

KIC 009450940

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})
009450940-01	OBS	No	0.548171	131.555190	19.2	1.321	8.6	7.4	1.80	8436	0.85	56158.11
009450940-02	OBS	No	288.753937	365.283660	477.1	2.208	7.7	7.0	1.80	8436	4.39	13.20

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009450940-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009450940-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—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.

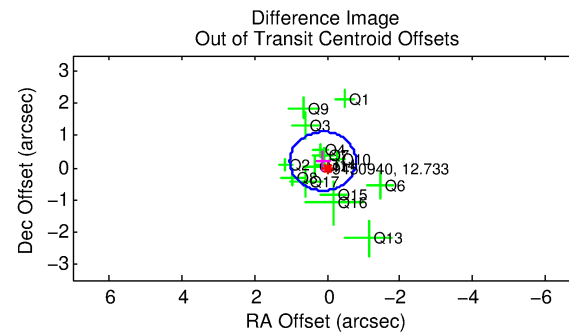
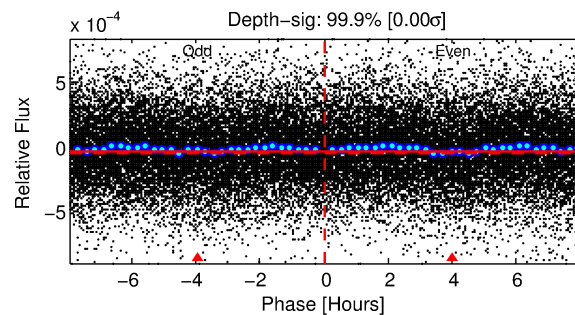
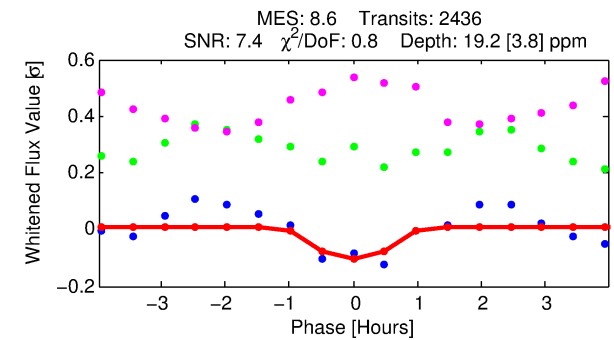
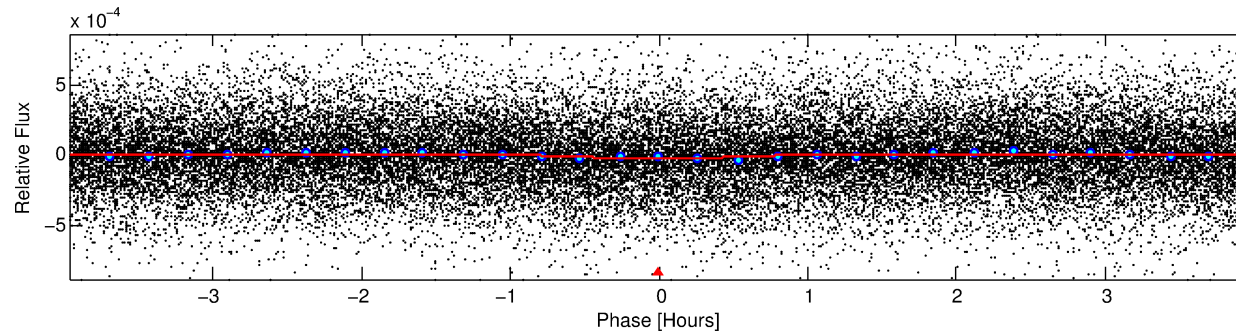
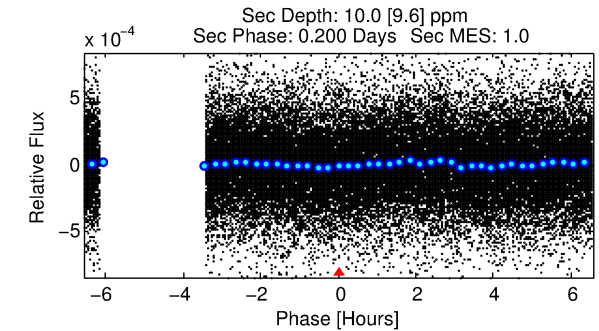
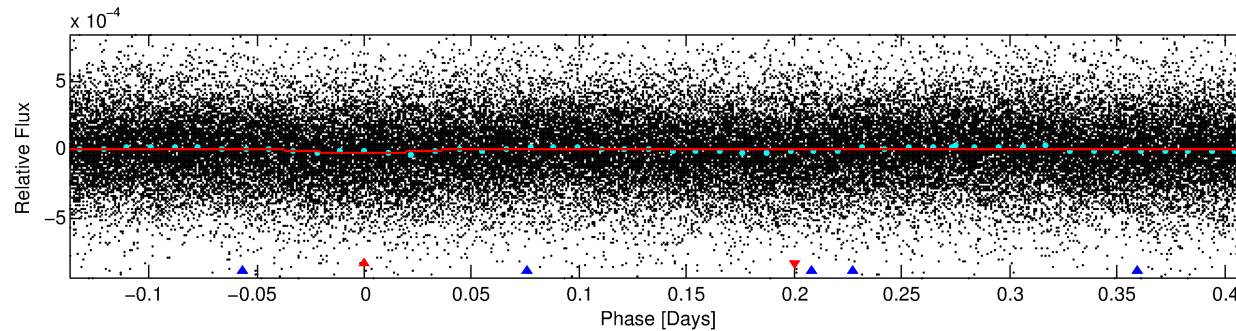
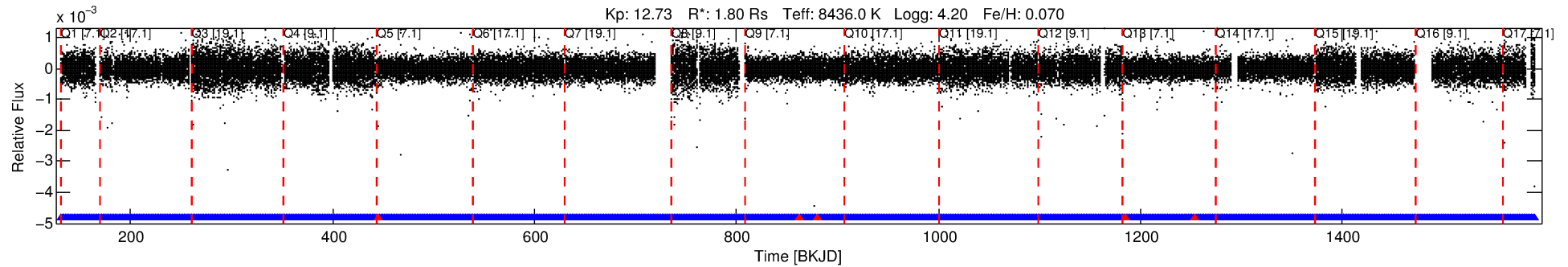
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009450940-01

No Significant Match Found

DV One-Page Summary

KIC: 9450940 Candidate: 1 of 2 Period: 0.548 d



DV Fit Results:

Period = 0.54817 [0.00002] d
Epoch = 131.5552 [0.0033] BKJD
Rp/R* = 0.0043 [0.0011]
a/R* = 2.42 [3.02]
b = 0.70 [1.10]
Seff = 56158.11 [20014.42]
Teq = 3925 [350] K
Rp = 0.85 [0.31] Re
a = 0.0162 [0.0035] AU
Ag = 2.00 [2.28] [0.44σ]
Teffp = 7214 [2005] K [1.62σ]

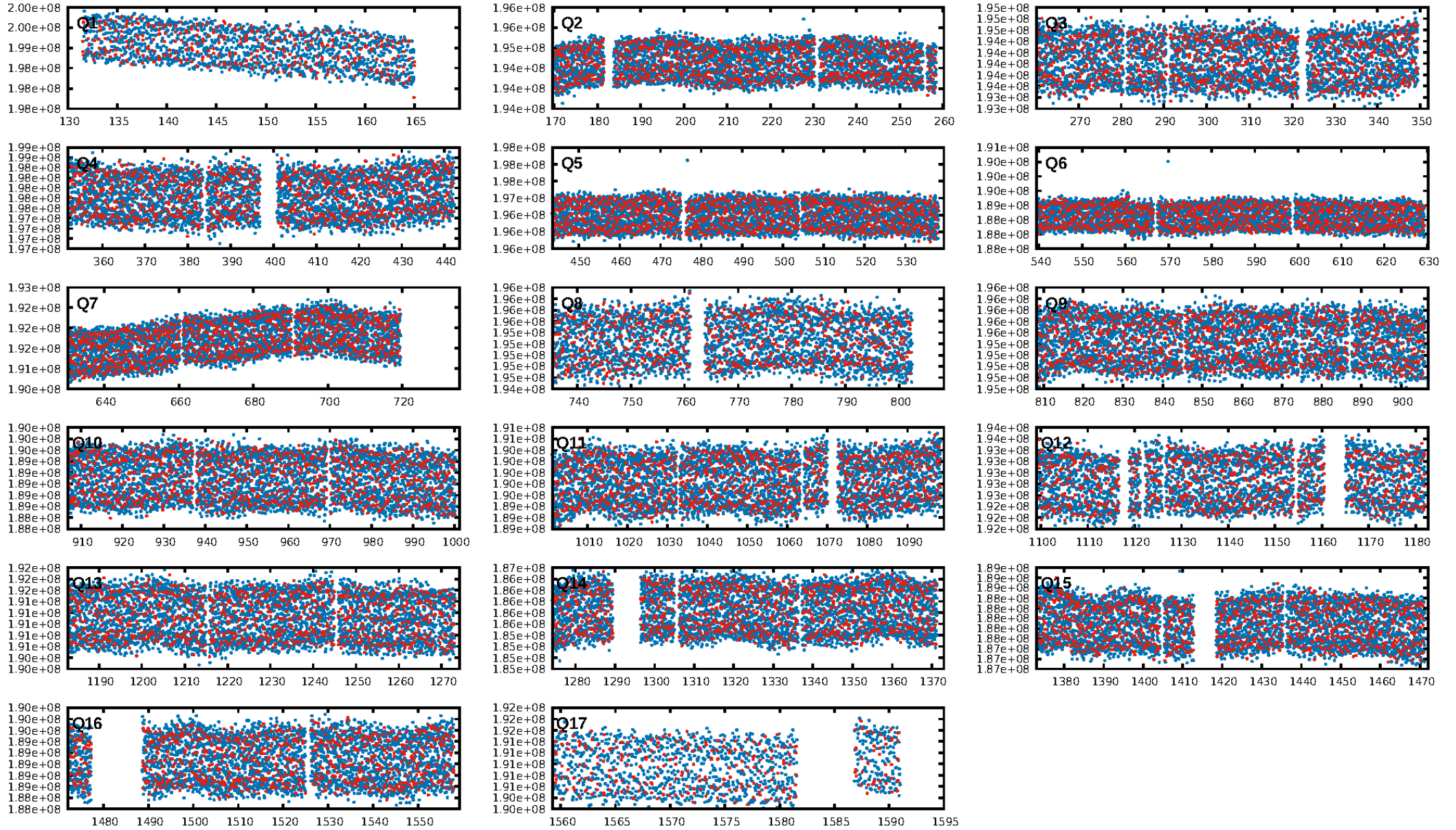
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [2688.56σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.84e-19
RollingBand-fgt: 1.00 [2320/2325]
GhostDiagnostic-chr: -5.238
Centroid-sig: 5.7%
Centroid-so: 1.278 arcsec [1.65σ]
OotOffset-rm: 0.234 arcsec [0.77σ]
KicOffset-rm: 0.212 arcsec [0.70σ]
OotOffset-st: 4/4/3/4 [15]
KicOffset-st: 4/4/3/4 [15]
DiffImageQuality-fgm: 0.87 [13/15]
DiffImageOverlap-fno: 1.00 [17/17]

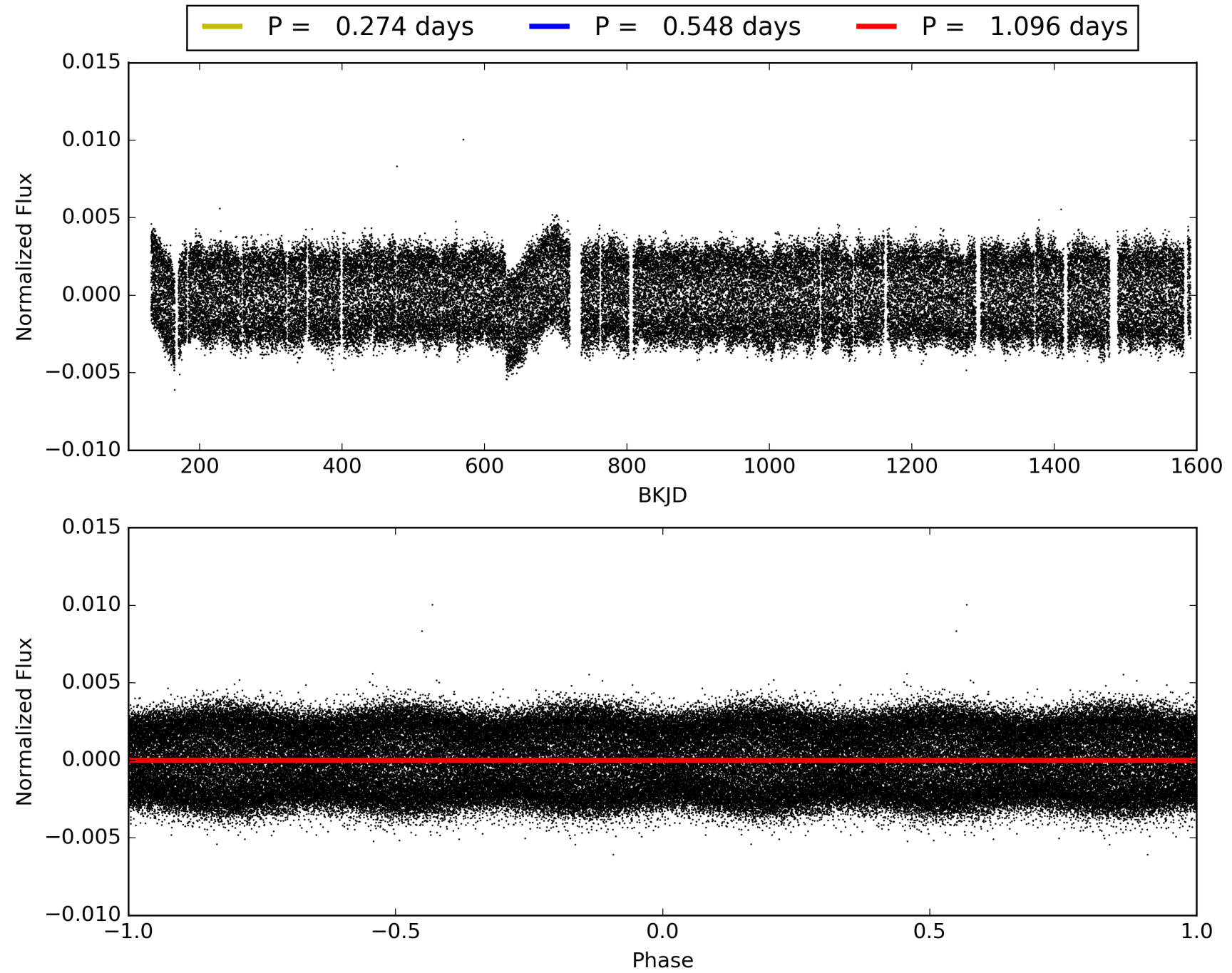
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:56:02 Z

