

KIC 009244508

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})
009244508-01	OBS	2830.01	40.528784	168.021535	332.9	10.688	18.6	20.1	3.09	6443	6.00	179.13
009244508-02	OBS	No	2.947664	131.570749	21.4	17.345	8.2	5.9	3.09	6443	1.51	5900.29
009244508-03	OBS	No	149.635182	156.827352	206.1	9.808	9.2	5.9	3.09	6443	5.20	31.39
009244508-05	OBS	No	68.383508	161.479944	294.8	3.101	7.4	7.6	3.09	6443	6.20	89.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009244508-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
009244508-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
009244508-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009244508-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—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.

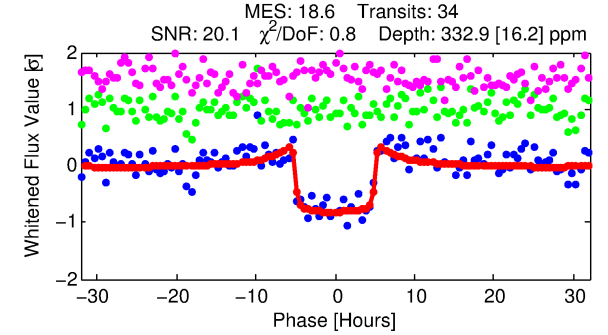
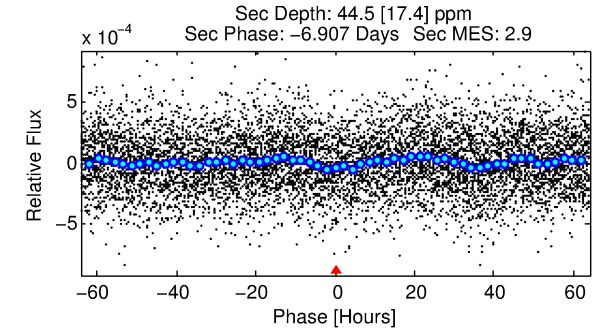
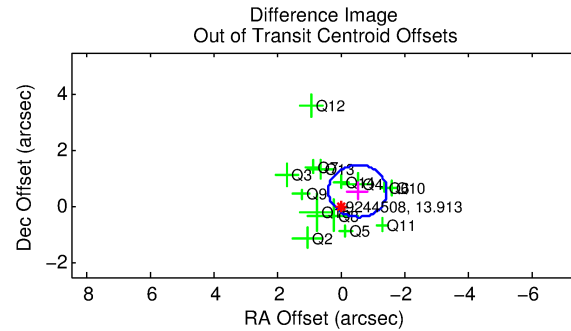
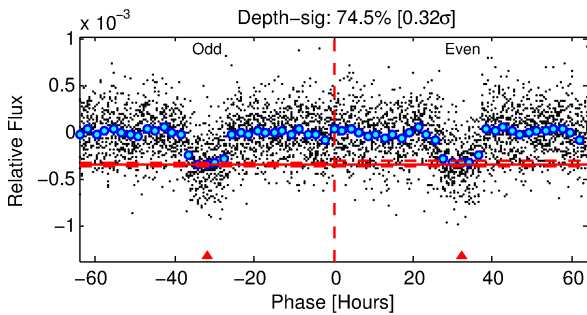
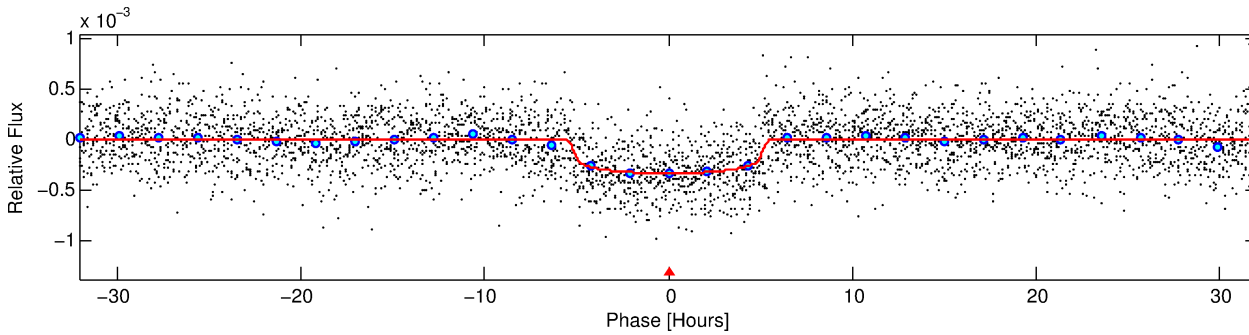
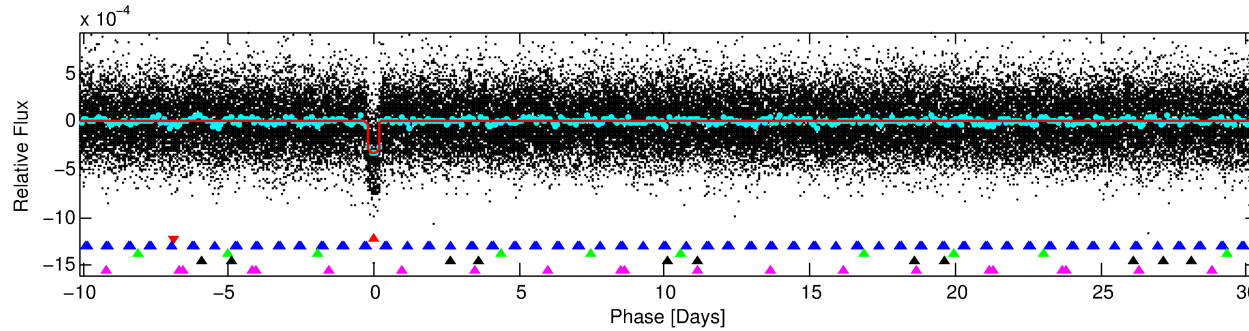
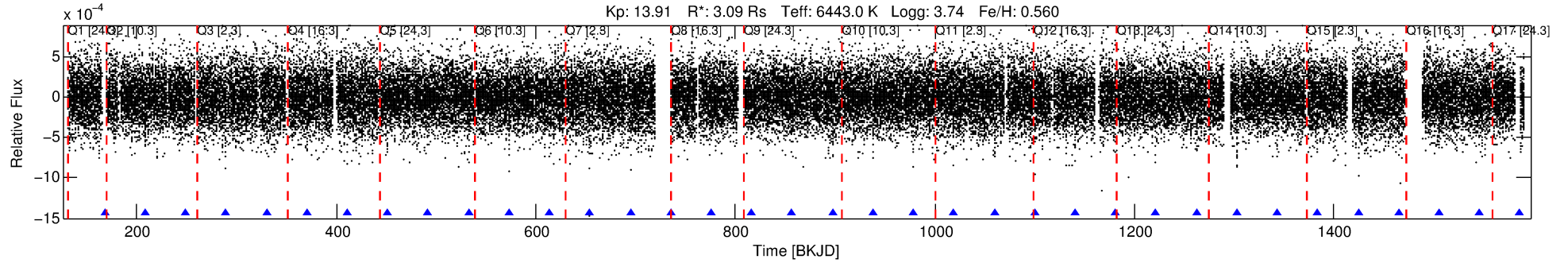
Ephemeris Match Information For 009244508-01

No Significant Match Found

DV One-Page Summary

KIC: 9244508 Candidate: 1 of 5 Period: 40.529 d

KOI: K02830.01 Corr: 0.989



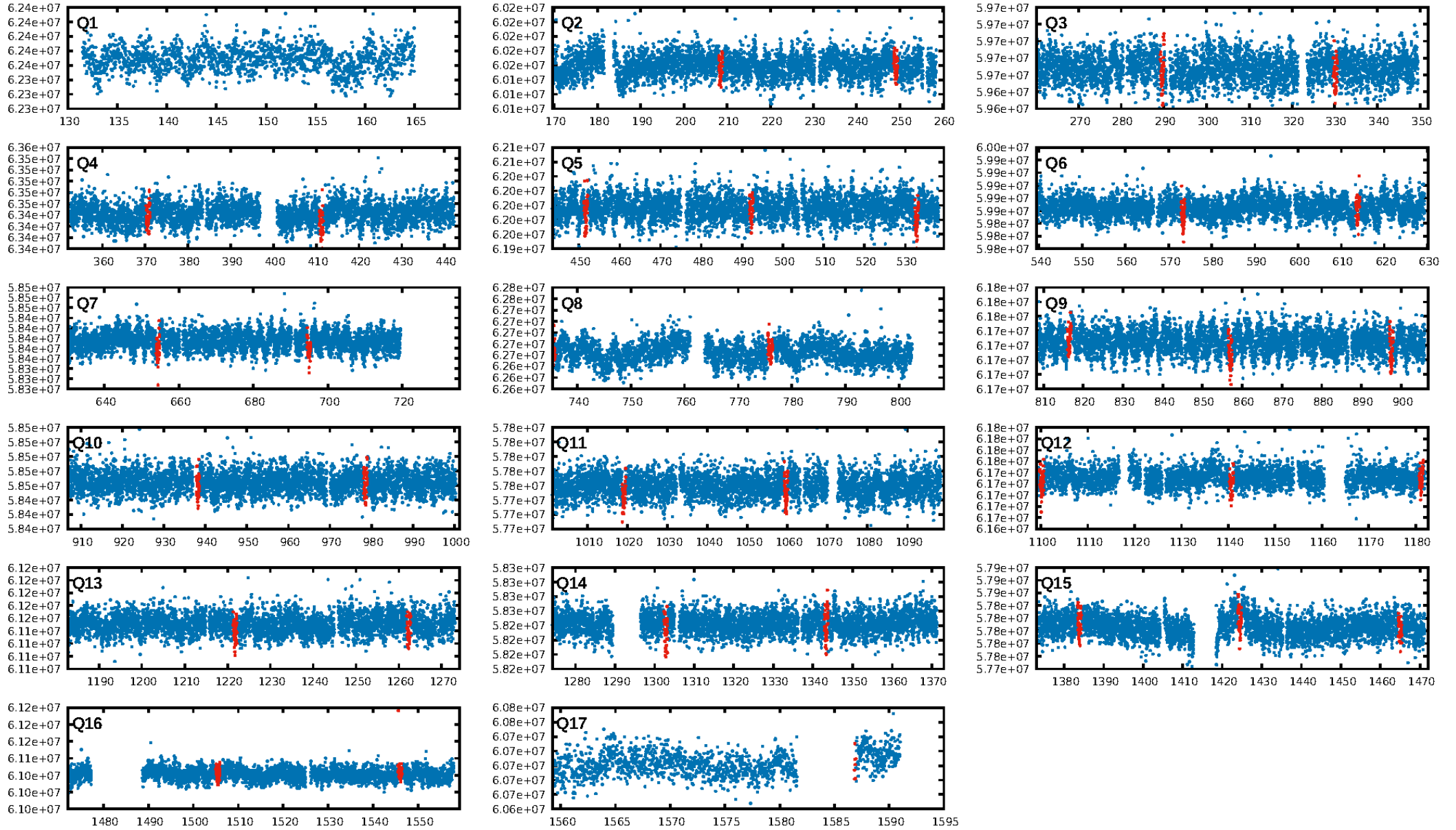
DV Fit Results:

Period = 40.52878 [0.00030] d
Epoch = 168.0215 [0.0059] BKJD
Rp/R* = 0.0178 [0.0027]
a/R* = 21.74 [16.36]
b = 0.69 [0.58]
Seff = 179.13 [66.31]
Teff = 933 [86] K
Rp = 6.00 [1.81] Re
a = 0.2865 [0.0678] AU
Ag = 55.80 [34.43] [1.59σ]
Teffp = 3942 [493] K [6.02σ]

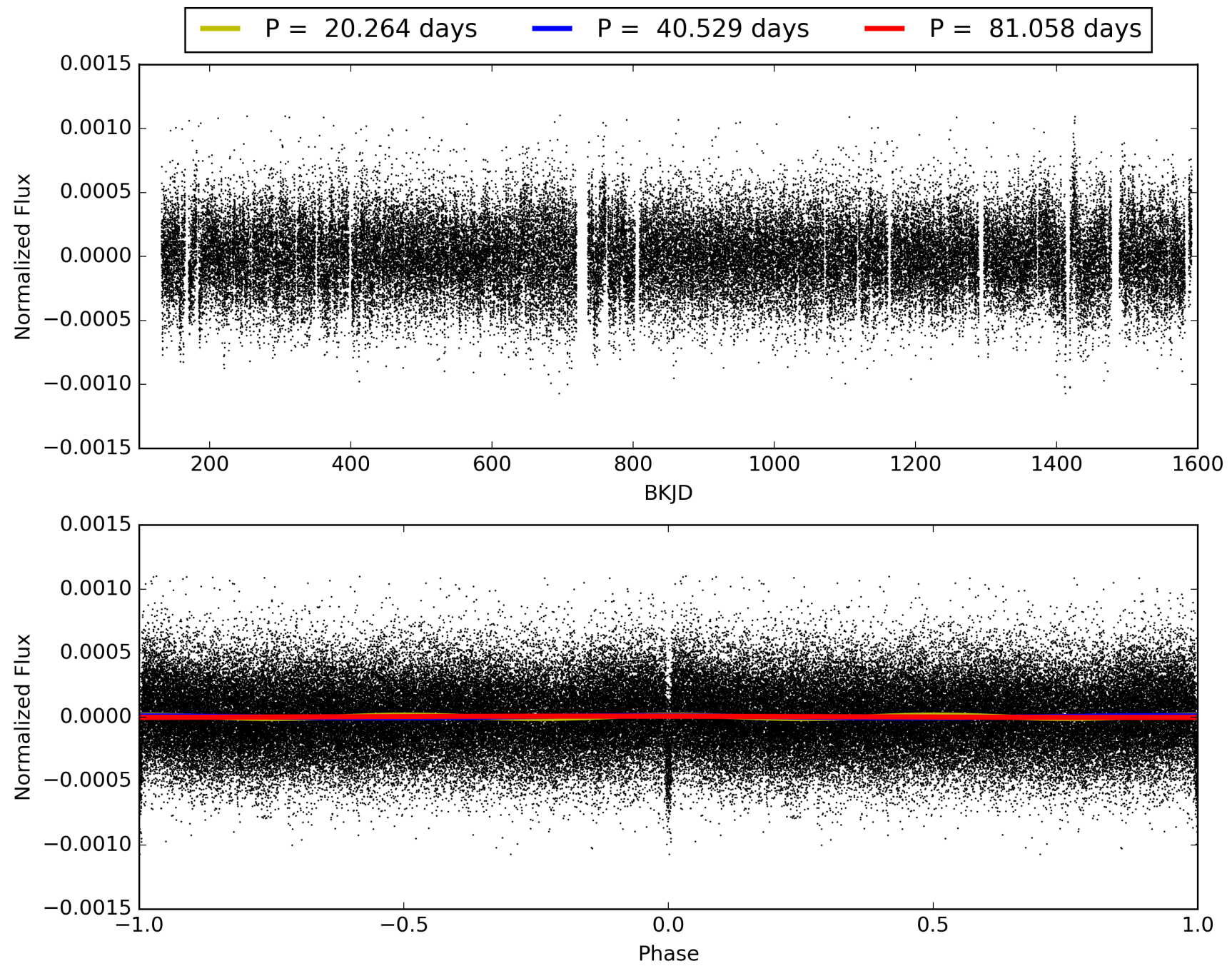
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [44.27σ]
LongPeriod-sig: 100.0% [60.07σ]
ModelChiSquare2-sig: 56.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.84e-34
RollingBand-fgt: 1.00 [34/34]
GhostDiagnostic-chr: 18.96
Centroid-sig: 10.9%
Centroid-so: 0.793 arcsec [1.75σ]
OotOffset-rm: 0.756 arcsec [2.45σ]
KicOffset-rm: 0.672 arcsec [2.11σ]
OotOffset-st: 4/4/3/3 [14]
KicOffset-st: 4/4/3/3 [14]
DiffImageQuality-fgm: 0.93 [13/14]
DiffImageOverlap-fno: 0.14 [2/14]

TCE 009244508-01, PDC Light Curves

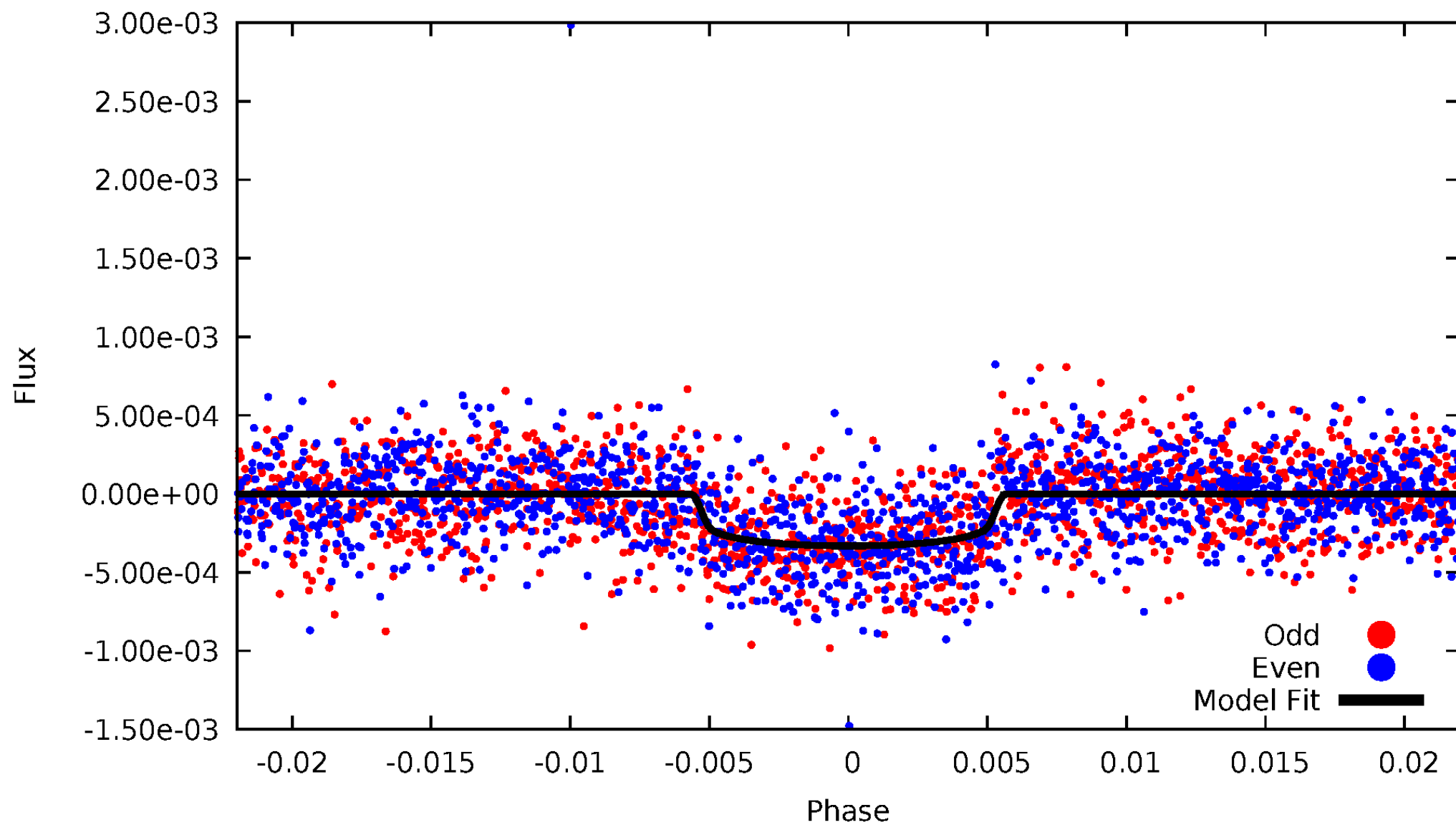


TCE 009244508-01



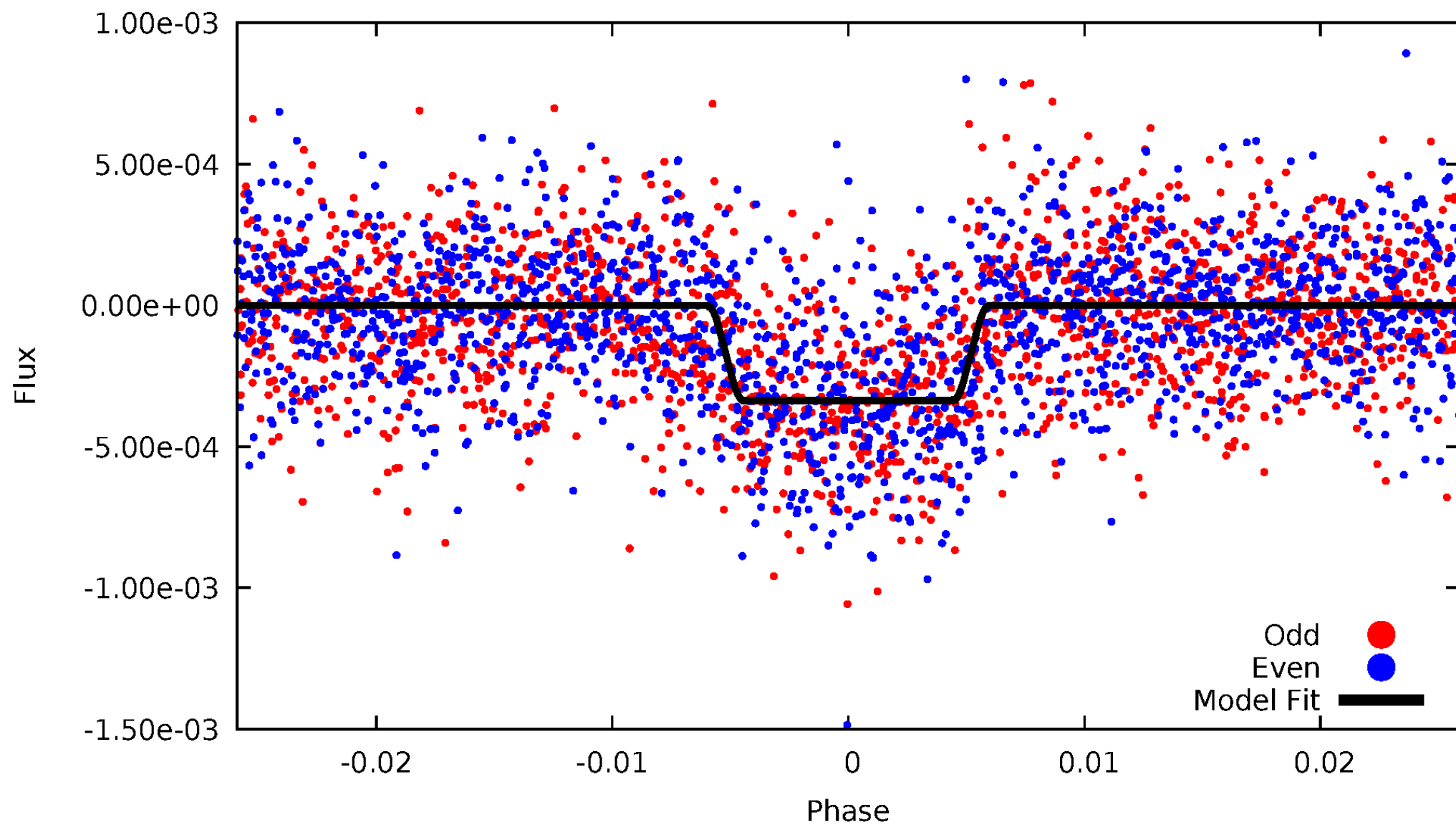
DV Odd/Even

TCE 009244508-01

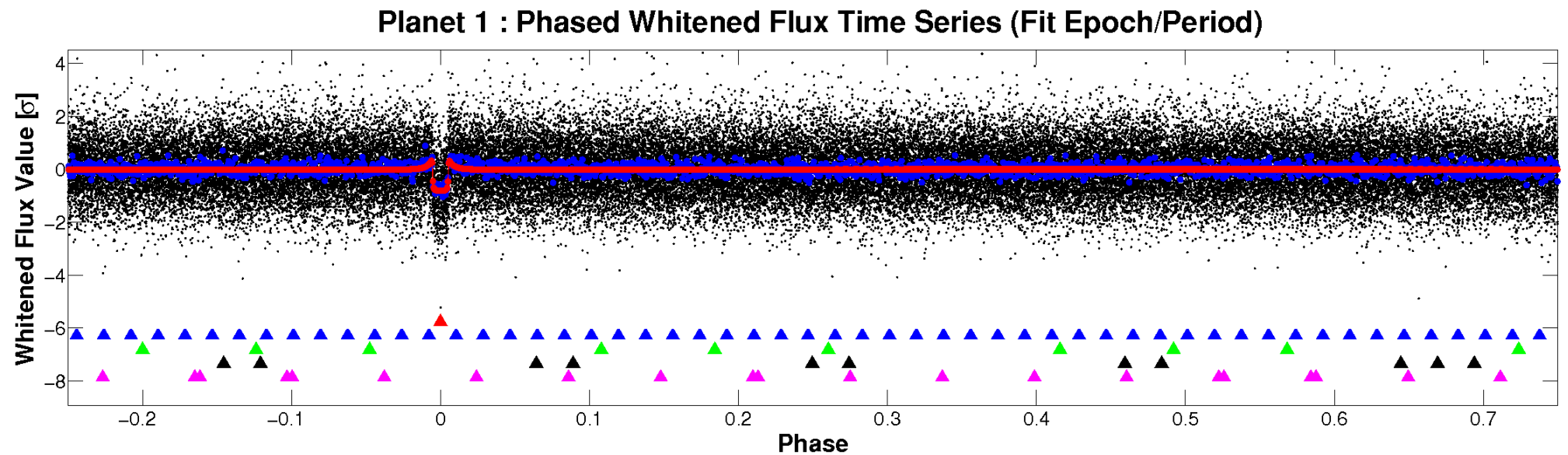
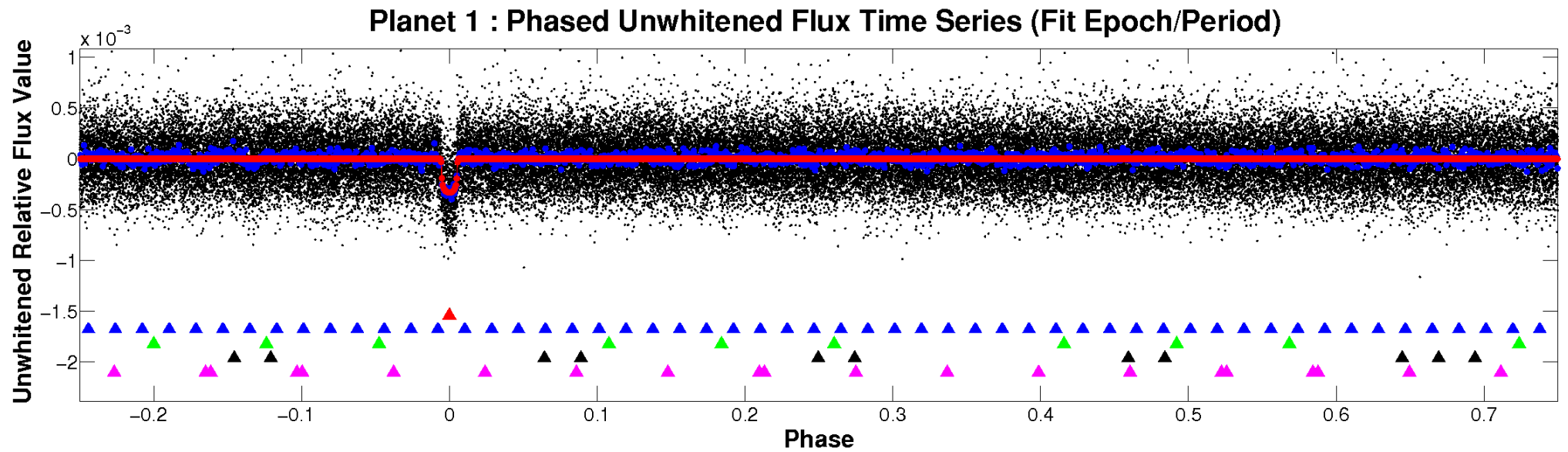


ALT Odd/Even

TCE 009244508-01

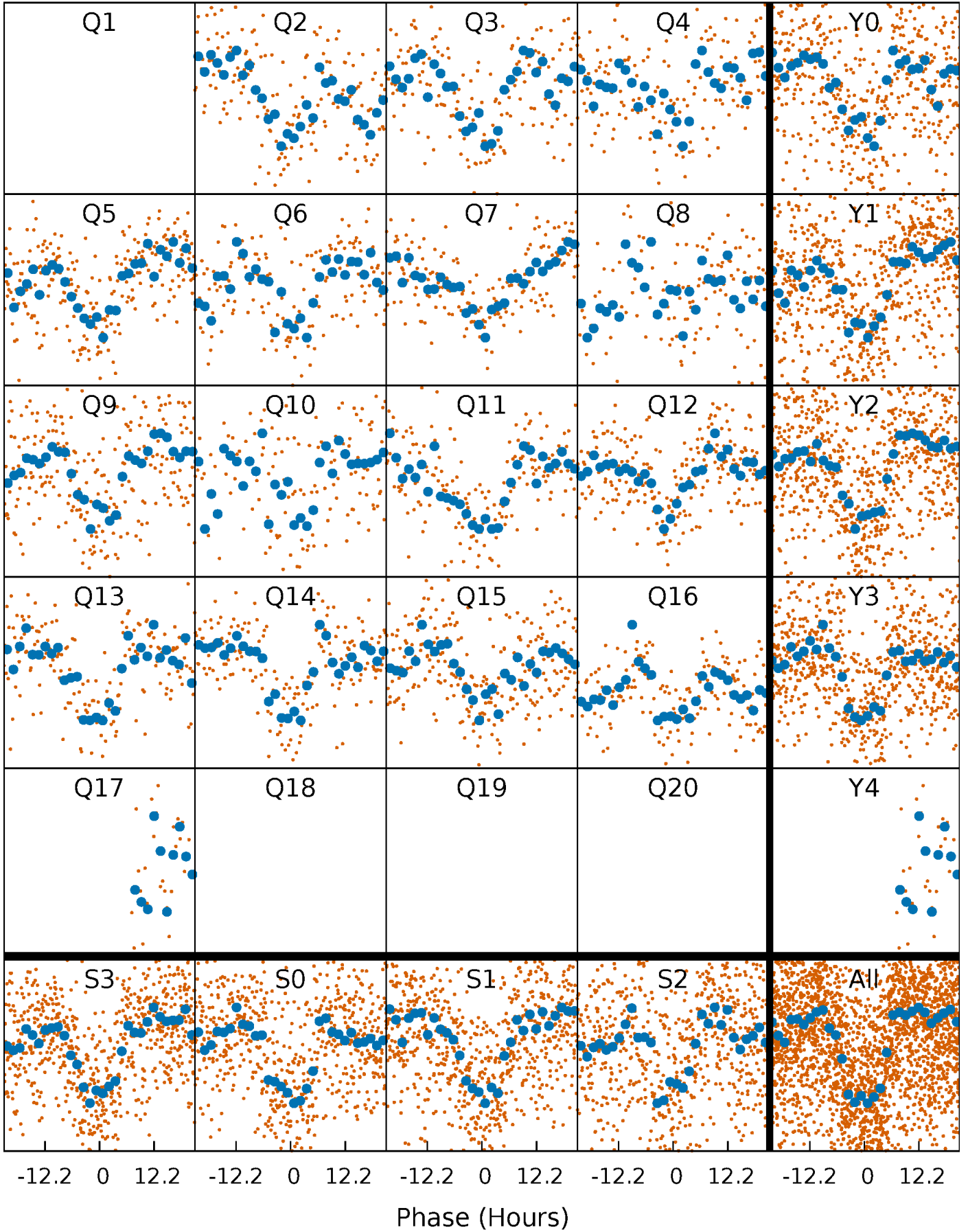


Non-Whitened Vs. Whitened Light Curve



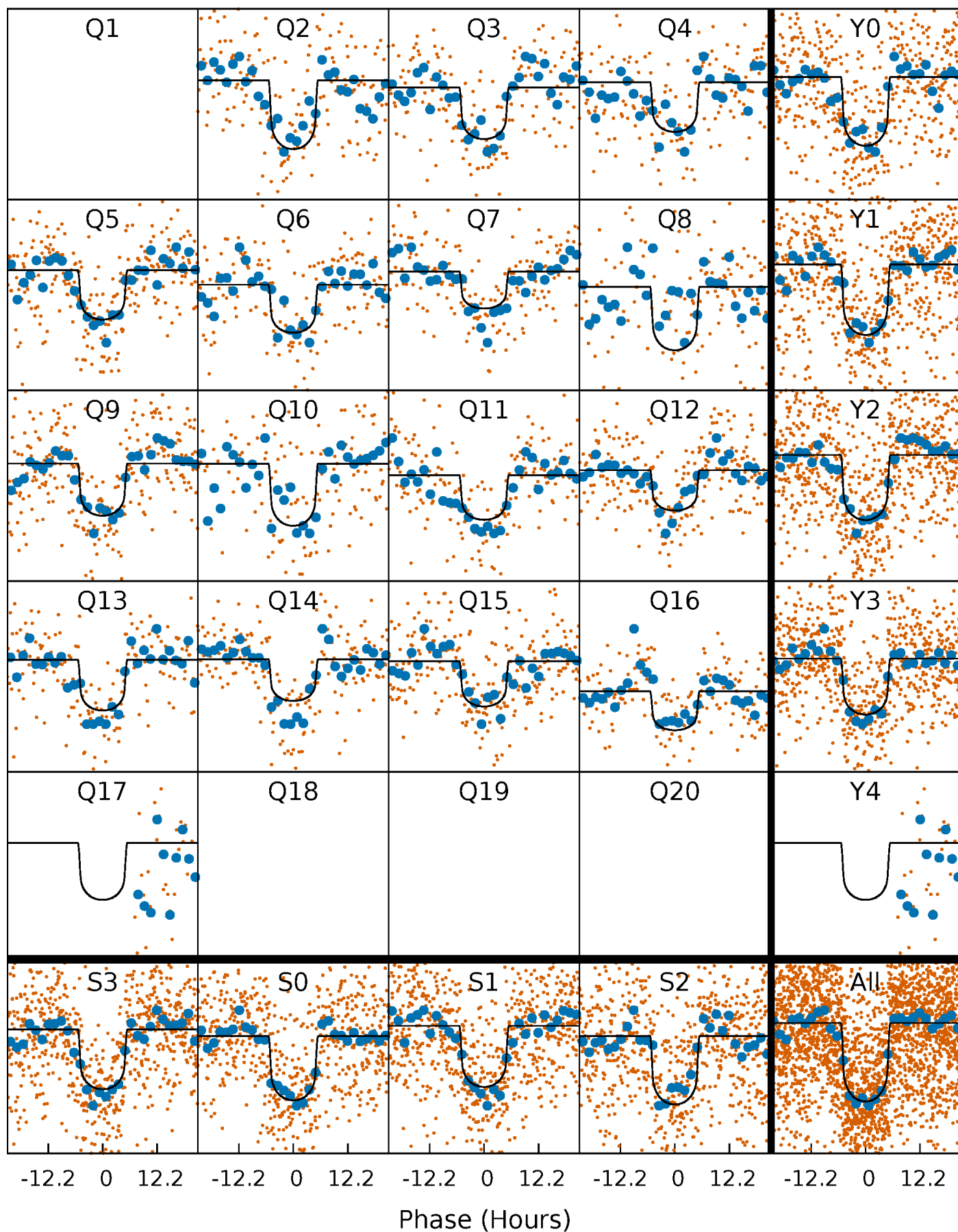
PDC Quarter-Phased Transit Curves

TCE 009244508-01 P= 40.528784 Days $T_0=168.021535$ (BKJD)



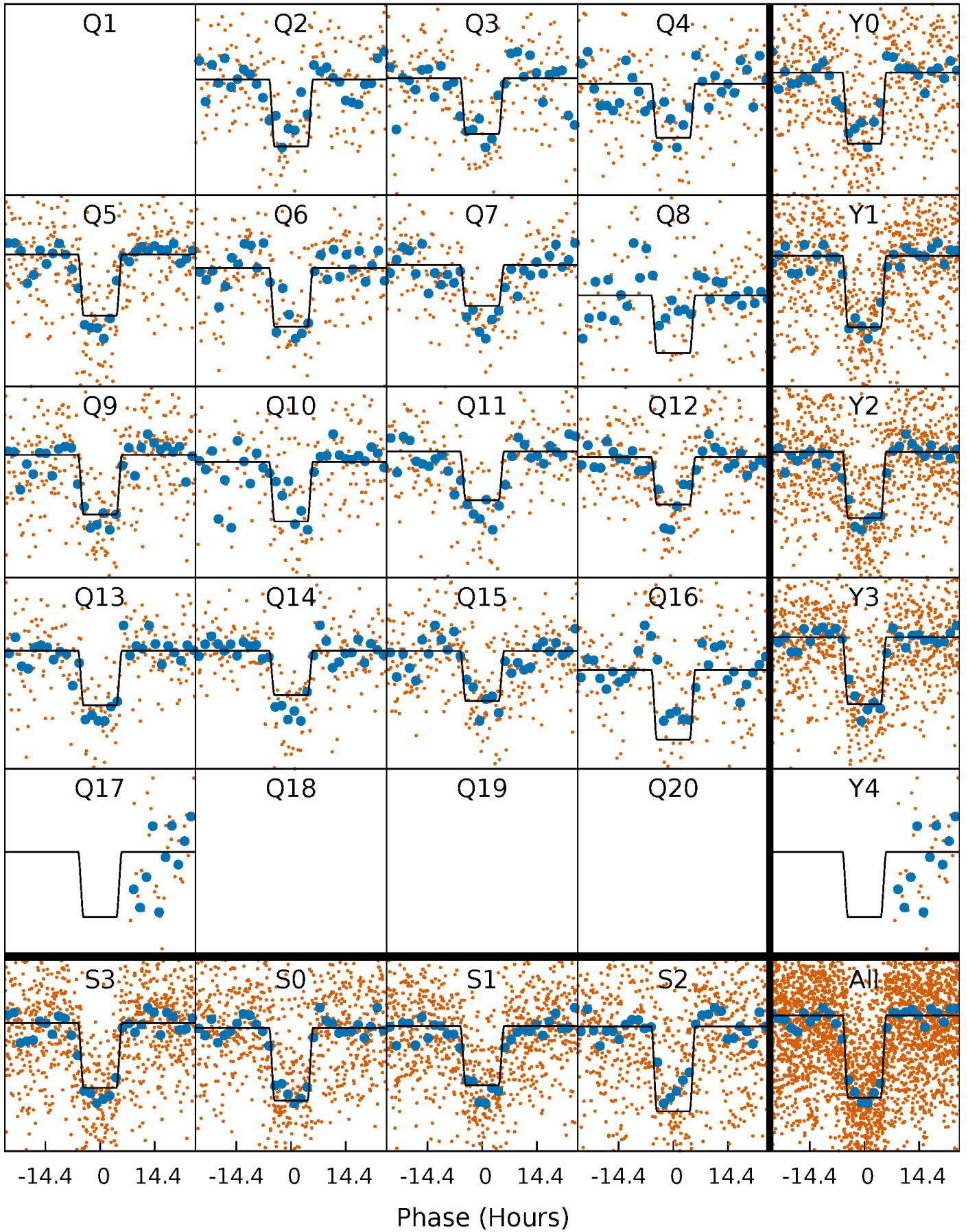
DV Quarter-Phased Transit Curves

TCE 009244508-01 P= 40.528784 Days $T_0=168.021535$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

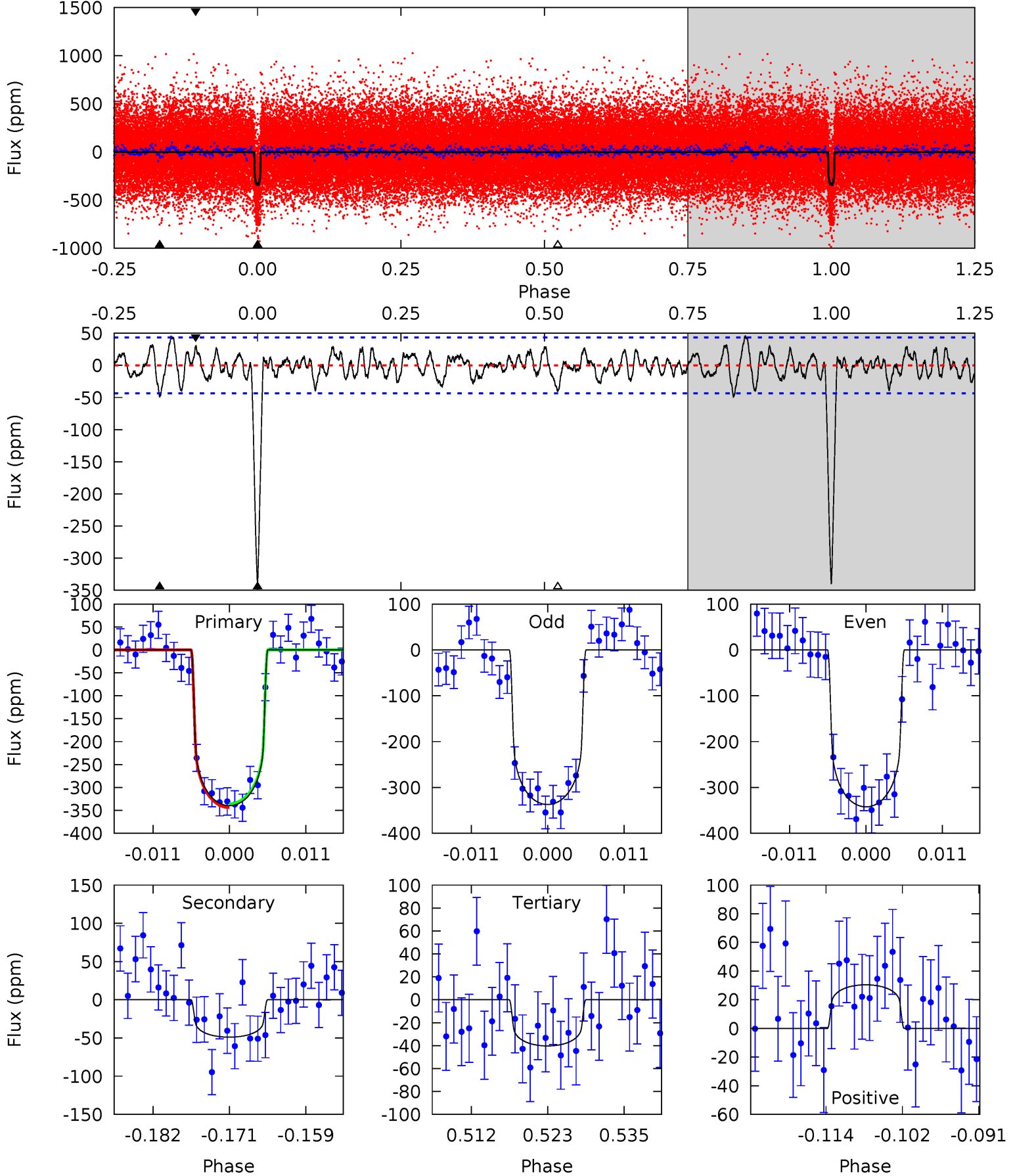
TCE 009244508-01 P= 40.527262 Days $T_0=168.043288$ (BKJD)



