

KIC 009406652

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})
009406652-01	OBS	No	462.142410	574.066579	156142.2	28.669	19.9	15.6	3.01	8600	126.94	20.54
009406652-03	OBS	No	477.418905	472.863727	76242.1	22.713	12.4	10.0	3.01	8600	89.09	19.67
009406652-04	OBS	No	365.433787	256.278311	181.2	15.000	12.2	-1.0	3.01	8600	4.12	28.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009406652-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009406652-03	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009406652-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

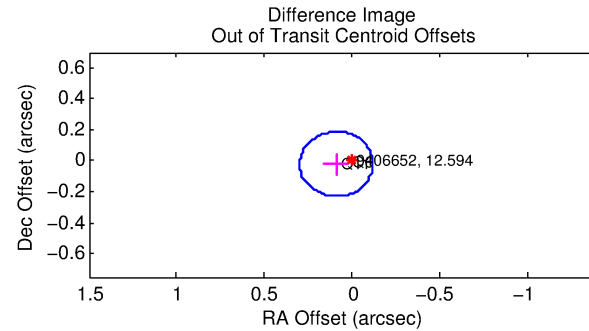
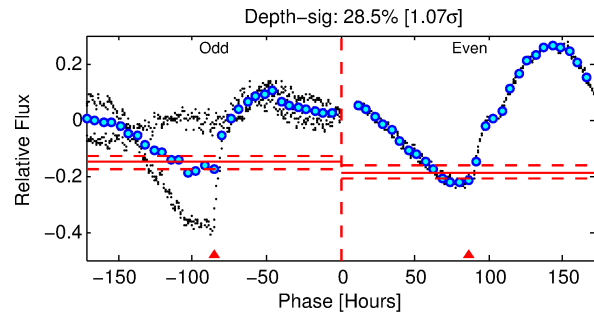
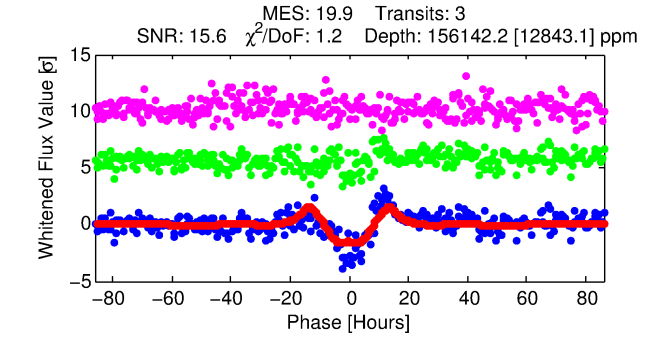
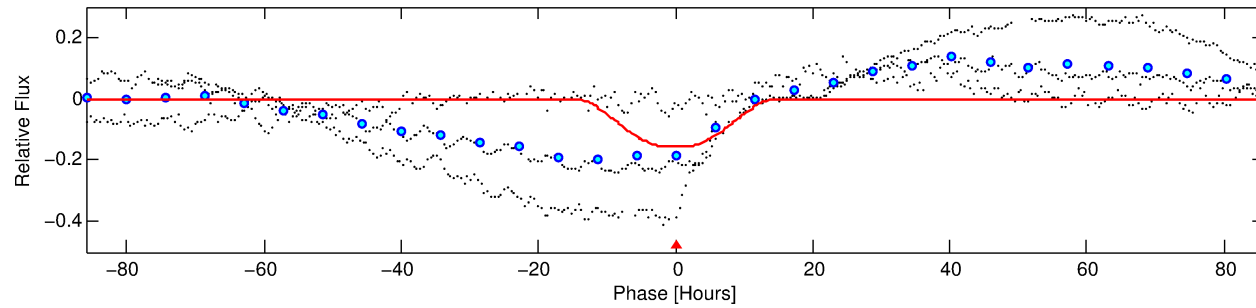
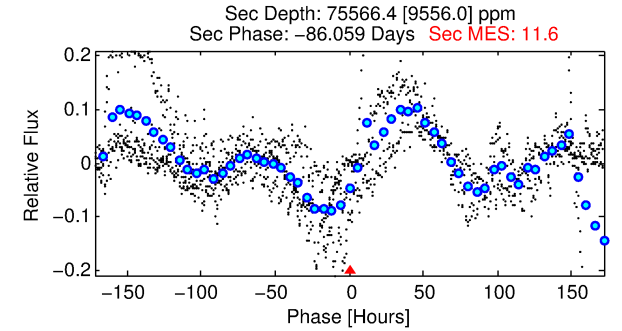
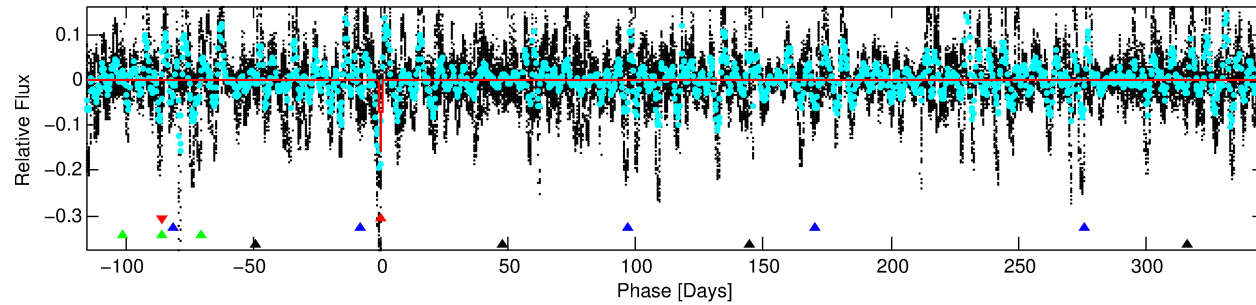
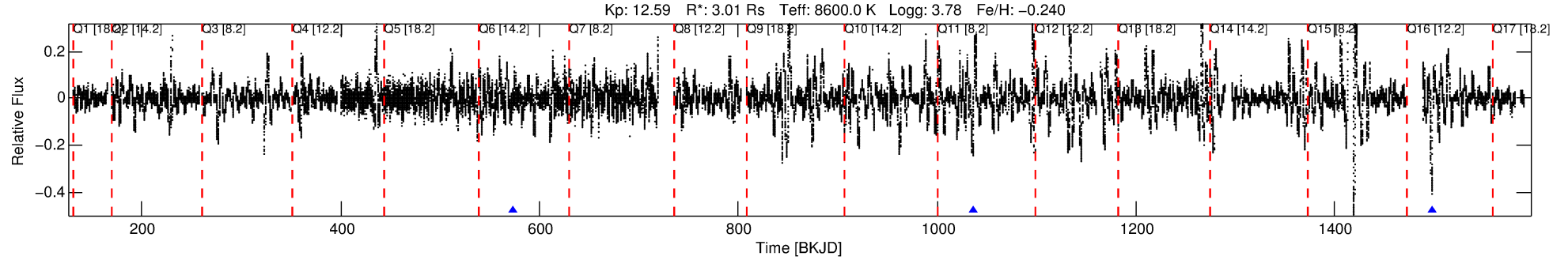
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009406652-01

No Significant Match Found

DV One-Page Summary

KIC: 9406652 Candidate: 1 of 4 Period: 462.142 d



DV Fit Results:

Period = 462.14241 [0.01623] d
Epoch = 574.0666 [0.0216] BKJD
Rp/R* = 0.3860 [0.0171]
a/R* = 155.14 [5.90]
b = 0.58 [0.05]
Seff = 20.54 [14.31]
Teff = 543 [95] K
Re = 126.94 [54.71] Re
a = 1.4722 [0.6150] AU
Ag = 5591.75 [3861.56] [1.45 σ]
Teffp = 7258 [429] K [15.28 σ]

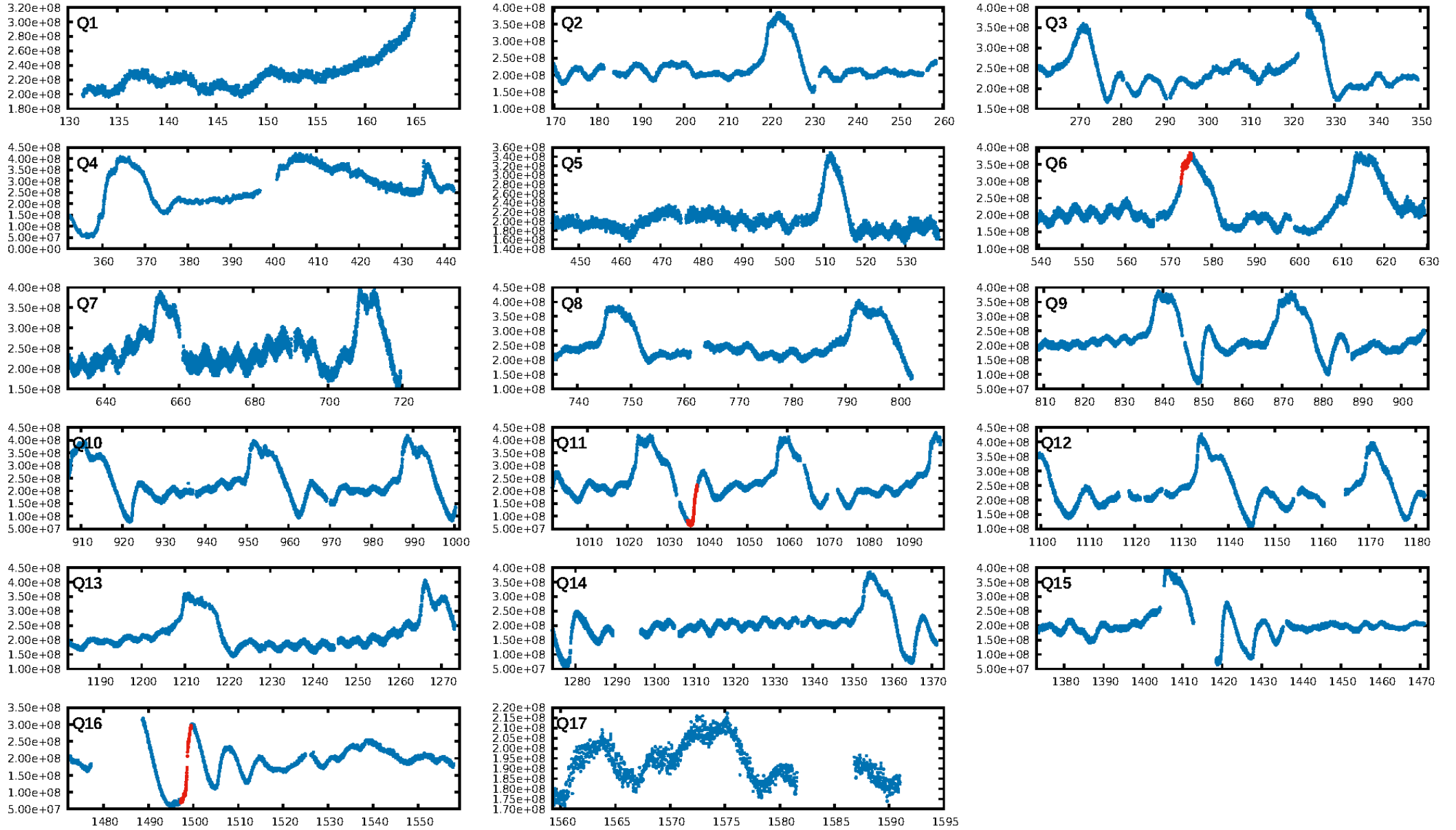
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [71.73 σ]
LongPeriod-sig: 100.0% [10.02 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 58.1%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.04042
Centroid-sig: 5.7%
Centroid-so: 1.189 arcsec [3.54 σ]
OotOffset-rm: 0.093 arcsec [1.34 σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-rm: 0.370 arcsec [5.13 σ]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

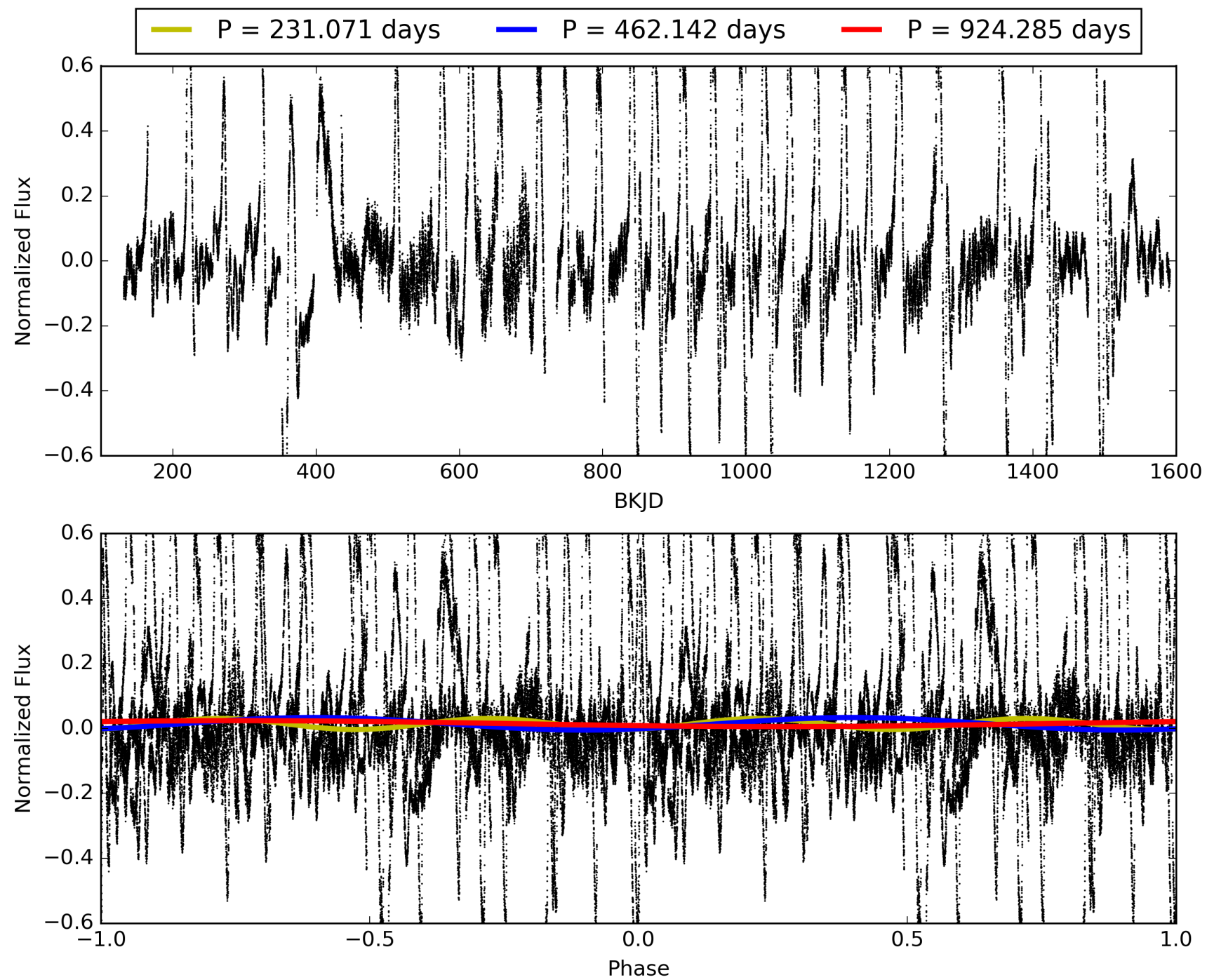
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:03:40 Z

