

KIC 005706966

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})
005706966-01	OBS	1908.01	12.551123	137.261109	498.9	3.209	27.2	31.3	0.60	4213	1.50	12.57
005706966-02	OBS	1908.02	24.088259	134.423839	380.5	4.028	15.8	18.0	0.60	4213	1.39	5.27

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005706966-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005706966-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

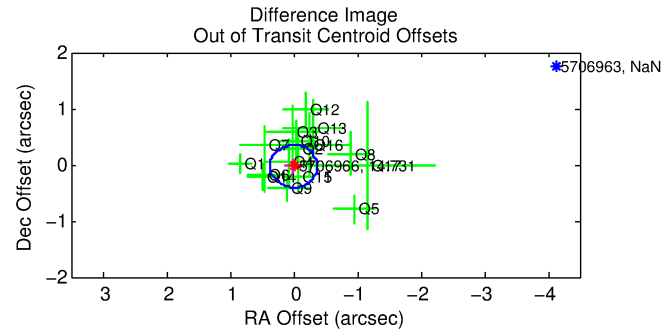
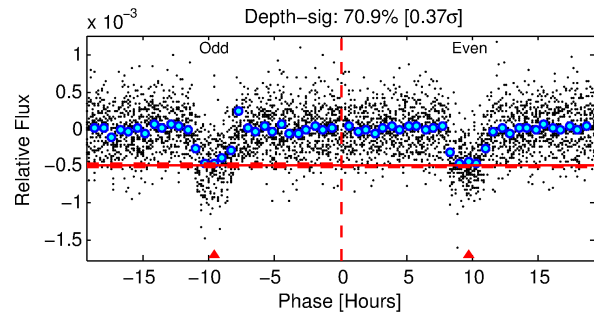
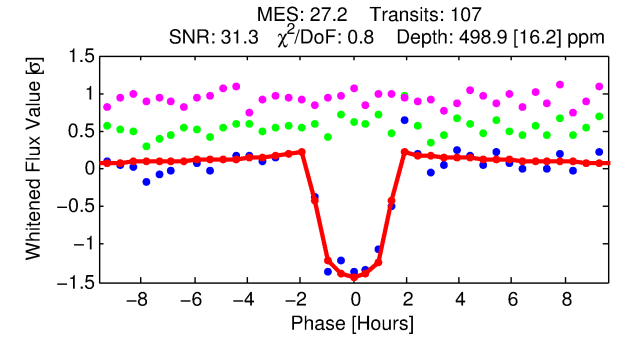
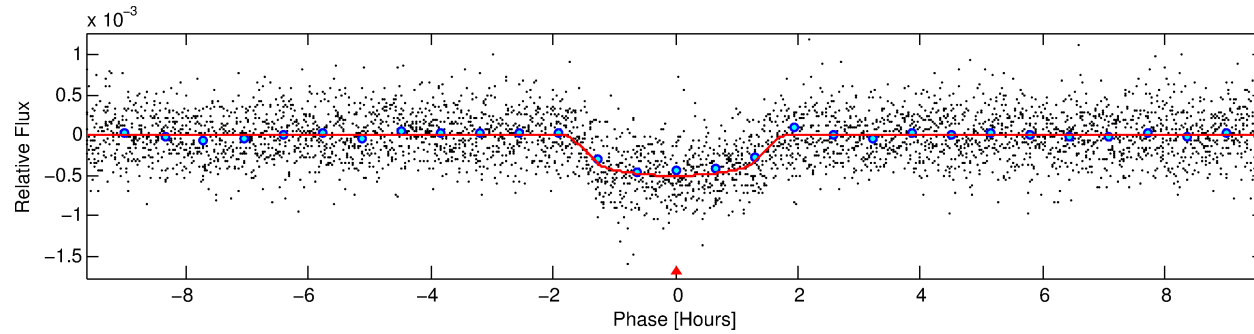
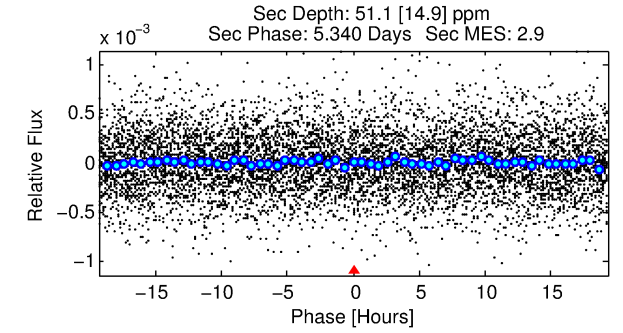
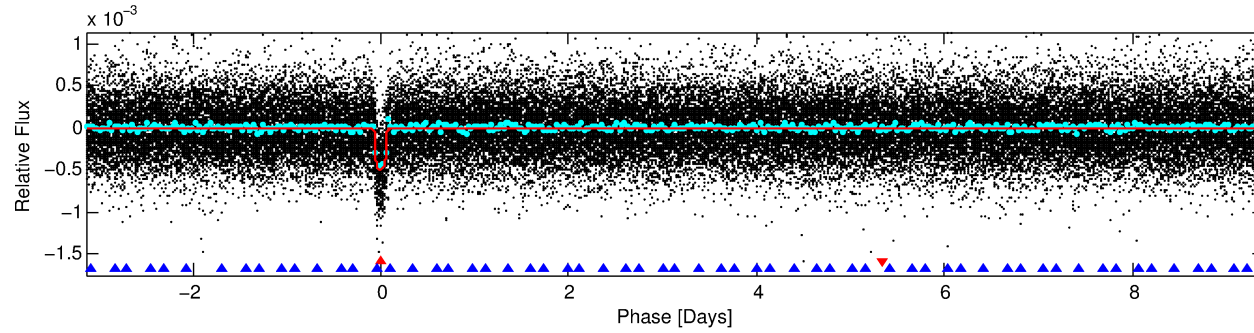
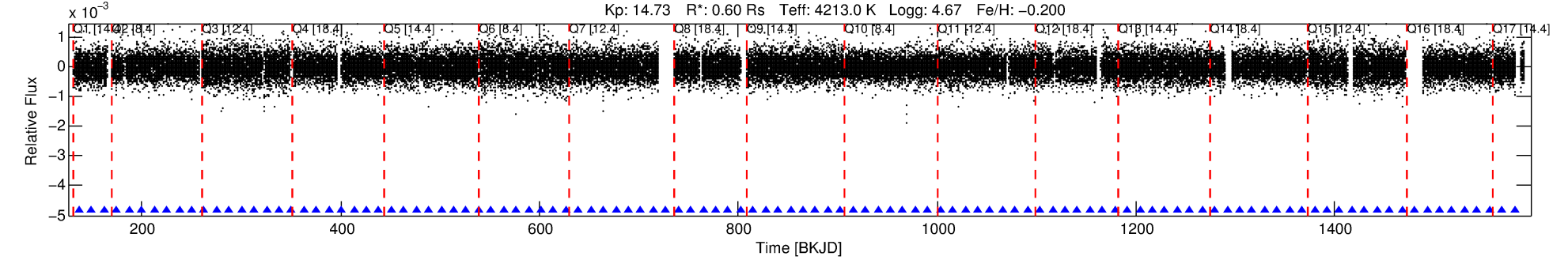
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005706966-01

