

KIC 009159301

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})
009159301-01	OBS	7138.01	3.044769	132.433910	480338.4	6.000	9604.2	-1.0	3.16	8199	59.41	14902.70
009159301-02	OBS	No	3.044783	133.957993	47753.4	9.630	650.5	900.7	3.16	8199	117.33	14902.61

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009159301-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
009159301-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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 009159301-01

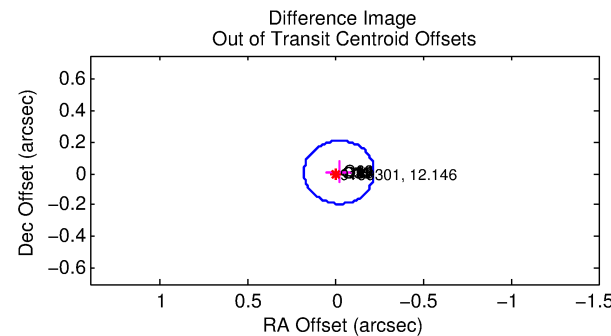
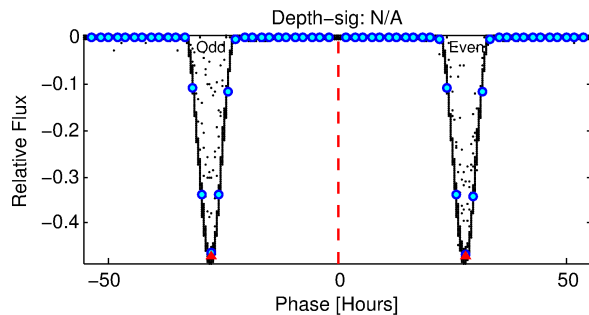
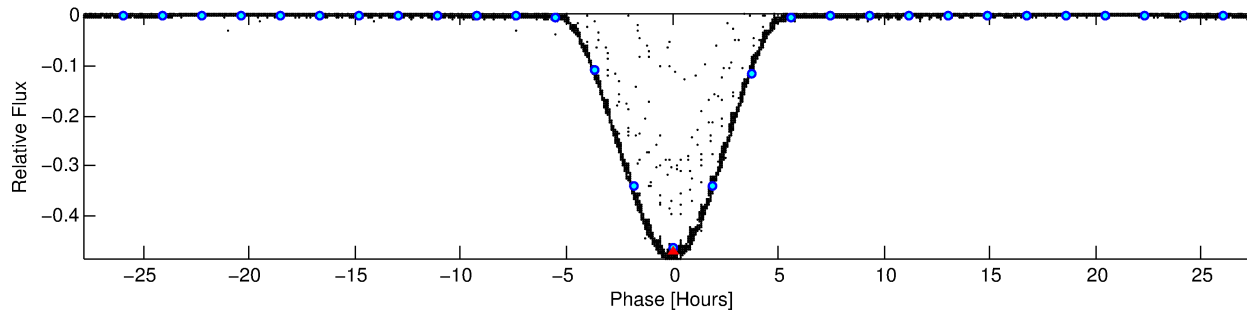
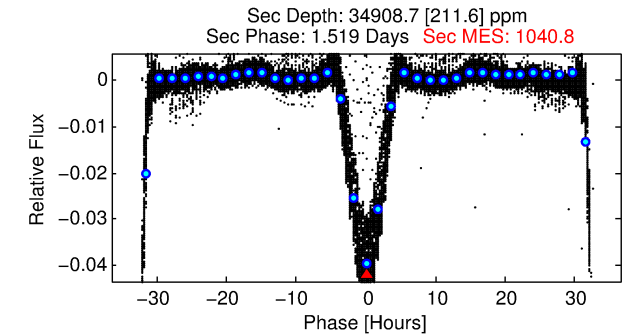
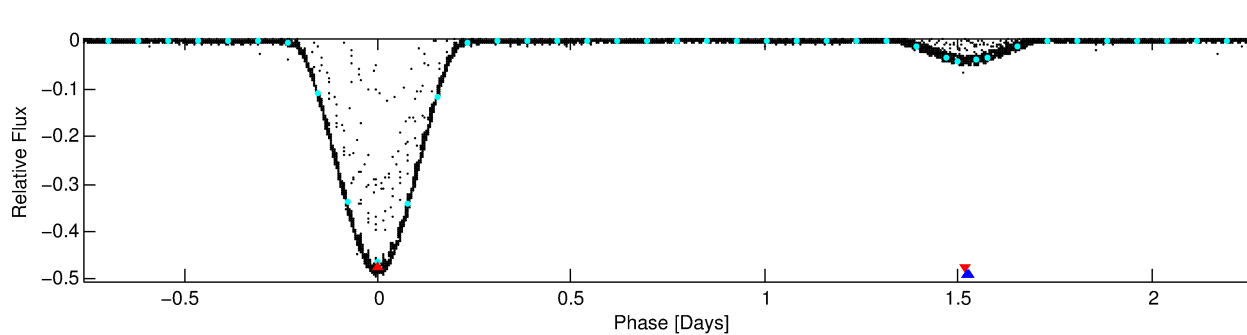
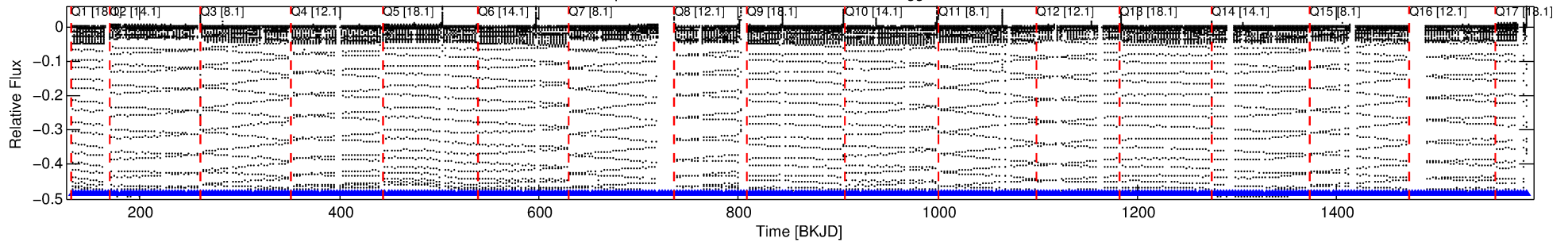
No Significant Match Found

DV One-Page Summary

KIC: 9159301 Candidate: 1 of 2 Period: 3.045 d

KOI: K07138 Corr: No Ephemeris Match

Kp: 12.15 R*: 3.16 Rs Teff: 8199.0 K Logg: 3.75 Fe/H: -0.120



TPS TCE Results:

Period = 3.04477 d
Epoch = 132.4339 BKJD

DV fit results are unavailable

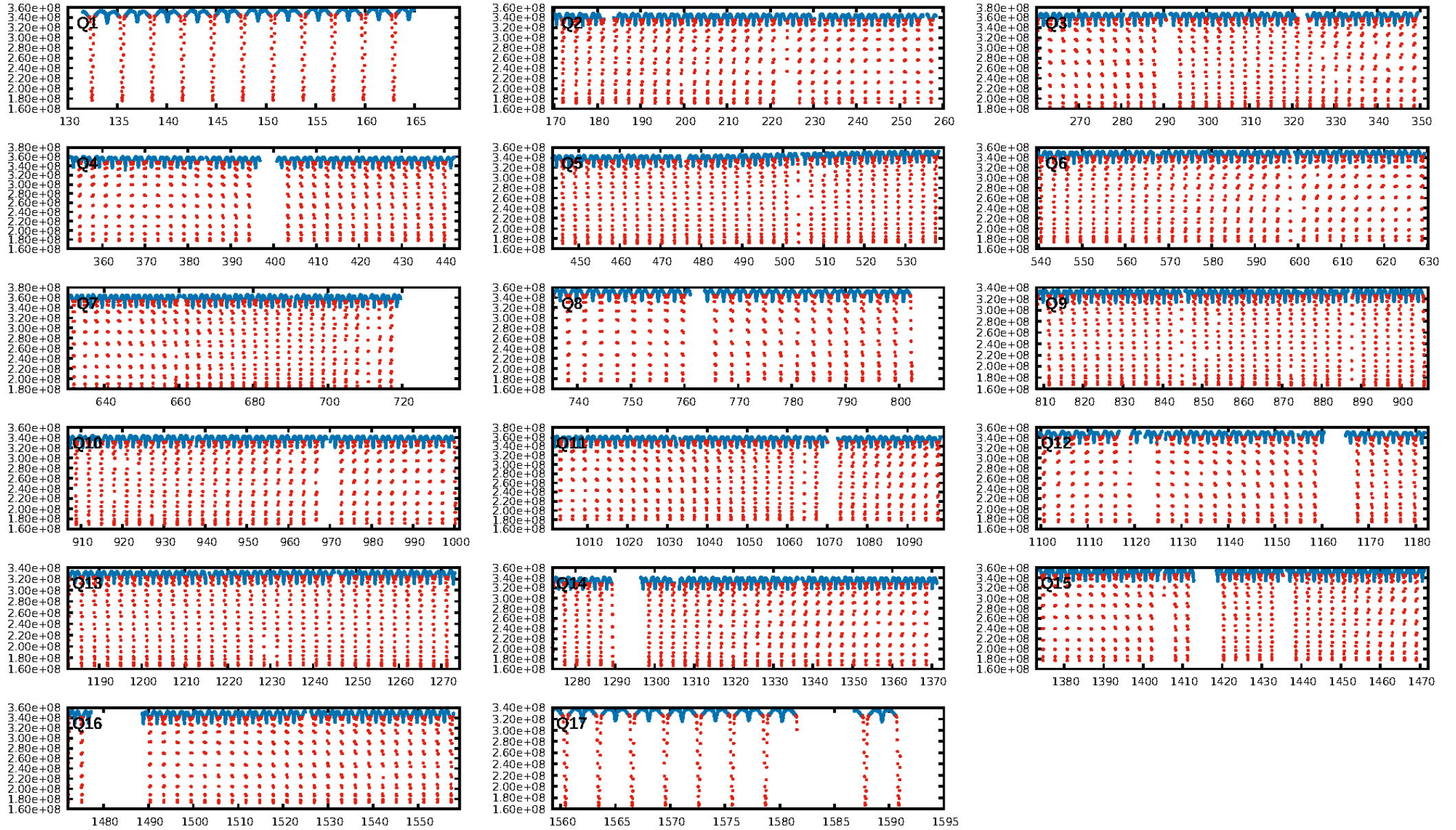
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [427/427]
GhostDiagnostic-chr: 1.642
Centroid-sig: N/A
Centroid-so: 0.124 arcsec [695.91σ]
OotOffset-rm: 0.022 arcsec [0.34σ]
KicOffset-rm: 0.074 arcsec [1.10σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

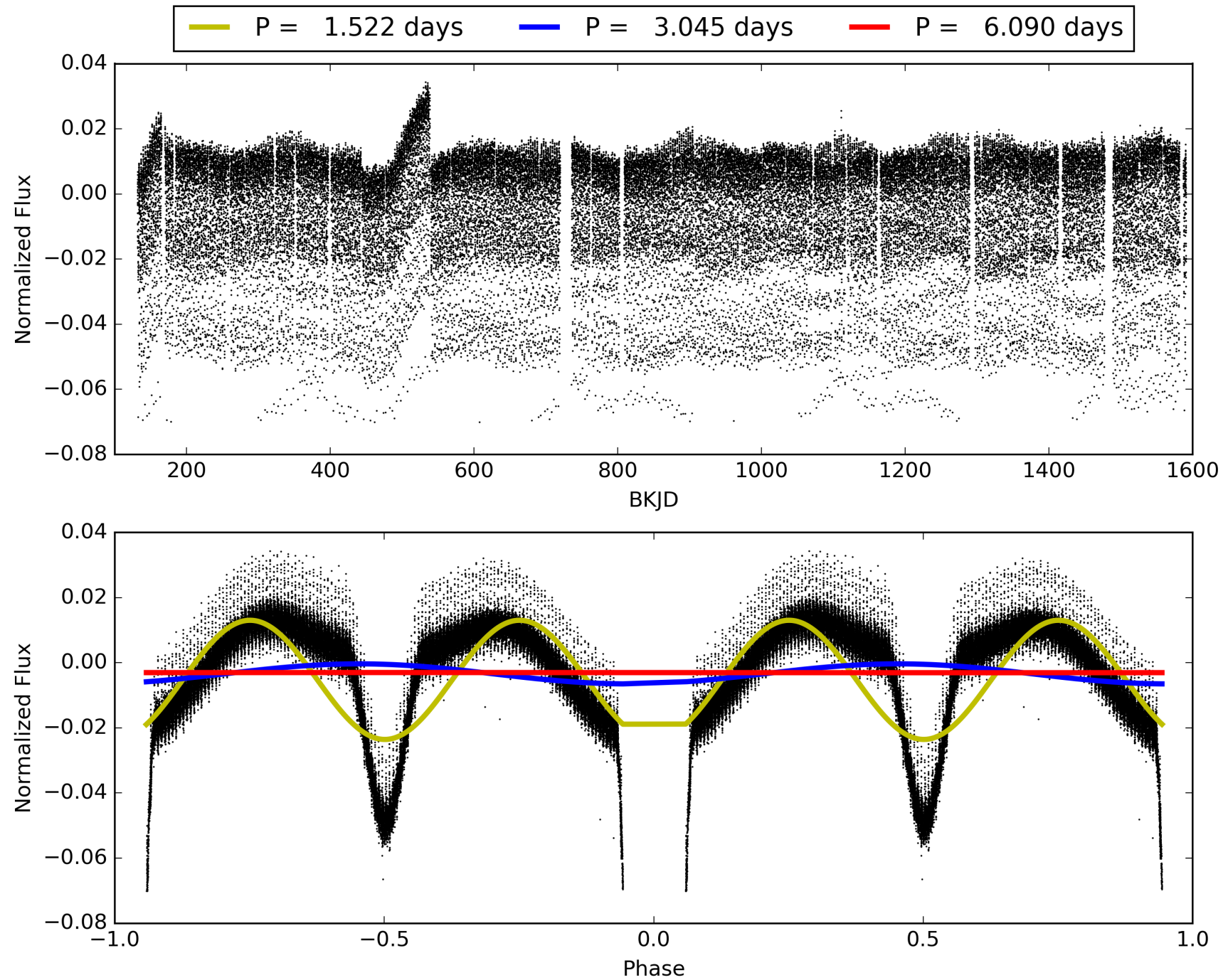
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:57:56 Z

