

KIC 009773099

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})
009773099-01	OBS	No	361.472250	445.752786	9738.7	2.290	12.0	10.9	0.79	5564	7.66	0.59
009773099-02	OBS	No	0.606408	131.760603	151.3	7.277	10.4	13.0	0.79	5564	0.96	2955.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009773099-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
009773099-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET

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

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

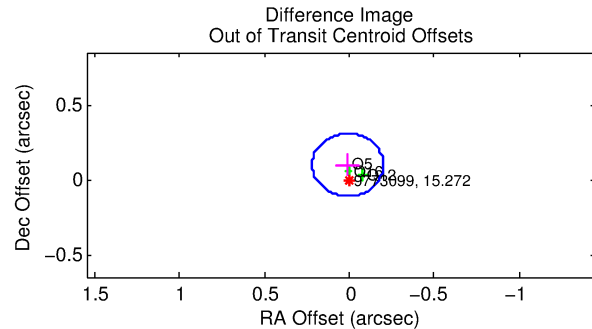
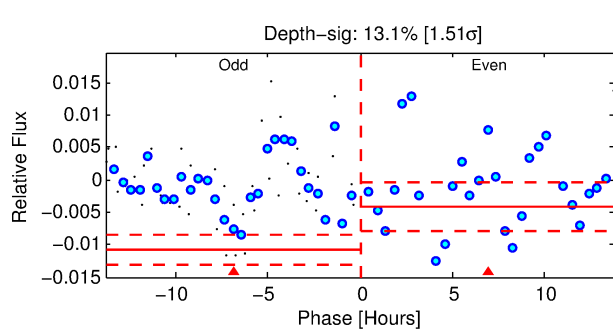
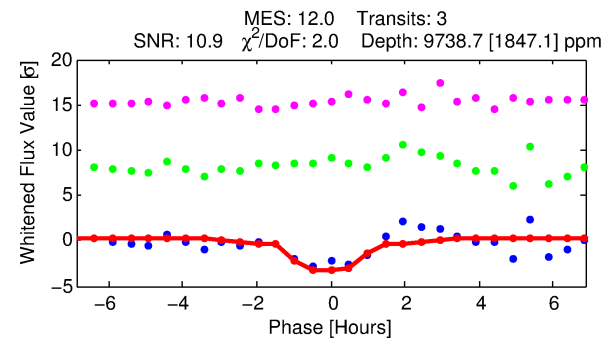
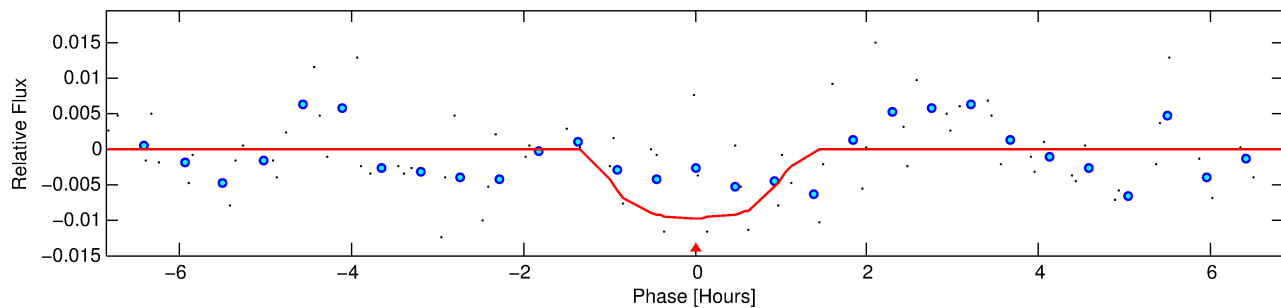
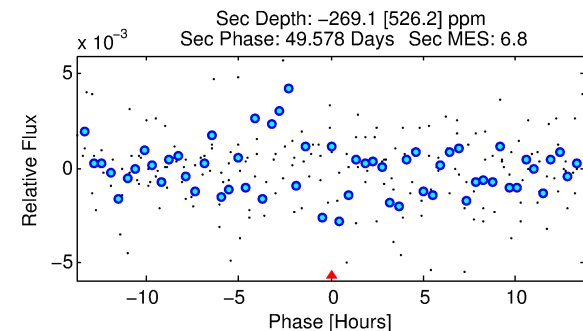
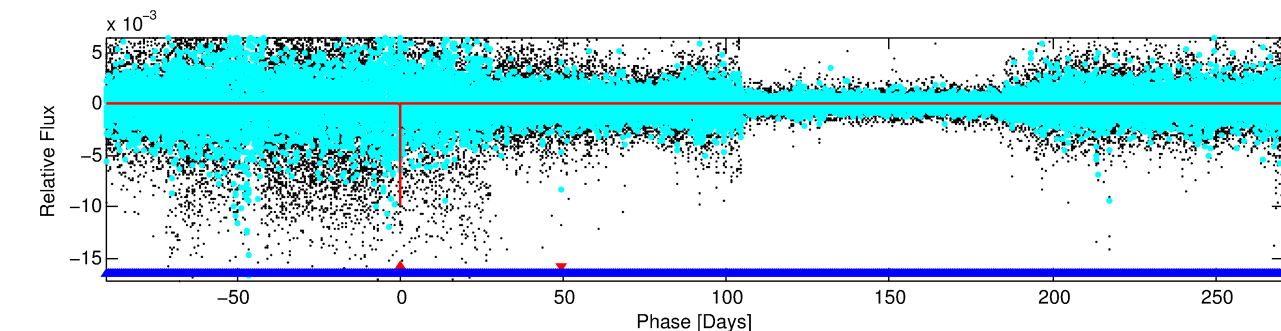
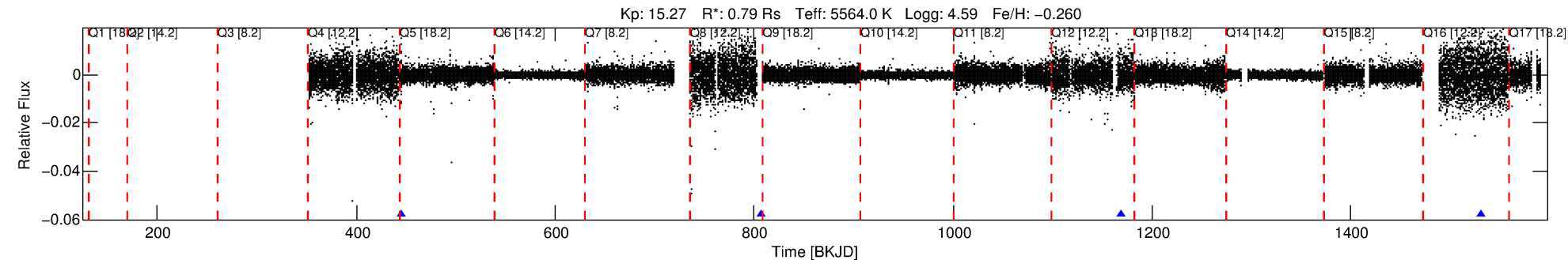
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009773099-01

No Significant Match Found

DV One-Page Summary

KIC: 9773099 Candidate: 1 of 2 Period: 361.472 d



DV Fit Results:

Period = 361.47225 [0.00459] d
Epoch = 445.7528 [0.0069] BKJD
Rp/R* = 0.0895 [0.2253]
a/R* = 1313.52 [13987.76]
b = 0.01 [780.06]
Seff = 0.59 [0.18]
Teq = 223 [17] K
Rp = 7.66 [19.38] Re
a = 0.9477 [0.1855] AU
Ag = N/A
Teffp = N/A

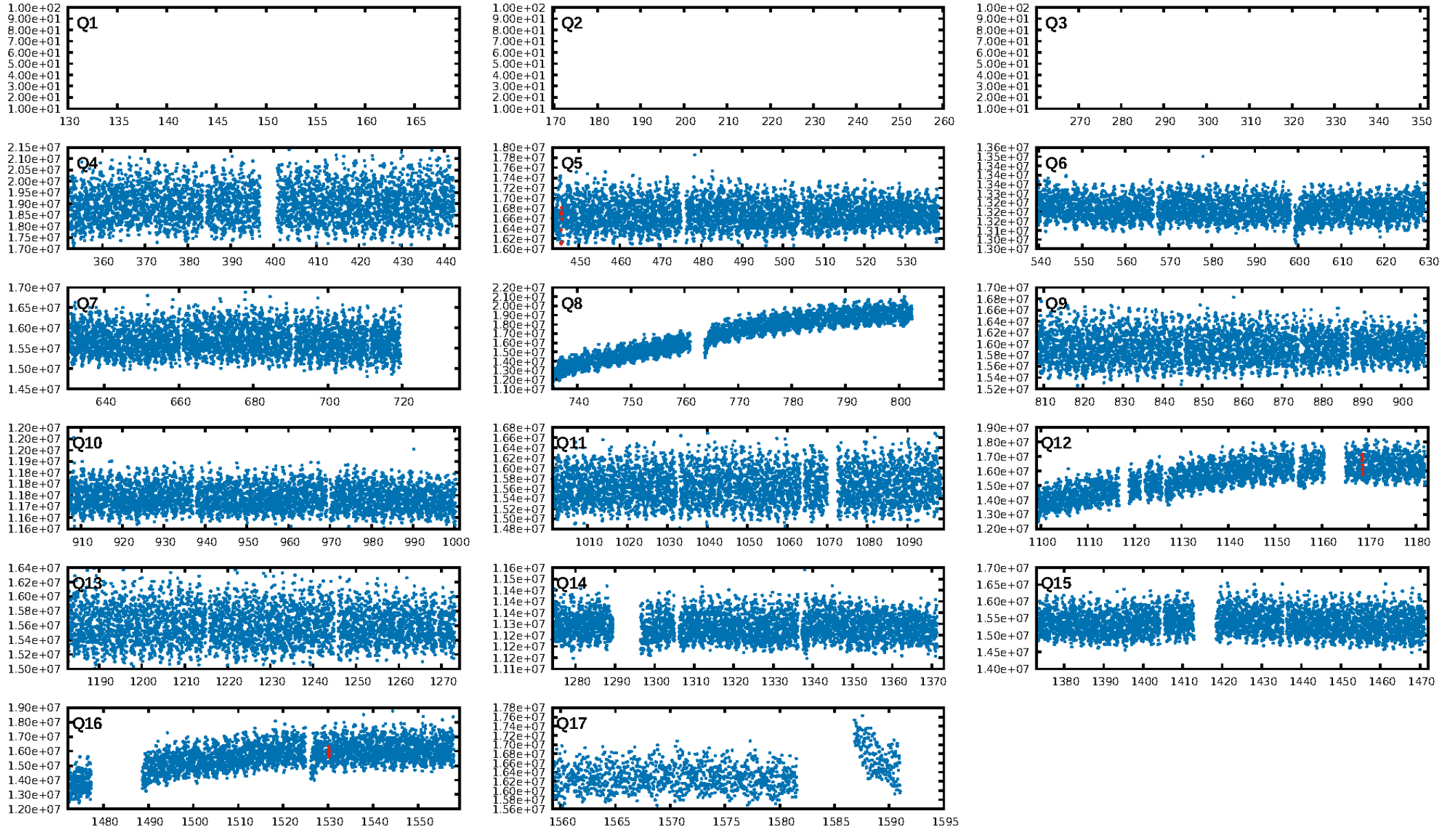
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1135.28σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 15.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.8804
Centroid-sig: 94.6%
Centroid-so: 2.525 arcsec [23.63σ]
OotOffset-rm: 0.099 arcsec [1.42σ]
OotOffset-st: 0/0/2/1 [3]
KicOffset-rm: 7.054 arcsec [71.83σ]
KicOffset-st: 0/0/2/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.00 [0/3]

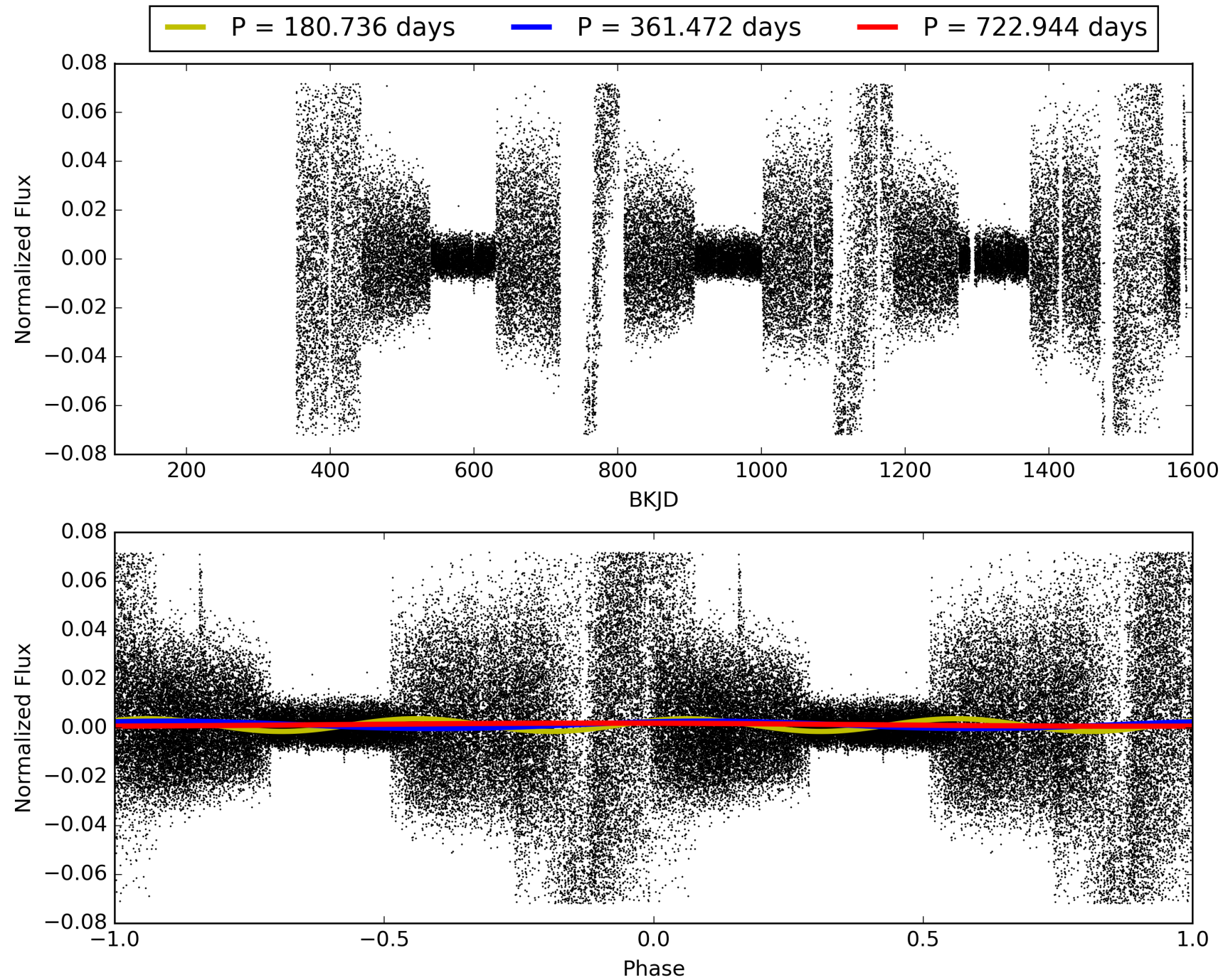
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:55:14 Z

