

KIC 006973796

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})
006973796-01	OBS	3726.01	115.994386	139.571283	37919.0	2.510	245.6	233.2	0.73	4530	14.26	1.17
006973796-02	OBS	No	115.993610	143.987305	1122.5	6.077	8.4	9.0	0.73	4530	2.78	1.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006973796-01	OBS	FP	0.00	0	1	0	0	HAS_SEC_TCE—CENT_KIC_POS
006973796-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_KIC_POS

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.

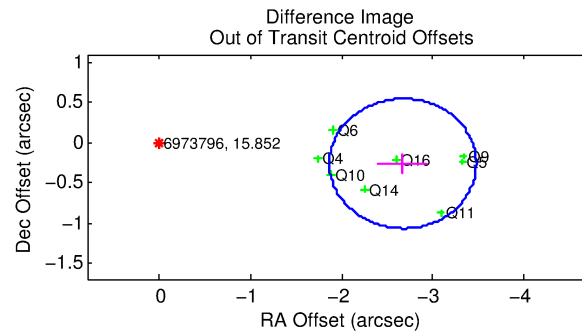
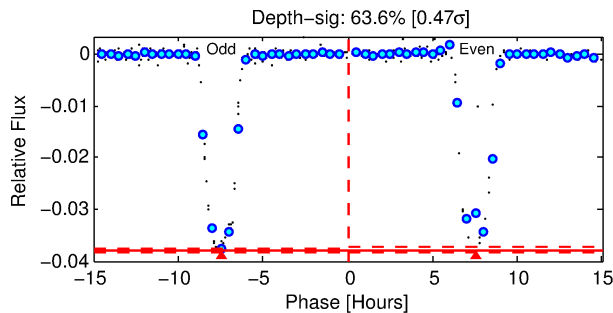
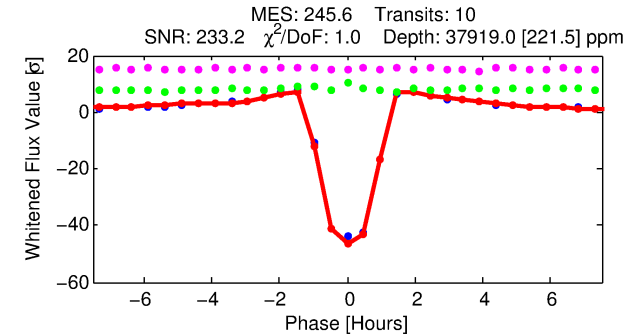
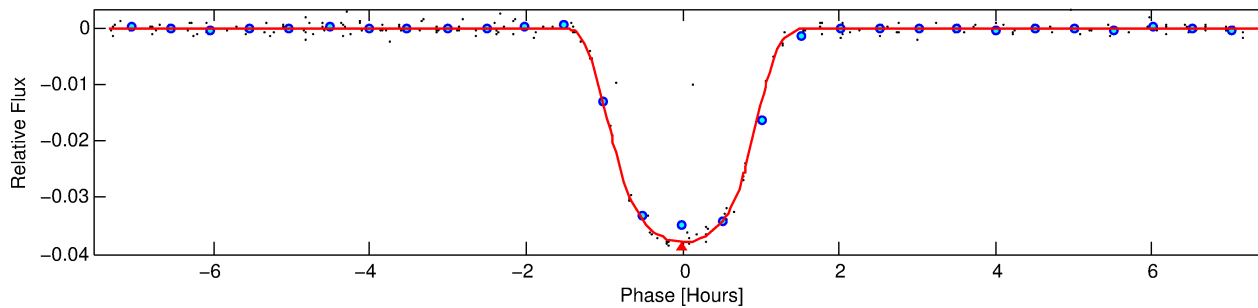
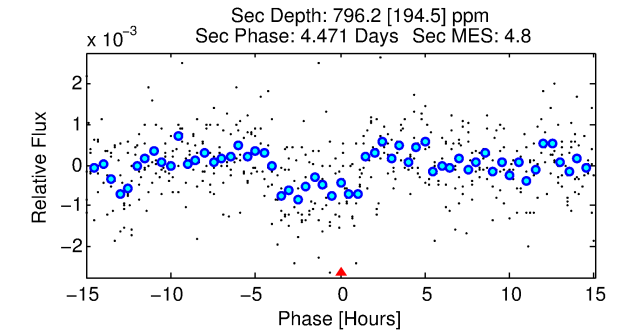
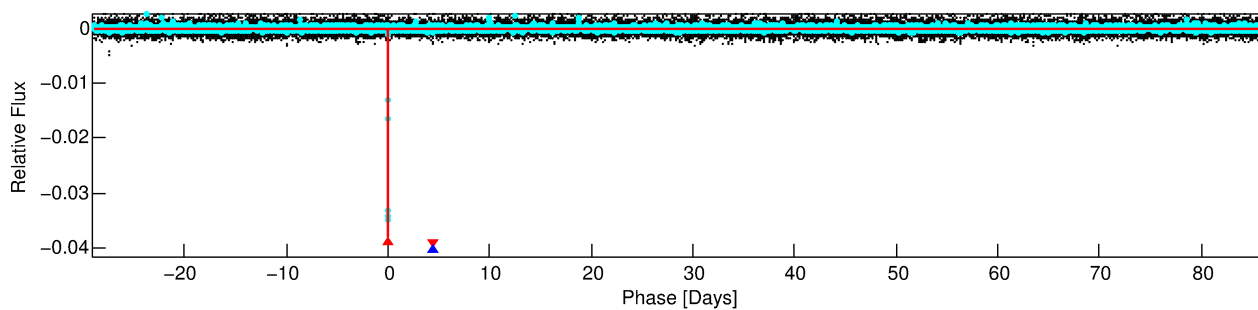
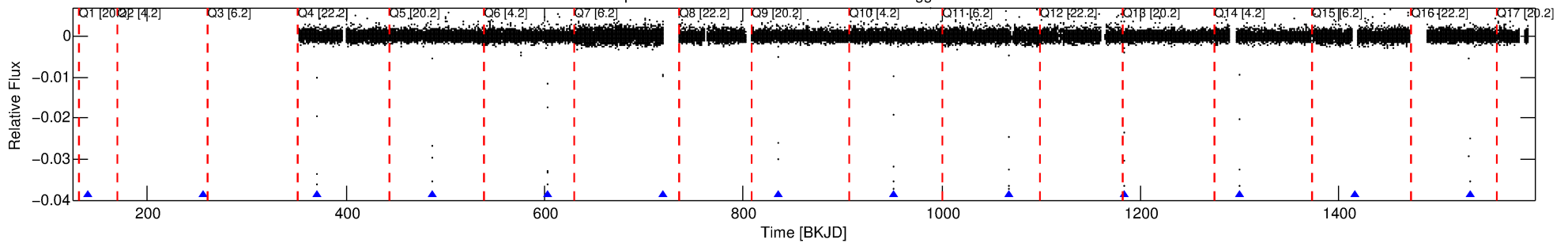
Ephemeris Match Information For 006973796-01

No Significant Match Found

DV One-Page Summary

KIC: 6973796 Candidate: 1 of 2 Period: 115.994 d
KOI: K03726.01 Corr: 0.989

Kp: 15.85 R*: 0.73 Rs Teff: 4530.0 K Logg: 4.57 Fe/H: 0.220



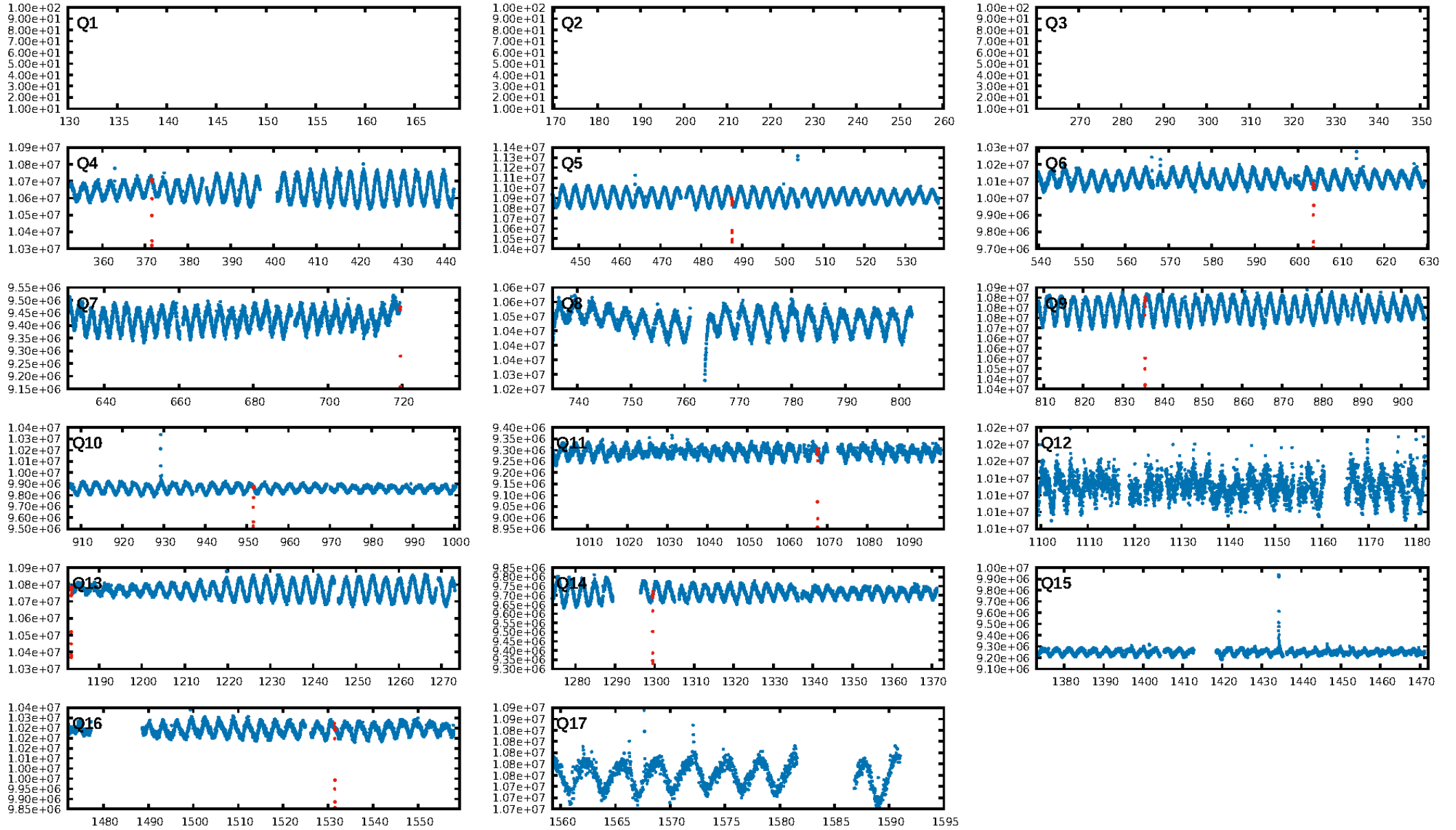
DV Fit Results:

Period = 115.99439 [0.00005] d
Epoch = 139.5713 [0.0004] BKJD
Rp/R* = 0.1778 [0.0032]
a/R* = 384.56 [17.20]
b = 0.45 [0.08]
Seff = 1.16 [0.21]
Teq = 265 [12] K
Rp = 14.26 [1.32] Re
a = 0.4183 [0.0319] AU
Ag = 377.08 [102.00] [3.69σ]
Teffp = 1805 [128] K [11.96σ]

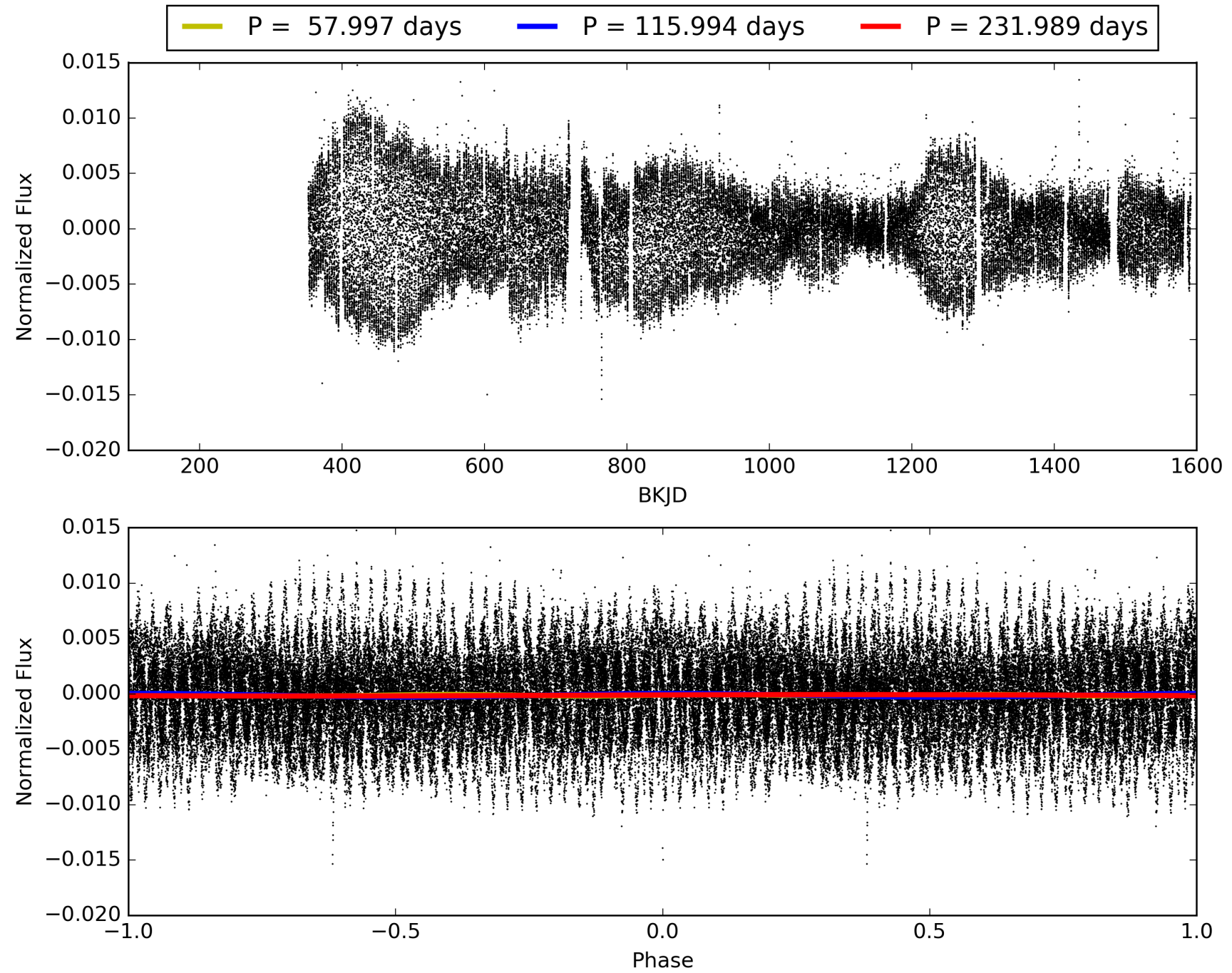
DV Diagnostic Results:

ShortPeriod-sig: 0.2% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 6.0%
ModelChiSquareGof-sig: 93.9%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 1.66
Centroid-sig: 0.0%
Centroid-so: 0.681 arcsec [19.41σ]
OotOffset-rm: 2.687 arcsec [9.97σ]
KicOffset-rm: 0.134 arcsec [1.90σ]
OotOffset-st: 3/1/2/2 [8]
KicOffset-st: 3/1/2/2 [8]
DiffImageQuality-fgm: 1.00 [8/8]
DiffImageOverlap-fno: 1.00 [8/8]