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

TCE 009406652-01, PDC Light Curves

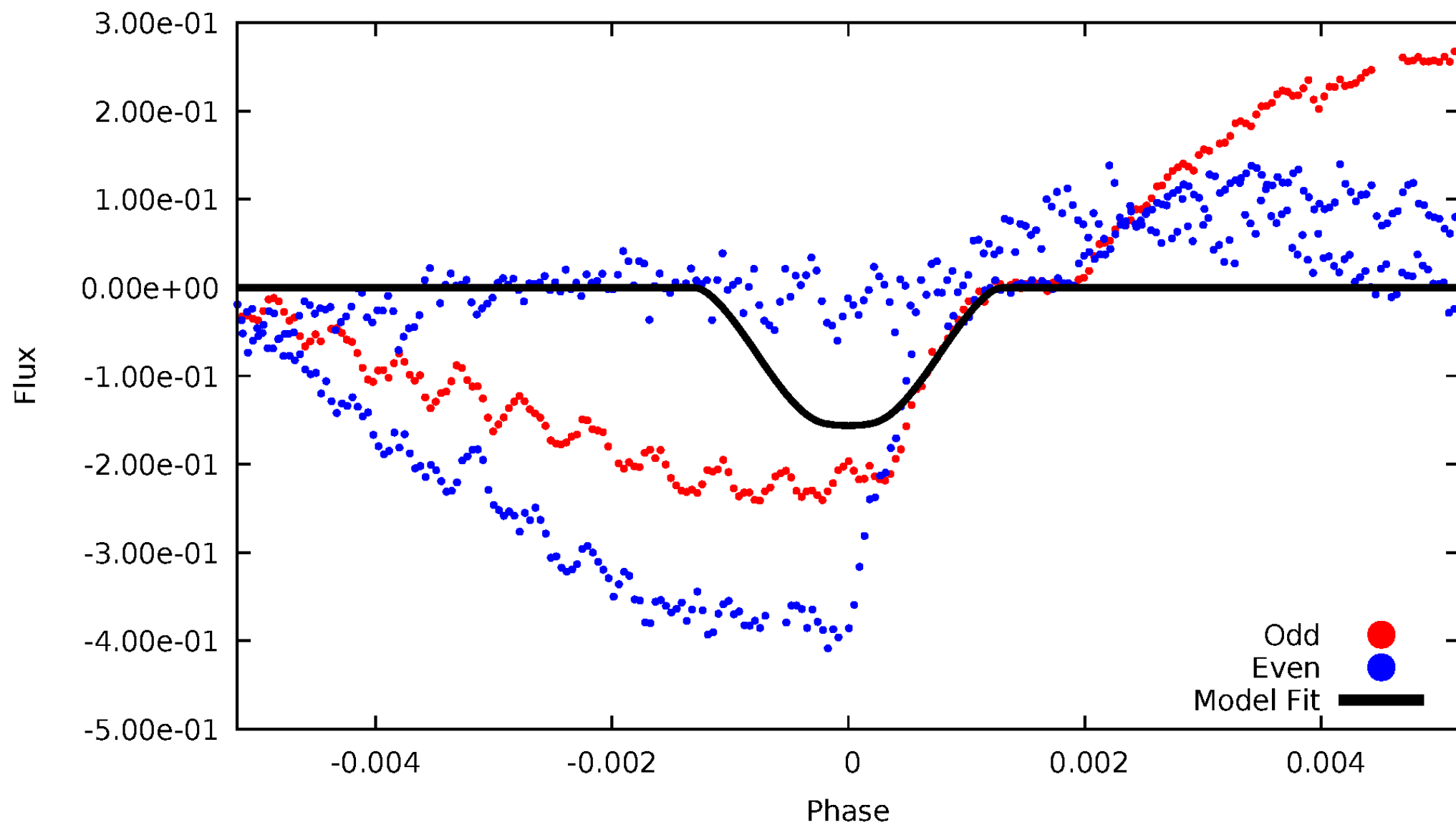


TCE 009406652-01



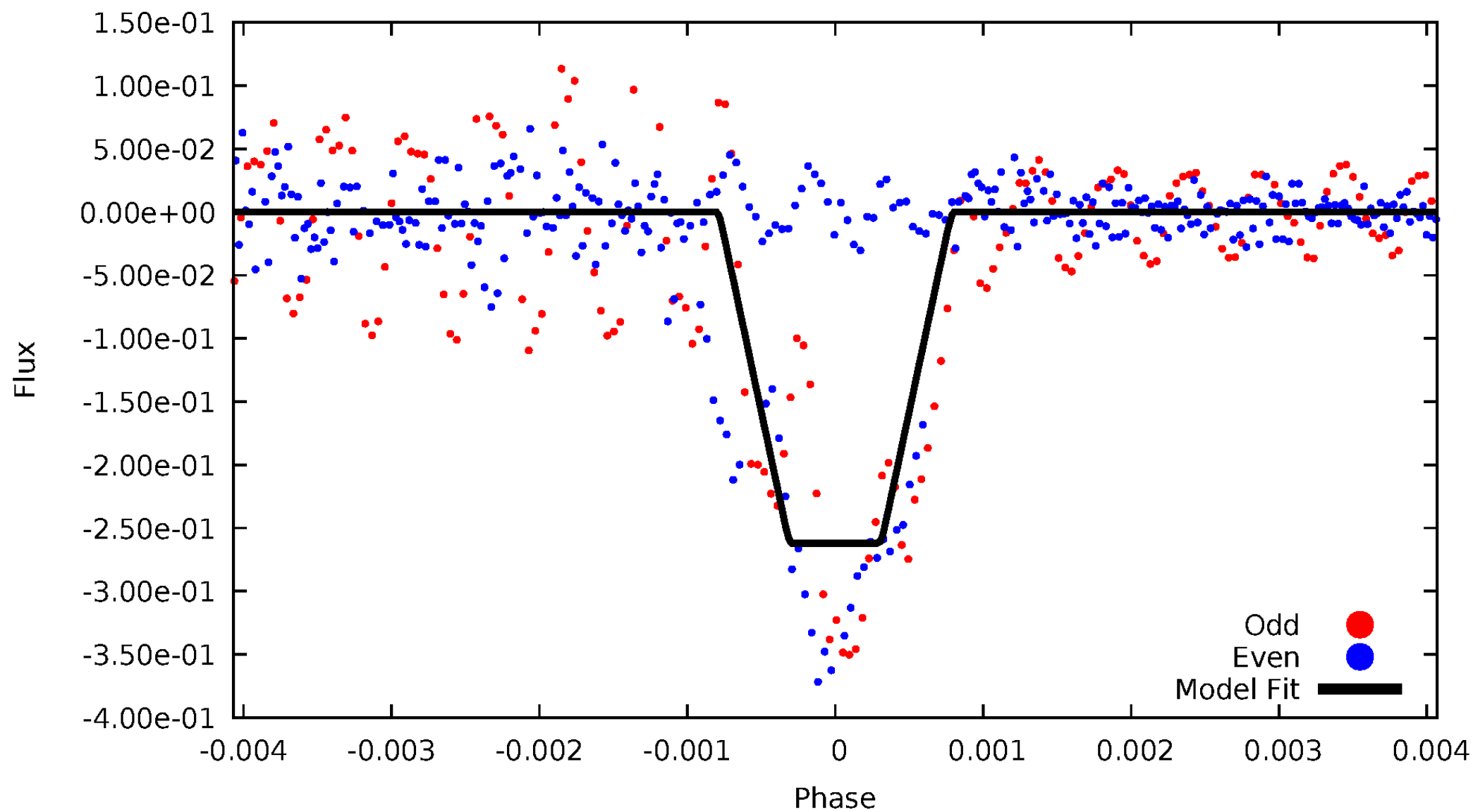
DV Odd/Even

TCE 009406652-01



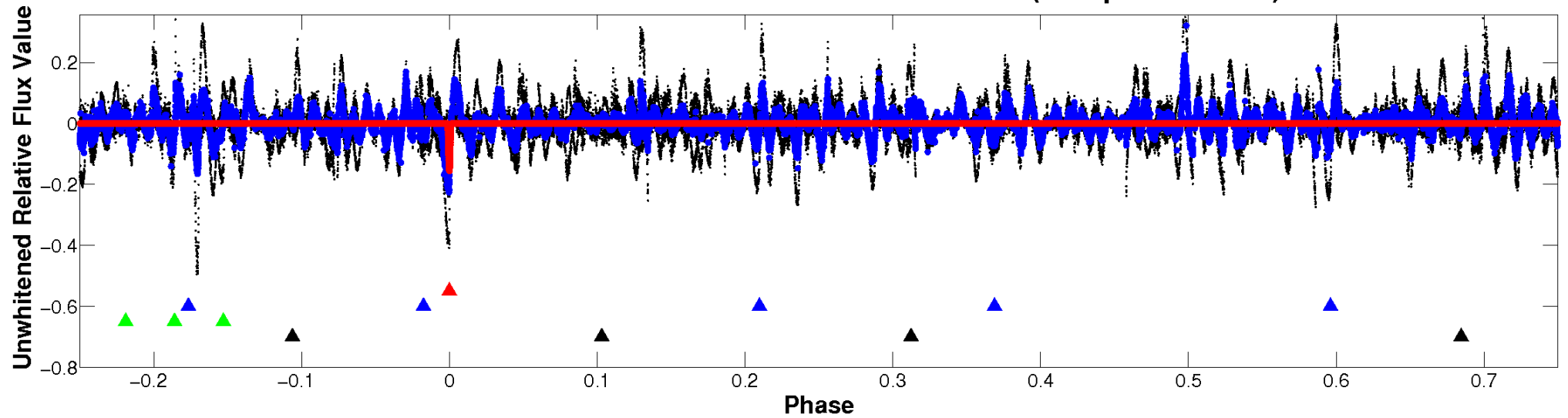
ALT Odd/Even

TCE 009406652-01

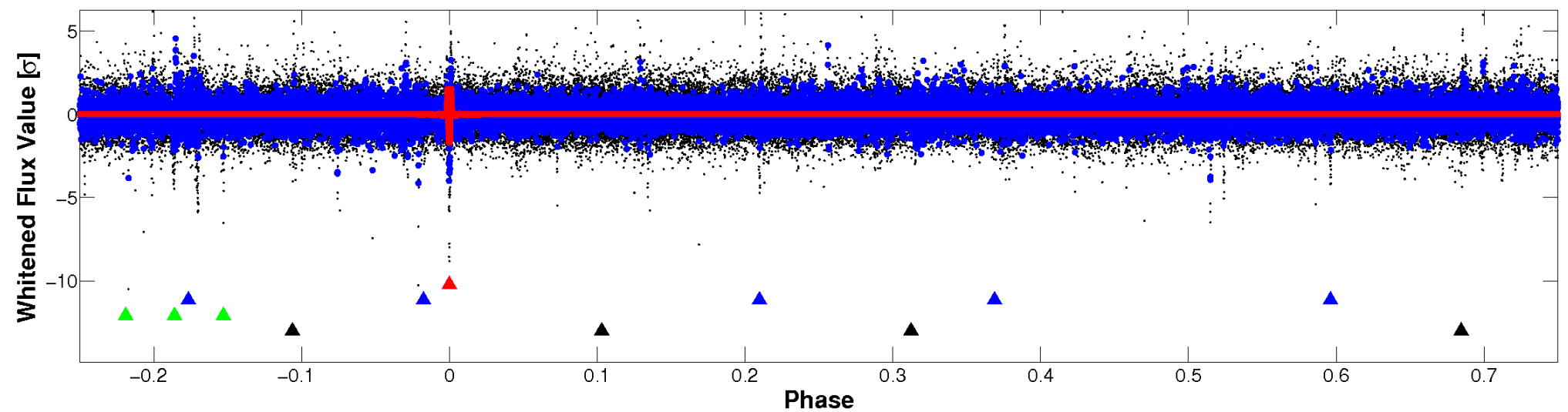


Non-Whitened Vs. Whitened Light Curve

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

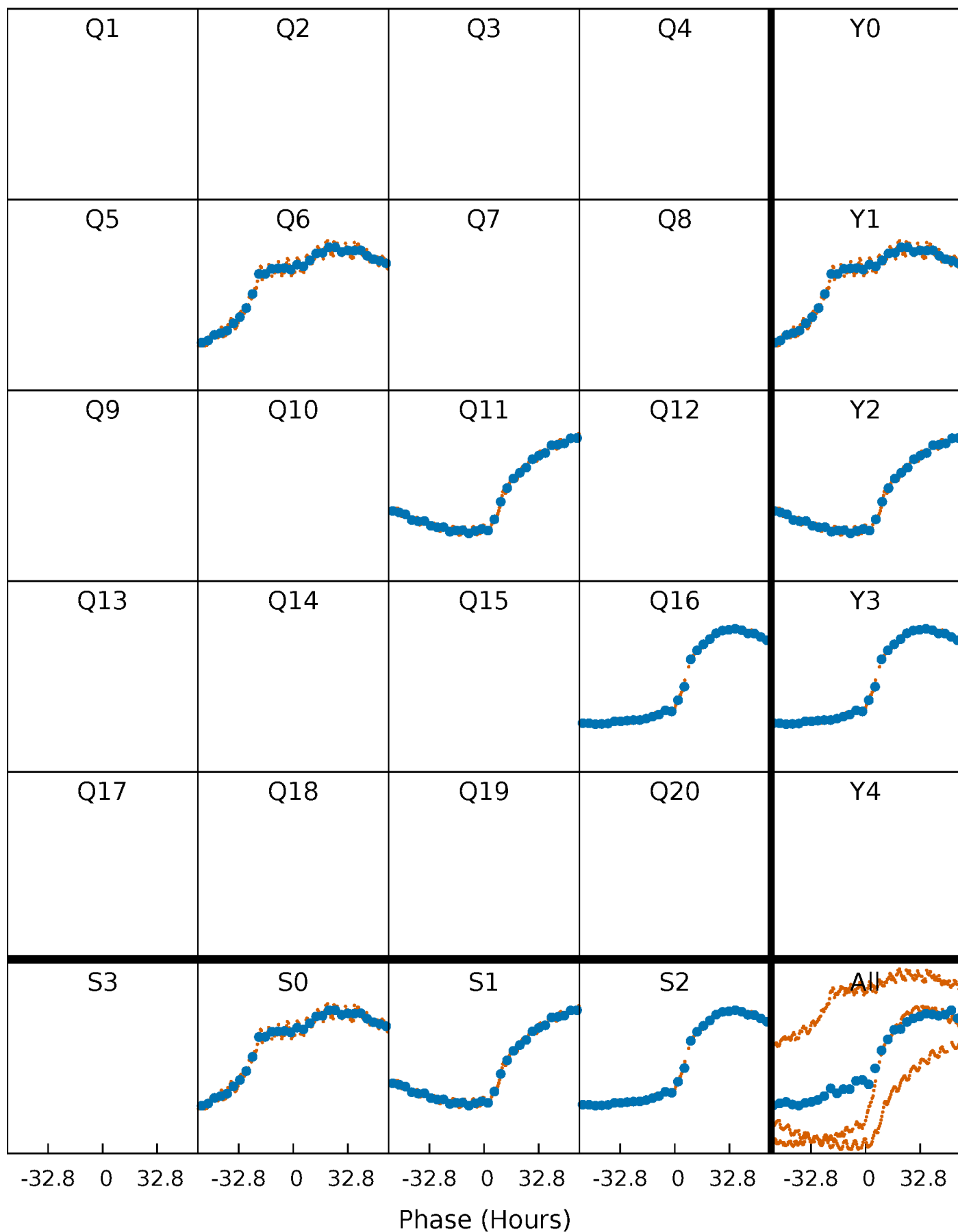


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



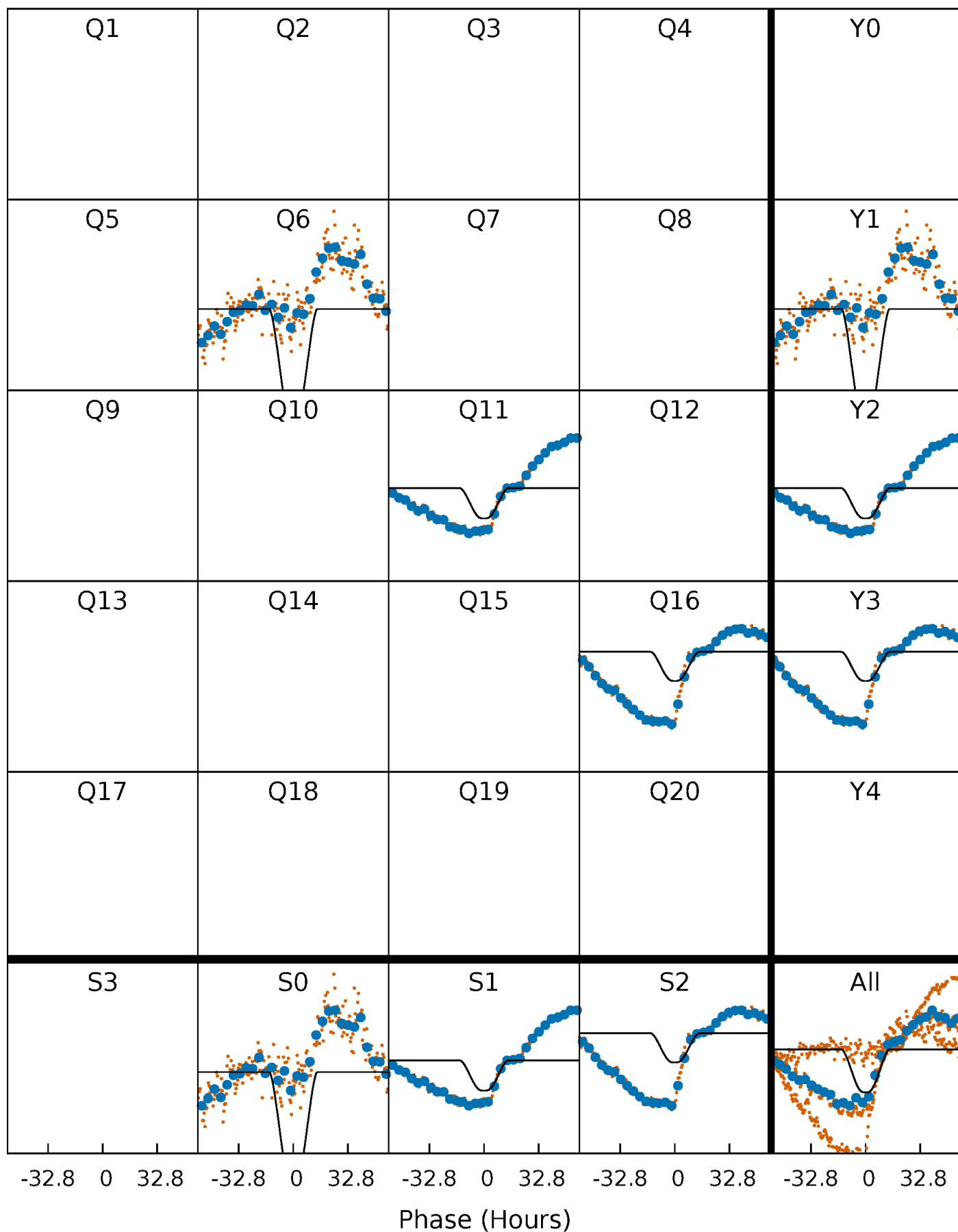
PDC Quarter-Phased Transit Curves

TCE 009406652-01 P=462.142410 Days $T_0=574.066579$ (BKJD)



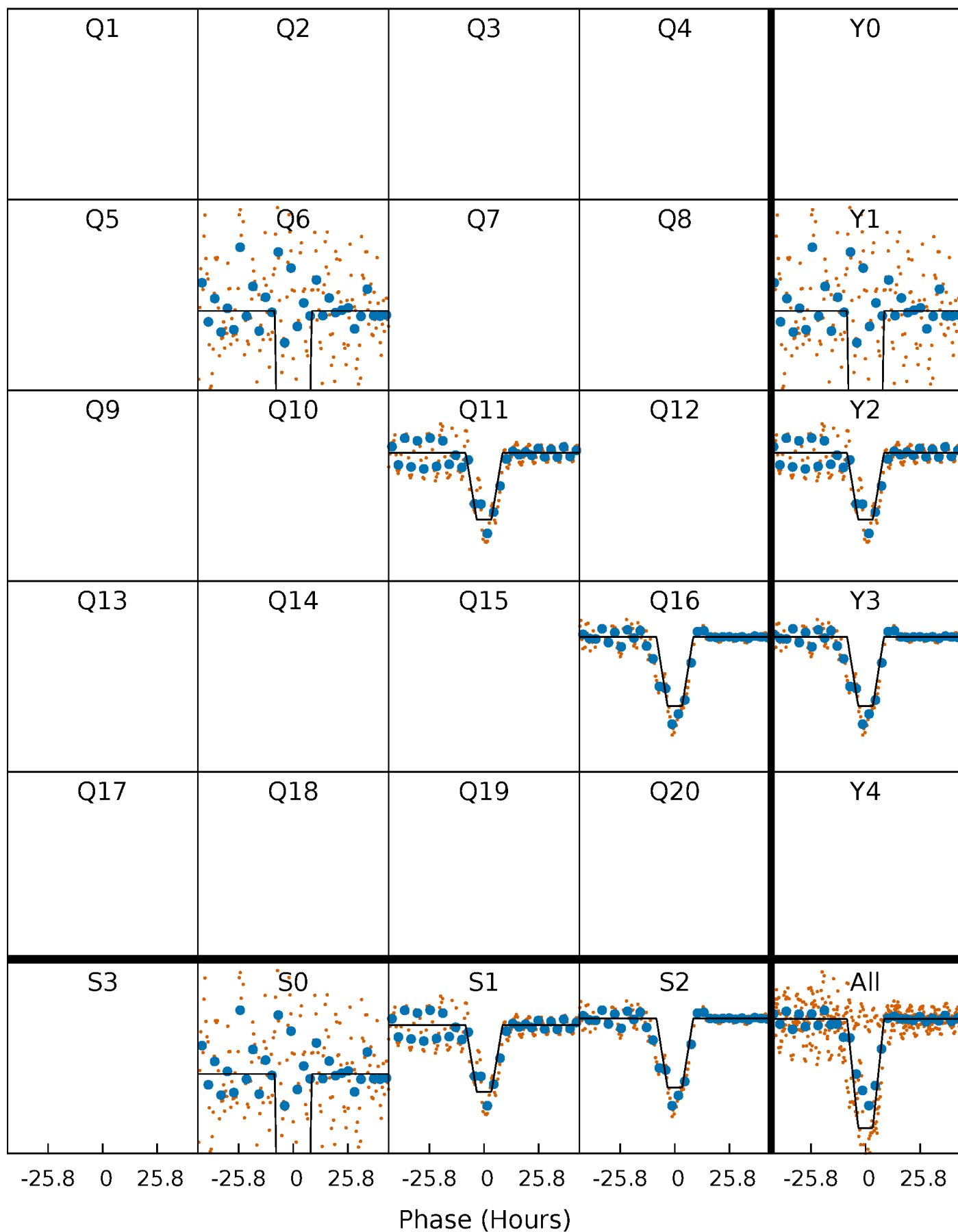
DV Quarter-Phased Transit Curves

TCE 009406652-01 P=462.142410 Days $T_0=574.066579$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

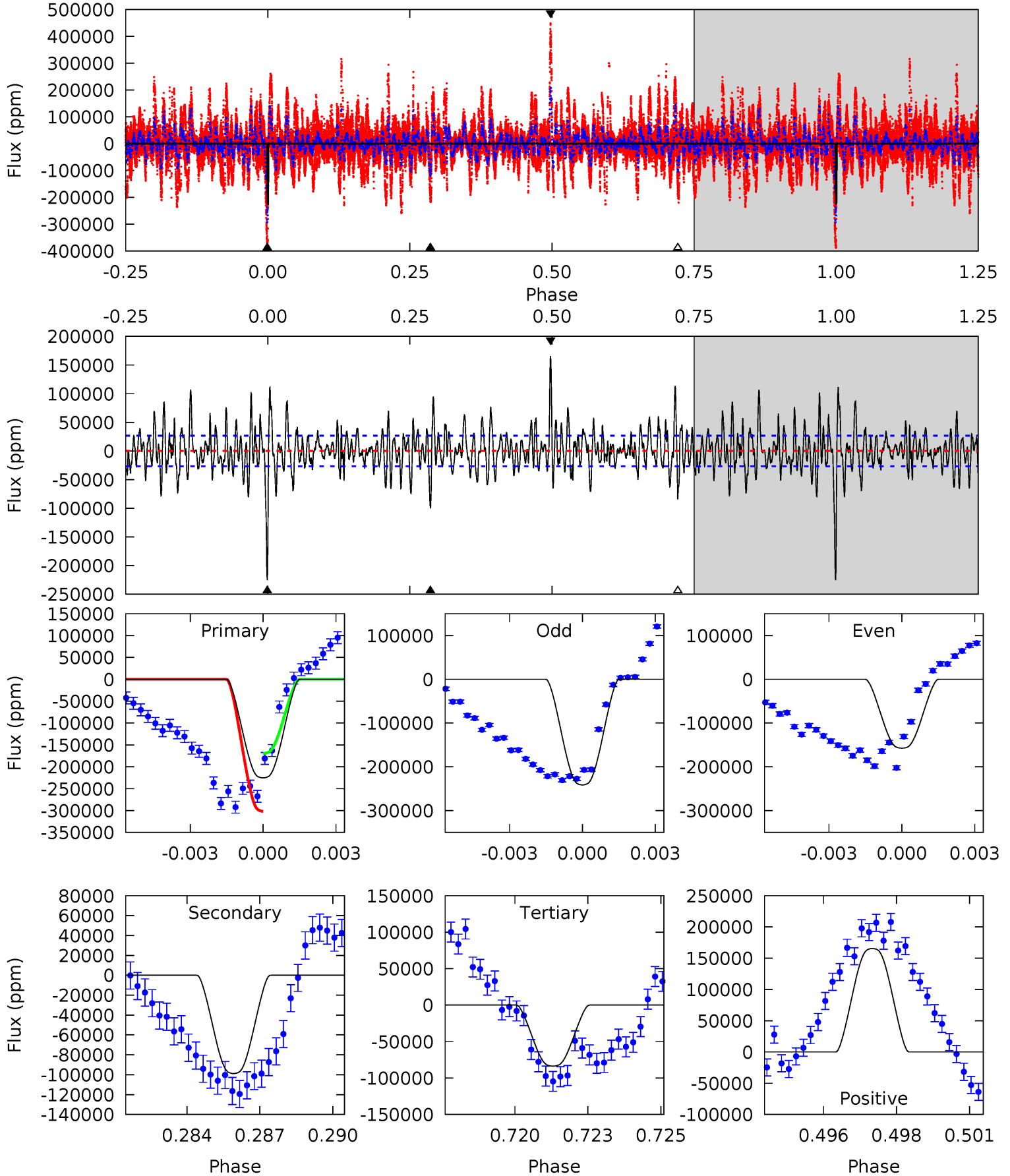
TCE 009406652-01 P=462.036848 Days $T_0=574.251725$ (BKJD)



DV Model-Shift Uniqueness Test

009406652-01, P = 462.142410 Days, E = 111.924169 Days

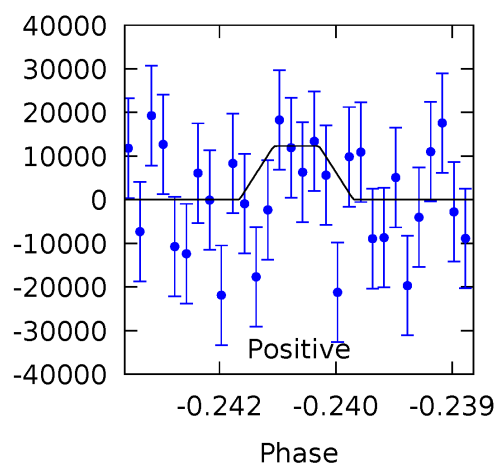
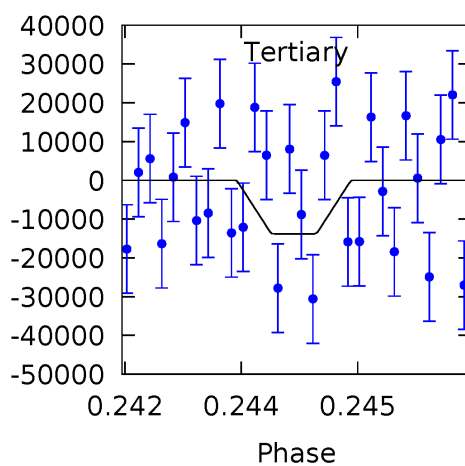
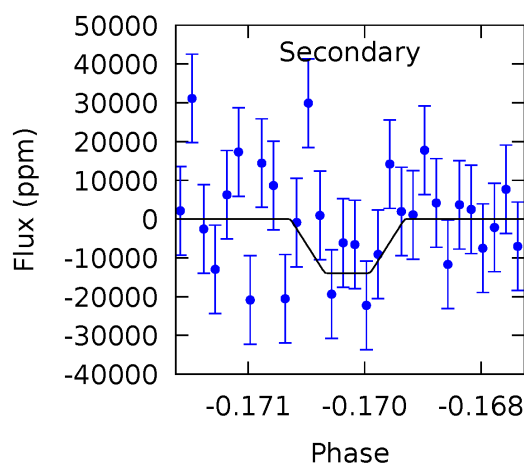
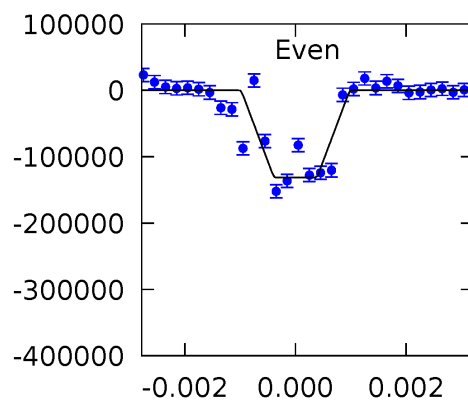
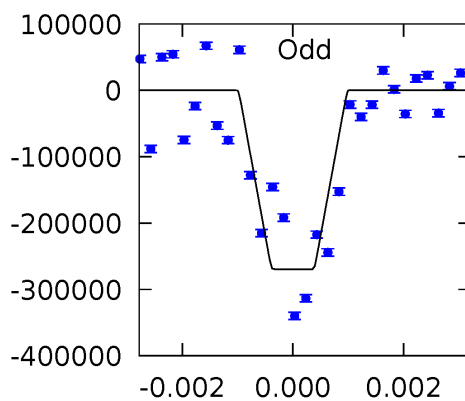
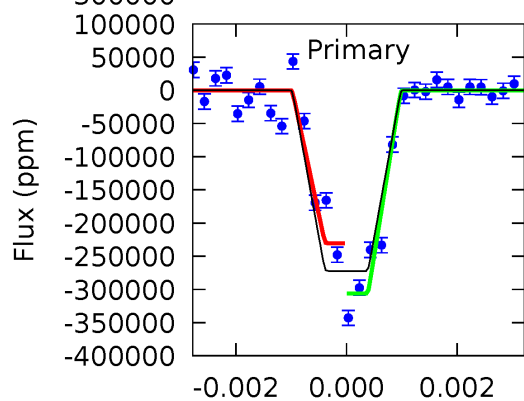
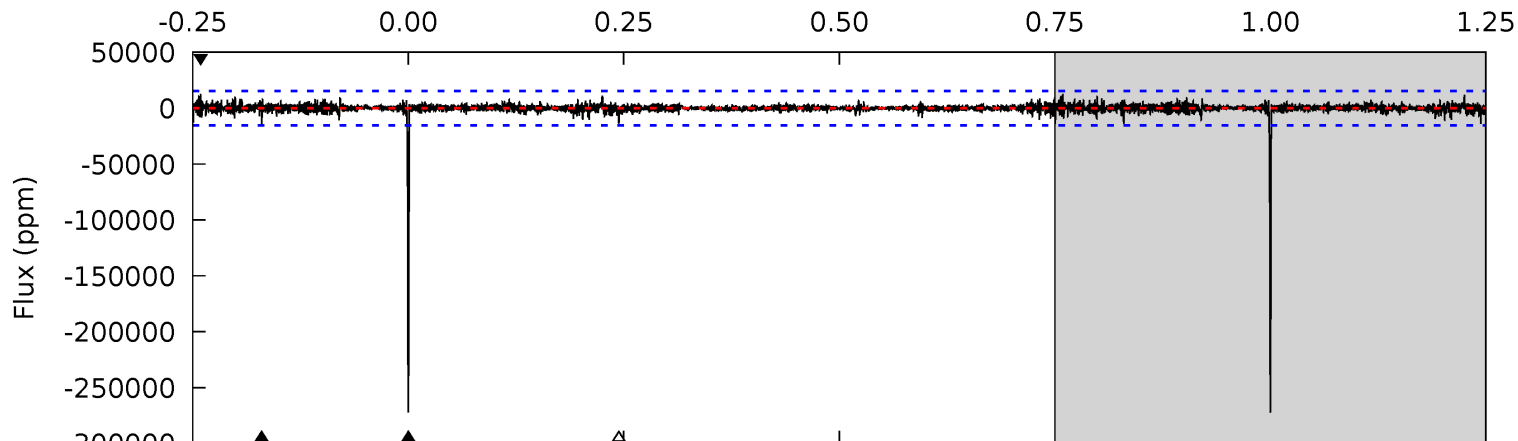
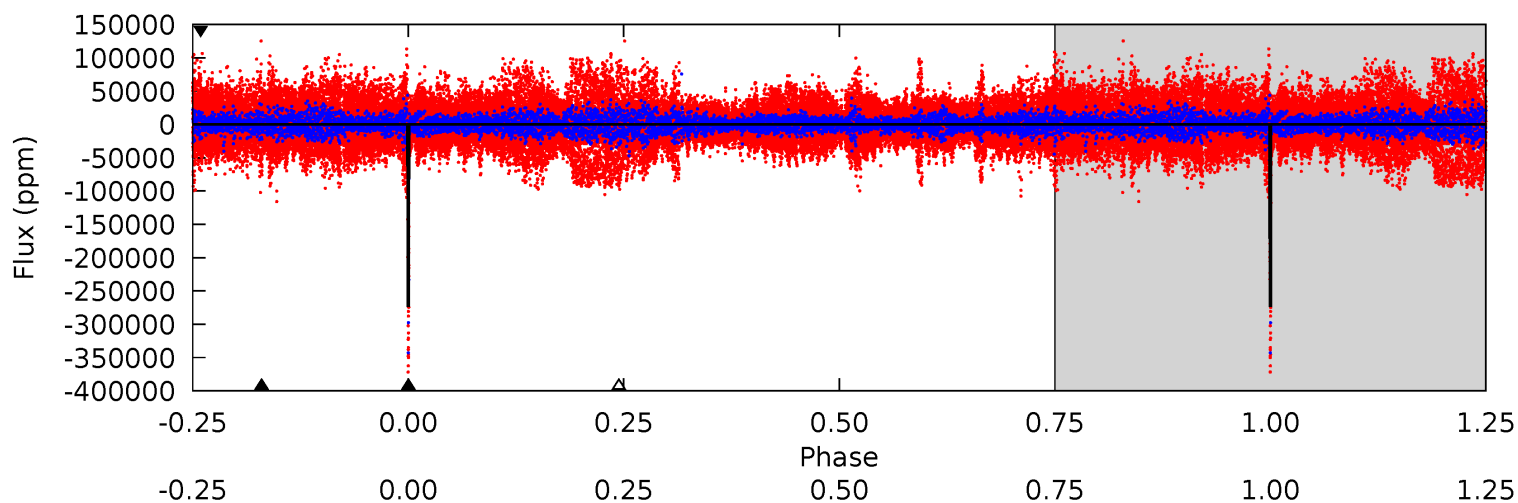
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
44.7	19.6	16.6	32.8	5.28	3.01	5.95	28.1	11.9	3.02	-13.2	8.02	0.83	0.42	13.1



Alt Model-Shift Uniqueness Test

009406652-01, P = 462.036848 Days, E = 112.214877 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
94.8	4.85	4.80	4.29	5.37	3.16	0.70	90.0	90.5	0.05	0.57	28.0	0.71	0.04	0



Stellar Parameters For KIC 009406652

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8600^{+237}_{-385}	$3.779^{+0.397}_{-0.132}$	$-0.240^{+0.350}_{-0.350}$	$3.014^{+0.754}_{-1.292}$	$1.994^{+0.424}_{-0.424}$	$0.103^{+0.369}_{-0.041}$
	+3%/-4%	+11%/-3%	+146%/-146%	+25%/-43%	+21%/-21%	+360%/-40%
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 009406652-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-98820 ± 5042	$124.65^{+19.74}_{-28.21}$	742^{+59}_{-85}	7766^{+361}_{-381}	8601^{+4950}_{-2088}
Alt.	-13940 ± 2872	$165.54^{+27.75}_{-36.62}$	742^{+59}_{-85}	4210^{+207}_{-217}	632^{+391}_{-198}

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

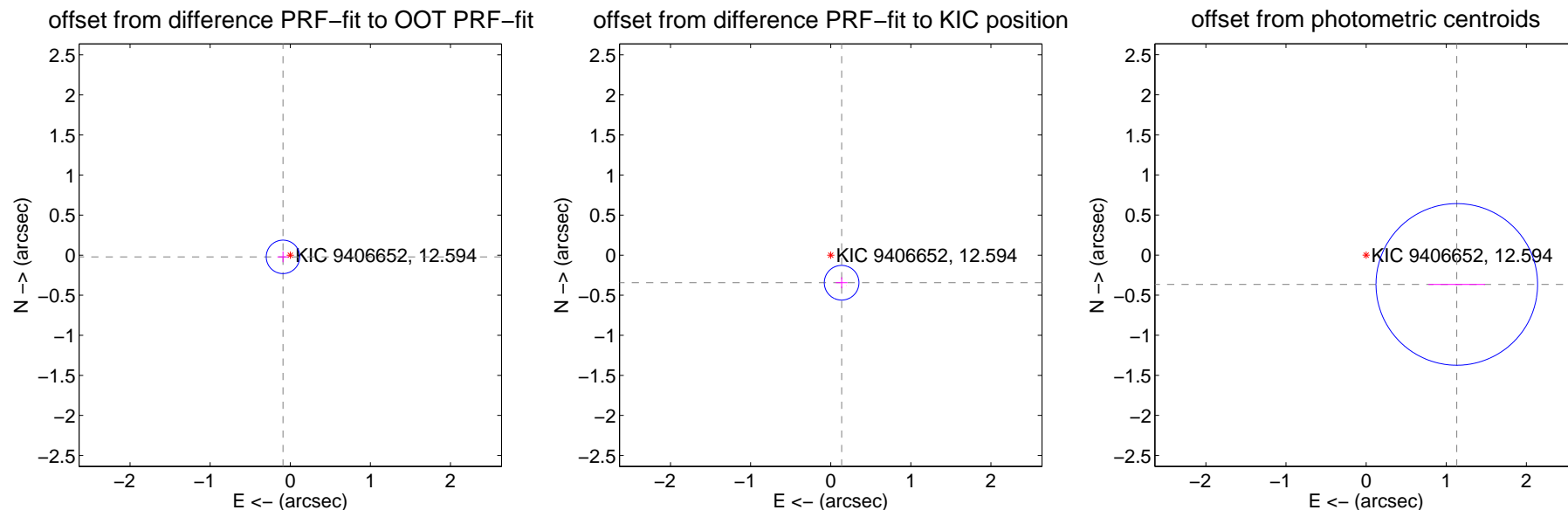
DV Centroid Data

Supplemental centroid analysis for 009406652-01. Kepler magnitude: 12.59. Transit SNR 15.62