No Significant Match Found

DV One-Page Summary

KIC: 5706966 Candidate: 1 of 2 Period: 12.551 d
KOI: K01908.01 Name: Kepler-333b Corr: 0.991



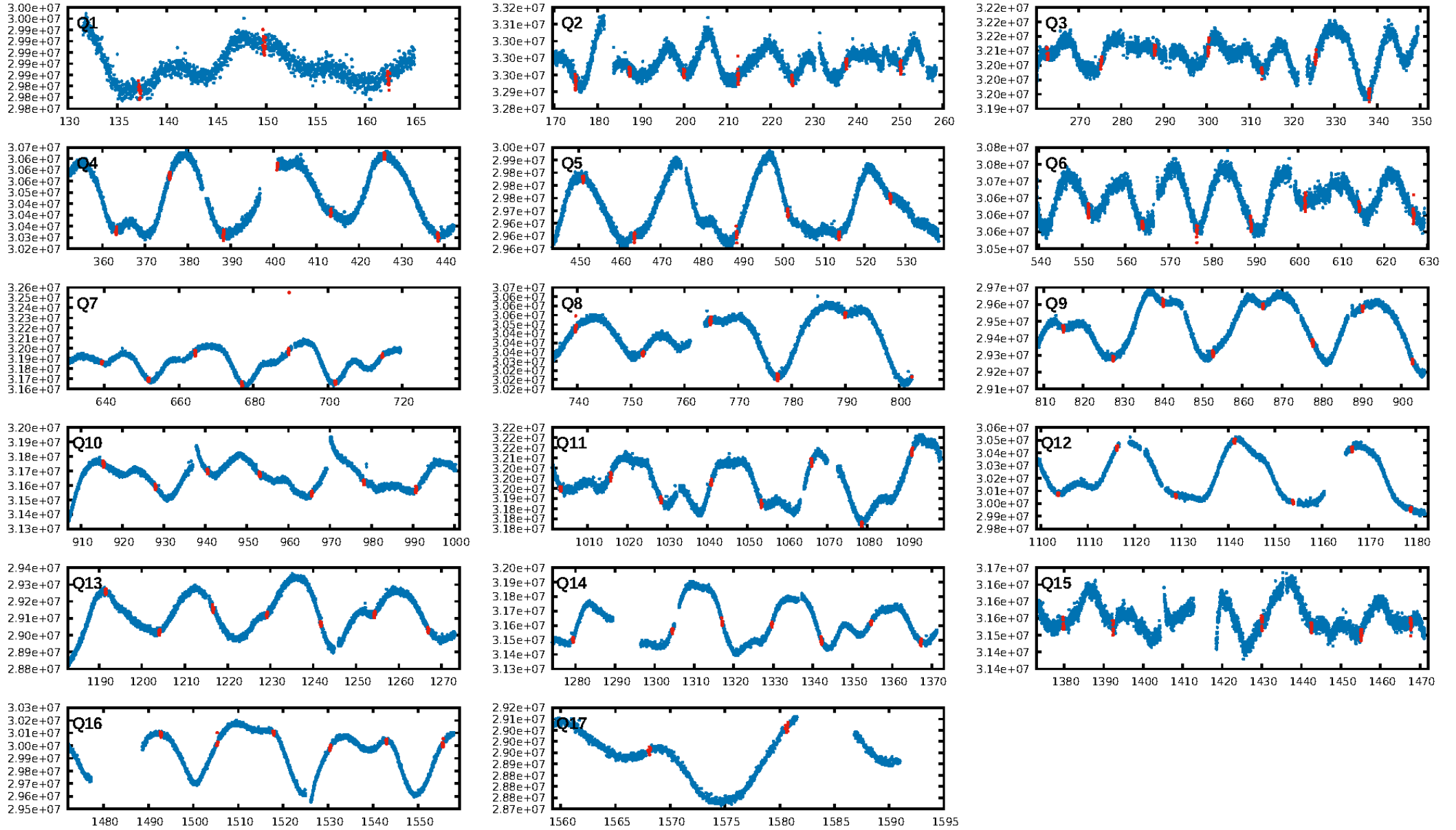
DV Fit Results:

Period = 12.55112 [0.00003] d
Epoch = 137.2611 [0.0021] BKJD
Rp/R* = 0.0229 [0.0066]
a/R* = 19.09 [20.49]
b = 0.80 [0.50]
Seff = 12.57 [1.18]
Teq = 480 [11] K
Rp = 1.50 [0.44] Re
a = 0.0896 [0.0033] AU
Ag = 100.82 [65.56] [1.52σ]
Teffp = 2352 [384] K [4.87σ]

