

KIC 009093289

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})
009093289-01	OBS	No	340.023847	235.119780	80.6	12.636	8.9	6.6	1.45	6254	1.48	2.76
009093289-02	OBS	No	375.627742	488.546772	161.3	2.715	7.6	7.1	1.45	6254	2.16	2.42

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009093289-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
009093289-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—CENT_SATURATED

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

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

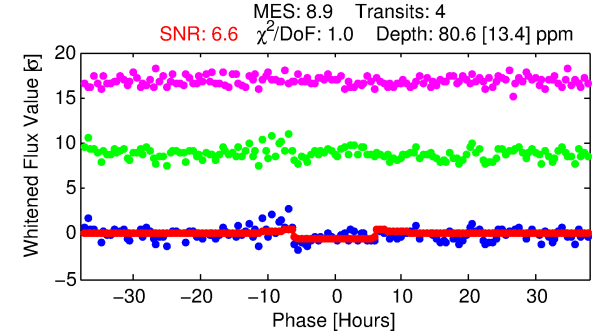
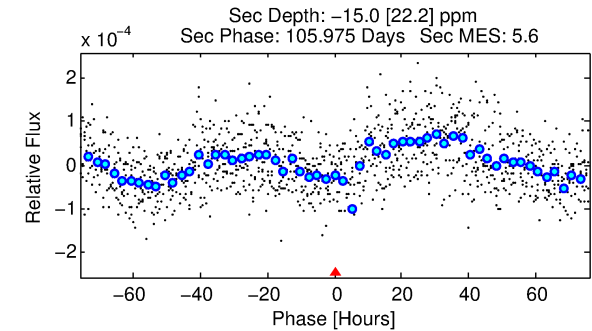
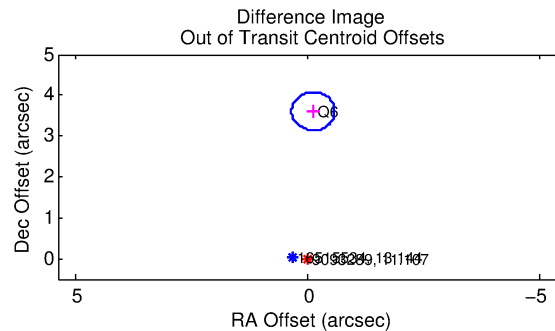
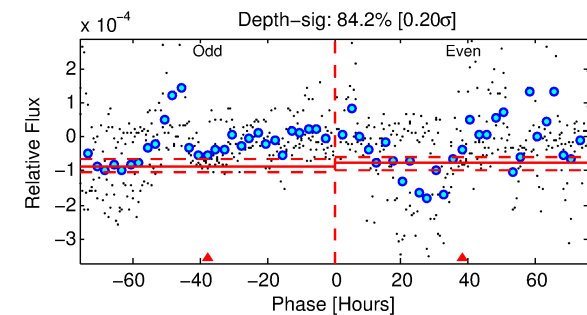
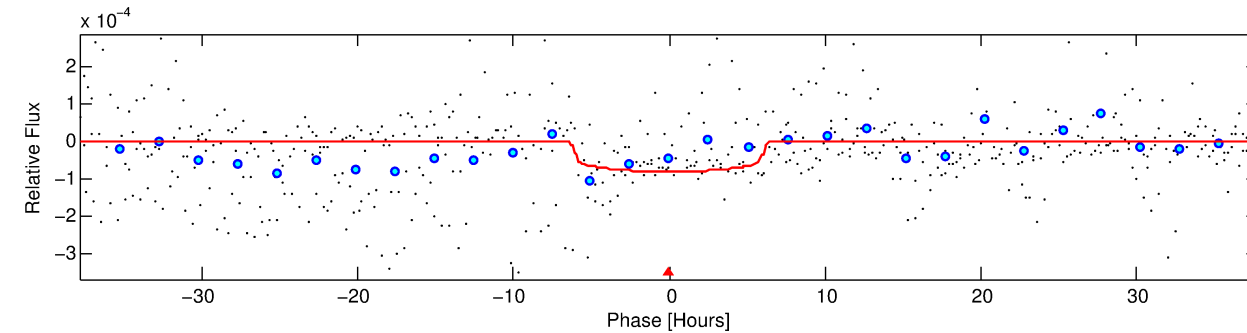
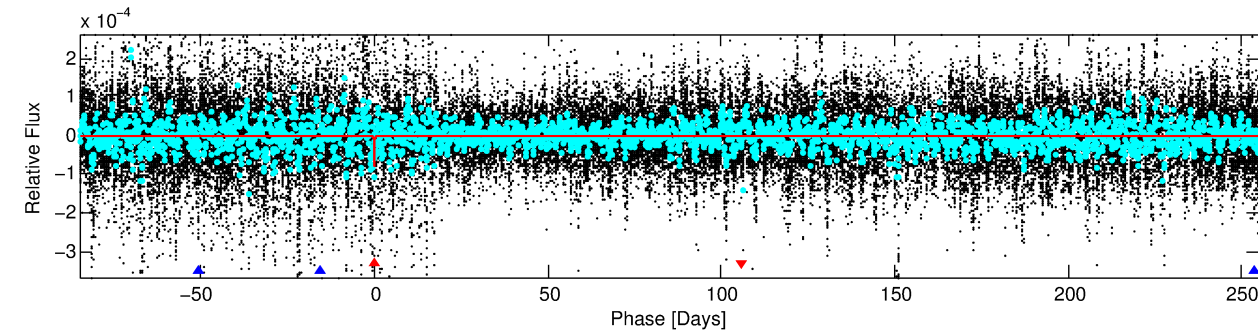
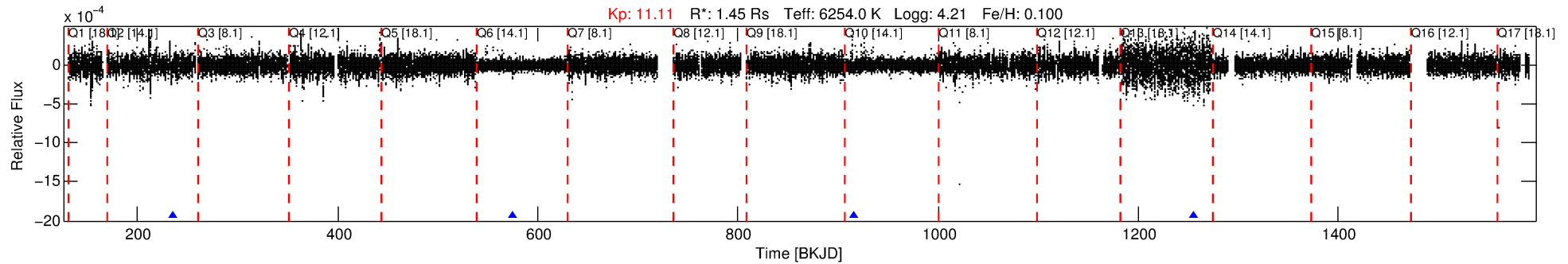
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009093289-01

No Significant Match Found

DV One-Page Summary

KIC: 9093289 Candidate: 1 of 2 Period: 340.024 d



DV Fit Results:

Period = 340.02385 [0.00925] d
Epoch = 235.1198 [0.0135] BKJD
Rp/R* = 0.0093 [0.0019]
a/R* = 110.90 [101.59]
b = 0.85 [0.30]
Seff = 2.76 [0.21]
Teq = 329 [6] K
Rp = 1.48 [0.31] Re
a = 1.0243 [0.0387] AU
Ag = N/A
Teffp = N/A

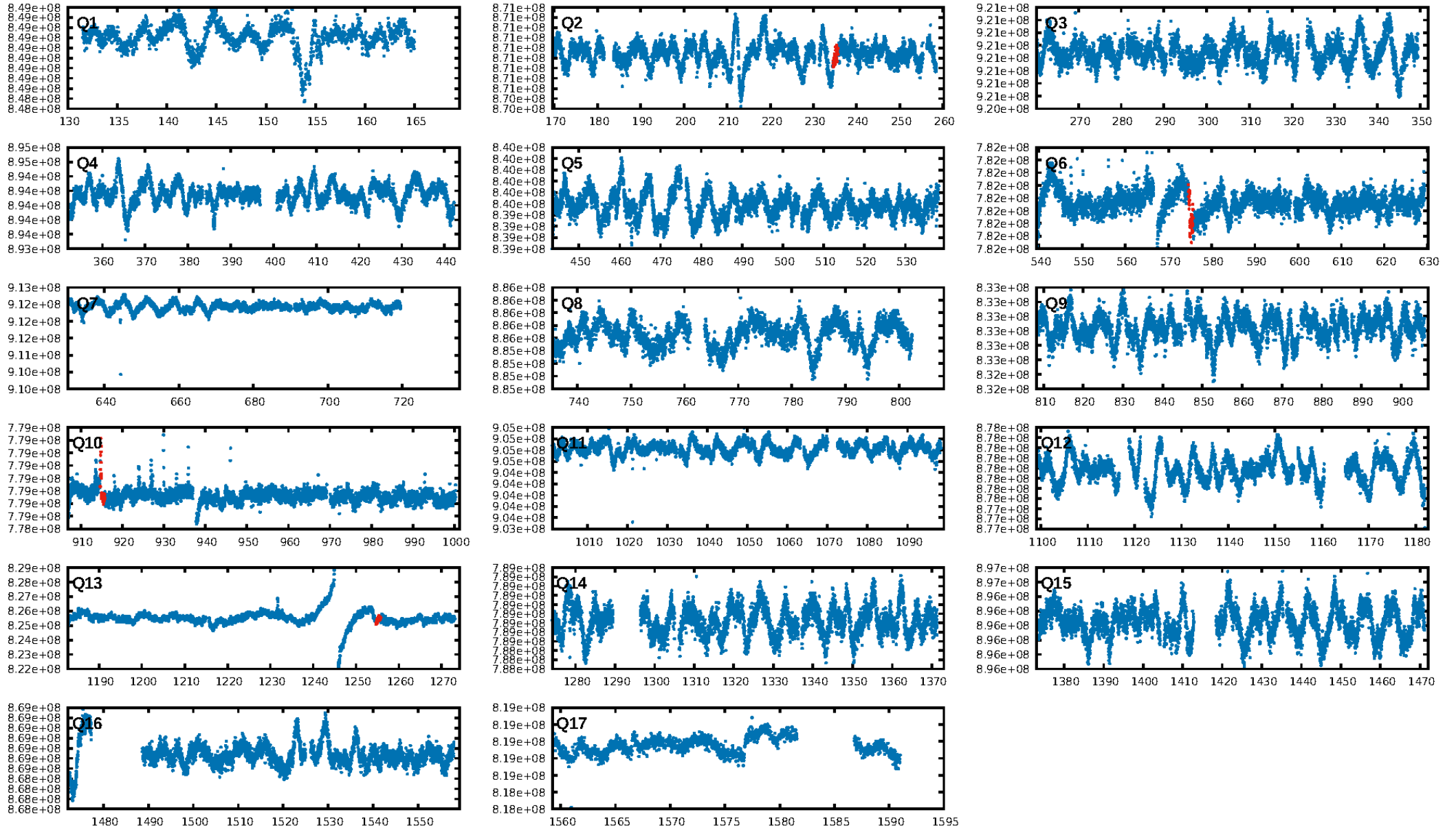
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [66.12 σ]
ModelChiSquare2-sig: 20.1%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 2.27e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 2.197
Centroid-sig: 0.0%
Centroid-so: 3.201 arcsec [2.34 σ]
OotOffset-rm: 3.609 arcsec [23.20 σ]
KicOffset-rm: 3.393 arcsec [22.17 σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [4/4]

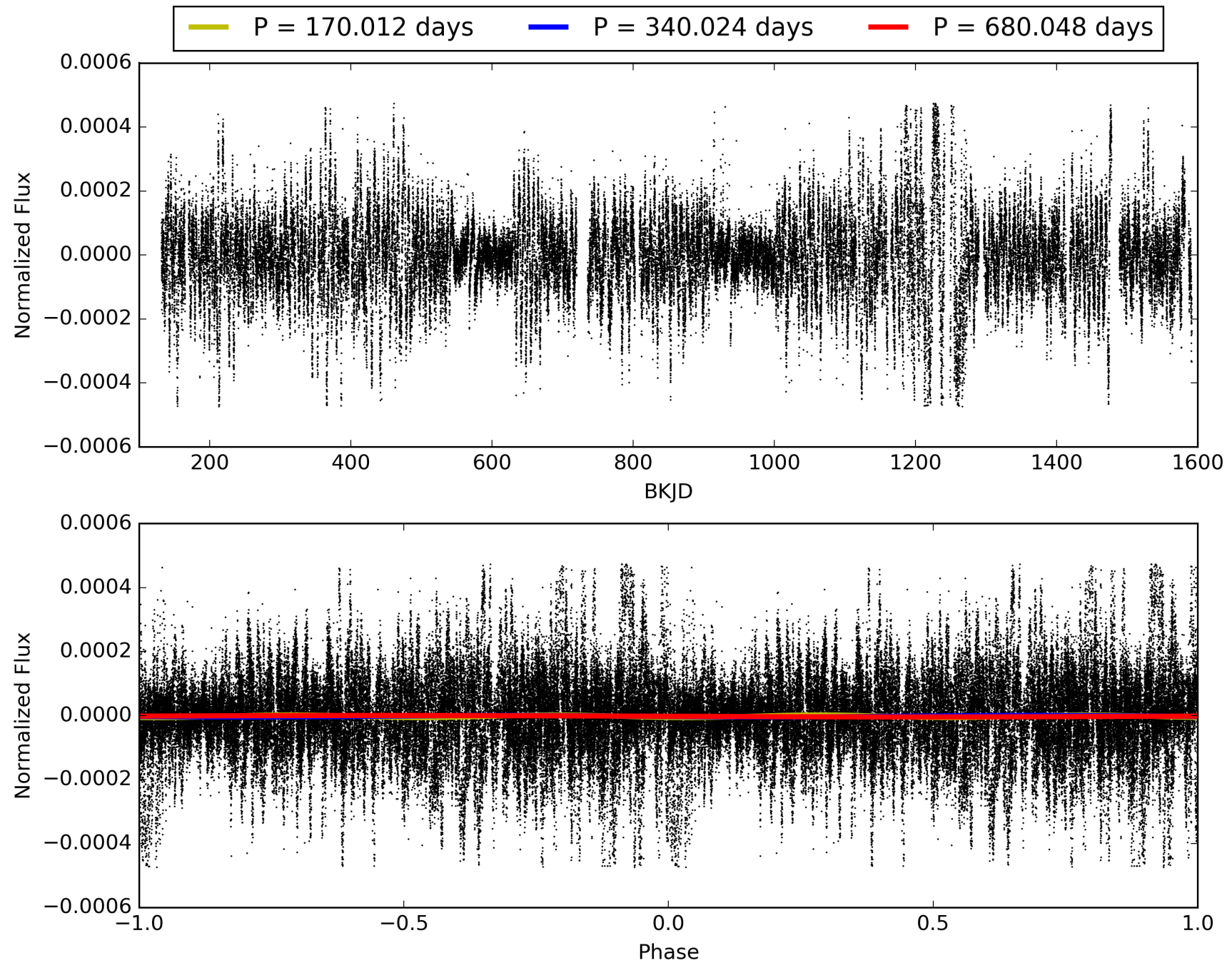
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:48:25 Z

