

KIC 010020423

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})
010020423-01	OBS	7273.01	7.448375	137.694546	153216.1	4.206	7390.9	5135.1	0.87	5636	33.89	136.37
010020423-02	OBS	No	7.448246	133.898315	2793.1	6.000	209.7	-1.0	0.87	5636	4.54	136.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010020423-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE
010020423-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—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.

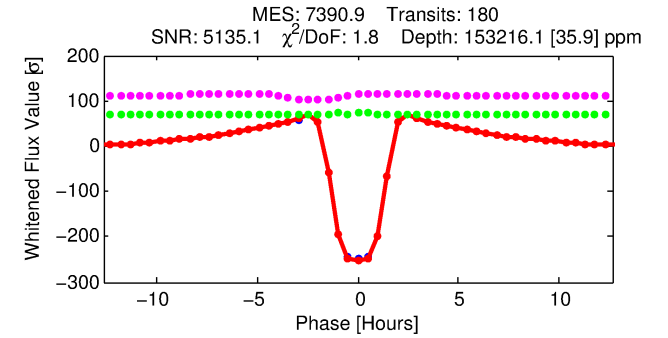
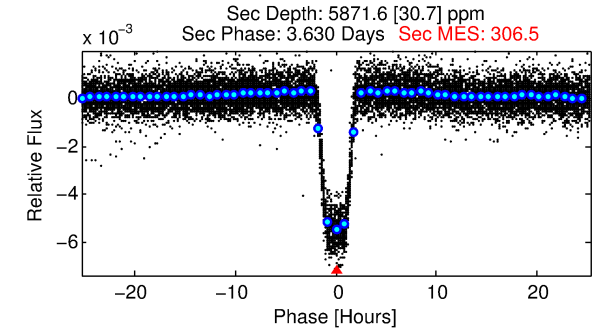
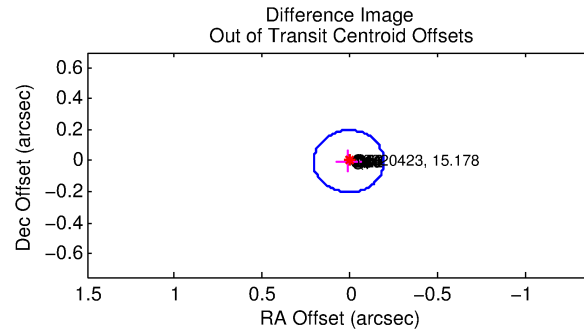
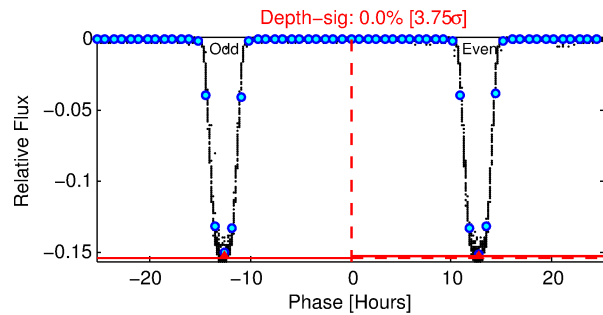
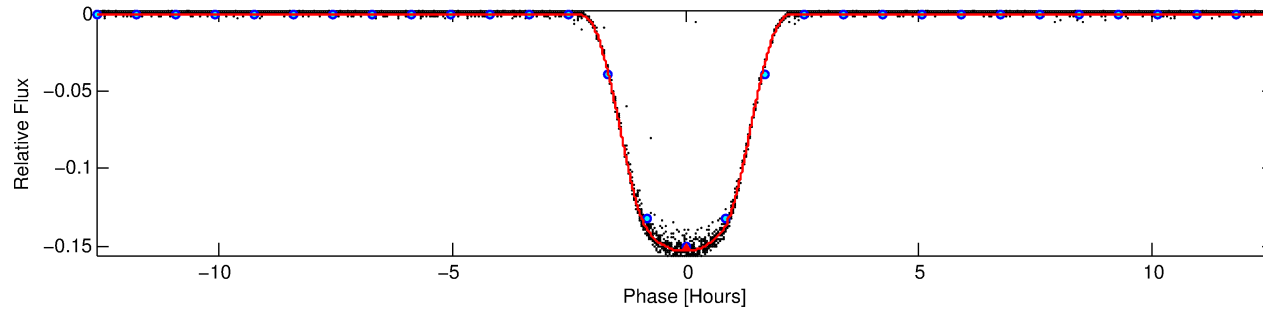
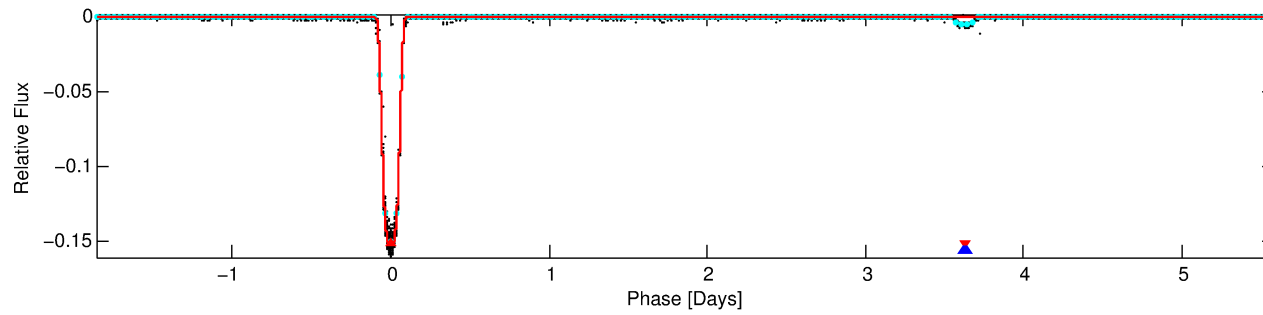
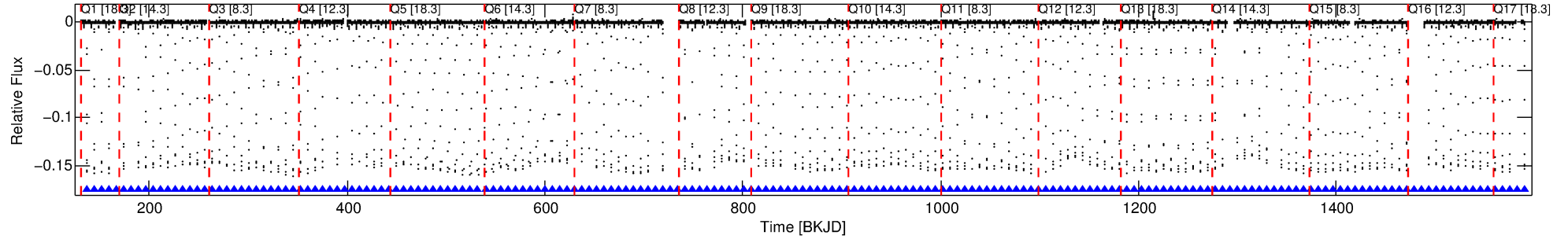
Ephemeris Match Information For 010020423-01

No Significant Match Found

DV One-Page Summary

KIC: 10020423 Candidate: 1 of 2 Period: 7.448 d
KOI: K07273.01 Corr: 0.999

Kp: 15.18 R*: 0.87 Rs Teff: 5636.0 K Logg: 4.49 Fe/H: -0.260



DV Fit Results:

Period = 7.44837 [0.00000] d
Epoch = 137.6945 [0.0000] BKJD
Rp/R* = 0.3582 [0.0001]
a/R* = 18.34 [0.01]
b = 0.10 [0.01]
Seff = 136.37 [15.32]
Teff = 871 [24] K
Rp = 33.89 [1.99] Re
a = 0.0706 [0.0037] AU
Ag = 14.02 [1.12] [11.67σ]
Teffp = 2607 [52] K [30.24σ]

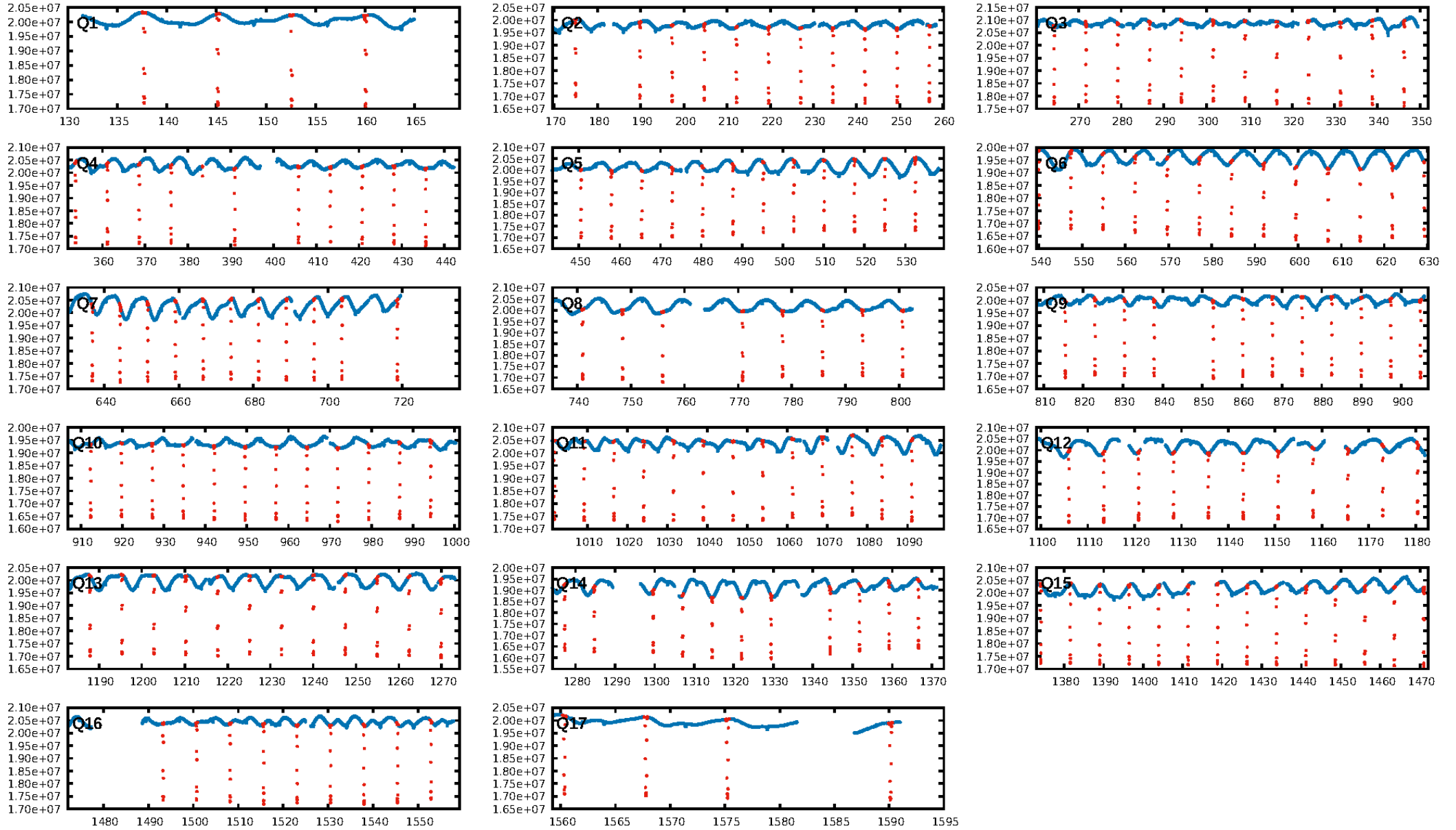
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [172/172]
GhostDiagnostic-chr: 2.425
Centroid-sig: 0.0%
Centroid-so: 0.254 arcsec [203.57σ]
OotOffset-rm: 0.009 arcsec [0.13σ]
KicOffset-rm: 0.129 arcsec [1.83σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

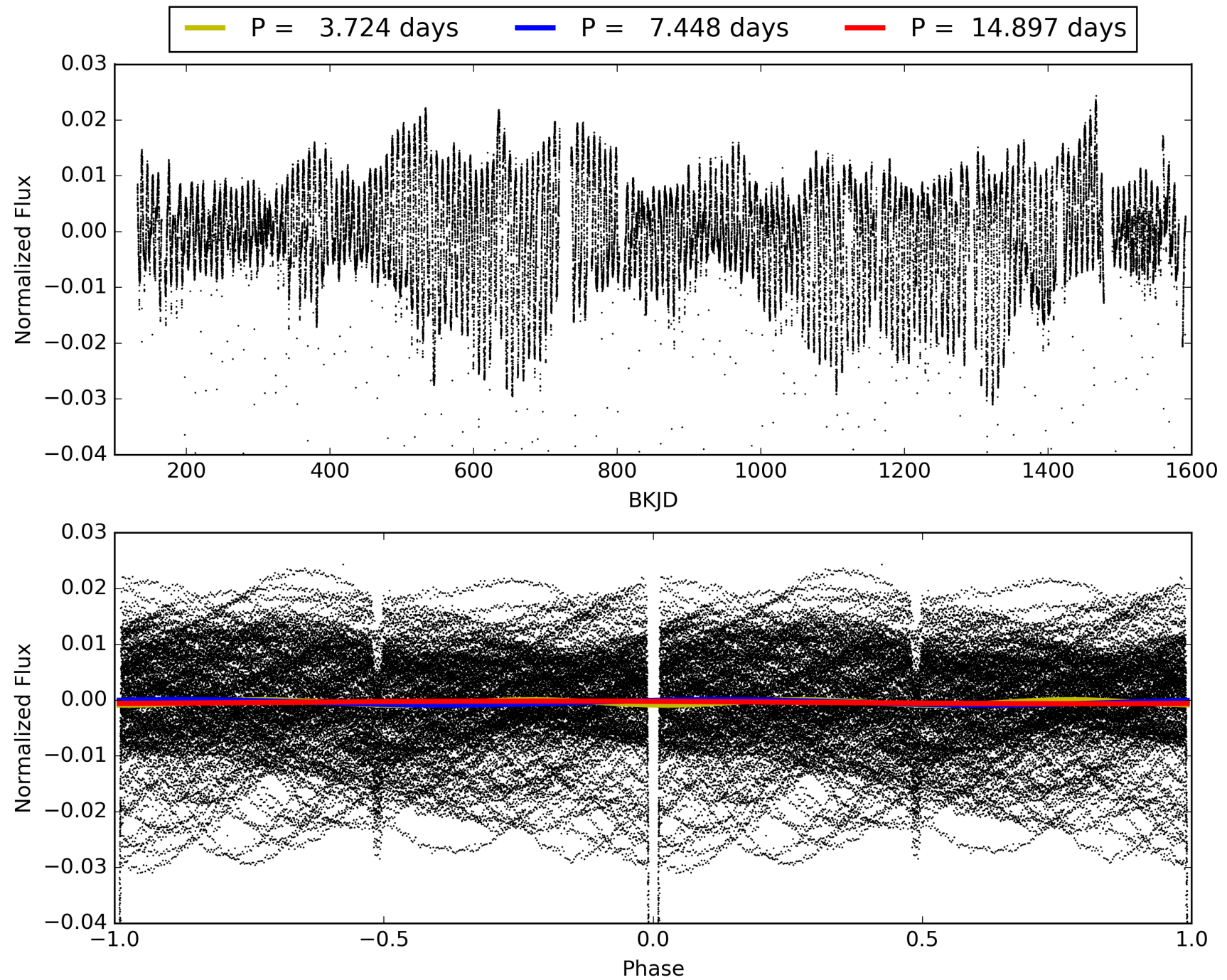
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:46:41 Z

