

KIC 009306597

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})
009306597-01	OBS	No	239.364361	344.216111	5758.4	9.819	18.1	6.9	1.22	6602	16.54	3.89
009306597-02	OBS	No	402.433744	520.310225	3947.2	5.454	11.6	7.2	1.22	6602	13.93	1.95
009306597-03	OBS	No	578.180452	159.923487	6494.5	6.707	10.6	8.7	1.22	6602	17.57	1.20
009306597-04	OBS	No	446.425608	508.564665	2606.0	4.500	19.8	-1.0	1.22	6602	6.29	1.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009306597-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
009306597-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009306597-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009306597-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

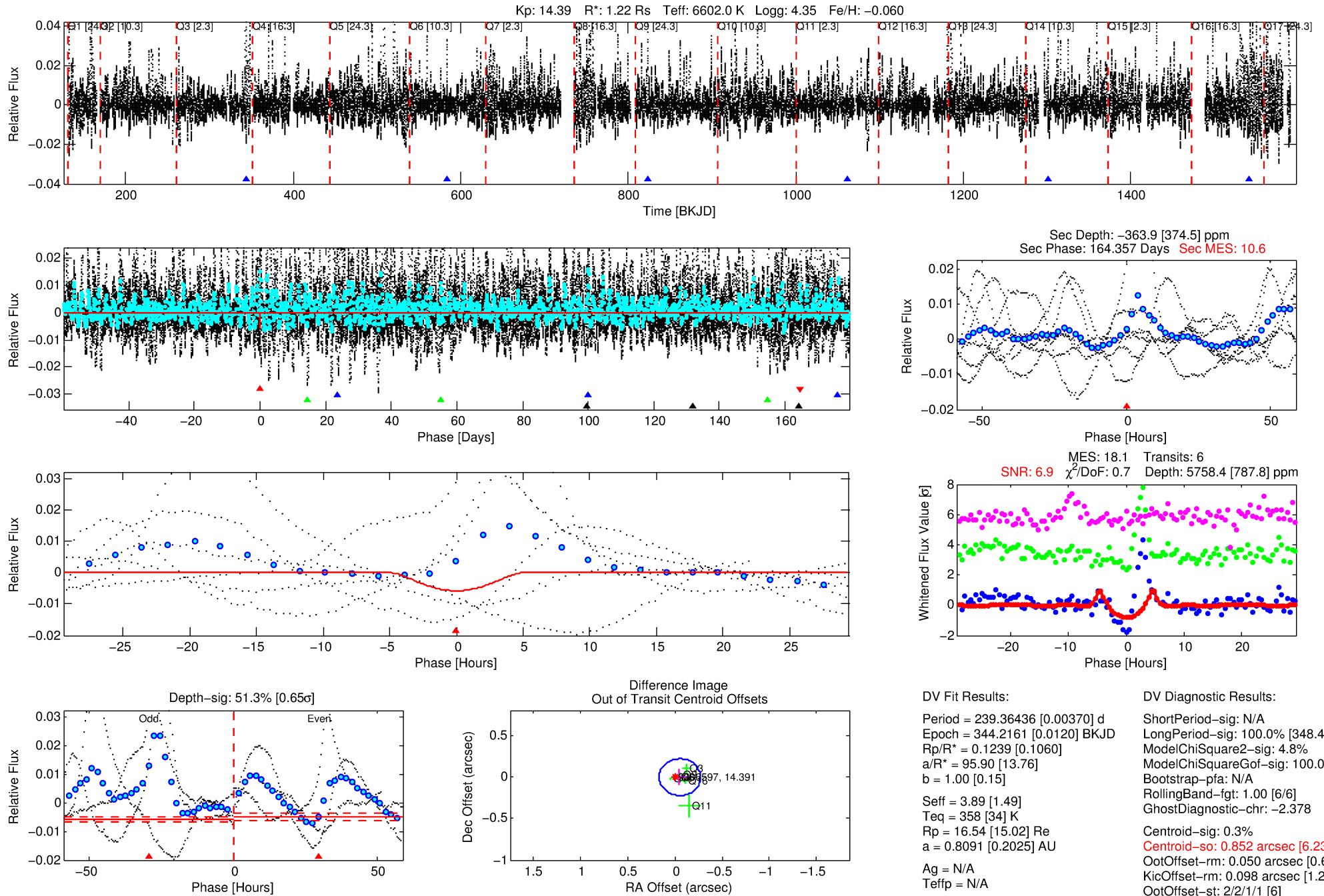
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009306597-01

No Significant Match Found

DV One-Page Summary

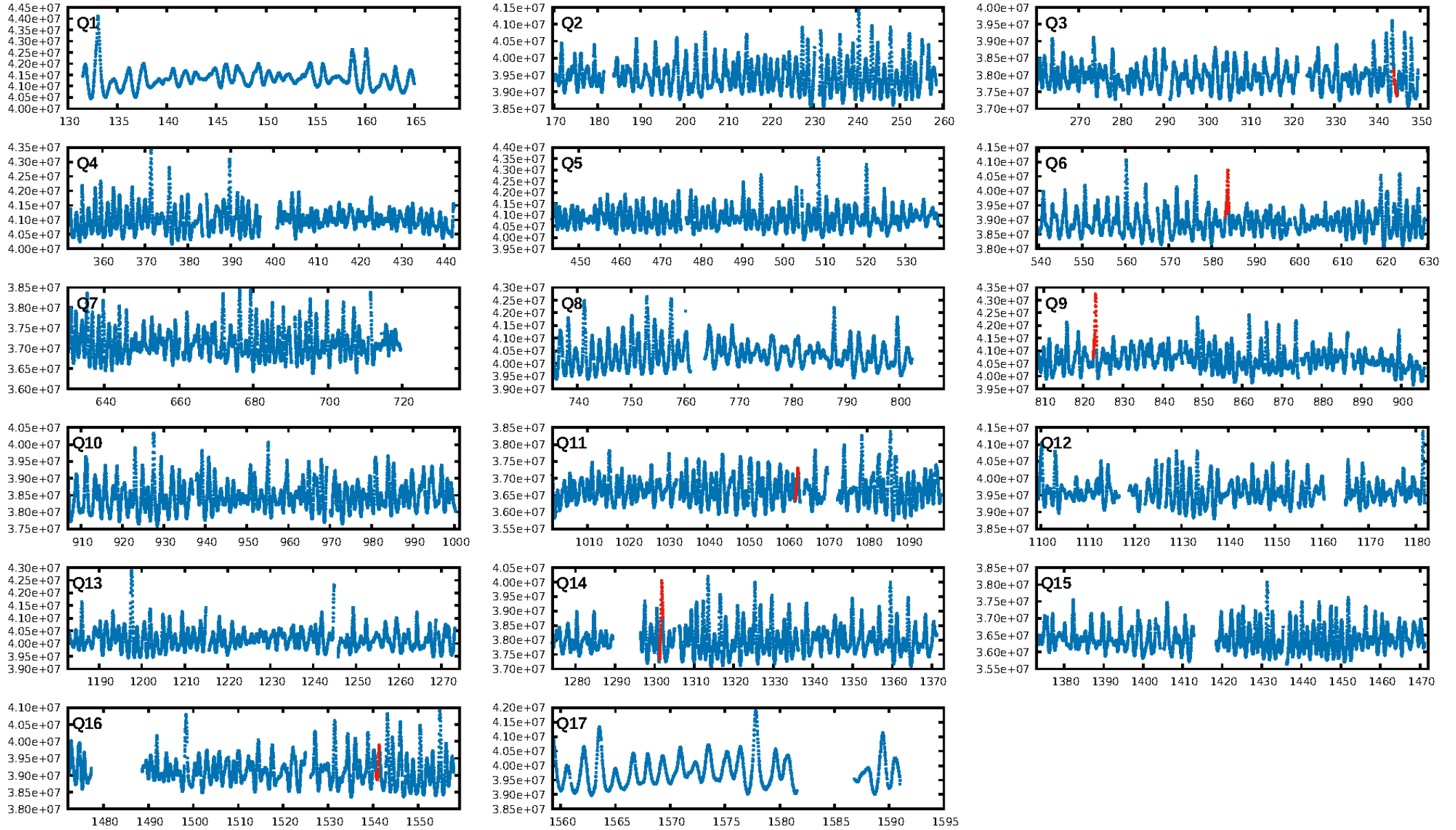
KIC: 9306597 Candidate: 1 of 4 Period: 239.364 d



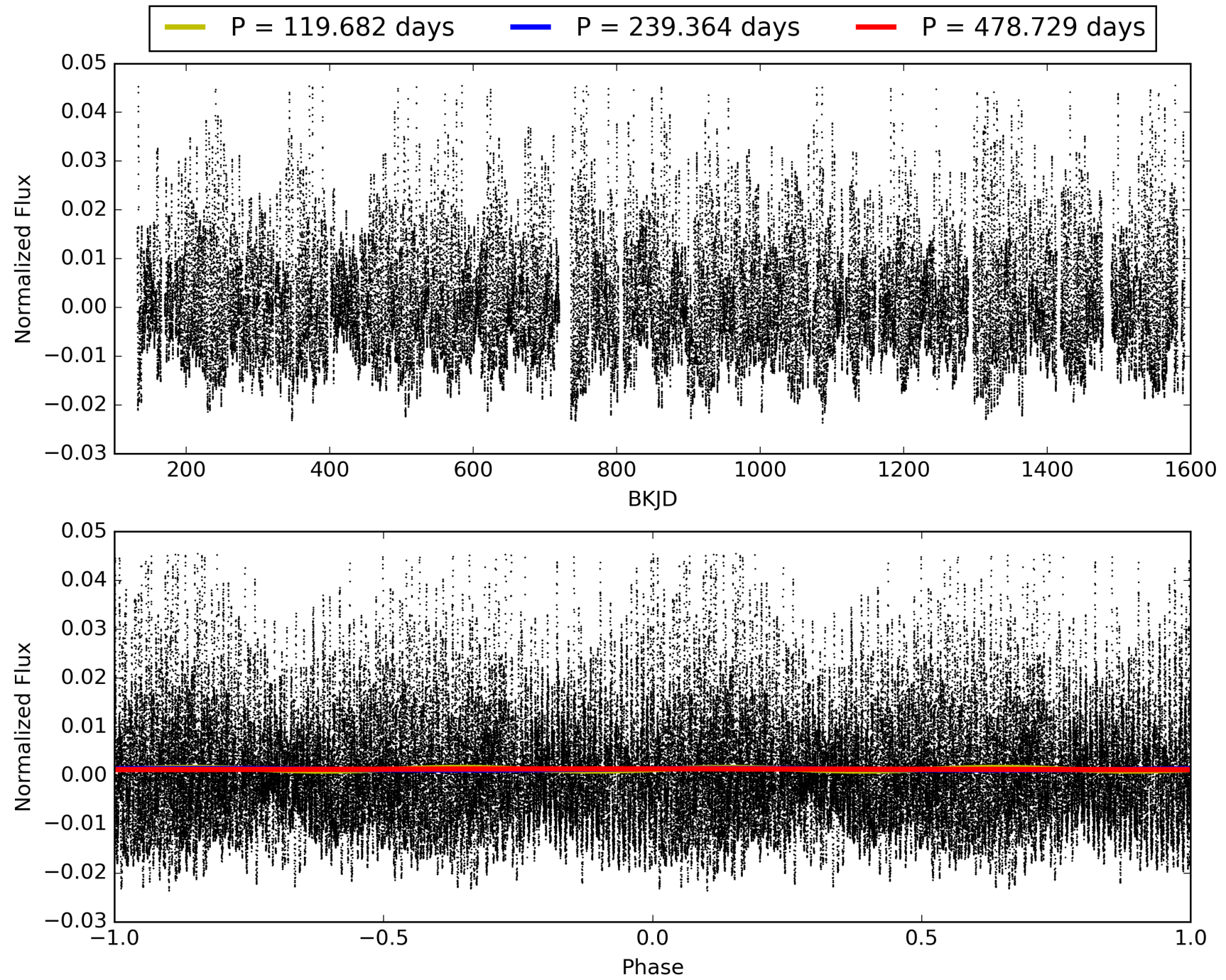
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:01:13 Z

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

TCE 009306597-01, PDC Light Curves

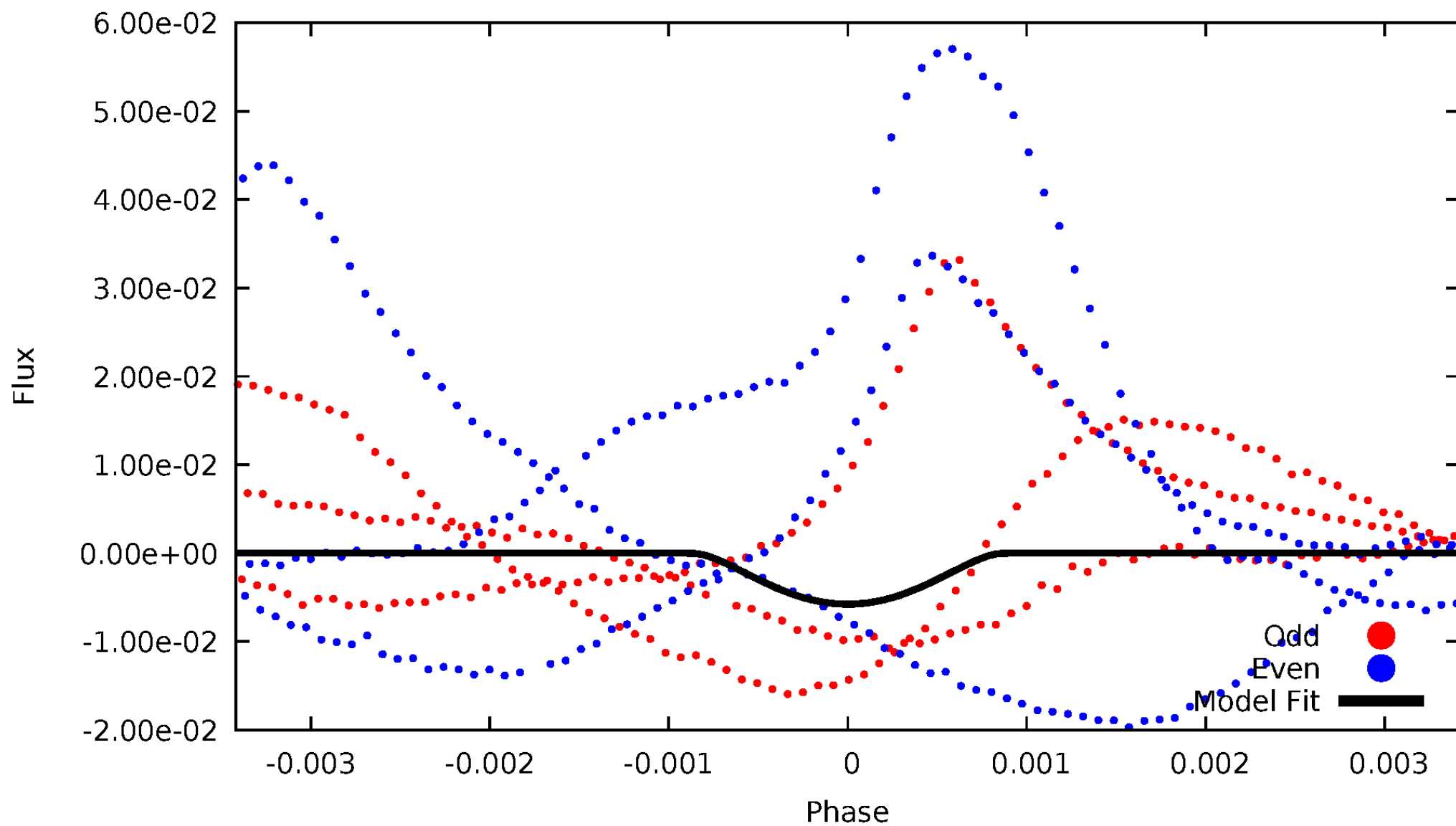


TCE 009306597-01



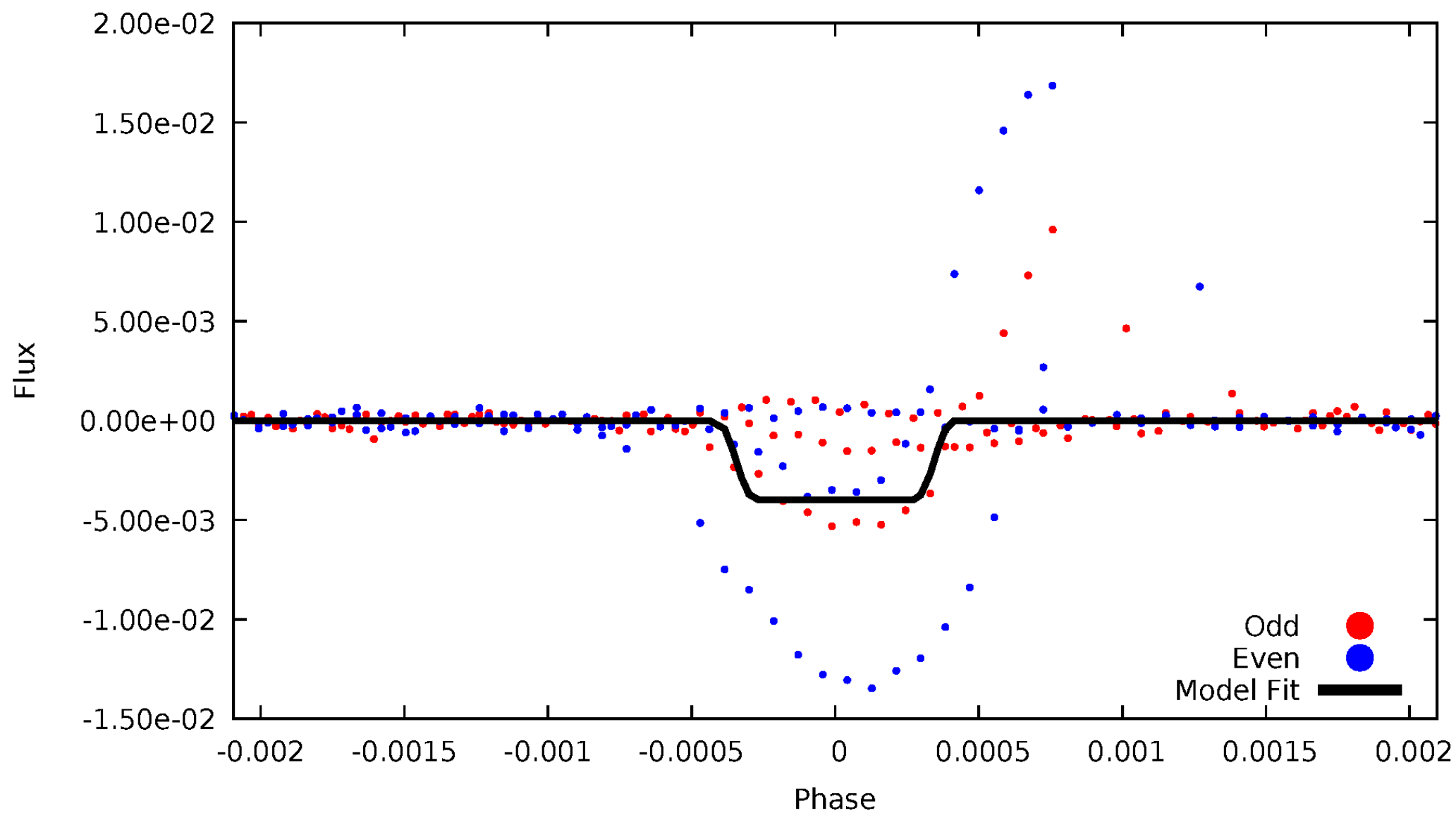
DV Odd/Even

TCE 009306597-01



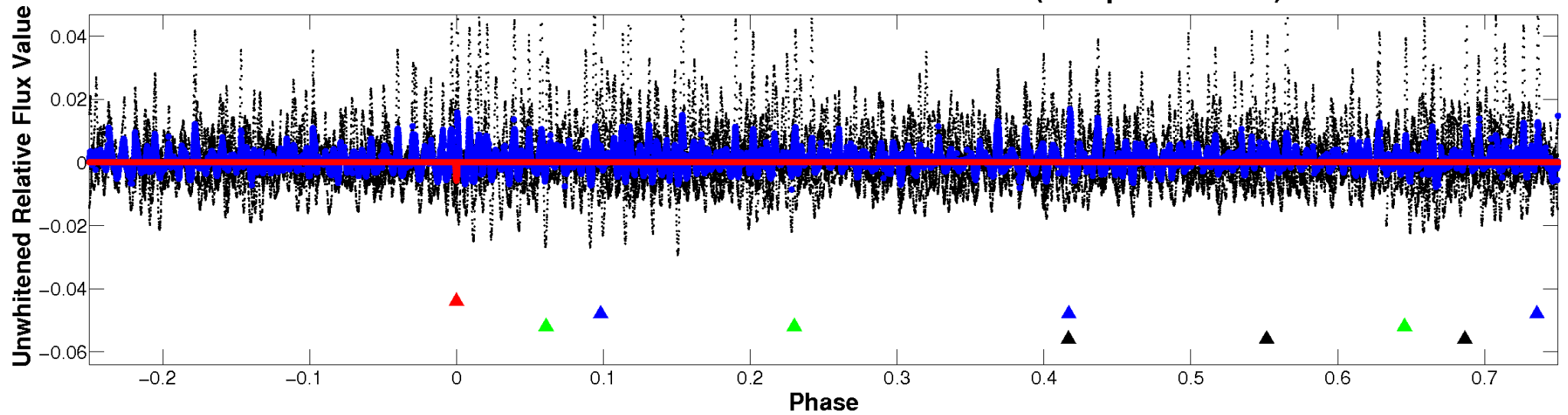
ALT Odd/Even

TCE 009306597-01

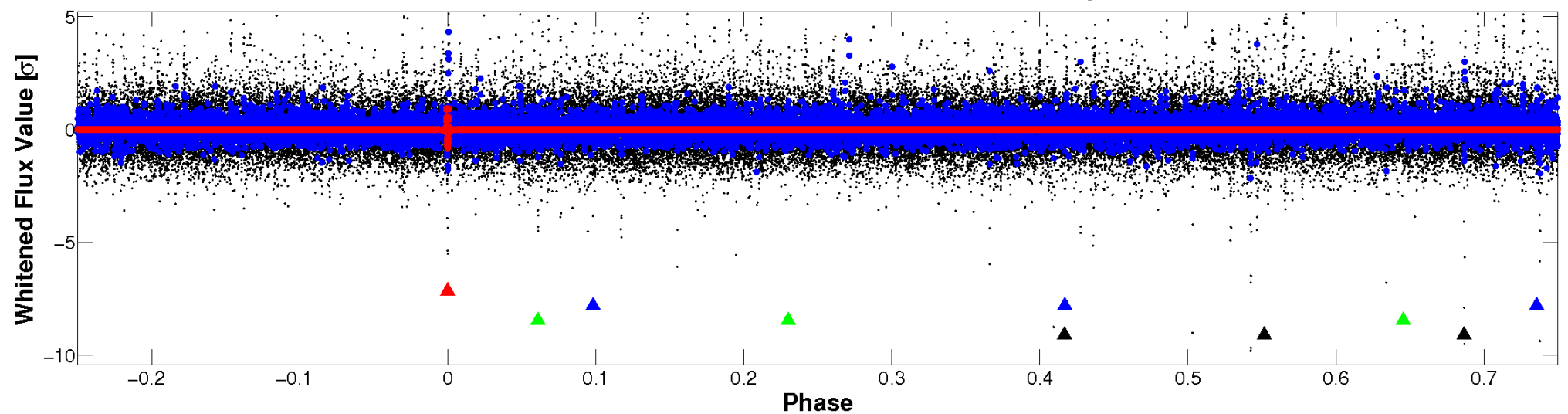


Non-Whitened Vs. Whitened Light Curve

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

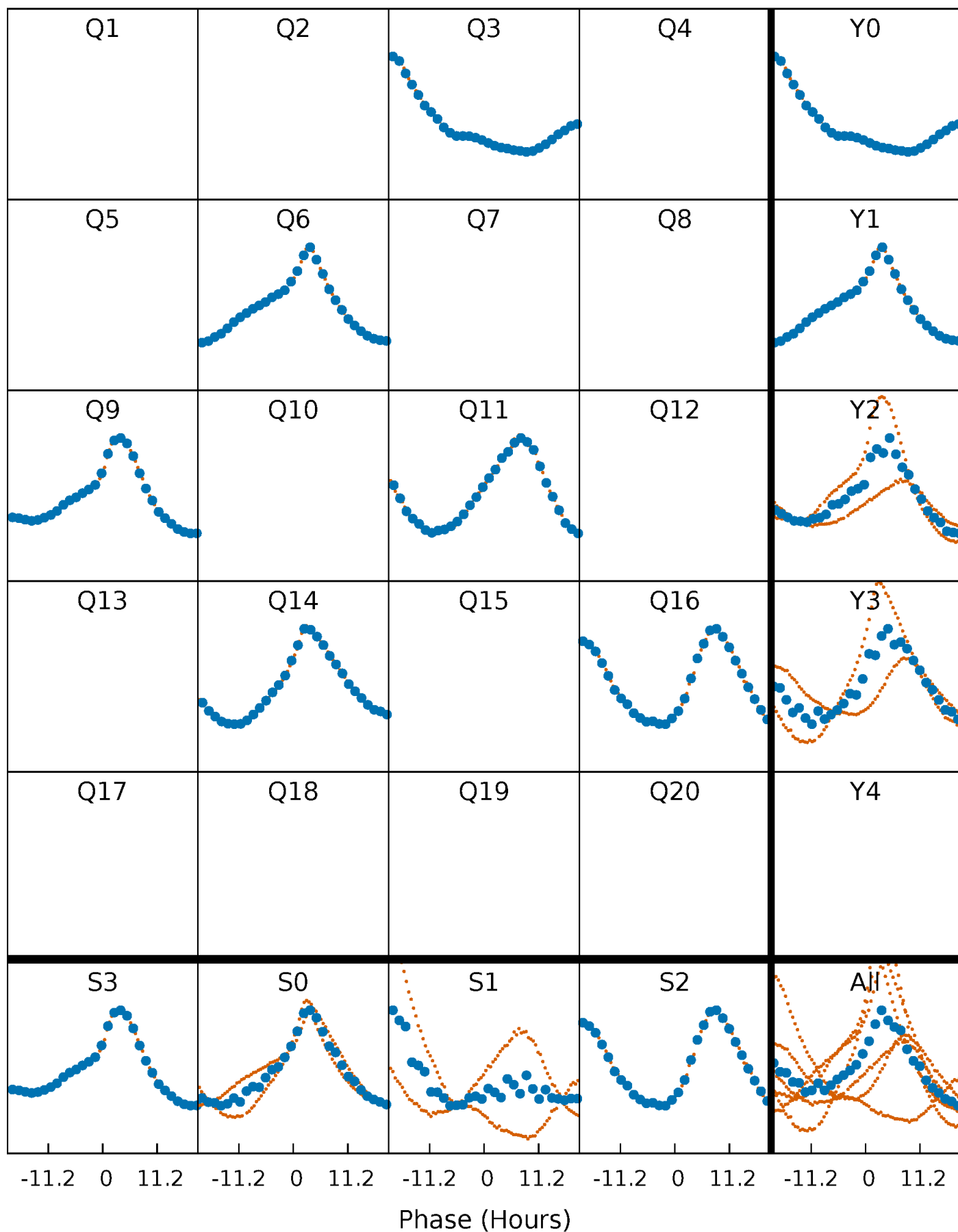


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



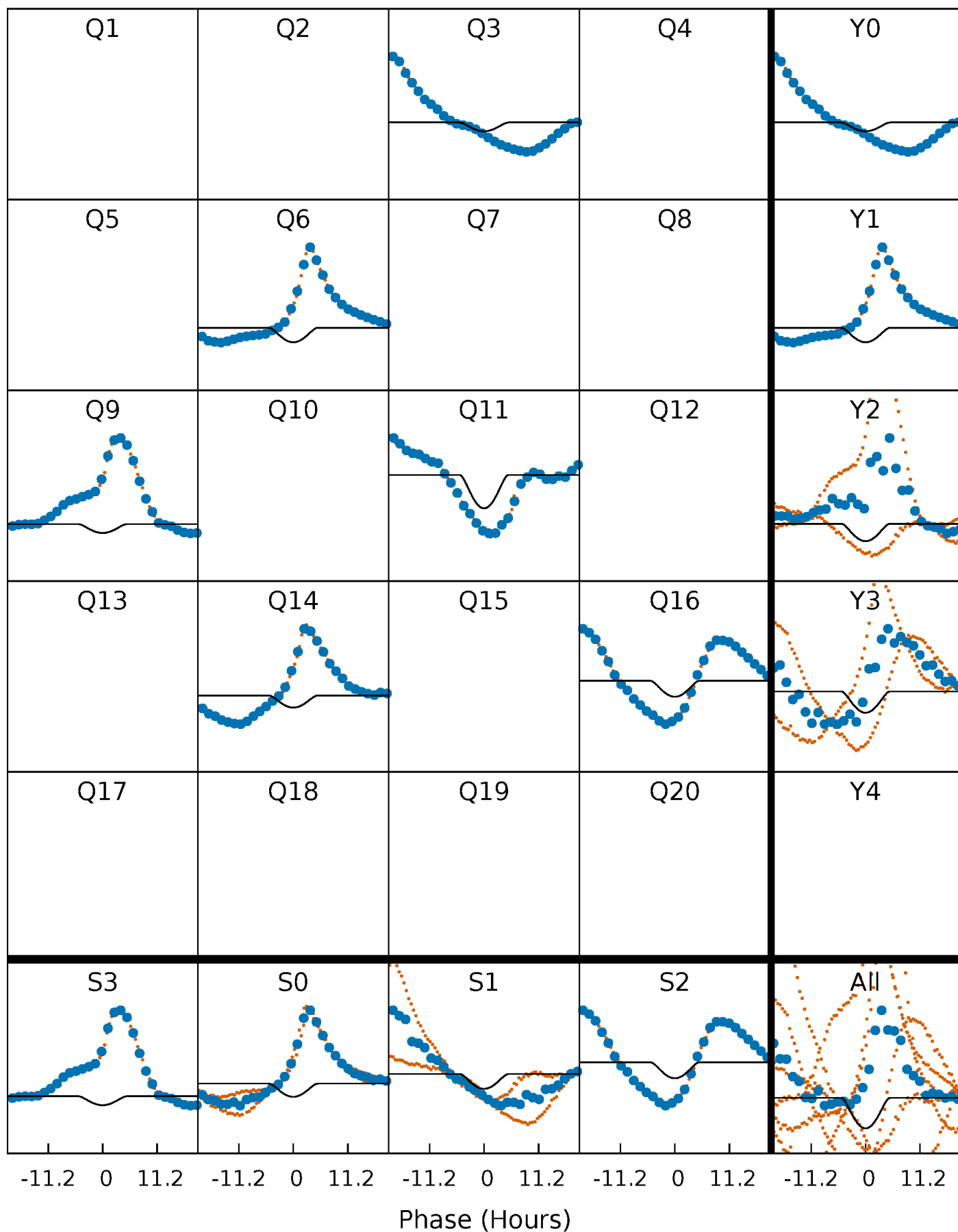
PDC Quarter-Phased Transit Curves

TCE 009306597-01 $P=239.364361$ Days $T_0=344.216111$ (BKJD)



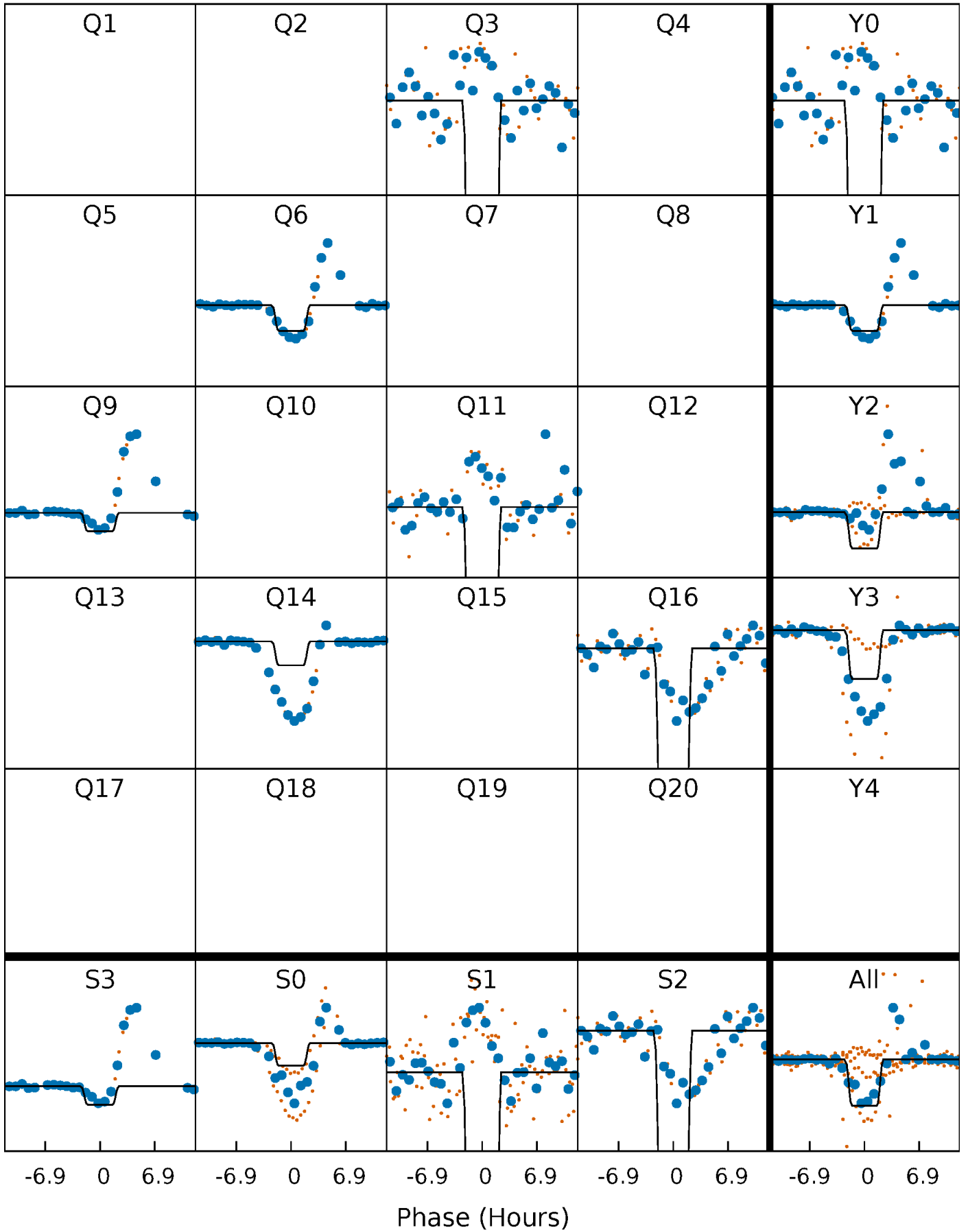
DV Quarter-Phased Transit Curves

TCE 009306597-01 P=239.364361 Days $T_0=344.216111$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

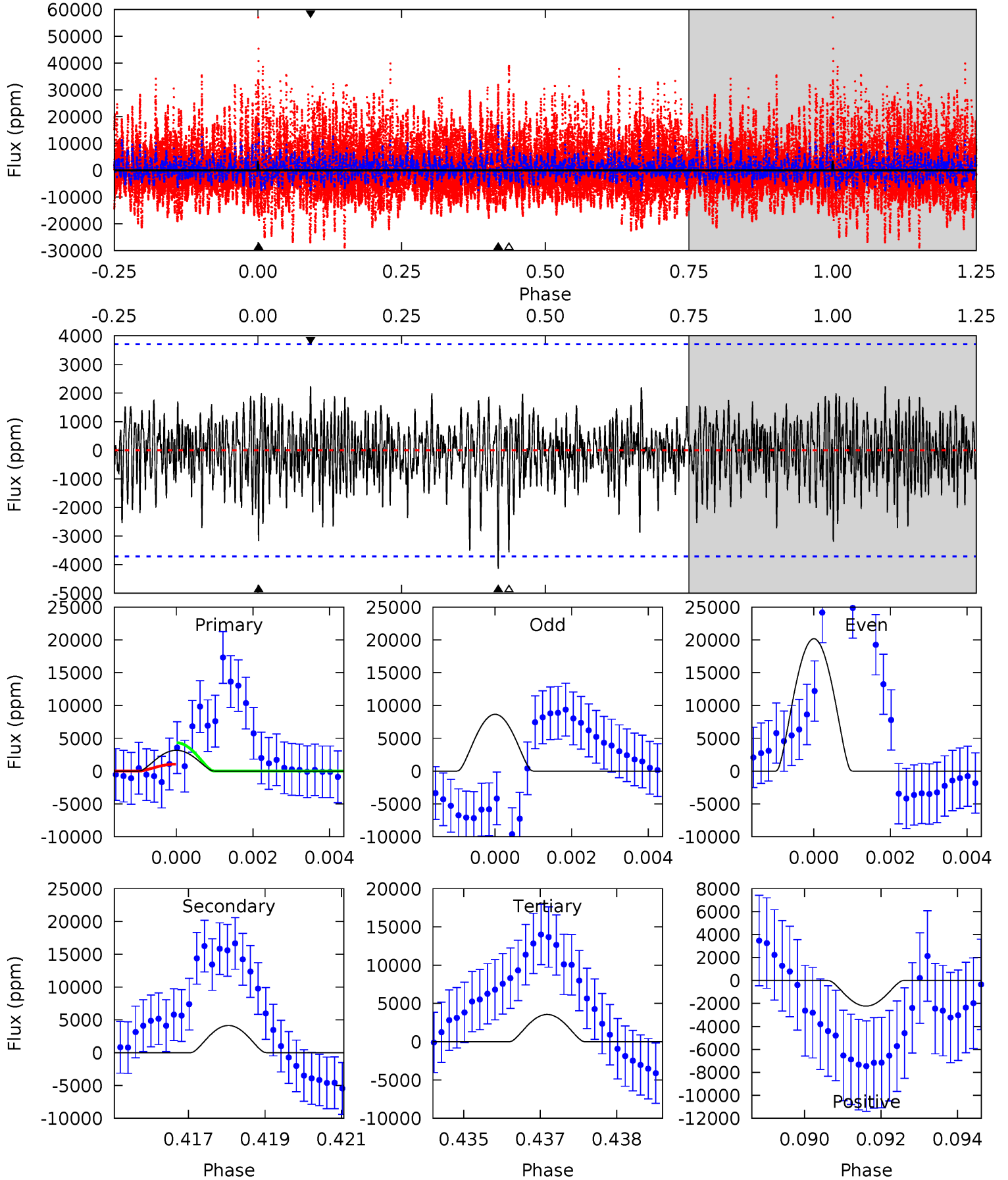
TCE 009306597-01 P=239.354793 Days $T_0=344.173668$ (BKJD)



DV Model-Shift Uniqueness Test

009306597-01, P = 239.364361 Days, E = 104.851750 Days

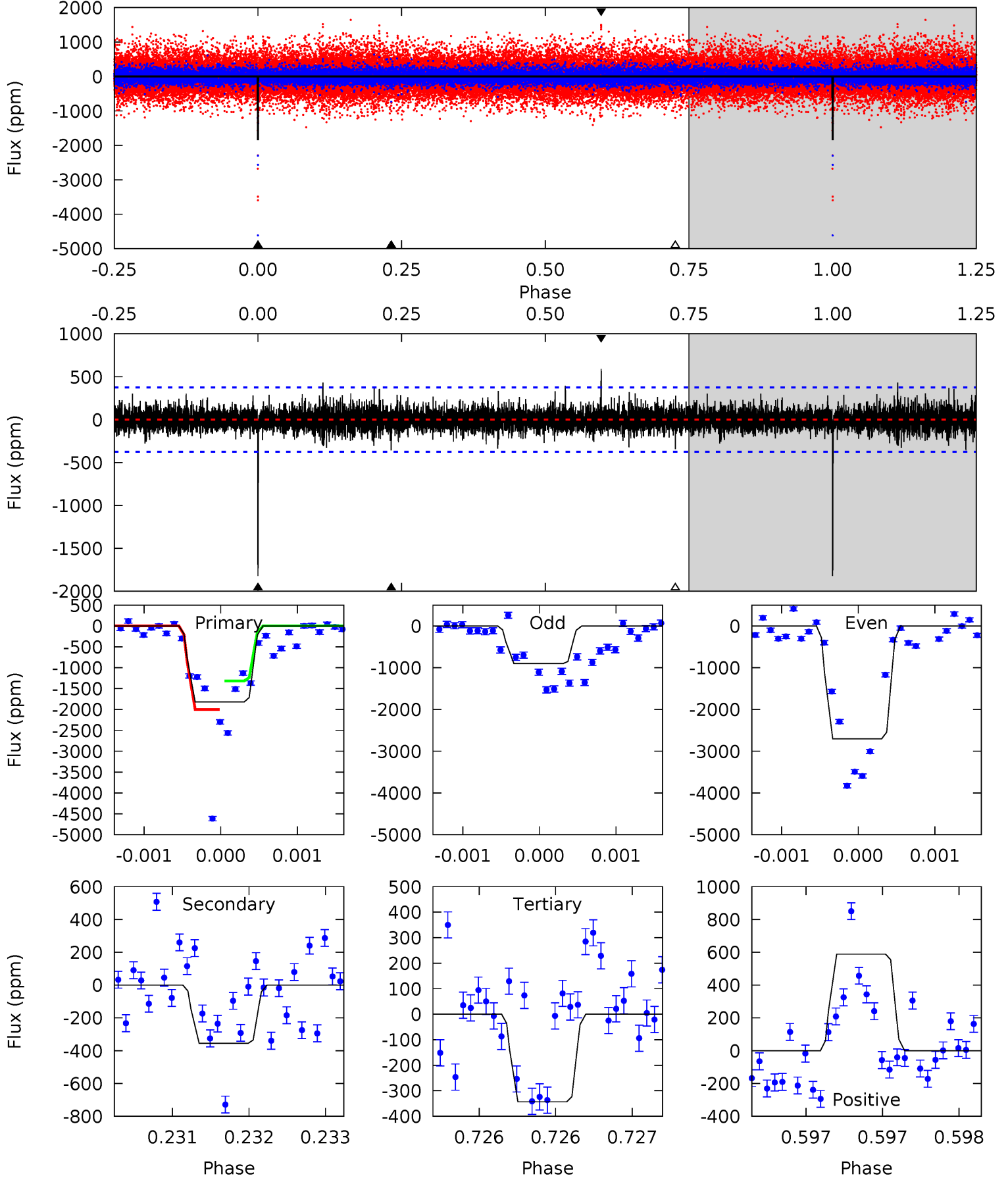
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.57	5.97	5.13	3.22	5.35	3.13	1.24	-0.56	1.35	0.84	2.75	7.77	2.60	0.35	2.36



