

KIC 002309585

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})
002309585-01	OBS	1004.01	1.838445	132.127427	635.2	3.191	272.3	35.8	0.94	5751	3.67	978.78
002309585-02	OBS	No	1.838459	133.037178	141.7	1.496	9.0	8.6	0.94	5751	1.34	978.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002309585-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_RESOLVED_OFFSET—EPHEM_MATCH
002309585-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET

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.

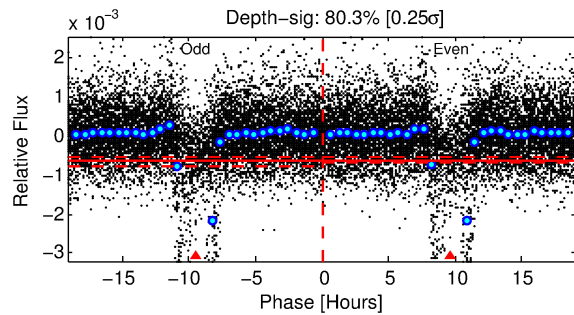
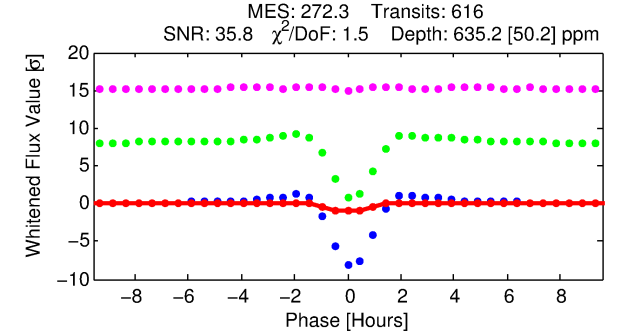
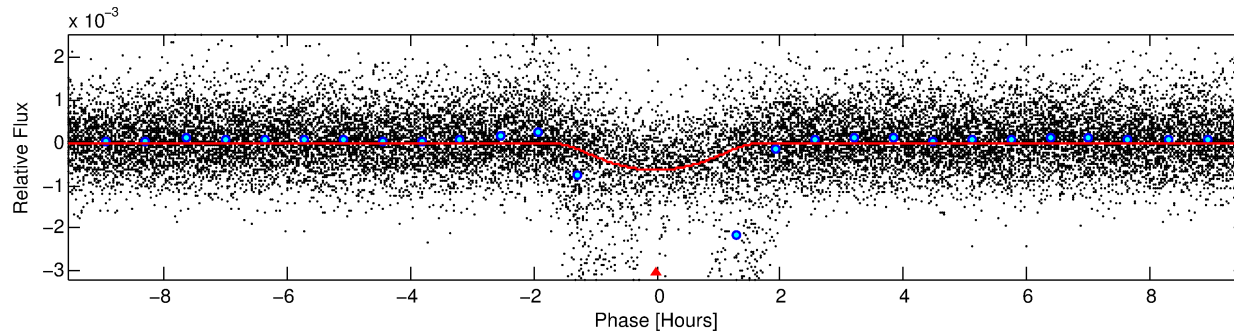
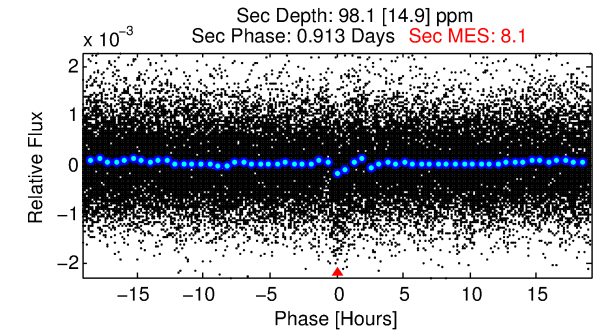
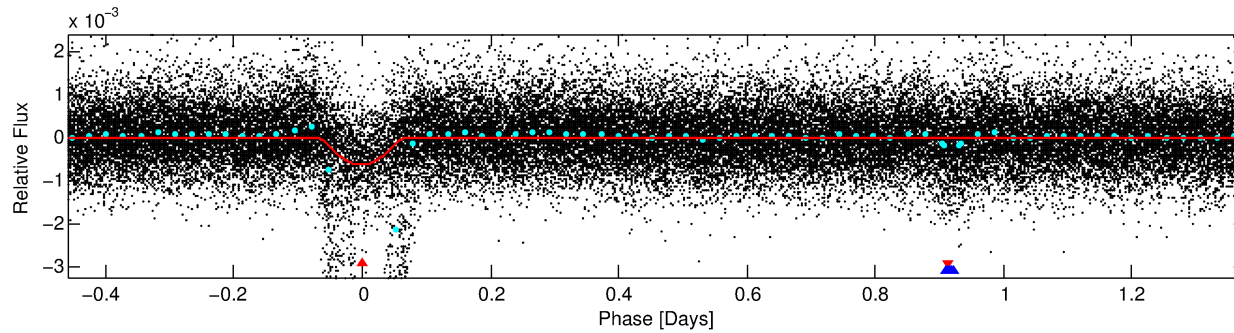
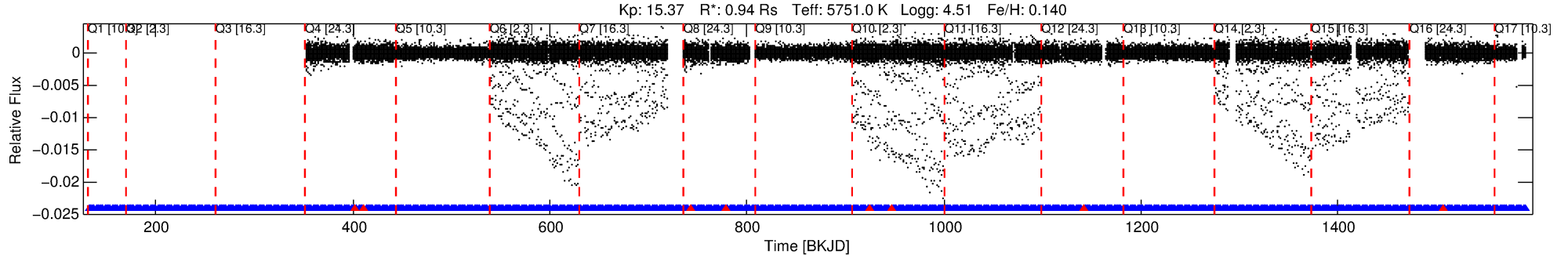
Ephemeris Match Information For 002309585-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
002309585-01	2309585	5982.01	2309587	1:1	11.7	-2	1	13.93	15.38	200.11	Direct-PRF	0	2.78	1.53

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 2309585 Candidate: 1 of 2 Period: 1.838 d
KOI: K01004.01 Corr: 0.874



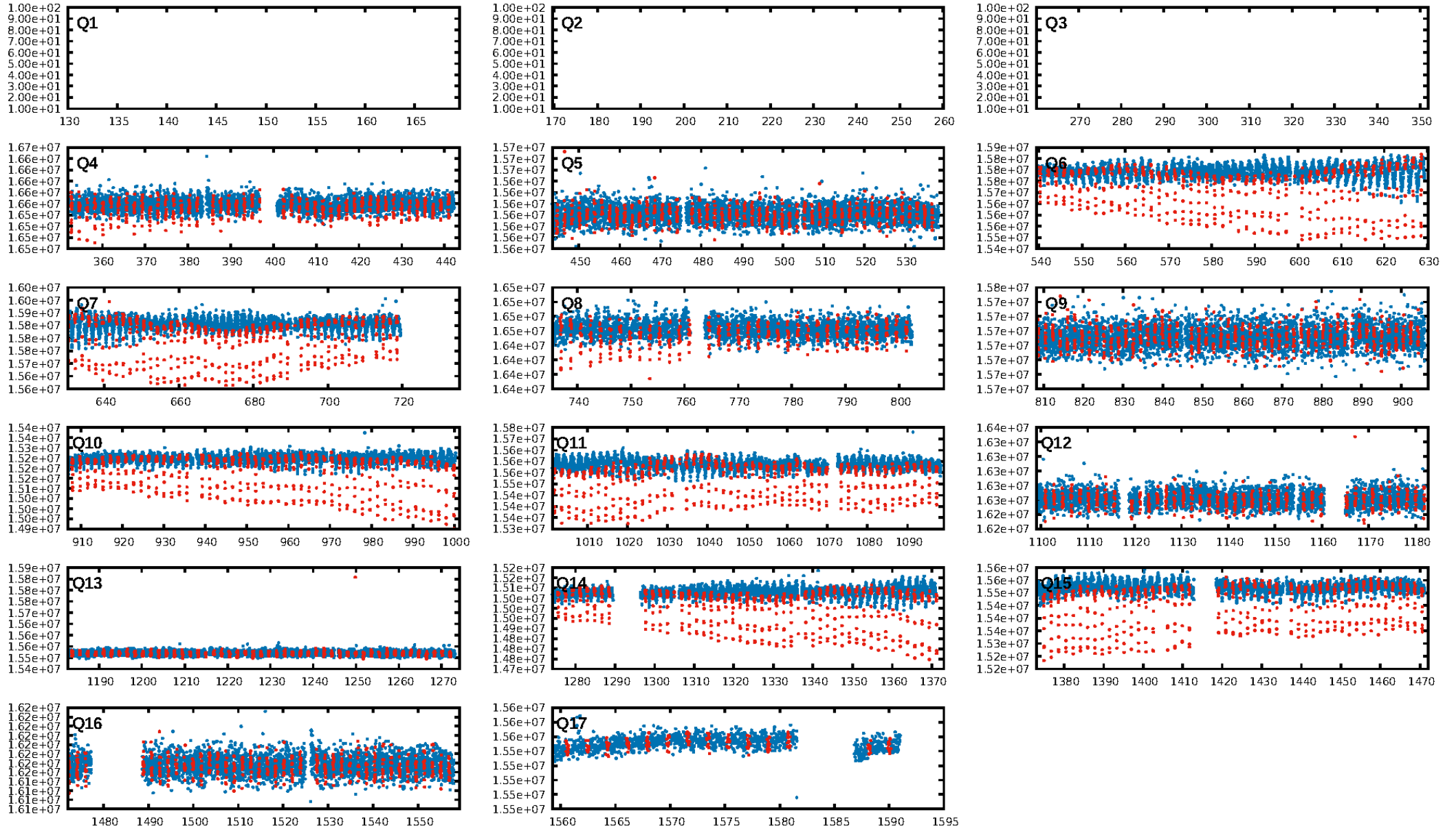
DV Fit Results:

Period = 1.83844 [0.00001] d
Epoch = 132.1274 [0.0017] BKJD
Rp/R* = 0.0358 [0.0160]
a/R* = 1.76 [0.22]
b = 0.98 [0.03]
Seff = 978.78 [398.08]
Teq = 1426 [145] K
Rp = 3.67 [1.97] Re
a = 0.0297 [0.0076] AU
Ag = 3.55 [3.50] [0.73σ]
Teffp = 3027 [696] K [2.25σ]

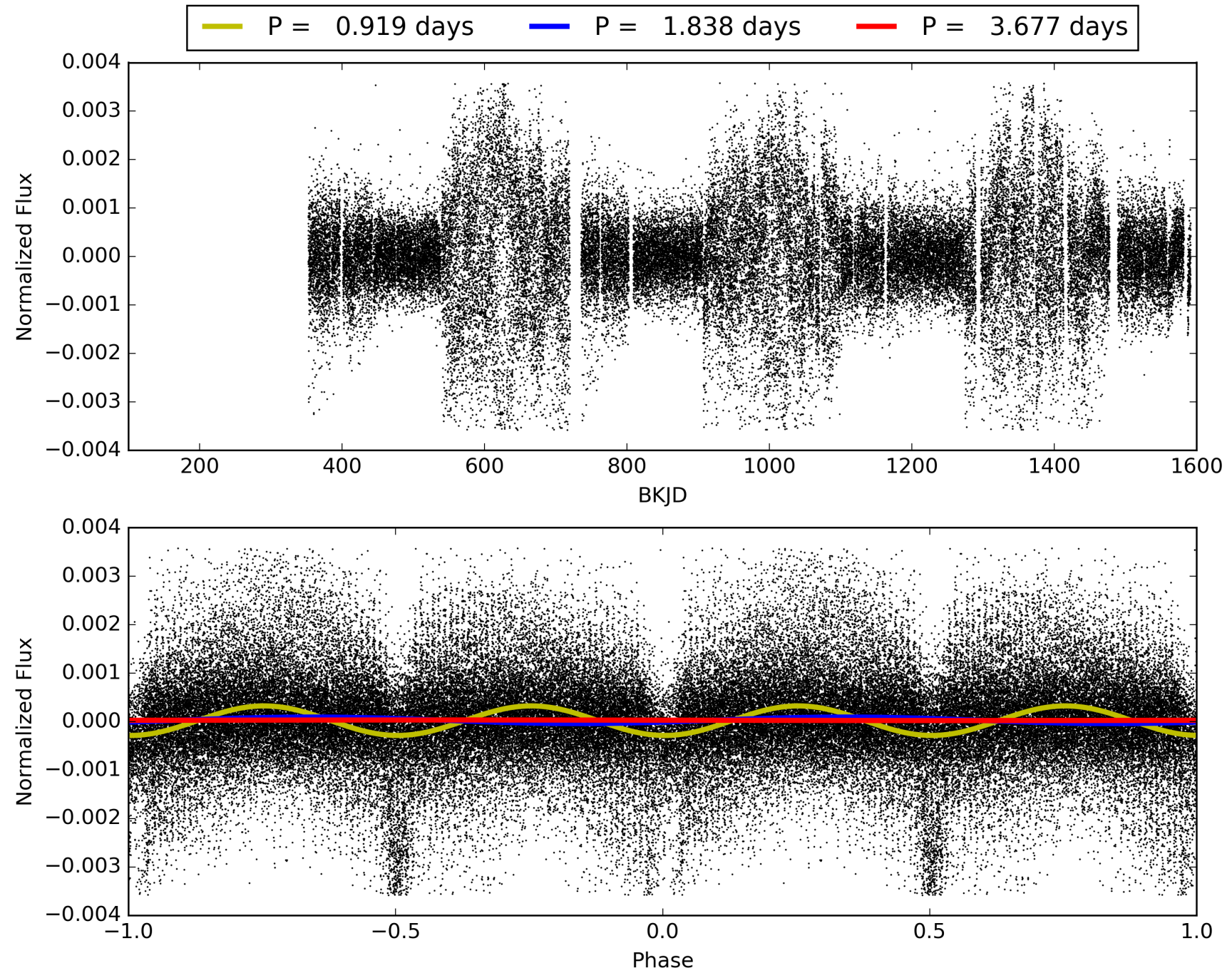
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.99 [594/602]
GhostDiagnostic-chr: -0.3683
Centroid-sig: N/A
Centroid-so: 75.423 arcsec [230.85σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [14/14]

