

KIC 010610039

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})
010610039-01	OBS	4577.01	105.996511	144.424995	511.9	4.331	10.4	11.1	0.83	6068	2.42	4.60
010610039-02	OBS	4577.02	3.073690	134.163490	86.9	2.034	7.9	8.7	0.83	6068	0.91	515.94

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010610039-01	OBS	PC	0.69	0	0	0	0	NO_COMMENT
010610039-02	OBS	PC	0.95	0	0	0	0	NO_COMMENT

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

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

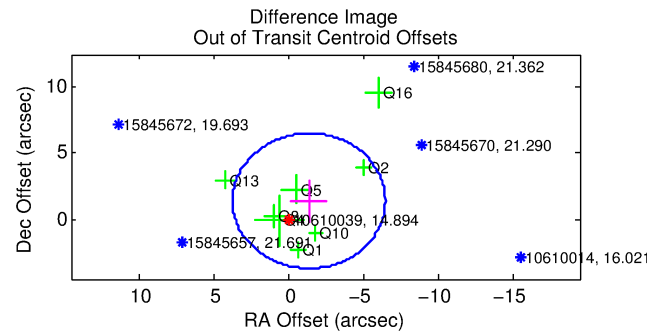
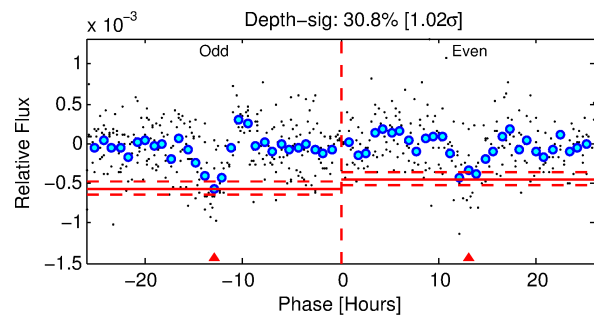
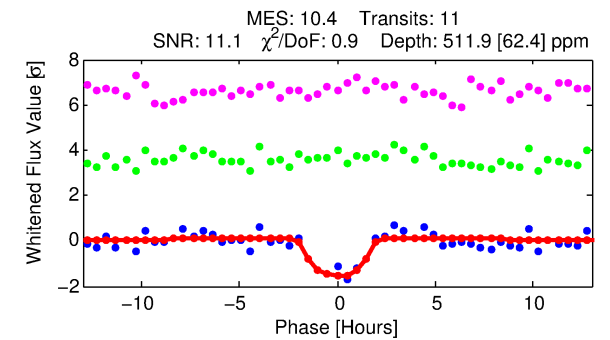
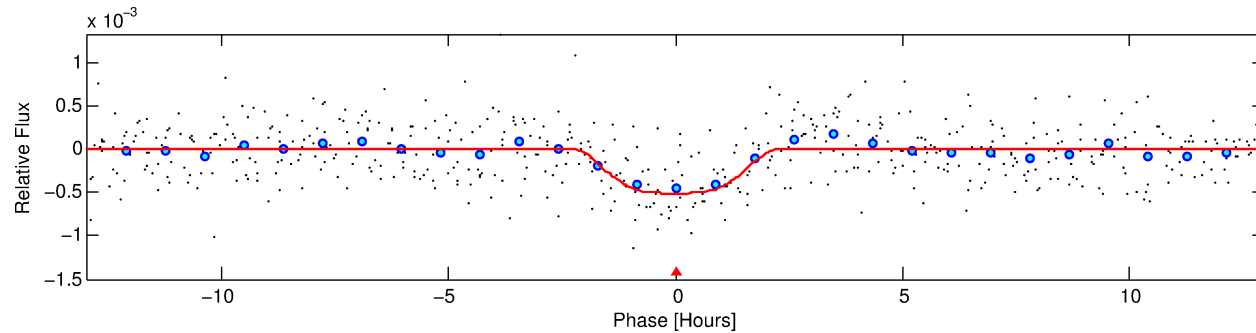
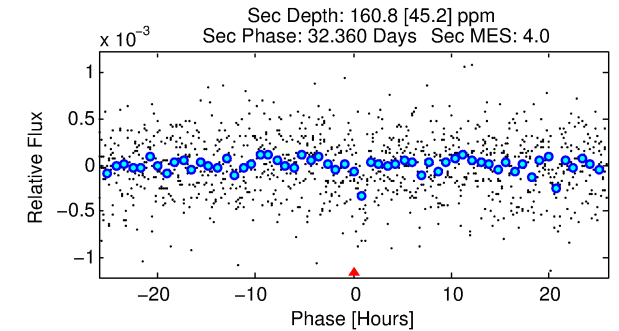
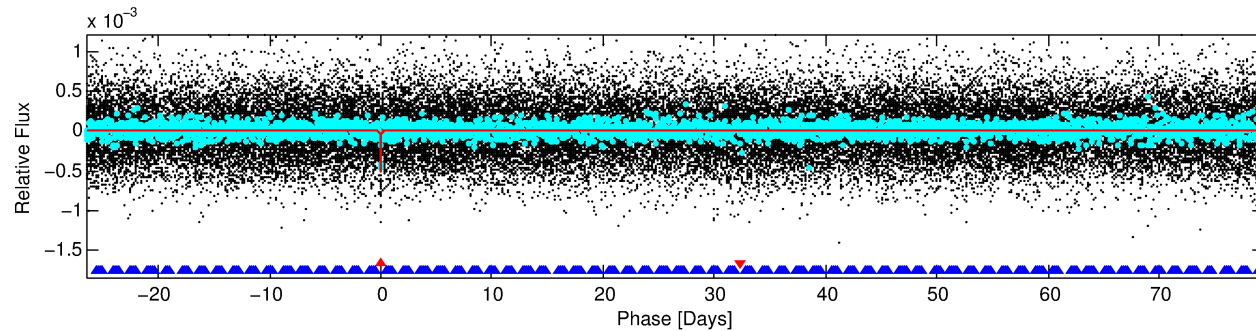
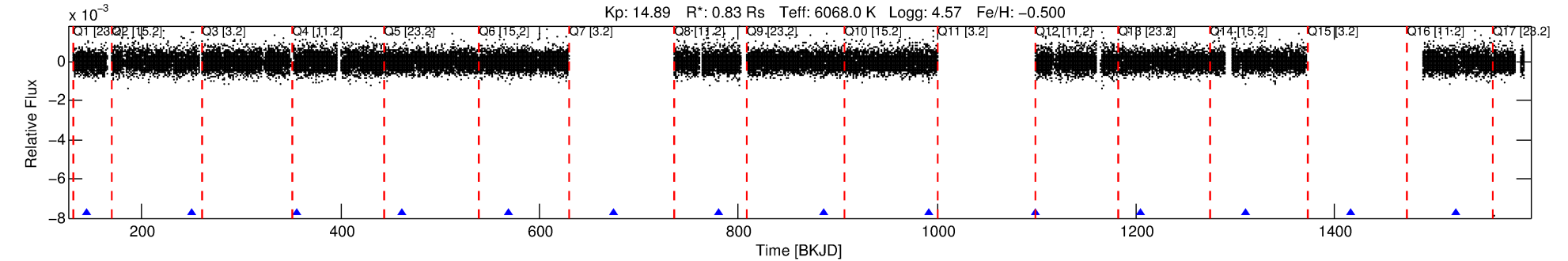
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010610039-01

No Significant Match Found

DV One-Page Summary

KIC: 10610039 Candidate: 1 of 2 Period: 105.997 d
KOI: K04577.01 Corr: 0.934



DV Fit Results:

Period = 105.99651 [0.00117] d
Epoch = 144.4250 [0.0088] BKJD
Rp/R* = 0.0267 [0.0024]
a/R* = 65.17 [15.22]
b = 0.97 [0.02]
Seff = 4.60 [1.77]
Teq = 373 [36] K
Rp = 2.42 [0.73] Re
a = 0.4272 [0.1055] AU
Ag = 2754.29 [1368.77] [2.01σ]
Teffp = 4182 [372] K [10.19σ]

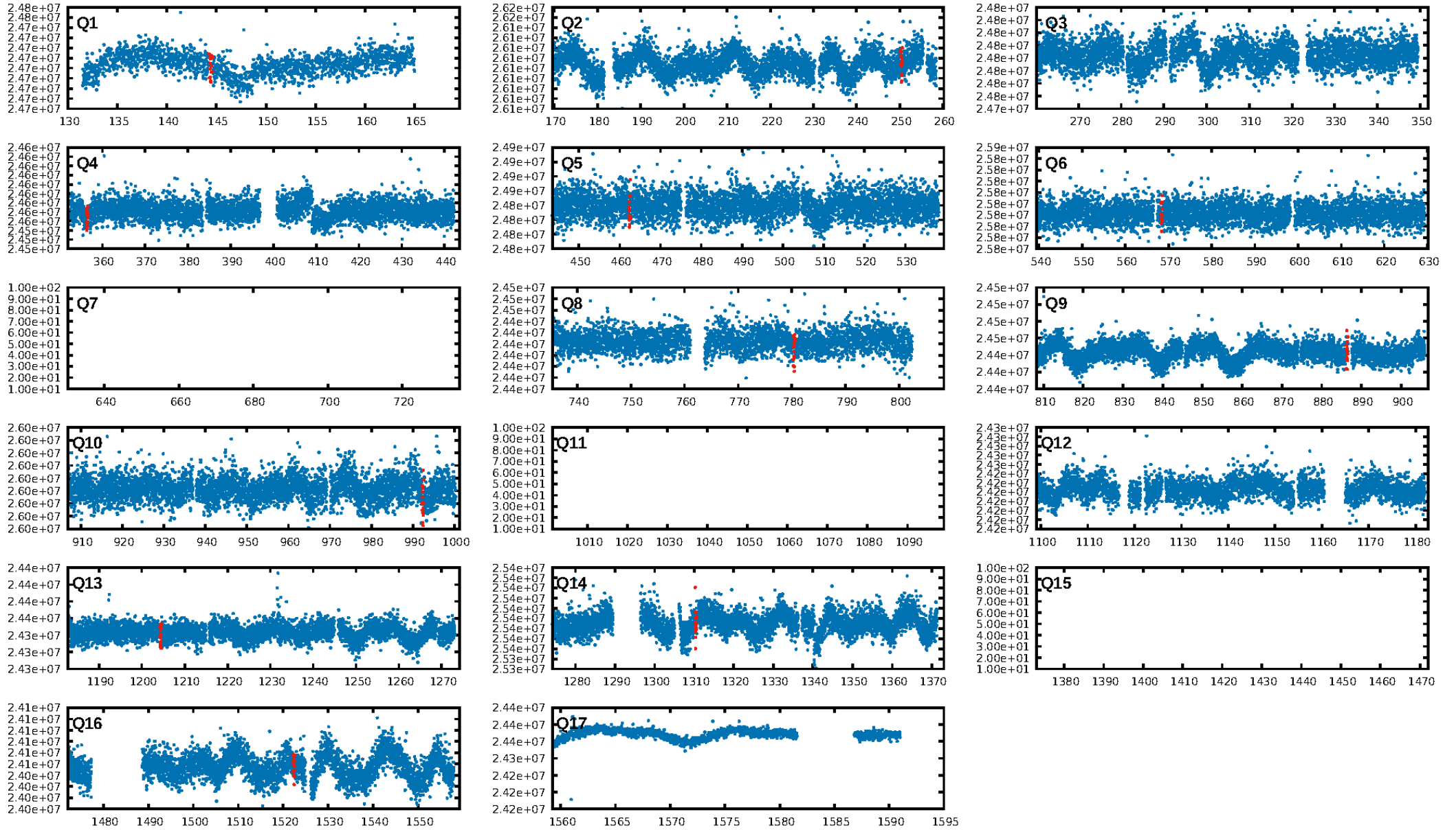
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [516.20σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 86.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.10e-21
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: -15.41
Centroid-sig: 82.1%
Centroid-so: 0.204 arcsec [0.18σ]
OotOffset-rm: 1.981 arcsec [1.16σ]
KicOffset-rm: 1.811 arcsec [1.23σ]
OotOffset-st: 2/0/3/3 [8]
KicOffset-st: 2/0/3/3 [8]
DiffImageQuality-fgm: 0.50 [4/8]
DiffImageOverlap-fno: 1.00 [9/9]

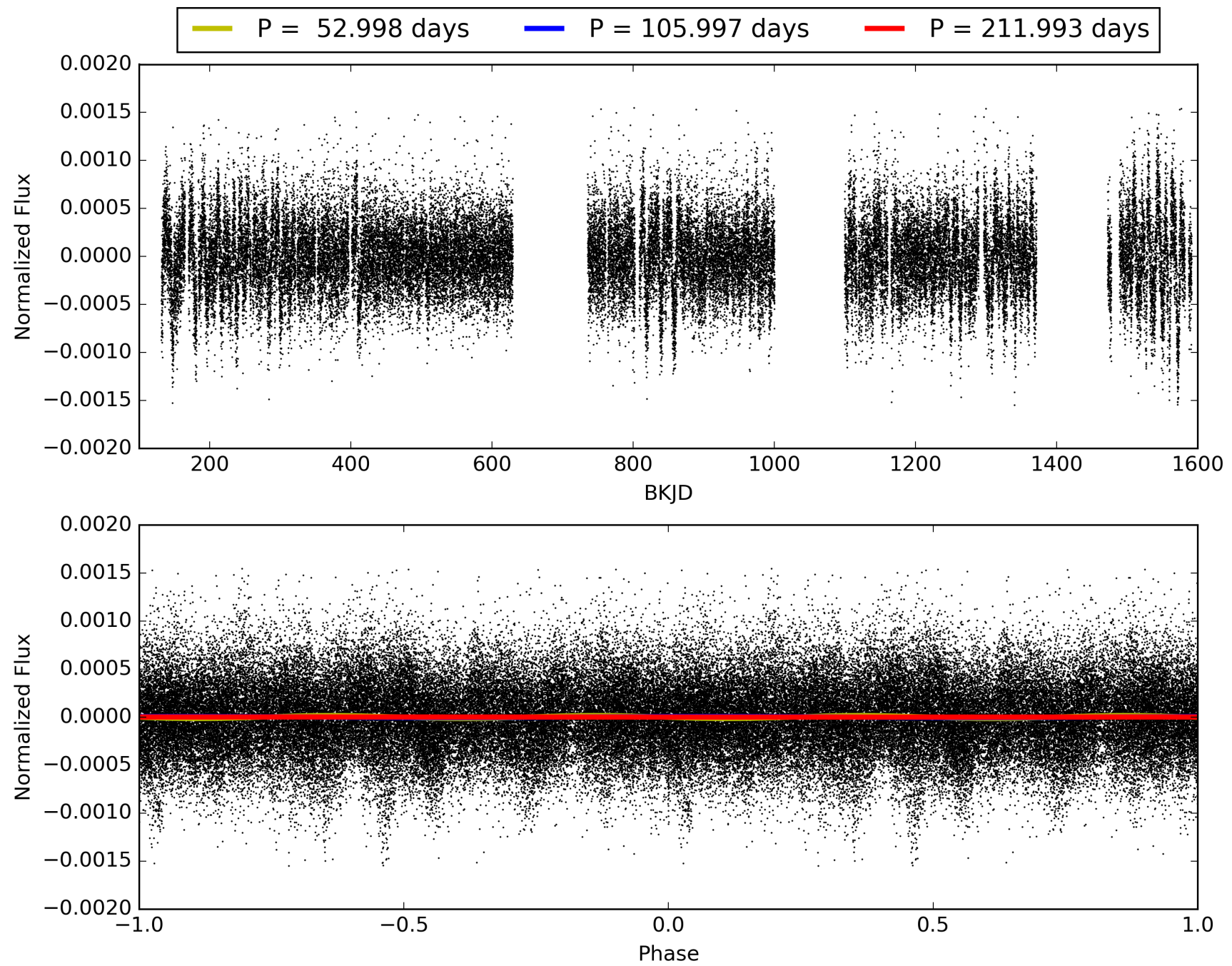
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:22:13 Z