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.39 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.093 ± 0.070	1.34	0.091 ± 0.070	-0.021 ± 0.067
PRF-fit source offset from KIC position	0.370 ± 0.072	5.13	-0.136 ± 0.073	-0.344 ± 0.069
photometric centroid source offset	1.19 ± 0.34	3.54	-1.13 ± 0.35	-0.37 ± 0.01

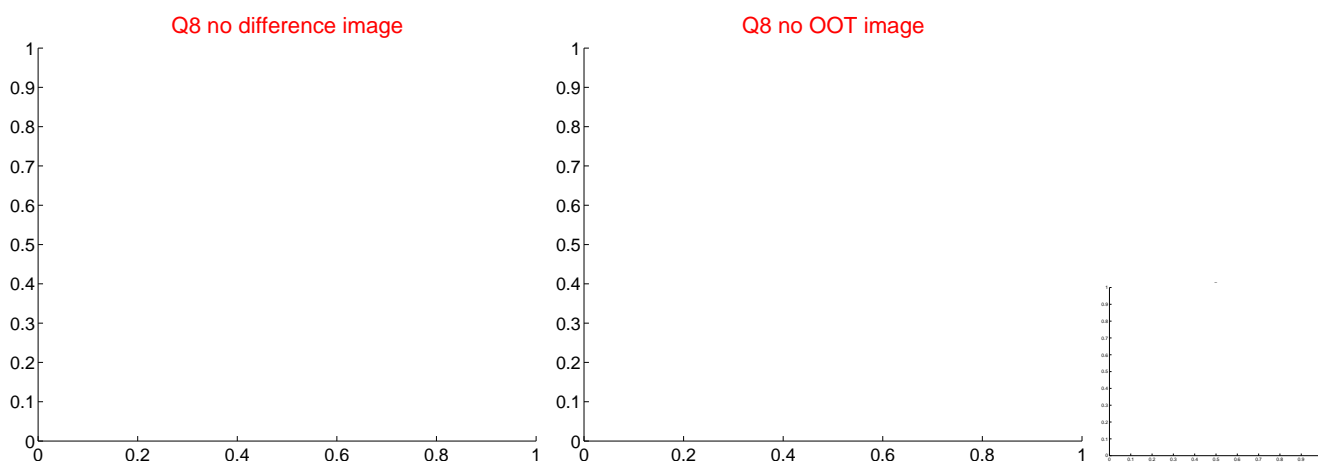
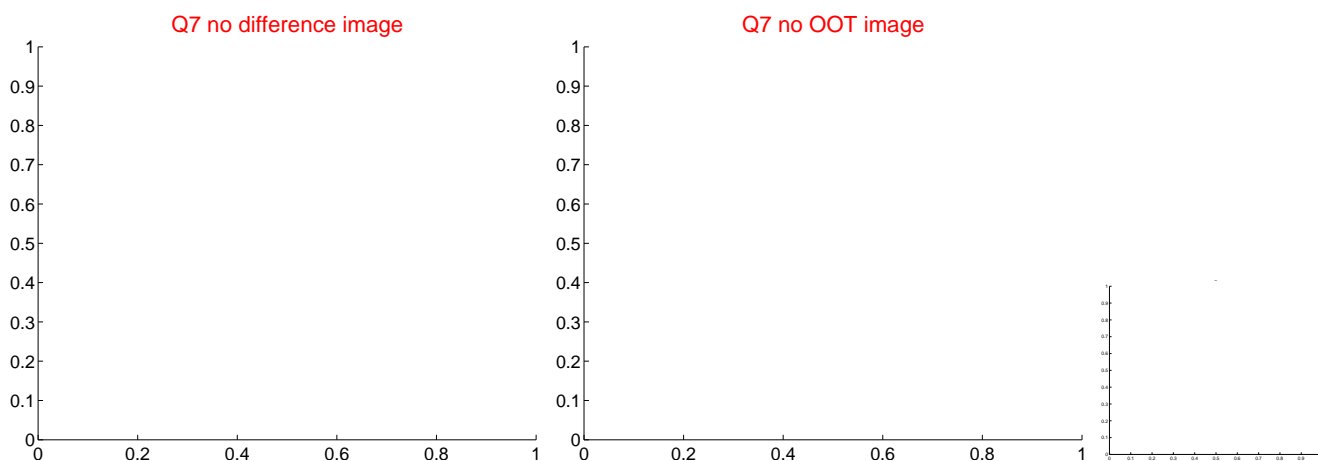
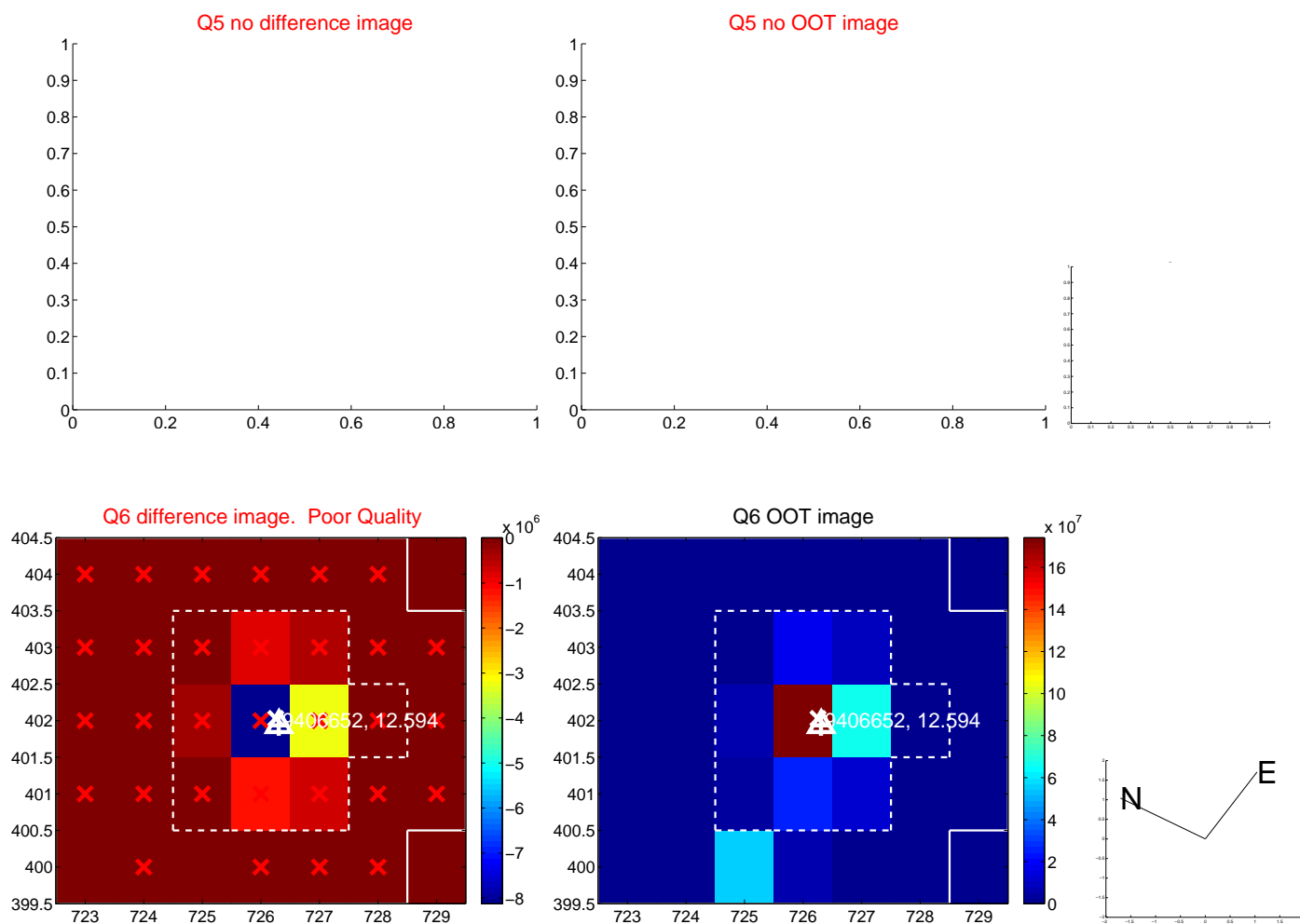


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

Q9 no difference image



Q9 no OOT image



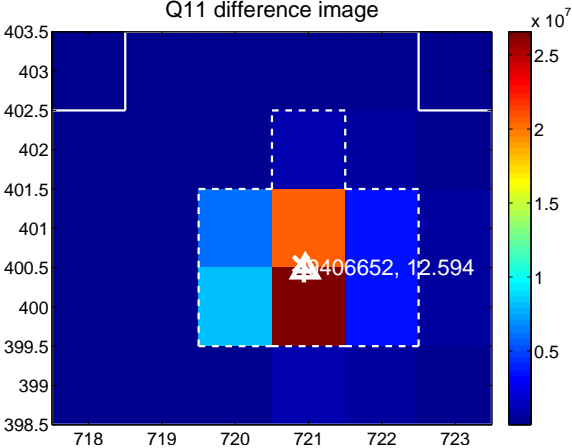
Q10 no difference image



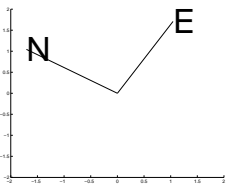
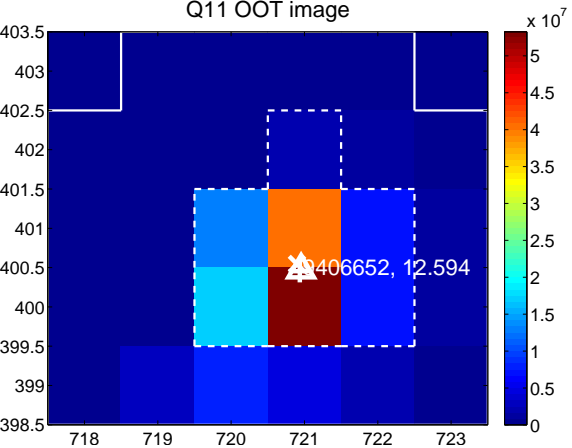
Q10 no OOT image



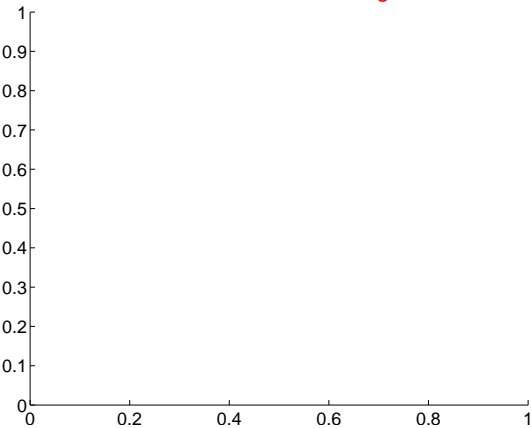
Q11 difference image



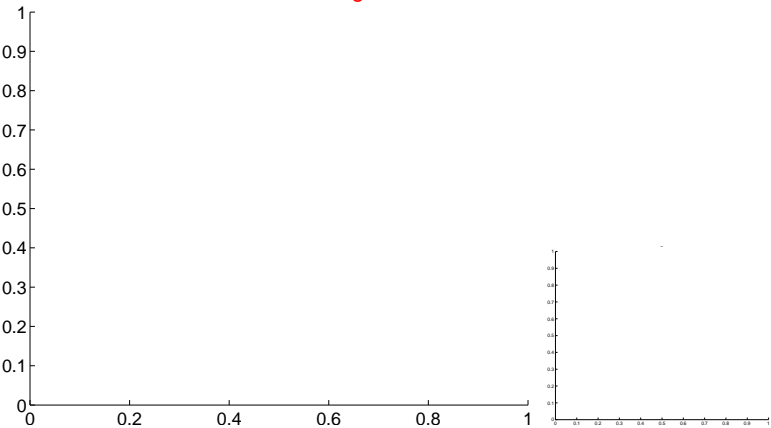
Q11 OOT image



Q12 no difference image



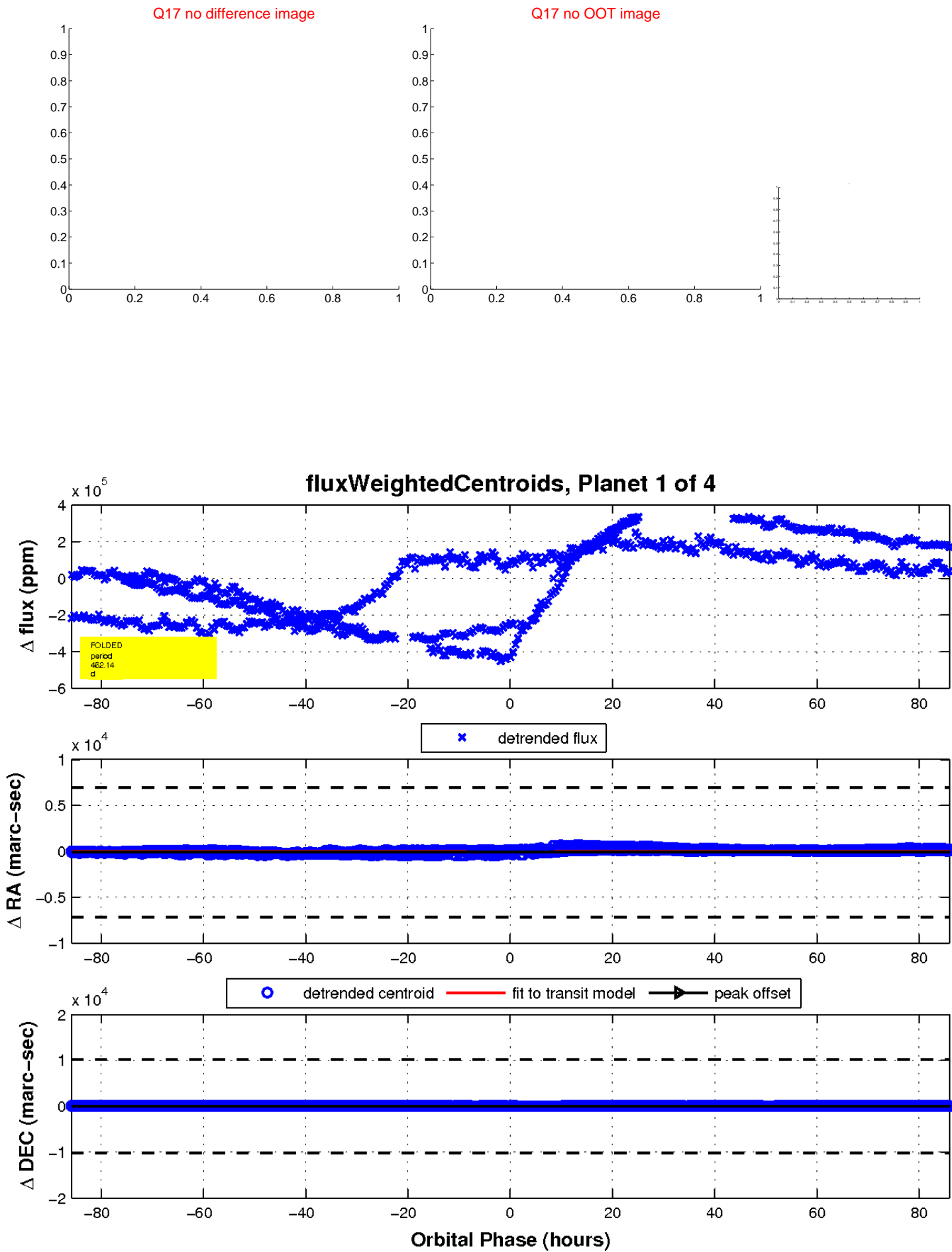
Q12 no OOT image



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

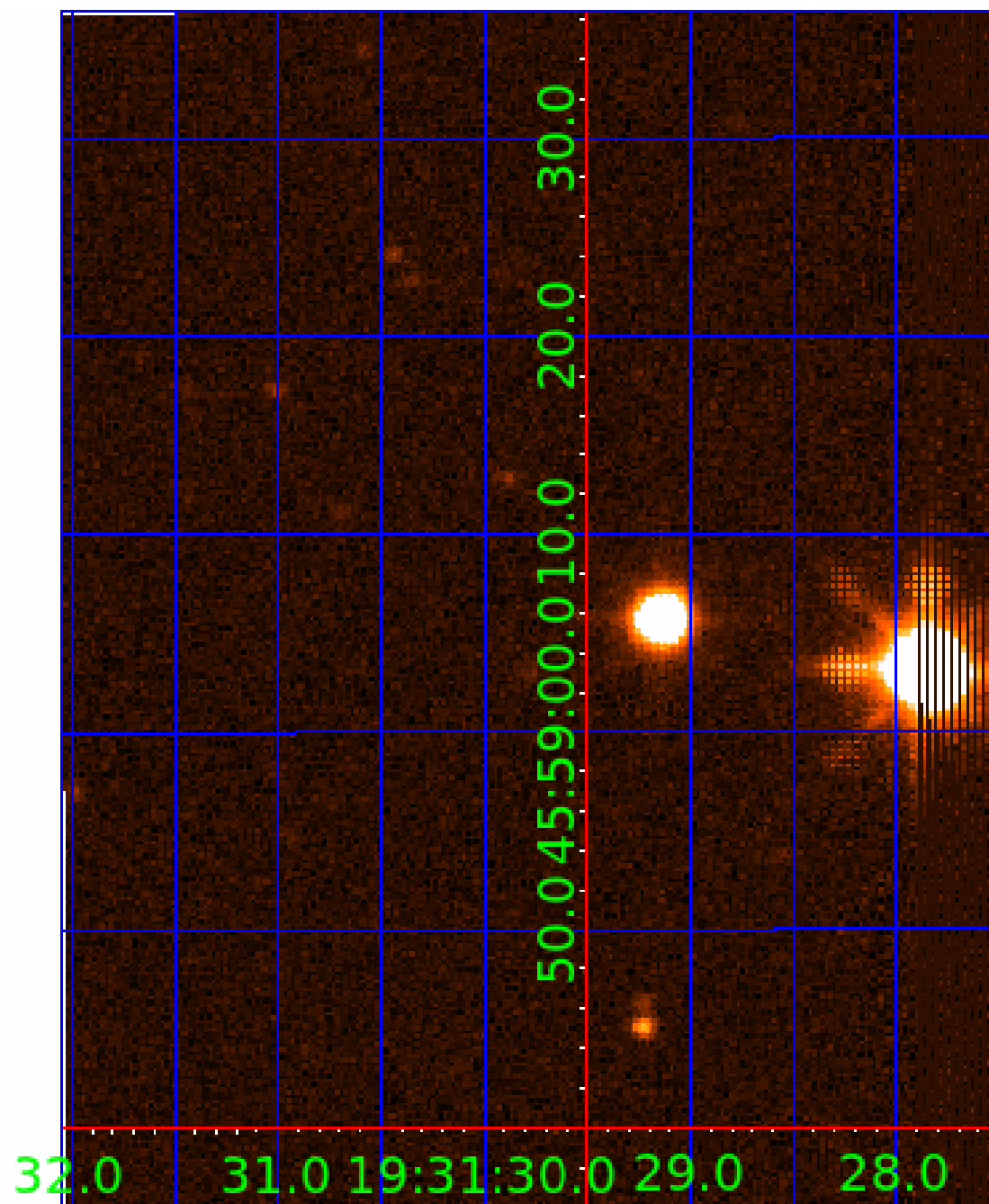


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009406652

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})
009406652-01	OBS	No	462.142410	574.066579	156142.2	28.669	19.9	15.6	3.01	8600	126.94	20.54
009406652-03	OBS	No	477.418905	472.863727	76242.1	22.713	12.4	10.0	3.01	8600	89.09	19.67
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009406652-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009406652-03	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009406652-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

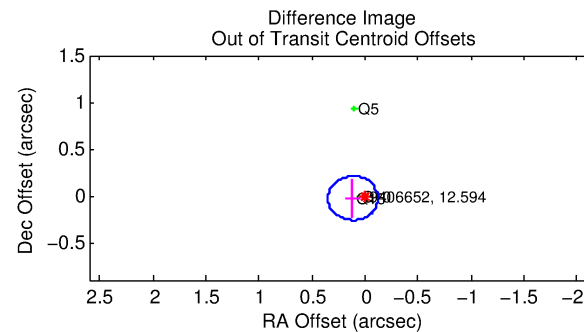
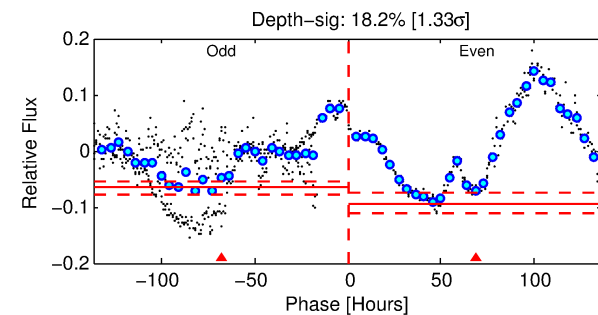
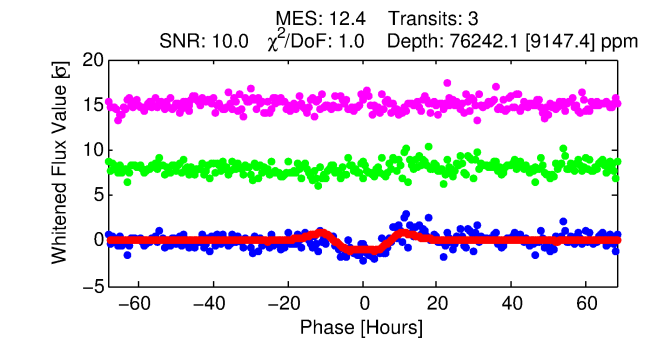
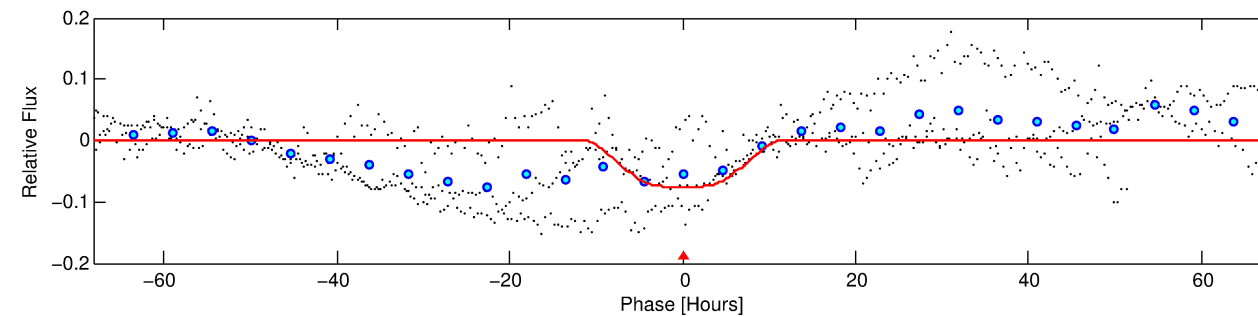
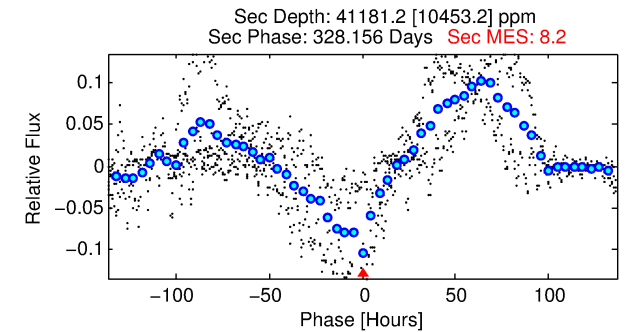
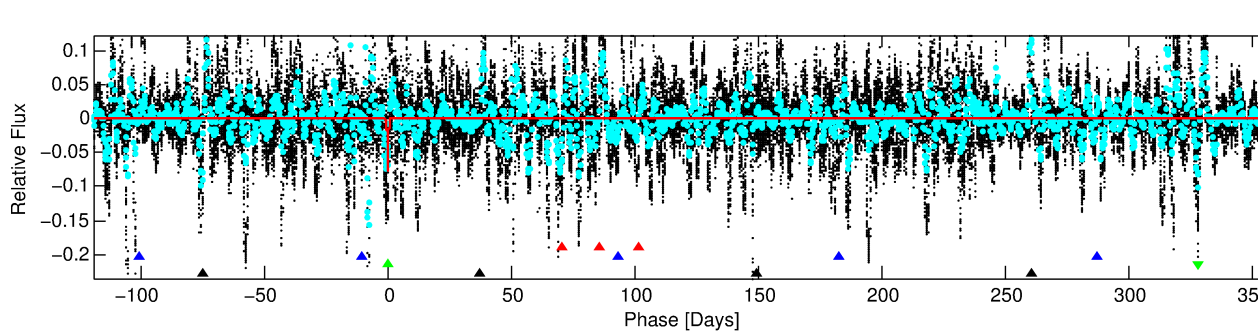
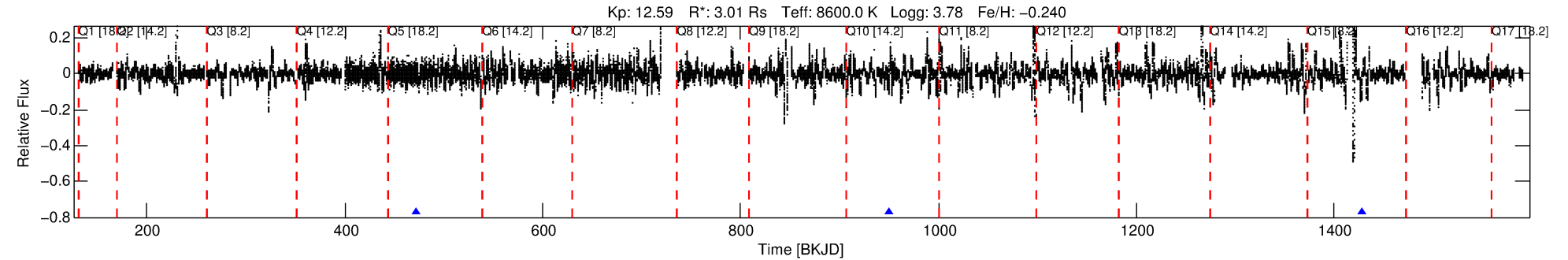
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009406652-03

