

KIC 012254110

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})
012254110-01	OBS	No	311.007388	419.348785	3343.1	3.938	12.5	6.2	0.52	4681	3.12	0.22
012254110-02	OBS	No	220.110615	197.491408	2334.9	7.361	8.8	7.5	0.52	4681	4.83	0.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012254110-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012254110-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_SKYE—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_KIC_POS—HALO_GHOST

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

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

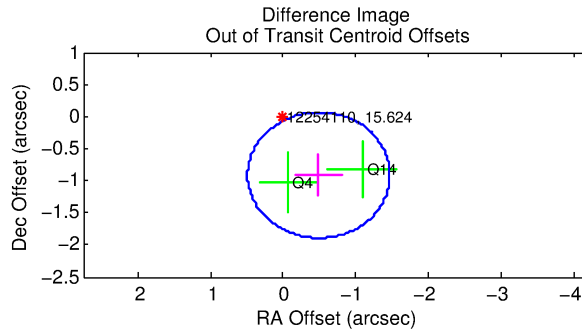
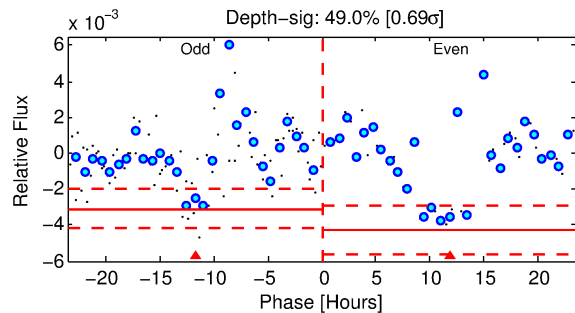
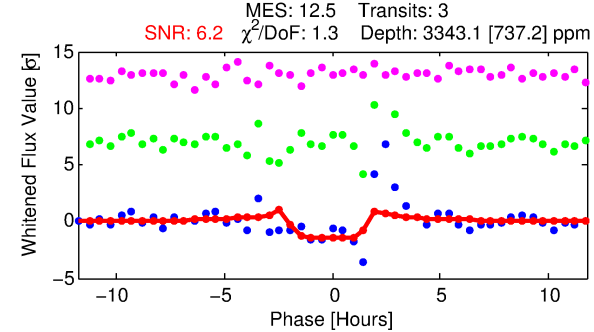
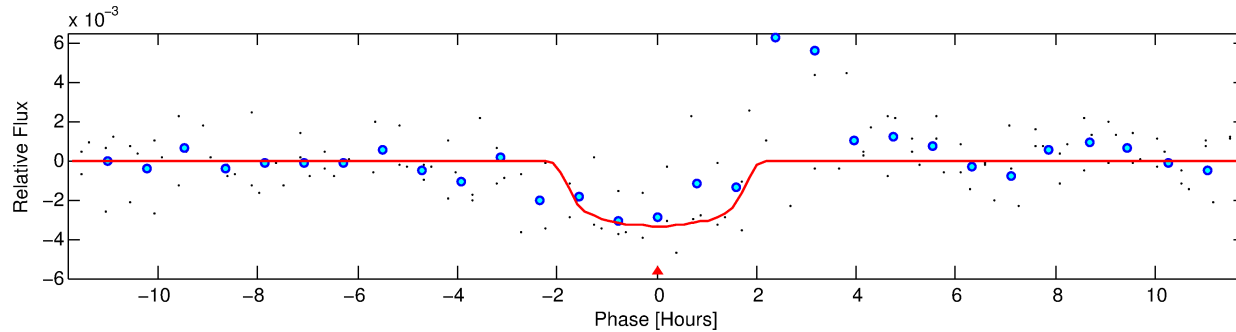
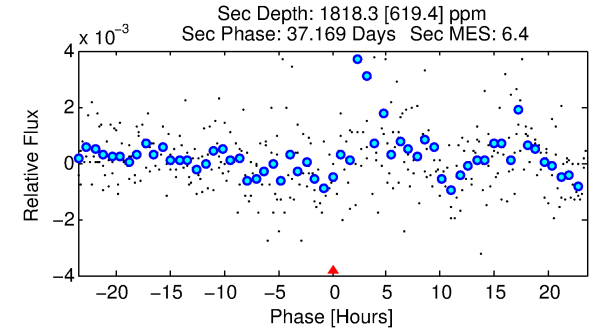
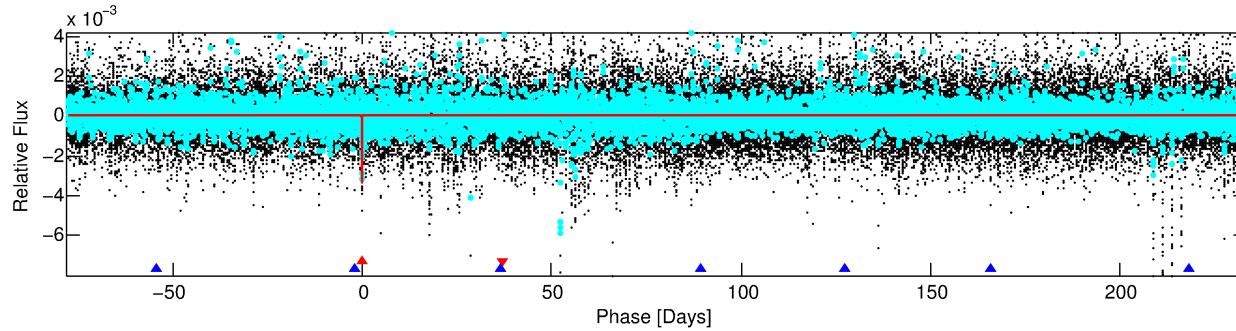
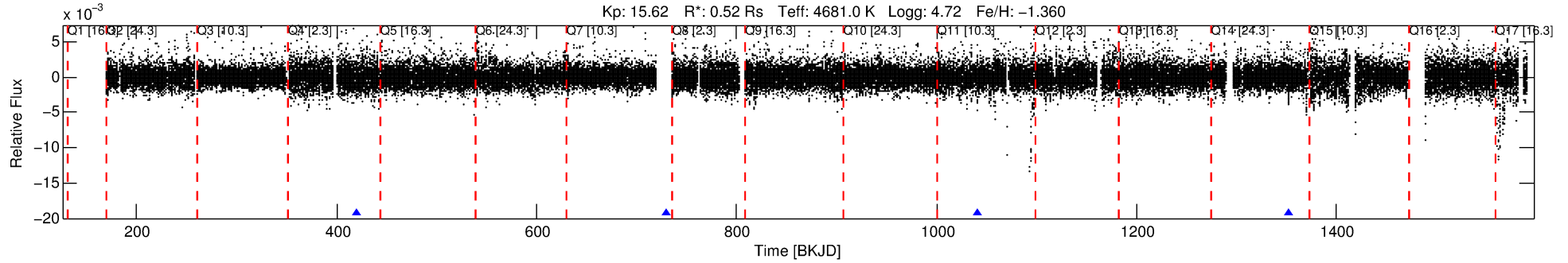
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012254110-01

No Significant Match Found

DV One-Page Summary

KIC: 12254110 Candidate: 1 of 2 Period: 311.007 d



DV Fit Results:

Period = 311.00739 [0.00427] d
Epoch = 419.3488 [0.0098] BKJD
Rp/R* = 0.0546 [0.0695]
a/R* = 535.04 [2692.97]
b = 0.57 [5.99]
Seff = 0.22 [0.03]
Teq = 175 [7] K
Rp = 3.12 [3.98] Re
a = 0.7279 [0.0421] AU
Ag = 54348.55 [139655.00] [0.39 σ]
Teffp = 4136 [2659] K [1.49 σ]

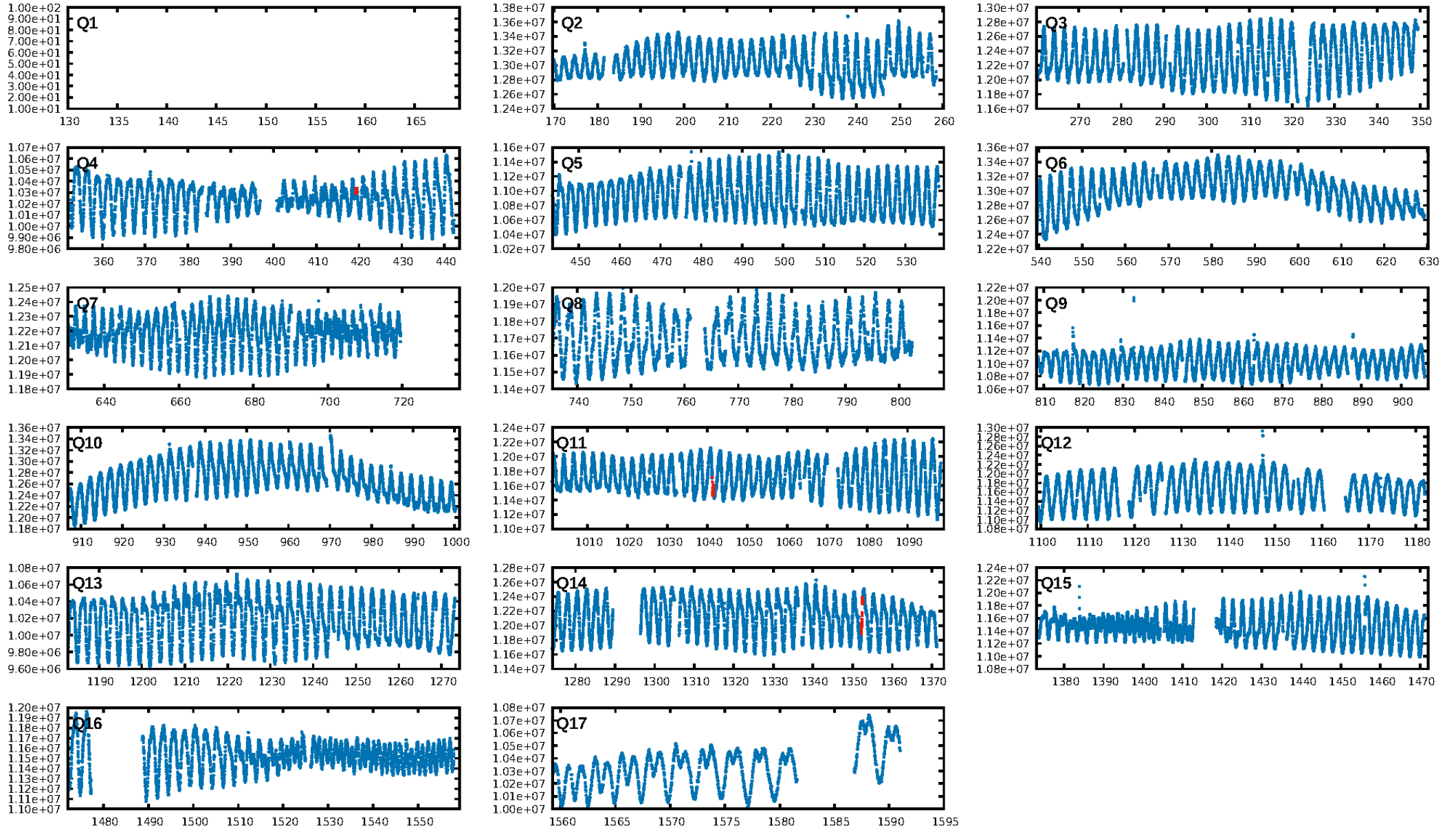
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [261.33 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 3.3%
ModelChiSquareGof-sig: 88.3%
Bootstrap-pfa: 2.20e-13
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.216
Centroid-sig: 64.4%
Centroid-so: 0.899 arcsec [1.24 σ]
OotOffset-rm: 1.036 arcsec [3.18 σ]
KicOffset-rm: 0.274 arcsec [0.85 σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

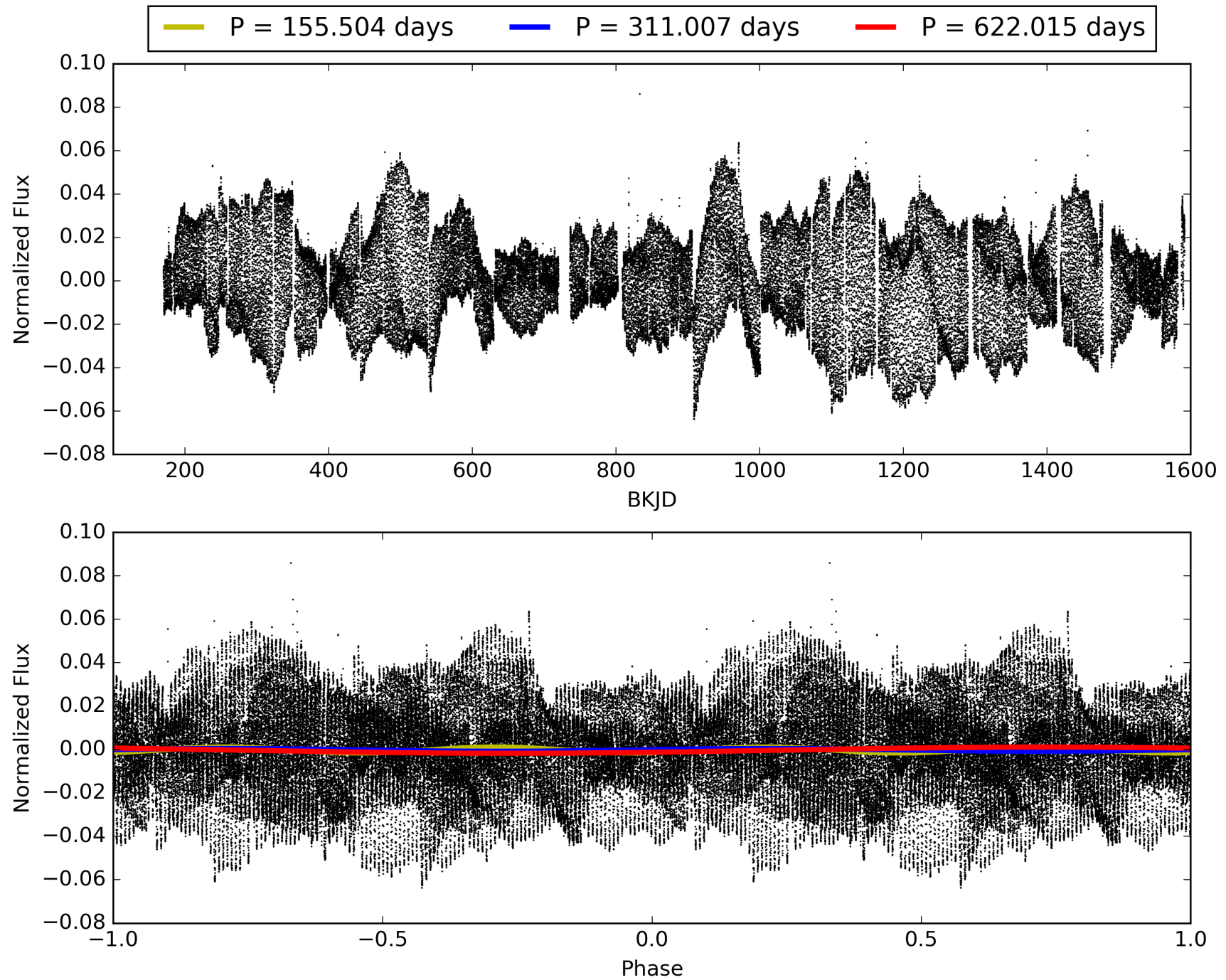
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:10:51 Z

