

KIC 010212441

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})
010212441-01	OBS	2342.01	15.044802	133.200432	103.4	7.030	18.3	20.4	1.52	5798	2.06	177.69
010212441-02	OBS	2342.02	354.784767	175.717061	244.2	5.791	8.2	8.3	1.52	5798	2.54	2.63

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010212441-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
010212441-02	OBS	FP	0.27	1	0	0	0	MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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

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

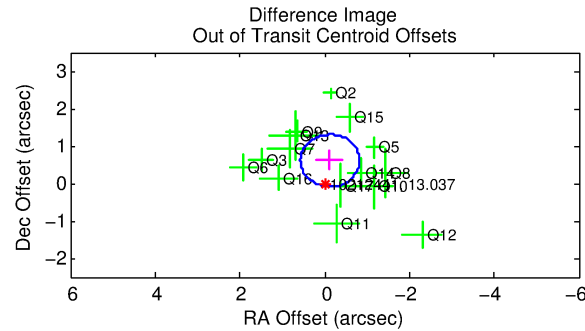
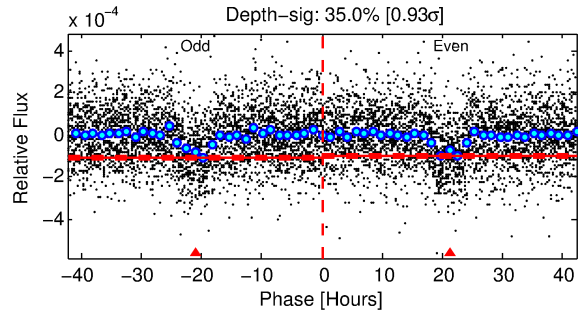
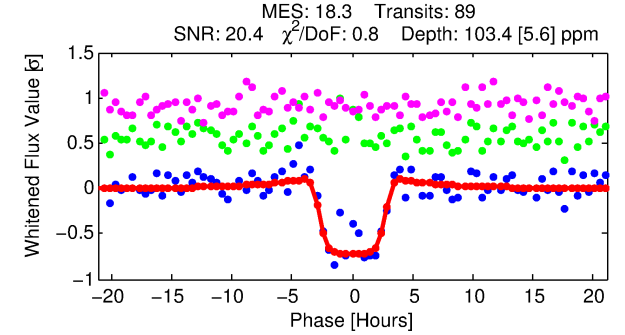
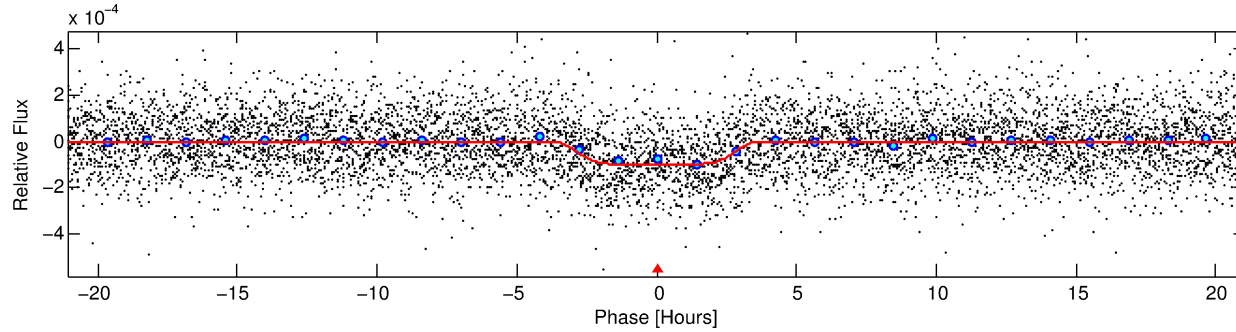
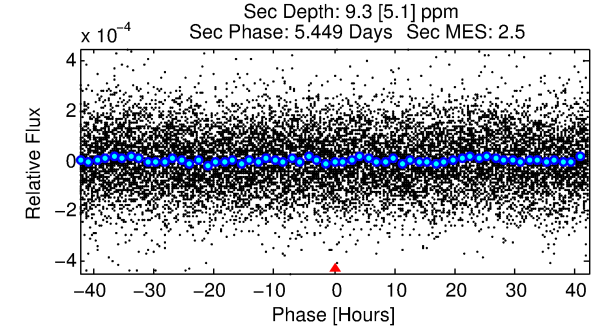
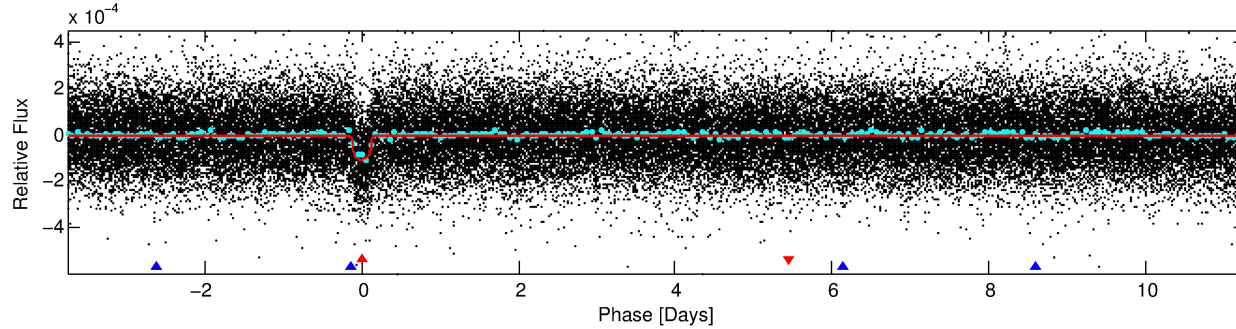
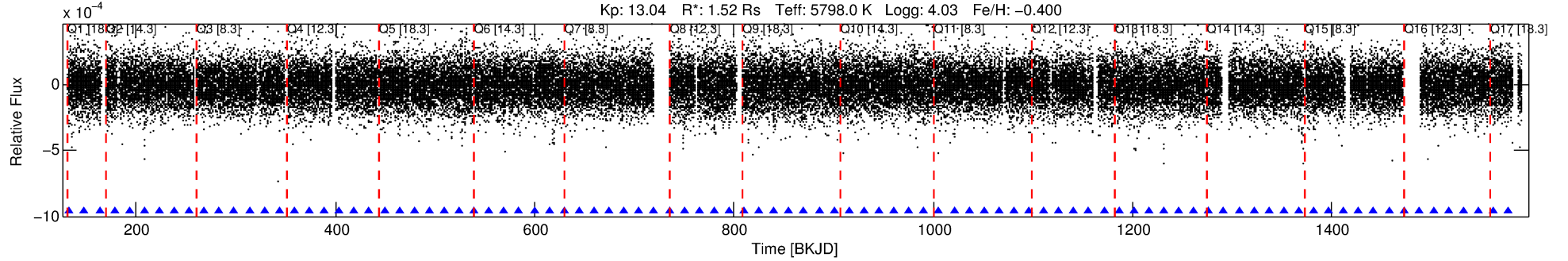
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010212441-01

No Significant Match Found

DV One-Page Summary

KIC: 10212441 Candidate: 1 of 2 Period: 15.045 d
KOI: K02342.01 Corr: 0.908



DV Fit Results:

Period = 15.04480 [0.00012] d
Epoch = 133.2004 [0.0067] BKJD
Rp/R* = 0.0124 [0.0005]
a/R* = 4.64 [0.68]
b = 0.97 [0.01]
Seff = 177.69 [65.45]
Teq = 931 [86] K
Rp = 2.06 [0.52] Re
a = 0.1151 [0.0264] AU
Ag = 16.09 [10.64] [1.42σ]
Teffp = 2883 [404] K [4.73σ]

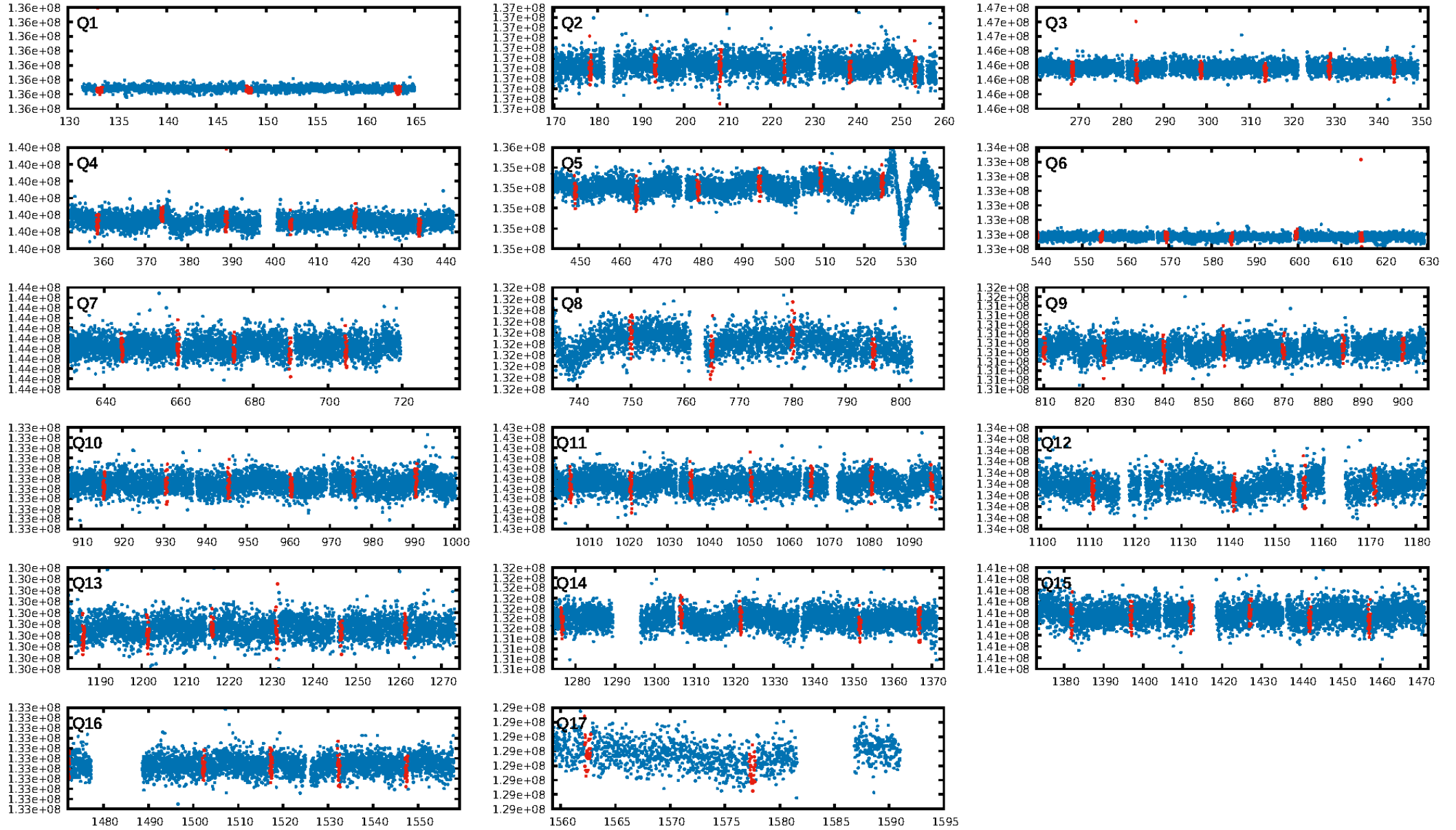
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [895.22σ]
ModelChiSquare2-sig: 99.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.86e-72
RollingBand-fgt: 1.00 [84/84]
GhostDiagnostic-chr: 10.07
Centroid-sig: N/A
Centroid-so: 0.876 arcsec [1.62σ]
OotOffset-rm: 0.619 arcsec [2.66σ]
KicOffset-rm: 0.293 arcsec [1.25σ]
OotOffset-st: 4/4/3/4 [15]
KicOffset-st: 4/4/3/4 [15]
DiffImageQuality-fgm: 0.93 [14/15]
DiffImageOverlap-fno: 1.00 [17/17]

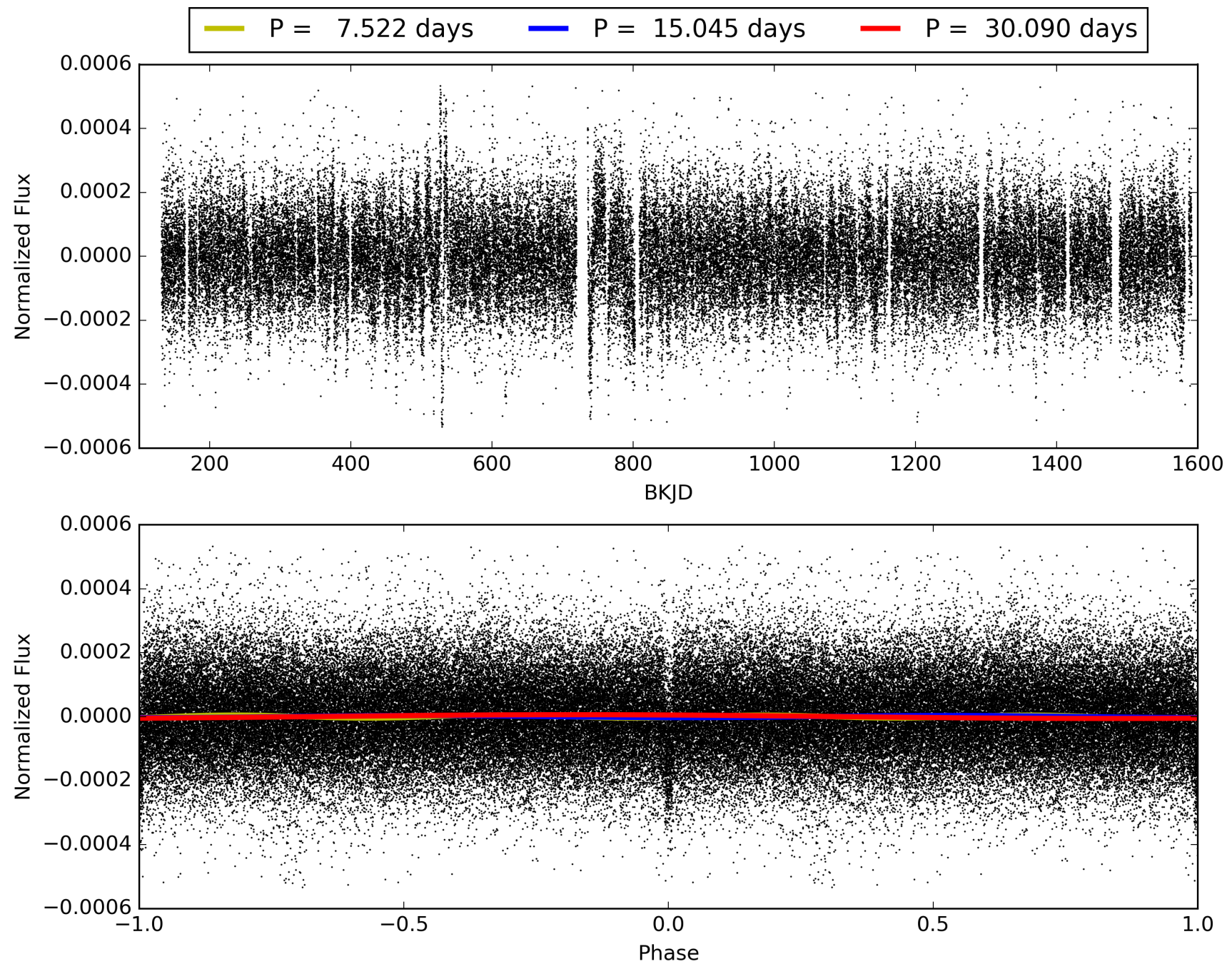
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:07:37 Z

