

KIC 009973633

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})
009973633-01	OBS	No	0.509983	131.943886	81.8	1.460	169.7	0.1	1.59	6802	1.73	26068.49
009973633-02	OBS	No	0.510789	131.573494	15832.7	1.500	32.7	-1.0	1.59	6802	20.28	26013.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009973633-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_FEW_DIFFS
009973633-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—CENT_NOFITS

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

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

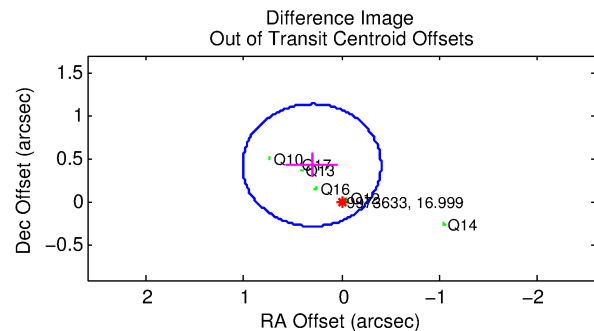
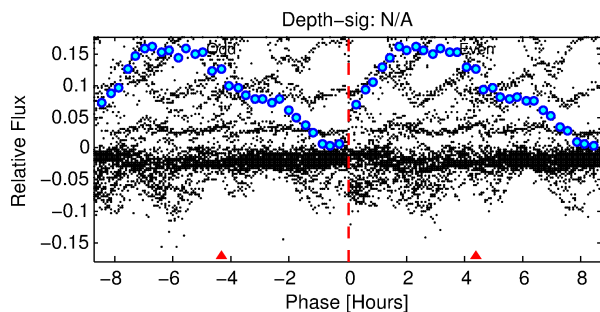
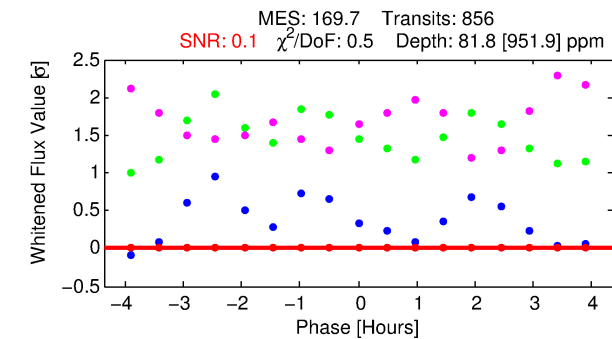
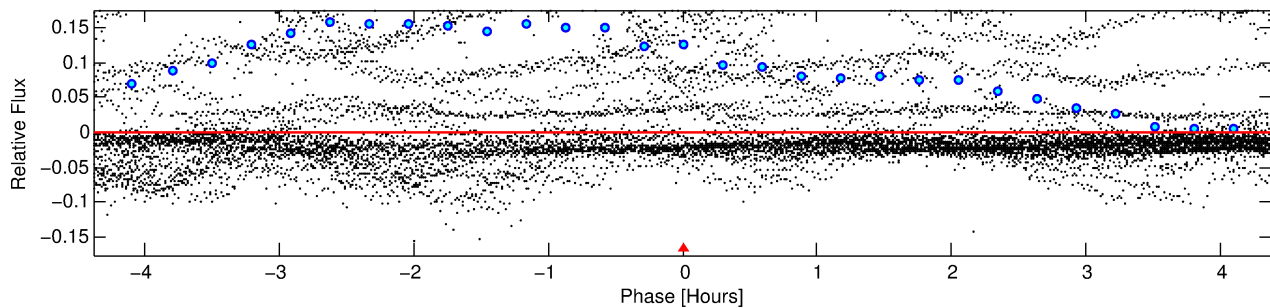
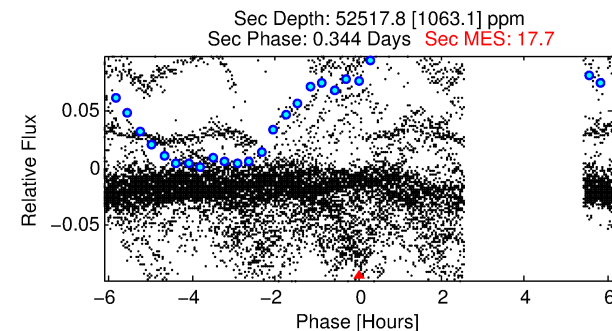
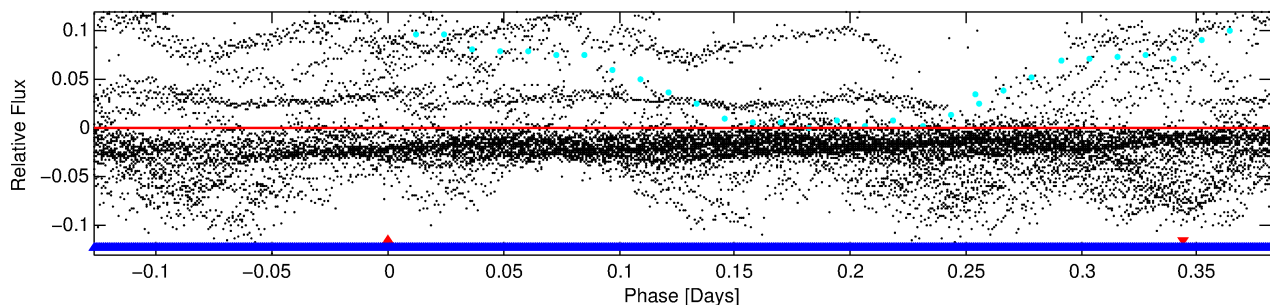
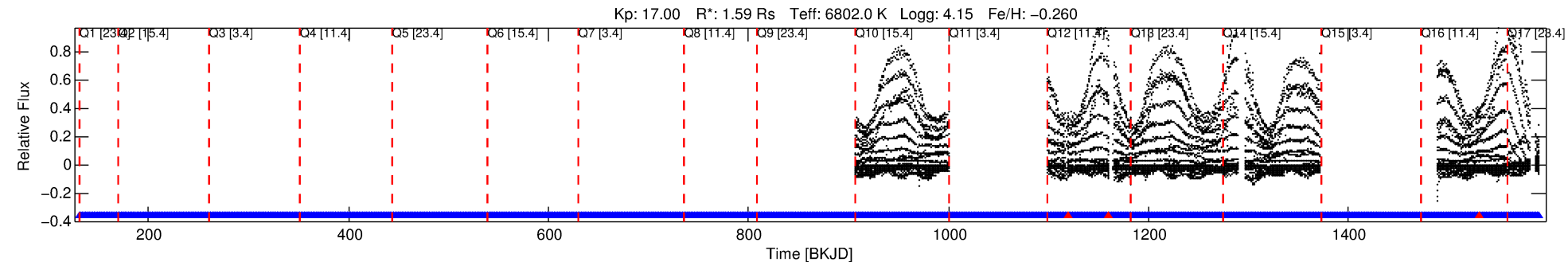
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009973633-01

No Significant Match Found

DV One-Page Summary

KIC: 9973633 Candidate: 1 of 2 Period: 0.510 d



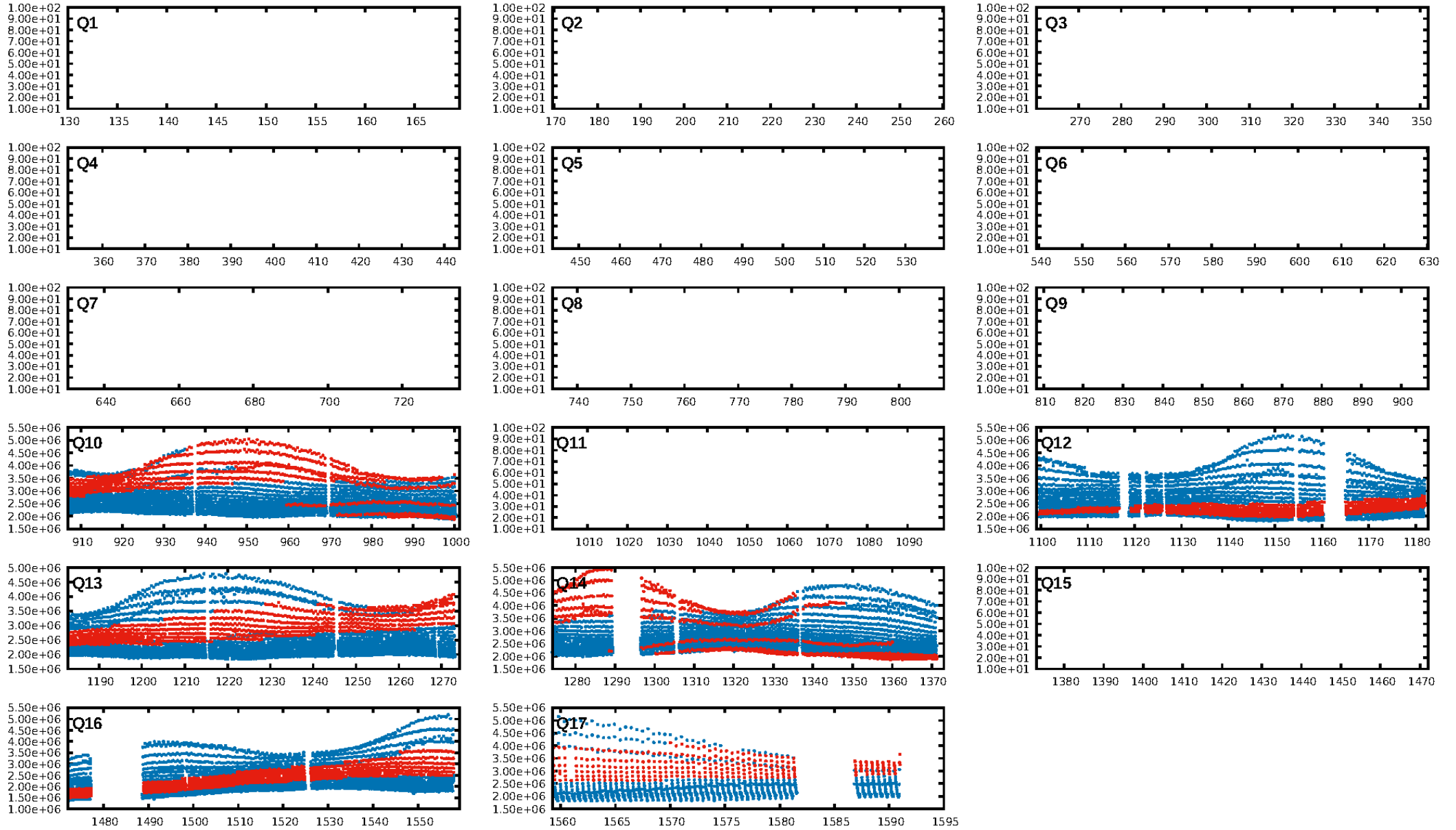
DV Fit Results:

Period = 0.50998 [0.00071] d
Epoch = 131.9439 [0.0767] BKJD
Rp/R* = 0.0100 [0.1717]
a/R* = 1.42 [67.44]
b = 0.93 [13.78]
Seff = 26068.49 [9904.20]
Teff = 3240 [308] K
Rp = 1.73 [29.78] Re
a = 0.0136 [0.0032] AU
Ag = 1802.28 [62200.83] [0.03σ]
Teffp = 32640 [281614] K [0.1σ]

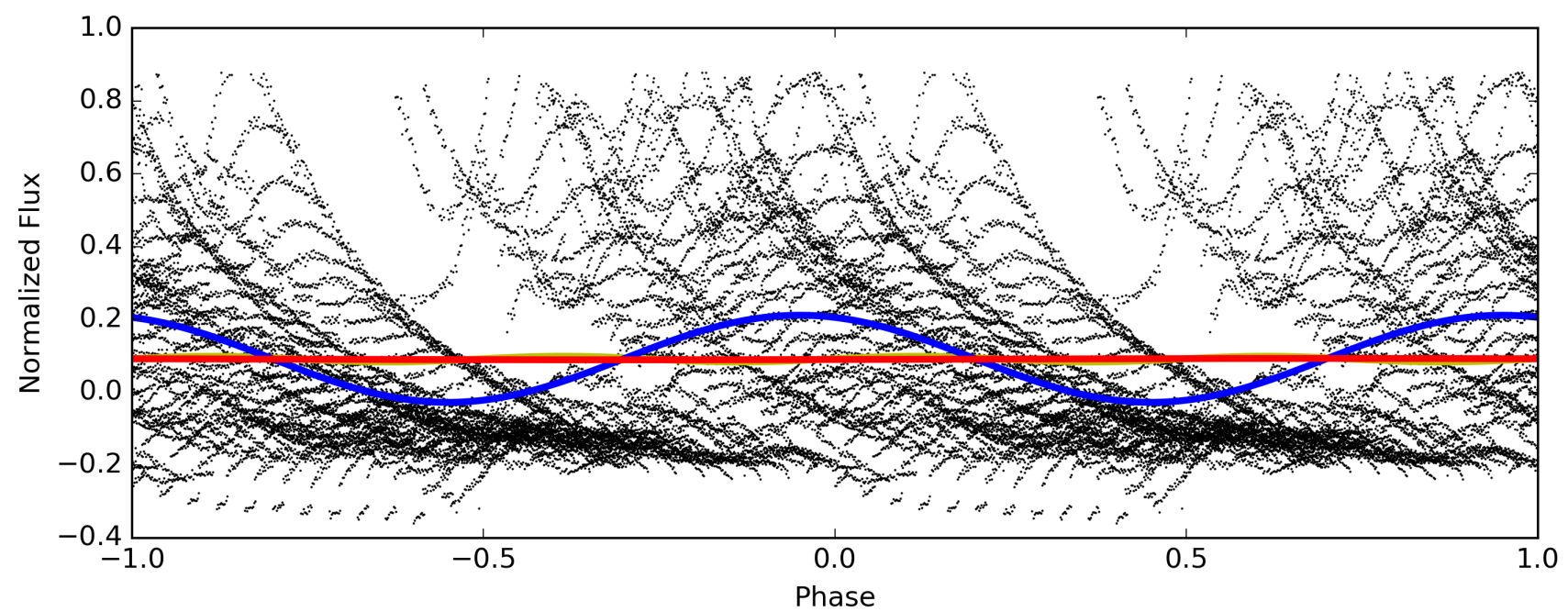
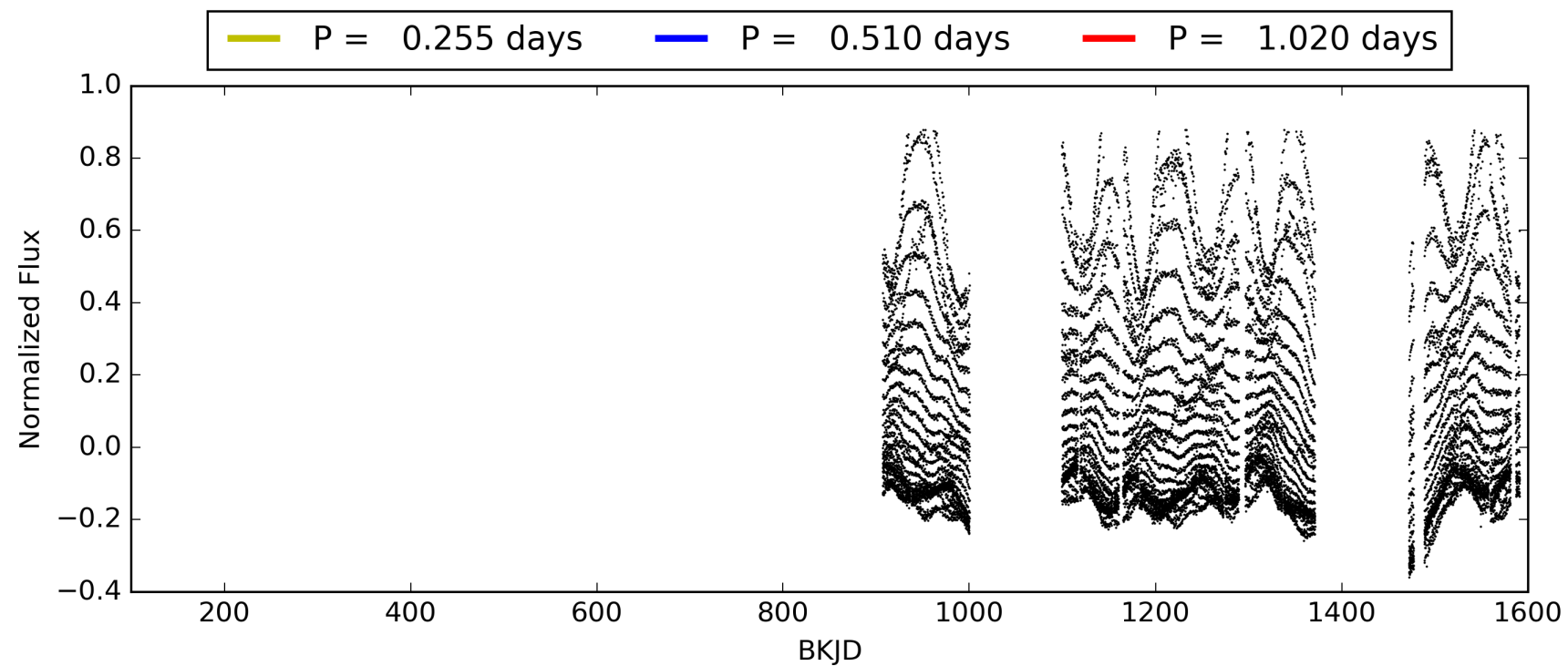
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.7% [0.01σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [801/804]
GhostDiagnostic-chr: 5.35
Centroid-sig: N/A
Centroid-so: 16.034 arcsec [1.13σ]
OotOffset-rm: 0.525 arcsec [2.22σ]
KicOffset-rm: 0.052 arcsec [0.22σ]
OotOffset-st: 2/0/2/2 [6]
KicOffset-st: 2/0/2/2 [6]
DiffImageQuality-fgm: 0.33 [2/6]
DiffImageOverlap-fno: 0.00 [0/6]

