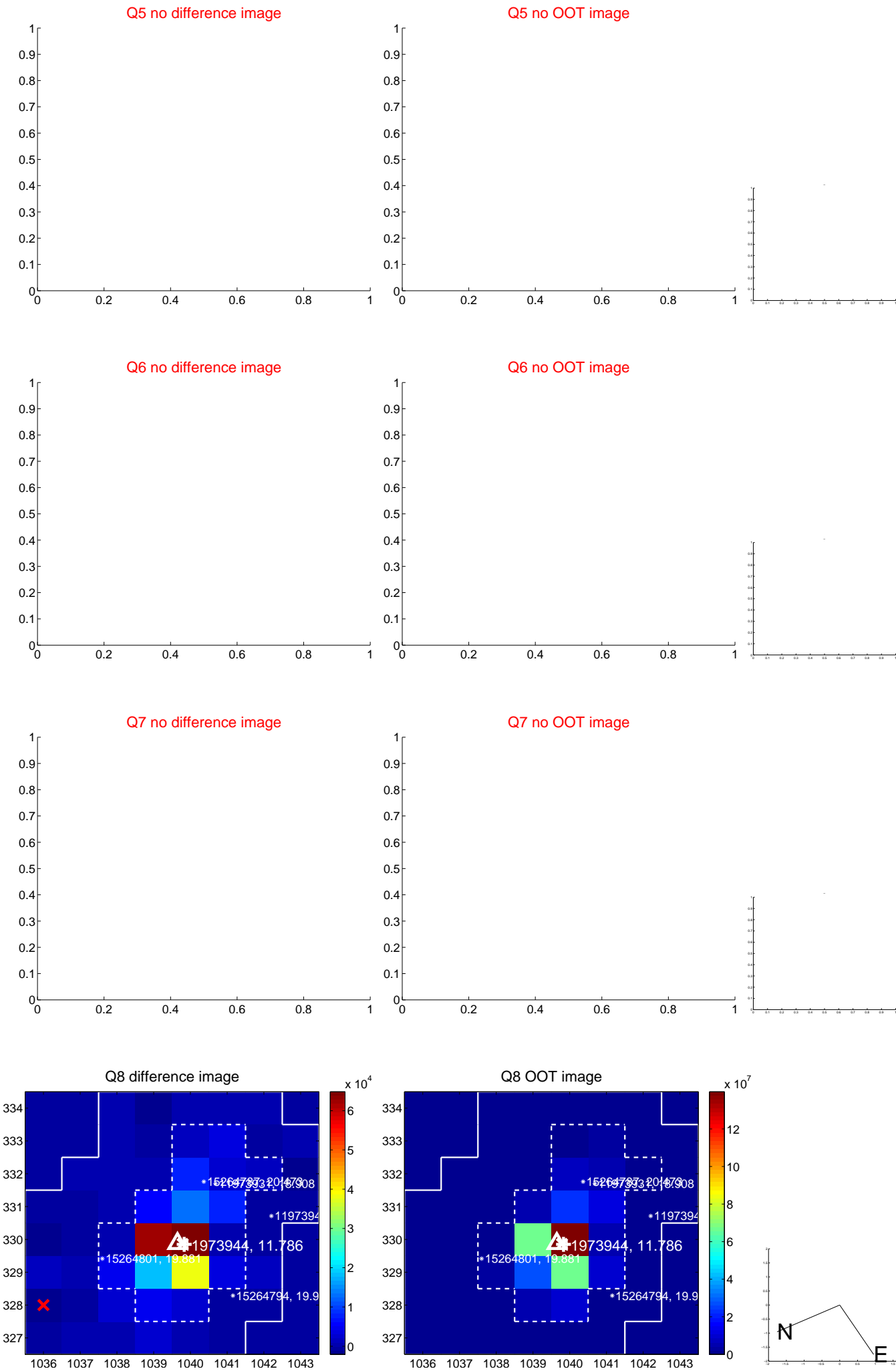


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