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

TCE 009093289-01, PDC Light Curves

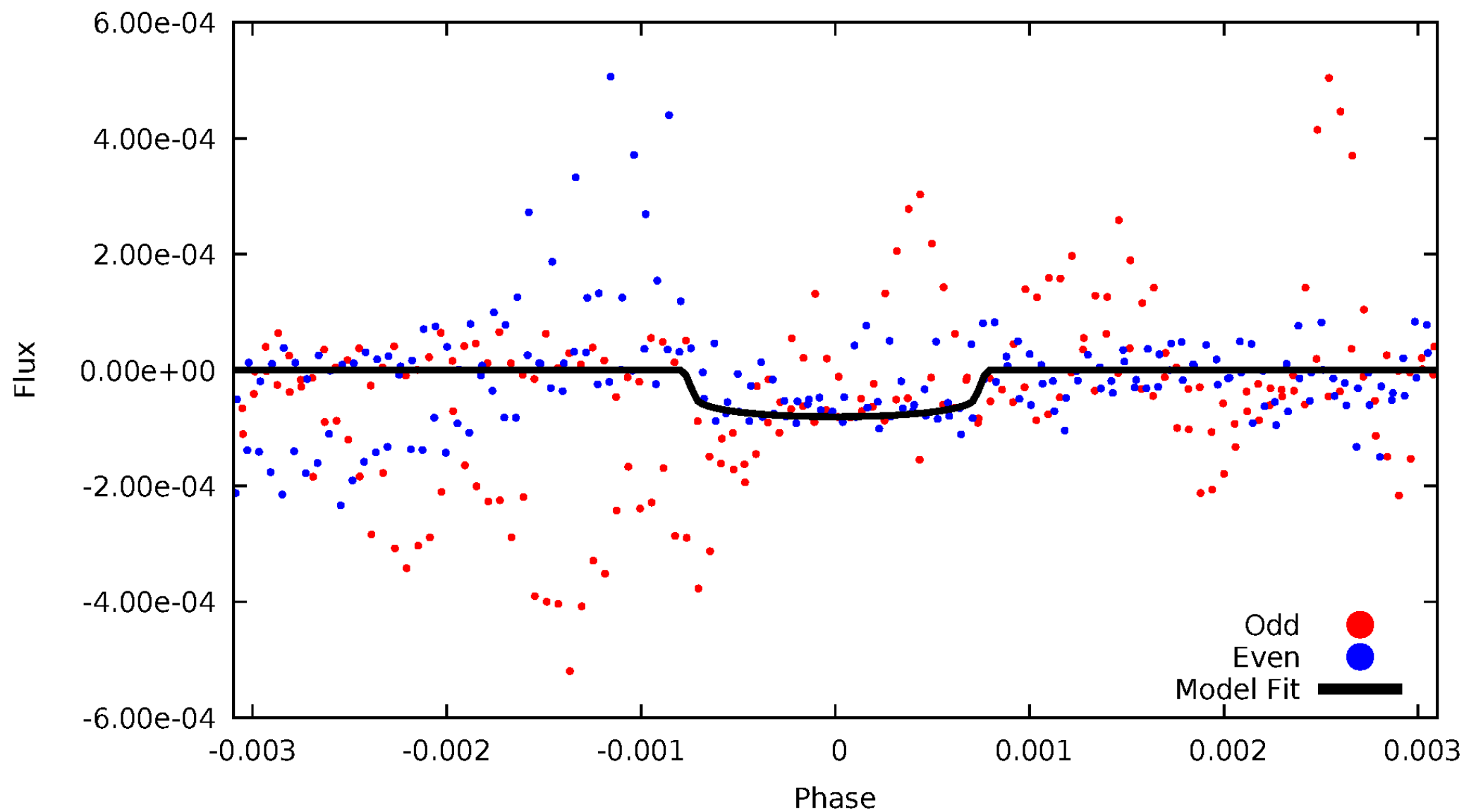


TCE 009093289-01



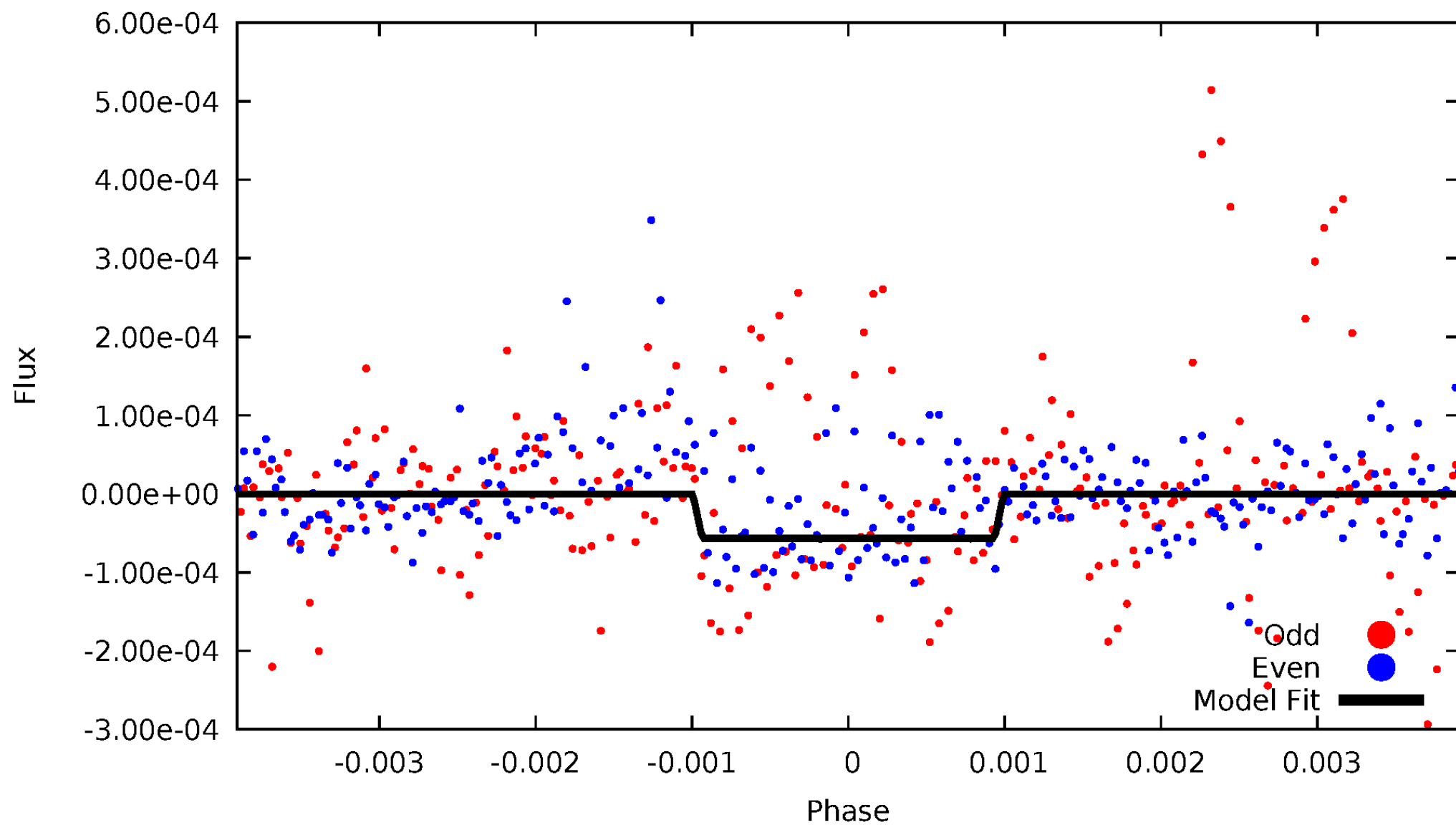
DV Odd/Even

TCE 009093289-01

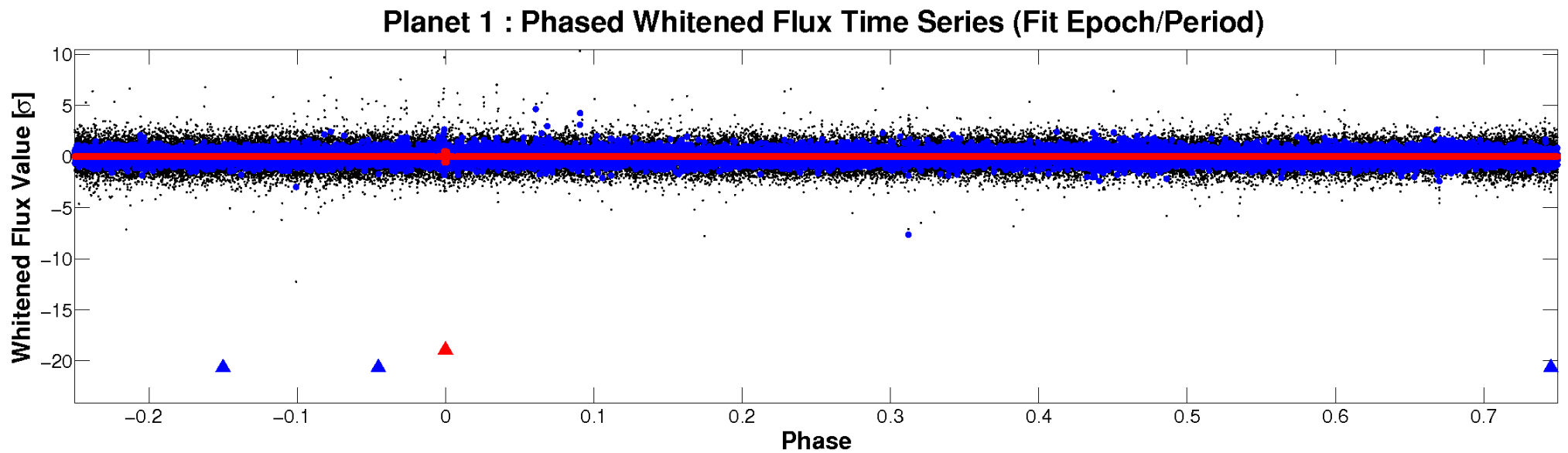
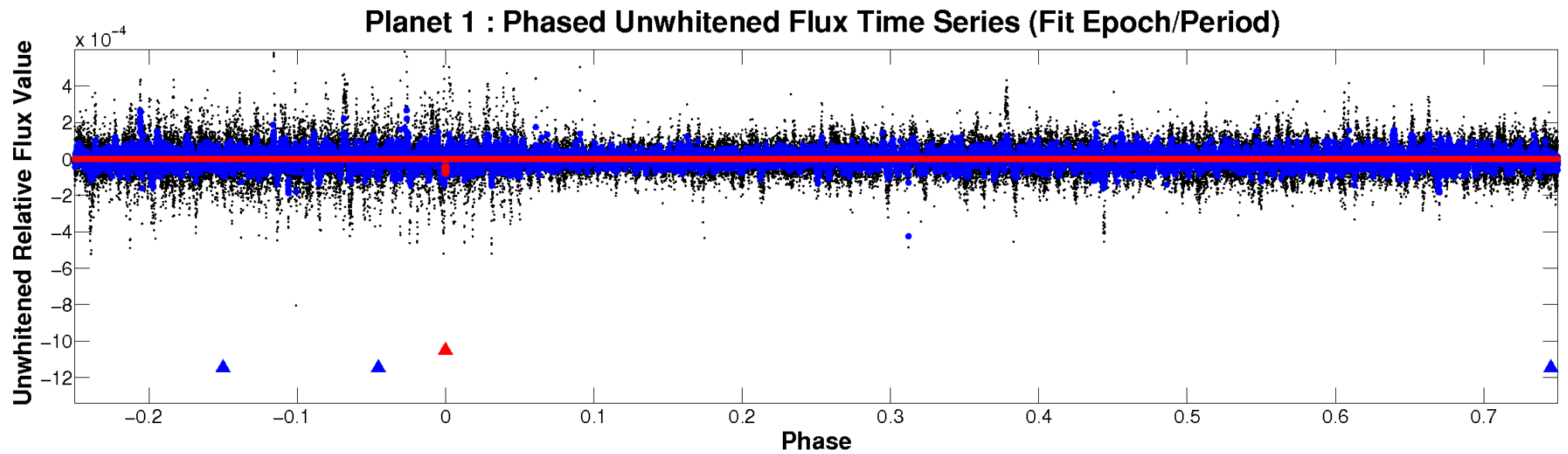


ALT Odd/Even

TCE 009093289-01

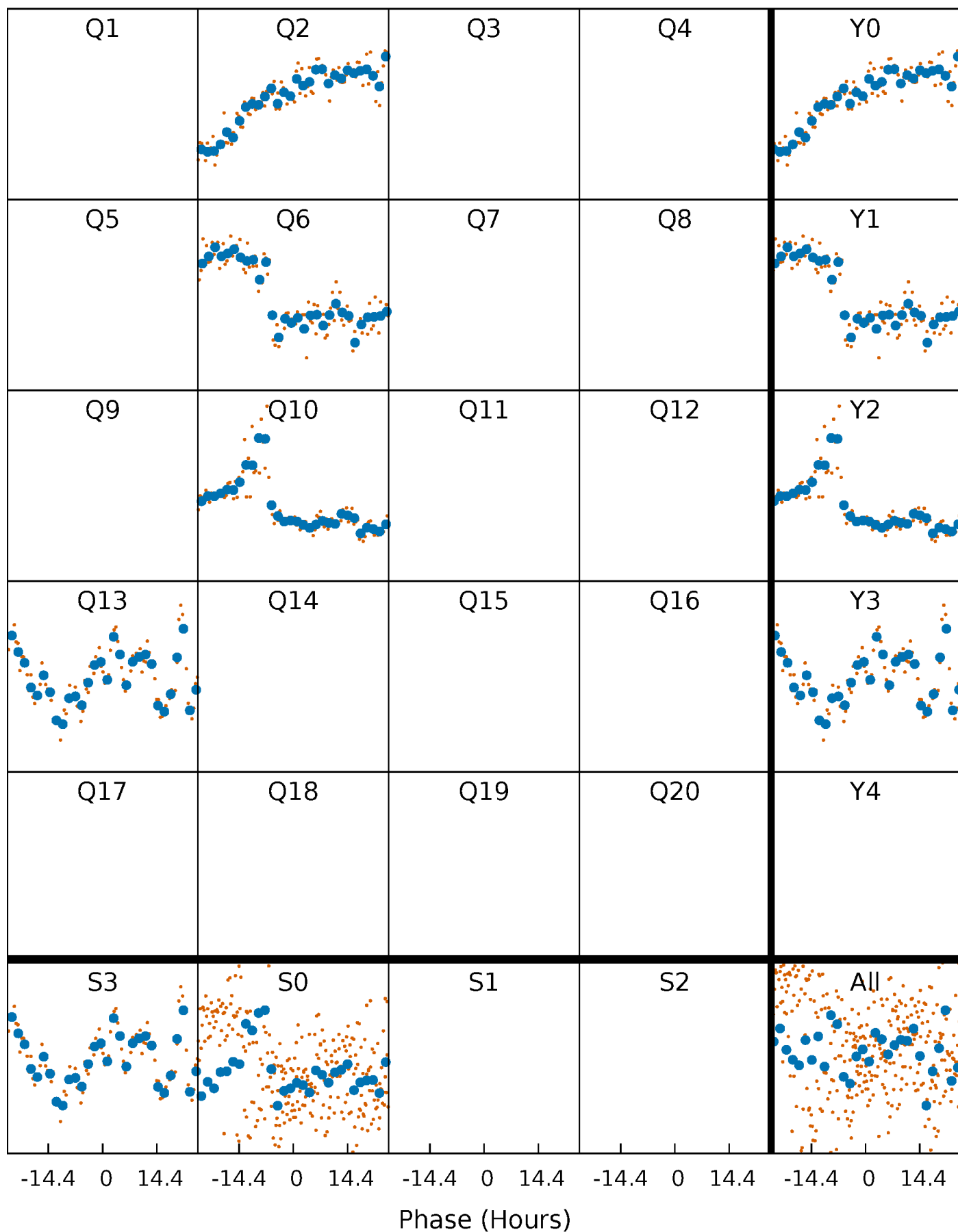


Non-Whitened Vs. Whitened Light Curve



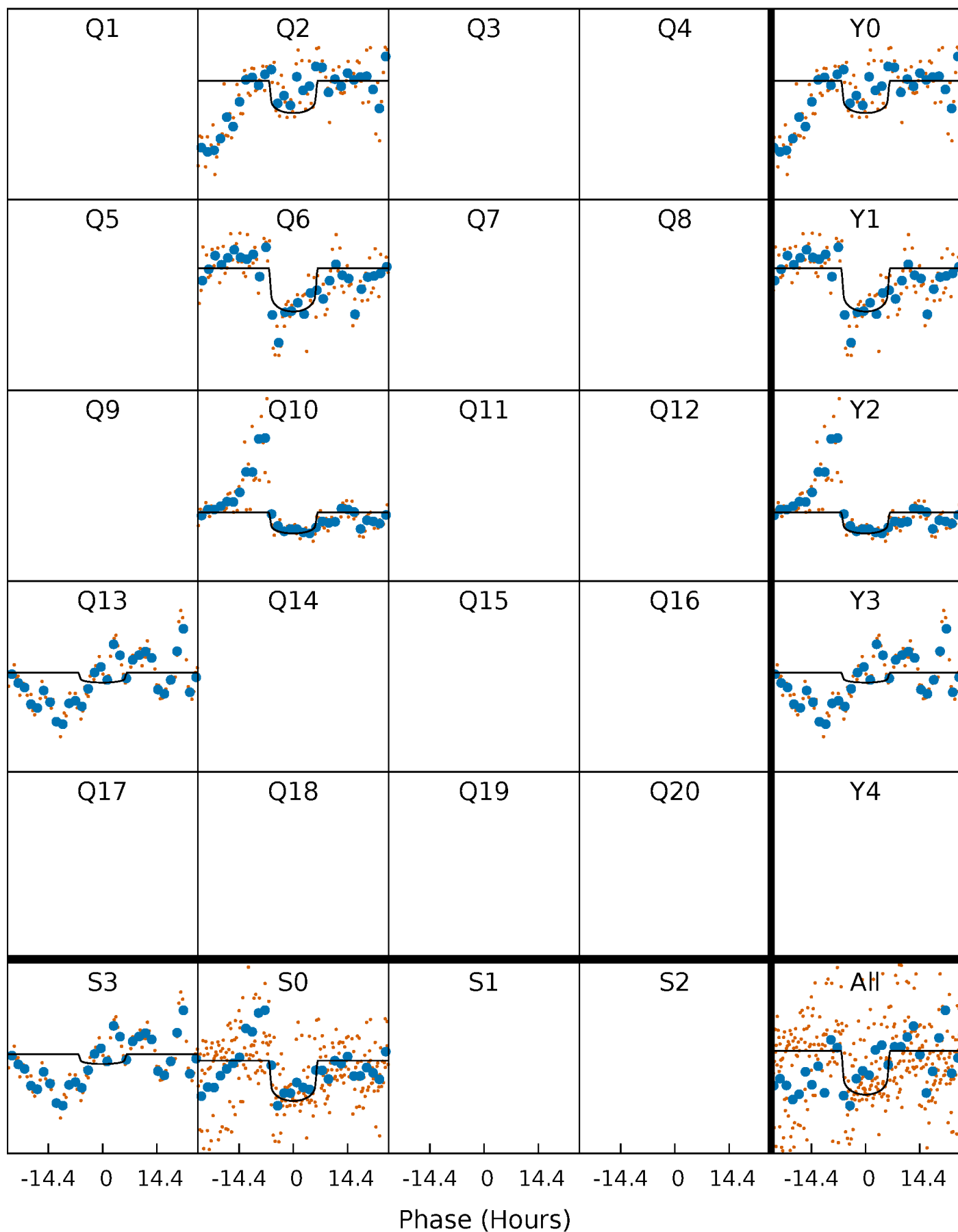
PDC Quarter-Phased Transit Curves

TCE 009093289-01 P=340.023847 Days $T_0=235.119780$ (BKJD)



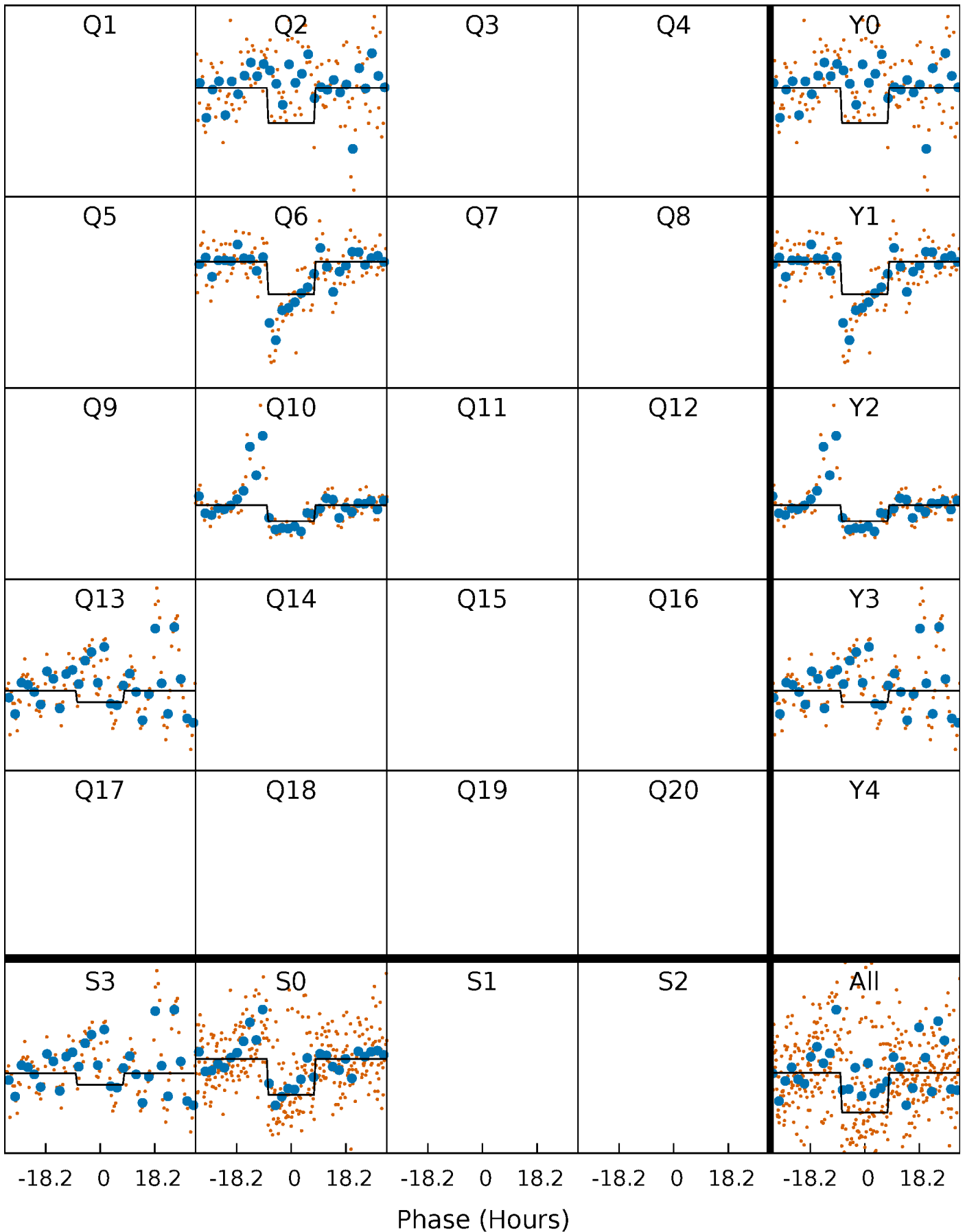
DV Quarter-Phased Transit Curves

TCE 009093289-01 P=340.023847 Days $T_0=235.119780$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

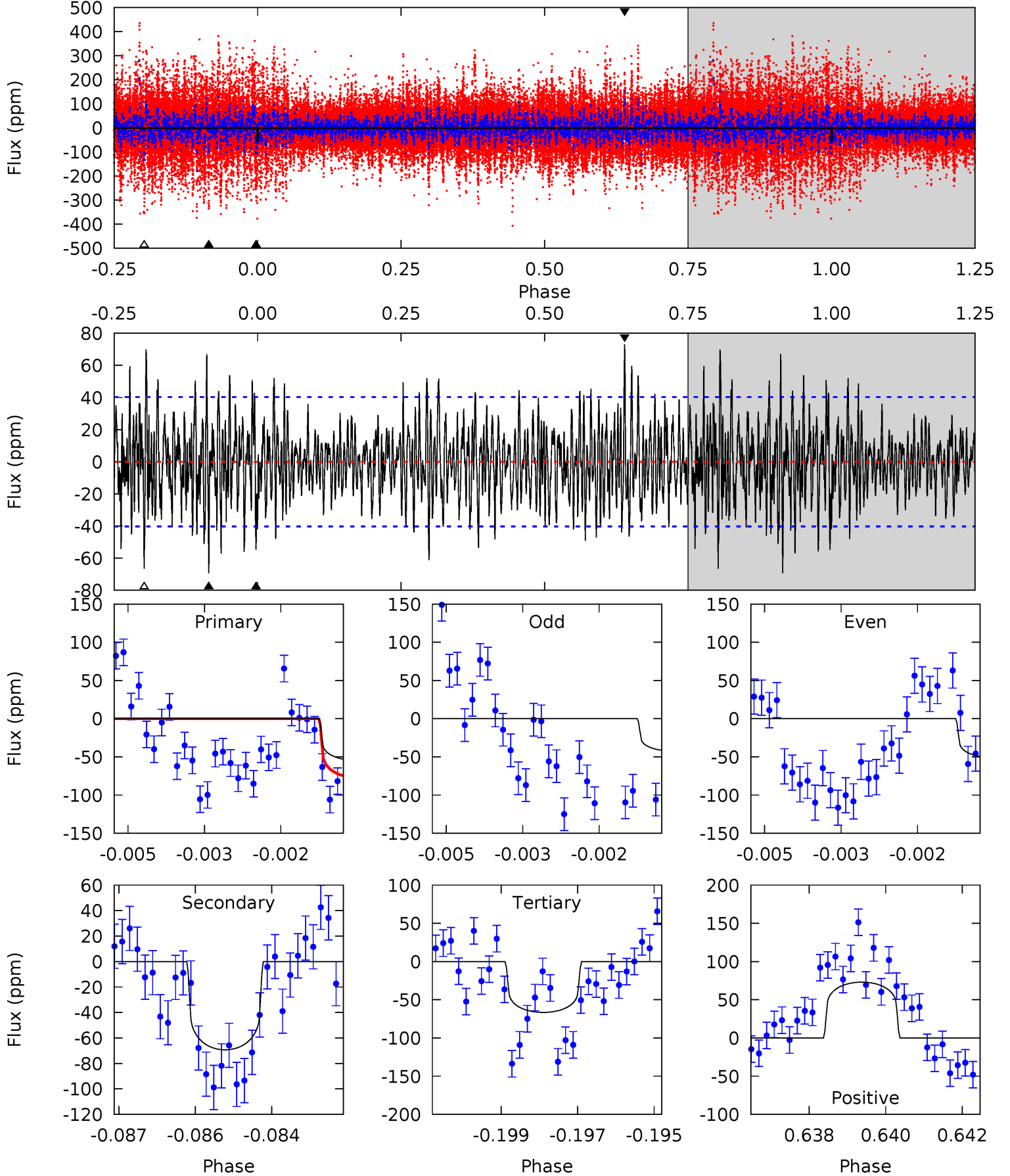
TCE 009093289-01 P=340.021250 Days $T_0=235.201354$ (BKJD)