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

TCE 009159301-01, PDC Light Curves

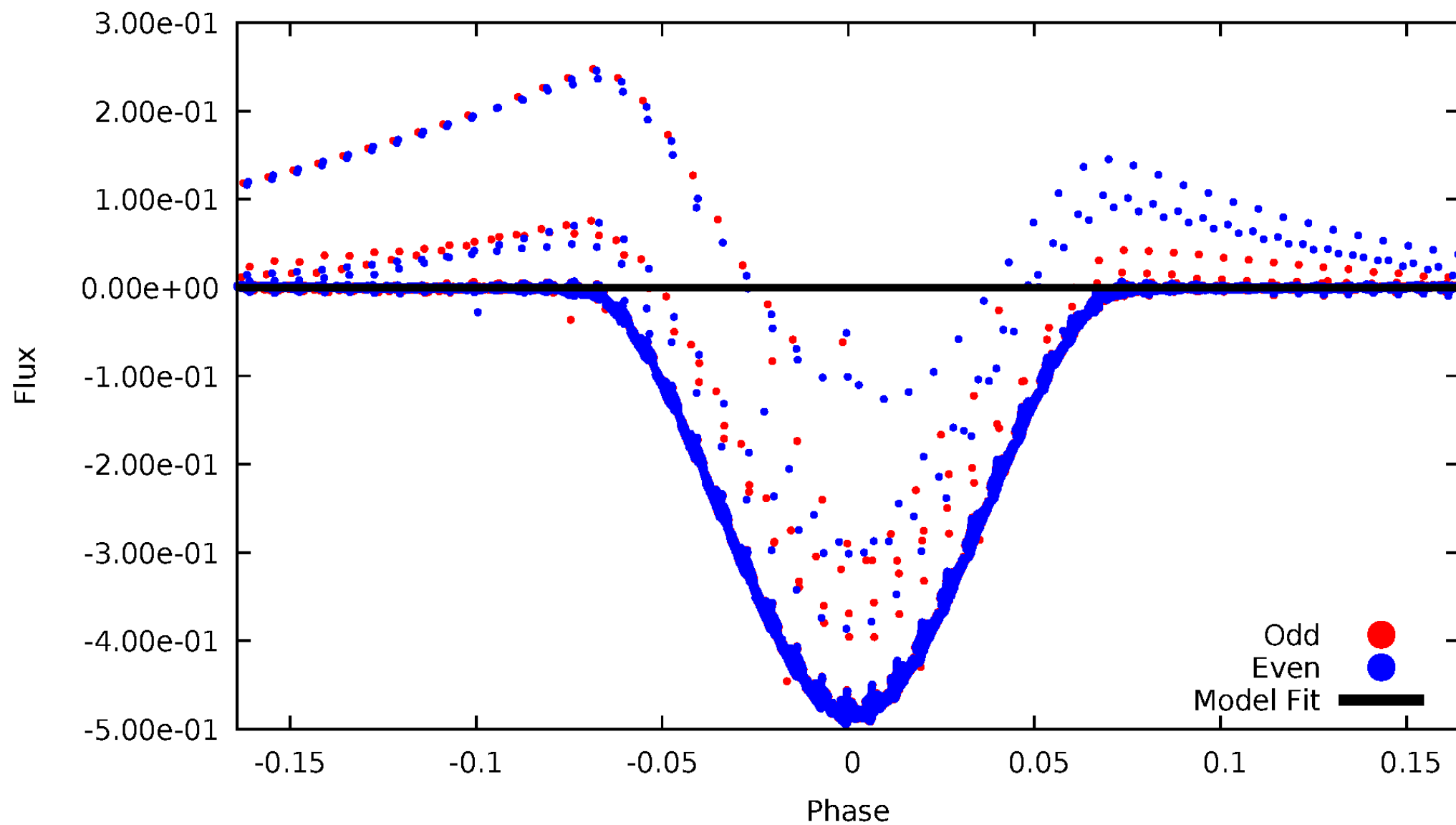


TCE 009159301-01



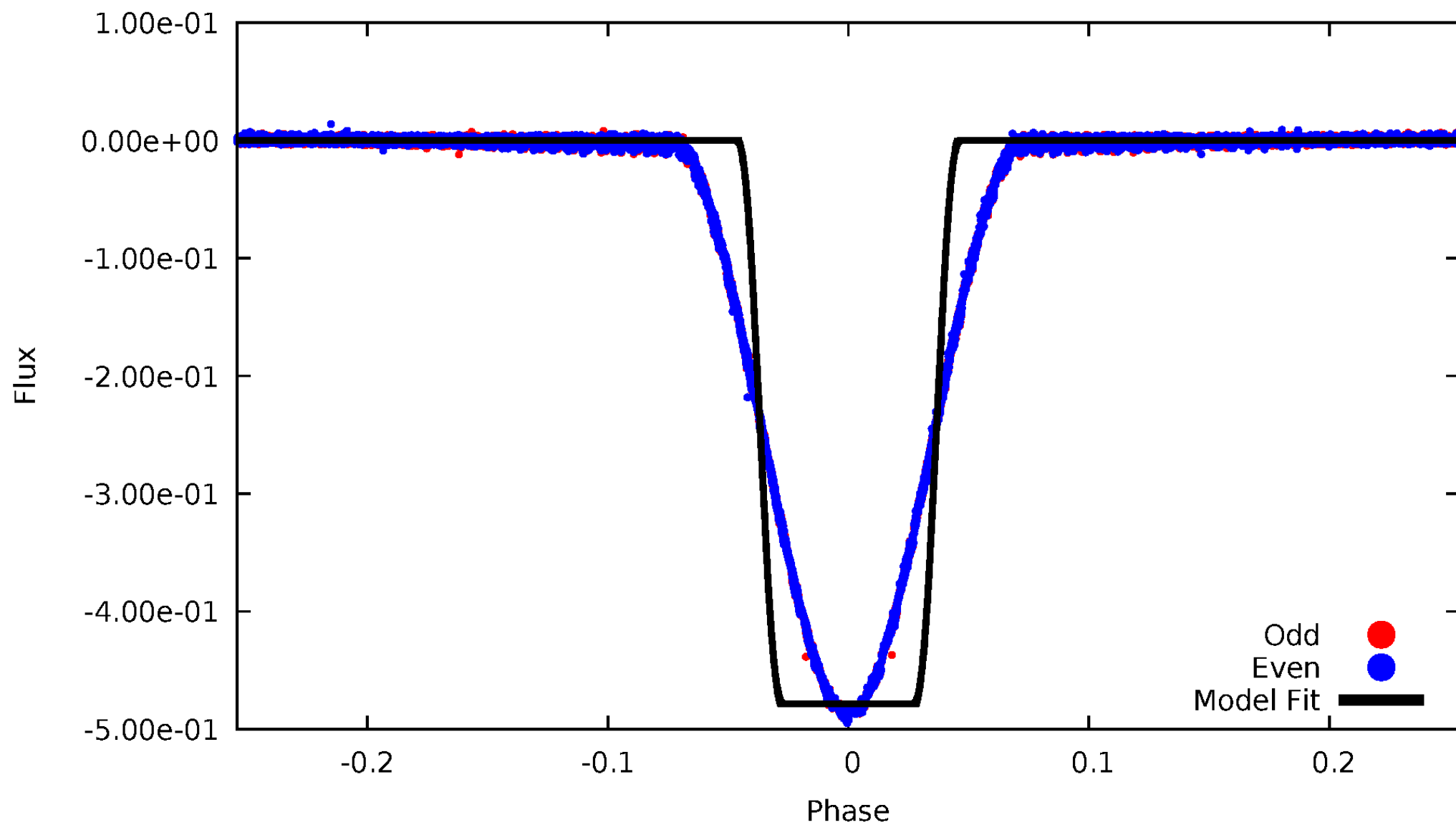
DV Odd/Even

TCE 009159301-01



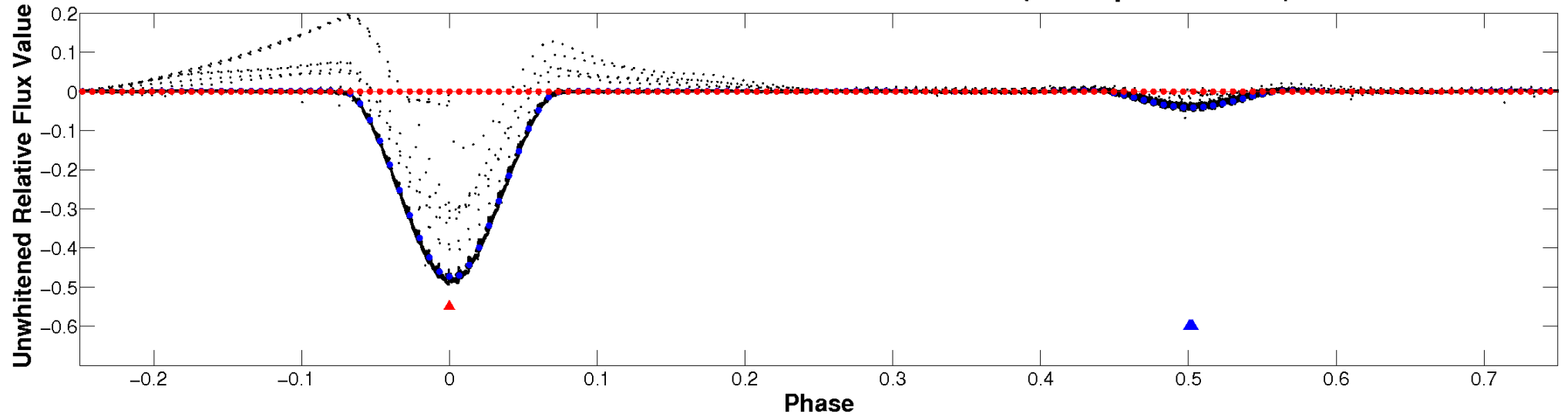
ALT Odd/Even

TCE 009159301-01



Non-Whitened Vs. Whitened Light Curve

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

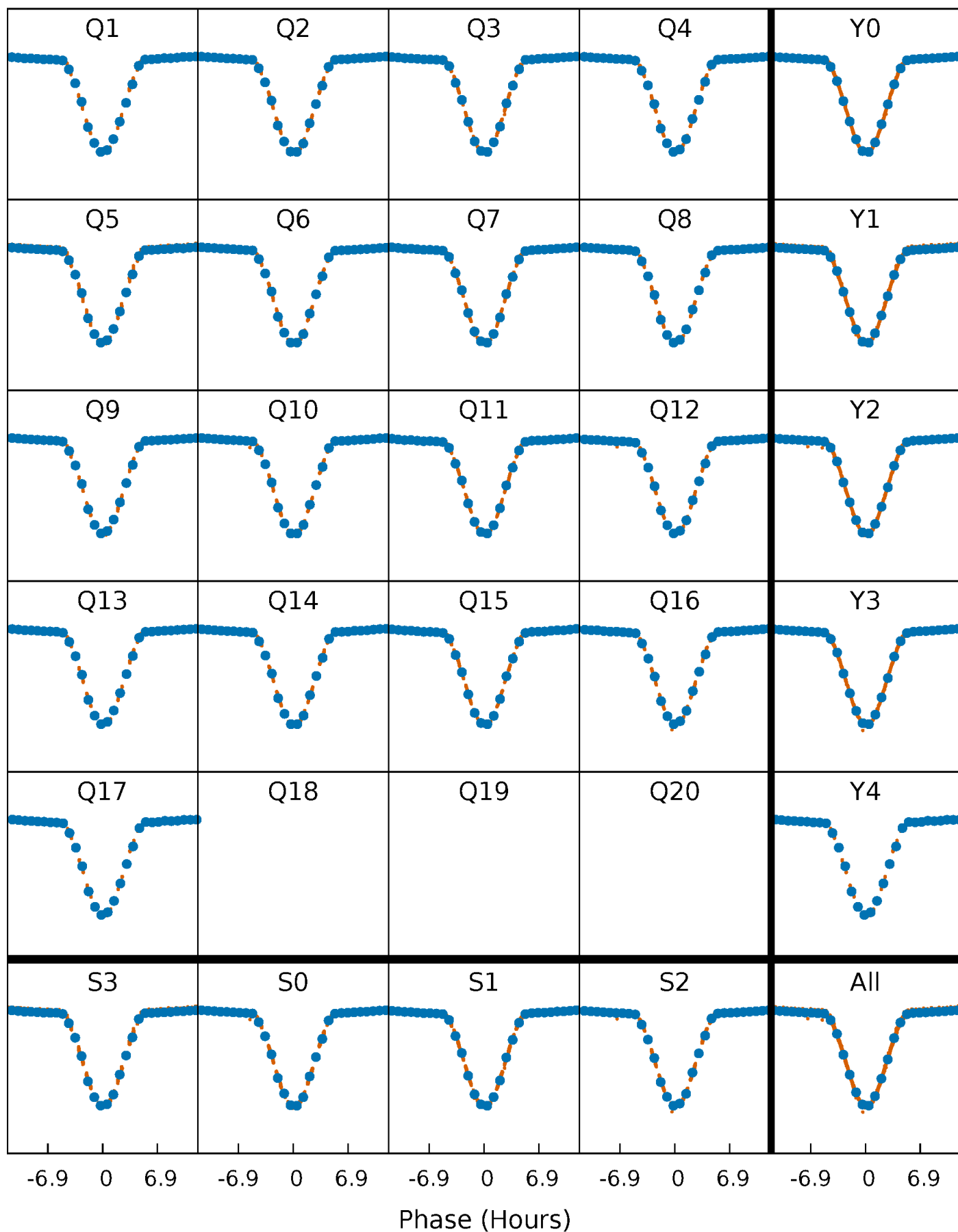


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



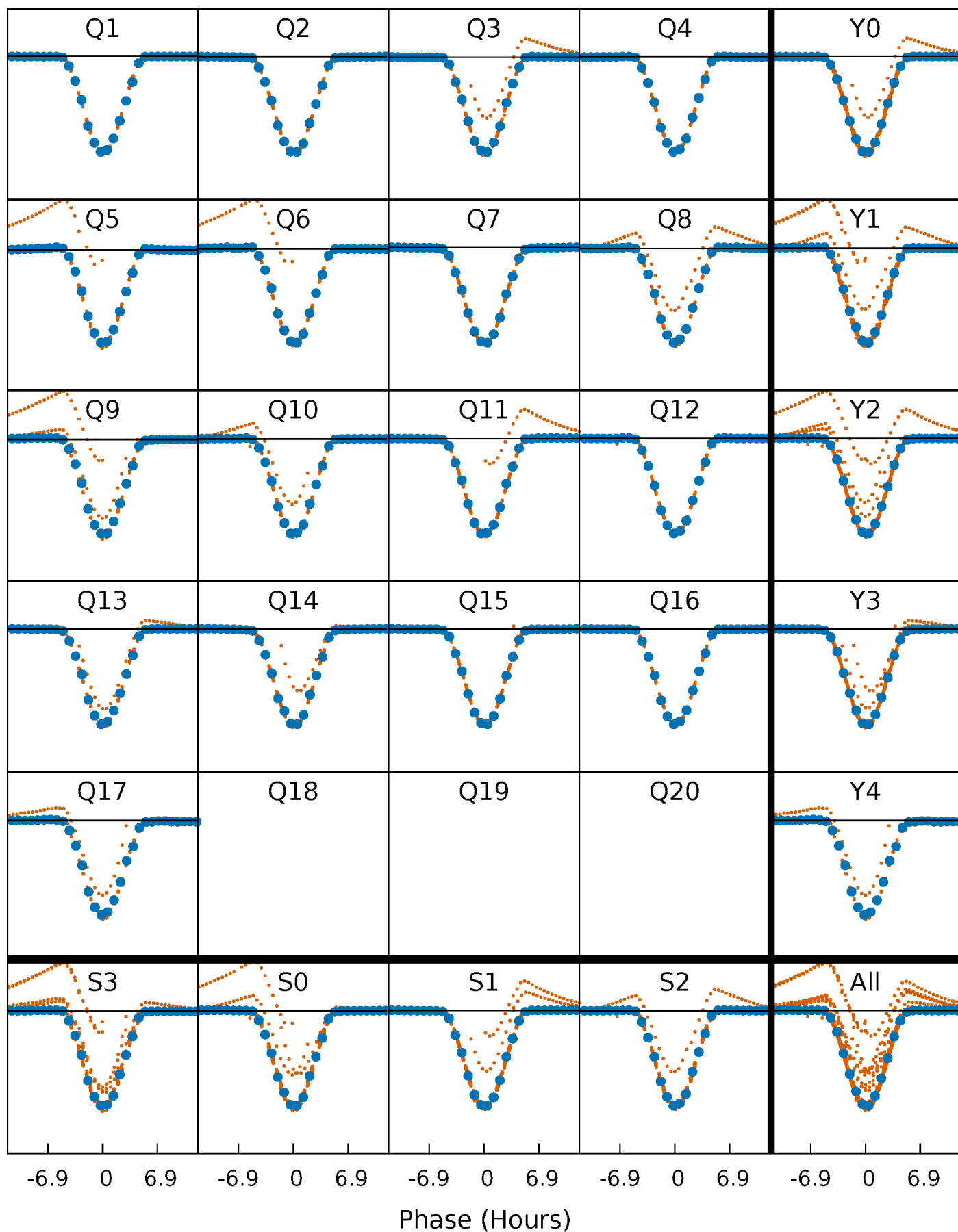
PDC Quarter-Phased Transit Curves

TCE 009159301-01 P= 3.044769 Days $T_0=132.433910$ (BKJD)



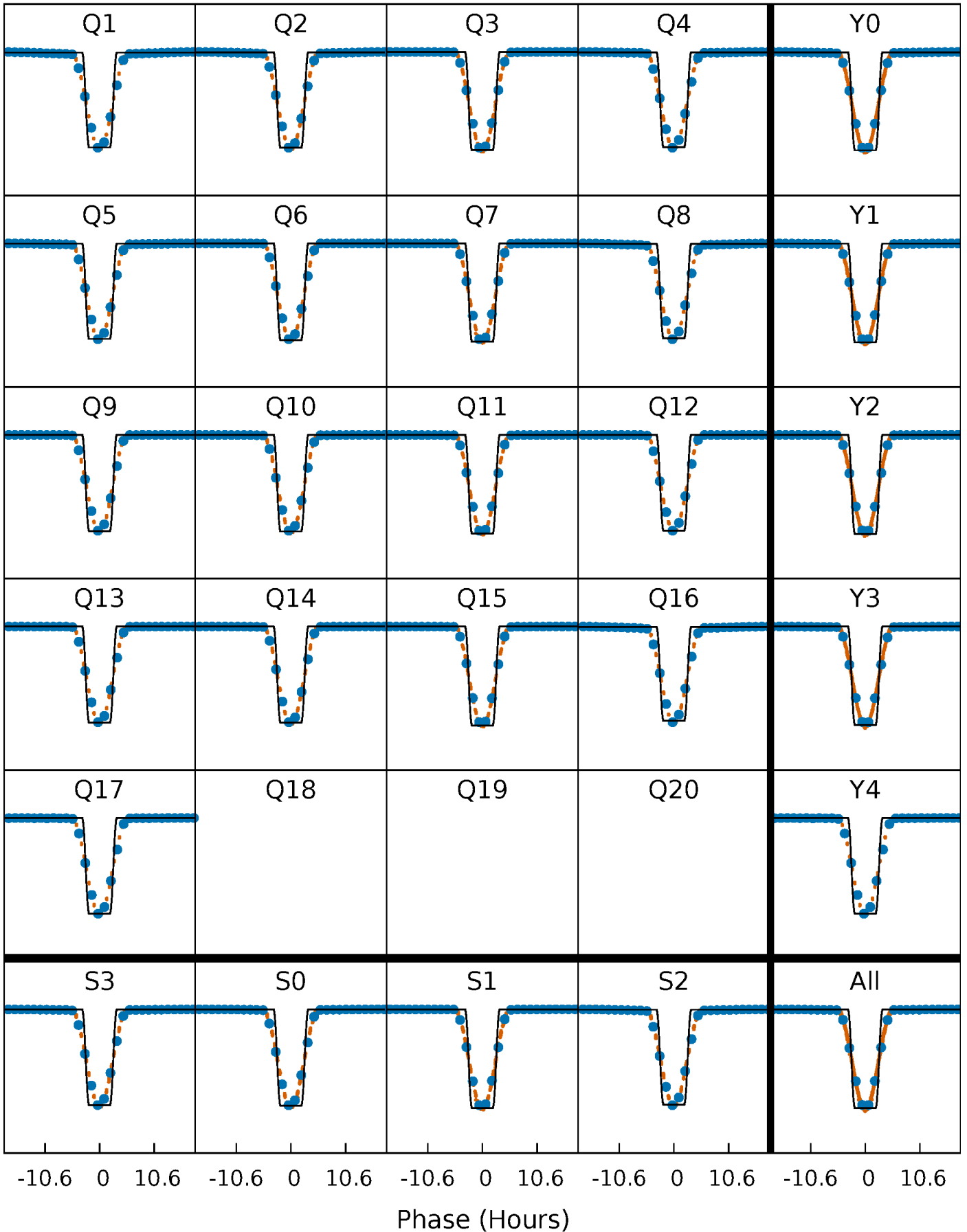
DV Quarter-Phased Transit Curves

TCE 009159301-01 P= 3.044769 Days $T_0=132.433910$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

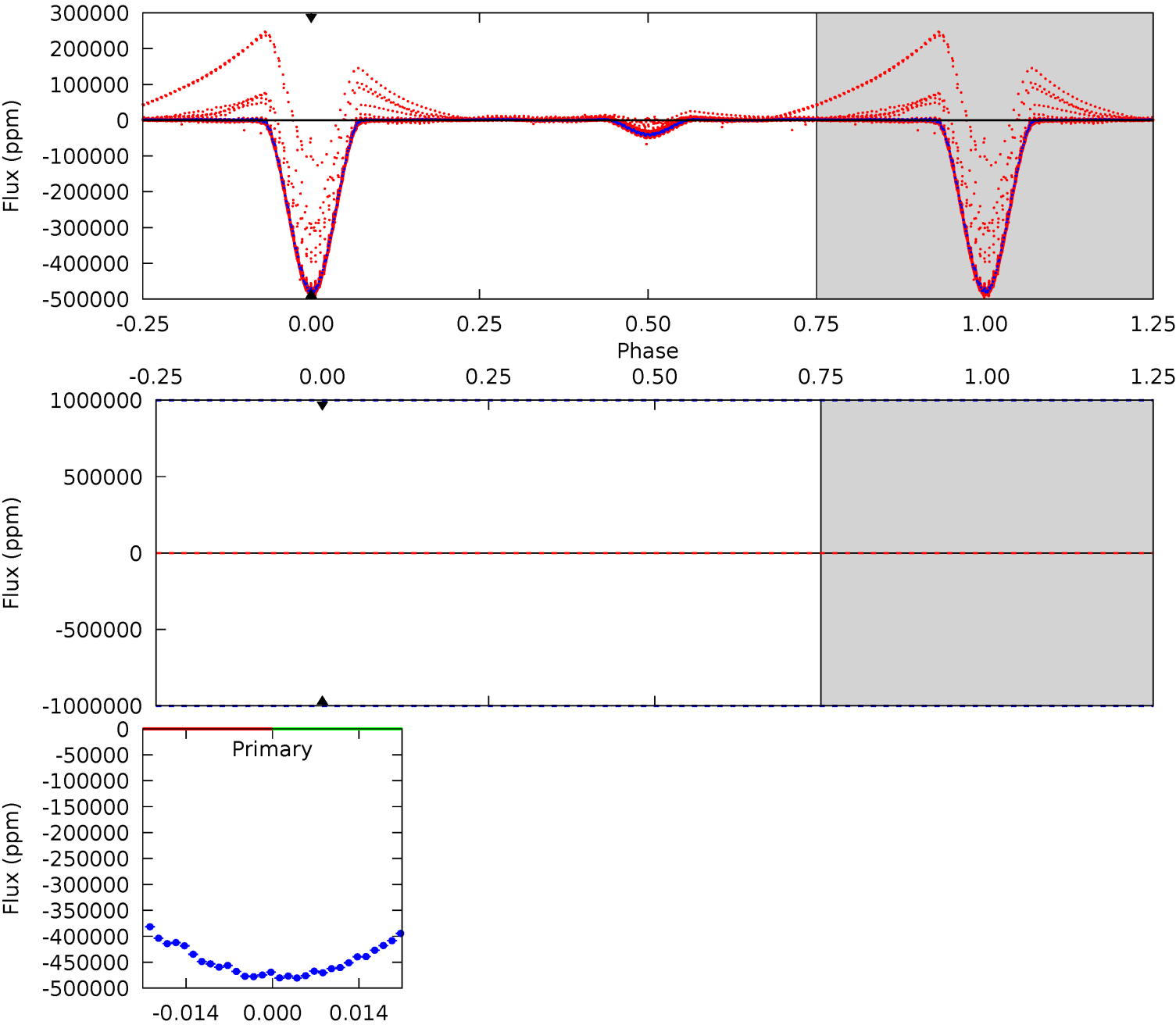
TCE 009159301-01 $P = 3.044769$ Days $T_0 = 132.437637$ (BKJD)