TCE 006973796-01, PDC Light Curves

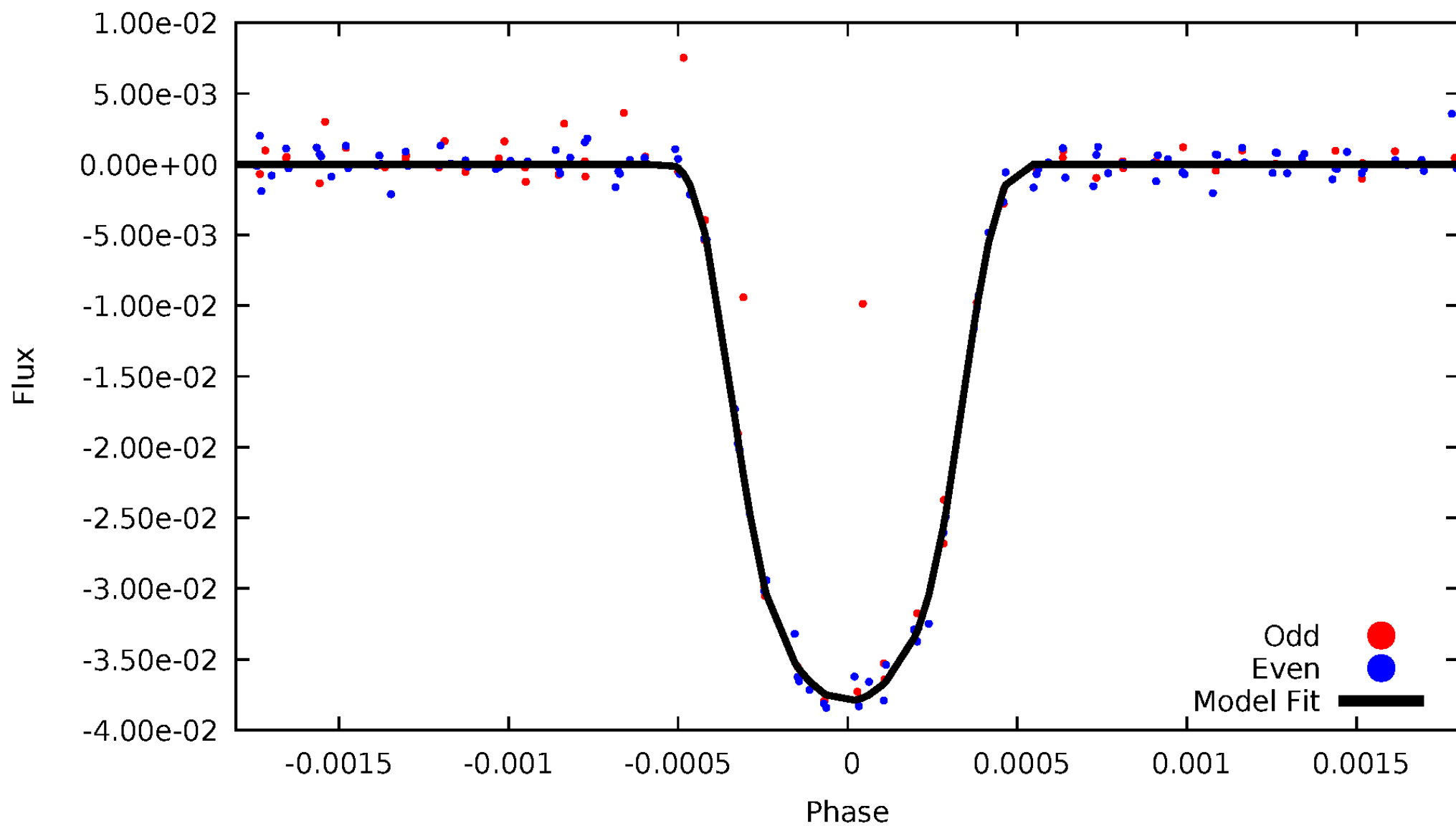


TCE 006973796-01



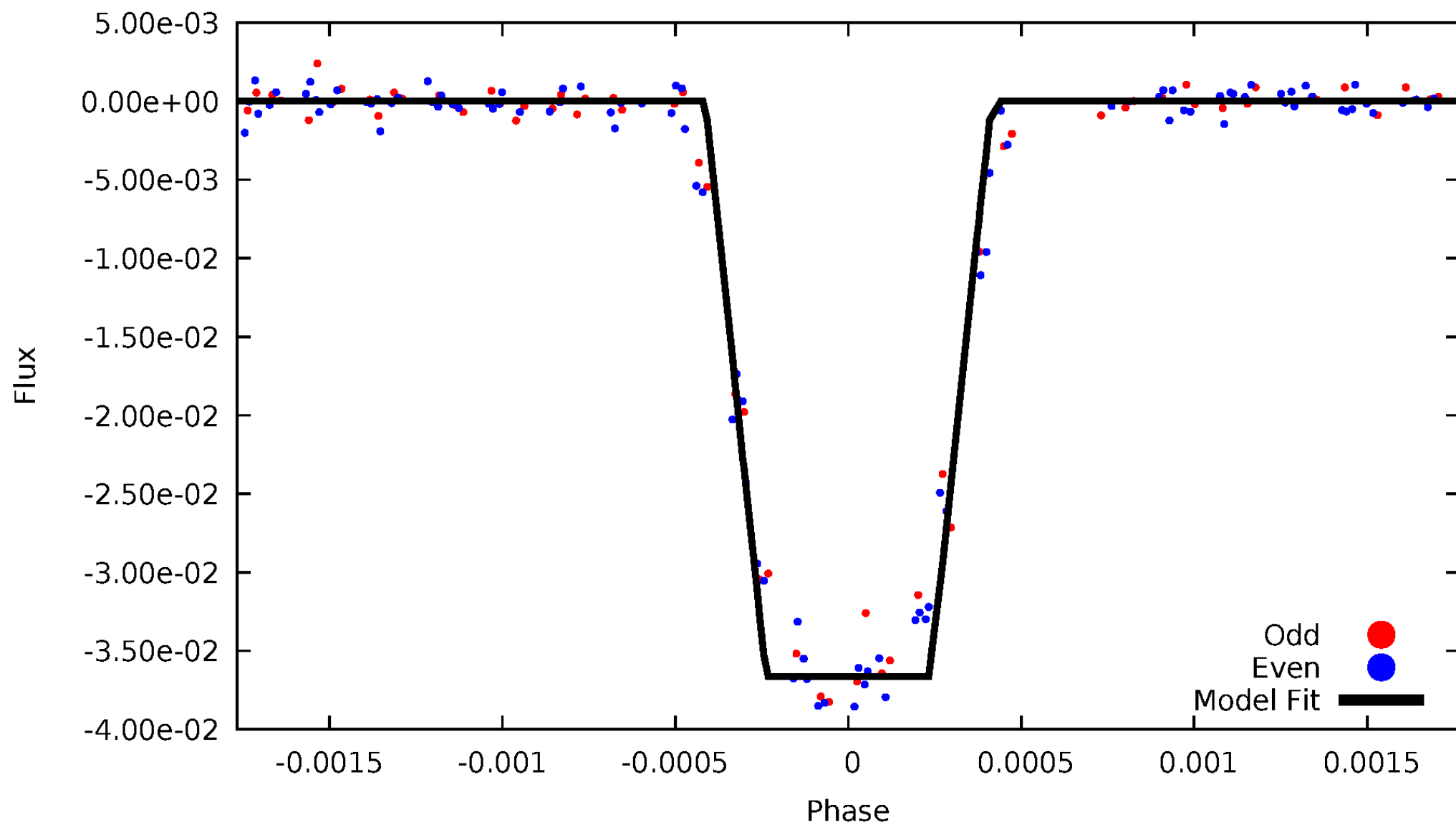
DV Odd/Even

TCE 006973796-01



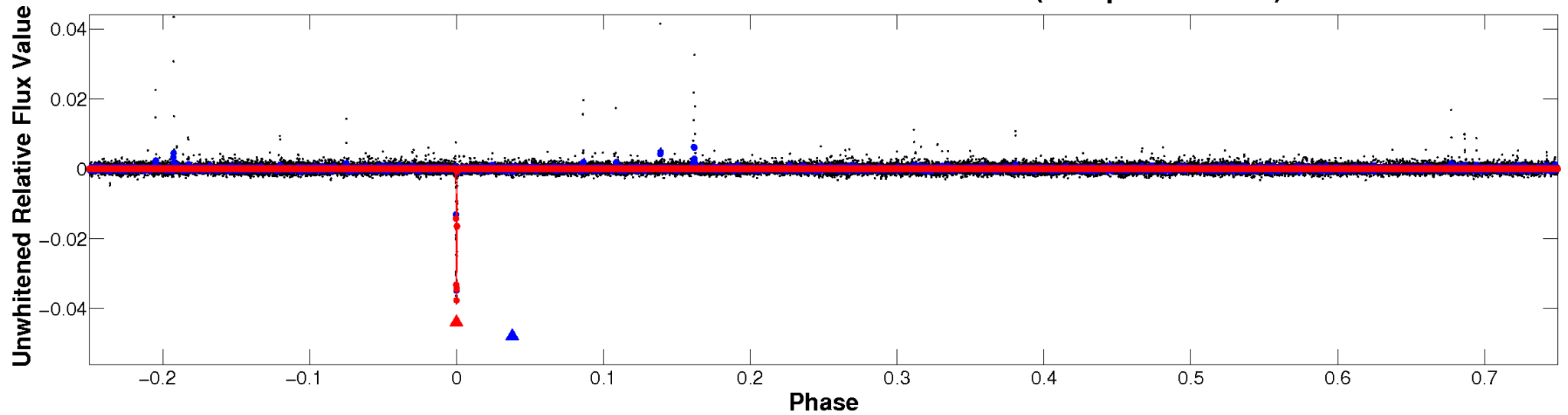
ALT Odd/Even

TCE 006973796-01

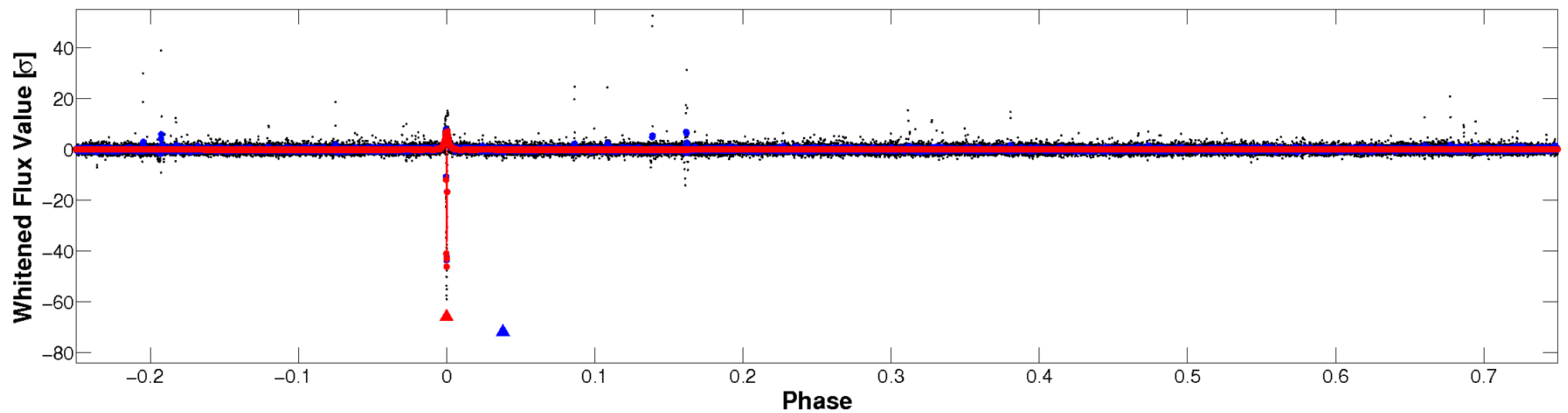


Non-Whitened Vs. Whitened Light Curve

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

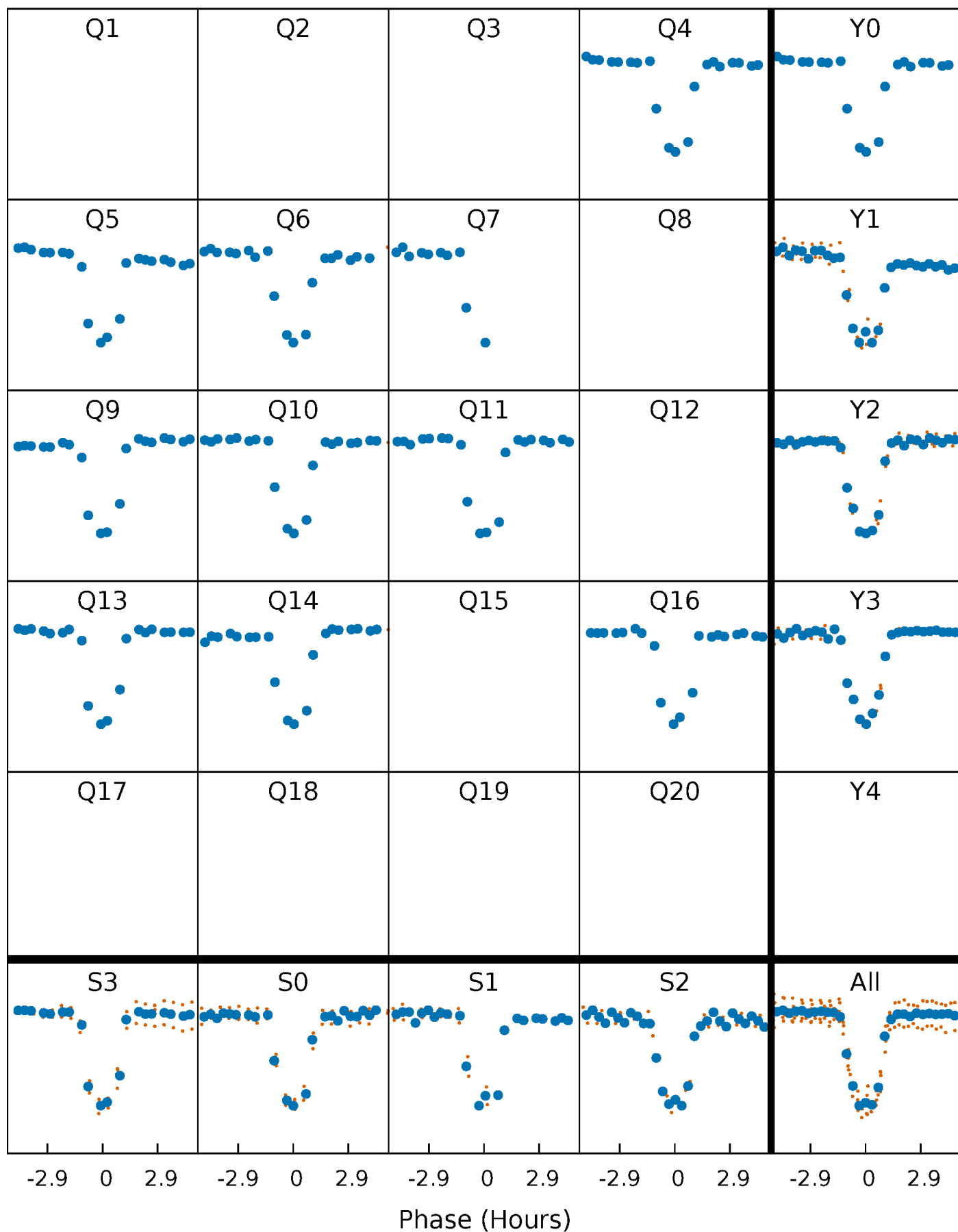


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



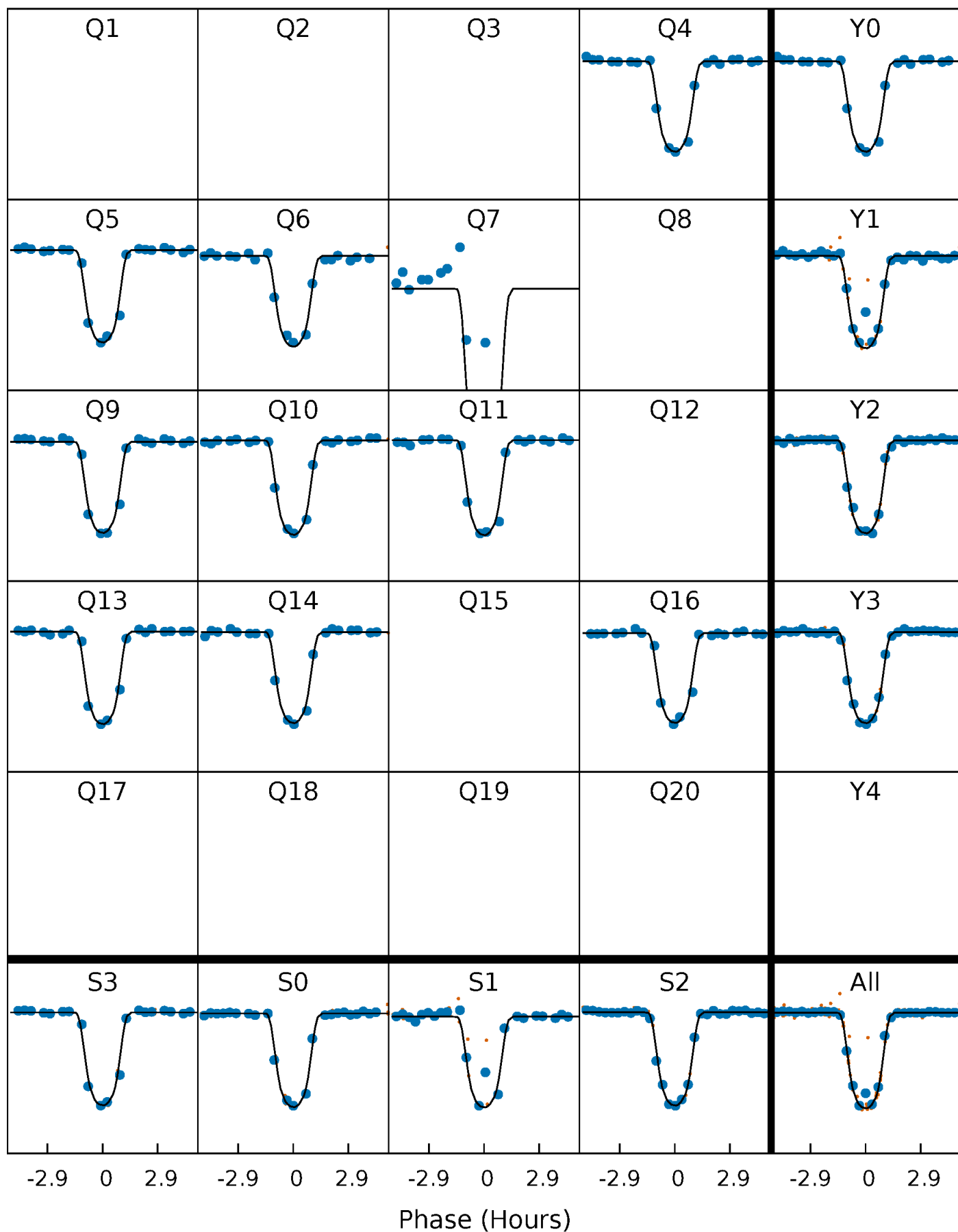
PDC Quarter-Phased Transit Curves

TCE 006973796-01 P=115.994386 Days $T_0=139.571283$ (BKJD)



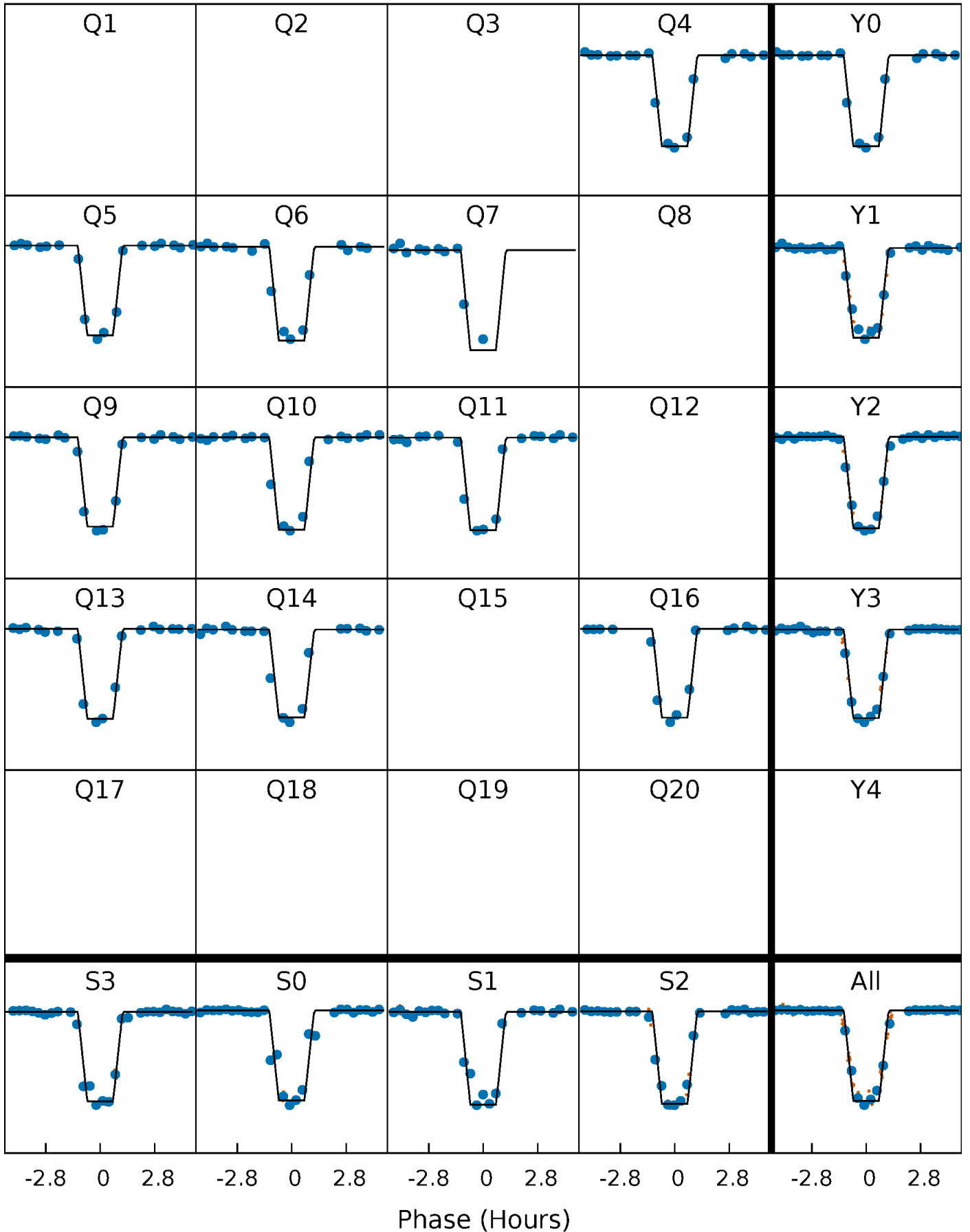
DV Quarter-Phased Transit Curves

TCE 006973796-01 P=115.994386 Days $T_0=139.571283$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

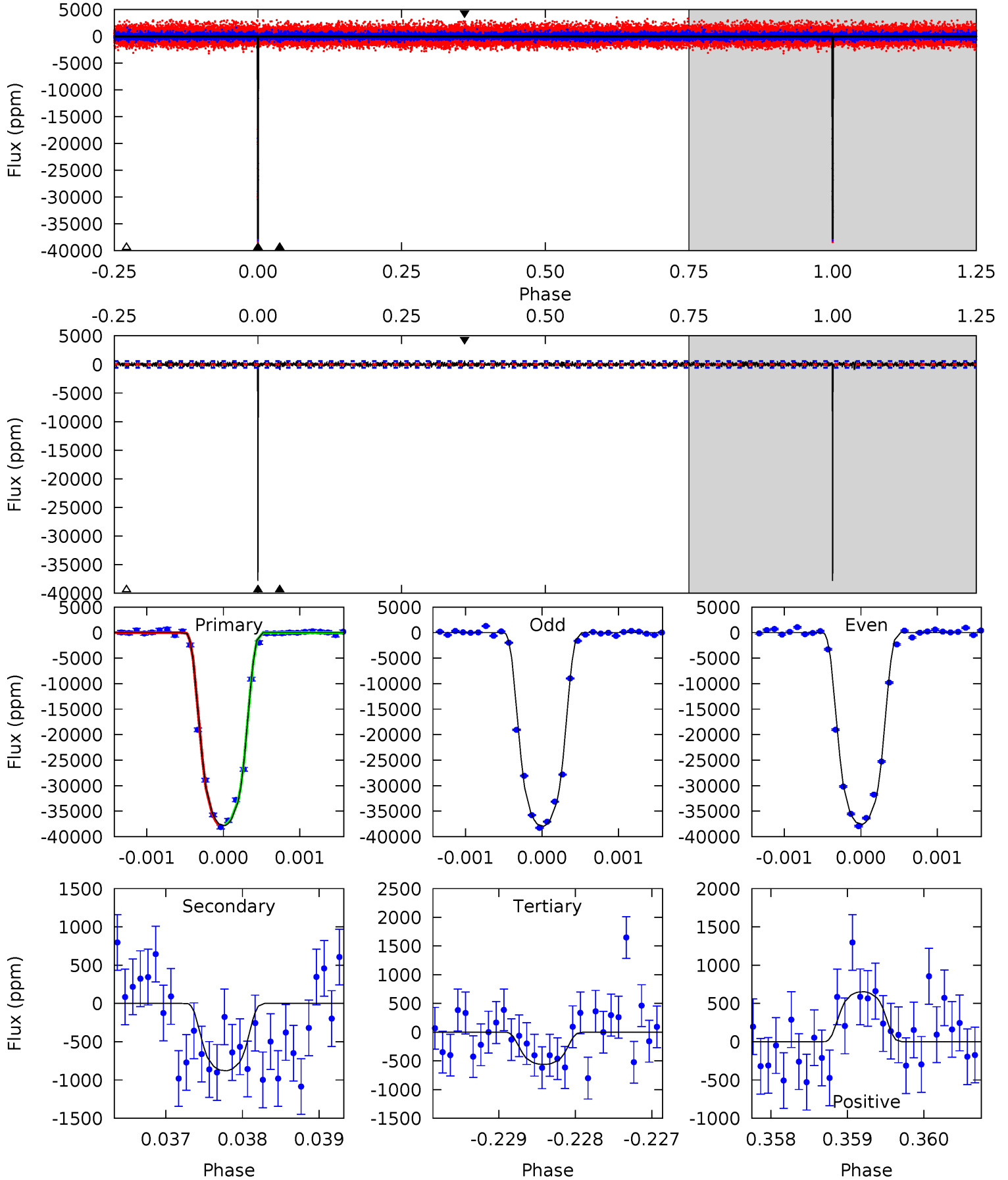
TCE 006973796-01 P=115.994881 Days $T_0=139.568114$ (BKJD)