Alt Model-Shift Uniqueness Test

009306597-01, P = 239.354793 Days, E = 104.818875 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.7	5.21	5.03	8.62	5.49	3.35	1.17	21.7	18.1	0.18	-3.41	13.3	1.83	0.24	0



Stellar Parameters For KIC 009306597

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6602^{+161}_{-241}	$4.354^{+0.062}_{-0.188}$	$-0.060^{+0.250}_{-0.300}$	$1.223^{+0.375}_{-0.150}$	$1.240^{+0.174}_{-0.174}$	$0.954^{+0.327}_{-0.478}$
	+2%/-4%	+1%/-4%	+417%/-500%	+31%/-12%	+14%/-14%	+34%/-50%
Source	PHO1	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 009306597-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-4142 ± 694	$19.66^{+13.08}_{-12.52}$	507^{+36}_{-26}	4580^{+2671}_{-758}	3765^{+22624}_{-2450}
Alt.	-356 ± 68	$14.41^{+13.15}_{-9.39}$	508^{+33}_{-26}	3324^{+1492}_{-557}	592^{+4538}_{-434}

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 $A_{obs} \gg 1.0$

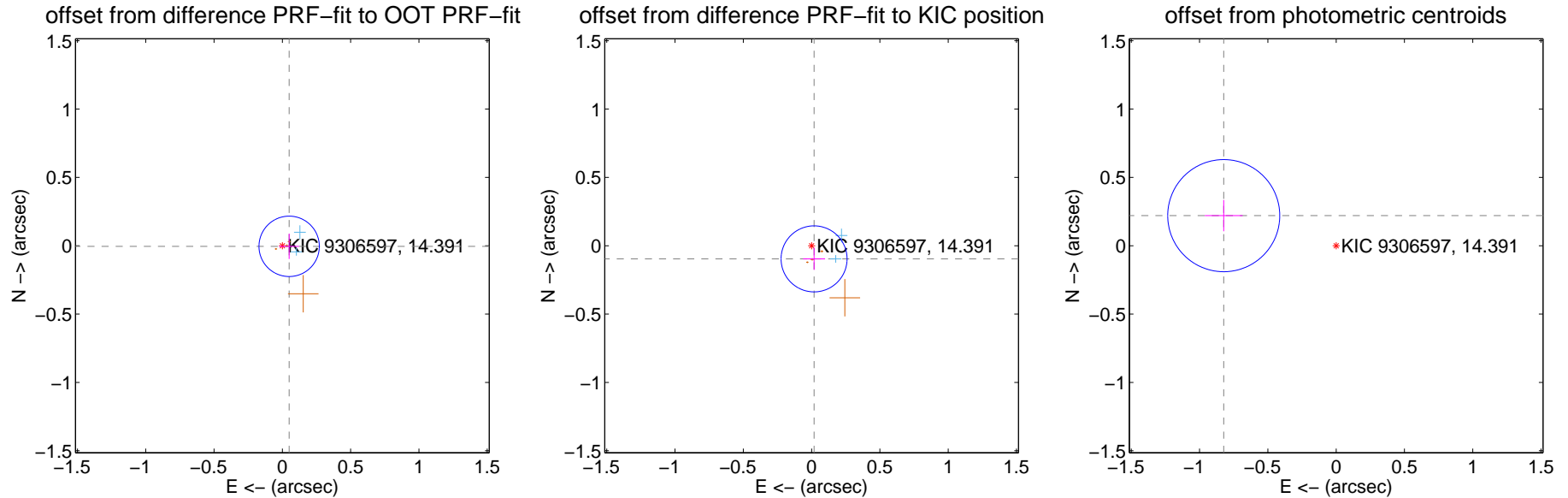
DV Centroid Data

Supplemental centroid analysis for 009306597-01. Kepler magnitude: 14.39. Transit SNR 6.93

There are 2 quarters with good PRF difference image offsets

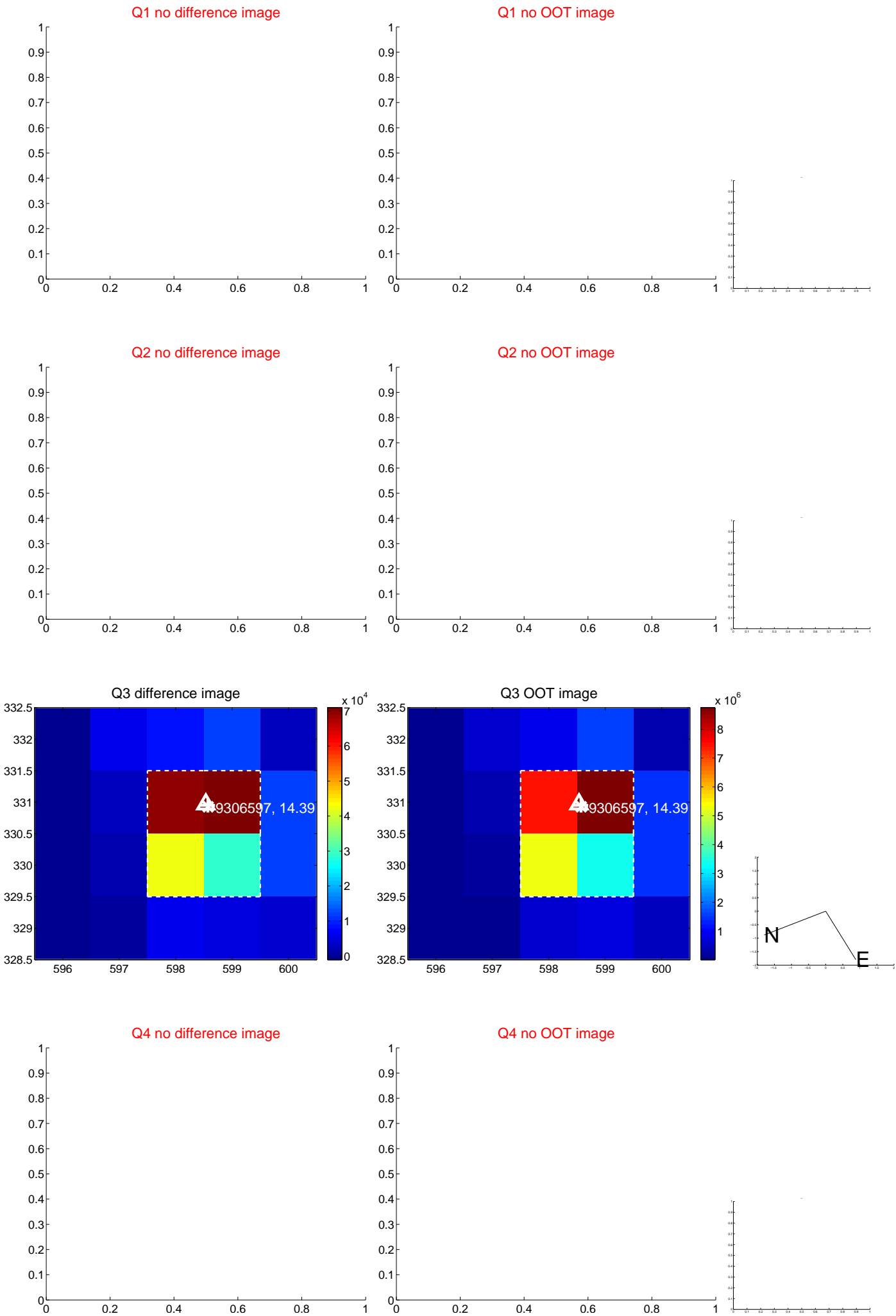
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.050 ± 0.074	0.68	-0.050 ± 0.072	-0.004 ± 0.093
PRF-fit source offset from KIC position	0.098 ± 0.081	1.21	-0.018 ± 0.080	-0.096 ± 0.081
photometric centroid source offset	0.85 ± 0.14	6.23	0.82 ± 0.14	0.22 ± 0.11

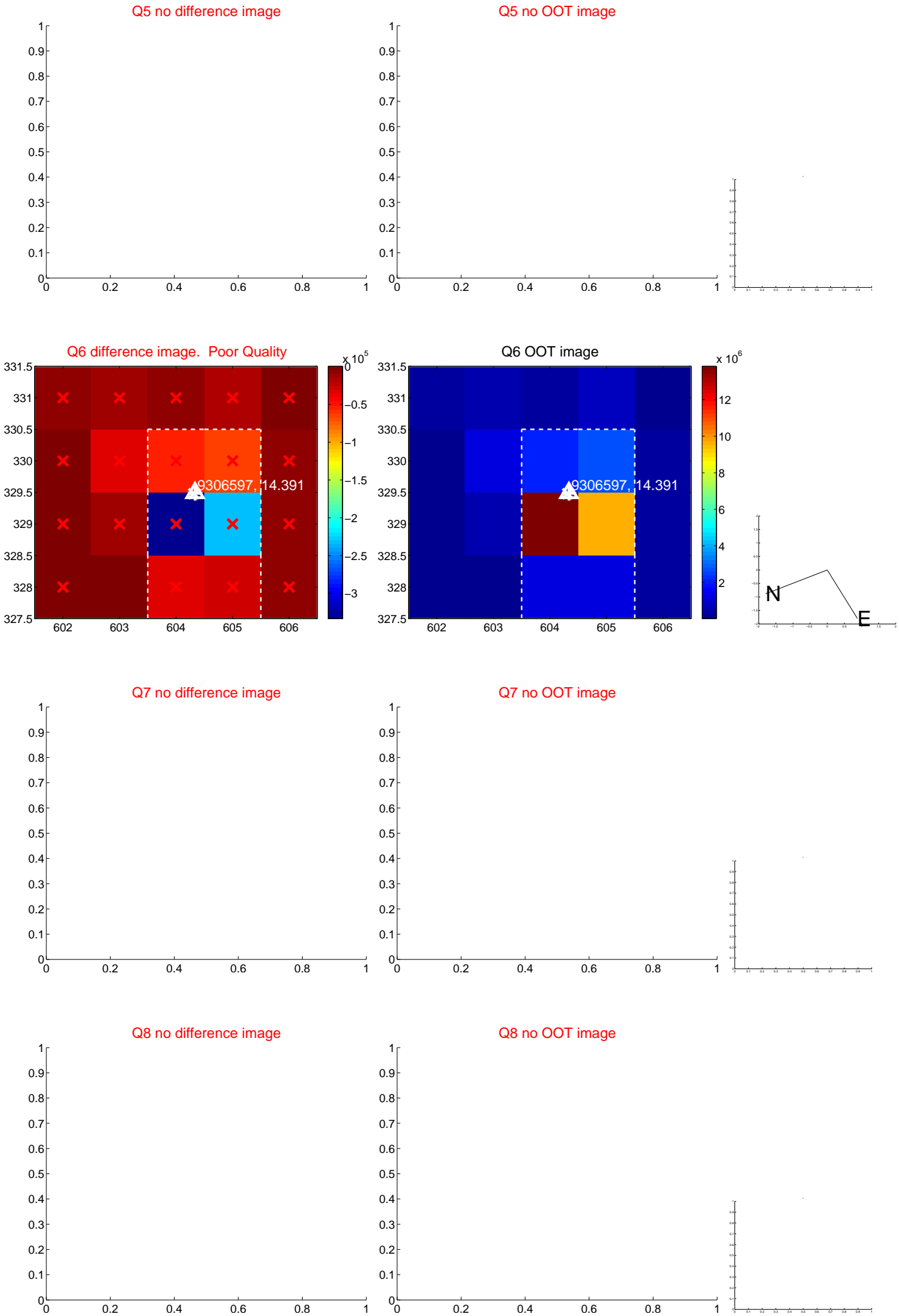


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

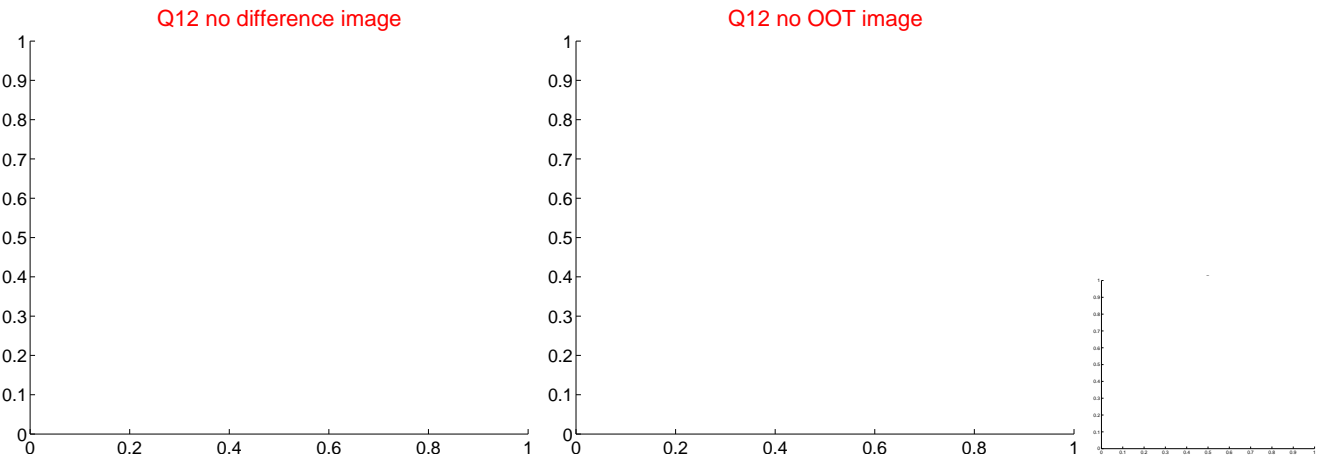
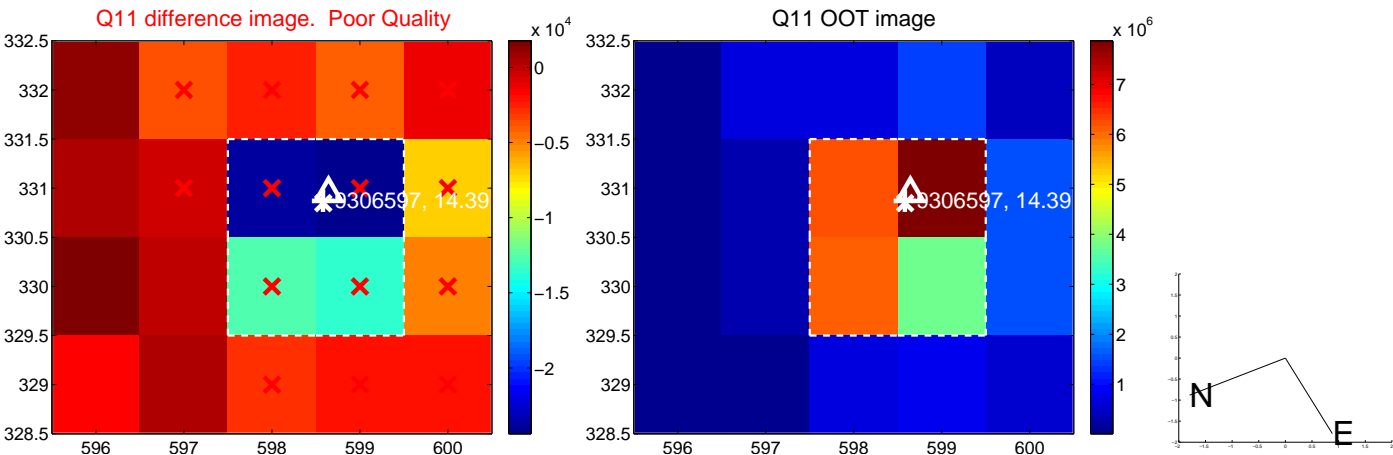
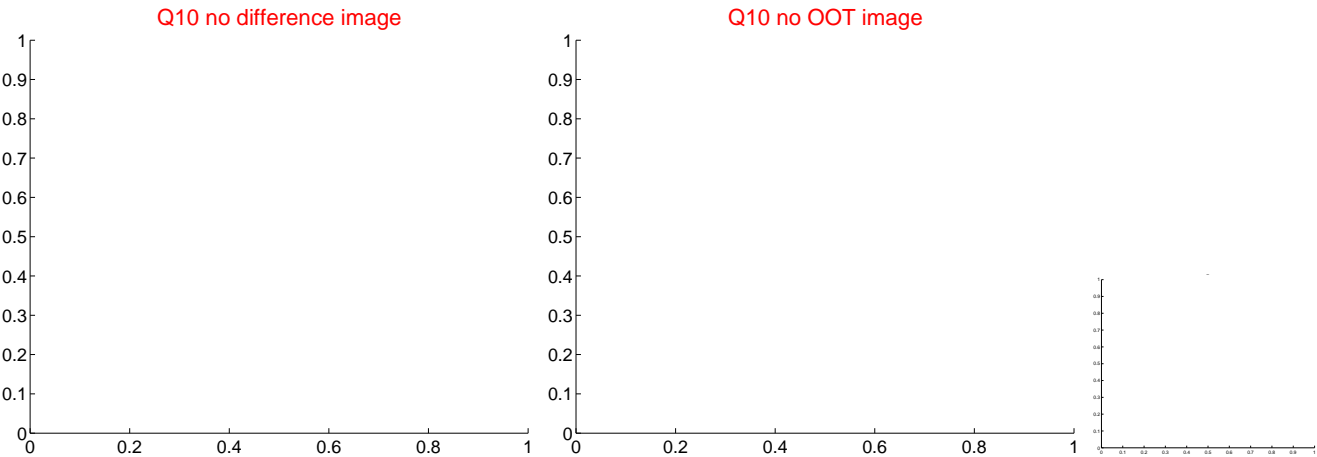
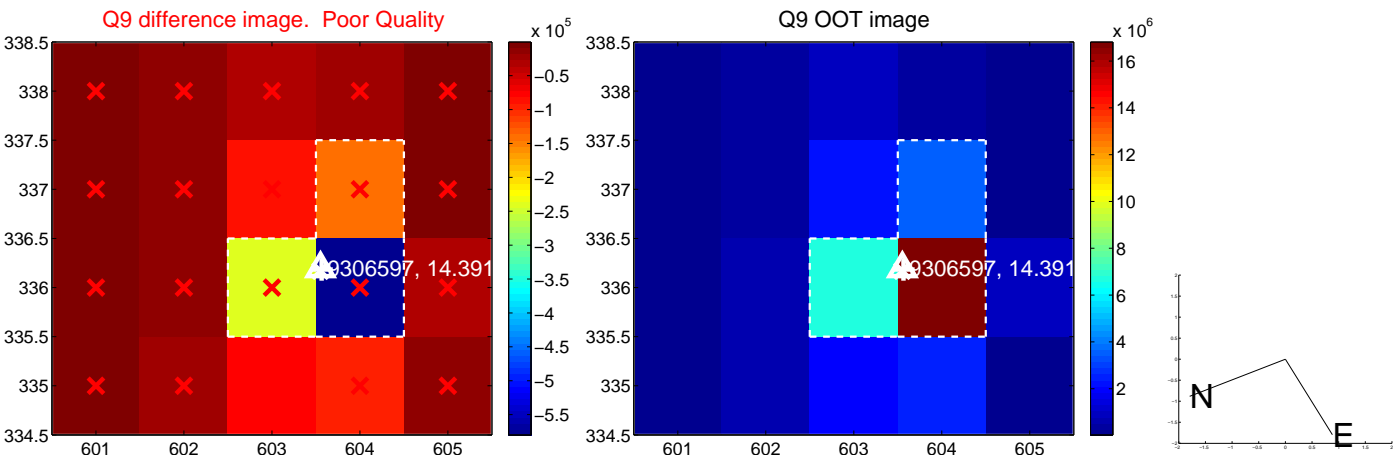
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



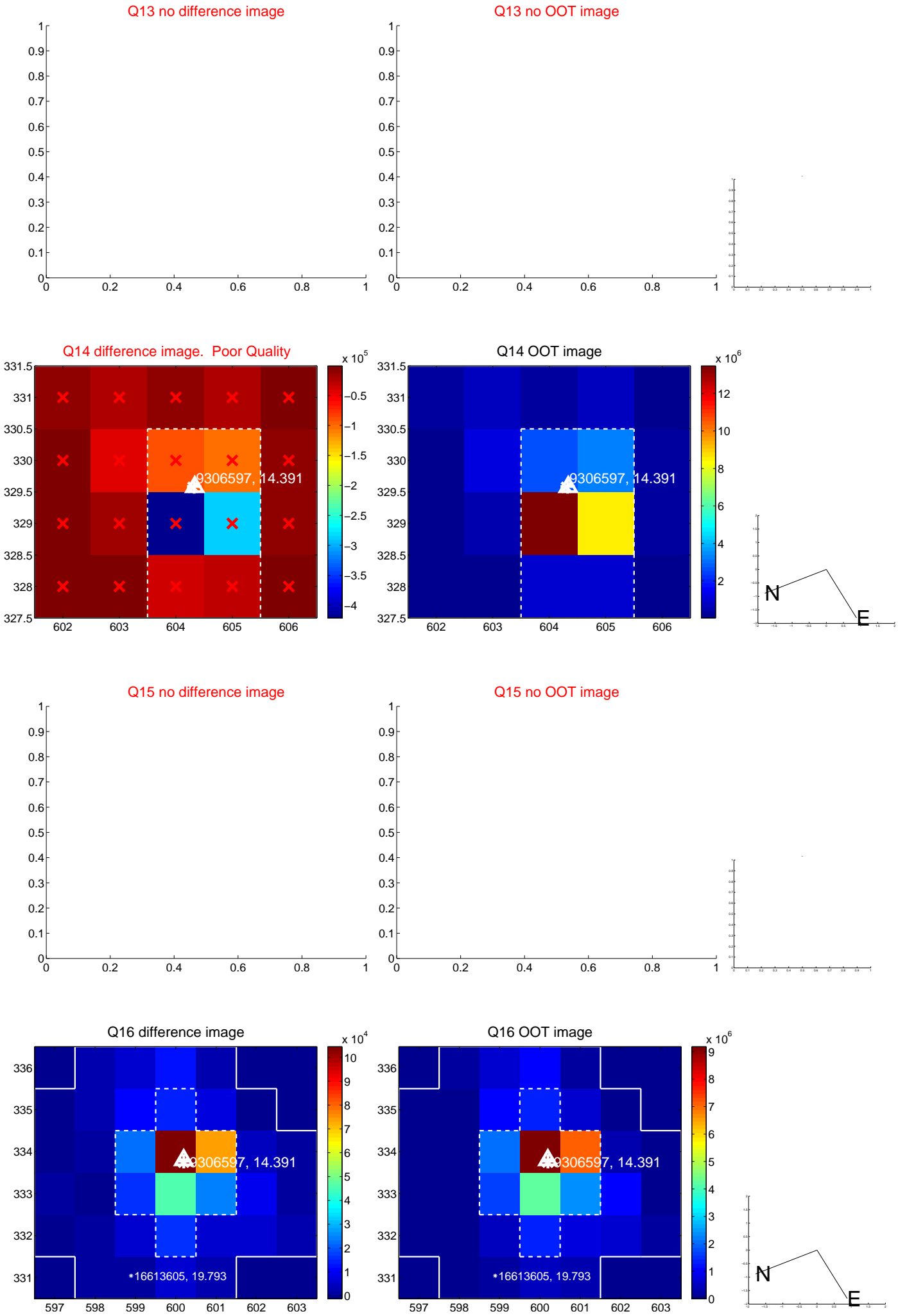
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



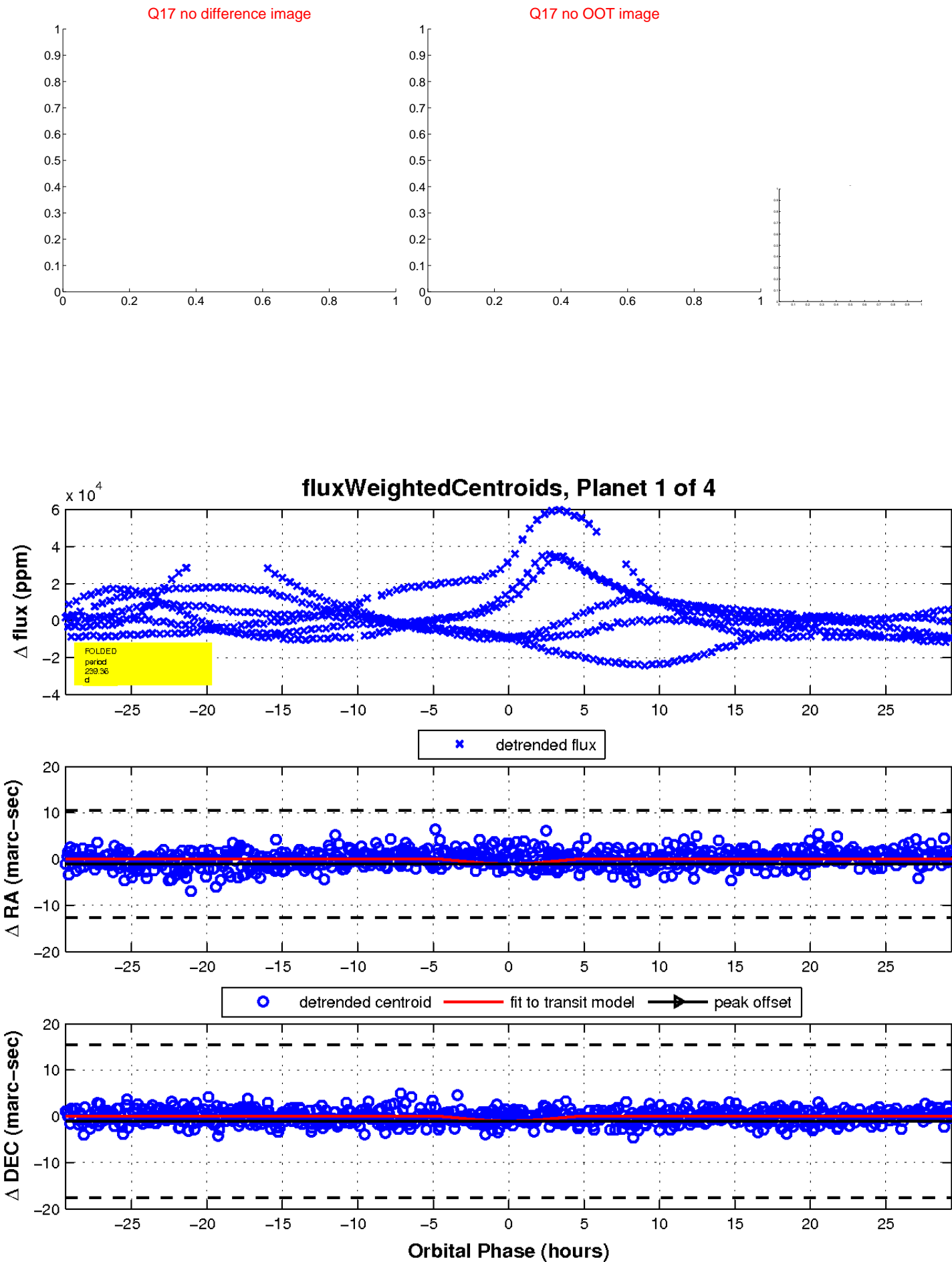
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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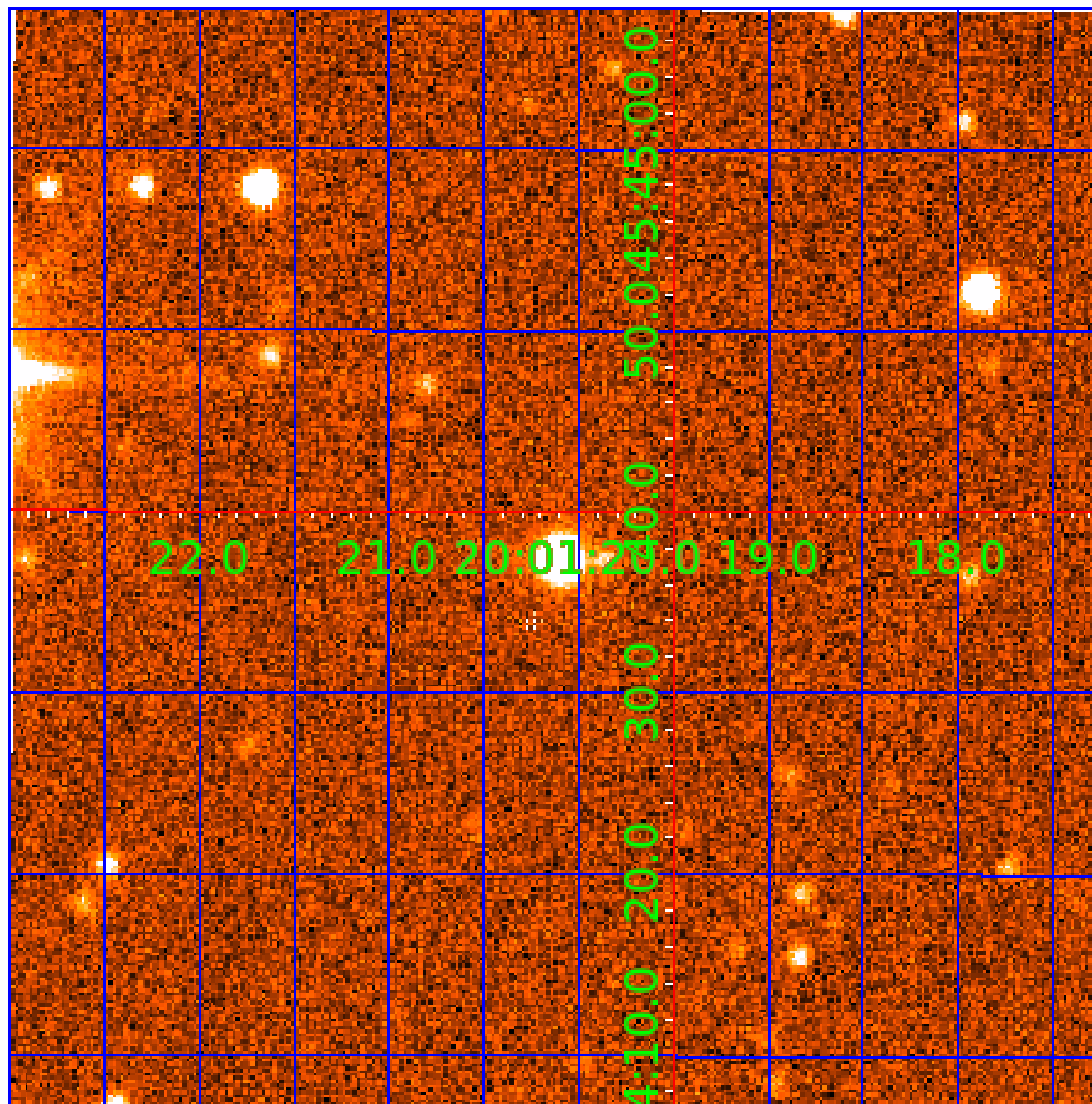


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009306597

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})
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009306597-02	OBS	No	402.433744	520.310225	3947.2	5.454	11.6	7.2	1.22	6602	13.93	1.95
009306597-03	OBS	No	578.180452	159.923487	6494.5	6.707	10.6	8.7	1.22	6602	17.57	1.20
009306597-04	OBS	No	446.425608	508.564665	2606.0	4.500	19.8	-1.0	1.22	6602	6.29	1.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009306597-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
009306597-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009306597-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009306597-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

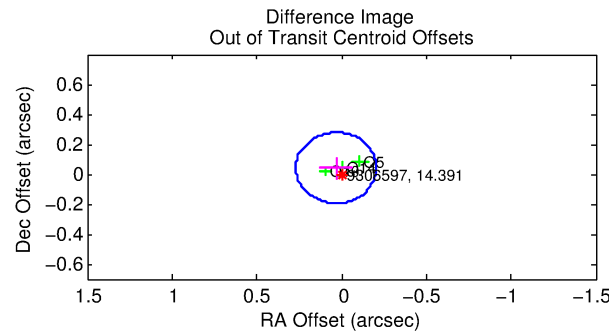
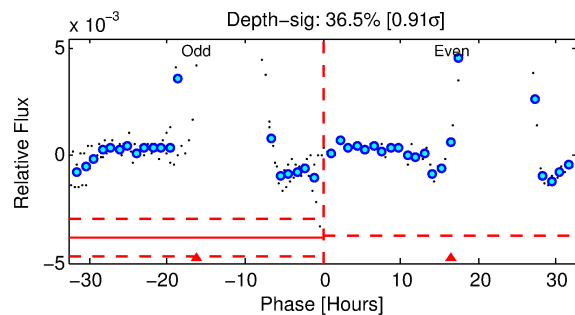
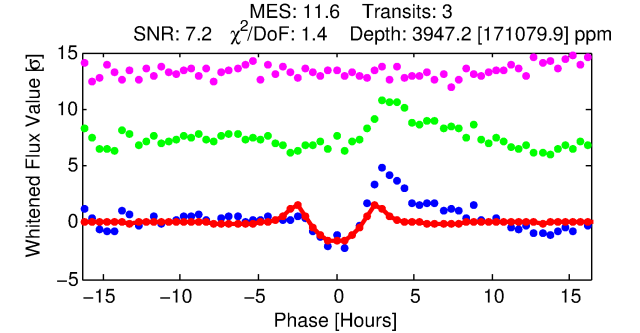
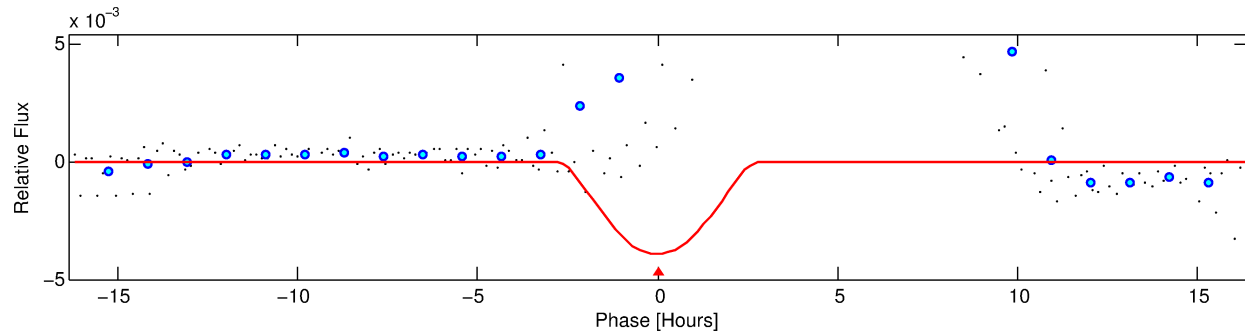
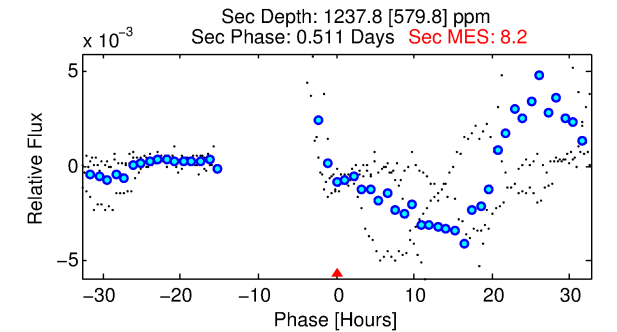
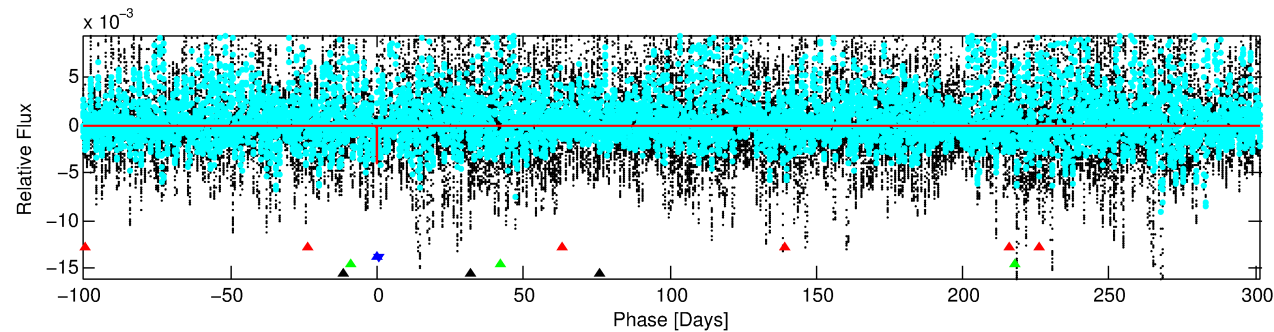
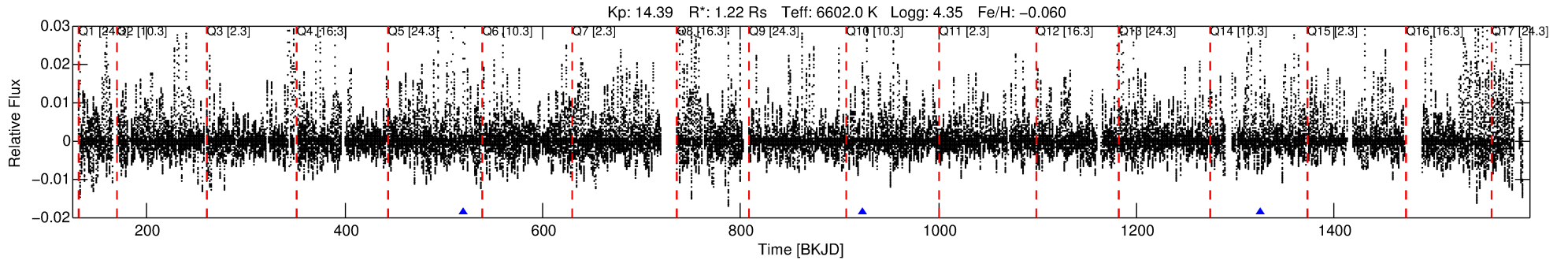
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009306597-02

No Significant Match Found

DV One-Page Summary

KIC: 9306597 Candidate: 2 of 4 Period: 402.434 d



DV Fit Results:

Period = 402.43374 [0.00792] d
Epoch = 520.3102 [0.0109] BKJD
Rp/R* = 0.1044 [0.2084]
a/R* = 264.24 [103.98]
b = 1.00 [2.75]
Seff = 1.95 [0.74]
Teq = 301 [29] K
Rp = 13.93 [28.14] Re
a = 1.1440 [0.2863] AU
Ag = 4590.22 [18523.79] [0.25σ]
Teffp = 3832 [3854] K [0.92σ]

