

KIC 002309587

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})
002309587-01	OBS	5982.01	1.838512	132.101631	113407.9	3.173	2078.0	2106.6	1.05	5799	39.69	1444.95
002309587-02	OBS	No	3.677021	132.883448	2046.7	9.000	188.0	-1.0	1.05	5799	4.75	573.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002309587-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
002309587-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—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.

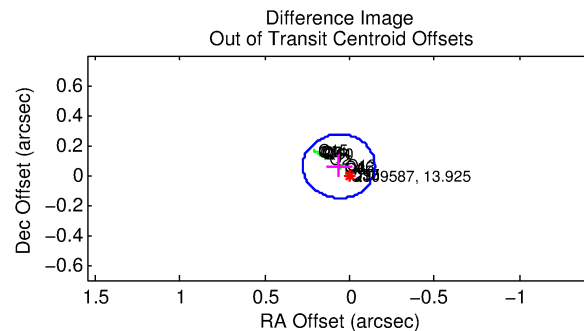
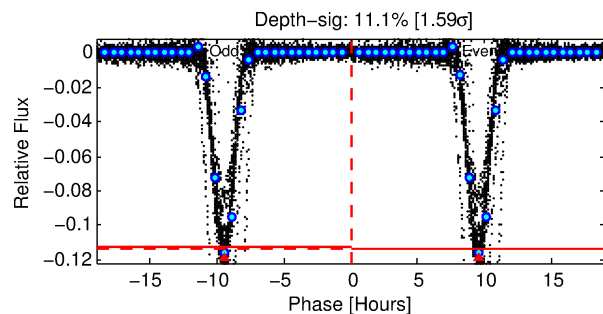
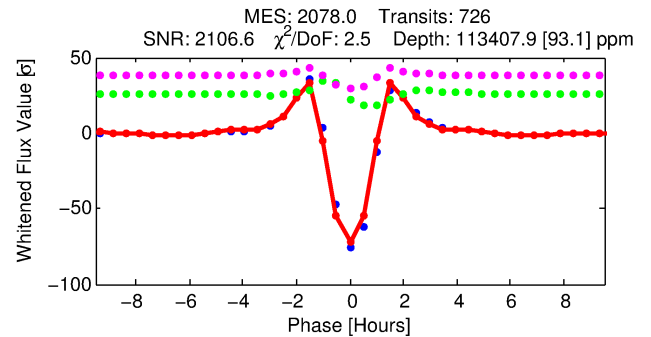
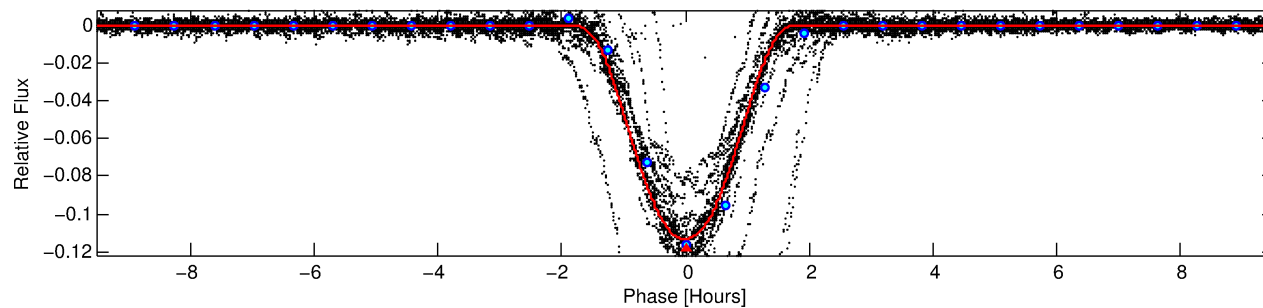
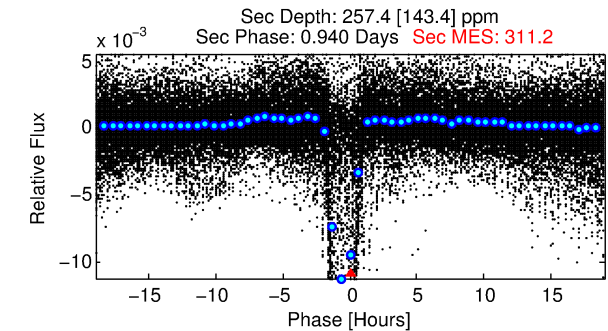
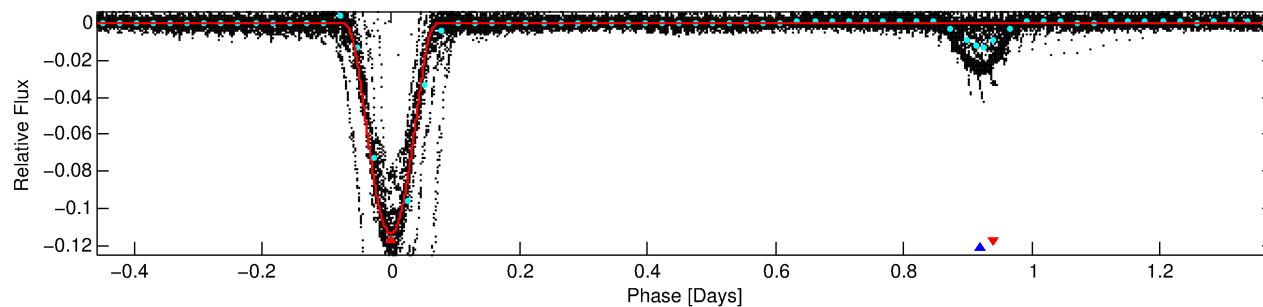
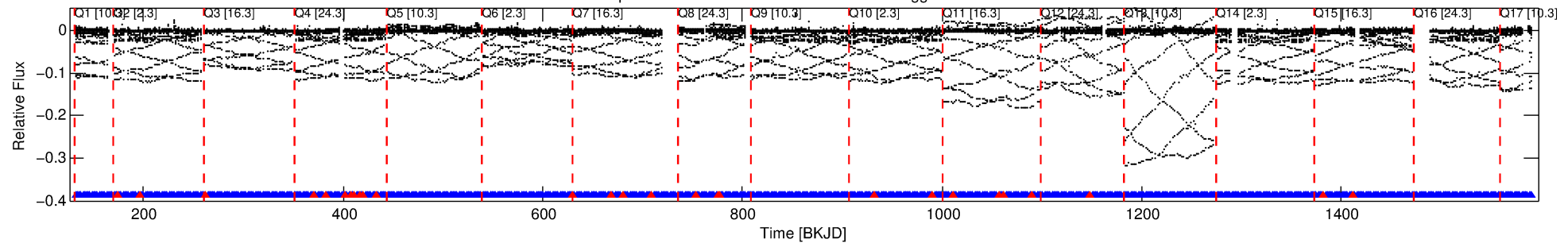
Ephemeris Match Information For 002309587-01

No Significant Match Found

DV One-Page Summary

KIC: 2309587 Candidate: 1 of 2 Period: 1.839 d
KOI: K05982.01 Corr: 0.980

Kp: 13.93 R*: 1.05 Rs Teff: 5799.0 K Logg: 4.33 Fe/H: -0.300



DV Fit Results:

Period = 1.83851 [0.00000] d
Epoch = 132.1016 [0.0000] BKJD
Rp/R* = 0.3447 [0.0005]
a/R* = 5.18 [0.00]
b = 0.70 [0.00]
Seff = 1444.95 [531.73]
Teff = 1572 [145] K
Rp = 39.69 [11.70] Re
a = 0.0279 [0.0068] AU
Ag = 0.07 [0.05] [-20.11σ]
Teffp = 1251 [178] K [-1.40σ]

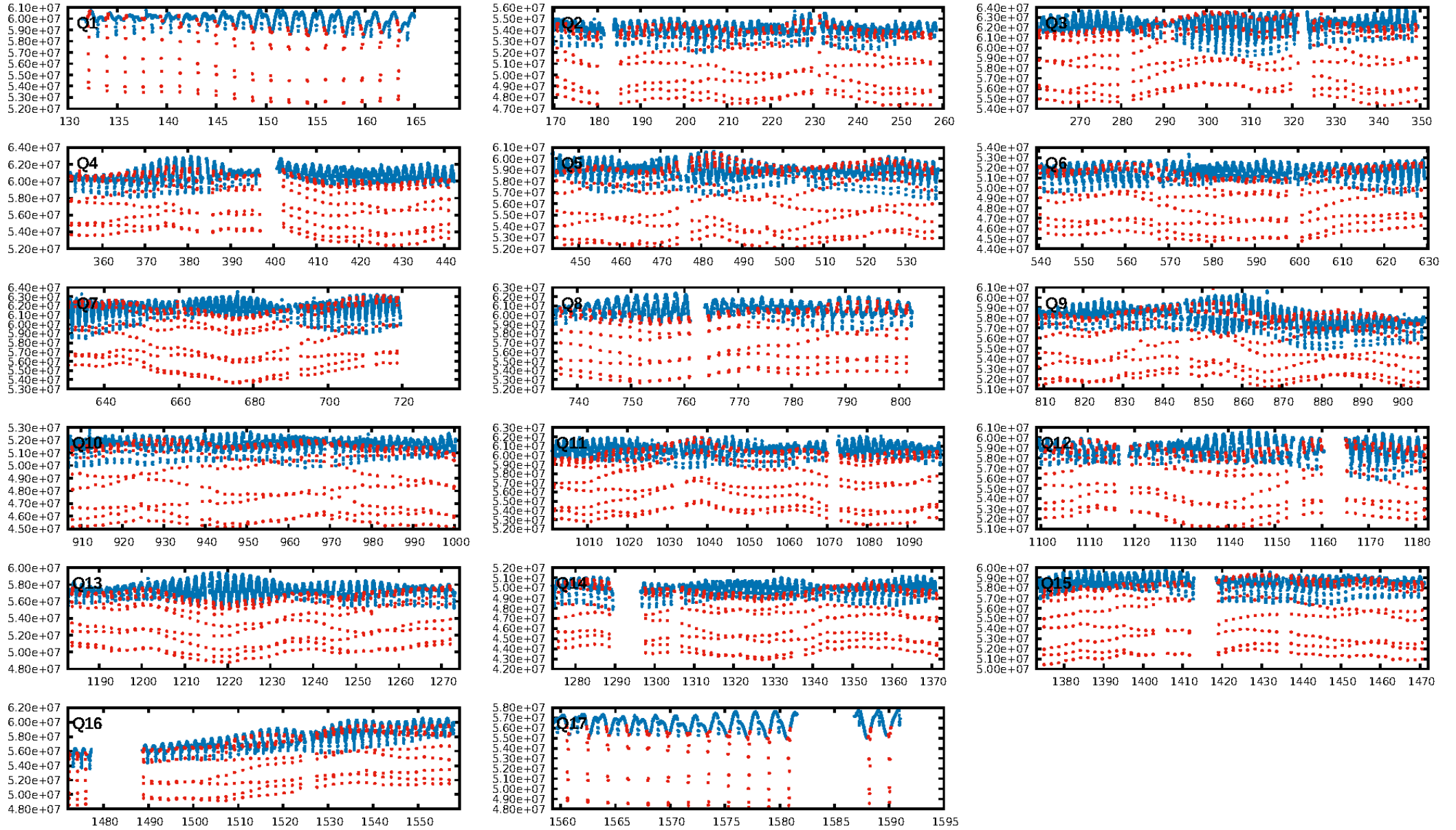
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [4.62σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.96 [667/694]
GhostDiagnostic-chr: 2.294
Centroid-sig: N/A
Centroid-so: 1.089 arcsec [960.42σ]
OotOffset-rm: 0.088 arcsec [1.23σ]
KicOffset-rm: 0.161 arcsec [2.41σ]
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]

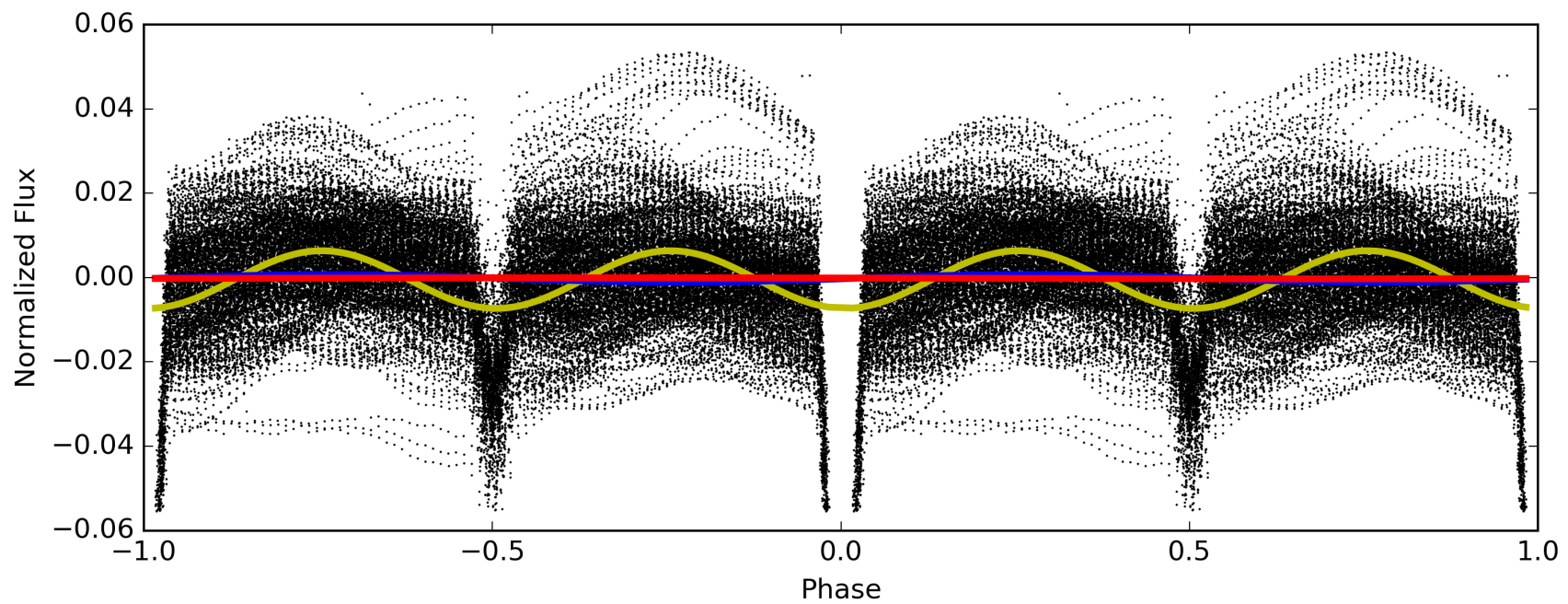
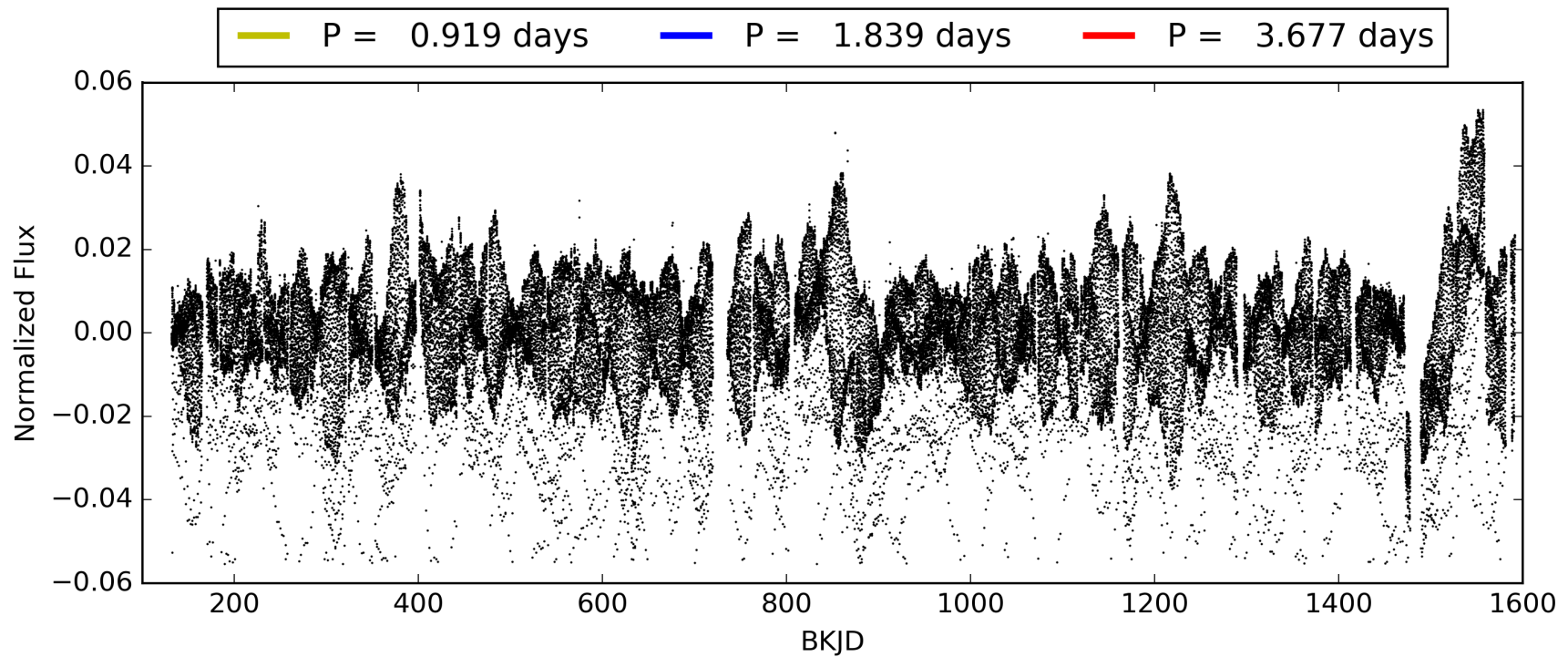
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:58:20 Z