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

TCE 012254110-01, PDC Light Curves

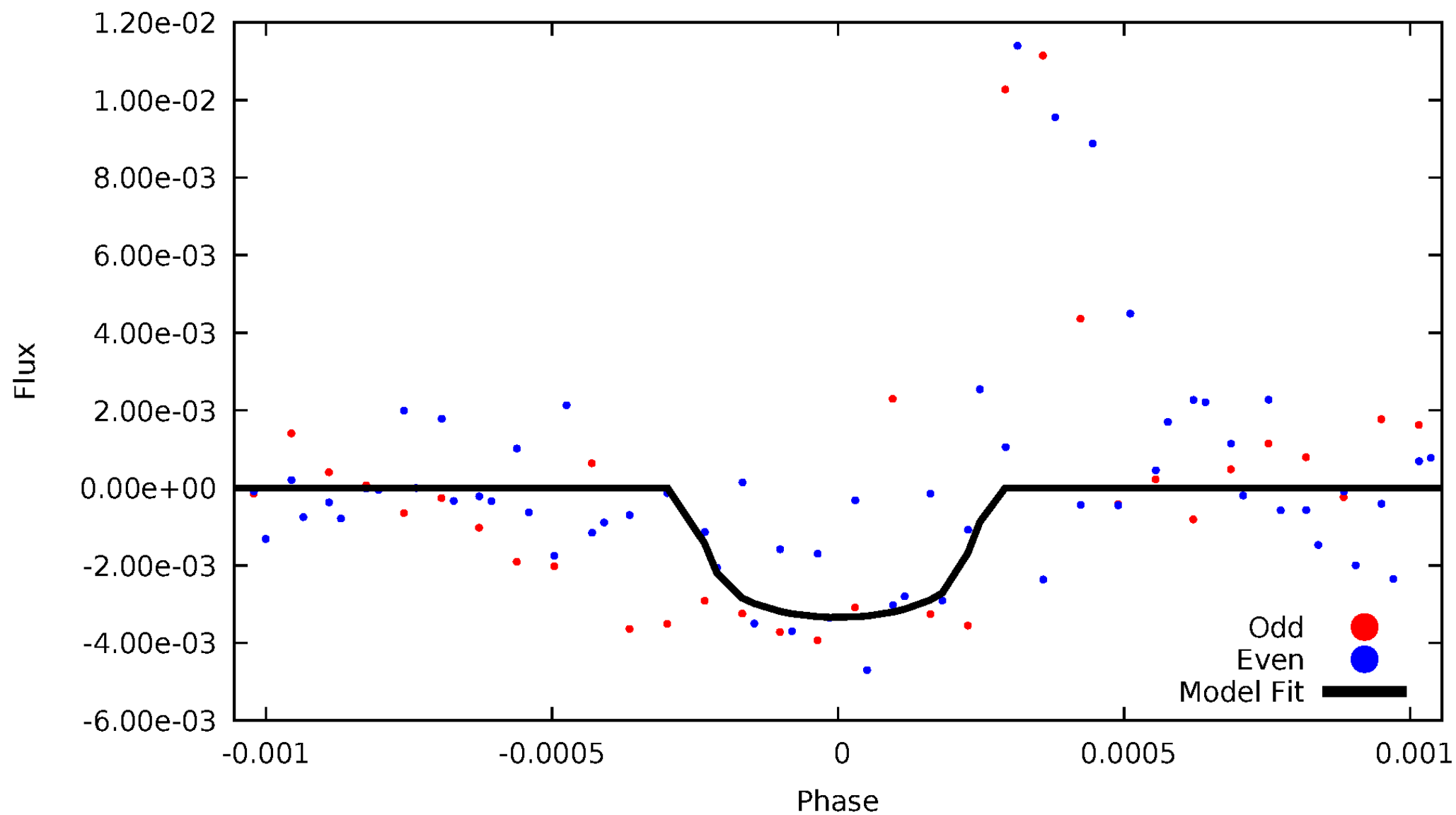


TCE 012254110-01



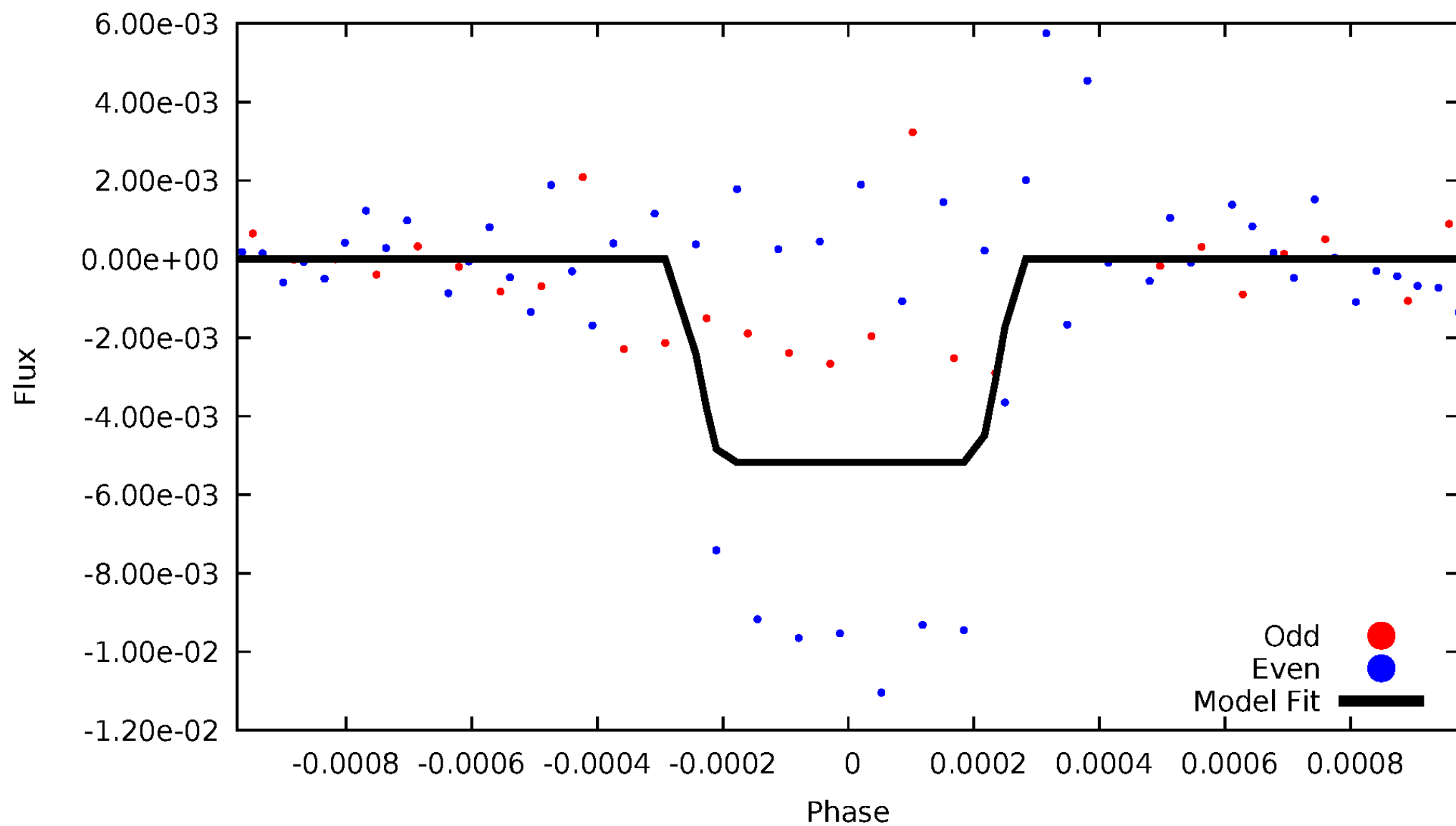
DV Odd/Even

TCE 012254110-01

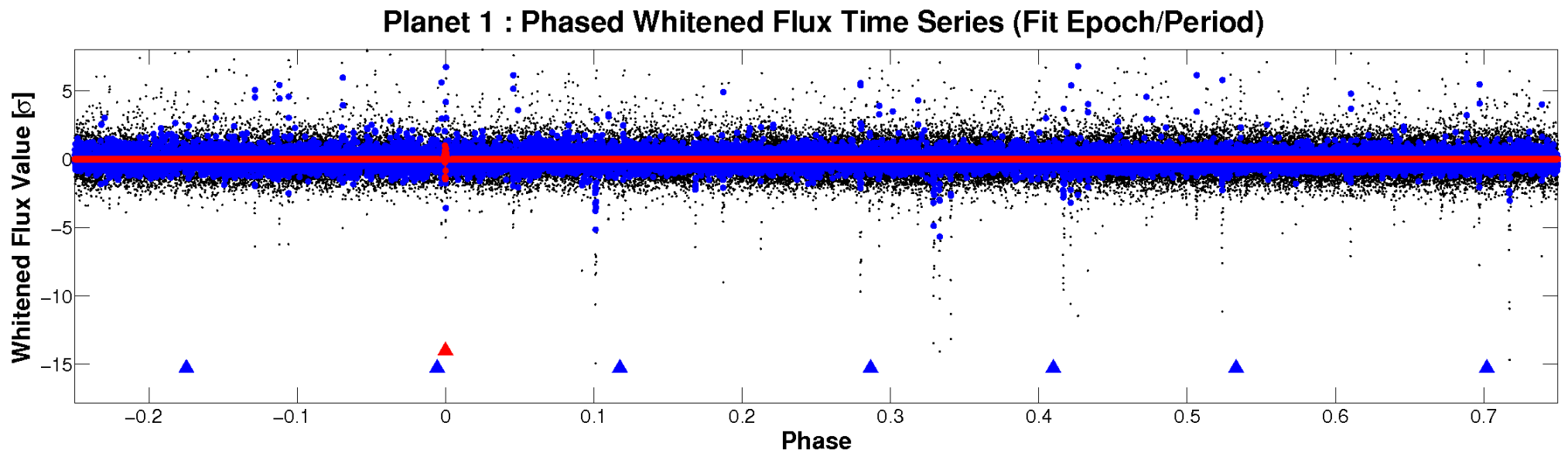
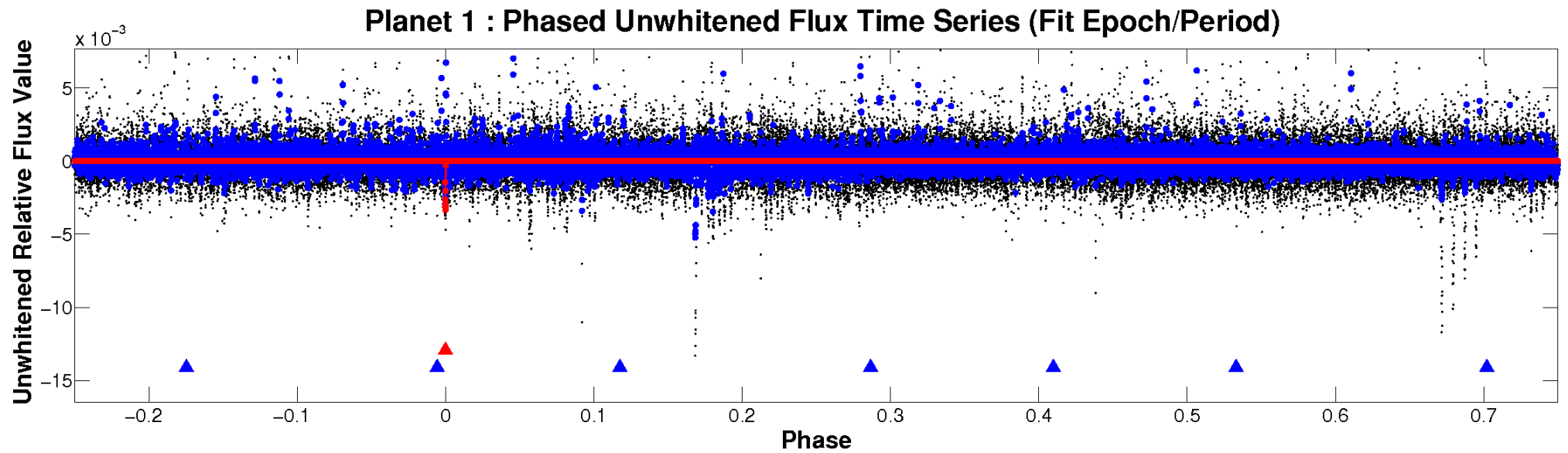


ALT Odd/Even

TCE 012254110-01

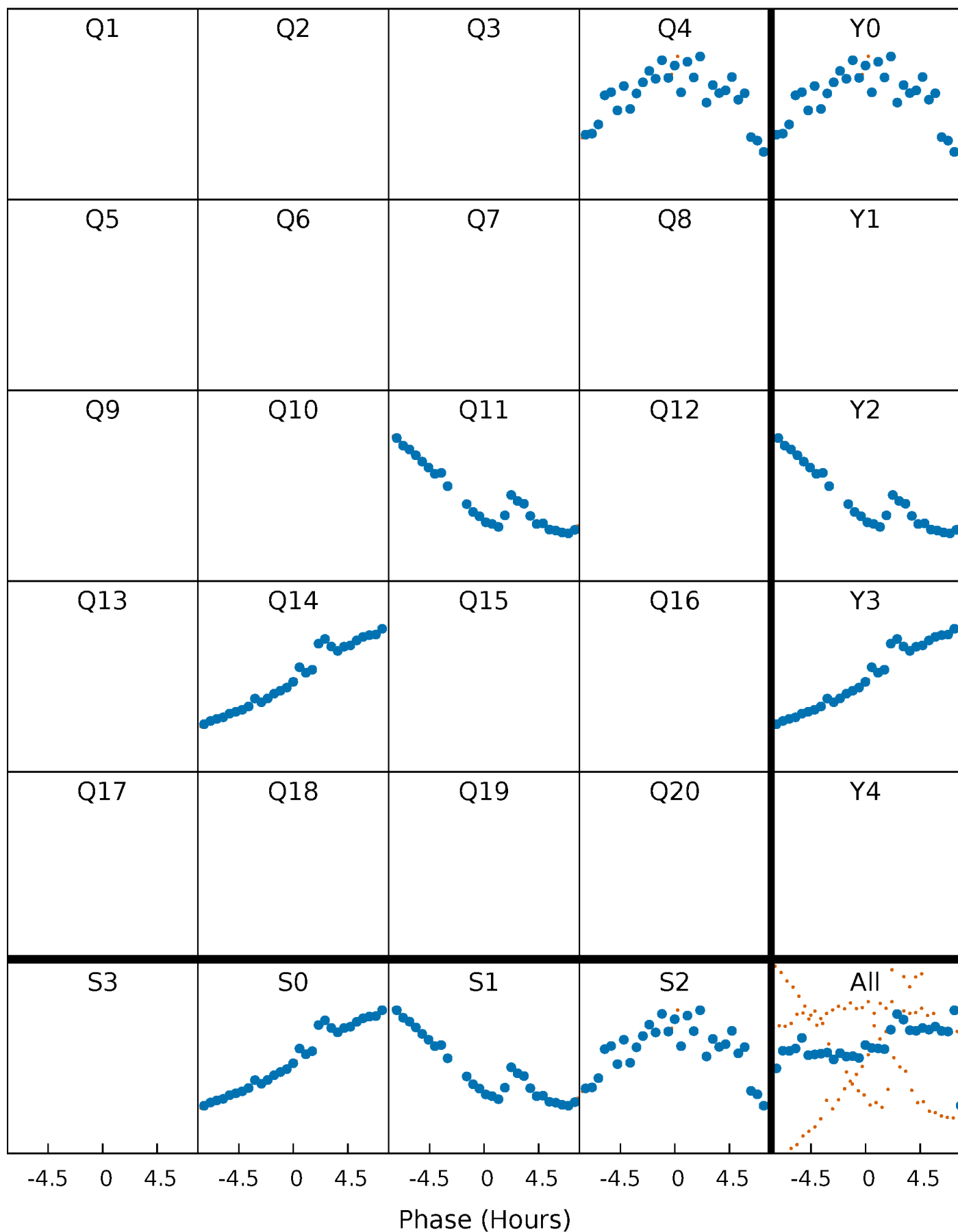


Non-Whitened Vs. Whitened Light Curve



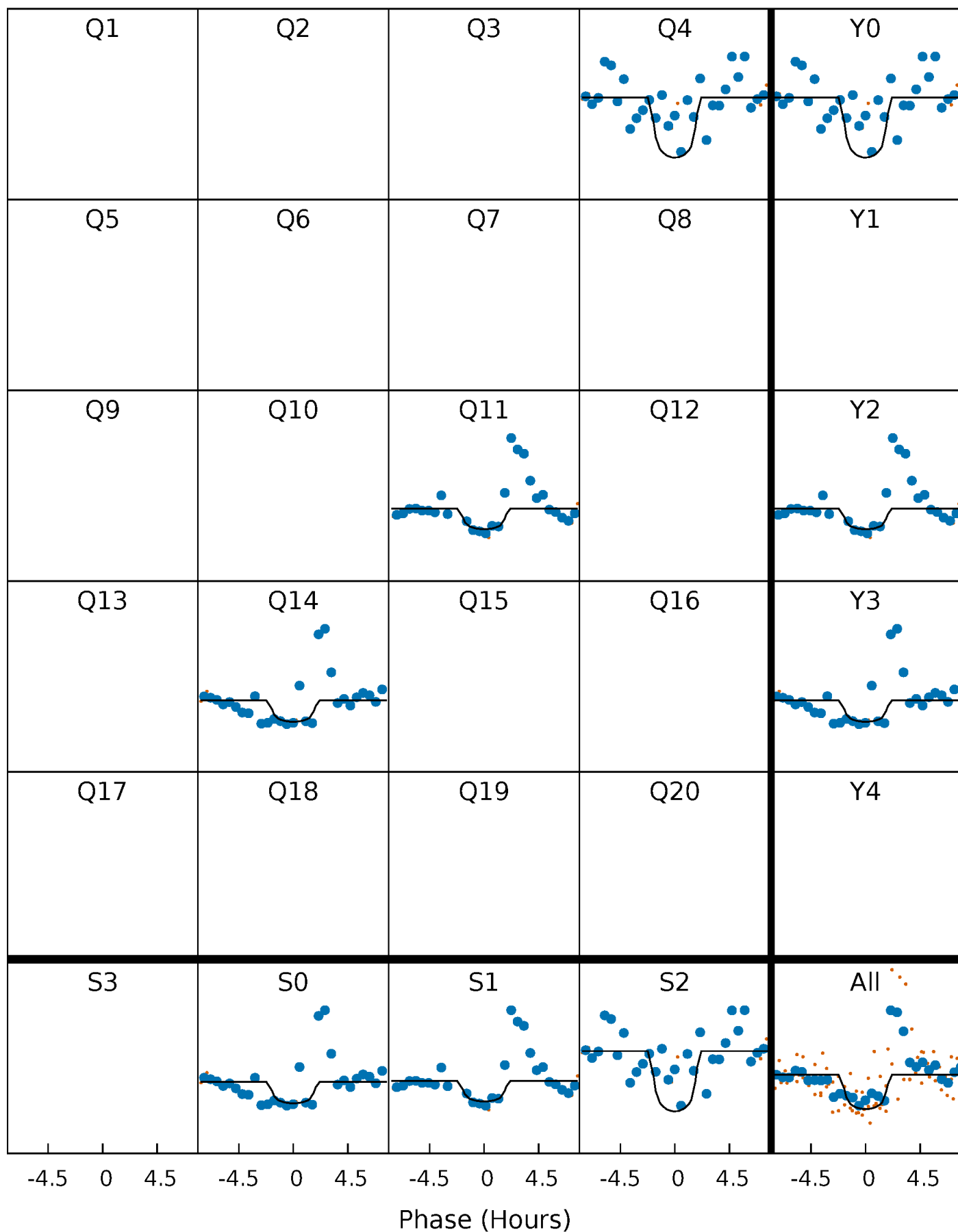
PDC Quarter-Phased Transit Curves

TCE 012254110-01 P=311.007387 Days $T_0=419.348785$ (BKJD)