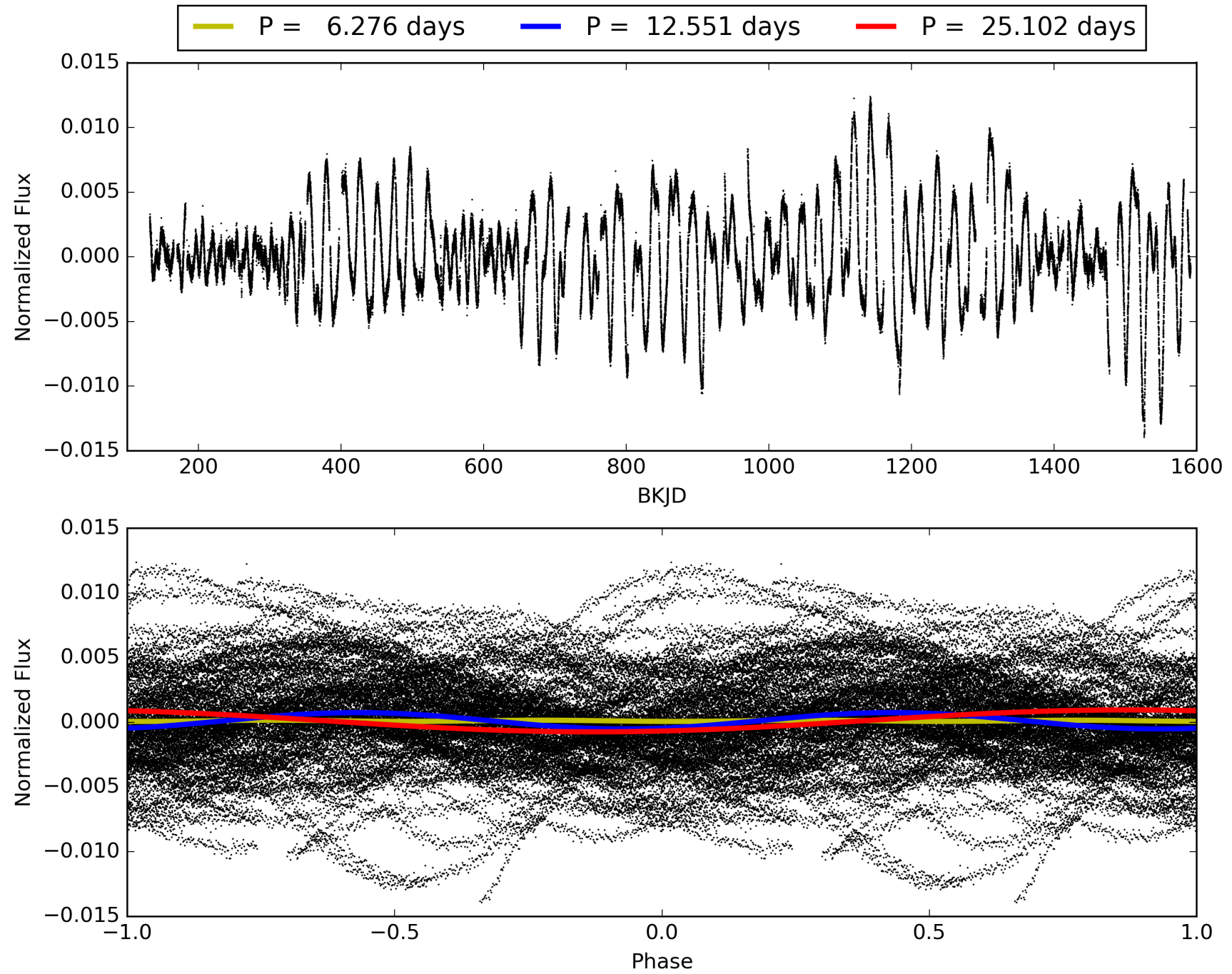
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [53.77σ]
ModelChiSquare2-sig: 93.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.92e-160
RollingBand-fgt: 1.00 [102/102]
GhostDiagnostic-chr: 3.901
Centroid-sig: 6.9%
Centroid-so: 0.425 arcsec [1.10σ]
OotOffset-rm: 0.030 arcsec [0.24σ]
KicOffset-rm: 0.114 arcsec [0.91σ]
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 005706966-01, PDC Light Curves