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

TCE 010020423-01, PDC Light Curves

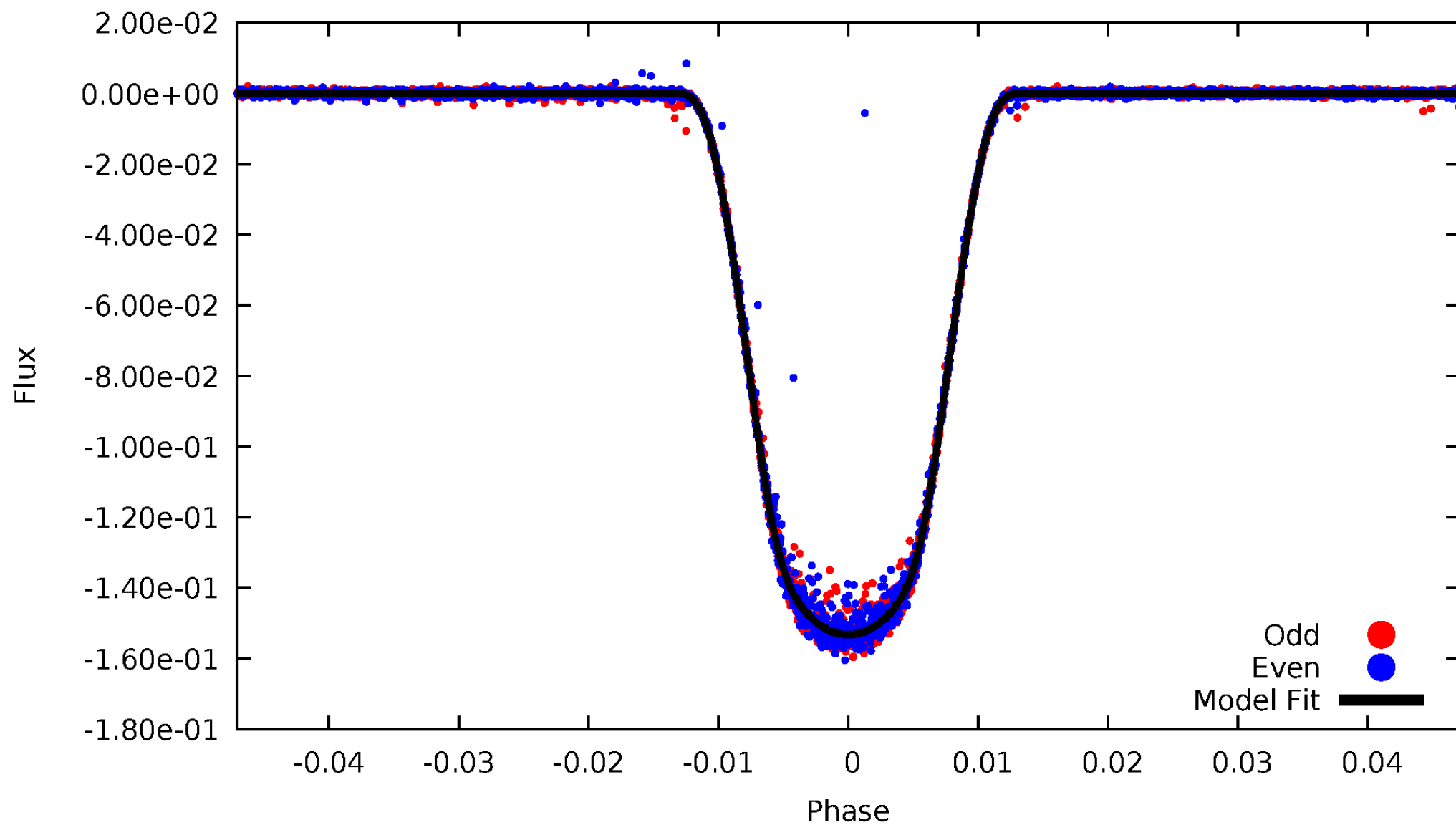


TCE 010020423-01



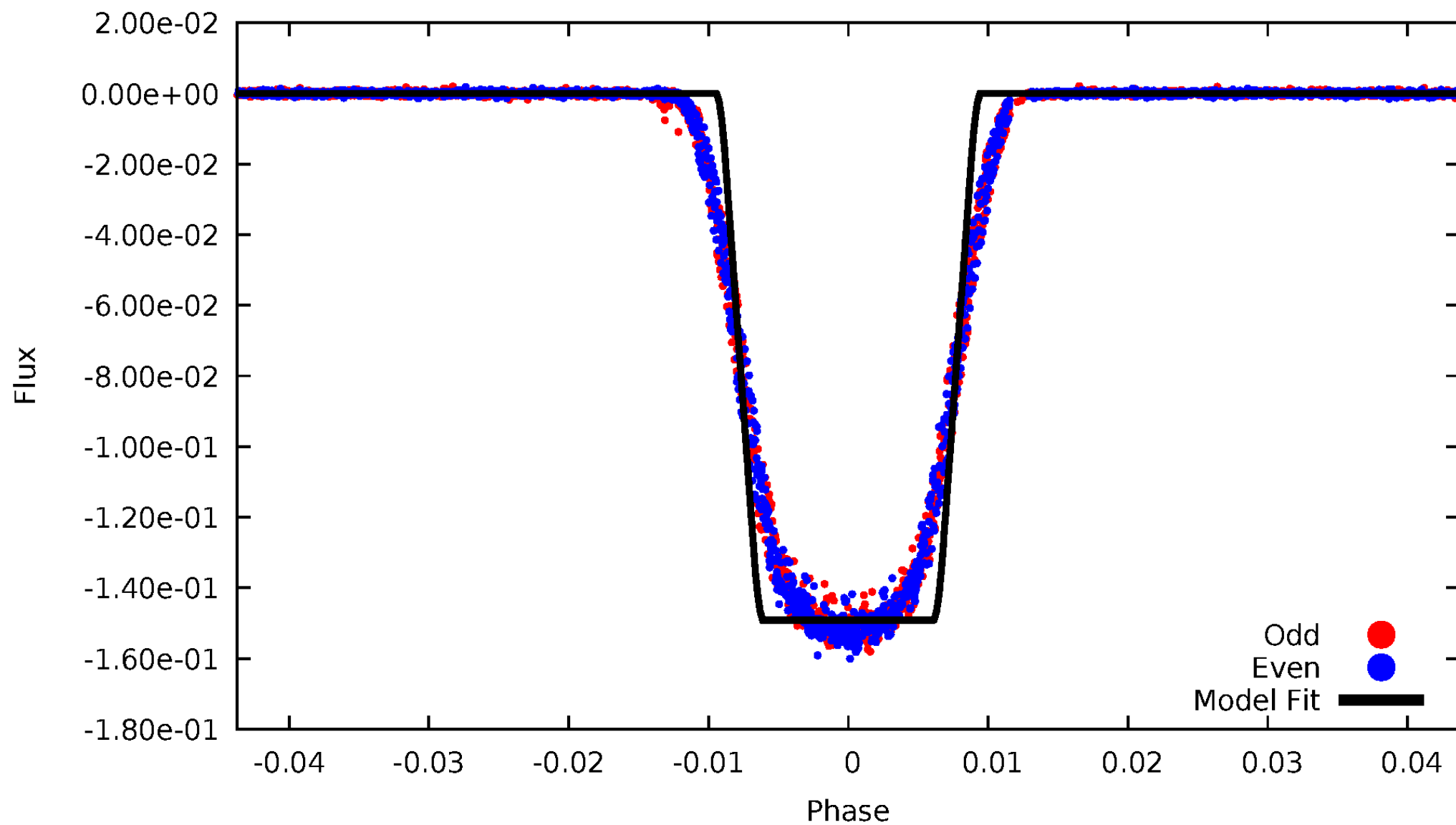
DV Odd/Even

TCE 010020423-01



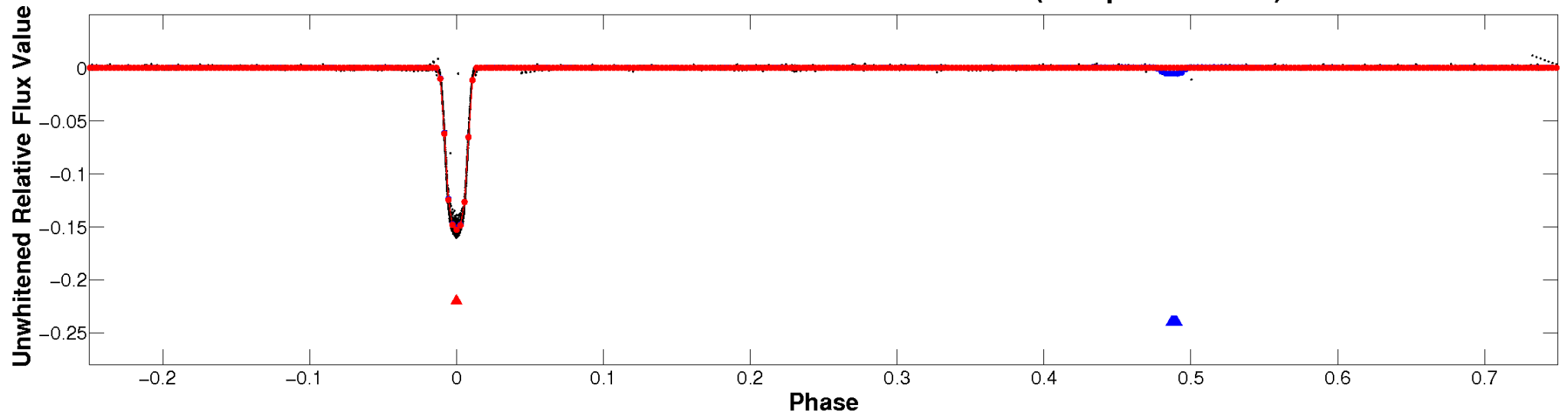
ALT Odd/Even

TCE 010020423-01

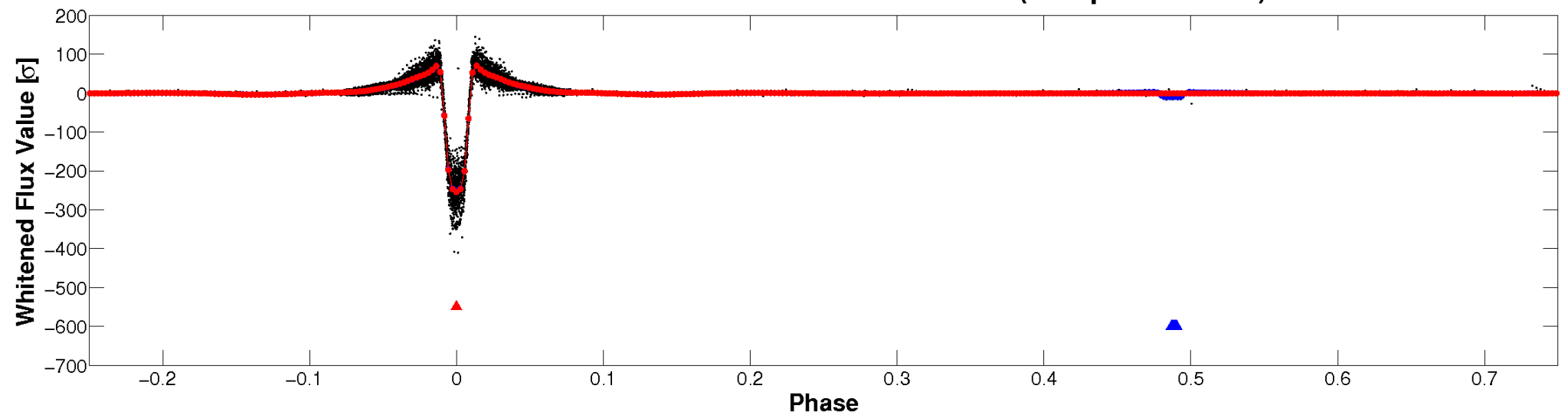


Non-Whitened Vs. Whitened Light Curve

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

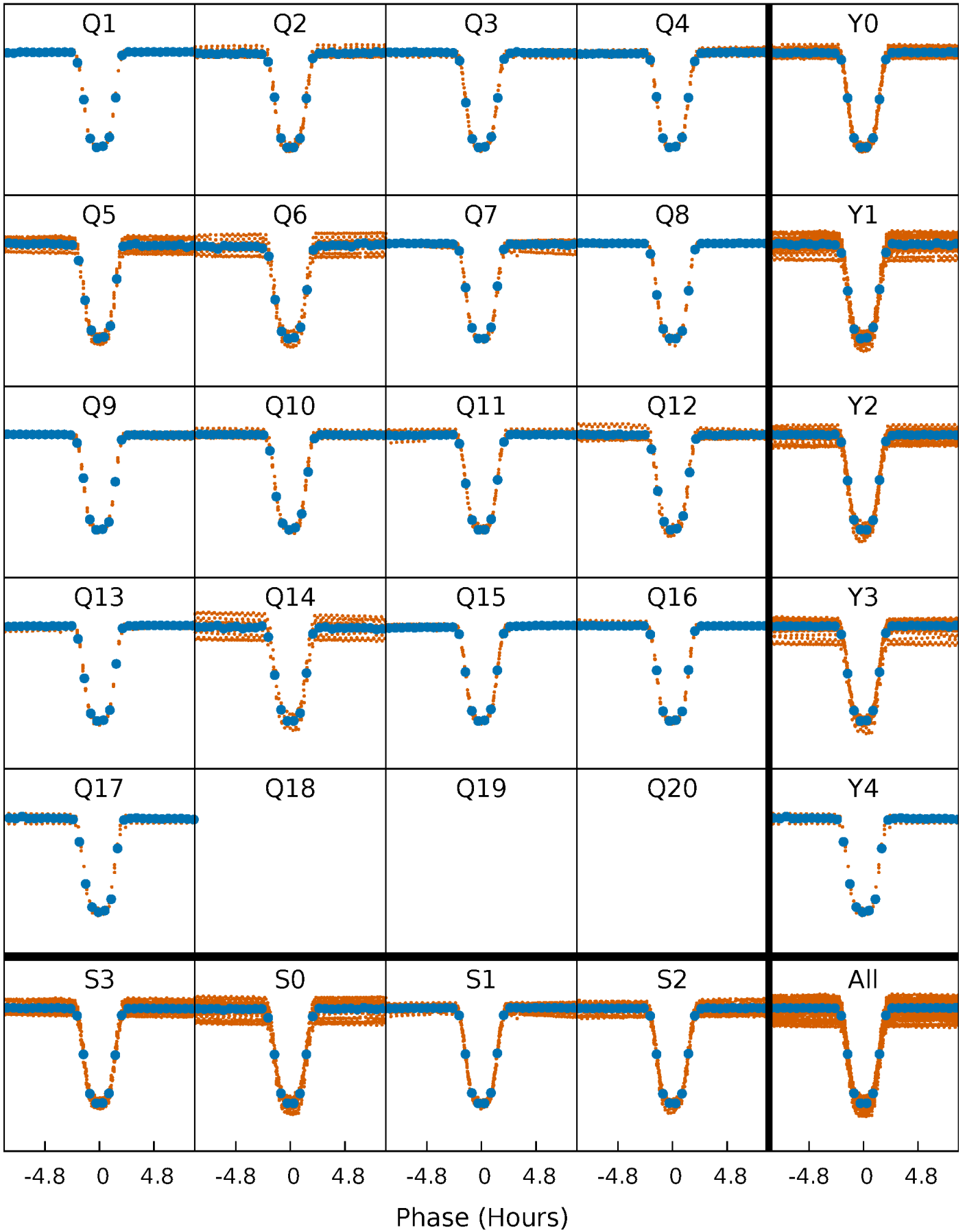


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



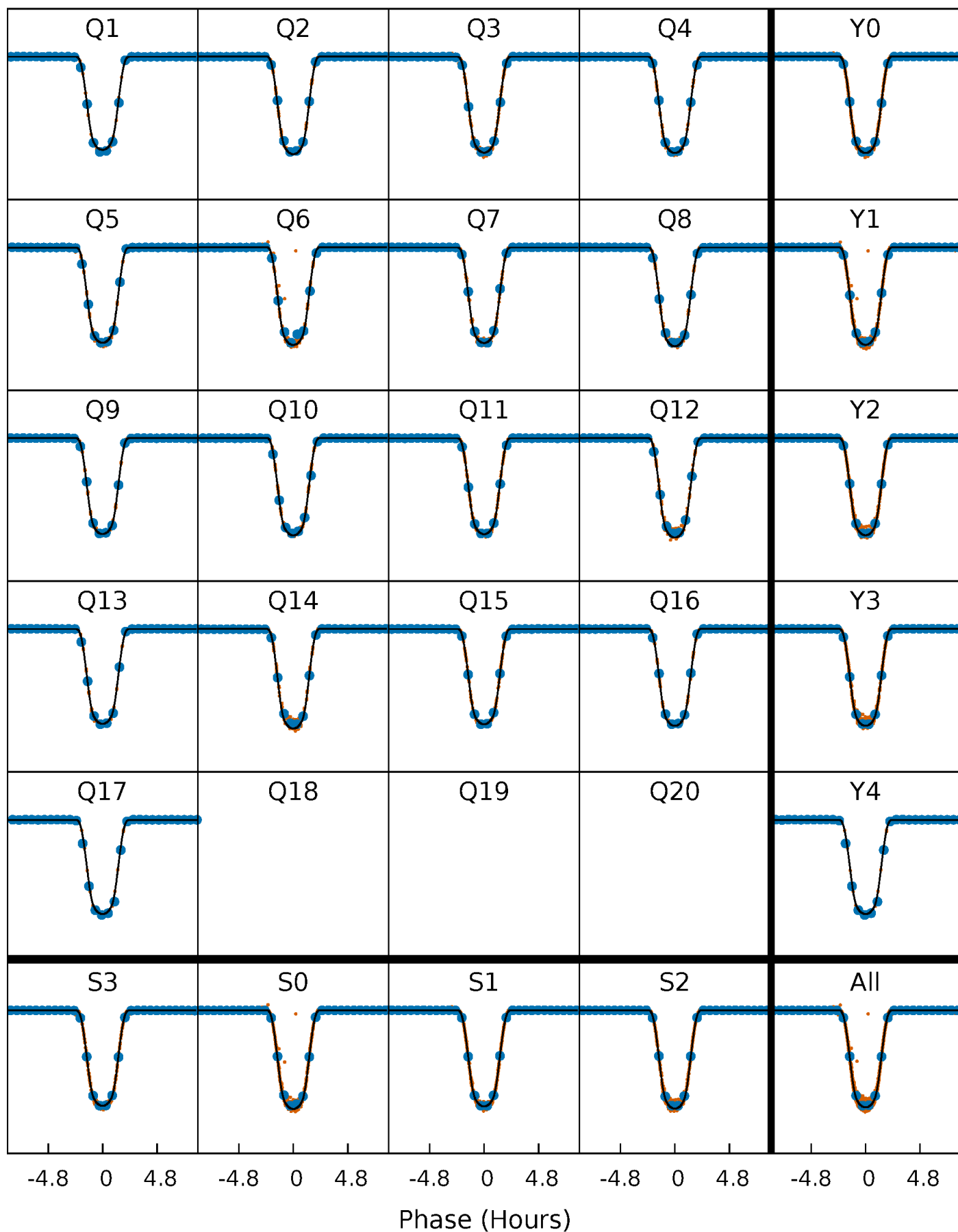
PDC Quarter-Phased Transit Curves

TCE 010020423-01 P= 7.448375 Days $T_0=137.694546$ (BKJD)



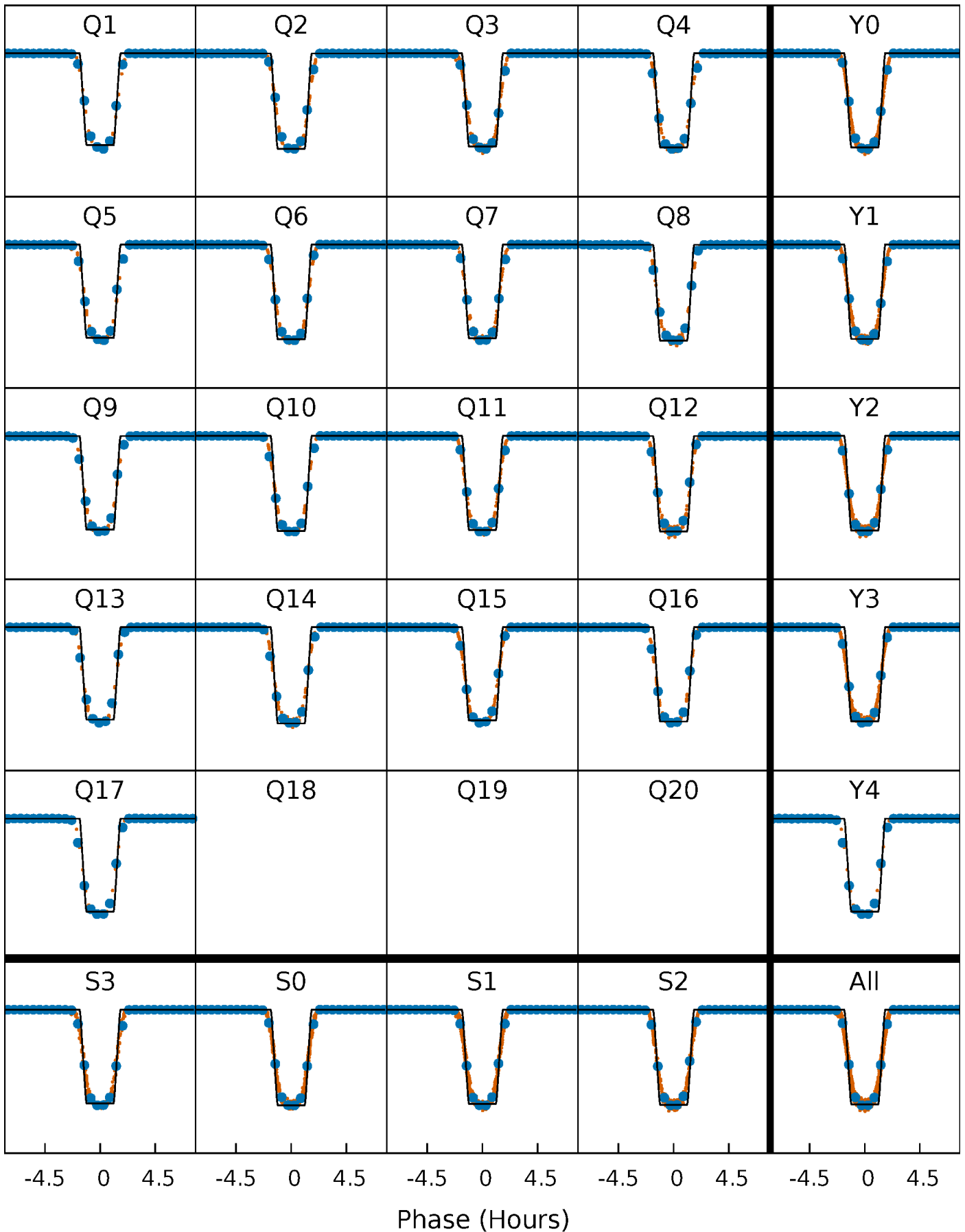
DV Quarter-Phased Transit Curves

TCE 010020423-01 P= 7.448375 Days $T_0=137.694546$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

