

KIC 003862246

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})
003862246-01	OBS	0230.01	4.702494	131.606255	4766.2	2.312	224.0	211.5	0.88	5408	9.20	219.58
003862246-02	OBS	No	4.702503	133.901911	632.6	2.117	25.3	28.8	0.88	5408	3.03	219.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003862246-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
003862246-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

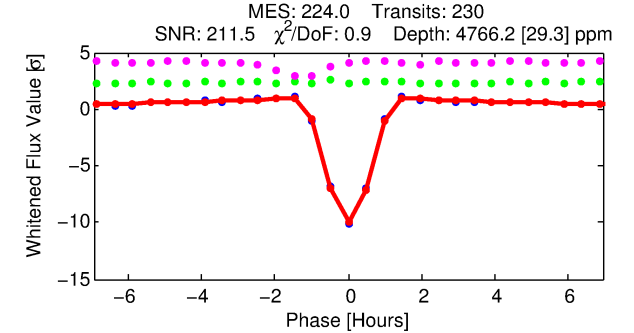
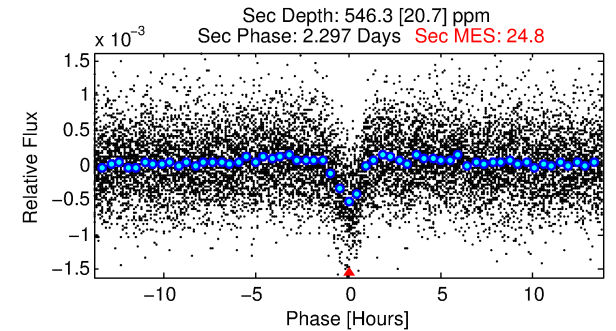
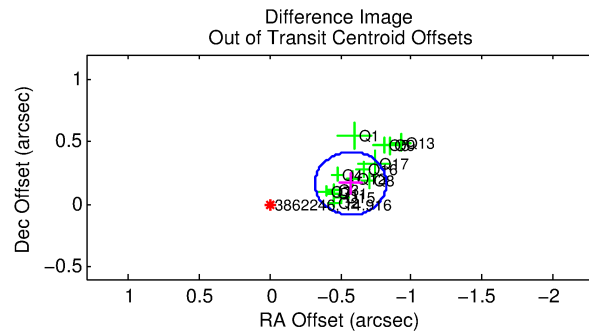
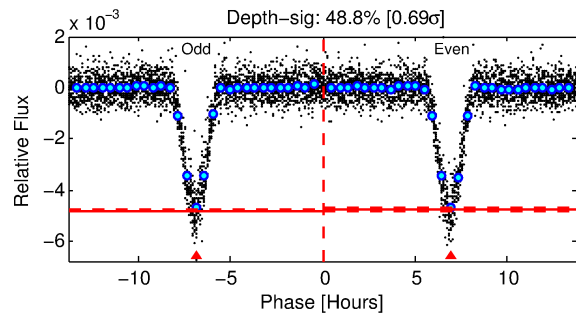
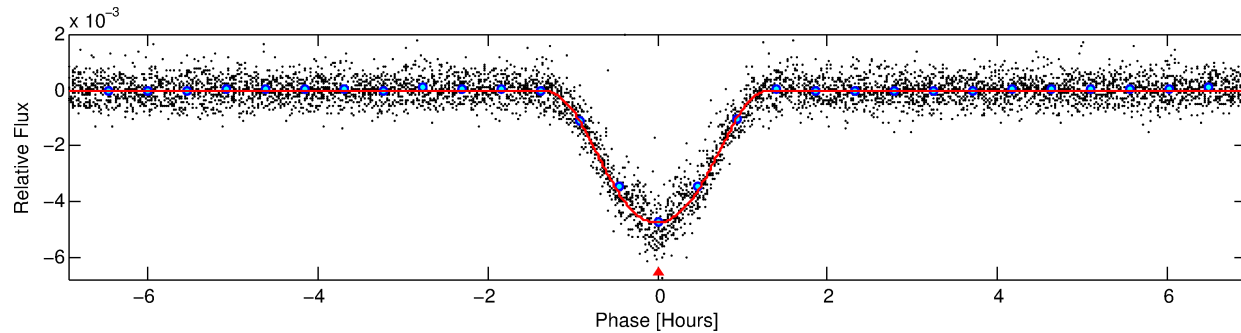
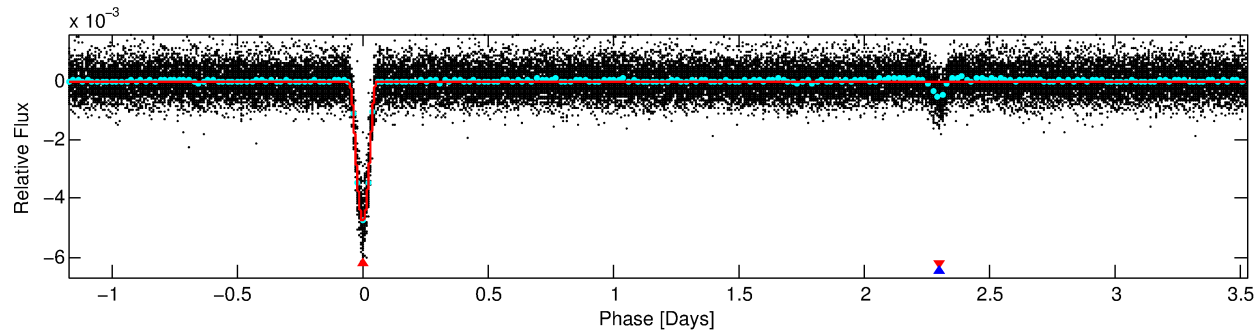
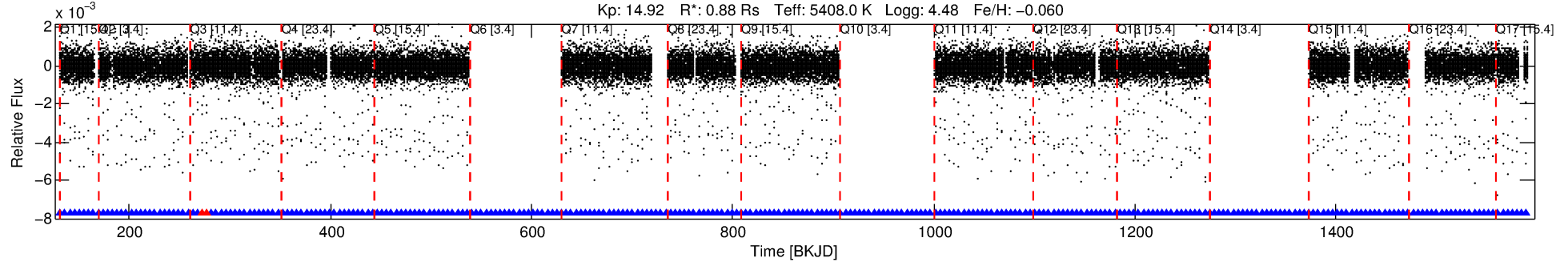
Ephemeris Match Information For 003862246-01

No Significant Match Found

DV One-Page Summary

KIC: 3862246 Candidate: 1 of 2 Period: 4.702 d
KOI: K00230.01 Corr: 0.994

Kp: 14.92 R*: 0.88 Rs Teff: 5408.0 K Logg: 4.48 Fe/H: -0.060



DV Fit Results:

Period = 4.70249 [0.00000] d
Epoch = 131.6063 [0.0002] BKJD
Rp/R* = 0.0960 [0.0100]
a/R* = 8.22 [0.26]
b = 0.96 [0.02]
Seff = 219.58 [60.82]
Teq = 982 [68] K
Rp = 9.20 [2.07] Re
a = 0.0519 [0.0088] AU
Ag = 9.56 [3.13] [2.73σ]
Teffp = 2668 [162] K [9.59σ]

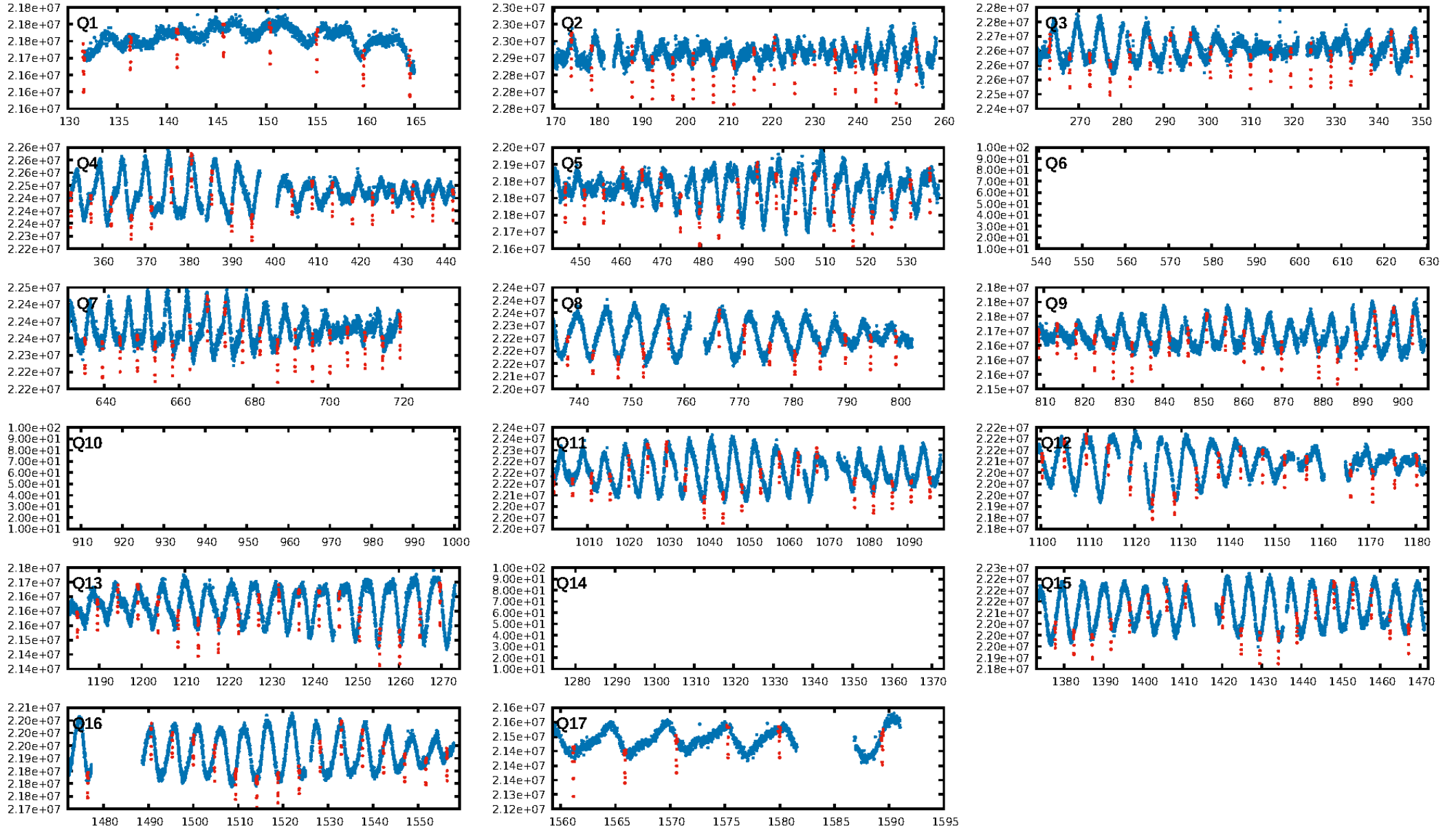
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.99 [214/216]
GhostDiagnostic-chr: 3.881
Centroid-sig: 0.0%
Centroid-so: 0.287 arcsec [5.54σ]
OotOffset-rm: 0.594 arcsec [7.06σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-rm: 0.185 arcsec [2.60σ]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

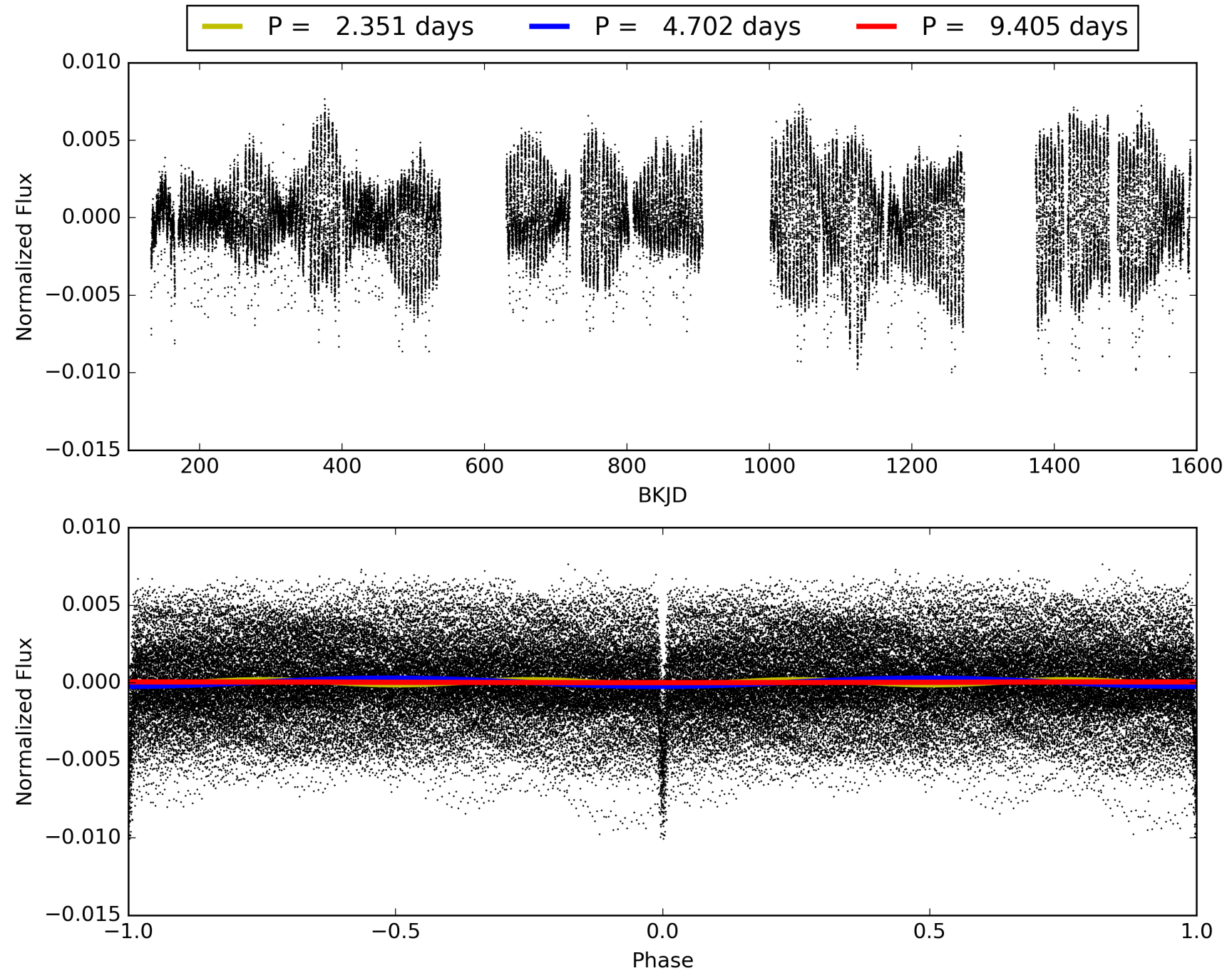
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 23:11:41 Z