DV Model-Shift Uniqueness Test

009093289-01, $P = 340.023847$ Days, $E = 235.119780$ Days

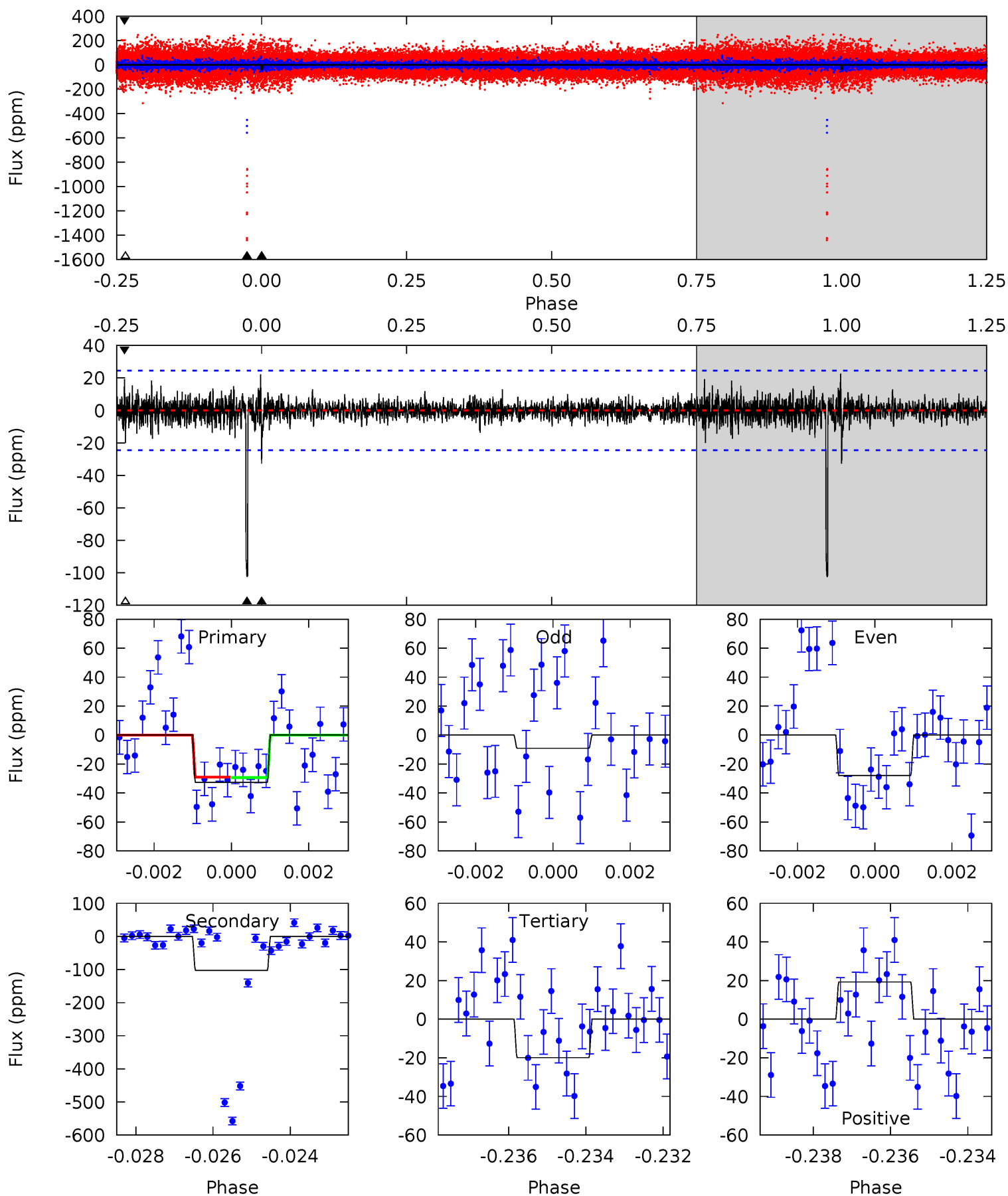
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.28	9.23	8.87	9.73	5.37	3.16	2.68	-1.59	-2.45	0.37	-0.50	0.54	0.92	0.51	3.04



Alt Model-Shift Uniqueness Test

009093289-01, P = 340.021250 Days, E = 235.201354 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.12	22.3	4.33	4.19	5.33	3.09	0.87	2.79	2.93	18.0	18.1	1.71	0.68	0.18	0.03



Stellar Parameters For KIC 009093289

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6254^{+88}_{-69}	$4.206^{+0.023}_{-0.025}$	$0.100^{+0.150}_{-0.150}$	$1.454^{+0.065}_{-0.071}$	$1.239^{+0.071}_{-0.097}$	$0.568^{+0.055}_{-0.050}$
	+1%/-1%	+1%/-1%	+150%/-150%	+4%/-5%	+6%/-8%	+10%/-9%
Source	SPE72	AST10	SPE72	DSEP		

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

Secondary Eclipse Parameters for KIC 009093289-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-69 ± 8	$1.48^{+0.29}_{-0.31}$	460^{+8}_{-7}	5953^{+744}_{-529}	18713^{+10789}_{-6253}
Alt.	-103 ± 5	$1.19^{+0.30}_{-0.30}$	460^{+8}_{-7}	7382^{+1452}_{-856}	41760^{+33238}_{-15451}

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

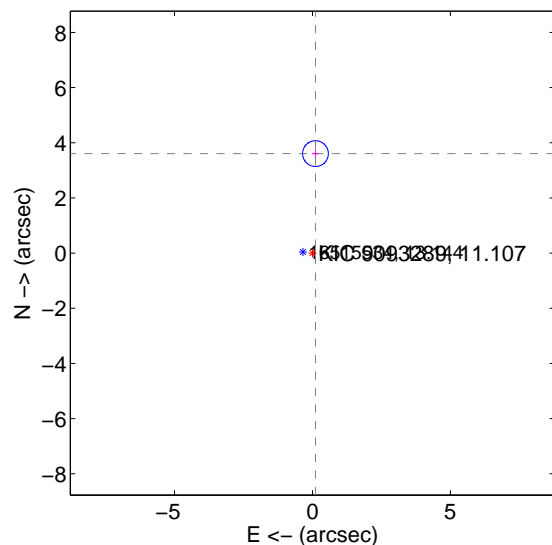
Supplemental centroid analysis for 009093289-01. **Kepler magnitude: 11.11.** Transit SNR 6.60

There are 1 quarters with good PRF difference image offsets

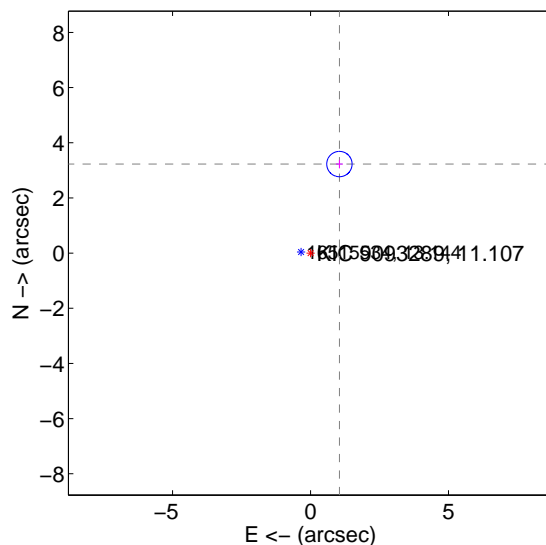
The direct PRF centroid is offset from the target star catalog position by about 1.01 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.609 ± 0.156	23.20	-0.110 ± 0.127	3.607 ± 0.156
PRF-fit source offset from KIC position	3.393 ± 0.153	22.17	-1.047 ± 0.127	3.228 ± 0.156
photometric centroid source offset	3.20 ± 1.37	2.34	-0.05 ± 1.68	3.20 ± 1.37

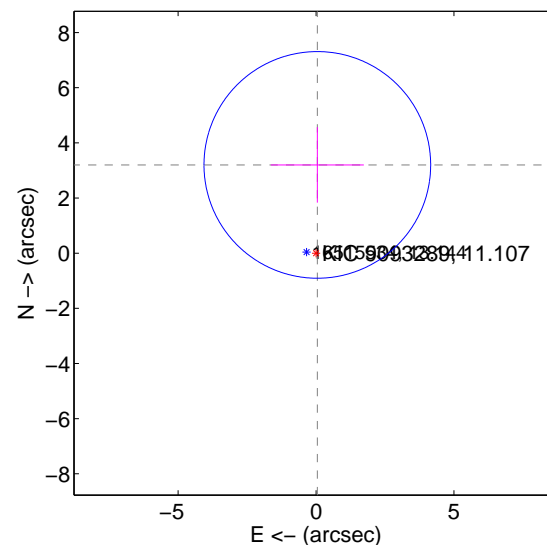
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

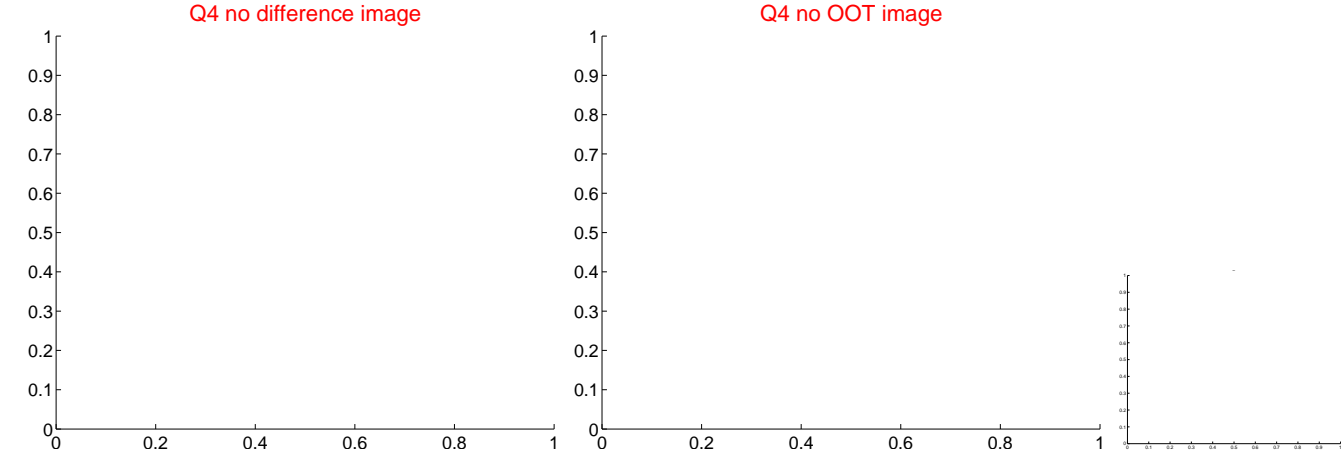
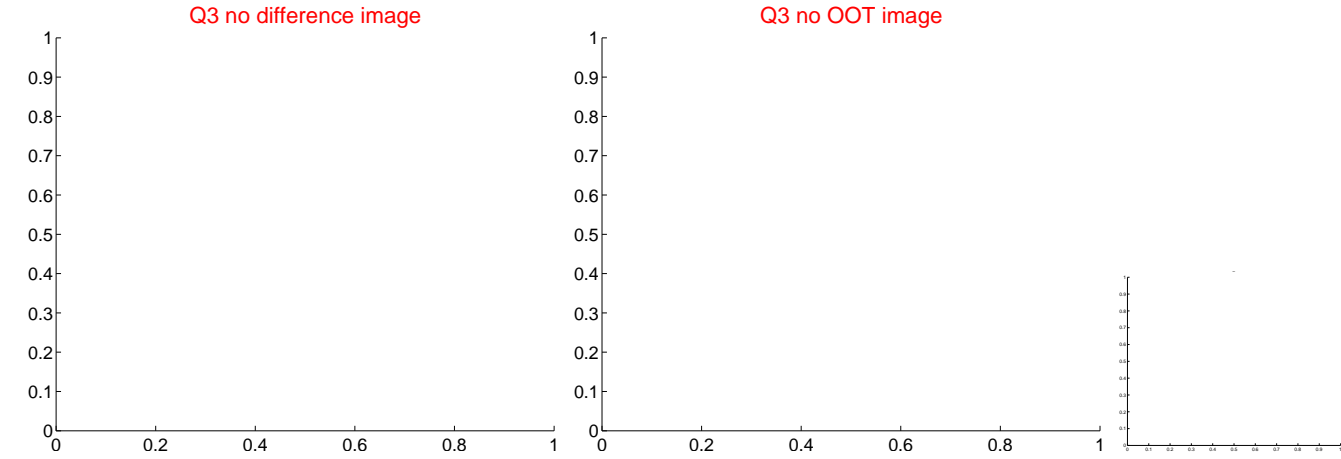
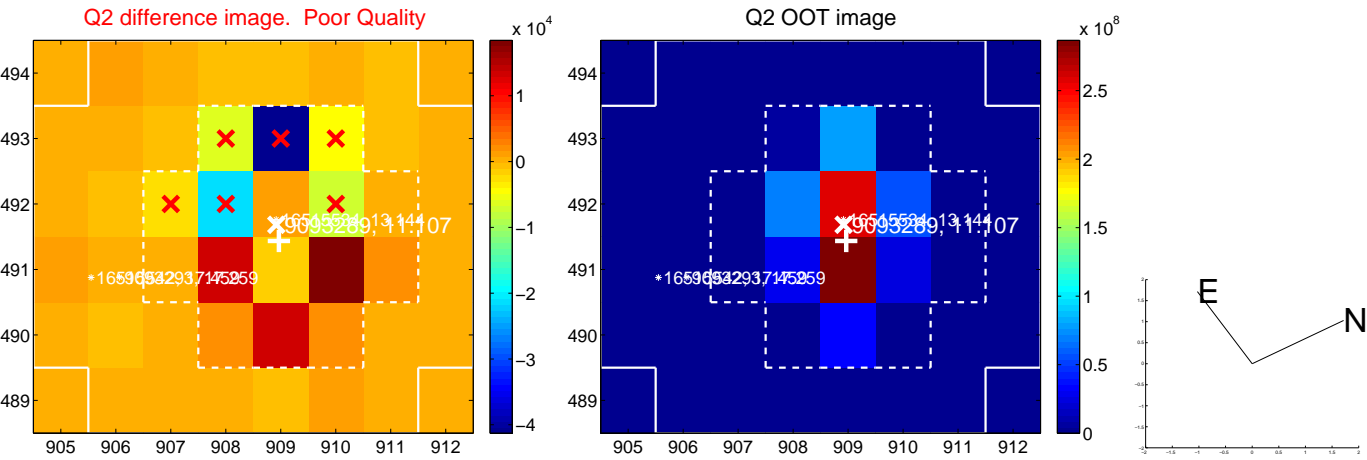
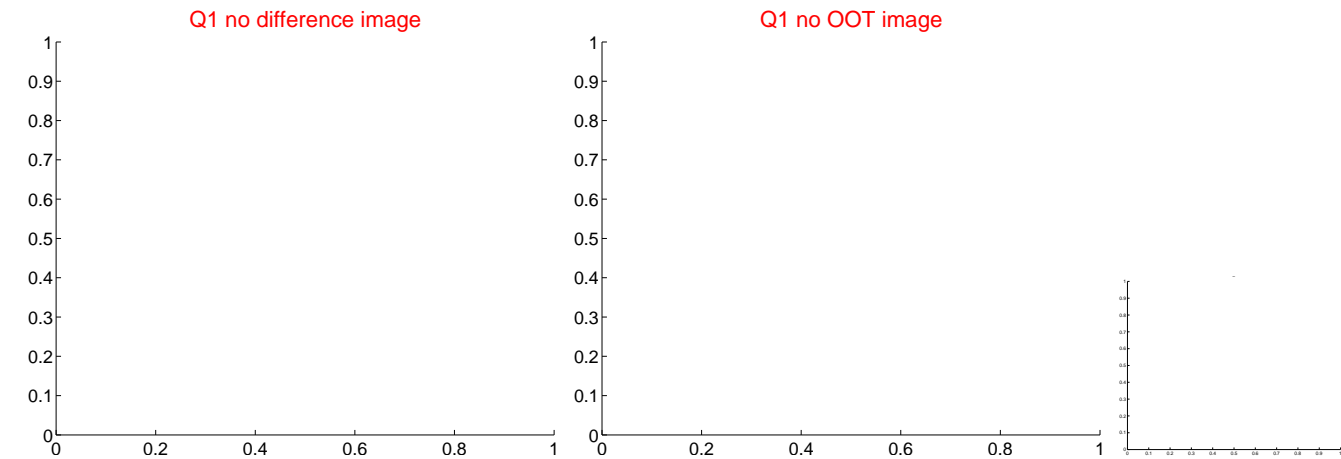


