

KIC 003231120

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})
003231120-01	OBS	3643.01	3.900105	133.382028	123798.2	3.898	1564.7	1095.7	0.97	5791	38.67	428.57
003231120-02	OBS	No	1.950043	133.386919	9422.3	3.677	119.9	118.4	0.97	5791	11.40	1079.94

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003231120-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_KIC_POS
003231120-02	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.

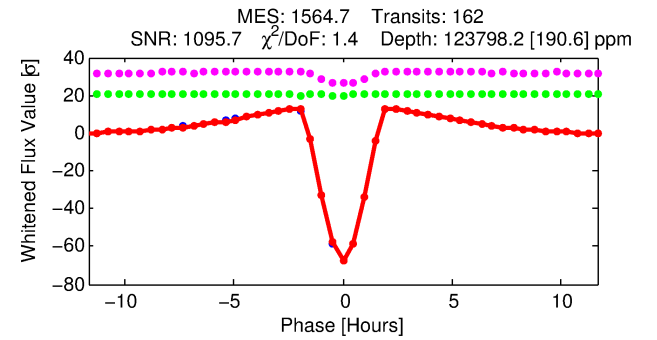
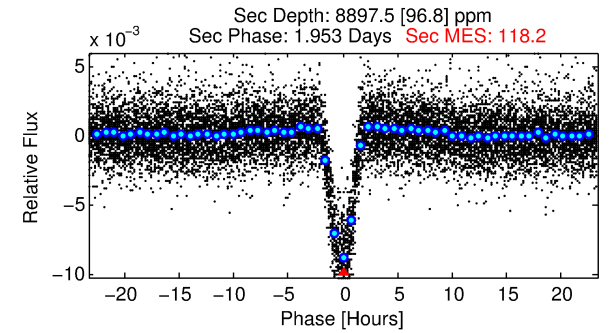
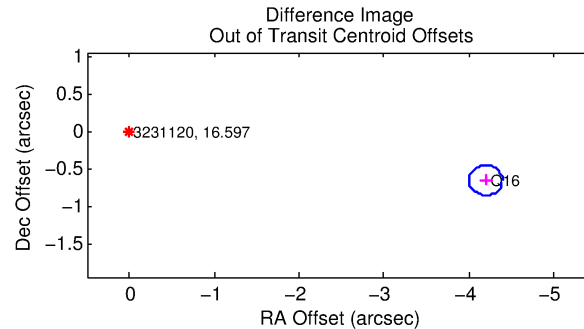
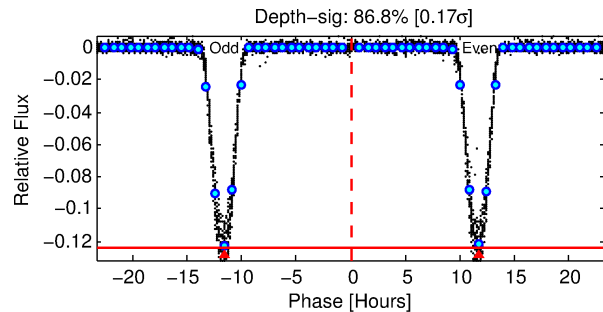
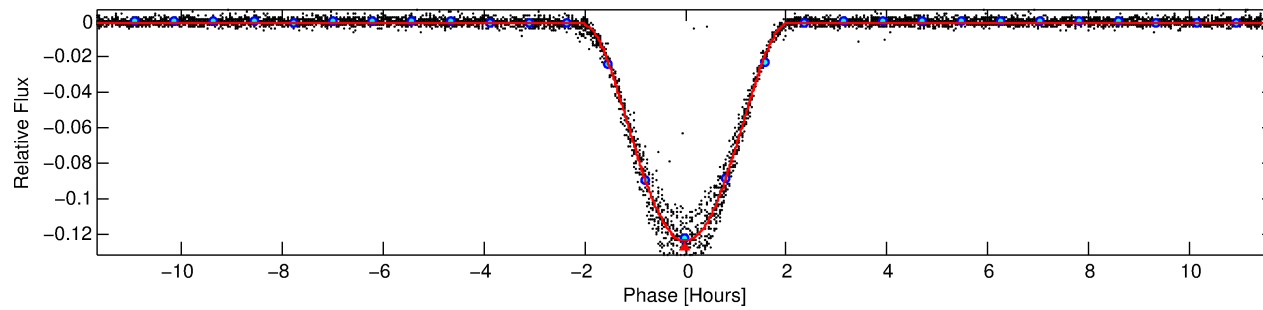
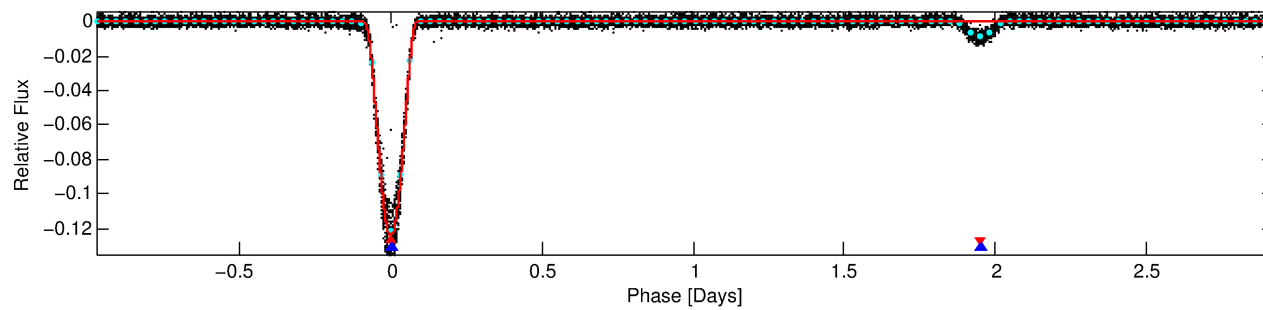
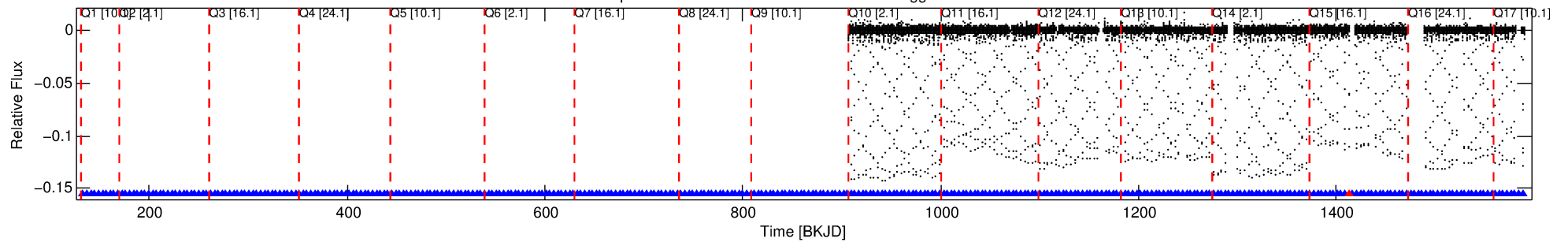
Ephemeris Match Information For 003231120-01

No Significant Match Found

DV One-Page Summary

KIC: 3231120 Candidate: 1 of 2 Period: 3.900 d
KOI: K03643.01 Corr: 0.995

Kp: 16.60 R*: 0.97 Rs Teff: 5791.0 K Logg: 4.42 Fe/H: -0.180



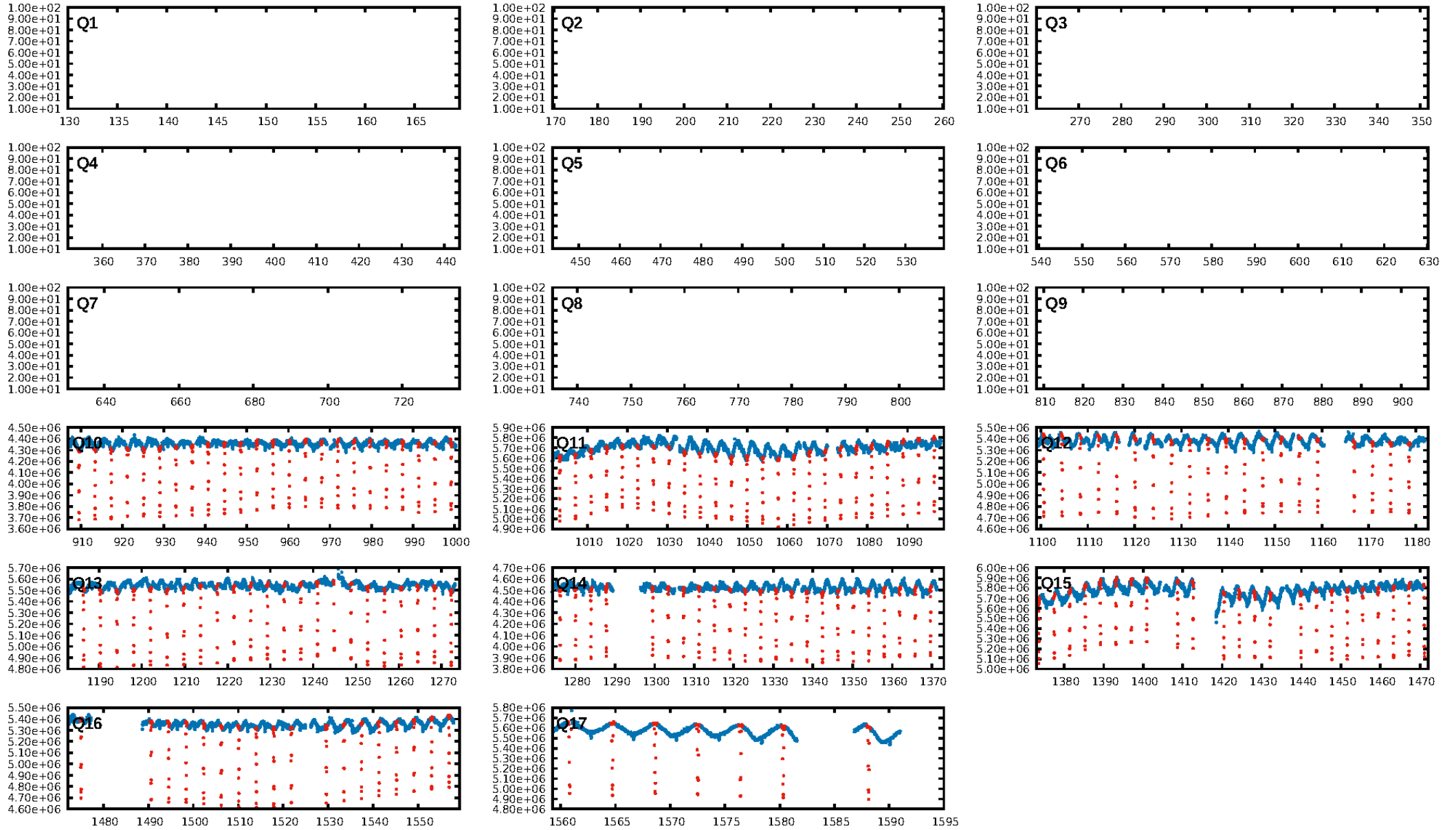
DV Fit Results:

Period = 3.90010 [0.00000] d
Epoch = 133.3820 [0.0001] BKJD
Rp/R* = 0.3657 [0.0026]
a/R* = 8.99 [0.02]
b = 0.71 [0.01]
Seff = 428.57 [154.15]
Teq = 1160 [104] K
Rp = 38.67 [10.98] Re
a = 0.0470 [0.0110] AU
Ag = 7.23 [2.42] [2.57σ]
Teffp = 2941 [97] K [12.48σ]

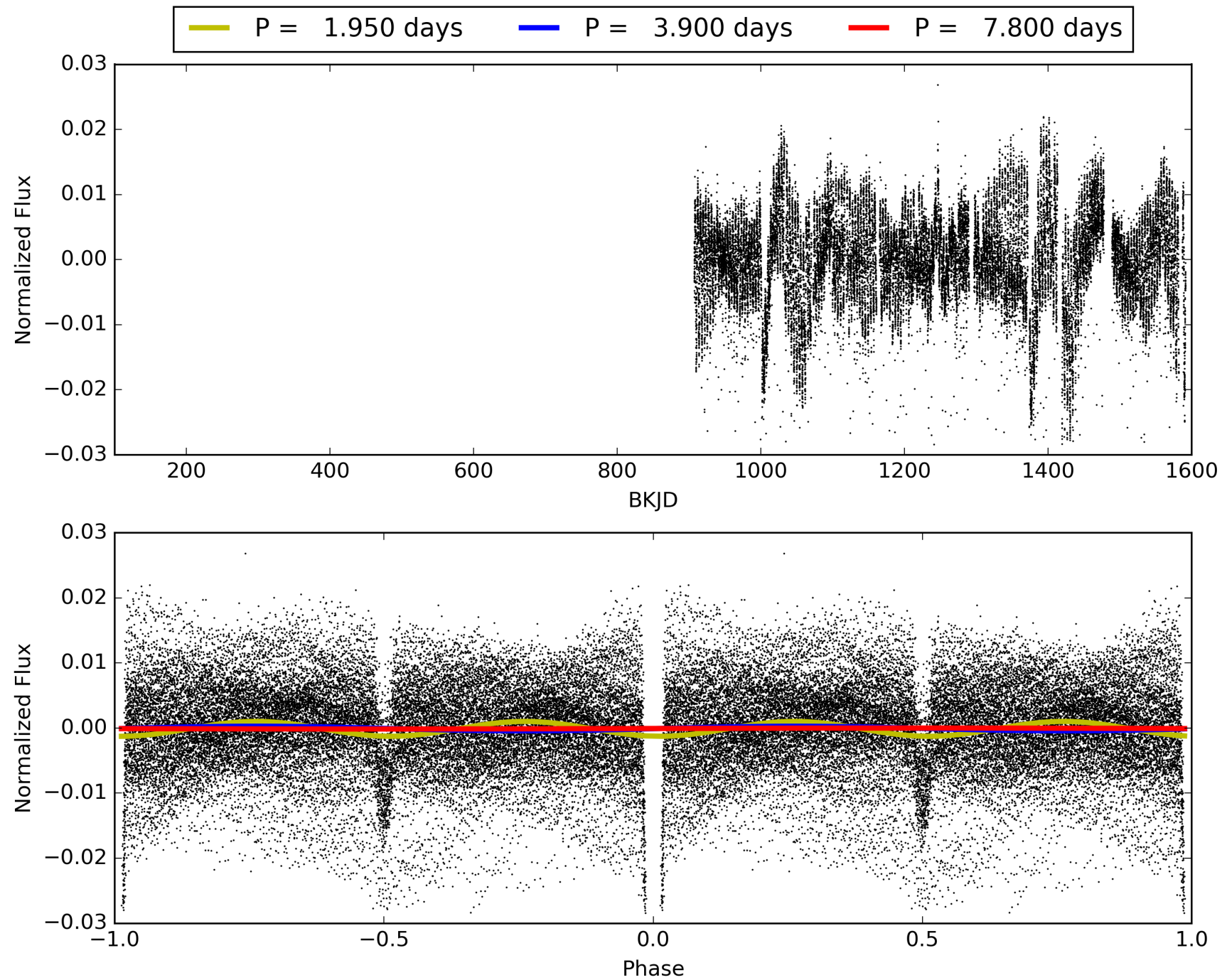
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [8.73σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 32.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.99 [154/155]
GhostDiagnostic-chr: 1.905
Centroid-sig: 0.0%
Centroid-so: 3.436 arcsec [841.13σ]
OotOffset-rm: 4.252 arcsec [63.62σ]
KicOffset-rm: 0.190 arcsec [2.48σ]
OotOffset-st: 0/0/1/0 [1]
KicOffset-st: 2/2/2/2 [8]
DiffImageQuality-fgm: 1.00 [8/8]
DiffImageOverlap-fno: 0.00 [0/8]