DV Model-Shift Uniqueness Test

009244508-01, $P = 40.528784$ Days, $E = 127.492751$ Days

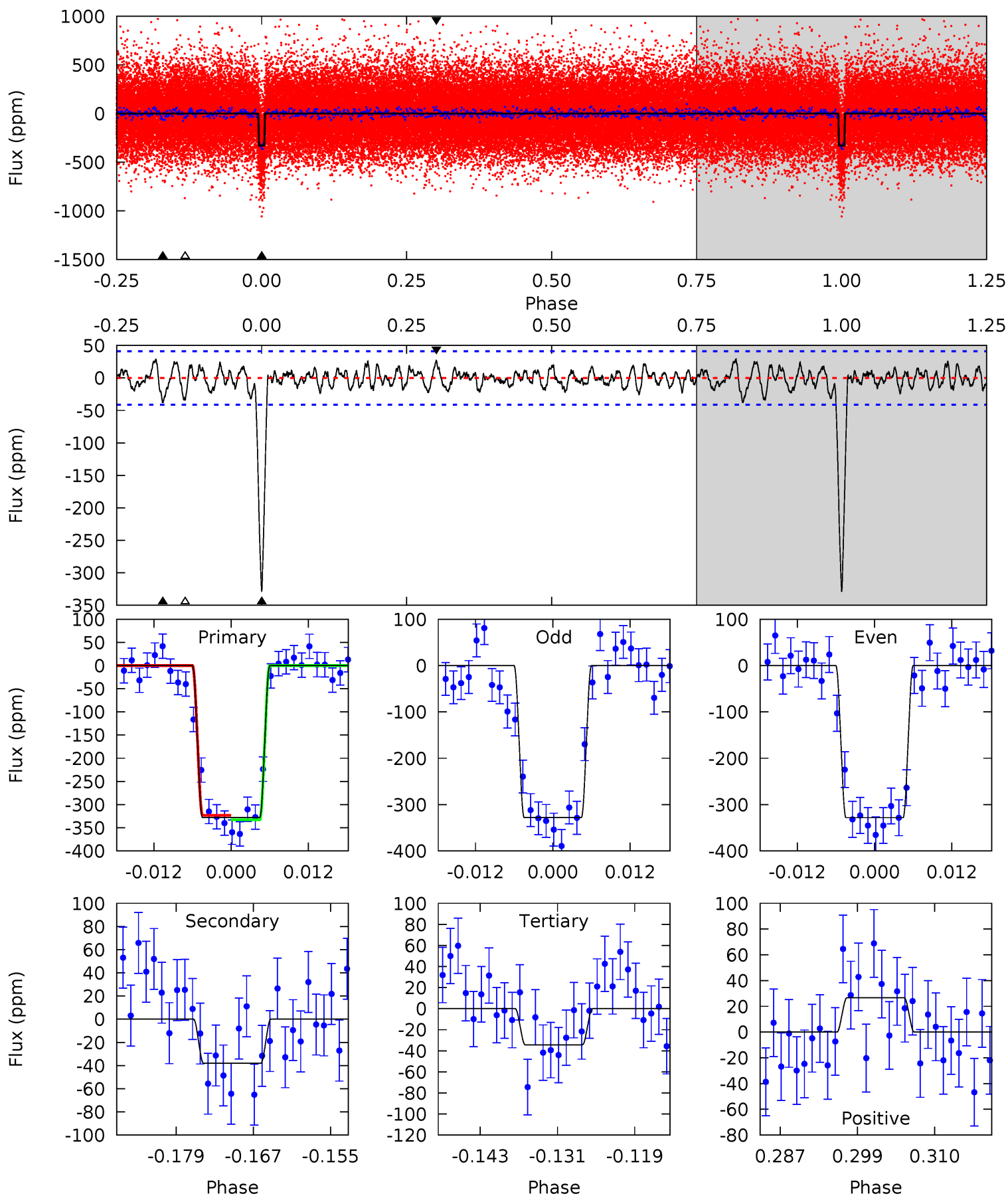
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.1	5.63	4.64	3.50	5.00	2.53	1.68	34.4	35.6	1.00	2.13	0.30	1.01	0.12	0.47



Alt Model-Shift Uniqueness Test

009244508-01, P = 40.527262 Days, E = 127.516026 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.8	4.61	4.16	3.22	4.99	2.51	1.34	35.6	36.5	0.46	1.39	0.02	0.98	0.08	0.59



Stellar Parameters For KIC 009244508

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6443^{+77}_{-90}	$3.740^{+0.210}_{-0.090}$	$0.560^{+0.050}_{-0.150}$	$3.086^{+0.432}_{-0.802}$	$1.907^{+0.069}_{-0.257}$	$0.091^{+0.111}_{-0.027}$
	+1%/-1%	+6%/-2%	+9%/-27%	+14%/-26%	+4%/-13%	+122%/-29%
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 009244508-01 / KOI 2830.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-49 ± 9	$5.71^{+1.09}_{-1.11}$	1293^{+53}_{-84}	4282^{+299}_{-247}	66^{+39}_{-20}
Alt.	-38 ± 8	$5.91^{+1.23}_{-1.02}$	1291^{+57}_{-83}	4016^{+274}_{-234}	47^{+26}_{-16}

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

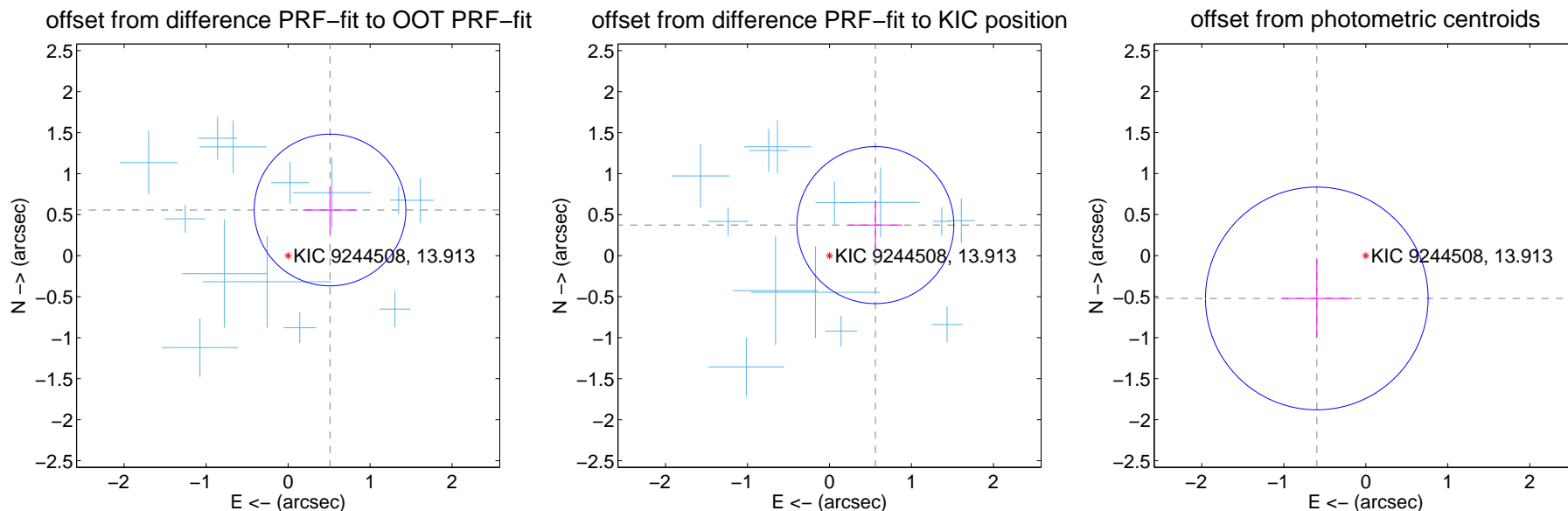
DV Centroid Data

Supplemental centroid analysis for 009244508-01. Kepler magnitude: 13.91. Transit SNR 20.08

There are 13 quarters with good PRF difference image offsets

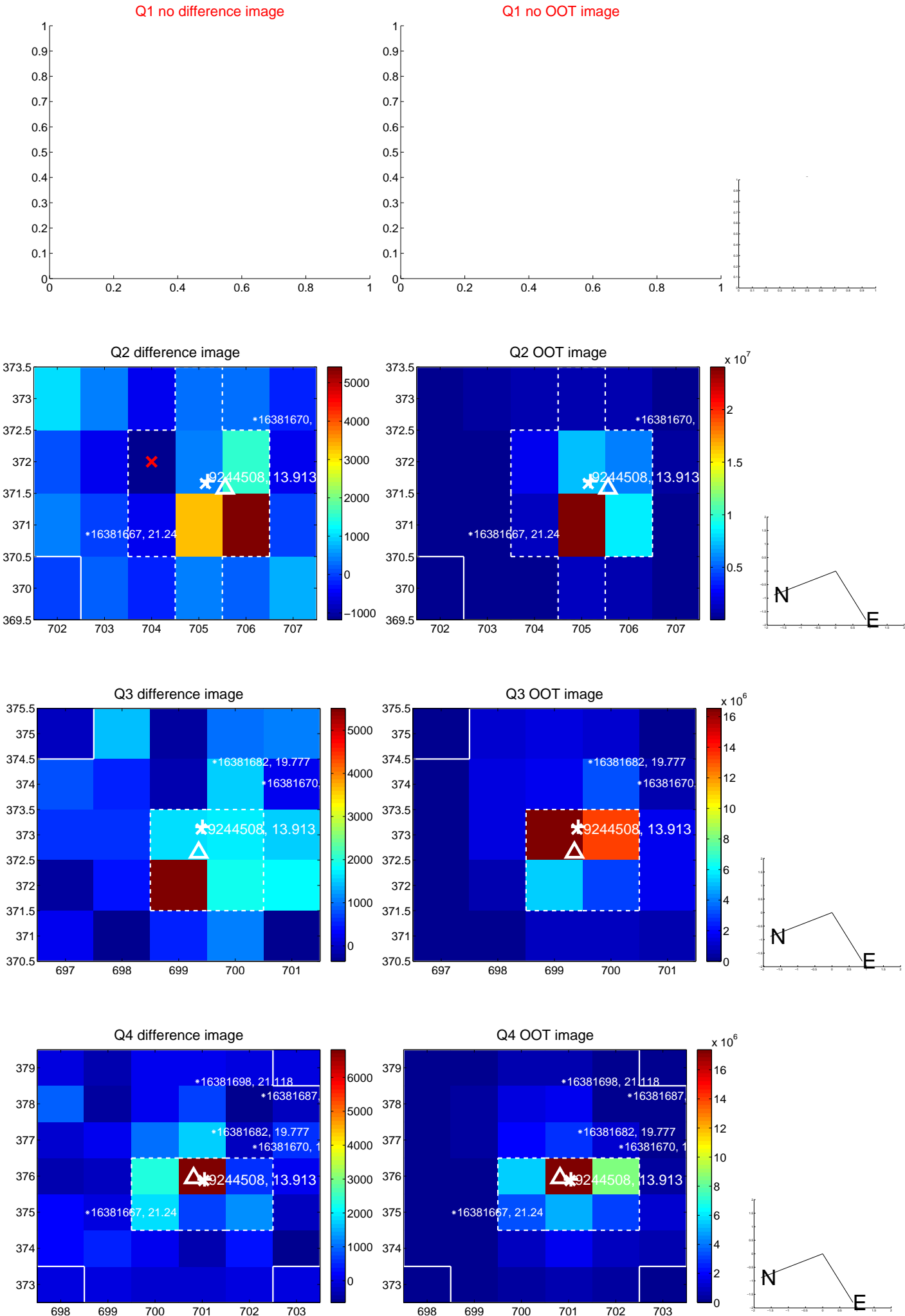
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.756 ± 0.308	2.45	-0.511 ± 0.331	0.557 ± 0.288
PRF-fit source offset from KIC position	0.672 ± 0.319	2.11	-0.560 ± 0.328	0.373 ± 0.299
photometric centroid source offset	0.79 ± 0.45	1.75	0.60 ± 0.43	-0.52 ± 0.48

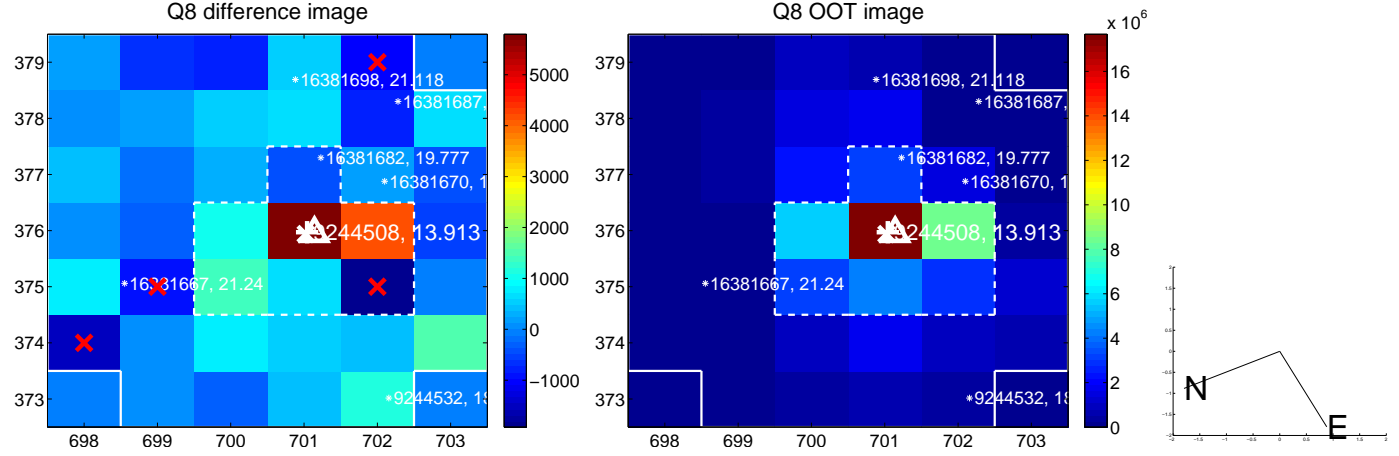
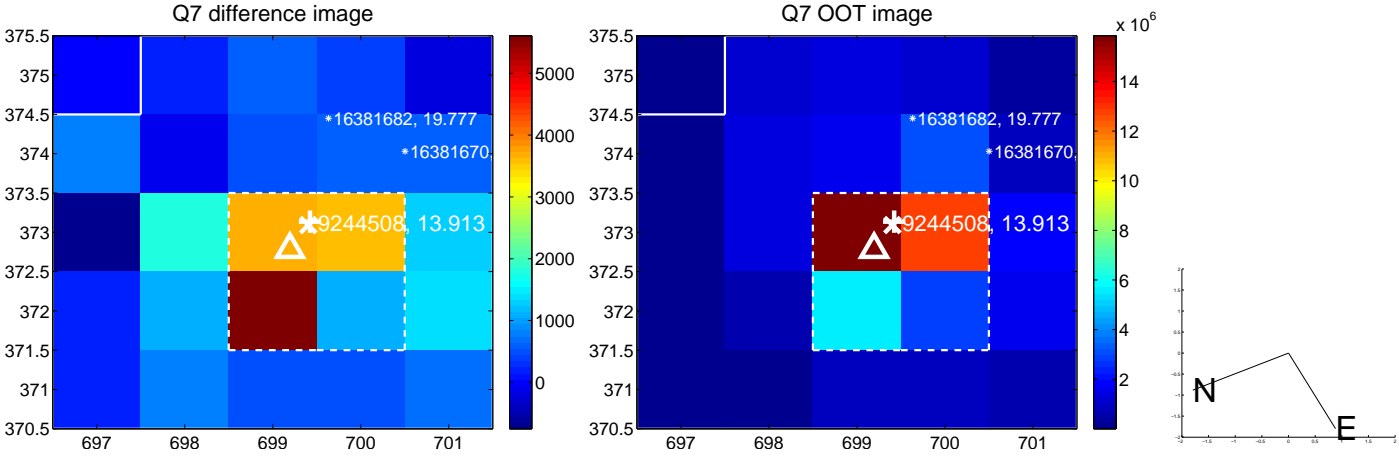
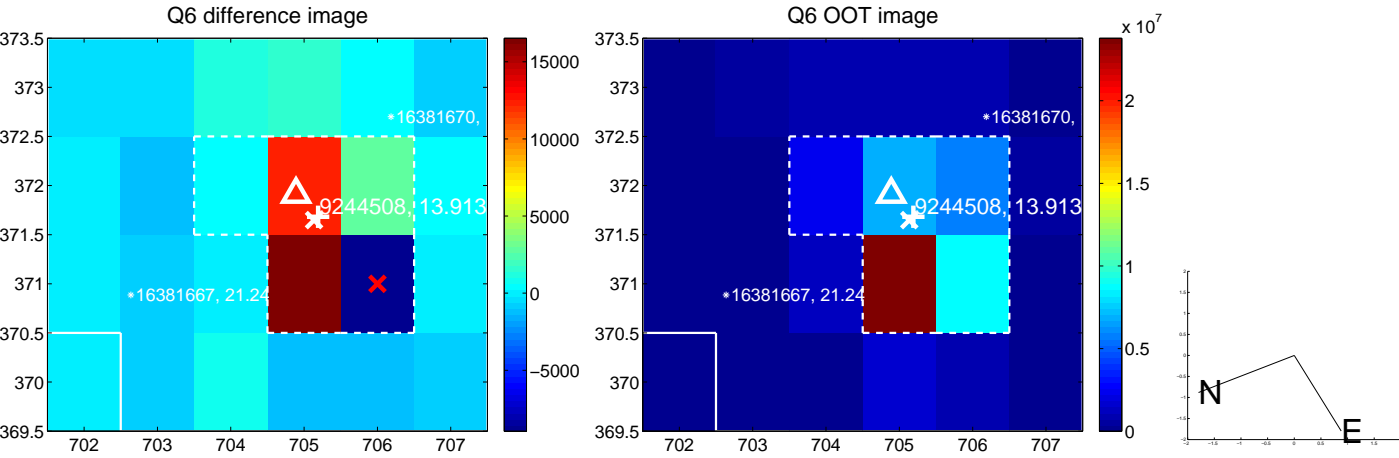
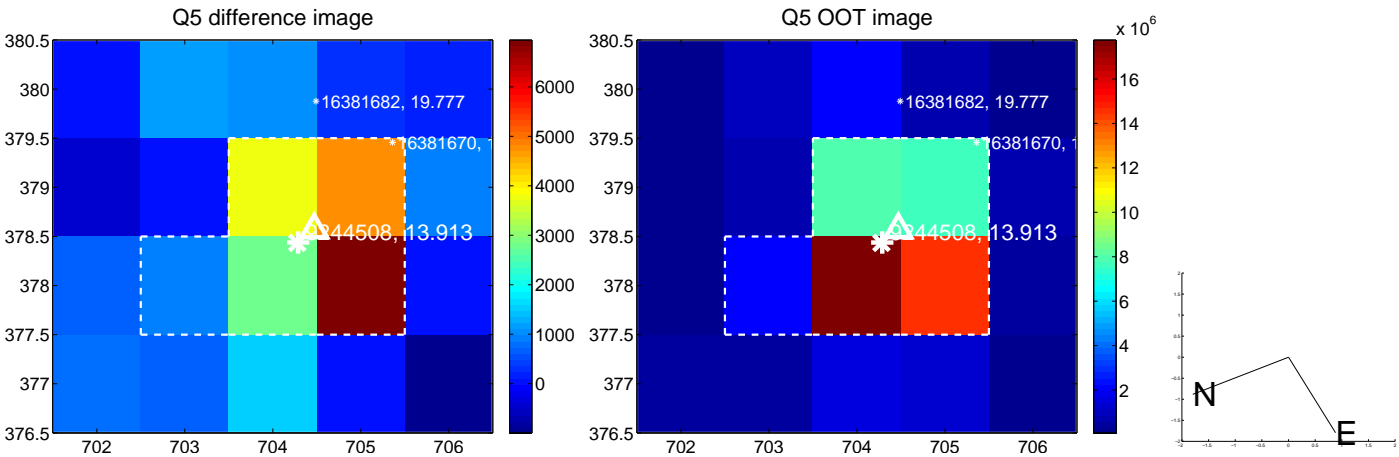


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

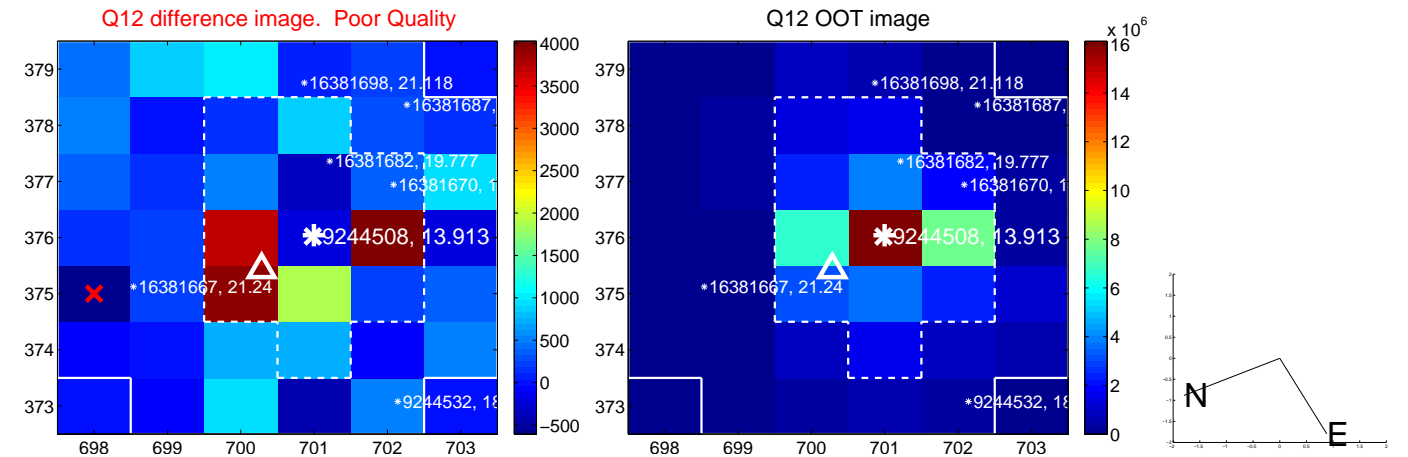
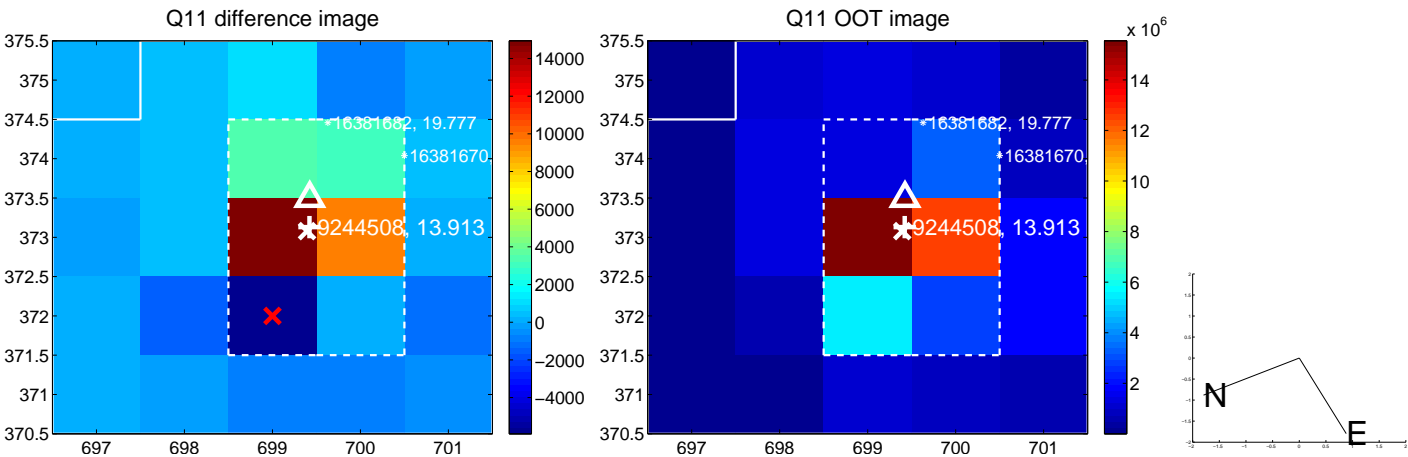
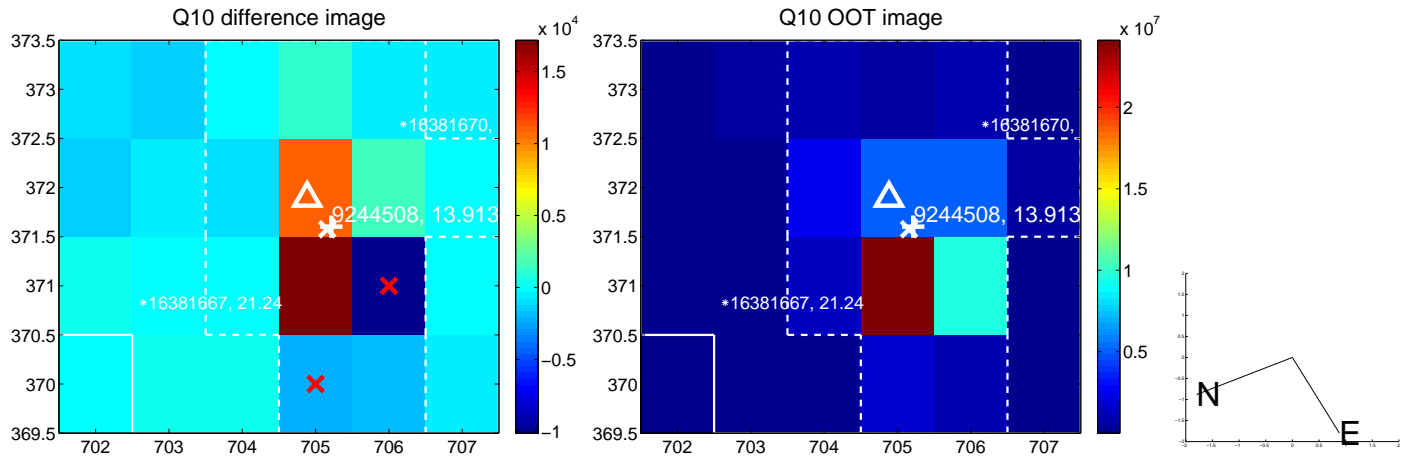
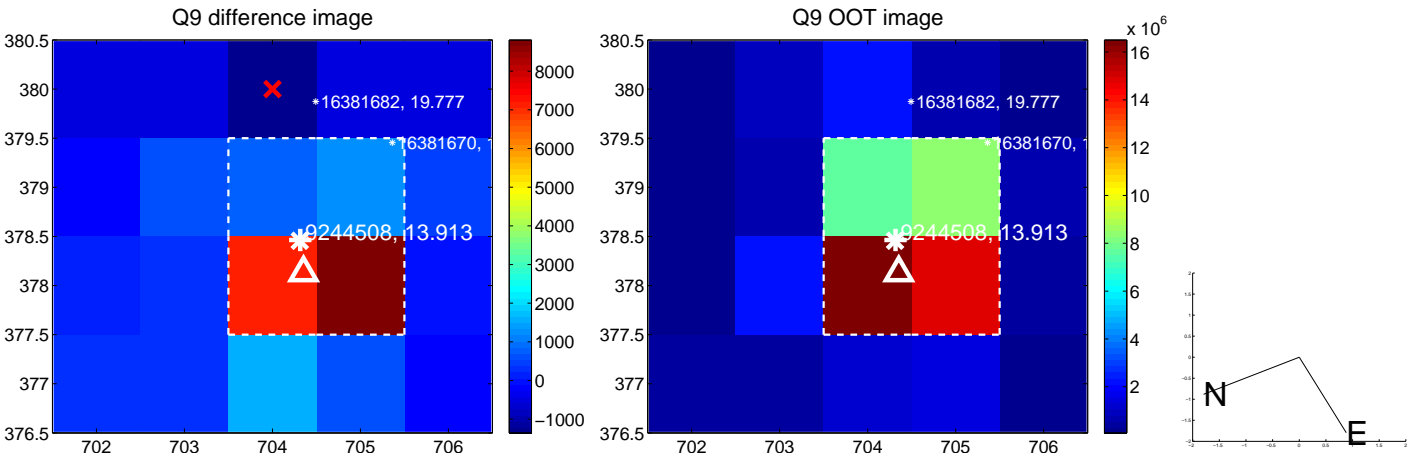
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



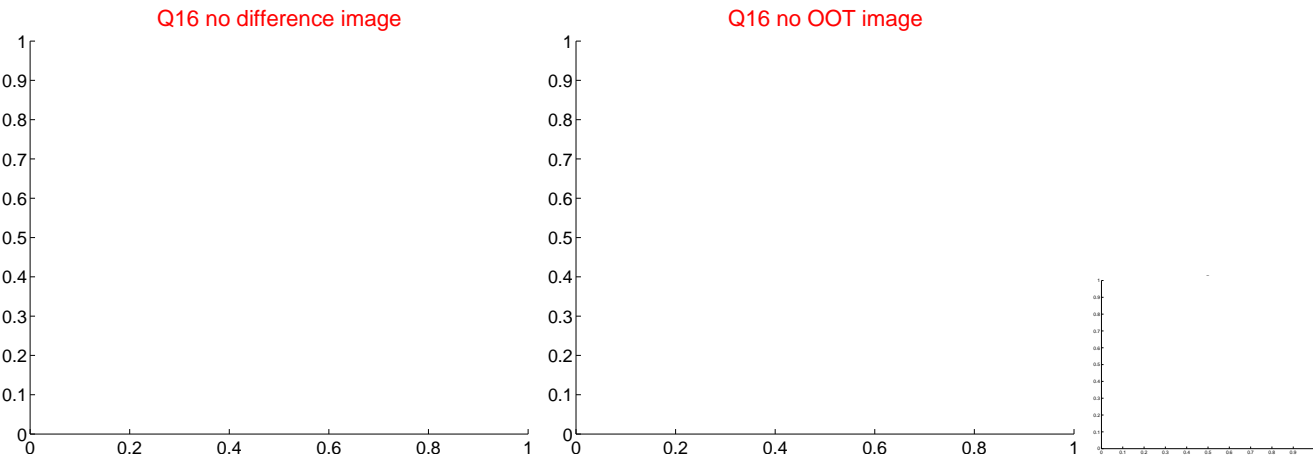
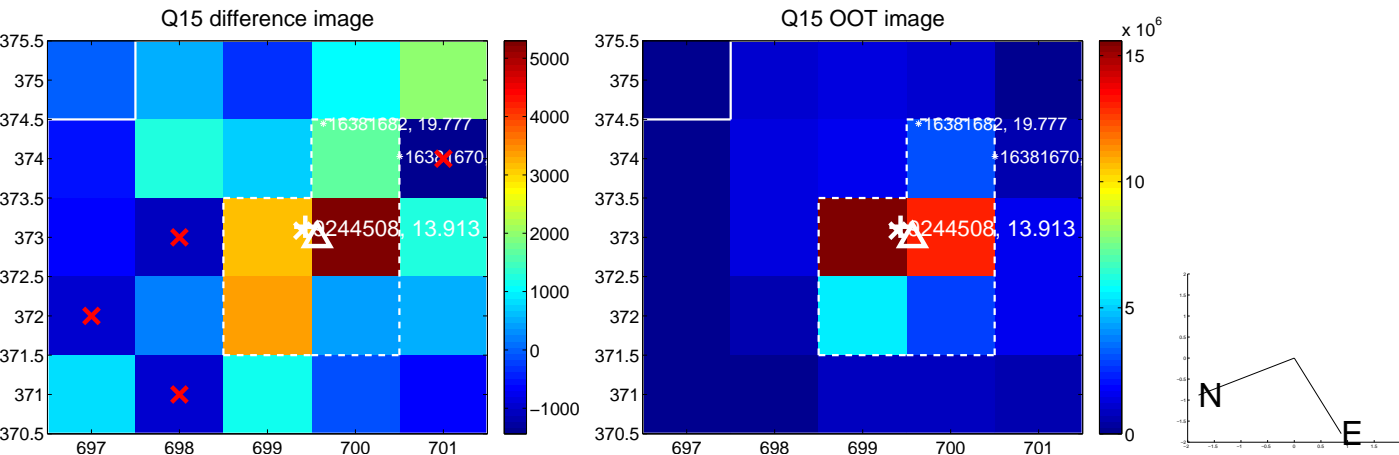
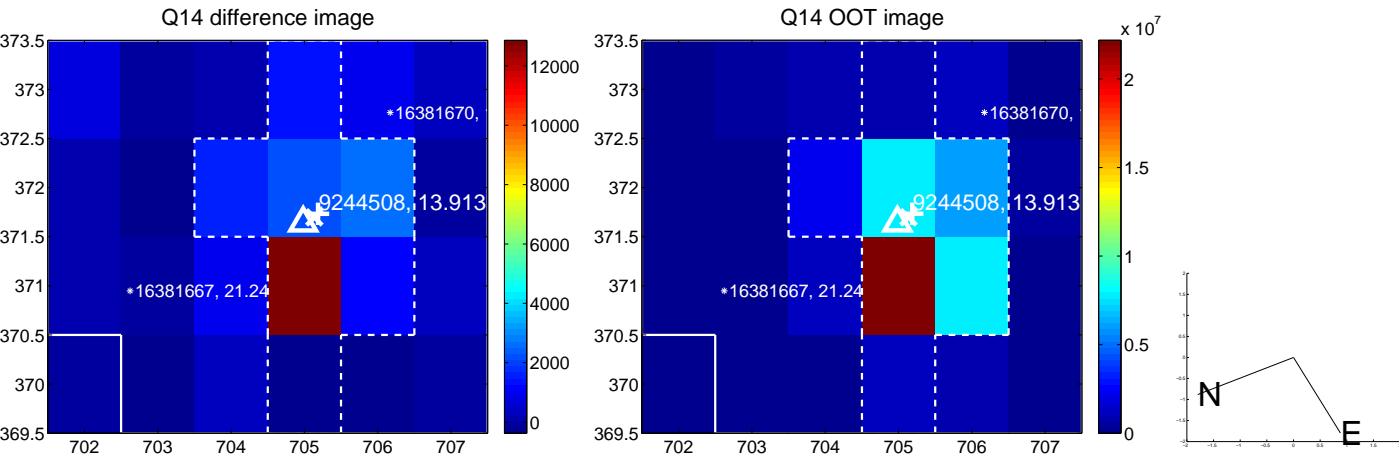
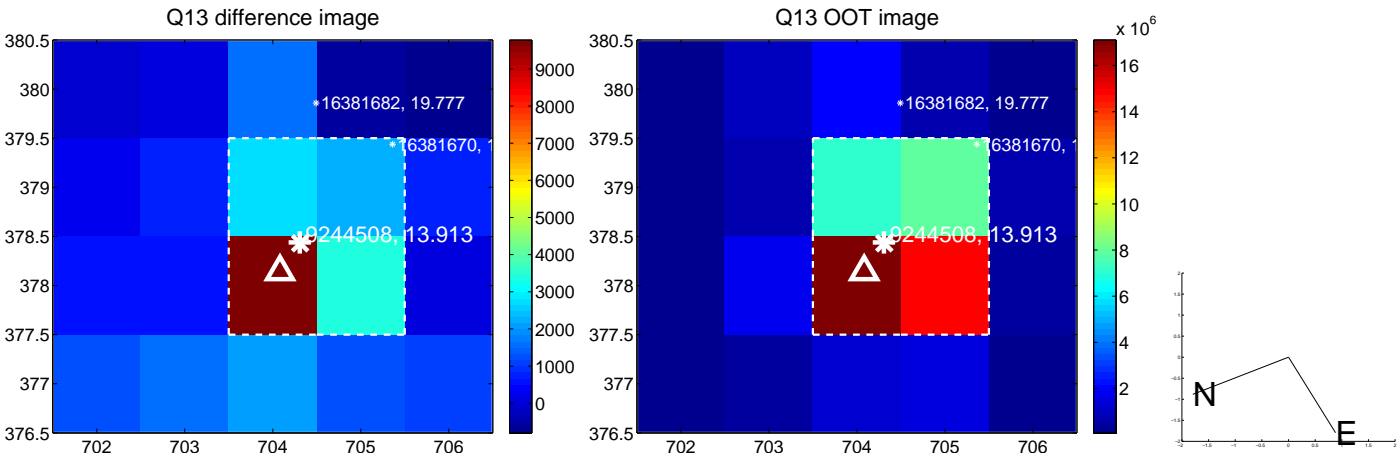
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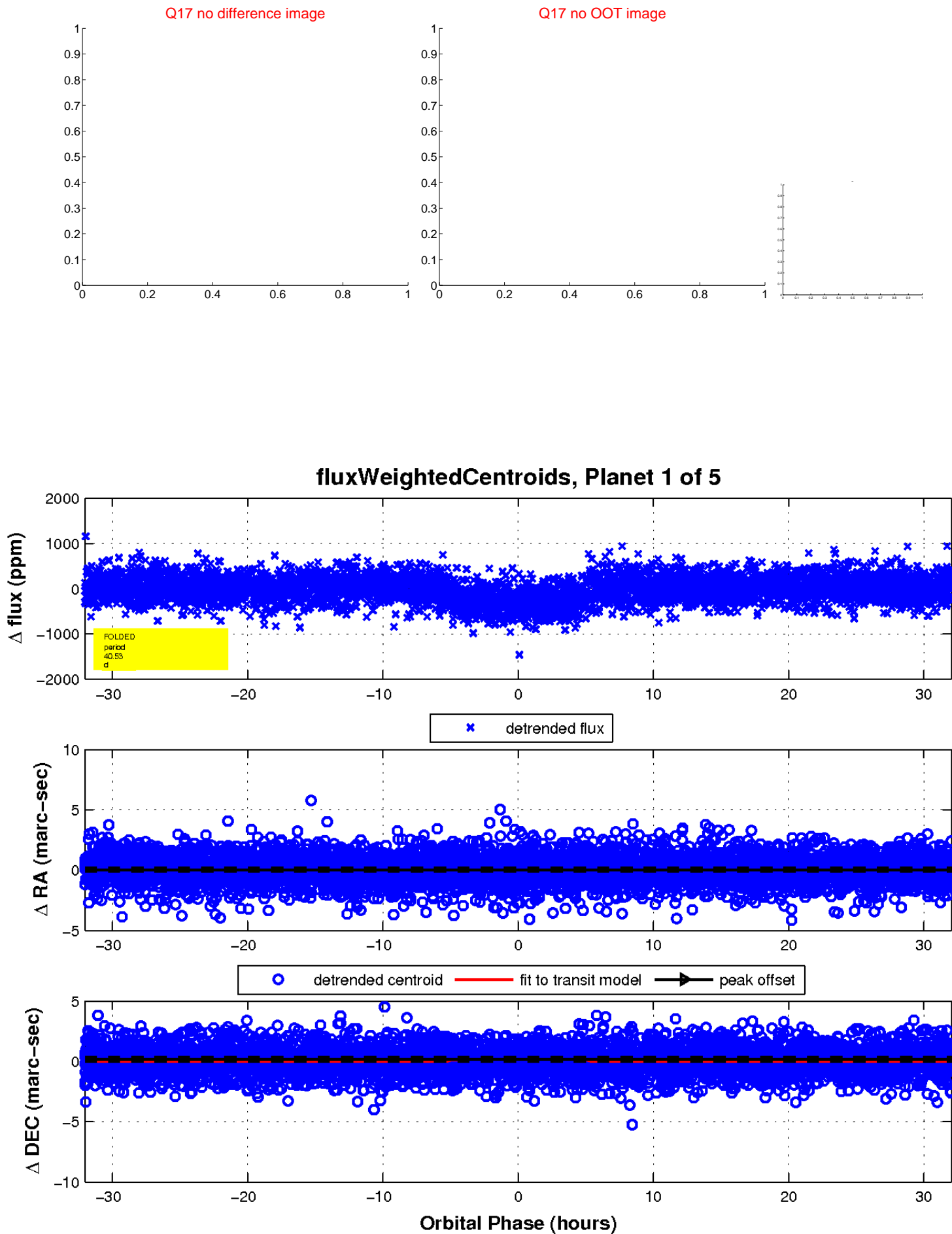
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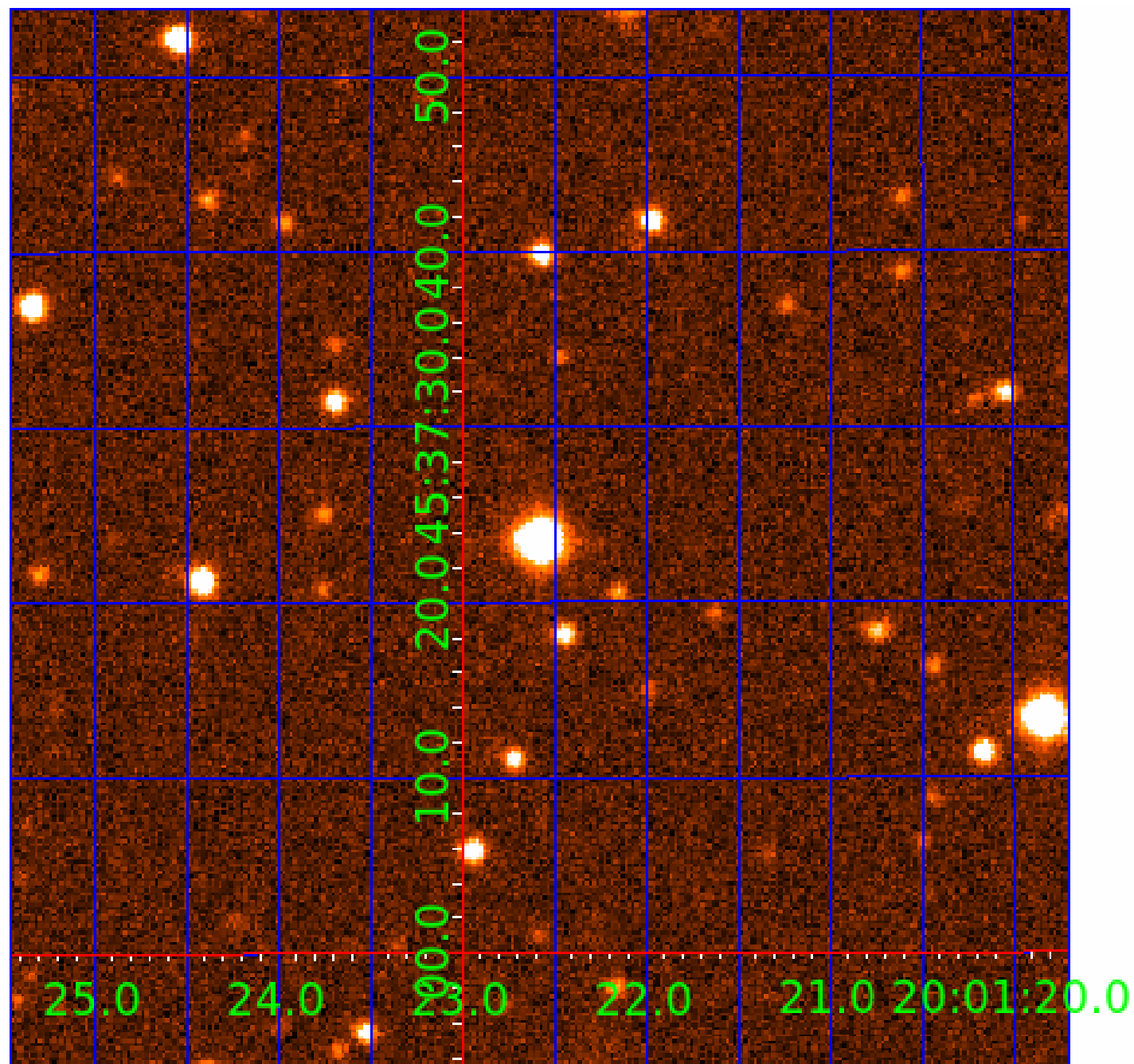


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009244508

Q1-17 DR25 TCE Parameters

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Robovetter Results

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009244508-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
009244508-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009244508-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—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.