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

TCE 009450940-01, PDC Light Curves

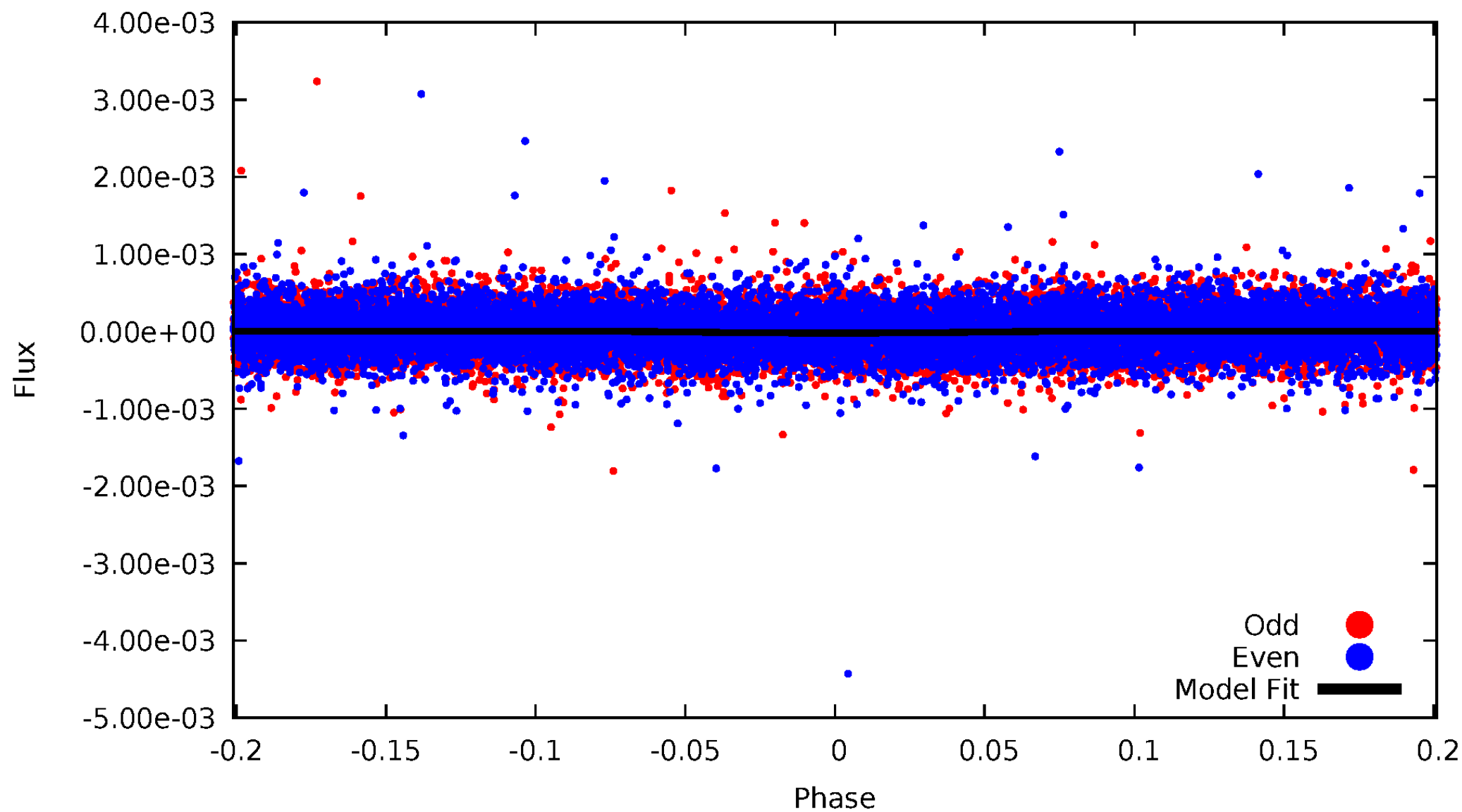


TCE 009450940-01



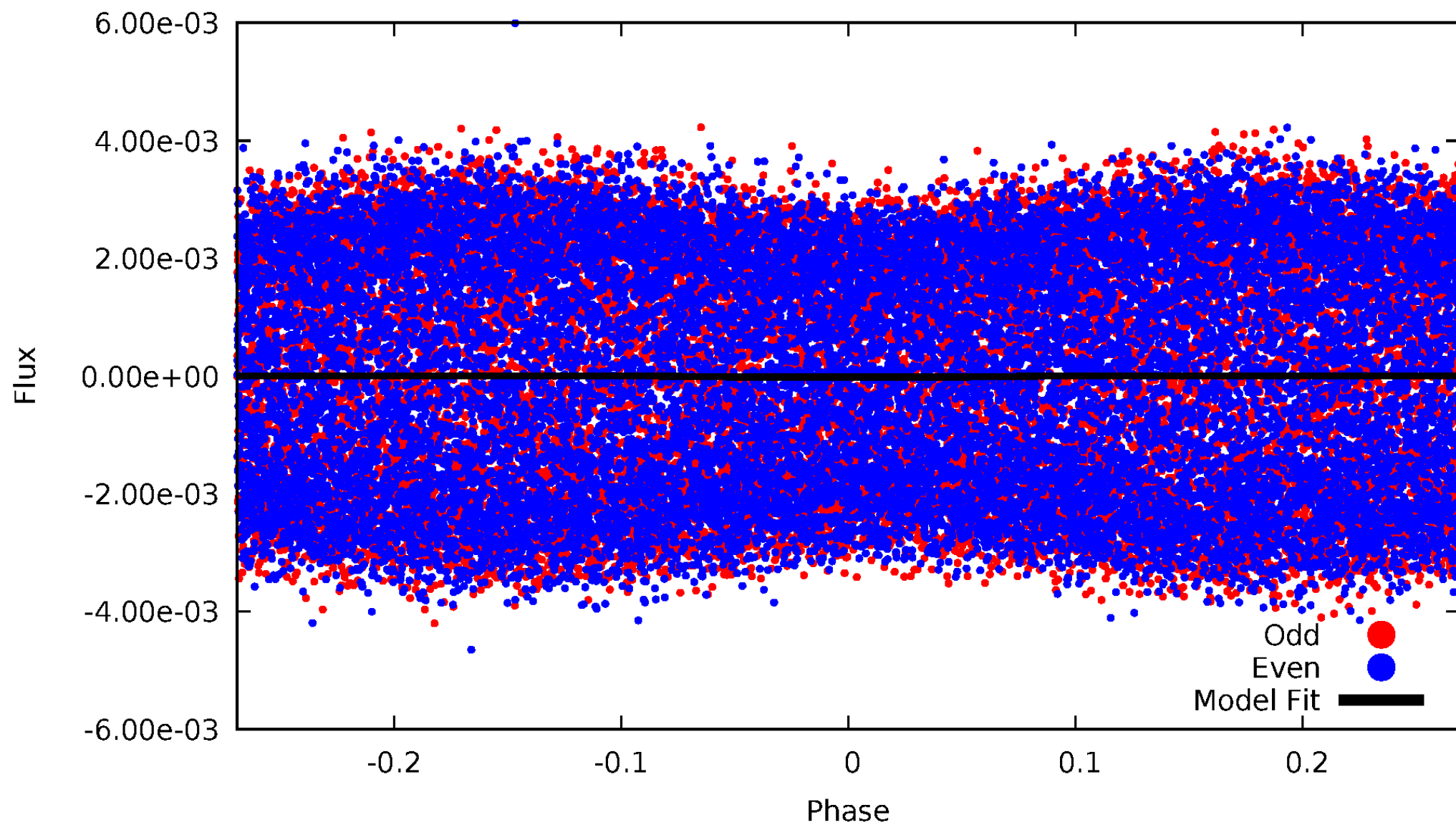
DV Odd/Even

TCE 009450940-01



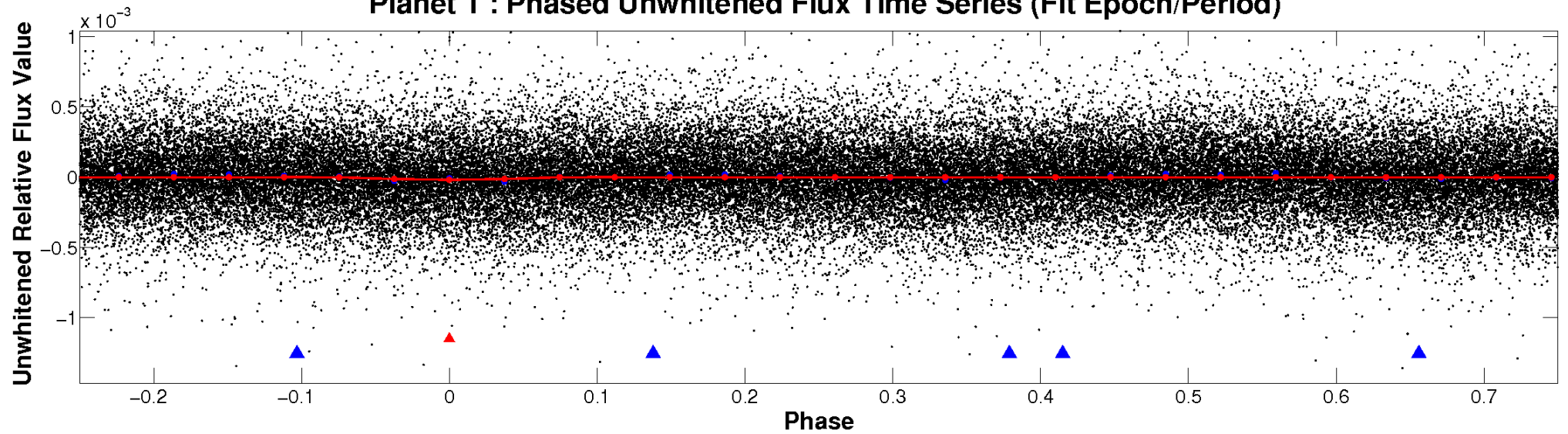
ALT Odd/Even

TCE 009450940-01

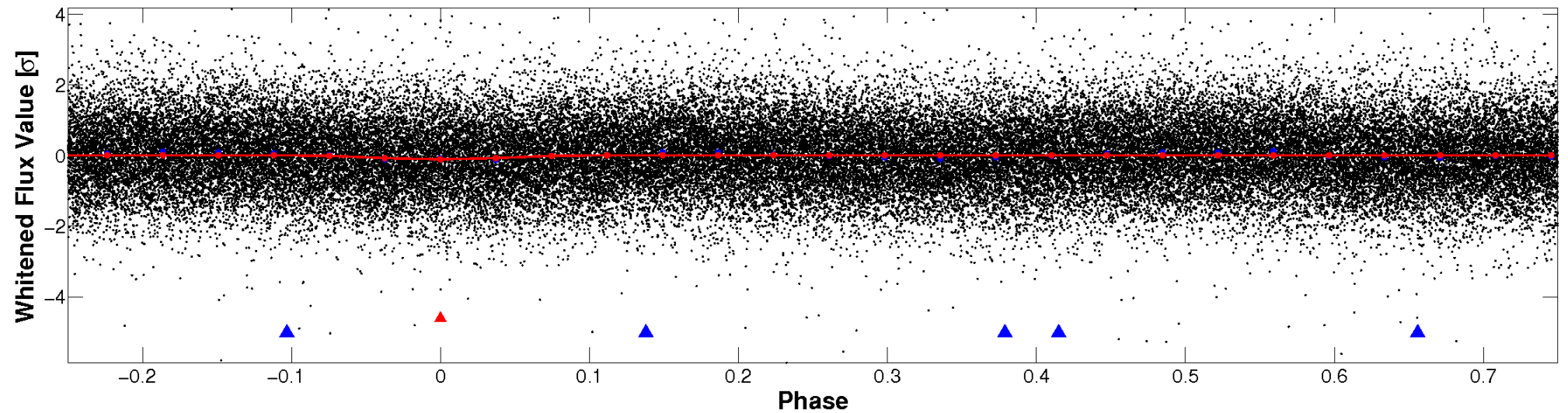


Non-Whitened Vs. Whitened Light Curve

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

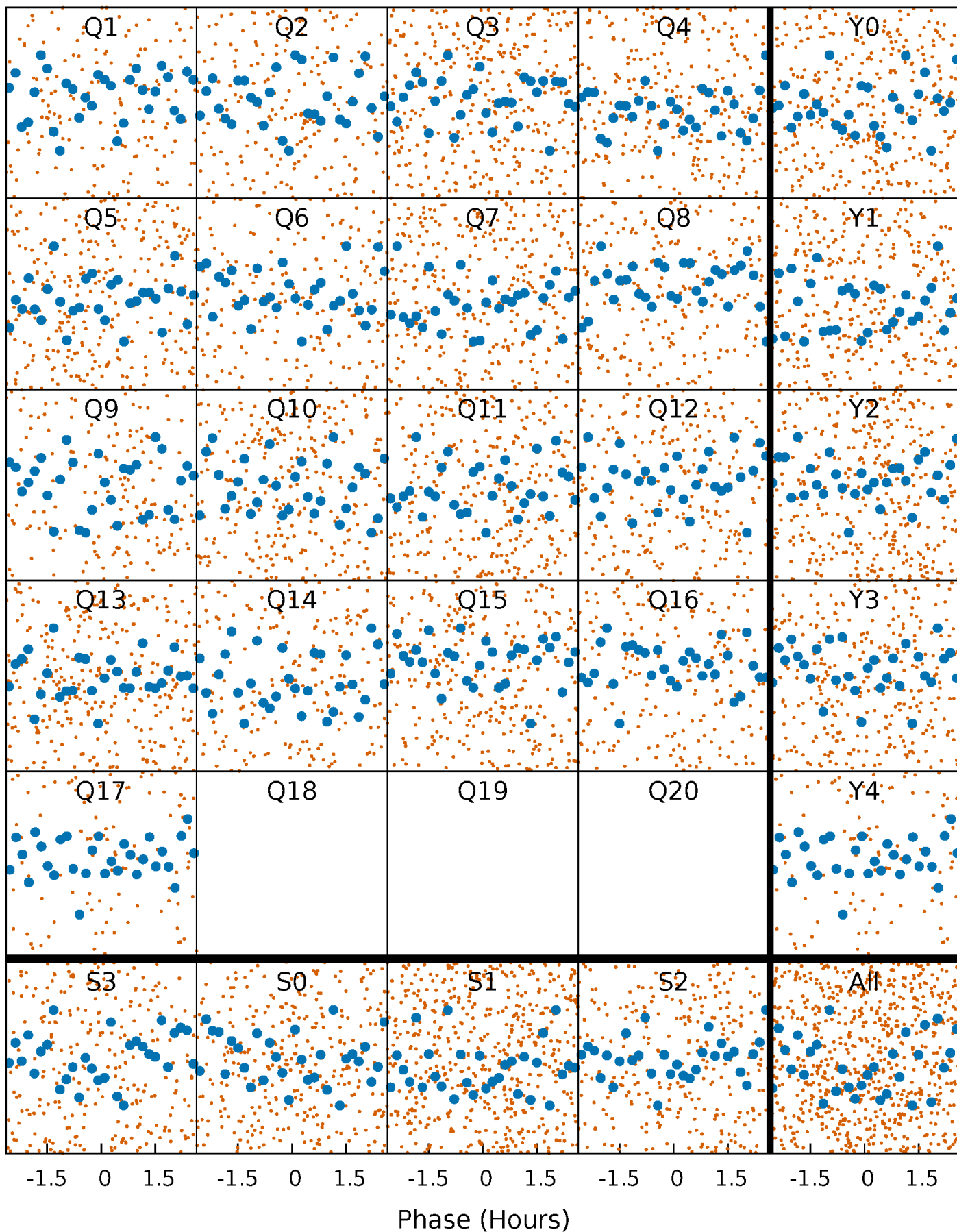


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



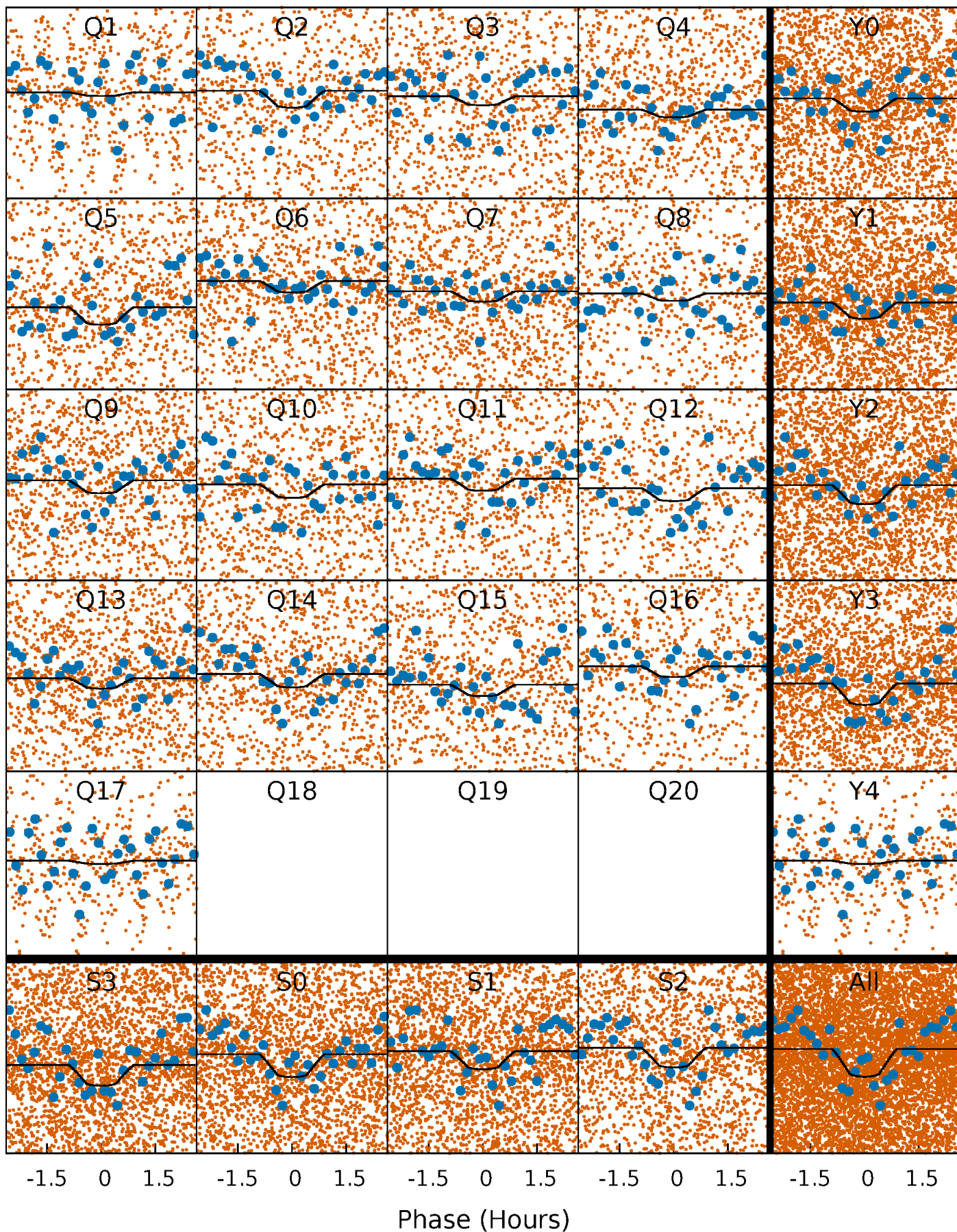
PDC Quarter-Phased Transit Curves

TCE 009450940-01 P= 0.548171 Days $T_0=131.555190$ (BKJD)



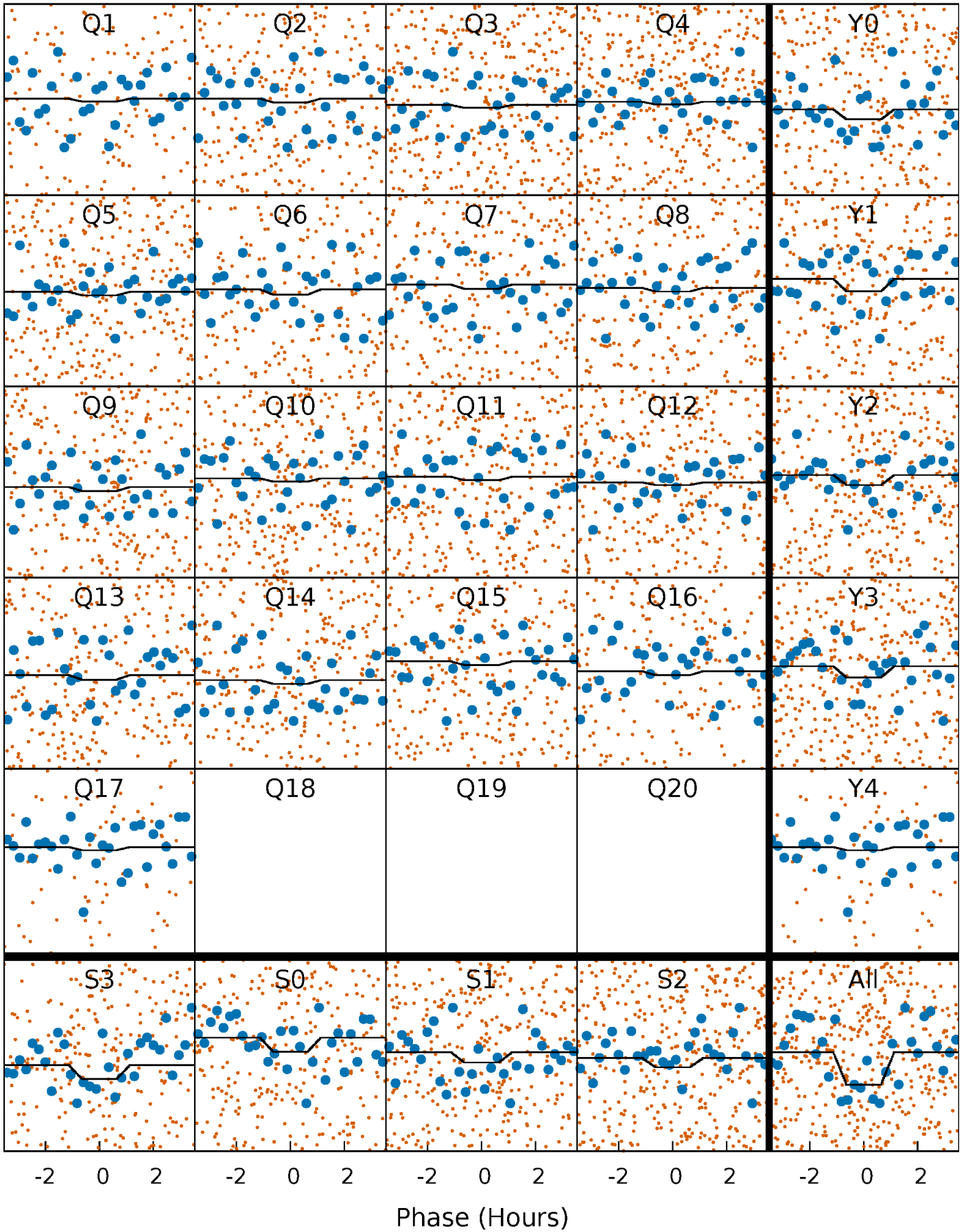
DV Quarter-Phased Transit Curves

TCE 009450940-01 P= 0.548171 Days $T_0=131.555190$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

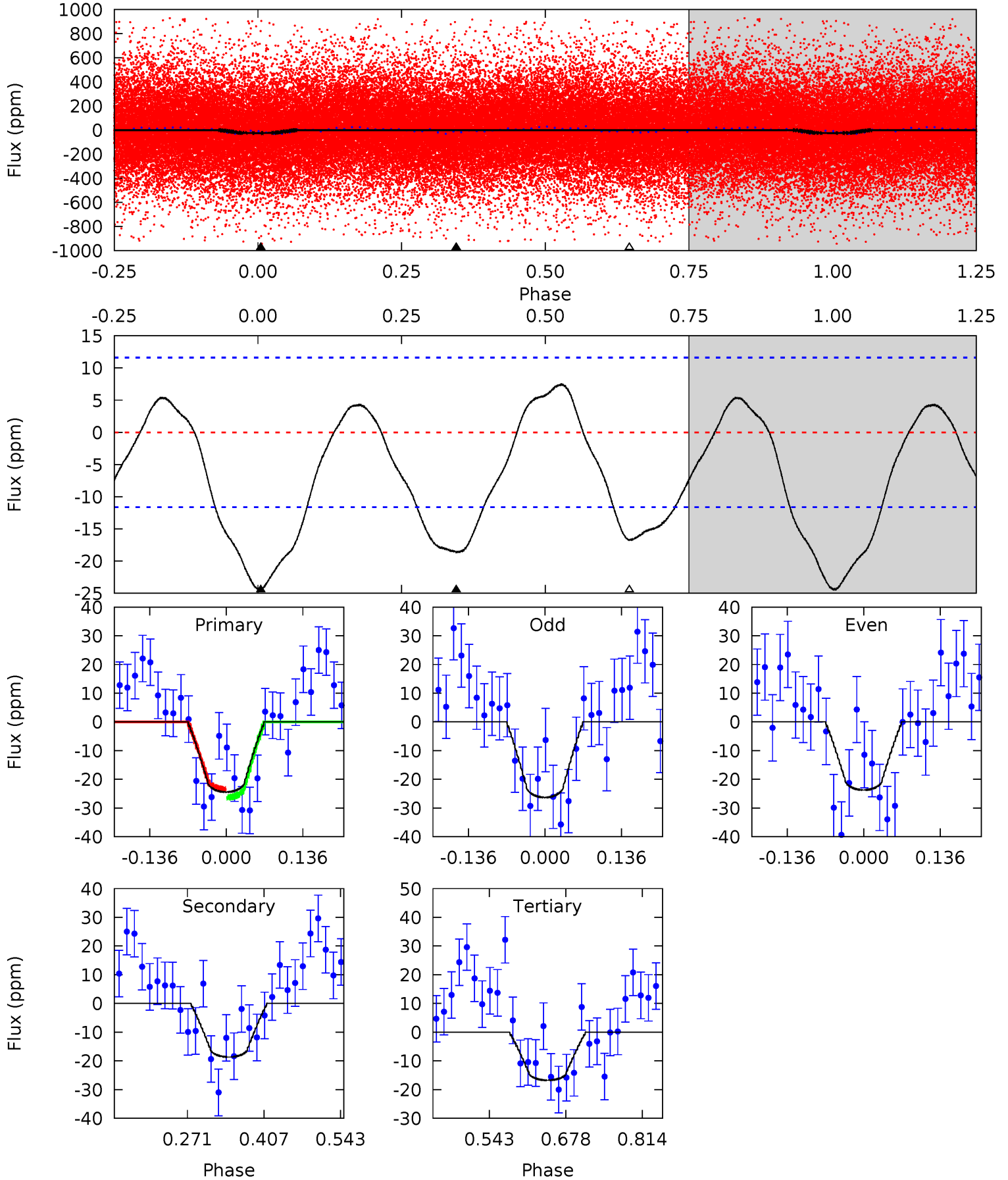
TCE 009450940-01 P= 0.548173 Days $T_0=131.555141$ (BKJD)



