

KIC 003937814

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})
003937814-01	OBS	4084.01	214.884369	213.398607	853.3	10.613	15.3	16.9	0.99	5323	3.33	1.59
003937814-02	OBS	4084.03	8.196170	135.102145	165.9	2.153	7.3	7.9	0.99	5323	1.65	124.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003937814-01	OBS	PC	0.82	0	0	0	0	NO_COMMENT
003937814-02	OBS	PC	0.41	0	0	0	0	NO_COMMENT

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.

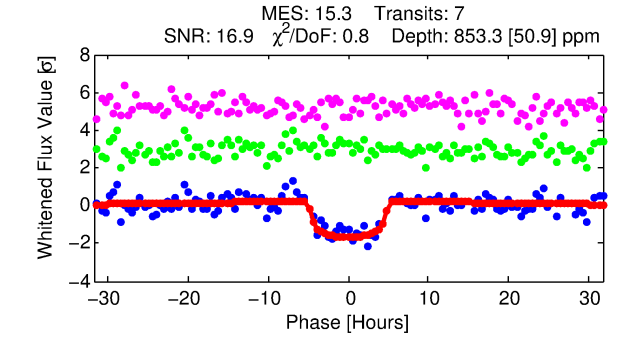
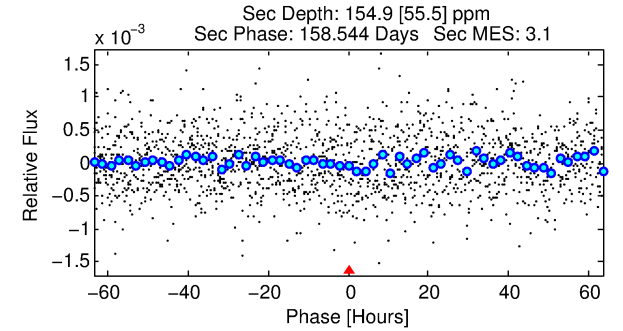
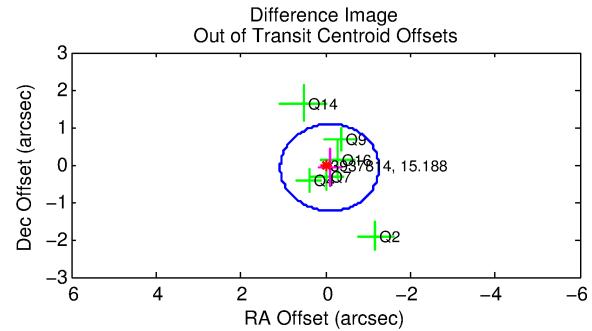
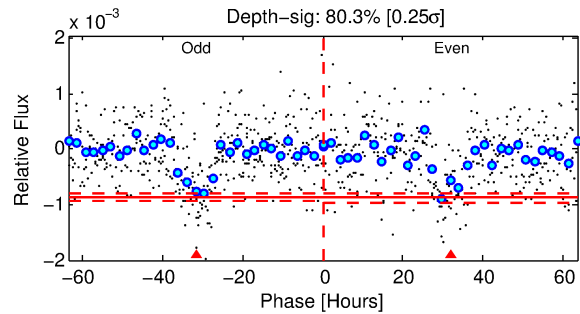
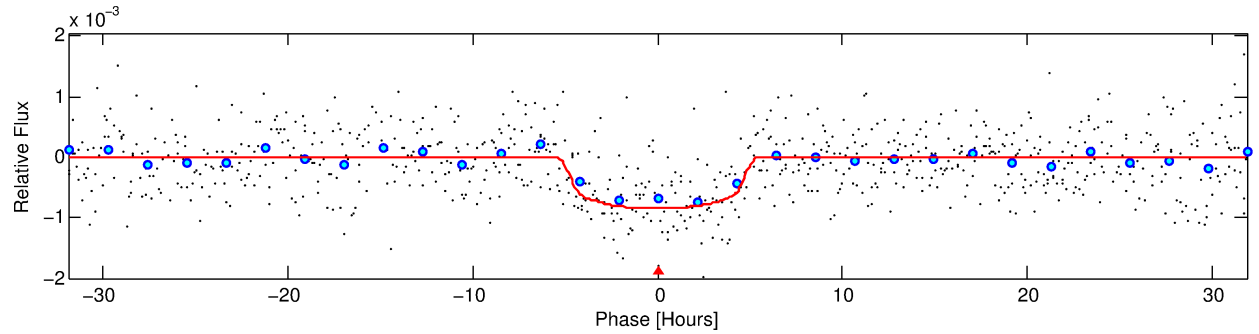
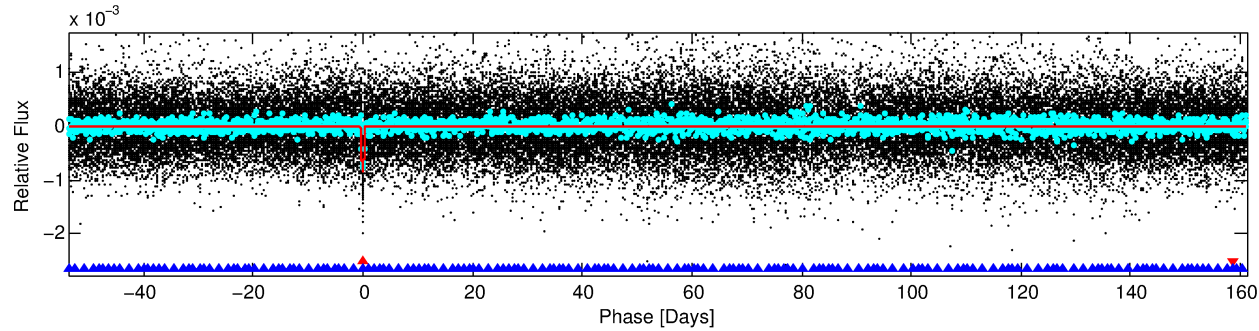
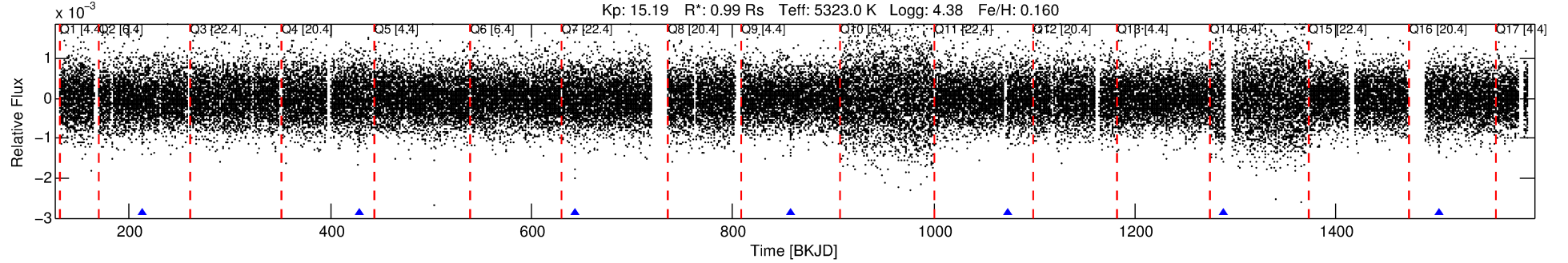
Ephemeris Match Information For 003937814-01

No Significant Match Found

DV One-Page Summary

KIC: 3937814 Candidate: 1 of 2 Period: 214.884 d

KOI: K04084.01 Corr: 0.976



DV Fit Results:

Period = 214.88437 [0.00307] d
Epoch = 213.3986 [0.0106] BKJD
Rp/R* = 0.0307 [0.0036]
a/R* = 91.95 [40.74]
b = 0.84 [0.16]
Seff = 1.59 [0.35]
Teq = 287 [16] K
Rp = 3.33 [0.60] Re
a = 0.6684 [0.0885] AU
Ag = 3427.52 [1640.69] [2.09 σ]
Teffp = 3389 [366] K [8.46 σ]

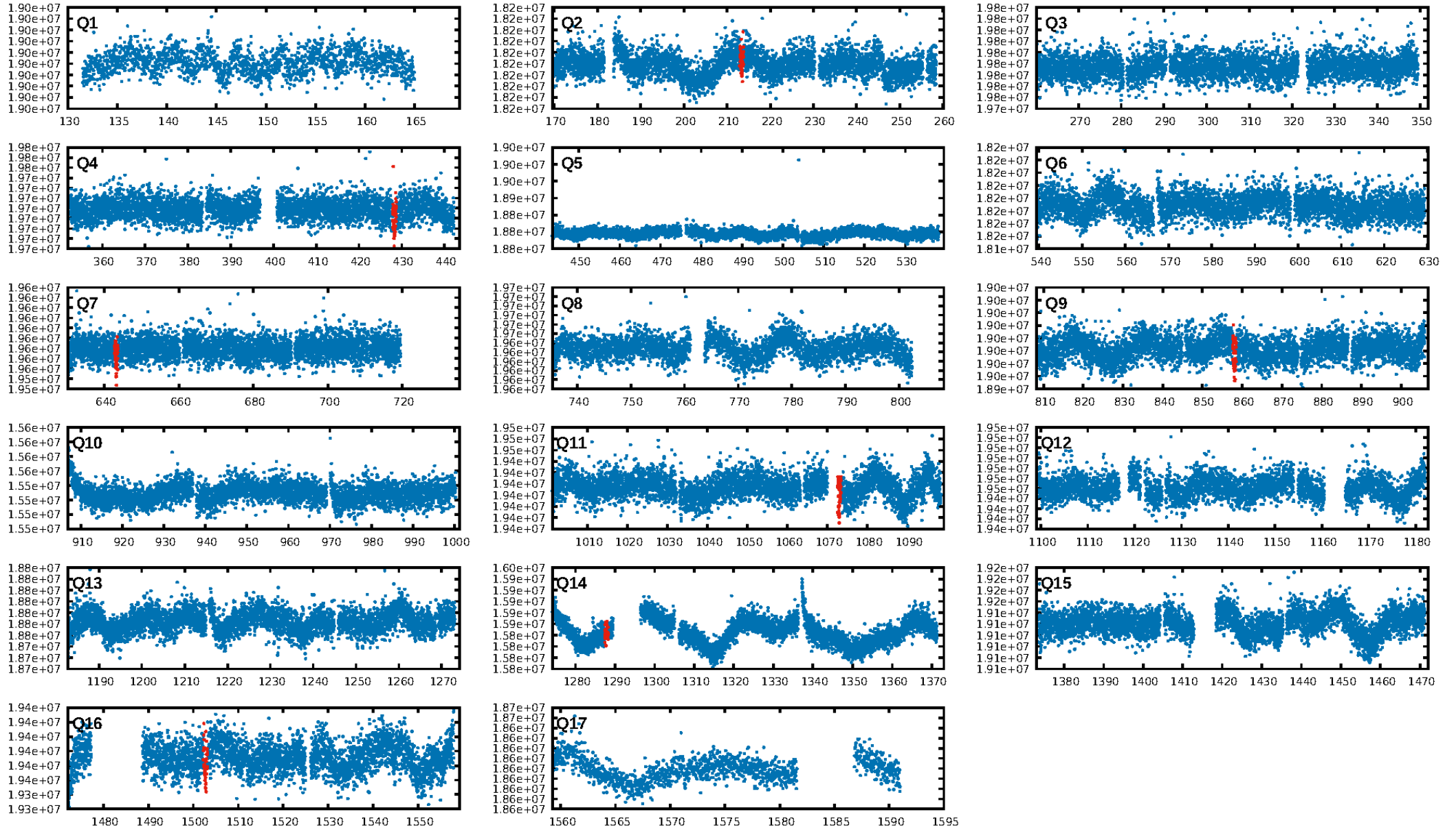
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [458.05 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 25.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.47e-46
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 1.866
Centroid-sig: 29.5%
Centroid-so: 0.462 arcsec [0.65 σ]
OotOffset-rm: 0.125 arcsec [0.32 σ]
KicOffset-rm: 0.161 arcsec [0.40 σ]
OotOffset-st: 2/1/2/1 [6]
KicOffset-st: 2/1/2/1 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 0.83 [5/6]

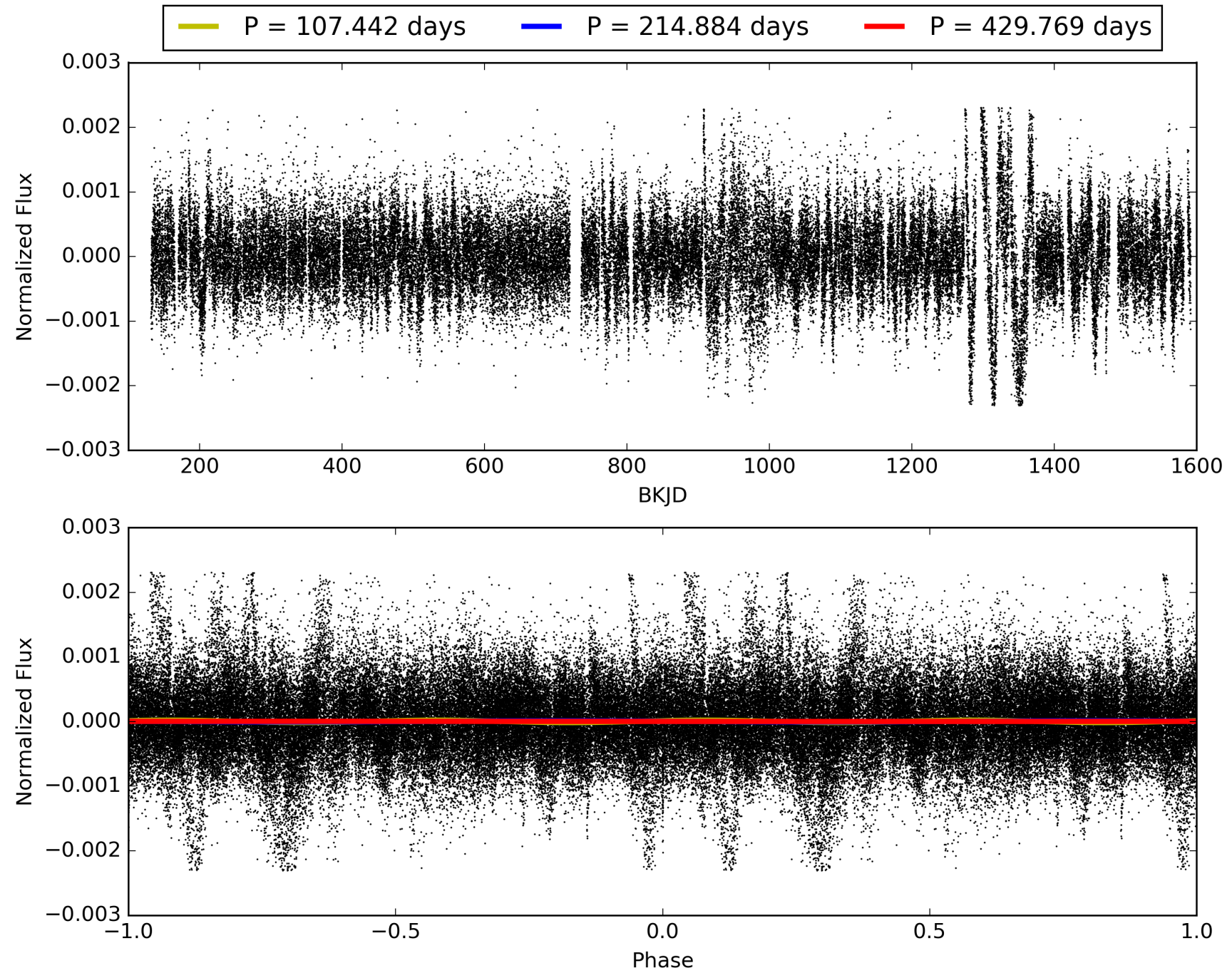
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:57:29 Z