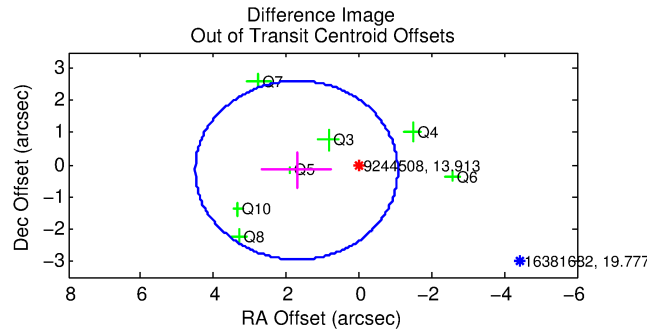
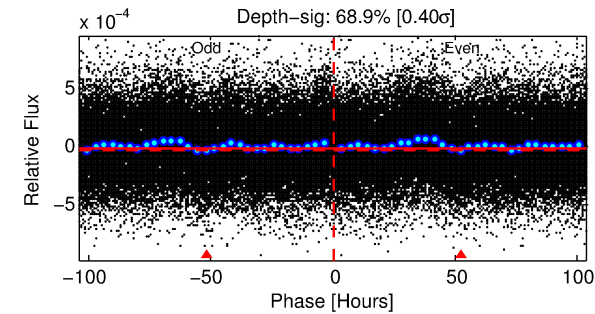
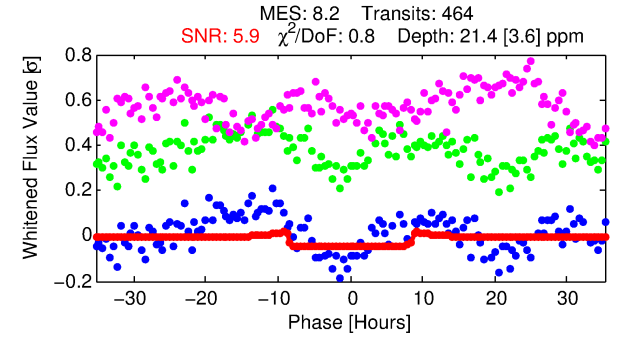
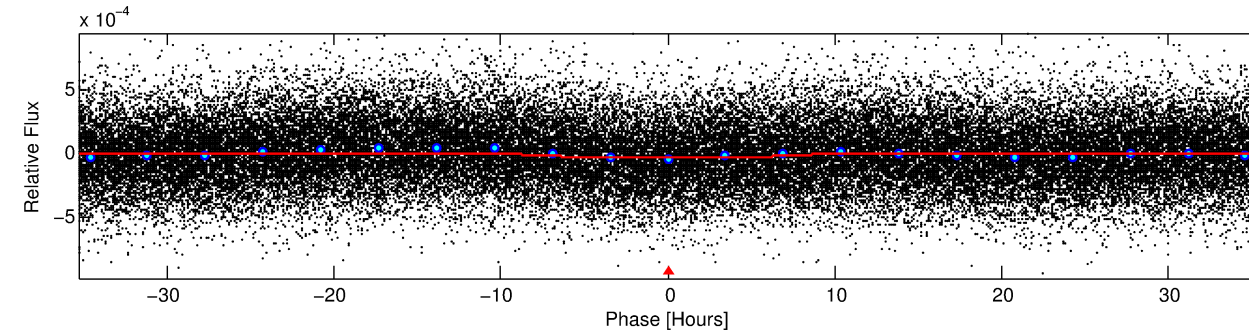
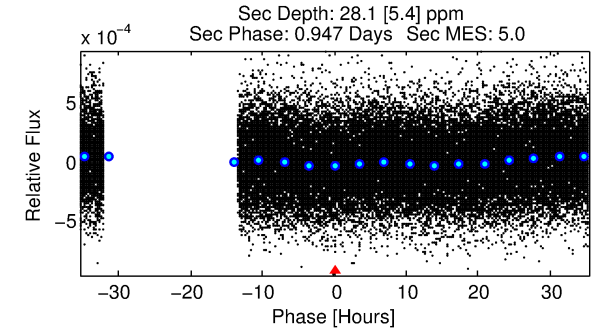
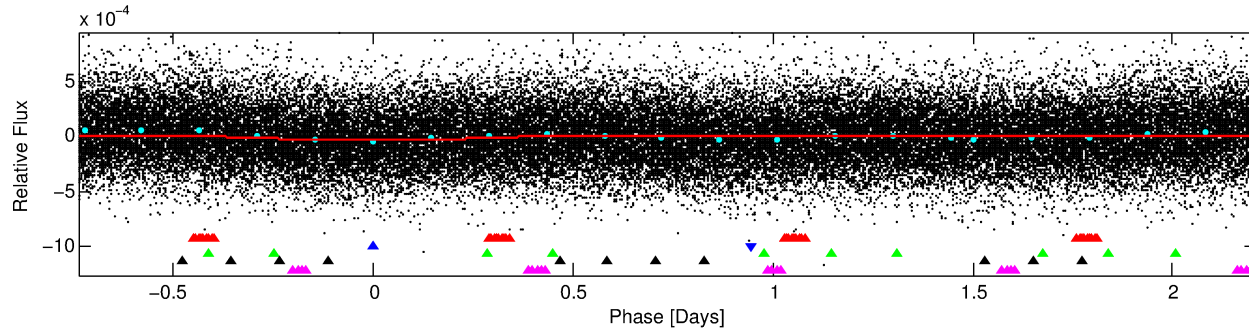
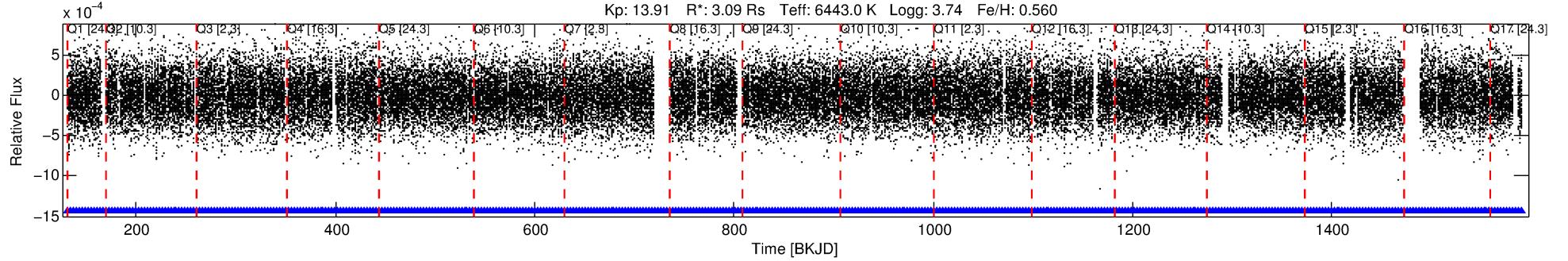
Ephemeris Match Information For 009244508-02

No Significant Match Found

DV One-Page Summary

KIC: 9244508 Candidate: 2 of 5 Period: 2.948 d

KOI: K02830 Corr: No Ephemeris Match



DV Fit Results:

Period = 2.94766 [0.00008] d
Epoch = 131.5707 [0.0169] BKJD
Rp/R* = 0.0045 [0.0032]
a/R* = 1.27 [1.73]
b = 0.66 [3.05]
Seff = 5900.29 [2184.36]
Teff = 2235 [207] K
Rp = 1.51 [1.13] Re
a = 0.0499 [0.0118] AU
Ag = 16.88 [24.73] [0.64σ]
Teffp = 7003 [2487] K [1.91σ]

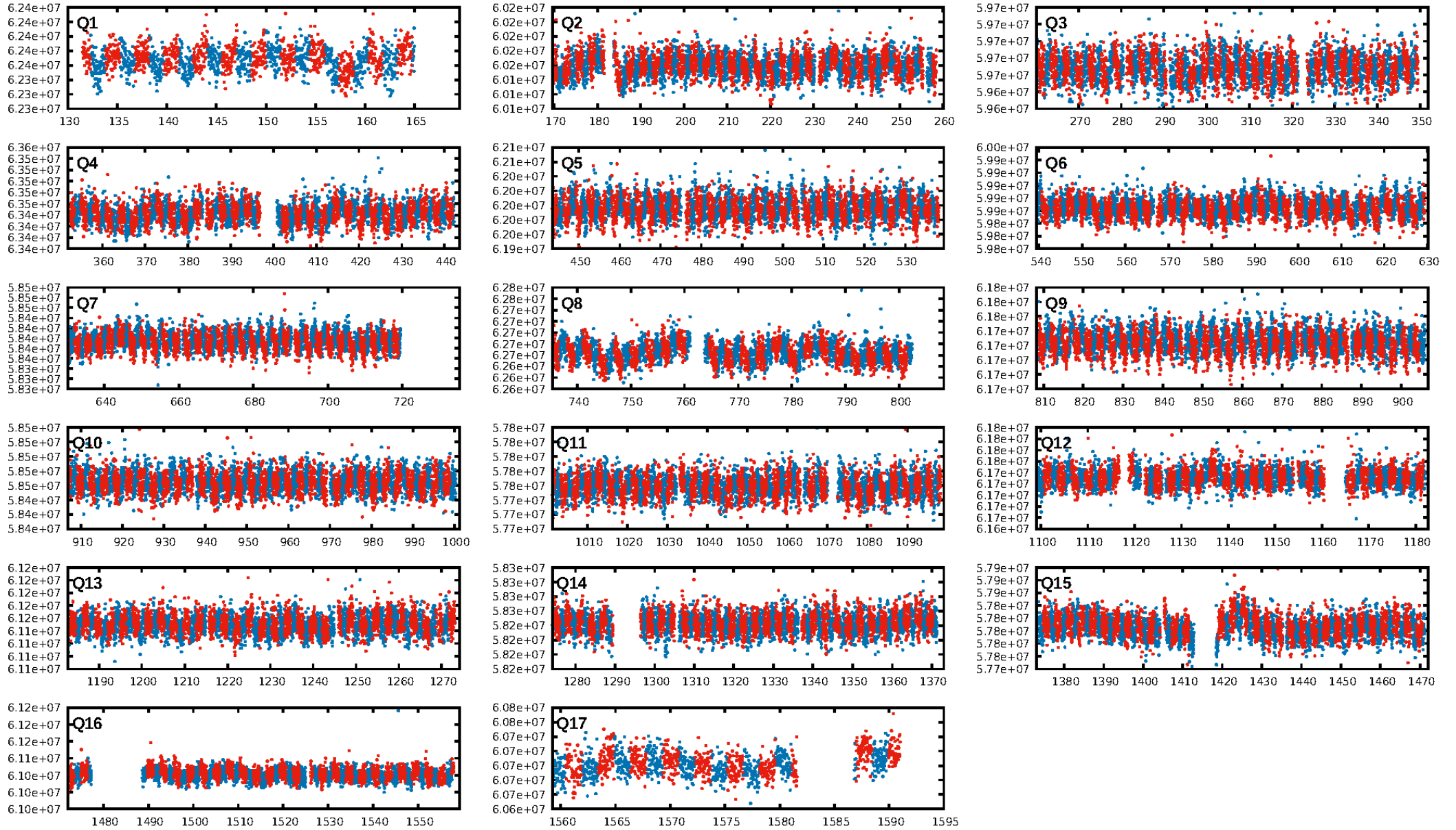
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [44.27σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.33e-08
RollingBand-fgt: 1.00 [442/442]
GhostDiagnostic-chr: 1.85
Centroid-sig: 0.9%
Centroid-so: 3.382 arcsec [2.23σ]
OotOffset-rm: 1.727 arcsec [1.86σ]
KicOffset-rm: 1.712 arcsec [1.84σ]
OotOffset-st: 2/2/2/1 [7]
KicOffset-st: 2/2/2/1 [7]
DiffImageQuality-fgm: 0.57 [4/7]
DiffImageOverlap-fno: 1.00 [17/17]

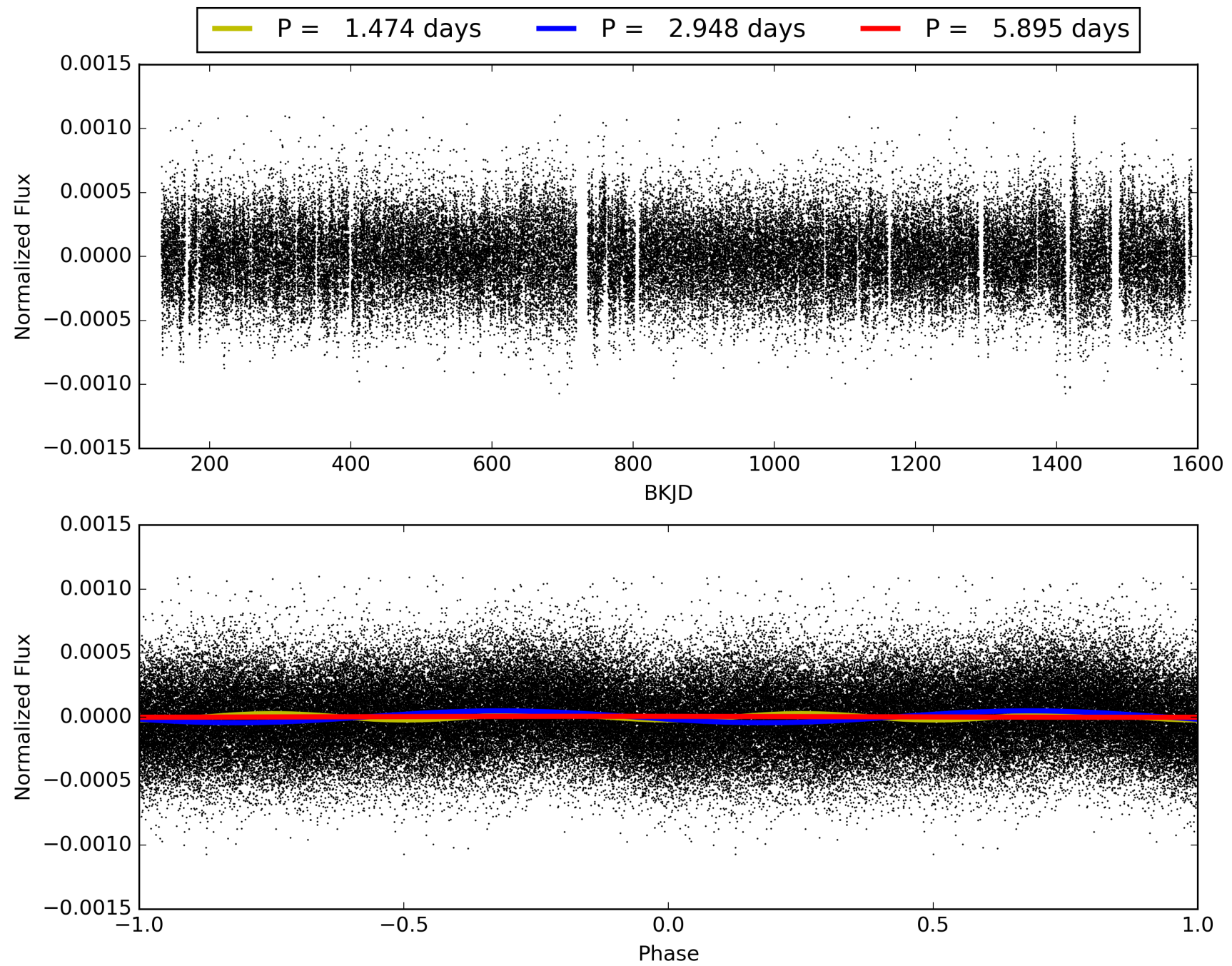
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:23:41 Z

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

TCE 009244508-02, PDC Light Curves

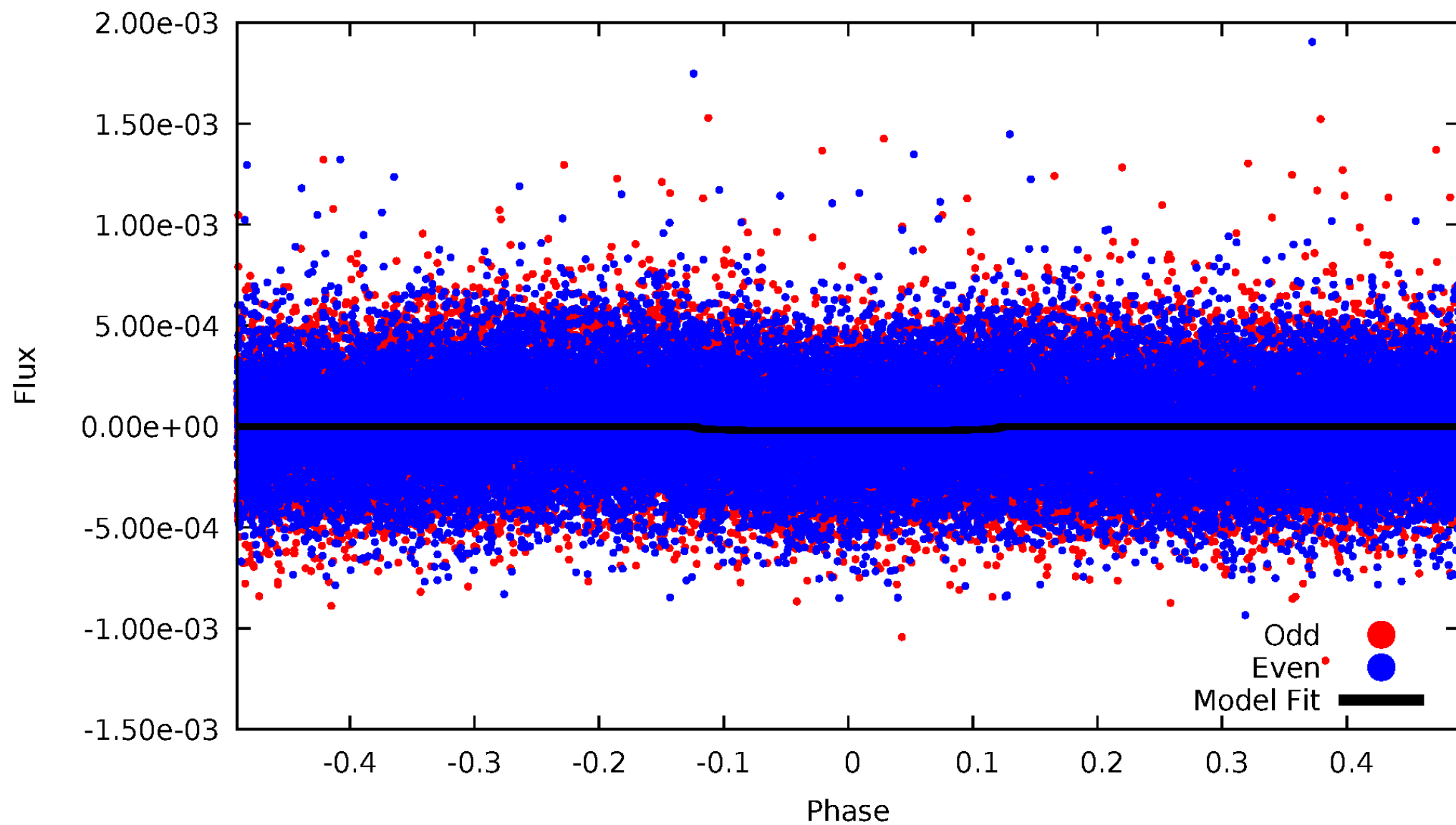


TCE 009244508-02



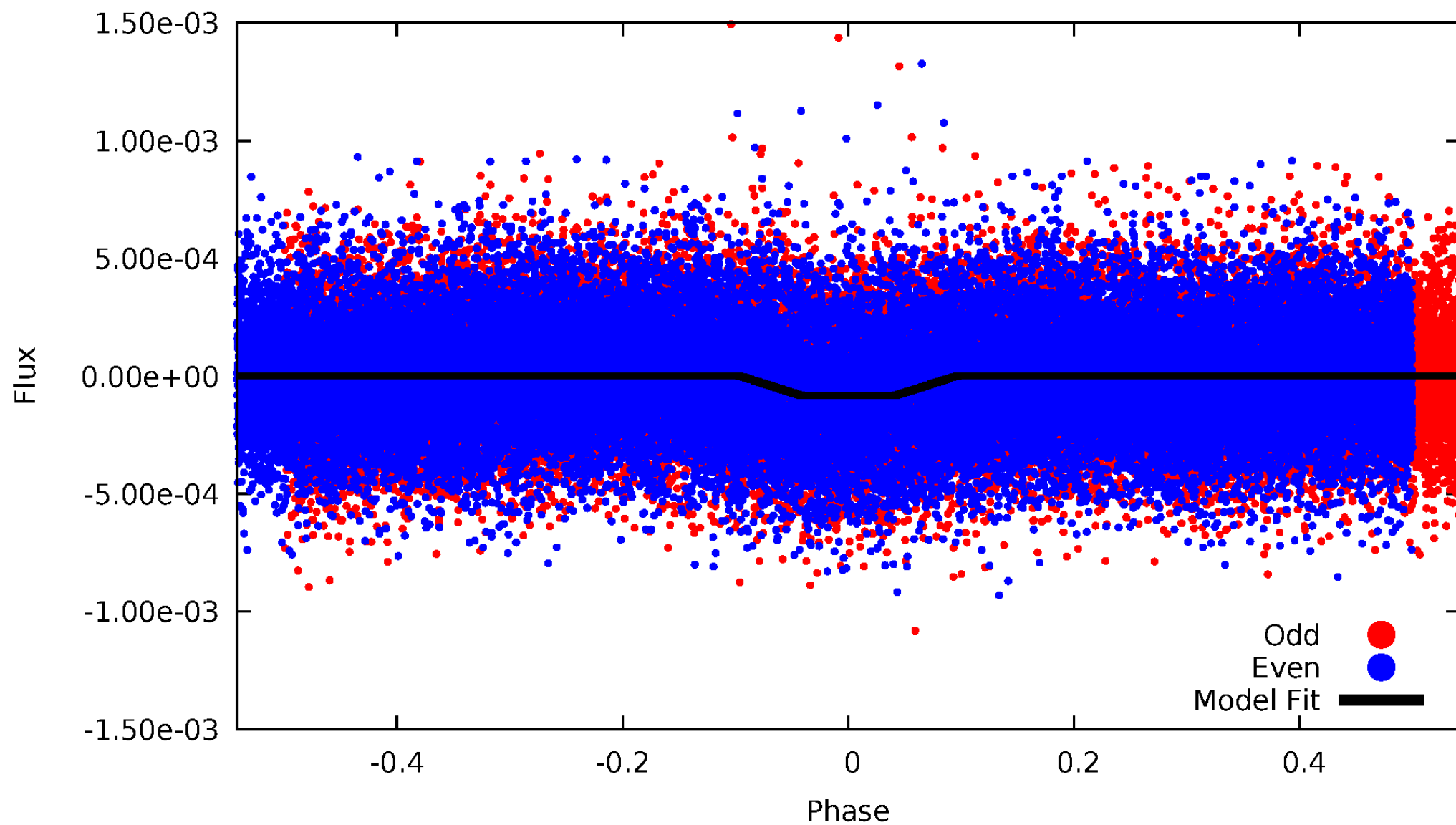
DV Odd/Even

TCE 009244508-02



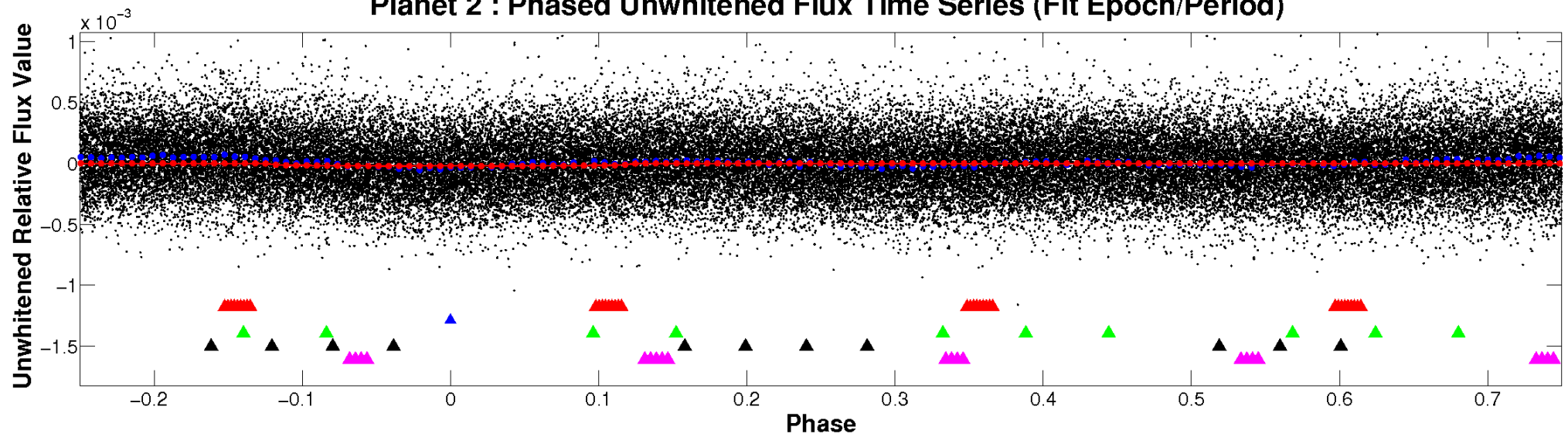
ALT Odd/Even

TCE 009244508-02

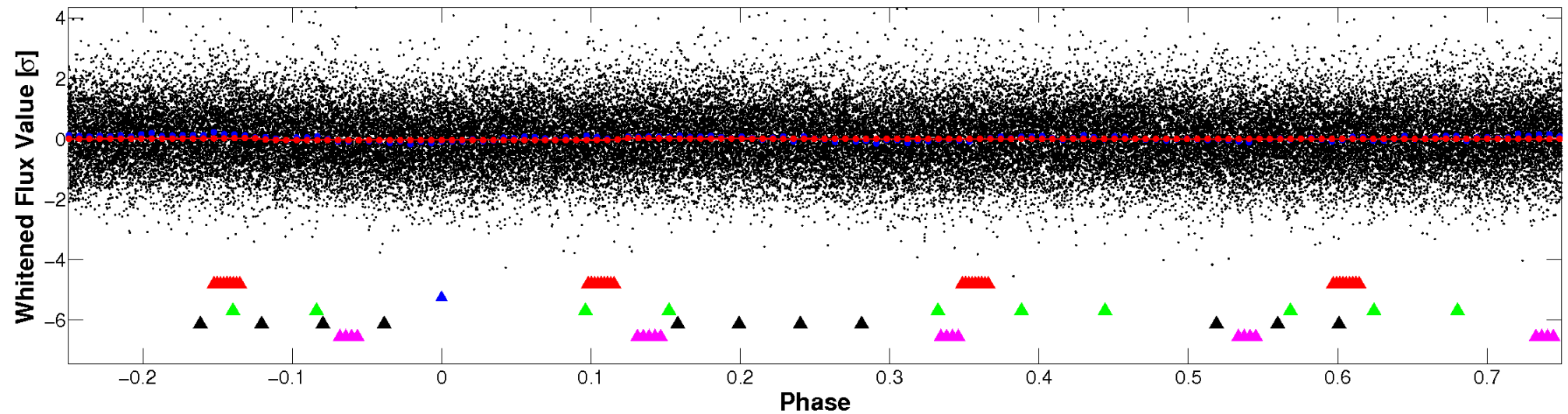


Non-Whitened Vs. Whitened Light Curve

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

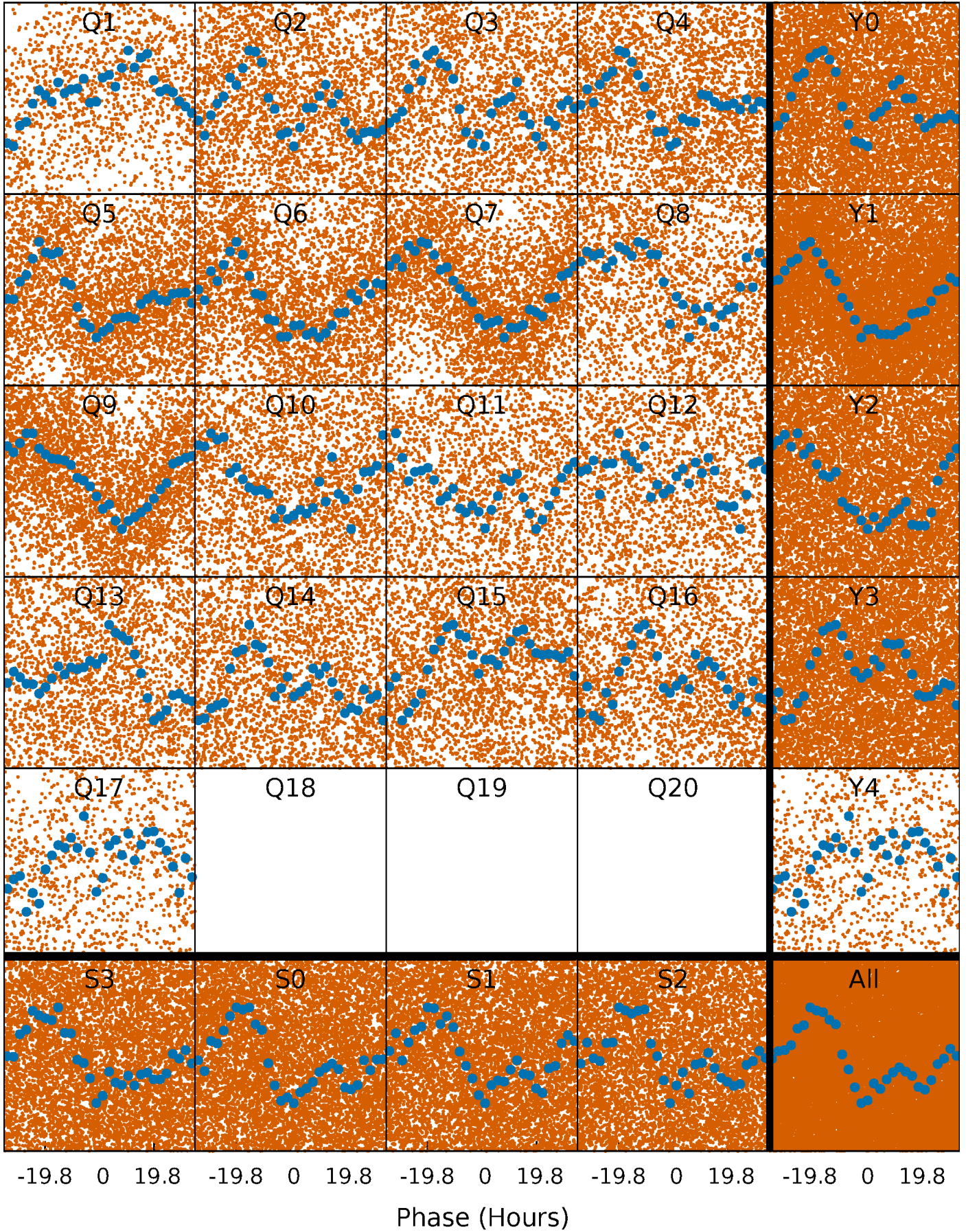


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



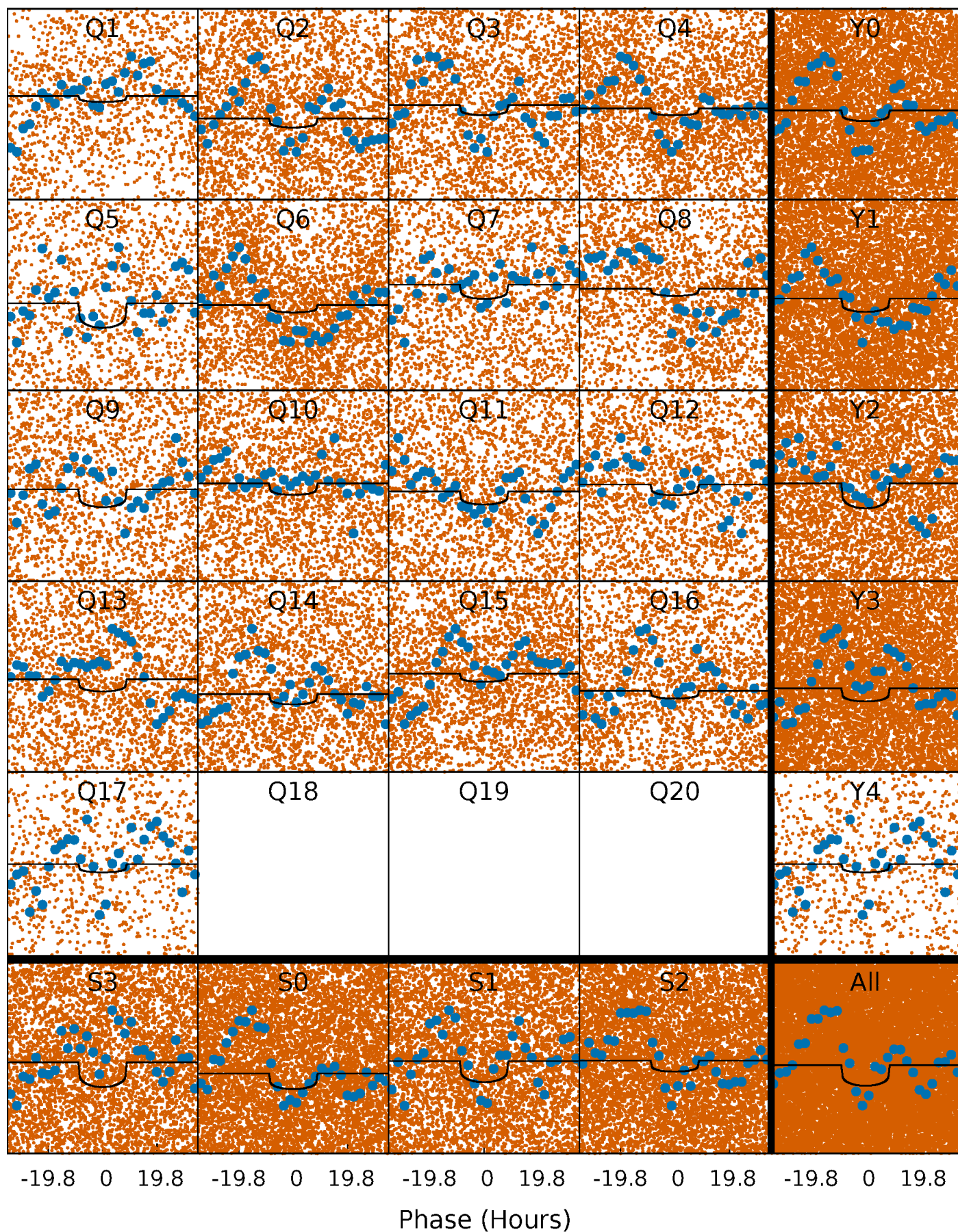
PDC Quarter-Phased Transit Curves

TCE 009244508-02 P= 2.947664 Days $T_0=131.570750$ (BKJD)



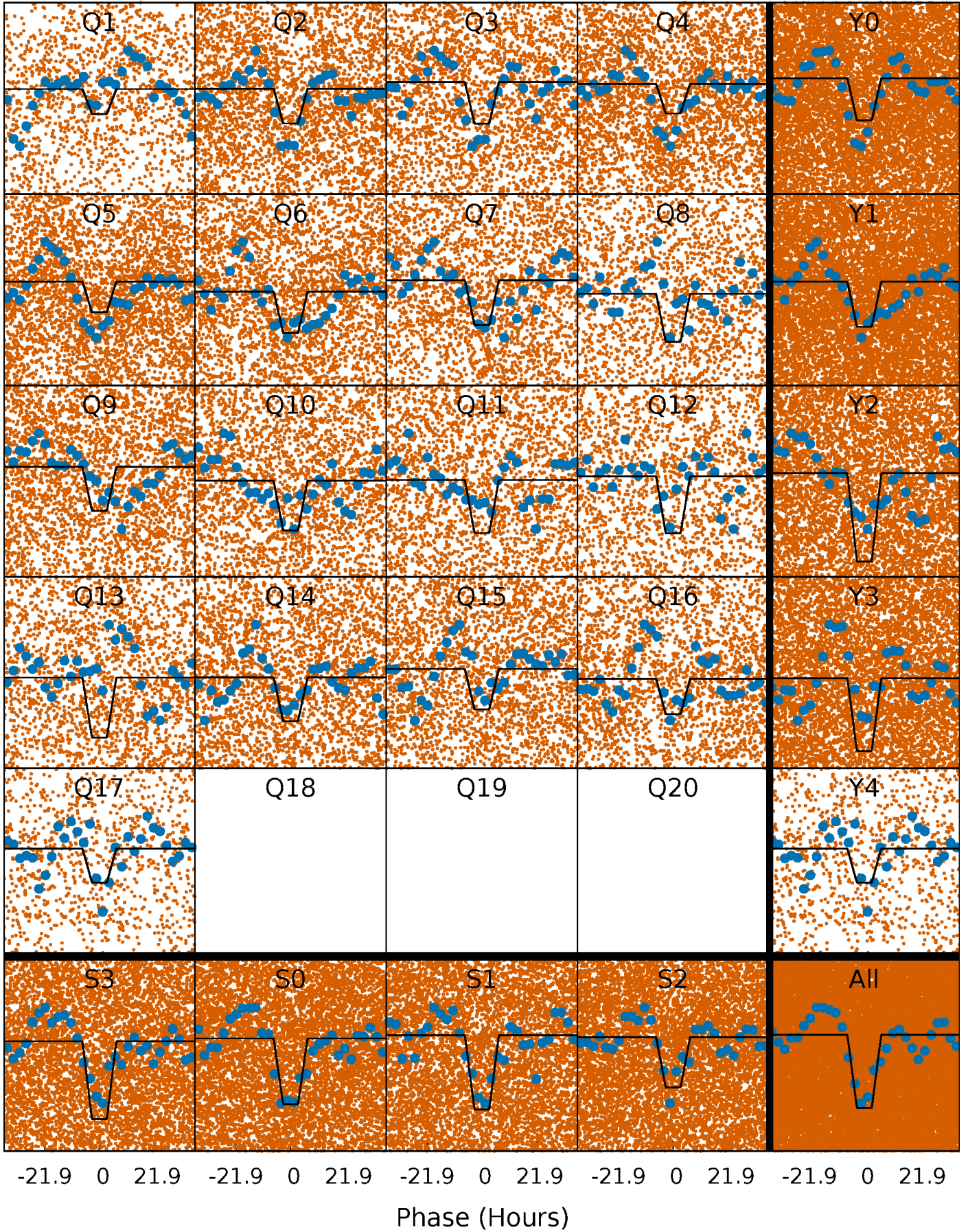
DV Quarter-Phased Transit Curves

TCE 009244508-02 P= 2.947664 Days $T_0=131.570750$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

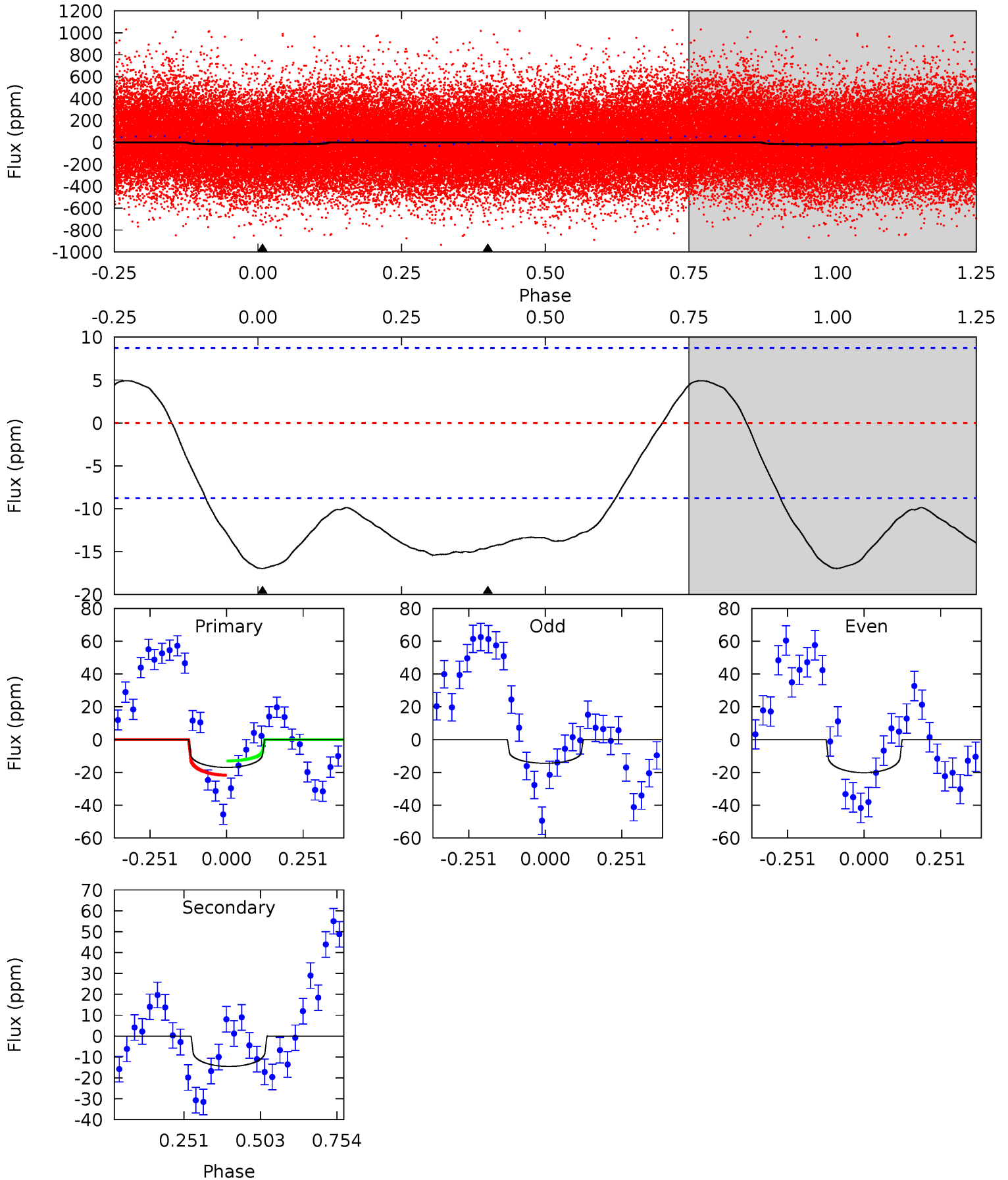
TCE 009244508-02 P= 2.947576 Days $T_0=131.562701$ (BKJD)



DV Model-Shift Uniqueness Test

009244508-02, P = 2.947664 Days, E = 128.623086 Days

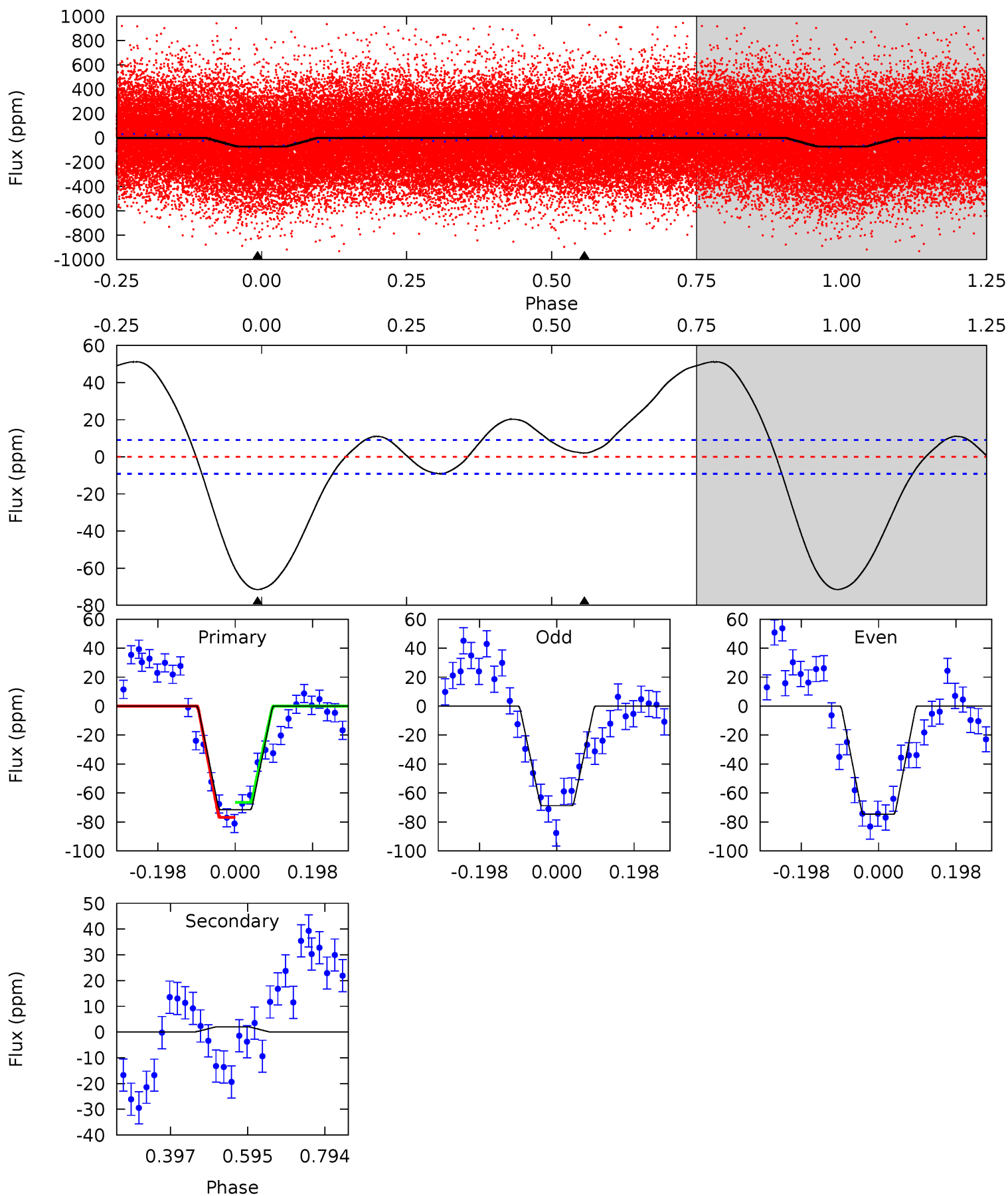
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.47	7.26	0	0	4.37	1.15	1.52	8.47	8.47	7.26	7.26	1.43	0.78	0.23	2.27