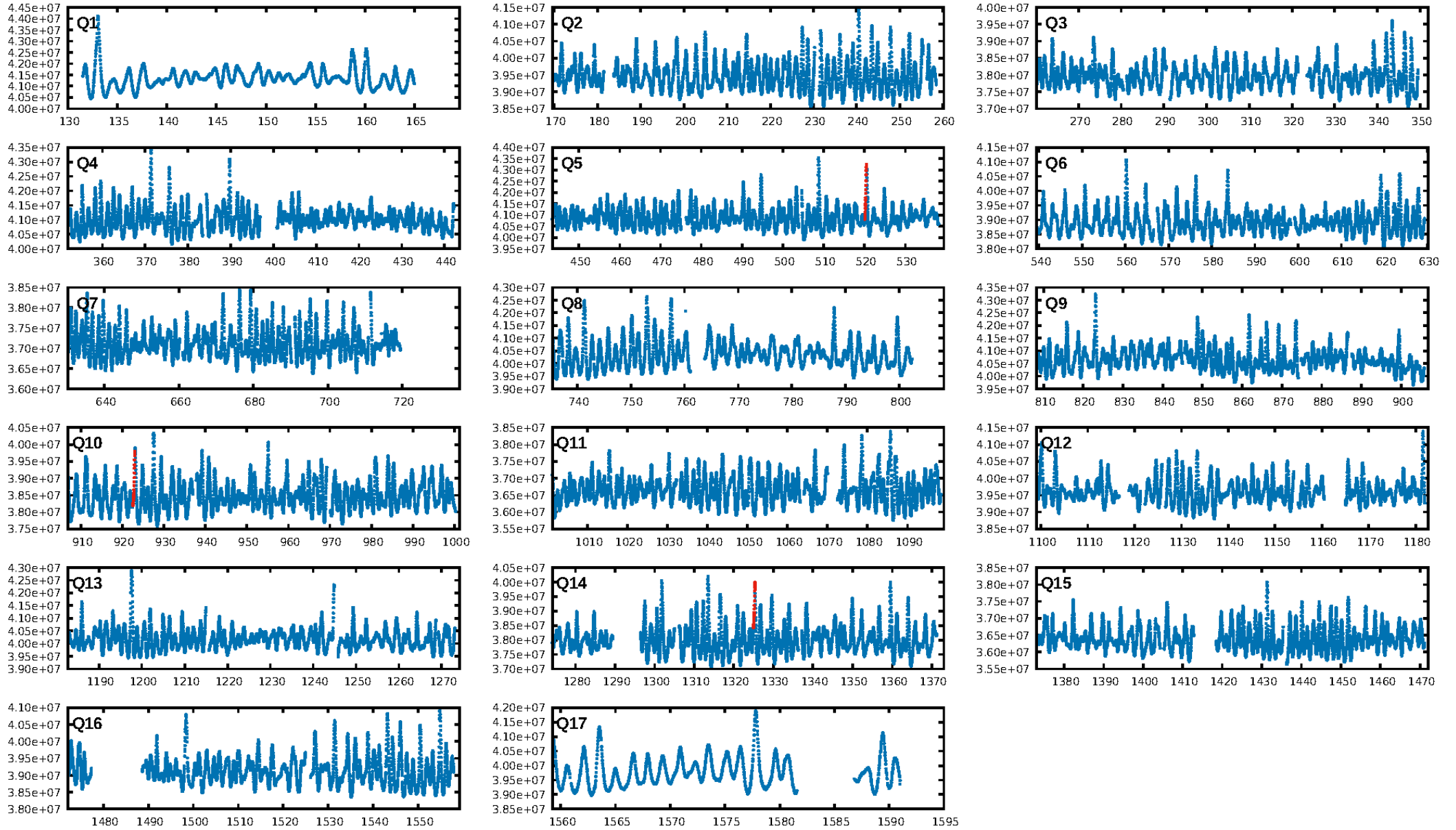
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [348.44σ]
LongPeriod-sig: 100.0% [149.32σ]
ModelChiSquare2-sig: 7.9%
ModelChiSquareGof-sig: 89.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.47
Centroid-sig: 33.5%
Centroid-so: 0.870 arcsec [2.79σ]
OotOffset-rm: 0.053 arcsec [0.67σ]
KicOffset-rm: 0.062 arcsec [0.77σ]
OotOffset-st: 2/0/0/1 [3]
KicOffset-st: 2/0/0/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

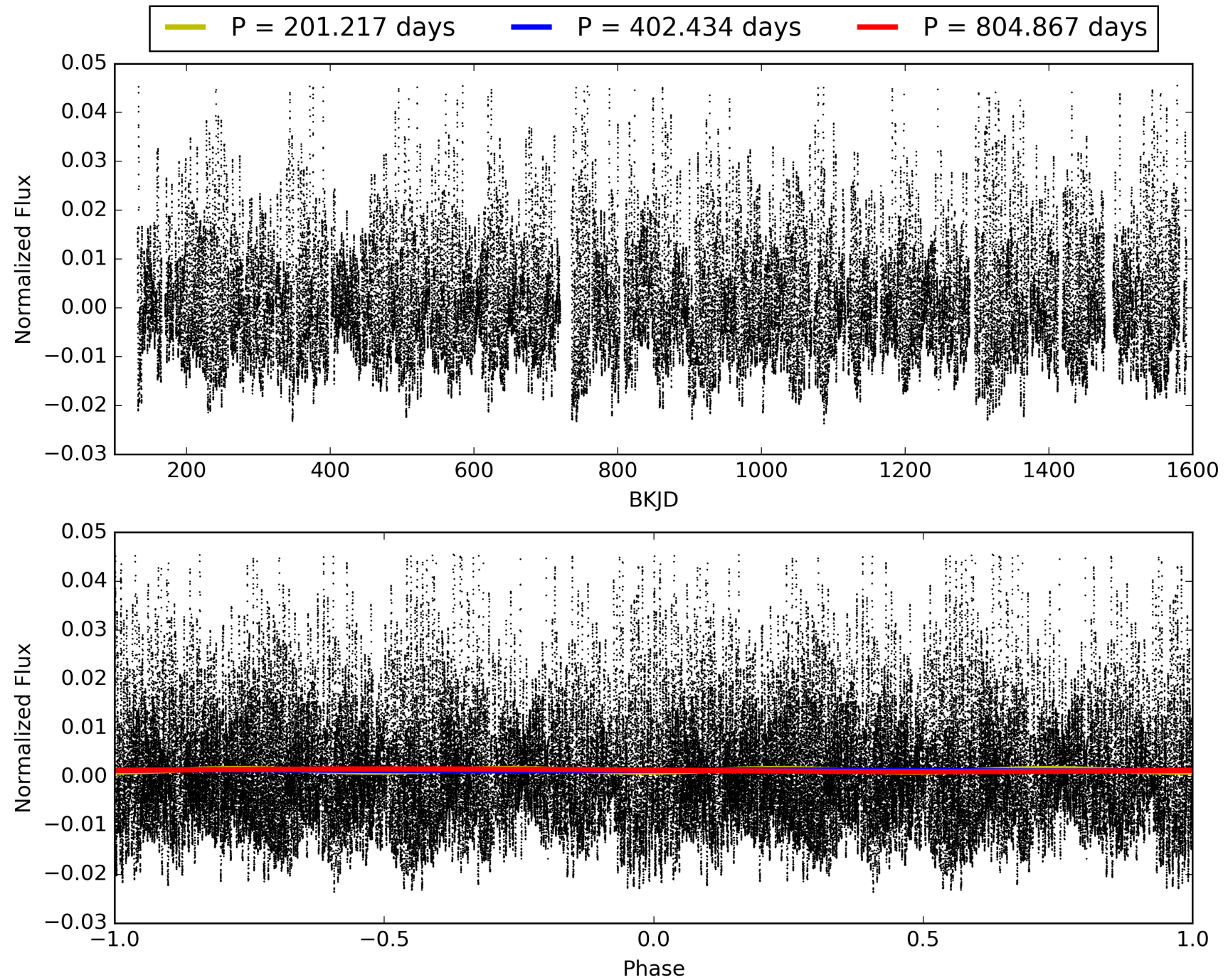
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:01:25 Z

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

TCE 009306597-02, PDC Light Curves

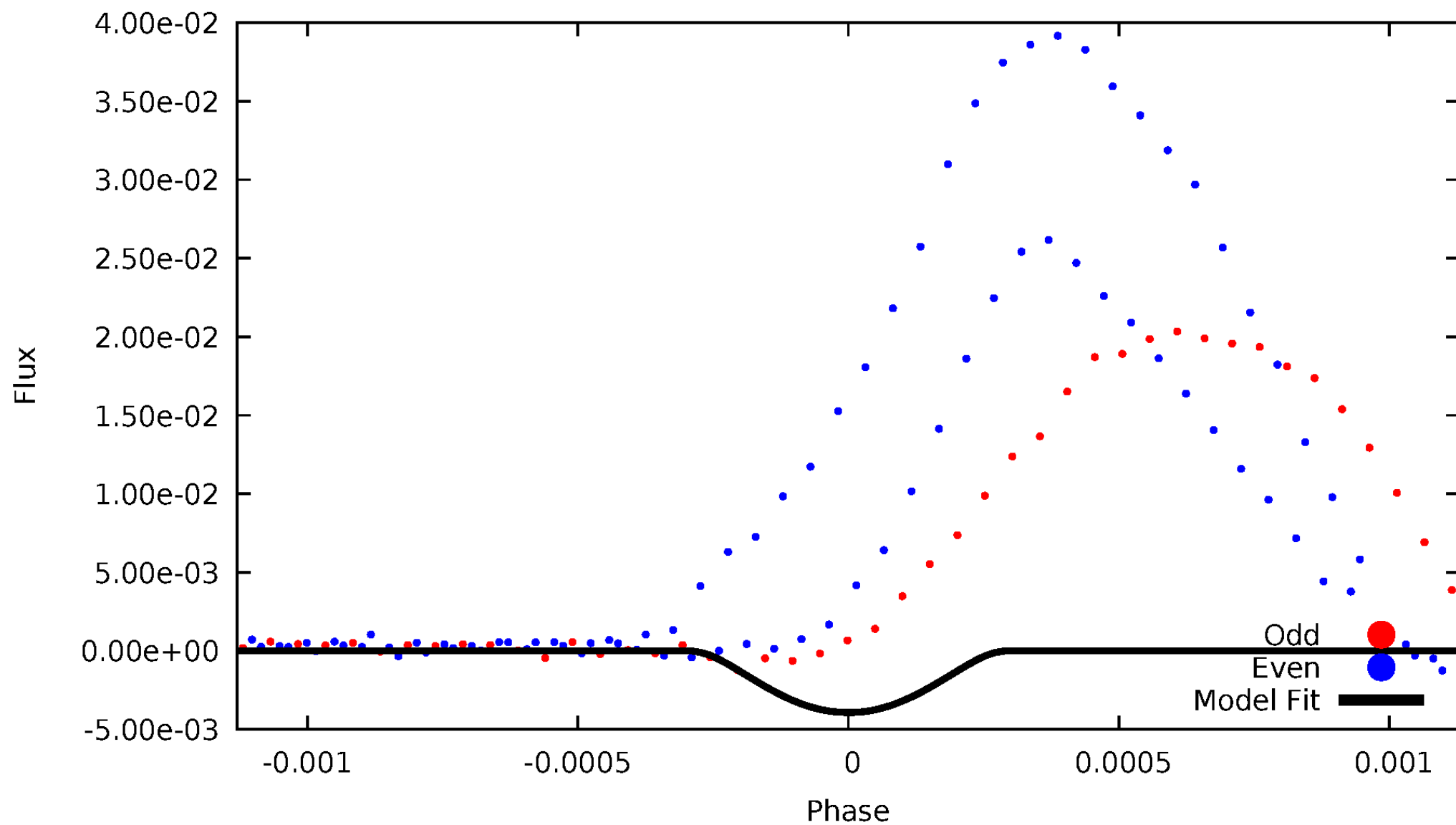


TCE 009306597-02



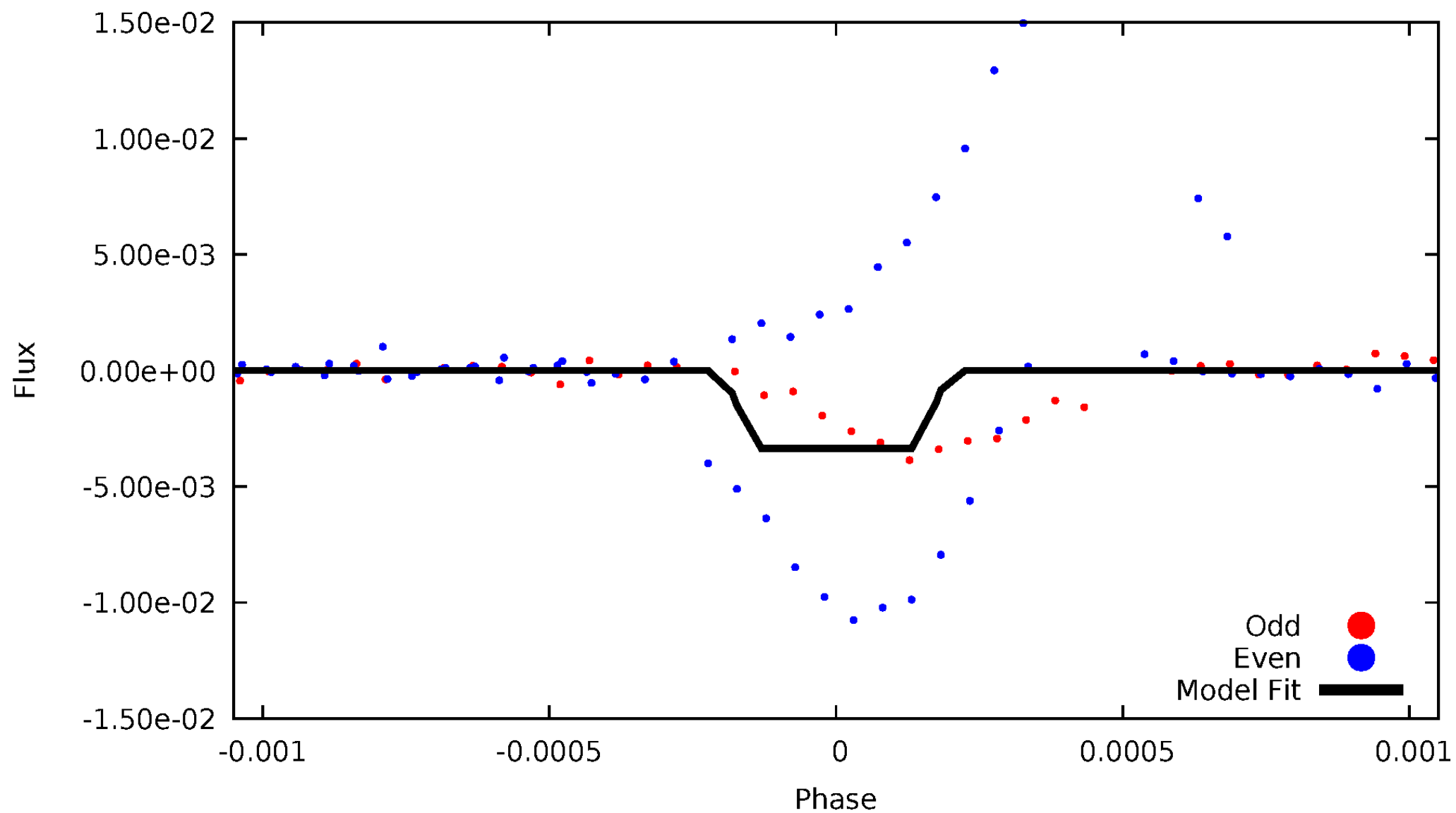
DV Odd/Even

TCE 009306597-02



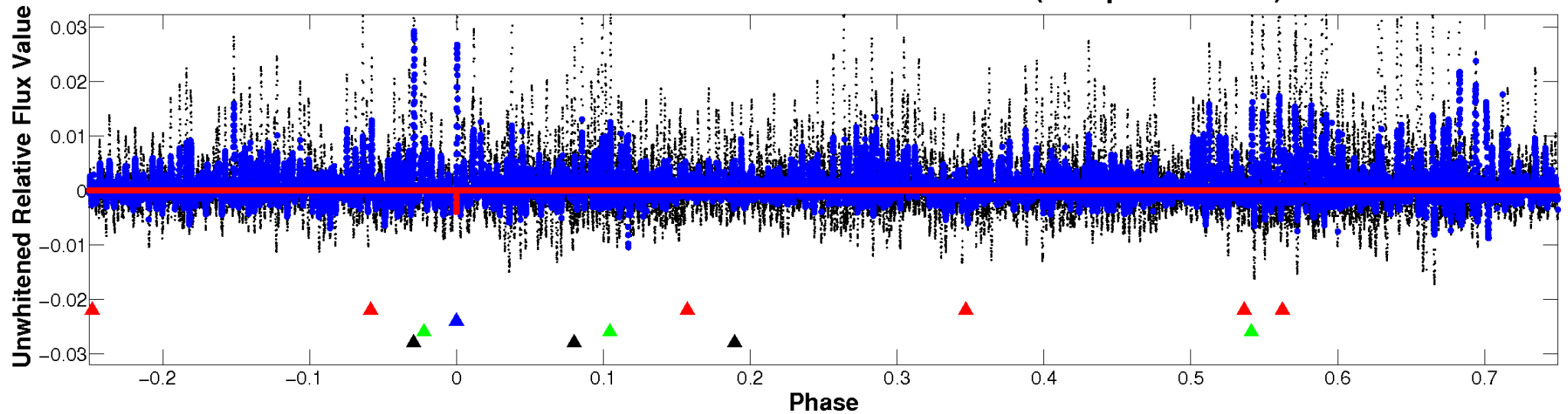
ALT Odd/Even

TCE 009306597-02

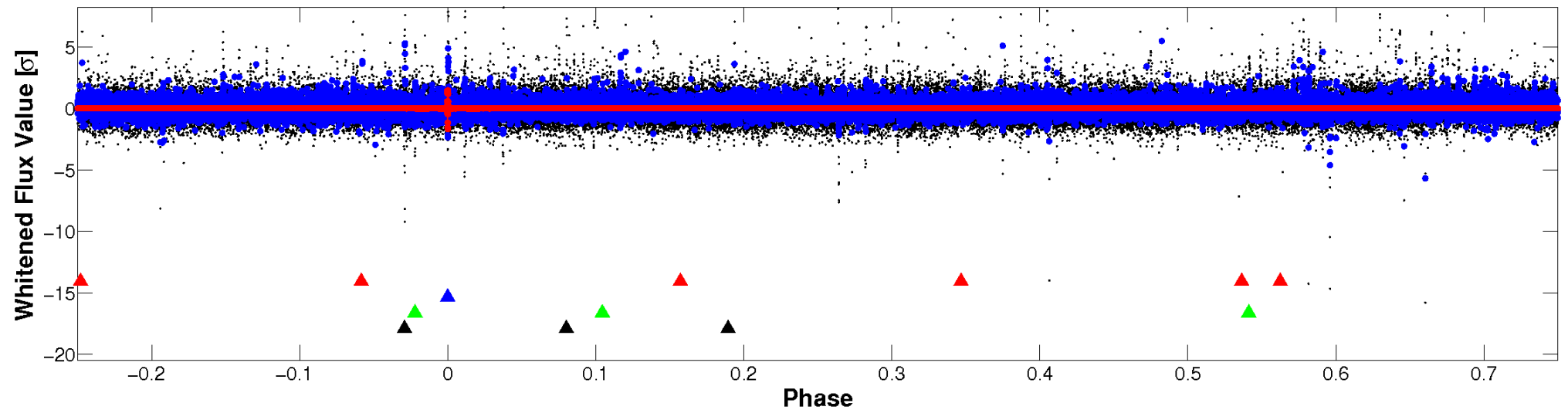


Non-Whitened Vs. Whitened Light Curve

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

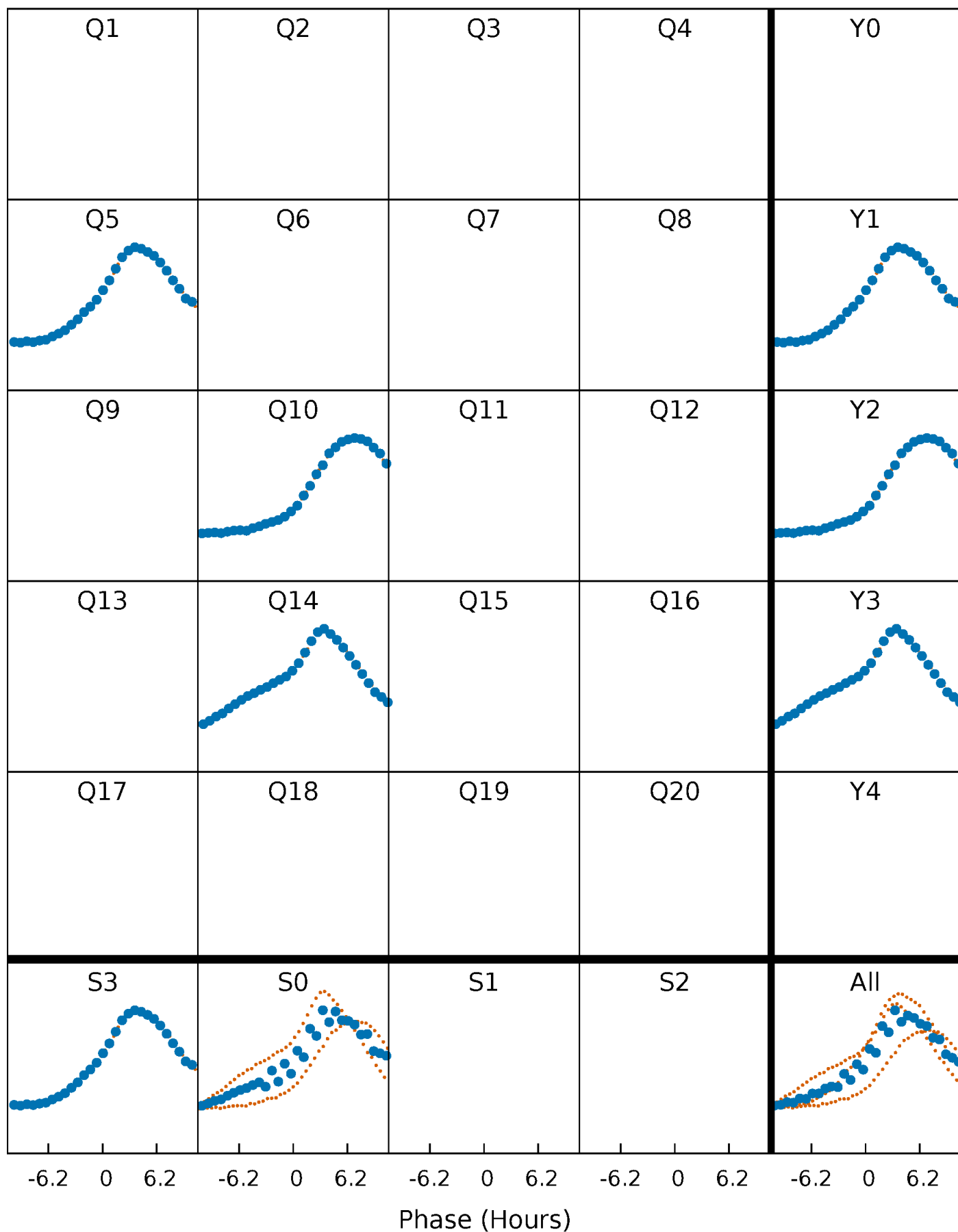


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



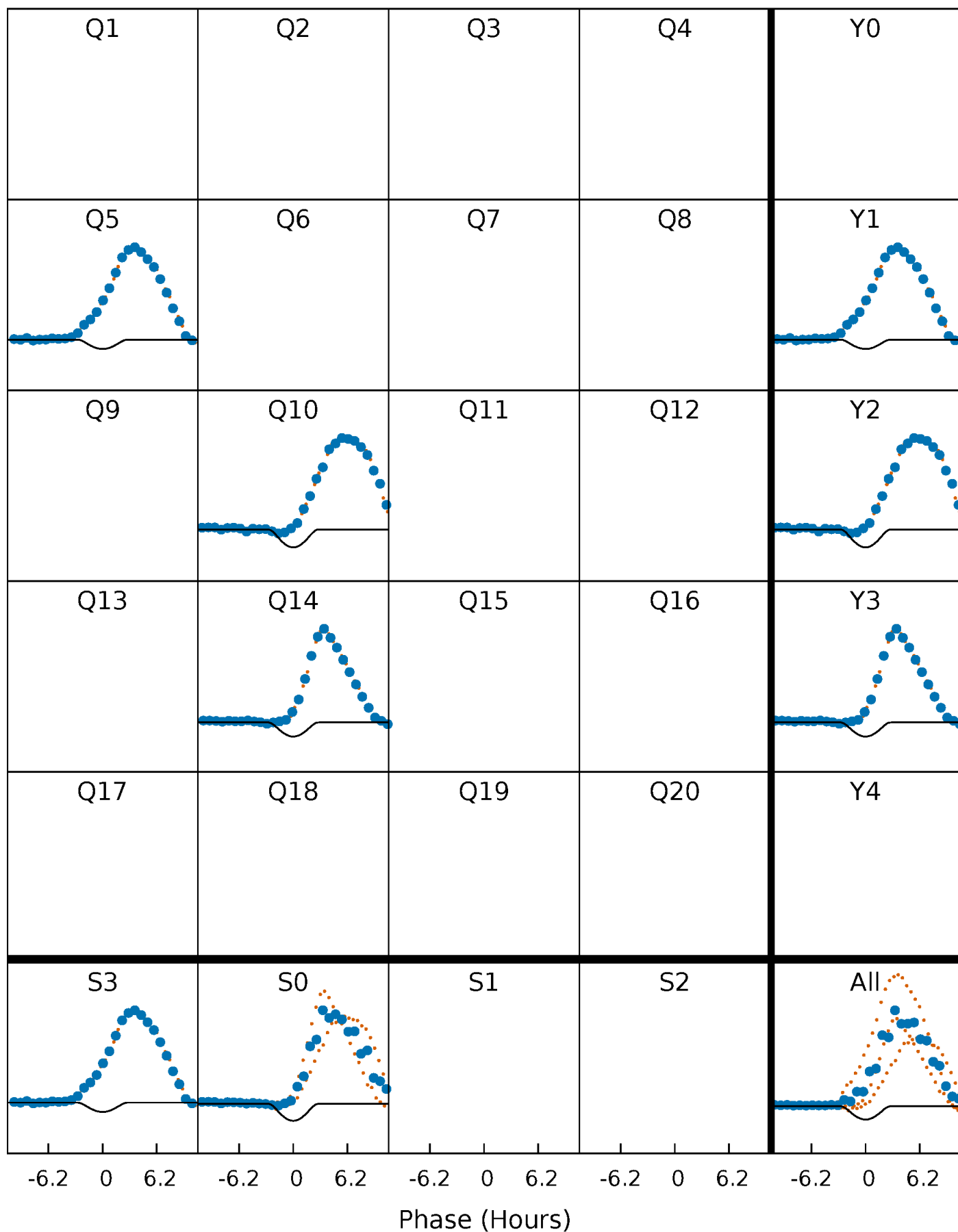
PDC Quarter-Phased Transit Curves

TCE 009306597-02 $P=402.433744$ Days $T_0=520.310225$ (BKJD)



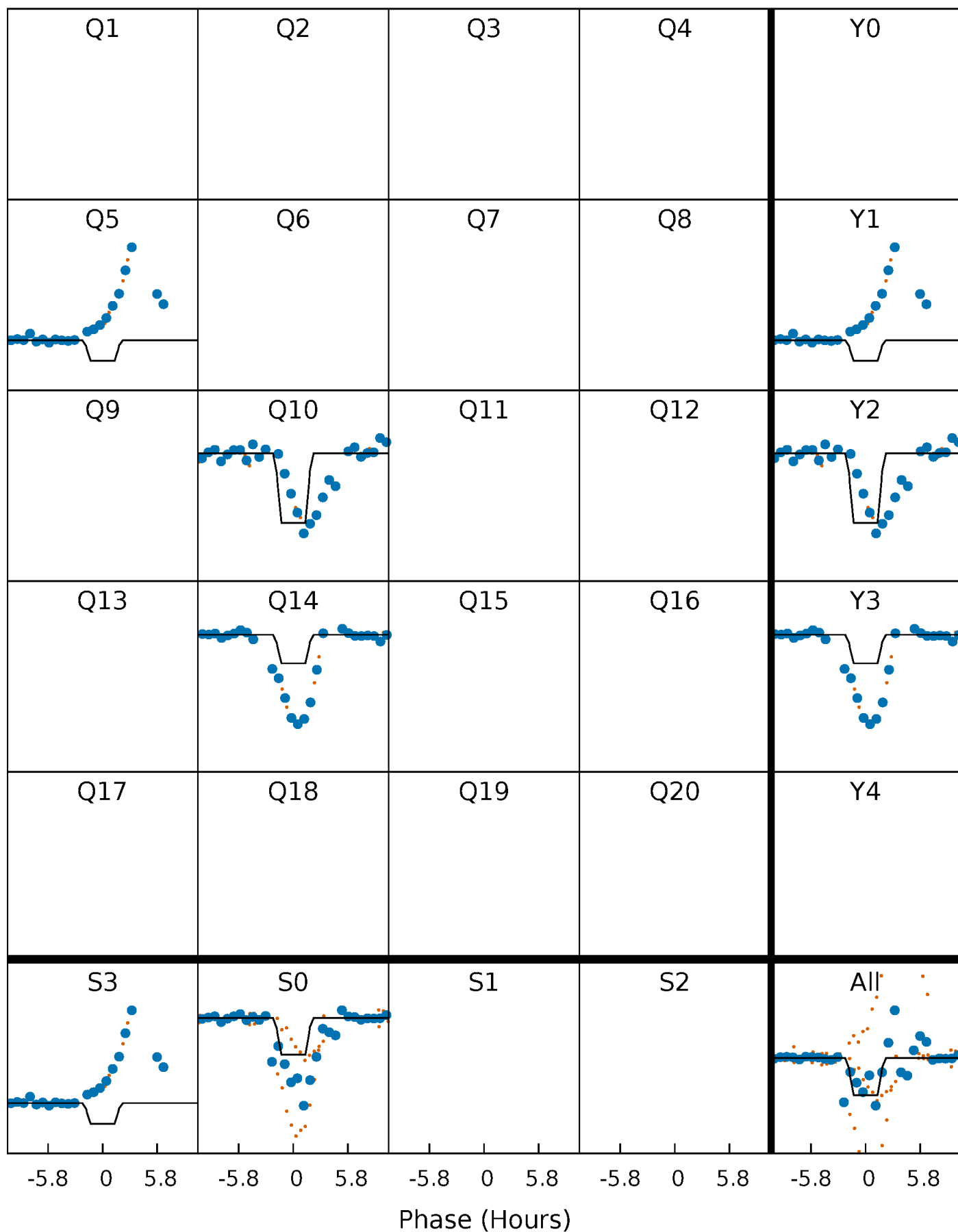
DV Quarter-Phased Transit Curves

TCE 009306597-02 $P=402.433744$ Days $T_0=520.310225$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

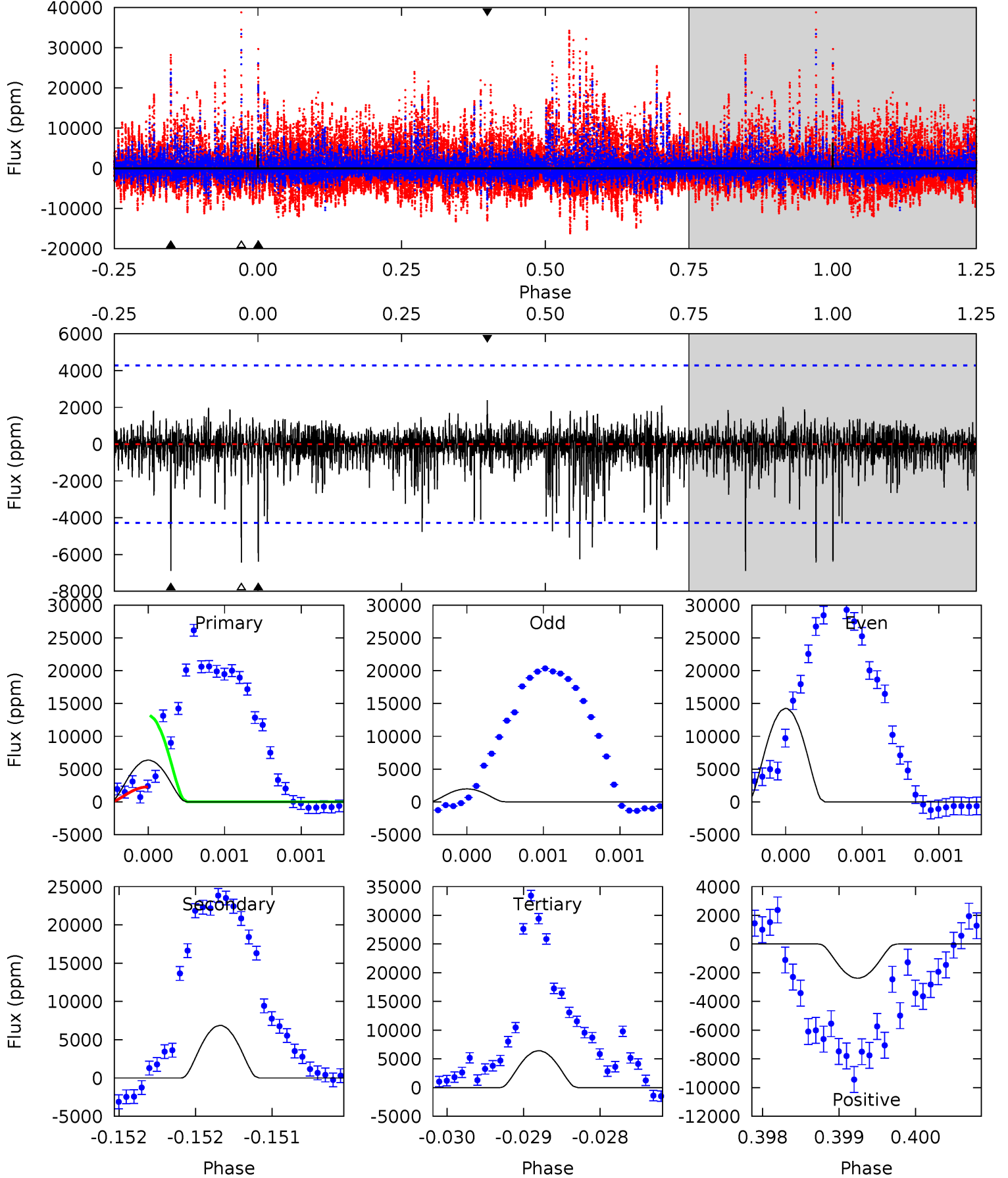
TCE 009306597-02 $P=402.438964$ Days $T_0=520.273127$ (BKJD)



DV Model-Shift Uniqueness Test

009306597-02, P = 402.433744 Days, E = 117.876481 Days

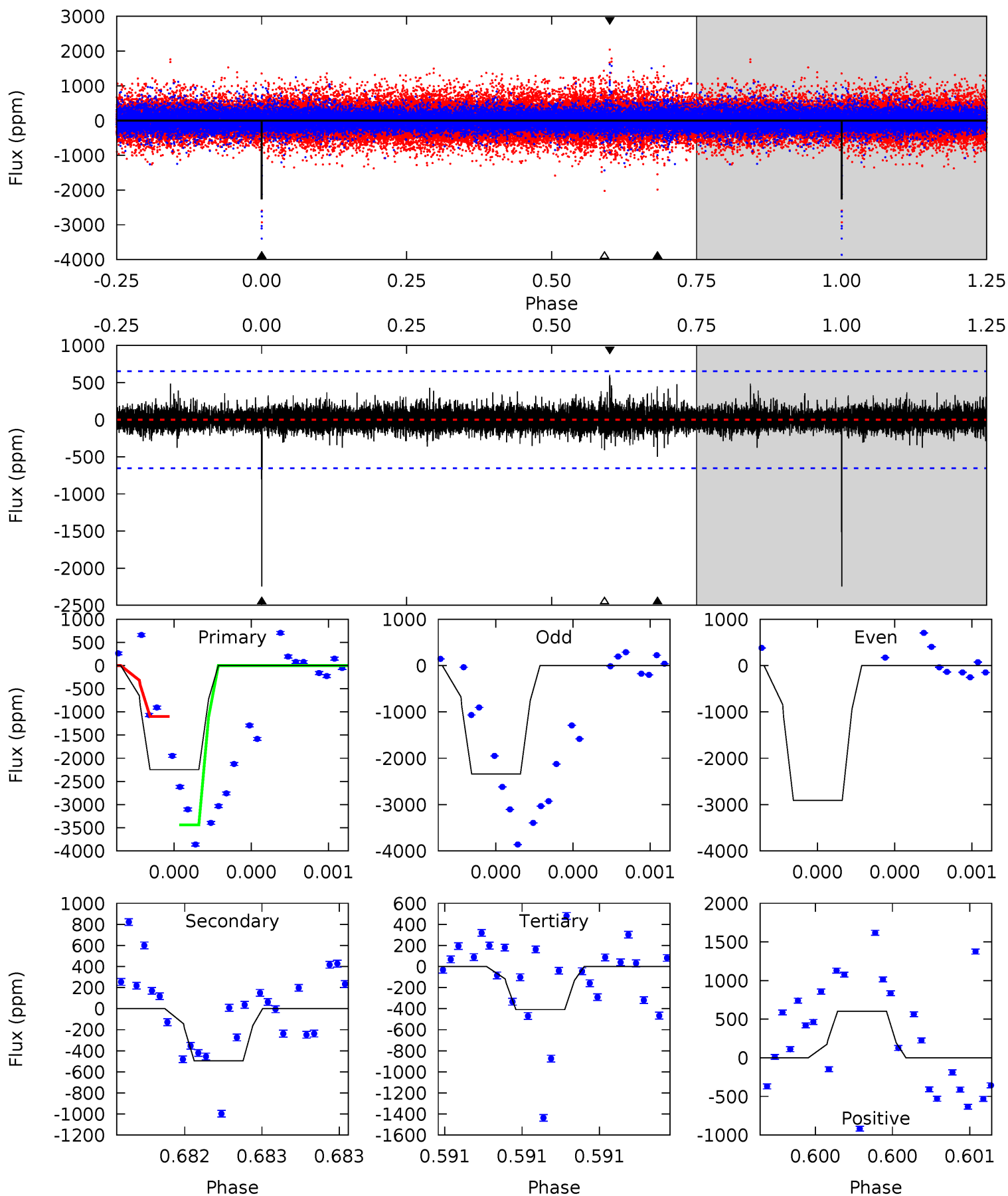
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.27	8.91	8.33	3.09	5.54	3.43	1.01	-0.06	5.18	0.59	5.82	6.70	1.57	0.26	7.18



Alt Model-Shift Uniqueness Test

009306597-02, P = 402.438964 Days, E = 117.834163 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	4.26	3.51	5.19	5.61	3.54	0.72	15.8	14.1	0.75	-0.92	3.56	1.19	0.21	0



Stellar Parameters For KIC 009306597

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6602^{+161}_{-241}	$4.354^{+0.062}_{-0.188}$	$-0.060^{+0.250}_{-0.300}$	$1.223^{+0.375}_{-0.150}$	$1.240^{+0.174}_{-0.174}$	$0.954^{+0.327}_{-0.478}$
	+2%/-4%	+1%/-4%	+417%/-500%	+31%/-12%	+14%/-14%	+34%/-50%
Source	PHO1	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 009306597-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-6882 ± 772	$26.51^{+24.30}_{-18.06}$	427^{+29}_{-20}	4542^{+3200}_{-950}	7205^{+62373}_{-5318}
Alt.	-496 ± 116	$22.20^{+23.70}_{-14.54}$	428^{+28}_{-22}	3087^{+1358}_{-537}	731^{+5118}_{-567}

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

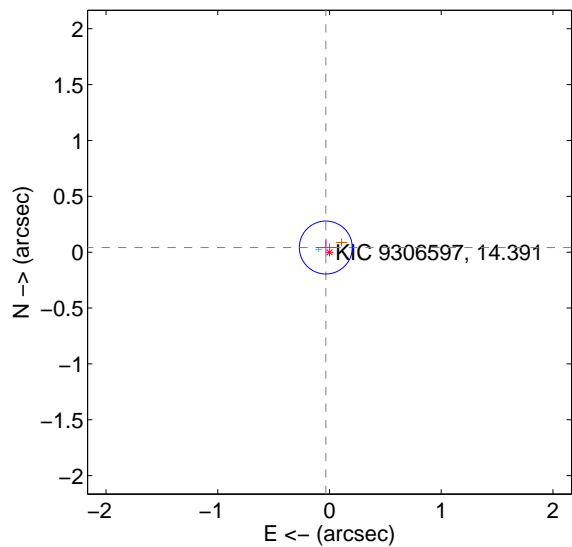
Supplemental centroid analysis for 009306597-02. Kepler magnitude: 14.39. Transit SNR 7.21

There are 1 quarters with good PRF difference image offsets

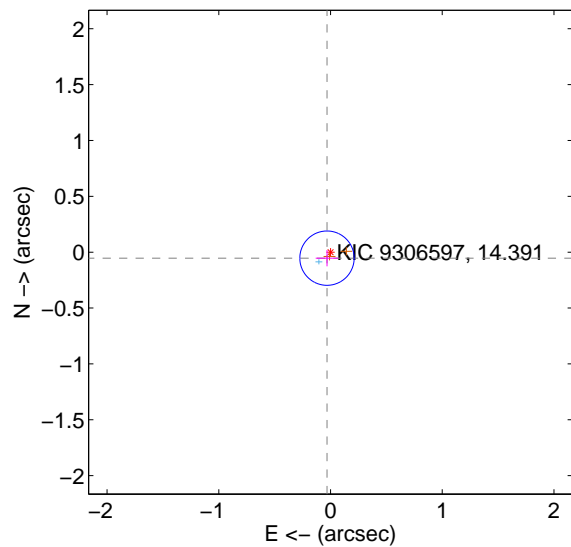
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.053 ± 0.079	0.67	0.033 ± 0.092	0.042 ± 0.070
PRF-fit source offset from KIC position	0.062 ± 0.081	0.77	0.032 ± 0.101	-0.053 ± 0.073
photometric centroid source offset	0.87 ± 0.31	2.79	0.86 ± 0.31	-0.11 ± 0.28