TCE 009973633-01, PDC Light Curves

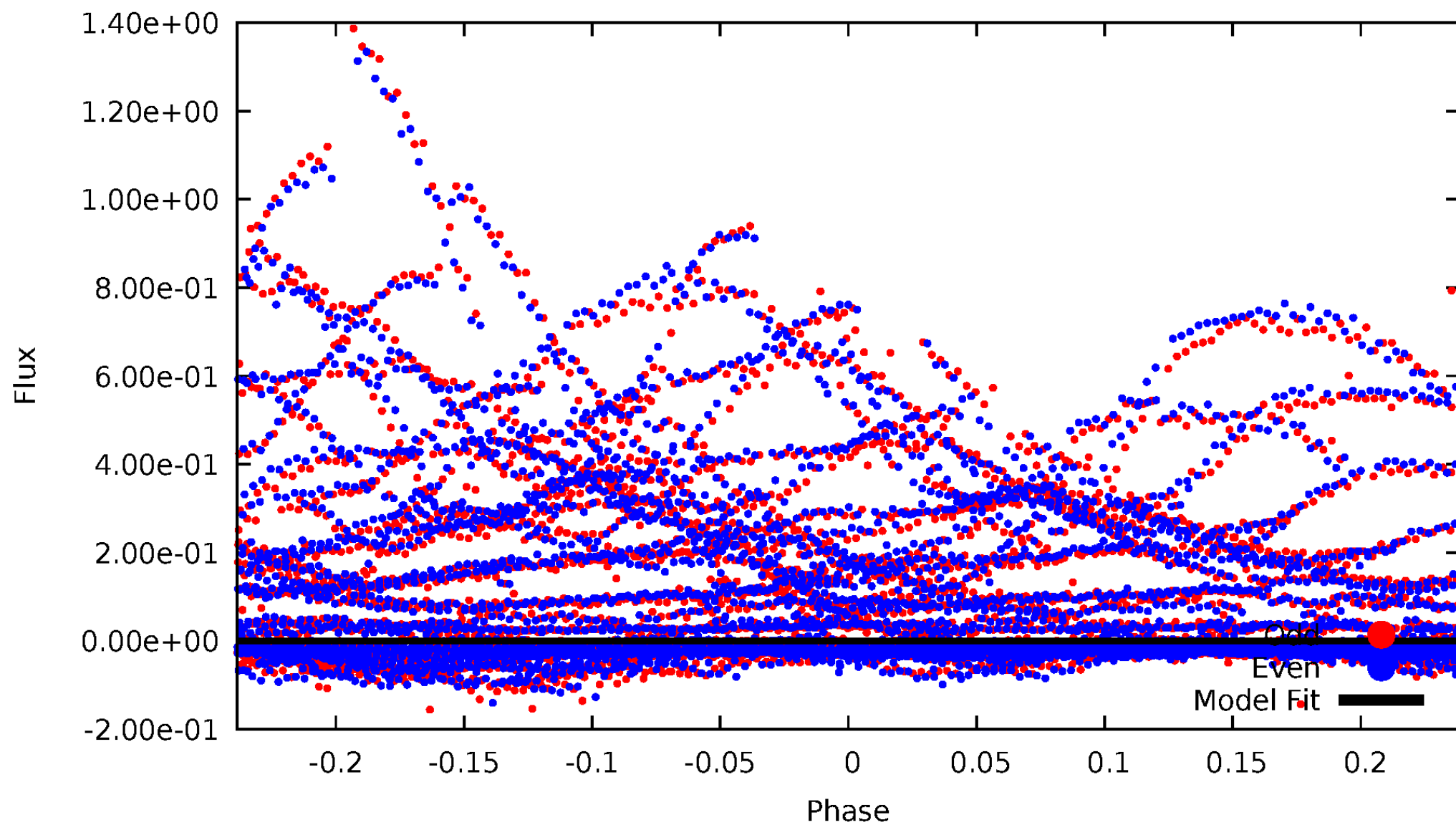


TCE 009973633-01



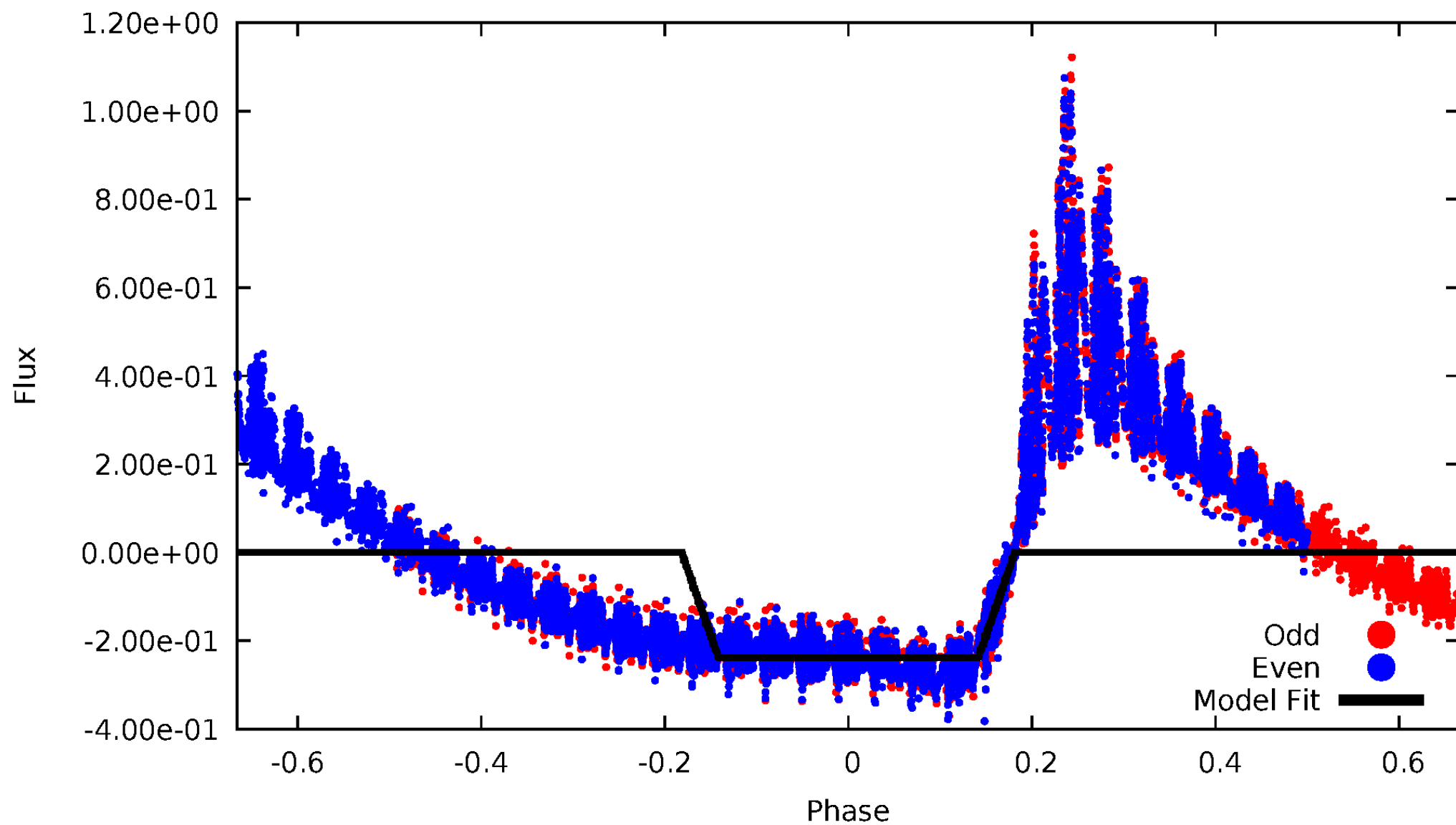
DV Odd/Even

TCE 009973633-01



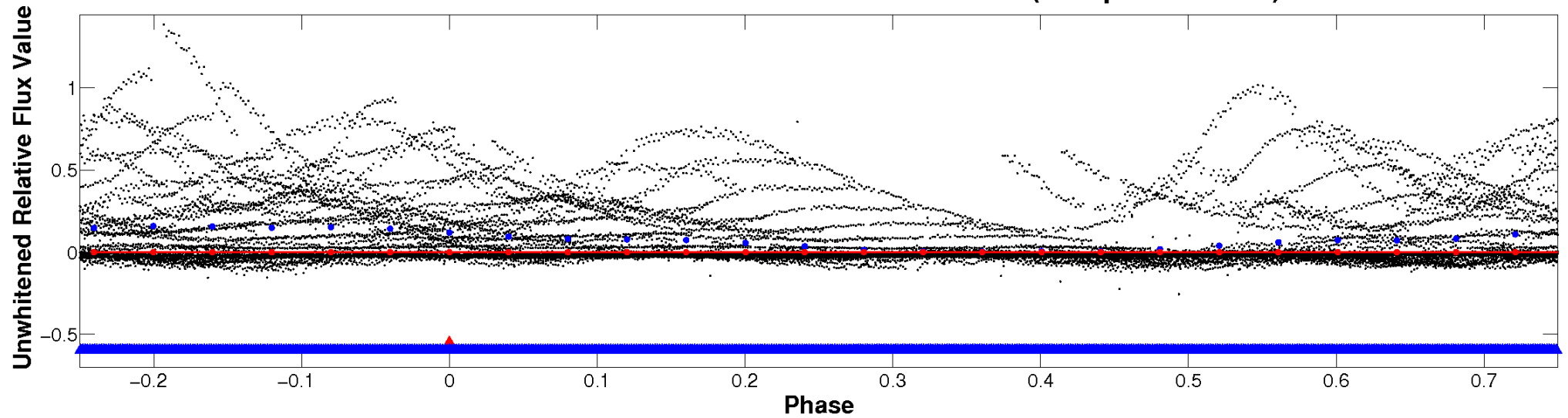
ALT Odd/Even

TCE 009973633-01

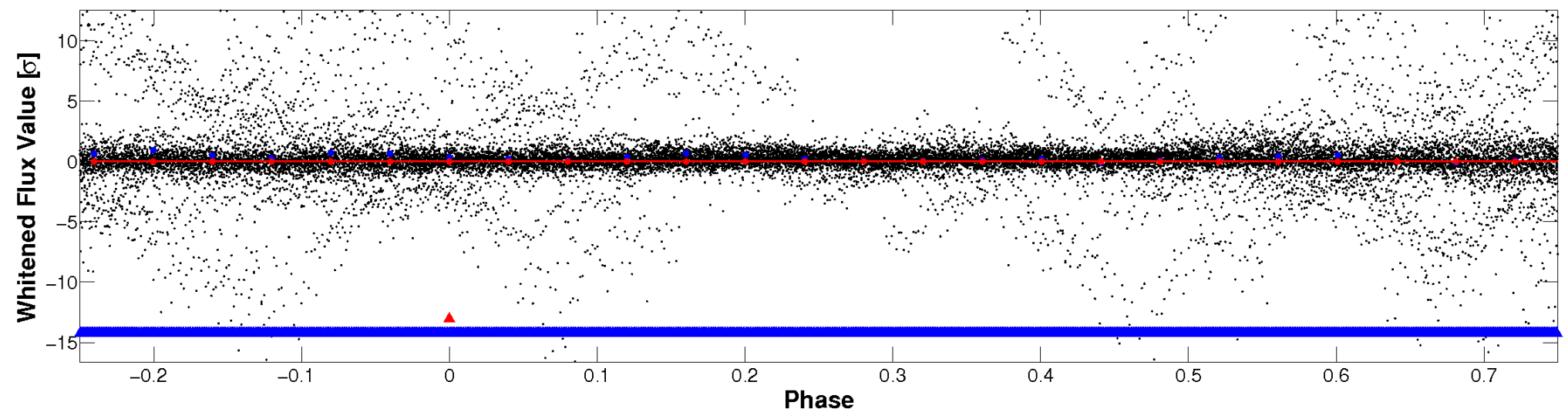


Non-Whitened Vs. Whitened Light Curve

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

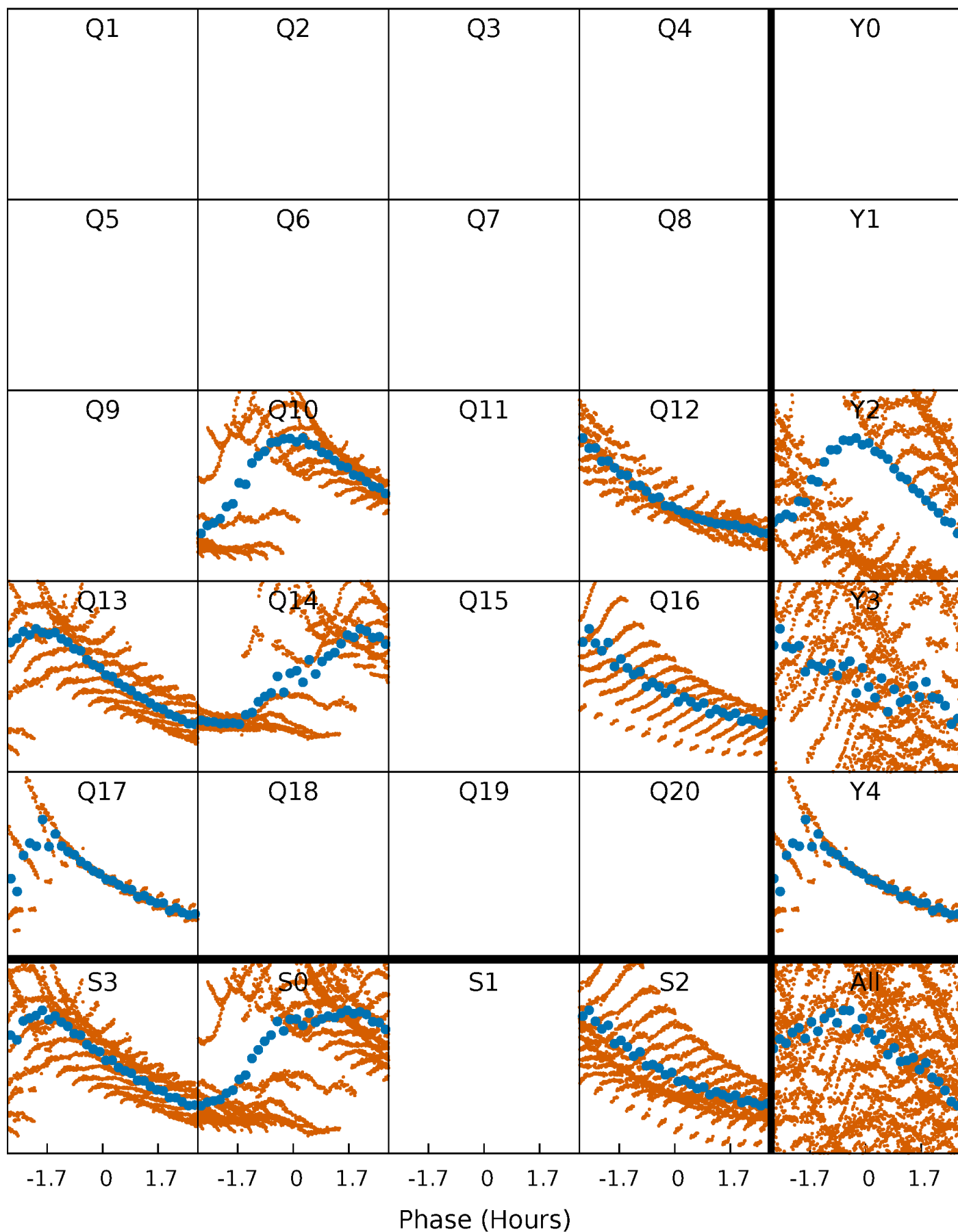


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



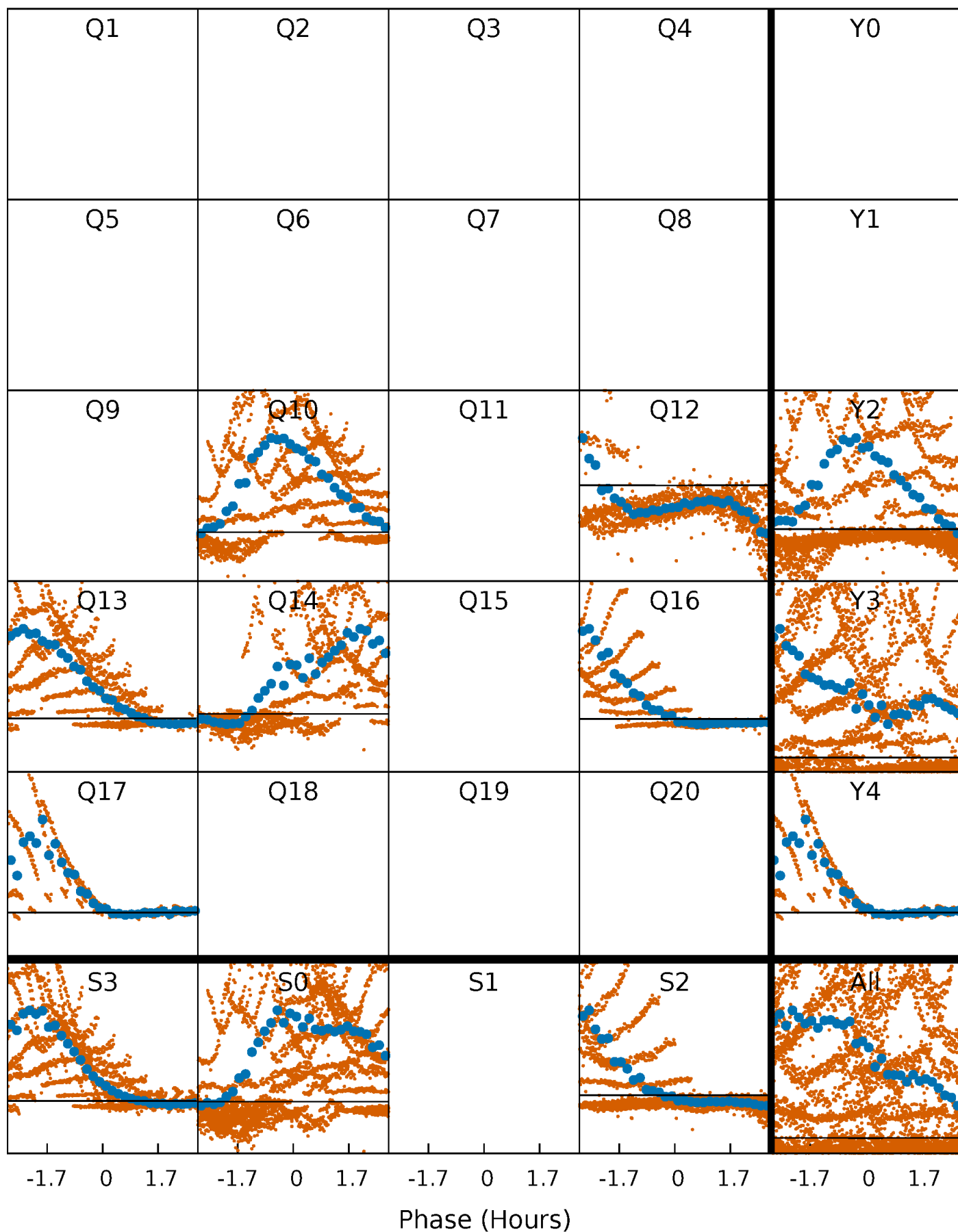
PDC Quarter-Phased Transit Curves

TCE 009973633-01 P= 0.509983 Days $T_0=131.943886$ (BKJD)