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

TCE 003862246-01, PDC Light Curves

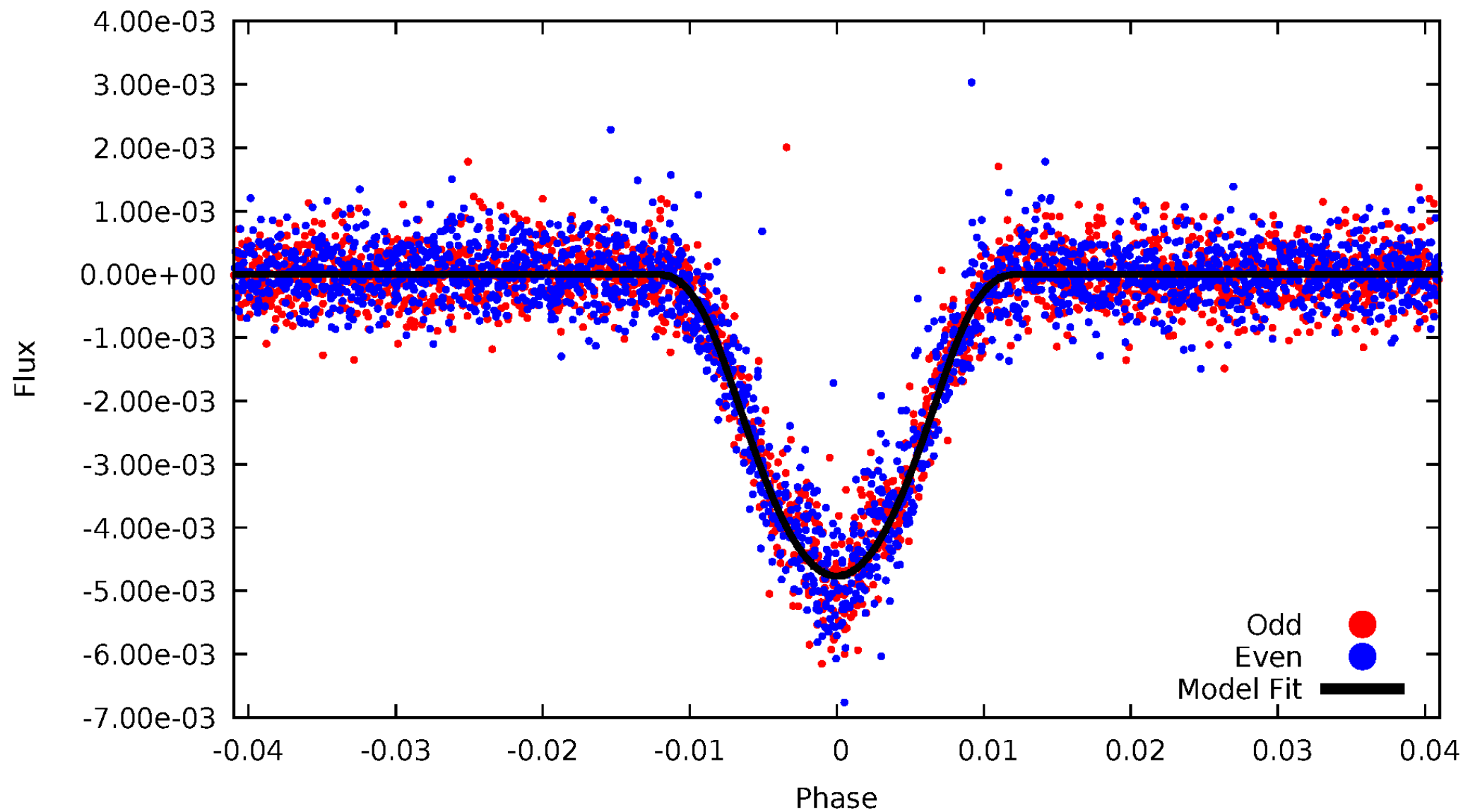


TCE 003862246-01



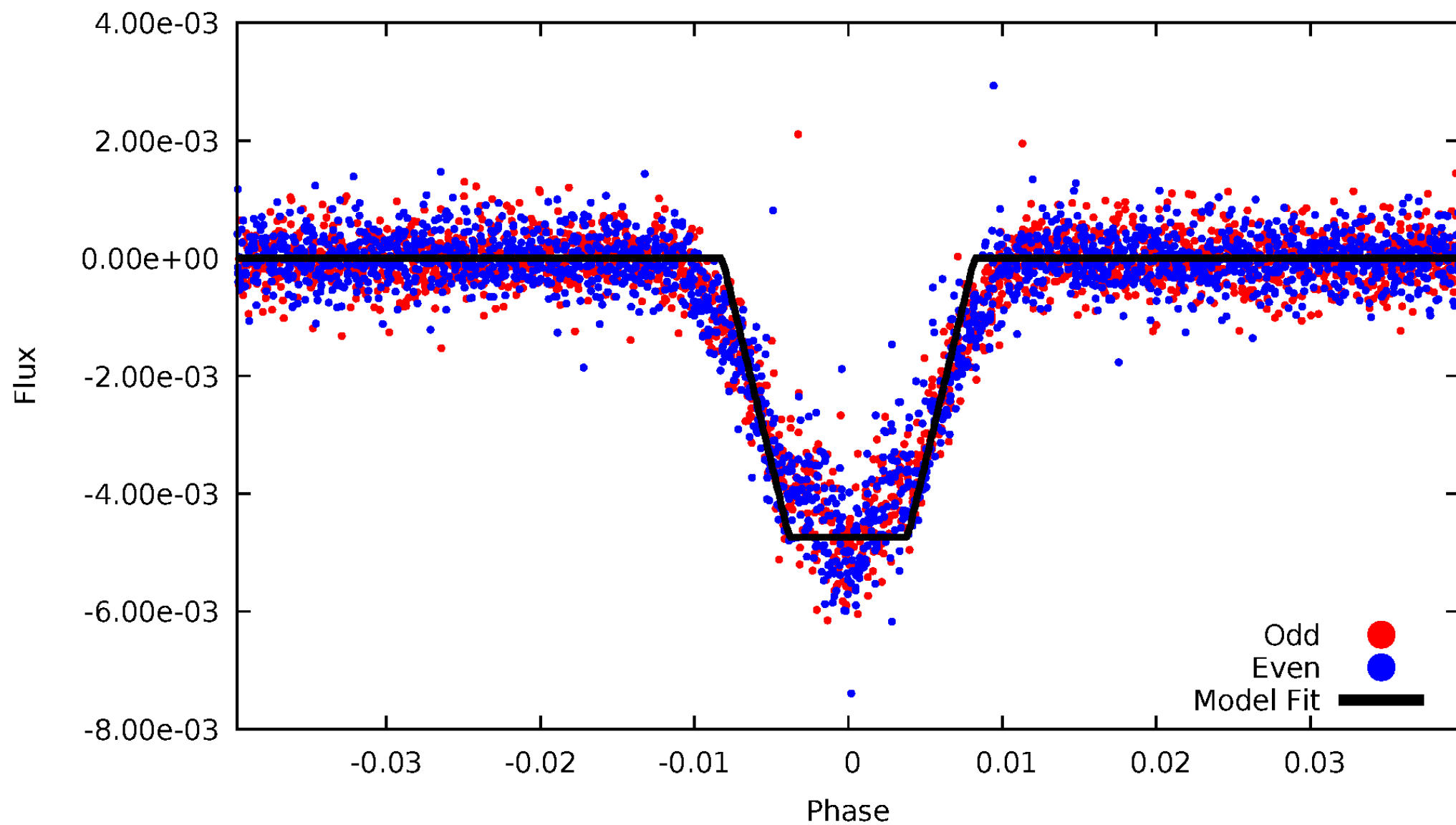
DV Odd/Even

TCE 003862246-01



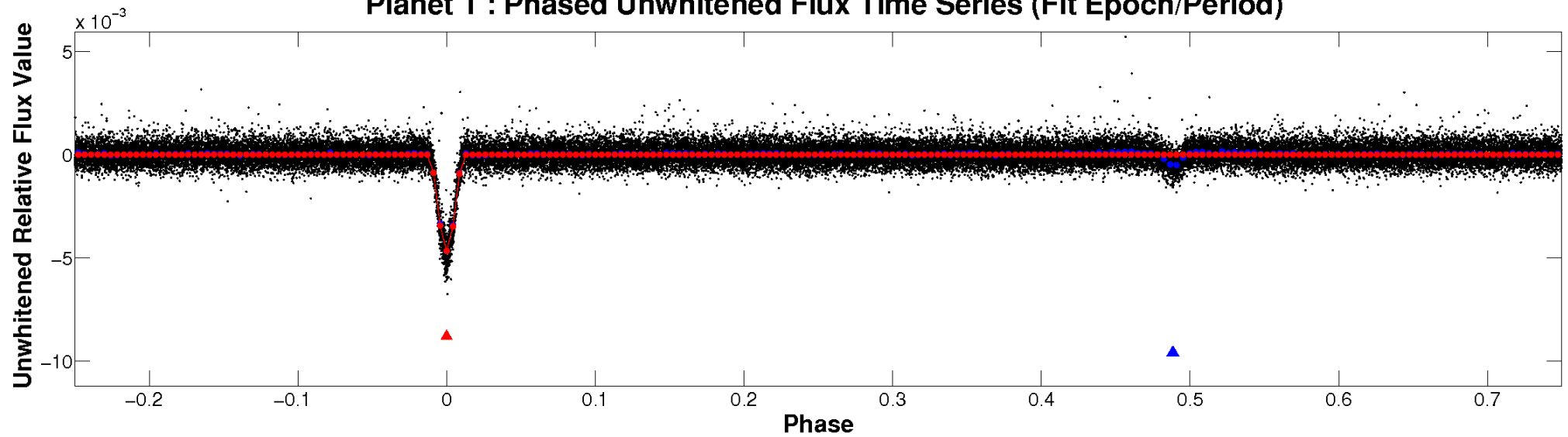
ALT Odd/Even

TCE 003862246-01

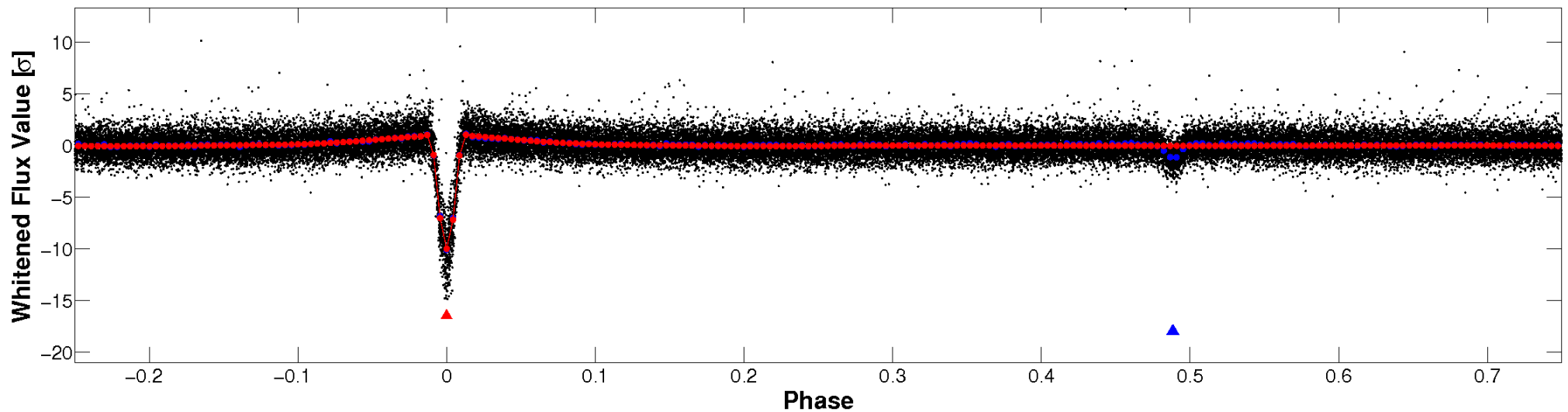


Non-Whitened Vs. Whitened Light Curve

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

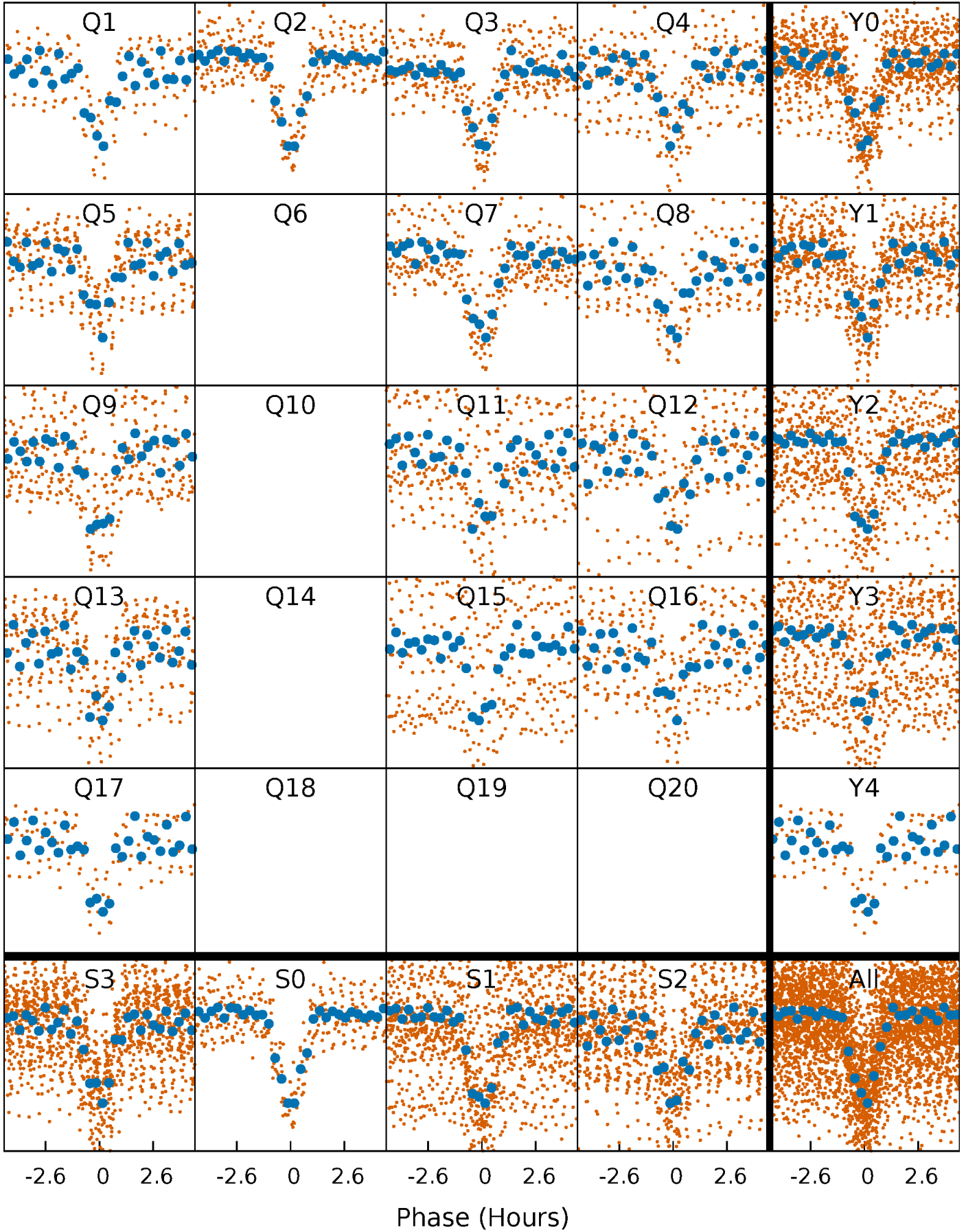


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



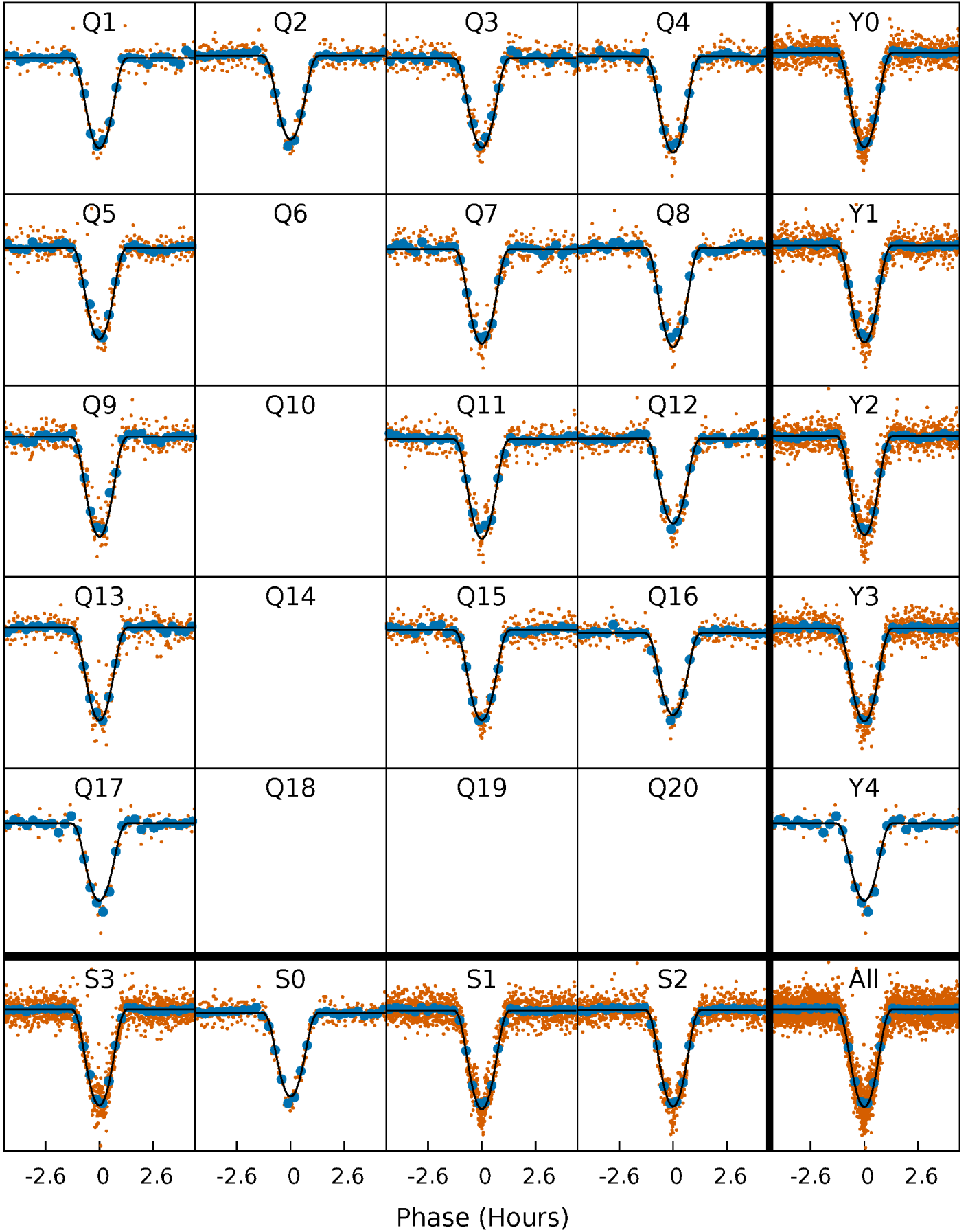
PDC Quarter-Phased Transit Curves

TCE 003862246-01 P= 4.702494 Days $T_0=131.606255$ (BKJD)



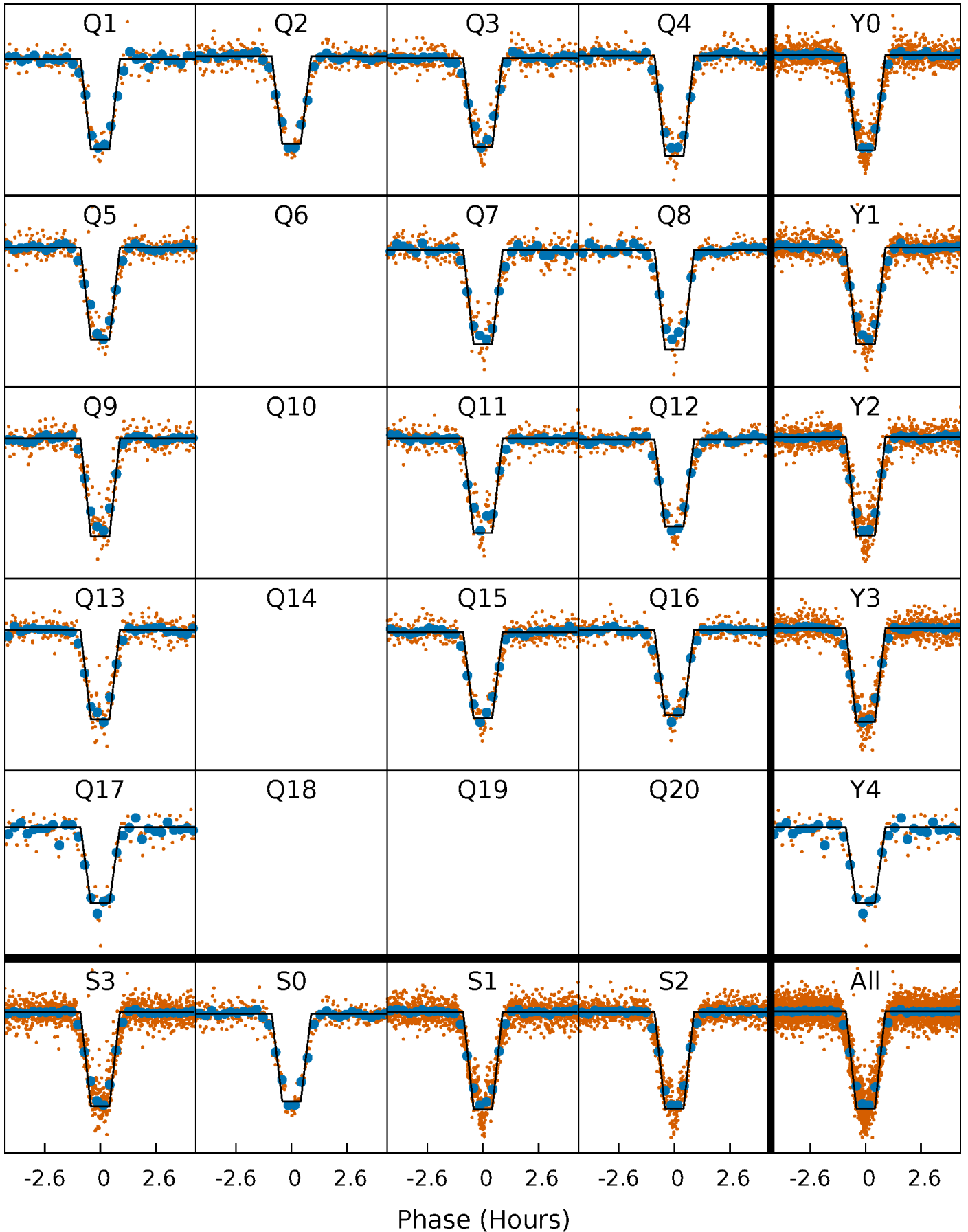
DV Quarter-Phased Transit Curves

TCE 003862246-01 P= 4.702494 Days $T_0=131.606255$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