offset from photometric centroids

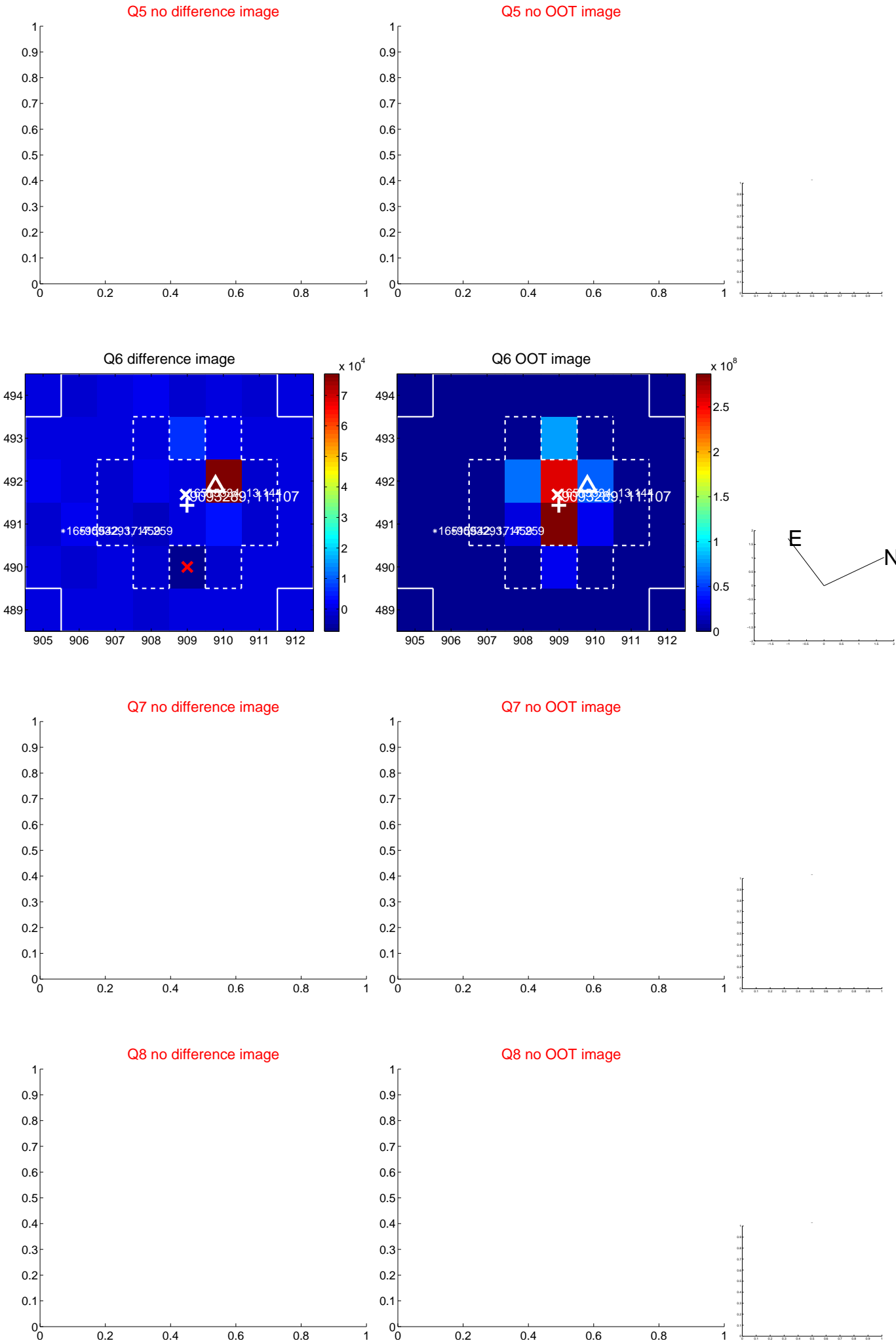


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

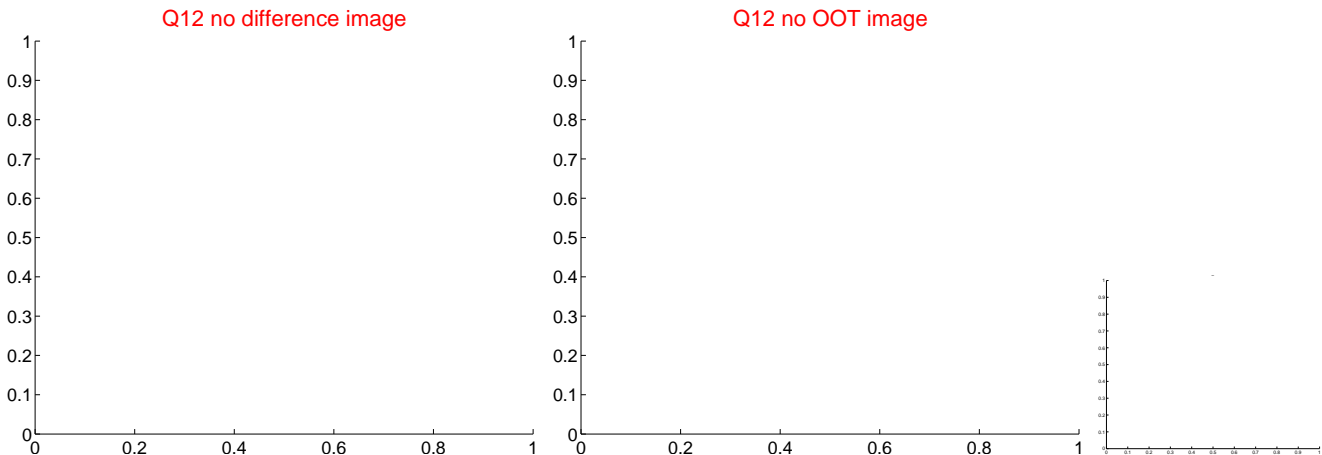
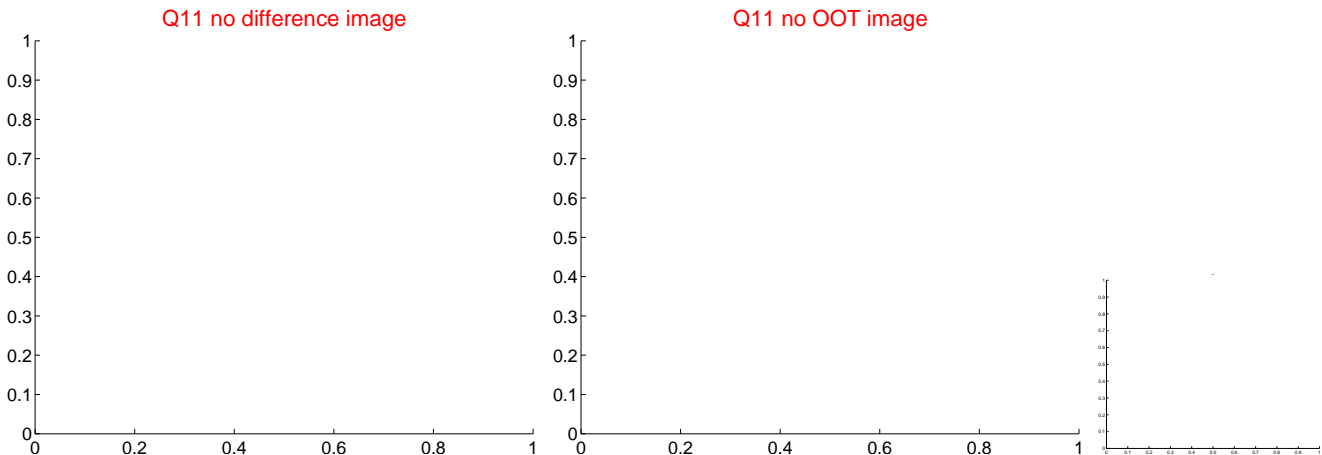
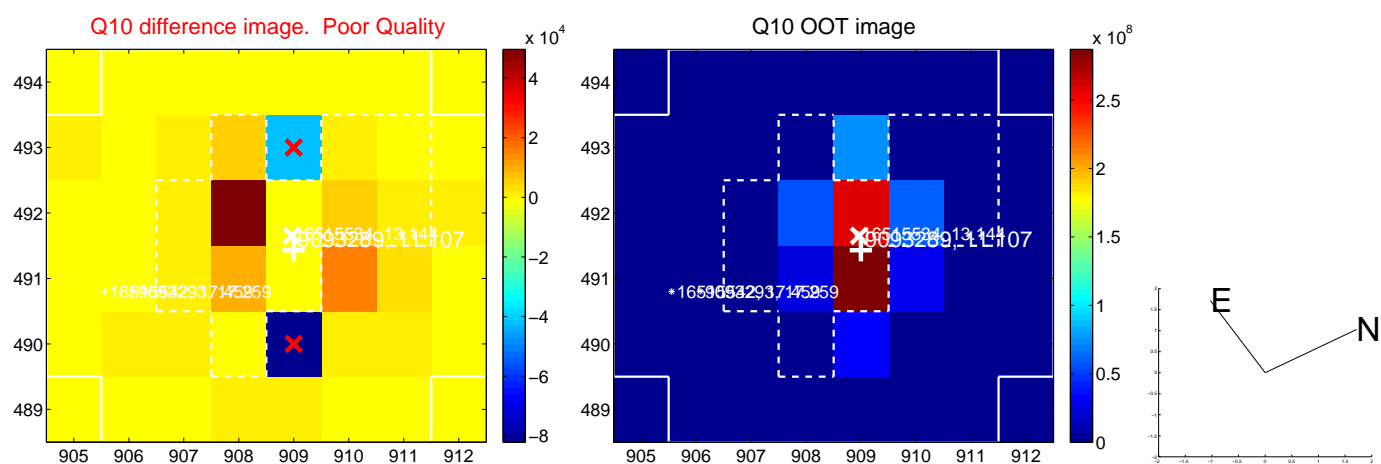
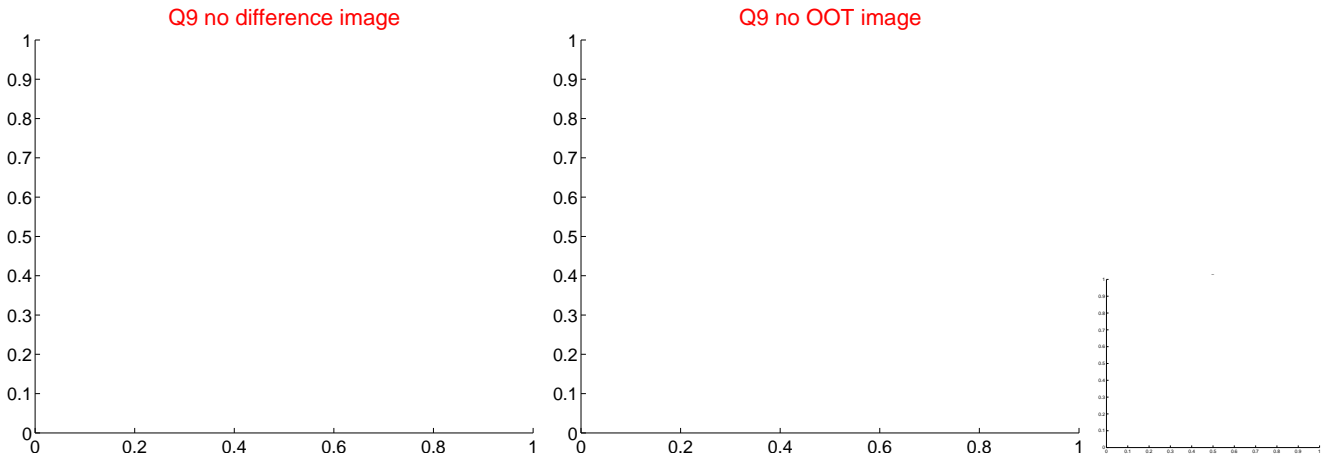
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



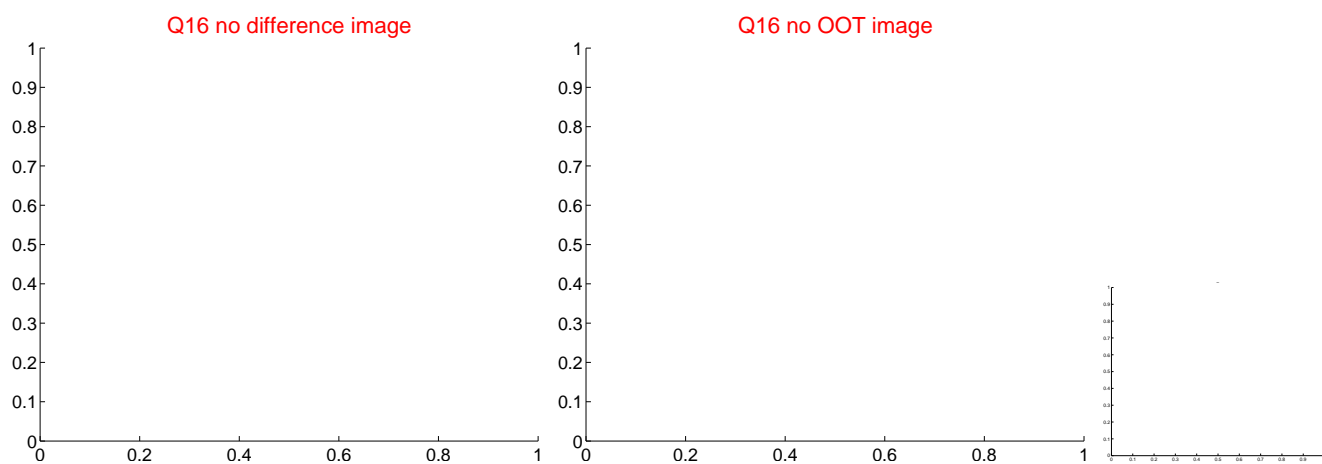
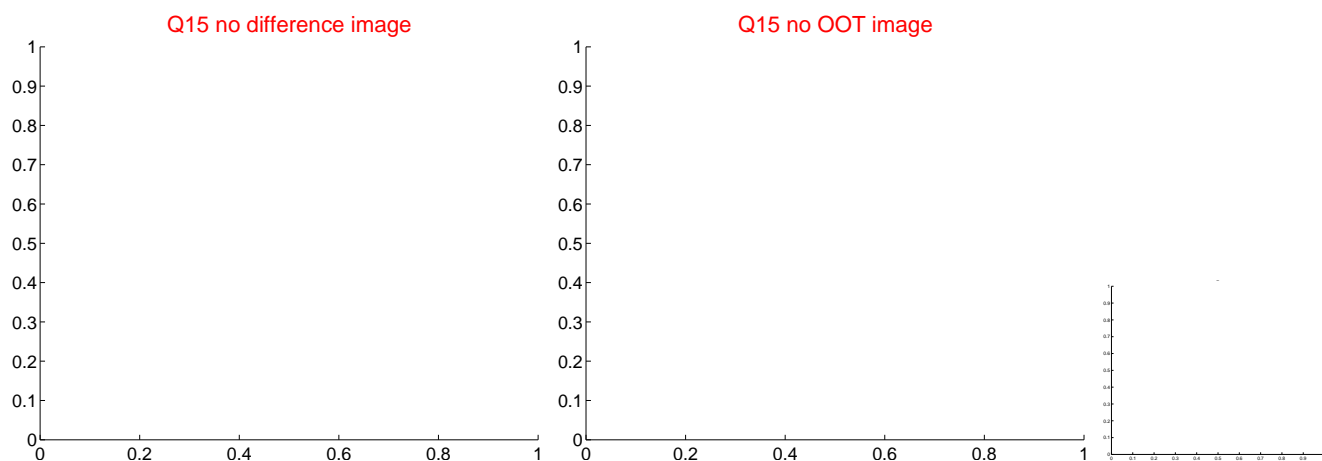
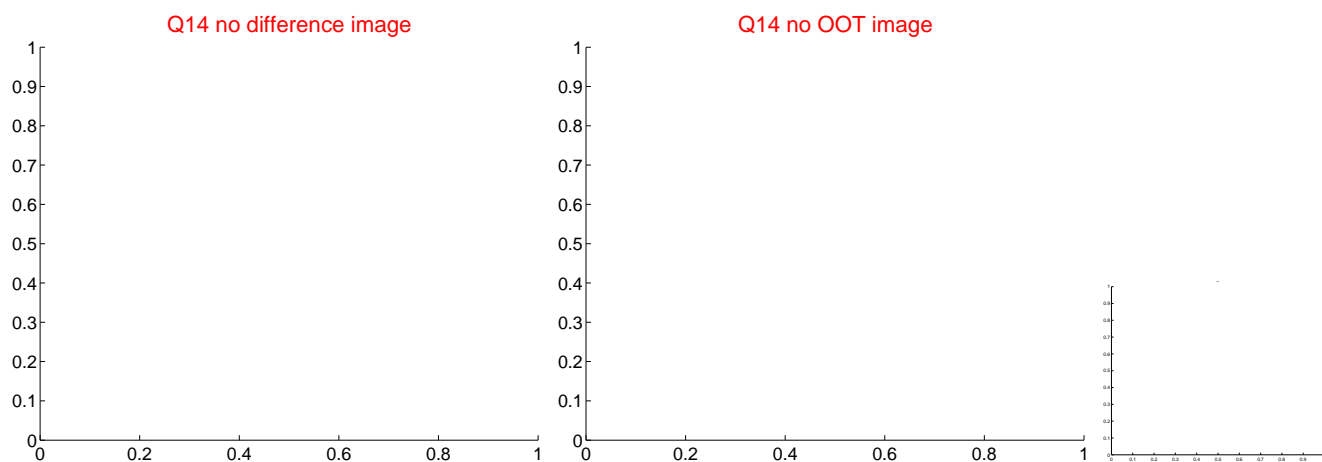
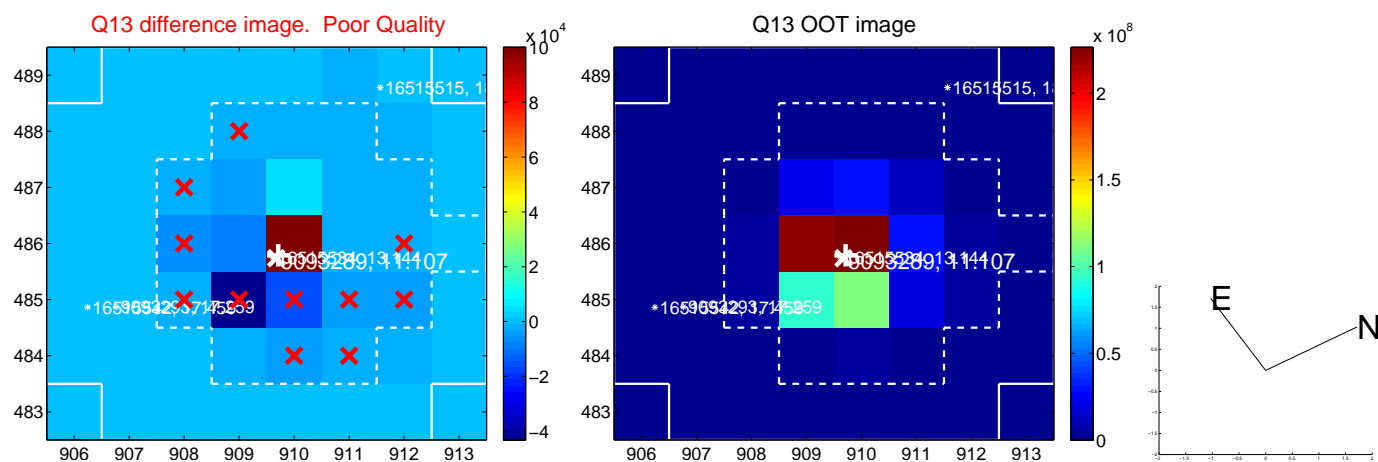
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



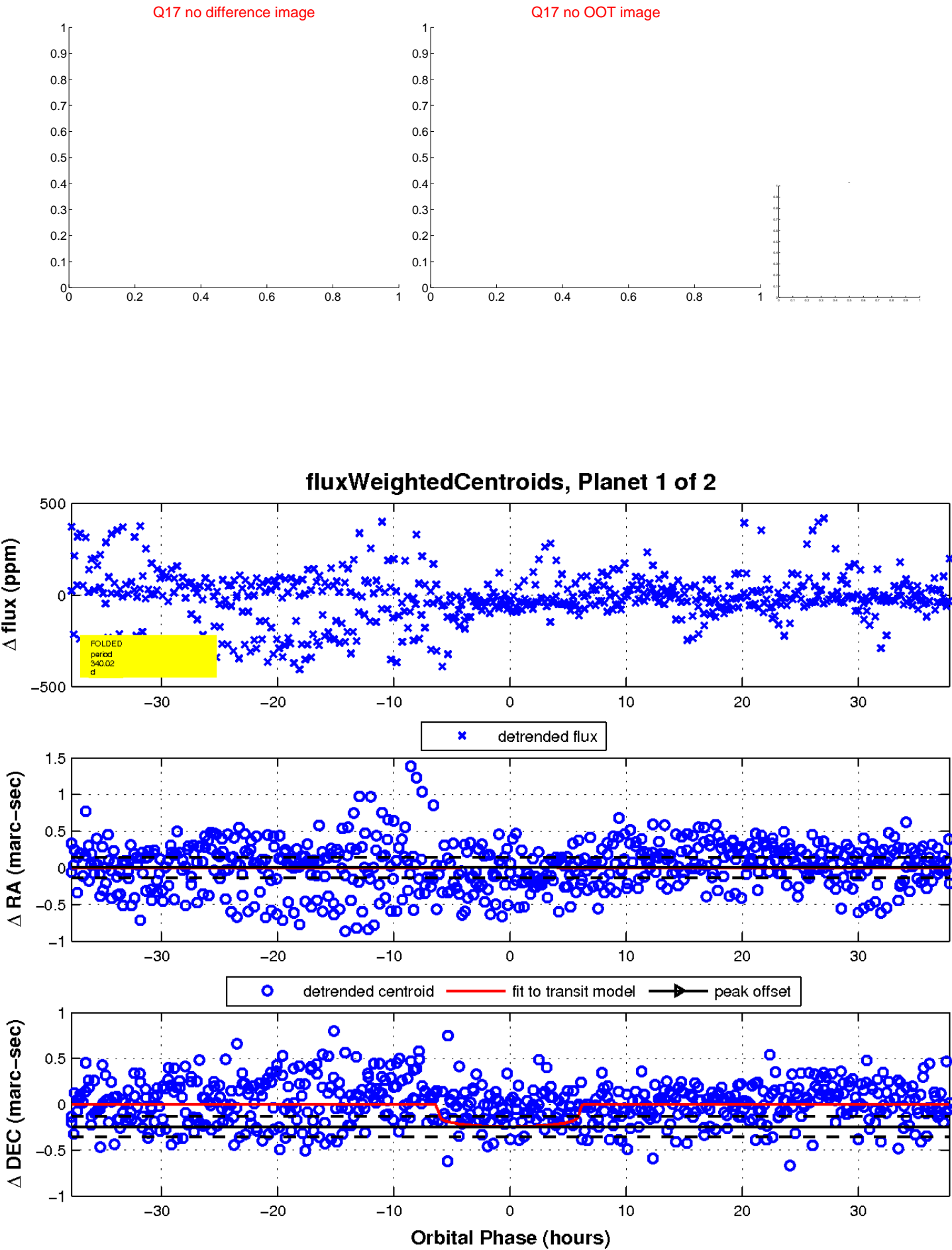
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

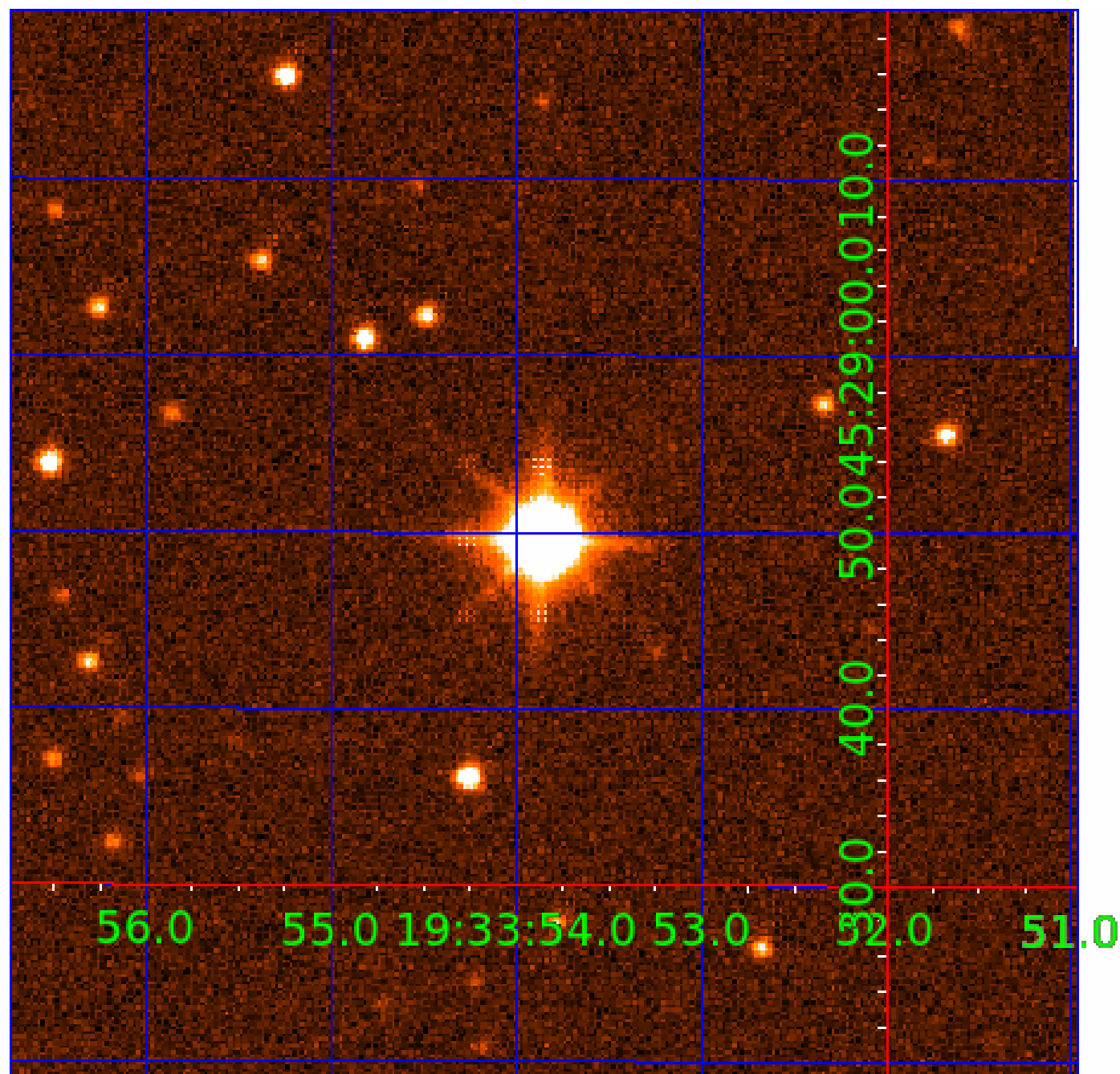


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009093289

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})
009093289-01	OBS	No	340.023847	235.119780	80.6	12.636	8.9	6.6	1.45	6254	1.48	2.76
009093289-02	OBS	No	375.627742	488.546772	161.3	2.715	7.6	7.1	1.45	6254	2.16	2.42