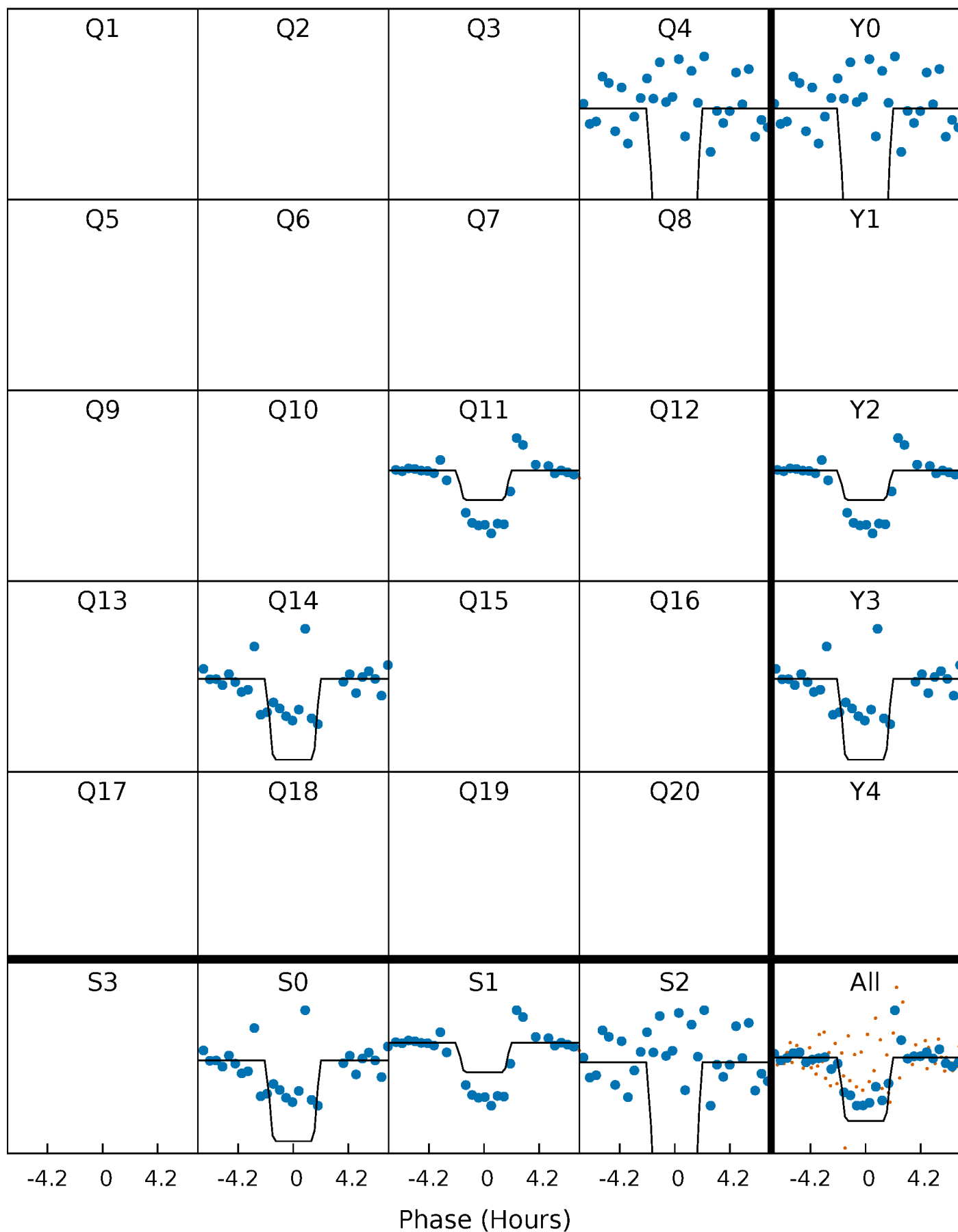
DV Quarter-Phased Transit Curves

TCE 012254110-01 P=311.007387 Days $T_0=419.348785$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

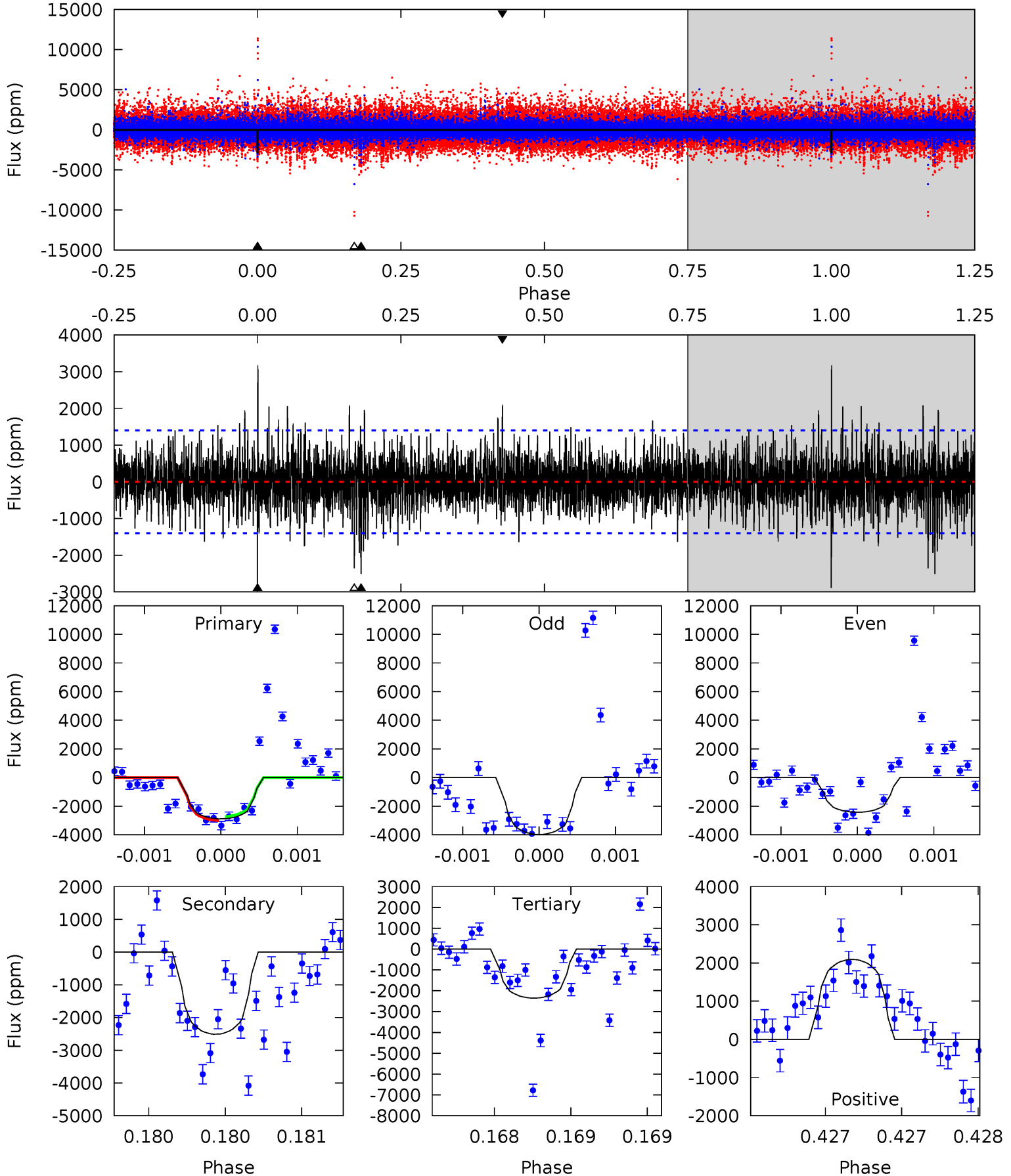
TCE 012254110-01 P=311.005594 Days $T_0=419.351907$ (BKJD)



DV Model-Shift Uniqueness Test

012254110-01, P = 311.007387 Days, E = 108.341398 Days

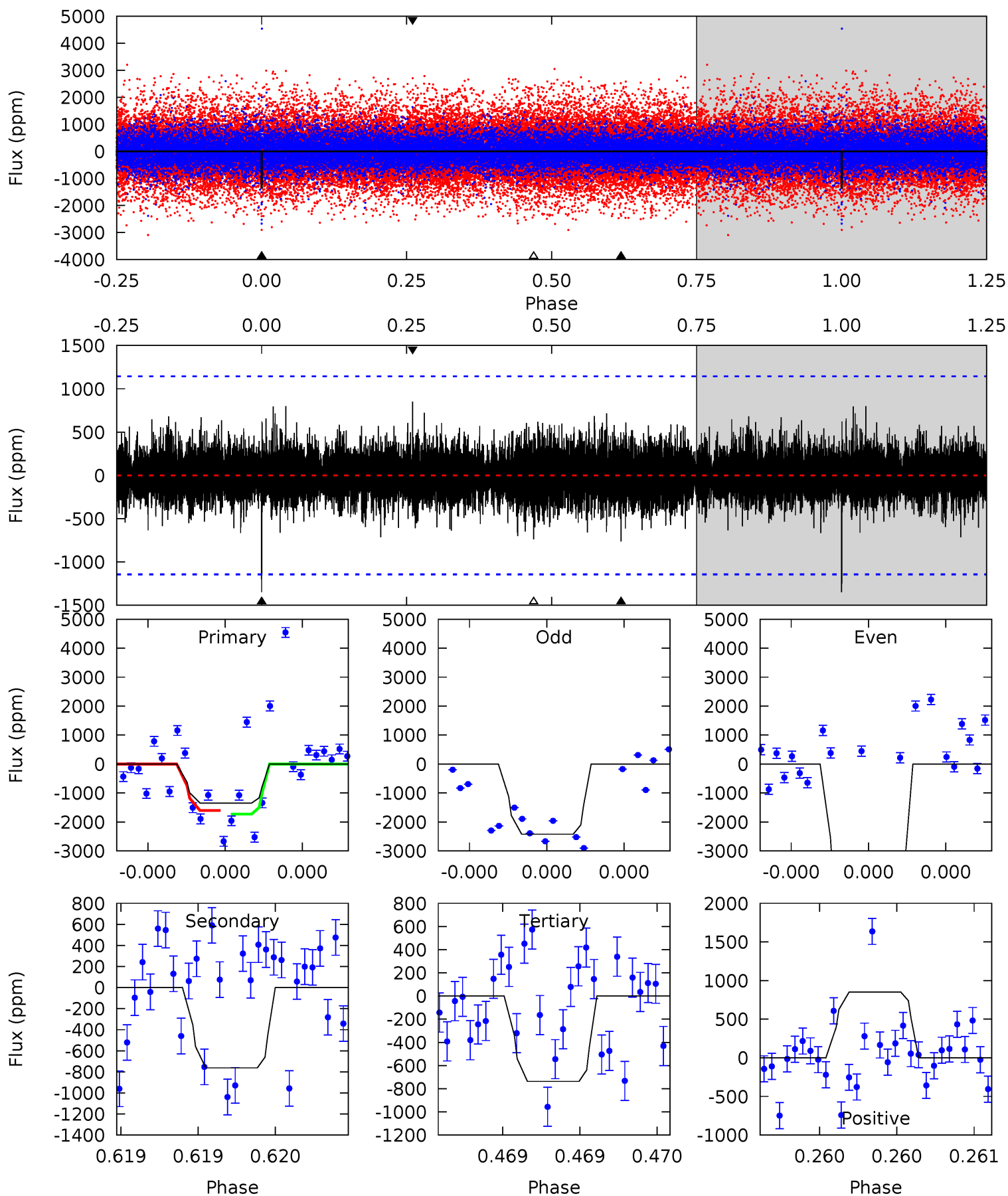
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	9.98	9.35	8.32	5.56	3.47	1.92	2.12	3.15	0.63	1.66	2.83	0.88	0.52	0.55



Alt Model-Shift Uniqueness Test

012254110-01, P = 311.005594 Days, E = 108.346313 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.57	3.72	3.59	4.15	5.58	3.48	0.87	2.98	2.42	0.12	-0.44	8.81	2.16	0.39	0



Stellar Parameters For KIC 012254110

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4681^{+145}_{-145}	$4.725^{+0.048}_{-0.024}$	$-1.360^{+0.300}_{-0.300}$	$0.524^{+0.028}_{-0.035}$	$0.532^{+0.035}_{-0.022}$	$5.198^{+1.021}_{-0.516}$
	+3%/-3%	+1%/-1%	+22%/-22%	+5%/-7%	+7%/-4%	+20%/-10%
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 012254110-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2510 ± 252	$4.17^{+3.53}_{-2.84}$	243^{+9}_{-8}	4056^{+2510}_{-765}	$42588^{+360434}_{-30448}$
Alt.	-762 ± 205	$4.78^{+3.84}_{-2.90}$	244^{+8}_{-9}	3164^{+1168}_{-454}	9494^{+53440}_{-6461}

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

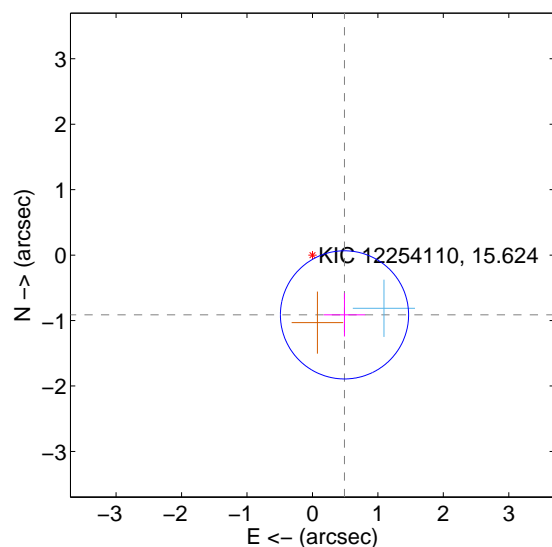
Supplemental centroid analysis for 012254110-01. Kepler magnitude: 15.62. Transit SNR 6.17

There are 1 quarters with good PRF difference image offsets

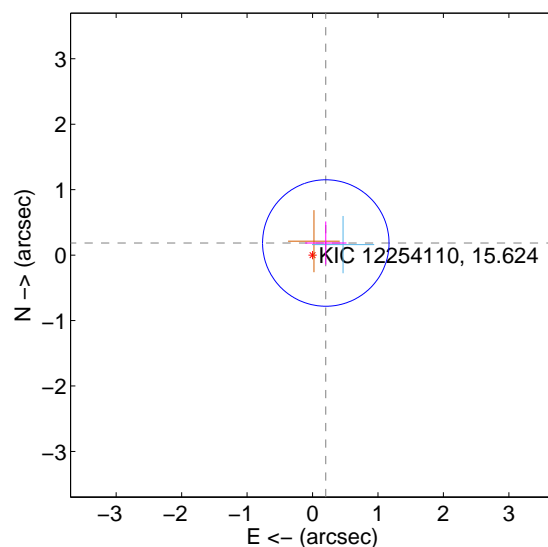
The direct PRF centroid is offset from the target star catalog position by about 1.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.036 ± 0.326	3.18	-0.490 ± 0.316	-0.913 ± 0.329
PRF-fit source offset from KIC position	0.274 ± 0.322	0.85	-0.203 ± 0.316	0.185 ± 0.329
photometric centroid source offset	0.90 ± 0.73	1.24	0.15 ± 0.59	0.89 ± 0.73

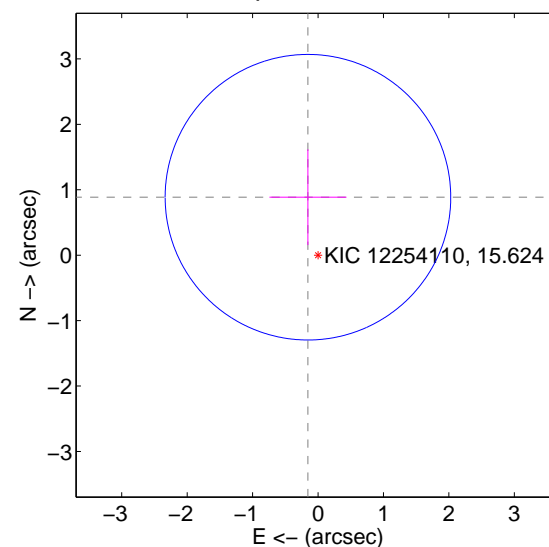
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



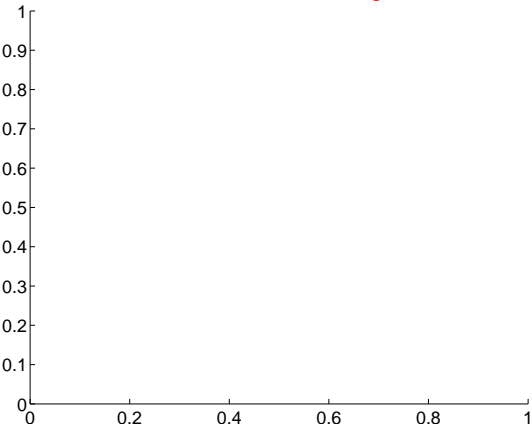
offset from photometric centroids



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.