DV Model-Shift Uniqueness Test

006973796-01, P = 115.994386 Days, E = 139.571283 Days

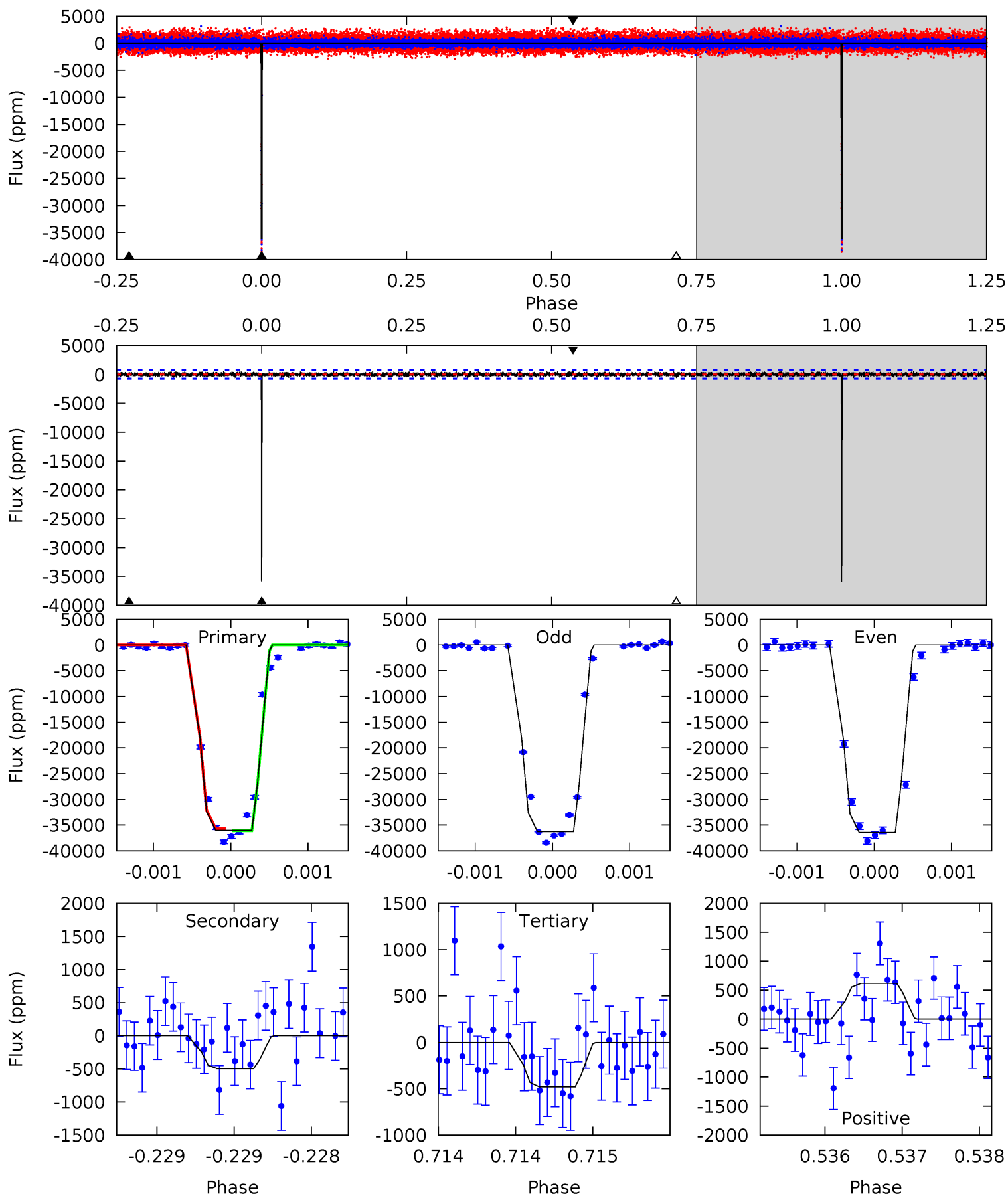
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
359.7	8.36	5.34	6.21	5.44	3.27	1.51	354.4	353.5	3.02	2.15	1.71	0.93	0.02	0.32



Alt Model-Shift Uniqueness Test

006973796-01, P = 115.994881 Days, E = 139.568114 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
273.1	3.77	3.65	4.68	5.49	3.35	1.13	269.4	268.4	0.13	-0.90	0.71	1.00	0.02	1.31



Stellar Parameters For KIC 006973796

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4530^{+159}_{-159}	$4.566^{+0.060}_{-0.020}$	$0.220^{+0.200}_{-0.300}$	$0.735^{+0.031}_{-0.067}$	$0.725^{+0.056}_{-0.056}$	$2.574^{+0.700}_{-0.236}$
	+4%/-4%	+1%/-0%	+91%/-136%	+4%/-9%	+8%/-8%	+27%/-9%
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 006973796-01 / KOI 3726.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-880 ± 105	$14.18^{+0.55}_{-0.74}$	367^{+14}_{-14}	2596^{+75}_{-73}	431^{+64}_{-60}
Alt.	-498 ± 132	$15.27^{+0.59}_{-0.86}$	367^{+15}_{-14}	2386^{+78}_{-94}	212^{+57}_{-54}

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

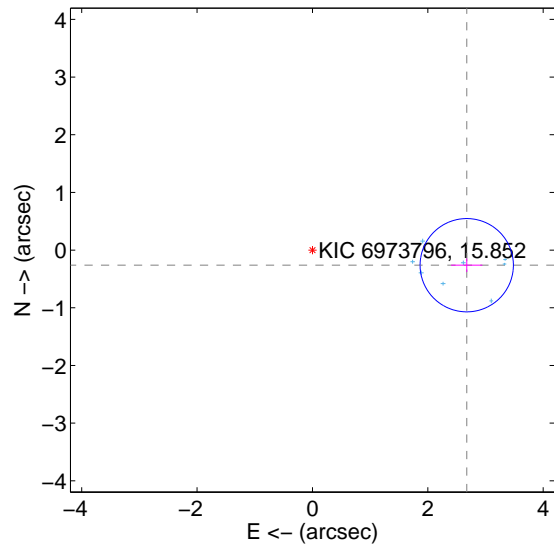
Supplemental centroid analysis for 006973796-01. Kepler magnitude: 15.85. Transit SNR 233.15

There are 8 quarters with good PRF difference image offsets

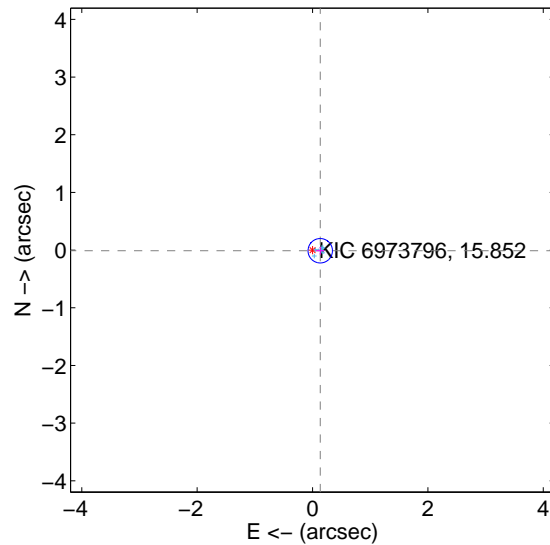
The OOT PRF centroid is offset from the target star catalog position by about 2.59 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.687 ± 0.270	9.97	-2.675 ± 0.271	-0.262 ± 0.118
PRF-fit source offset from KIC position	0.134 ± 0.071	1.90	-0.134 ± 0.071	-0.011 ± 0.069
photometric centroid source offset	0.68 ± 0.04	19.41	0.65 ± 0.04	0.21 ± 0.03

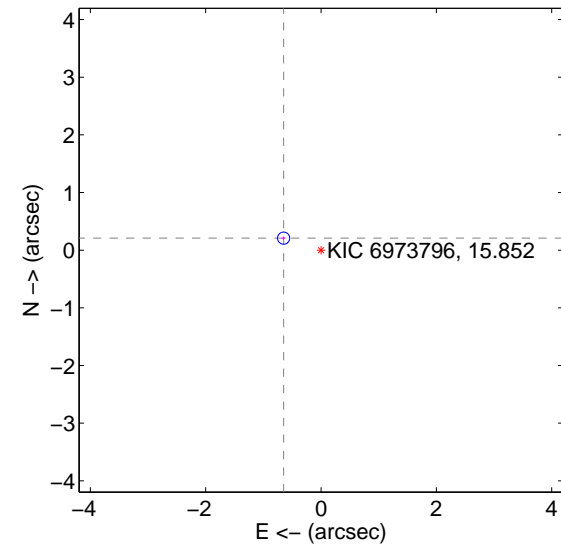
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

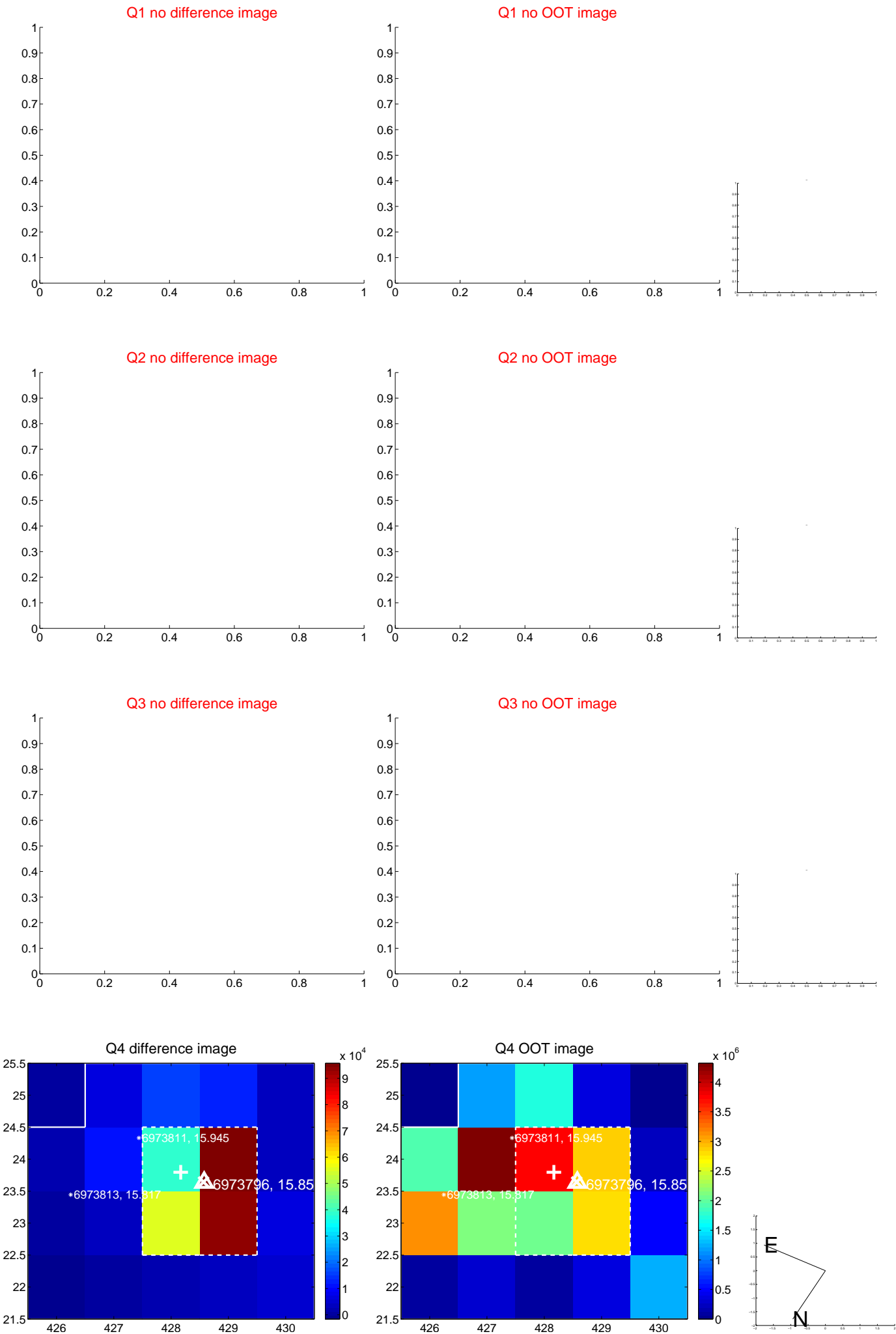


offset from photometric centroids

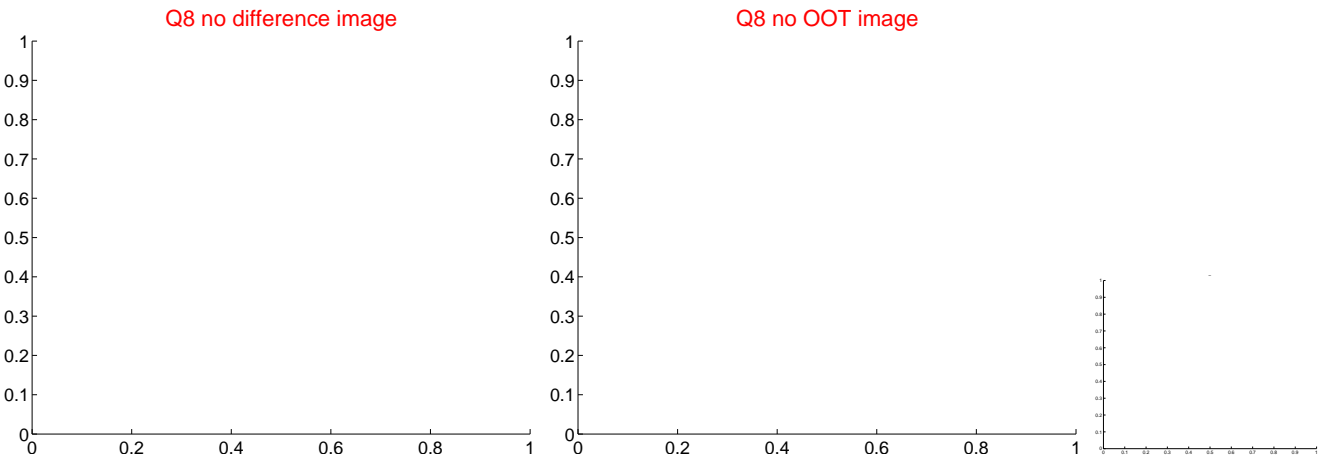
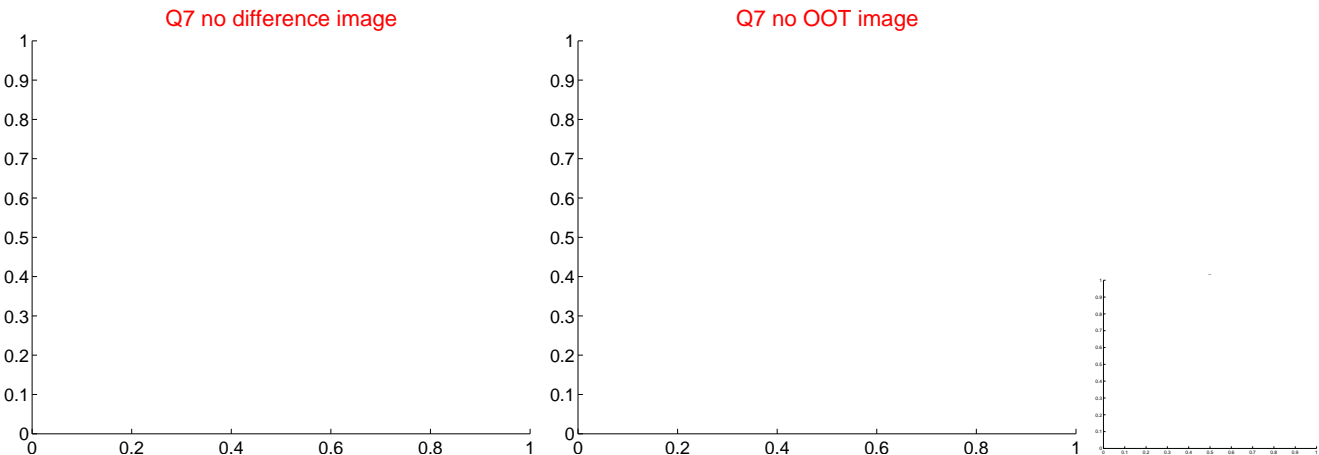
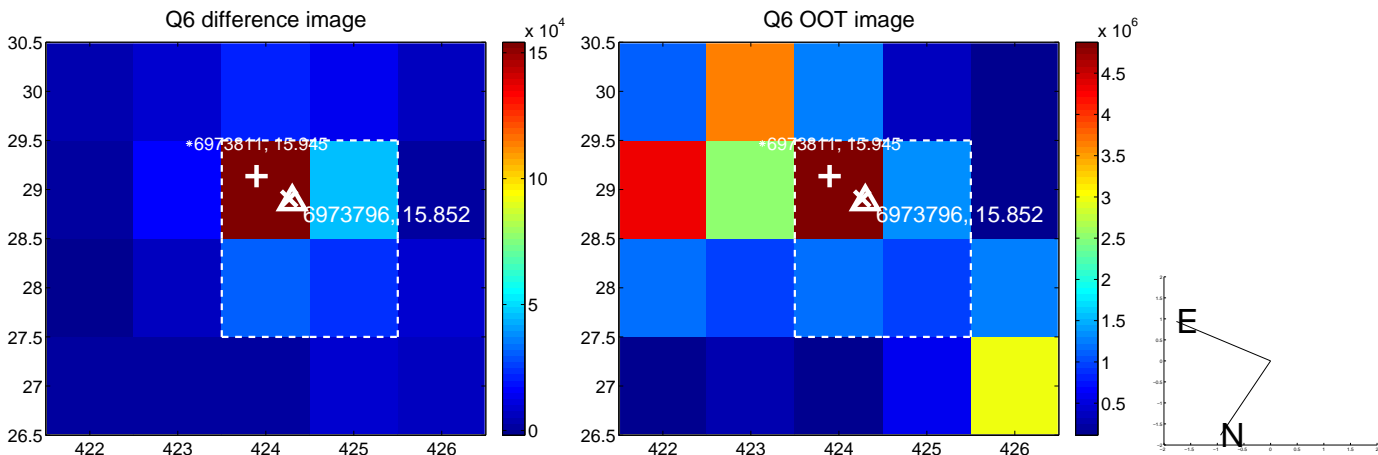
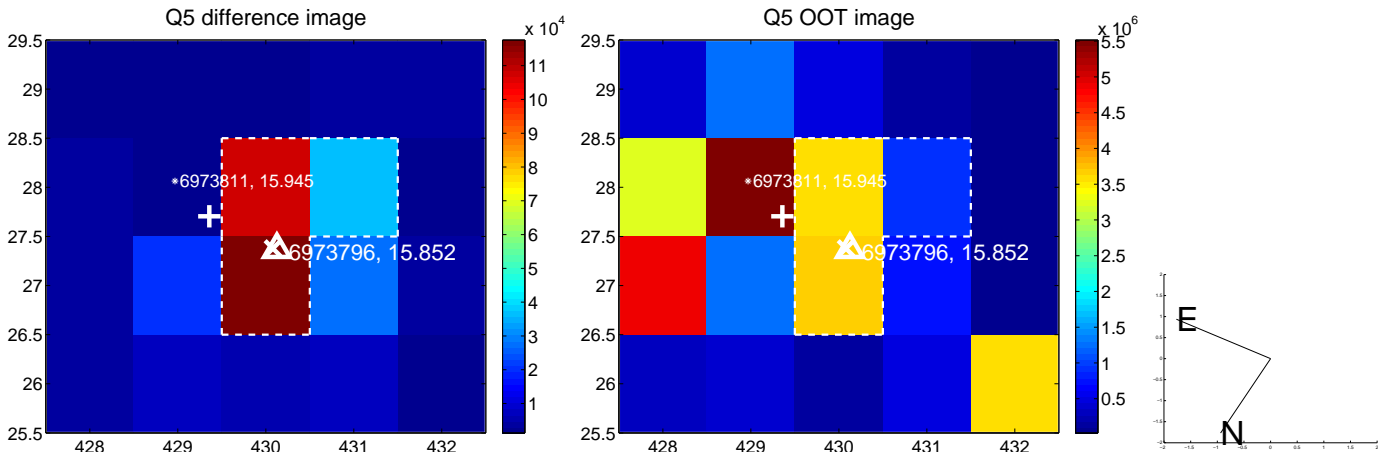