Alt Model-Shift Uniqueness Test

009244508-02, P = 2.947576 Days, E = 128.615125 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.7	-0.99	0	0	4.42	1.29	10.4	34.7	34.7	-0.99	-0.99	1.42	0.93	0.42	2.53



Stellar Parameters For KIC 009244508

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6443^{+77}_{-90}	$3.740^{+0.210}_{-0.090}$	$0.560^{+0.050}_{-0.150}$	$3.086^{+0.432}_{-0.802}$	$1.907^{+0.069}_{-0.257}$	$0.091^{+0.111}_{-0.027}$
	+1%/-1%	+6%/-2%	+9%/-27%	+14%/-26%	+4%/-13%	+122%/-29%
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 009244508-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-15 ± 2	$1.56^{+1.02}_{-0.85}$	3091^{+131}_{-193}	5658^{+3205}_{-1141}	$8.056^{+32.227}_{-5.168}$
Alt.	2 ± 2	$2.90^{+1.13}_{-1.05}$	3098^{+139}_{-194}	-3481^{+361}_{-480}	$-0.281^{+0.286}_{-0.712}$

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 $A_{obs} \gg 1.0$

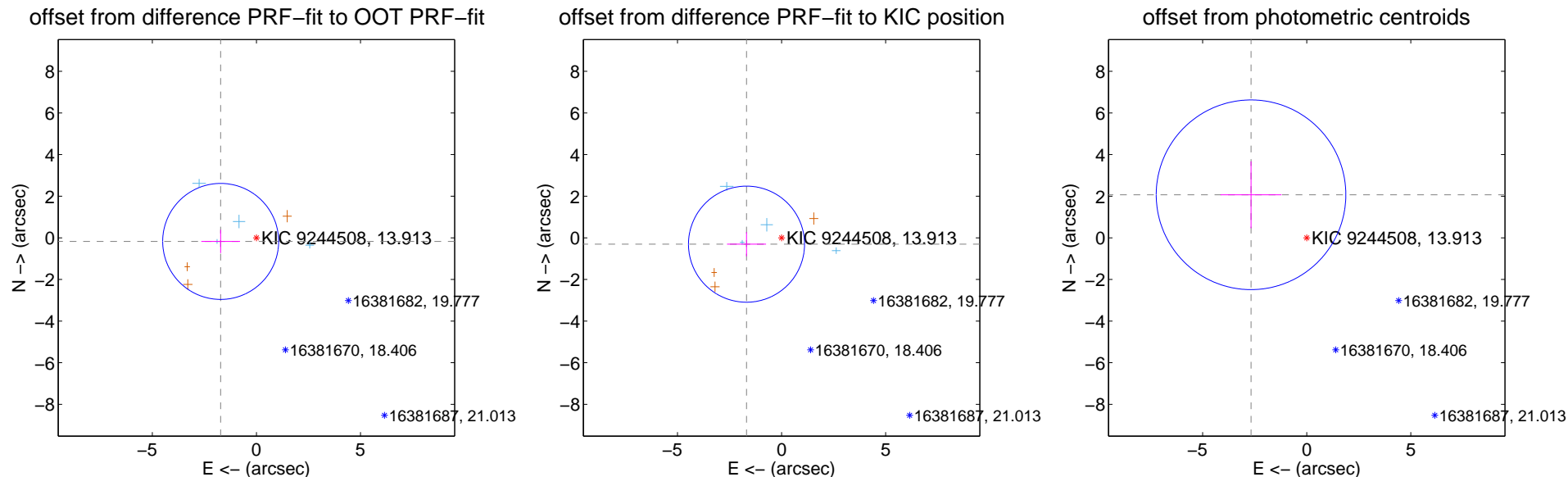
DV Centroid Data

Supplemental centroid analysis for 009244508-02. Kepler magnitude: 13.91. Transit SNR 5.89

There are 4 quarters with good PRF difference image offsets

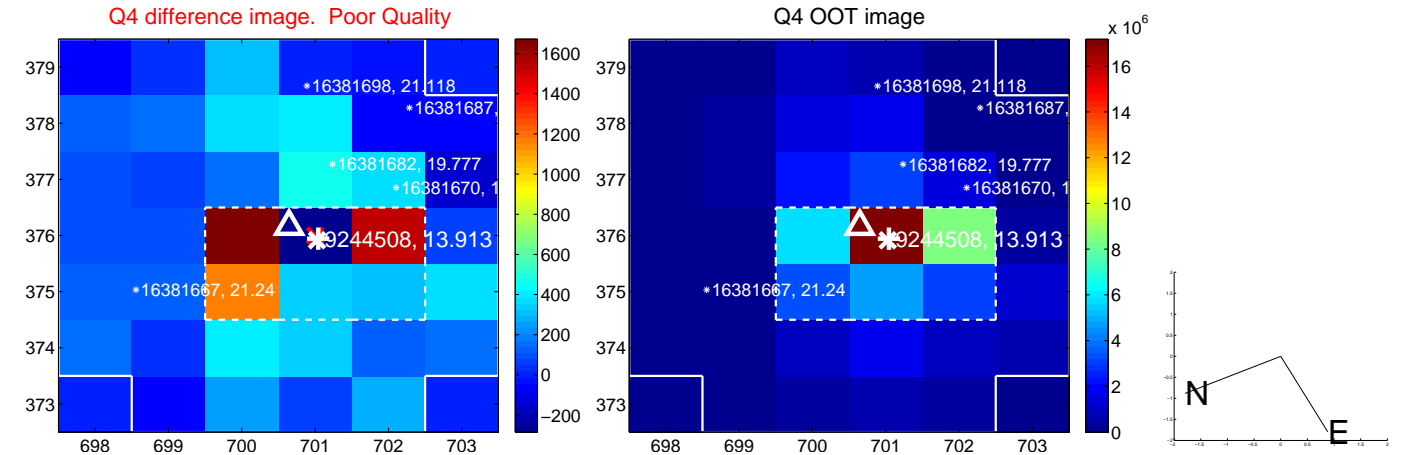
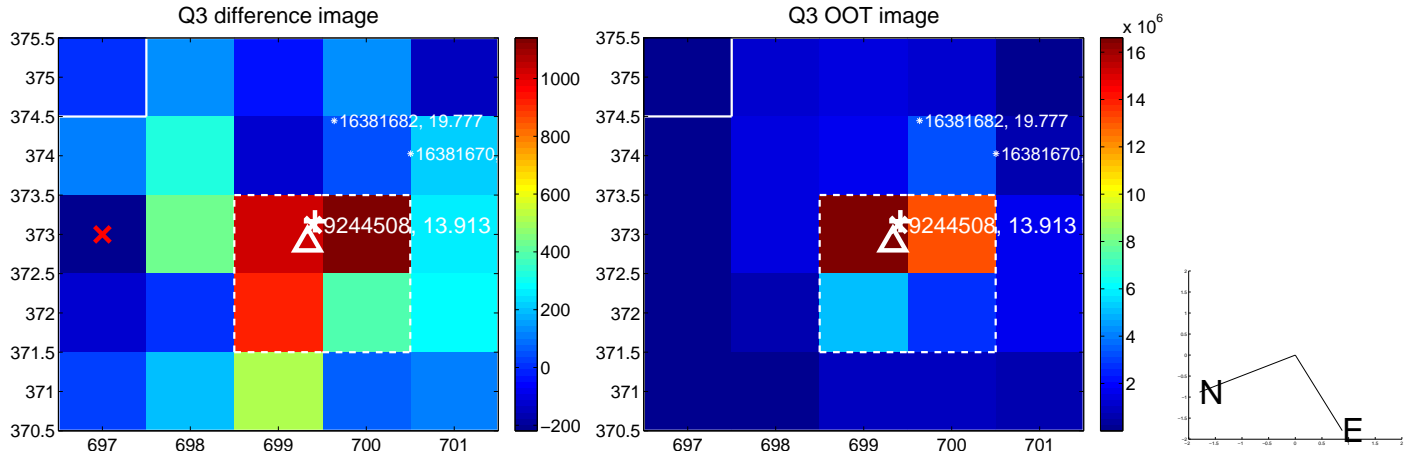
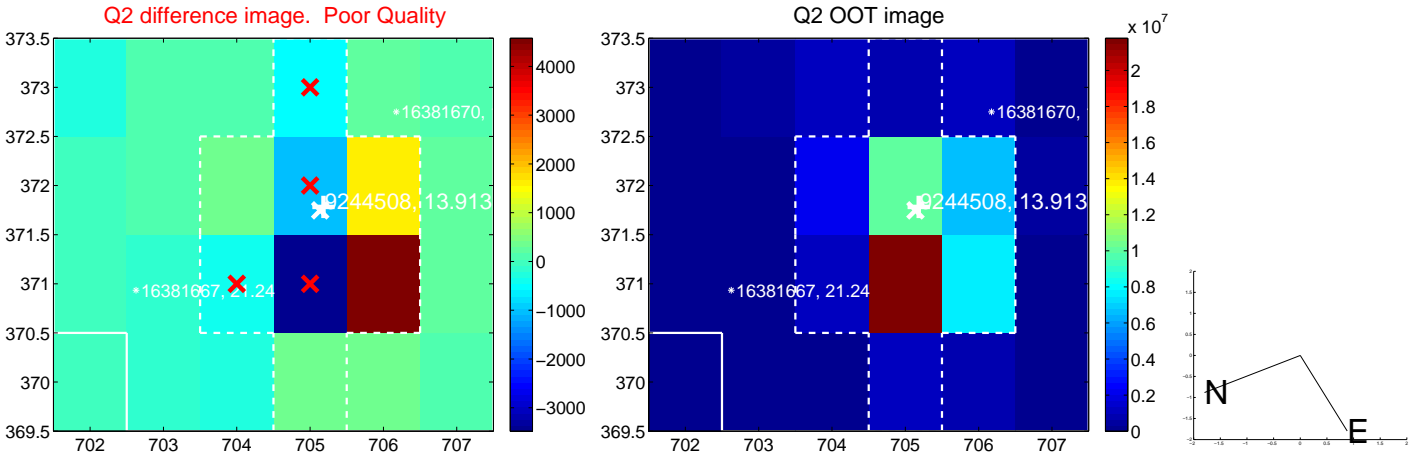
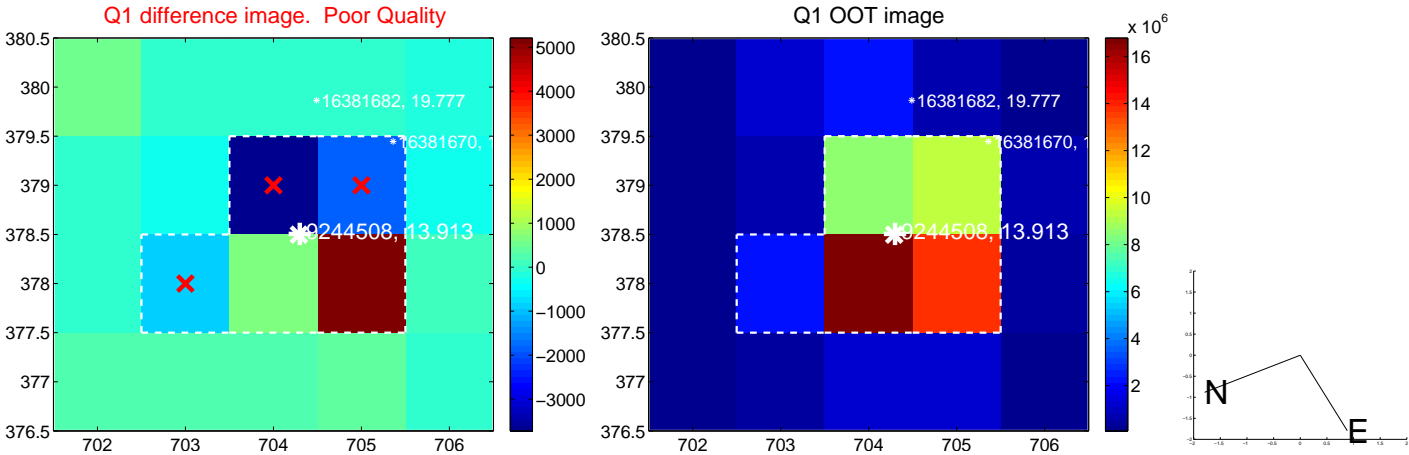
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.727 ± 0.929	1.86	1.718 ± 0.932	-0.173 ± 0.558
PRF-fit source offset from KIC position	1.712 ± 0.930	1.84	1.685 ± 0.939	-0.305 ± 0.579
photometric centroid source offset	3.38 ± 1.52	2.23	2.68 ± 1.47	2.07 ± 1.60

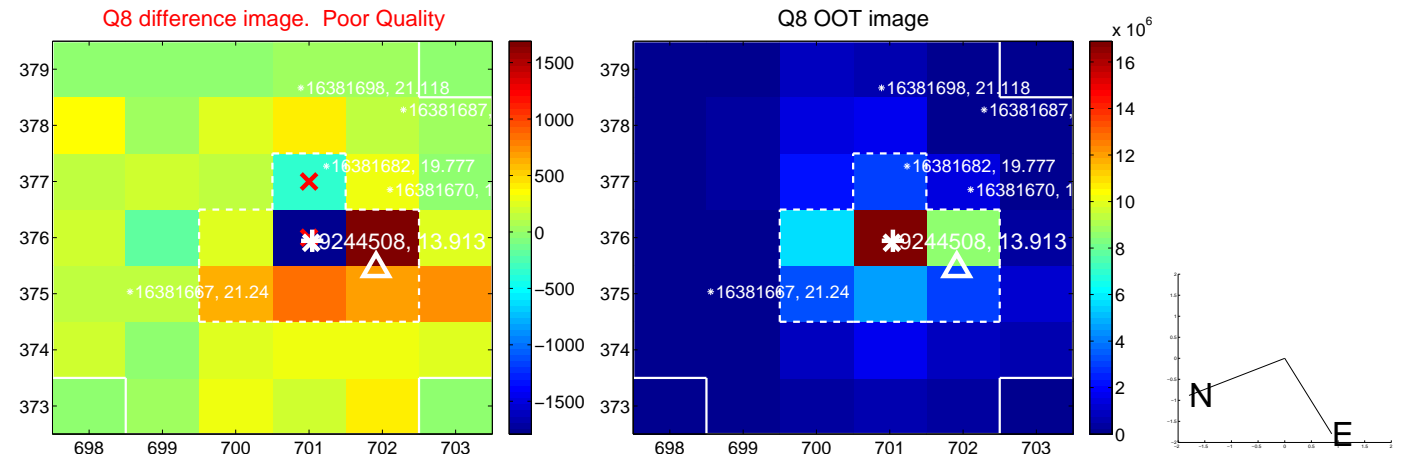
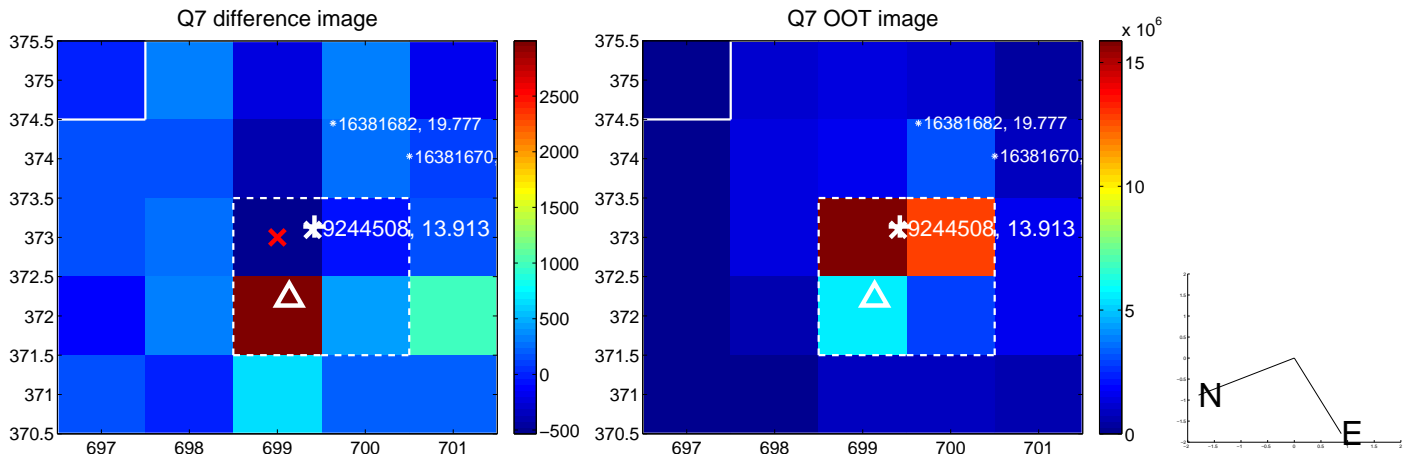
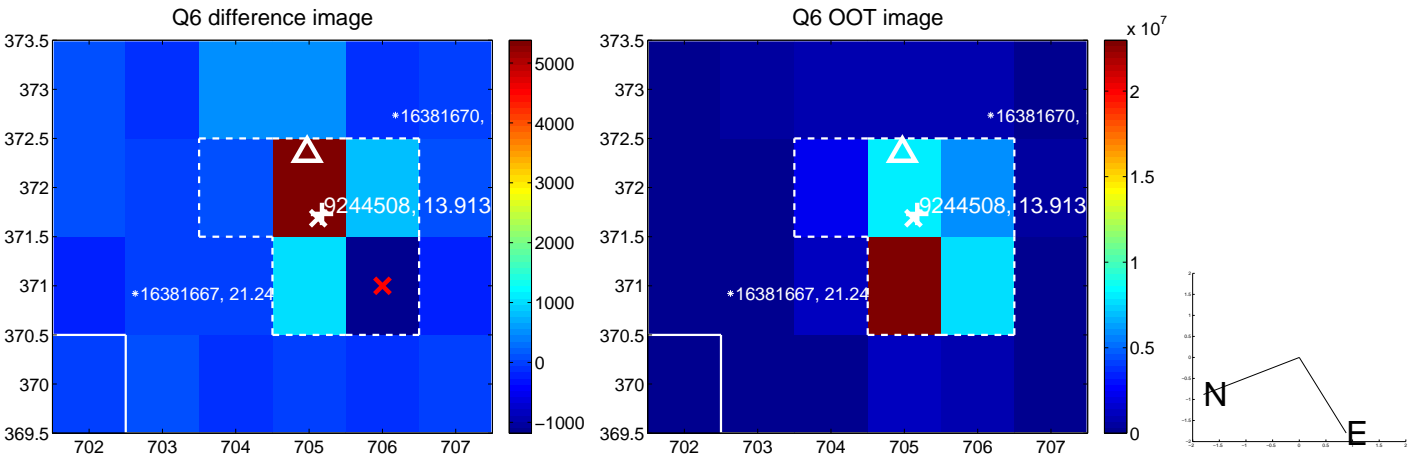
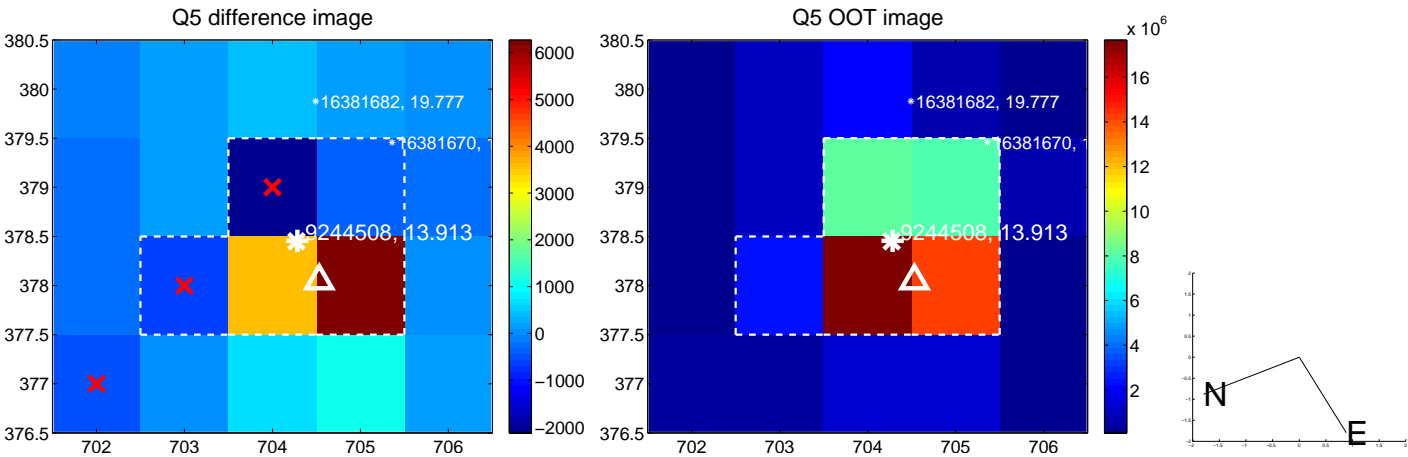


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

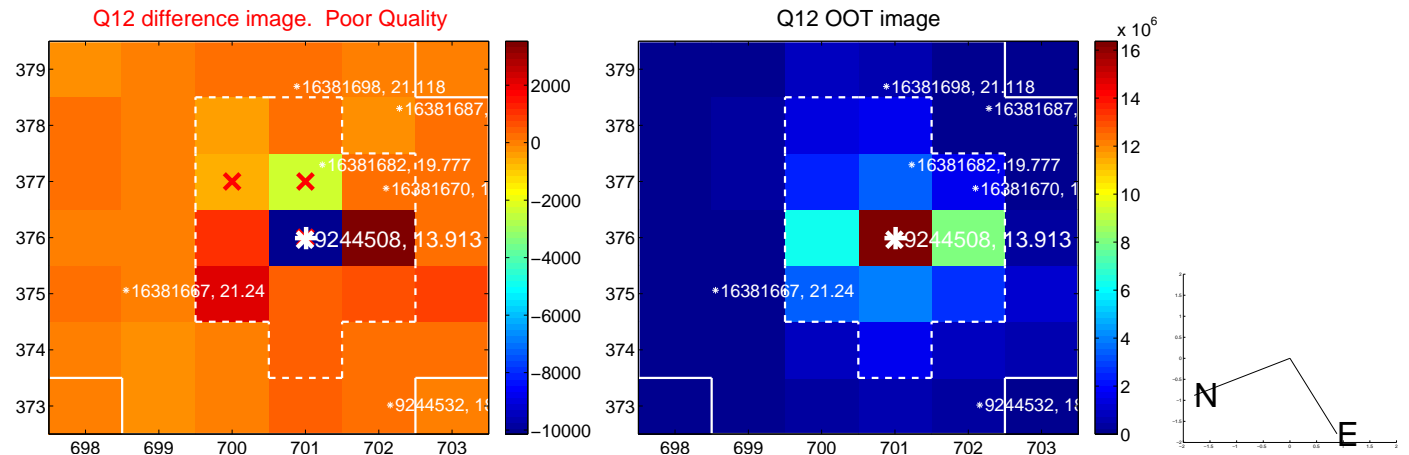
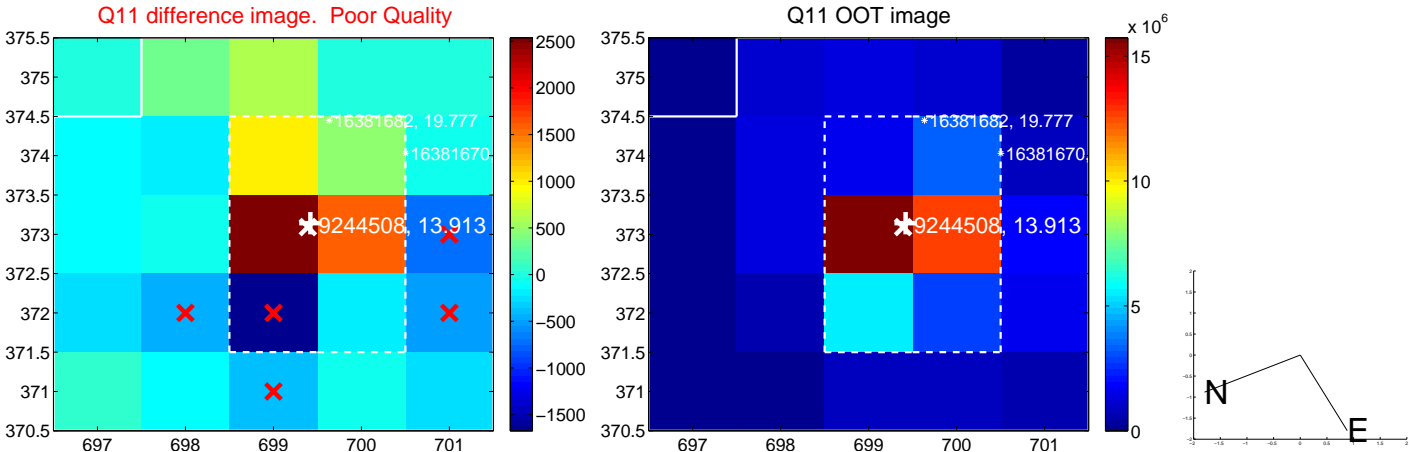
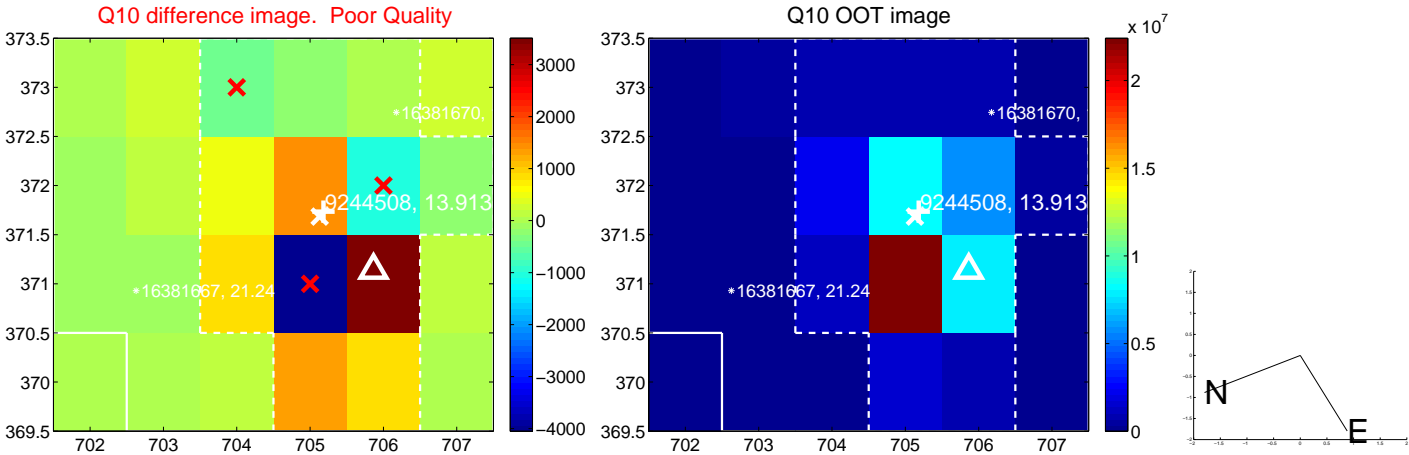
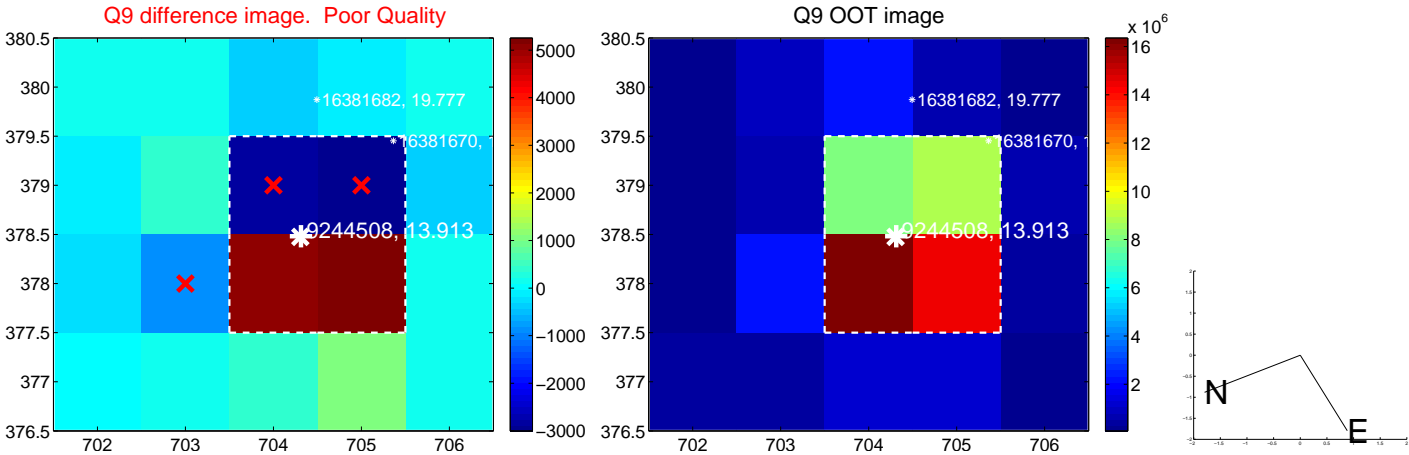
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



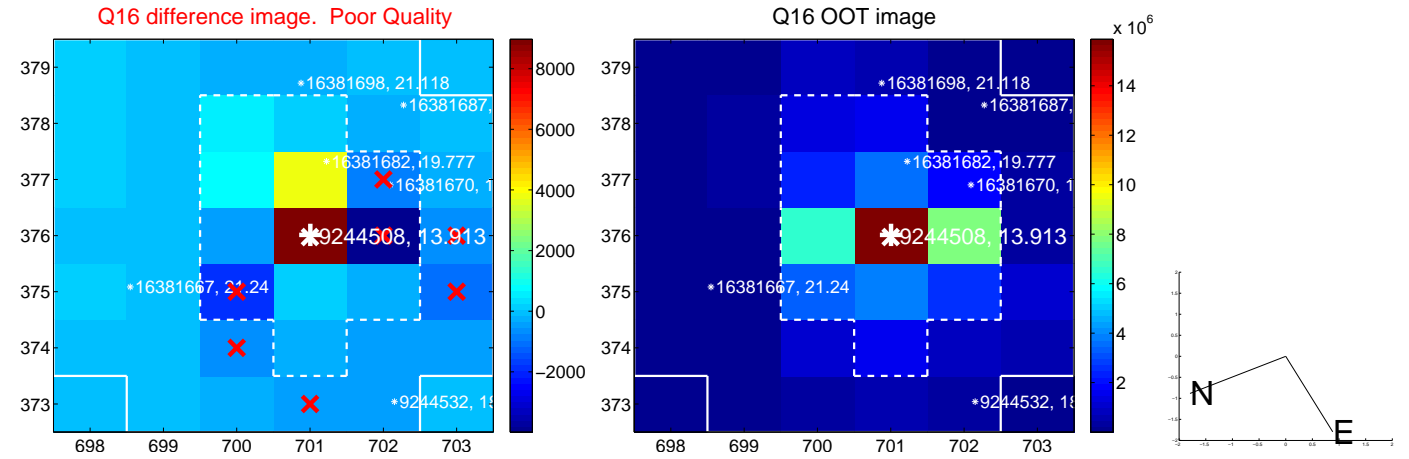
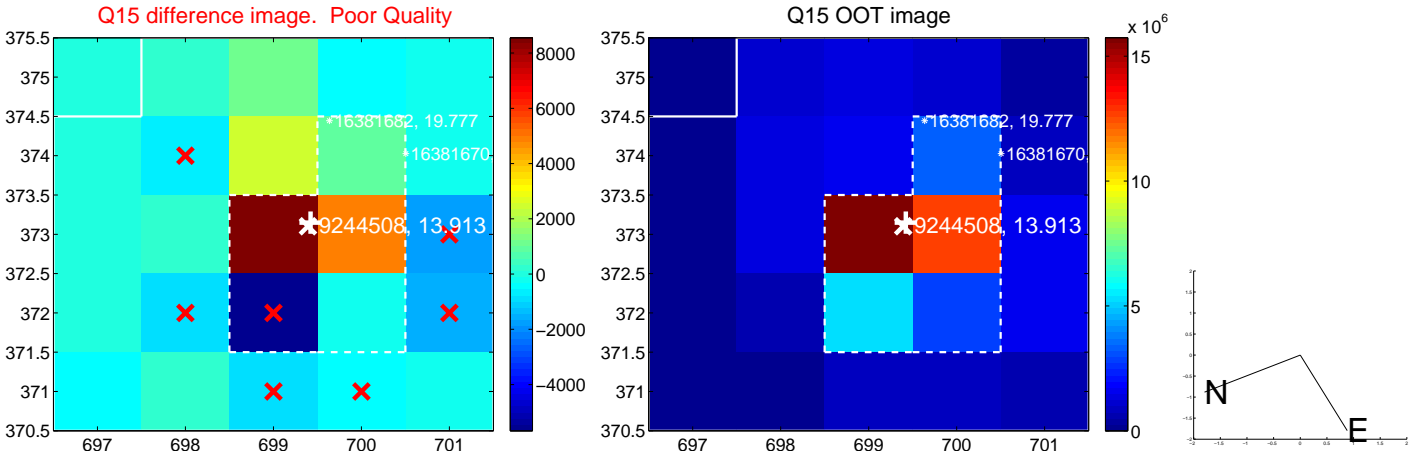
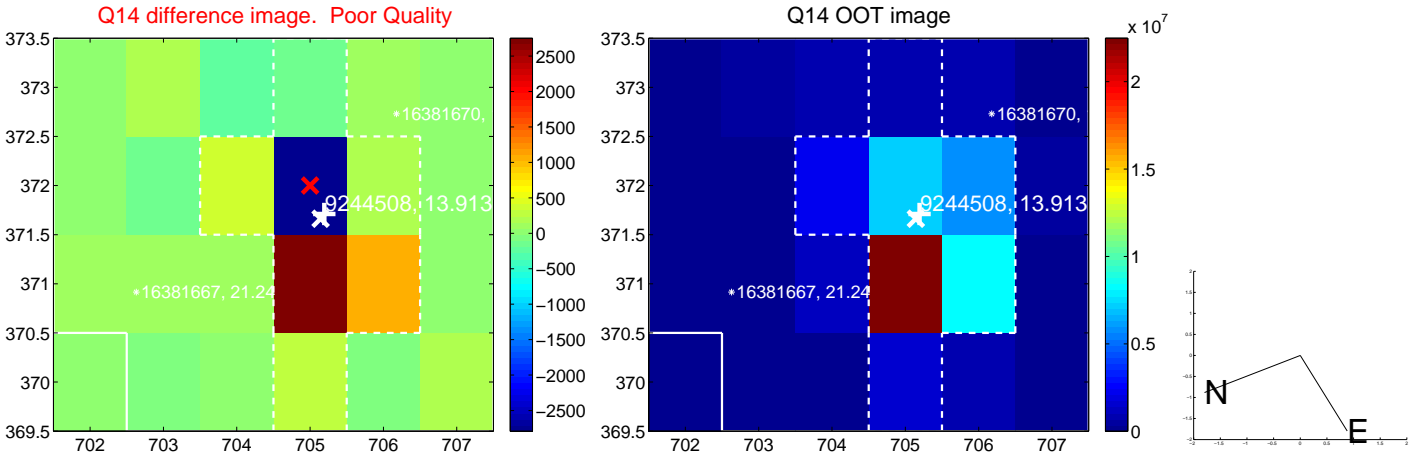
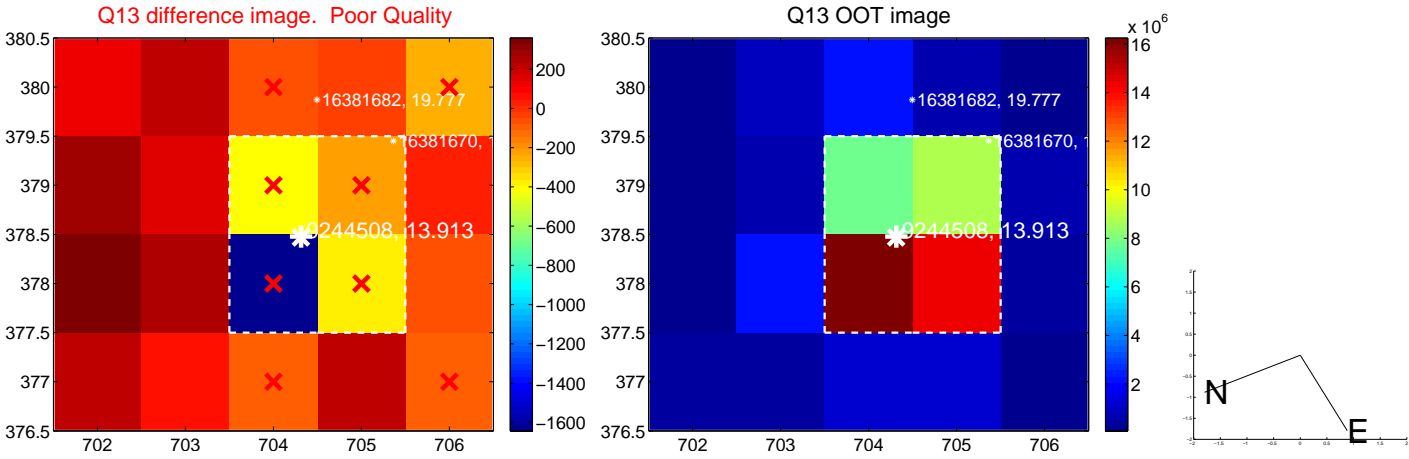
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



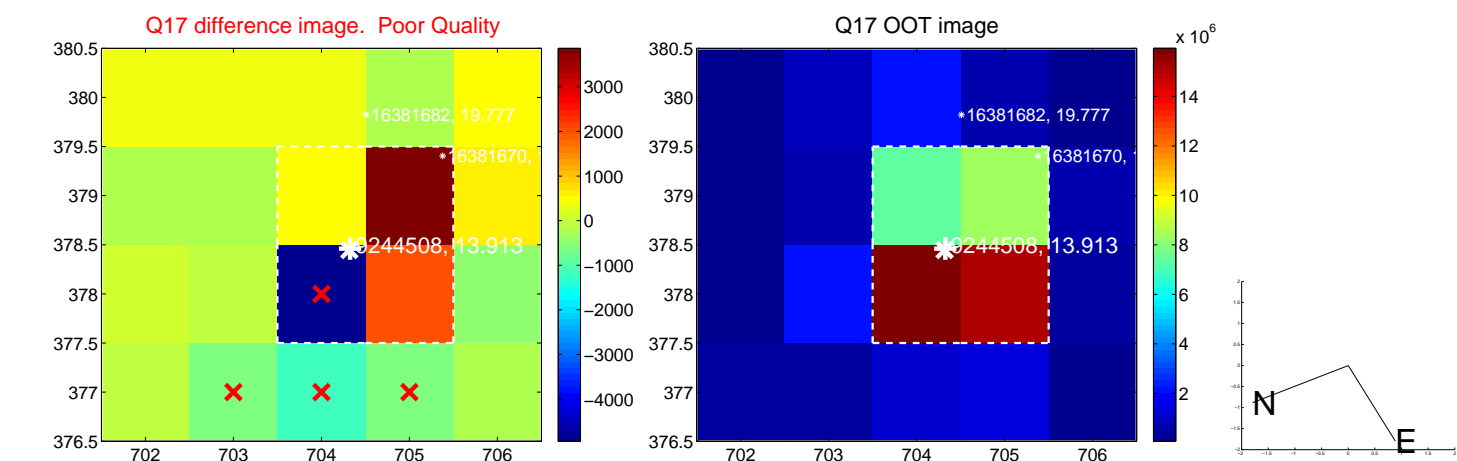
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



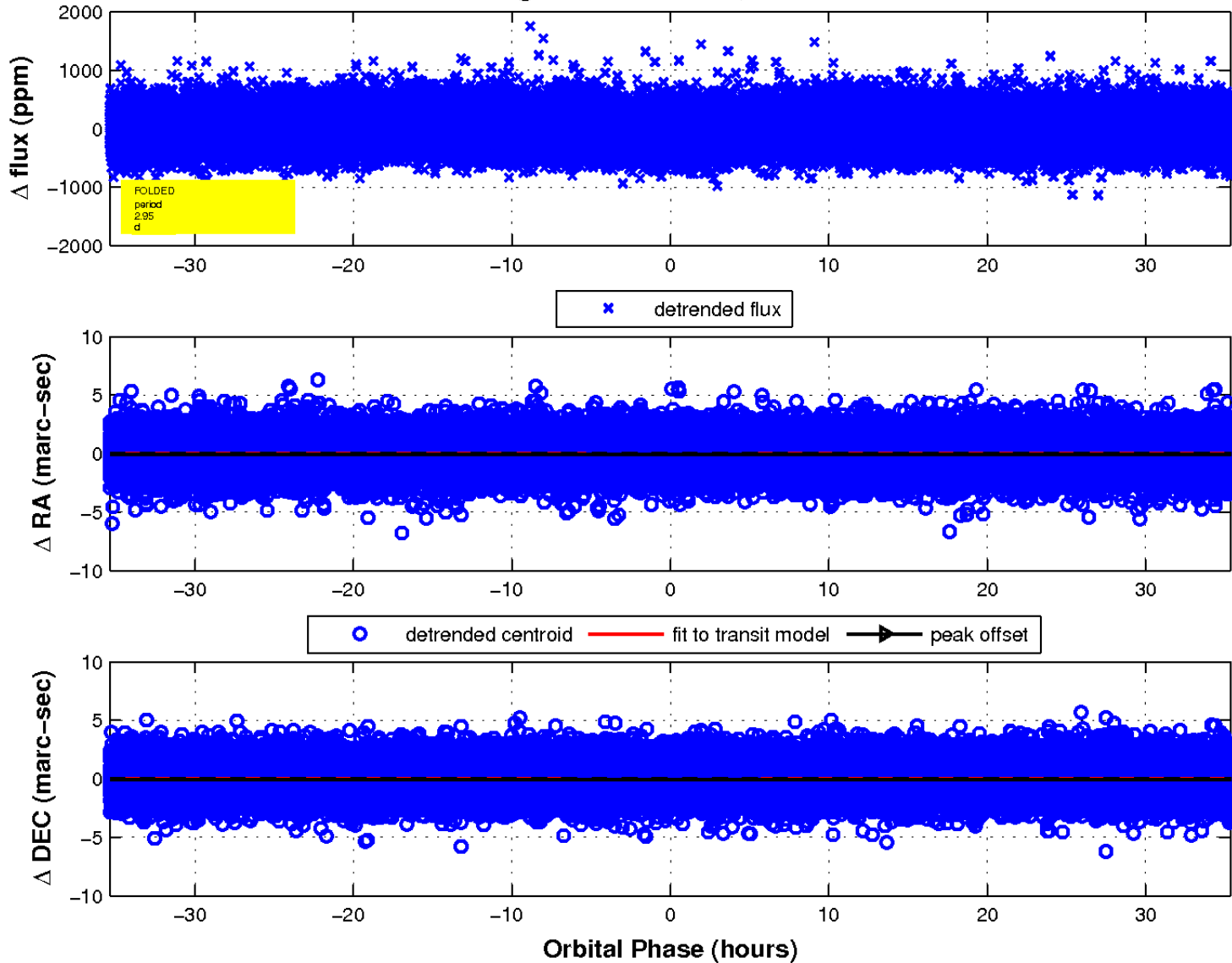
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

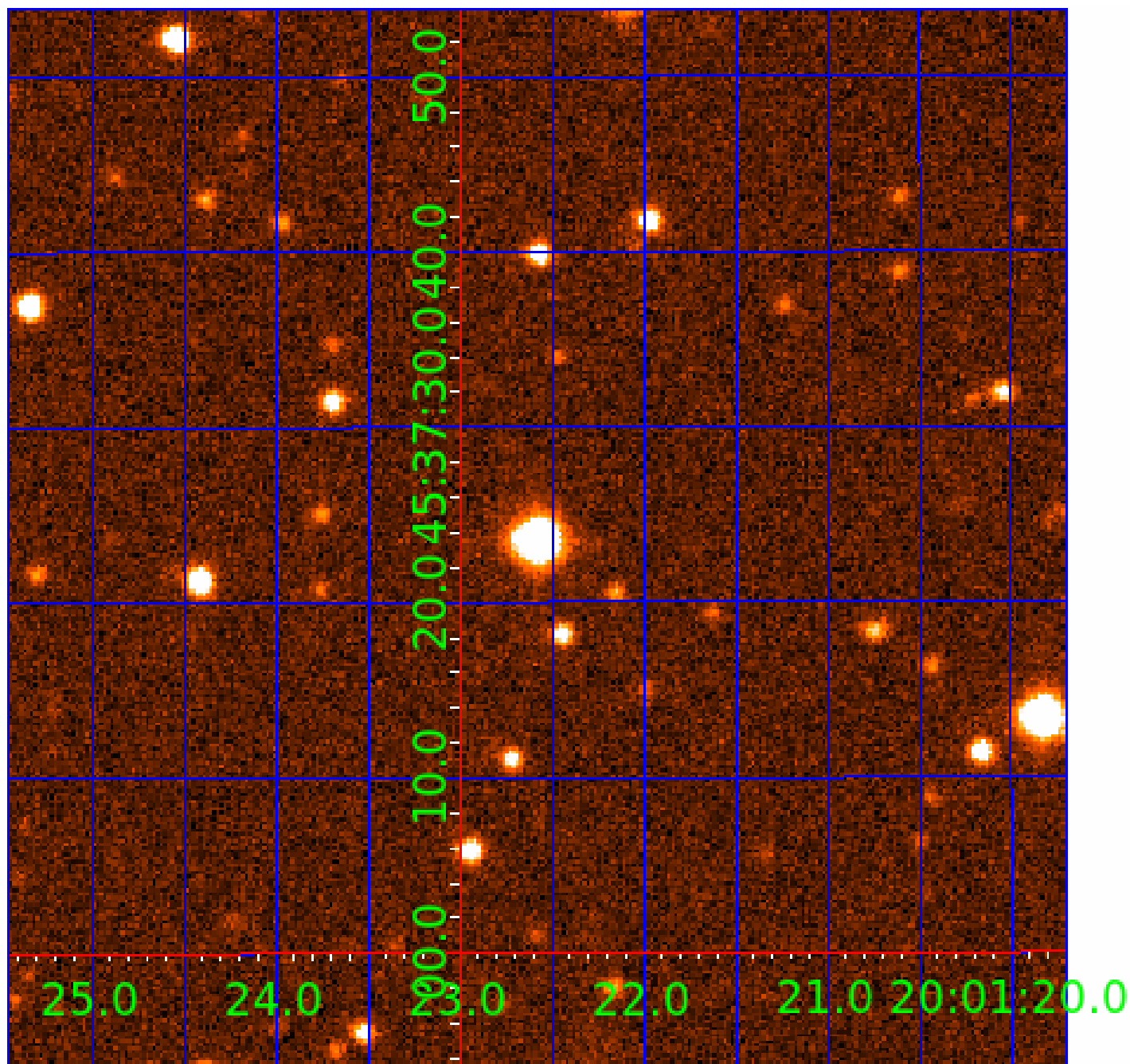


fluxWeightedCentroids, Planet 2 of 5



UKIRT Image

Declination



KIC 009244508

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})
009244508-01	OBS	2830.01	40.528784	168.021535	332.9	10.688	18.6	20.1	3.09	6443	6.00	179.13
009244508-02	OBS	No	2.947664	131.570749	21.4	17.345	8.2	5.9	3.09	6443	1.51	5900.29
009244508-03	OBS	No	149.635182	156.827352	206.1	9.808	9.2	5.9	3.09	6443	5.20	31.39
009244508-05	OBS	No	68.383508	161.479944	294.8	3.101	7.4	7.6	3.09	6443	6.20	89.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009244508-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
009244508-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
009244508-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009244508-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—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.