TCE 003231120-01, PDC Light Curves

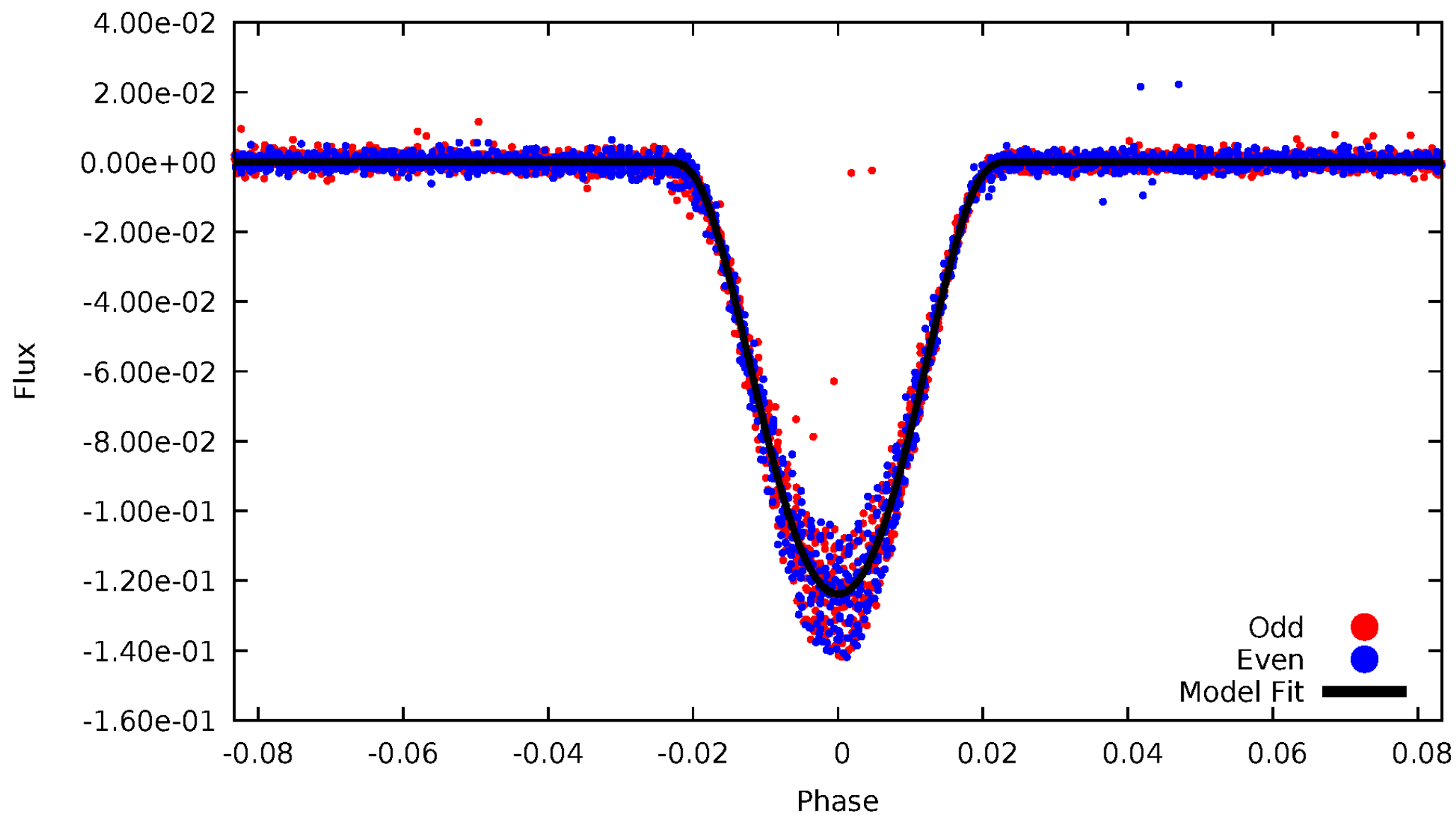


TCE 003231120-01



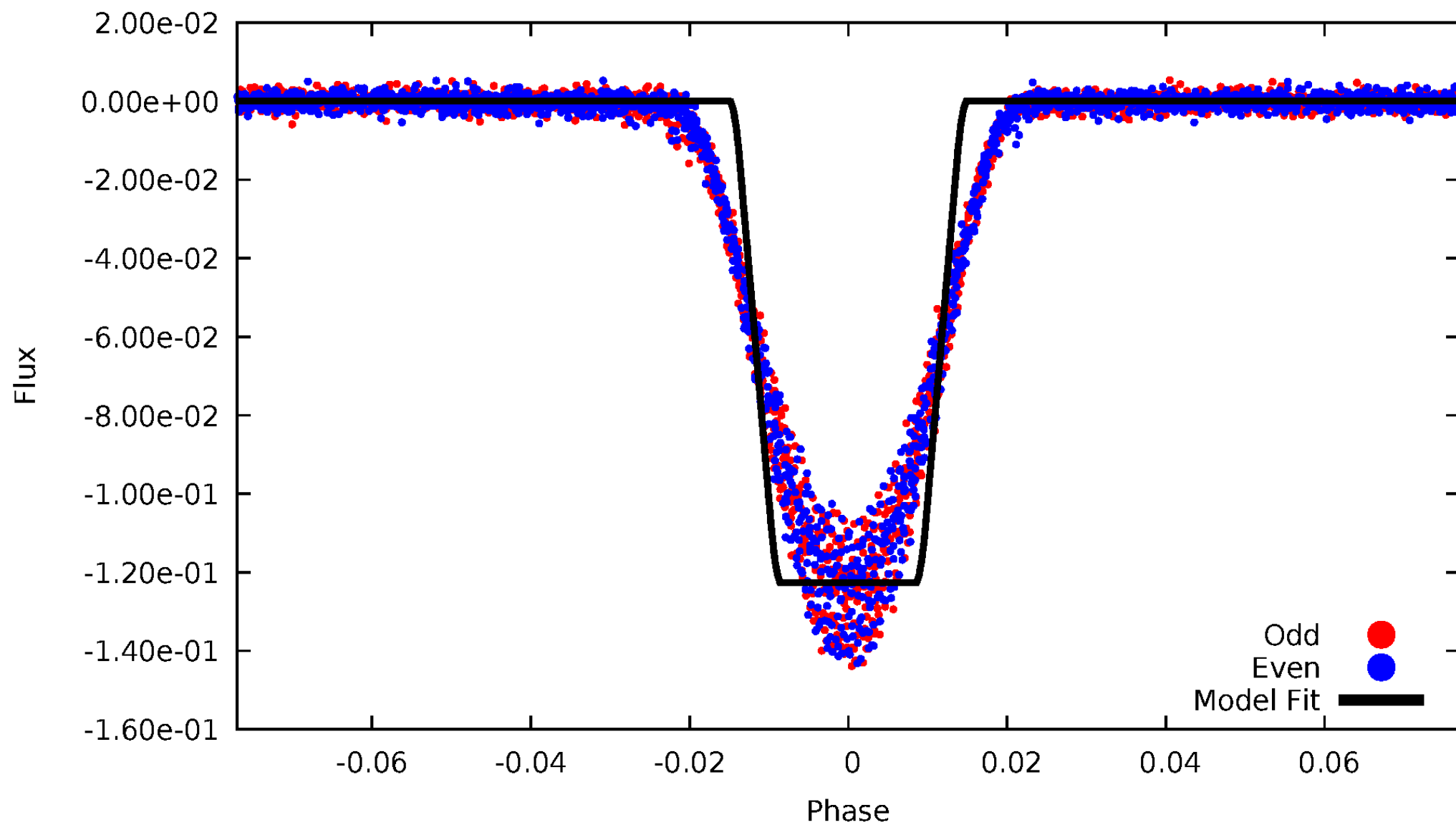
DV Odd/Even

TCE 003231120-01



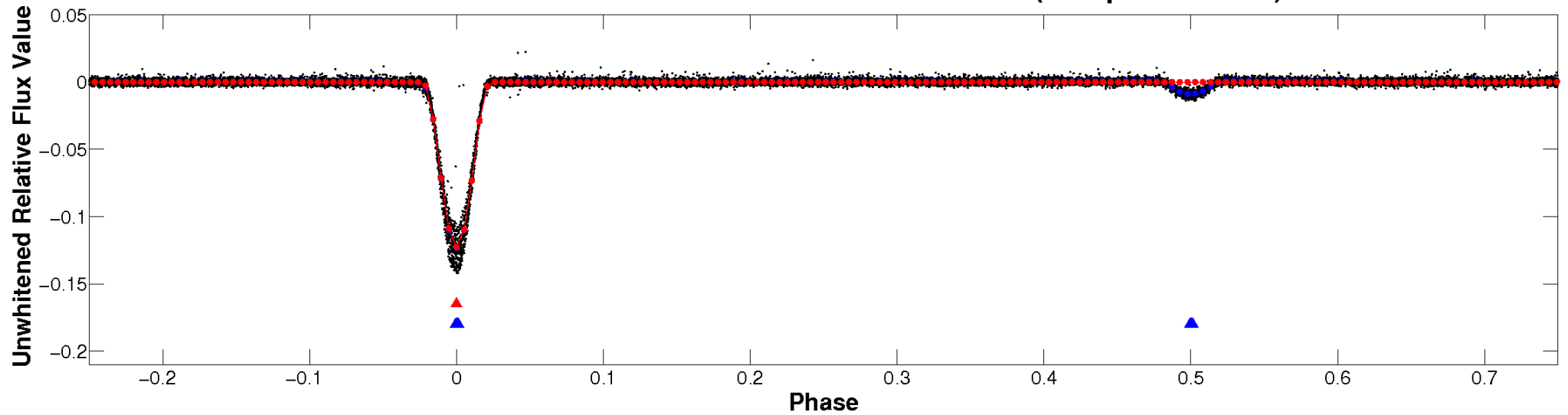
ALT Odd/Even

TCE 003231120-01

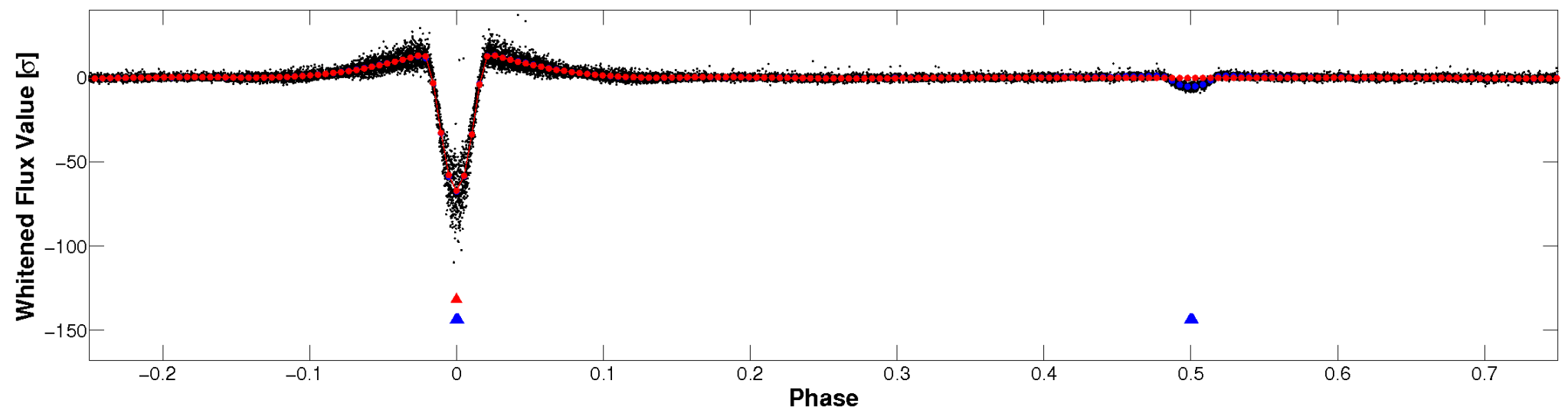


Non-Whitened Vs. Whitened Light Curve

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

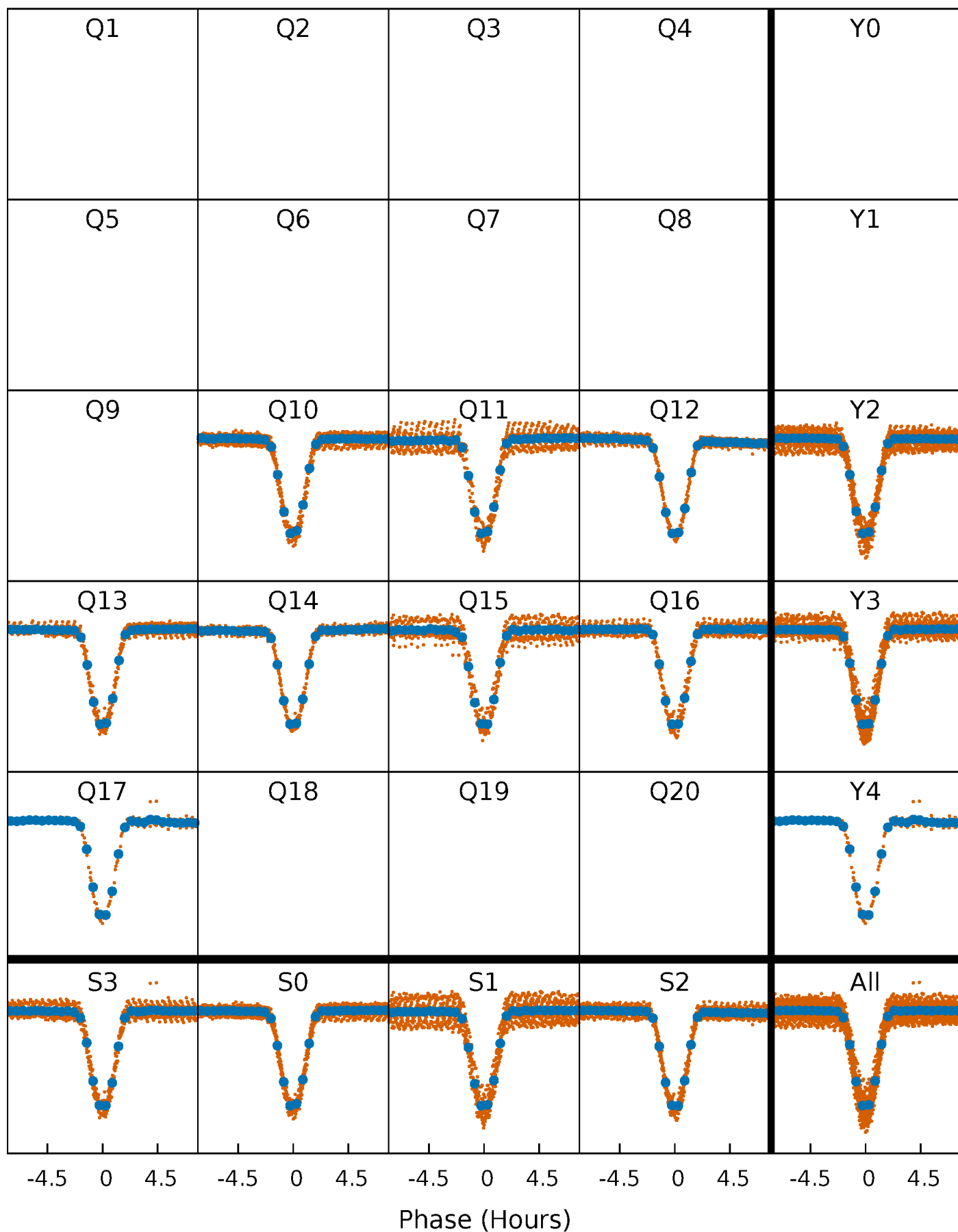


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



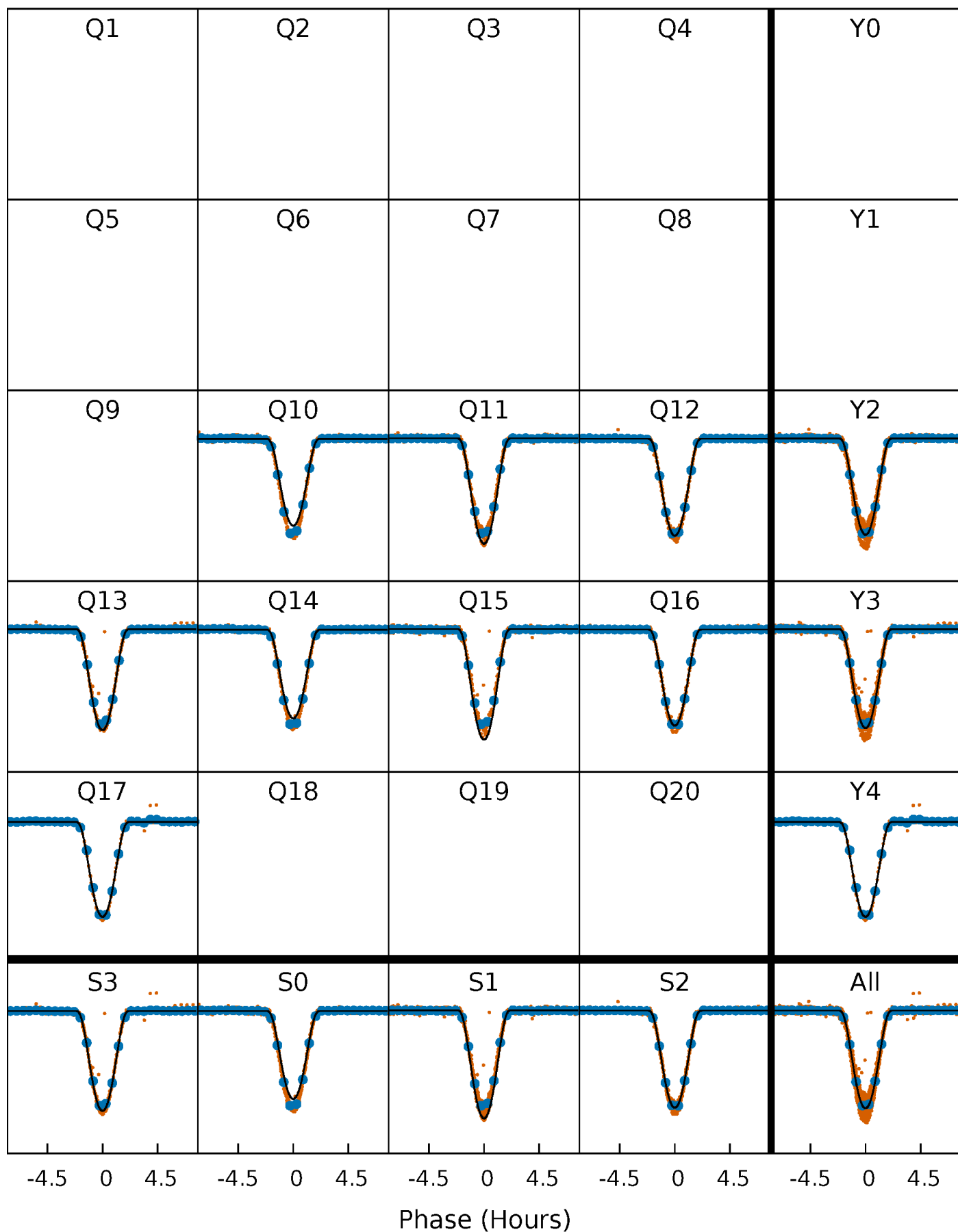
PDC Quarter-Phased Transit Curves

TCE 003231120-01 P= 3.900105 Days $T_0=133.382028$ (BKJD)



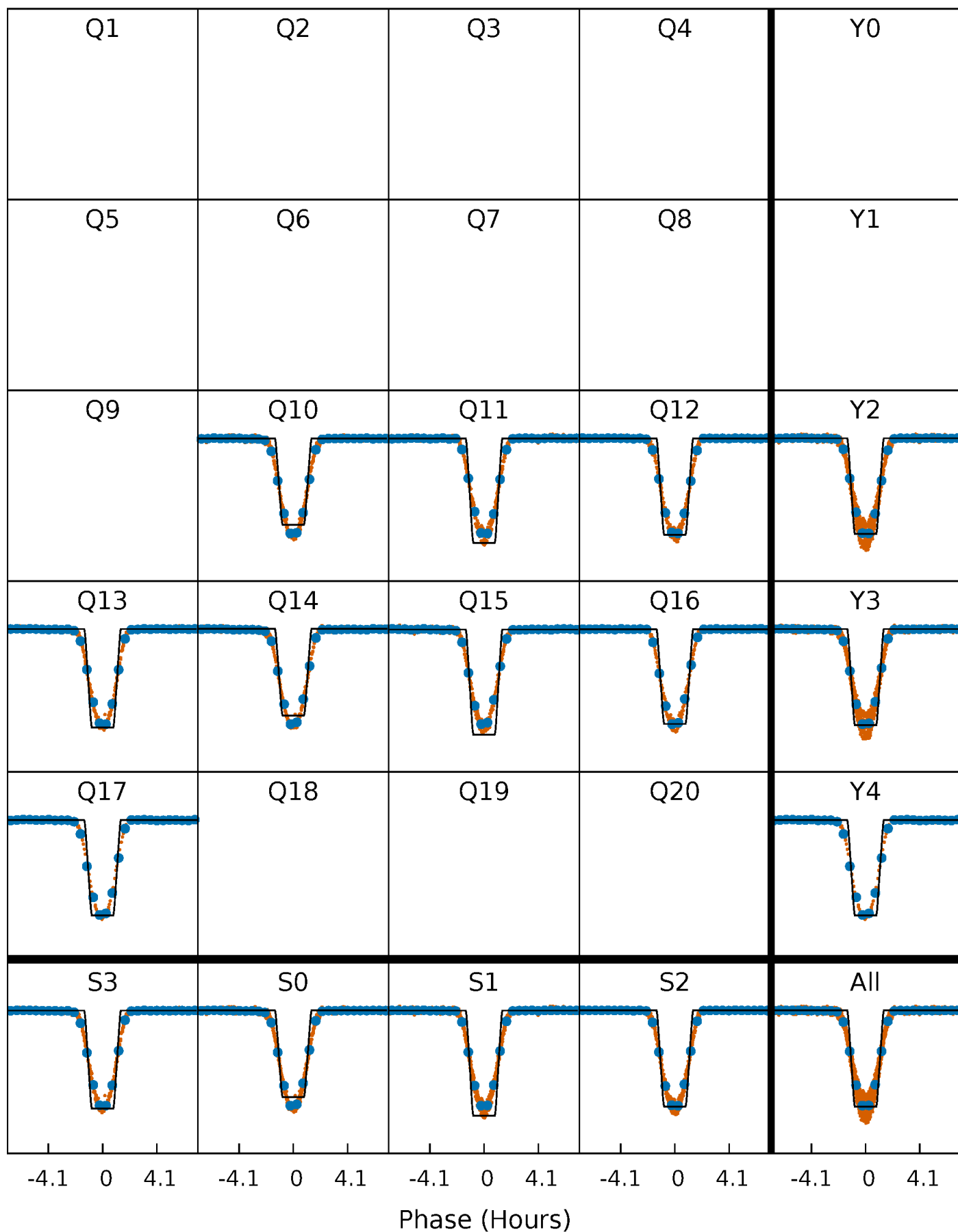
DV Quarter-Phased Transit Curves

TCE 003231120-01 P= 3.900105 Days $T_0=133.382028$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