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

TCE 002309587-01, PDC Light Curves

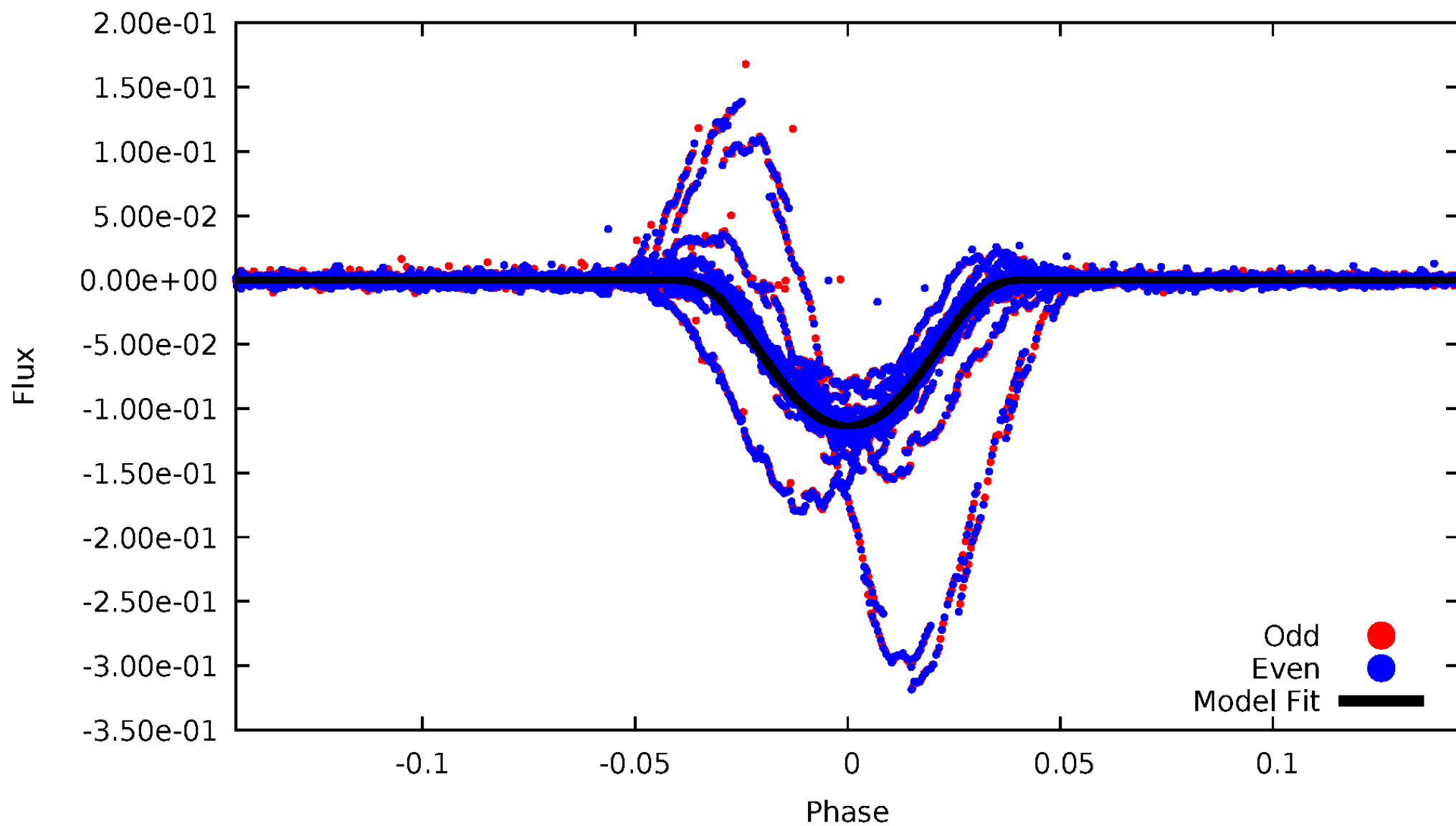


TCE 002309587-01



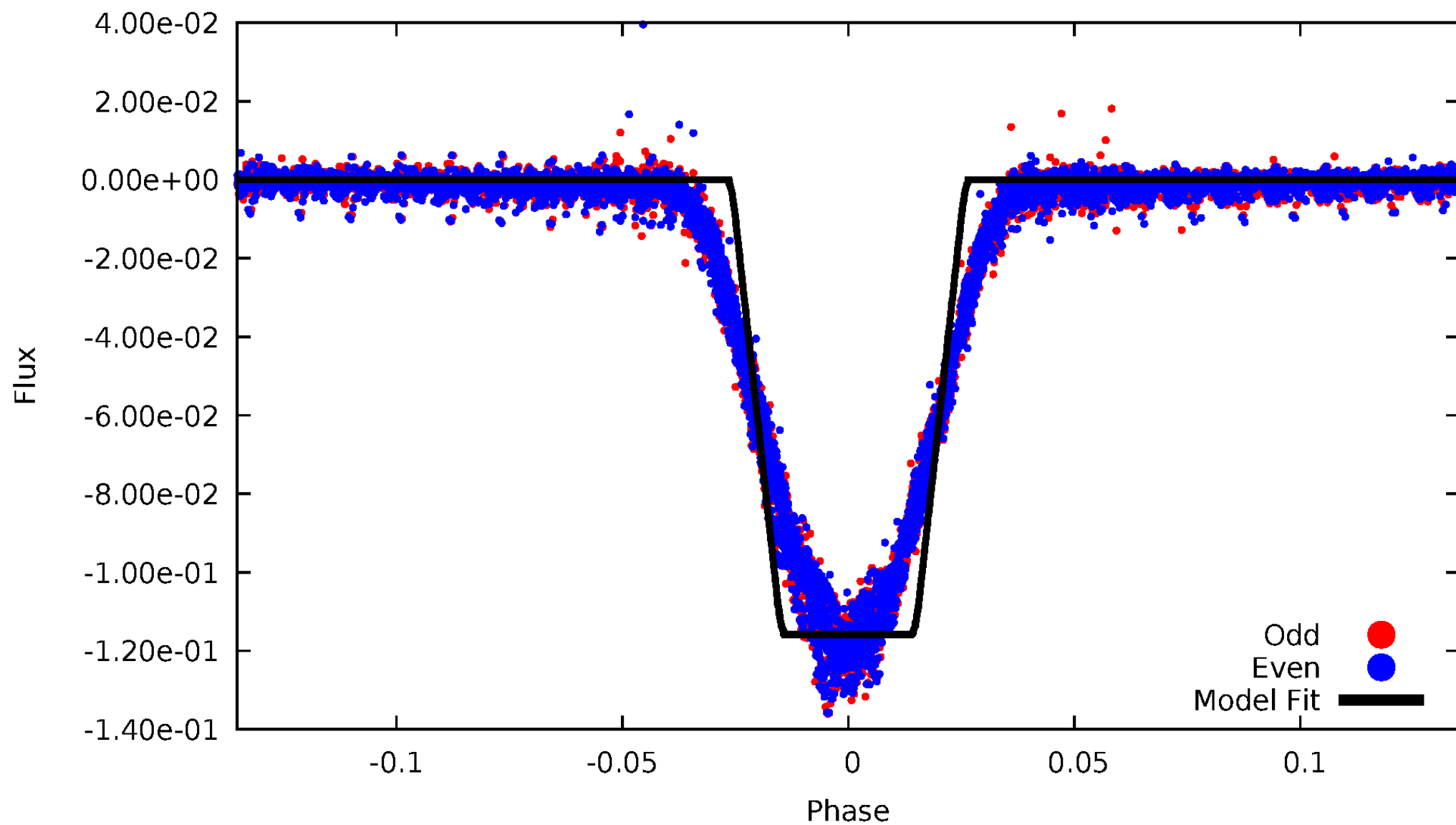
DV Odd/Even

TCE 002309587-01



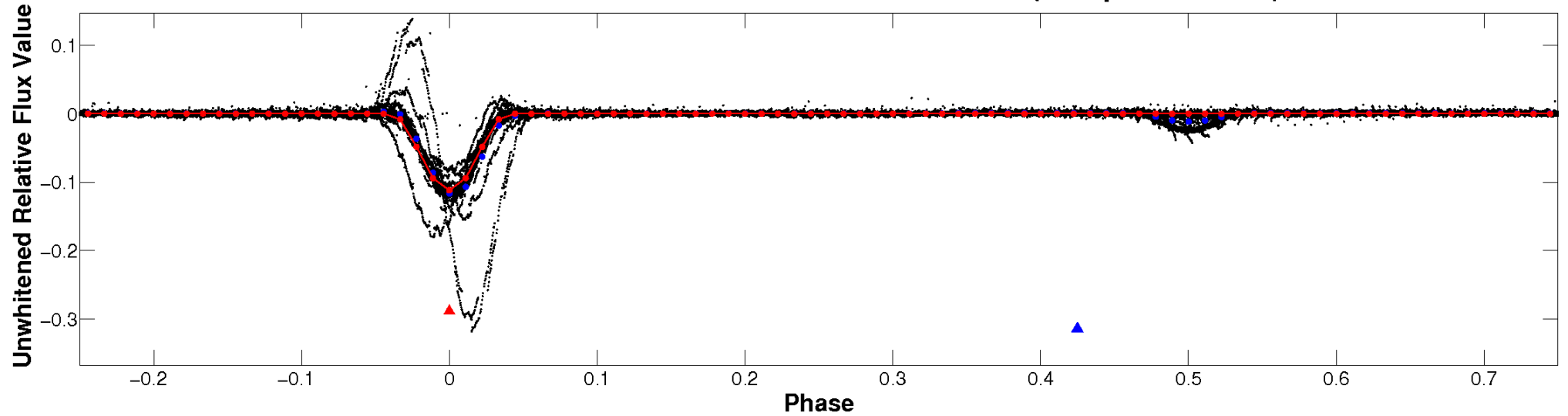
ALT Odd/Even

TCE 002309587-01

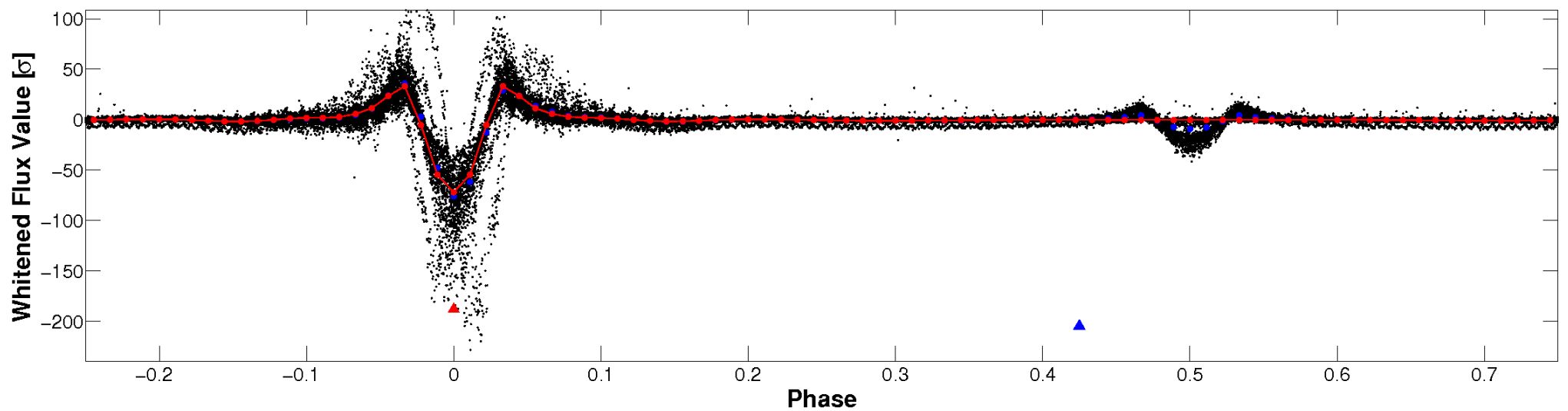


Non-Whitened Vs. Whitened Light Curve

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

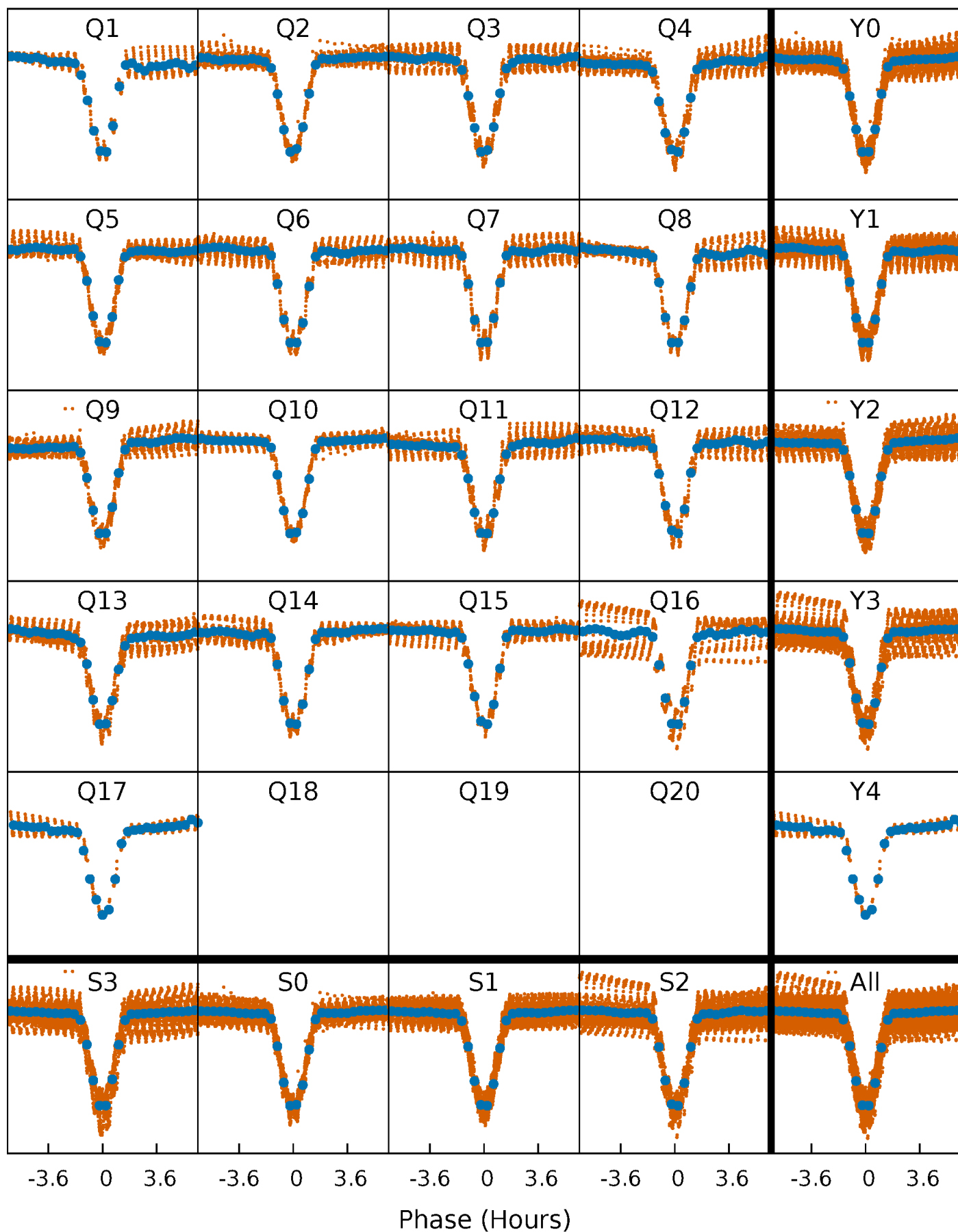


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



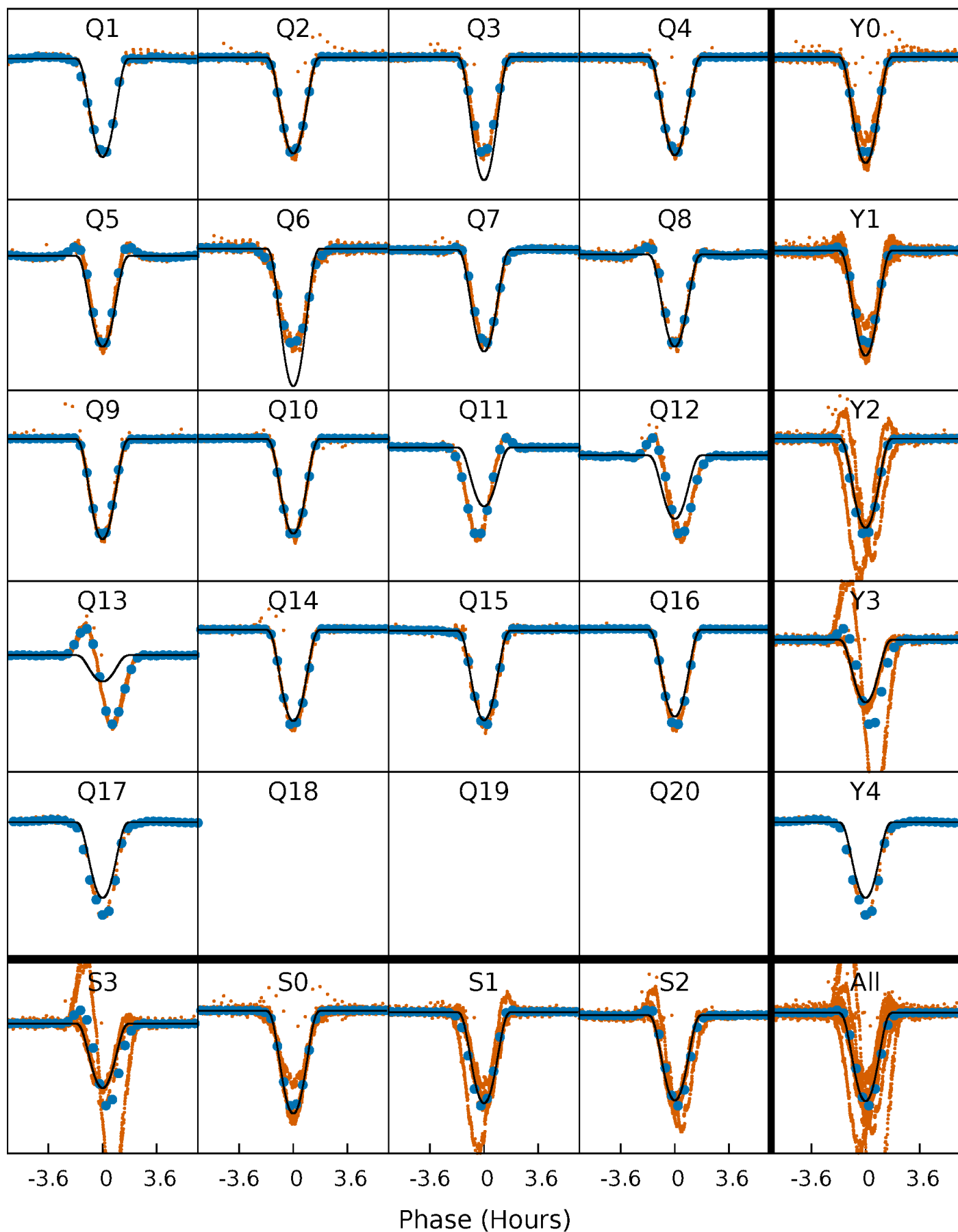
PDC Quarter-Phased Transit Curves

TCE 002309587-01 P= 1.838512 Days $T_0=132.101631$ (BKJD)



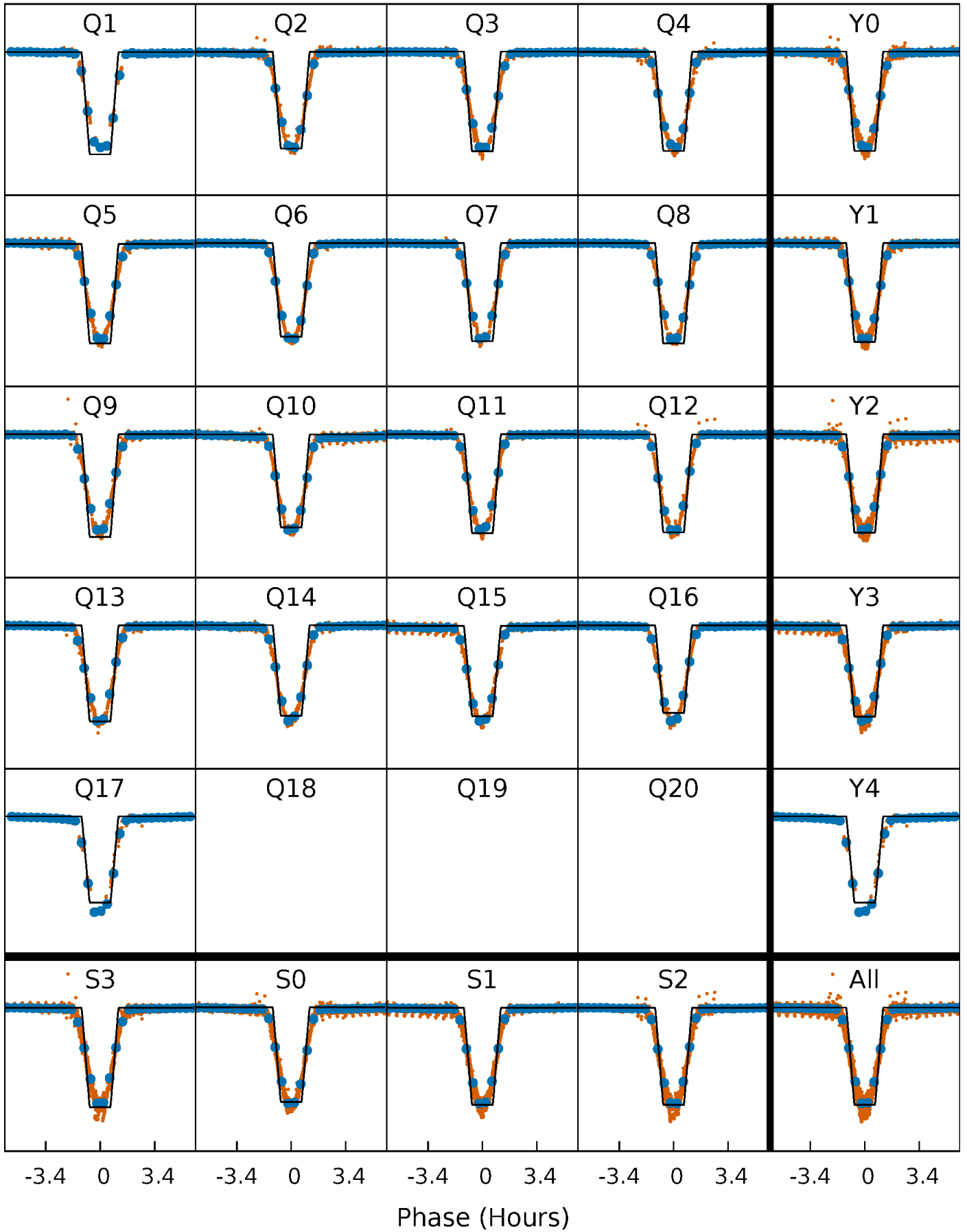
DV Quarter-Phased Transit Curves

TCE 002309587-01 P= 1.838512 Days $T_0=132.101631$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

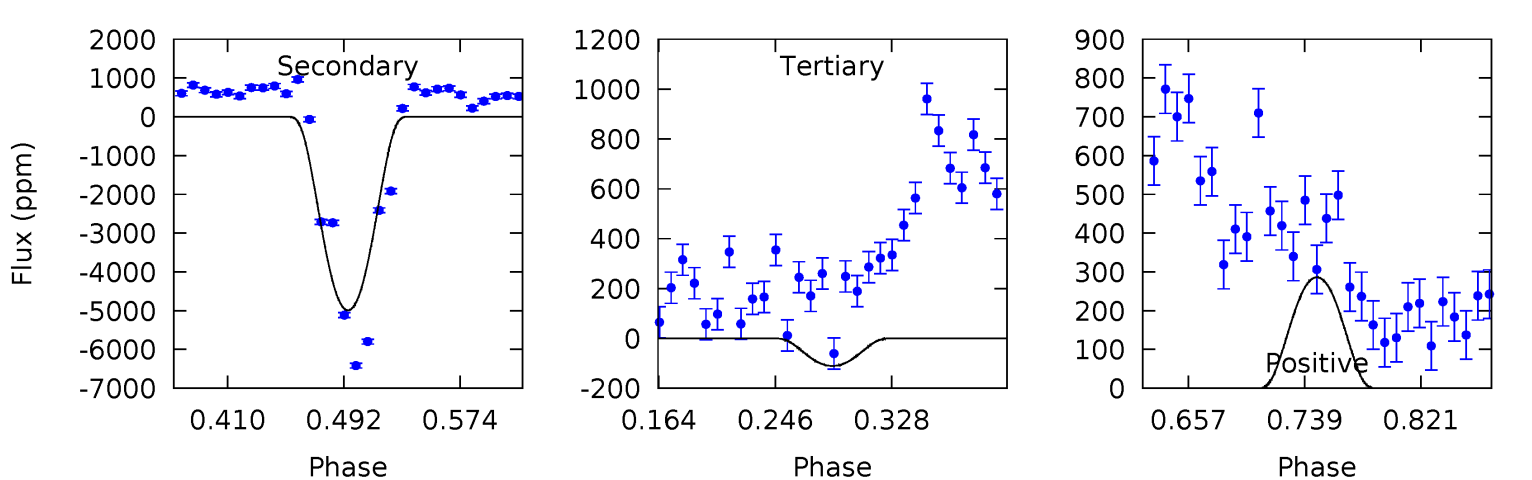
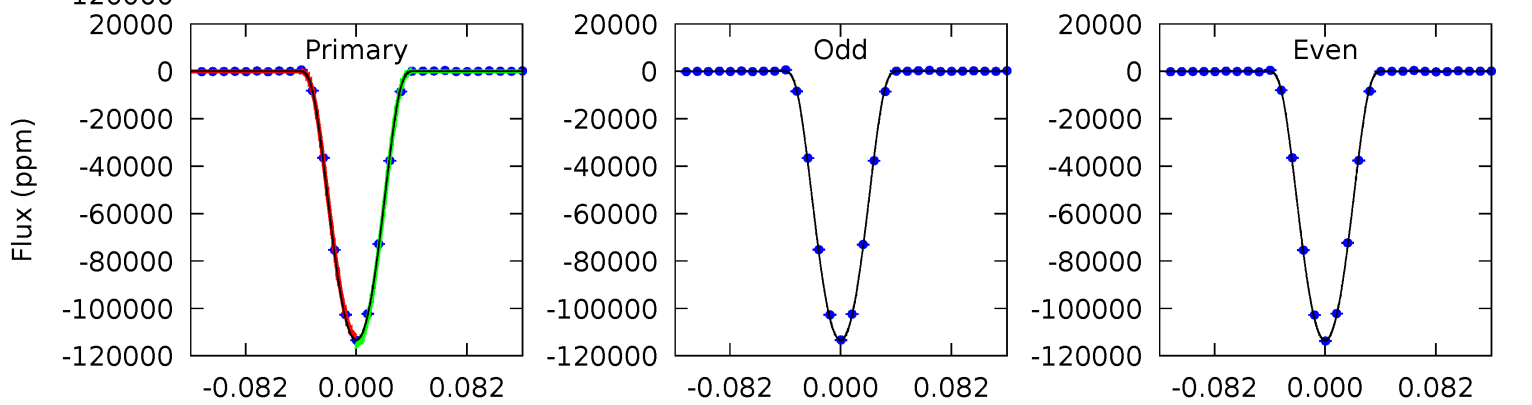
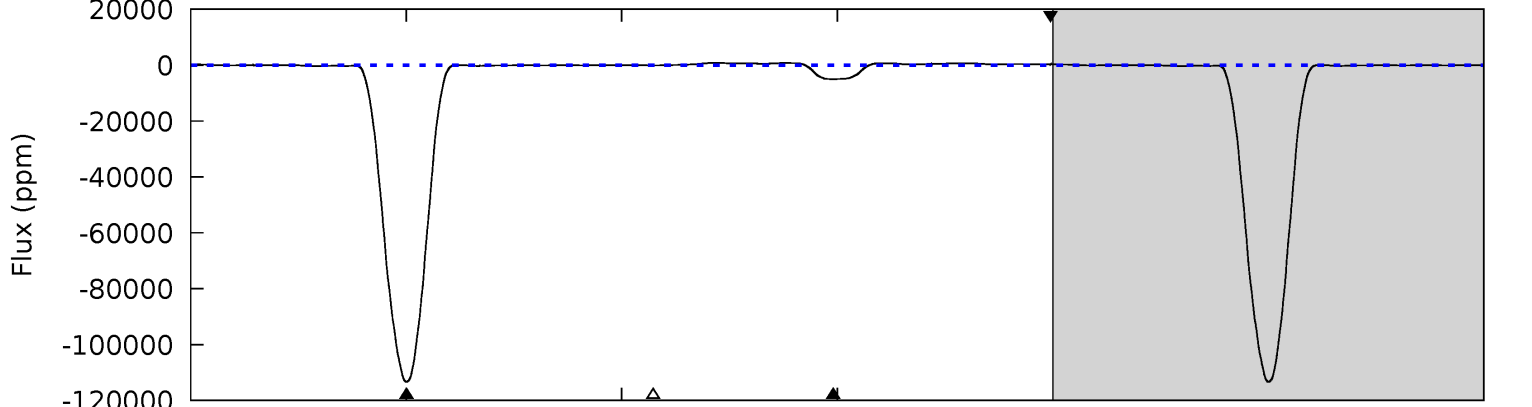
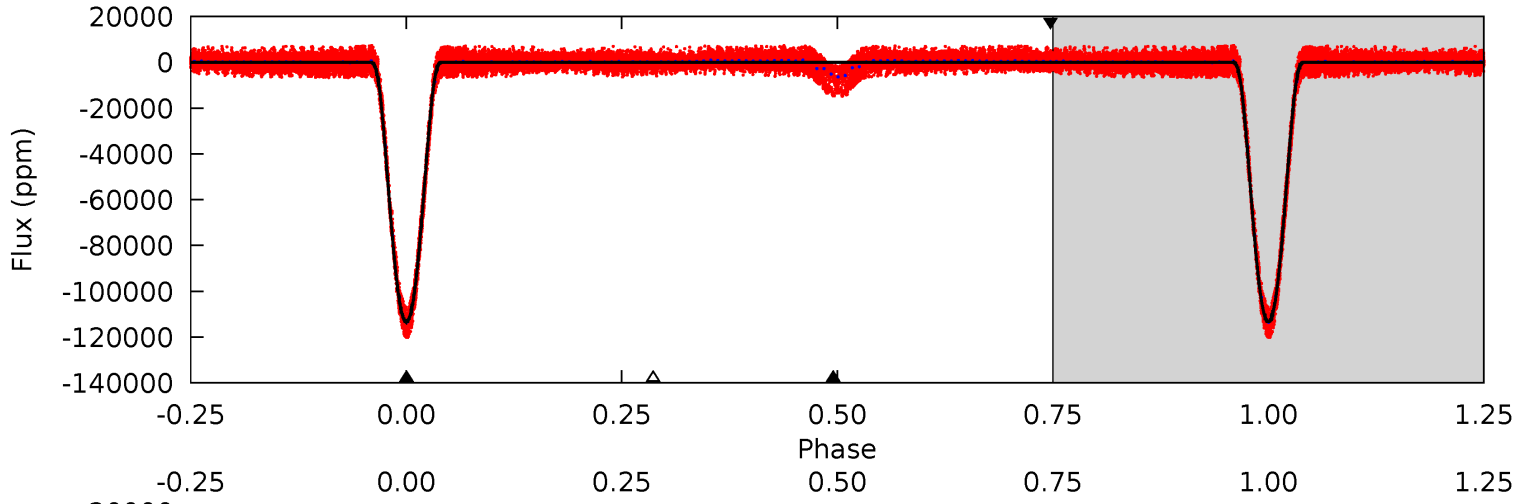
TCE 002309587-01 P= 1.838519 Days $T_0=132.099230$ (BKJD)