TCE 002309585-01, PDC Light Curves

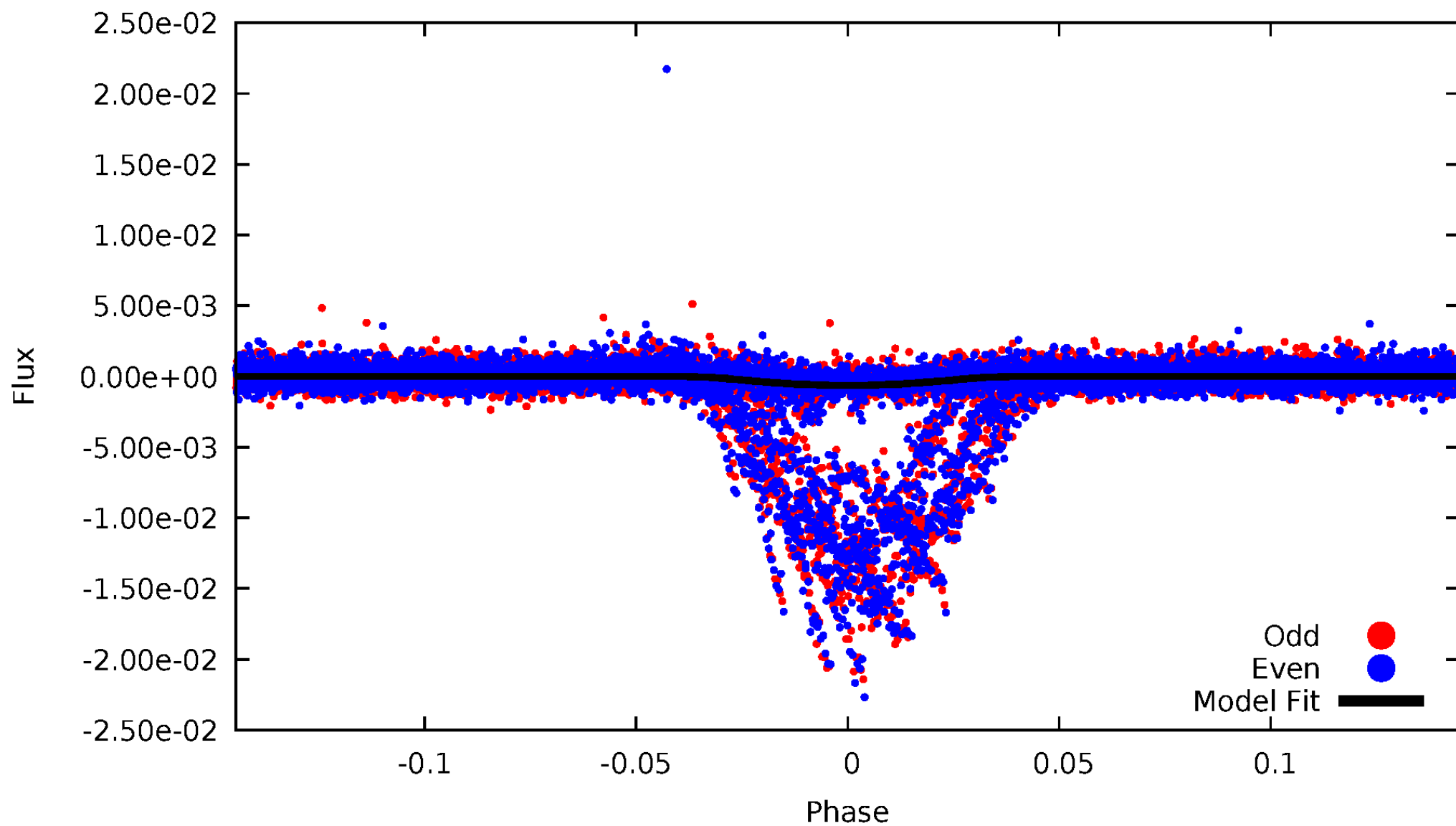


TCE 002309585-01



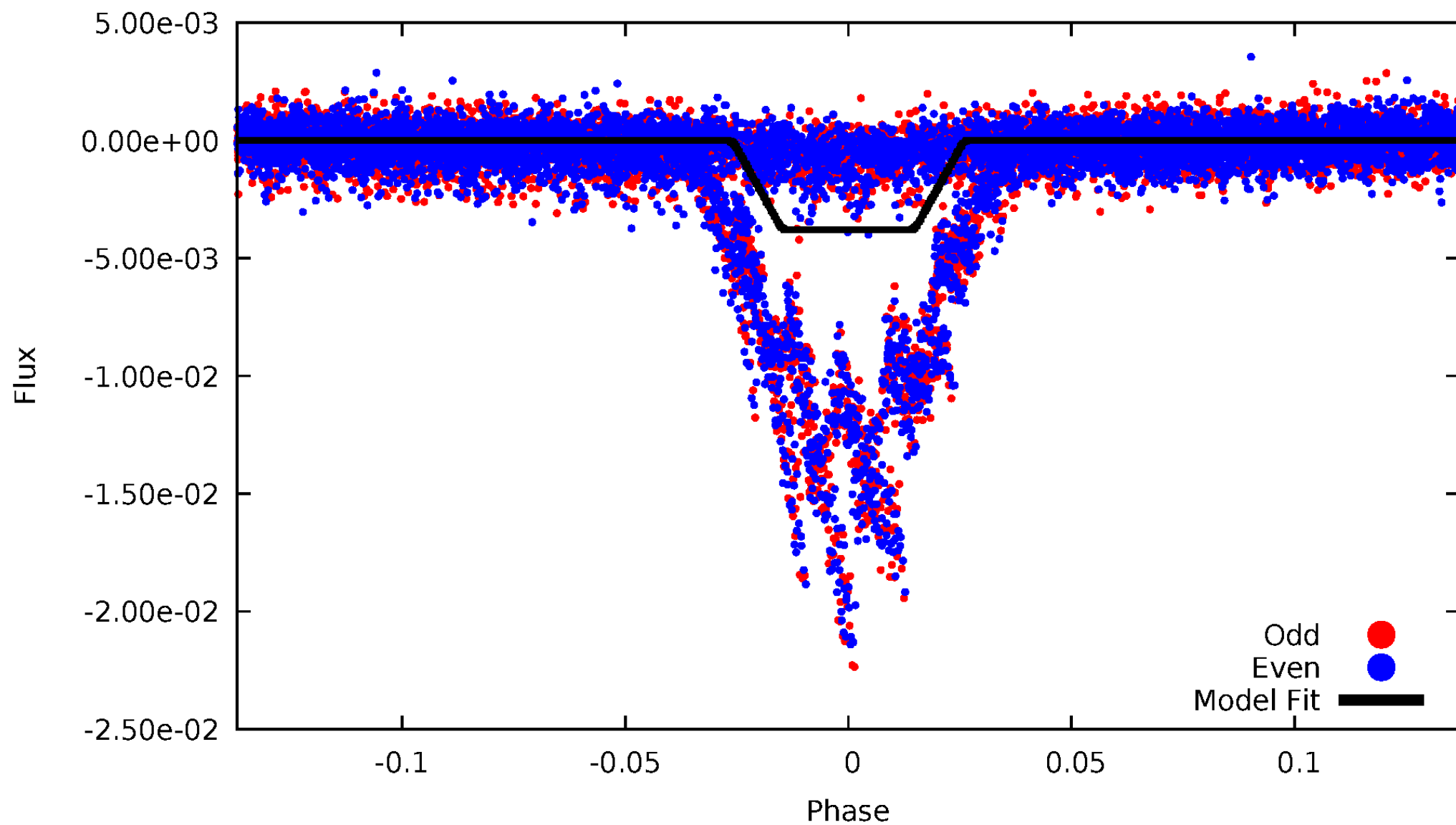
DV Odd/Even

TCE 002309585-01

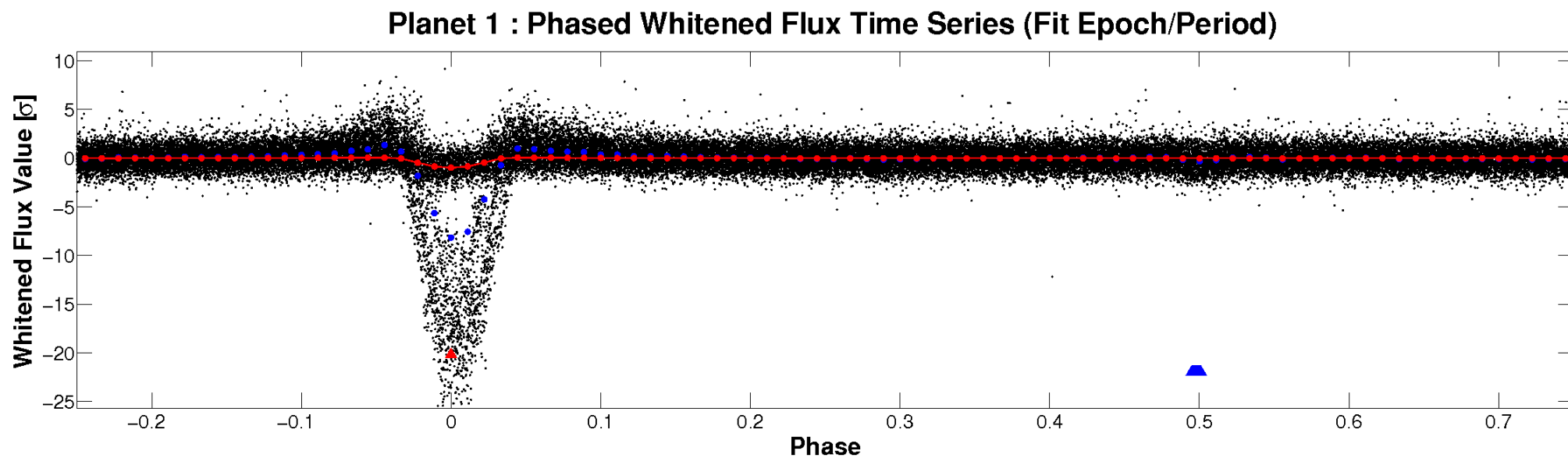
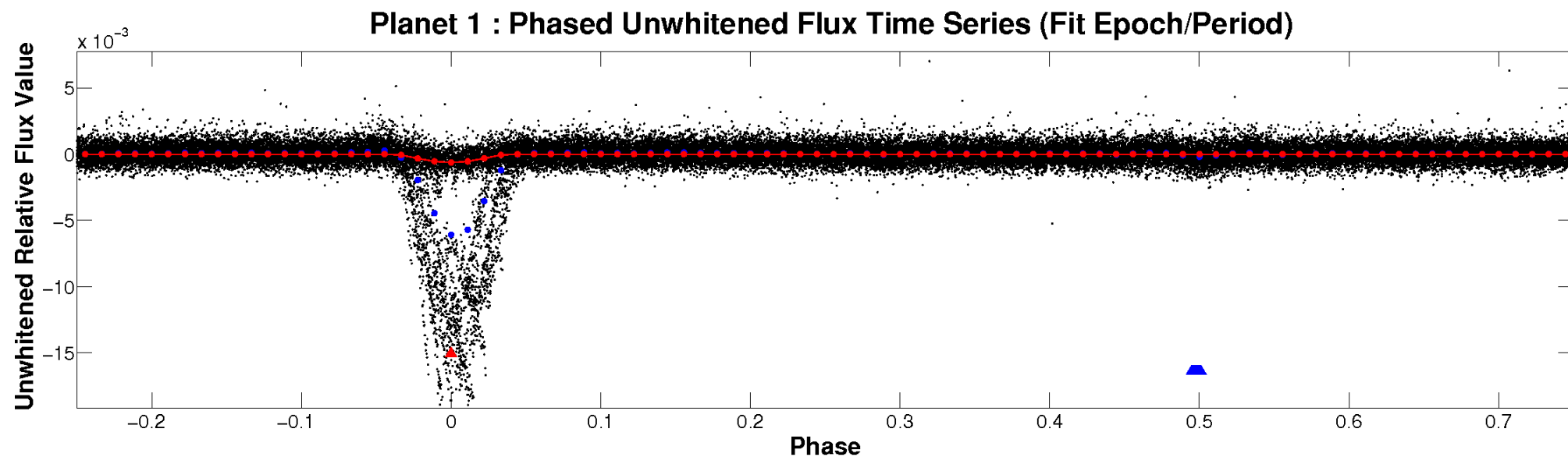


ALT Odd/Even

TCE 002309585-01

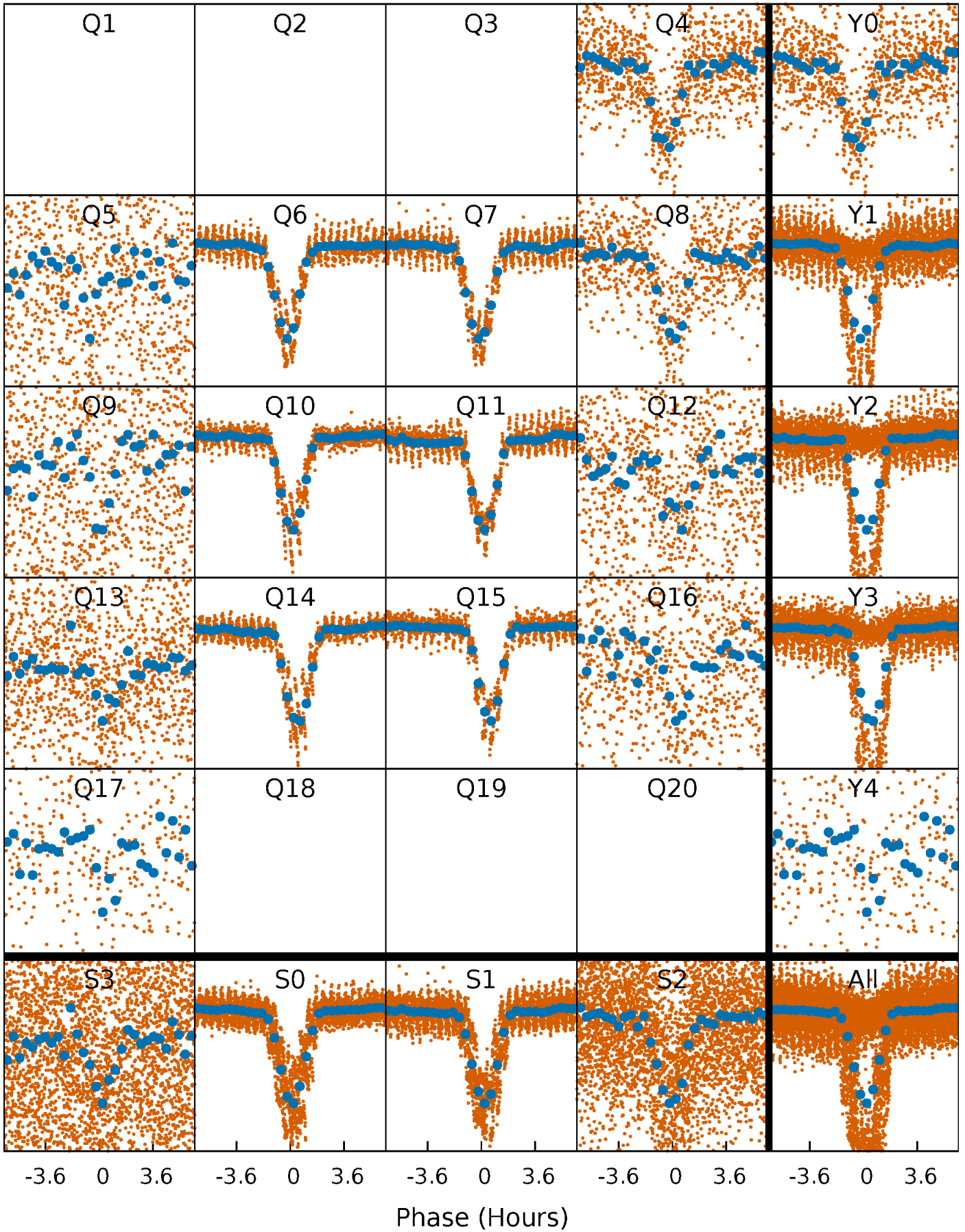


Non-Whitened Vs. Whitened Light Curve



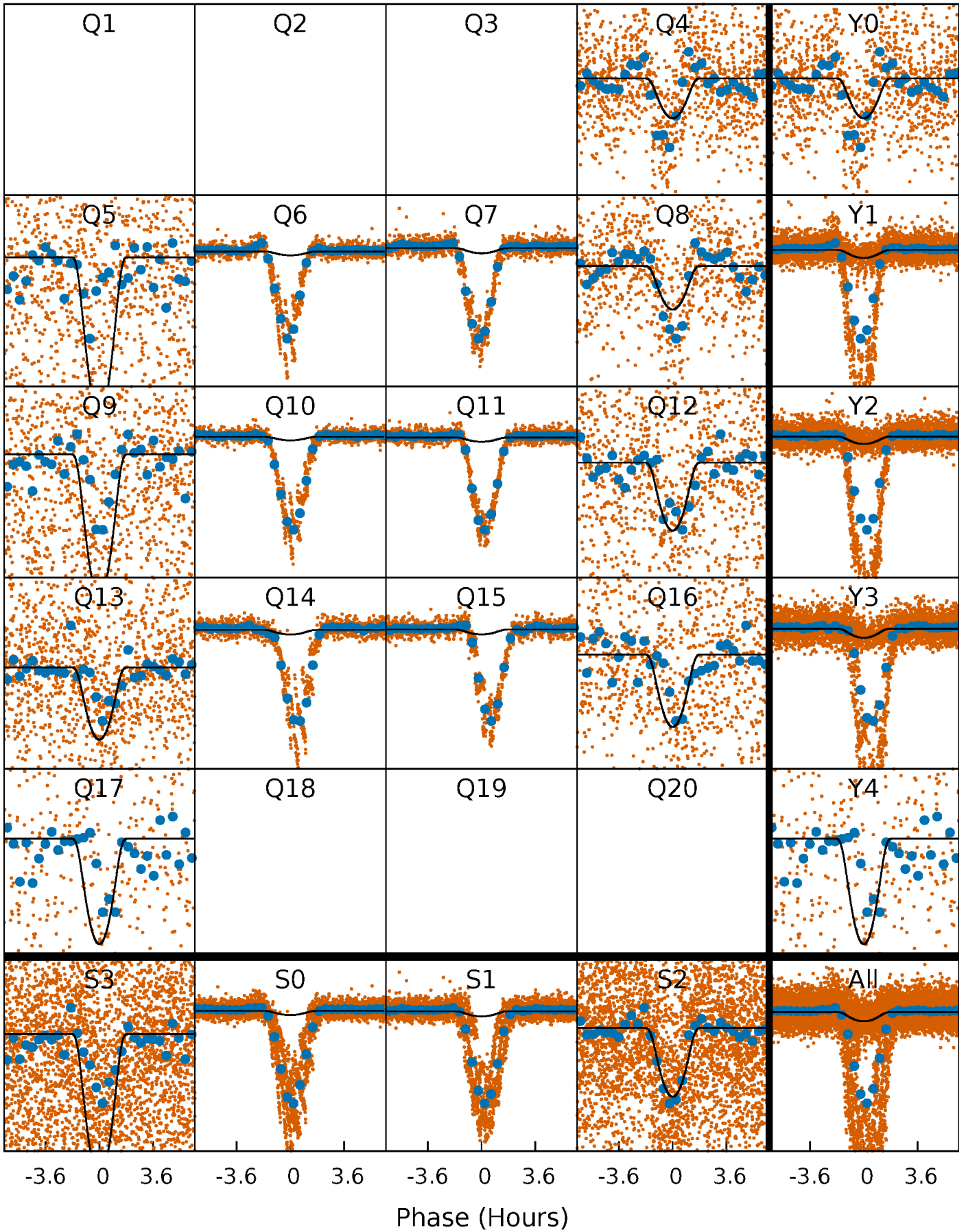
PDC Quarter-Phased Transit Curves

TCE 002309585-01 P= 1.838445 Days $T_0=132.127427$ (BKJD)



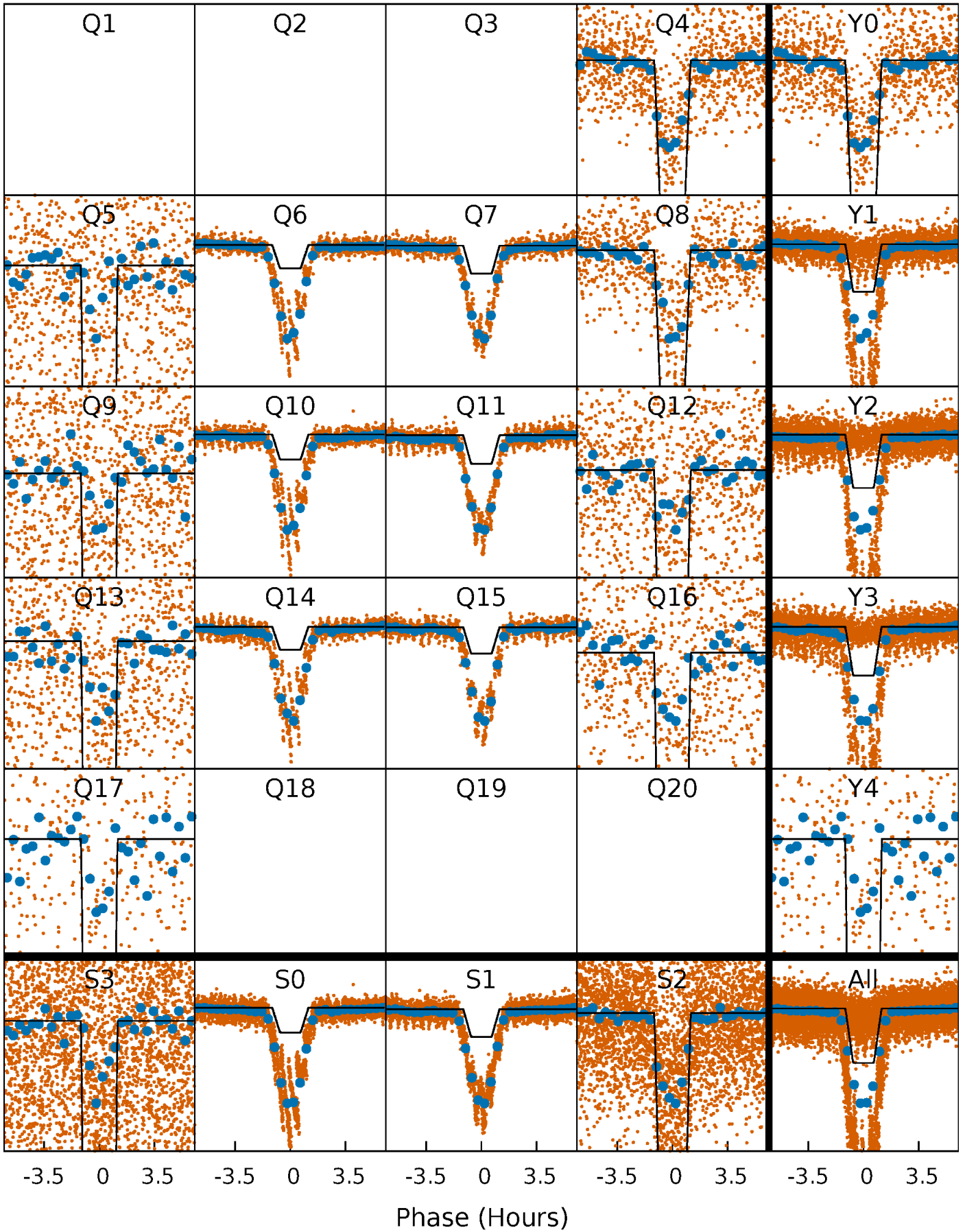
DV Quarter-Phased Transit Curves

TCE 002309585-01 P= 1.838445 Days $T_0=132.127427$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

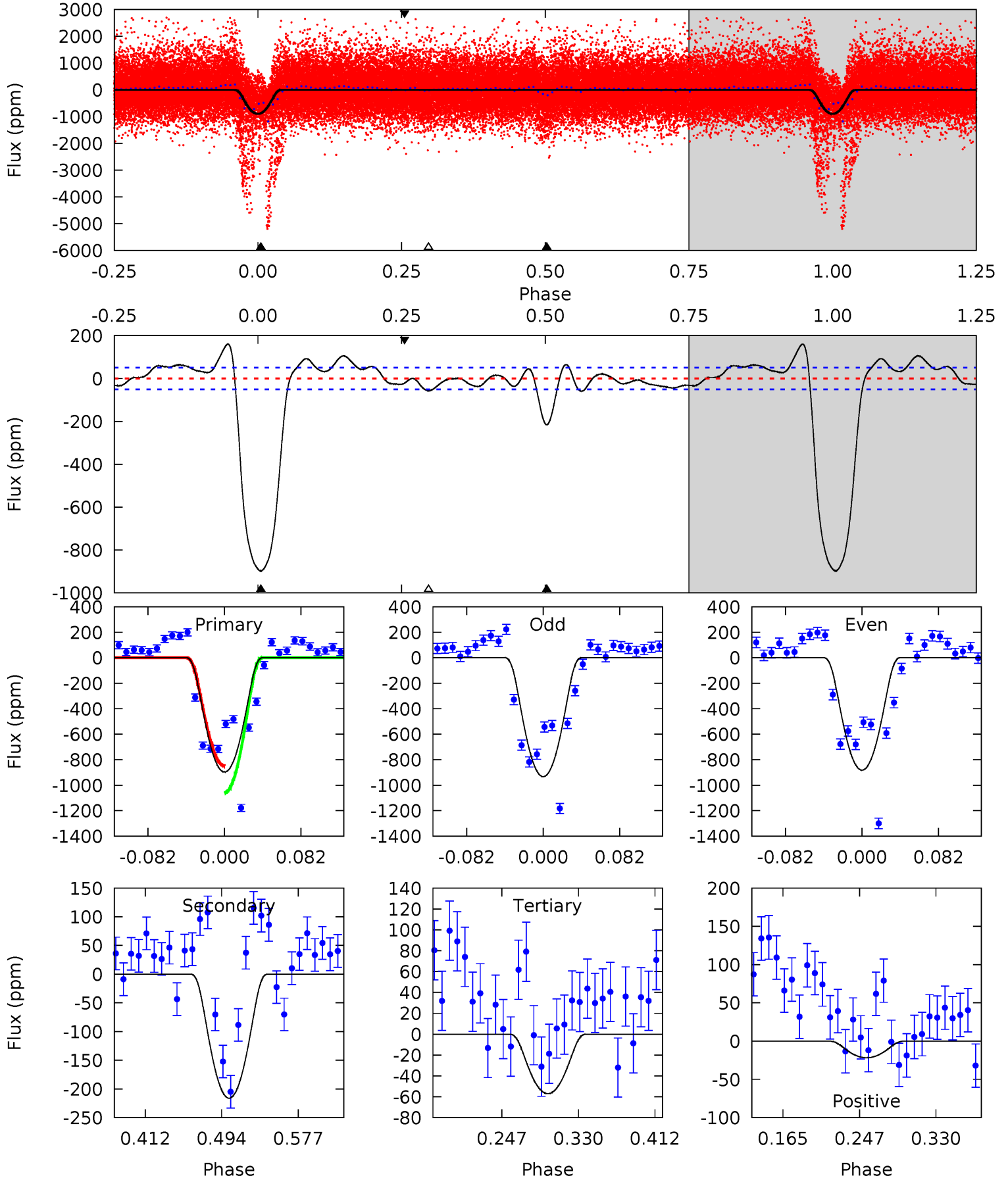
TCE 002309585-01 P= 1.838508 Days $T_0=132.103781$ (BKJD)