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

TCE 010212441-01, PDC Light Curves

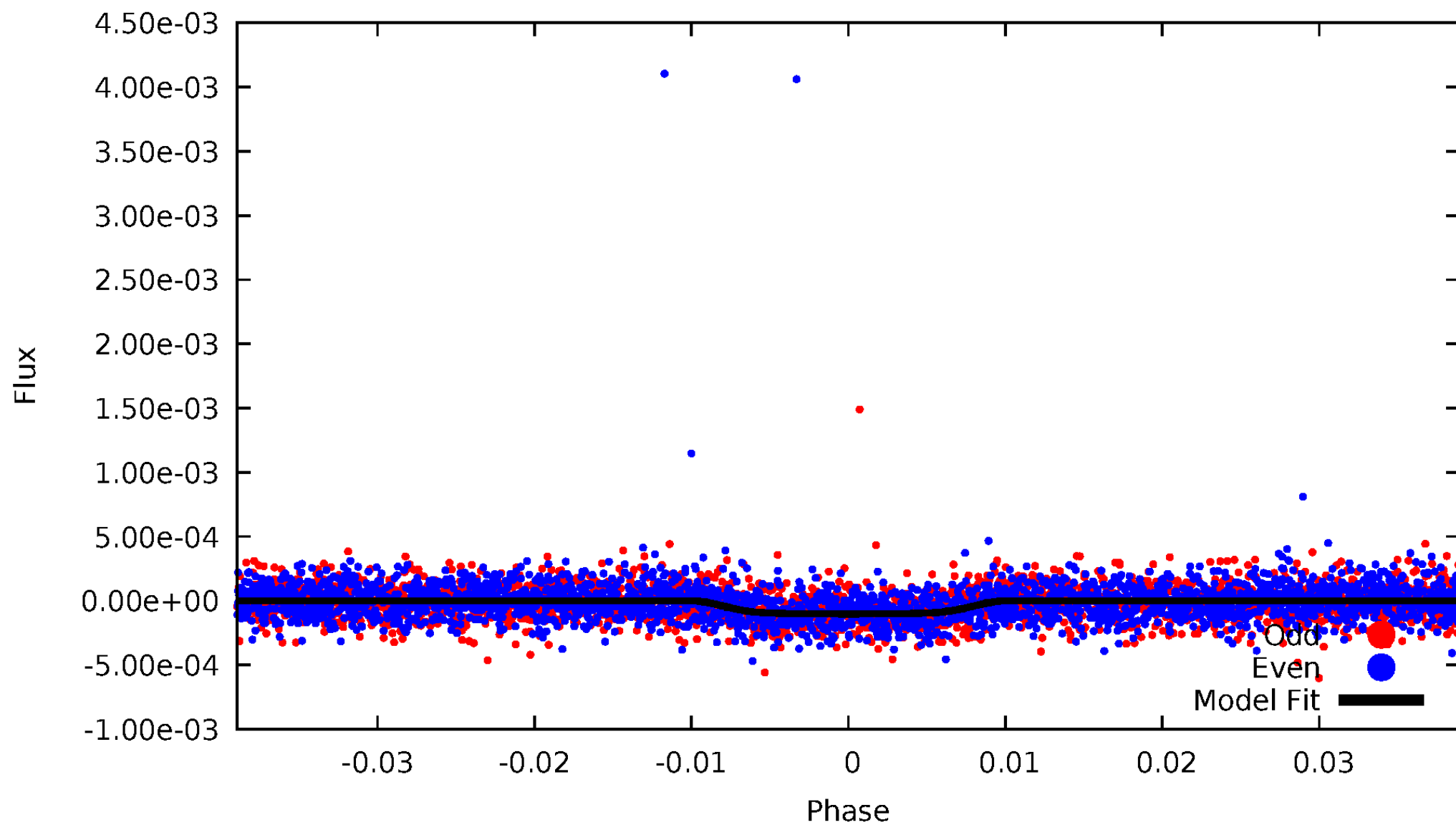


TCE 010212441-01



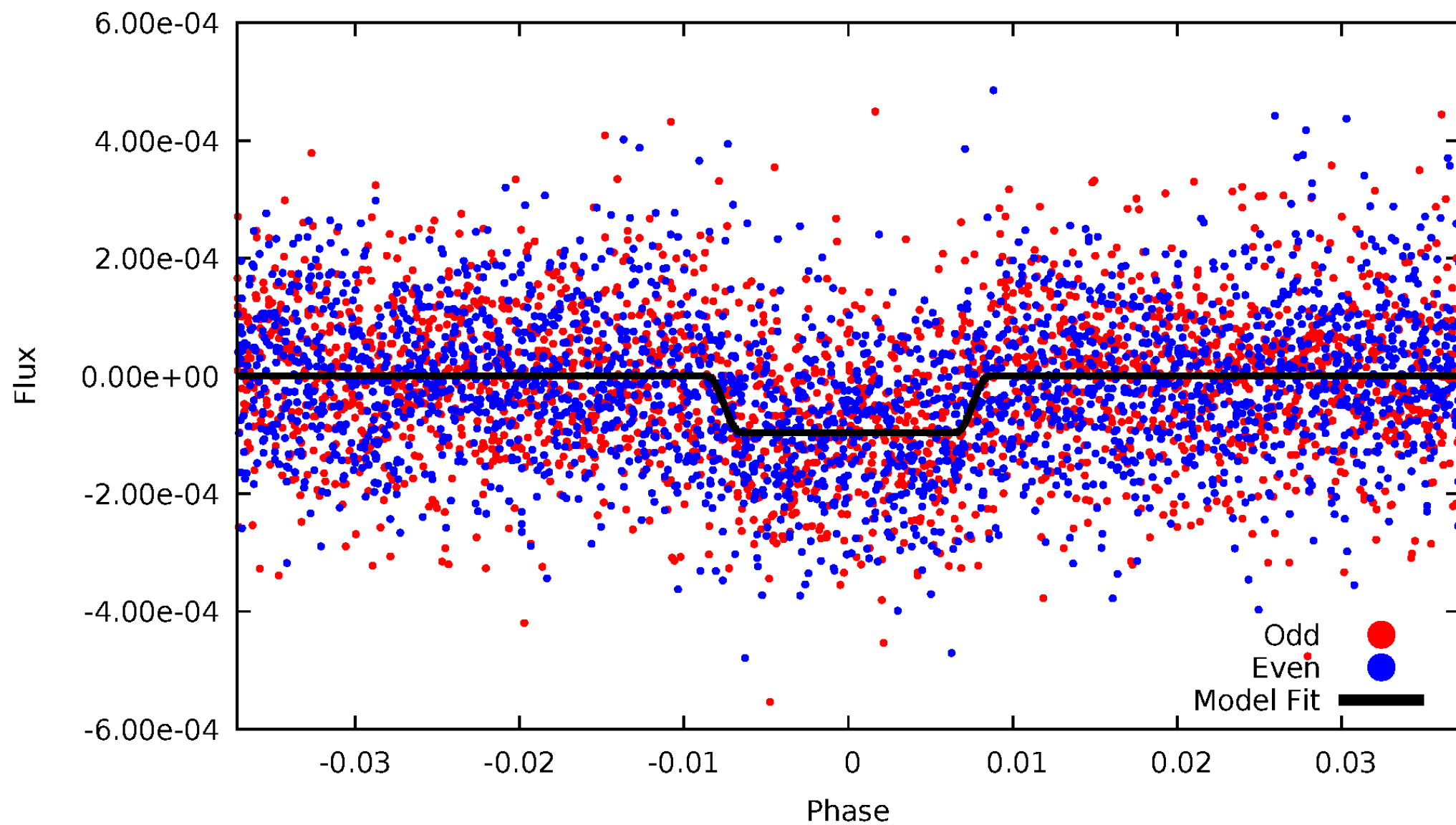
DV Odd/Even

TCE 010212441-01



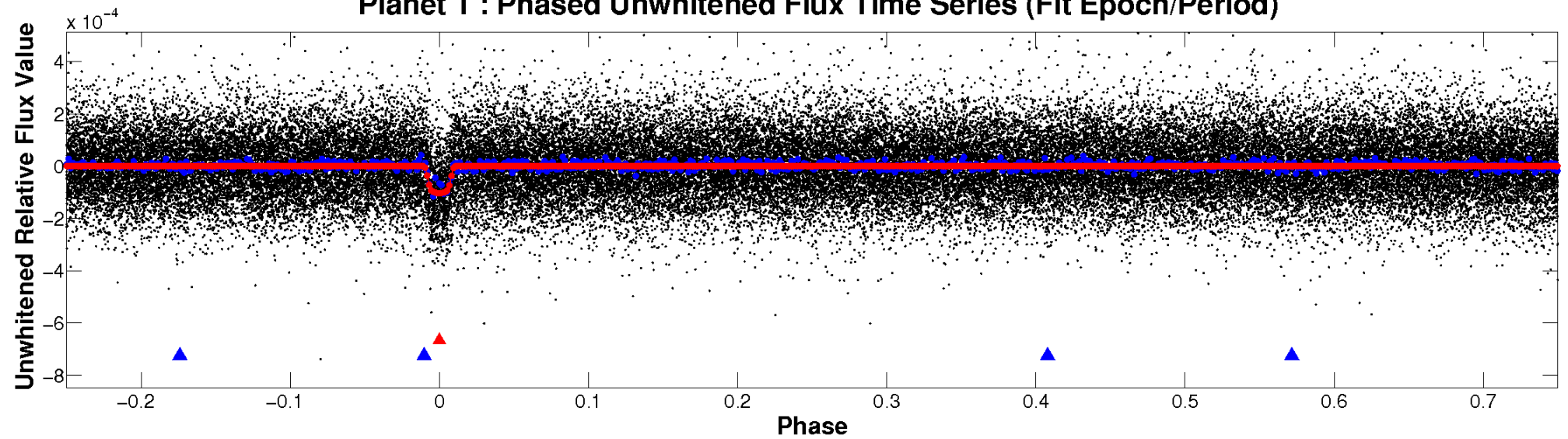
ALT Odd/Even

TCE 010212441-01

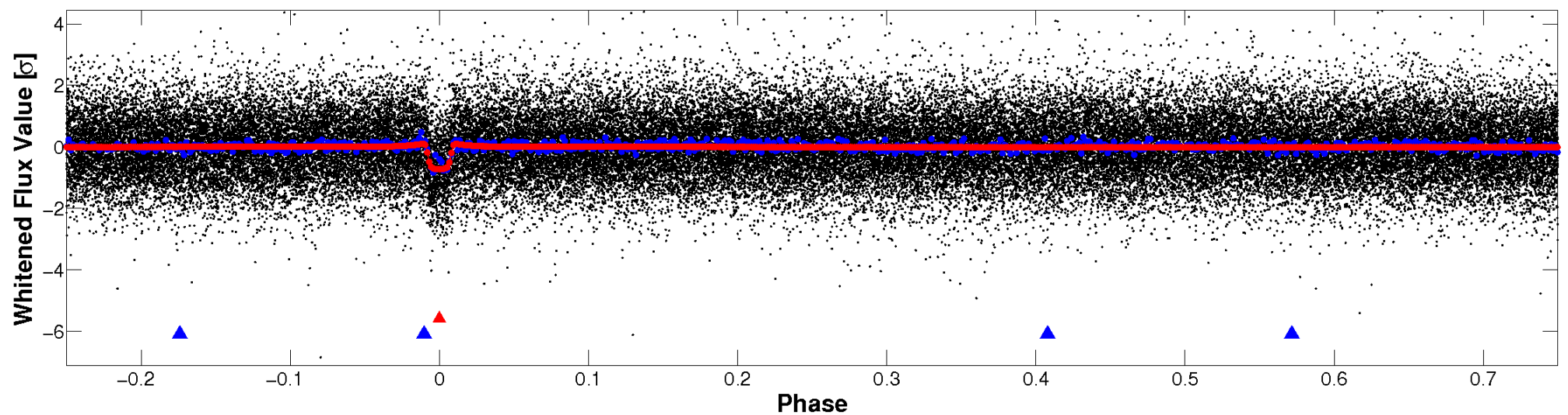


Non-Whitened Vs. Whitened Light Curve

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

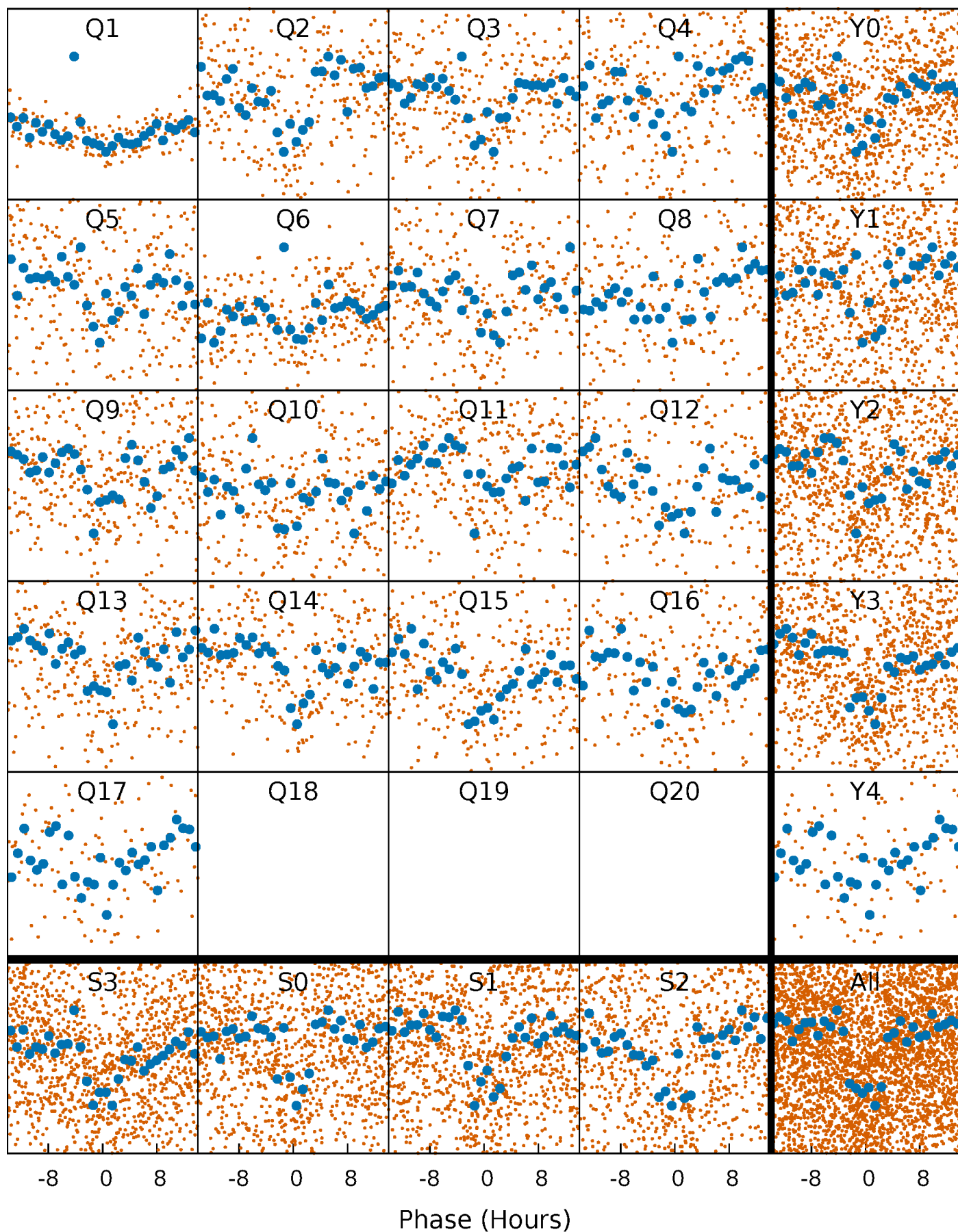


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



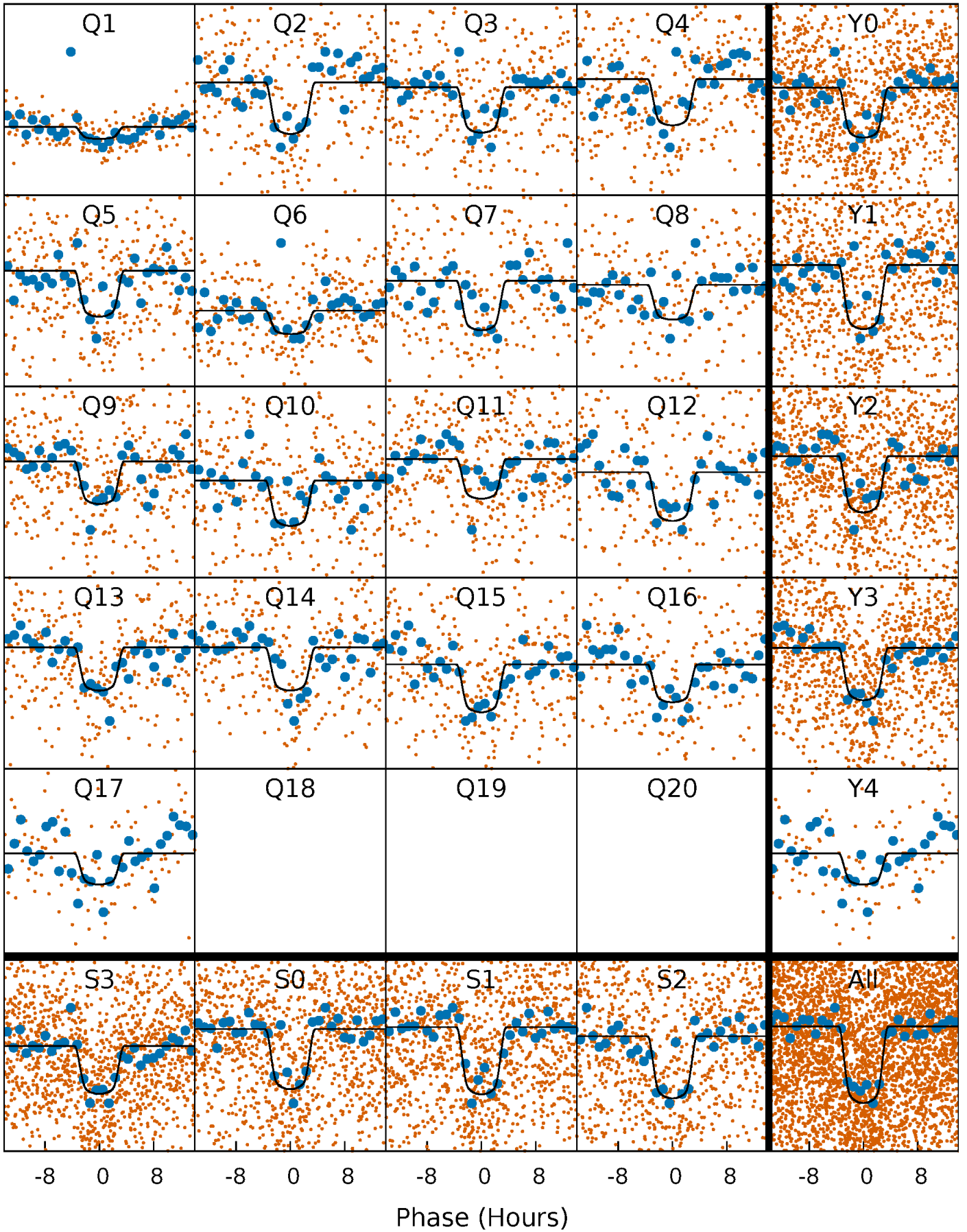
PDC Quarter-Phased Transit Curves

TCE 010212441-01 P= 15.044802 Days $T_0=133.200432$ (BKJD)



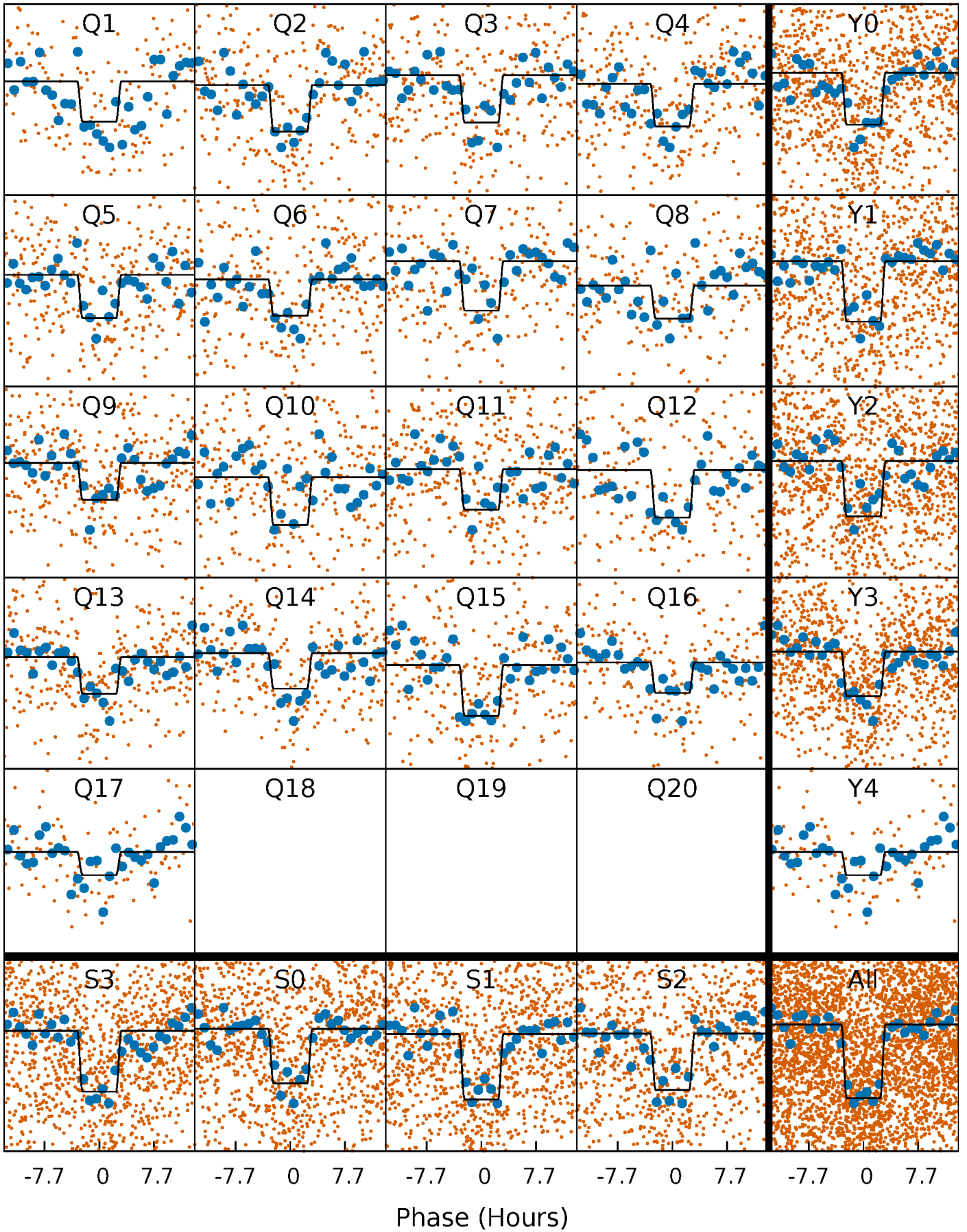
DV Quarter-Phased Transit Curves

TCE 010212441-01 P= 15.044802 Days $T_0=133.200432$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