No Significant Match Found

DV One-Page Summary

KIC: 9406652 Candidate: 3 of 4 Period: 477.419 d



DV Fit Results:

Period = 477.41891 [0.02164] d
Epoch = 472.8637 [0.0297] BKJD
Rp/R* = 0.2709 [0.0180]
a/R* = 175.77 [14.74]
b = 0.65 [0.08]
Seff = 19.67 [13.70]
Teq = 537 [94] K
Rp = 89.09 [38.65] Re
a = 1.5045 [0.6285] AU
Ag = 6461.02 [4726.84] [1.37σ]
Teffp = 7444 [629] K [10.86σ]

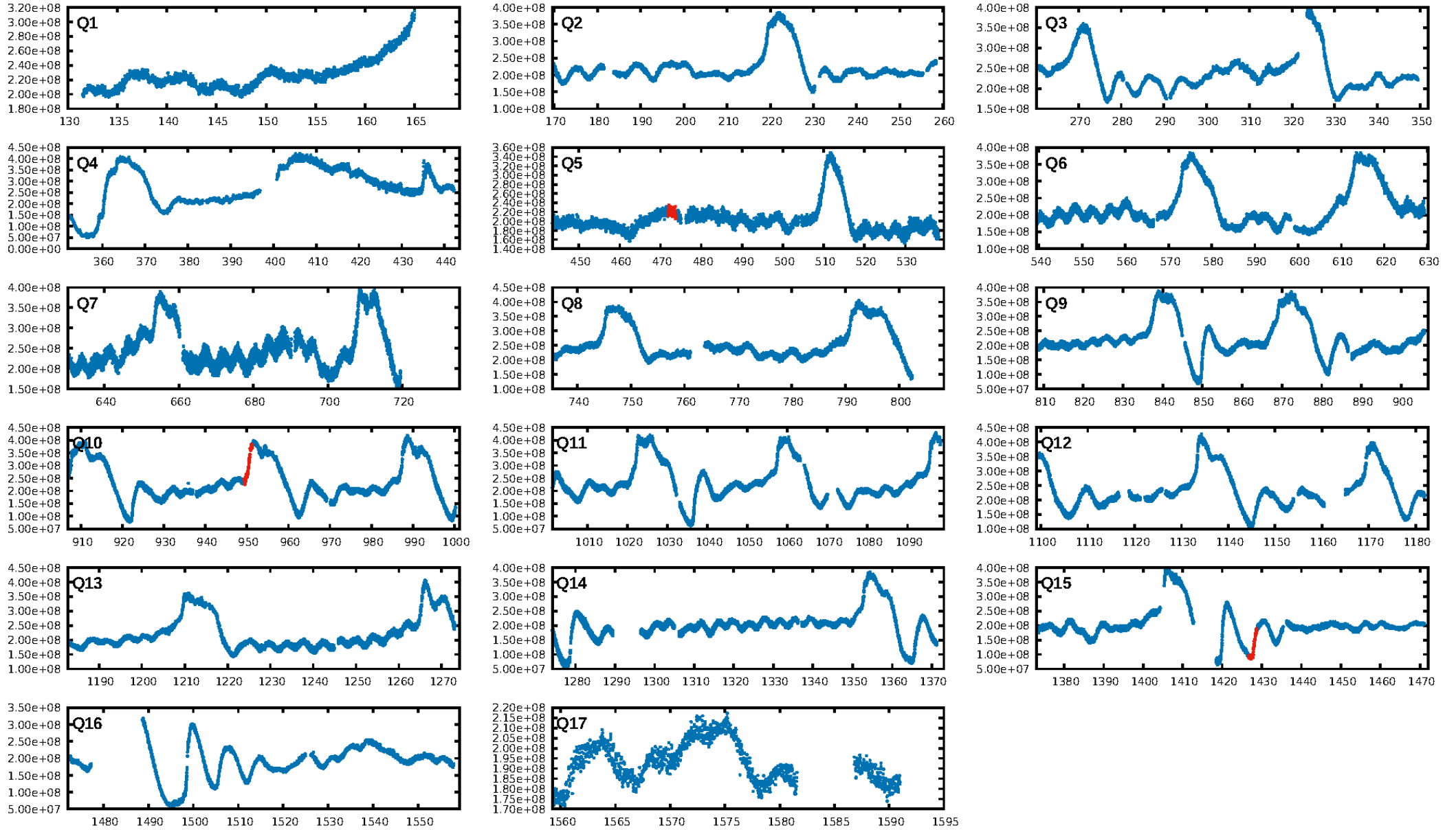
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.02σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 98.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.6176
Centroid-sig: 0.0%
Centroid-so: 0.356 arcsec [10.73σ]
OotOffset-rm: 0.116 arcsec [1.48σ]
KicOffset-rm: 0.426 arcsec [1.43σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

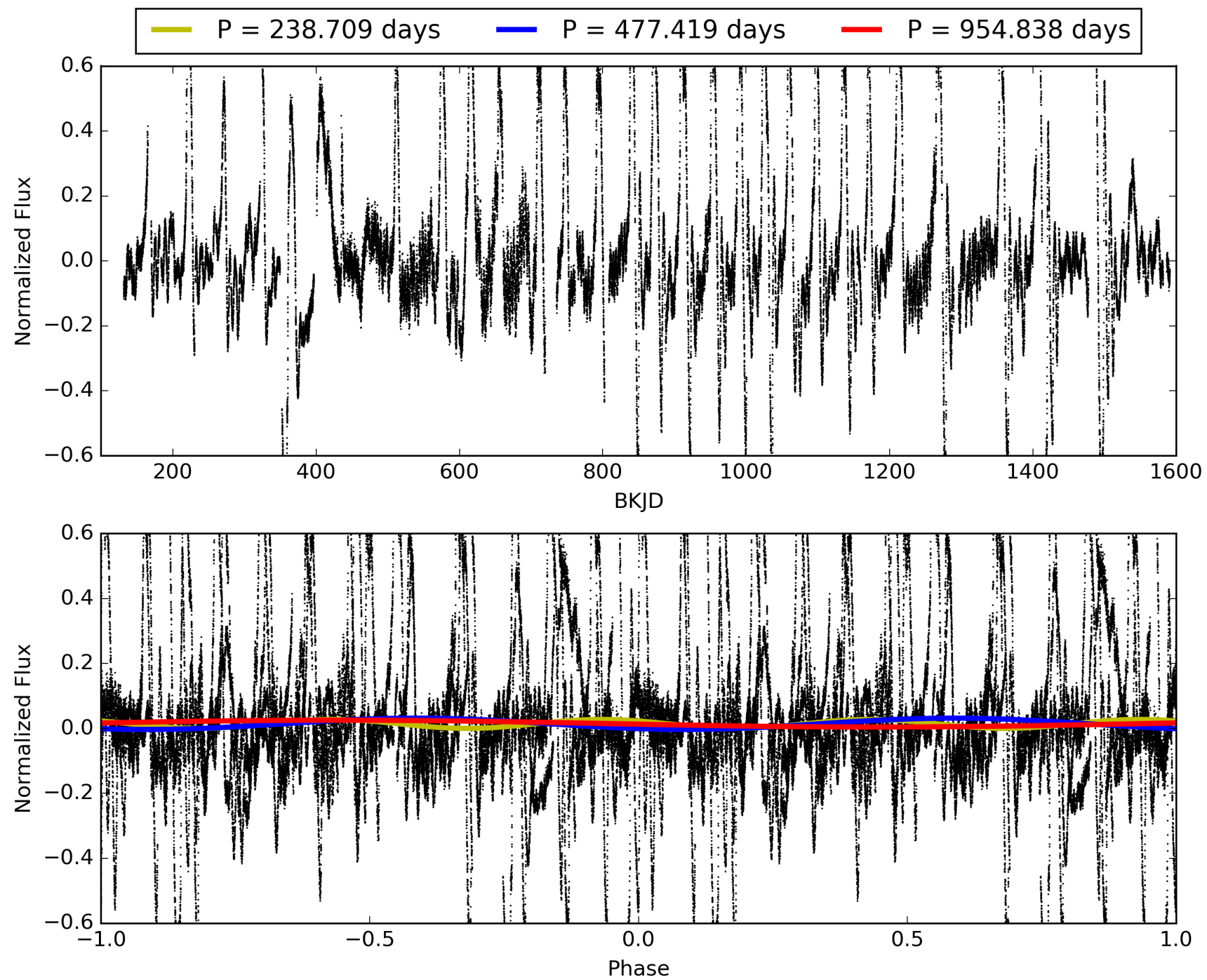
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:03:55 Z

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

TCE 009406652-03, PDC Light Curves

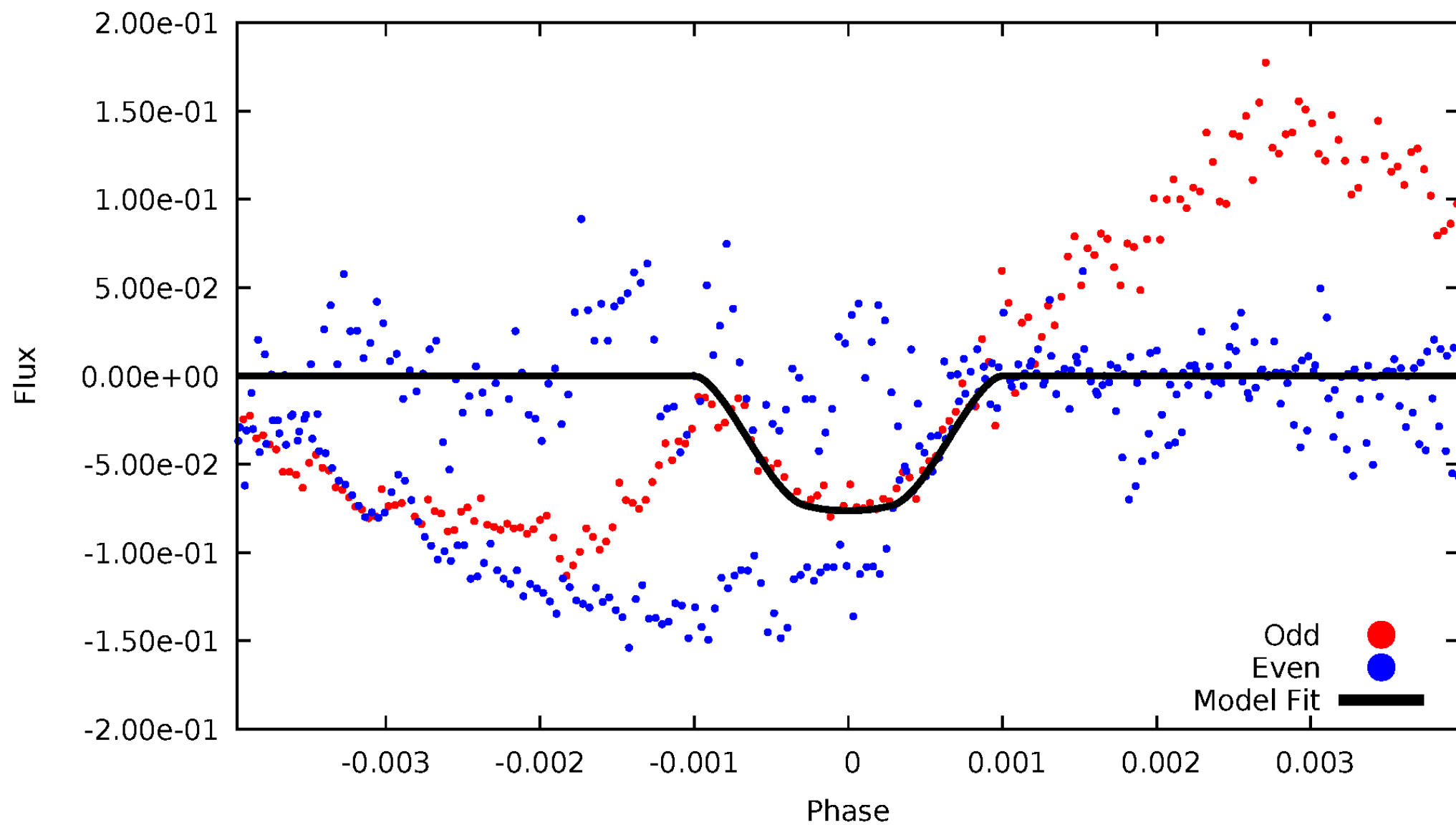


TCE 009406652-03



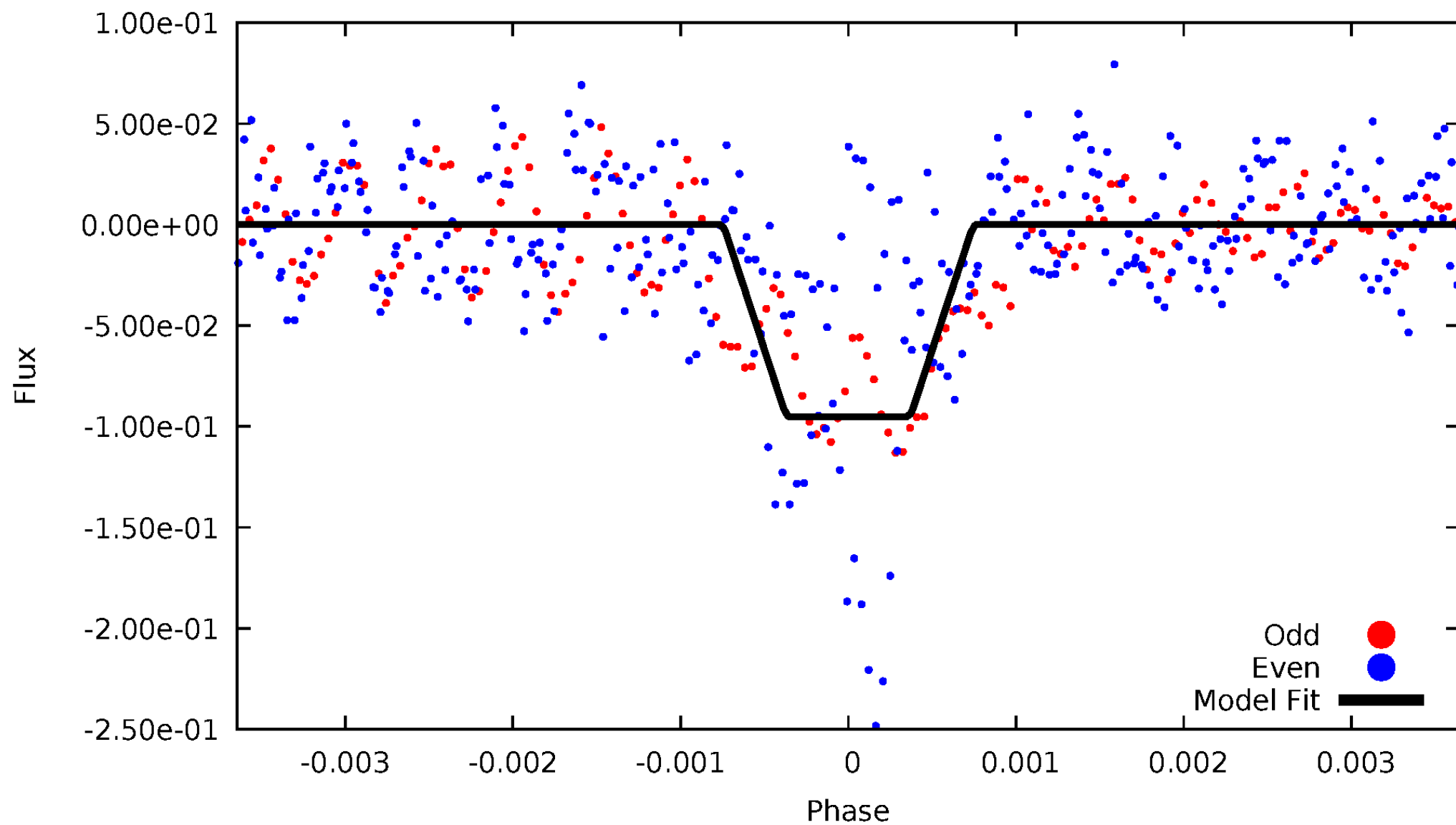
DV Odd/Even

TCE 009406652-03



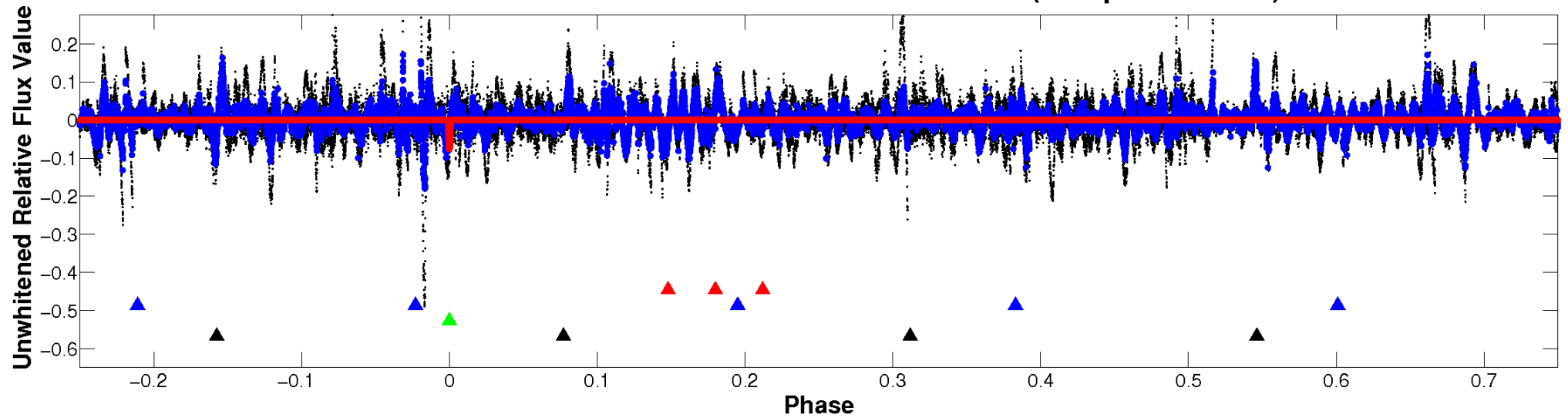
ALT Odd/Even

TCE 009406652-03

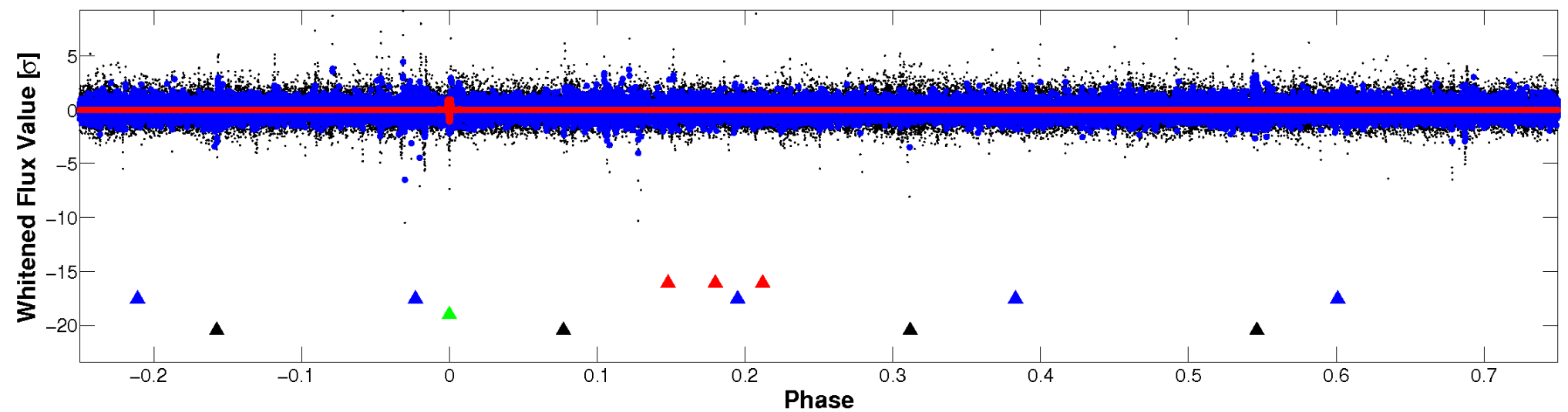


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

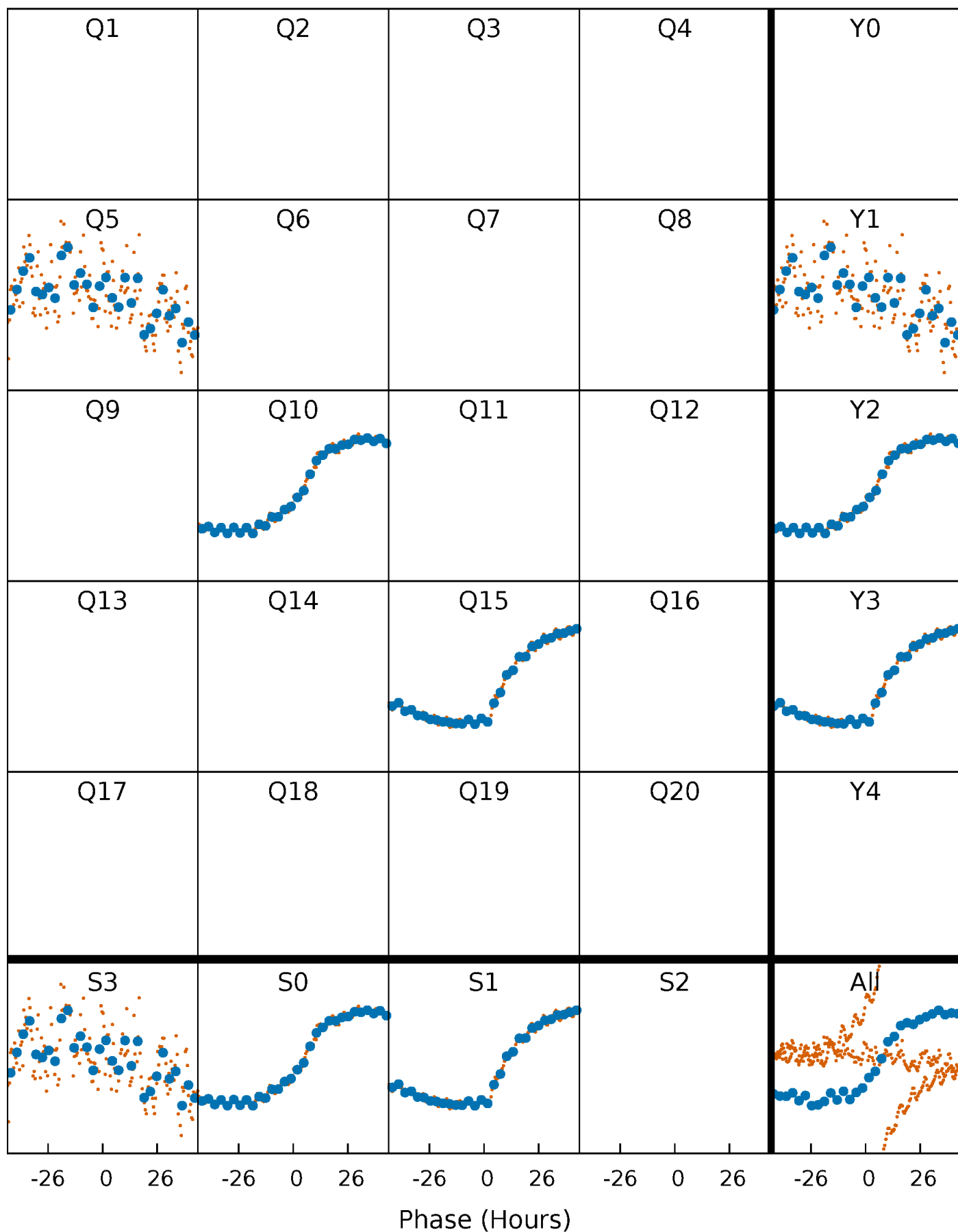


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



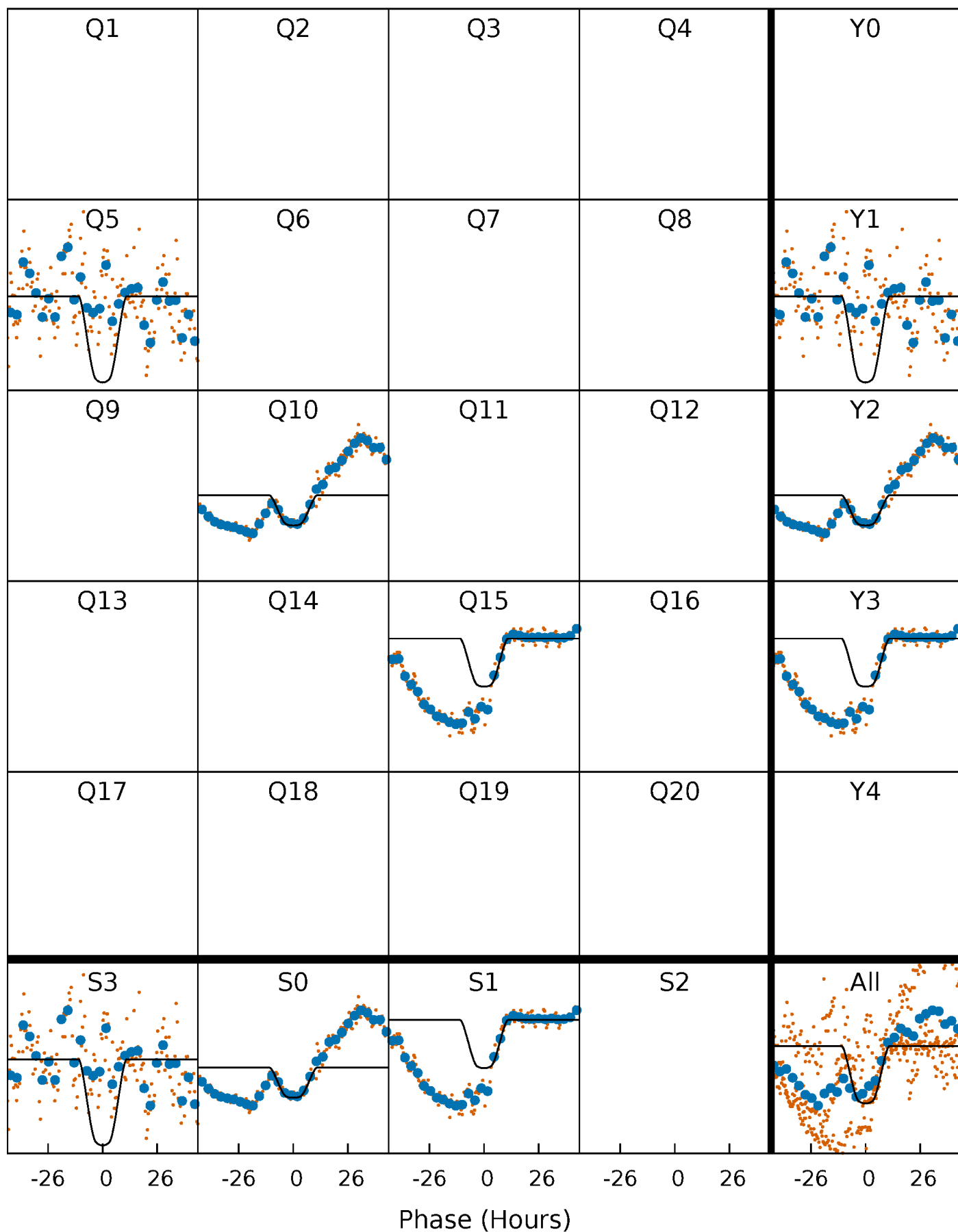
PDC Quarter-Phased Transit Curves

TCE 009406652-03 $P=477.418905$ Days $T_0=472.863727$ (BKJD)