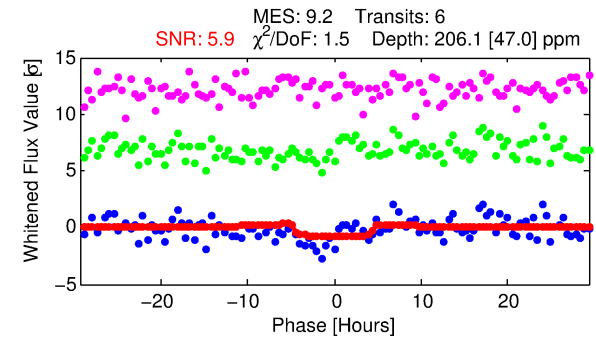
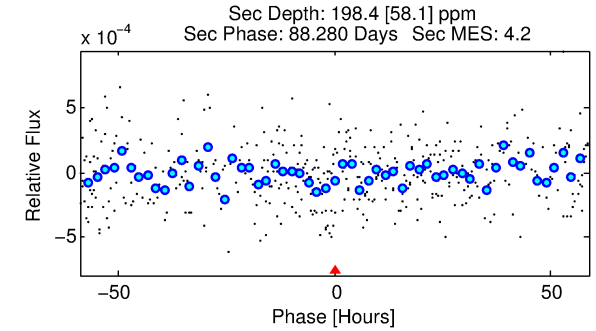
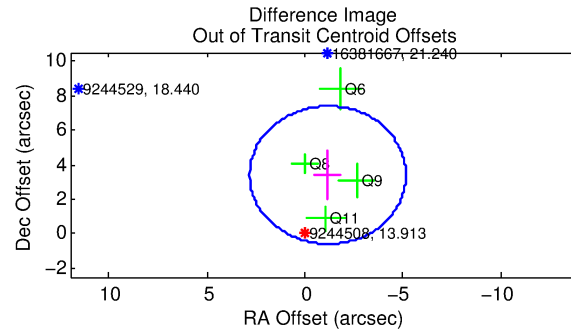
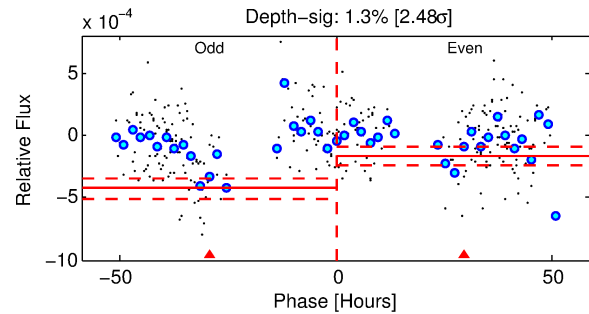
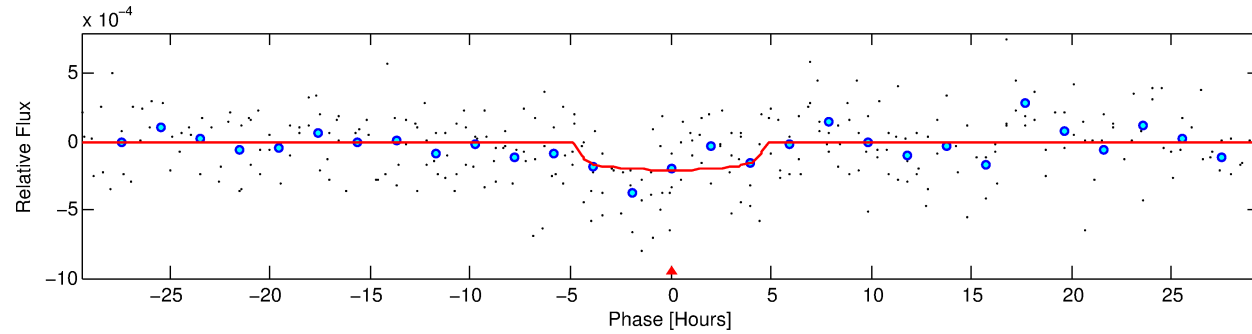
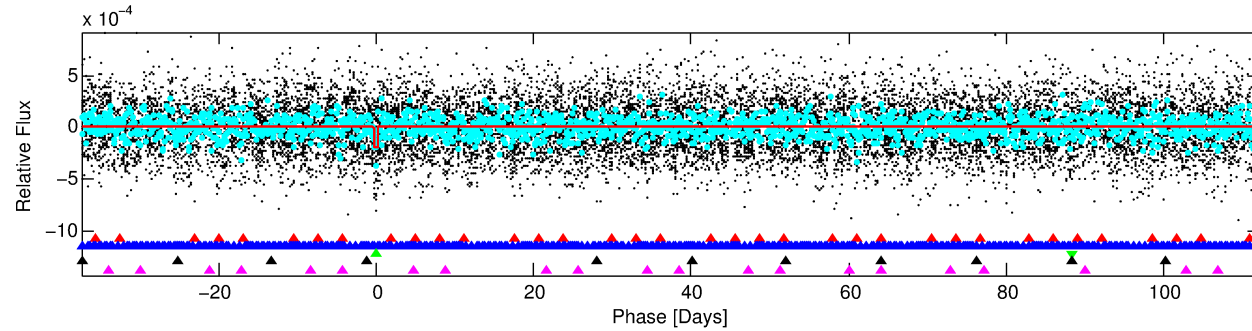
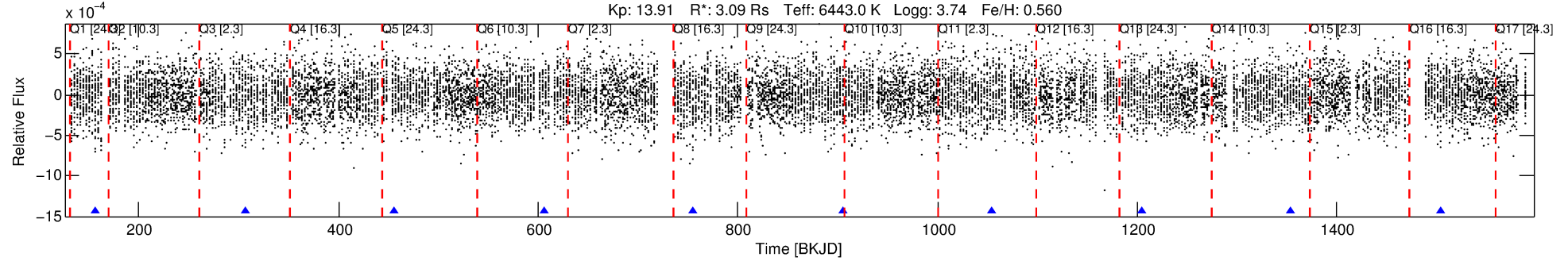
Ephemeris Match Information For 009244508-03

No Significant Match Found

DV One-Page Summary

KIC: 9244508 Candidate: 3 of 5 Period: 149.635 d
KOI: K02830 Corr: No Ephemeris Match

Kp: 13.91 R*: 3.09 Rs Teff: 6443.0 K Logg: 3.74 Fe/H: 0.560



DV Fit Results:

Period = 149.63518 [0.00480] d
Epoch = 156.8274 [0.0322] BKJD
Rp/R* = 0.0154 [0.0053]
a/R* = 55.05 [93.26]
b = 0.90 [0.36]
Seff = 31.39 [11.62]
Teq = 604 [56] K
Rp = 5.20 [2.25] Re
a = 0.6844 [0.1620] AU
Ag = 1891.43 [1579.56] [1.20σ]
Teffp = 6154 [1158] K [4.79σ]

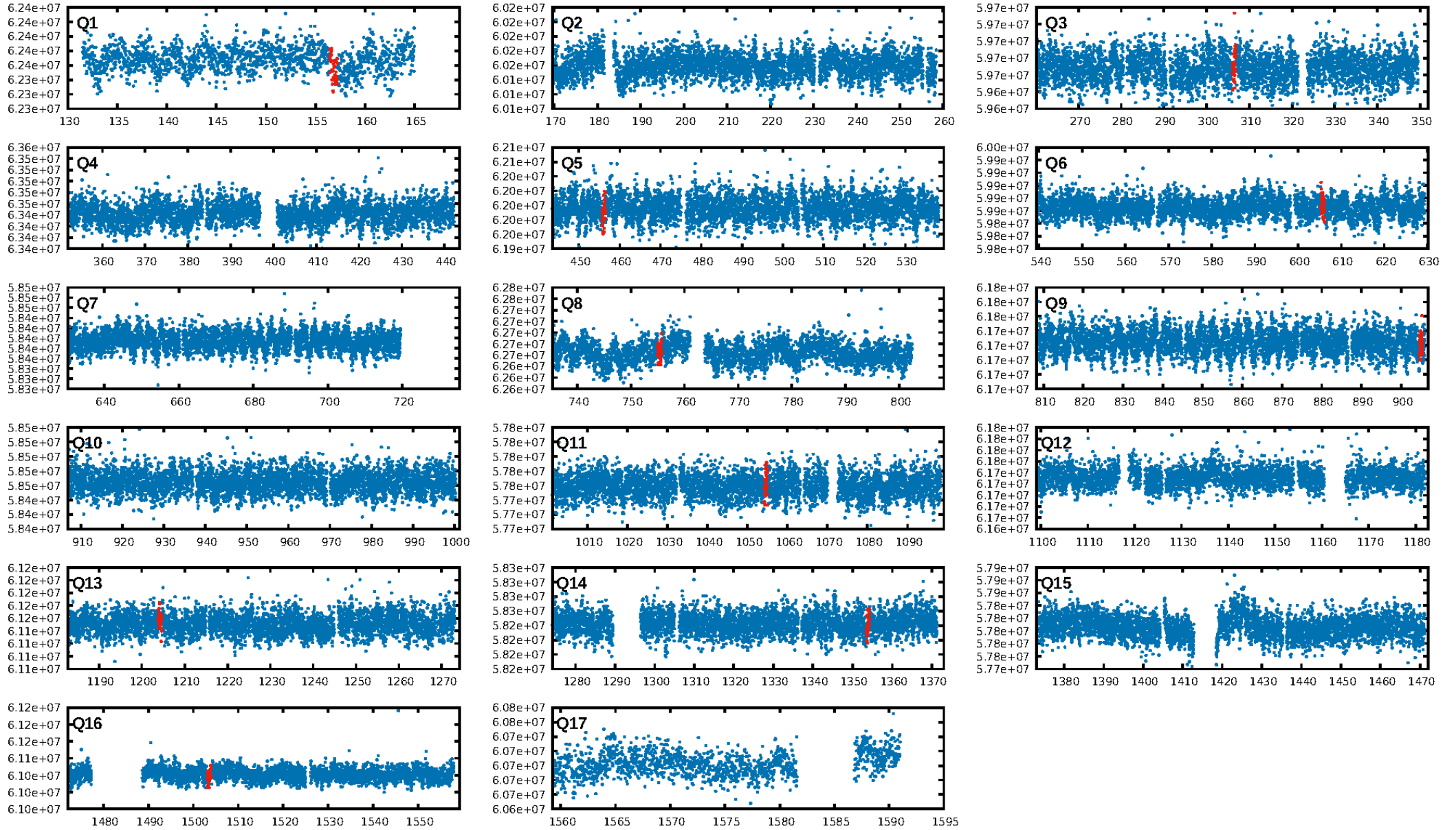
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [24.28σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 99.8%
Bootstrap-pfa: 4.07e-11
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 1.187
Centroid-sig: 14.5%
Centroid-so: 2.231 arcsec [1.65σ]
OotOffset-rm: 3.592 arcsec [2.70σ]
KicOffset-rm: 3.503 arcsec [2.64σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.00 [0/4]
DiffImageOverlap-fno: 0.40 [4/10]

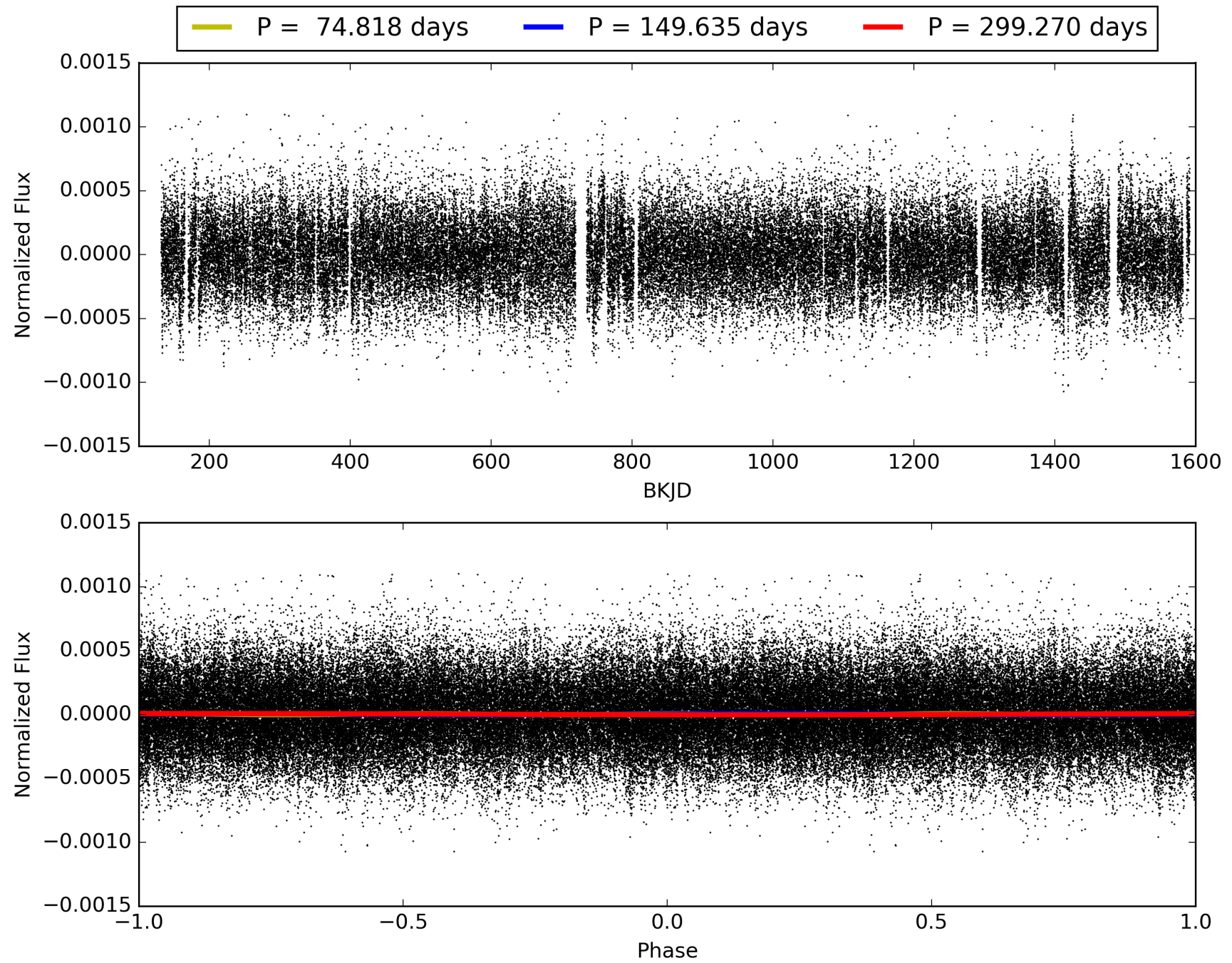
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:23:52 Z

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

TCE 009244508-03, PDC Light Curves

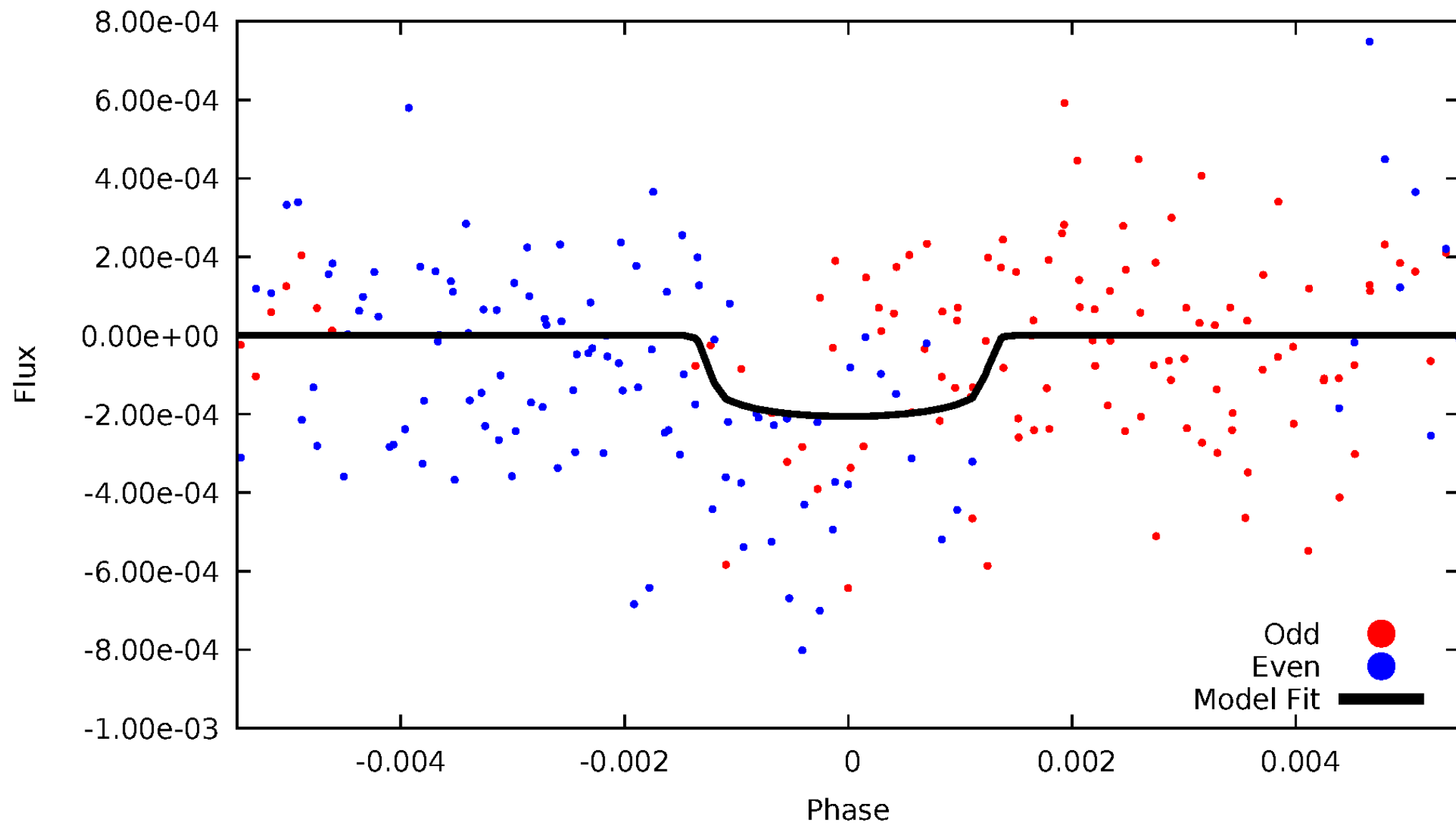


TCE 009244508-03



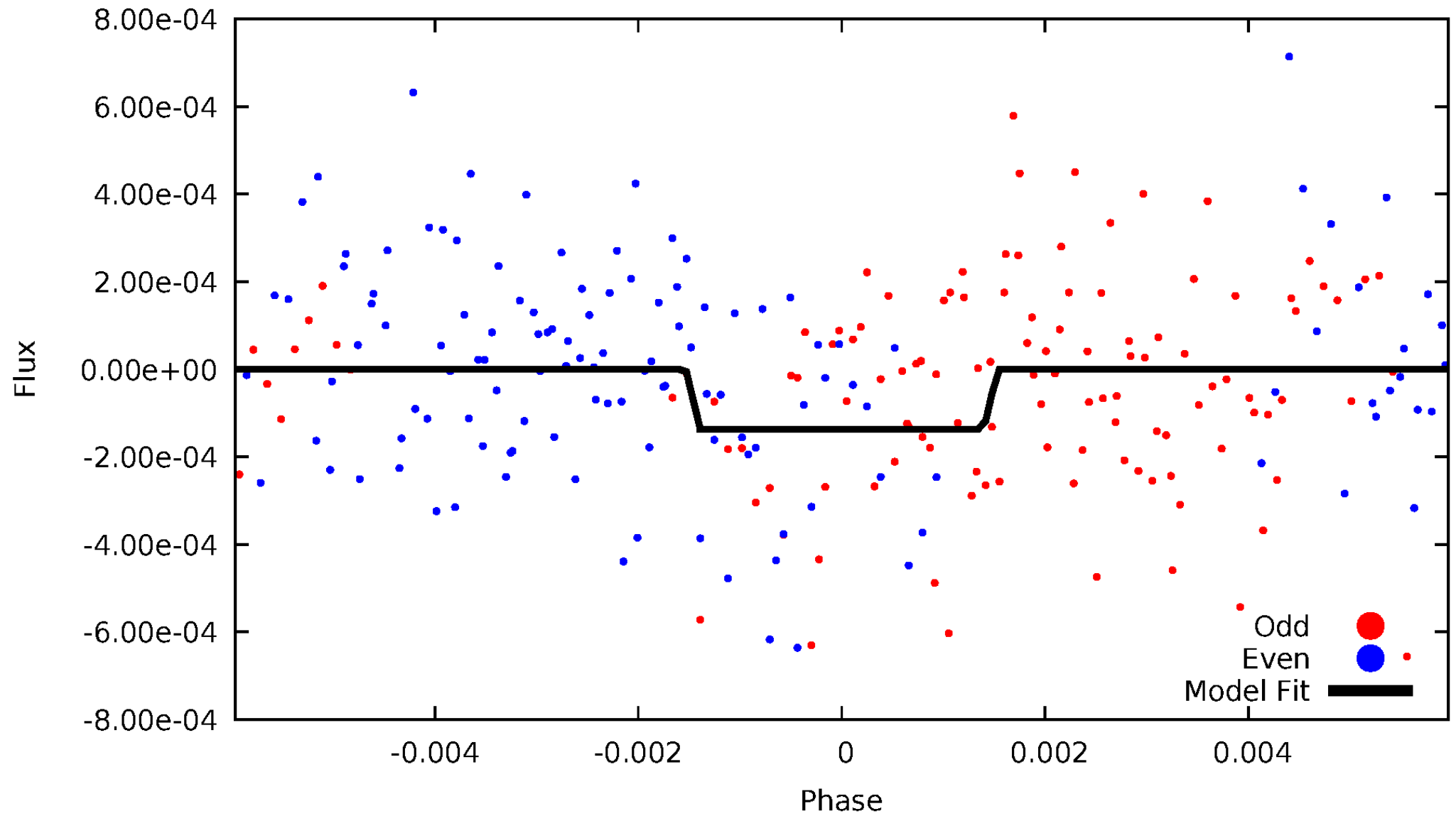
DV Odd/Even

TCE 009244508-03

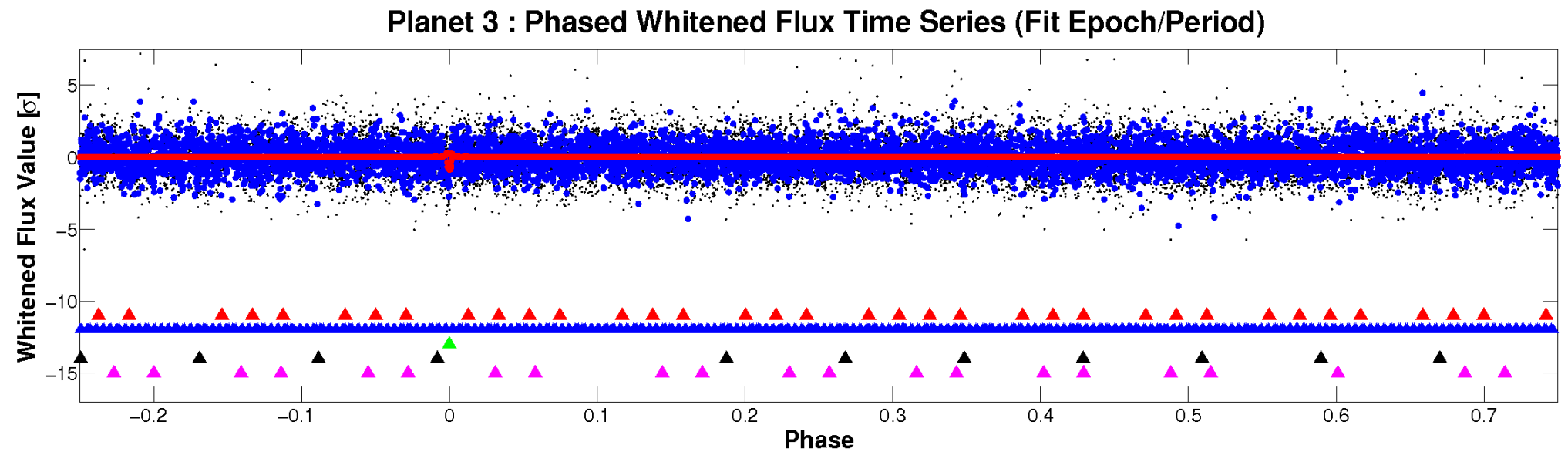
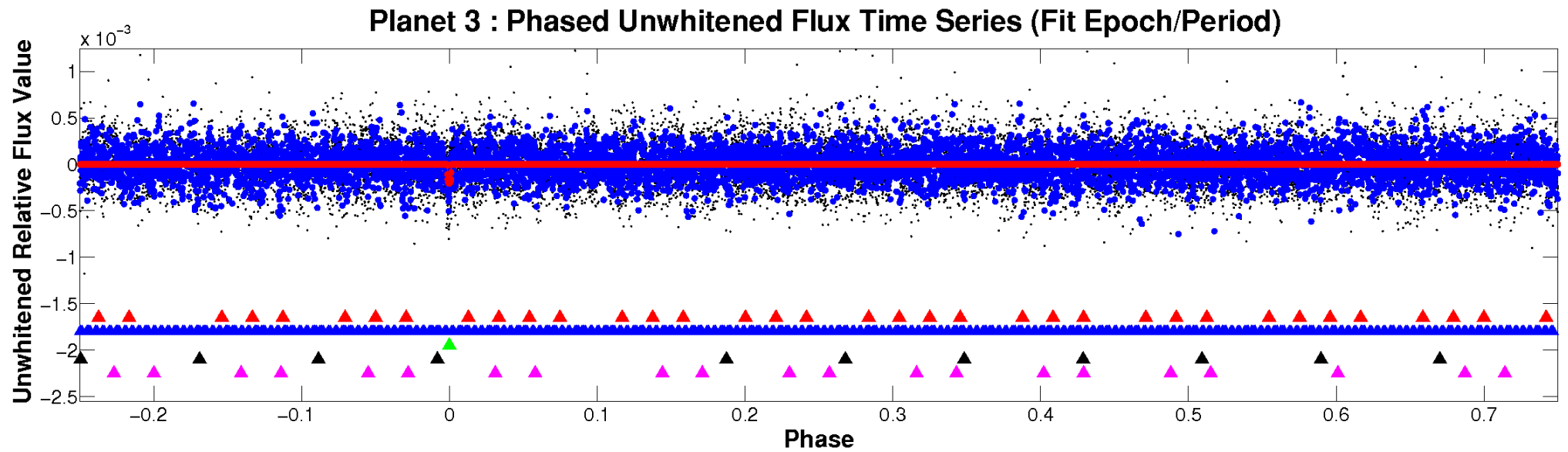


ALT Odd/Even

TCE 009244508-03

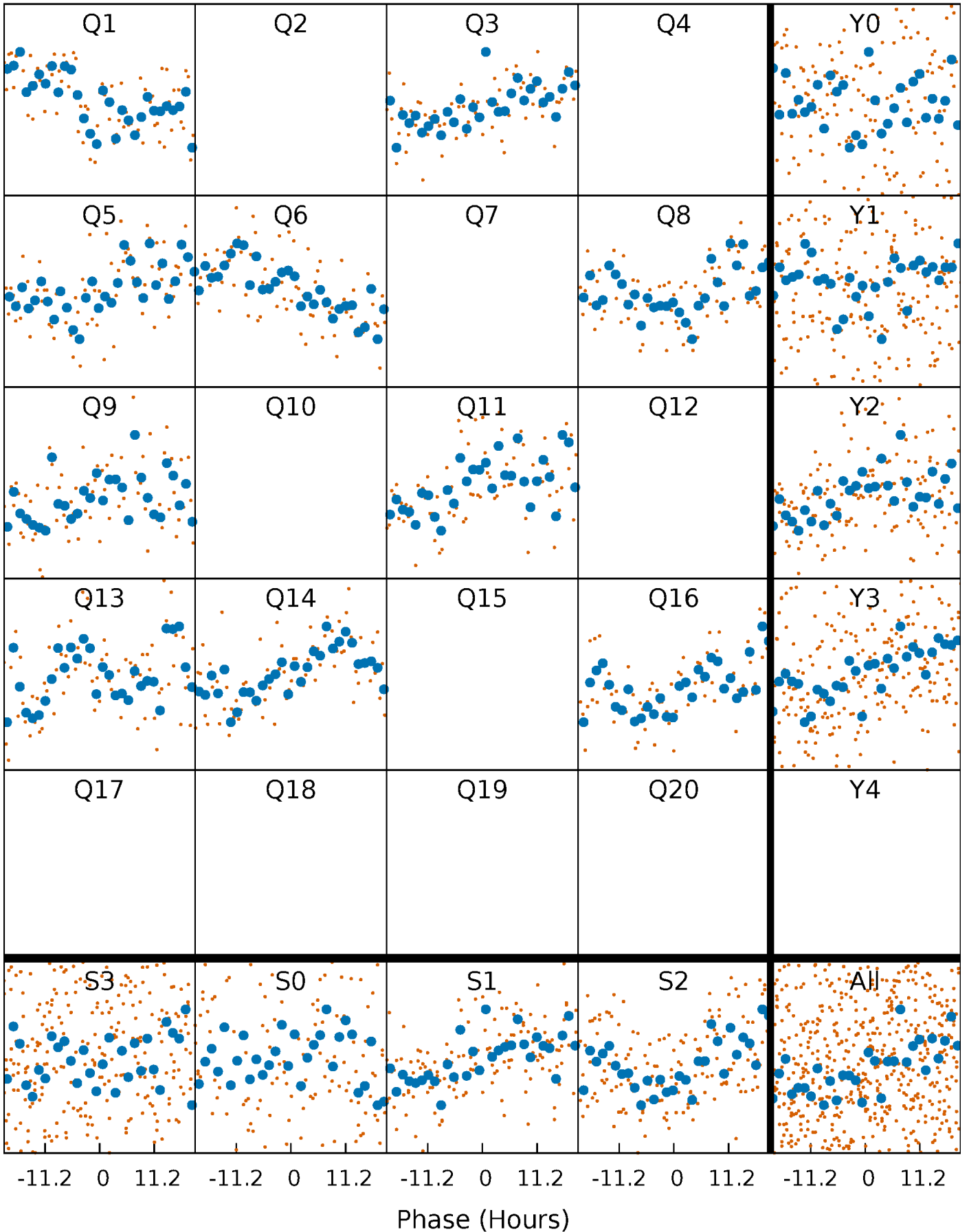


Non-Whitened Vs. Whitened Light Curve



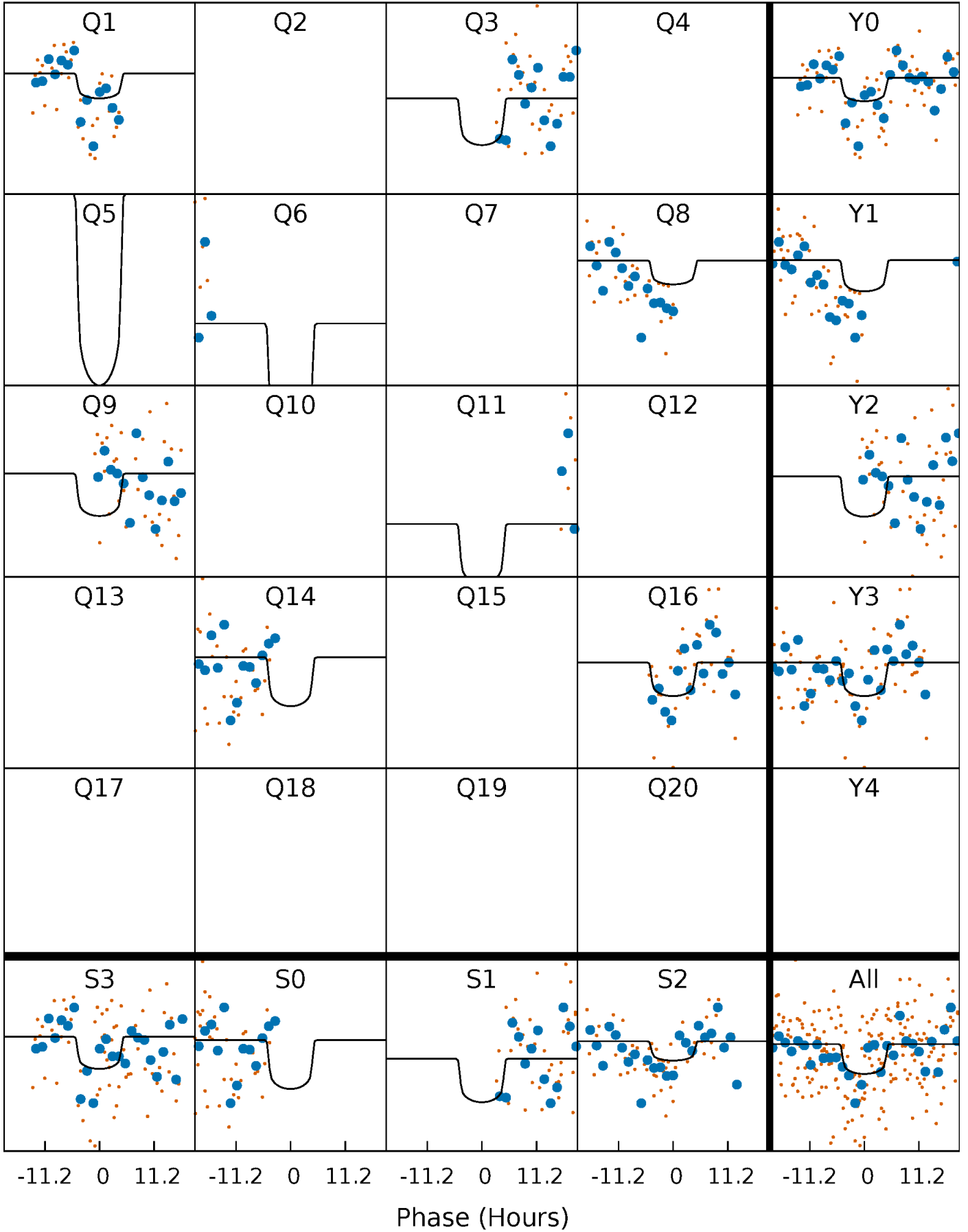
PDC Quarter-Phased Transit Curves

TCE 009244508-03 P=149.635182 Days $T_0=156.827352$ (BKJD)



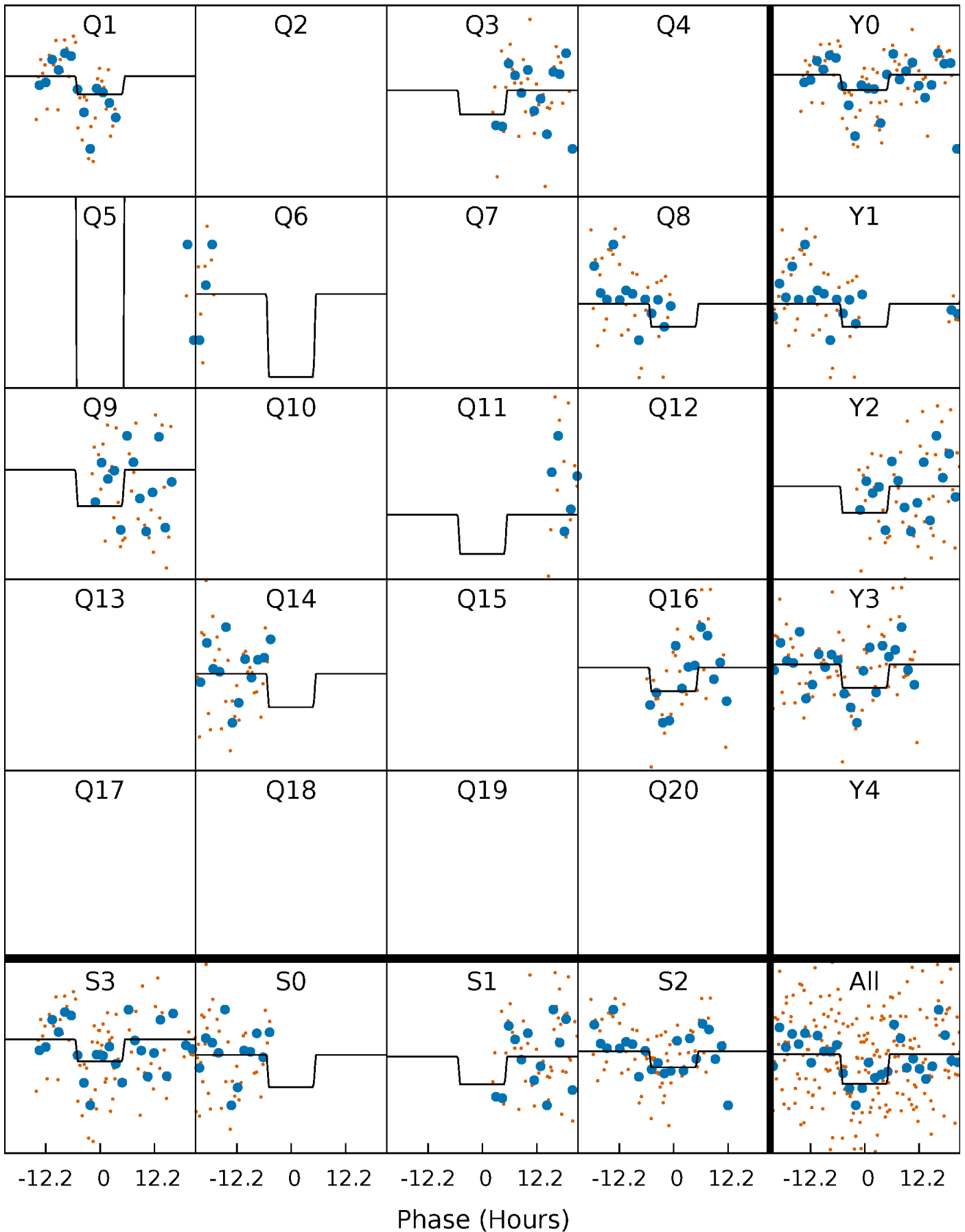
DV Quarter-Phased Transit Curves

TCE 009244508-03 $P=149.635182$ Days $T_0=156.827352$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