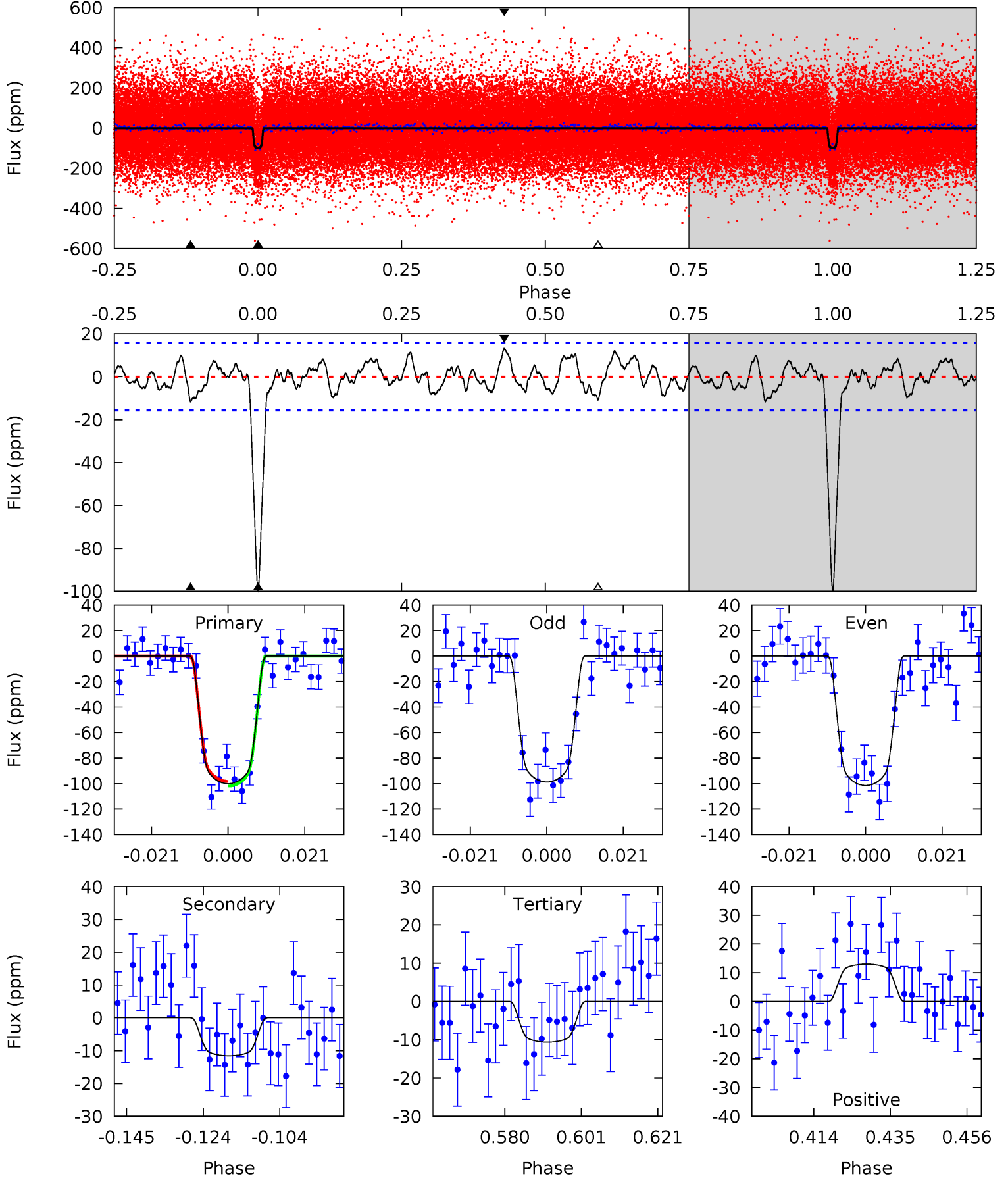
TCE 010212441-01 P= 15.045075 Days $T_0=133.190739$ (BKJD)



DV Model-Shift Uniqueness Test

010212441-01, $P = 15.044802$ Days, $E = 118.155630$ Days

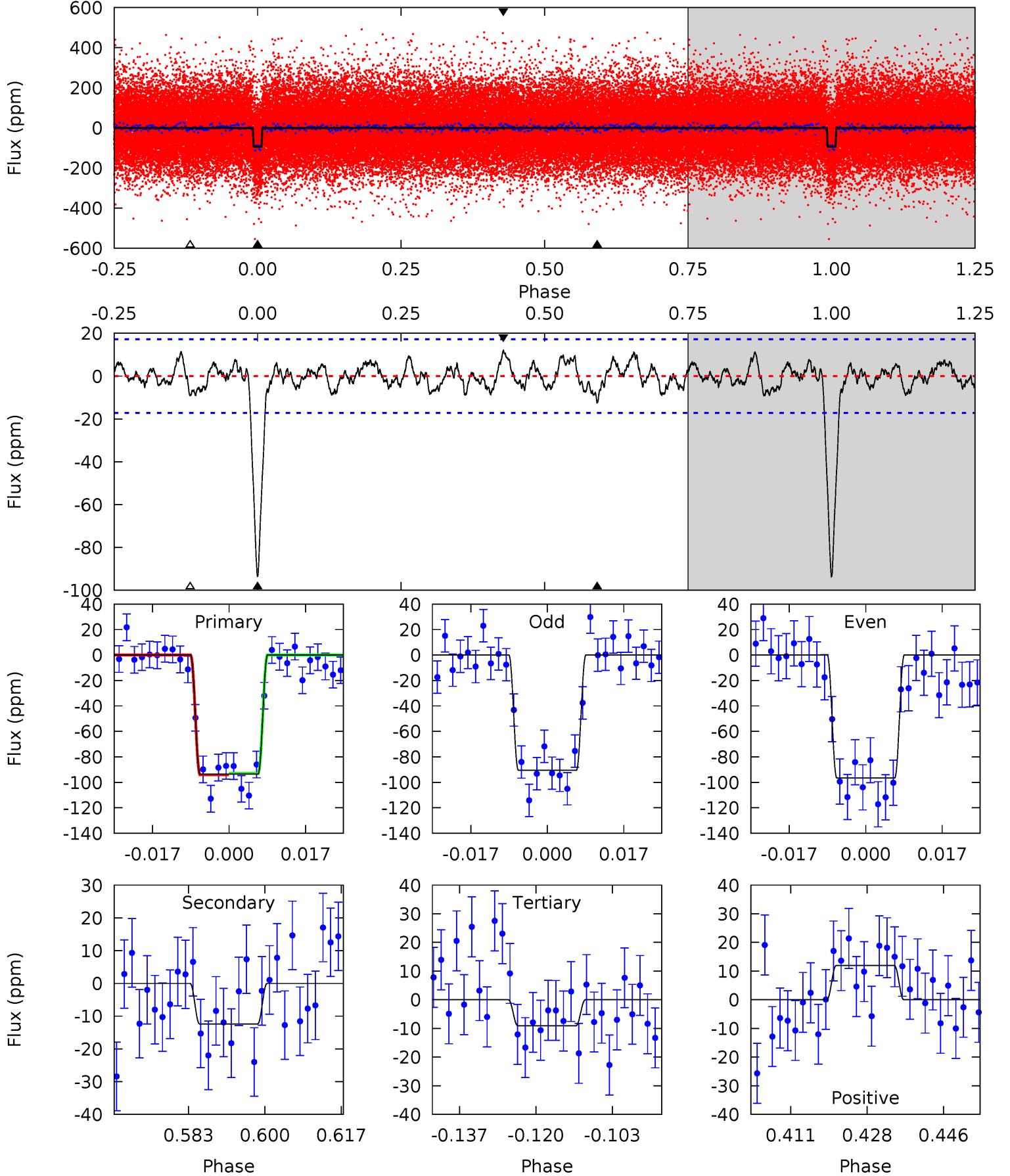
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.1	3.60	3.31	4.04	4.88	2.31	1.57	27.8	27.1	0.29	-0.45	0.43	0.94	0.12	0.56



Alt Model-Shift Uniqueness Test

010212441-01, P = 15.045075 Days, E = 118.145664 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.8	3.55	2.61	3.42	4.92	2.38	1.30	24.2	23.4	0.94	0.13	0.85	0.97	0.11	0.16



Stellar Parameters For KIC 010212441

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5798^{+116}_{-81}	$4.025^{+0.208}_{-0.112}$	$-0.400^{+0.150}_{-0.100}$	$1.525^{+0.252}_{-0.378}$	$0.899^{+0.082}_{-0.061}$	$0.357^{+0.419}_{-0.123}$
	+2%/-1%	+5%/-3%	+37%/-25%	+17%/-25%	+9%/-7%	+117%/-35%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 010212441-01 / KOI 2342.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-12 ± 3	$2.06^{+0.24}_{-0.28}$	1301^{+67}_{-84}	3513^{+152}_{-190}	20^{+9}_{-6}
Alt.	-12 ± 3	$1.63^{+0.18}_{-0.22}$	1293^{+69}_{-80}	3836^{+190}_{-224}	35^{+16}_{-11}

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 $A_{obs} \gg 1.0$

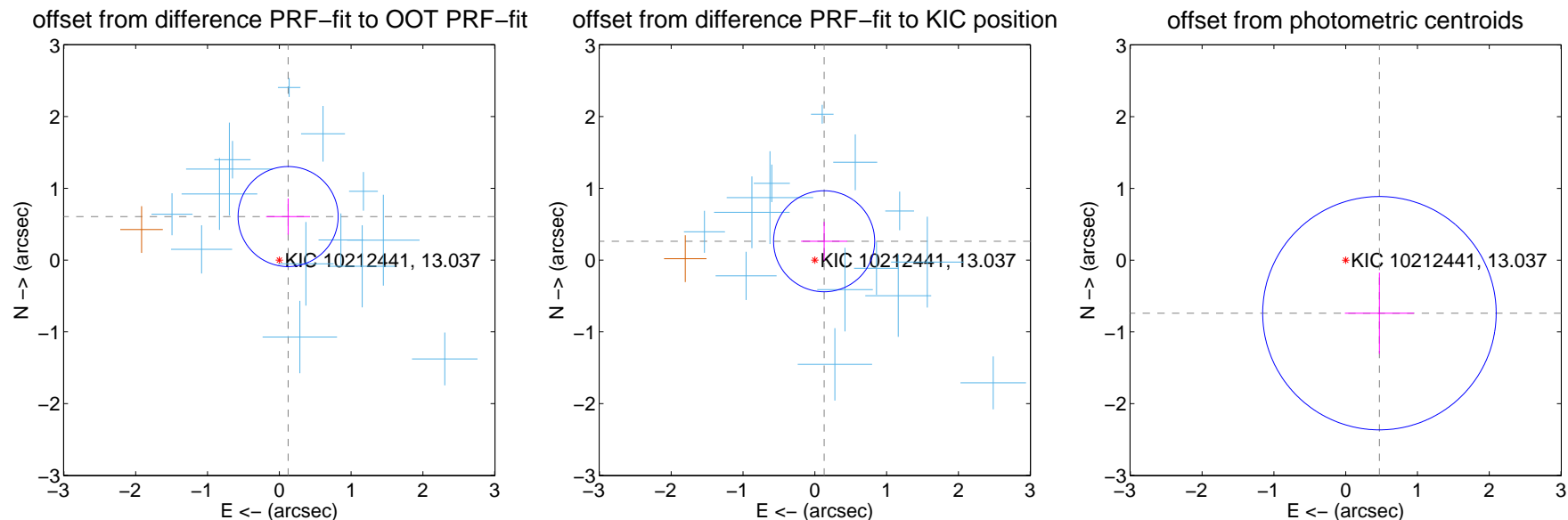
DV Centroid Data

Supplemental centroid analysis for 010212441-01. Kepler magnitude: 13.04. Transit SNR 20.40

There are 14 quarters with good PRF difference image offsets

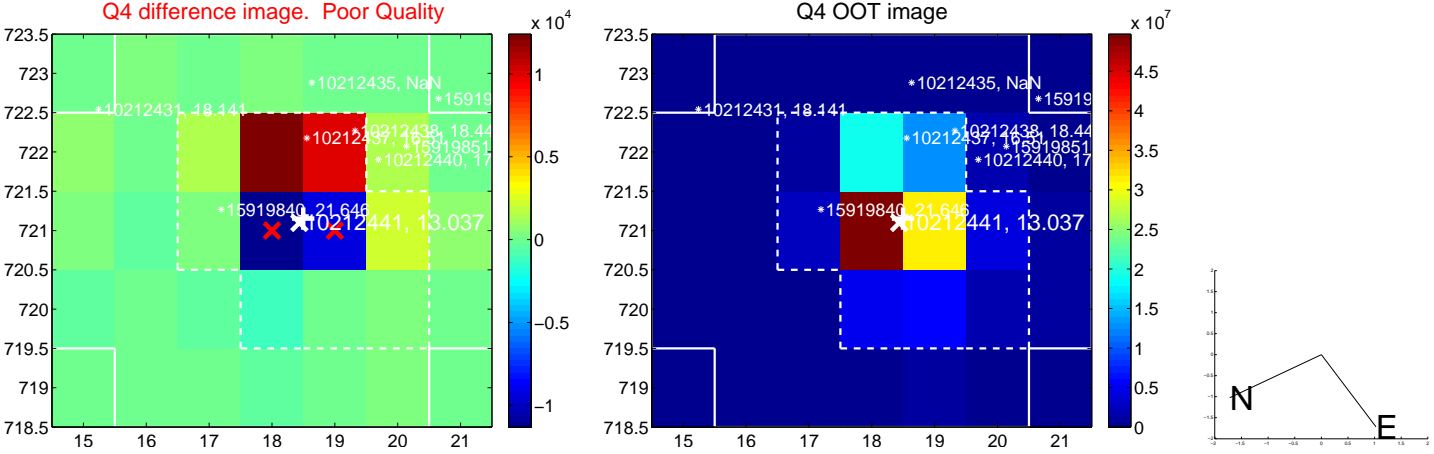
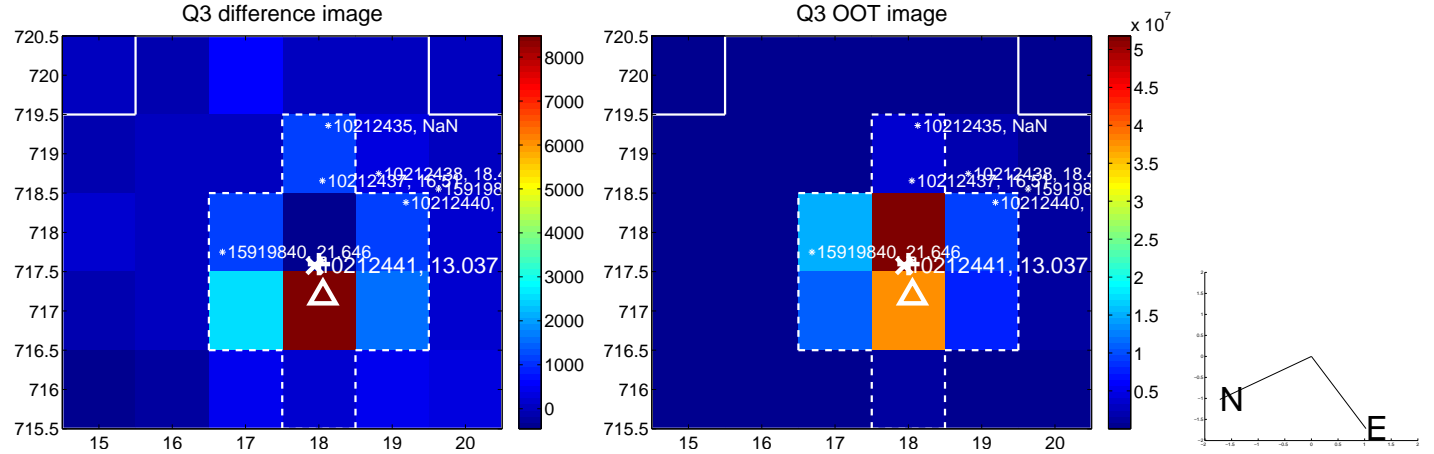
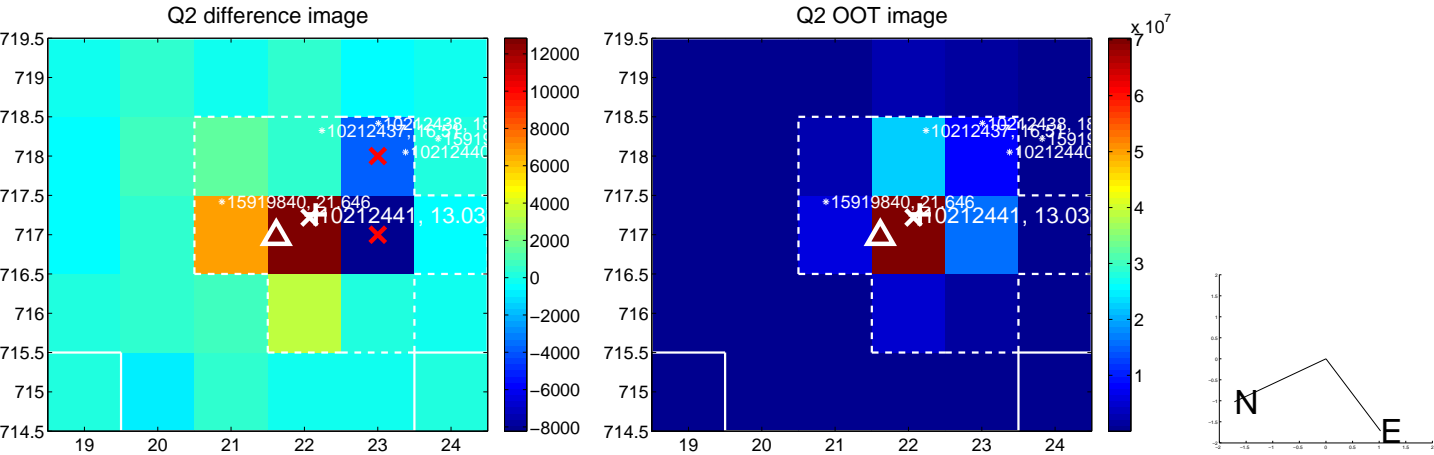
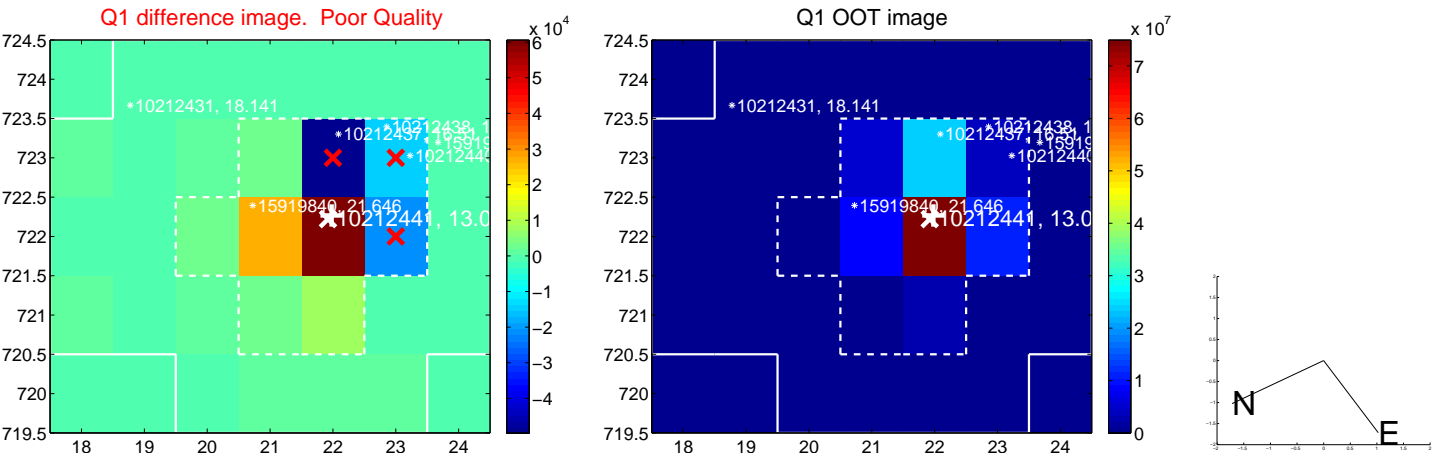
The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.619 ± 0.232	2.66	-0.123 ± 0.306	0.607 ± 0.252
PRF-fit source offset from KIC position	0.293 ± 0.235	1.25	-0.130 ± 0.321	0.262 ± 0.270
photometric centroid source offset	0.88 ± 0.54	1.62	-0.47 ± 0.48	-0.74 ± 0.56