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

TCE 003937814-01, PDC Light Curves

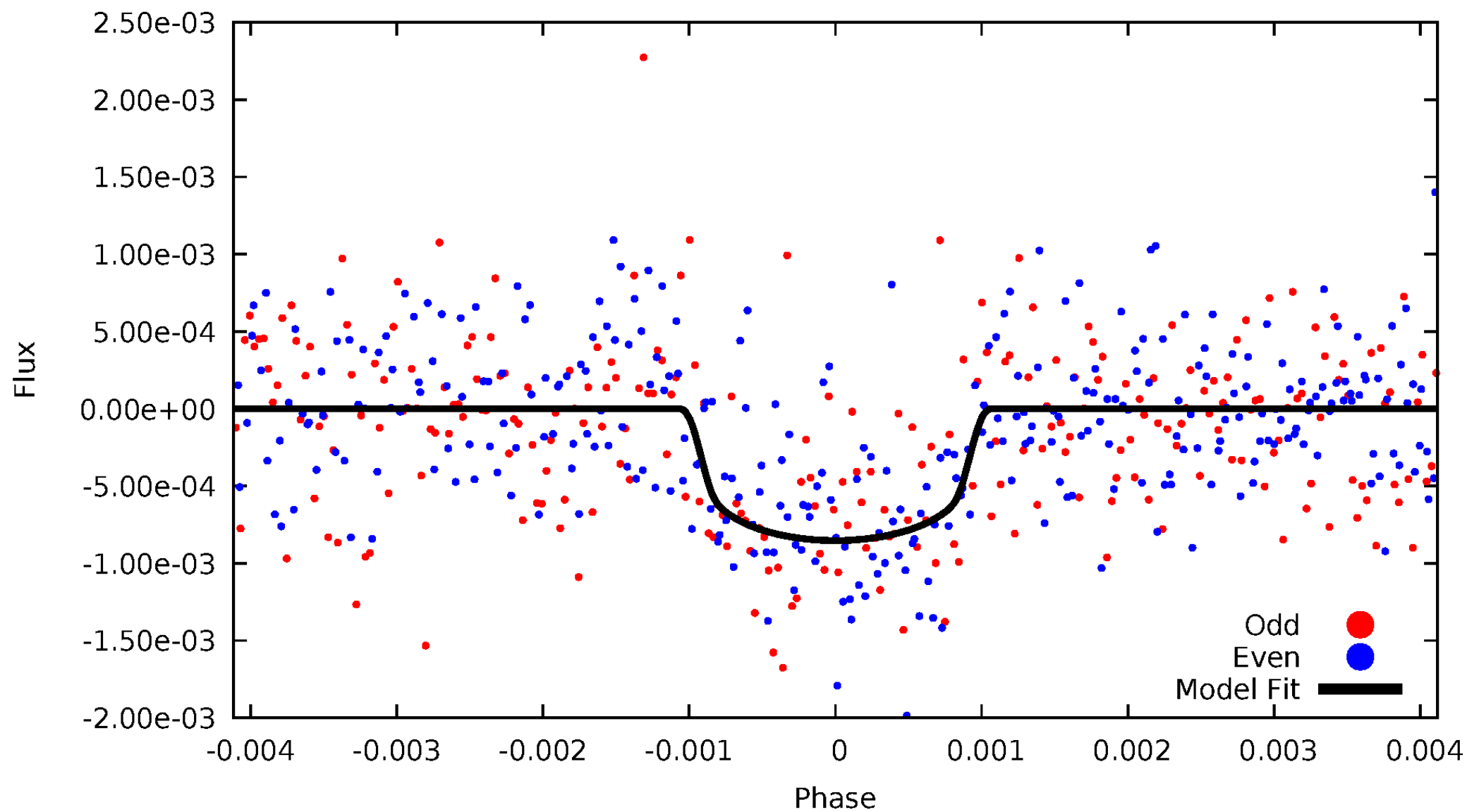


TCE 003937814-01



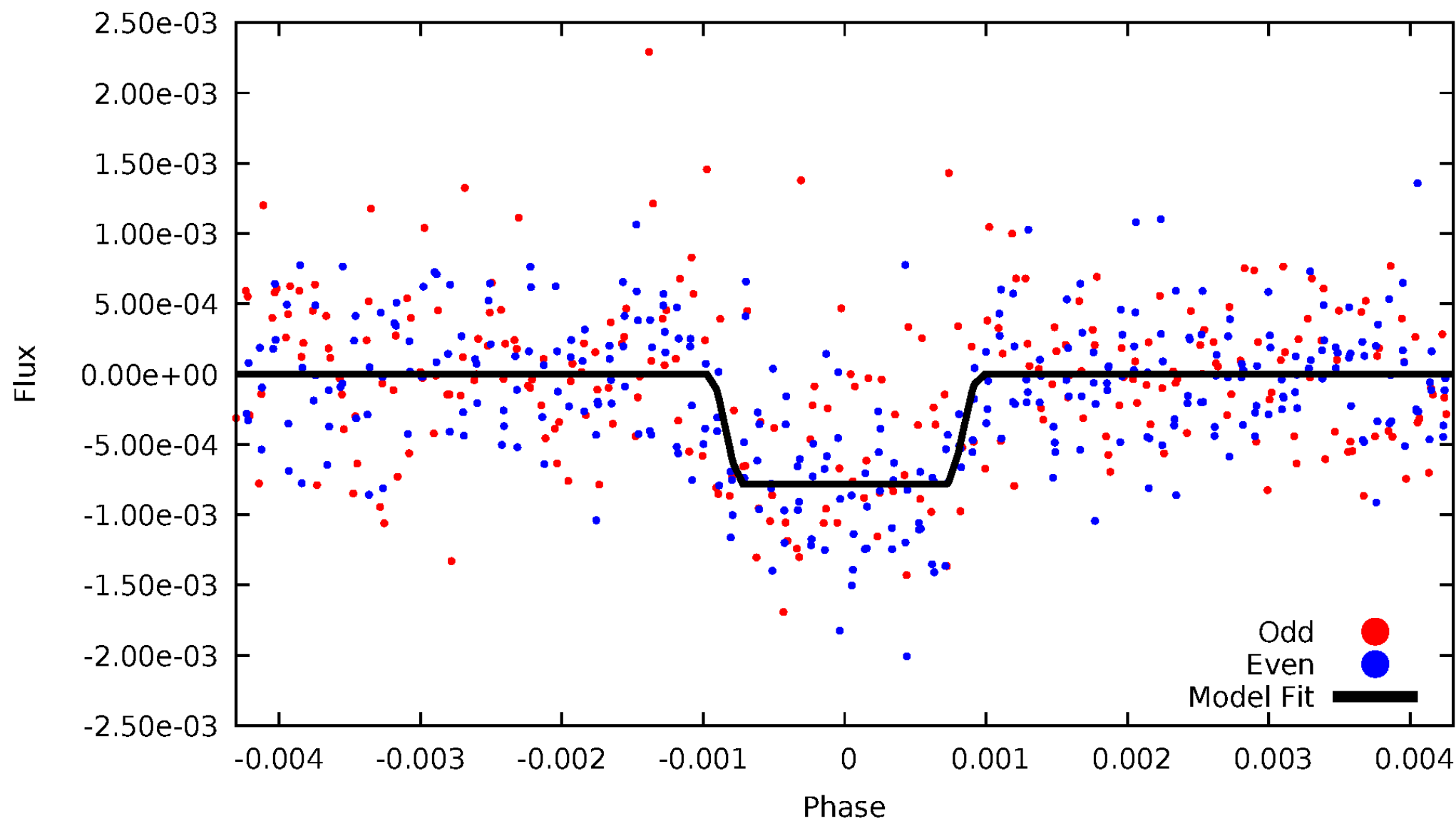
DV Odd/Even

TCE 003937814-01



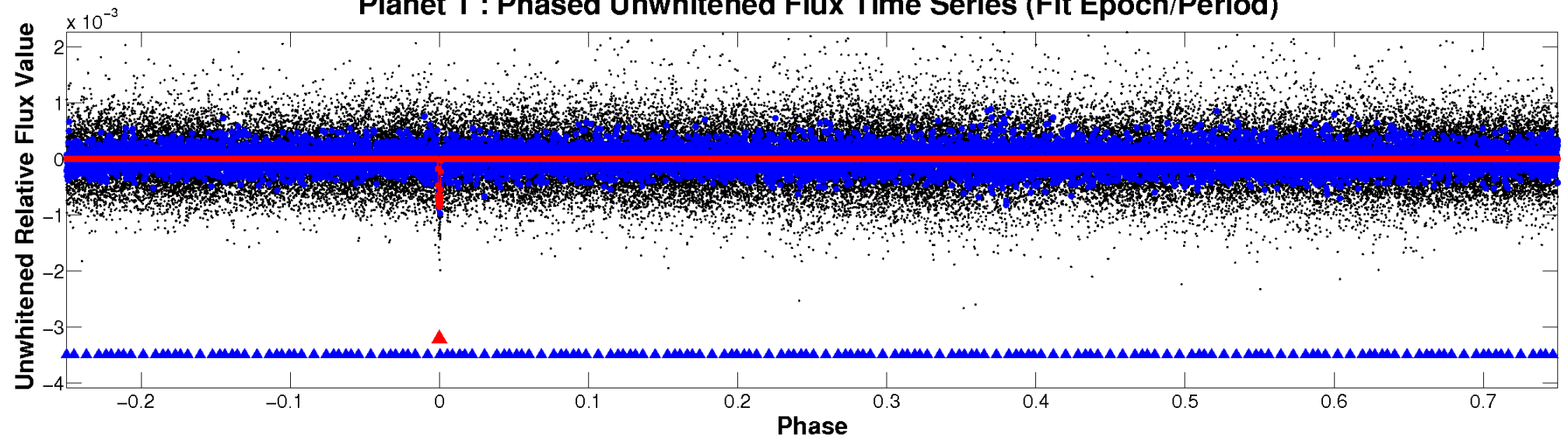
ALT Odd/Even

TCE 003937814-01

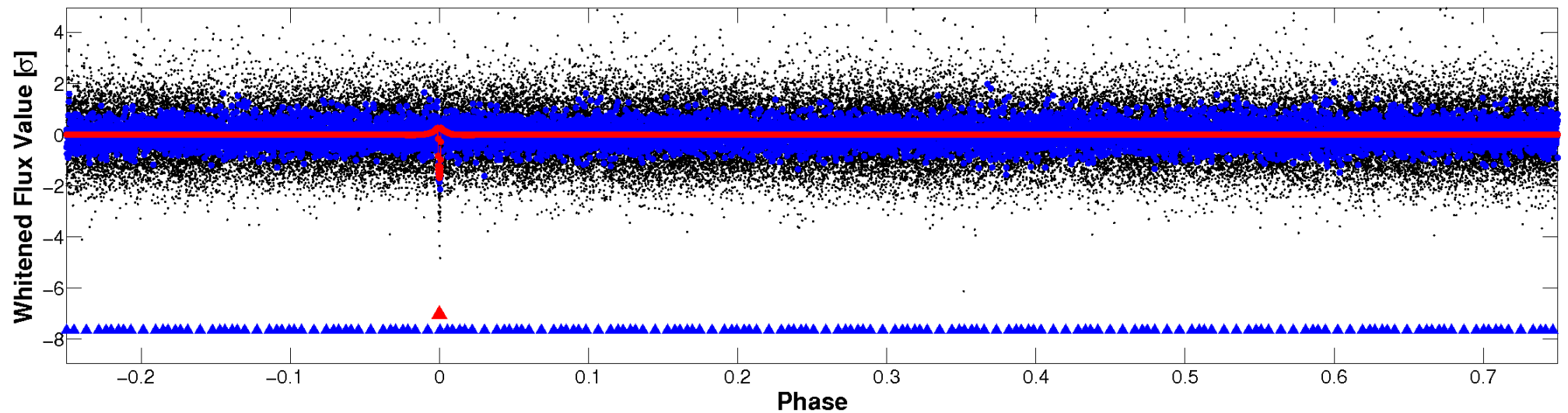


Non-Whitened Vs. Whitened Light Curve

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

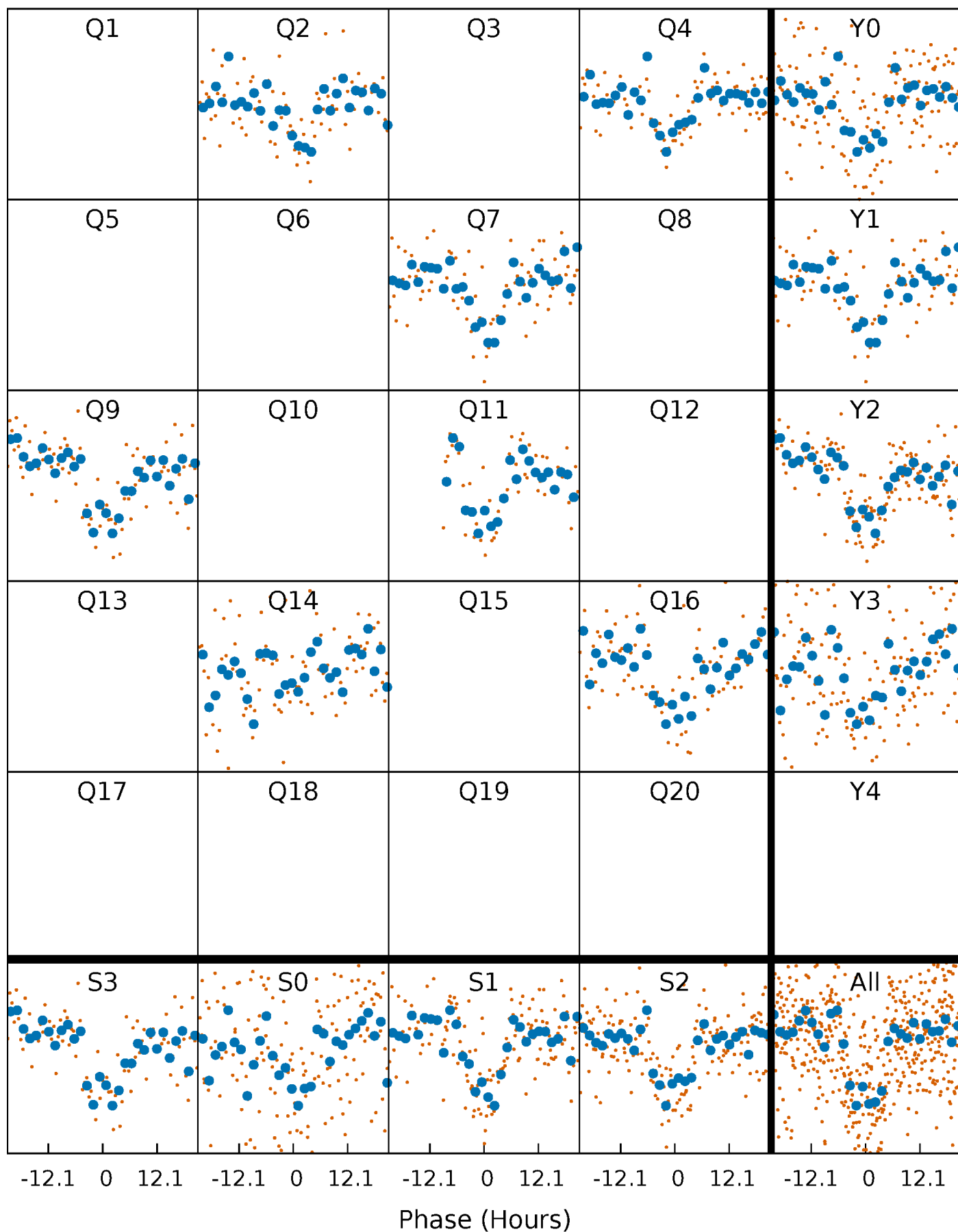


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



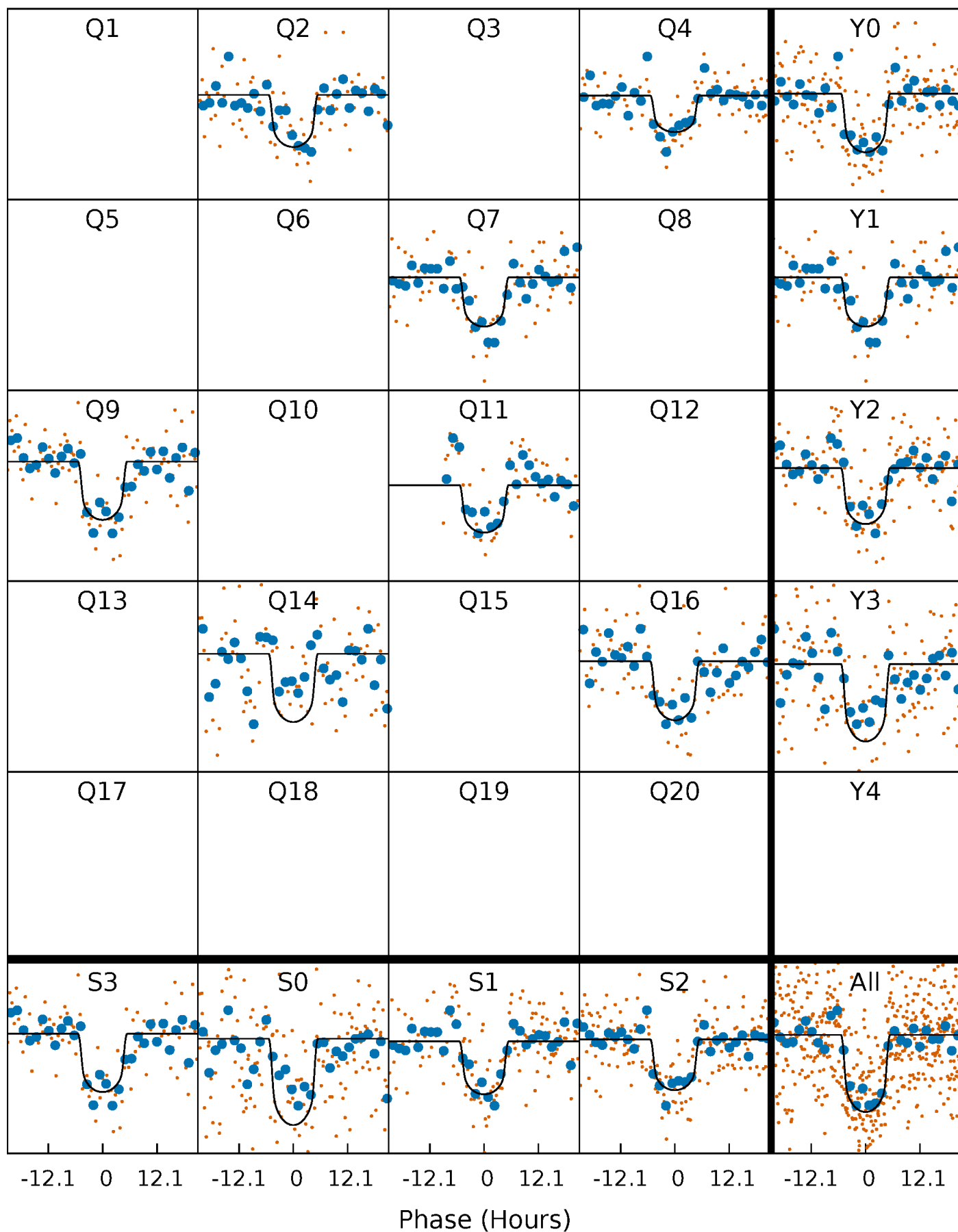
PDC Quarter-Phased Transit Curves

TCE 003937814-01 P=214.884369 Days $T_0=213.398607$ (BKJD)



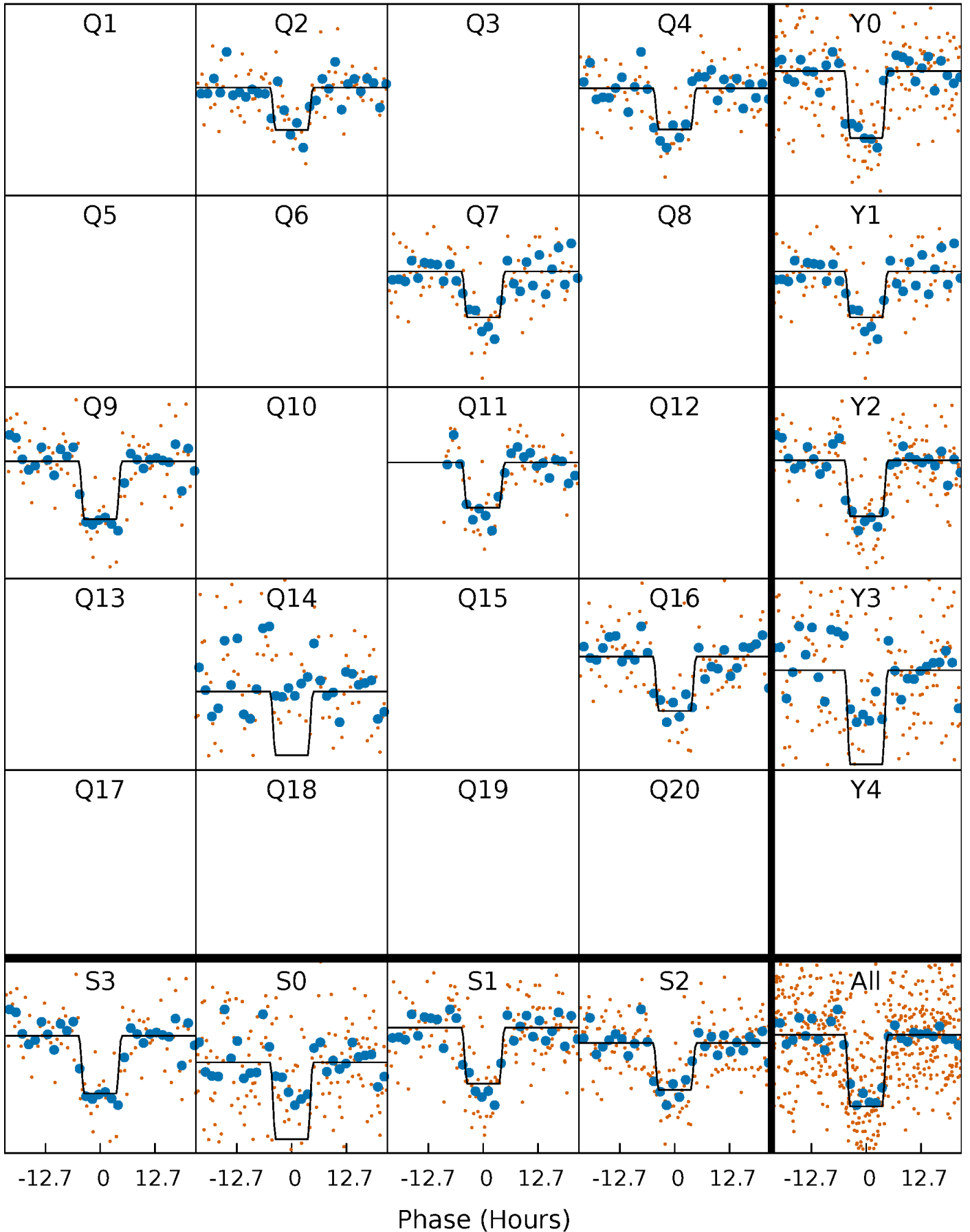
DV Quarter-Phased Transit Curves

TCE 003937814-01 P=214.884369 Days $T_0=213.398607$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