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

TCE 009773099-01, PDC Light Curves

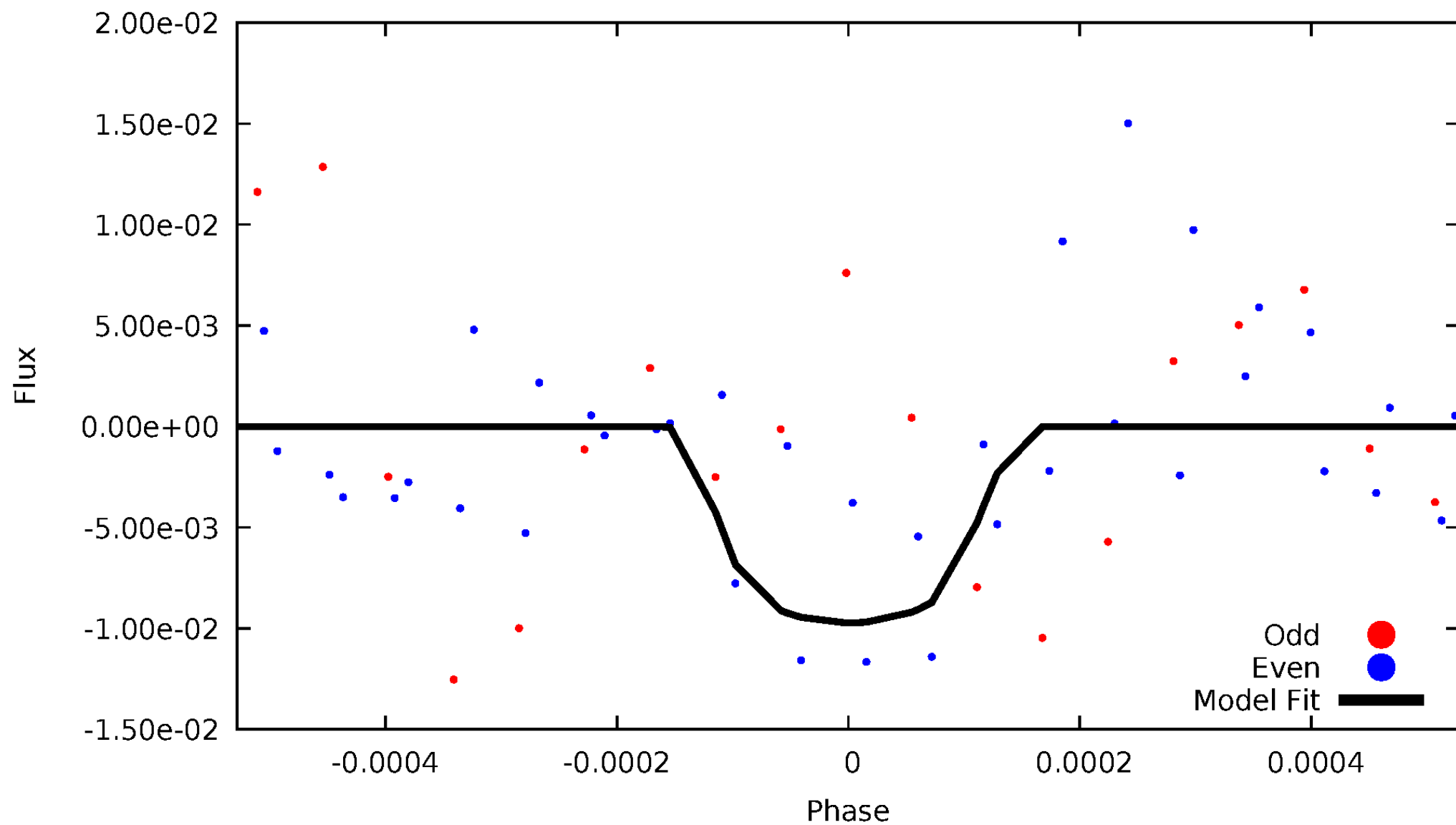


TCE 009773099-01



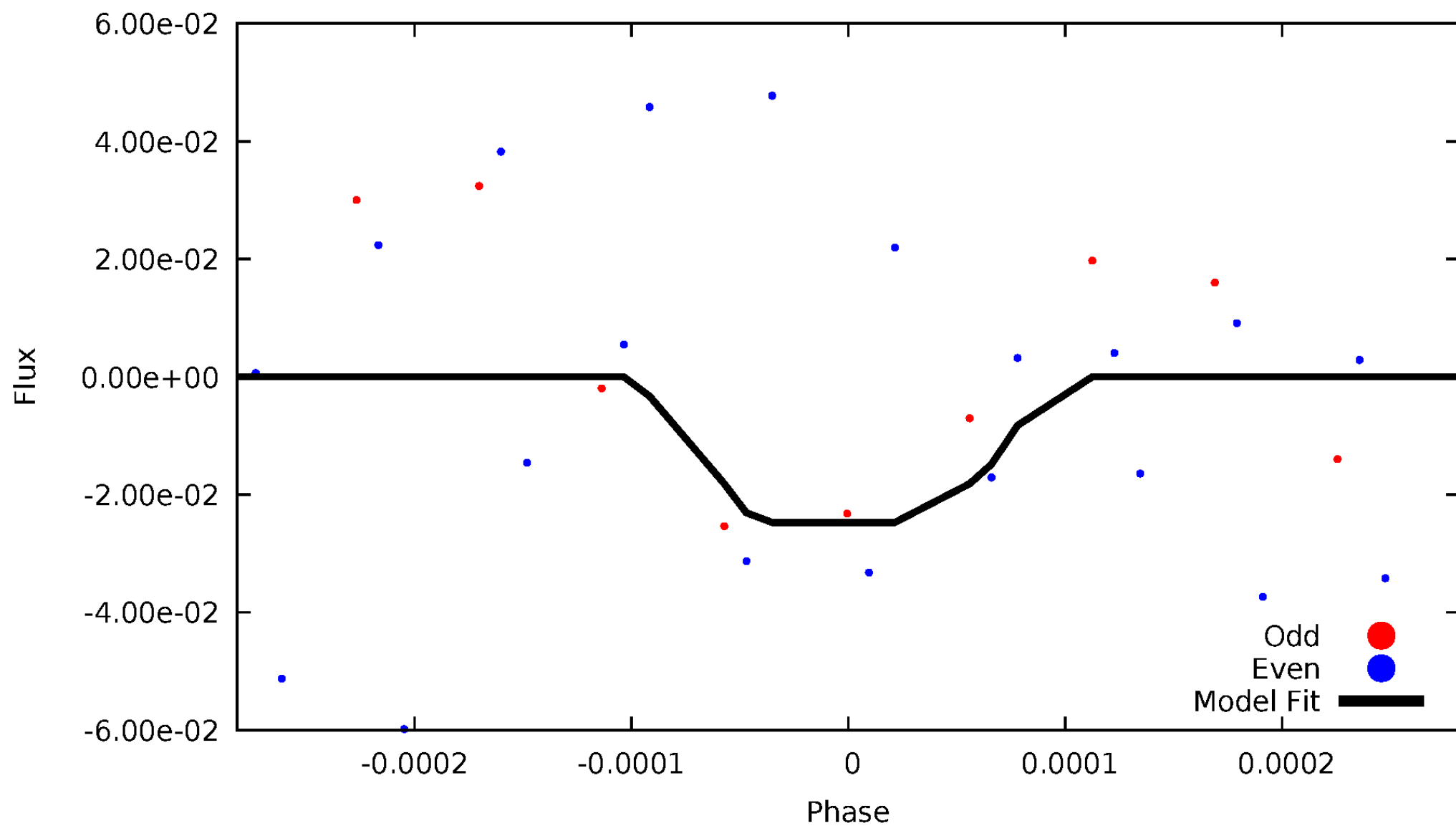
DV Odd/Even

TCE 009773099-01



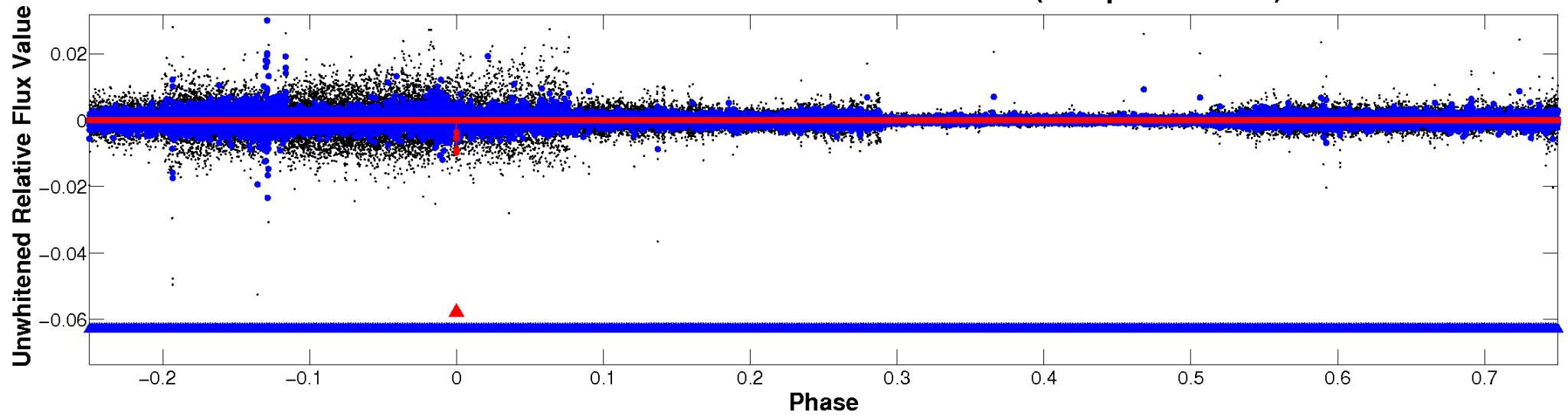
ALT Odd/Even

TCE 009773099-01

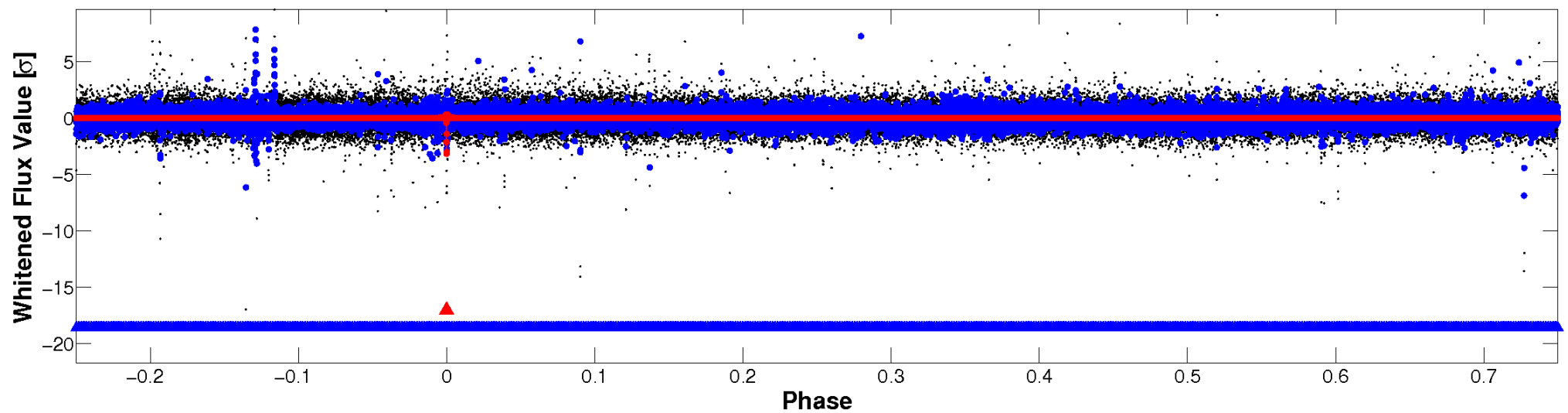


Non-Whitened Vs. Whitened Light Curve

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

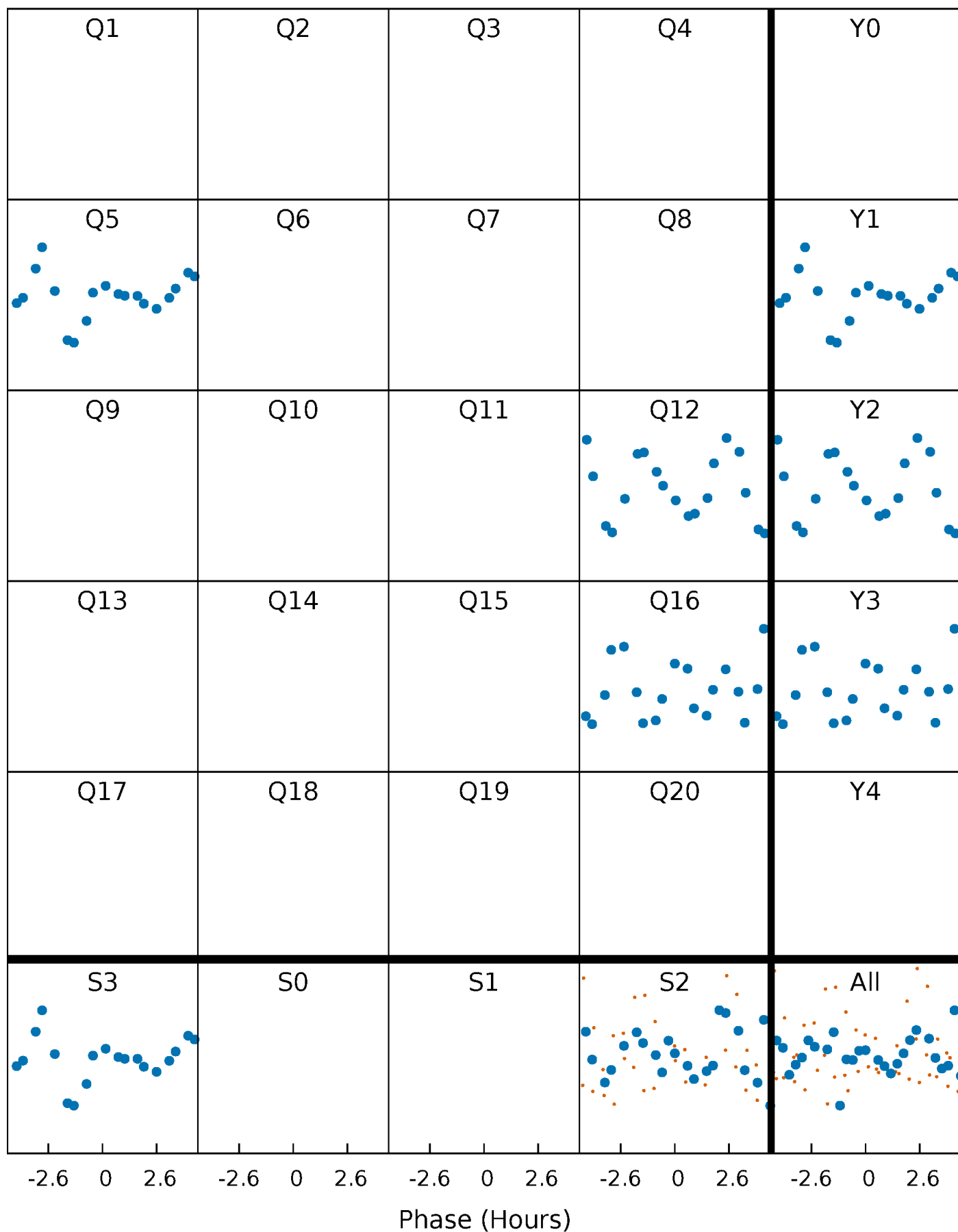


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



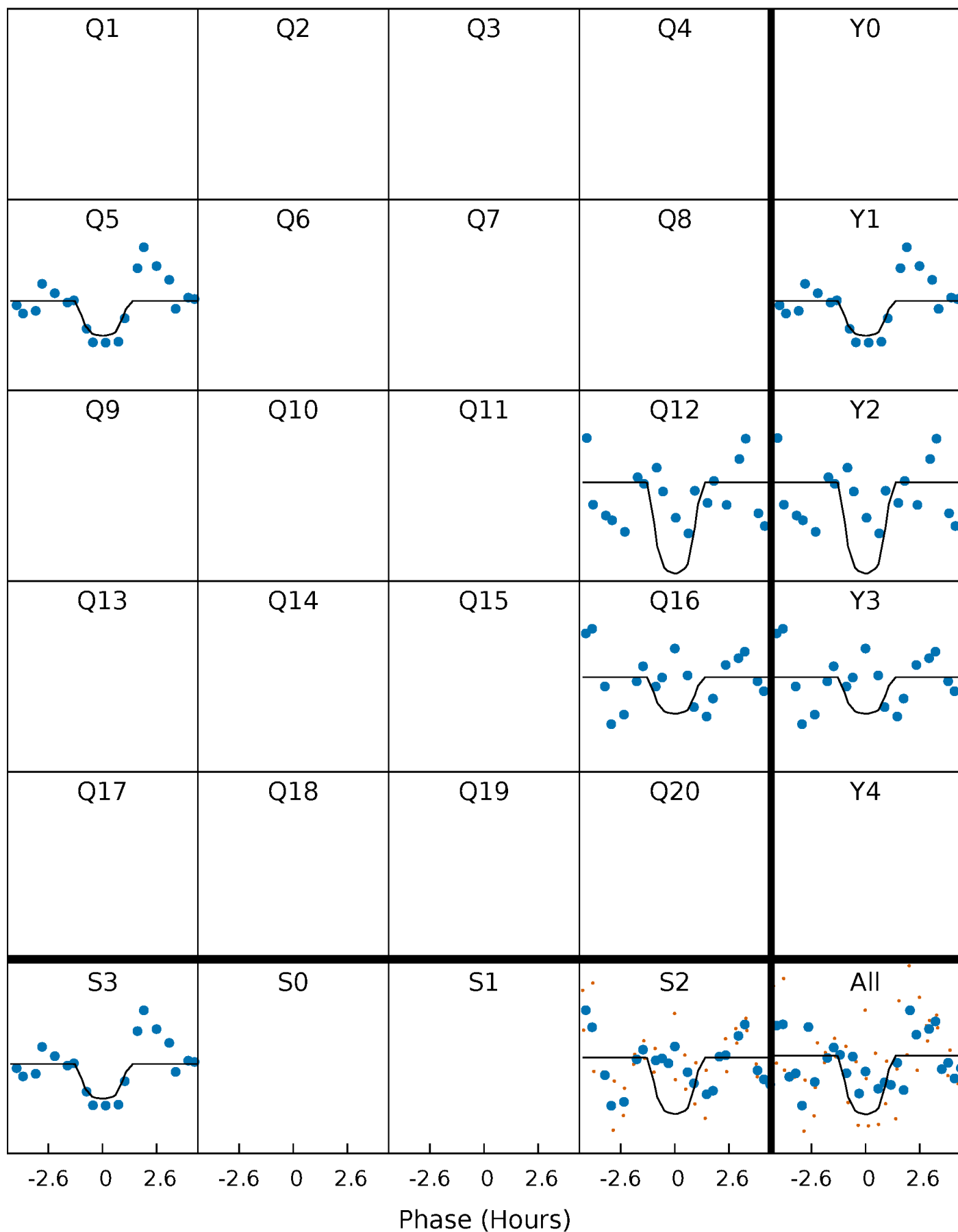
PDC Quarter-Phased Transit Curves

TCE 009773099-01 $P=361.472250$ Days $T_0=445.752786$ (BKJD)



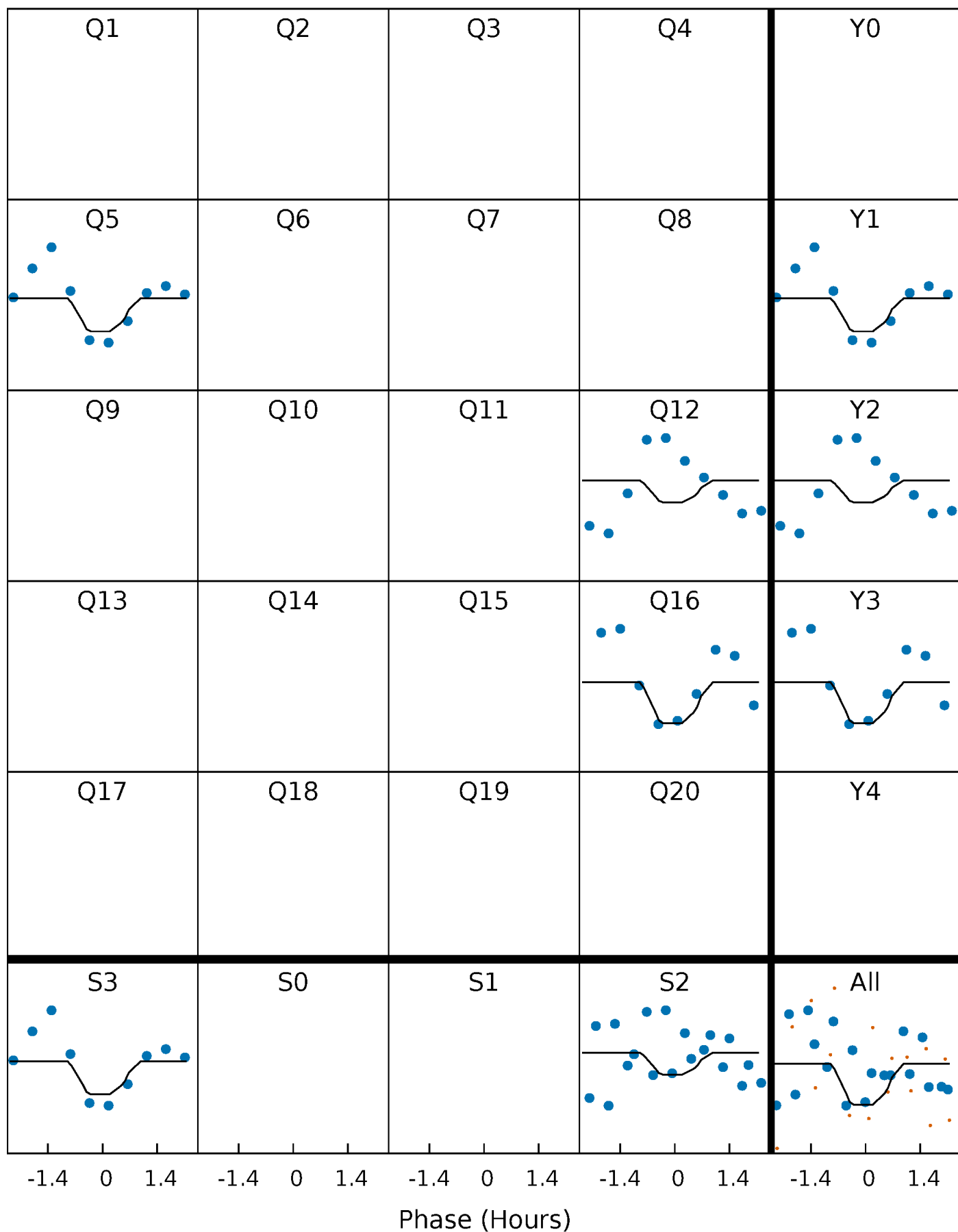
DV Quarter-Phased Transit Curves

TCE 009773099-01 P=361.472250 Days $T_0=445.752786$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

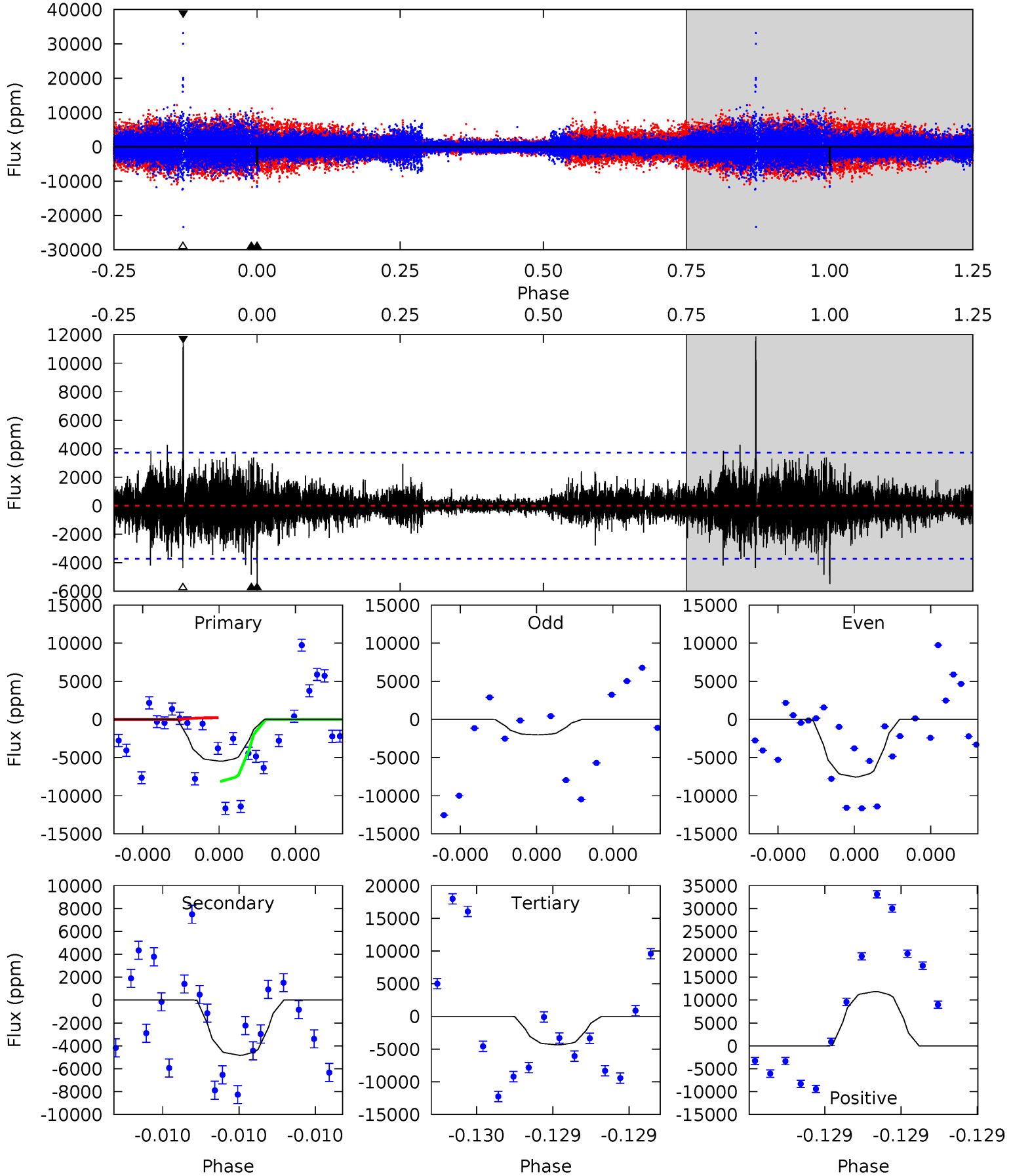
TCE 009773099-01 P=361.478186 Days $T_0=445.693678$ (BKJD)



