

KIC 004914423

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})
004914423-01	OBS	0108.01	15.965347	142.176989	479.9	4.695	122.3	119.1	1.43	5880	3.54	136.67
004914423-02	OBS	0108.02	179.610162	295.334171	1272.2	13.600	116.1	122.9	1.43	5880	5.50	5.42

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004914423-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
004914423-02	OBS	PC	1.00	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.

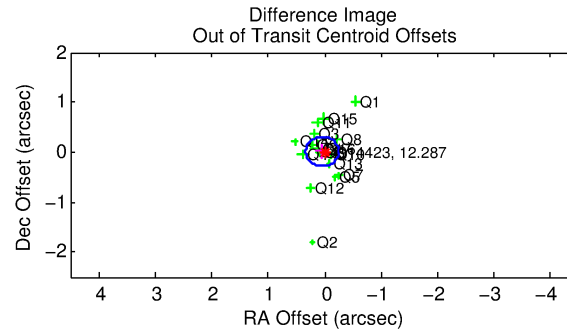
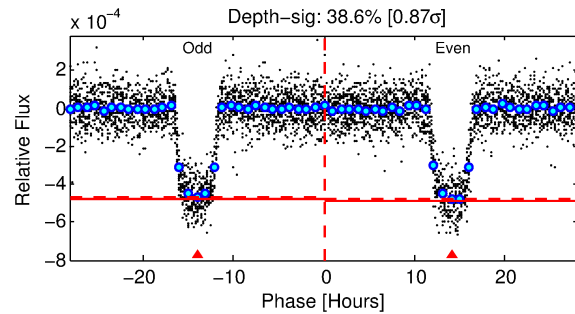
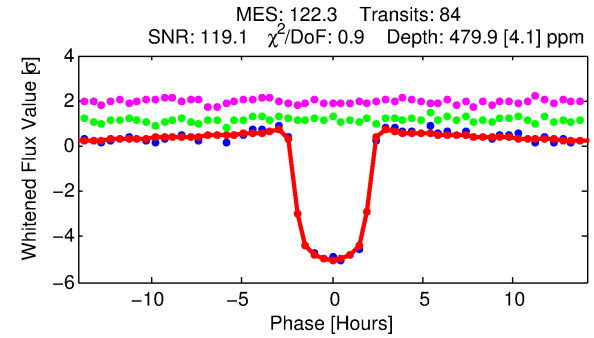
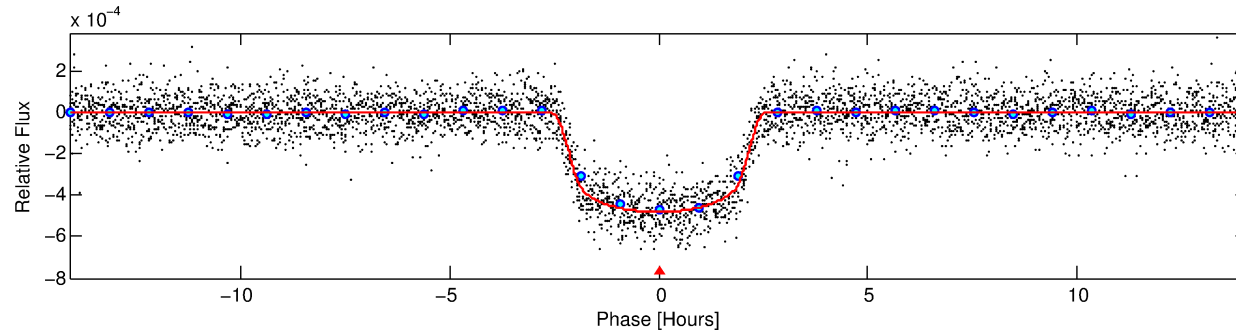
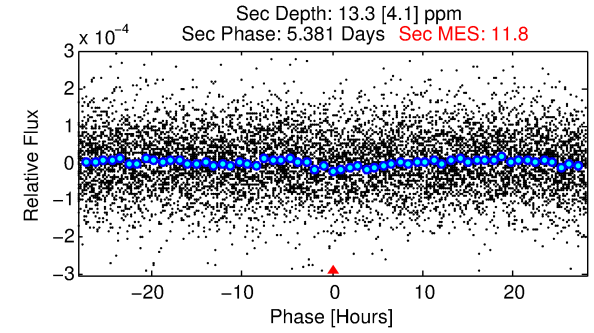
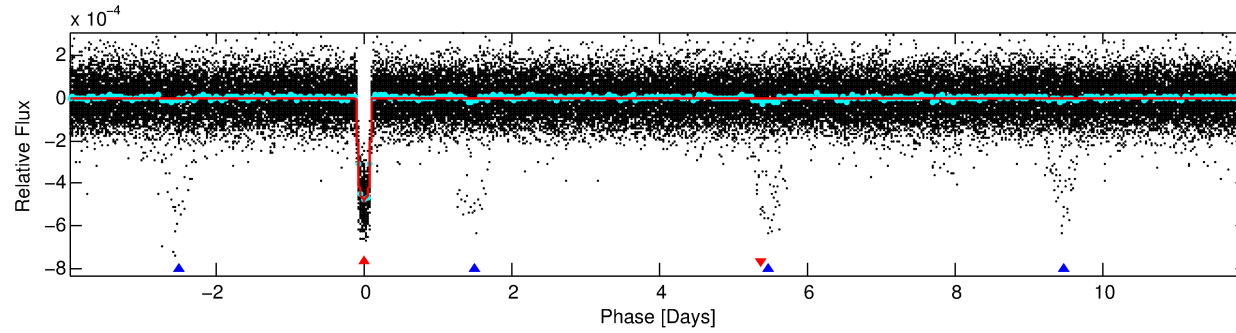
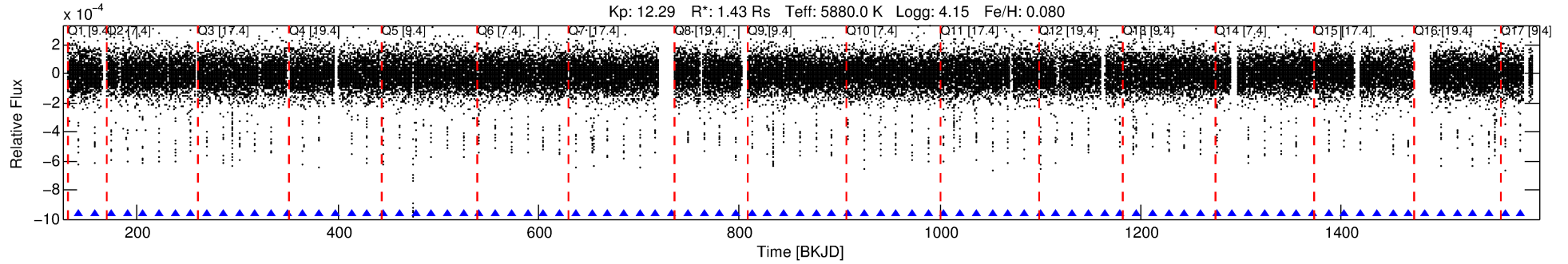
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004914423-01

No Significant Match Found

DV One-Page Summary

KIC: 4914423 Candidate: 1 of 2 Period: 15.965 d
KOI: K00108.01 Name: Kepler-103b Corr: 0.981



DV Fit Results:

Period = 15.96535 [0.00001] d
Epoch = 142.1770 [0.0008] BKJD
Rp/R* = 0.0226 [0.0008]
a/R* = 15.58 [2.57]
b = 0.83 [0.06]
Seff = 136.67 [11.54]
Teff = 872 [18] K
Rp = 3.54 [0.26] Re
a = 0.1269 [0.0062] AU
Ag = 9.39 [3.05] [2.75σ]
Teffp = 2359 [190] K [7.78σ]

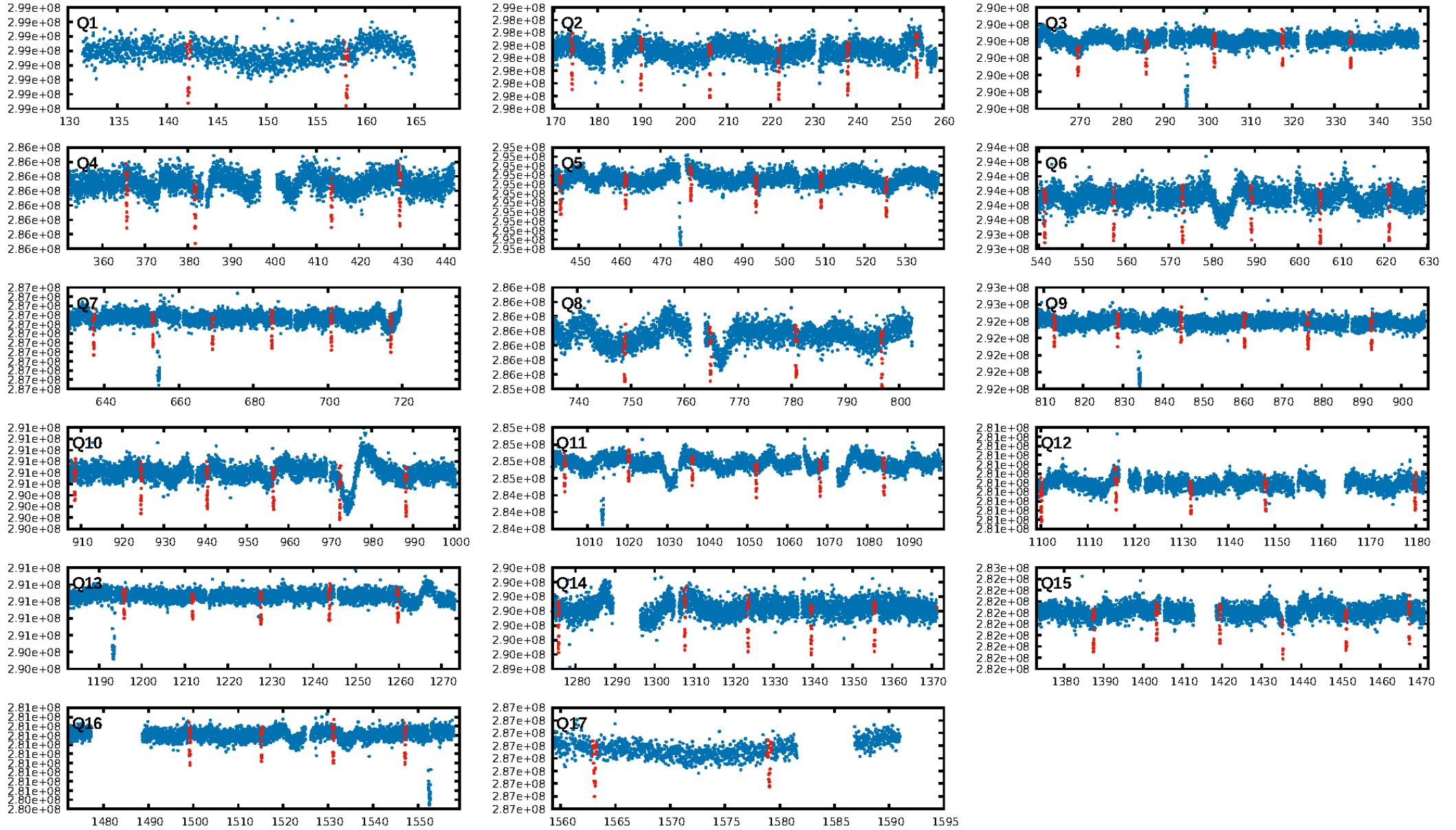
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [272.98σ]
ModelChiSquare2-sig: 80.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [80/80]
GhostDiagnostic-chr: 6.478
Centroid-sig: 0.0%
Centroid-so: 0.262 arcsec [3.19σ]
OotOffset-rm: 0.046 arcsec [0.46σ]
KicOffset-rm: 0.040 arcsec [0.25σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

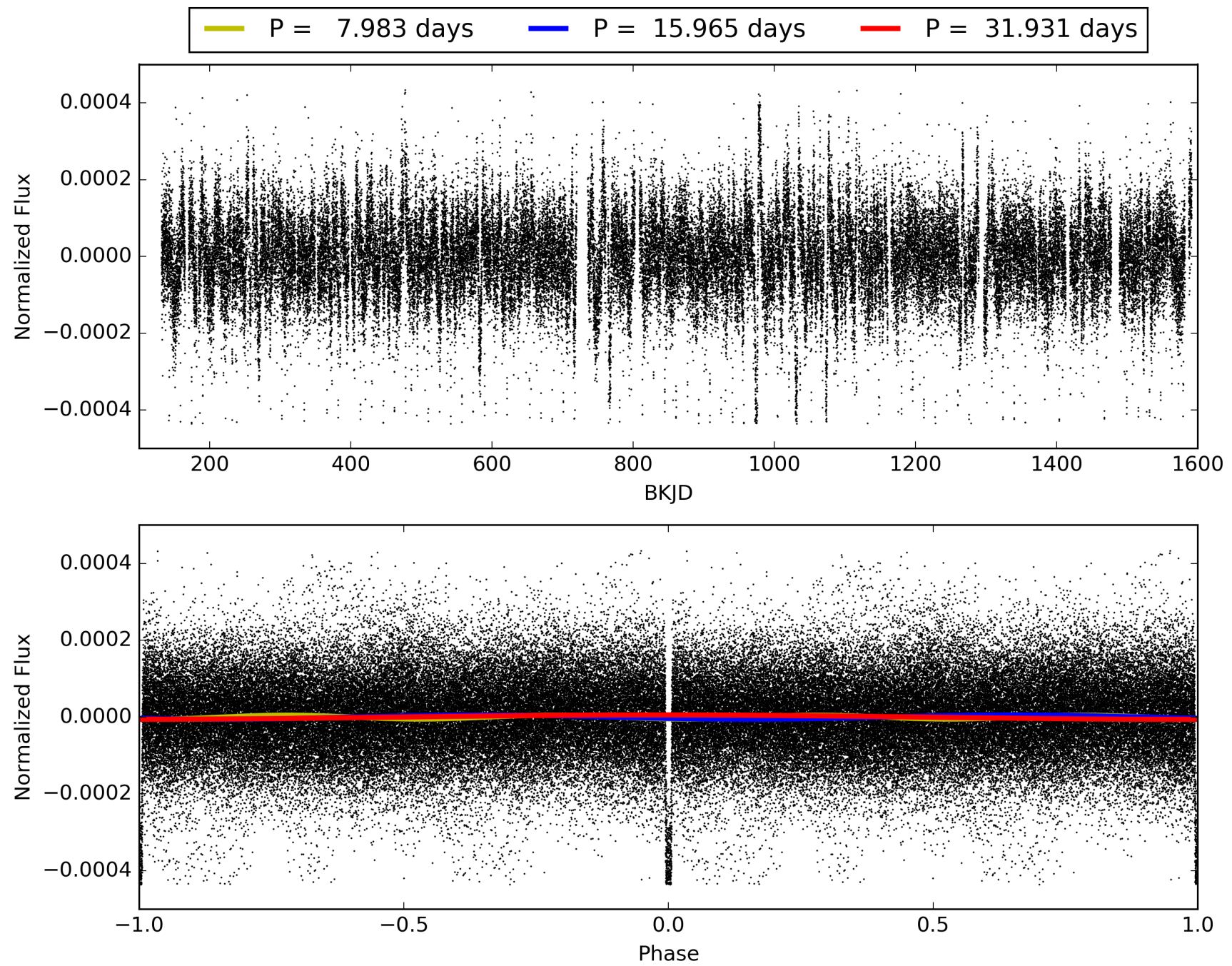
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:24:00 Z