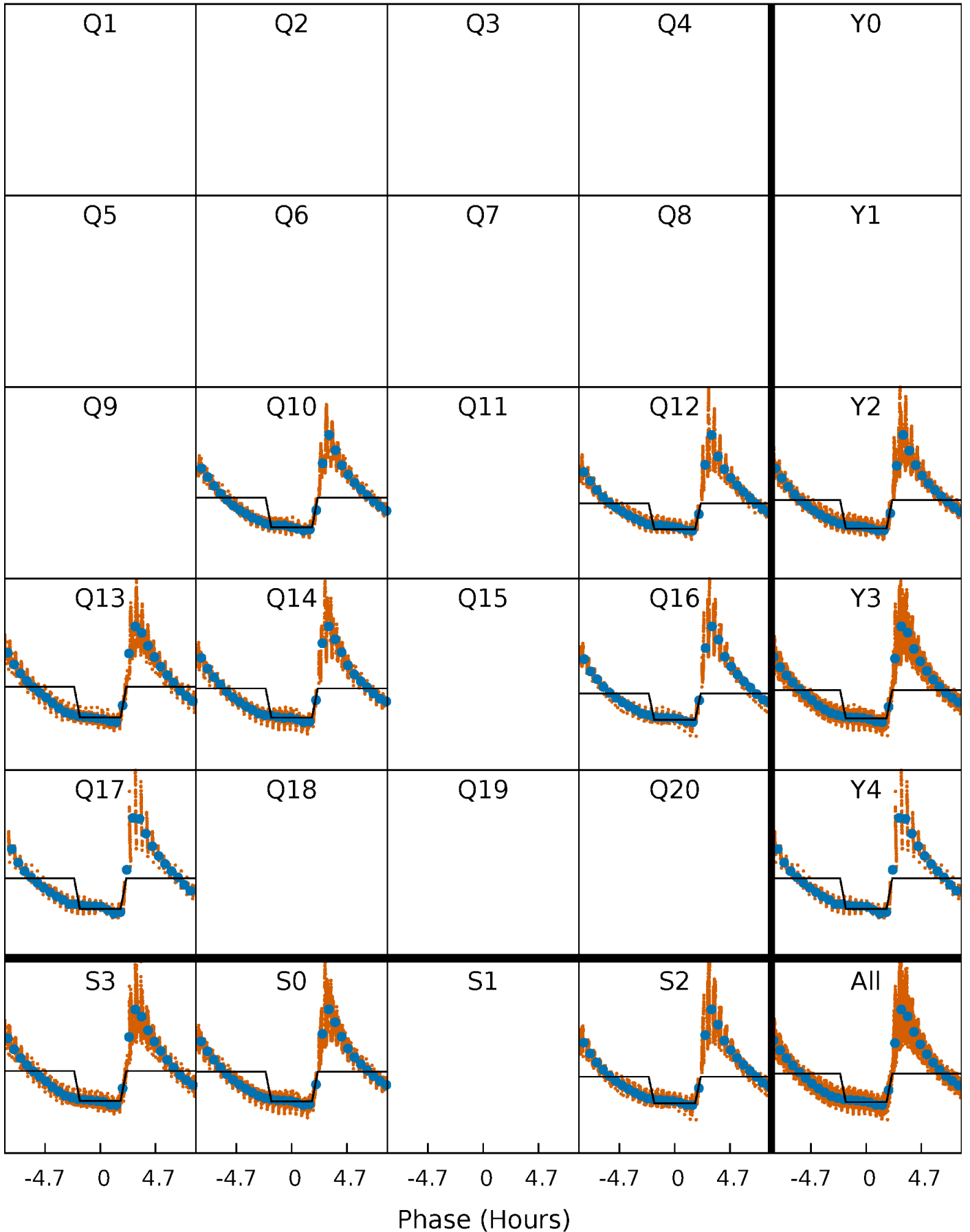
DV Quarter-Phased Transit Curves

TCE 009973633-01 P= 0.509983 Days $T_0=131.943886$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

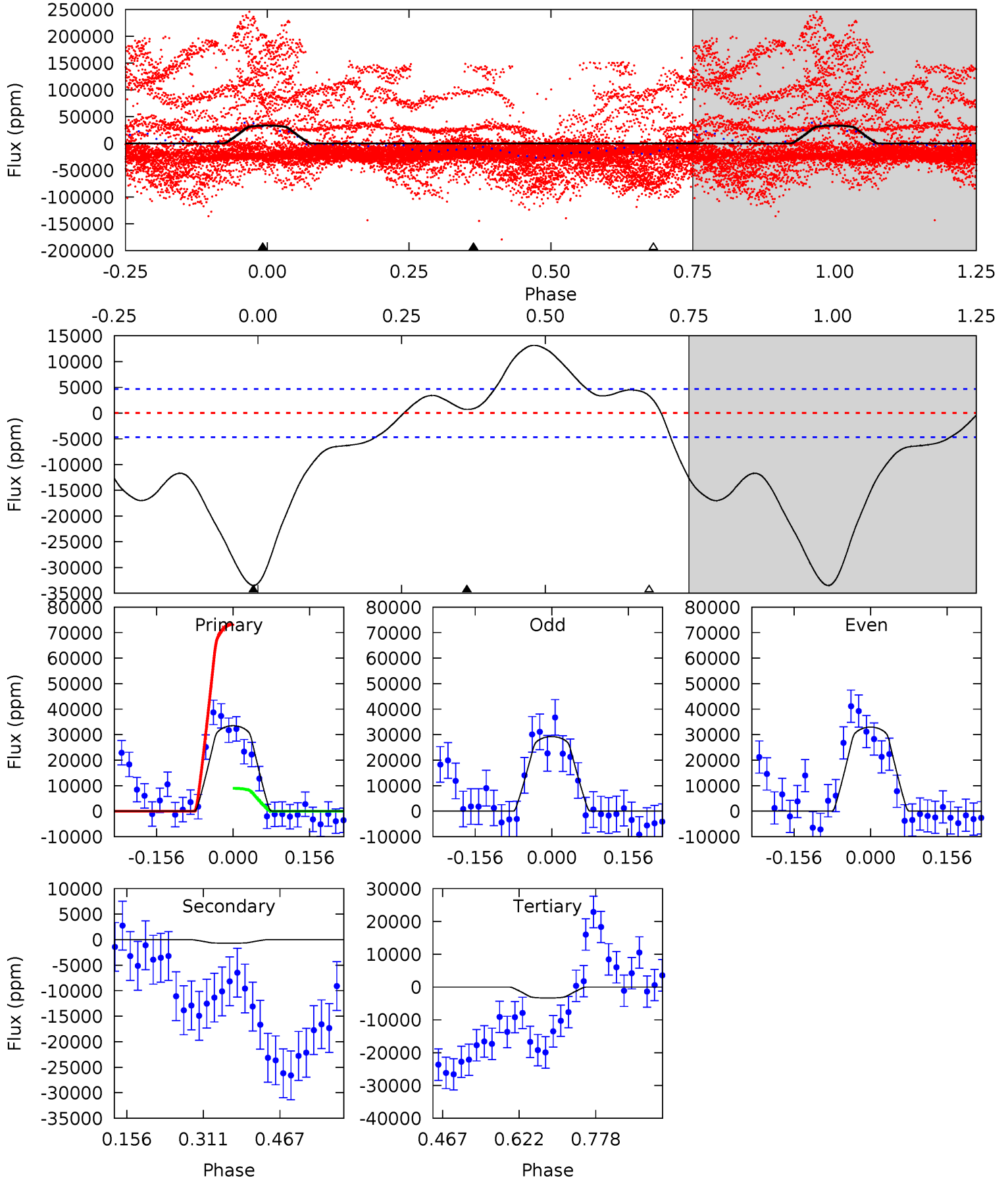
TCE 009973633-01 P= 0.510784 Days $T_0=131.520888$ (BKJD)



DV Model-Shift Uniqueness Test

009973633-01, P = 0.509983 Days, E = 131.943886 Days

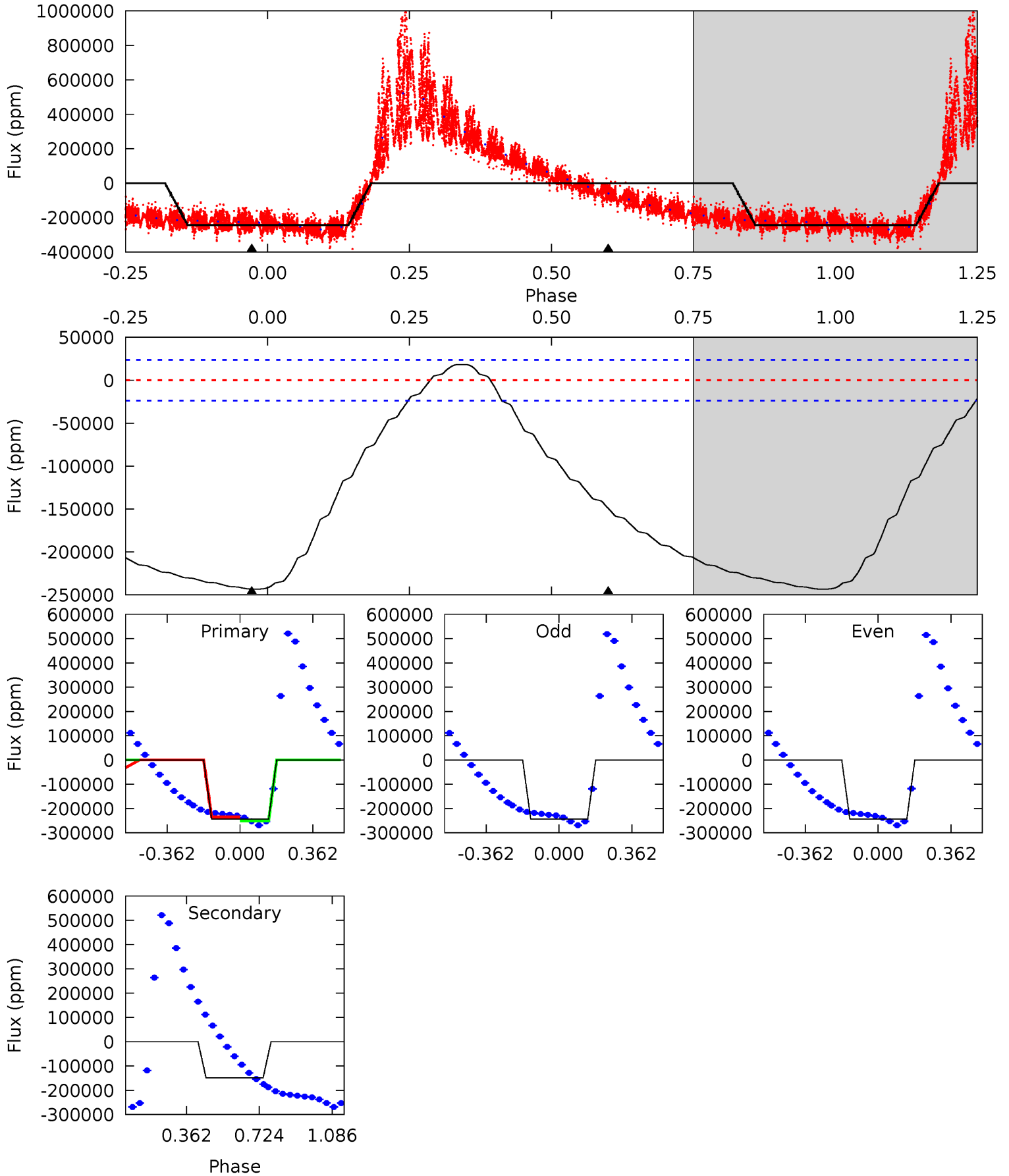
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.0	-0.68	-3.20	0	4.47	1.42	8.14	35.2	32.0	2.52	-0.68	1.82	2.86	0.28	0



Alt Model-Shift Uniqueness Test

009973633-01, P = 0.510784 Days, E = 131.520888 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
43.8	26.9	0	0	4.29	0.91	2.84	43.8	43.8	26.9	26.9	0.02	1.00	0.07	1.78



Stellar Parameters For KIC 009973633

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6802^{+213}_{-284}	$4.149^{+0.185}_{-0.185}$	$-0.260^{+0.250}_{-0.300}$	$1.589^{+0.451}_{-0.410}$	$1.307^{+0.182}_{-0.223}$	$0.459^{+0.466}_{-0.234}$
	+3%/-4%	+4%/-4%	+96%/-115%	+28%/-26%	+14%/-17%	+102%/-51%
Source	KIC0	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 009973633-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	710 ± 1046	$19.86^{+22.58}_{-14.53}$	4522^{+367}_{-337}	-4321^{+531}_{-1949}	$-0.098^{+0.150}_{-2.032}$
Alt.	-149145 ± 5549	$84.93^{+35.53}_{-31.02}$	4522^{+369}_{-345}	5987^{+1825}_{-921}	$2.433^{+3.580}_{-1.206}$

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

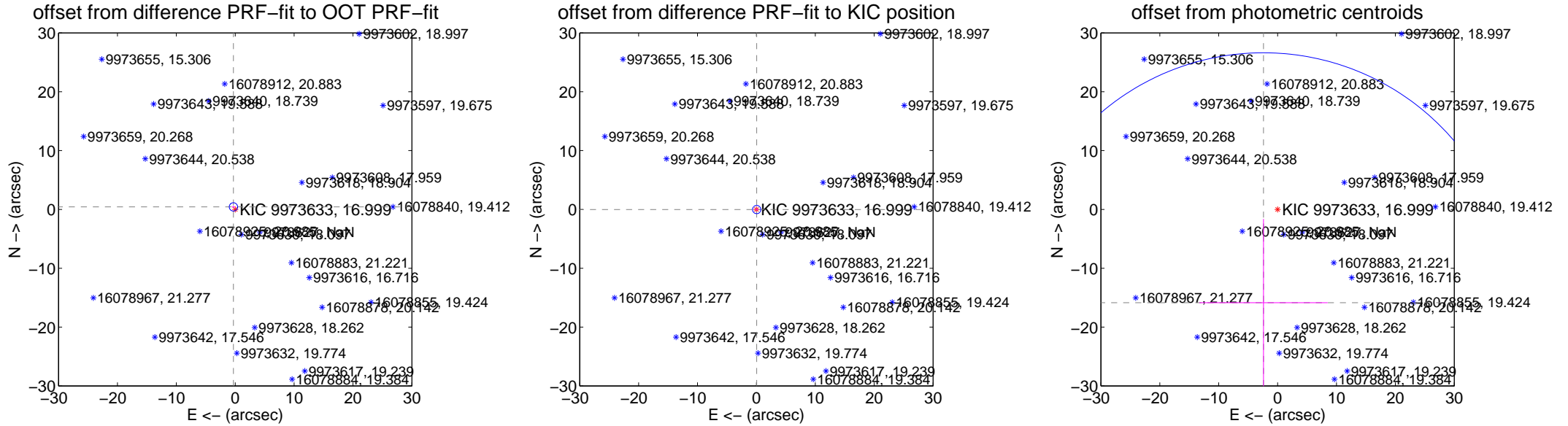
DV Centroid Data

Supplemental centroid analysis for 009973633-01. Kepler magnitude: 17.00. Transit SNR 0.10

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.63 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.525 ± 0.236	2.22	0.303 ± 0.253	0.428 ± 0.127
PRF-fit source offset from KIC position	0.052 ± 0.234	0.22	-0.047 ± 0.221	-0.022 ± 0.104
photometric centroid source offset	16.03 ± 14.16	1.13	2.39 ± 10.90	-15.85 ± 14.22



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.