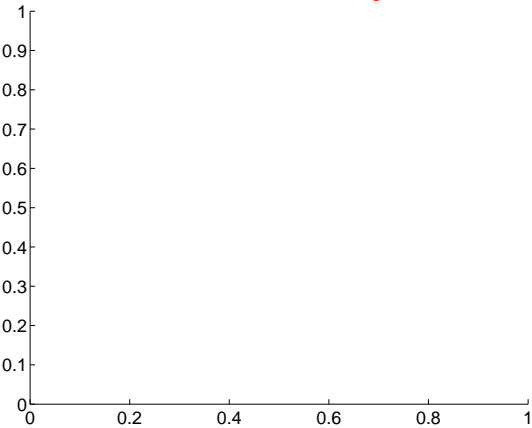
Q1 no difference image



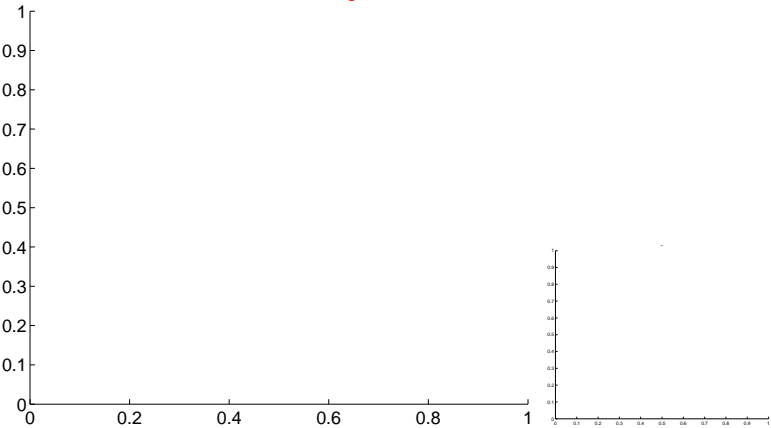
Q1 no OOT image



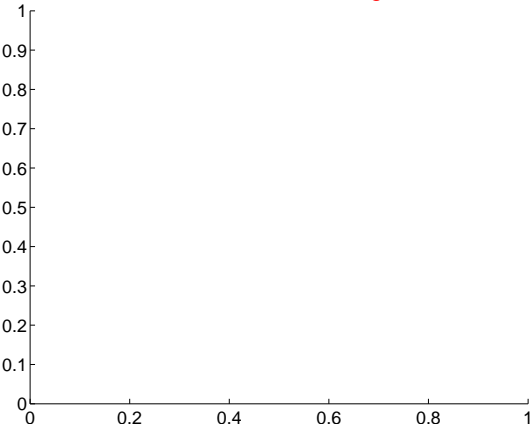
Q2 no difference image



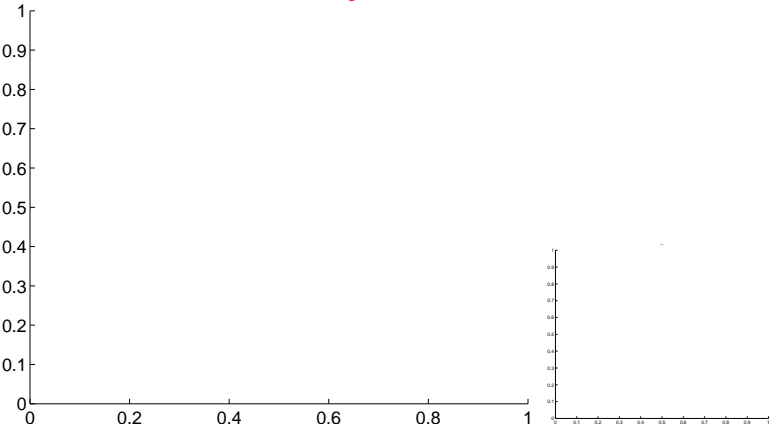
Q2 no OOT image



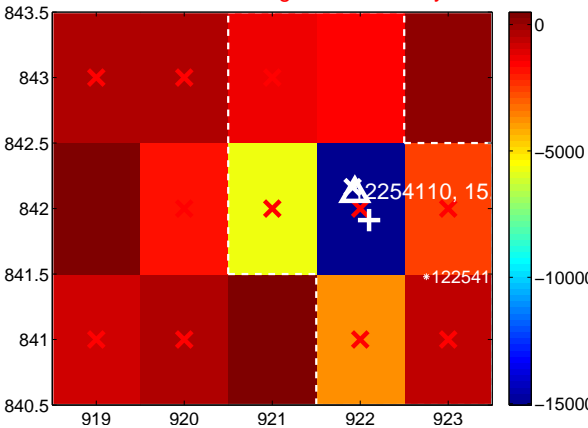
Q3 no difference image



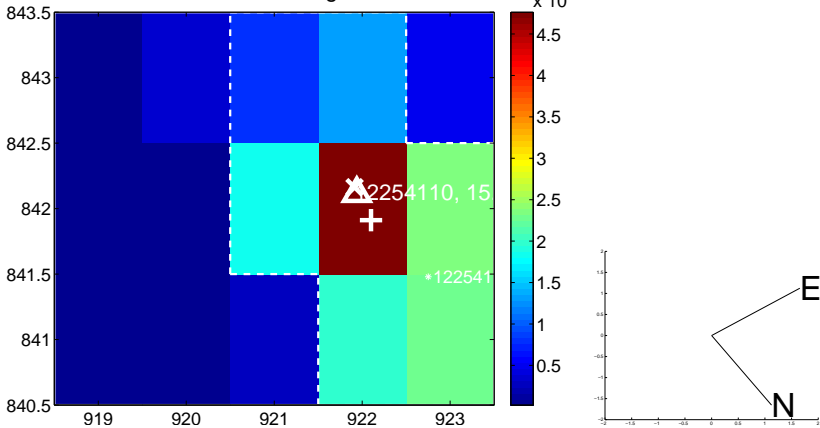
Q3 no OOT image



Q4 difference image. Poor Quality



Q4 OOT image



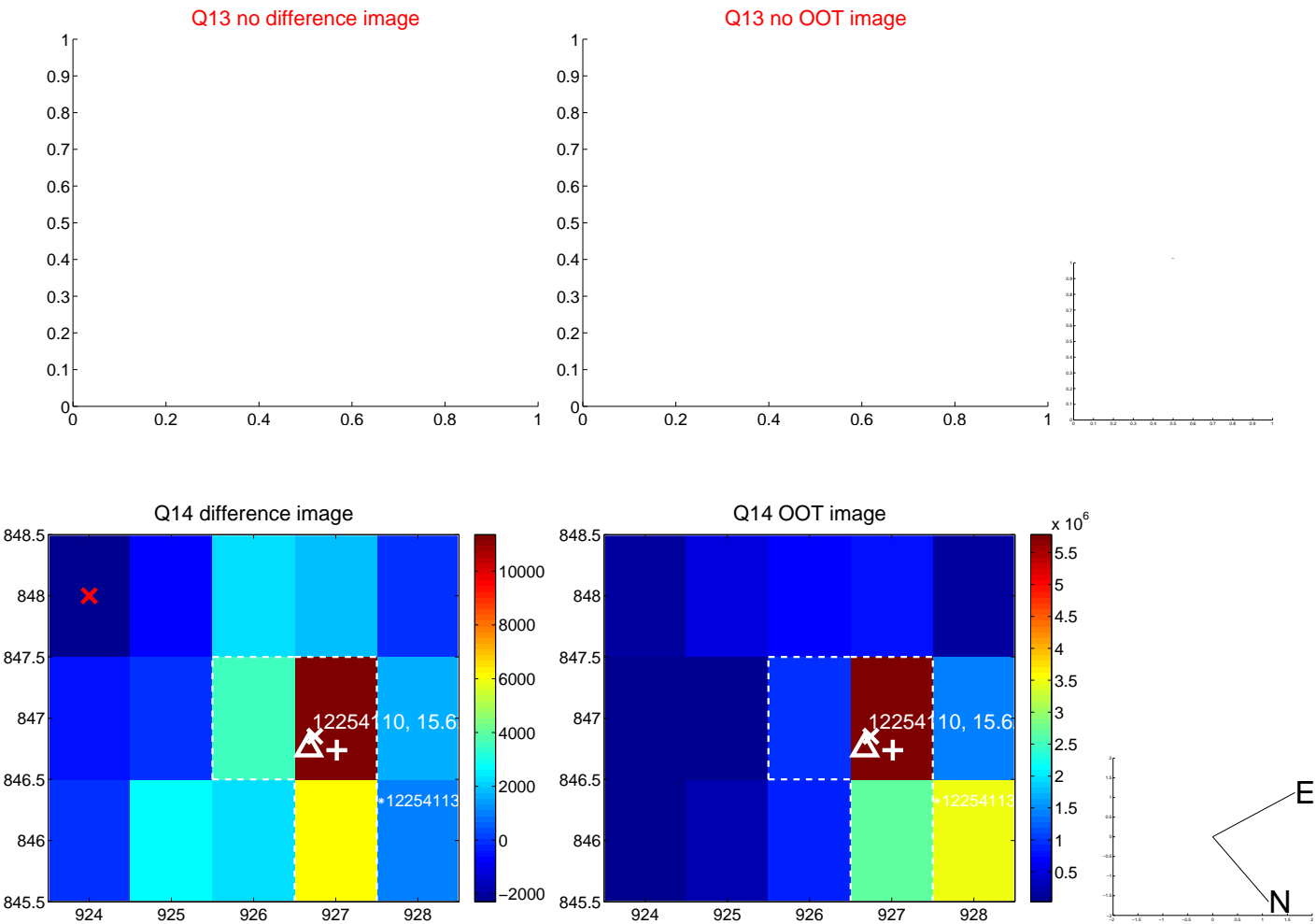
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



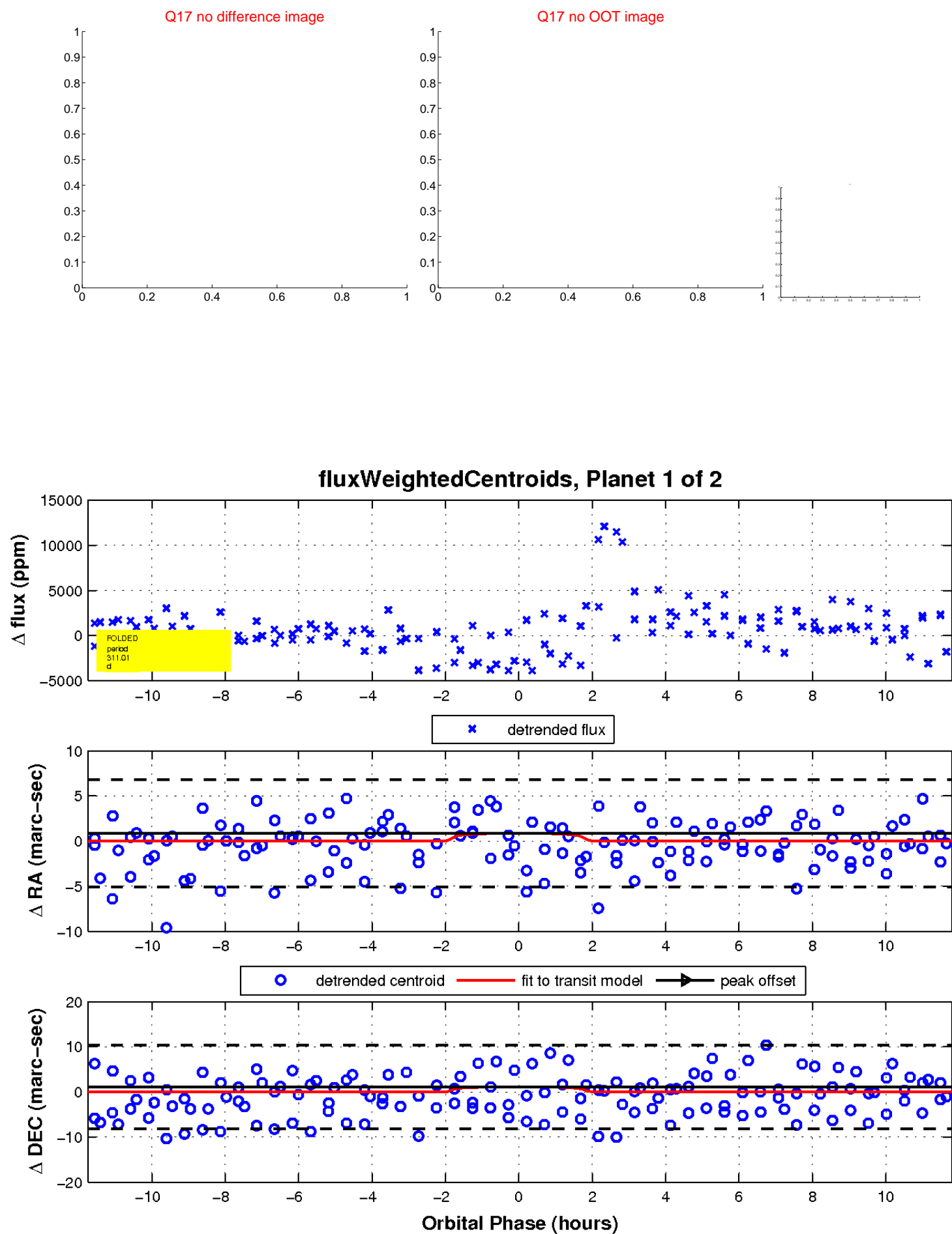
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



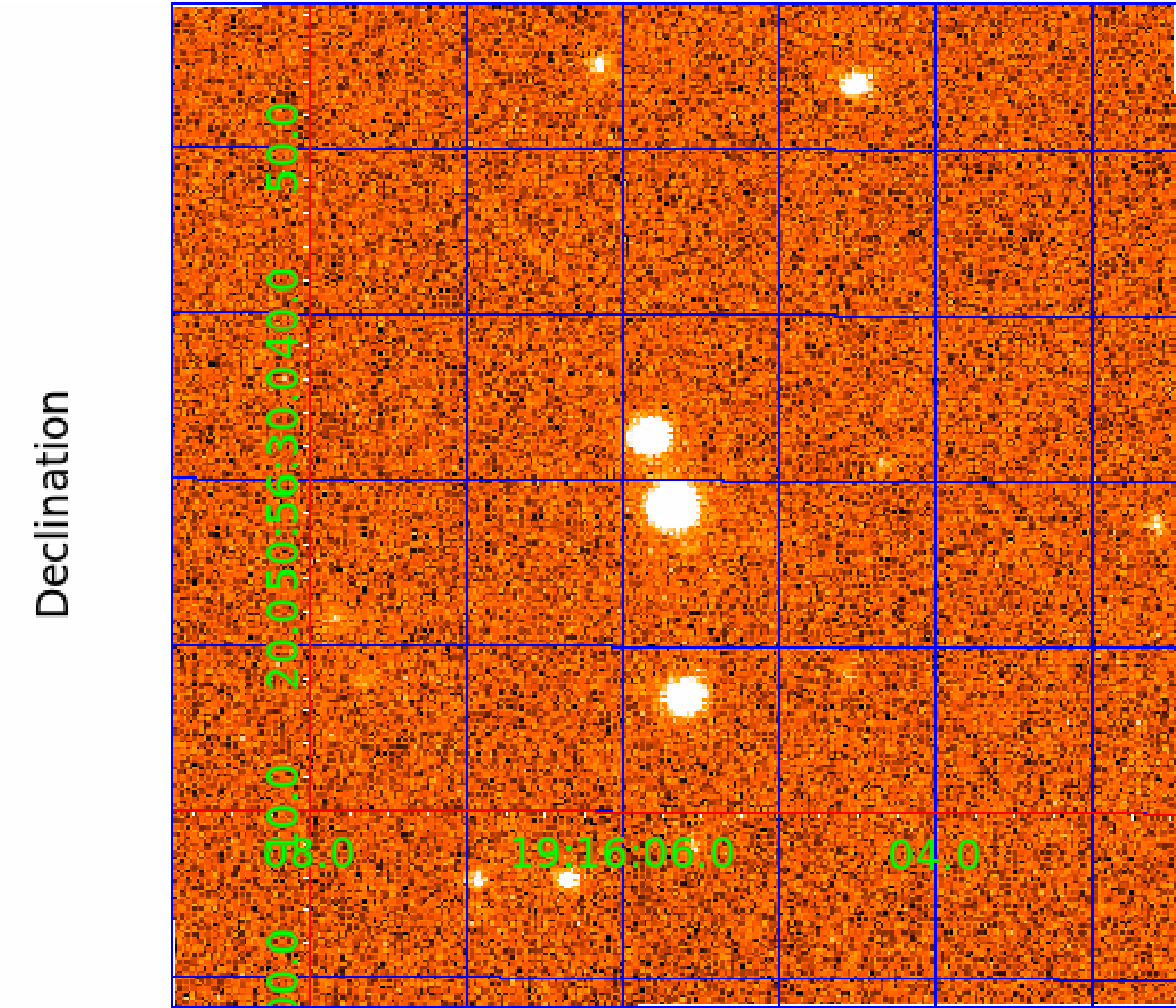
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 012254110

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})
012254110-01	OBS	No	311.007388	419.348785	3343.1	3.938	12.5	6.2	0.52	4681	3.12	0.22
012254110-02	OBS	No	220.110615	197.491408	2334.9	7.361	8.8	7.5	0.52	4681	4.83	0.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012254110-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012254110-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_SKYE—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_KIC_POS—HALO_GHOST

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

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

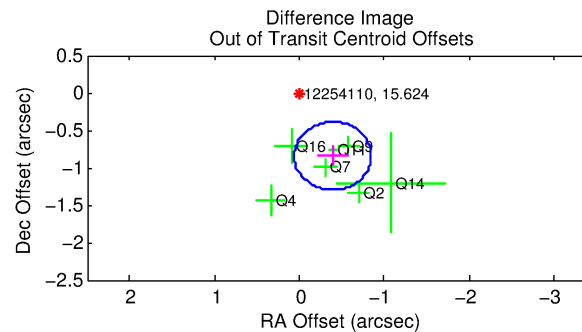
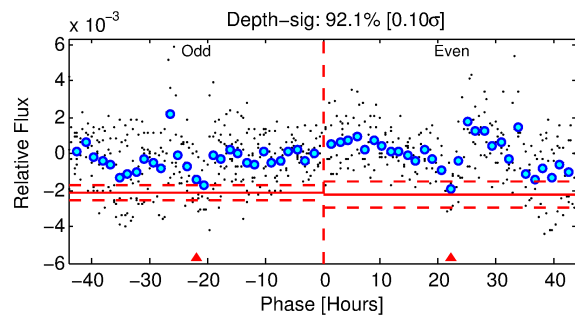
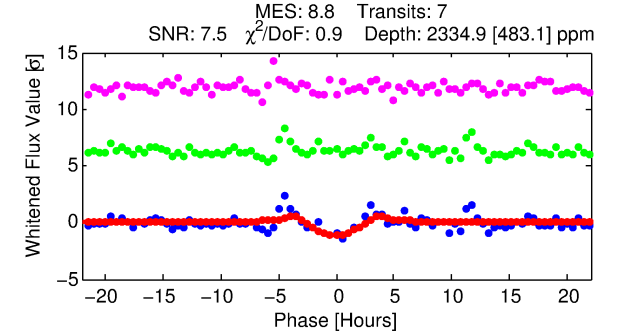
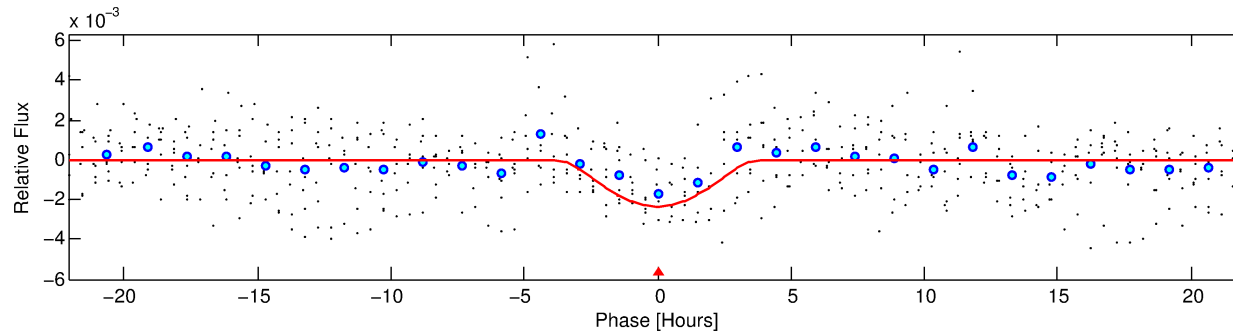
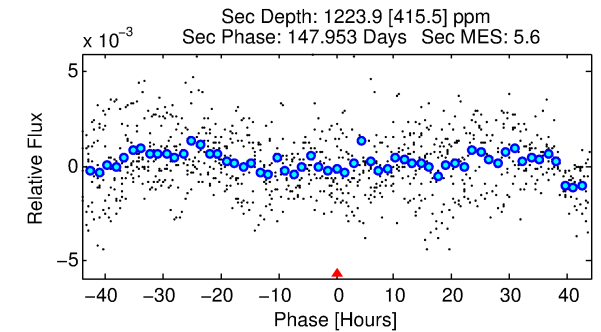
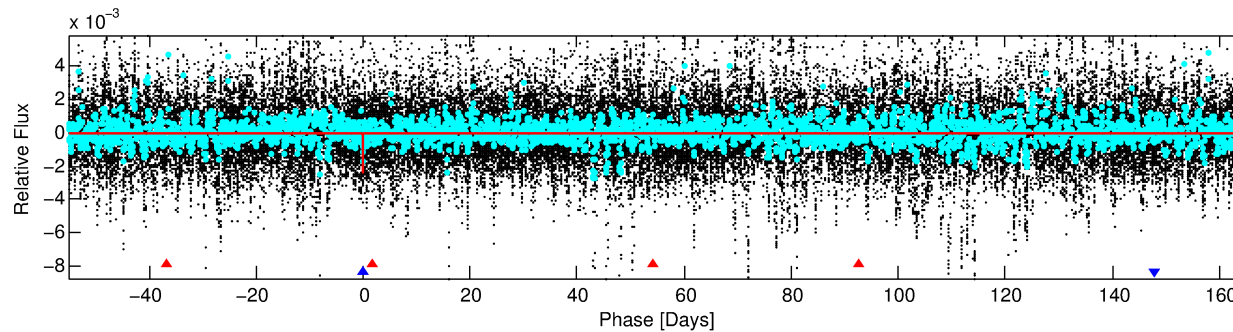
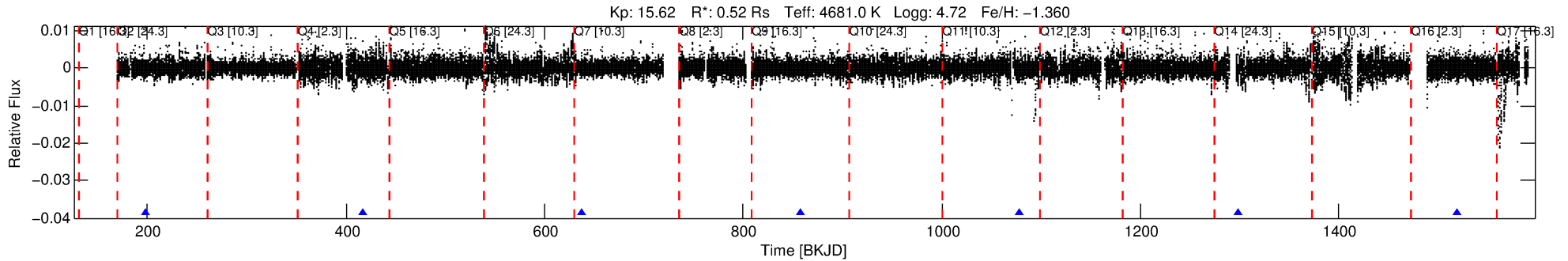
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012254110-02