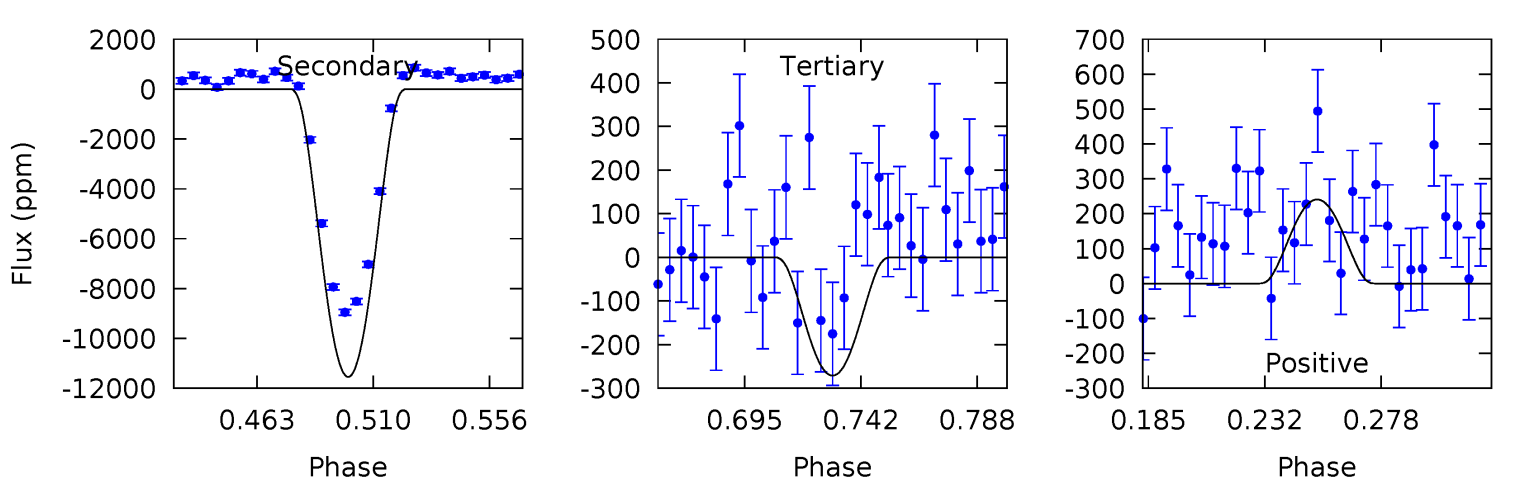
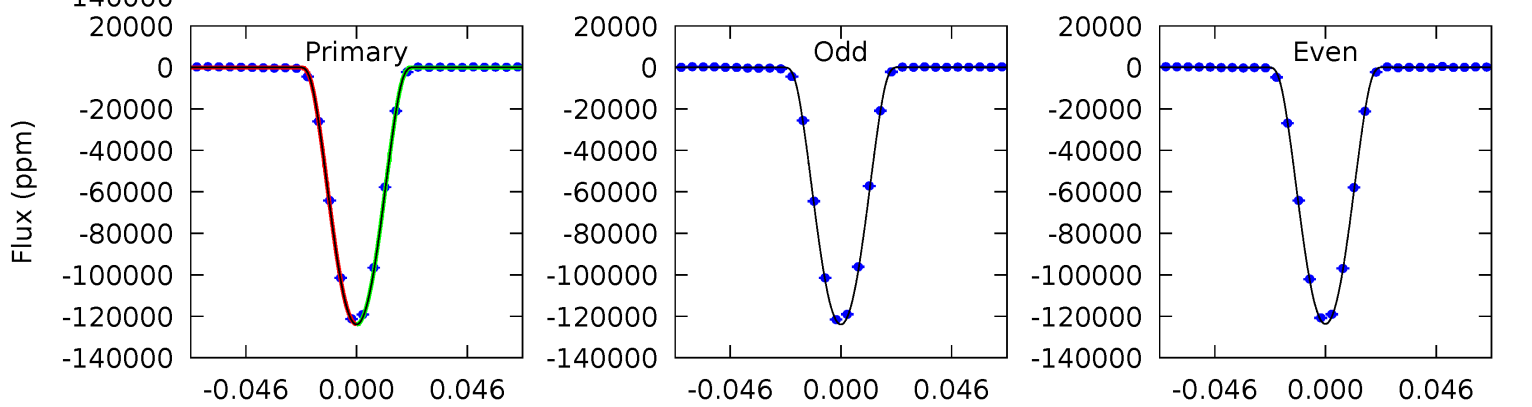
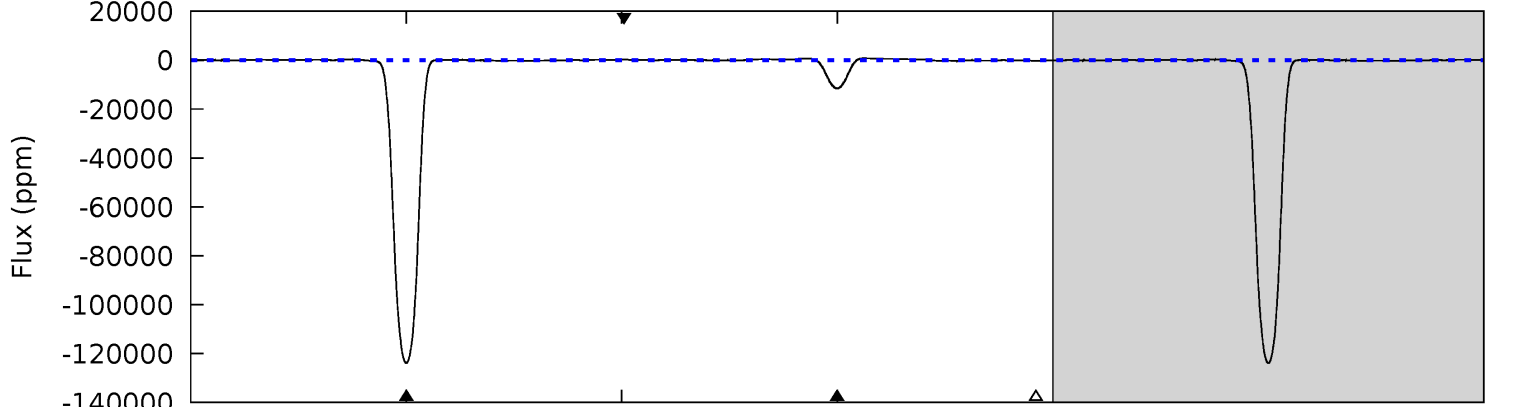
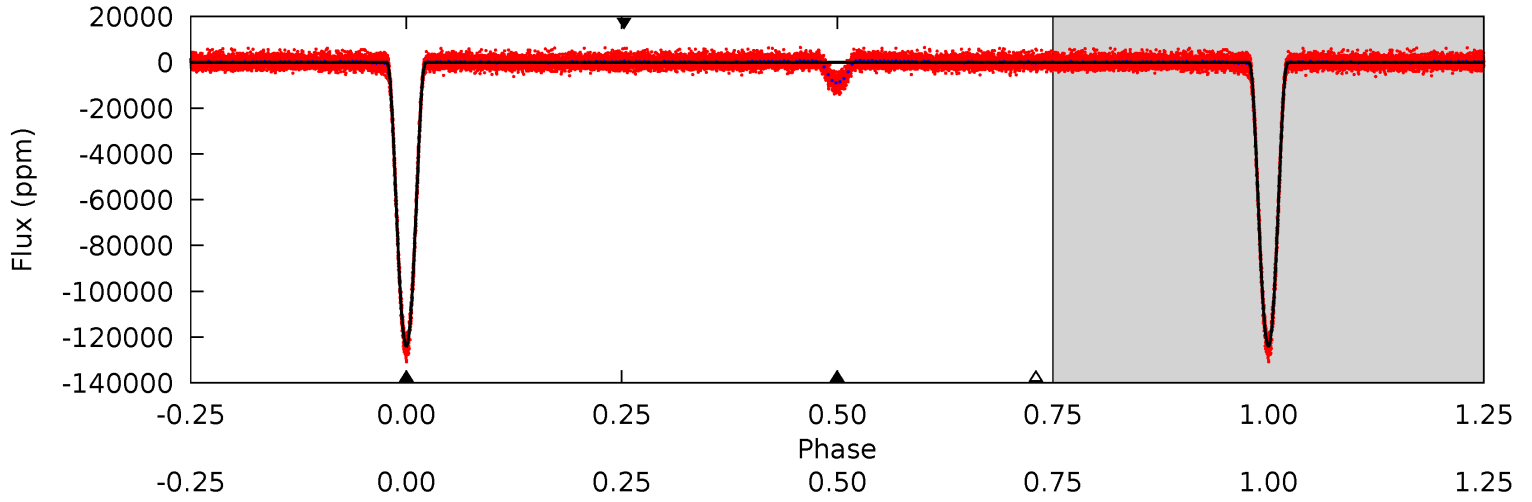
TCE 003231120-01 P= 3.900121 Days $T_0=133.377255$ (BKJD)



DV Model-Shift Uniqueness Test

003231120-01, P = 3.900105 Days, E = 133.382028 Days

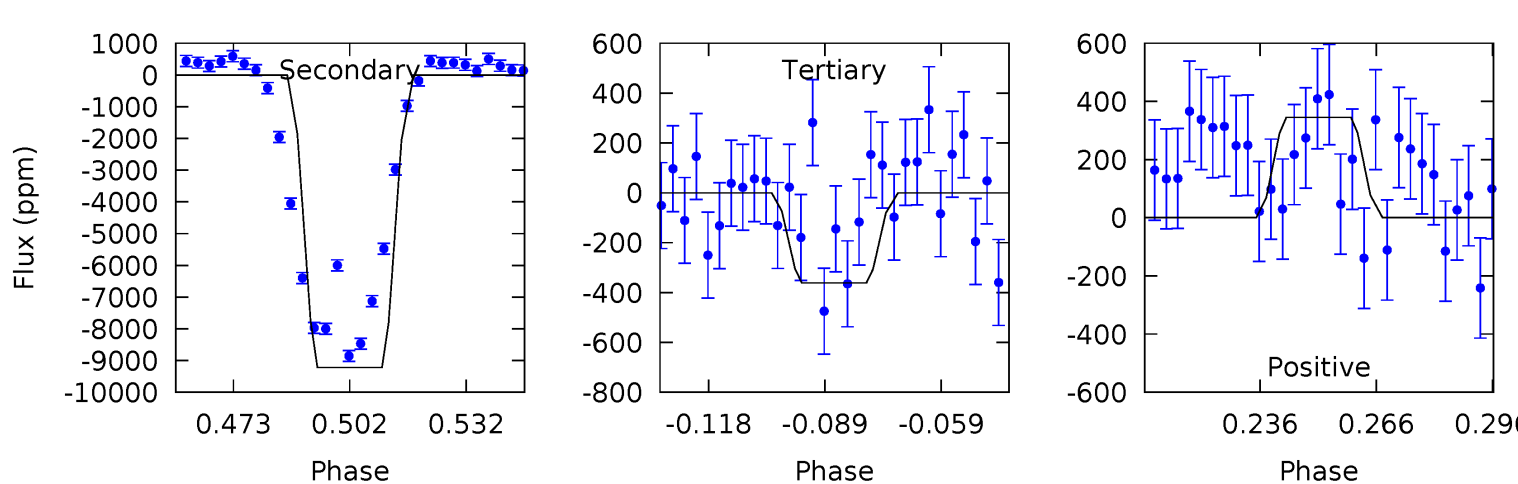
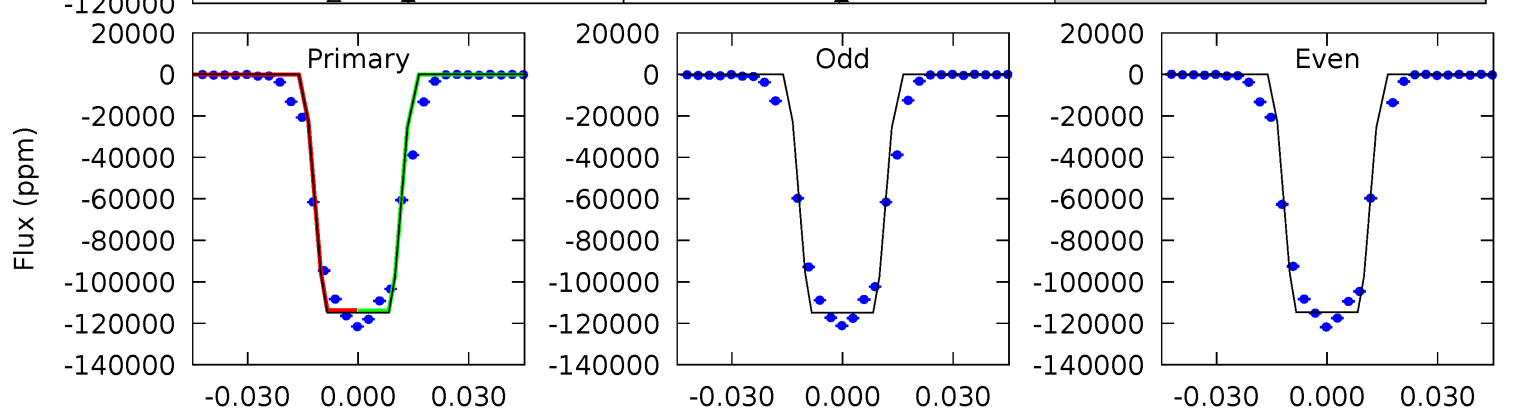
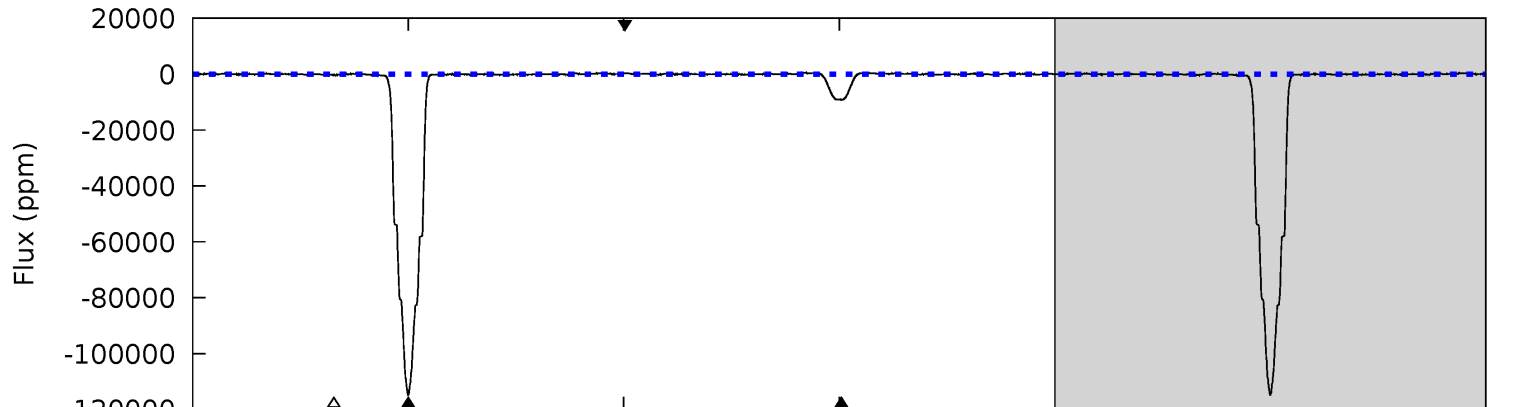
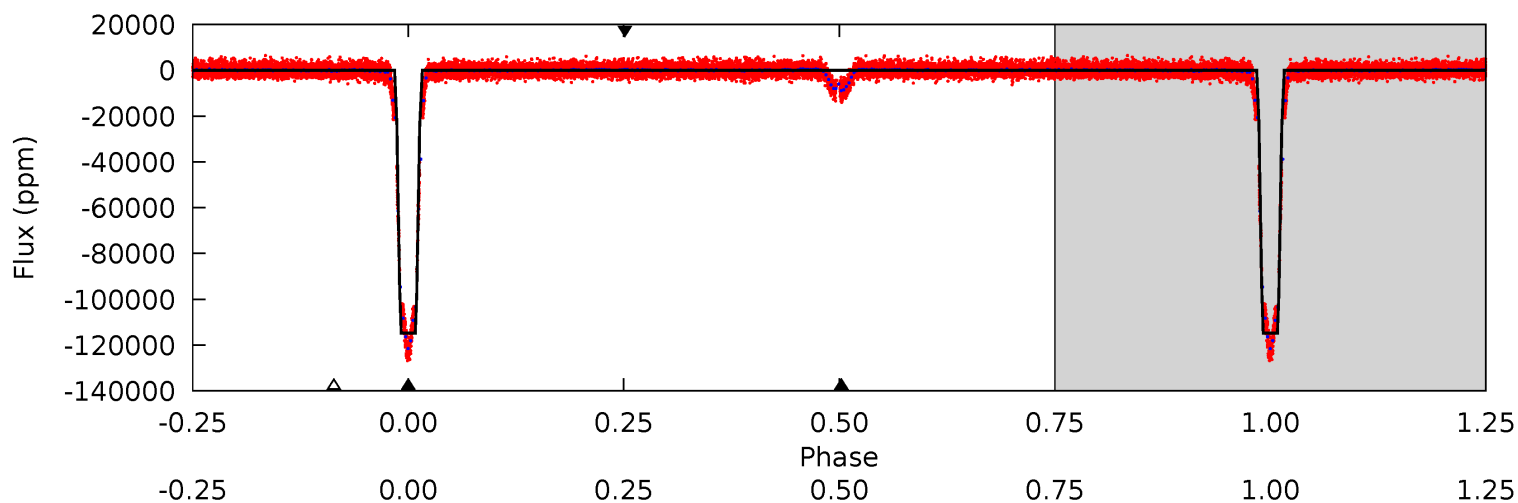
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2613	243.5	5.72	5.08	4.72	1.99	3.88	2607	2608	237.8	238.4	2.67	1.00	0.01	1.85