DV Model-Shift Uniqueness Test

009773099-01, P = 361.472250 Days, E = 84.280536 Days

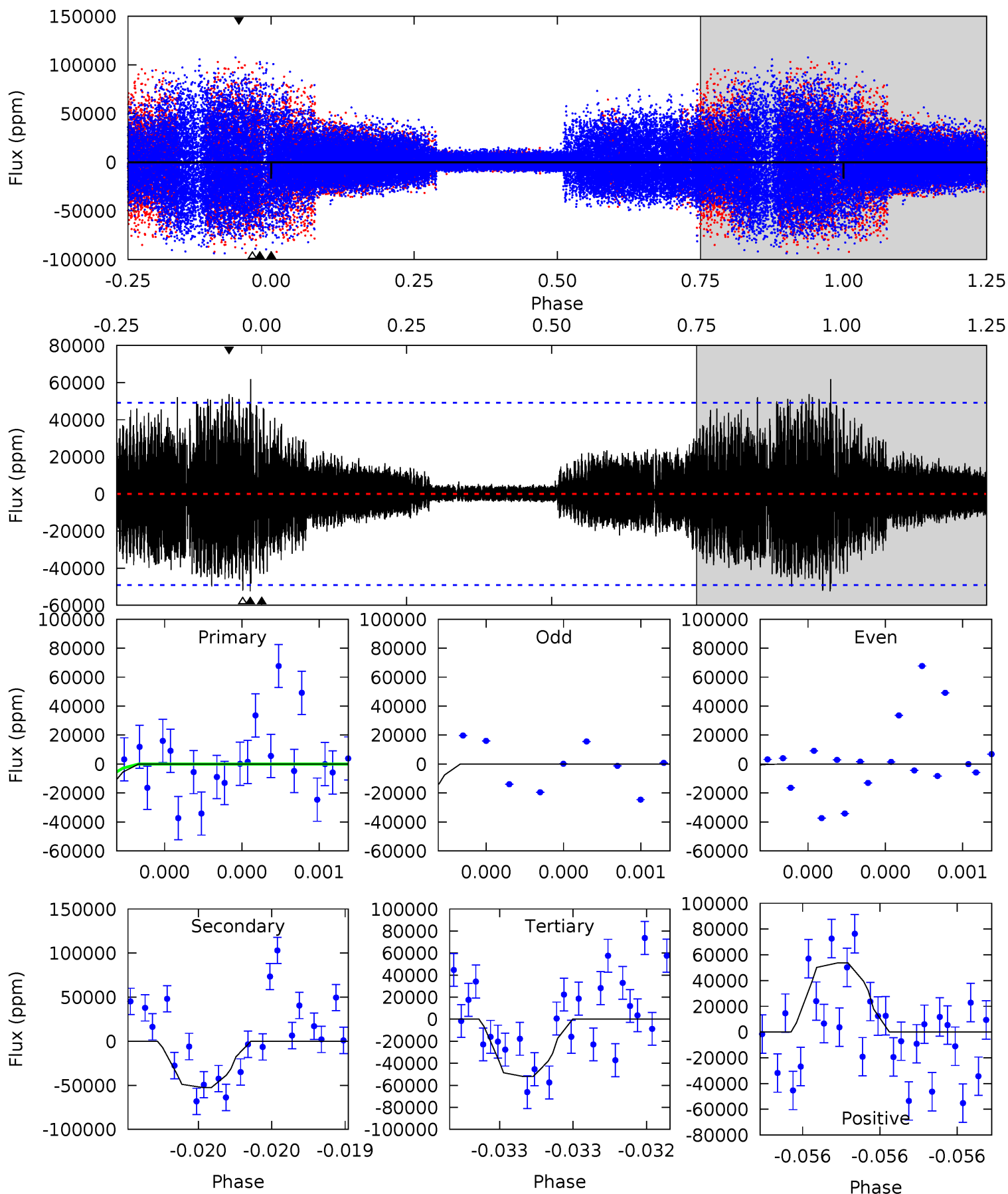
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.36	7.37	6.64	18.1	5.67	3.63	1.12	1.72	-9.74	0.73	-10.7	3.61	1.61	0.68	5.25



Alt Model-Shift Uniqueness Test

009773099-01, P = 361.478186 Days, E = 84.215492 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.95	6.14	6.11	6.30	5.76	3.76	1.38	-4.15	-4.35	0.04	-0.16	1.14	0.28	0.54	0.19



Stellar Parameters For KIC 009773099

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5564^{+183}_{-183}	$4.587^{+0.038}_{-0.152}$	$-0.260^{+0.300}_{-0.300}$	$0.785^{+0.185}_{-0.062}$	$0.878^{+0.090}_{-0.110}$	$2.558^{+0.506}_{-1.128}$
	+3%/-3%	+1%/-3%	+115%/-115%	+24%/-8%	+10%/-13%	+20%/-44%
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 009773099-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-4833 ± 656	$16.29^{+16.62}_{-11.44}$	318^{+18}_{-15}	3788^{+2535}_{-719}	9301^{+93934}_{-7113}
Alt.	-52394 ± 8527	$19.12^{+19.03}_{-12.39}$	319^{+17}_{-15}	5798^{+5148}_{-1545}	$74349^{+536400}_{-57258}$

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

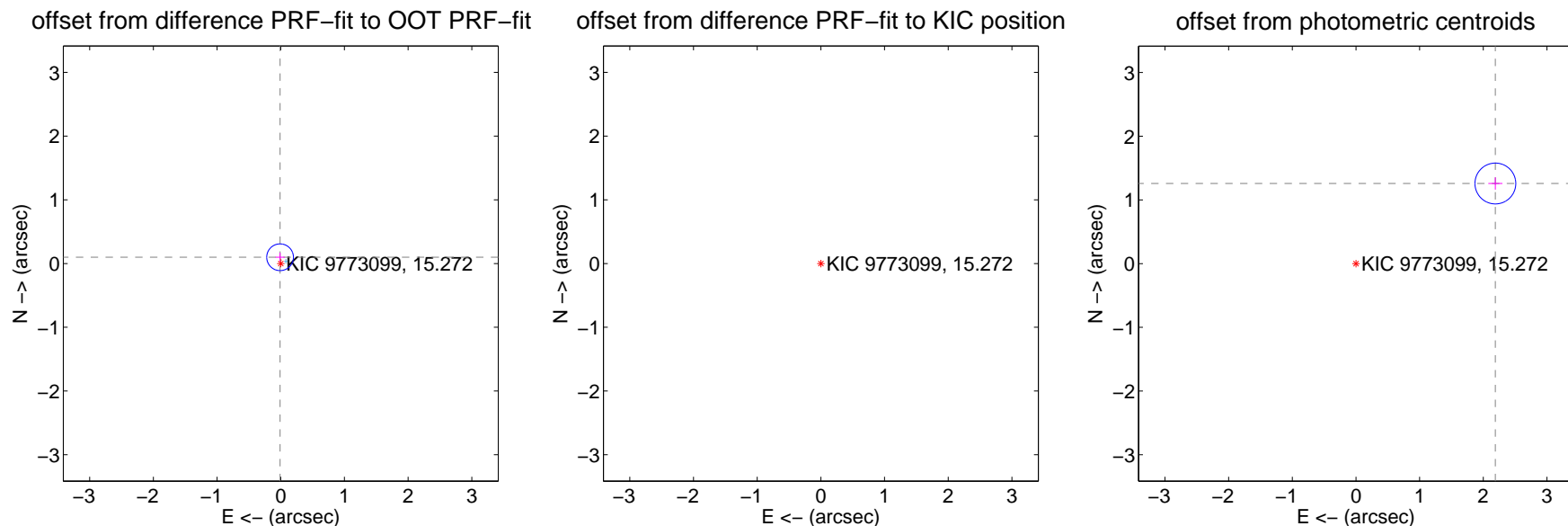
DV Centroid Data

Supplemental centroid analysis for 009773099-01. Kepler magnitude: 15.27. Transit SNR 10.92

There are 1 quarters with good PRF difference image offsets

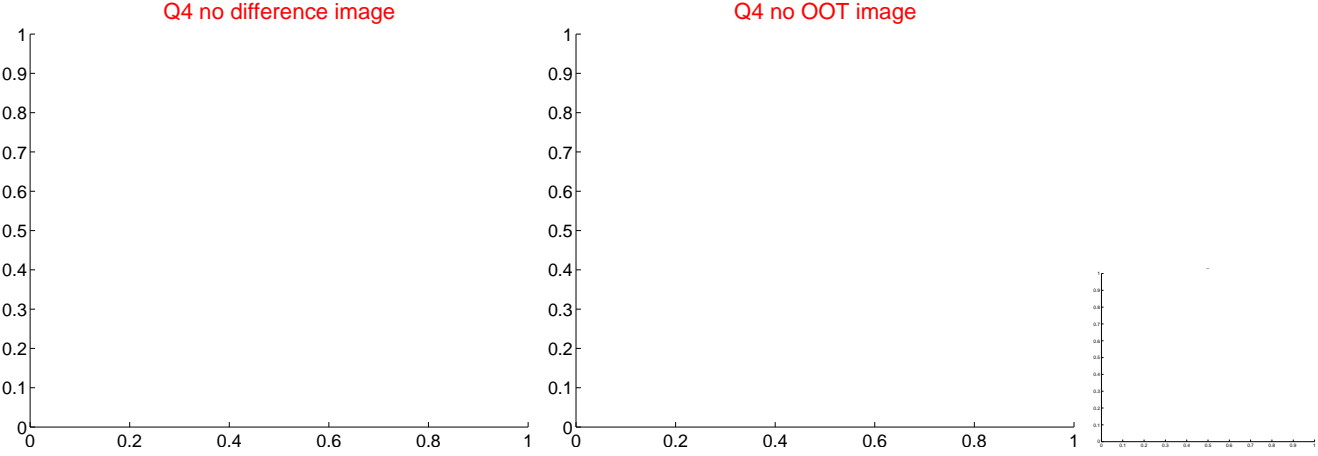
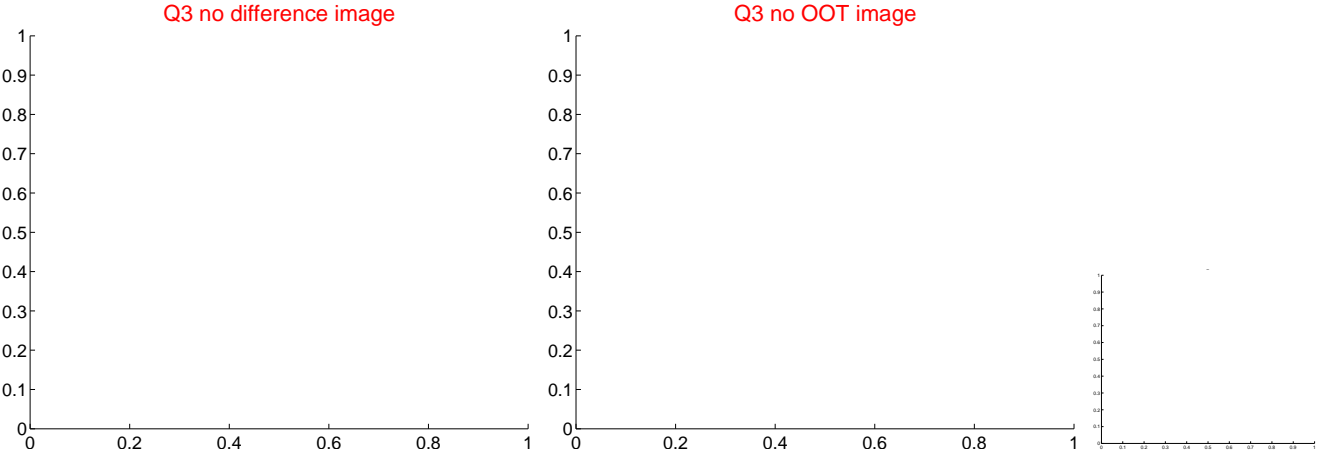
The OOT PRF centroid is offset from the target star catalog position by about 6.77 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.099 ± 0.070	1.42	0.011 ± 0.071	0.099 ± 0.069
PRF-fit source offset from KIC position	7.054 ± 0.098	71.83	-4.937 ± 0.070	5.038 ± 0.106
photometric centroid source offset	2.53 ± 0.11	23.63	-2.19 ± 0.11	1.26 ± 0.10

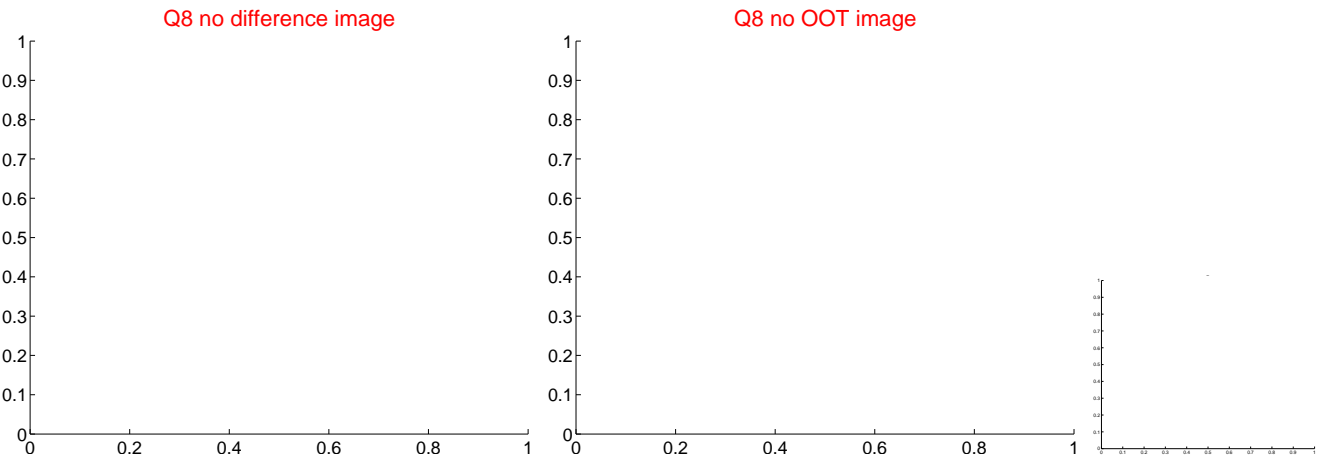
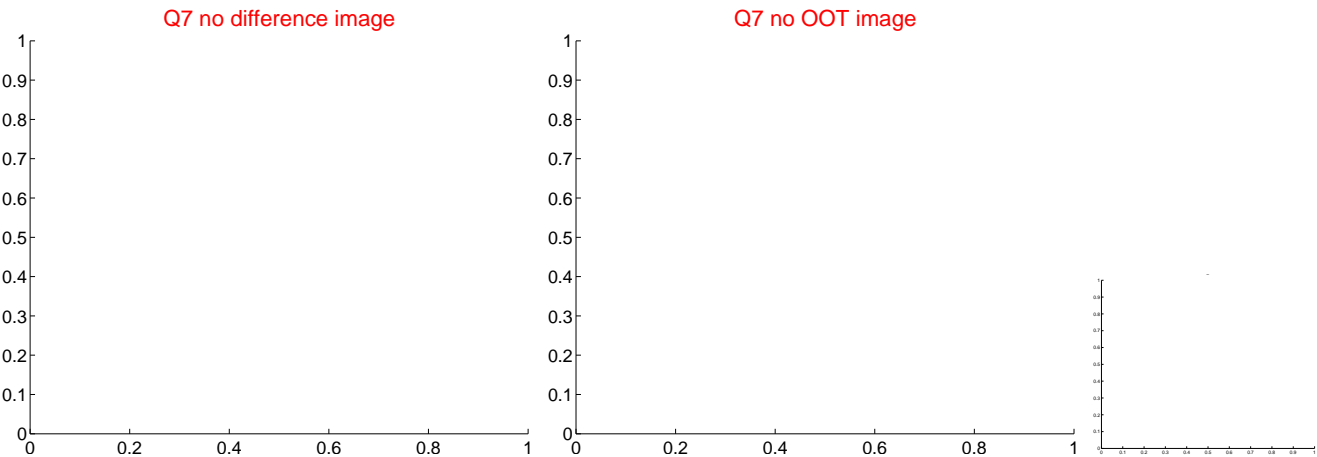
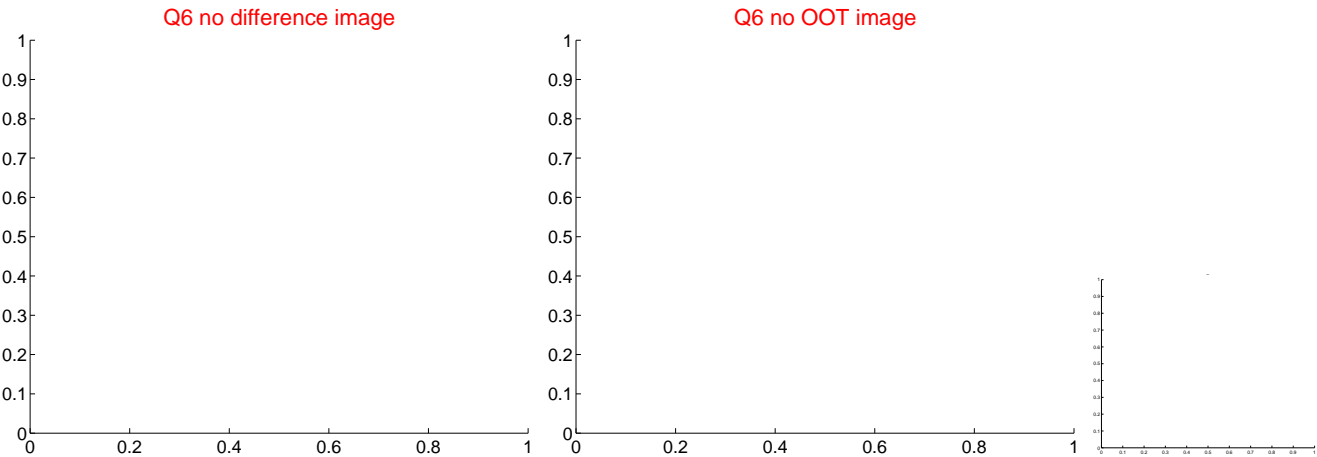
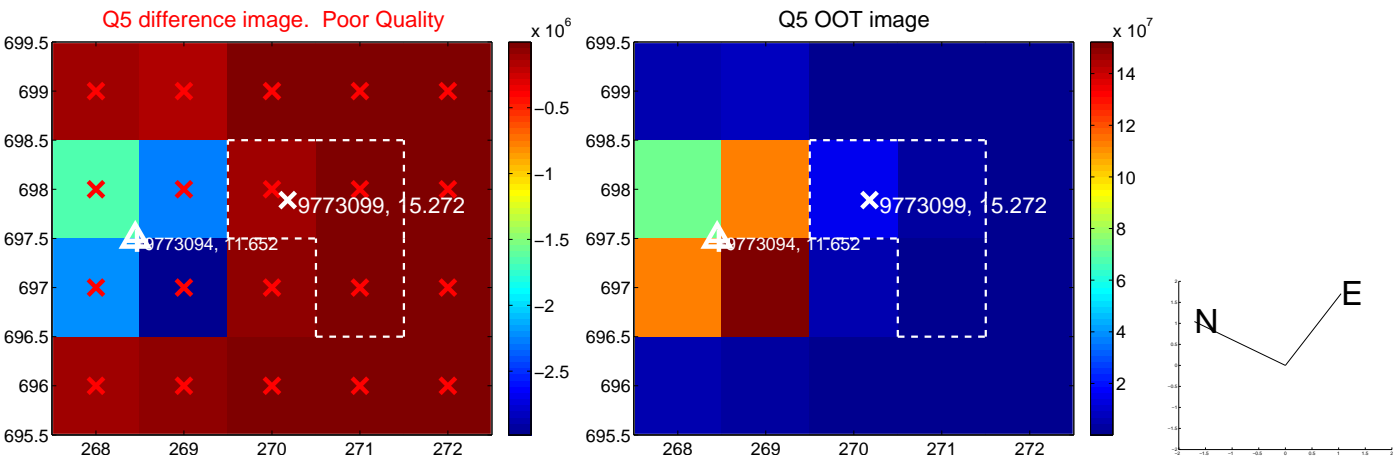