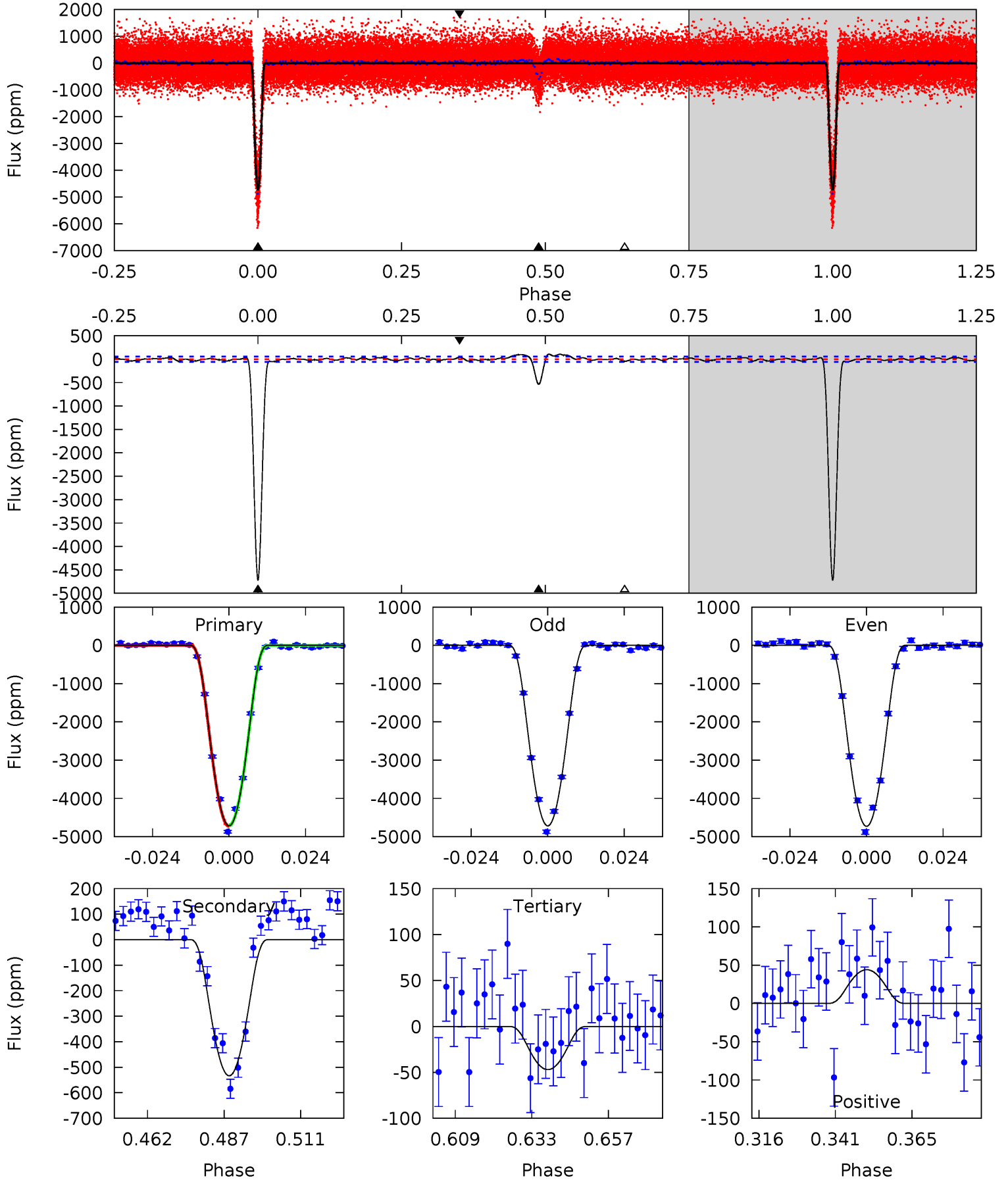
TCE 003862246-01 P= 4.702504 Days $T_0=131.604649$ (BKJD)



DV Model-Shift Uniqueness Test

003862246-01, P = 4.702494 Days, E = 126.903761 Days

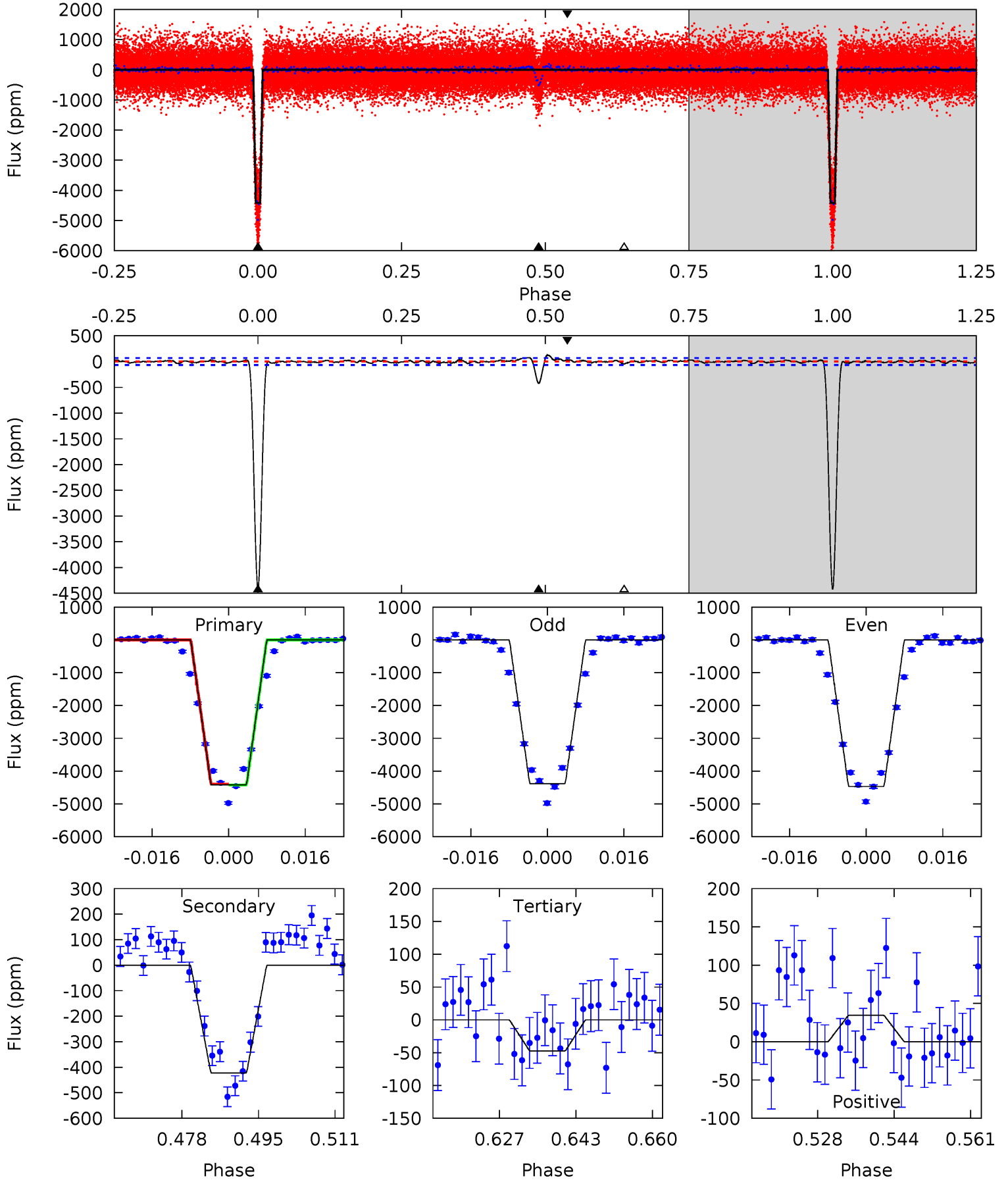
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
398.1	45.0	3.97	3.72	4.85	2.25	2.38	394.1	394.4	41.1	41.3	0.56	0.99	0.02	1.10



Alt Model-Shift Uniqueness Test

003862246-01, P = 4.702504 Days, E = 126.902145 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
318.6	30.5	3.42	2.49	4.93	2.40	1.48	315.2	316.1	27.1	28.0	3.16	0.99	0.03	0.97



Stellar Parameters For KIC 003862246

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5408^{+161}_{-145}	$4.476^{+0.092}_{-0.138}$	$-0.060^{+0.300}_{-0.300}$	$0.878^{+0.175}_{-0.102}$	$0.842^{+0.098}_{-0.071}$	$1.753^{+0.691}_{-0.689}$
	+3%/-3%	+2%/-3%	+500%/-500%	+20%/-12%	+12%/-8%	+39%/-39%
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 003862246-01 / KOI 0230.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-533 ± 12	$9.39^{+1.38}_{-1.17}$	1383^{+74}_{-63}	3204^{+123}_{-107}	$8.962^{+2.739}_{-2.080}$
Alt.	-423 ± 14	$6.67^{+1.24}_{-1.14}$	1383^{+81}_{-64}	3442^{+195}_{-166}	14^{+6}_{-4}

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 $A_{obs} \gg 1.0$

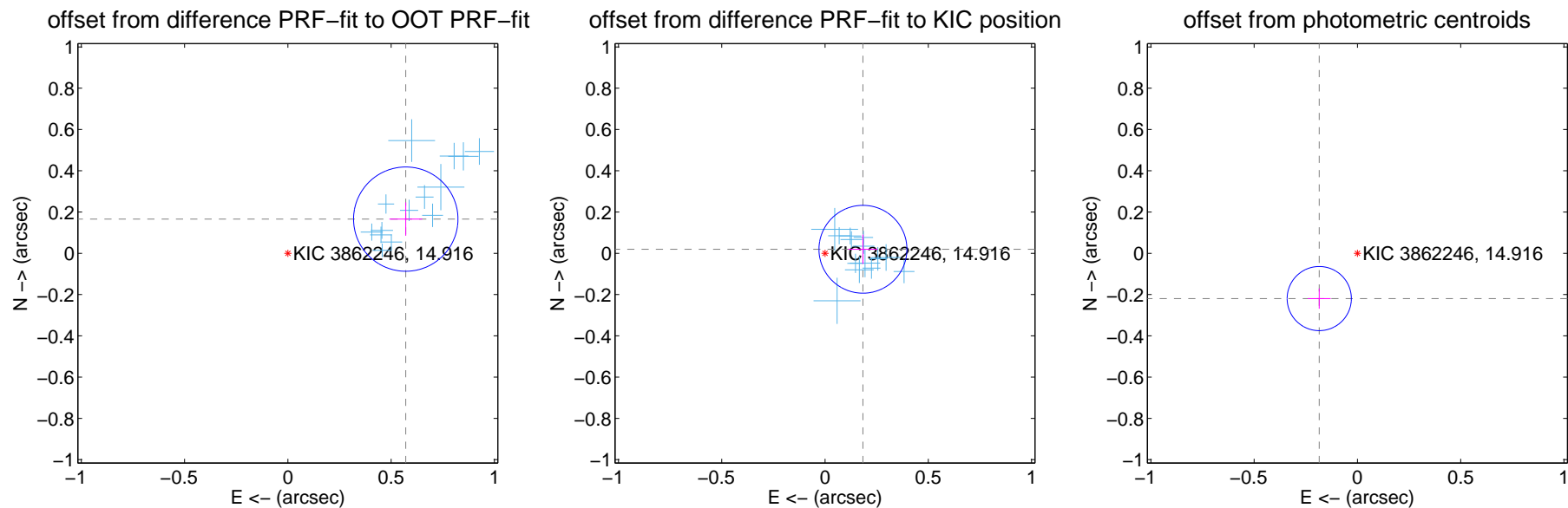
DV Centroid Data

Supplemental centroid analysis for 003862246-01. Kepler magnitude: 14.92. Transit SNR 211.49

There are 14 quarters with good PRF difference image offsets

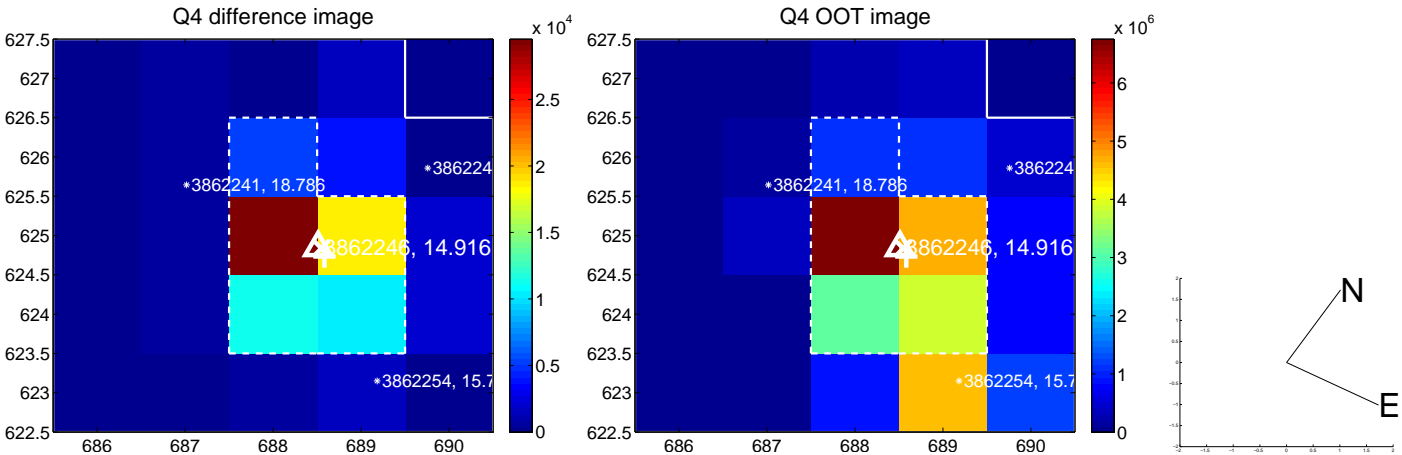
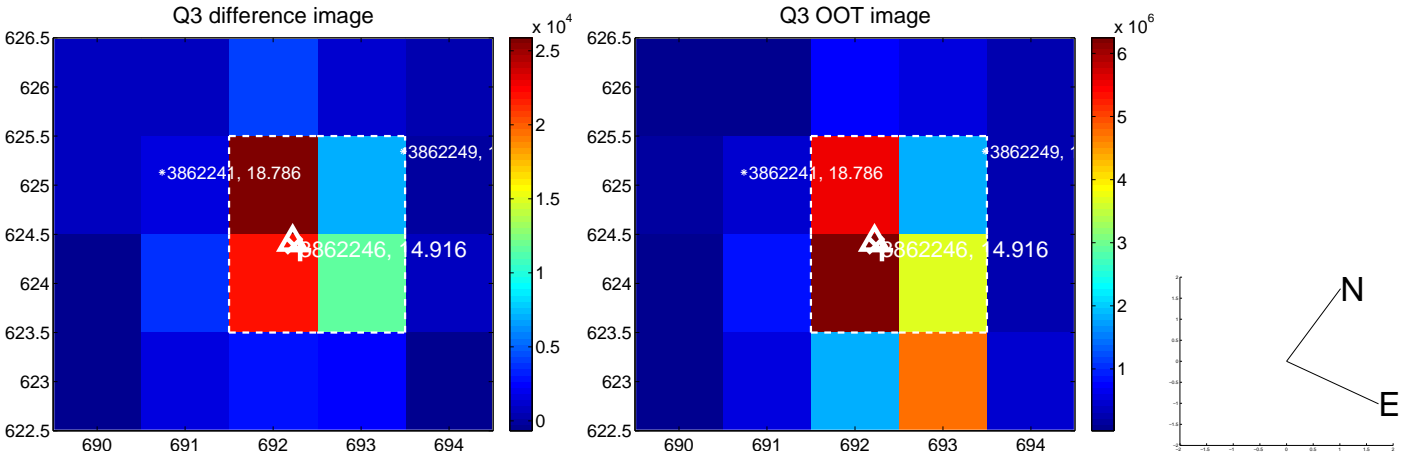
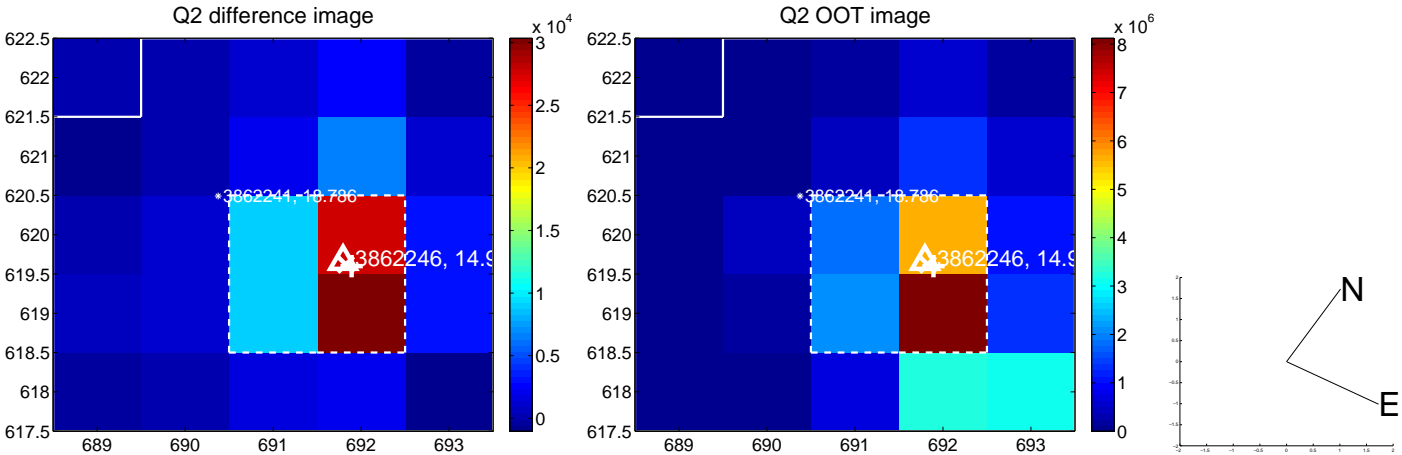
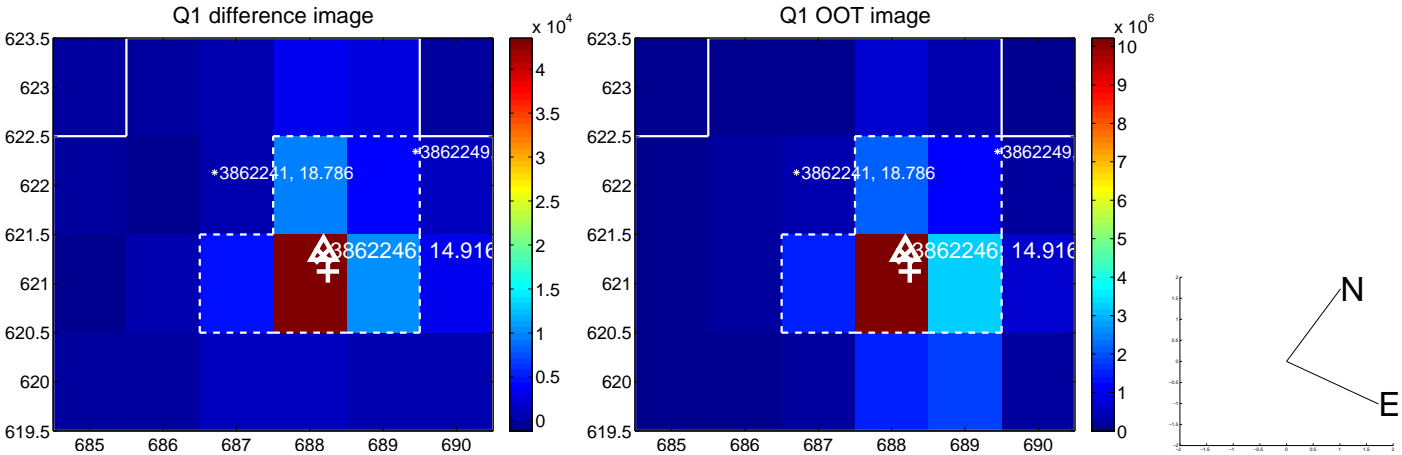
The direct PRF centroid is offset from the target star catalog position by about 0.88 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.594 ± 0.084	7.06	-0.571 ± 0.079	0.166 ± 0.081
PRF-fit source offset from KIC position	0.185 ± 0.071	2.60	-0.184 ± 0.071	0.019 ± 0.071
photometric centroid source offset	0.29 ± 0.05	5.54	0.18 ± 0.06	-0.22 ± 0.05