DV Model-Shift Uniqueness Test

002309585-01, P = 1.838445 Days, E = 132.127427 Days

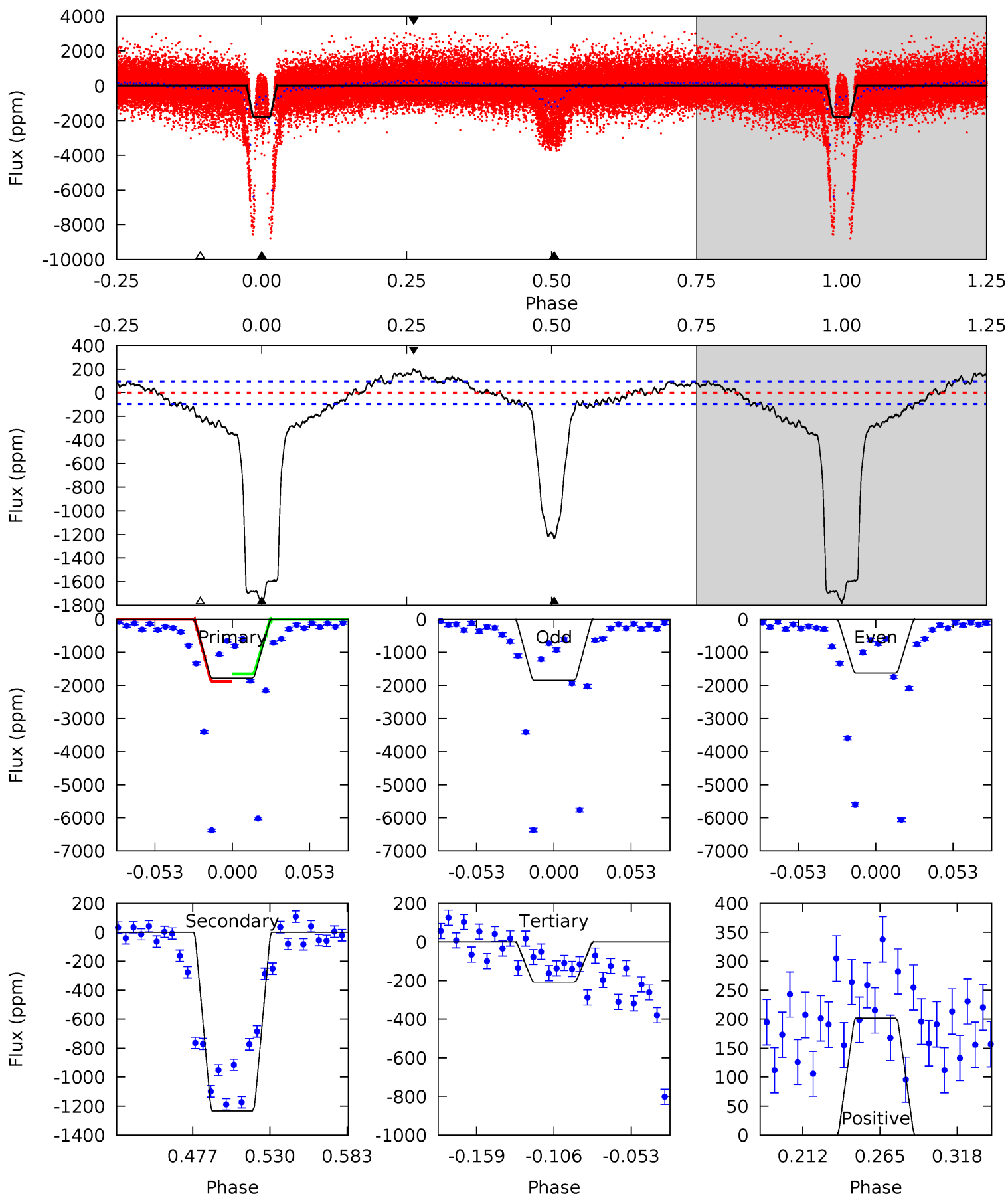
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
81.7	19.7	5.19	-1.98	4.61	1.74	3.56	76.5	83.7	14.5	21.7	2.31	4.10	0.15	9.50



Alt Model-Shift Uniqueness Test

002309585-01, P = 1.838508 Days, E = 132.103781 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
86.3	59.8	10.1	9.78	4.70	1.93	5.96	76.3	76.6	49.8	50.1	5.23	2.95	0.10	5.35



Stellar Parameters For KIC 002309585

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5751^{+160}_{-200}	$4.508^{+0.037}_{-0.213}$	$0.140^{+0.200}_{-0.300}$	$0.940^{+0.279}_{-0.093}$	$1.038^{+0.110}_{-0.134}$	$1.761^{+0.358}_{-0.875}$
	+3%/-3%	+1%/-5%	+143%/-214%	+30%/-10%	+11%/-13%	+20%/-50%
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 002309585-01 / KOI 1004.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-216 ± 11	$3.78^{+1.98}_{-1.71}$	2042^{+135}_{-92}	3971^{+1055}_{-500}	$7.176^{+16.082}_{-3.955}$
Alt.	-1234 ± 21	$6.78^{+1.96}_{-1.98}$	2049^{+145}_{-102}	4488^{+665}_{-410}	13^{+13}_{-5}

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

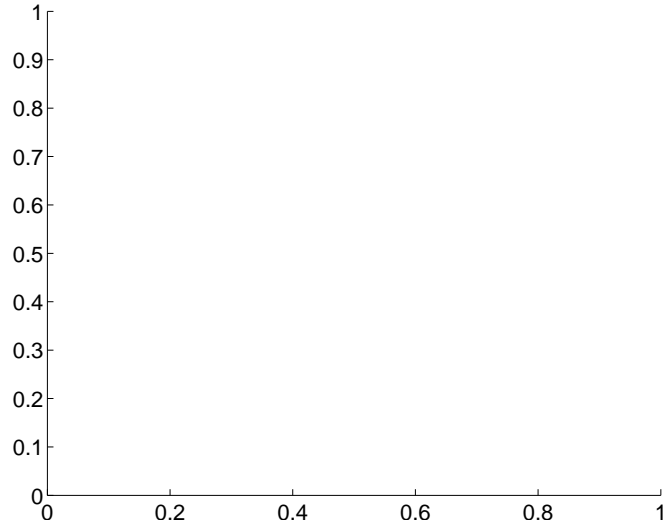
Supplemental centroid analysis for 002309585-01. Kepler magnitude: 15.37. Transit SNR 35.76

There are 0 quarters with good PRF difference image offsets

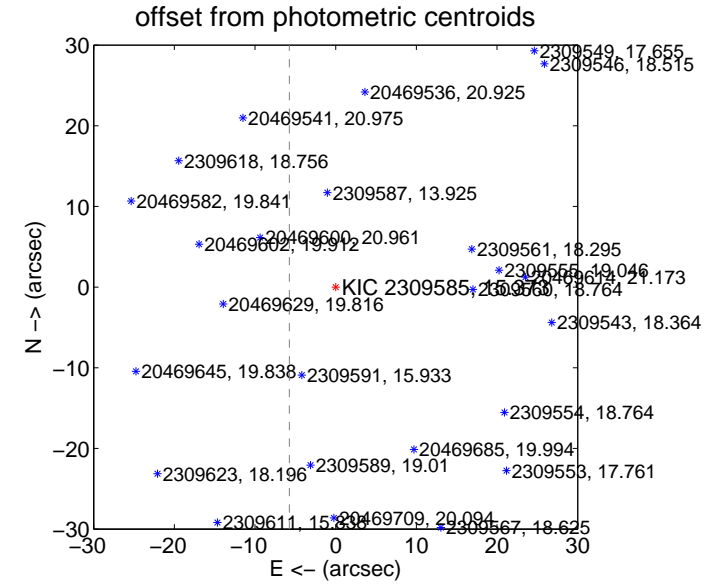
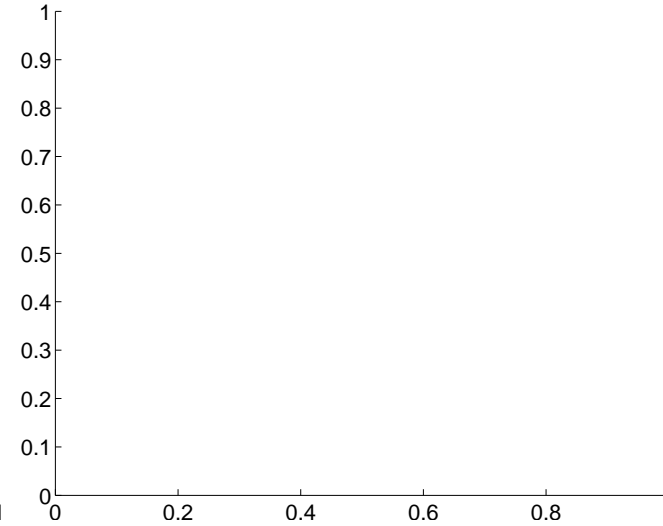
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	75.42 ± 0.33	230.85	5.74 ± 0.25	75.20 ± 0.33

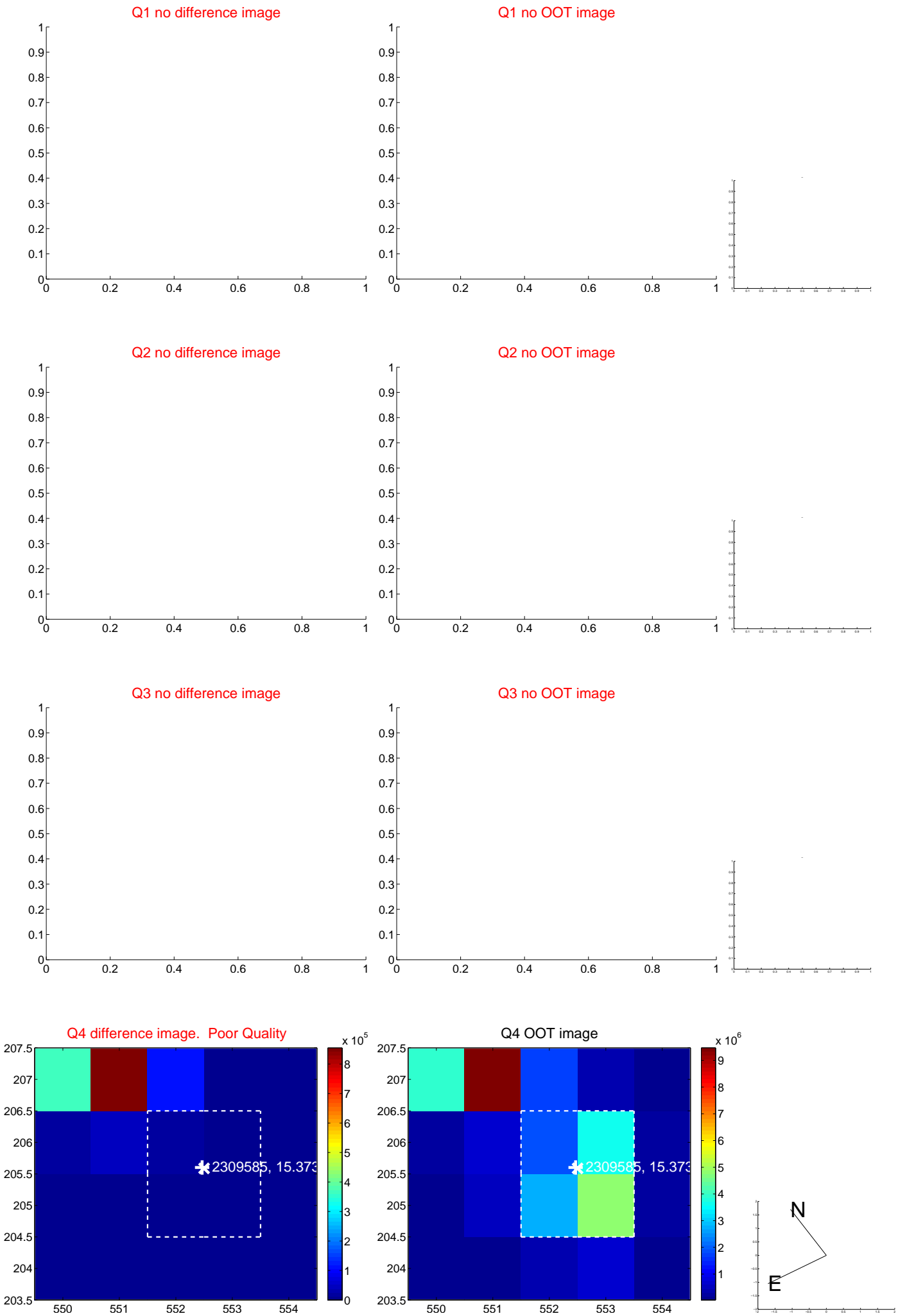
There is no PRF-fit offset from OOT-fit



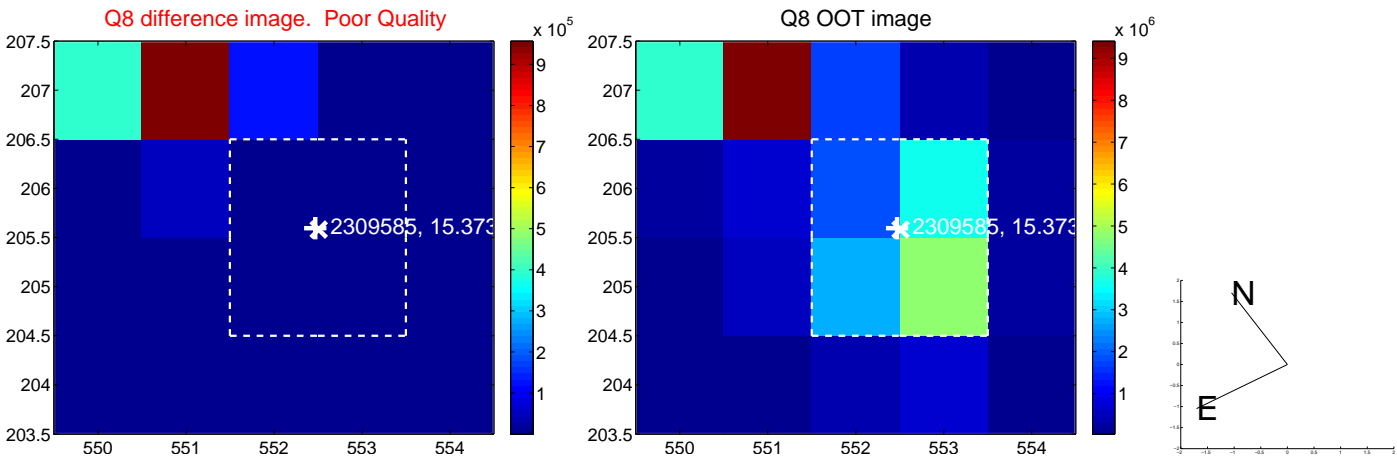
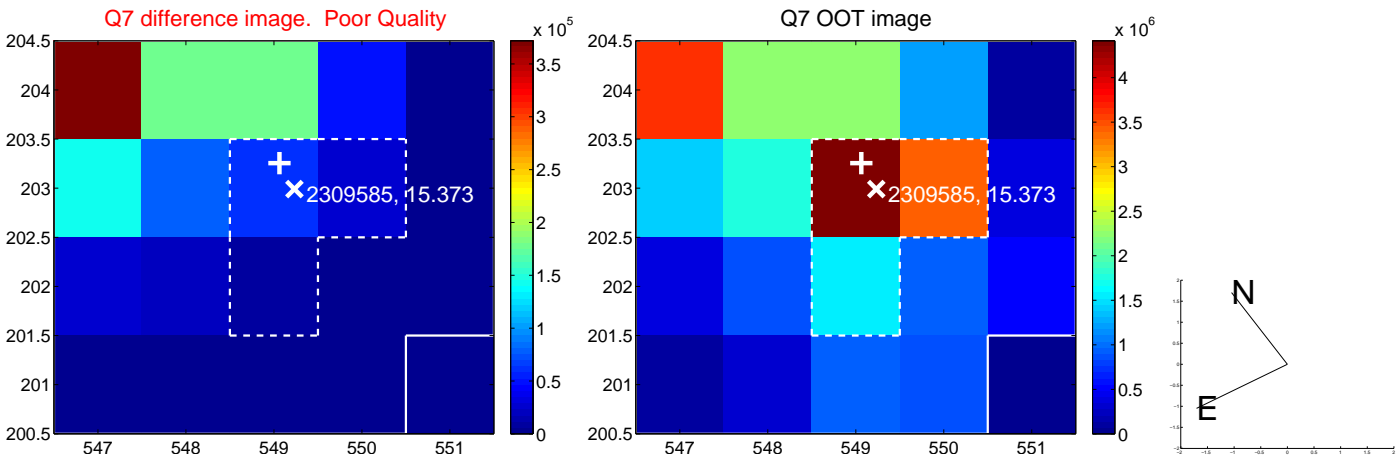
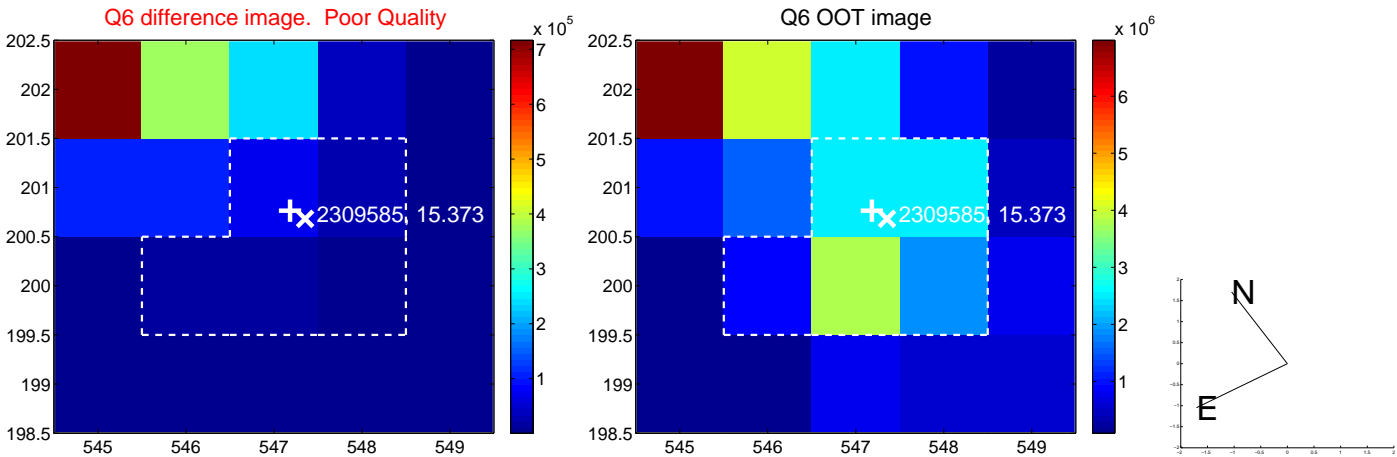
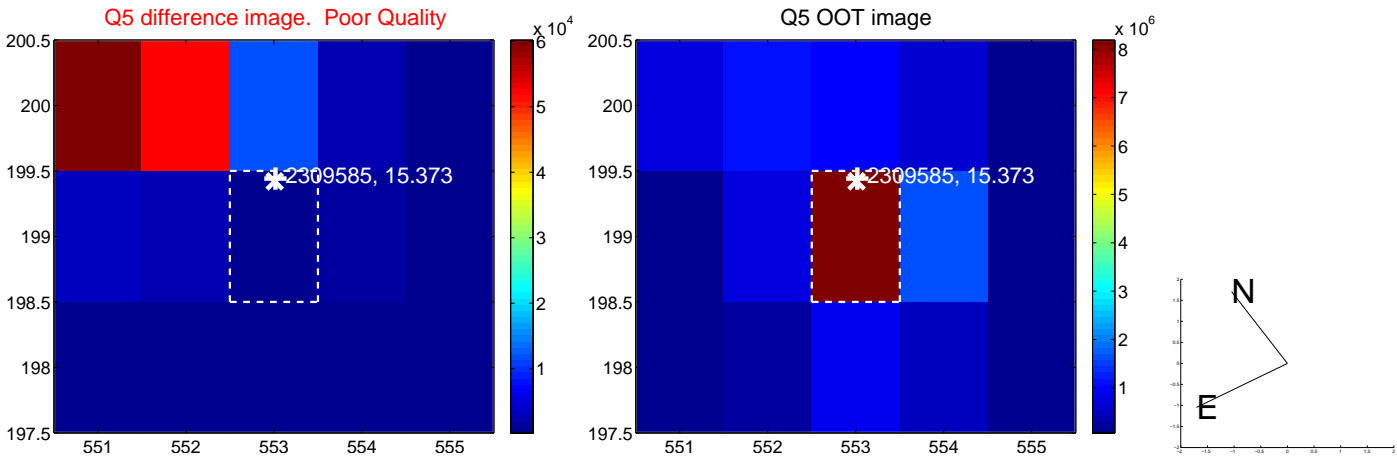
There is no PRF-fit offset from KIC