Alt Model-Shift Uniqueness Test

003231120-01, P = 3.900121 Days, E = 133.377255 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1364	109.6	4.30	4.10	4.81	2.18	1.74	1360	1360	105.3	105.5	0.95	1.01	0.00	0



Stellar Parameters For KIC 003231120

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5791^{+172}_{-190}	$4.424^{+0.105}_{-0.180}$	$-0.180^{+0.300}_{-0.300}$	$0.969^{+0.275}_{-0.127}$	$0.910^{+0.123}_{-0.089}$	$1.407^{+0.650}_{-0.713}$
	+3%/-3%	+2%/-4%	+167%/-167%	+28%/-13%	+14%/-10%	+46%/-51%
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 003231120-01 / KOI 3643.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-11544 ± 47	$38.82^{+6.12}_{-3.15}$	1632^{+127}_{-90}	3576^{+72}_{-79}	$9.273^{+1.781}_{-2.164}$
Alt.	-9221 ± 84	$36.99^{+5.77}_{-3.03}$	1631^{+105}_{-86}	3499^{+70}_{-82}	$8.138^{+1.456}_{-1.722}$

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

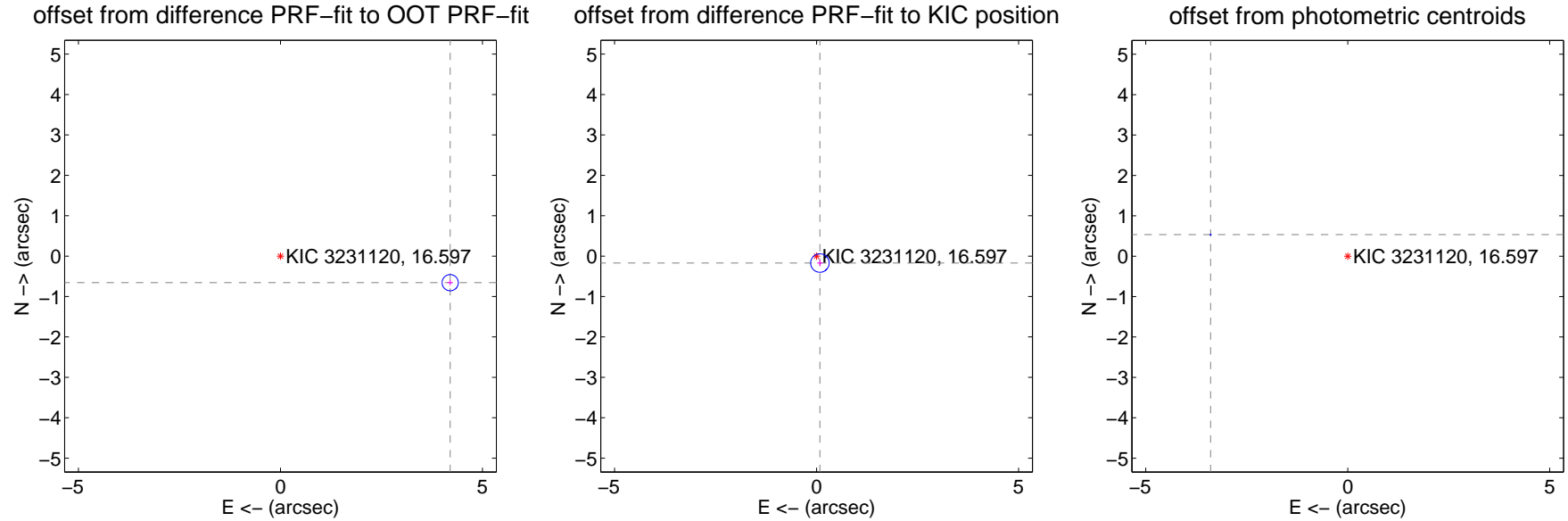
DV Centroid Data

Supplemental centroid analysis for 003231120-01. Kepler magnitude: 16.60. Transit SNR 1095.67

There are 8 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 4.19 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	4.252 ± 0.067	63.62	-4.201 ± 0.067	-0.657 ± 0.067
PRF-fit source offset from KIC position	0.190 ± 0.076	2.48	-0.082 ± 0.069	-0.171 ± 0.078
photometric centroid source offset	3.44 ± 0.00	841.13	3.39 ± 0.00	0.53 ± 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.

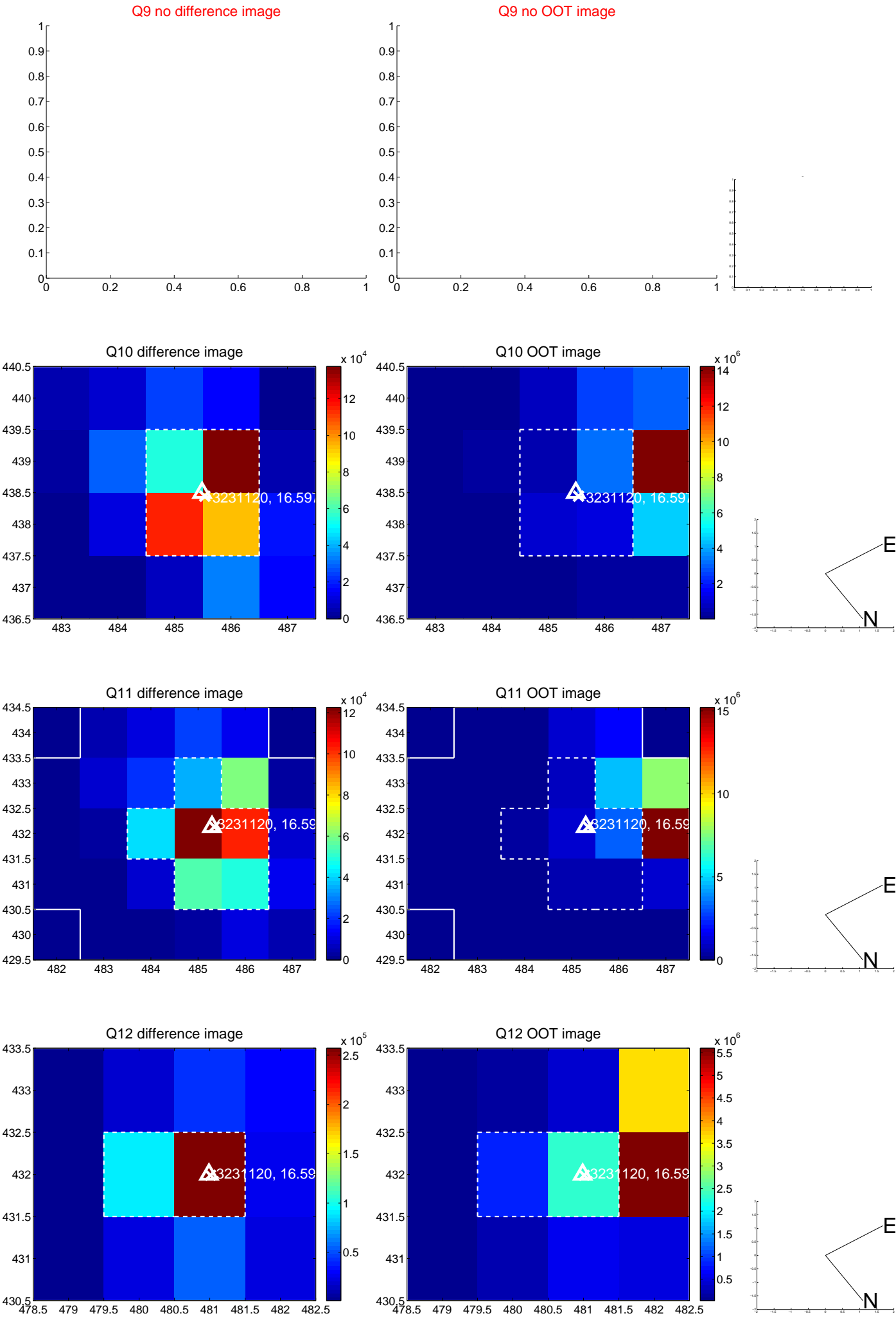
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



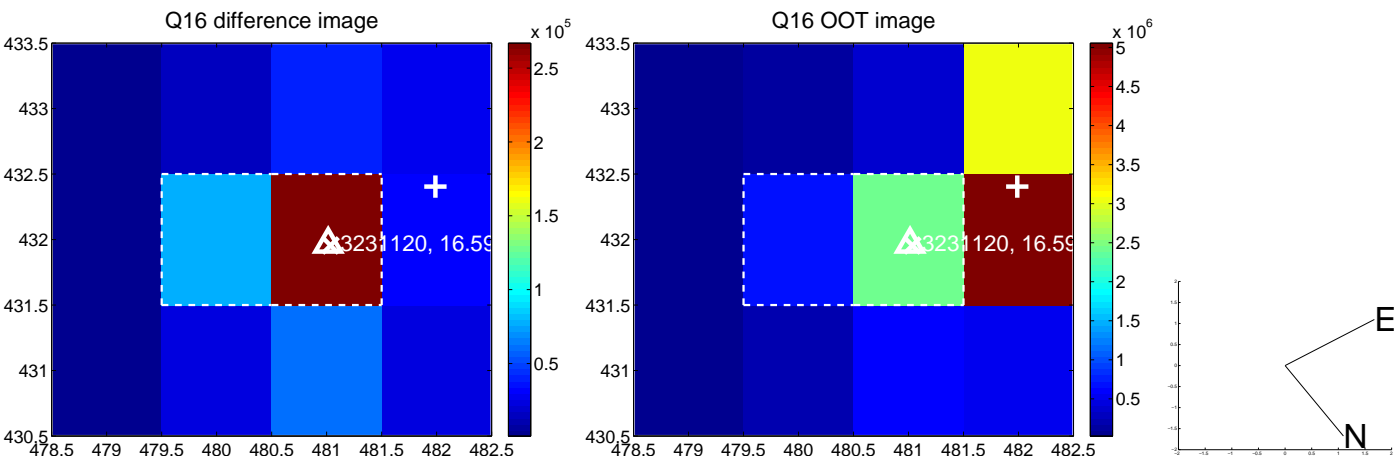
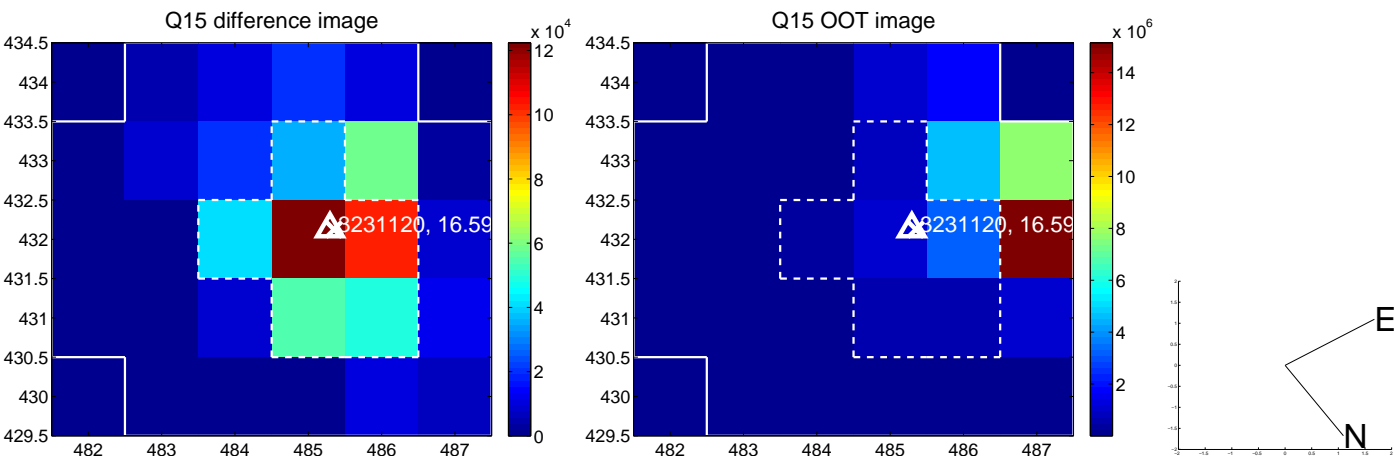
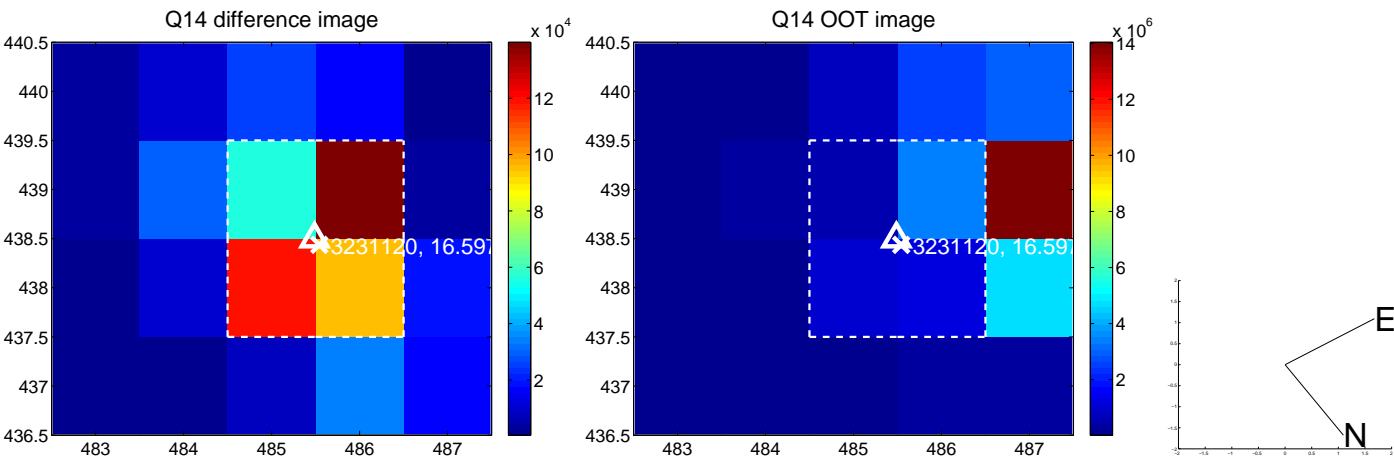
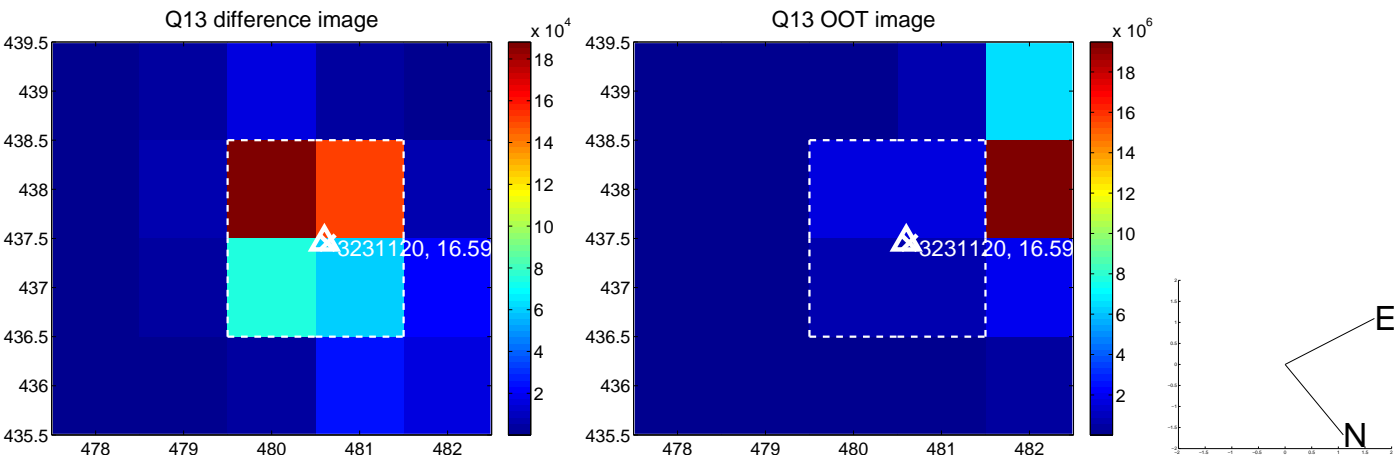
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