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009093289-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
009093289-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—CENT_SATURATED

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

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

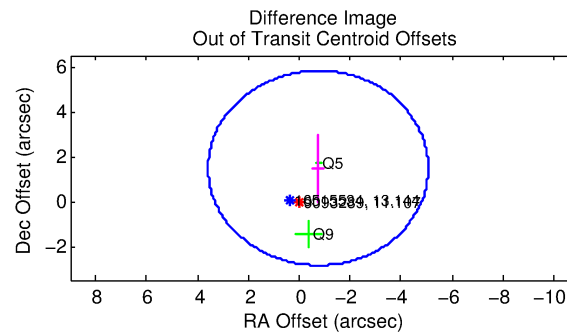
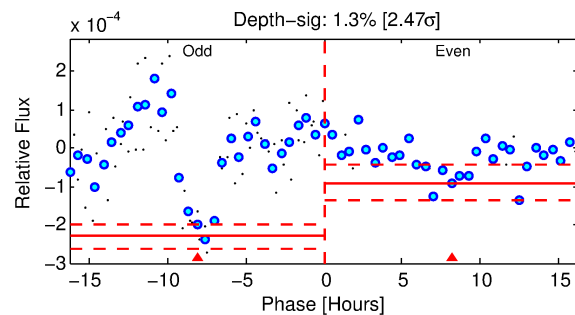
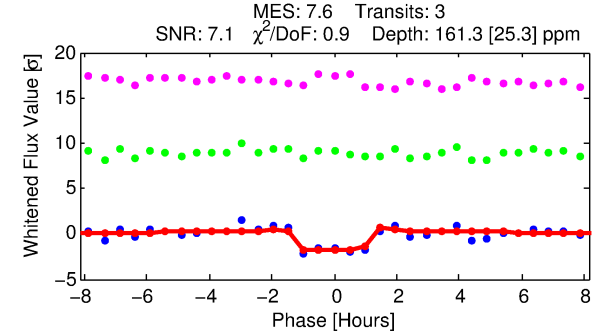
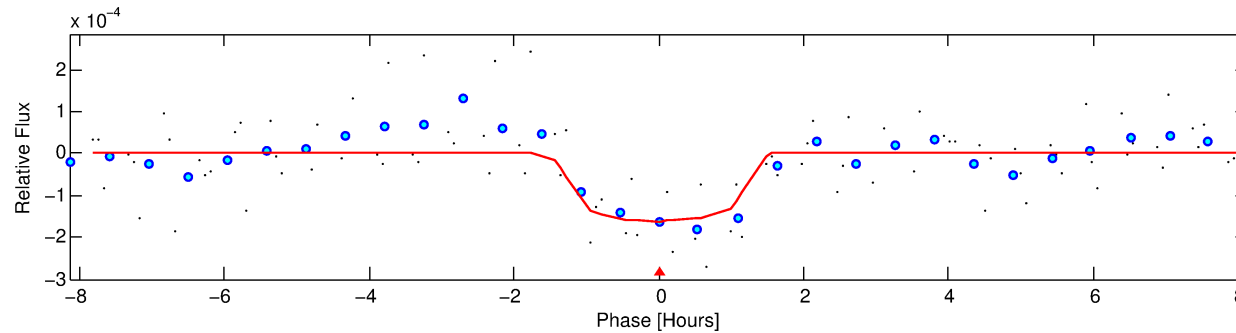
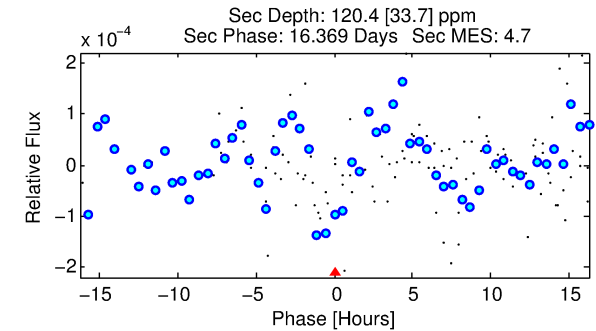
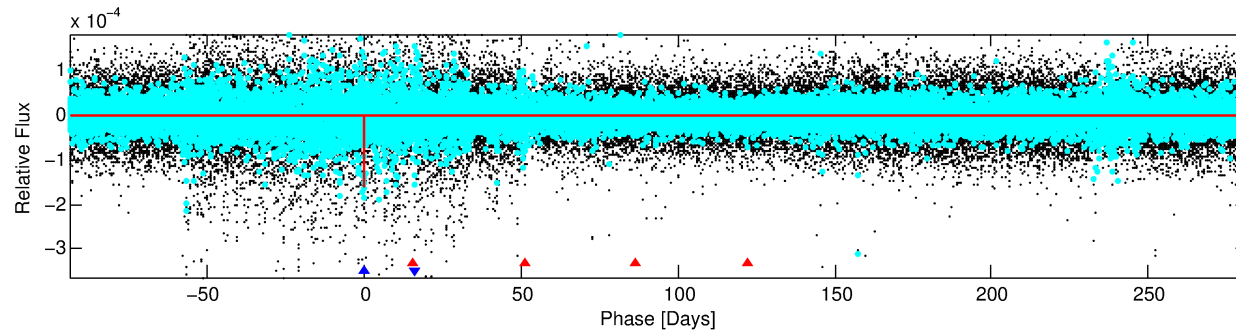
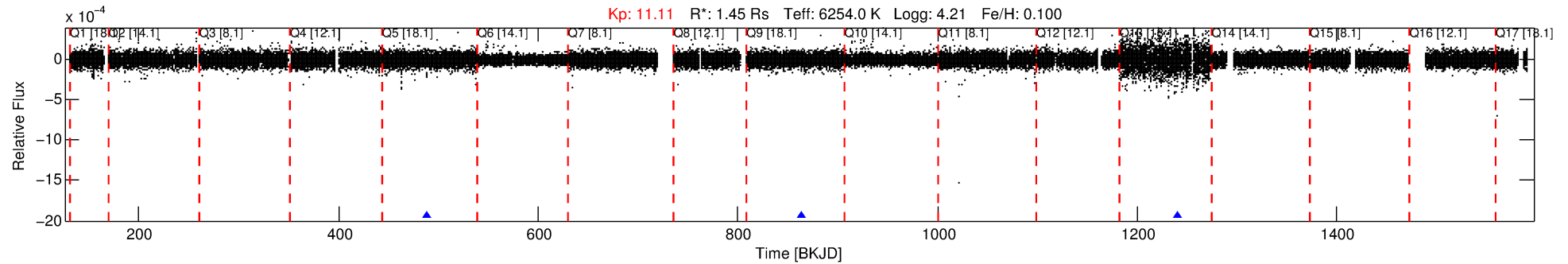
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009093289-02

No Significant Match Found

DV One-Page Summary

KIC: 9093289 Candidate: 2 of 2 Period: 375.628 d



DV Fit Results:

Period = 375.62774 [0.00510] d
Epoch = 488.5468 [0.0066] BKJD
Rp/R* = 0.0136 [0.0083]
a/R* = 508.89 [1620.77]
b = 0.89 [0.74]
Seff = 2.42 [0.18]
Teq = 318 [6] K
Rp = 2.16 [1.33] Re
a = 1.0946 [0.0414] AU
Ag = 17053.97 [21459.71] [0.79σ]
Teff = 5618 [1768] K [3.00σ]

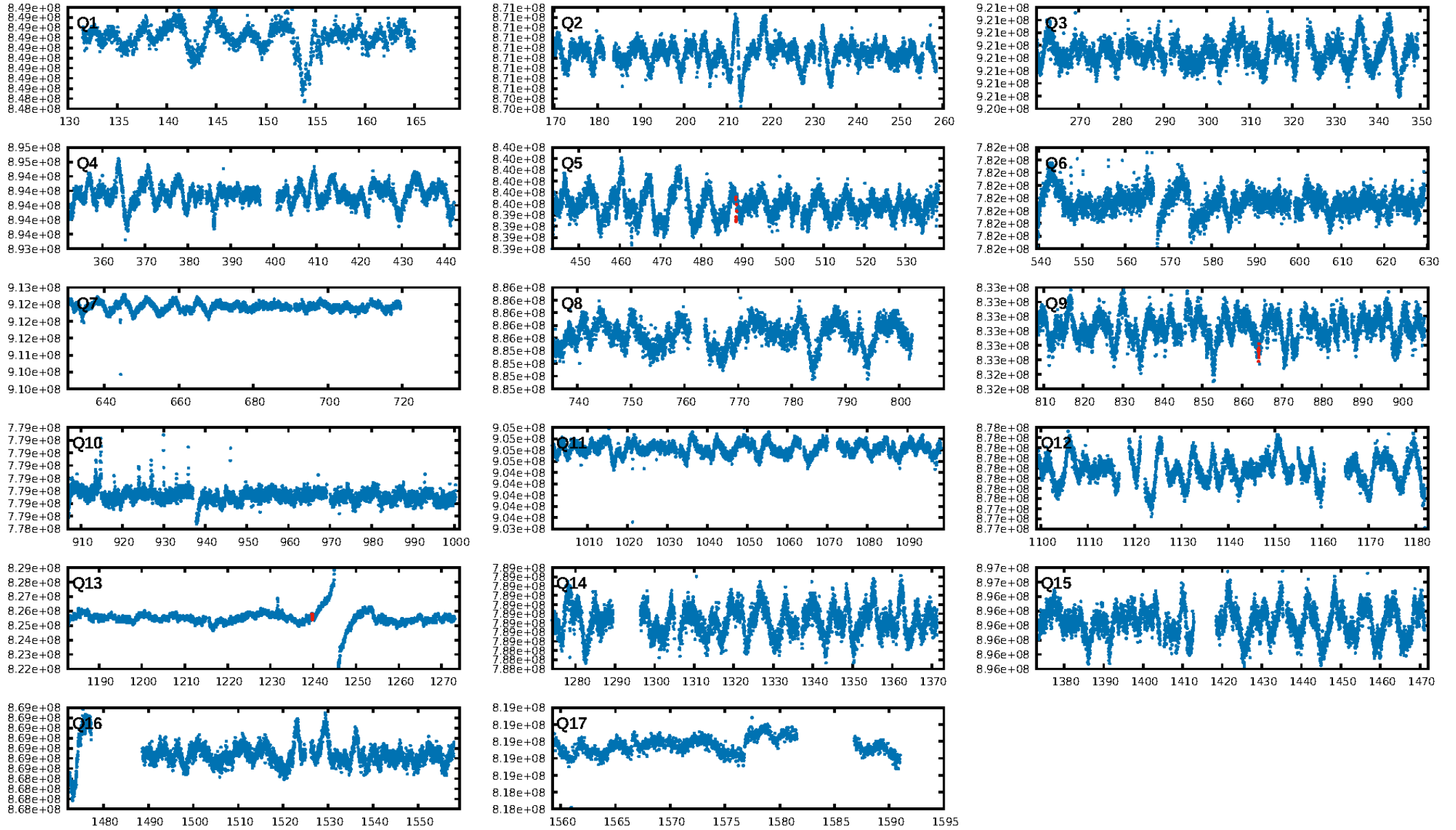
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [66.12σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 6.7%
ModelChiSquareGof-sig: 95.9%
Bootstrap-pfa: 3.21e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -2.266
Centroid-sig: 53.9%
Centroid-so: 0.921 arcsec [0.68σ]
OotOffset-rm: 1.658 arcsec [1.15σ]
OotOffset-st: 0/0/0/2 [2]
KicOffset-rm: 1.803 arcsec [1.45σ]
KicOffset-st: 0/0/0/2 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

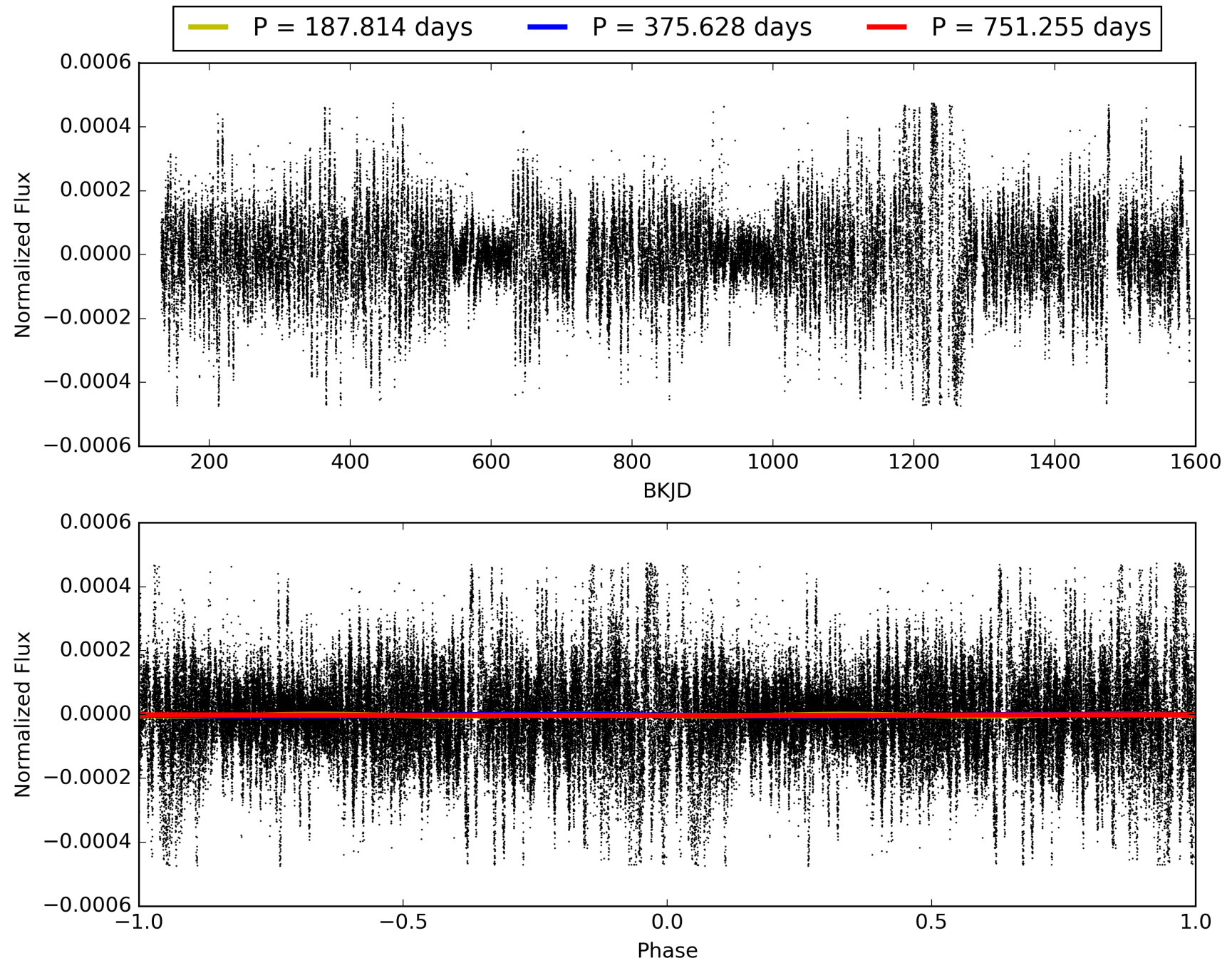
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:48:47 Z