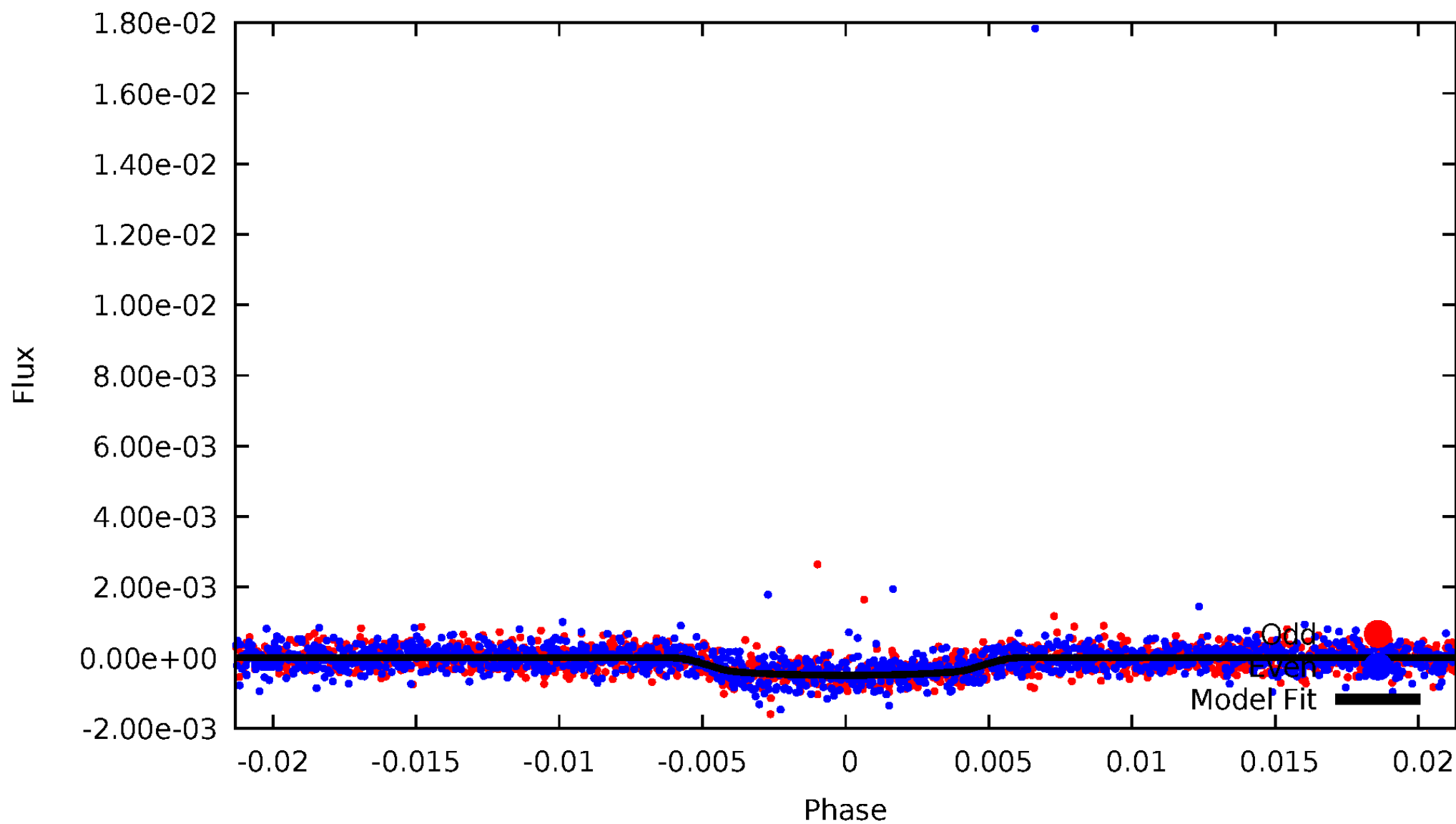


TCE 005706966-01



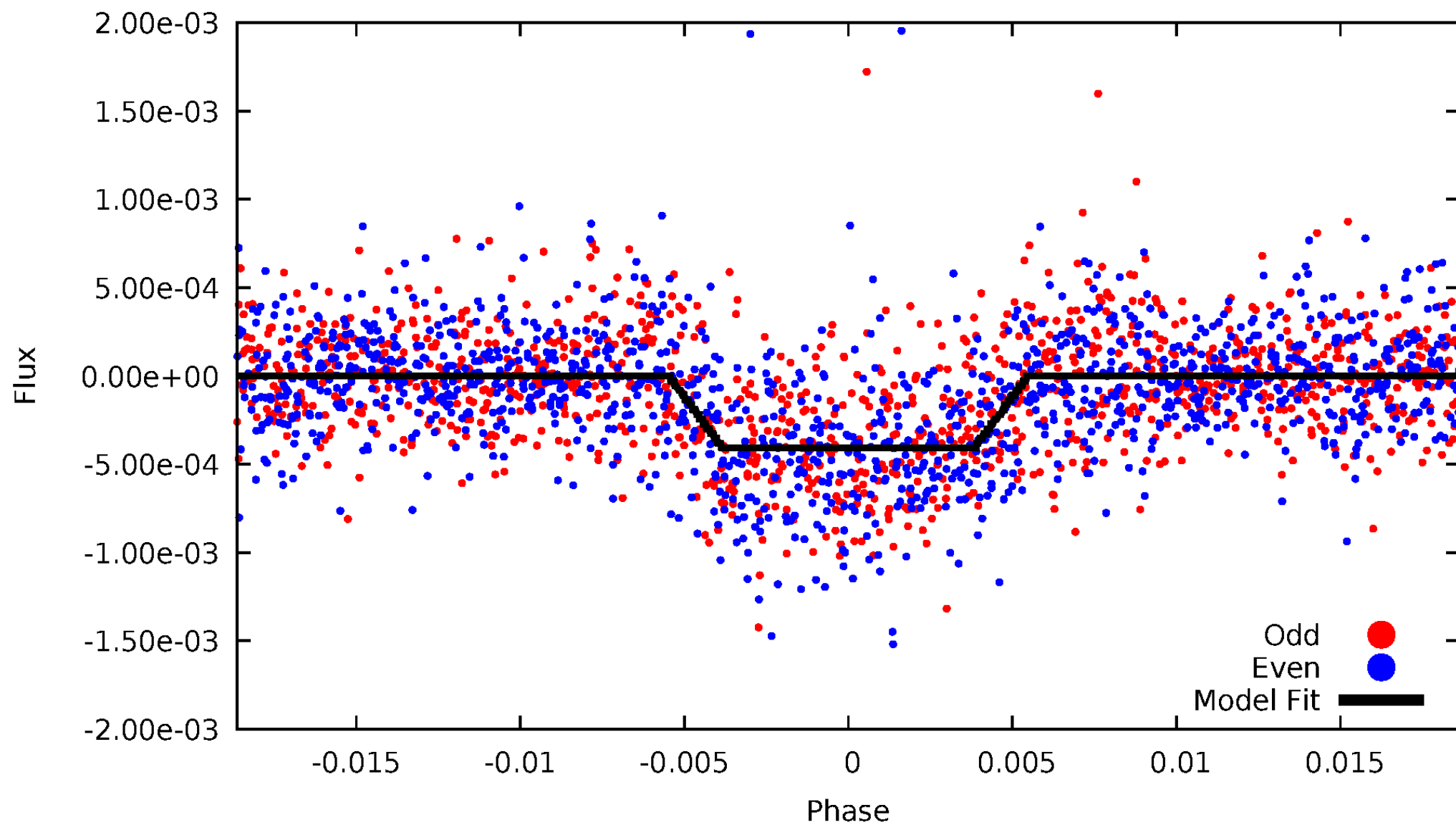