DV Model-Shift Uniqueness Test

002309587-01, P = 1.838512 Days, E = 130.263119 Days

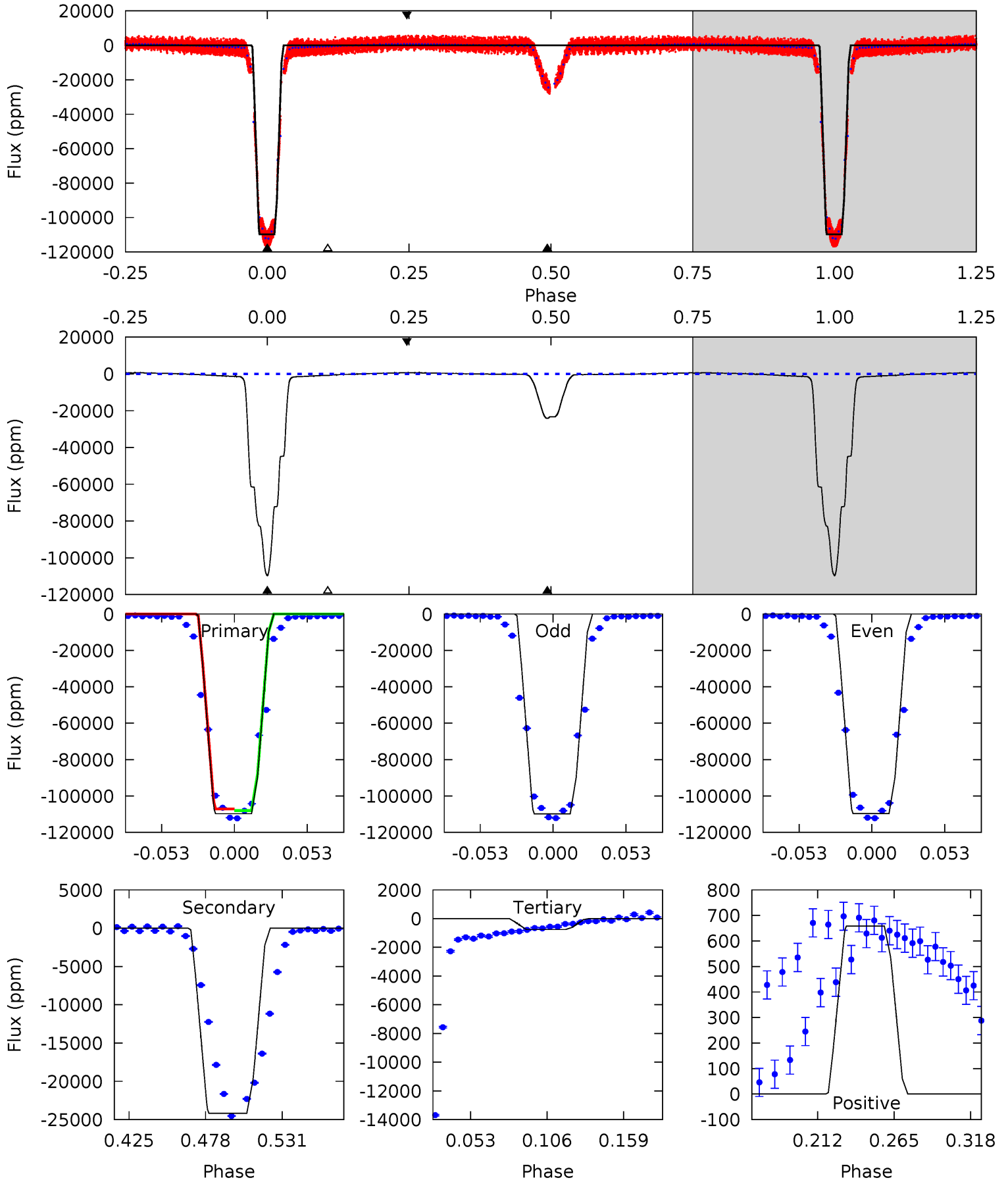
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3553	156.4	3.46	8.97	4.61	1.74	9.24	3550	3544	153.0	147.5	1.98	1.03	0.01	0



Alt Model-Shift Uniqueness Test

002309587-01, P = 1.838519 Days, E = 130.260711 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2893	637.7	20.0	17.4	4.70	1.93	13.9	2873	2876	617.7	620.4	1.14	1.00	0.01	0



Stellar Parameters For KIC 002309587

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5799^{+157}_{-157}	$4.326^{+0.190}_{-0.190}$	$-0.300^{+0.300}_{-0.300}$	$1.055^{+0.311}_{-0.233}$	$0.861^{+0.131}_{-0.070}$	$1.032^{+0.982}_{-0.498}$
	+3%/-3%	+4%/-4%	+100%/-100%	+29%/-22%	+15%/-8%	+95%/-48%
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 002309587-01 / KOI 5982.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-4991 ± 32	$39.68^{+6.94}_{-4.95}$	2196^{+175}_{-160}	3097^{+57}_{-68}	$1.382^{+0.424}_{-0.365}$
Alt.	-24183 ± 38	$39.31^{+6.62}_{-4.73}$	2199^{+167}_{-155}	4168^{+87}_{-86}	$6.978^{+2.027}_{-1.741}$

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 $A_{obs} \gg 1.0$

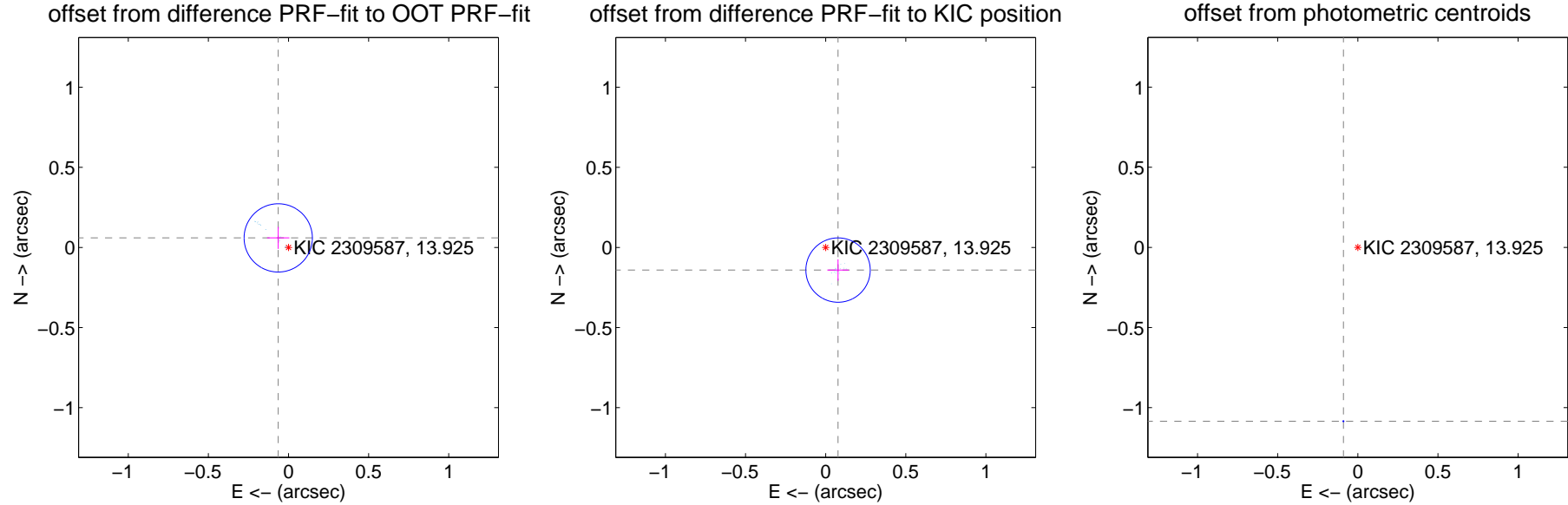
DV Centroid Data

Supplemental centroid analysis for 002309587-01. Kepler magnitude: 13.93. Transit SNR 2106.57

There are 17 quarters with good PRF difference image offsets

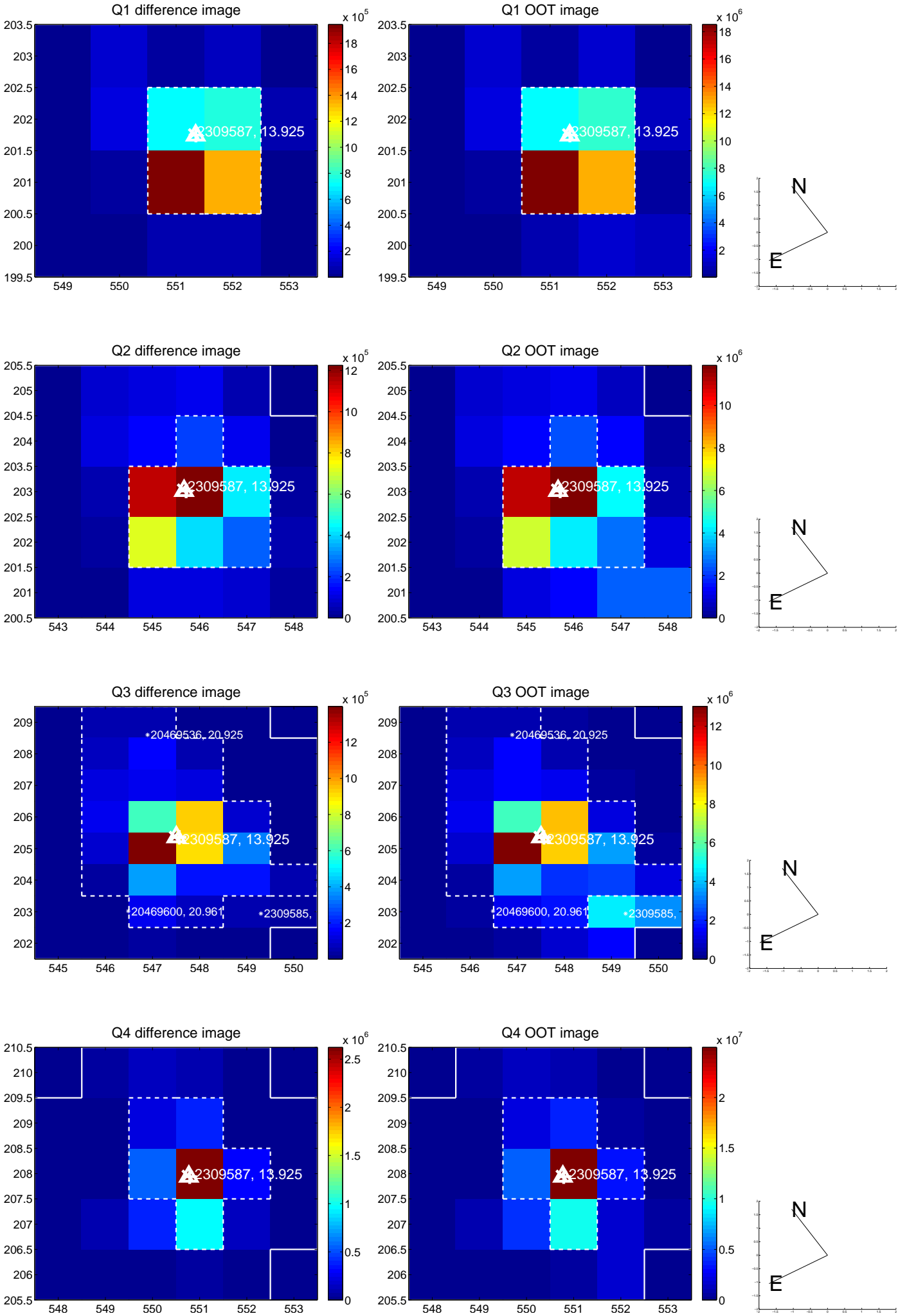
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.088 ± 0.071	1.23	0.064 ± 0.069	0.060 ± 0.069
PRF-fit source offset from KIC position	0.161 ± 0.067	2.41	-0.077 ± 0.067	-0.141 ± 0.067
photometric centroid source offset	1.09 ± 0.00	960.42	0.09 ± 0.00	-1.08 ± 0.00

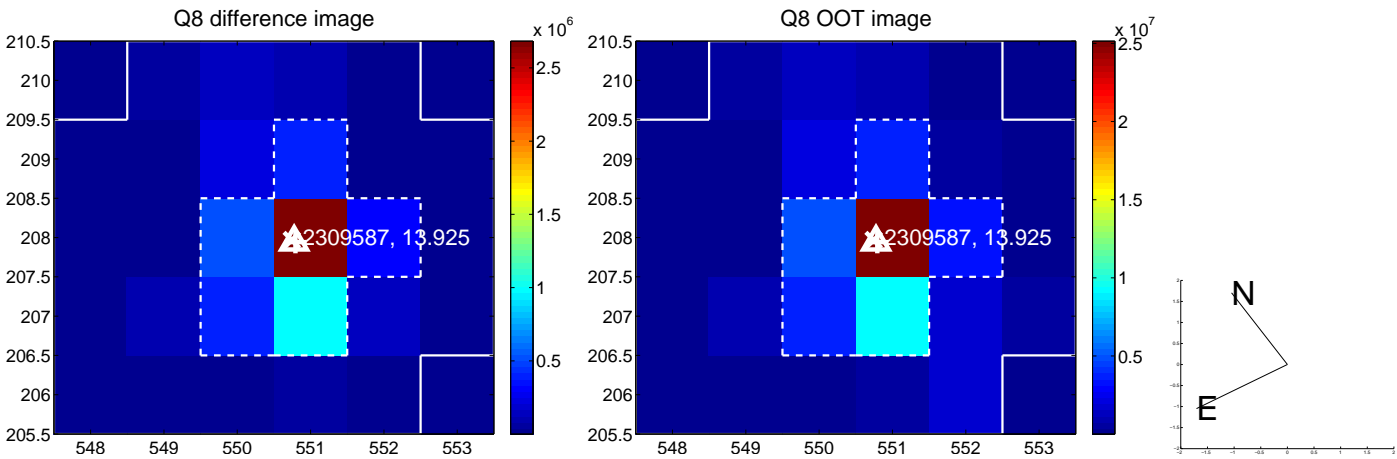
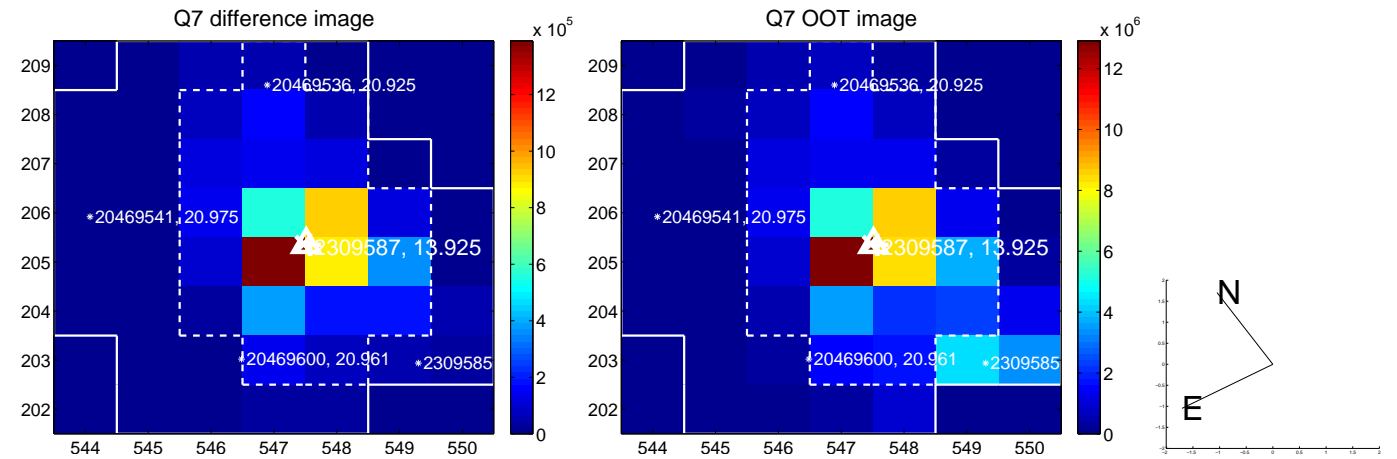
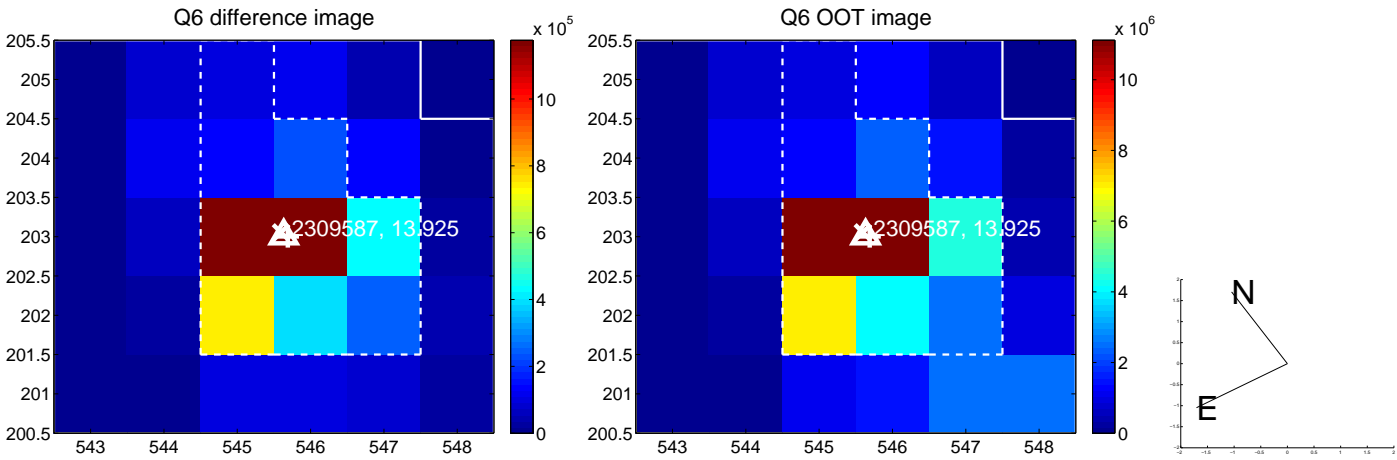
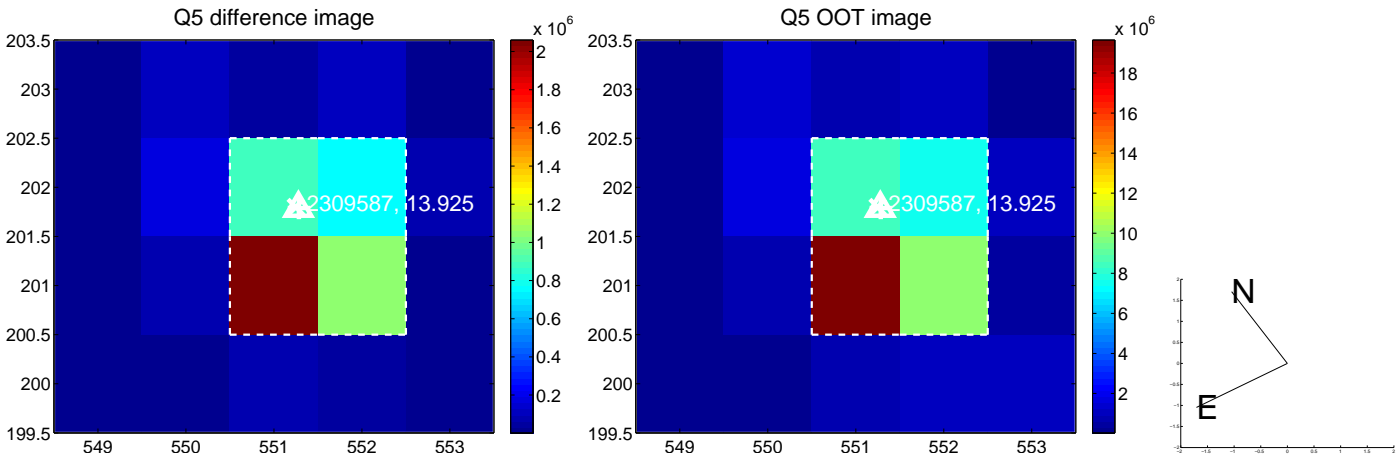