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

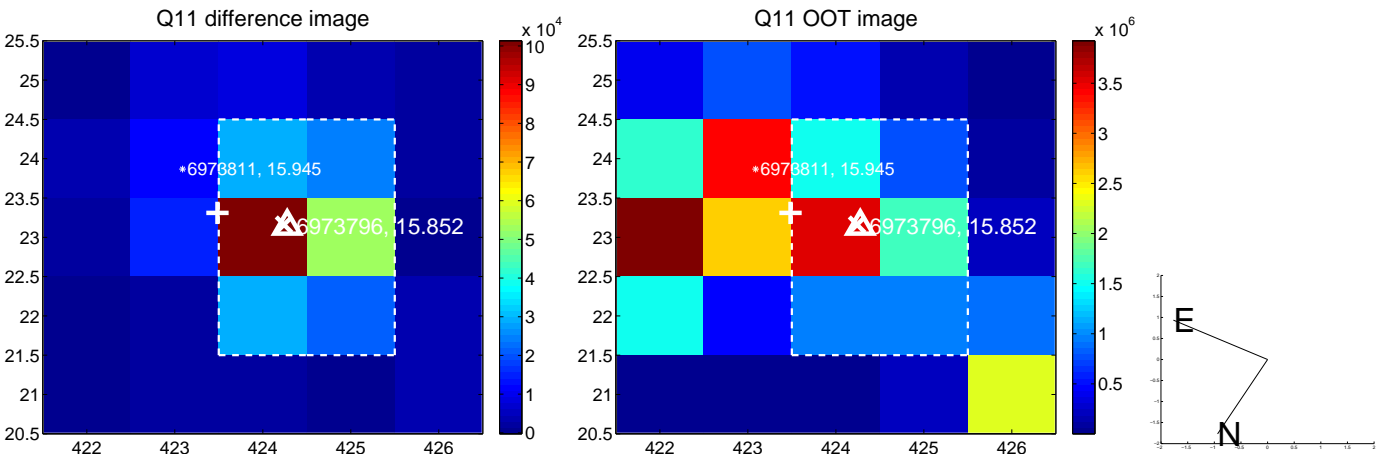
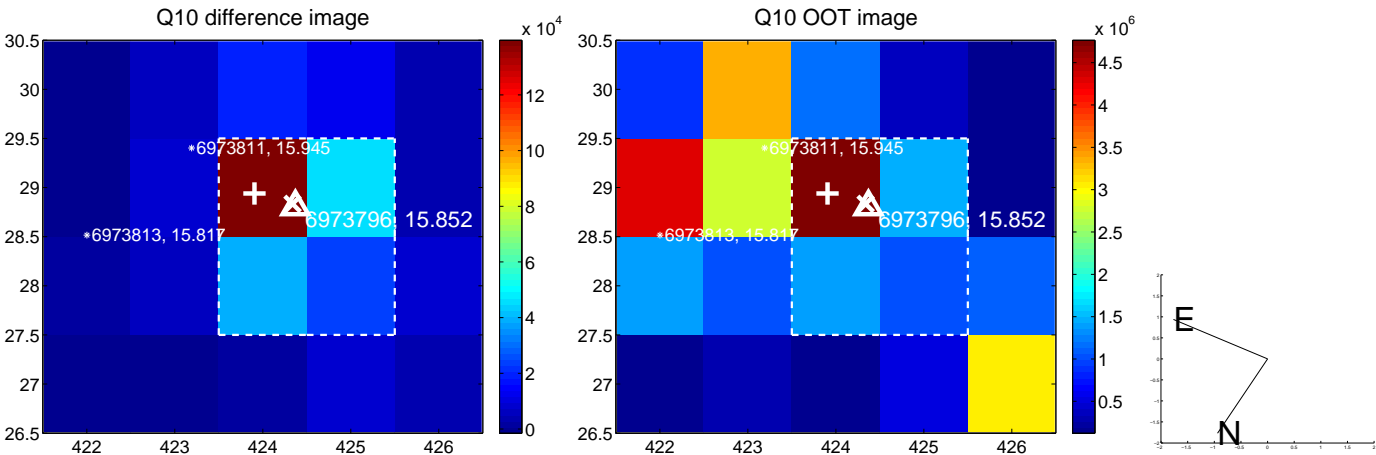
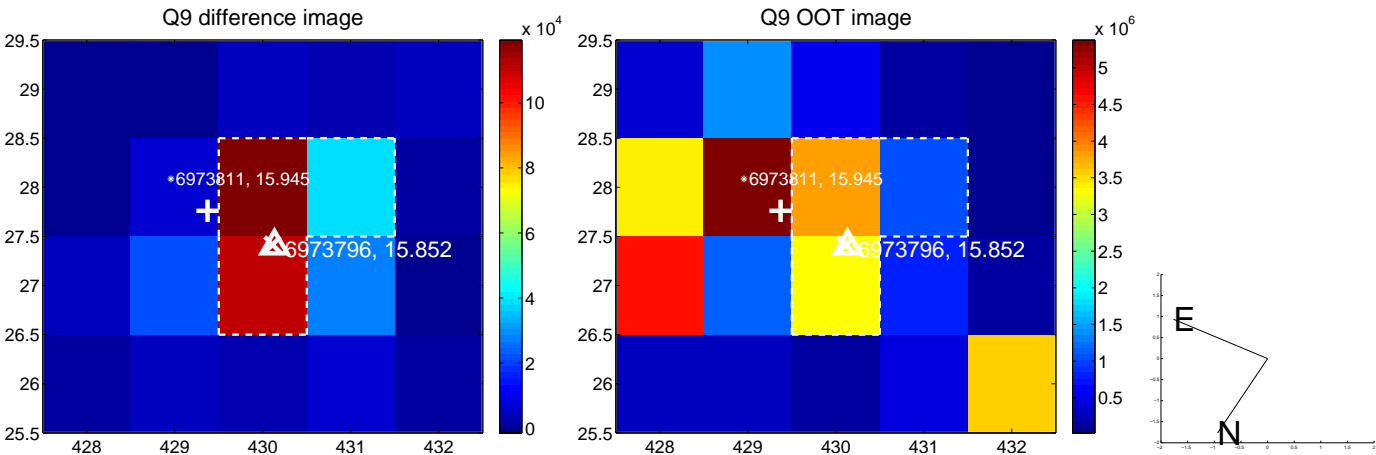
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



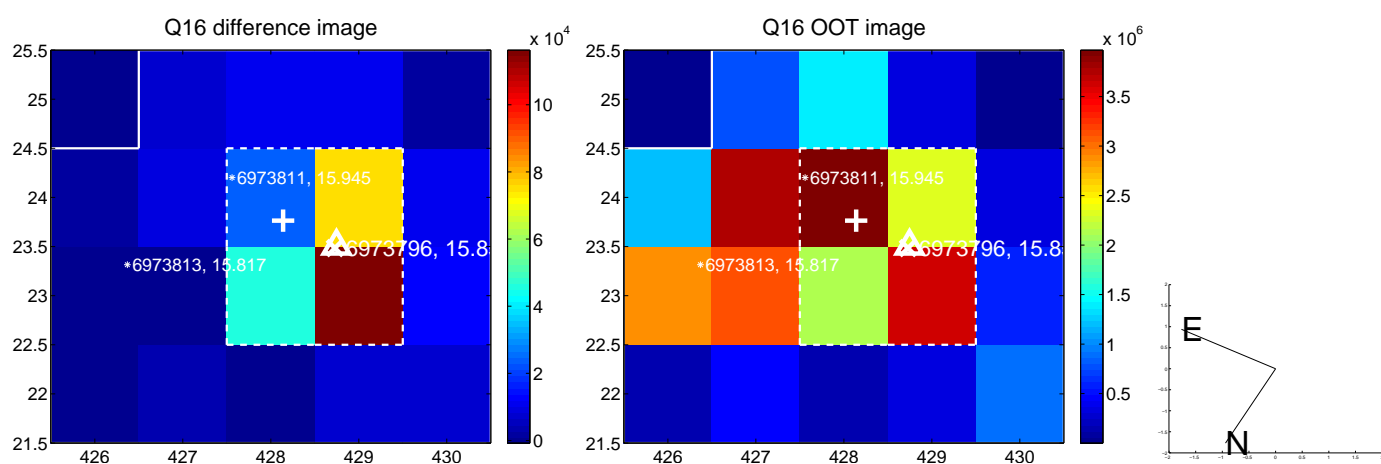
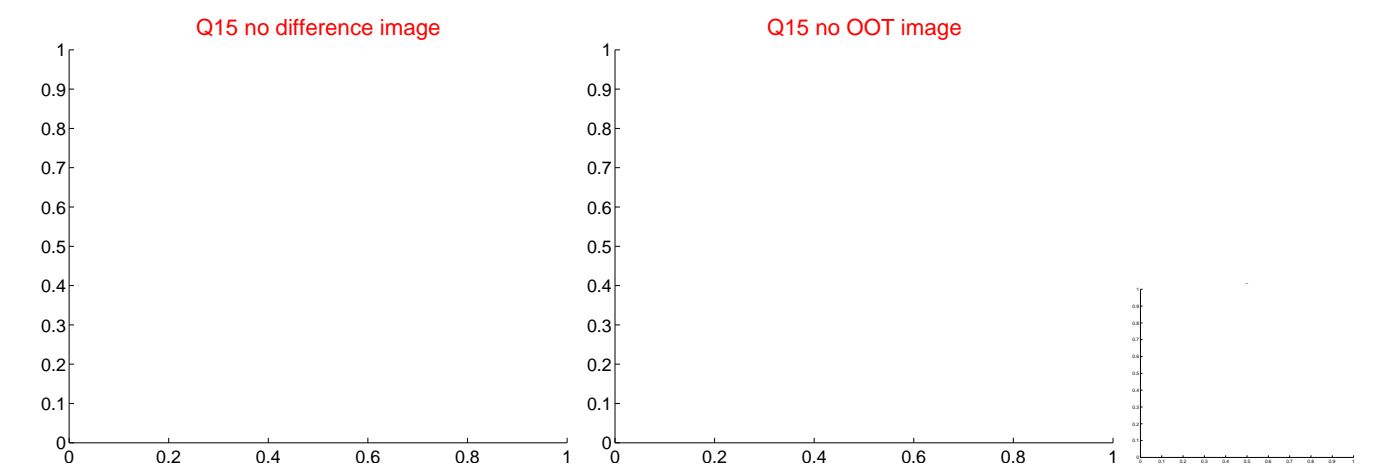
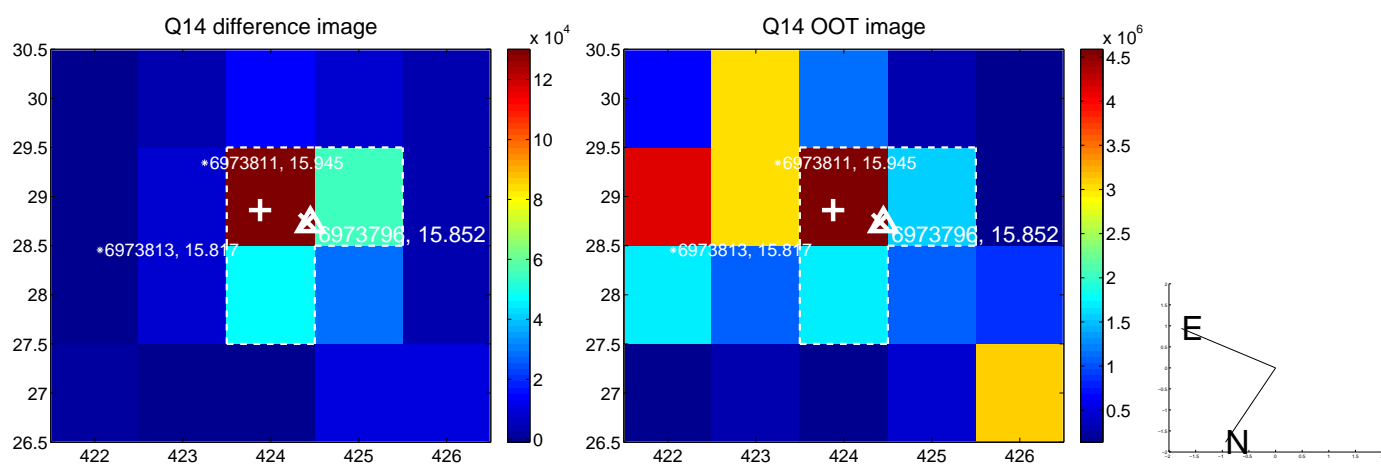
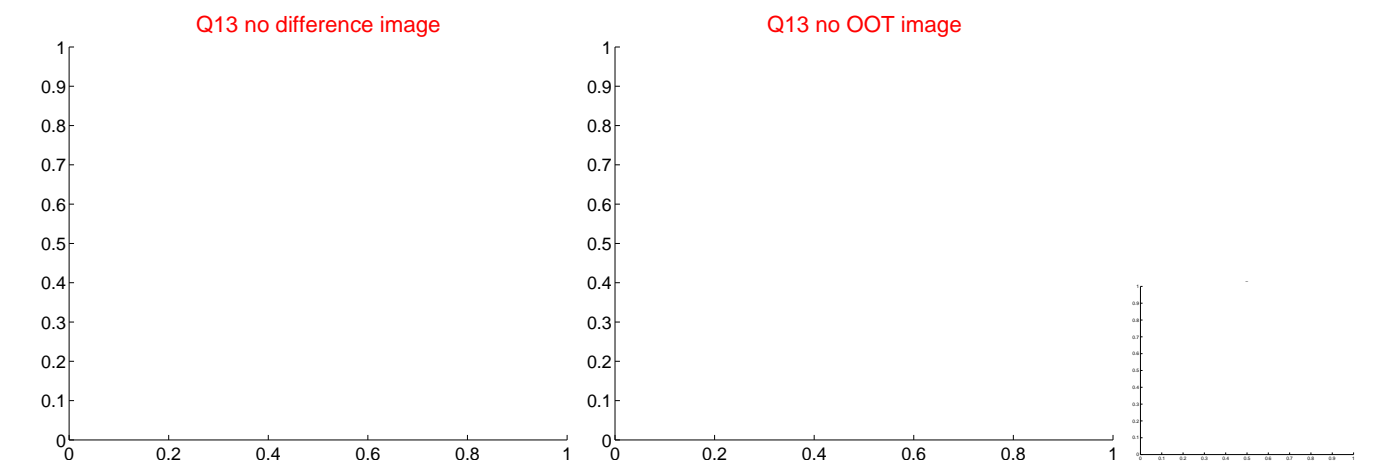
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



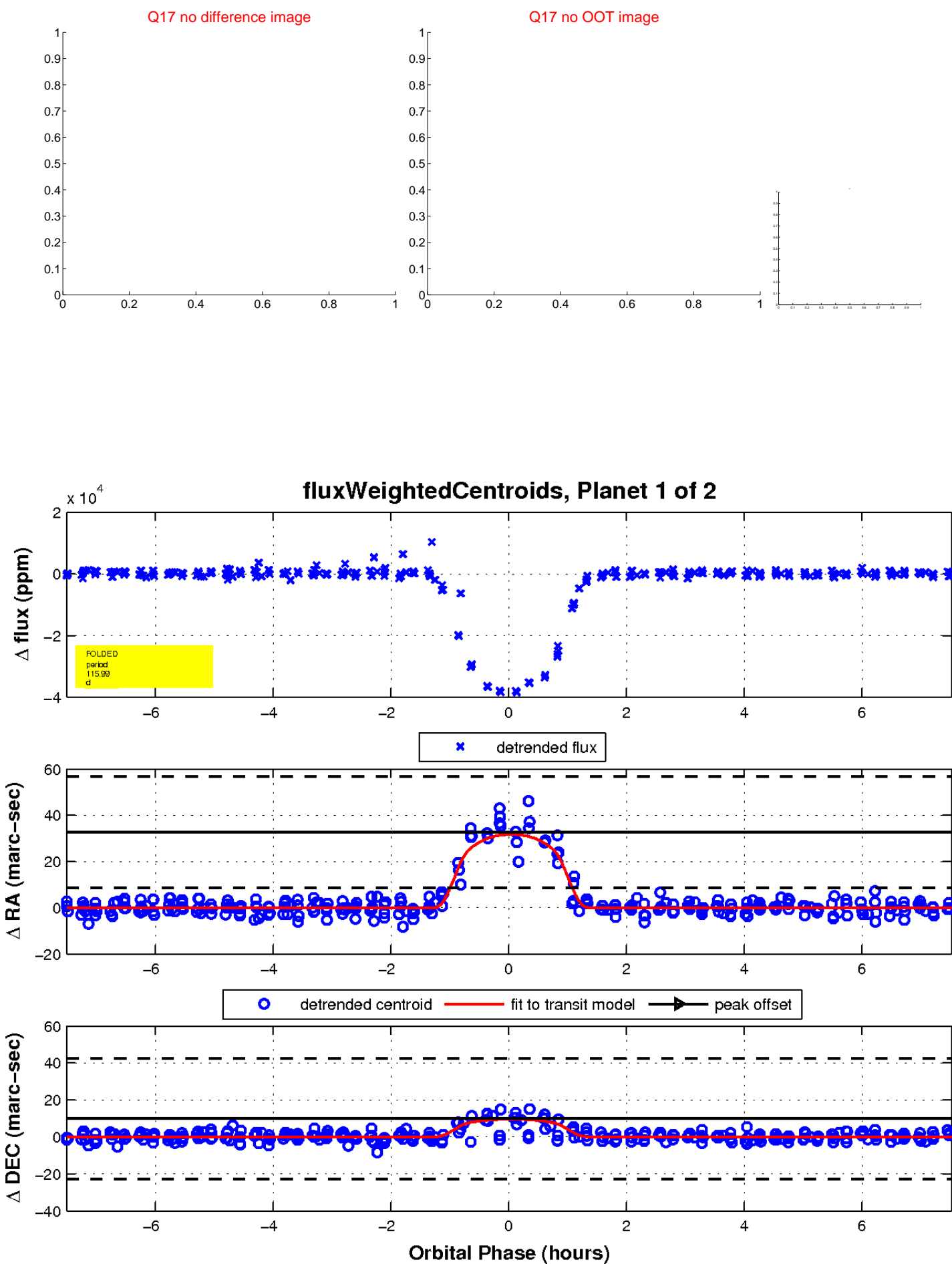
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