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

TCE 004914423-01, PDC Light Curves

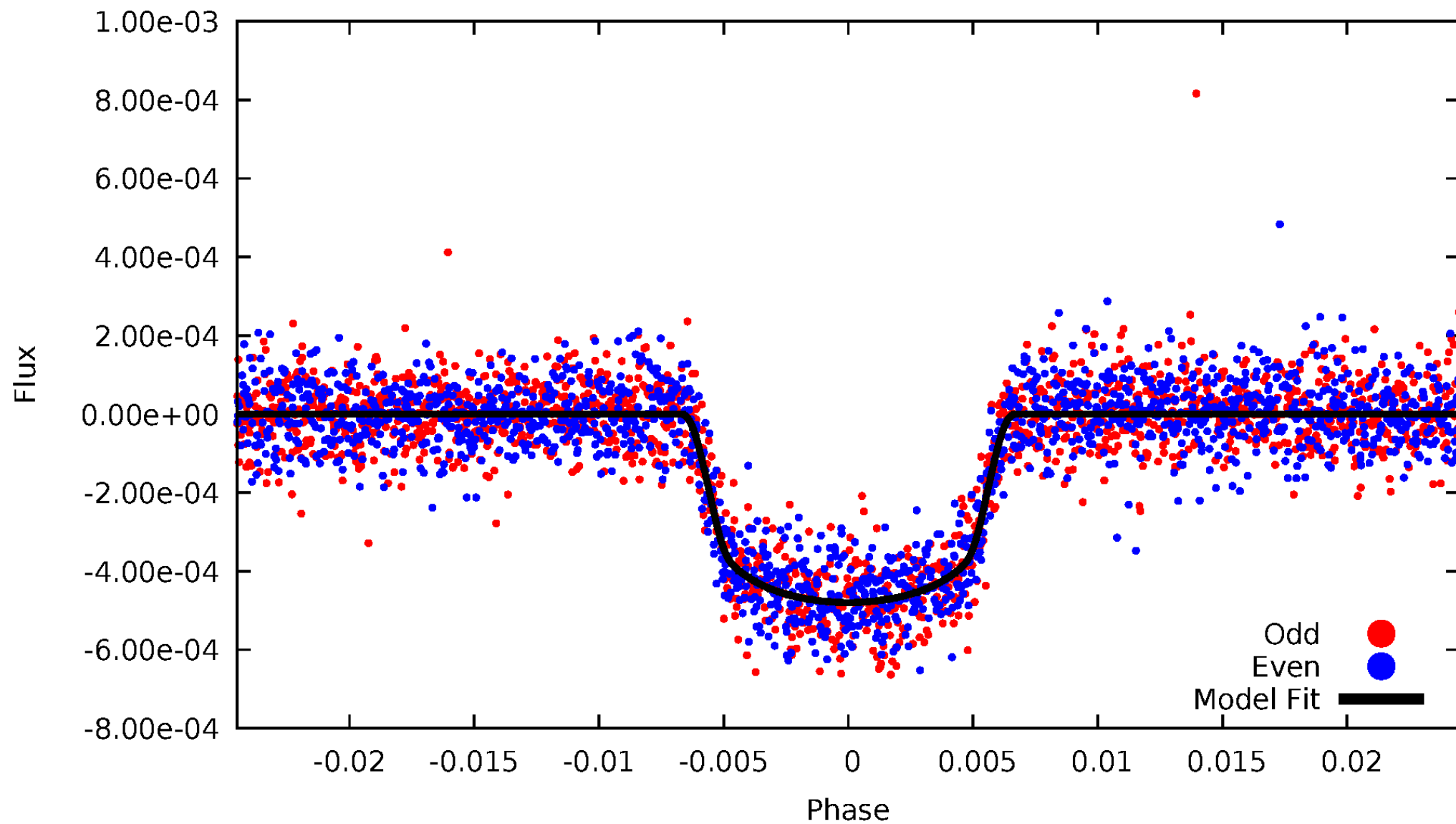


TCE 004914423-01



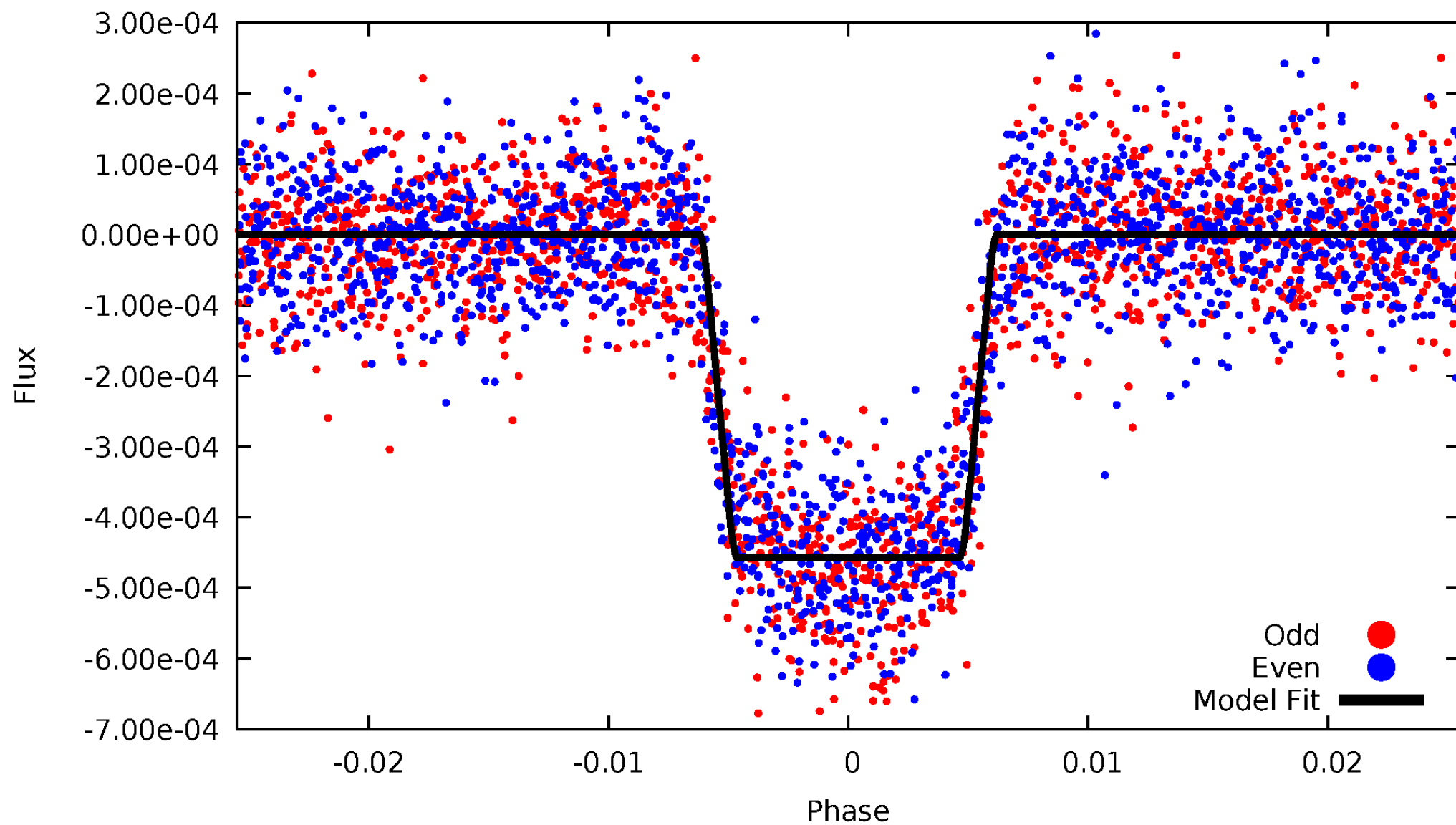
DV Odd/Even

TCE 004914423-01

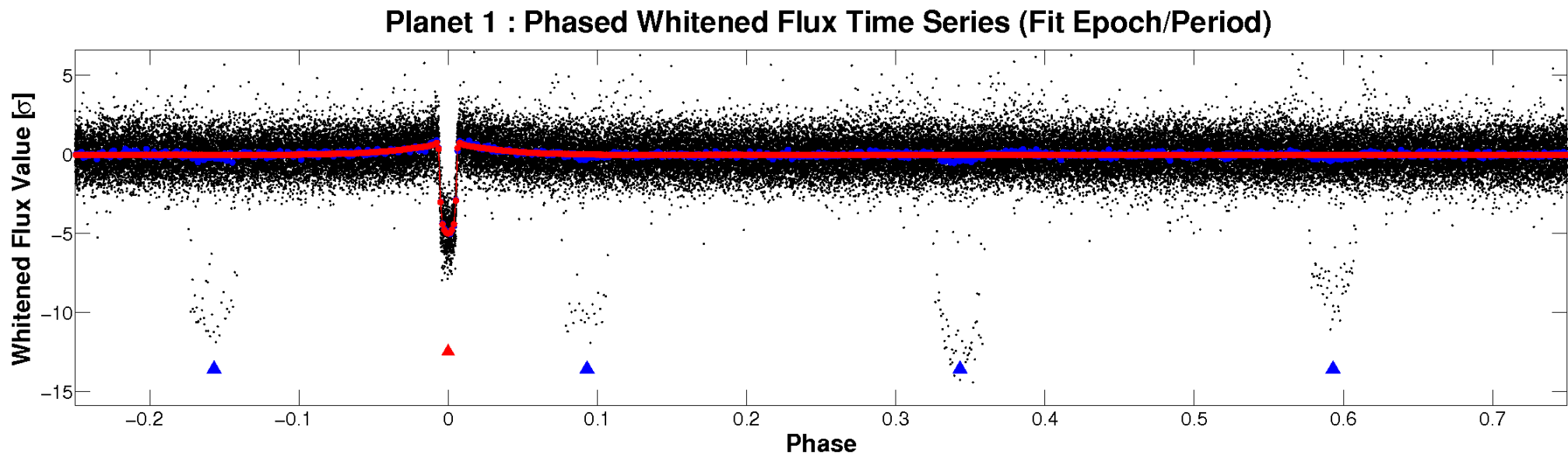
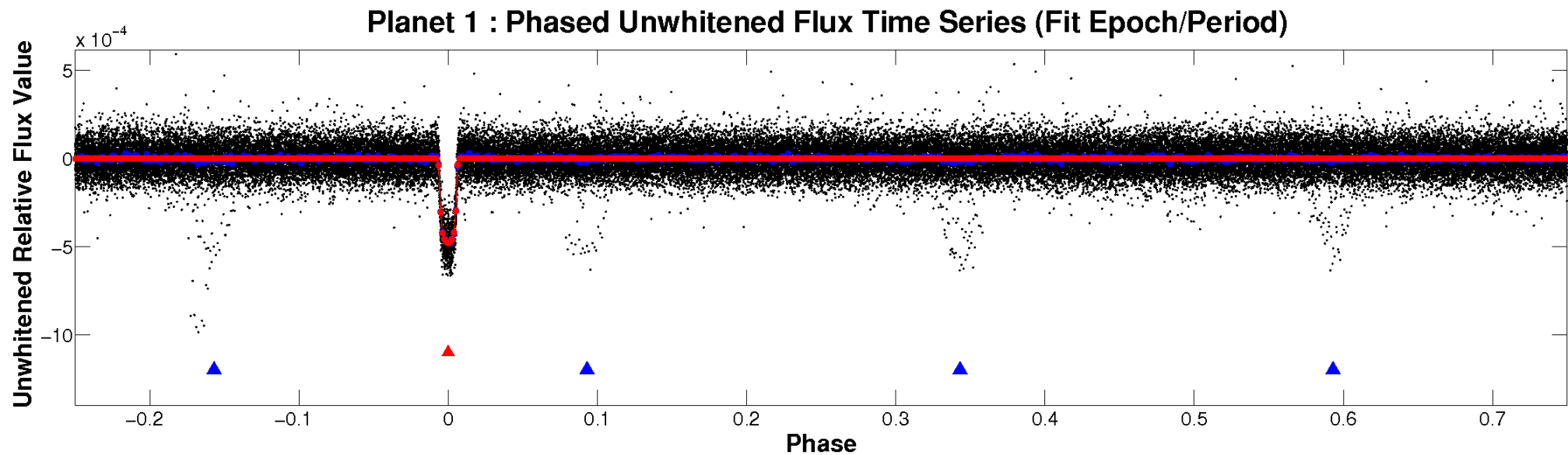


ALT Odd/Even

TCE 004914423-01

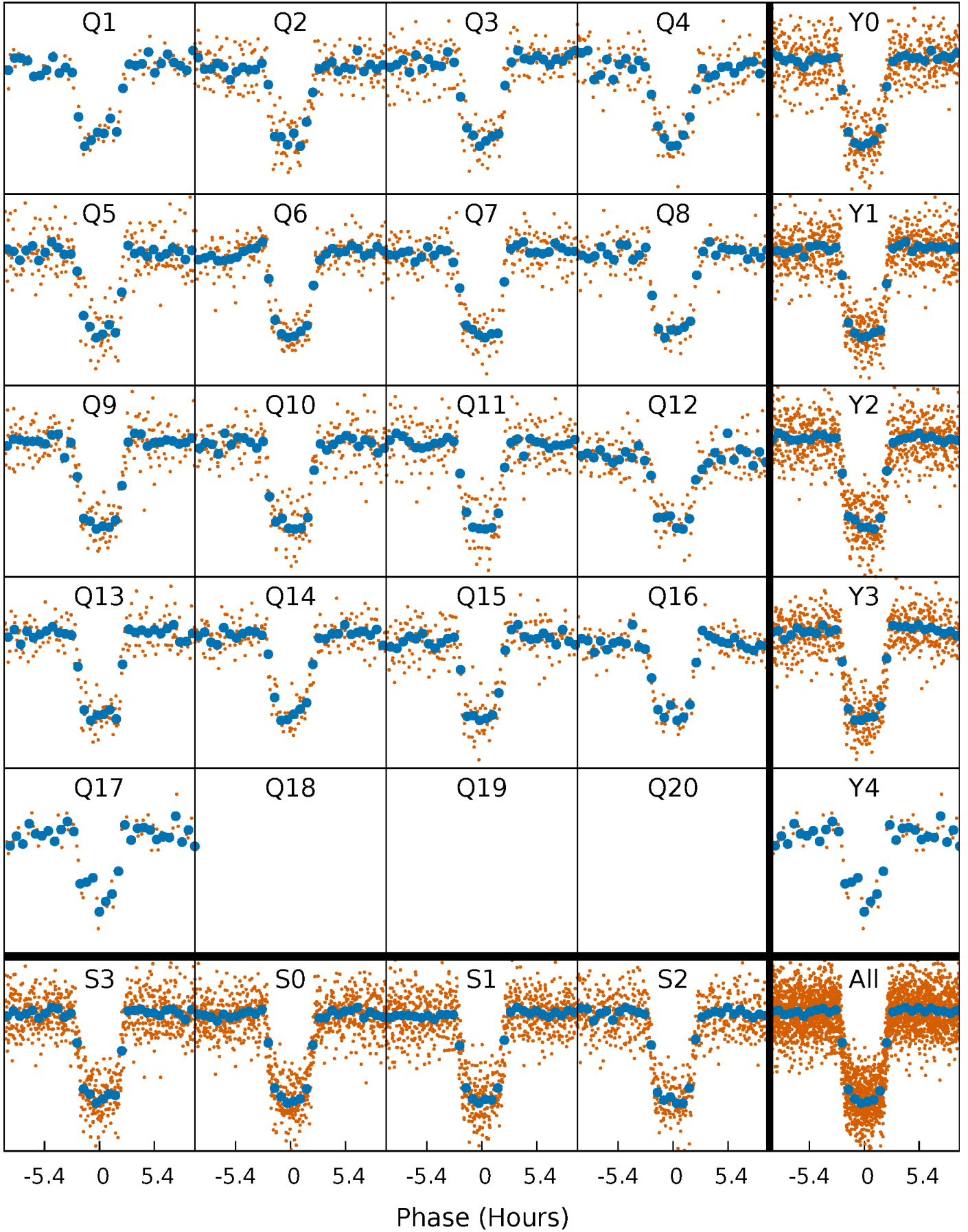


Non-Whitened Vs. Whitened Light Curve



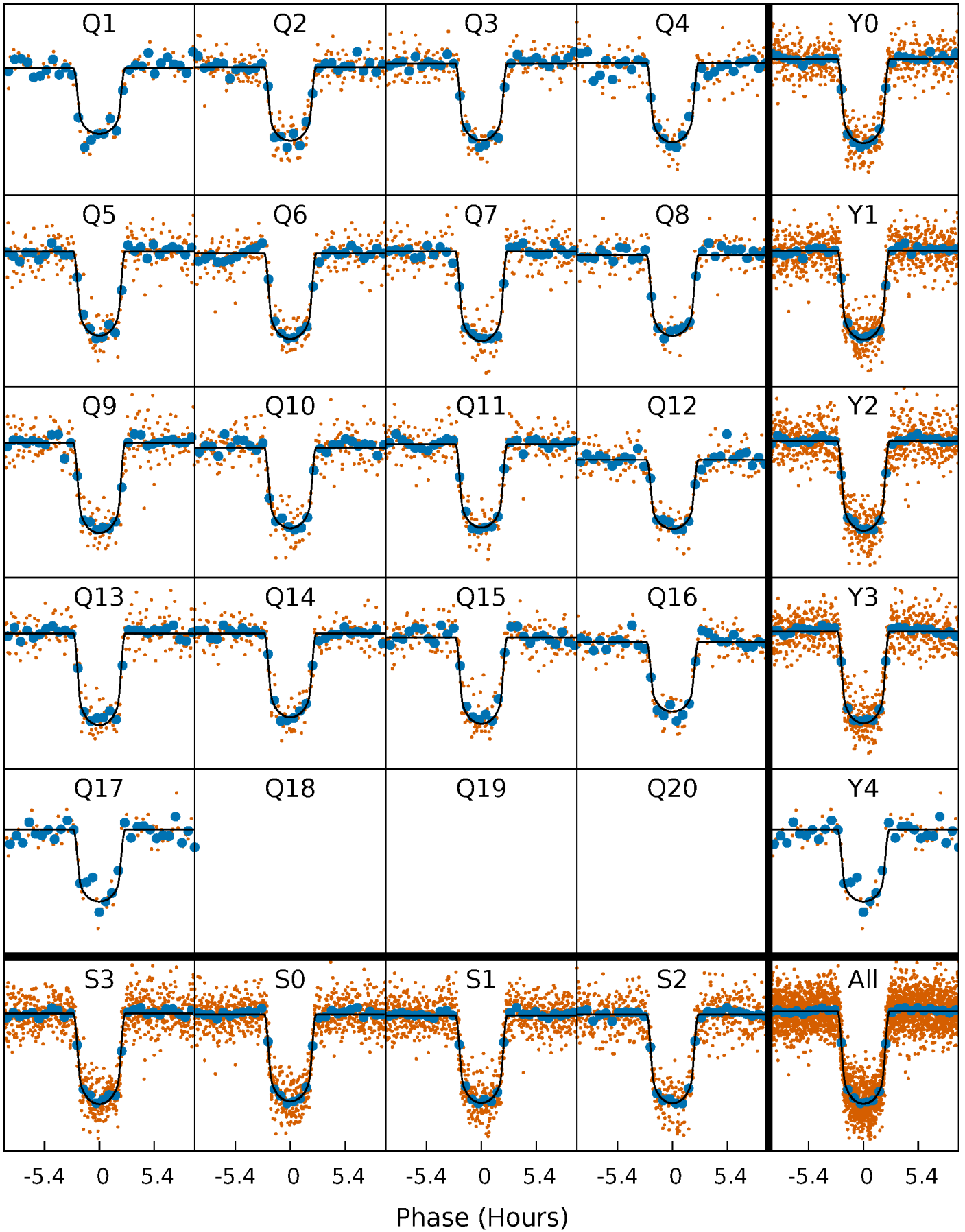
PDC Quarter-Phased Transit Curves

TCE 004914423-01 P= 15.965347 Days $T_0=142.176989$ (BKJD)