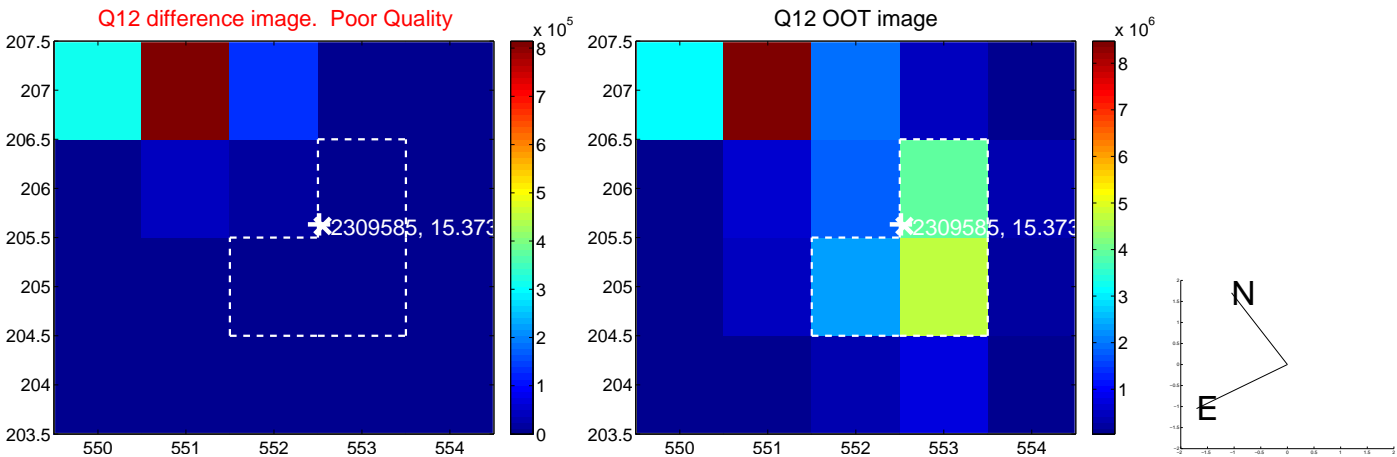
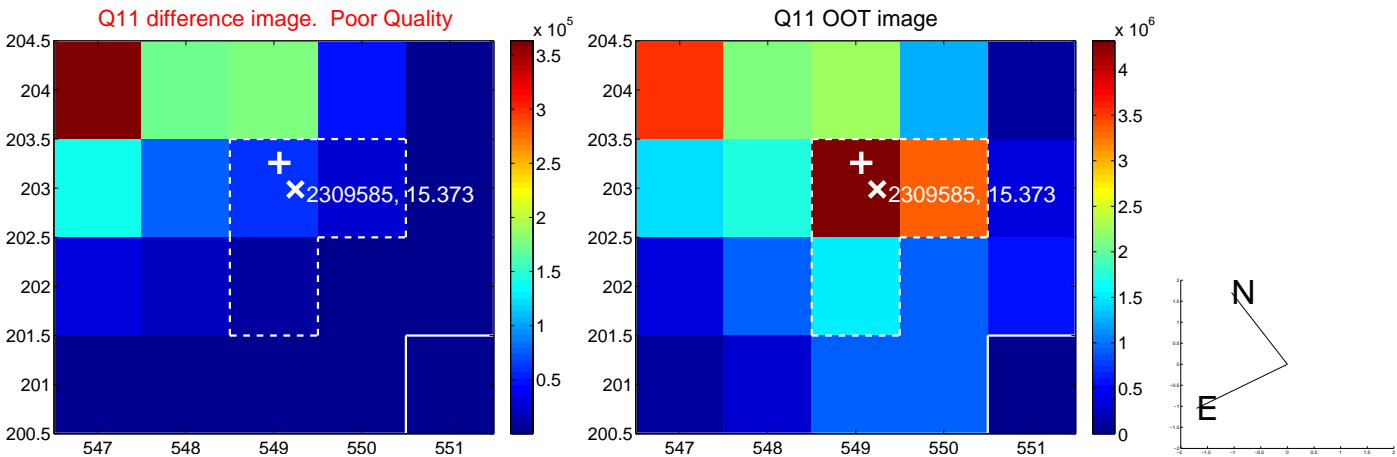
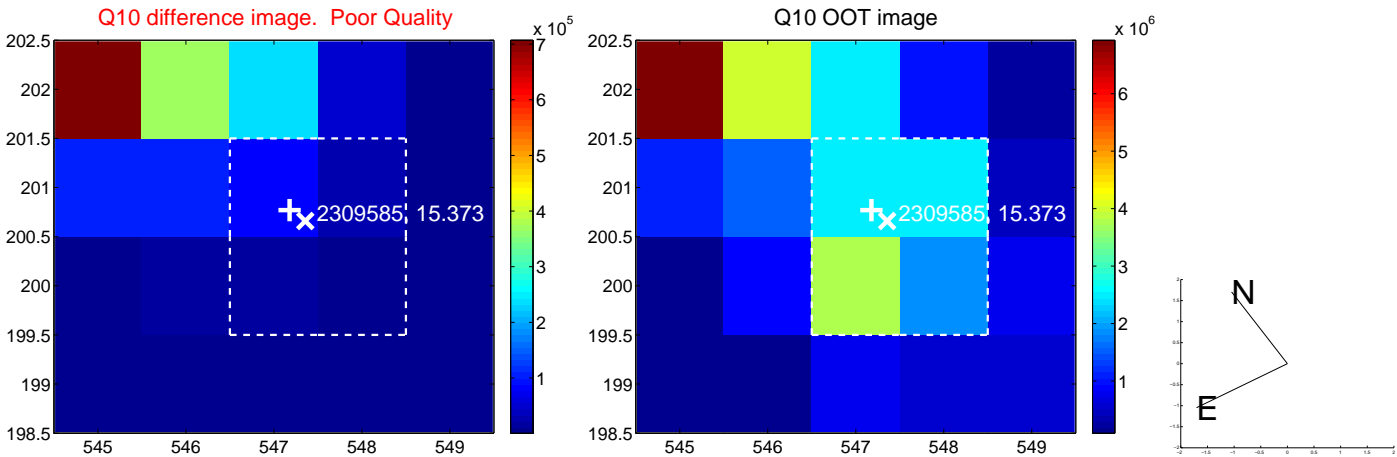
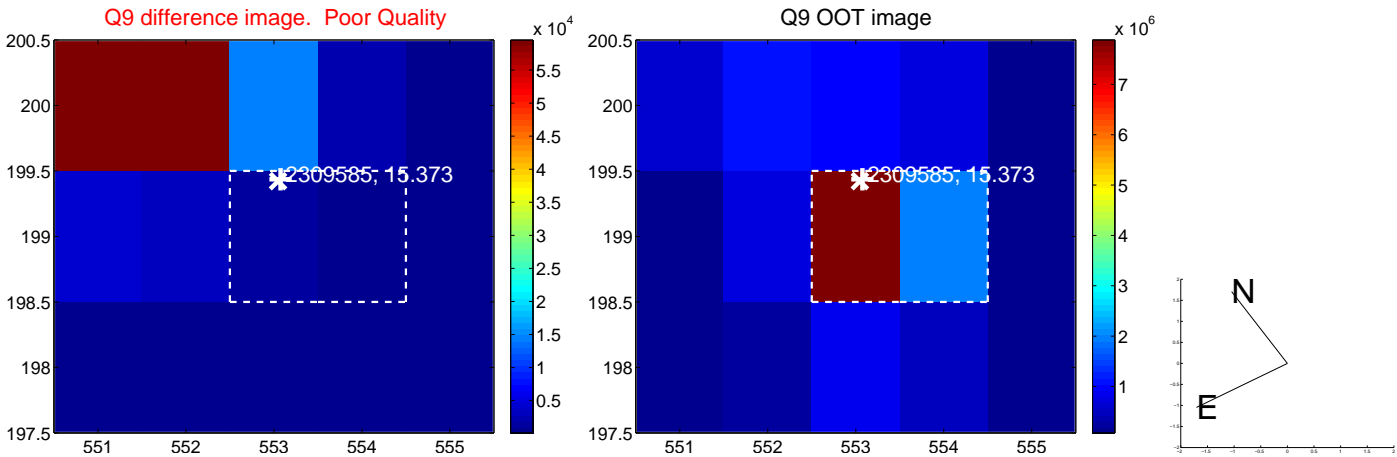
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



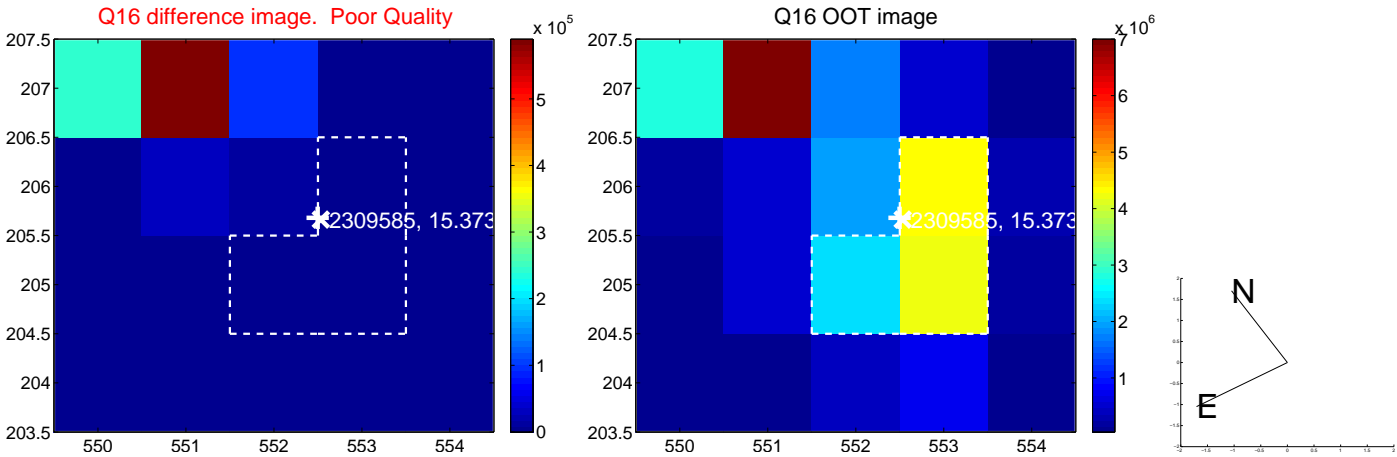
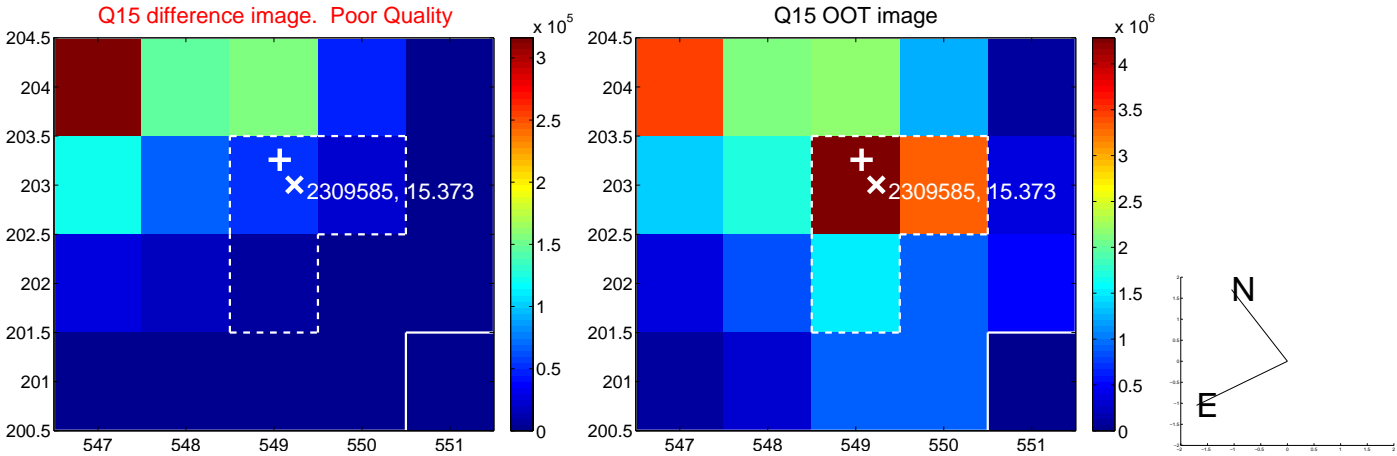
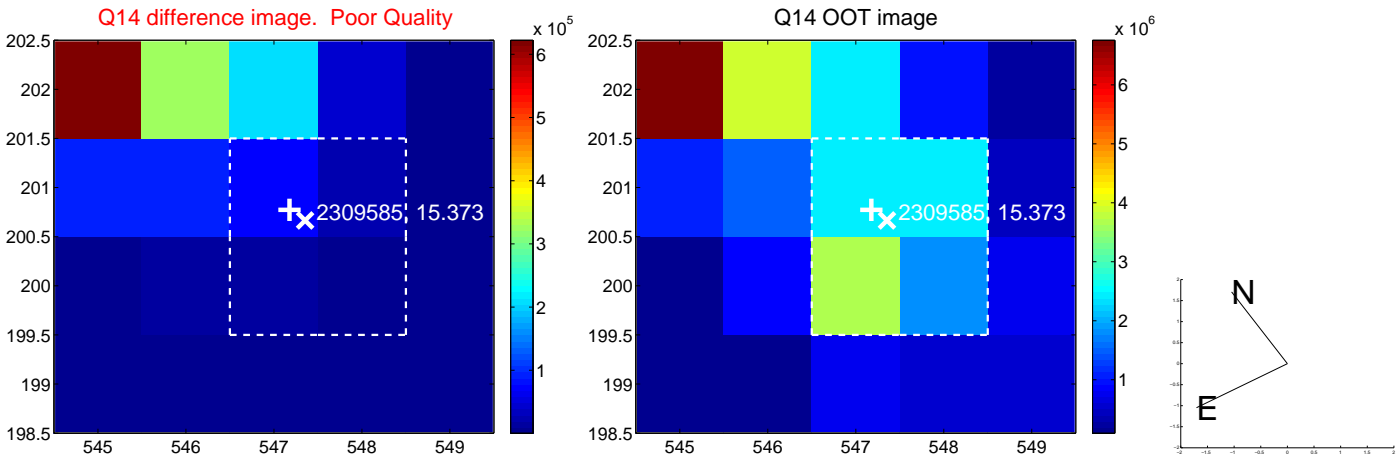
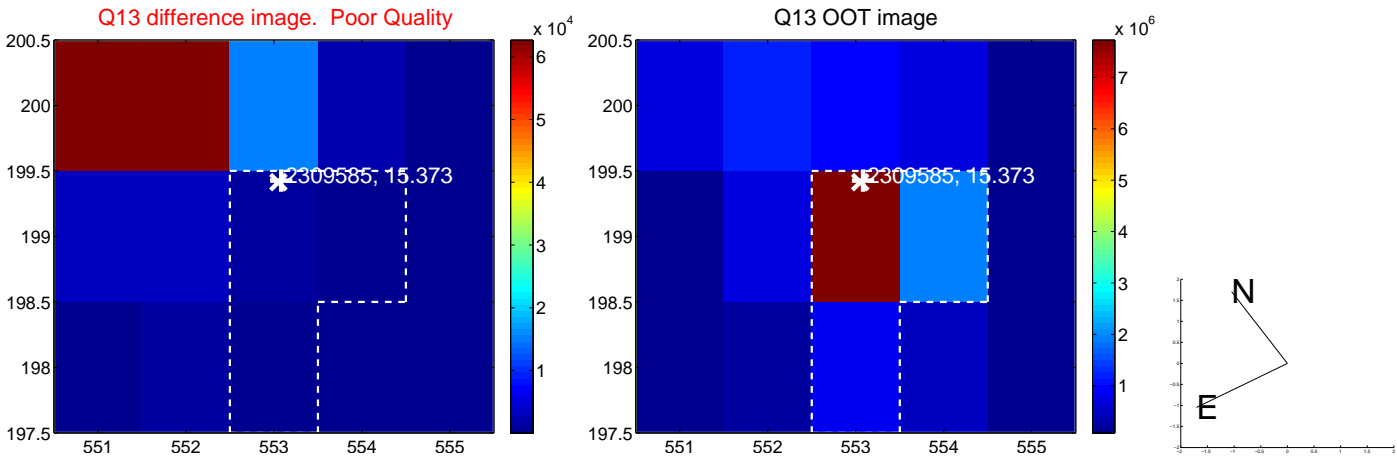
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



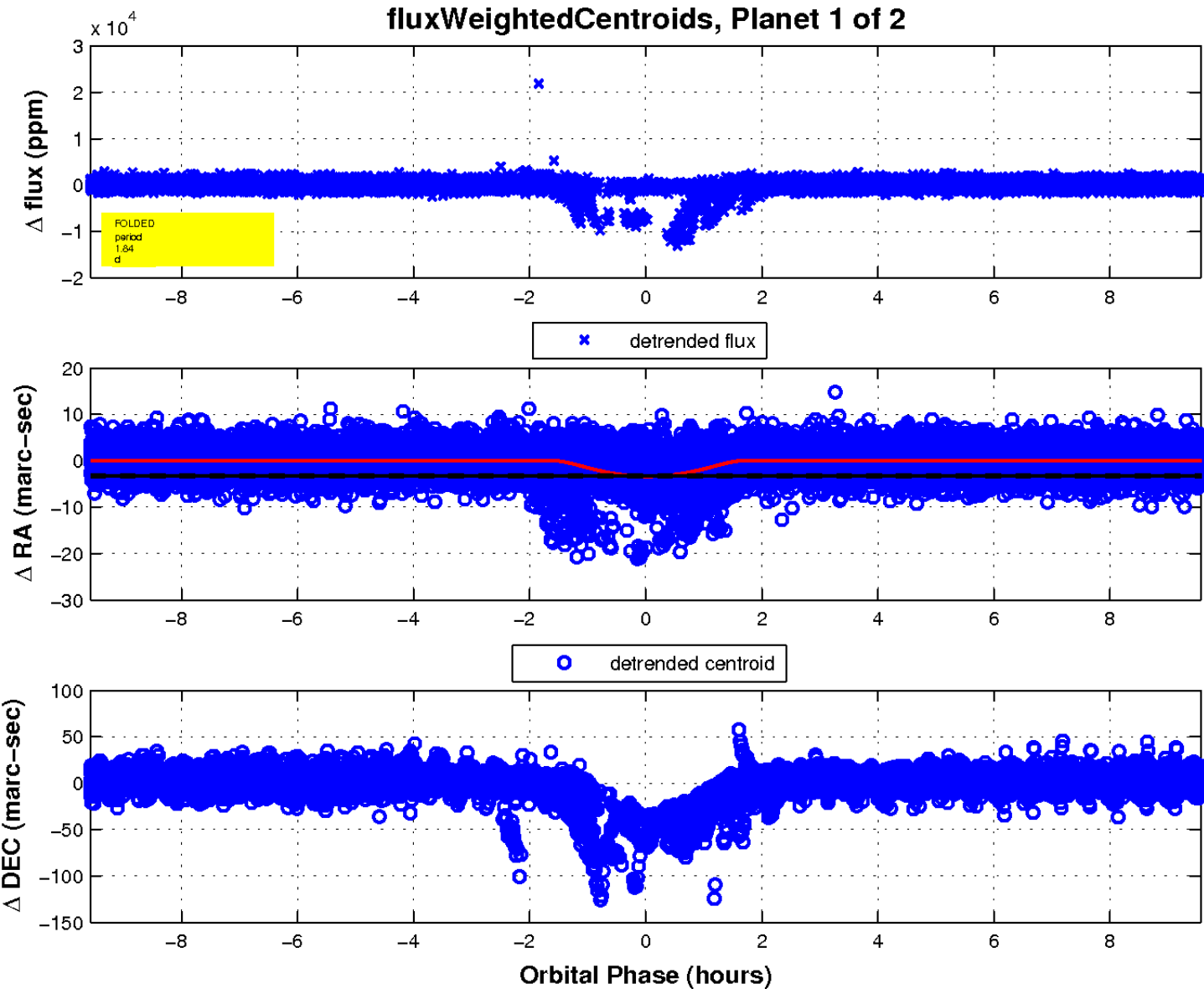
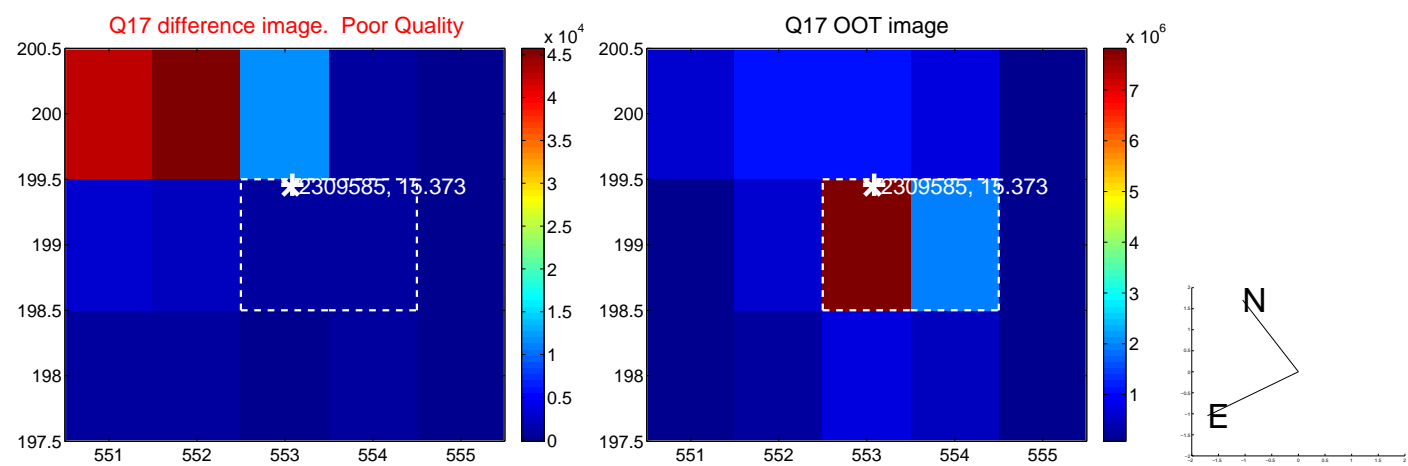
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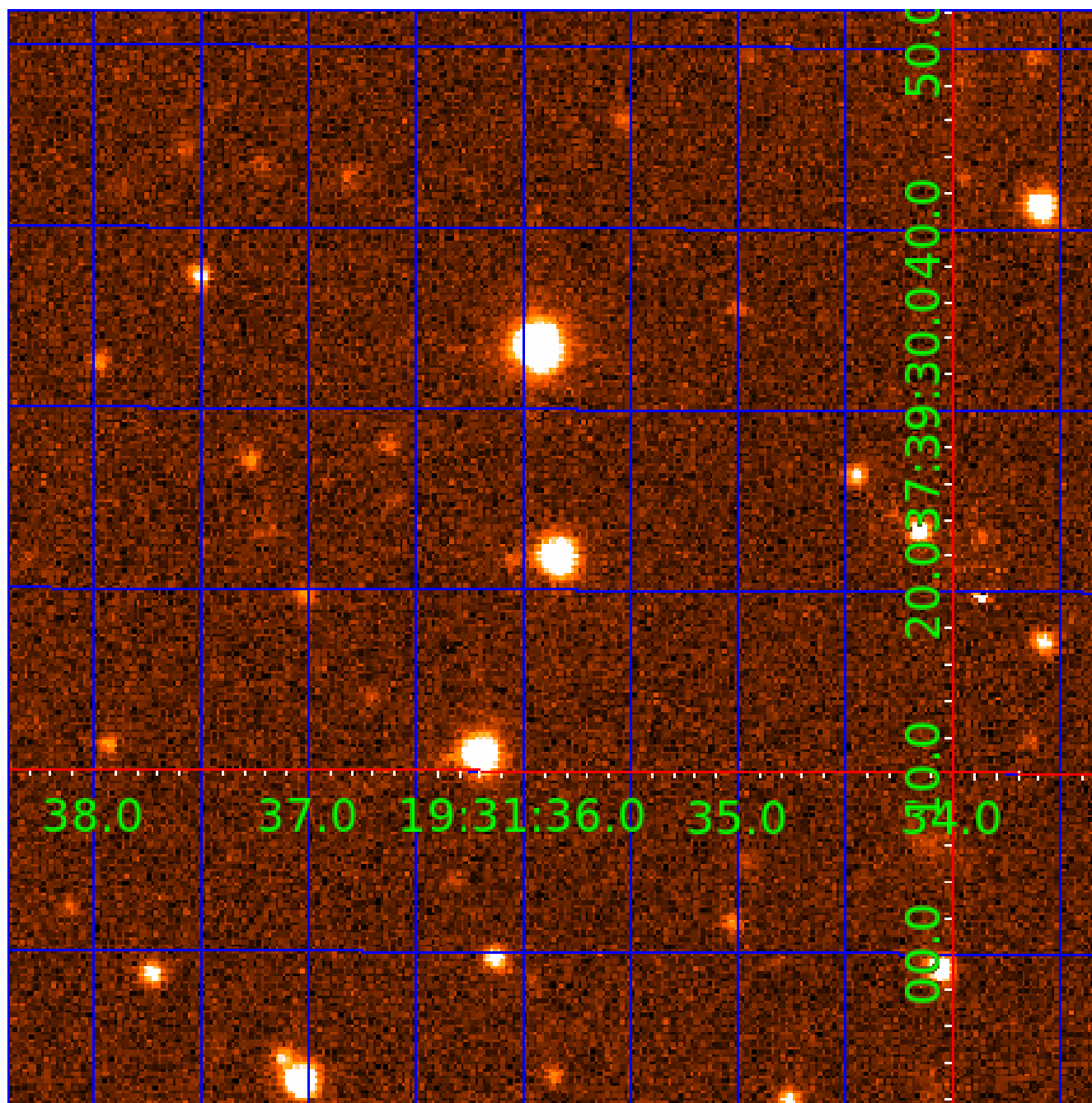


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002309585

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})
002309585-01	OBS	1004.01	1.838445	132.127427	635.2	3.191	272.3	35.8	0.94	5751	3.67	978.78
002309585-02	OBS	No	1.838459	133.037178	141.7	1.496	9.0	8.6	0.94	5751	1.34	978.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002309585-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_RESOLVED_OFFSET—EPHEM_MATCH
002309585-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET

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.