DV Odd/Even

TCE 005706966-01

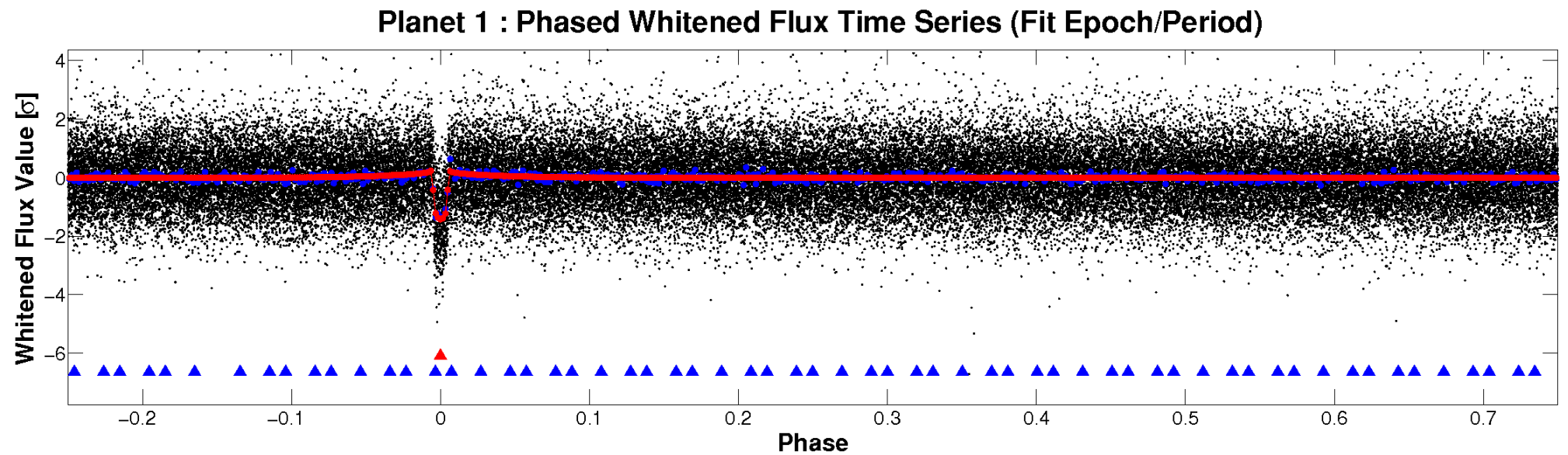
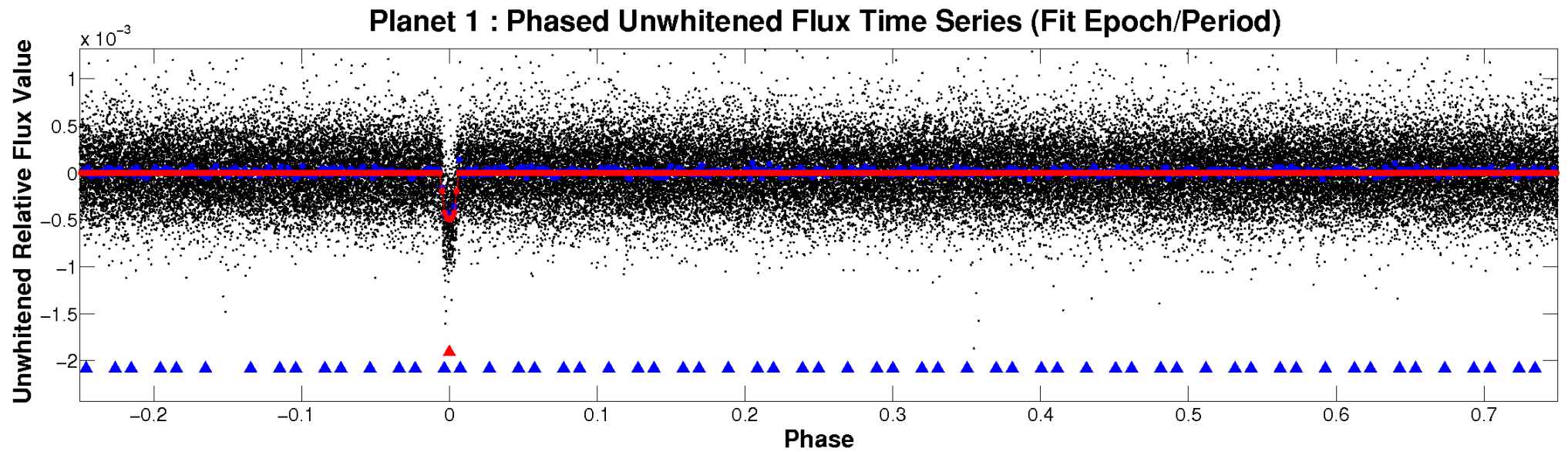