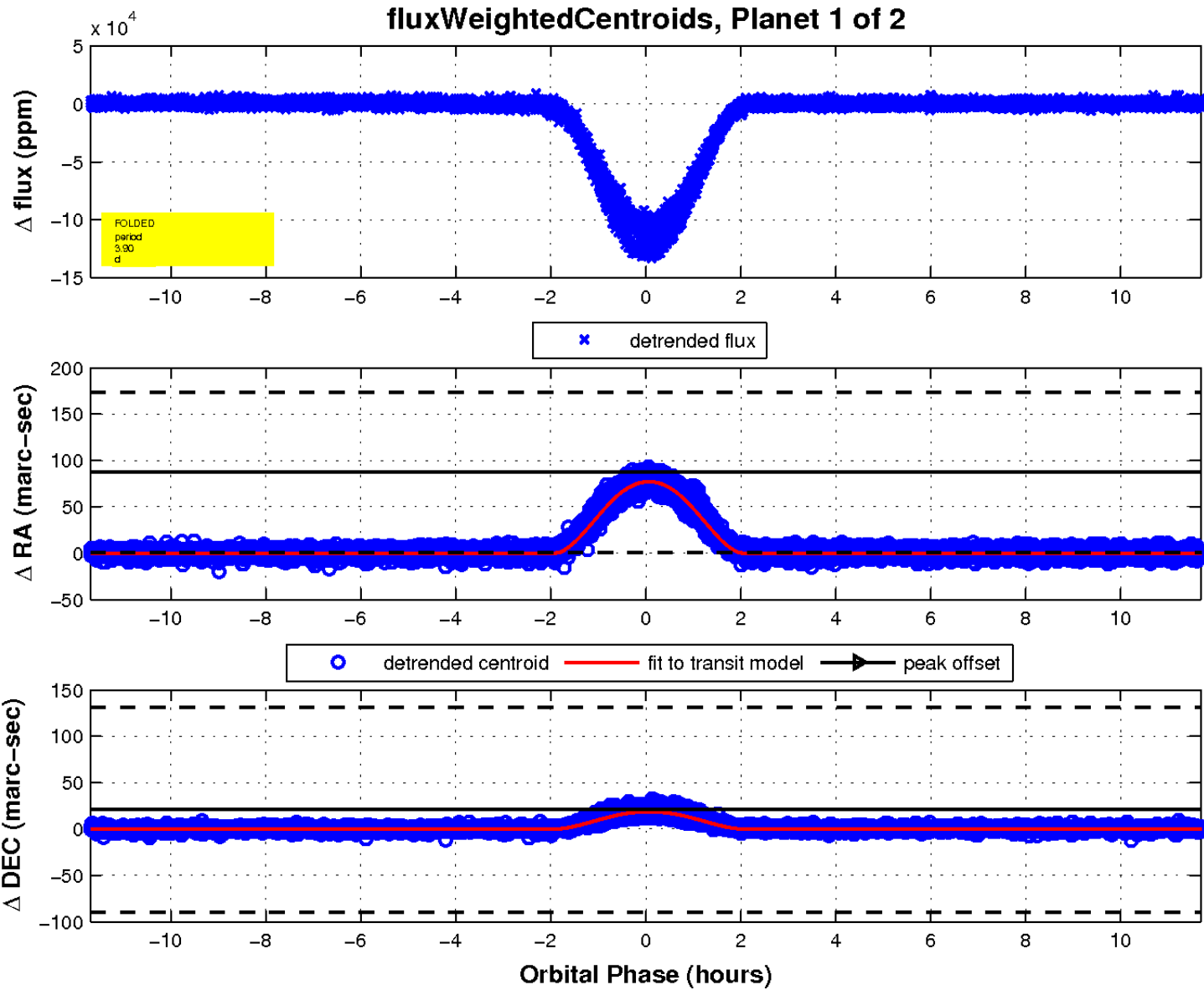
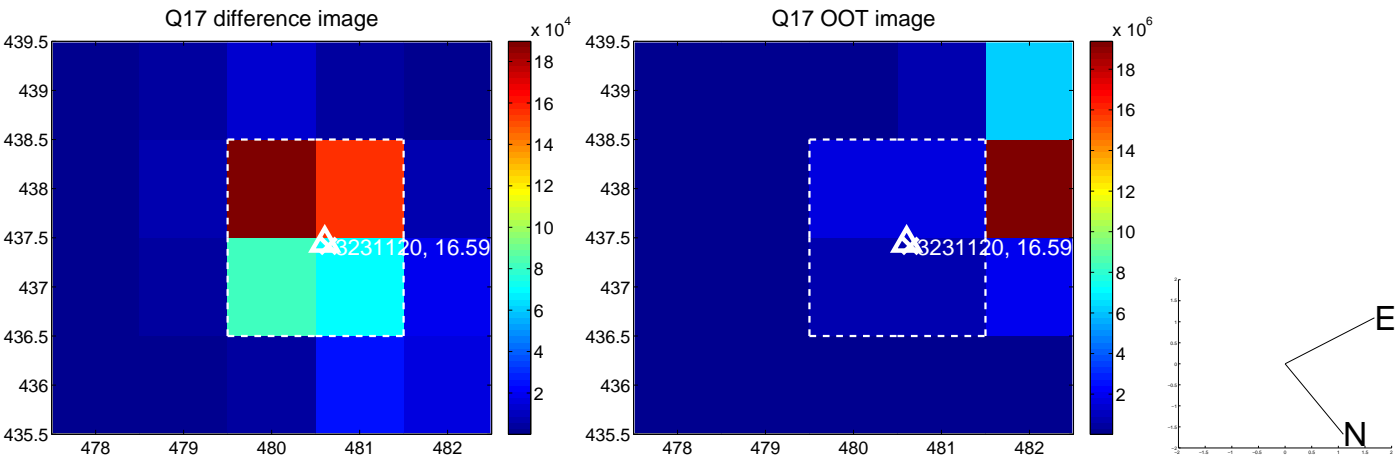
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

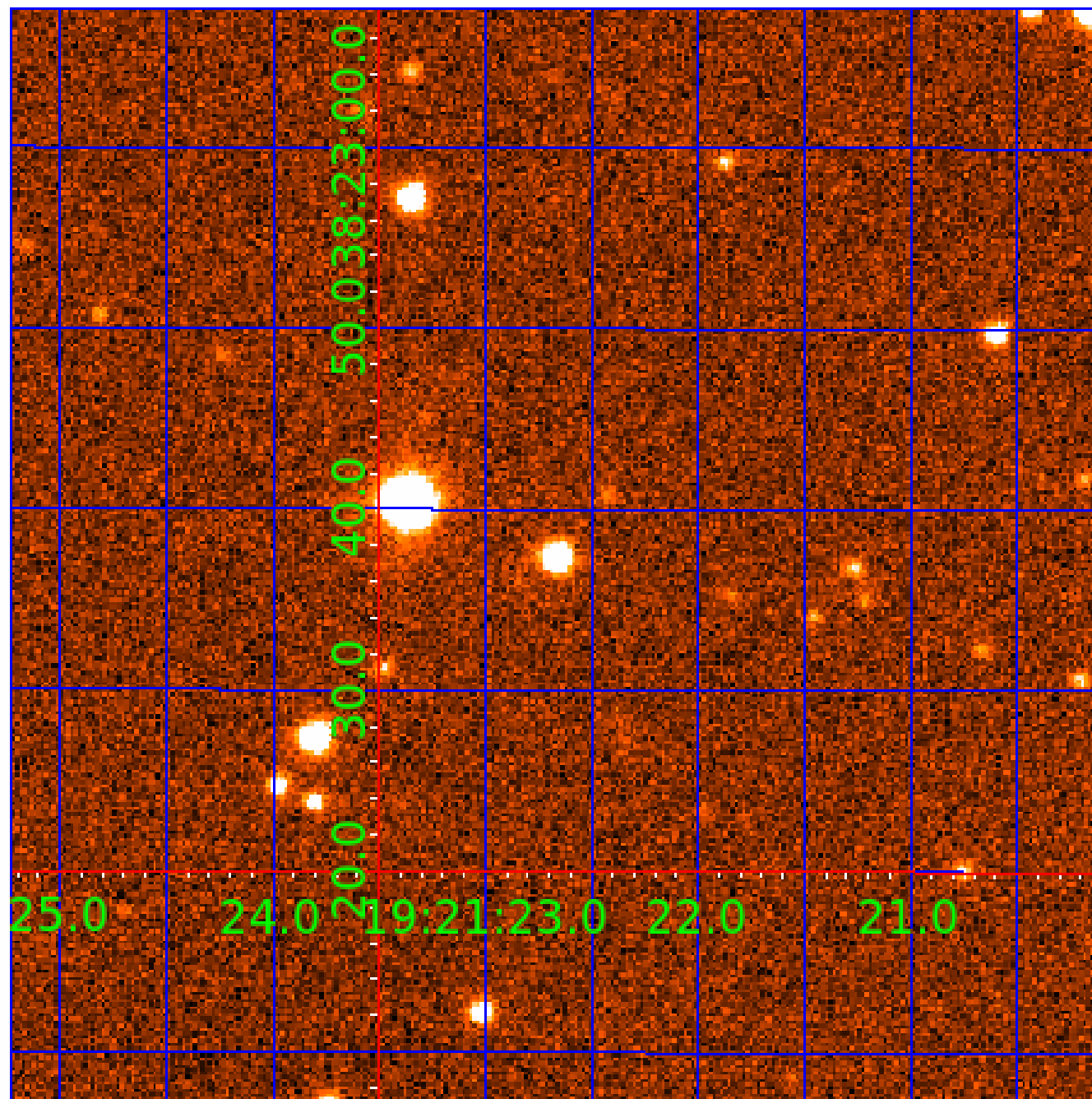


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003231120

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})
003231120-01	OBS	3643.01	3.900105	133.382028	123798.2	3.898	1564.7	1095.7	0.97	5791	38.67	428.57
003231120-02	OBS	No	1.950043	133.386919	9422.3	3.677	119.9	118.4	0.97	5791	11.40	1079.94

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003231120-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_KIC_POS
003231120-02	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.

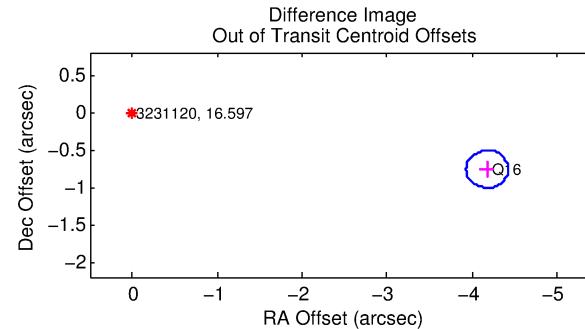
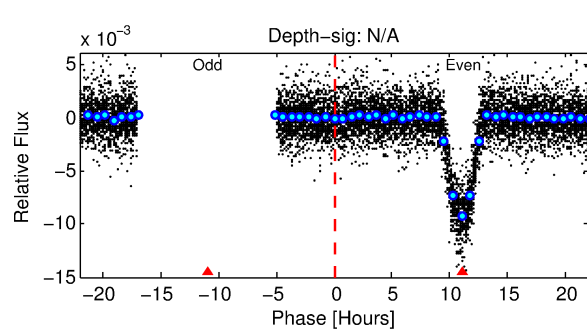
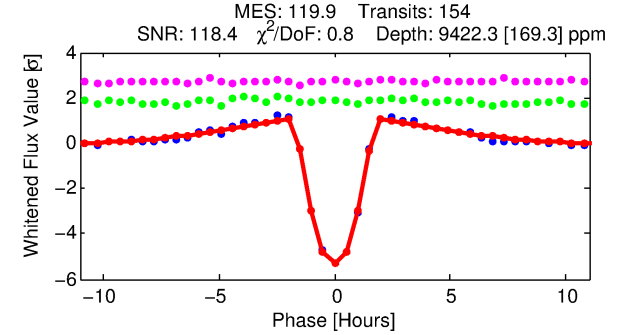
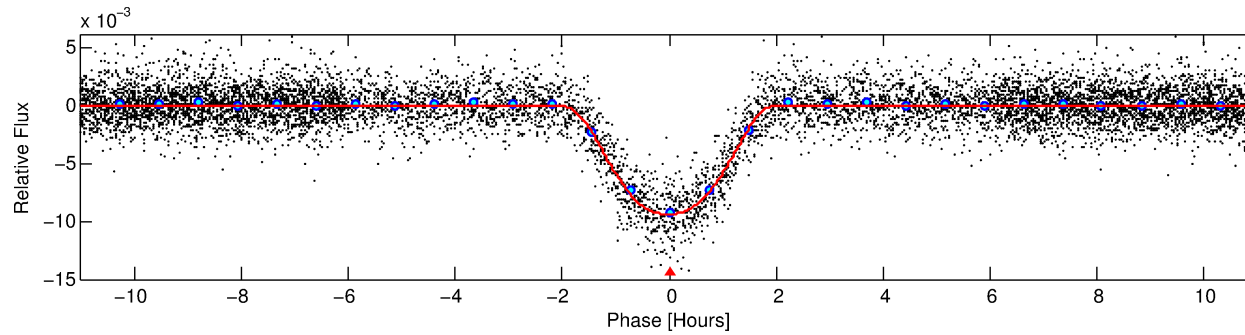
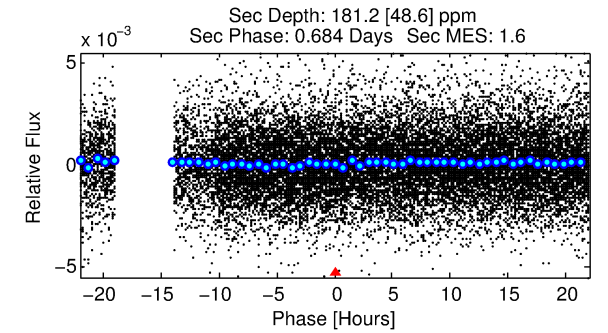
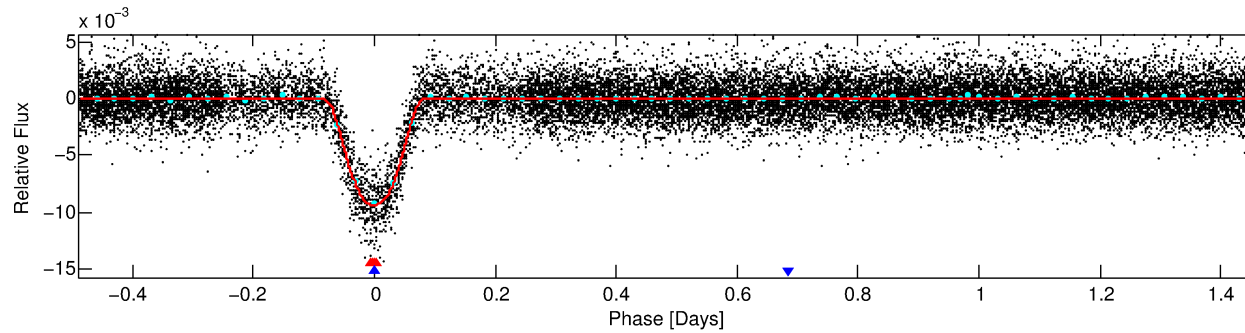
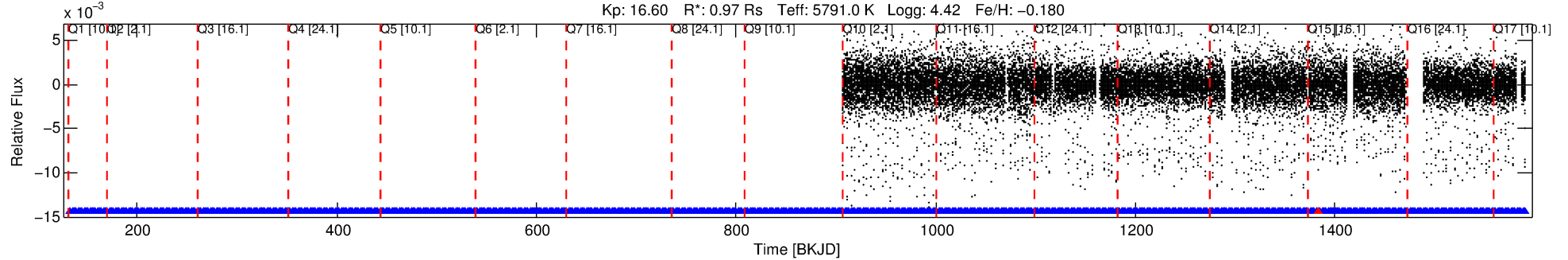
Ephemeris Match Information For 003231120-02

No Significant Match Found

DV One-Page Summary

KIC: 3231120 Candidate: 2 of 2 Period: 1.950 d
KOI: K03643 Corr: No Ephemeris Match

Kp: 16.60 R*: 0.97 Rs Teff: 5791.0 K Logg: 4.42 Fe/H: -0.180



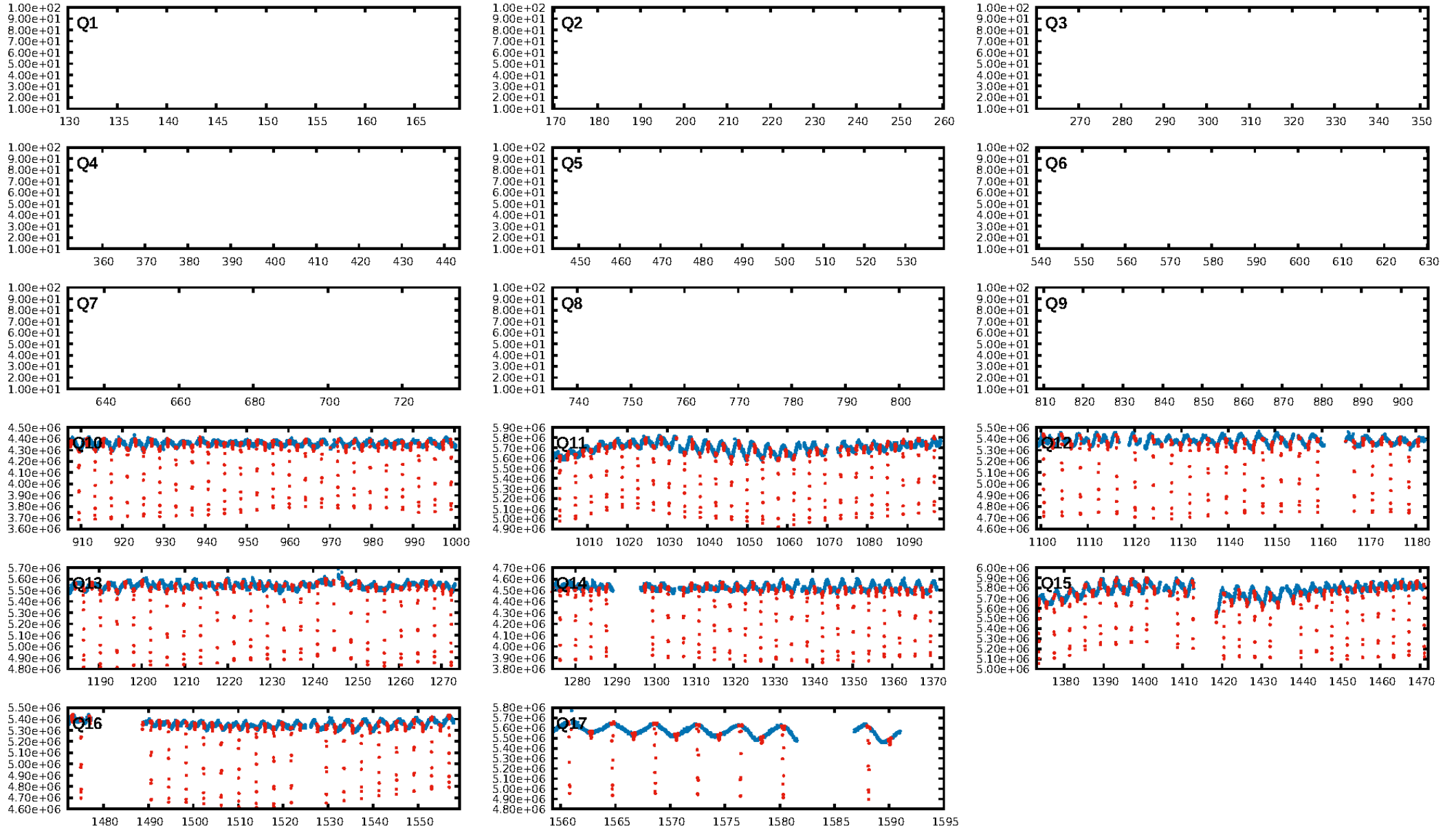
DV Fit Results:

Period = 1.95004 [0.00000] d
Epoch = 133.3869 [0.0005] BKJD
Rp/R* = 0.1078 [0.0027]
a/R* = 2.79 [0.05]
b = 0.90 [0.01]
Seff = 1079.94 [388.43]
Teq = 1462 [131] K
Rp = 11.40 [3.25] Re
a = 0.0296 [0.0069] AU
Ag = 0.67 [0.29] [-1.13σ]
Teffp = 2046 [155] K [2.88σ]