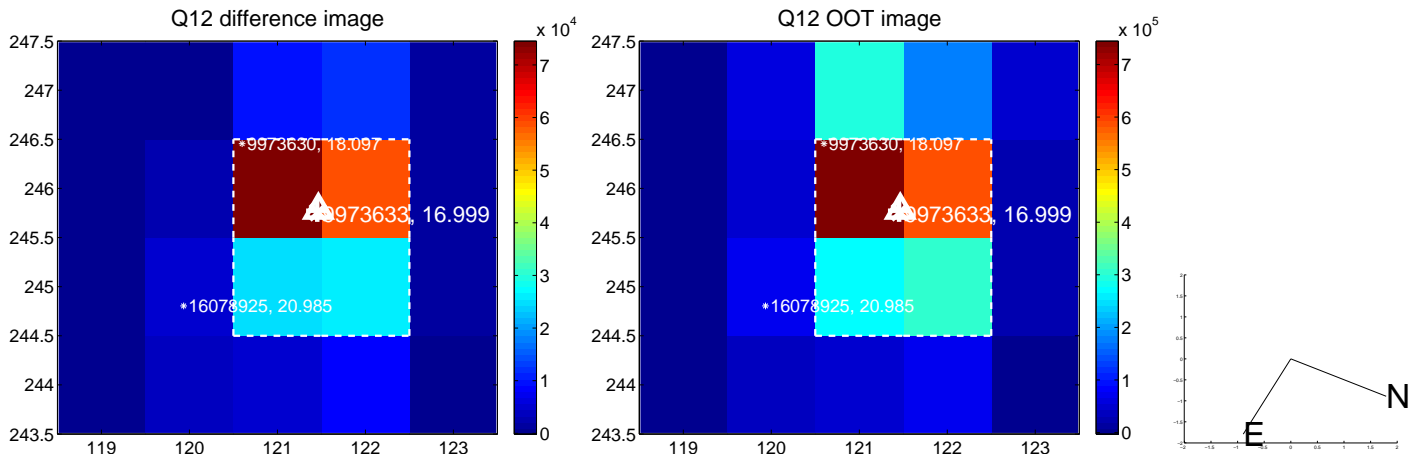
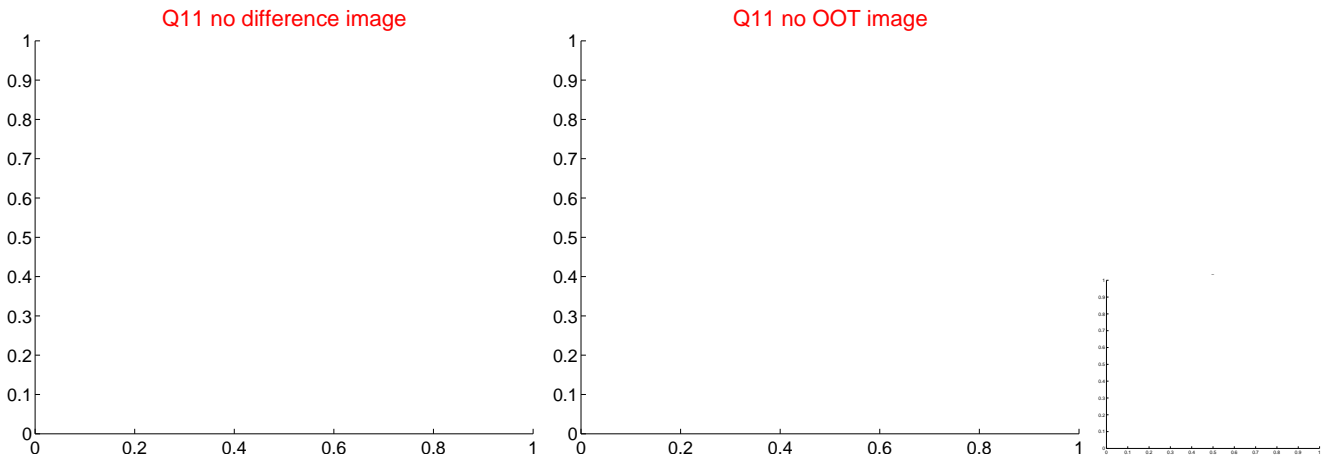
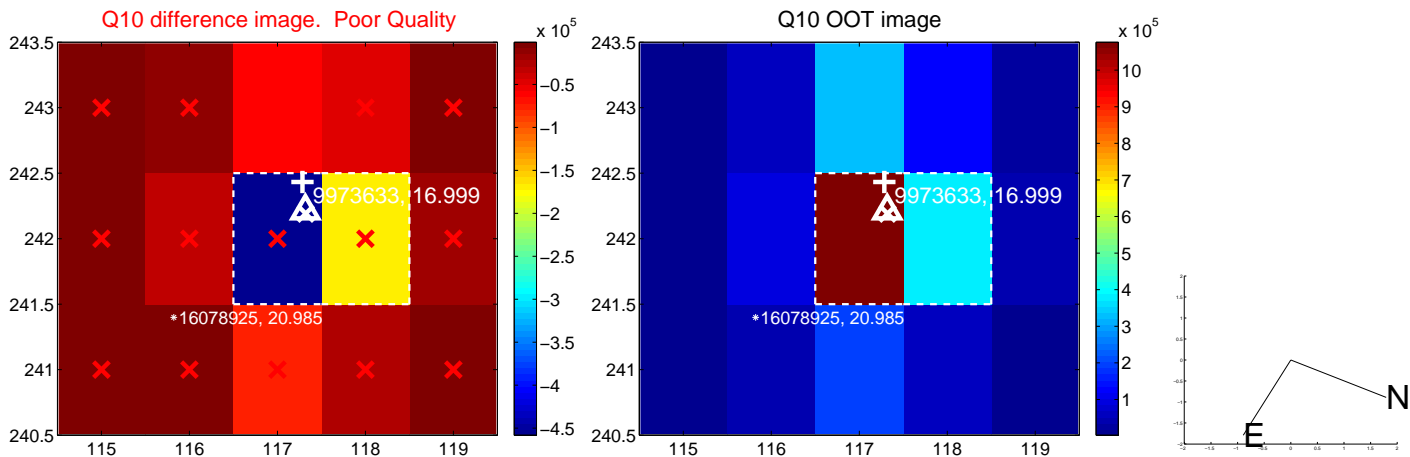
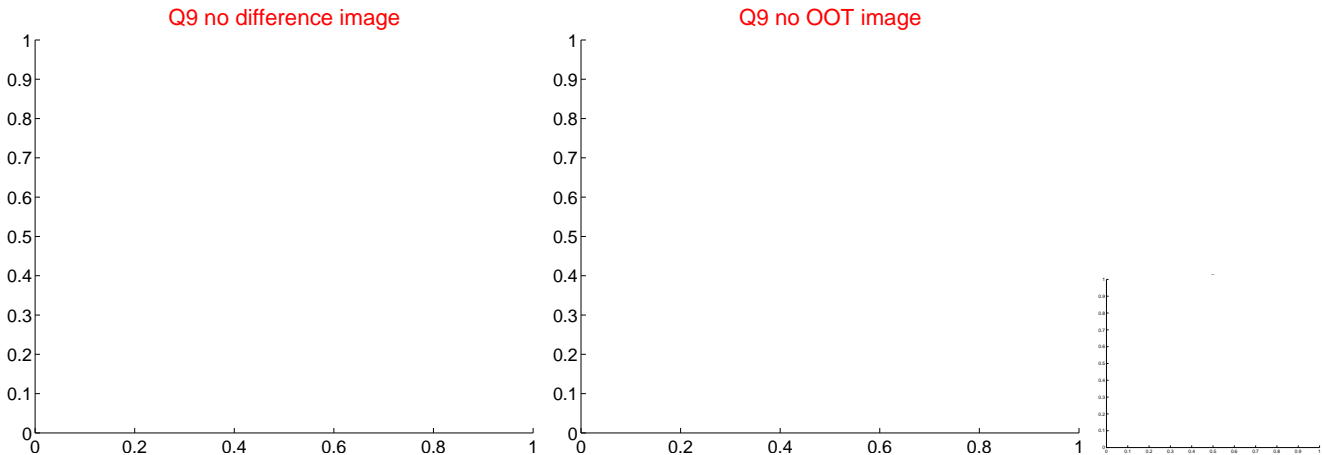
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



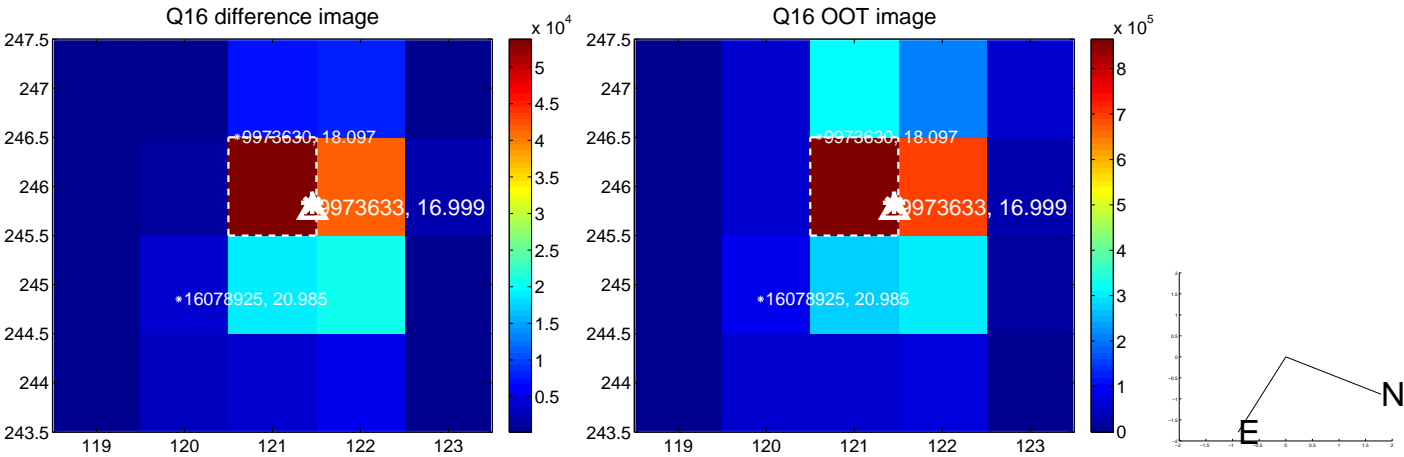
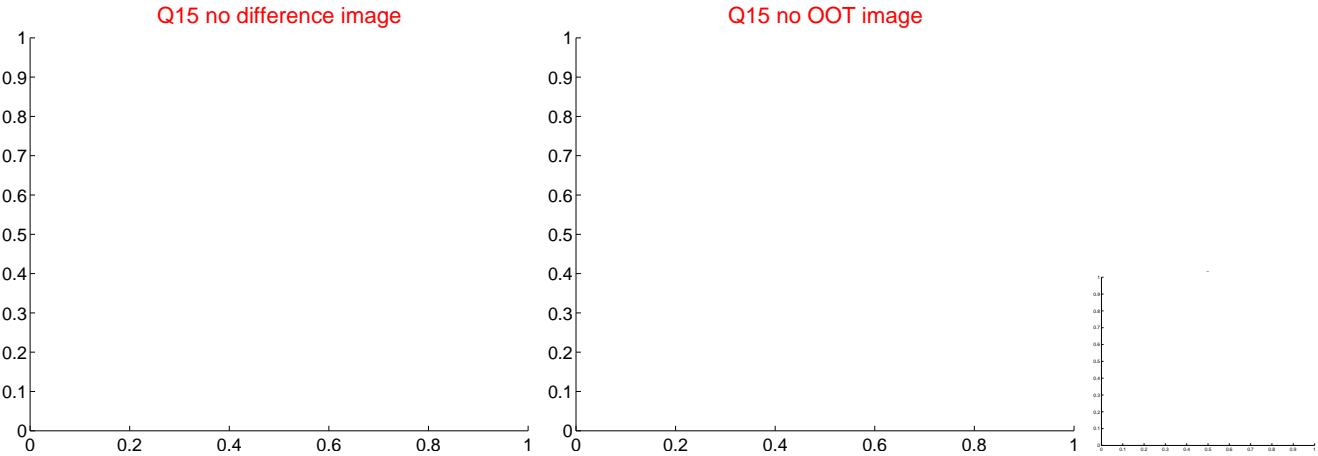
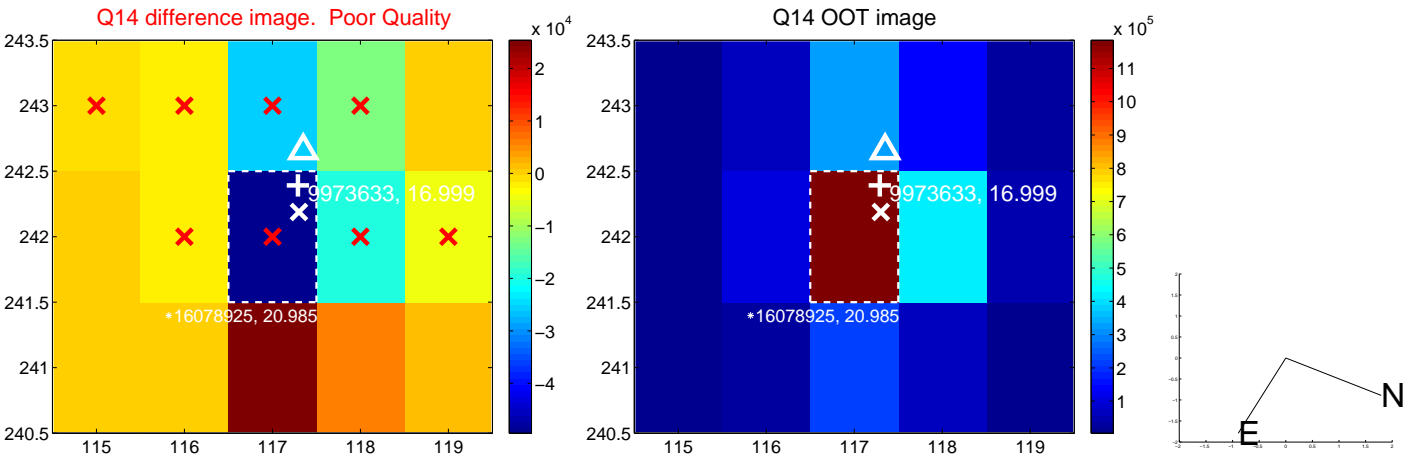
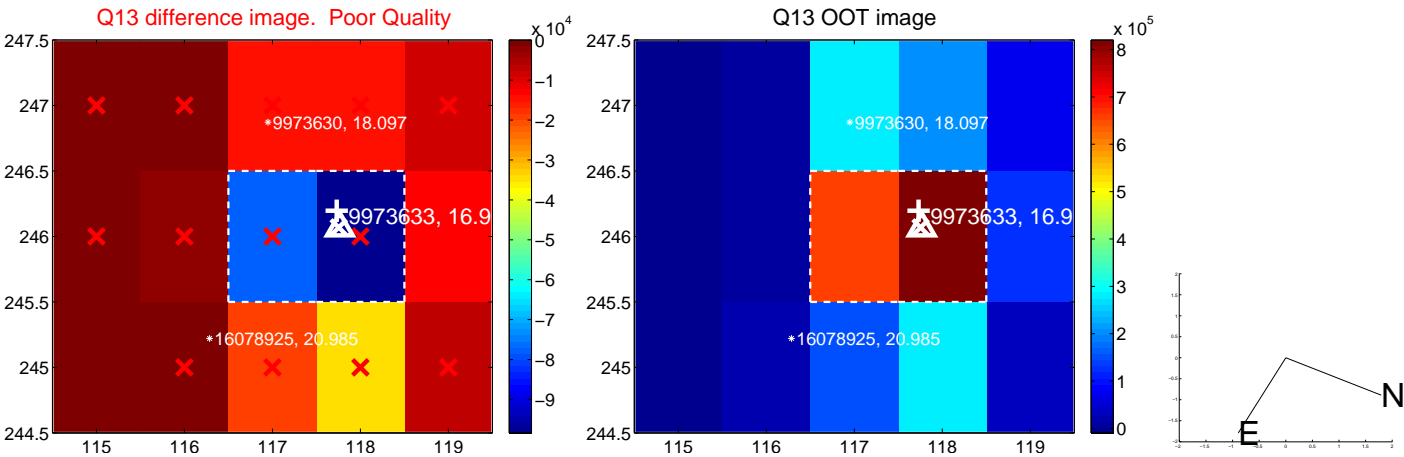
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



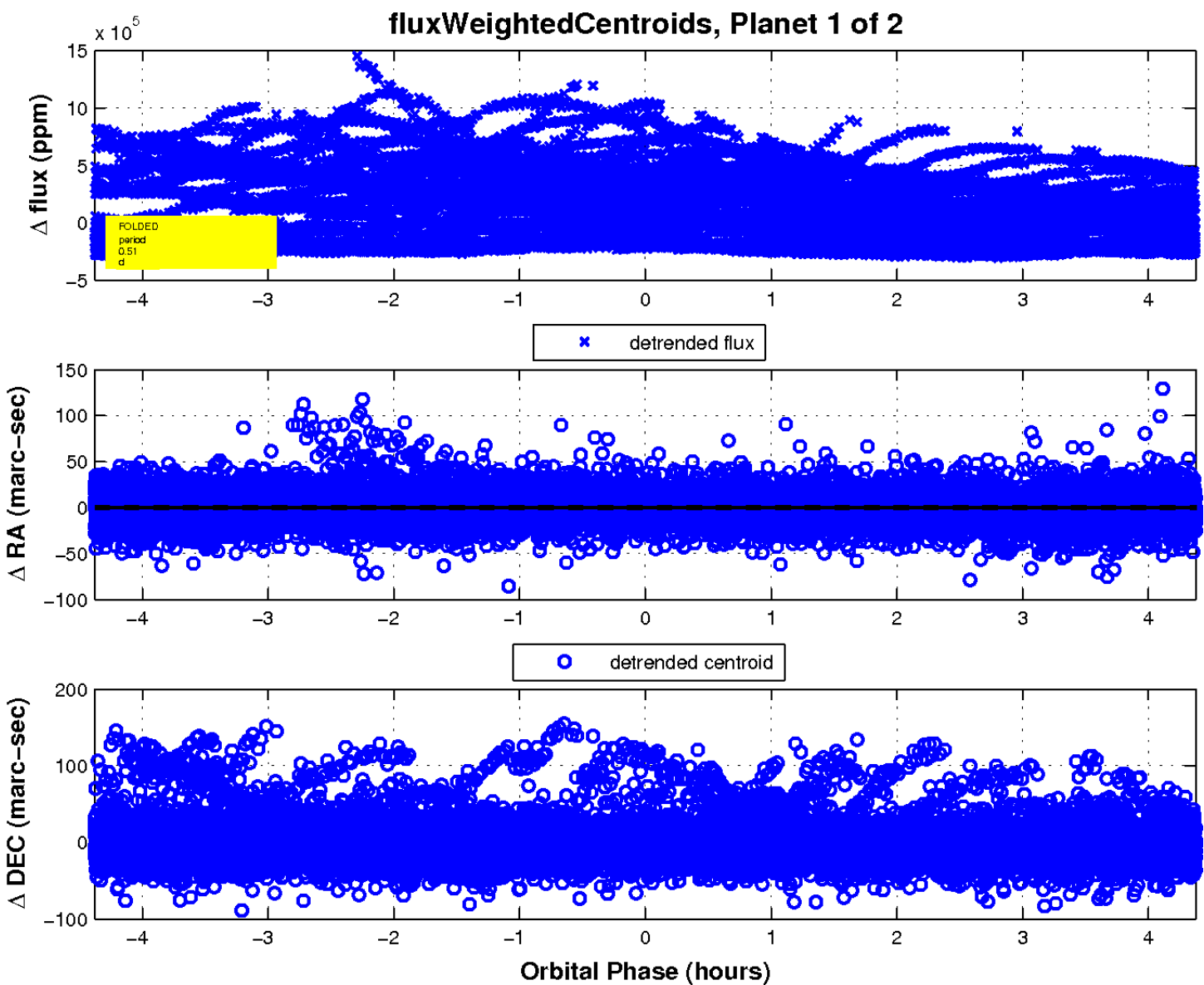
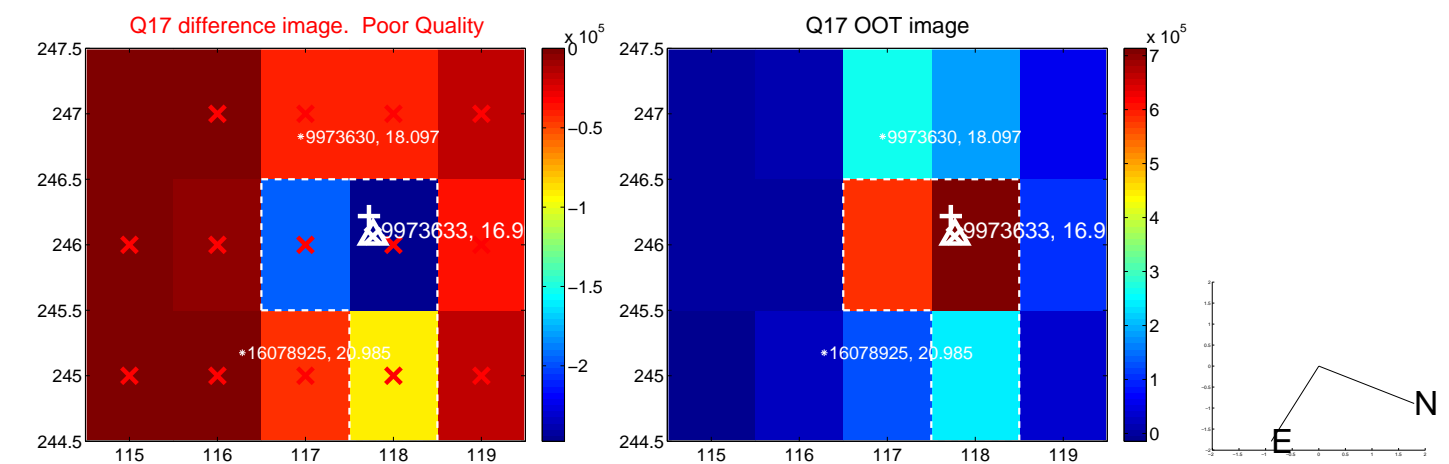
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