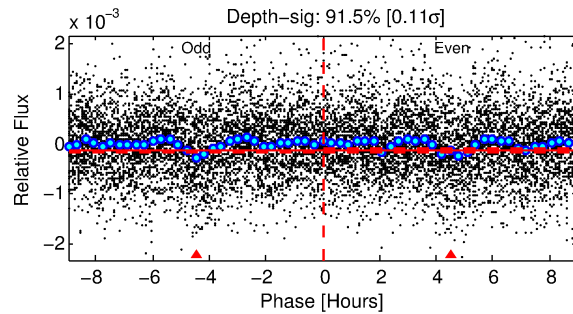
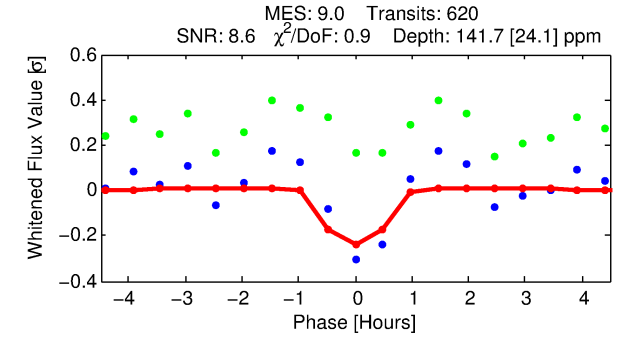
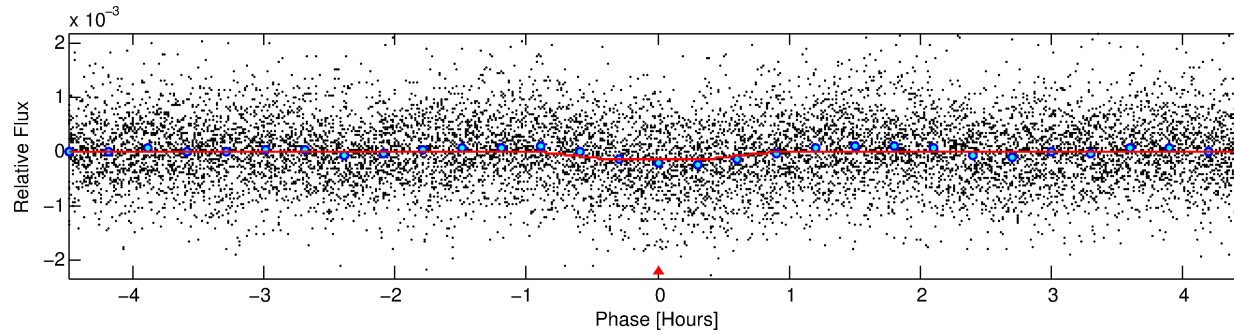
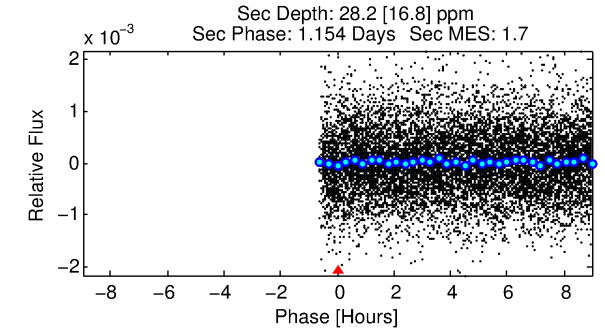
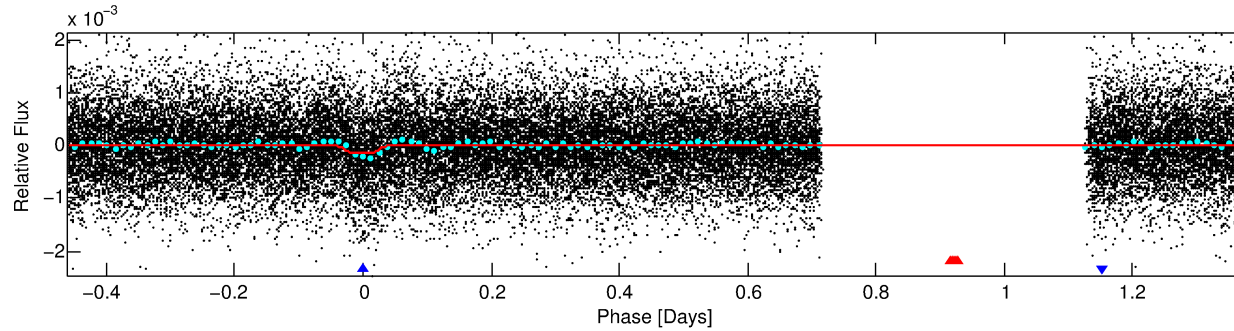
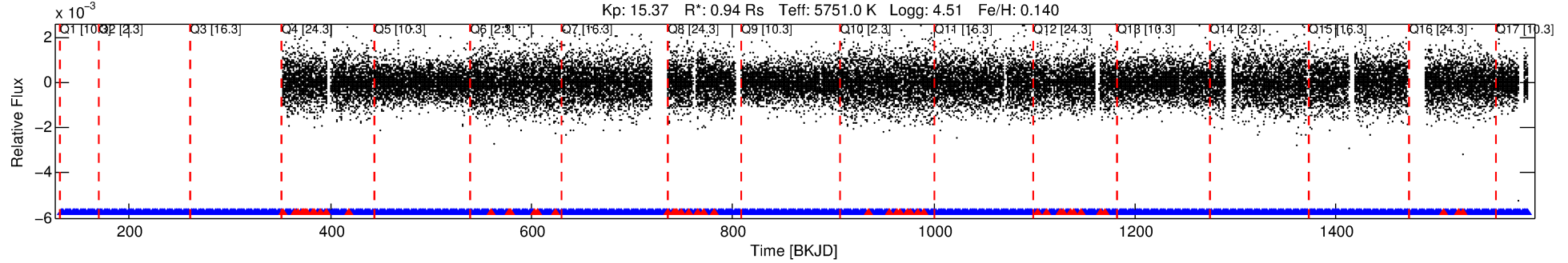
Ephemeris Match Information For 002309585-02

No Significant Match Found

DV One-Page Summary

KIC: 2309585 Candidate: 2 of 2 Period: 1.838 d
KOI: K01004 Corr: No Ephemeris Match

Kp: 15.37 R*: 0.94 Rs Teff: 5751.0 K Logg: 4.51 Fe/H: 0.140



DV Fit Results:

Period = 1.83846 [0.00001] d
Epoch = 133.0372 [0.0029] BKJD
Rp/R* = 0.0131 [0.0133]
a/R* = 4.39 [19.84]
b = 0.90 [0.98]
Seff = 978.77 [398.07]
Teq = 1426 [145] K
Rp = 1.34 [1.42] Re
a = 0.0297 [0.0076] AU
Ag = 7.59 [16.30] [0.40σ]
Teffp = 3660 [1939] K [1.15σ]

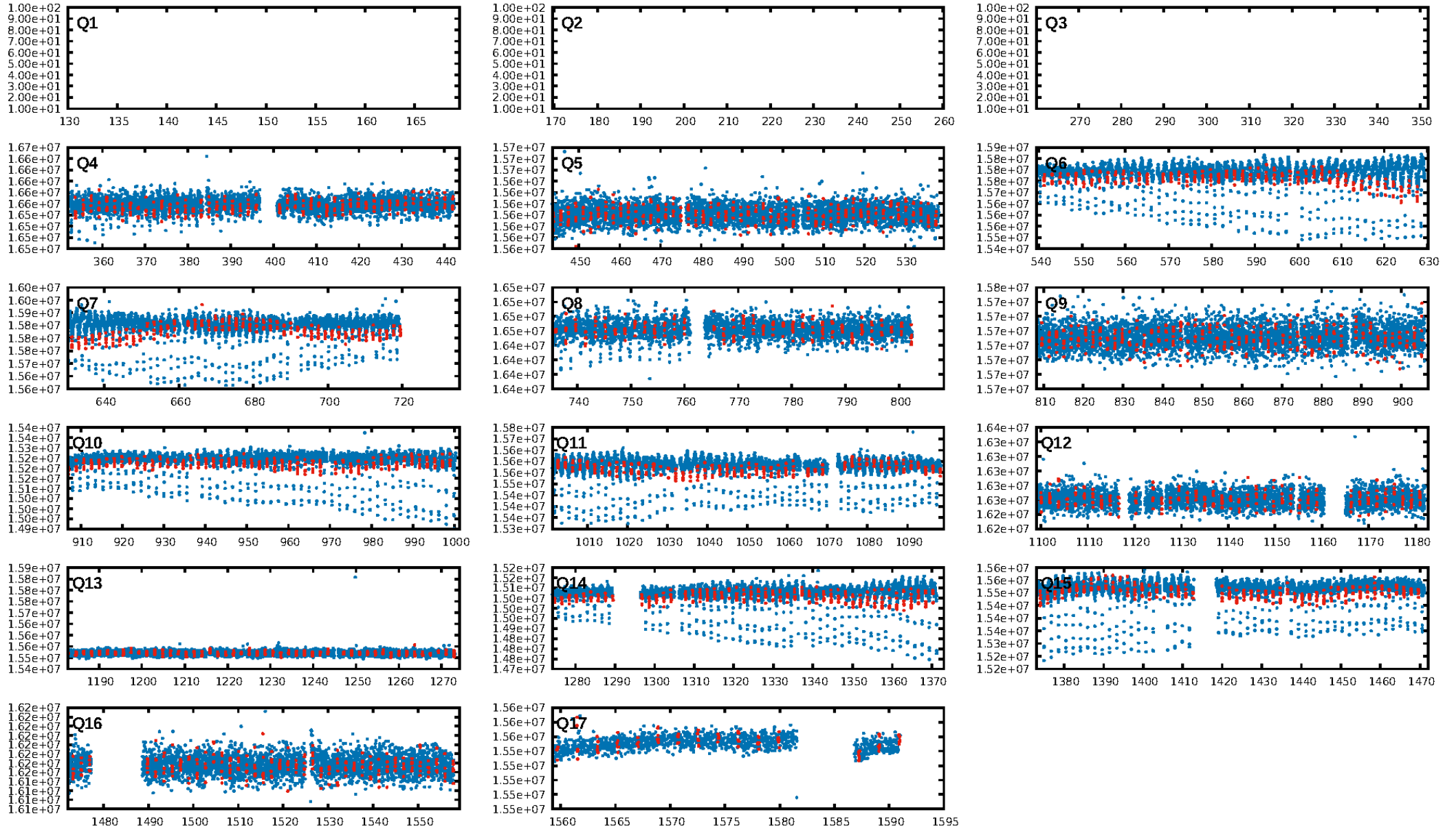
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.50e-19
RollingBand-fgm: 0.92 [558/605]
GhostDiagnostic-chr: -0.5228
Centroid-sig: N/A
Centroid-so: 2.334 arcsec [1.71σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [14/14]

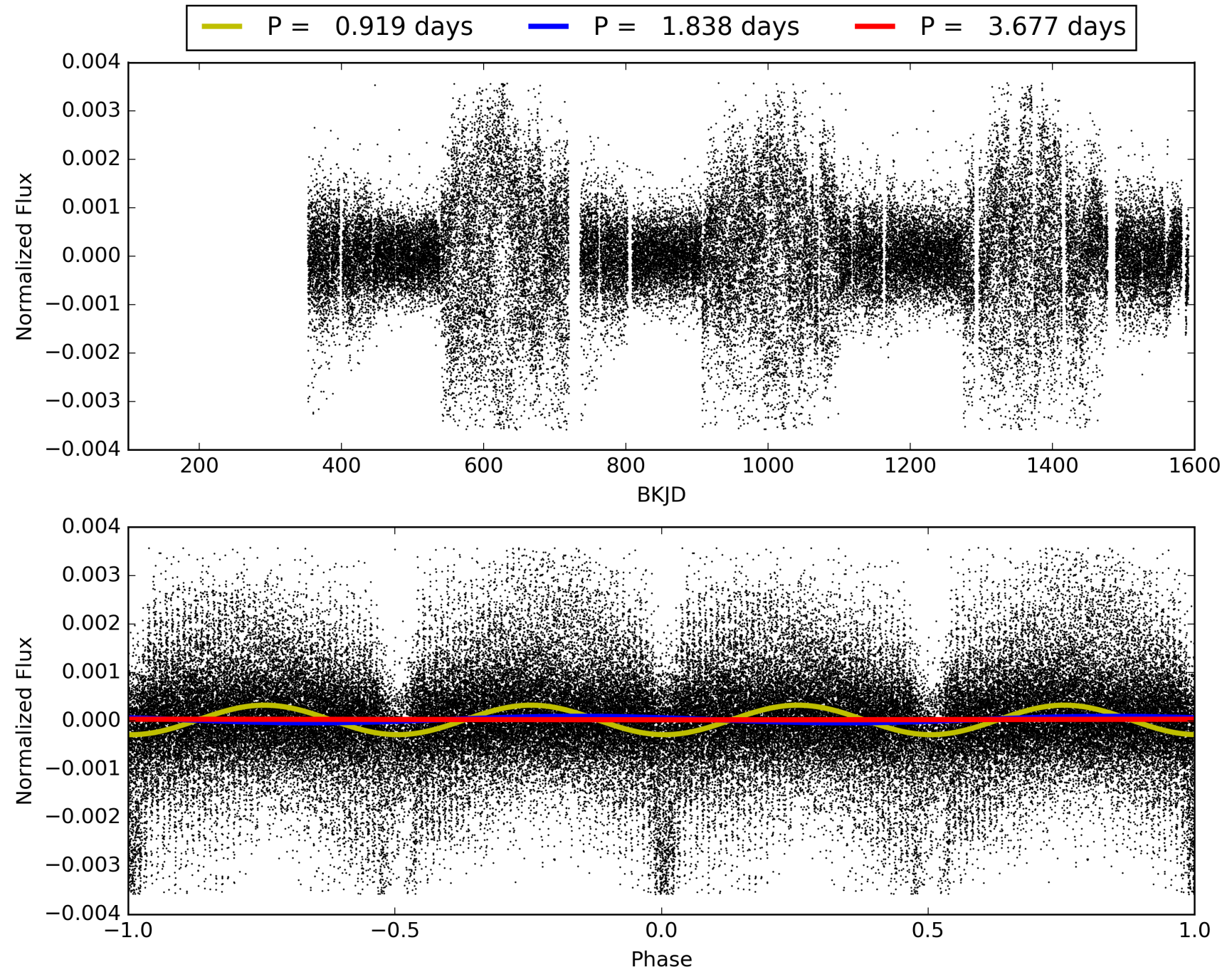
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:31:16 Z