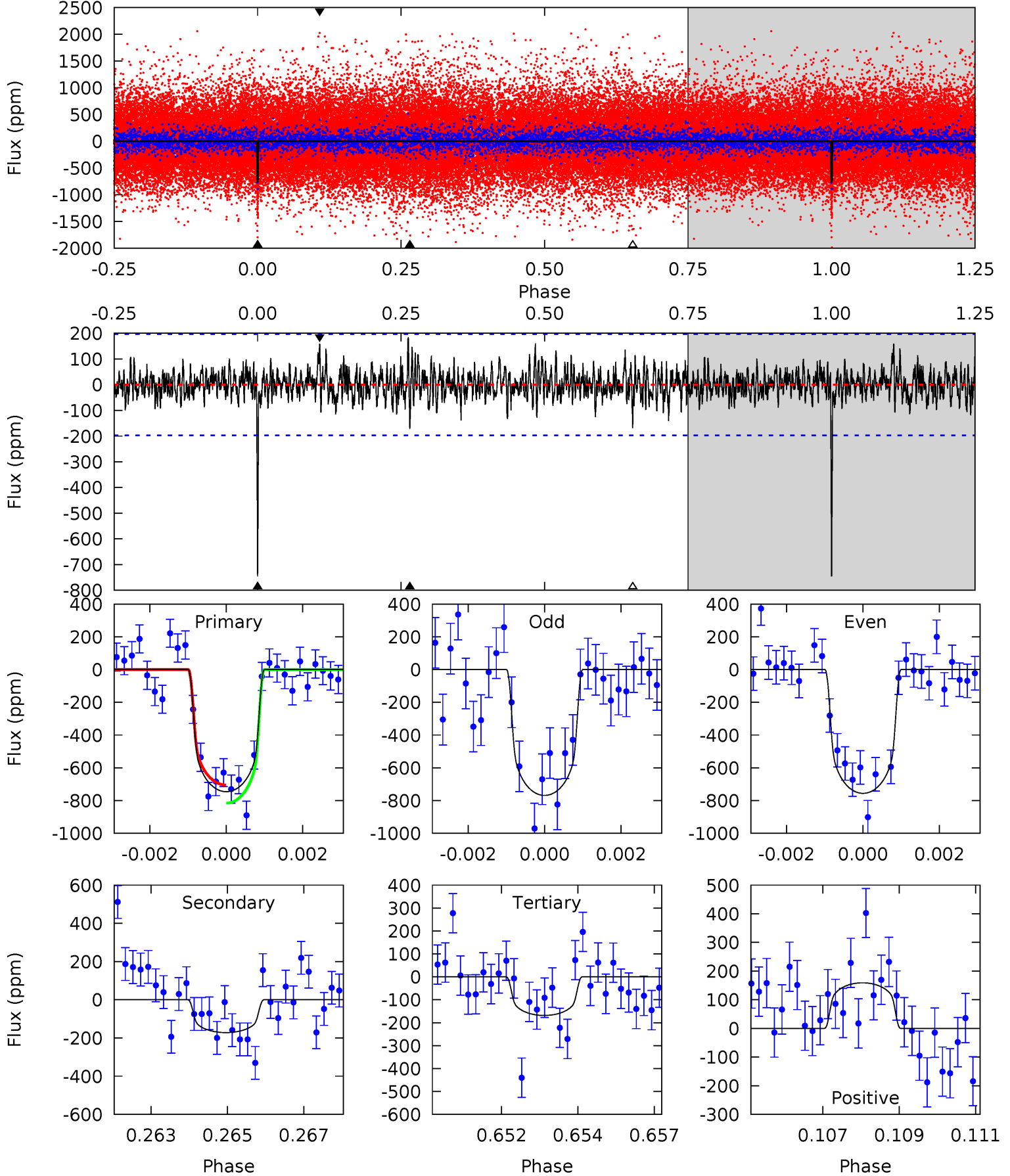
TCE 003937814-01 P=214.879317 Days $T_0=213.419208$ (BKJD)



DV Model-Shift Uniqueness Test

003937814-01, P = 214.884369 Days, E = 213.398607 Days

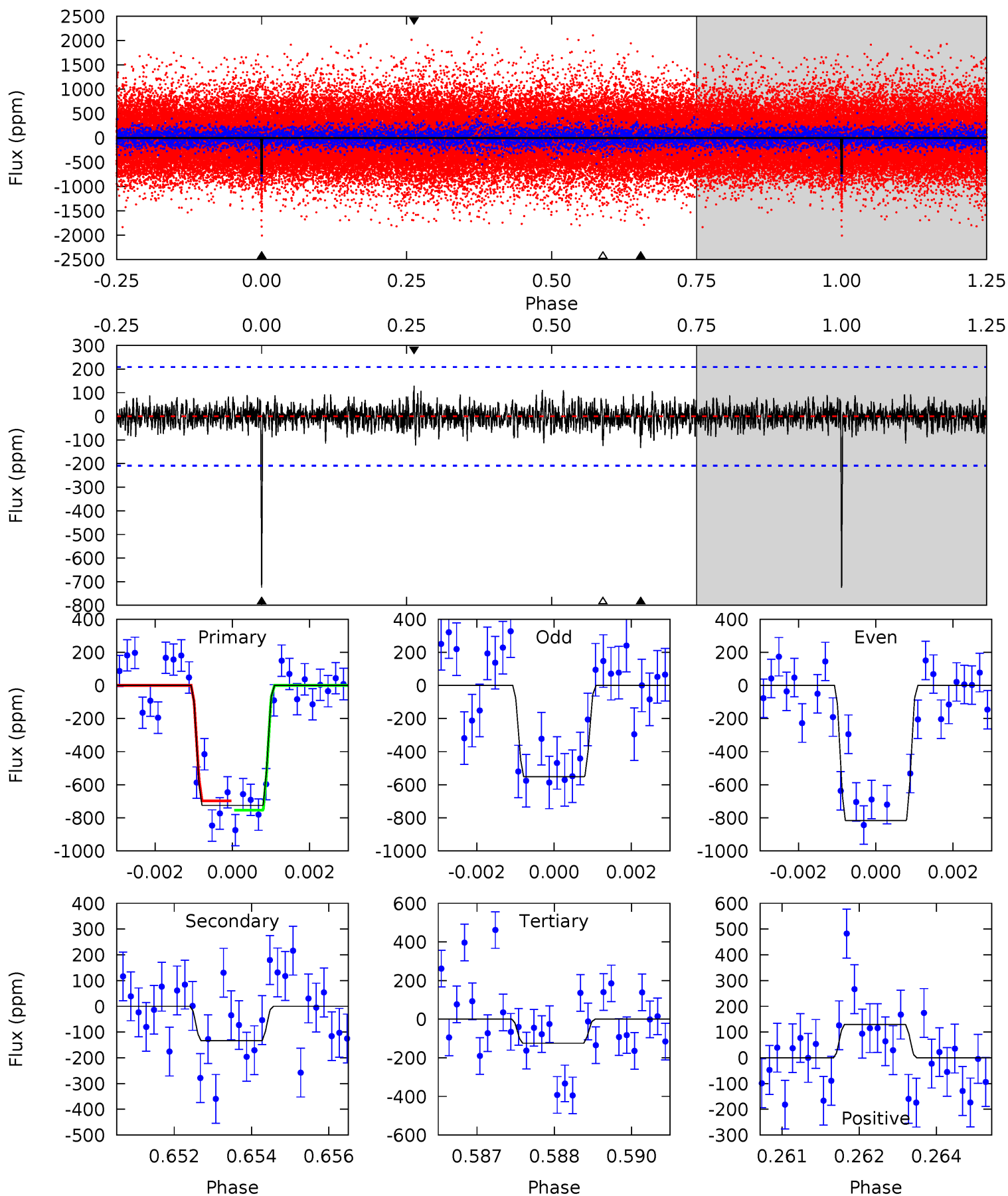
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.1	4.63	4.54	4.29	5.31	3.07	1.22	15.6	15.8	0.09	0.34	0.17	0.96	0.20	1.49



Alt Model-Shift Uniqueness Test

003937814-01, P = 214.879317 Days, E = 213.419208 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.5	3.41	3.19	3.32	5.34	3.12	0.84	15.4	15.2	0.23	0.10	3.37	0.84	0.15	0.72



Stellar Parameters For KIC 003937814

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5323^{+79}_{-79}	$4.378^{+0.126}_{-0.084}$	$0.160^{+0.150}_{-0.150}$	$0.995^{+0.111}_{-0.135}$	$0.862^{+0.064}_{-0.032}$	$1.232^{+0.646}_{-0.291}$
	+1%/-1%	+3%/-2%	+94%/-94%	+11%/-14%	+7%/-4%	+52%/-24%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 003937814-01 / KOI 4084.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-172 ± 37	$3.31^{+0.48}_{-0.45}$	399^{+14}_{-18}	3810^{+232}_{-197}	3778^{+1641}_{-1111}
Alt.	-133 ± 39	$3.02^{+0.47}_{-0.44}$	399^{+14}_{-16}	3767^{+277}_{-244}	3582^{+1897}_{-1278}

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

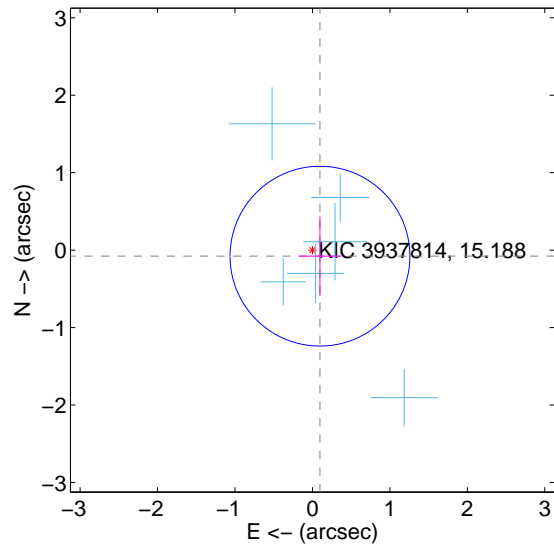
Supplemental centroid analysis for 003937814-01. Kepler magnitude: 15.19. Transit SNR 16.88

There are 6 quarters with good PRF difference image offsets

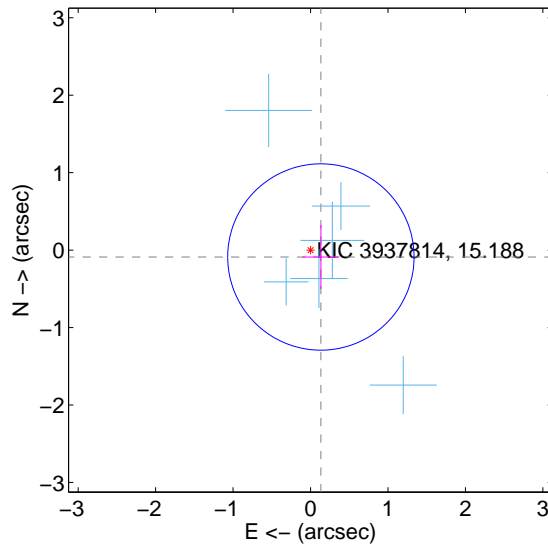
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.125 ± 0.387	0.32	-0.097 ± 0.273	-0.078 ± 0.515
PRF-fit source offset from KIC position	0.161 ± 0.401	0.40	-0.134 ± 0.238	-0.089 ± 0.413
photometric centroid source offset	0.46 ± 0.71	0.65	-0.06 ± 0.65	0.46 ± 0.72

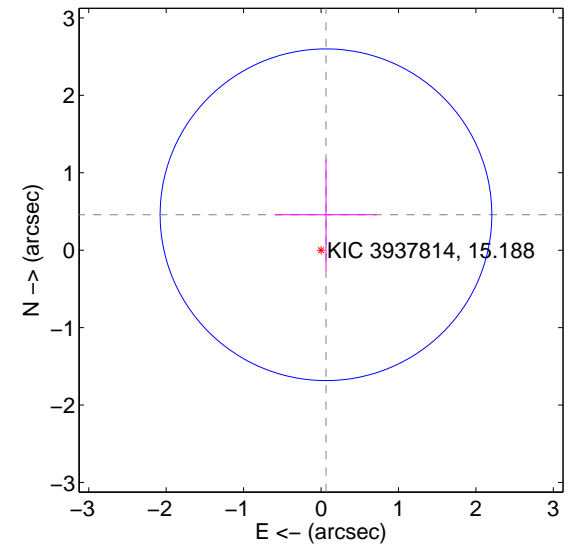
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