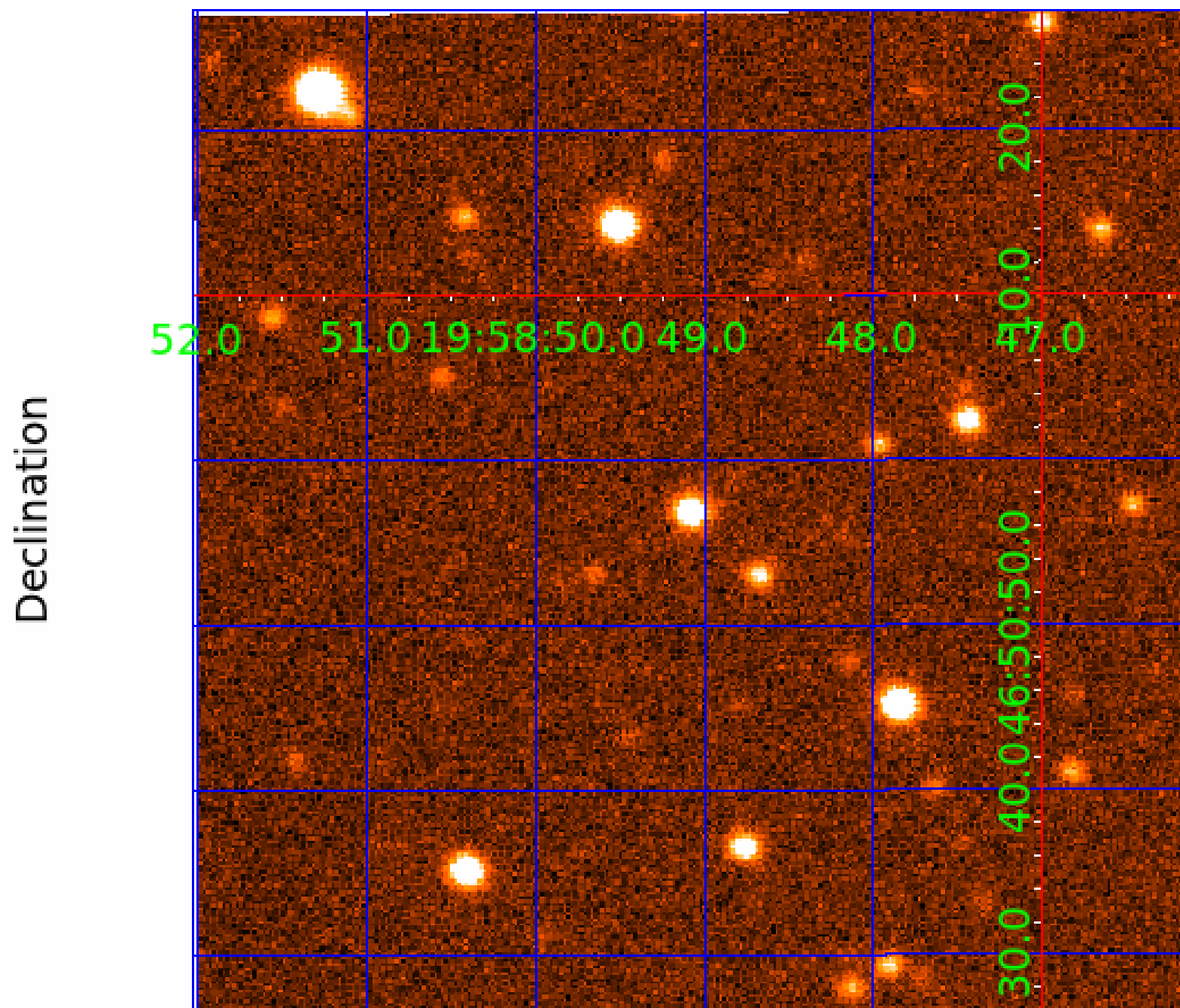
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009973633

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})
009973633-01	OBS	No	0.509983	131.943886	81.8	1.460	169.7	0.1	1.59	6802	1.73	26068.49
009973633-02	OBS	No	0.510789	131.573494	15832.7	1.500	32.7	-1.0	1.59	6802	20.28	26013.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009973633-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_FEW_DIFFS
009973633-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—CENT_NOFITS

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

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

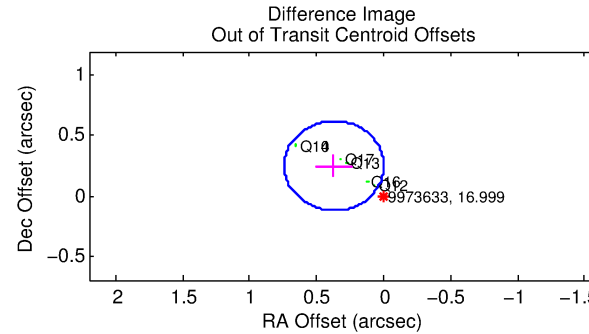
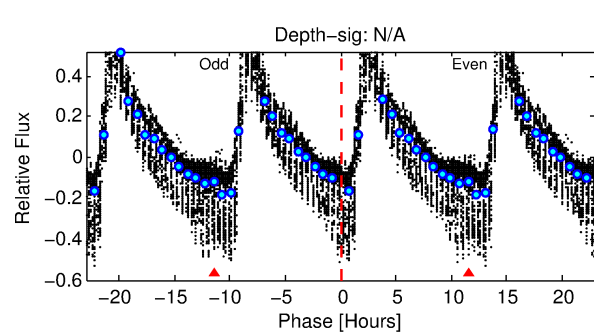
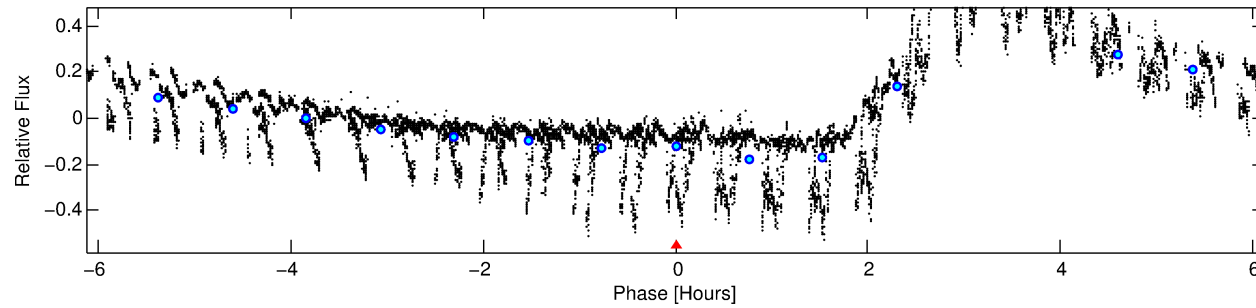
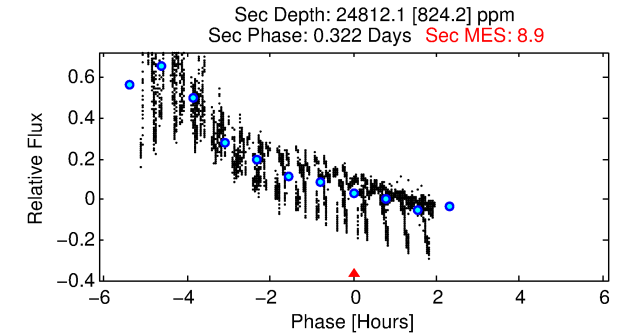
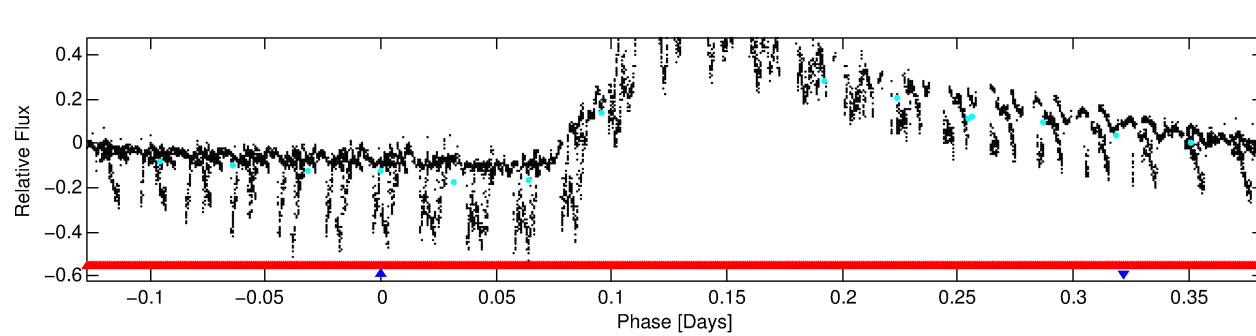
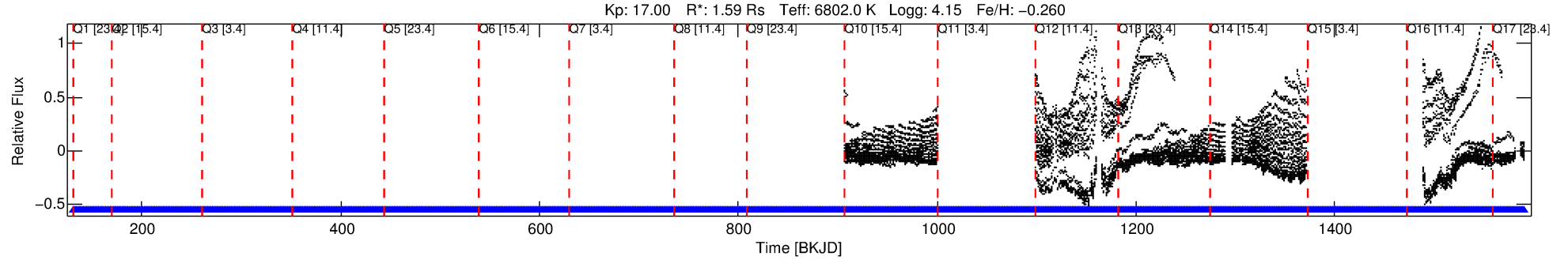
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009973633-02

No Significant Match Found

DV One-Page Summary

KIC: 9973633 Candidate: 2 of 2 Period: 0.511 d



TPS TCE Results:

Period = 0.51079 d
Epoch = 131.5735 BKJD

DV fit results are unavailable

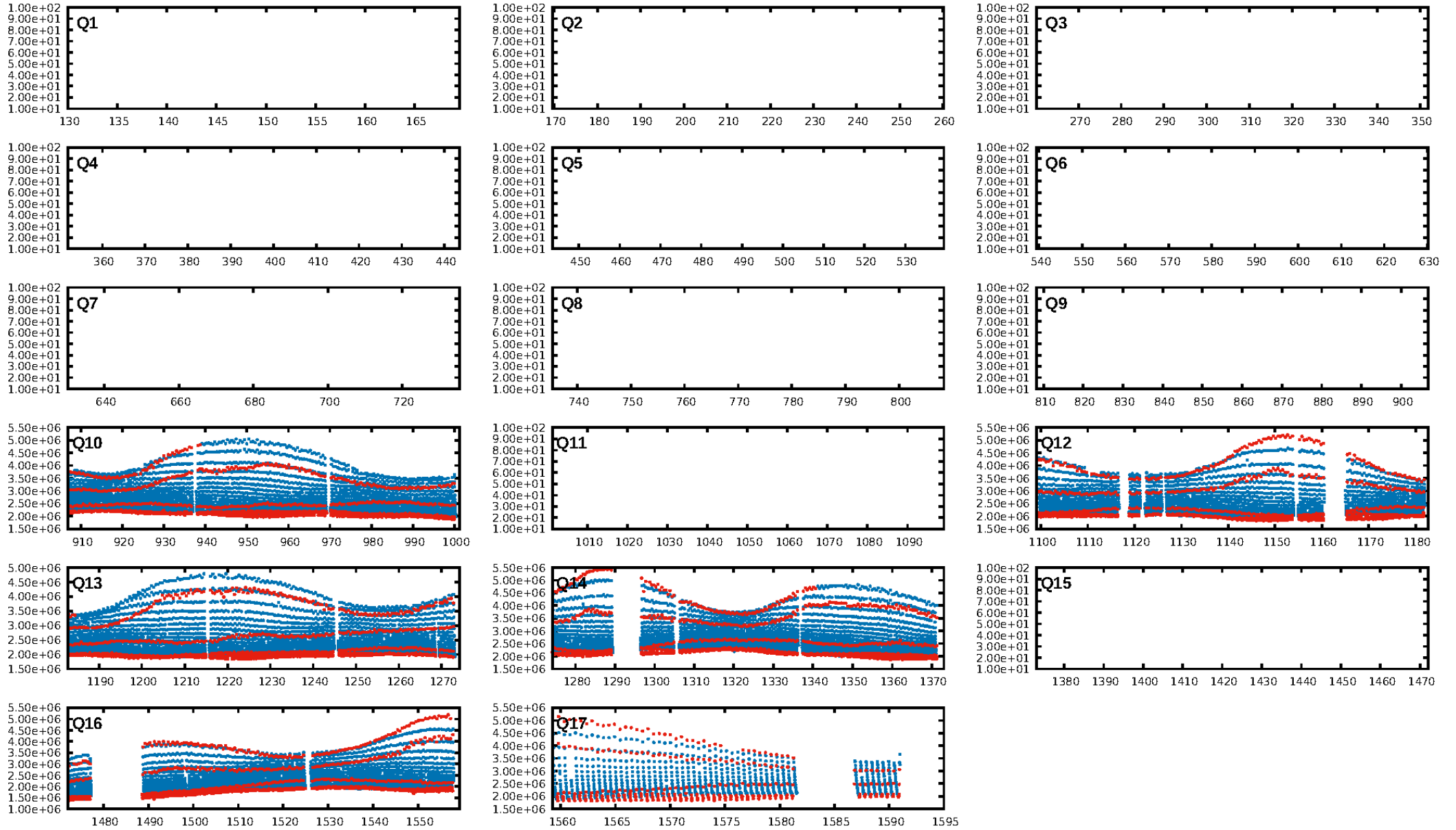
DV Diagnostic Results:

ShortPeriod-sig: 0.7% [0.01 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [783/783]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.447 arcsec [3.60 σ]
KicOffset-rm: 0.036 arcsec [0.52 σ]
OotOffset-st: 2/0/2/2 [6]
KicOffset-st: 2/0/2/2 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 0.00 [0/6]

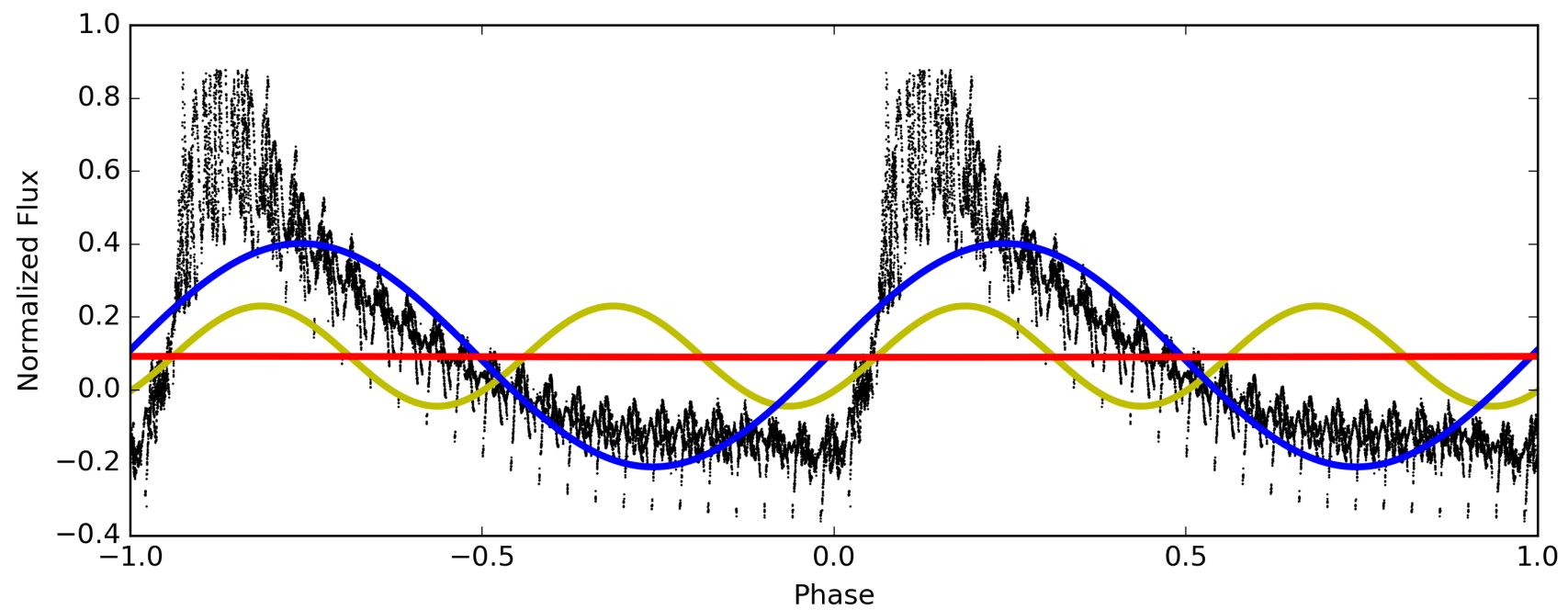
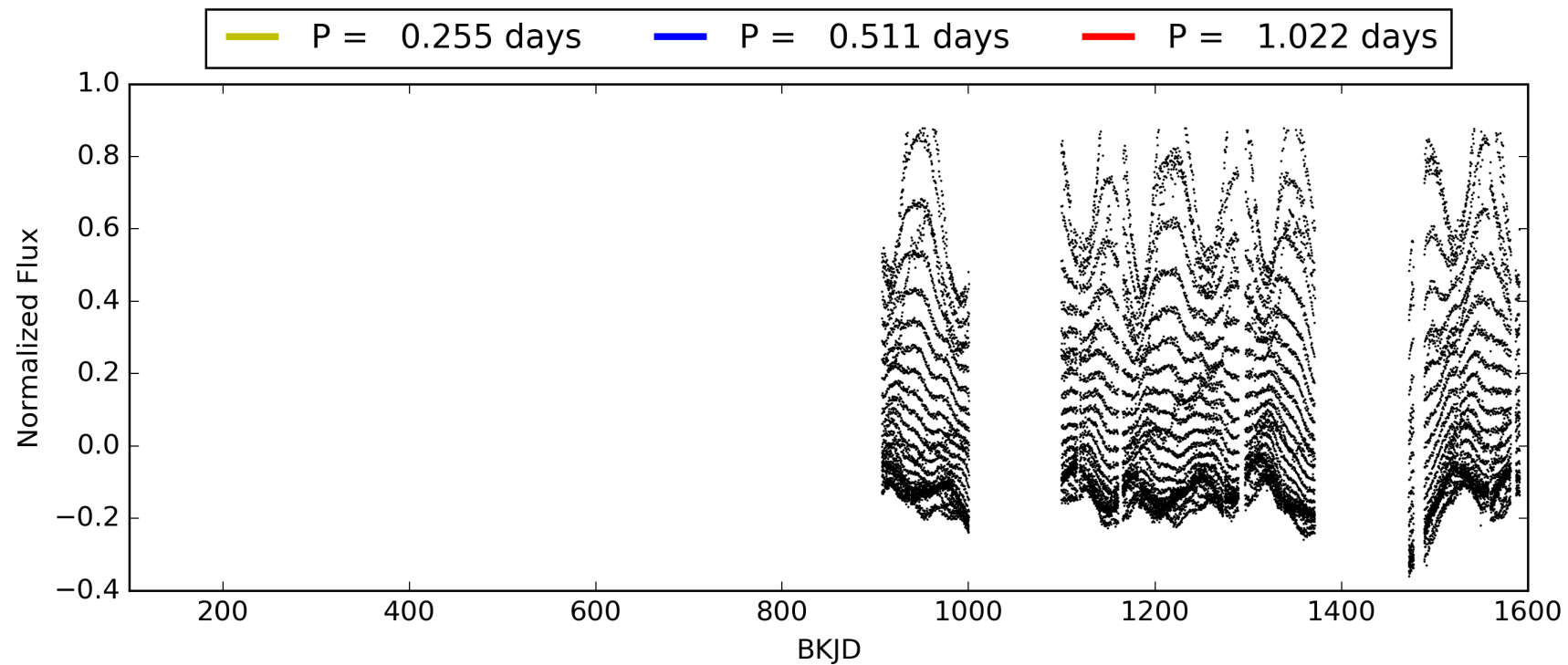
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009973633-02, PDC Light Curves