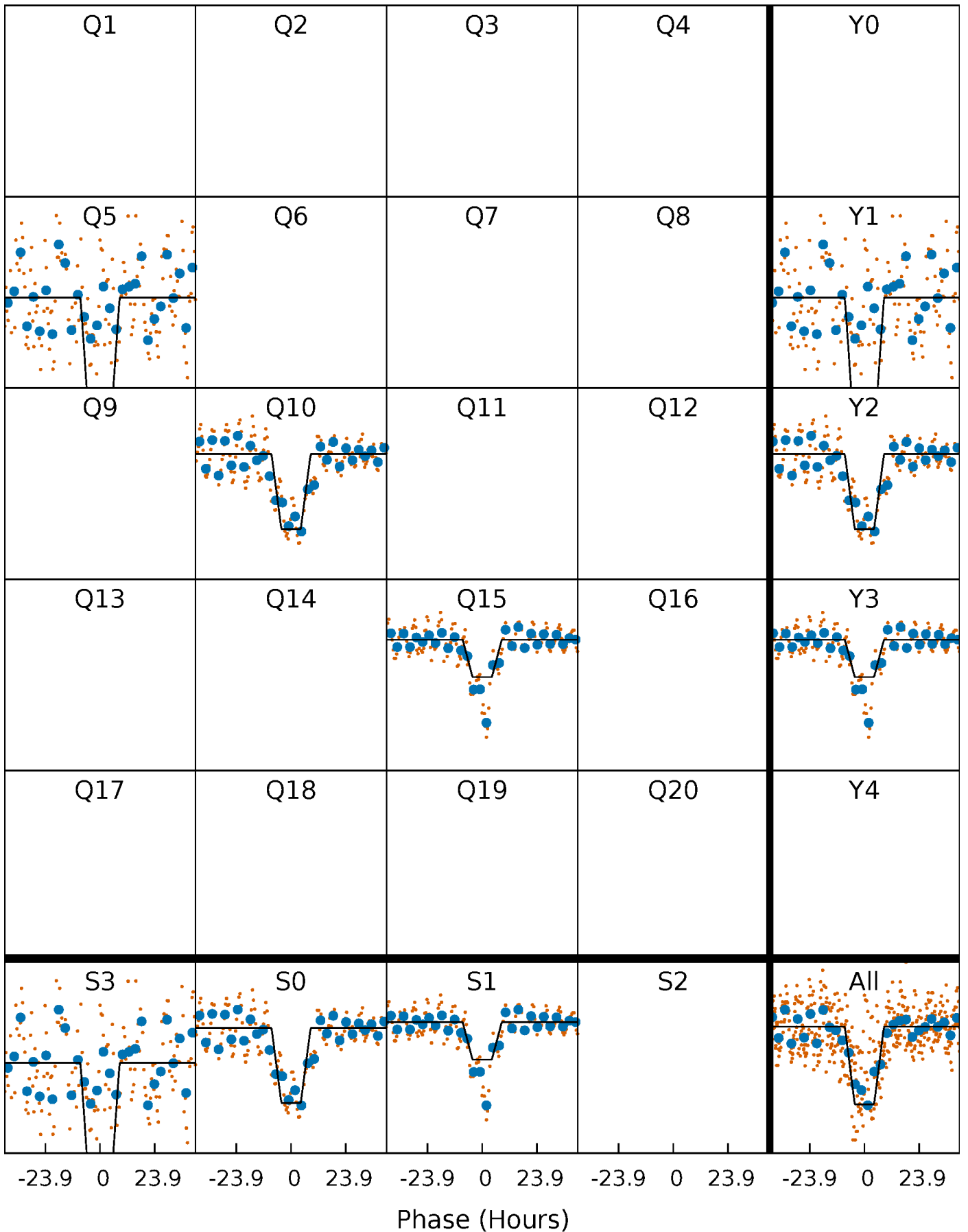
DV Quarter-Phased Transit Curves

TCE 009406652-03 P=477.418905 Days $T_0=472.863727$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

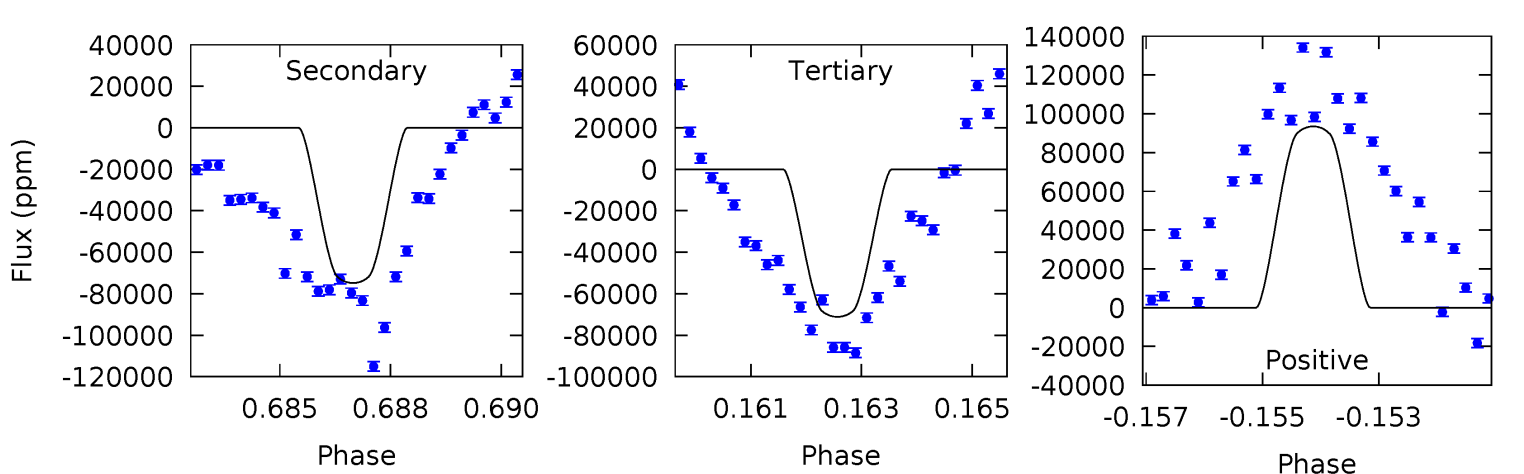
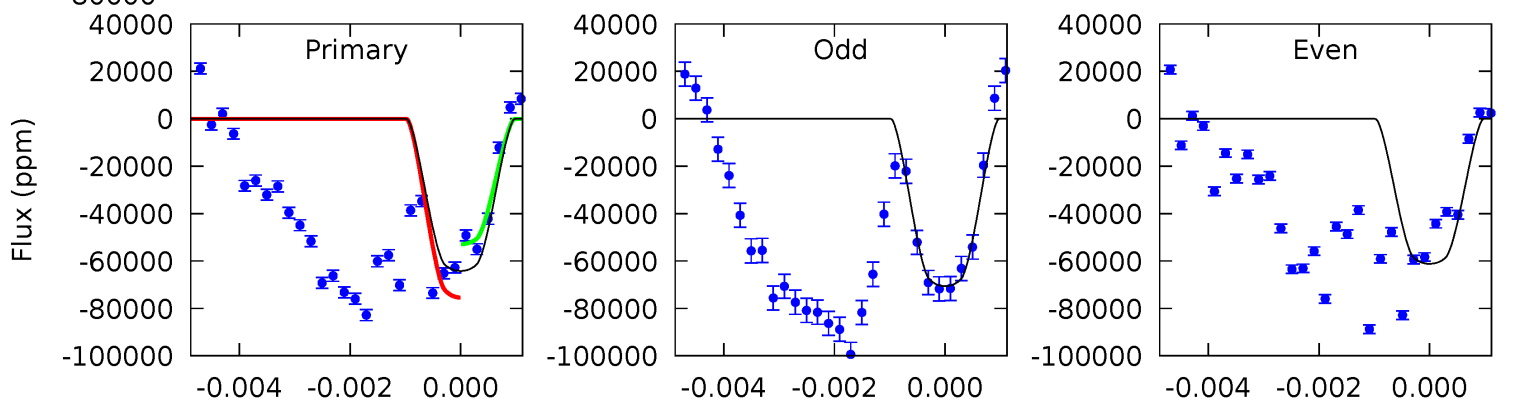
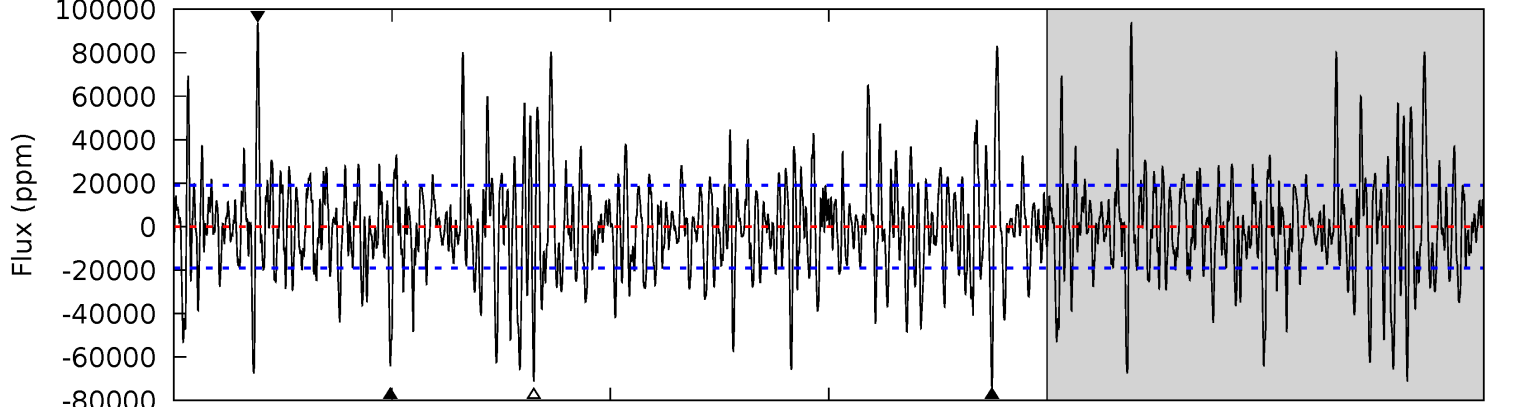
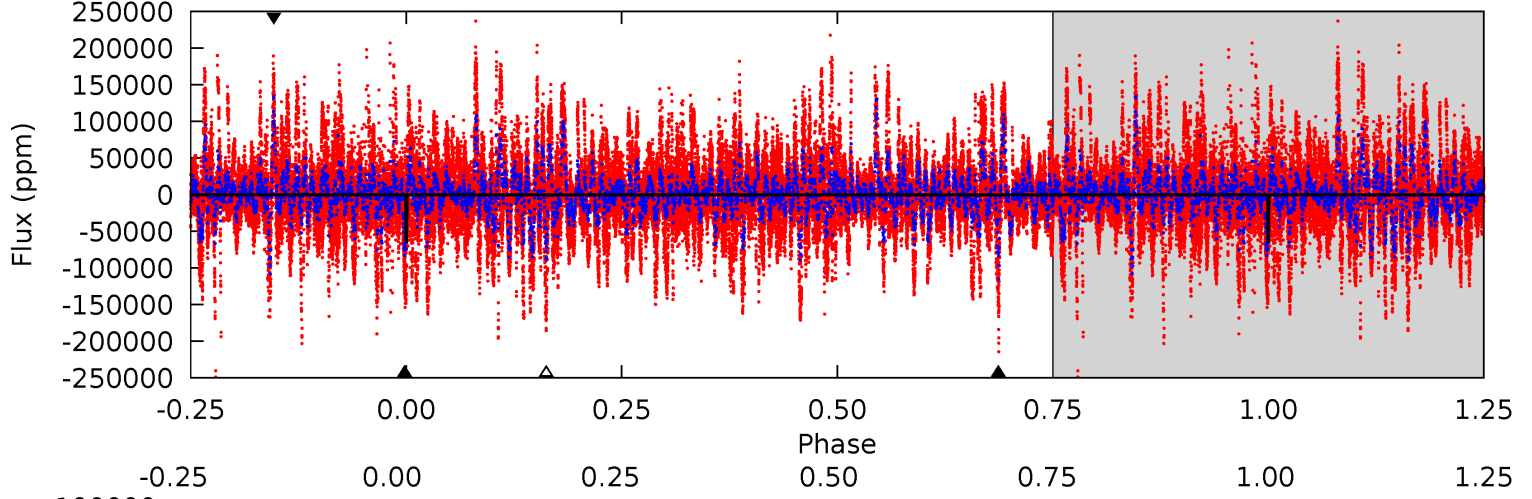
TCE 009406652-03 $P=477.443752$ Days $T_0=472.832946$ (BKJD)



DV Model-Shift Uniqueness Test

009406652-03, P = 477.418905 Days, E = 472.863727 Days

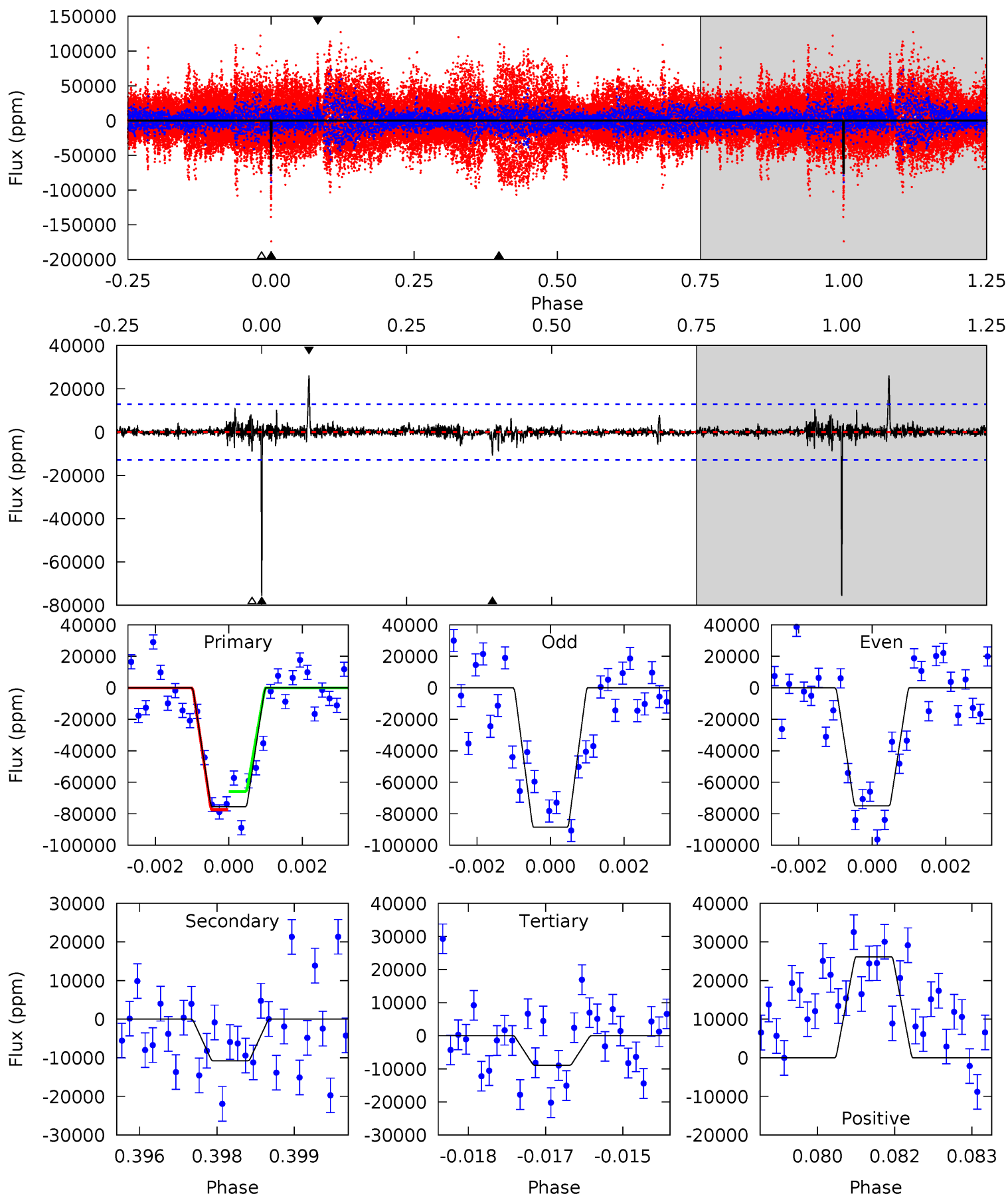
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.0	20.9	19.9	26.2	5.32	3.09	5.72	-1.94	-8.19	1.03	-5.22	1.11	0.91	0.56	3.19



Alt Model-Shift Uniqueness Test

009406652-03, P = 477.443752 Days, E = 472.832946 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.6	4.51	3.73	10.9	5.38	3.17	0.77	27.9	20.7	0.78	-6.44	2.89	0.90	0.26	0



Stellar Parameters For KIC 009406652

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8600^{+237}_{-385}	$3.779^{+0.397}_{-0.132}$	$-0.240^{+0.350}_{-0.350}$	$3.014^{+0.754}_{-1.292}$	$1.994^{+0.424}_{-0.424}$	$0.103^{+0.369}_{-0.041}$
	+3%/-4%	+11%/-3%	+146%/-146%	+25%/-43%	+21%/-21%	+360%/-40%
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 009406652-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-74836 ± 3573	$85.56^{+16.70}_{-20.28}$	726^{+59}_{-81}	8819^{+519}_{-531}	13922^{+8646}_{-3802}
Alt.	-10763 ± 2388	$99.85^{+16.15}_{-23.50}$	735^{+63}_{-85}	4896^{+272}_{-281}	1415^{+866}_{-435}

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 $A_{obs} \gg 1.0$

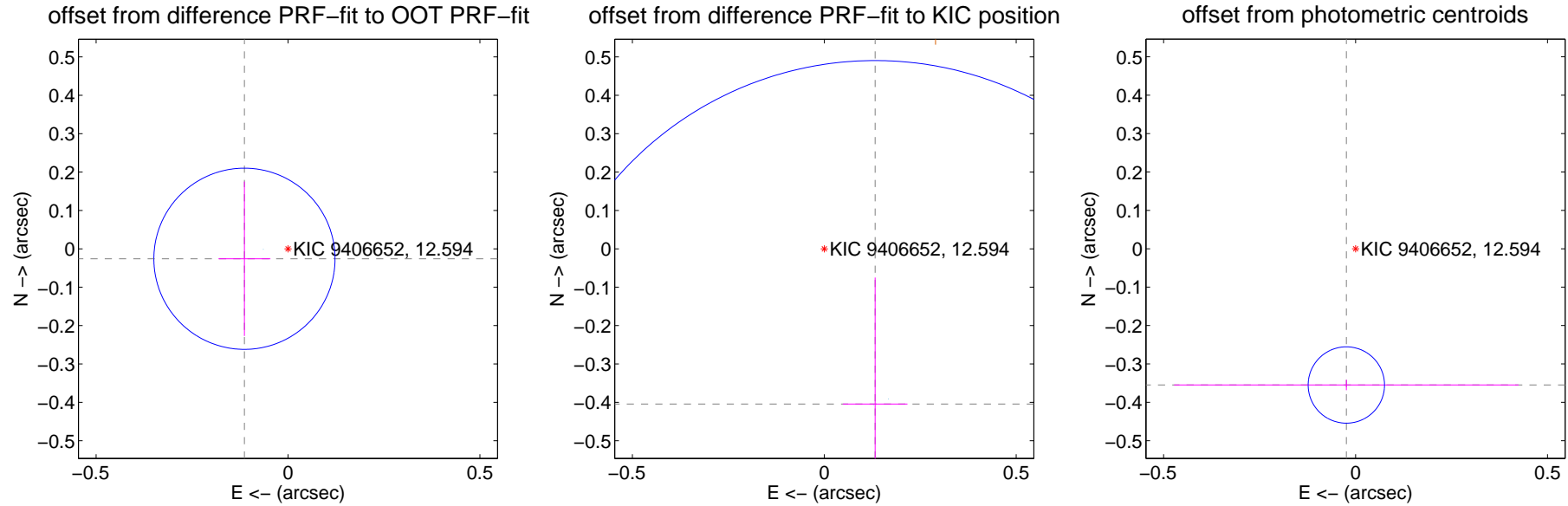
DV Centroid Data

Supplemental centroid analysis for 009406652-03. Kepler magnitude: 12.59. Transit SNR 10.00

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.45 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.116 ± 0.079	1.48	0.113 ± 0.068	-0.026 ± 0.201
PRF-fit source offset from KIC position	0.426 ± 0.298	1.43	-0.132 ± 0.084	-0.404 ± 0.329
photometric centroid source offset	0.36 ± 0.03	10.73	0.02 ± 0.45	-0.35 ± 0.01