No Significant Match Found

DV One-Page Summary

KIC: 12254110 Candidate: 2 of 2 Period: 220.111 d



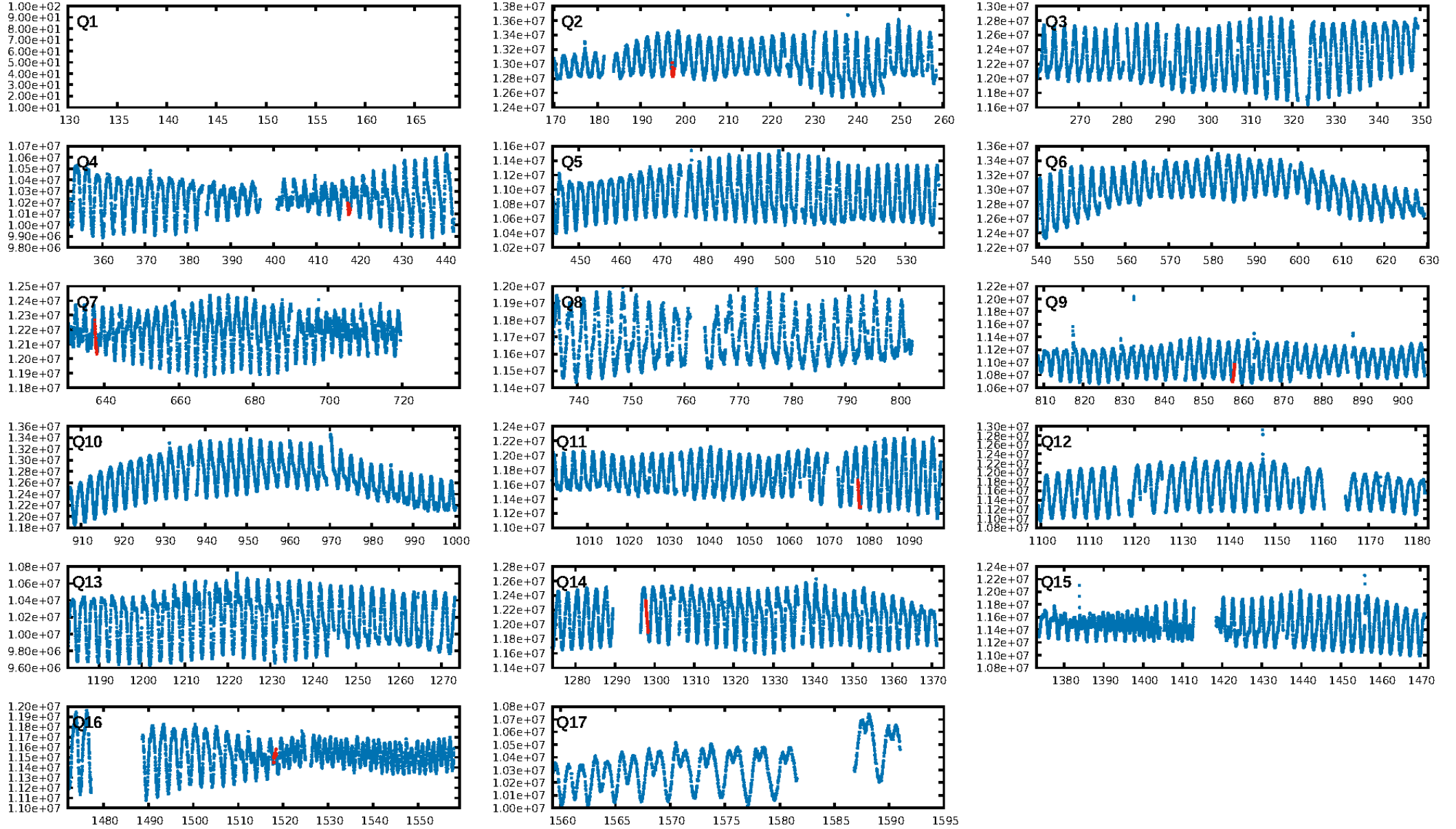
DV Fit Results:

Period = 220.11062 [0.00419] d
Epoch = 197.4914 [0.0140] BKJD
Rp/R* = 0.0845 [0.2431]
a/R* = 96.77 [57.82]
b = 1.00 [0.36]
Seff = 0.35 [0.05]
Teq = 197 [7] K
Rp = 4.83 [13.90] Re
a = 0.5781 [0.0334] AU
Ag = 9635.94 [55535.52] [0.17σ]
Teffp = 3012 [4340] K [0.65σ]

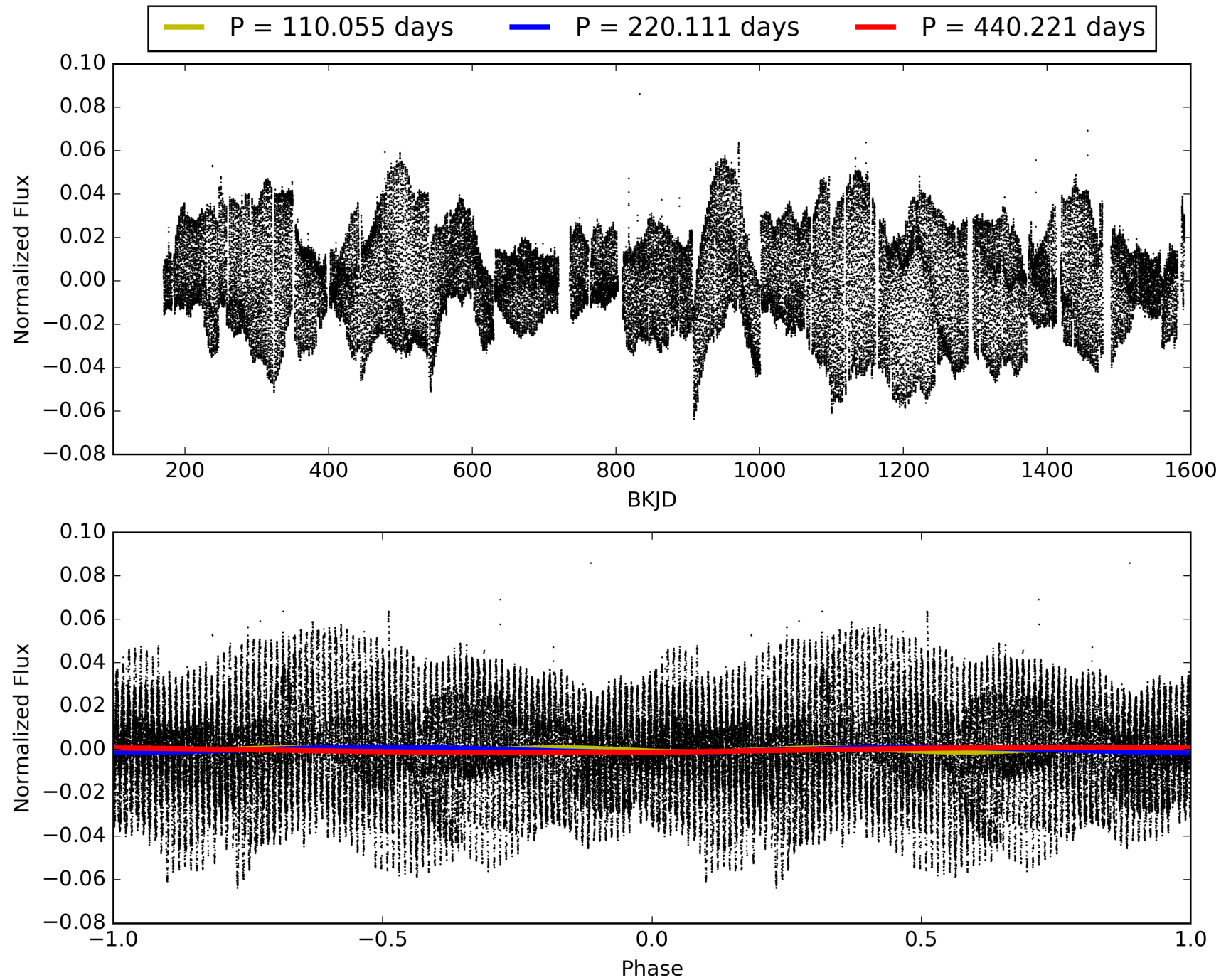
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [261.33σ]
ModelChiSquare2-sig: 48.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.62e-10
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 0.1023
Centroid-sig: 39.5%
Centroid-so: 1.331 arcsec [2.18σ]
OotOffset-rm: 0.931 arcsec [6.14σ]
KicOffset-rm: 0.159 arcsec [1.29σ]
OotOffset-st: 2/2/2/1 [7]
KicOffset-st: 2/2/2/1 [7]
DiffImageQuality-fgm: 0.86 [6/7]
DiffImageOverlap-fno: 1.00 [7/7]