DV Model-Shift Uniqueness Test

009159301-01, P = 3.044769 Days, E = 129.389141 Days

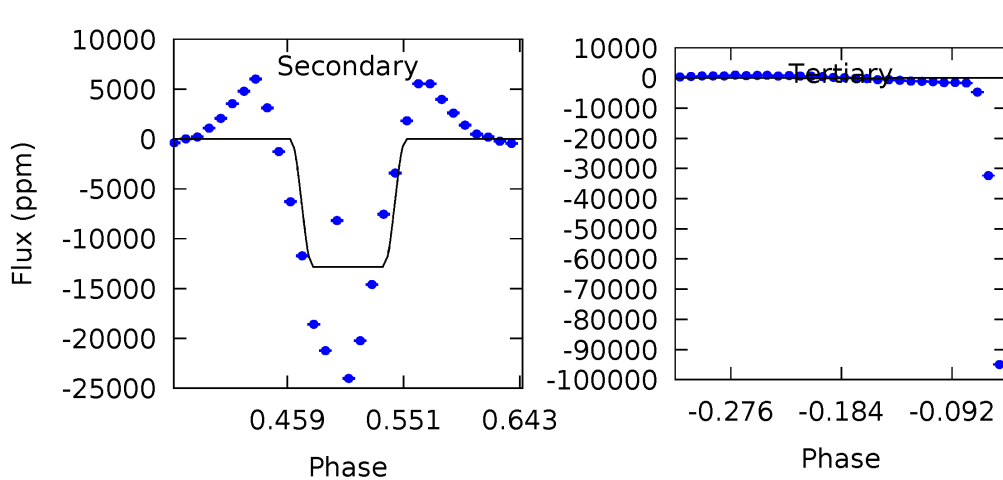
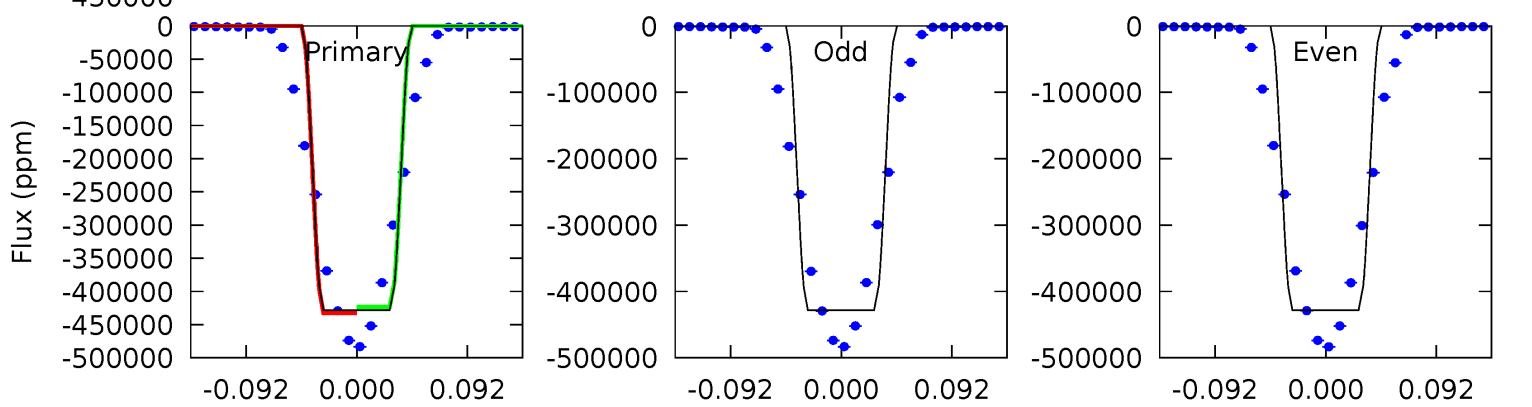
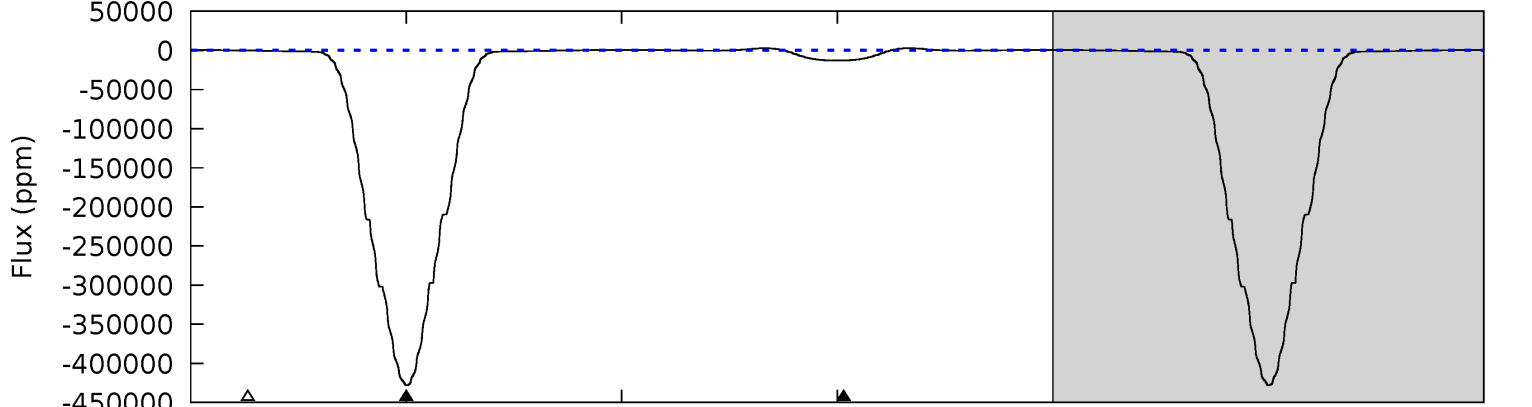
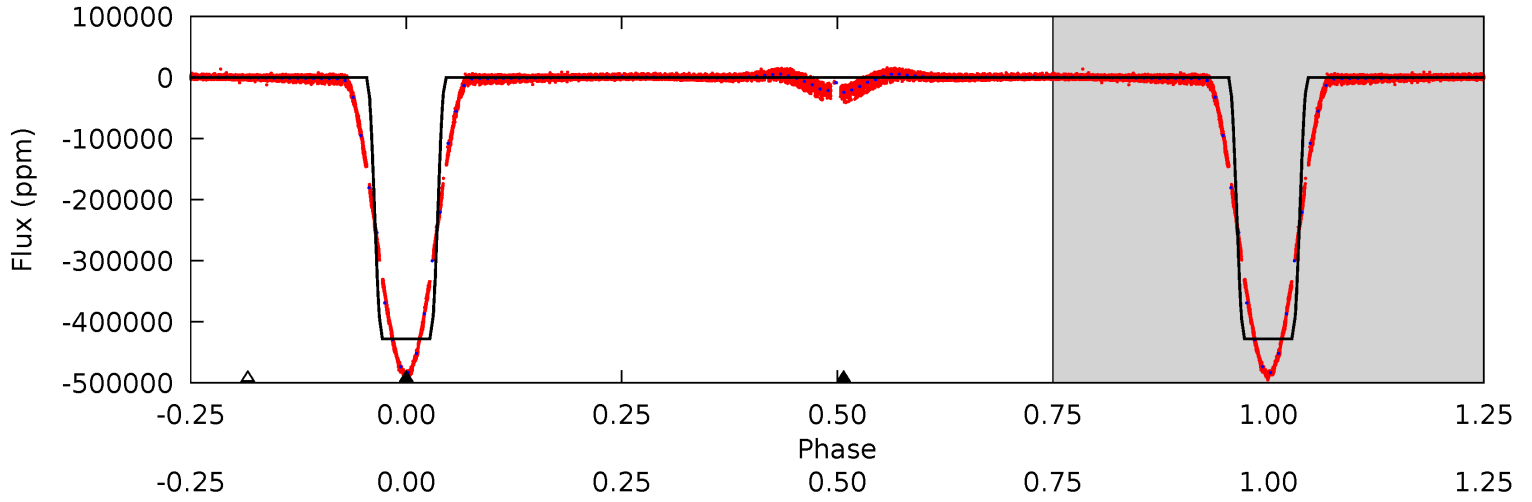
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009159301-01, P = 3.044769 Days, E = 129.392868 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13744	411.6	5.52	0	4.58	1.69	32.7	13739	13744	406.1	411.6	1.16	1.00	0.01	148.0



Stellar Parameters For KIC 009159301

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8199^{+199}_{-370}	$3.747^{+0.416}_{-0.104}$	$-0.120^{+0.200}_{-0.350}$	$3.163^{+0.766}_{-1.532}$	$2.039^{+0.332}_{-0.498}$	$0.091^{+0.355}_{-0.035}$
	+2%/-5%	+11%/-3%	+167%/-292%	+24%/-48%	+16%/-24%	+391%/-39%
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 009159301-01 / KOI 7138.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$55.57^{+35.30}_{-30.22}$	3817^{+273}_{-484}	-5009^{+19556}_{-9222}	$-1.349^{+72.807}_{-68.025}$
Alt.	-12819 ± 31	$218.77^{+56.47}_{-53.97}$	3782^{+313}_{-412}	2934^{+488}_{-5605}	$0.400^{+0.281}_{-0.137}$

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 $A_{obs} \gg 1.0$

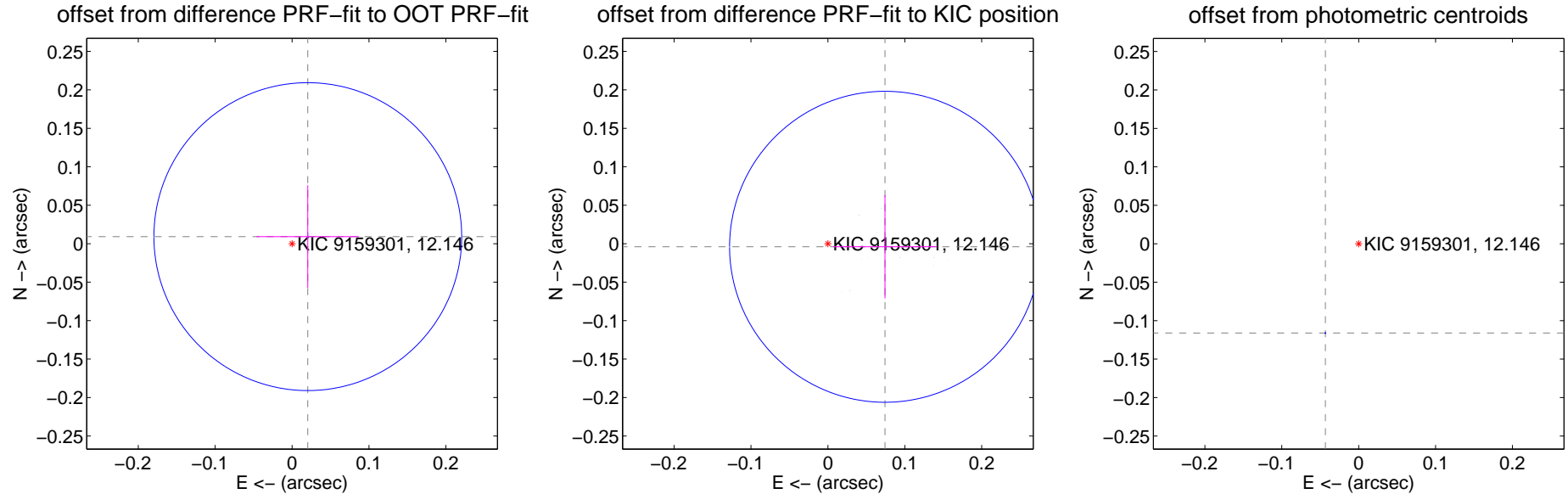
DV Centroid Data

Supplemental centroid analysis for 009159301-01. Kepler magnitude: 12.15. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

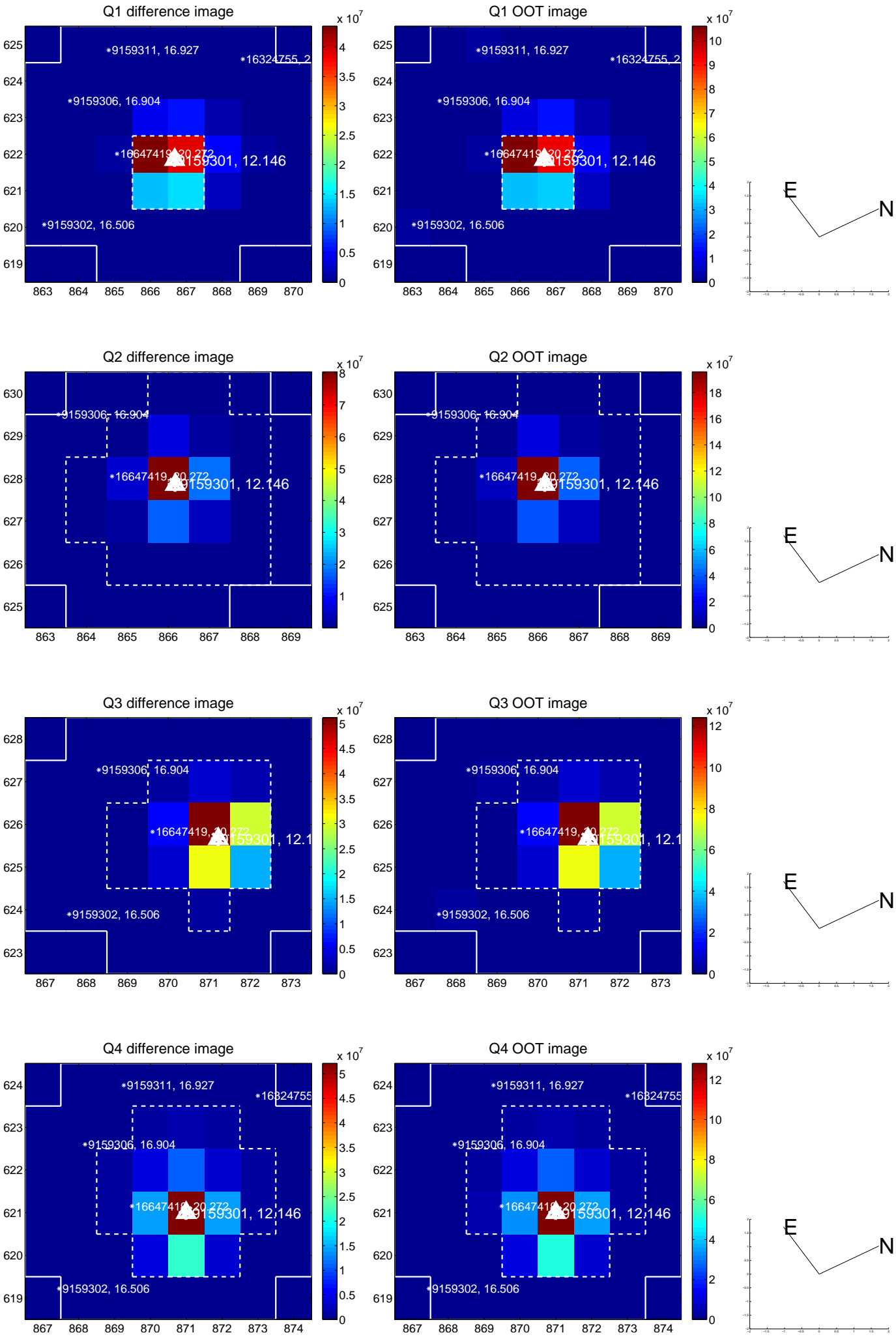
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.022 ± 0.067	0.34	-0.020 ± 0.067	0.009 ± 0.067
PRF-fit source offset from KIC position	0.074 ± 0.067	1.10	-0.074 ± 0.067	-0.004 ± 0.067
photometric centroid source offset	0.12 ± 0.00	695.91	0.04 ± 0.00	-0.12 ± 0.00

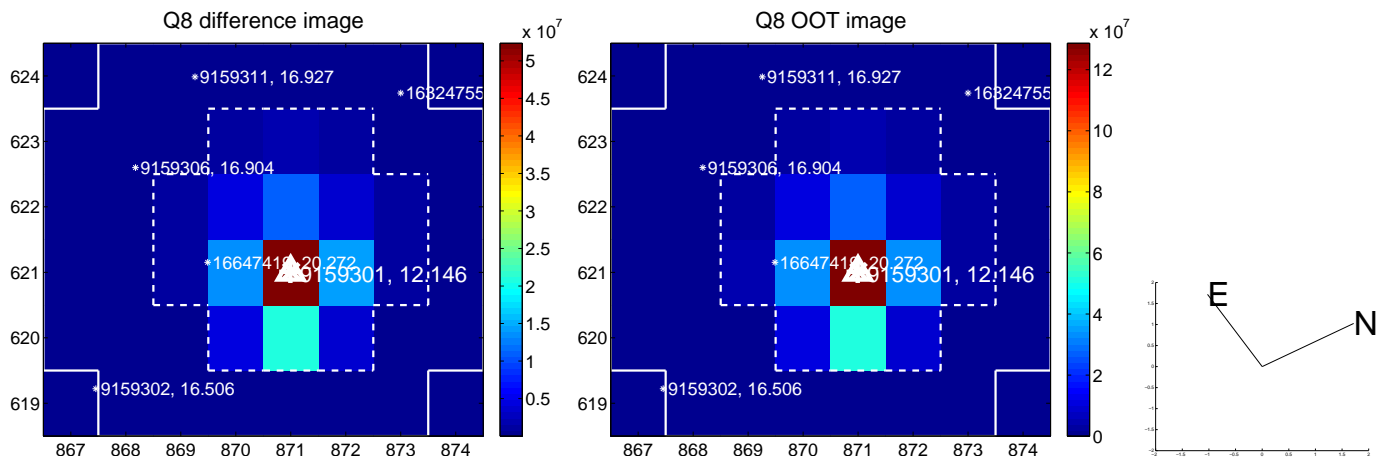
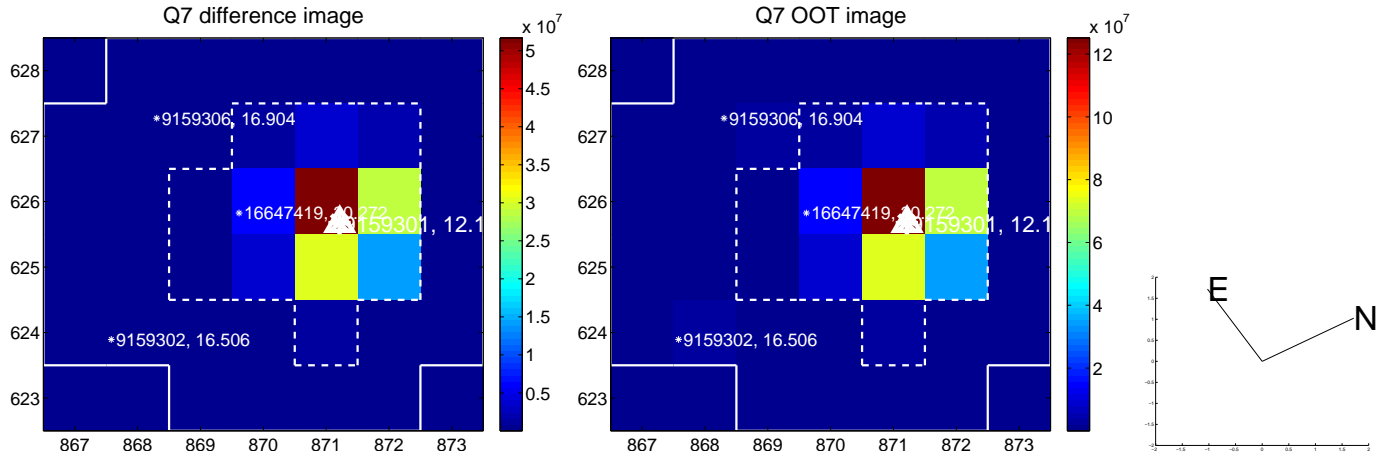
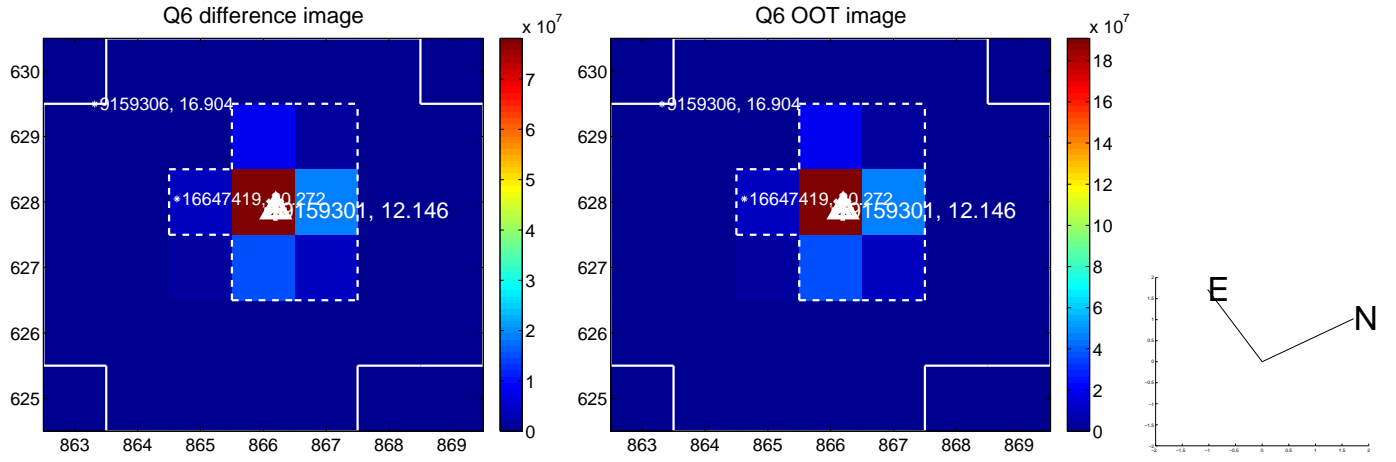
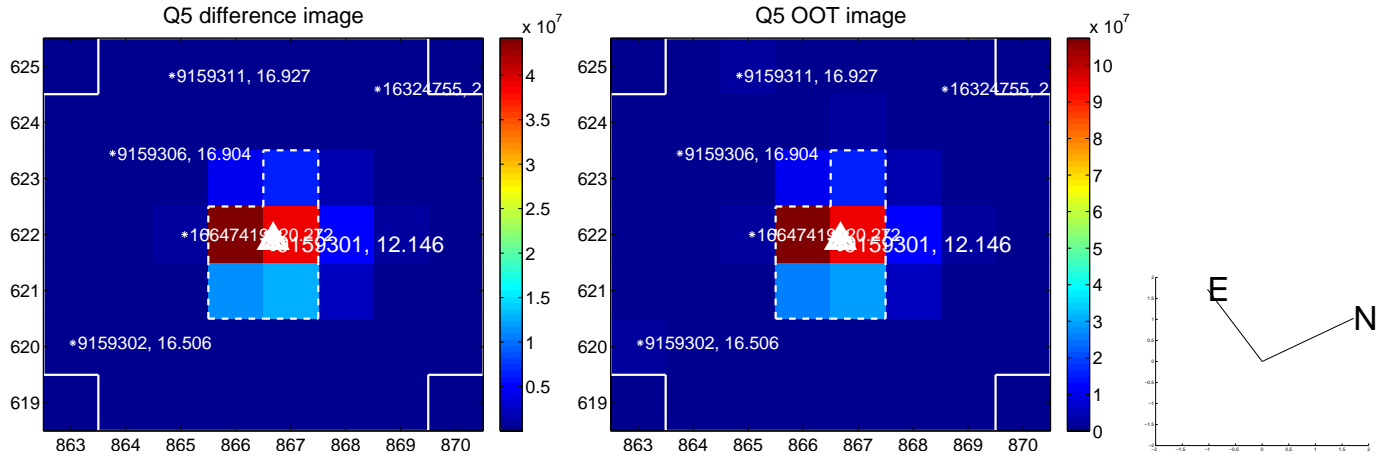