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

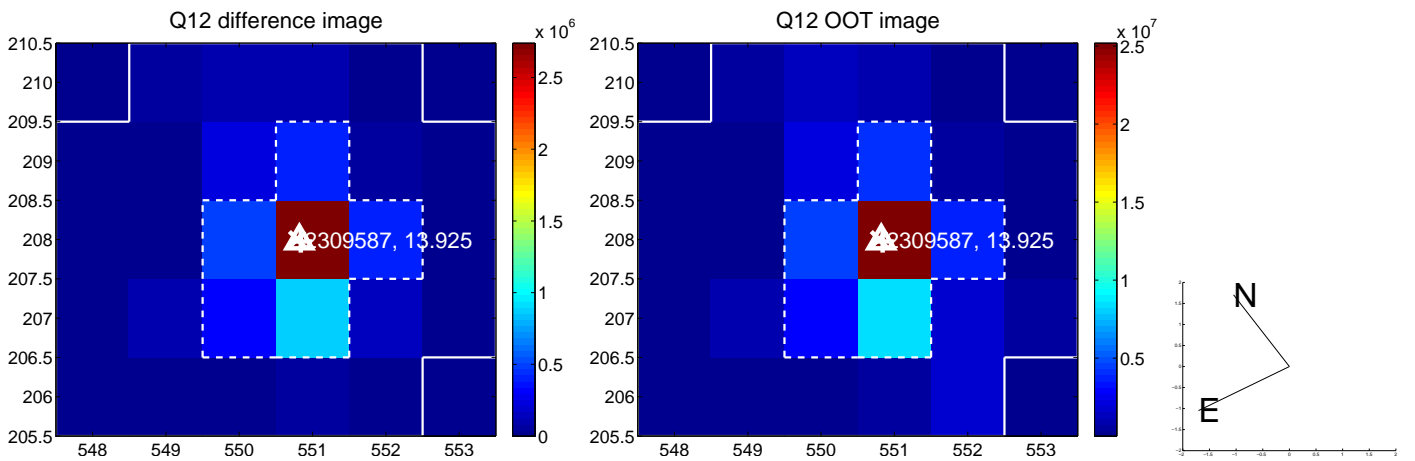
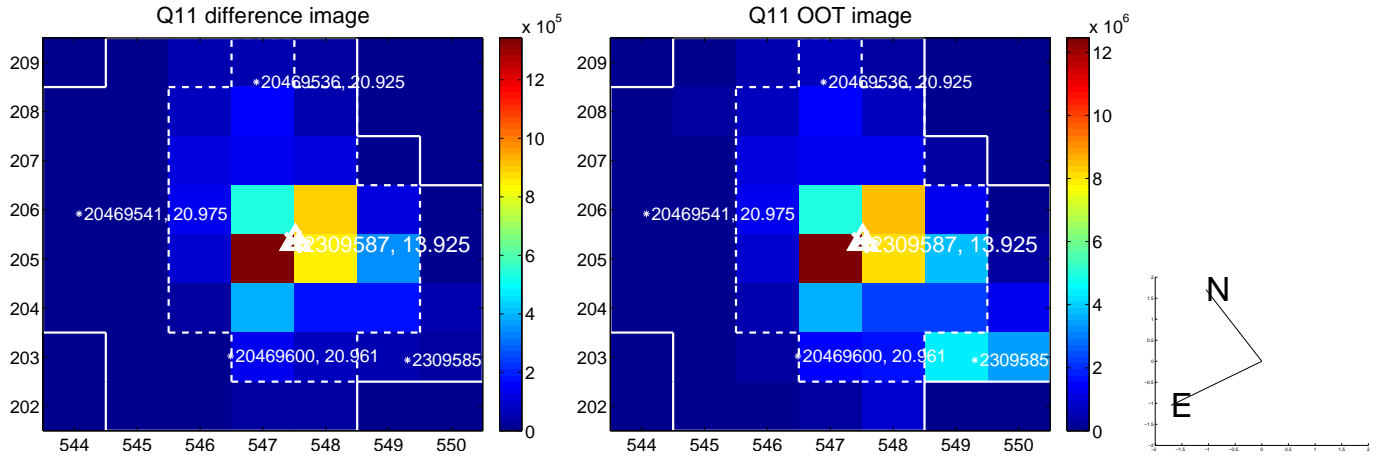
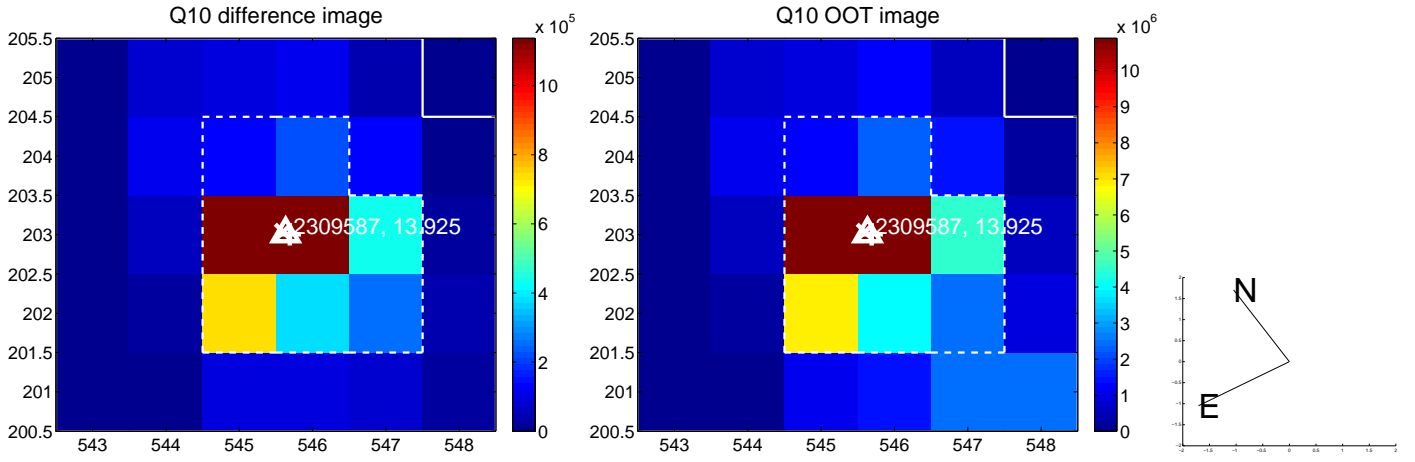
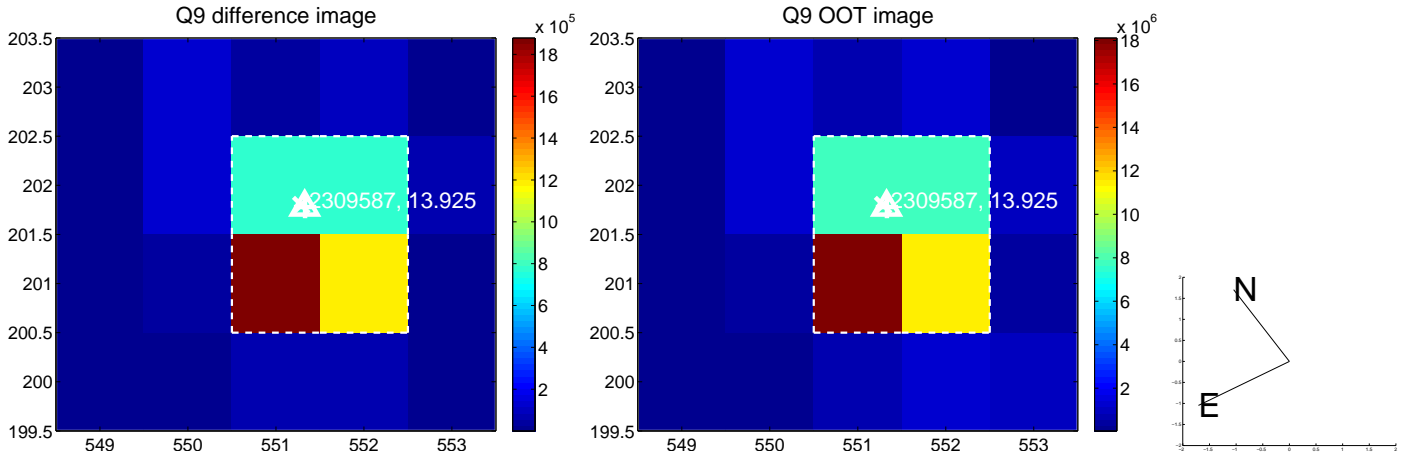
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



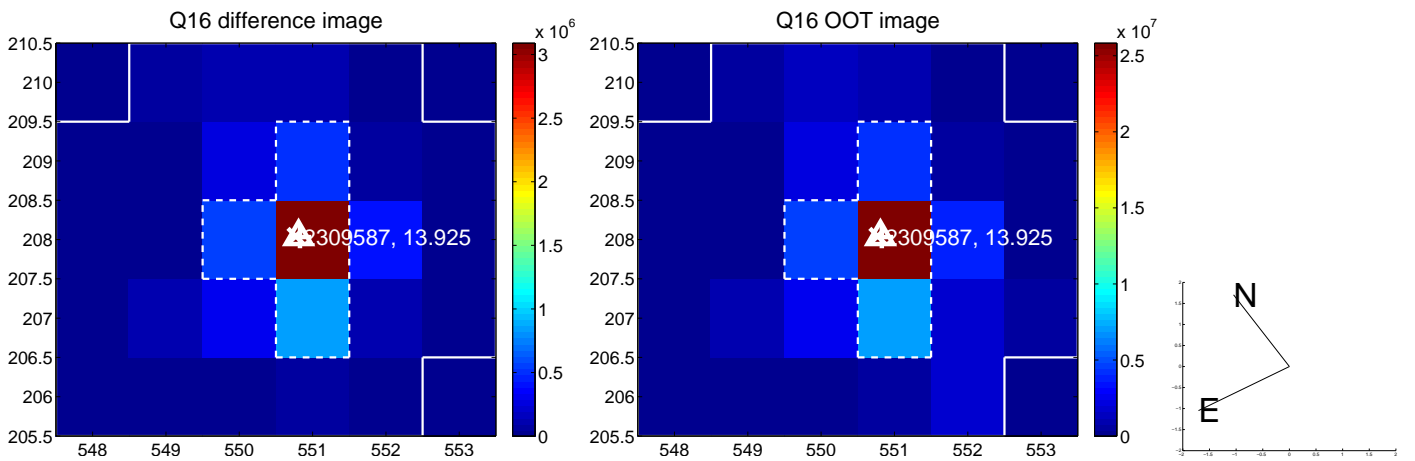
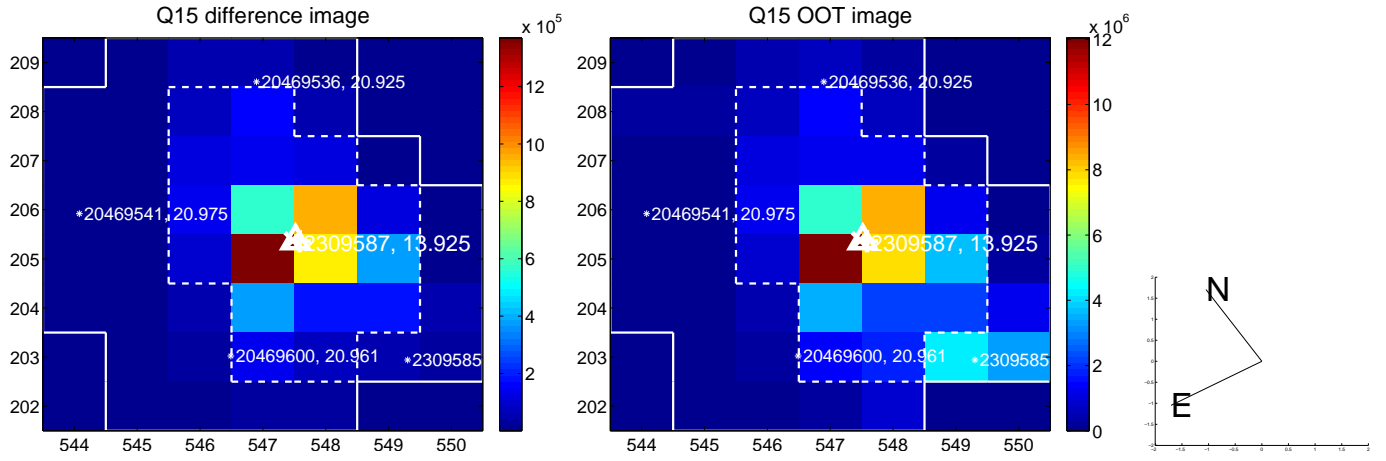
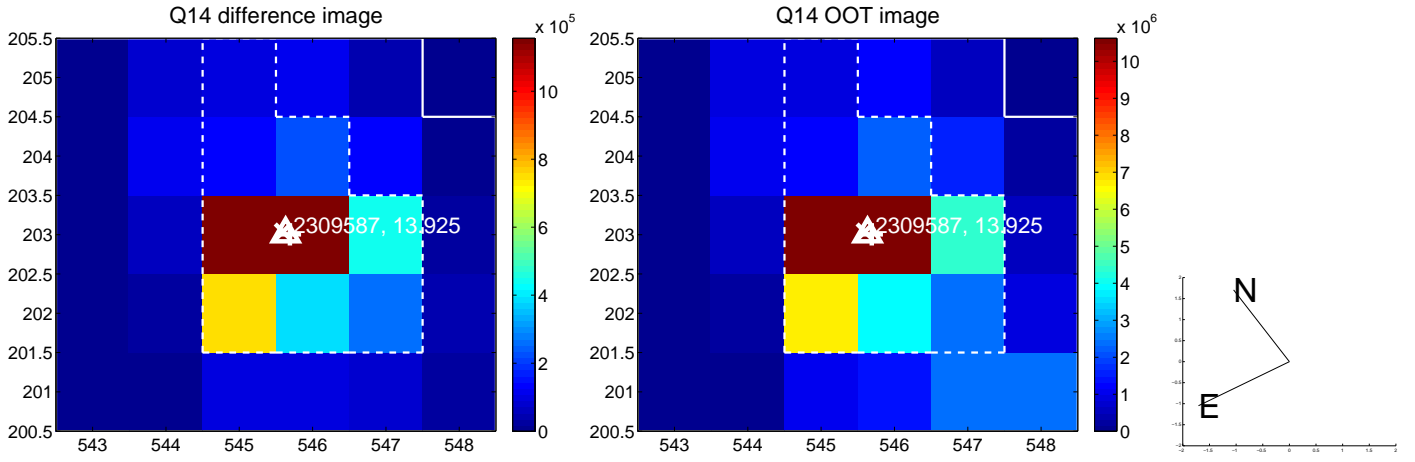
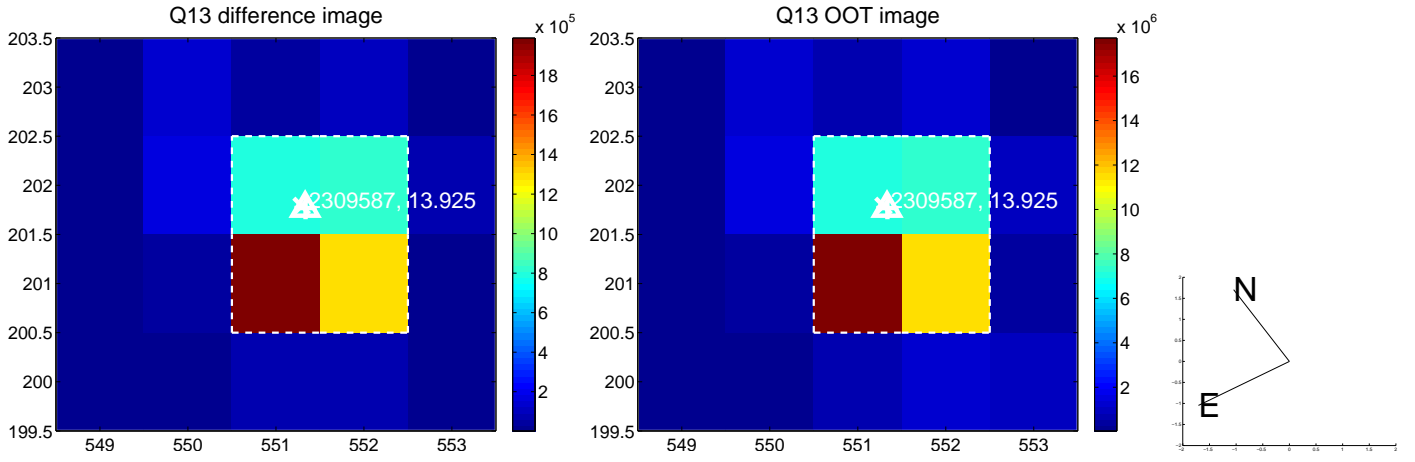
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



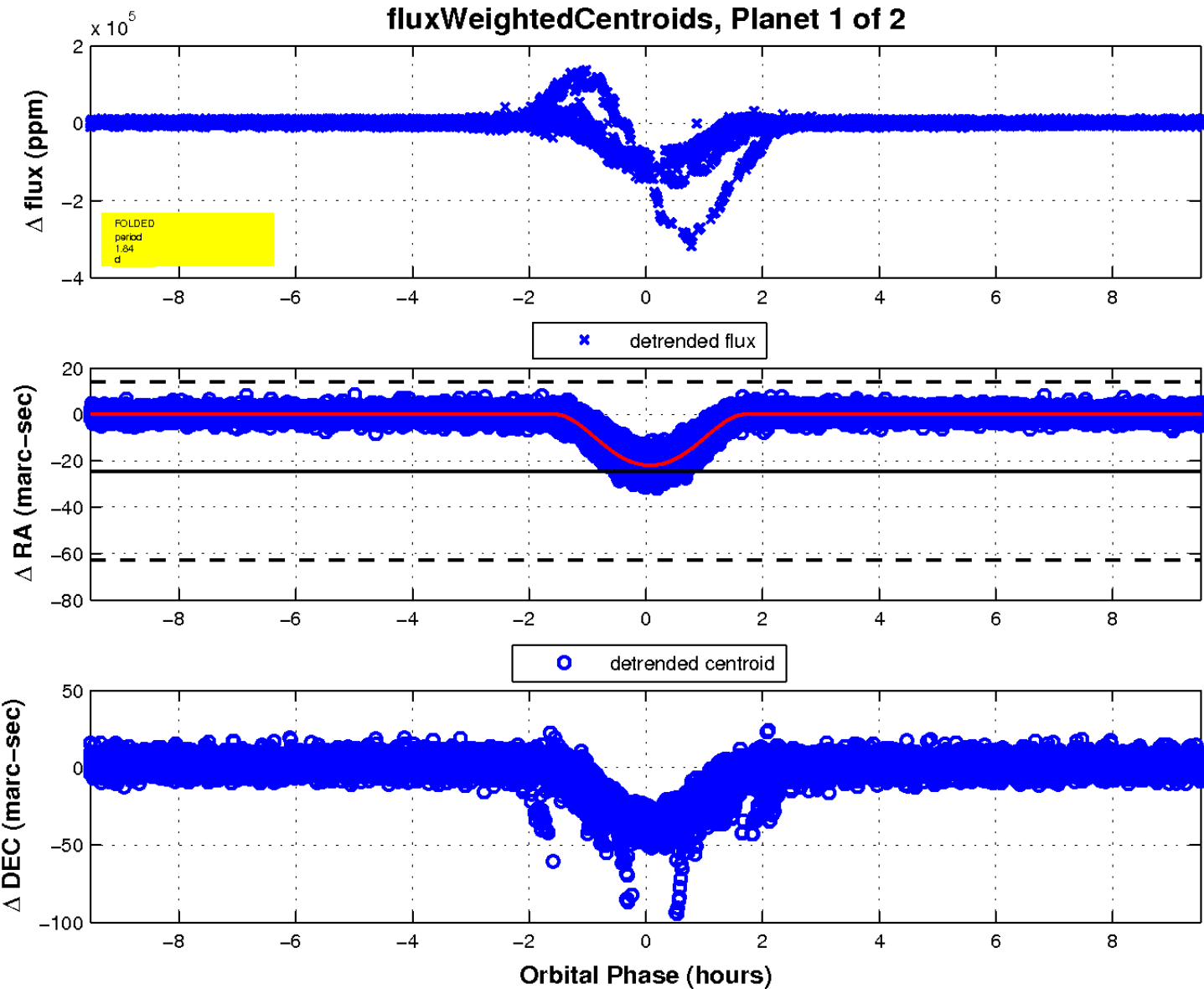
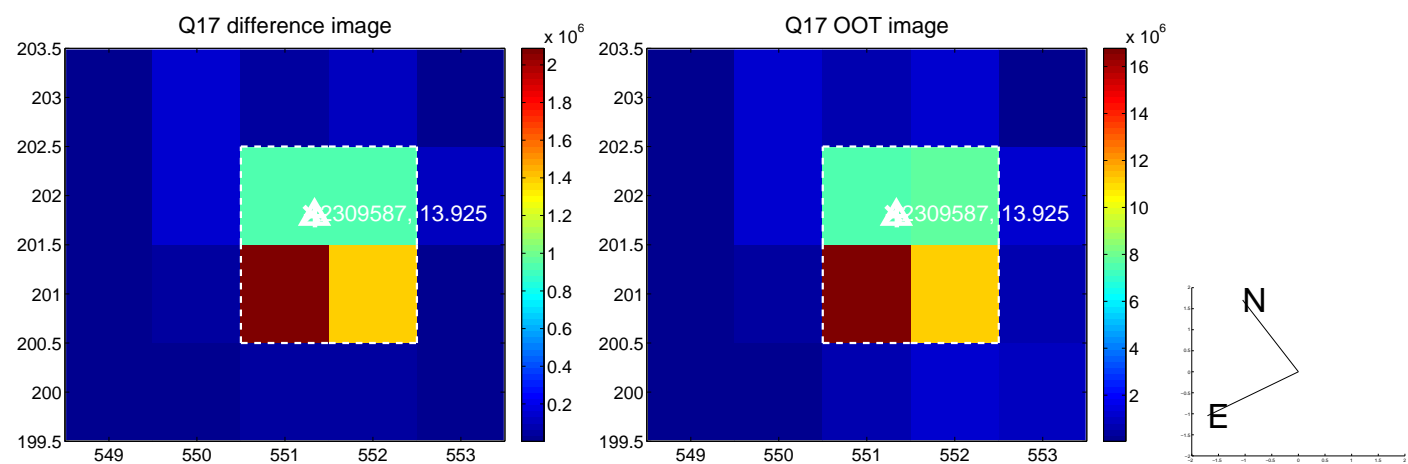
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

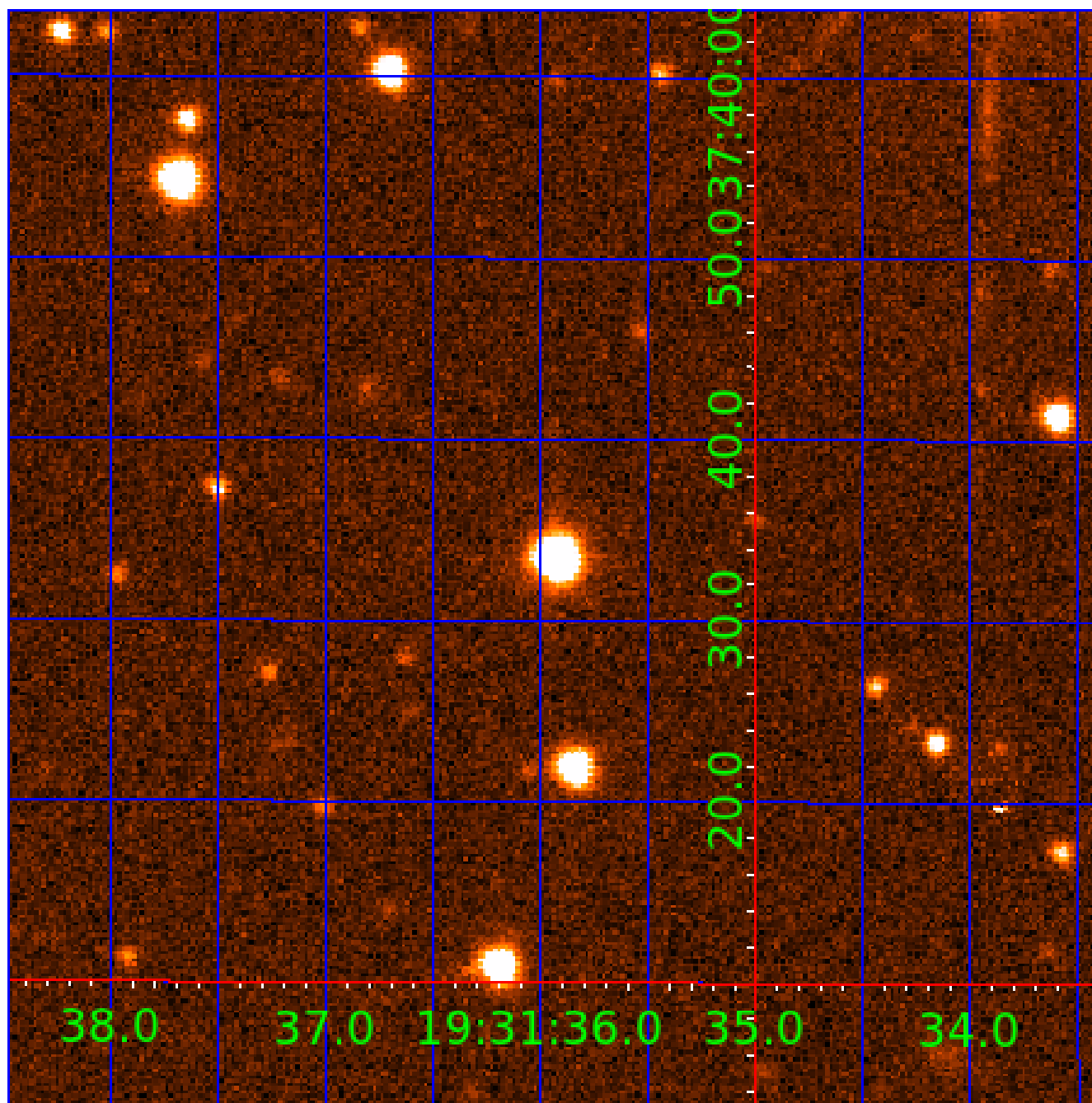


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002309587

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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002309587-02	OBS	No	3.677021	132.883448	2046.7	9.000	188.0	-1.0	1.05	5799	4.75	573.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002309587-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
002309587-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—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.