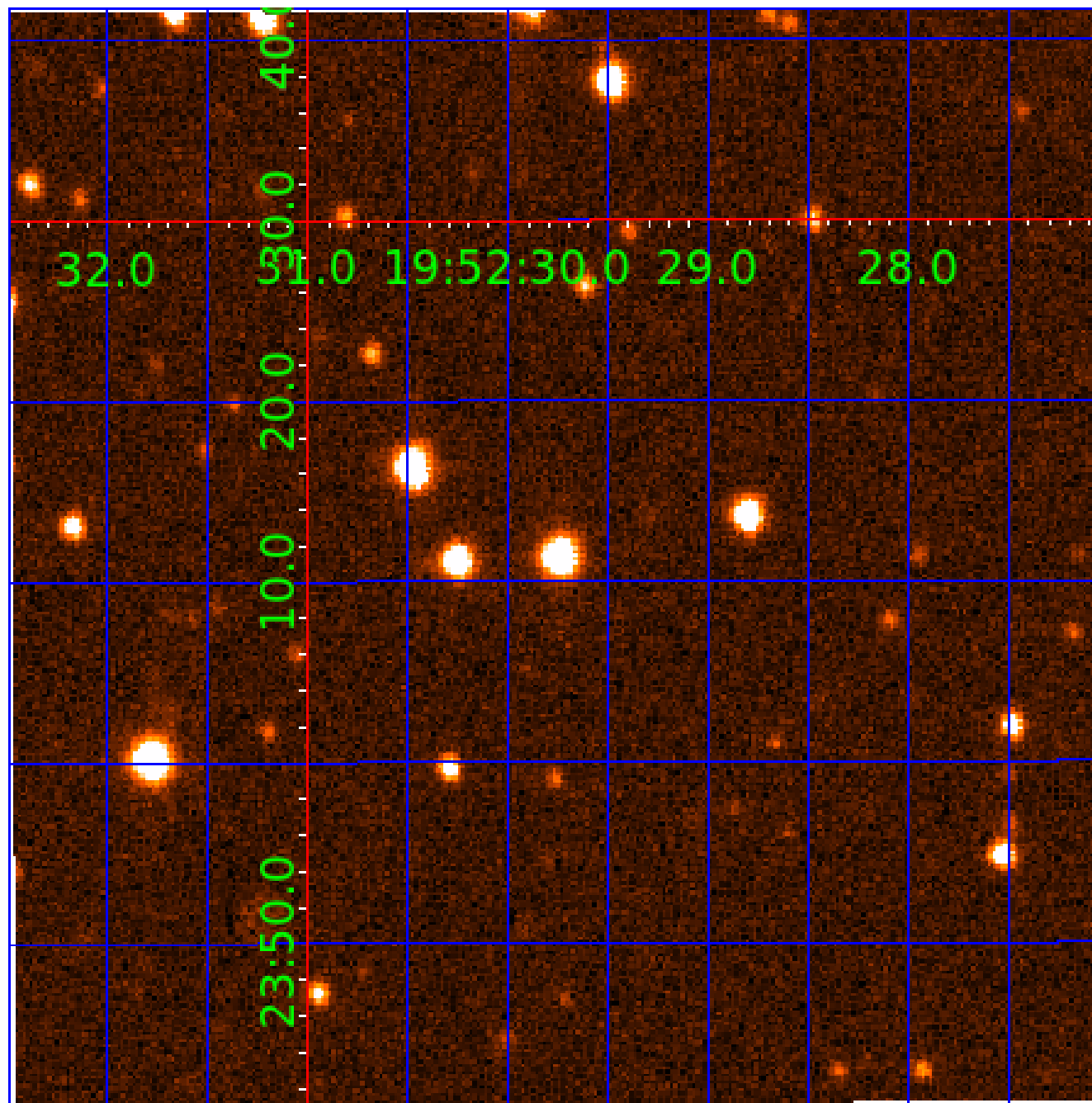


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006973796

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})
006973796-01	OBS	3726.01	115.994386	139.571283	37919.0	2.510	245.6	233.2	0.73	4530	14.26	1.17
006973796-02	OBS	No	115.993610	143.987305	1122.5	6.077	8.4	9.0	0.73	4530	2.78	1.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006973796-01	OBS	FP	0.00	0	1	0	0	HAS_SEC_TCE—CENT_KIC_POS
006973796-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_KIC_POS

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.

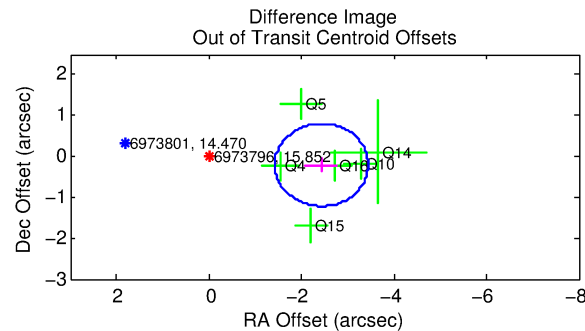
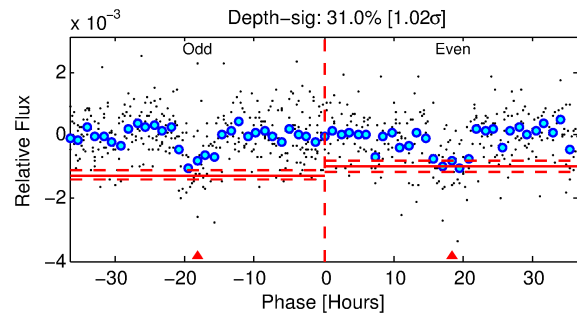
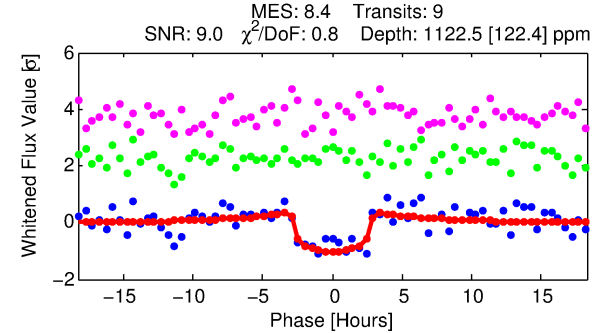
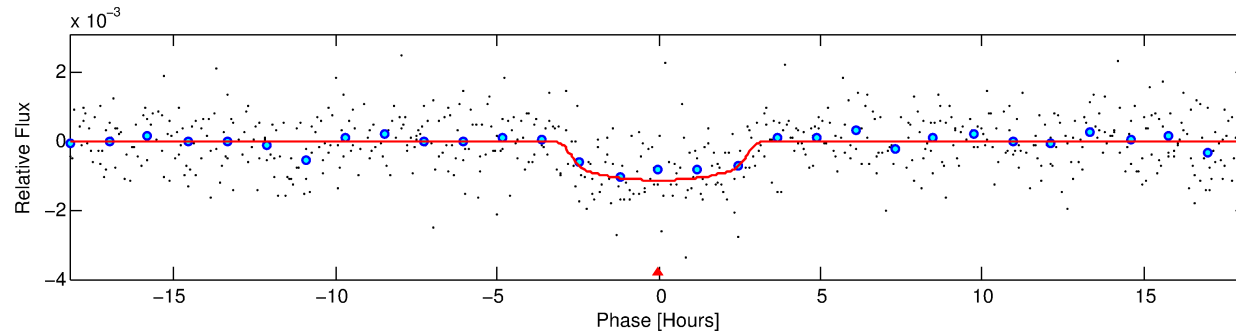
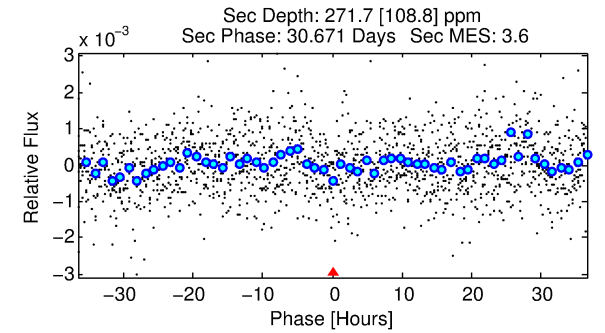
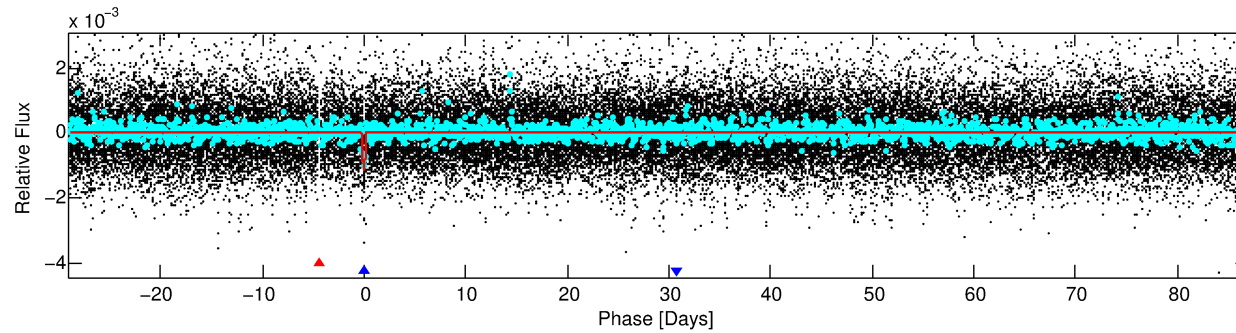
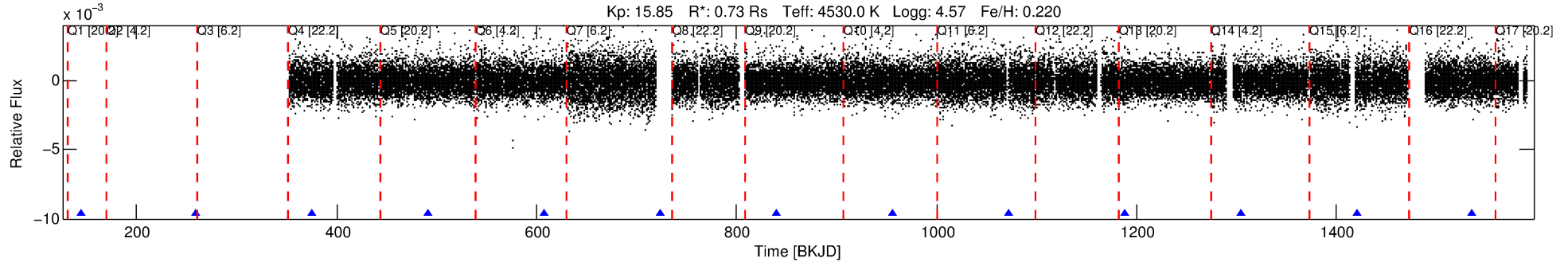
Ephemeris Match Information For 006973796-02

No Significant Match Found

DV One-Page Summary

KIC: 6973796 Candidate: 2 of 2 Period: 115.994 d

KOI: K03726 Corr: No Ephemeris Match



DV Fit Results:

Period = 115.99361 [0.00167] d
Epoch = 143.9873 [0.0129] BKJD
Rp/R* = 0.0347 [0.0120]
a/R* = 95.50 [103.87]
b = 0.80 [0.50]
Seff = 1.16 [0.21]
Teq = 265 [12] K
Rp = 2.78 [1.00] Re
a = 0.4183 [0.0319] AU
Ag = 3386.73 [2738.08] [1.24σ]
Teffp = 3124 [635] K [4.50σ]

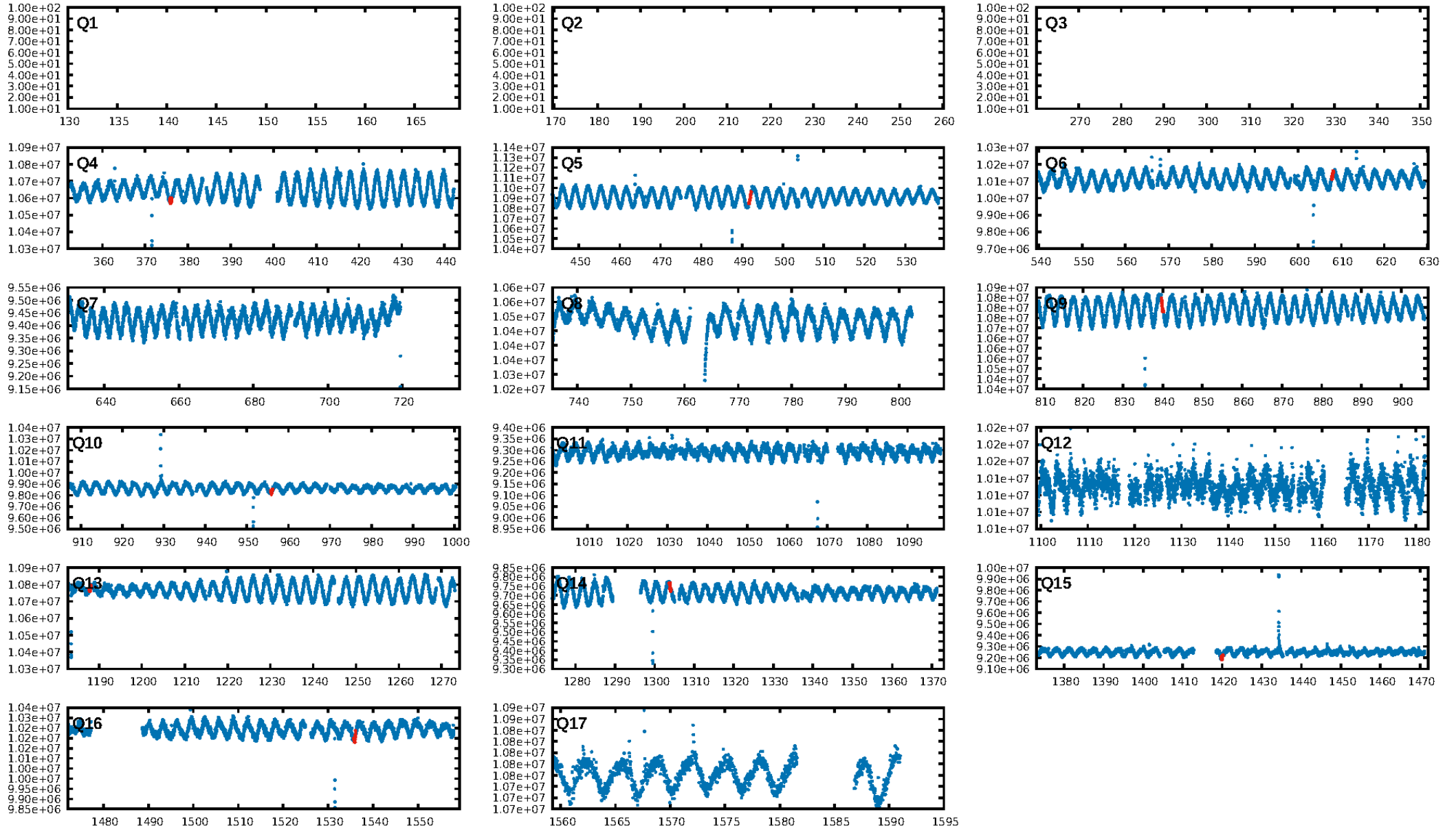
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.2% [0.00σ]
ModelChiSquare2-sig: 94.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.61e-15
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: 1.334
Centroid-sig: 0.1%
Centroid-so: 0.538 arcsec [0.86σ]
OotOffset-rm: 2.438 arcsec [7.24σ]
KicOffset-rm: 0.233 arcsec [0.84σ]
OotOffset-st: 2/1/2/1 [6]
KicOffset-st: 2/1/2/1 [6]
DiffImageQuality-fgm: 0.83 [5/6]
DiffImageOverlap-fno: 1.00 [8/8]

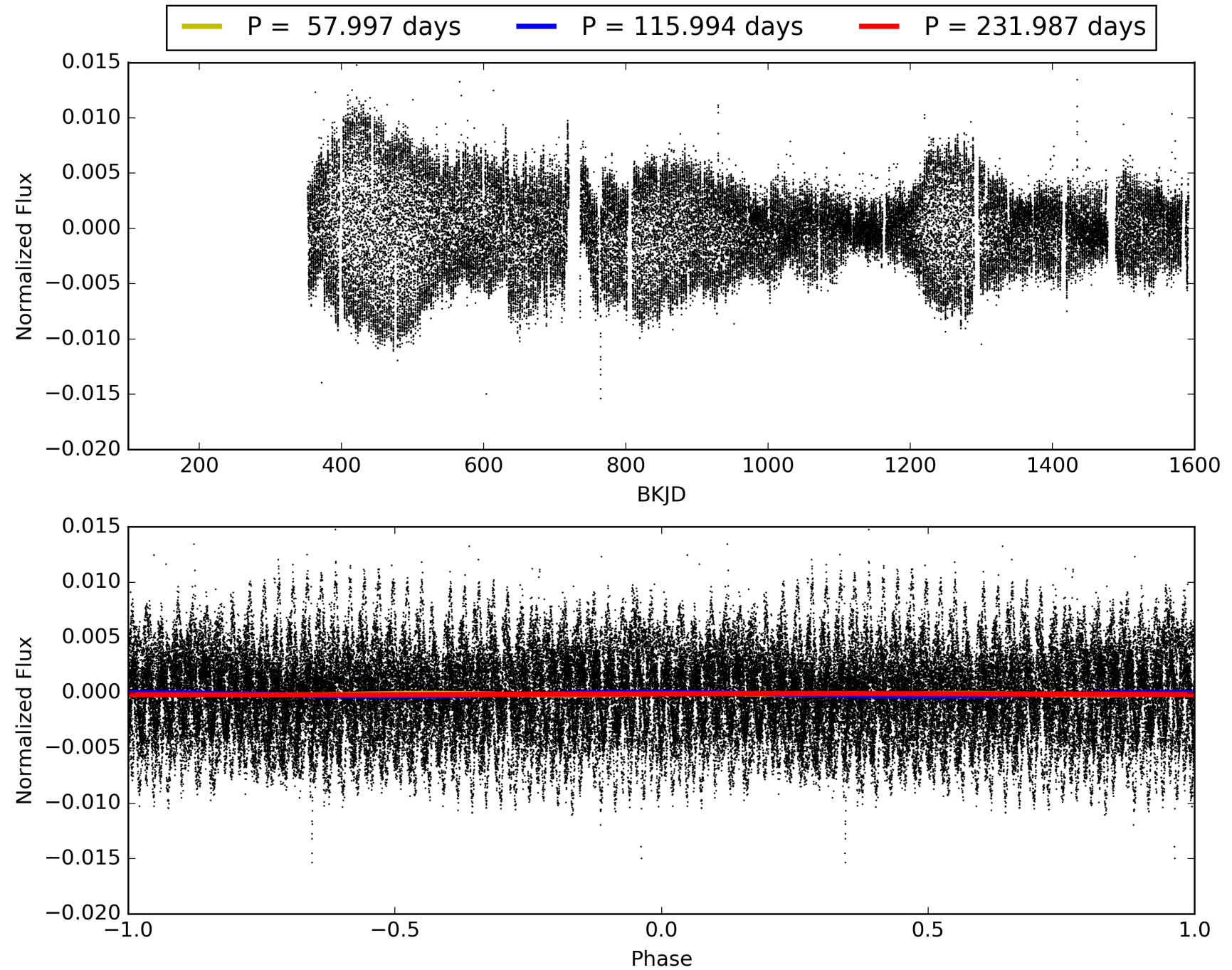
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:33:18 Z