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

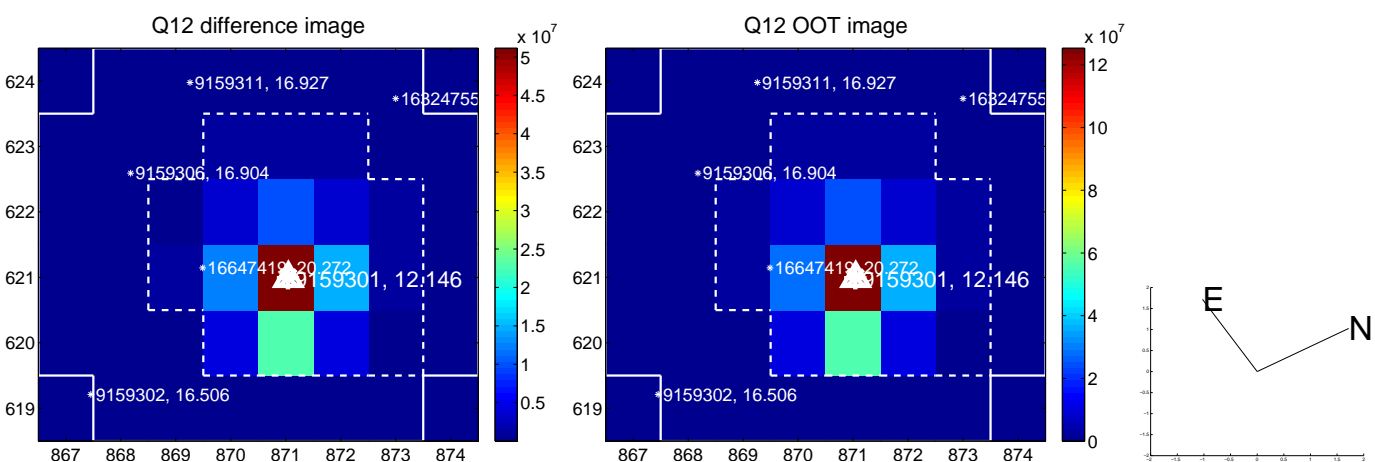
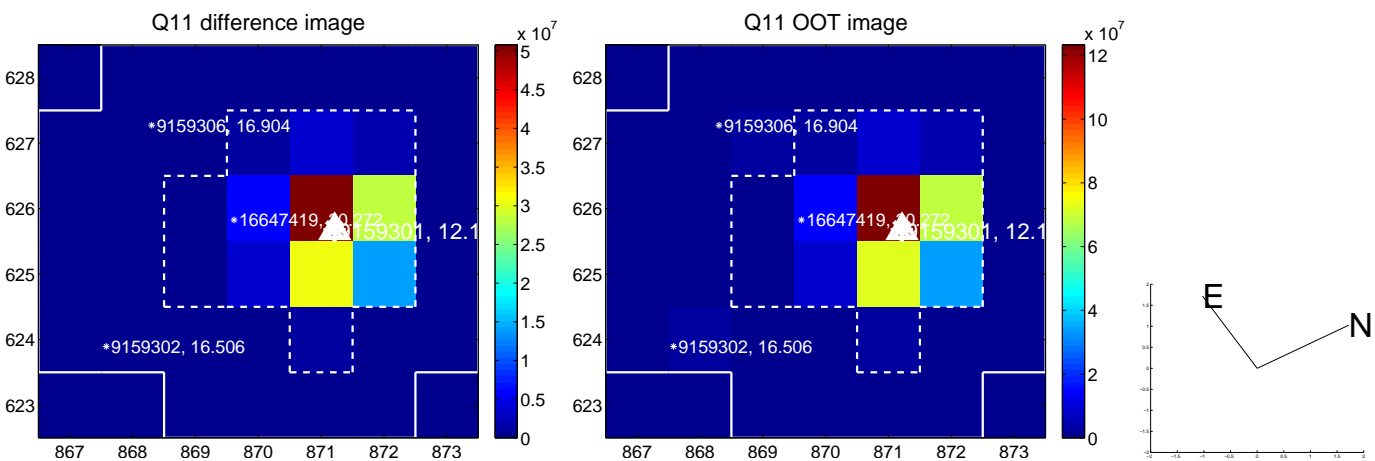
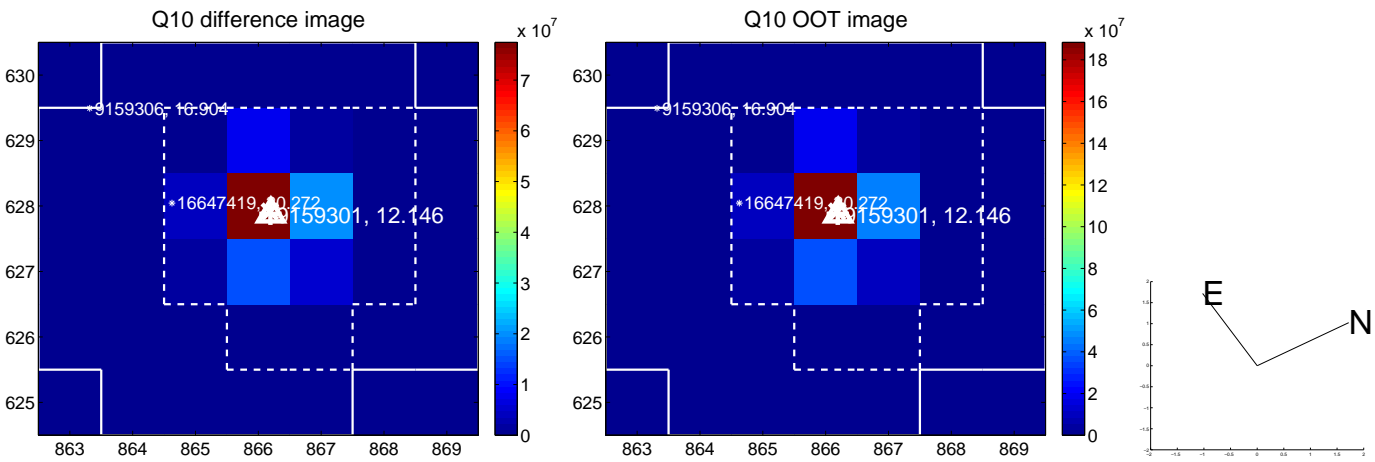
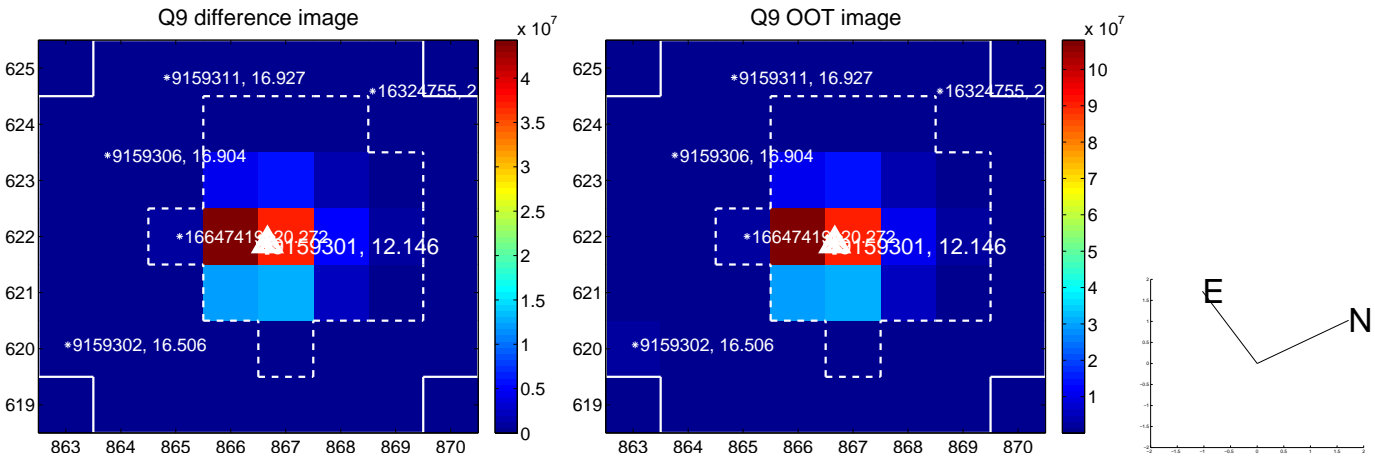
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



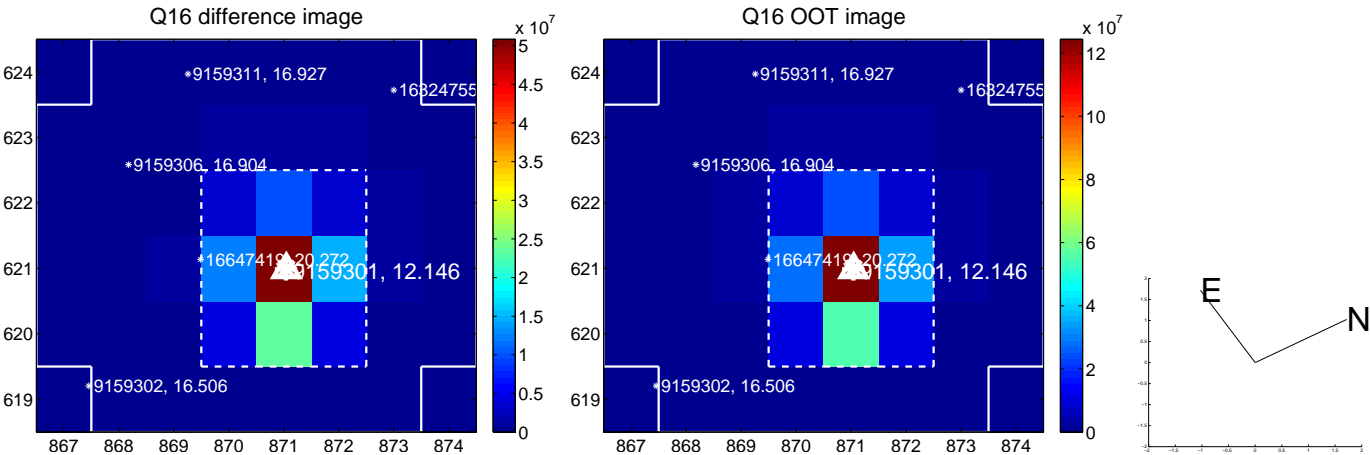
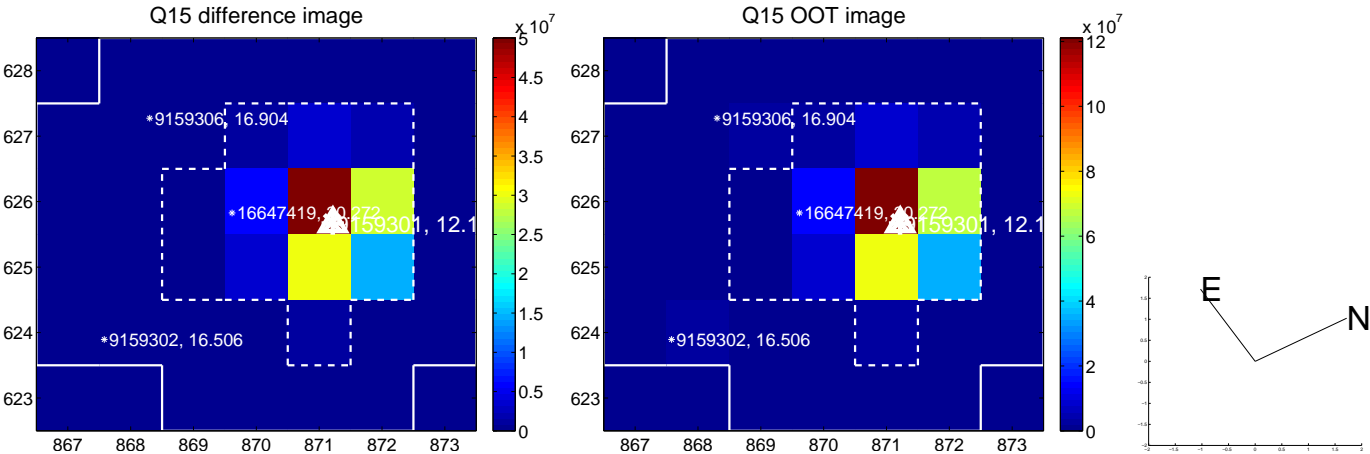
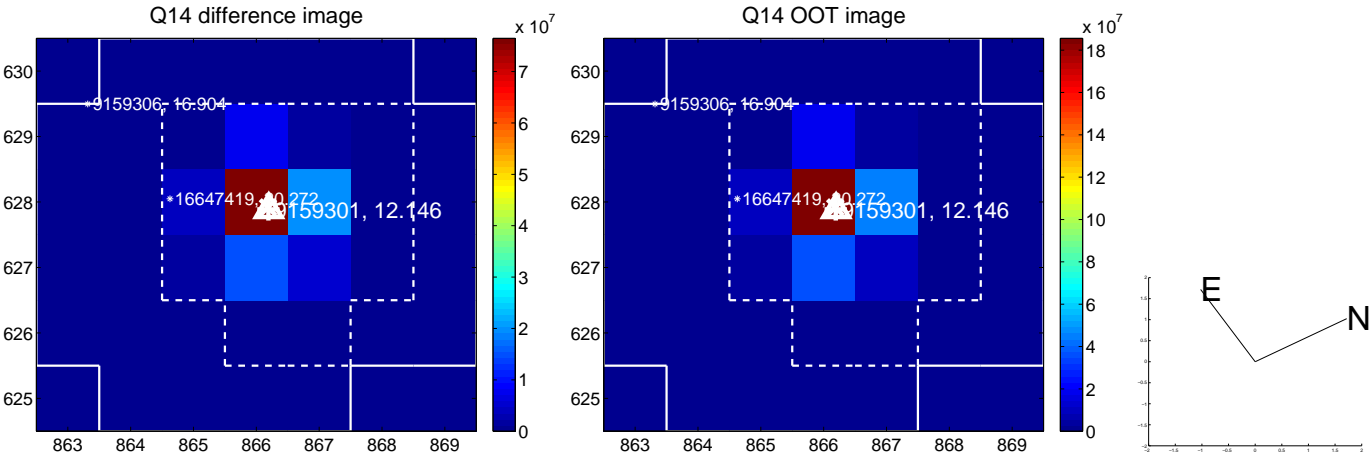
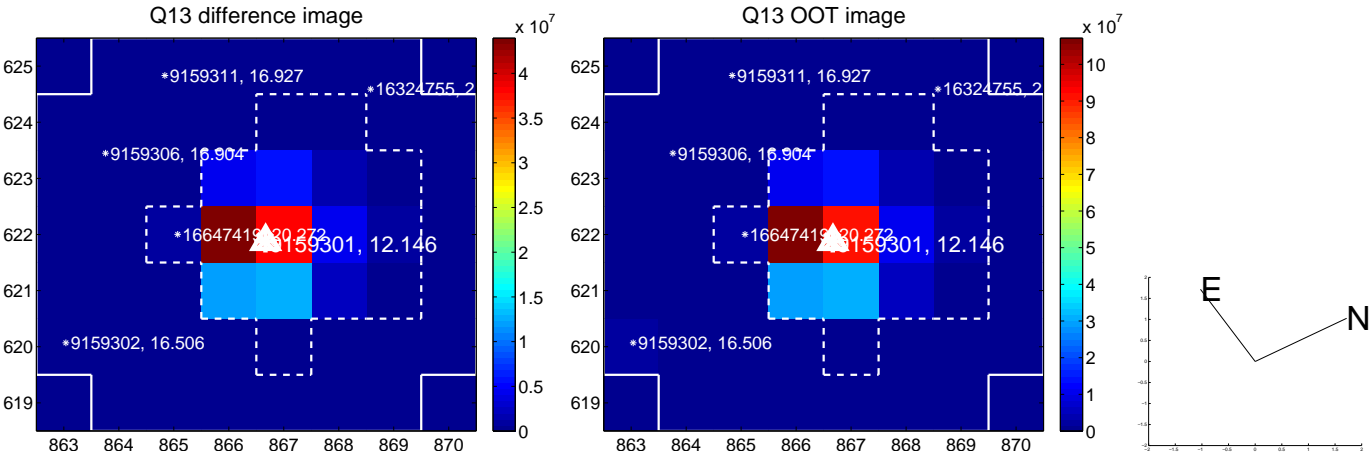
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



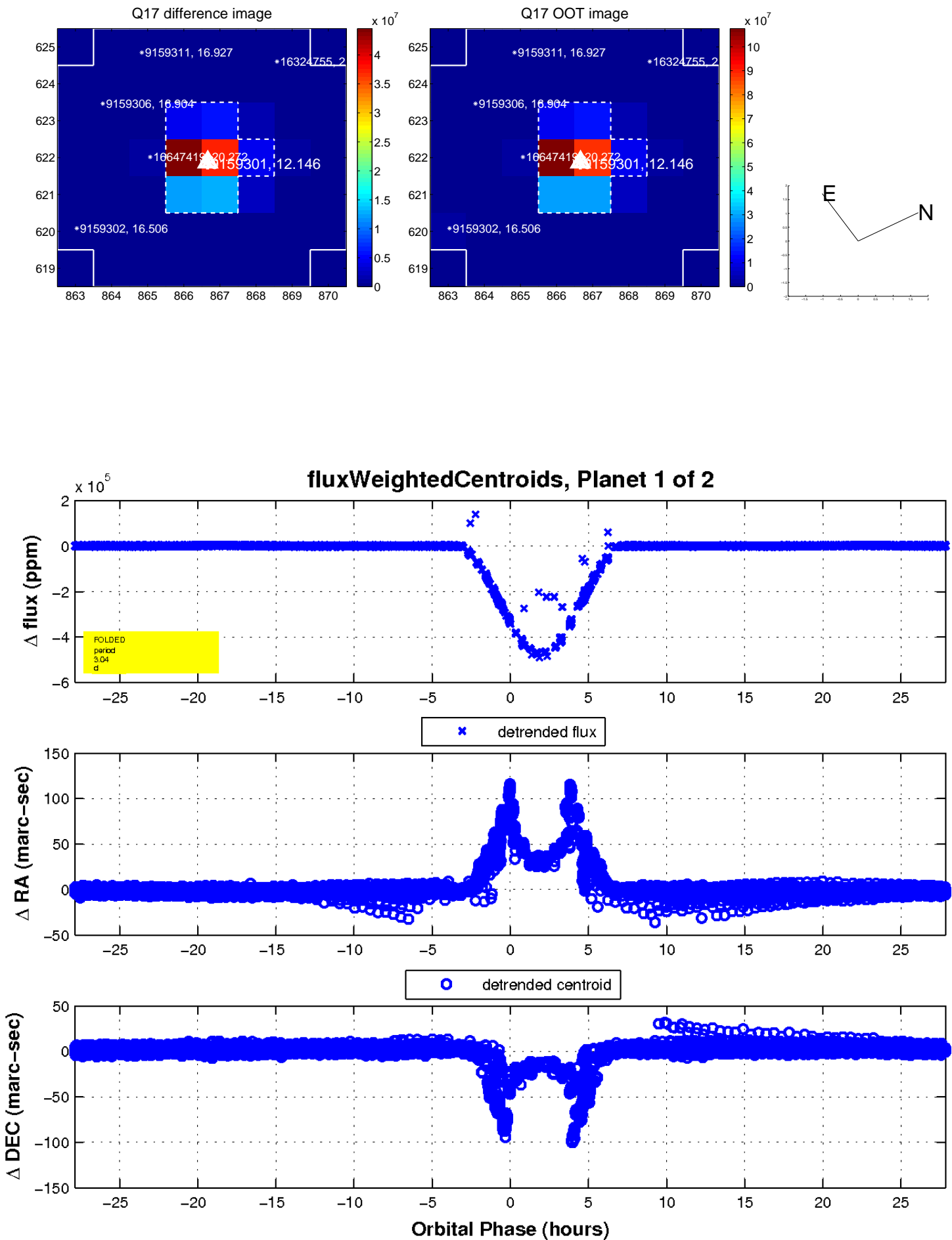
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