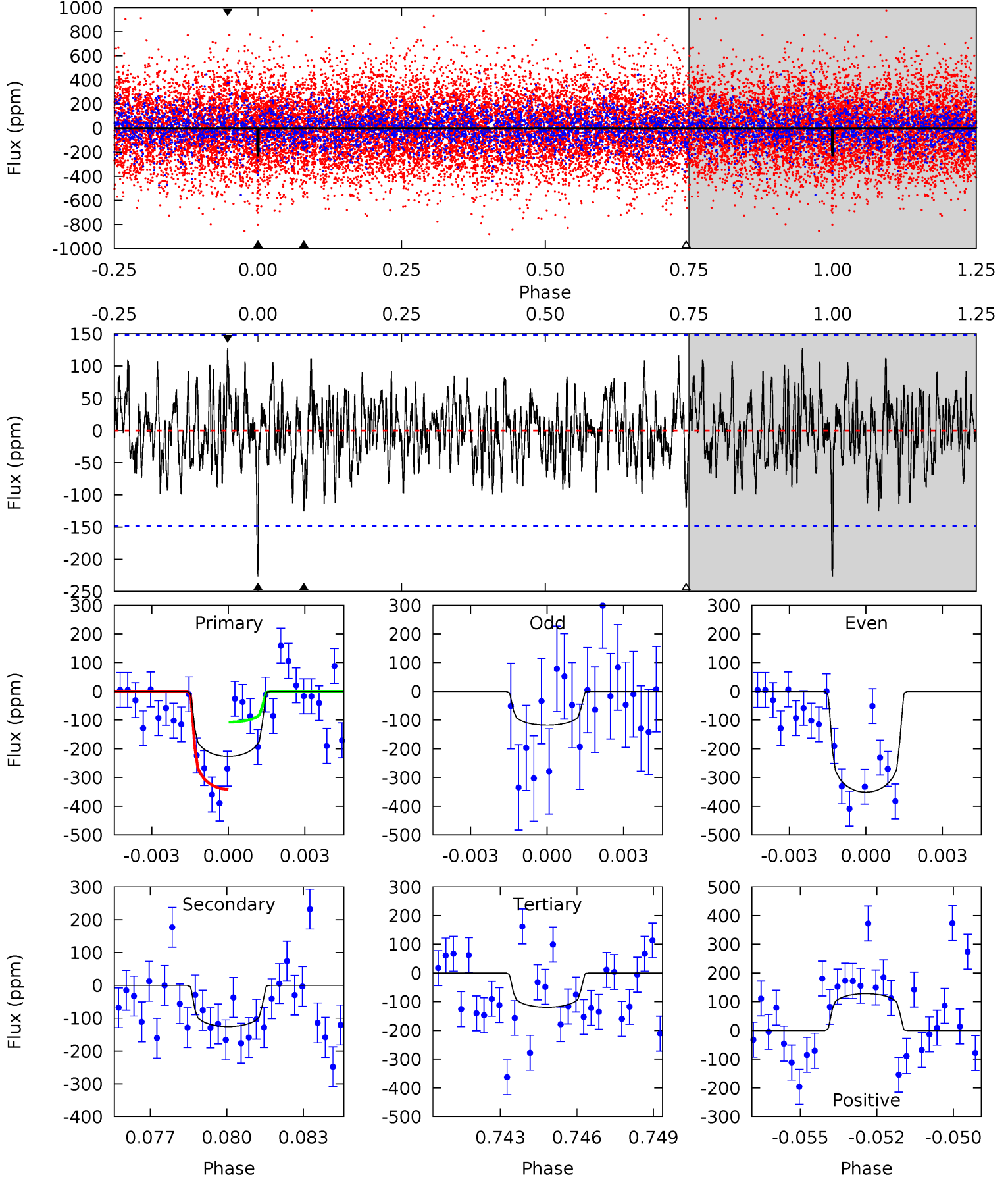
TCE 009244508-03 P=149.637152 Days $T_0=156.854126$ (BKJD)



DV Model-Shift Uniqueness Test

009244508-03, P = 149.635182 Days, E = 7.192170 Days

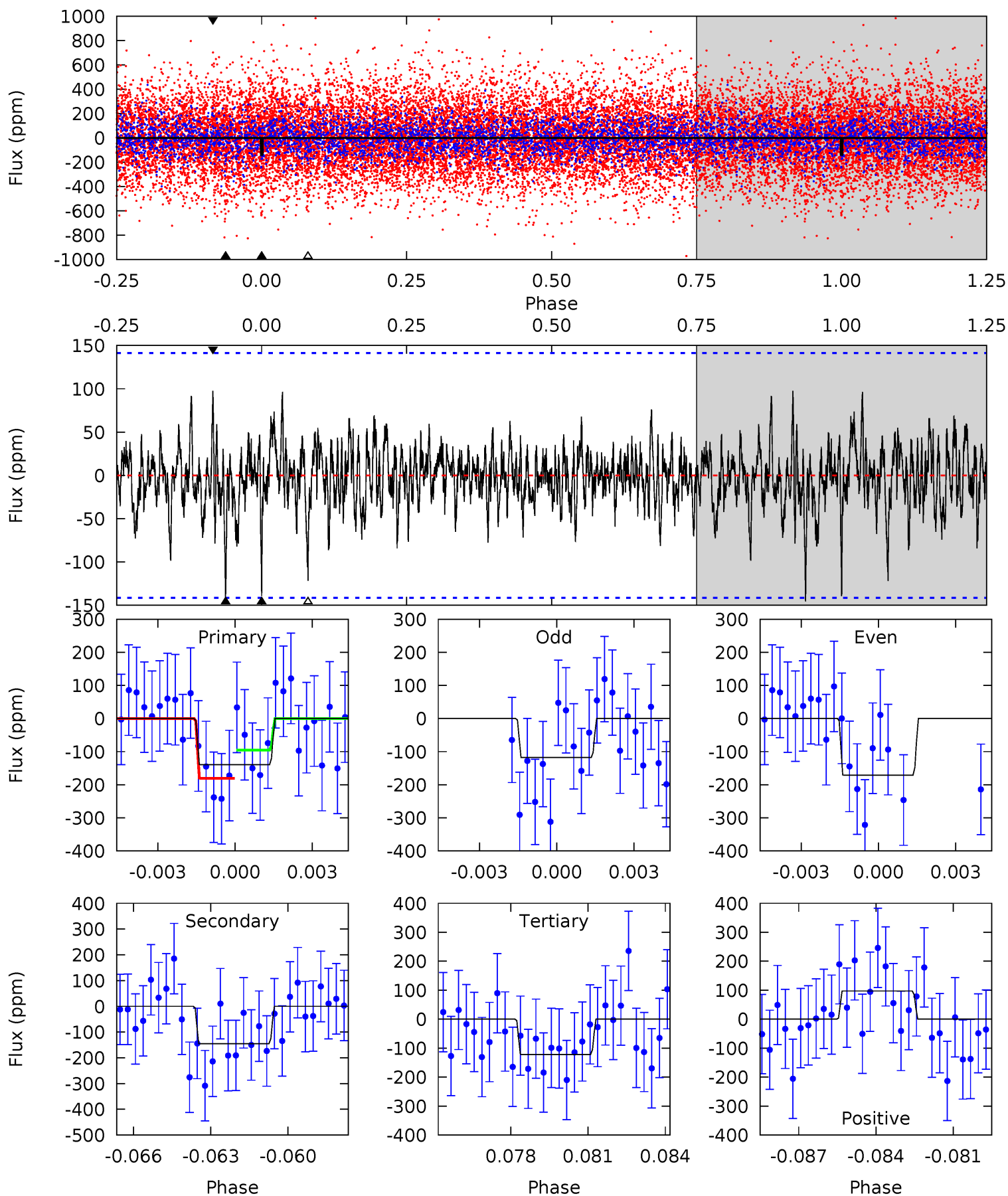
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.07	4.48	4.25	4.57	5.27	2.99	1.49	3.82	3.50	0.24	-0.09	4.14	0.79	0.36	4.18



Alt Model-Shift Uniqueness Test

009244508-03, P = 149.637152 Days, E = 7.216974 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.18	5.41	4.52	3.62	5.25	2.97	1.09	0.65	1.55	0.88	1.79	0.97	0.91	0.40	1.59



Stellar Parameters For KIC 009244508

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6443^{+77}_{-90}	$3.740^{+0.210}_{-0.090}$	$0.560^{+0.050}_{-0.150}$	$3.086^{+0.432}_{-0.802}$	$1.907^{+0.069}_{-0.257}$	$0.091^{+0.111}_{-0.027}$
	+1%/-1%	+6%/-2%	+9%/-27%	+14%/-26%	+4%/-13%	+122%/-29%
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 009244508-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-126 ± 28	$5.06^{+1.91}_{-1.93}$	839^{+37}_{-57}	5468^{+1363}_{-753}	1245^{+1993}_{-653}
Alt.	-146 ± 27	$3.76^{+1.73}_{-1.90}$	835^{+39}_{-56}	6583^{+3374}_{-1092}	2646^{+7632}_{-1439}

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

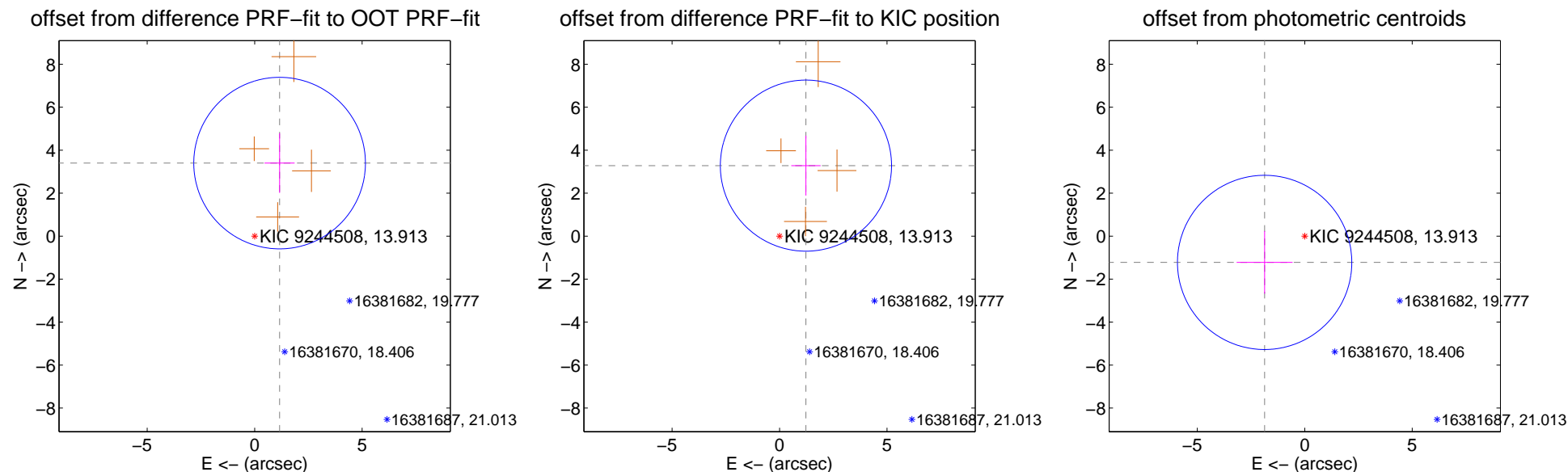
DV Centroid Data

Supplemental centroid analysis for 009244508-03. Kepler magnitude: 13.91. Transit SNR 5.94

There are 0 quarters with good PRF difference image offsets

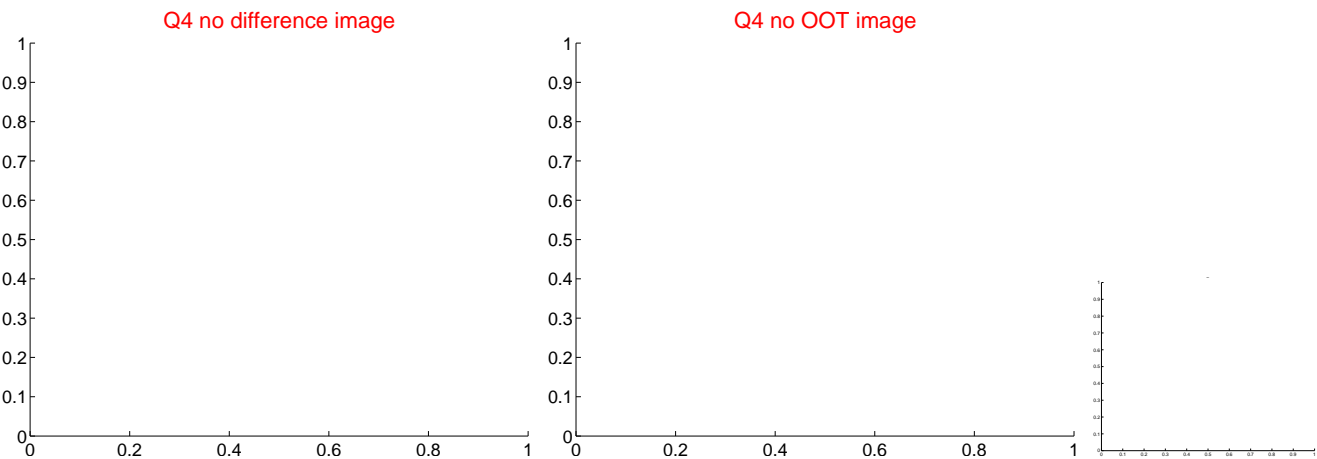
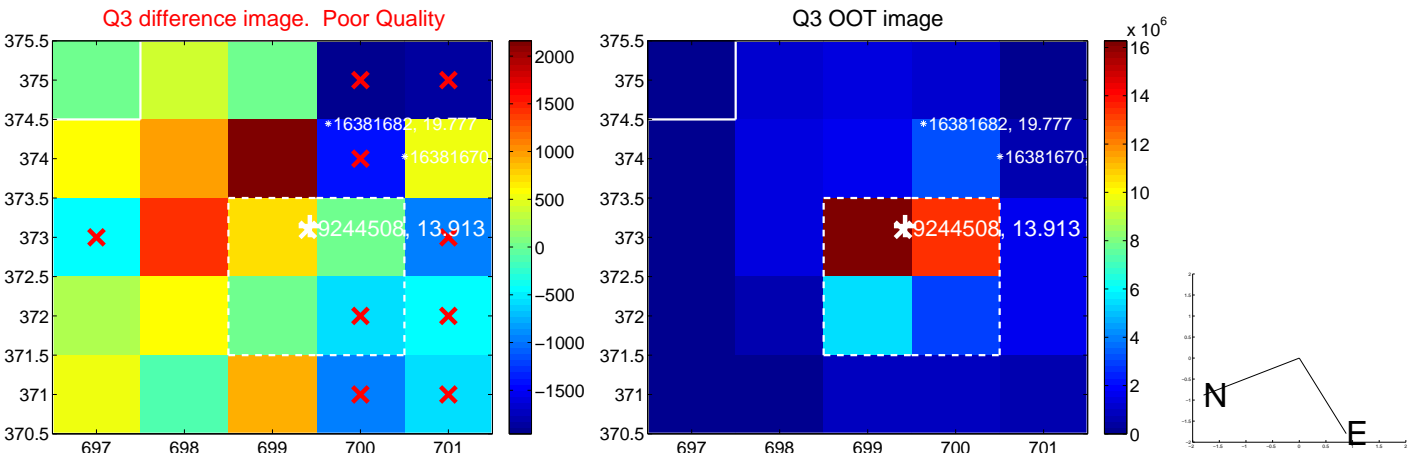
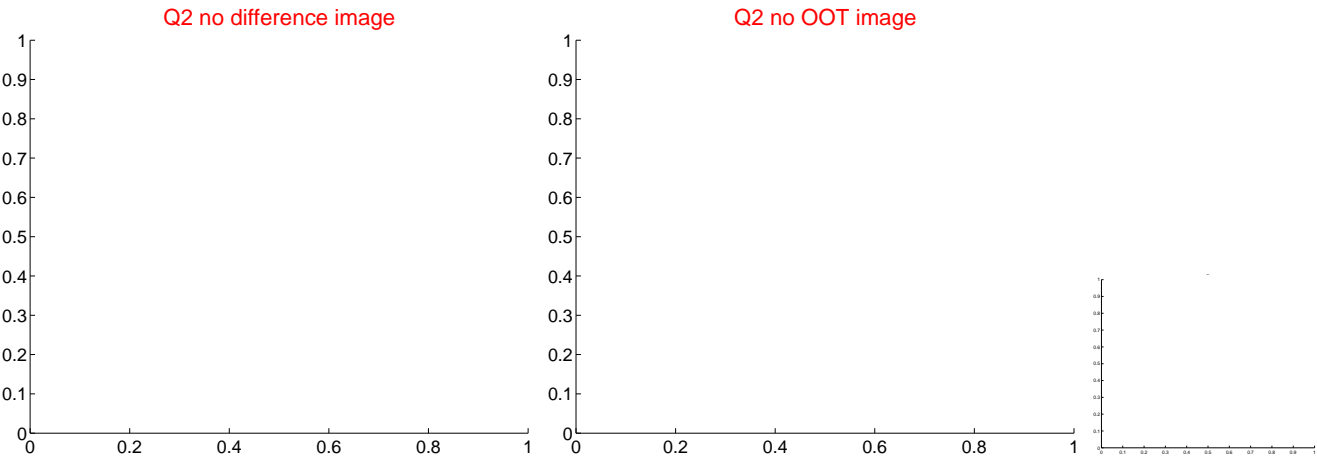
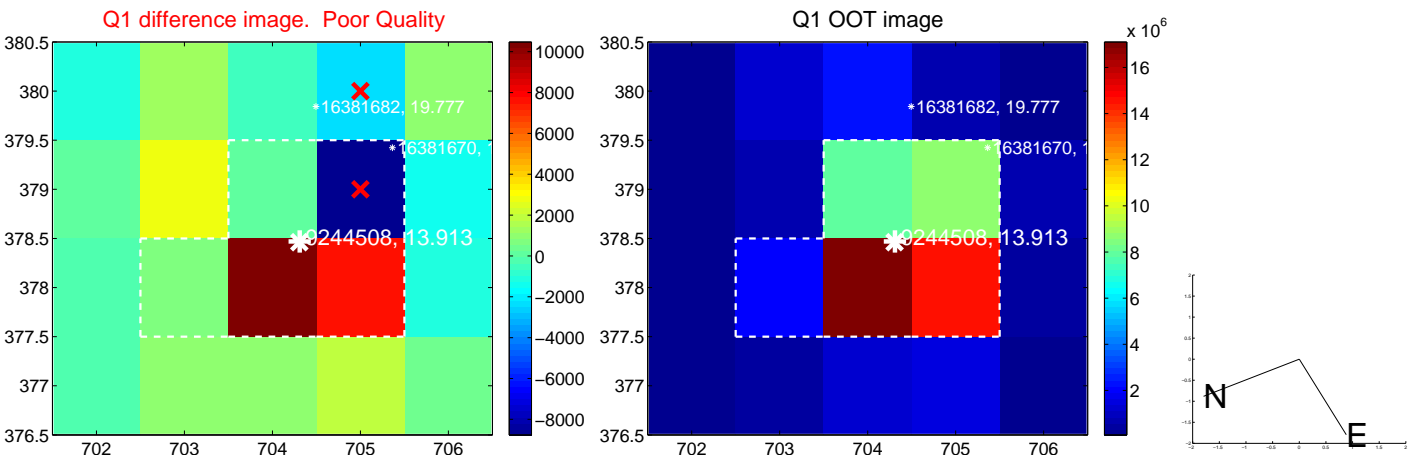
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.592 ± 1.330	2.70	-1.160 ± 0.700	3.399 ± 1.385
PRF-fit source offset from KIC position	3.503 ± 1.327	2.64	-1.227 ± 0.682	3.281 ± 1.394
photometric centroid source offset	2.23 ± 1.35	1.65	1.87 ± 1.30	-1.22 ± 1.46

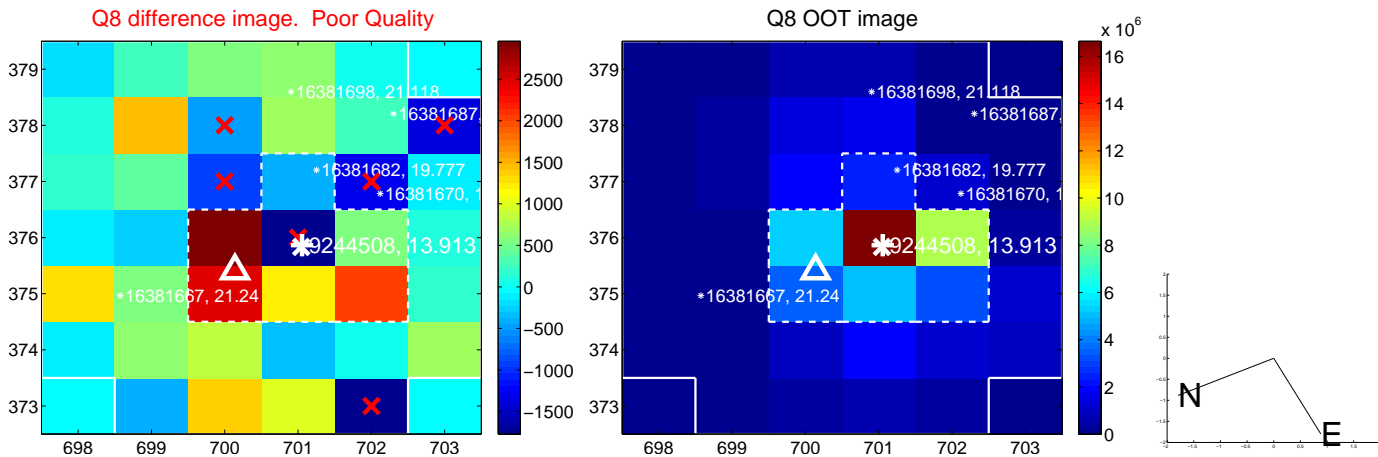
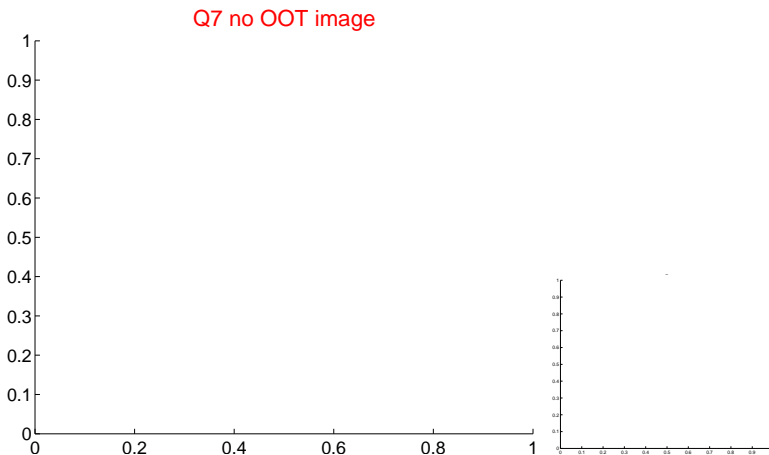
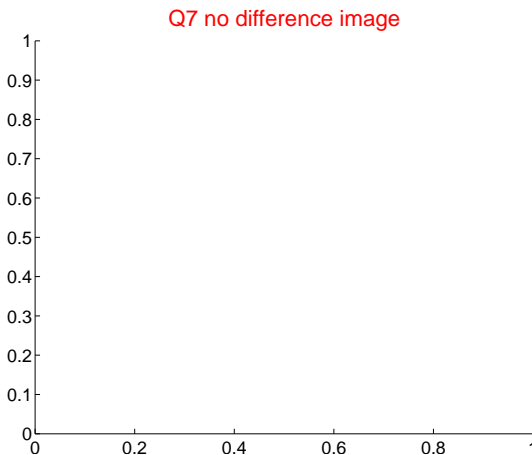
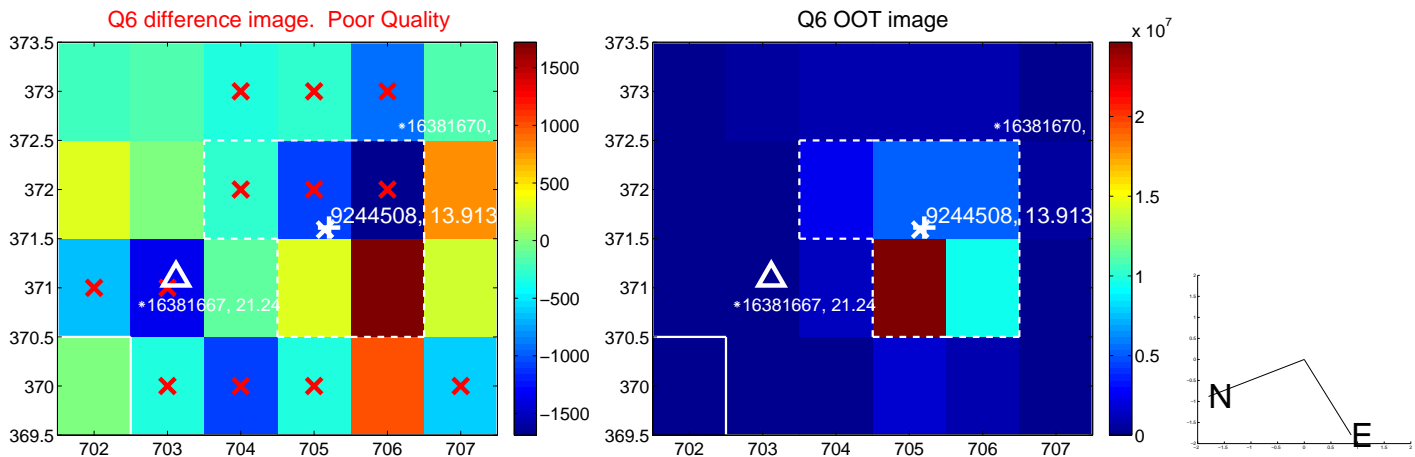
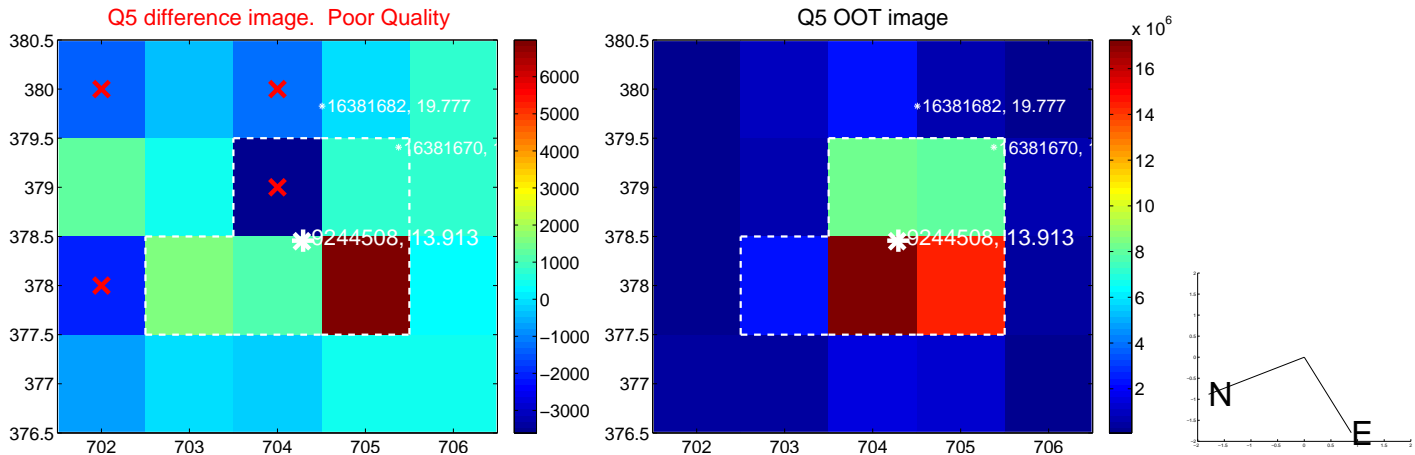


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

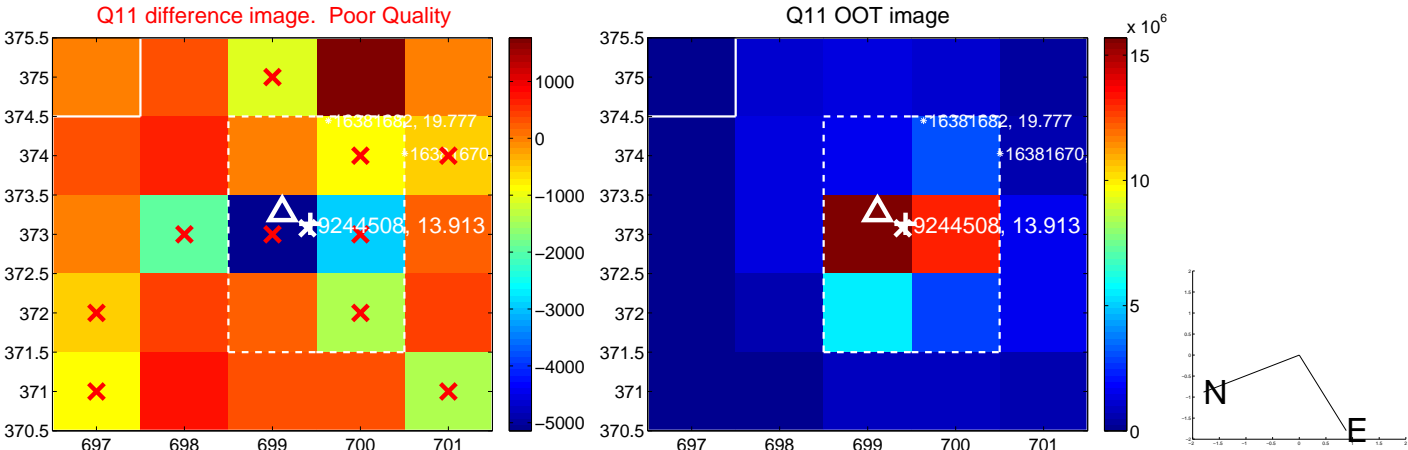
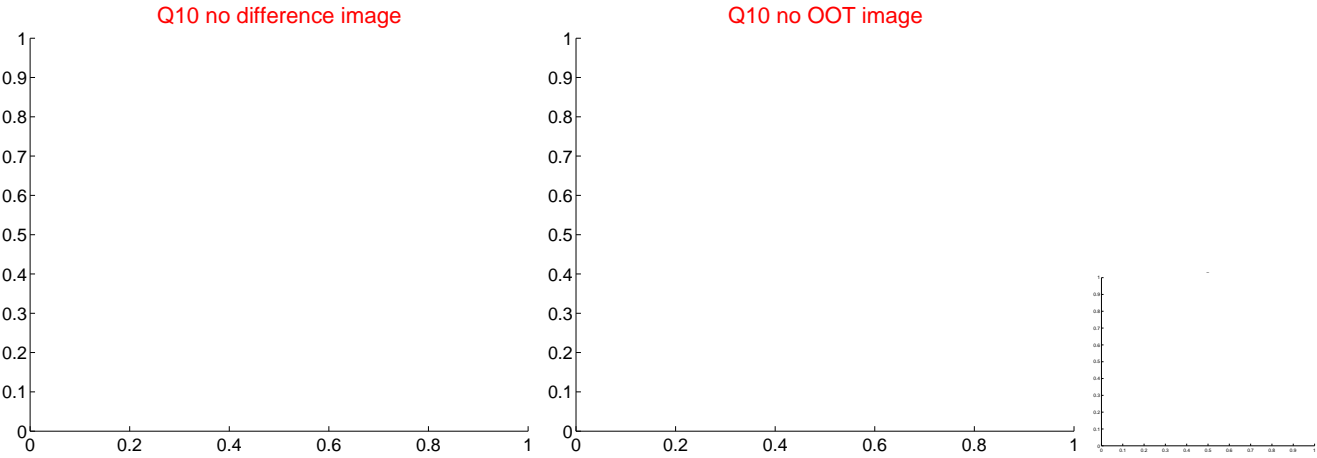
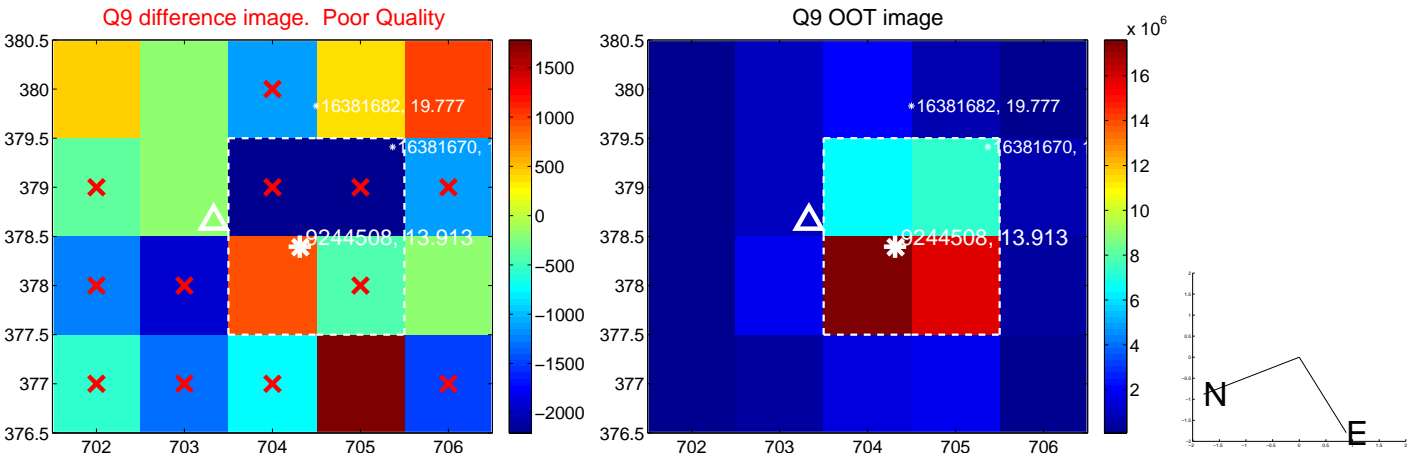
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



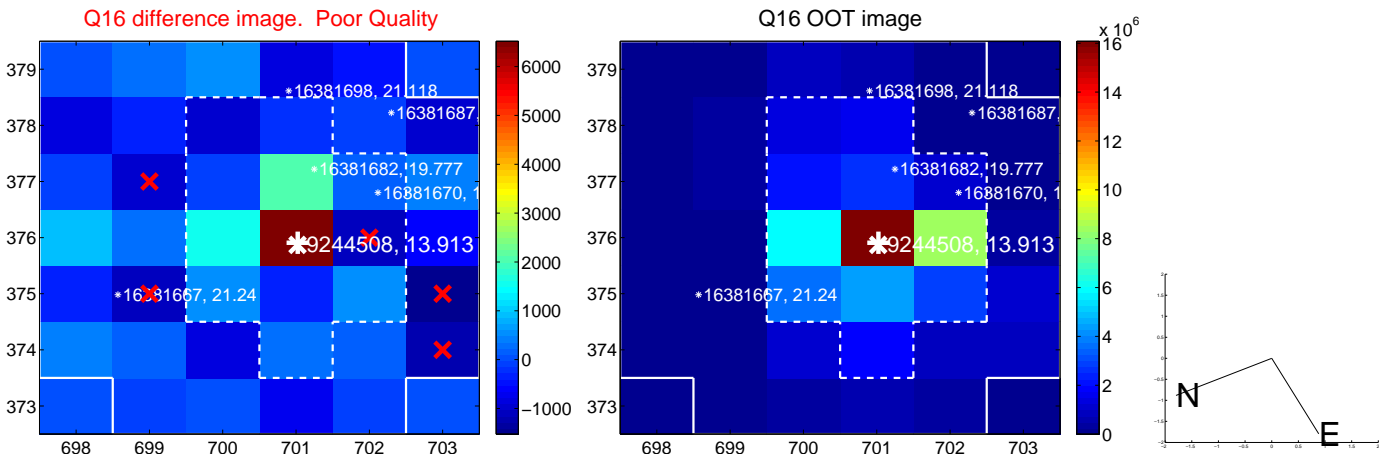
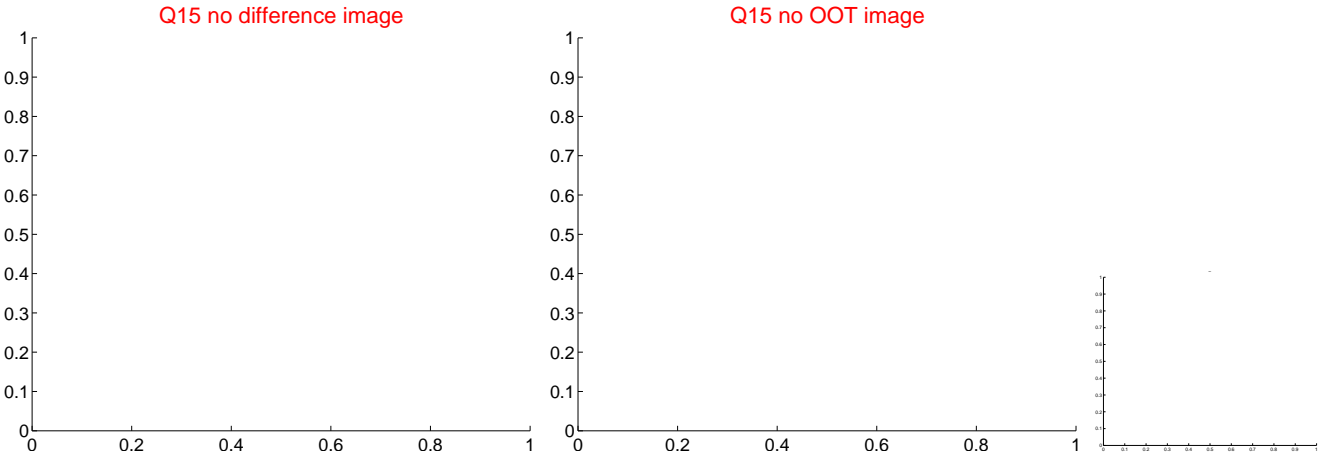
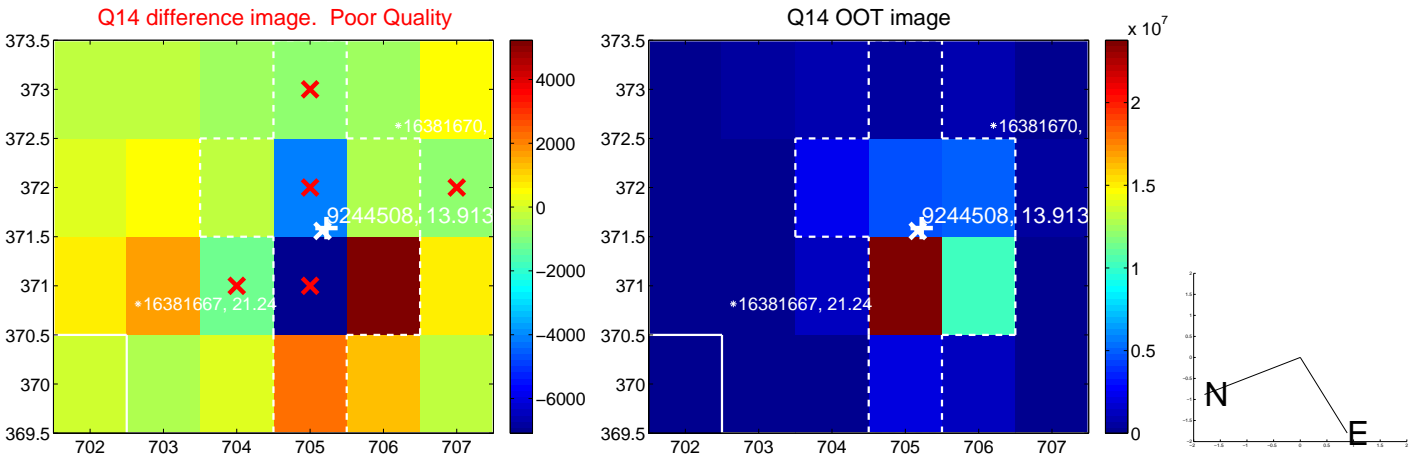
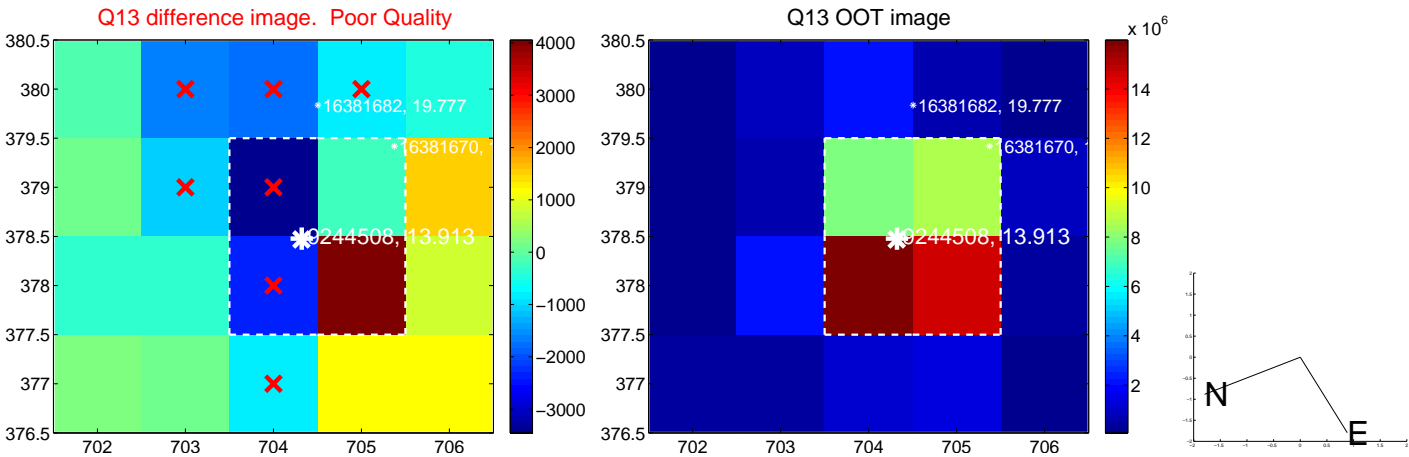
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



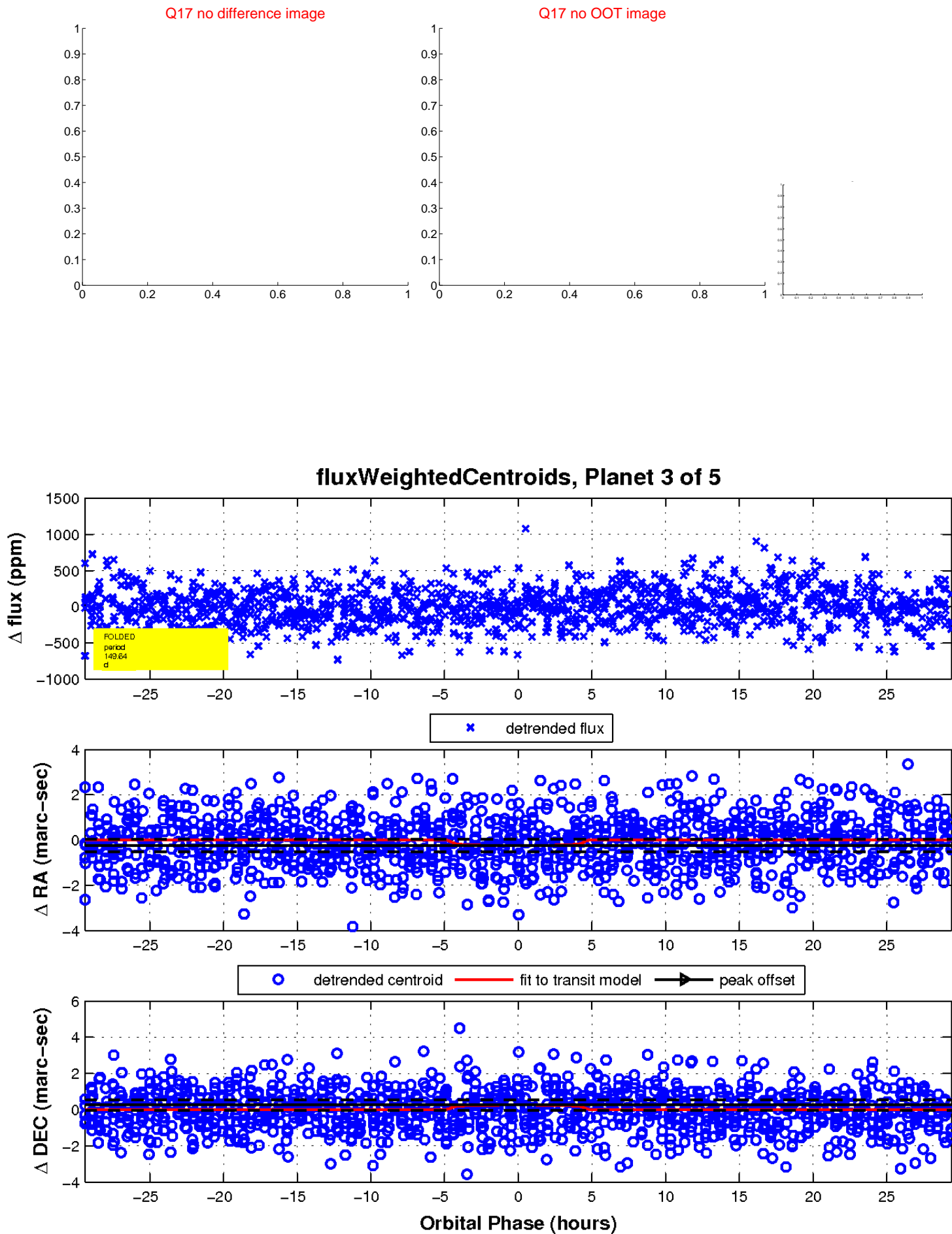
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

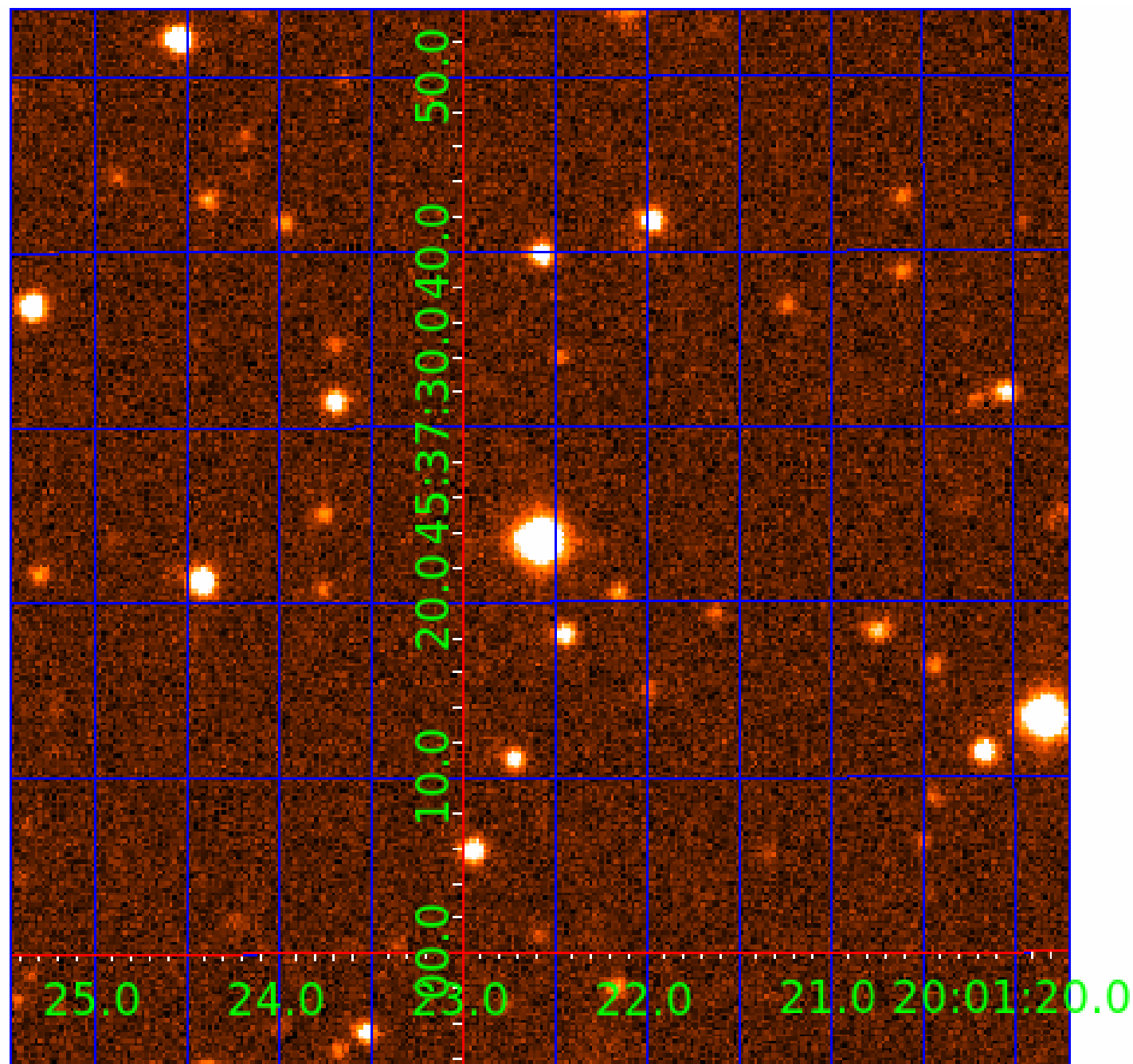


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009244508

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})
009244508-01	OBS	2830.01	40.528784	168.021535	332.9	10.688	18.6	20.1	3.09	6443	6.00	179.13
009244508-02	OBS	No	2.947664	131.570749	21.4	17.345	8.2	5.9	3.09	6443	1.51	5900.29
009244508-03	OBS	No	149.635182	156.827352	206.1	9.808	9.2	5.9	3.09	6443	5.20	31.39
009244508-05	OBS	No	68.383508	161.479944	294.8	3.101	7.4	7.6	3.09	6443	6.20	89.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009244508-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
009244508-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
009244508-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009244508-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—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.