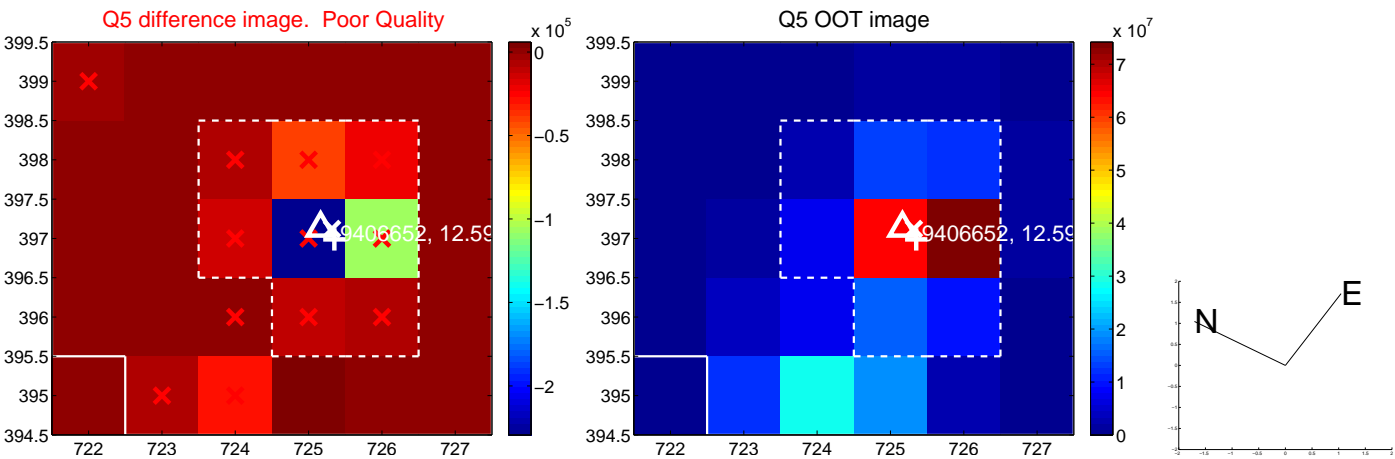


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

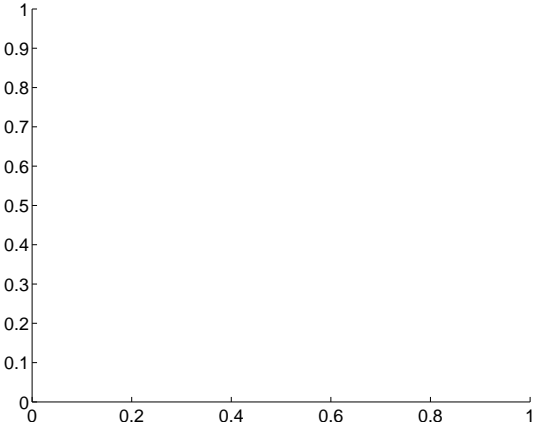


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

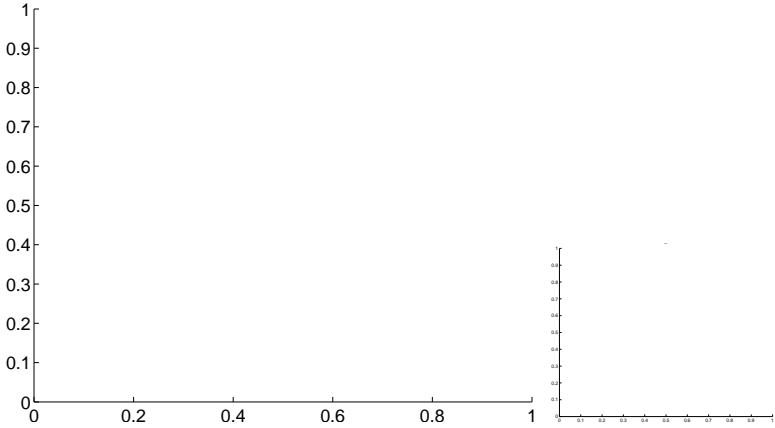


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

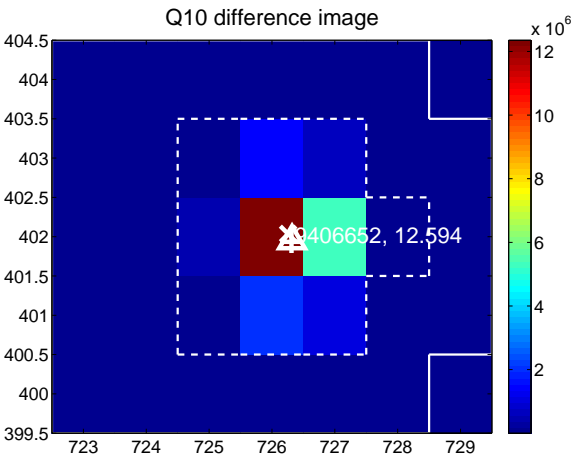
Q9 no difference image



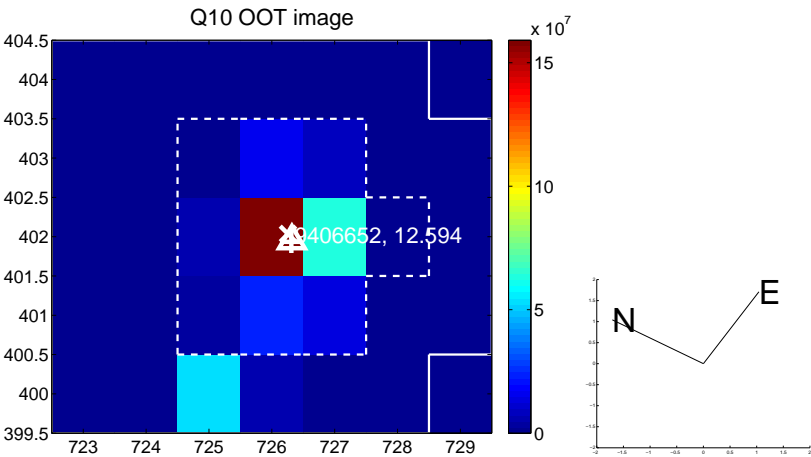
Q9 no OOT image



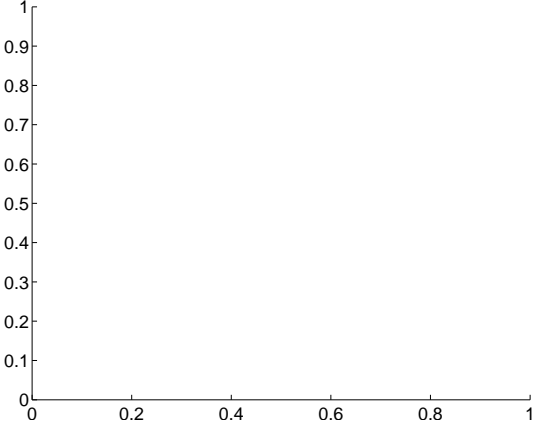
Q10 difference image



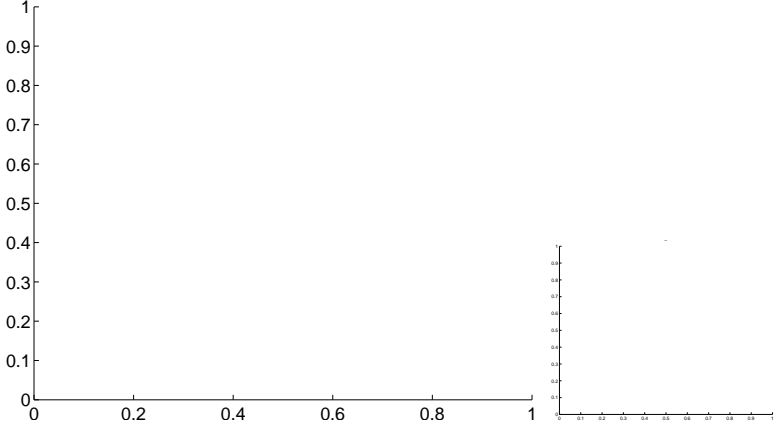
Q10 OOT image



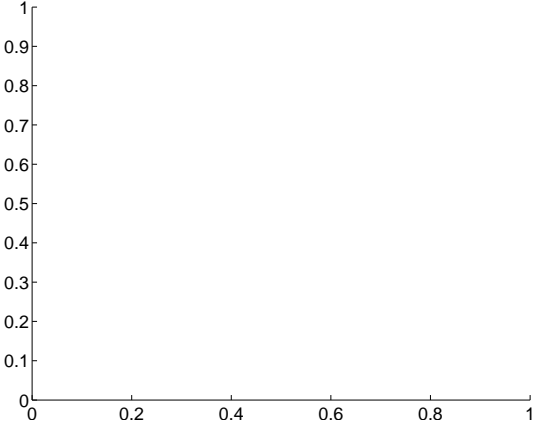
Q11 no difference image



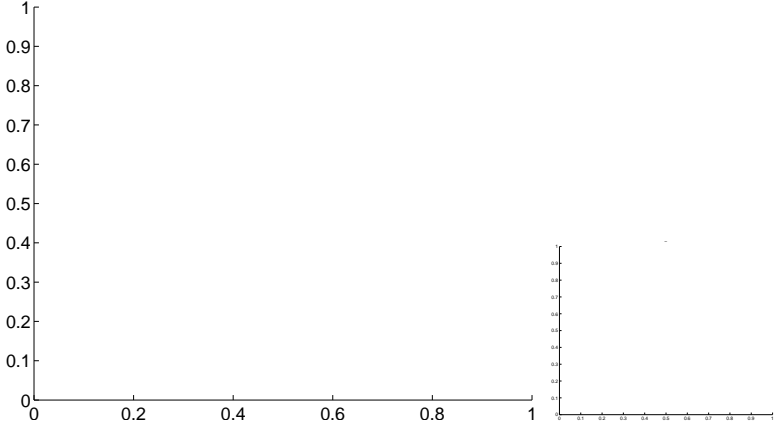
Q11 no OOT image



Q12 no difference image

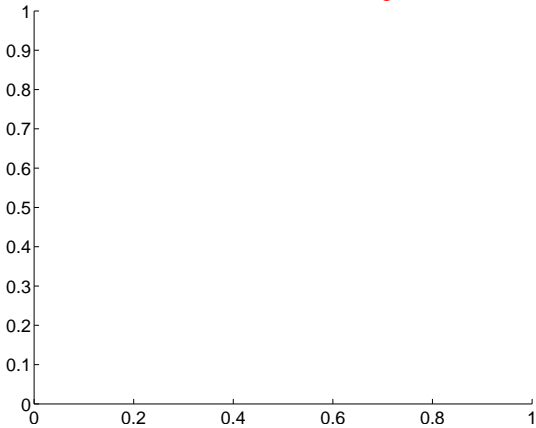


Q12 no OOT image



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

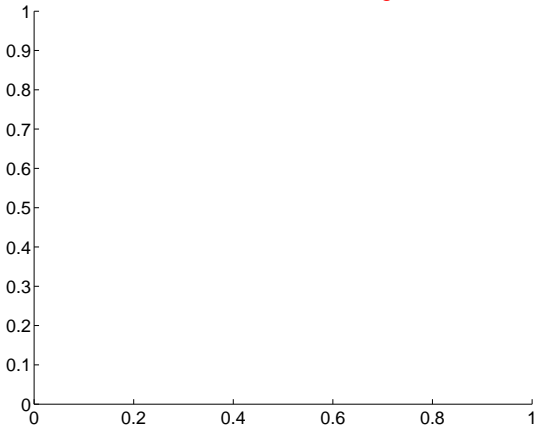
Q13 no difference image



Q13 no OOT image



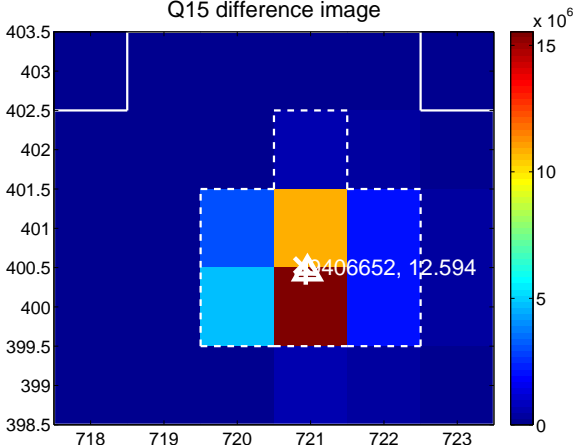
Q14 no difference image



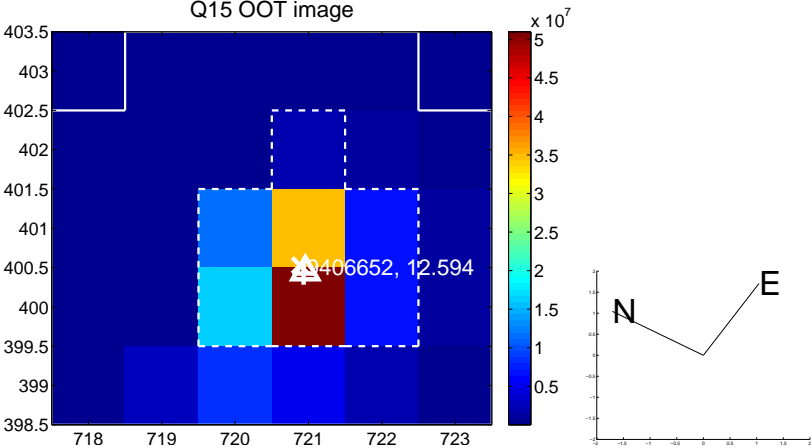
Q14 no OOT image



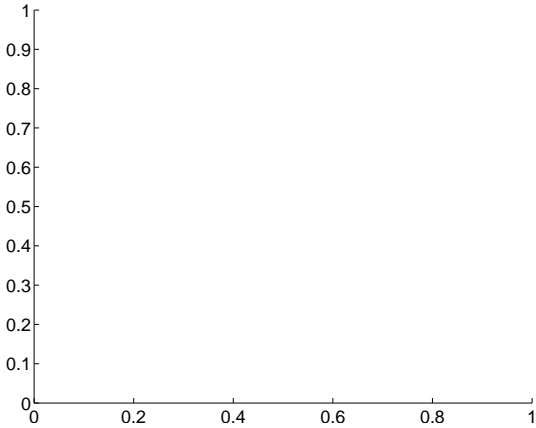
Q15 difference image



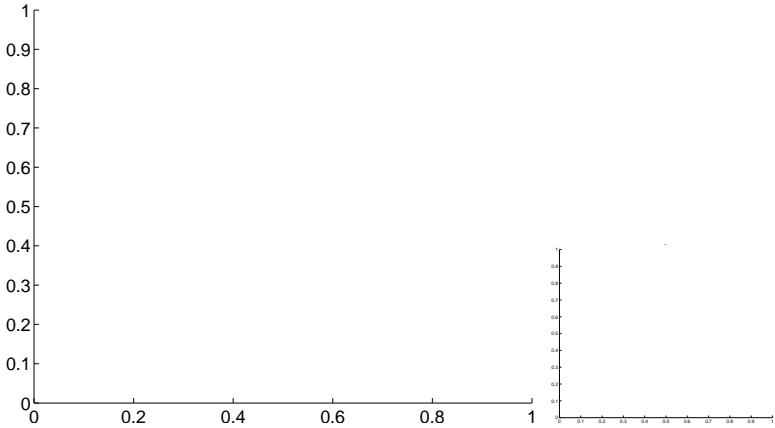
Q15 OOT image



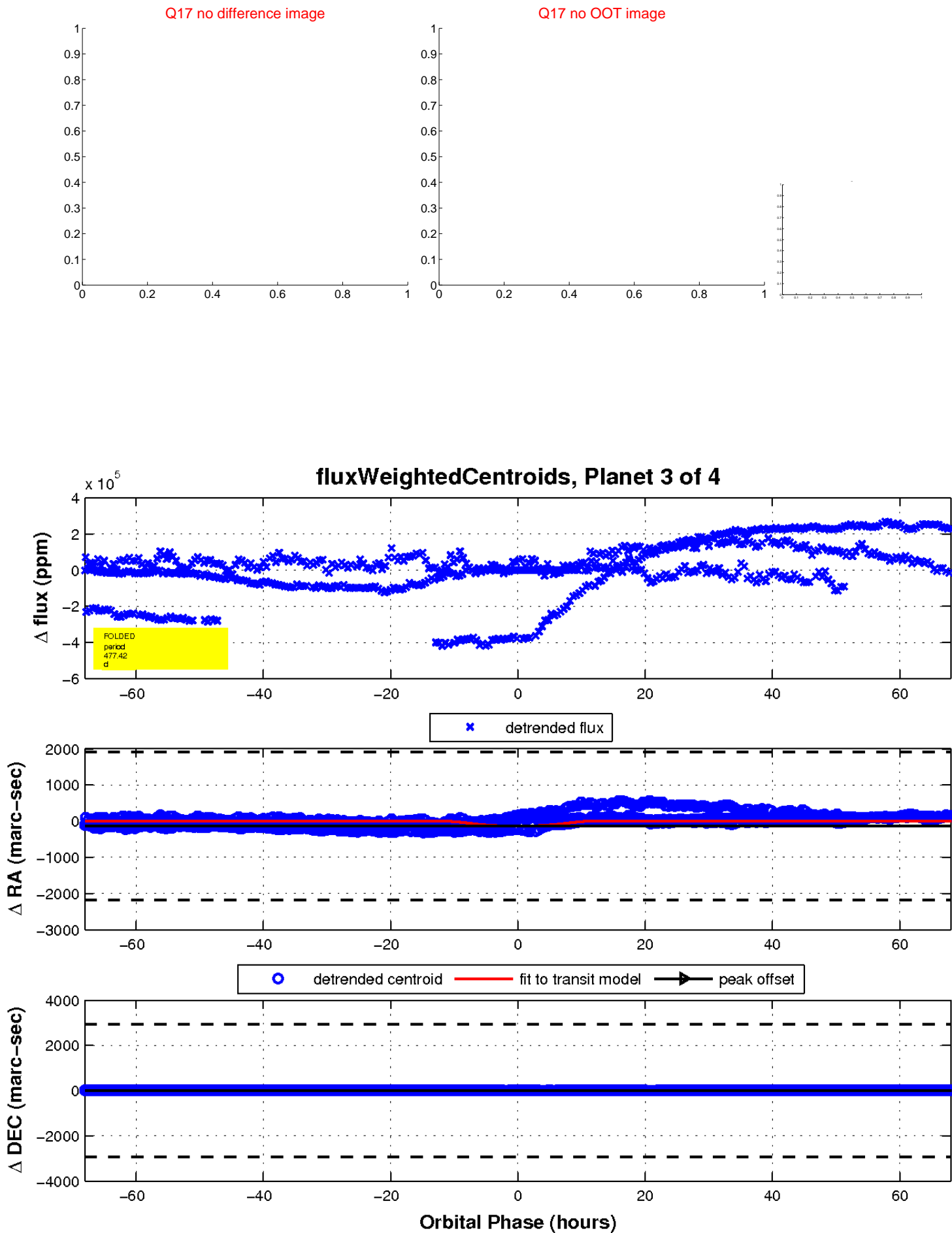
Q16 no difference image



Q16 no OOT image

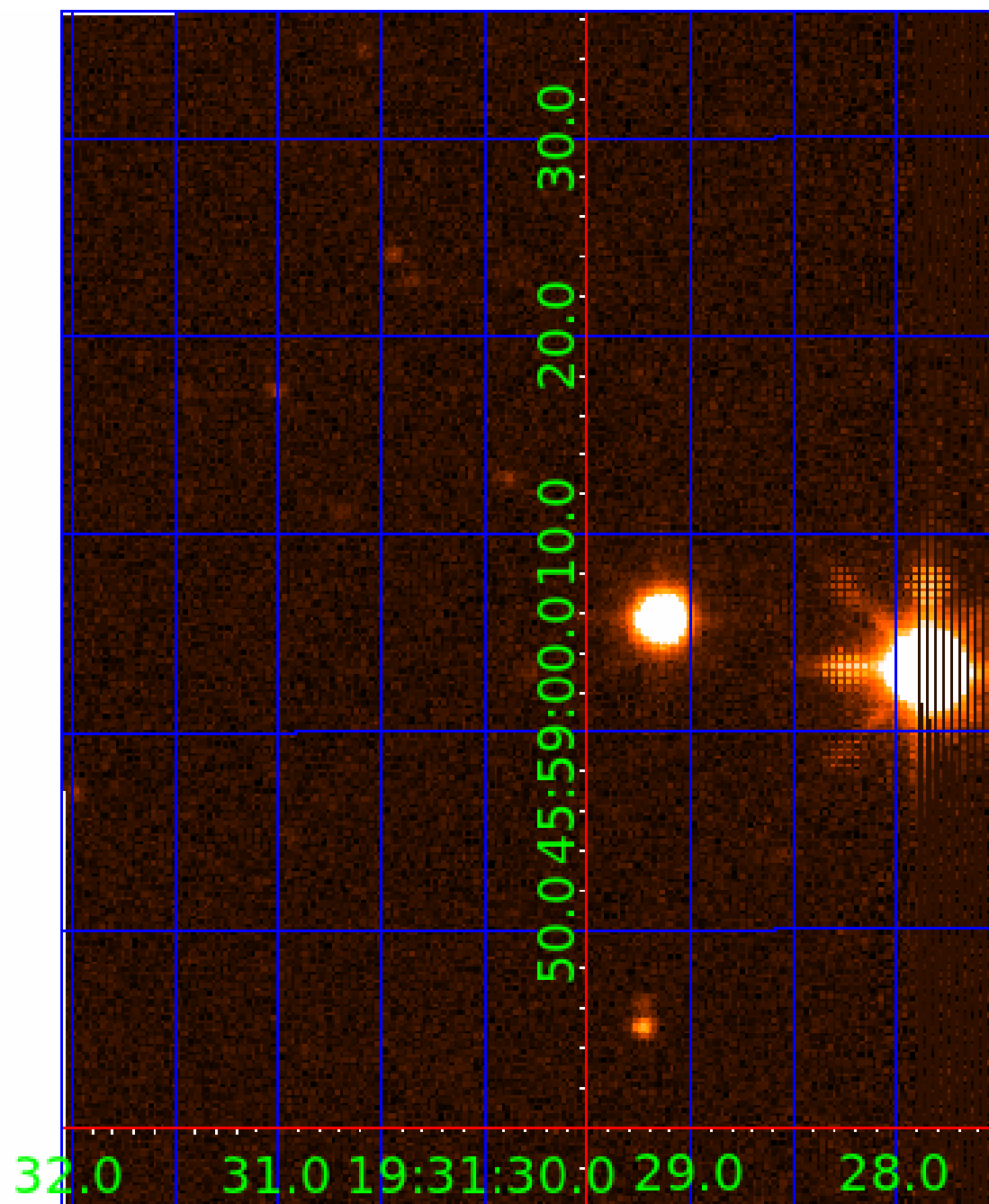


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009406652

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})
009406652-01	OBS	No	462.142410	574.066579	156142.2	28.669	19.9	15.6	3.01	8600	126.94	20.54
009406652-03	OBS	No	477.418905	472.863727	76242.1	22.713	12.4	10.0	3.01	8600	89.09	19.67
009406652-04	OBS	No	365.433787	256.278311	181.2	15.000	12.2	-1.0	3.01	8600	4.12	28.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009406652-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009406652-03	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009406652-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—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.

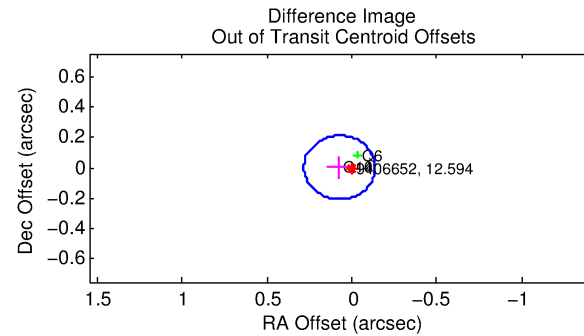
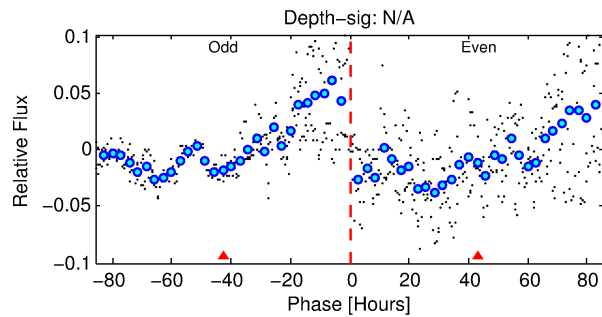
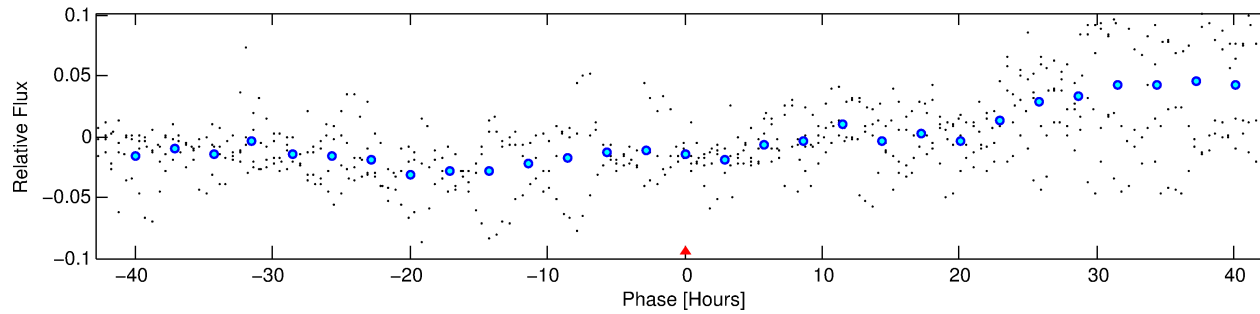
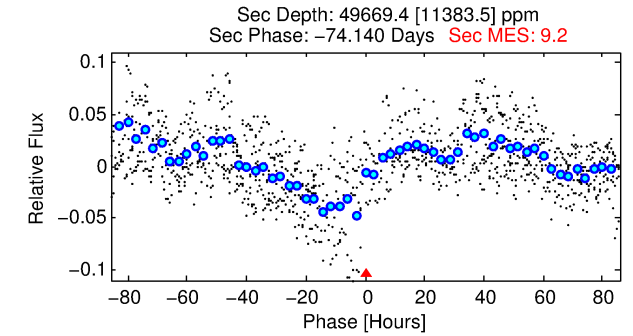
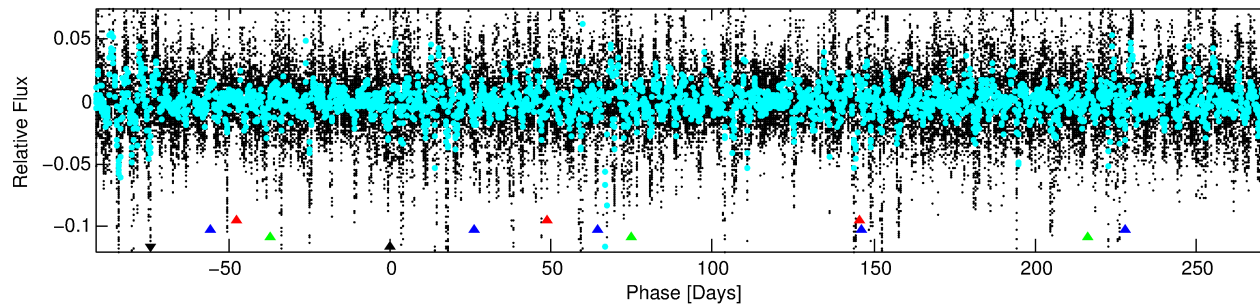
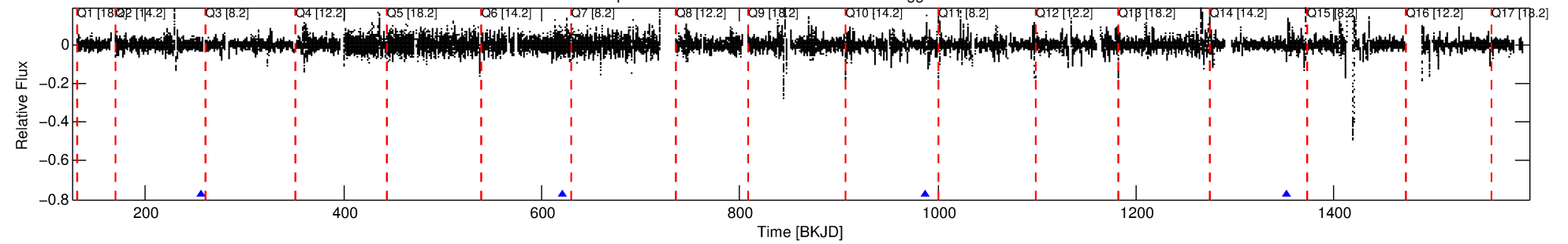
Ephemeris Match Information For 009406652-04

No Significant Match Found

DV One-Page Summary

KIC: 9406652 Candidate: 4 of 4 Period: 365.434 d

Kp: 12.59 R*: 3.01 Rs Teff: 8600.0 K Logg: 3.78 Fe/H: -0.240



TPS TCE Results:

Period = 365.43379 d
Epoch = 256.2783 BKJD

DV fit results are unavailable

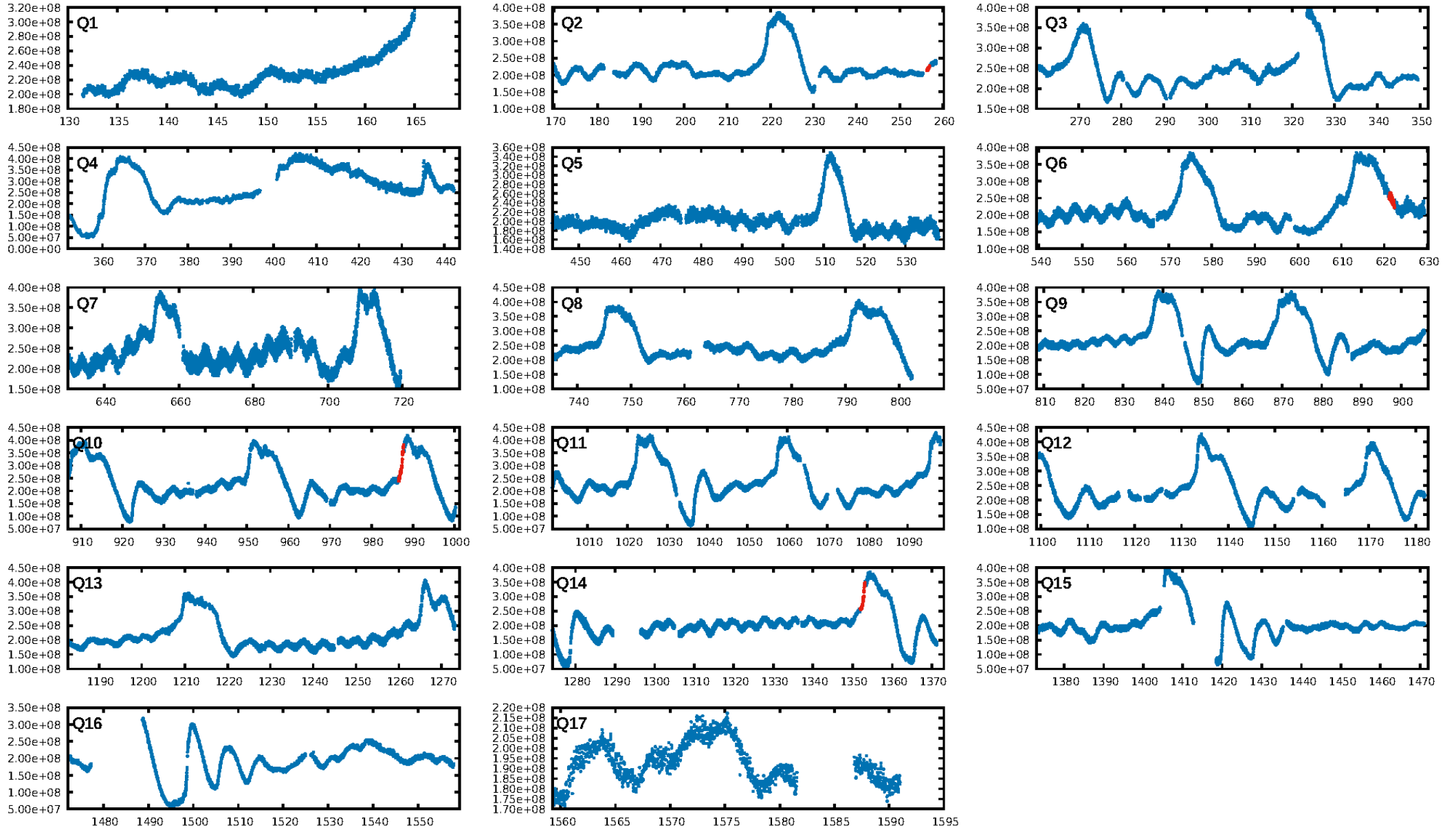
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [66.22σ]
LongPeriod-sig: 100.0% [71.73σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.6158
Centroid-sig: 8.8%
Centroid-so: 0.410 arcsec [0.58σ]
OotOffset-rm: 0.075 arcsec [1.07σ]
OotOffset-st: 3/0/0/0 [3]
KicOffset-rm: 0.433 arcsec [5.83σ]
KicOffset-st: 3/0/0/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