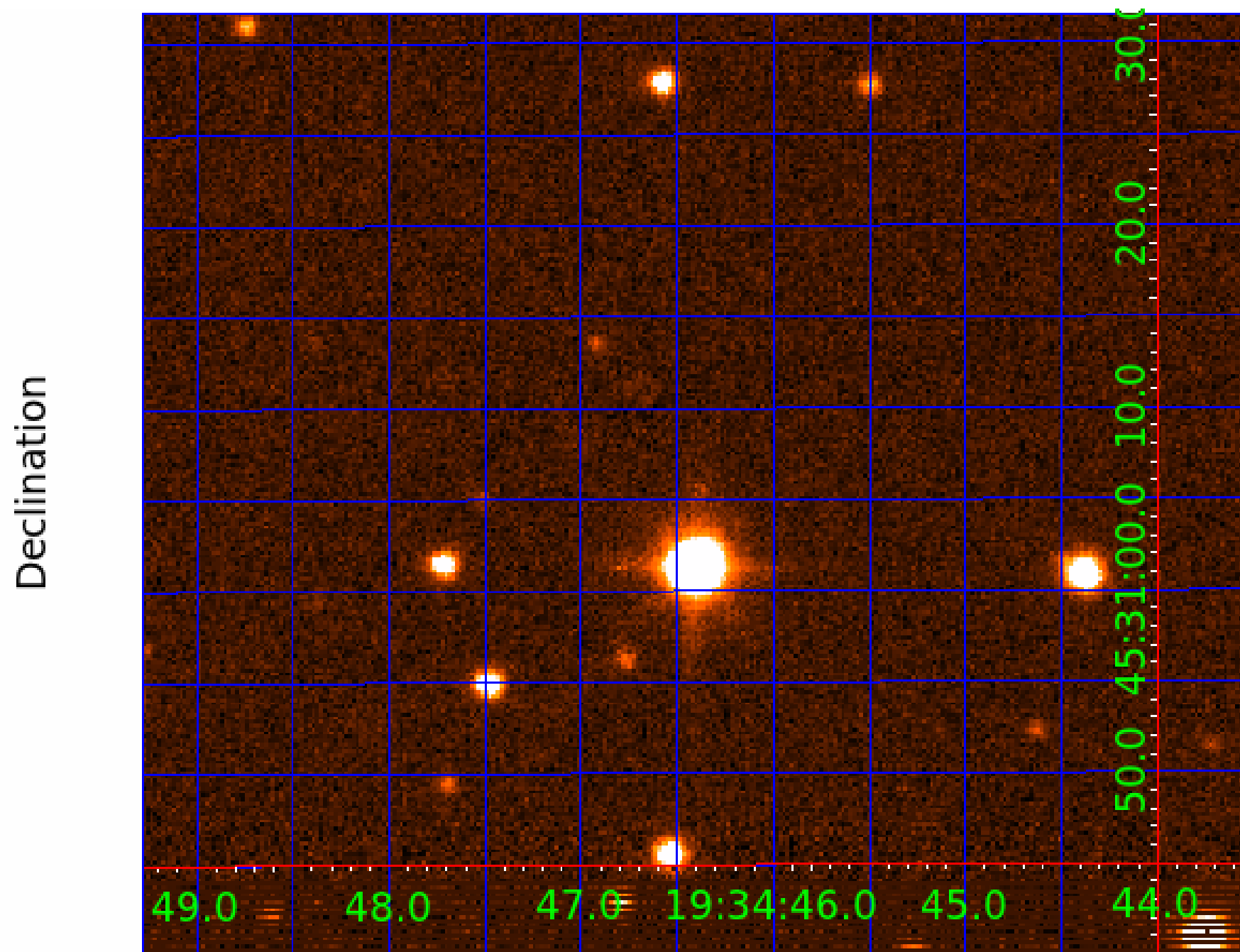
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009159301

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})
009159301-01	OBS	7138.01	3.044769	132.433910	480338.4	6.000	9604.2	-1.0	3.16	8199	59.41	14902.70
009159301-02	OBS	No	3.044783	133.957993	47753.4	9.630	650.5	900.7	3.16	8199	117.33	14902.61

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009159301-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
009159301-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

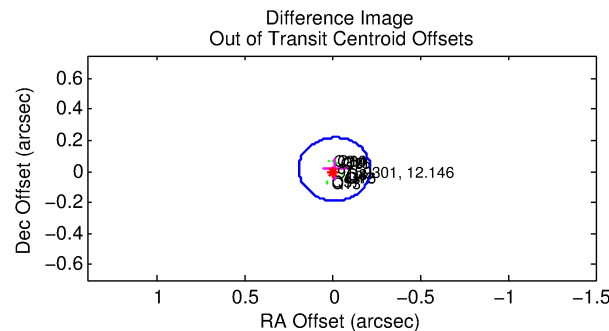
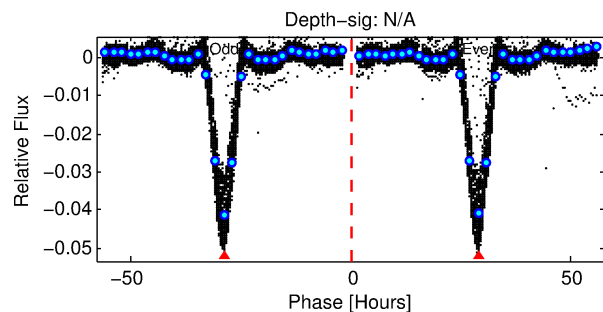
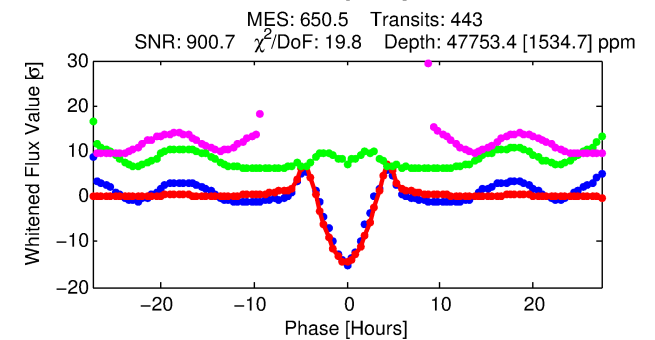
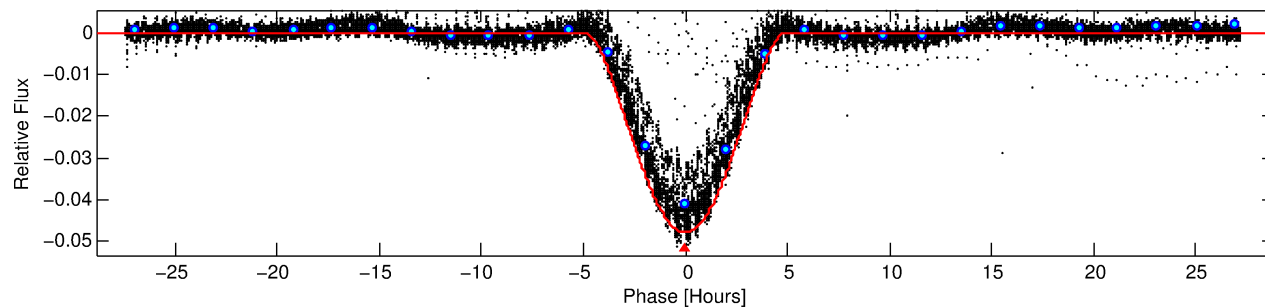
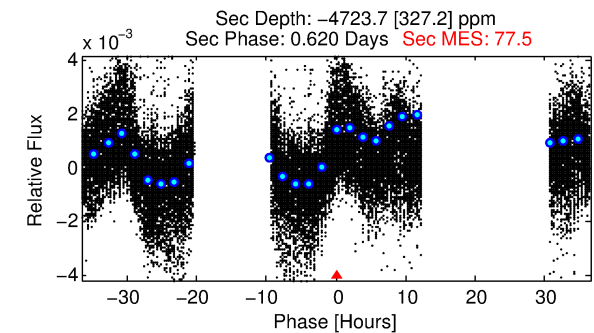
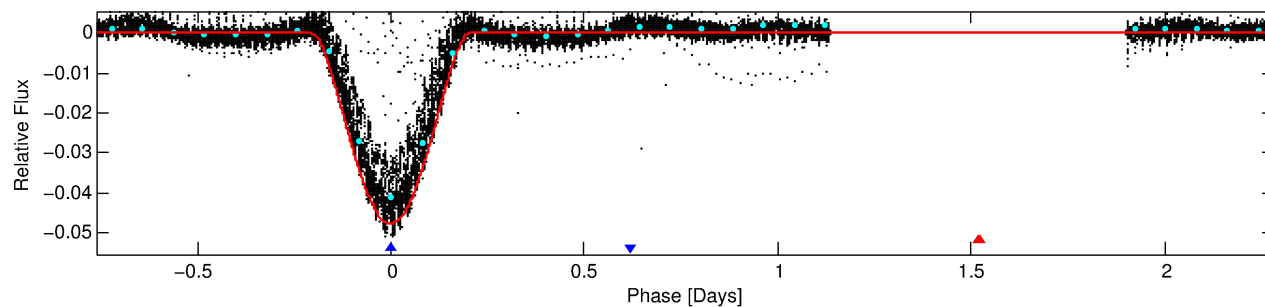
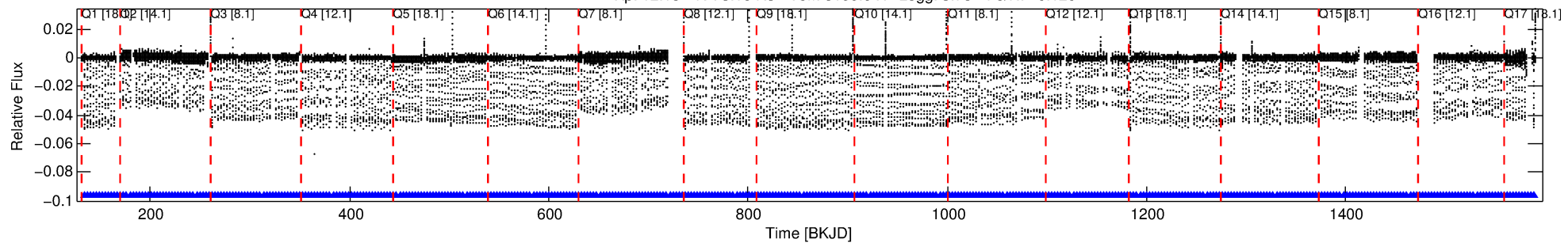
Ephemeris Match Information For 009159301-02

No Significant Match Found

DV One-Page Summary

KIC: 9159301 Candidate: 2 of 2 Period: 3.045 d
KOI: K07138 Corr: No Ephemeris Match

Kp: 12.15 R*: 3.16 Rs Teff: 8199.0 K Logg: 3.75 Fe/H: -0.120



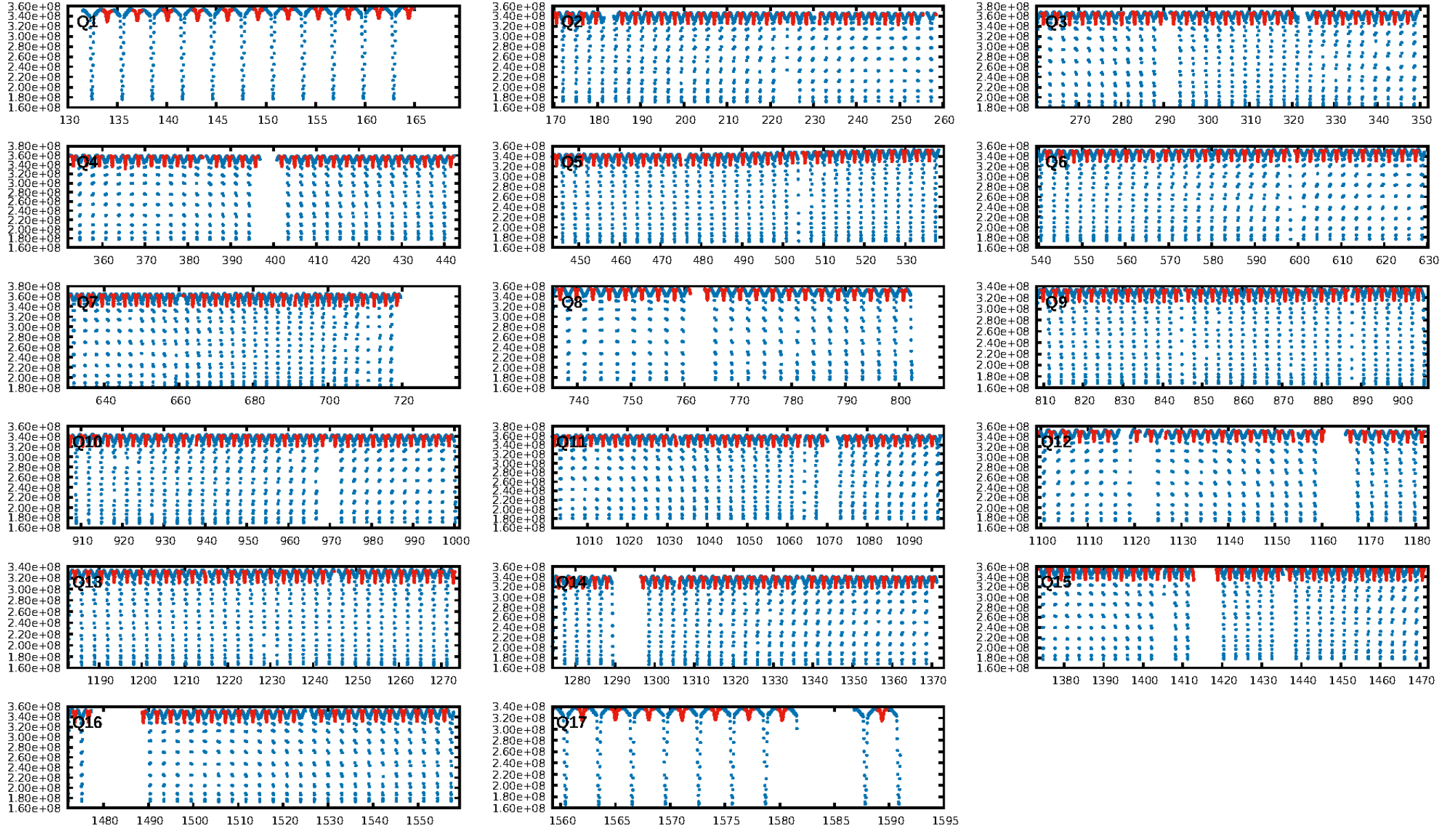
DV Fit Results:

Period = 3.04478 [0.00000] d
Epoch = 133.9580 [0.0006] BKJD
Rp/R* = 0.3399 [0.0497]
a/R* = 2.43 [0.02]
b = 1.00 [0.06]
Seff = 14902.61 [10998.06]
Teff = 2817 [520] K
Rp = 117.34 [59.37] Re
a = 0.0521 [0.0237] AU
Ag = N/A
Teffp = N/A

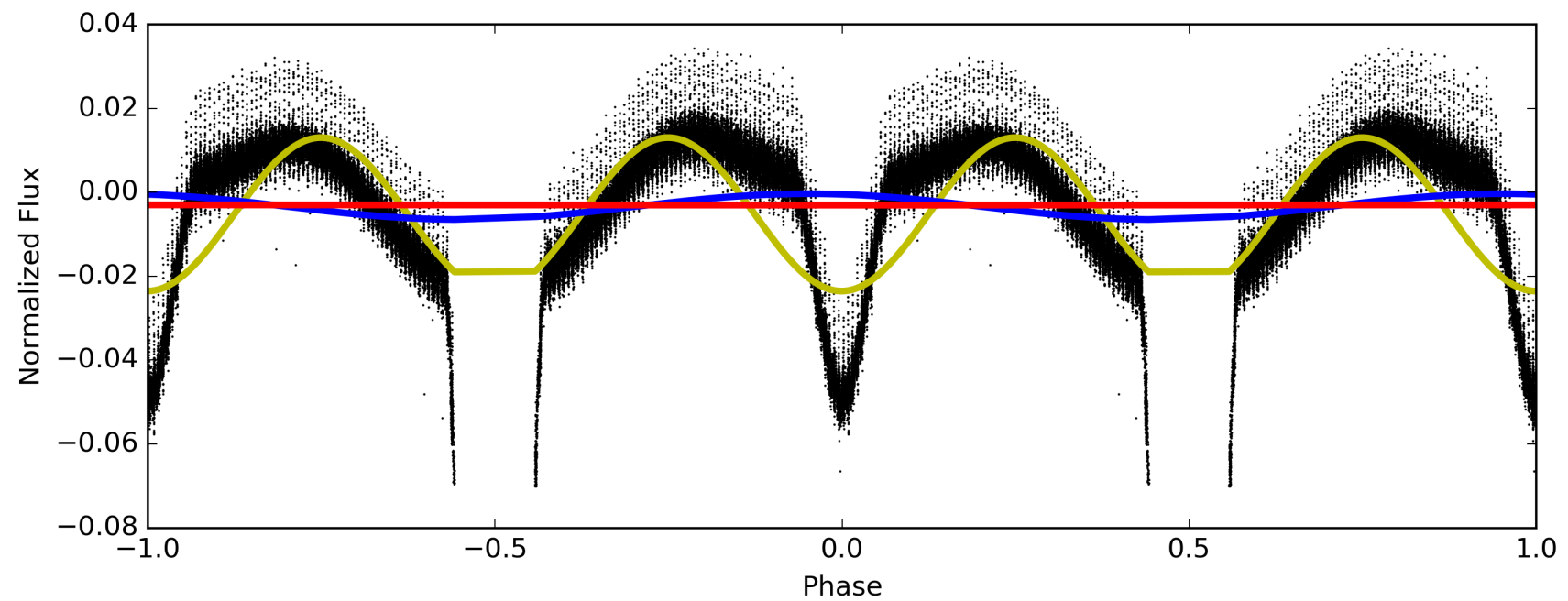
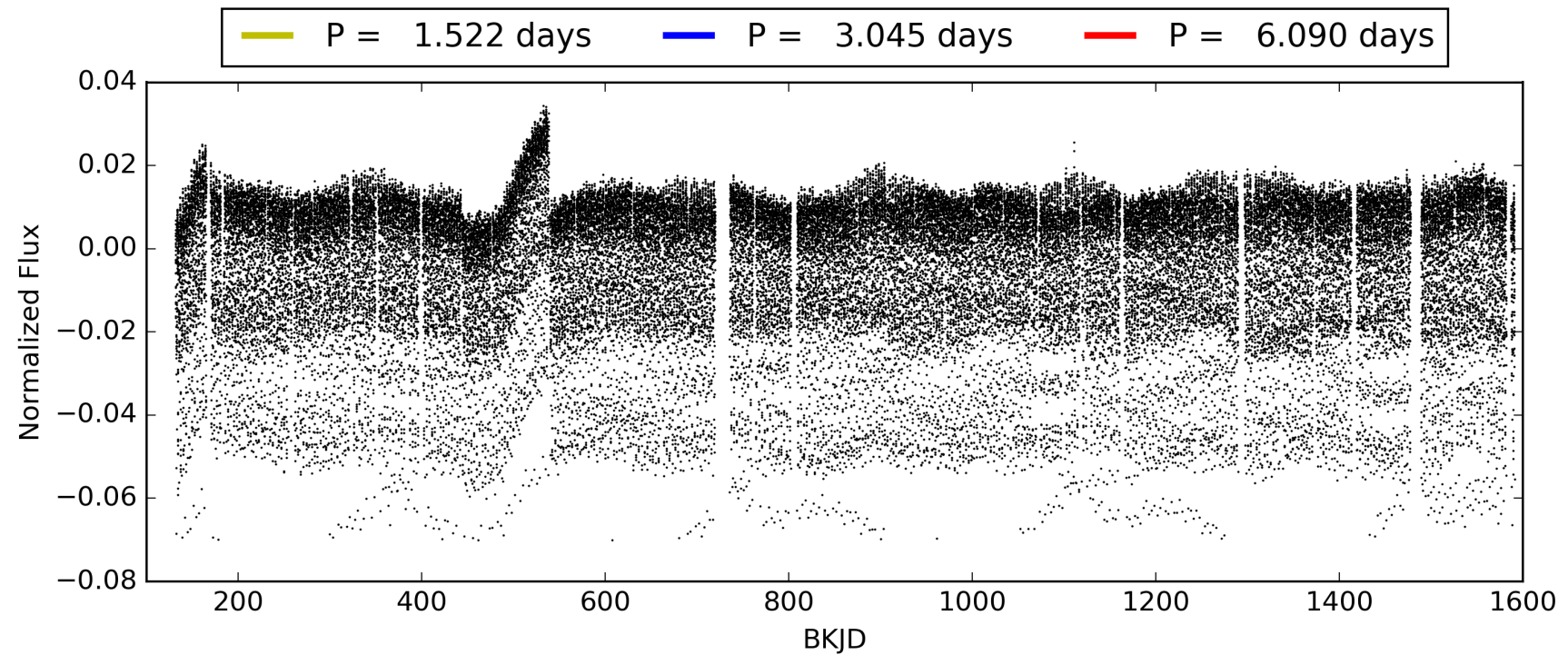
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00e]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [424/424]
GhostDiagnostic-chr: 0.7776
Centroid-sig: N/A
Centroid-so: 0.196 arcsec [182.70σ]
OotOffset-rm: 0.019 arcsec [0.28σ]
KicOffset-rm: 0.070 arcsec [1.04σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009159301-02, PDC Light Curves