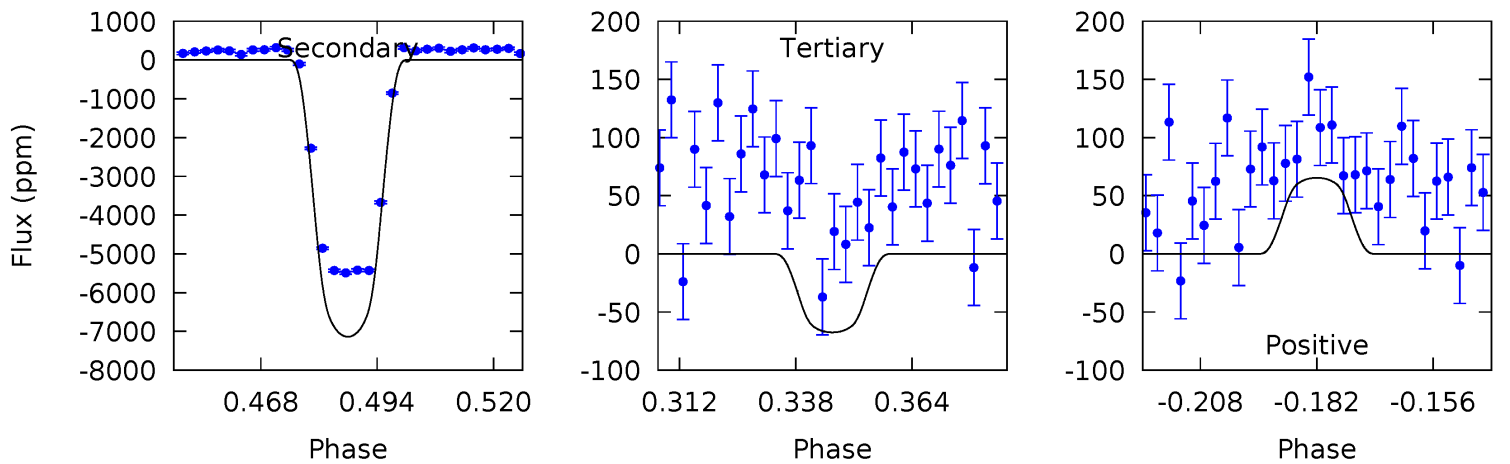
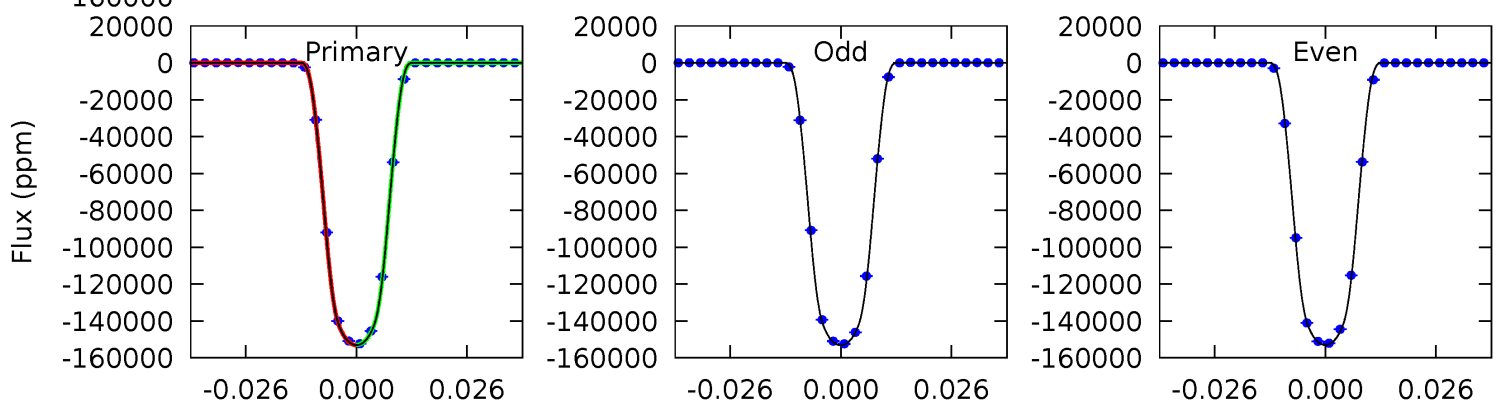
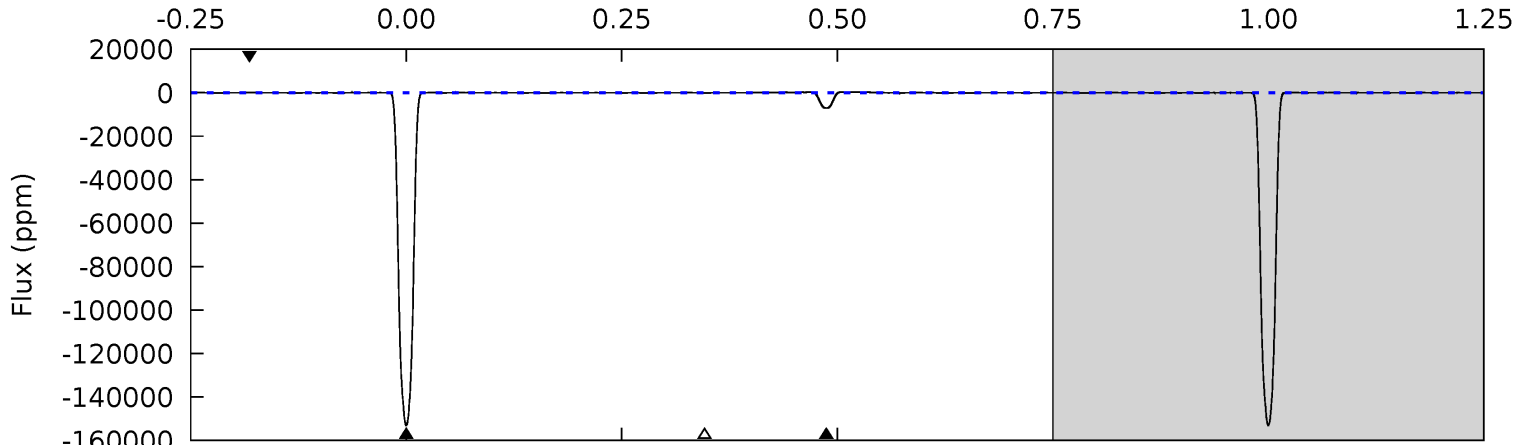
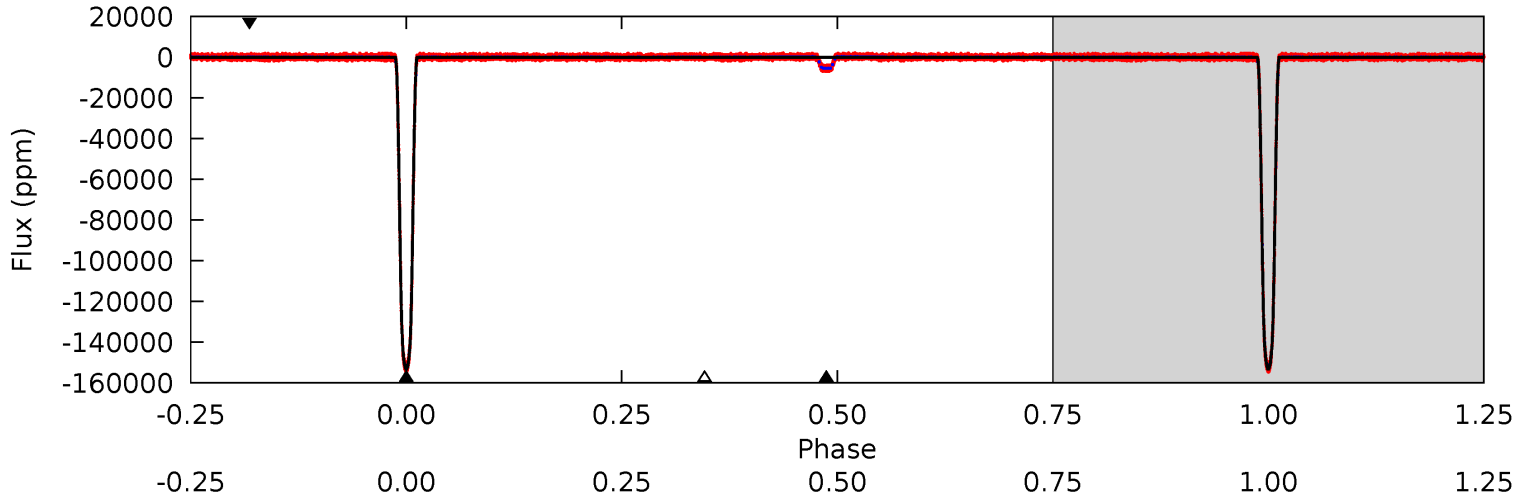
TCE 010020423-01 P= 7.448411 Days $T_0=137.690885$ (BKJD)



DV Model-Shift Uniqueness Test

010020423-01, P = 7.448375 Days, E = 130.246171 Days

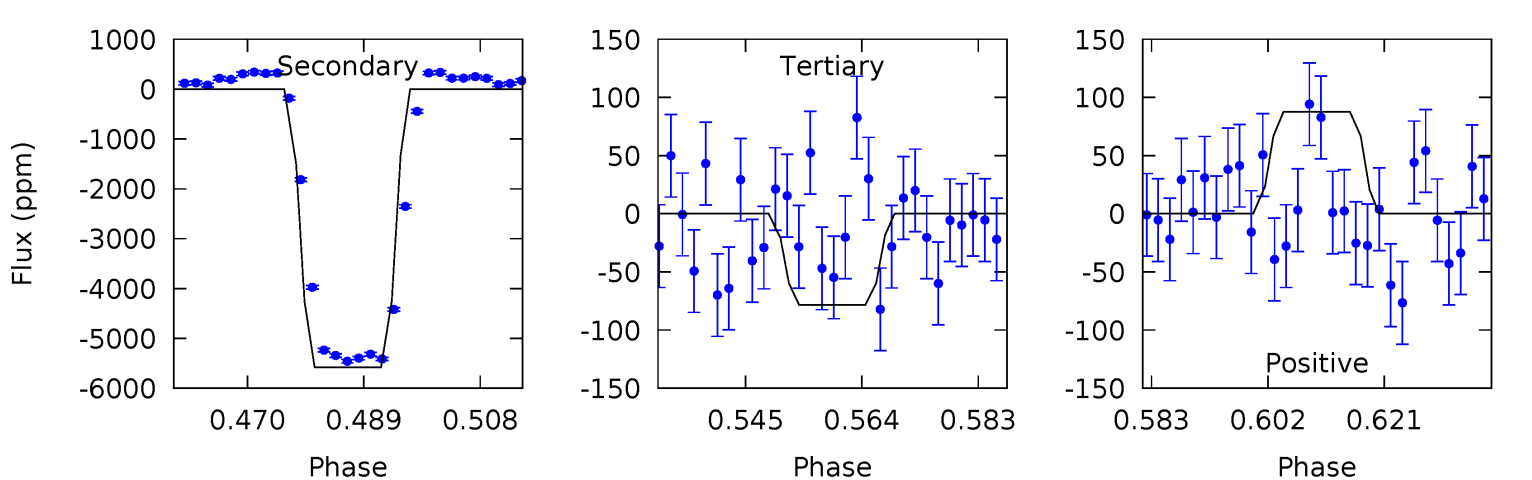
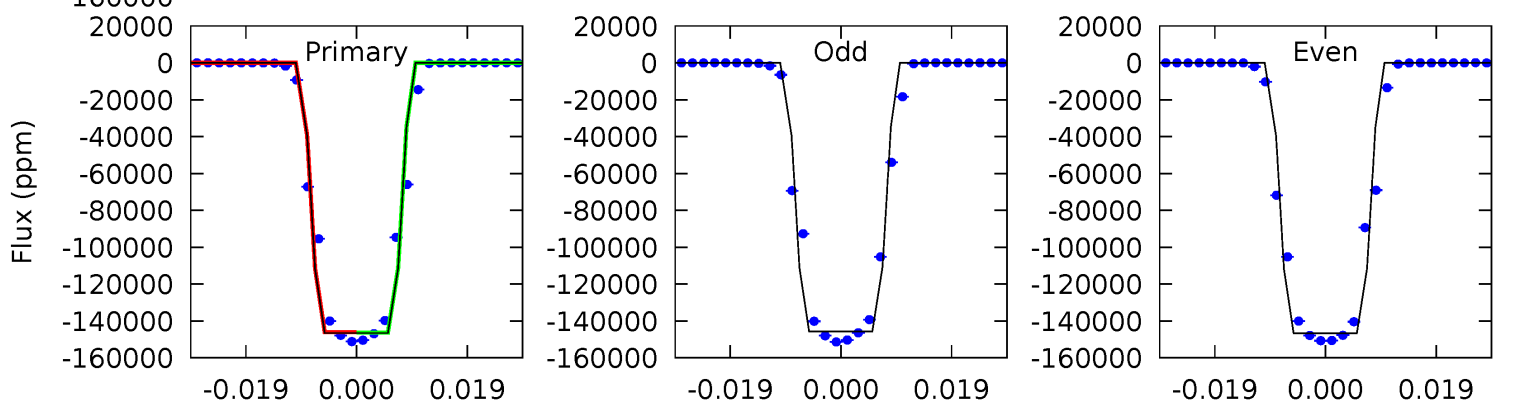
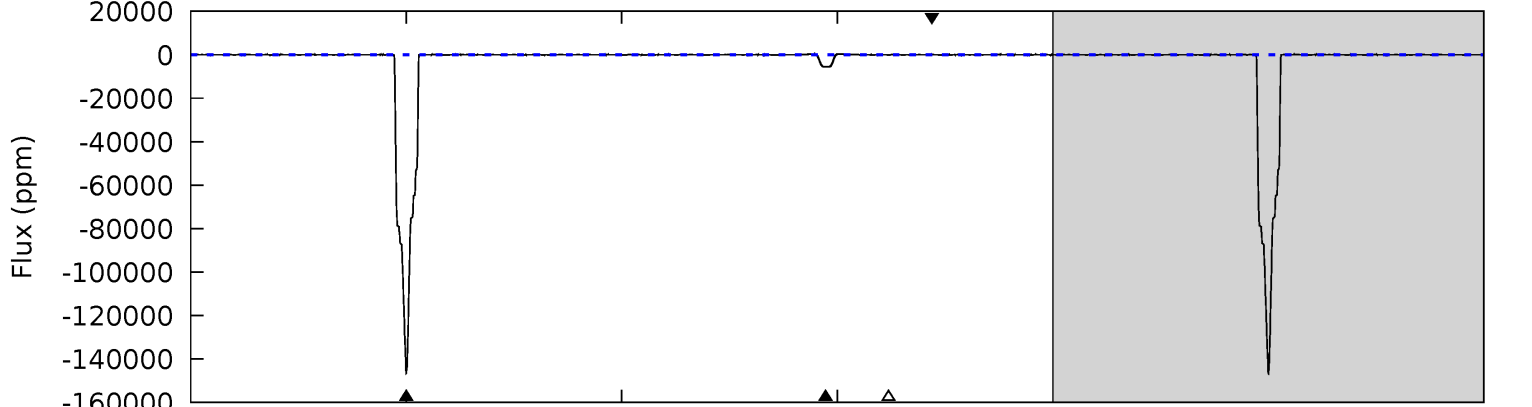
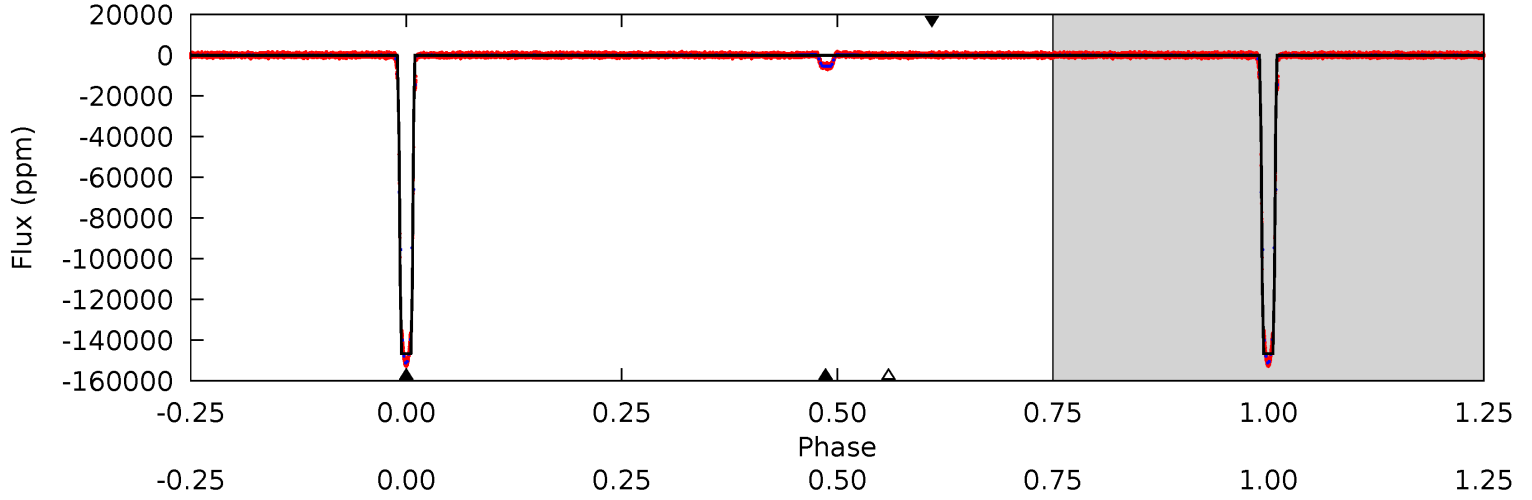
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10697	498.6	4.71	4.57	4.84	2.23	4.41	10692	10692	493.9	494.0	6.17	0.99	0.00	0



Alt Model-Shift Uniqueness Test

010020423-01, P = 7.448411 Days, E = 130.242474 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6082	231.6	3.25	3.64	4.90	2.35	1.47	6078	6078	228.4	228.0	21.7	1.00	0.00	0



Stellar Parameters For KIC 010020423

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5636^{+101}_{-112}	$4.489^{+0.045}_{-0.045}$	$-0.260^{+0.150}_{-0.150}$	$0.867^{+0.051}_{-0.051}$	$0.846^{+0.061}_{-0.055}$	$1.826^{+0.321}_{-0.273}$
	+2%/-2%	+1%/-1%	+58%/-58%	+6%/-6%	+7%/-7%	+18%/-15%
Source	SPE45	TRA45	SPE45	DSEP		

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

Secondary Eclipse Parameters for KIC 010020423-01 / KOI 7273.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-7138 ± 14	$34.06^{+1.37}_{-1.33}$	1217^{+28}_{-30}	3284^{+39}_{-43}	17^{+1}_{-1}
Alt.	-5583 ± 24	$36.58^{+1.34}_{-1.43}$	1216^{+30}_{-30}	3094^{+38}_{-38}	12^{+1}_{-1}

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

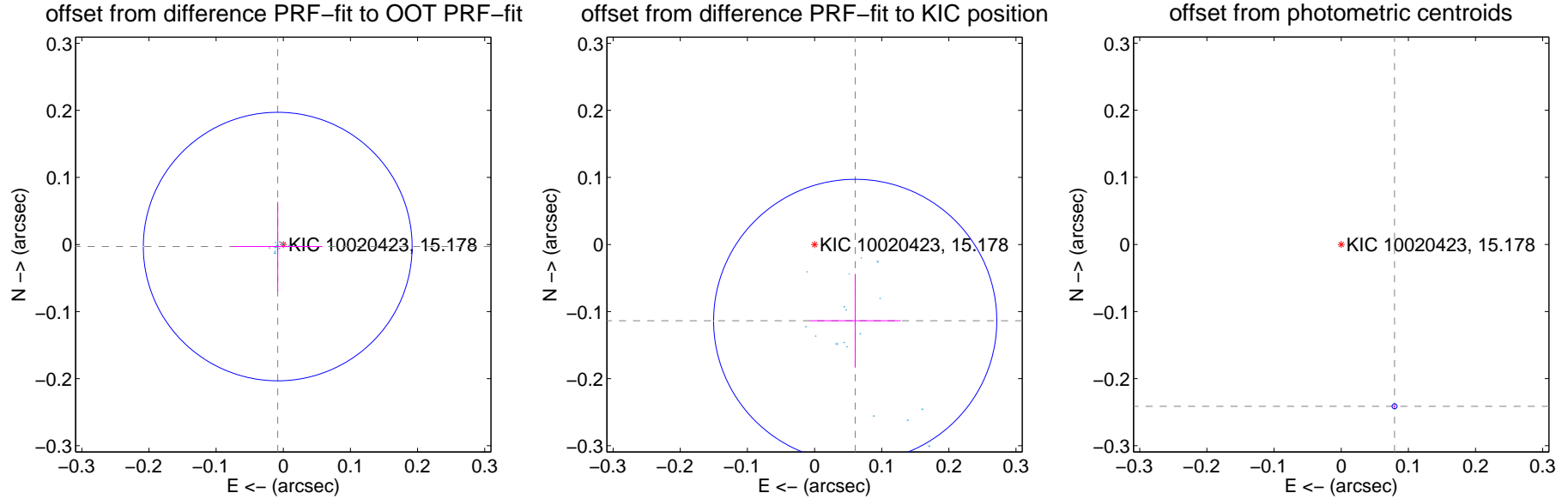
DV Centroid Data

Supplemental centroid analysis for 010020423-01. Kepler magnitude: 15.18. Transit SNR 5135.07

There are 17 quarters with good PRF difference image offsets

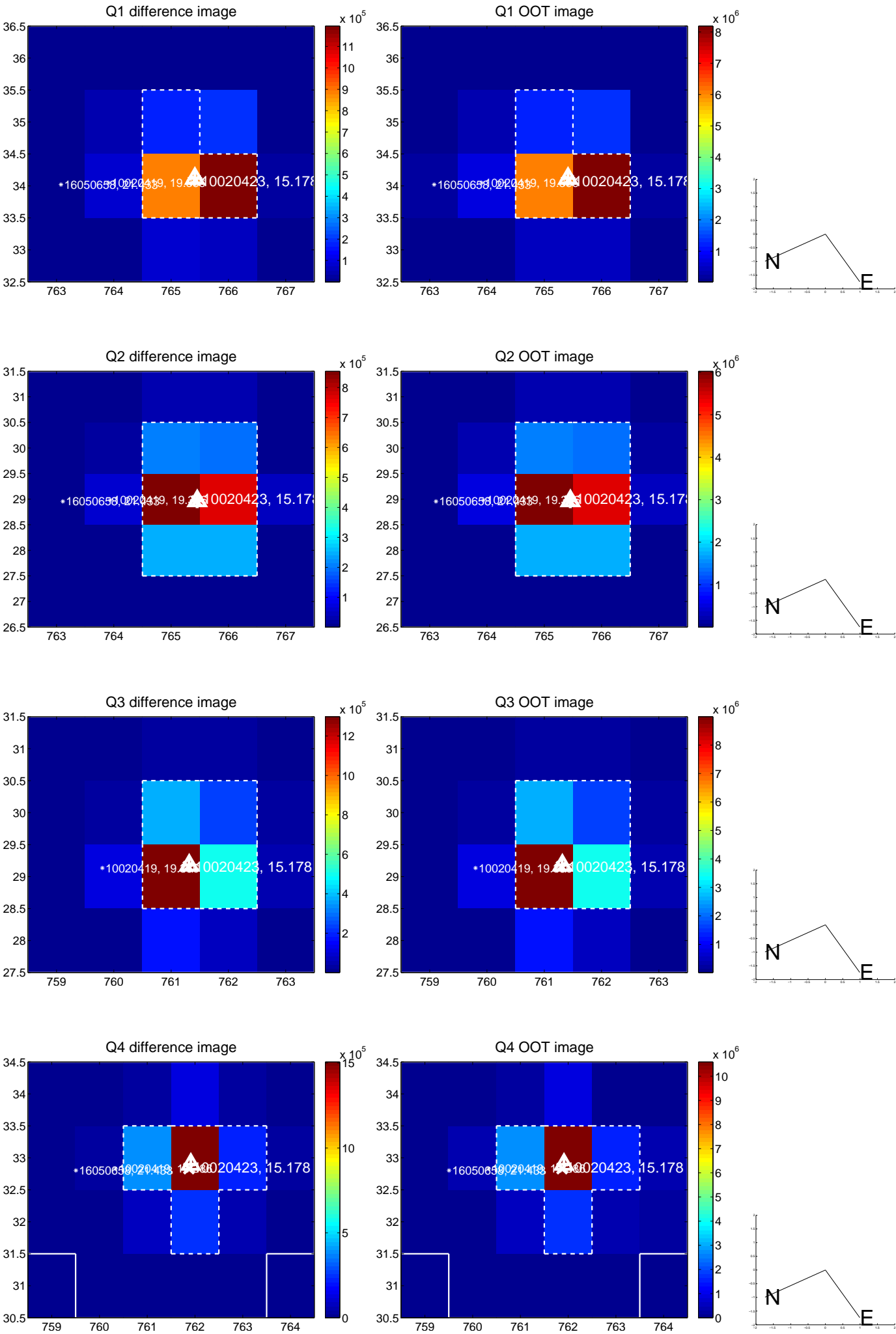
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.009 ± 0.067	0.13	0.008 ± 0.067	-0.003 ± 0.067
PRF-fit source offset from KIC position	0.129 ± 0.070	1.83	-0.061 ± 0.068	-0.114 ± 0.070
photometric centroid source offset	0.25 ± 0.00	203.57	-0.08 ± 0.00	-0.24 ± 0.00