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

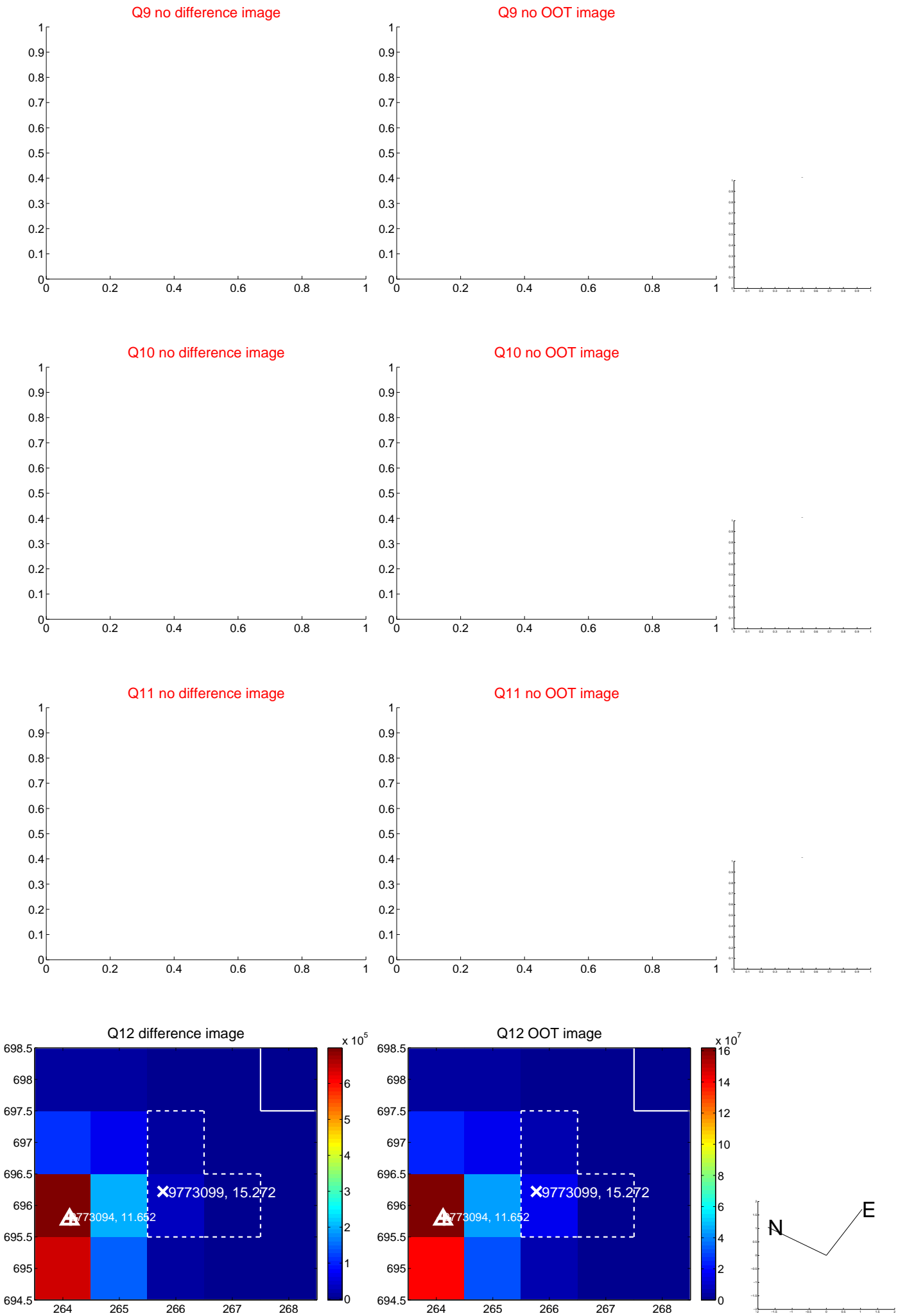
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



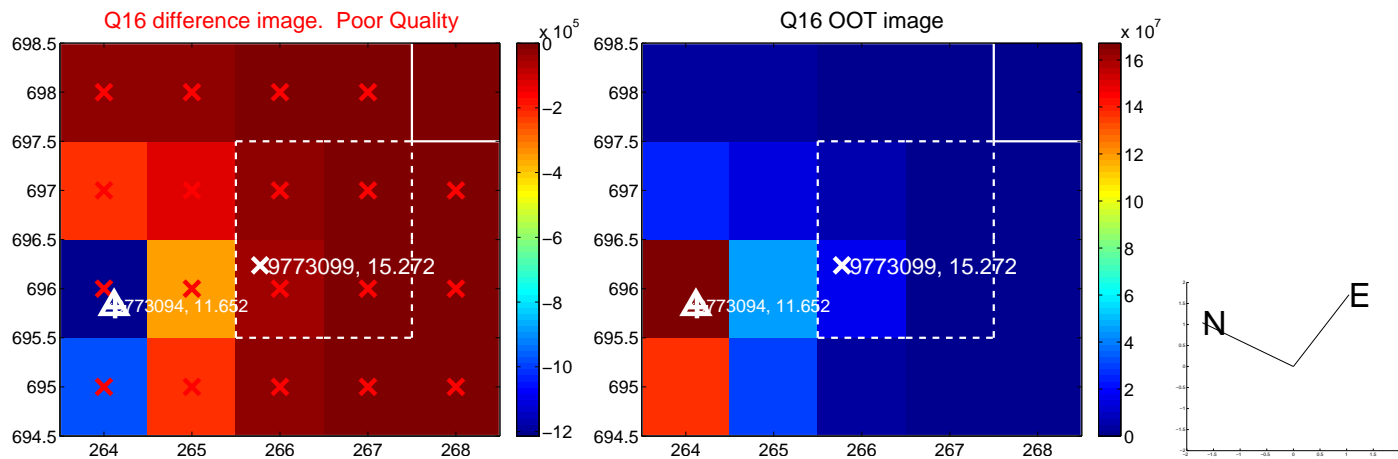
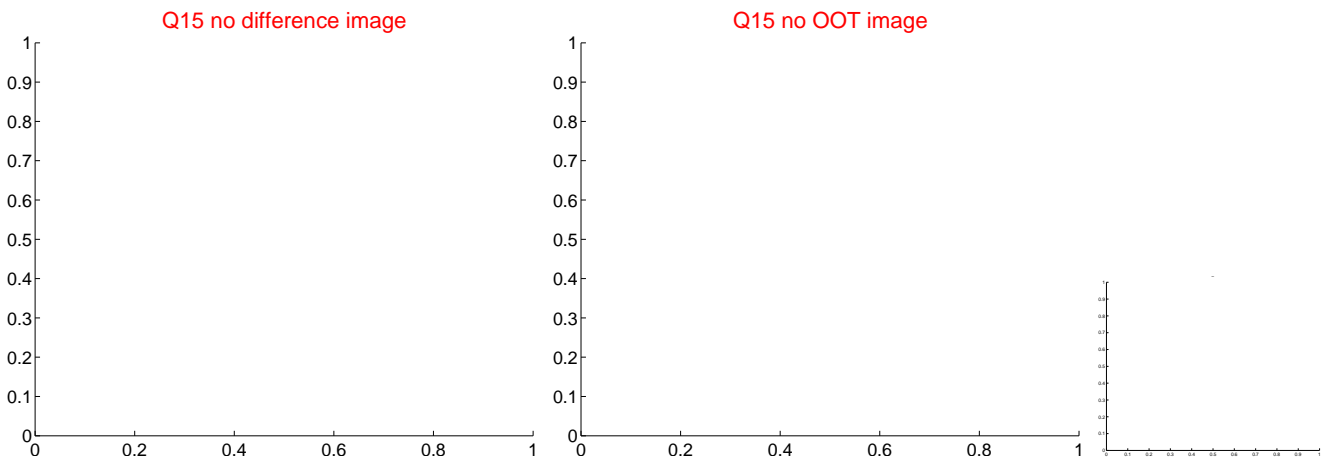
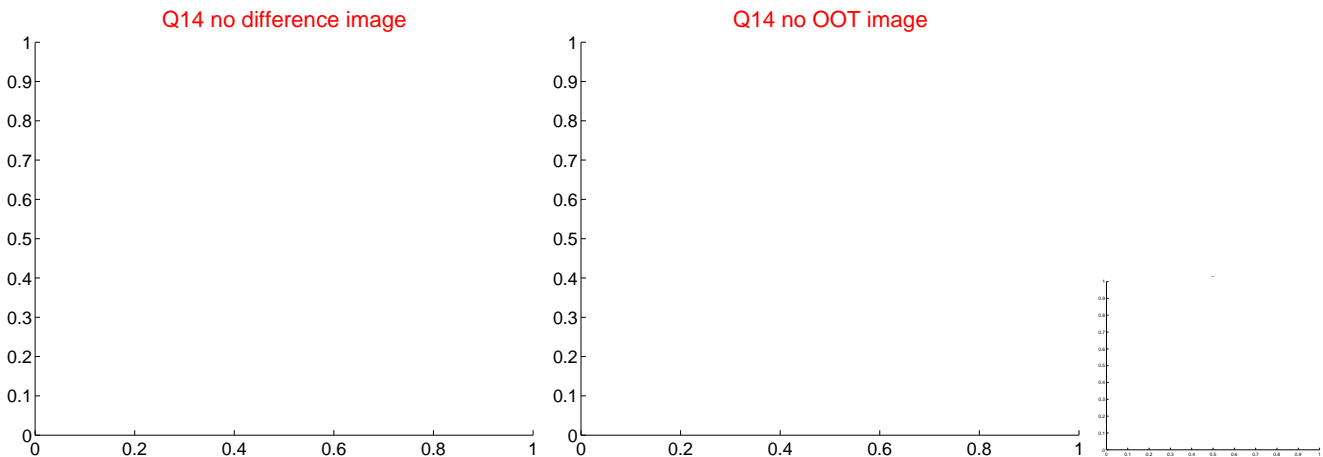
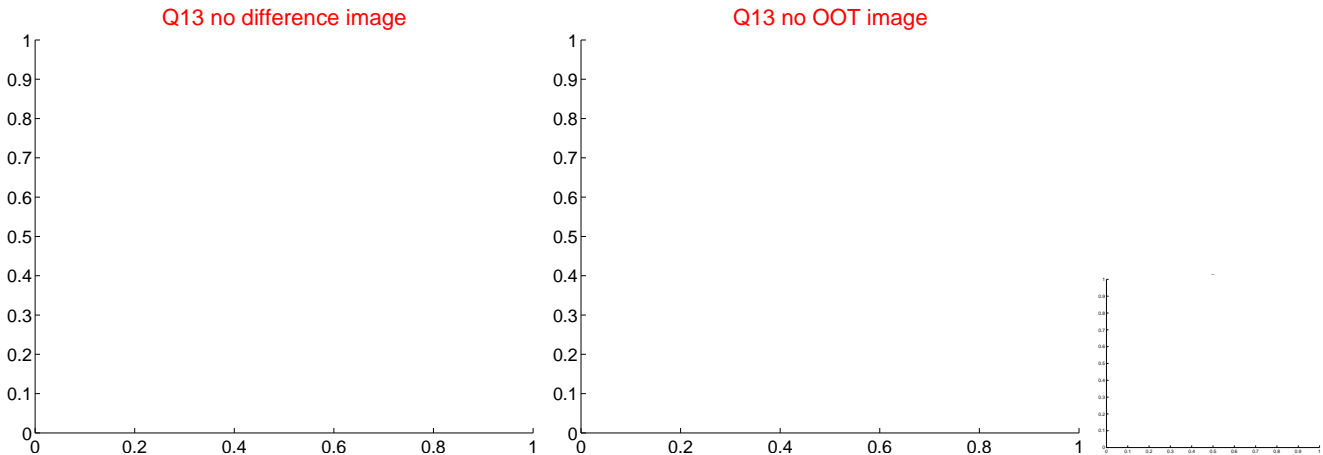
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



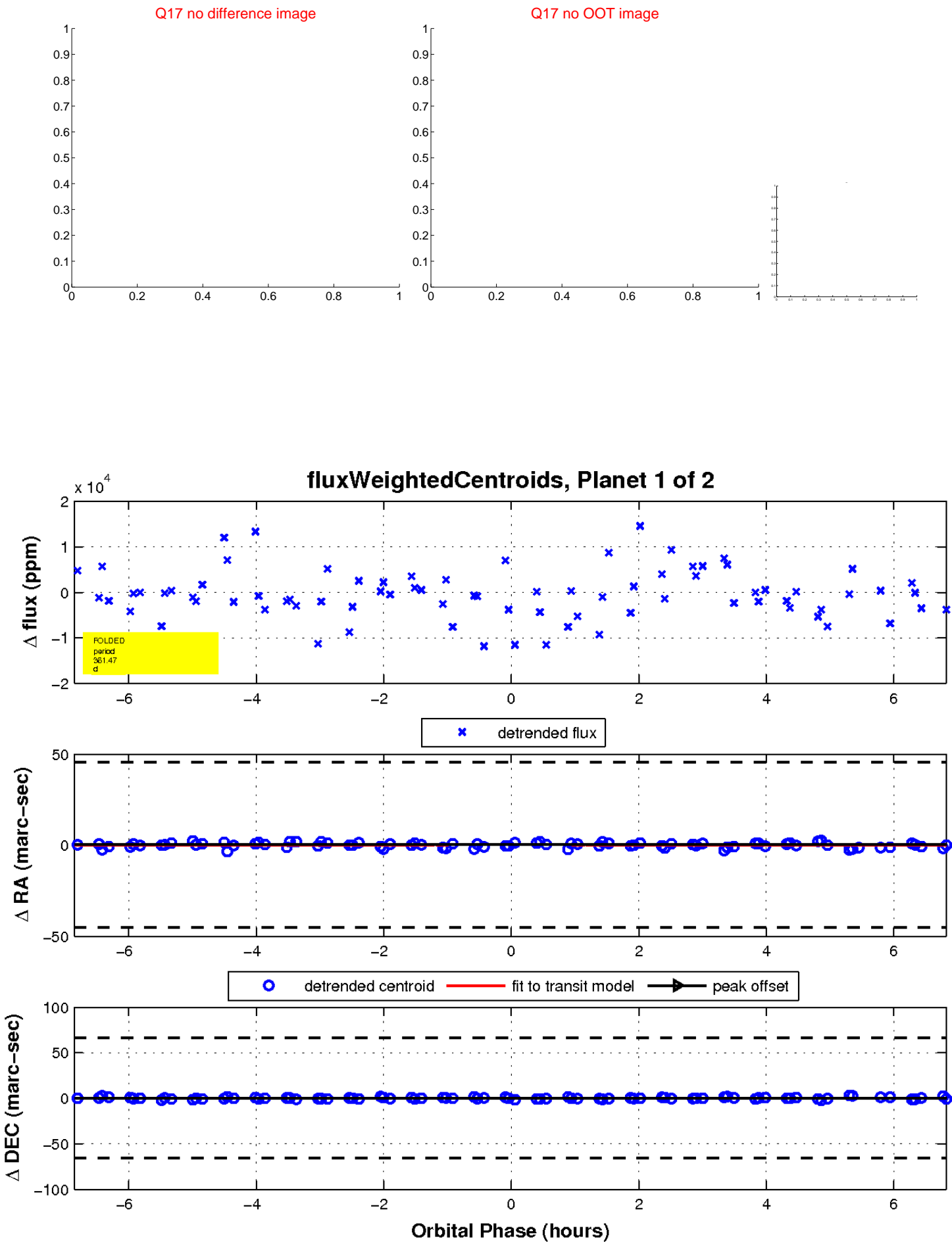
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

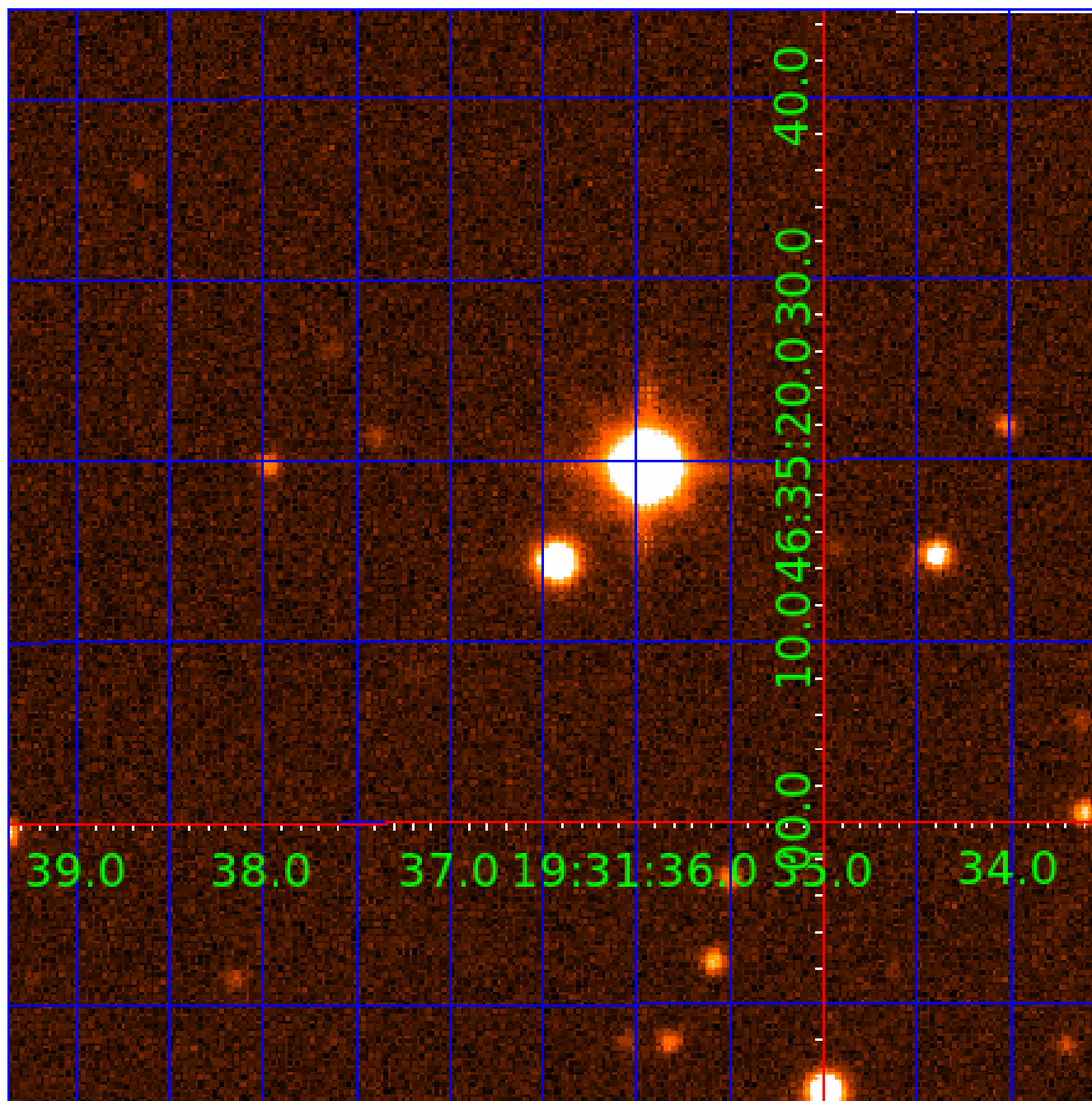


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009773099

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})
009773099-01	OBS	No	361.472250	445.752786	9738.7	2.290	12.0	10.9	0.79	5564	7.66	0.59
009773099-02	OBS	No	0.606408	131.760603	151.3	7.277	10.4	13.0	0.79	5564	0.96	2955.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009773099-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
009773099-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET