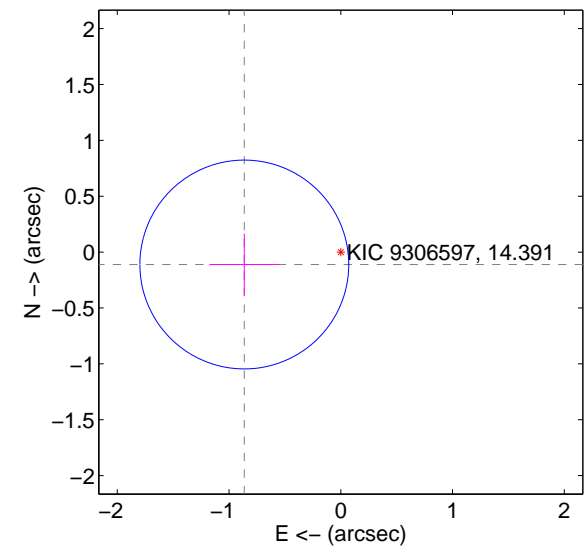
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

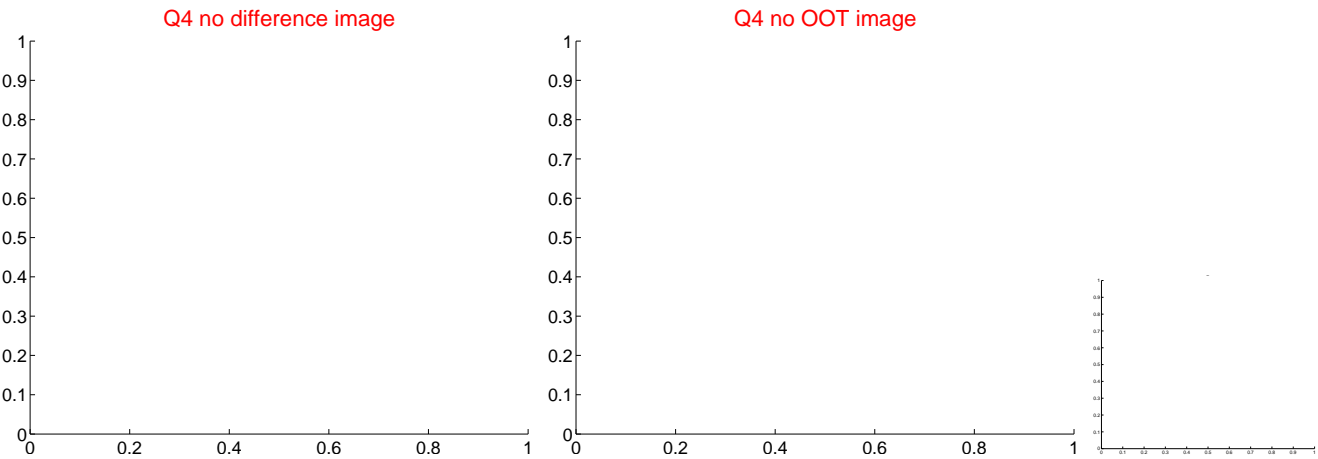
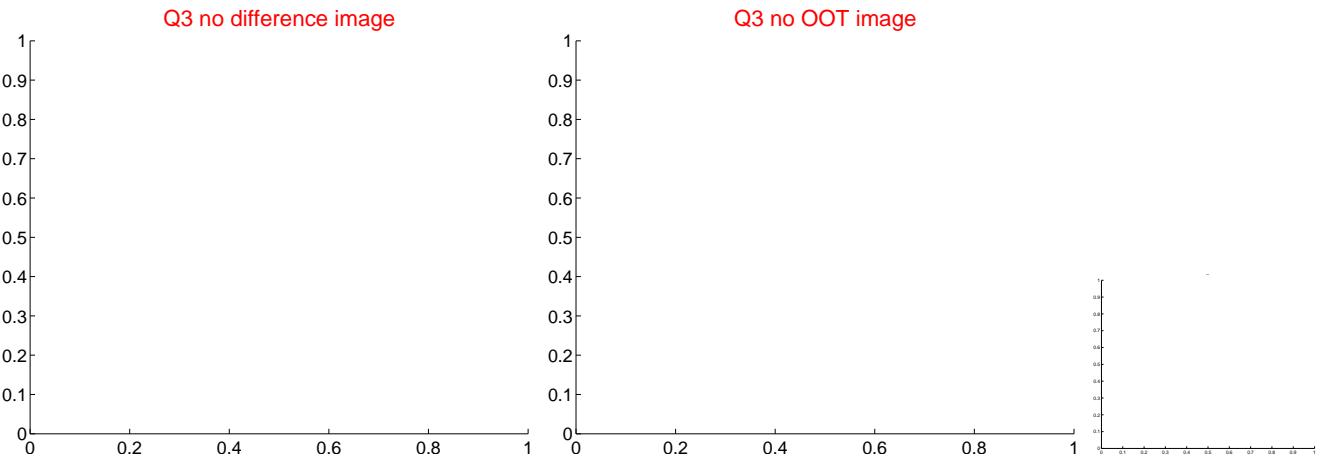
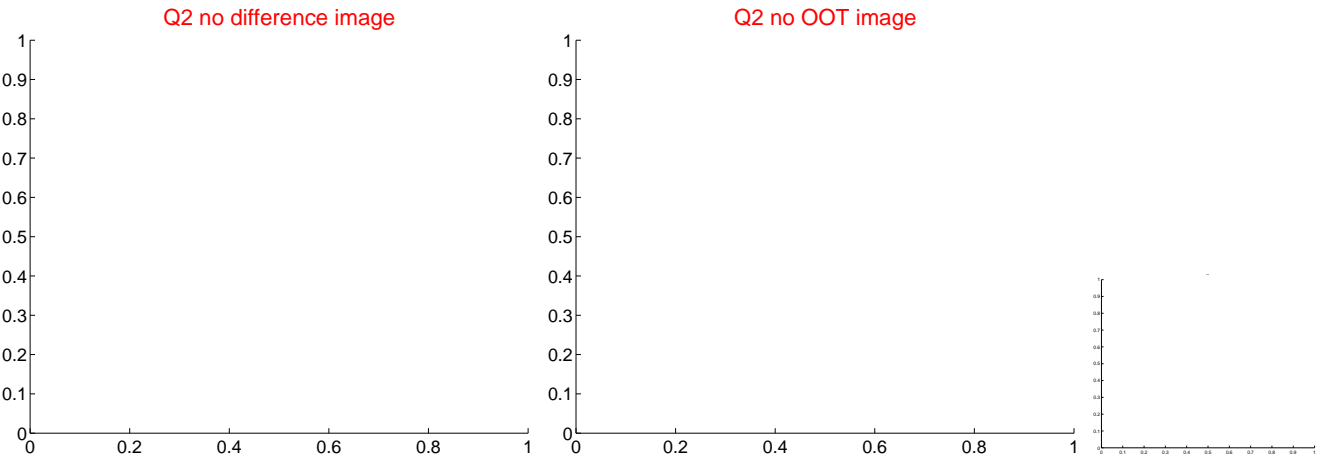
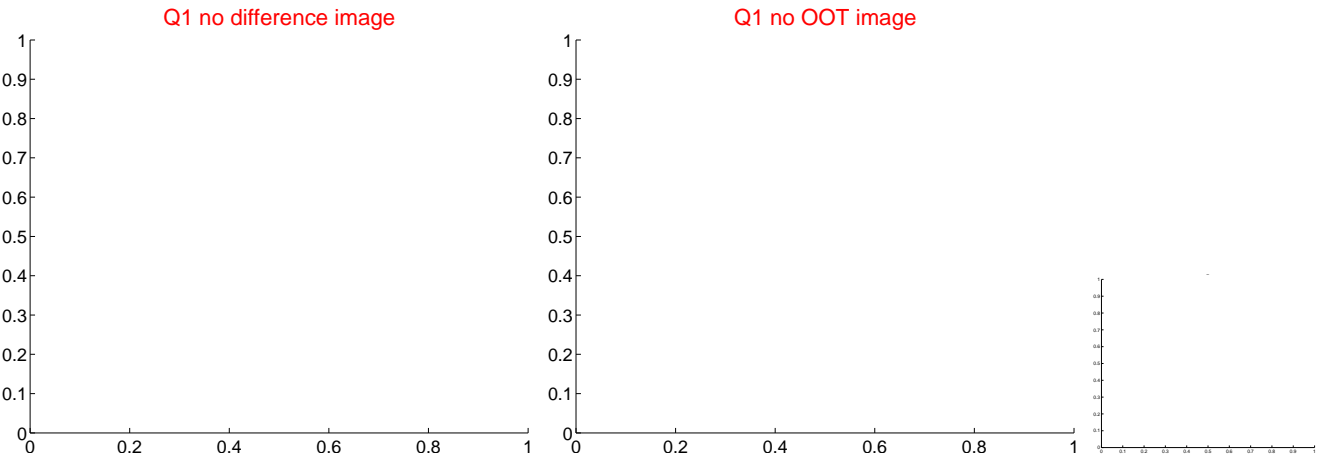


offset from photometric centroids

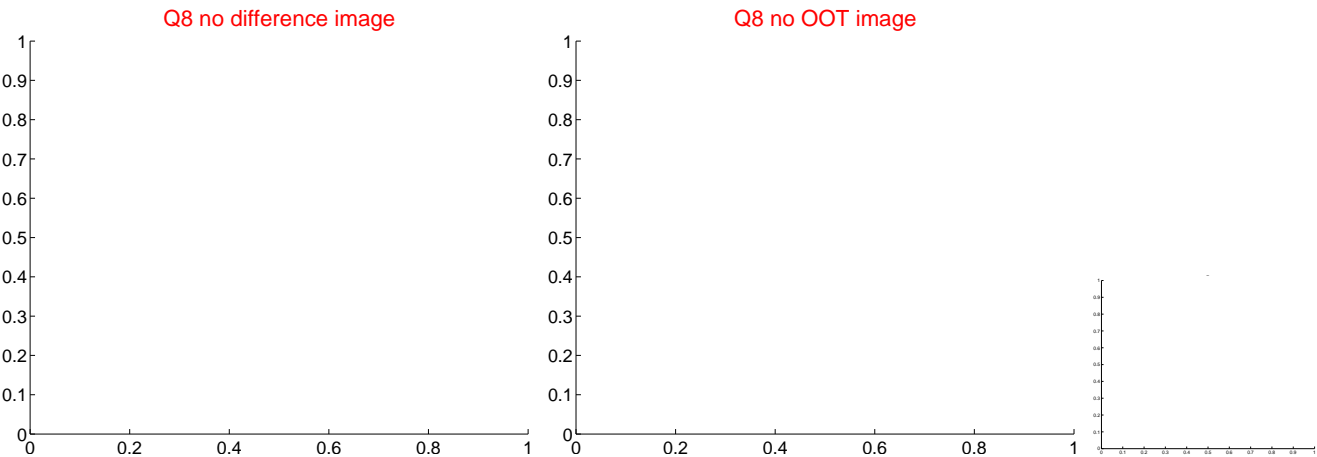
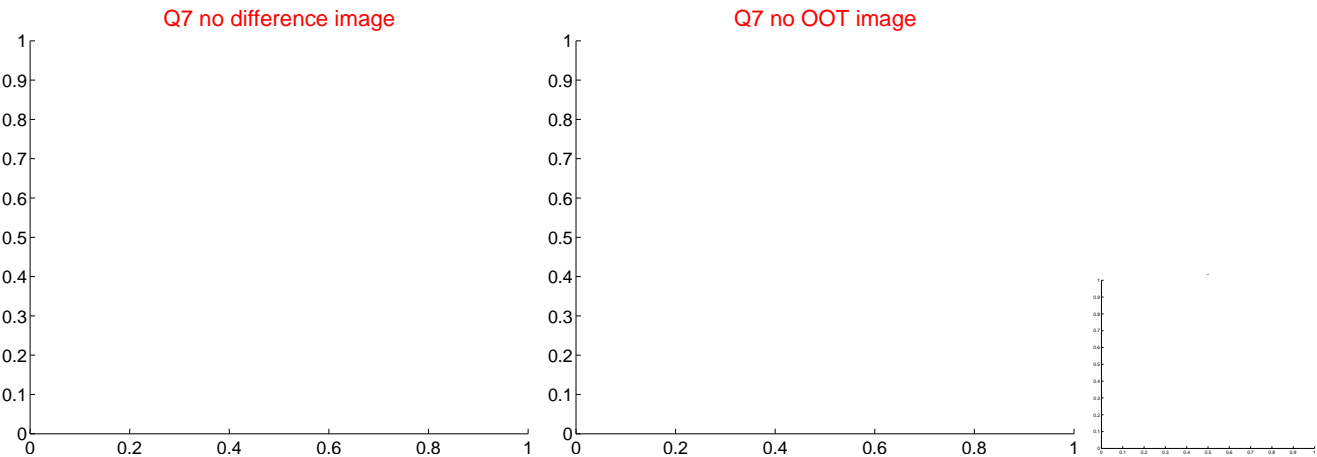
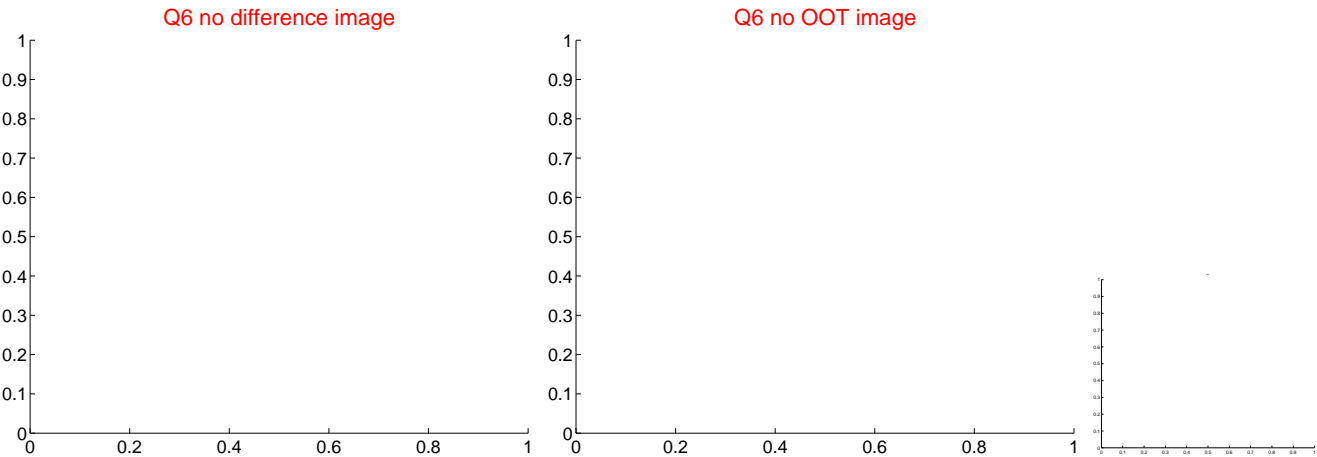
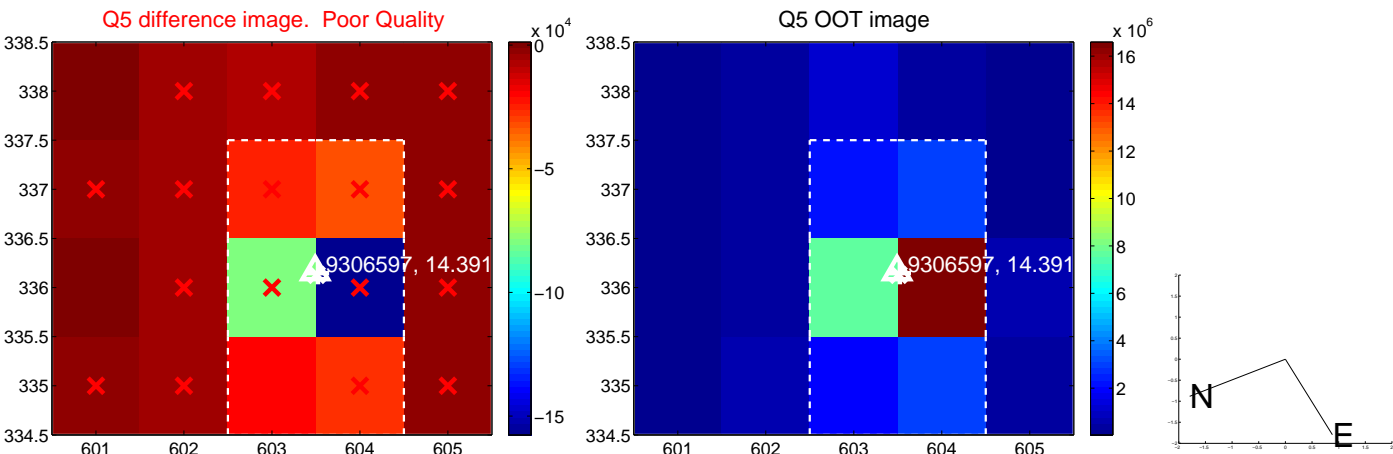


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

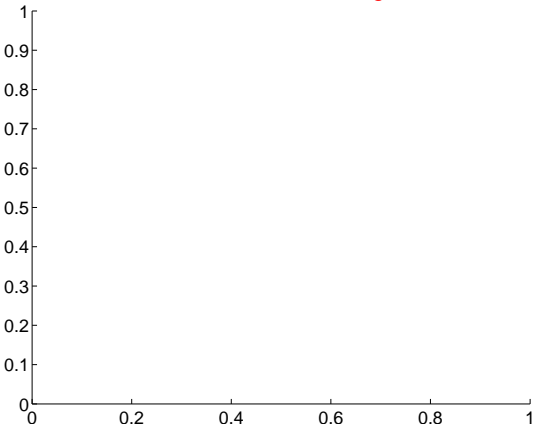


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

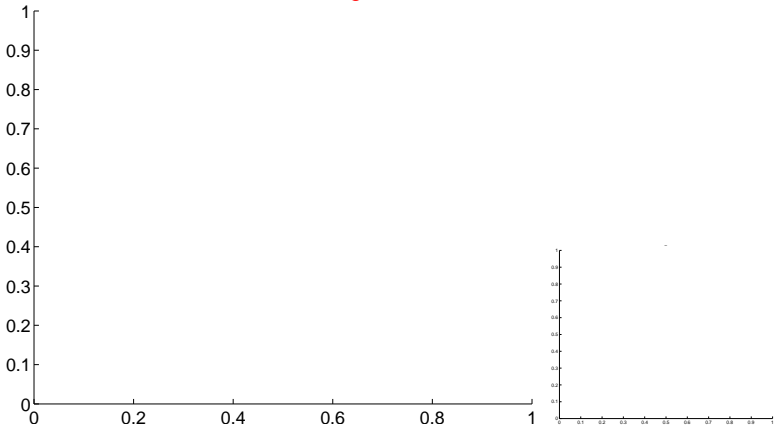


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

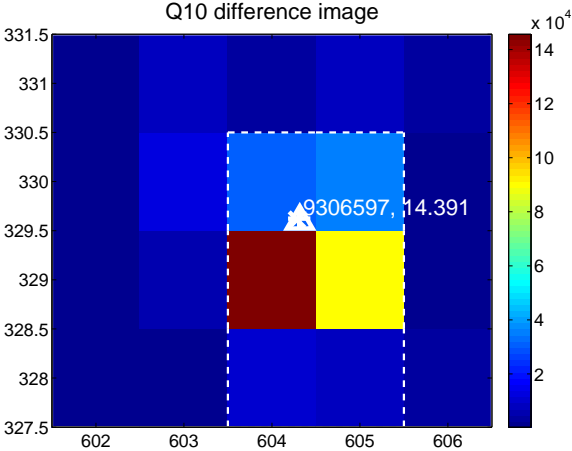
Q9 no difference image



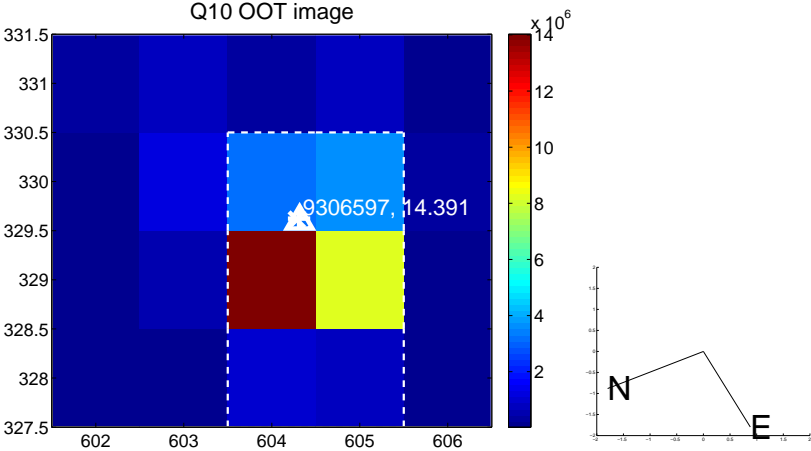
Q9 no OOT image



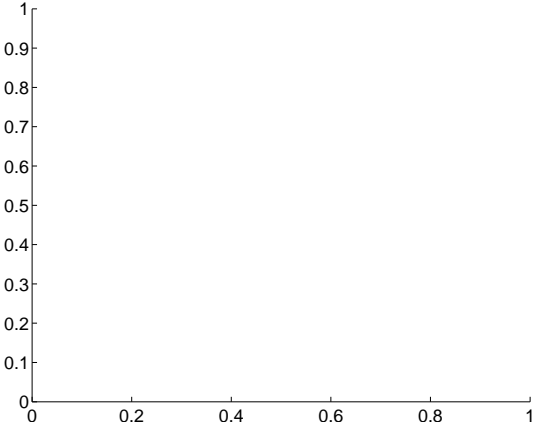
Q10 difference image



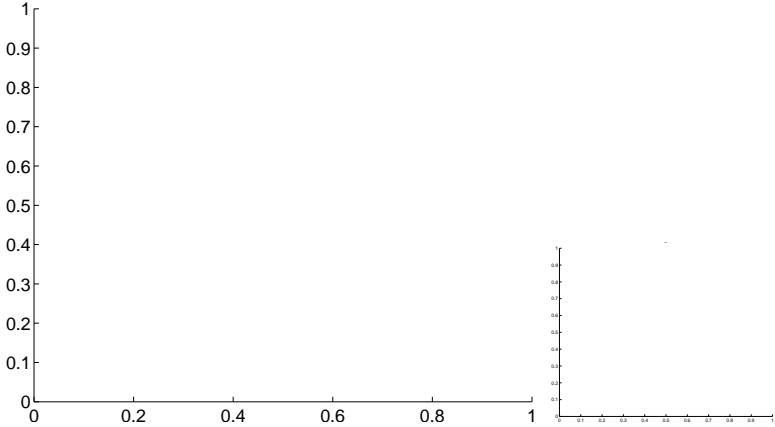
Q10 OOT image



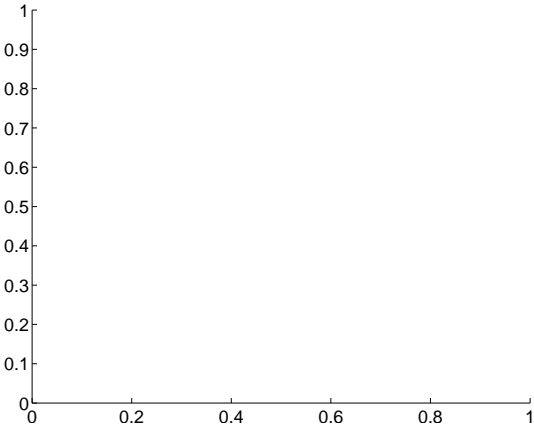
Q11 no difference image



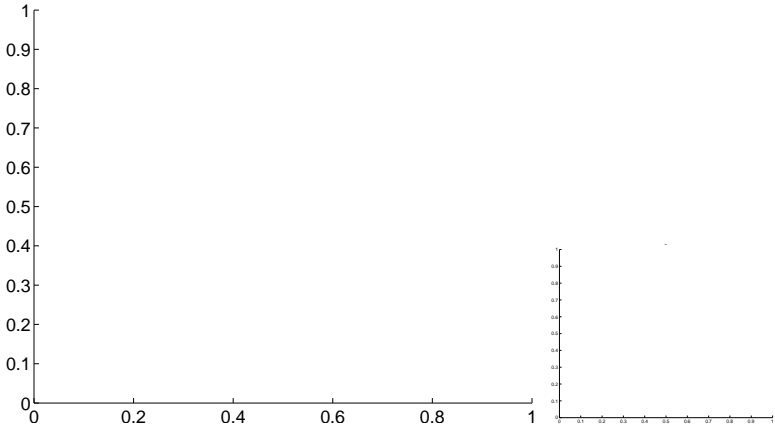
Q11 no OOT image



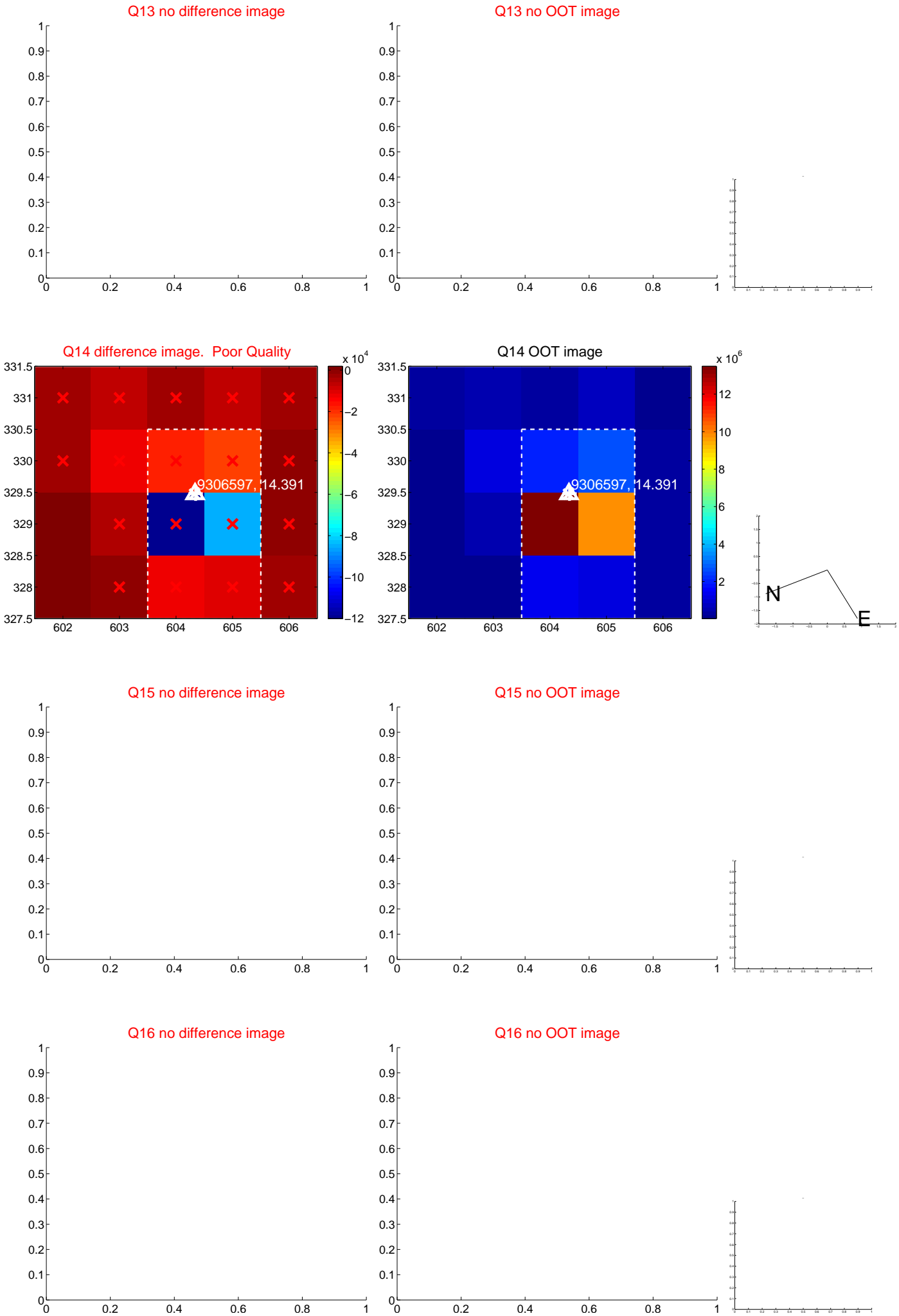
Q12 no difference image



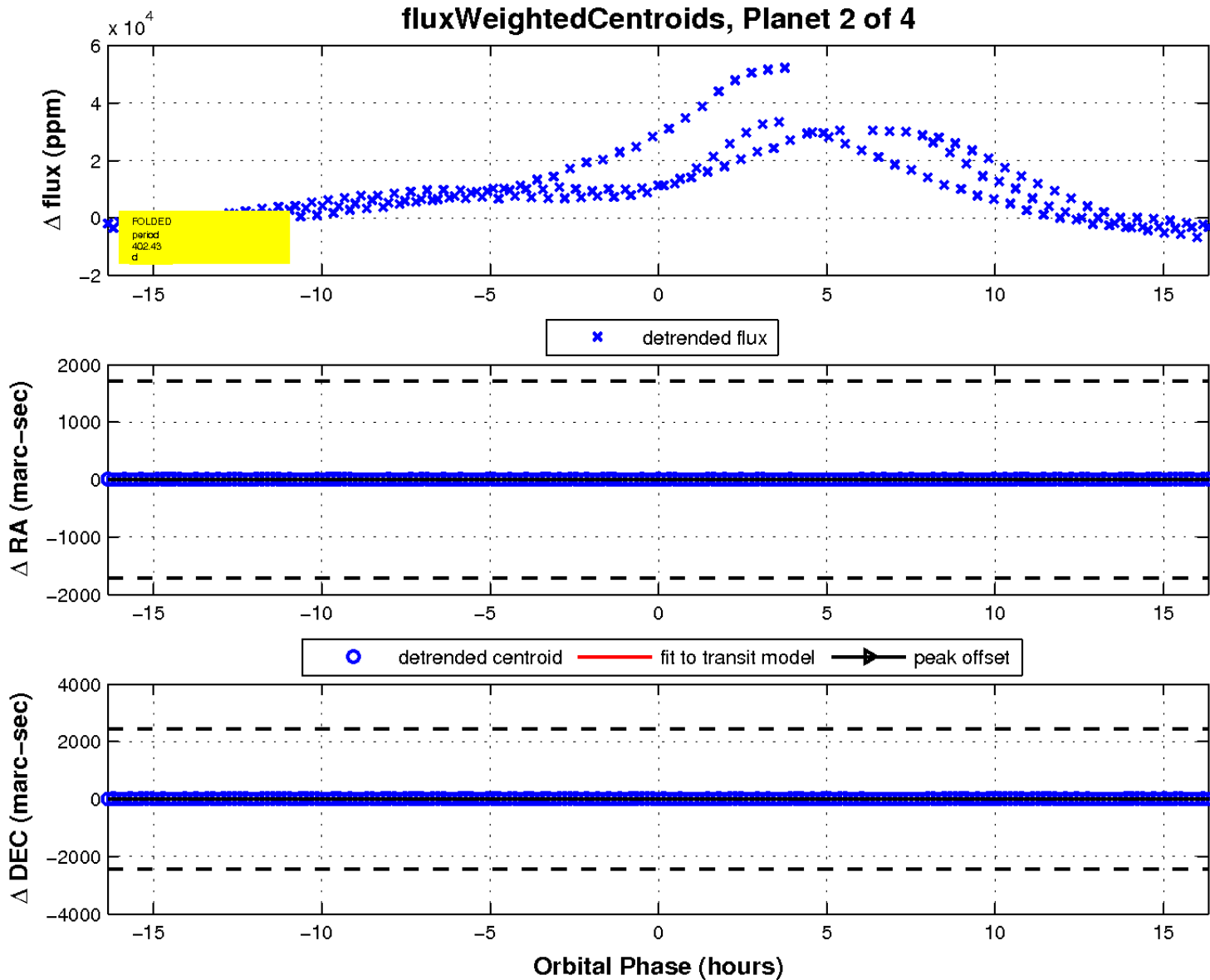
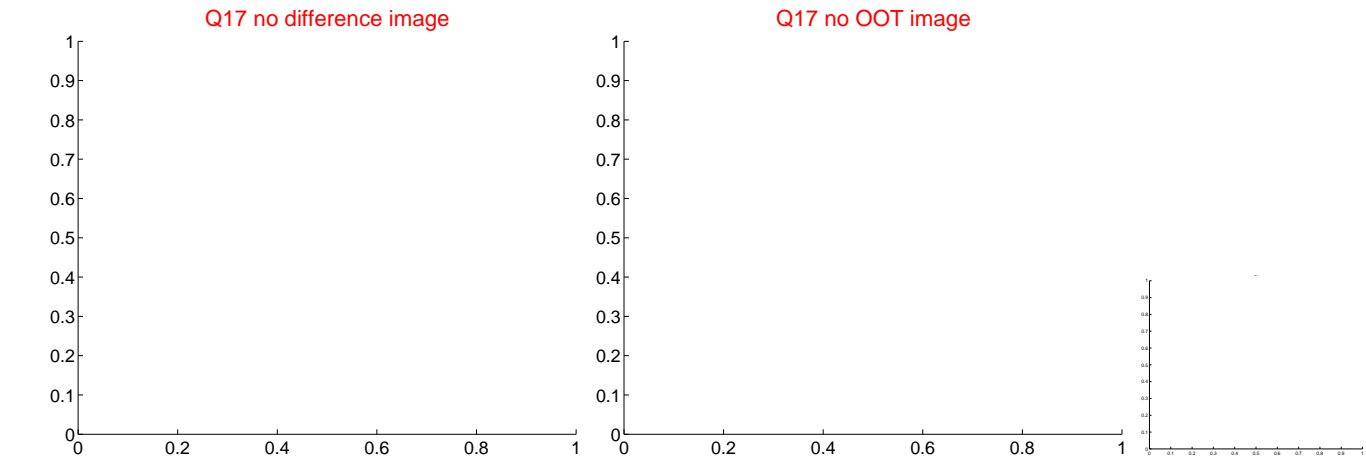
Q12 no OOT image



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

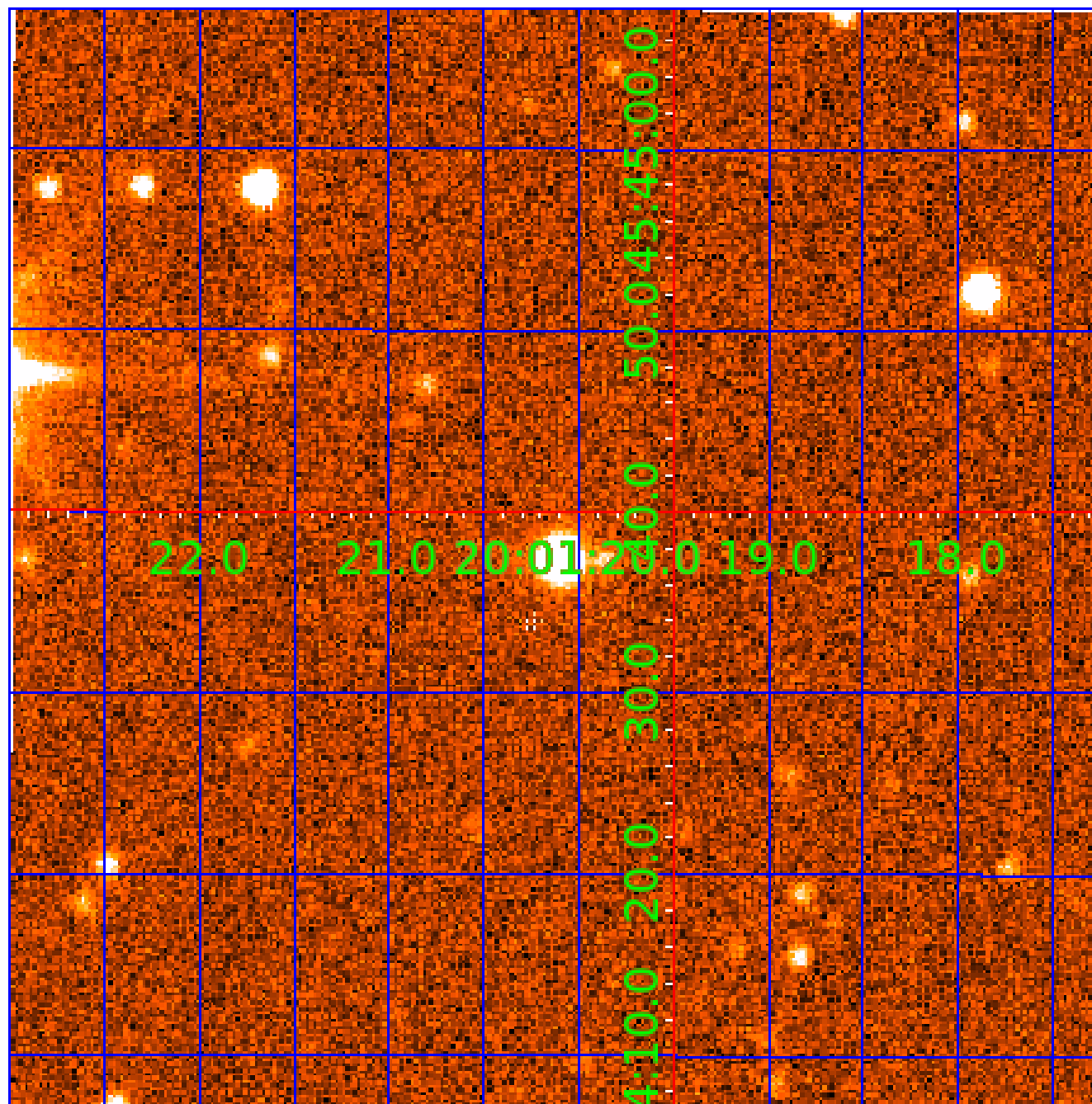


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009306597

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})
009306597-01	OBS	No	239.364361	344.216111	5758.4	9.819	18.1	6.9	1.22	6602	16.54	3.89
009306597-02	OBS	No	402.433744	520.310225	3947.2	5.454	11.6	7.2	1.22	6602	13.93	1.95
009306597-03	OBS	No	578.180452	159.923487	6494.5	6.707	10.6	8.7	1.22	6602	17.57	1.20
009306597-04	OBS	No	446.425608	508.564665	2606.0	4.500	19.8	-1.0	1.22	6602	6.29	1.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009306597-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
009306597-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009306597-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009306597-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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.