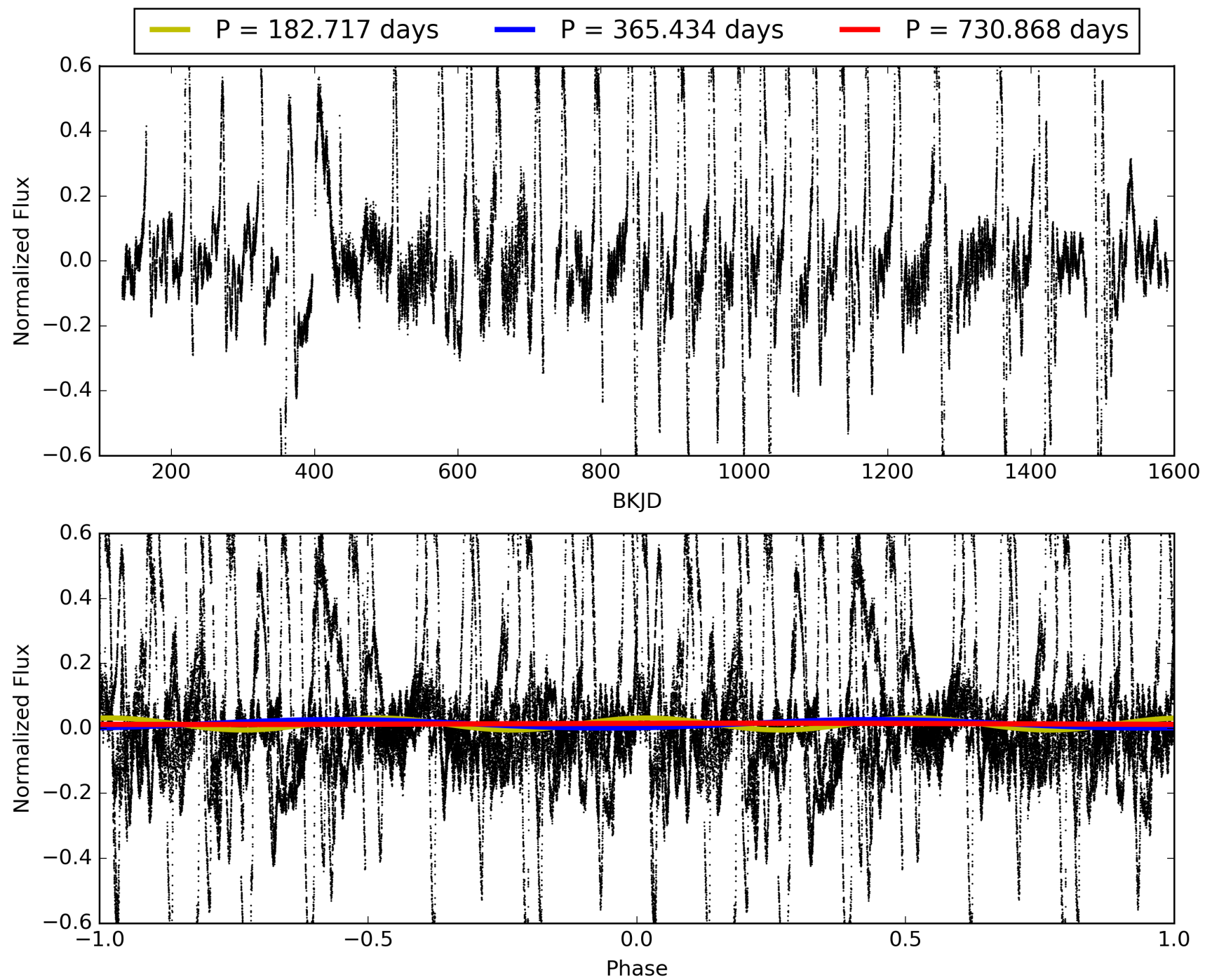
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:04:03 Z

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

TCE 009406652-04, PDC Light Curves

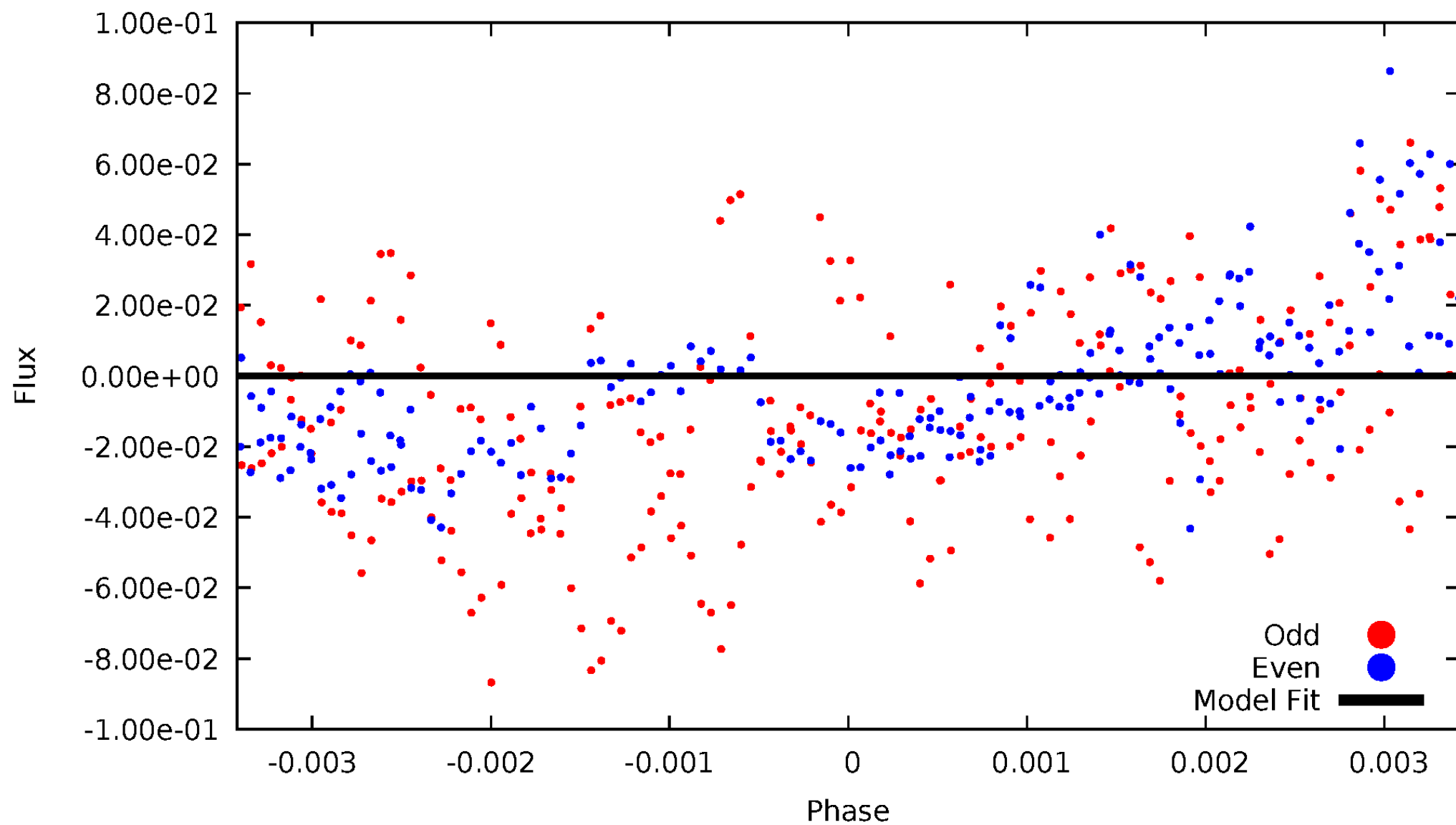


TCE 009406652-04



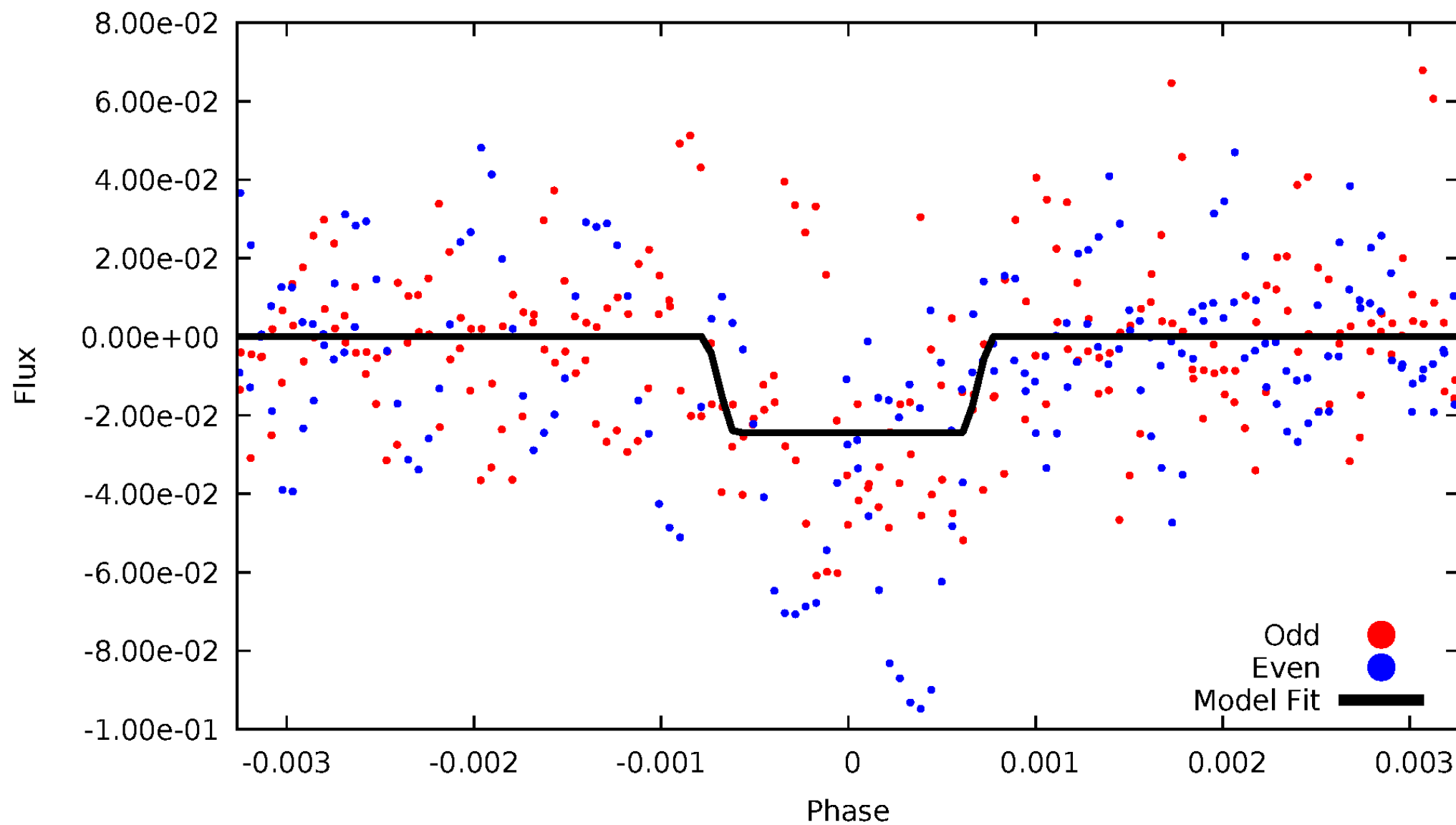
DV Odd/Even

TCE 009406652-04



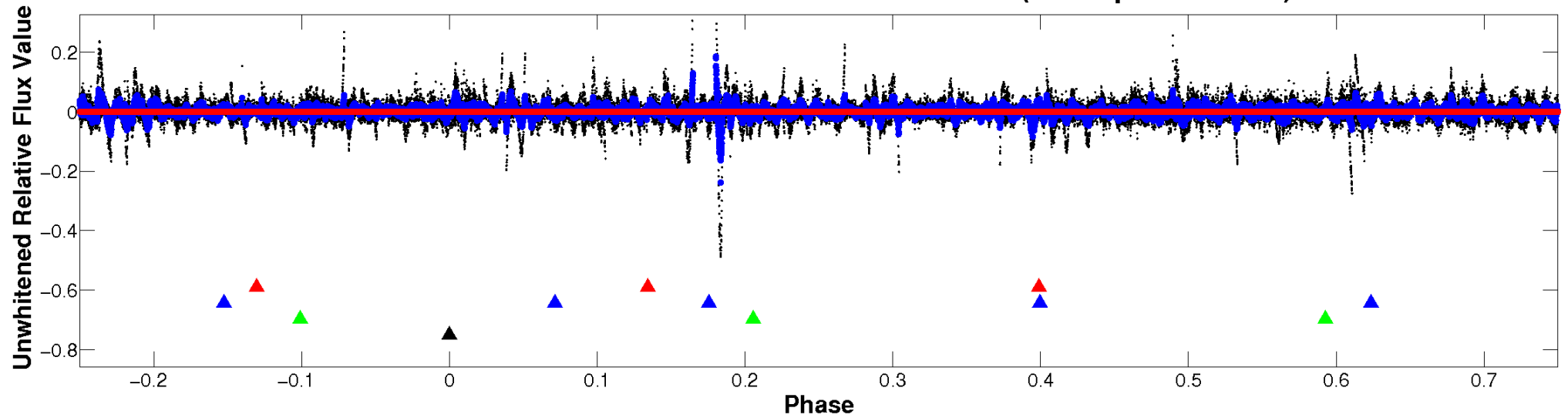
ALT Odd/Even

TCE 009406652-04

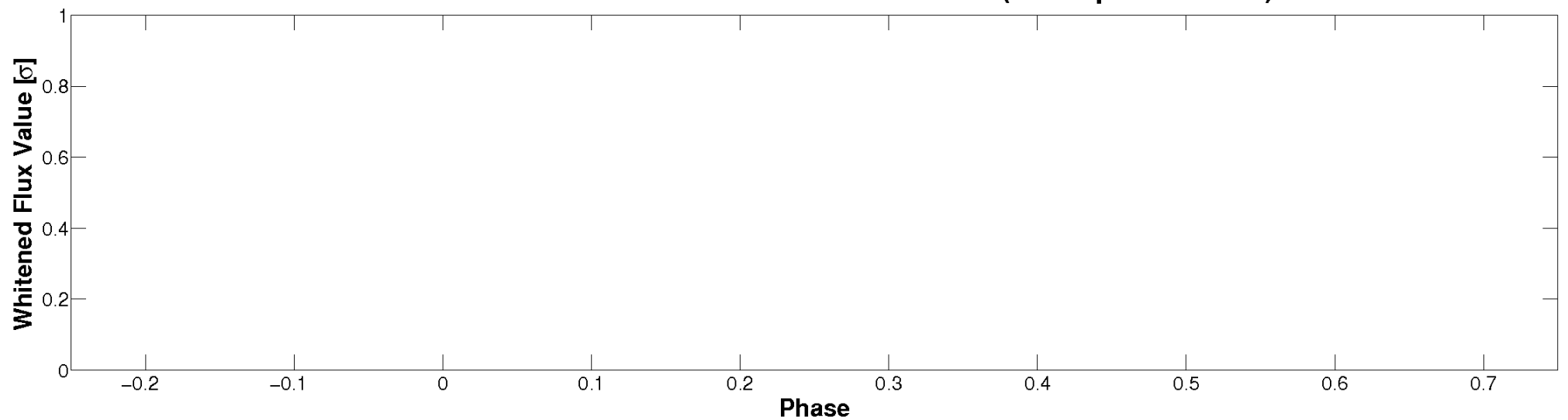


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

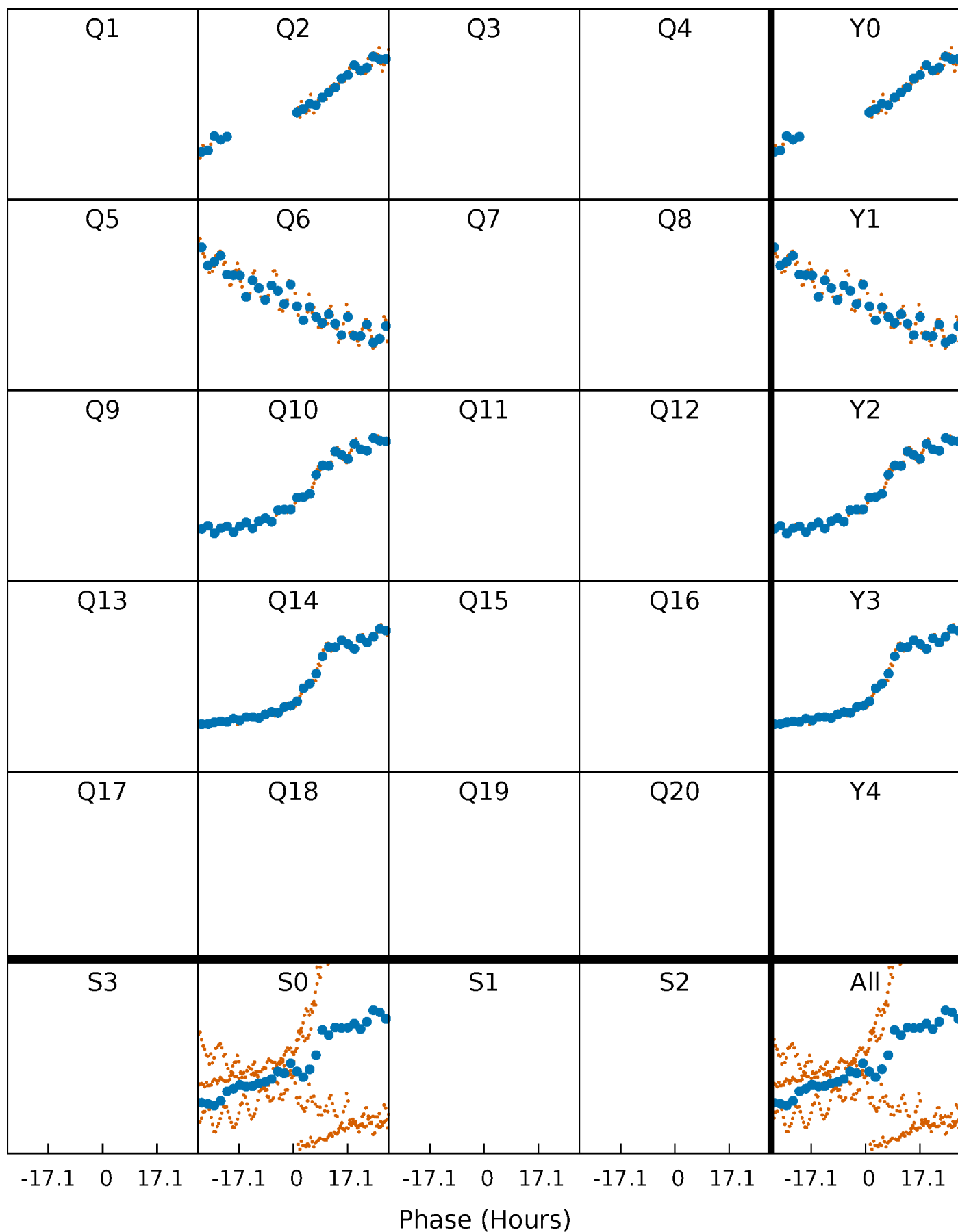


Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)



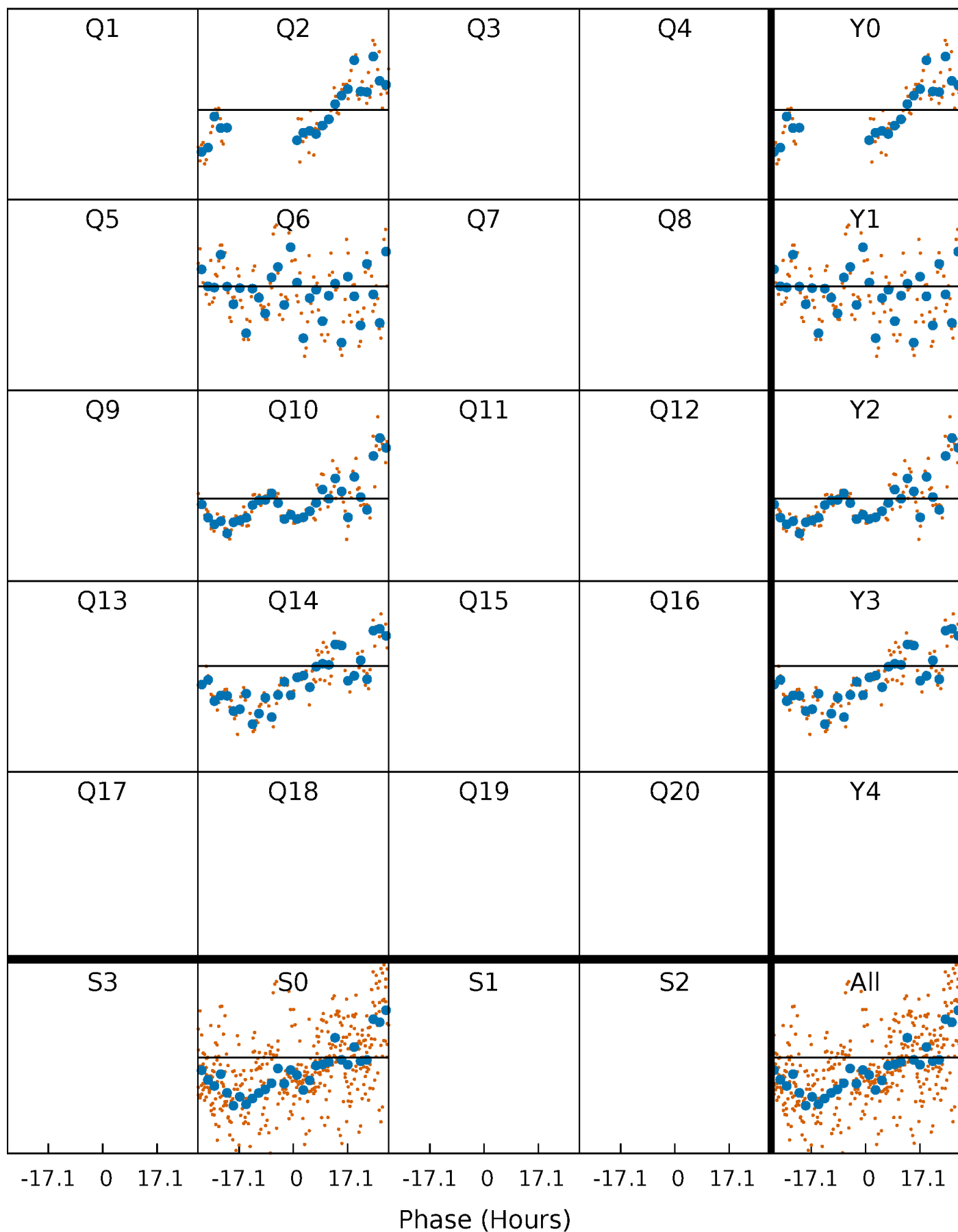
PDC Quarter-Phased Transit Curves

TCE 009406652-04 P=365.433787 Days $T_0=256.278311$ (BKJD)



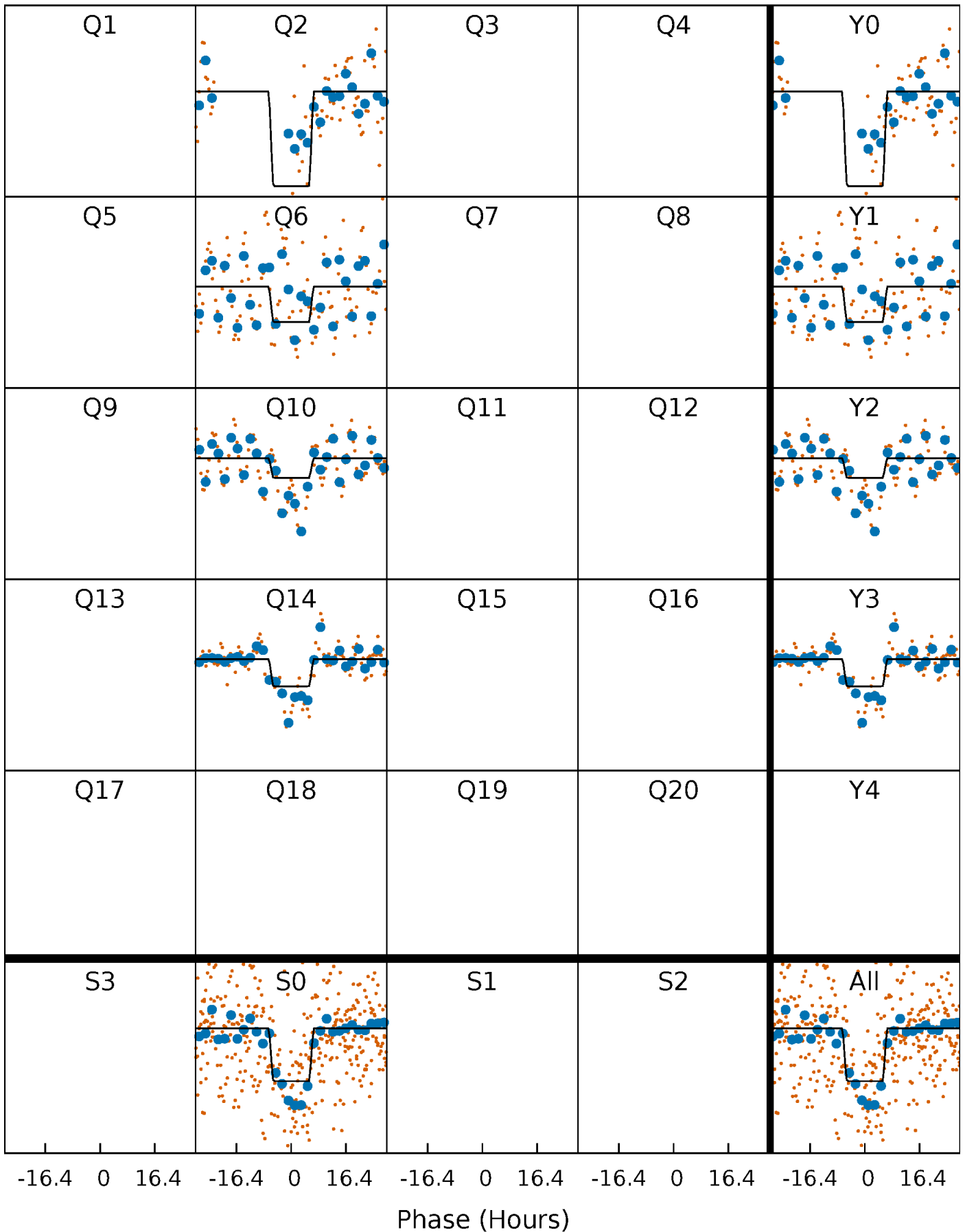
DV Quarter-Phased Transit Curves

TCE 009406652-04 P=365.433787 Days $T_0=256.278311$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