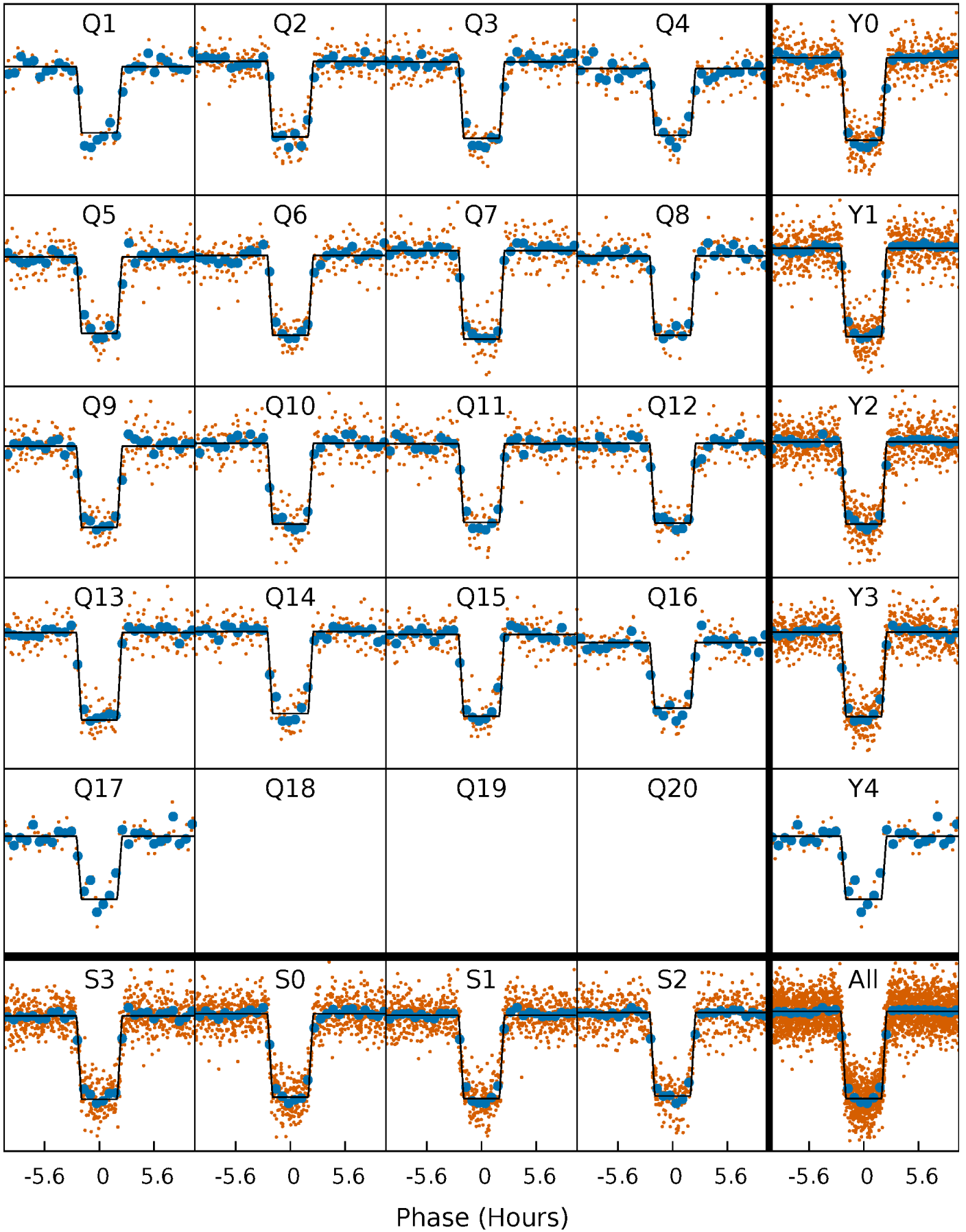
DV Quarter-Phased Transit Curves

TCE 004914423-01 P= 15.965347 Days $T_0=142.176989$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

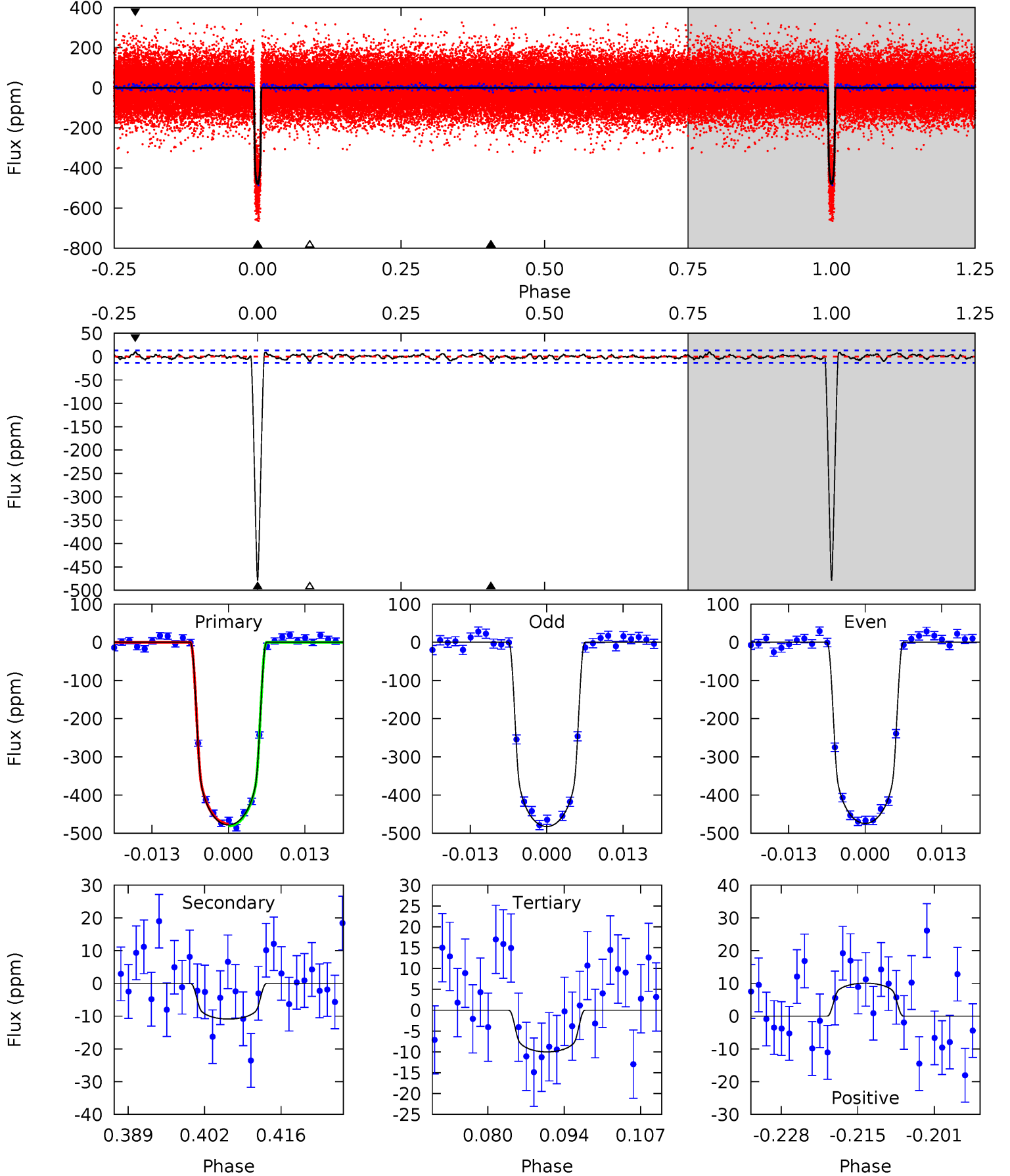
TCE 004914423-01 P= 15.965451 Days $T_0=142.172557$ (BKJD)



DV Model-Shift Uniqueness Test

004914423-01, $P = 15.965347$ Days, $E = 126.211642$ Days

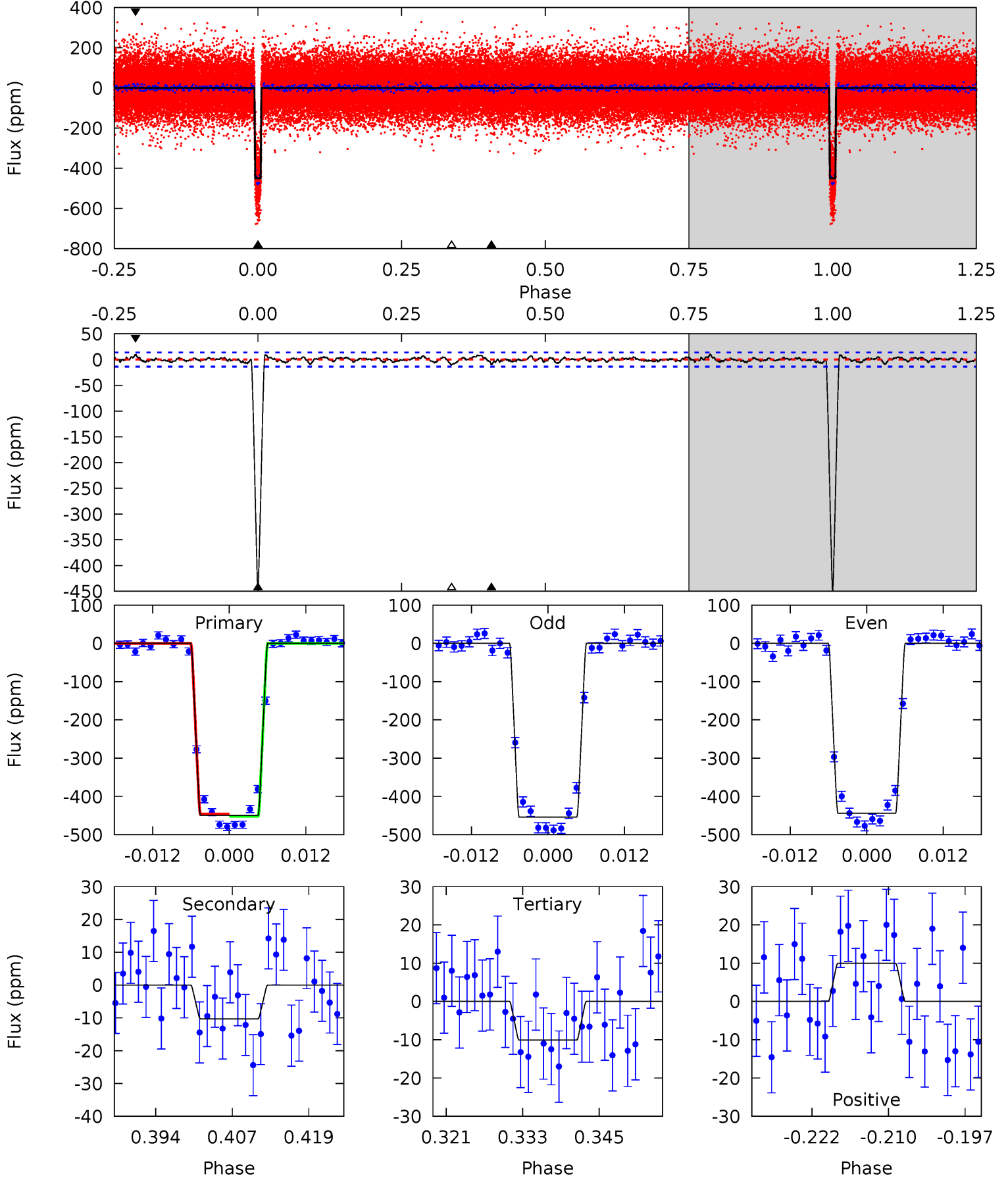
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
178.6	4.07	3.74	3.76	4.97	2.47	1.20	174.9	174.9	0.33	0.32	1.55	0.99	0.02	0.93



Alt Model-Shift Uniqueness Test

004914423-01, P = 15.965451 Days, E = 126.207106 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
162.3	3.72	3.64	3.61	4.99	2.50	1.11	158.6	158.7	0.07	0.11	1.84	1.00	0.02	1.04



Stellar Parameters For KIC 004914423

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5880^{+78}_{-78}	$4.154^{+0.033}_{-0.027}$	$0.080^{+0.150}_{-0.150}$	$1.433^{+0.090}_{-0.072}$	$1.068^{+0.124}_{-0.067}$	$0.511^{+0.062}_{-0.055}$
	+1%/-1%	+1%/-1%	+188%/-188%	+6%/-5%	+12%/-6%	+12%/-11%
Source	SPE72	AST69	SPE72	DSEP		

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

Secondary Eclipse Parameters for KIC 004914423-01 / KOI 0108.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-11 ± 3	$3.53^{+0.20}_{-0.16}$	1216^{+24}_{-23}	2920^{+110}_{-109}	$7.708^{+2.208}_{-1.926}$
Alt.	-10 ± 3	$3.33^{+0.19}_{-0.17}$	1220^{+20}_{-24}	2948^{+120}_{-144}	$8.203^{+2.520}_{-2.396}$

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 $A_{obs} \gg 1.0$

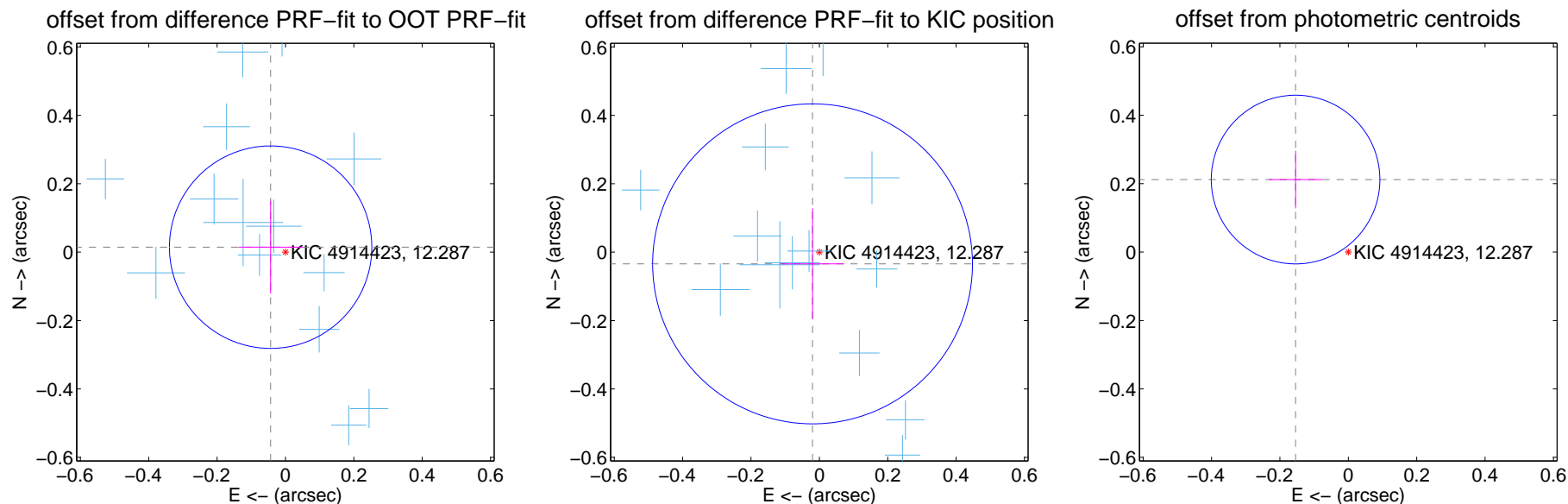
DV Centroid Data

Supplemental centroid analysis for 004914423-01. Kepler magnitude: 12.29. Transit SNR 119.11

There are 17 quarters with good PRF difference image offsets

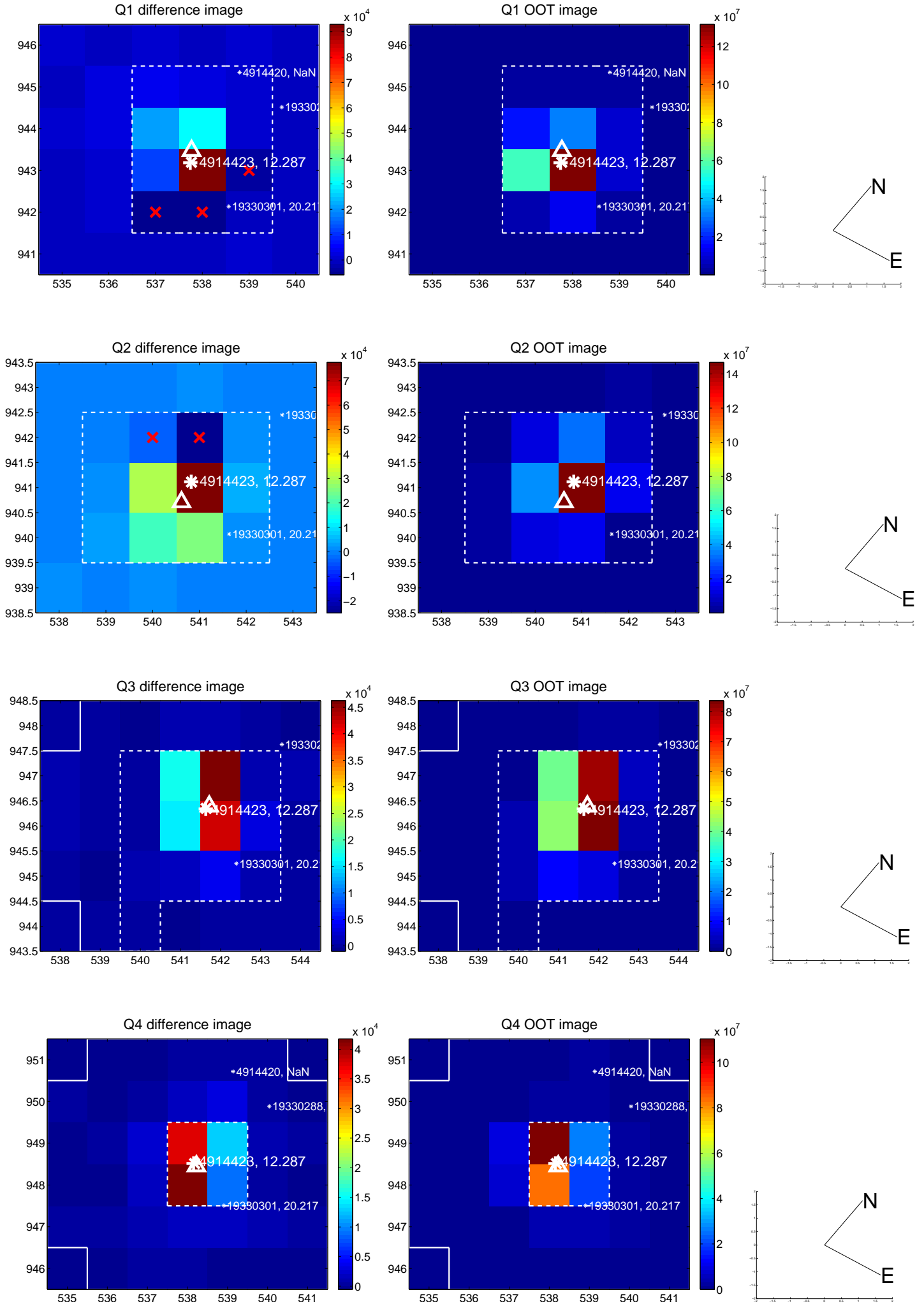
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.046 ± 0.099	0.46	0.043 ± 0.094	0.015 ± 0.136
PRF-fit source offset from KIC position	0.040 ± 0.156	0.25	0.020 ± 0.092	-0.034 ± 0.162
photometric centroid source offset	0.26 ± 0.08	3.19	0.15 ± 0.08	0.21 ± 0.08