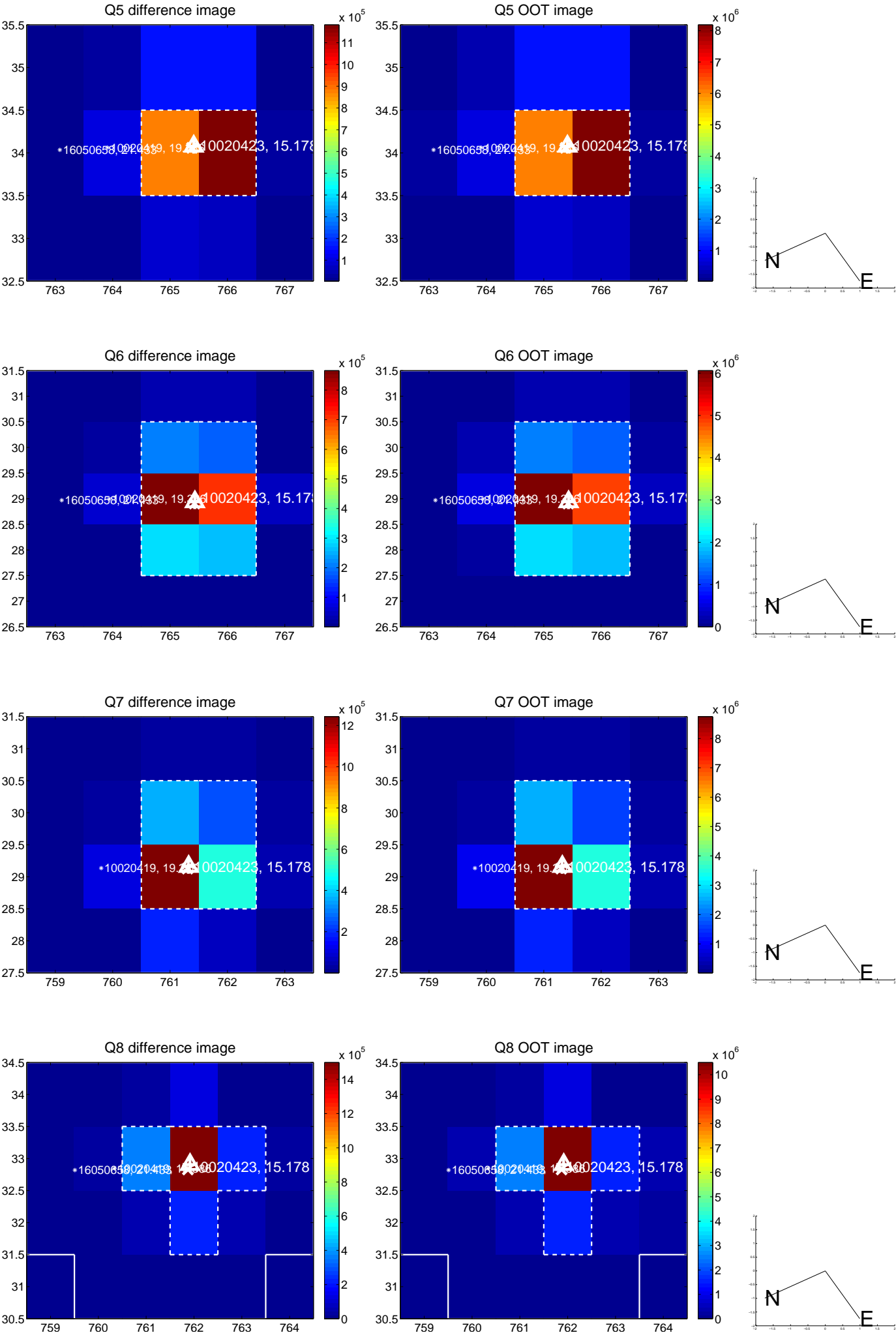


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

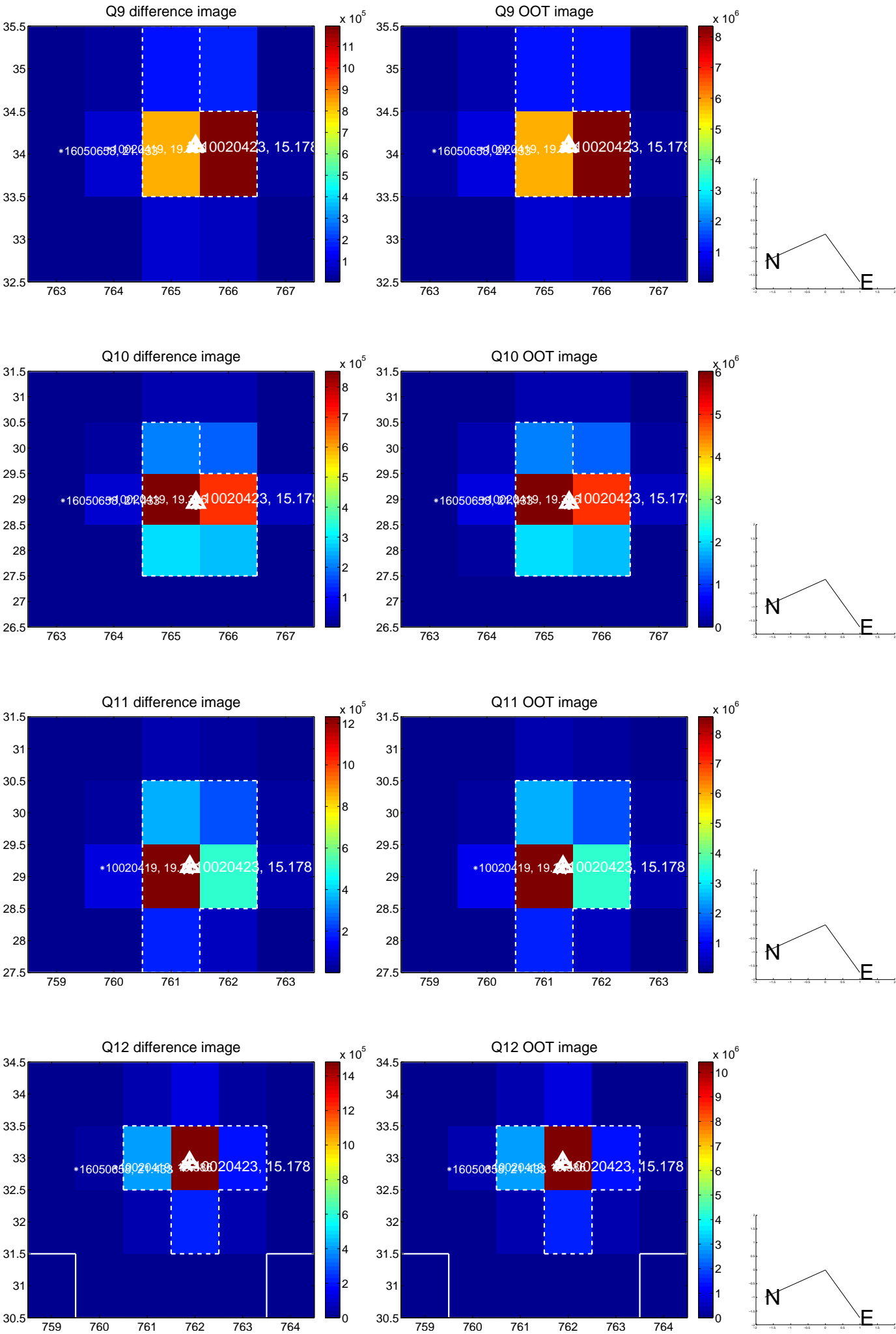
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



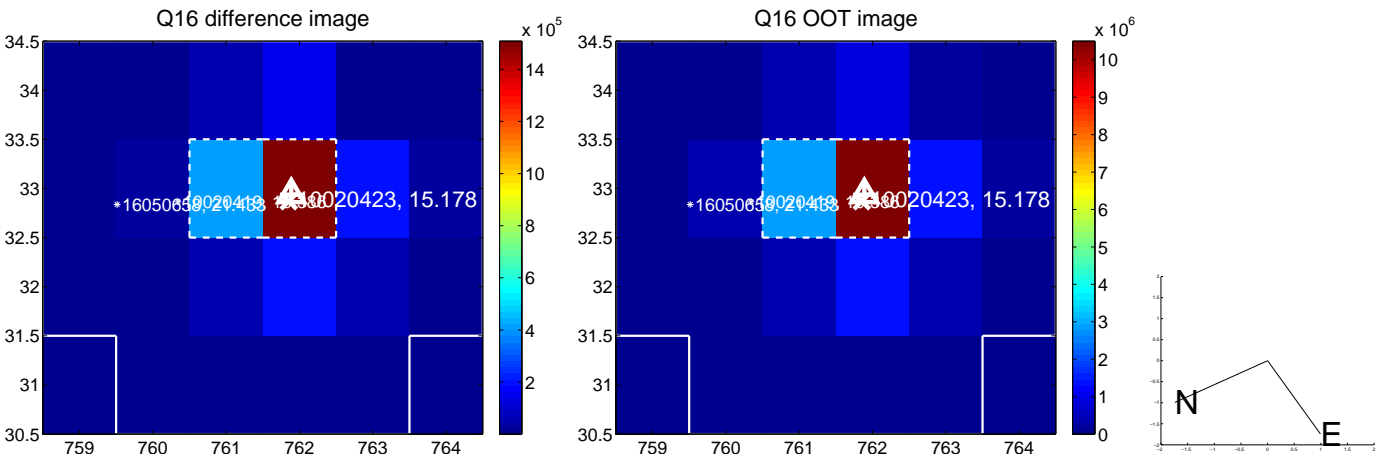
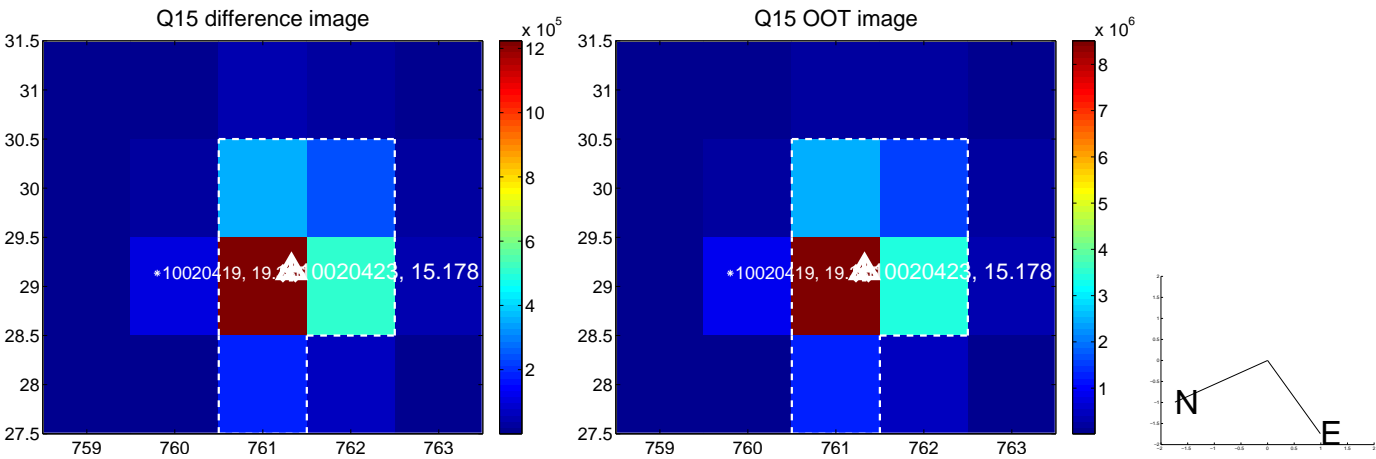
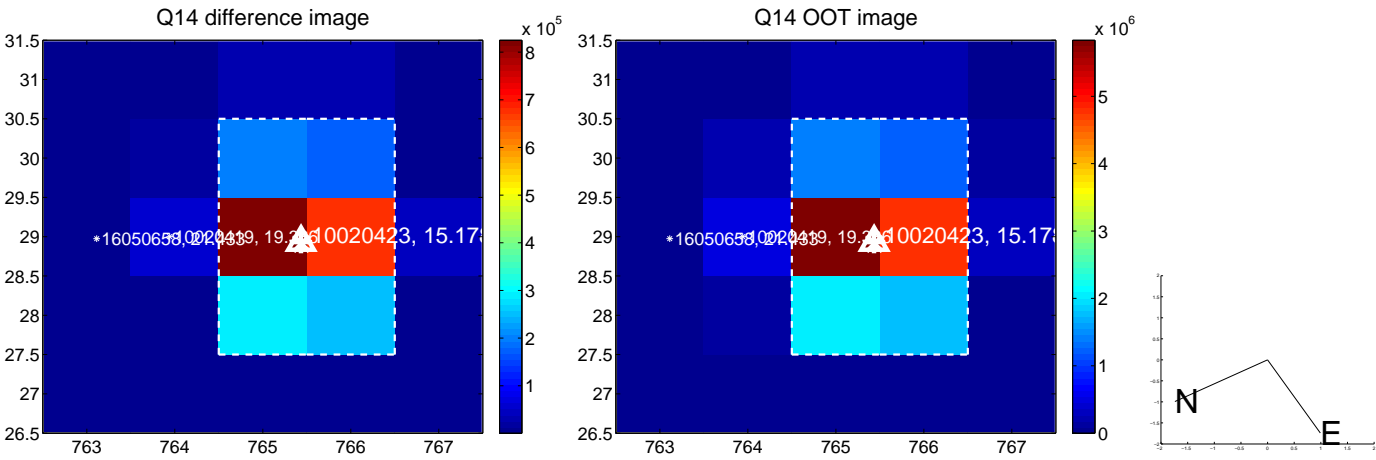
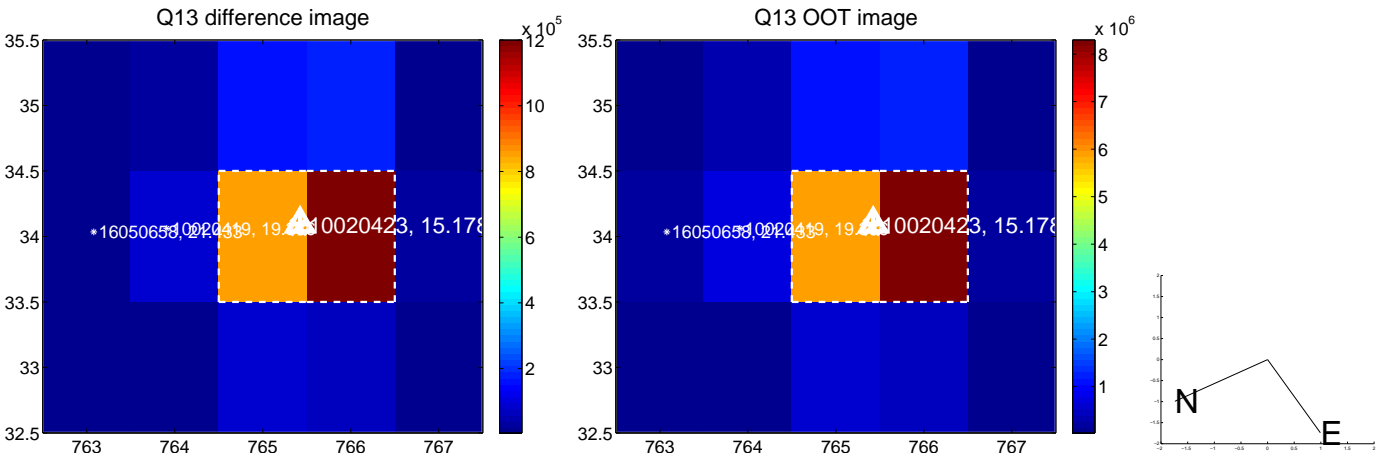
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



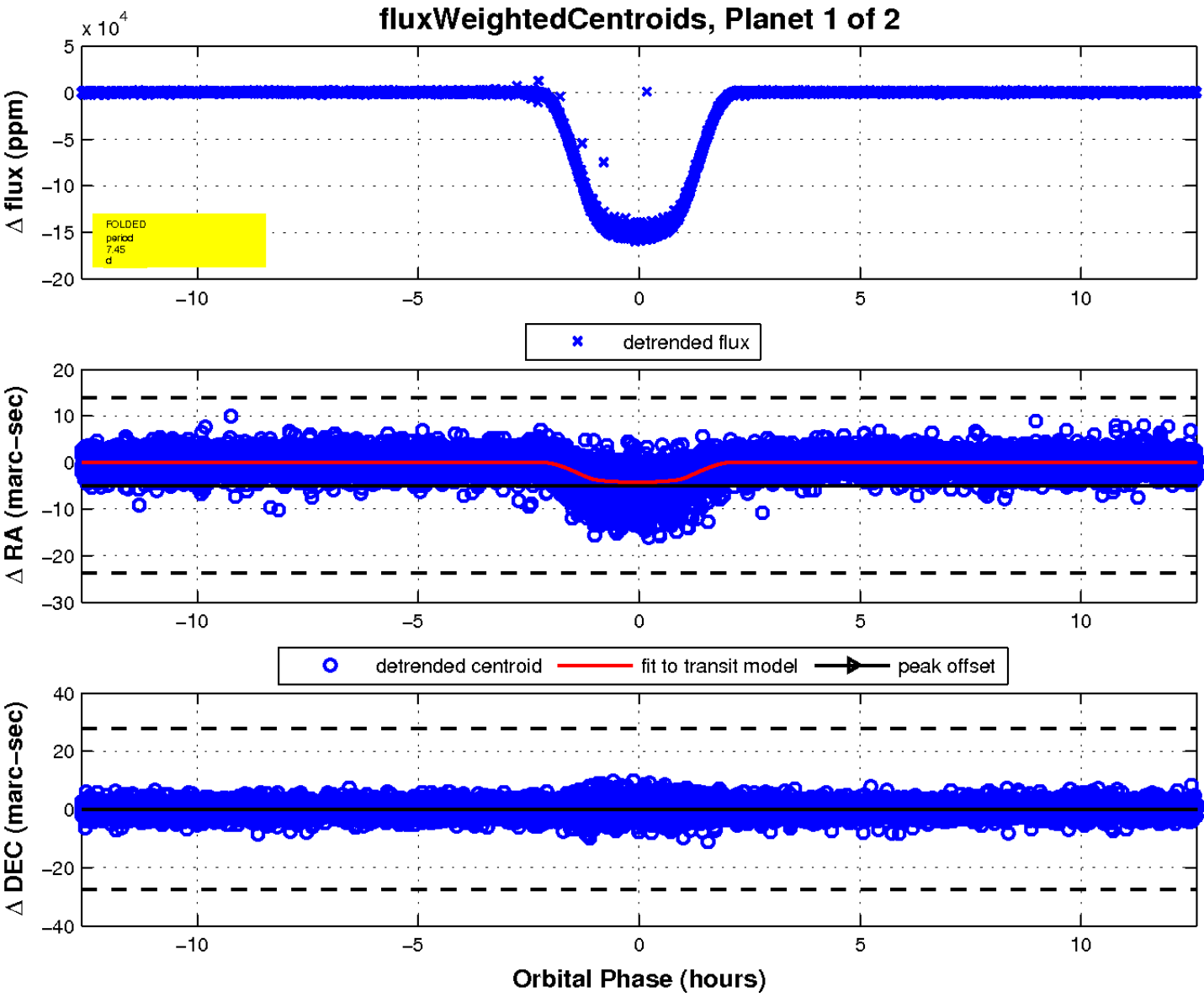
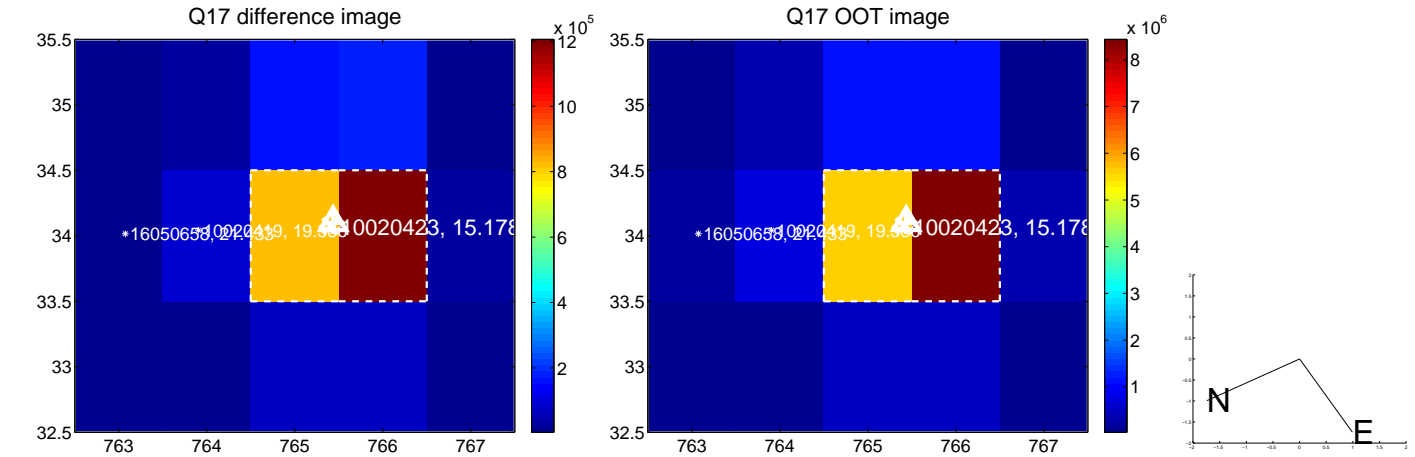
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