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

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

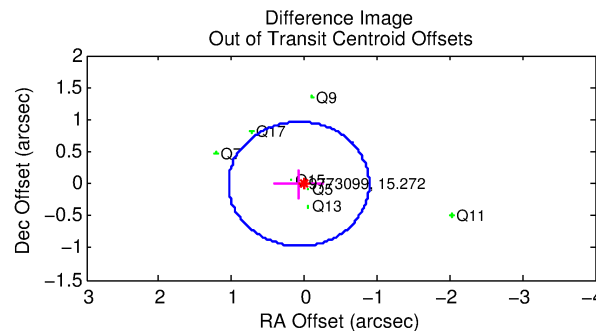
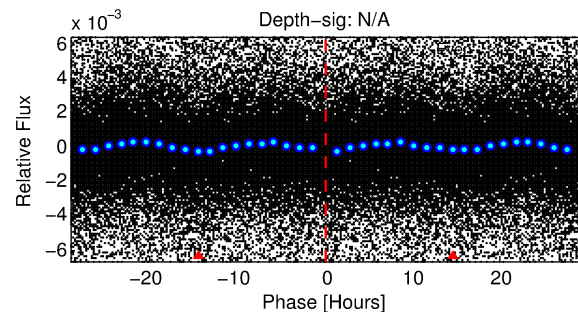
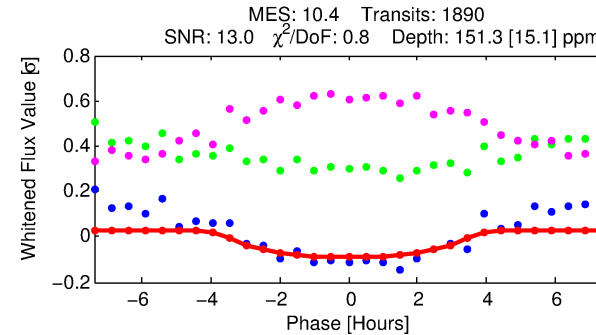
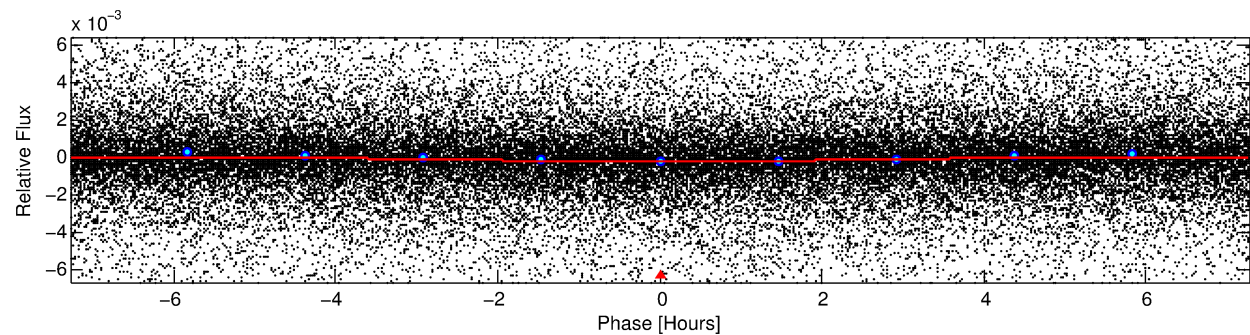
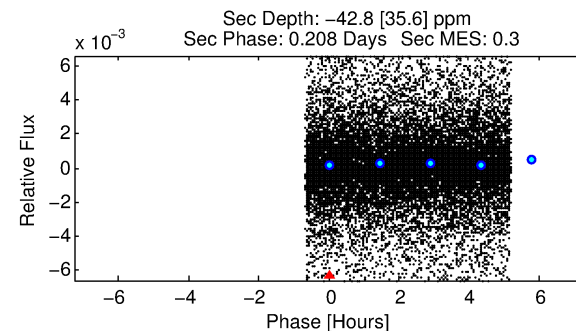
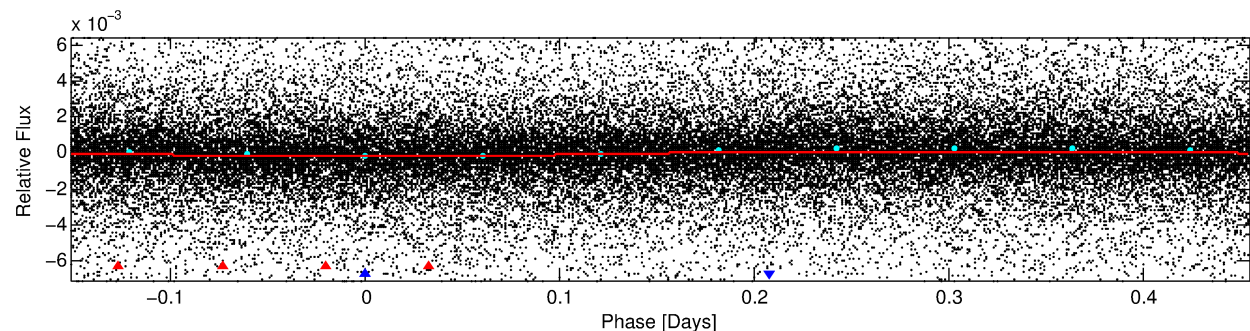
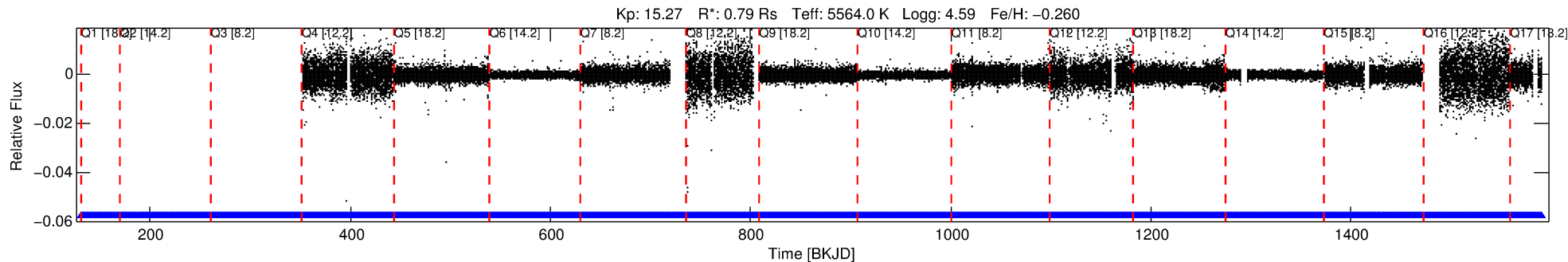
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009773099-02

No Significant Match Found

DV One-Page Summary

KIC: 9773099 Candidate: 2 of 2 Period: 0.606 d



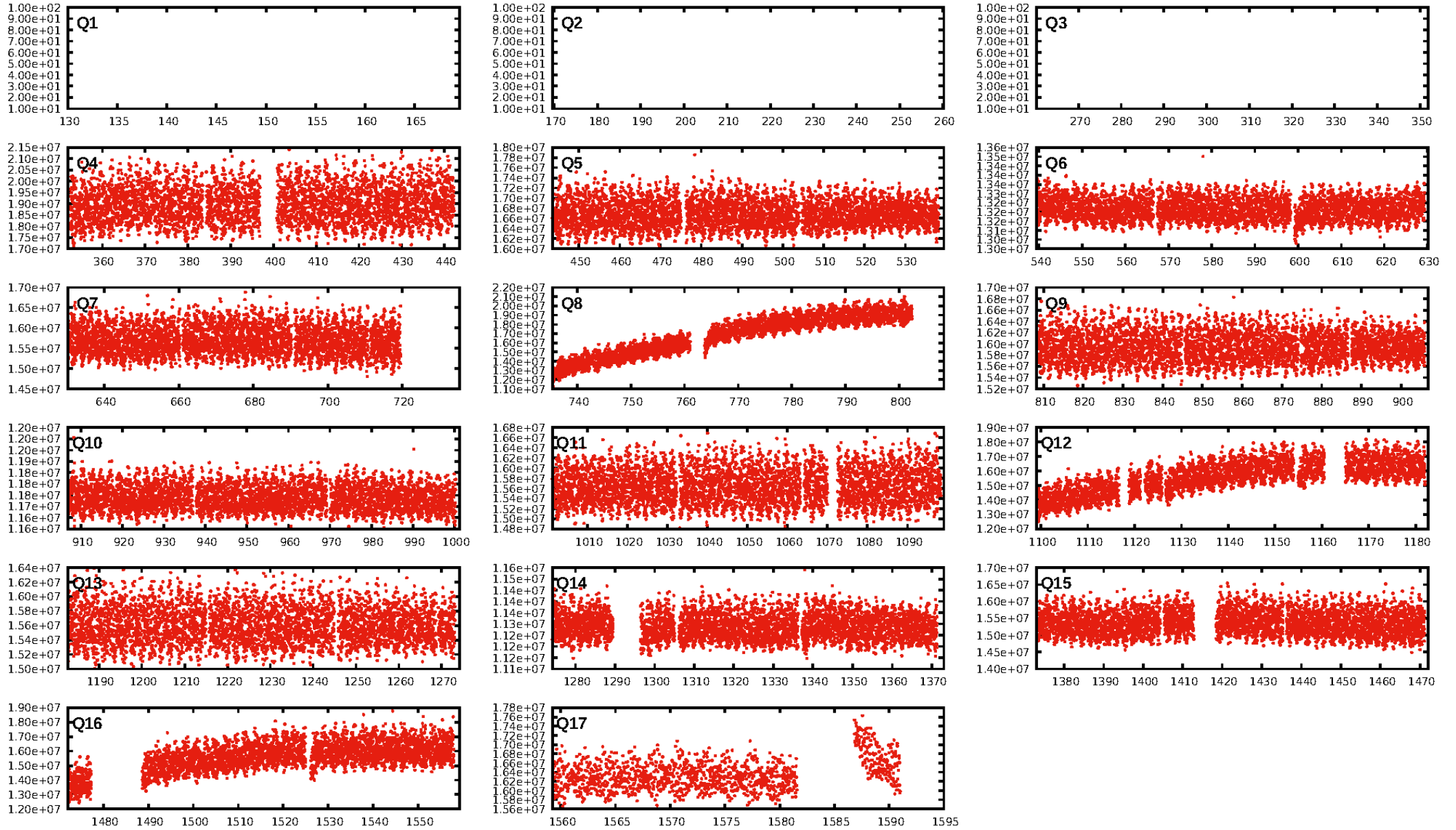
DV Fit Results:

Period = 0.60641 [0.00001] d
Epoch = 131.7606 [0.0064] BKJD
Rp/R* = 0.0112 [0.0066]
a/R* = 1.00 [0.01]
b = 0.18 [14.14]
Seff = 2955.76 [917.88]
Teq = 1880 [146] K
Rp = 0.96 [0.61] Re
a = 0.0134 [0.0026] AU
Ag = N/A
Teffp = N/A

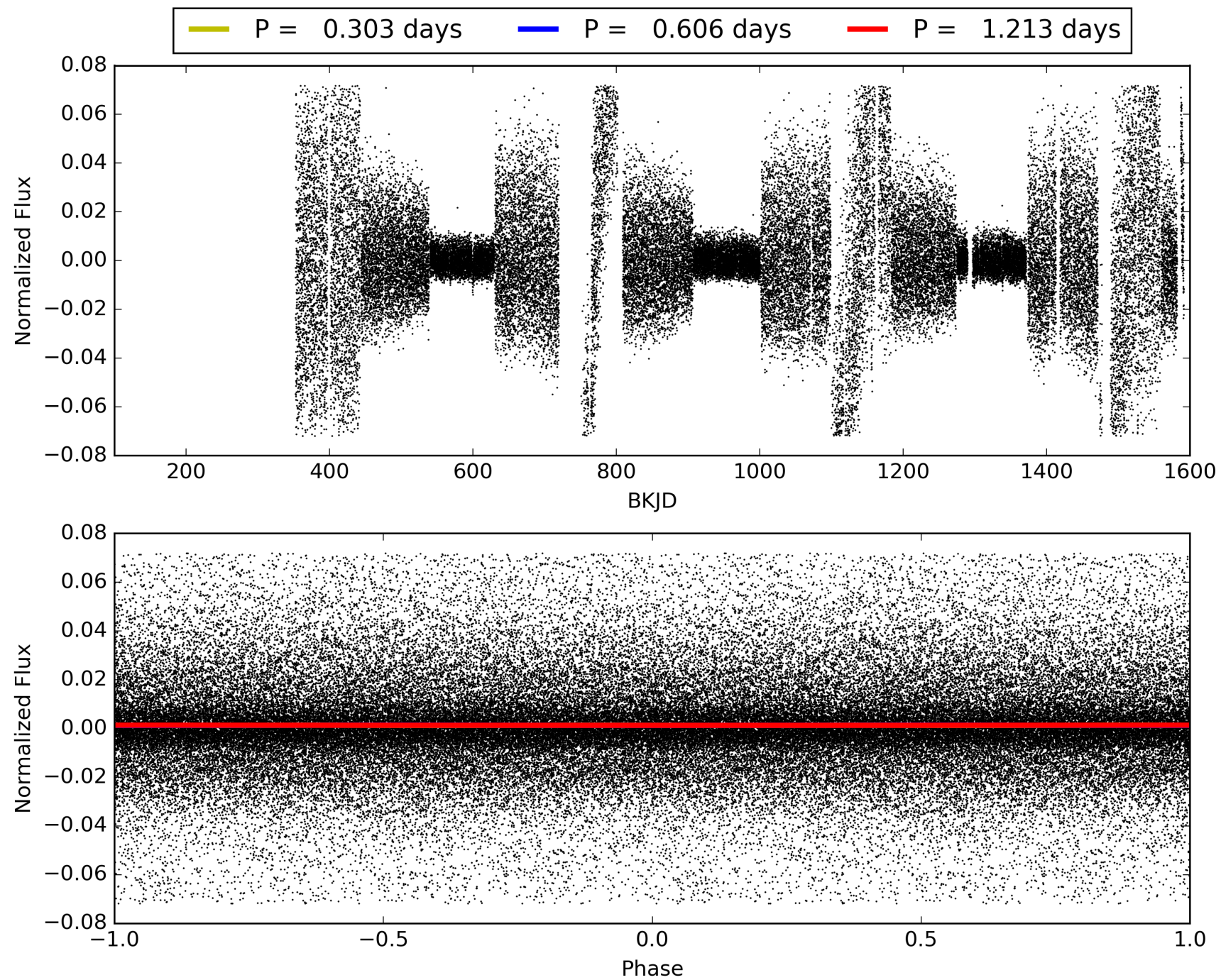
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1135.28σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1845/1845]
GhostDiagnostic-chr: -0.853
Centroid-sig: 0.0%
Centroid-so: 3.995 arcsec [27.27σ]
OotOffset-rm: 0.076 arcsec [0.24σ]
KicOffset-rm: 6.940 arcsec [30.26σ]
OotOffset-st: 0/3/0/4 [7]
KicOffset-st: 0/3/0/4 [7]
DiffImageQuality-fgm: 0.71 [5/7]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 009773099-02, PDC Light Curves