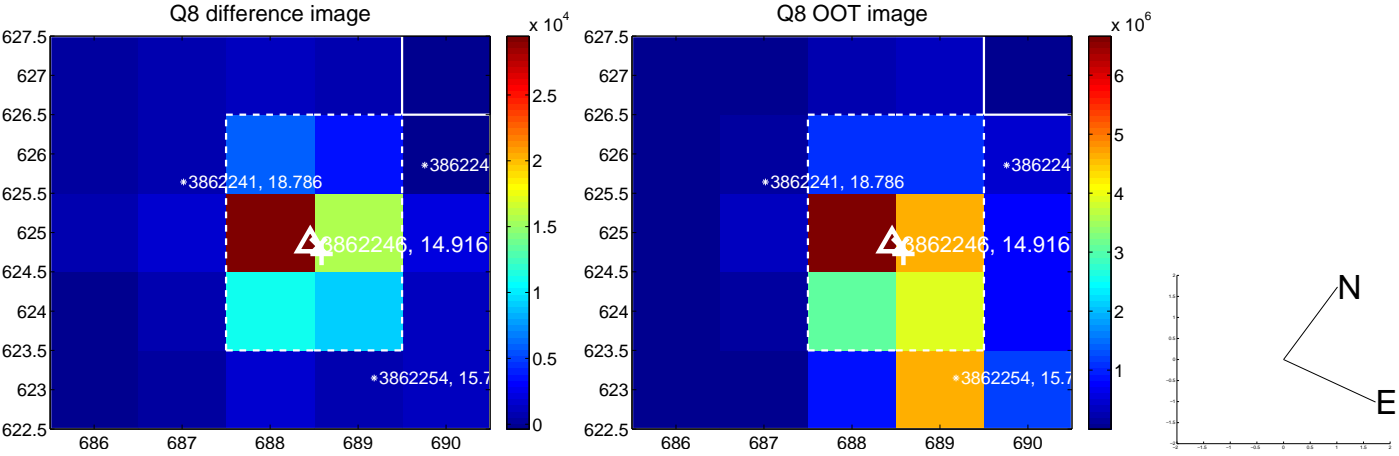
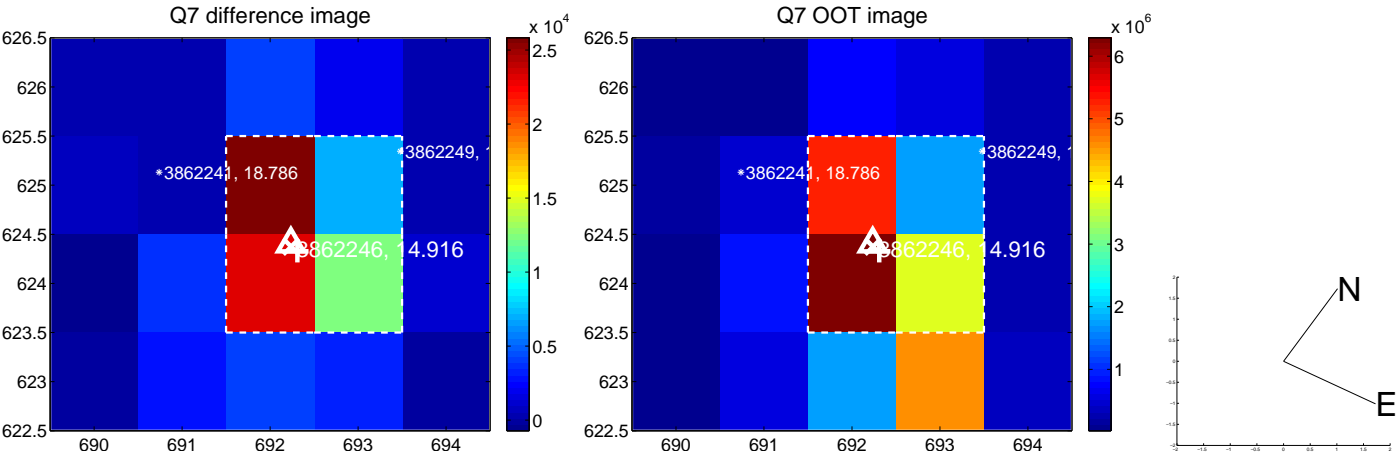
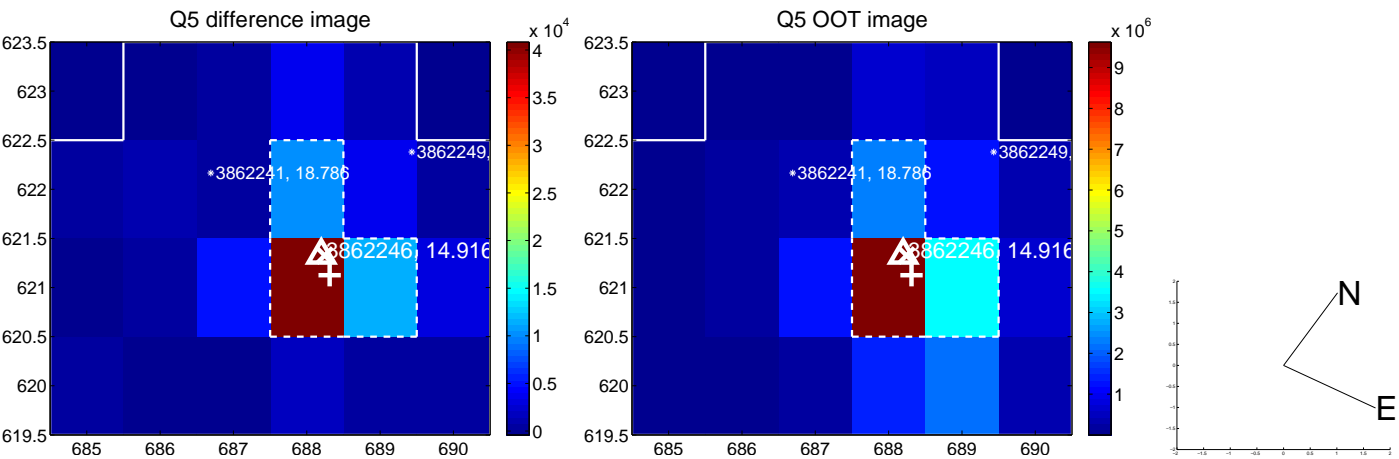


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

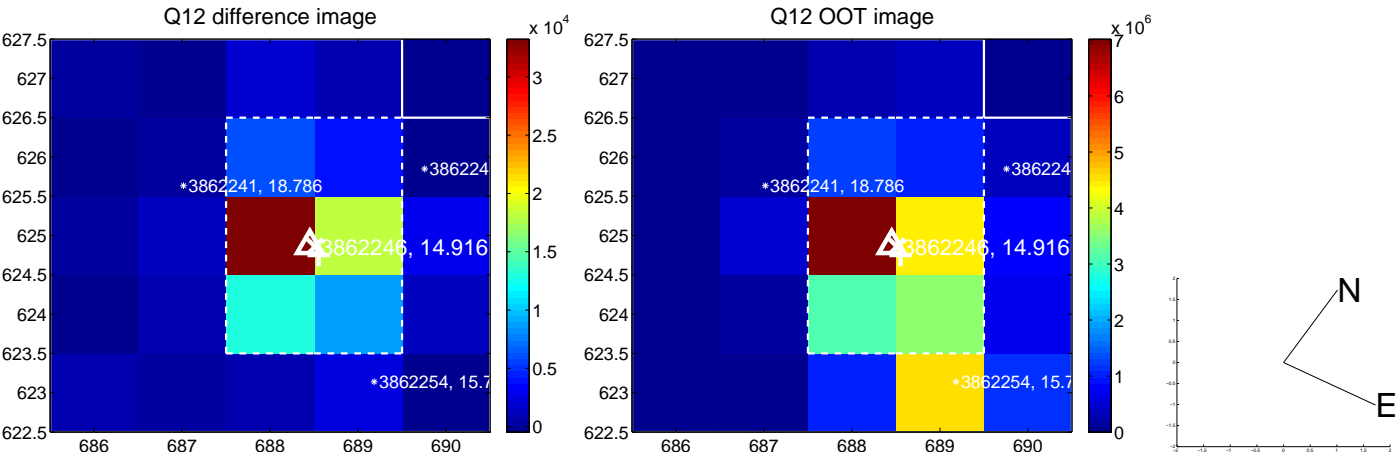
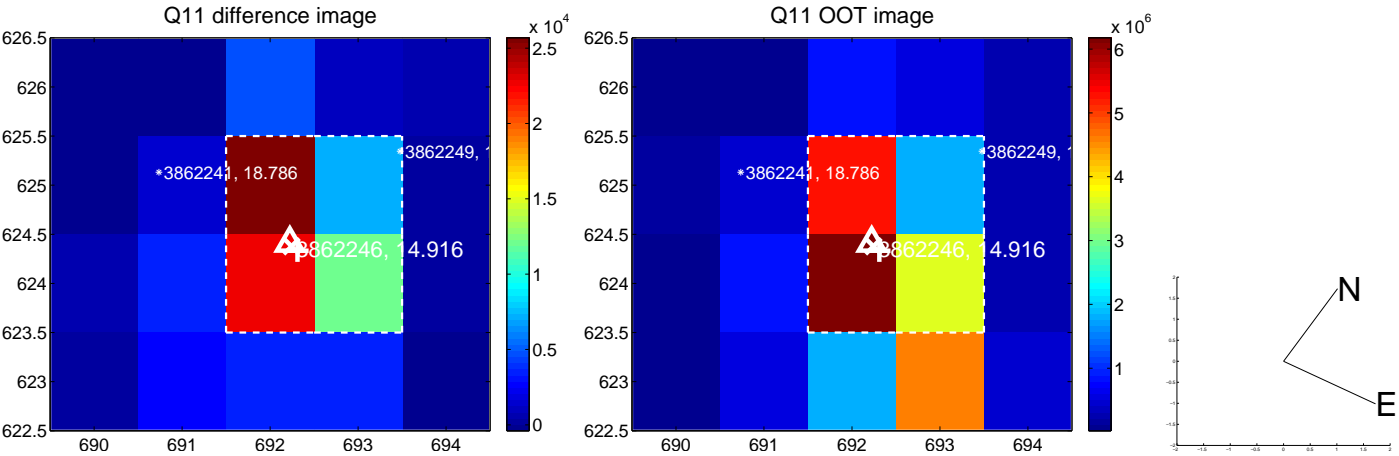
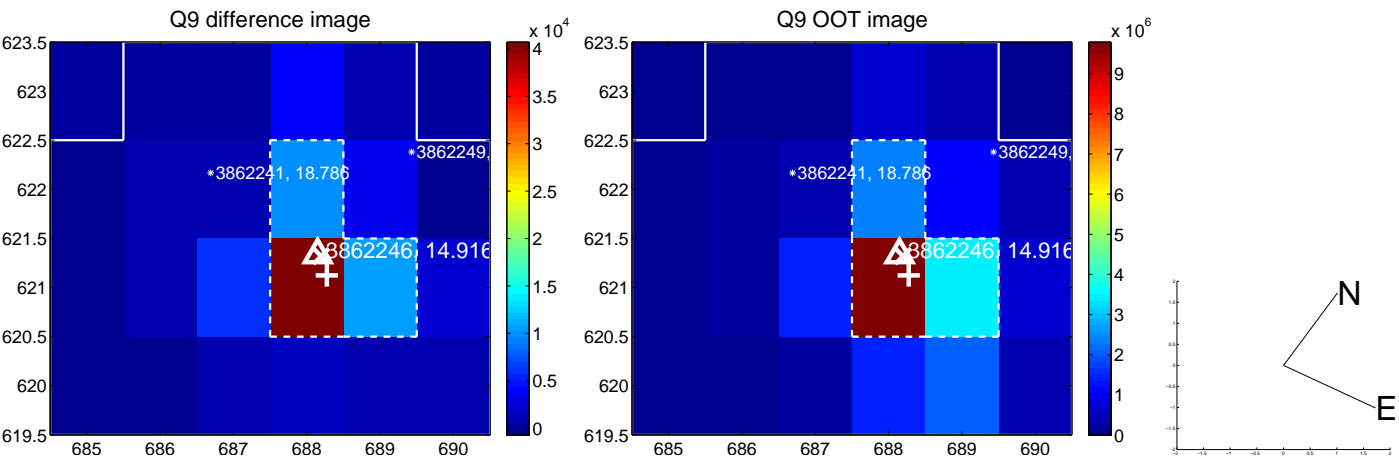
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



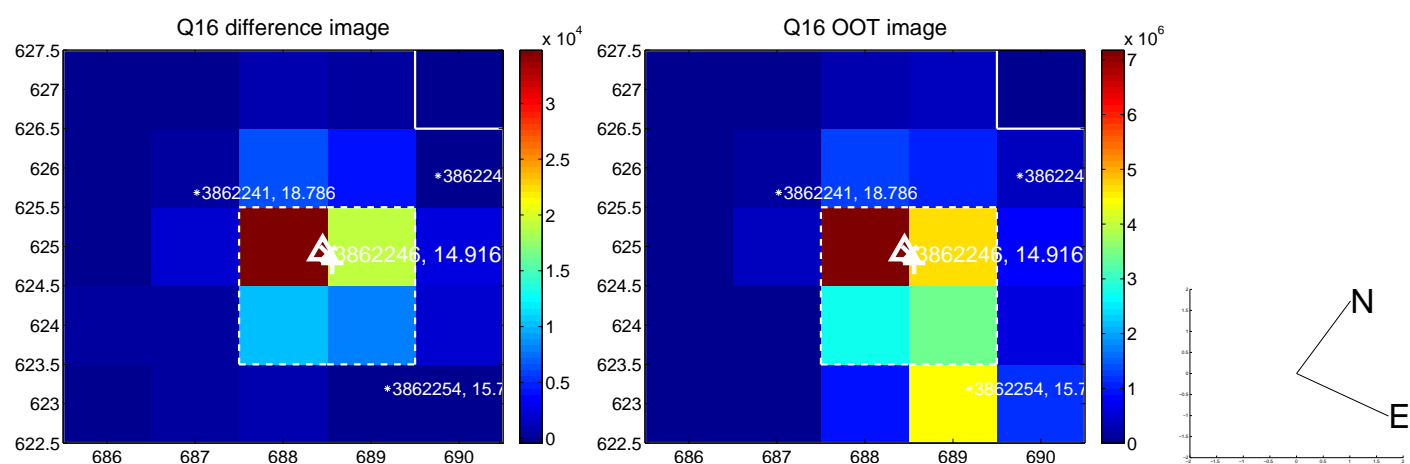
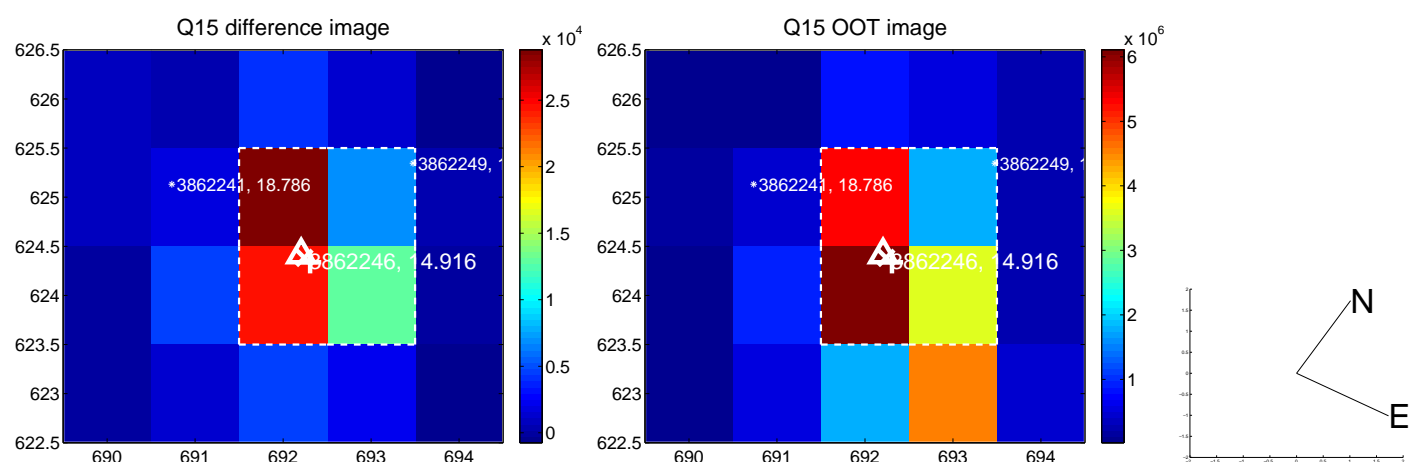
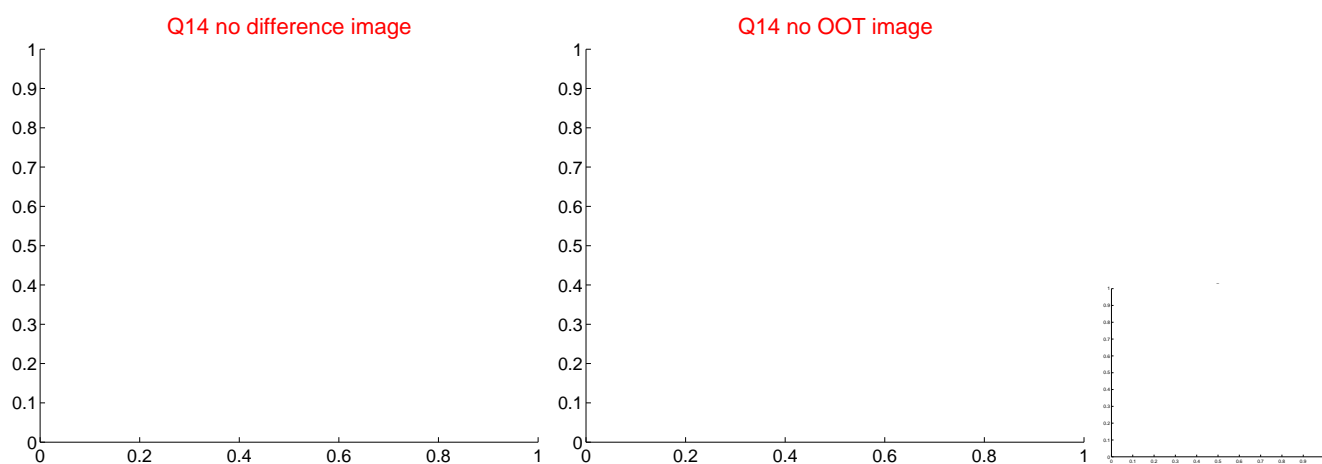
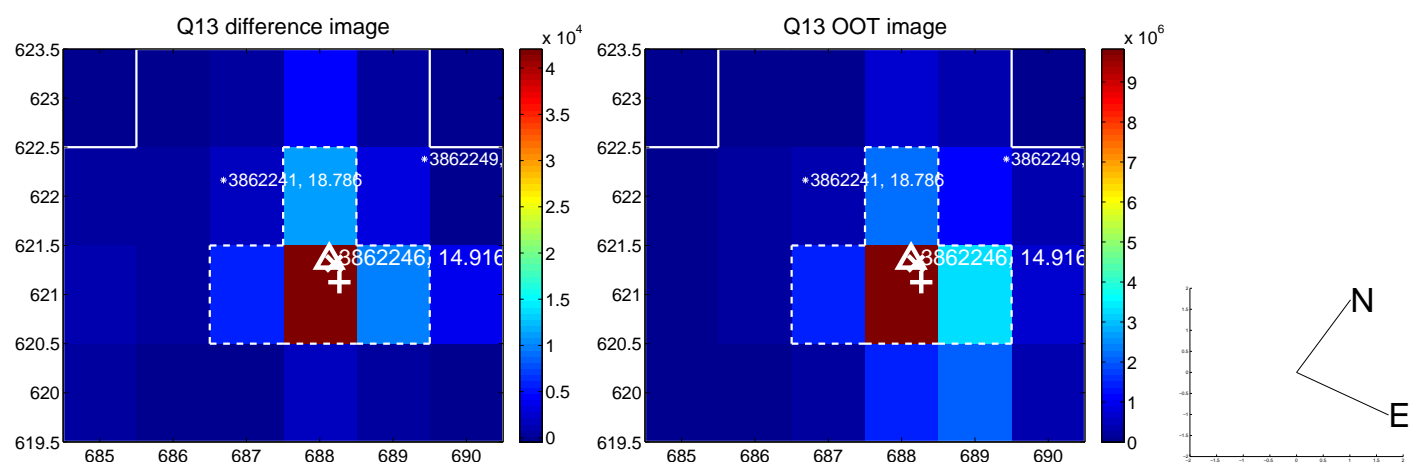
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