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

TCE 009093289-02, PDC Light Curves

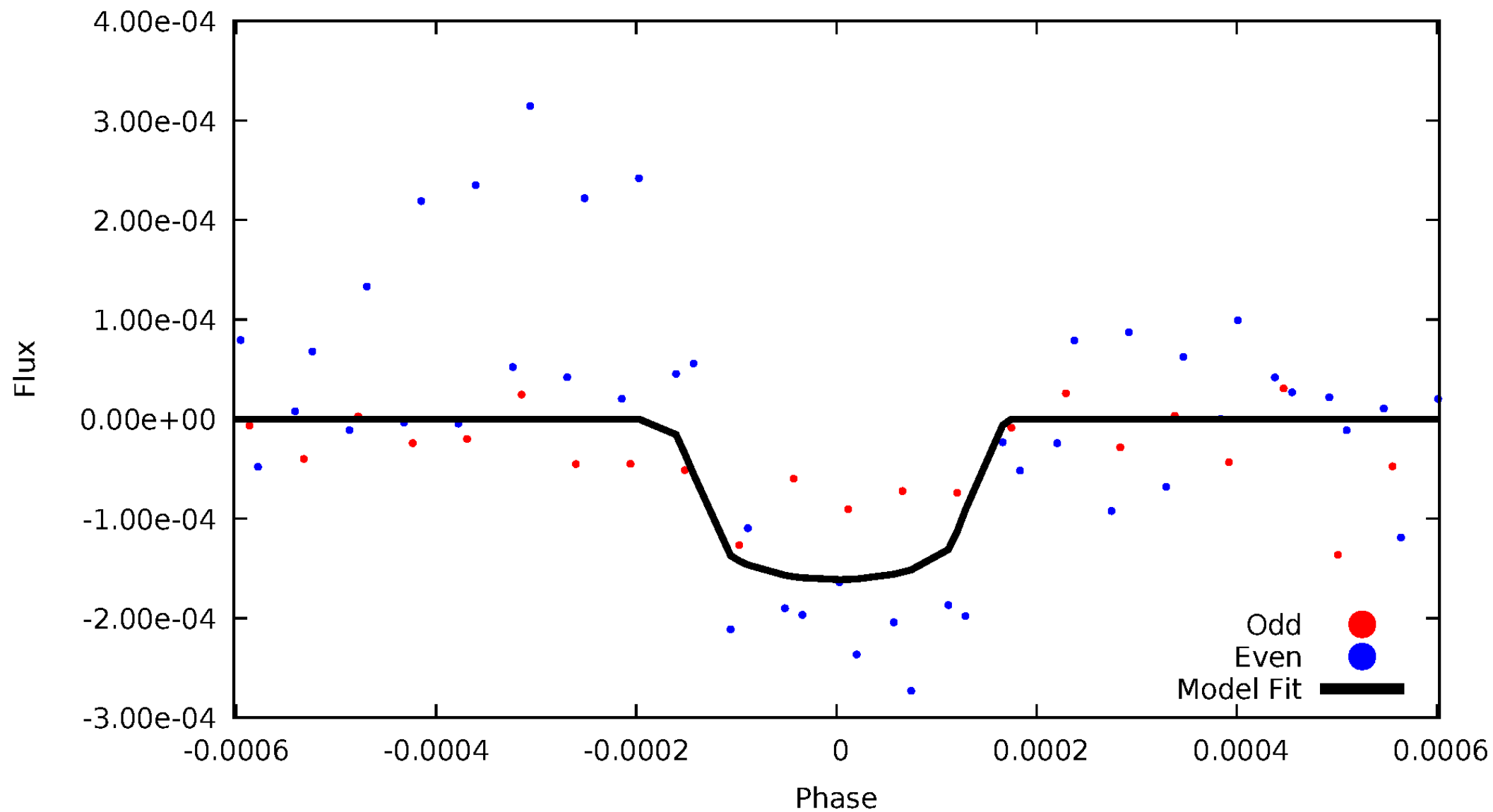


TCE 009093289-02



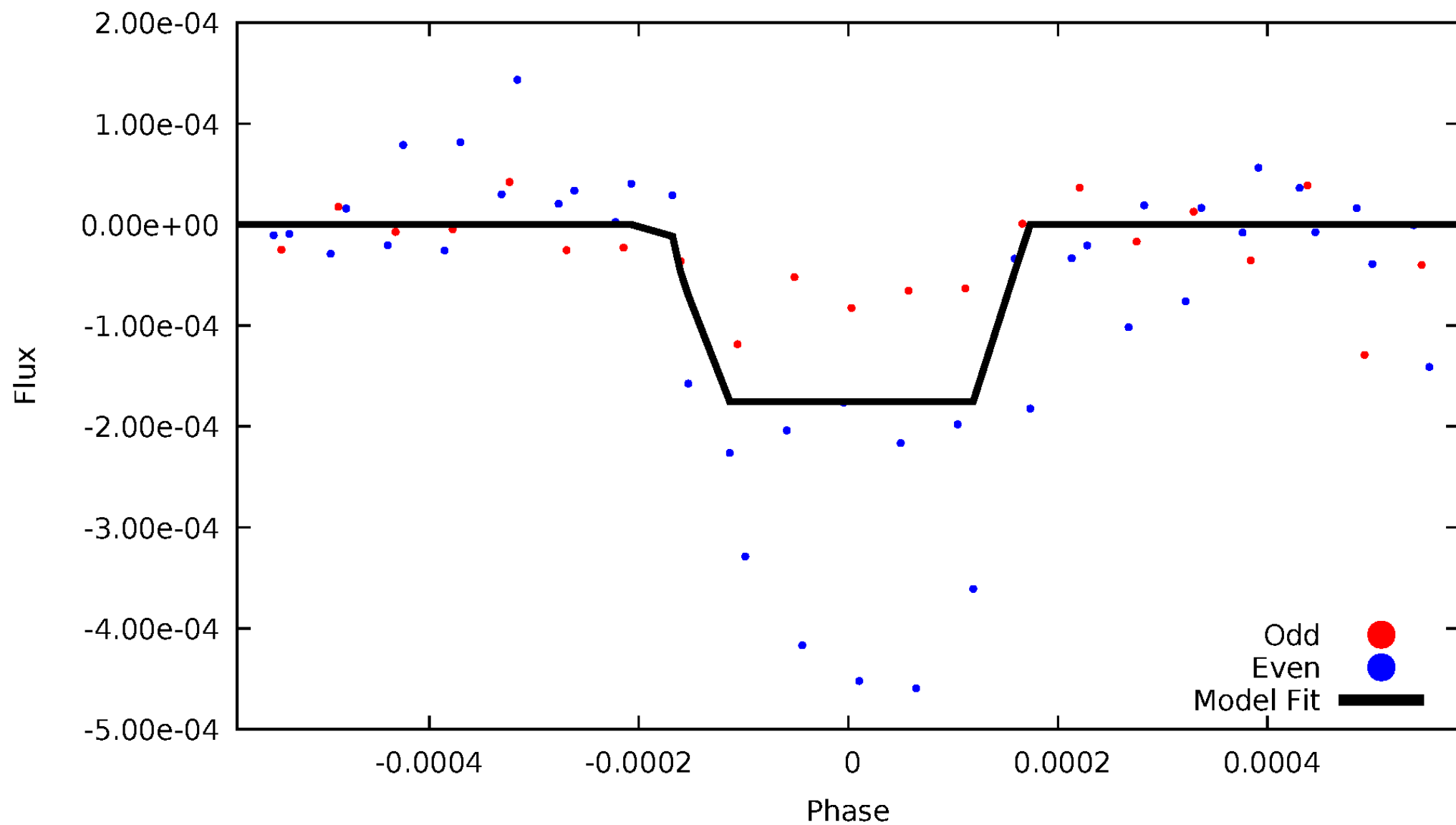
DV Odd/Even

TCE 009093289-02



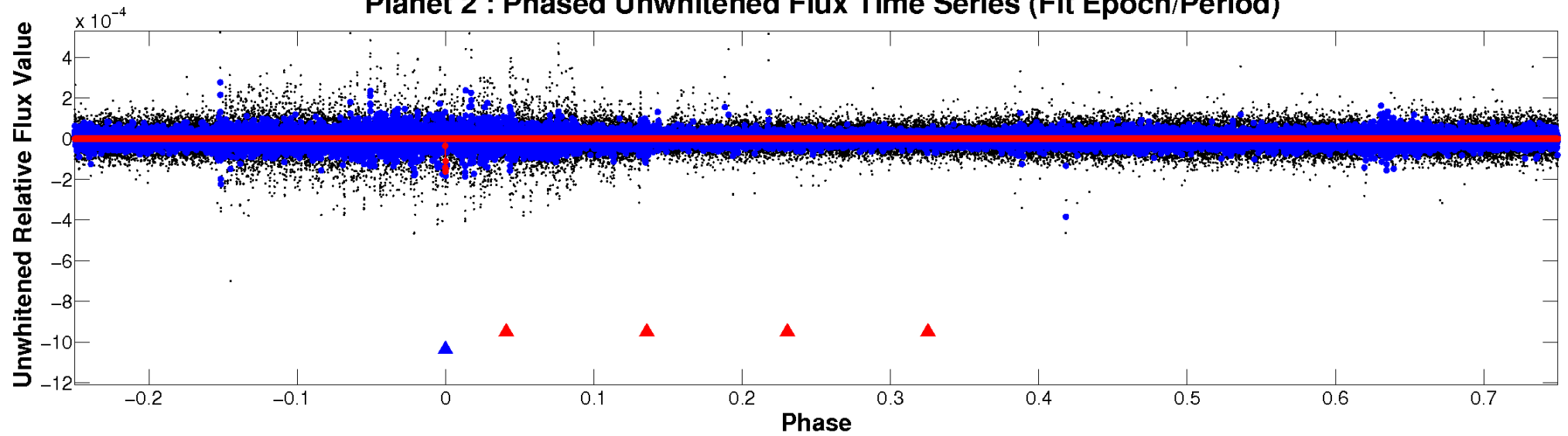
ALT Odd/Even

TCE 009093289-02

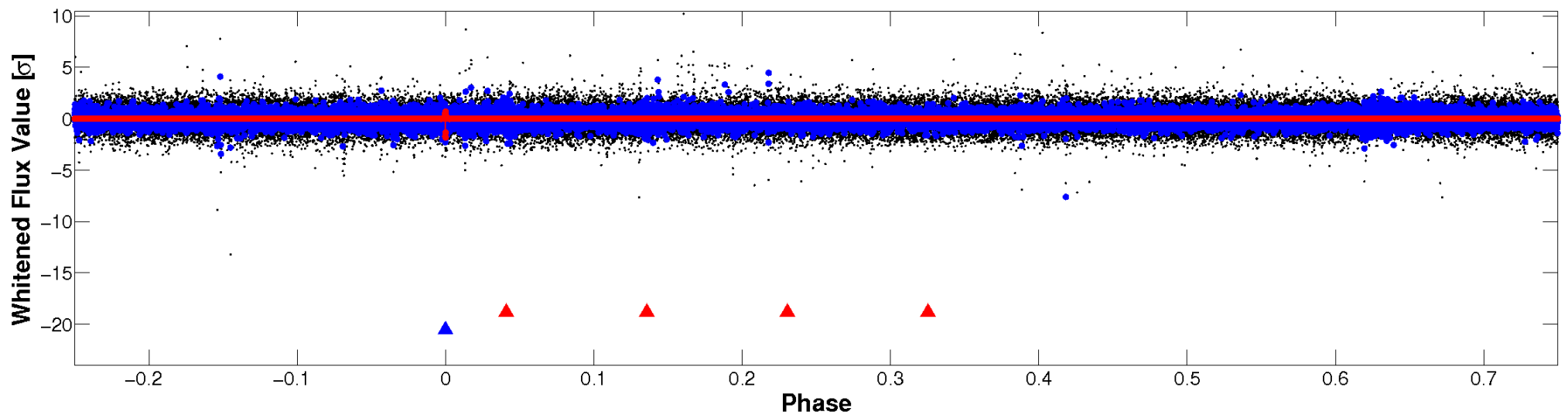


Non-Whitened Vs. Whitened Light Curve

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

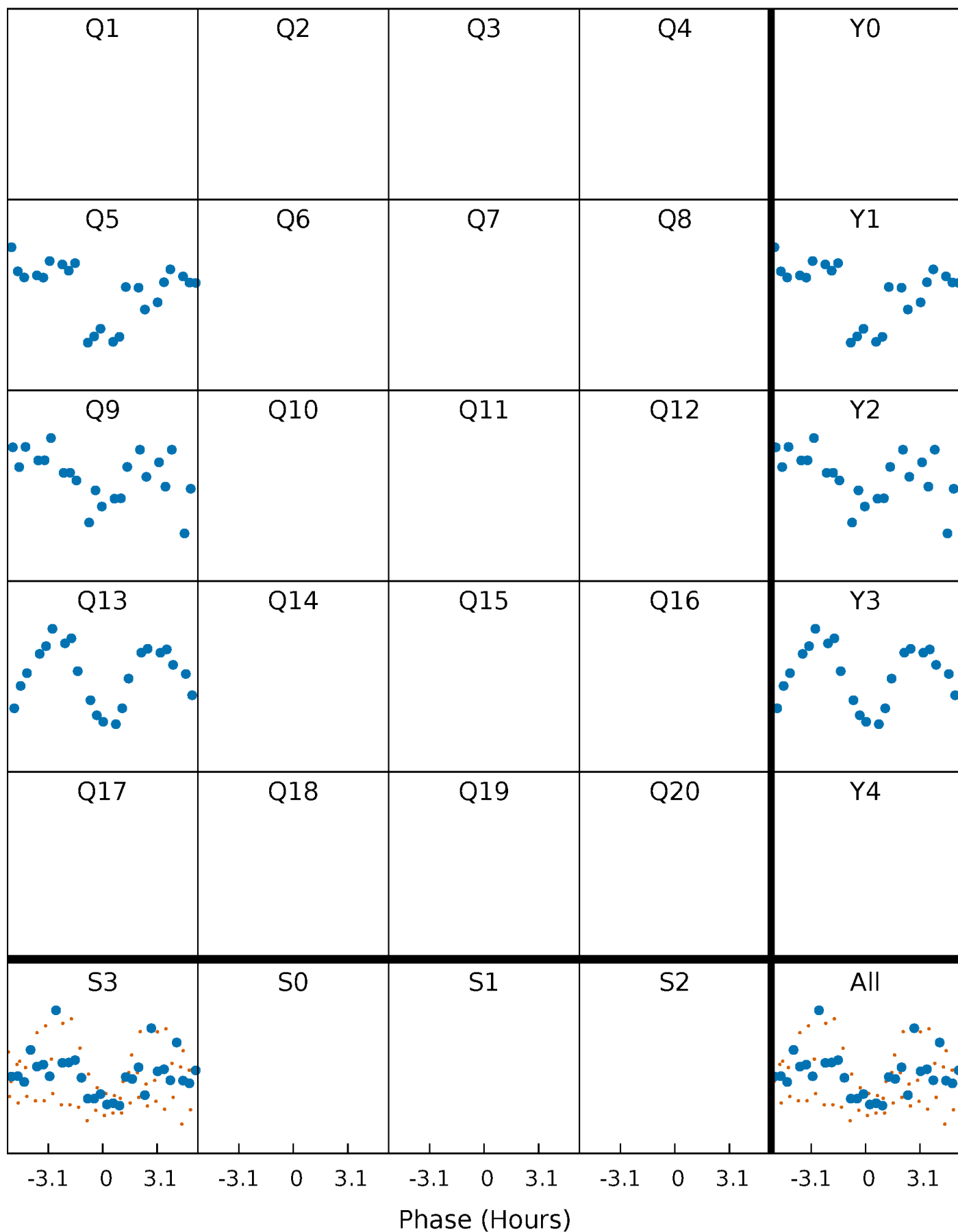


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



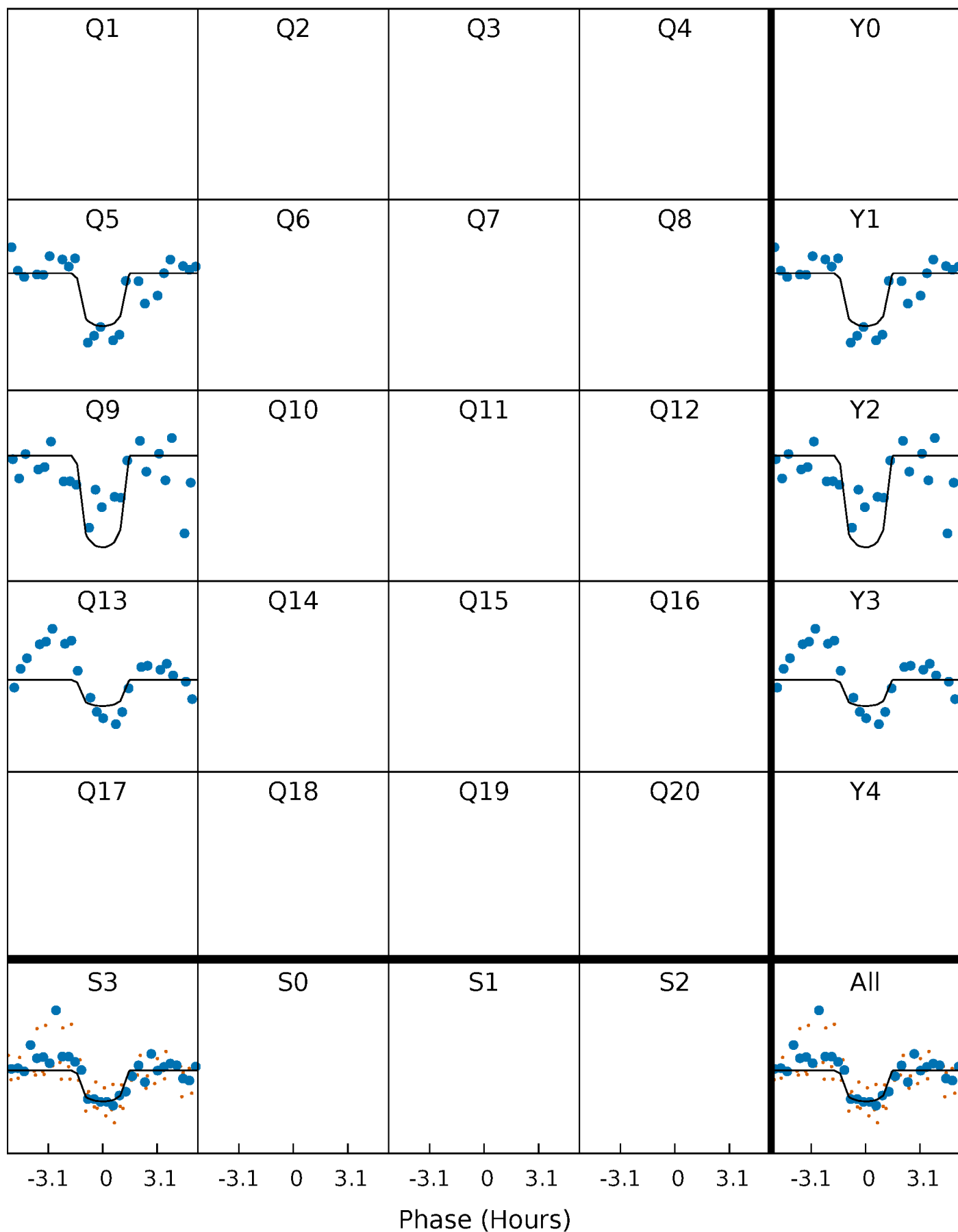
PDC Quarter-Phased Transit Curves

TCE 009093289-02 $P=375.627742$ Days $T_0=488.546771$ (BKJD)



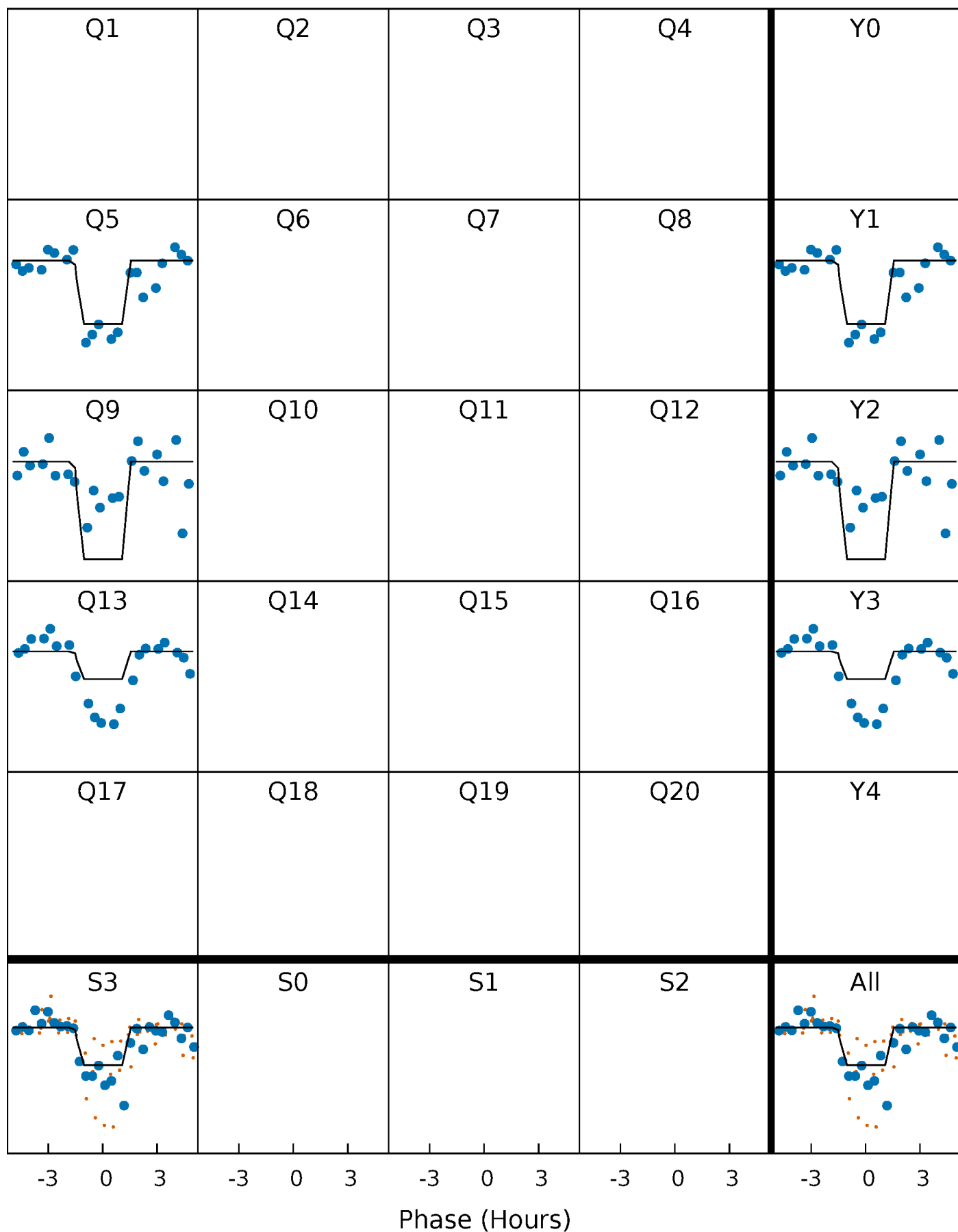
DV Quarter-Phased Transit Curves

TCE 009093289-02 $P=375.627742$ Days $T_0=488.546771$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

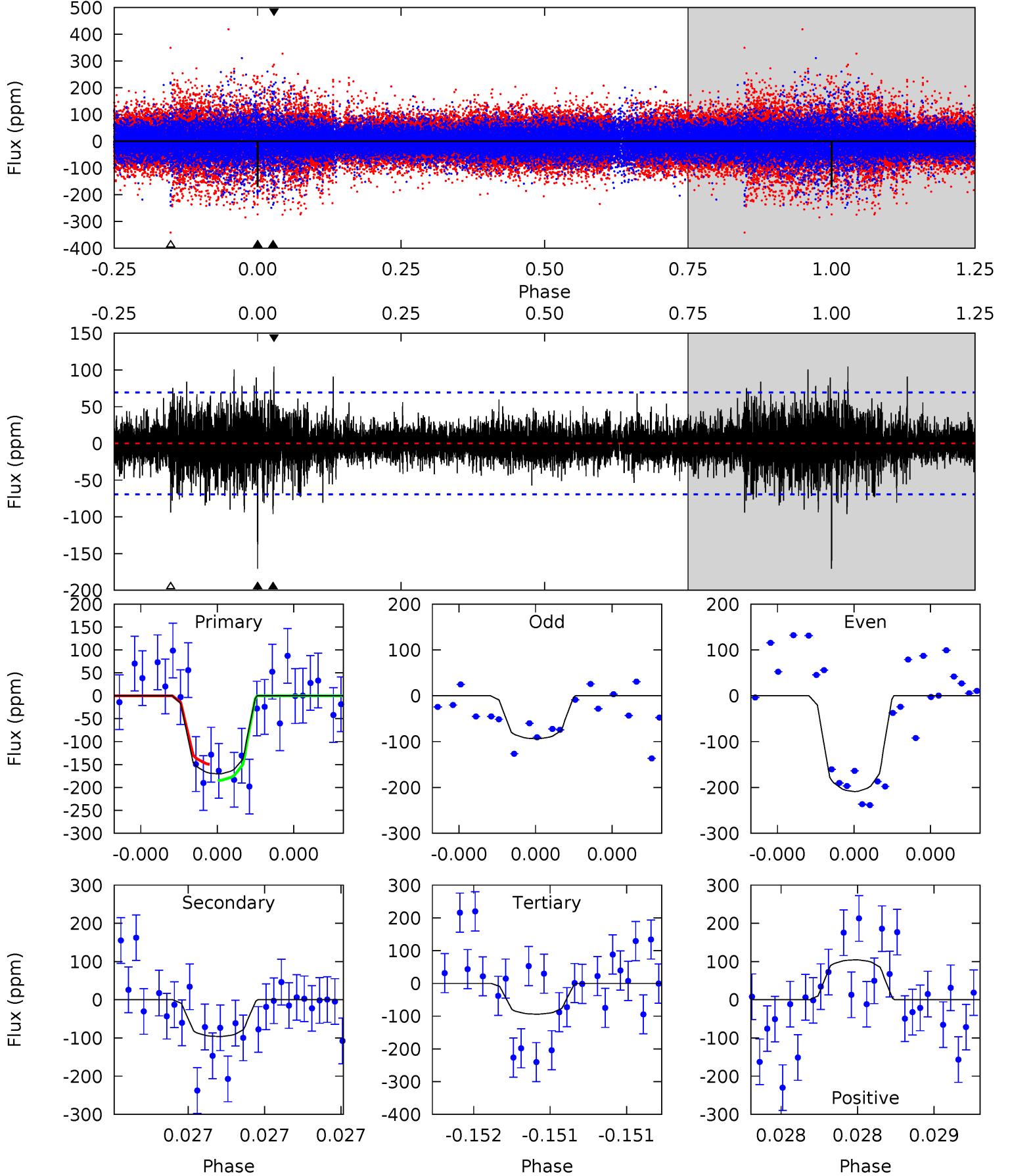
TCE 009093289-02 $P=375.628189$ Days $T_0=488.549524$ (BKJD)