TCE 012254110-02, PDC Light Curves

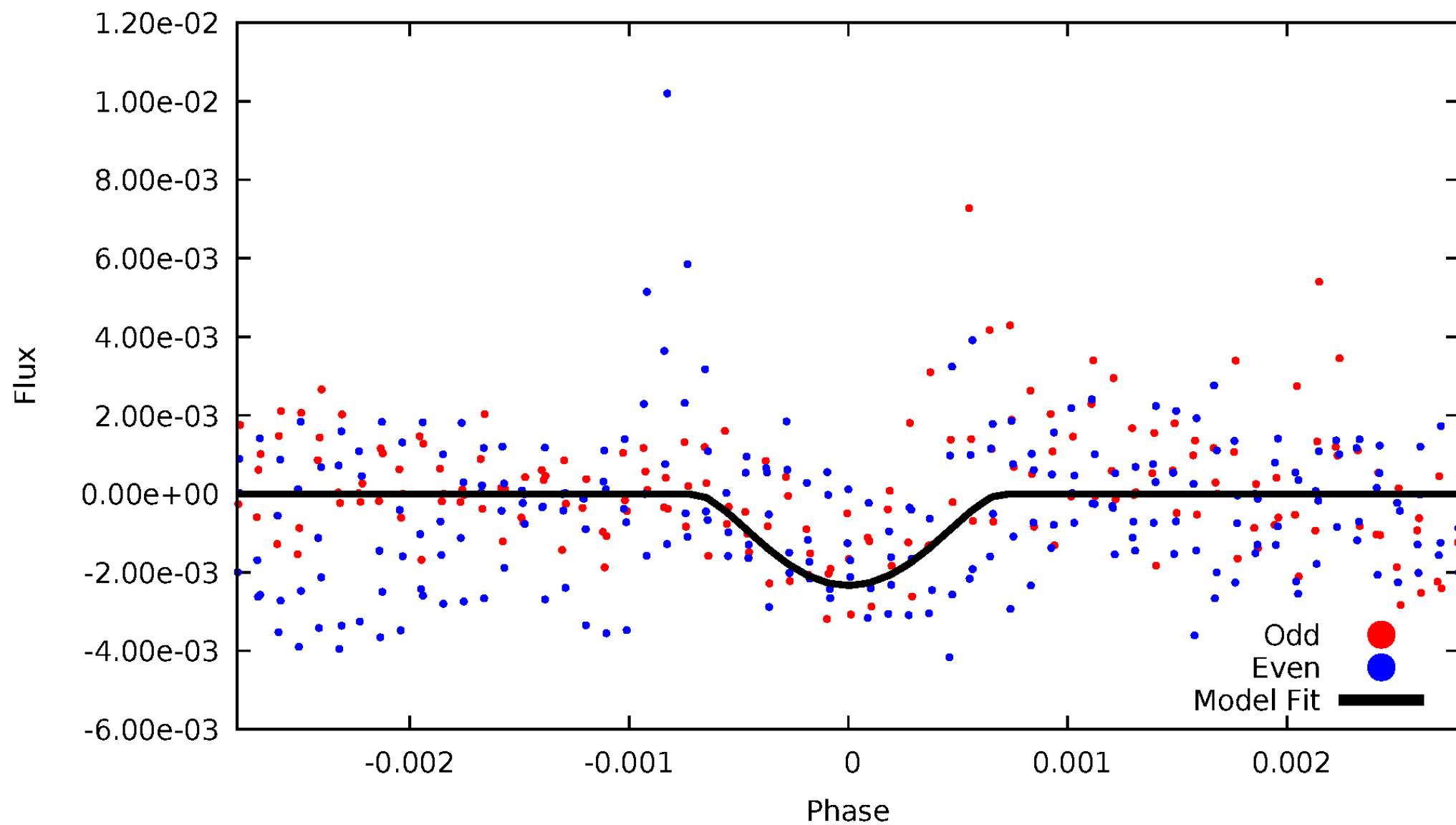


TCE 012254110-02



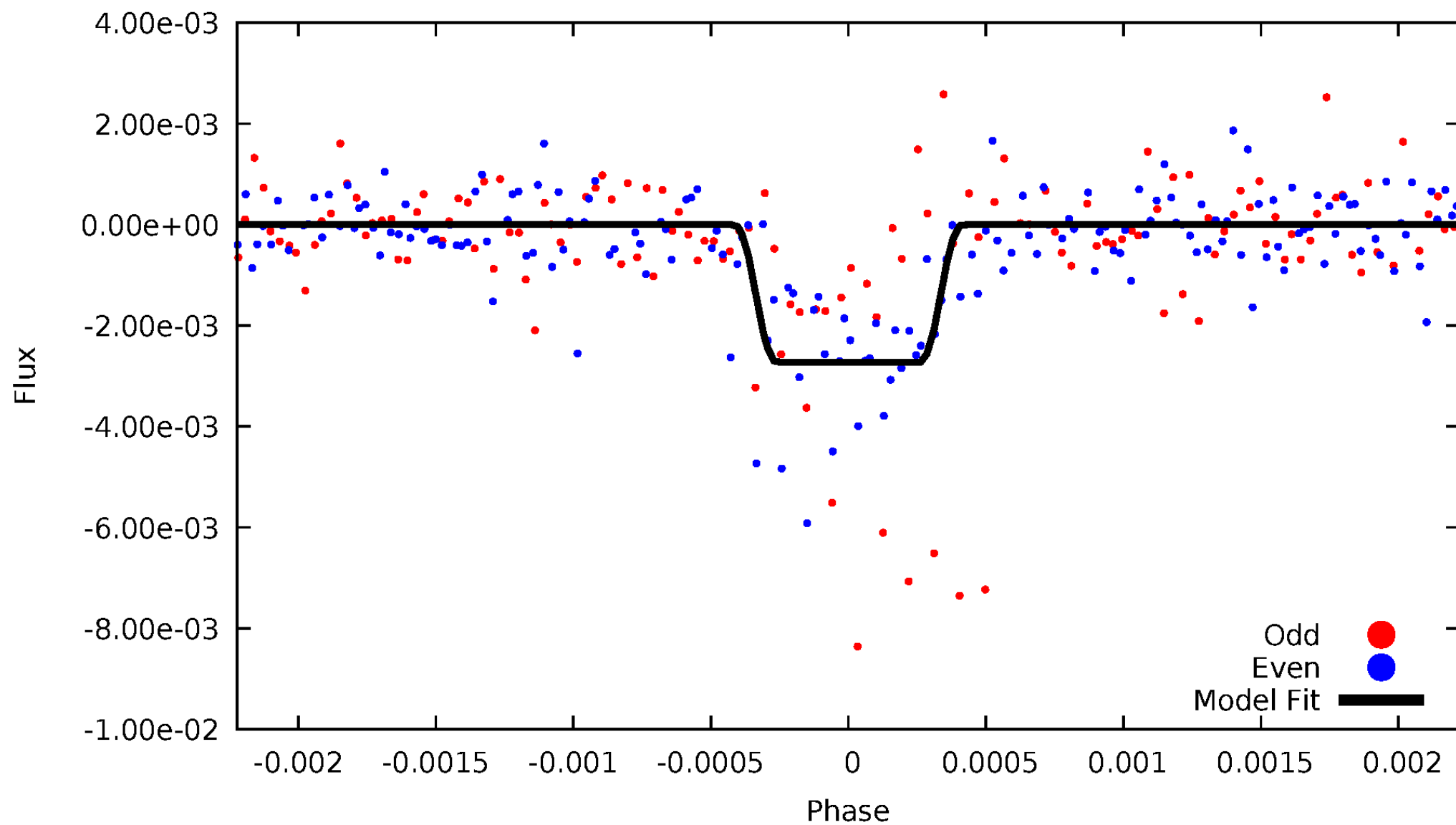
DV Odd/Even

TCE 012254110-02



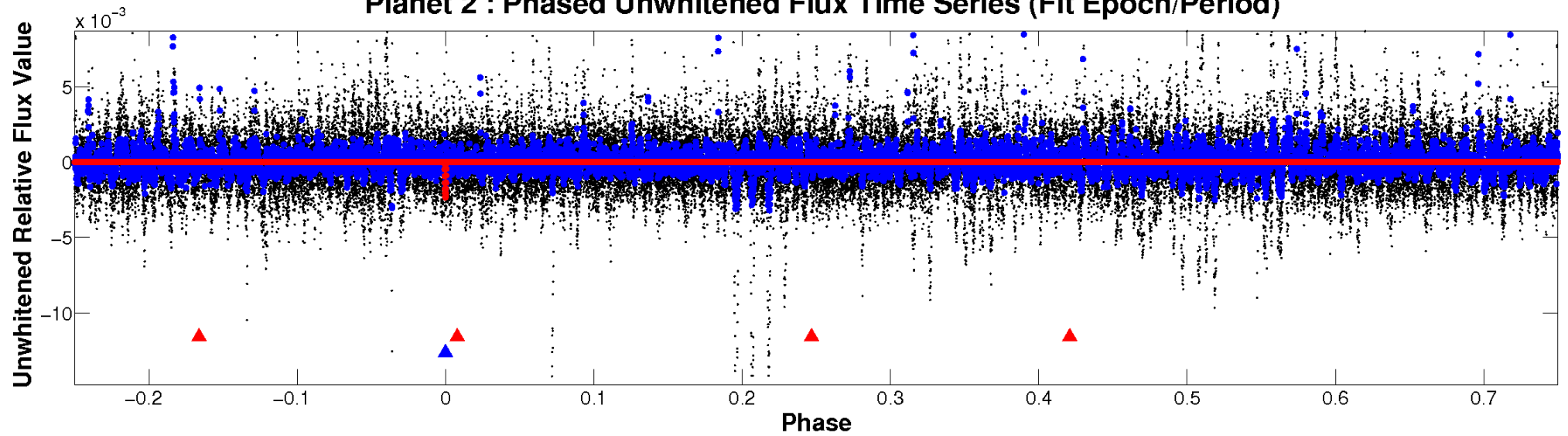
ALT Odd/Even

TCE 012254110-02

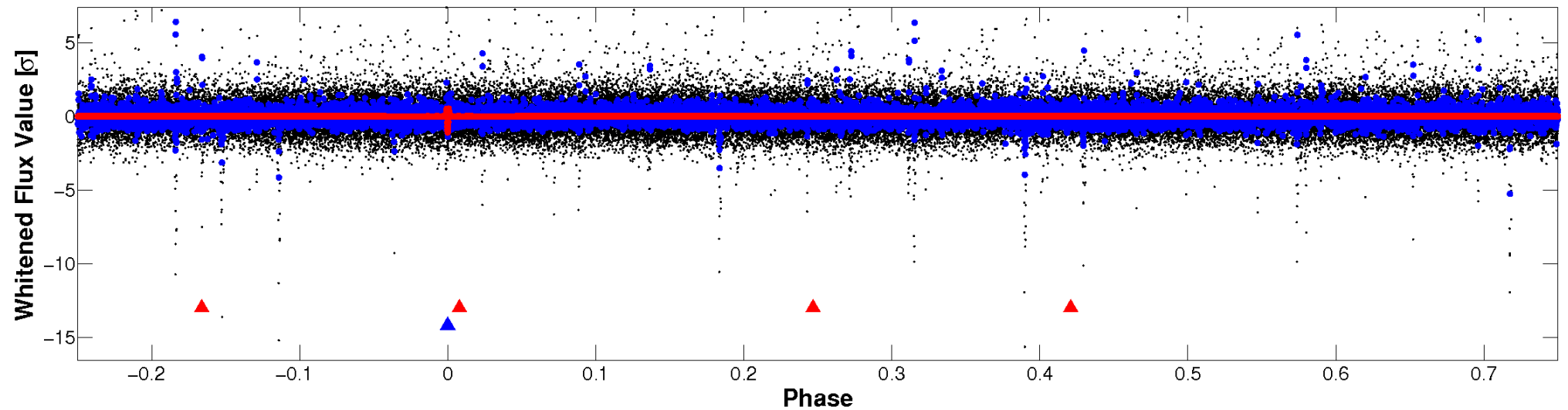


Non-Whitened Vs. Whitened Light Curve

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

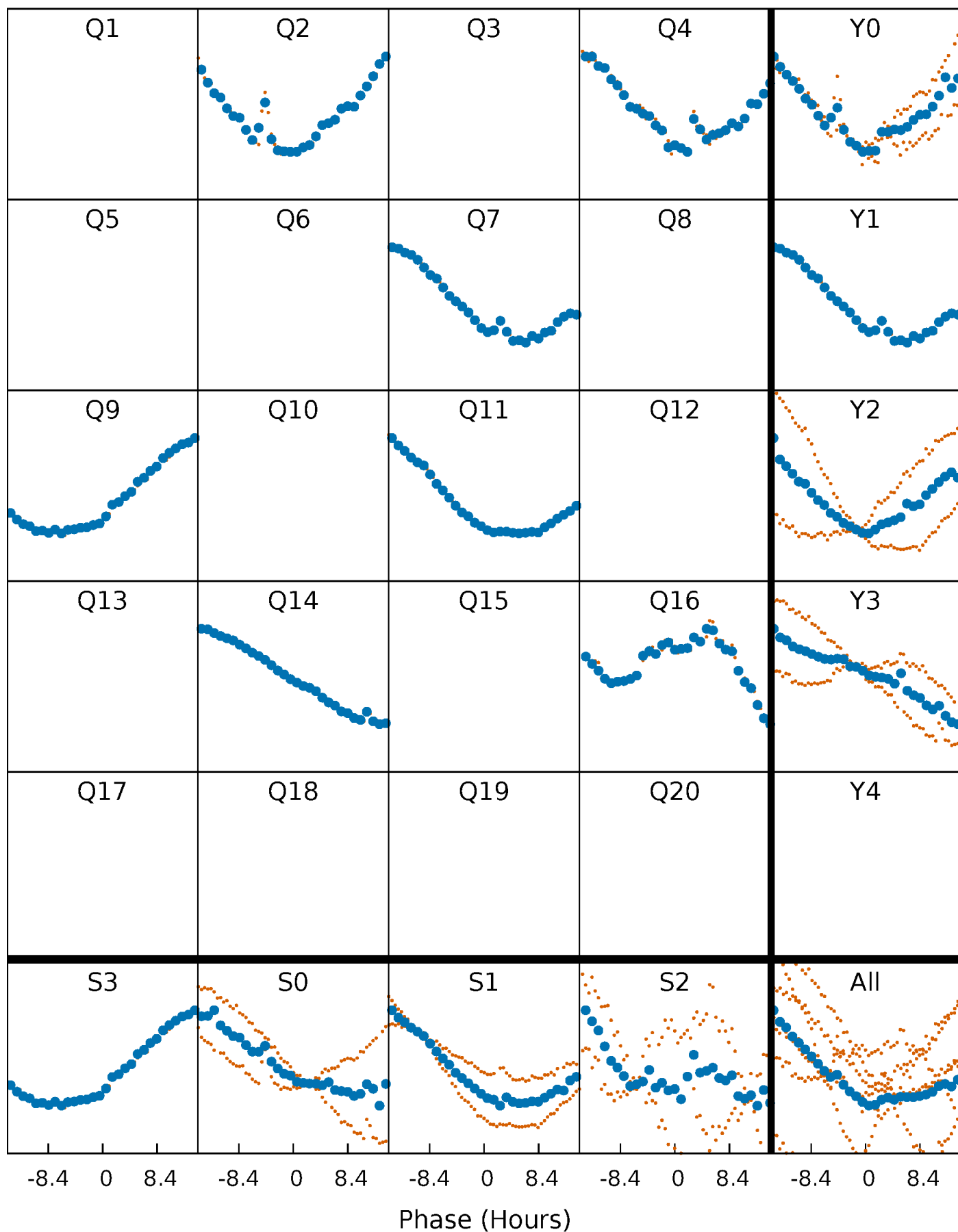


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



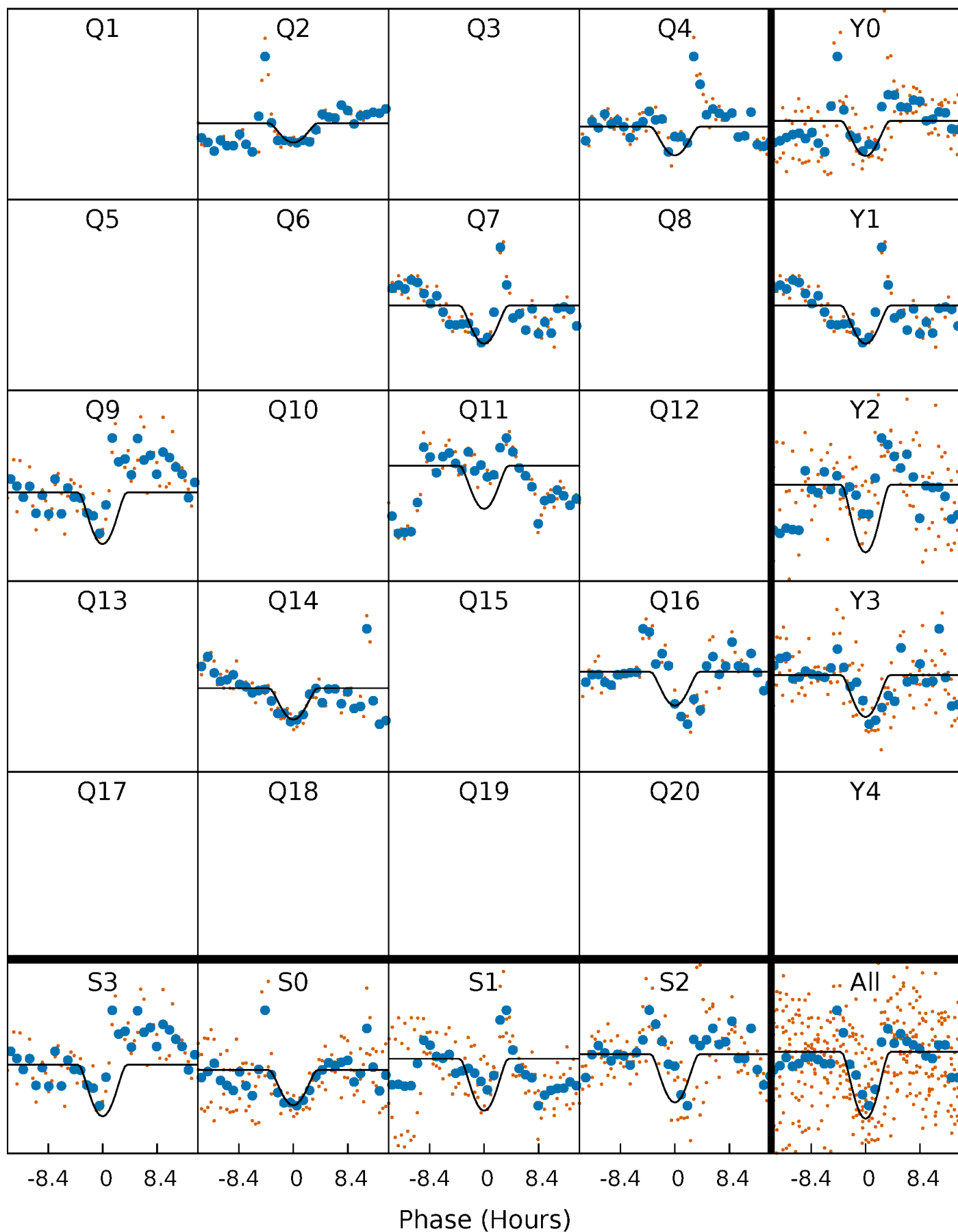
PDC Quarter-Phased Transit Curves

TCE 012254110-02 P=220.110615 Days $T_0=197.491408$ (BKJD)



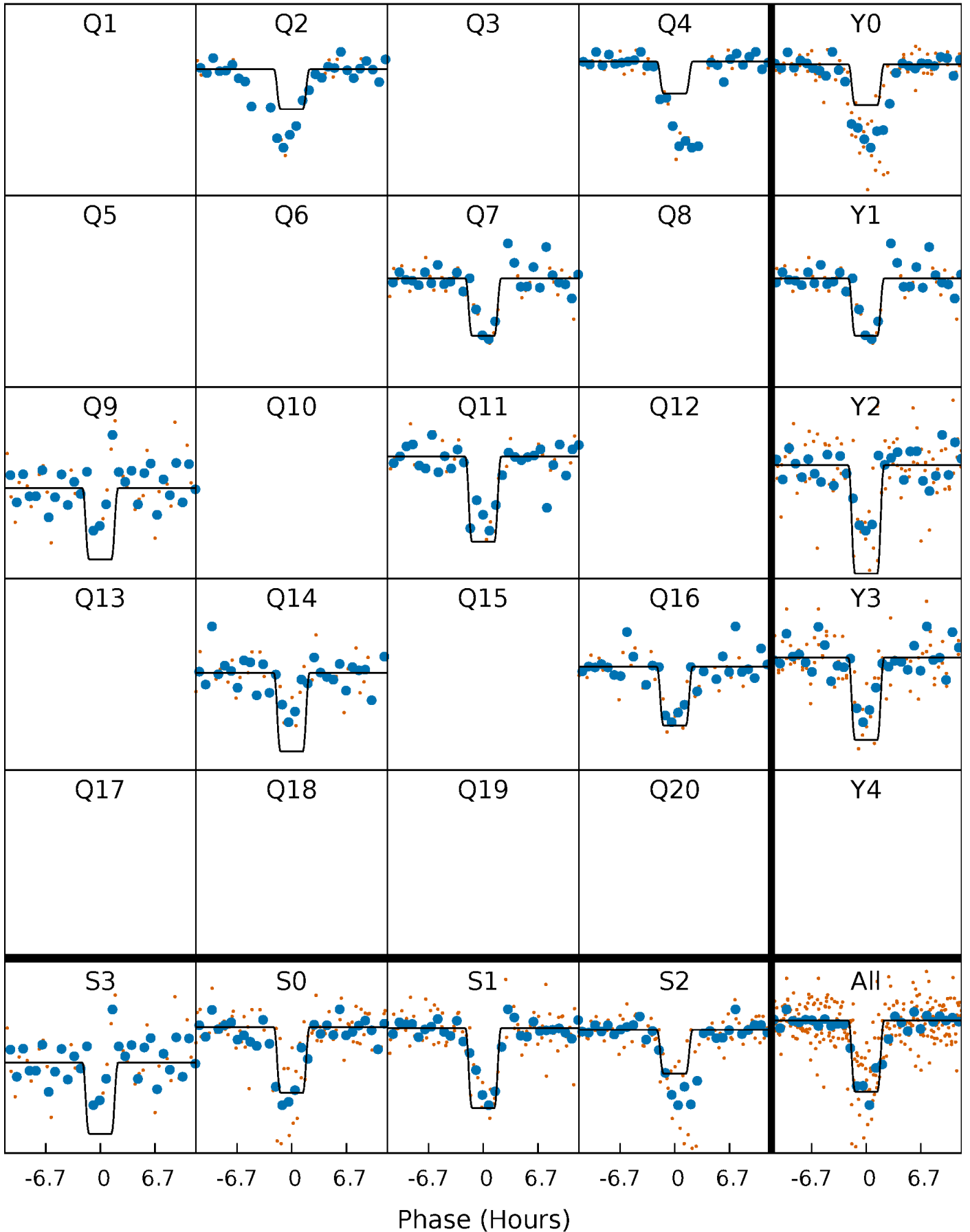
DV Quarter-Phased Transit Curves

TCE 012254110-02 P=220.110615 Days $T_0=197.491408$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

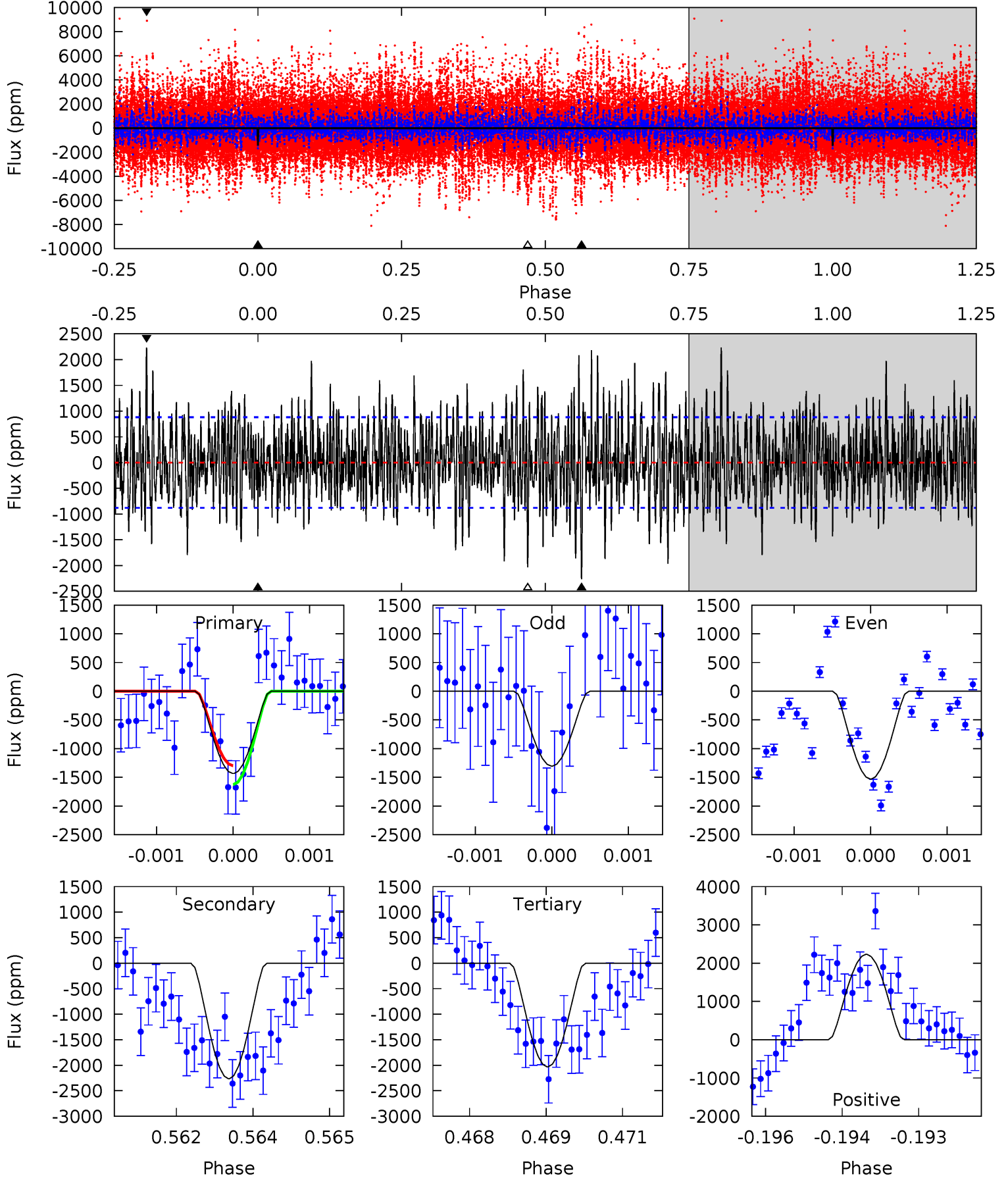
TCE 012254110-02 P=220.128212 Days $T_0=197.444785$ (BKJD)