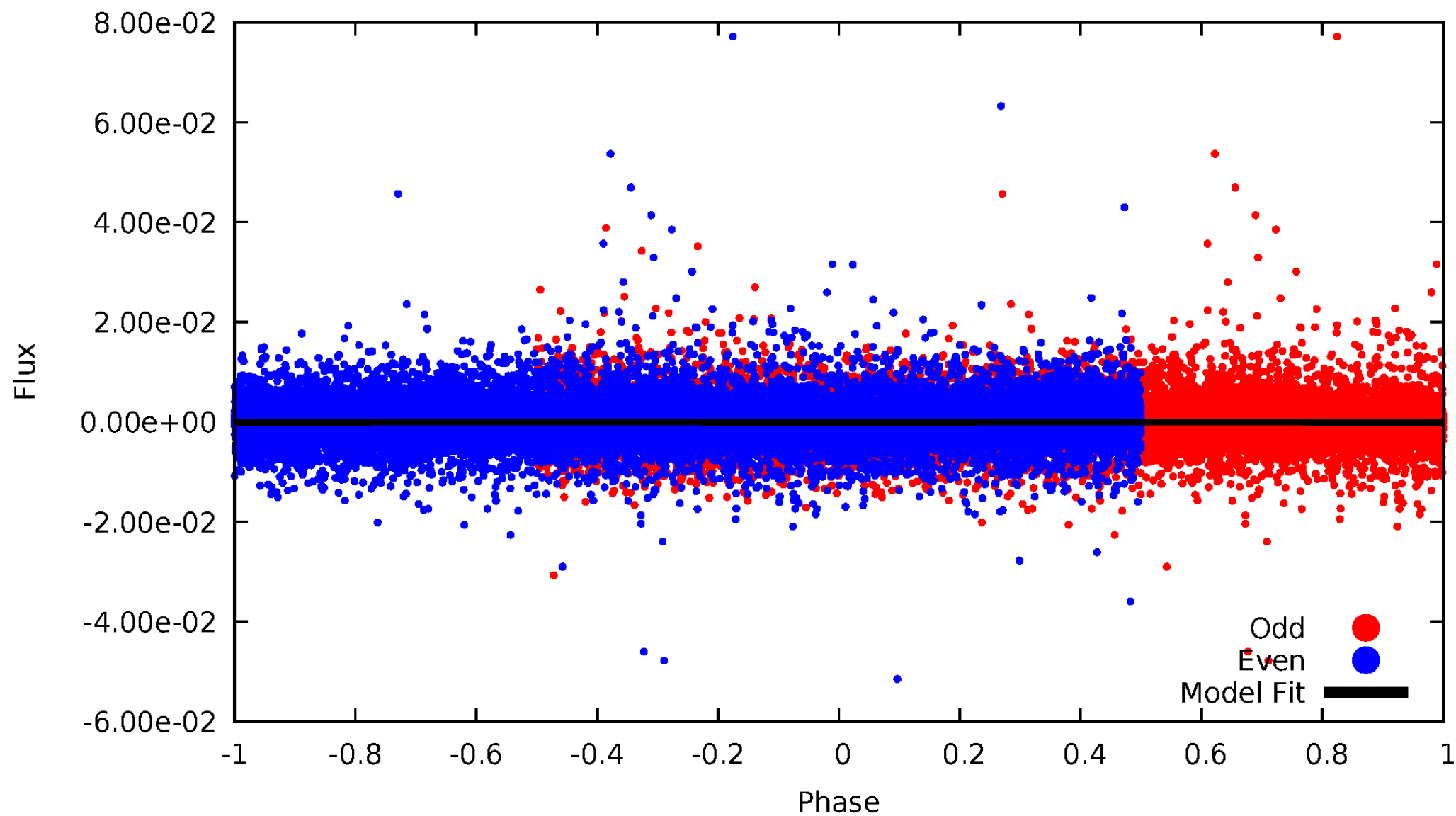


TCE 009773099-02



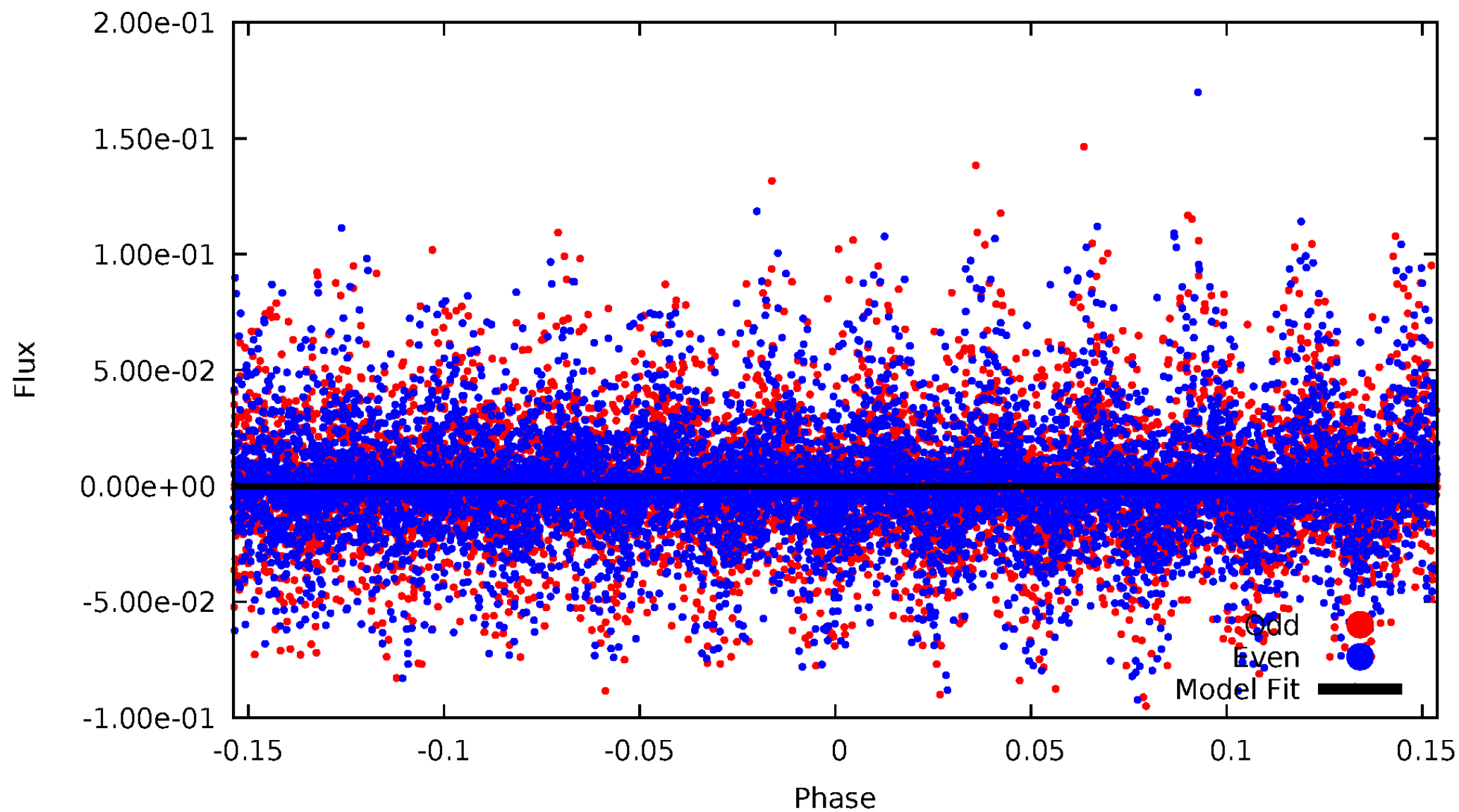
DV Odd/Even

TCE 009773099-02



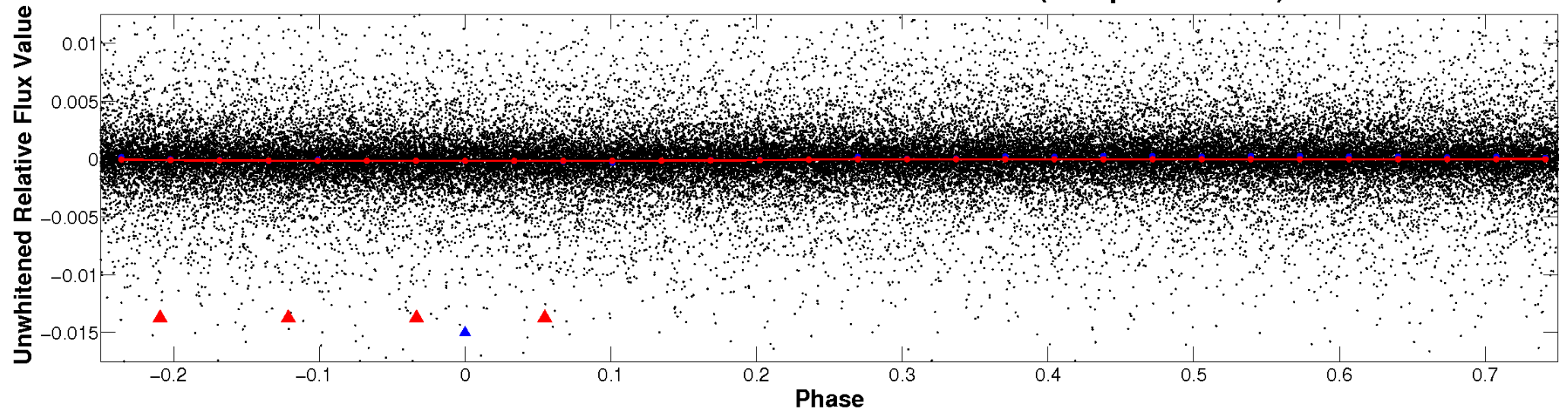
ALT Odd/Even

TCE 009773099-02

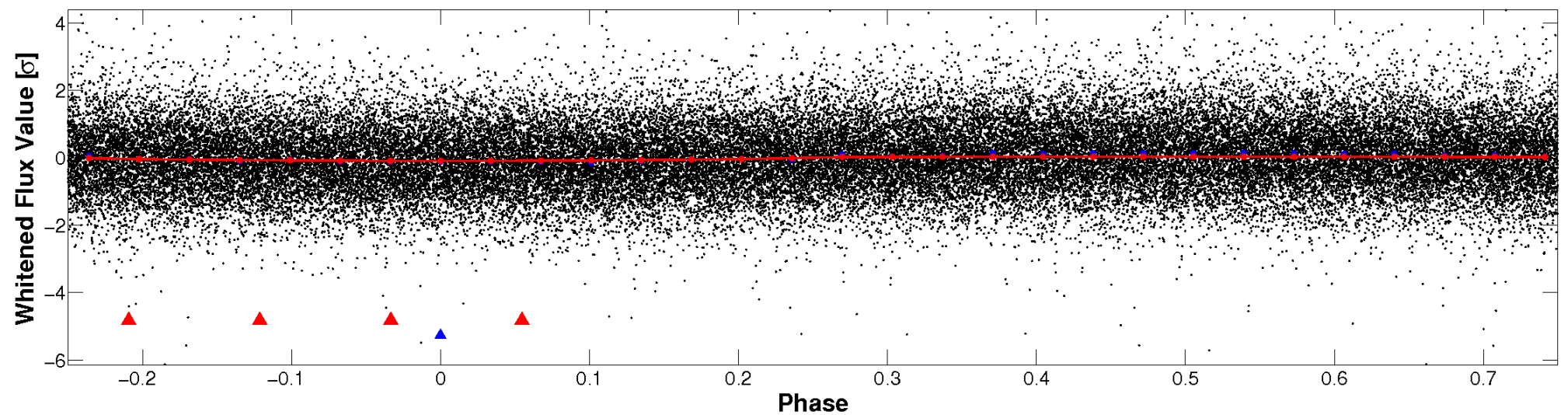


Non-Whitened Vs. Whitened Light Curve

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

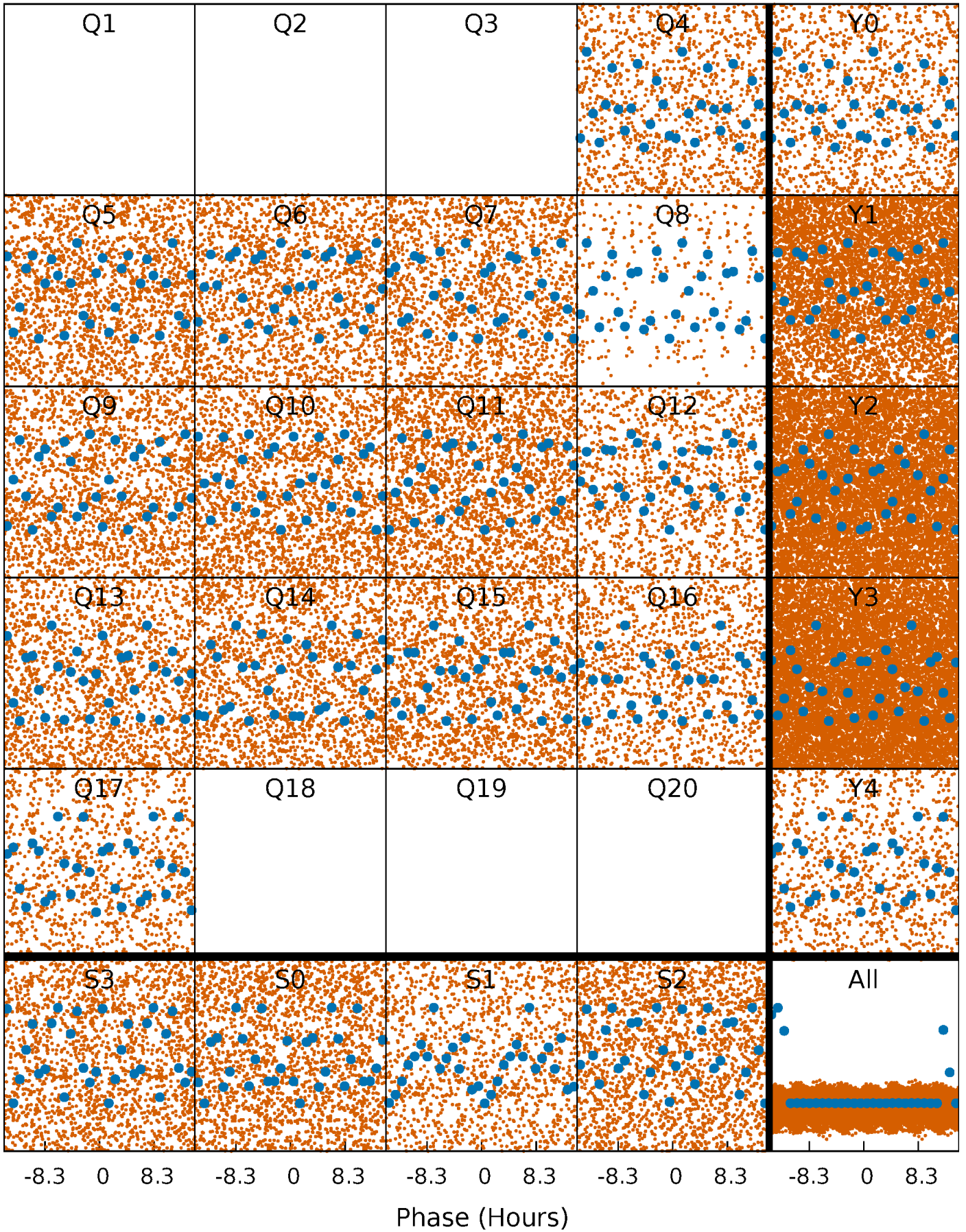


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



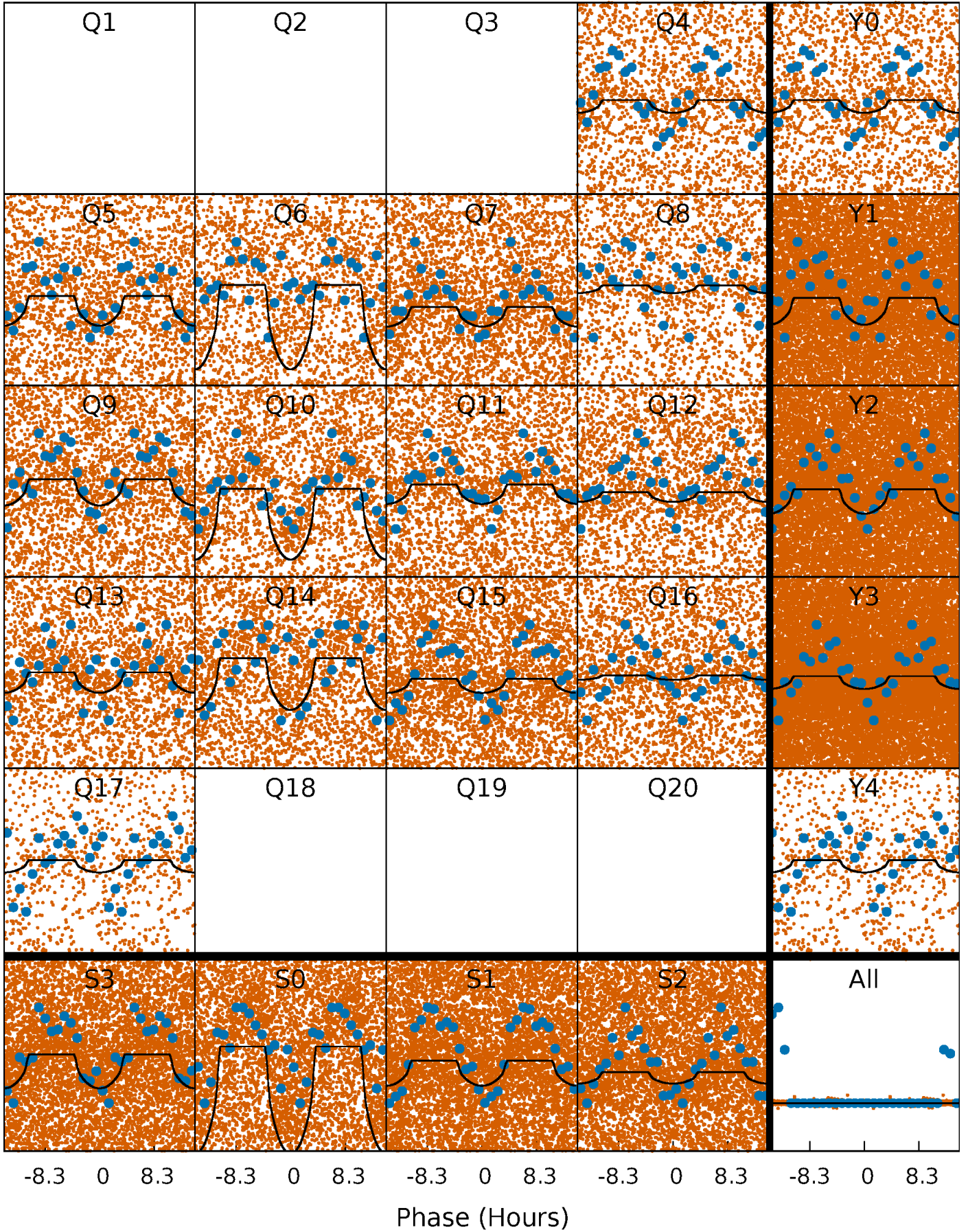
PDC Quarter-Phased Transit Curves

TCE 009773099-02 $P = 0.606408$ Days $T_0 = 131.760604$ (BKJD)



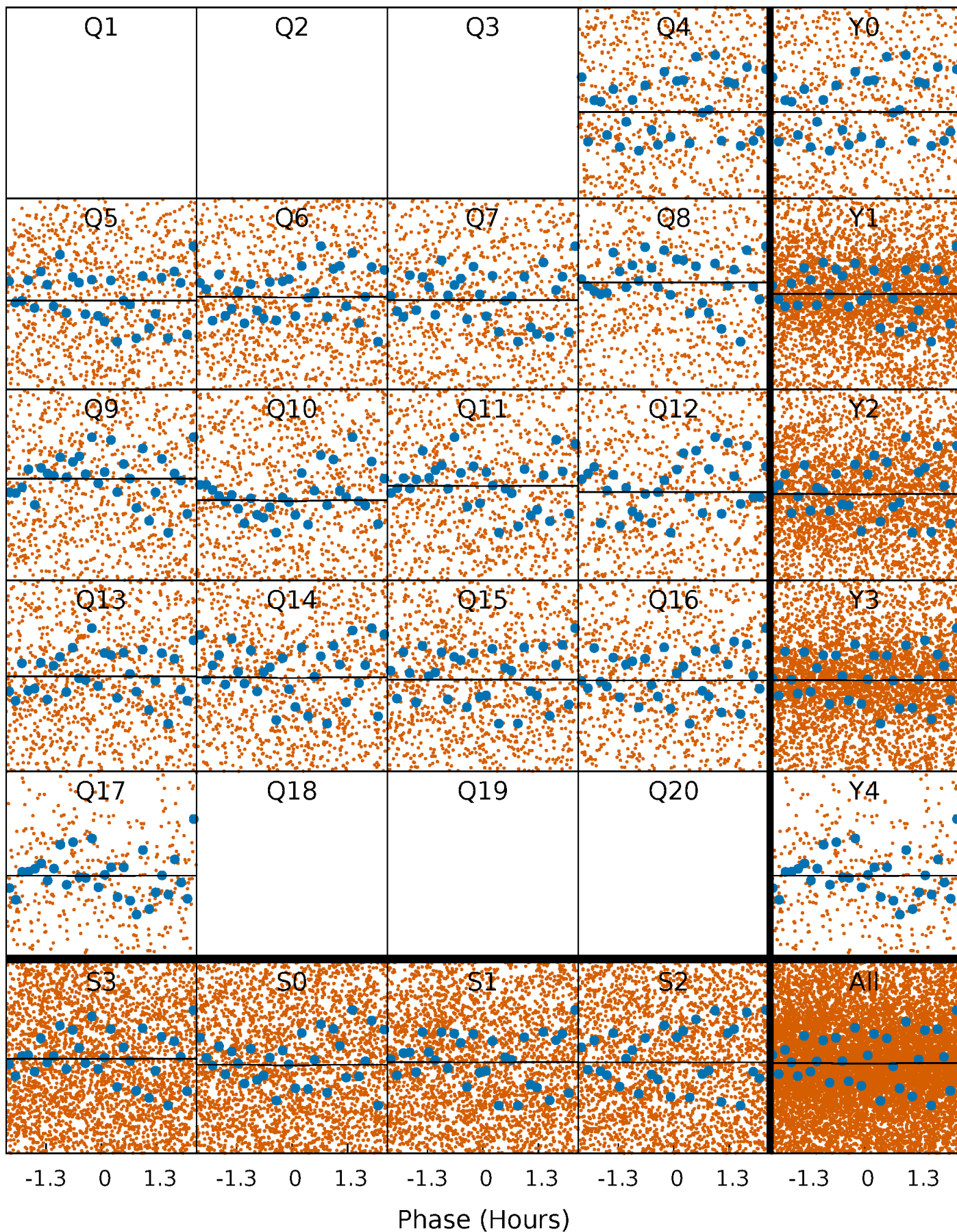
DV Quarter-Phased Transit Curves

TCE 009773099-02 P= 0.606408 Days $T_0=131.760604$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

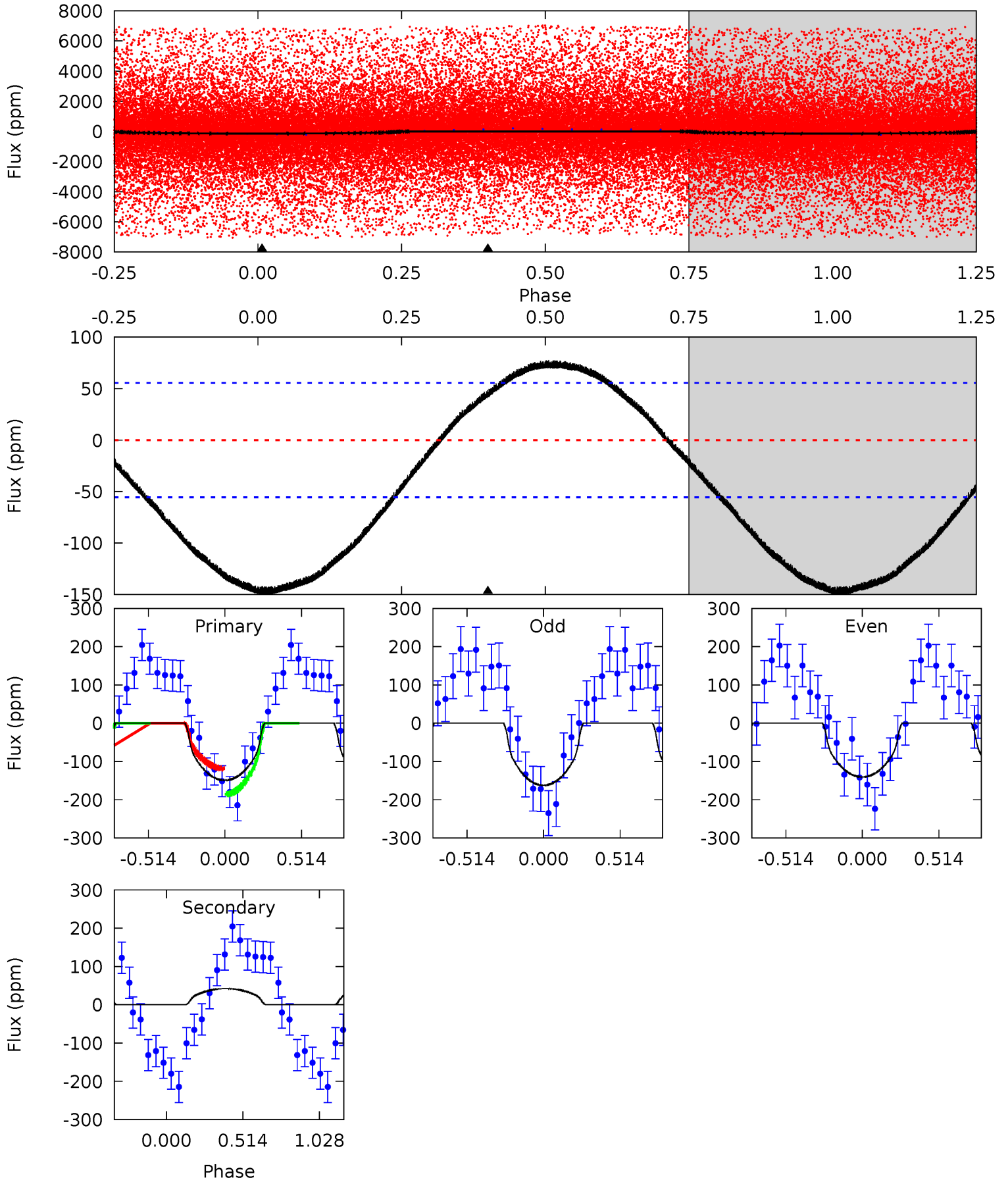
TCE 009773099-02 P= 0.606511 Days $T_0=131.749945$ (BKJD)