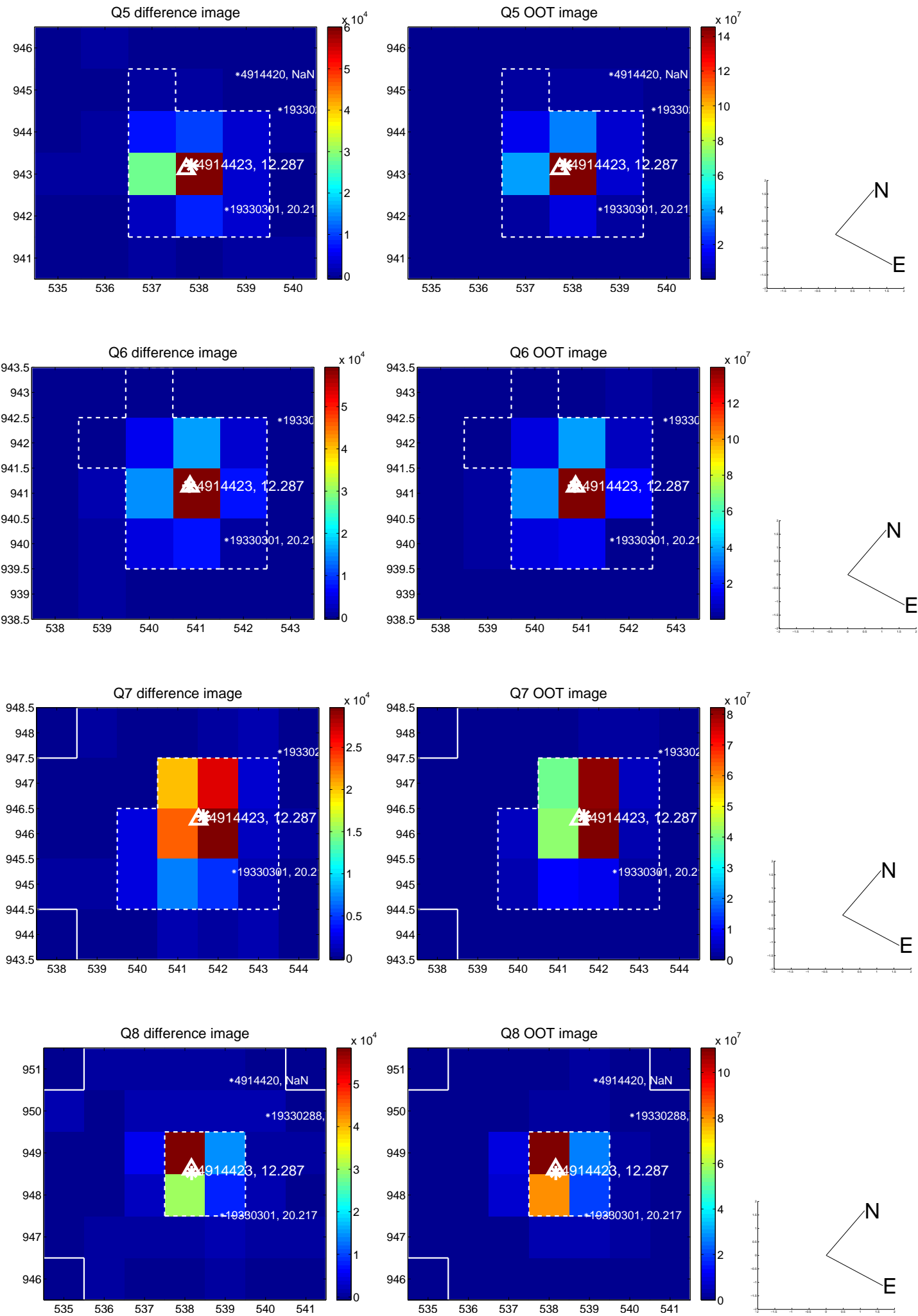


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

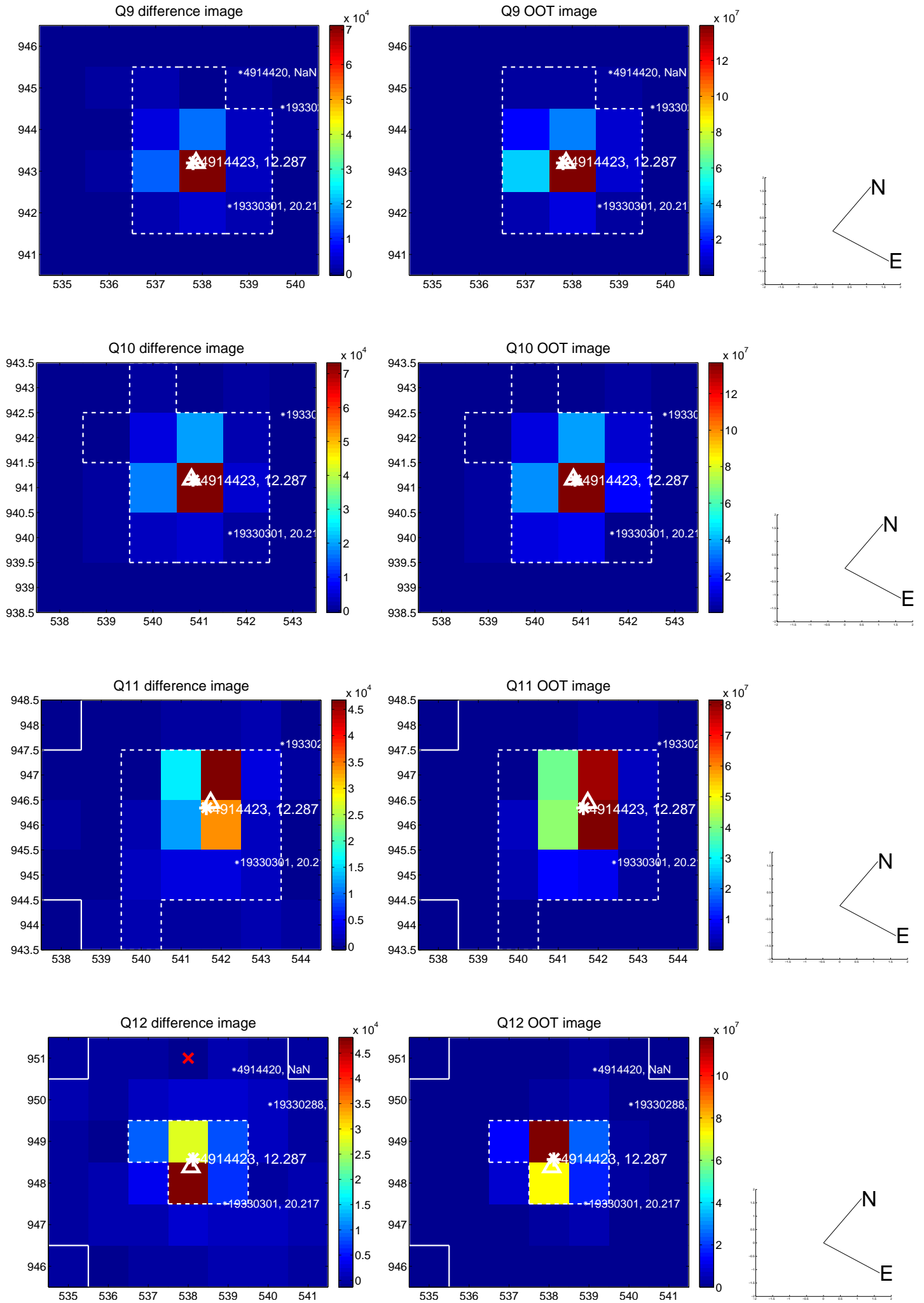
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



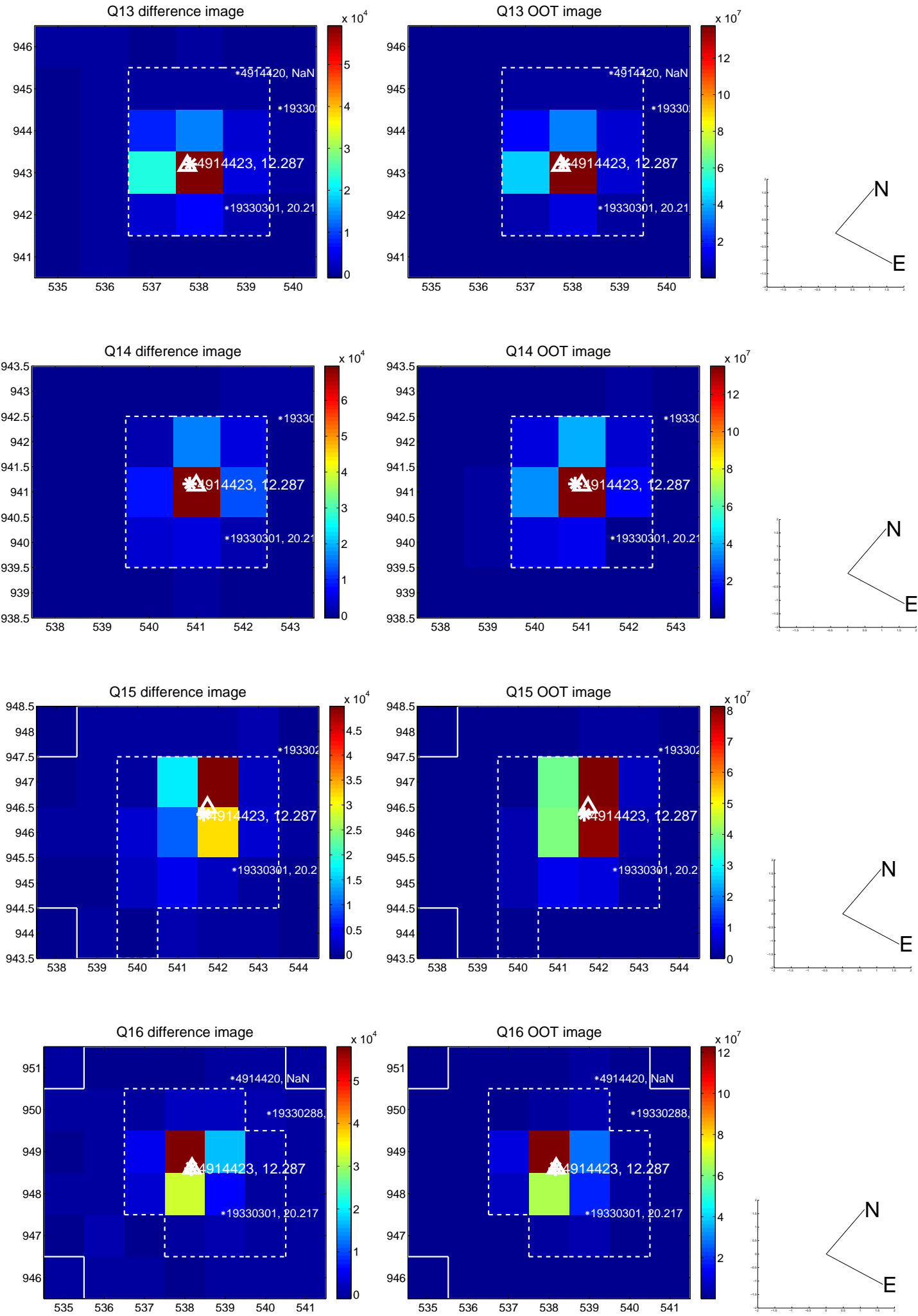
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



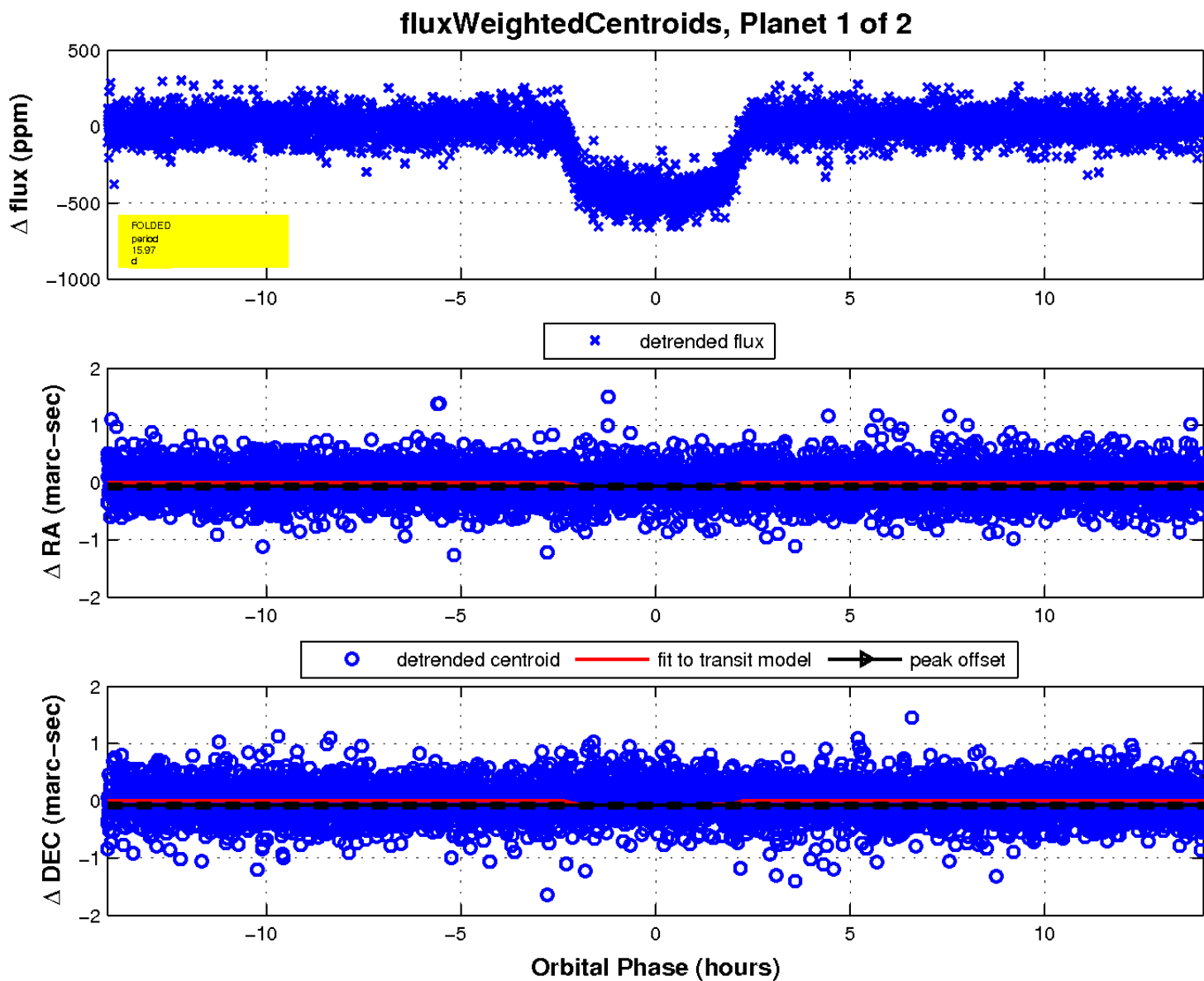
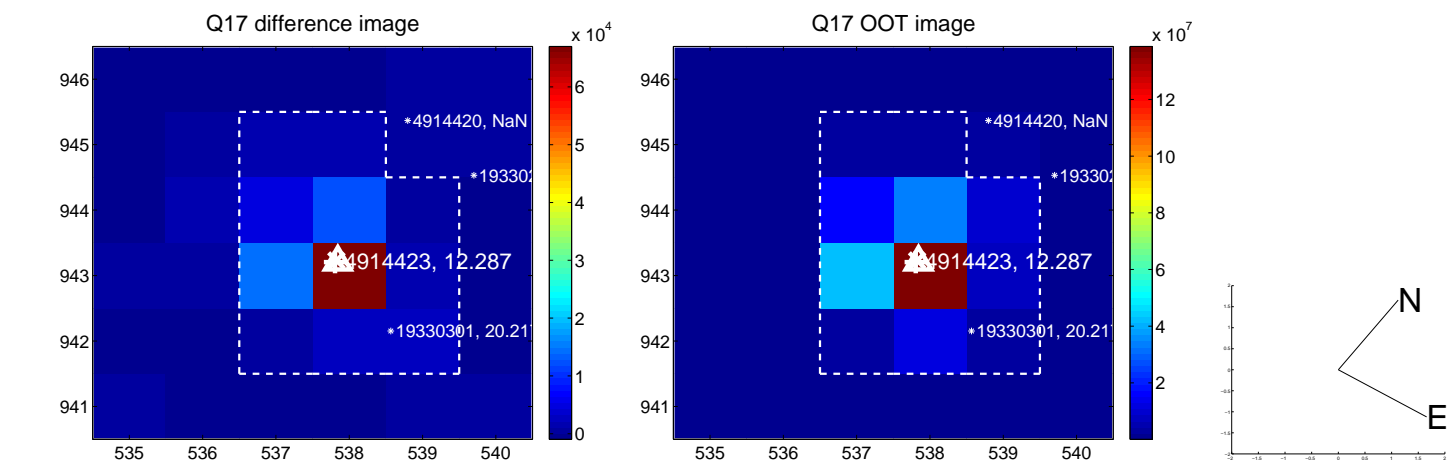
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