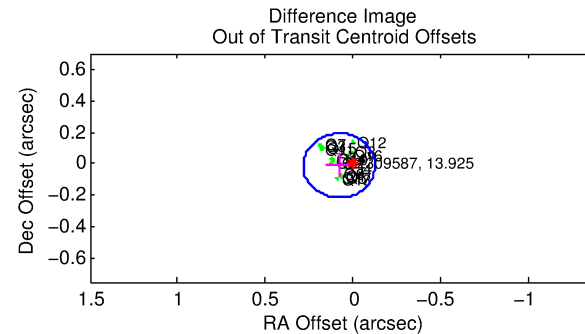
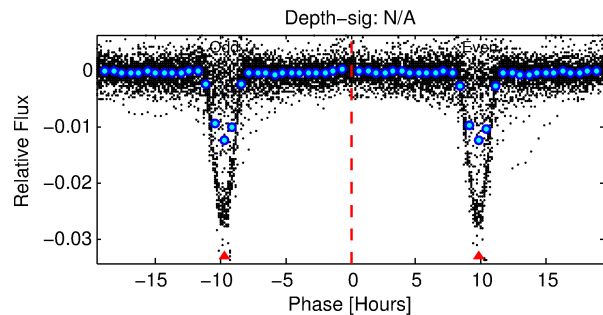
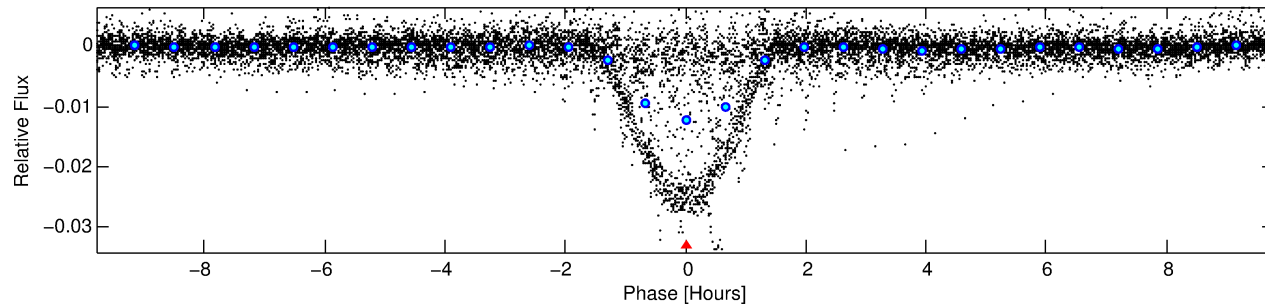
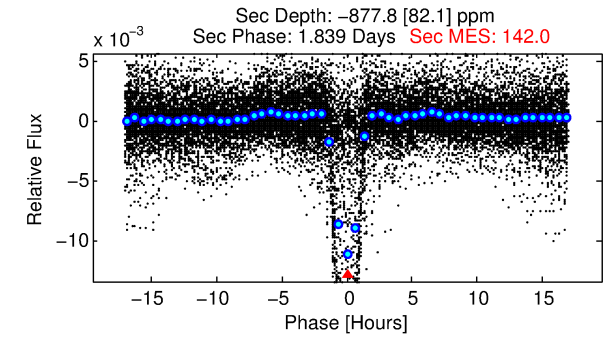
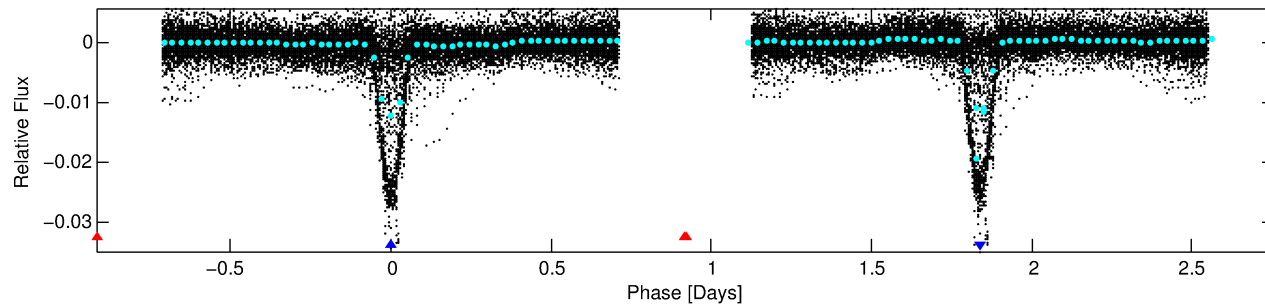
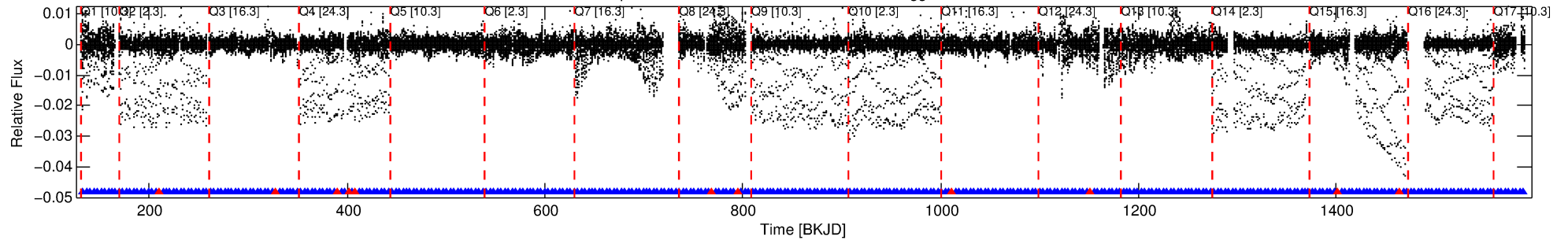
Ephemeris Match Information For 002309587-02

No Significant Match Found

DV One-Page Summary

KIC: 2309587 Candidate: 2 of 2 Period: 3.677 d
KOI: K05982 Corr: No Ephemeris Match

Kp: 13.93 R*: 1.05 Rs Teff: 5799.0 K Logg: 4.33 Fe/H: -0.300



TPS TCE Results:

Period = 3.67702 d
Epoch = 132.8834 BKJD

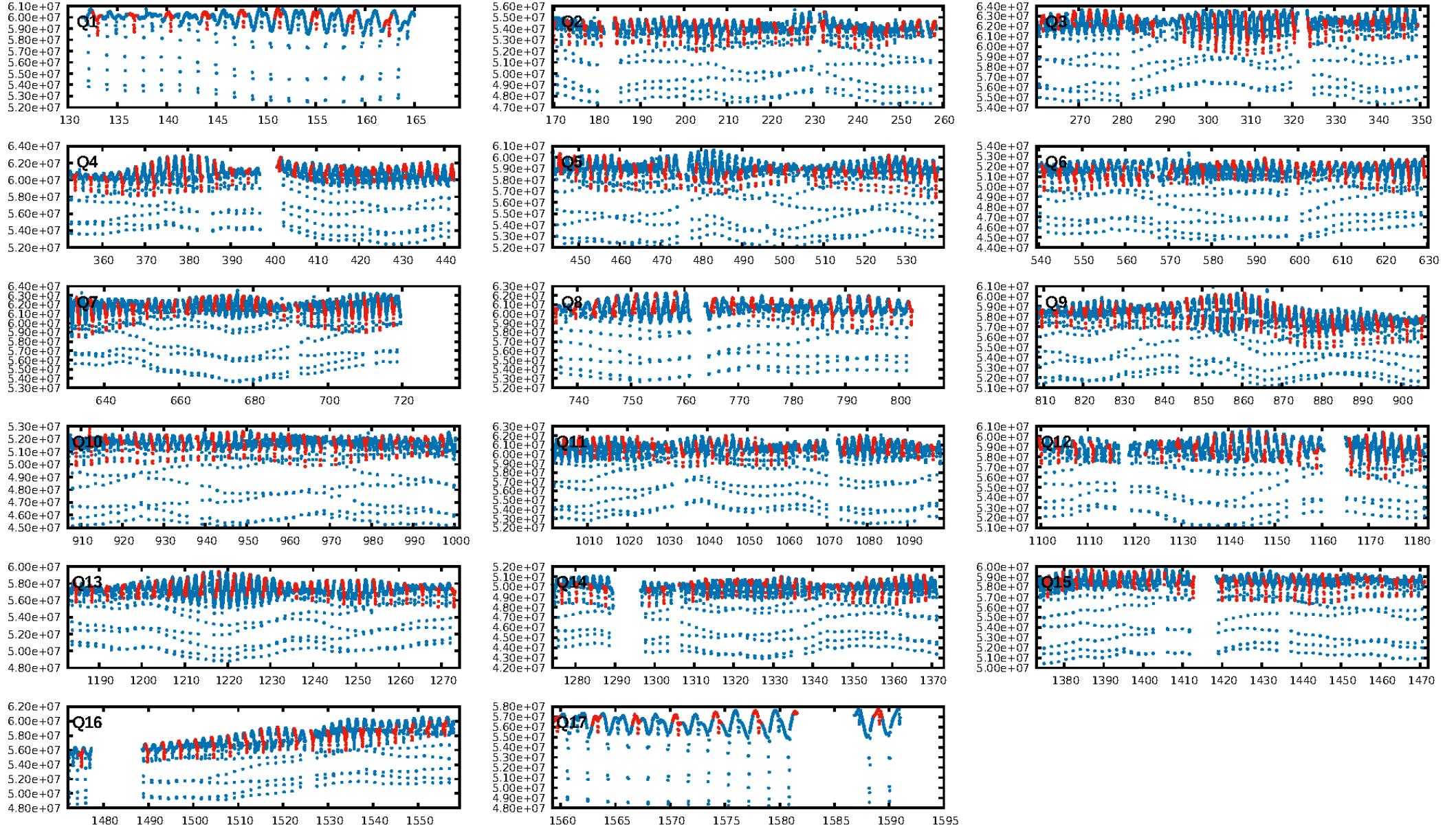
DV fit results are unavailable

DV Diagnostic Results:

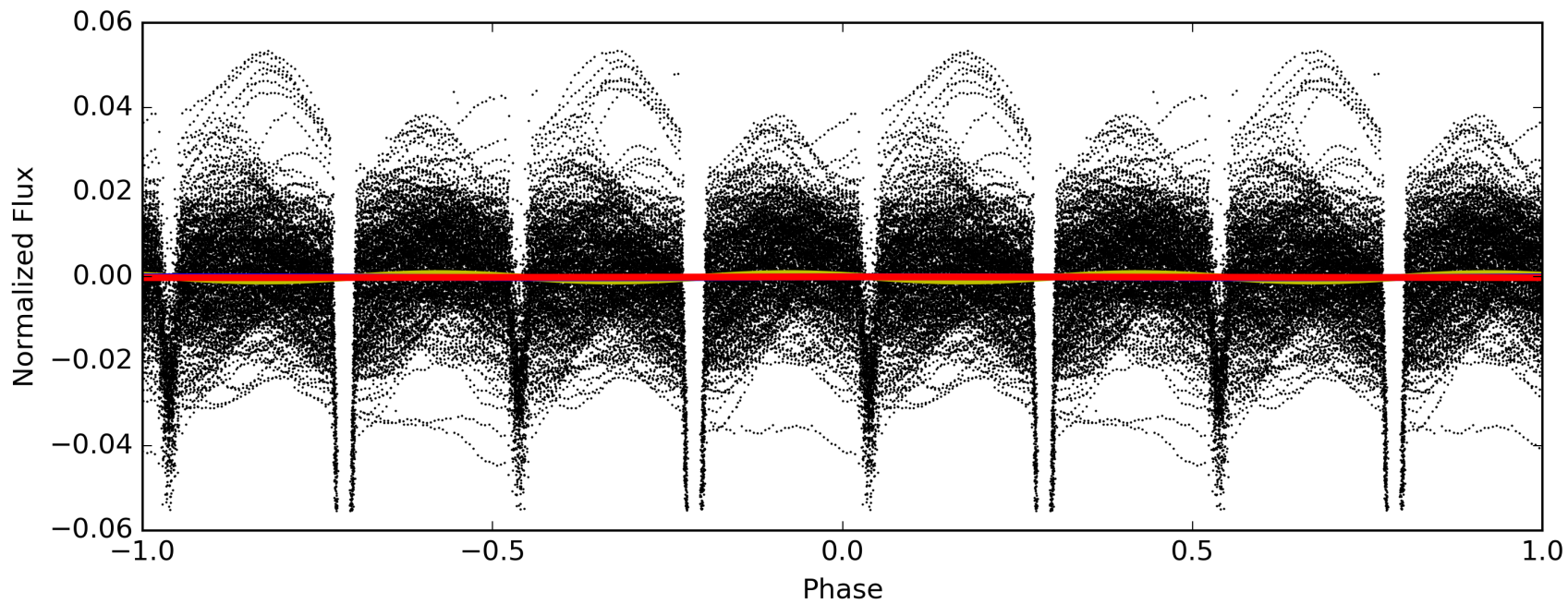
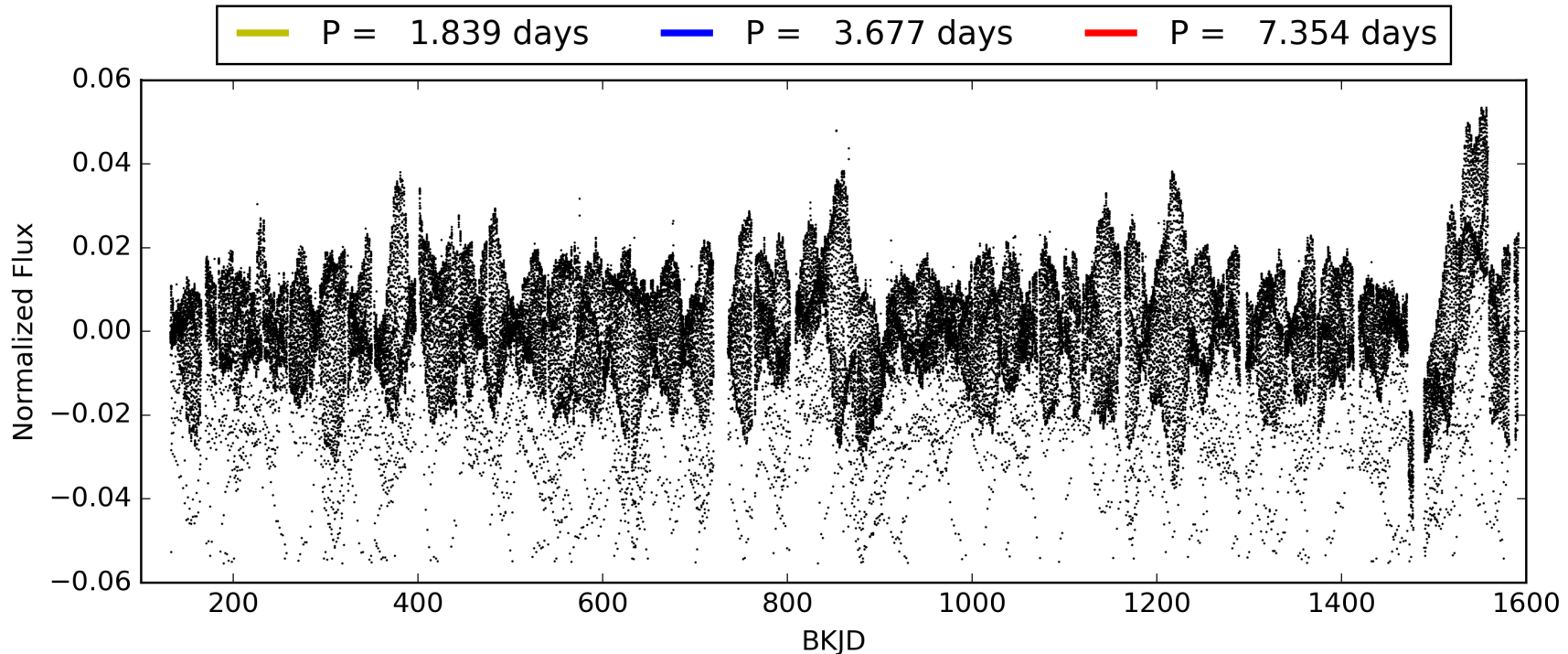
ShortPeriod-sig: 100.0% [4.62 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.97 [338/349]
GhostDiagnostic-chr: 1.567

Centroid-sig: N/A
Centroid-so: 1.450 arcsec [278.96 σ]
OotOffset-rm: 0.080 arcsec [1.18 σ]
KicOffset-rm: 0.199 arcsec [2.87 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
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TCE 002309587-02, PDC Light Curves