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

TCE 010610039-01, PDC Light Curves

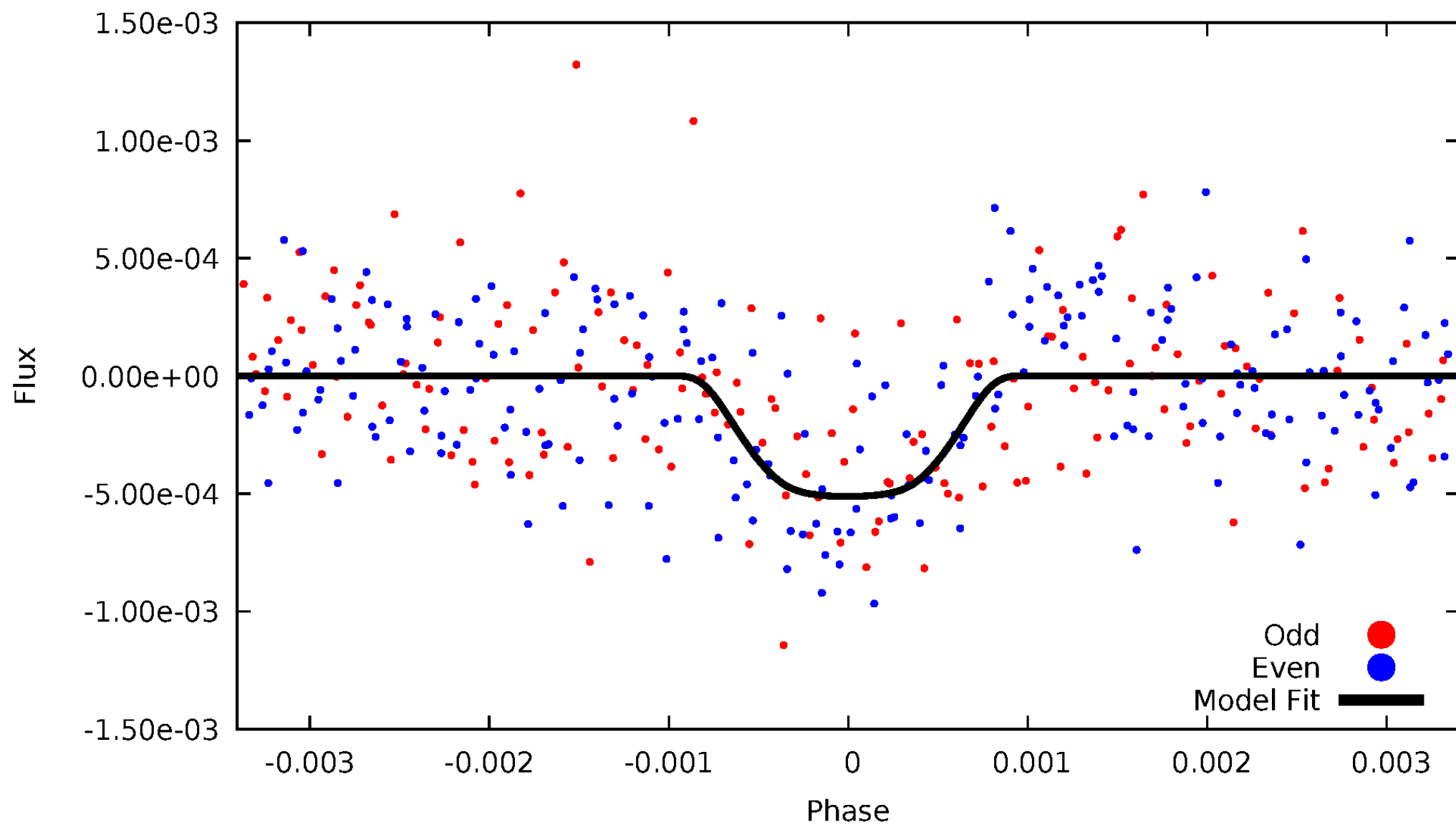


TCE 010610039-01



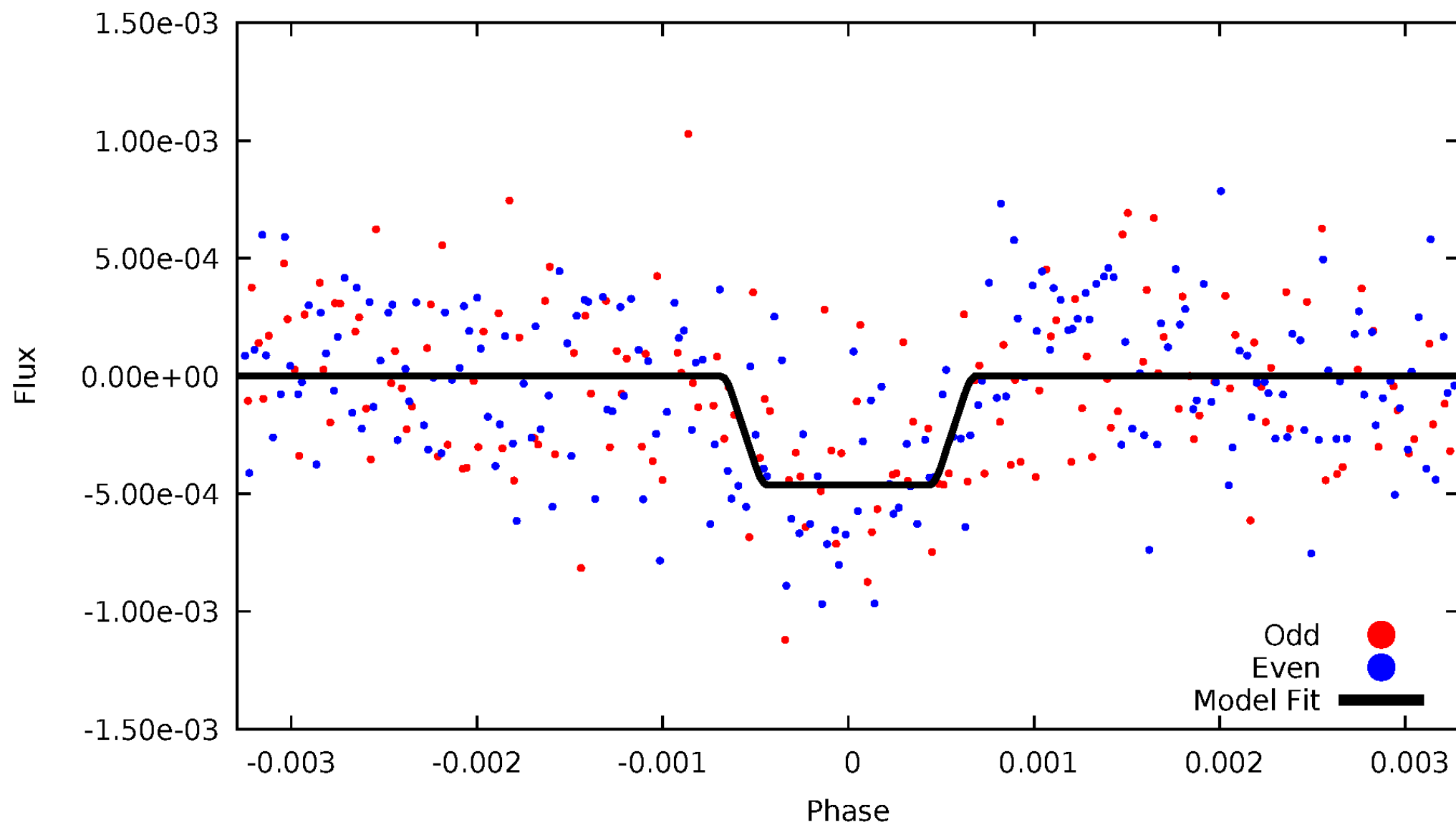
DV Odd/Even

TCE 010610039-01



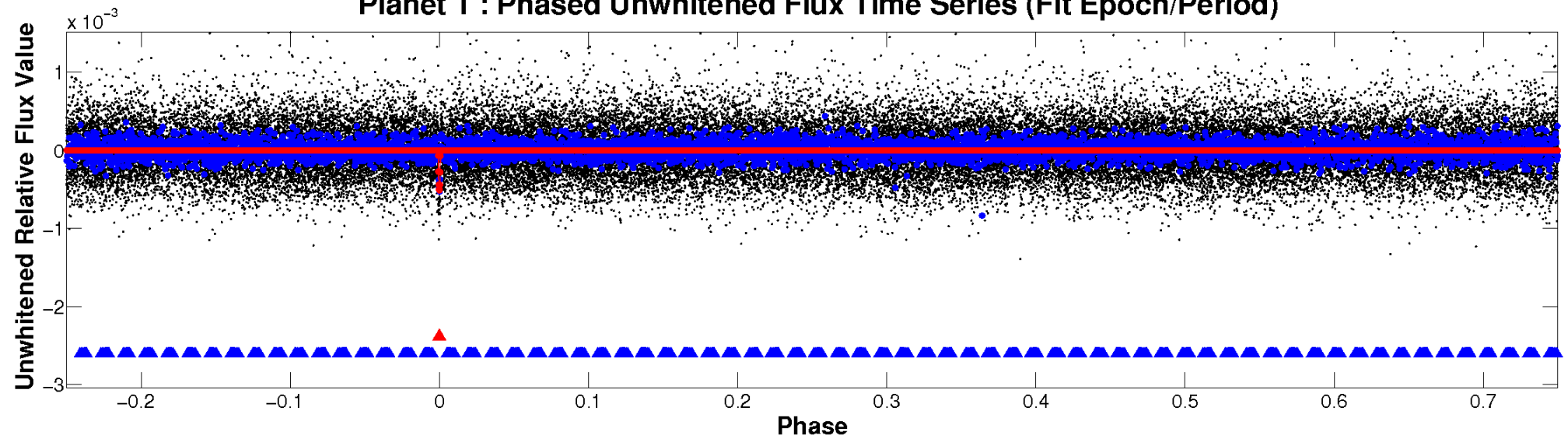
ALT Odd/Even

TCE 010610039-01

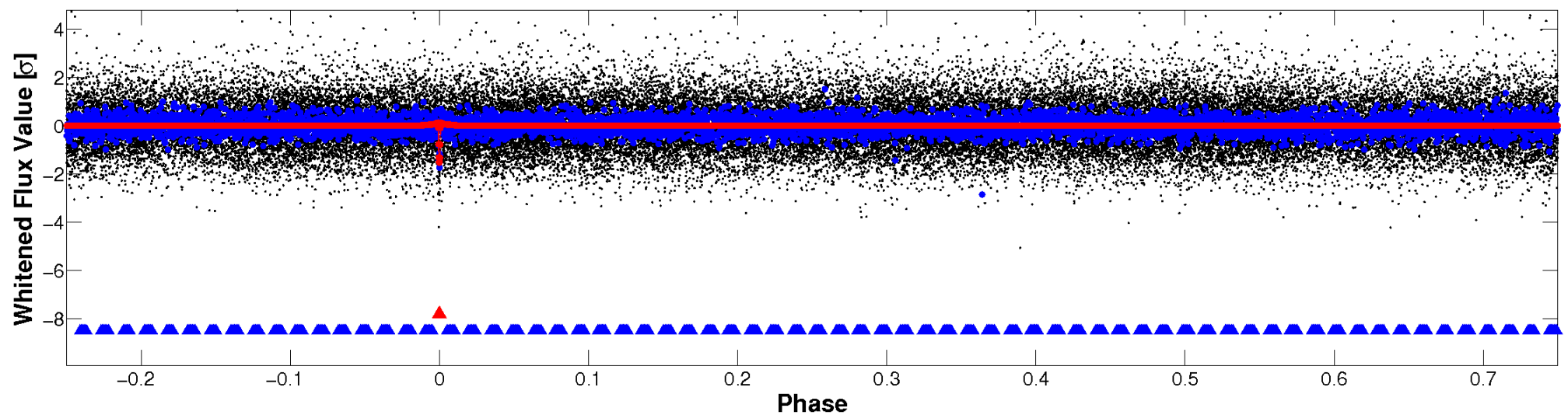


Non-Whitened Vs. Whitened Light Curve

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

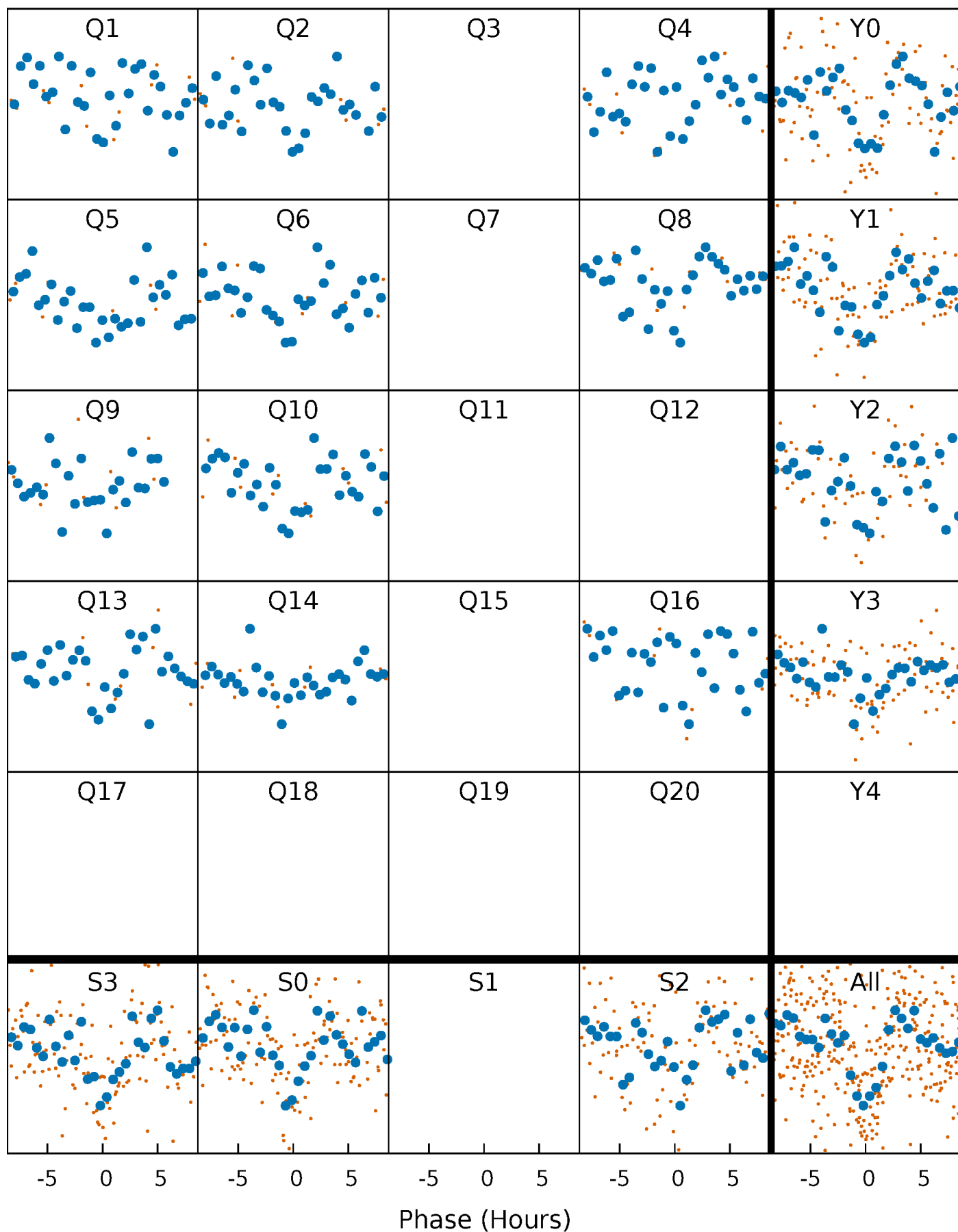


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



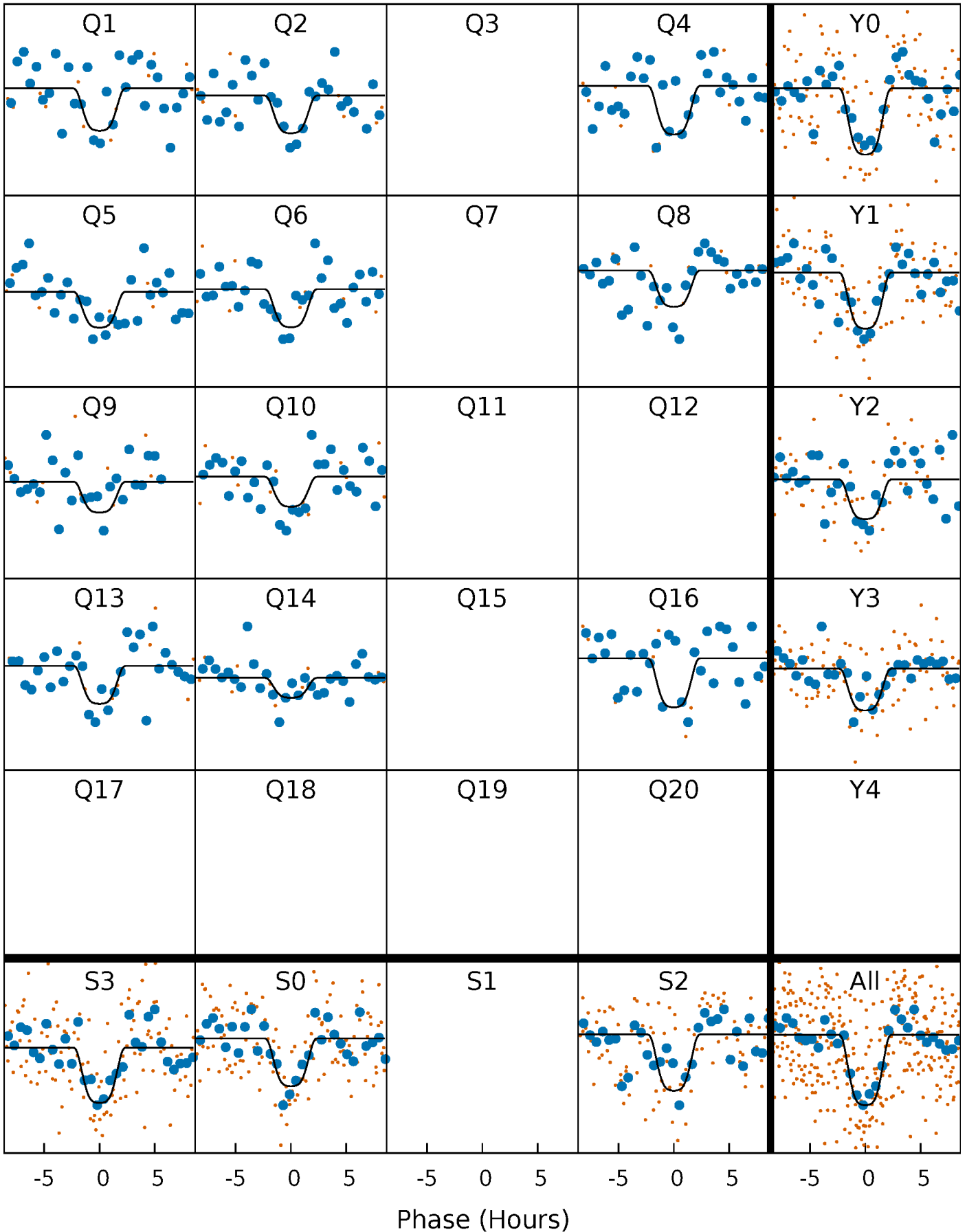
PDC Quarter-Phased Transit Curves

TCE 010610039-01 P=105.996511 Days $T_0=144.424995$ (BKJD)



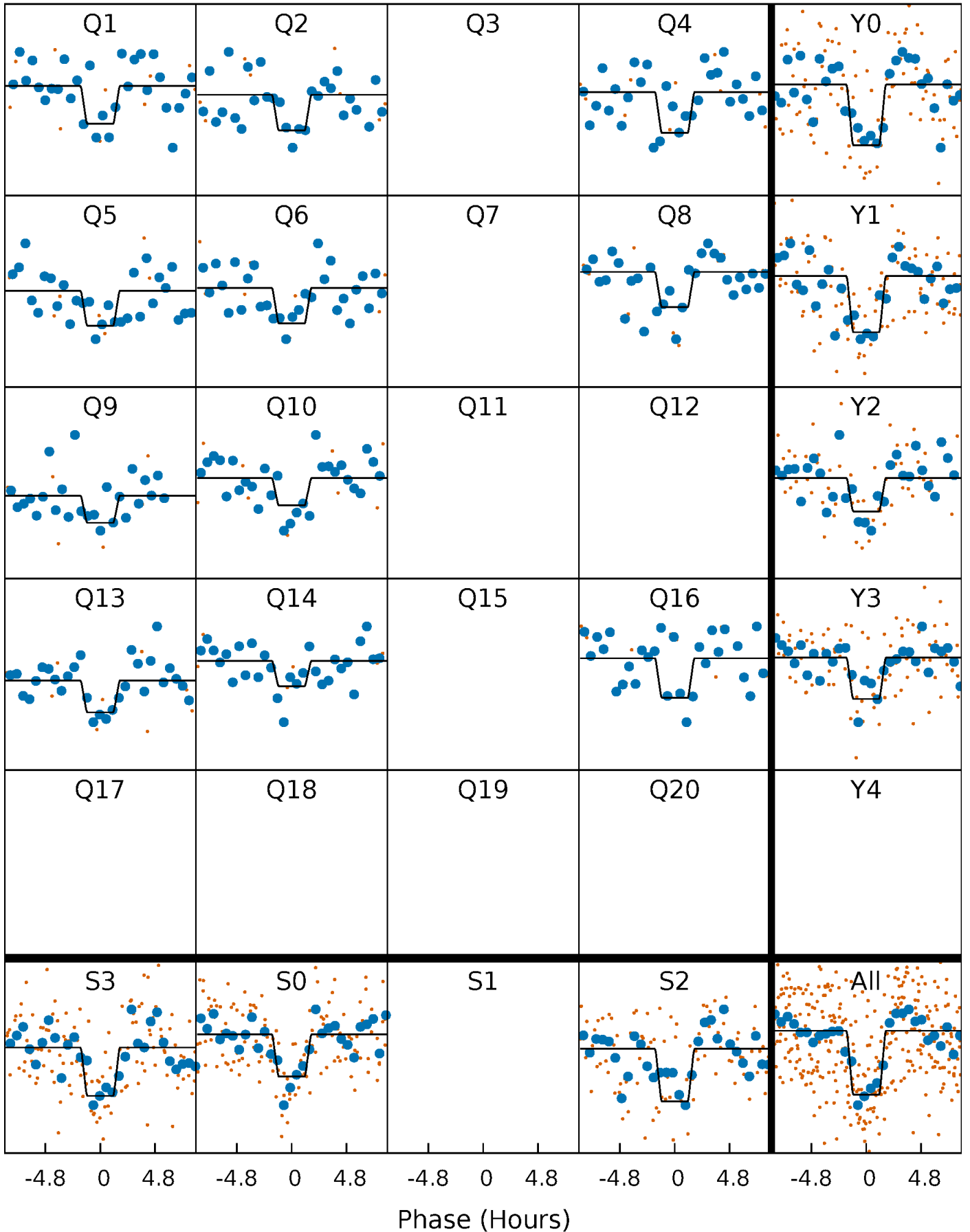
DV Quarter-Phased Transit Curves

TCE 010610039-01 P=105.996511 Days $T_0=144.424995$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

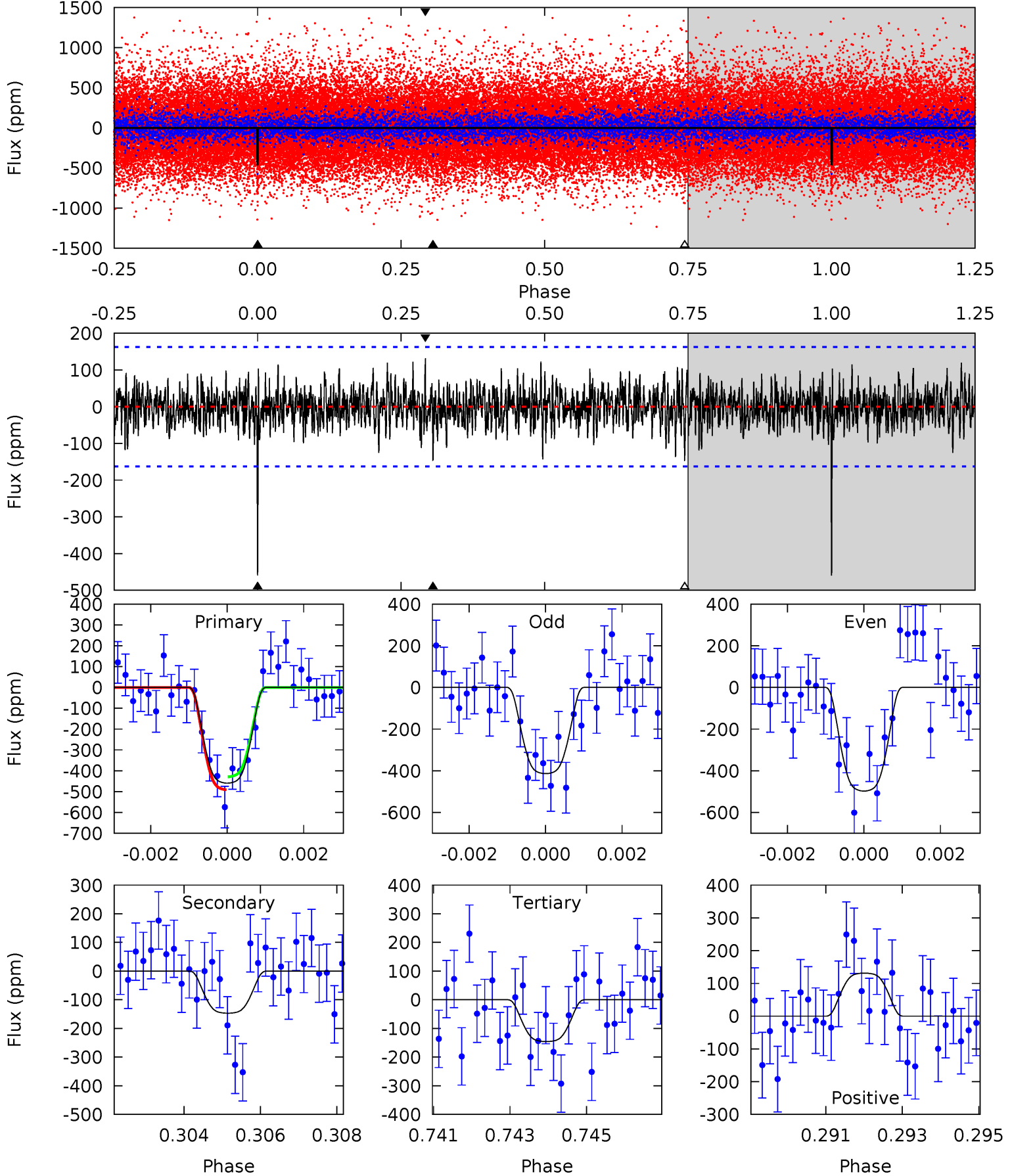
TCE 010610039-01 P=105.996074 Days $T_0=144.427828$ (BKJD)