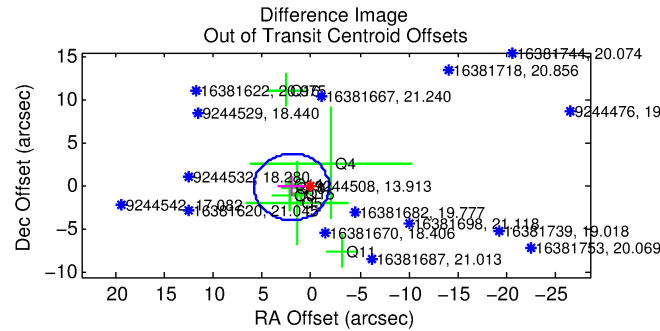
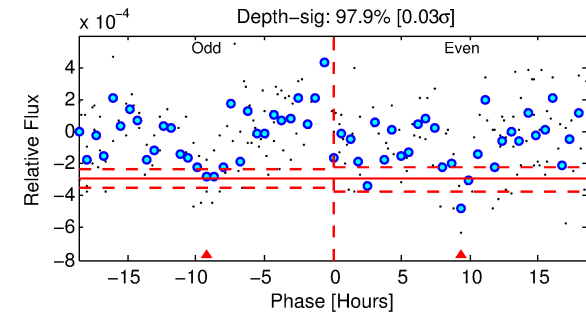
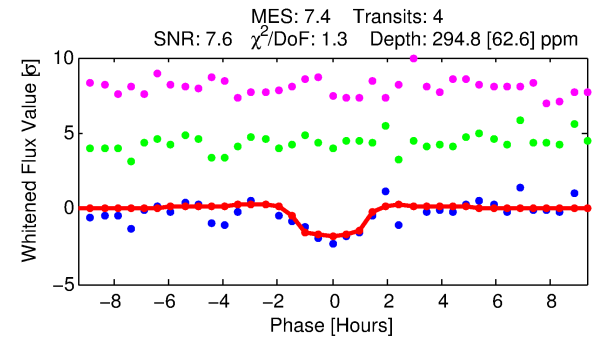
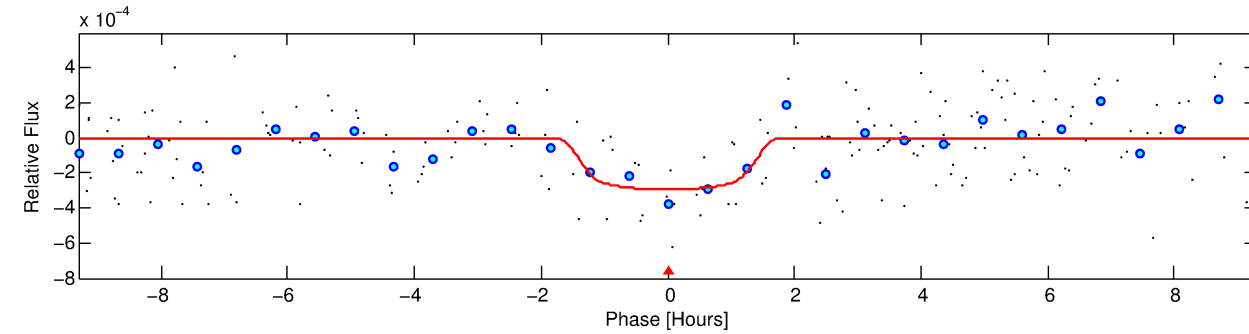
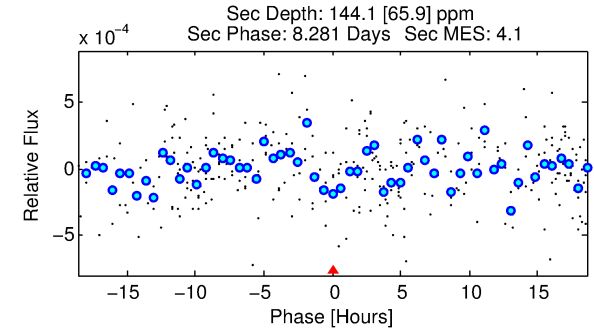
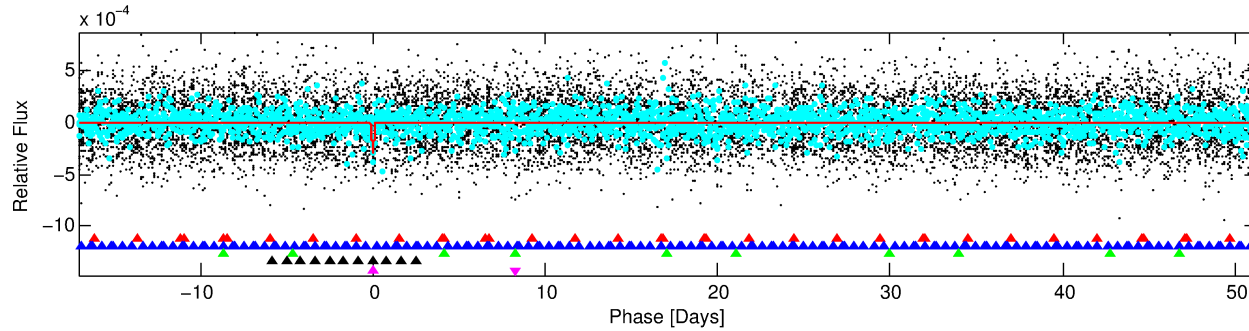
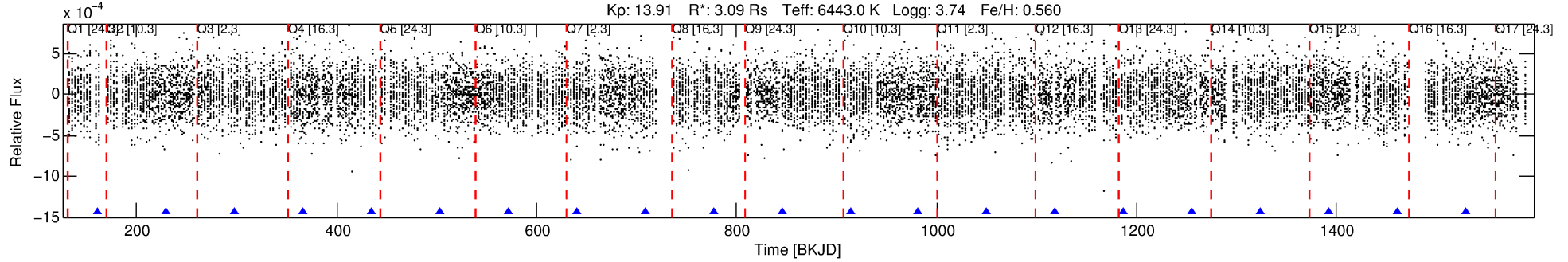
Ephemeris Match Information For 009244508-05

No Significant Match Found

DV One-Page Summary

KIC: 9244508 Candidate: 5 of 5 Period: 68.384 d
KOI: K02830 Corr: No Ephemeris Match

Kp: 13.91 R*: 3.09 Rs Teff: 6443.0 K Logg: 3.74 Fe/H: 0.560



DV Fit Results:

Period = 68.38351 [0.00105] d
Epoch = 161.4799 [0.0132] BKJD
Rp/R* = 0.0184 [0.0478]
a/R* = 82.25 [1128.53]
b = 0.89 [3.15]
Seff = 89.17 [33.01]
Teq = 784 [73] K
Rp = 6.20 [16.18] Re
a = 0.4061 [0.0961] AU
Ag = 340.43 [1779.57] [0.19σ]
Teffp = 5204 [6785] K [0.65σ]

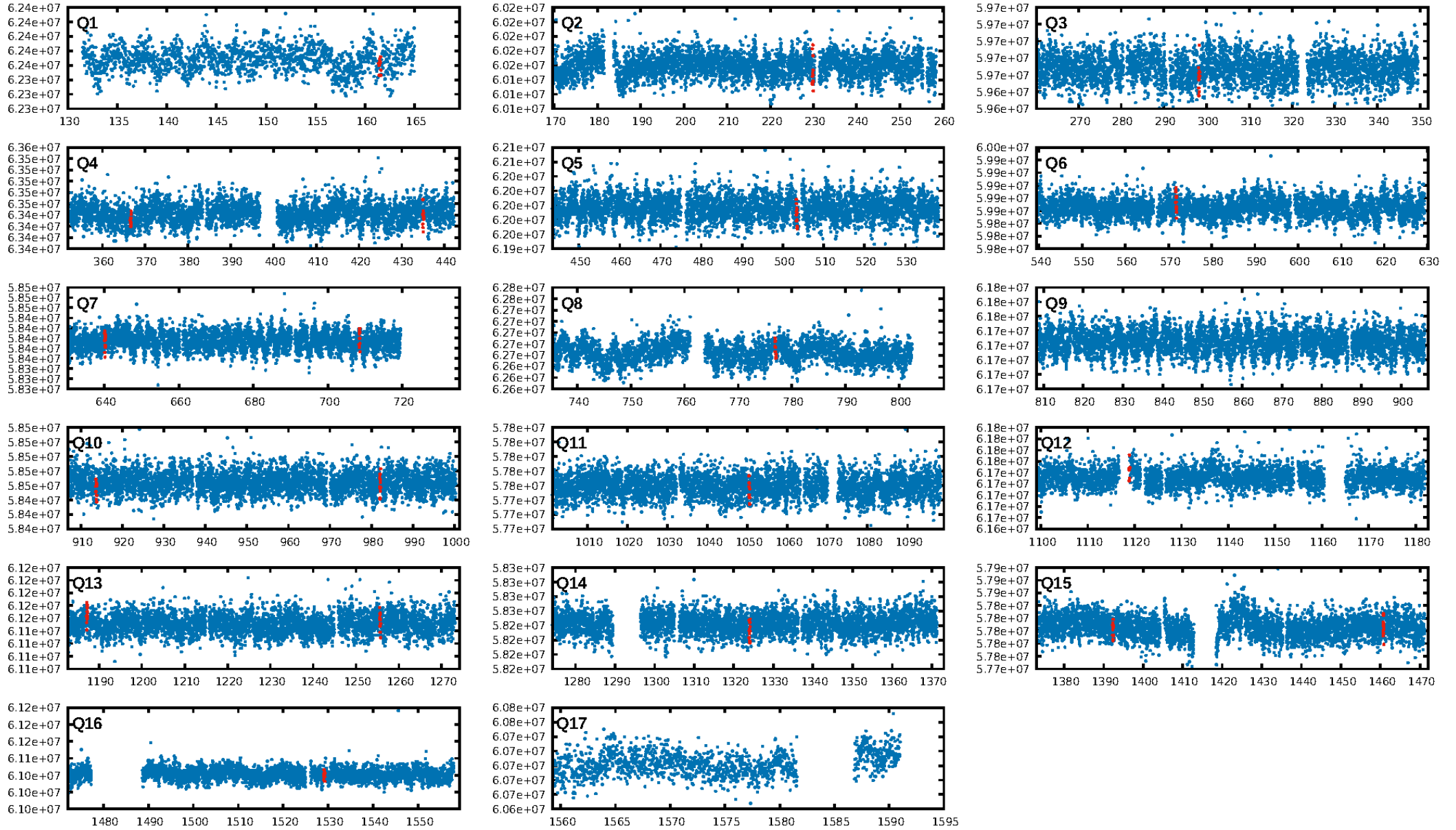
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [60.07σ]
LongPeriod-sig: 100.0% [224.03σ]
ModelChiSquare2-sig: 54.0%
ModelChiSquareGof-sig: 68.7%
Bootstrap-pfa: 2.82e-08
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.3621
Centroid-sig: 85.7%
Centroid-so: 0.836 arcsec [0.75σ]
OotOffset-rm: 2.017 arcsec [1.57σ]
OotOffset-st: 2/3/2/1 [8]
KicOffset-rm: 1.986 arcsec [1.55σ]
KicOffset-st: 2/3/2/1 [8]
DiffImageQuality-fgm: 0.25 [2/8]
DiffImageOverlap-fno: 0.71 [10/14]

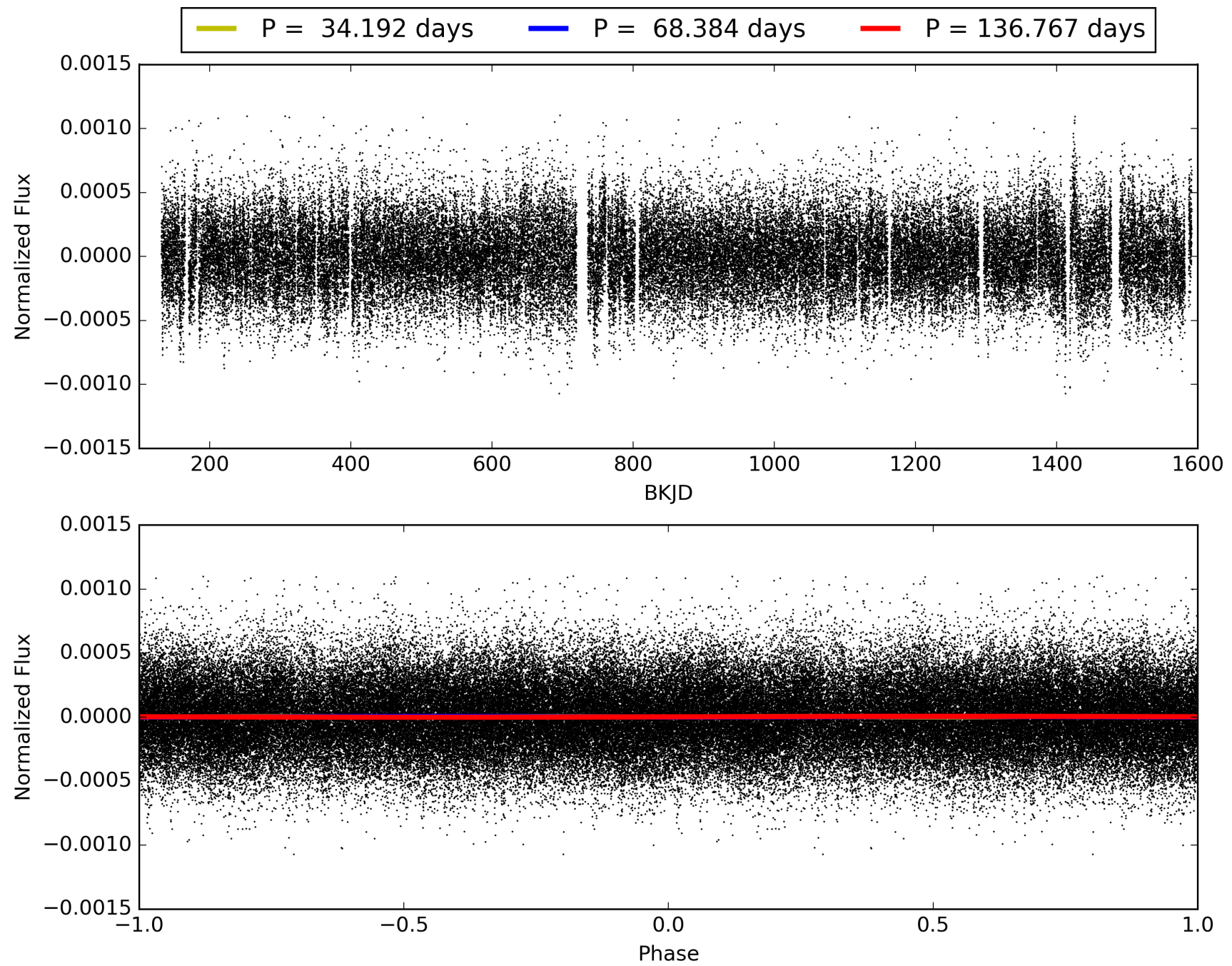
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:24:00 Z

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

TCE 009244508-05, PDC Light Curves

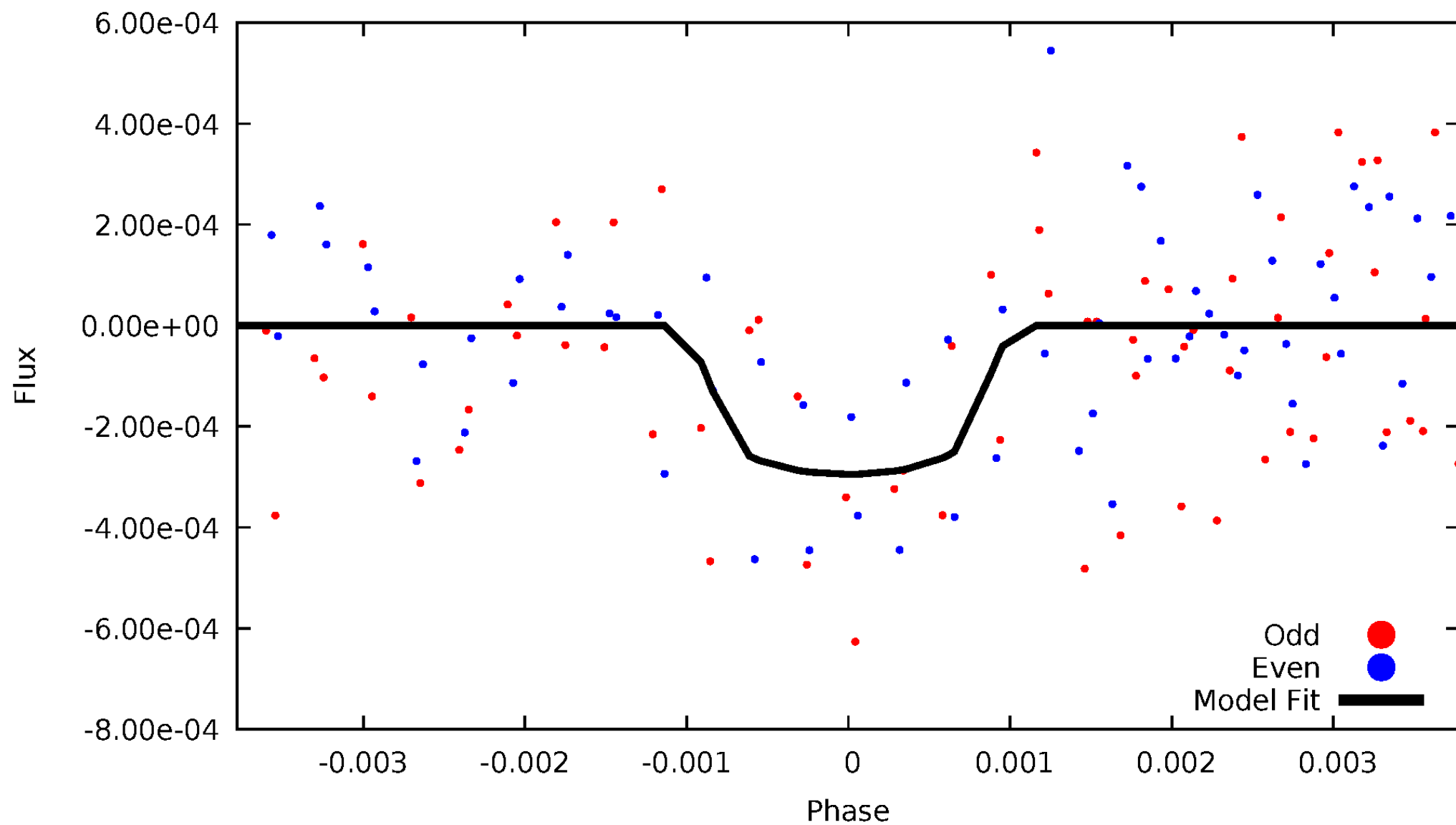


TCE 009244508-05



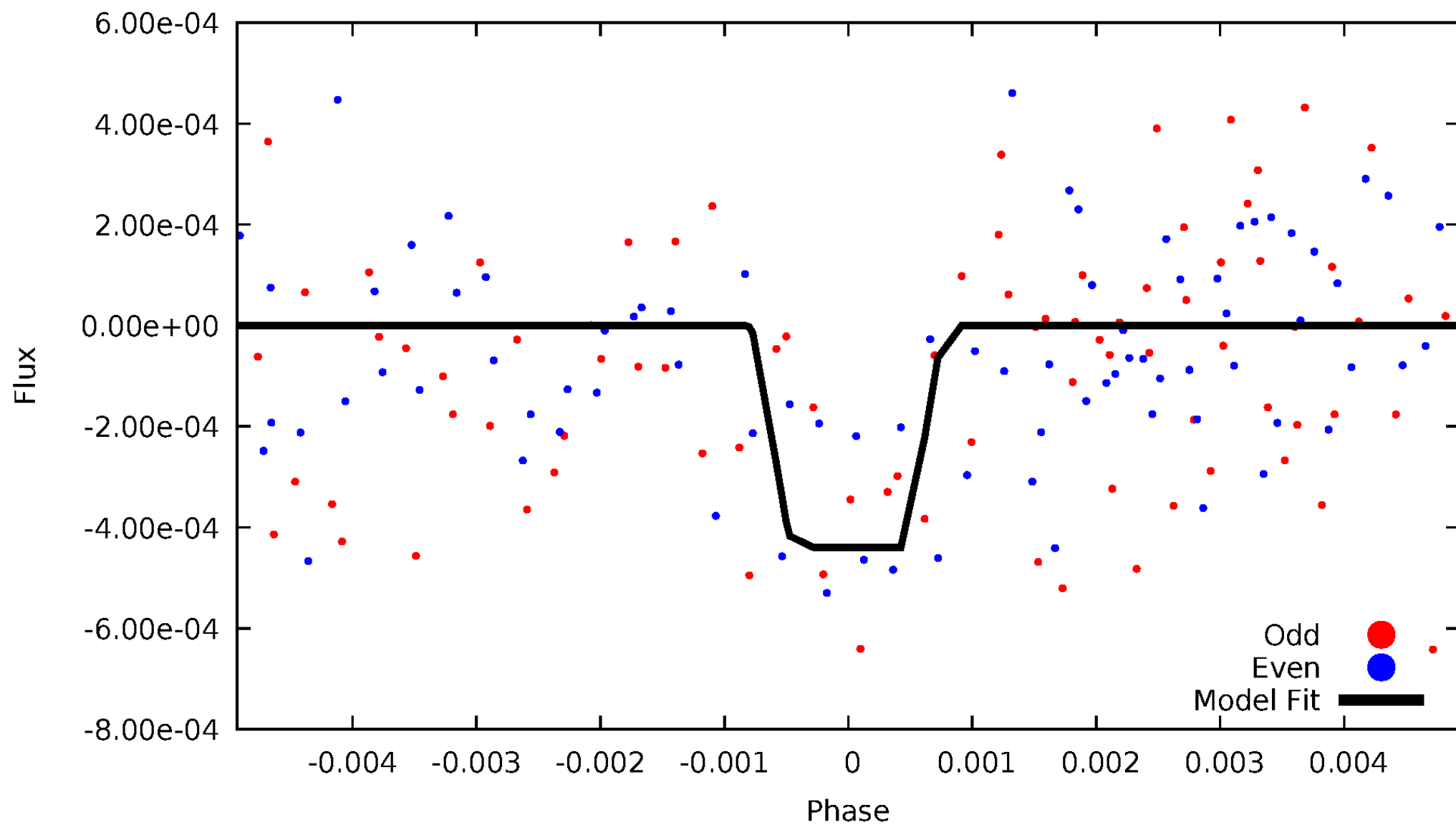
DV Odd/Even

TCE 009244508-05



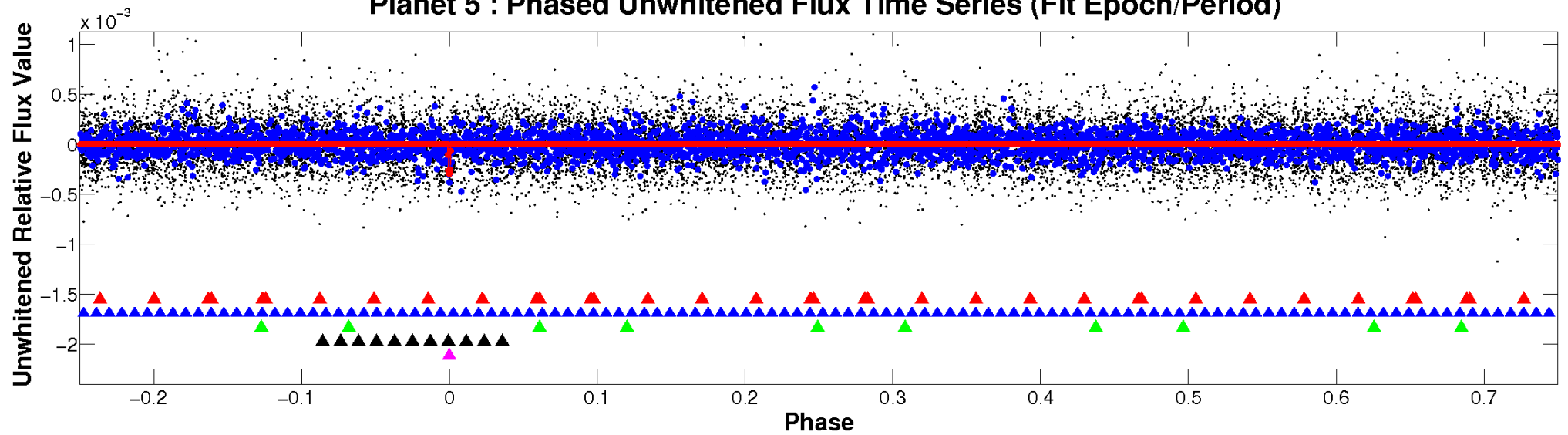
ALT Odd/Even

TCE 009244508-05

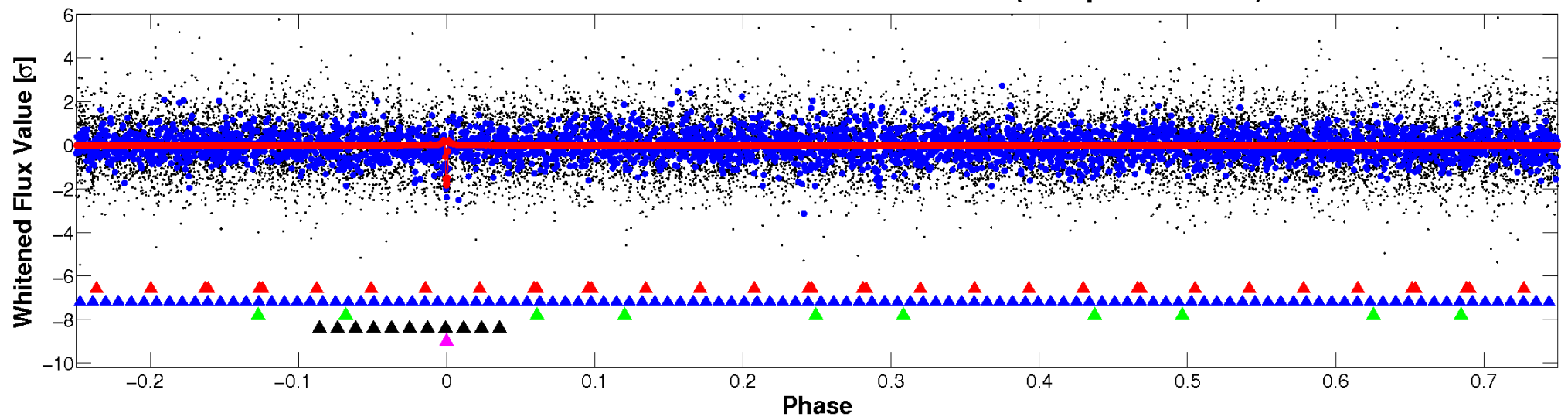


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

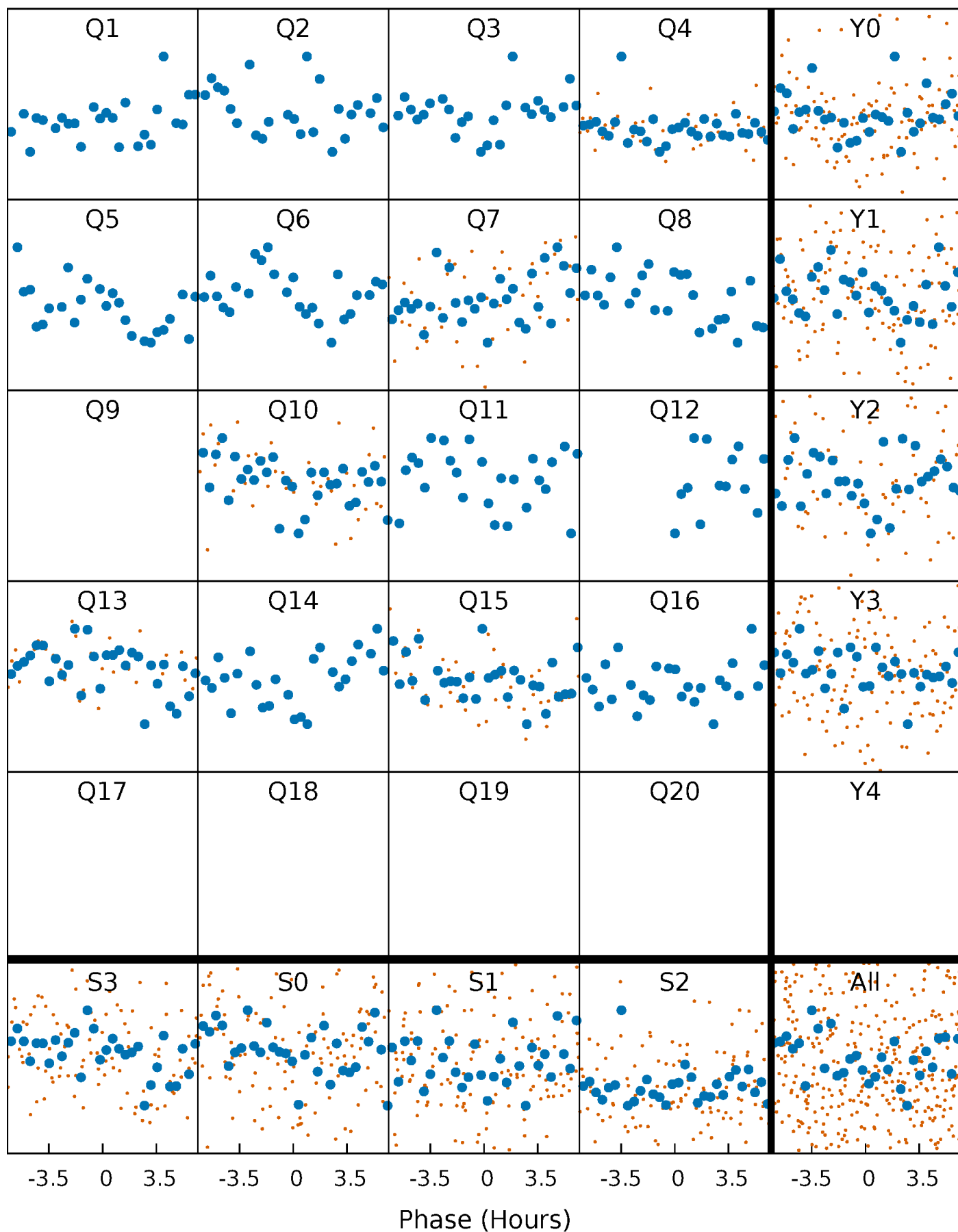


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



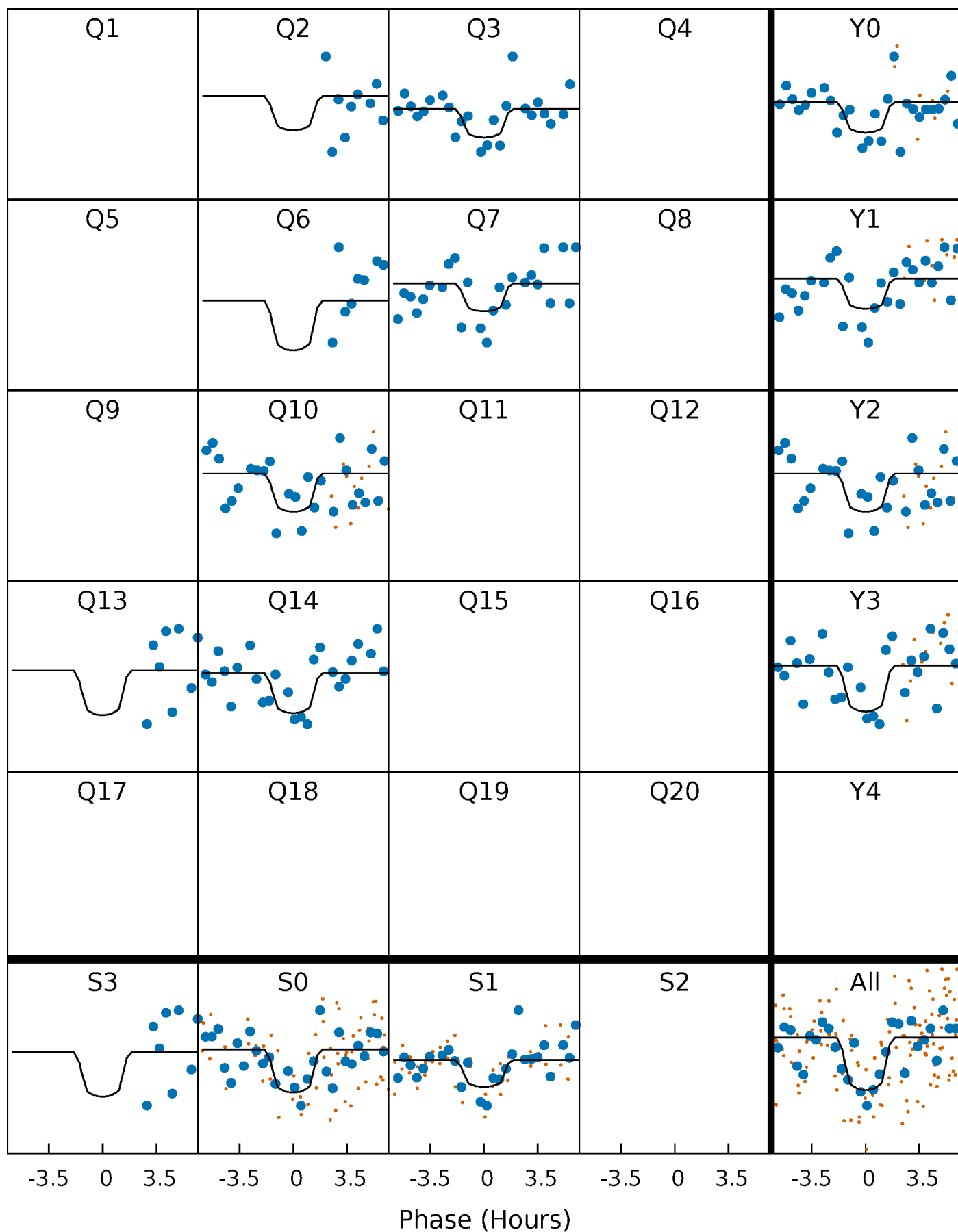
PDC Quarter-Phased Transit Curves

TCE 009244508-05 P= 68.383508 Days $T_0=161.479944$ (BKJD)



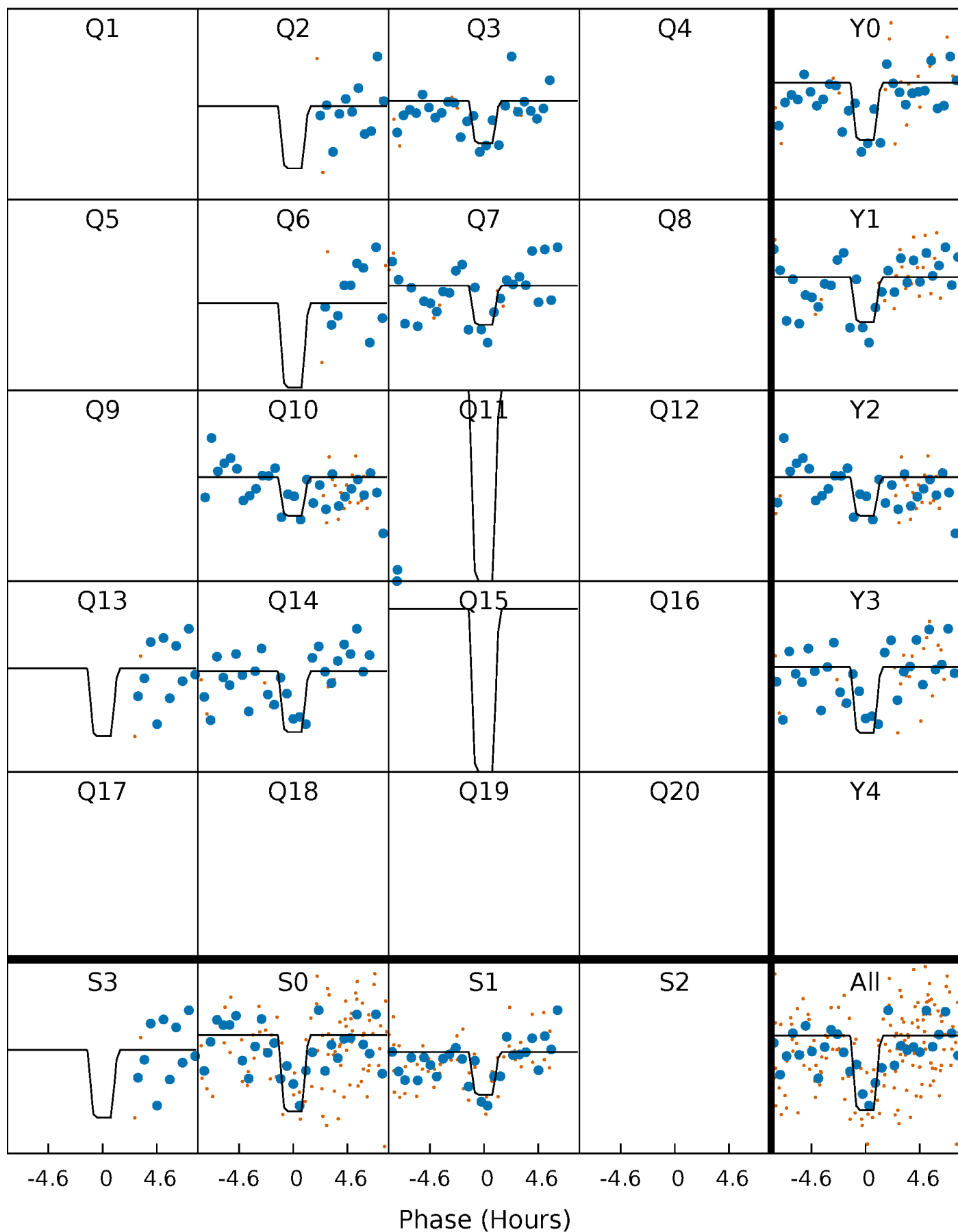
DV Quarter-Phased Transit Curves

TCE 009244508-05 P= 68.383508 Days $T_0=161.479944$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