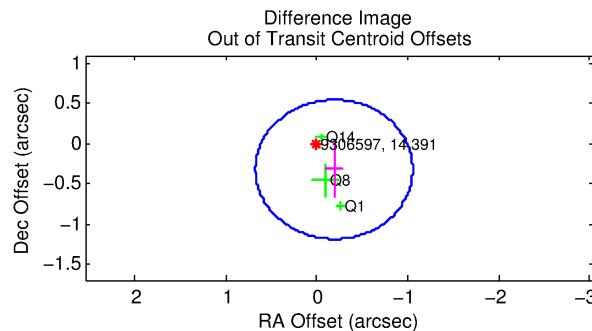
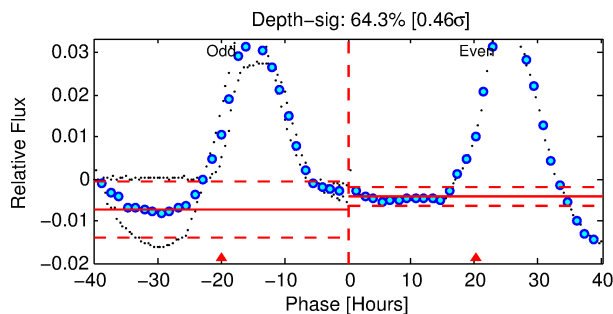
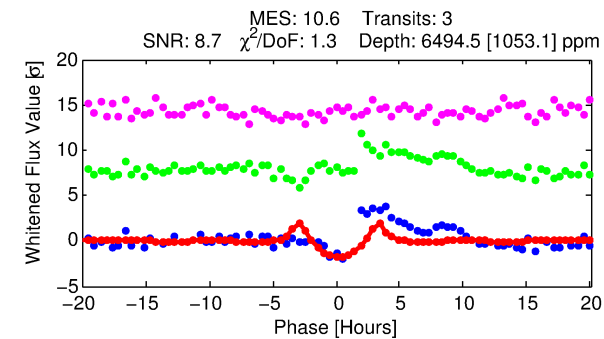
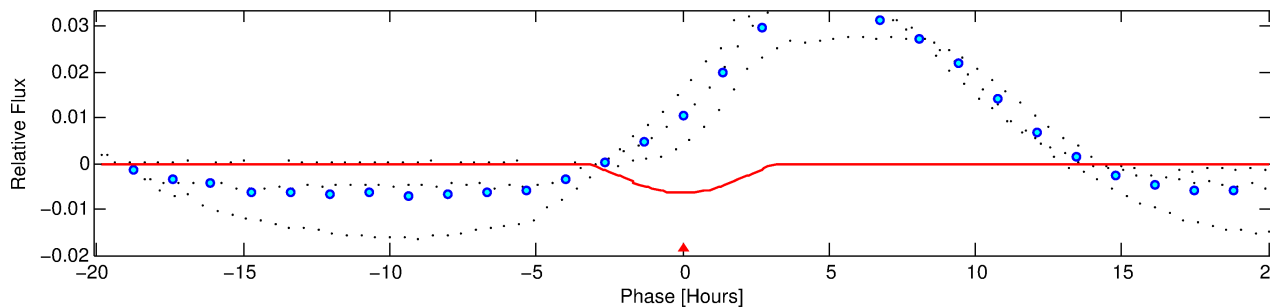
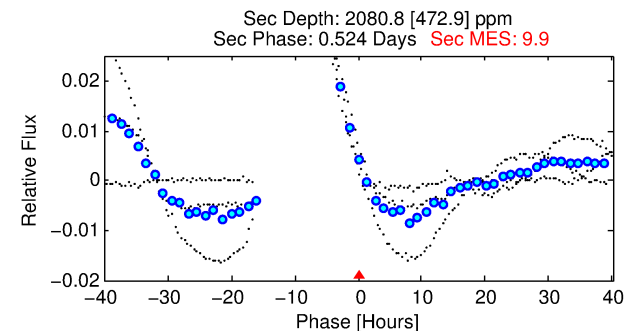
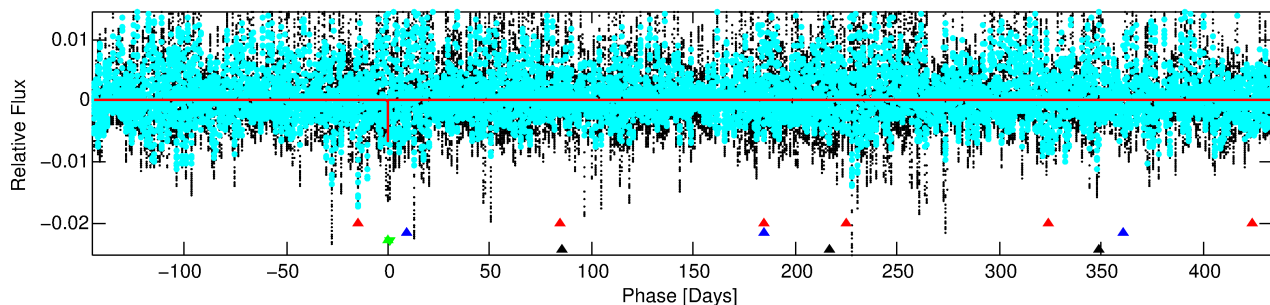
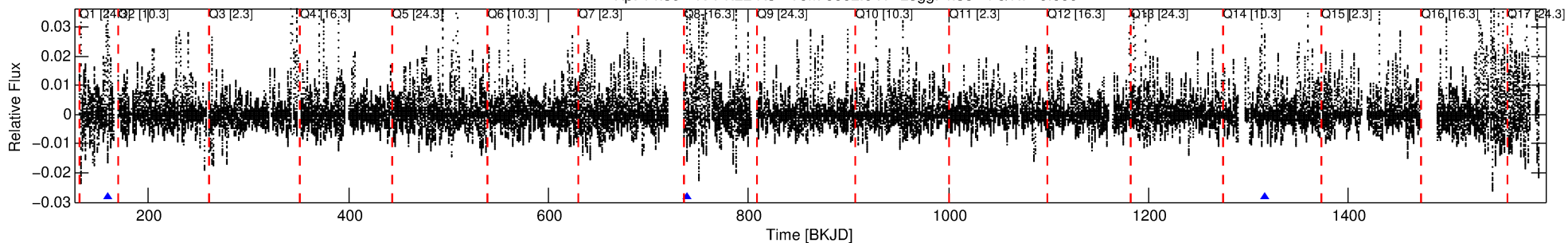
Ephemeris Match Information For 009306597-03

No Significant Match Found

DV One-Page Summary

KIC: 9306597 Candidate: 3 of 4 Period: 578.180 d

Kp: 14.39 R*: 1.22 Rs Teff: 6602.0 K Logg: 4.35 Fe/H: -0.060



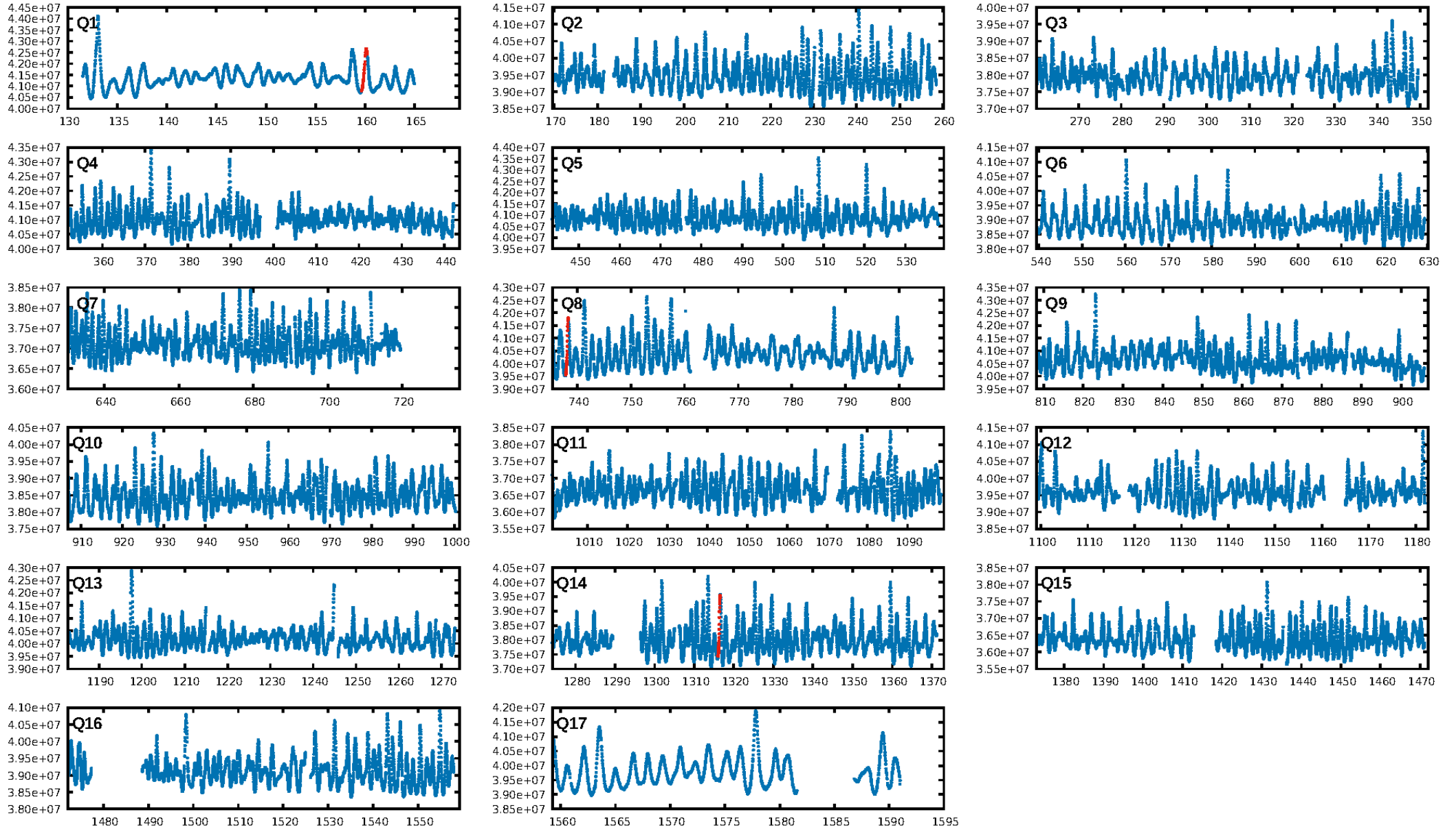
DV Fit Results:

Period = 578.18045 [0.00667] d
Epoch = 159.9235 [0.0108] BKJD
Rp/R* = 0.1316 [0.1641]
a/R* = 349.45 [74.47]
b = 1.00 [0.23]
Seff = 1.20 [0.46]
Teff = 267 [26] K
Rp = 17.57 [22.55] Re
a = 1.4567 [0.3645] AU
Ag = 7869.82 [19895.77] [0.40σ]
Teffp = 3886 [2436] K [1.49σ]

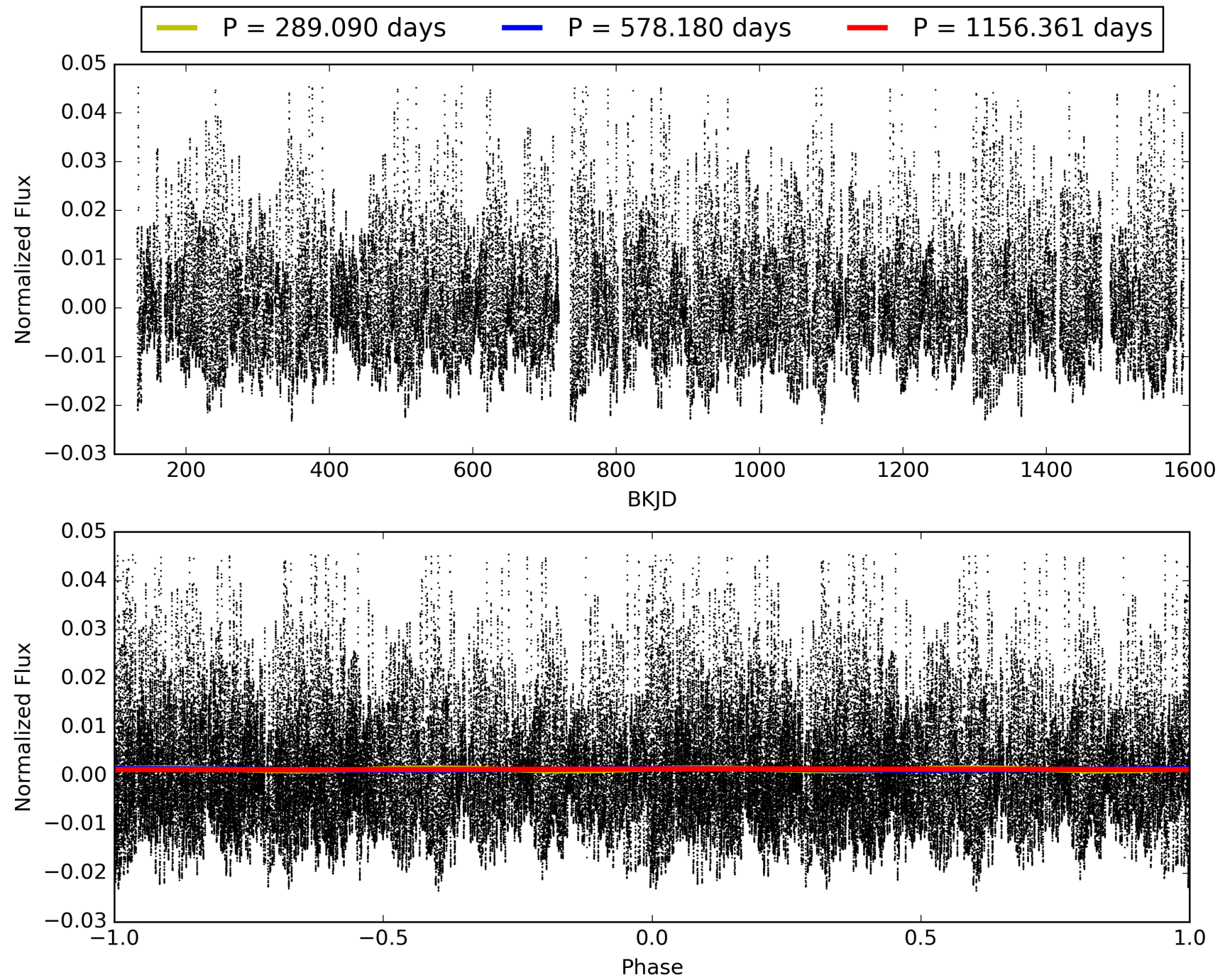
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [391.50σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 22.2%
ModelChiSquareGof-sig: 50.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.7503
Centroid-sig: 11.2%
Centroid-so: 0.254 arcsec [1.19σ]
OotOffset-rm: 0.373 arcsec [1.29σ]
KicOffset-rm: 0.459 arcsec [1.63σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009306597-03, PDC Light Curves

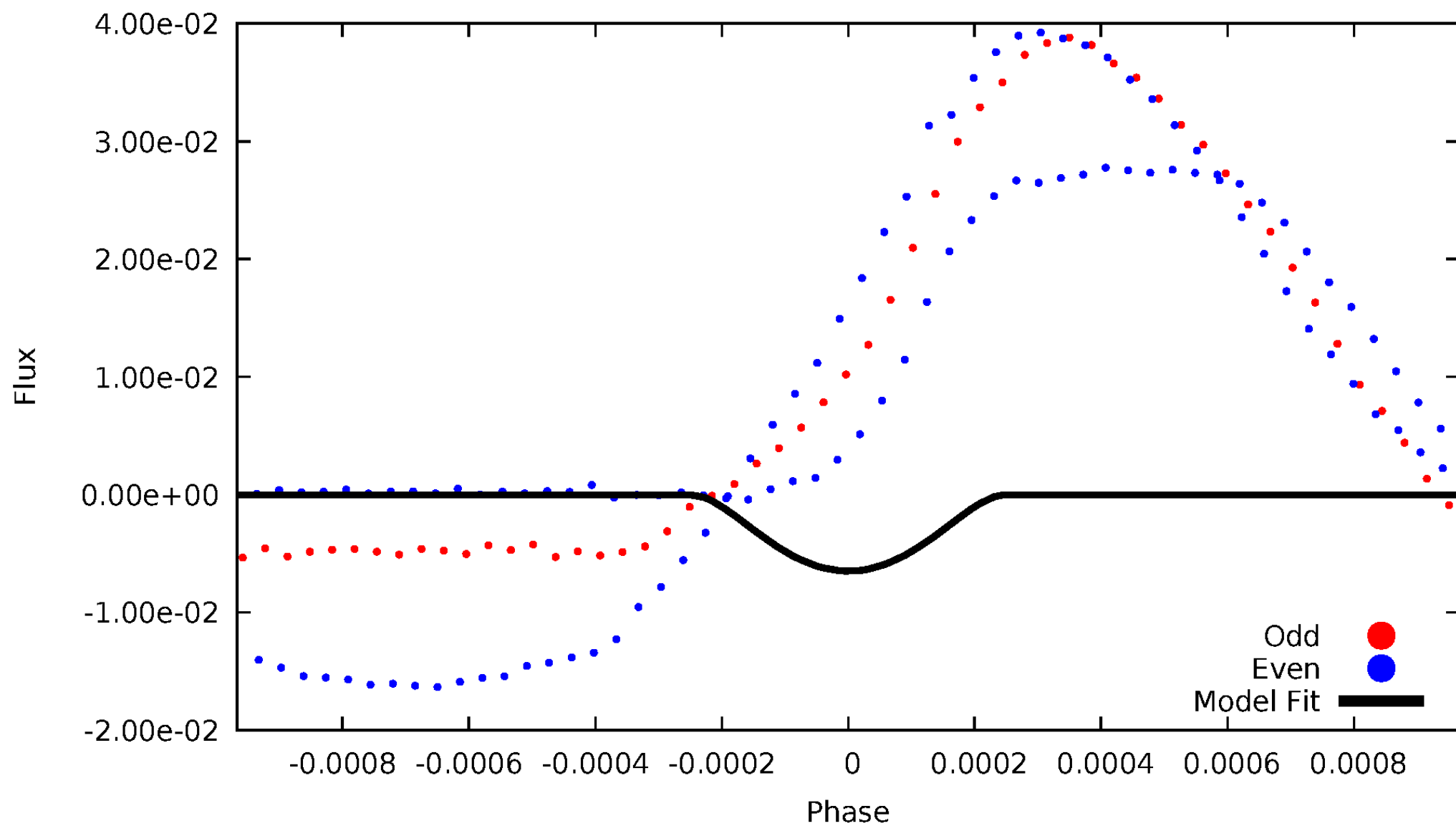


TCE 009306597-03



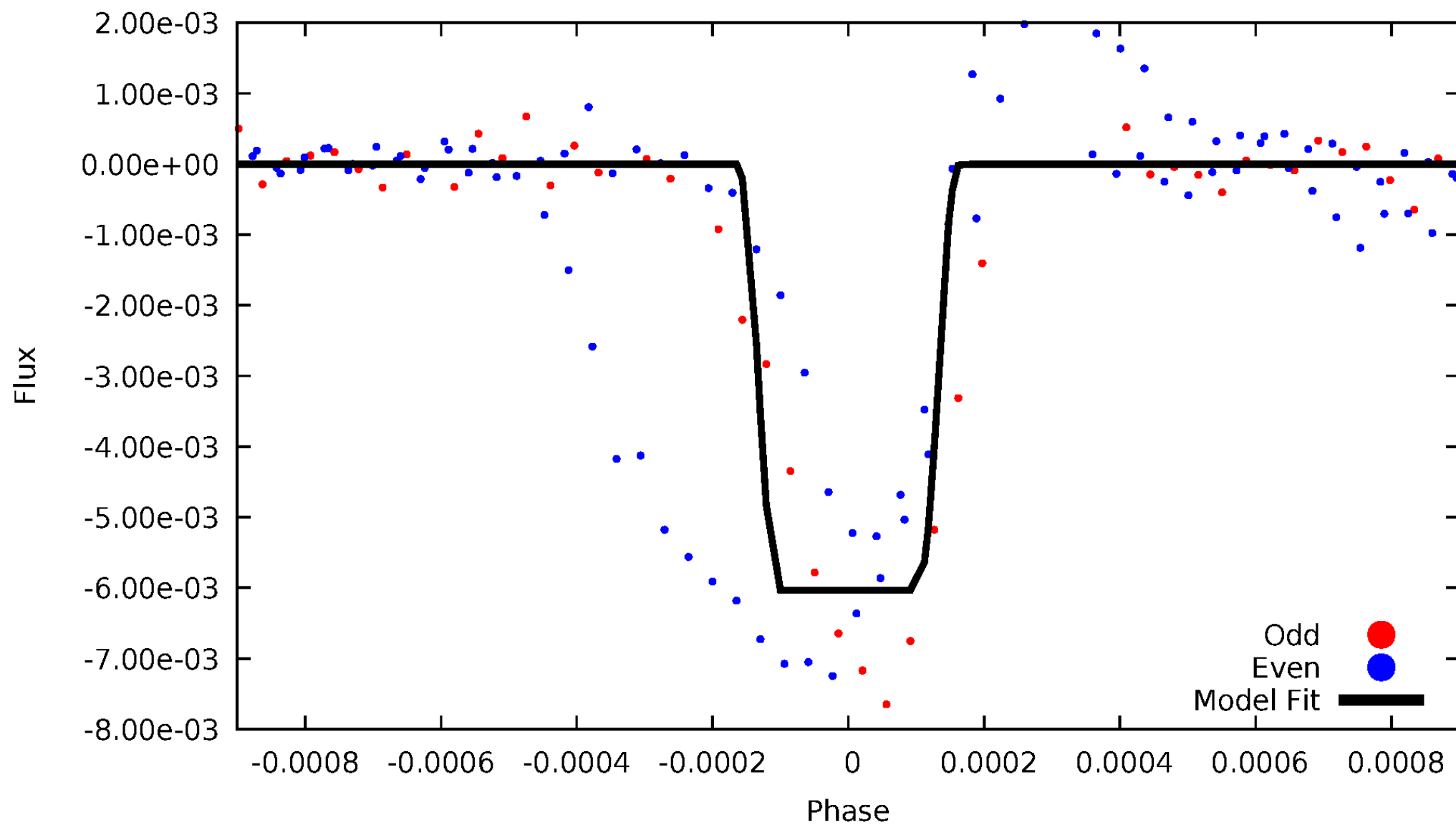
DV Odd/Even

TCE 009306597-03



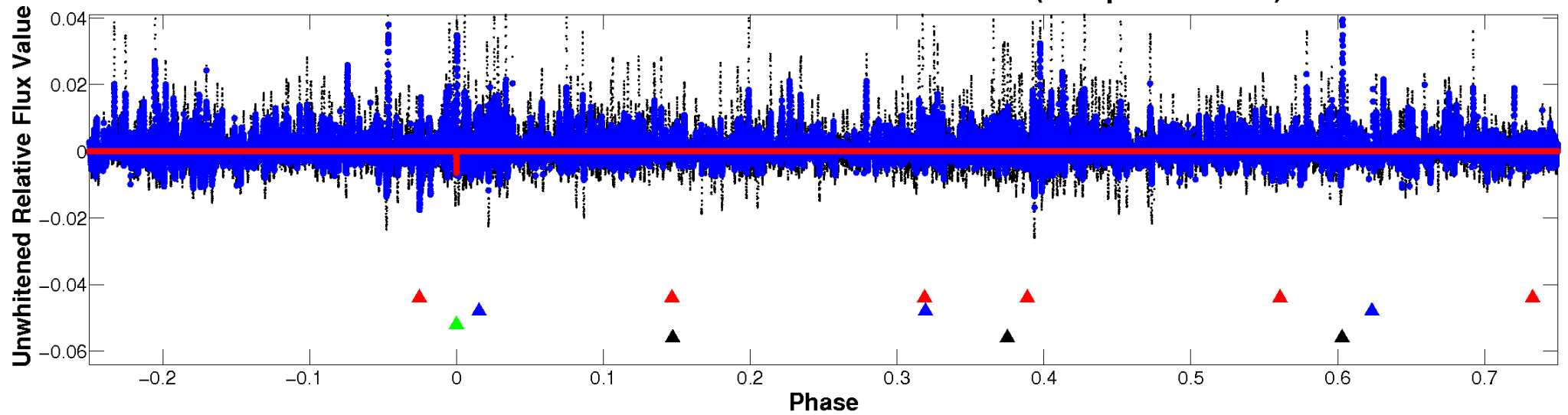
ALT Odd/Even

TCE 009306597-03

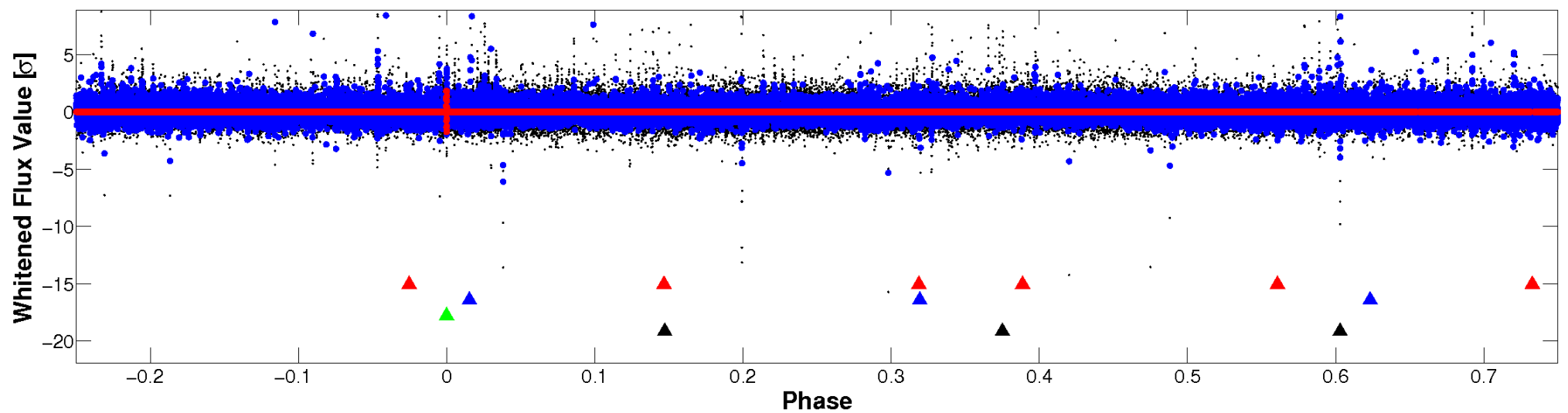


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

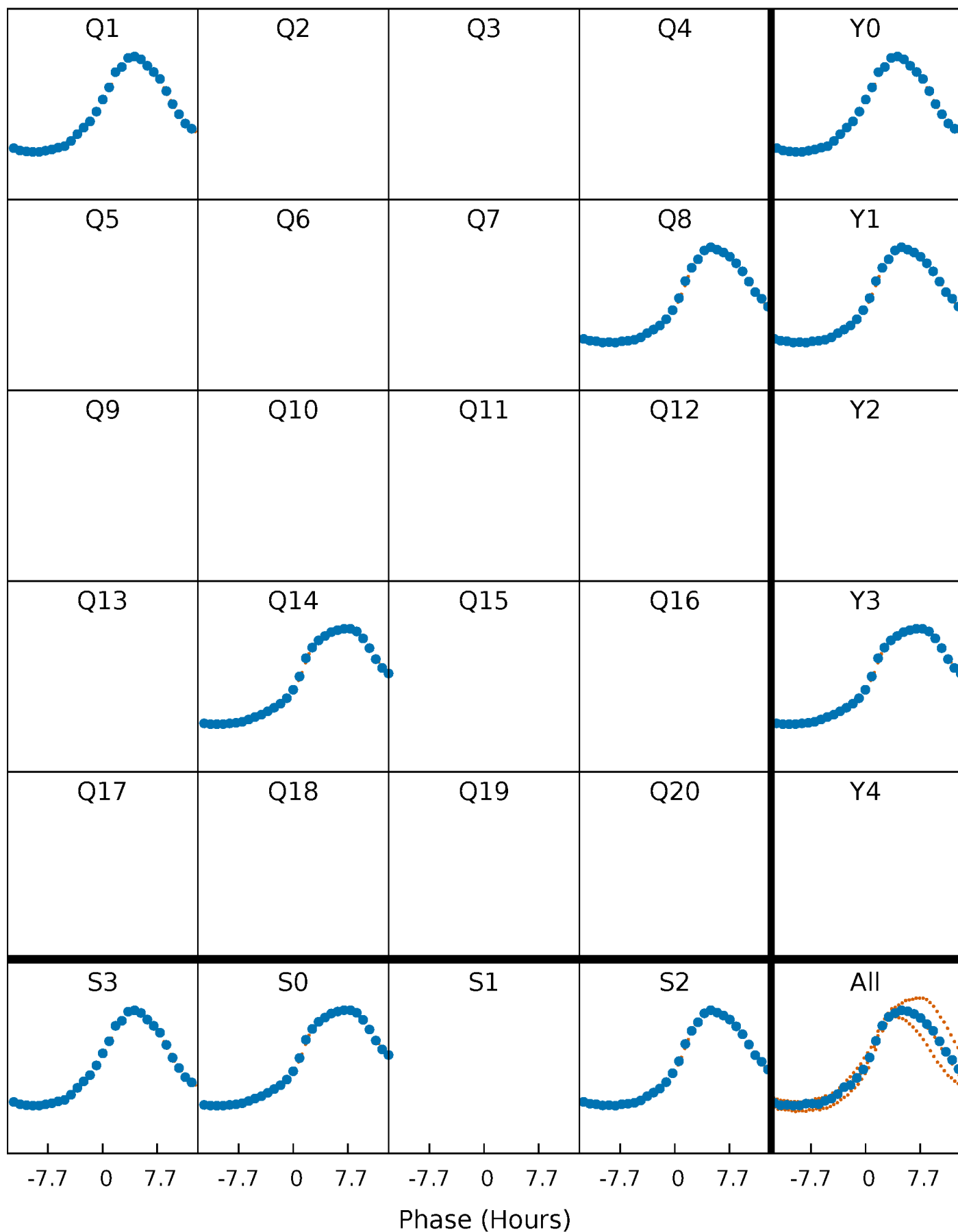


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



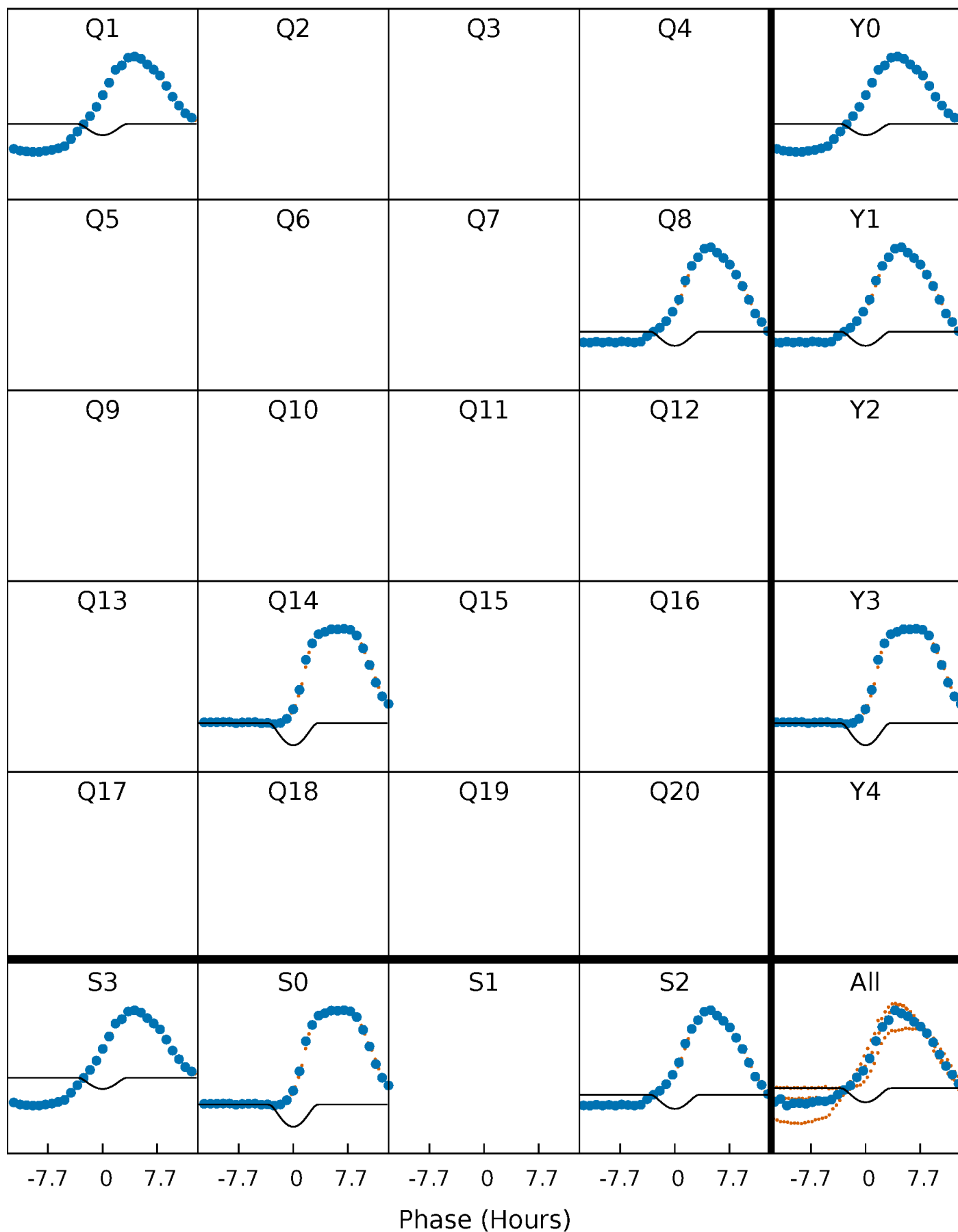
PDC Quarter-Phased Transit Curves

TCE 009306597-03 P=578.180452 Days $T_0=159.923487$ (BKJD)



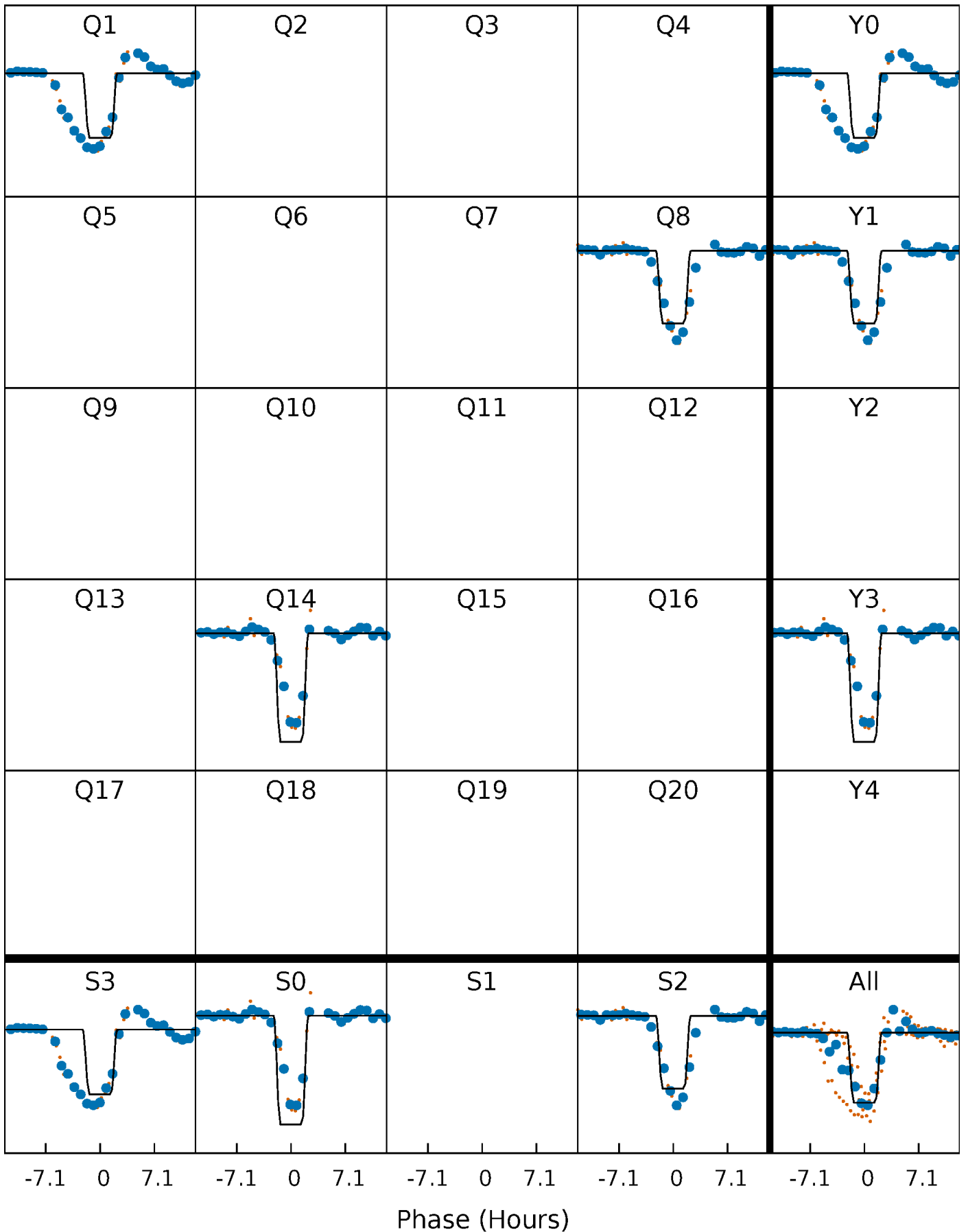
DV Quarter-Phased Transit Curves

TCE 009306597-03 P=578.180452 Days $T_0=159.923487$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

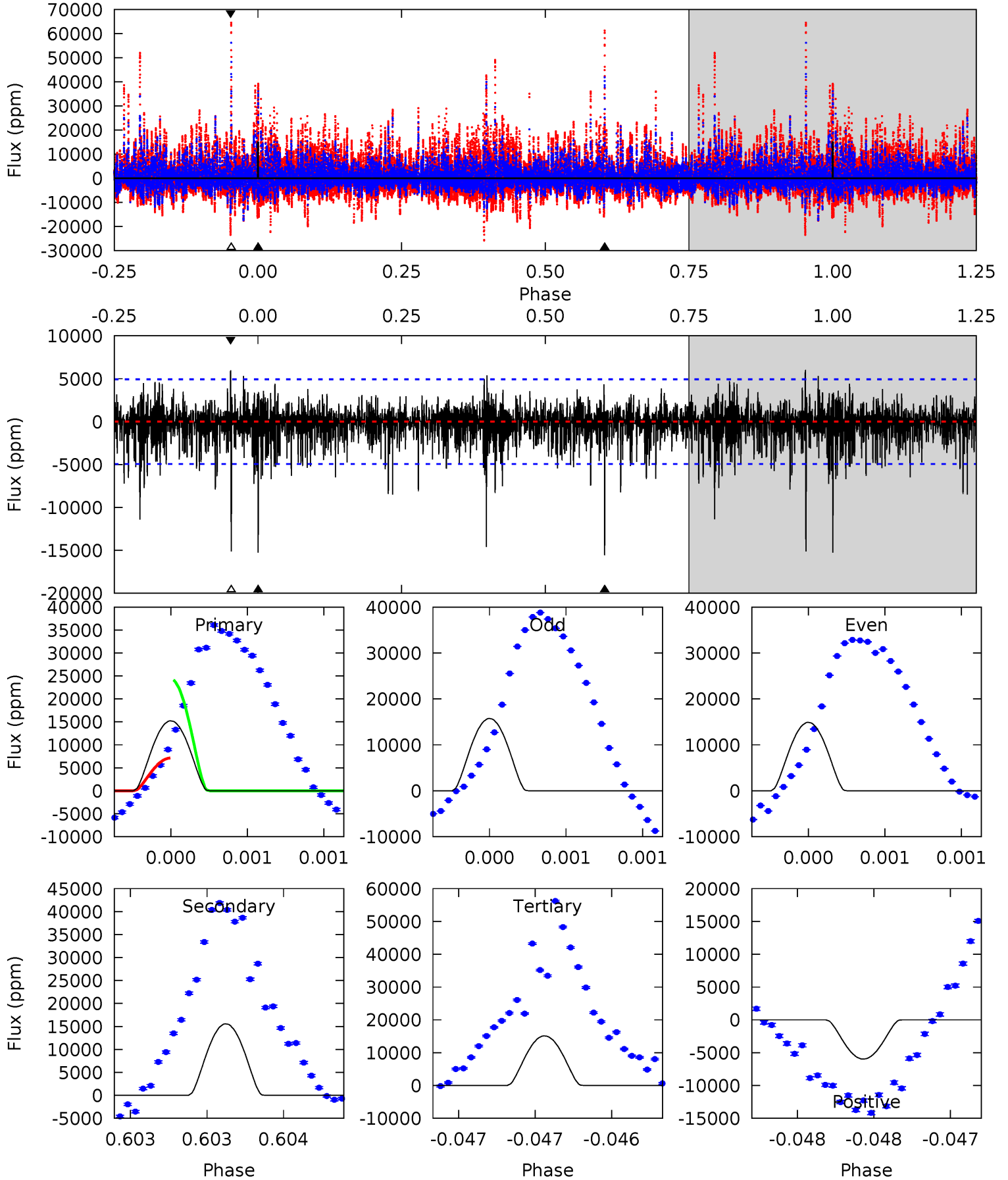
TCE 009306597-03 $P=578.181203$ Days $T_0=159.908604$ (BKJD)