DV Model-Shift Uniqueness Test

010610039-01, $P = 105.996511$ Days, $E = 38.428484$ Days

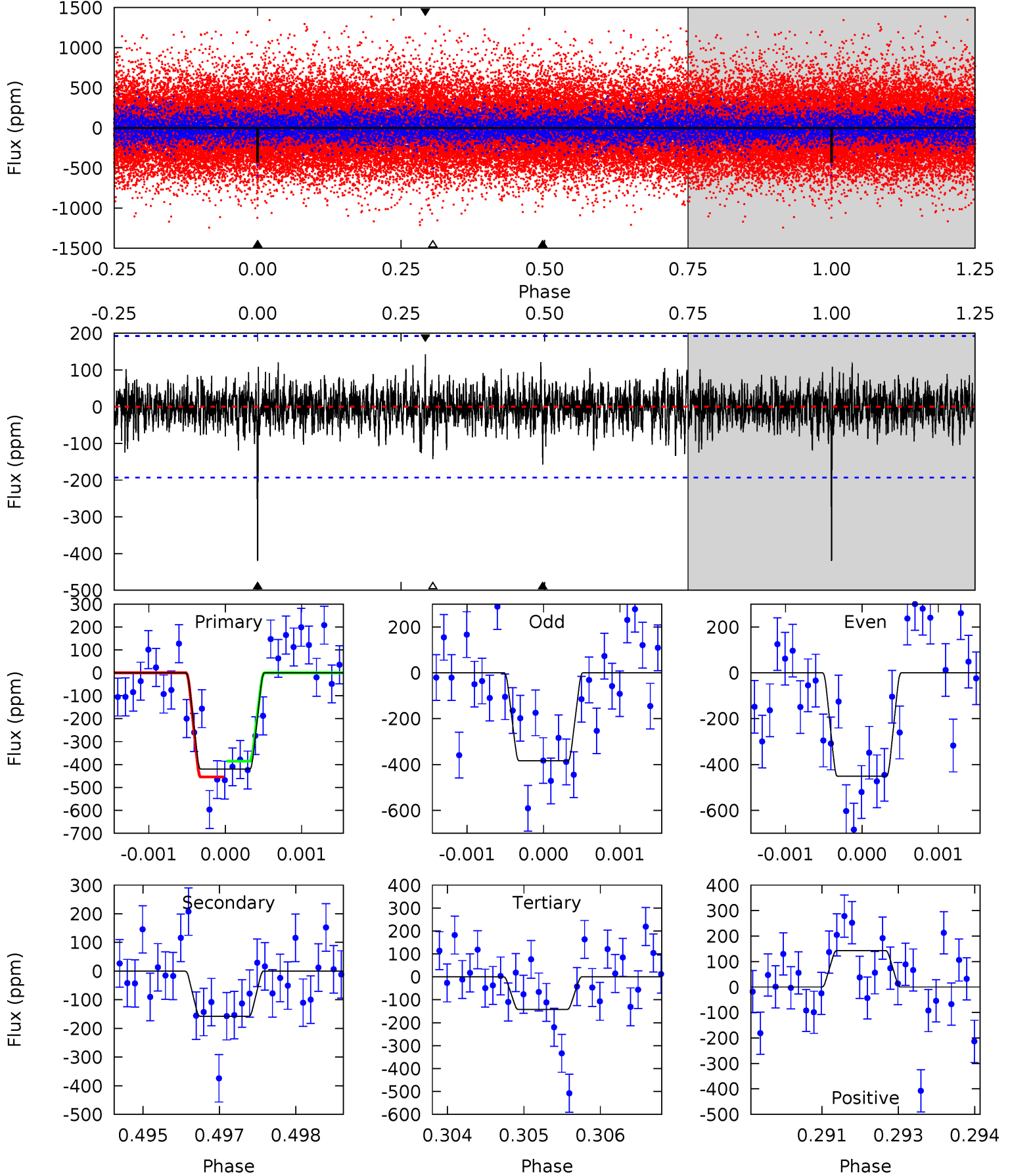
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.1	4.82	4.79	4.31	5.34	3.11	1.31	10.3	10.8	0.03	0.51	1.37	0.95	0.22	1.02



Alt Model-Shift Uniqueness Test

010610039-01, $P = 105.996074$ Days, $E = 38.431754$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.8	4.40	3.98	3.99	5.40	3.21	1.04	7.78	7.77	0.42	0.41	0.95	1.05	0.25	0.96



Stellar Parameters For KIC 010610039

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6068^{+163}_{-181}	$4.565^{+0.036}_{-0.204}$	$-0.500^{+0.300}_{-0.300}$	$0.831^{+0.238}_{-0.063}$	$0.931^{+0.097}_{-0.108}$	$2.285^{+0.323}_{-1.209}$
	+3%/-3%	+1%/-4%	+60%/-60%	+29%/-8%	+10%/-12%	+14%/-53%
Source	PHO1	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 010610039-01 / KOI 4577.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-147 ± 30	$2.53^{+0.42}_{-0.31}$	535^{+37}_{-23}	4316^{+266}_{-233}	2250^{+803}_{-708}
Alt.	-157 ± 36	$2.03^{+0.36}_{-0.28}$	535^{+33}_{-25}	4775^{+342}_{-331}	3682^{+1622}_{-1194}

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 $A_{obs} \gg 1.0$

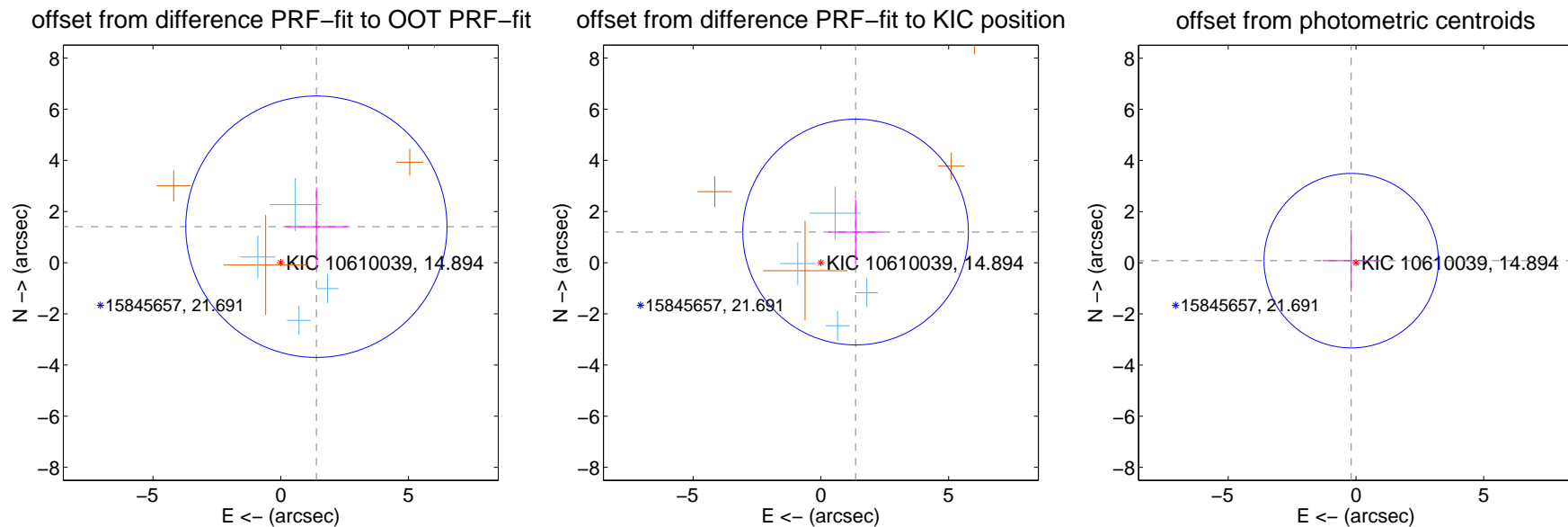
DV Centroid Data

Supplemental centroid analysis for 010610039-01. Kepler magnitude: 14.89. Transit SNR 11.10

There are 4 quarters with good PRF difference image offsets

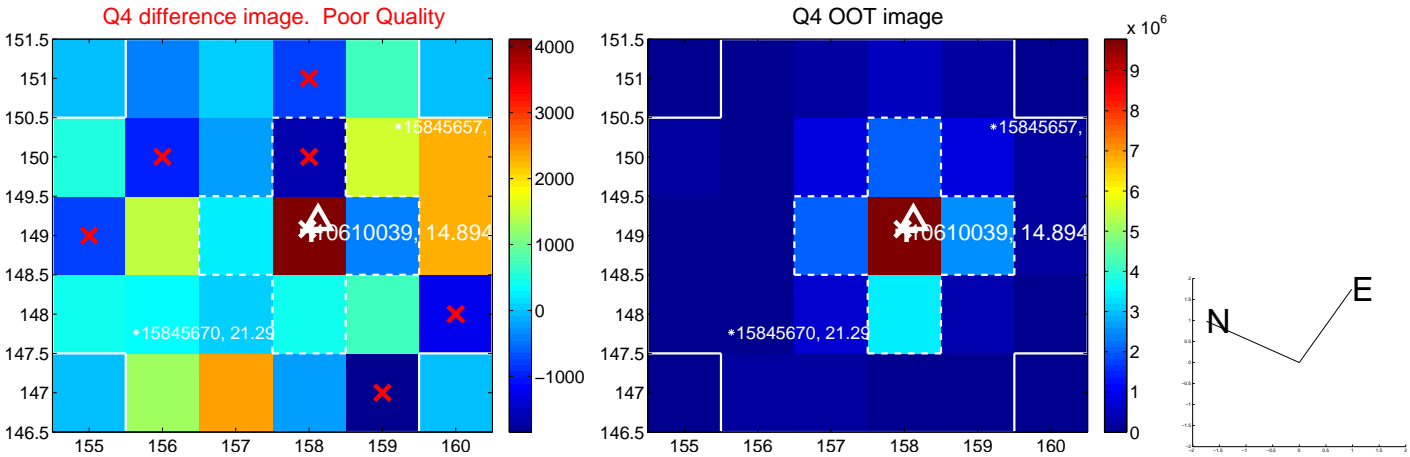
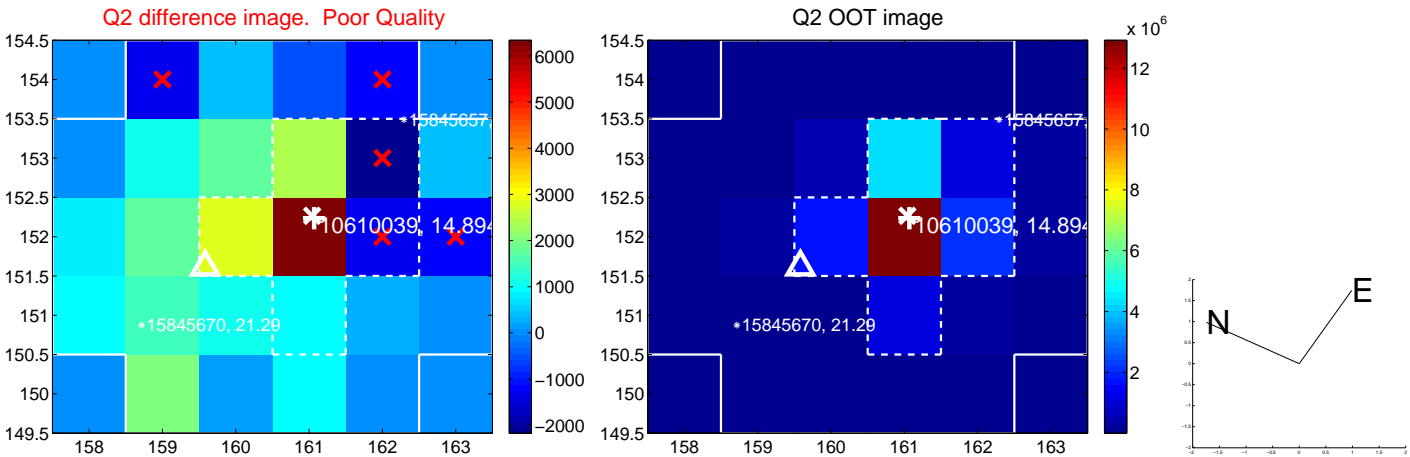
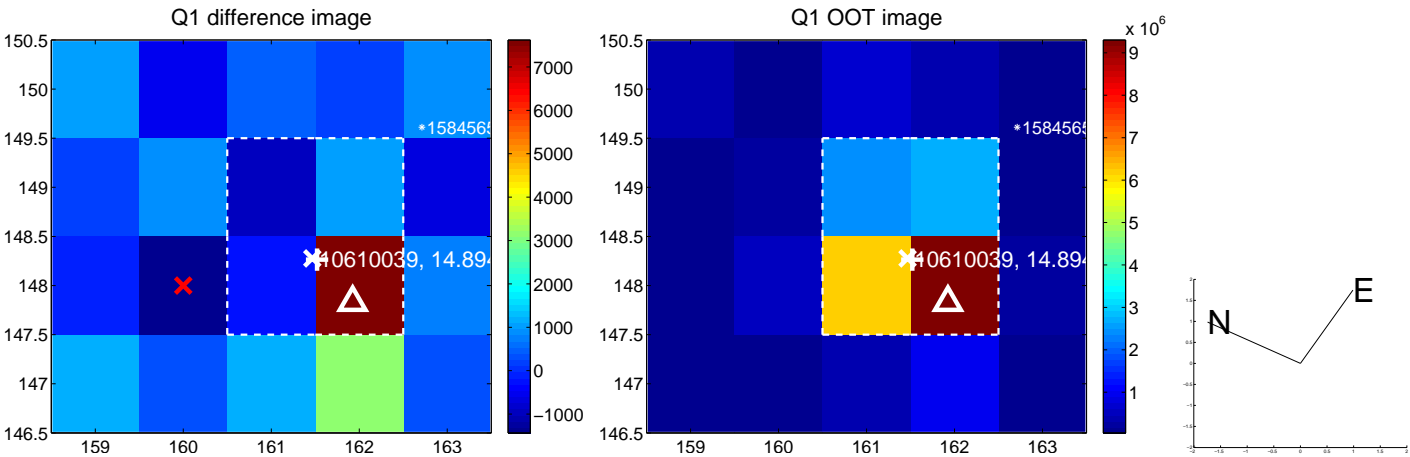
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.981 ± 1.703	1.16	-1.394 ± 1.208	1.407 ± 1.527
PRF-fit source offset from KIC position	1.811 ± 1.471	1.23	-1.358 ± 1.068	1.198 ± 1.268
photometric centroid source offset	0.20 ± 1.14	0.18	0.19 ± 1.12	0.08 ± 1.21

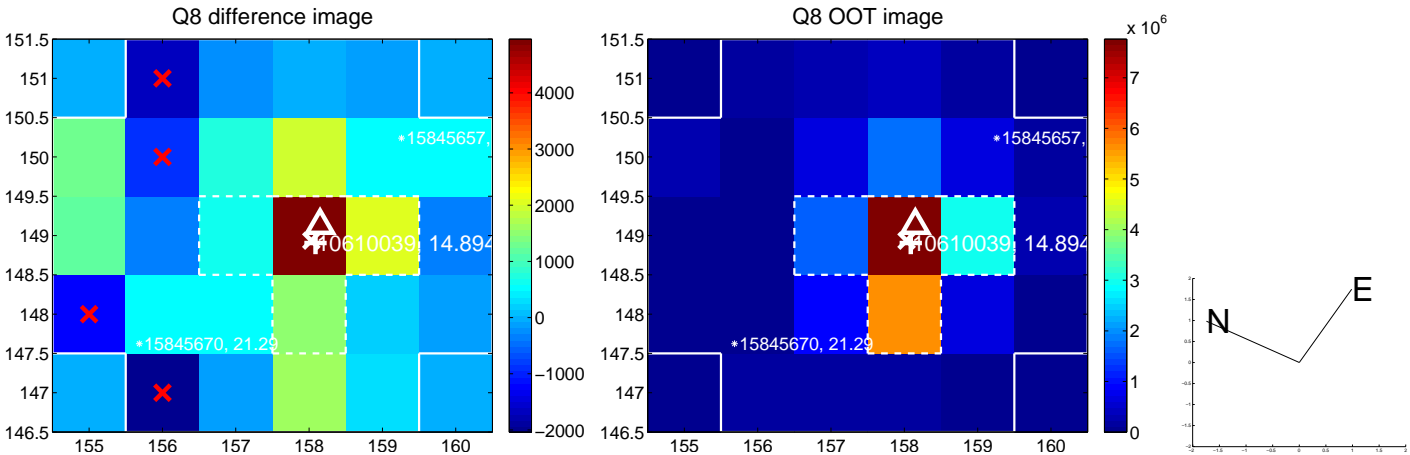
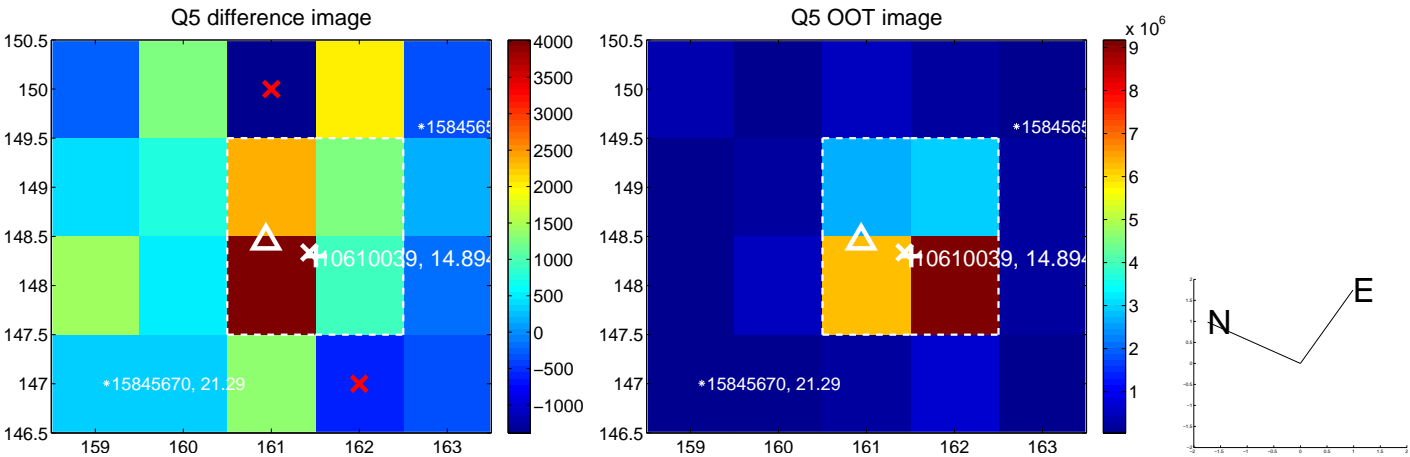