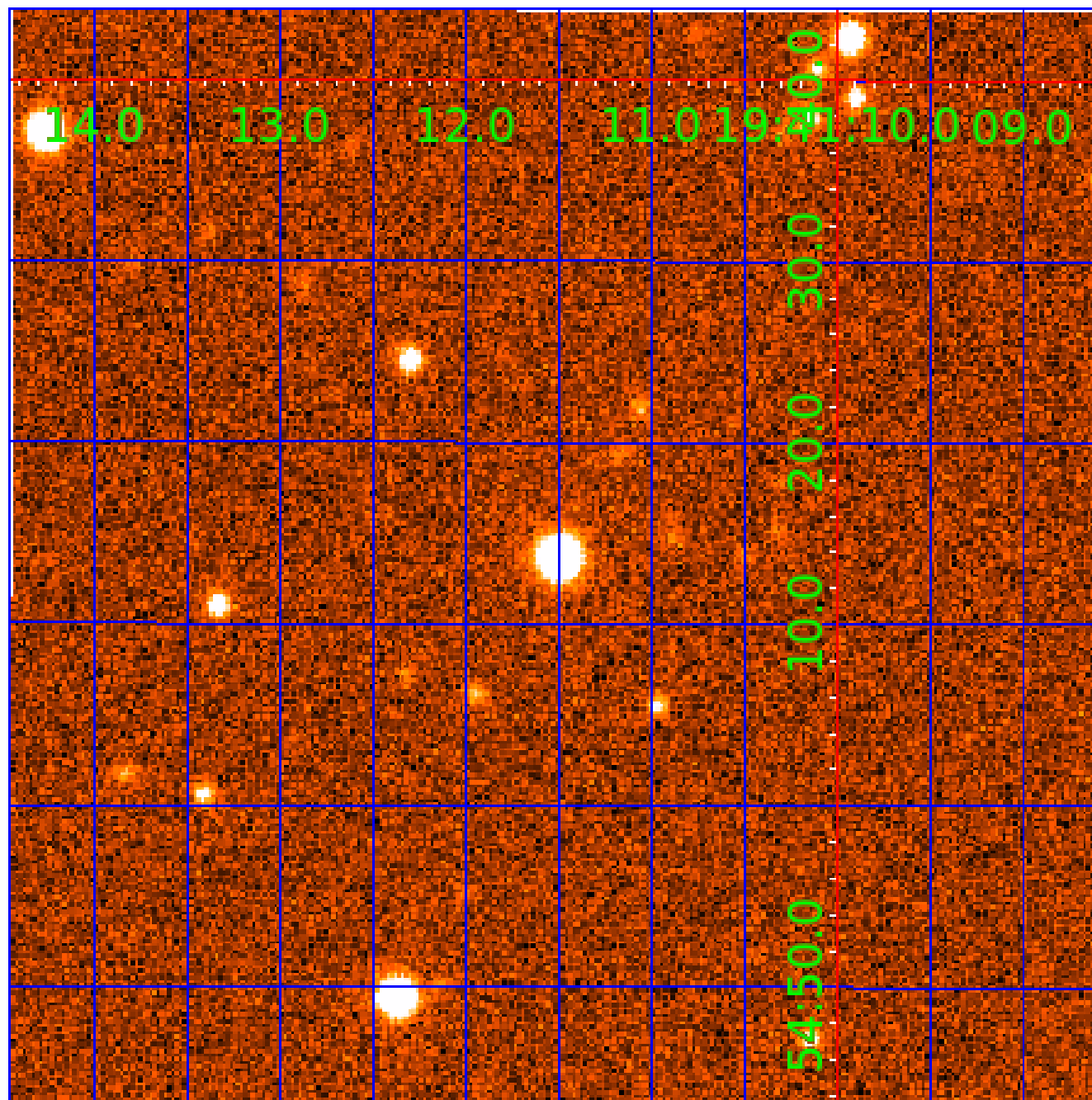


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010020423

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})
010020423-01	OBS	7273.01	7.448375	137.694546	153216.1	4.206	7390.9	5135.1	0.87	5636	33.89	136.37
010020423-02	OBS	No	7.448246	133.898315	2793.1	6.000	209.7	-1.0	0.87	5636	4.54	136.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010020423-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE
010020423-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—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 010020423-02

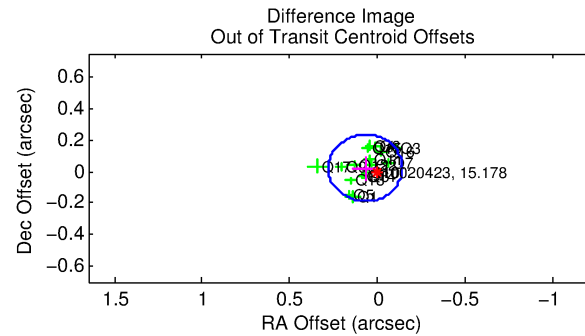
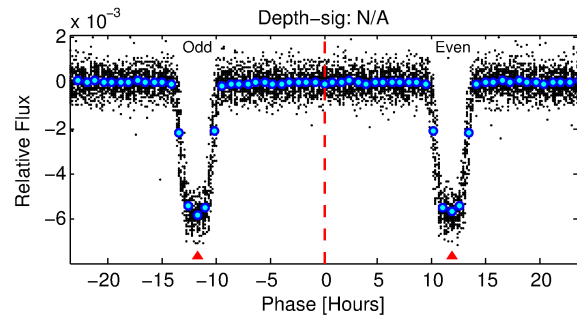
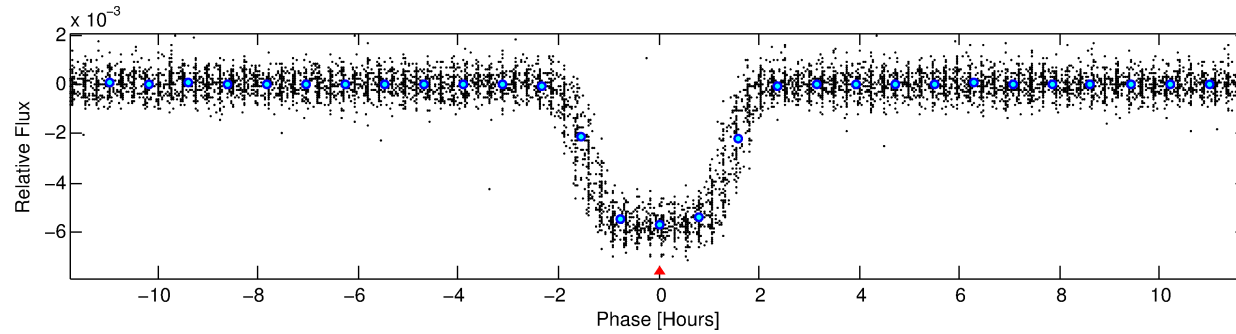
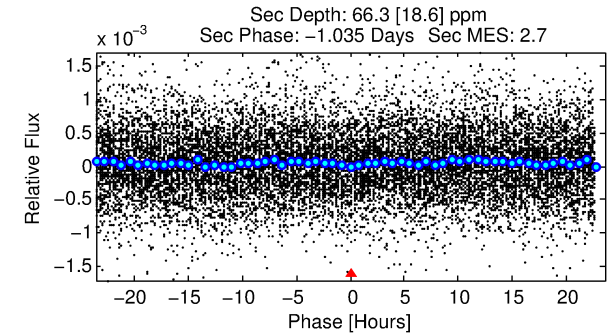
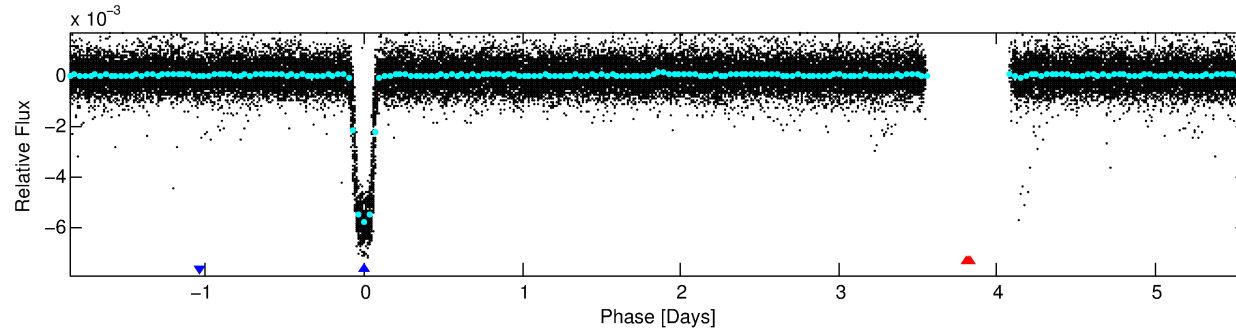
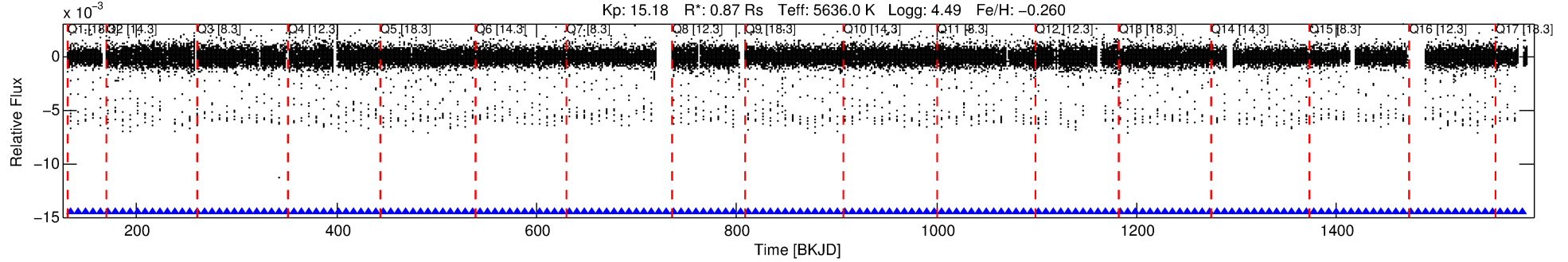
No Significant Match Found

DV One-Page Summary

KIC: 10020423 Candidate: 2 of 2 Period: 7.448 d

KOI: K07273 Corr: No Ephemeris Match

Kp: 15.18 R*: 0.87 Rs Teff: 5636.0 K Logg: 4.49 Fe/H: -0.260



TPS TCE Results:

Period = 7.44825 d
Epoch = 133.8983 BKJD

DV fit results are unavailable

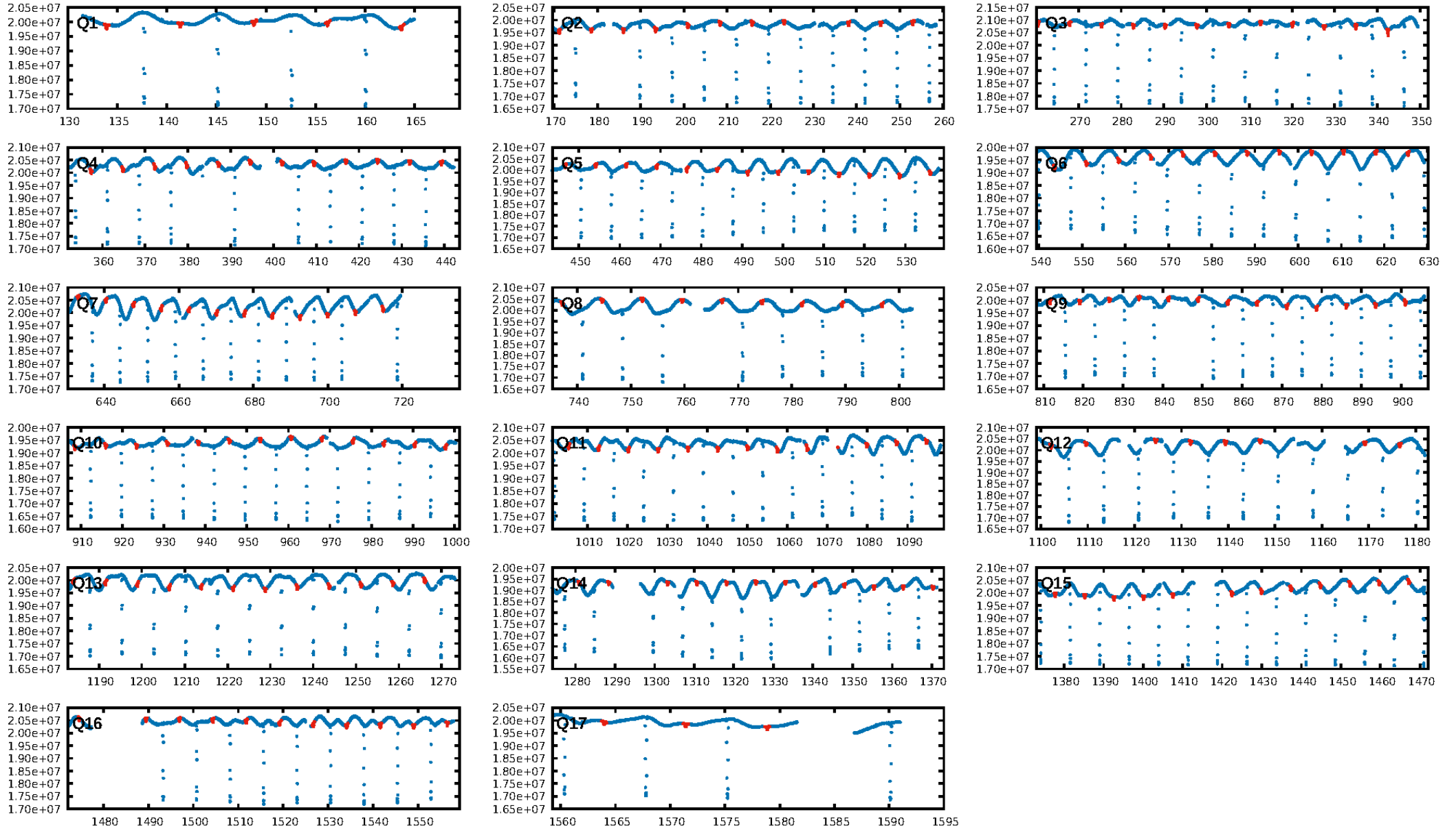
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [173/173]
GhostDiagnostic-chr: 2.127
Centroid-sig: 0.0%
Centroid-so: 0.202 arcsec [7.15σ]
OotOffset-rm: 0.075 arcsec [1.06σ]
KicOffset-rm: 0.081 arcsec [1.17σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
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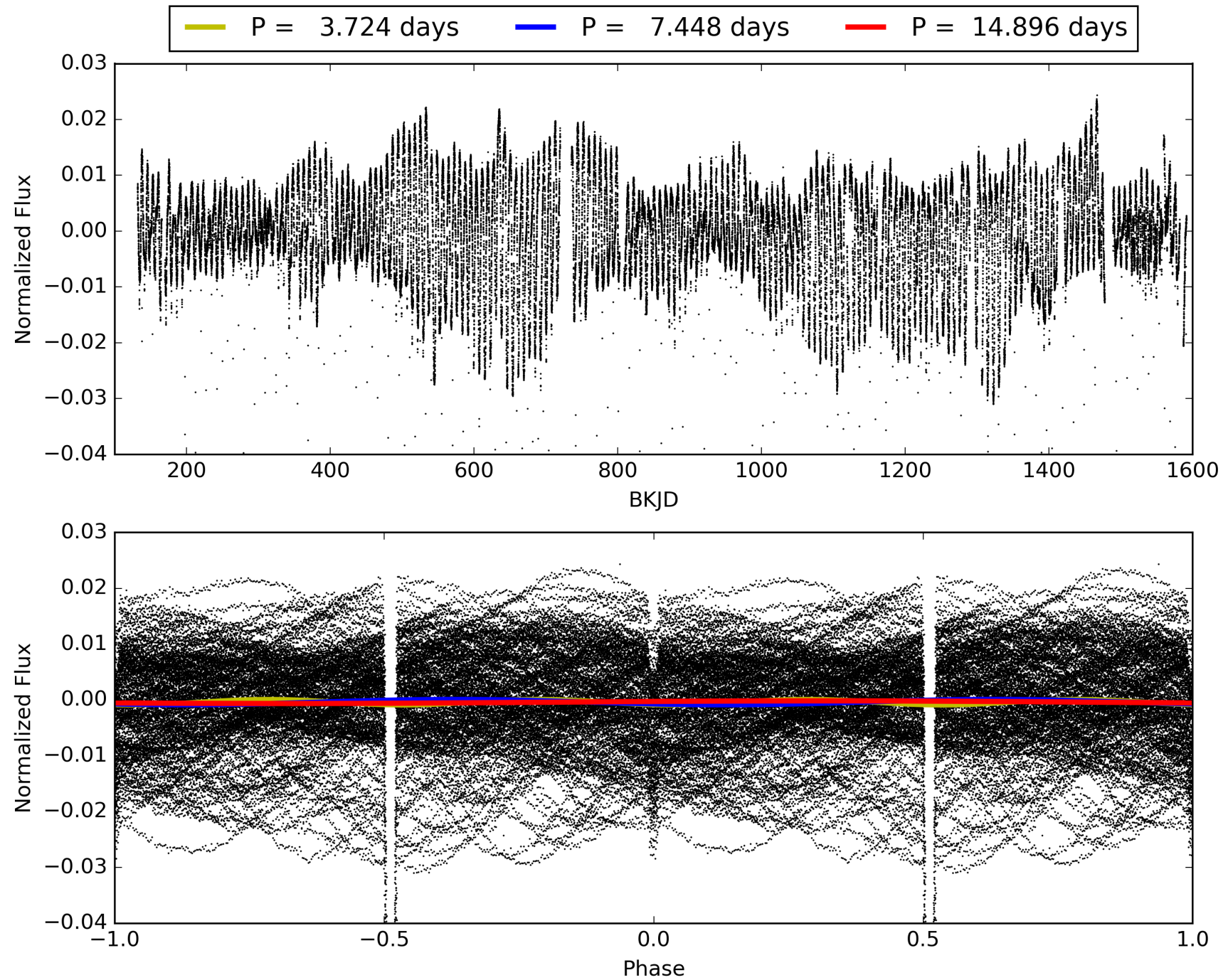
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:46:45 Z