DV Model-Shift Uniqueness Test

009773099-02, P = 0.606408 Days, E = 131.760604 Days

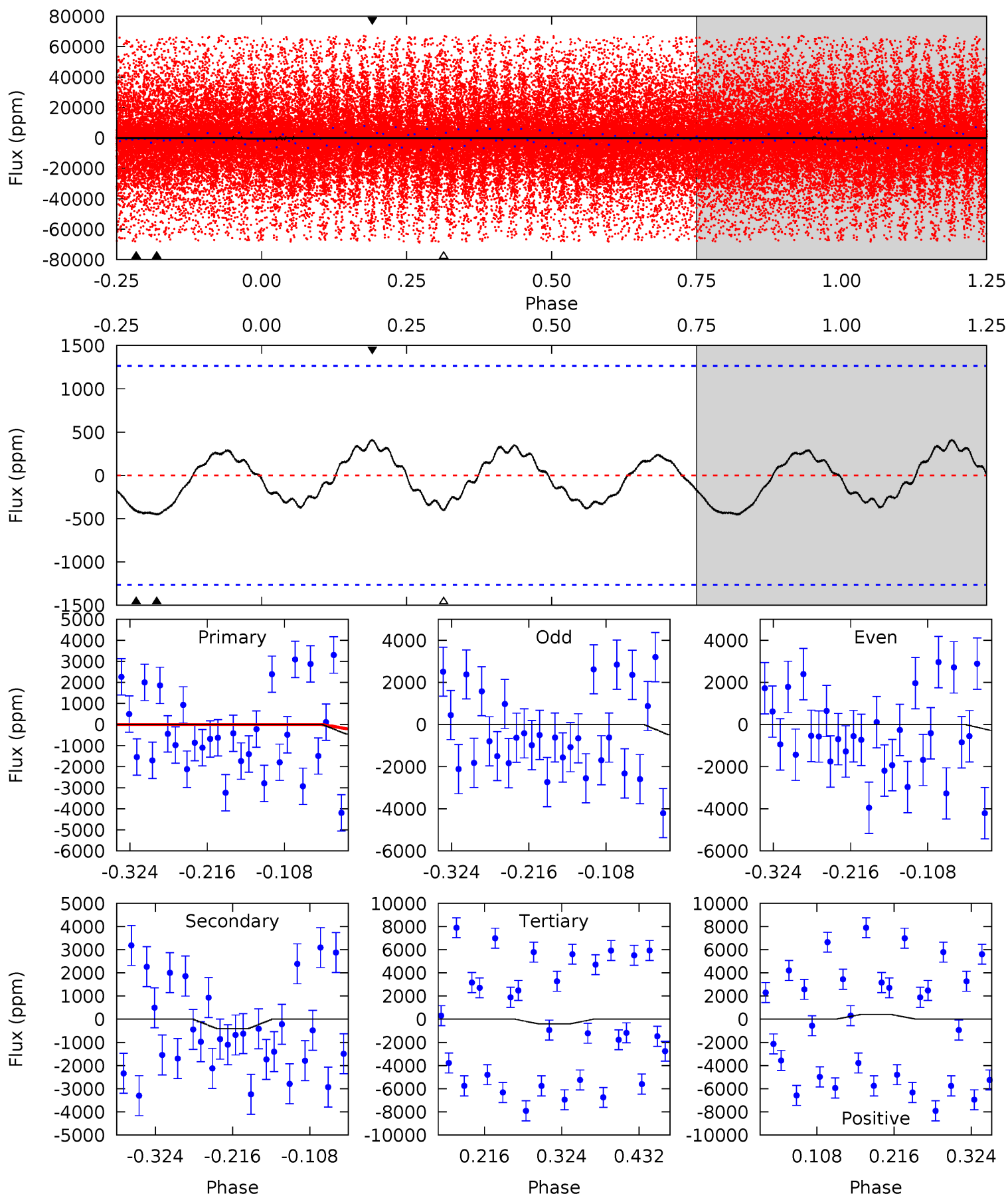
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	-3.19	0	0	4.21	0.65	1.38	11.3	11.3	-3.19	-3.19	0.85	0.68	0.34	2.64



Alt Model-Shift Uniqueness Test

009773099-02, P = 0.606511 Days, E = 131.749945 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.63	1.49	1.46	1.48	4.55	1.61	0.83	0.18	0.16	0.03	0.01	0.38	-1.42	0.48	0.45



Stellar Parameters For KIC 009773099

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5564^{+183}_{-183}	$4.587^{+0.038}_{-0.152}$	$-0.260^{+0.300}_{-0.300}$	$0.785^{+0.185}_{-0.062}$	$0.878^{+0.090}_{-0.110}$	$2.558^{+0.506}_{-1.128}$
	+3%/-3%	+1%/-3%	+115%/-115%	+24%/-8%	+10%/-13%	+20%/-44%
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 009773099-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	42 ± 13	$1.07^{+0.56}_{-0.54}$	2671^{+146}_{-119}	-4356^{+598}_{-1361}	$-3.584^{+2.220}_{-10.215}$
Alt.	-414 ± 278	$0.64^{+0.53}_{-0.39}$	2677^{+154}_{-123}	9400^{+14331}_{-3536}	78^{+495}_{-63}

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

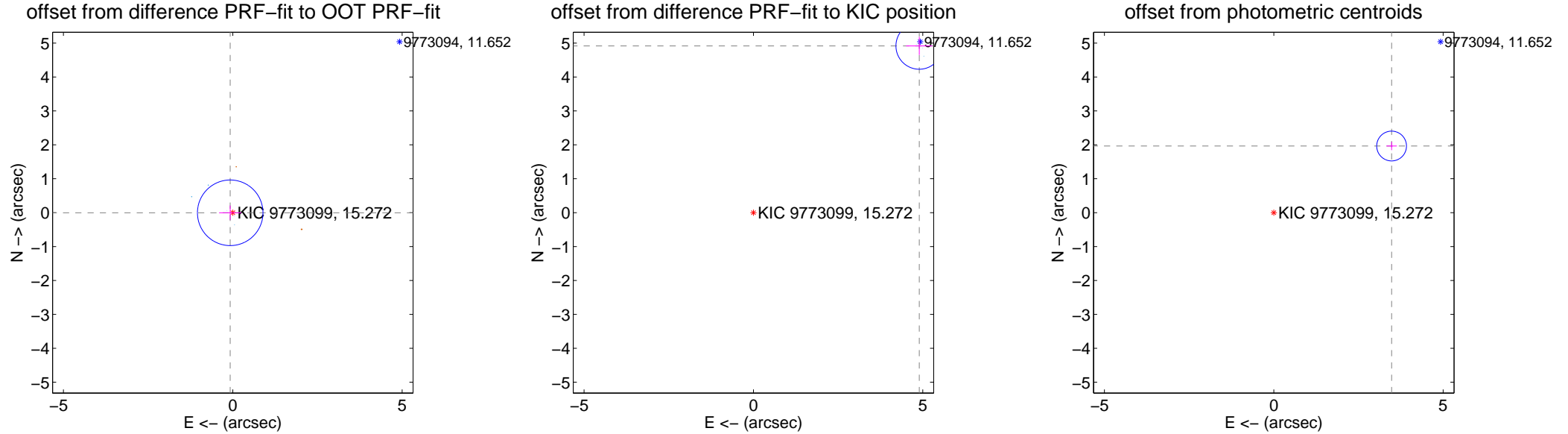
DV Centroid Data

Supplemental centroid analysis for 009773099-02. Kepler magnitude: 15.27. Transit SNR 13.04

There are 5 quarters with good PRF difference image offsets

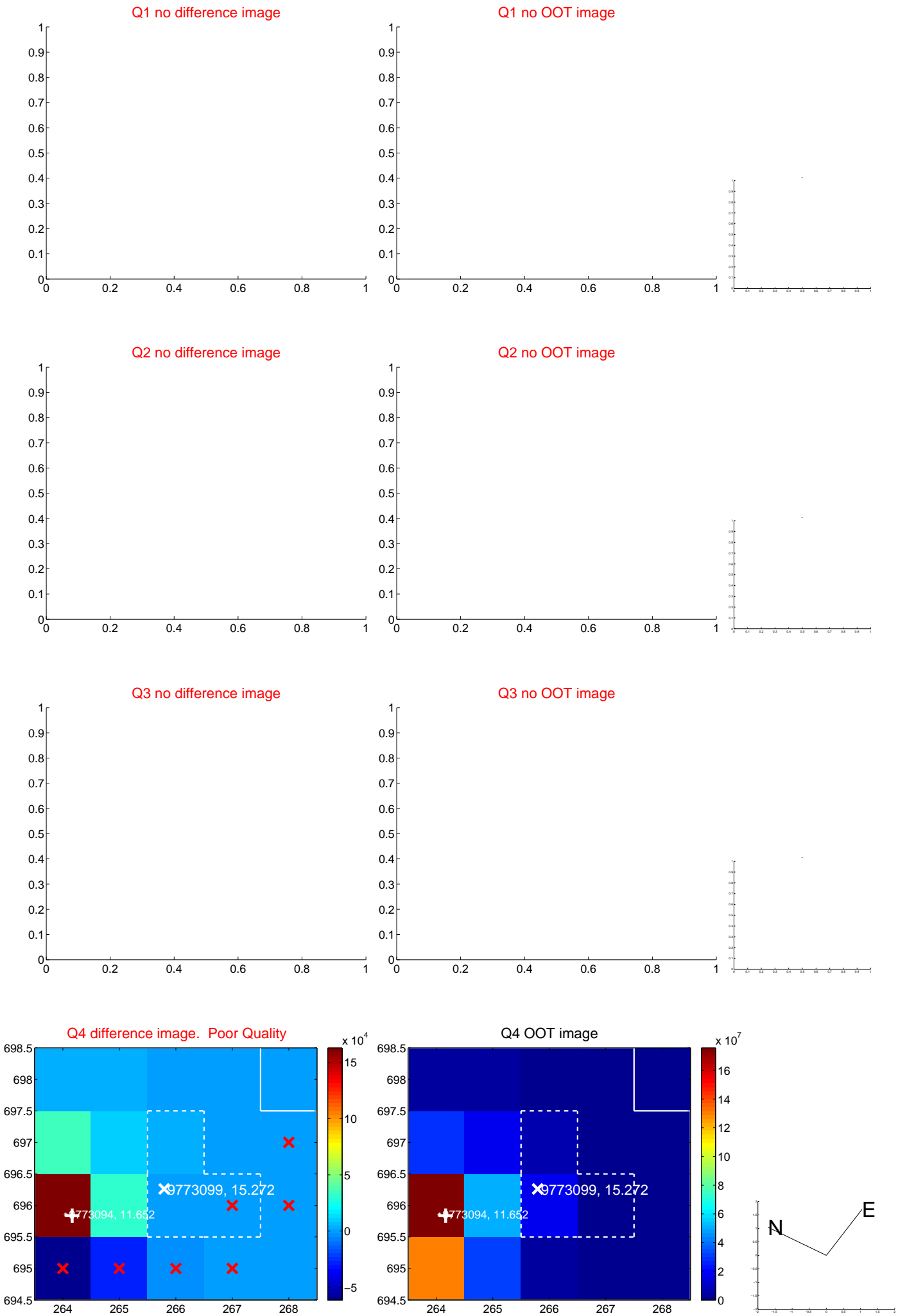
The OOT PRF centroid is offset from the target star catalog position by about 6.98 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.076 ± 0.323	0.24	0.076 ± 0.328	-0.004 ± 0.213
PRF-fit source offset from KIC position	6.940 ± 0.229	30.26	-4.896 ± 0.388	4.918 ± 0.266
photometric centroid source offset	4.00 ± 0.15	27.27	-3.48 ± 0.15	1.97 ± 0.12

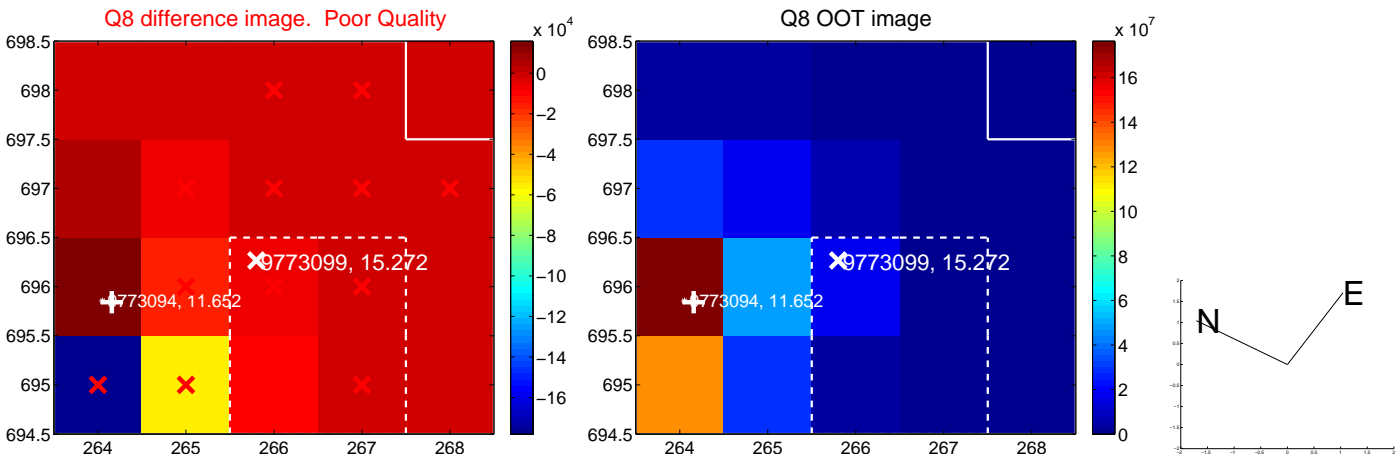
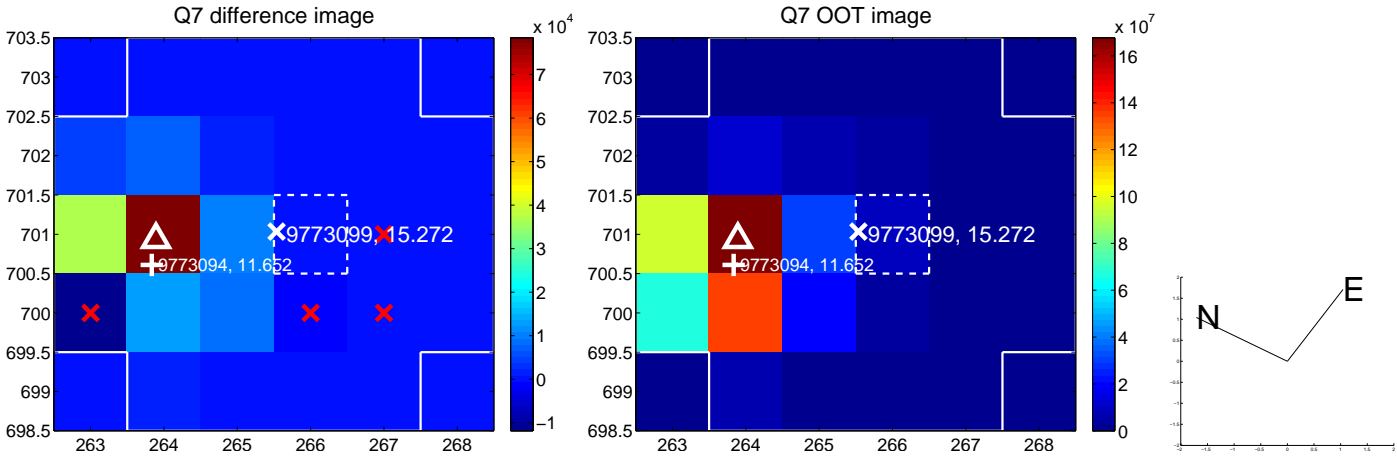
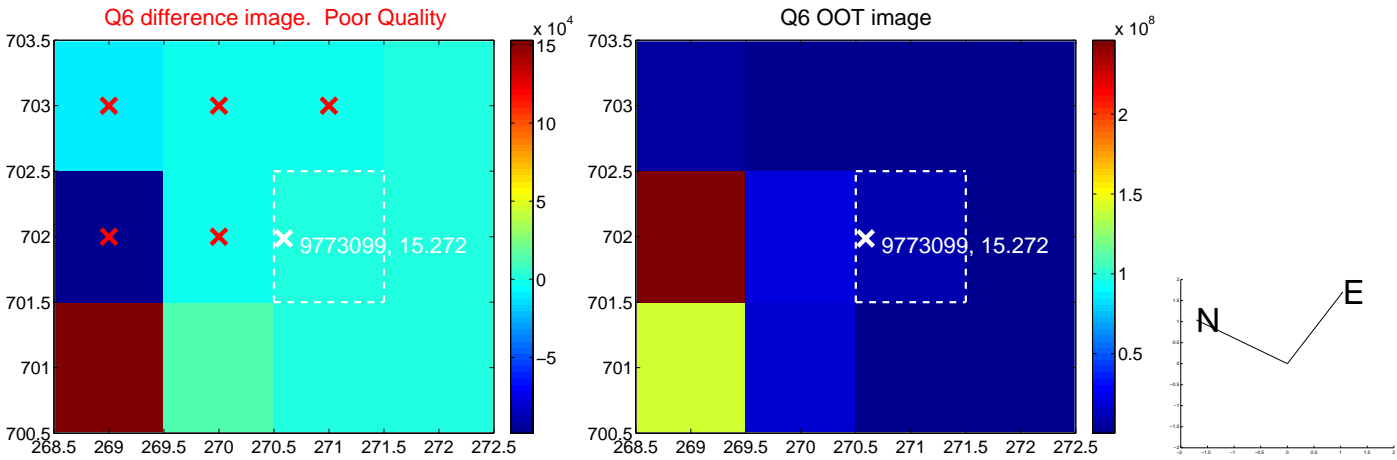
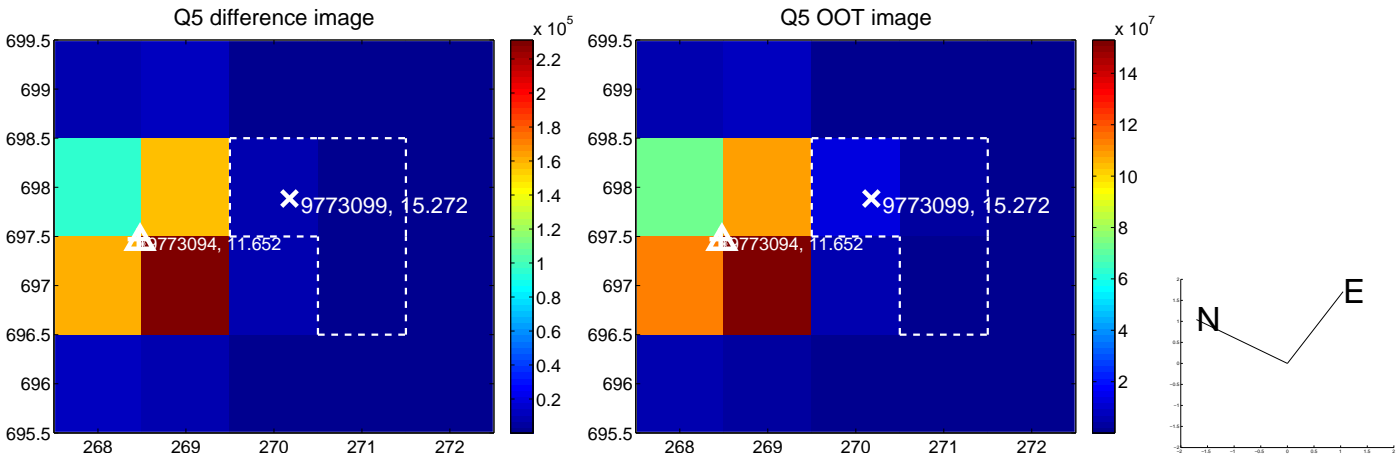