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

TCE 002309585-02, PDC Light Curves

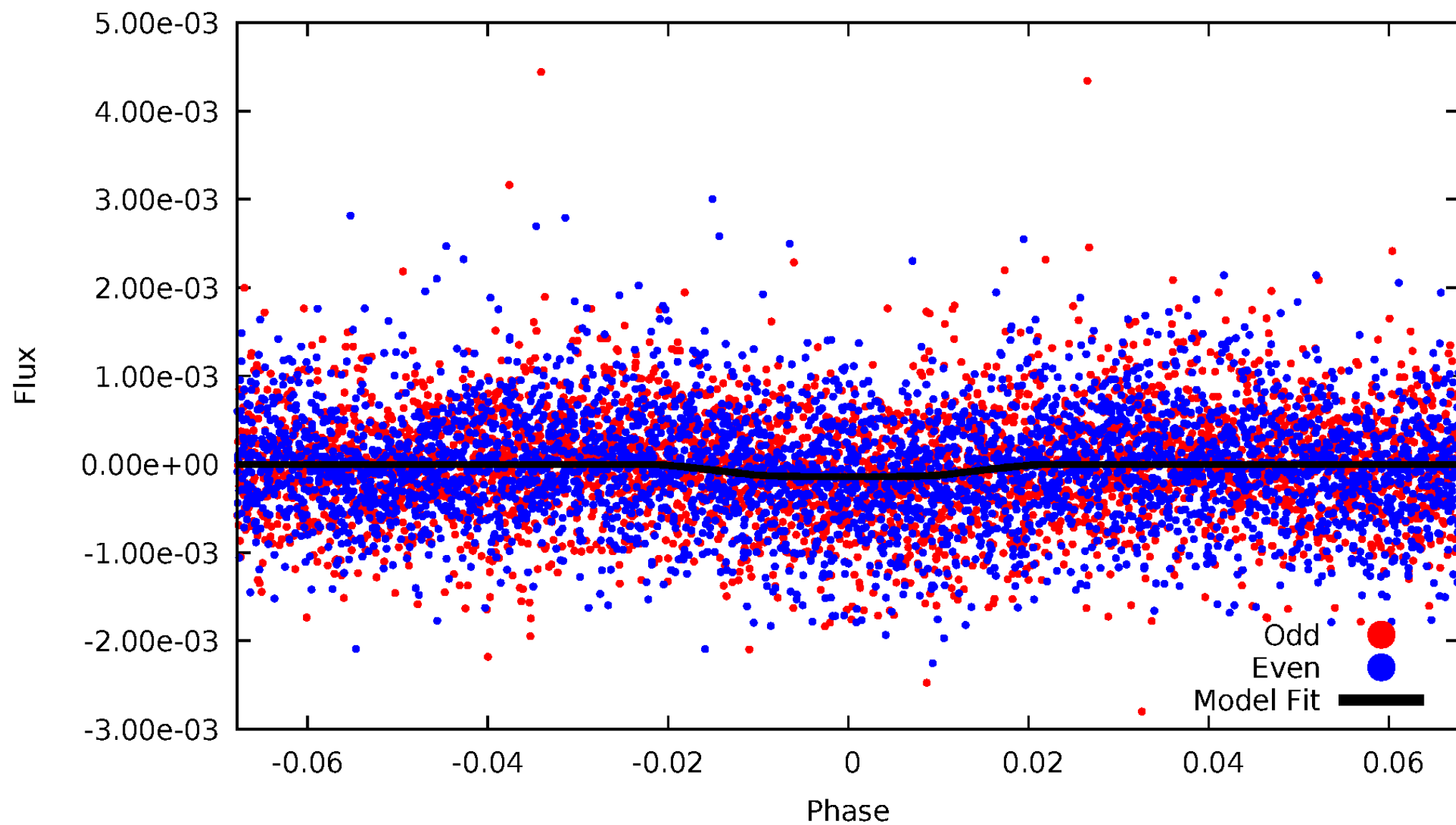


TCE 002309585-02



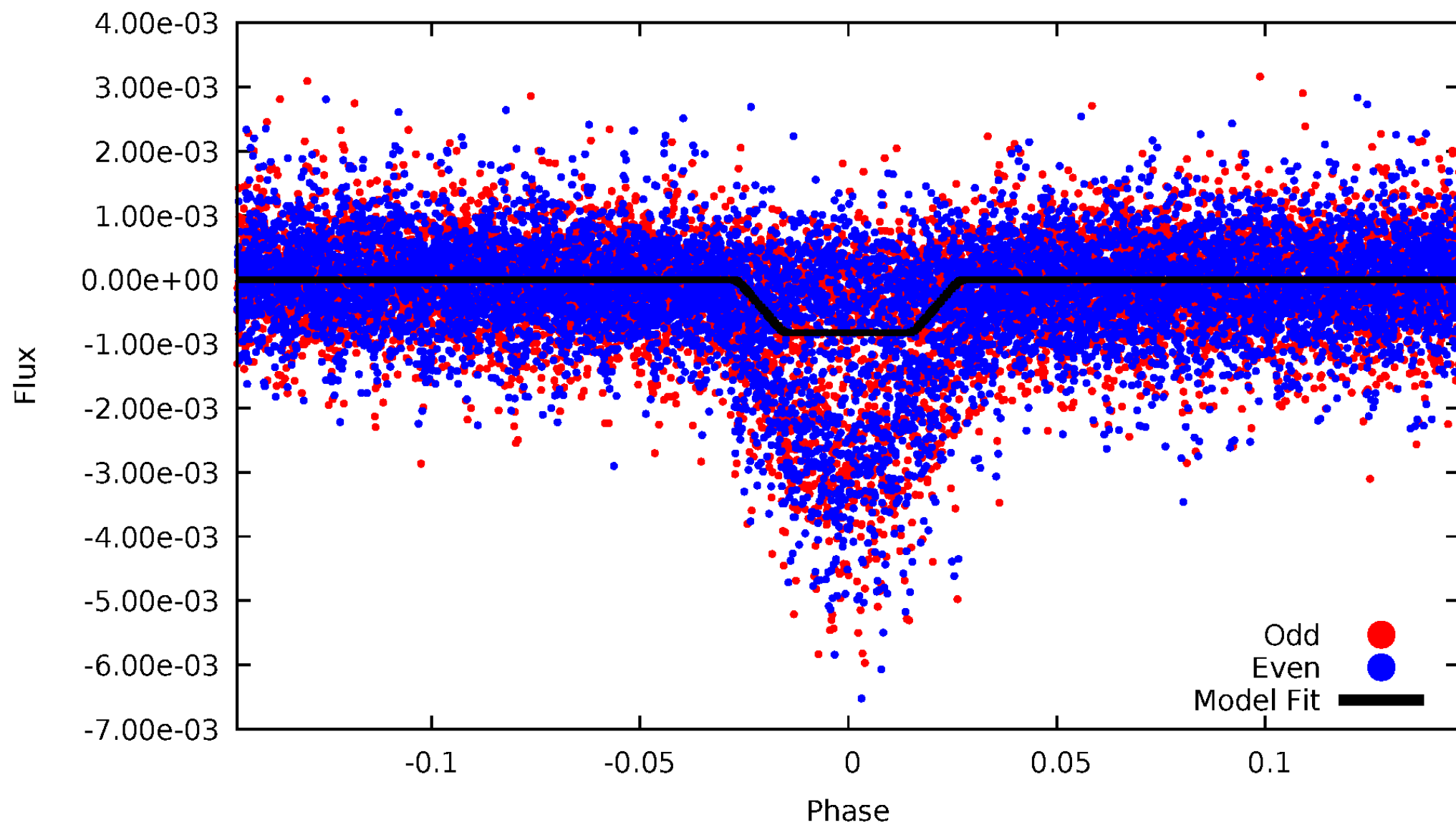
DV Odd/Even

TCE 002309585-02



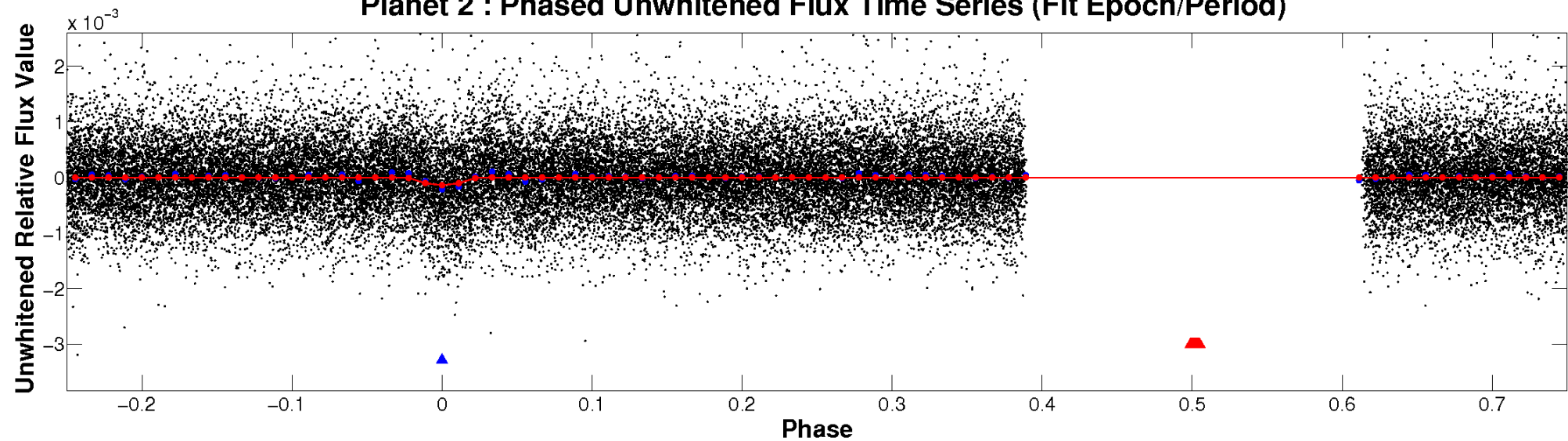
ALT Odd/Even

TCE 002309585-02

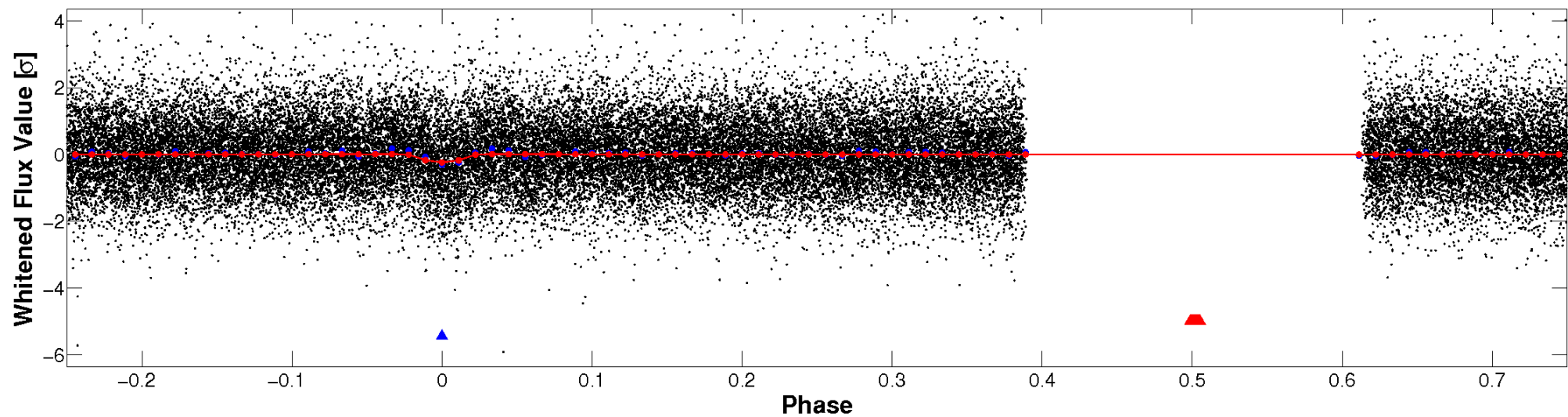


Non-Whitened Vs. Whitened Light Curve

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

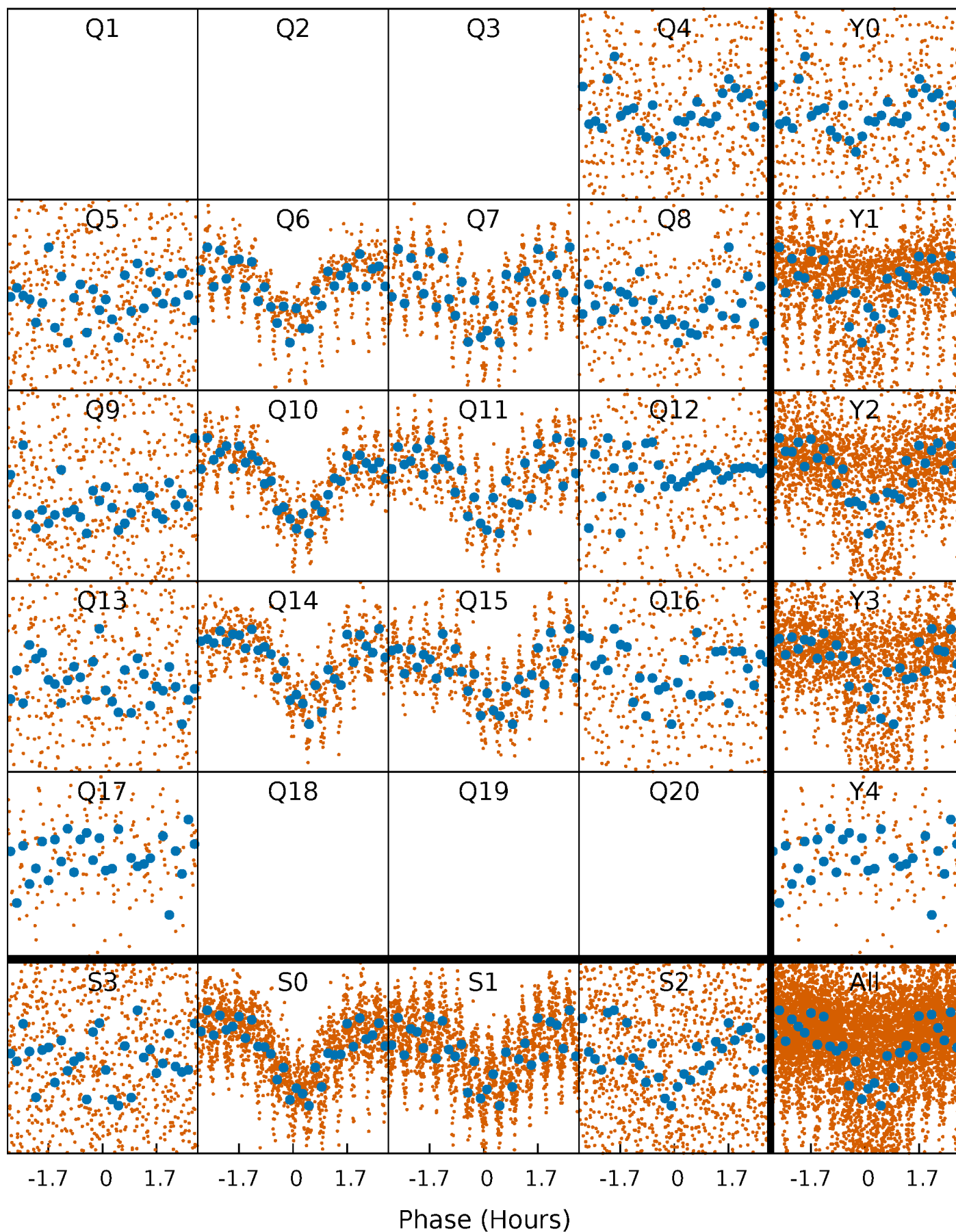


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



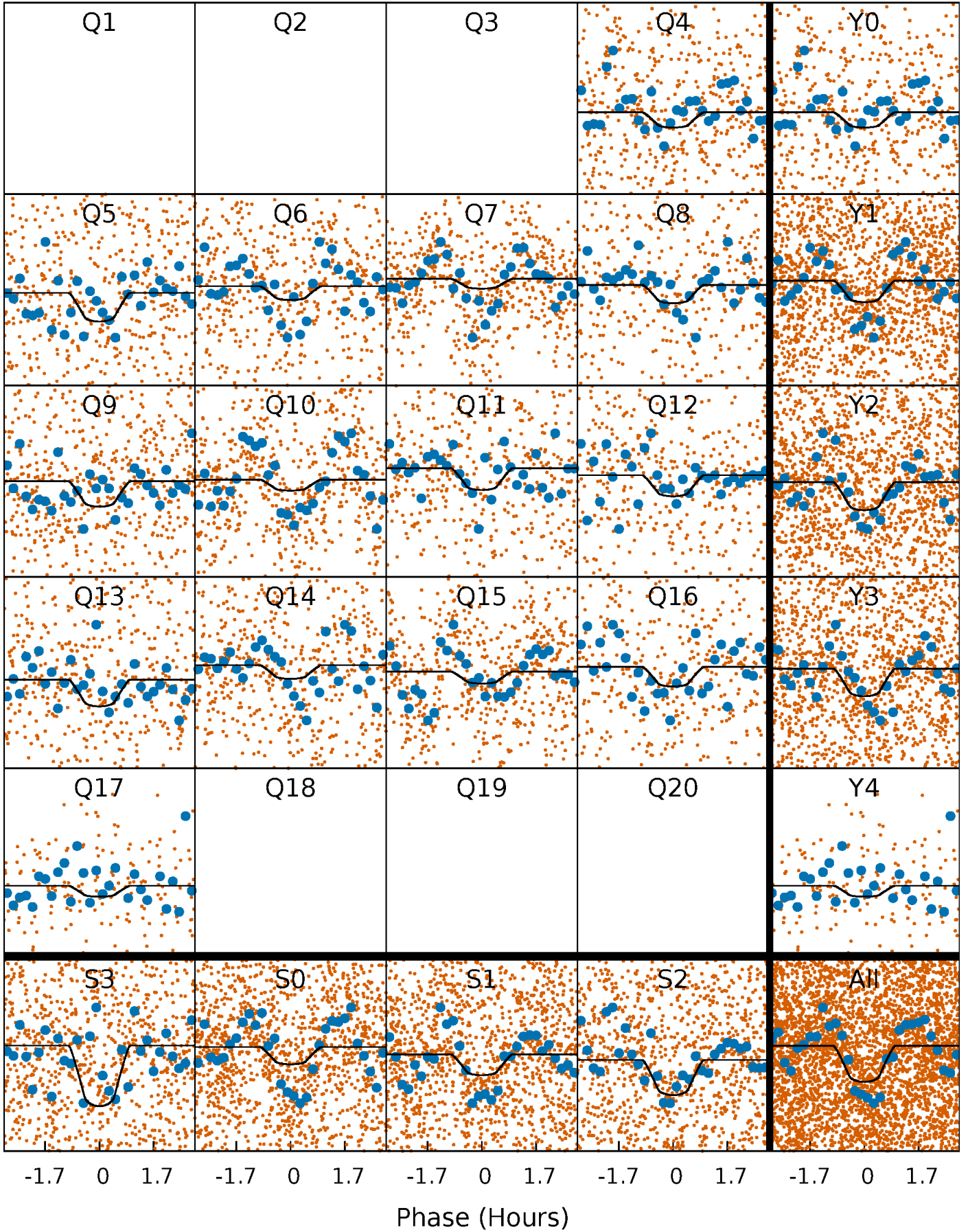
PDC Quarter-Phased Transit Curves

TCE 002309585-02 P= 1.838459 Days $T_0=133.037178$ (BKJD)



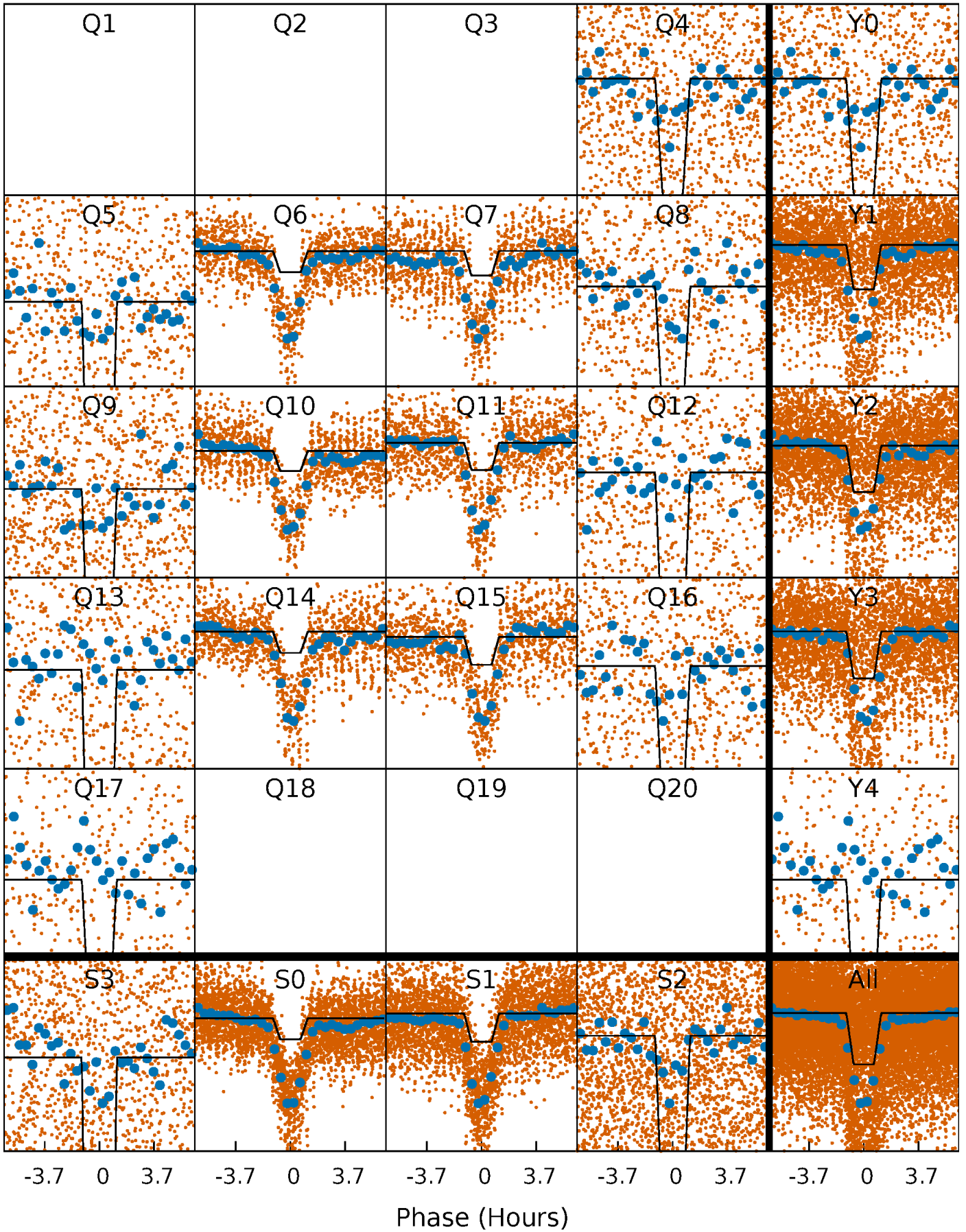
DV Quarter-Phased Transit Curves

TCE 002309585-02 $P = 1.838459$ Days $T_0 = 133.037178$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

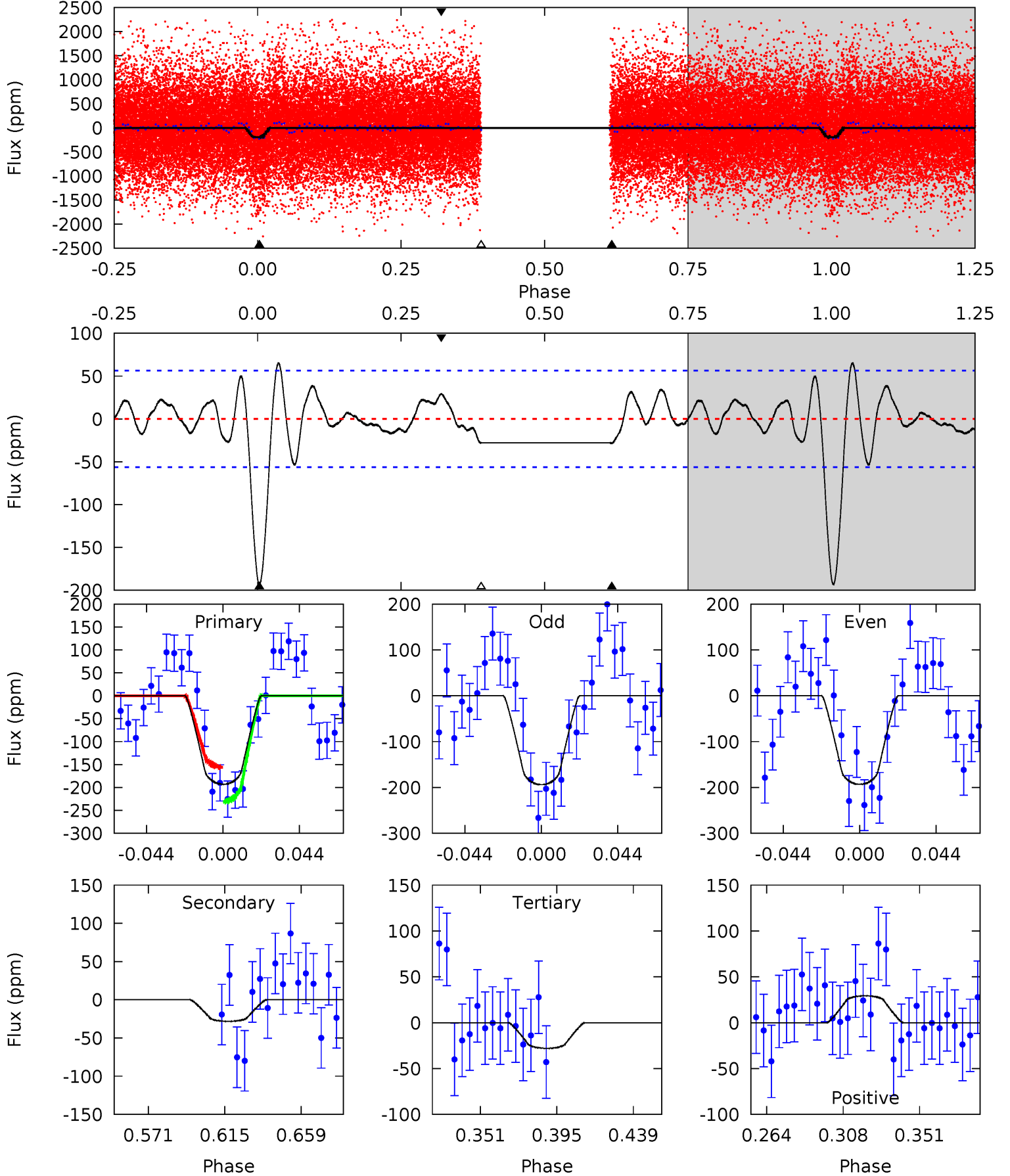
TCE 002309585-02 $P = 1.838487$ Days $T_0 = 133.032709$ (BKJD)