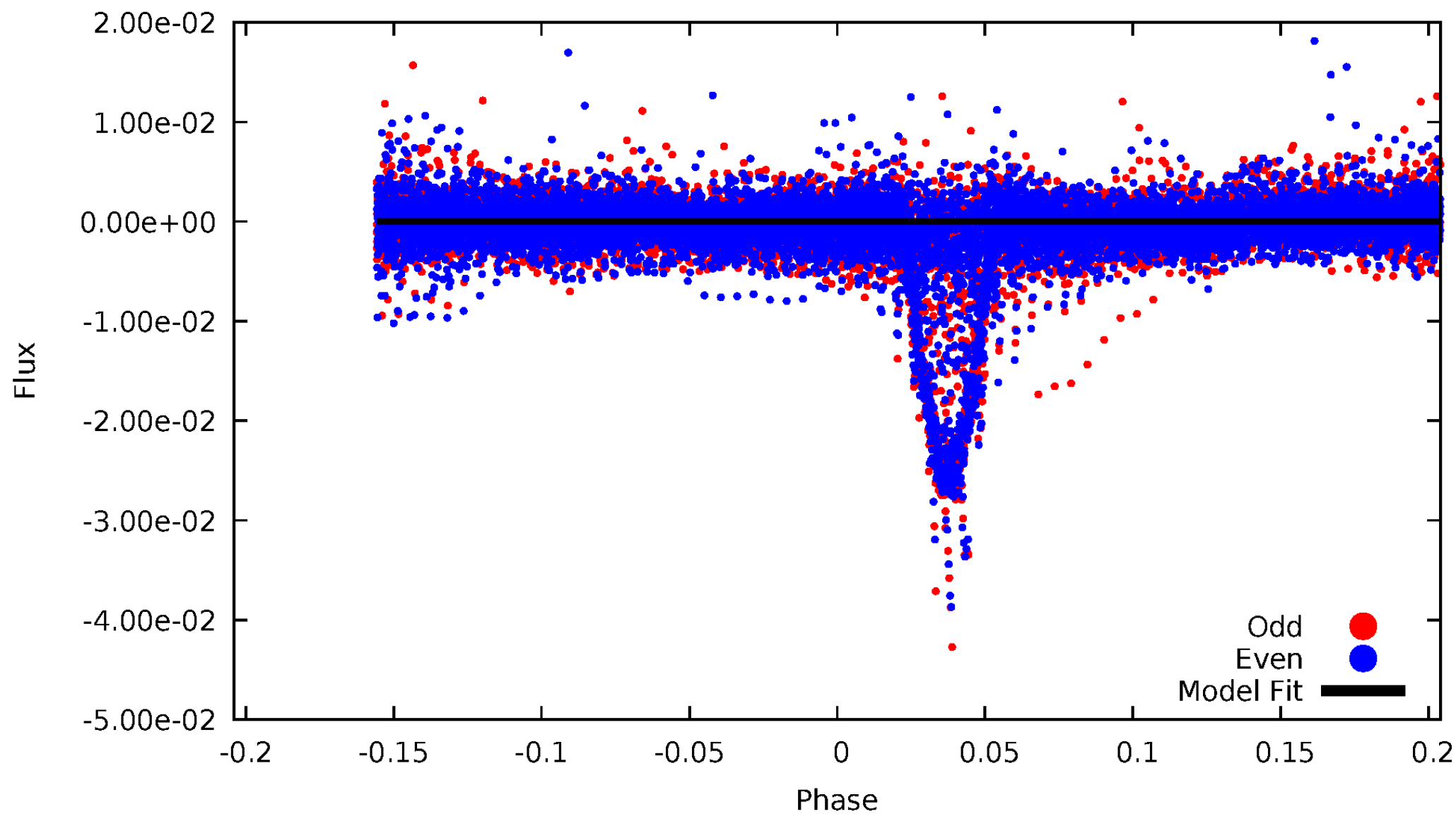


TCE 002309587-02



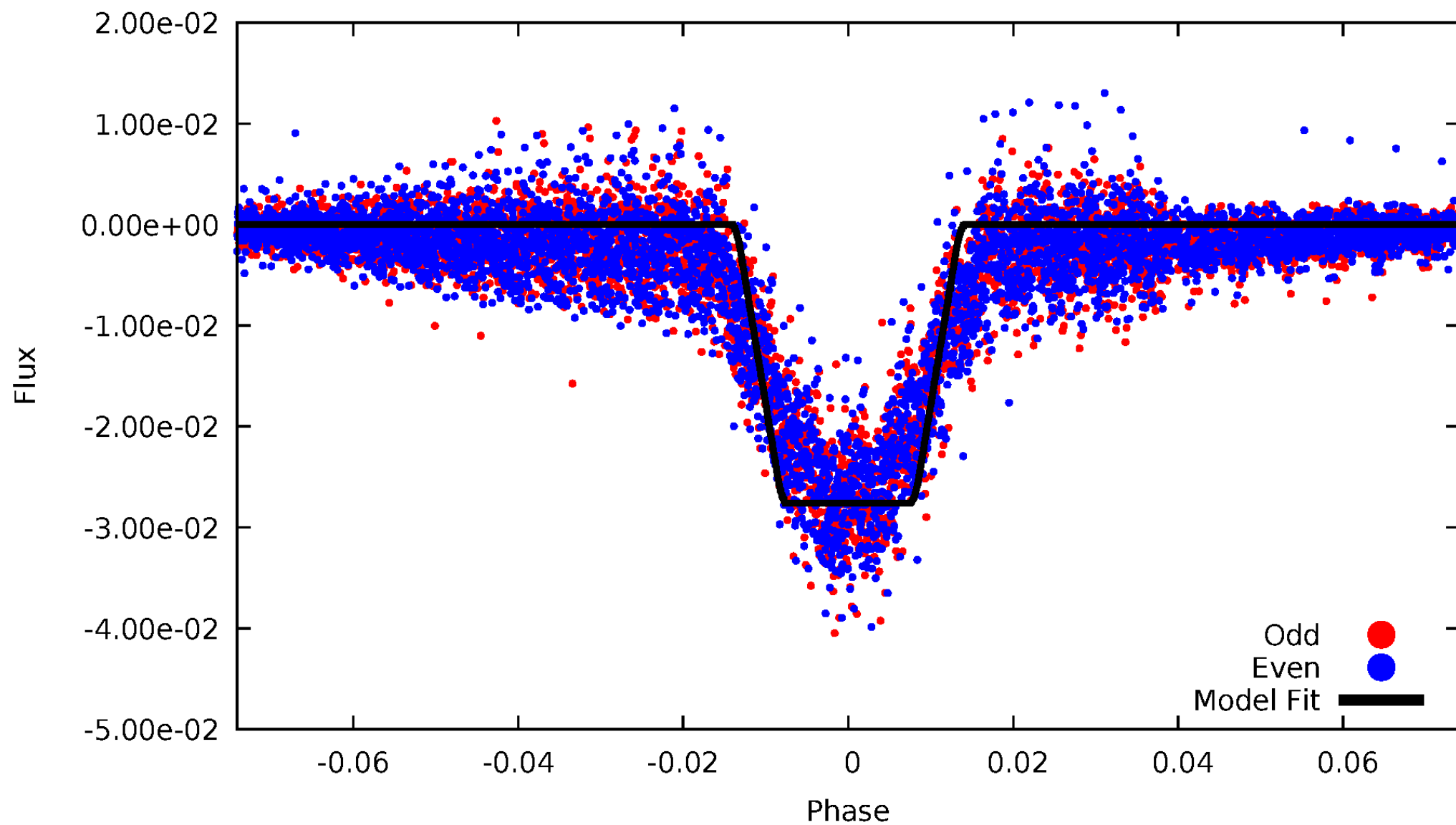
DV Odd/Even

TCE 002309587-02



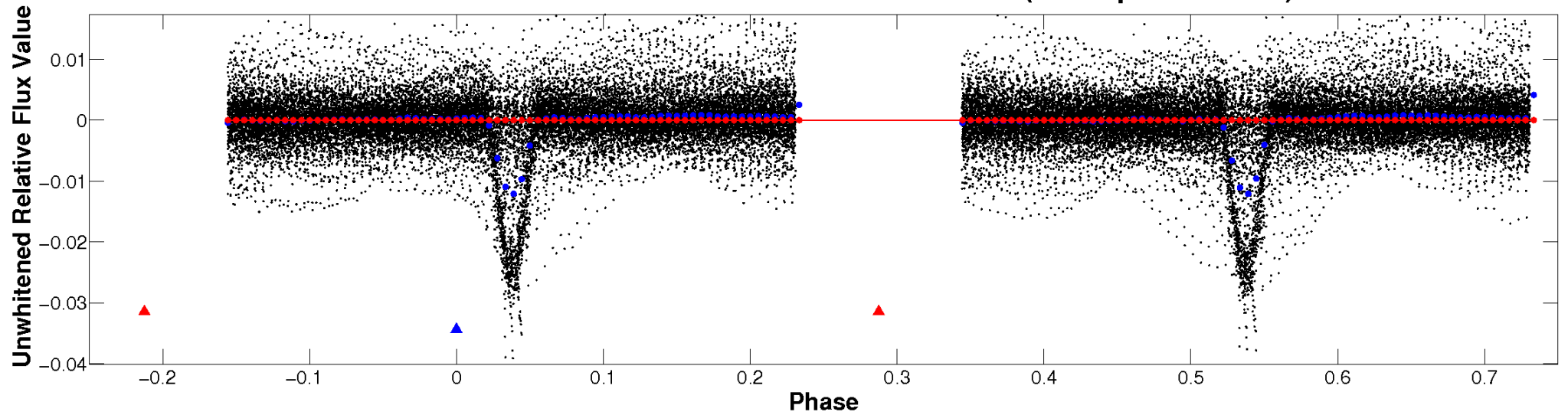
ALT Odd/Even

TCE 002309587-02

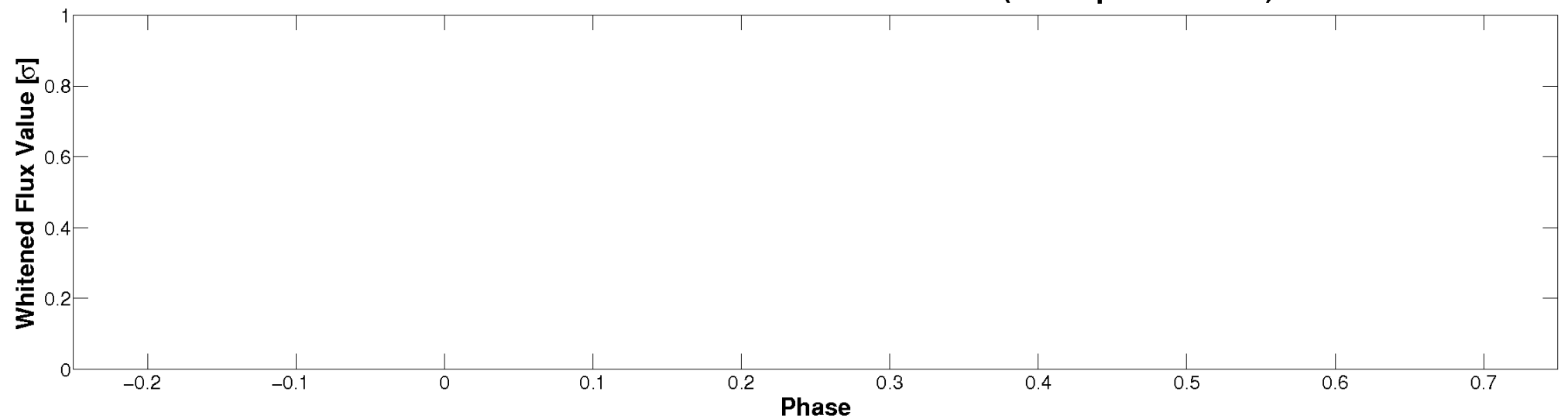


Non-Whitened Vs. Whitened Light Curve

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

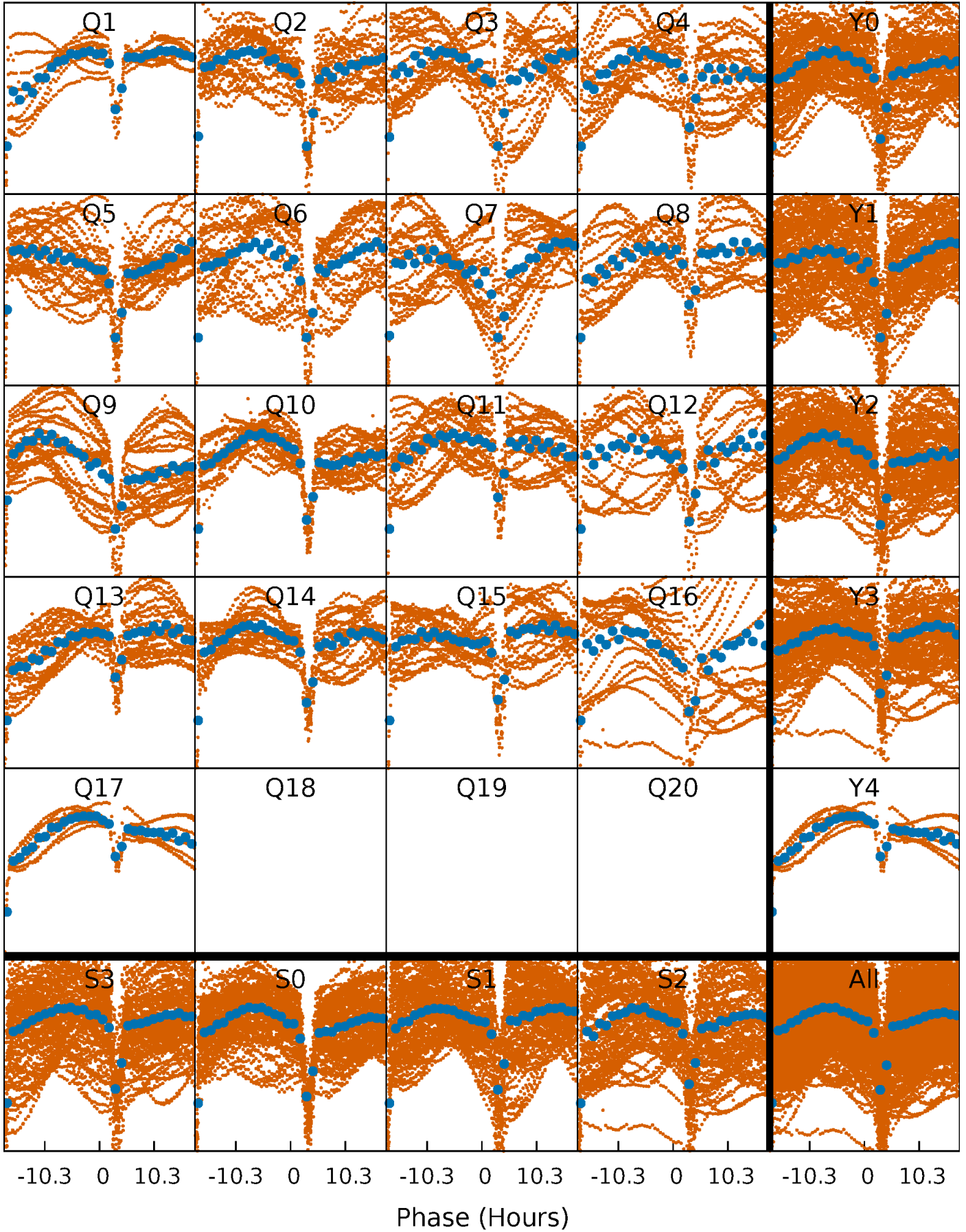


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



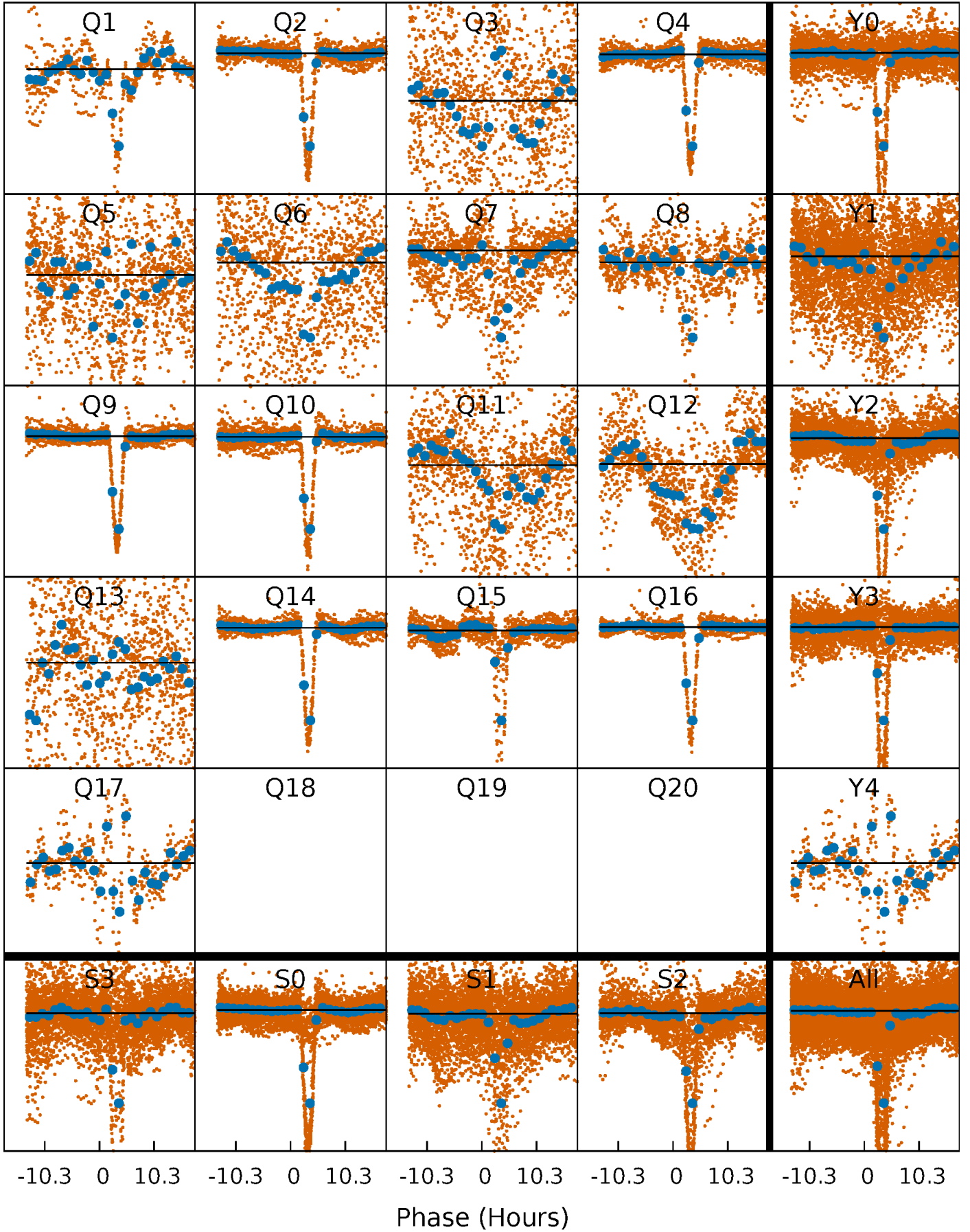
PDC Quarter-Phased Transit Curves

TCE 002309587-02 $P = 3.677021$ Days $T_0 = 132.883448$ (BKJD)



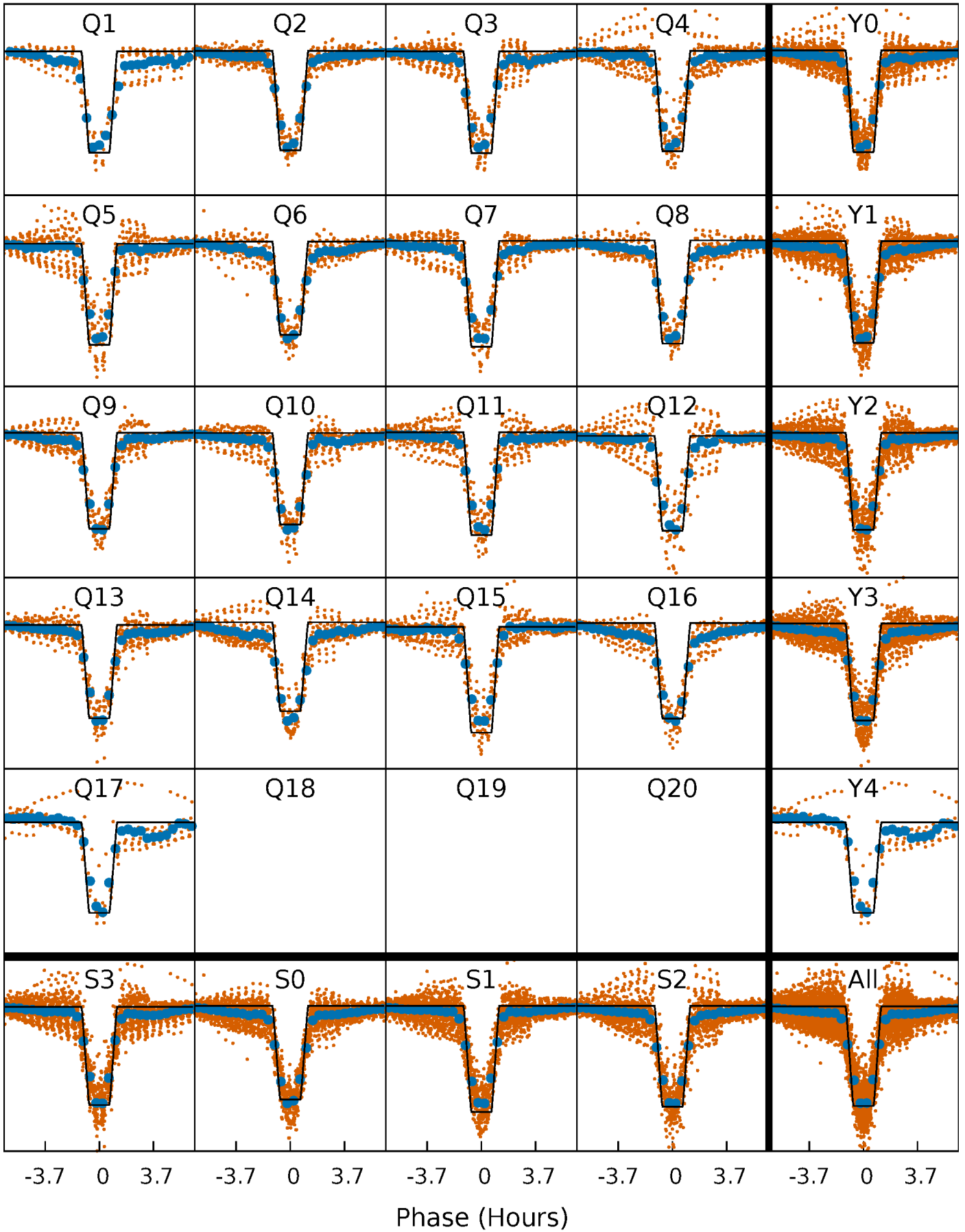
DV Quarter-Phased Transit Curves

TCE 002309587-02 $P = 3.677021$ Days $T_0 = 132.883448$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

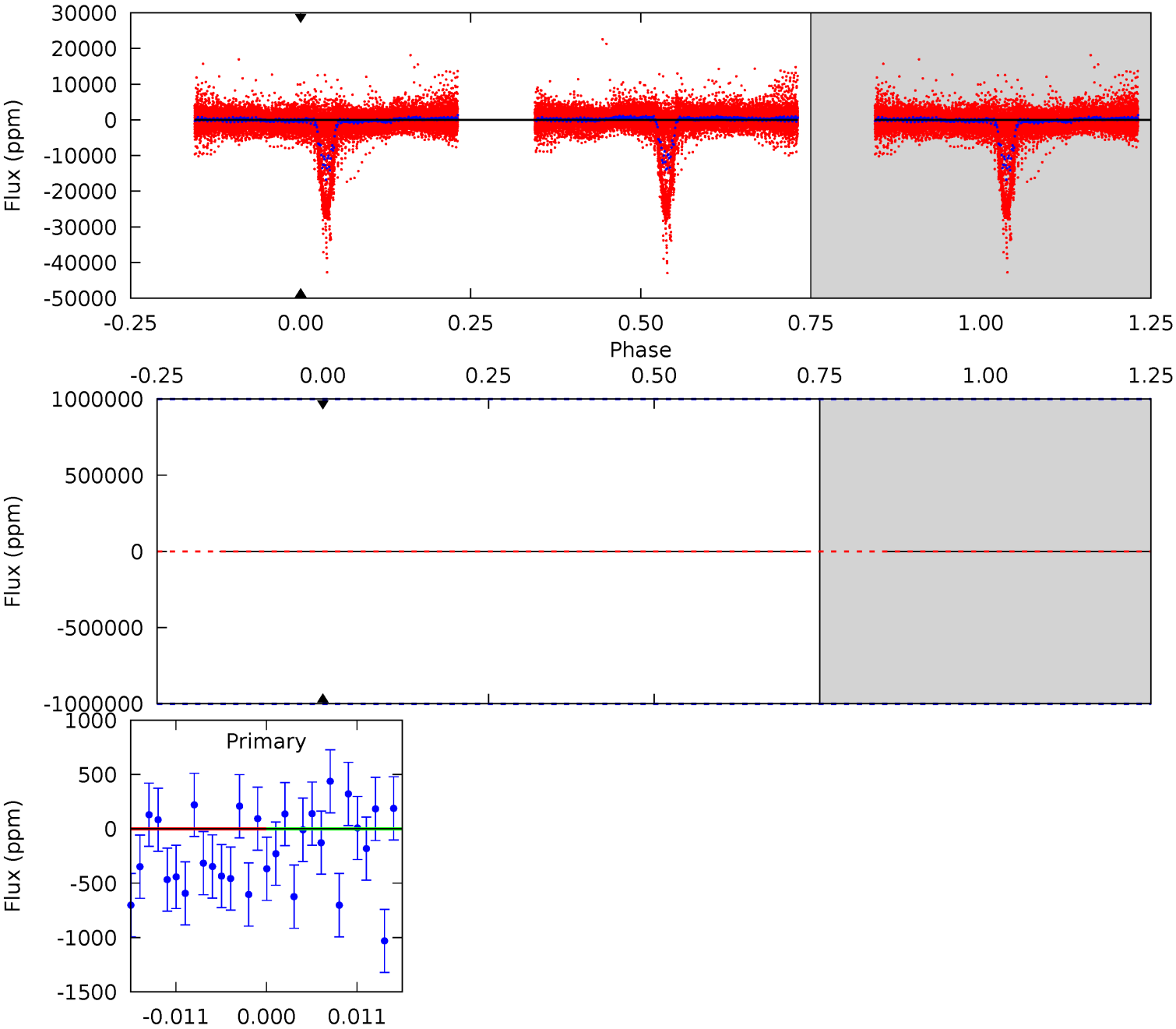
TCE 002309587-02 P= 3.677021 Days $T_0=133.021988$ (BKJD)