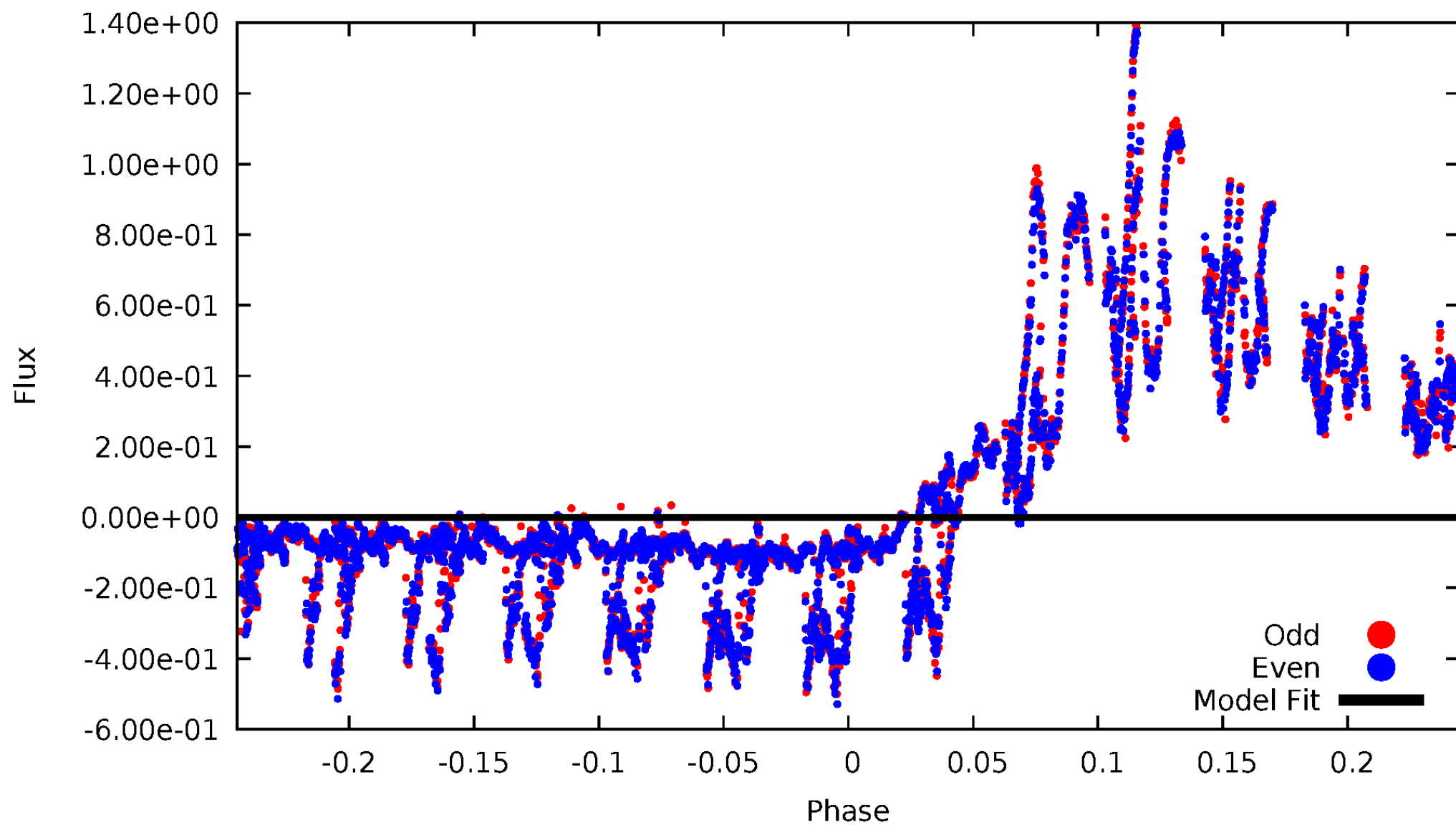


TCE 009973633-02



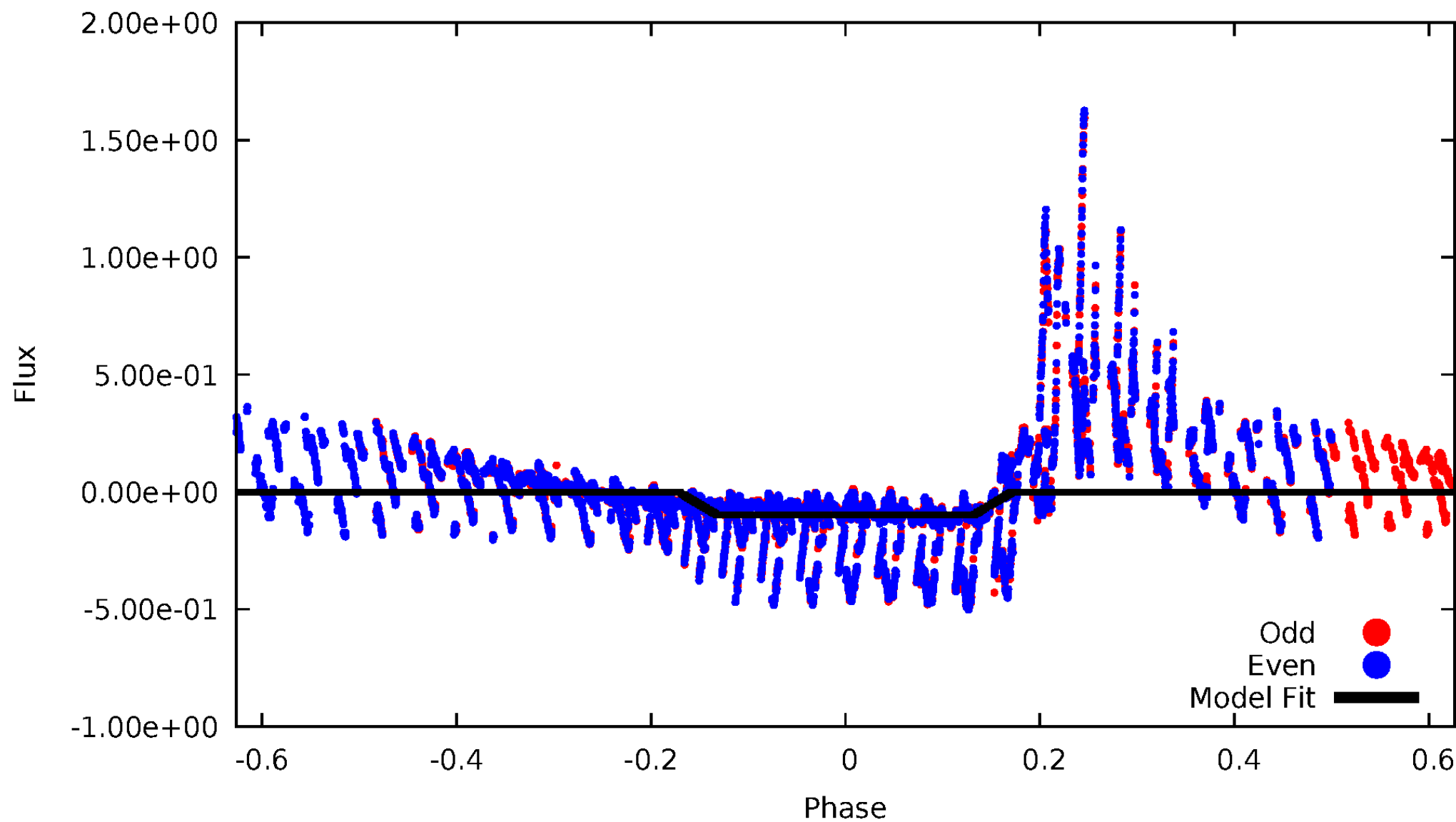
DV Odd/Even

TCE 009973633-02



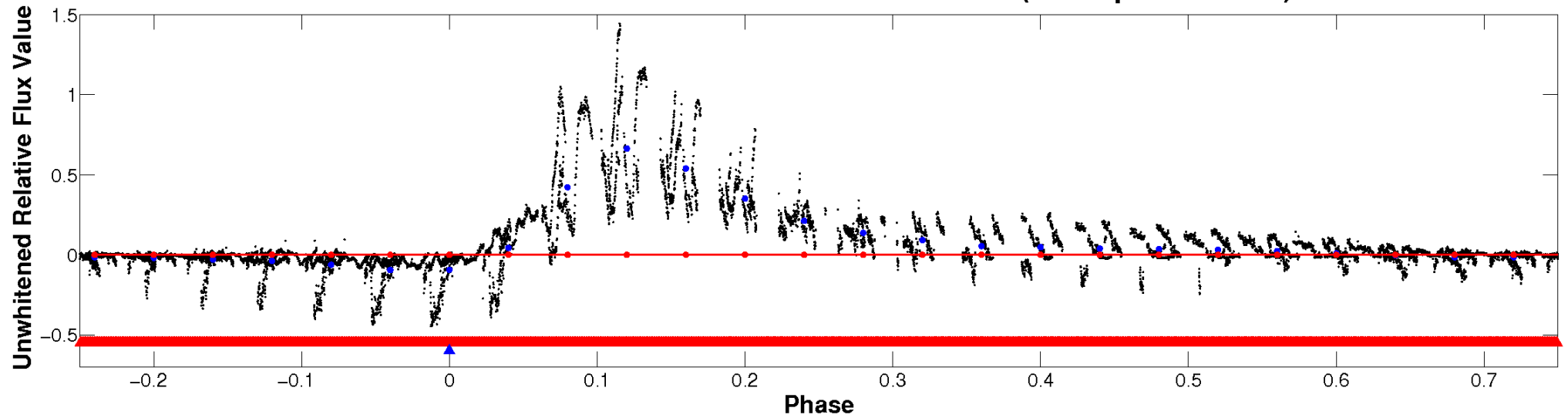
ALT Odd/Even

TCE 009973633-02

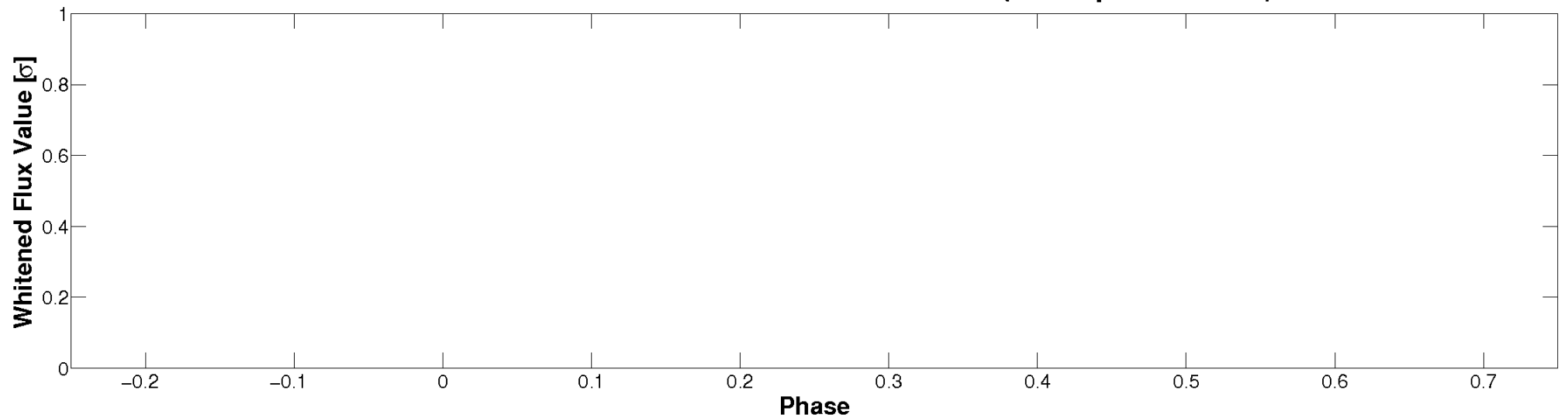


Non-Whitened Vs. Whitened Light Curve

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

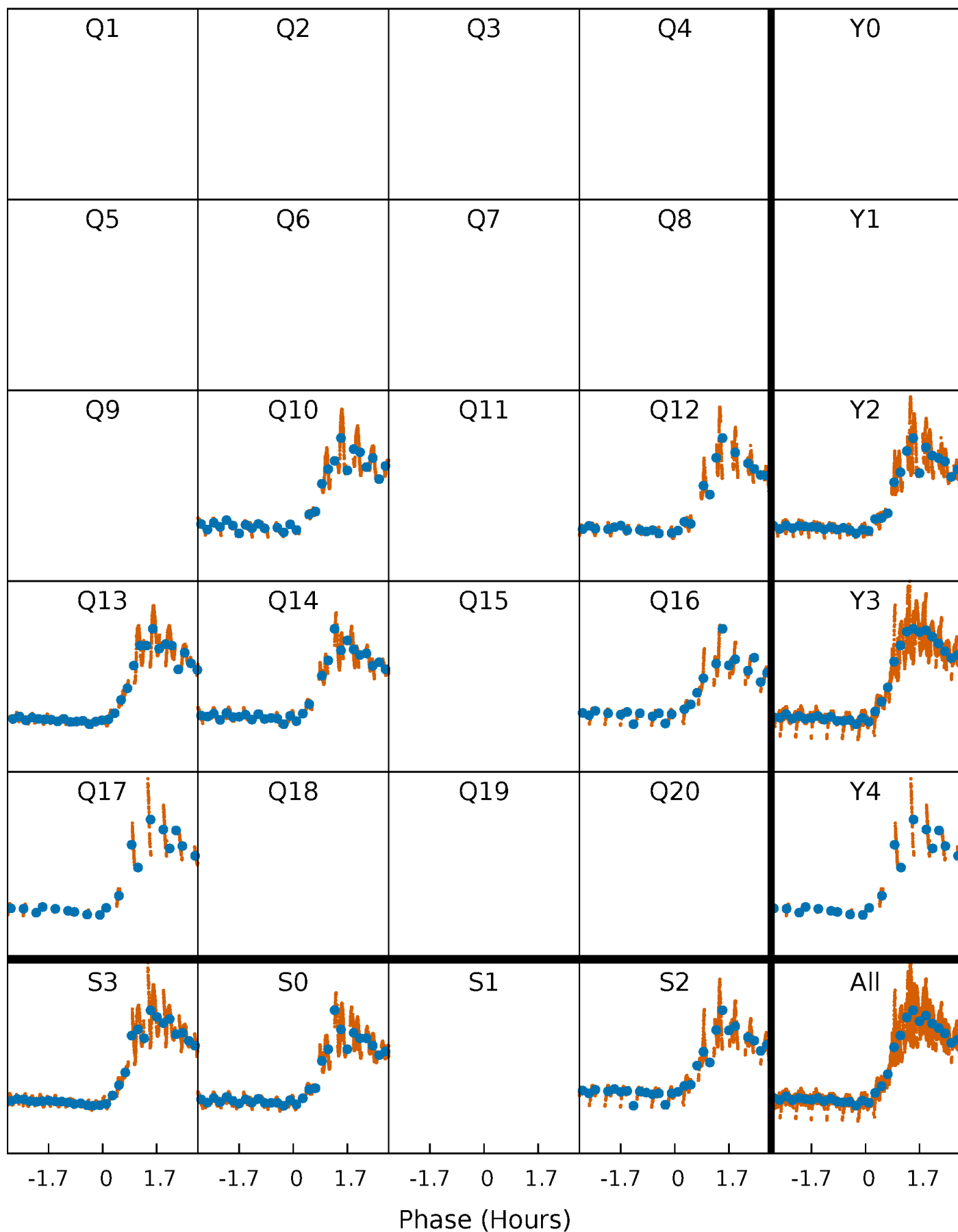


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



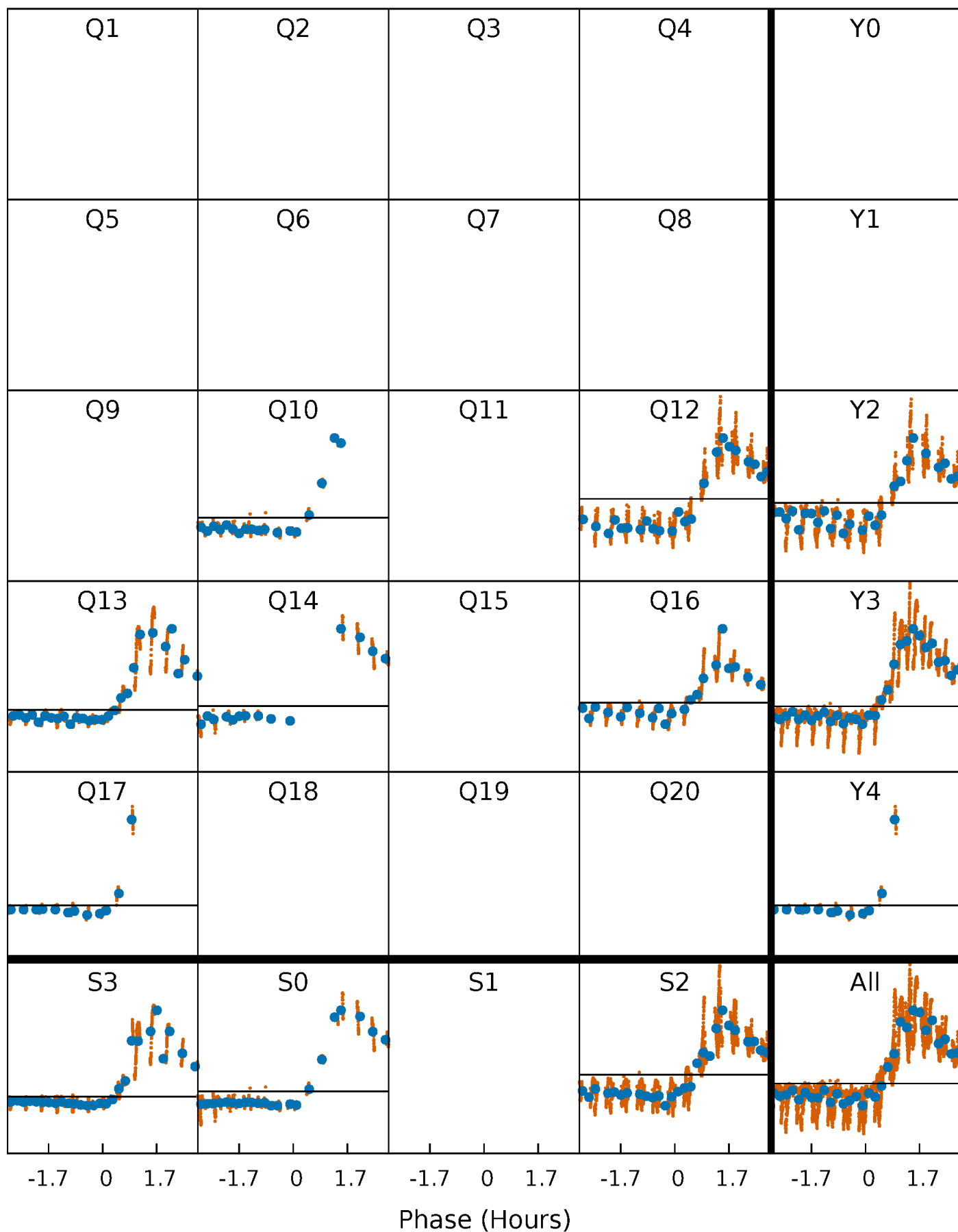
PDC Quarter-Phased Transit Curves

TCE 009973633-02 $P = 0.510789$ Days $T_0 = 131.573494$ (BKJD)



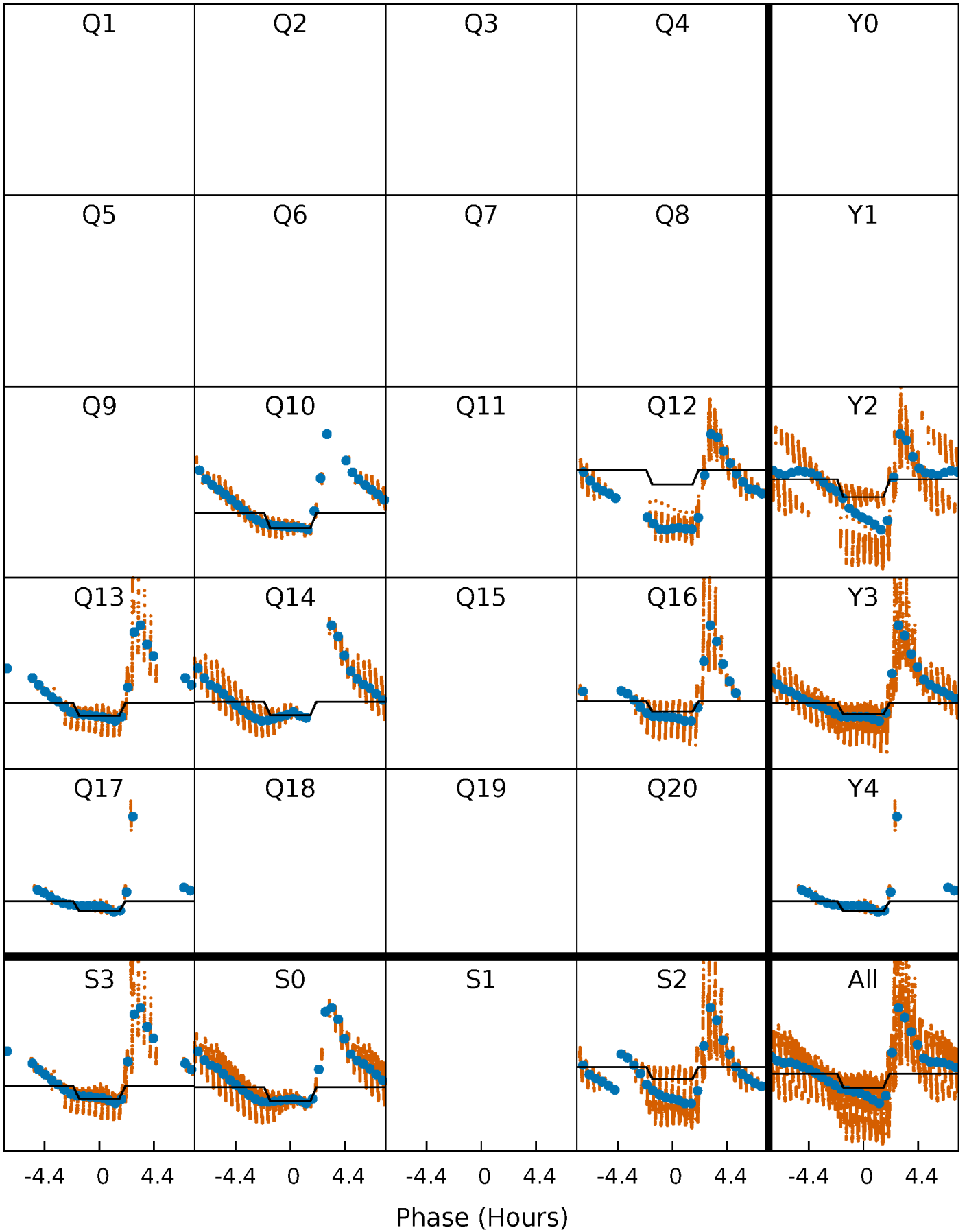
DV Quarter-Phased Transit Curves

TCE 009973633-02 $P = 0.510789$ Days $T_0 = 131.573494$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

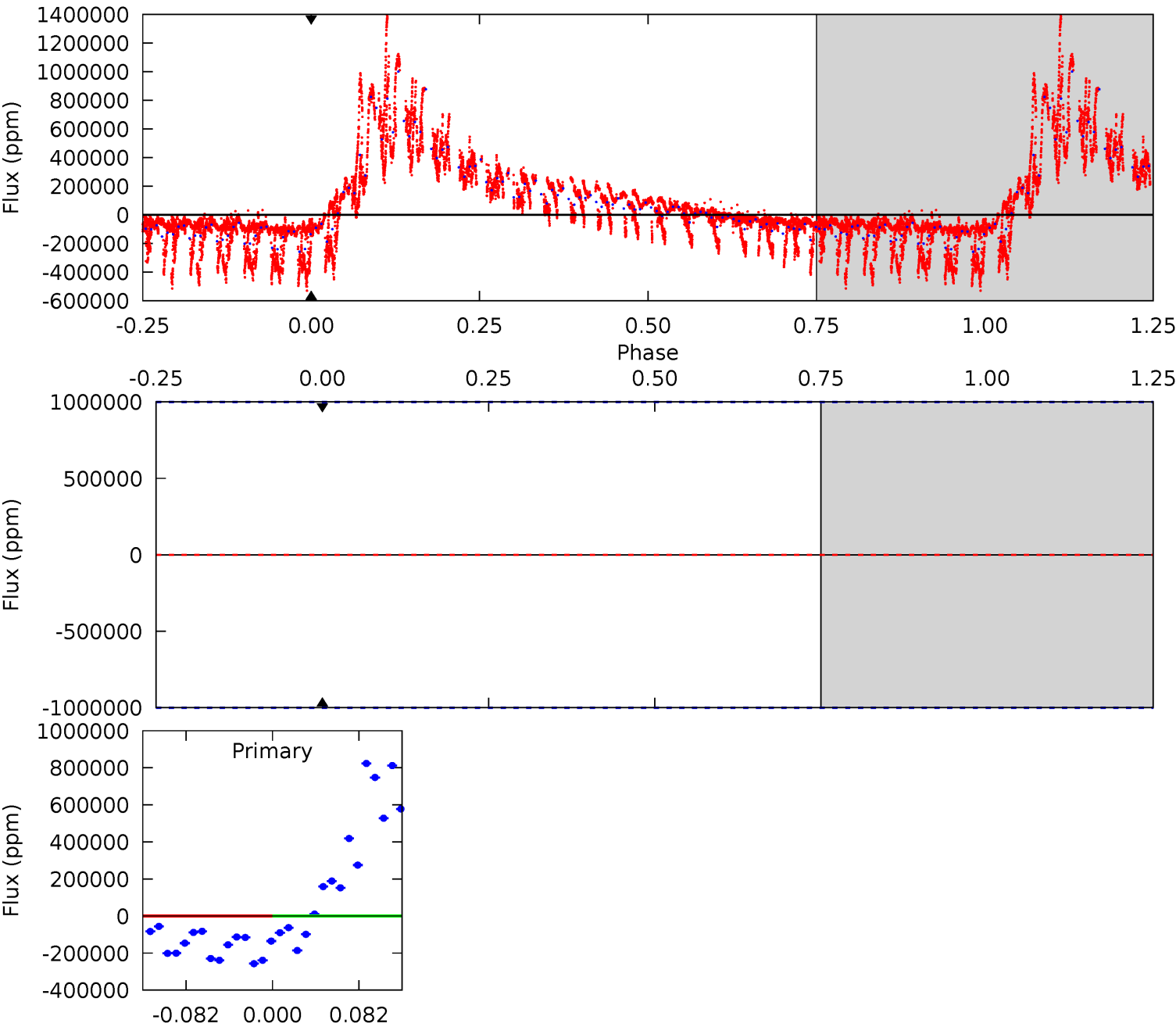
TCE 009973633-02 P= 0.510789 Days $T_0=131.506927$ (BKJD)



DV Model-Shift Uniqueness Test

009973633-02, P = 0.510789 Days, E = 131.573494 Days

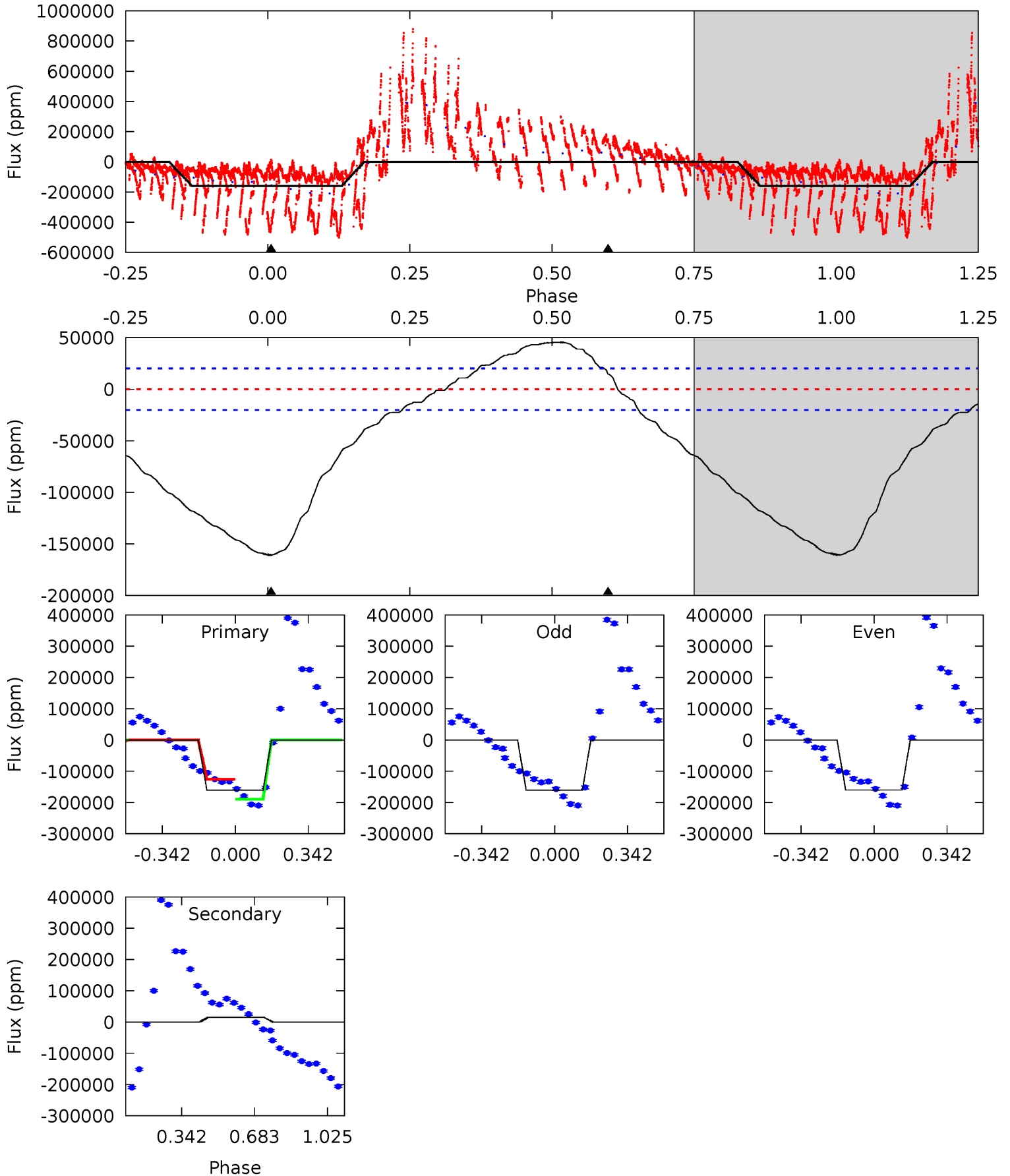
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009973633-02, P = 0.510789 Days, E = 131.506927 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.3	-3.13	0	0	4.30	0.95	2.89	34.3	34.3	-3.13	-3.13	0.10	1.70	0.22	7.38