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

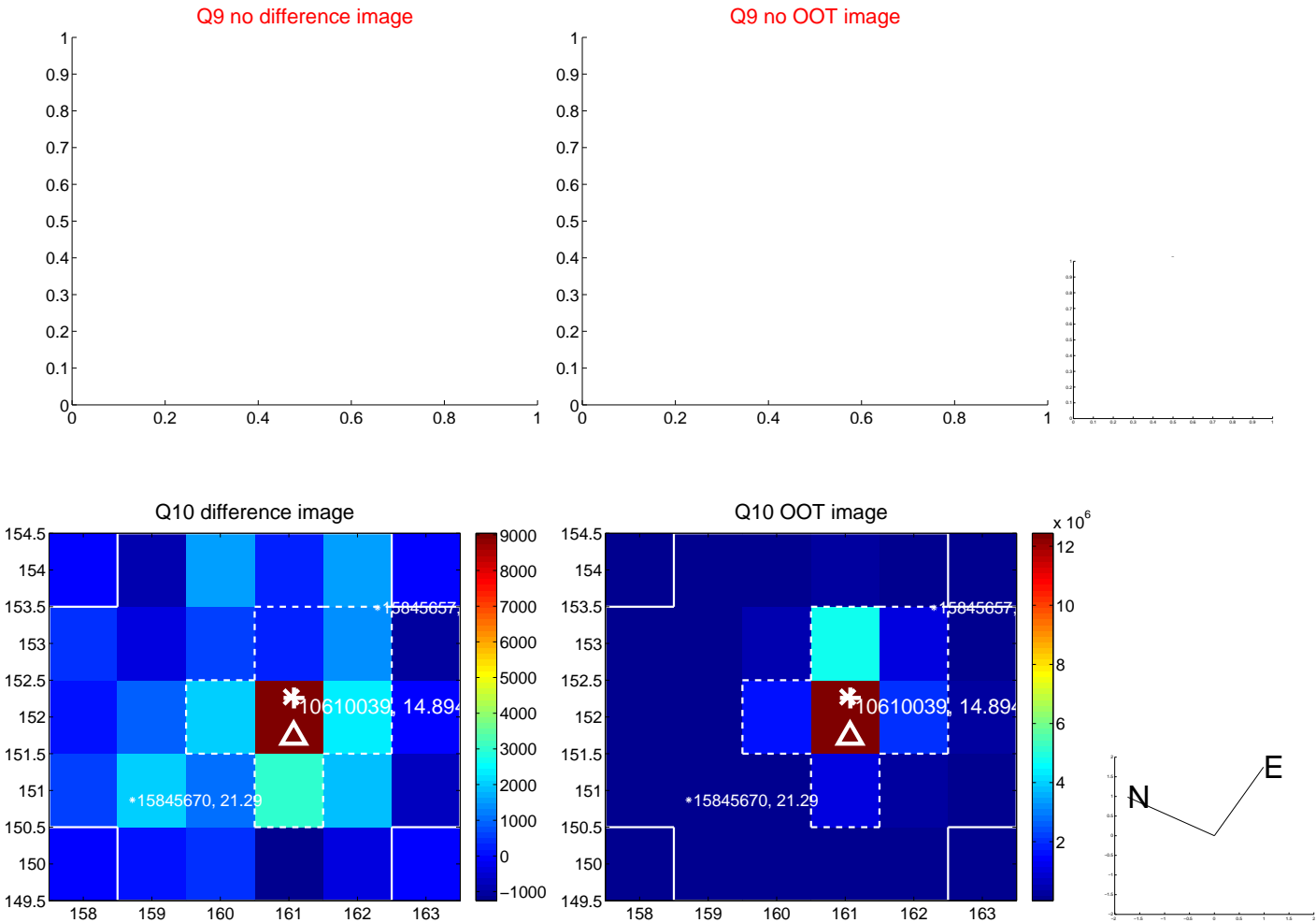
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



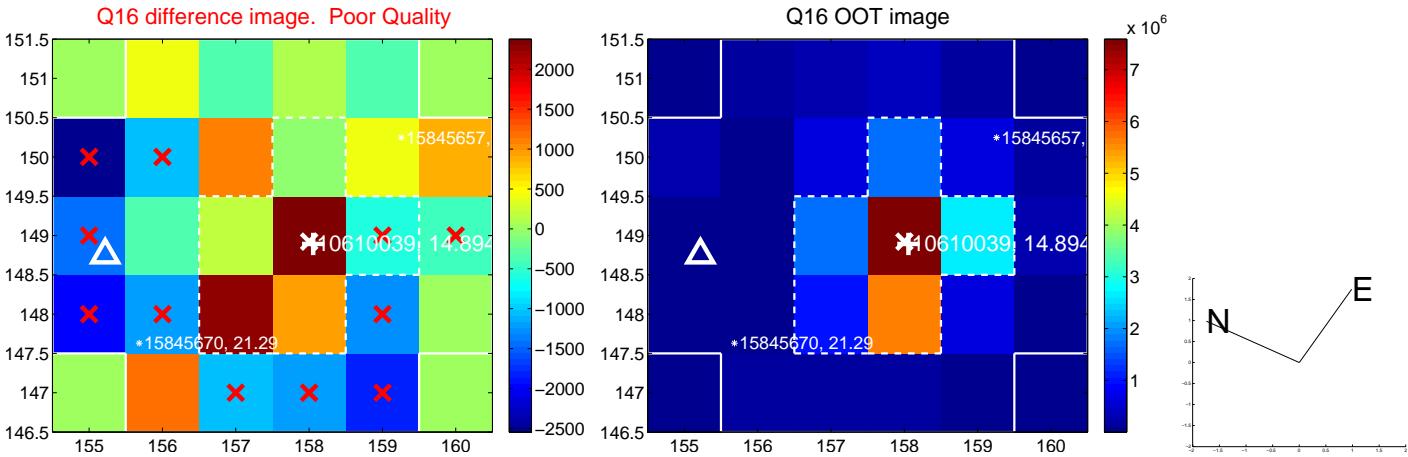
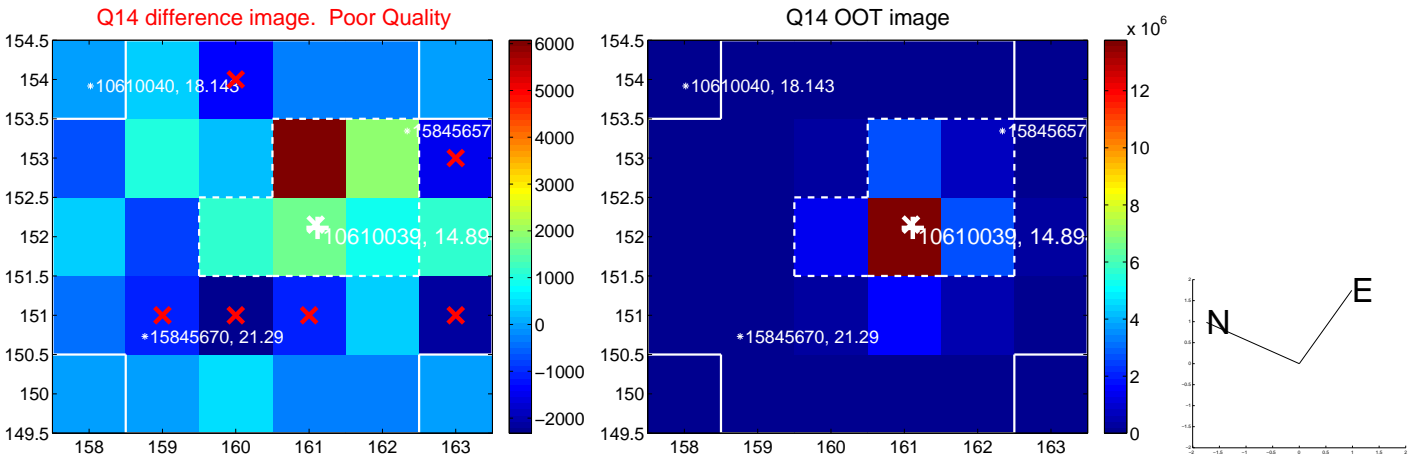
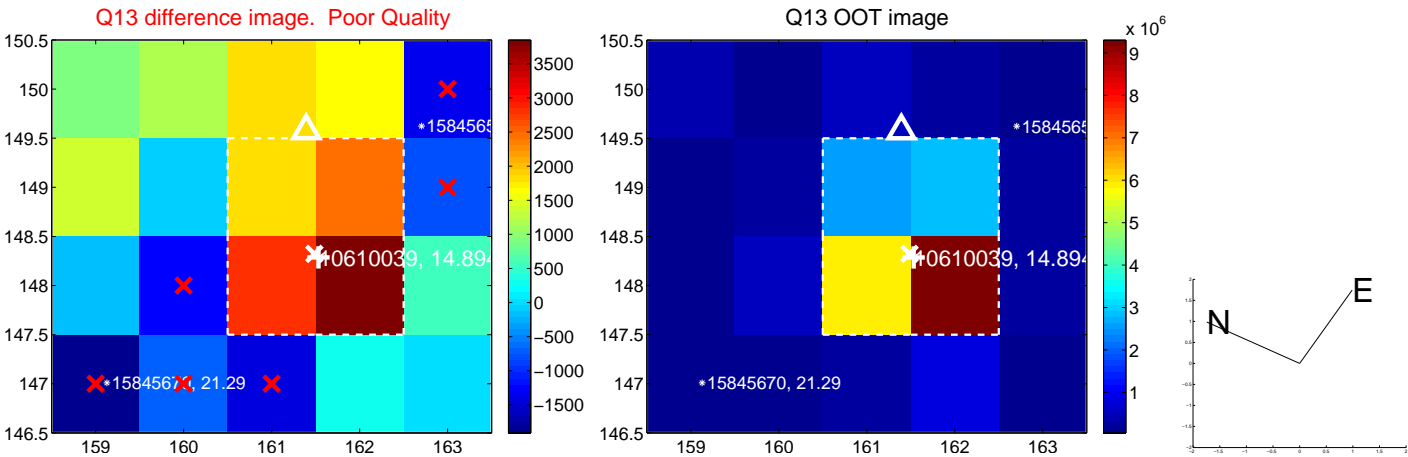
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



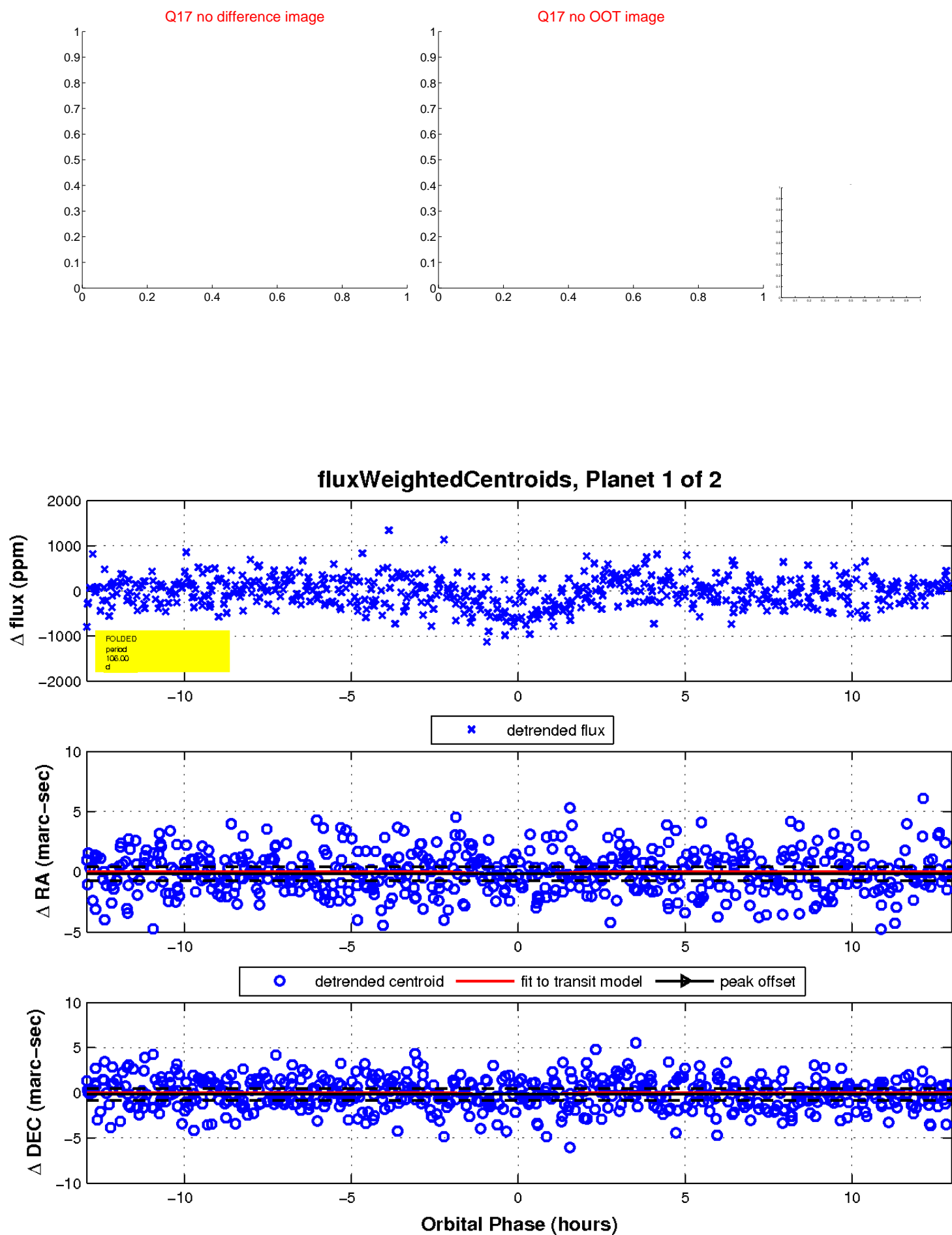
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



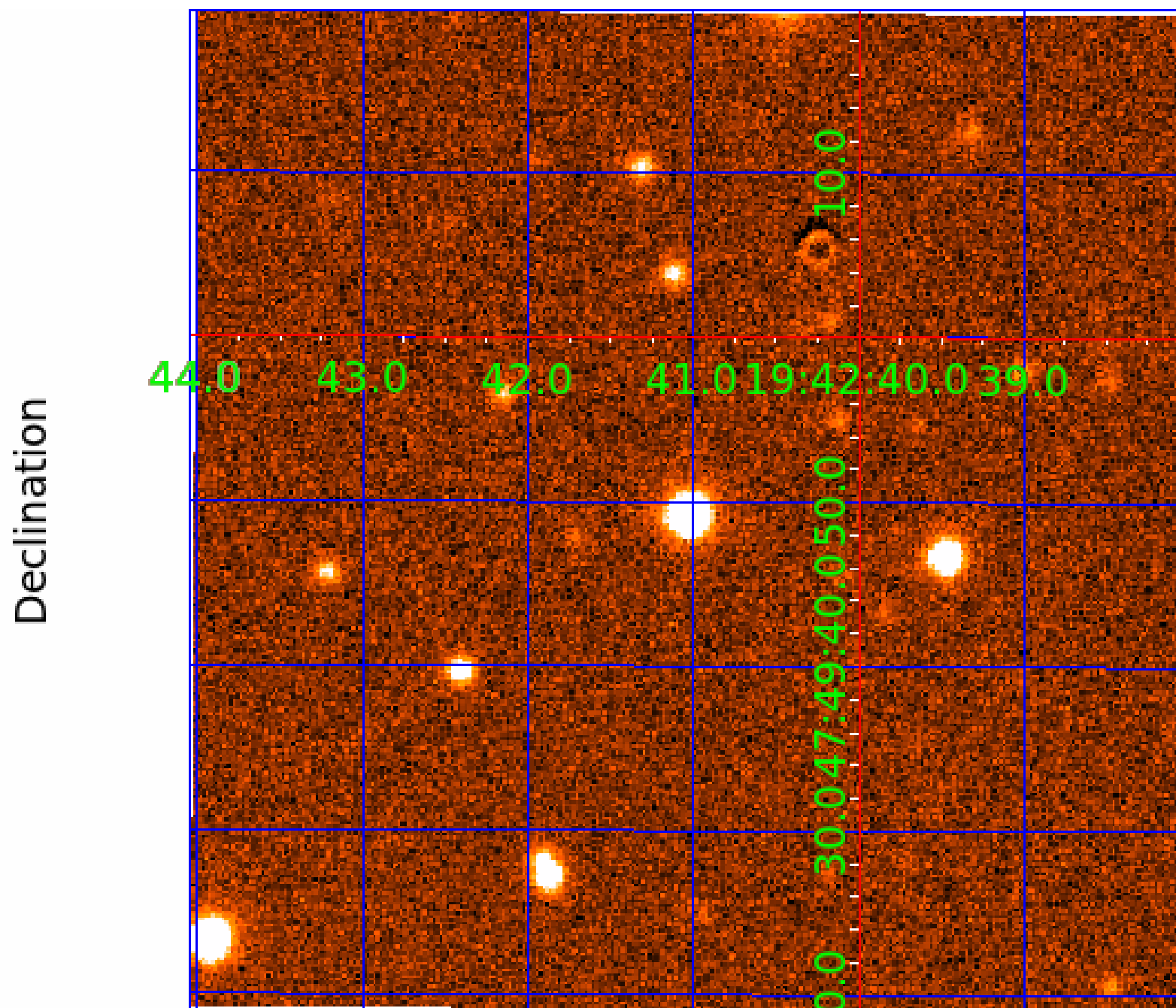
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 010610039

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})
010610039-01	OBS	4577.01	105.996511	144.424995	511.9	4.331	10.4	11.1	0.83	6068	2.42	4.60
010610039-02	OBS	4577.02	3.073690	134.163490	86.9	2.034	7.9	8.7	0.83	6068	0.91	515.94

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010610039-01	OBS	PC	0.69	0	0	0	0	NO_COMMENT
010610039-02	OBS	PC	0.95	0	0	0	0	NO_COMMENT

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.