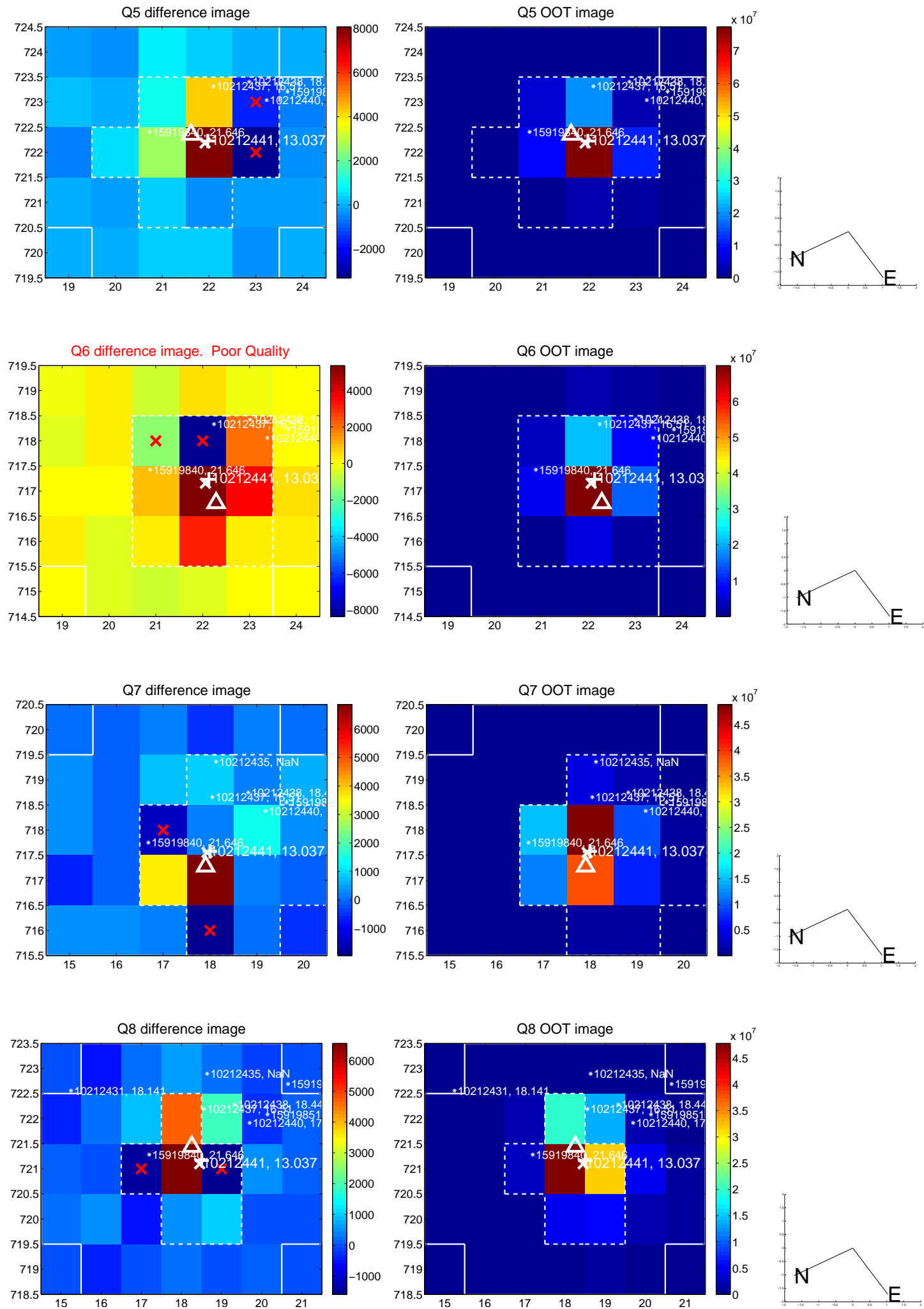


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

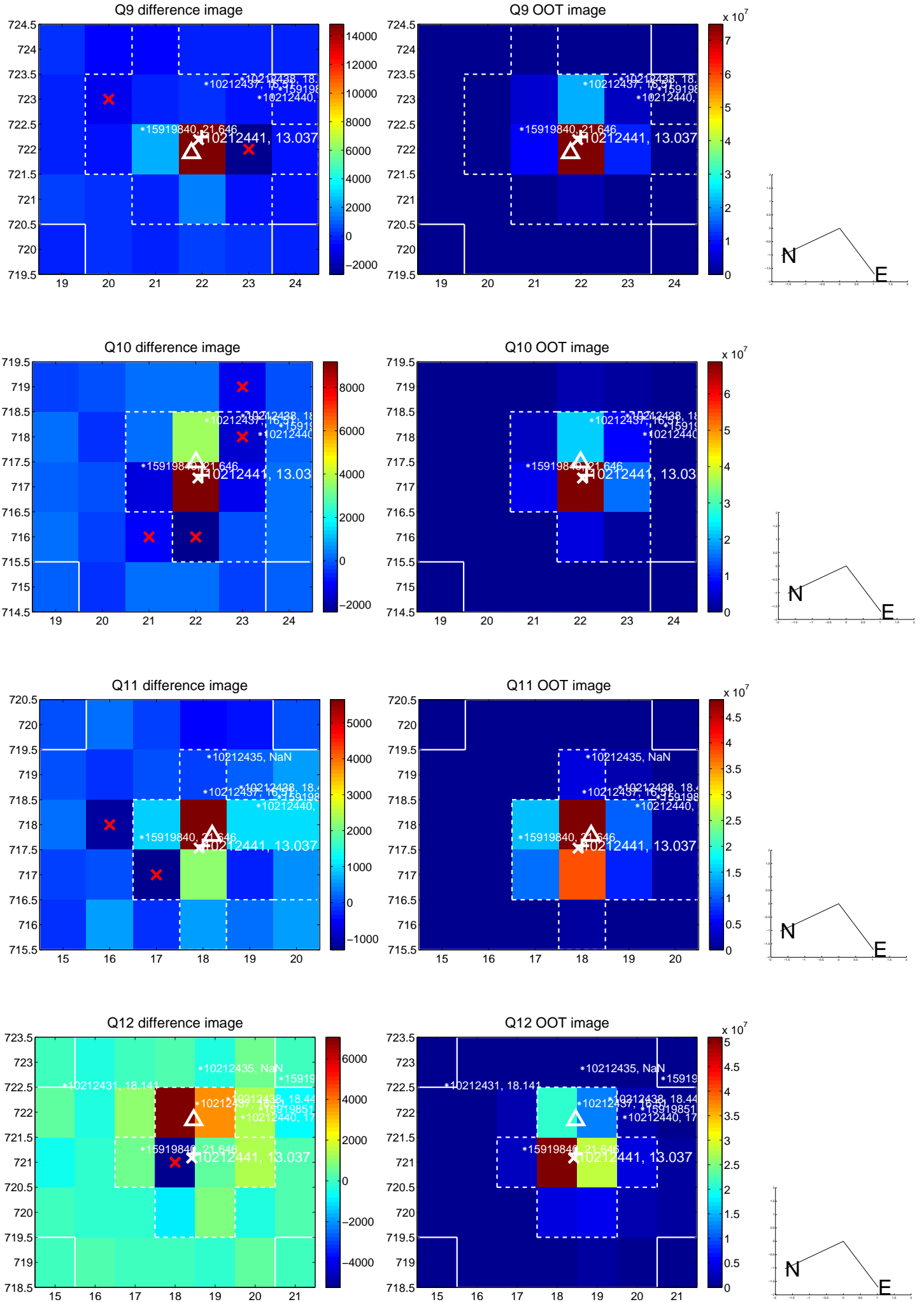
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



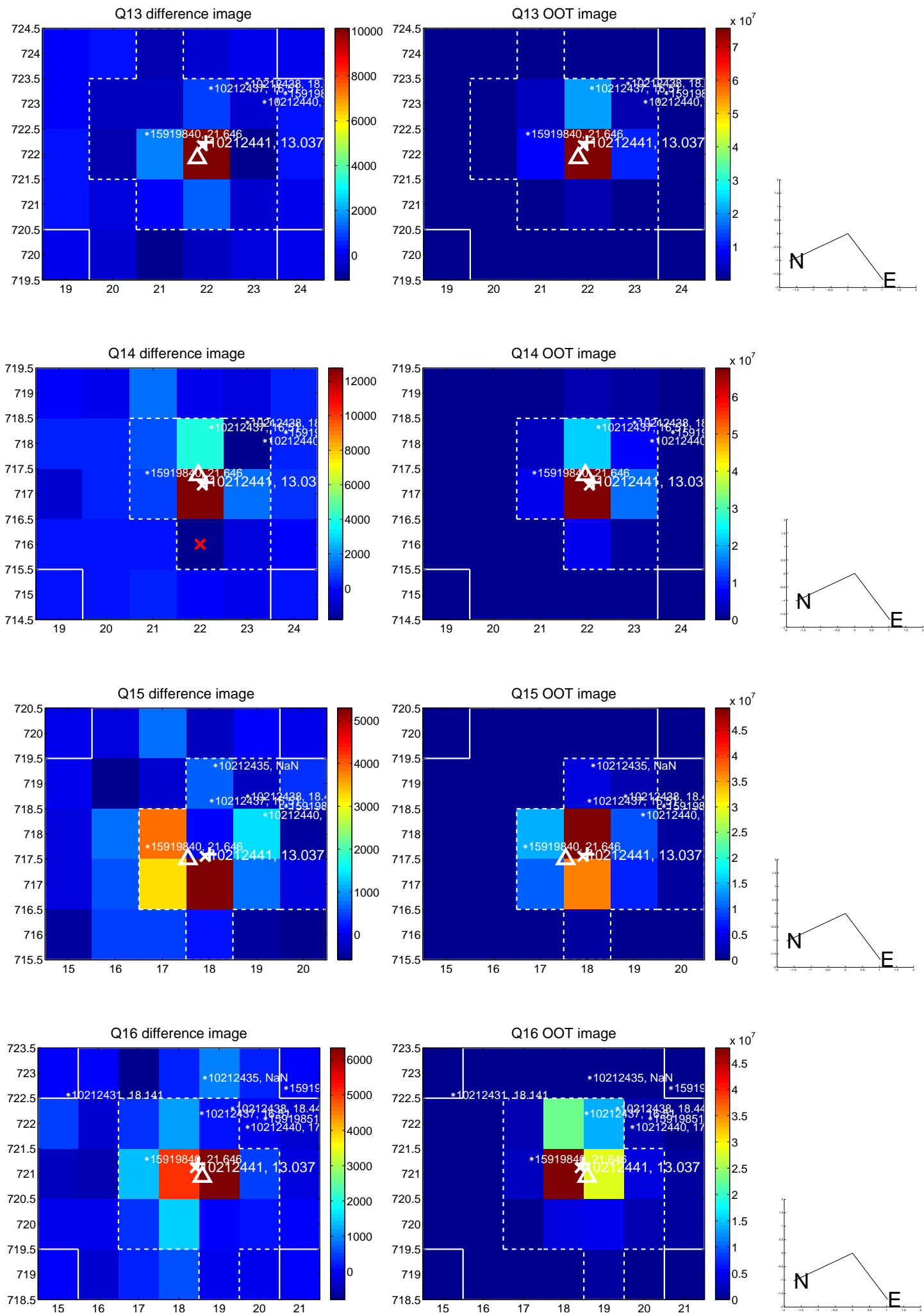
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



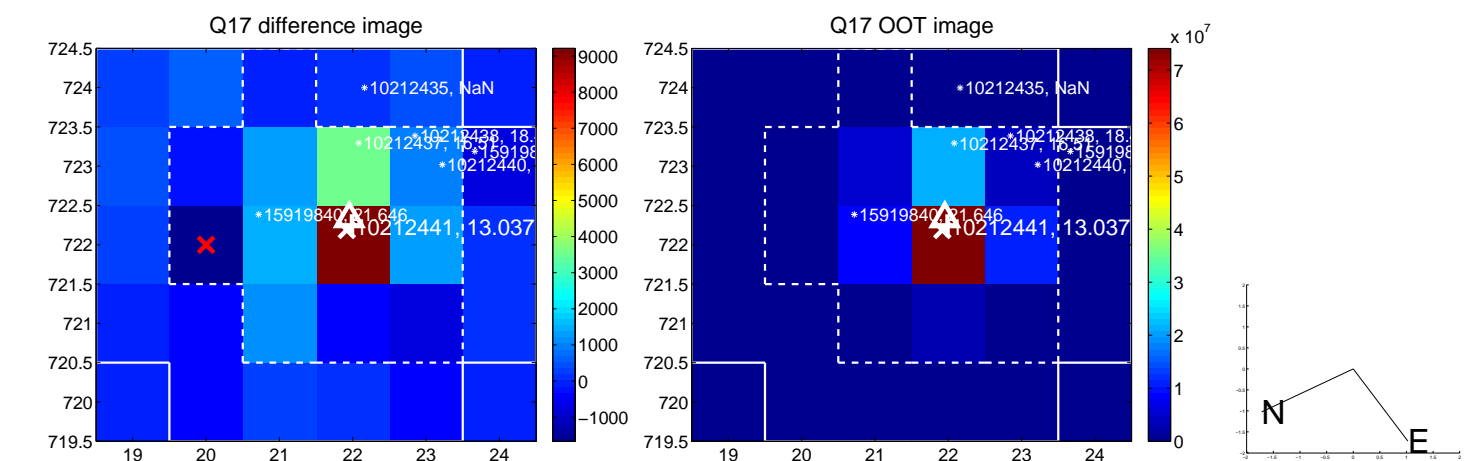
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



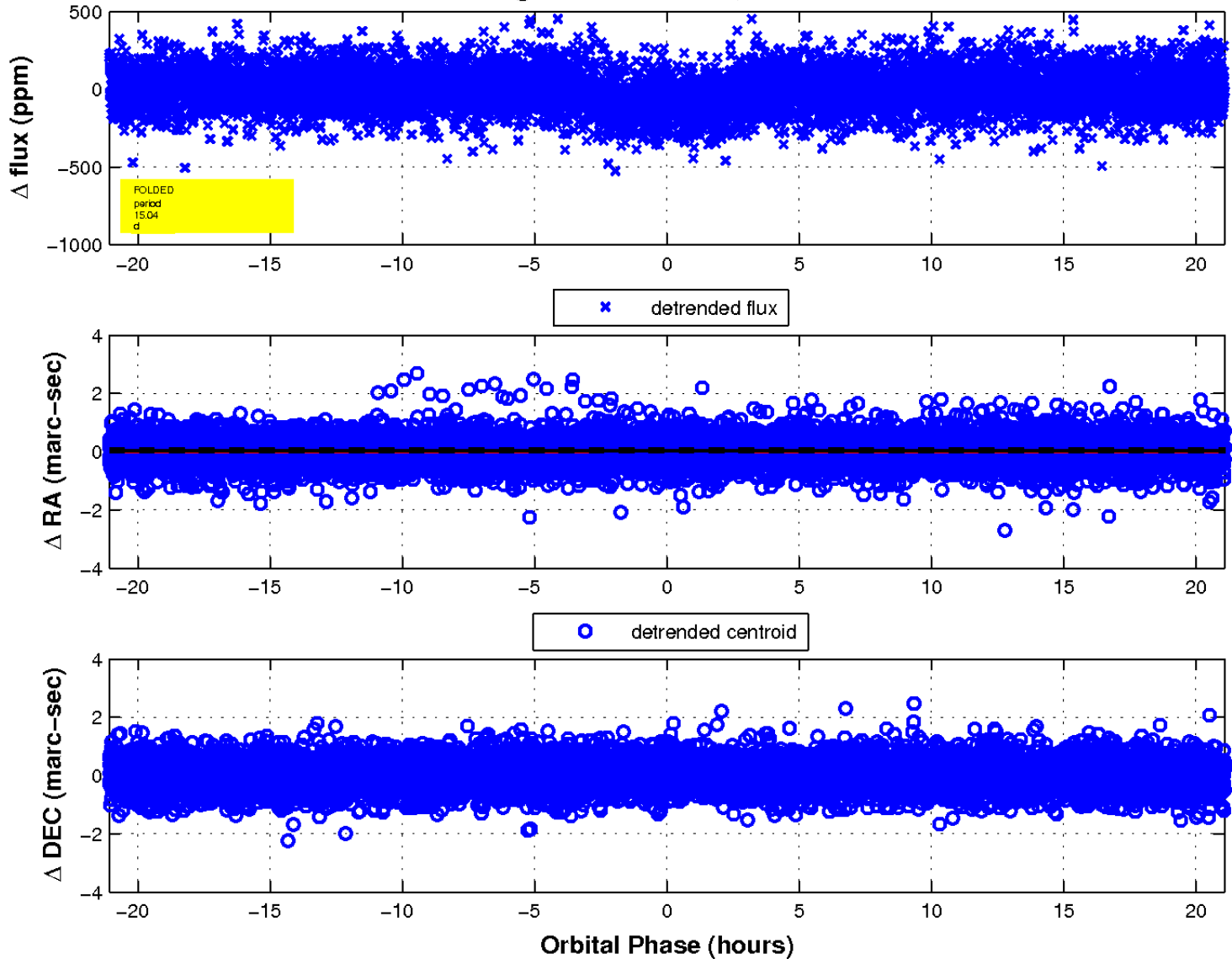
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

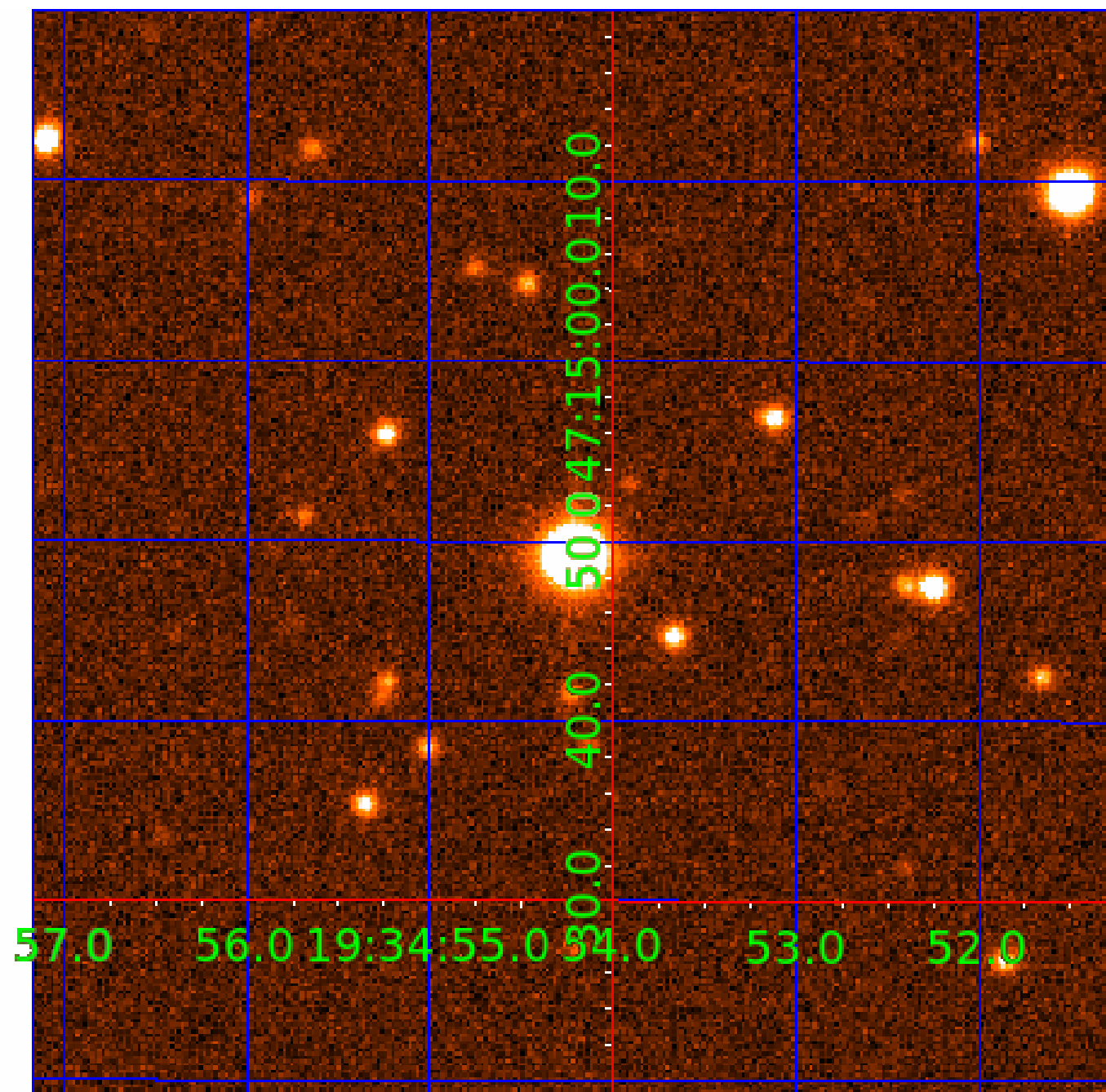


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 010212441

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})
010212441-01	OBS	2342.01	15.044802	133.200432	103.4	7.030	18.3	20.4	1.52	5798	2.06	177.69
010212441-02	OBS	2342.02	354.784767	175.717061	244.2	5.791	8.2	8.3	1.52	5798	2.54	2.63

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010212441-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
010212441-02	OBS	FP	0.27	1	0	0	0	MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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.