ALT Odd/Even

TCE 005706966-01

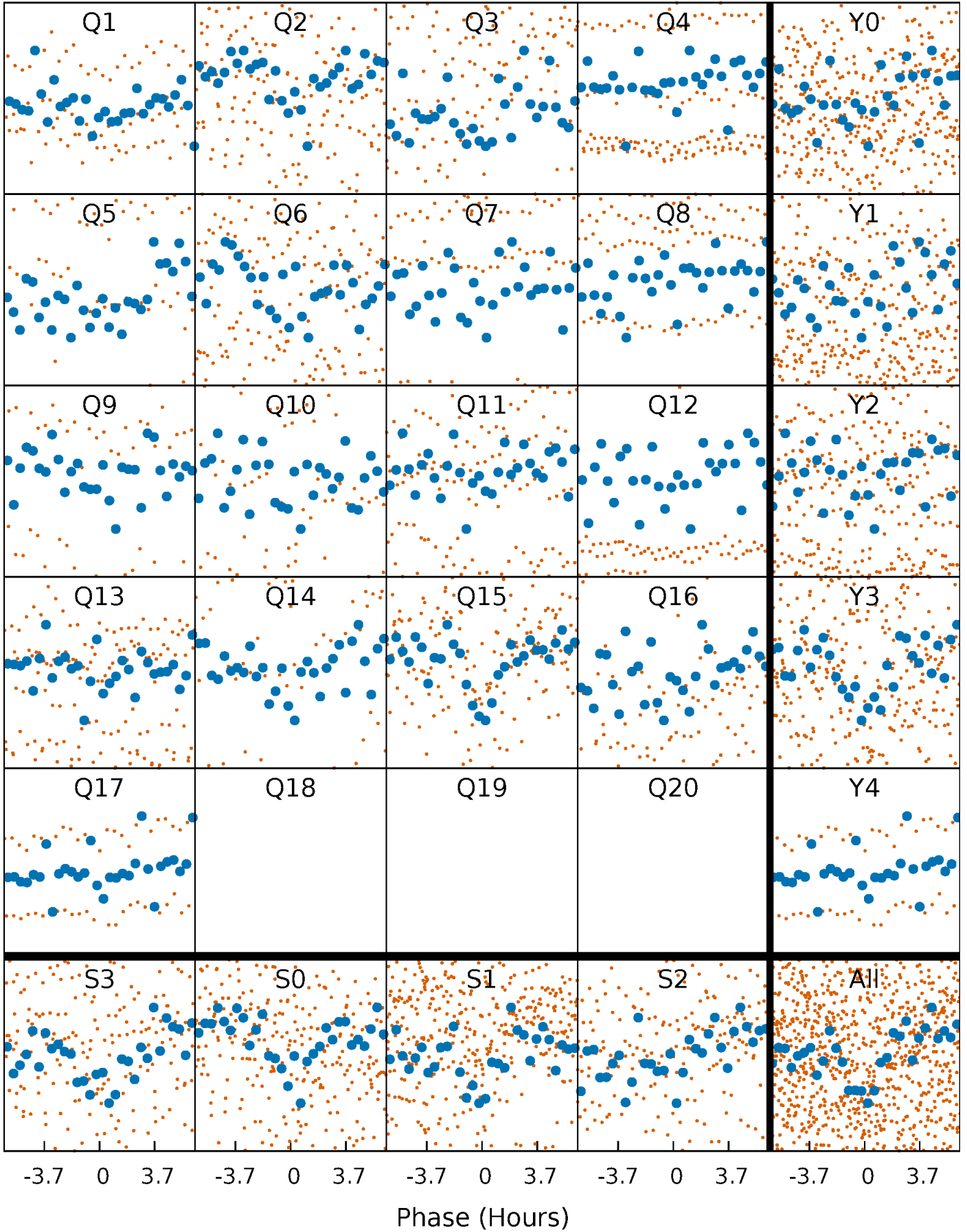


Non-Whitened Vs. Whitened Light Curve



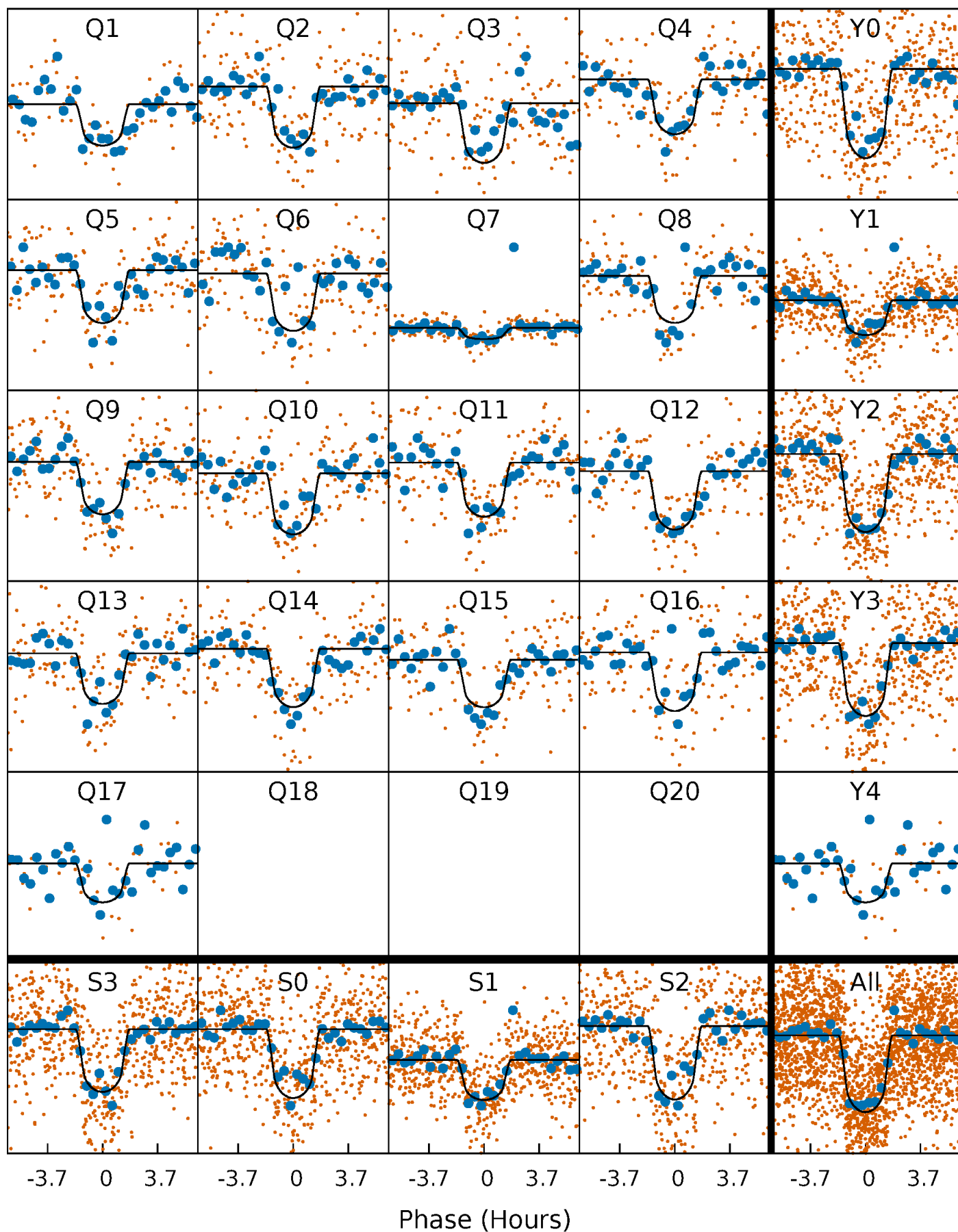
PDC Quarter-Phased Transit Curves

TCE 005706966-01 P= 12.551123 Days $T_0=137.261109$ (BKJD)



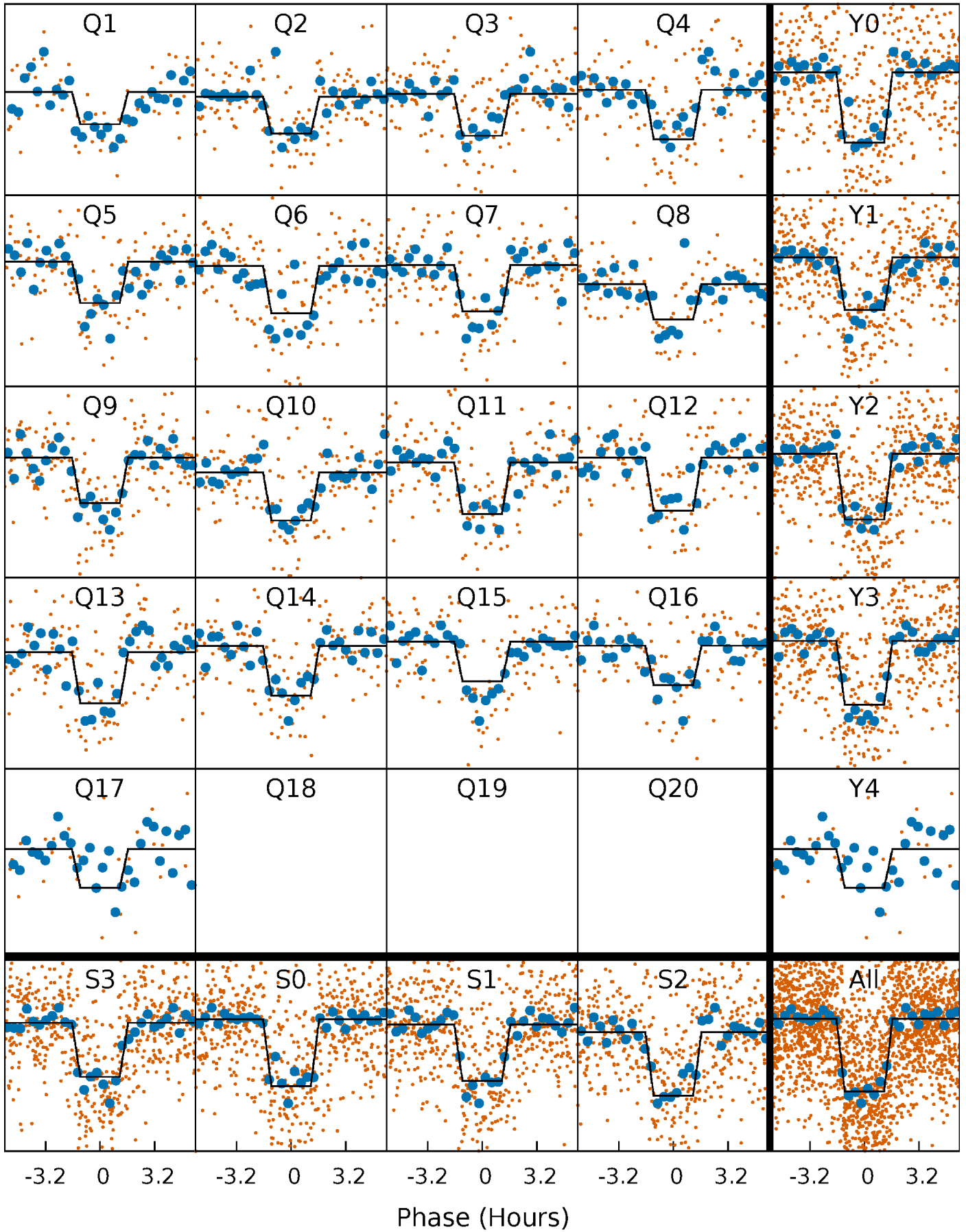
DV Quarter-Phased Transit Curves

TCE 005706966-01 P= 12.551123 Days $T_0=137.261109$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