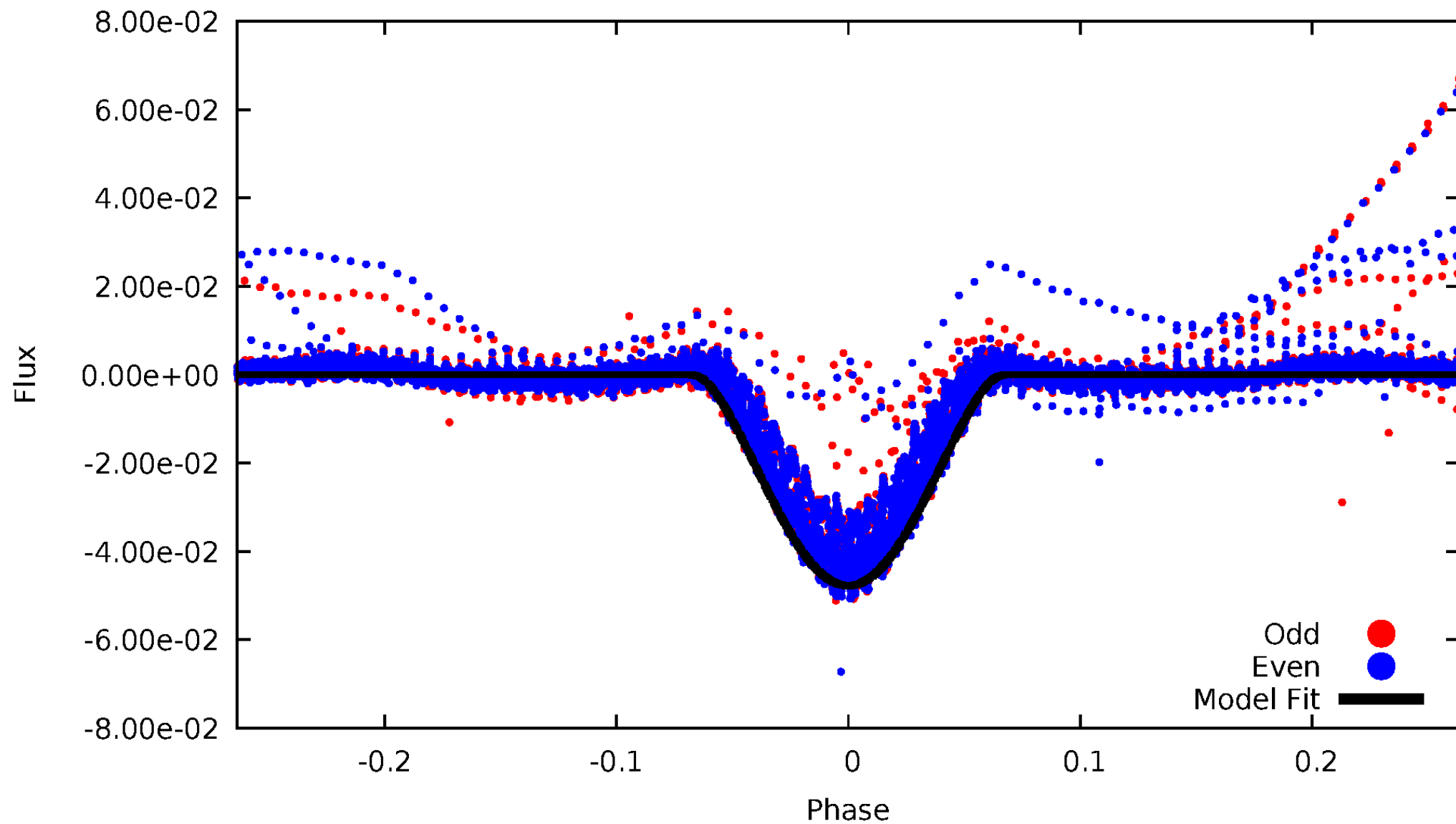


TCE 009159301-02



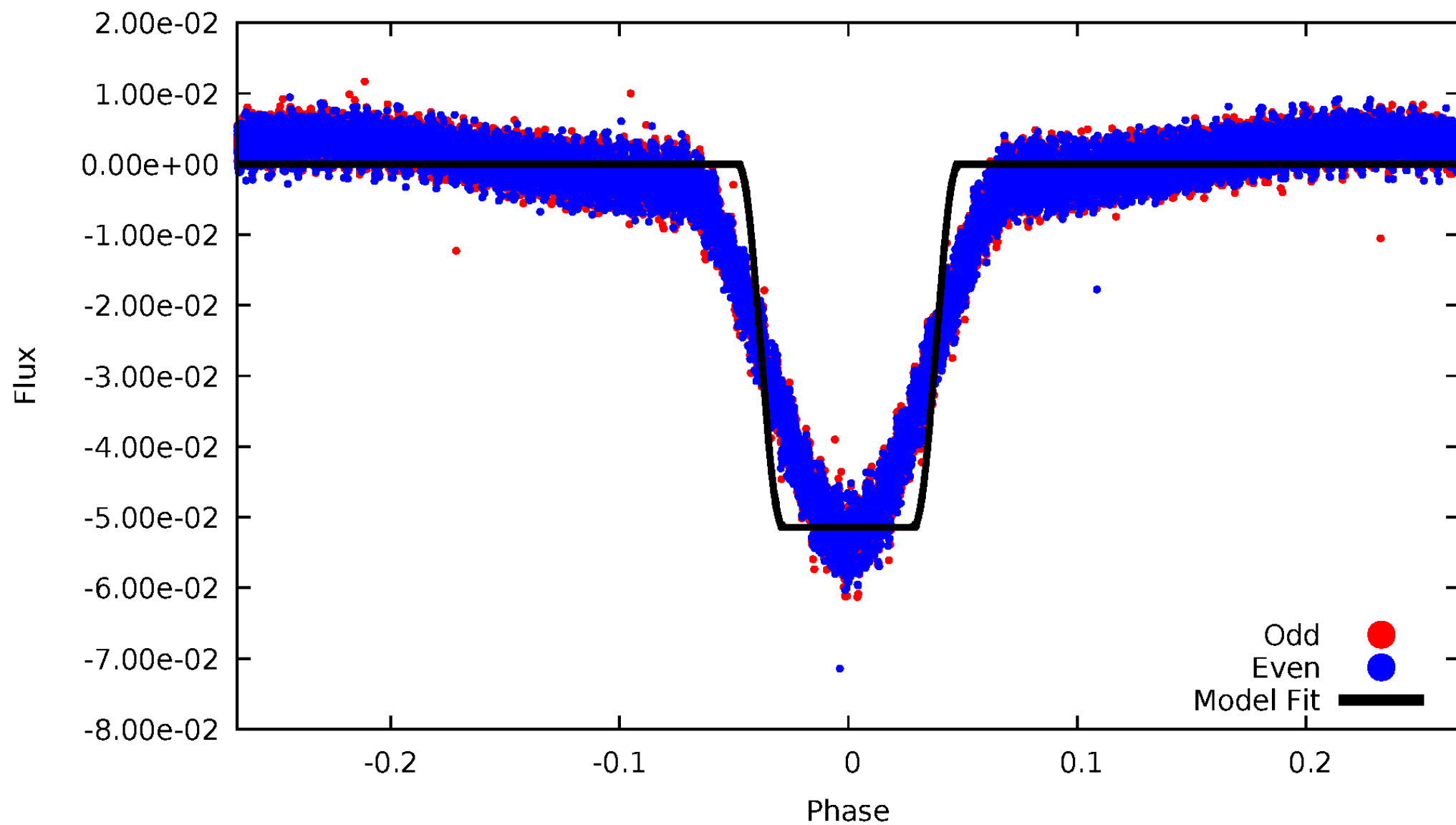
DV Odd/Even

TCE 009159301-02



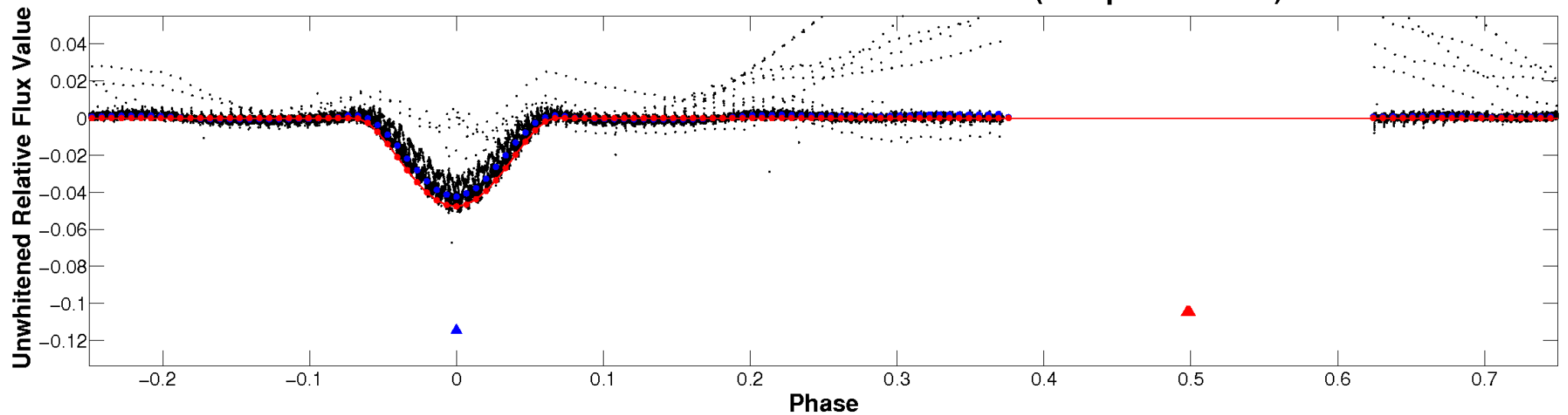
ALT Odd/Even

TCE 009159301-02

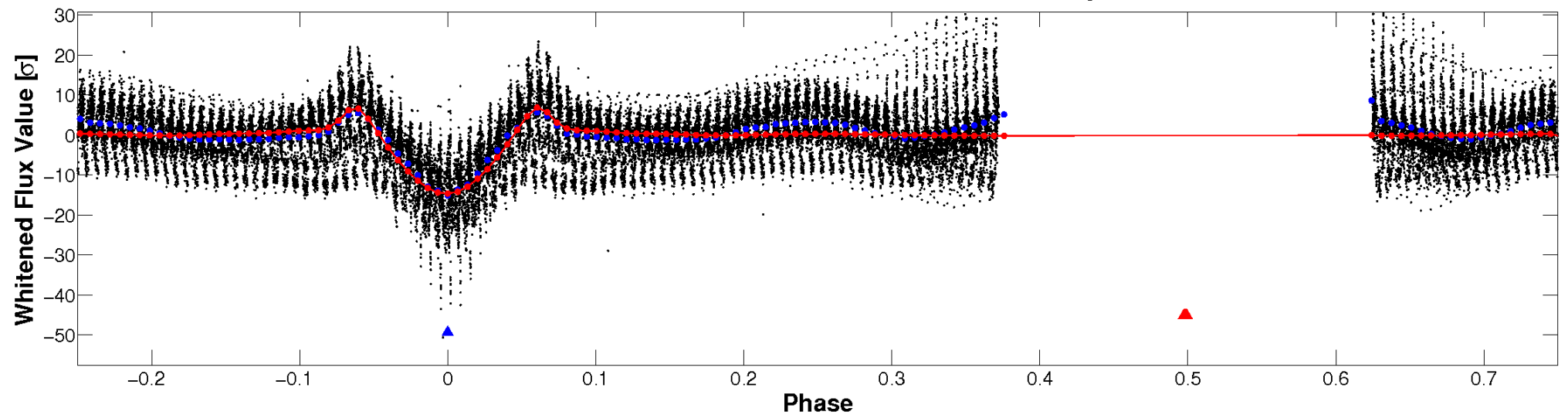


Non-Whitened Vs. Whitened Light Curve

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

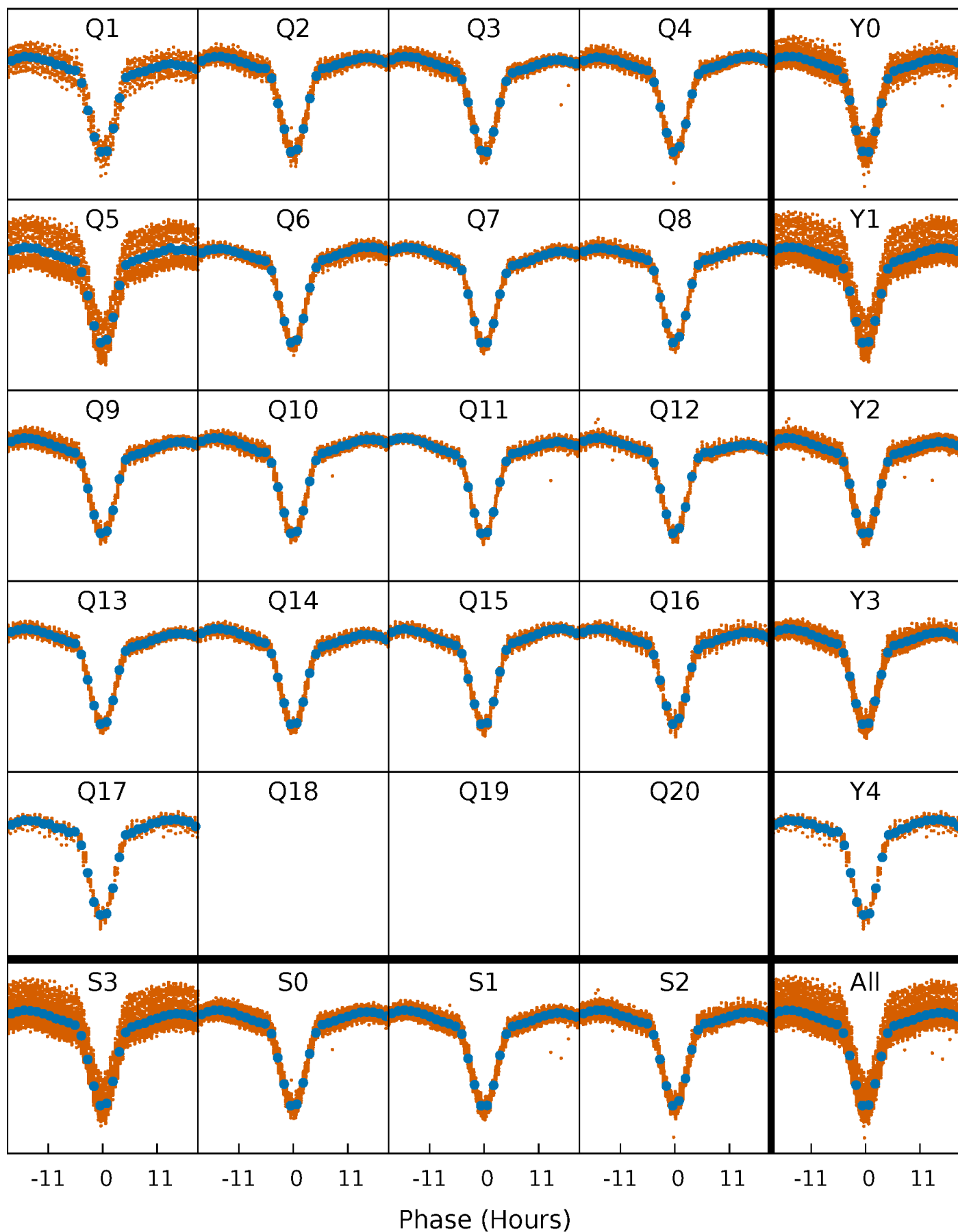


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



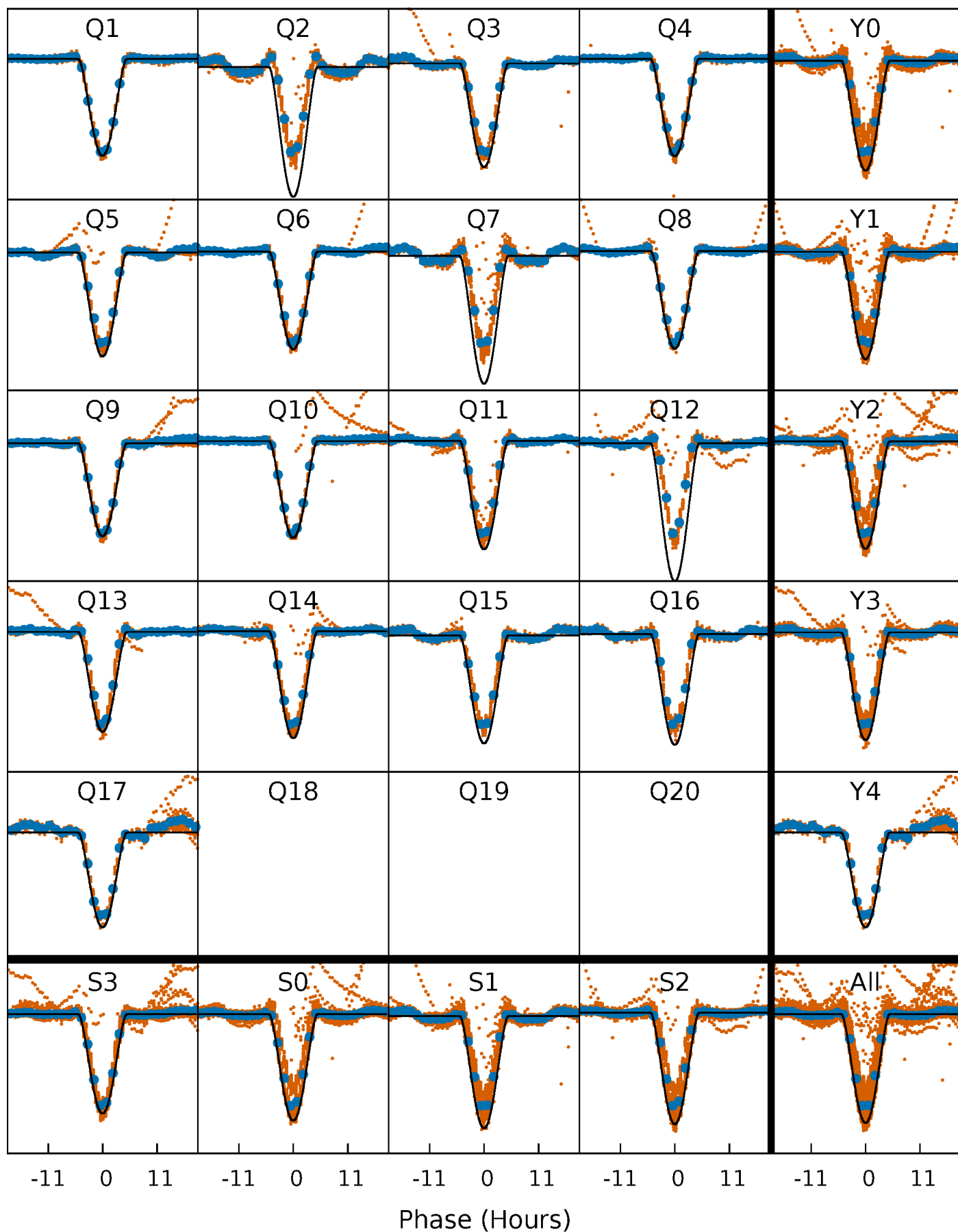
PDC Quarter-Phased Transit Curves

TCE 009159301-02 P= 3.044783 Days $T_0=133.957993$ (BKJD)



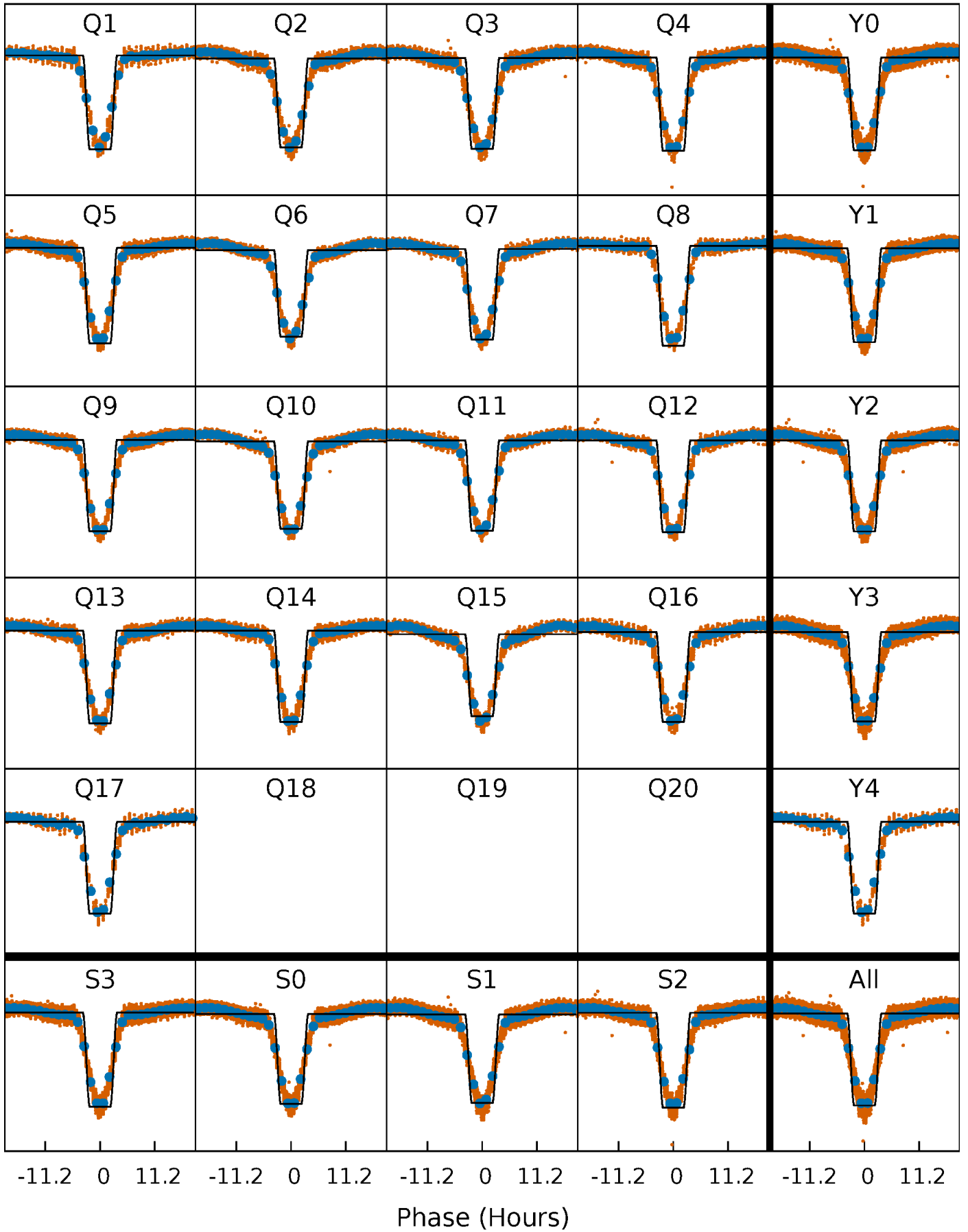
DV Quarter-Phased Transit Curves

TCE 009159301-02 P= 3.044783 Days $T_0=133.957993$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