DV Model-Shift Uniqueness Test

009093289-02, $P = 375.627742$ Days, $E = 112.919029$ Days

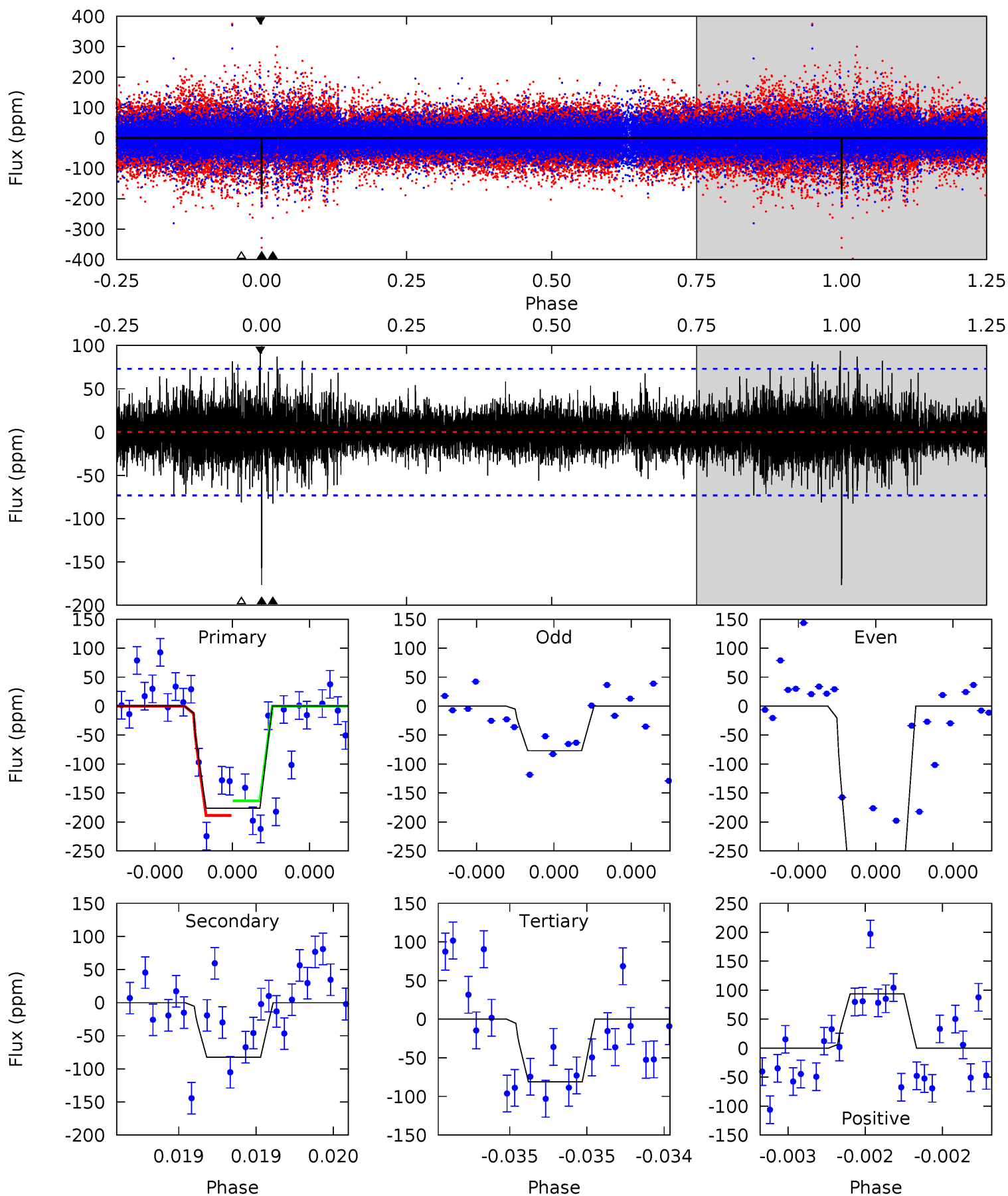
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.9	7.82	7.64	8.50	5.64	3.59	1.46	6.22	5.37	0.17	-0.68	4.41	0.83	0.38	1.37



Alt Model-Shift Uniqueness Test

009093289-02, P = 375.628189 Days, E = 112.921335 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.6	6.37	6.26	7.23	5.64	3.59	1.27	7.34	6.37	0.11	-0.86	7.56	1.12	0.35	0.98



Stellar Parameters For KIC 009093289

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6254^{+88}_{-69}	$4.206^{+0.023}_{-0.025}$	$0.100^{+0.150}_{-0.150}$	$1.454^{+0.065}_{-0.071}$	$1.239^{+0.071}_{-0.097}$	$0.568^{+0.055}_{-0.050}$
	+1%/-1%	+1%/-1%	+150%/-150%	+4%/-5%	+6%/-8%	+10%/-9%
Source	SPE72	AST10	SPE72	DSEP		

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

Secondary Eclipse Parameters for KIC 009093289-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-96 ± 12	$2.29^{+1.39}_{-1.19}$	445^{+7}_{-6}	5205^{+2433}_{-889}	11831^{+42278}_{-7161}
Alt.	-83 ± 13	$2.18^{+1.32}_{-1.16}$	445^{+7}_{-7}	5167^{+2426}_{-888}	11273^{+40007}_{-6816}

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

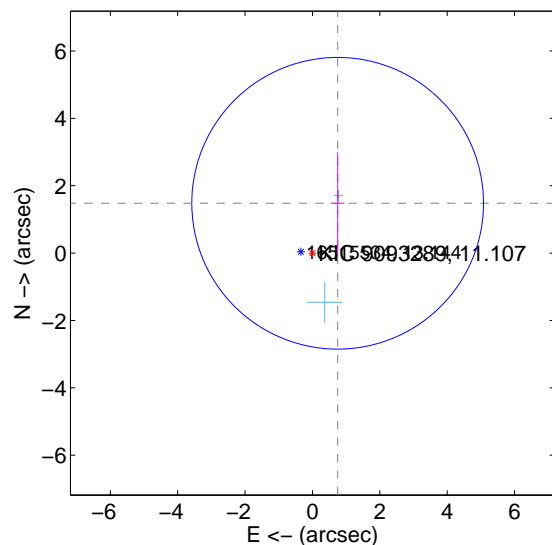
Supplemental centroid analysis for 009093289-02. **Kepler magnitude: 11.11.** Transit SNR 7.10

There are 2 quarters with good PRF difference image offsets

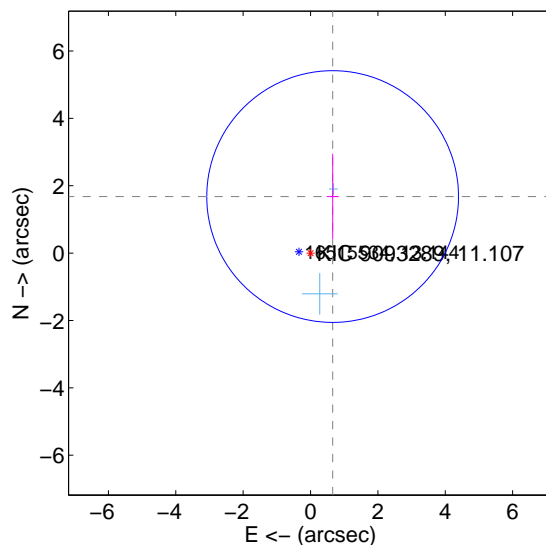
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.658 ± 1.443	1.15	-0.748 ± 0.207	1.479 ± 1.518
PRF-fit source offset from KIC position	1.803 ± 1.245	1.45	-0.656 ± 0.179	1.679 ± 1.272
photometric centroid source offset	0.92 ± 1.36	0.68	-0.60 ± 1.05	0.70 ± 1.55

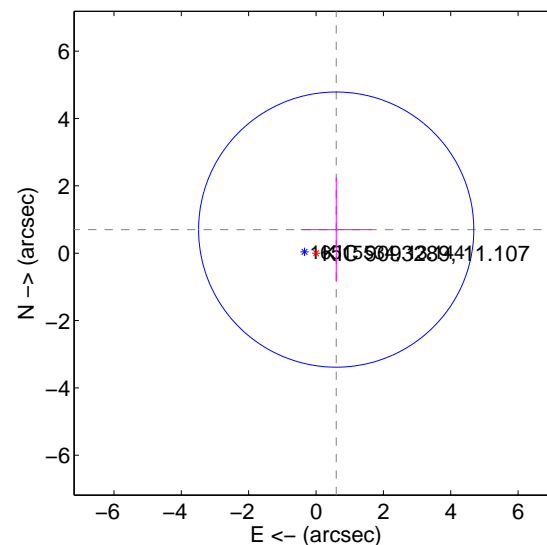
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

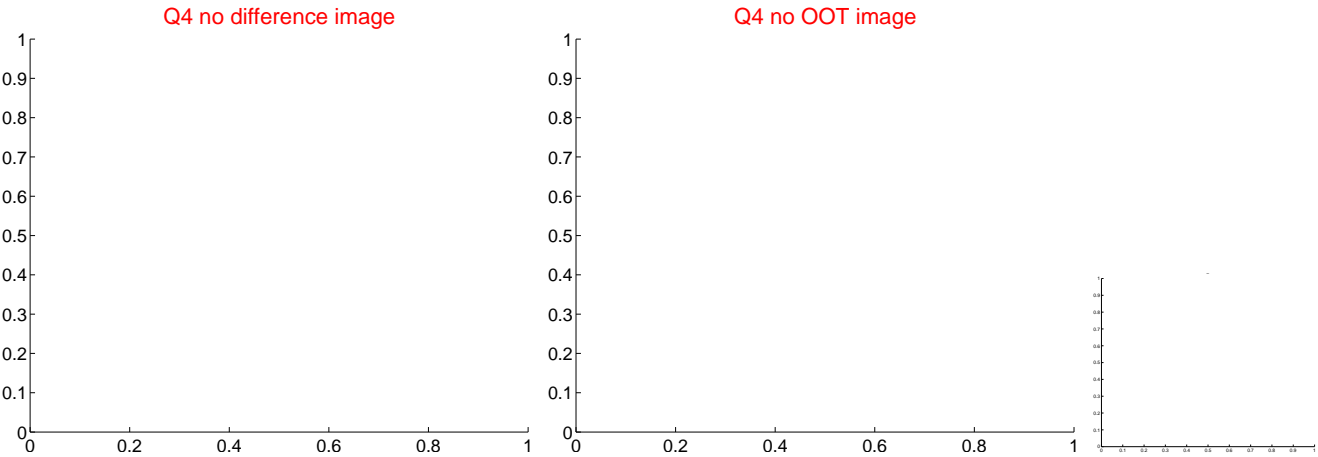
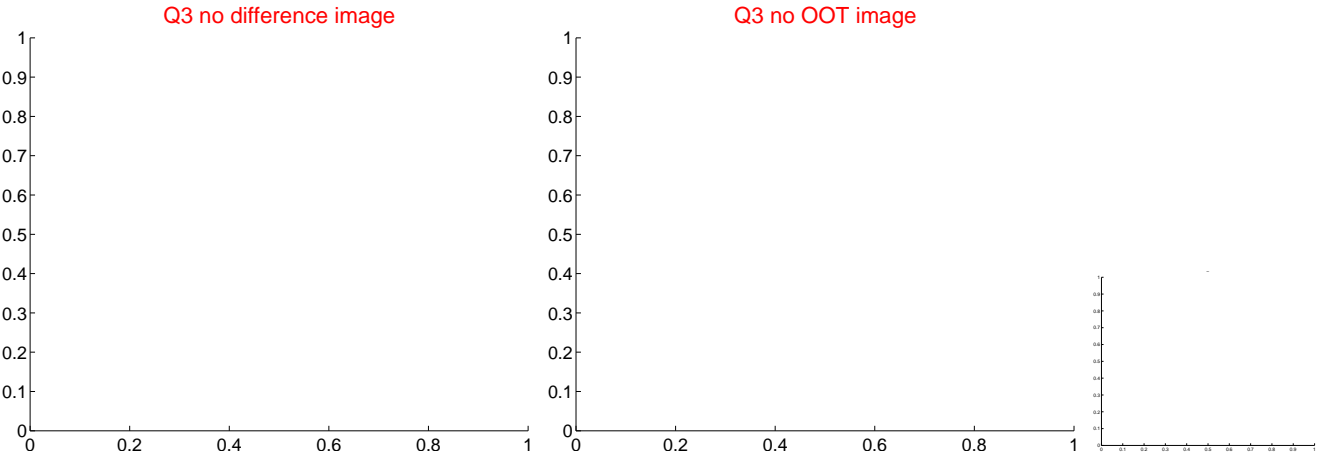
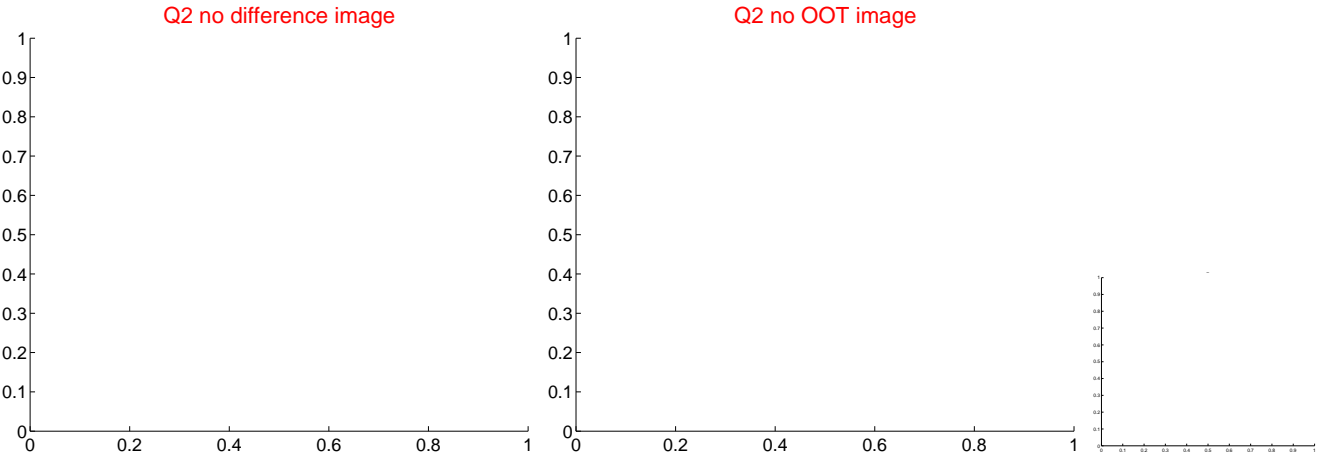
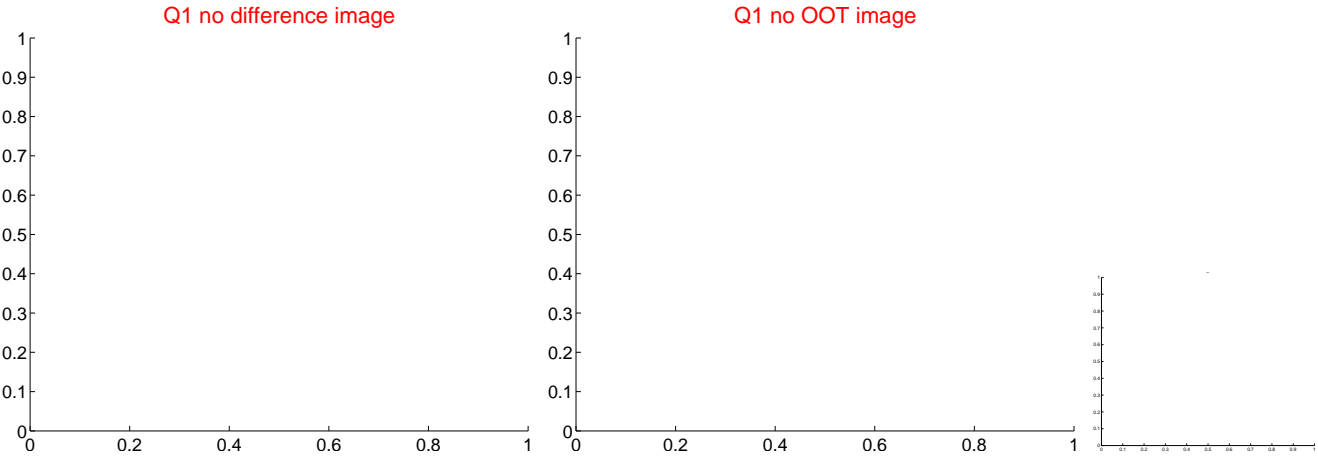


offset from photometric centroids

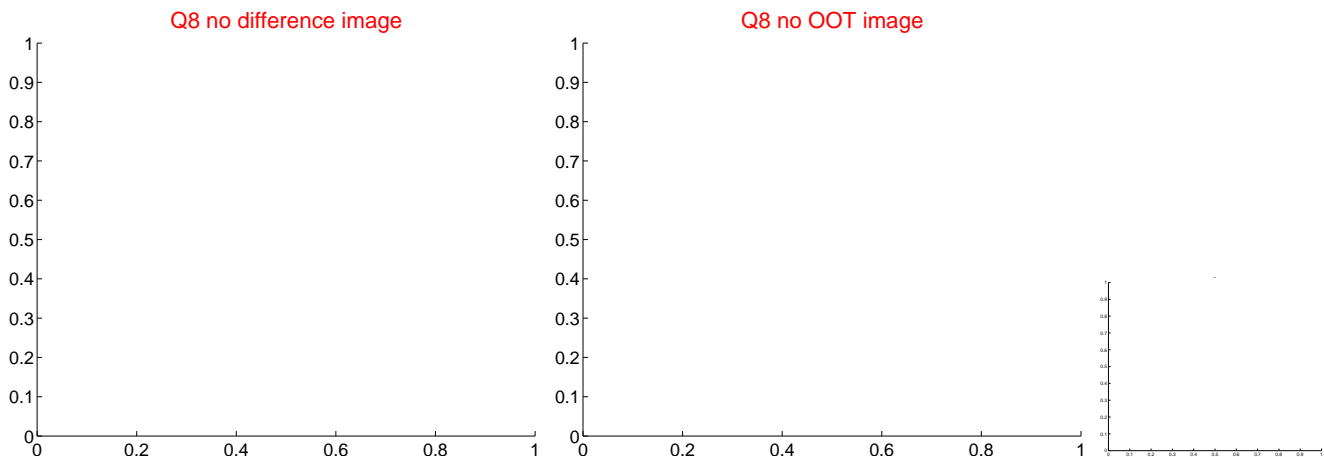
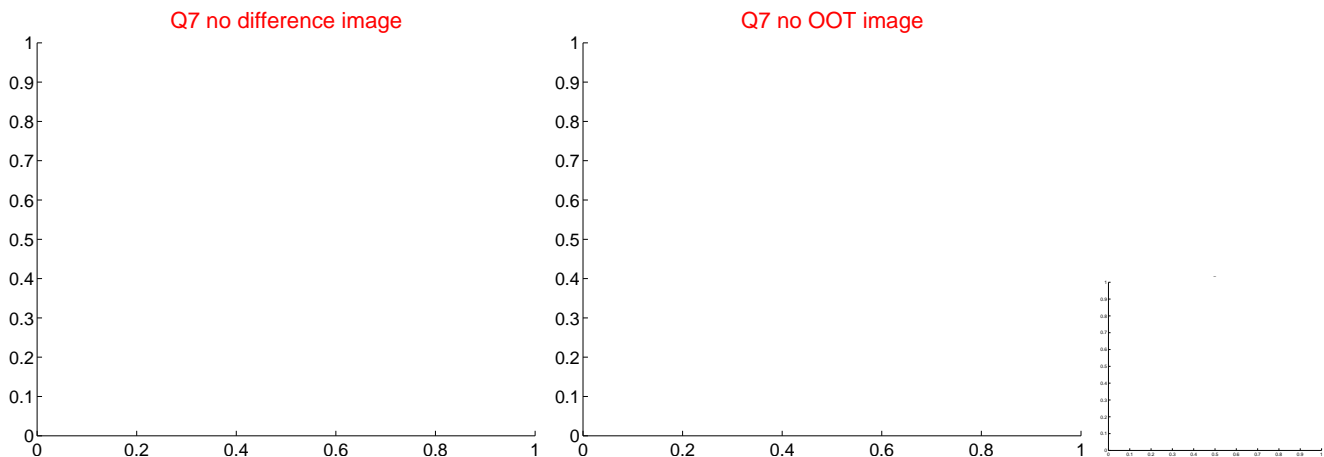
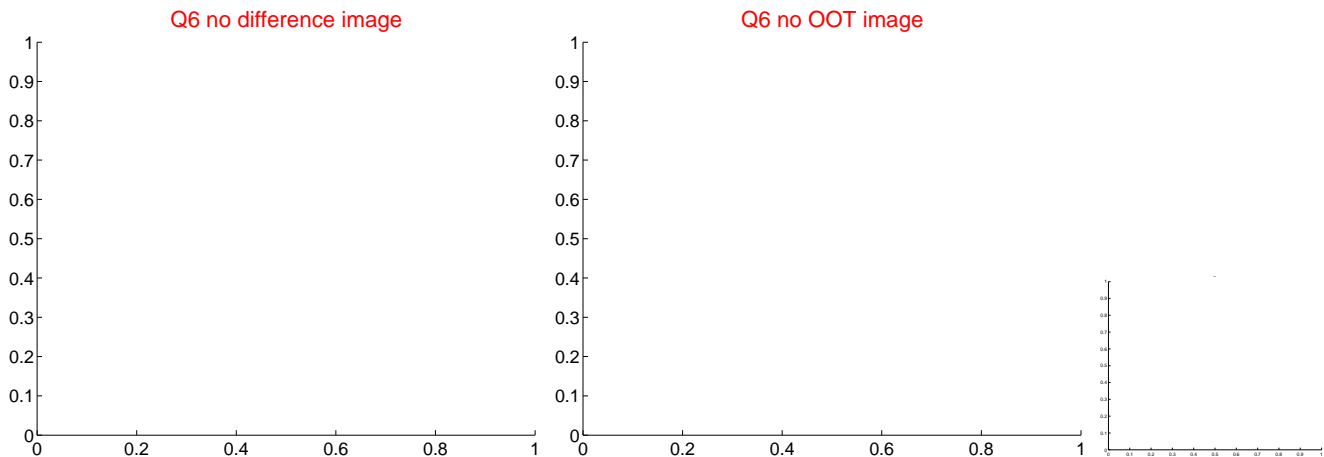
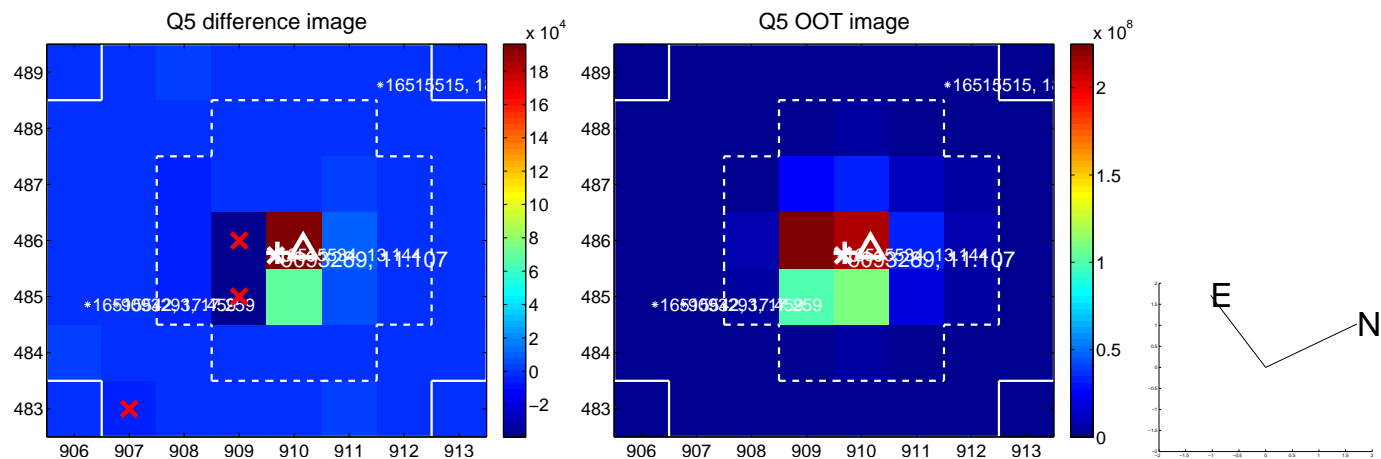