DV Model-Shift Uniqueness Test

009450940-01, P = 0.548171 Days, E = 131.007019 Days

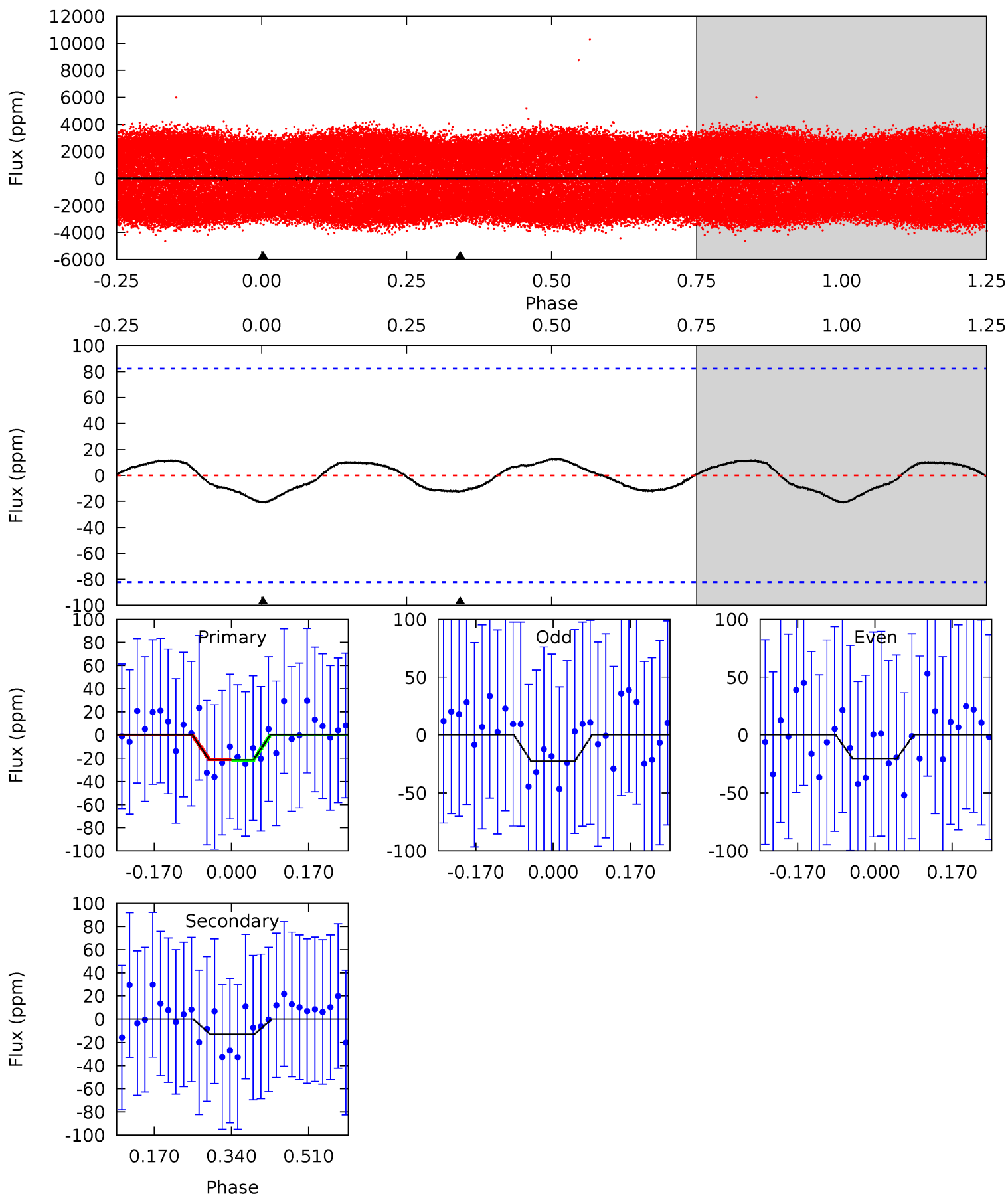
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.47	7.23	6.49	0	4.50	1.49	3.13	2.99	9.47	0.74	7.23	0.51	0.96	0.23	0.55



Alt Model-Shift Uniqueness Test

009450940-01, P = 0.548173 Days, E = 131.006968 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.16	0.70	0	0	4.45	1.37	0.44	1.16	1.16	0.70	0.70	0.05	0.78	0.39	0.02



Stellar Parameters For KIC 009450940

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8436^{+233}_{-366}	$4.201^{+0.091}_{-0.169}$	$0.070^{+0.250}_{-0.550}$	$1.798^{+0.464}_{-0.309}$	$1.875^{+0.297}_{-0.363}$	$0.454^{+0.215}_{-0.199}$
	+3%/-4%	+2%/-4%	+357%/-786%	+26%/-17%	+16%/-19%	+47%/-44%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009450940-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-19 ± 3	$0.85^{+0.28}_{-0.23}$	5515^{+345}_{-309}	8196^{+2012}_{-1313}	$3.603^{+3.324}_{-1.510}$
Alt.	-13 ± 18	$0.86^{+0.25}_{-0.23}$	5531^{+358}_{-305}	7059^{+3641}_{-13275}	$2.246^{+5.045}_{-3.305}$

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

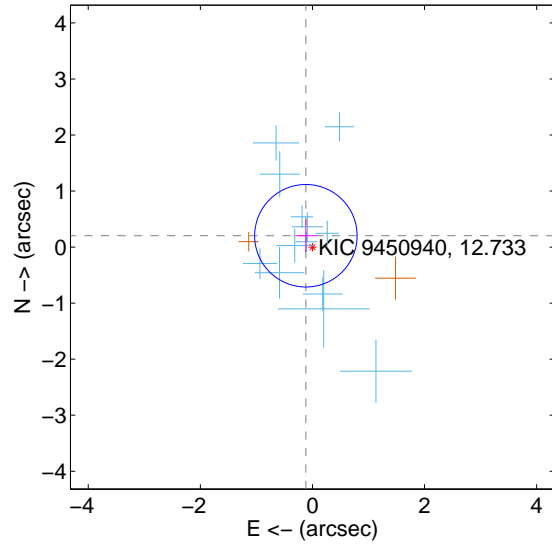
Supplemental centroid analysis for 009450940-01. Kepler magnitude: 12.73. Transit SNR 7.43

There are 13 quarters with good PRF difference image offsets

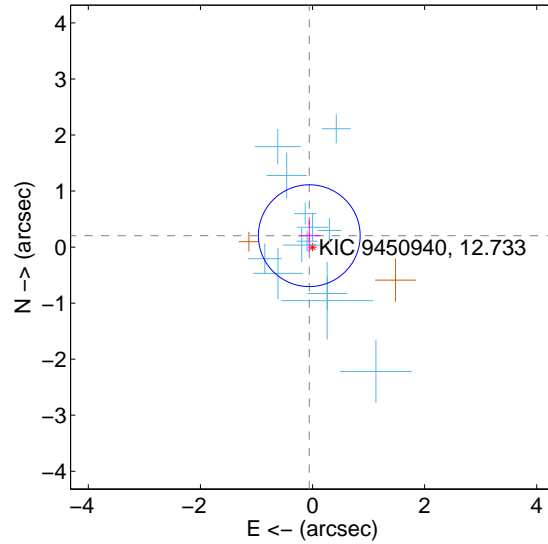
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.234 ± 0.305	0.77	0.117 ± 0.190	0.202 ± 0.293
PRF-fit source offset from KIC position	0.212 ± 0.303	0.70	0.058 ± 0.194	0.204 ± 0.288
photometric centroid source offset	1.28 ± 0.77	1.65	1.06 ± 0.74	0.72 ± 0.84

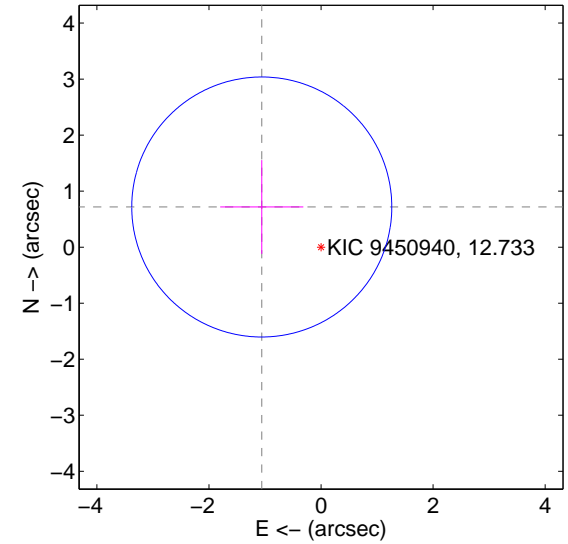
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

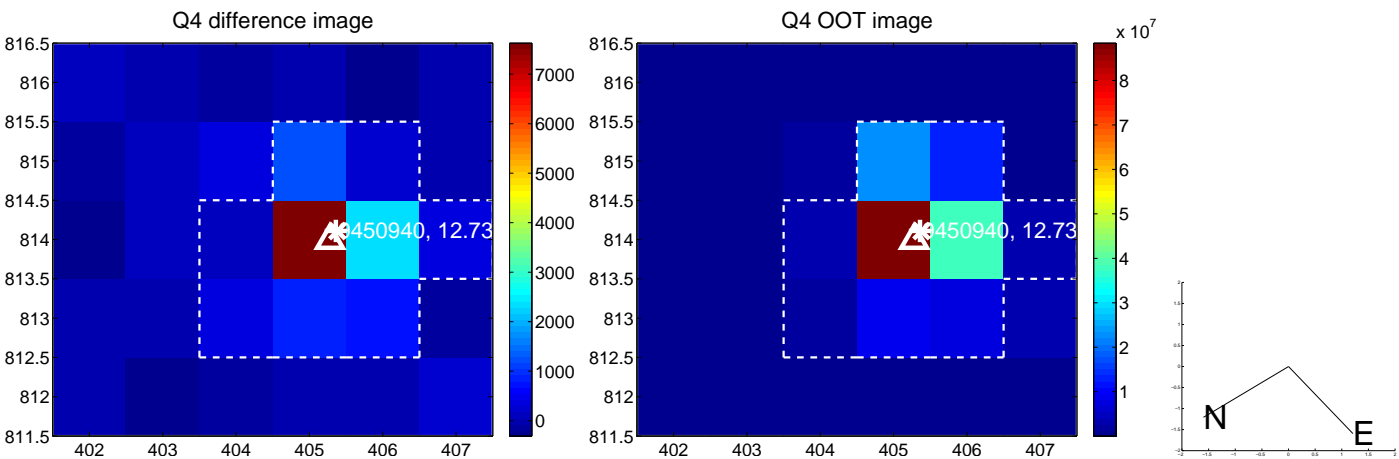
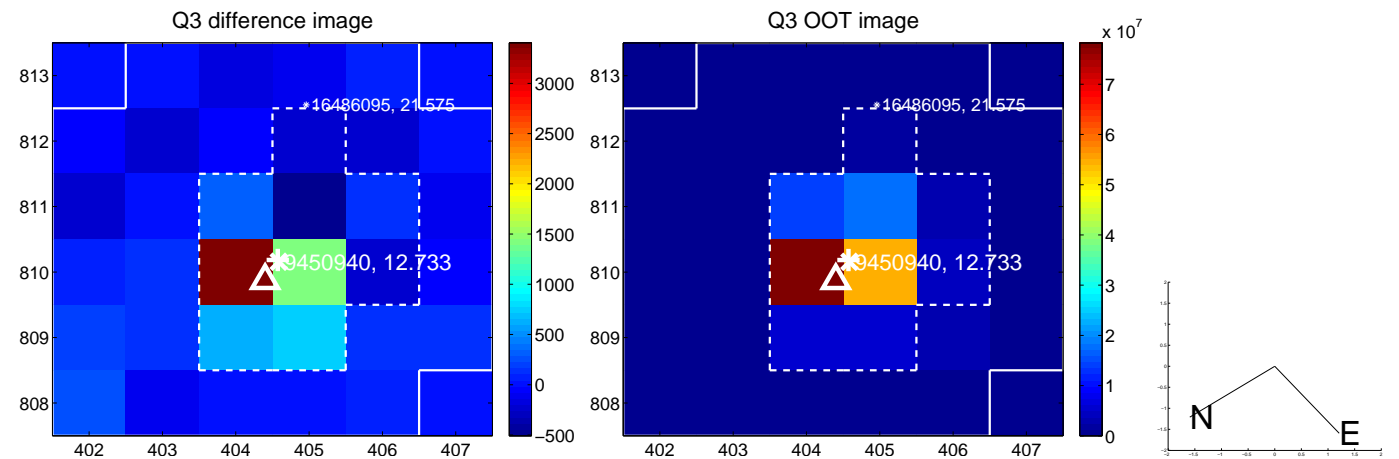
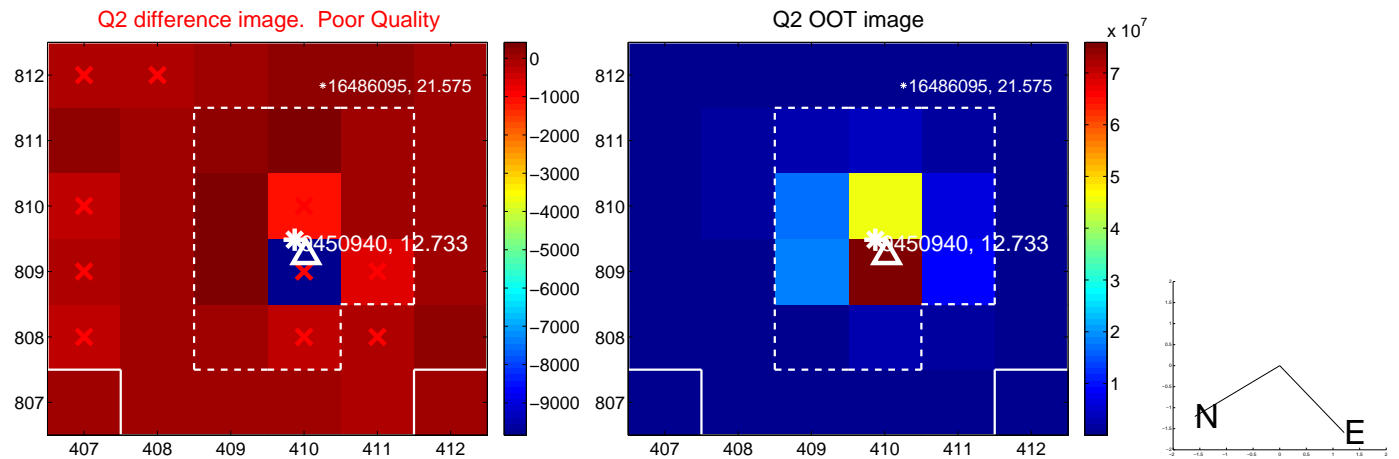
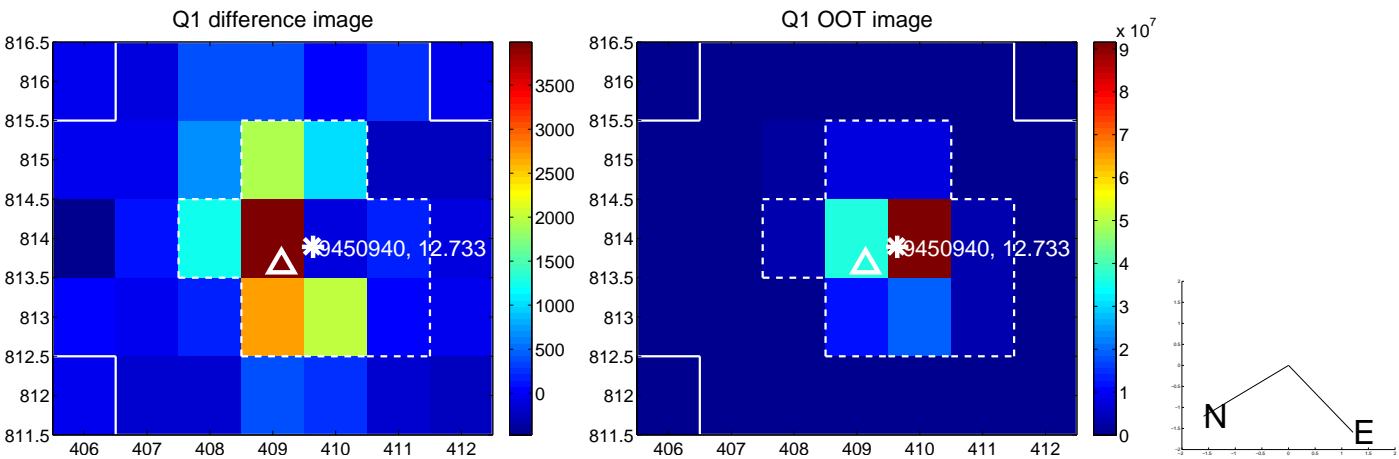


offset from photometric centroids

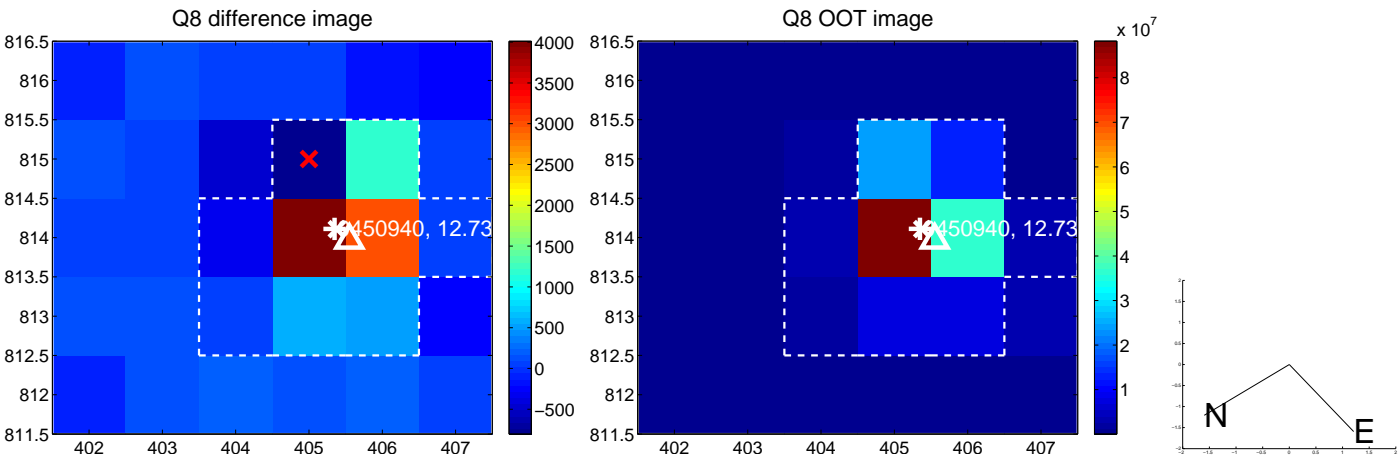
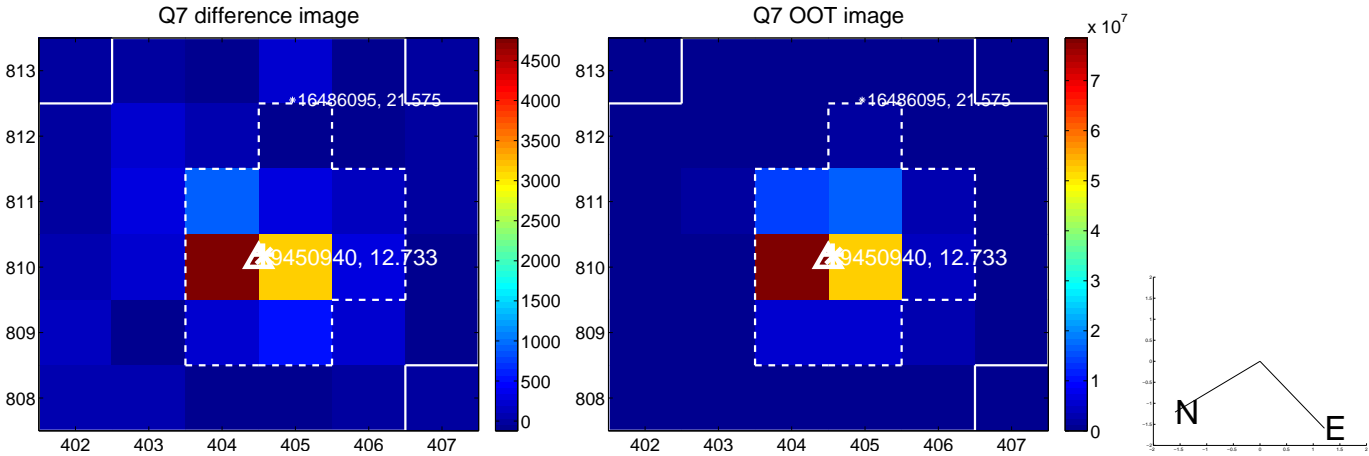
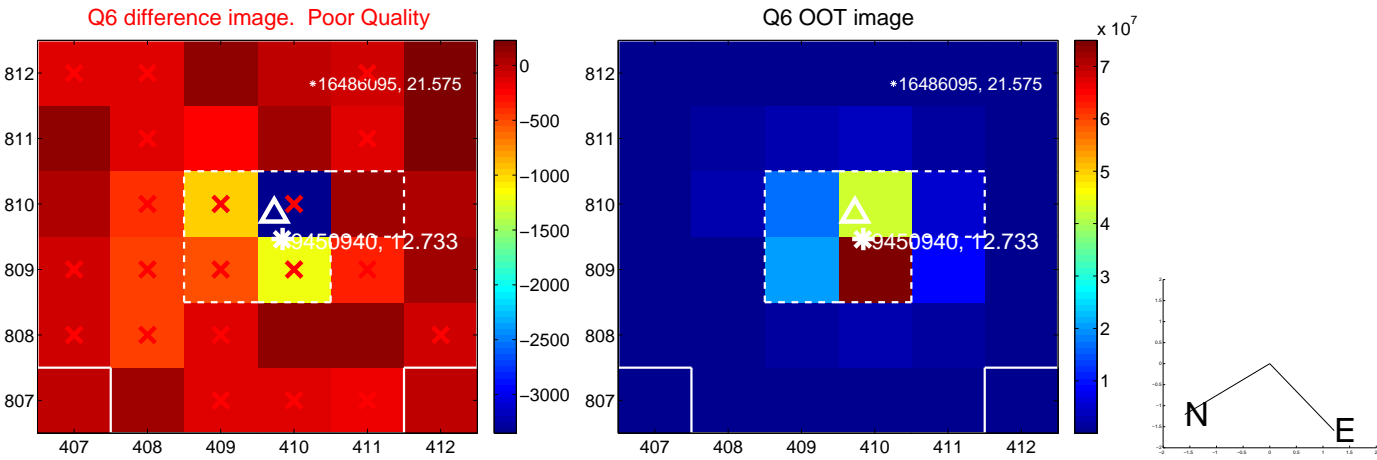
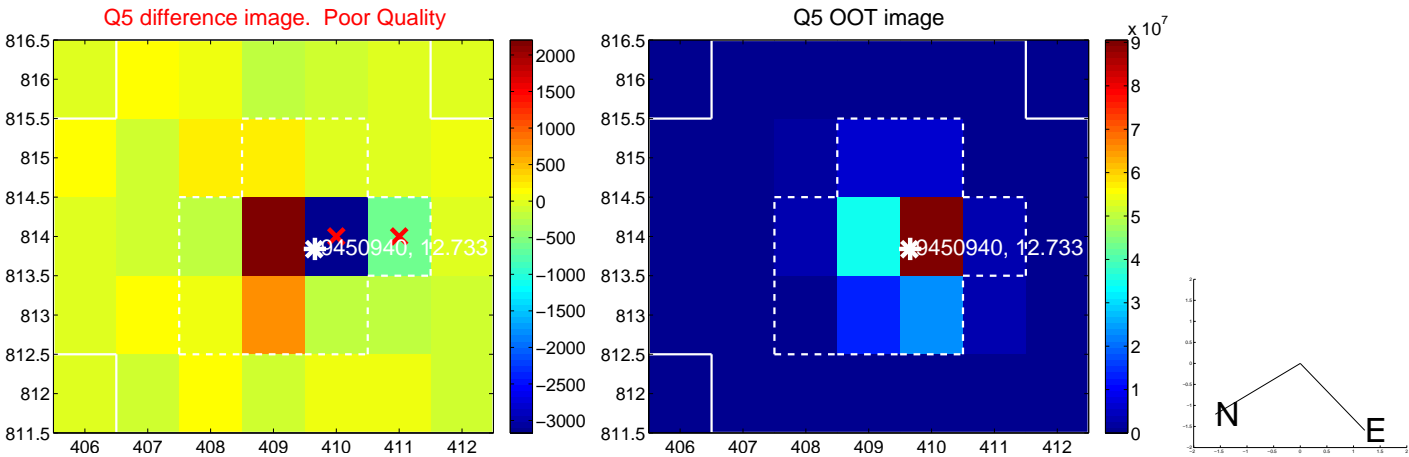