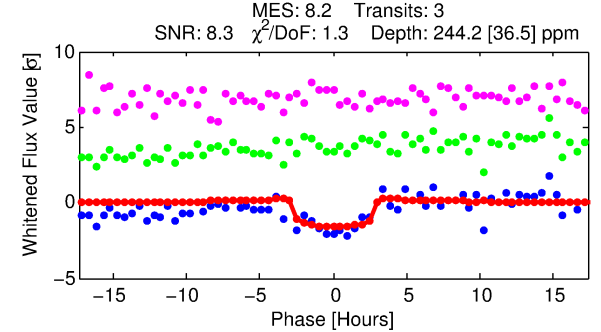
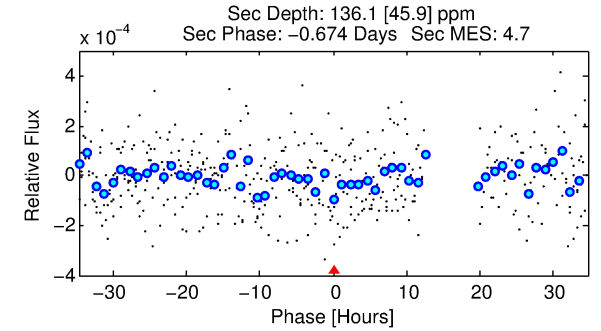
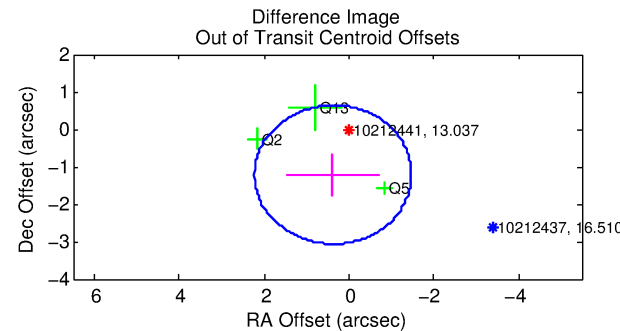
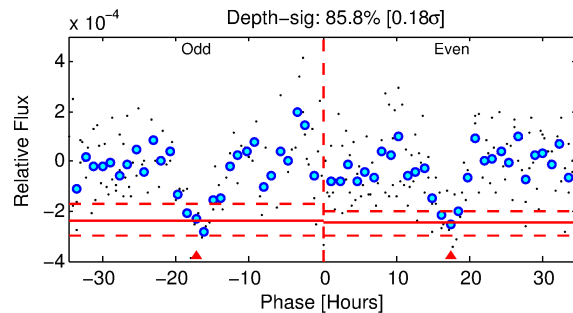
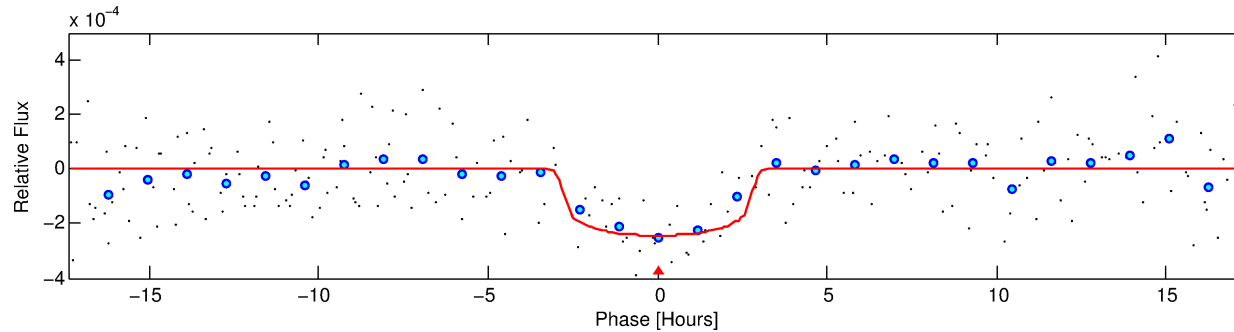
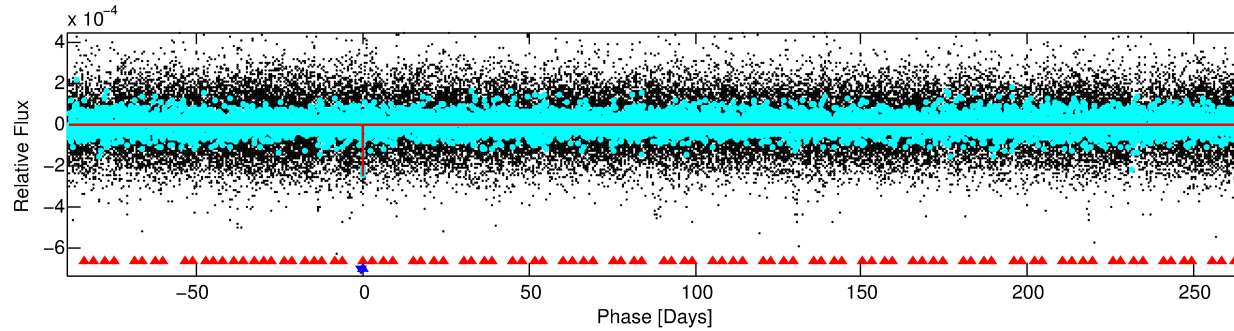
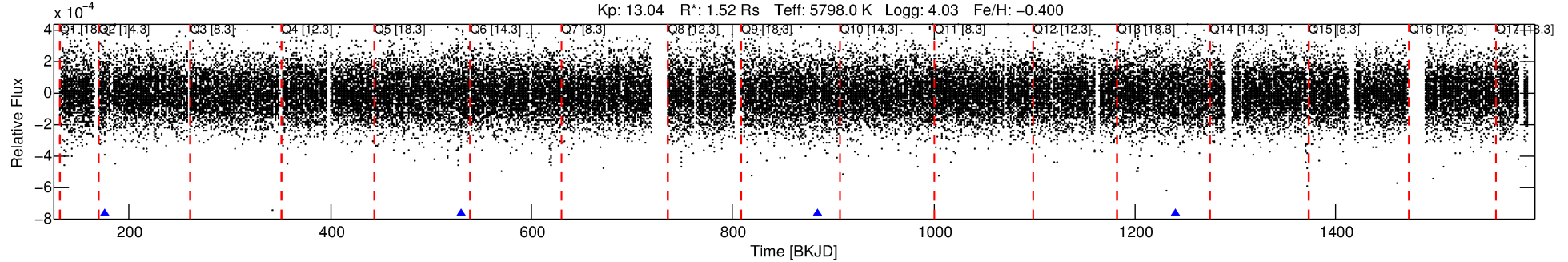
Ephemeris Match Information For 010212441-02

No Significant Match Found

DV One-Page Summary

KIC: 10212441 Candidate: 2 of 2 Period: 354.785 d
KOI: K02342 Corr: No Ephemeris Match

Kp: 13.04 R*: 1.52 Rs Teff: 5798.0 K Logg: 4.03 Fe/H: -0.400



DV Fit Results:

Period = 354.78477 [0.00835] d
Epoch = 175.7171 [0.0145] BKJD
Rp/R* = 0.0153 [0.0250]
a/R* = 345.19 [2683.54]
b = 0.70 [5.80]
Seff = 2.63 [0.97]
Teq = 325 [30] K
Rp = 2.54 [4.21] Re
a = 0.9466 [0.2175] AU
Ag = 10365.62 [34282.88] [0.30σ]
Teffp = 5065 [4164] K [1.14σ]

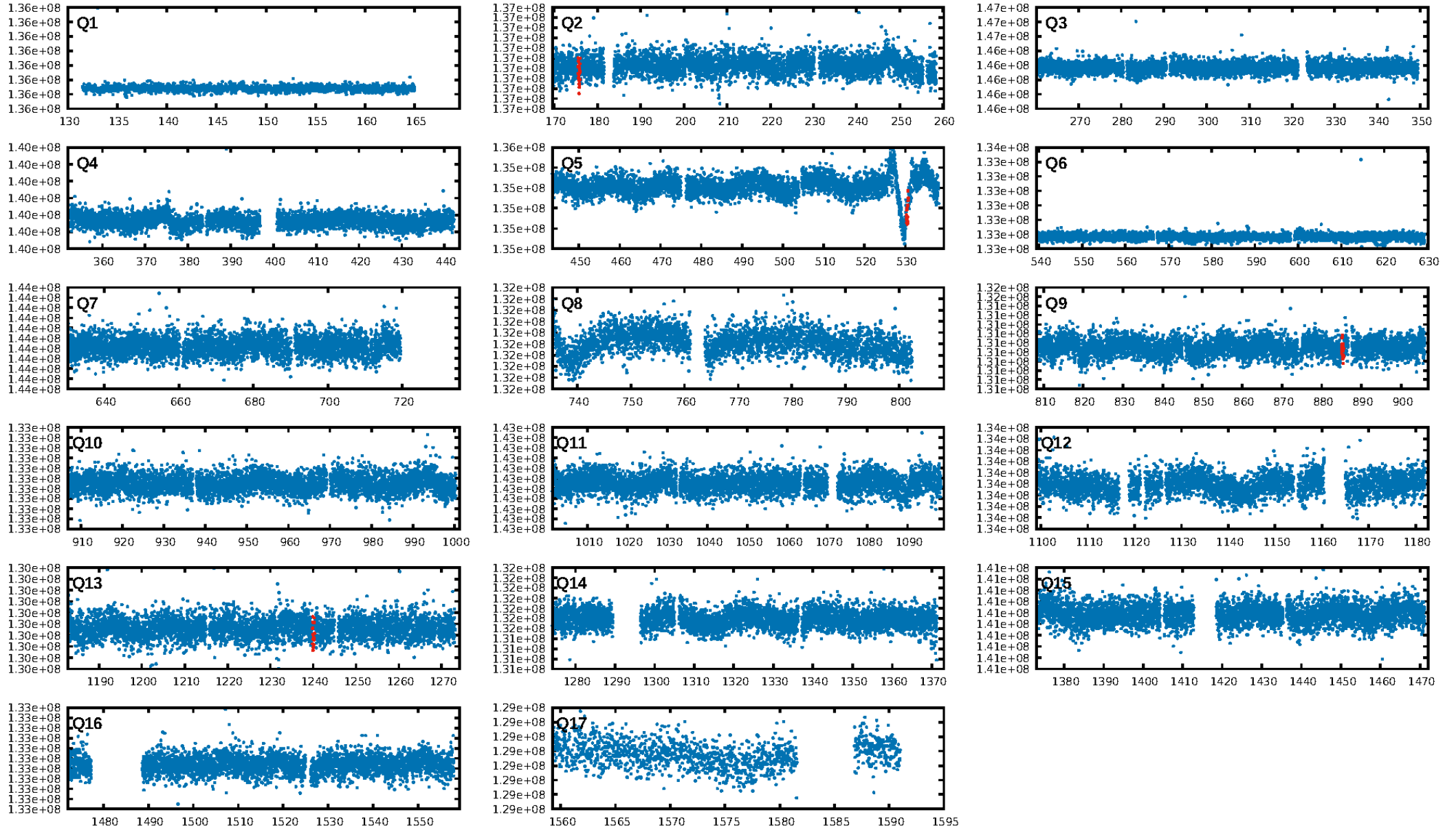
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [895.22σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 1.4%
ModelChiSquareGof-sig: 95.8%
Bootstrap-pfa: 3.52e-15
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -114.6
Centroid-sig: N/A
Centroid-so: 0.924 arcsec [0.80σ]
OotOffset-rm: 1.270 arcsec [2.06σ]
KicOffset-rm: 1.577 arcsec [2.73σ]
OotOffset-st: 1/0/0/2 [3]
KicOffset-st: 1/0/0/2 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.75 [3/4]

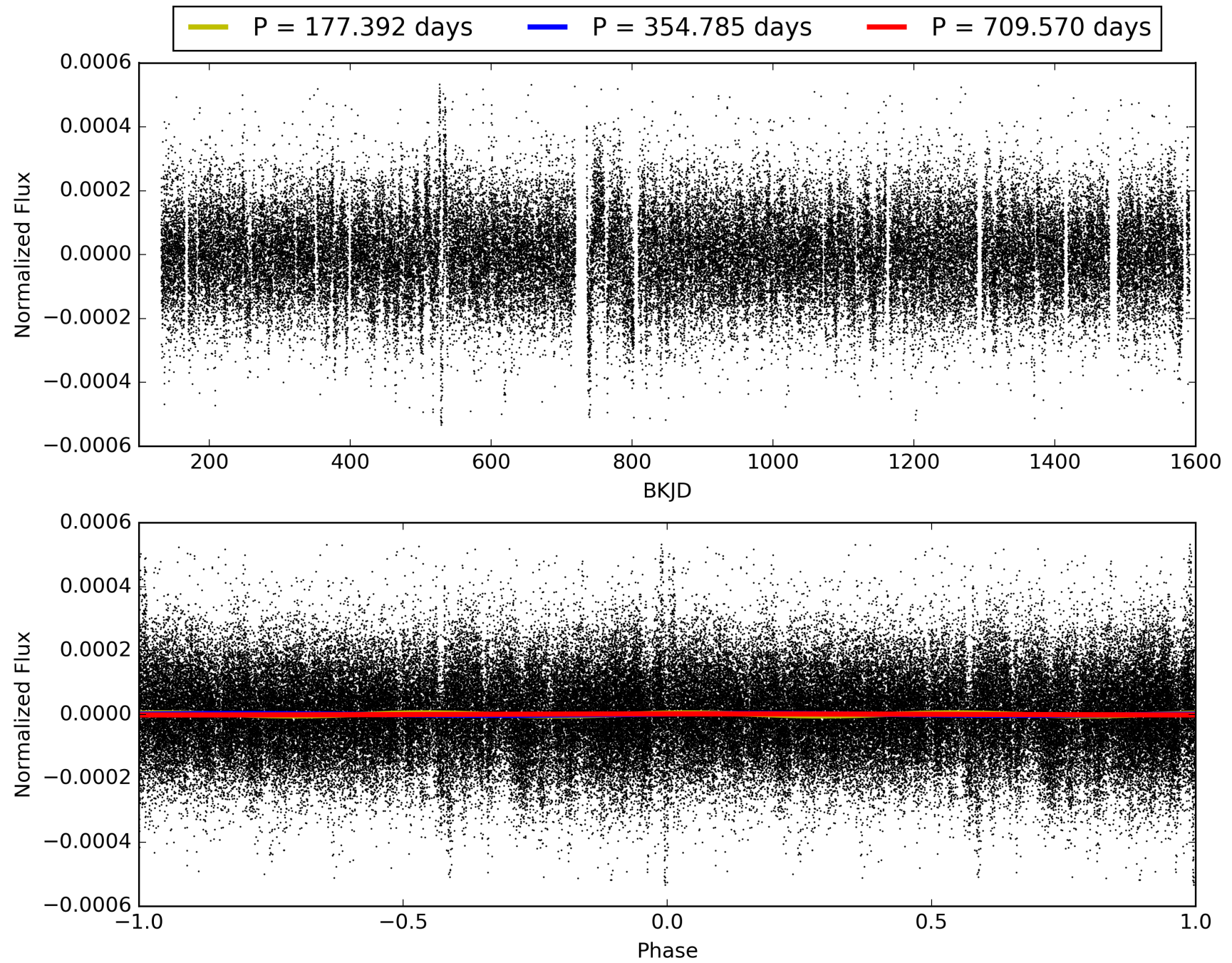
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:07:49 Z