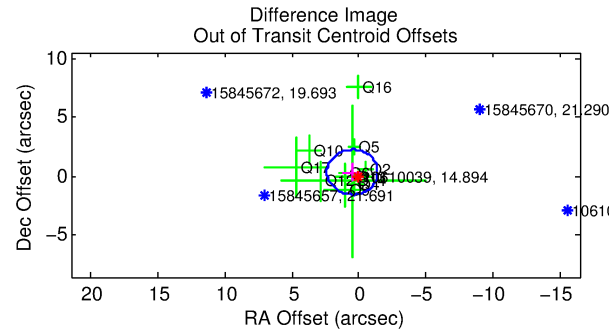
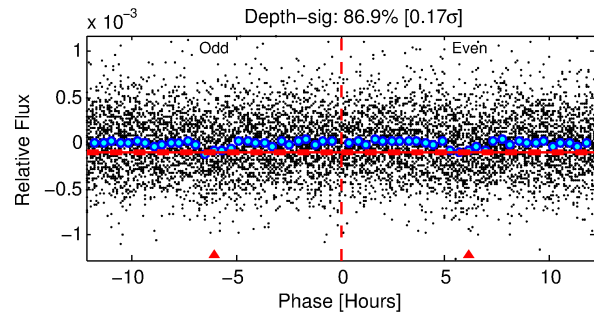
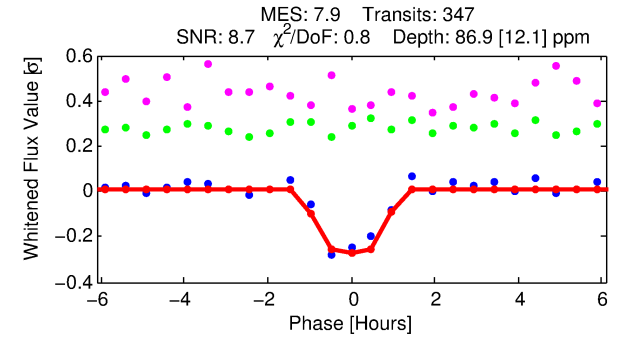
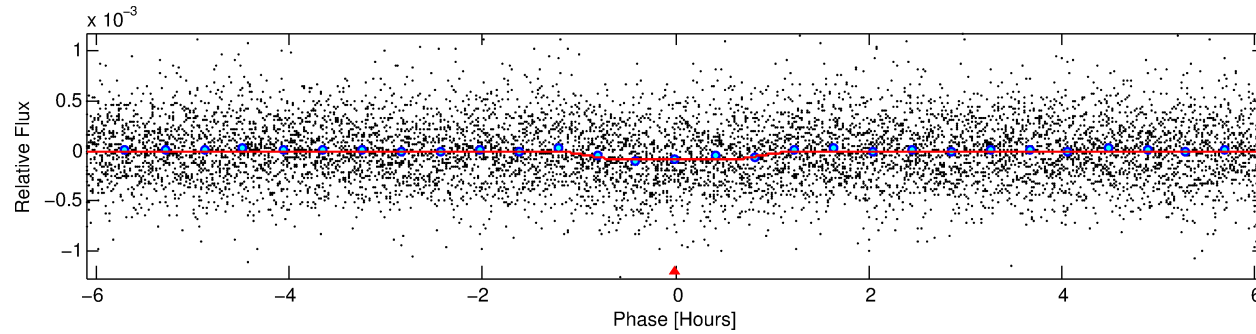
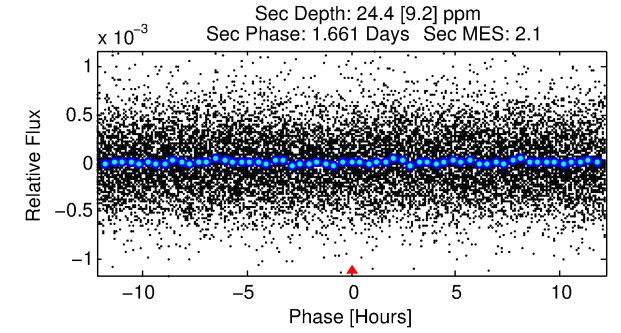
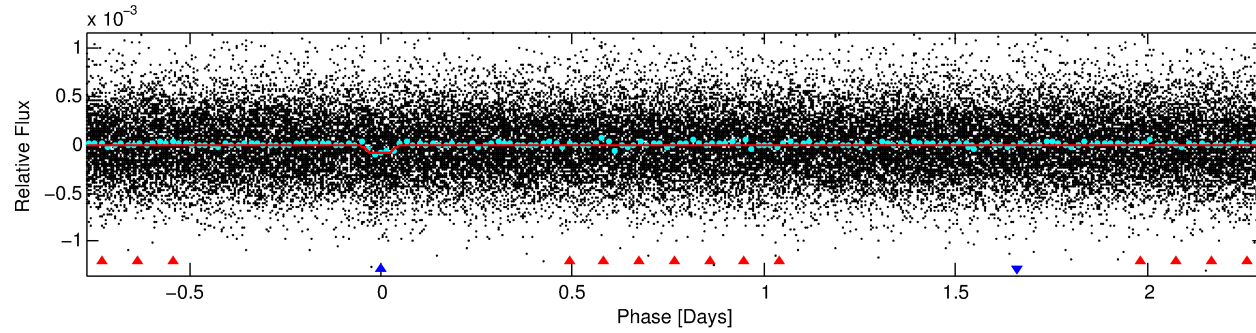
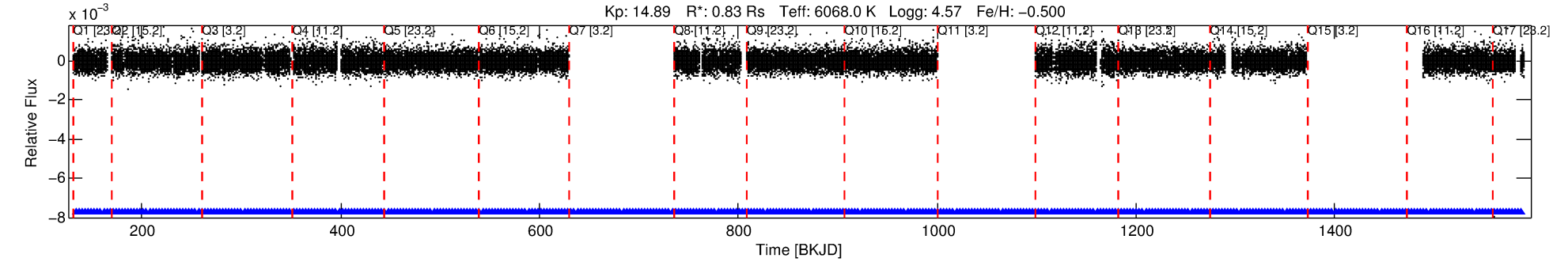
Ephemeris Match Information For 010610039-02

No Significant Match Found

DV One-Page Summary

KIC: 10610039 Candidate: 2 of 2 Period: 3.074 d

KOI: K04577 Corr: No Ephemeris Match



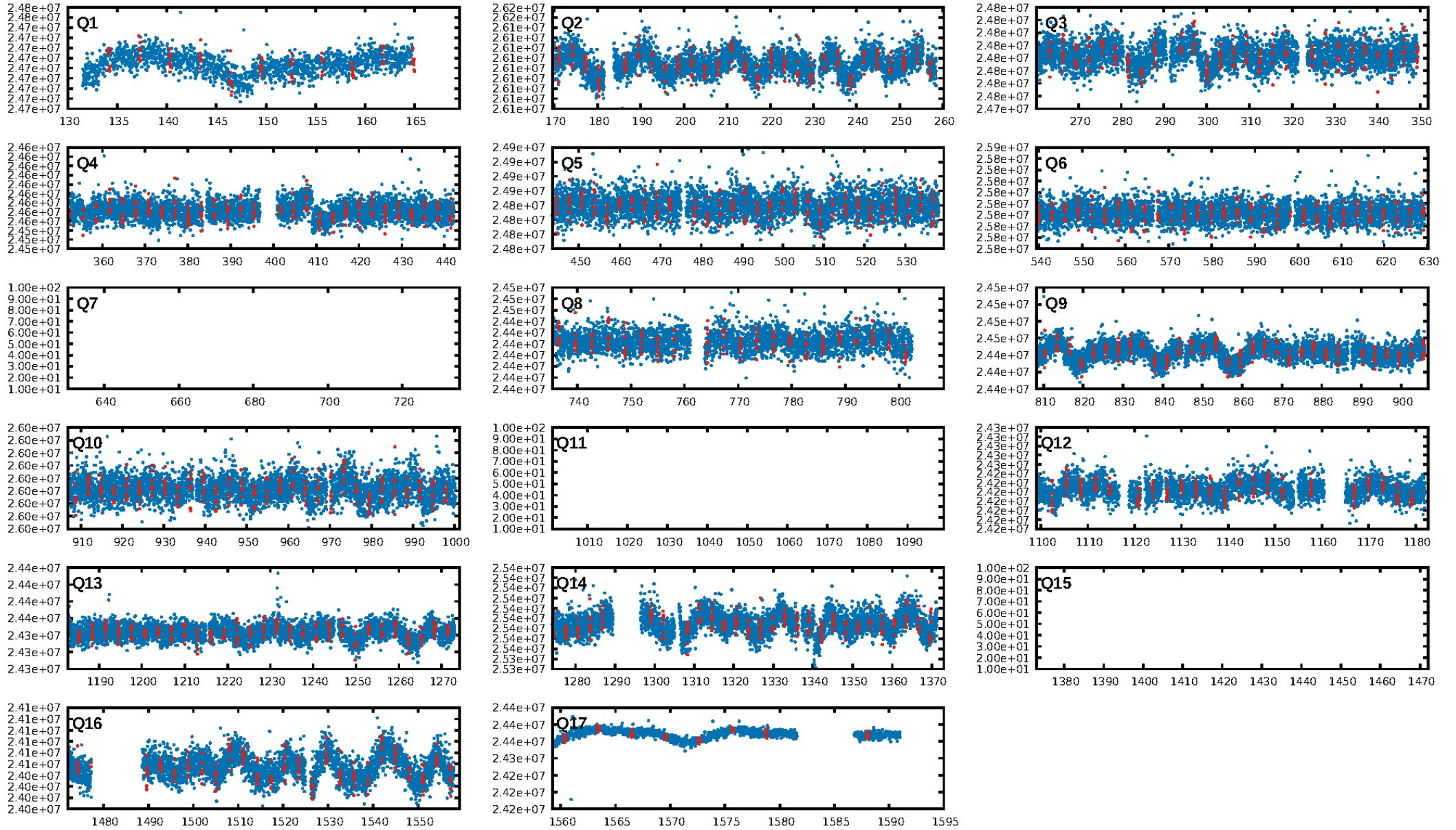
DV Fit Results:

Period = 3.07369 [0.00002] d
Epoch = 134.1635 [0.0040] BKJD
Rp/R* = 0.0100 [0.0079]
a/R* = 5.39 [22.63]
b = 0.90 [0.94]
Seff = 515.94 [198.99]
Teff = 1215 [117] K
Rp = 0.91 [0.77] Re
a = 0.0403 [0.0100] AU
Ag = 26.33 [43.93] [0.58σ]
Teffp = 4256 [1736] K [1.75σ]

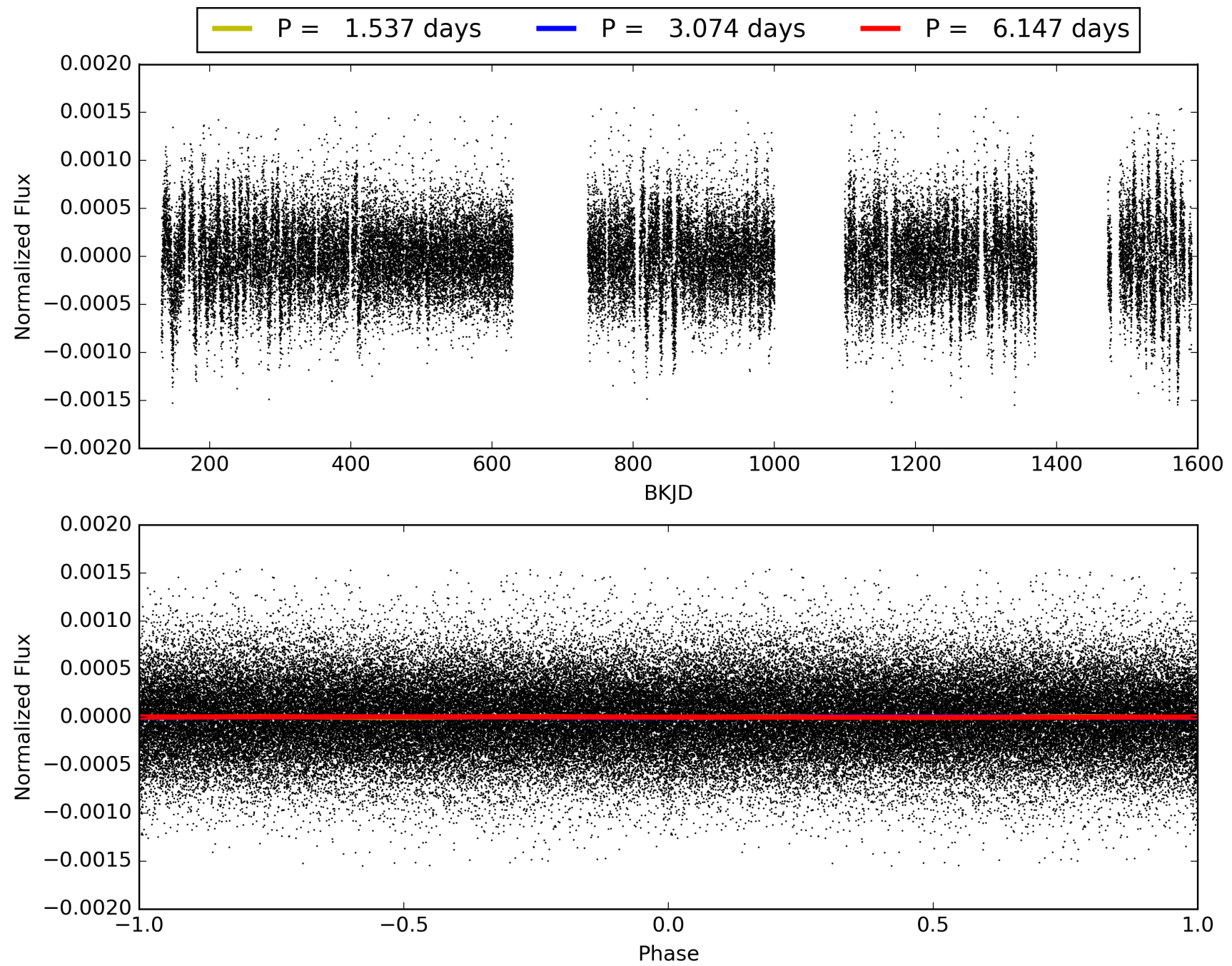
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [516.20σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.24e-15
RollingBand-fgt: 1.00 [328/328]
GhostDiagnostic-chr: -4.399
Centroid-sig: 0.1%
Centroid-so: 3.855 arcsec [2.40σ]
OotOffset-rm: 0.620 arcsec [0.98σ]
KicOffset-rm: 0.586 arcsec [0.94σ]
OotOffset-st: 4/0/3/4 [11]
KicOffset-st: 4/0/3/4 [11]
DiffImageQuality-fgm: 0.36 [4/11]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 010610039-02, PDC Light Curves