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

TCE 010020423-02, PDC Light Curves

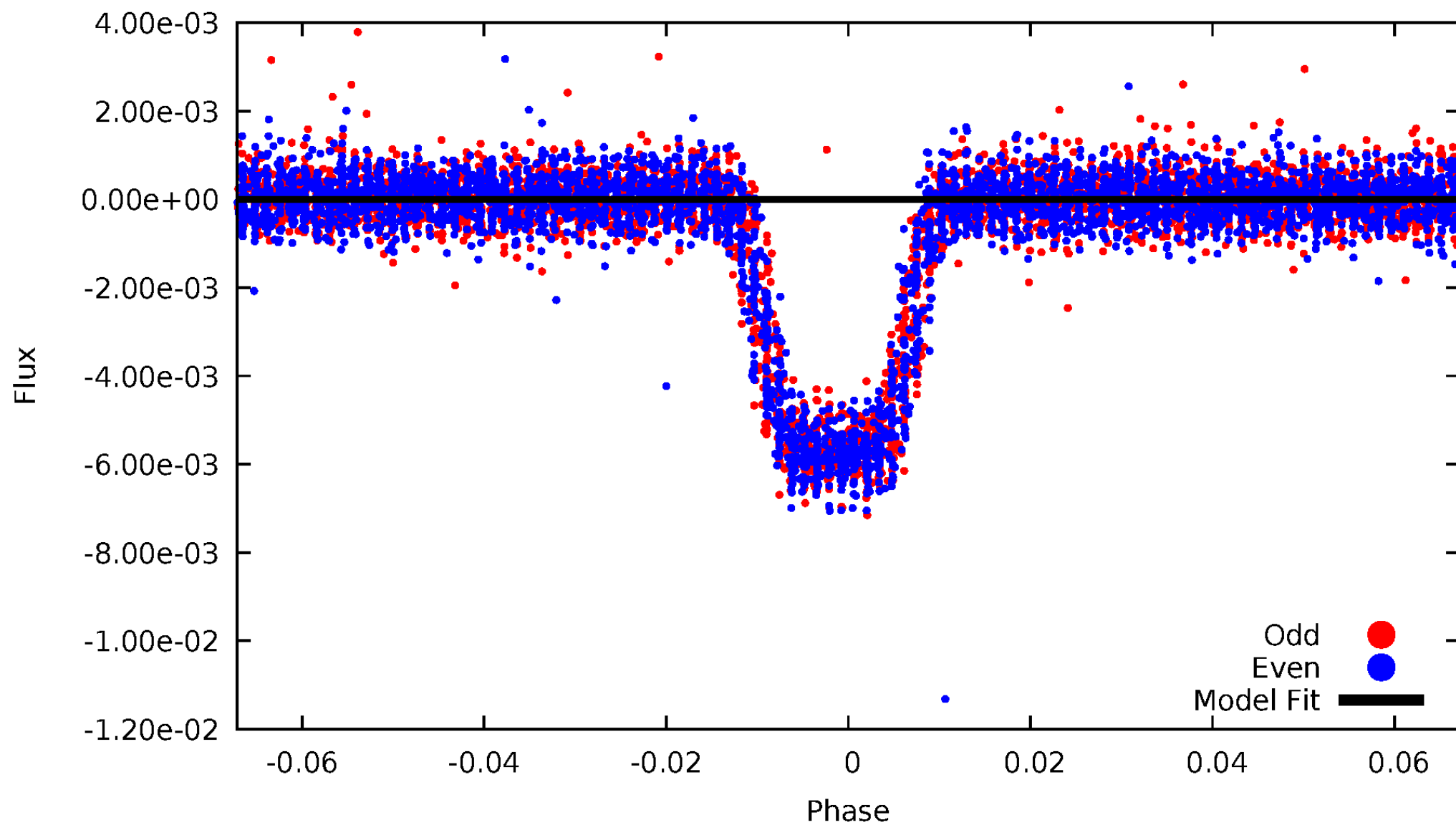


TCE 010020423-02



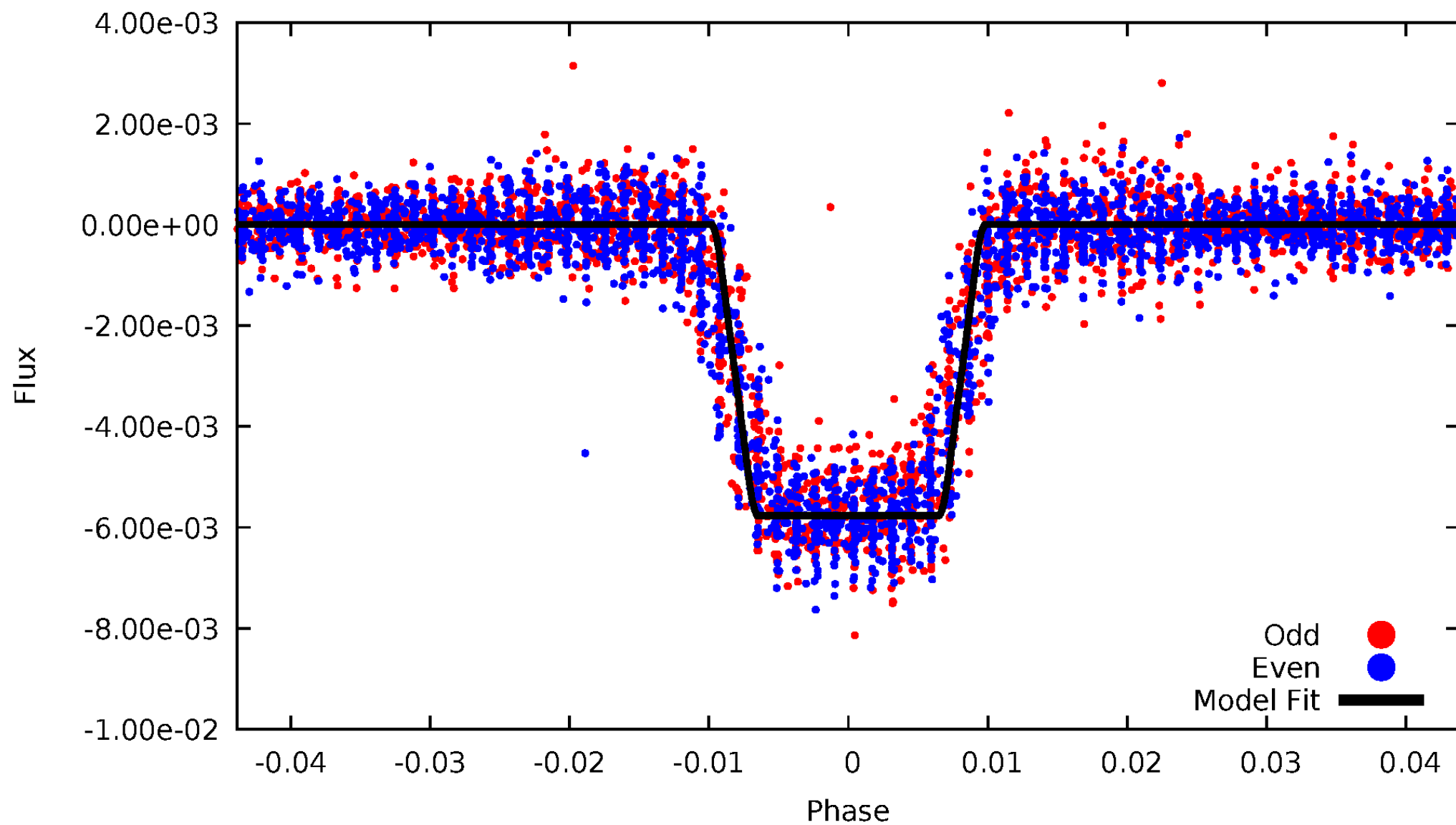
DV Odd/Even

TCE 010020423-02



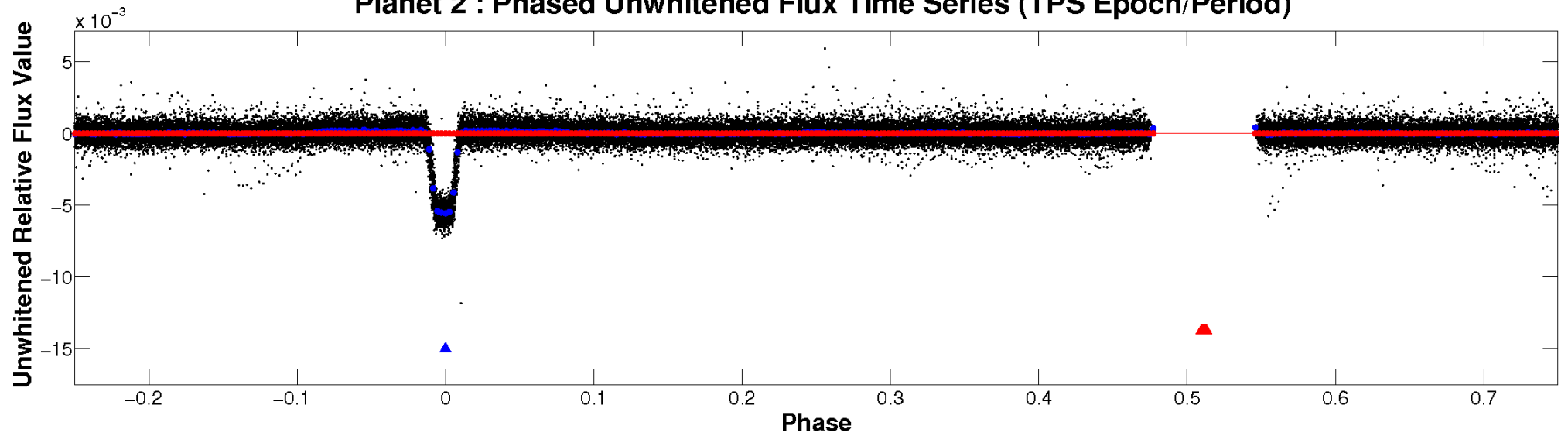
ALT Odd/Even

TCE 010020423-02



Non-Whitened Vs. Whitened Light Curve

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

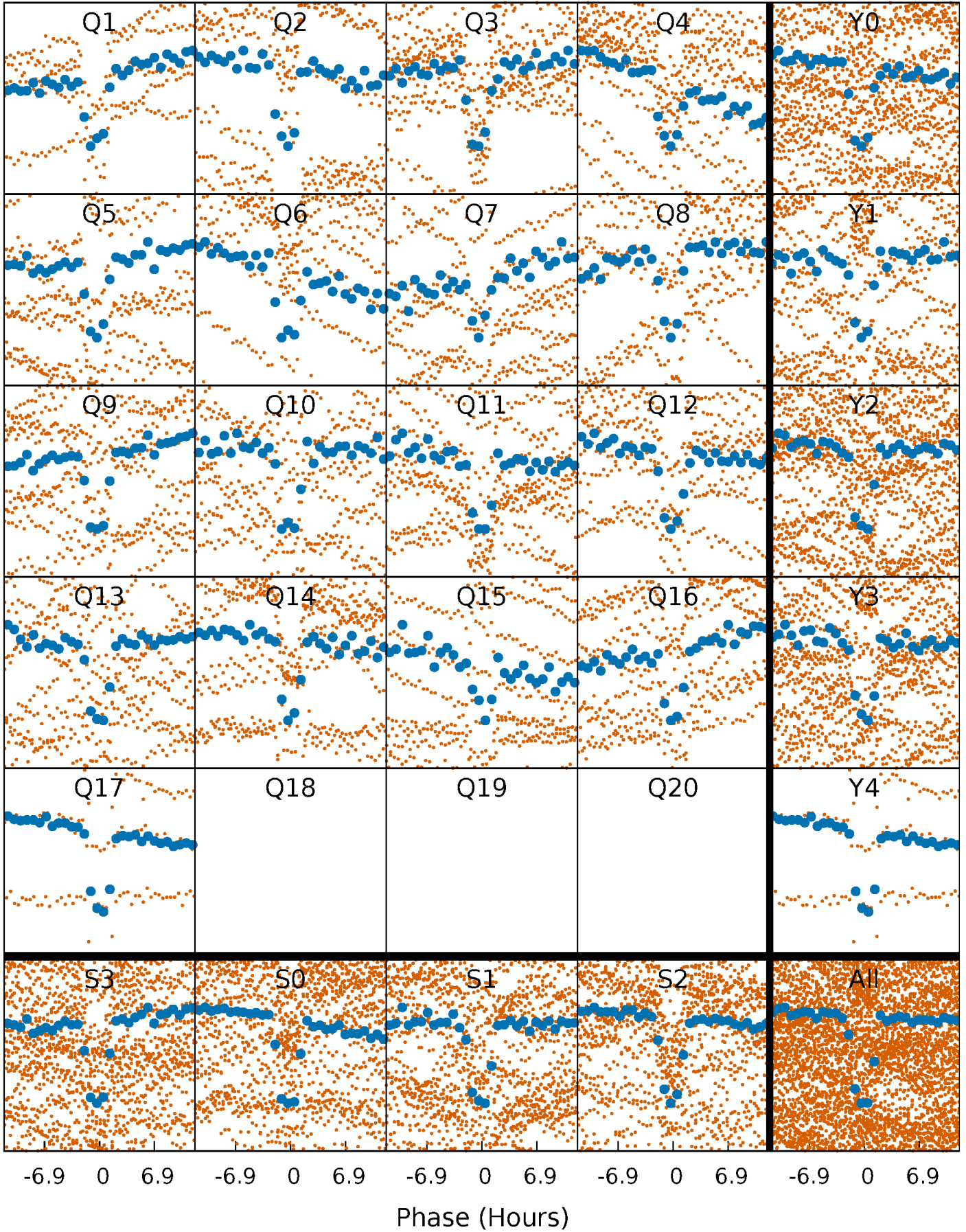


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



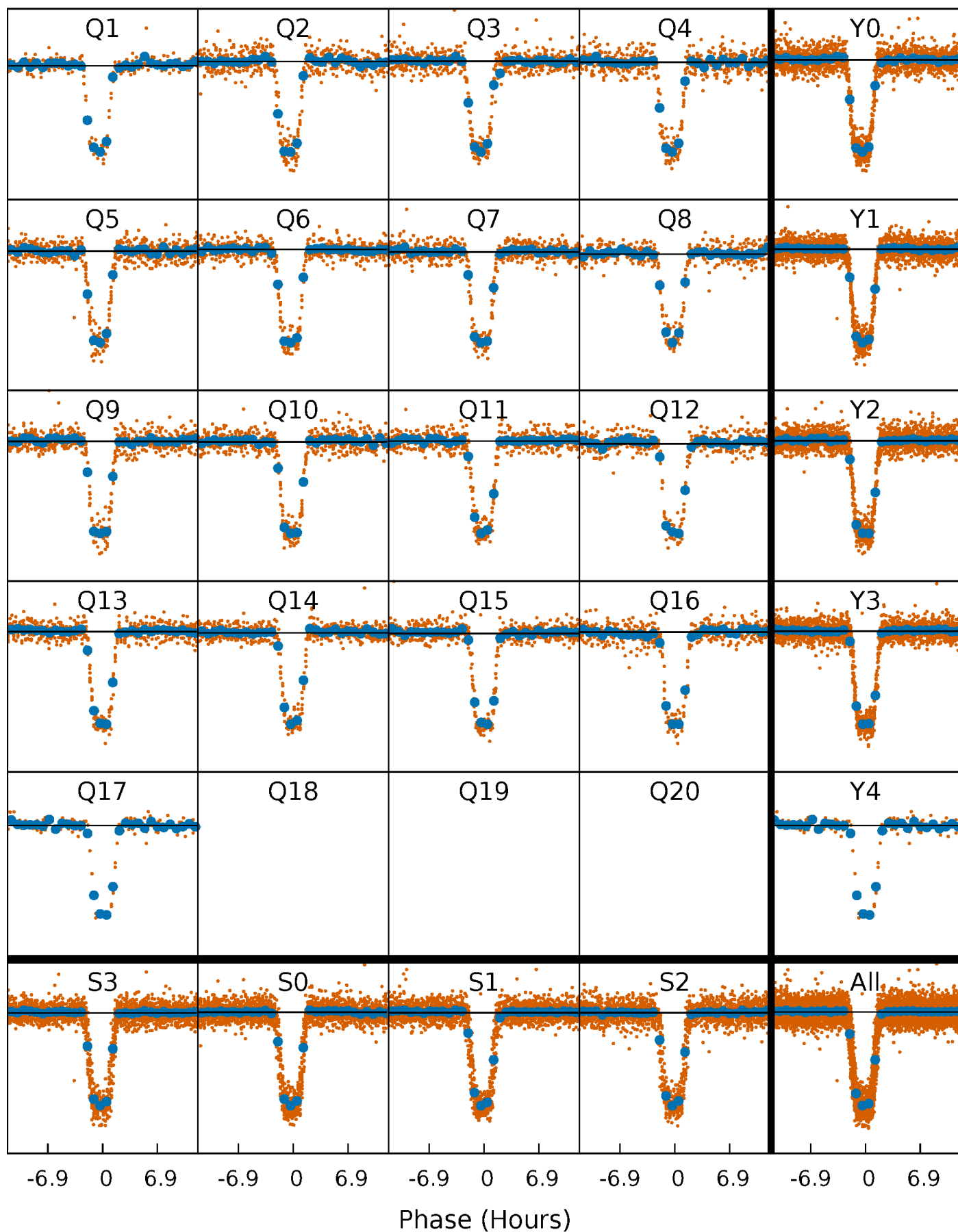
PDC Quarter-Phased Transit Curves

TCE 010020423-02 P= 7.448246 Days $T_0=133.898315$ (BKJD)



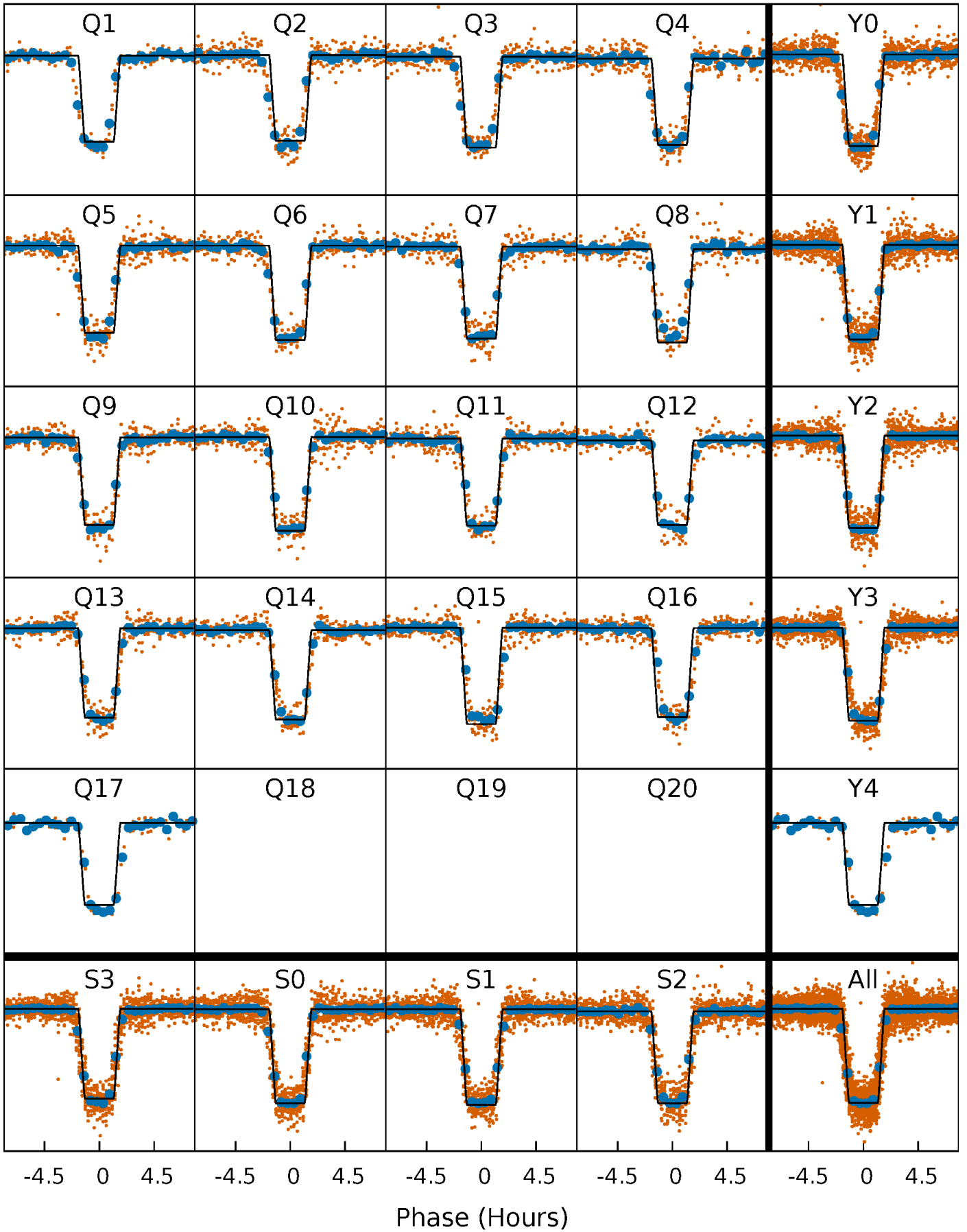
DV Quarter-Phased Transit Curves

TCE 010020423-02 P= 7.448246 Days $T_0=133.898315$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