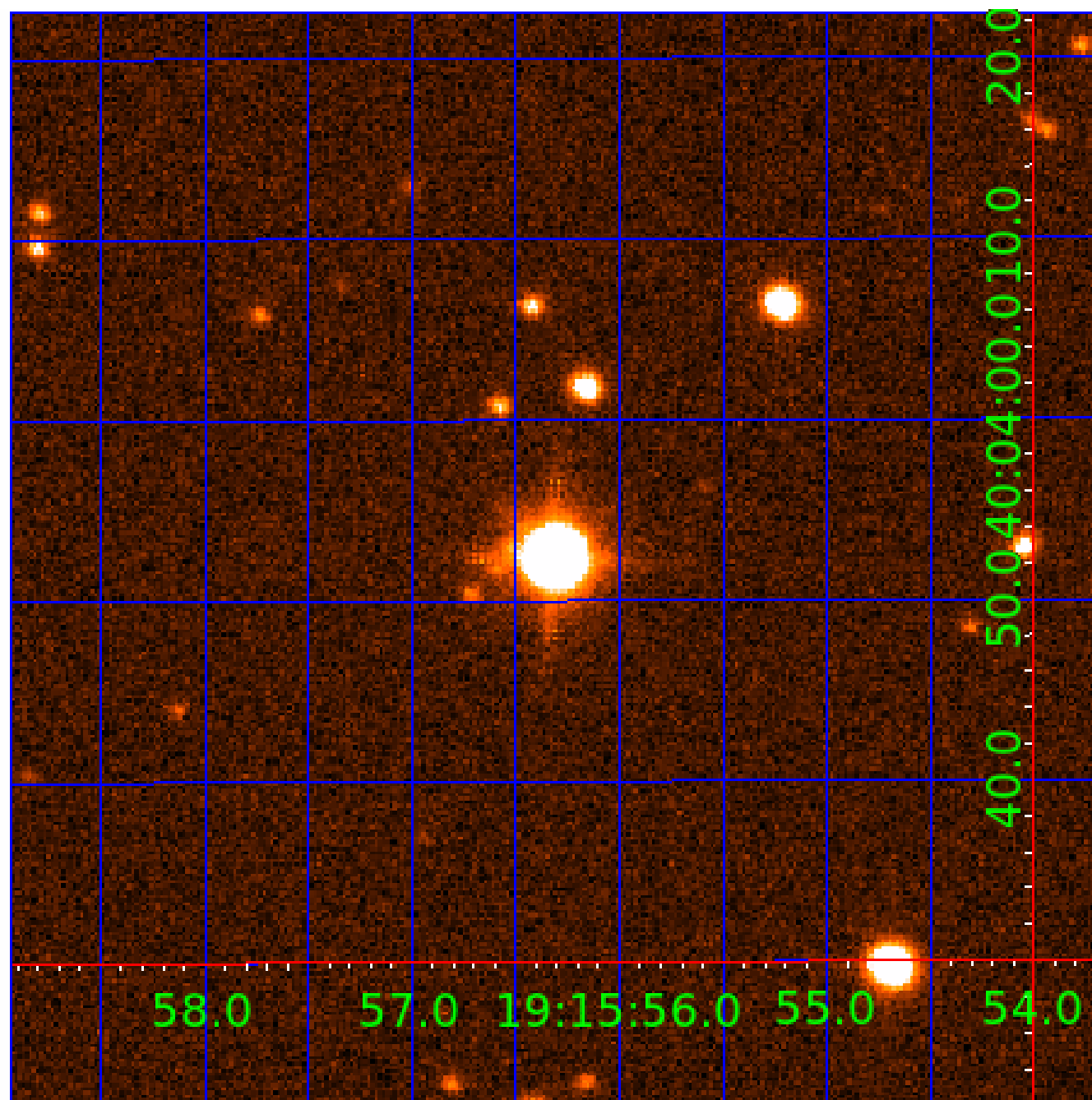


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004914423

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})
004914423-01	OBS	0108.01	15.965347	142.176989	479.9	4.695	122.3	119.1	1.43	5880	3.54	136.67
004914423-02	OBS	0108.02	179.610162	295.334171	1272.2	13.600	116.1	122.9	1.43	5880	5.50	5.42

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004914423-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
004914423-02	OBS	PC	1.00	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.

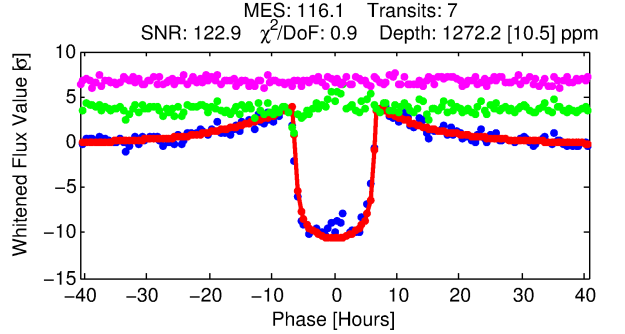
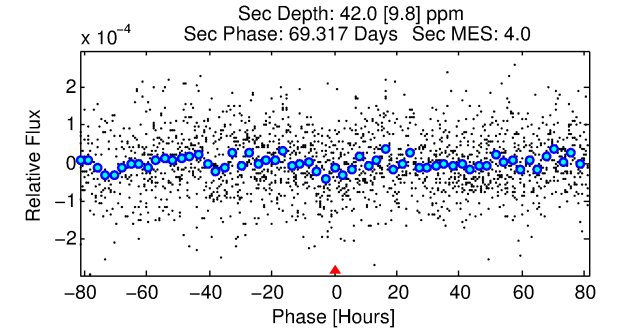
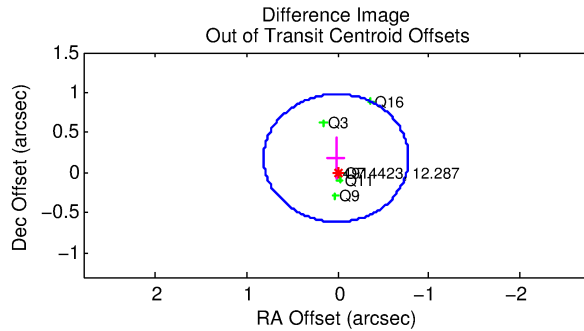
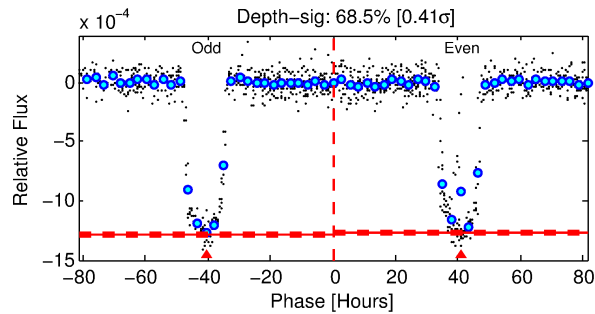
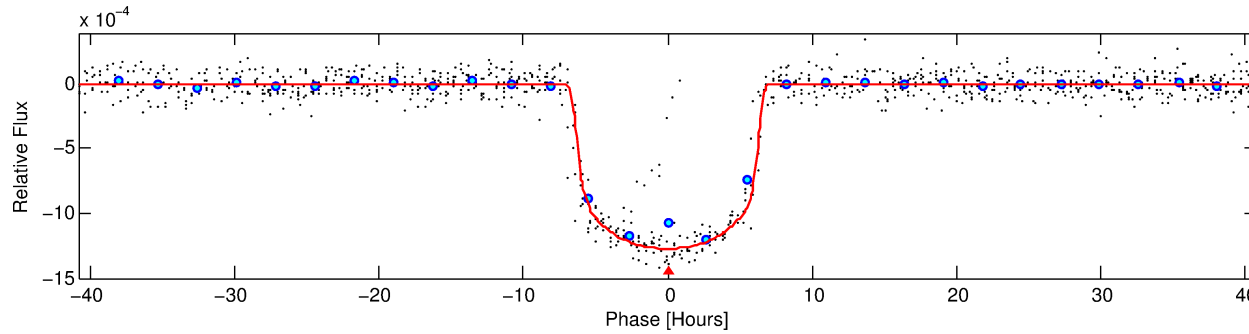
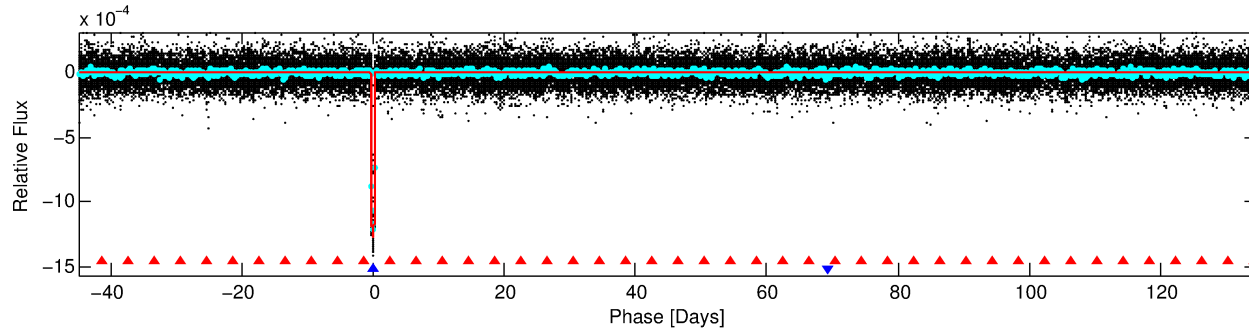
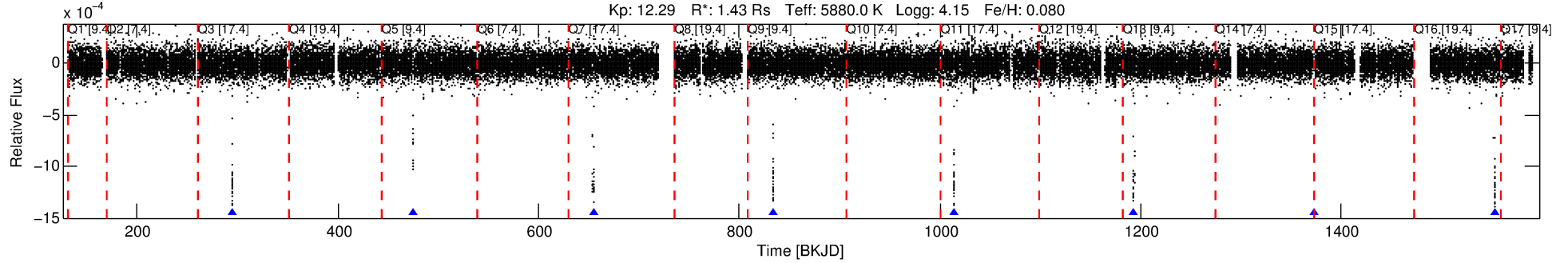
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004914423-02

No Significant Match Found

DV One-Page Summary

KIC: 4914423 Candidate: 2 of 2 Period: 179.610 d
KOI: K00108.02 Name: Kepler-103c Corr: 0.991



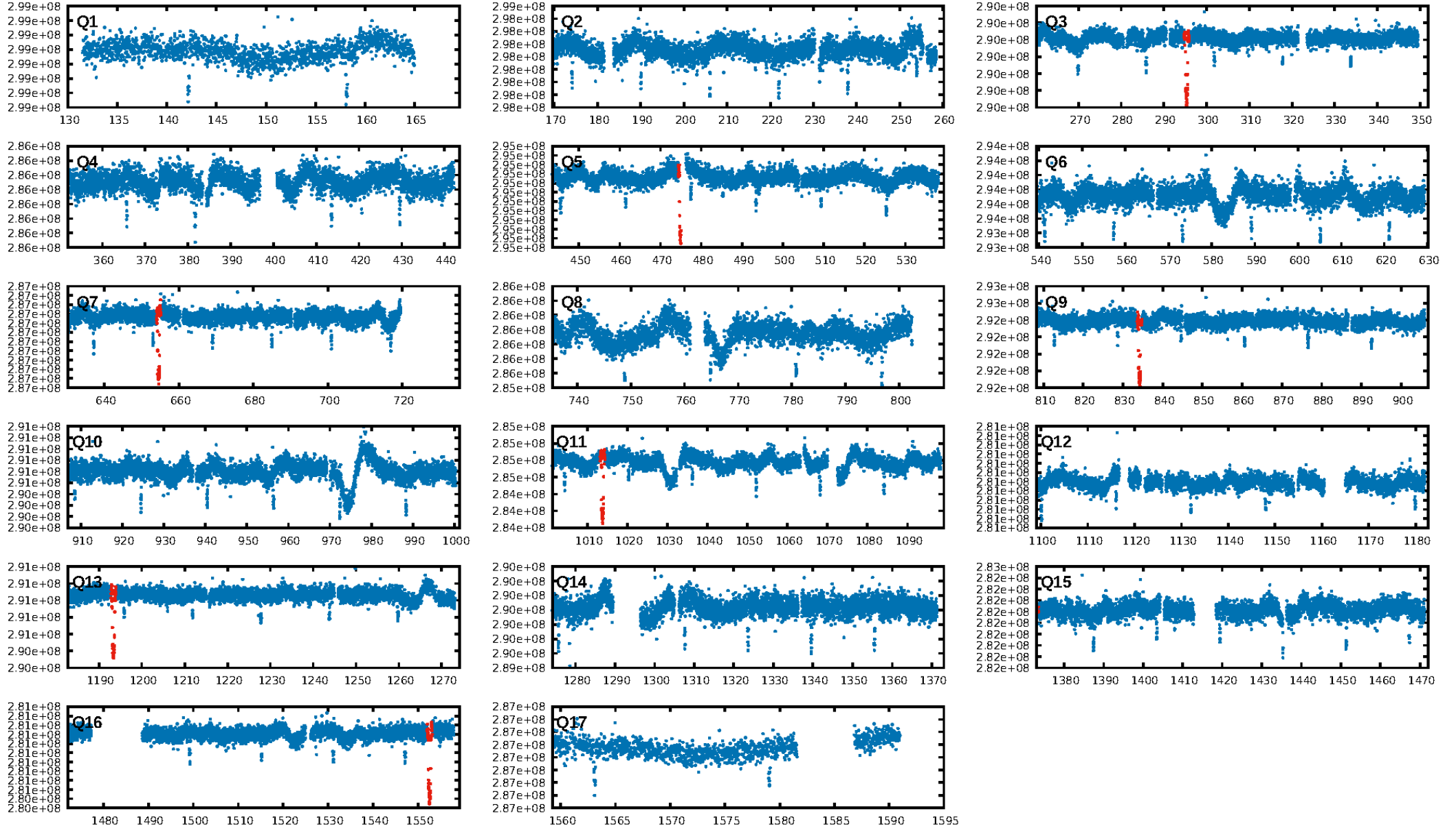
DV Fit Results:

Period = 179.61016 [0.00037] d
Epoch = 295.3342 [0.0015] BKJD
Rp/R* = 0.0351 [0.0005]
a/R* = 74.83 [4.80]
b = 0.72 [0.04]
Seff = 5.42 [0.46]
Teq = 389 [8] K
Rp = 5.50 [0.36] Re
a = 0.6369 [0.0312] AU
Ag = 310.65 [75.92] [4.08σ]
Teffp = 2526 [152] K [14.00σ]

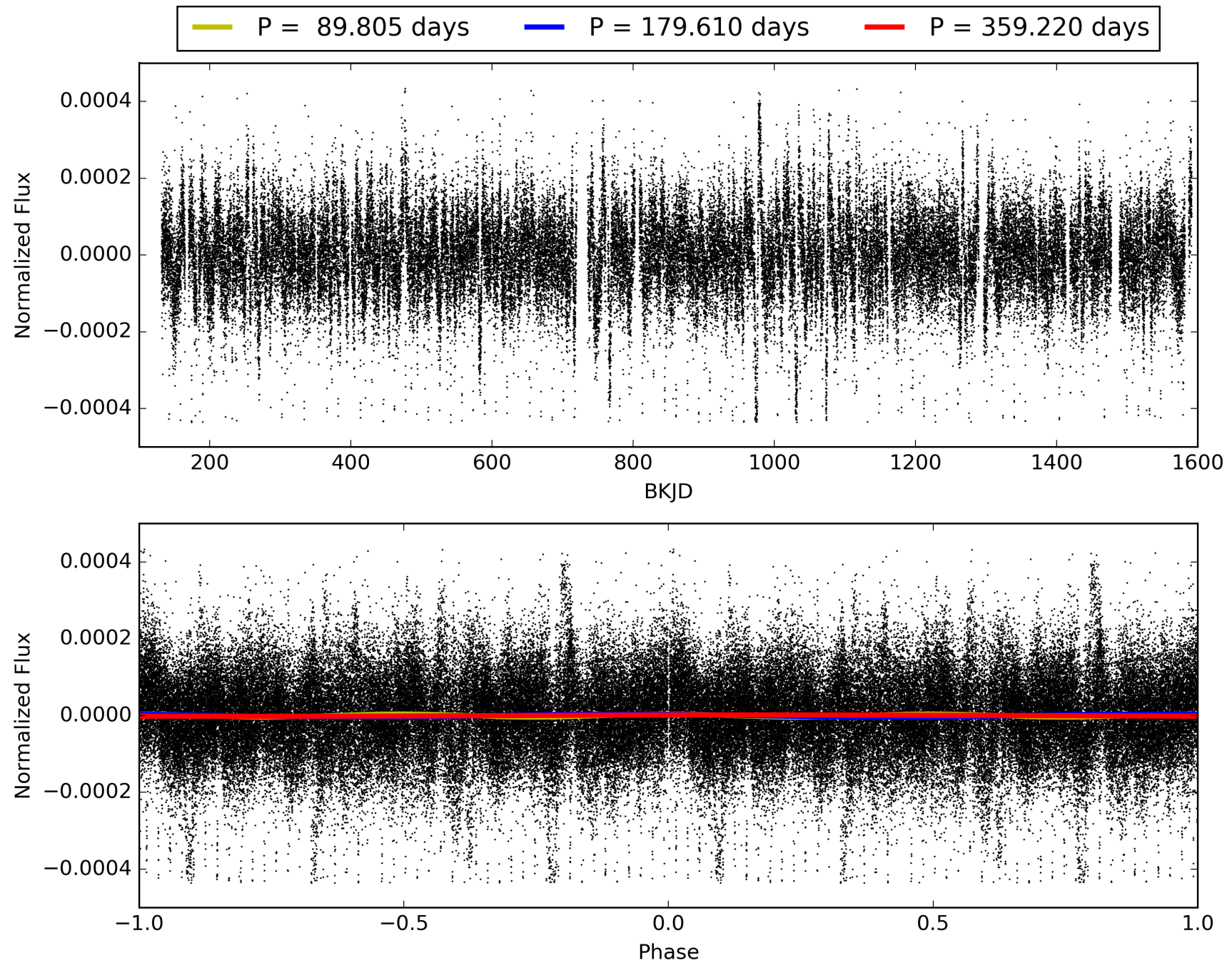
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [272.98σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 94.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 9.001
Centroid-sig: 5.0%
Centroid-so: 0.111 arcsec [1.49σ]
OotOffset-rm: 0.183 arcsec [0.69σ]
KicOffset-rm: 0.113 arcsec [0.45σ]
OotOffset-st: 0/3/1/1 [5]
KicOffset-st: 0/3/1/1 [5]
DiffImageQuality-fgm: 1.00 [5/5]
DiffImageOverlap-fno: 1.00 [5/5]