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

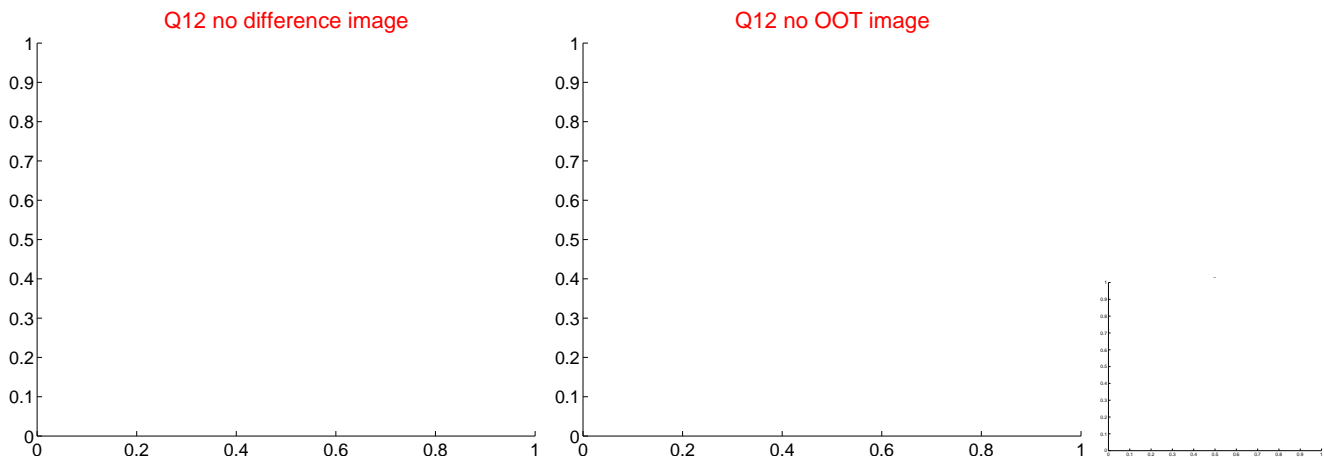
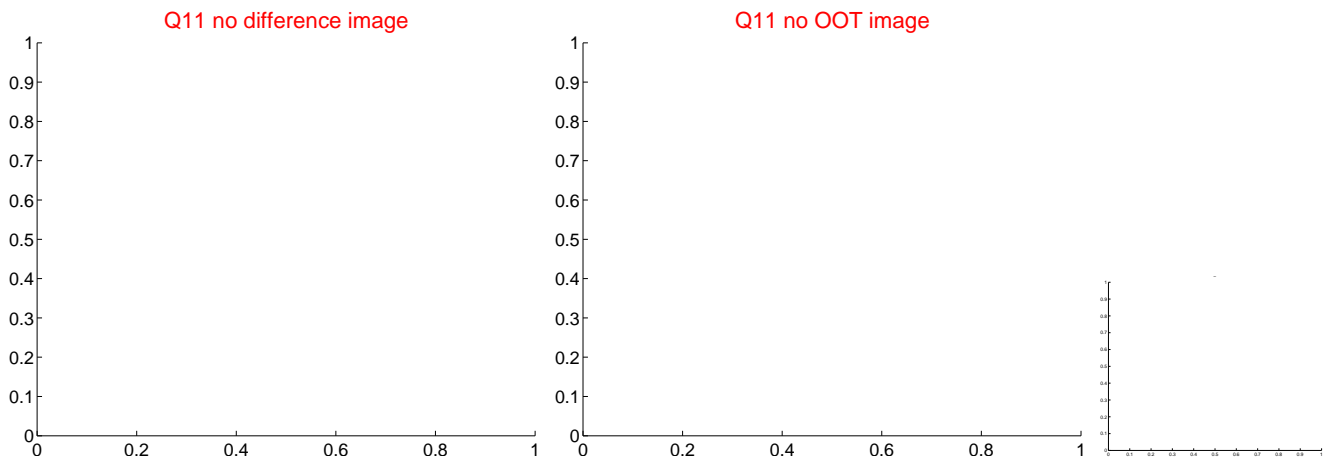
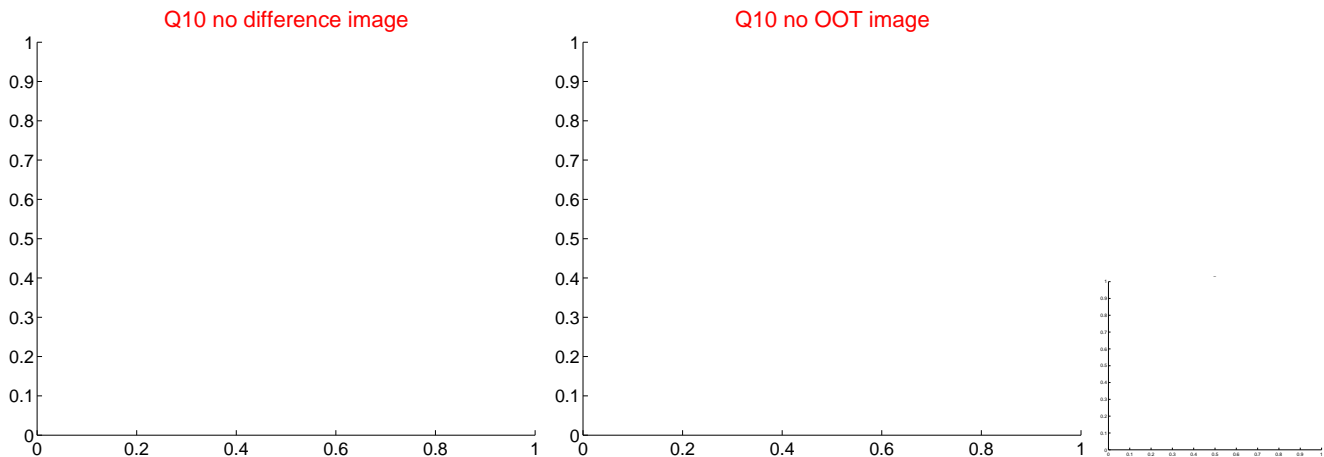
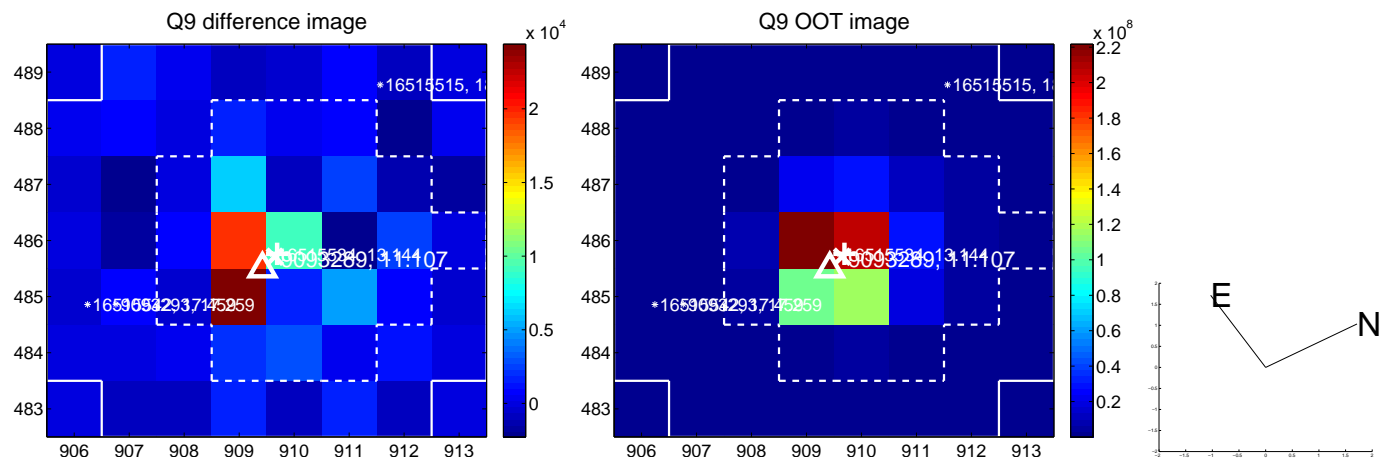
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



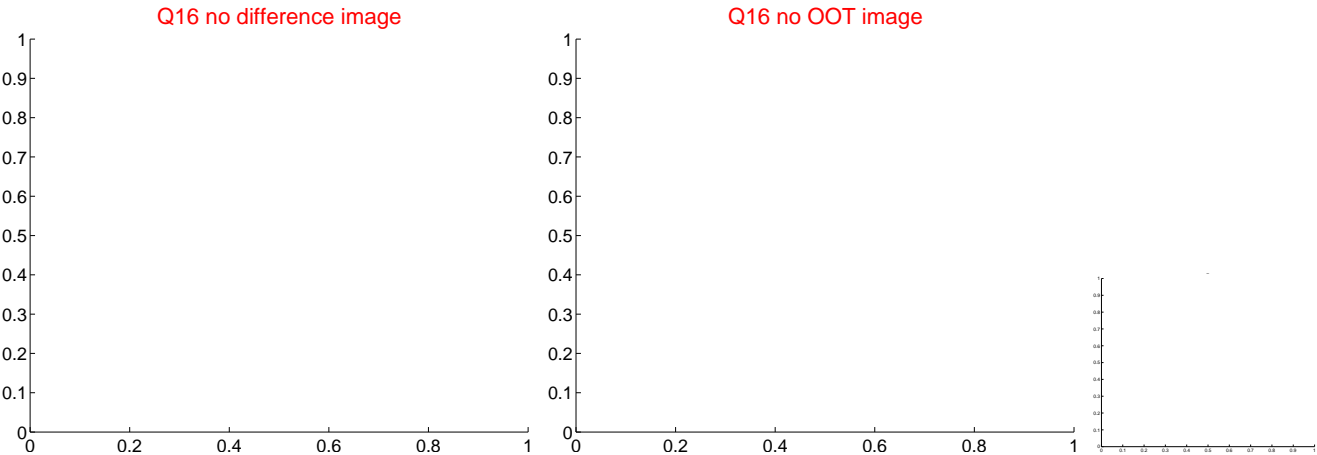
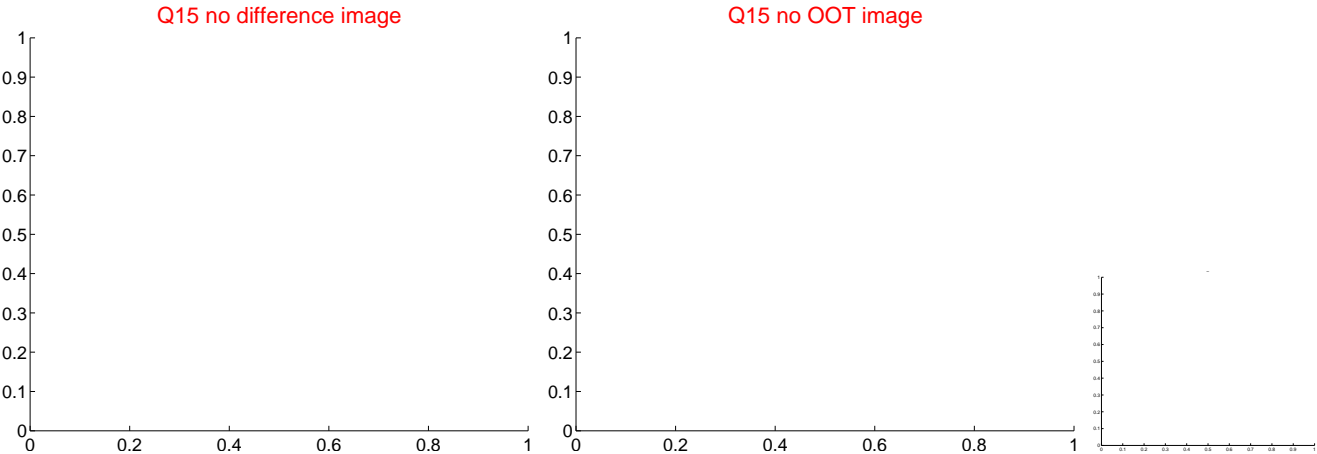
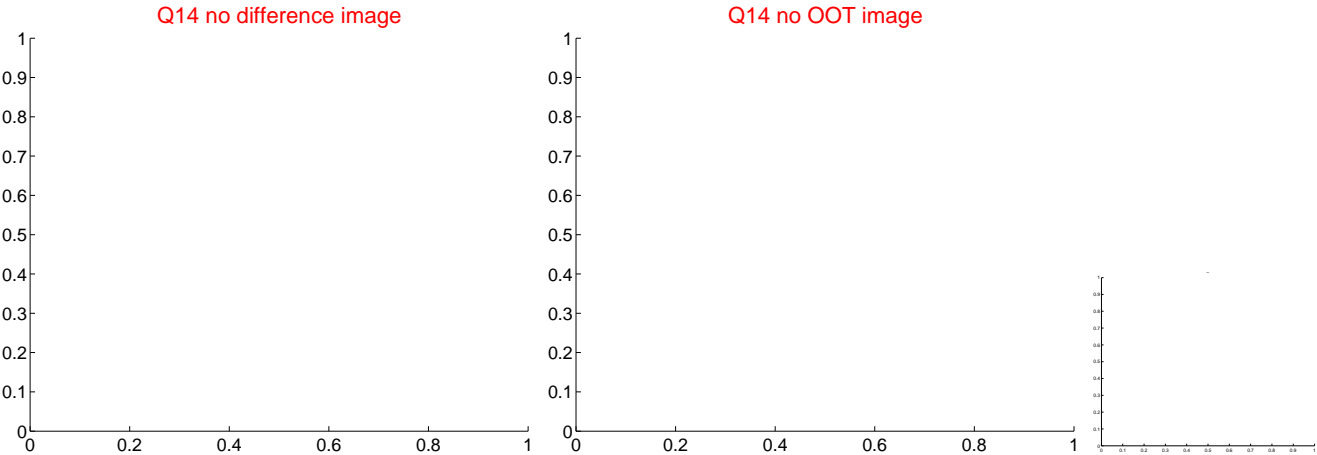
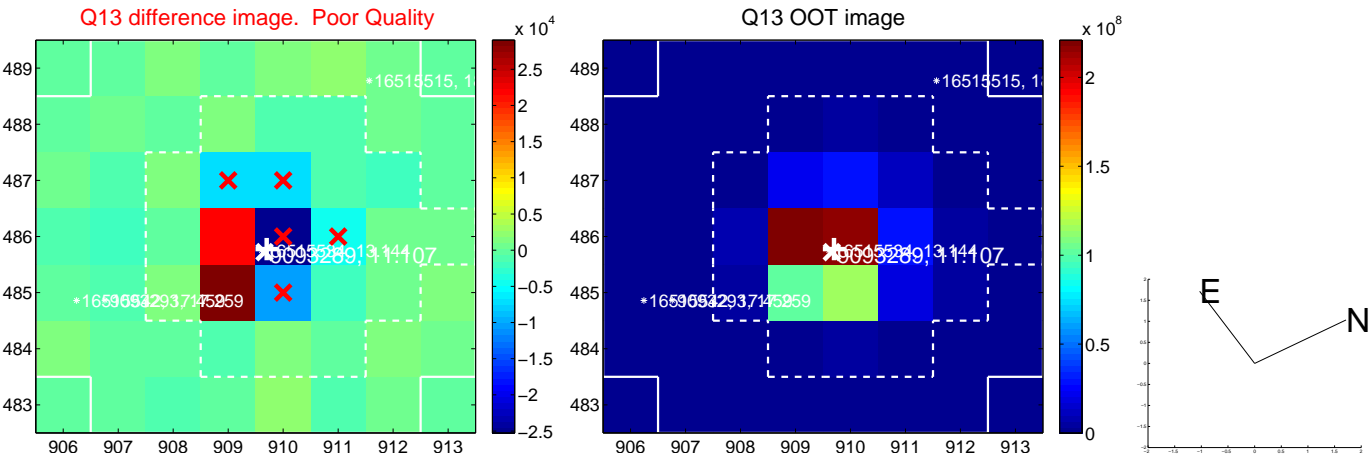
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



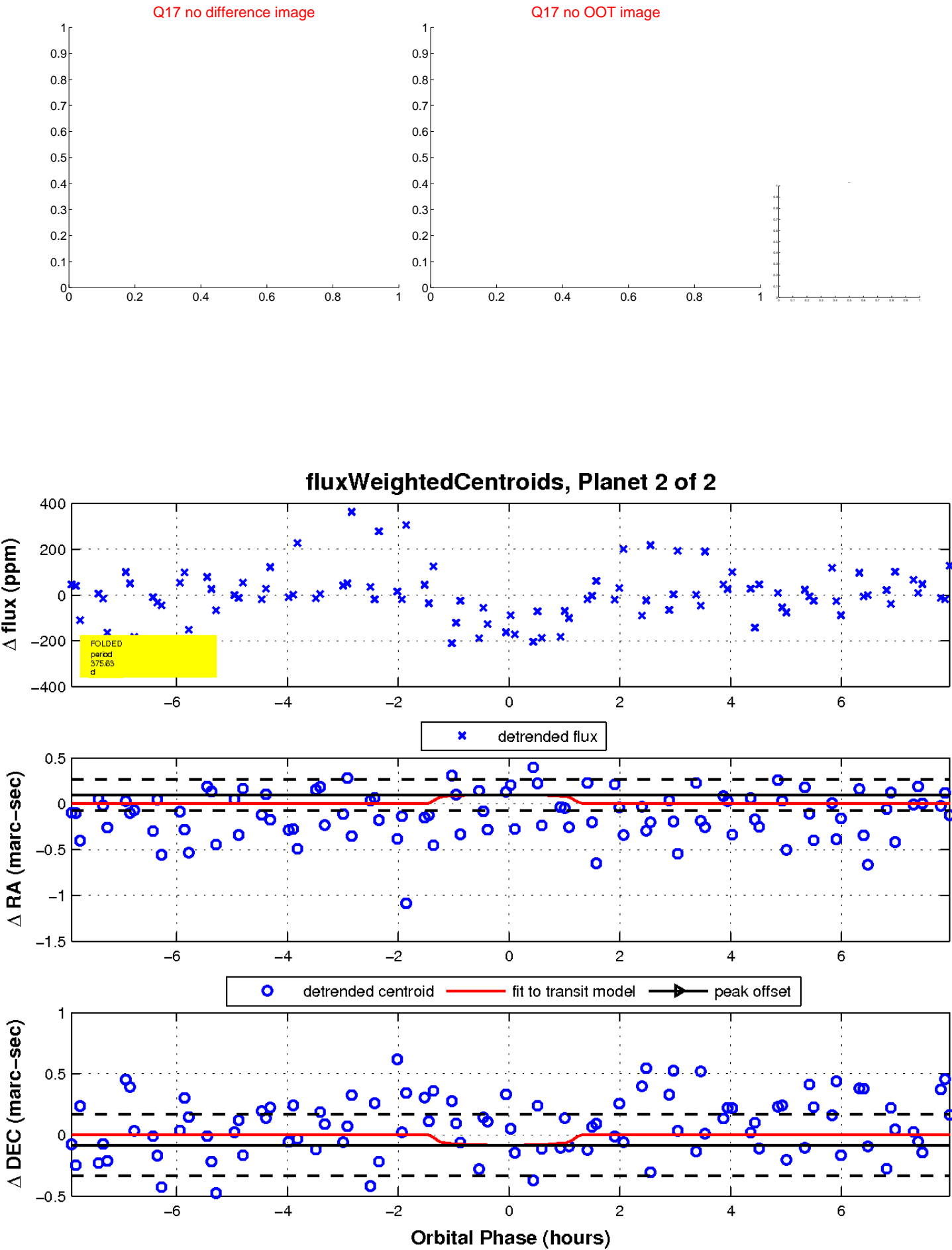
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