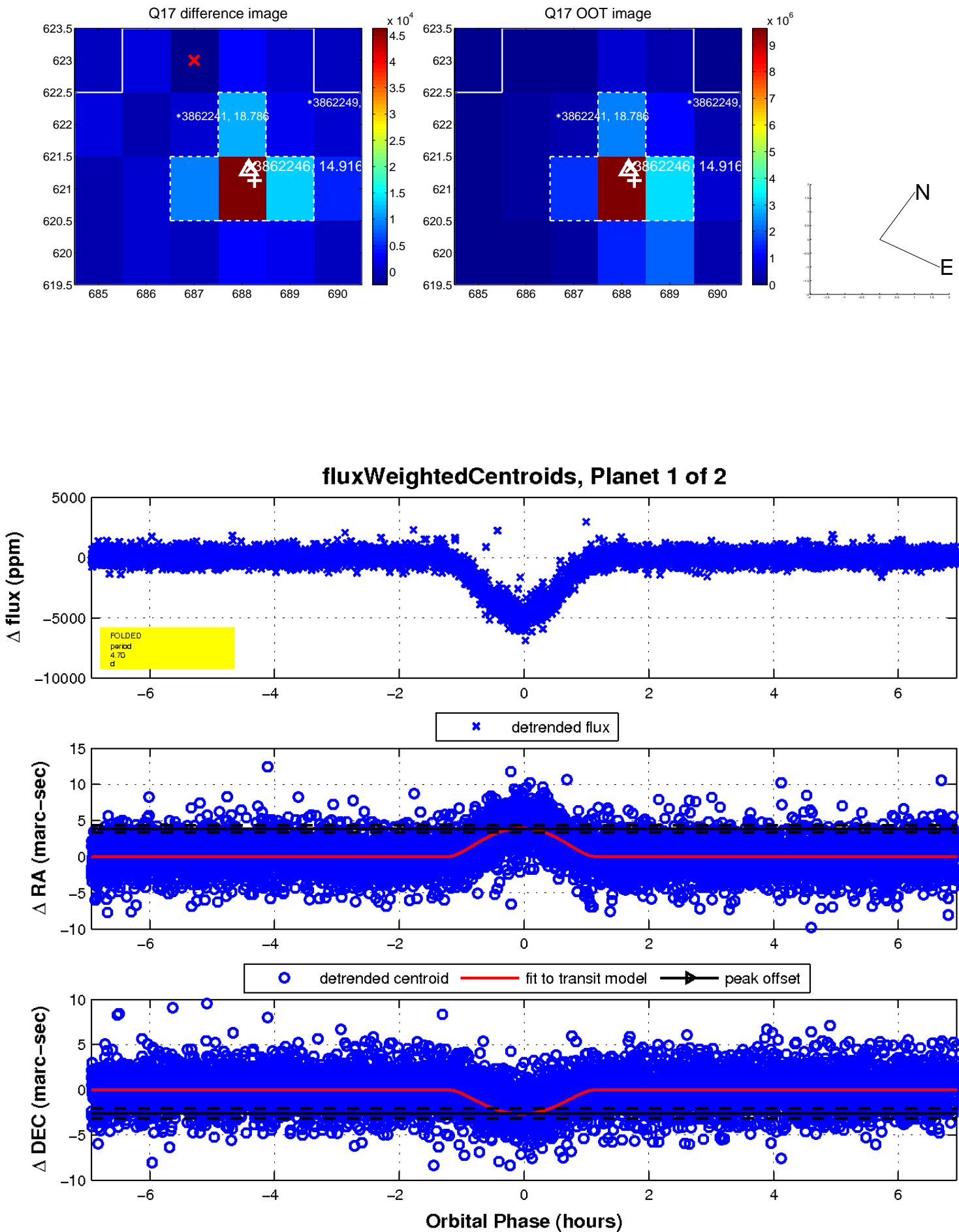
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

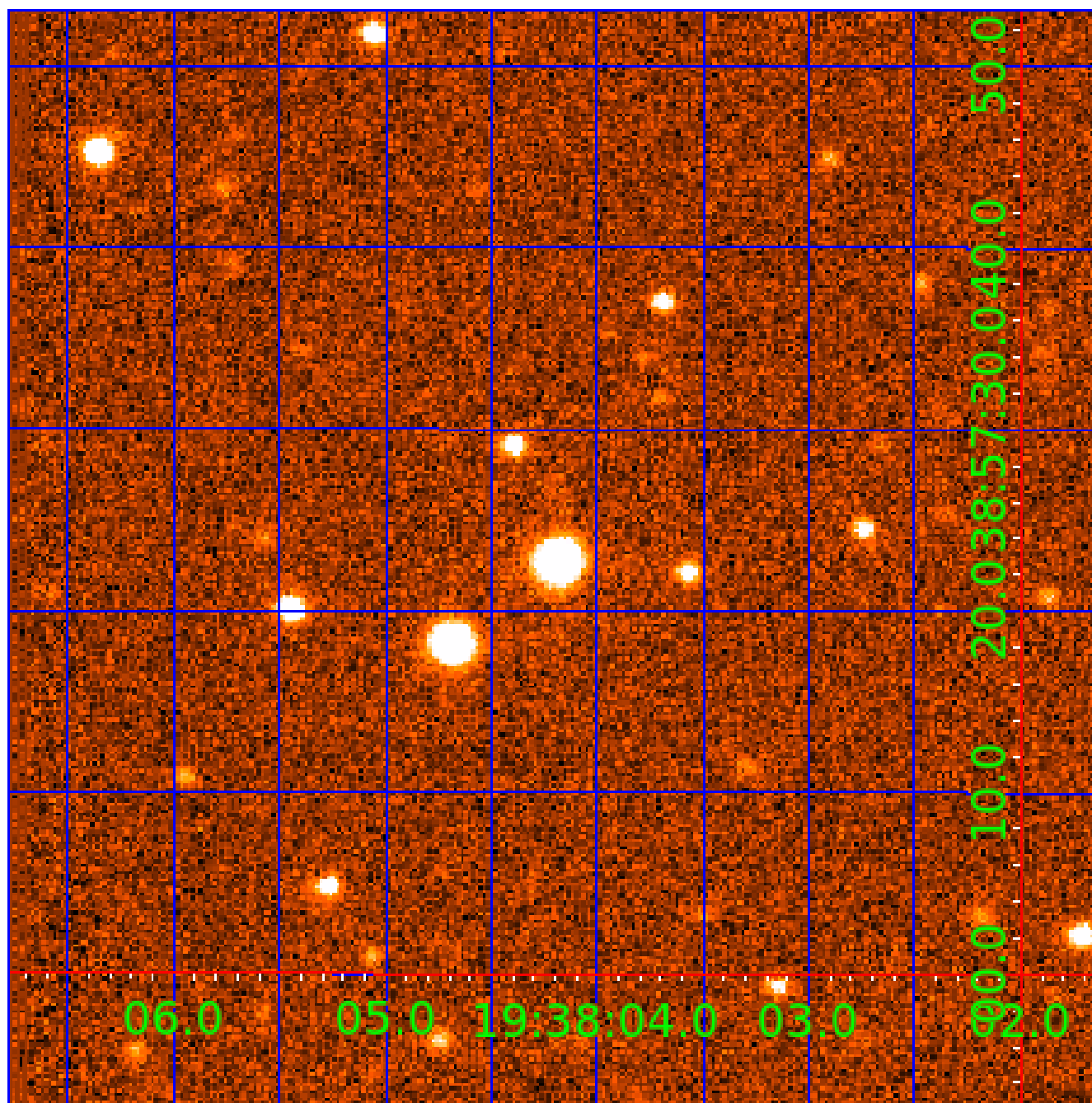


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003862246

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})
003862246-01	OBS	0230.01	4.702494	131.606255	4766.2	2.312	224.0	211.5	0.88	5408	9.20	219.58
003862246-02	OBS	No	4.702503	133.901911	632.6	2.117	25.3	28.8	0.88	5408	3.03	219.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003862246-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
003862246-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

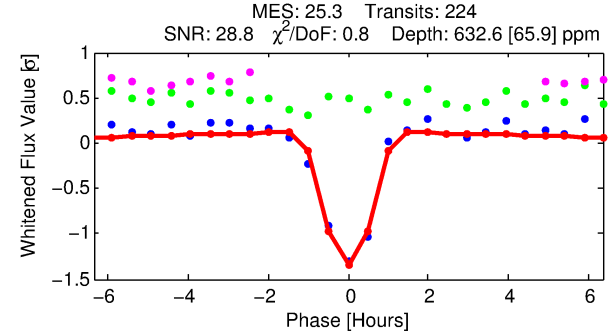
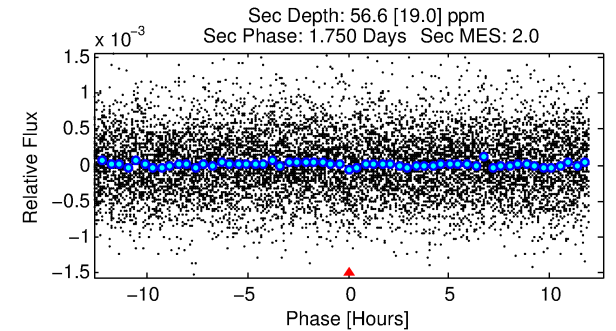
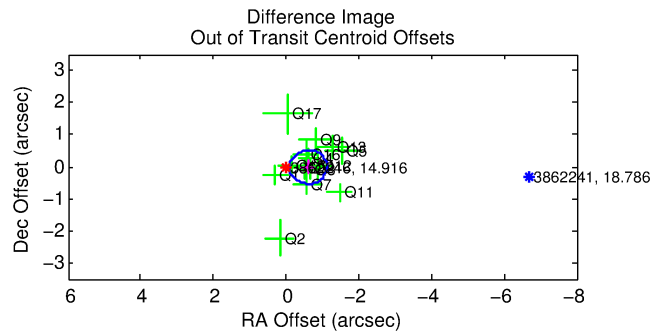
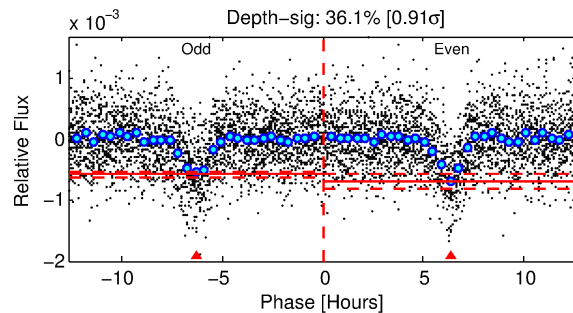
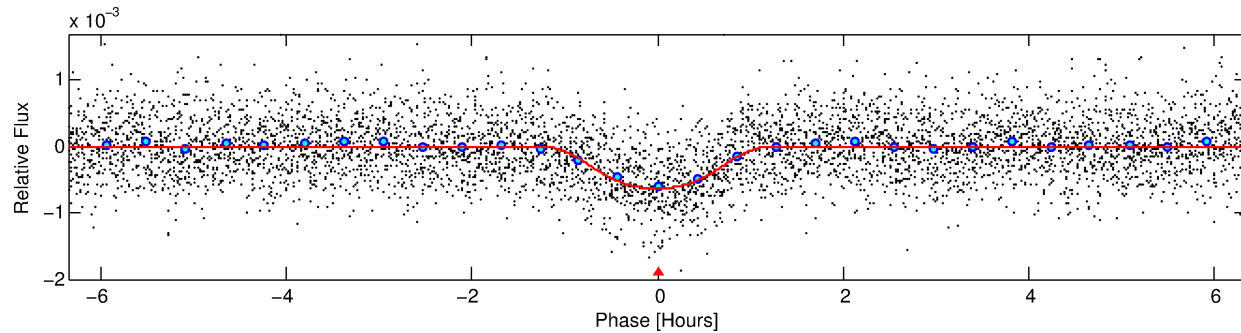
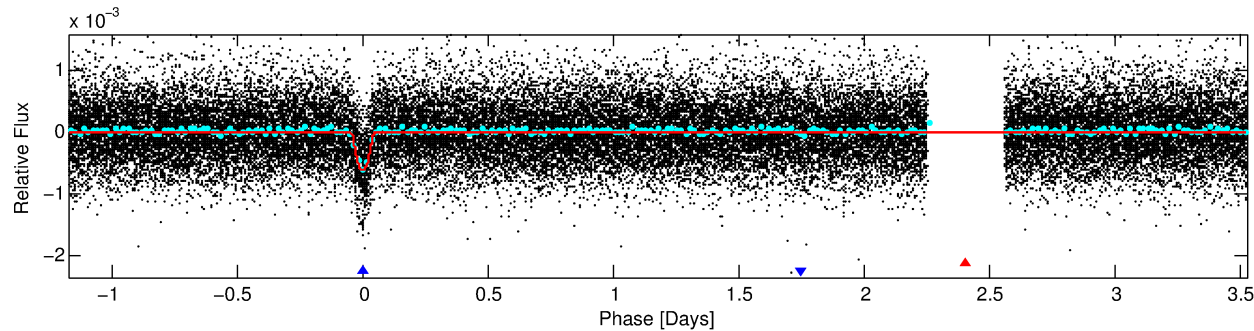
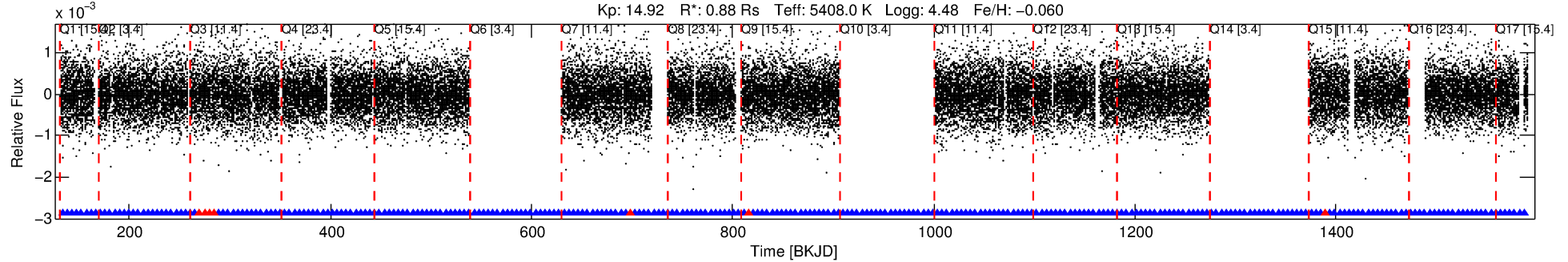
Ephemeris Match Information For 003862246-02

No Significant Match Found

DV One-Page Summary

KIC: 3862246 Candidate: 2 of 2 Period: 4.703 d
KOI: K00230 Corr: No Ephemeris Match

Kp: 14.92 R*: 0.88 Rs Teff: 5408.0 K Logg: 4.48 Fe/H: -0.060



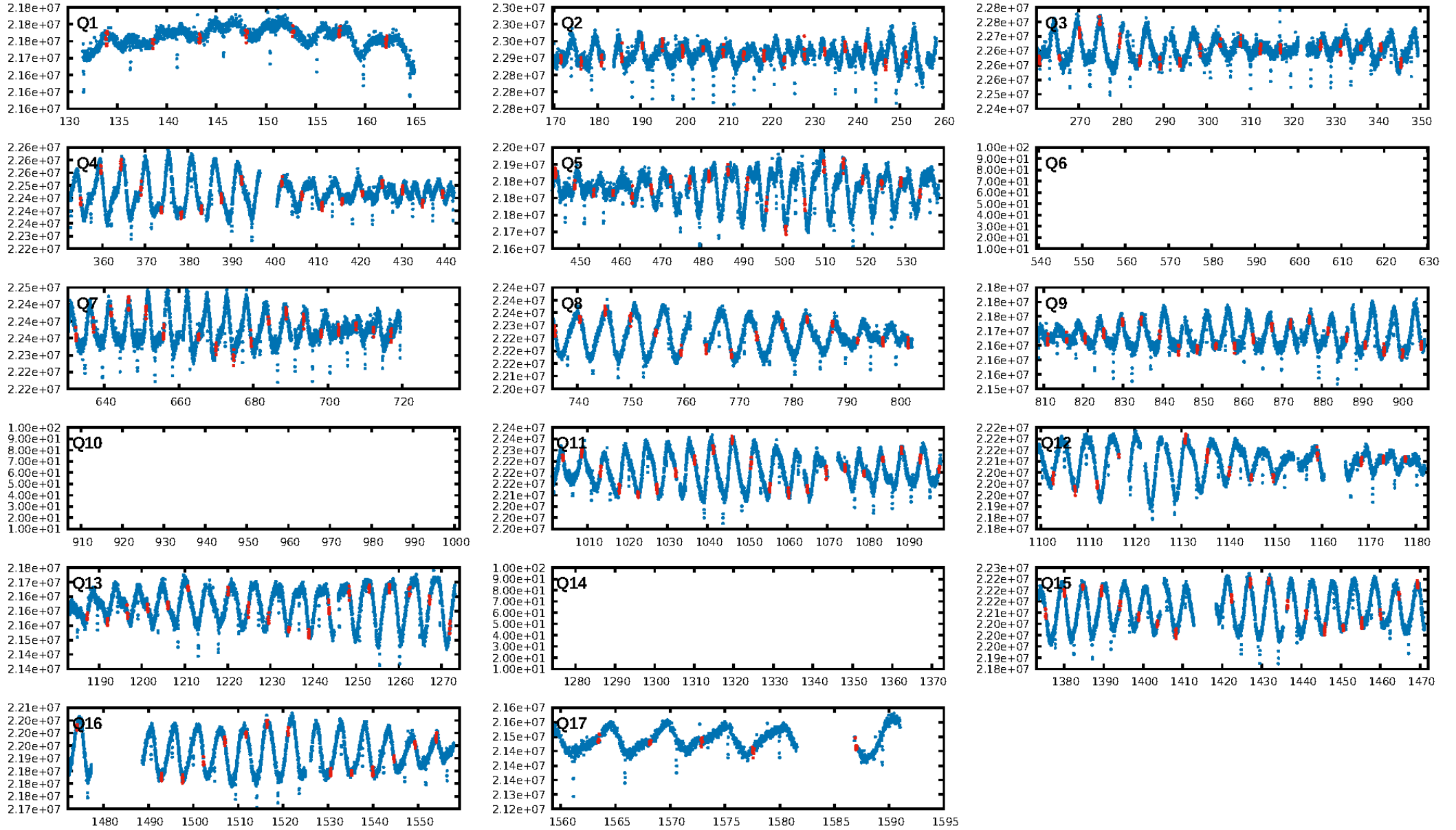
DV Fit Results:

Period = 4.70250 [0.00001] d
Epoch = 133.9019 [0.0013] BKJD
Rp/R* = 0.0316 [0.0034]
a/R* = 6.08 [0.76]
b = 0.97 [0.01]
Seff = 219.58 [60.82]
Teq = 982 [68] K
Rp = 3.03 [0.69] Re
a = 0.0519 [0.0088] AU
Ag = 9.13 [4.29] [1.89σ]
Teffp = 2638 [274] K [5.86σ]