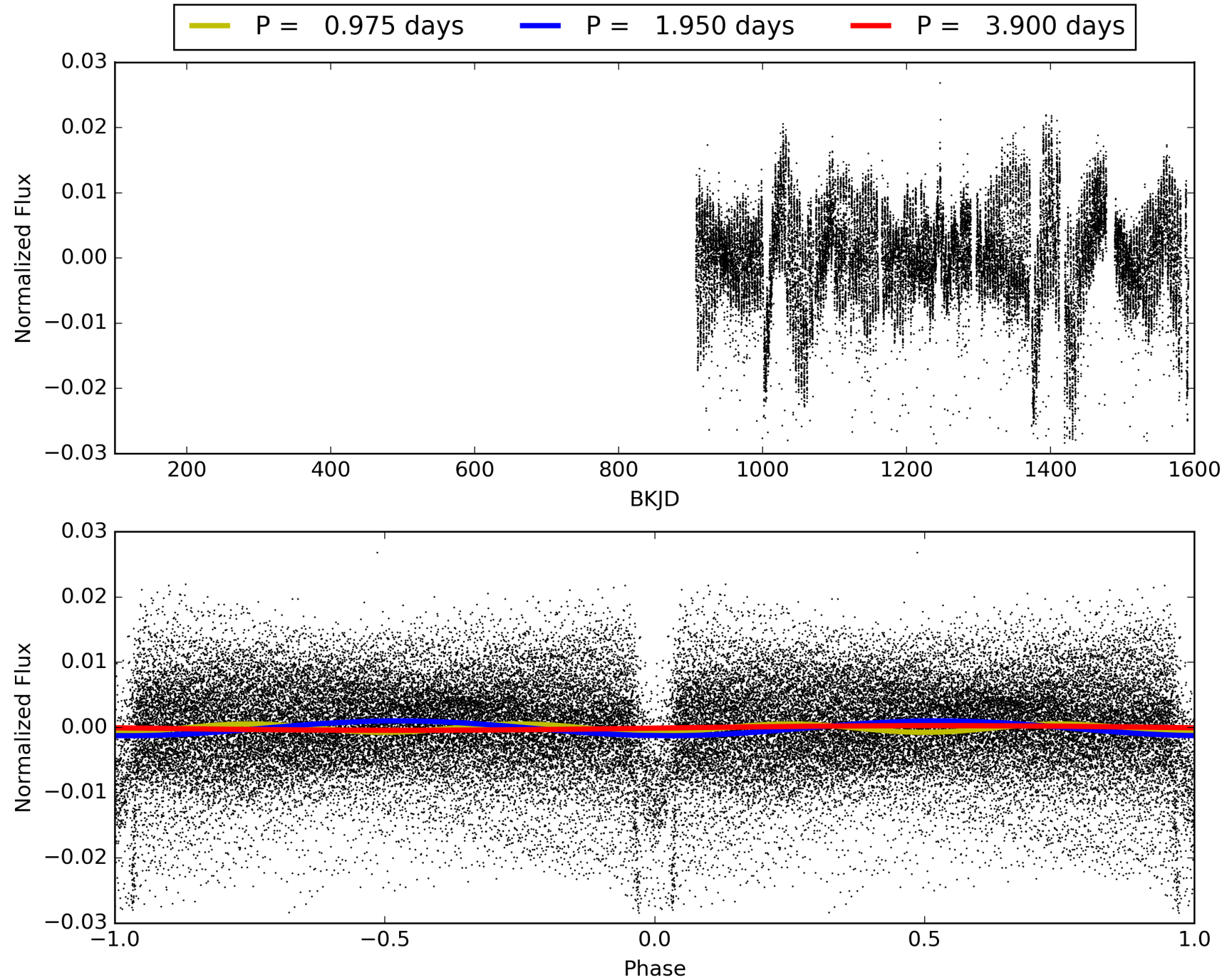
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [8.73σ]
ModelChiSquare2-sig: 5.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.99 [147/148]
GhostDiagnostic-chr: 2.724
Centroid-sig: 0.0%
Centroid-so: 3.356 arcsec [91.45σ]
OotOffset-rm: 4.249 arcsec [51.13σ]
KicOffset-rm: 0.250 arcsec [2.81σ]
OotOffset-st: 0/0/1/0 [1]
KicOffset-st: 2/2/2/2 [8]
DiffImageQuality-fgm: 1.00 [8/8]
DiffImageOverlap-fno: 1.00 [8/8]