TCE 004914423-02, PDC Light Curves

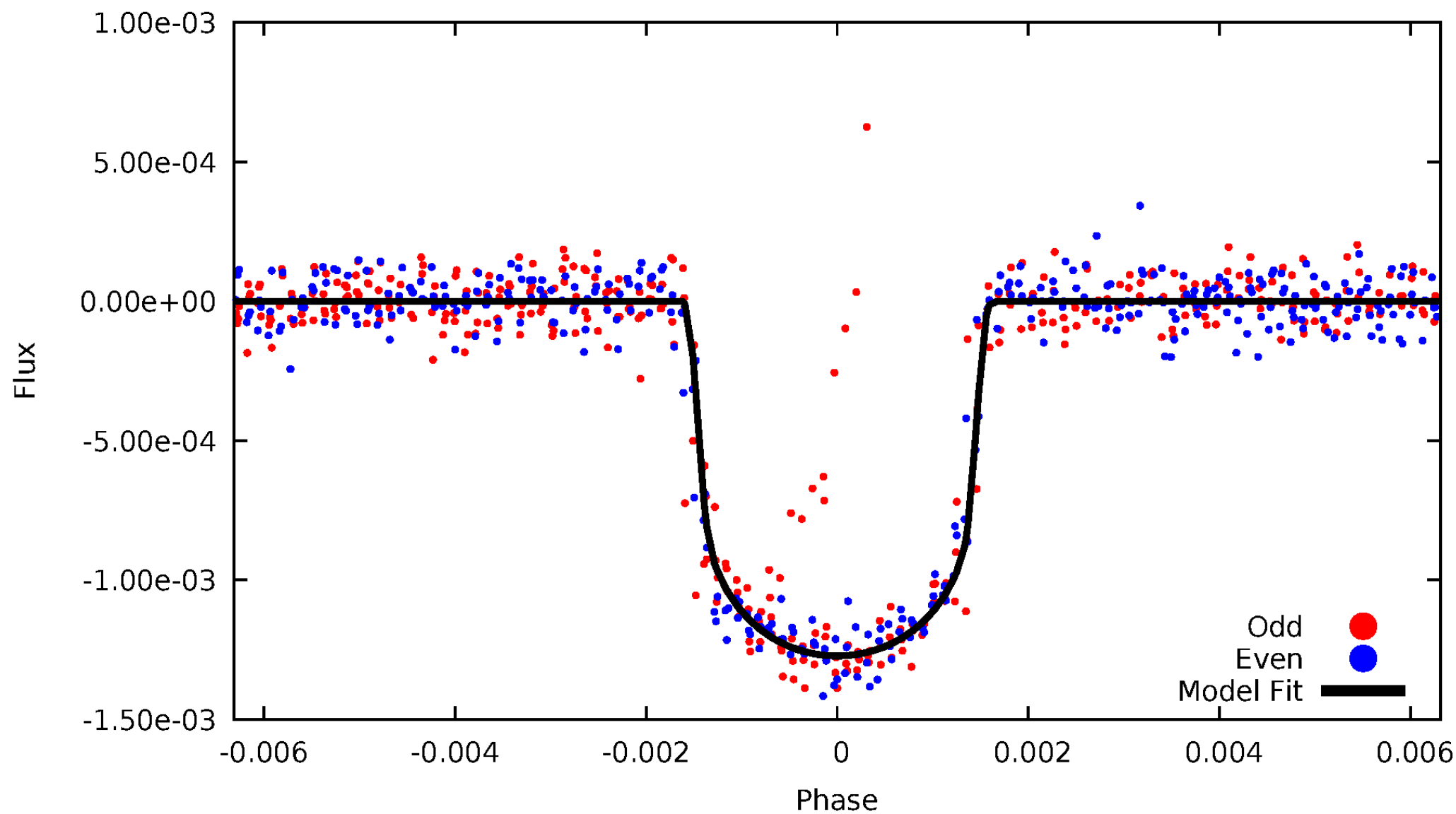


TCE 004914423-02



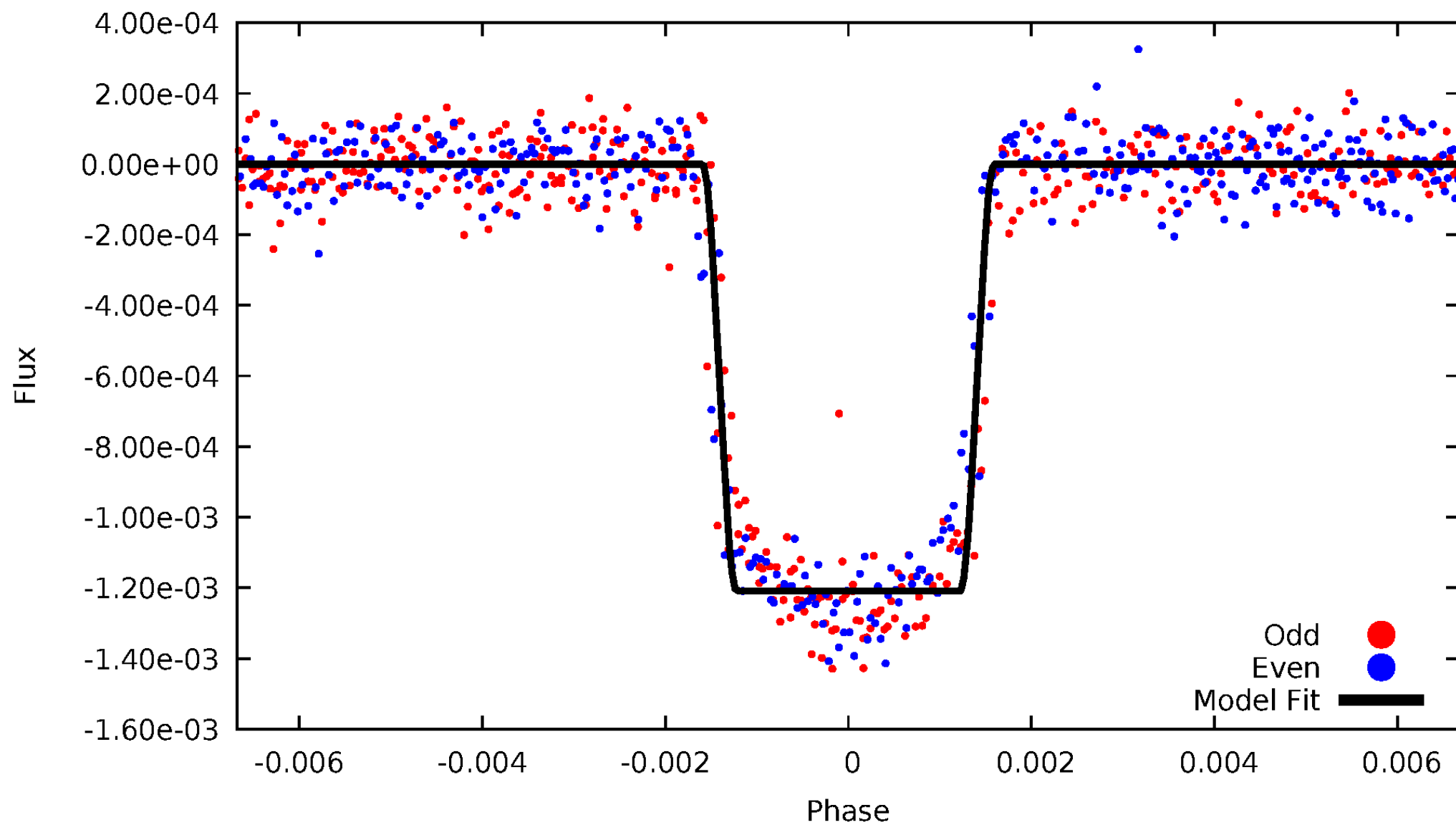
DV Odd/Even

TCE 004914423-02



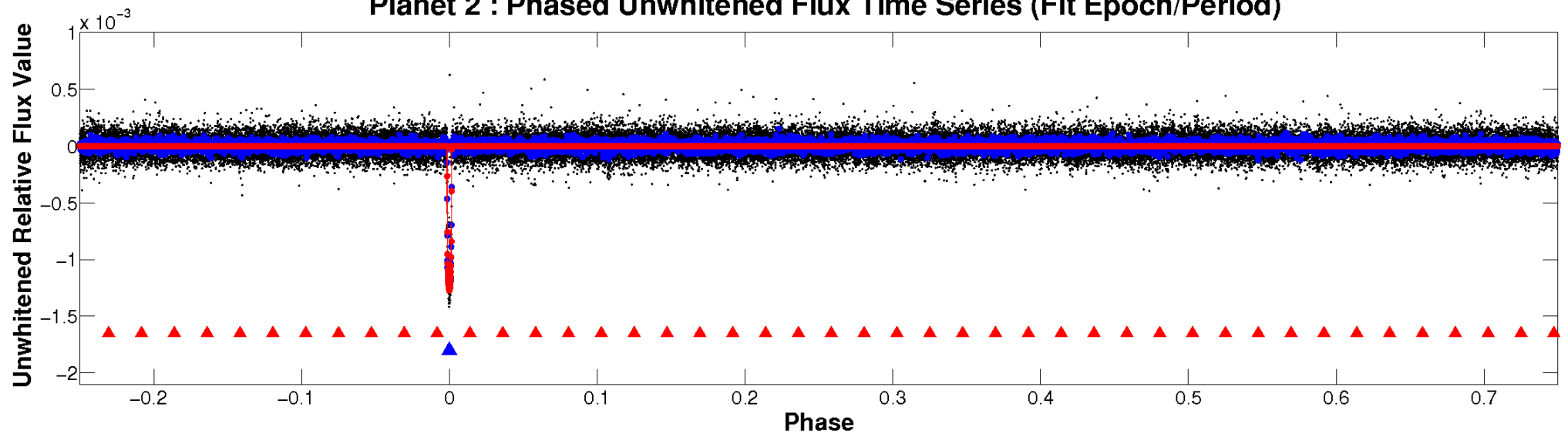
ALT Odd/Even

TCE 004914423-02

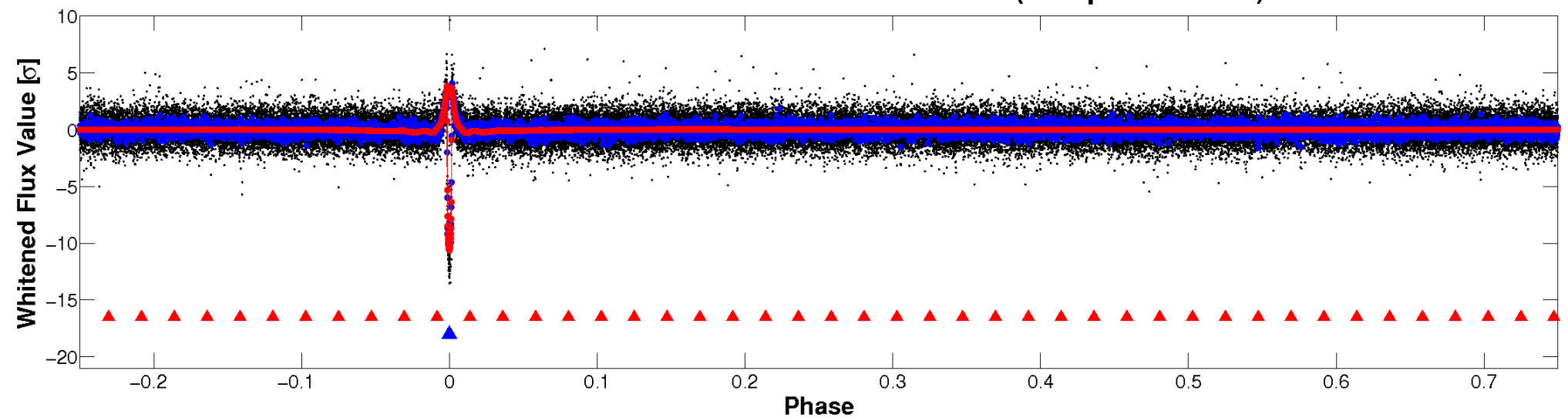


Non-Whitened Vs. Whitened Light Curve

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

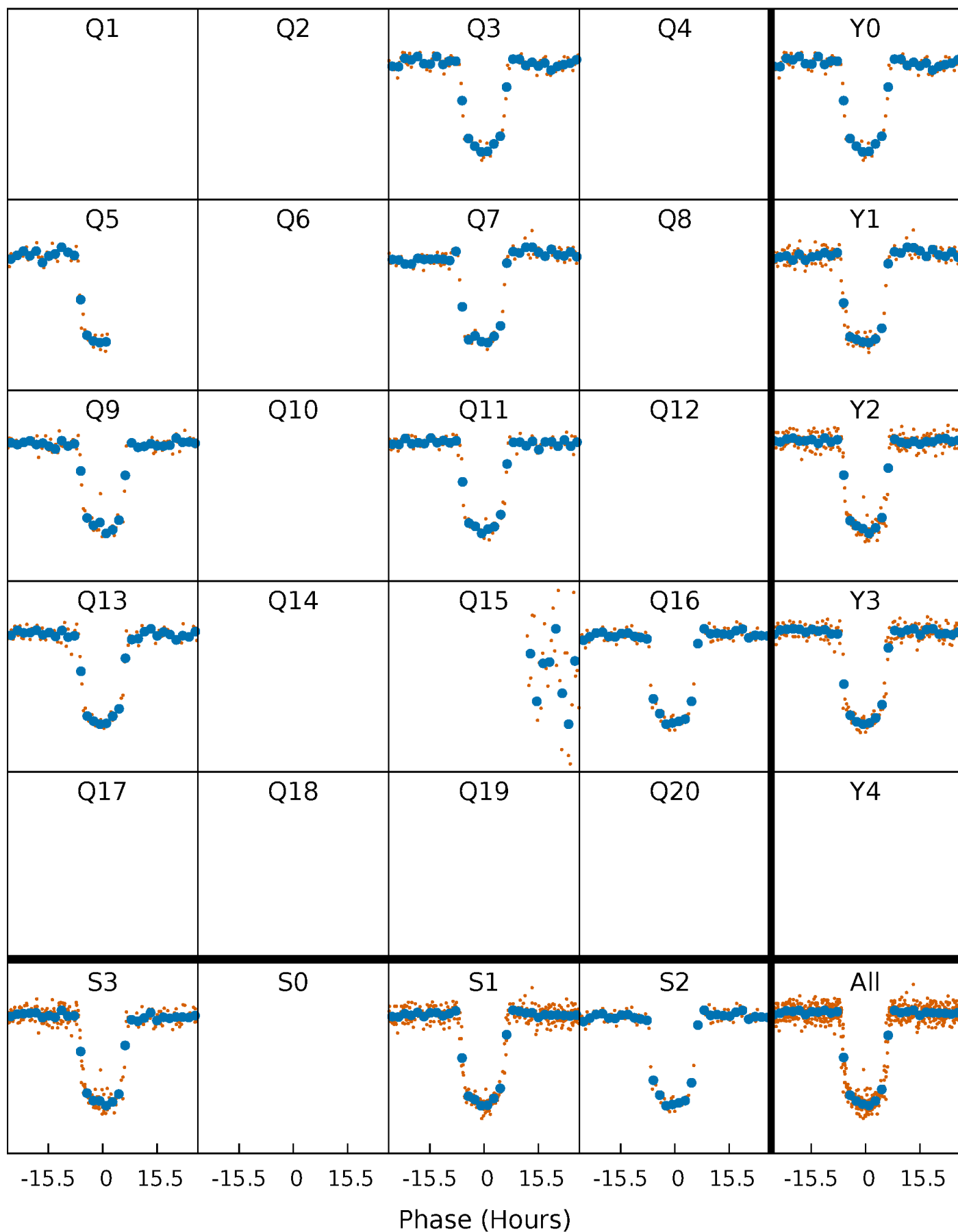


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



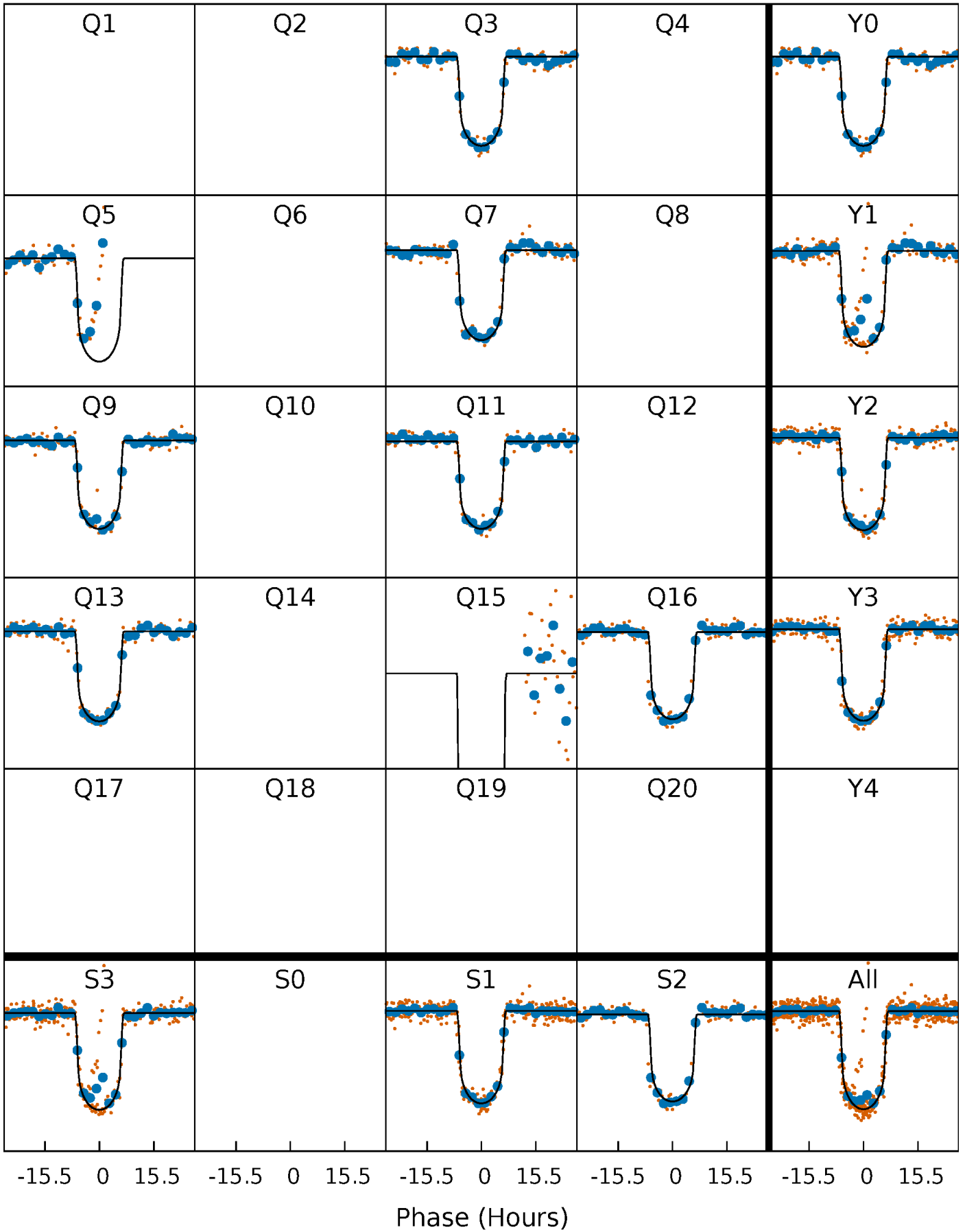
PDC Quarter-Phased Transit Curves

TCE 004914423-02 P=179.610162 Days $T_0=295.334171$ (BKJD)