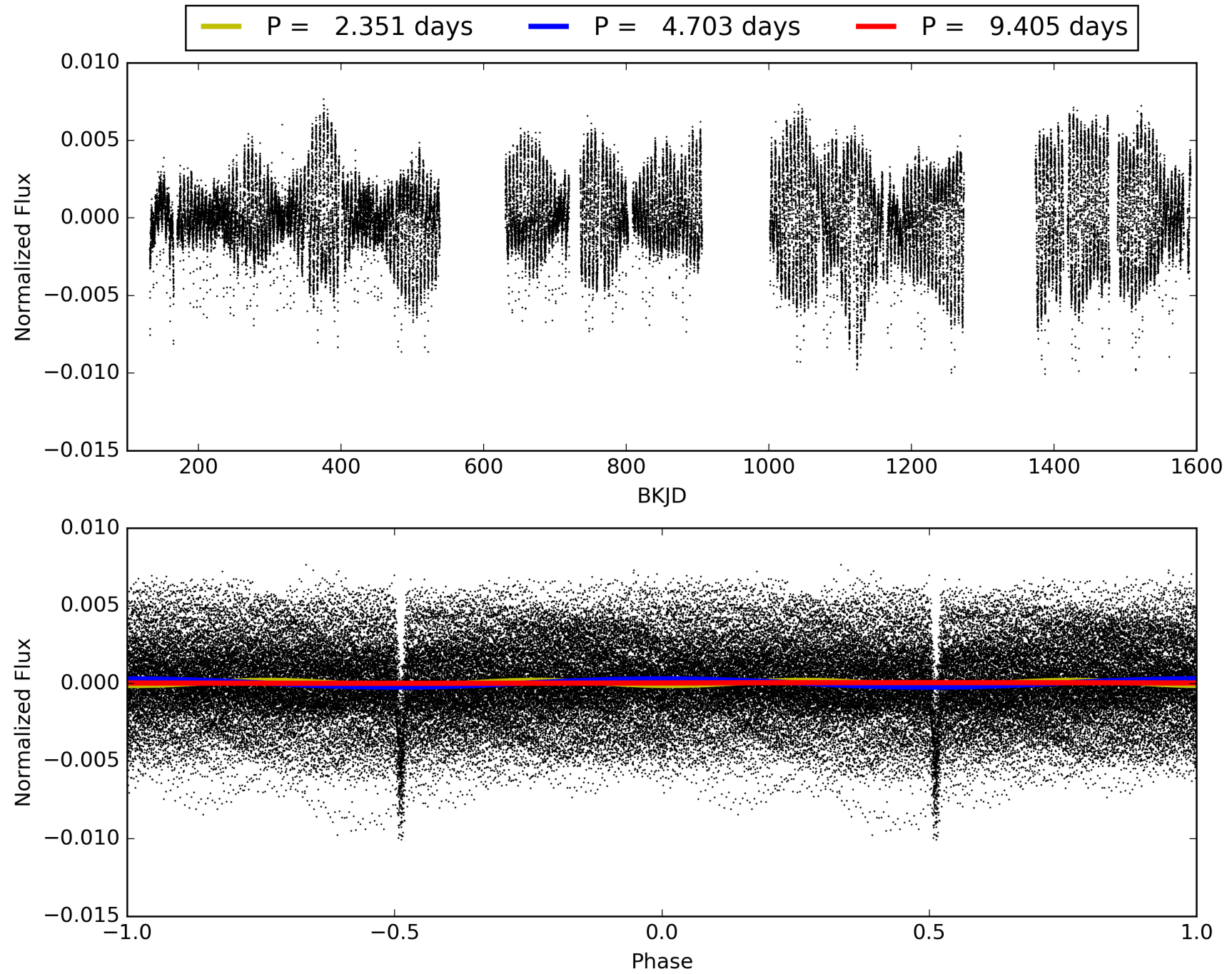
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.04e-137
RollingBand-fgt: 0.97 [205/212]
GhostDiagnostic-chr: 16.23
Centroid-sig: 0.0%
Centroid-so: 0.578 arcsec [1.49σ]
OotOffset-rm: 0.604 arcsec [3.47σ]
KicOffset-rm: 0.338 arcsec [1.84σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 0.93 [13/14]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 003862246-02, PDC Light Curves

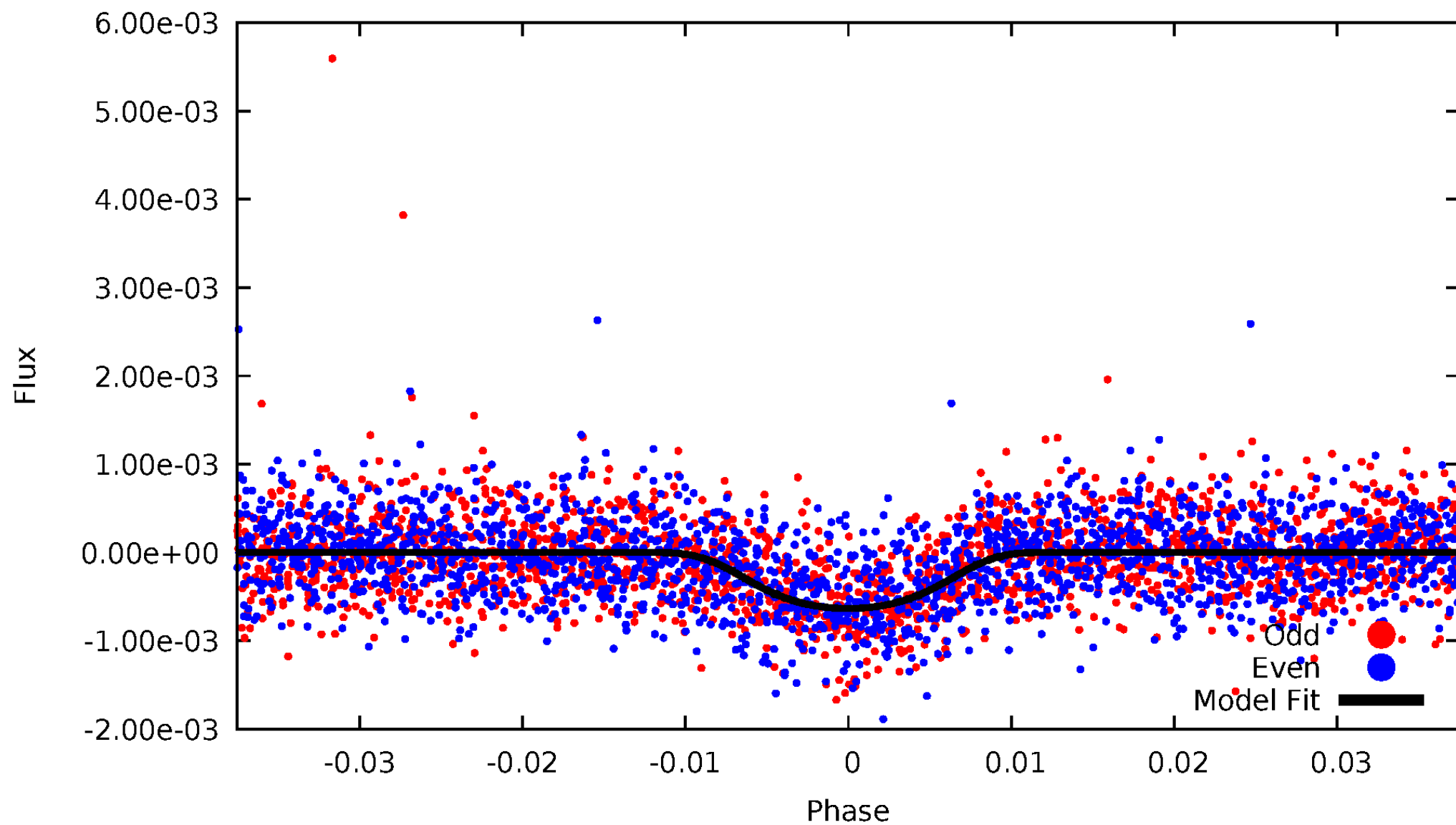


TCE 003862246-02



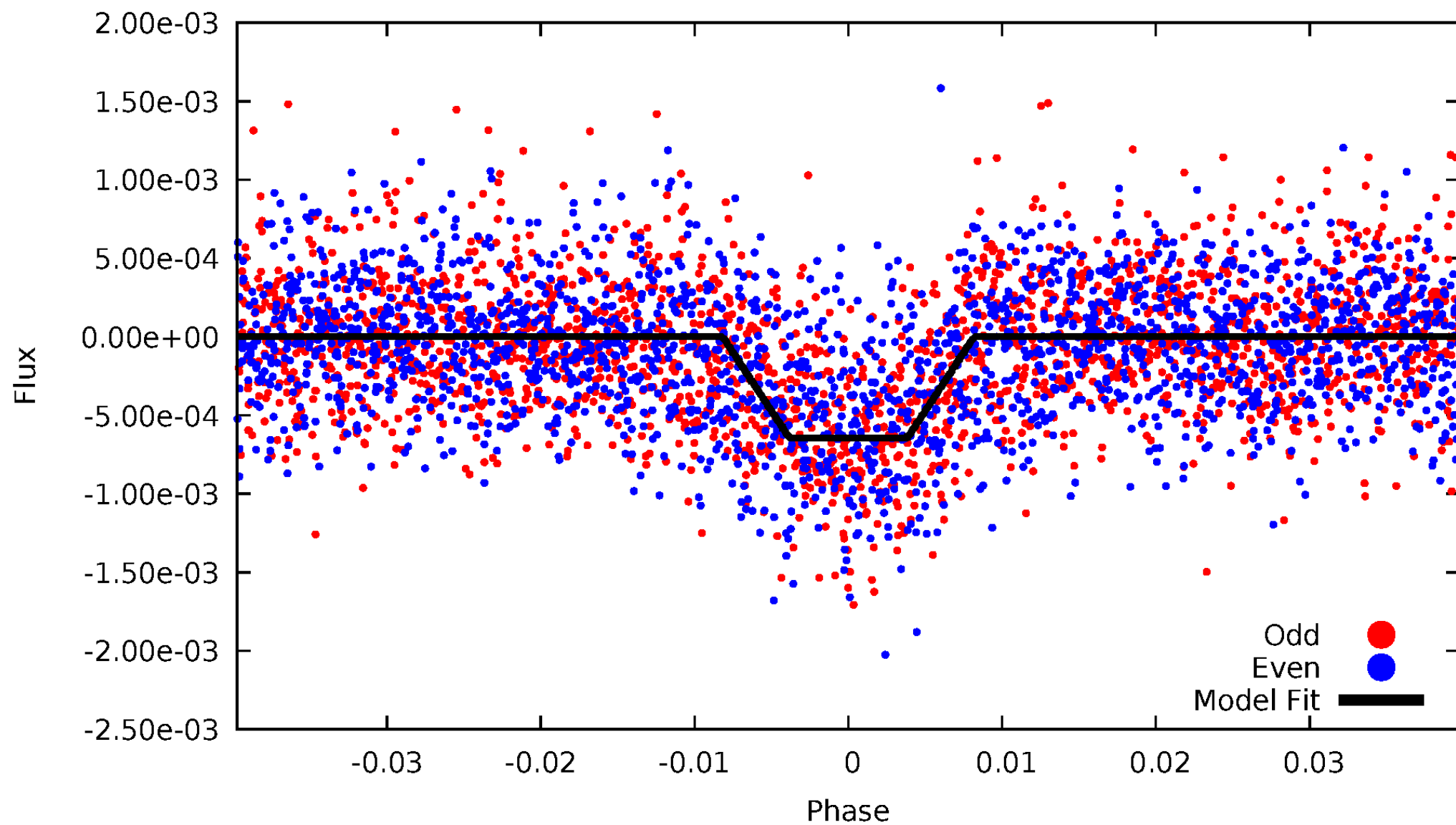
DV Odd/Even

TCE 003862246-02



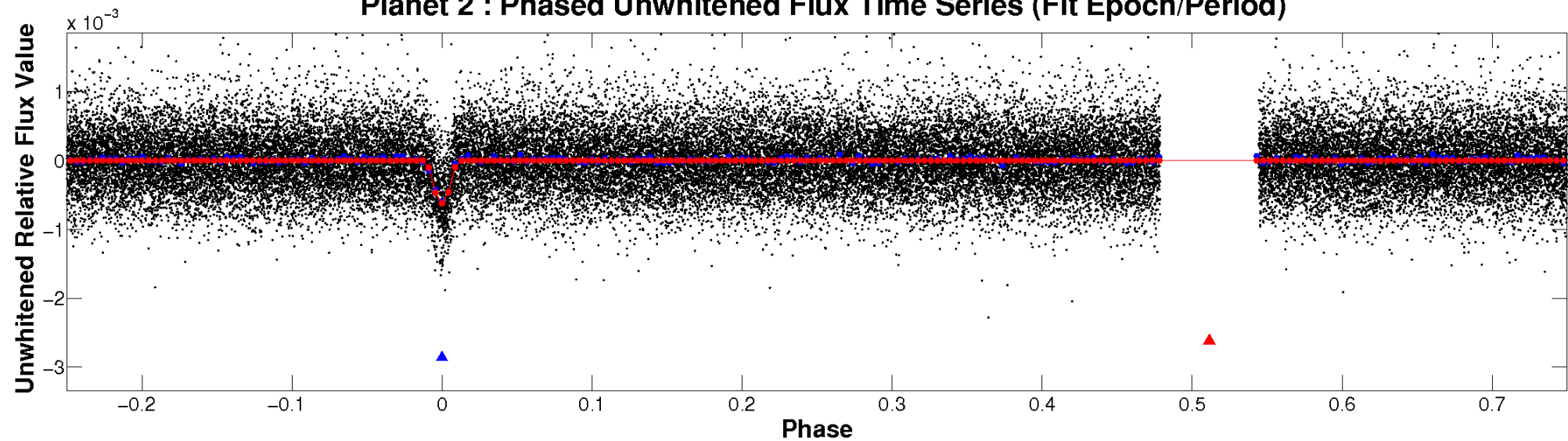
ALT Odd/Even

TCE 003862246-02

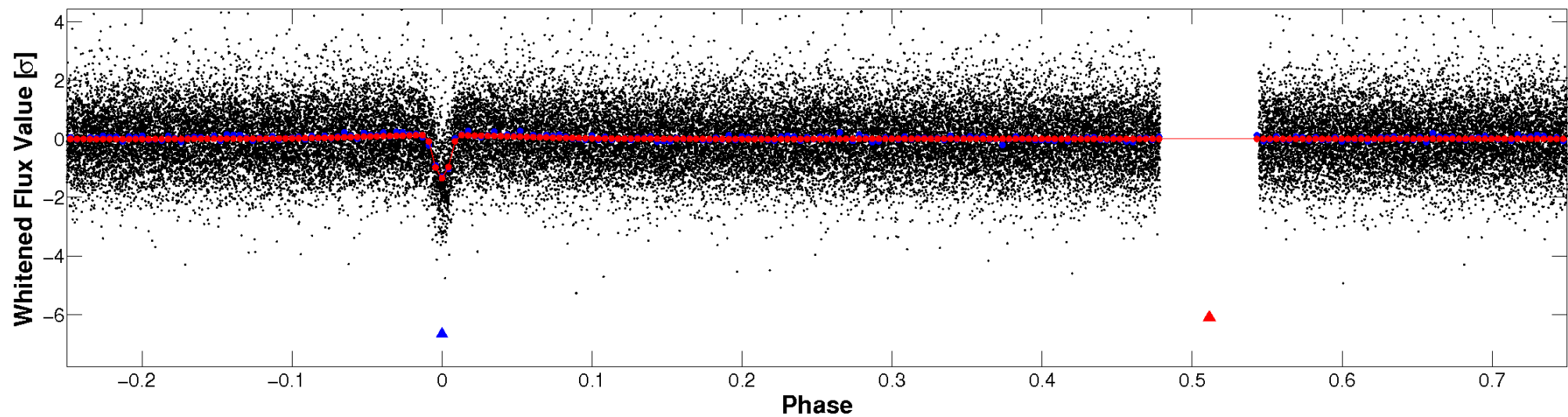


Non-Whitened Vs. Whitened Light Curve

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

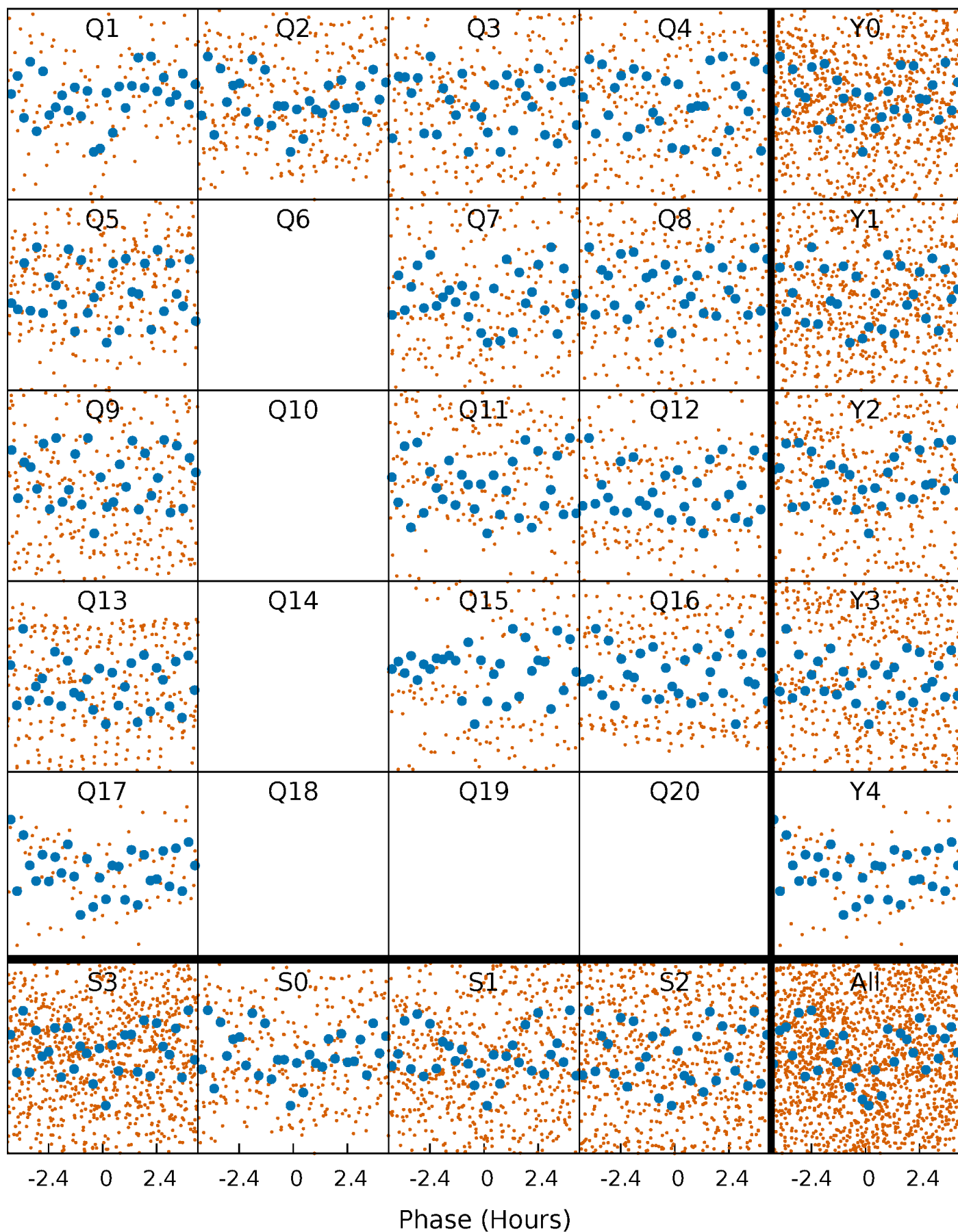


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 003862246-02 P= 4.702503 Days $T_0=133.901911$ (BKJD)