DV Model-Shift Uniqueness Test

002309587-02, P = 3.677021 Days, E = 129.206427 Days

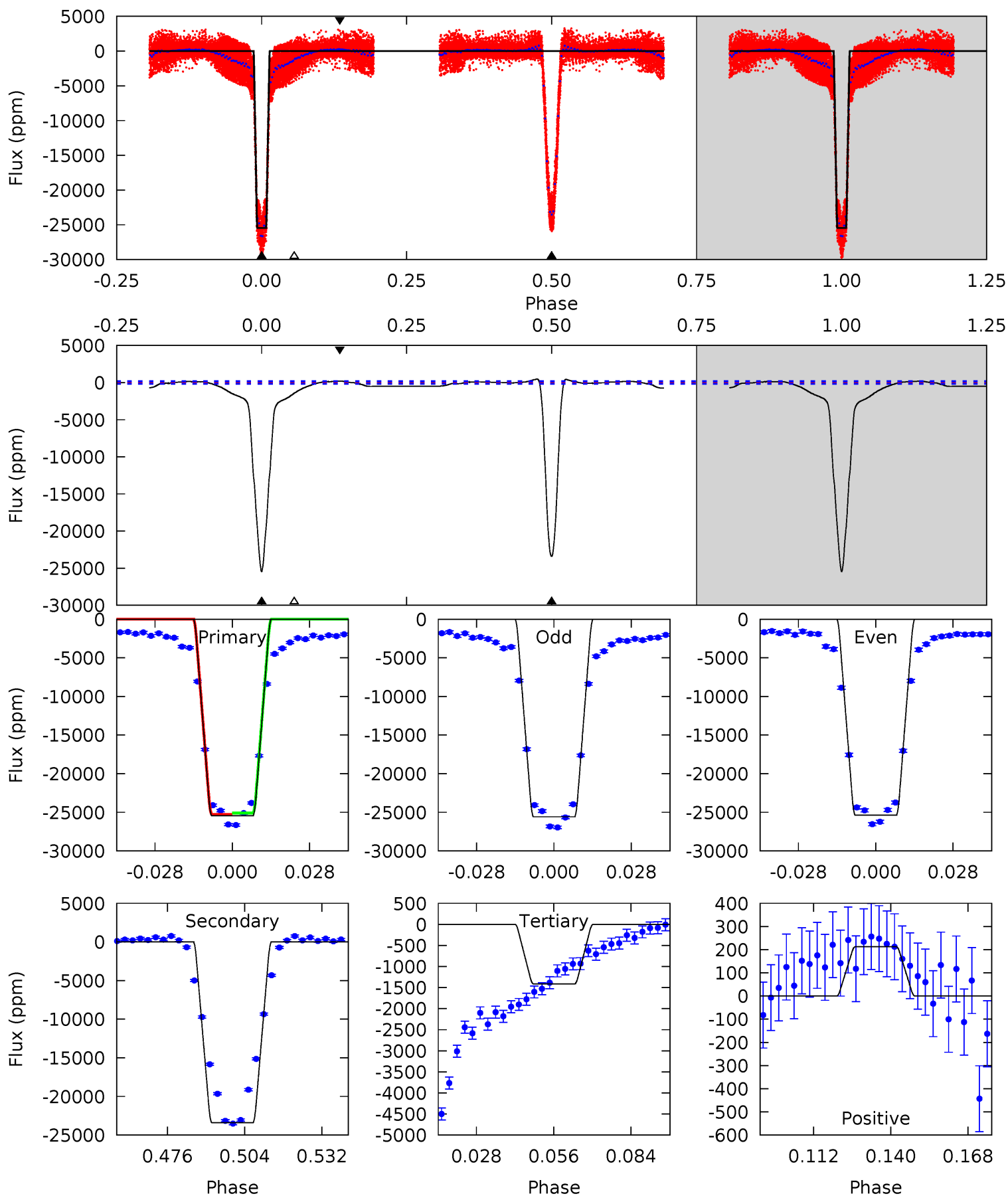
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

002309587-02, P = 3.677021 Days, E = 129.344967 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
756.4	695.1	42.0	6.31	4.82	2.20	16.4	714.4	750.1	653.1	688.8	3.35	1.00	0.02	0



Stellar Parameters For KIC 002309587

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5799^{+157}_{-157}	$4.326^{+0.190}_{-0.190}$	$-0.300^{+0.300}_{-0.300}$	$1.055^{+0.311}_{-0.233}$	$0.861^{+0.131}_{-0.070}$	$1.032^{+0.982}_{-0.498}$
	+3%/-3%	+4%/-4%	+100%/-100%	+29%/-22%	+15%/-8%	+95%/-48%
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 002309587-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$9.68^{+10.52}_{-6.48}$	1746^{+131}_{-121}	-4241^{+22168}_{-14504}	$-19.140^{+1896.383}_{-2061.295}$
Alt.	-23392 ± 34	$20.42^{+12.21}_{-11.49}$	1745^{+138}_{-118}	5436^{+2862}_{-937}	62^{+257}_{-37}

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

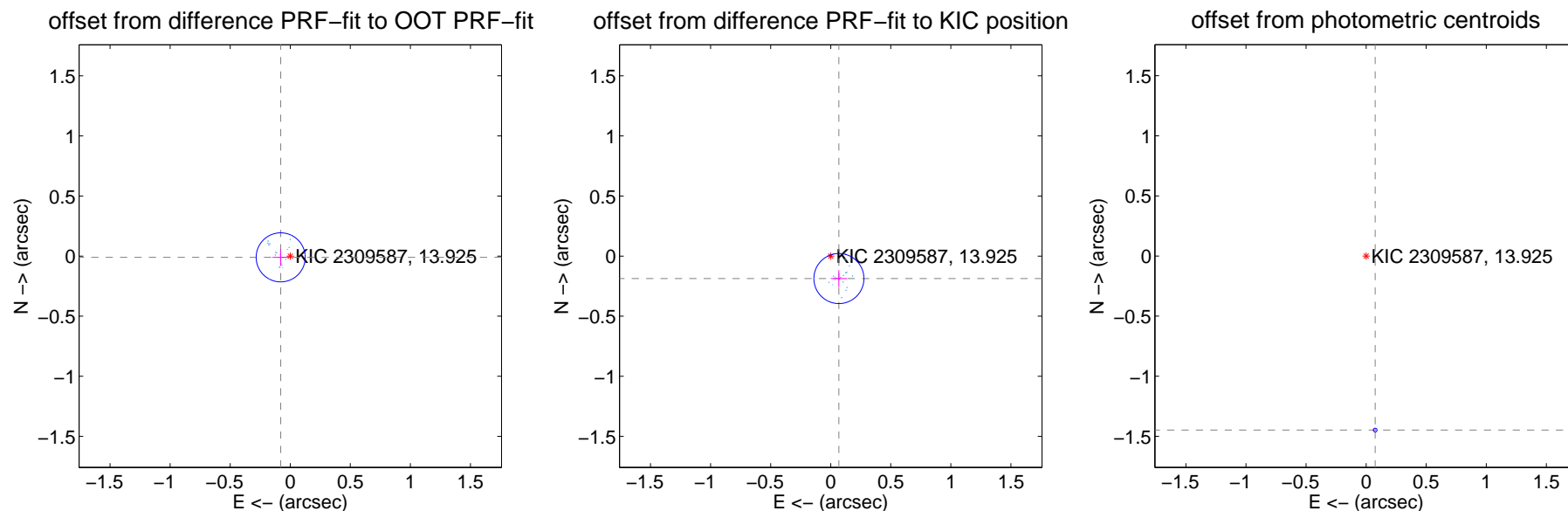
DV Centroid Data

Supplemental centroid analysis for 002309587-02. Kepler magnitude: 13.93. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

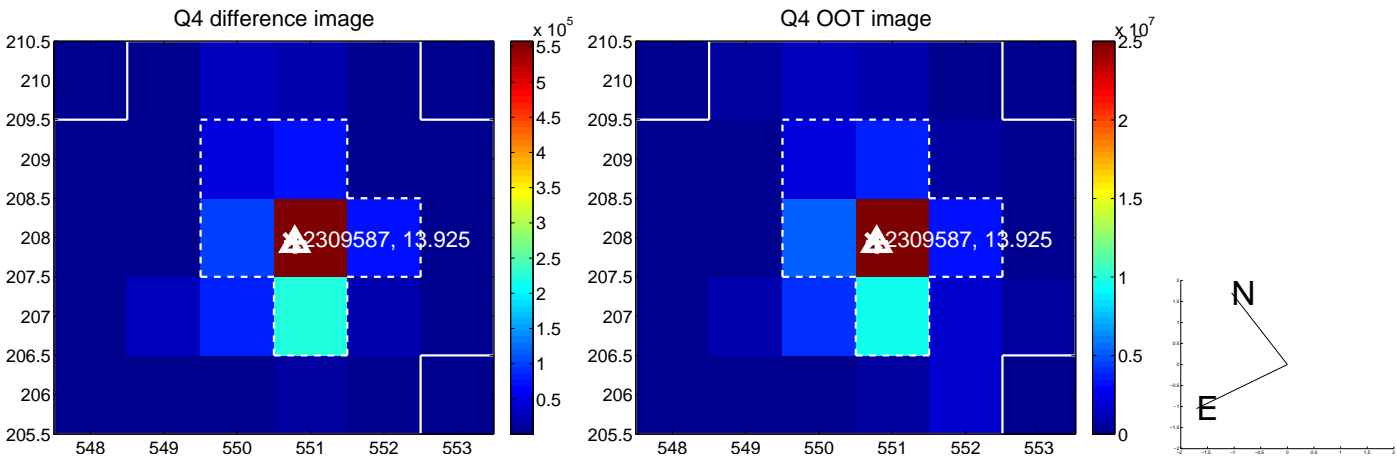
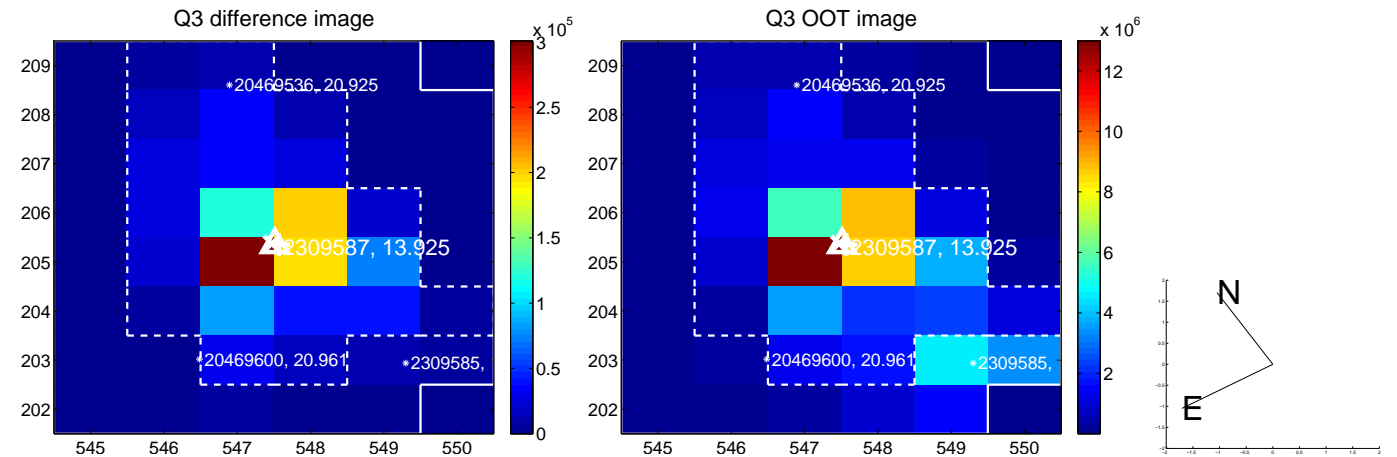
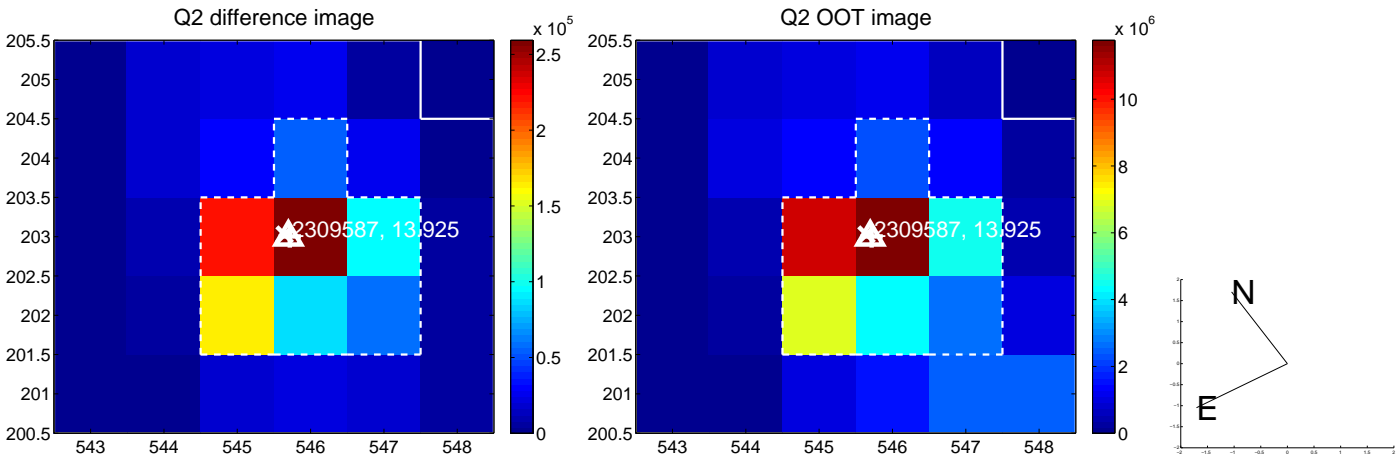
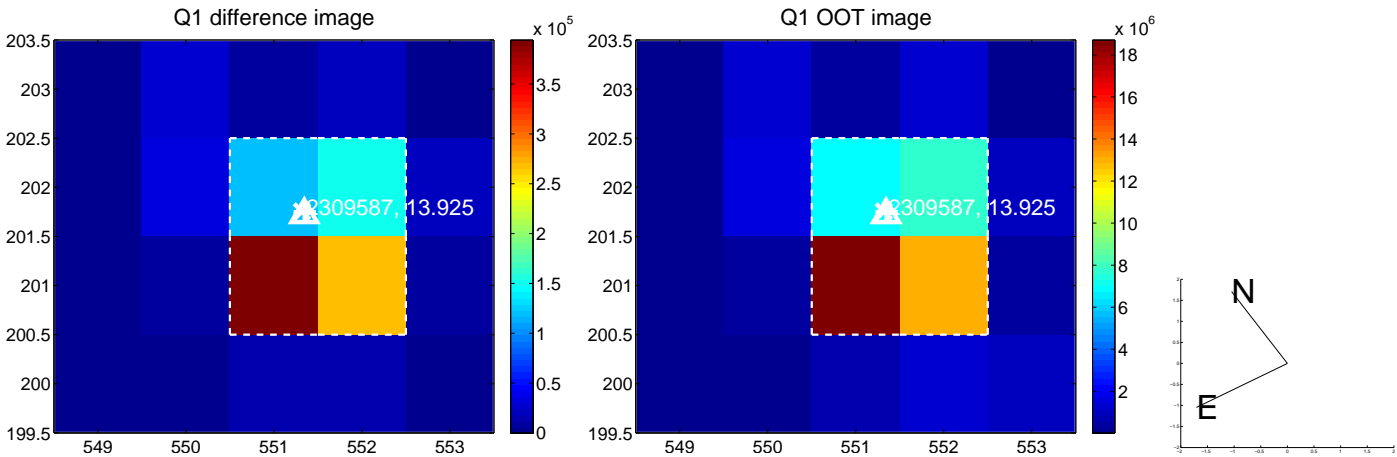
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.080 ± 0.068	1.18	0.080 ± 0.068	-0.011 ± 0.070
PRF-fit source offset from KIC position	0.199 ± 0.069	2.87	-0.068 ± 0.068	-0.187 ± 0.070
photometric centroid source offset	1.45 ± 0.01	278.96	-0.08 ± 0.00	-1.45 ± 0.01

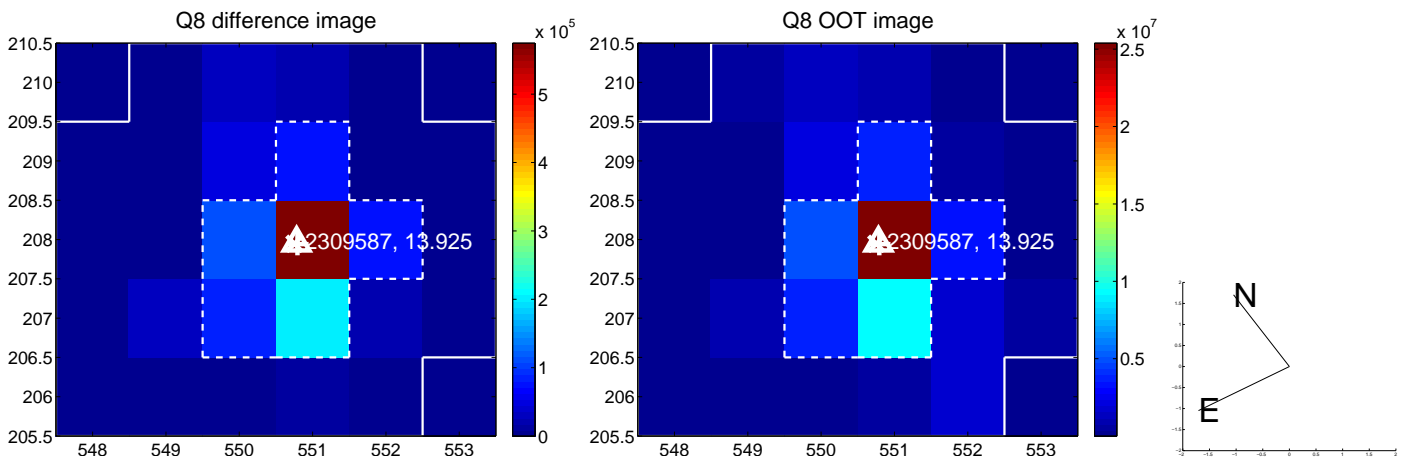
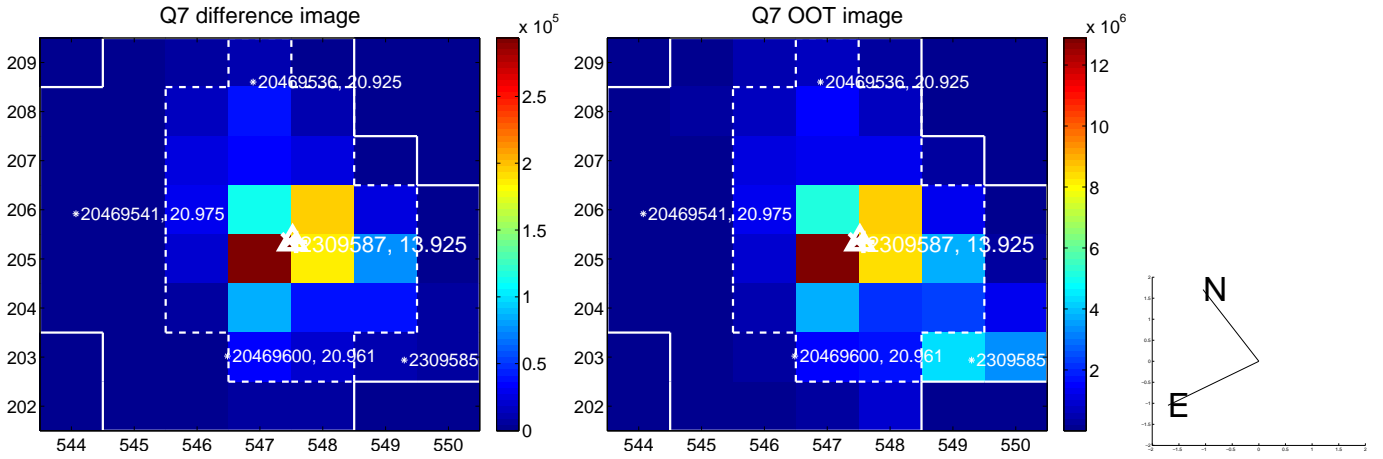
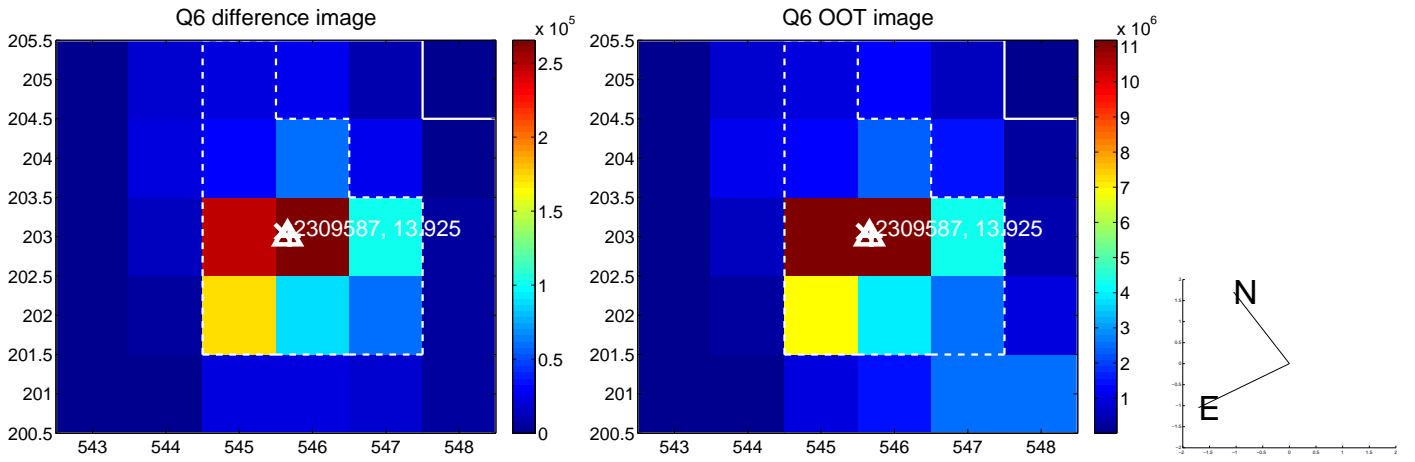
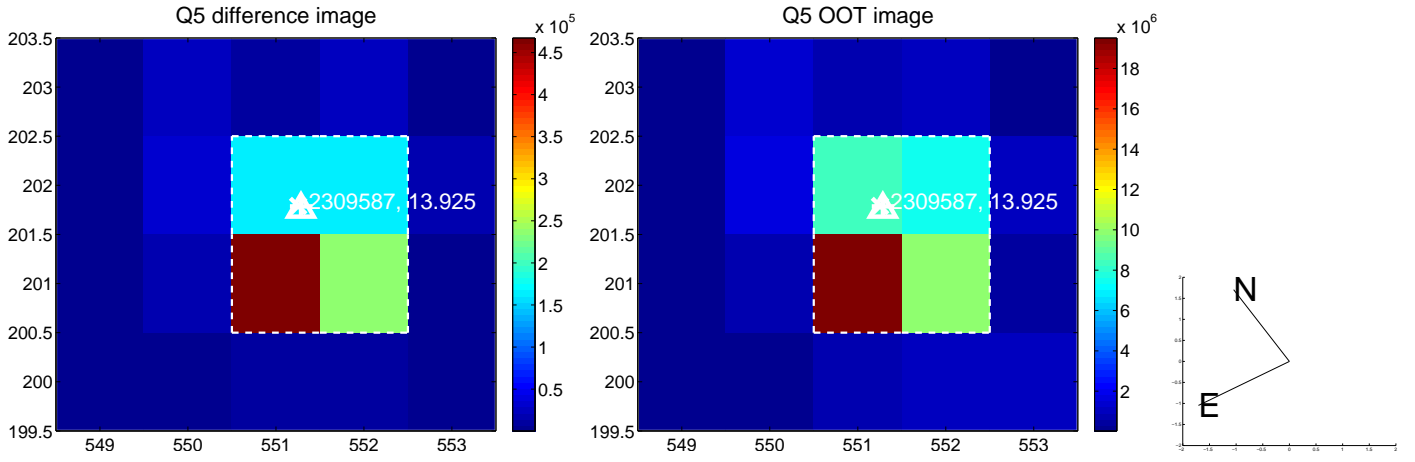