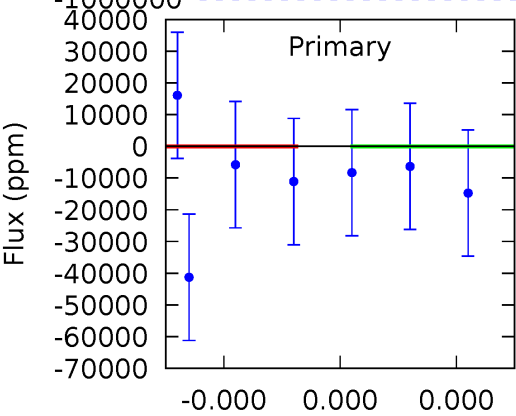
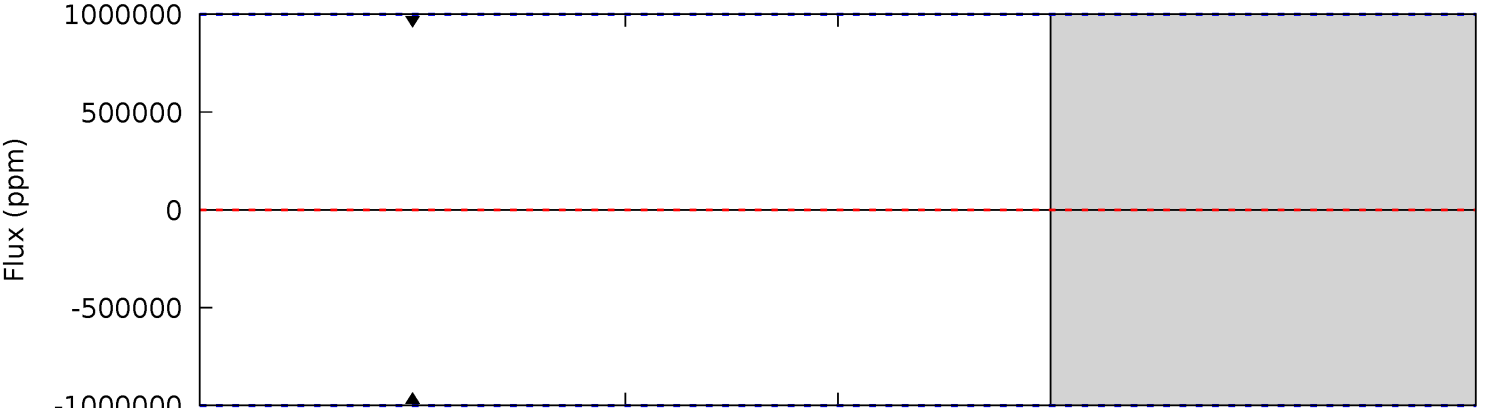
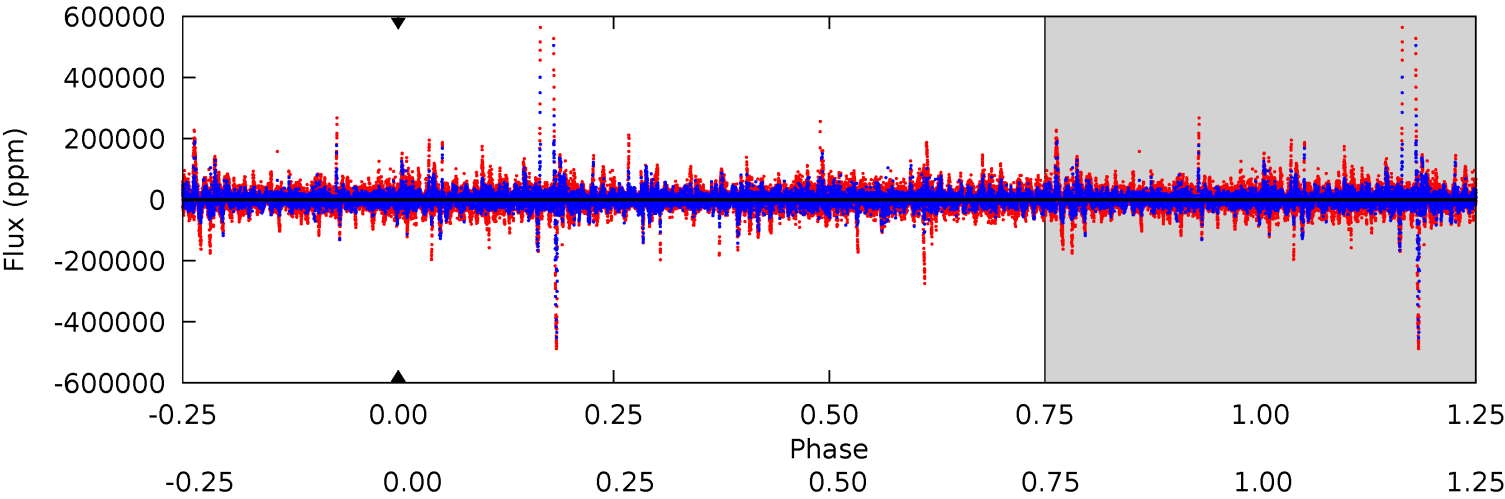
TCE 009406652-04 P=365.433787 Days $T_0=256.345669$ (BKJD)



DV Model-Shift Uniqueness Test

009406652-04, P = 365.433787 Days, E = 256.278311 Days

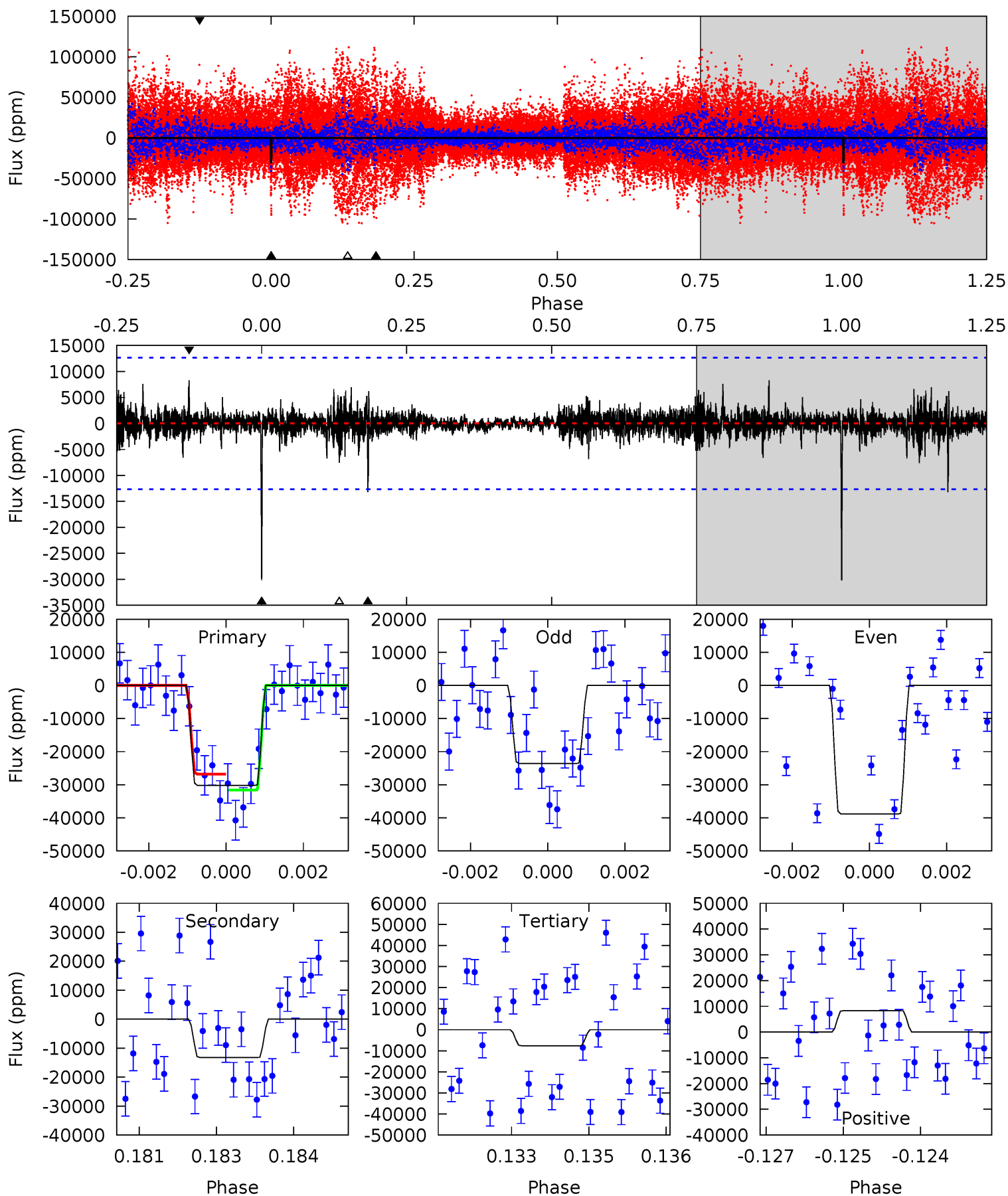
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009406652-04, P = 365.433787 Days, E = 256.345669 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.8	5.62	3.22	3.52	5.38	3.17	0.59	9.60	9.30	2.40	2.10	3.21	1.14	0.22	1.02



Stellar Parameters For KIC 009406652

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8600^{+237}_{-385}	$3.779^{+0.397}_{-0.132}$	$-0.240^{+0.350}_{-0.350}$	$3.014^{+0.754}_{-1.292}$	$1.994^{+0.424}_{-0.424}$	$0.103^{+0.369}_{-0.041}$
	+3%/-4%	+11%/-3%	+146%/-146%	+25%/-43%	+21%/-21%	+360%/-40%
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 009406652-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$22.82^{+23.73}_{-16.33}$	797^{+65}_{-91}	-5385^{+70625}_{-50107}	$-1811.639^{+329405.890}_{-295172.138}$
Alt.	-13221 ± 2354	$47.38^{+35.68}_{-26.31}$	795^{+66}_{-95}	7057^{+5394}_{-1590}	5363^{+22509}_{-3622}

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

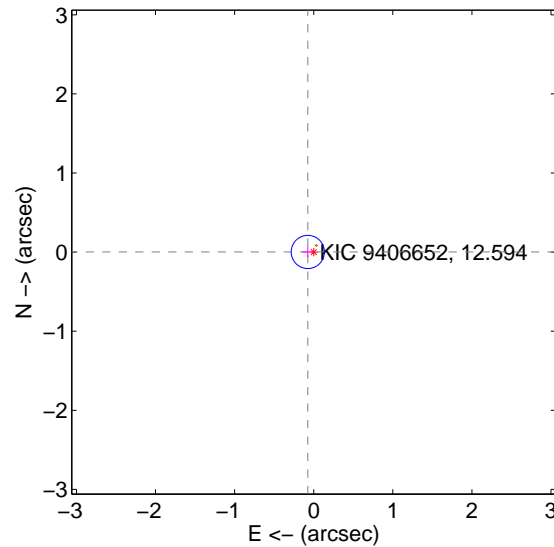
Supplemental centroid analysis for 009406652-04. Kepler magnitude: 12.59. Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

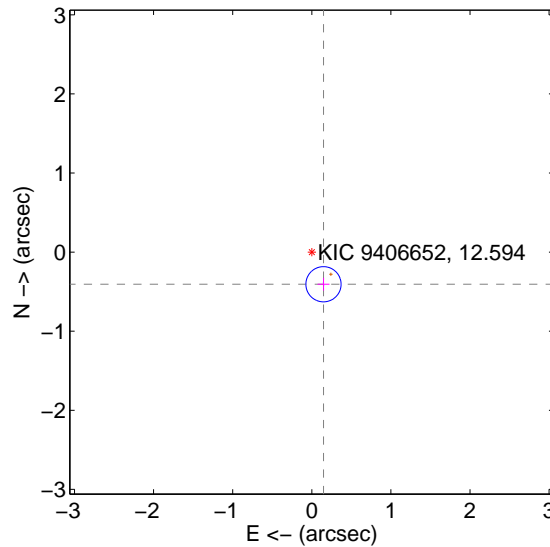
The direct PRF centroid is offset from the target star catalog position by about 0.49 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.075 ± 0.070	1.07	0.075 ± 0.070	0.002 ± 0.069
PRF-fit source offset from KIC position	0.433 ± 0.074	5.83	-0.148 ± 0.075	-0.406 ± 0.081
photometric centroid source offset	0.41 ± 0.71	0.58	0.17 ± 1.70	-0.37 ± 0.02

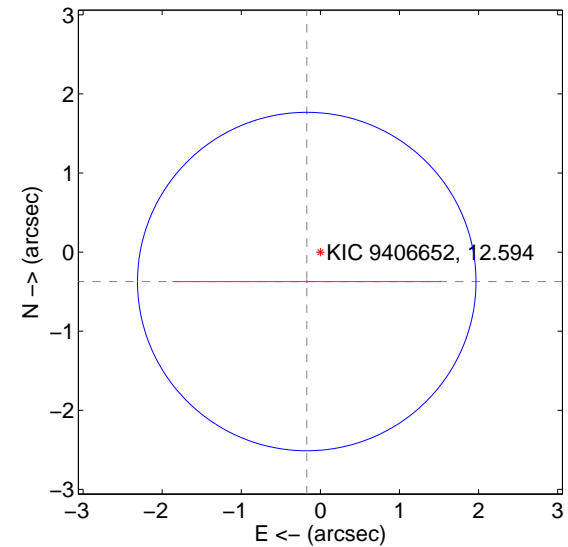
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

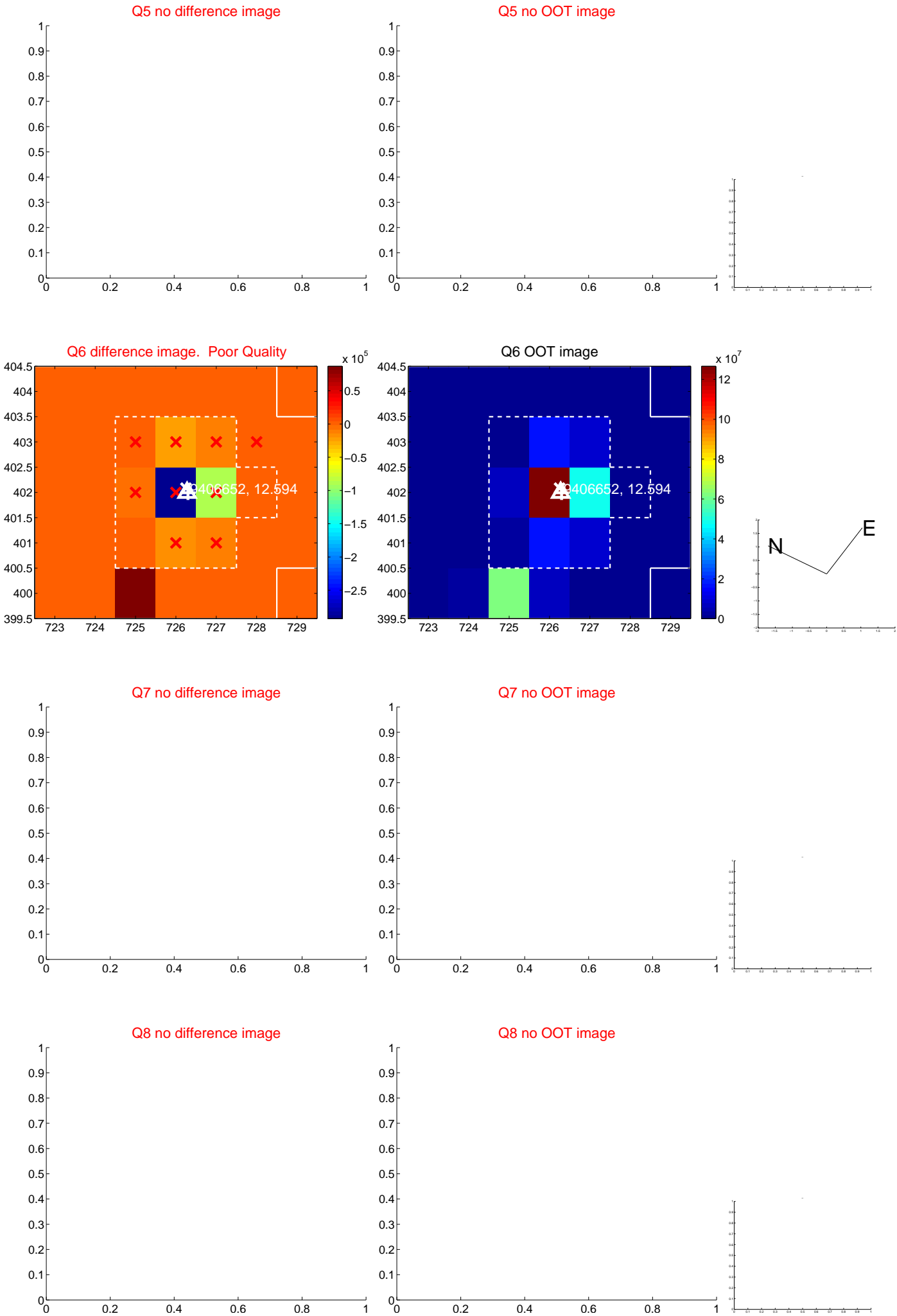


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

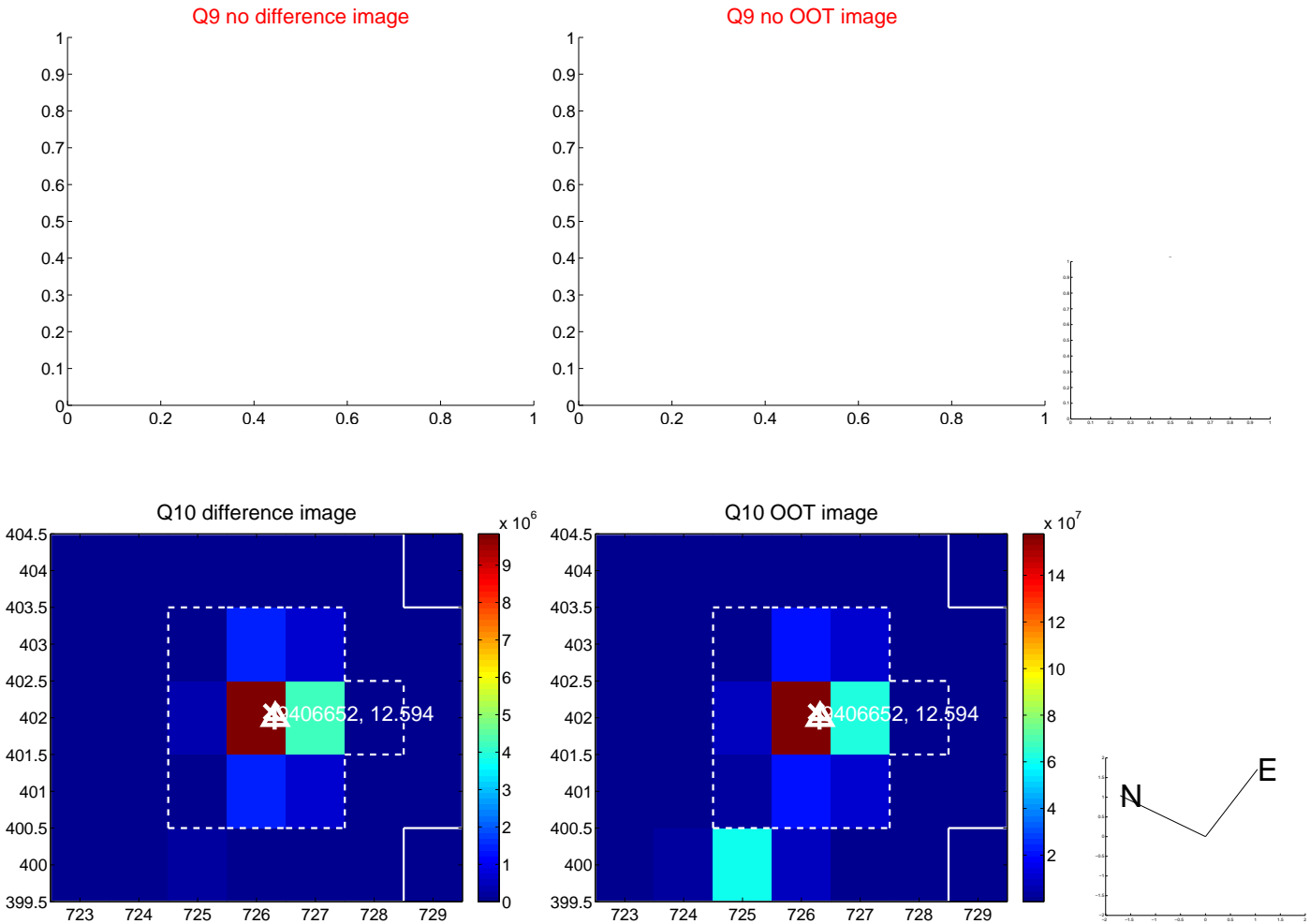
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



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

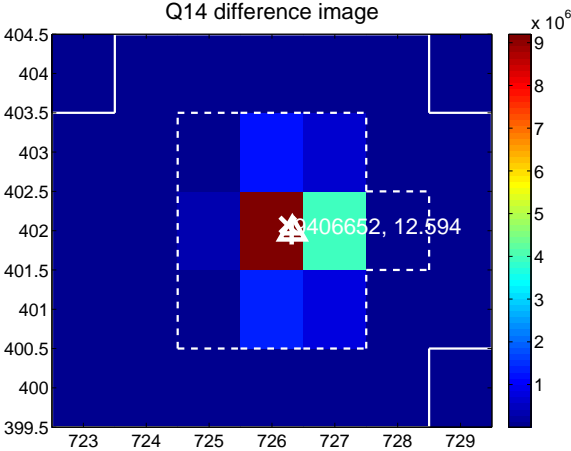
Q13 no difference image



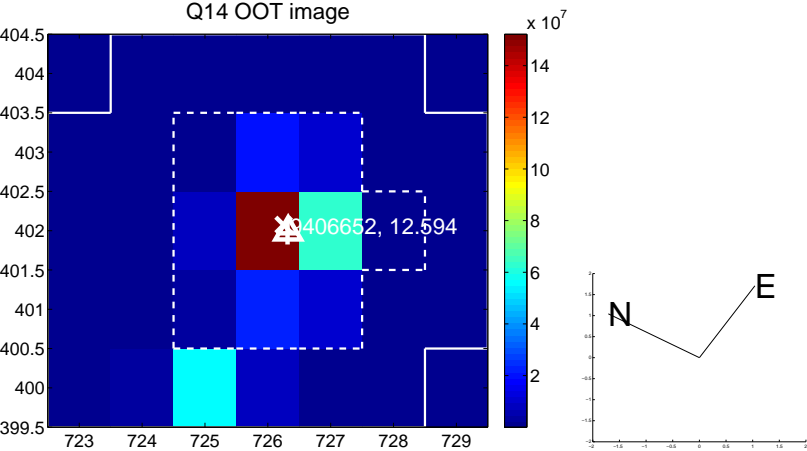
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



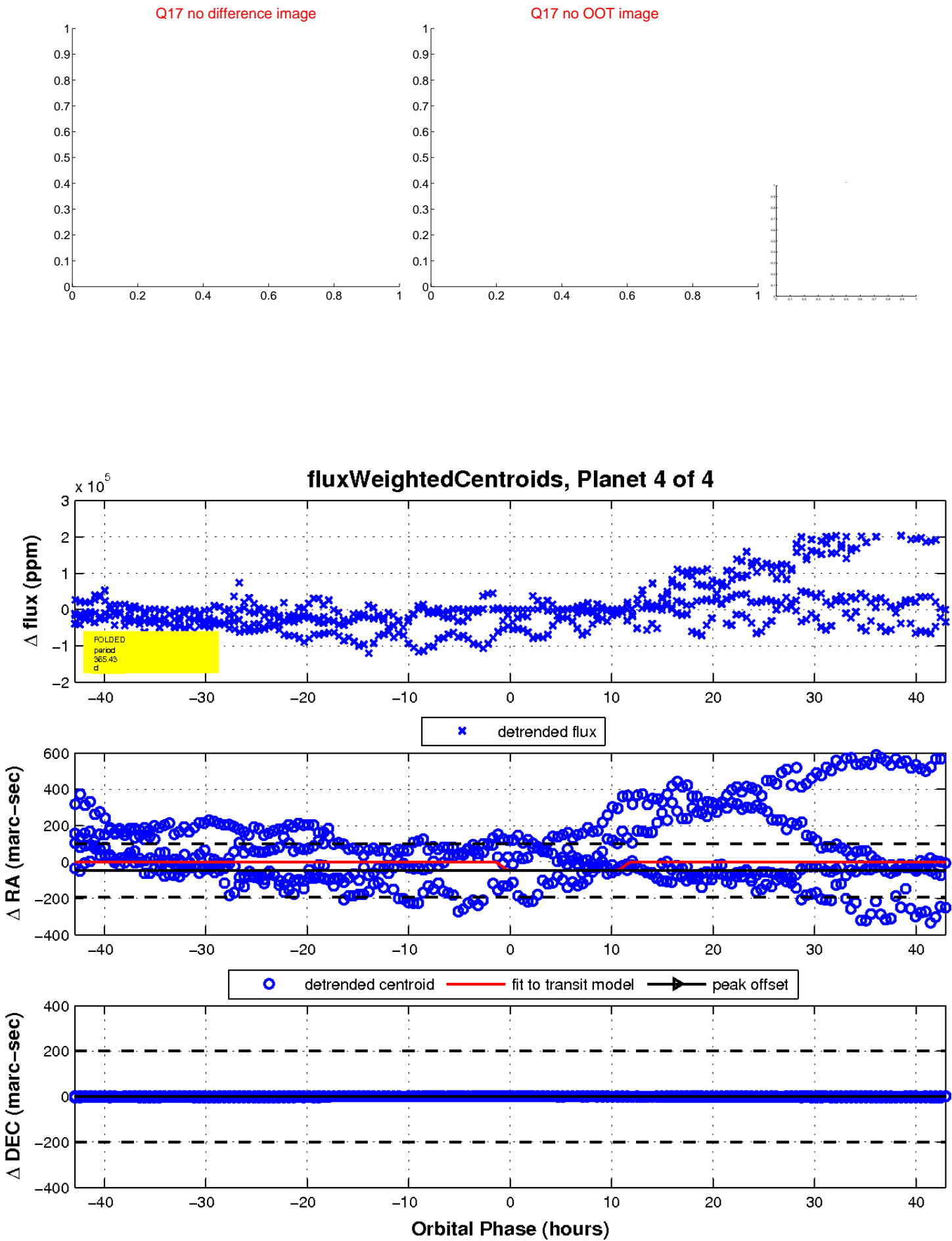
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