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

TCE 010212441-02, PDC Light Curves

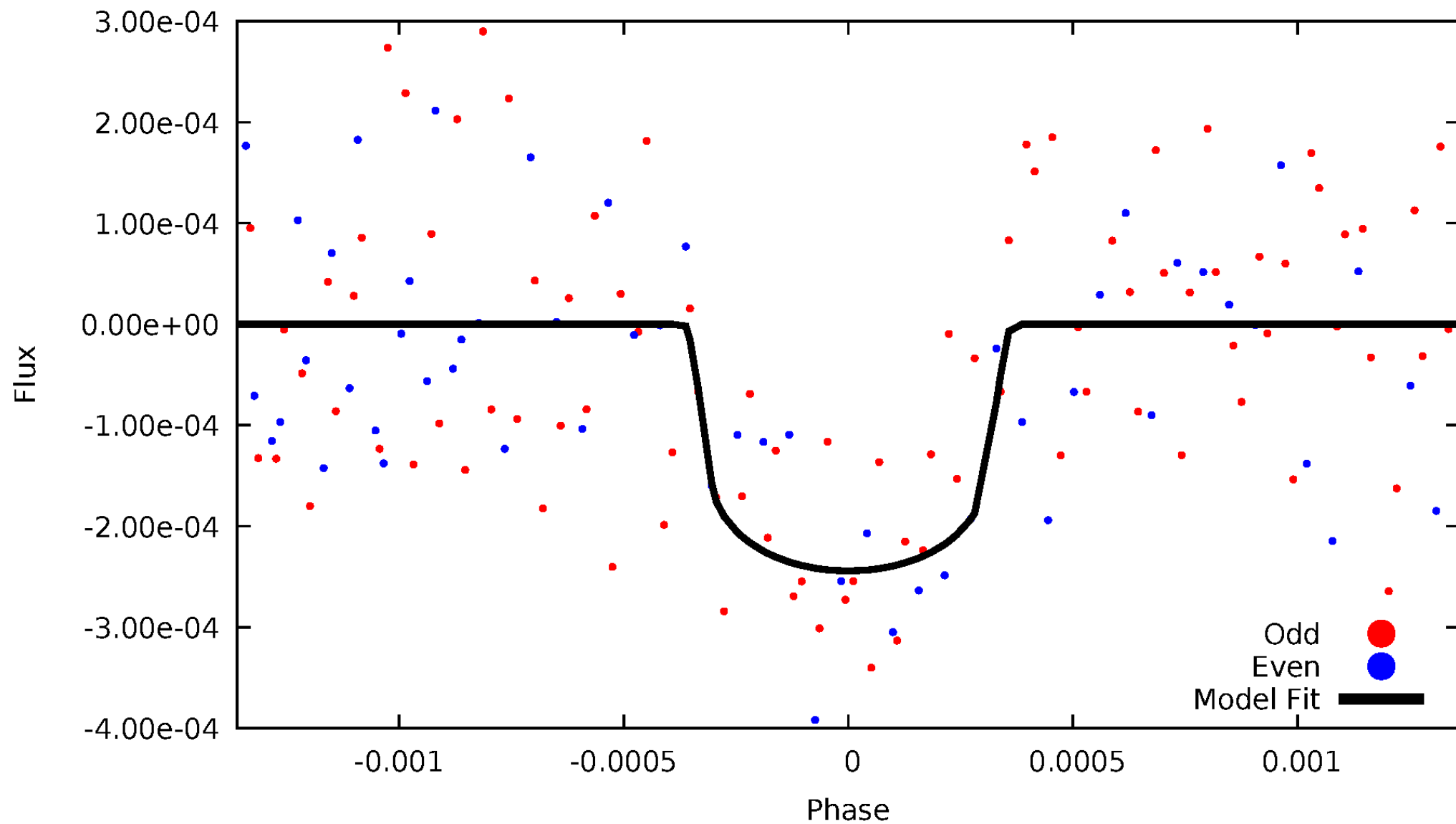


TCE 010212441-02



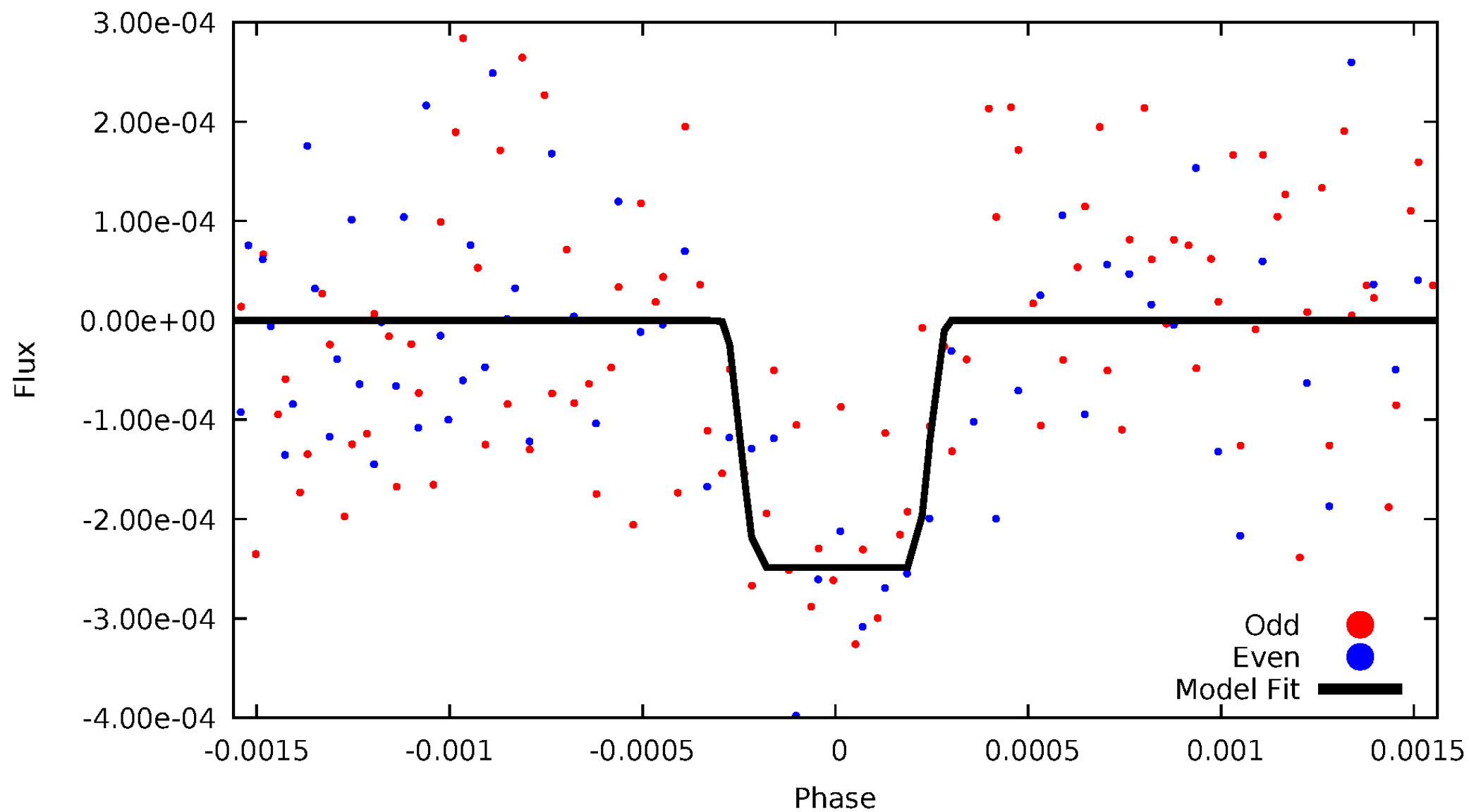
DV Odd/Even

TCE 010212441-02



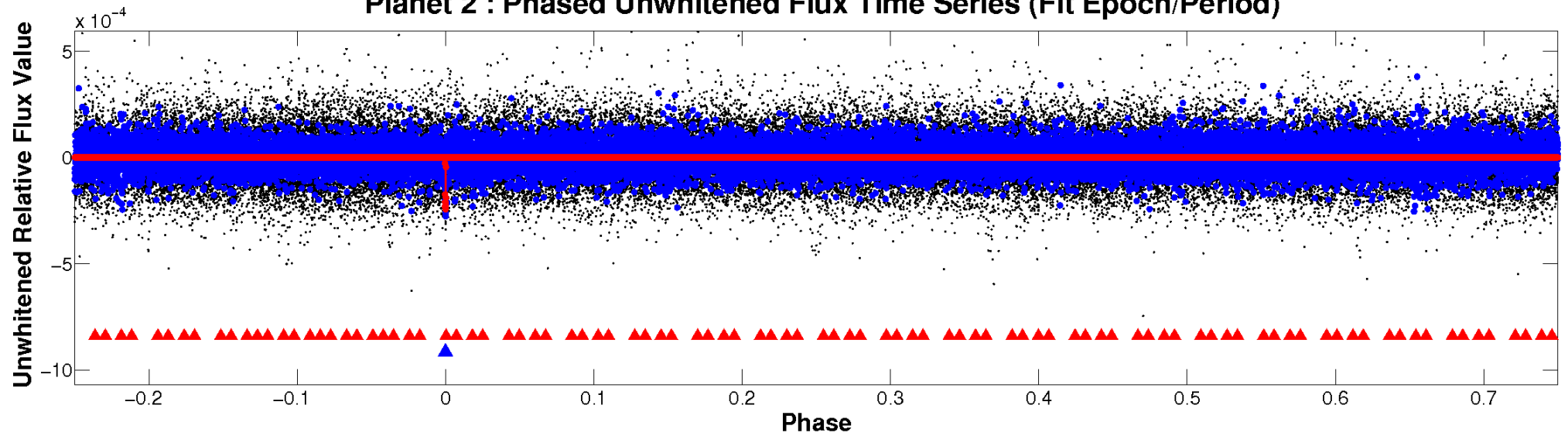
ALT Odd/Even

TCE 010212441-02

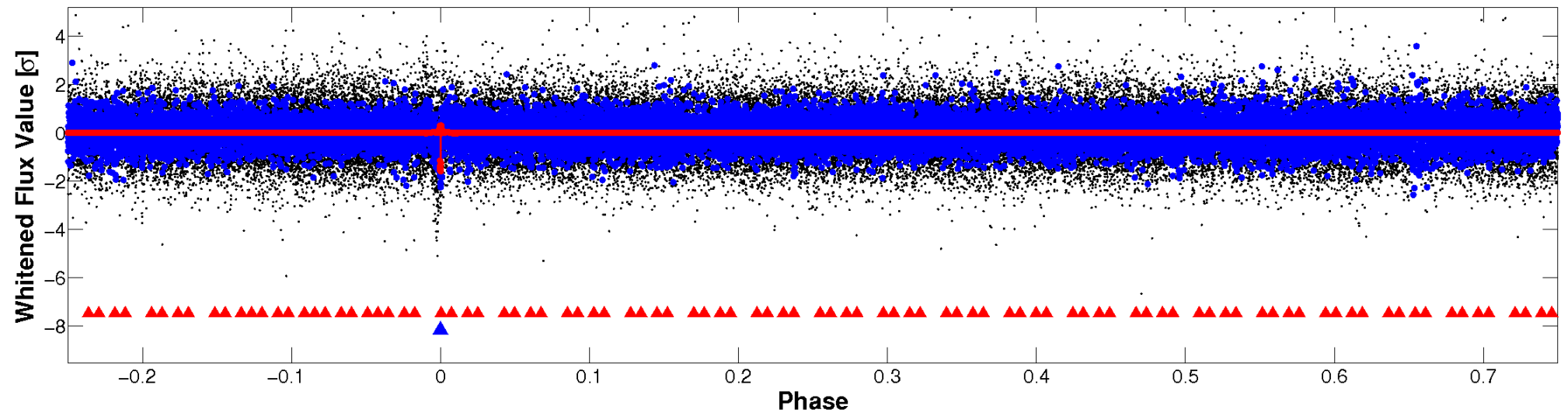


Non-Whitened Vs. Whitened Light Curve

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

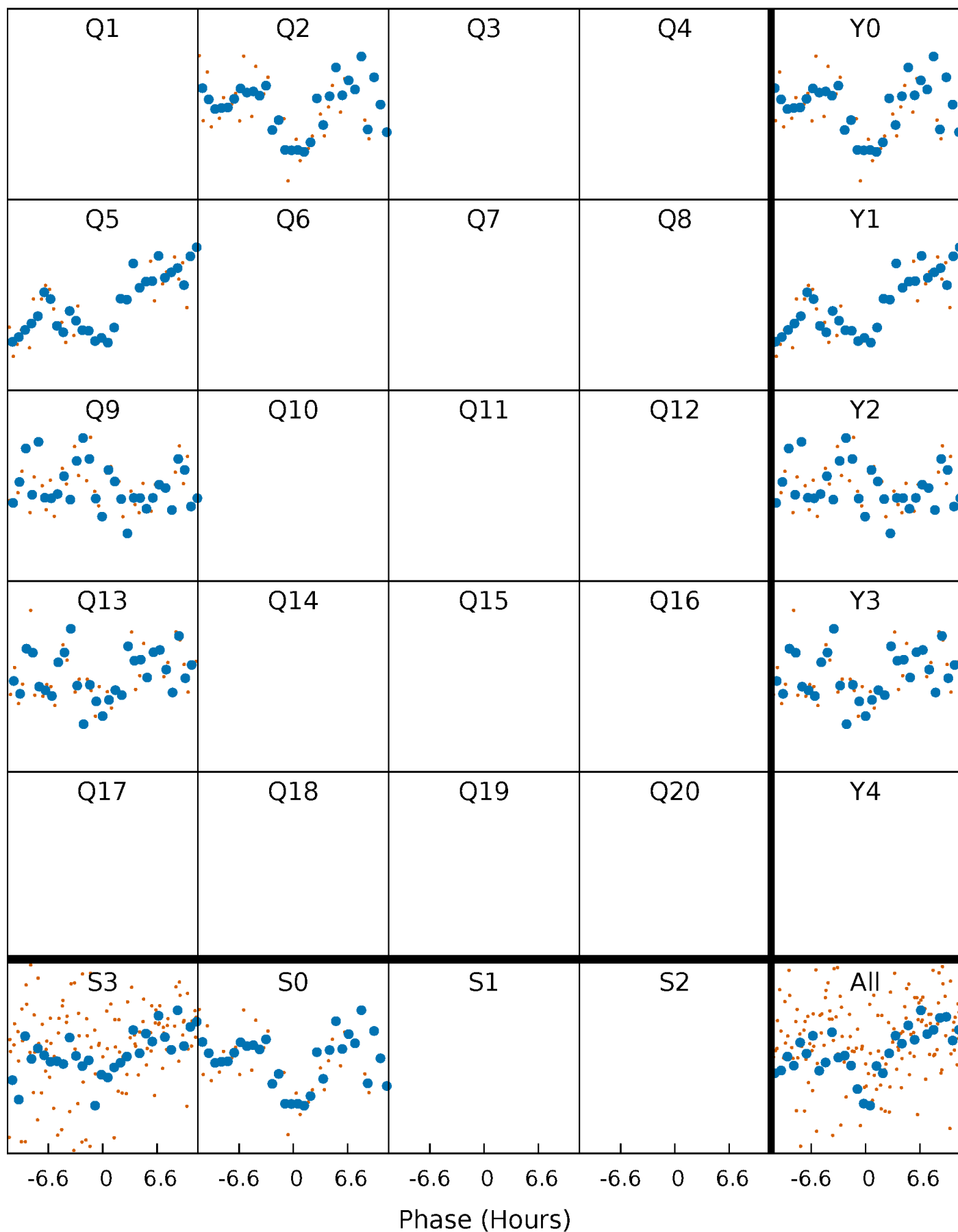


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



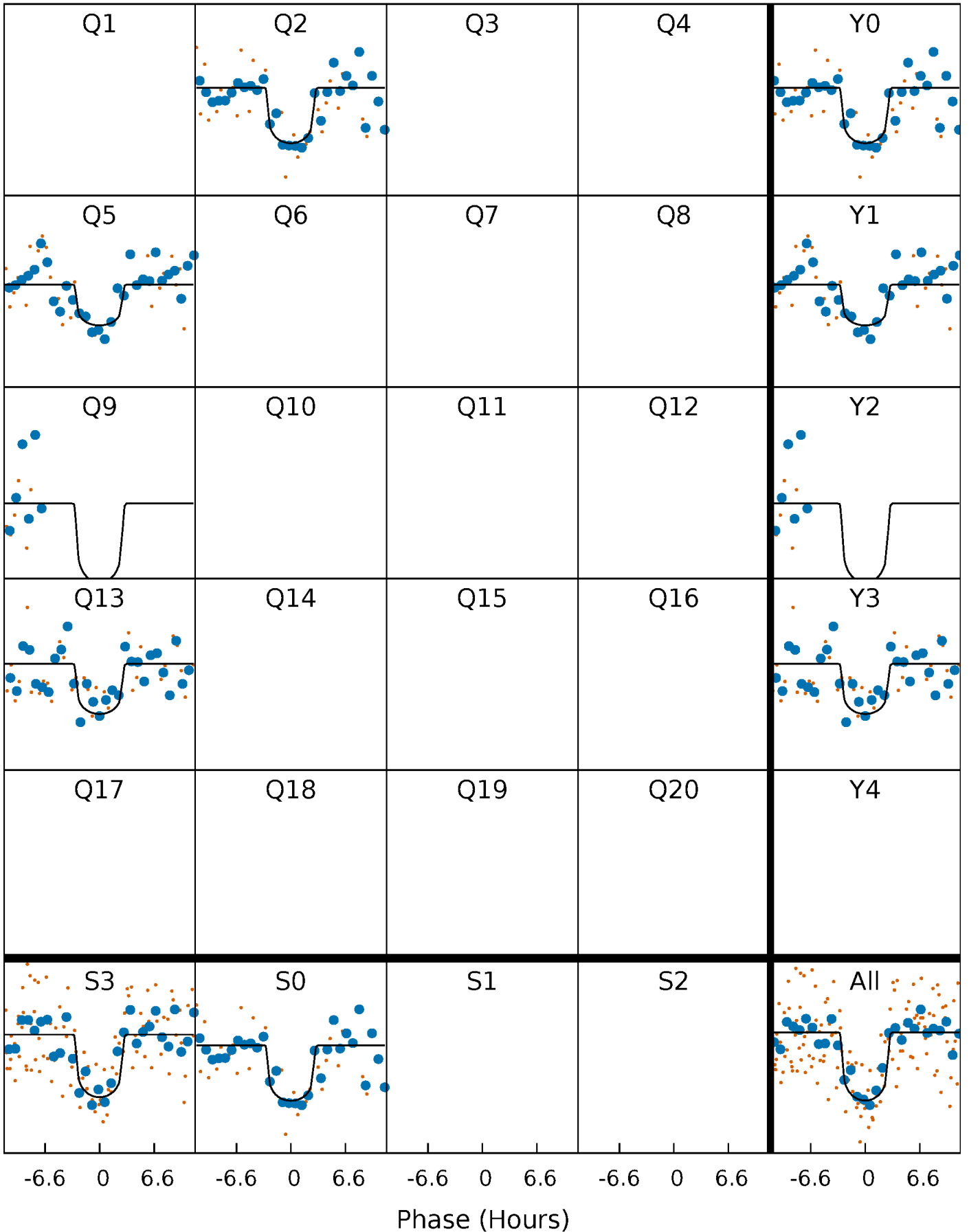
PDC Quarter-Phased Transit Curves

TCE 010212441-02 P=354.784767 Days $T_0=175.717061$ (BKJD)



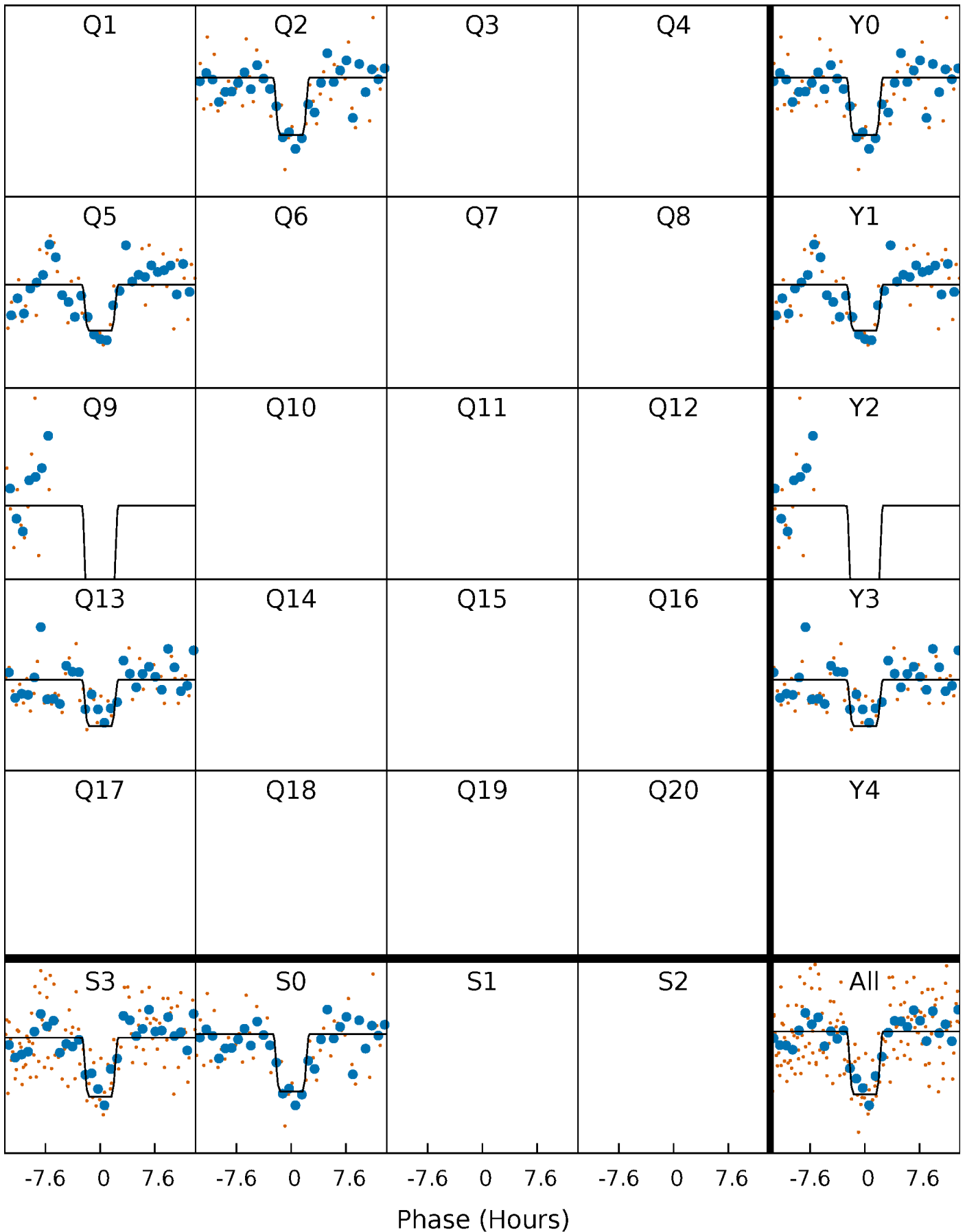
DV Quarter-Phased Transit Curves

TCE 010212441-02 P=354.784767 Days $T_0=175.717061$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