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

TCE 006973796-02, PDC Light Curves

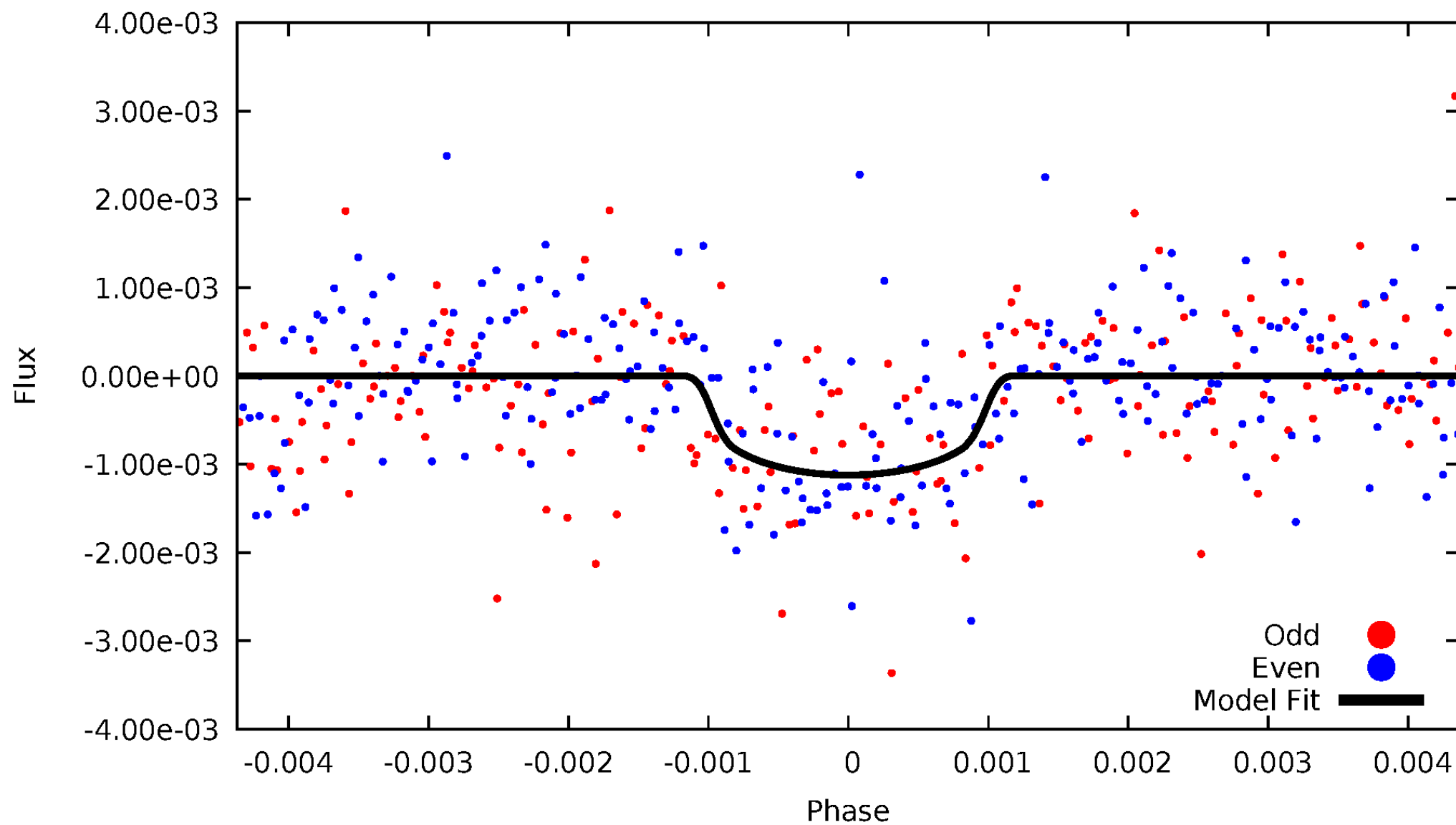


TCE 006973796-02



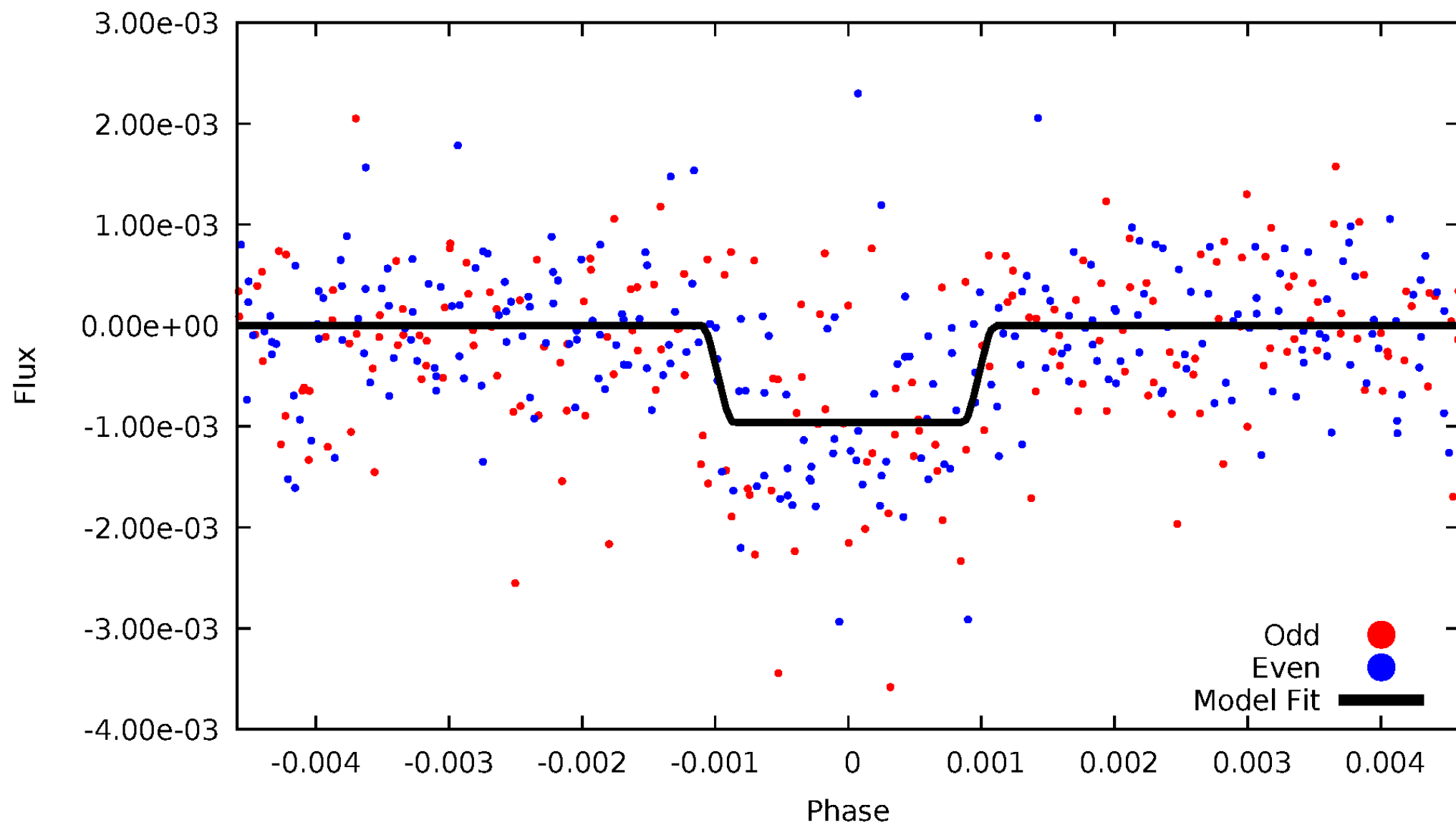
DV Odd/Even

TCE 006973796-02



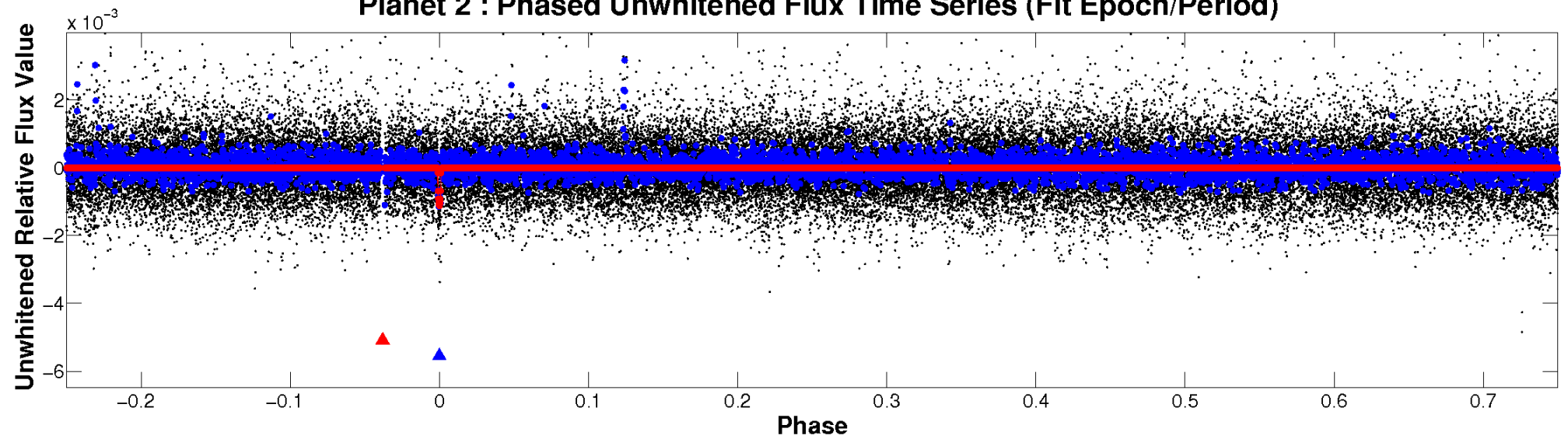
ALT Odd/Even

TCE 006973796-02

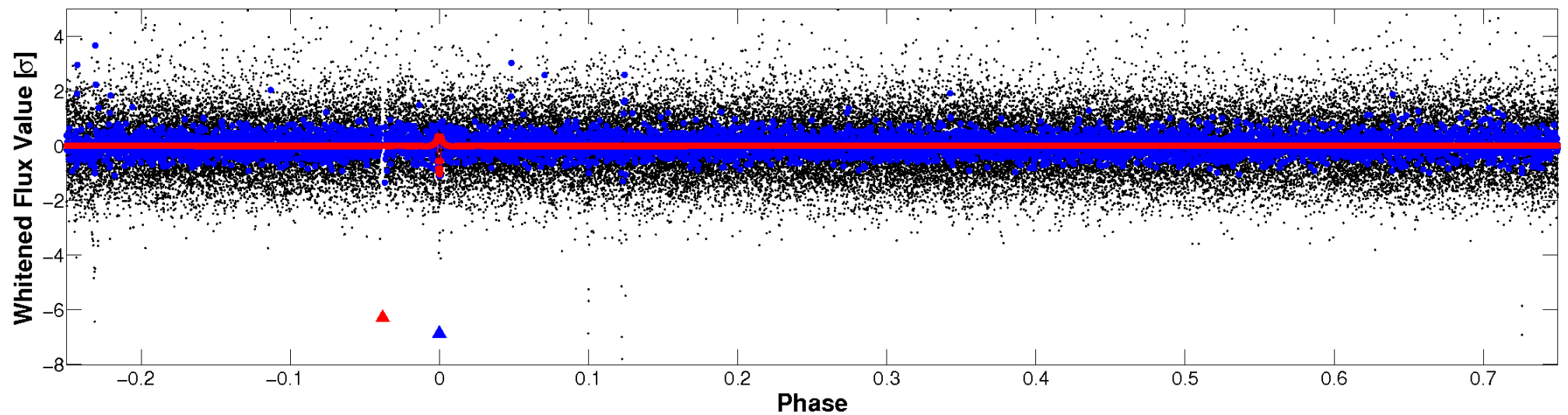


Non-Whitened Vs. Whitened Light Curve

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

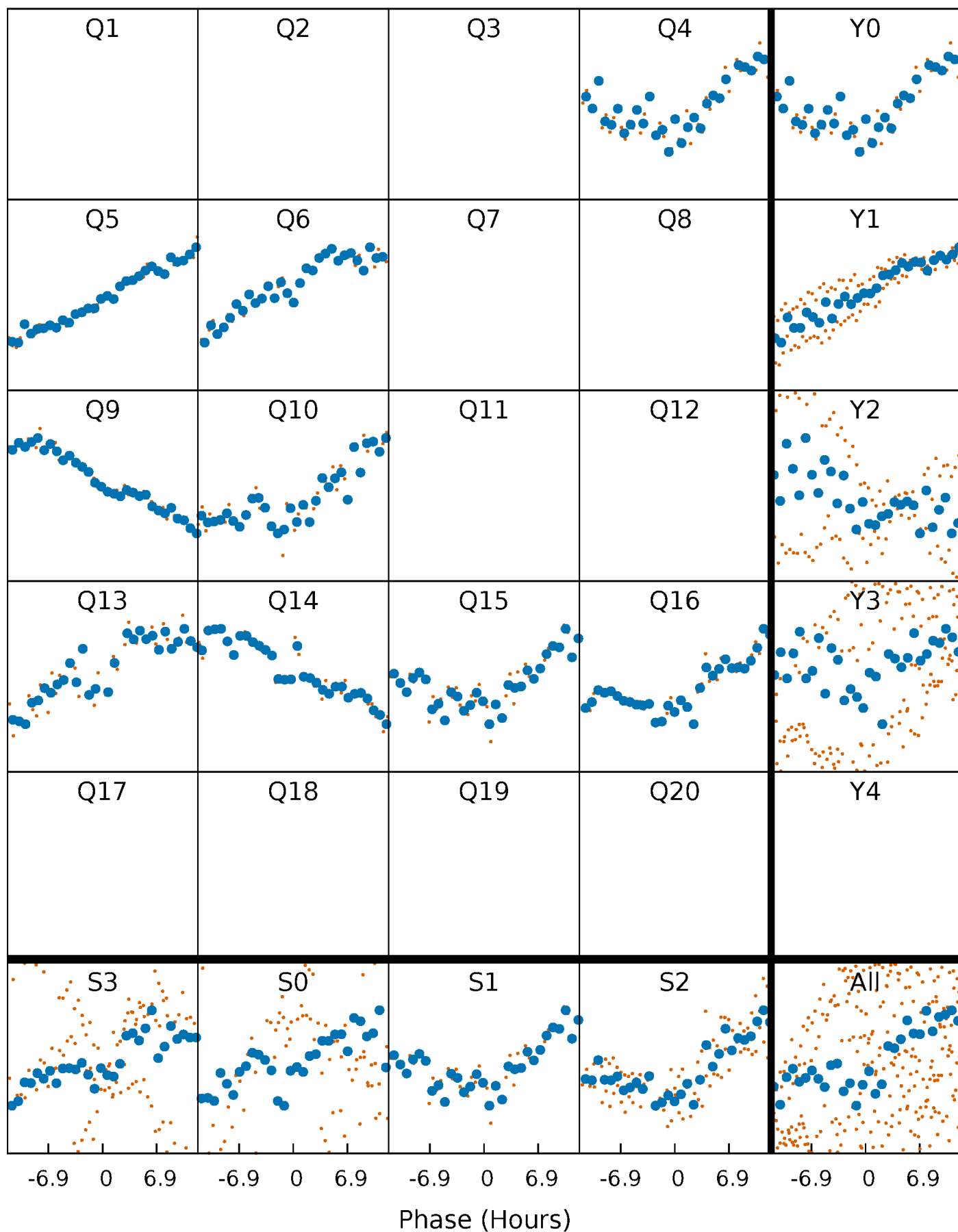


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



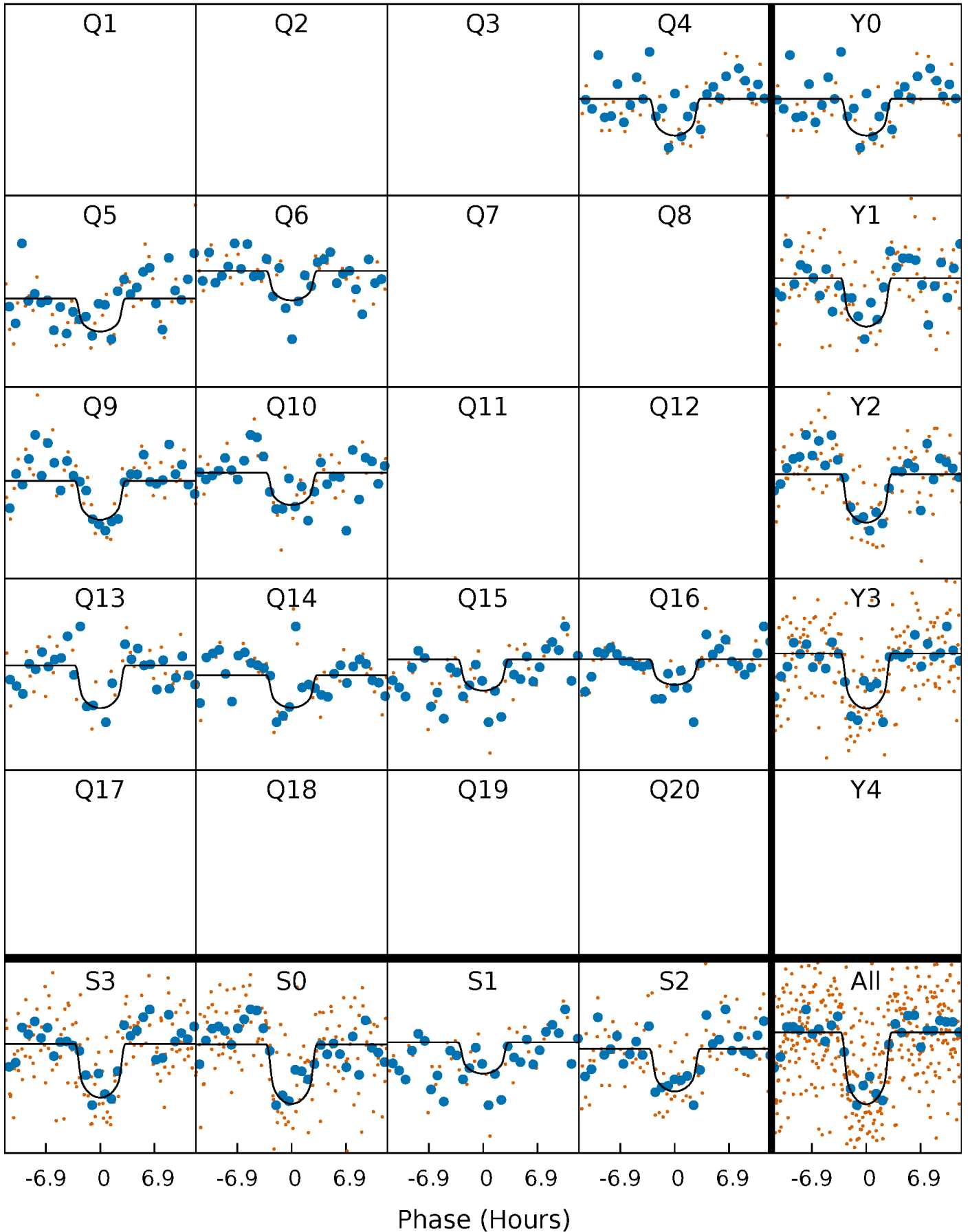
PDC Quarter-Phased Transit Curves

TCE 006973796-02 $P=115.993610$ Days $T_0=143.987305$ (BKJD)



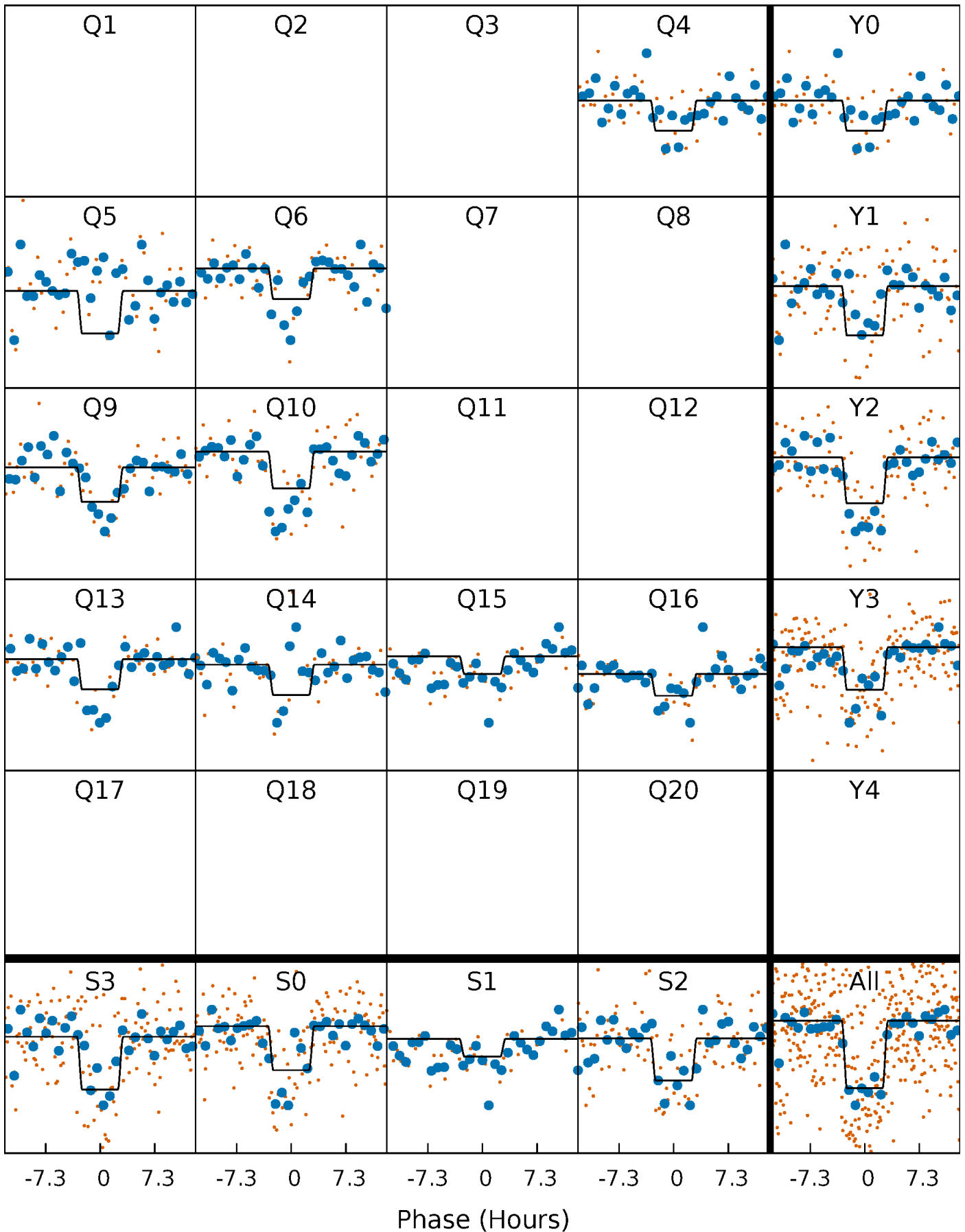
DV Quarter-Phased Transit Curves

TCE 006973796-02 $P=115.993610$ Days $T_0=143.987305$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