DV Model-Shift Uniqueness Test

002309585-02, P = 1.838459 Days, E = 133.037178 Days

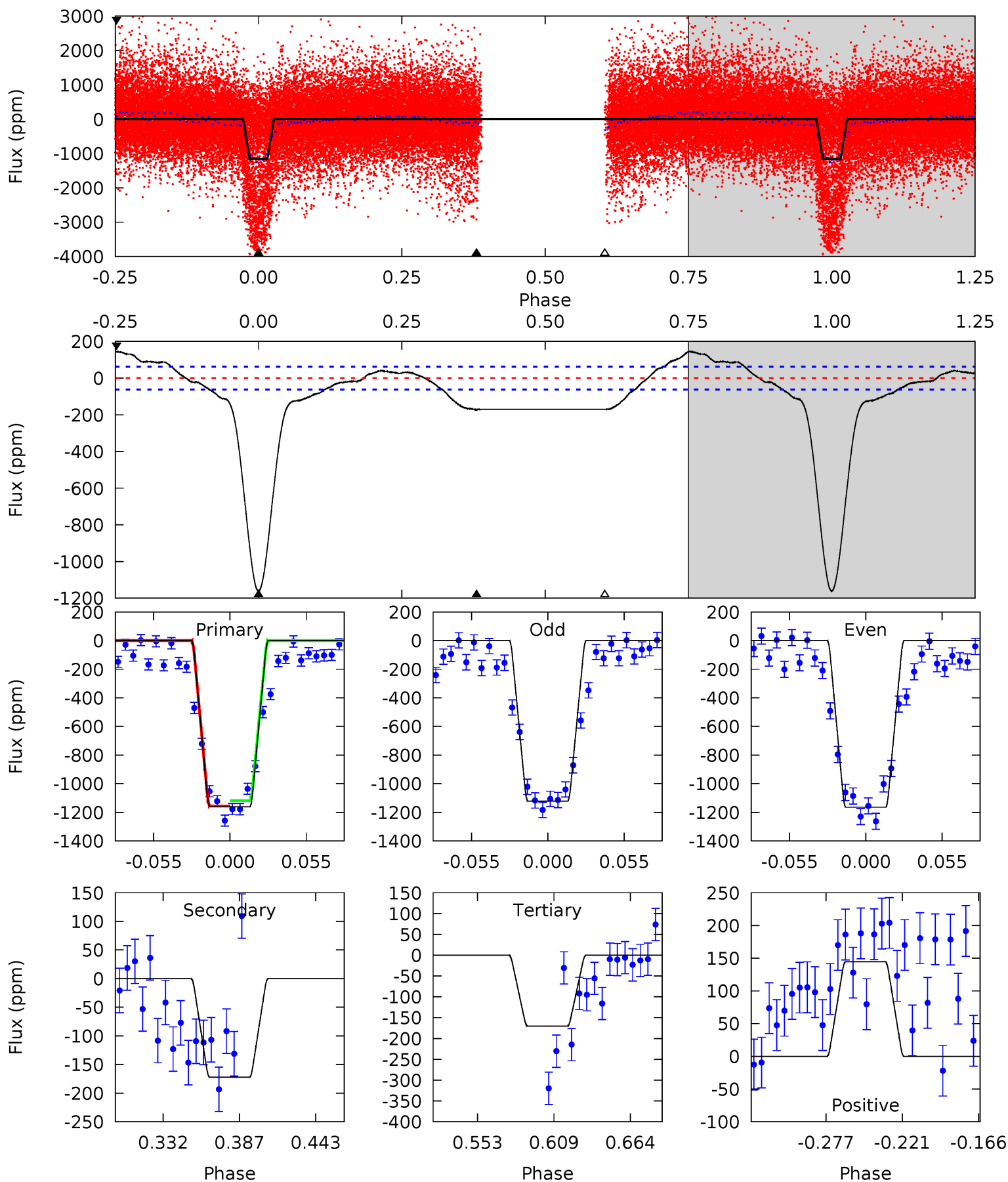
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.2	2.38	2.35	2.46	4.73	2.01	1.41	13.9	13.8	0.03	-0.08	0.03	1.23	0.25	3.16



Alt Model-Shift Uniqueness Test

002309585-02, P = 1.838487 Days, E = 133.032709 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
86.9	12.9	12.8	10.8	4.69	1.92	5.81	74.2	76.1	0.14	2.08	1.62	1.81	0.11	1.39



Stellar Parameters For KIC 002309585

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5751^{+160}_{-200}	$4.508^{+0.037}_{-0.213}$	$0.140^{+0.200}_{-0.300}$	$0.940^{+0.279}_{-0.093}$	$1.038^{+0.110}_{-0.134}$	$1.761^{+0.358}_{-0.875}$
	+3%/-3%	+1%/-5%	+143%/-214%	+30%/-10%	+11%/-13%	+20%/-50%
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 002309585-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-28 ± 12	$1.73^{+1.35}_{-1.01}$	2046^{+147}_{-106}	3596^{+1715}_{-751}	$3.984^{+23.063}_{-2.915}$
Alt.	-172 ± 13	$3.16^{+1.45}_{-1.39}$	2045^{+144}_{-97}	4103^{+1009}_{-522}	$8.249^{+17.354}_{-4.378}$

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

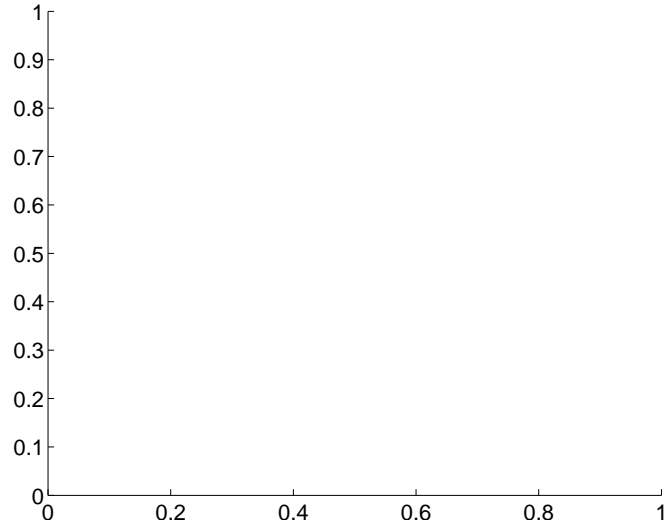
Supplemental centroid analysis for 002309585-02. Kepler magnitude: 15.37. Transit SNR 8.57

There are 0 quarters with good PRF difference image offsets

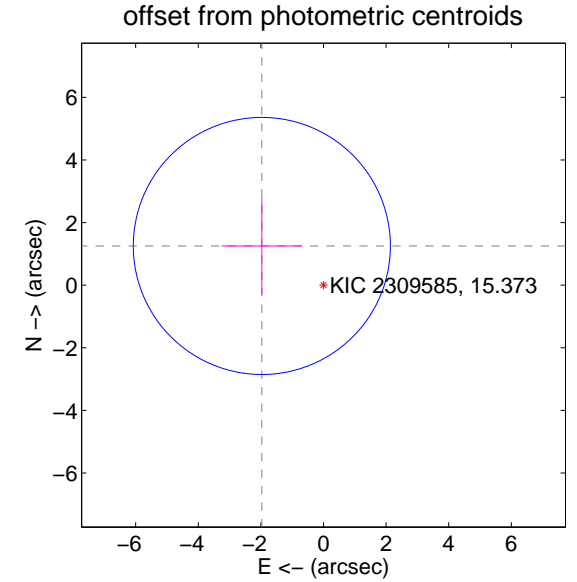
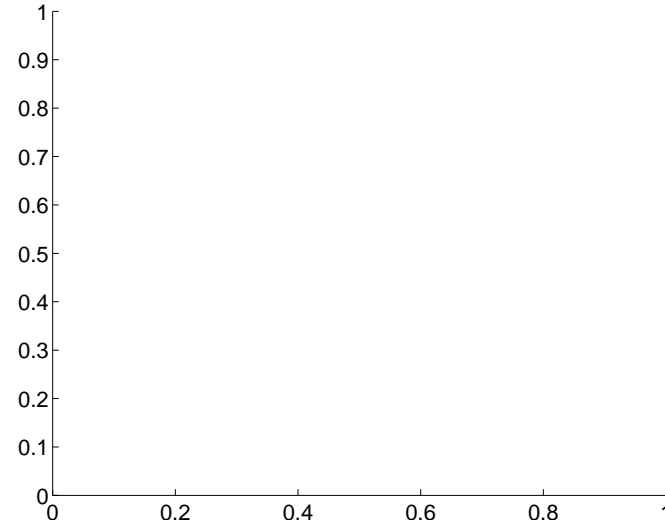
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	2.33 ± 1.37	1.71	1.97 ± 1.29	1.25 ± 1.55

There is no PRF-fit offset from OOT-fit

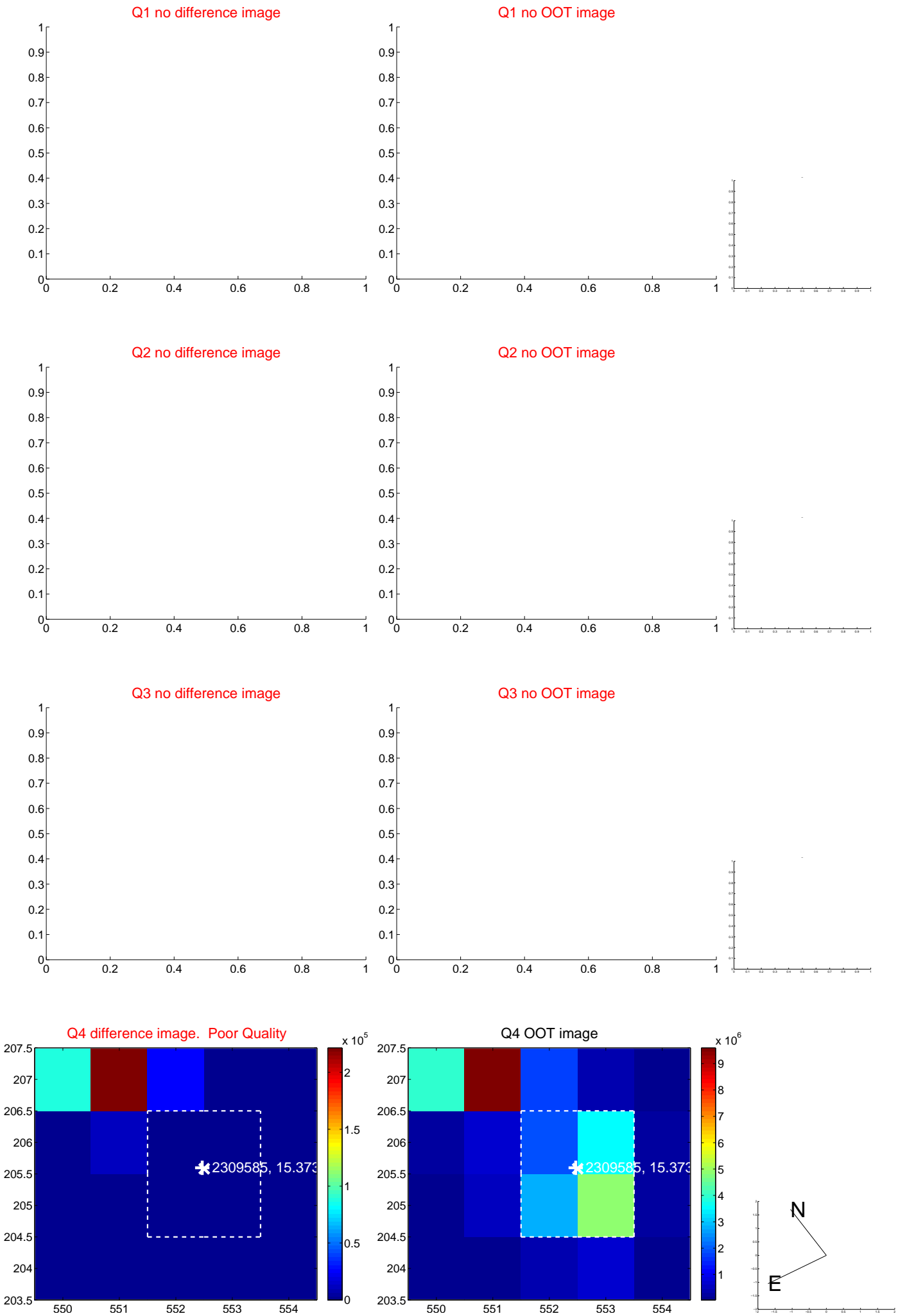


There is no PRF-fit offset from KIC

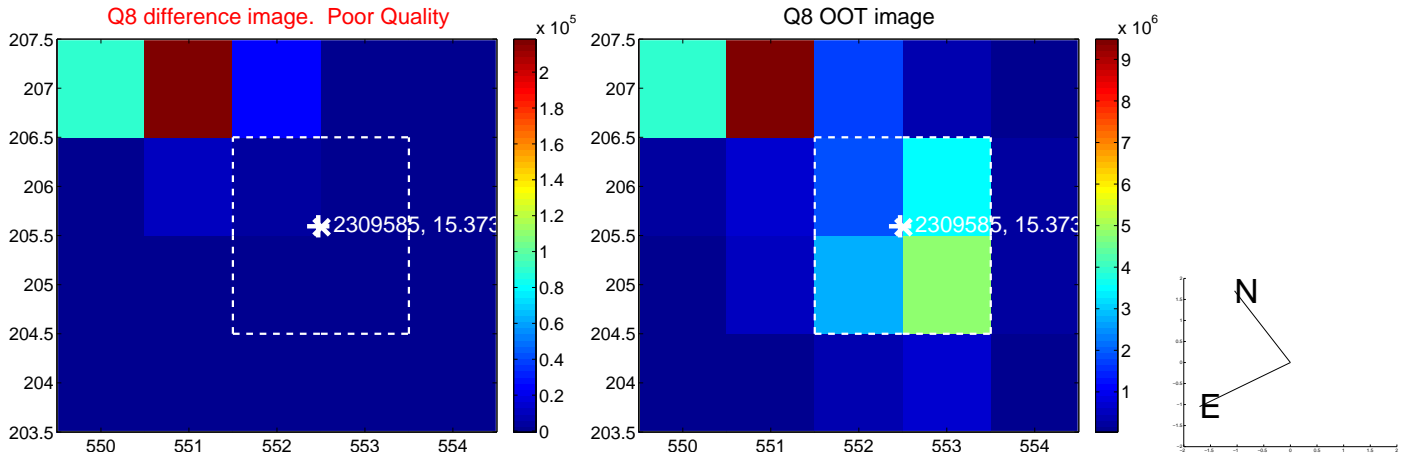
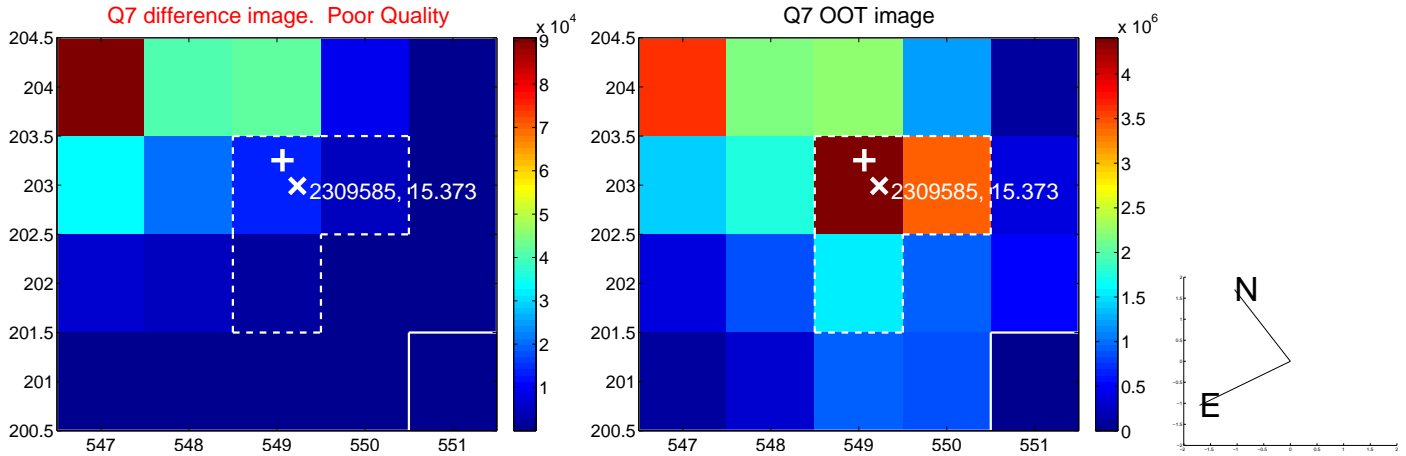
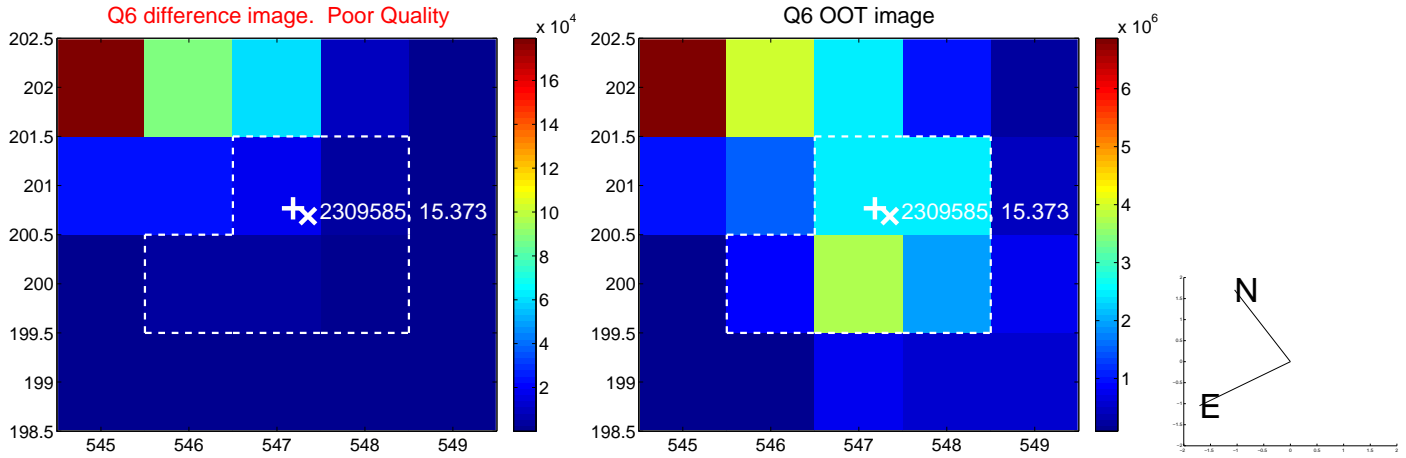
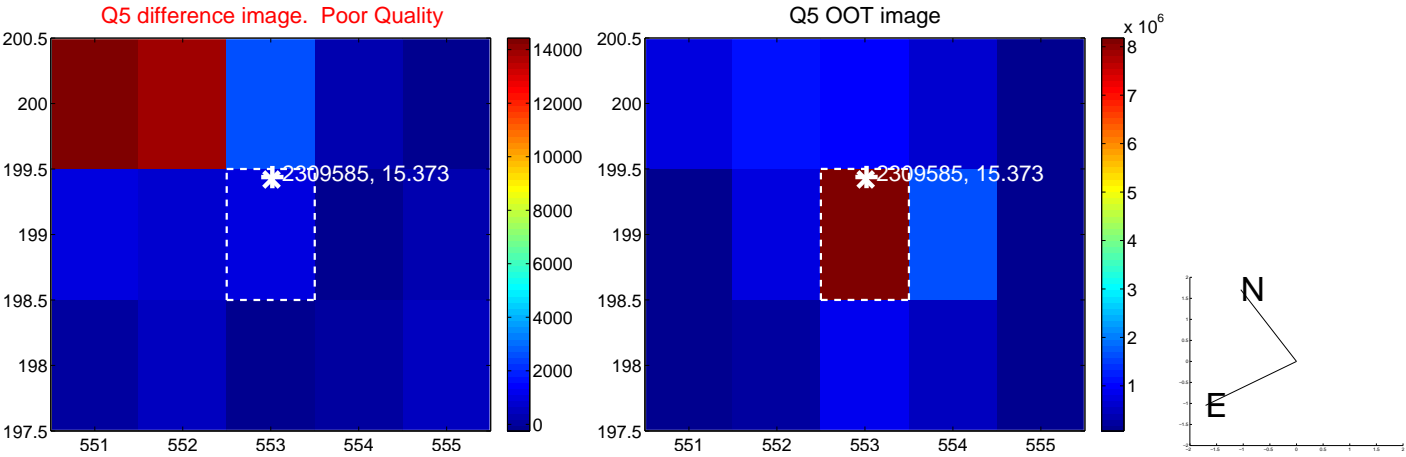