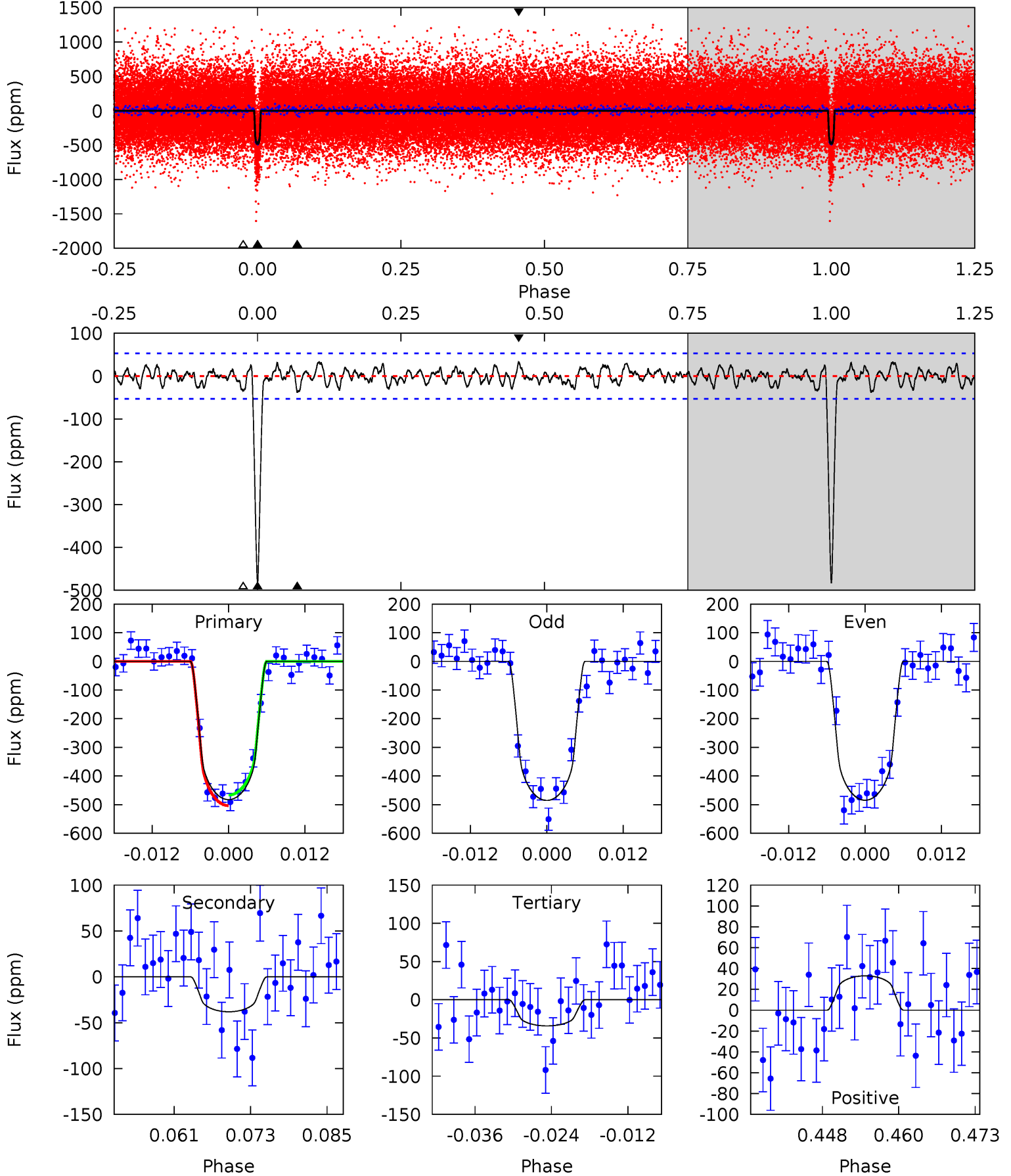
TCE 005706966-01 P= 12.551052 Days $T_0=137.264967$ (BKJD)



DV Model-Shift Uniqueness Test

005706966-01, P = 12.551123 Days, E = 124.709986 Days

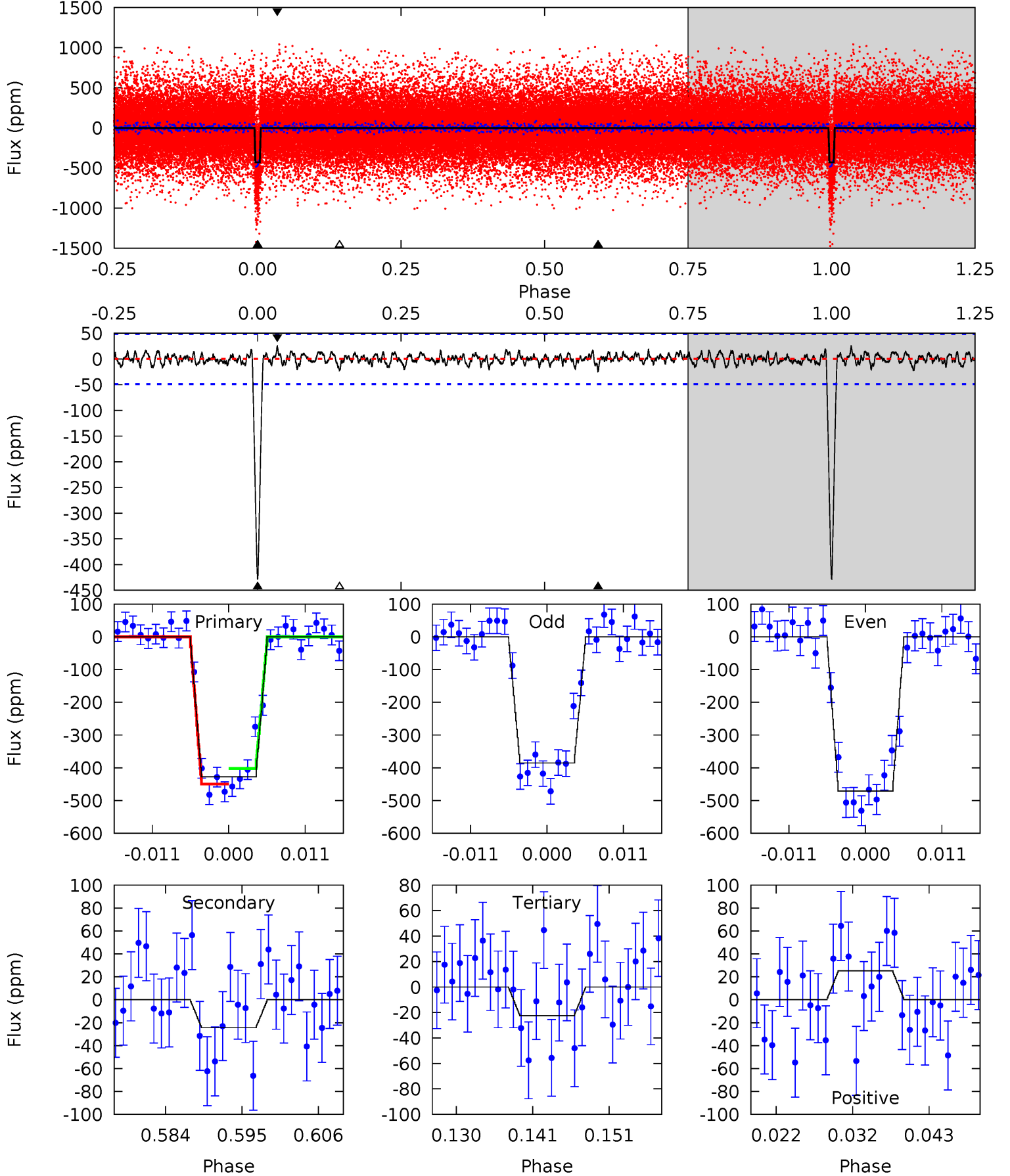
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.2	3.57	3.21	3.09	4.99	2.51	1.25	42.0	42.1	0.36	0.48	0.03	0.95	0.06	1.72