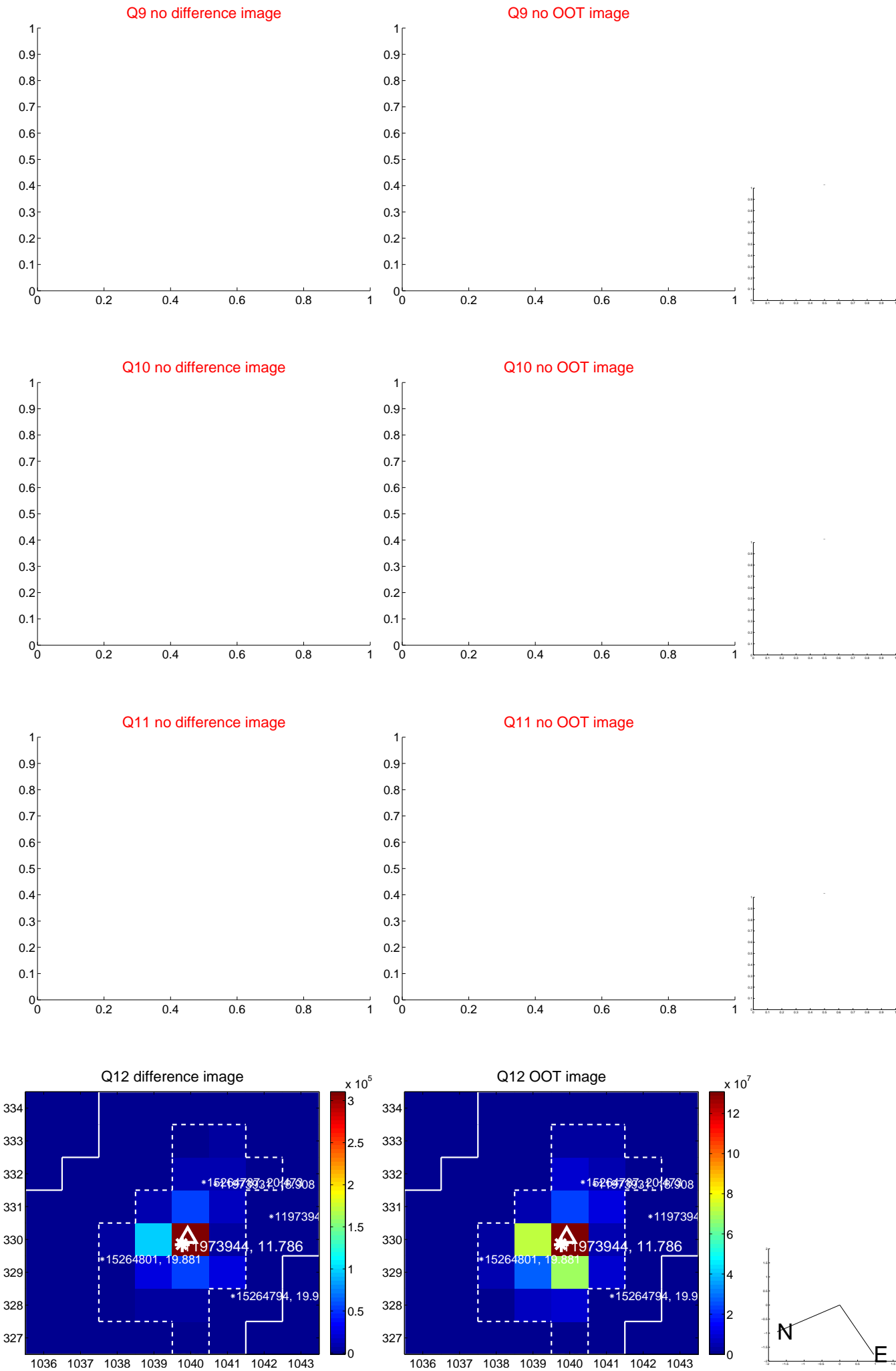
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