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

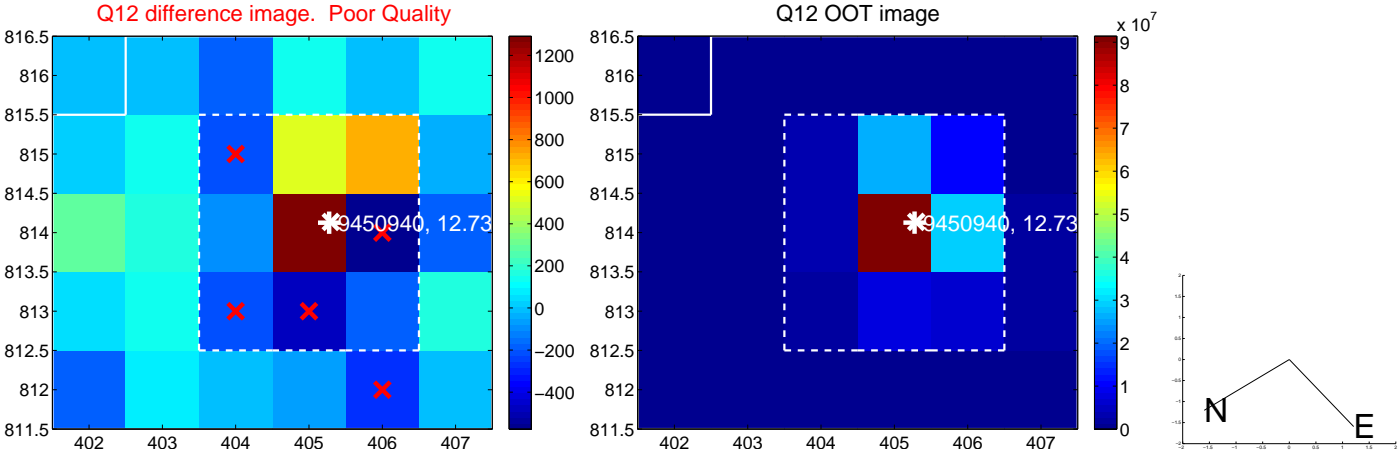
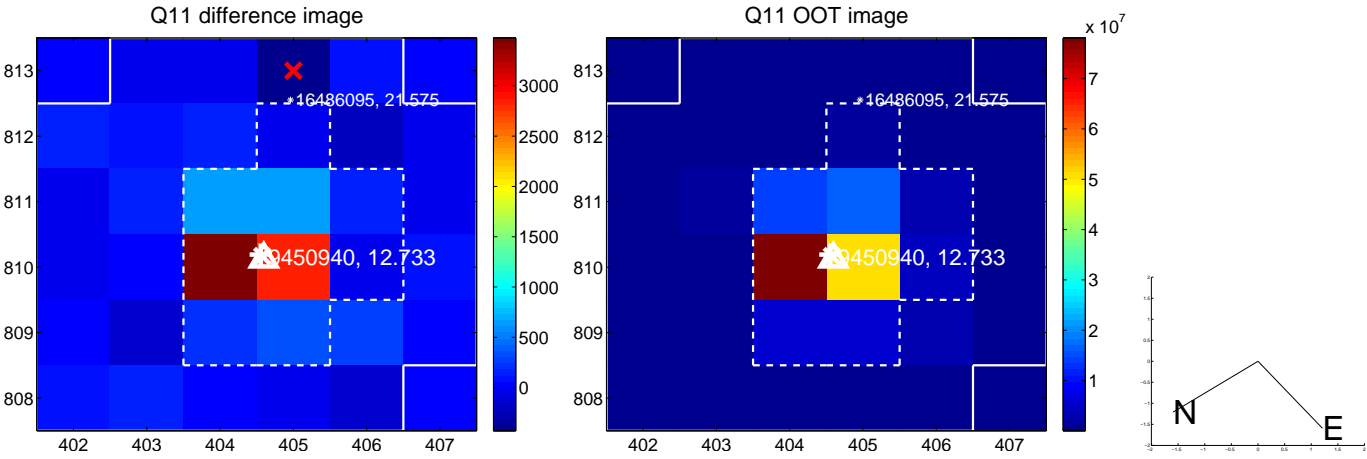
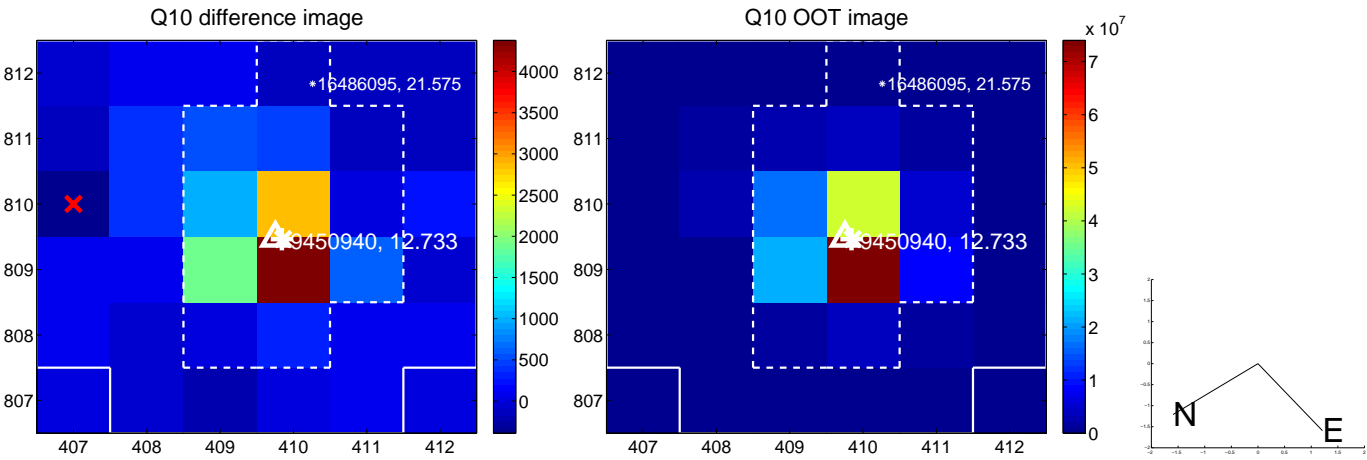
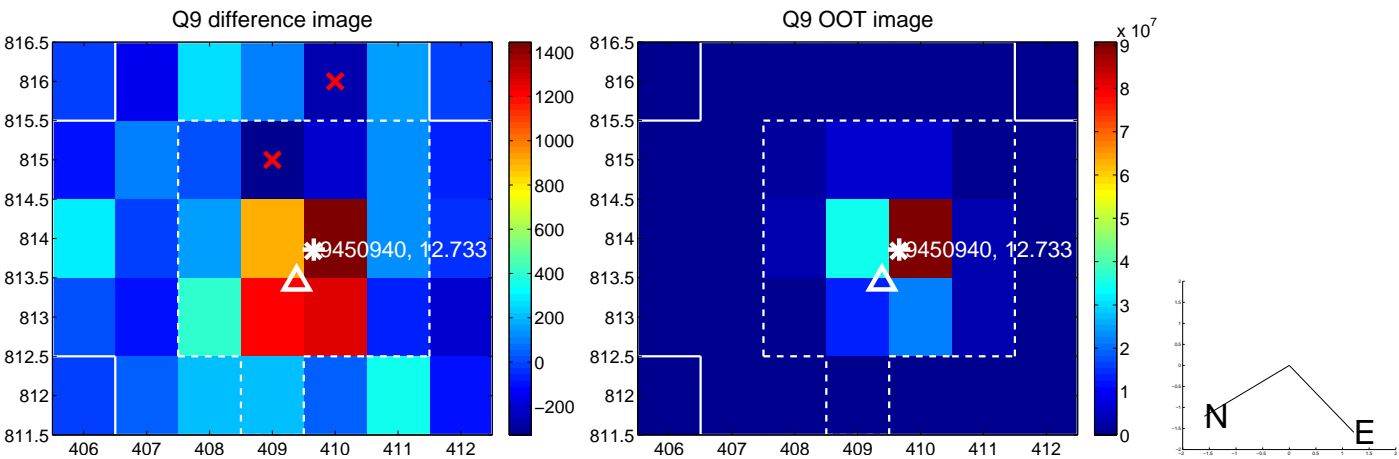
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



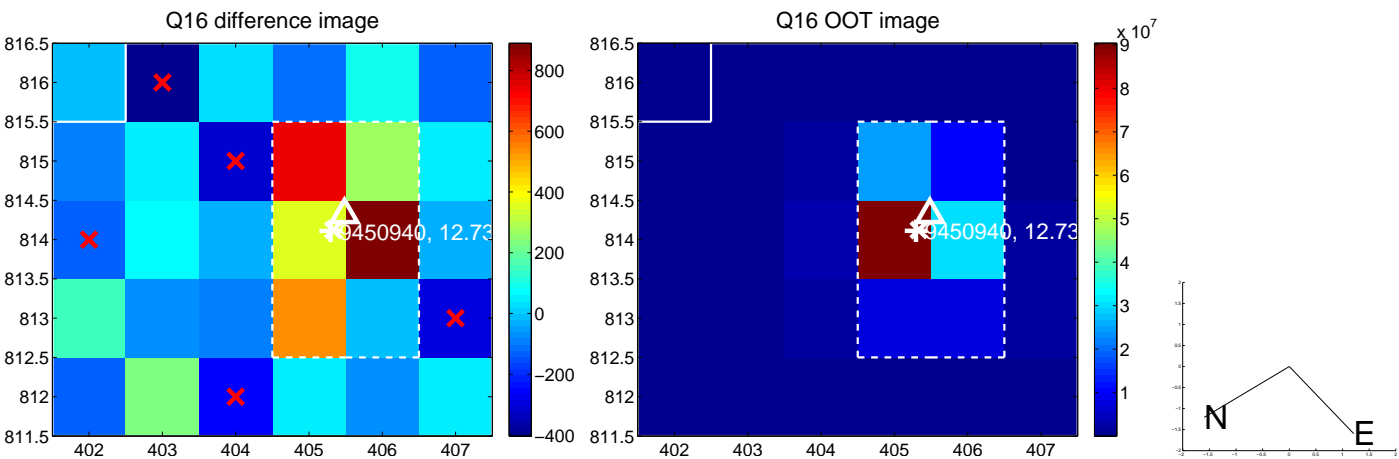
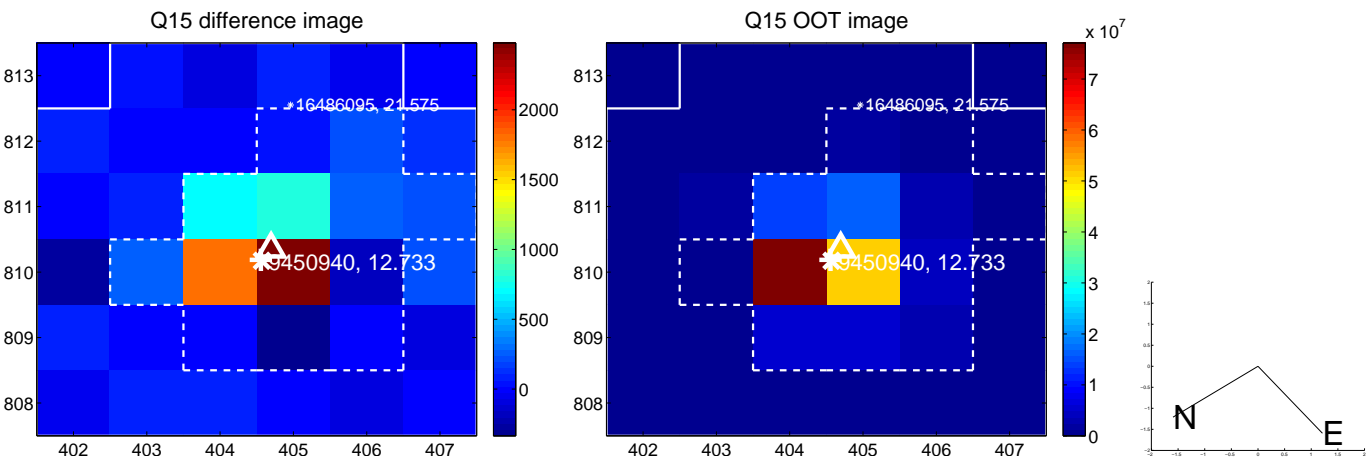
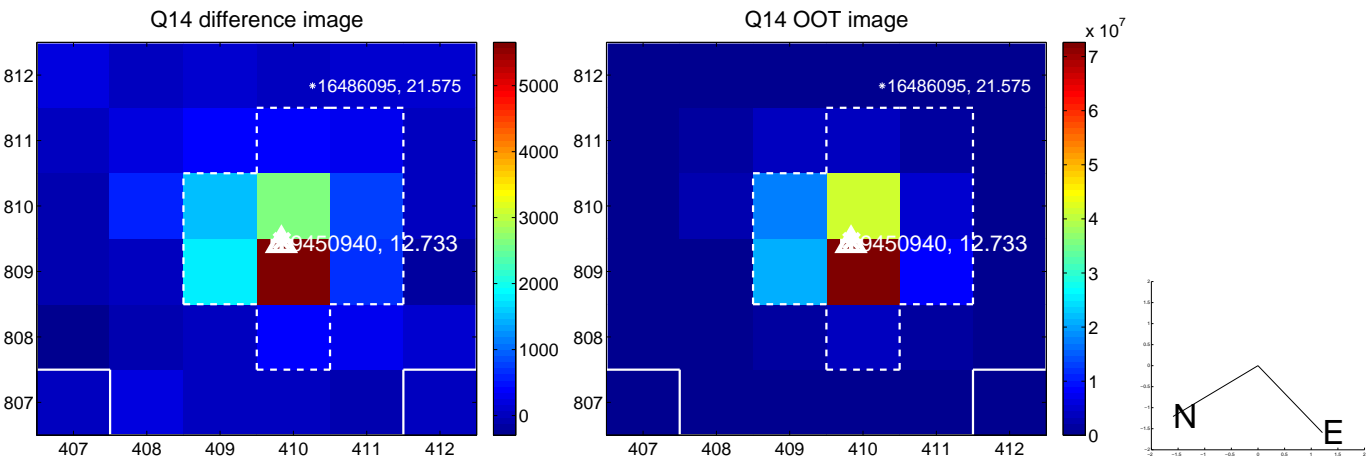
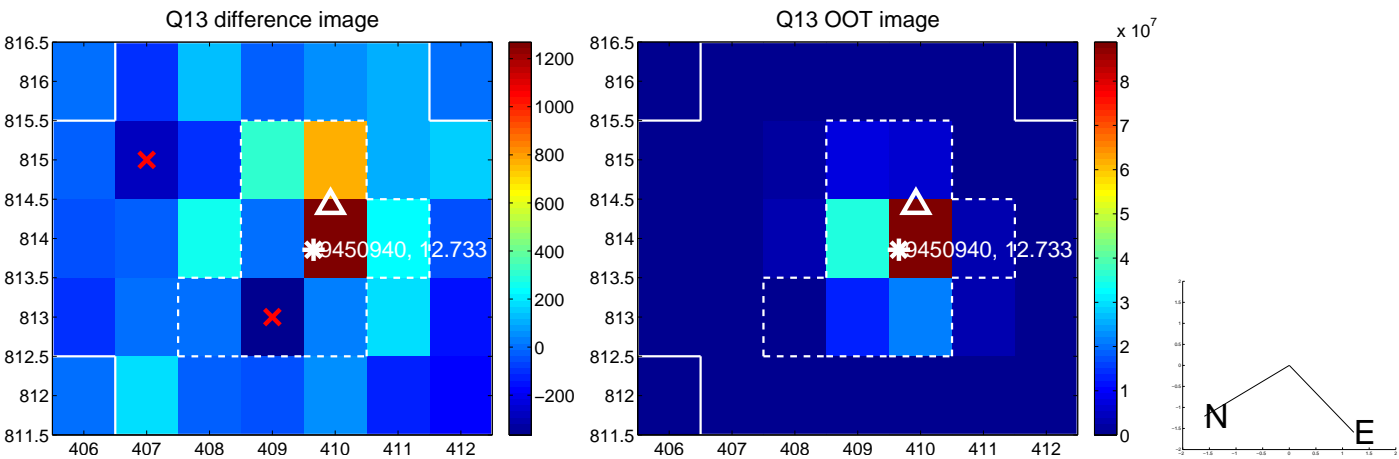
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