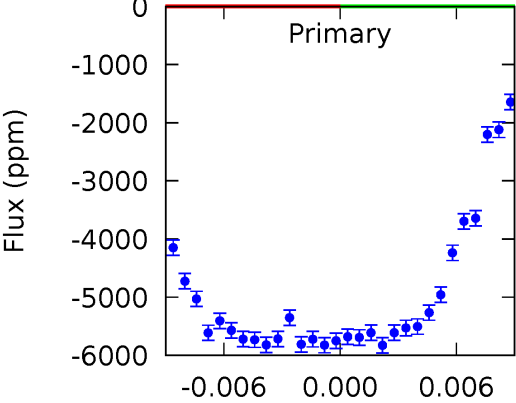
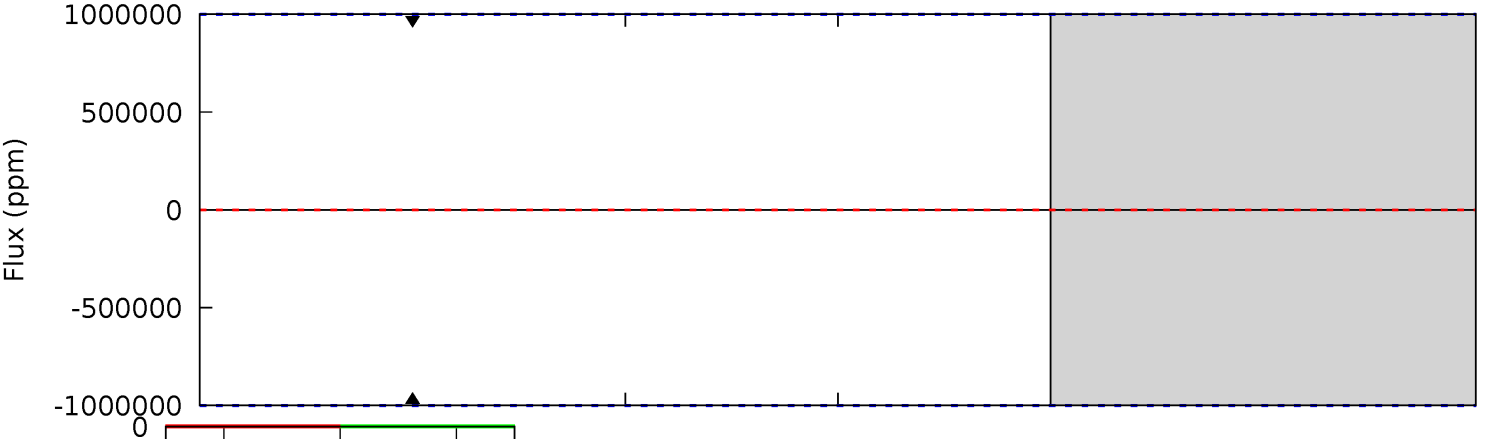
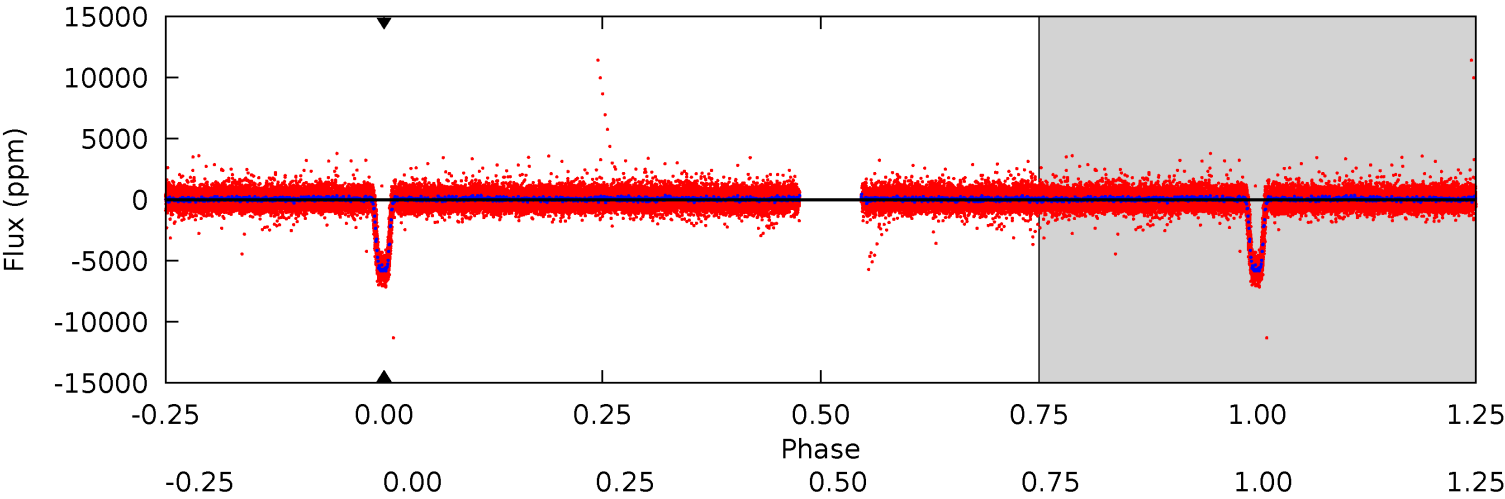
TCE 010020423-02 $P = 7.448246$ Days $T_0 = 133.890008$ (BKJD)



DV Model-Shift Uniqueness Test

010020423-02, P = 7.448246 Days, E = 126.450069 Days

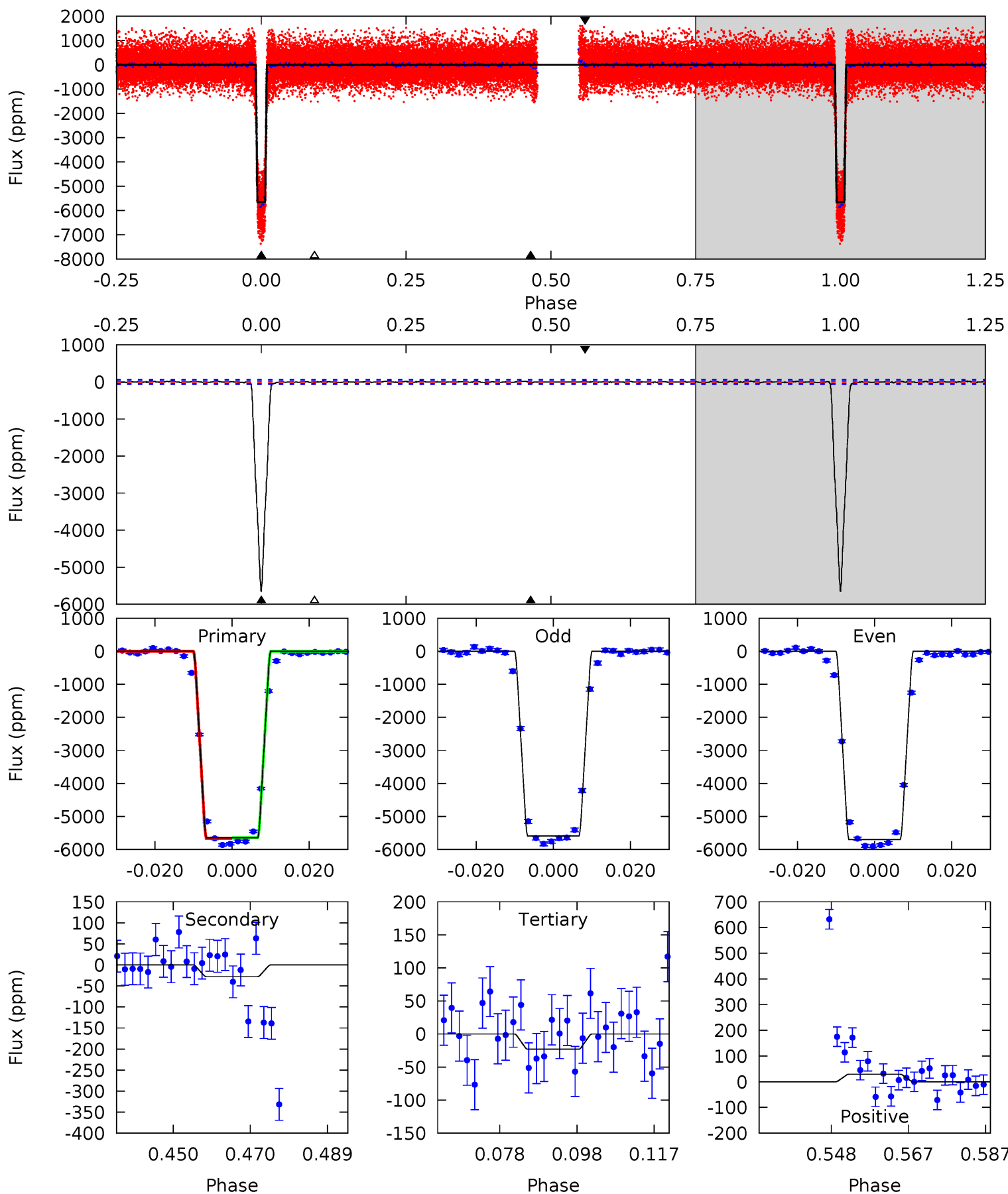
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

010020423-02, P = 7.448246 Days, E = 126.441762 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
489.8	2.44	1.99	2.56	4.90	2.33	0.74	487.8	487.2	0.45	-0.11	4.58	0.99	0.01	1.12



Stellar Parameters For KIC 010020423

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5636^{+101}_{-112}	$4.489^{+0.045}_{-0.045}$	$-0.260^{+0.150}_{-0.150}$	$0.867^{+0.051}_{-0.051}$	$0.846^{+0.061}_{-0.055}$	$1.826^{+0.321}_{-0.273}$
	+2%/-2%	+1%/-1%	+58%/-58%	+6%/-6%	+7%/-7%	+18%/-15%
Source	SPE45	TRA45	SPE45	DSEP		

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

Secondary Eclipse Parameters for KIC 010020423-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$8.62^{+8.12}_{-5.92}$	1218^{+31}_{-30}	-3304^{+19258}_{-10399}	$-16.423^{+6622.554}_{-4658.005}$
Alt.	-28 ± 12	$10.06^{+8.01}_{-6.59}$	1218^{+31}_{-32}	2053^{+777}_{-3865}	$0.703^{+5.357}_{-0.510}$

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

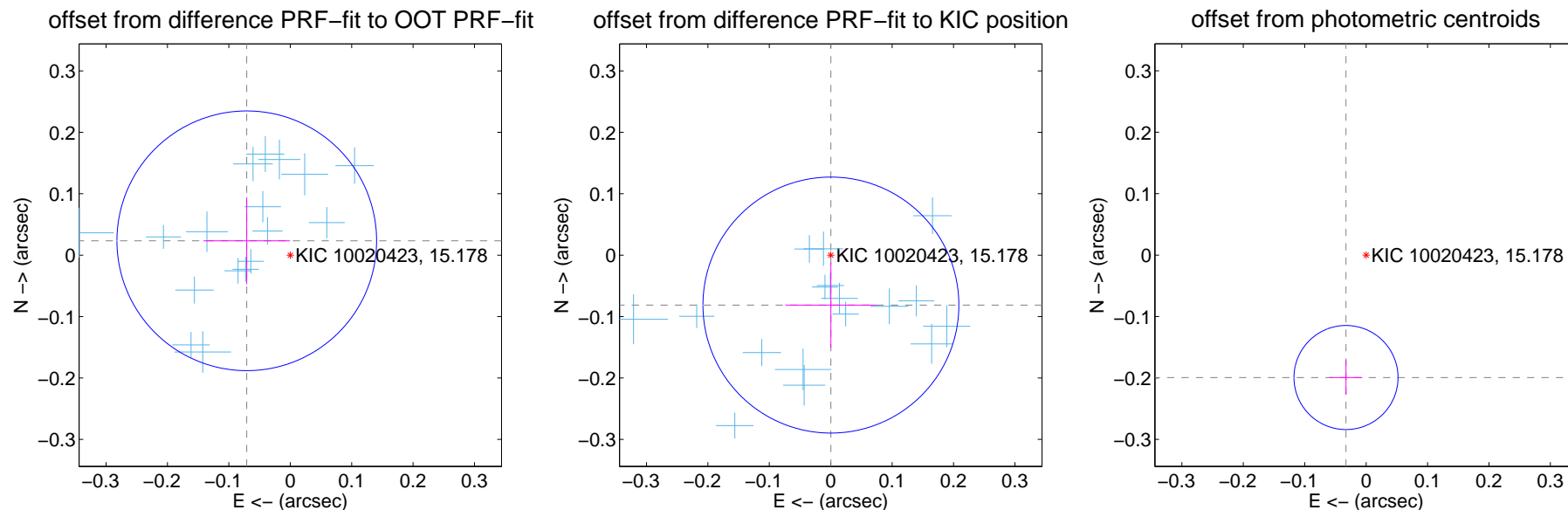
DV Centroid Data

Supplemental centroid analysis for 010020423-02. Kepler magnitude: 15.18. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

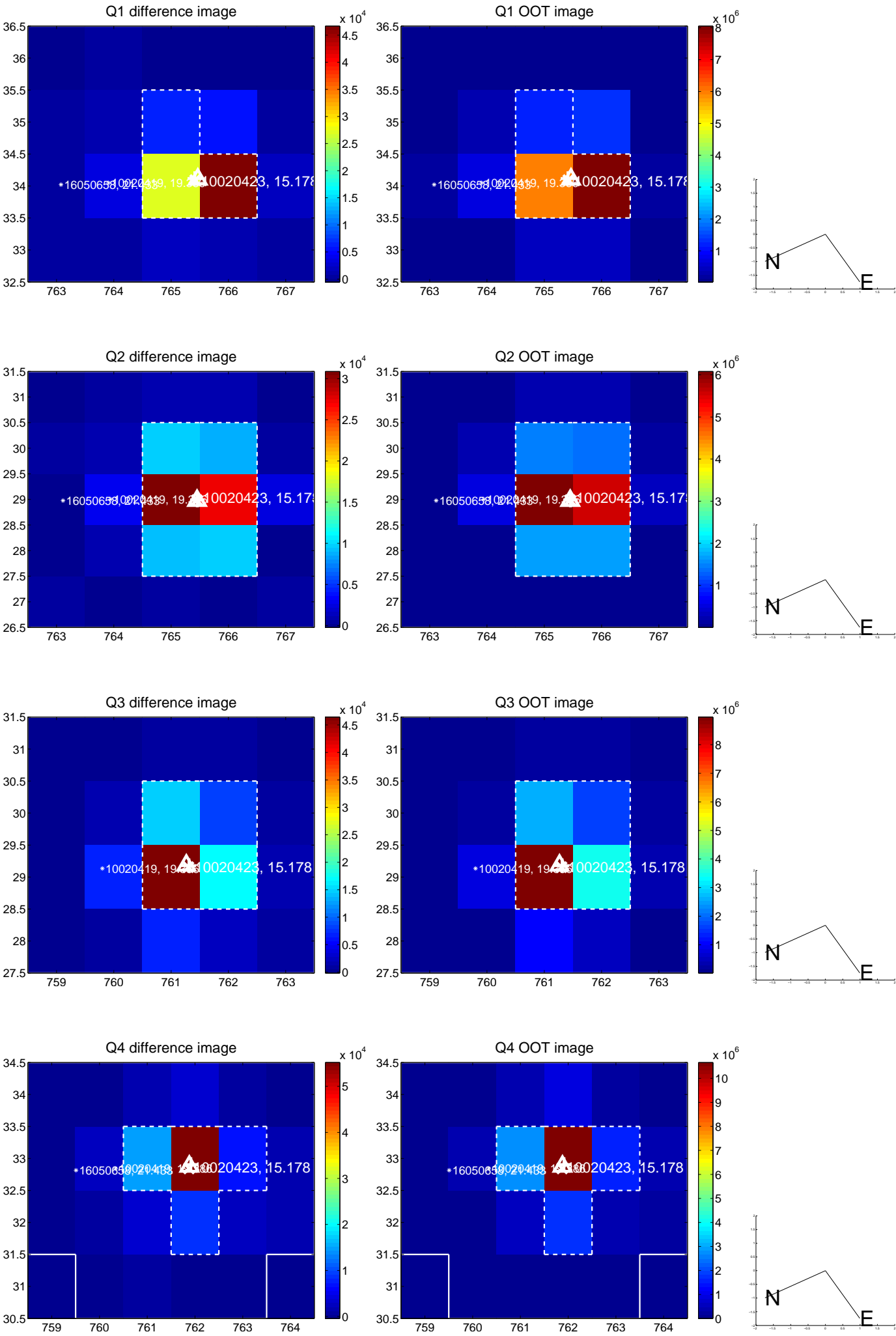
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.075 ± 0.070	1.06	0.071 ± 0.070	0.023 ± 0.071
PRF-fit source offset from KIC position	0.081 ± 0.069	1.17	-0.000 ± 0.074	-0.081 ± 0.069
photometric centroid source offset	0.20 ± 0.03	7.15	0.03 ± 0.03	-0.20 ± 0.03