DV Model-Shift Uniqueness Test

012254110-02, P = 220.110615 Days, E = 197.491408 Days

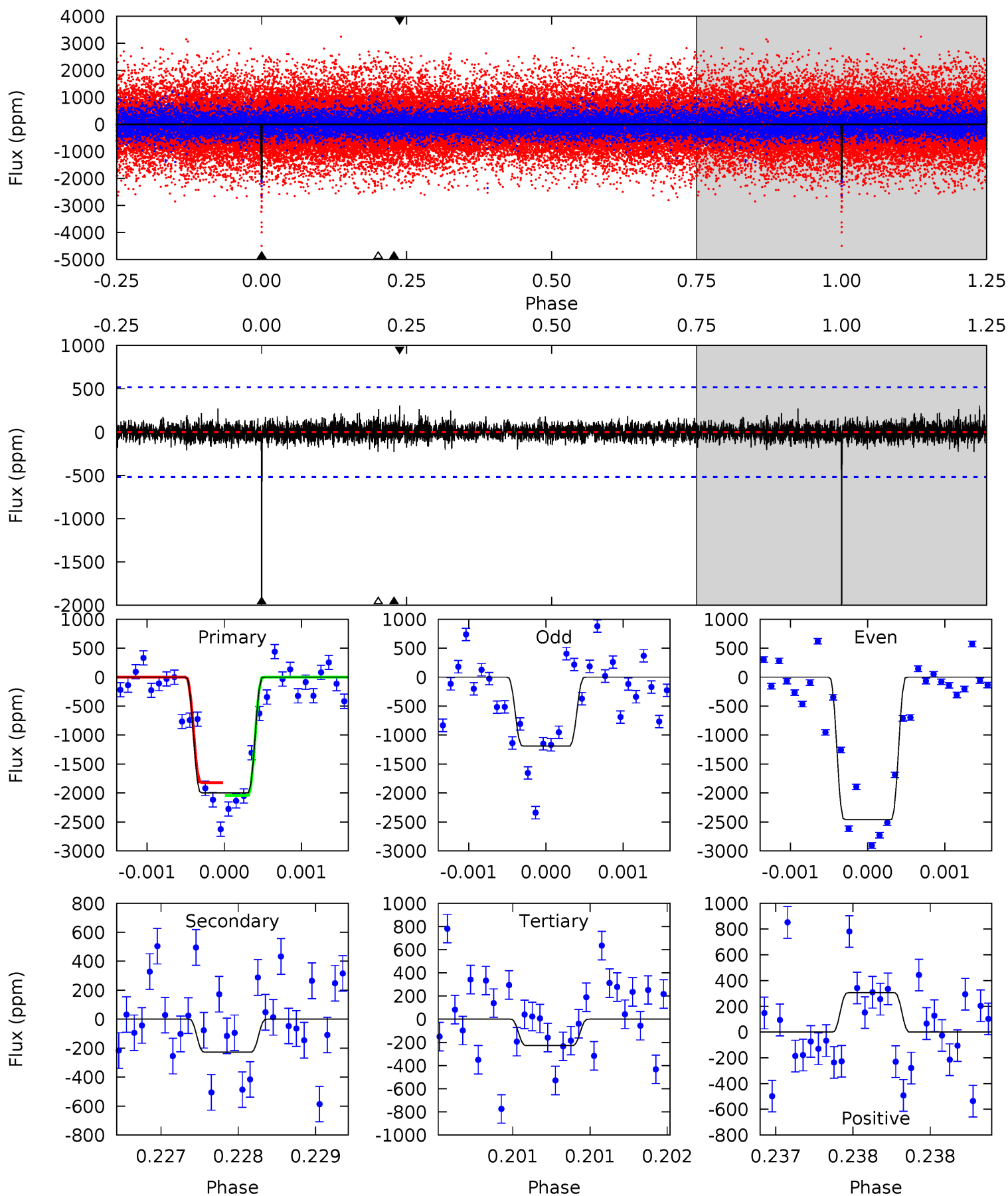
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.77	13.9	12.4	13.7	5.38	3.18	3.92	-3.66	-4.88	1.43	0.20	0.68	0.91	0.50	1.00



Alt Model-Shift Uniqueness Test

012254110-02, P = 220.128212 Days, E = 197.444785 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.1	2.40	2.40	3.22	5.48	3.34	0.60	18.7	17.9	0.00	-0.82	6.54	1.20	0.13	1.17



Stellar Parameters For KIC 012254110

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4681^{+145}_{-145}	$4.725^{+0.048}_{-0.024}$	$-1.360^{+0.300}_{-0.300}$	$0.524^{+0.028}_{-0.035}$	$0.532^{+0.035}_{-0.022}$	$5.198^{+1.021}_{-0.516}$
	+3%/-3%	+1%/-1%	+22%/-22%	+5%/-7%	+7%/-4%	+20%/-10%
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 012254110-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2266 ± 164	$12.10^{+10.09}_{-8.69}$	273^{+9}_{-10}	2852^{+1402}_{-406}	2873^{+32814}_{-2038}
Alt.	-228 ± 95	$10.70^{+10.07}_{-7.57}$	274^{+10}_{-10}	2197^{+833}_{-299}	331^{+3792}_{-246}

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

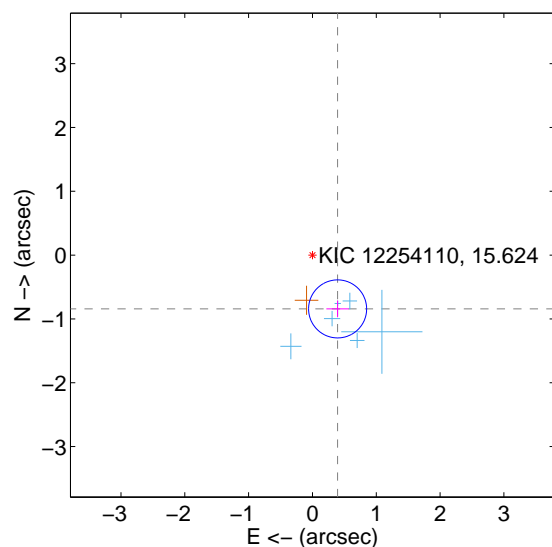
Supplemental centroid analysis for 012254110-02. Kepler magnitude: 15.62. Transit SNR 7.50

There are 6 quarters with good PRF difference image offsets

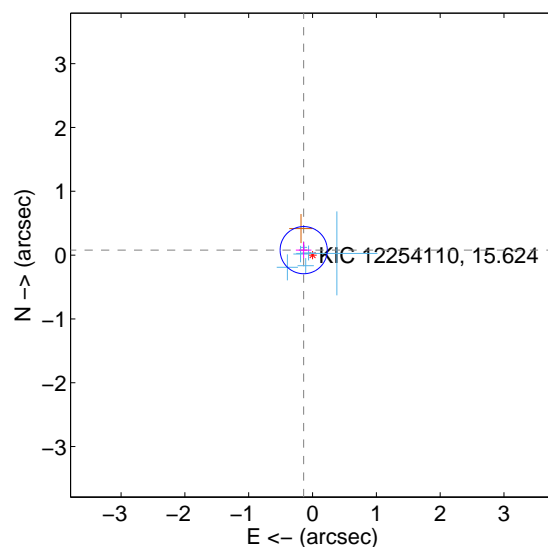
The direct PRF centroid is offset from the target star catalog position by about 1.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.931 ± 0.152	6.14	-0.394 ± 0.176	-0.843 ± 0.131
PRF-fit source offset from KIC position	0.159 ± 0.123	1.29	0.138 ± 0.122	0.078 ± 0.127
photometric centroid source offset	1.33 ± 0.61	2.18	-0.13 ± 0.49	1.33 ± 0.61

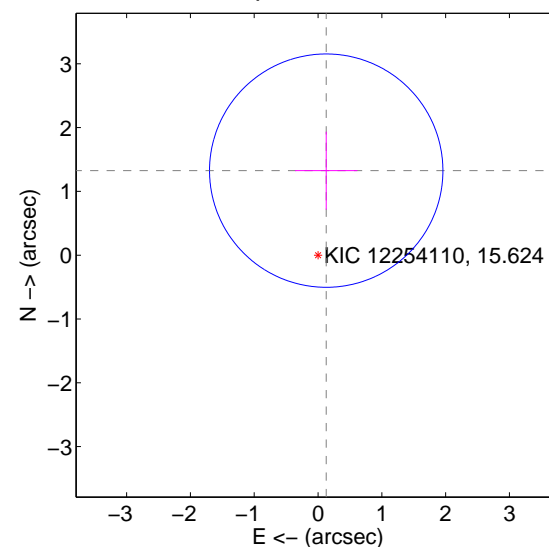
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