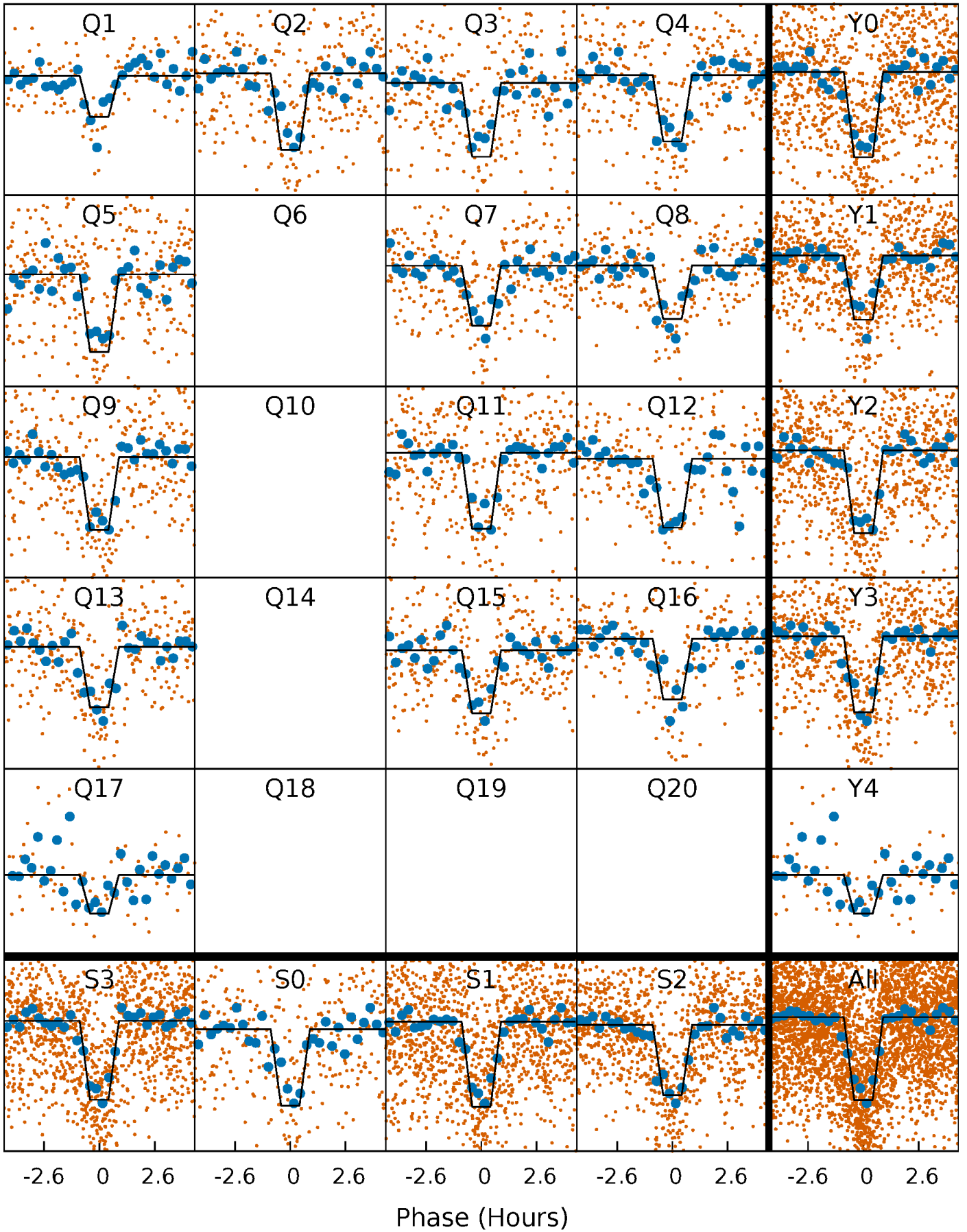
DV Quarter-Phased Transit Curves

TCE 003862246-02 P= 4.702503 Days $T_0=133.901911$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

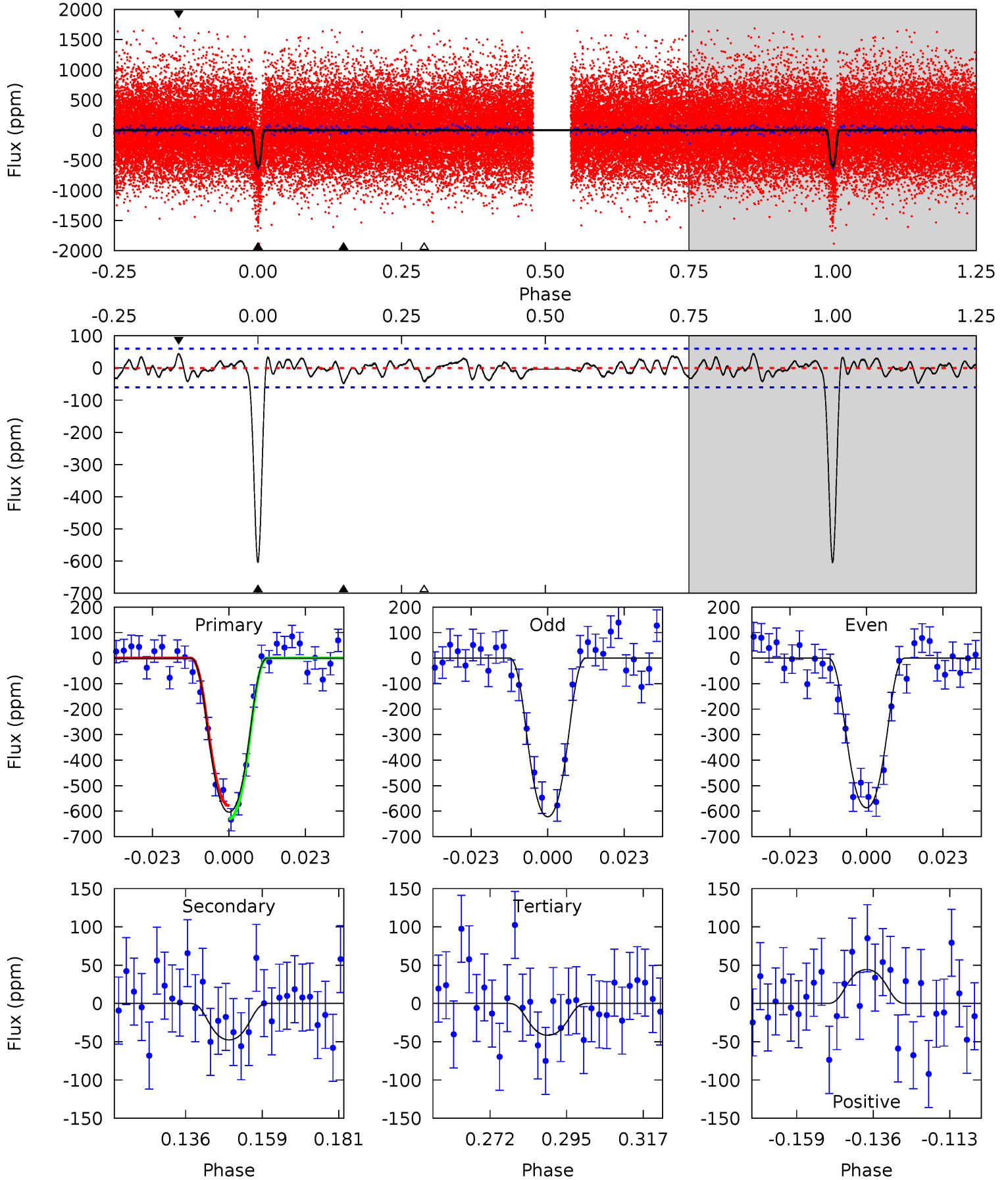
TCE 003862246-02 P= 4.702487 Days $T_0=133.904496$ (BKJD)



DV Model-Shift Uniqueness Test

003862246-02, P = 4.702503 Days, E = 129.199408 Days

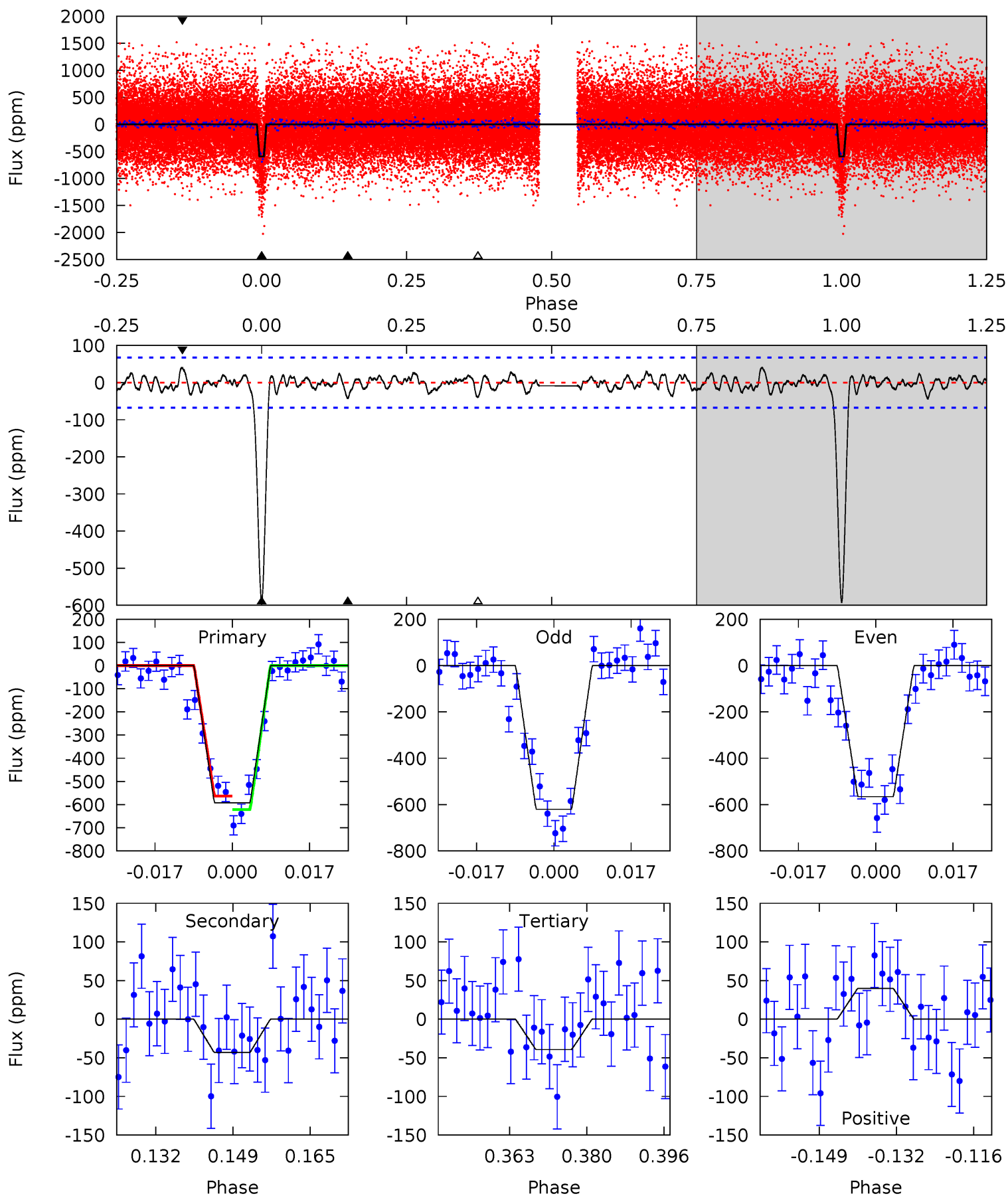
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
48.9	3.85	3.37	3.59	4.87	2.28	1.41	45.5	45.3	0.49	0.27	1.43	1.04	0.07	2.11



Alt Model-Shift Uniqueness Test

003862246-02, P = 4.702487 Days, E = 129.202009 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
43.3	3.15	2.87	2.90	4.93	2.40	1.04	40.5	40.4	0.28	0.25	1.99	1.04	0.06	2.16



Stellar Parameters For KIC 003862246

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5408^{+161}_{-145}	$4.476^{+0.092}_{-0.138}$	$-0.060^{+0.300}_{-0.300}$	$0.878^{+0.175}_{-0.102}$	$0.842^{+0.098}_{-0.071}$	$1.753^{+0.691}_{-0.689}$
	+3%/-3%	+2%/-3%	+500%/-500%	+20%/-12%	+12%/-8%	+39%/-39%
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 003862246-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-48 ± 12	$3.05^{+0.48}_{-0.39}$	1380^{+79}_{-61}	3123^{+171}_{-165}	$7.650^{+3.221}_{-2.549}$
Alt.	-43 ± 14	$2.50^{+0.42}_{-0.39}$	1387^{+70}_{-69}	3264^{+236}_{-227}	$9.991^{+5.726}_{-3.765}$

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 $A_{obs} \gg 1.0$

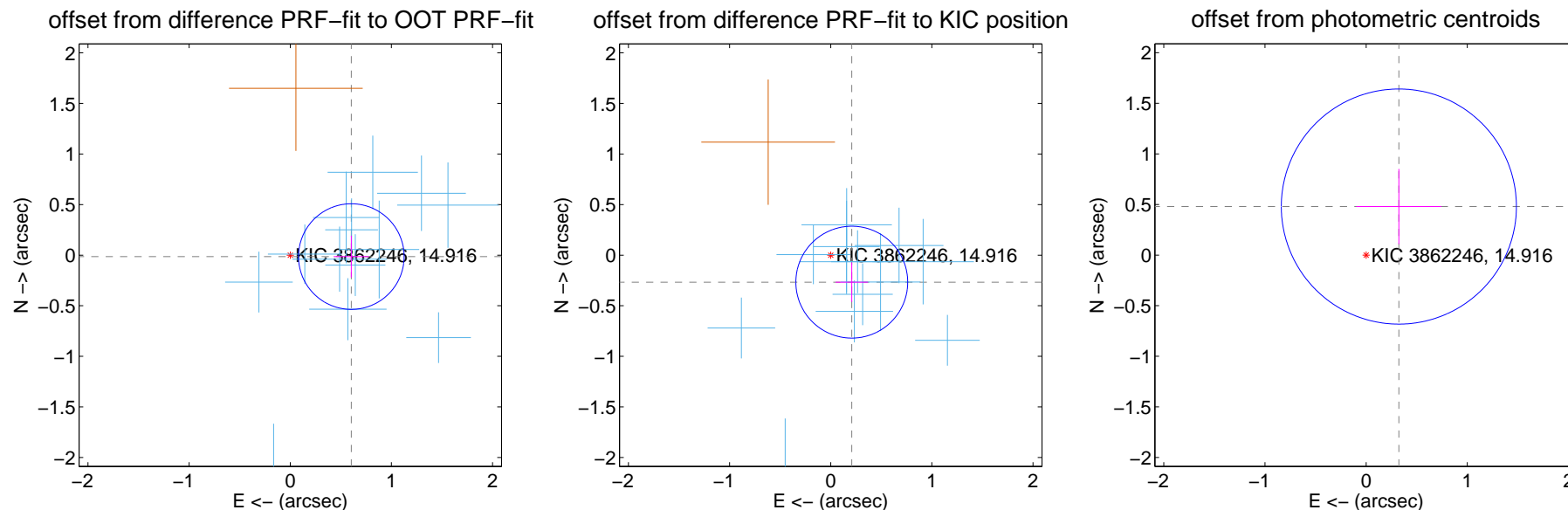
DV Centroid Data

Supplemental centroid analysis for 003862246-02. Kepler magnitude: 14.92. Transit SNR 28.79

There are 13 quarters with good PRF difference image offsets

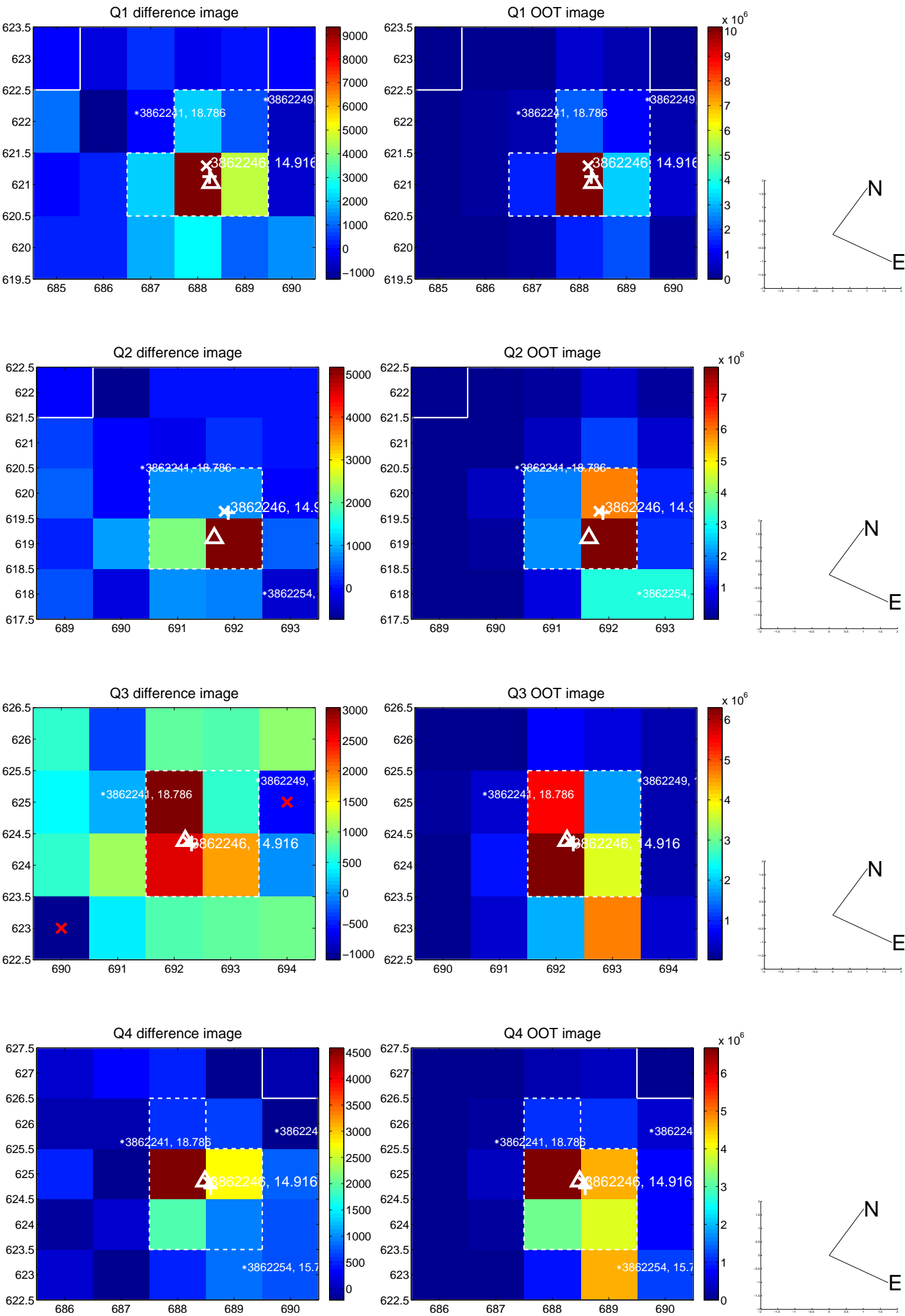
The direct PRF centroid is offset from the target star catalog position by about 0.86 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.604 ± 0.174	3.47	-0.603 ± 0.174	-0.014 ± 0.206
PRF-fit source offset from KIC position	0.338 ± 0.184	1.84	-0.208 ± 0.160	-0.267 ± 0.195
photometric centroid source offset	0.58 ± 0.39	1.49	-0.32 ± 0.42	0.48 ± 0.37