TCE 003231120-02, PDC Light Curves

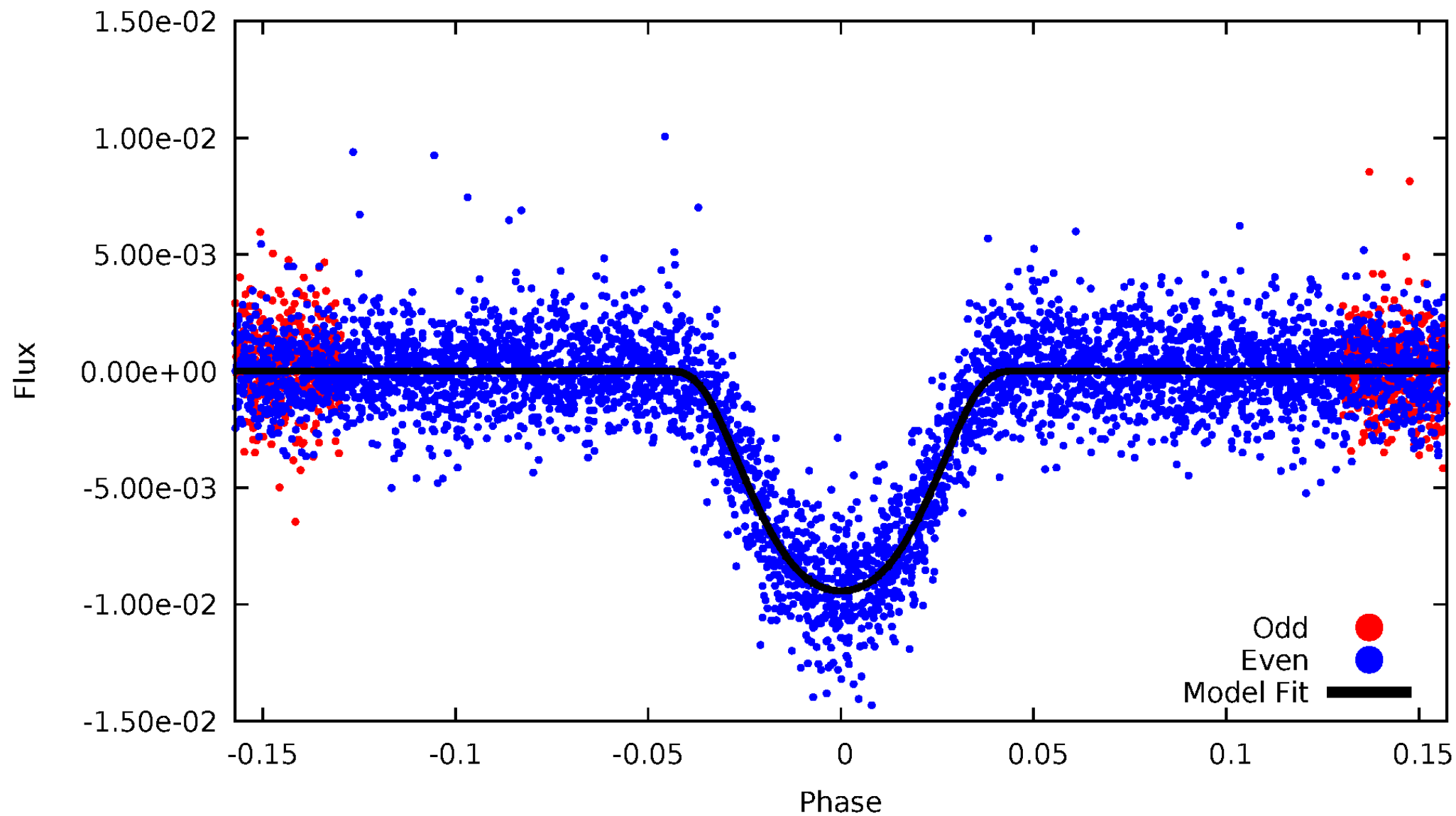


TCE 003231120-02



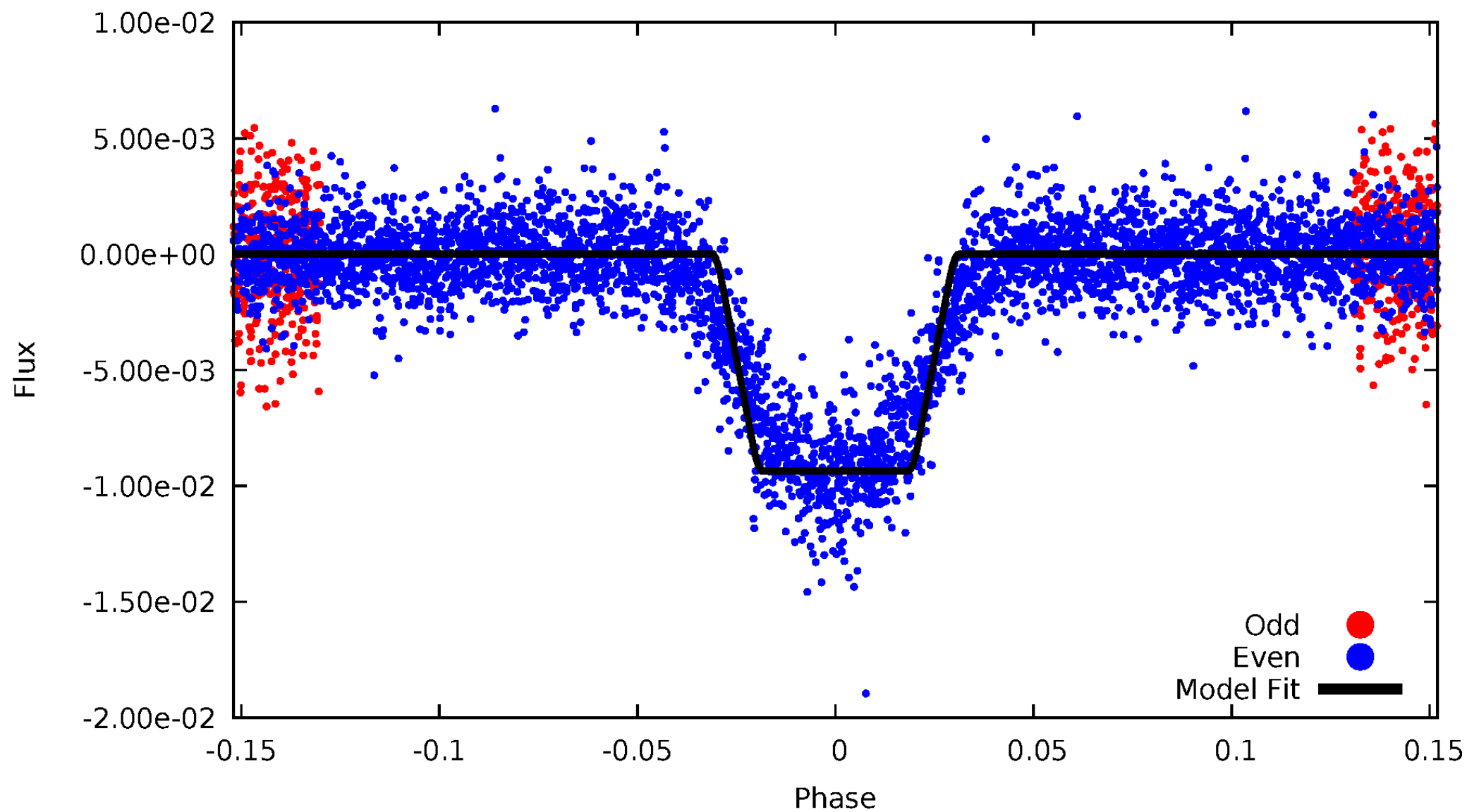
DV Odd/Even

TCE 003231120-02



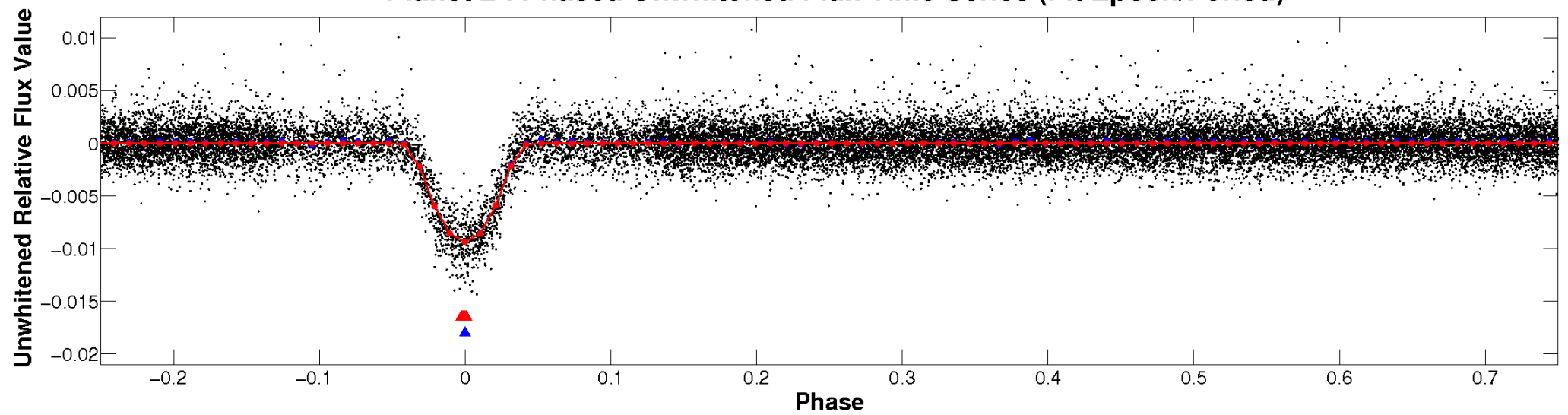
ALT Odd/Even

TCE 003231120-02

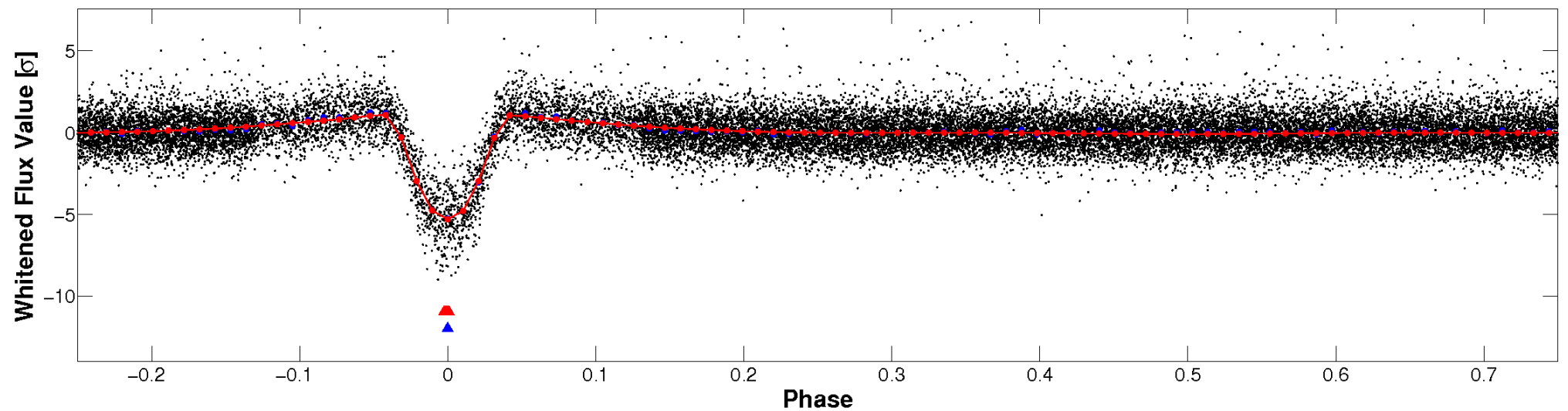


Non-Whitened Vs. Whitened Light Curve

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

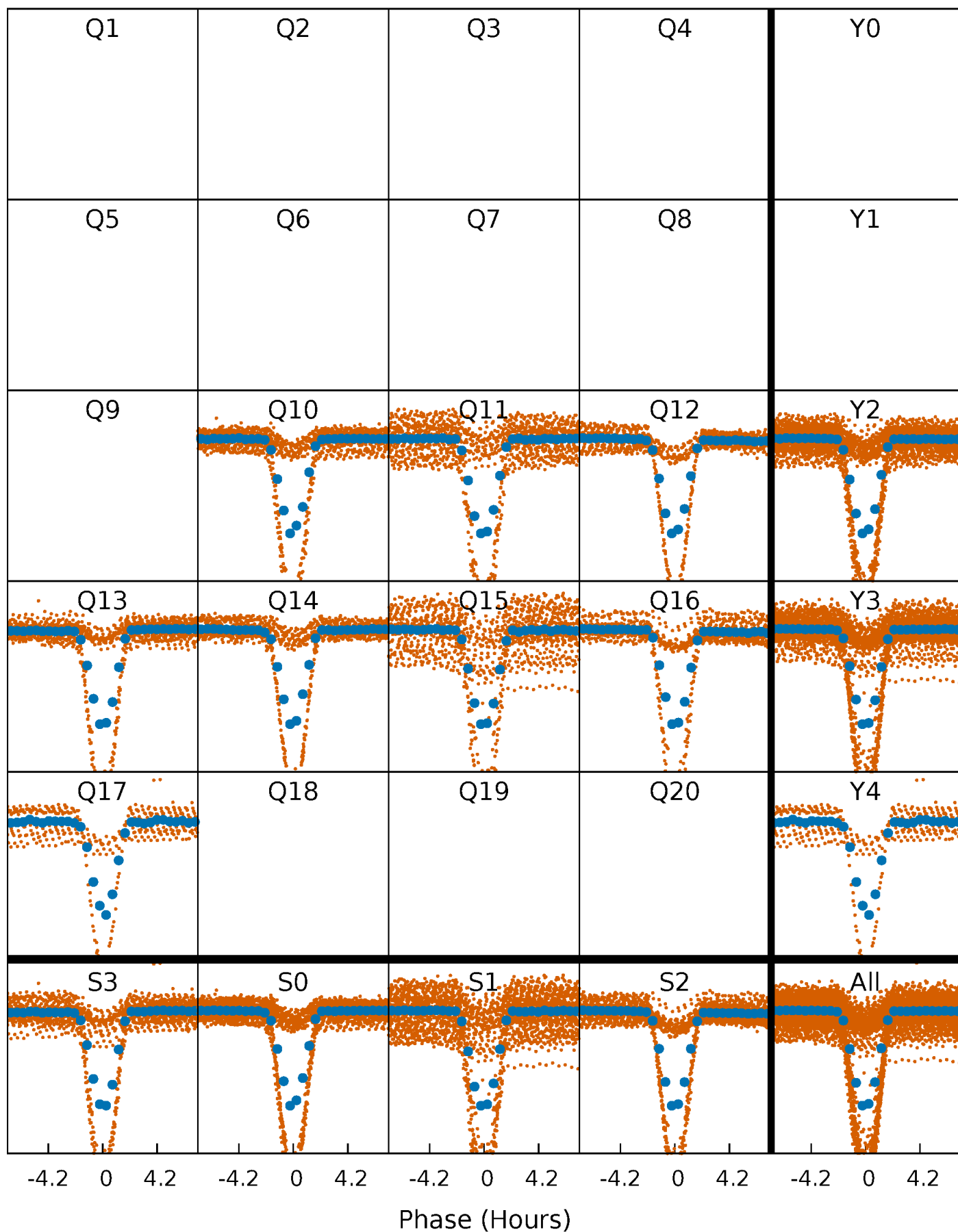


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



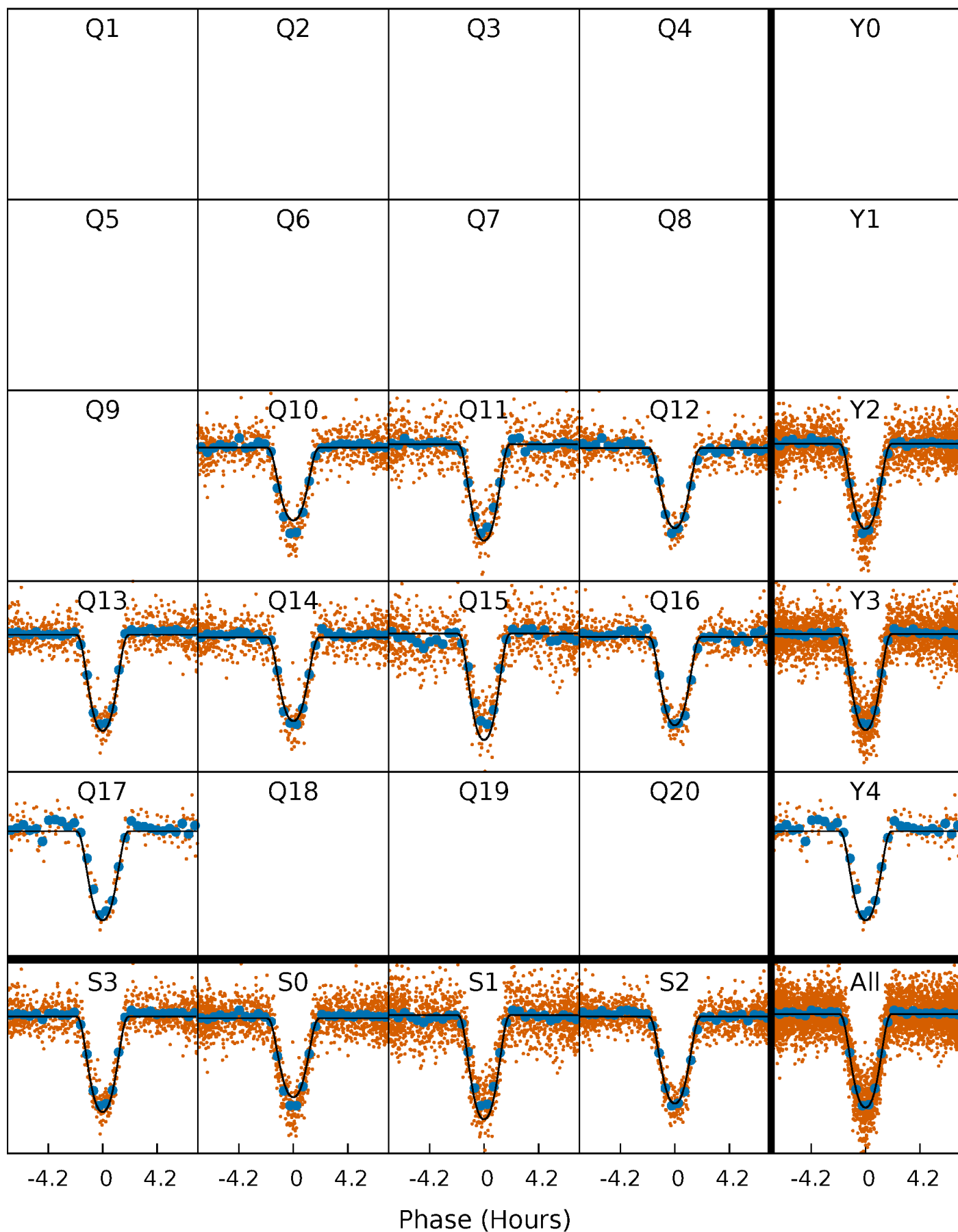
PDC Quarter-Phased Transit Curves

TCE 003231120-02 P= 1.950043 Days $T_0=133.386919$ (BKJD)



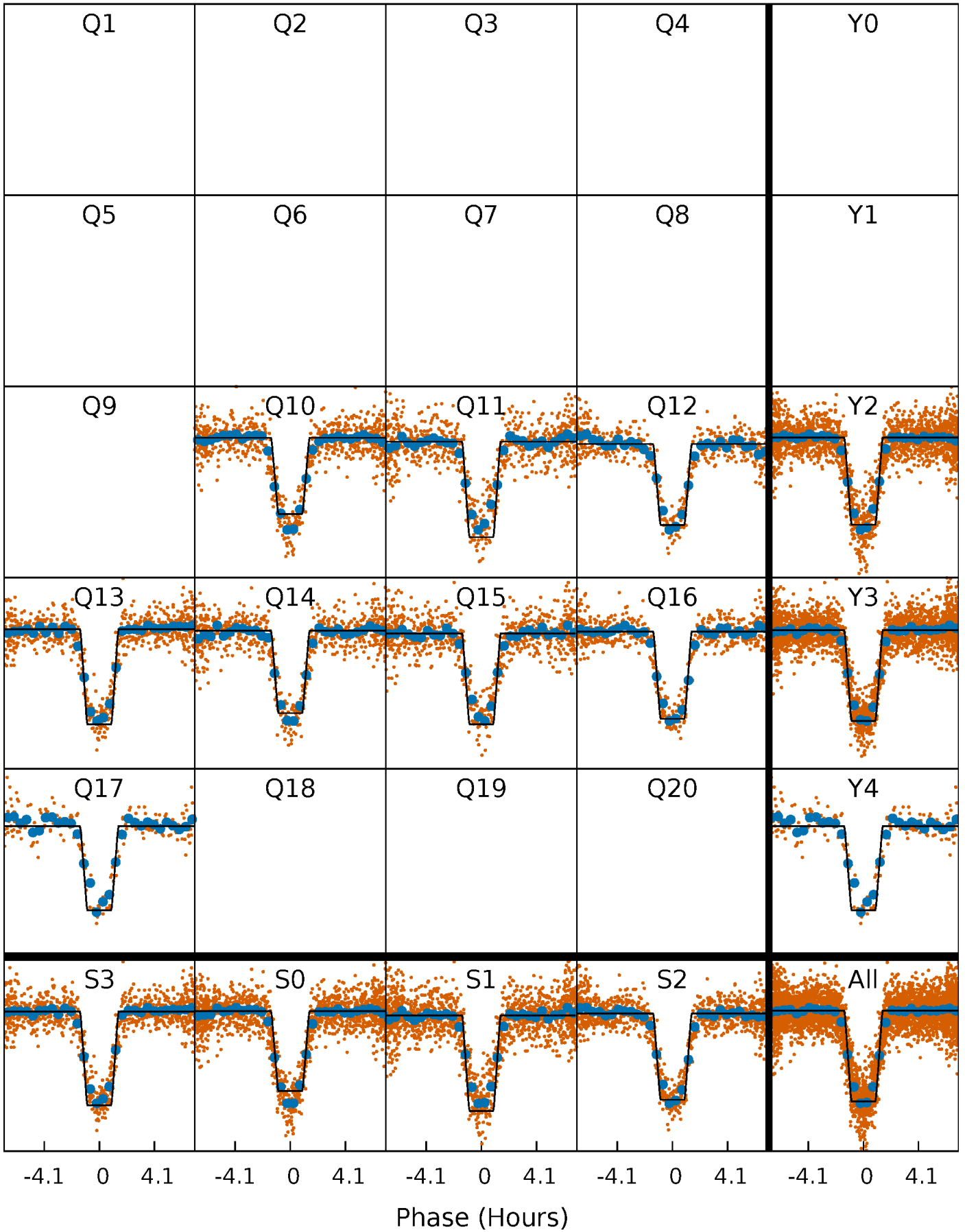
DV Quarter-Phased Transit Curves

TCE 003231120-02 P= 1.950043 Days $T_0=133.386919$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

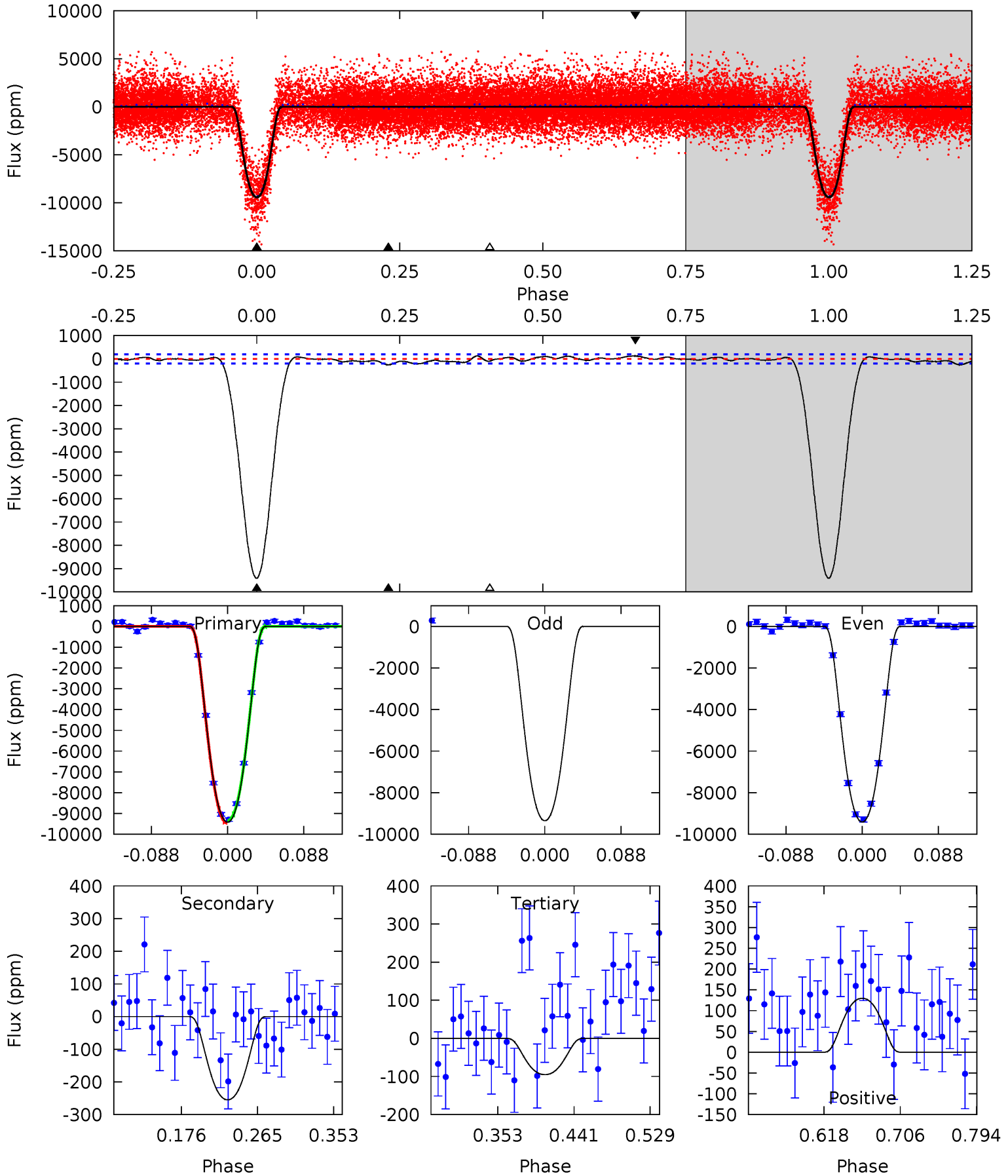
TCE 003231120-02 $P = 1.950047$ Days $T_0 = 133.385116$ (BKJD)



DV Model-Shift Uniqueness Test

003231120-02, P = 1.950043 Days, E = 133.386919 Days

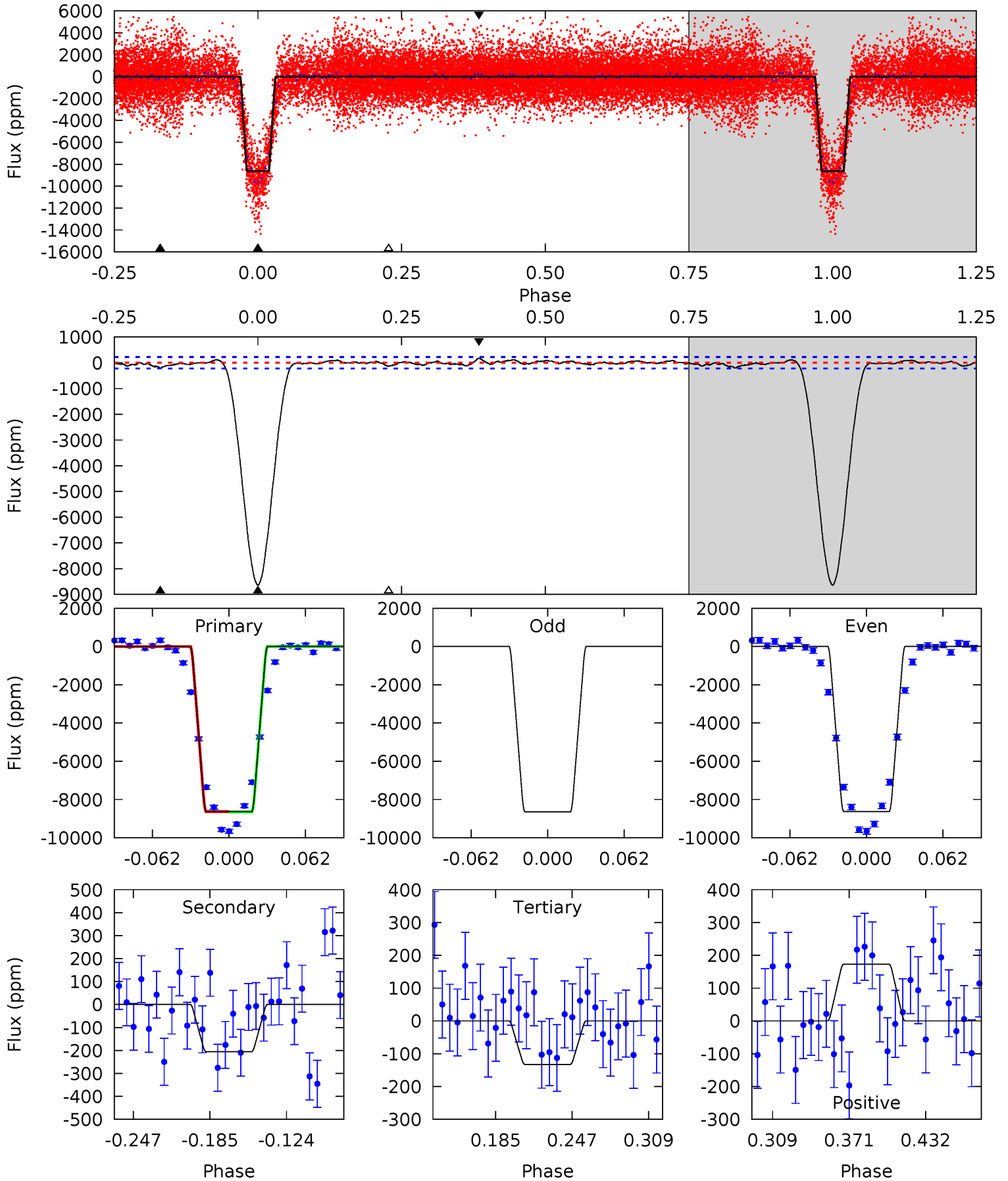
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
222.5	6.02	2.25	3.06	4.59	1.70	1.53	220.3	219.4	3.77	2.96	0.83	0.98	0.01	1.45



Alt Model-Shift Uniqueness Test

003231120-02, P = 1.950047 Days, E = 133.385116 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
179.8	4.28	2.76	3.60	4.66	1.87	1.12	177.1	176.2	1.52	0.68	0.11	1.00	0.02	0.12



Stellar Parameters For KIC 003231120

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5791^{+172}_{-190}	$4.424^{+0.105}_{-0.180}$	$-0.180^{+0.300}_{-0.300}$	$0.969^{+0.275}_{-0.127}$	$0.910^{+0.123}_{-0.089}$	$1.407^{+0.650}_{-0.713}$
	+3%/-3%	+2%/-4%	+167%/-167%	+28%/-13%	+14%/-10%	+46%/-51%
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 003231120-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-255 ± 42	$11.51^{+1.71}_{-0.98}$	2056^{+151}_{-104}	2759^{+108}_{-135}	$0.892^{+0.239}_{-0.227}$
Alt.	-206 ± 48	$10.42^{+1.63}_{-0.95}$	2059^{+150}_{-106}	2758^{+135}_{-175}	$0.891^{+0.298}_{-0.294}$

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 $A_{obs} \gg 1.0$

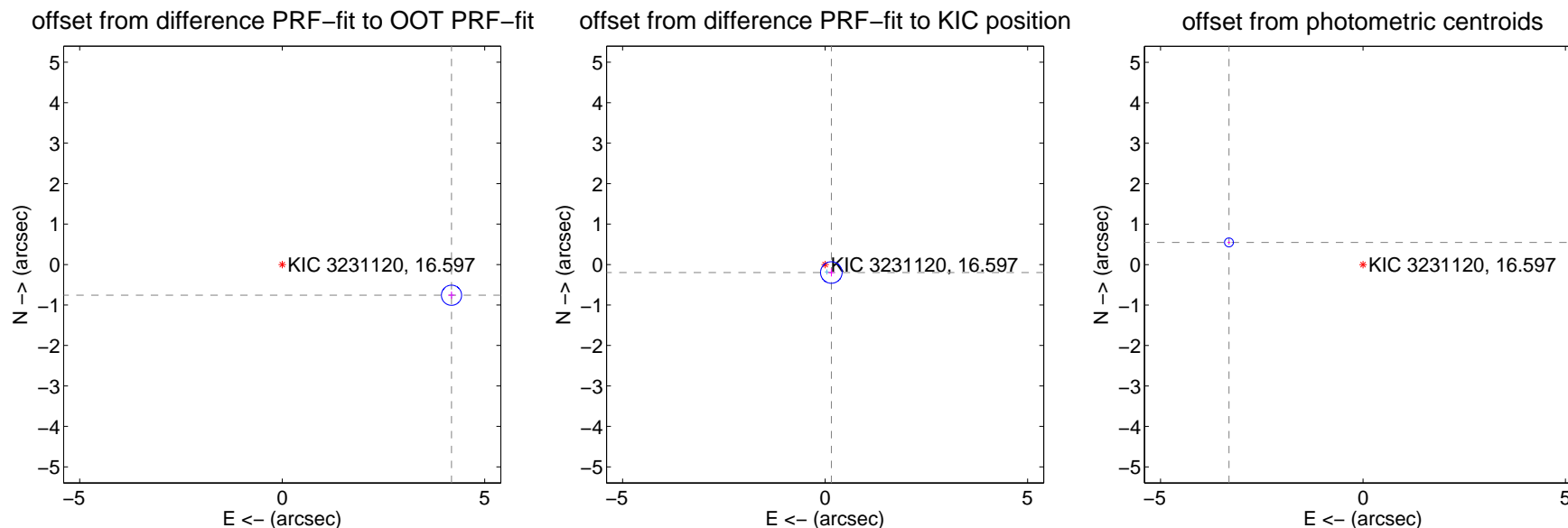
DV Centroid Data

Supplemental centroid analysis for 003231120-02. Kepler magnitude: 16.60. Transit SNR 118.36

There are 8 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 4.18 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	4.249 ± 0.083	51.13	-4.181 ± 0.083	-0.759 ± 0.092
PRF-fit source offset from KIC position	0.250 ± 0.089	2.81	-0.153 ± 0.072	-0.197 ± 0.098
photometric centroid source offset	3.36 ± 0.04	91.45	3.31 ± 0.04	0.55 ± 0.02



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.