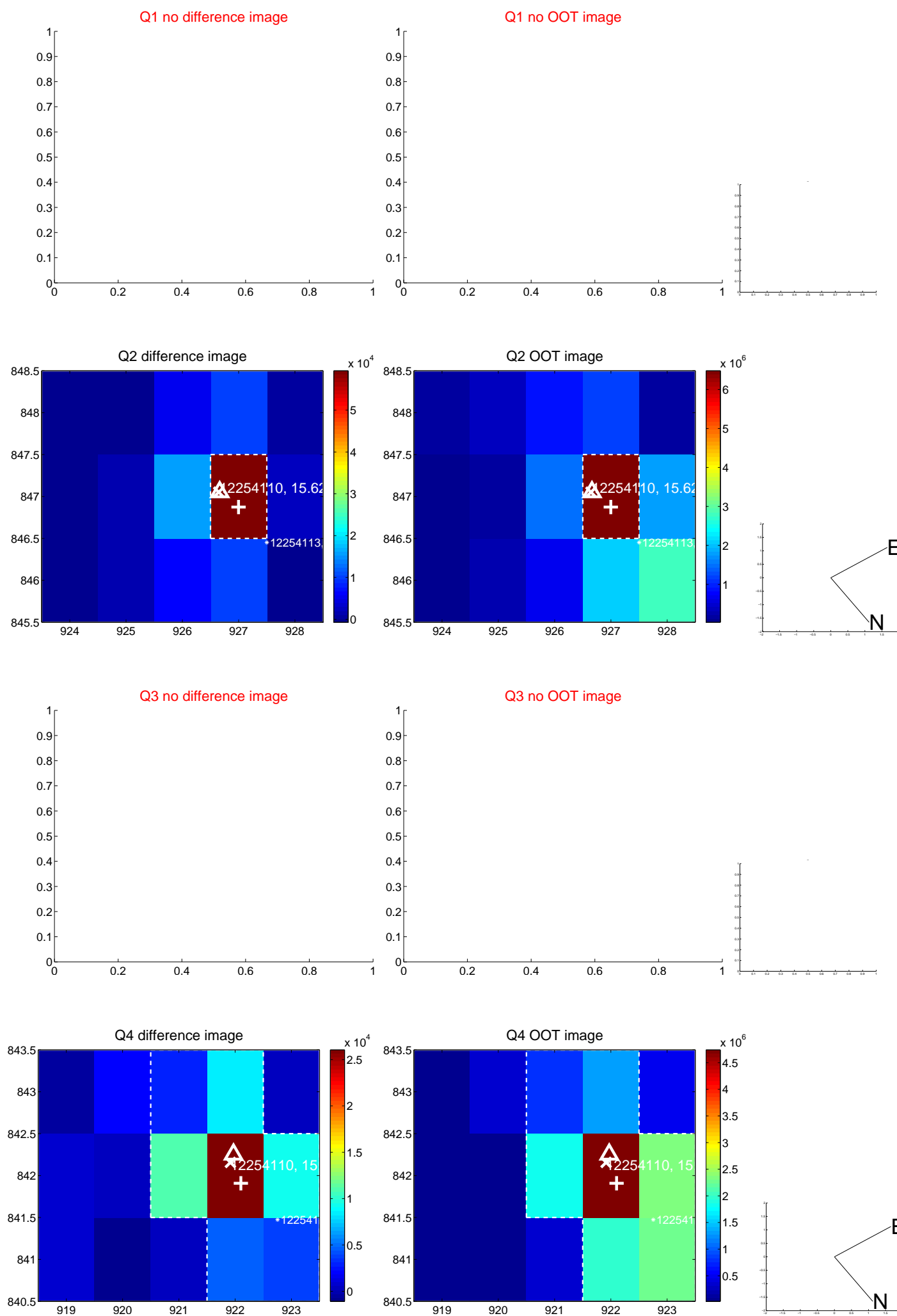


offset from photometric centroids

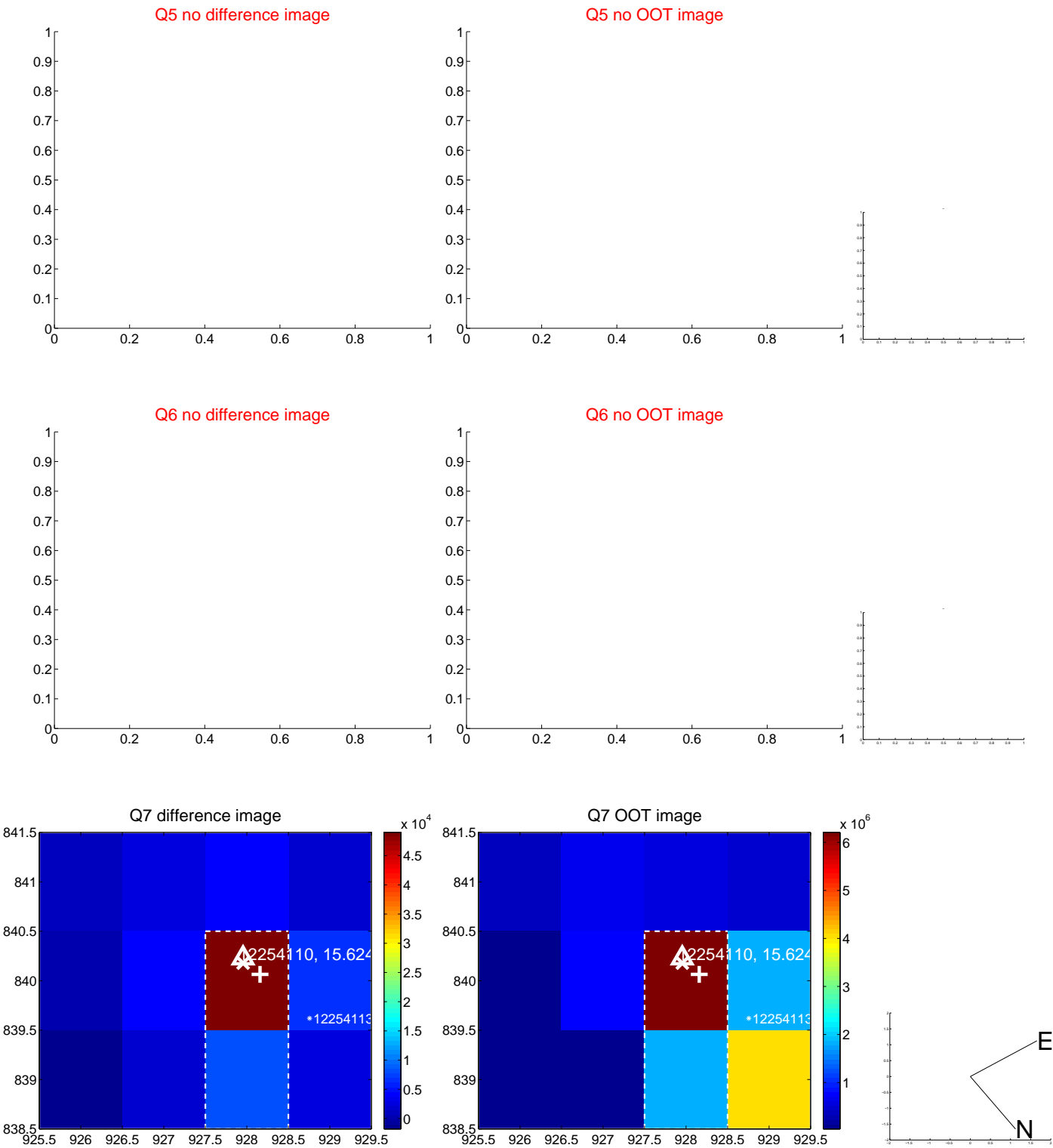


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

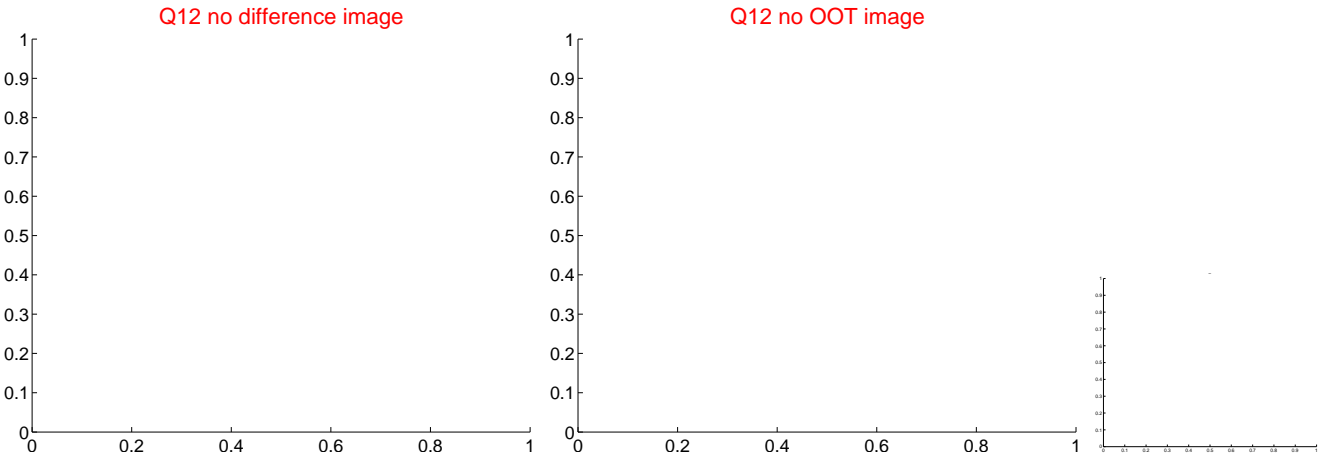
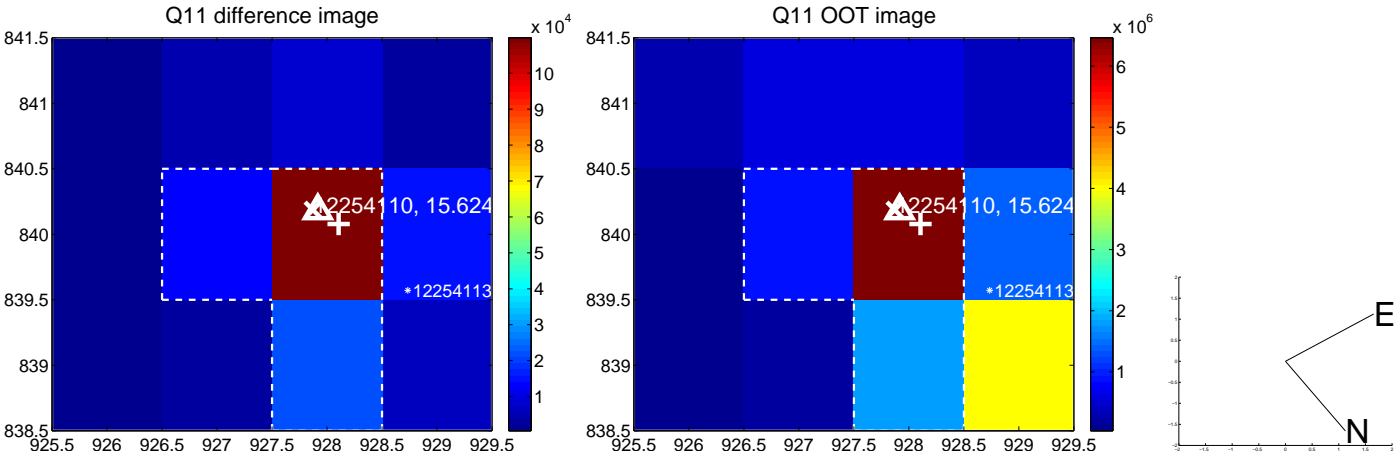
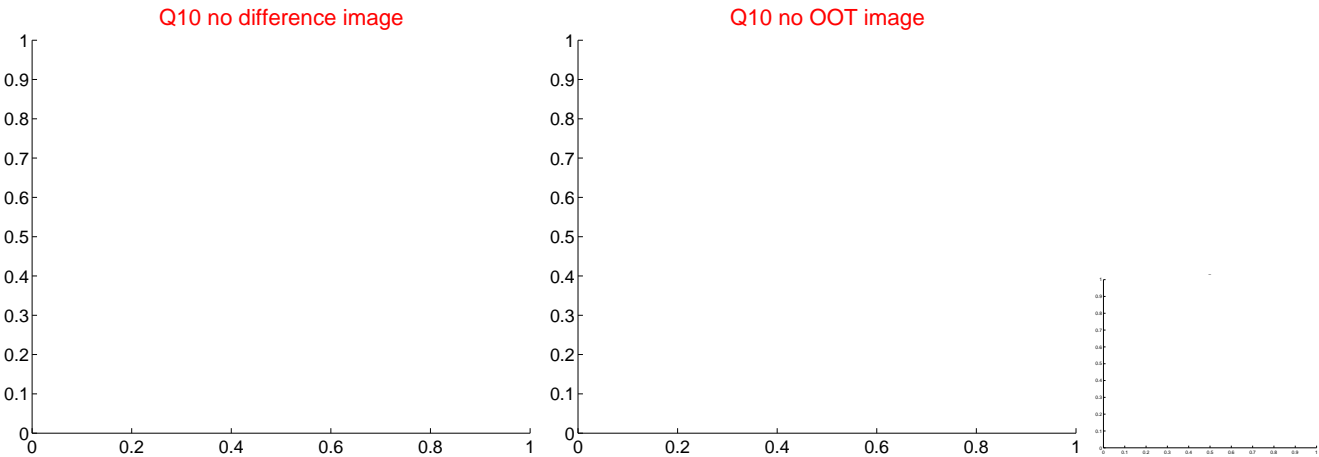
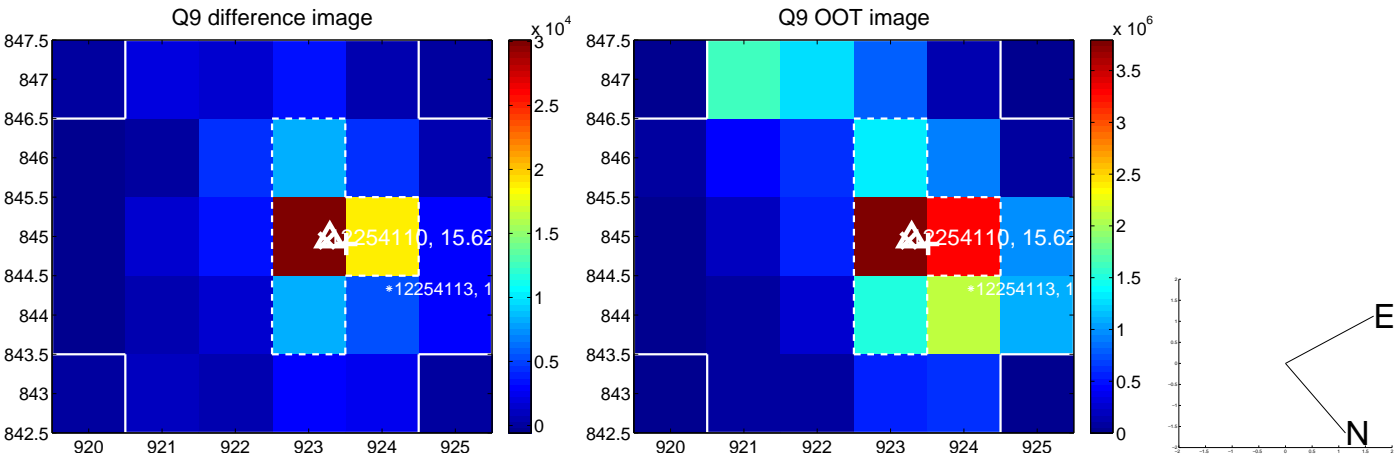
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



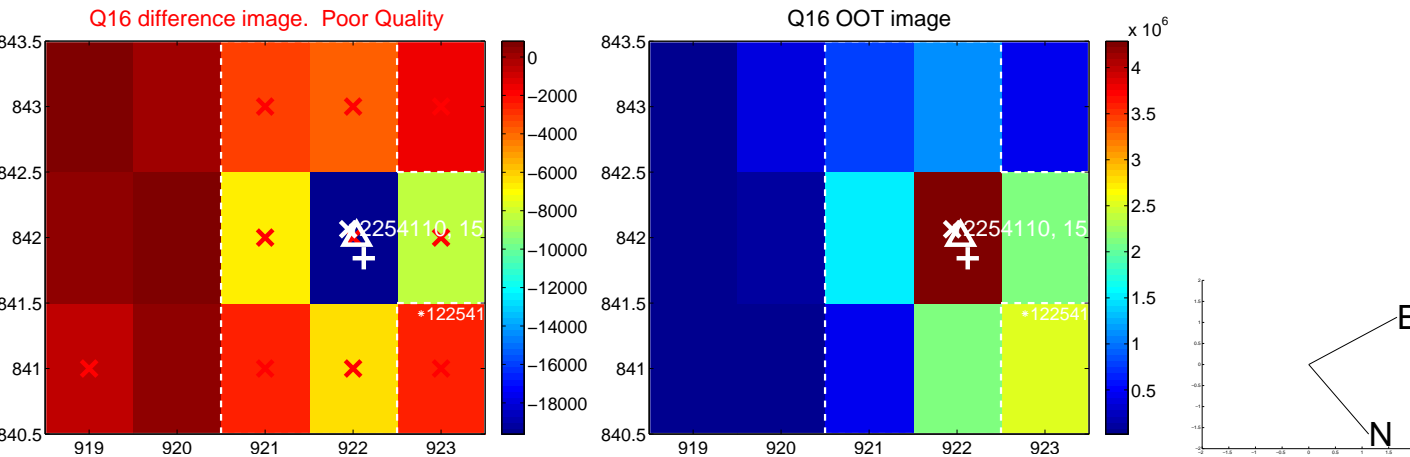
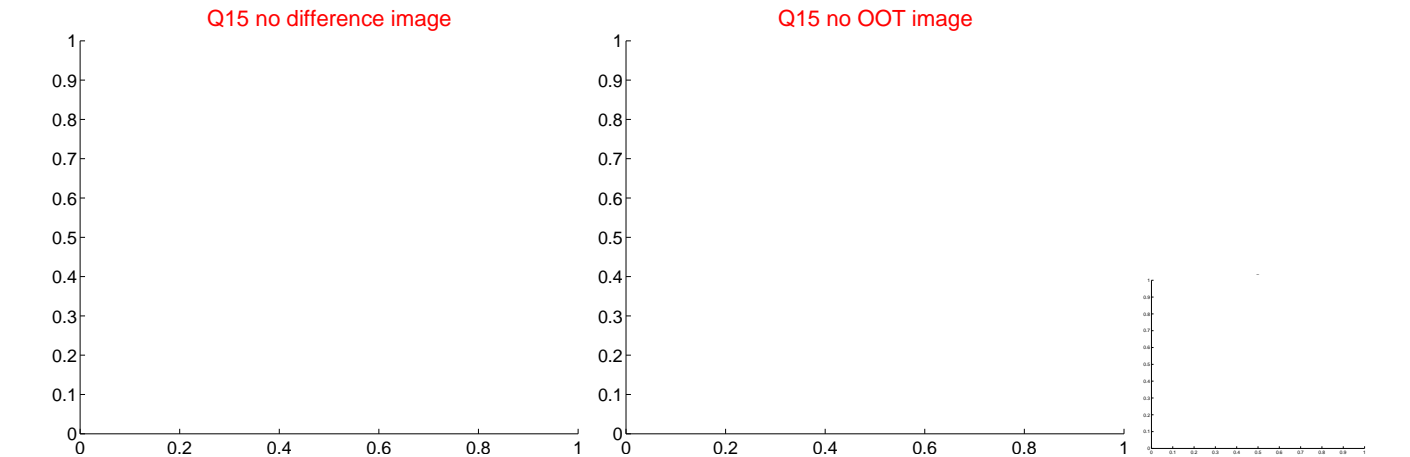
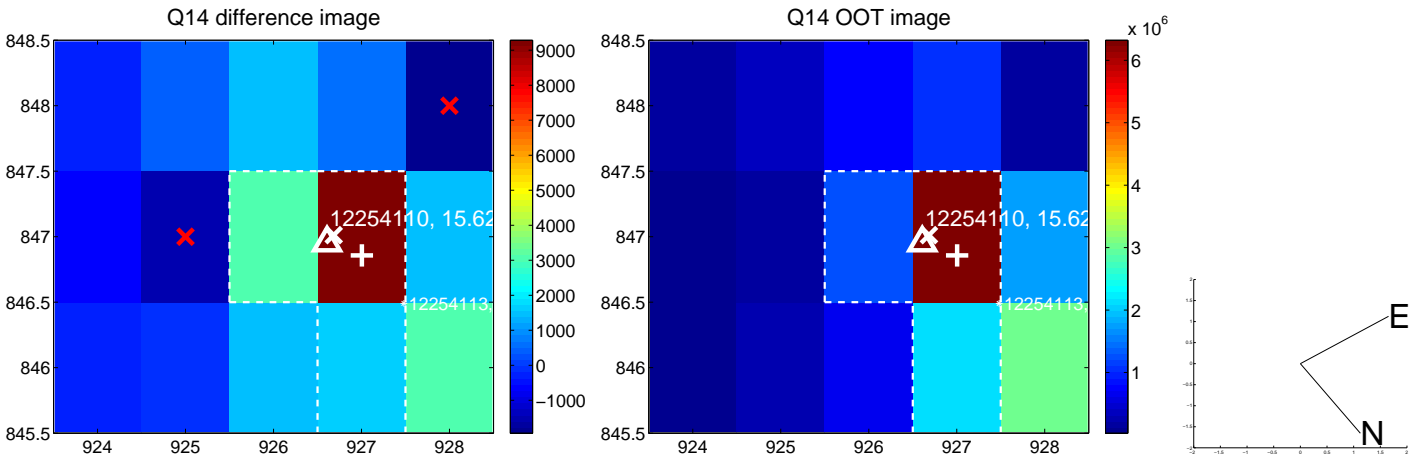
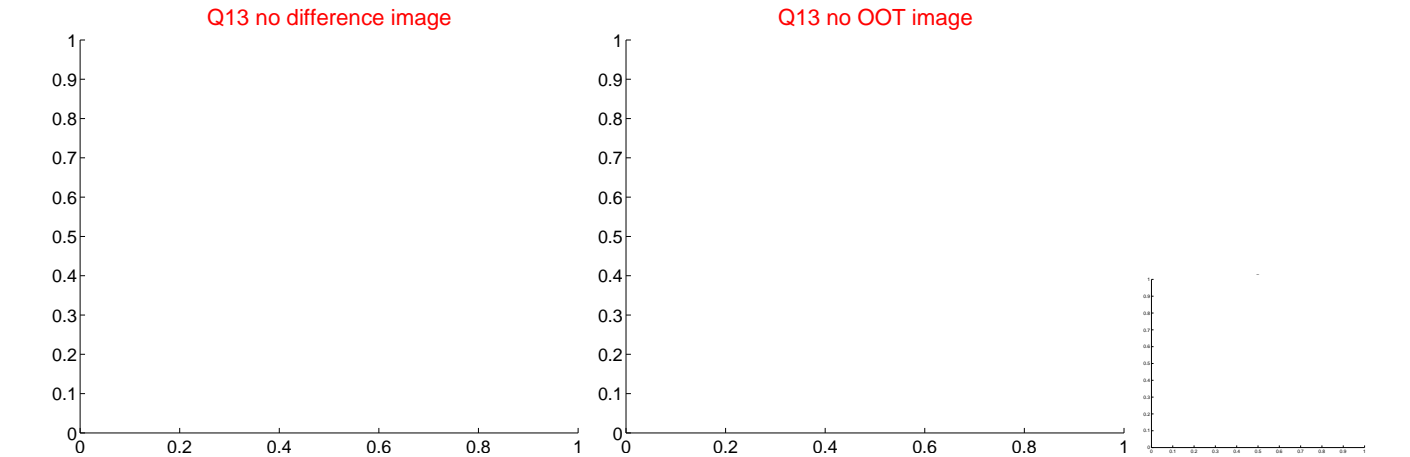
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



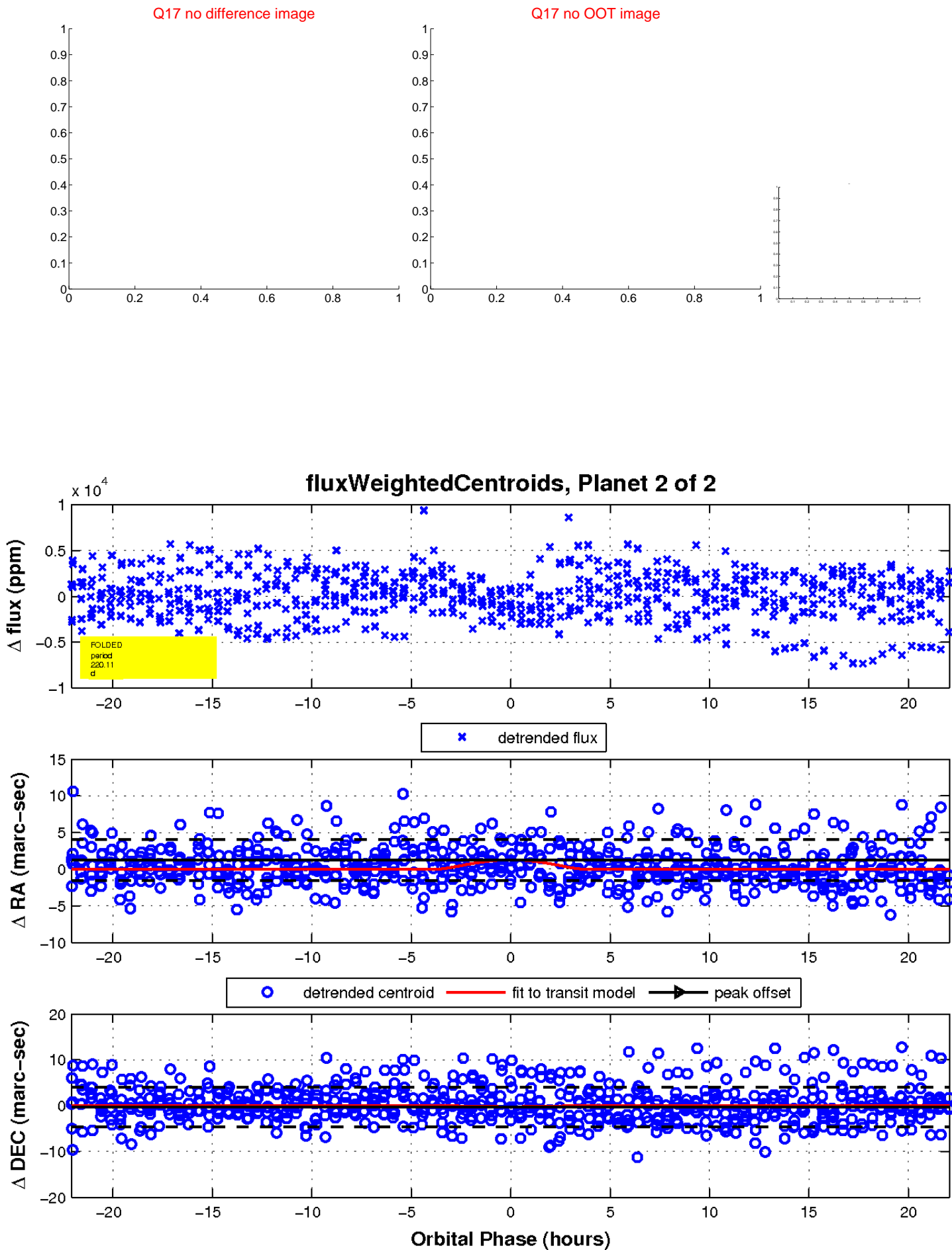
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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UKIRT Image