Stellar Parameters For KIC 009973633

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6802^{+213}_{-284}	$4.149^{+0.185}_{-0.185}$	$-0.260^{+0.250}_{-0.300}$	$1.589^{+0.451}_{-0.410}$	$1.307^{+0.182}_{-0.223}$	$0.459^{+0.466}_{-0.234}$
	+3%/-4%	+4%/-4%	+96%/-115%	+28%/-26%	+14%/-17%	+102%/-51%
Source	KIC0	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 009973633-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$23.49^{+17.99}_{-13.77}$	4536^{+386}_{-358}	-4725^{+19149}_{-9098}	$-0.368^{+29.478}_{-25.396}$
Alt.	14668 ± 4681	$54.37^{+20.91}_{-17.92}$	4534^{+372}_{-355}	-4856^{+406}_{-622}	$-0.495^{+0.268}_{-0.623}$

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 $A_{obs} \gg 1.0$

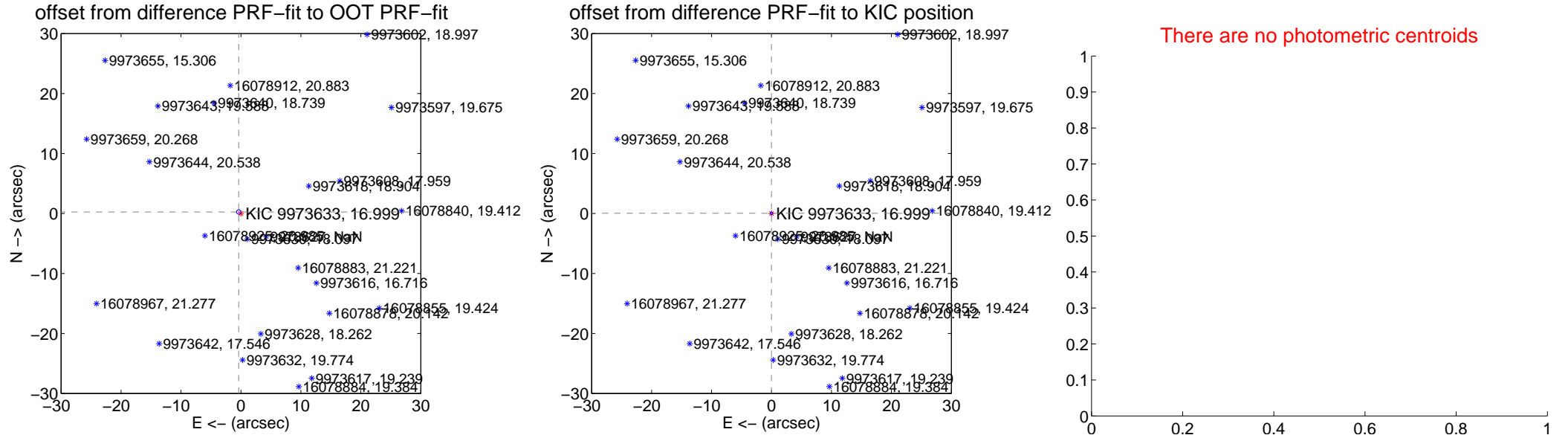
DV Centroid Data

Supplemental centroid analysis for 009973633-02. Kepler magnitude: 17.00. Transit SNR -1.00

There are 6 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.42 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.447 \pm 0.124	3.60	0.371 \pm 0.136	0.249 \pm 0.090
PRF-fit source offset from KIC position	0.036 \pm 0.070	0.52	0.000 \pm 0.071	0.036 \pm 0.070
photometric centroid source offset	—	—	—	—



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.