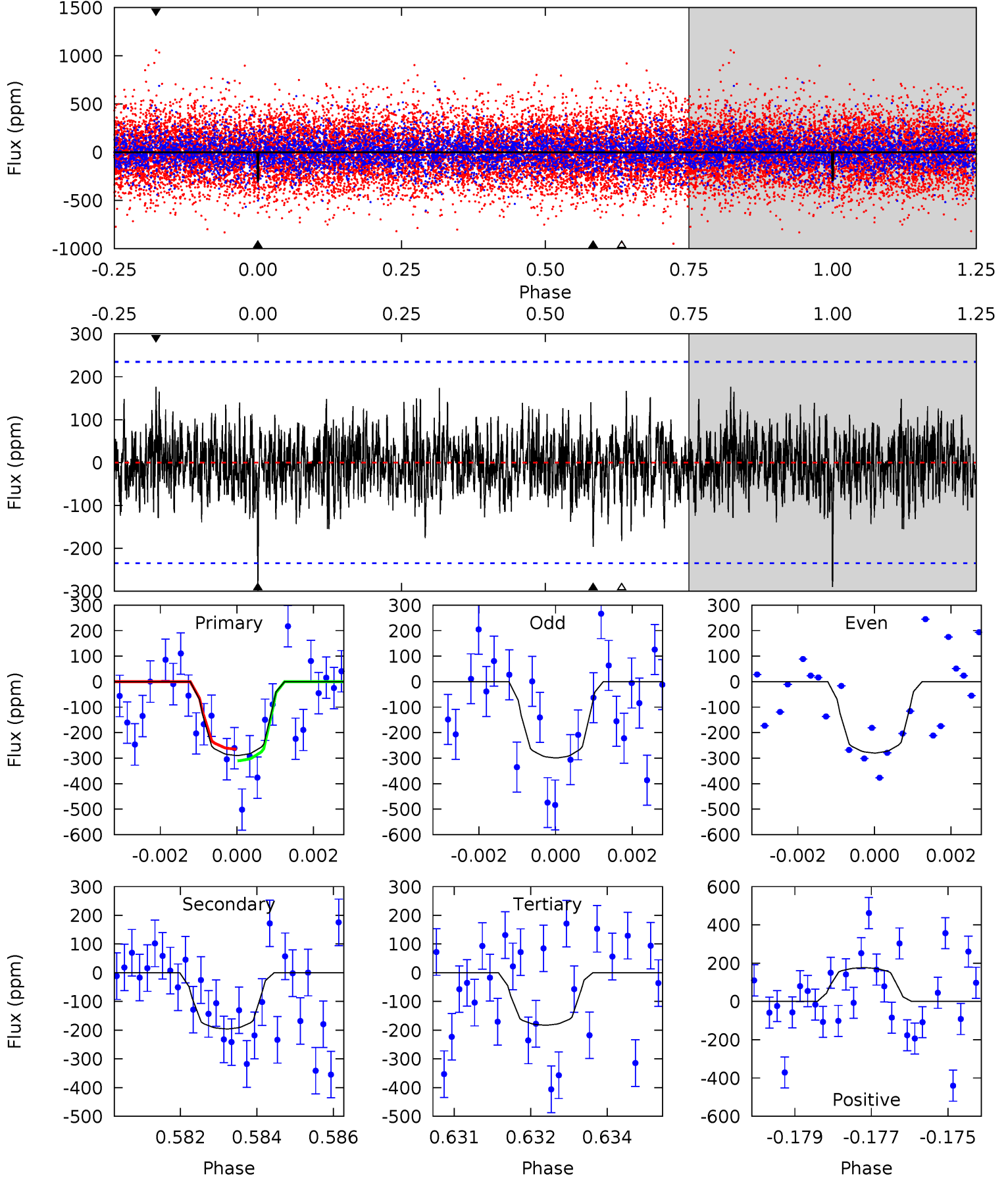
TCE 009244508-05 $P = 68.383668$ Days $T_0 = 161.475034$ (BKJD)



DV Model-Shift Uniqueness Test

009244508-05, P = 68.383508 Days, E = 93.096436 Days

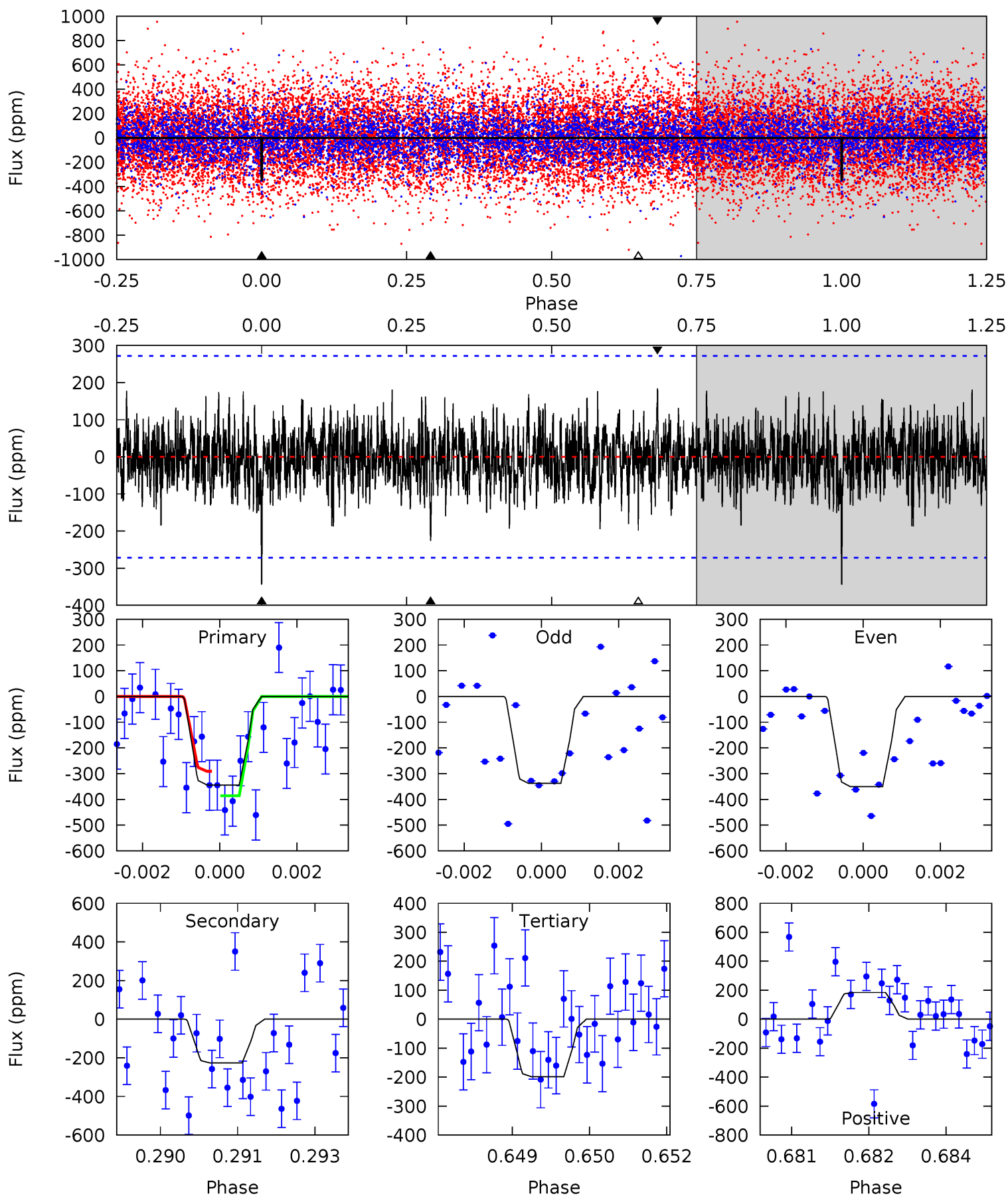
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.59	4.46	4.16	4.01	5.34	3.11	1.16	2.43	2.58	0.30	0.44	0.22	1.03	0.38	0.52



Alt Model-Shift Uniqueness Test

009244508-05, P = 68.383668 Days, E = 93.091366 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.78	4.46	3.91	3.63	5.36	3.14	1.14	2.87	3.15	0.55	0.83	0.12	0.98	0.35	0.92



Stellar Parameters For KIC 009244508

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6443^{+77}_{-90}	$3.740^{+0.210}_{-0.090}$	$0.560^{+0.050}_{-0.150}$	$3.086^{+0.432}_{-0.802}$	$1.907^{+0.069}_{-0.257}$	$0.091^{+0.111}_{-0.027}$
	+1%/-1%	+6%/-2%	+9%/-27%	+14%/-26%	+4%/-13%	+122%/-29%
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 009244508-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-196 ± 44	$12.59^{+14.08}_{-8.89}$	1085^{+49}_{-76}	4097^{+3000}_{-880}	104^{+1127}_{-80}
Alt.	-226 ± 51	$12.84^{+12.71}_{-8.31}$	1084^{+48}_{-71}	4203^{+2514}_{-916}	120^{+890}_{-91}

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

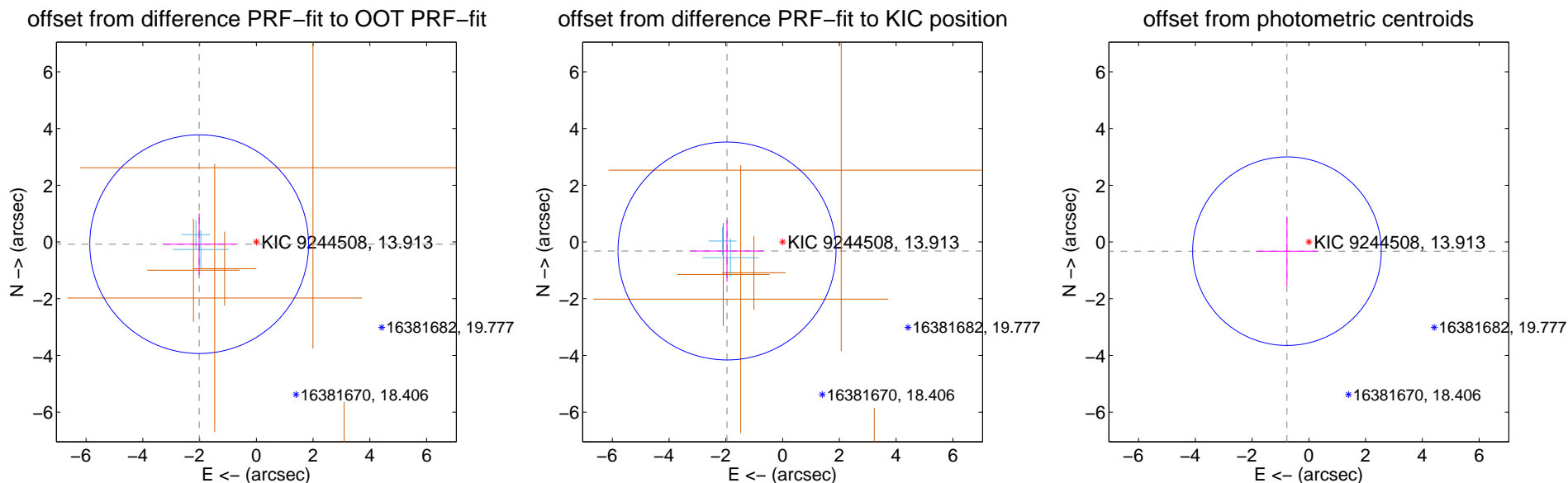
DV Centroid Data

Supplemental centroid analysis for 009244508-05. Kepler magnitude: 13.91. Transit SNR 7.63

There are 2 quarters with good PRF difference image offsets

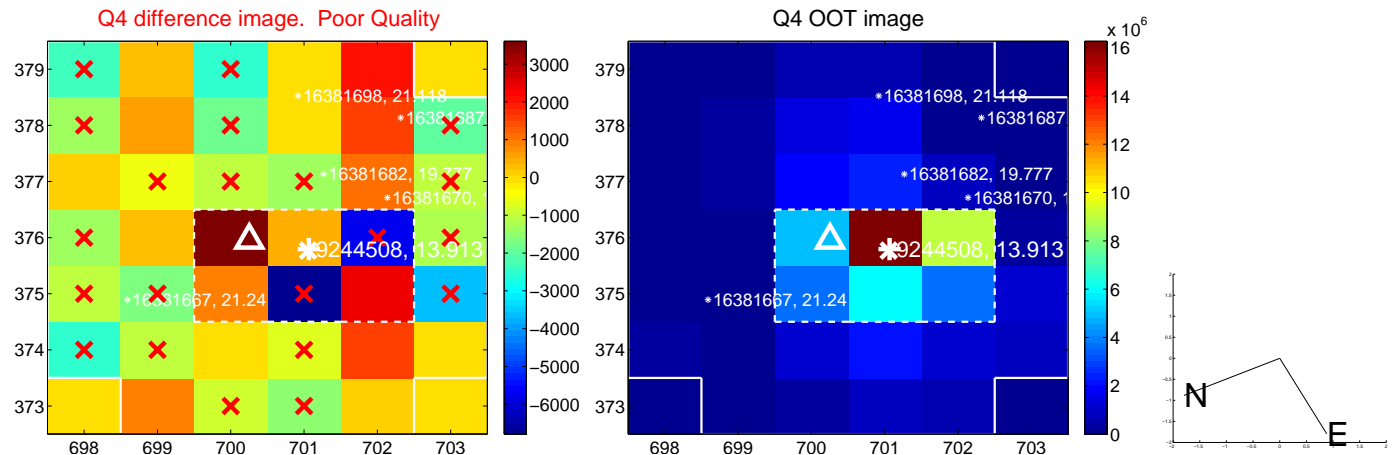
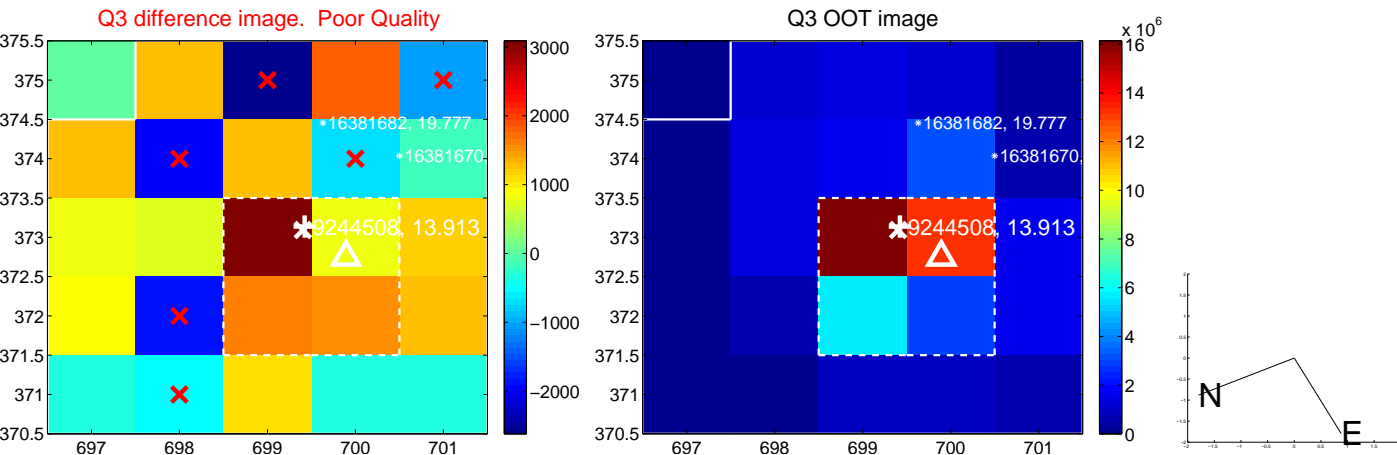
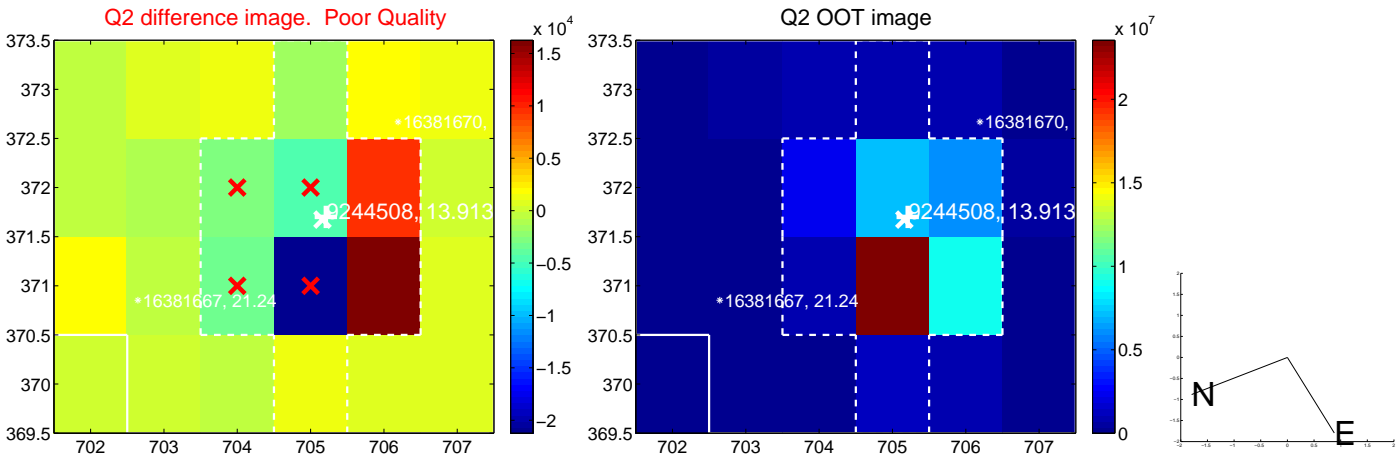
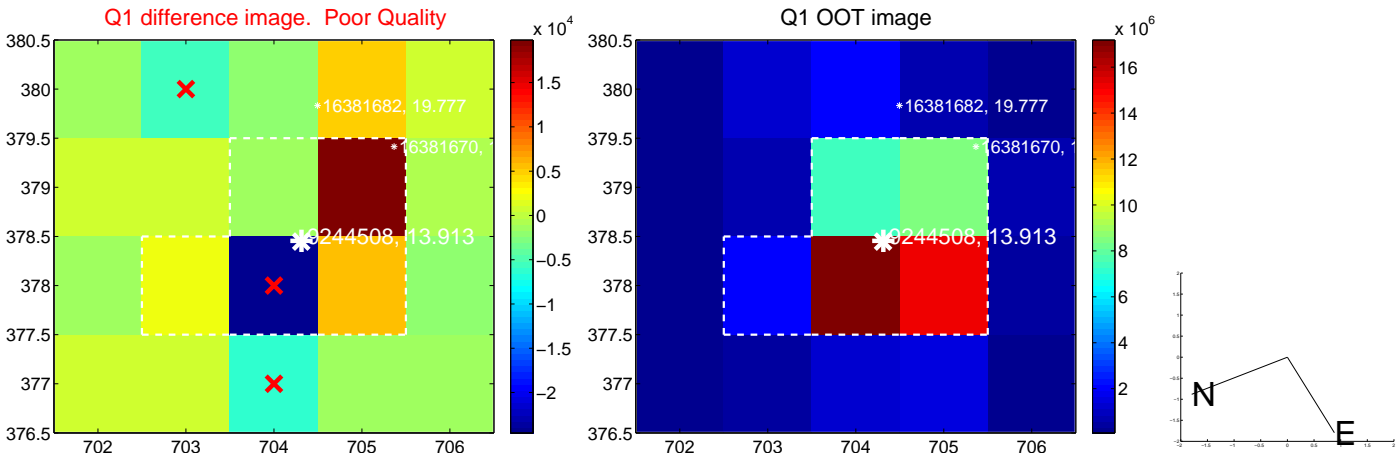
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.017 ± 1.285	1.57	2.015 ± 1.285	-0.077 ± 1.090
PRF-fit source offset from KIC position	1.986 ± 1.281	1.55	1.960 ± 1.285	-0.317 ± 1.090
photometric centroid source offset	0.84 ± 1.11	0.75	0.77 ± 1.09	-0.32 ± 1.21

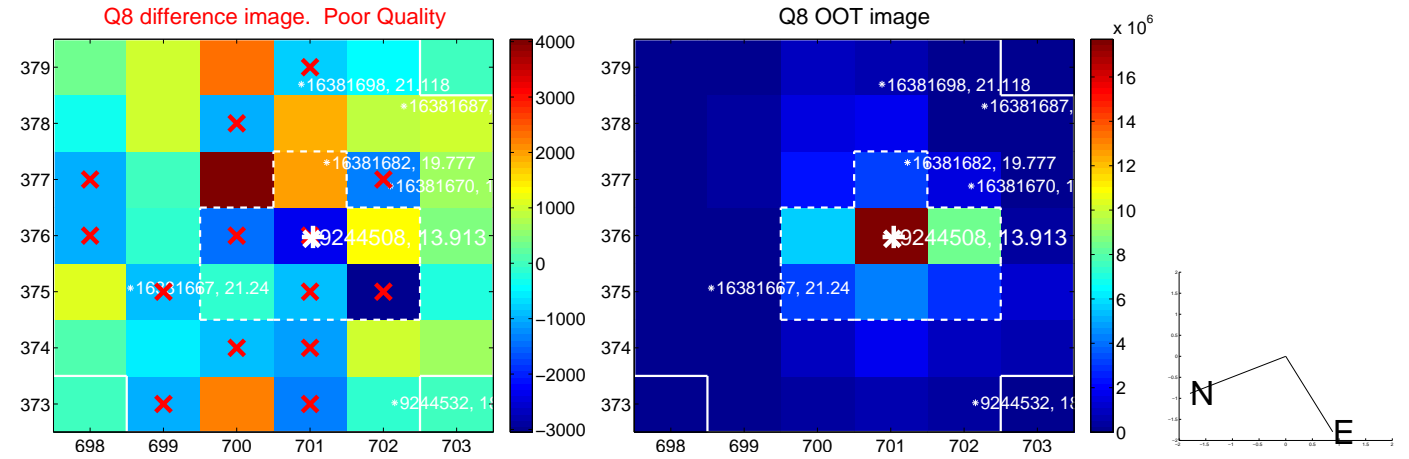
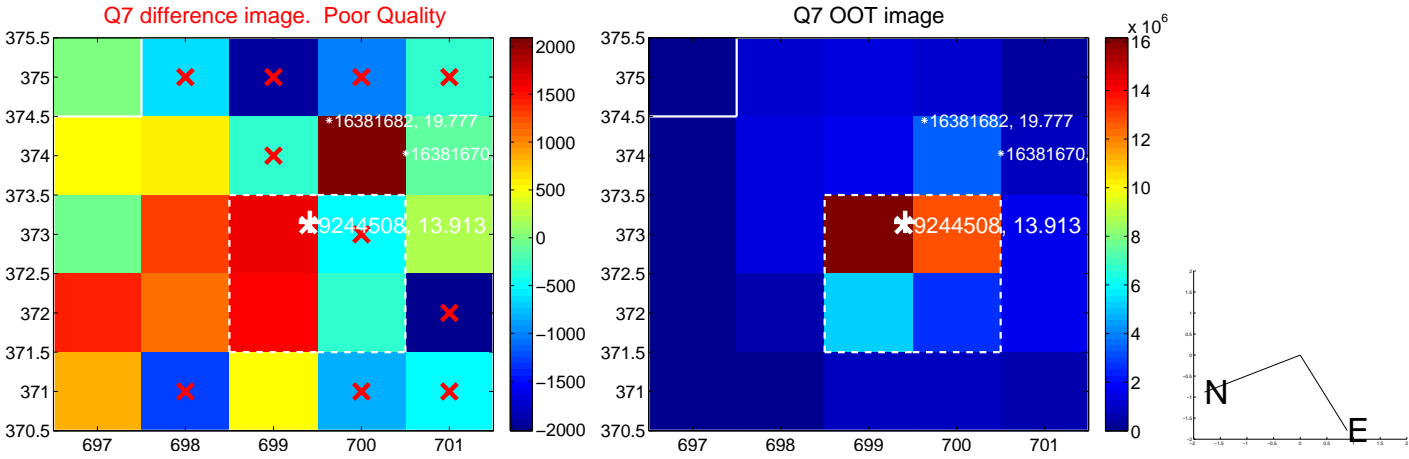
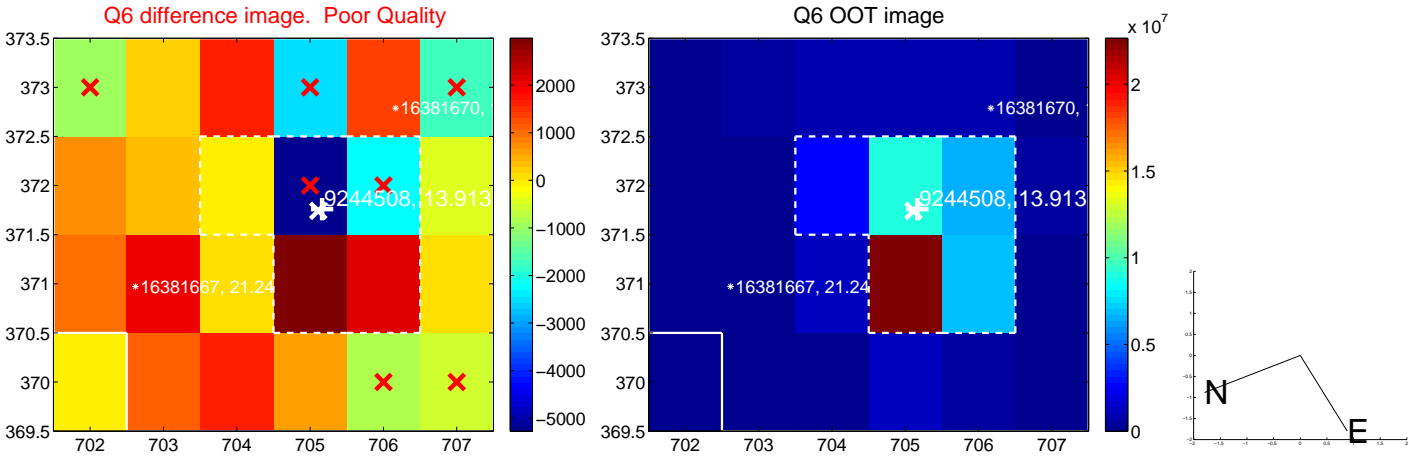
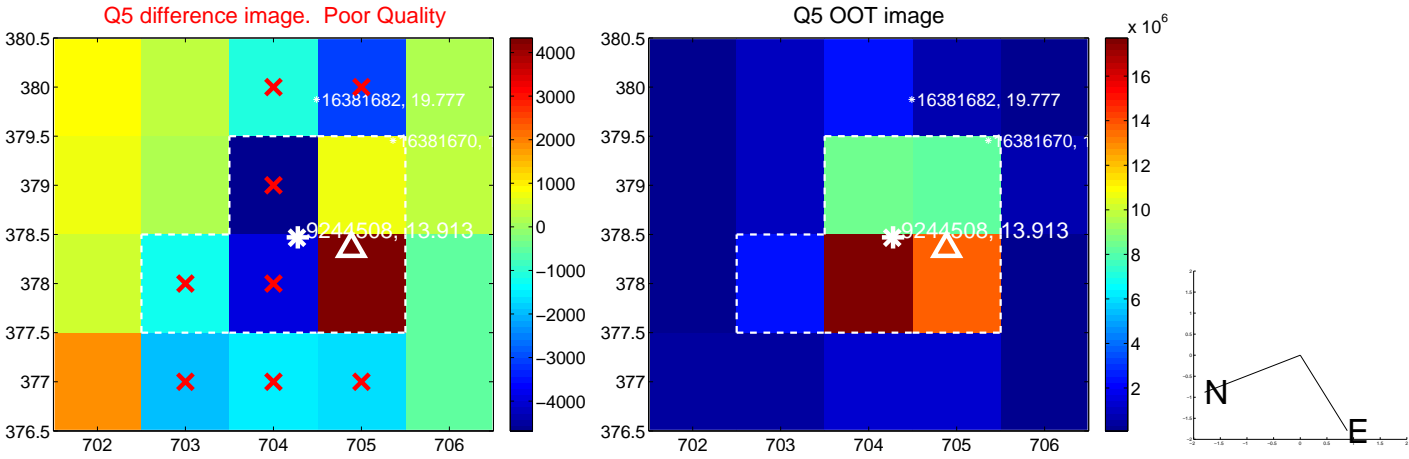


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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



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

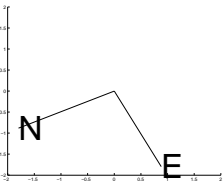
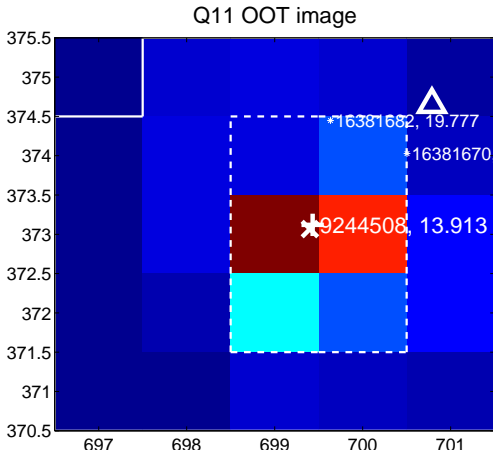
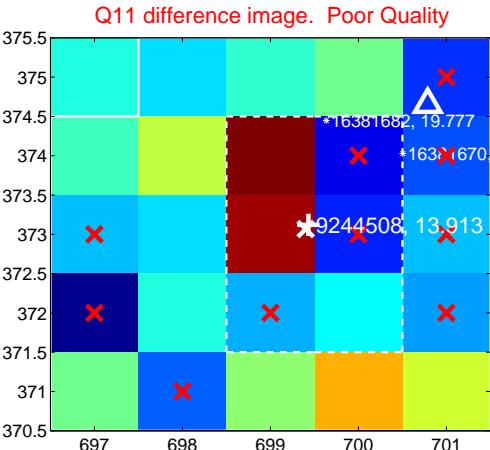
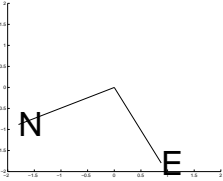
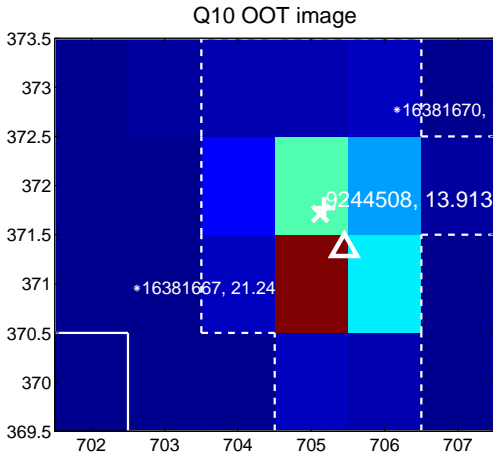
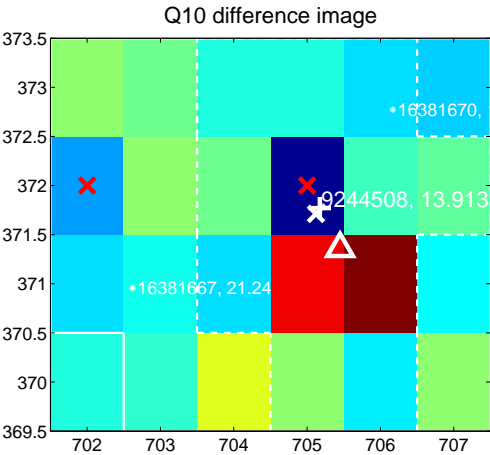


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

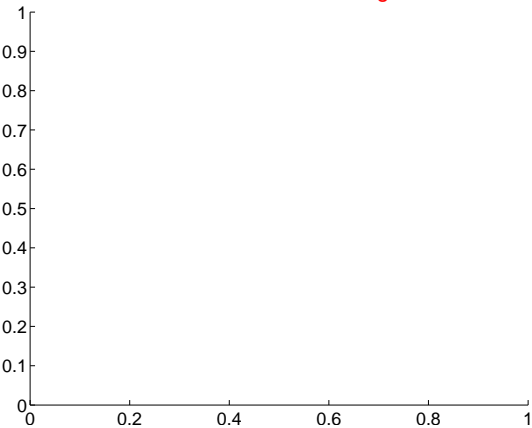
Q9 no difference image



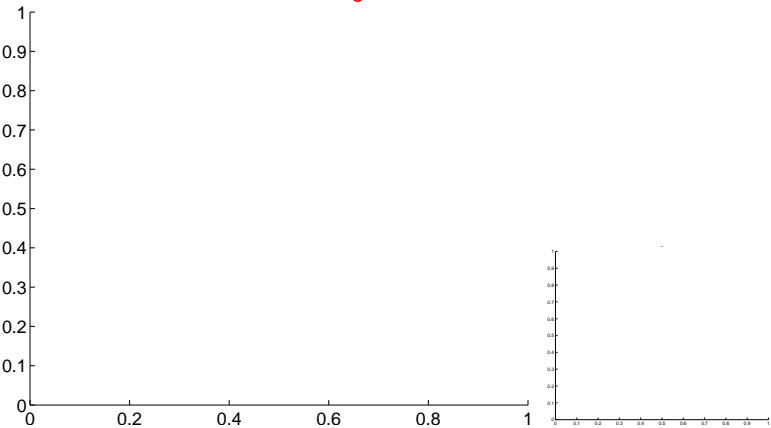
Q9 no OOT image



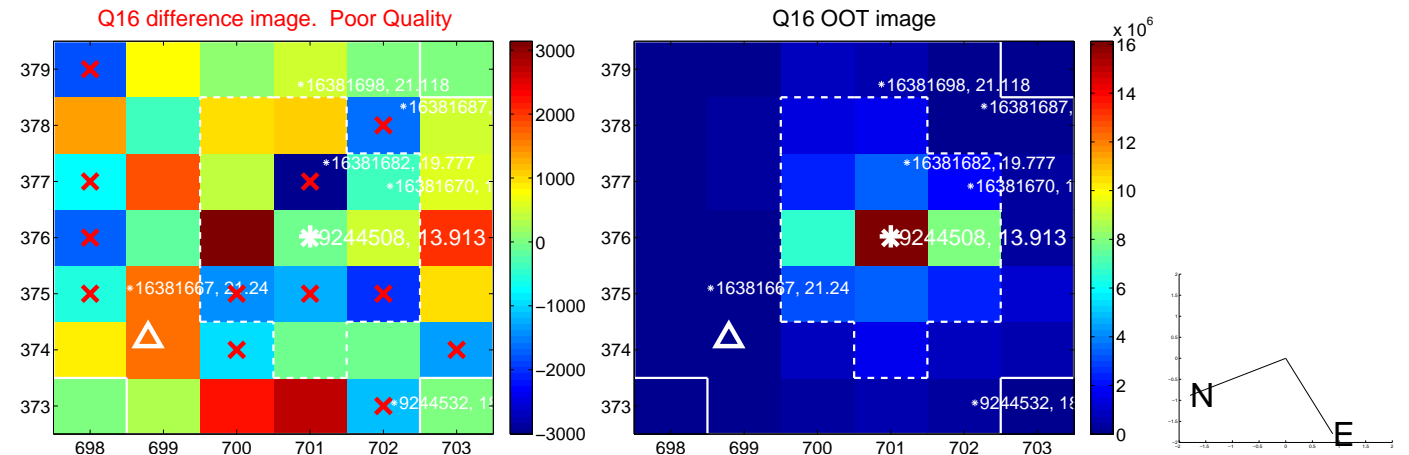
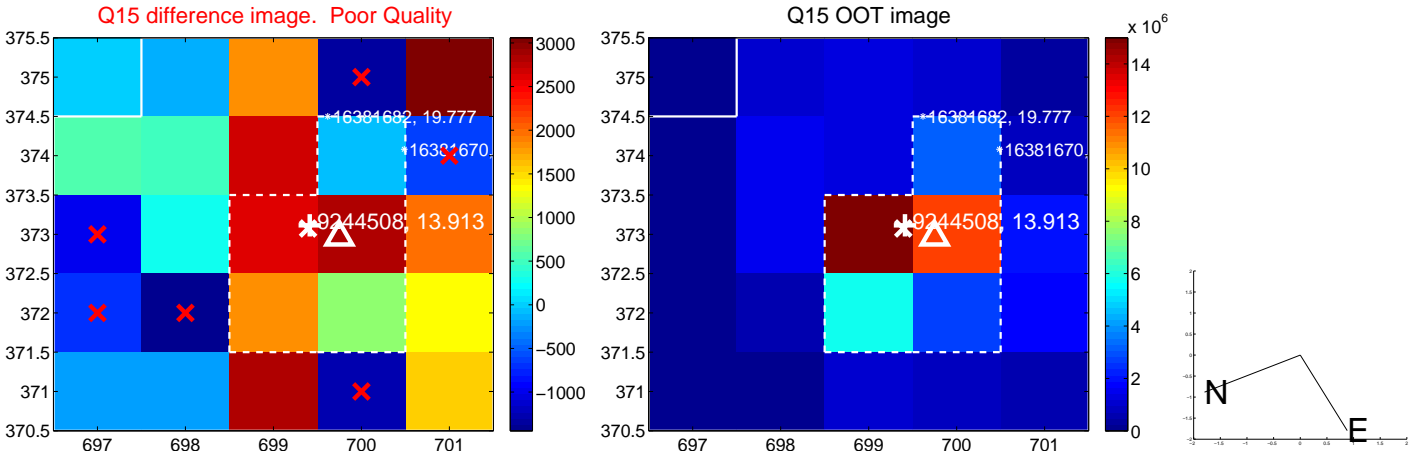
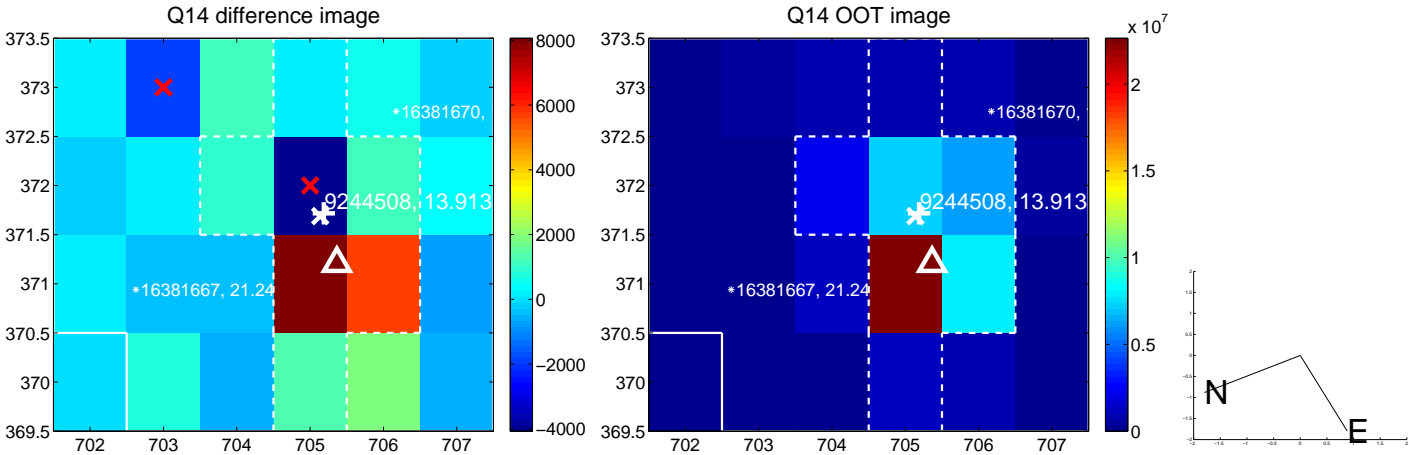
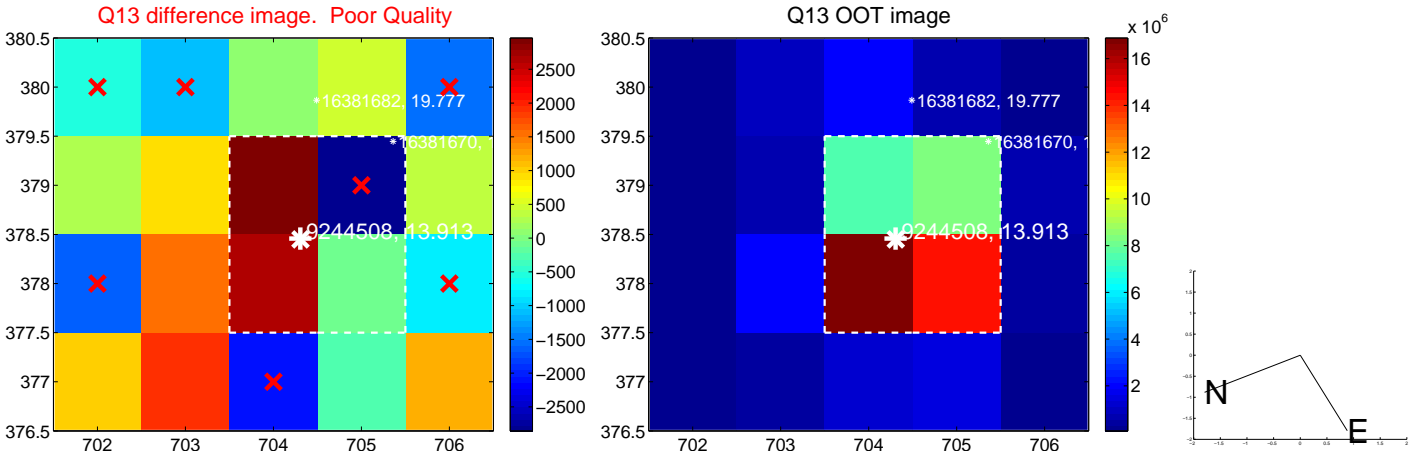
Q12 no difference image



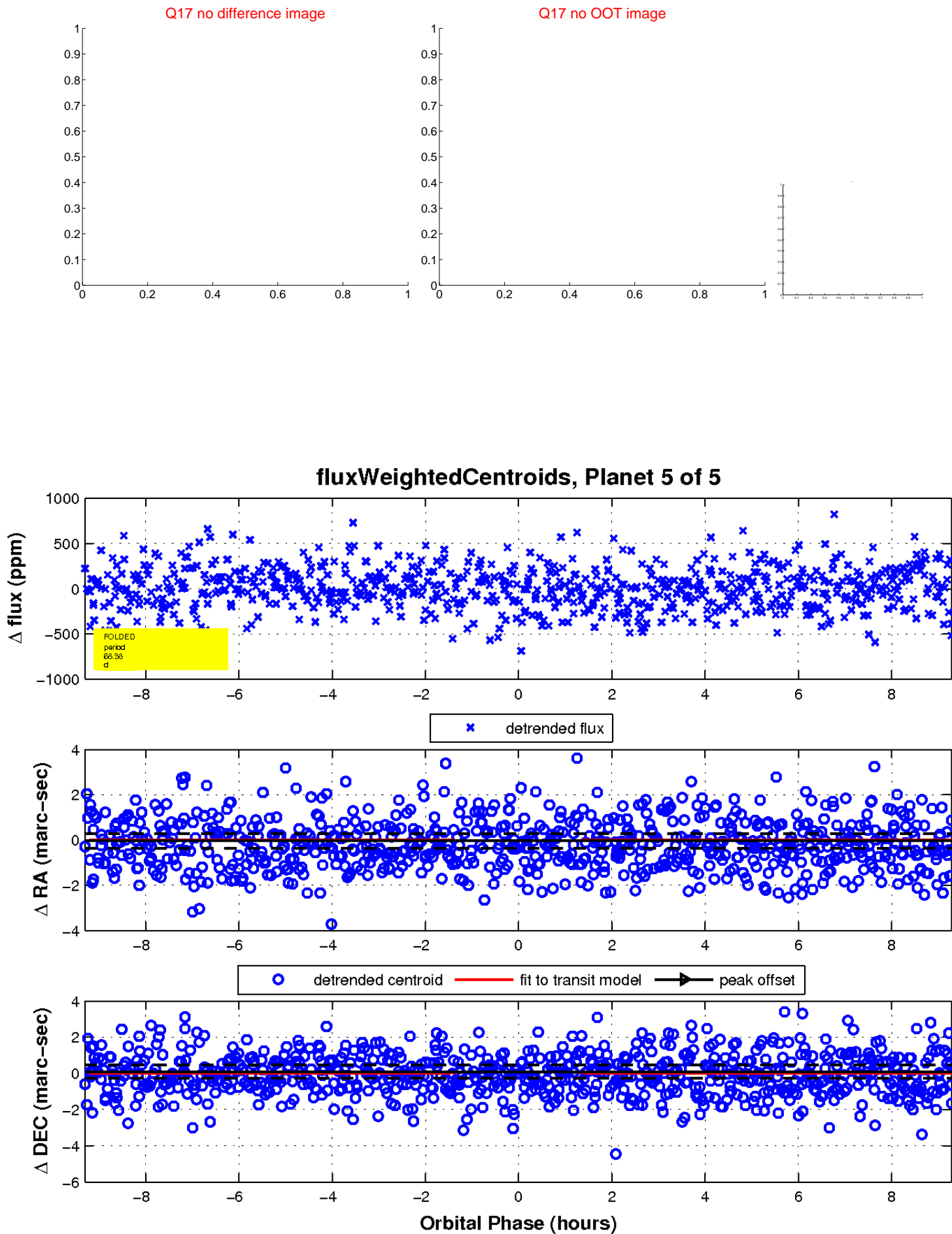
Q12 no OOT image



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



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



UKIRT Image

Declination