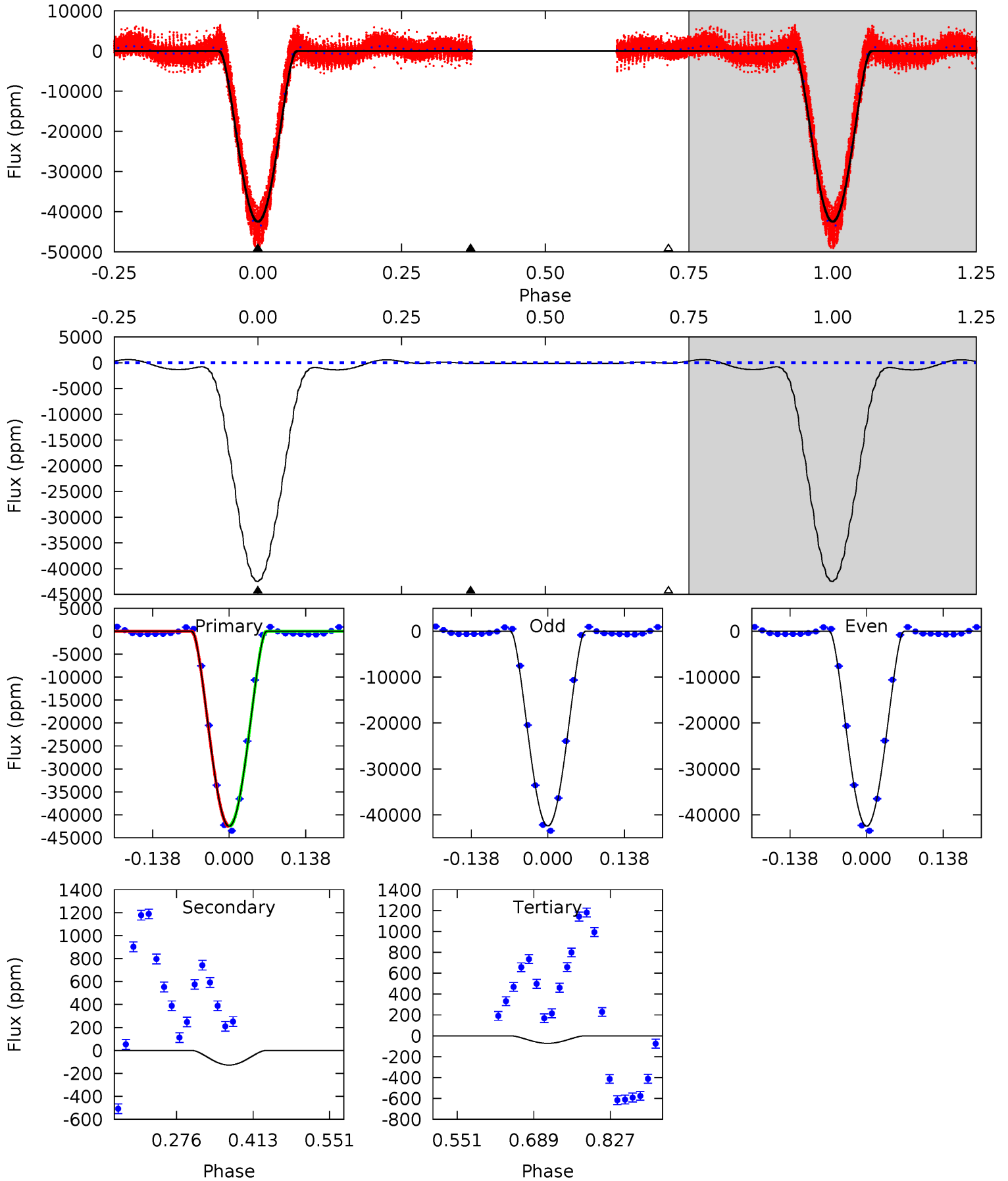
TCE 009159301-02 $P = 3.044769$ Days $T_0 = 133.960550$ (BKJD)



DV Model-Shift Uniqueness Test

009159301-02, P = 3.044783 Days, E = 130.913210 Days

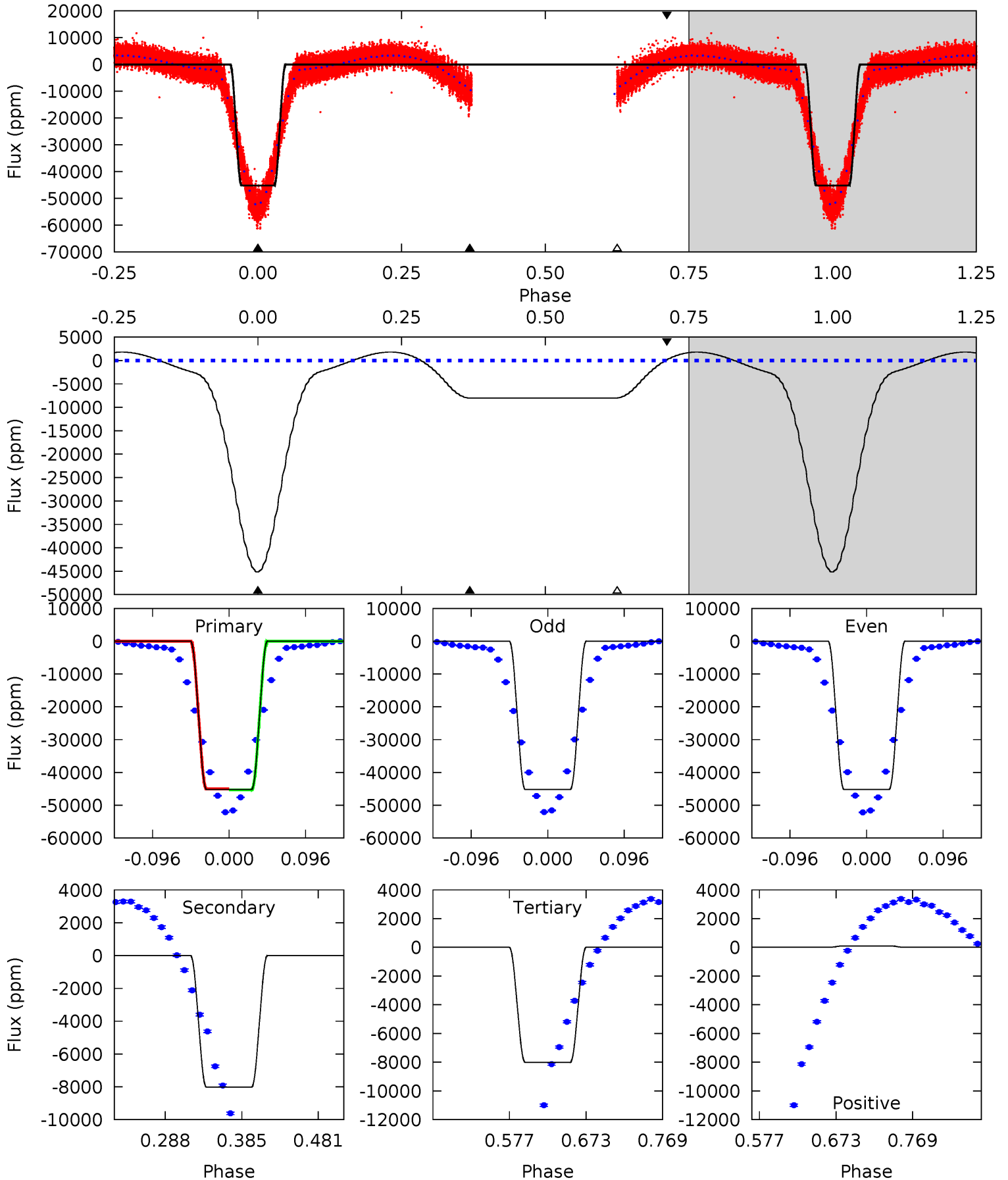
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2812	8.44	4.77	0	4.50	1.48	39.7	2807	2812	3.68	8.44	2.15	0.94	0.01	1.43



Alt Model-Shift Uniqueness Test

009159301-02, P = 3.044769 Days, E = 130.915781 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1042	185.0	184.7	2.36	4.57	1.66	57.4	857.4	1040	0.37	182.7	0.00	1.00	0.04	3.97



Stellar Parameters For KIC 009159301

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8199^{+199}_{-370}	$3.747^{+0.416}_{-0.104}$	$-0.120^{+0.200}_{-0.350}$	$3.163^{+0.766}_{-1.532}$	$2.039^{+0.332}_{-0.498}$	$0.091^{+0.355}_{-0.035}$
	+2%/-5%	+11%/-3%	+167%/-292%	+24%/-48%	+16%/-24%	+391%/-39%
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 009159301-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-128 ± 15	$109.32^{+25.26}_{-28.52}$	3788^{+278}_{-431}	-3477^{+268}_{-148}	$0.016^{+0.011}_{-0.006}$
Alt.	-8023 ± 43	$71.40^{+22.91}_{-21.11}$	3792^{+304}_{-442}	4923^{+619}_{-478}	$2.395^{+2.178}_{-0.981}$

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

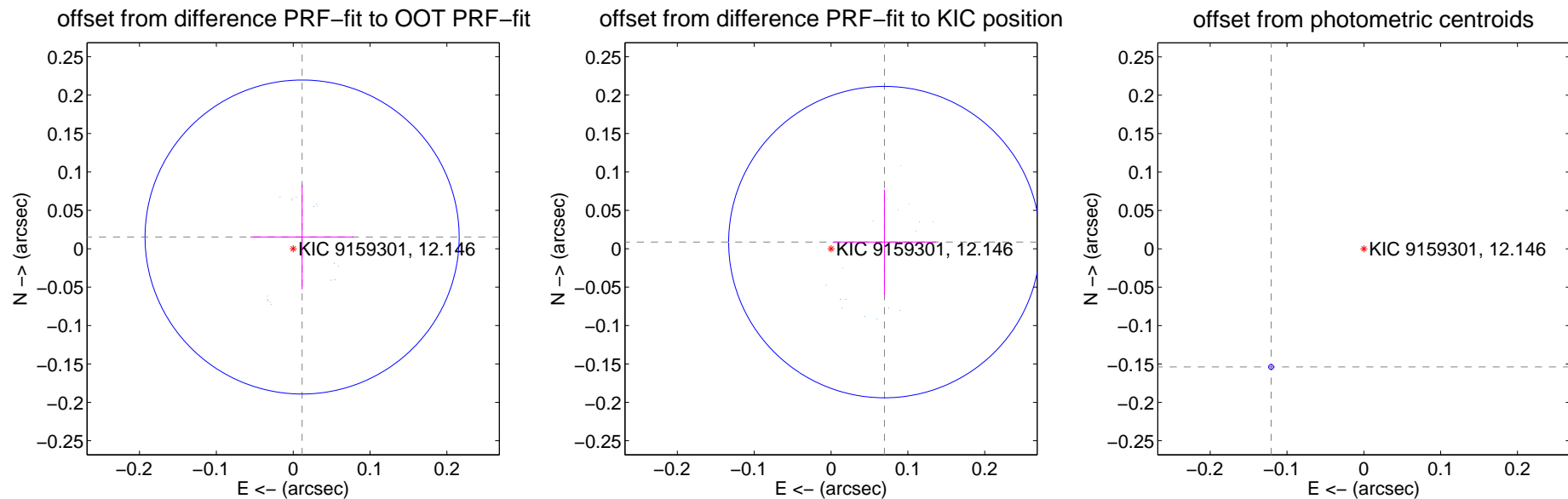
DV Centroid Data

Supplemental centroid analysis for 009159301-02. Kepler magnitude: 12.15. Transit SNR 900.75

There are 17 quarters with good PRF difference image offsets

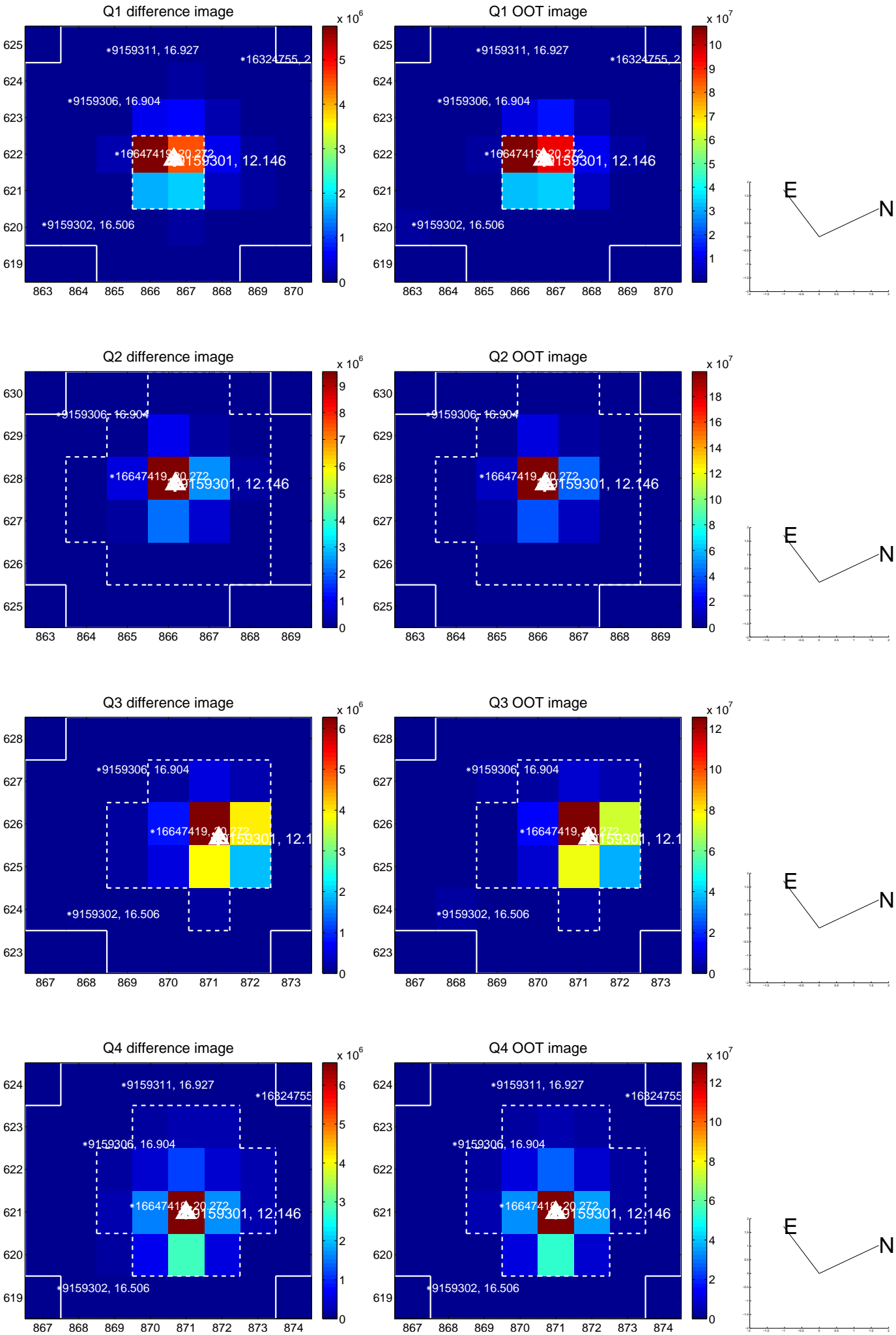
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.019 ± 0.068	0.28	-0.012 ± 0.067	0.015 ± 0.068
PRF-fit source offset from KIC position	0.070 ± 0.068	1.04	-0.069 ± 0.067	0.009 ± 0.068
photometric centroid source offset	0.20 ± 0.00	182.70	0.12 ± 0.00	-0.15 ± 0.00

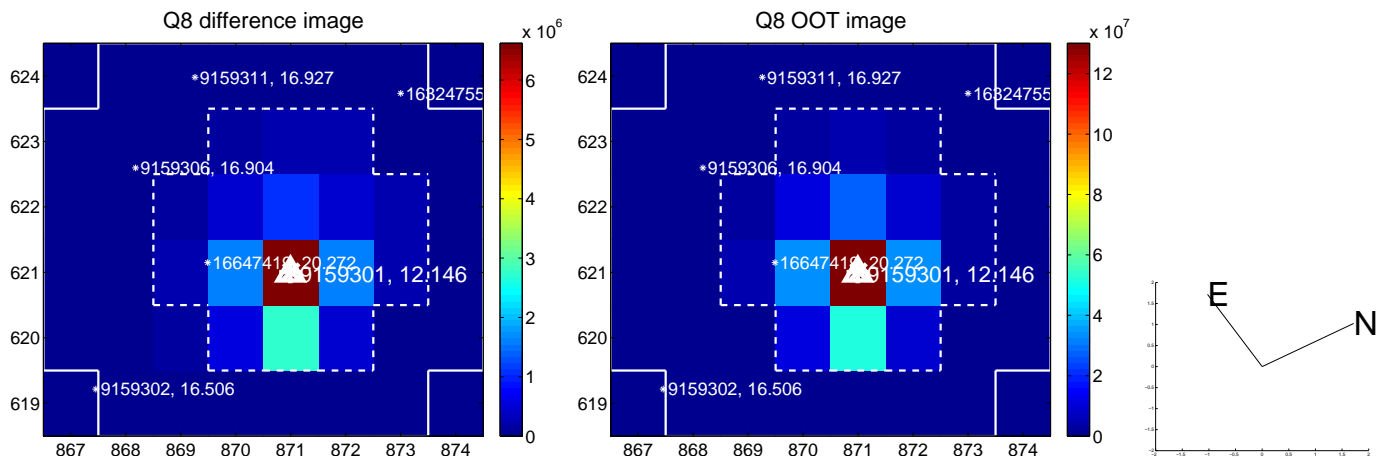
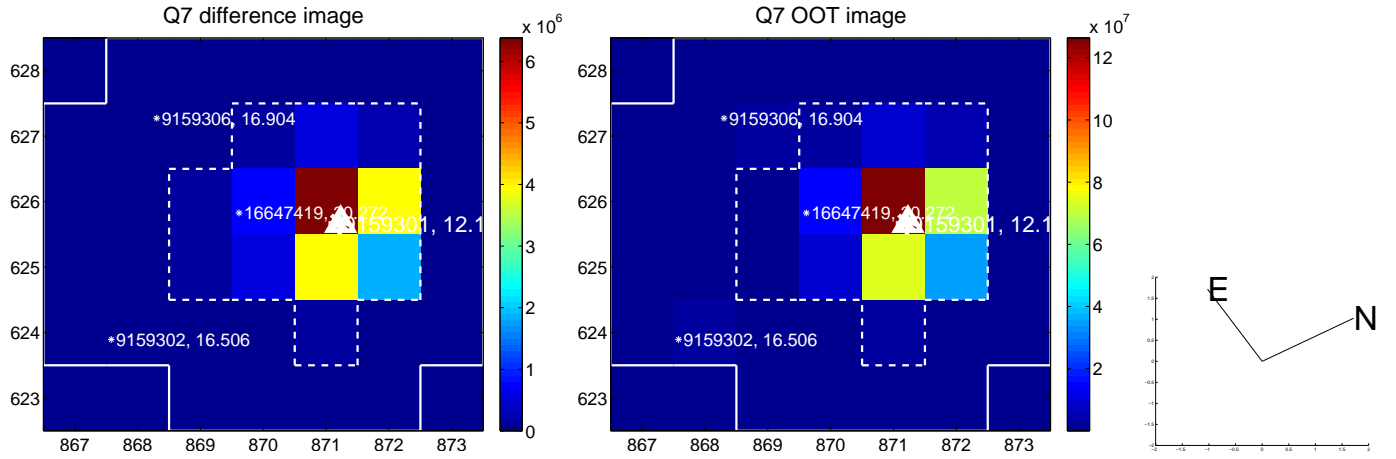
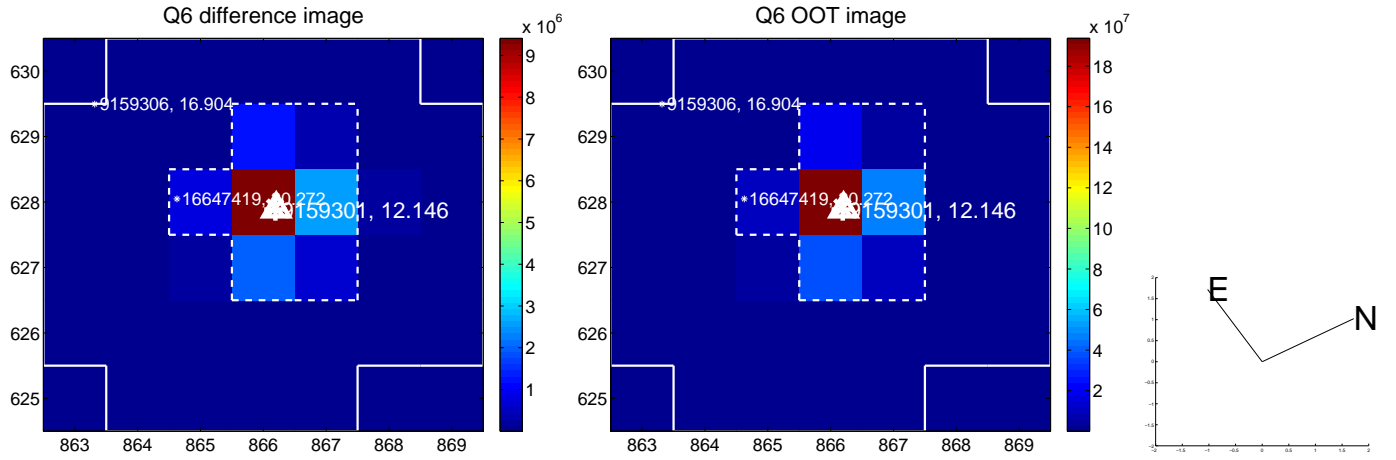
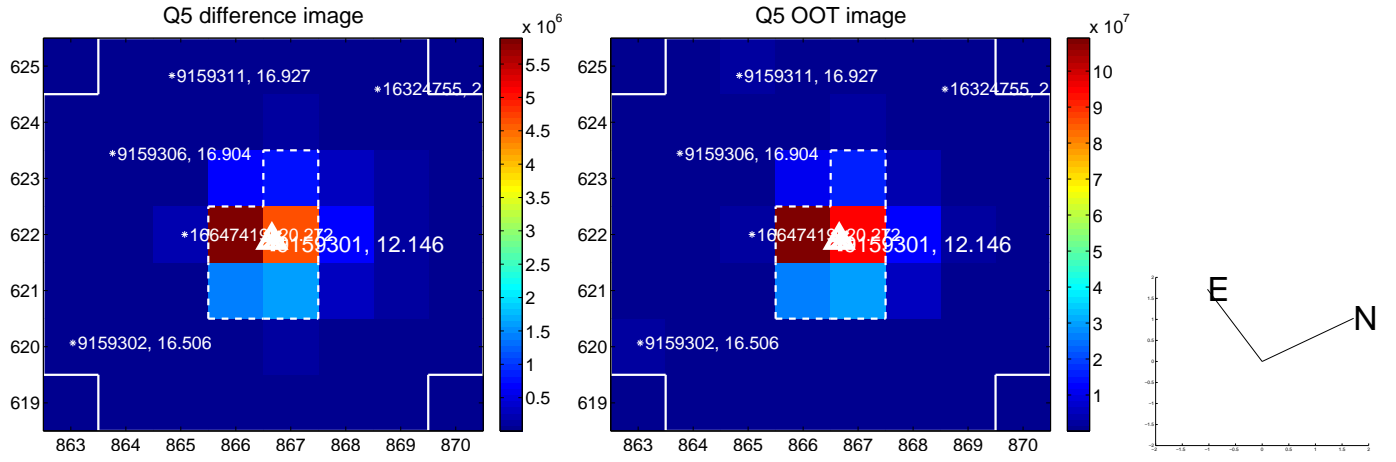