DV Model-Shift Uniqueness Test

009306597-03, P = 578.180452 Days, E = 159.923487 Days

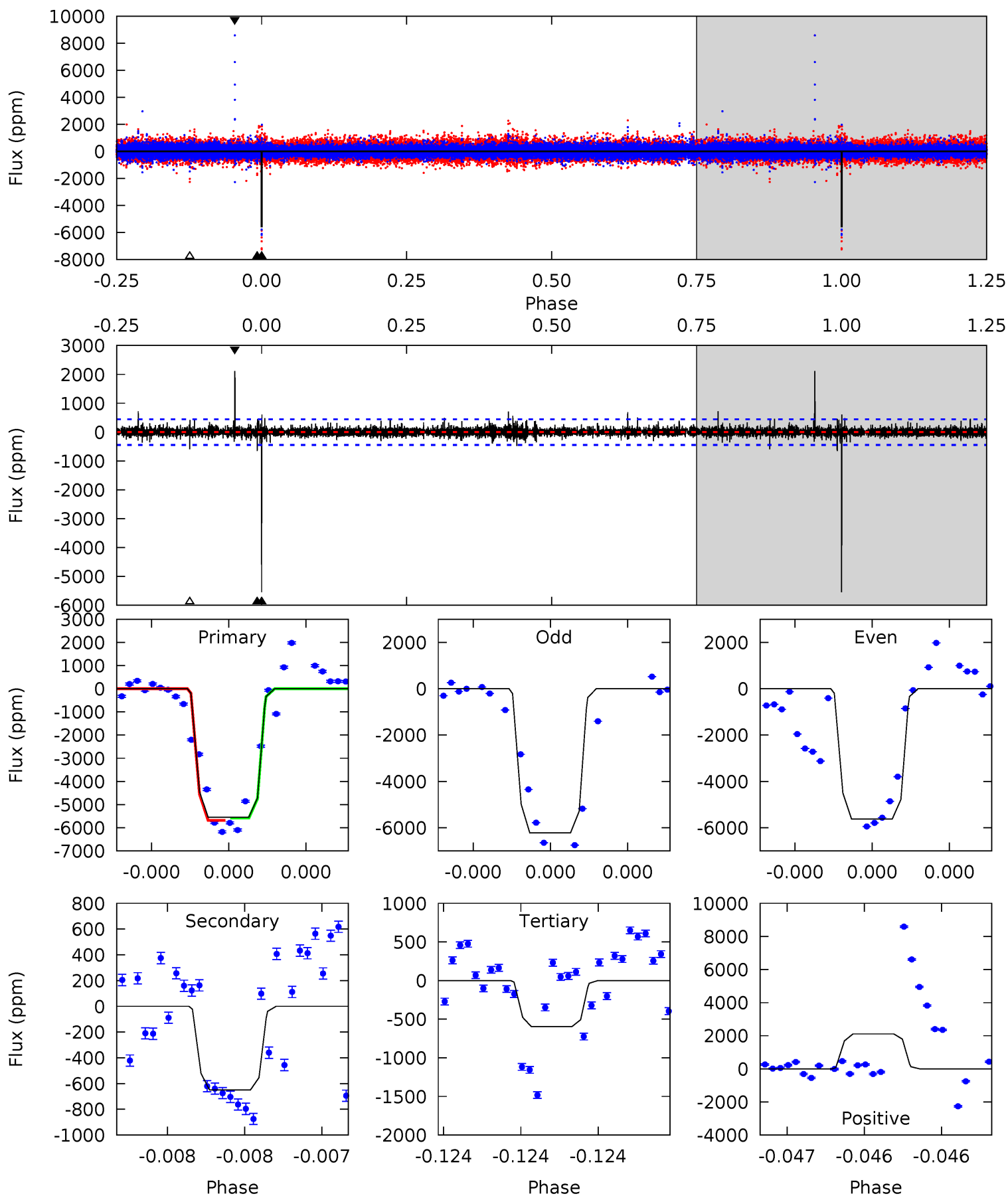
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.2	17.6	17.1	6.74	5.57	3.47	2.04	0.13	10.4	0.50	10.8	0.42	0.97	0.28	9.61



Alt Model-Shift Uniqueness Test

009306597-03, P = 578.181203 Days, E = 159.908604 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
70.4	8.27	7.56	26.8	5.65	3.60	1.08	62.9	43.6	0.71	-18.5	4.25	0.90	0.28	0.57



Stellar Parameters For KIC 009306597

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6602^{+161}_{-241}	$4.354^{+0.062}_{-0.188}$	$-0.060^{+0.250}_{-0.300}$	$1.223^{+0.375}_{-0.150}$	$1.240^{+0.174}_{-0.174}$	$0.954^{+0.327}_{-0.478}$
	+2%/-4%	+1%/-4%	+417%/-500%	+31%/-12%	+14%/-14%	+34%/-50%
Source	PHO1	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 009306597-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-15575 ± 887	$24.09^{+19.98}_{-15.77}$	379^{+25}_{-18}	5632^{+4575}_{-1267}	$31057^{+224229}_{-21617}$
Alt.	-650 ± 79	$21.38^{+17.59}_{-14.43}$	378^{+26}_{-18}	3248^{+1530}_{-494}	1577^{+13253}_{-1071}

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

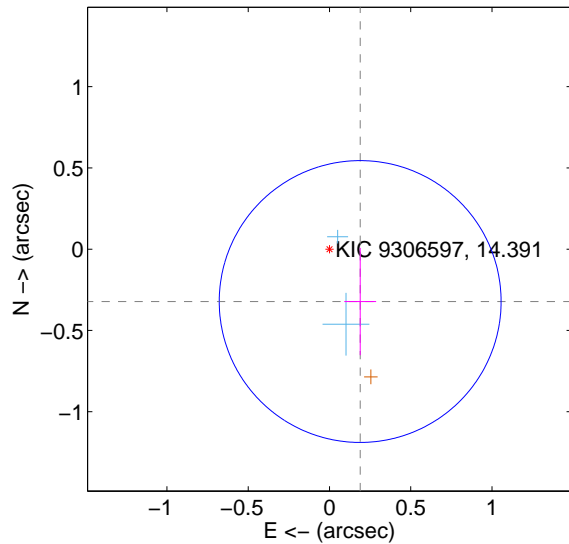
Supplemental centroid analysis for 009306597-03. Kepler magnitude: 14.39. Transit SNR 8.72

There are 2 quarters with good PRF difference image offsets

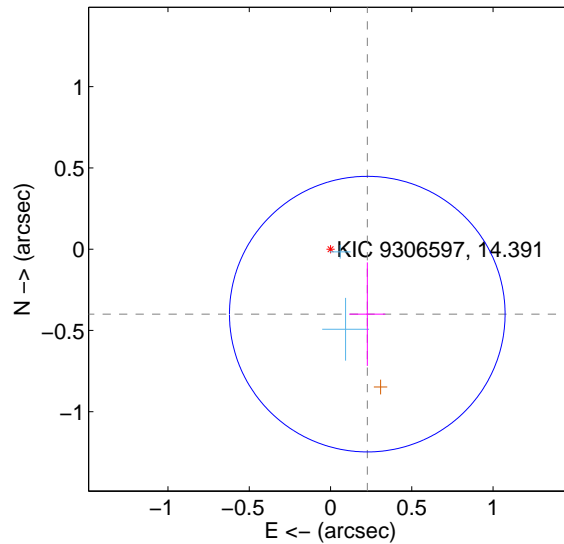
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.373 ± 0.289	1.29	-0.189 ± 0.098	-0.322 ± 0.330
PRF-fit source offset from KIC position	0.459 ± 0.283	1.63	-0.226 ± 0.111	-0.400 ± 0.319
photometric centroid source offset	0.25 ± 0.21	1.19	0.25 ± 0.21	0.05 ± 0.17

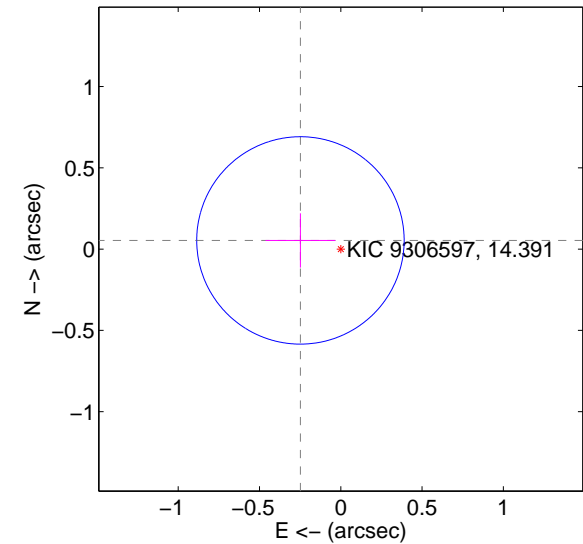
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

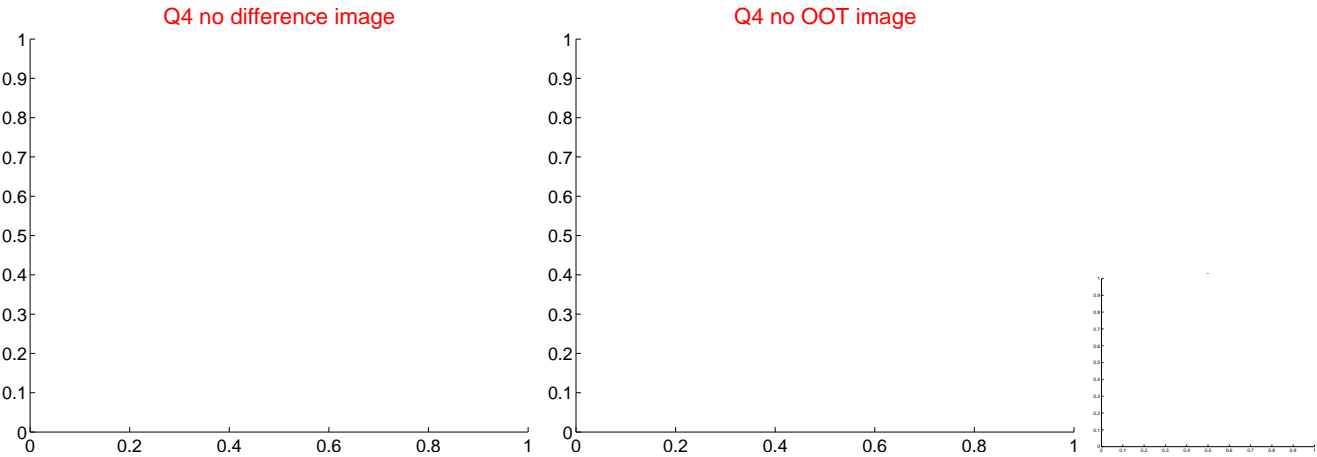
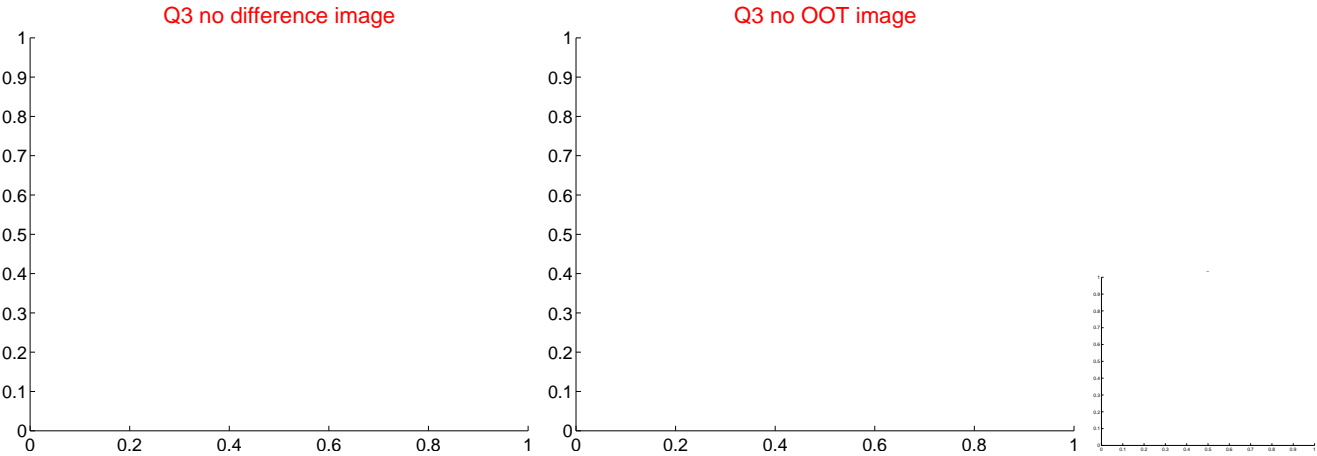
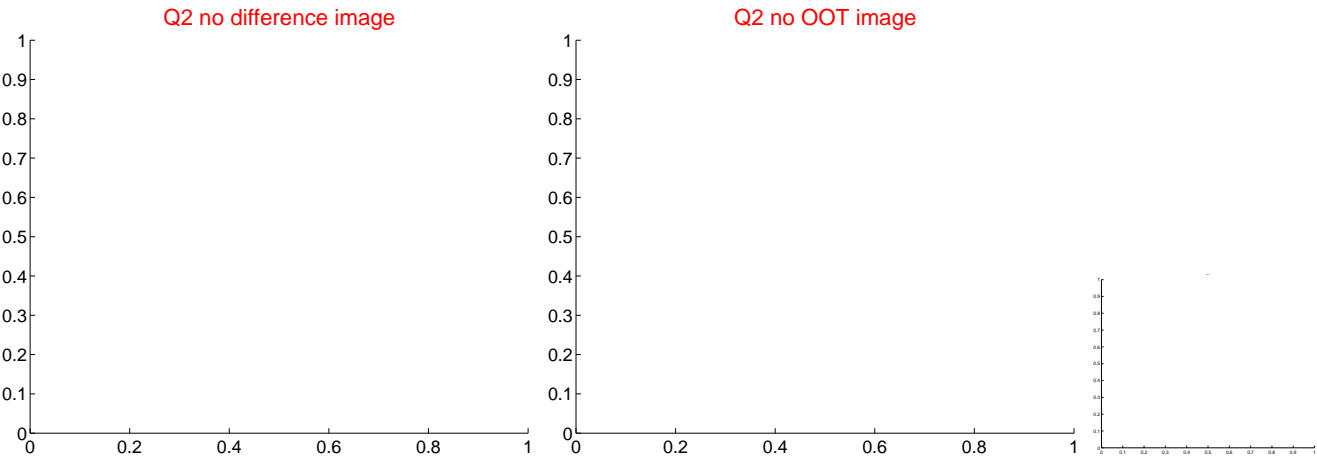
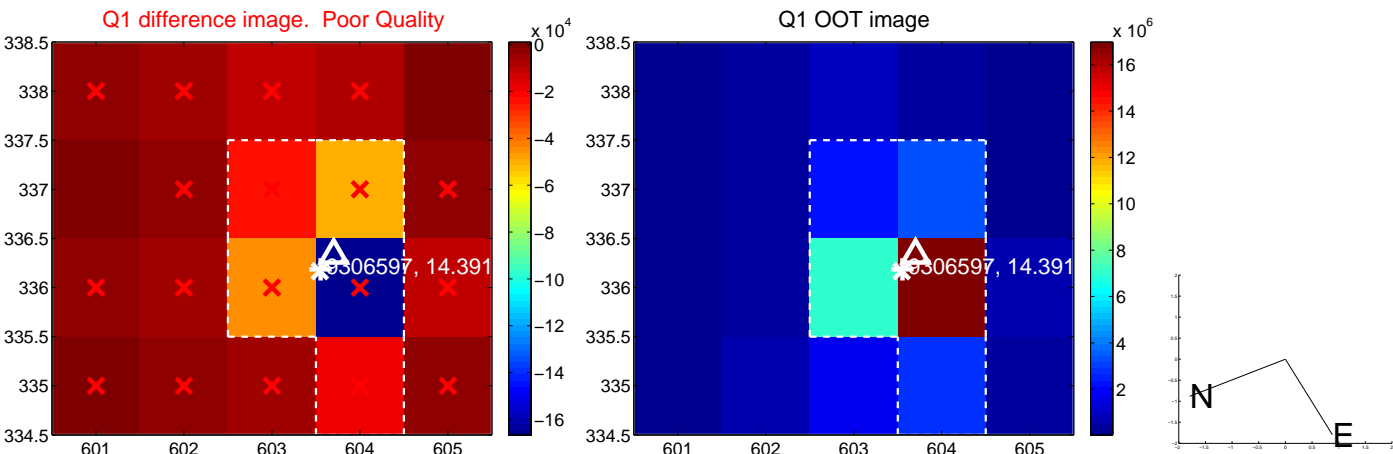


offset from photometric centroids

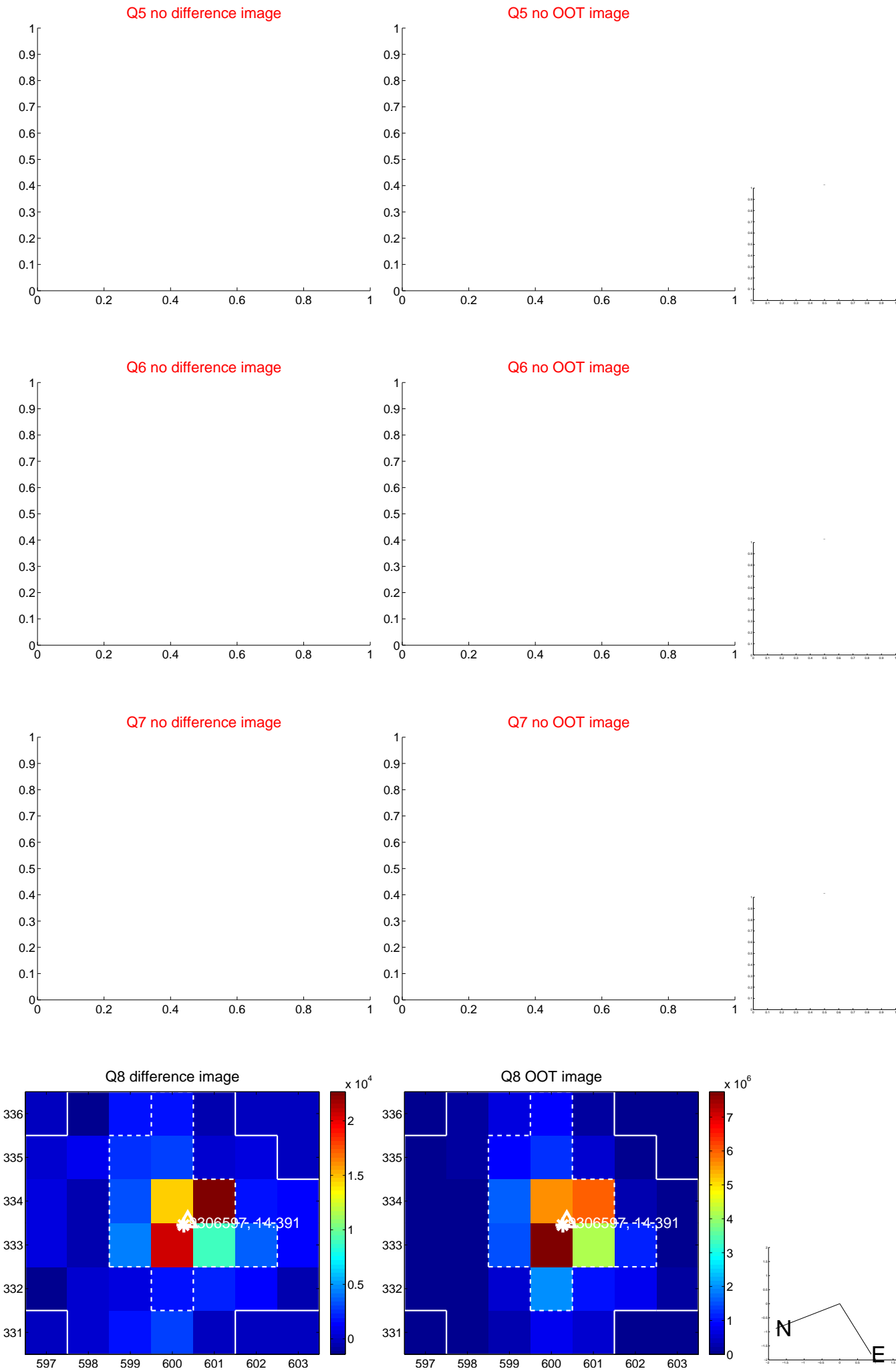


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

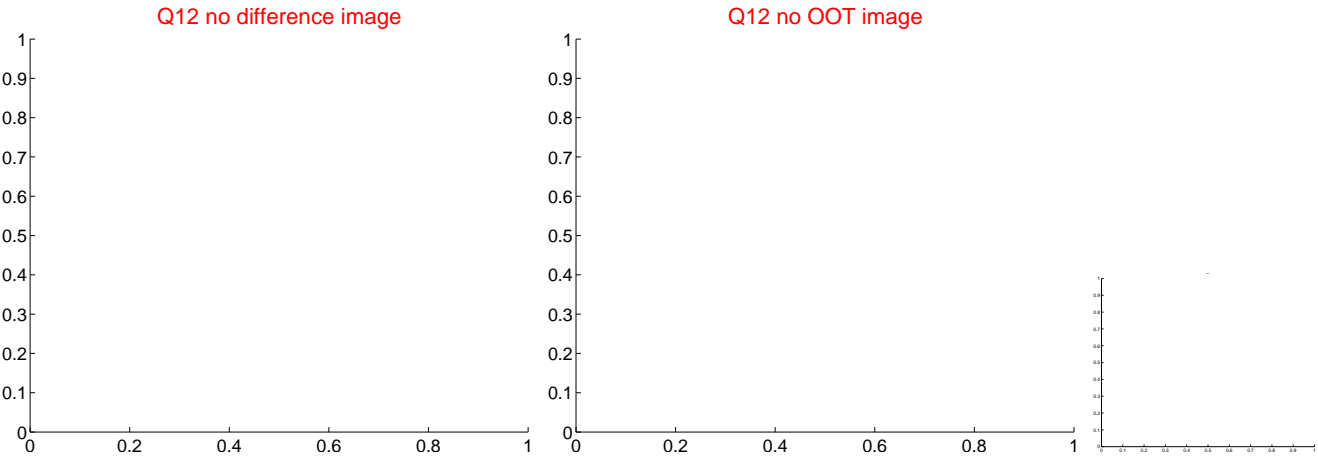
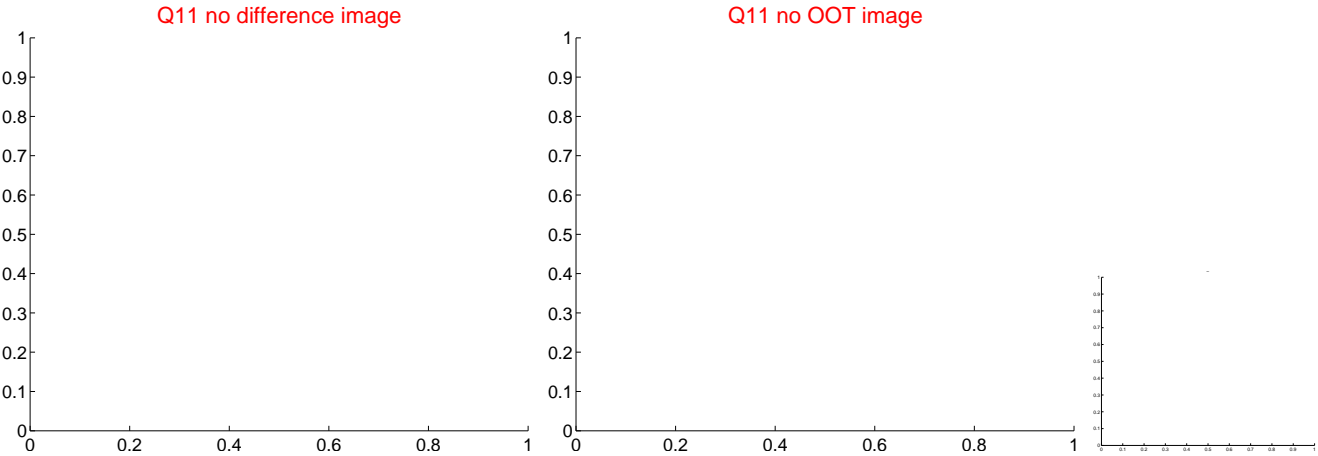
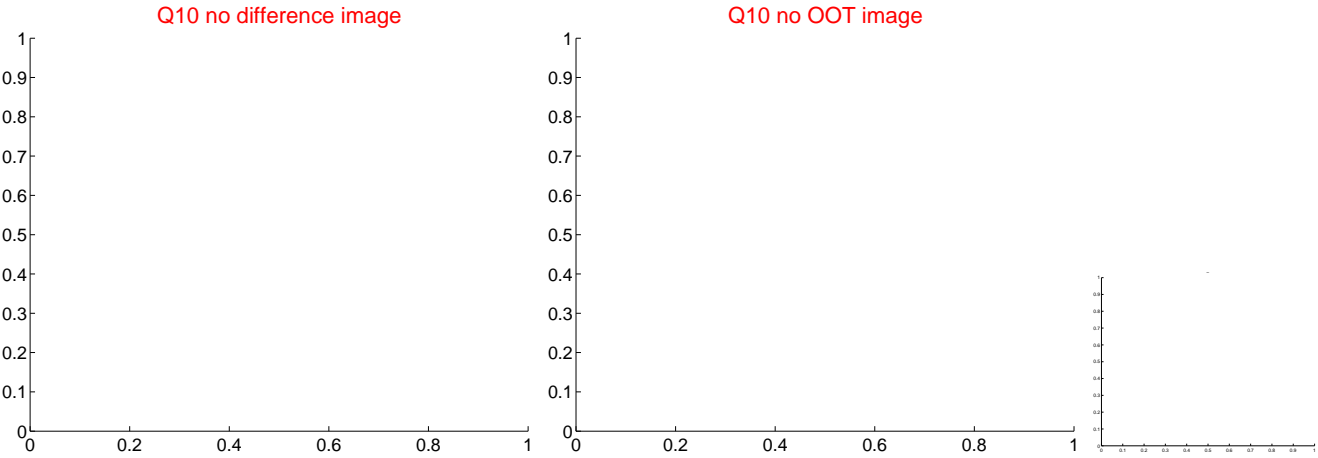
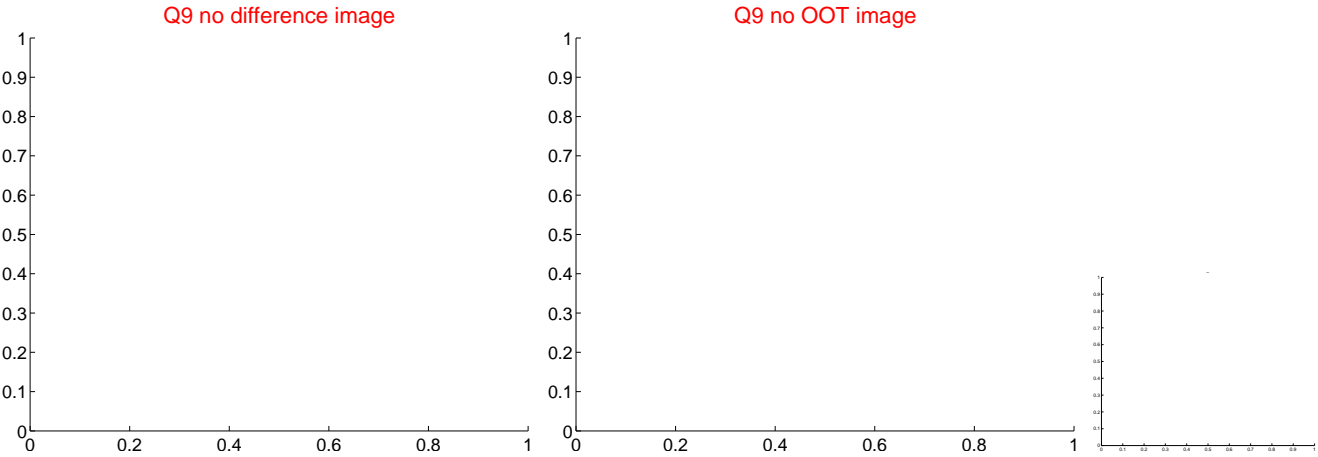
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

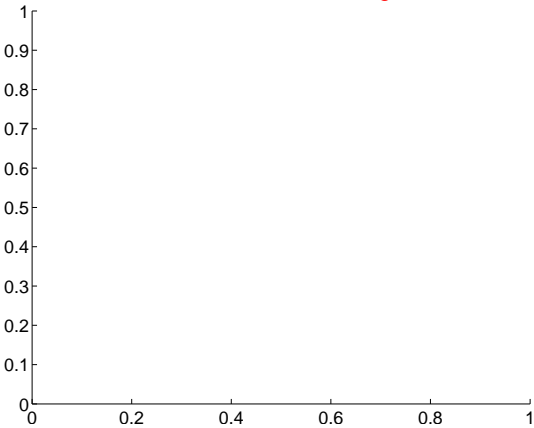


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

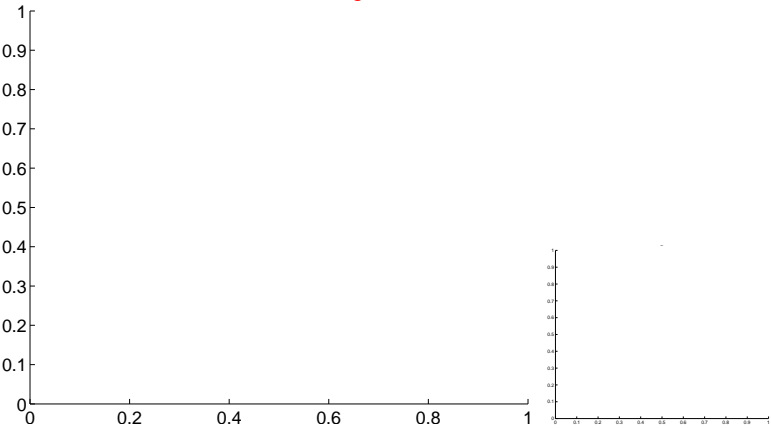


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

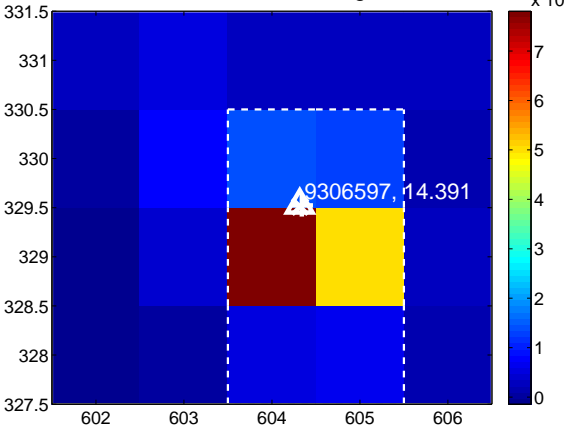
Q13 no difference image



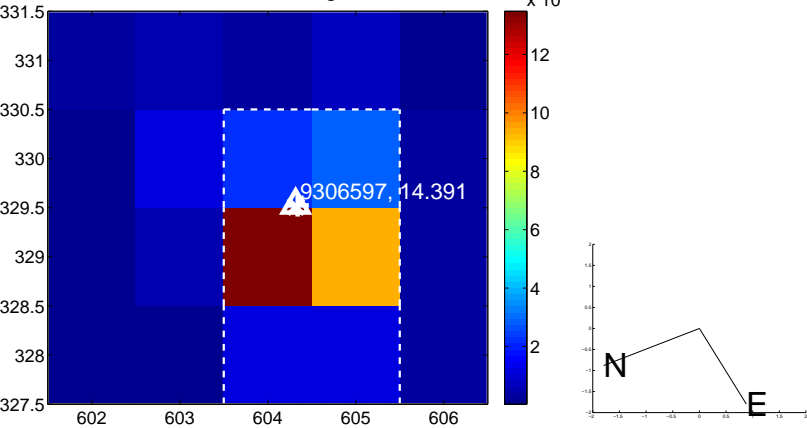
Q13 no OOT image



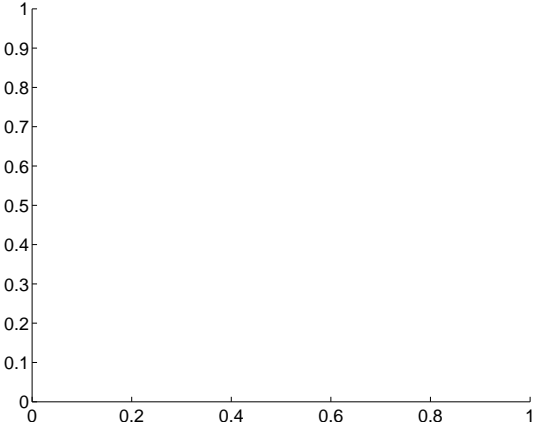
Q14 difference image



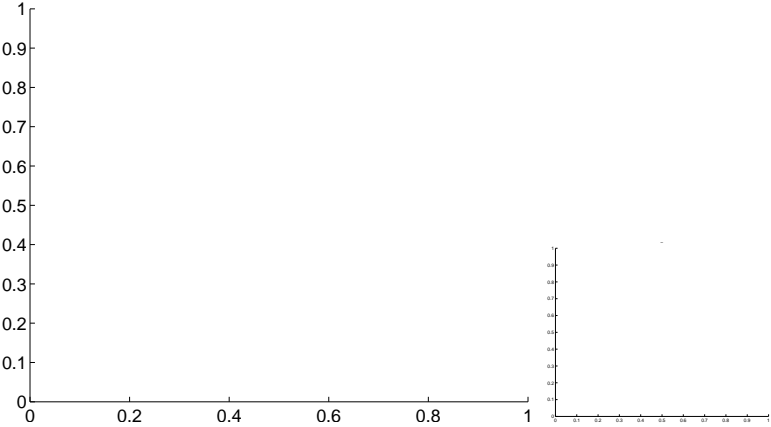
Q14 OOT image



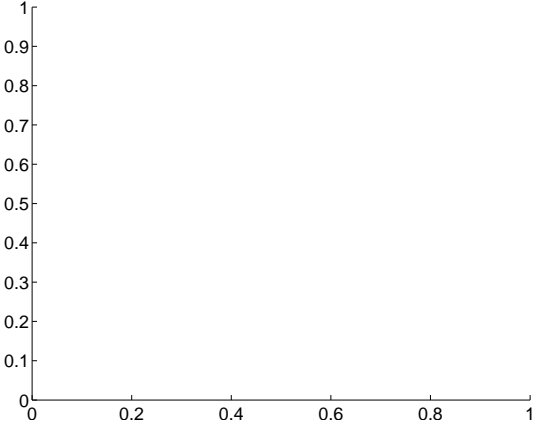
Q15 no difference image



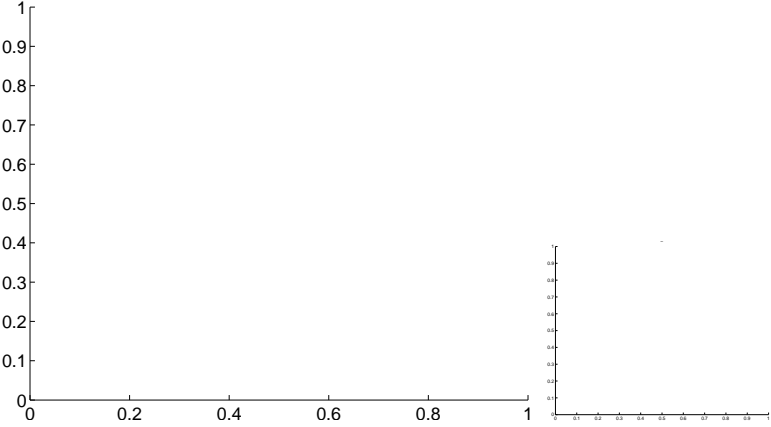
Q15 no OOT image



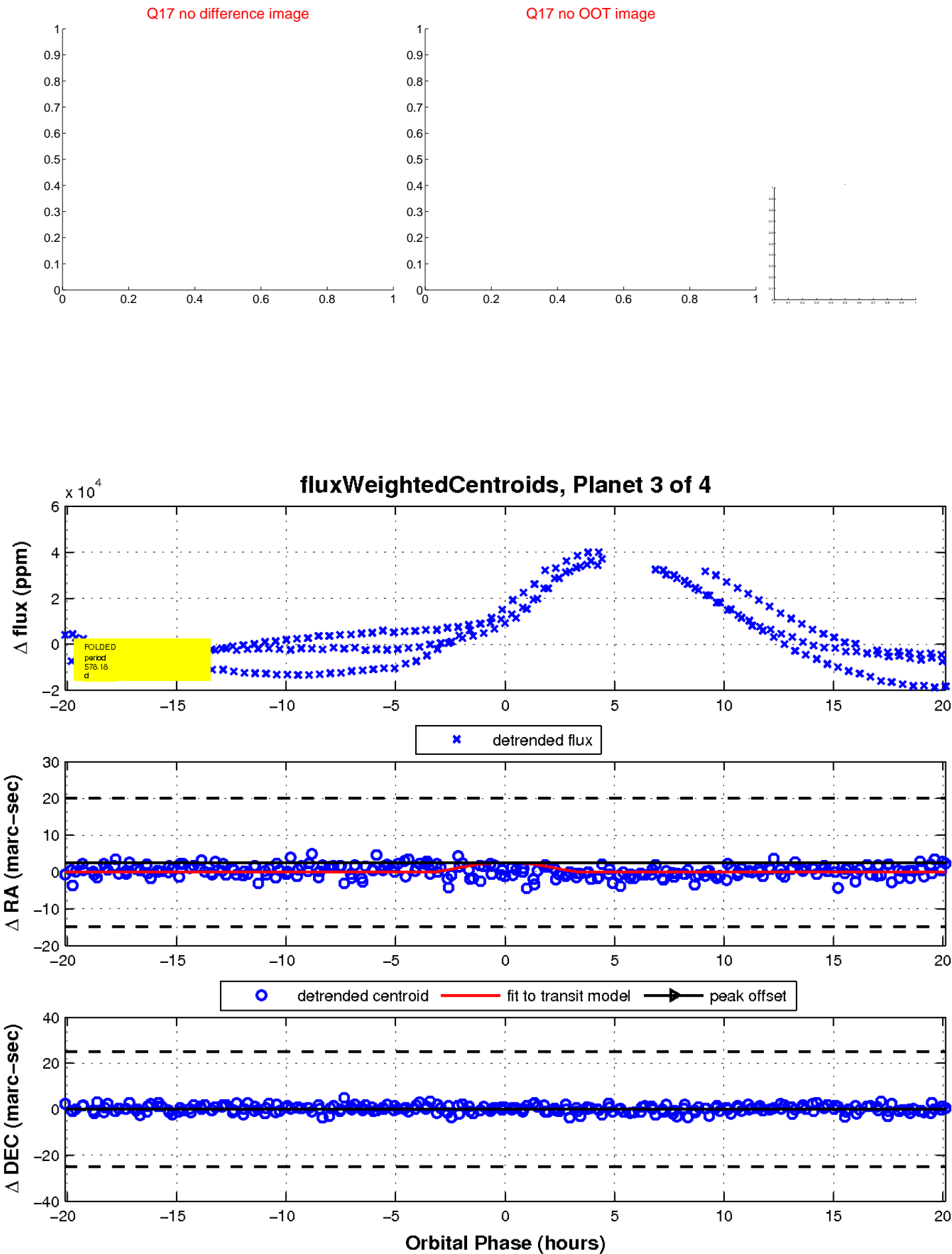
Q16 no difference image



Q16 no OOT image

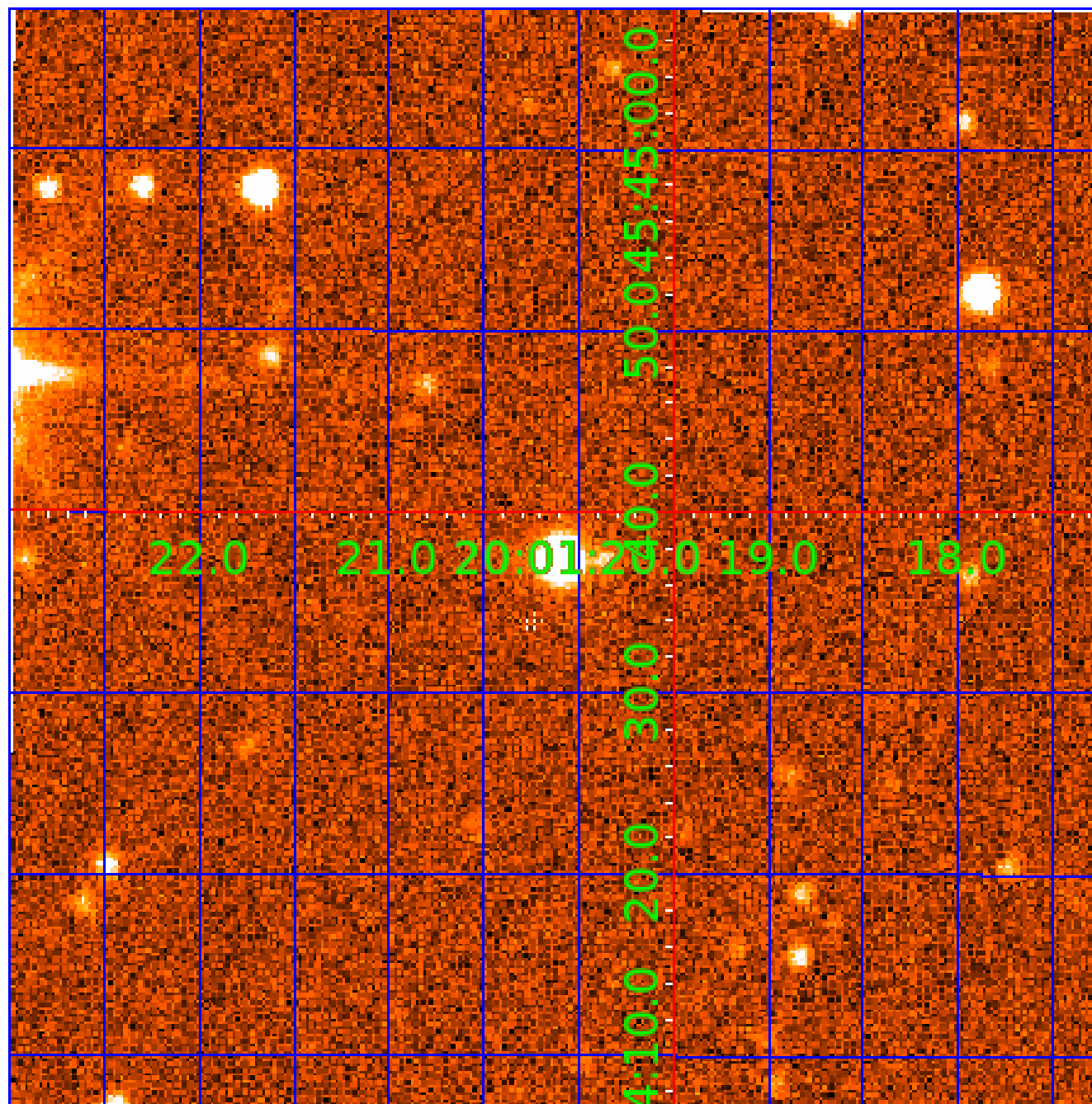


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009306597

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})
009306597-01	OBS	No	239.364361	344.216111	5758.4	9.819	18.1	6.9	1.22	6602	16.54	3.89
009306597-02	OBS	No	402.433744	520.310225	3947.2	5.454	11.6	7.2	1.22	6602	13.93	1.95
009306597-03	OBS	No	578.180452	159.923487	6494.5	6.707	10.6	8.7	1.22	6602	17.57	1.20
009306597-04	OBS	No	446.425608	508.564665	2606.0	4.500	19.8	-1.0	1.22	6602	6.29	1.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009306597-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
009306597-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009306597-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009306597-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