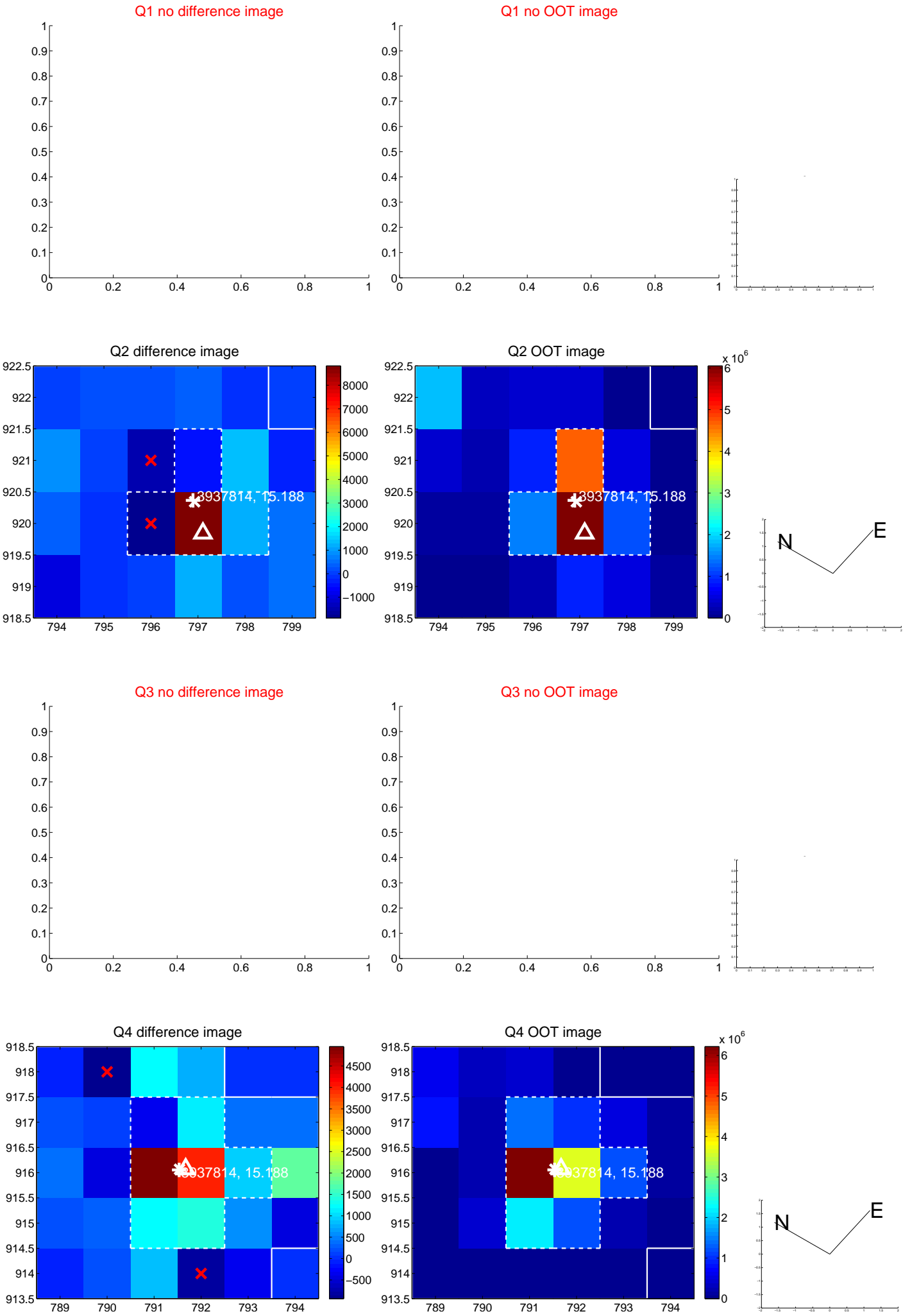


offset from photometric centroids

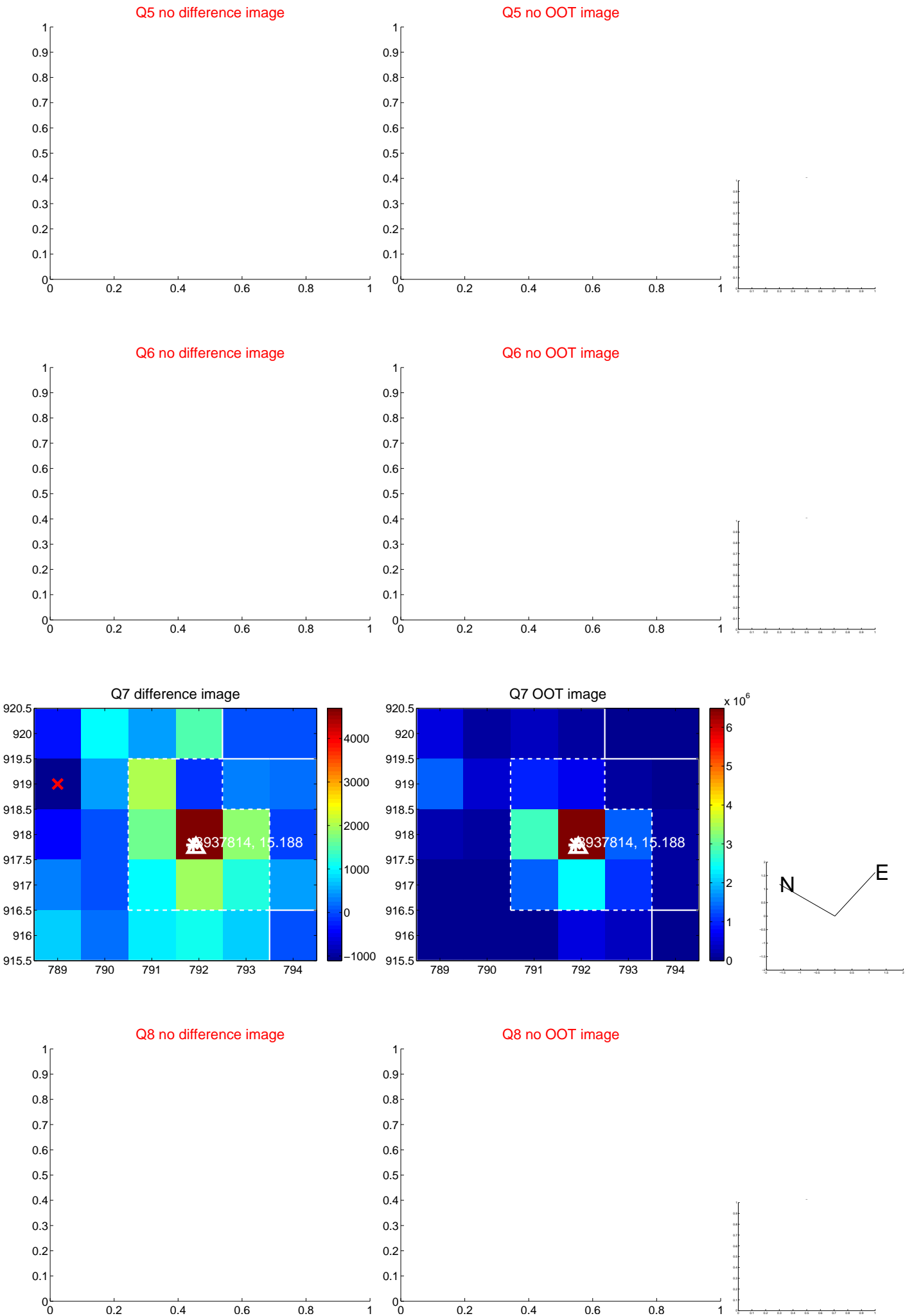


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

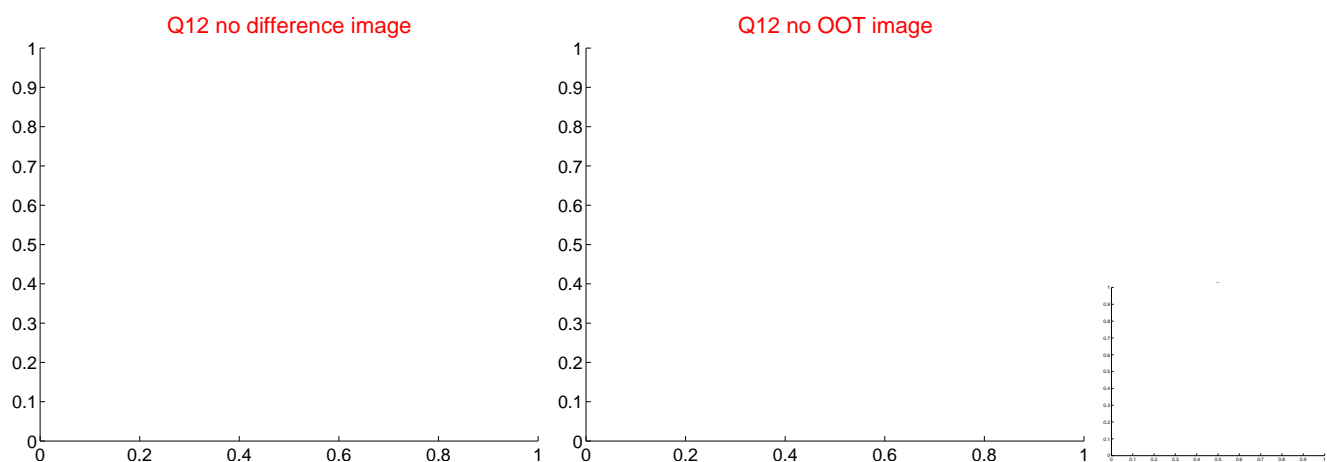
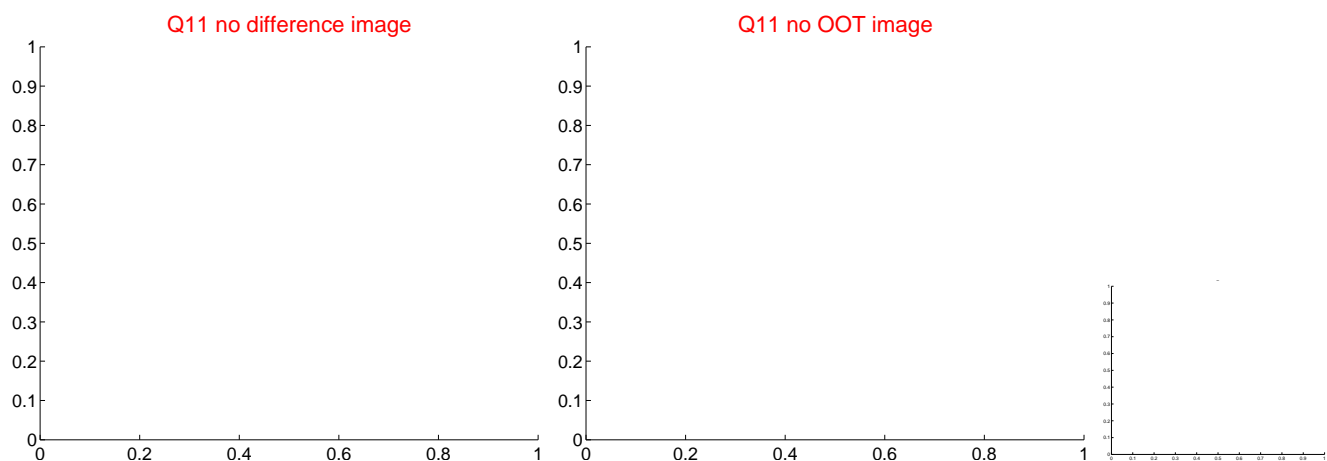
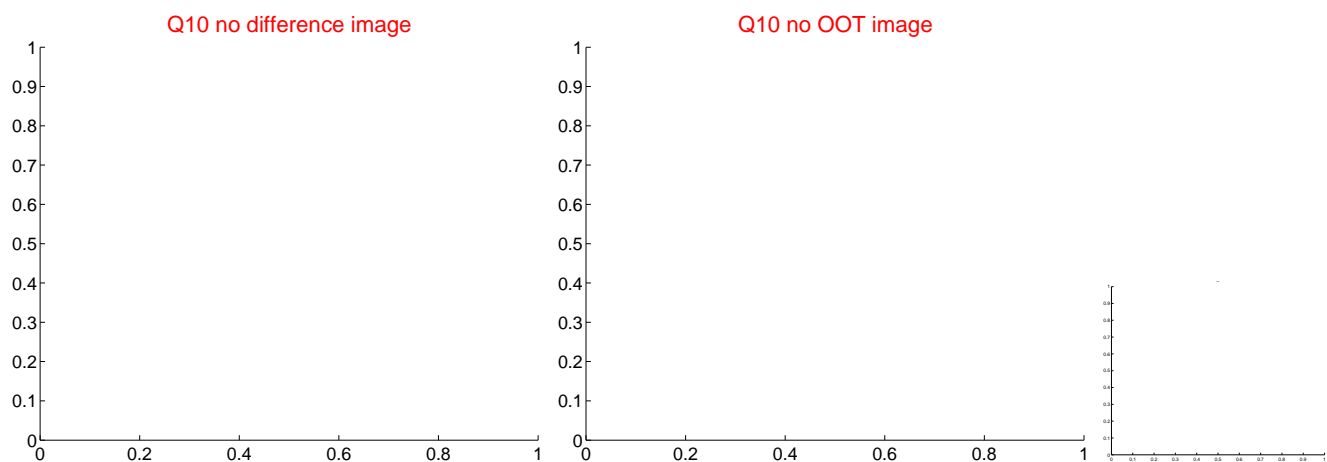
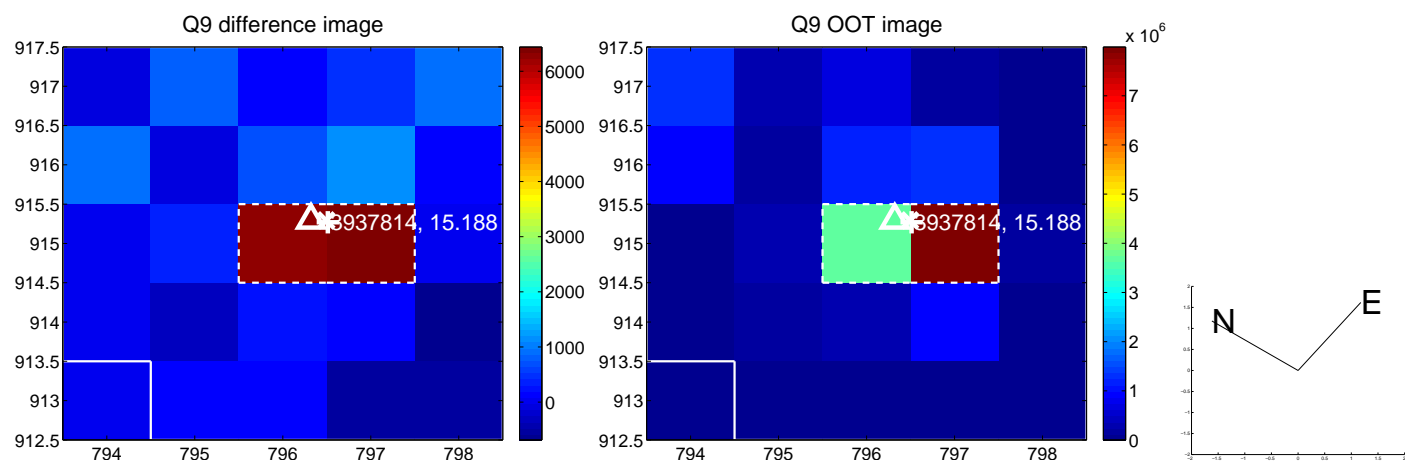
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



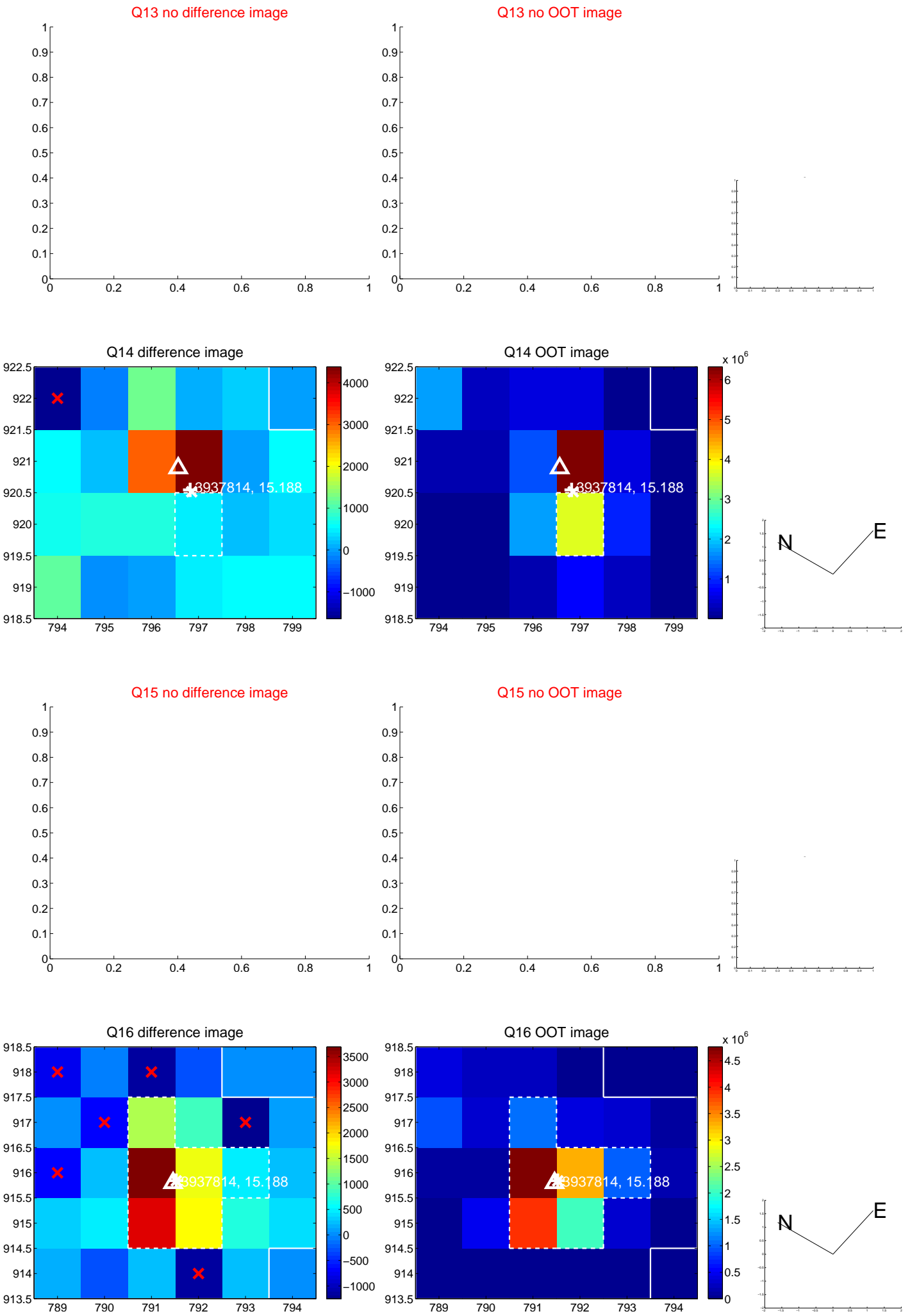
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



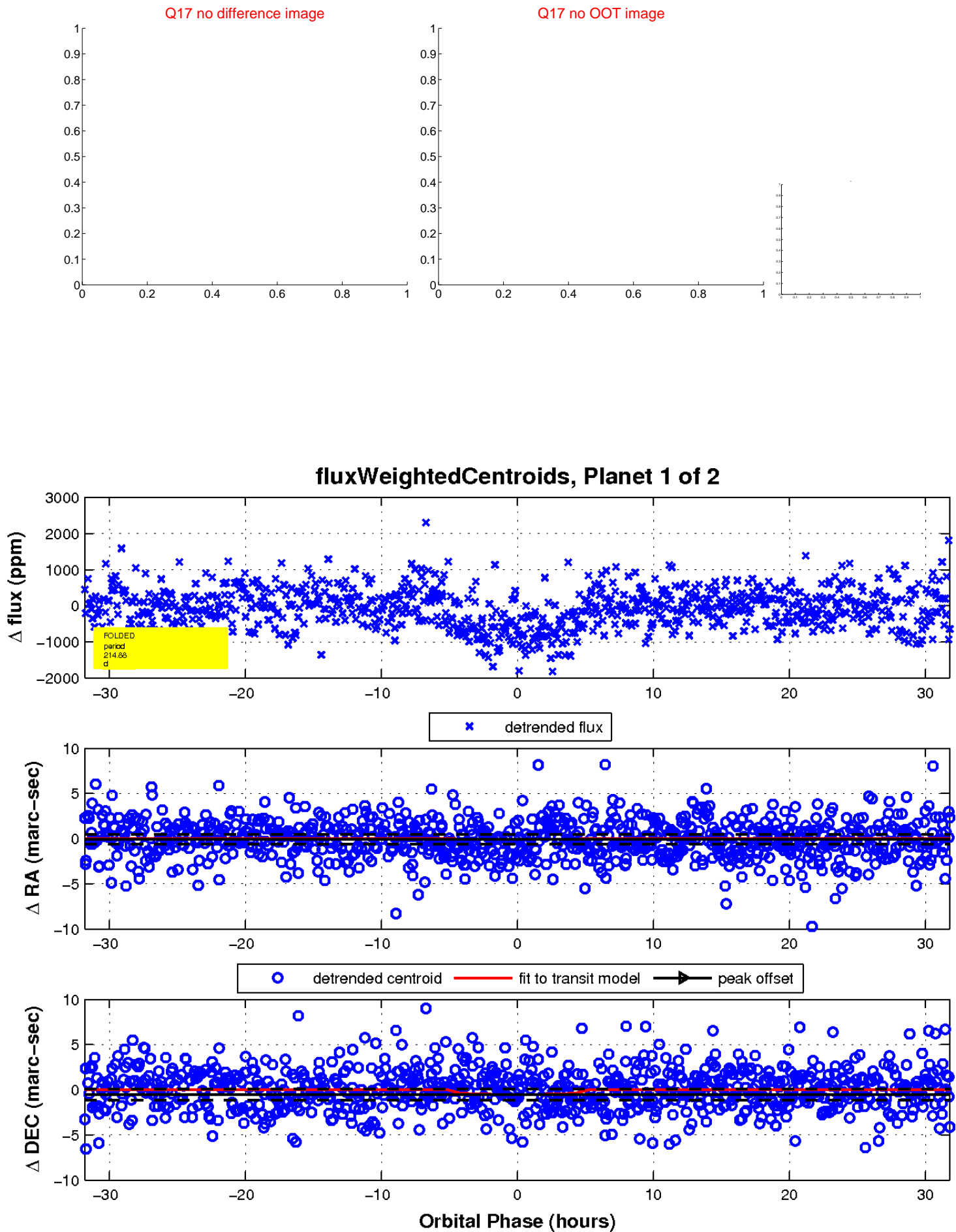
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

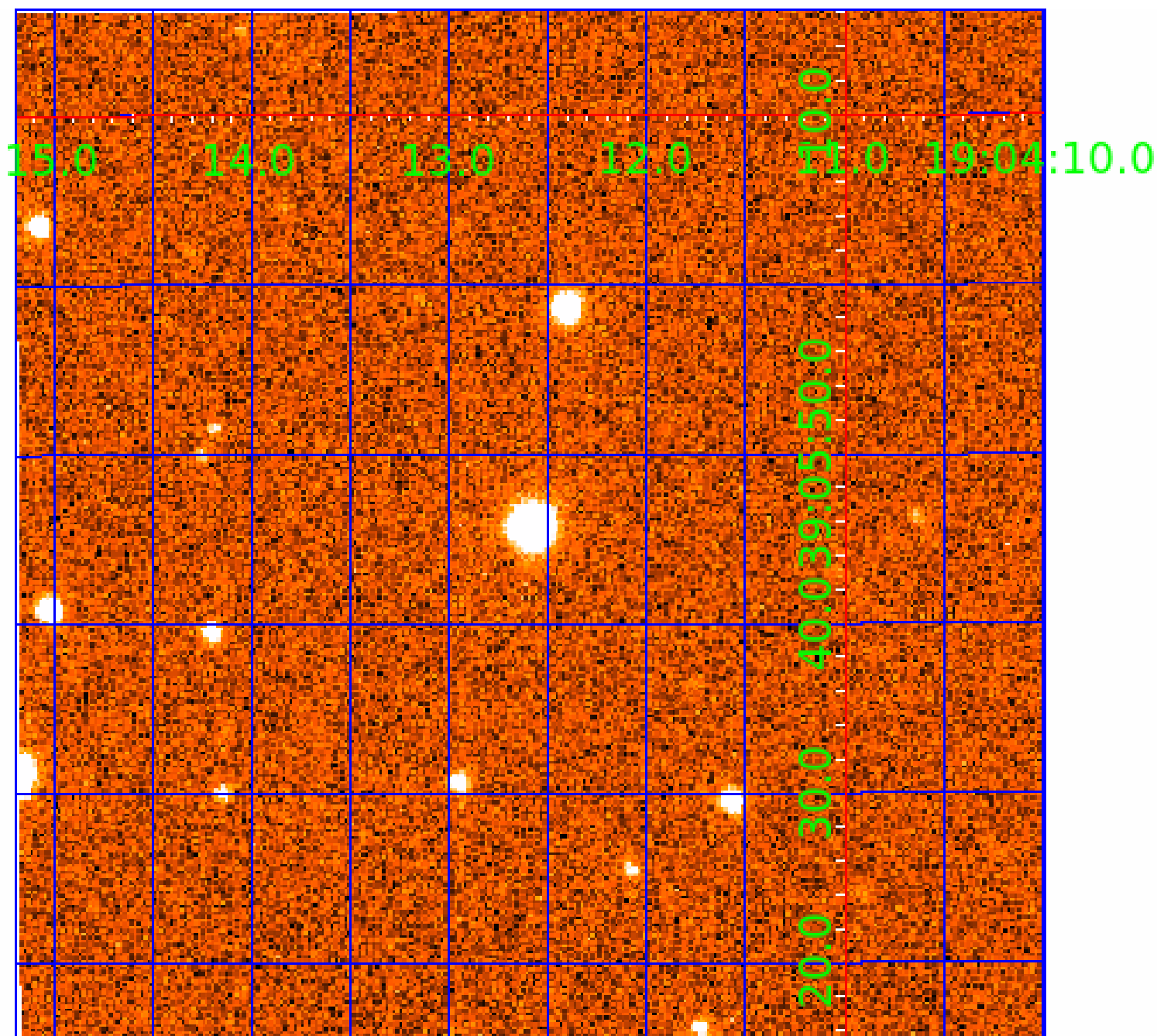


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003937814

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})
003937814-01	OBS	4084.01	214.884369	213.398607	853.3	10.613	15.3	16.9	0.99	5323	3.33	1.59
003937814-02	OBS	4084.03	8.196170	135.102145	165.9	2.153	7.3	7.9	0.99	5323	1.65	124.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003937814-01	OBS	PC	0.82	0	0	0	0	NO_COMMENT
003937814-02	OBS	PC	0.41	0	0	0	0	NO_COMMENT

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.