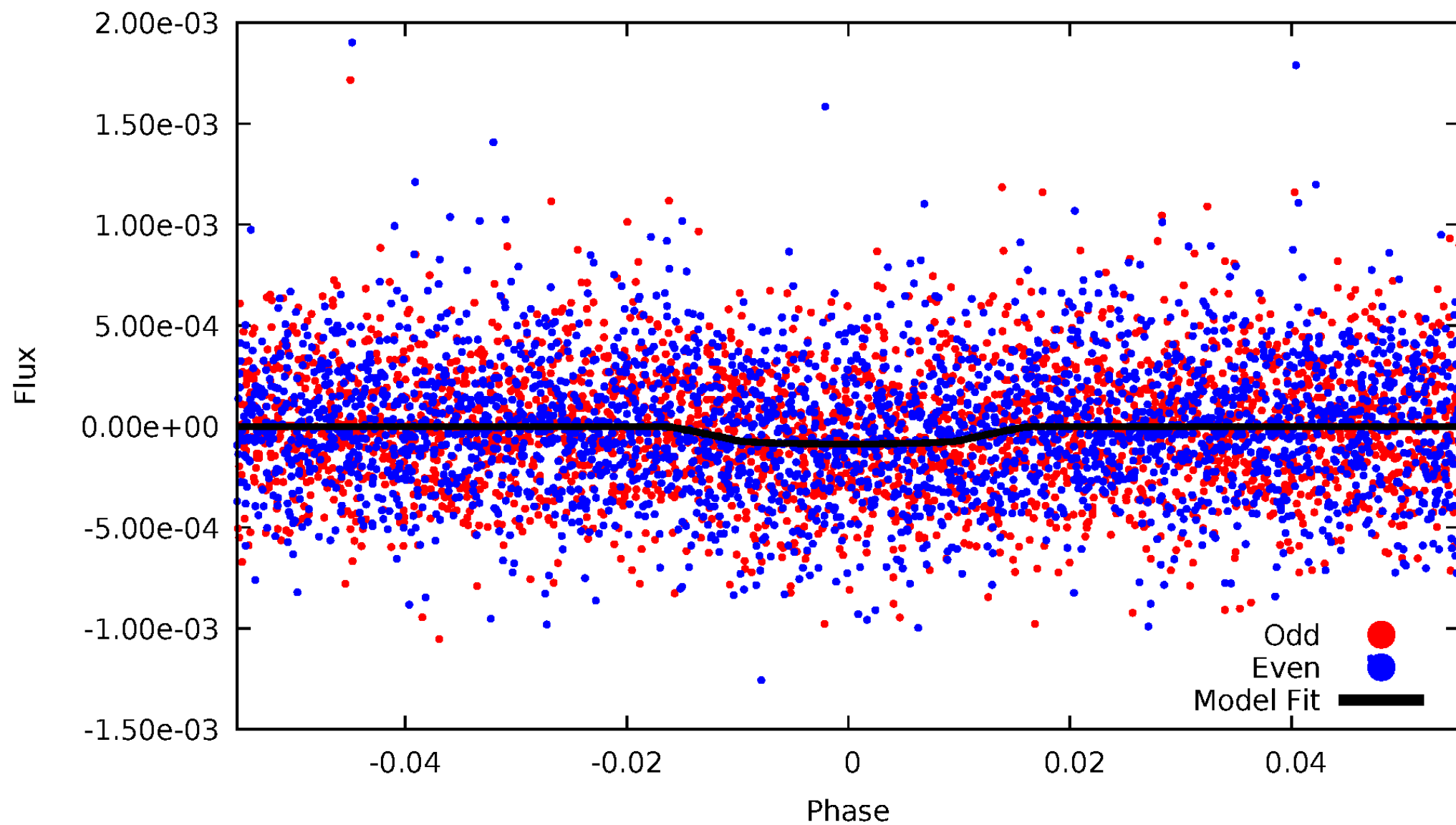


TCE 010610039-02



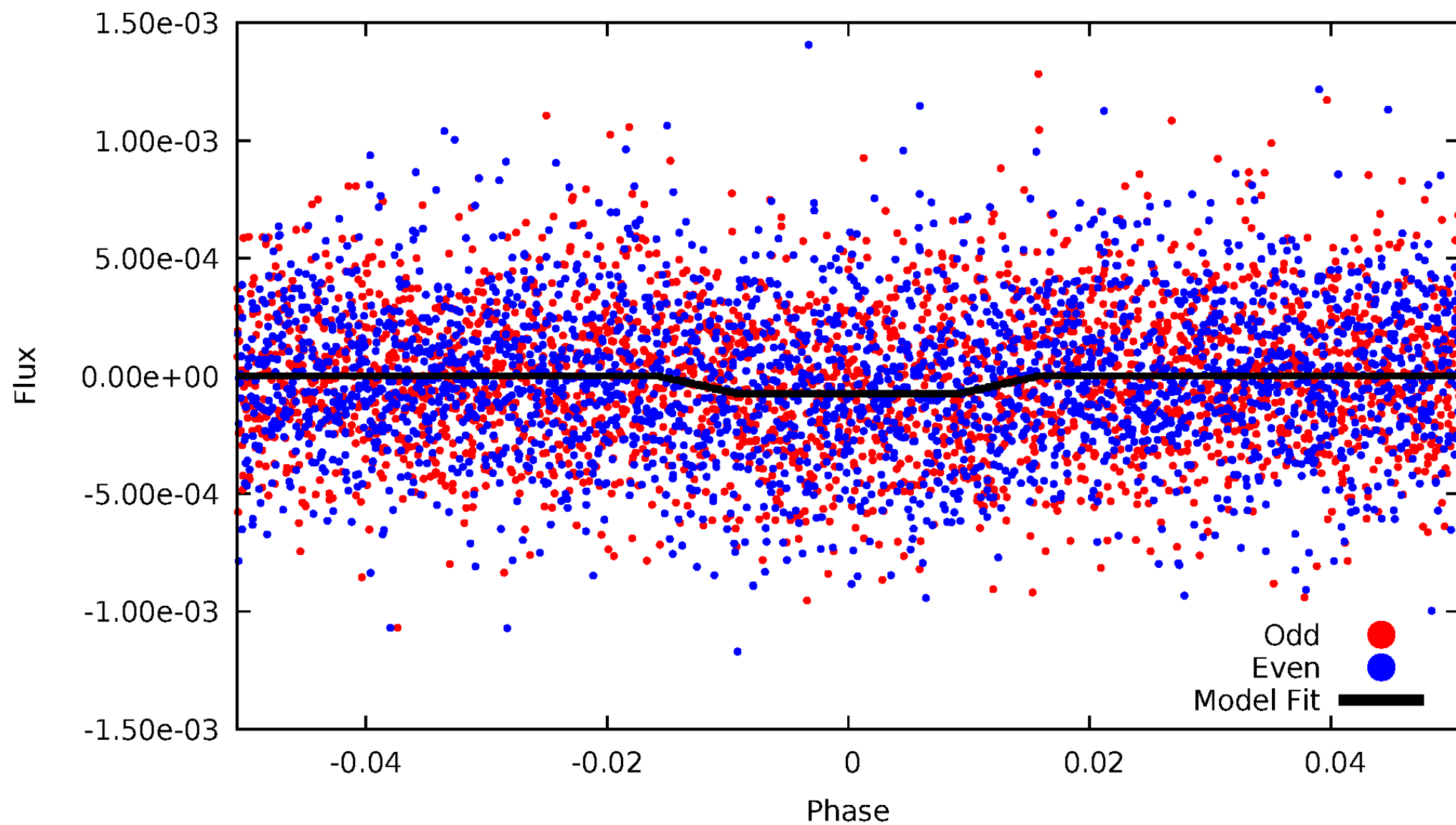
DV Odd/Even

TCE 010610039-02



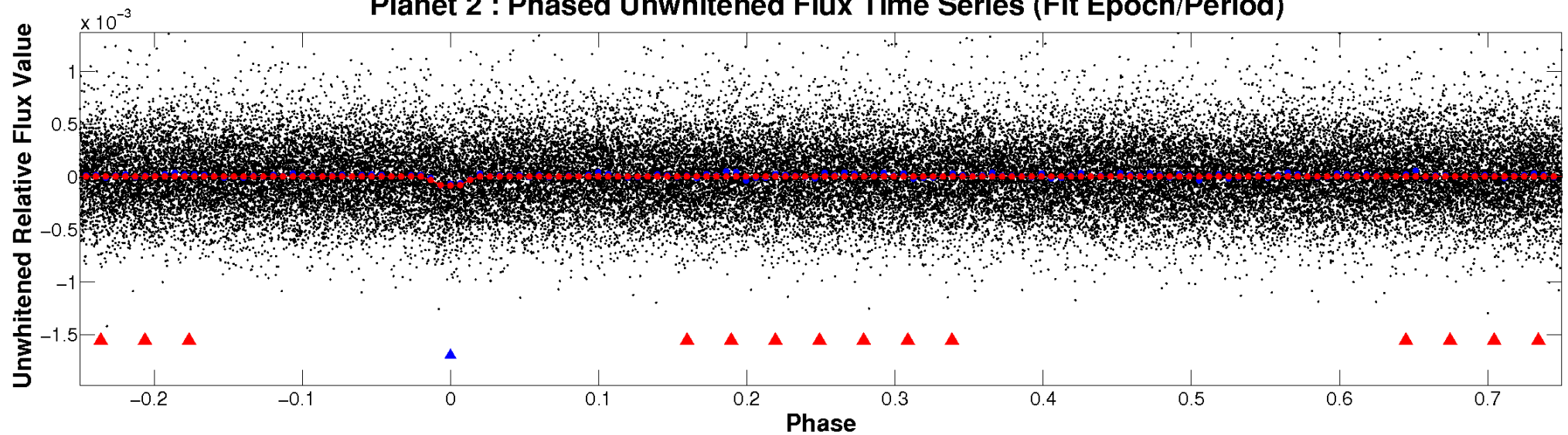
ALT Odd/Even

TCE 010610039-02

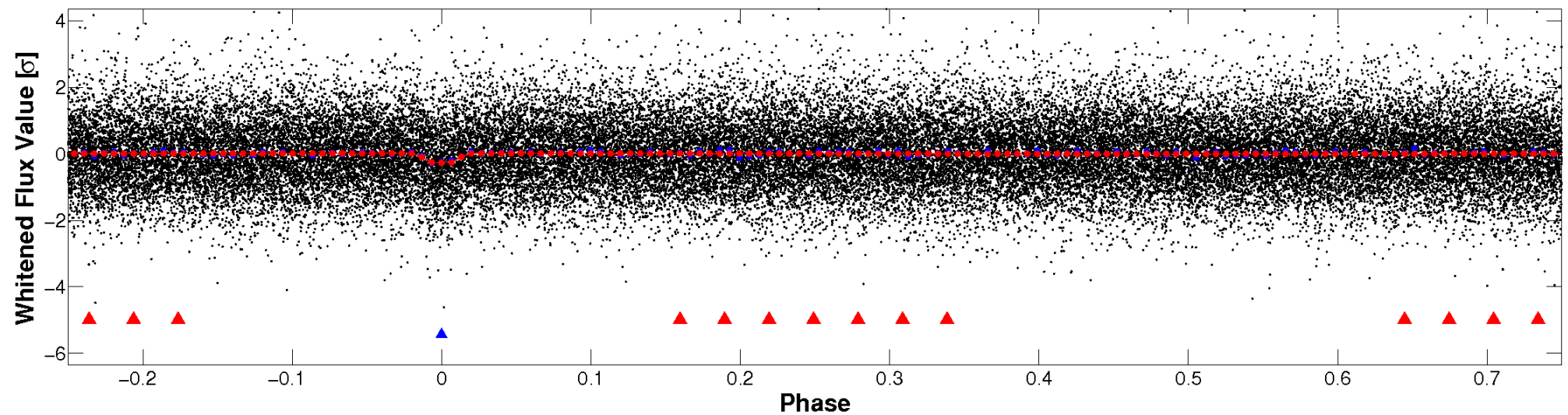


Non-Whitened Vs. Whitened Light Curve

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

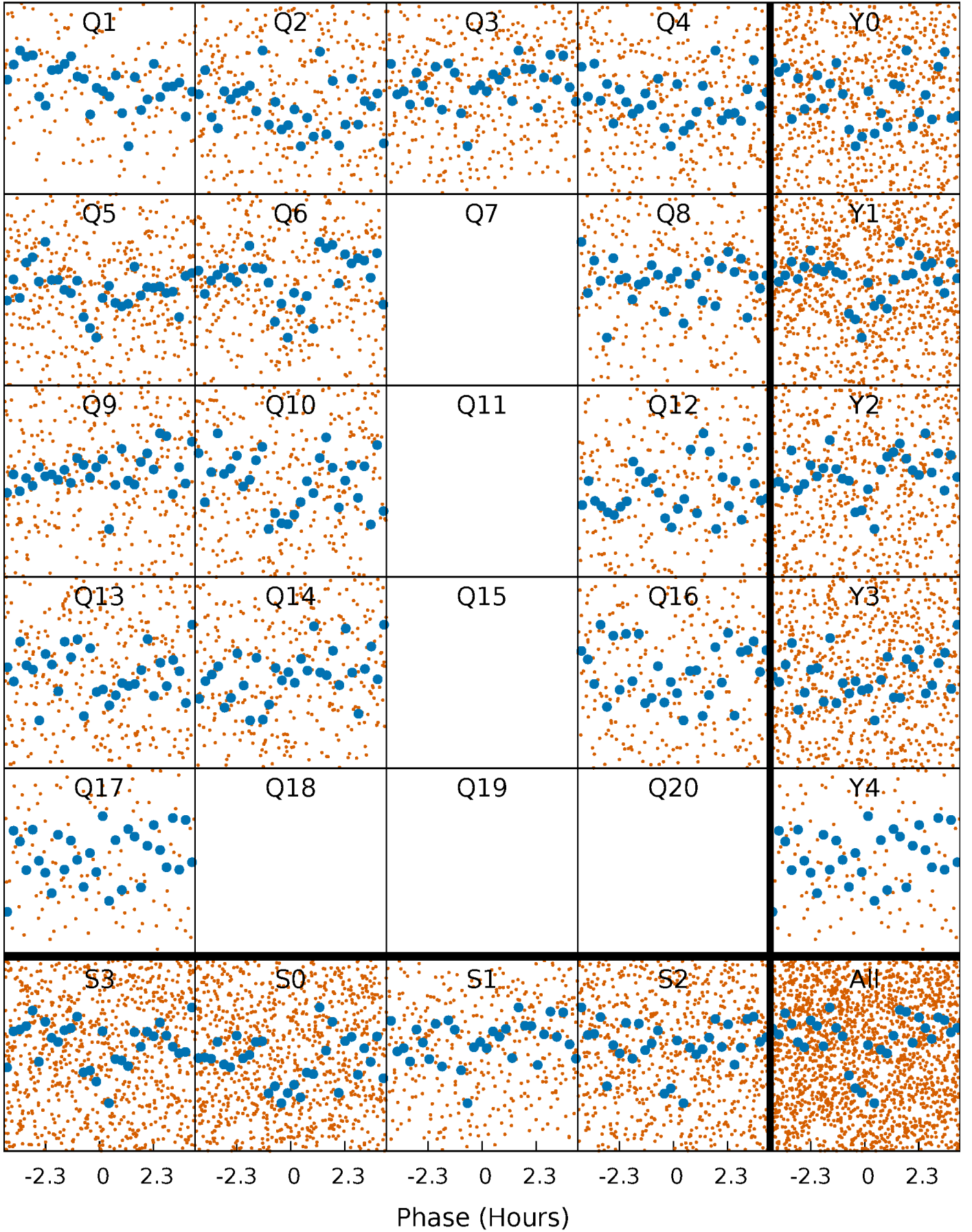


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



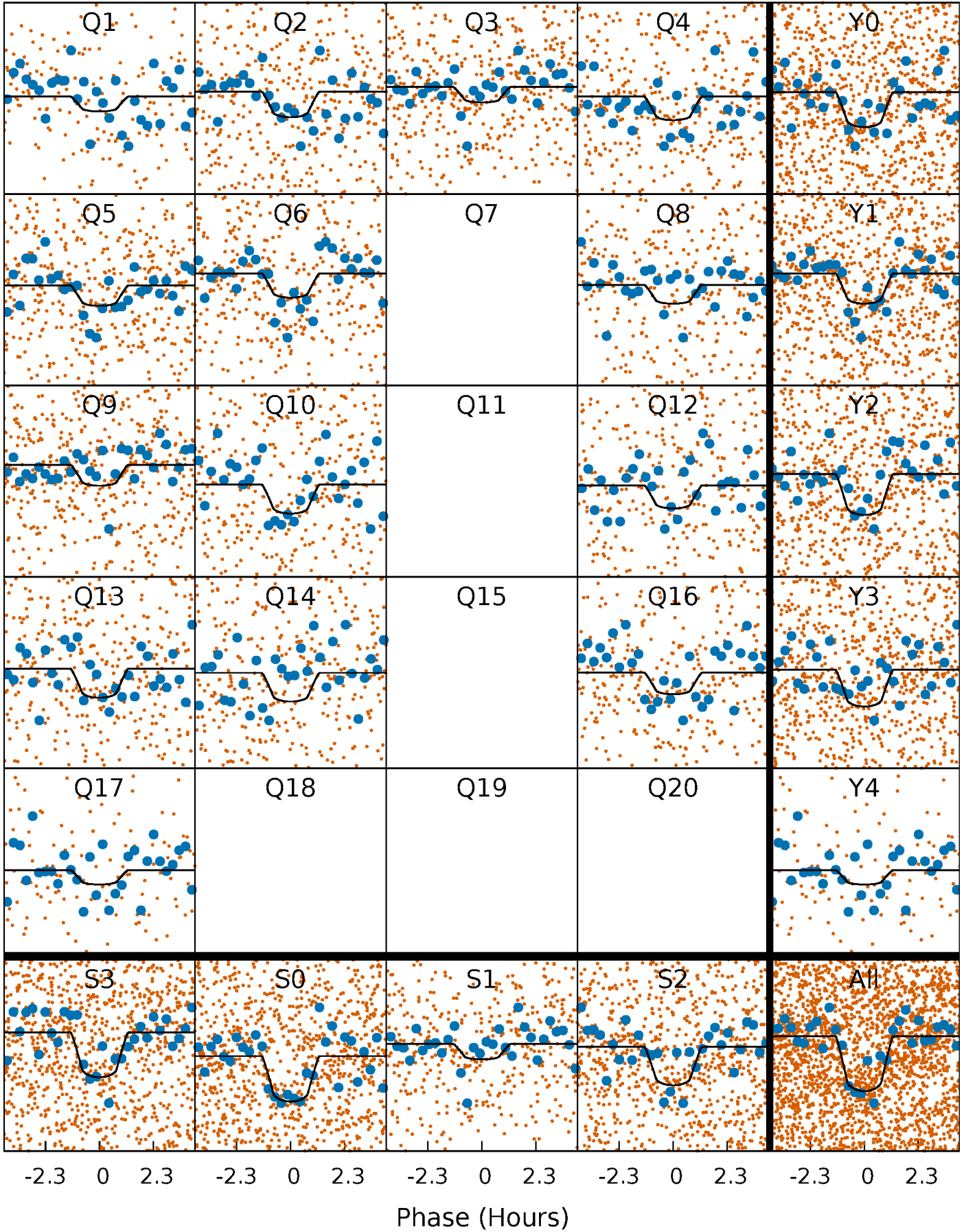
PDC Quarter-Phased Transit Curves

TCE 010610039-02 P= 3.073690 Days $T_0=134.163490$ (BKJD)



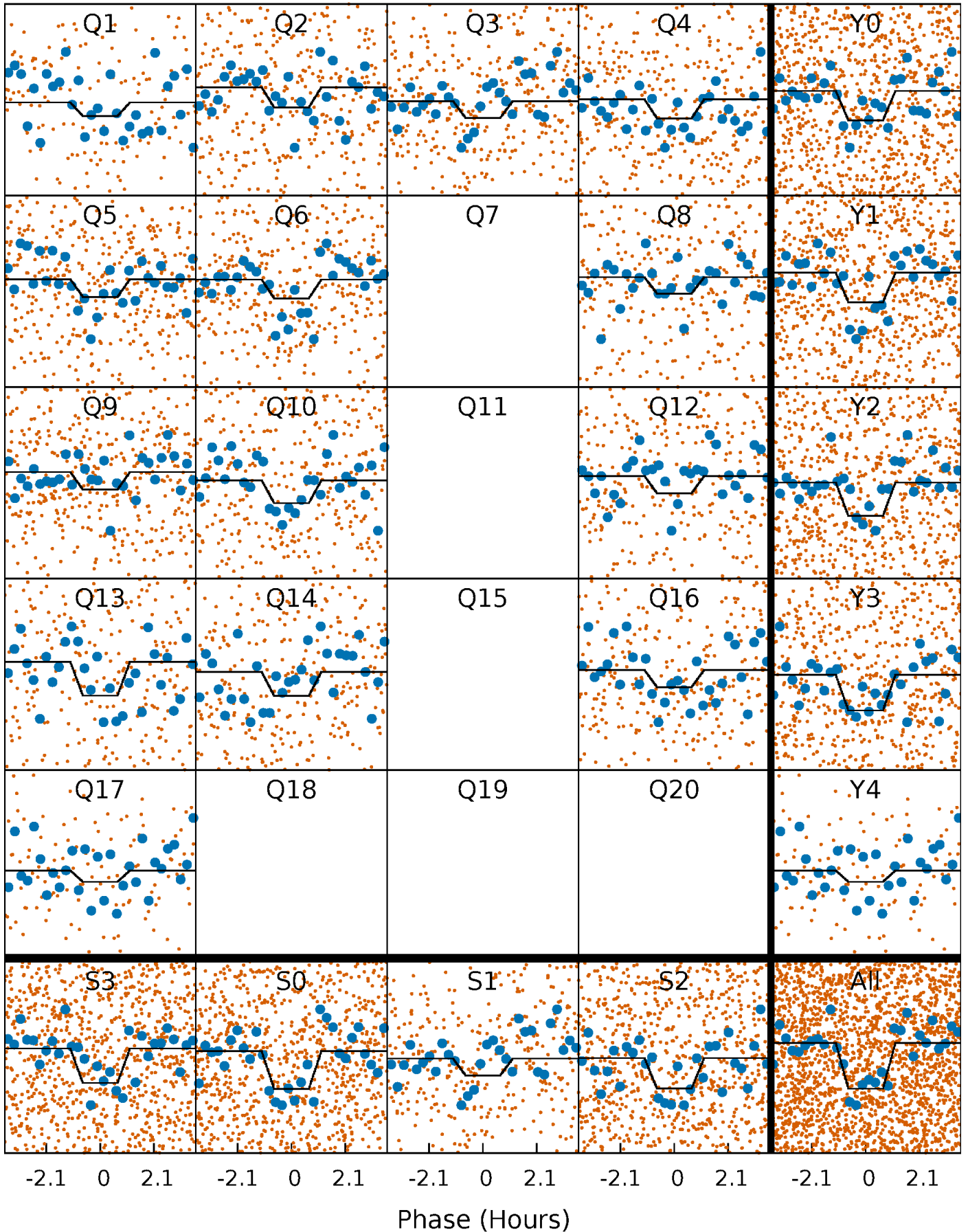
DV Quarter-Phased Transit Curves

TCE 010610039-02 P= 3.073690 Days $T_0=134.163490$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

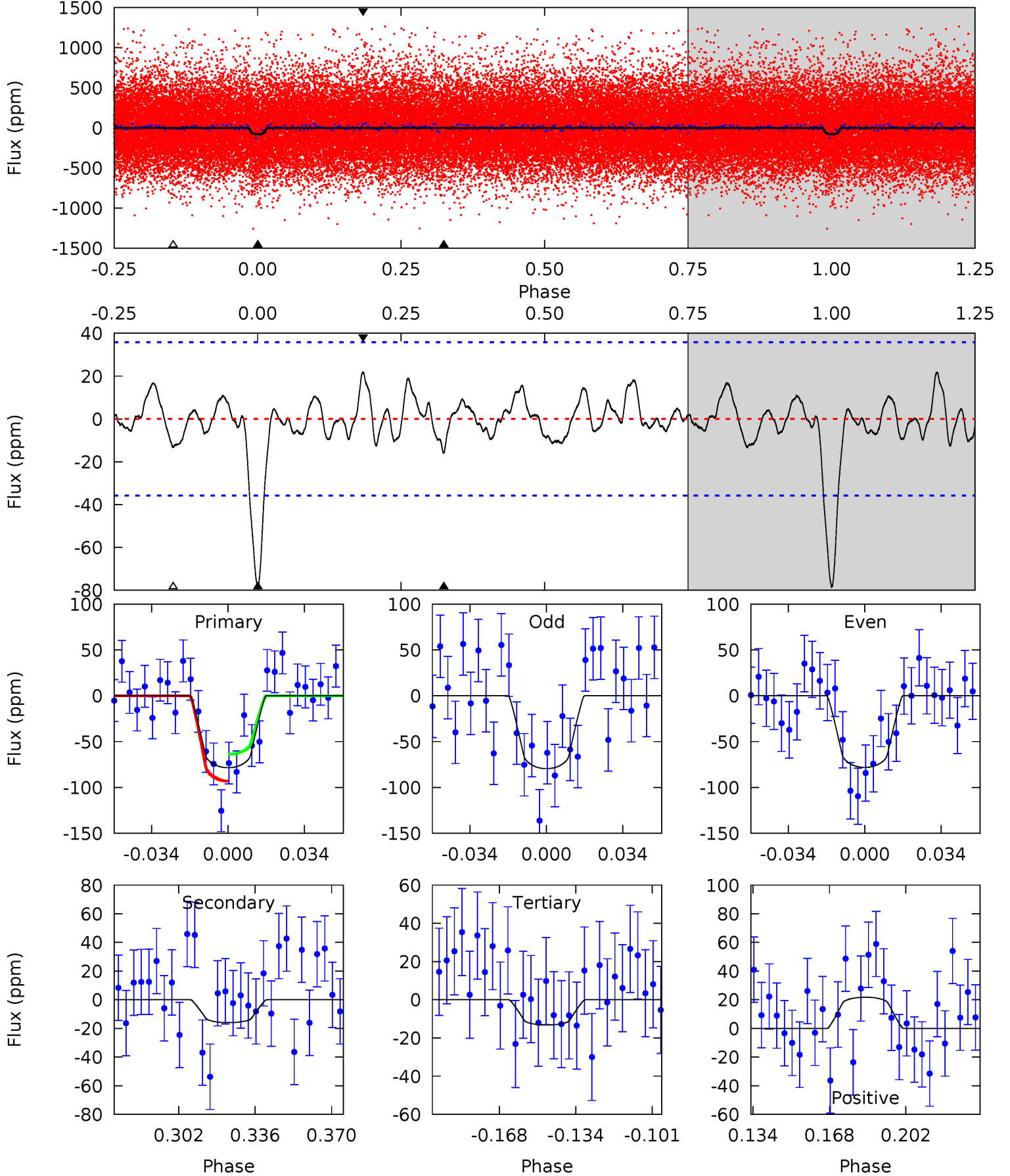
TCE 010610039-02 $P = 3.073659$ Days $T_0 = 134.169664$ (BKJD)