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

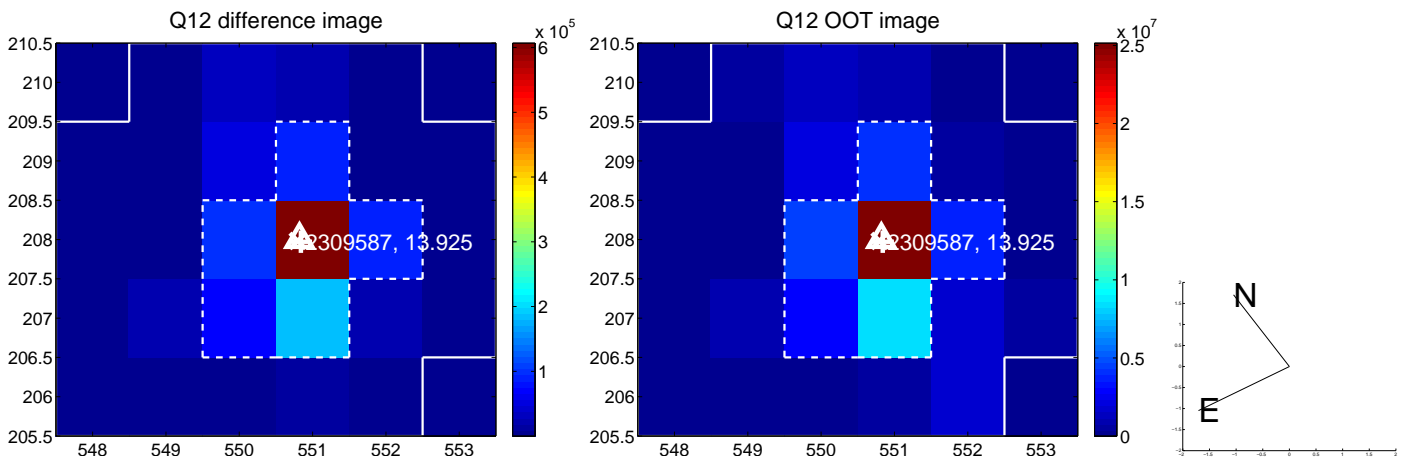
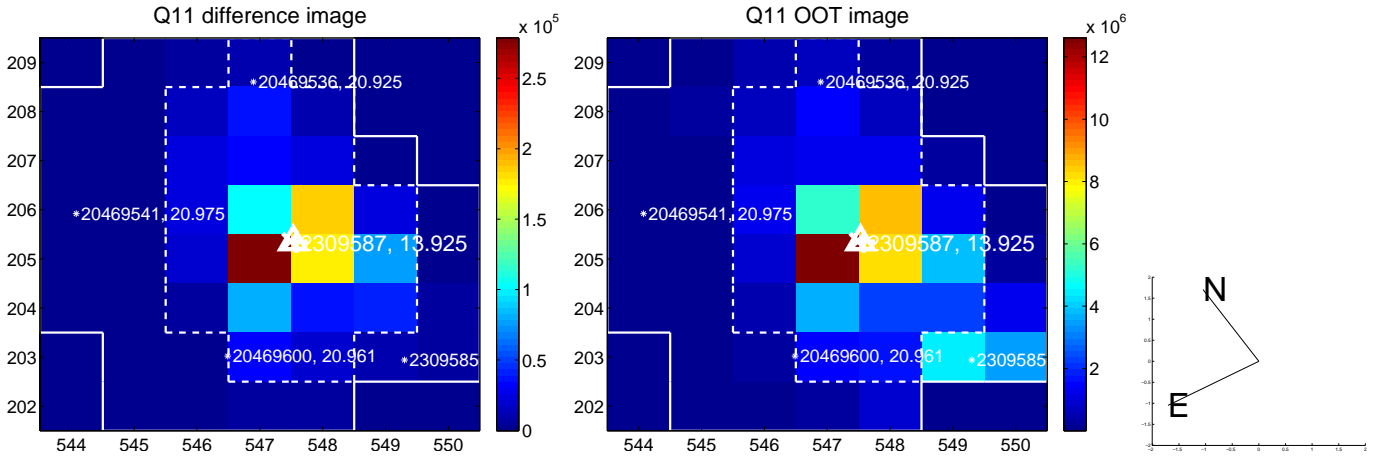
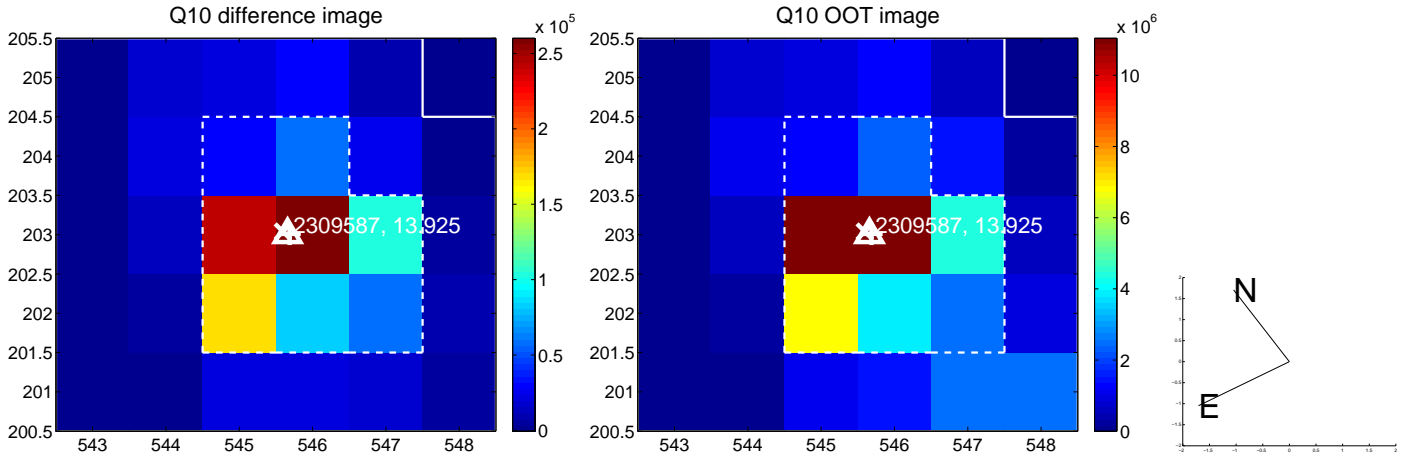
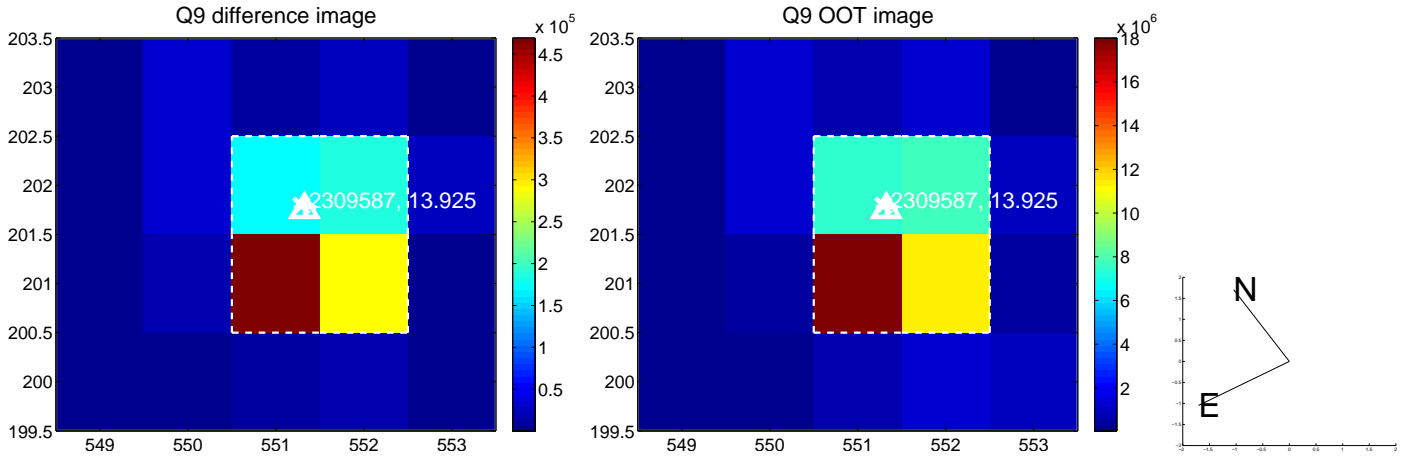
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



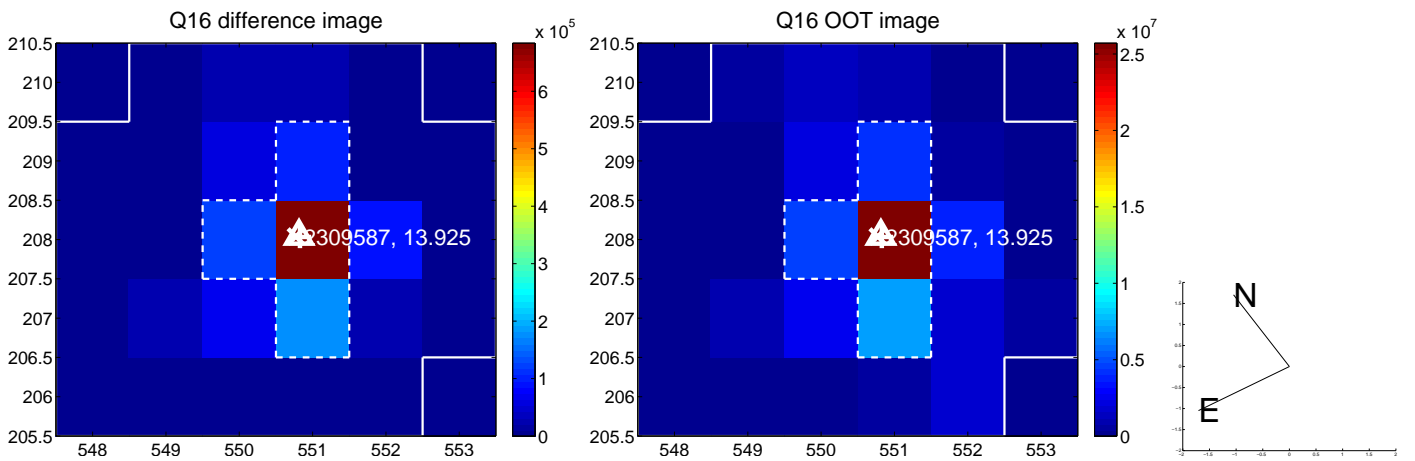
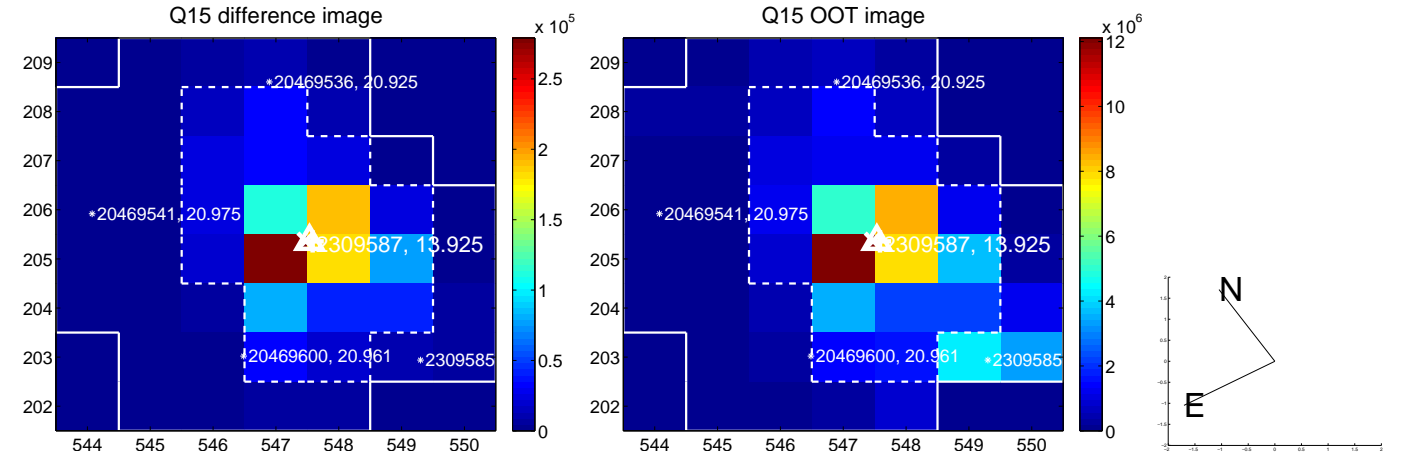
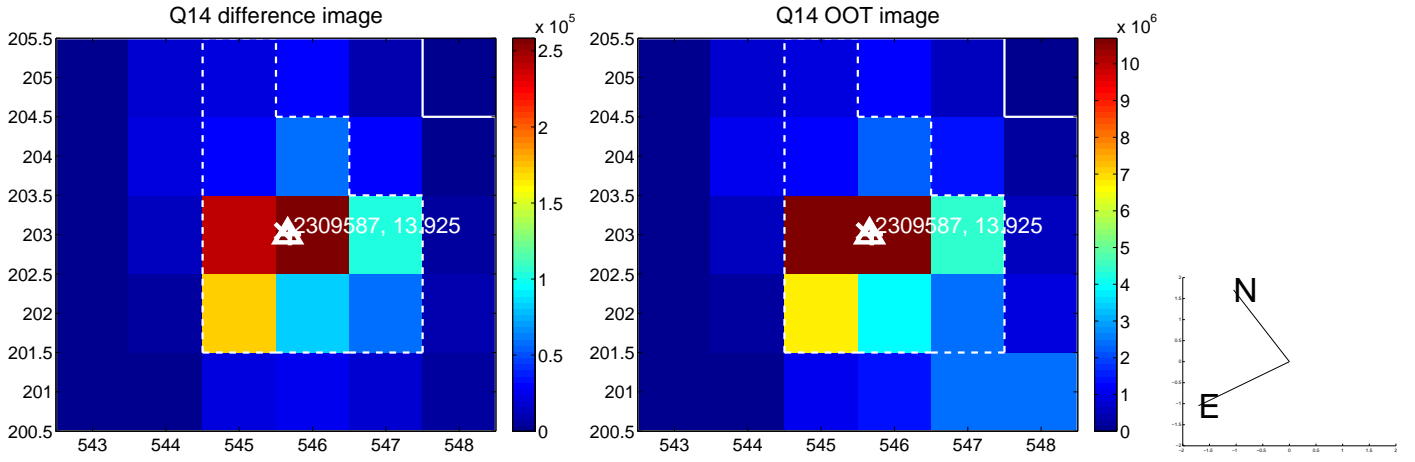
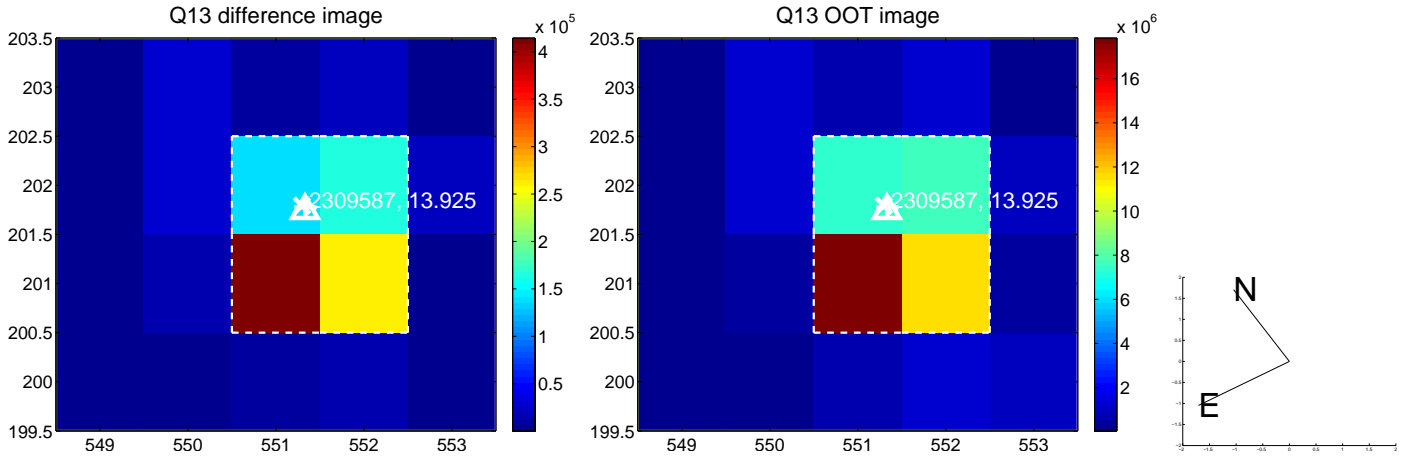
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



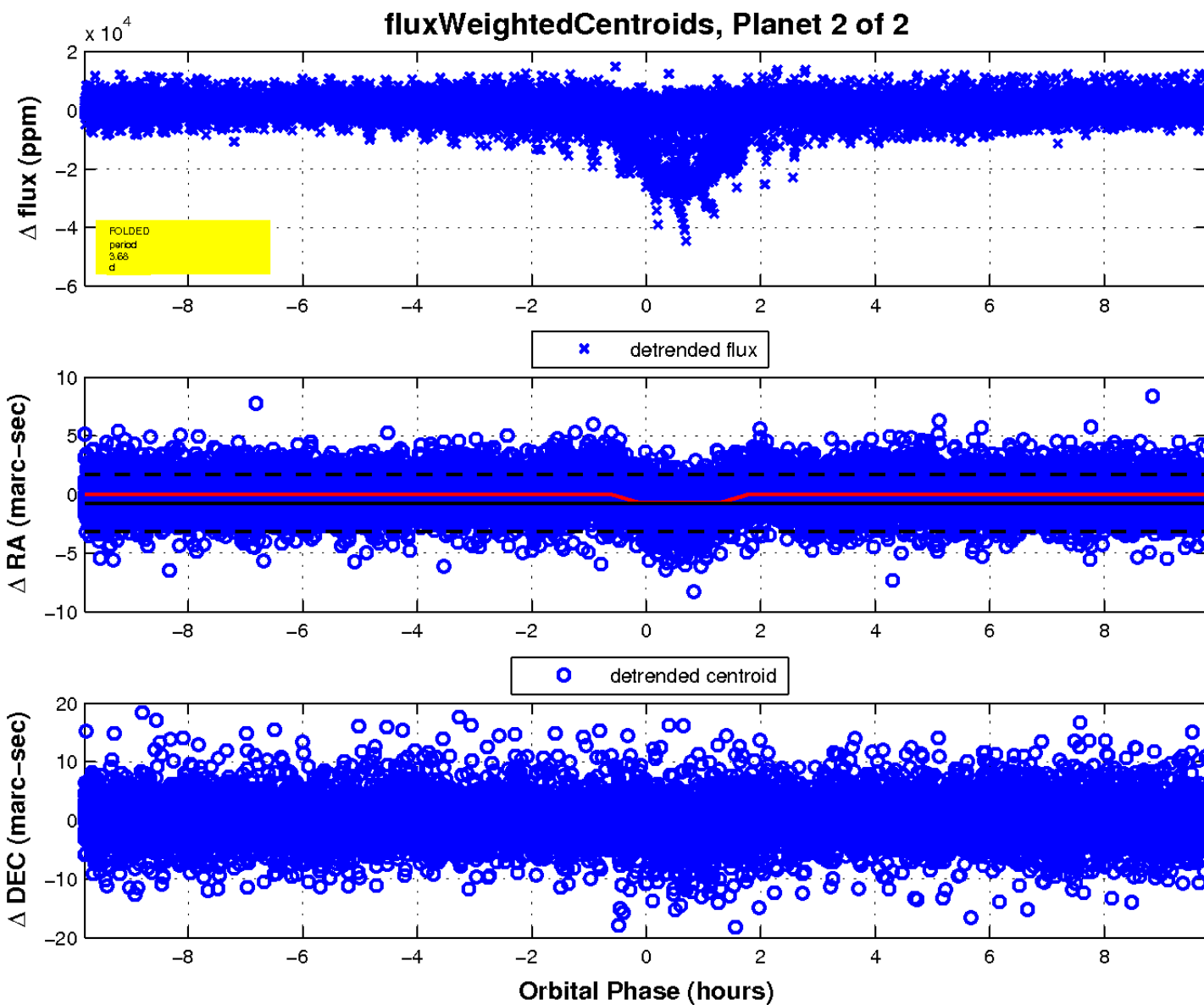
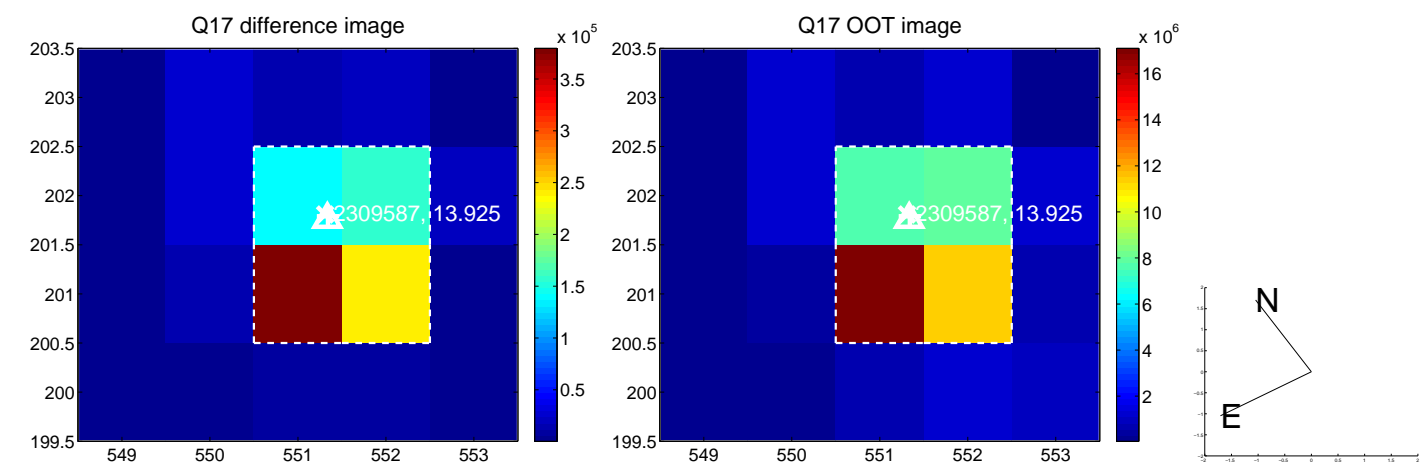
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