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

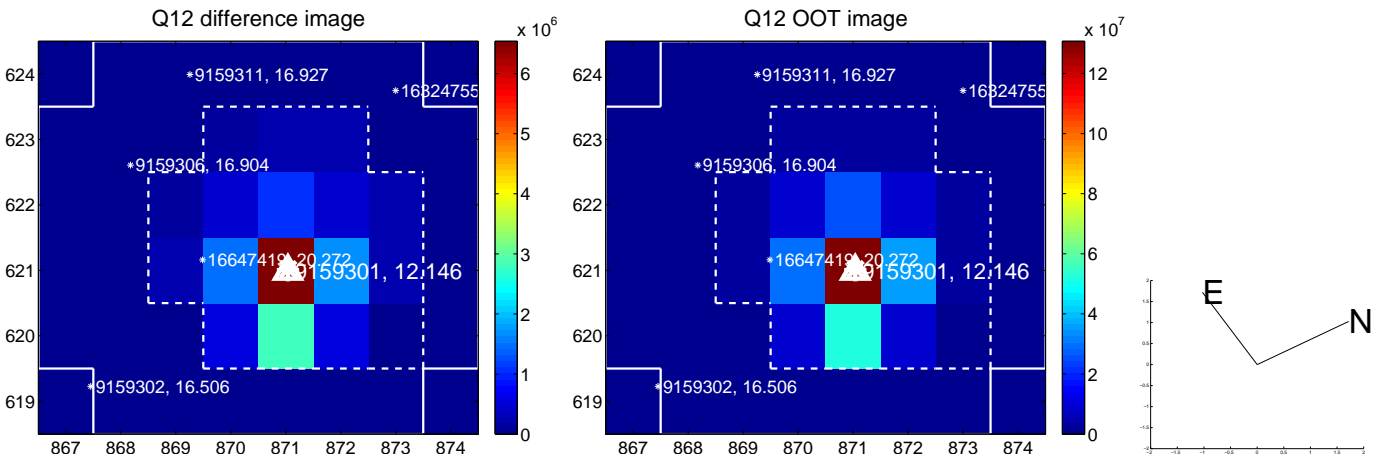
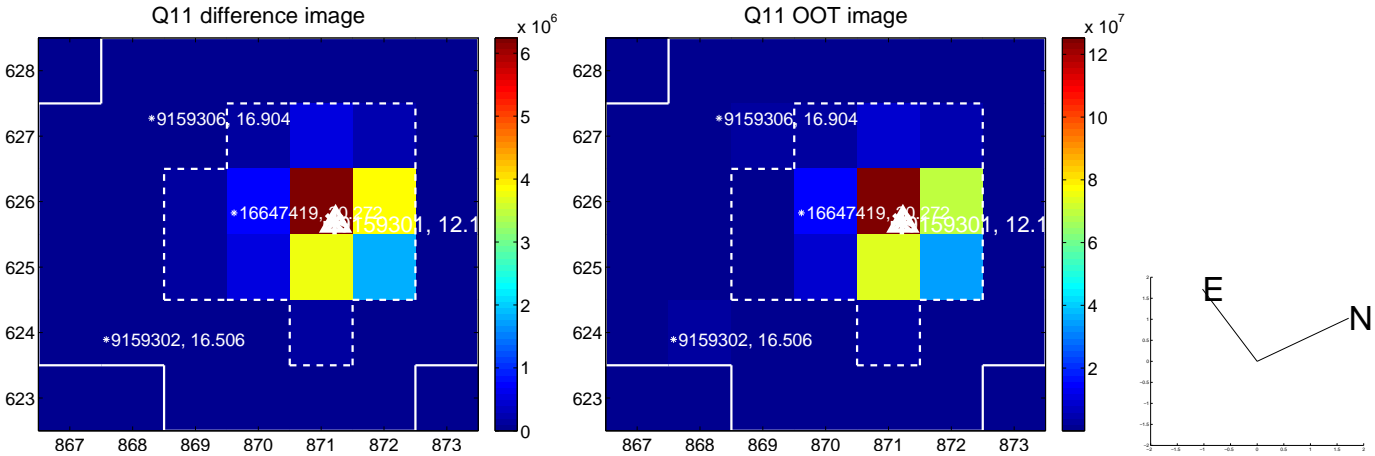
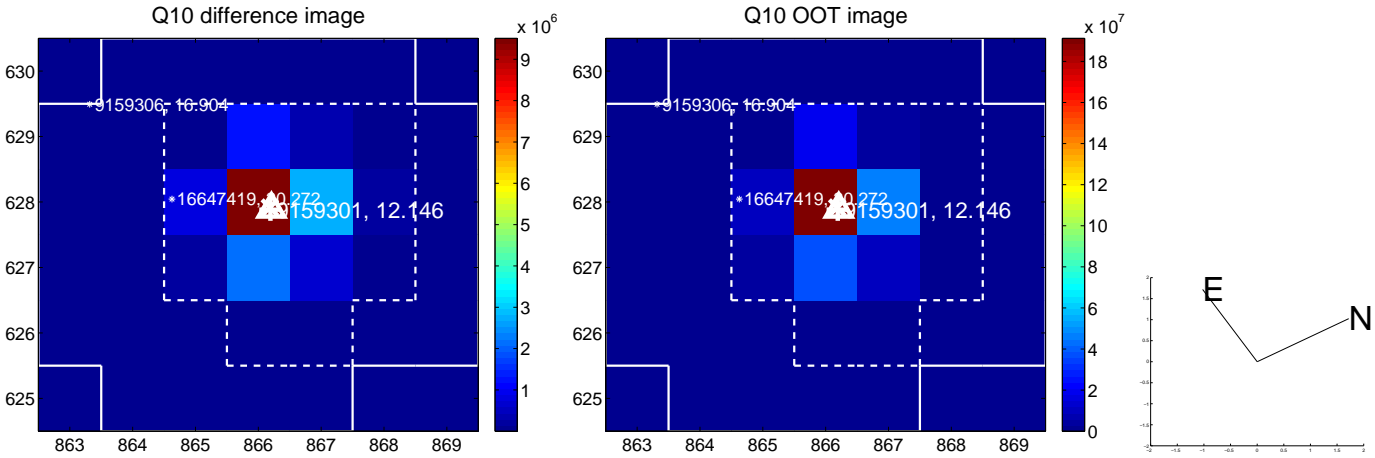
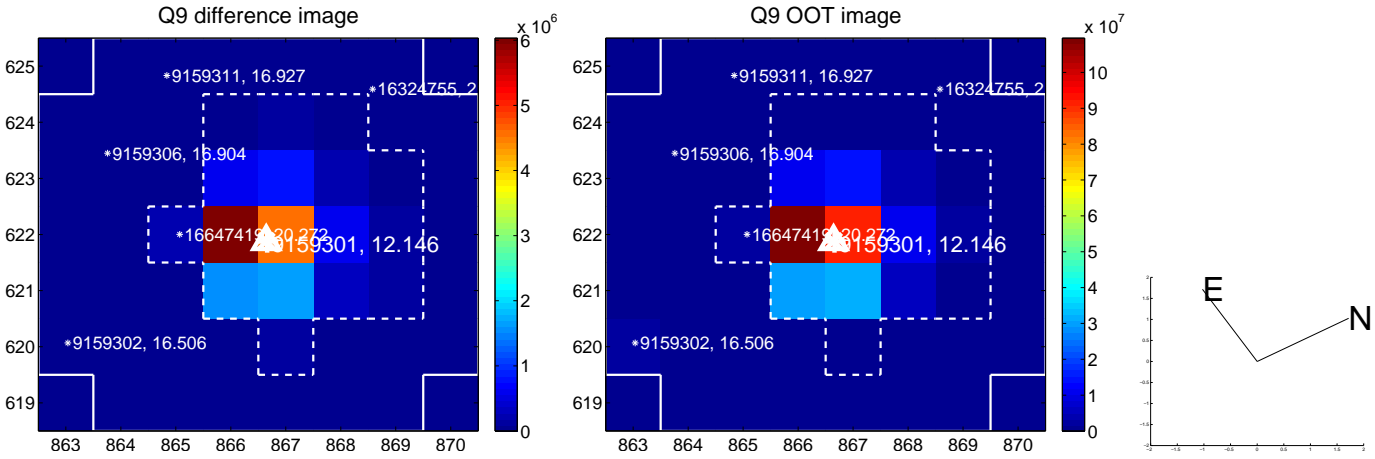
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



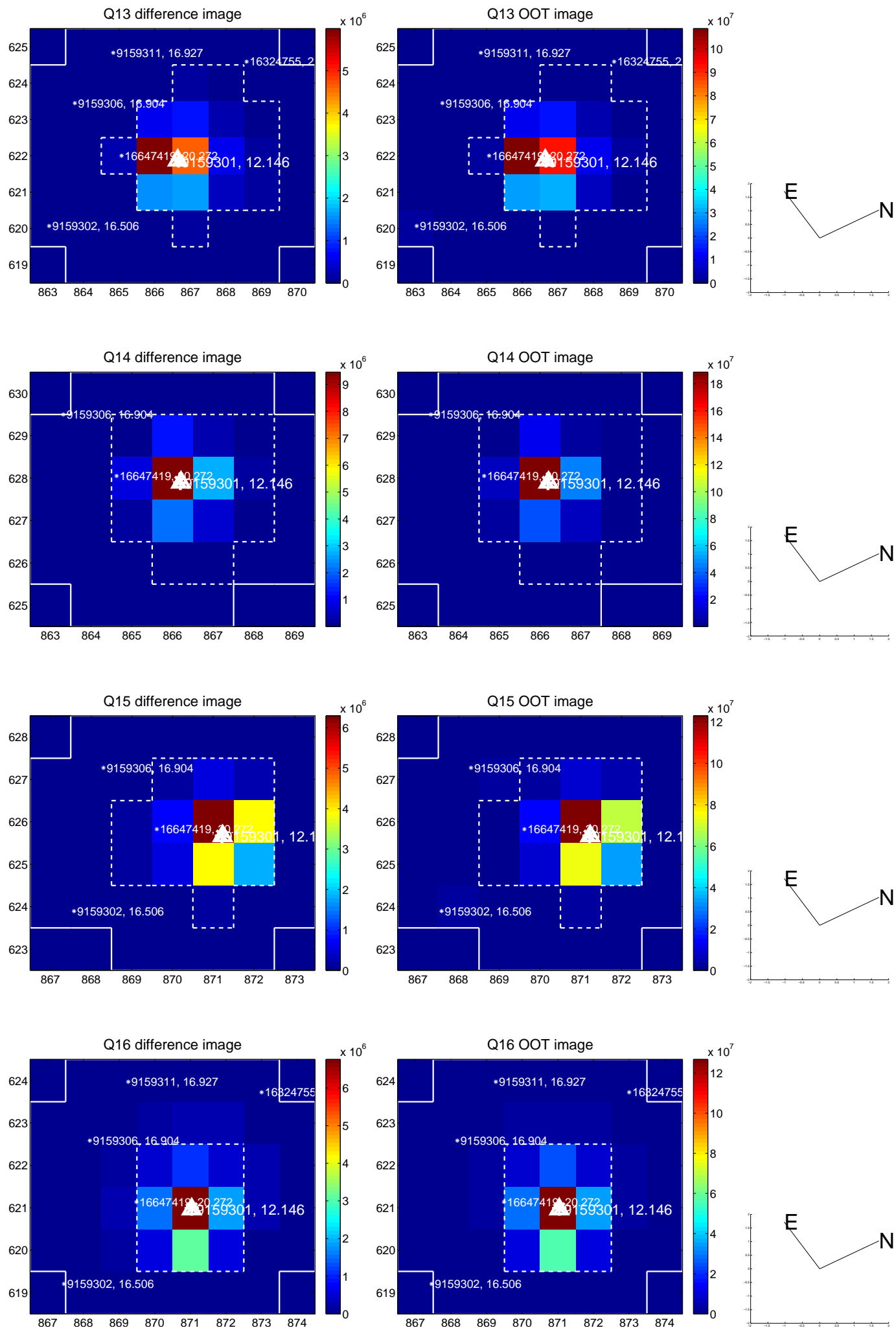
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



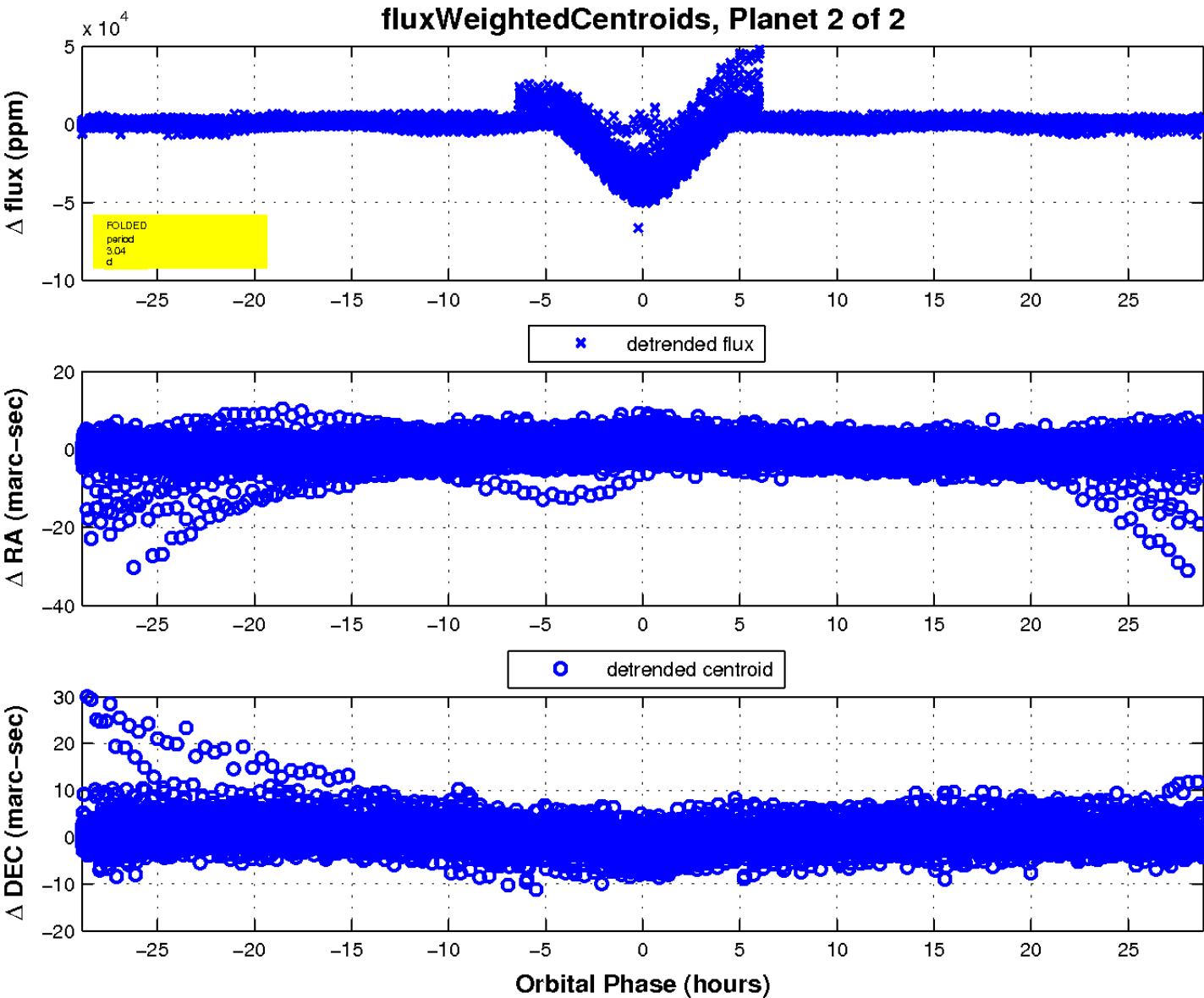
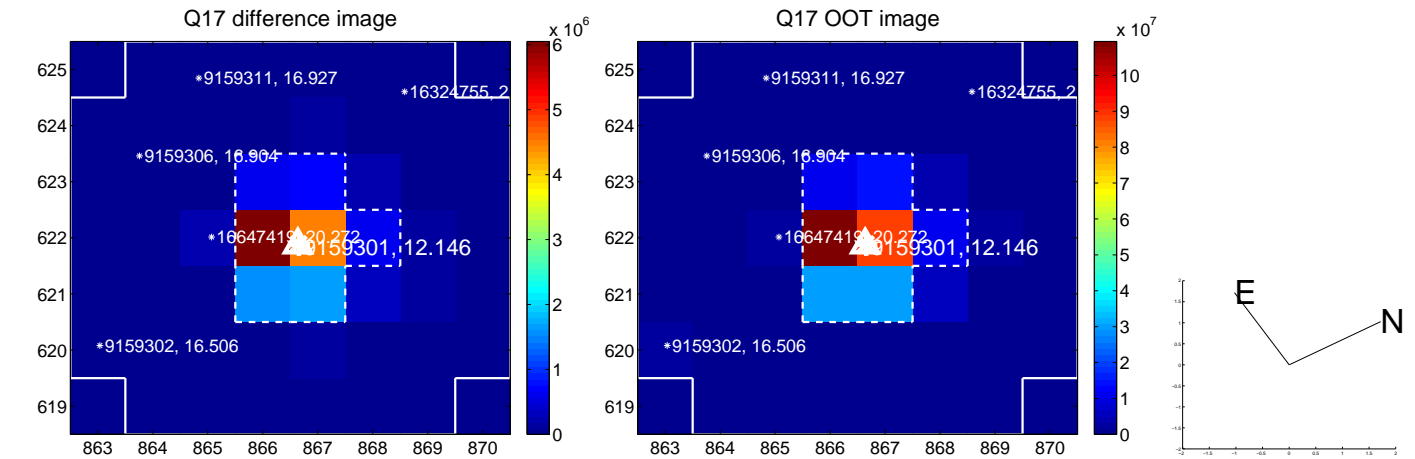
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