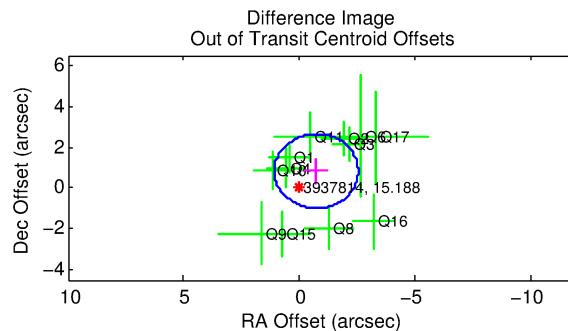
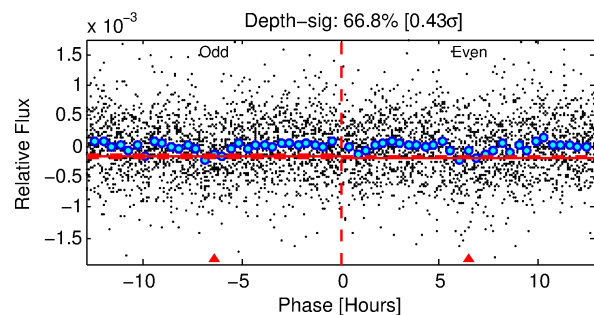
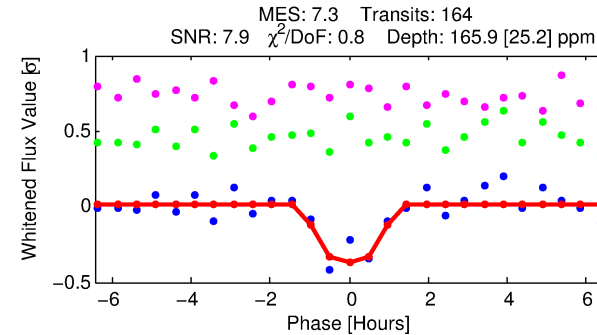
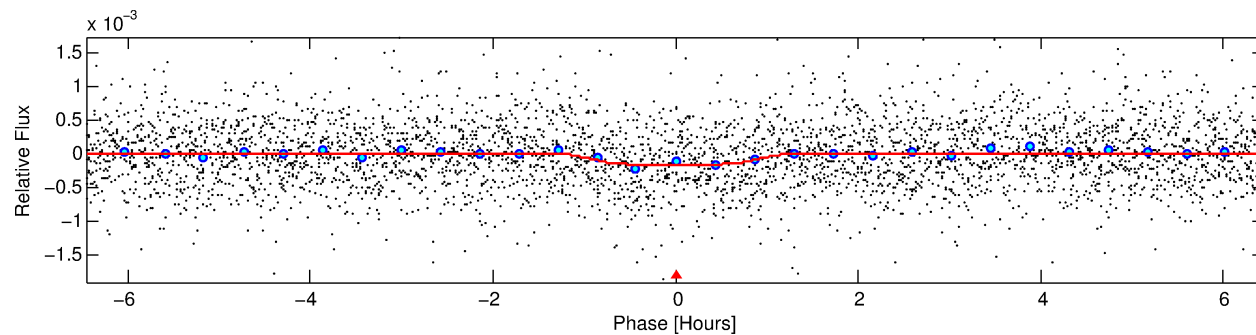
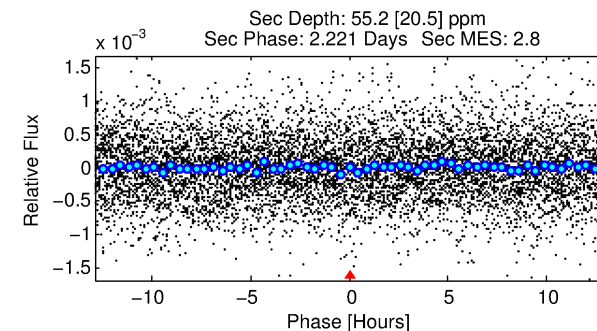
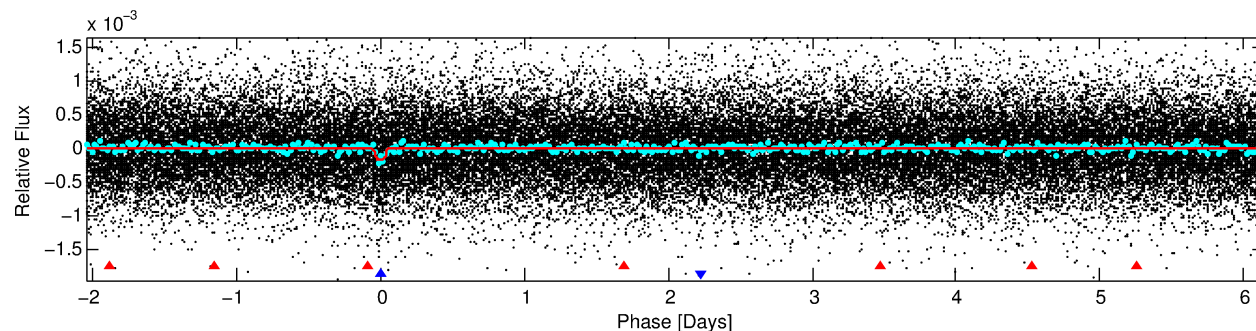
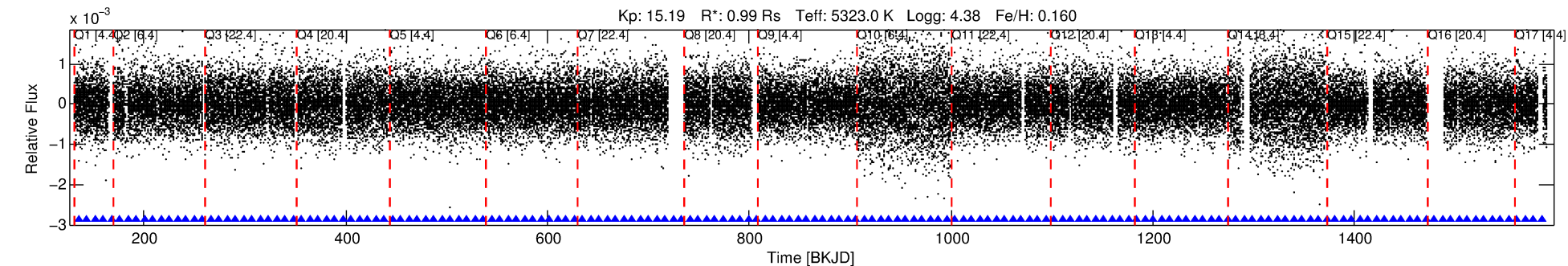
Ephemeris Match Information For 003937814-02

No Significant Match Found

DV One-Page Summary

KIC: 3937814 Candidate: 2 of 2 Period: 8.196 d

KOI: K04084.03 Corr: 0.921



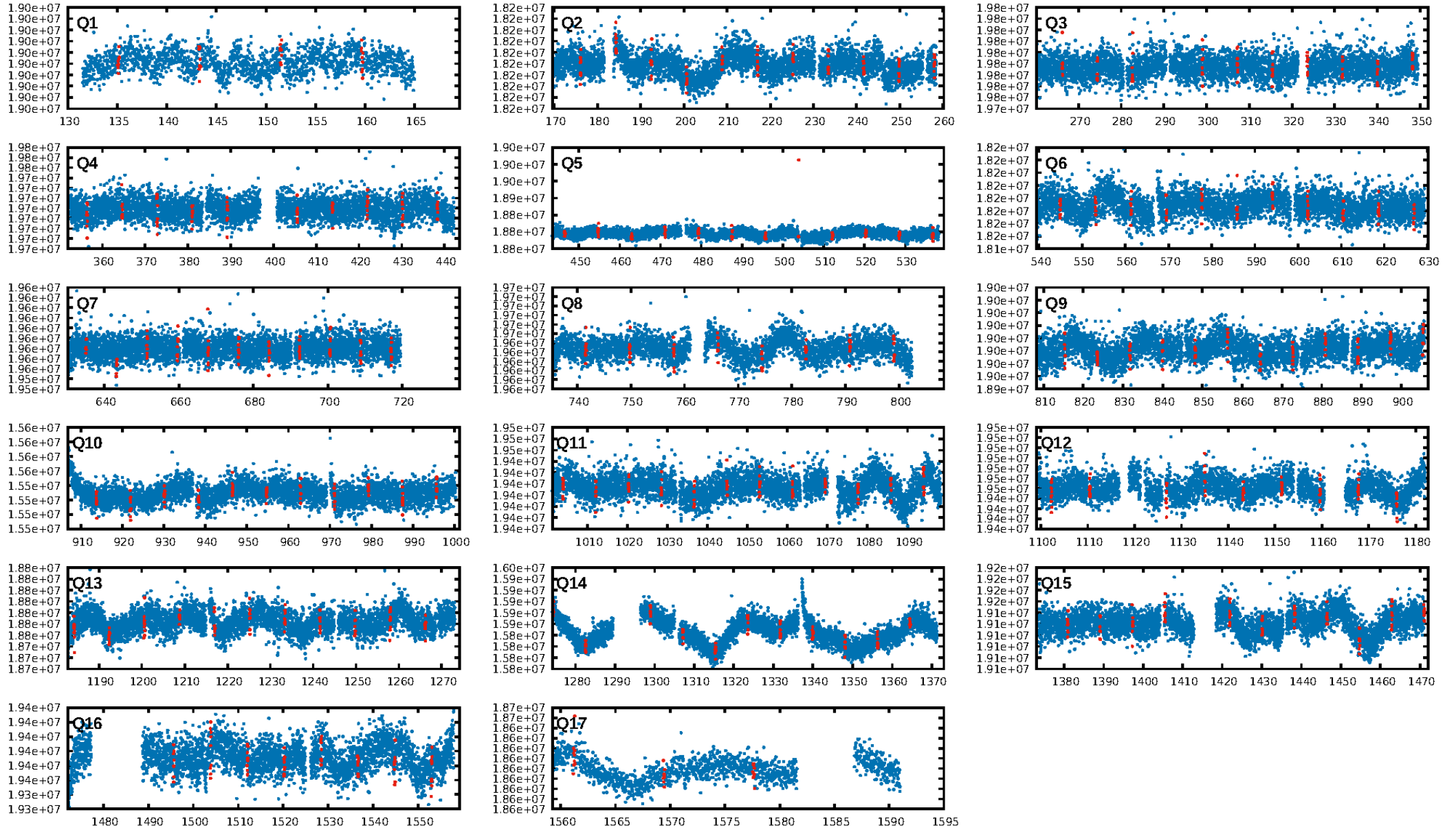
DV Fit Results:

Period = 8.19617 [0.00007] d
Epoch = 135.1021 [0.0064] BKJD
Rp/R* = 0.0152 [0.0087]
a/R* = 10.98 [28.27]
b = 0.94 [0.31]
Seff = 124.14 [27.51]
Teff = 851 [47] K
Rp = 1.65 [0.98] Re
a = 0.0757 [0.0100] AU
Ag = 64.27 [79.10] [0.80σ]
Teffp = 3726 [1130] K [2.54σ]

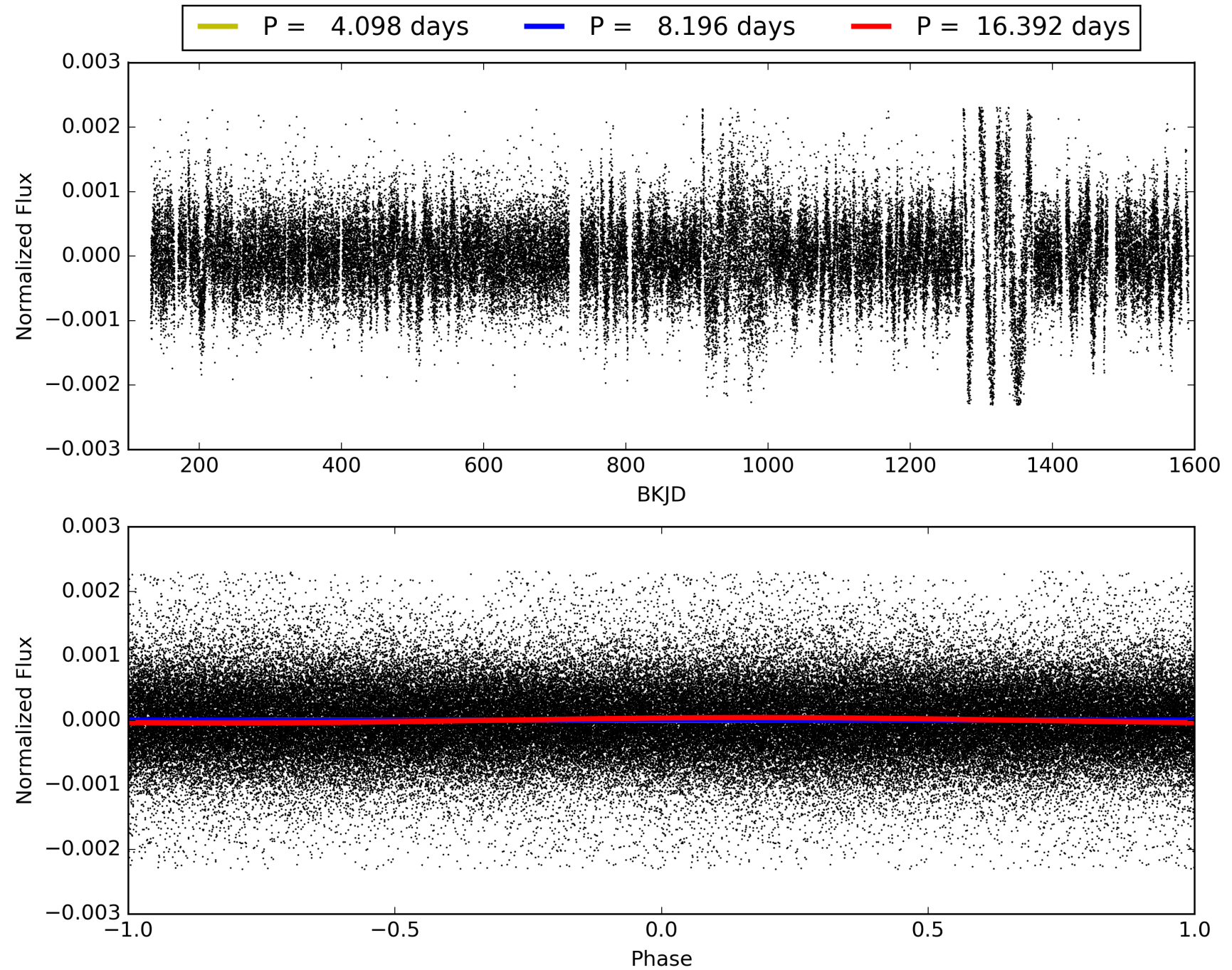
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [458.05σ]
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.86e-13
RollingBand-fgt: 1.00 [157/157]
GhostDiagnostic-chr: 1.604
Centroid-sig: 96.0%
Centroid-so: 0.485 arcsec [0.32σ]
OotOffset-rm: 1.105 arcsec [1.83σ]
KicOffset-rm: 1.157 arcsec [1.80σ]
OotOffset-st: 3/3/3/3 [12]
KicOffset-st: 3/3/3/3 [12]
DiffImageQuality-fgm: 0.42 [5/12]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 003937814-02, PDC Light Curves