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

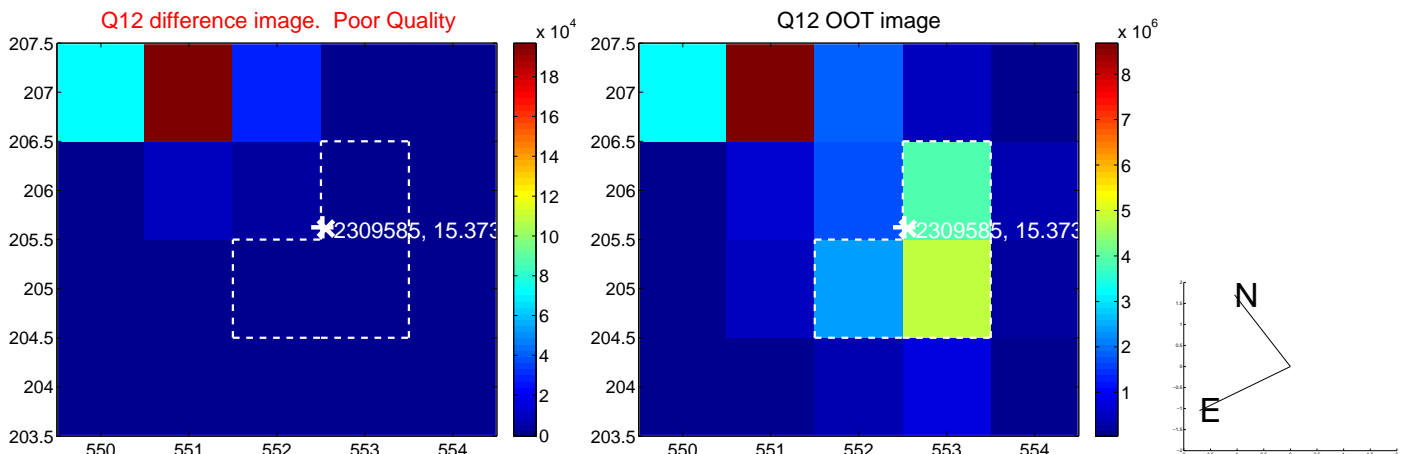
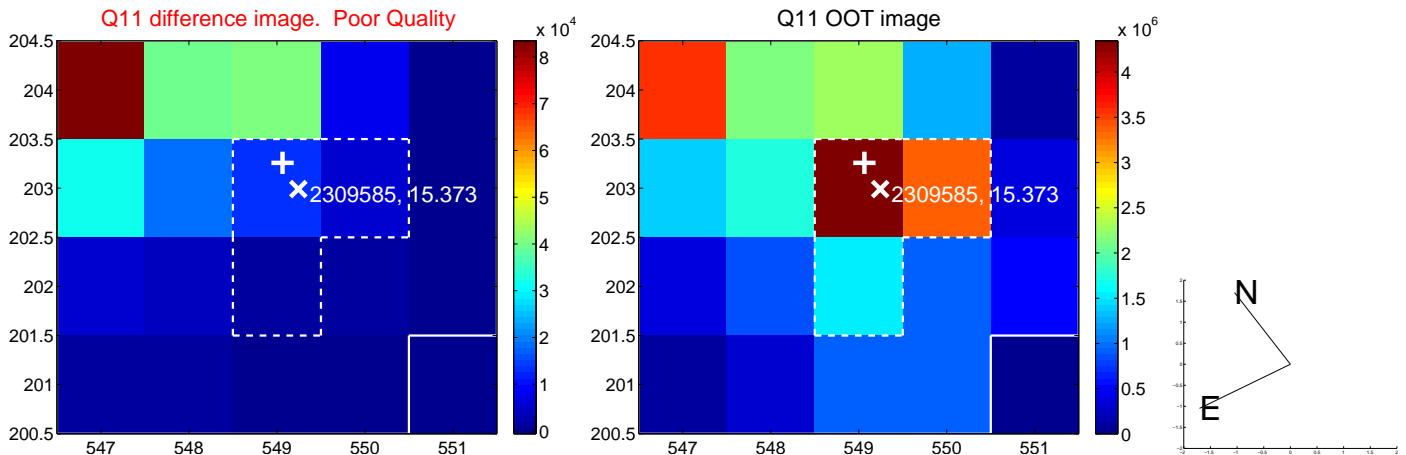
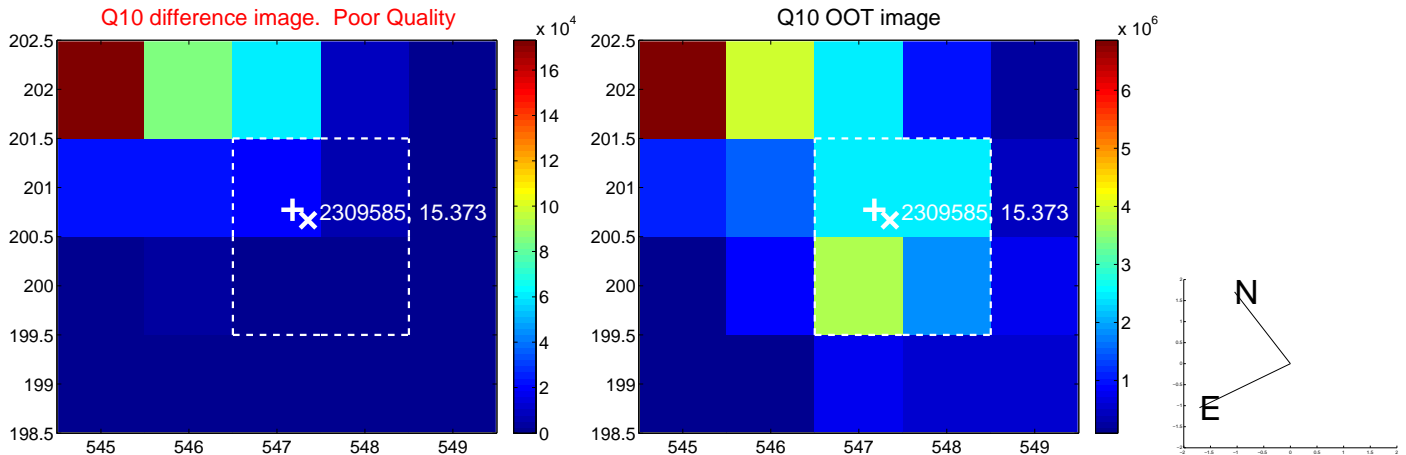
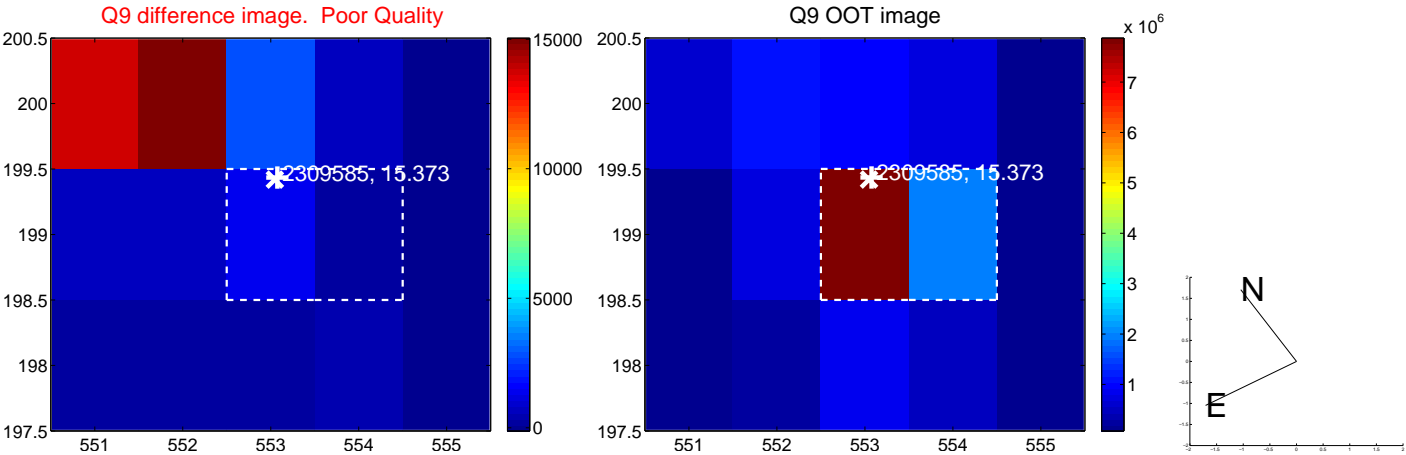
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



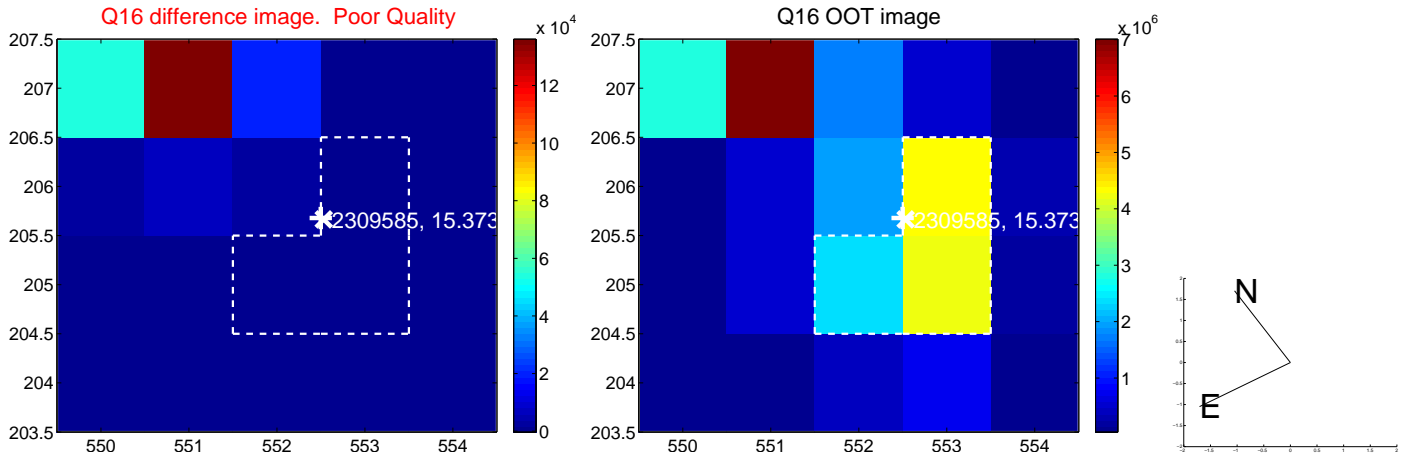
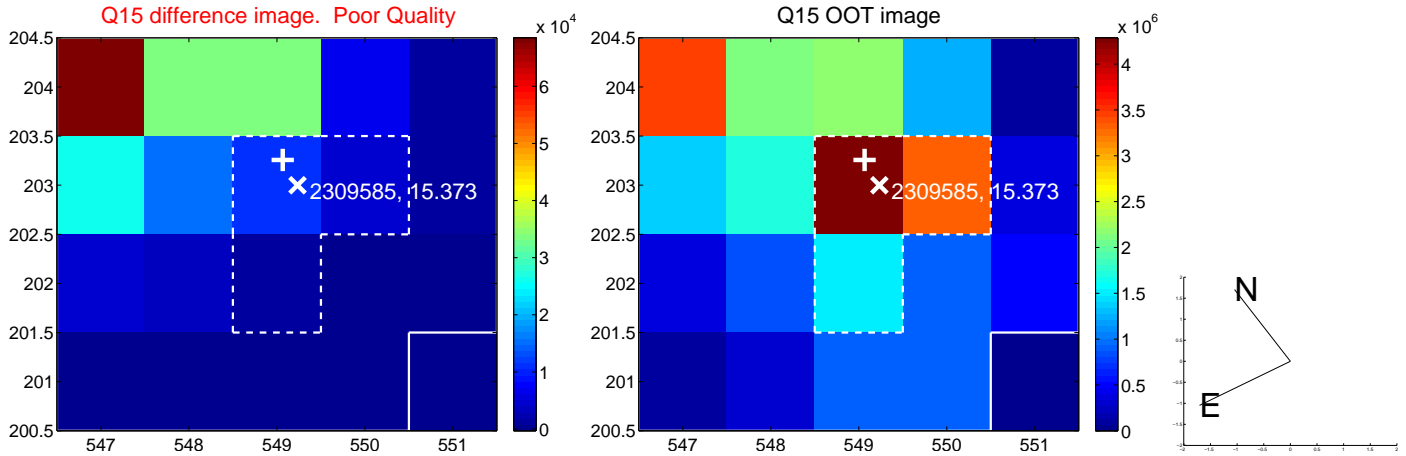
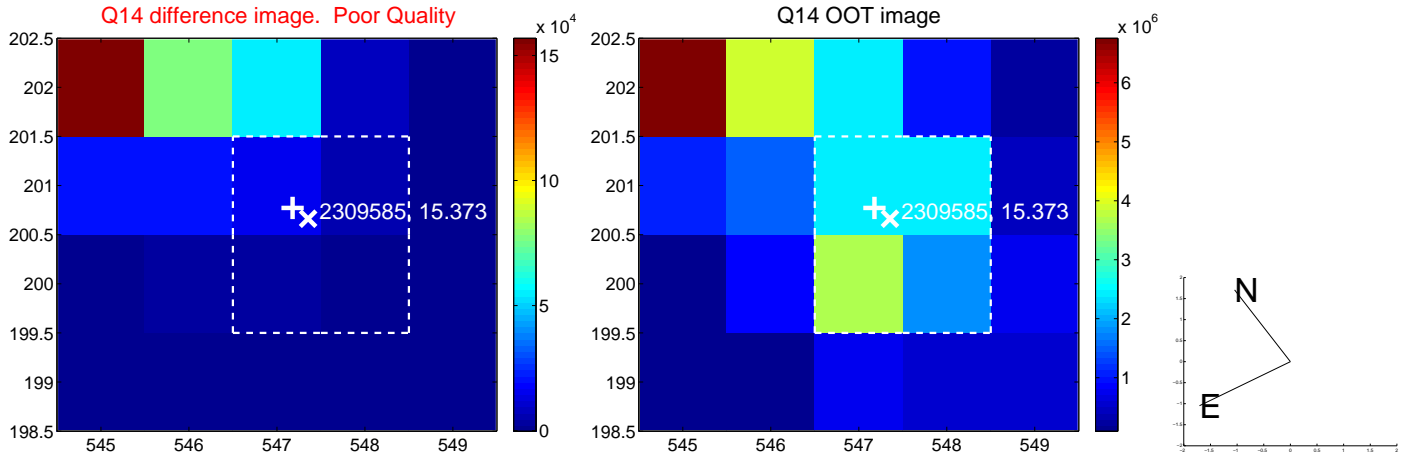
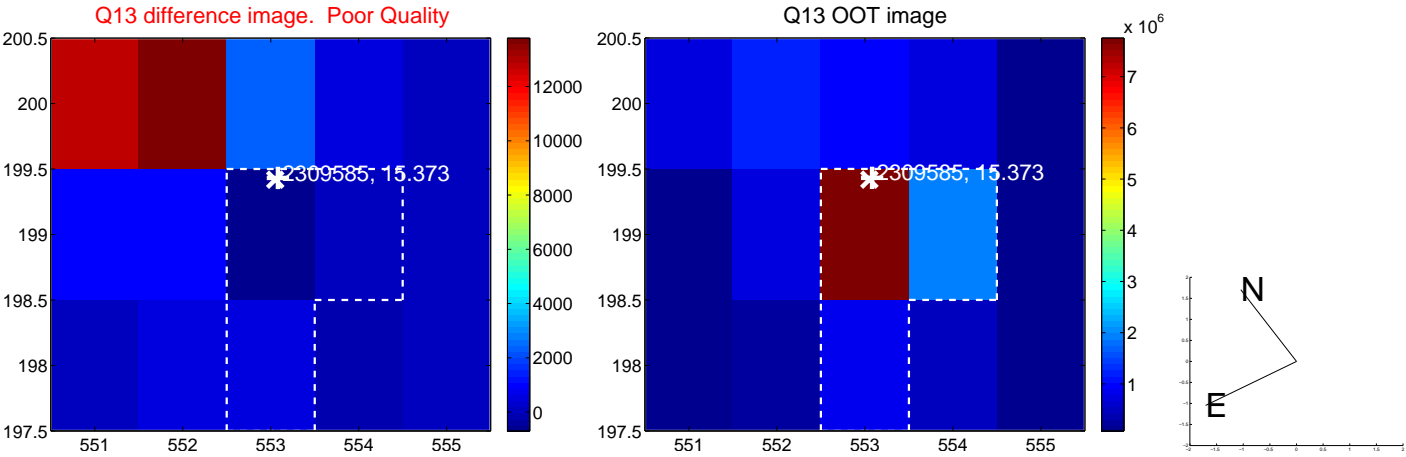
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



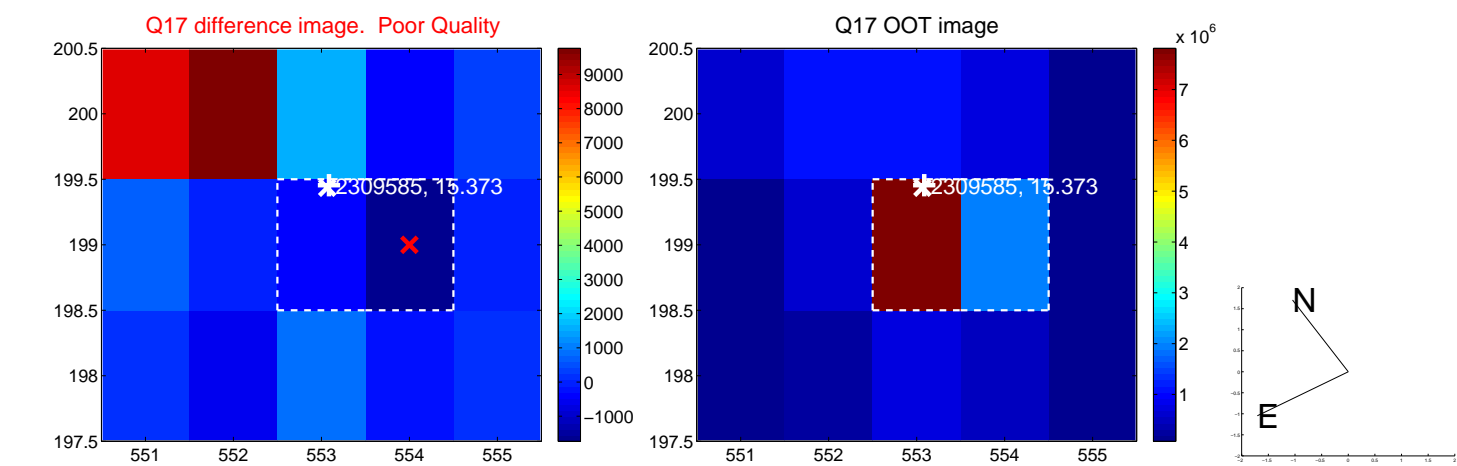
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



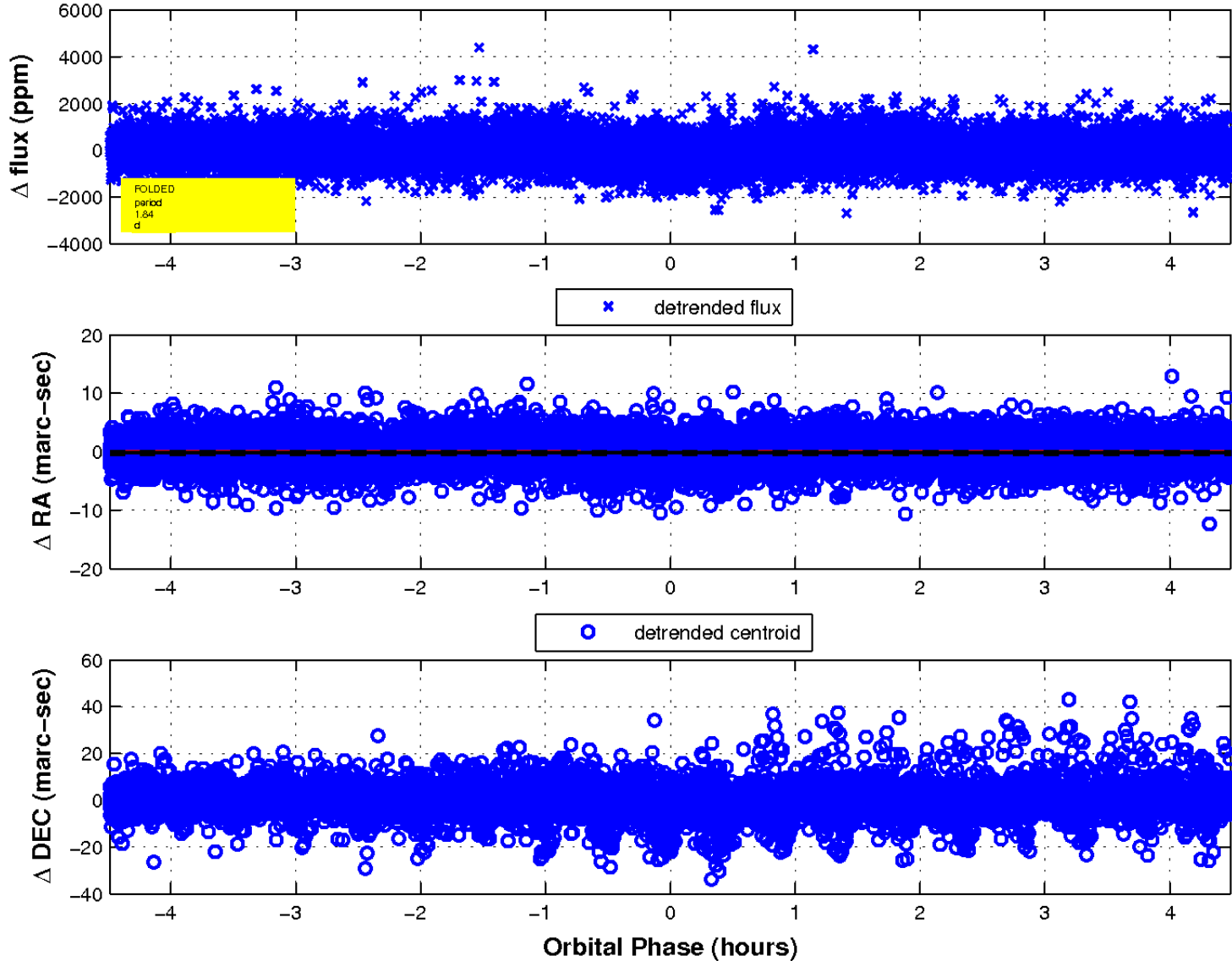
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