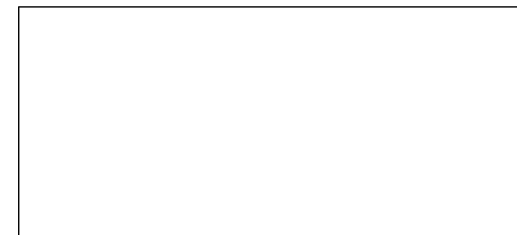
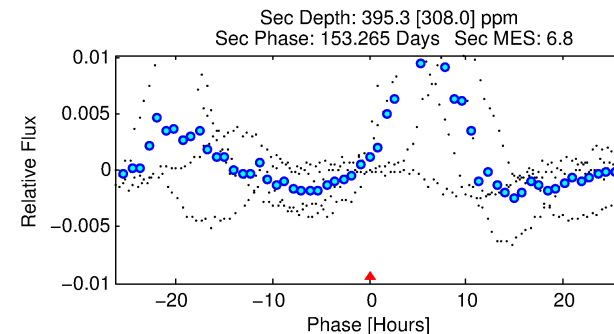
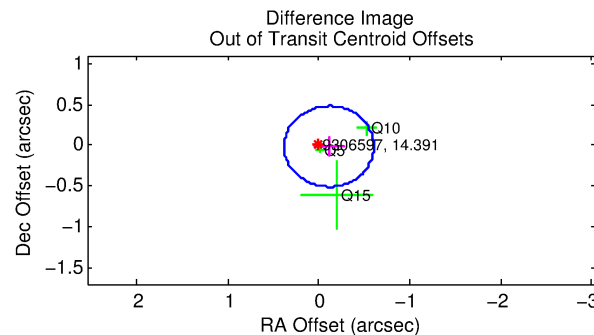
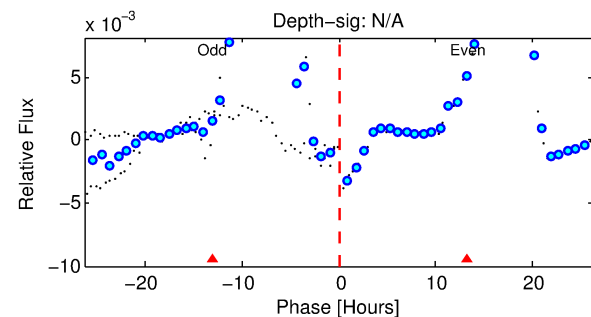
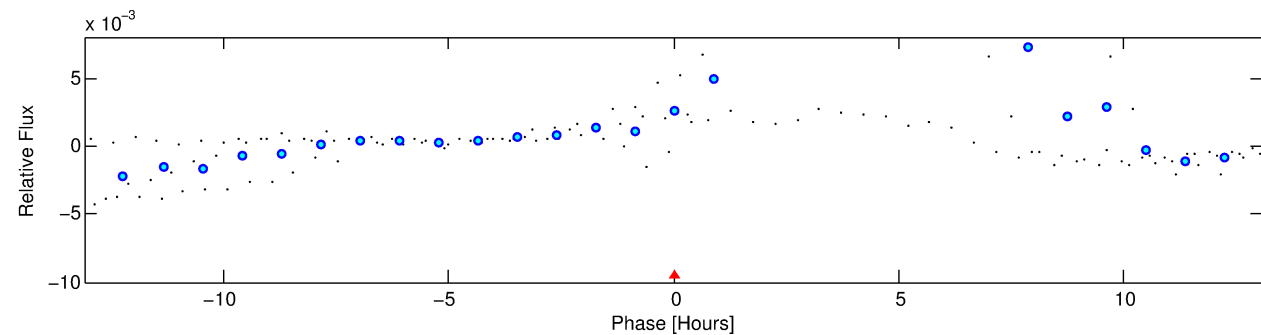
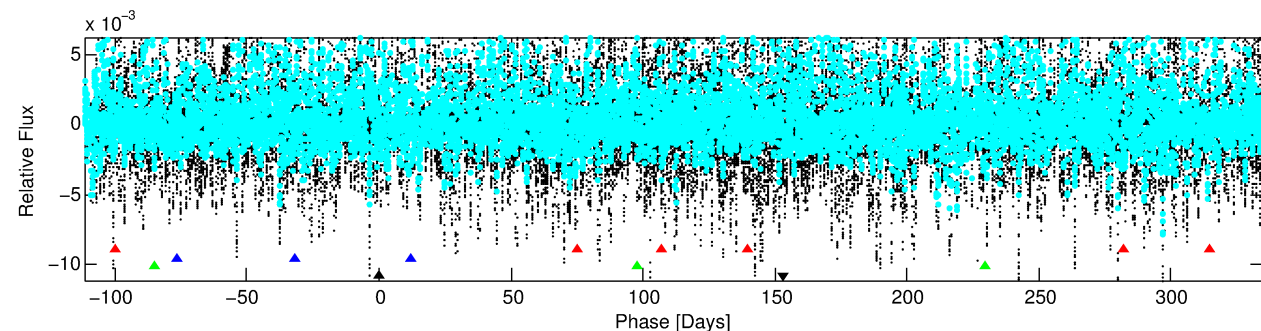
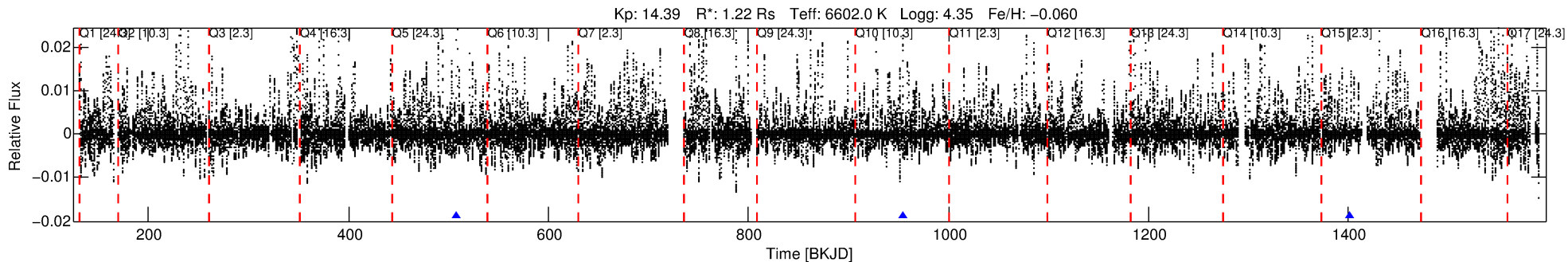
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009306597-04

No Significant Match Found

DV One-Page Summary

KIC: 9306597 Candidate: 4 of 4 Period: 446.426 d



TPS TCE Results:

Period = 446.42561 d
Epoch = 508.5647 BKJD

DV fit results are unavailable

DV Diagnostic Results:

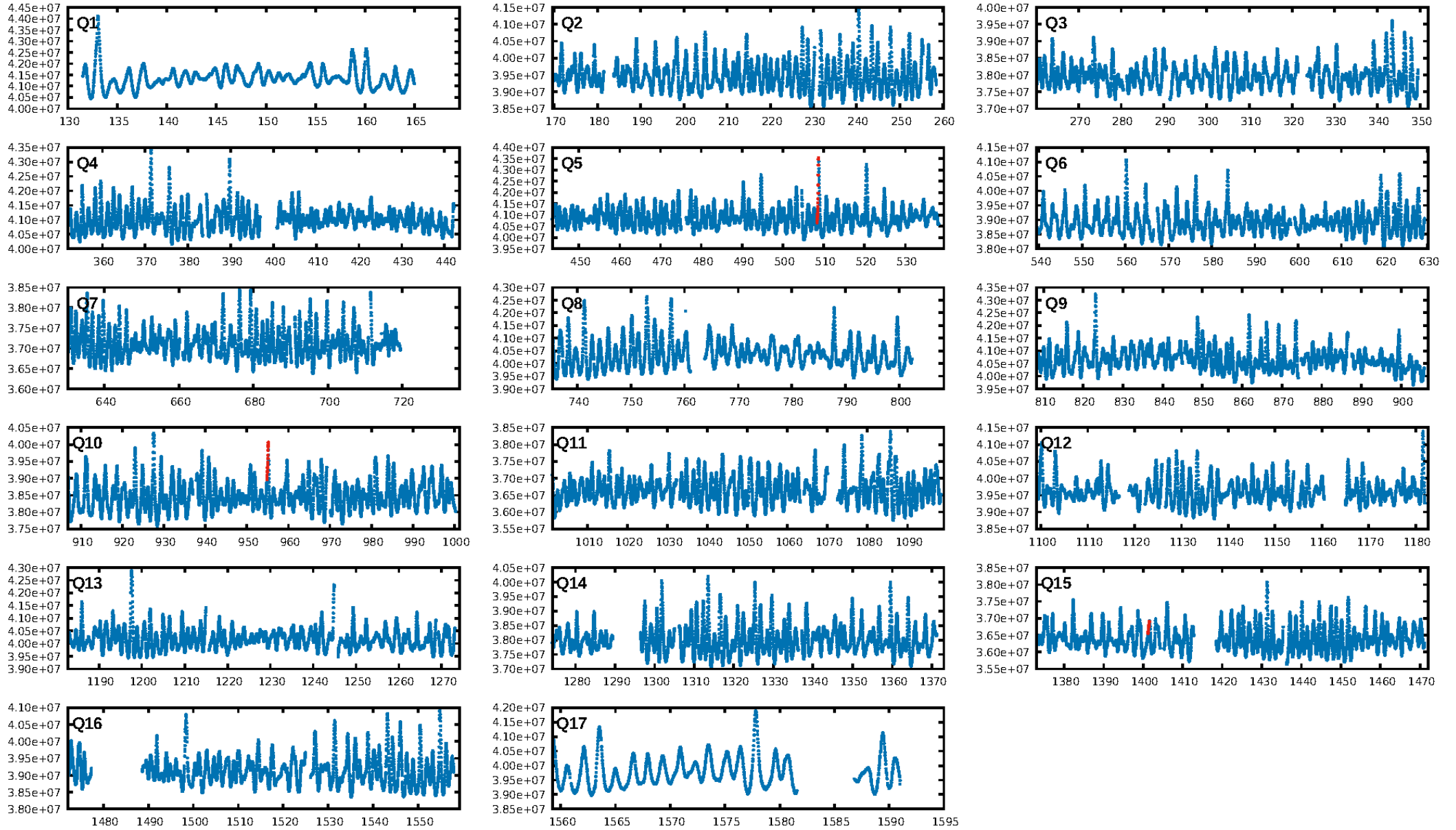
ShortPeriod-sig: 100.0% [149.32 σ]
LongPeriod-sig: 100.0% [391.50 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 15.08

Centroid-sig: 12.9%
Centroid-so: 1.111 arcsec [2.58 σ]
OotOffset-rm: 0.113 arcsec [0.68 σ]
KicOffset-rm: 0.154 arcsec [1.01 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

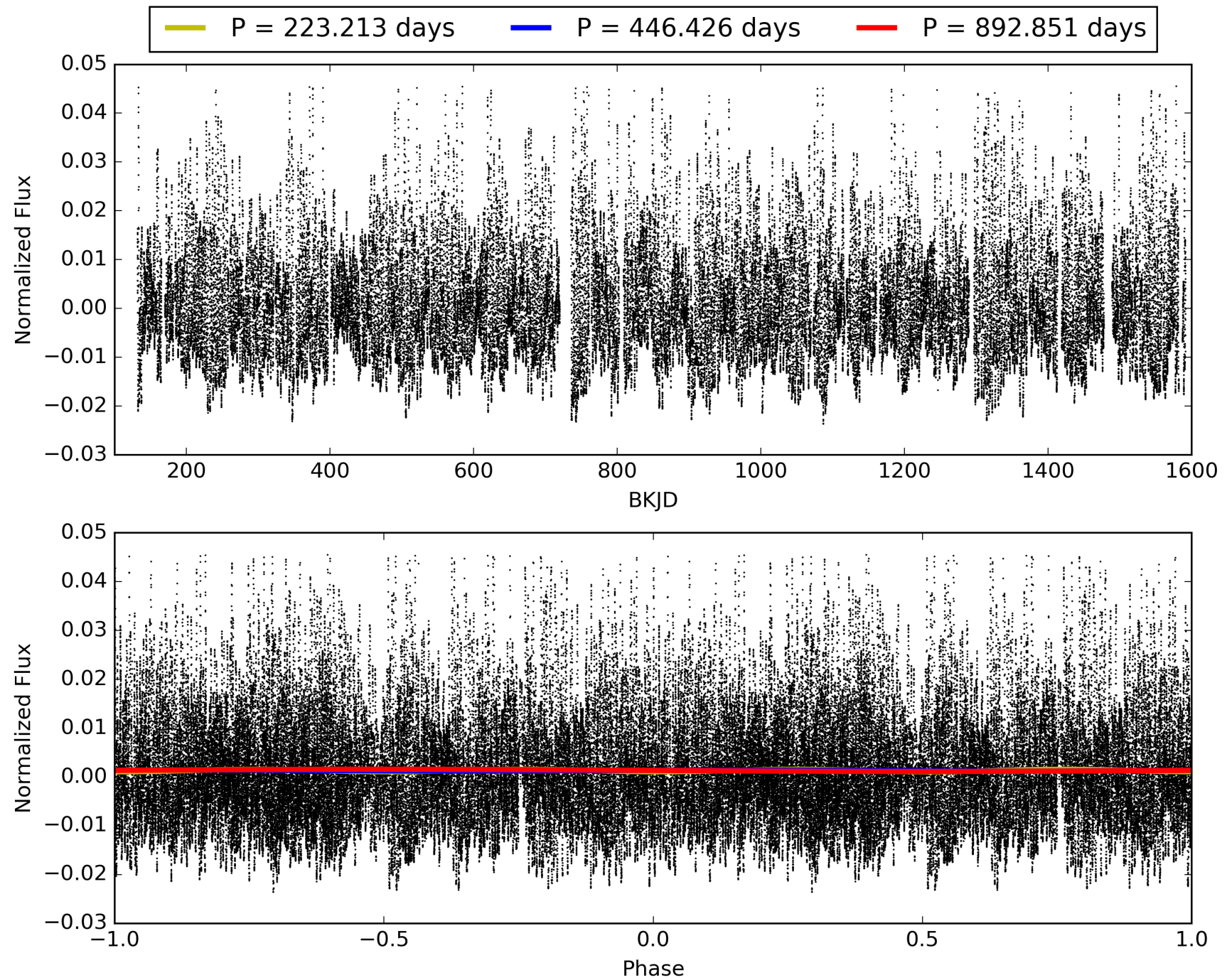
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:01:55 Z

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

TCE 009306597-04, PDC Light Curves

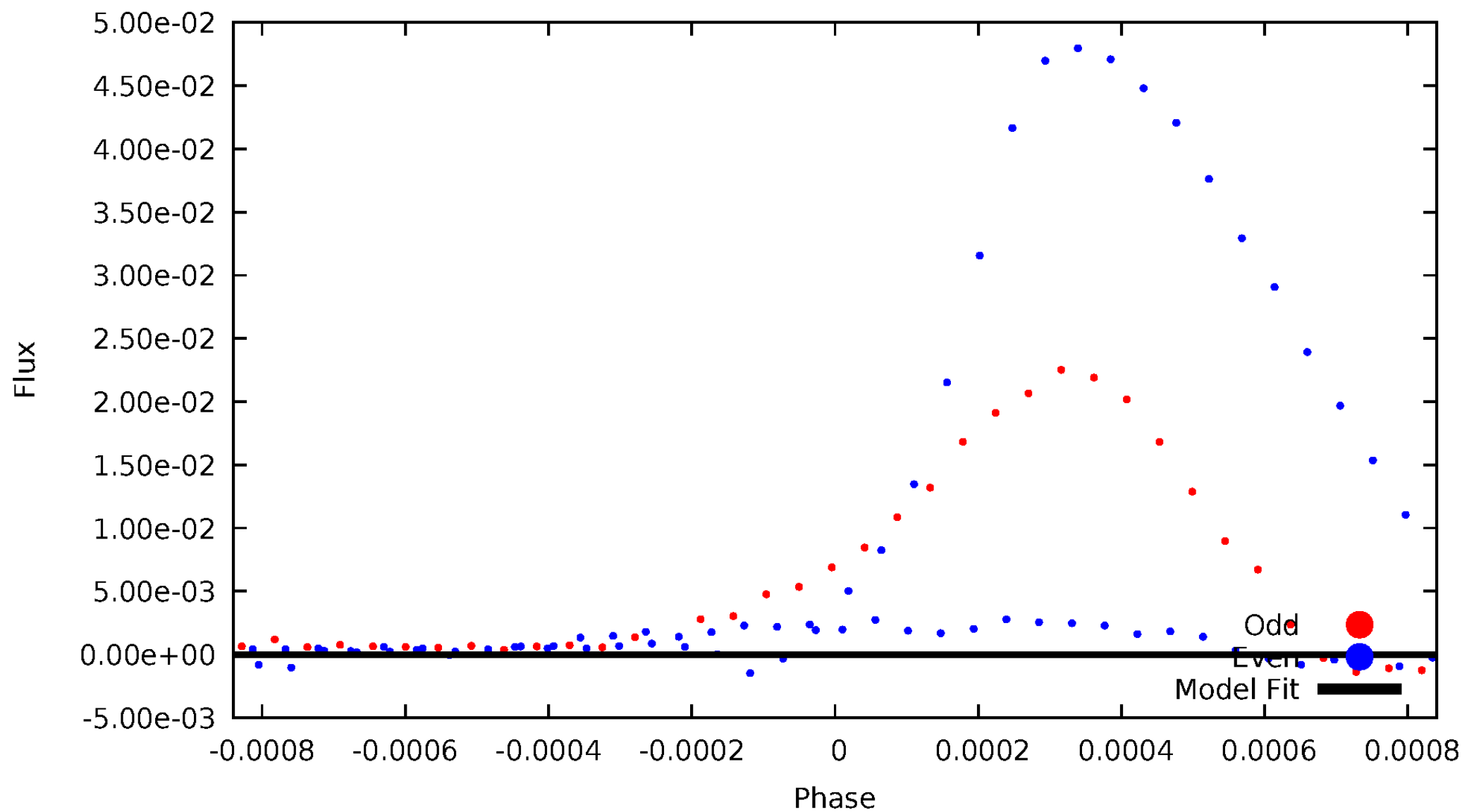


TCE 009306597-04



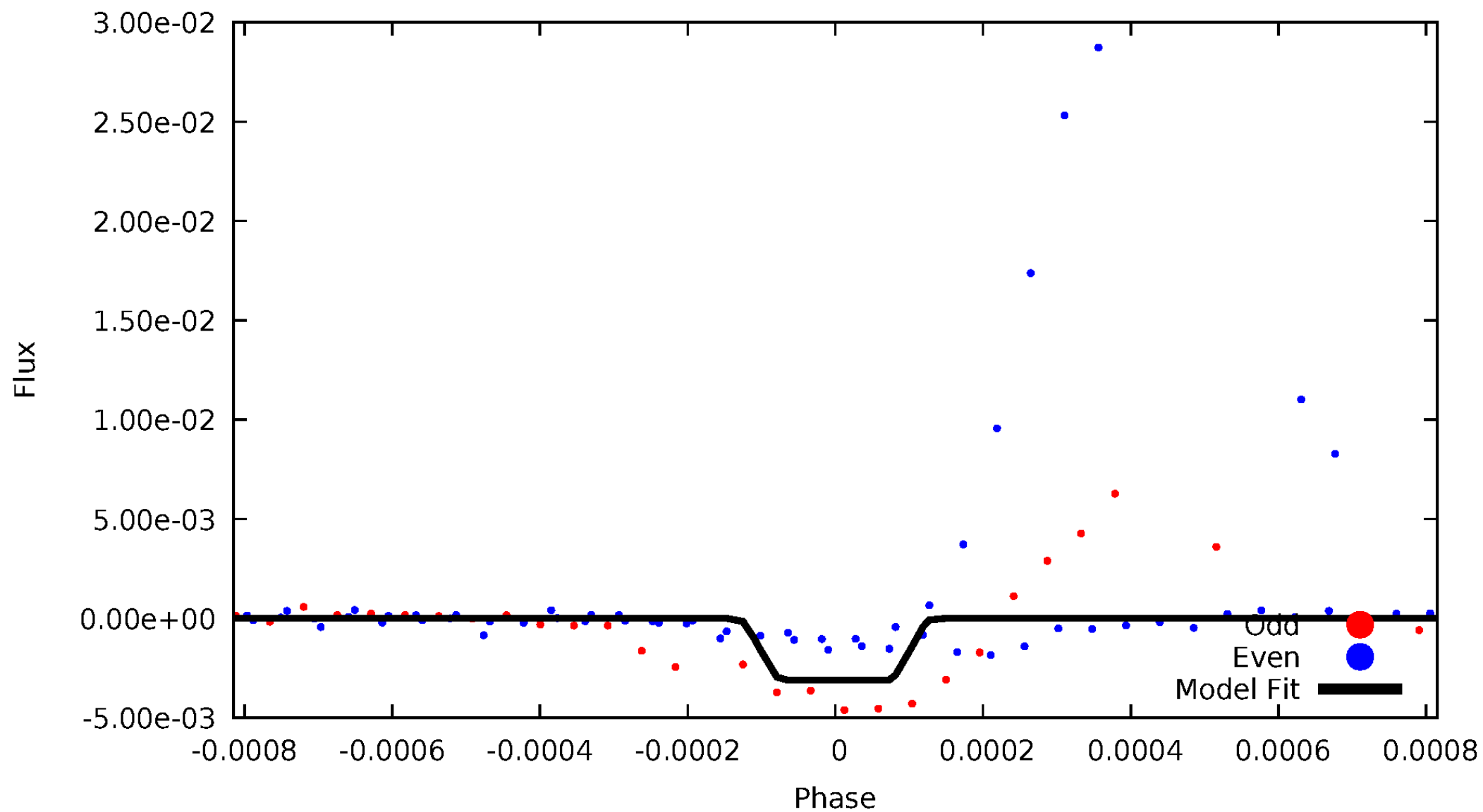
DV Odd/Even

TCE 009306597-04



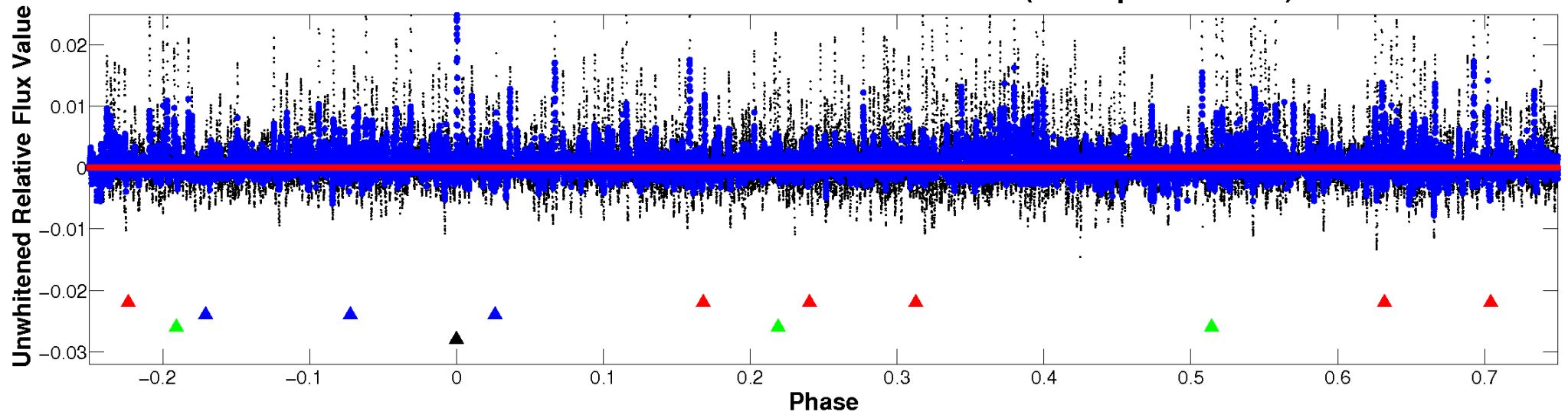
ALT Odd/Even

TCE 009306597-04

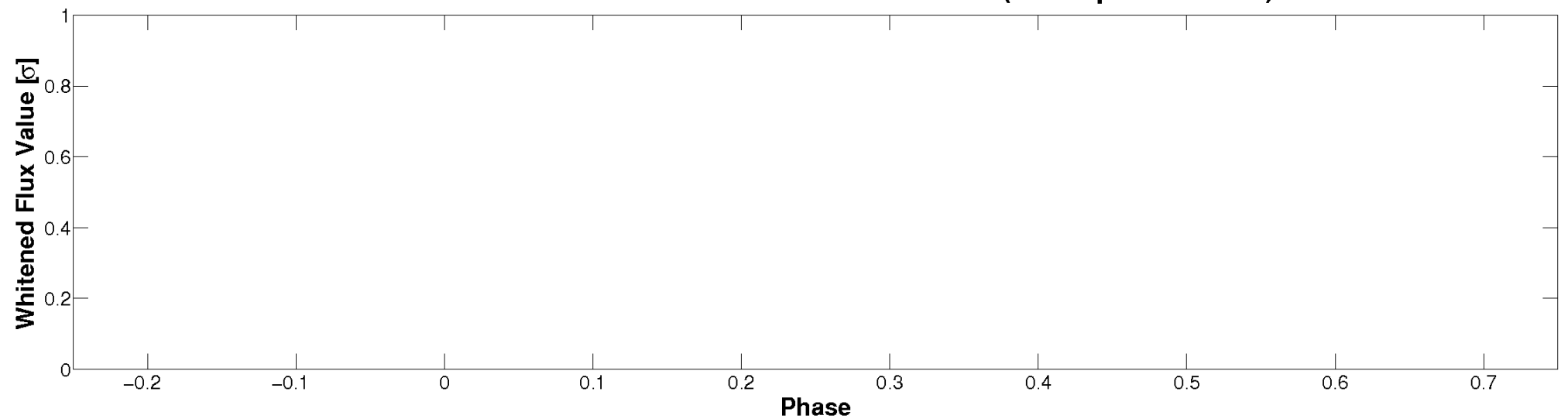


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

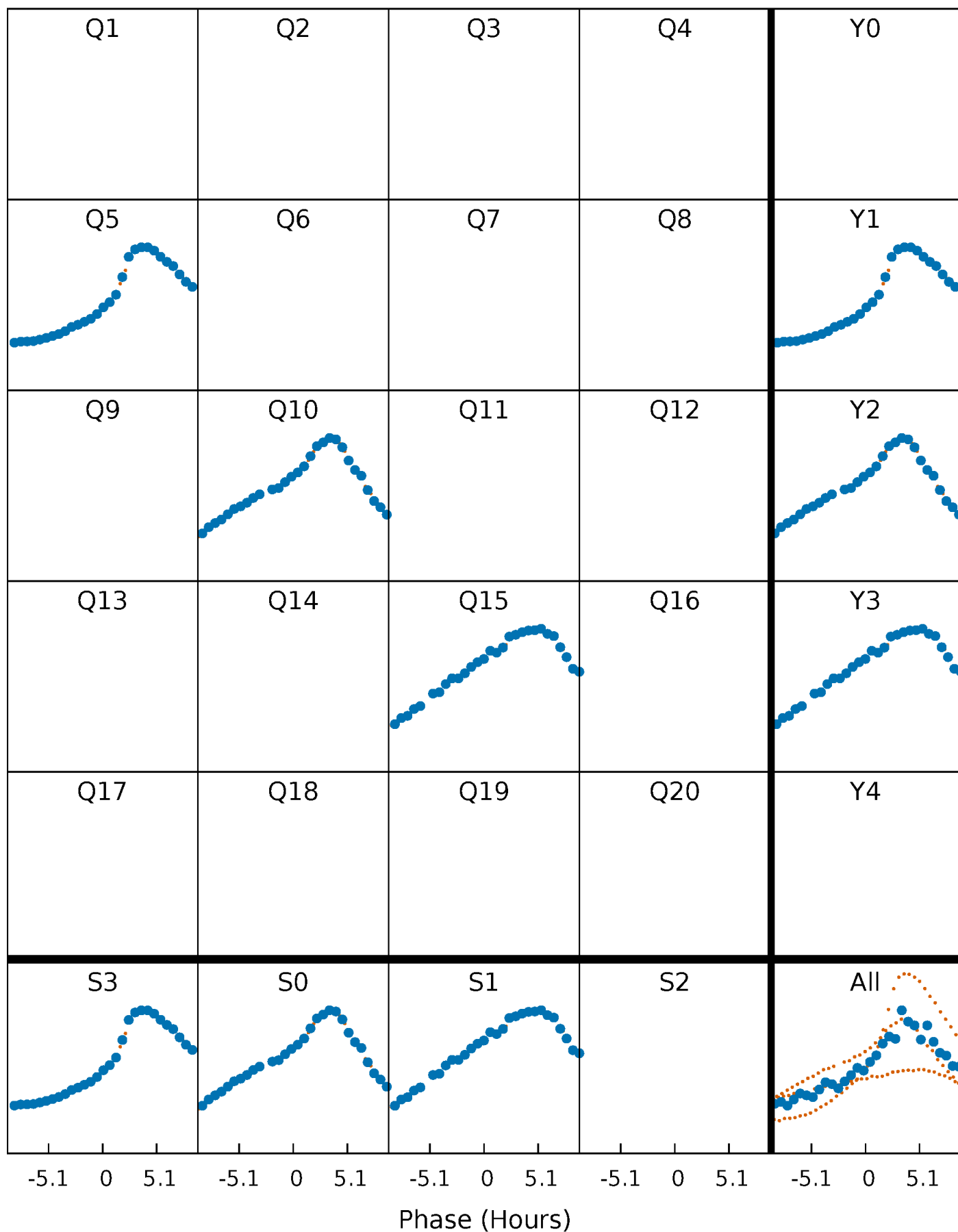


Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)



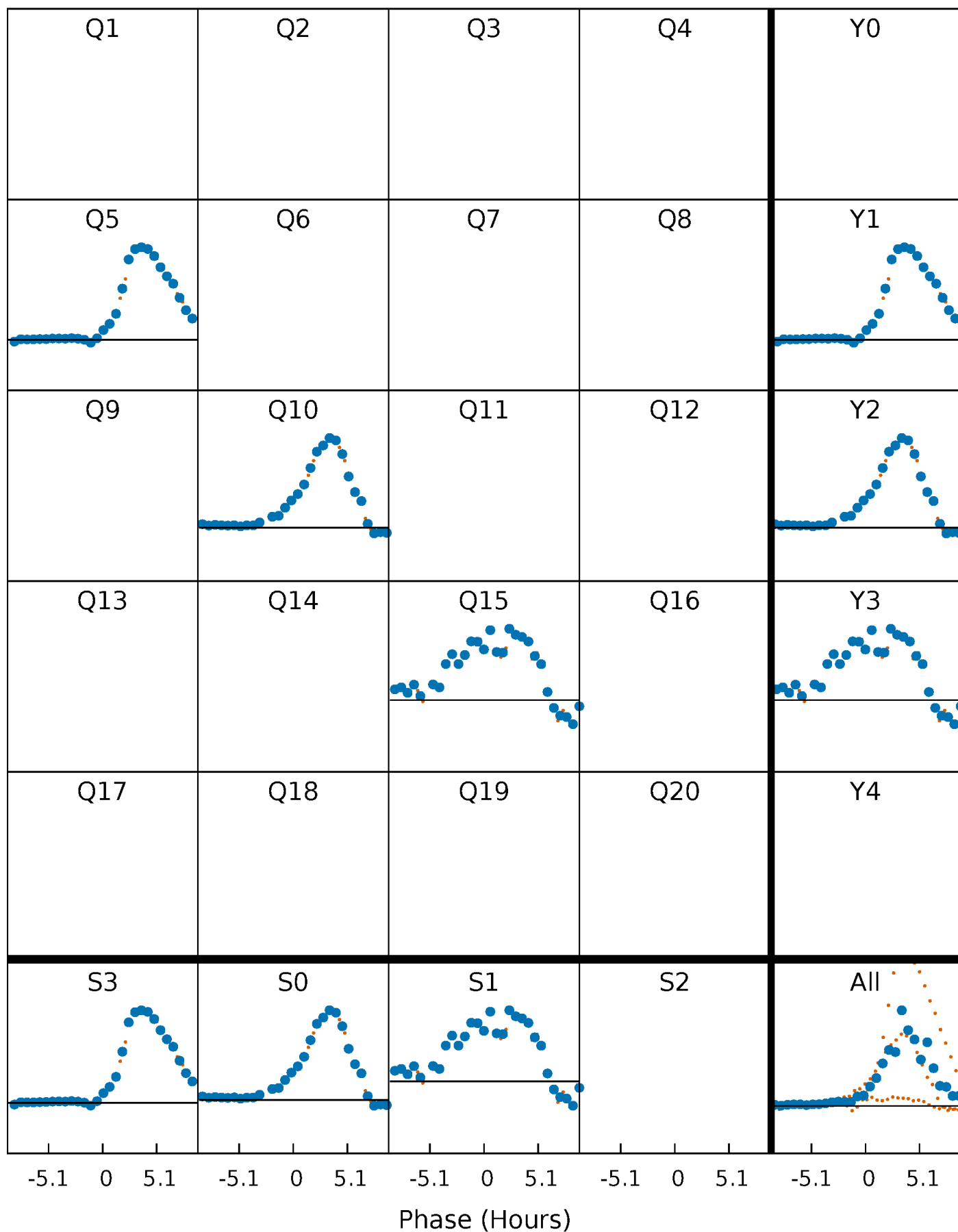
PDC Quarter-Phased Transit Curves

TCE 009306597-04 P=446.425608 Days $T_0=508.564665$ (BKJD)



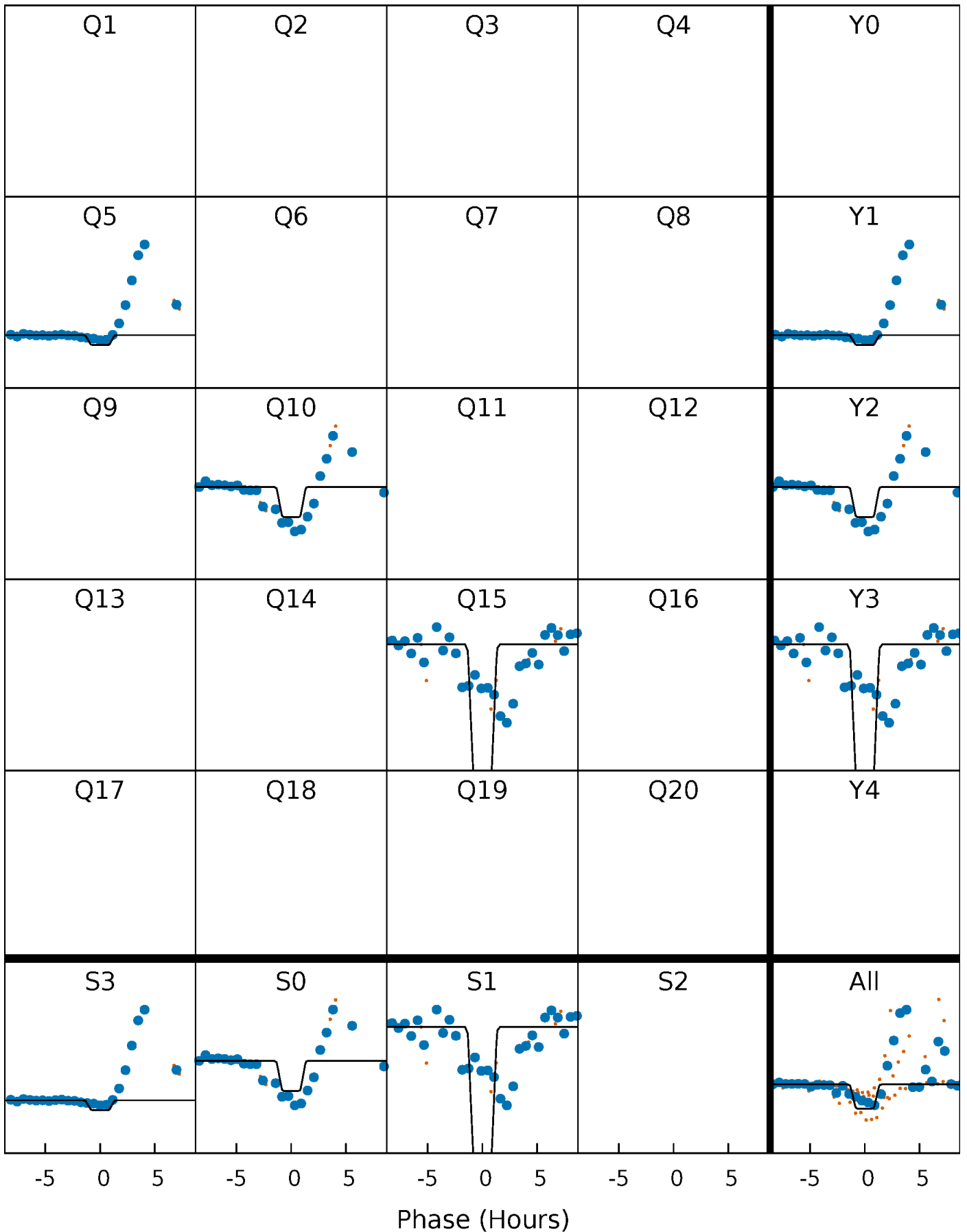
DV Quarter-Phased Transit Curves

TCE 009306597-04 $P=446.425608$ Days $T_0=508.564665$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

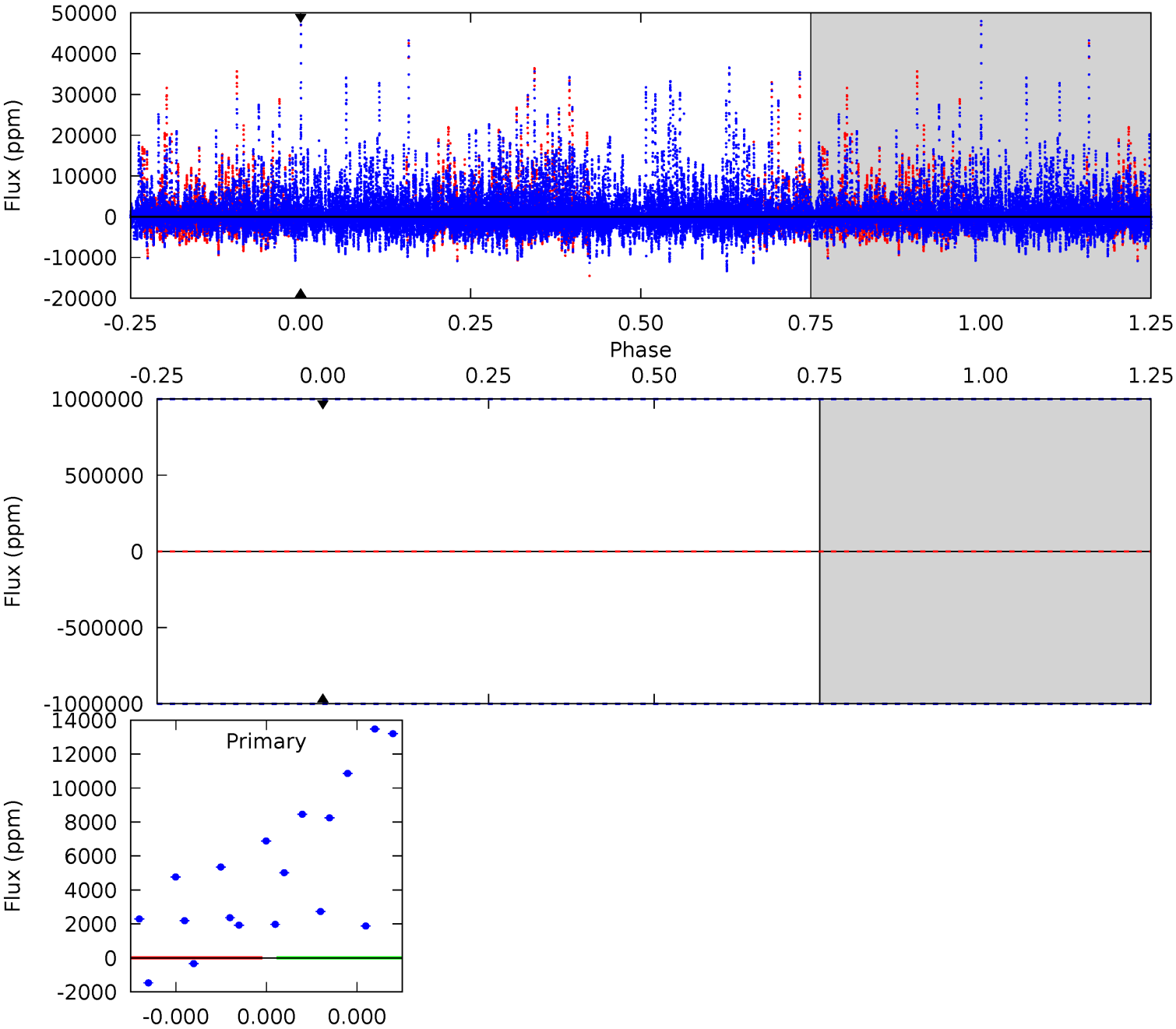
TCE 009306597-04 $P=446.425608$ Days $T_0=508.536688$ (BKJD)