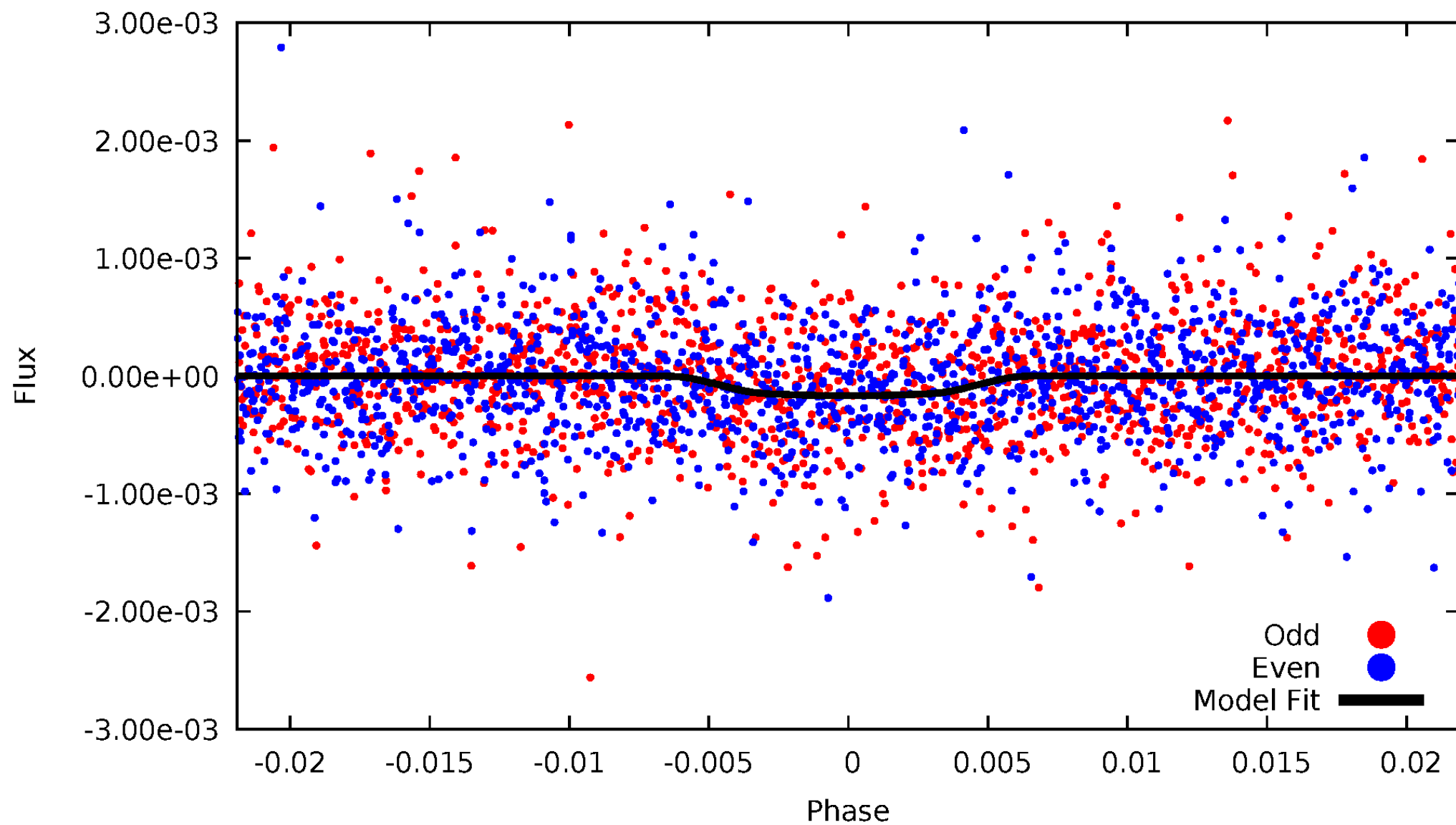


TCE 003937814-02



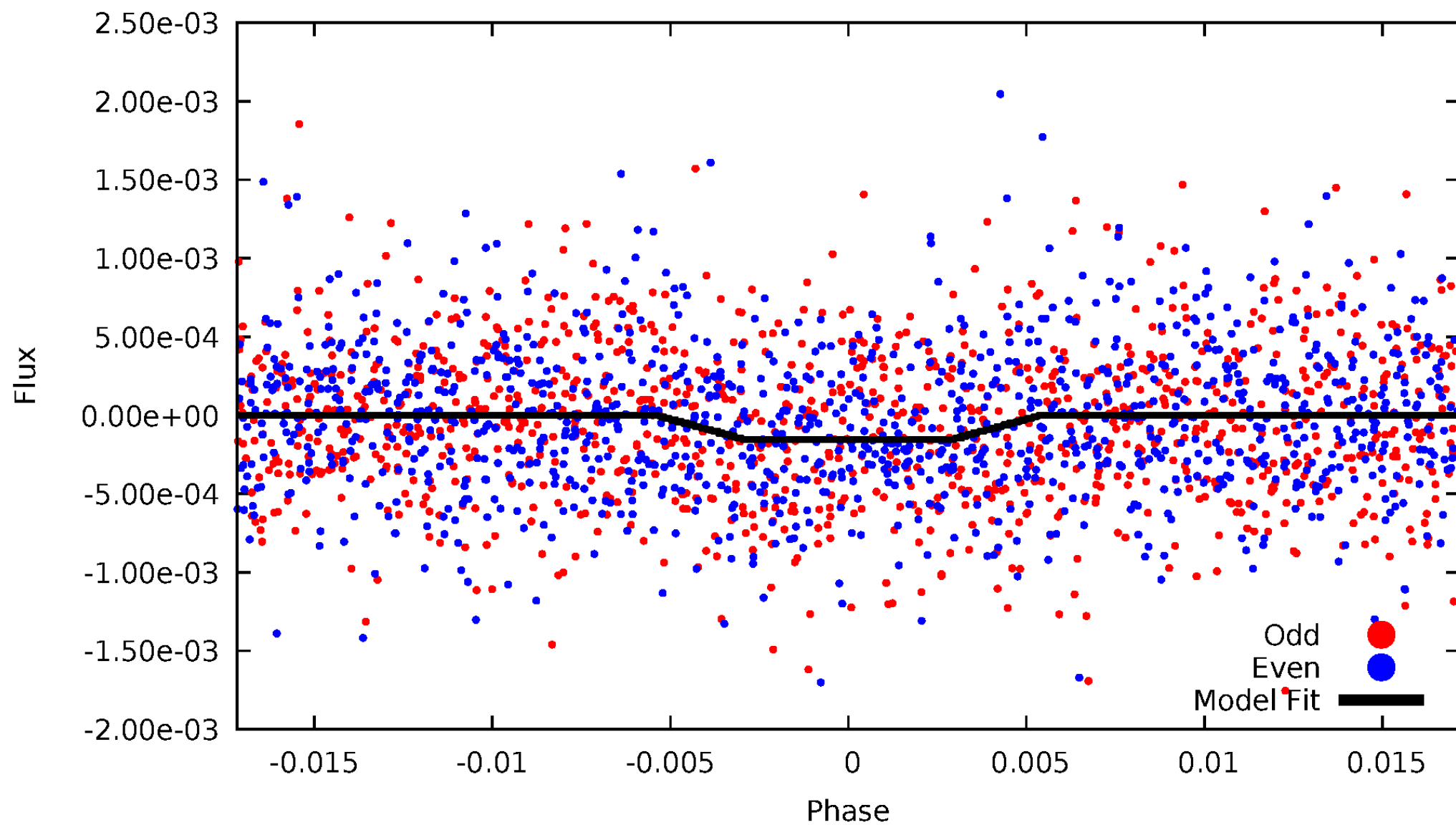
DV Odd/Even

TCE 003937814-02



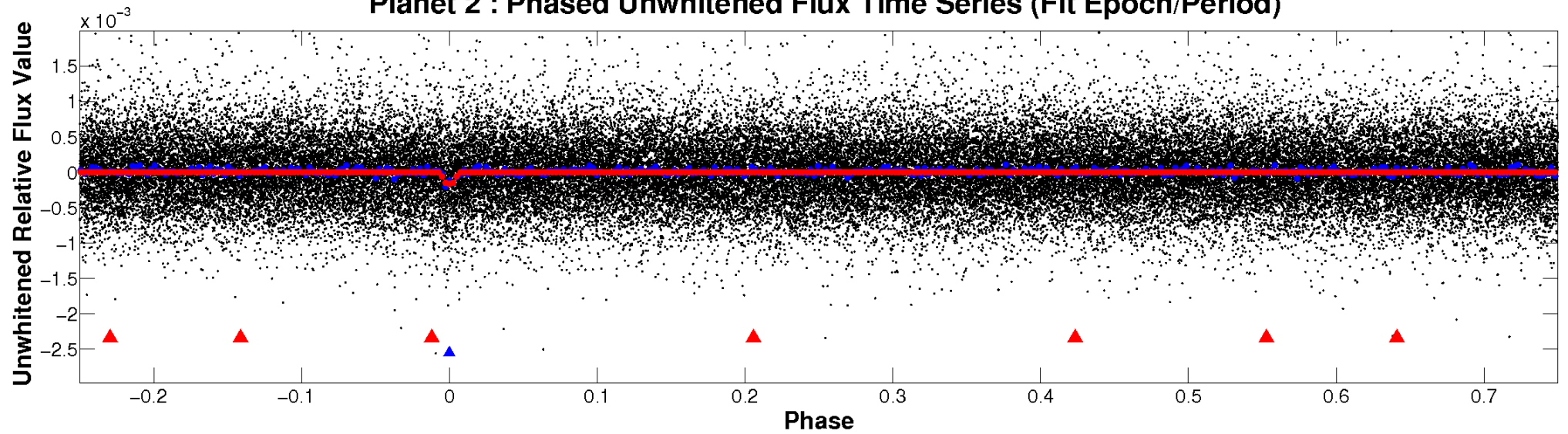
ALT Odd/Even

TCE 003937814-02

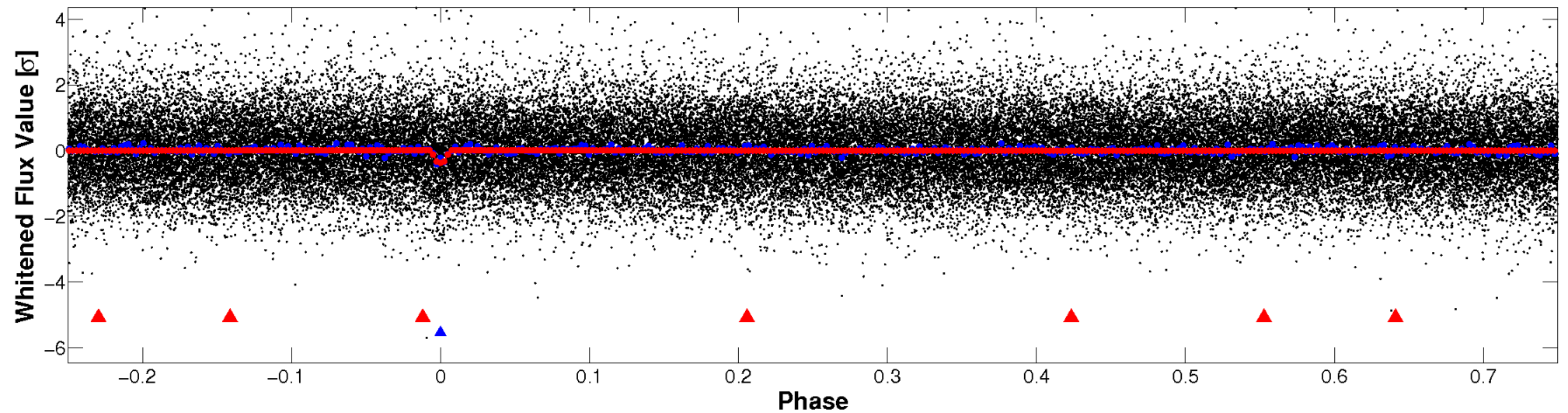


Non-Whitened Vs. Whitened Light Curve

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

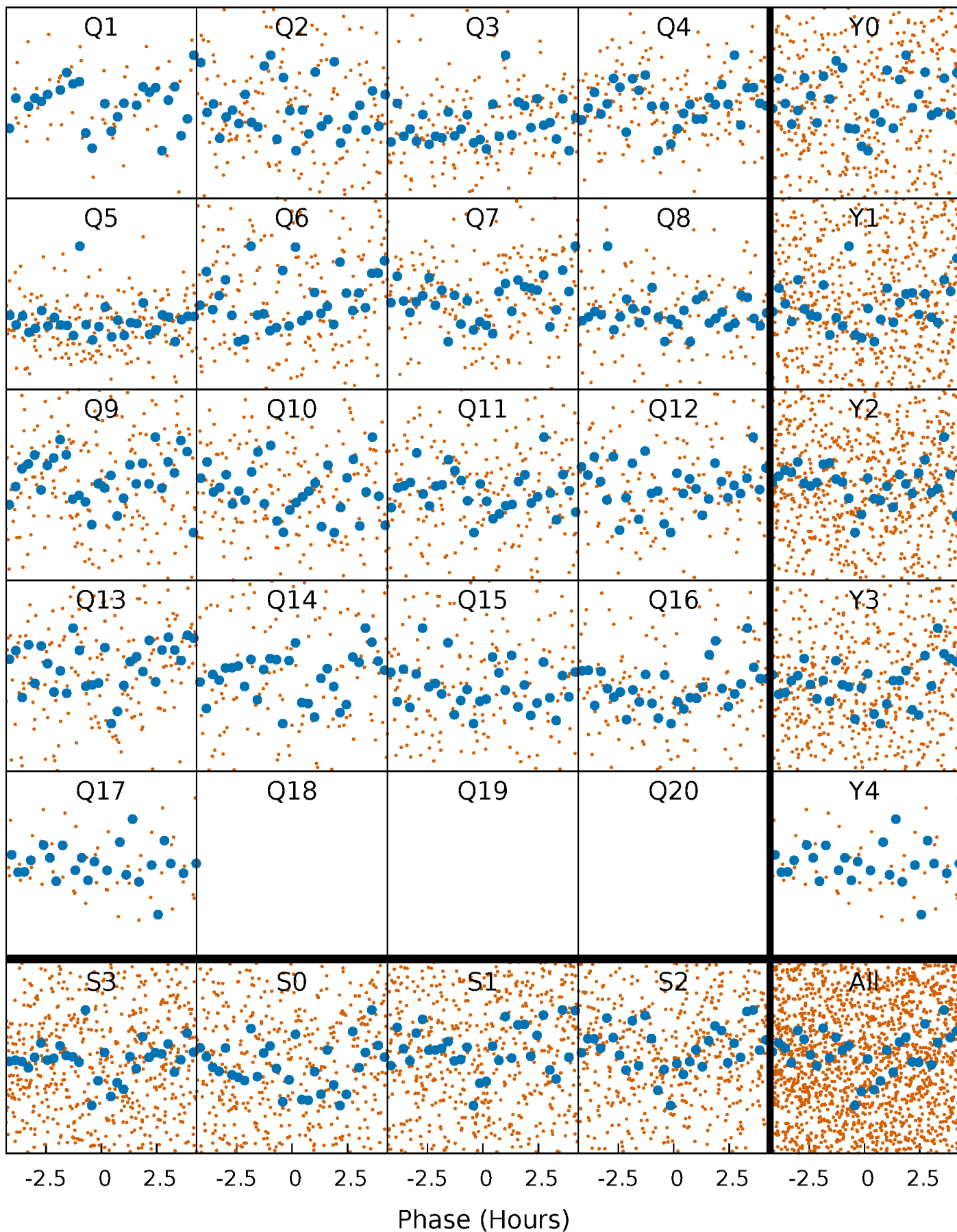


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



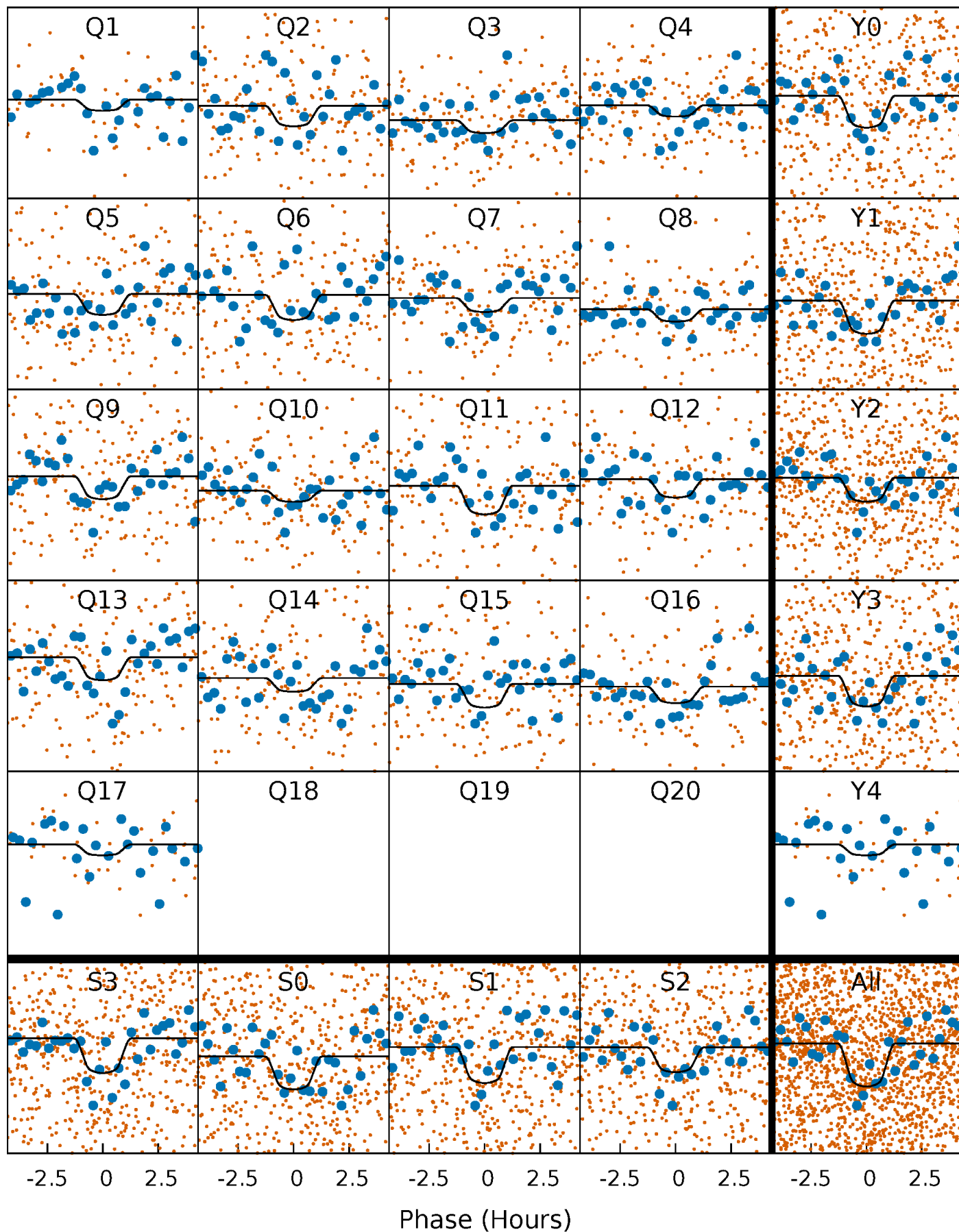
PDC Quarter-Phased Transit Curves

TCE 003937814-02 P= 8.196170 Days $T_0=135.102145$ (BKJD)



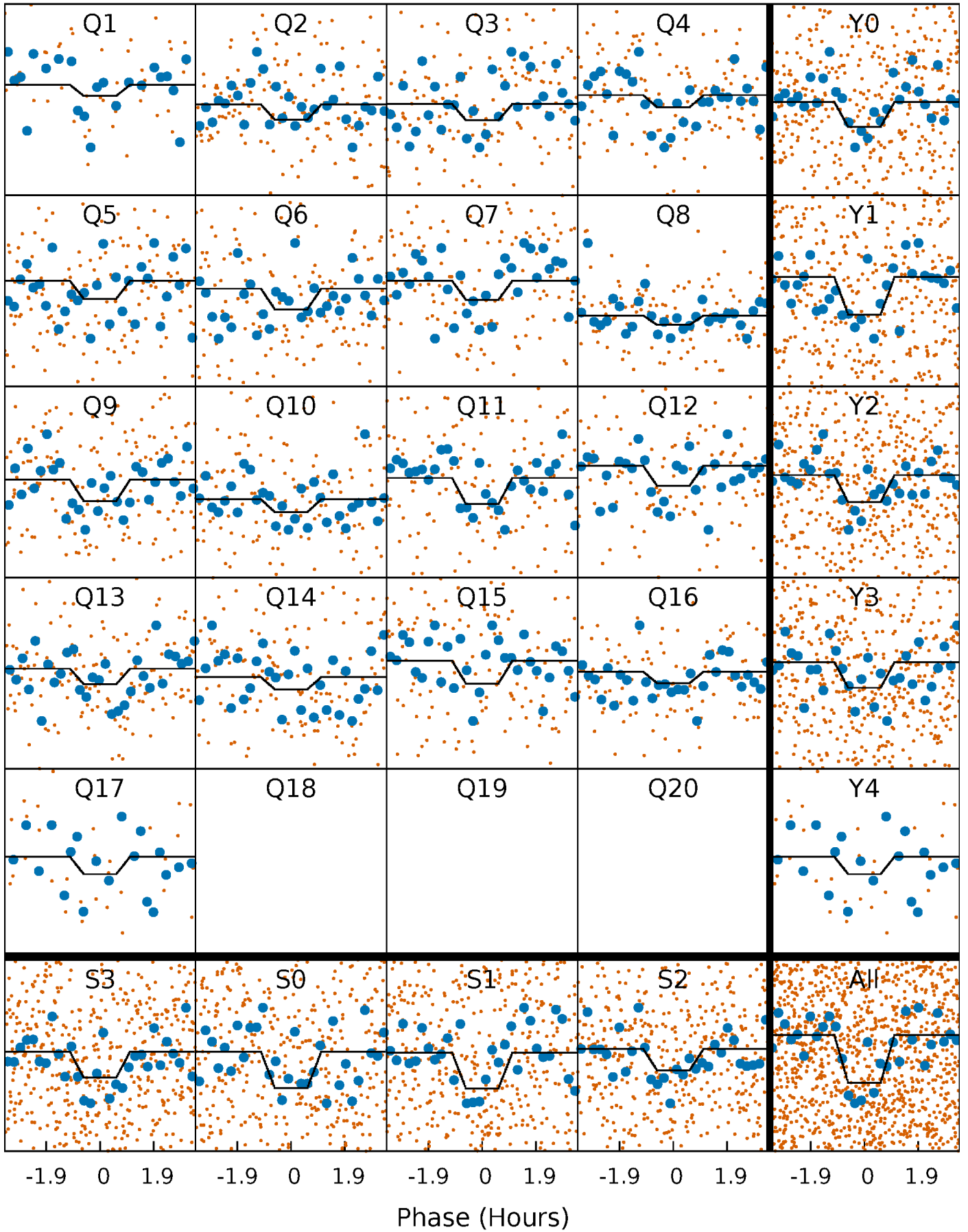
DV Quarter-Phased Transit Curves

TCE 003937814-02 P= 8.196170 Days $T_0=135.102145$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