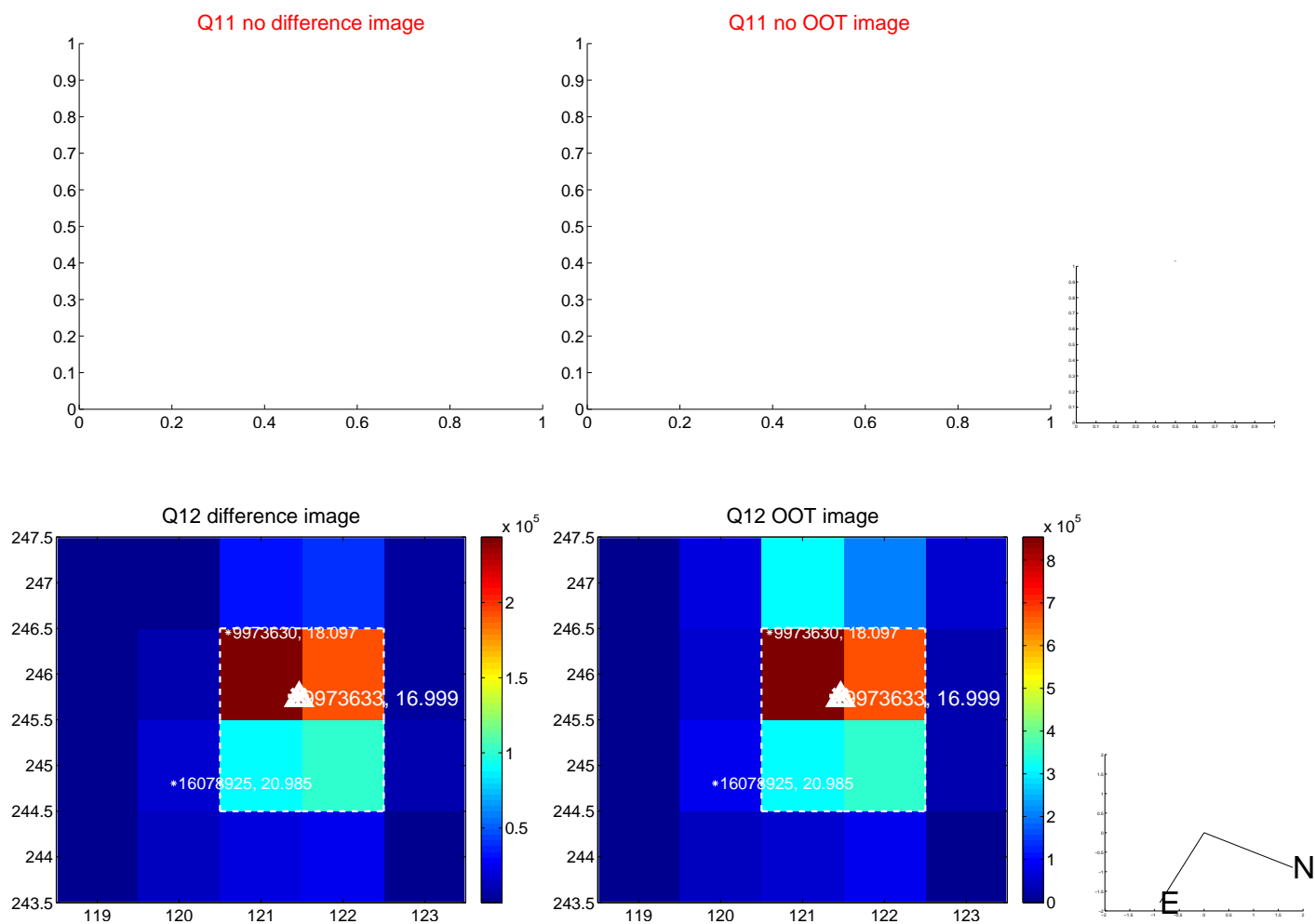
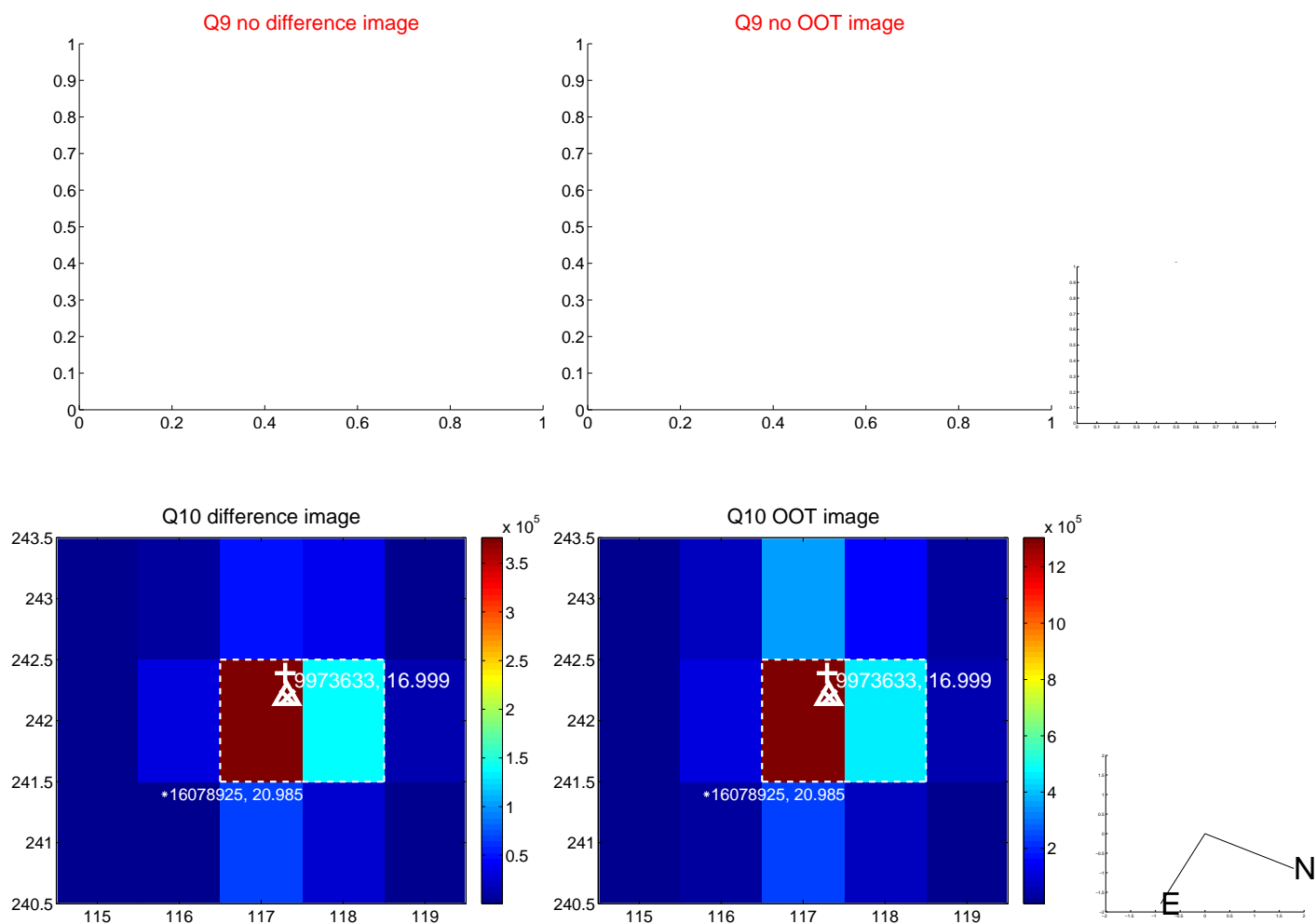
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



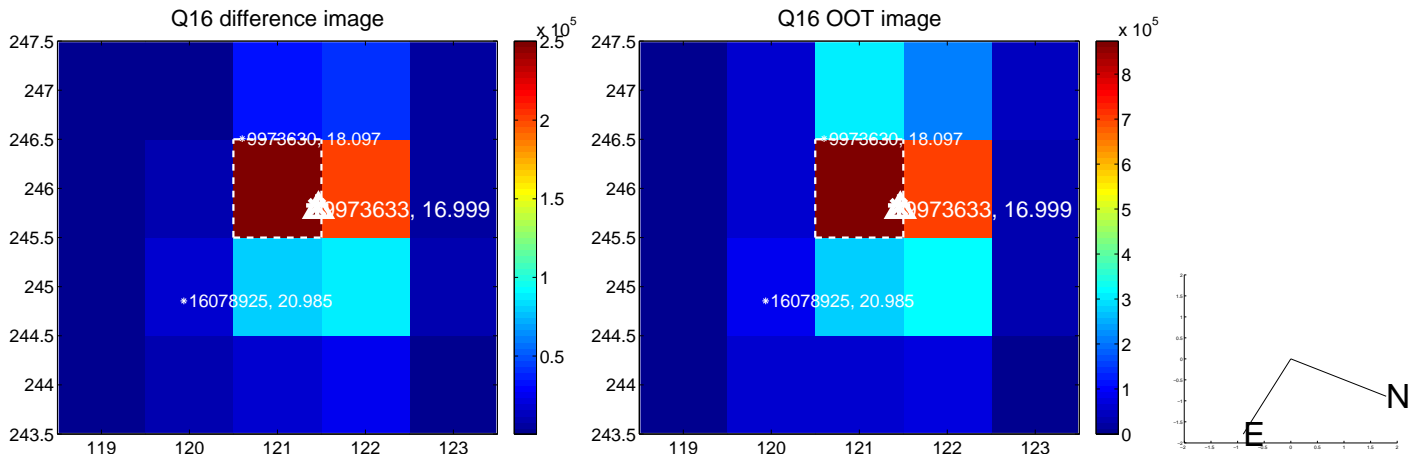
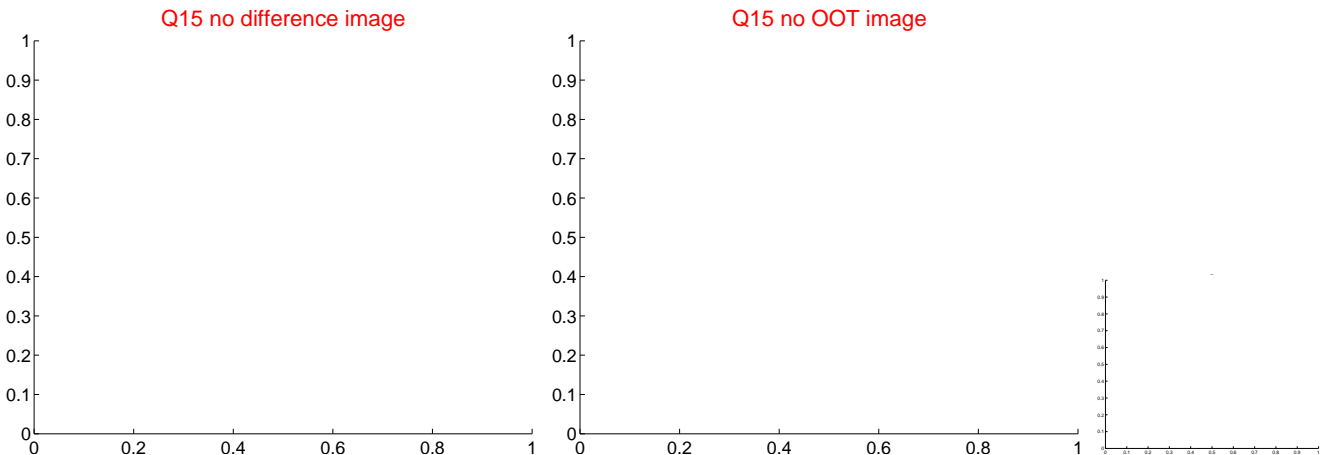
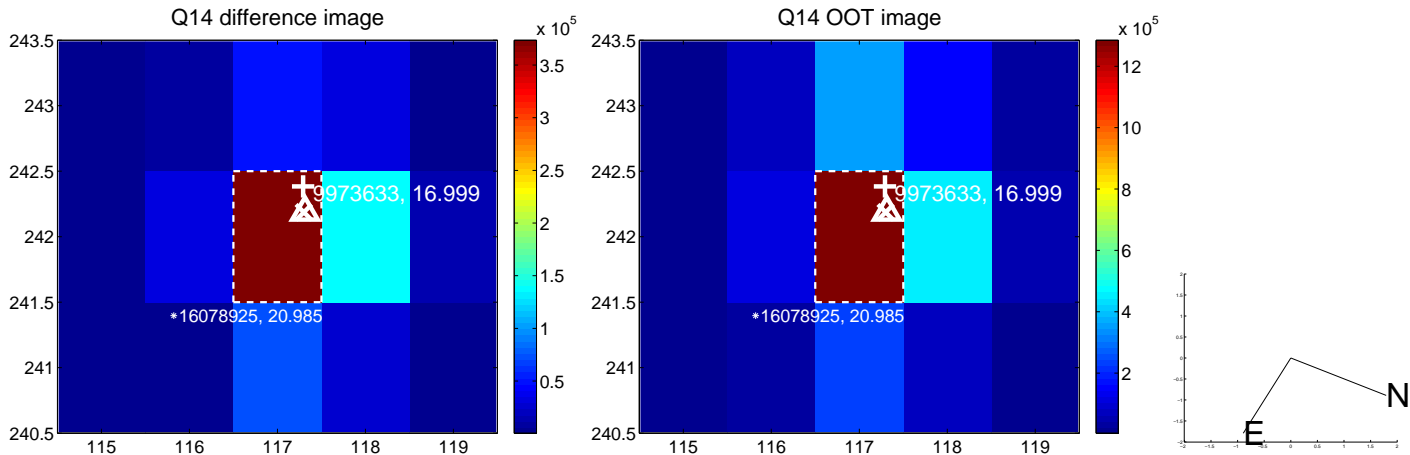
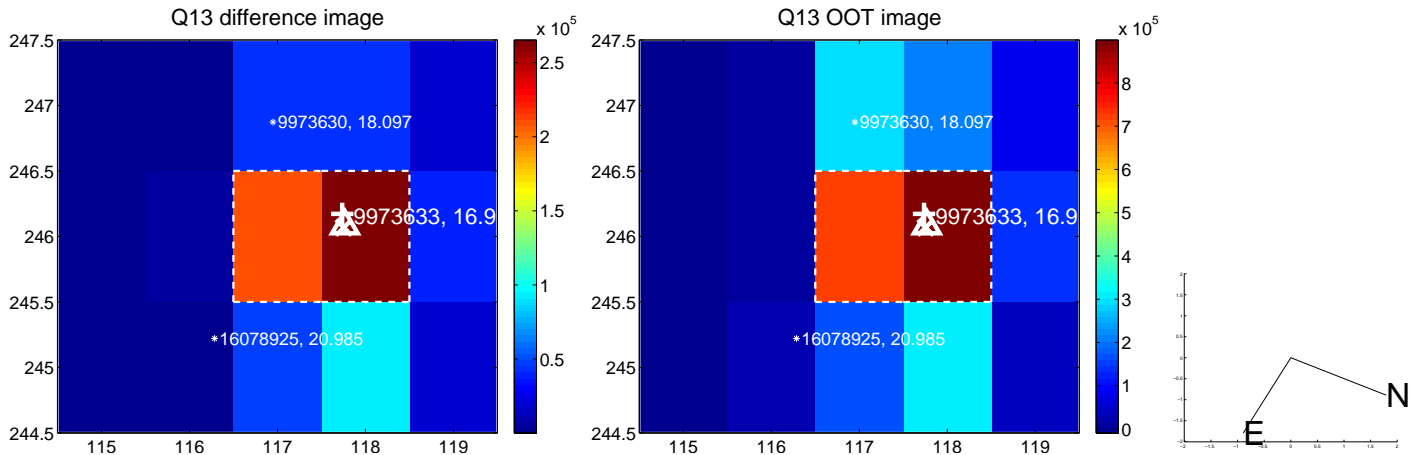
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



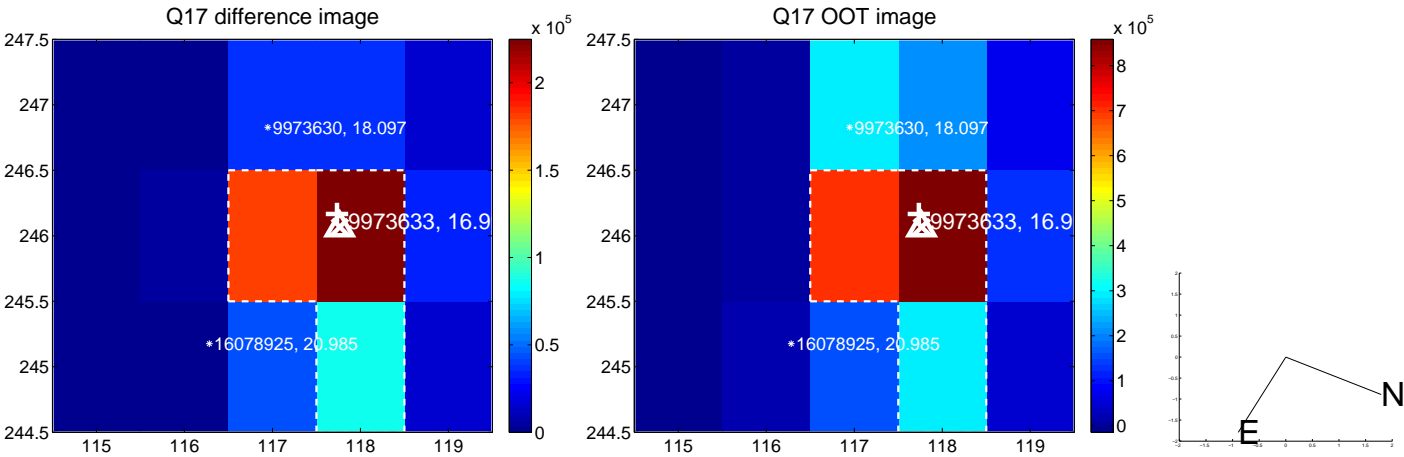
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



folded centroid time series figure for this object.

UKIRT Image