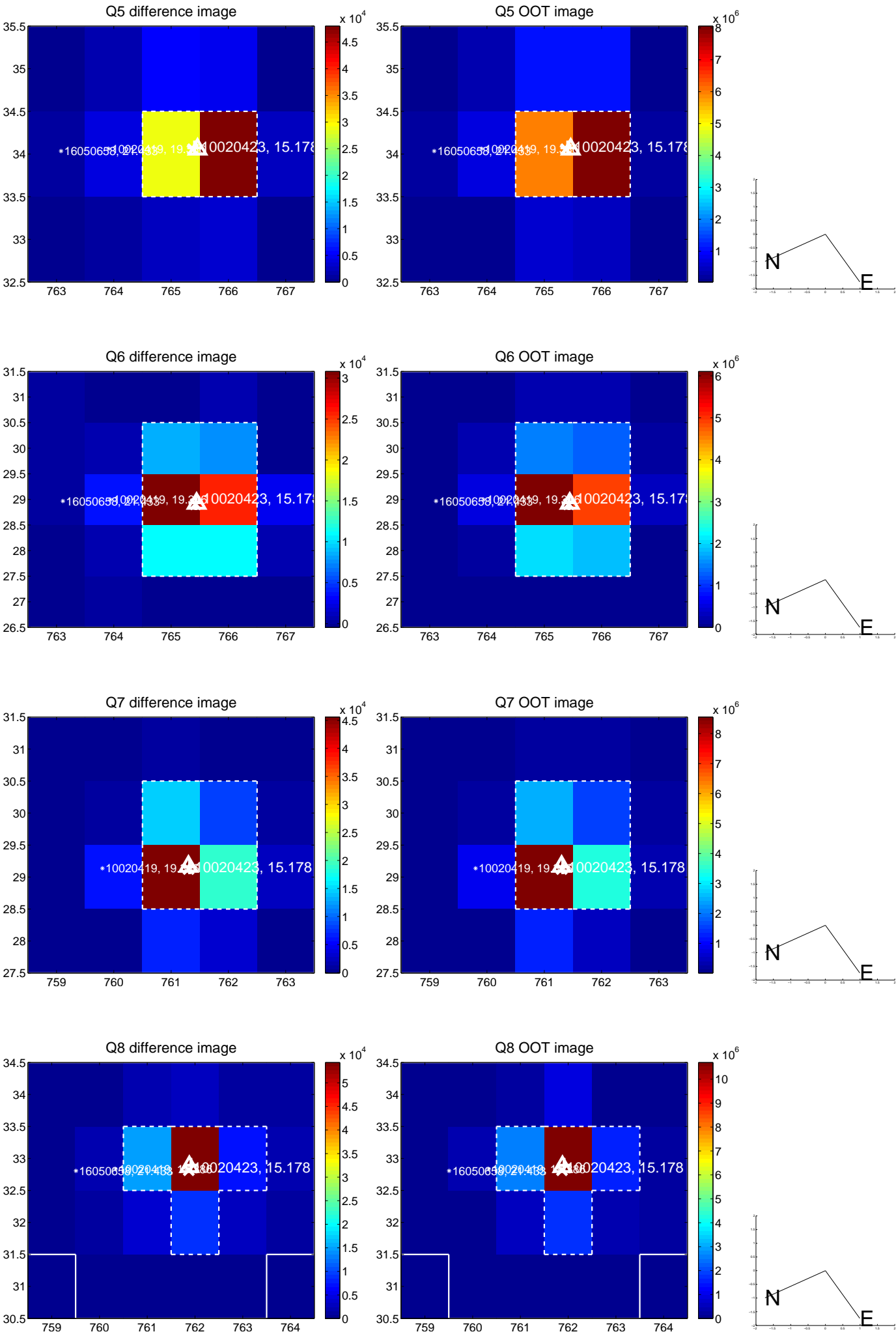


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

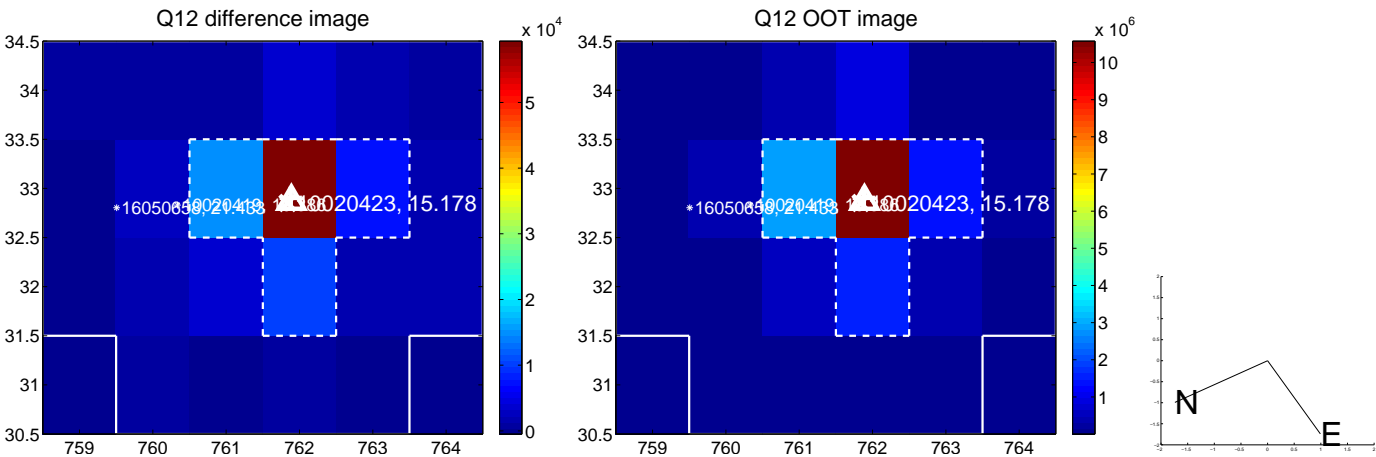
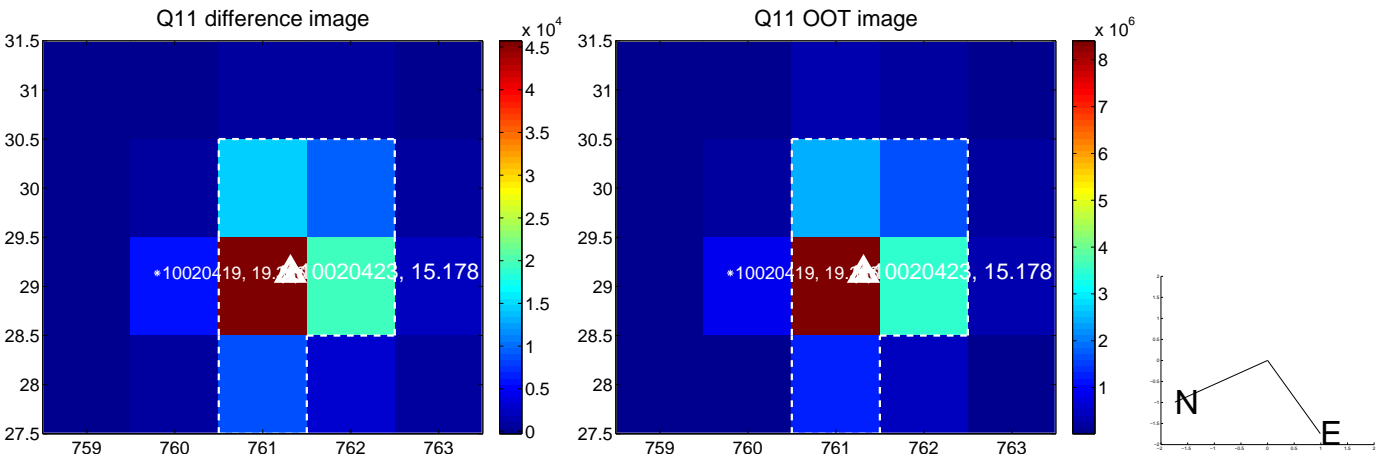
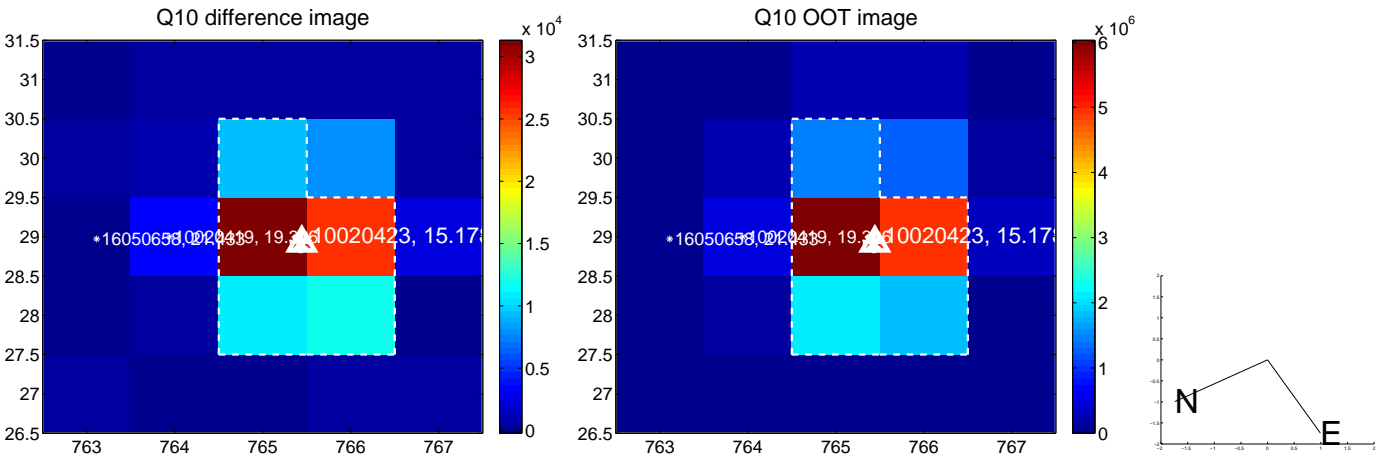
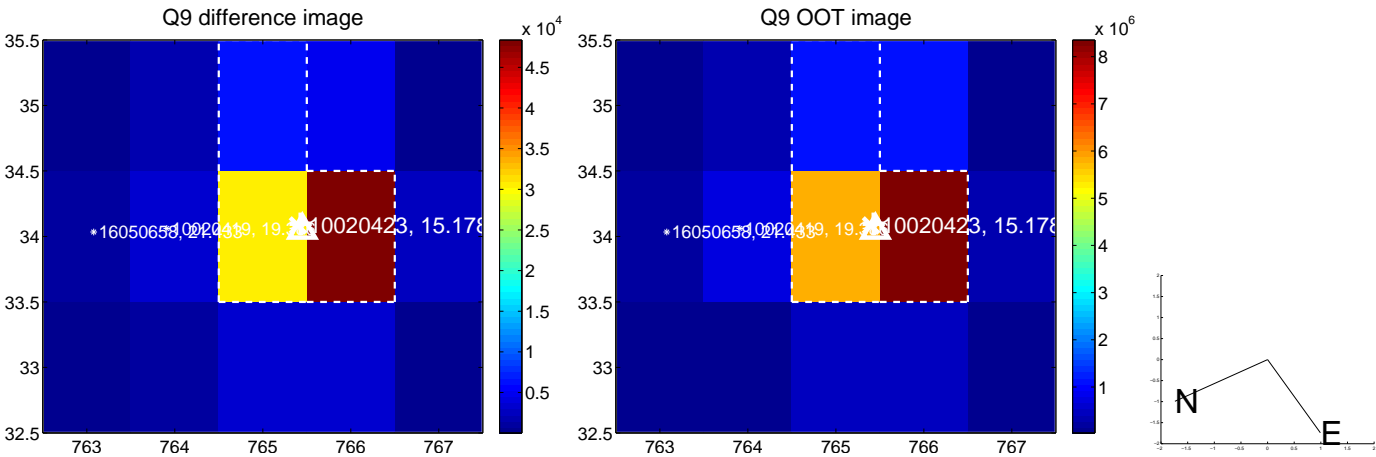
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



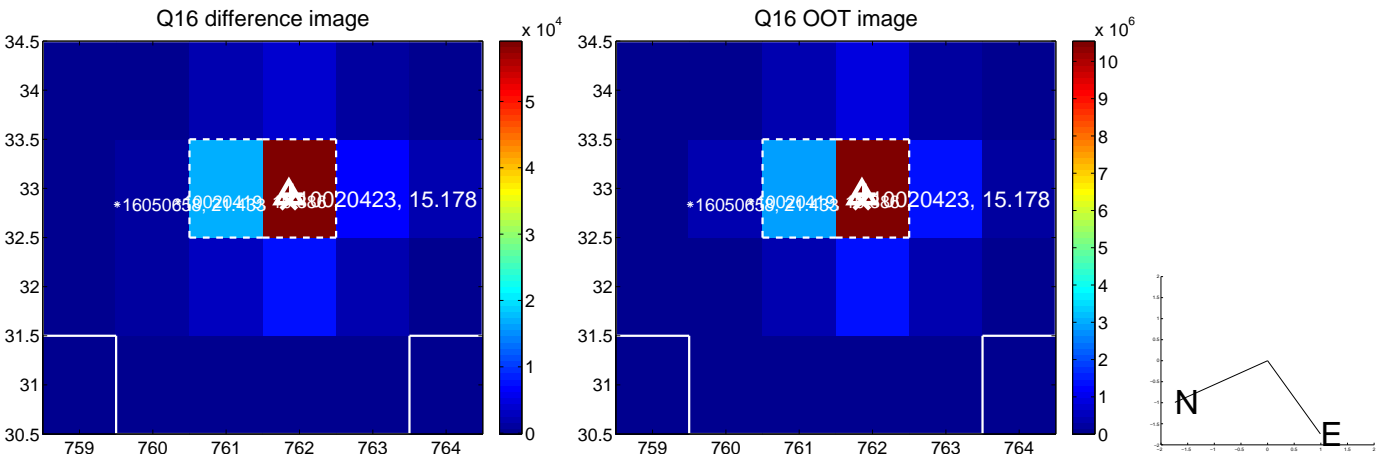
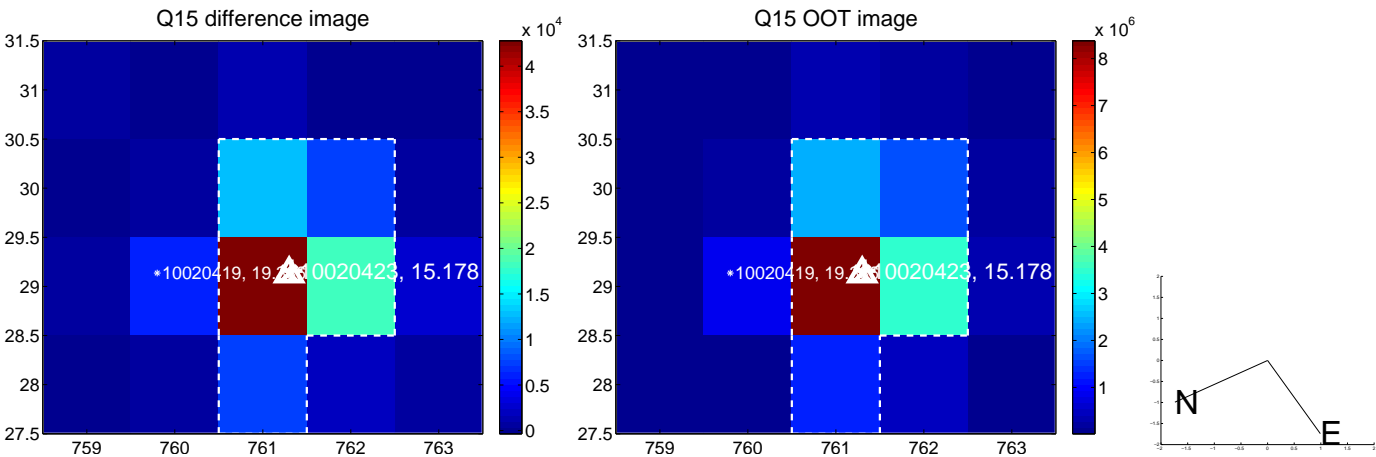
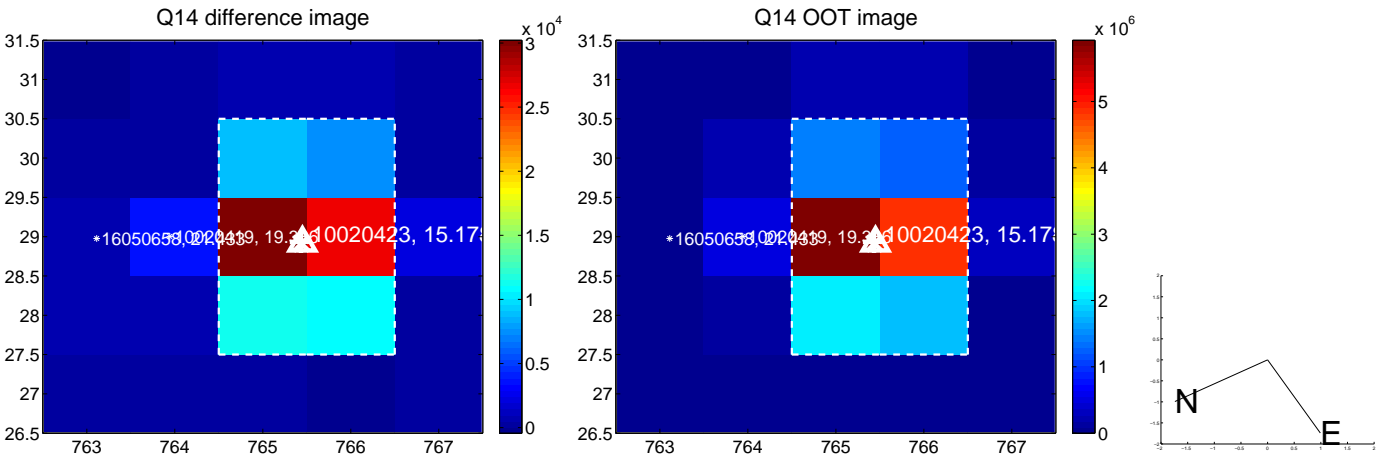
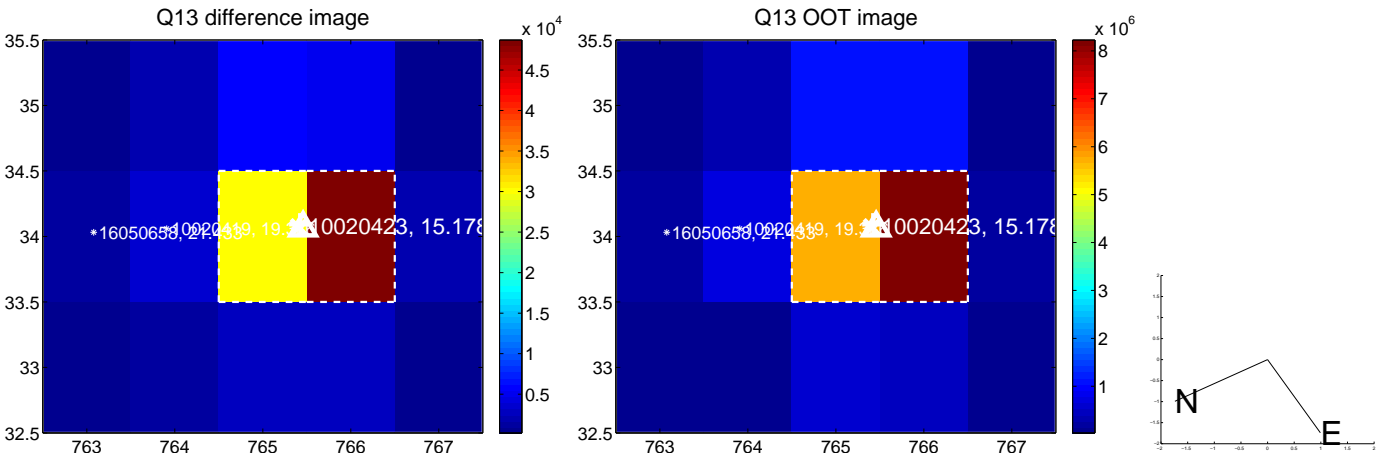
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



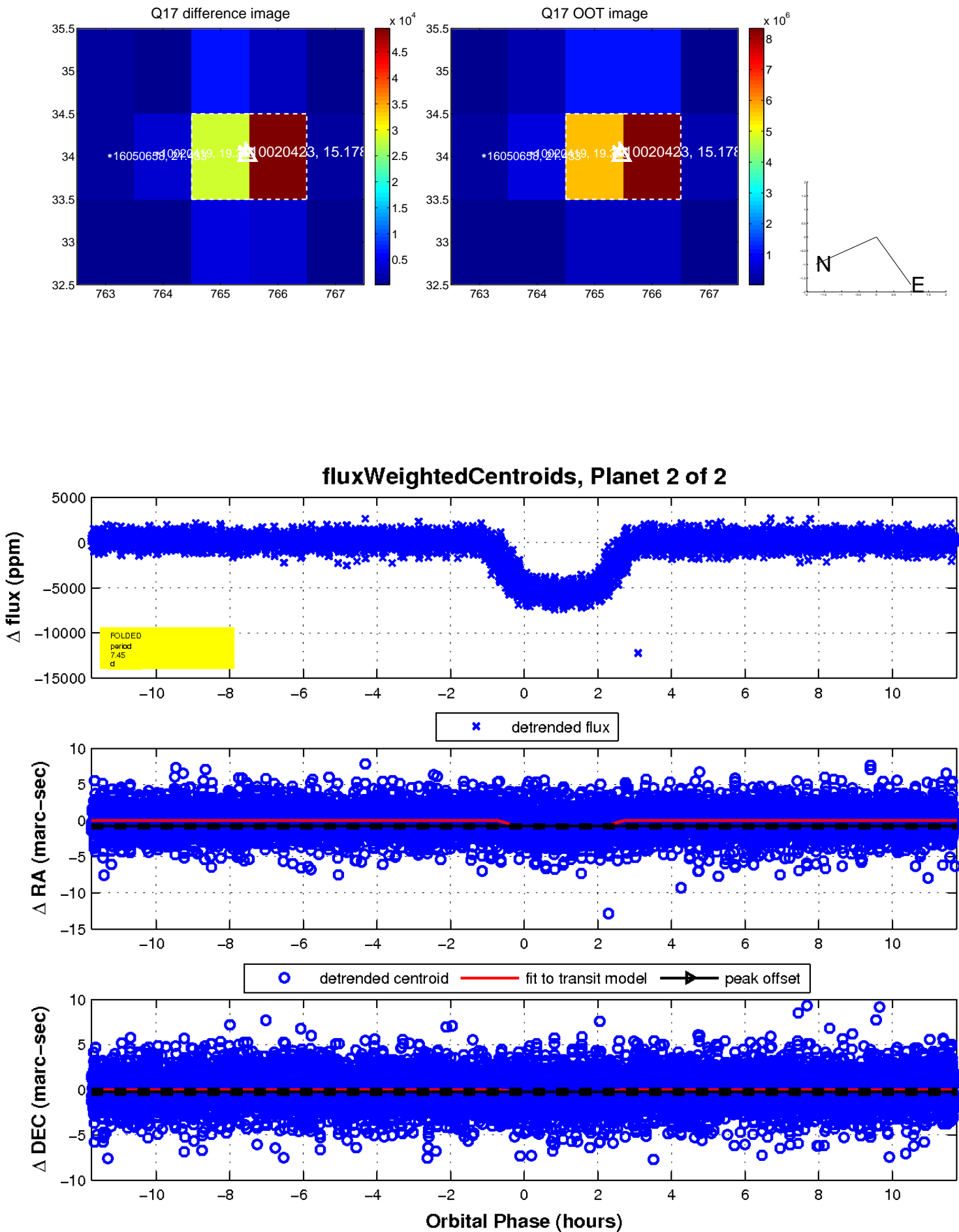
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