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

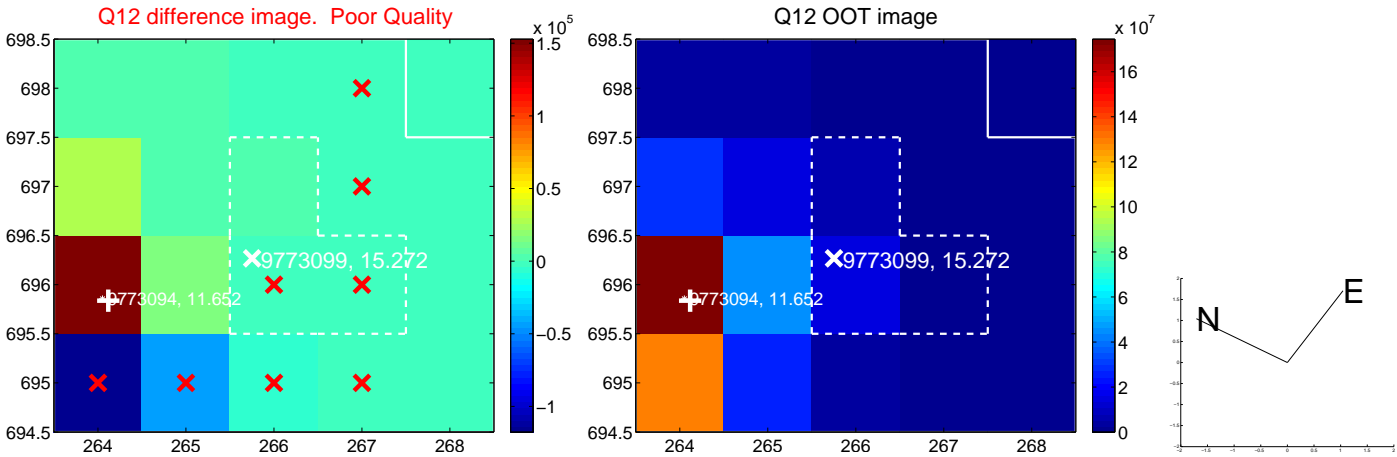
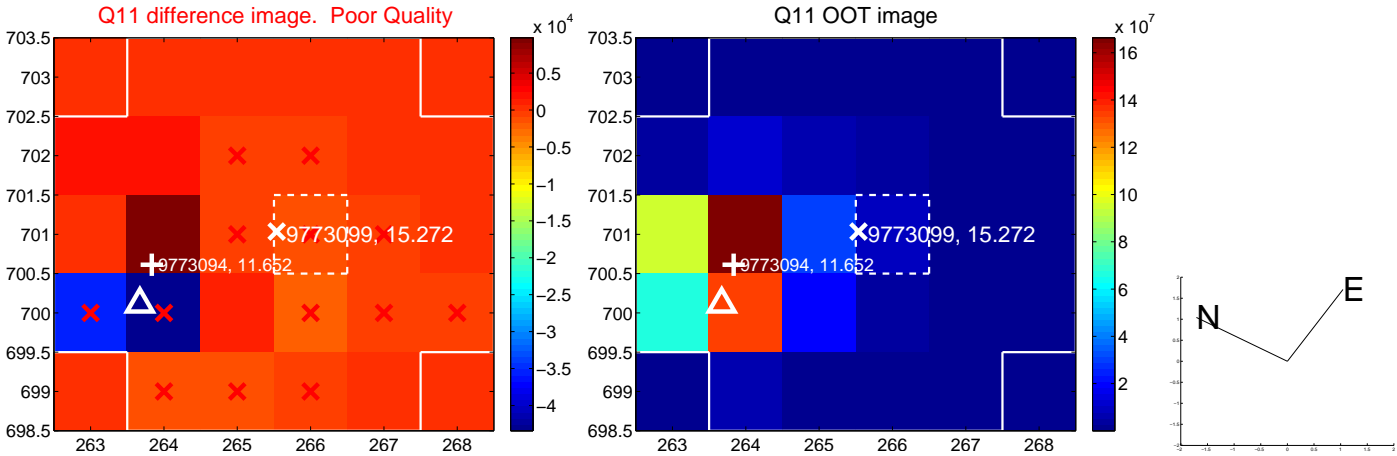
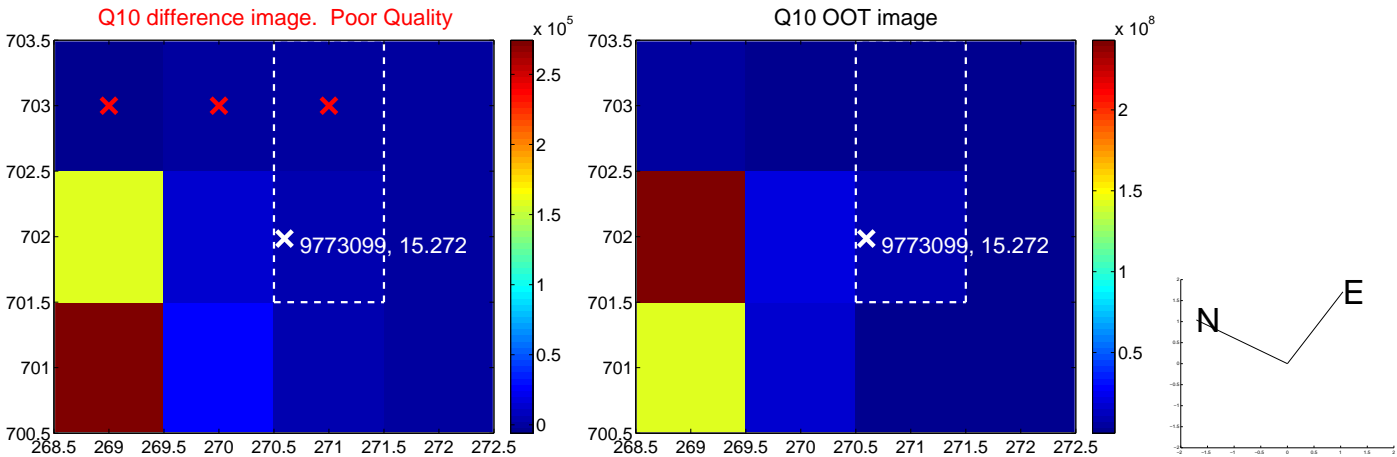
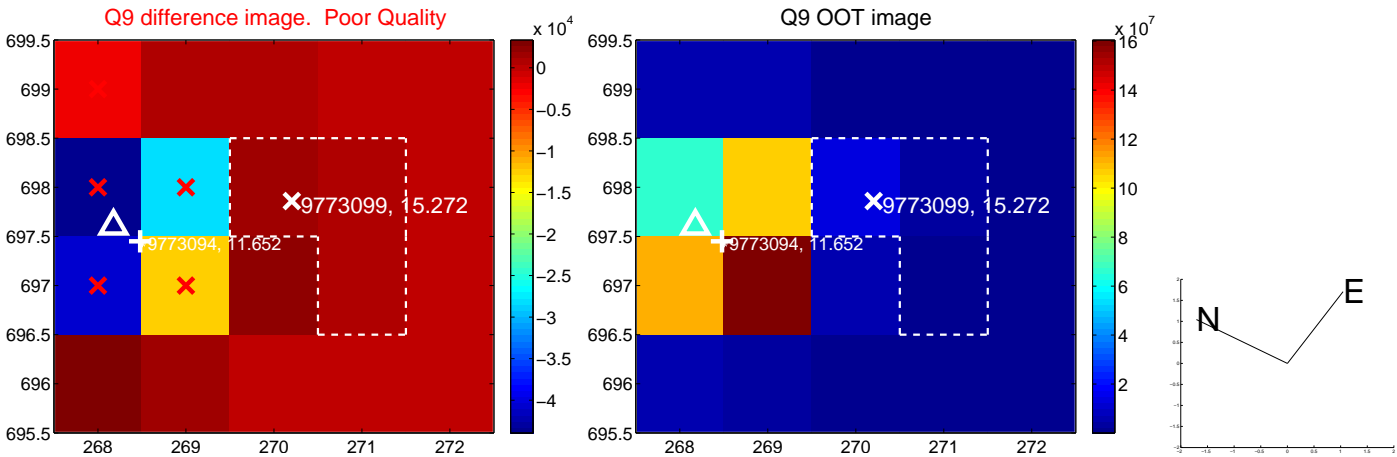
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



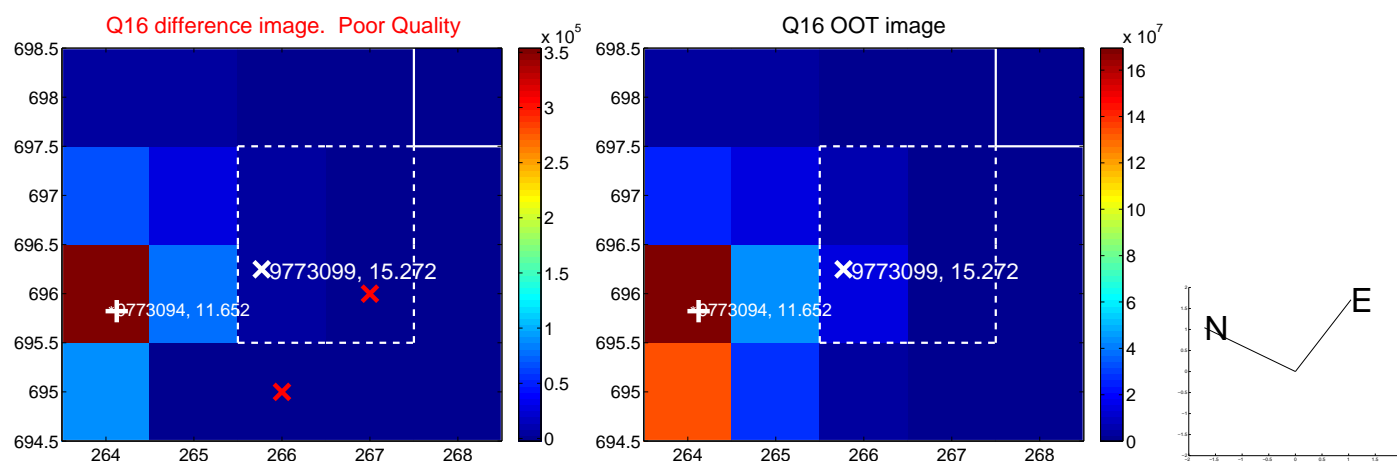
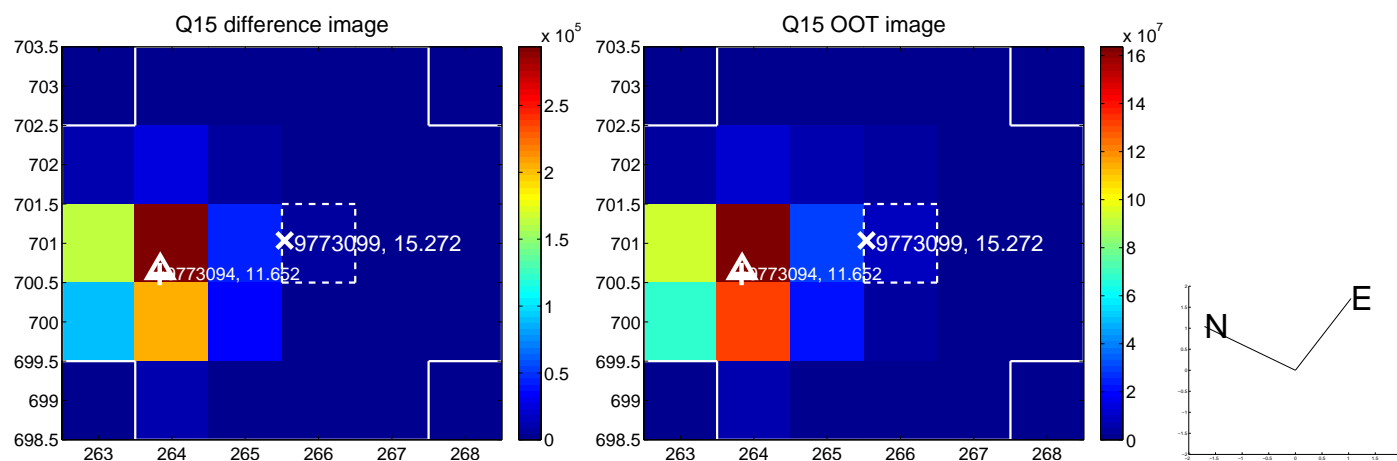
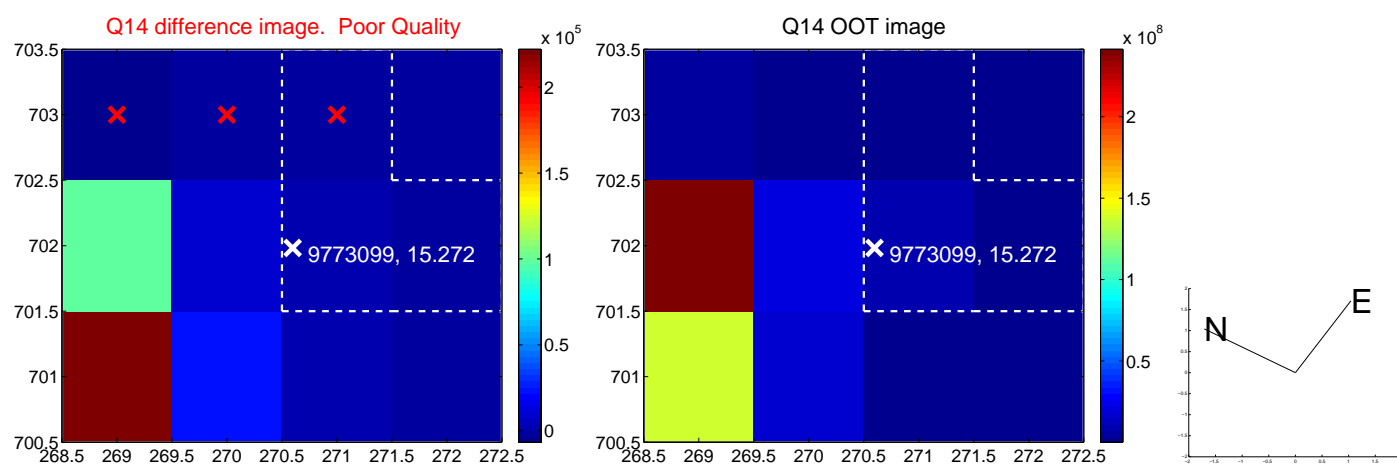
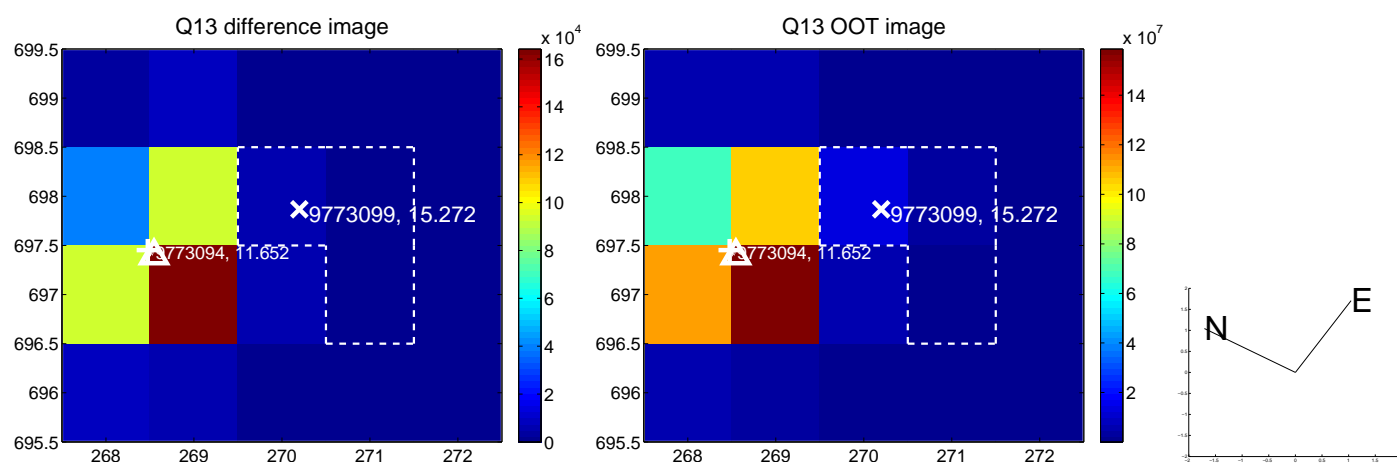
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



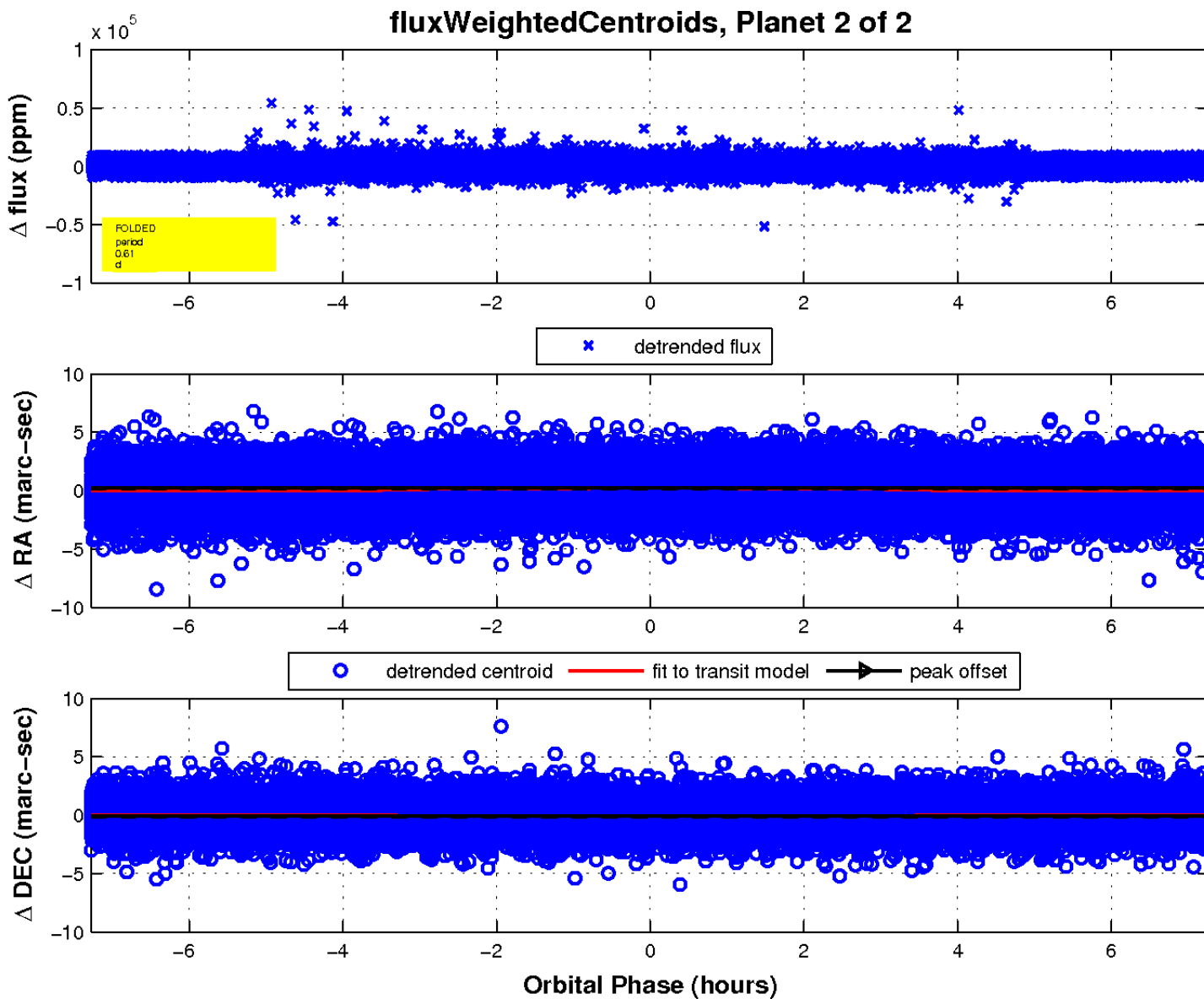
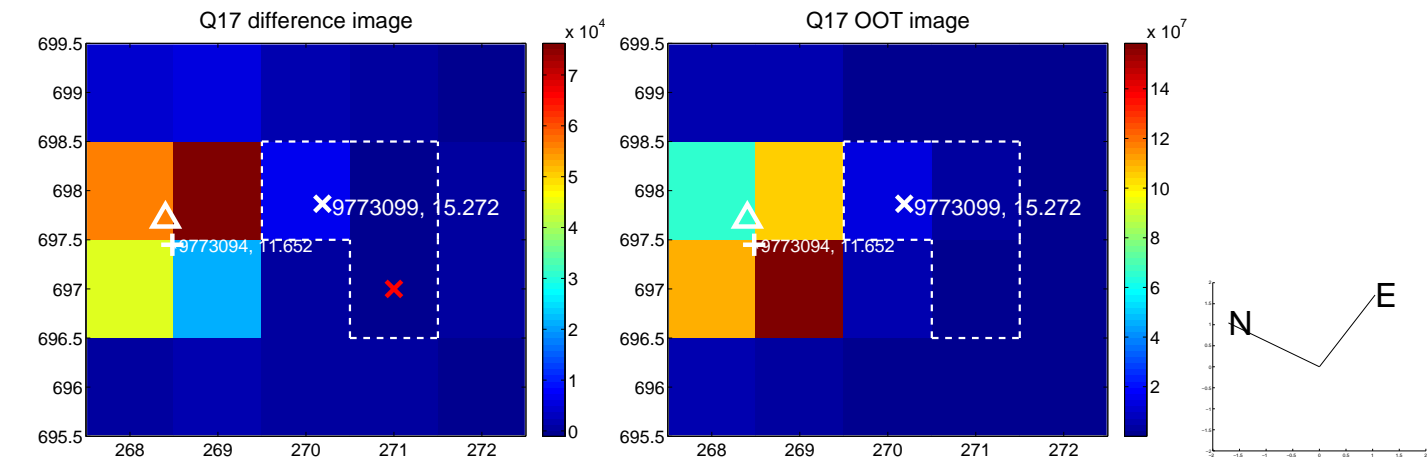
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