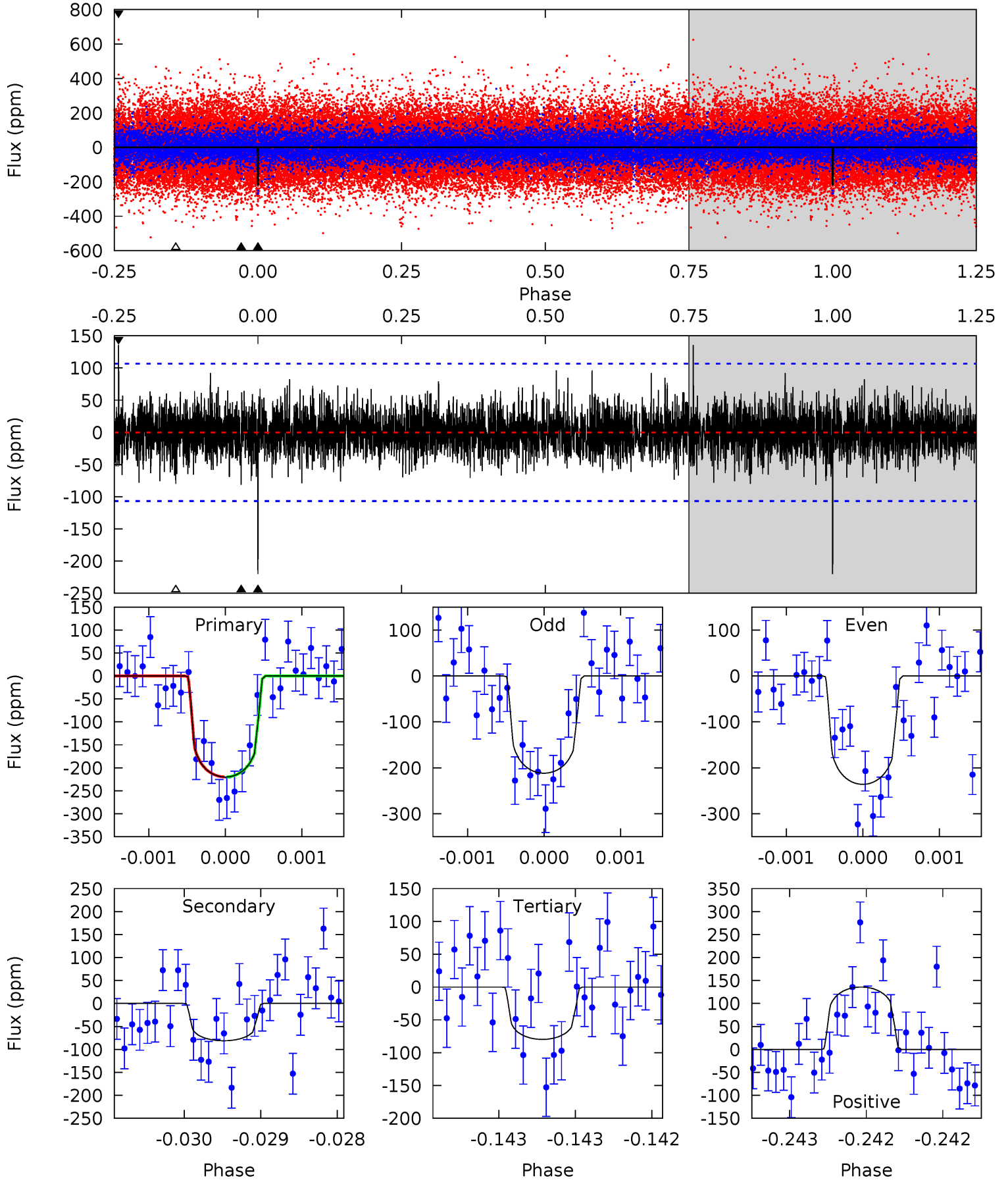
TCE 010212441-02 $P=354.774280$ Days $T_0=175.727118$ (BKJD)



DV Model-Shift Uniqueness Test

010212441-02, P = 354.784767 Days, E = 175.717061 Days

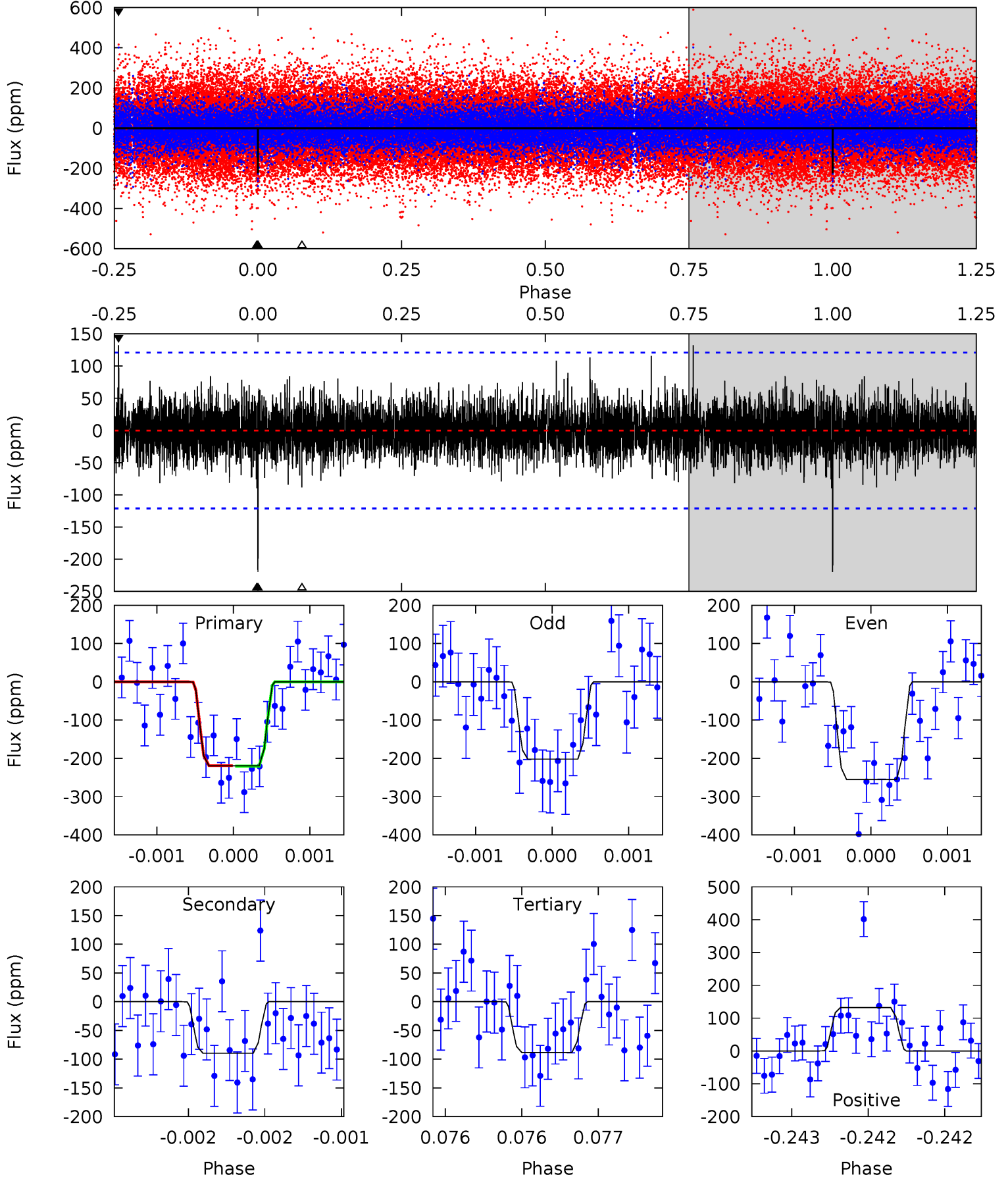
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	4.19	4.12	7.00	5.50	3.37	1.21	7.24	4.35	0.07	-2.81	0.61	0.93	0.38	0.00



Alt Model-Shift Uniqueness Test

010212441-02, P = 354.774280 Days, E = 175.727118 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	4.11	4.05	6.07	5.55	3.45	1.12	6.03	4.00	0.06	-1.96	1.14	0.91	0.38	0.03



Stellar Parameters For KIC 010212441

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5798^{+116}_{-81}	$4.025^{+0.208}_{-0.112}$	$-0.400^{+0.150}_{-0.100}$	$1.525^{+0.252}_{-0.378}$	$0.899^{+0.082}_{-0.061}$	$0.357^{+0.419}_{-0.123}$
	+2%/-1%	+5%/-3%	+37%/-25%	+17%/-25%	+9%/-7%	+117%/-35%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 010212441-02 / KOI 2342.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-81 ± 19	$3.72^{+3.70}_{-2.45}$	451^{+23}_{-28}	3963^{+2283}_{-787}	2918^{+24033}_{-2192}
Alt.	-90 ± 22	$3.81^{+3.74}_{-2.67}$	453^{+21}_{-29}	4053^{+2706}_{-812}	3157^{+29705}_{-2381}

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

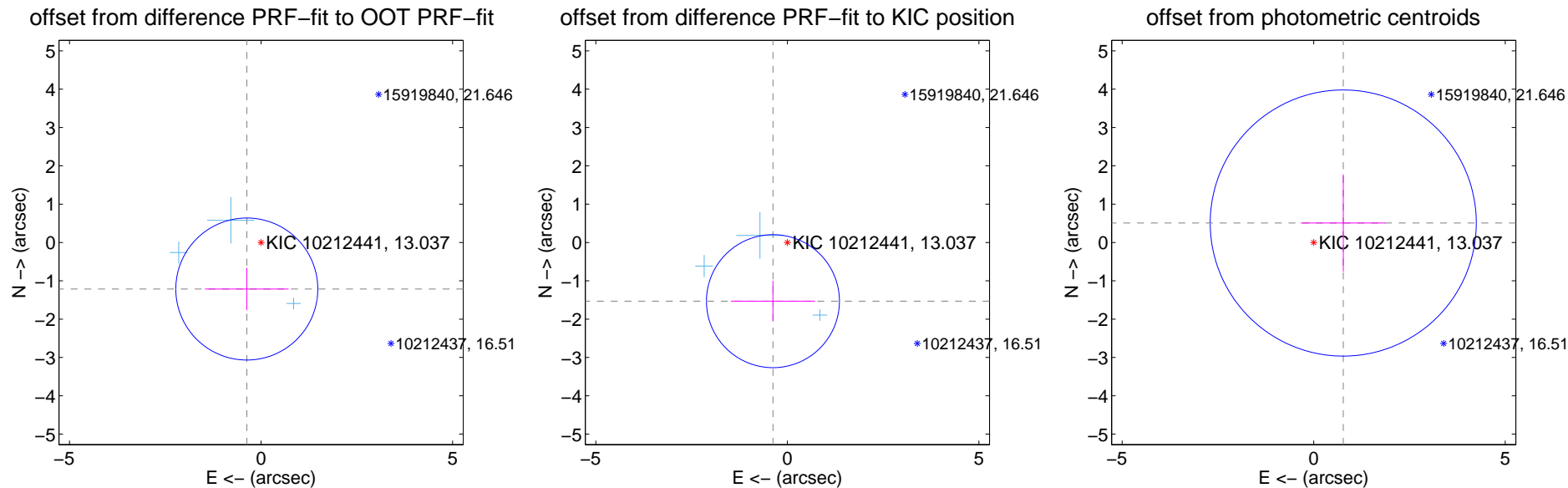
DV Centroid Data

Supplemental centroid analysis for 010212441-02. Kepler magnitude: 13.04. Transit SNR 8.35

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.270 ± 0.618	2.06	0.372 ± 1.092	-1.214 ± 0.553
PRF-fit source offset from KIC position	1.577 ± 0.578	2.73	0.376 ± 1.099	-1.531 ± 0.531
photometric centroid source offset	0.92 ± 1.16	0.80	-0.77 ± 1.10	0.51 ± 1.27



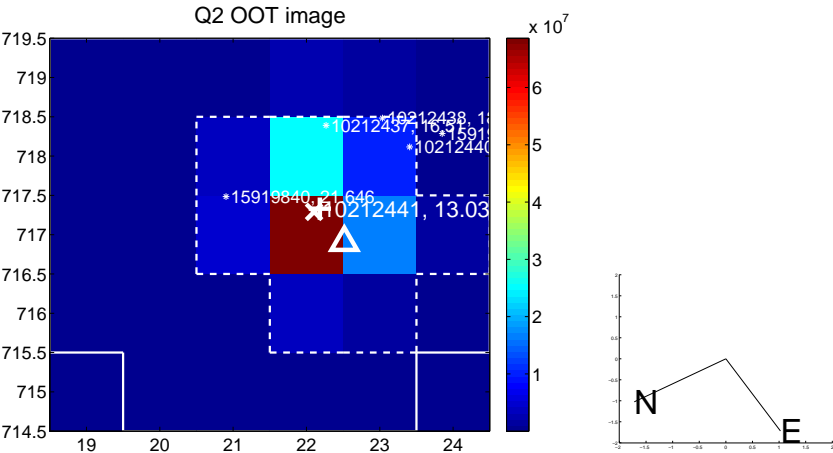
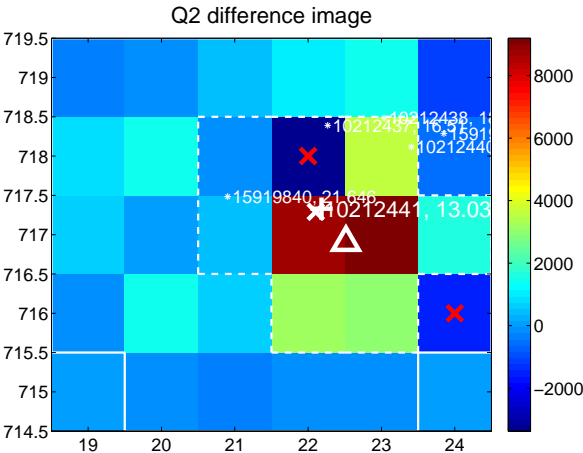
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