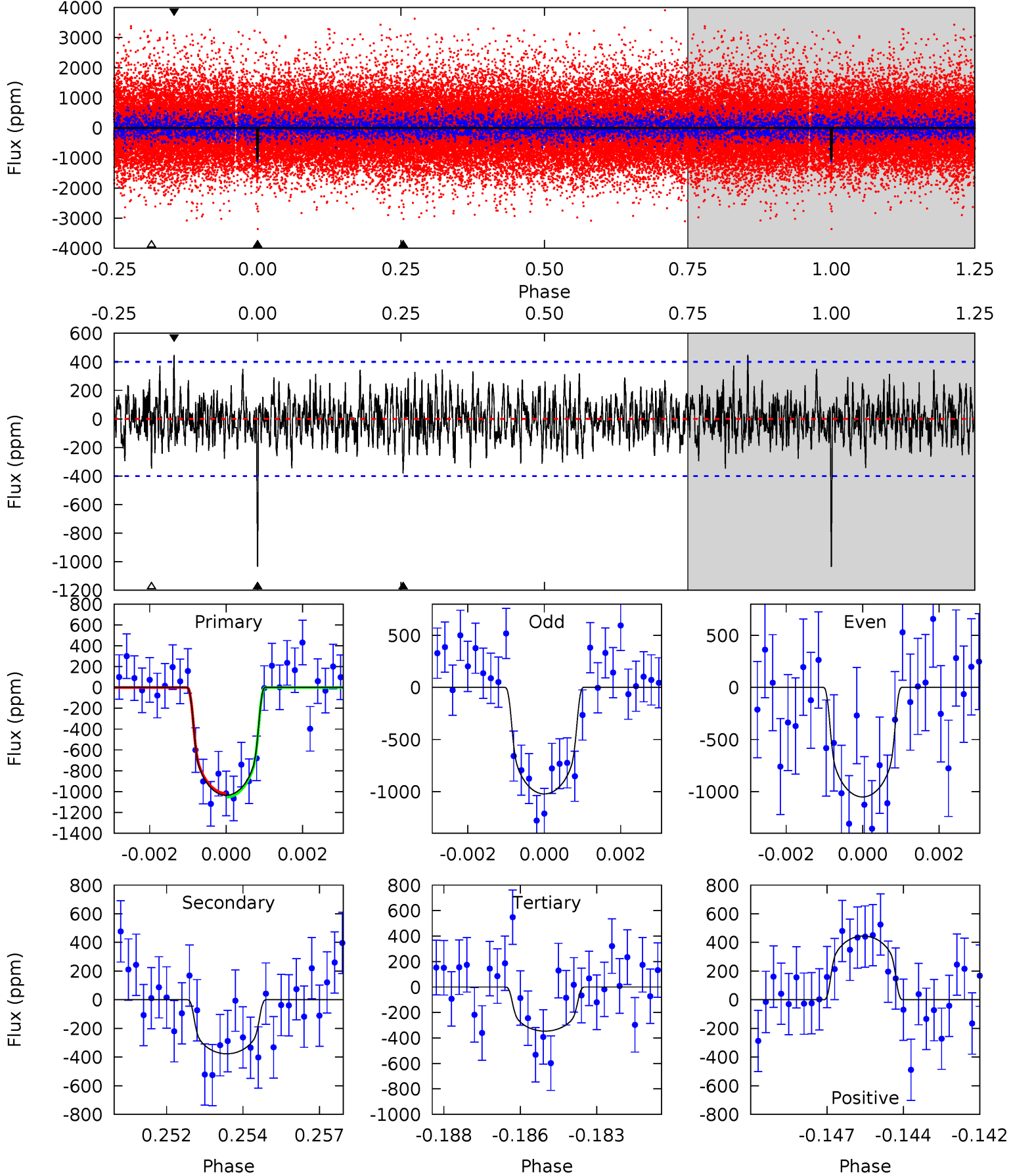
TCE 006973796-02 P=115.991948 Days $T_0=144.004888$ (BKJD)



DV Model-Shift Uniqueness Test

006973796-02, P = 115.993610 Days, E = 143.987305 Days

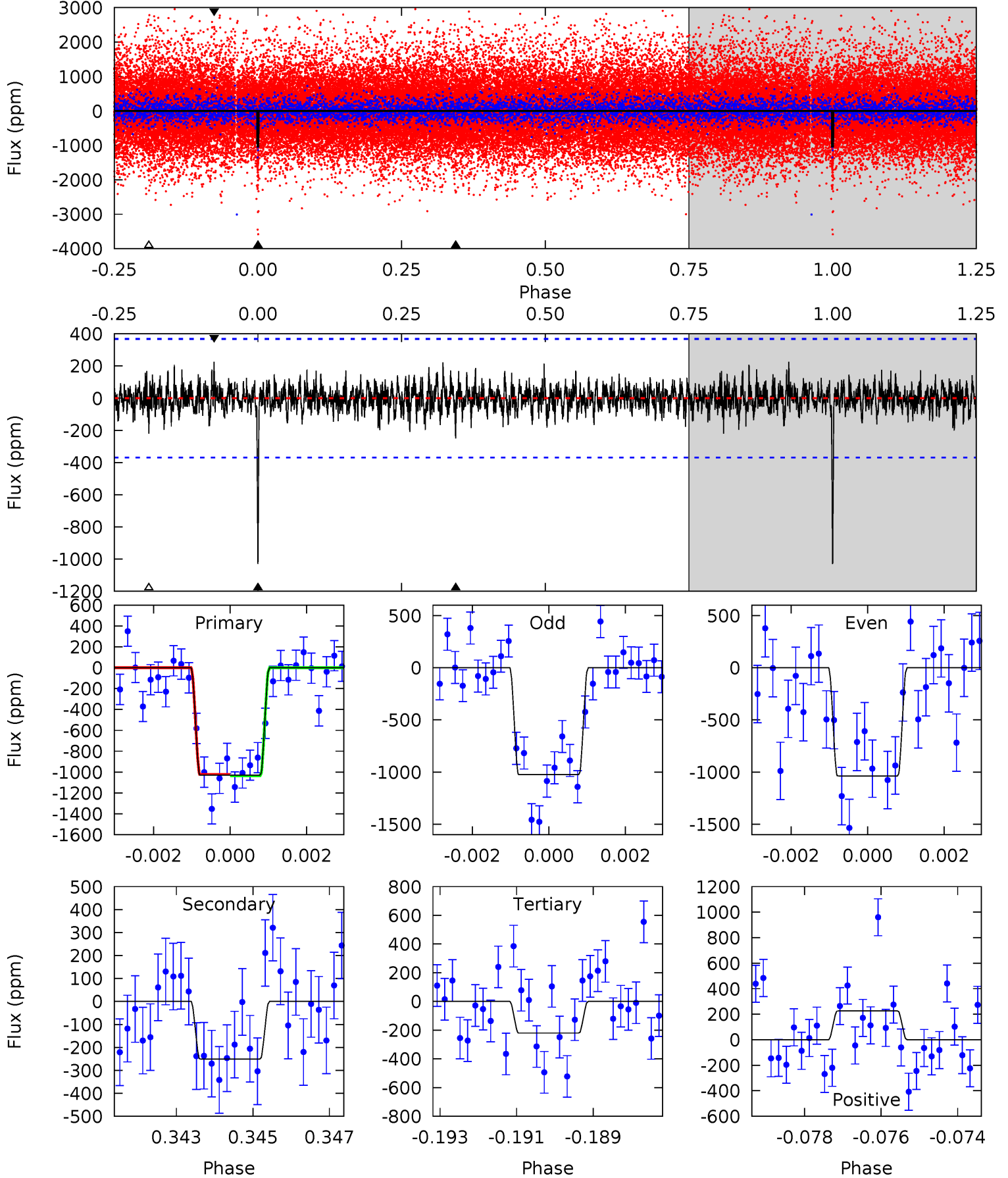
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	5.00	4.59	5.89	5.30	3.05	1.57	9.13	7.82	0.41	-0.90	0.19	0.99	0.30	0.24



Alt Model-Shift Uniqueness Test

006973796-02, P = 115.991948 Days, E = 144.004888 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.8	3.61	3.17	3.25	5.31	3.07	0.88	11.7	11.6	0.44	0.36	0.10	0.84	0.18	0.10



Stellar Parameters For KIC 006973796

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4530^{+159}_{-159}	$4.566^{+0.060}_{-0.020}$	$0.220^{+0.200}_{-0.300}$	$0.735^{+0.031}_{-0.067}$	$0.725^{+0.056}_{-0.056}$	$2.574^{+0.700}_{-0.236}$
	+4%/-4%	+1%/-0%	+91%/-136%	+4%/-9%	+8%/-8%	+27%/-9%
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 006973796-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-377 ± 75	$2.75^{+0.95}_{-0.99}$	367^{+15}_{-15}	3680^{+610}_{-366}	4838^{+7004}_{-2242}
Alt.	-251 ± 69	$2.53^{+0.92}_{-0.96}$	368^{+14}_{-14}	3534^{+588}_{-381}	3761^{+6129}_{-1917}

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

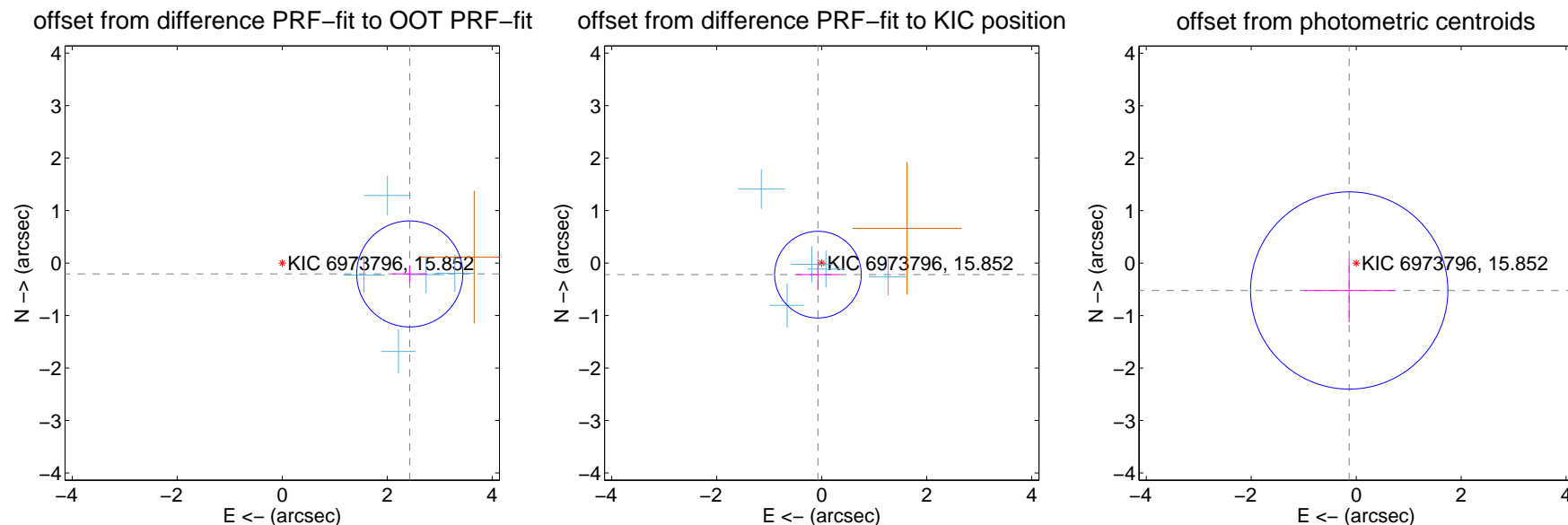
DV Centroid Data

Supplemental centroid analysis for 006973796-02. Kepler magnitude: 15.85. Transit SNR 8.99

There are 5 quarters with good PRF difference image offsets

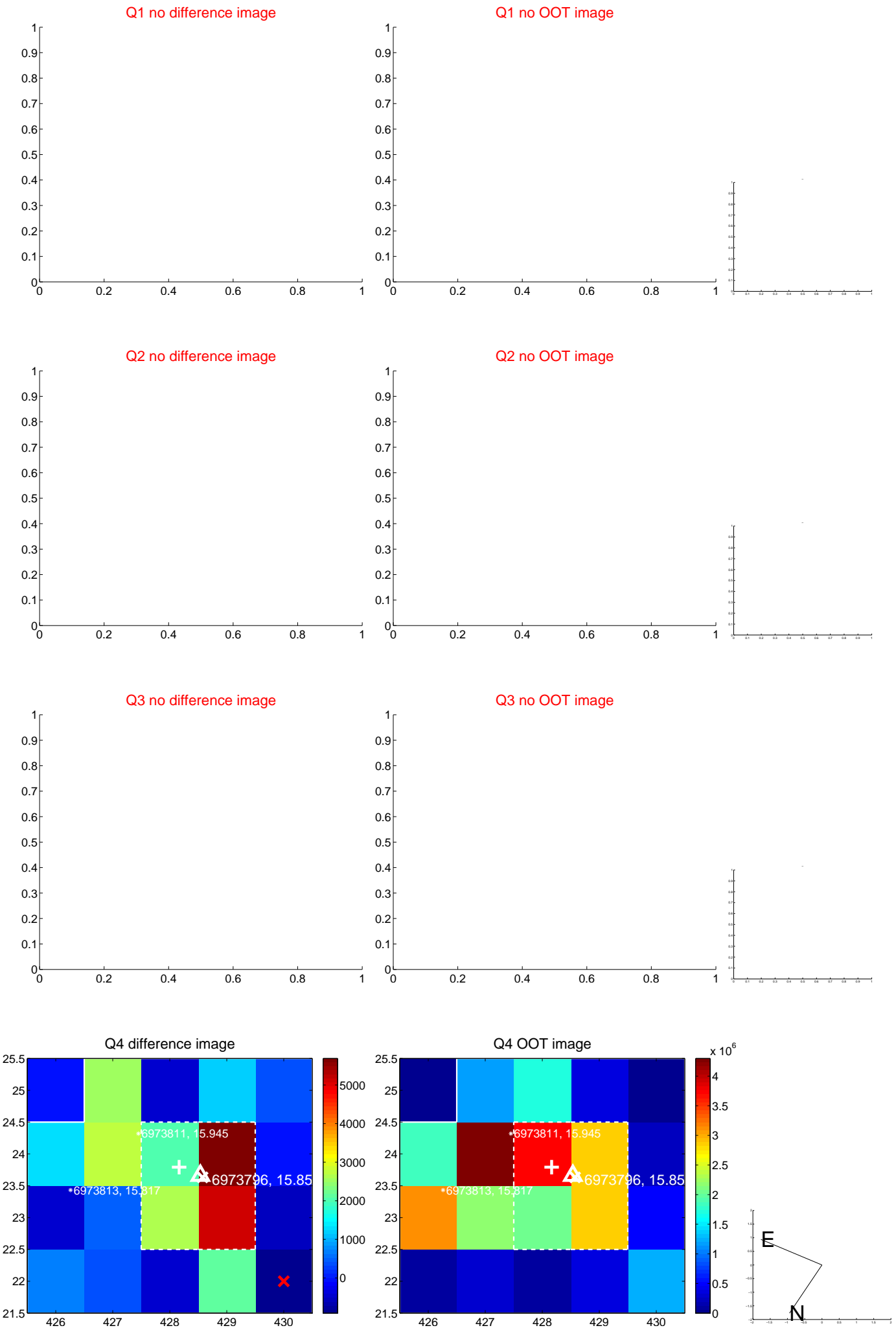
The OOT PRF centroid is offset from the target star catalog position by about 2.66 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.438 ± 0.337	7.24	-2.429 ± 0.338	-0.208 ± 0.163
PRF-fit source offset from KIC position	0.233 ± 0.275	0.84	0.072 ± 0.411	-0.221 ± 0.295
photometric centroid source offset	0.54 ± 0.63	0.86	0.13 ± 0.86	-0.52 ± 0.61