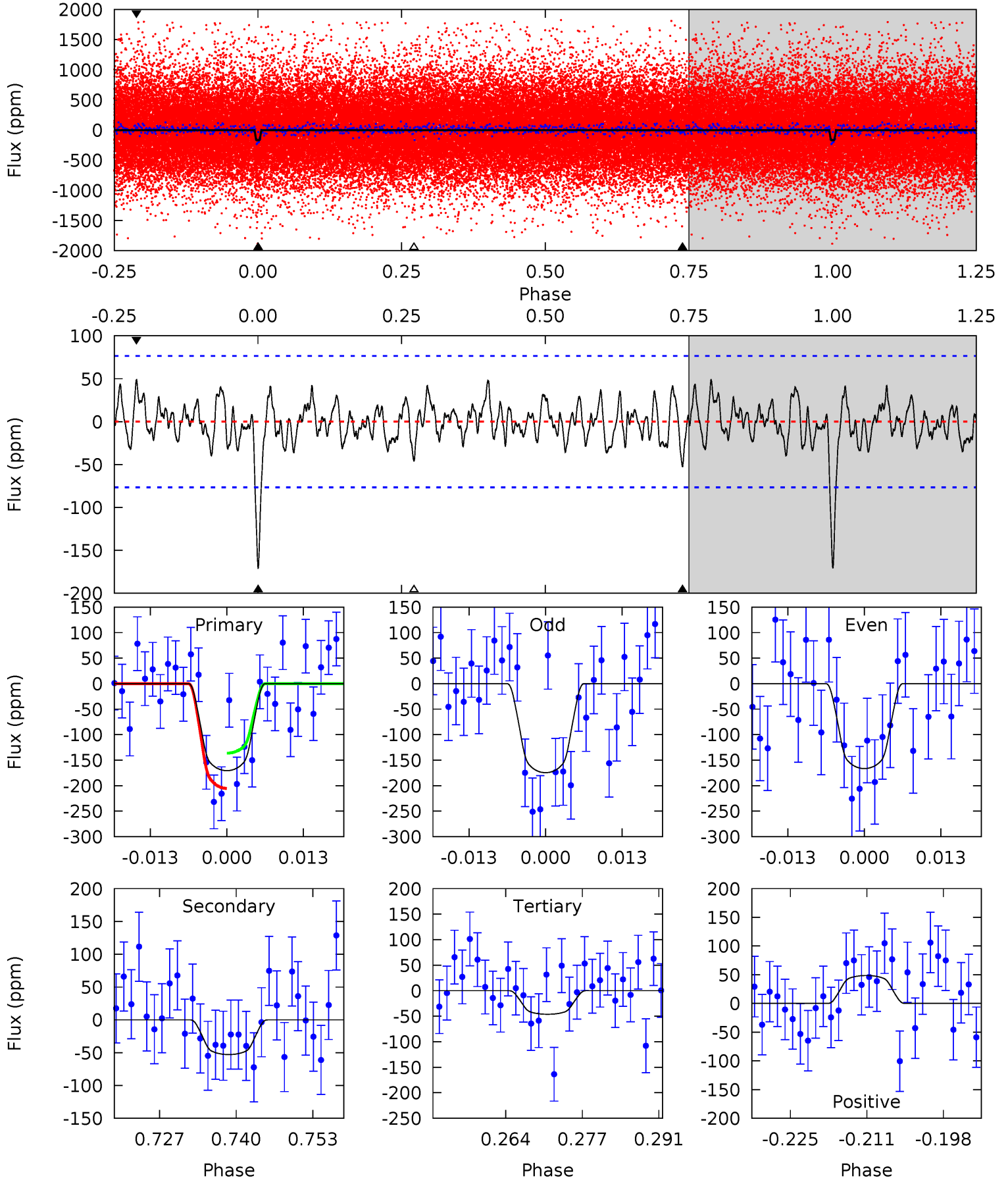
TCE 003937814-02 P= 8.196148 Days $T_0=135.104802$ (BKJD)



DV Model-Shift Uniqueness Test

003937814-02, P = 8.196170 Days, E = 126.905975 Days

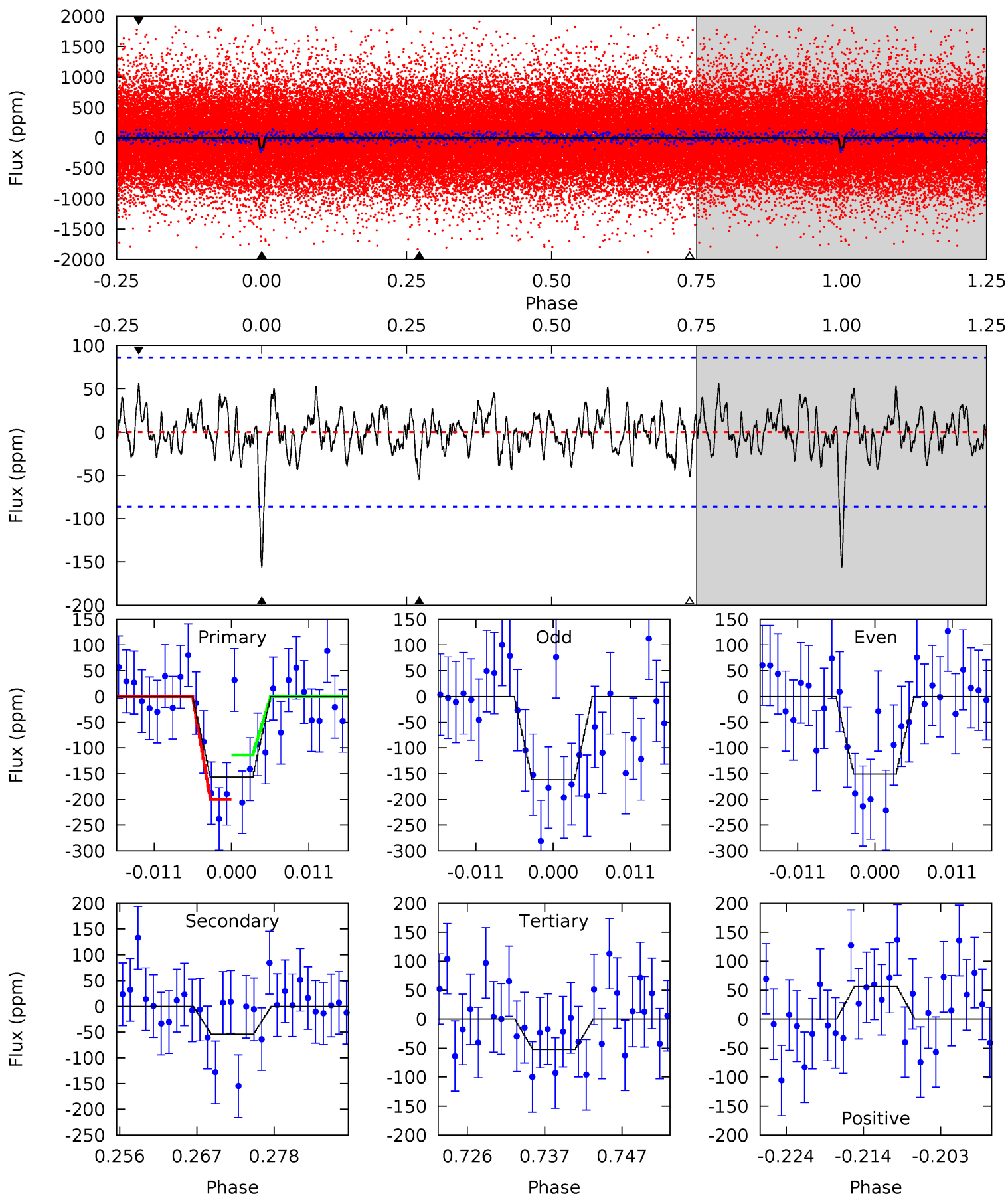
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	3.43	3.00	3.16	4.97	2.48	1.19	8.08	7.92	0.43	0.27	0.26	1.01	0.22	2.26



Alt Model-Shift Uniqueness Test

003937814-02, P = 8.196148 Days, E = 126.908654 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.08	3.15	3.02	3.28	5.01	2.55	1.11	6.06	5.80	0.13	-0.13	0.32	1.05	0.27	2.51



Stellar Parameters For KIC 003937814

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5323^{+79}_{-79}	$4.378^{+0.126}_{-0.084}$	$0.160^{+0.150}_{-0.150}$	$0.995^{+0.111}_{-0.135}$	$0.862^{+0.064}_{-0.032}$	$1.232^{+0.646}_{-0.291}$
	+1%/-1%	+3%/-2%	+94%/-94%	+11%/-14%	+7%/-4%	+52%/-24%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 003937814-02 / KOI 4084.03

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-53 ± 15	$1.69^{+1.04}_{-0.87}$	1187^{+41}_{-46}	3923^{+1210}_{-574}	58^{+173}_{-36}
Alt.	-54 ± 17	$1.43^{+0.95}_{-0.87}$	1187^{+42}_{-49}	4190^{+1945}_{-717}	82^{+414}_{-52}

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

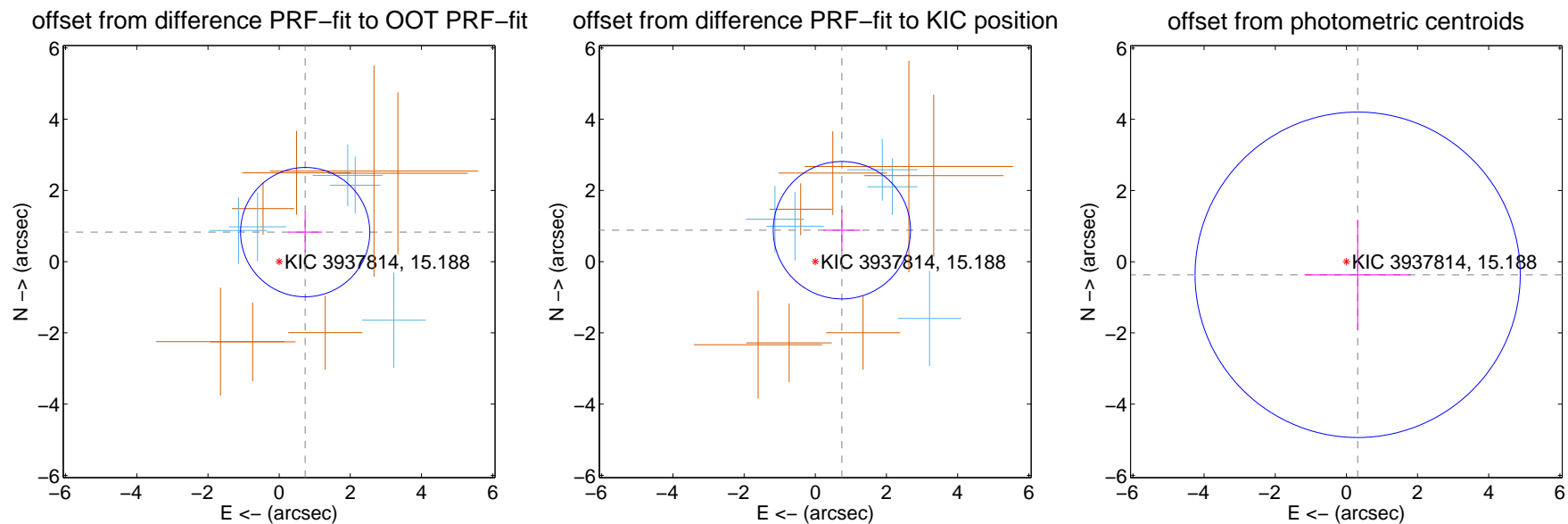
DV Centroid Data

Supplemental centroid analysis for 003937814-02. Kepler magnitude: 15.19. Transit SNR 7.90

There are 5 quarters with good PRF difference image offsets

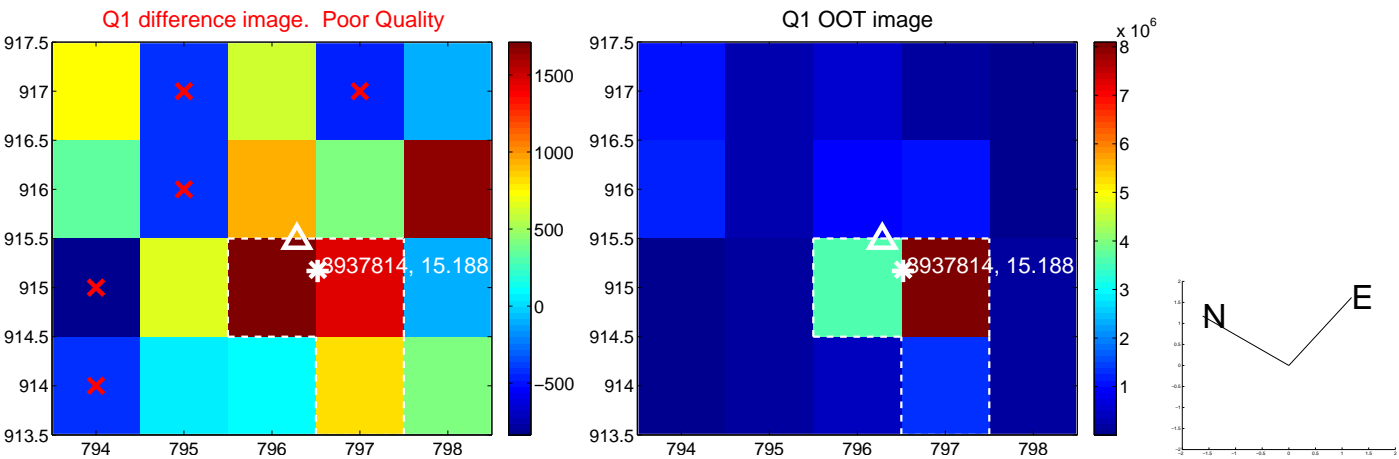
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.105 ± 0.605	1.83	-0.731 ± 0.475	0.828 ± 0.569
PRF-fit source offset from KIC position	1.157 ± 0.643	1.80	-0.748 ± 0.515	0.883 ± 0.580
photometric centroid source offset	0.48 ± 1.52	0.32	-0.32 ± 1.49	-0.37 ± 1.55