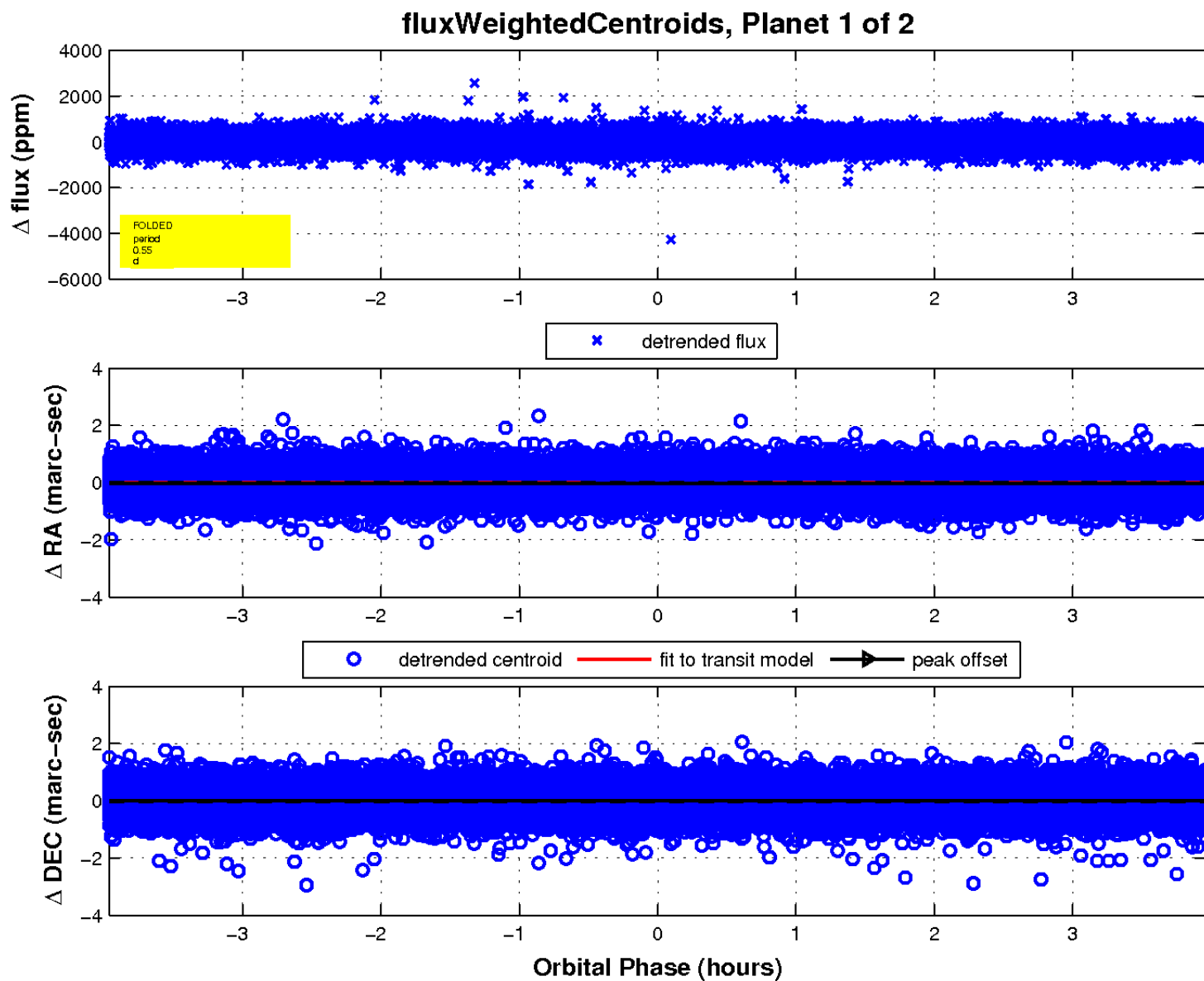
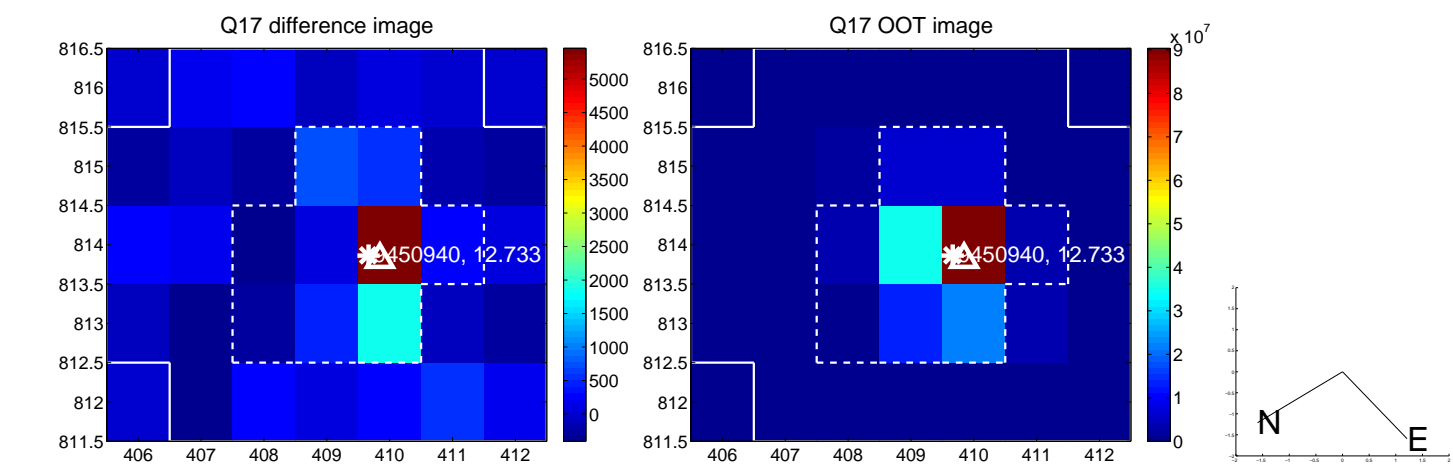
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

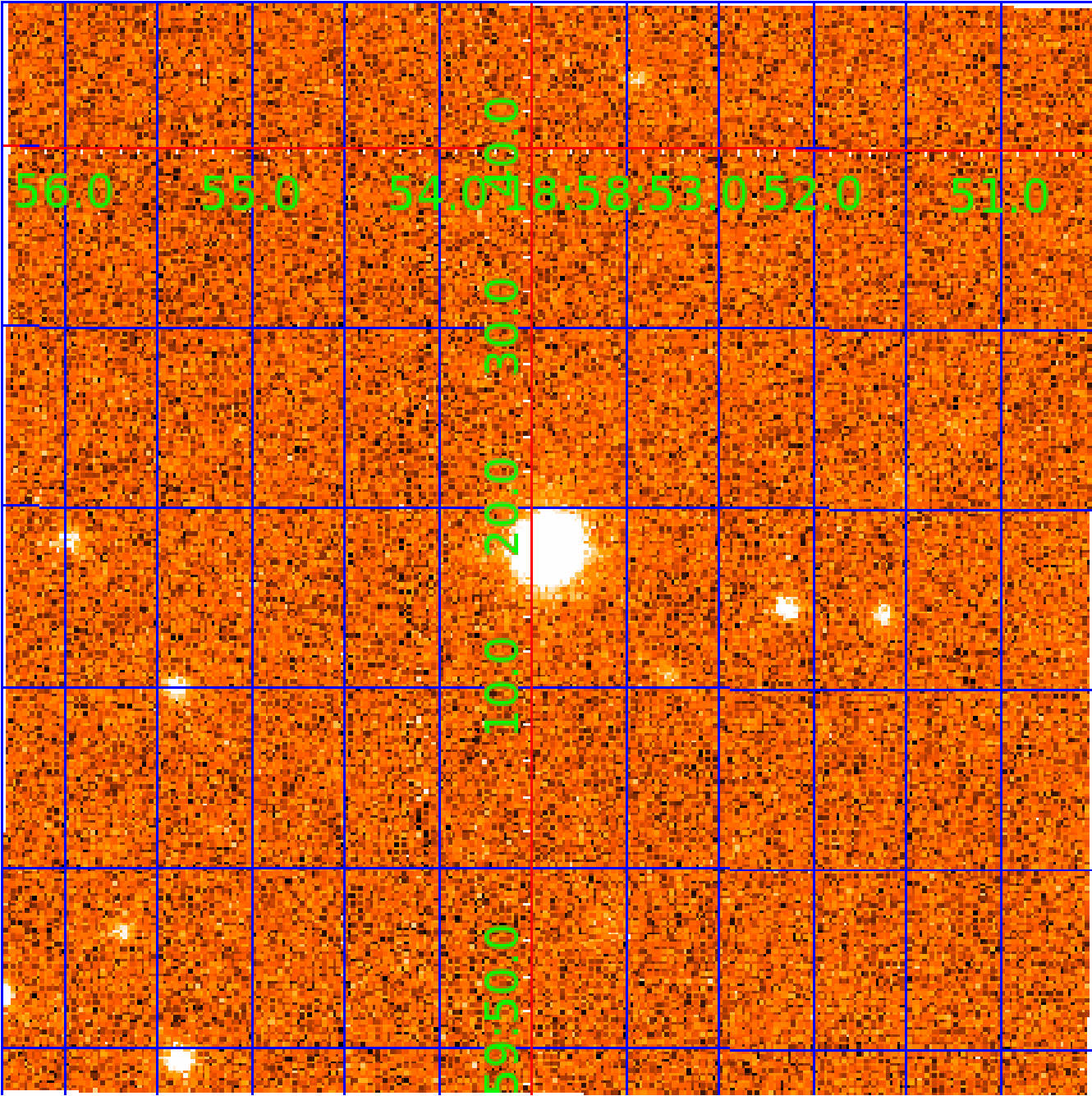


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009450940

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})
009450940-01	OBS	No	0.548171	131.555190	19.2	1.321	8.6	7.4	1.80	8436	0.85	56158.11
009450940-02	OBS	No	288.753937	365.283660	477.1	2.208	7.7	7.0	1.80	8436	4.39	13.20

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009450940-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009450940-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—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.

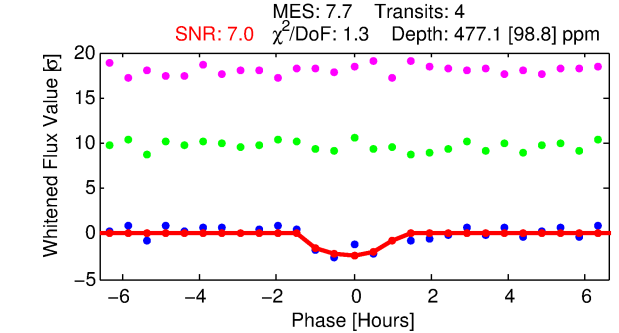
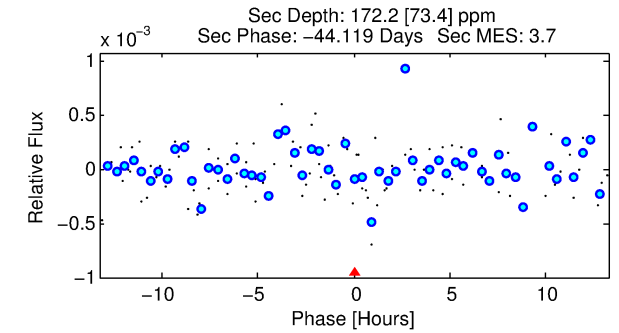
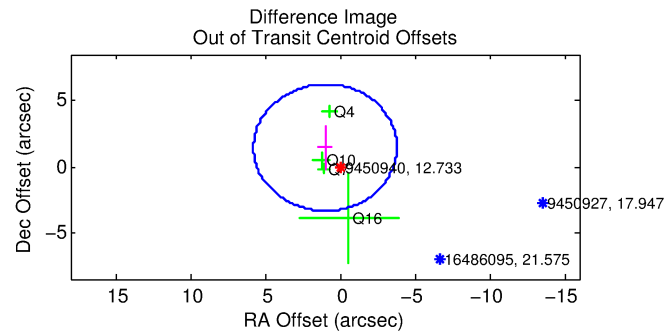
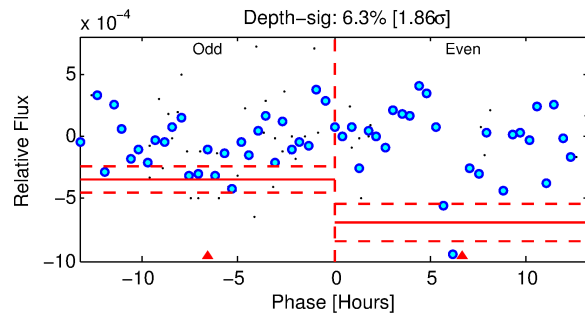
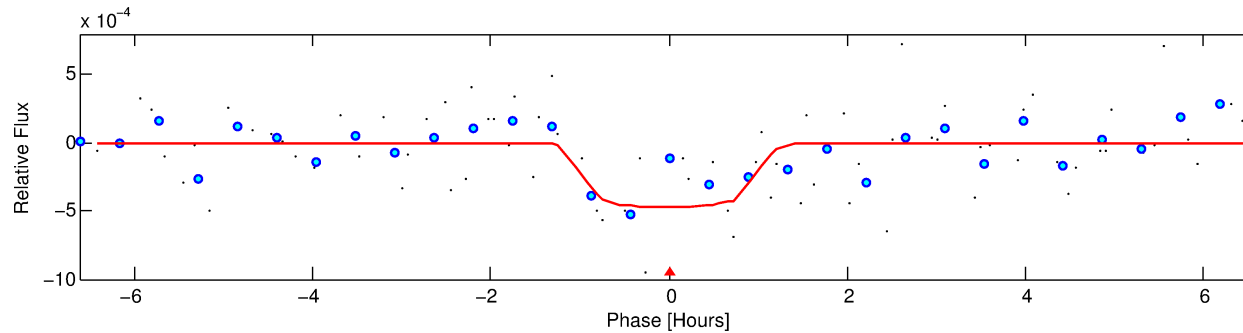
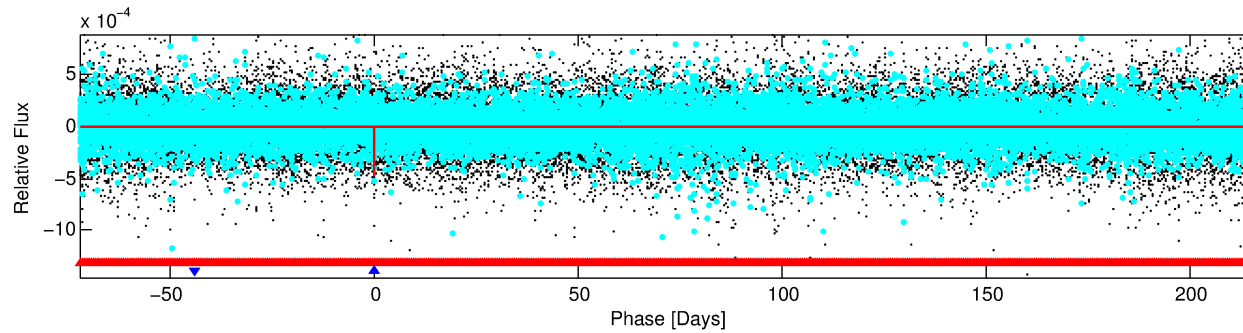
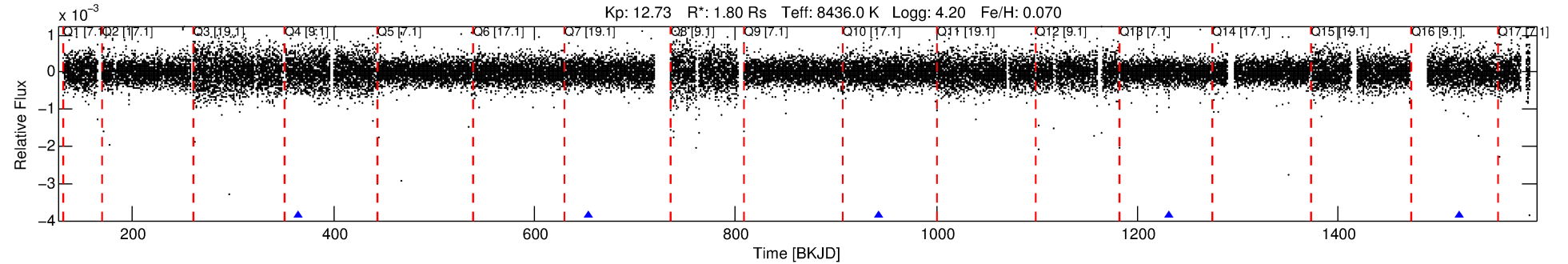
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009450940-02

No Significant Match Found

DV One-Page Summary

KIC: 9450940 Candidate: 2 of 2 Period: 288.754 d



DV Fit Results:

Period = 288.75394 [0.00344] d
Epoch = 365.2837 [0.0098] BKJD
Rp/R* = 0.0224 [0.0353]
a/R* = 593.02 [5750.08]
b = 0.83 [3.62]
Seff = 13.20 [4.70]
Teq = 486 [43] K
Rp = 4.39 [7.02] Re
a = 1.0542 [0.2271] AU
Ag = 5452.59 [17431.80] [0.31σ]
Teffp = 6458 [5144] K [1.16σ]

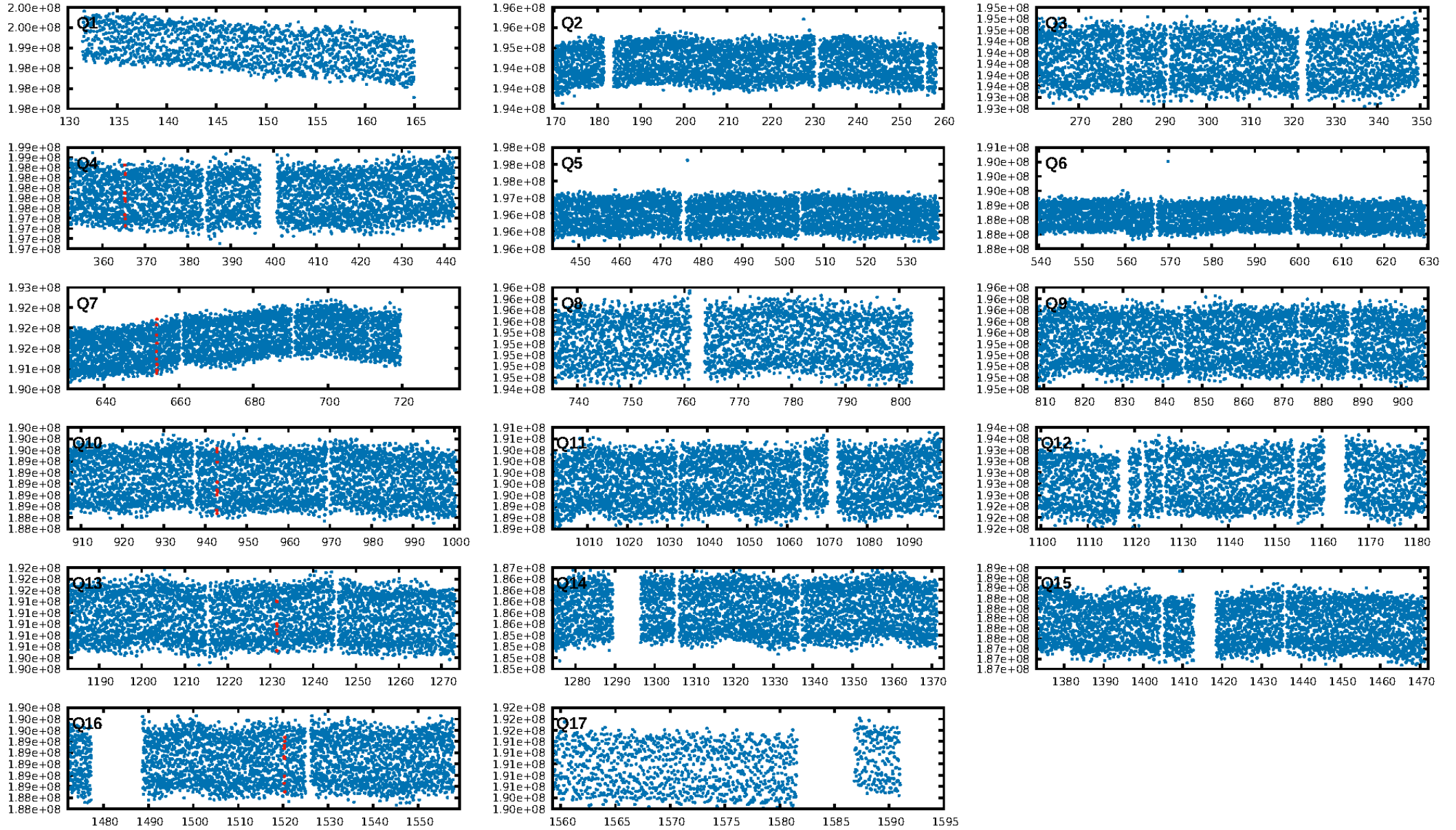
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [2688.56σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 4.8%
ModelChiSquareGof-sig: 72.8%
Bootstrap-pfa: 1.03e-09
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.686
Centroid-sig: 93.8%
Centroid-so: 0.216 arcsec [0.36σ]
OotOffset-rm: 1.746 arcsec [1.09σ]
OotOffset-st: 1/1/2/0 [4]
KicOffset-rm: 1.745 arcsec [1.42σ]
KicOffset-st: 1/1/2/0 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 0.00 [0/4]