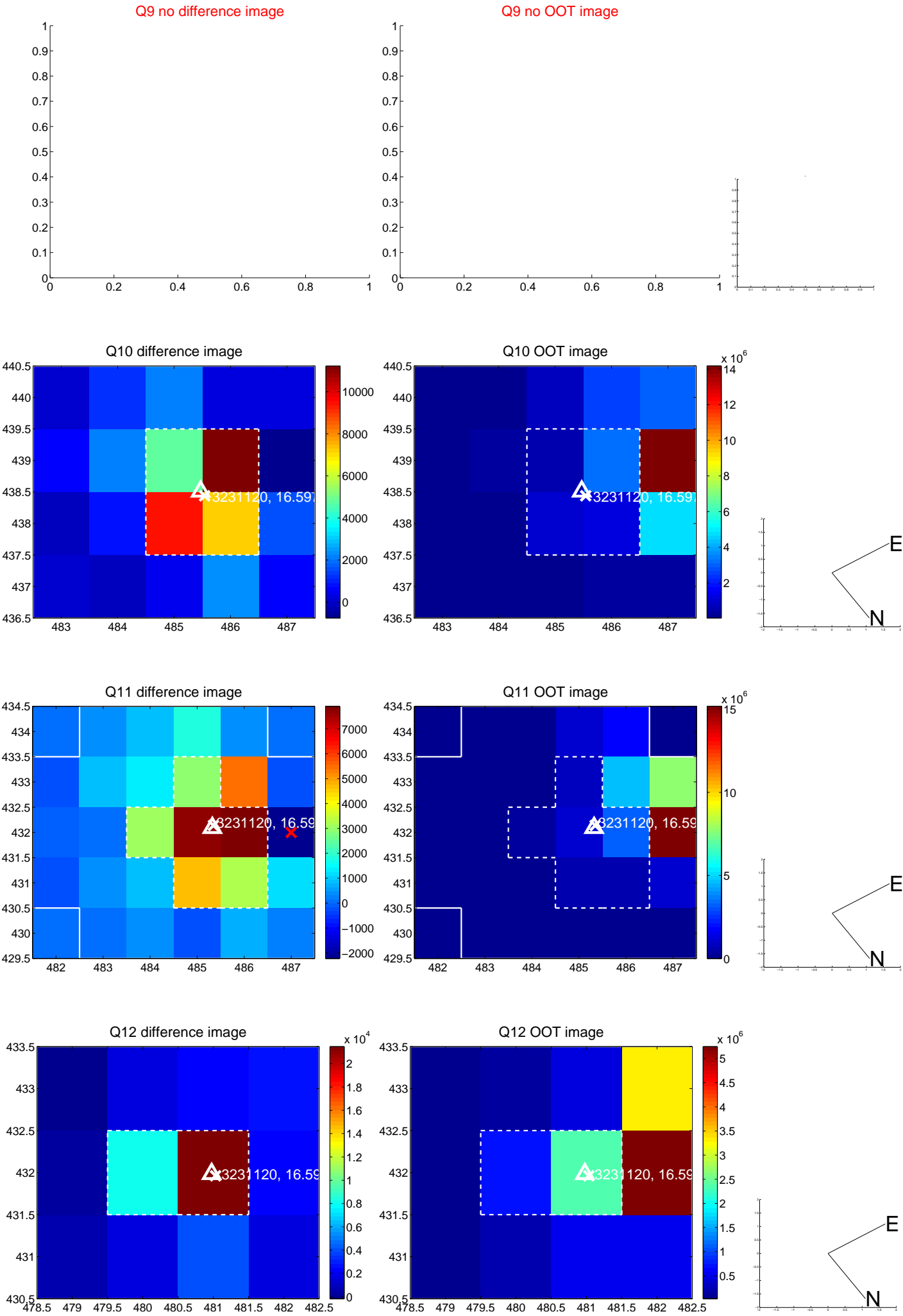
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



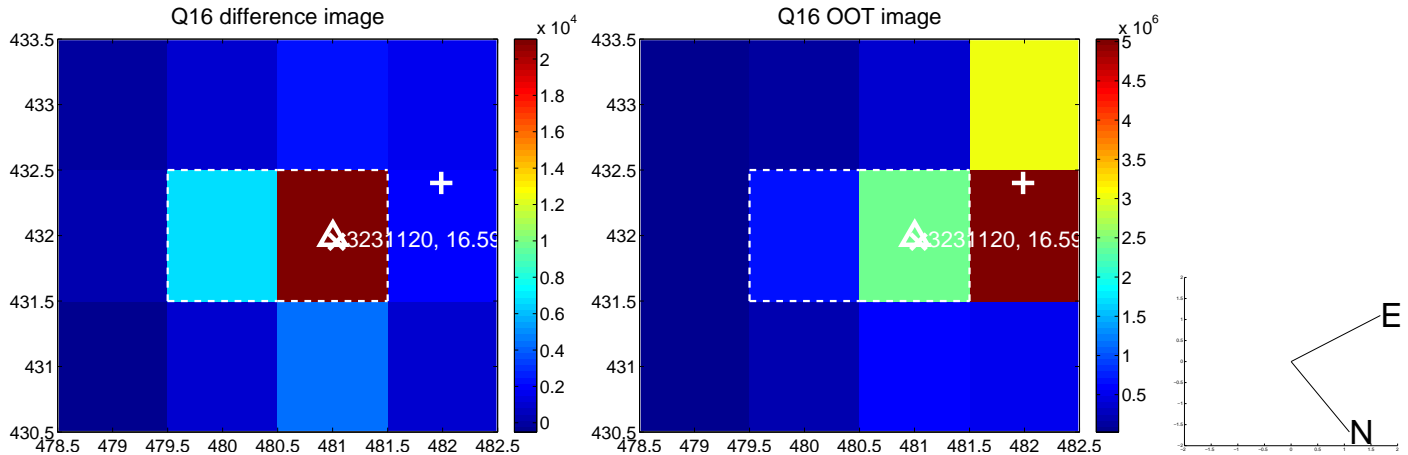
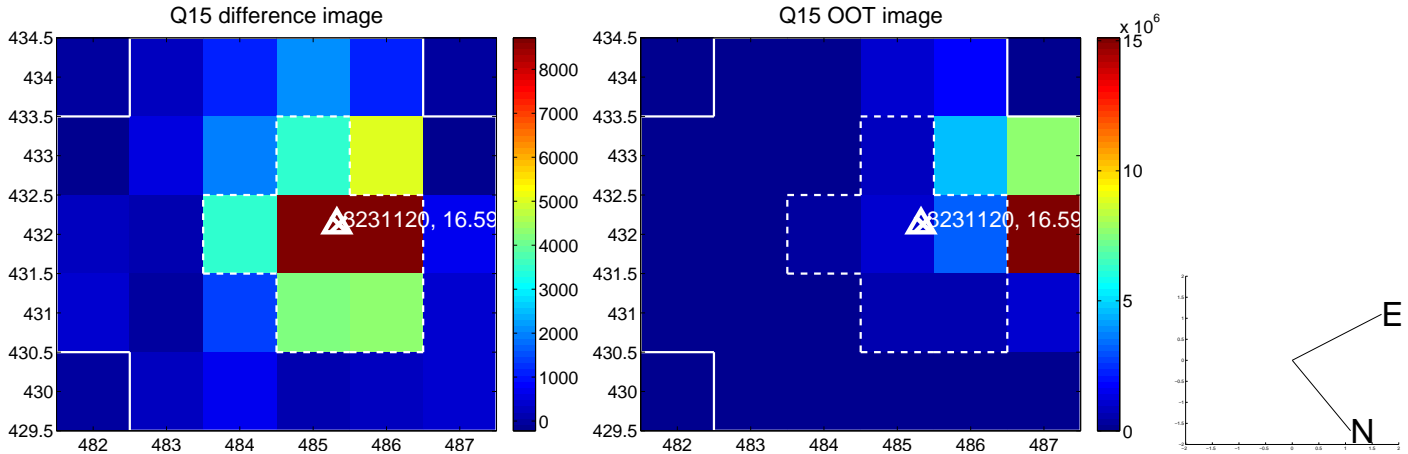
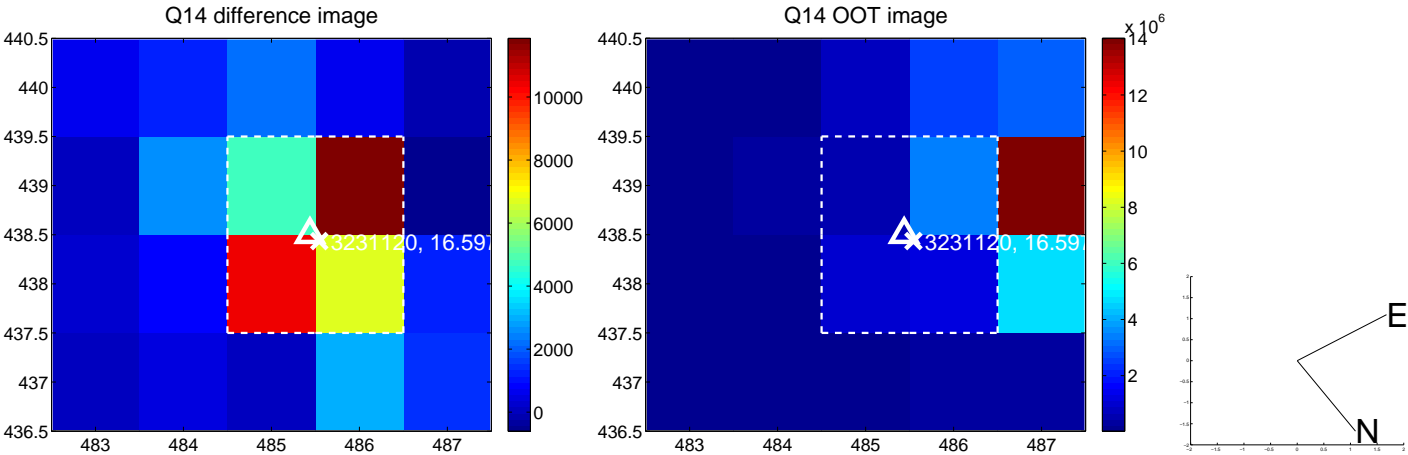
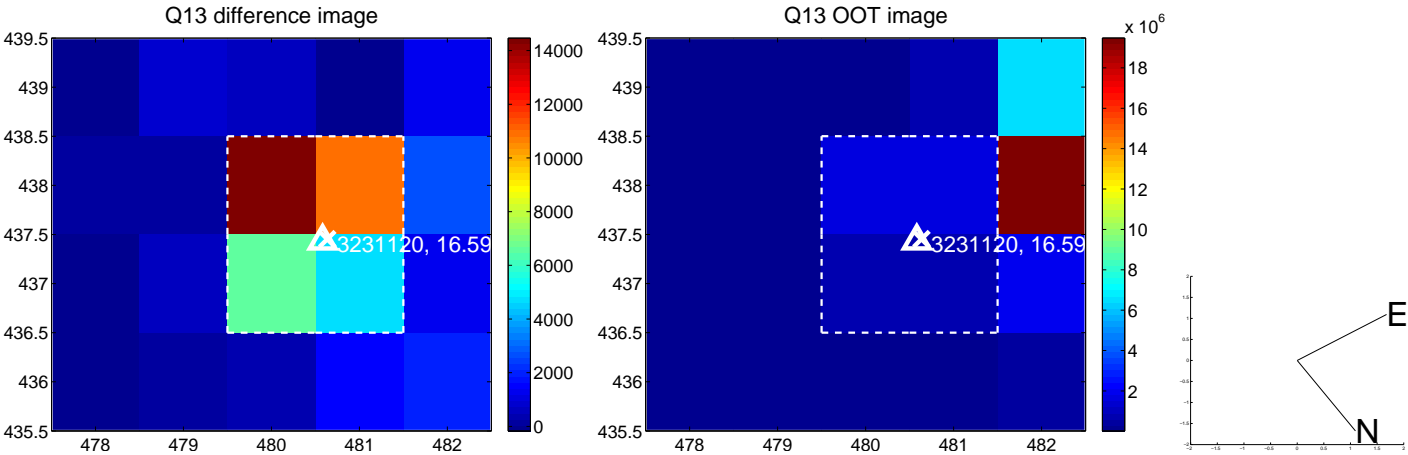
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



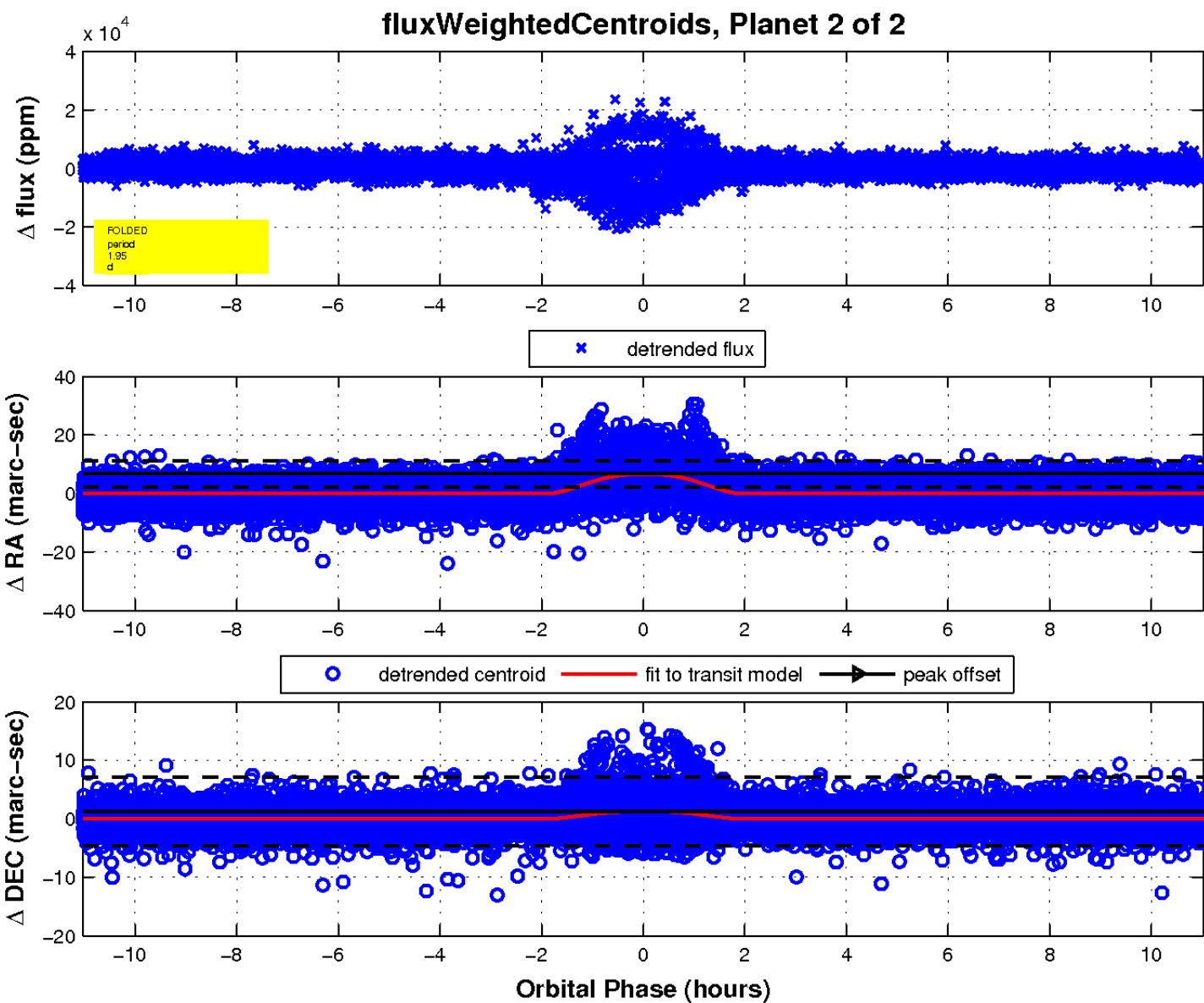
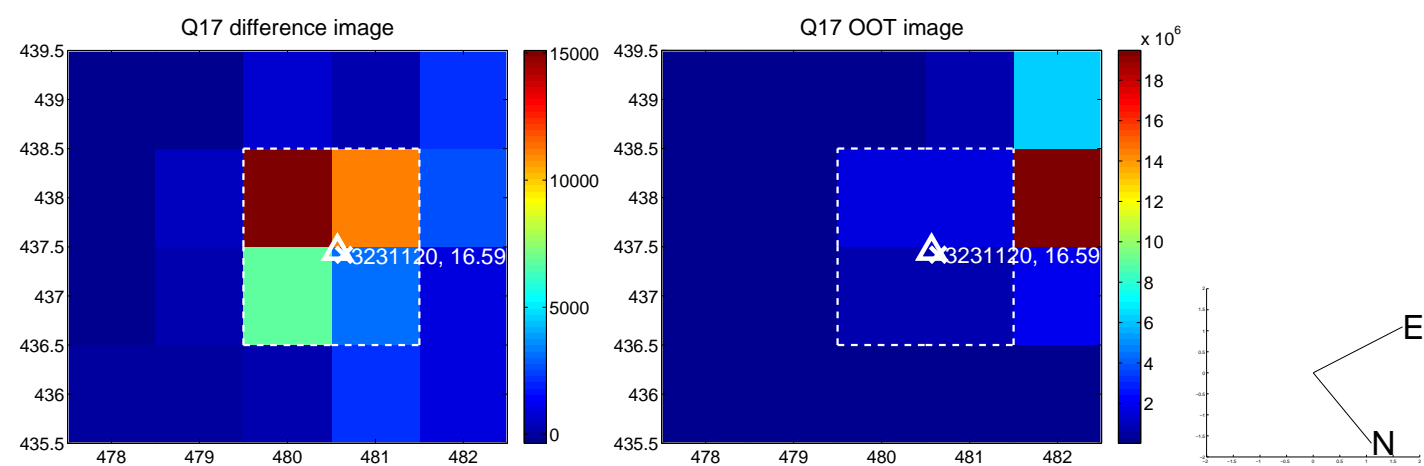
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