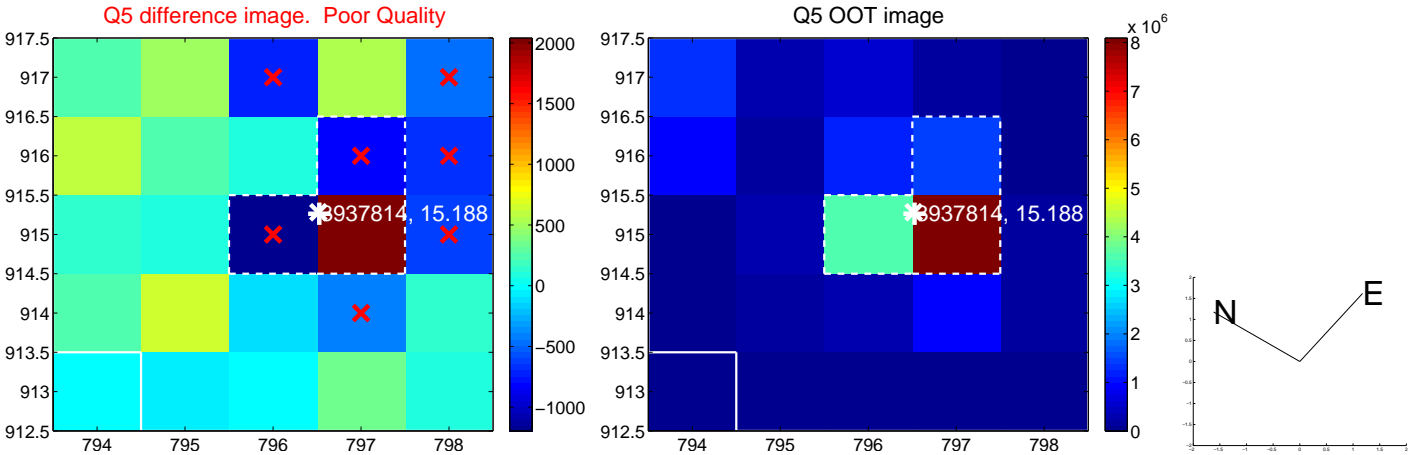


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

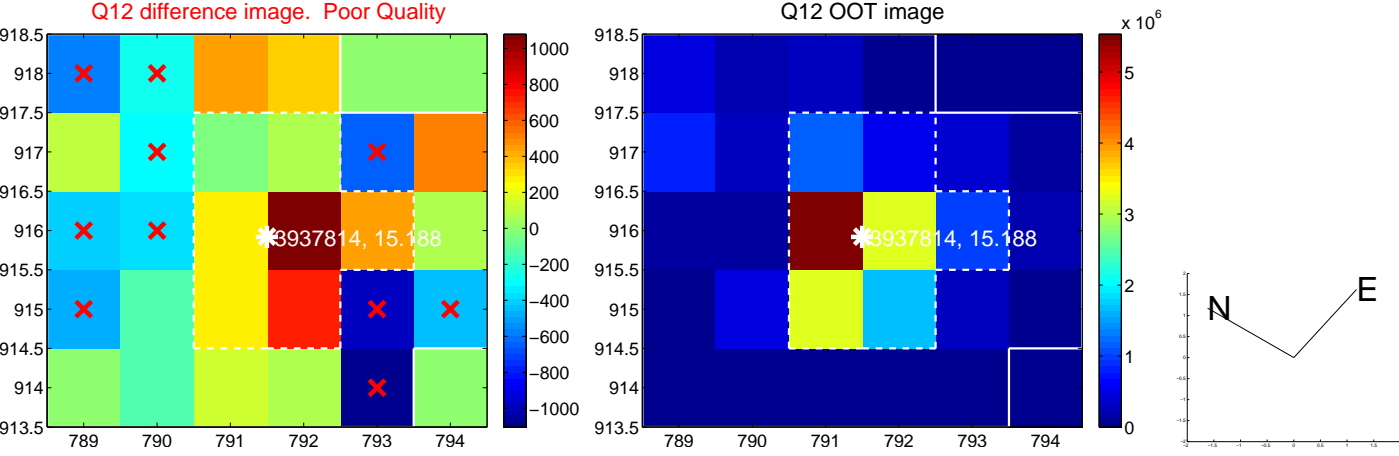
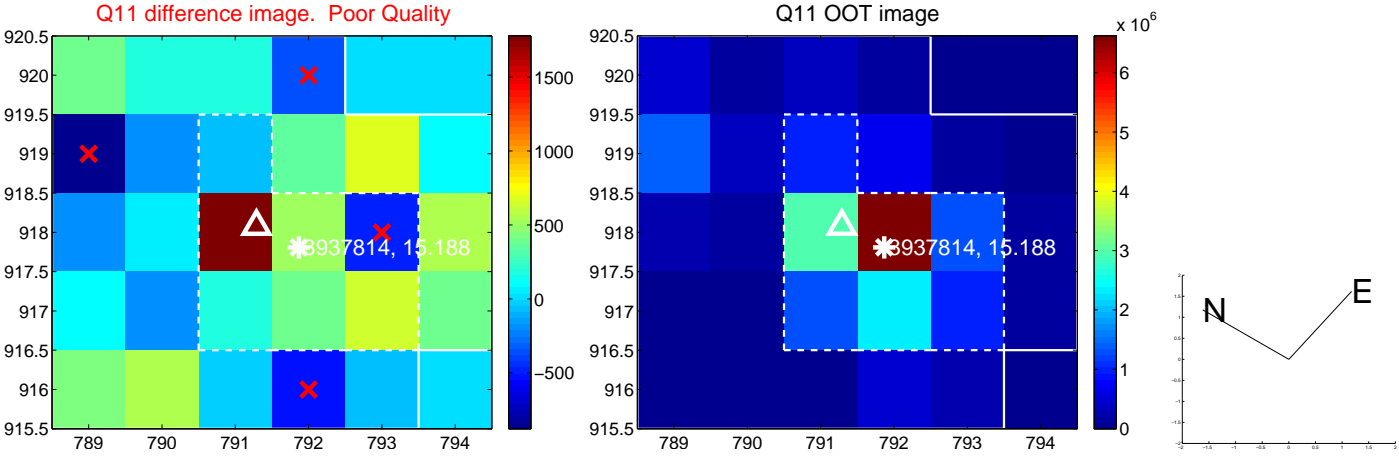
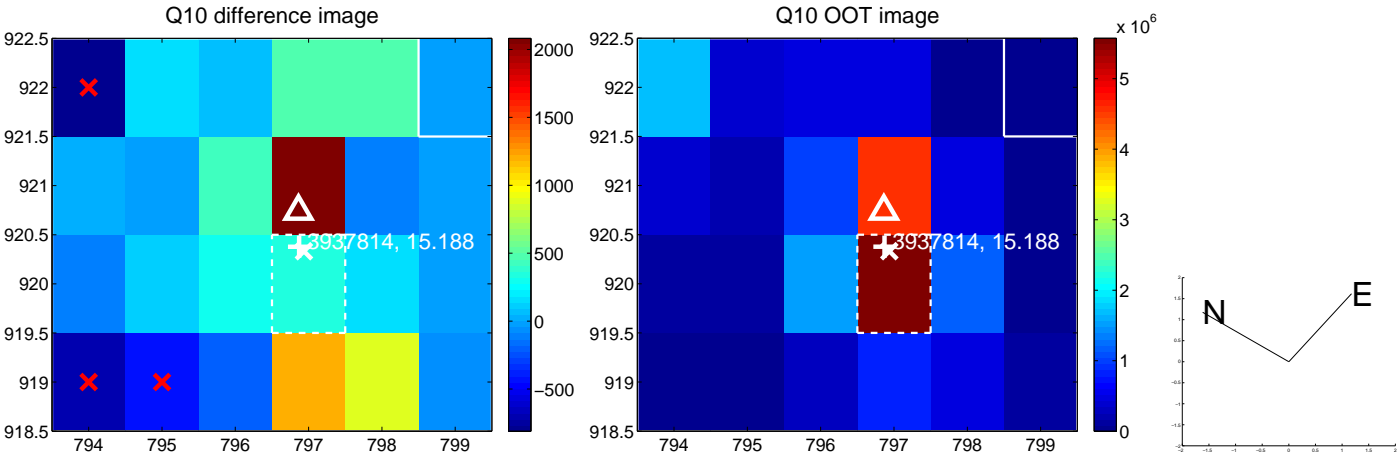
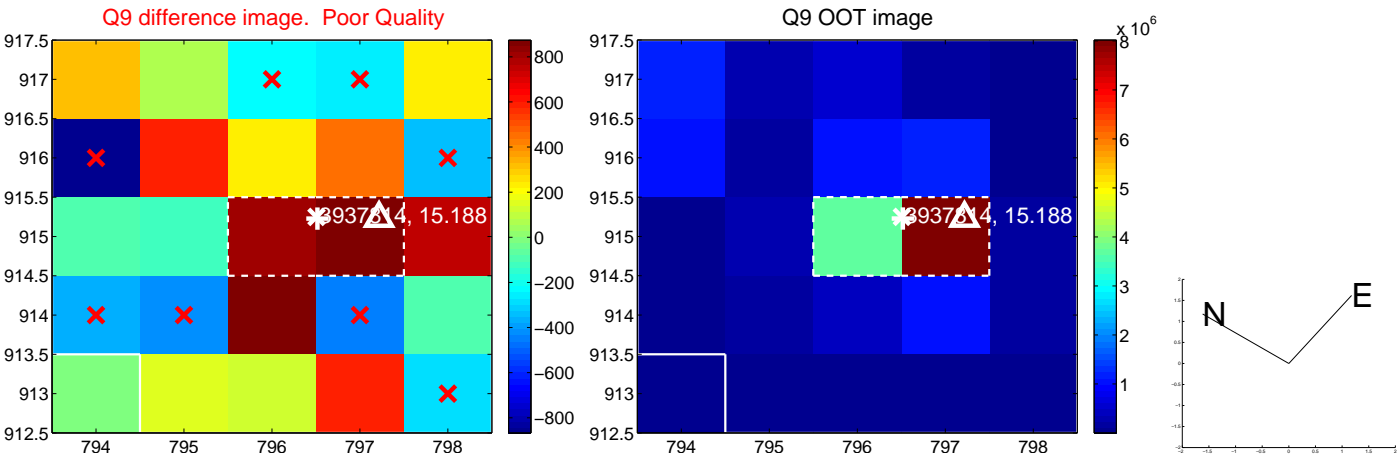
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



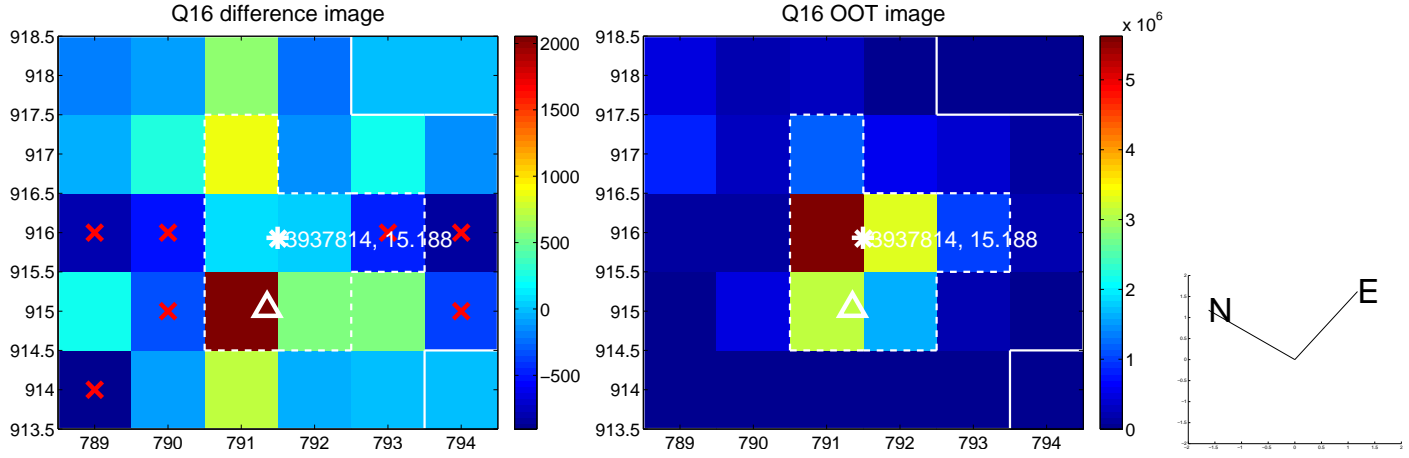
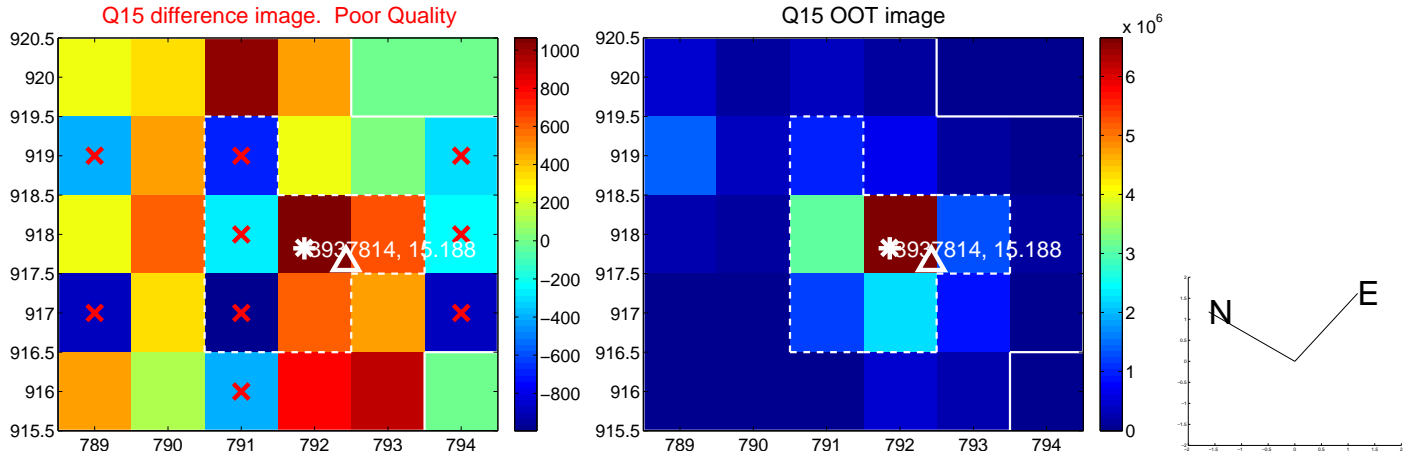
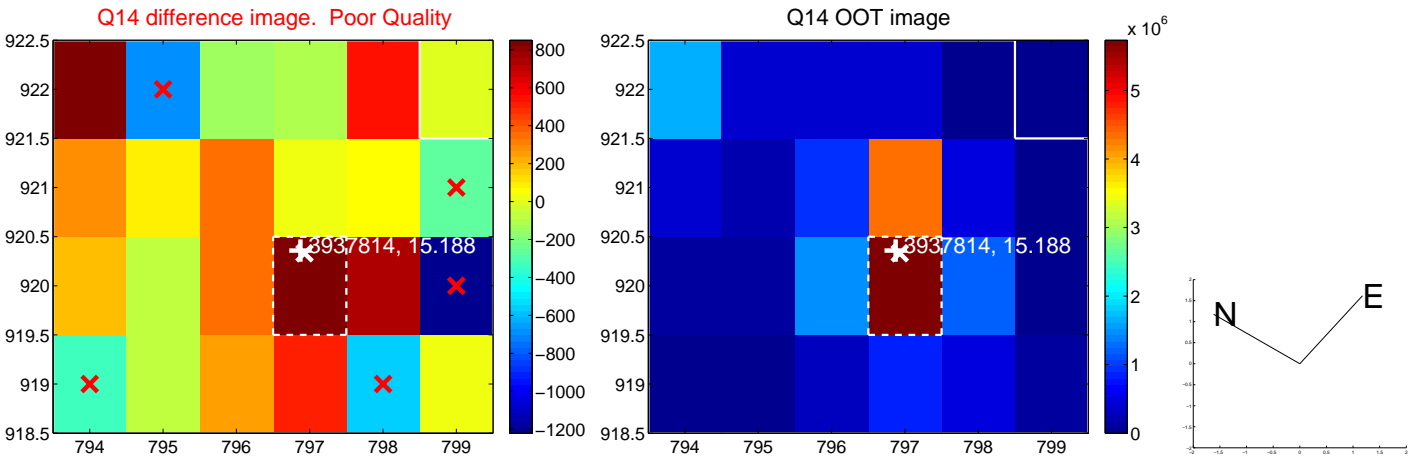
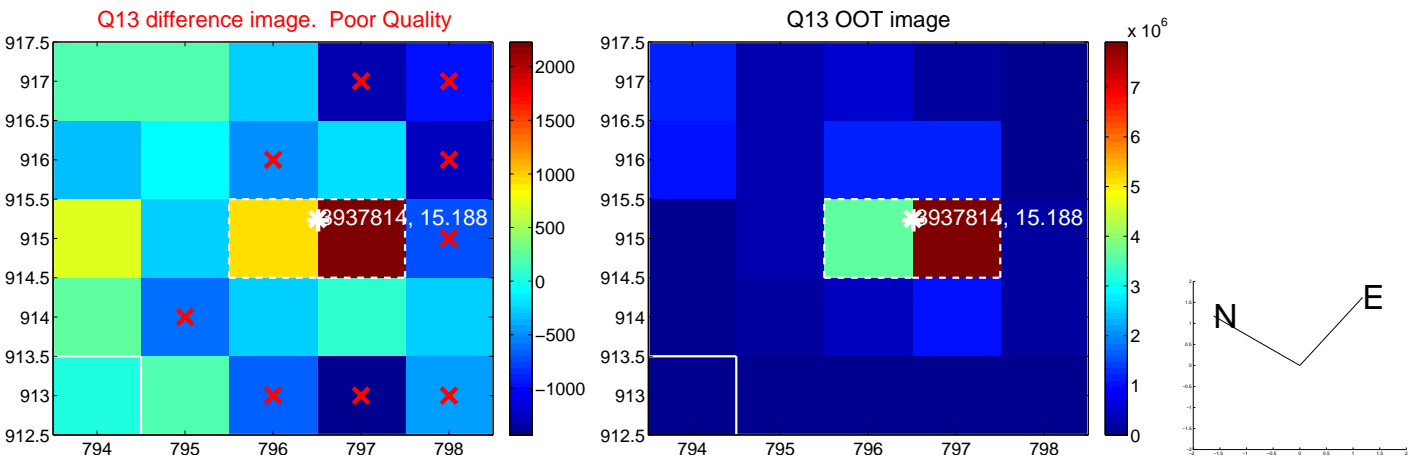
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



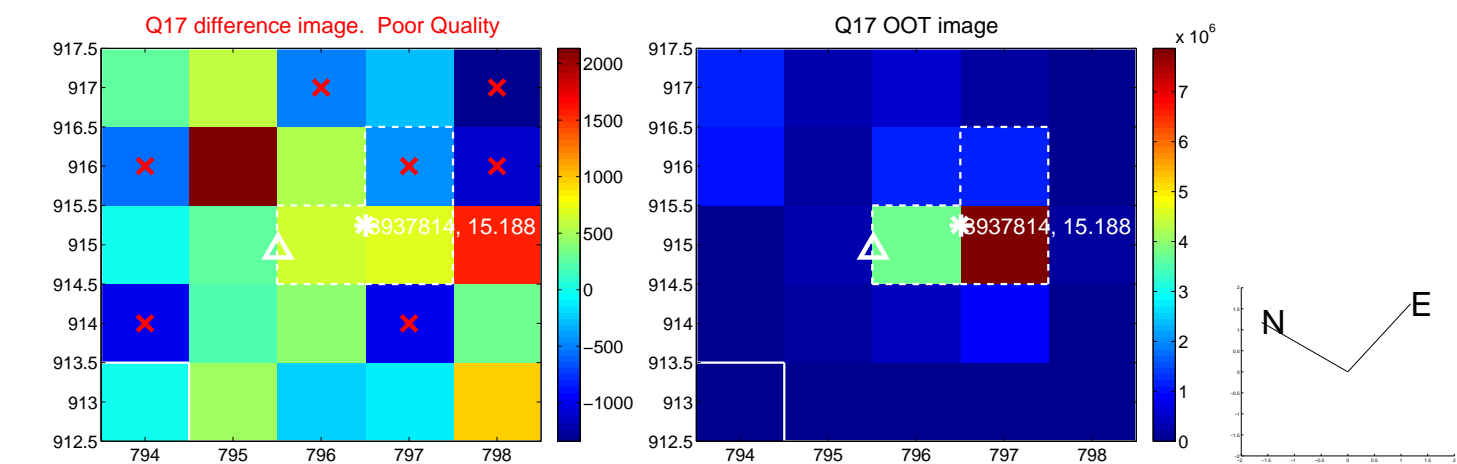
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



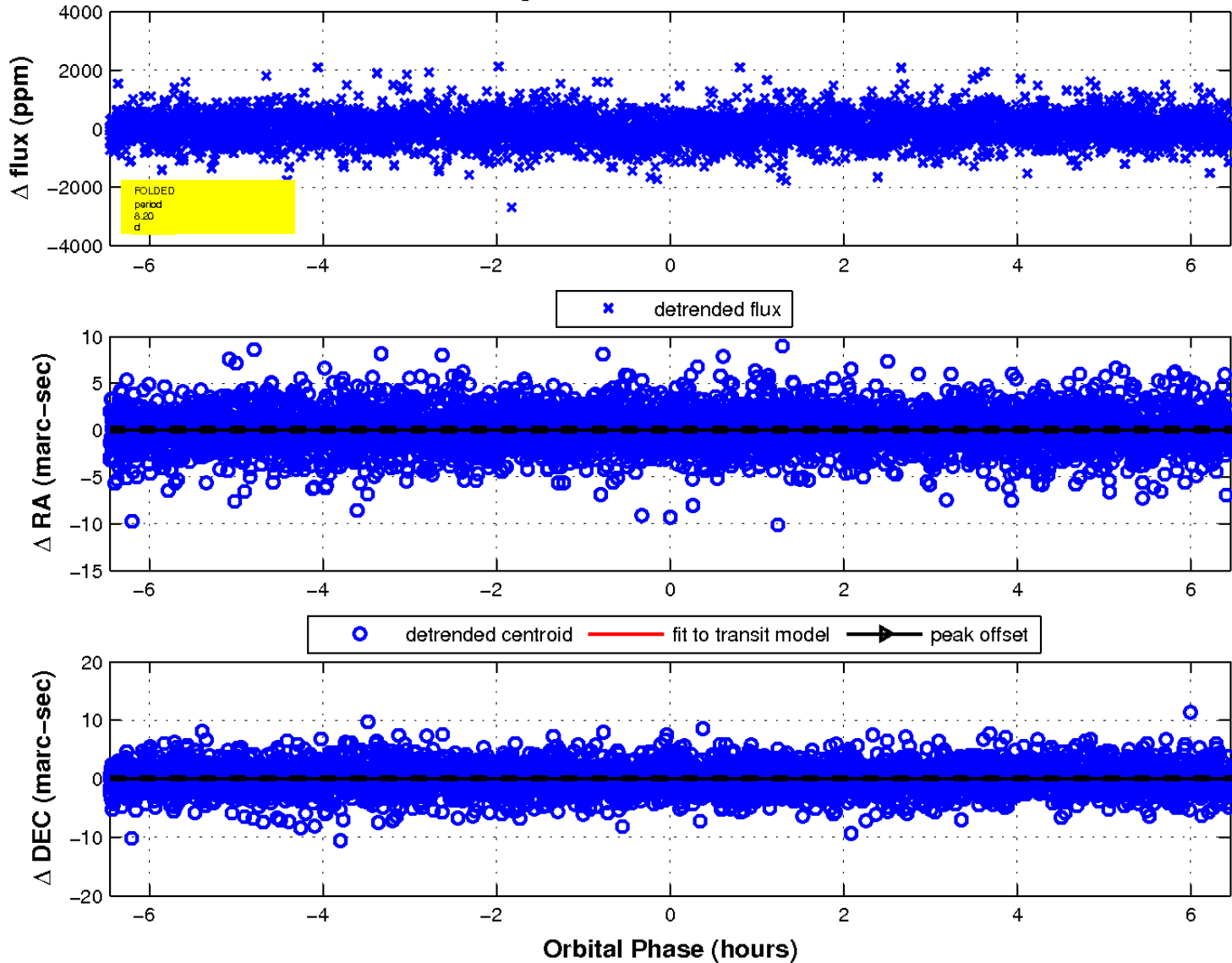
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