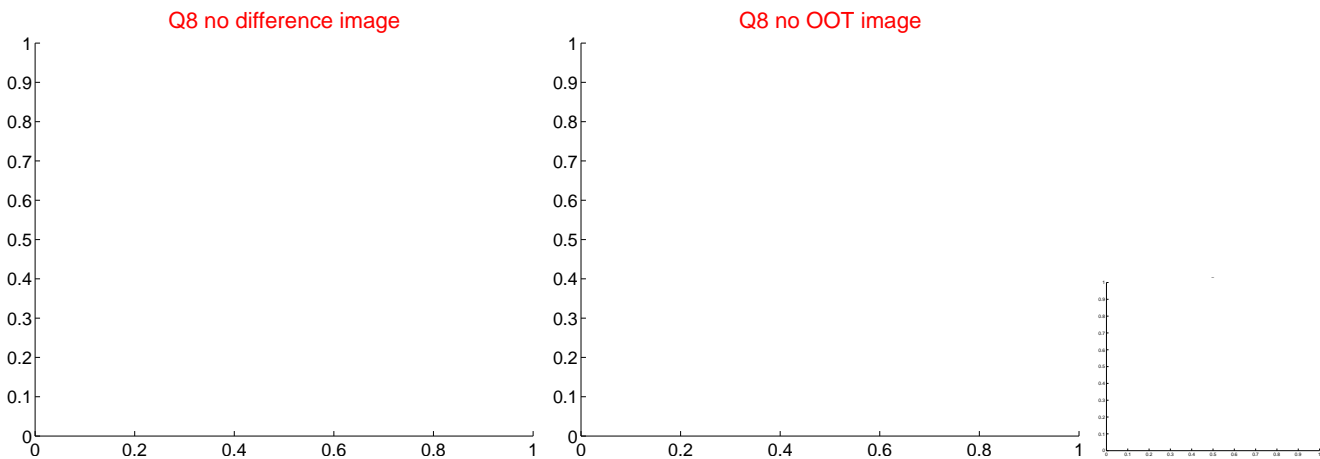
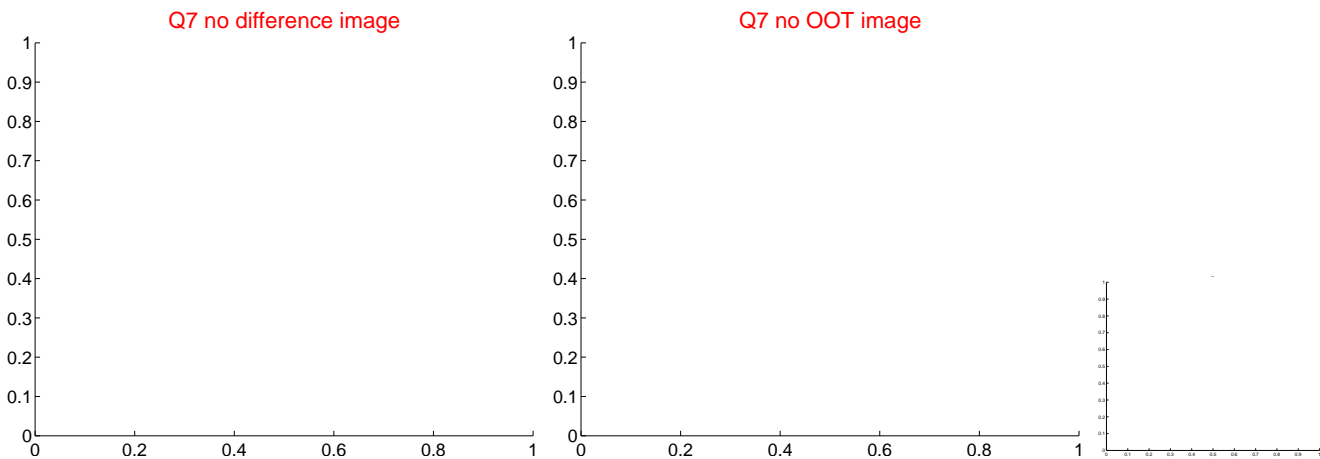
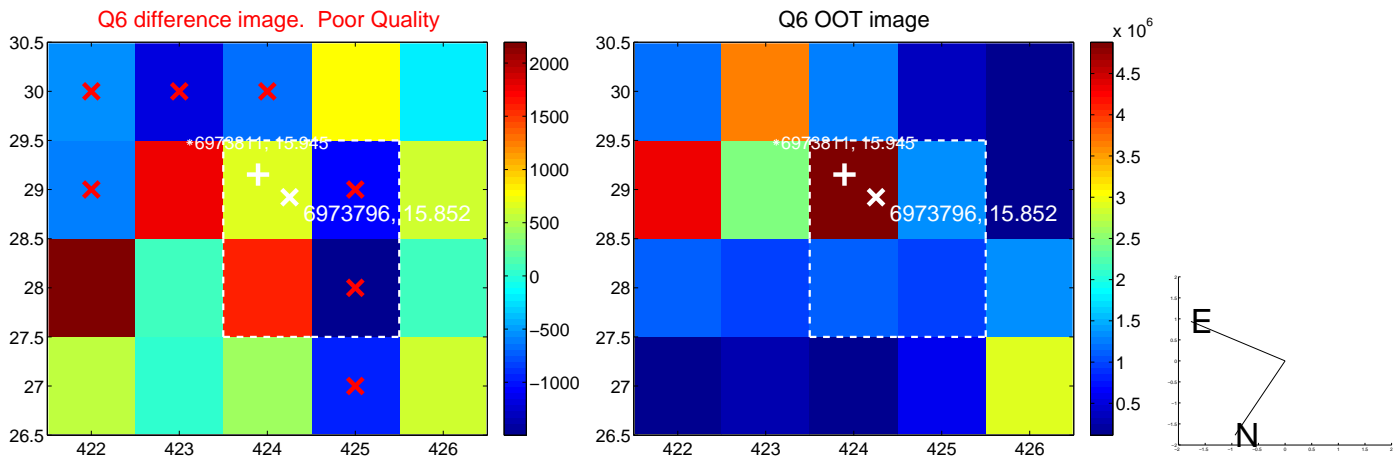
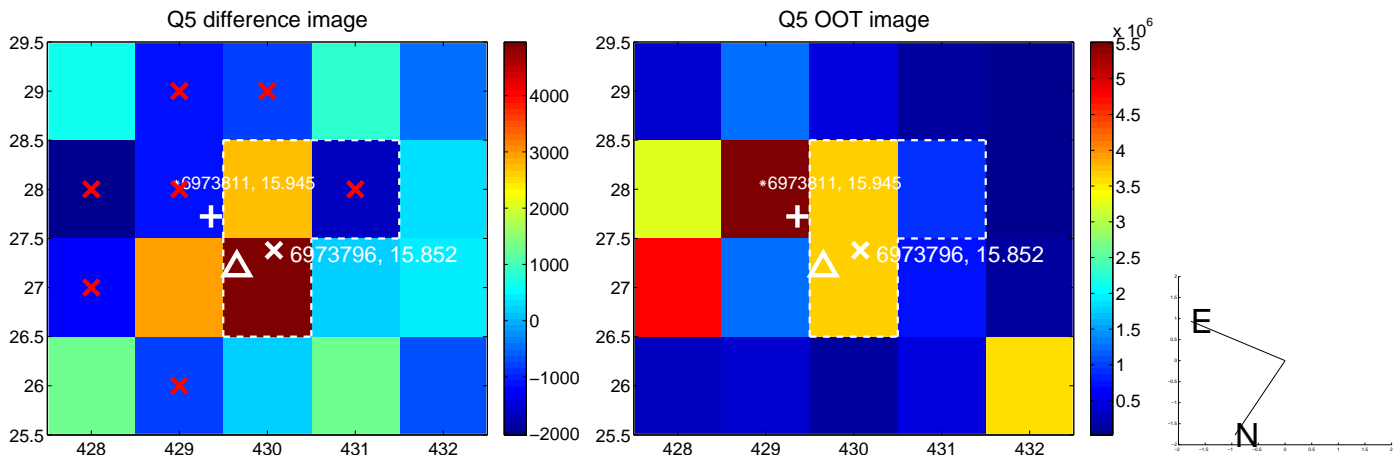


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

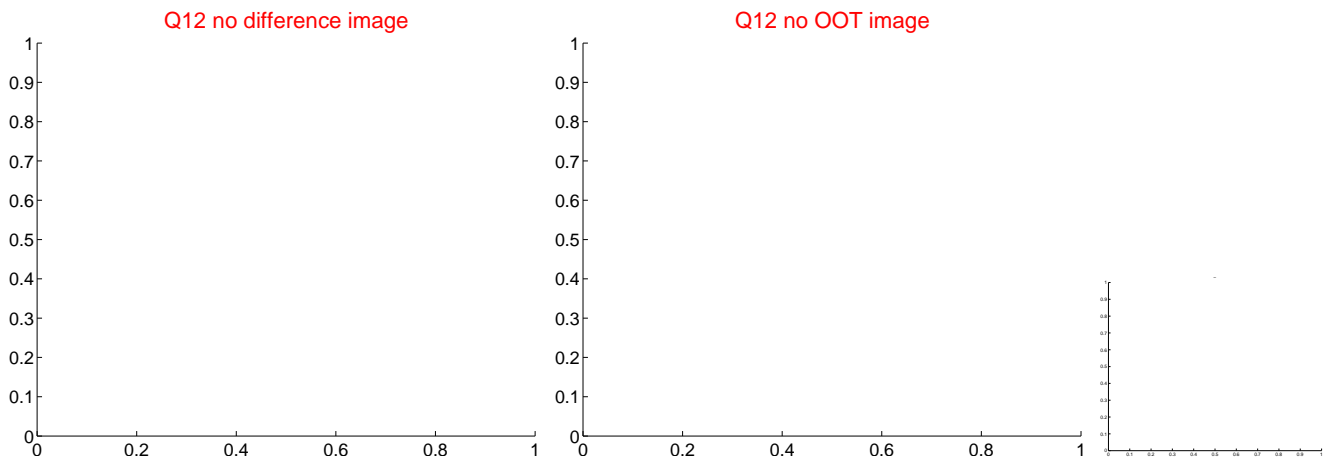
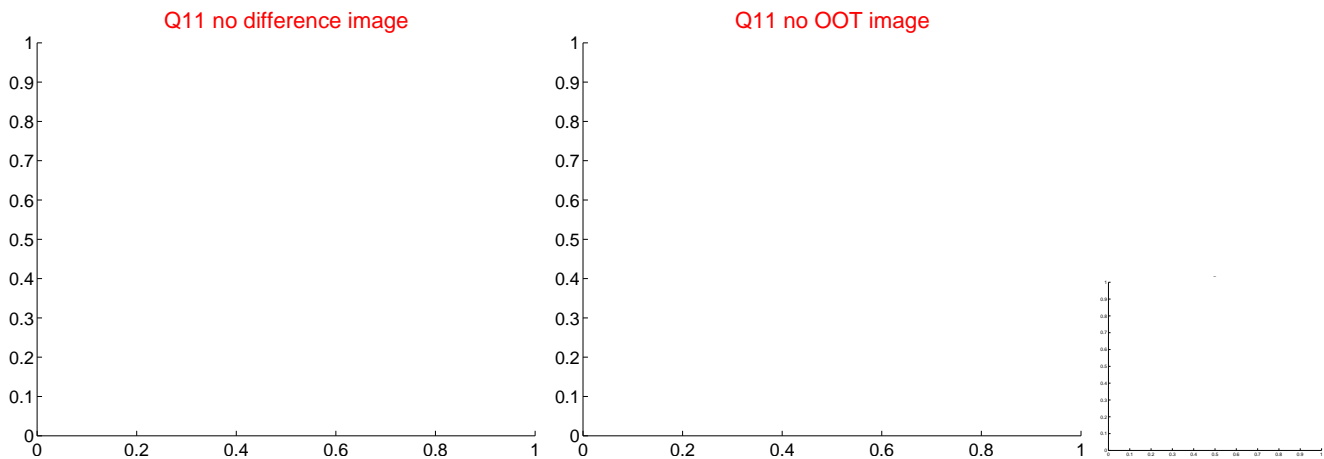
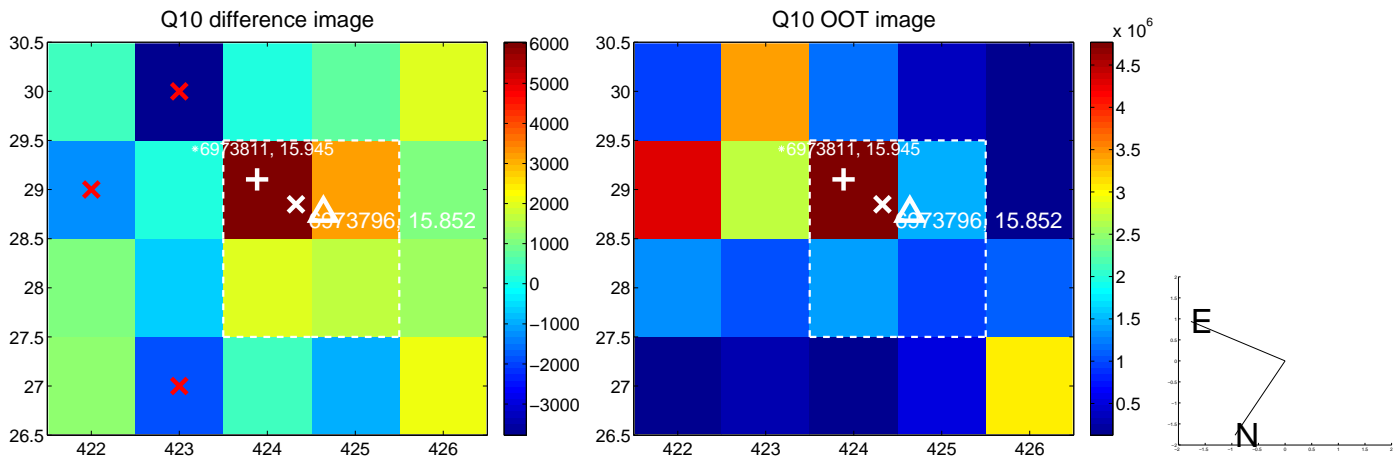
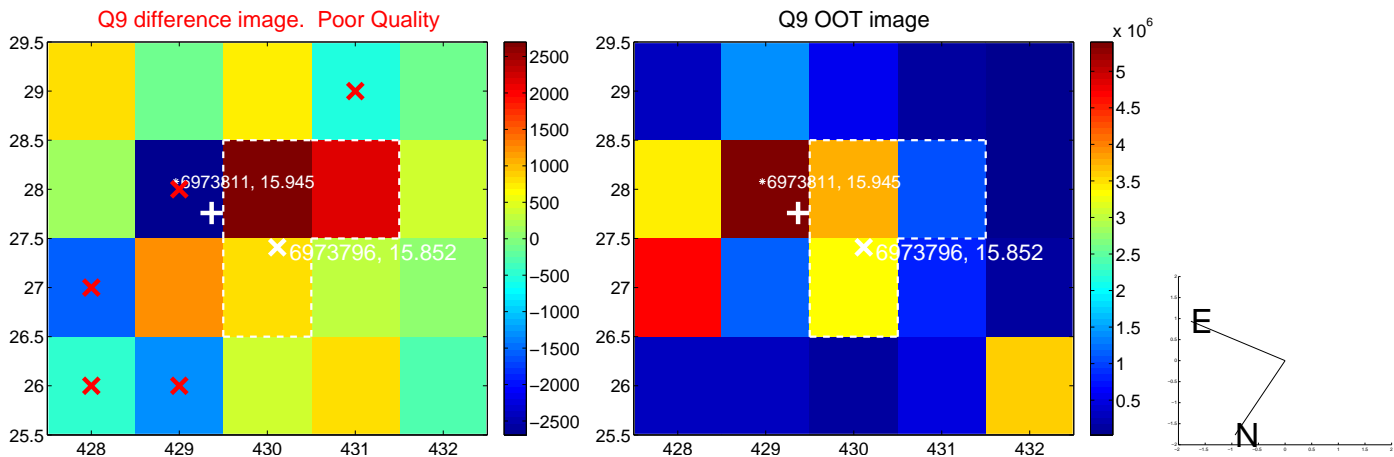
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



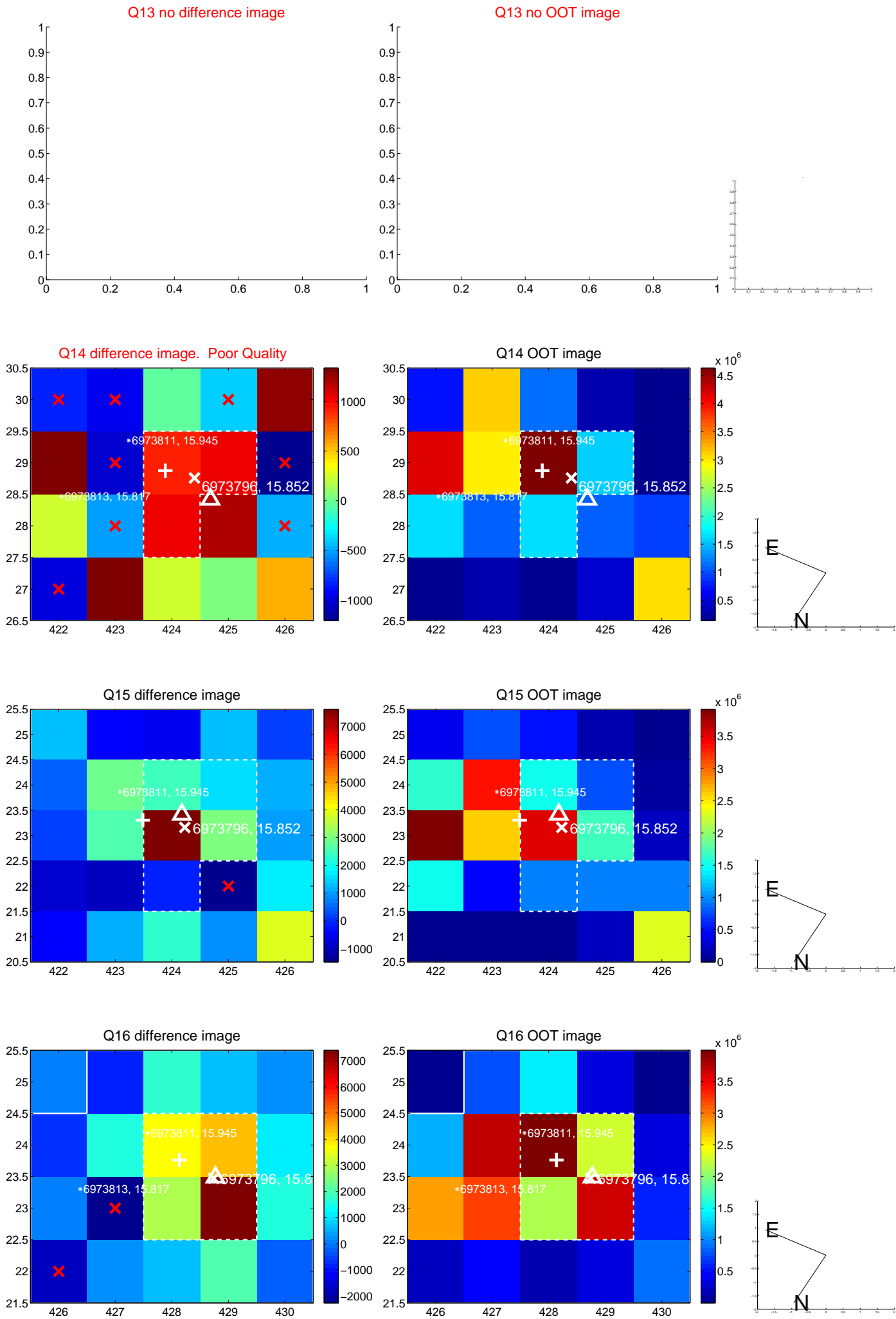
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



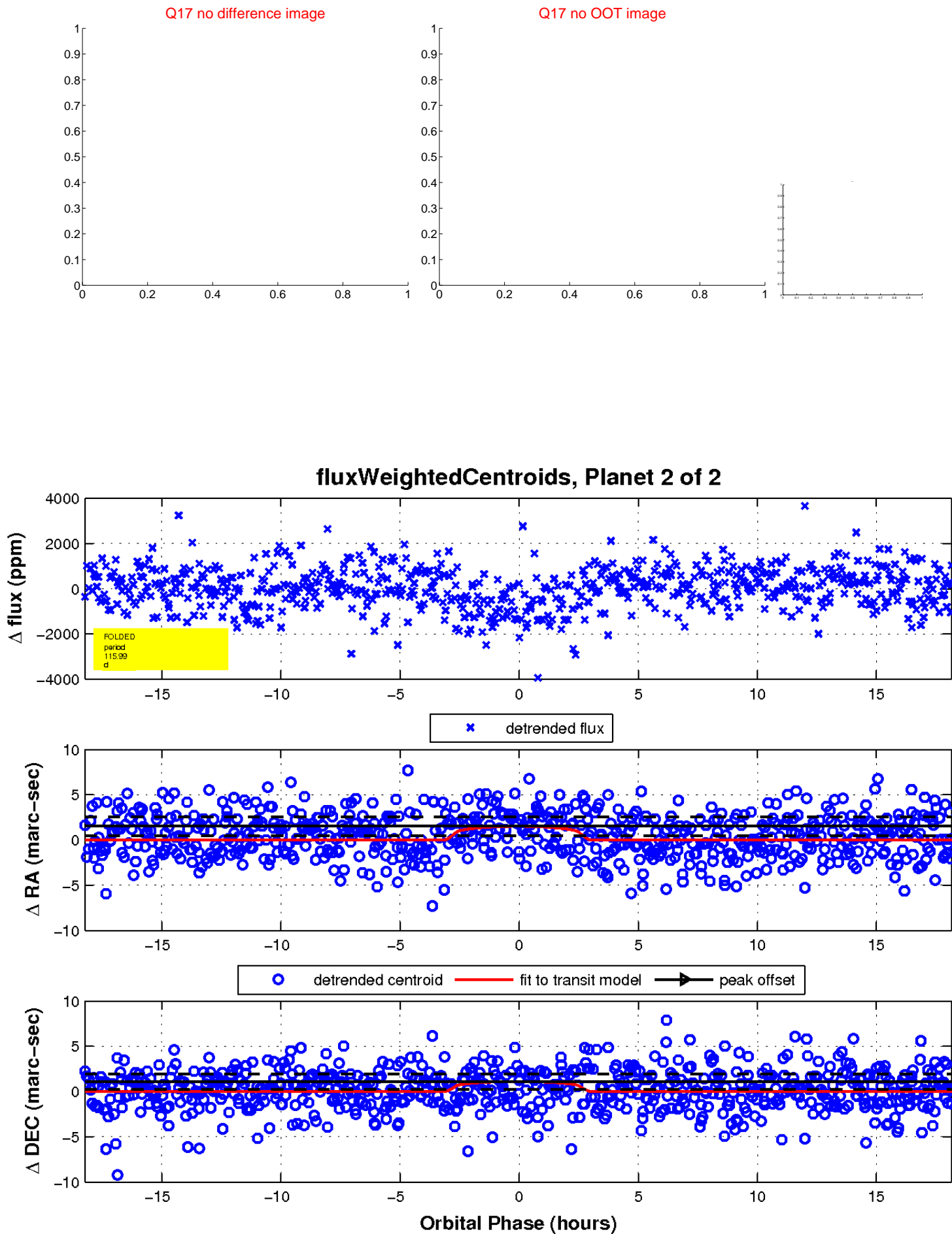
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