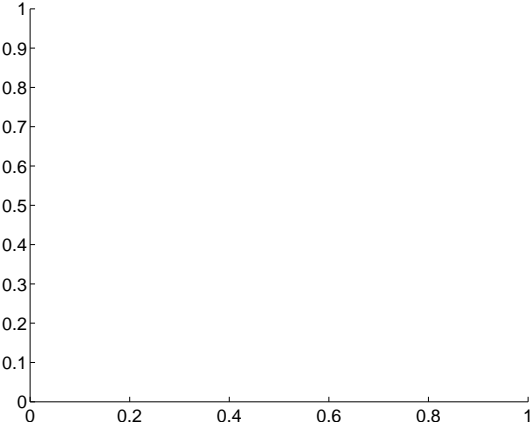
Q1 no difference image



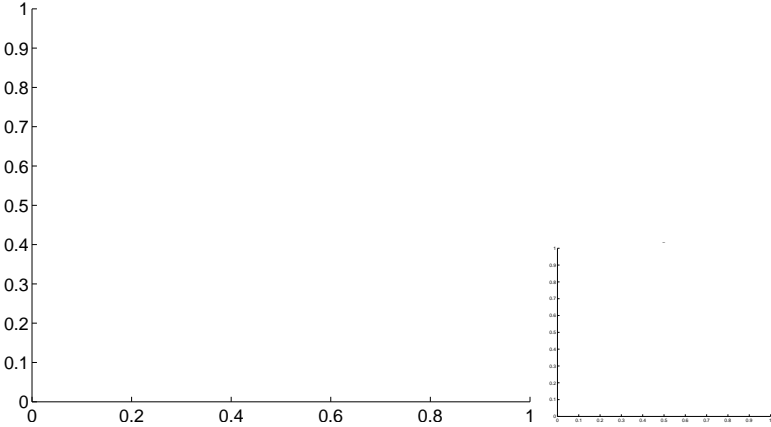
Q1 no OOT image



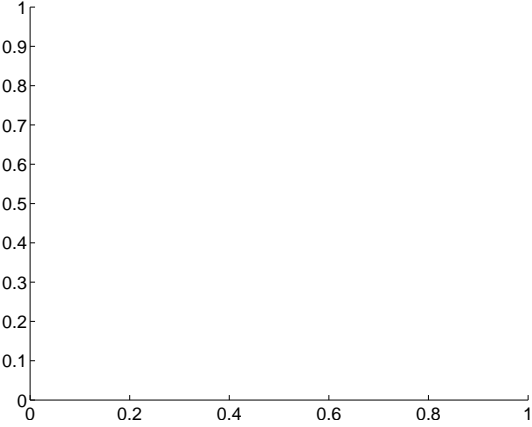
Q3 no difference image



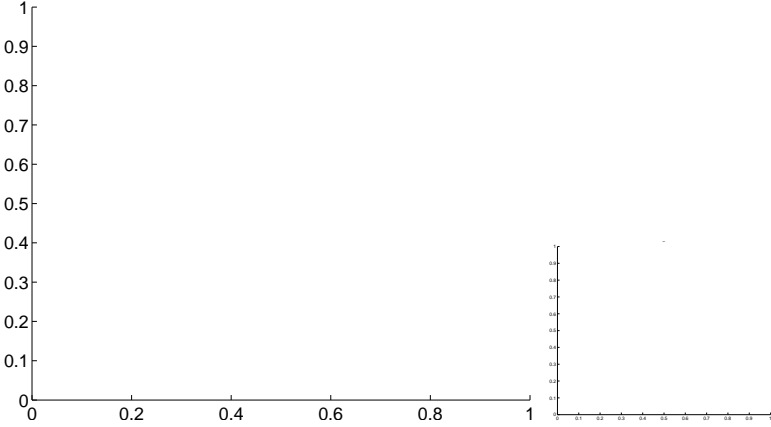
Q3 no OOT image



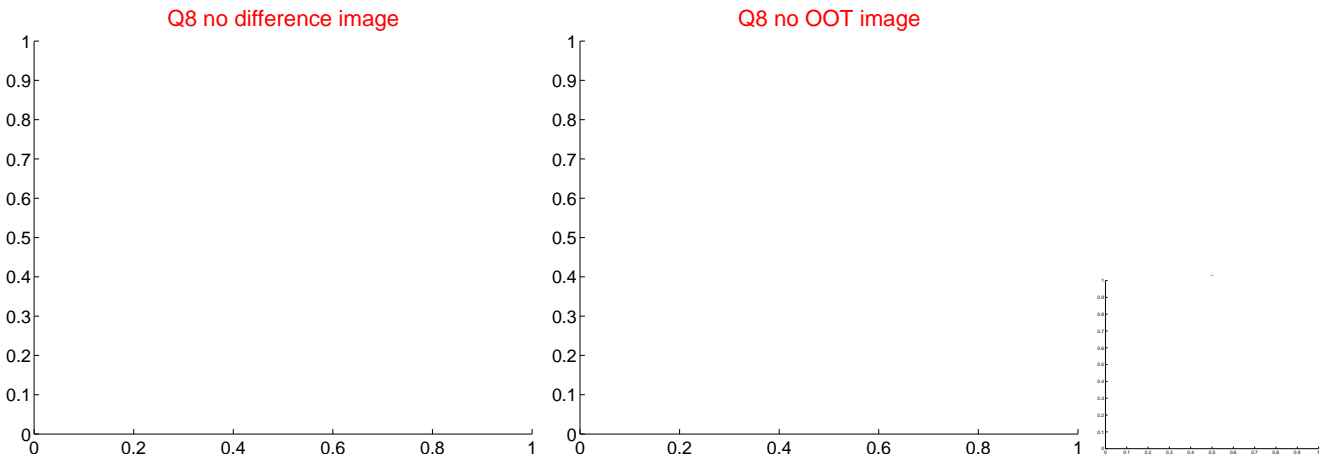
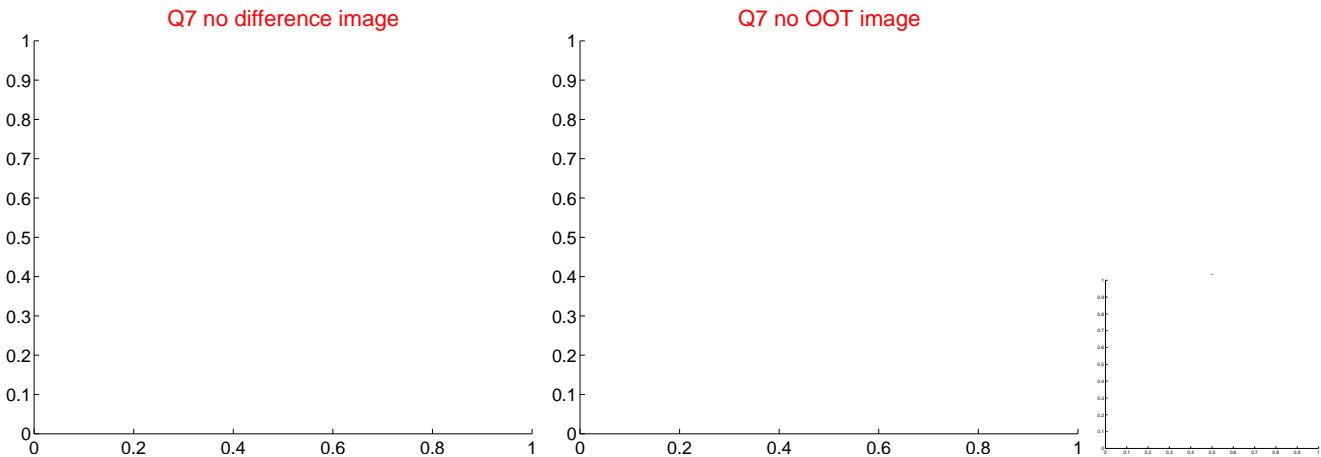
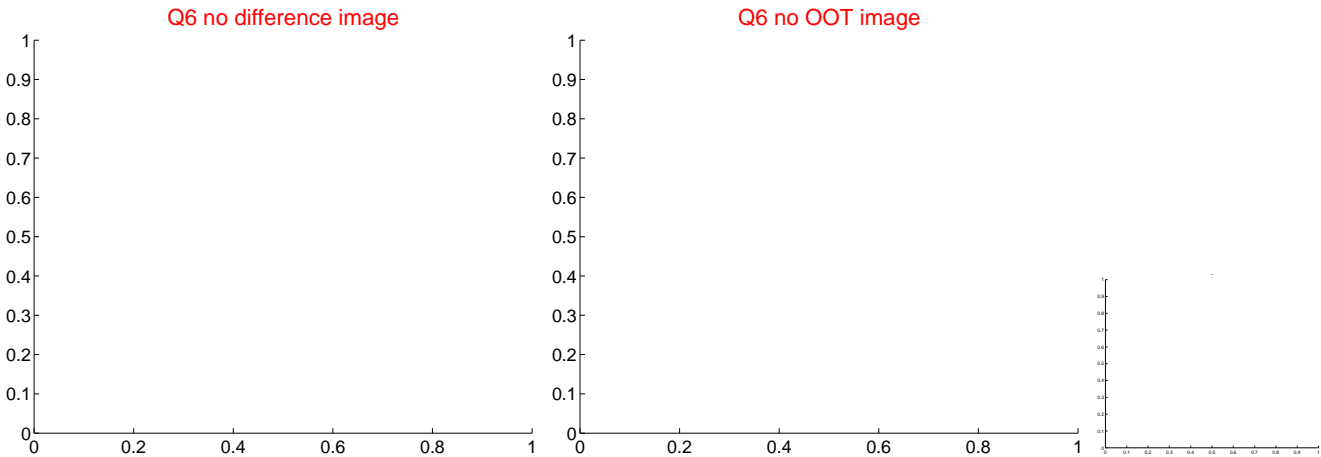
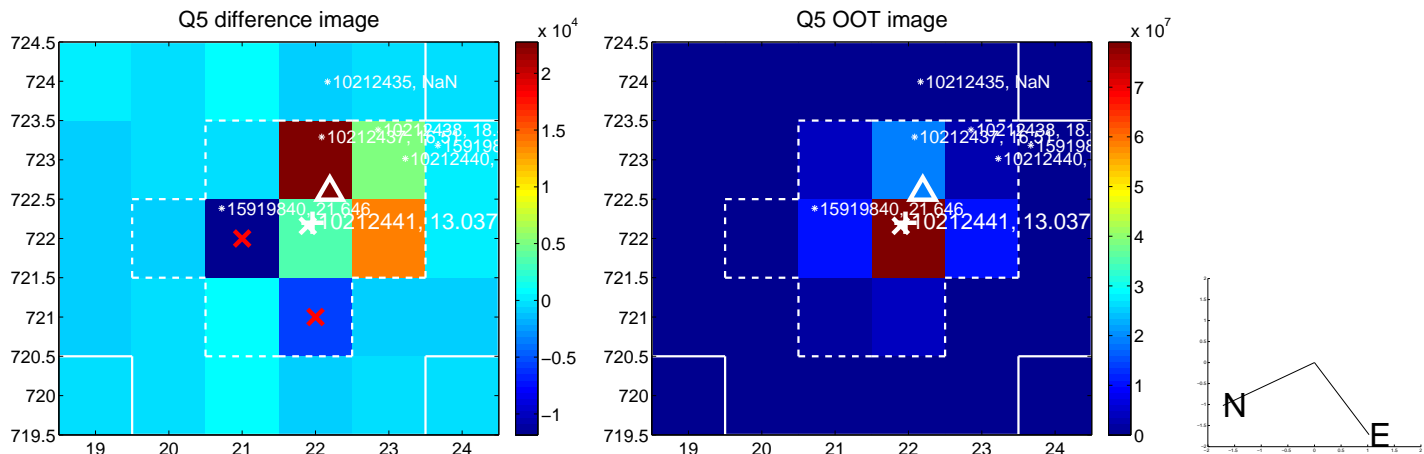
Q4 no difference image



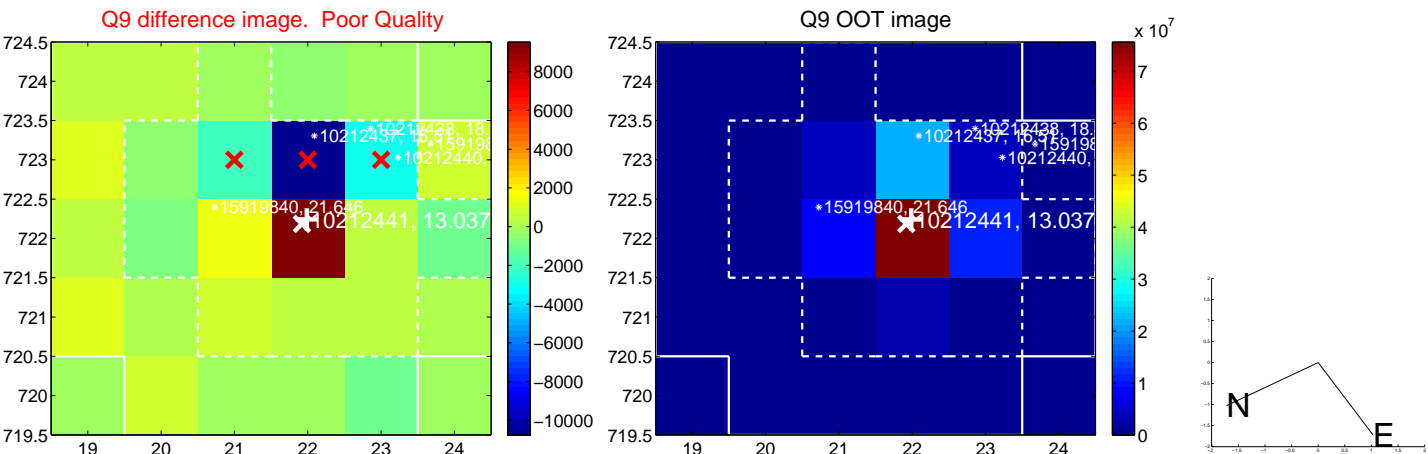
Q4 no OOT image



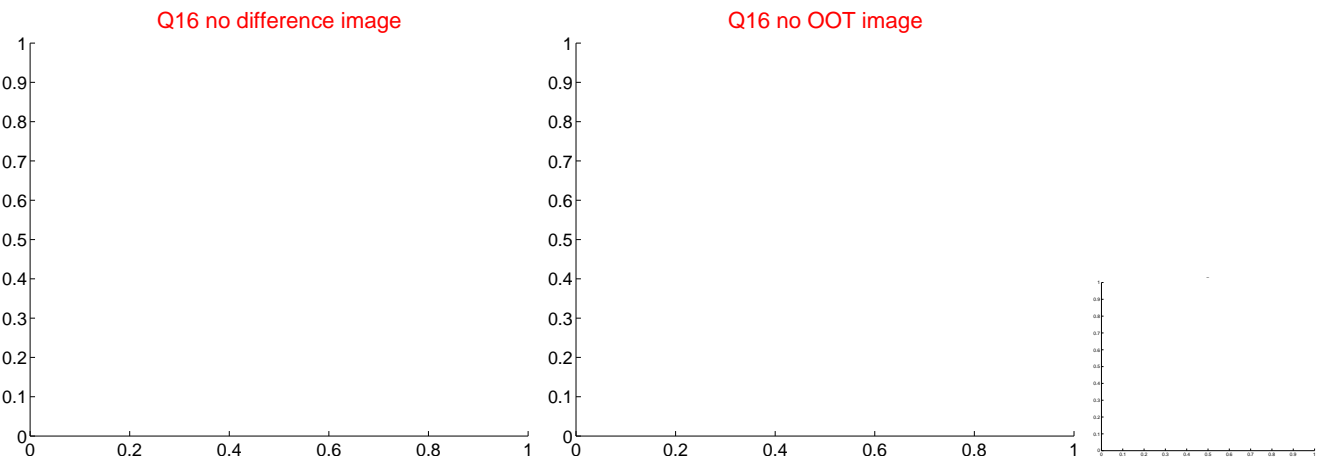
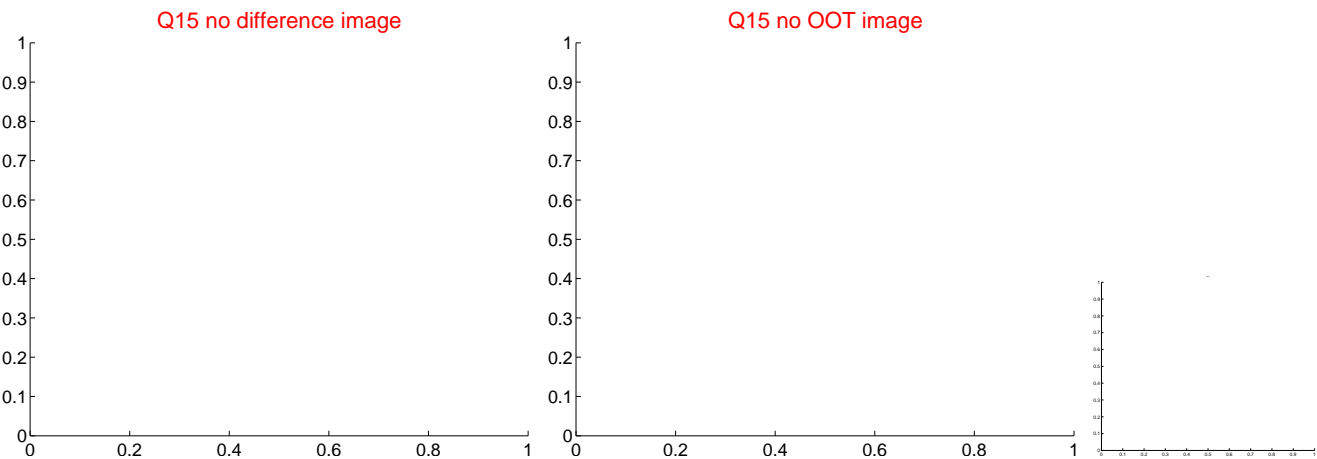
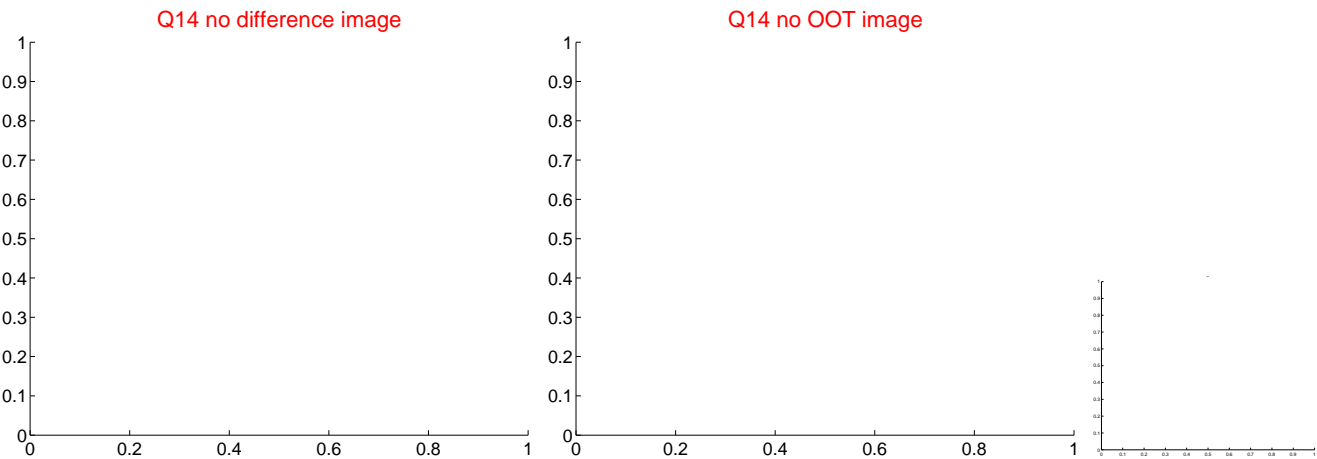
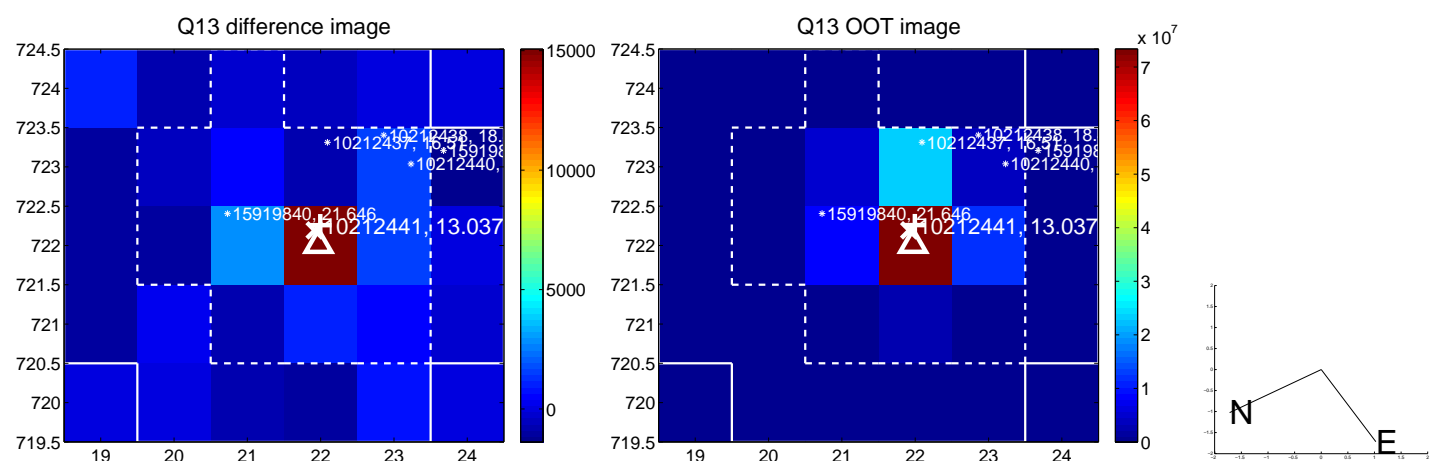
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



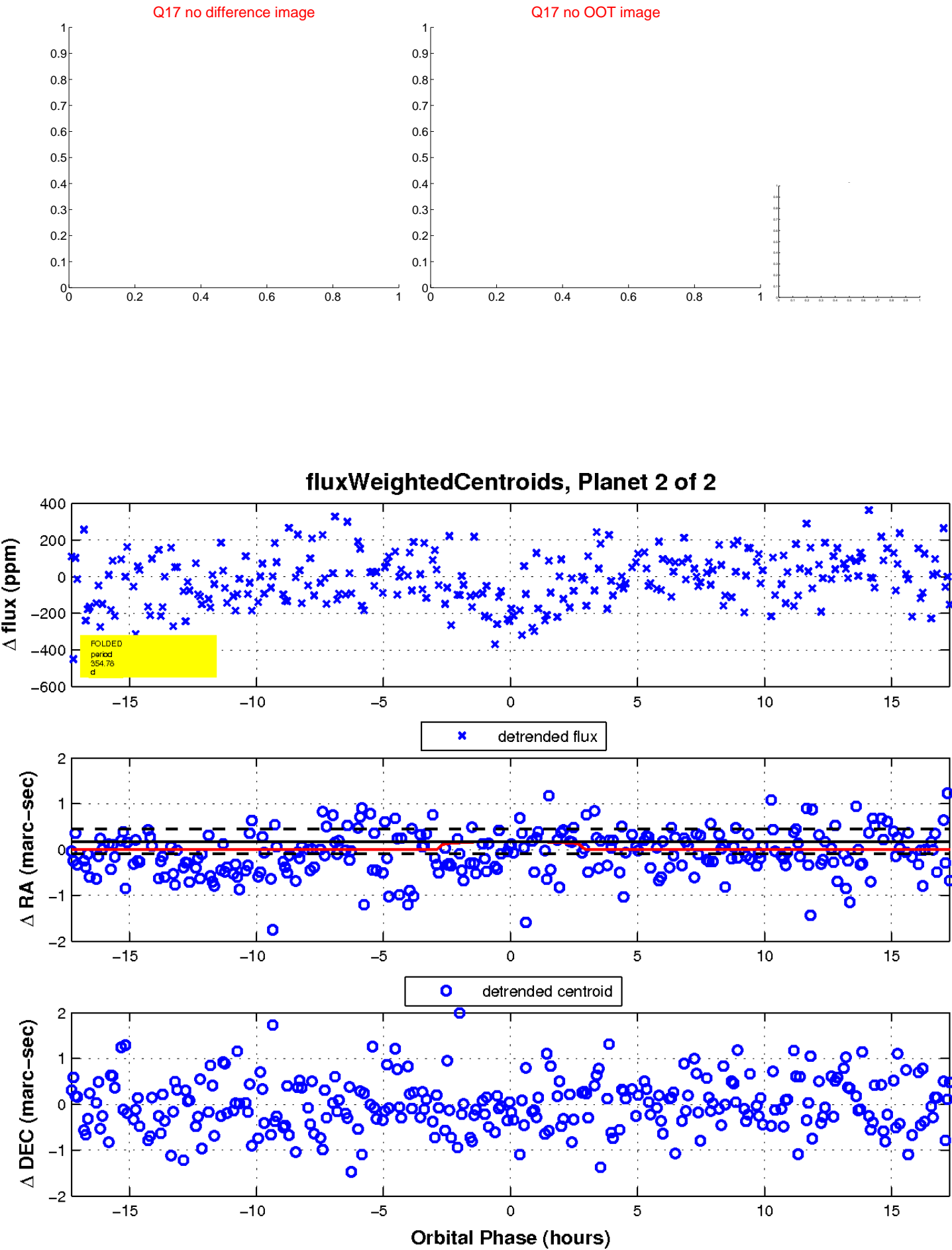
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