DV Model-Shift Uniqueness Test

010610039-02, P = 3.073690 Days, E = 131.089800 Days

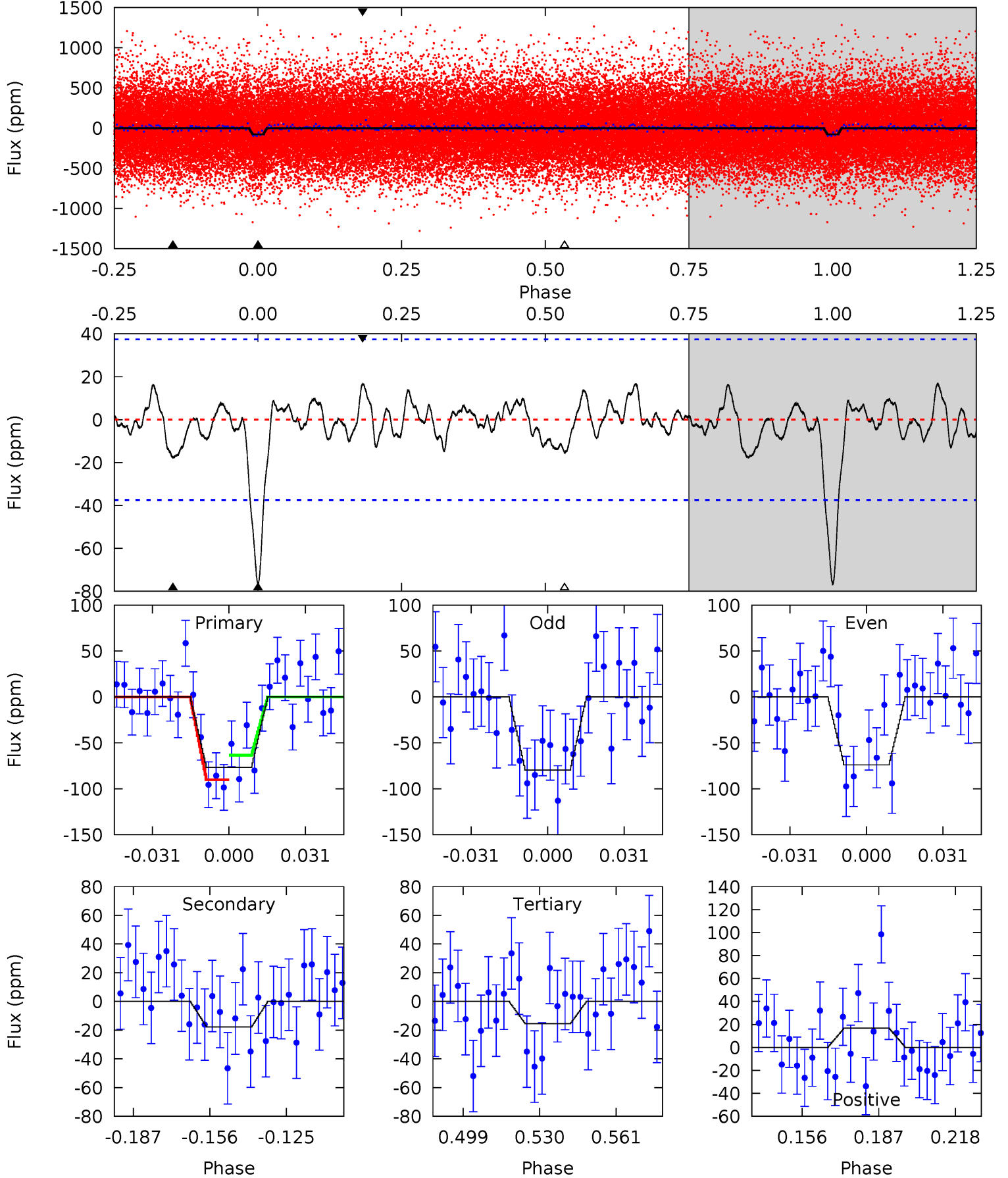
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	2.14	1.77	2.91	4.79	2.12	1.00	8.73	7.58	0.37	-0.78	0.09	1.16	0.22	1.96



Alt Model-Shift Uniqueness Test

010610039-02, P = 3.073659 Days, E = 131.096005 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.86	2.27	2.00	2.16	4.80	2.15	0.86	7.86	7.70	0.28	0.12	0.37	0.95	0.18	1.72



Stellar Parameters For KIC 010610039

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6068^{+163}_{-181}	$4.565^{+0.036}_{-0.204}$	$-0.500^{+0.300}_{-0.300}$	$0.831^{+0.238}_{-0.063}$	$0.931^{+0.097}_{-0.108}$	$2.285^{+0.323}_{-1.209}$
	+3%/-3%	+1%/-4%	+60%/-60%	+29%/-8%	+10%/-12%	+14%/-53%
Source	PHO1	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 010610039-02 / KOI 4577.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-16 ± 7	$1.10^{+0.71}_{-0.65}$	1740^{+123}_{-81}	3845^{+1510}_{-686}	11^{+46}_{-7}
Alt.	-18 ± 8	$1.01^{+0.72}_{-0.62}$	1747^{+113}_{-80}	4089^{+2039}_{-790}	15^{+79}_{-10}

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 $A_{obs} \gg 1.0$

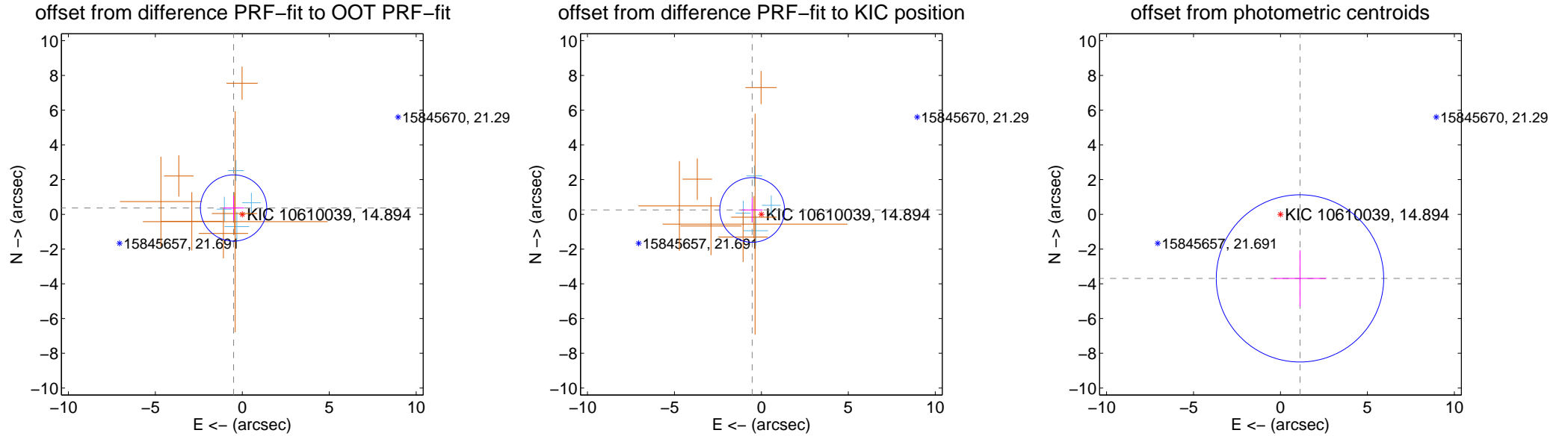
DV Centroid Data

Supplemental centroid analysis for 010610039-02. Kepler magnitude: 14.89. Transit SNR 8.65

There are 4 quarters with good PRF difference image offsets

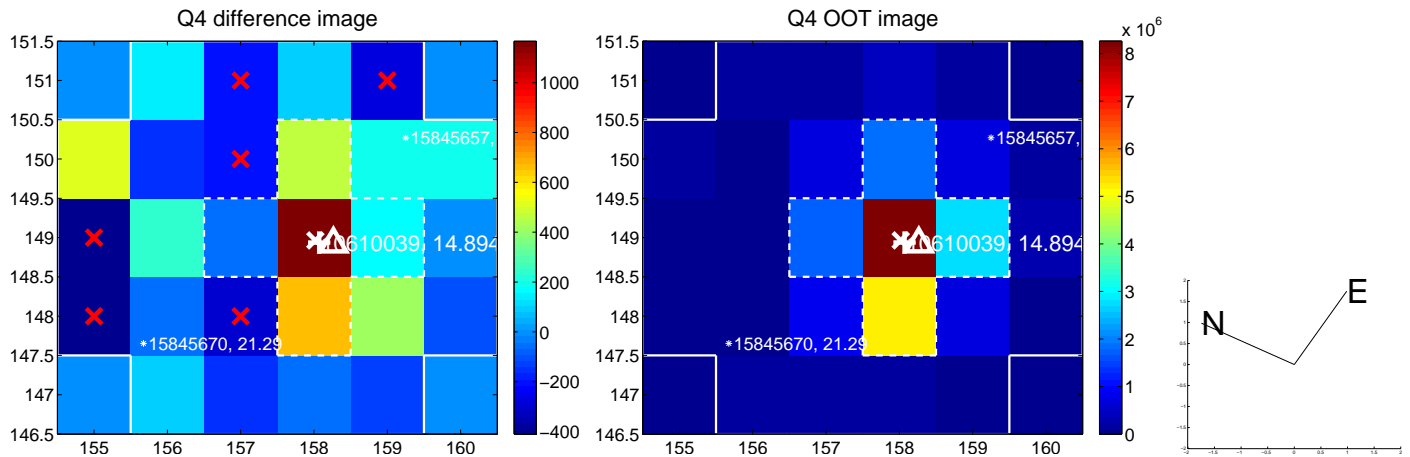
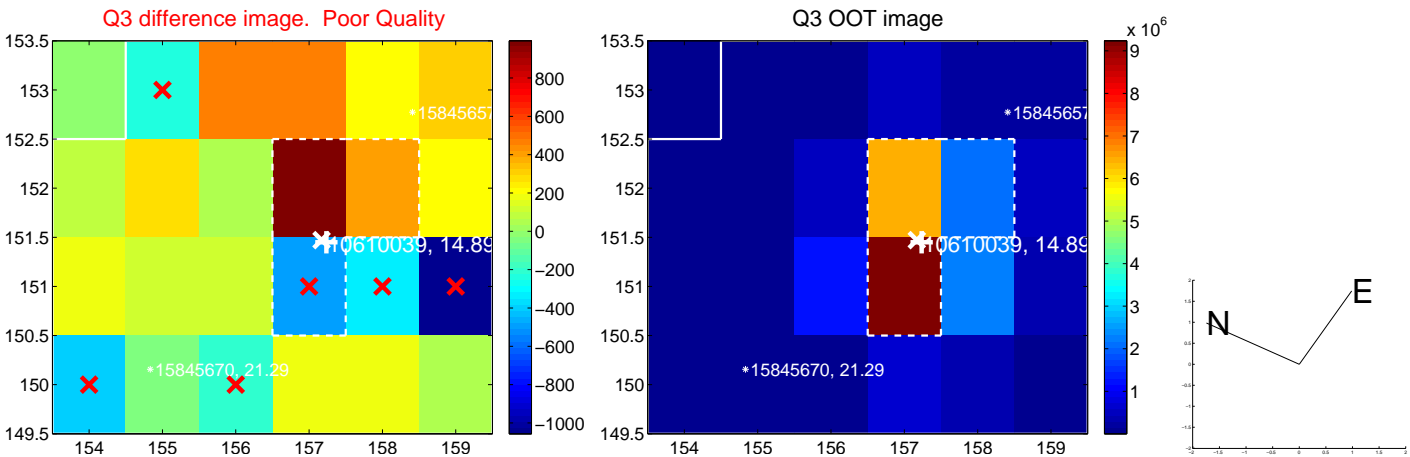
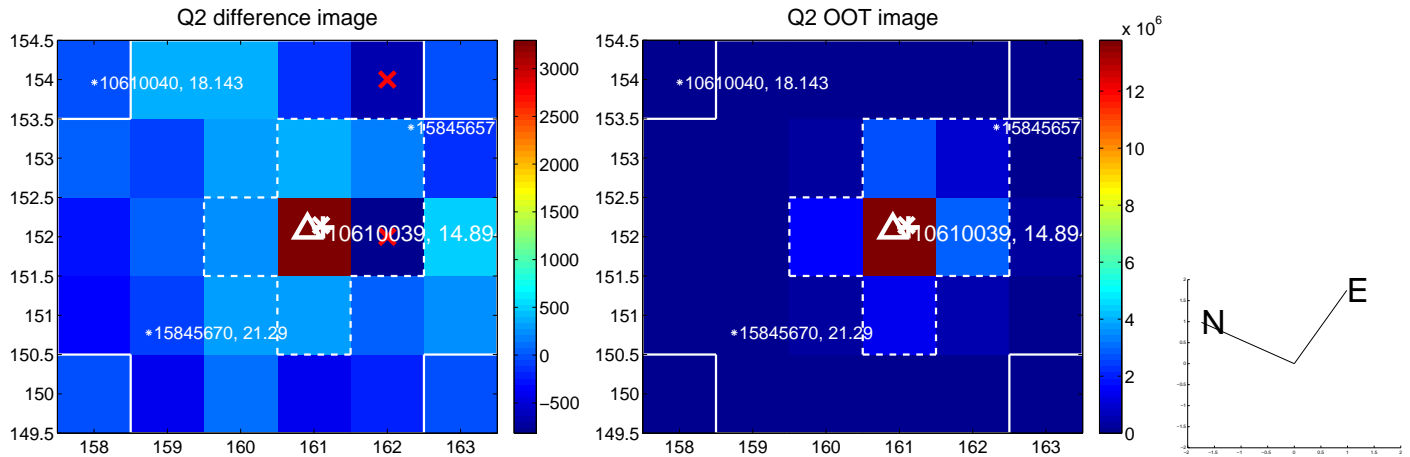
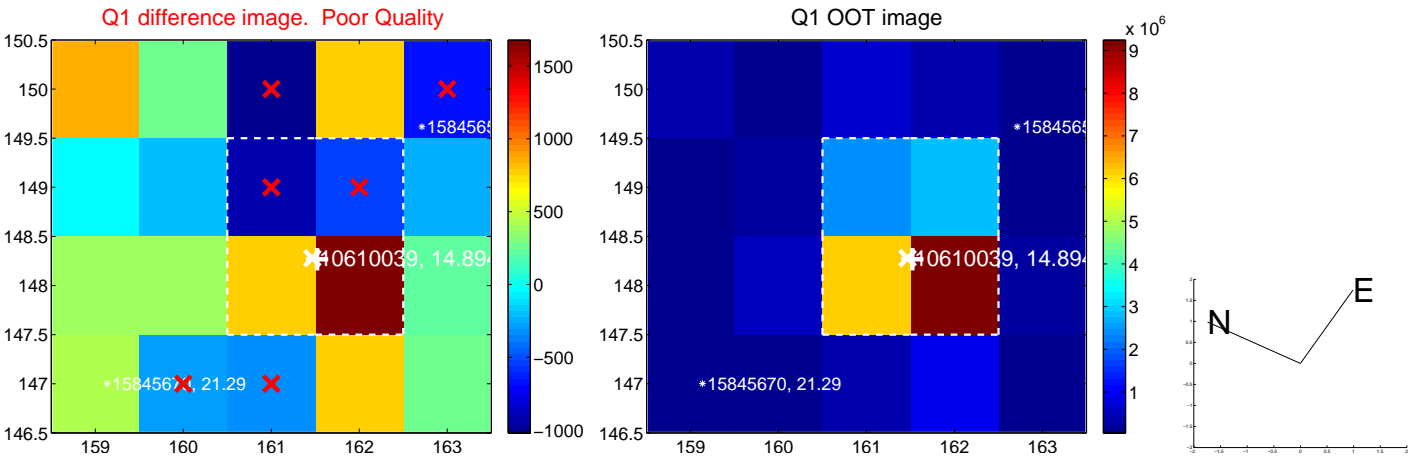
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.620 ± 0.636	0.98	0.501 ± 0.602	0.366 ± 0.694
PRF-fit source offset from KIC position	0.586 ± 0.620	0.94	0.529 ± 0.602	0.253 ± 0.694
photometric centroid source offset	3.86 ± 1.60	2.40	-1.12 ± 1.51	-3.69 ± 1.61

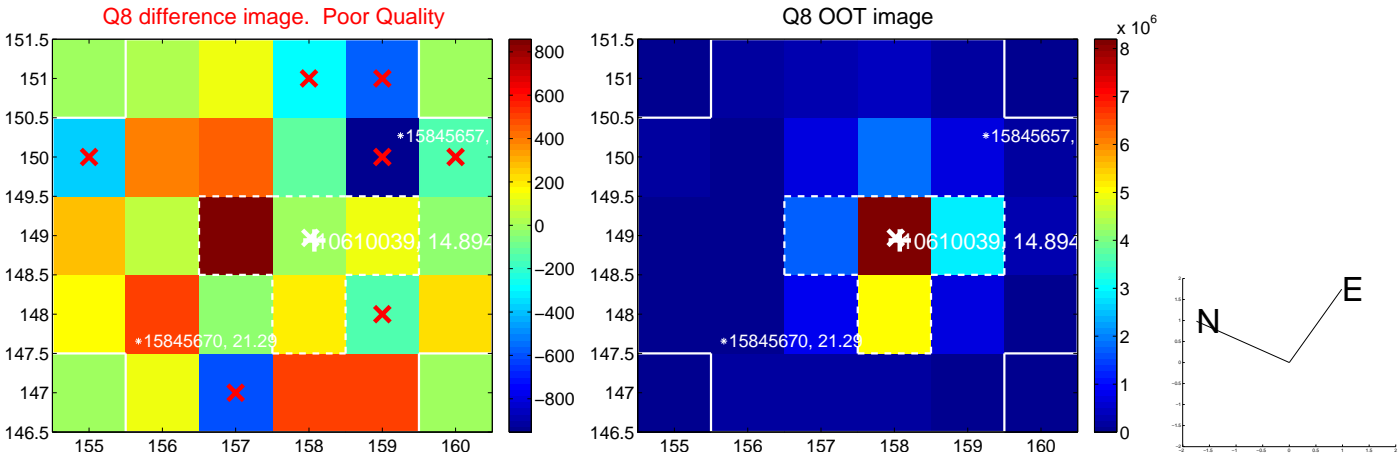
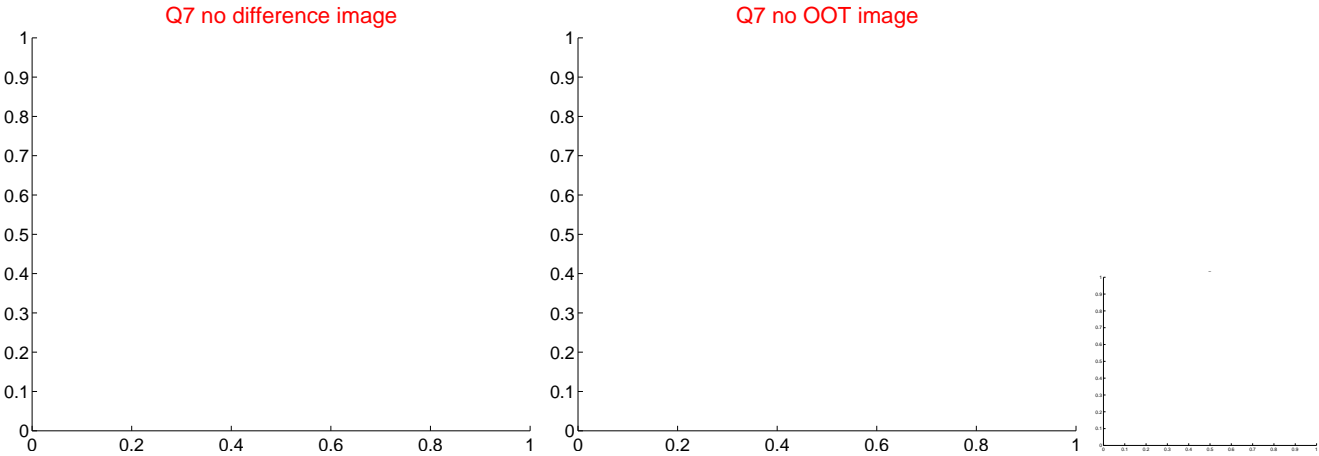
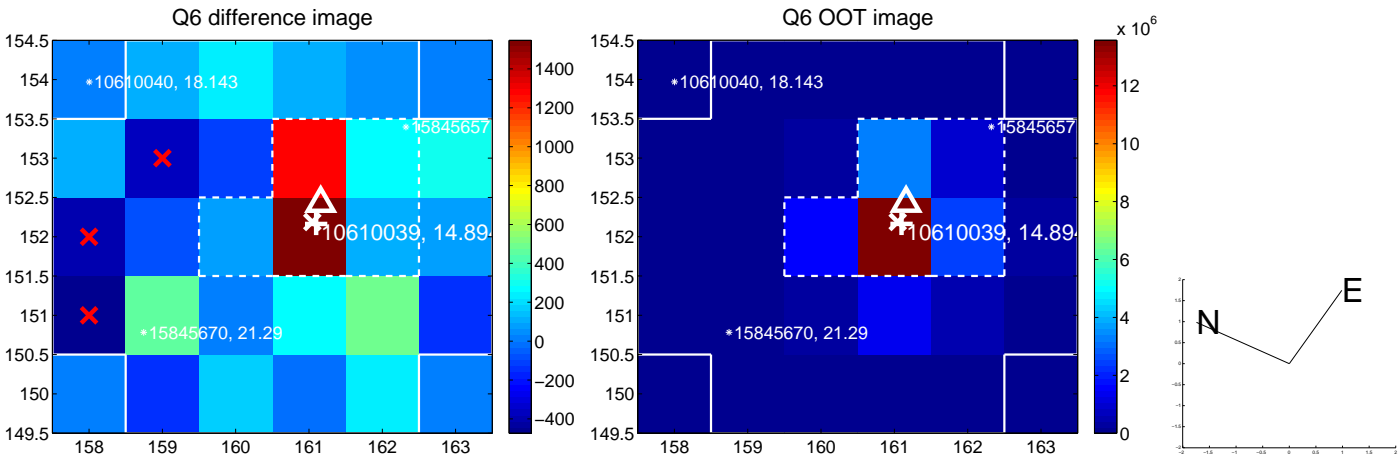
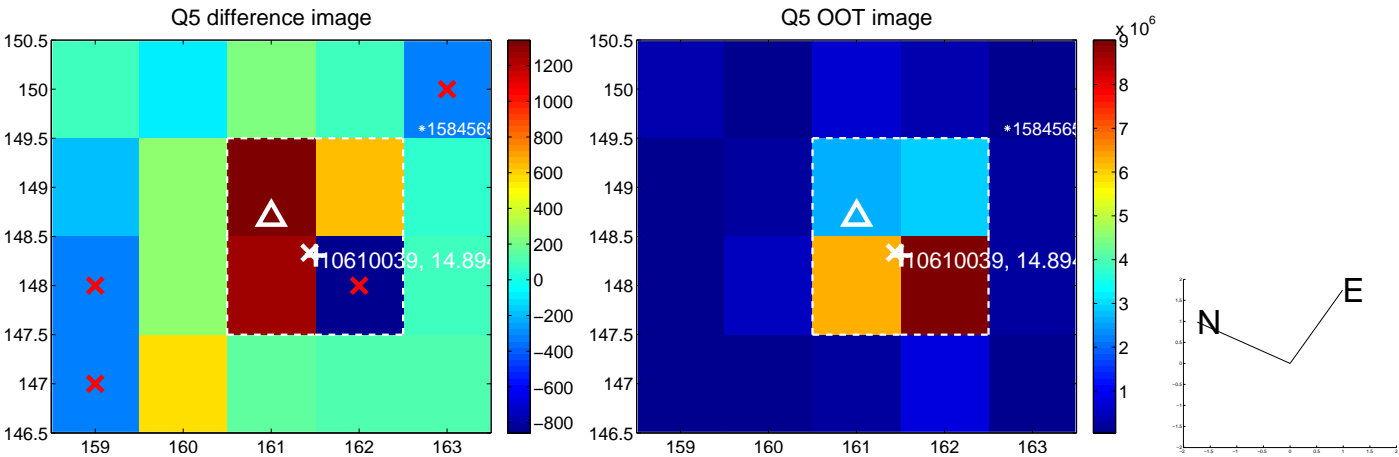