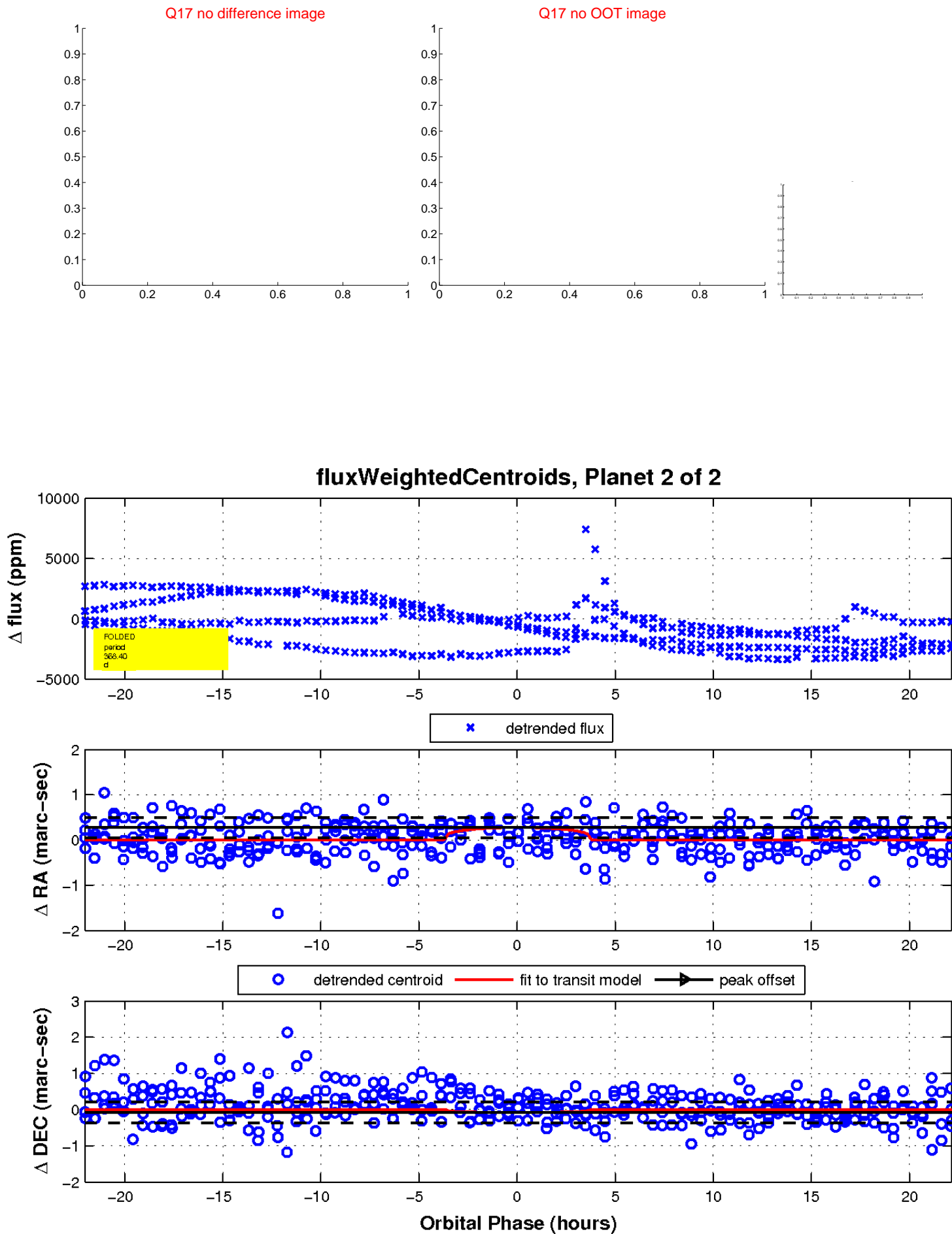
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