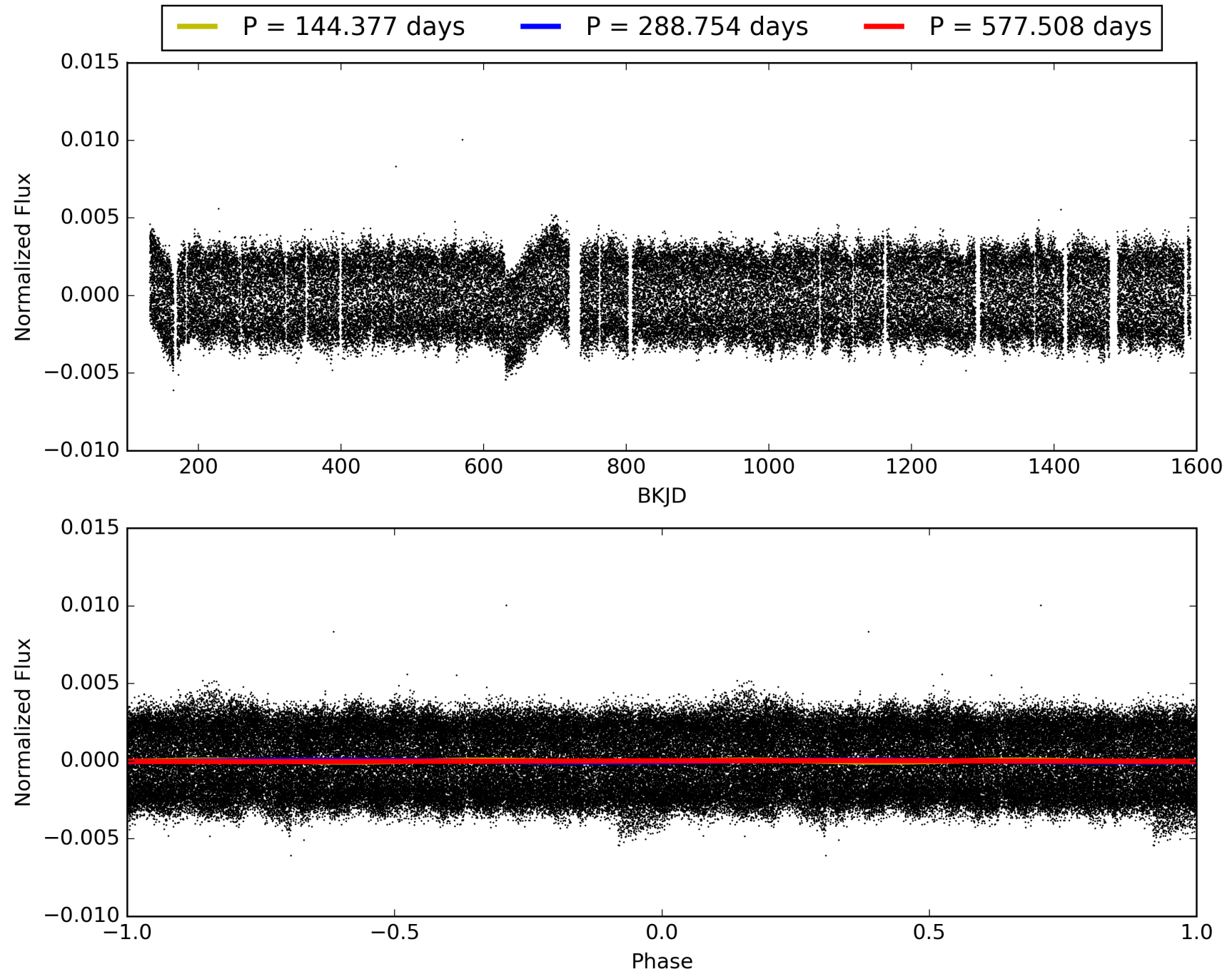
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:56:19 Z

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

TCE 009450940-02, PDC Light Curves

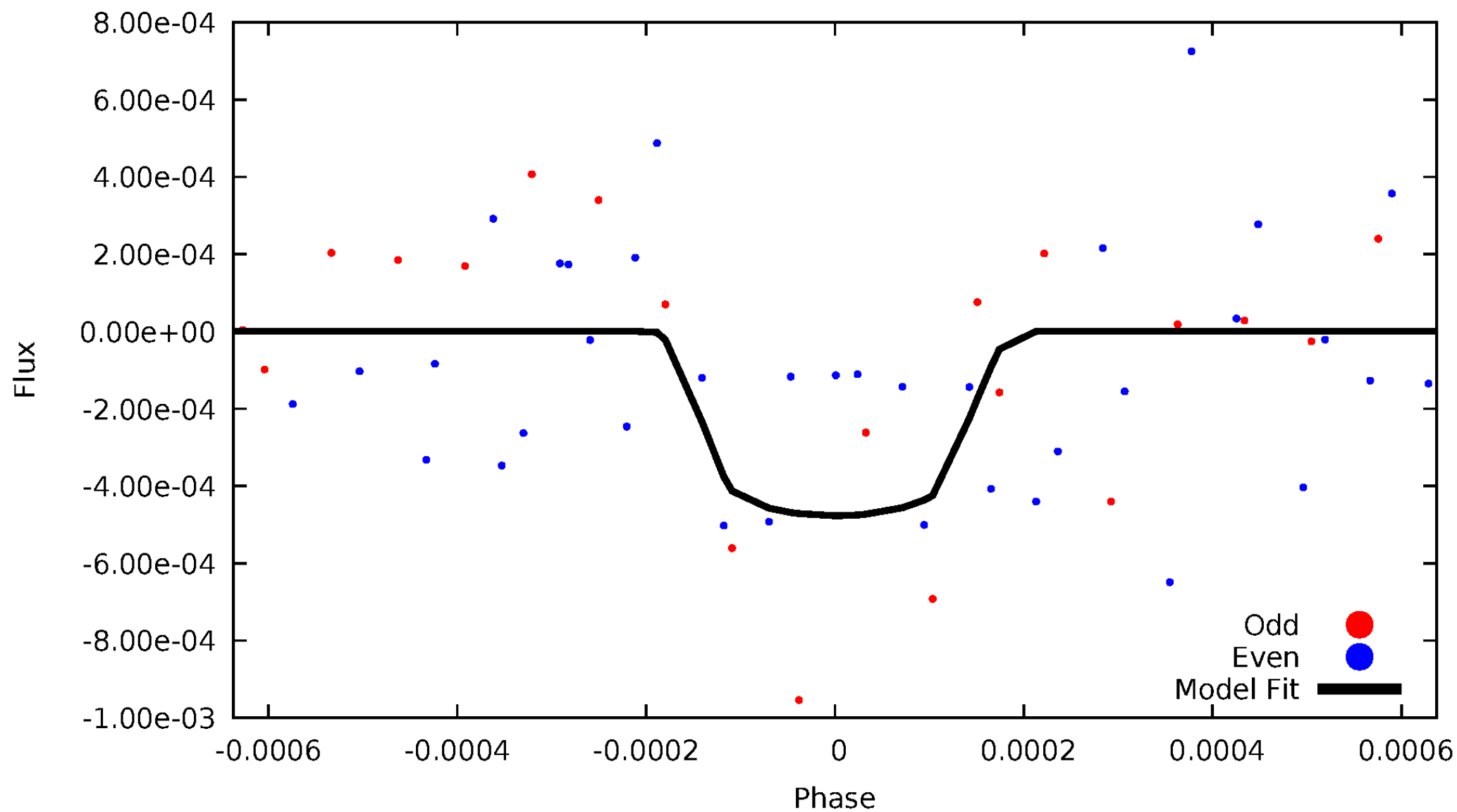


TCE 009450940-02



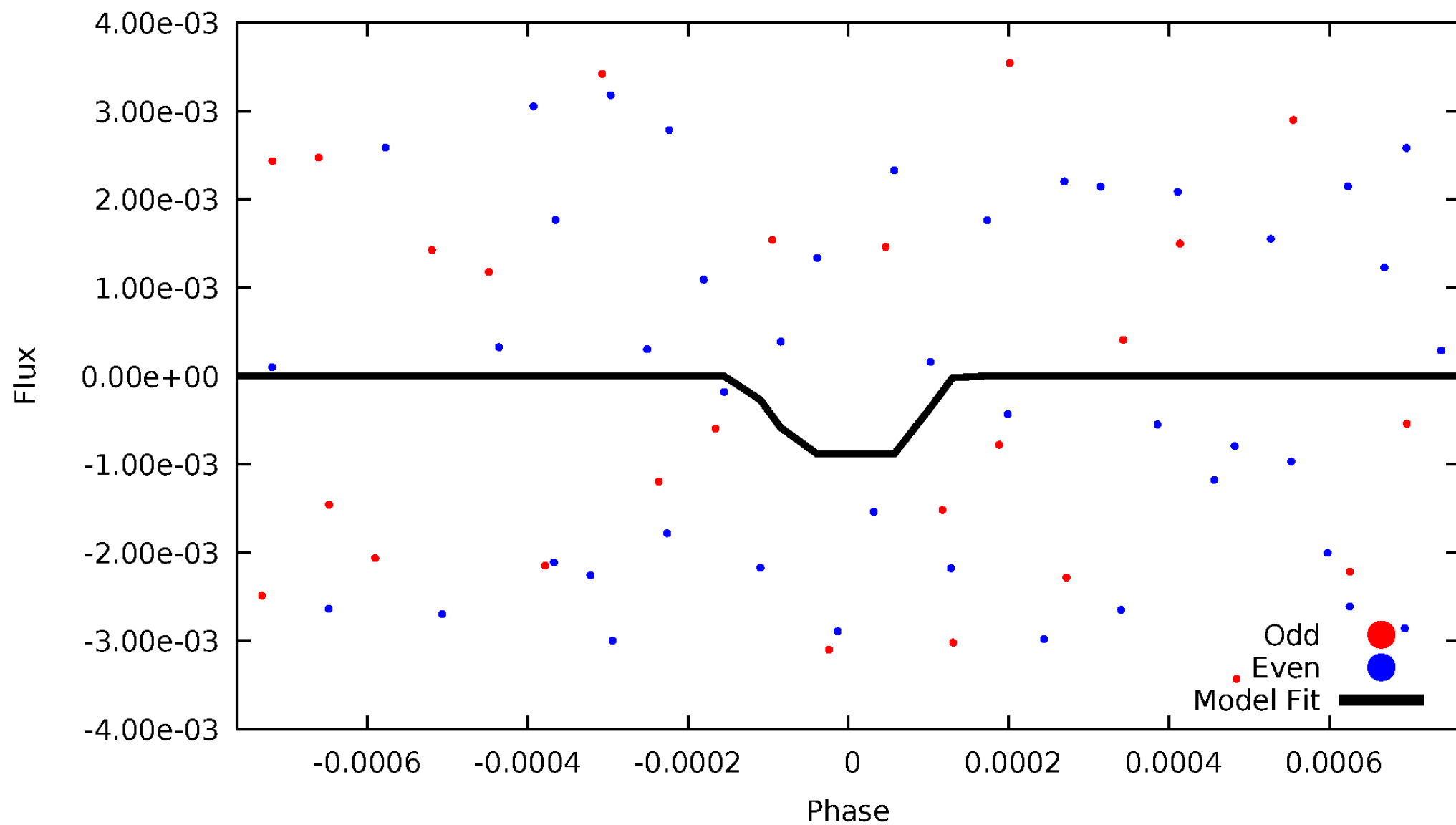
DV Odd/Even

TCE 009450940-02



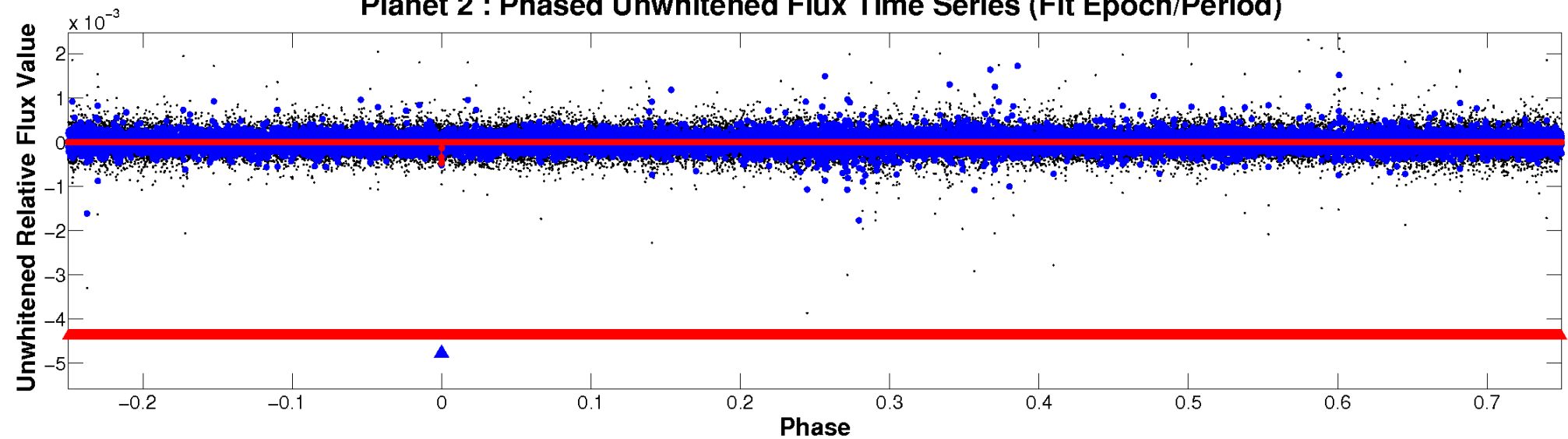
ALT Odd/Even

TCE 009450940-02

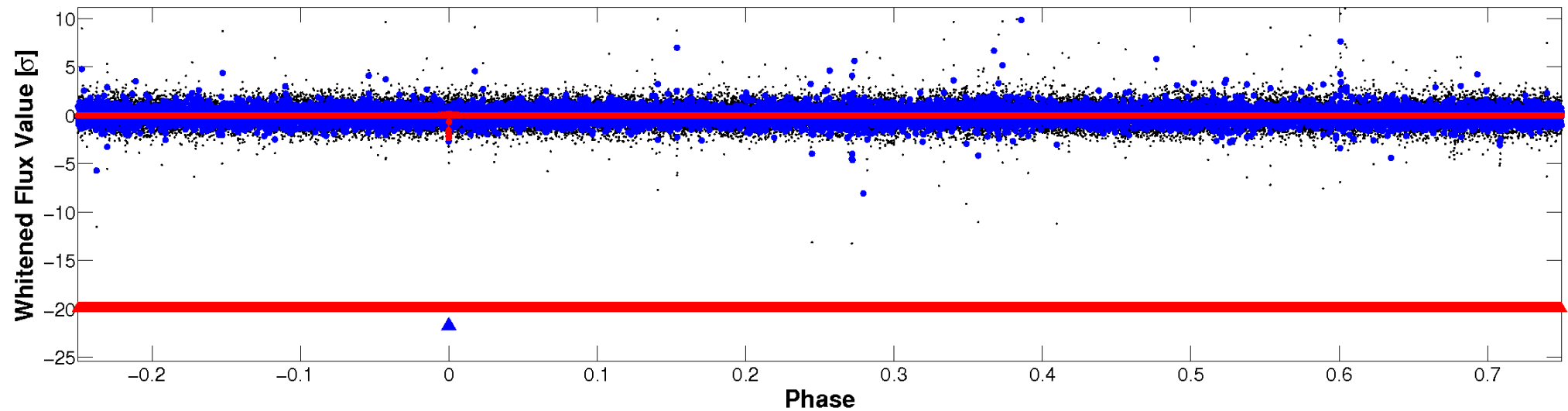


Non-Whitened Vs. Whitened Light Curve

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

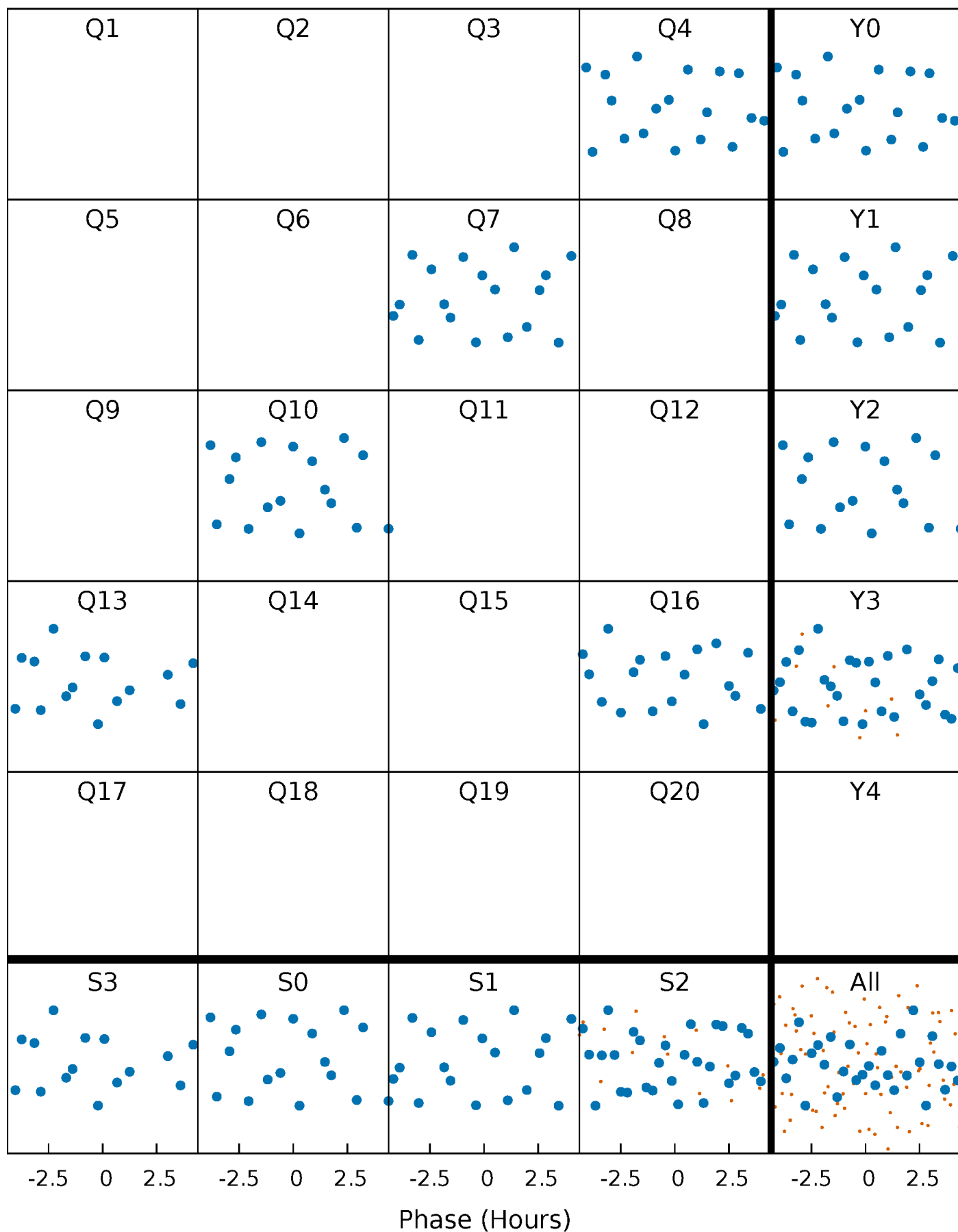


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



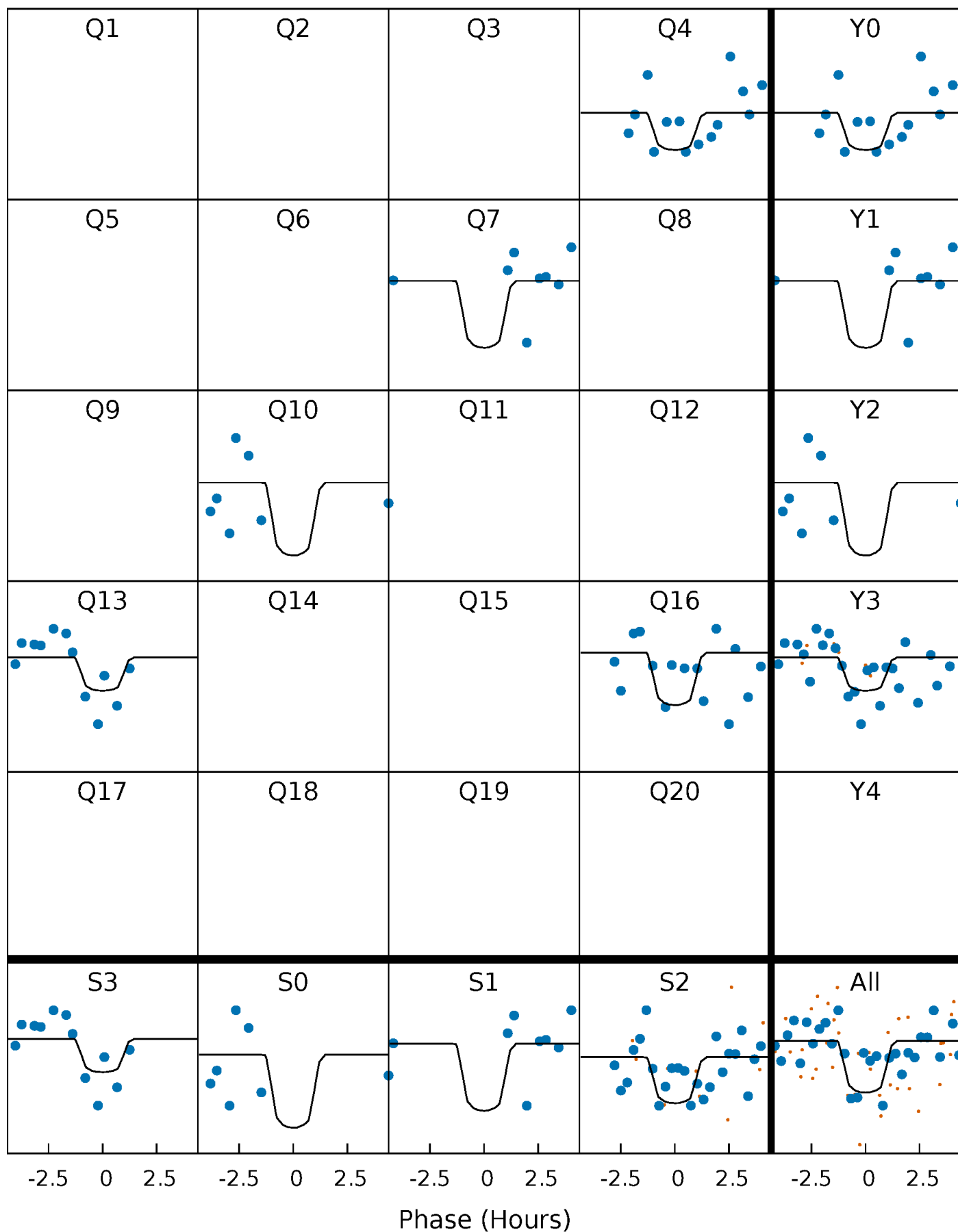
PDC Quarter-Phased Transit Curves

TCE 009450940-02 P=288.753937 Days $T_0=365.283660$ (BKJD)