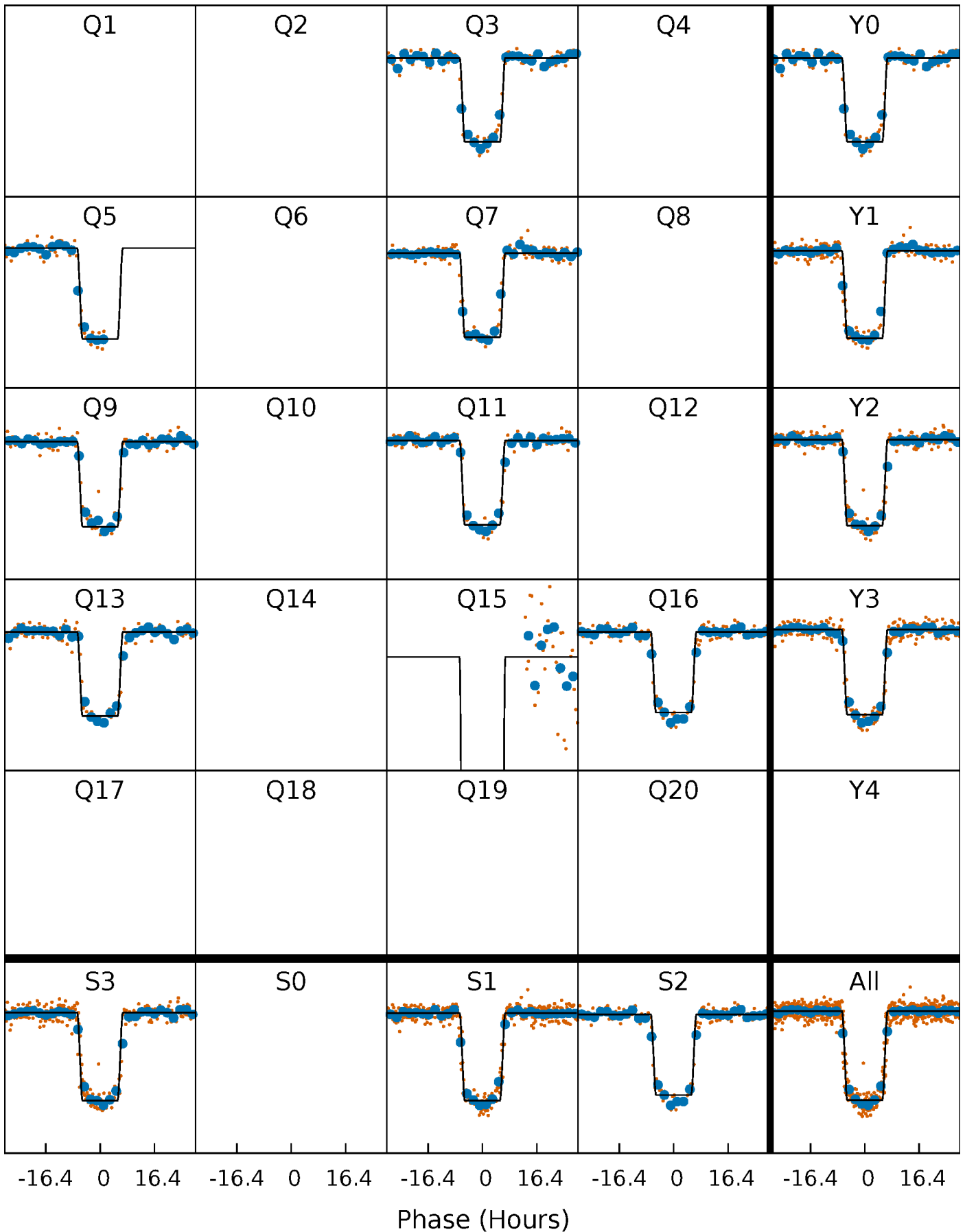
DV Quarter-Phased Transit Curves

TCE 004914423-02 $P=179.610162$ Days $T_0=295.334171$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

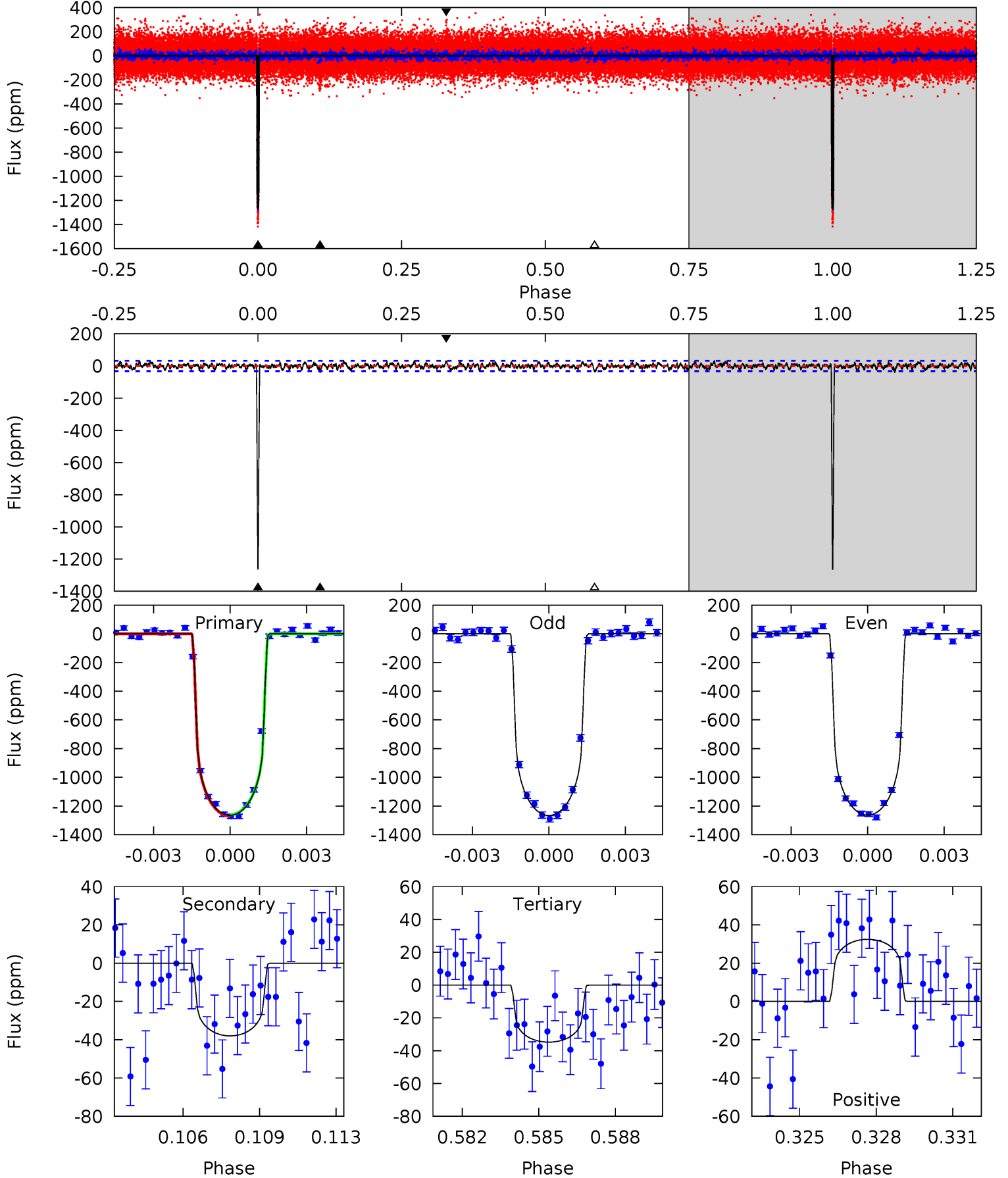
TCE 004914423-02 P=179.604181 Days $T_0=295.346214$ (BKJD)



DV Model-Shift Uniqueness Test

004914423-02, P = 179.610162 Days, E = 115.724009 Days

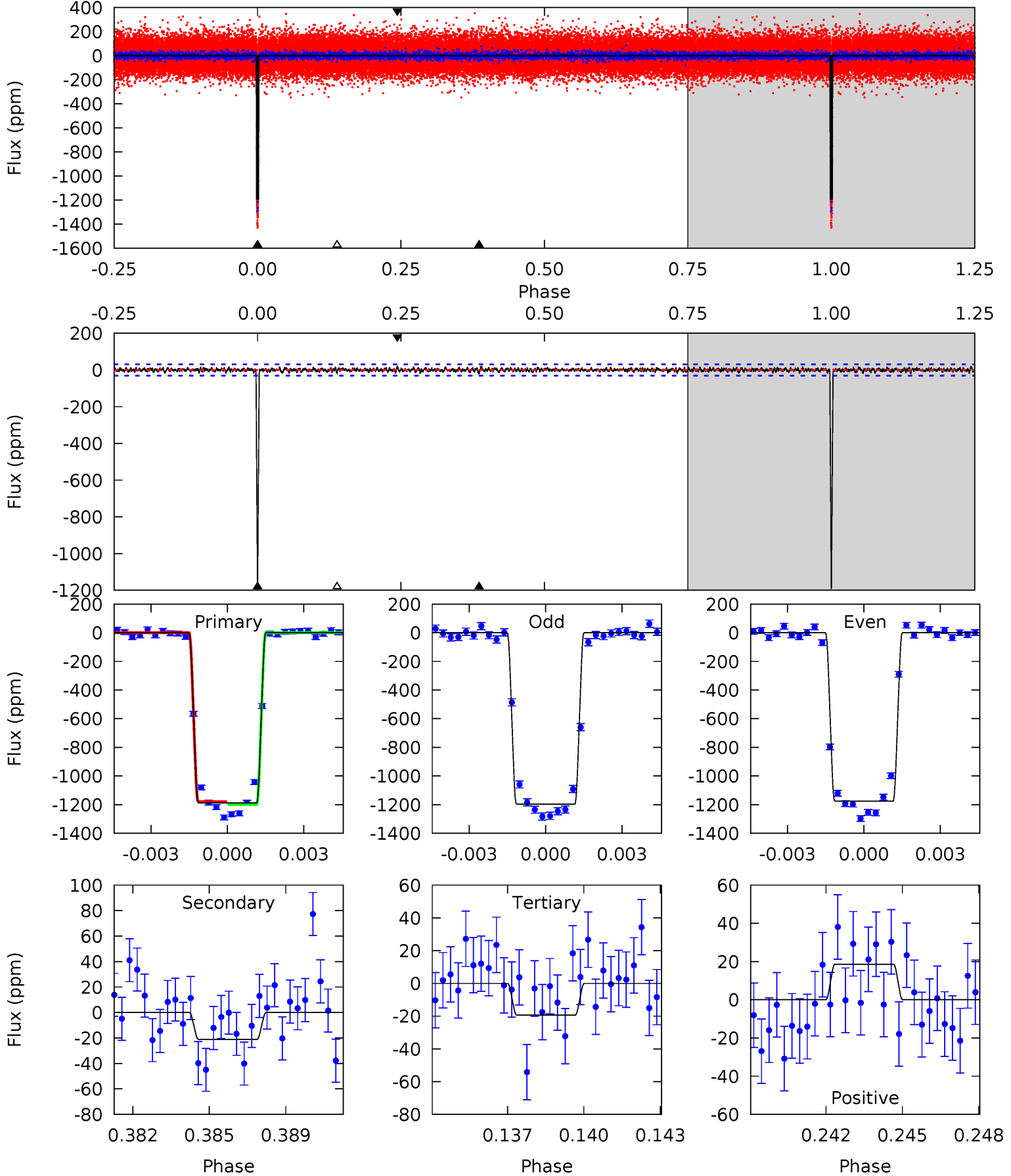
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
207.7	6.24	5.71	5.33	5.24	2.95	1.69	202.0	202.3	0.53	0.91	0.19	0.93	0.03	0.78



Alt Model-Shift Uniqueness Test

004914423-02, P = 179.604181 Days, E = 115.742033 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
200.9	3.57	3.28	3.15	5.24	2.95	0.95	197.6	197.8	0.29	0.42	1.80	1.00	0.02	1.71



Stellar Parameters For KIC 004914423

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} \text{ (g}\cdot\text{cm}^{-3})$
	5880^{+78}_{-78}	$4.154^{+0.033}_{-0.027}$	$0.080^{+0.150}_{-0.150}$	$1.433^{+0.090}_{-0.072}$	$1.068^{+0.124}_{-0.067}$	$0.511^{+0.062}_{-0.055}$
	+1%/-1%	+1%/-1%	+188%/-188%	+6%/-5%	+12%/-6%	+12%/-11%
Source	SPE72	AST69	SPE72	DSEP		

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

Secondary Eclipse Parameters for KIC 004914423-02 / KOI 0108.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-38 ± 6	$5.50^{+0.23}_{-0.21}$	544^{+11}_{-10}	3096^{+75}_{-77}	280^{+51}_{-47}
Alt.	-21 ± 6	$5.45^{+0.25}_{-0.20}$	543^{+10}_{-10}	2854^{+110}_{-132}	159^{+49}_{-49}

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 $A_{obs} \gg 1.0$

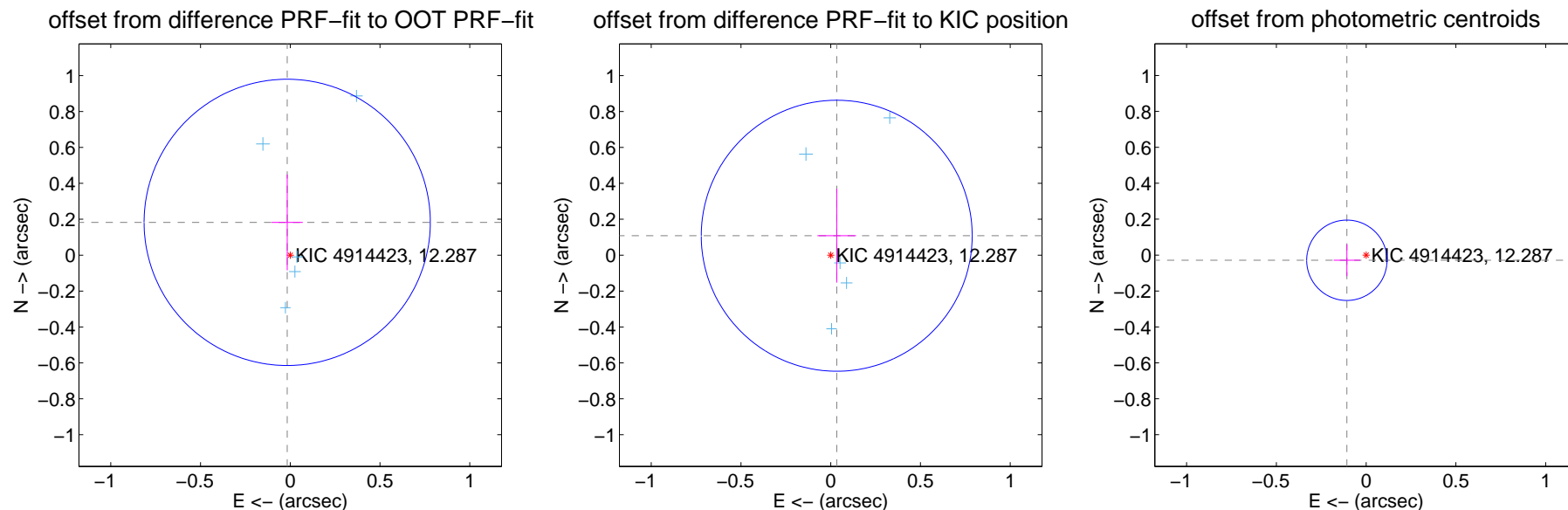
DV Centroid Data

Supplemental centroid analysis for 004914423-02. Kepler magnitude: 12.29. Transit SNR 122.94

There are 5 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.183 ± 0.266	0.69	0.017 ± 0.087	0.183 ± 0.267
PRF-fit source offset from KIC position	0.113 ± 0.252	0.45	-0.033 ± 0.108	0.108 ± 0.261
photometric centroid source offset	0.11 ± 0.07	1.49	0.11 ± 0.07	-0.03 ± 0.09



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.