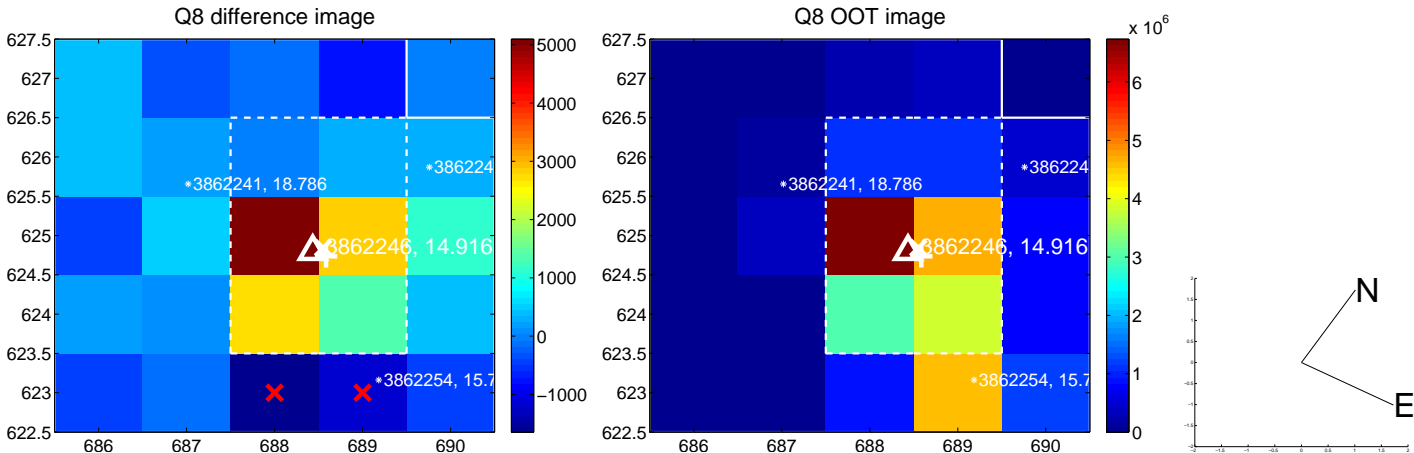
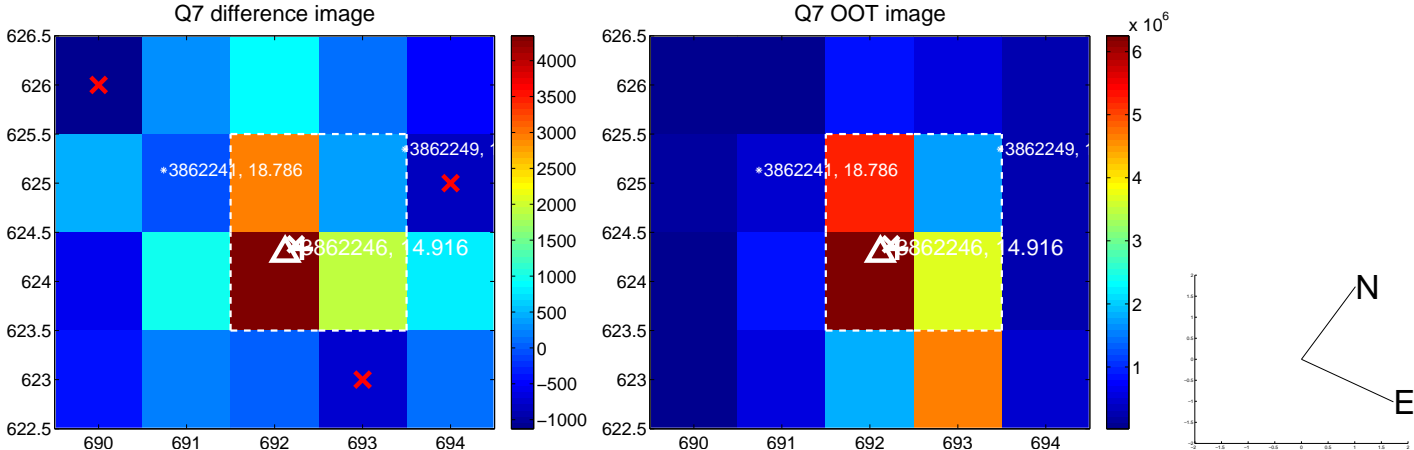
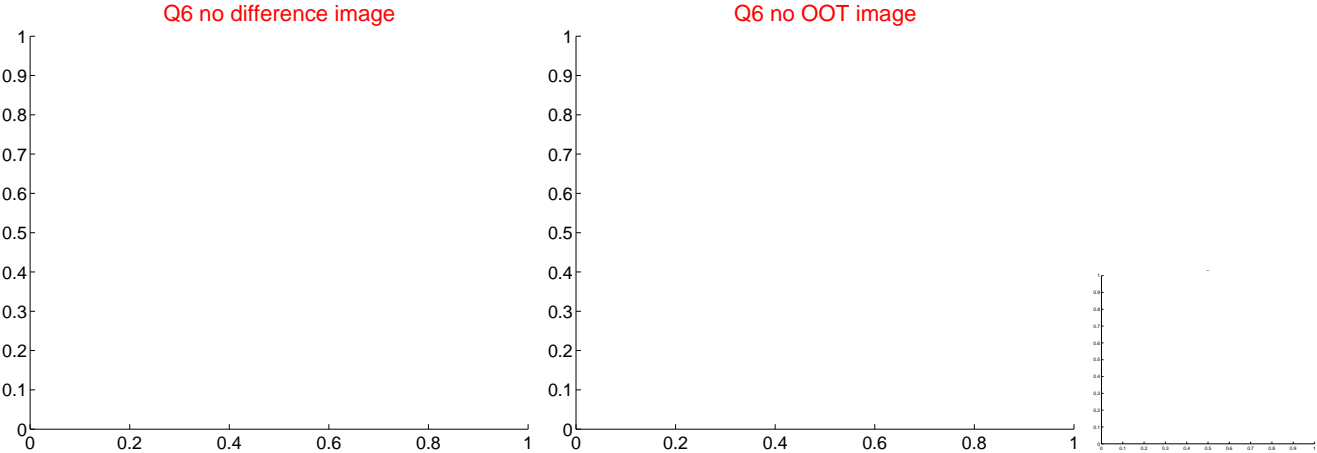
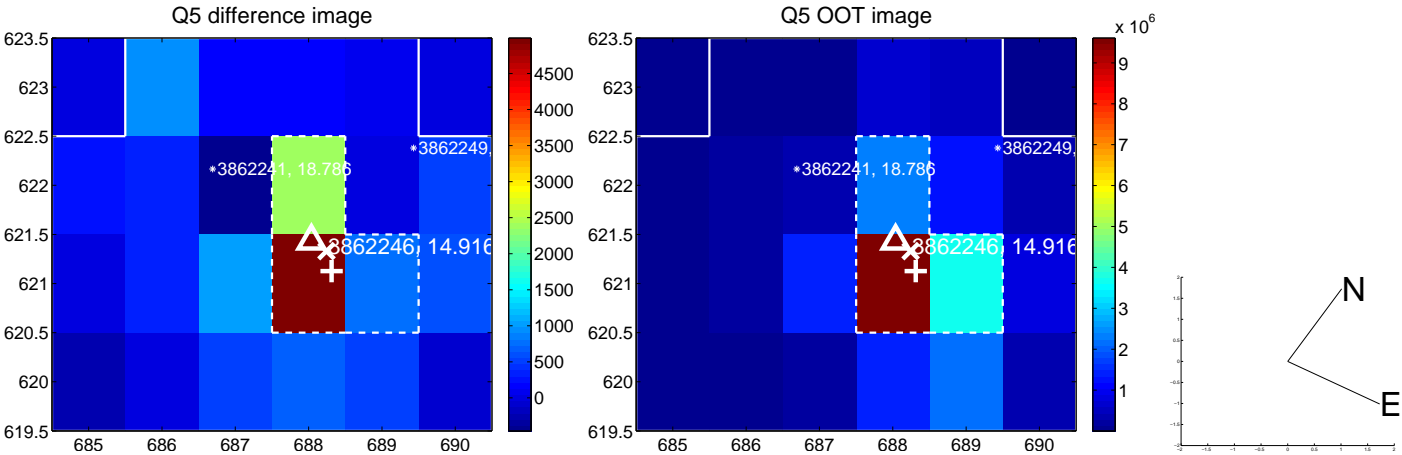


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

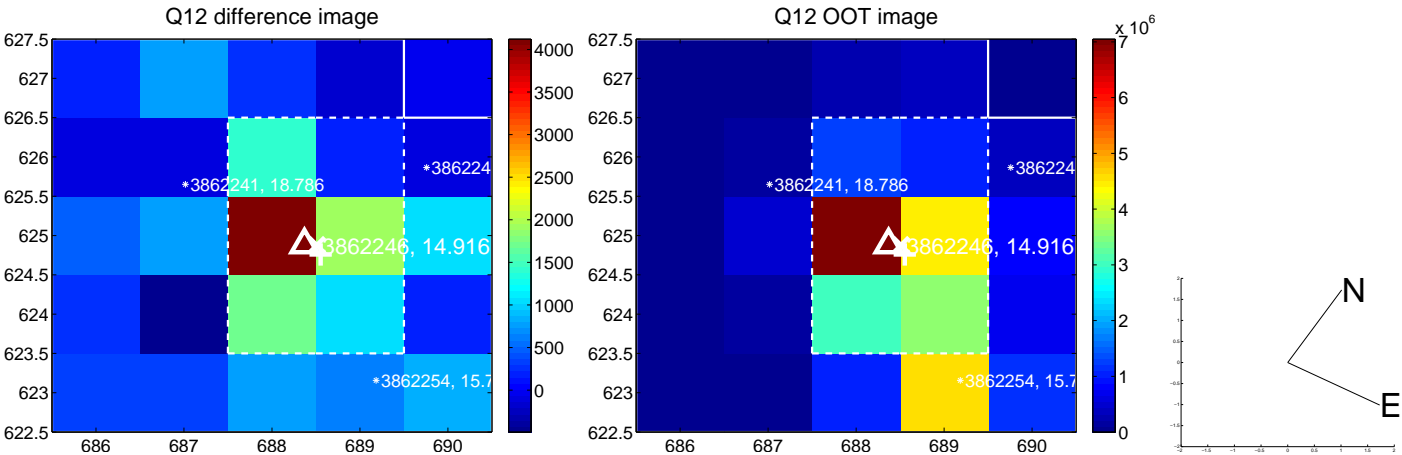
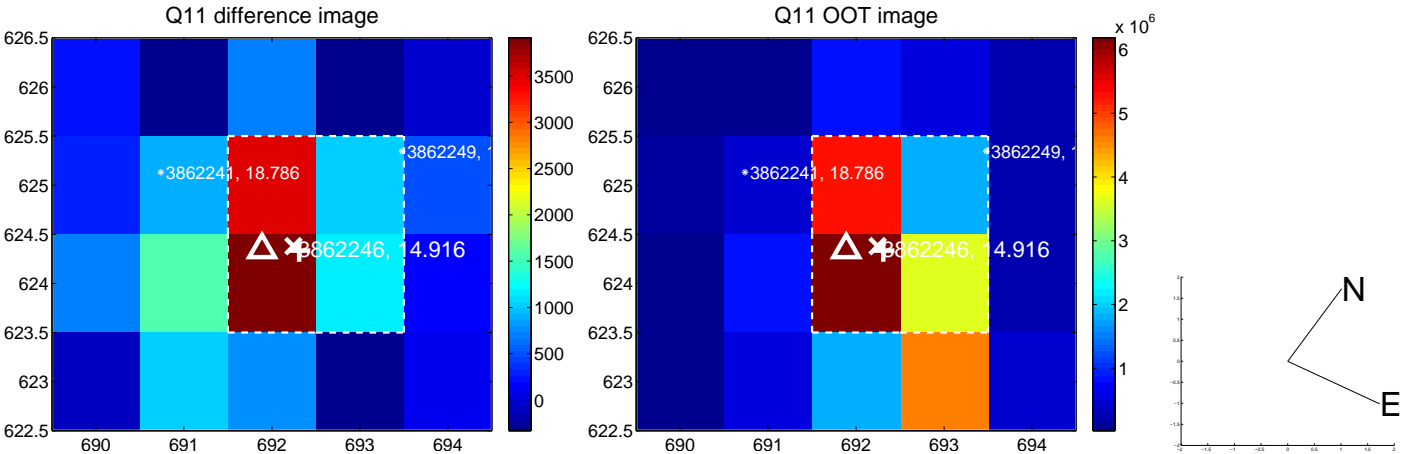
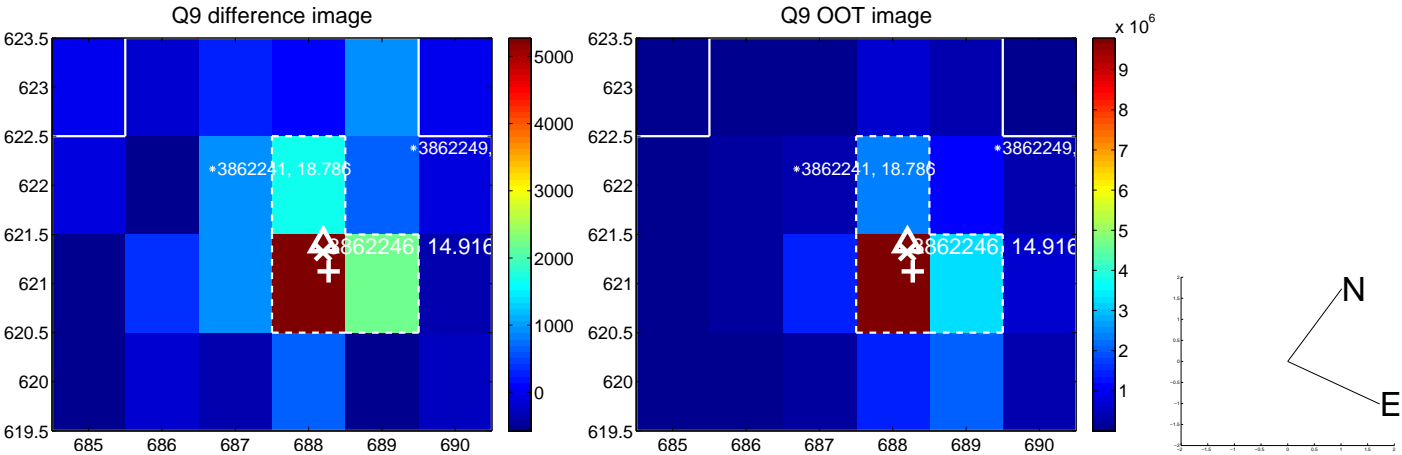
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



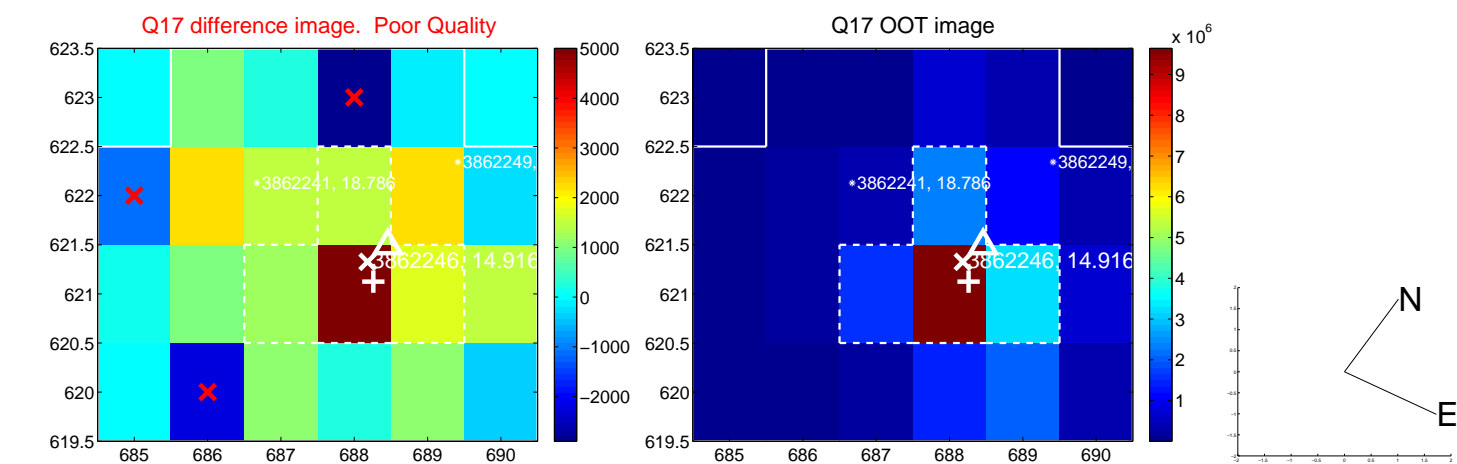
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



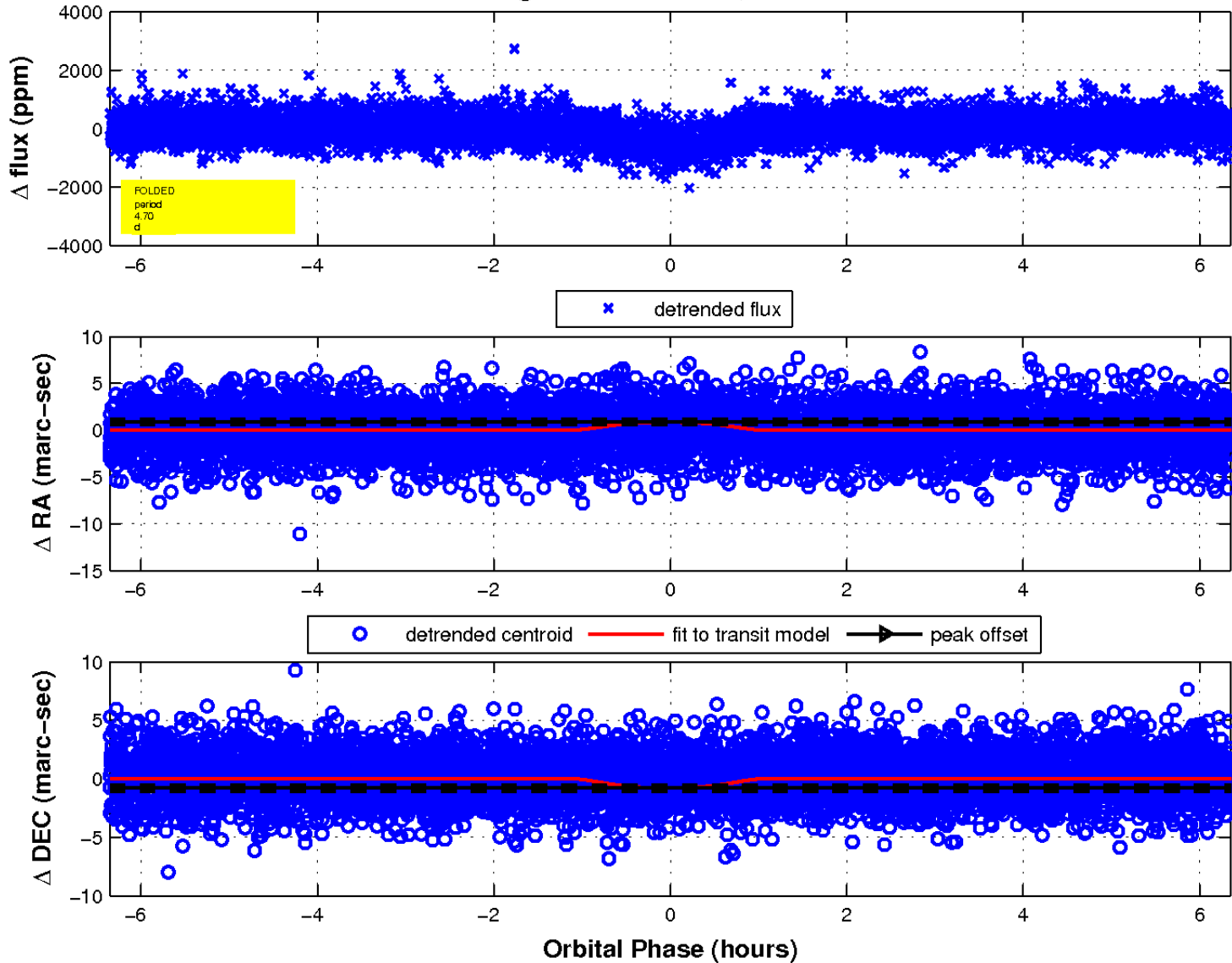
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