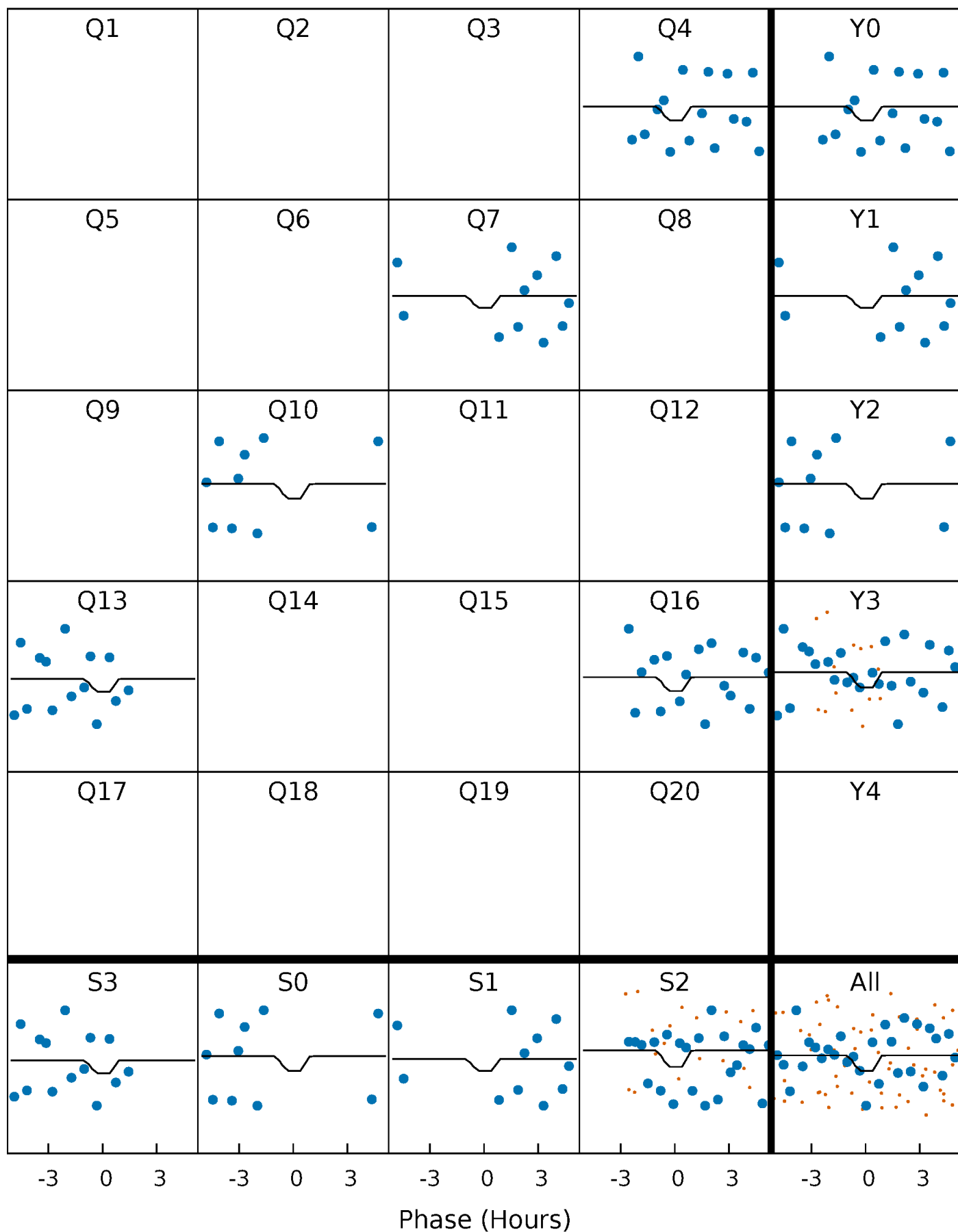
DV Quarter-Phased Transit Curves

TCE 009450940-02 $P=288.753937$ Days $T_0=365.283660$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

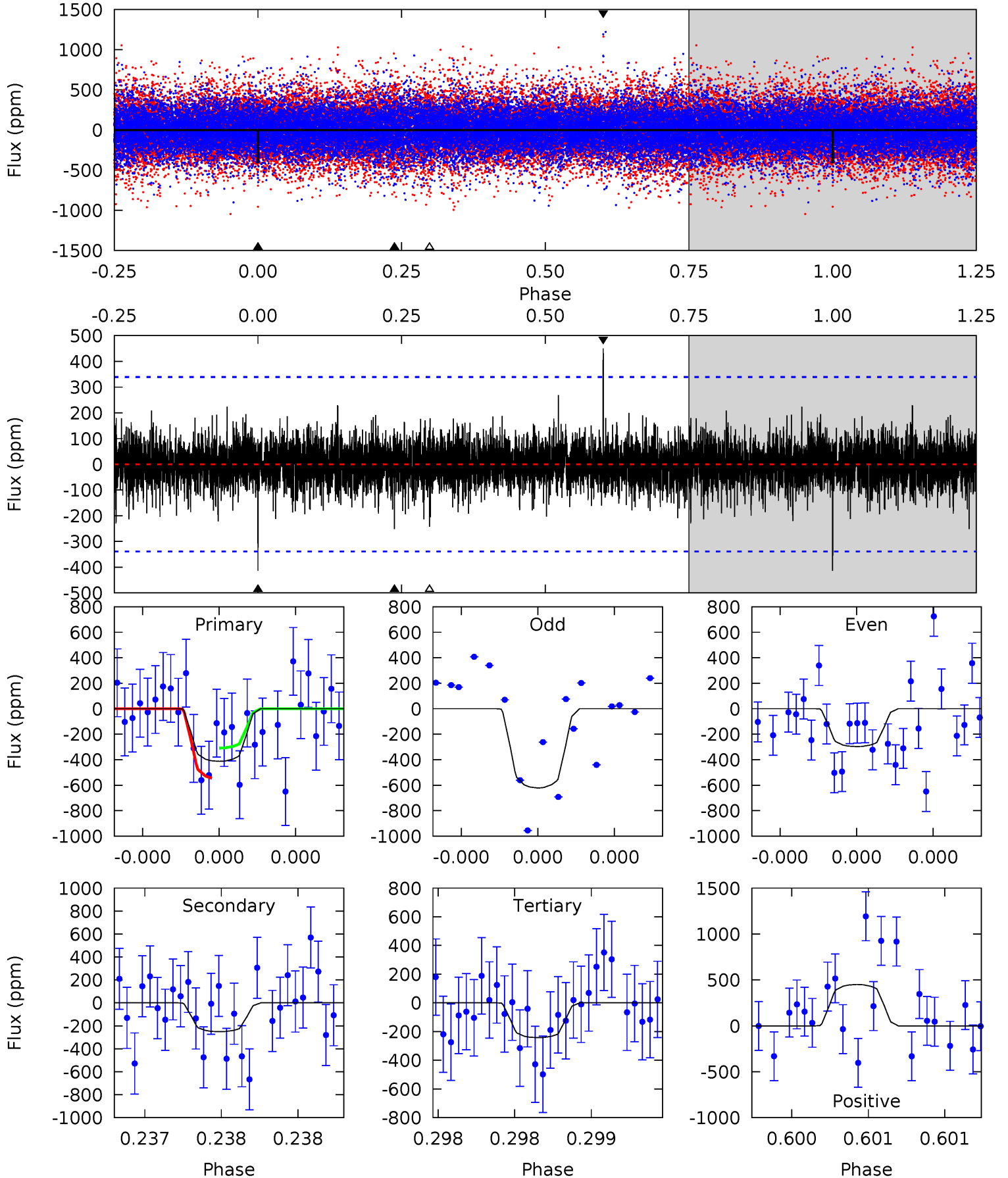
TCE 009450940-02 P=288.749002 Days $T_0=365.294431$ (BKJD)



DV Model-Shift Uniqueness Test

009450940-02, P = 288.753937 Days, E = 76.529723 Days

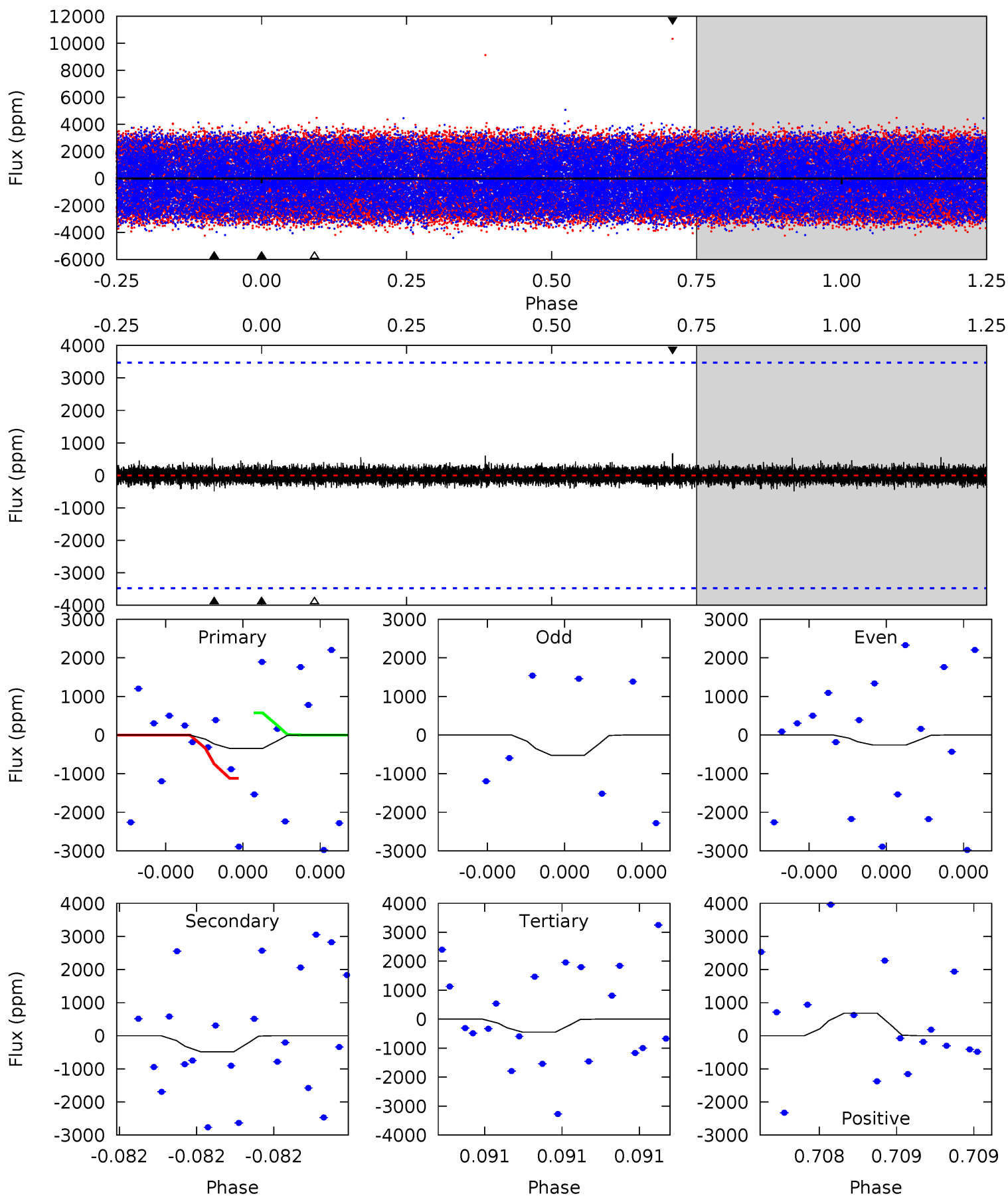
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.84	4.16	4.01	7.45	5.62	3.54	0.96	2.82	-0.62	0.14	-3.30	2.67	1.25	0.52	1.90



Alt Model-Shift Uniqueness Test

009450940-02, P = 288.749002 Days, E = 76.545429 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.57	0.80	0.73	1.12	5.71	3.69	0.20	-0.16	-0.55	0.06	-0.33	0.20	0.96	0.58	0.44



Stellar Parameters For KIC 009450940

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8436^{+233}_{-366}	$4.201^{+0.091}_{-0.169}$	$0.070^{+0.250}_{-0.550}$	$1.798^{+0.464}_{-0.309}$	$1.875^{+0.297}_{-0.363}$	$0.454^{+0.215}_{-0.199}$
	+3%/-4%	+2%/-4%	+357%/-786%	+26%/-17%	+16%/-19%	+47%/-44%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009450940-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-251 ± 60	$7.41^{+6.09}_{-4.84}$	684^{+47}_{-38}	5287^{+4273}_{-1077}	2617^{+19375}_{-1782}
Alt.	-484 ± 608	$7.63^{+7.06}_{-4.75}$	686^{+46}_{-41}	5619^{+5143}_{-9793}	3352^{+25708}_{-4206}

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 $A_{obs} \gg 1.0$

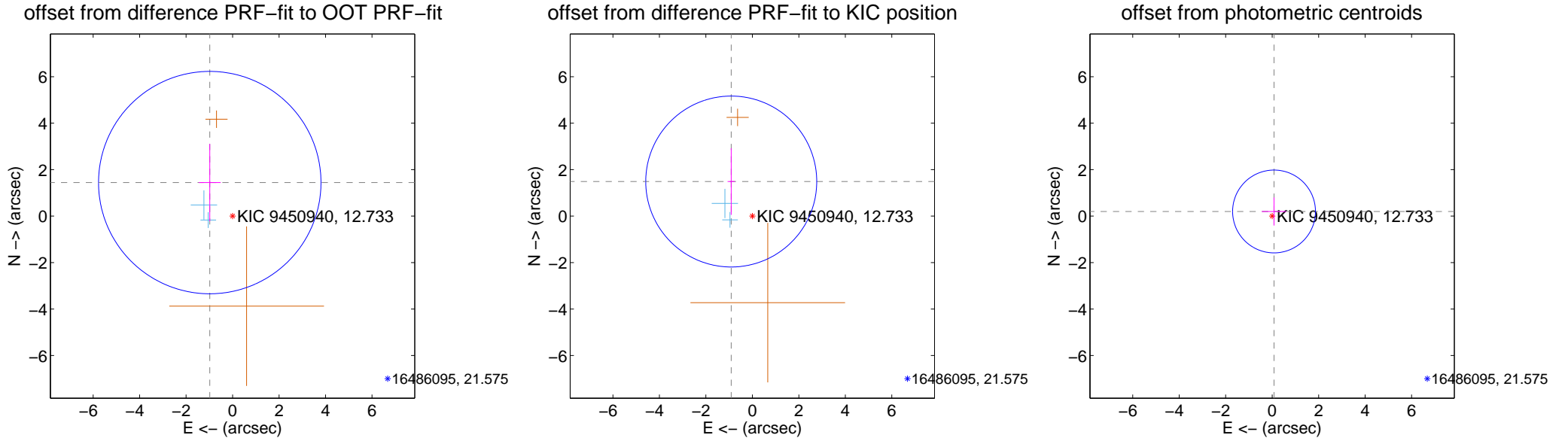
DV Centroid Data

Supplemental centroid analysis for 009450940-02. Kepler magnitude: 12.73. Transit SNR 6.95

There are 2 quarters with good PRF difference image offsets

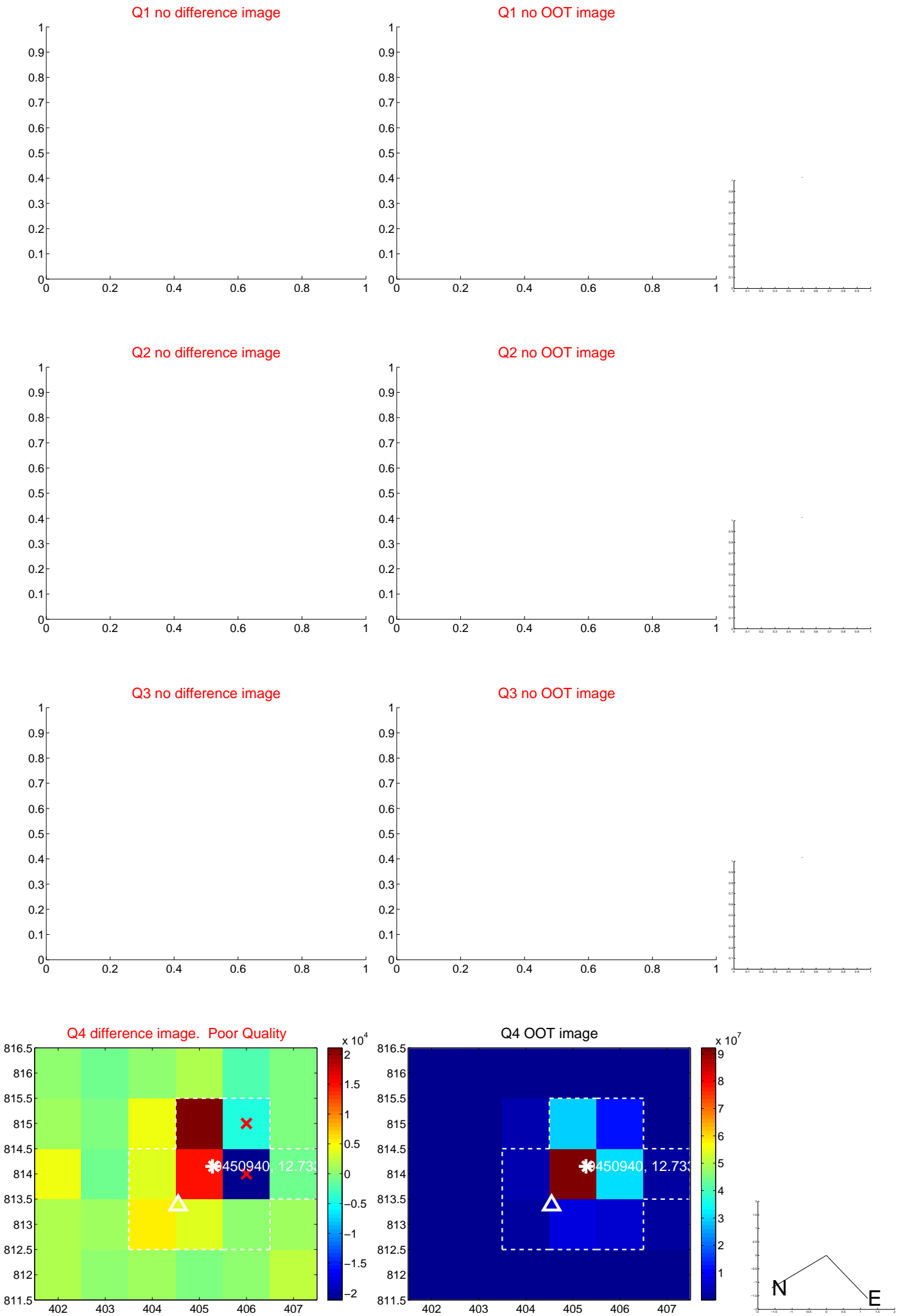
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.746 ± 1.596	1.09	0.982 ± 0.471	1.443 ± 1.665
PRF-fit source offset from KIC position	1.745 ± 1.227	1.42	0.910 ± 0.158	1.489 ± 1.434
photometric centroid source offset	0.22 ± 0.59	0.36	-0.08 ± 0.53	0.20 ± 0.60