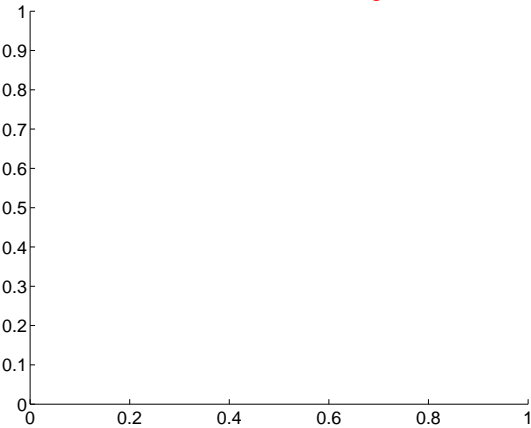
Q1 no difference image



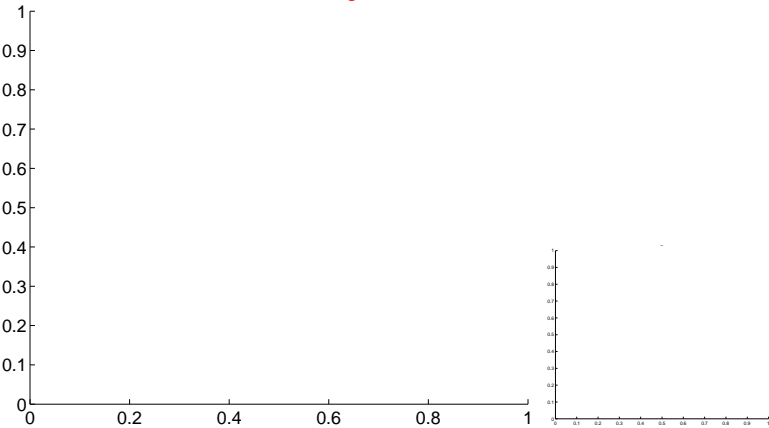
Q1 no OOT image



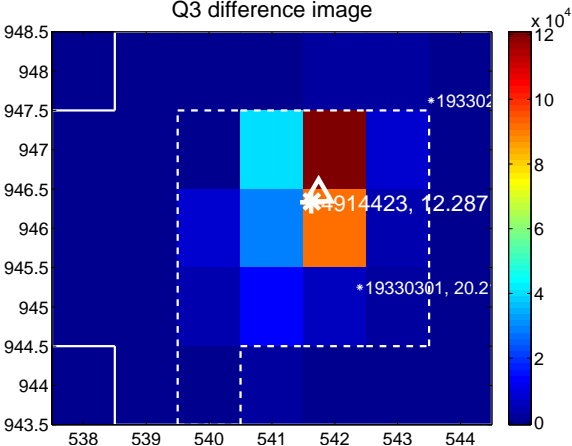
Q2 no difference image



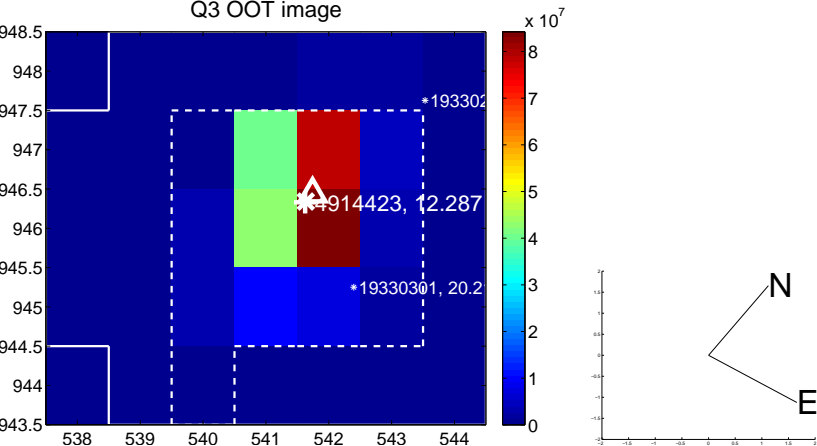
Q2 no OOT image



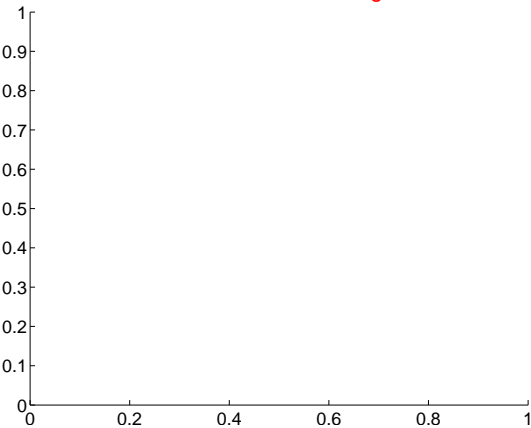
Q3 difference image



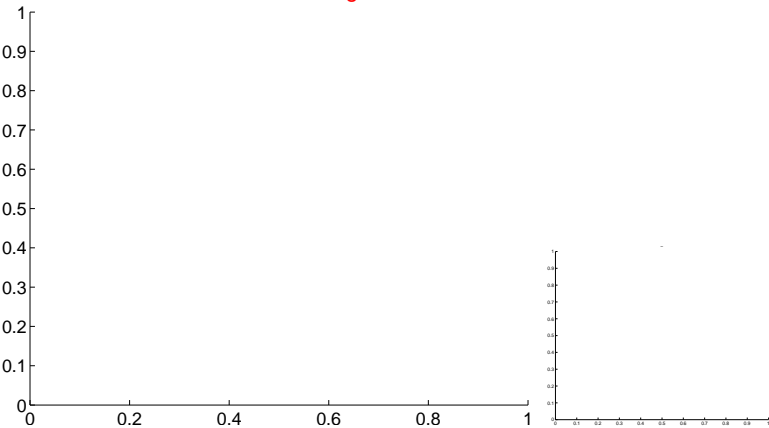
Q3 OOT image



Q4 no difference image



Q4 no OOT image



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

Q5 no difference image



Q5 no OOT image



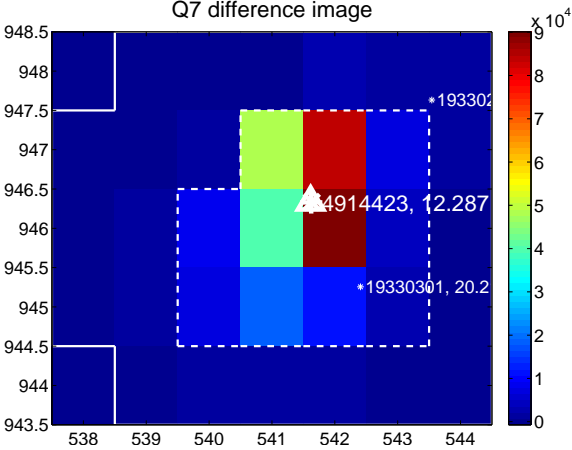
Q6 no difference image



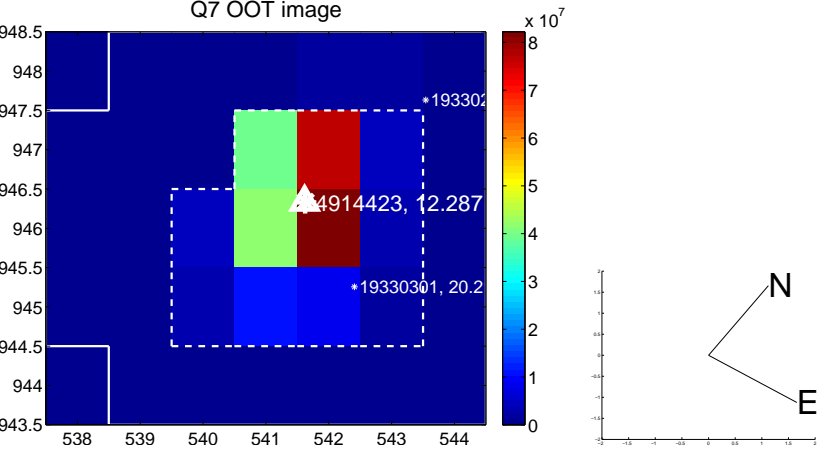
Q6 no OOT image



Q7 difference image



Q7 OOT image



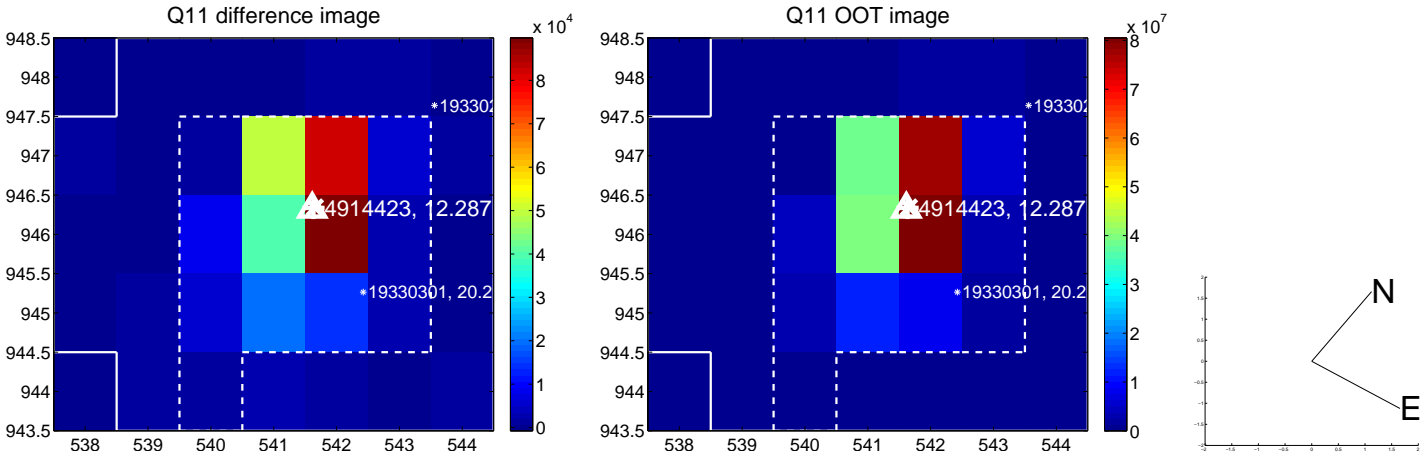
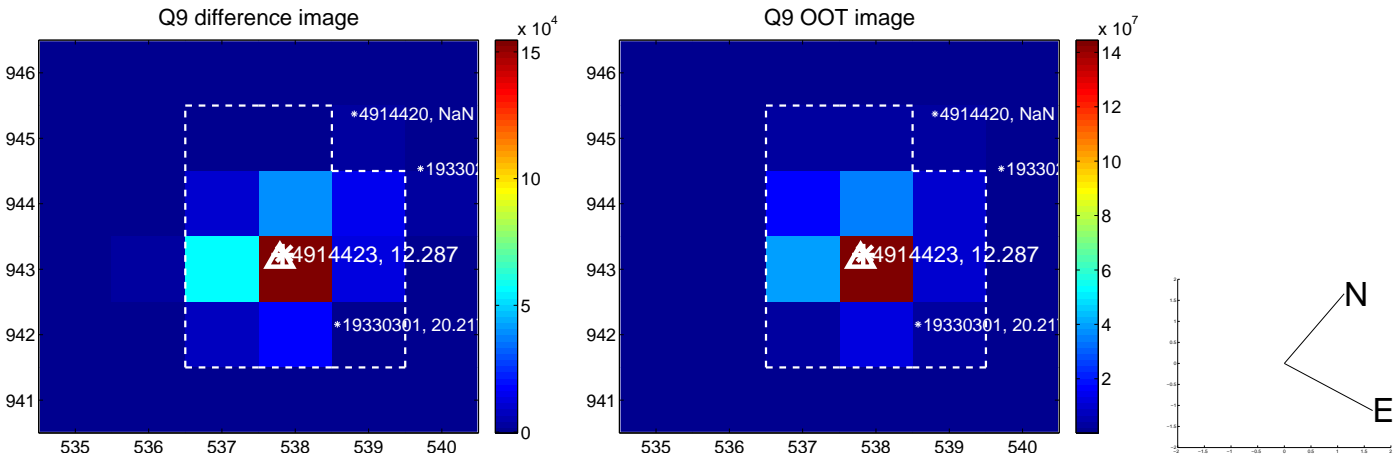
Q8 no difference image



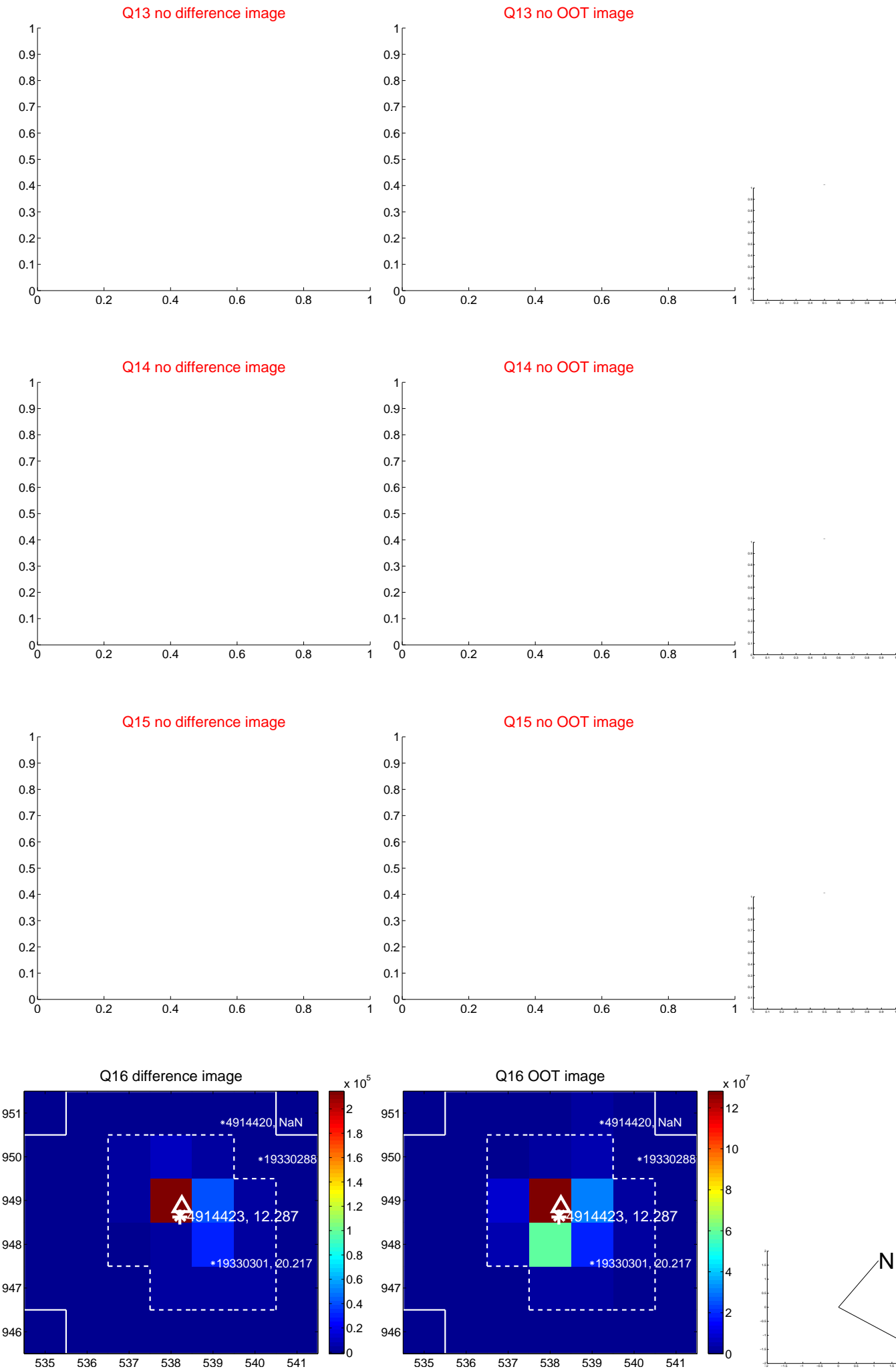
Q8 no OOT image



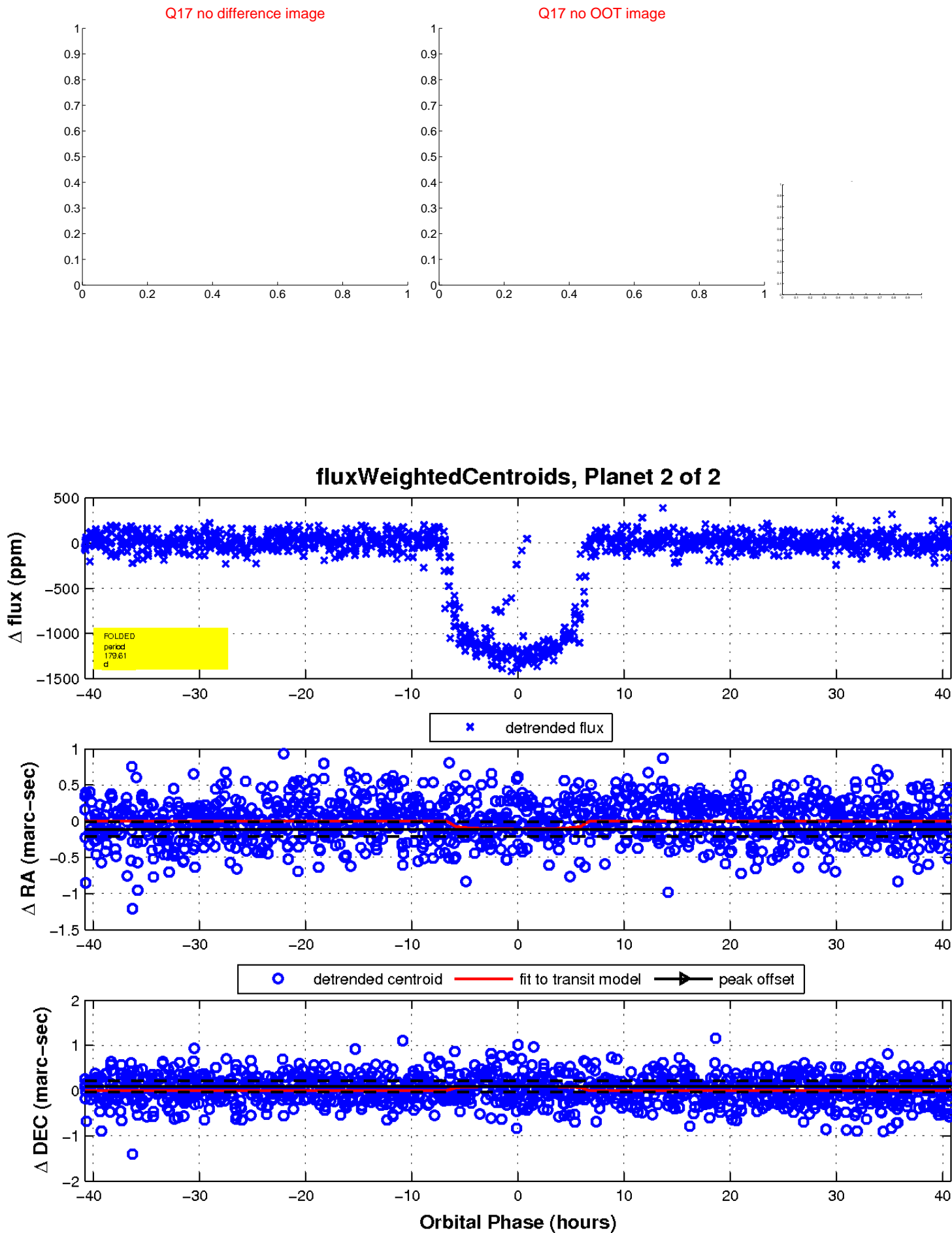
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