DV Model-Shift Uniqueness Test

009306597-04, P = 446.425608 Days, E = 62.139057 Days

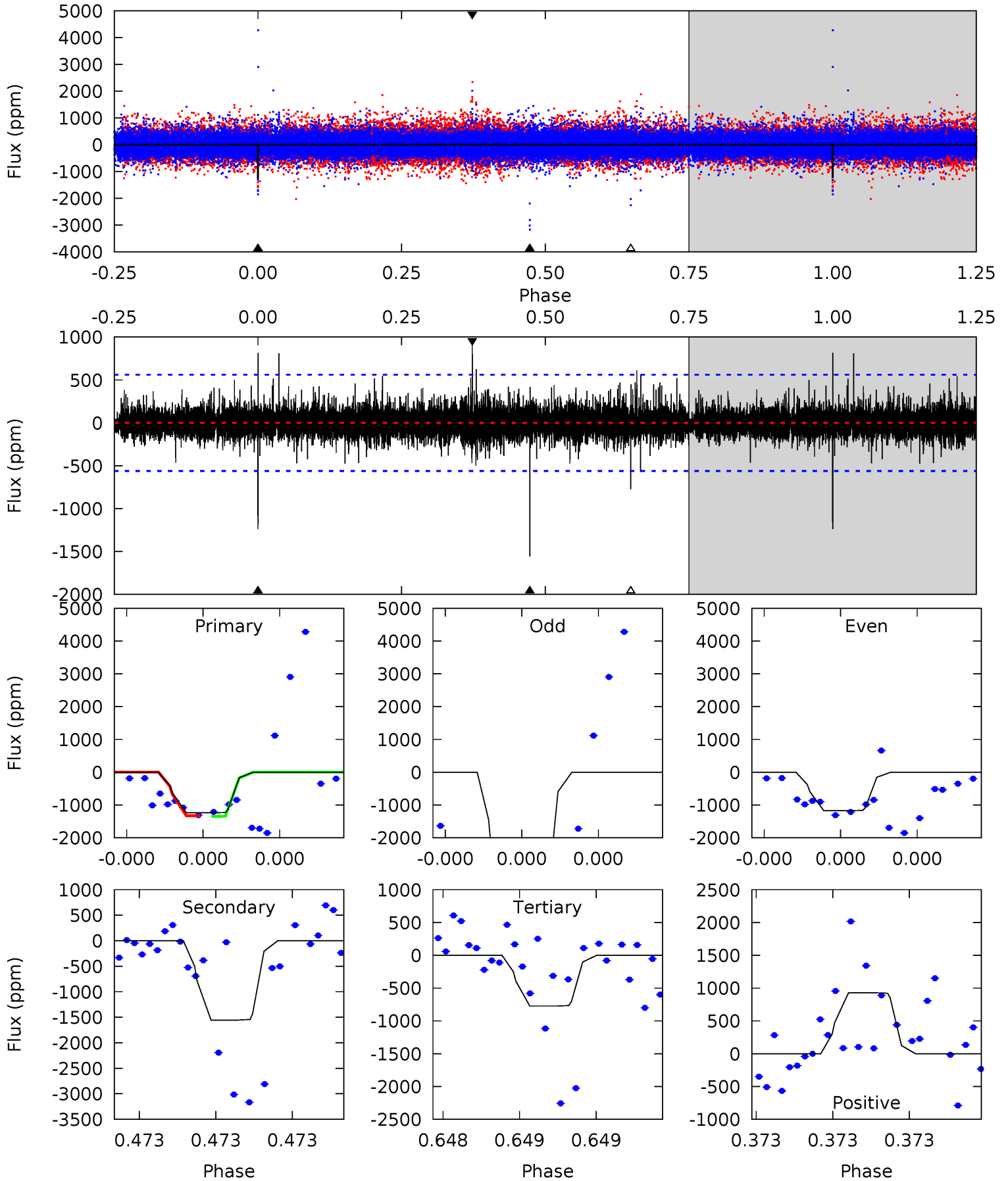
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009306597-04, P = 446.425608 Days, E = 62.111080 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	15.8	7.84	9.43	5.69	3.66	1.06	4.73	3.15	7.95	6.37	18.5	1.91	0.37	0.11



Stellar Parameters For KIC 009306597

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6602^{+161}_{-241}	$4.354^{+0.062}_{-0.188}$	$-0.060^{+0.250}_{-0.300}$	$1.223^{+0.375}_{-0.150}$	$1.240^{+0.174}_{-0.174}$	$0.954^{+0.327}_{-0.478}$
	+2%/-4%	+1%/-4%	+417%/-500%	+31%/-12%	+14%/-14%	+34%/-50%
Source	PHO1	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 009306597-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$12.26^{+11.29}_{-8.57}$	414^{+28}_{-20}	5448^{+18977}_{-25519}	$21136^{+1014073}_{-684330}$
Alt.	-1555 ± 98	$12.18^{+12.21}_{-8.20}$	414^{+28}_{-21}	4529^{+3273}_{-942}	8359^{+72480}_{-6222}

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 $A_{obs} \gg 1.0$

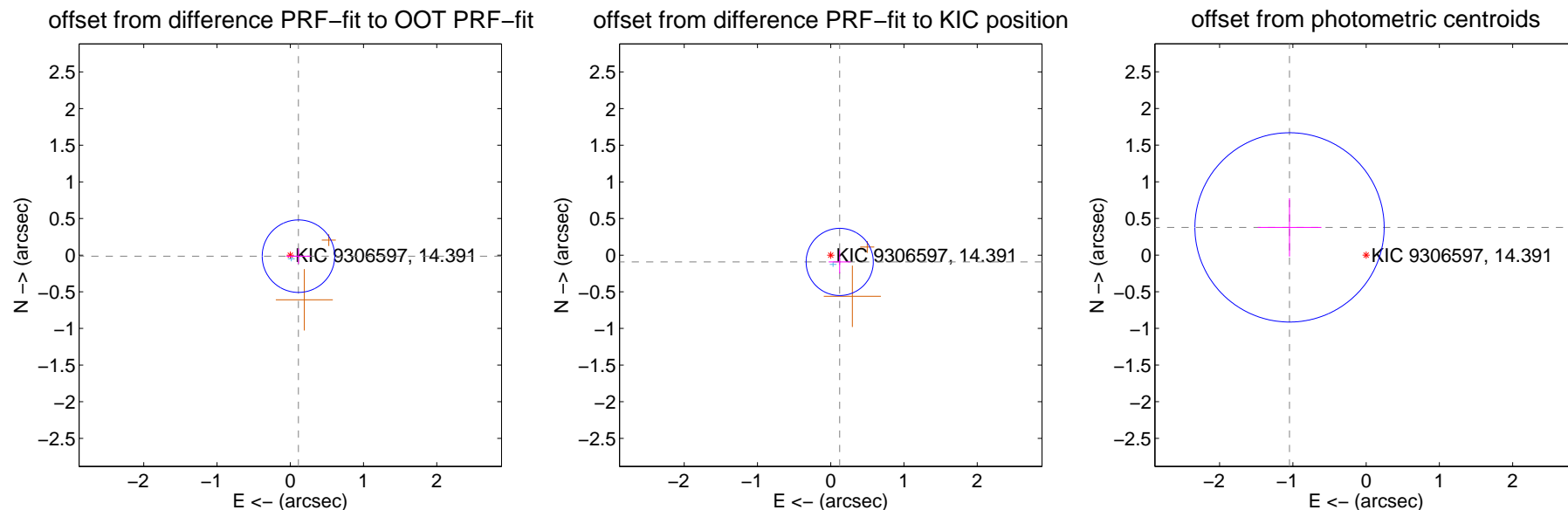
DV Centroid Data

Supplemental centroid analysis for 009306597-04. Kepler magnitude: 14.39. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

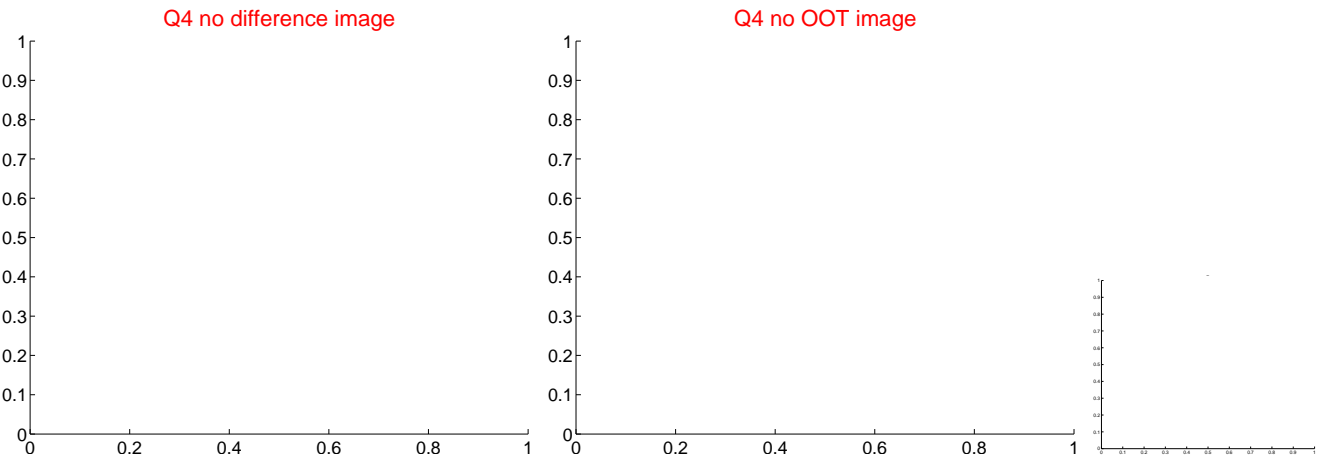
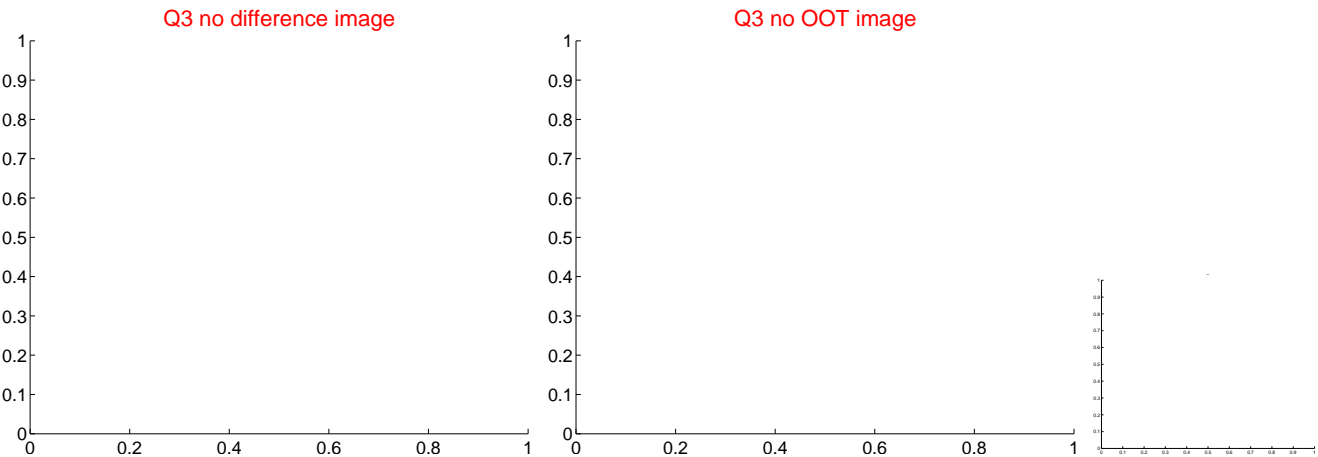
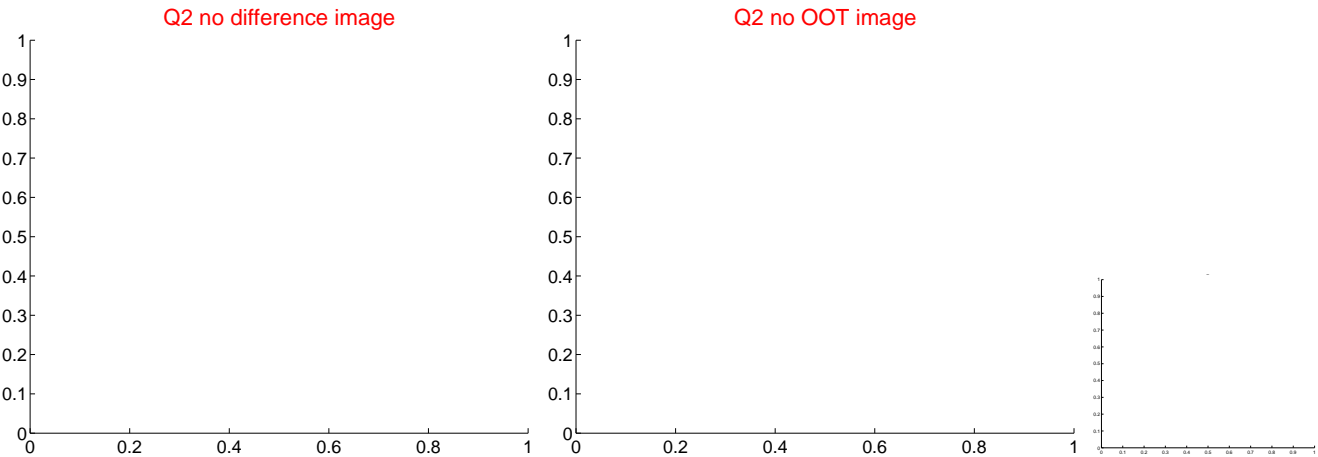
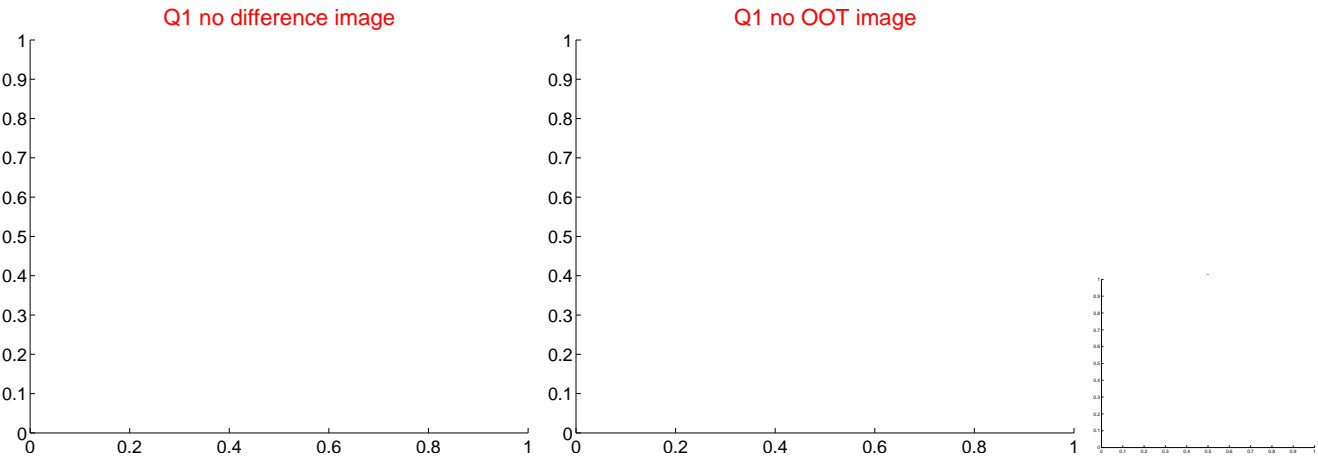
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.113 ± 0.165	0.68	-0.112 ± 0.166	-0.014 ± 0.105
PRF-fit source offset from KIC position	0.154 ± 0.153	1.01	-0.123 ± 0.150	-0.092 ± 0.157
photometric centroid source offset	1.11 ± 0.43	2.58	1.05 ± 0.43	0.38 ± 0.40

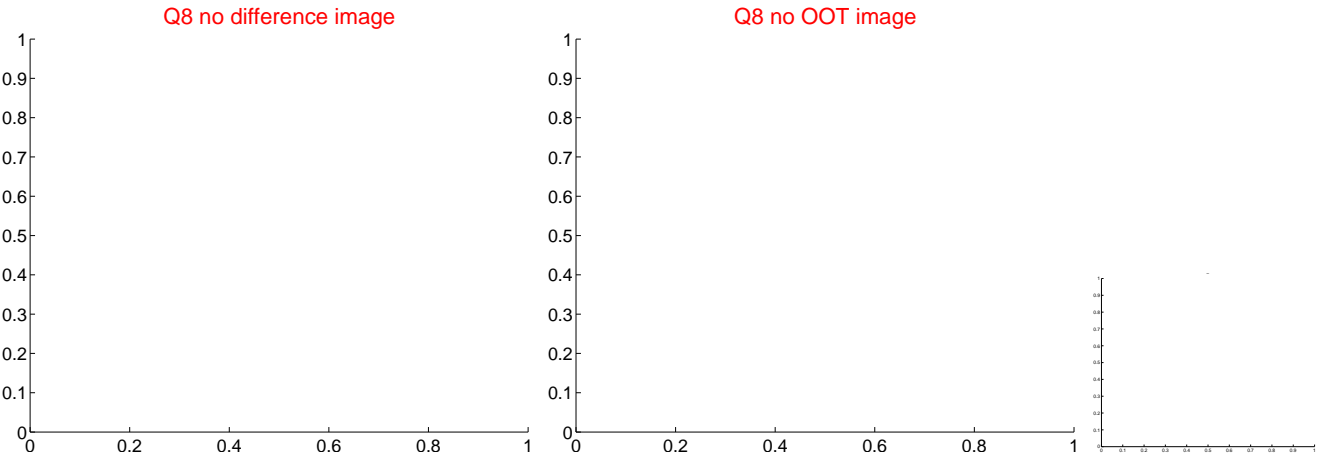
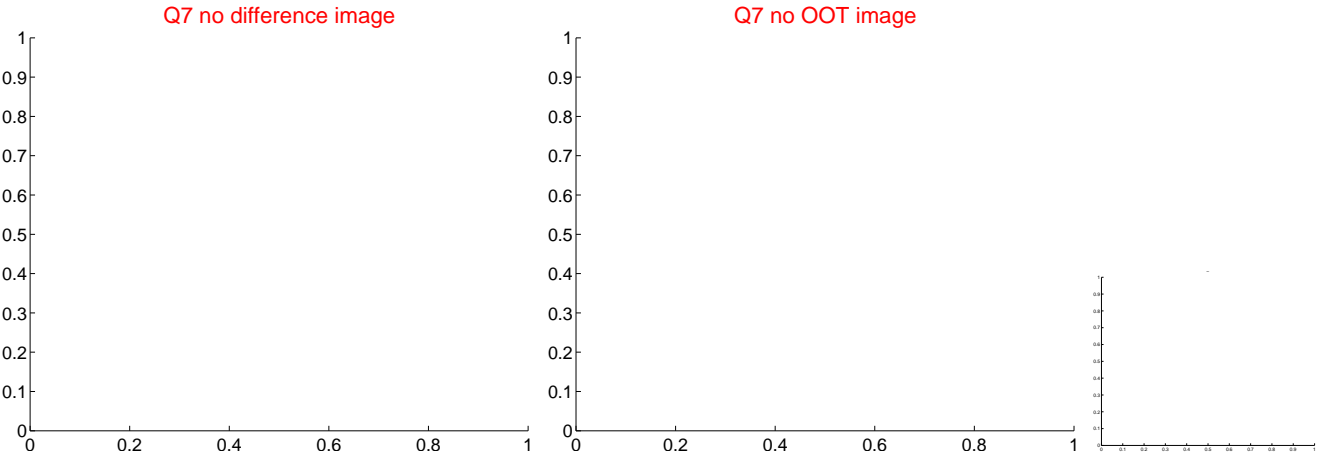
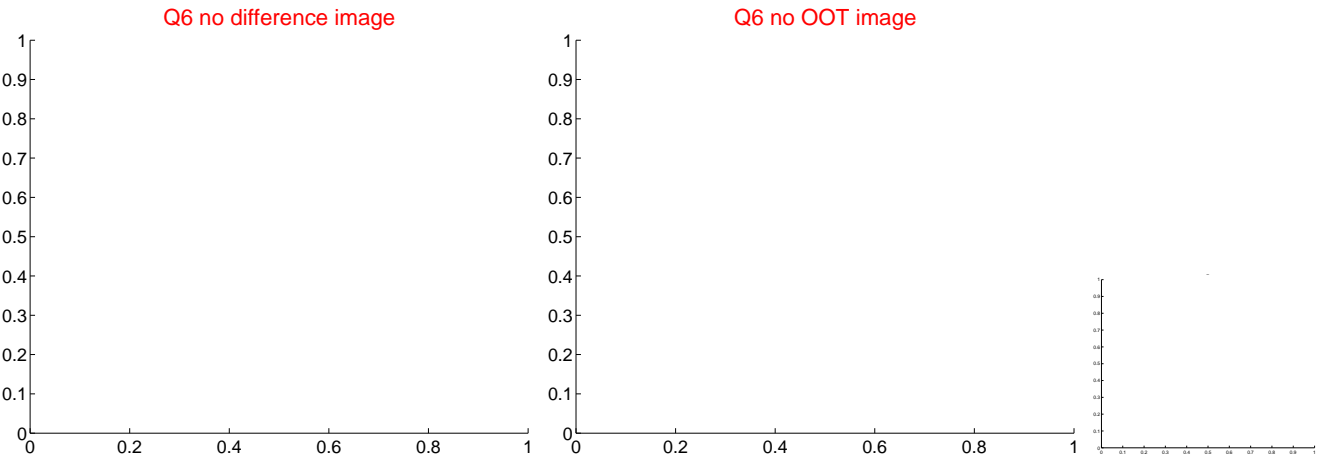
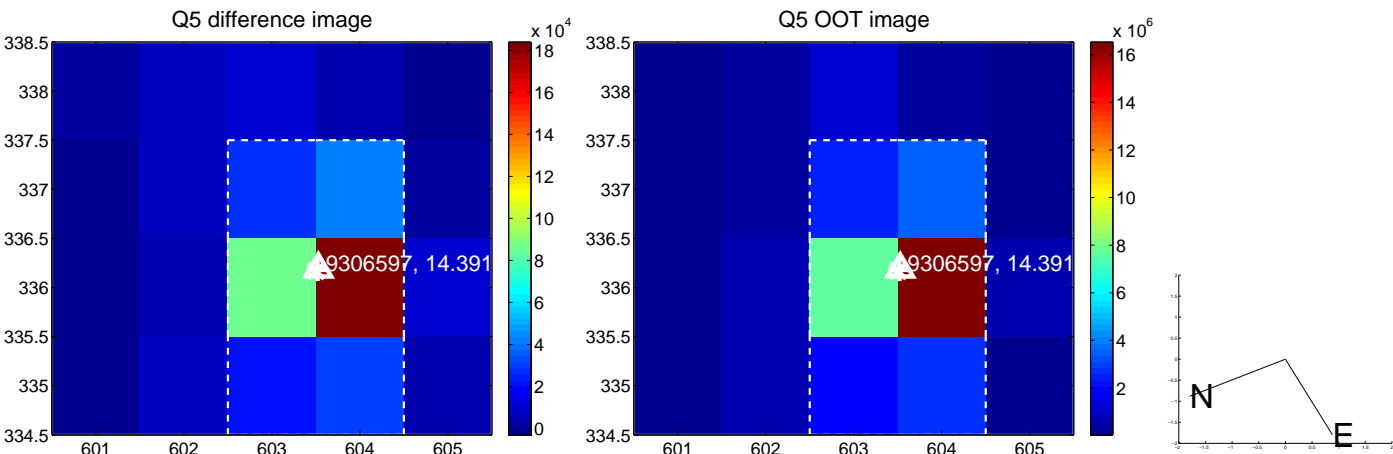


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

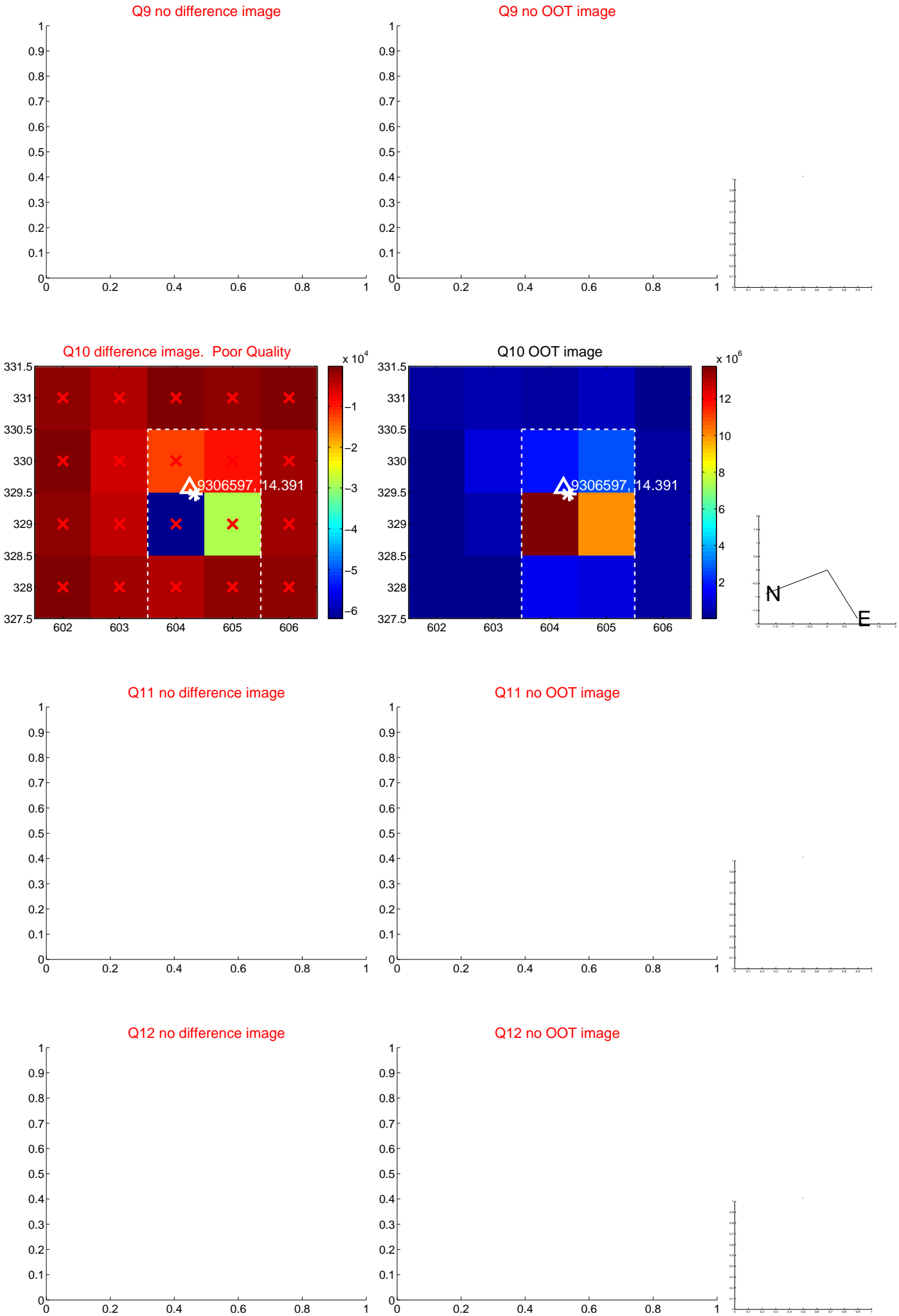
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



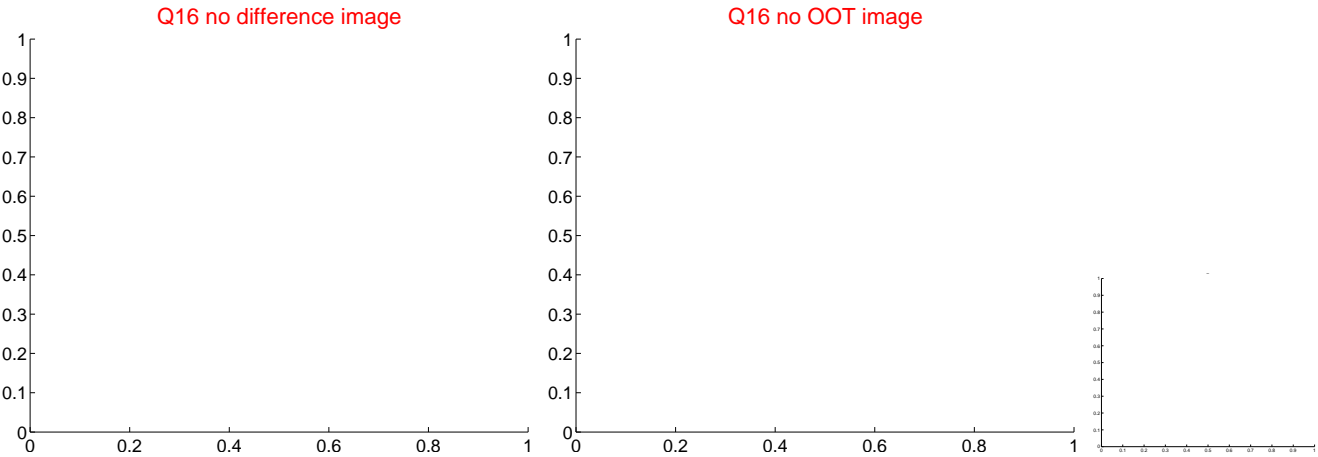
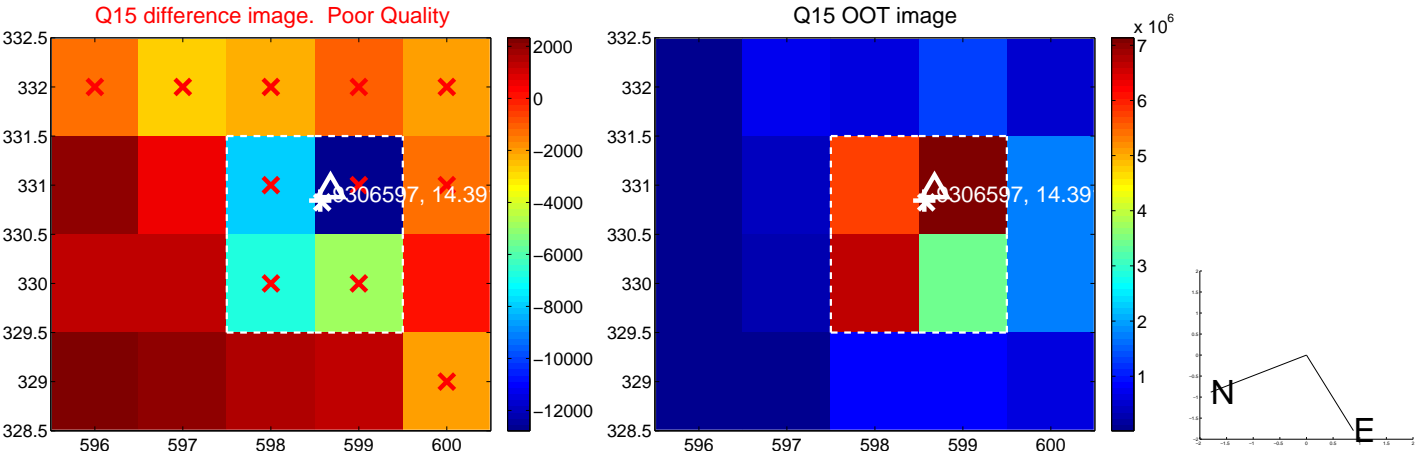
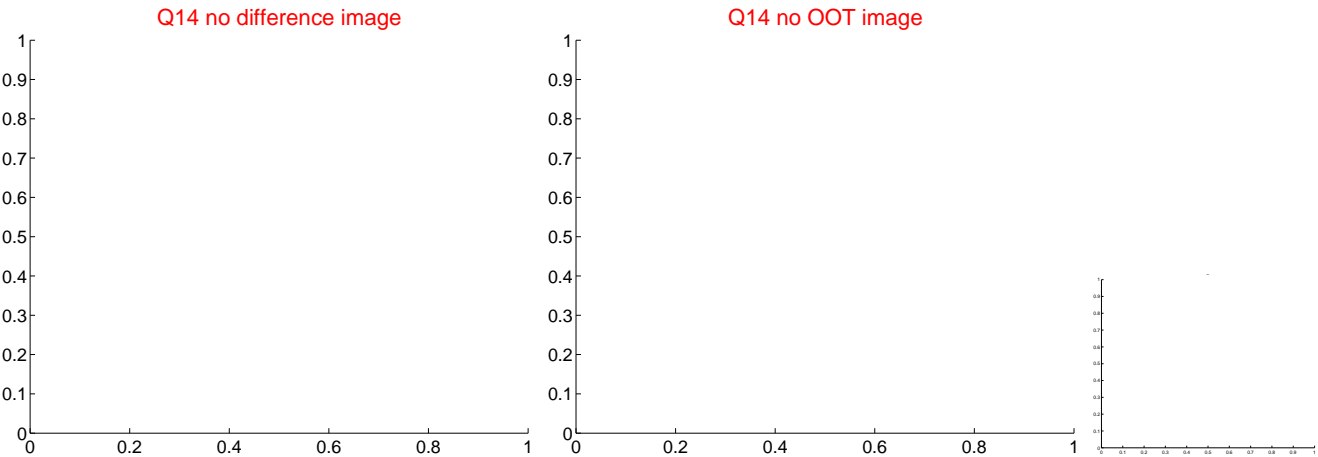
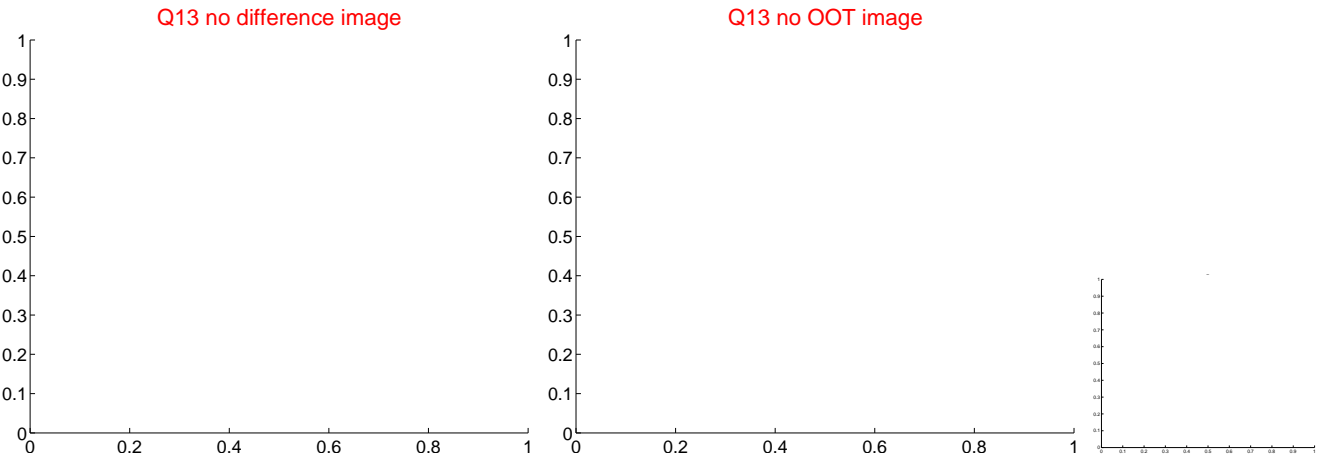
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



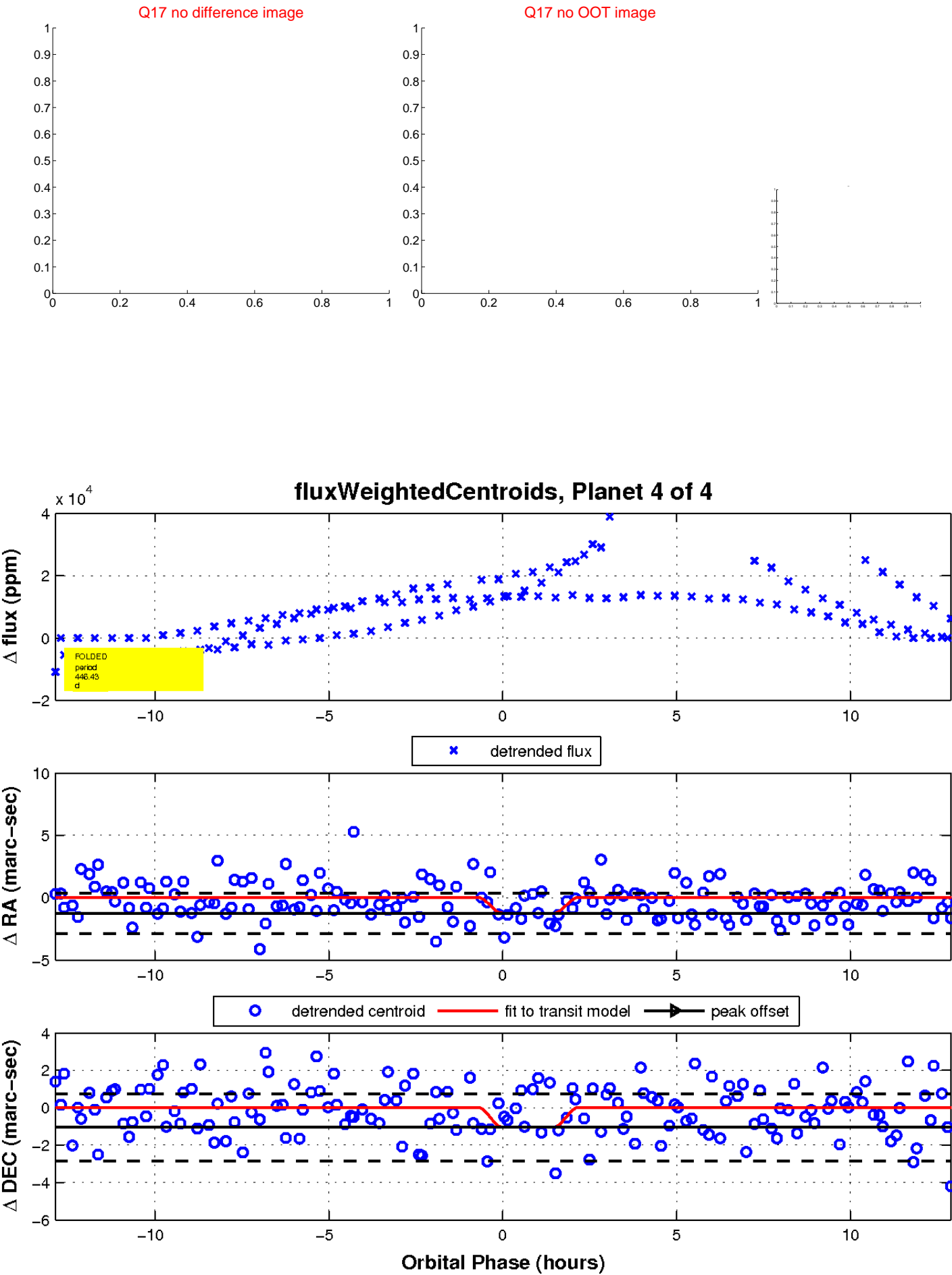
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