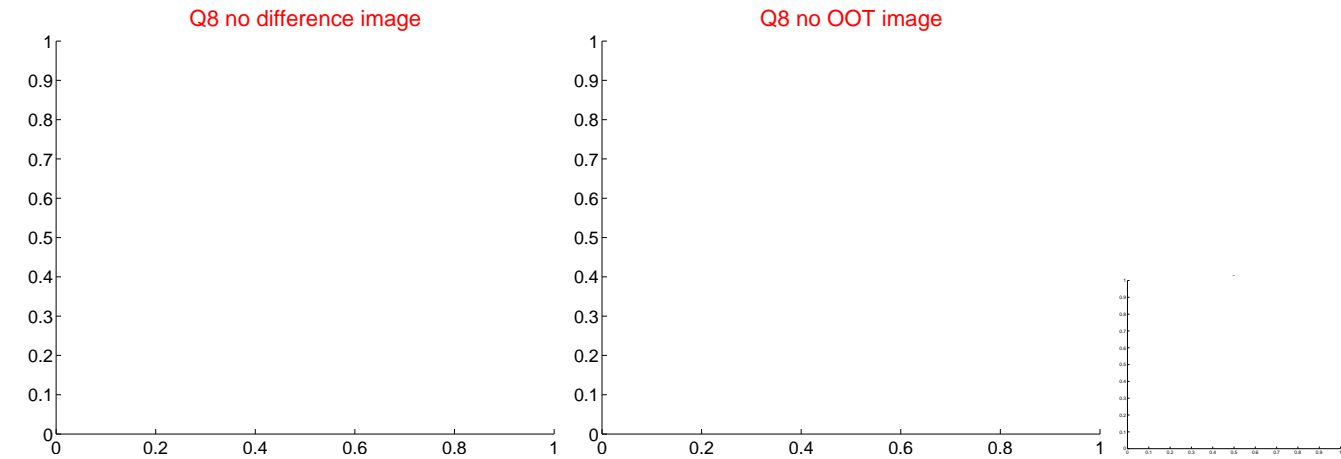
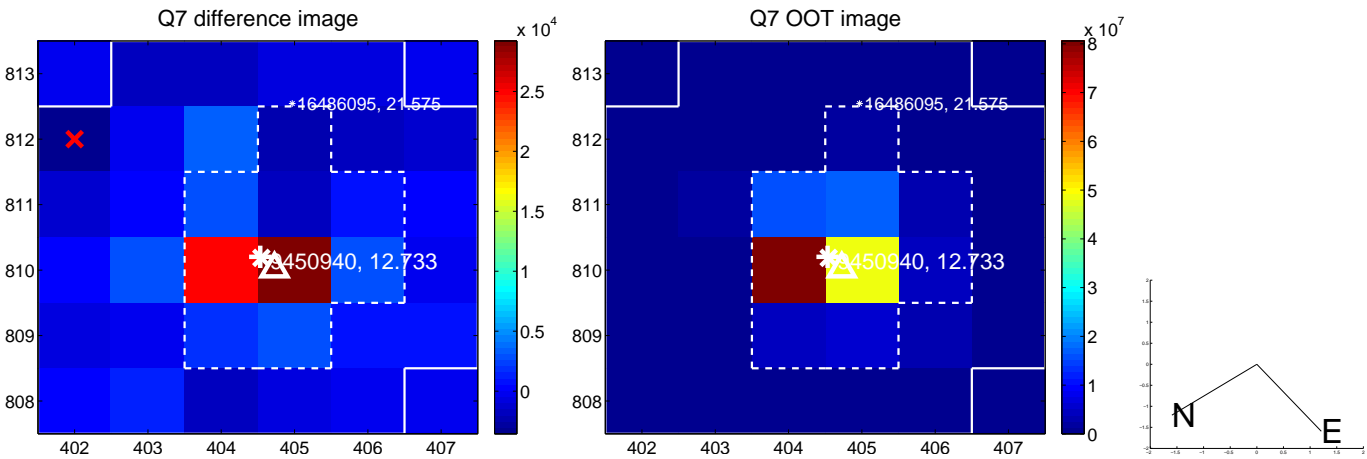
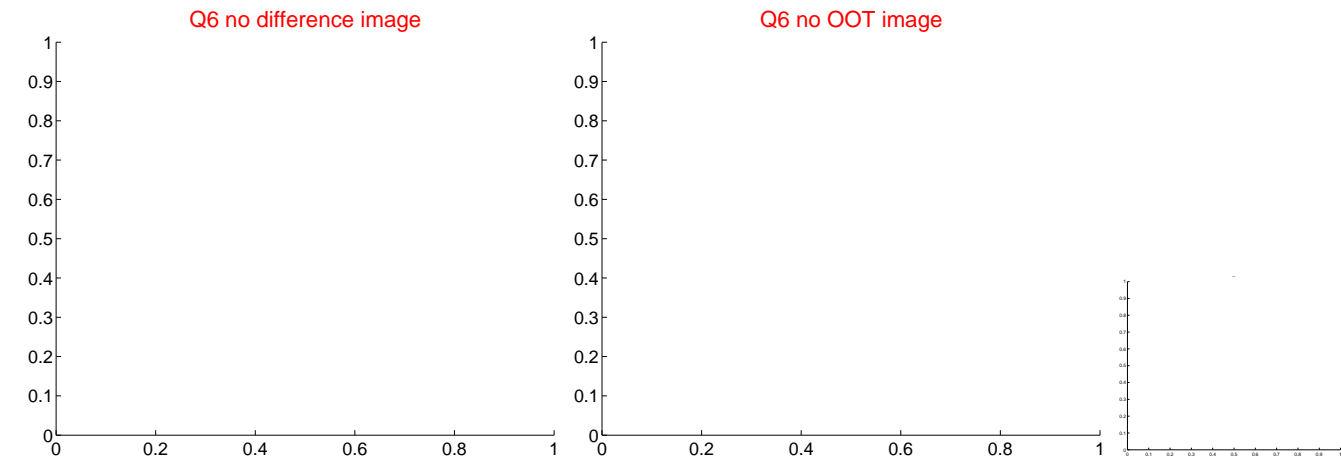
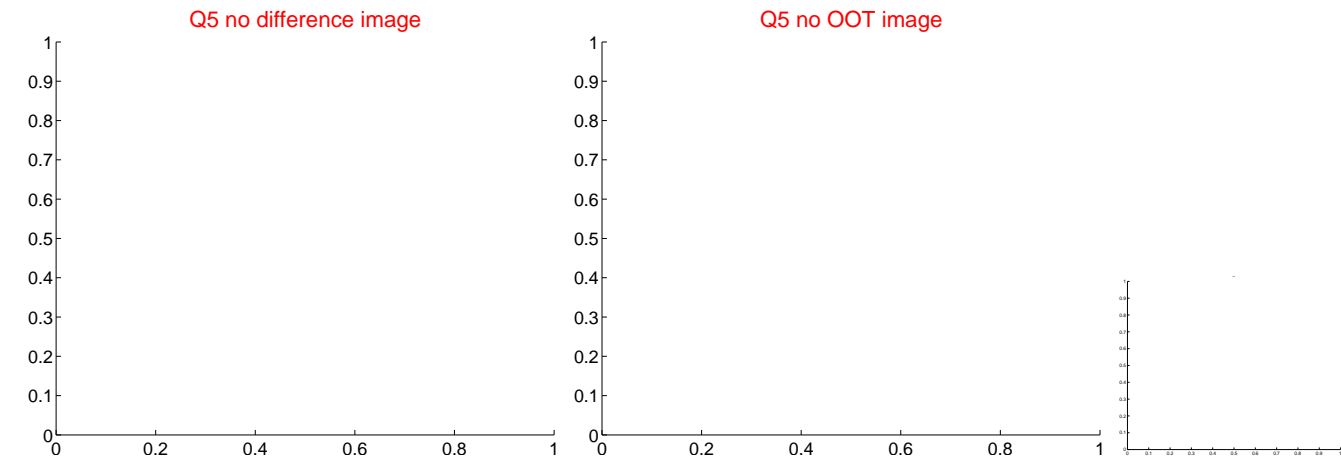


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

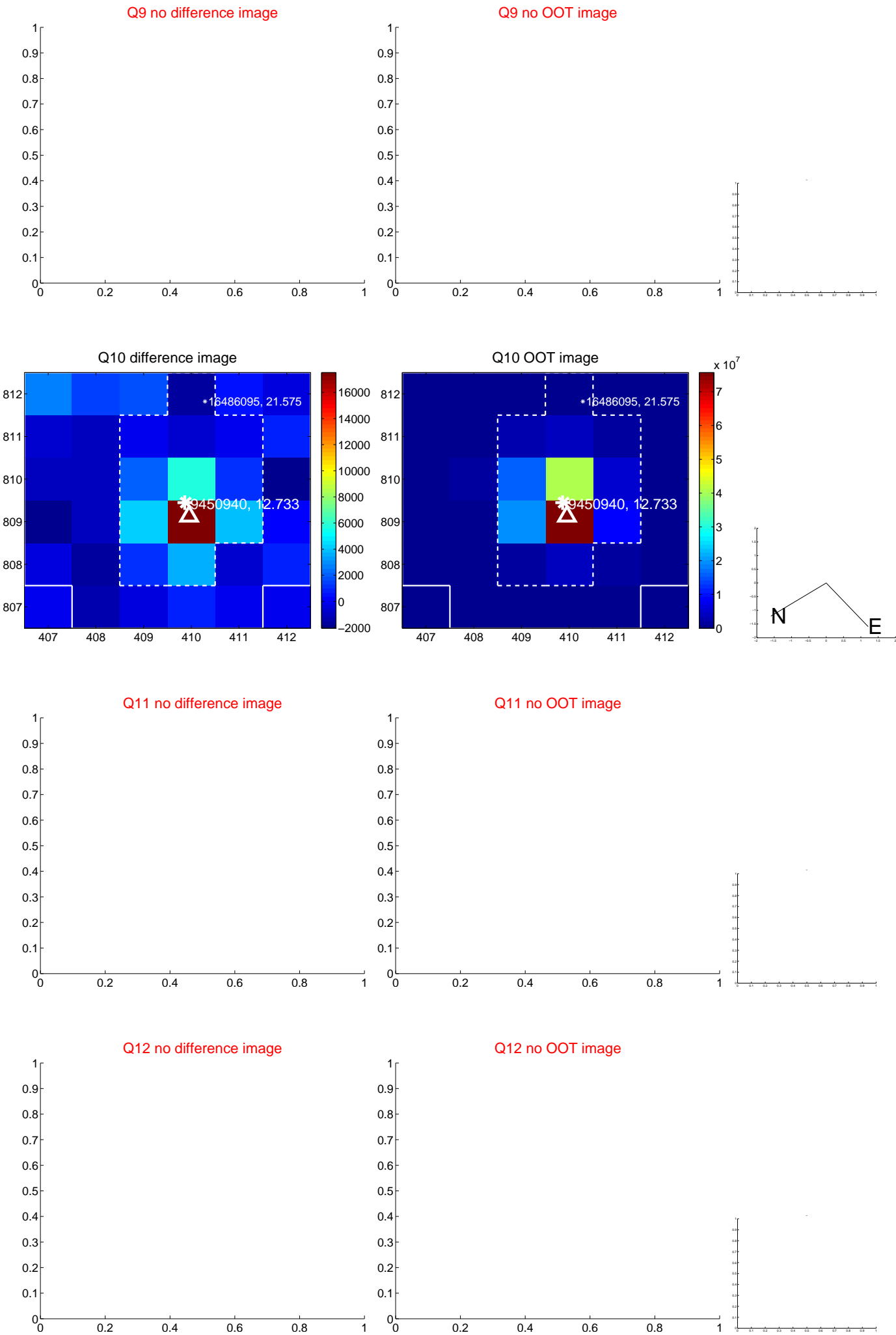
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



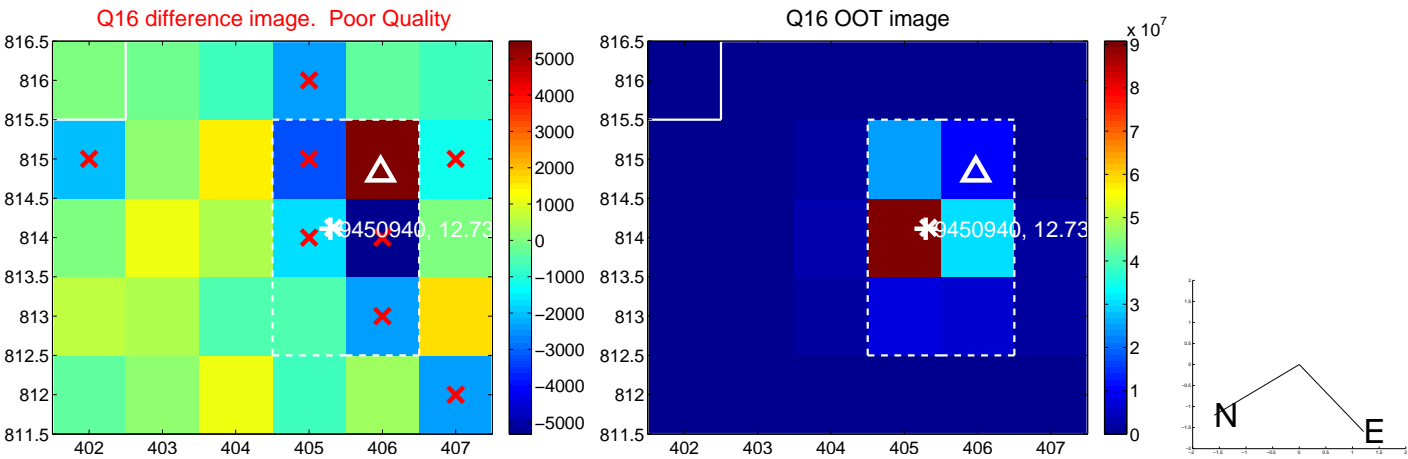
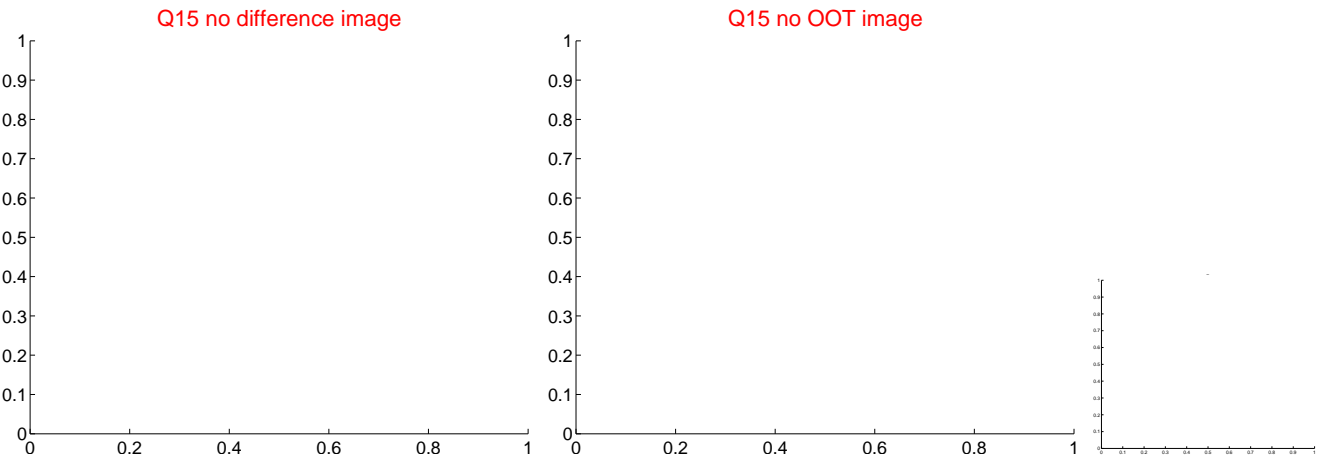
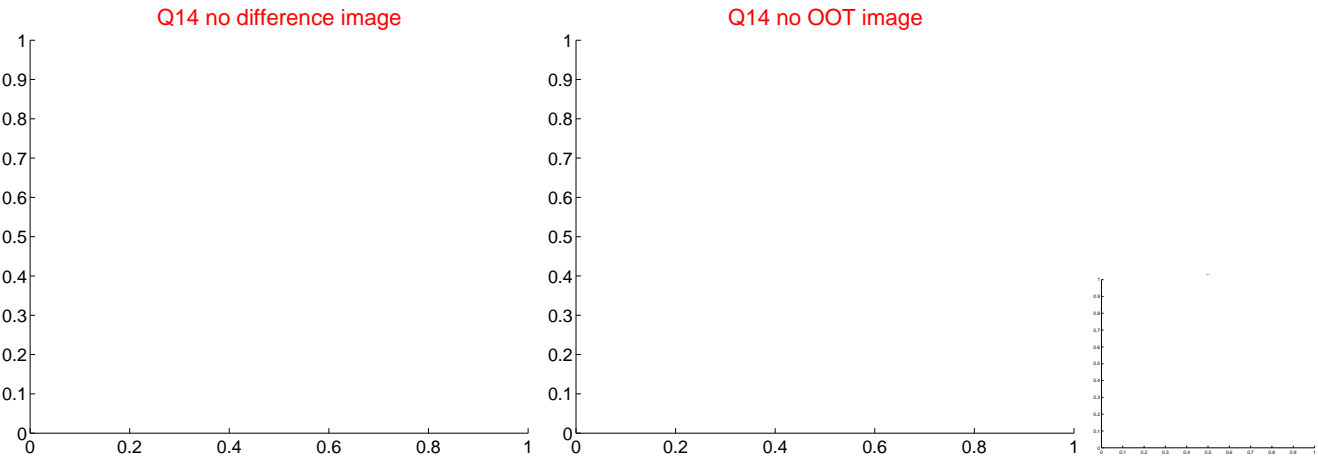
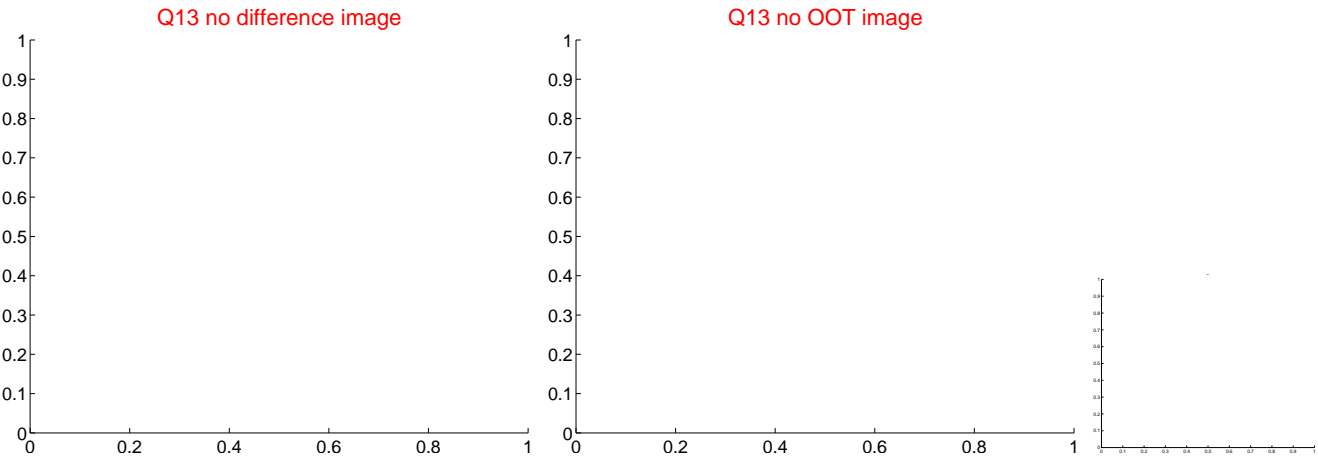
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



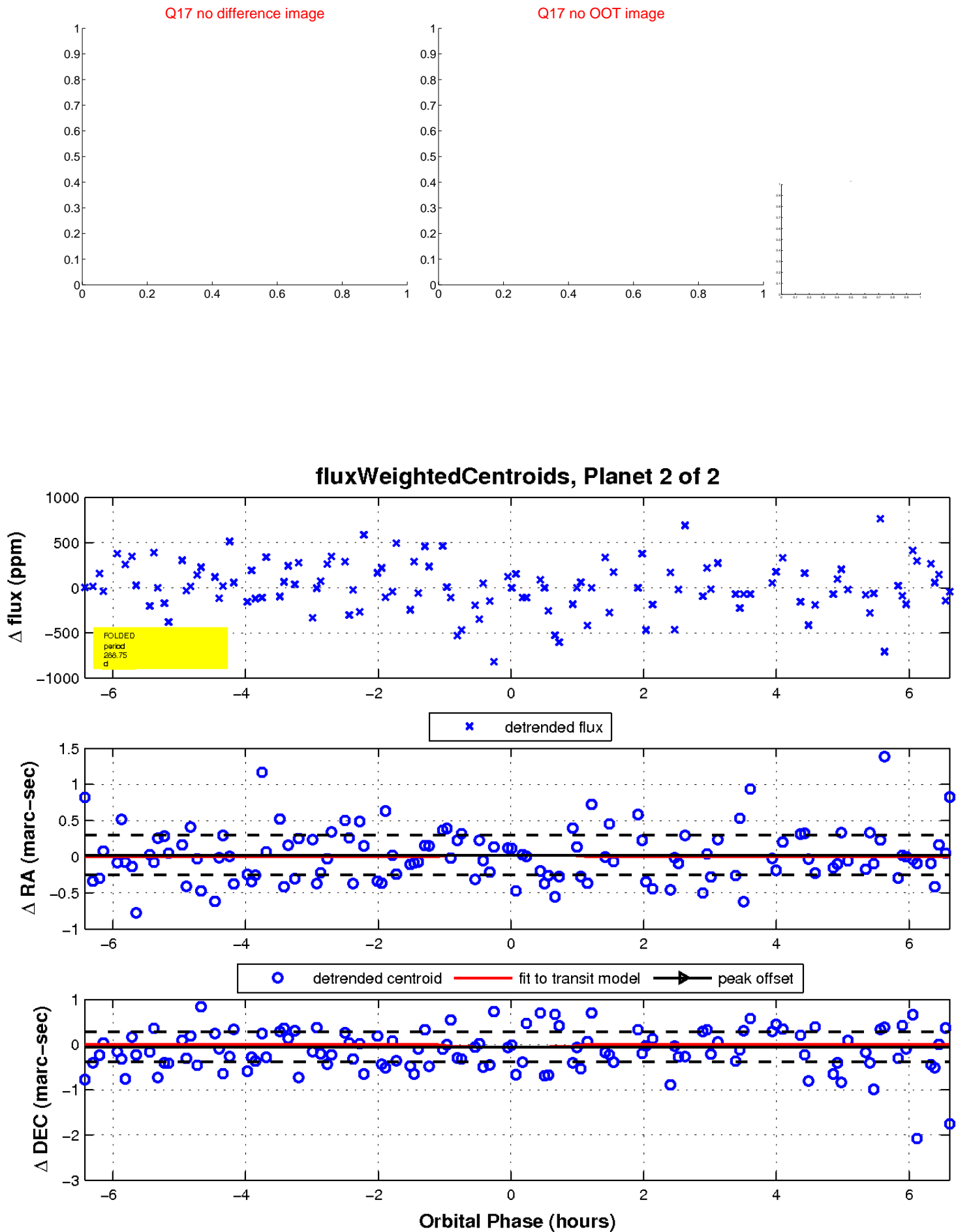
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