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

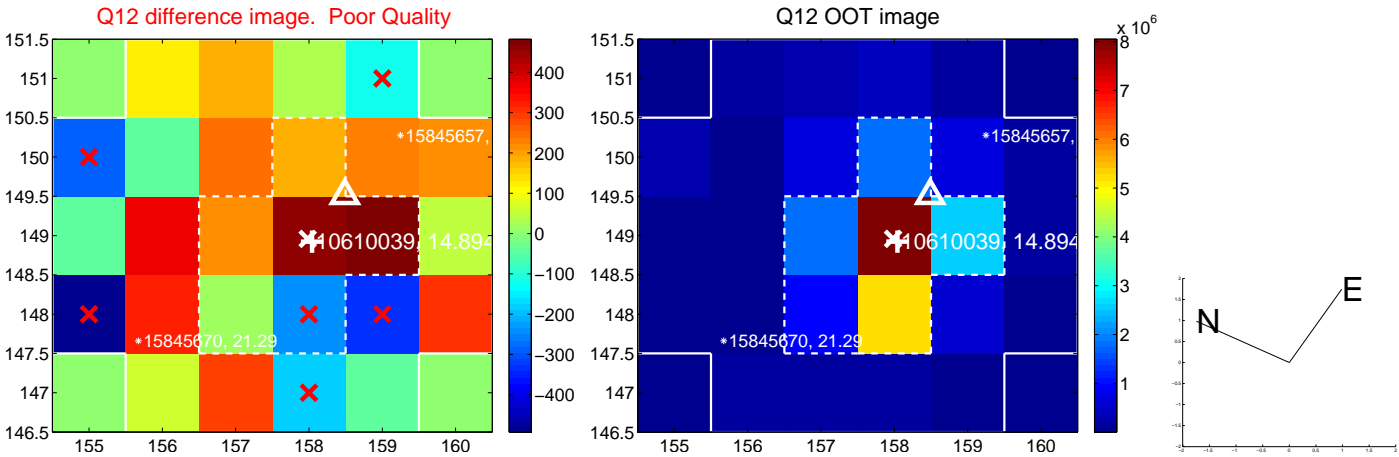
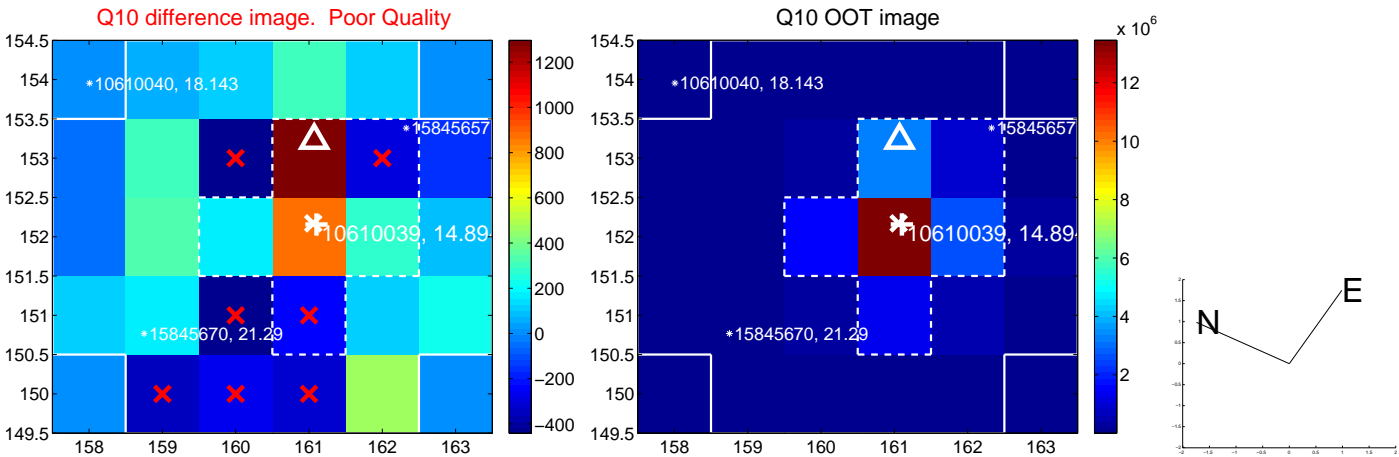
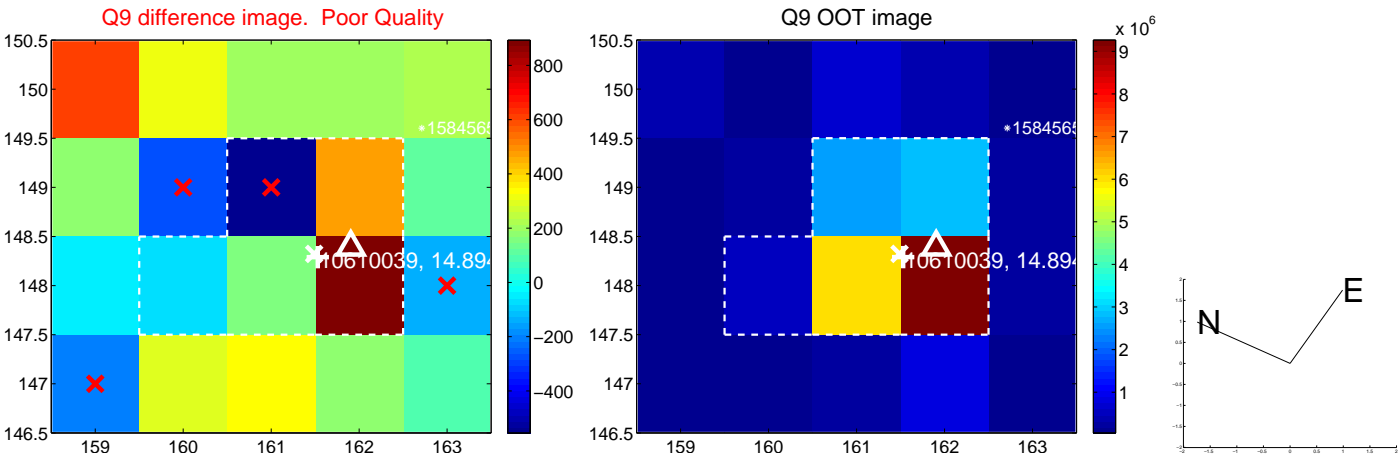
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



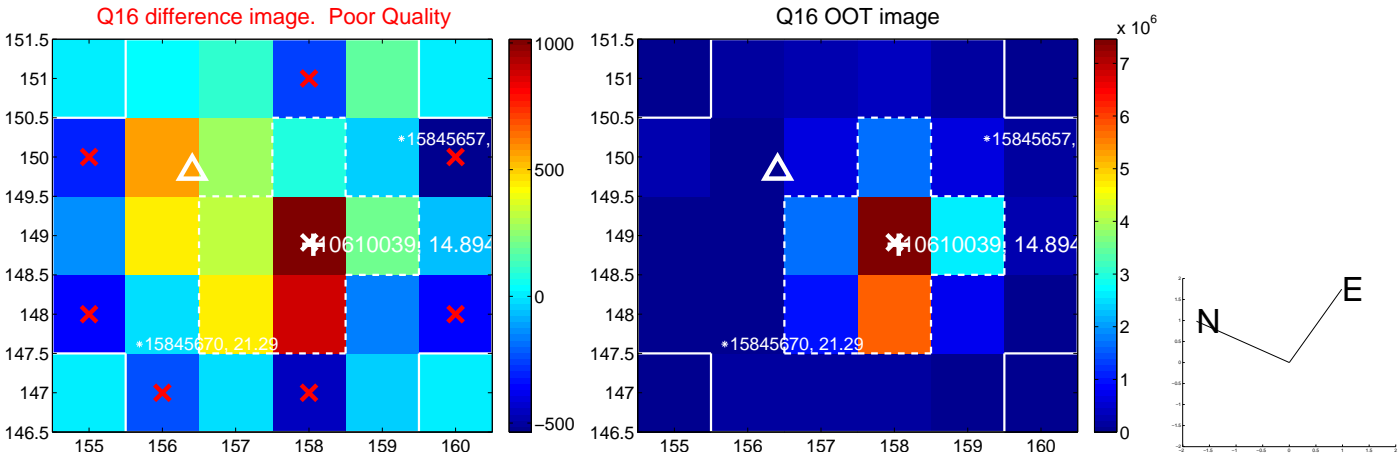
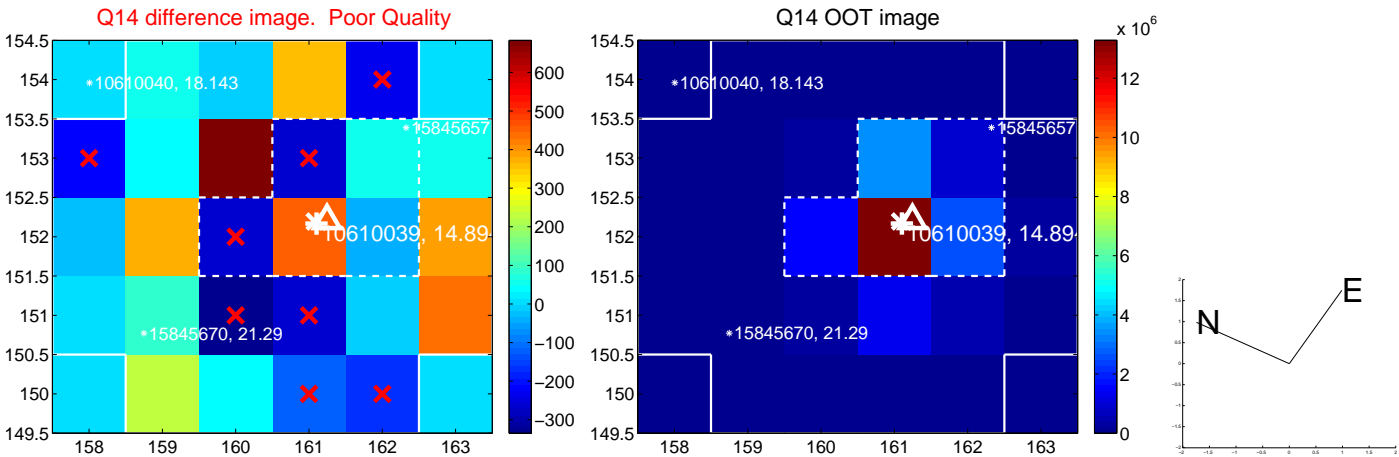
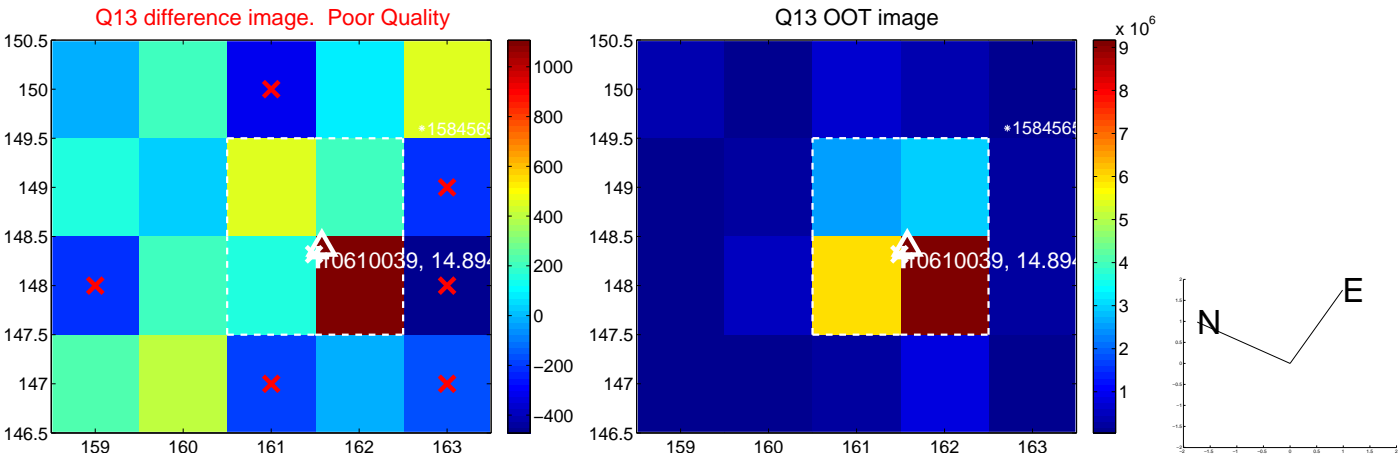
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



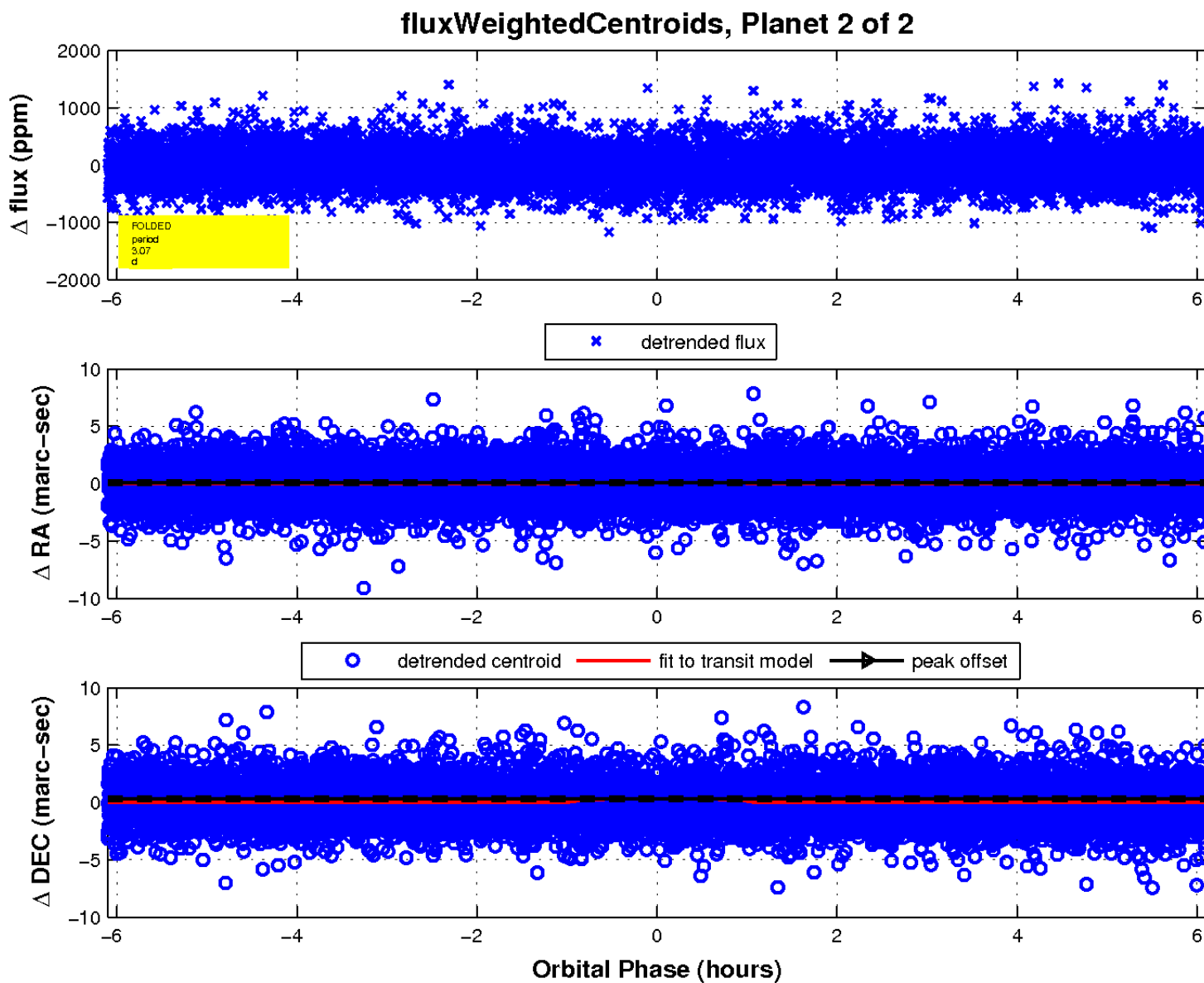
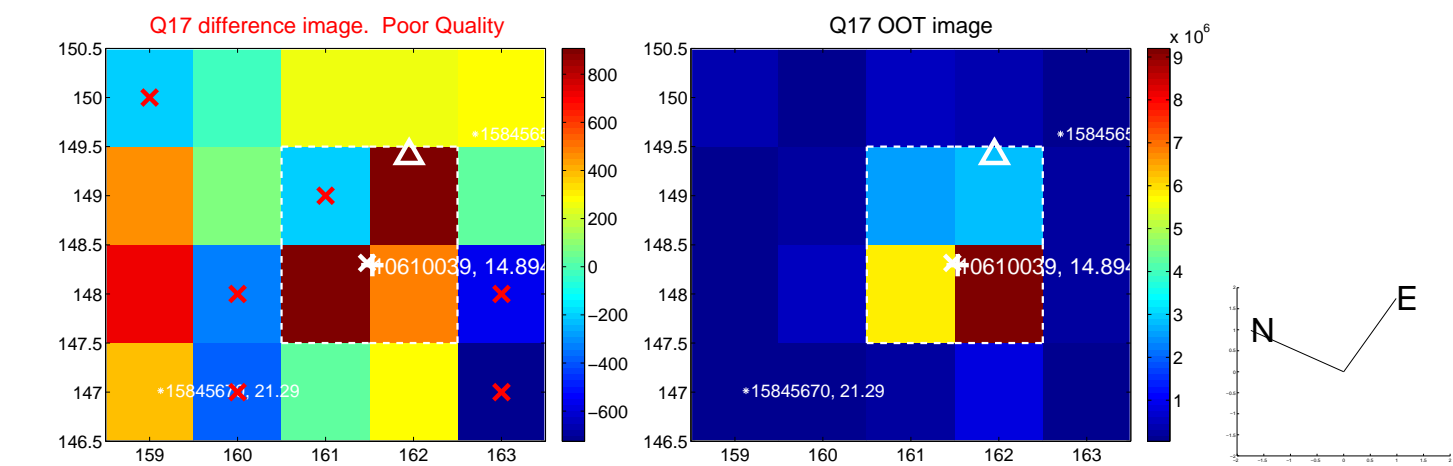
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