Alt Model-Shift Uniqueness Test

005706966-01, $P = 12.551052$ Days, $E = 124.713915$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
43.8	2.50	2.31	2.59	5.01	2.55	0.76	41.5	41.3	0.19	-0.09	4.41	1.00	0.06	2.42



Stellar Parameters For KIC 005706966

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4213^{+84}_{-84}	$4.669^{+0.024}_{-0.022}$	$-0.200^{+0.150}_{-0.150}$	$0.598^{+0.029}_{-0.029}$	$0.609^{+0.033}_{-0.033}$	$4.008^{+0.427}_{-0.352}$
	+2%/-2%	+1%/-0%	+75%/-75%	+5%/-5%	+5%/-5%	+11%/-9%
Source	SPE60	SPE60	SPE60	DSEP		

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

Secondary Eclipse Parameters for KIC 005706966-01 / KOI 1908.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-38 ± 11	$1.50^{+0.39}_{-0.46}$	671^{+14}_{-16}	2787^{+297}_{-216}	74^{+77}_{-34}
Alt.	-24 ± 10	$1.33^{+0.42}_{-0.45}$	671^{+14}_{-14}	2719^{+332}_{-255}	61^{+79}_{-32}

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

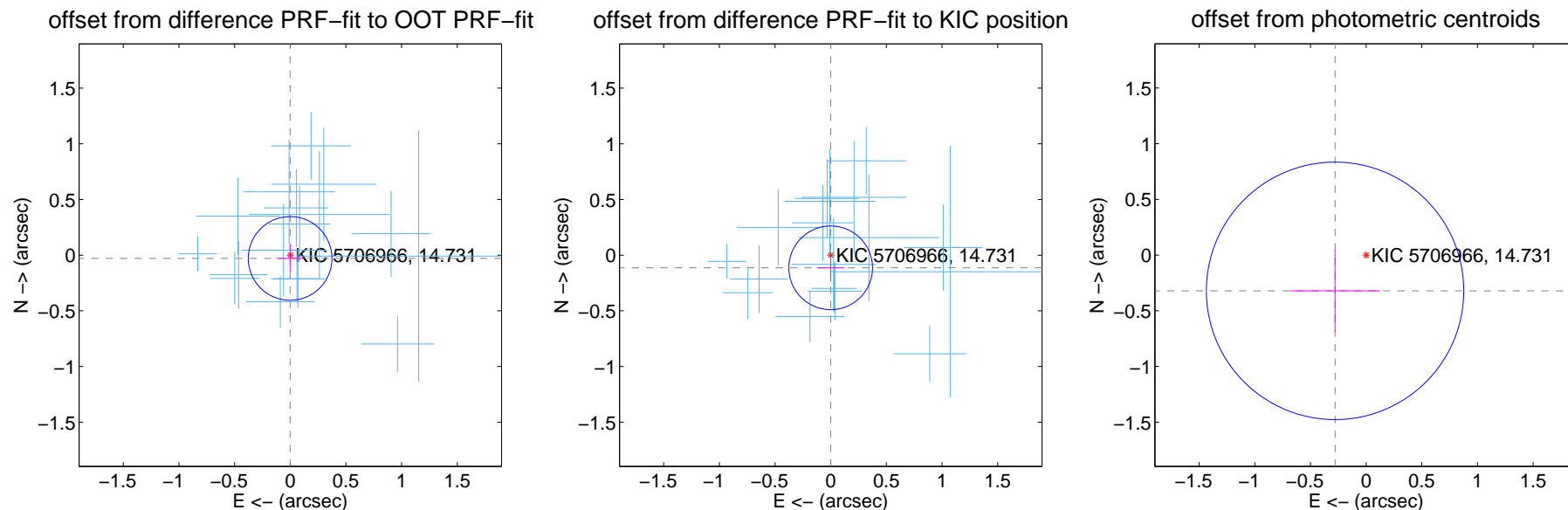
DV Centroid Data

Supplemental centroid analysis for 005706966-01. Kepler magnitude: 14.73. Transit SNR 31.32

There are 17 quarters with good PRF difference image offsets

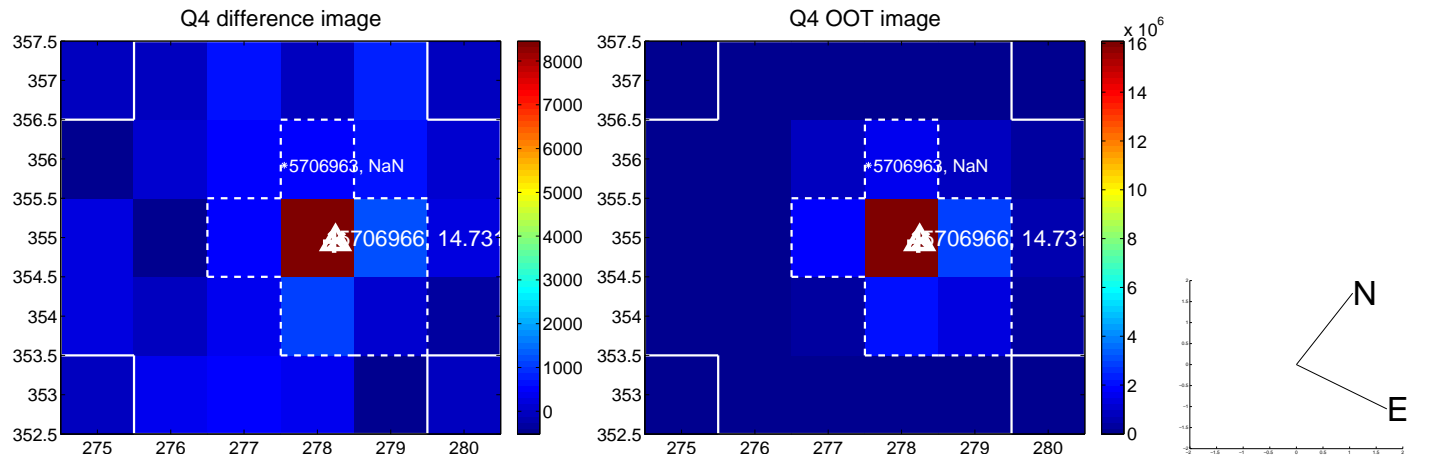
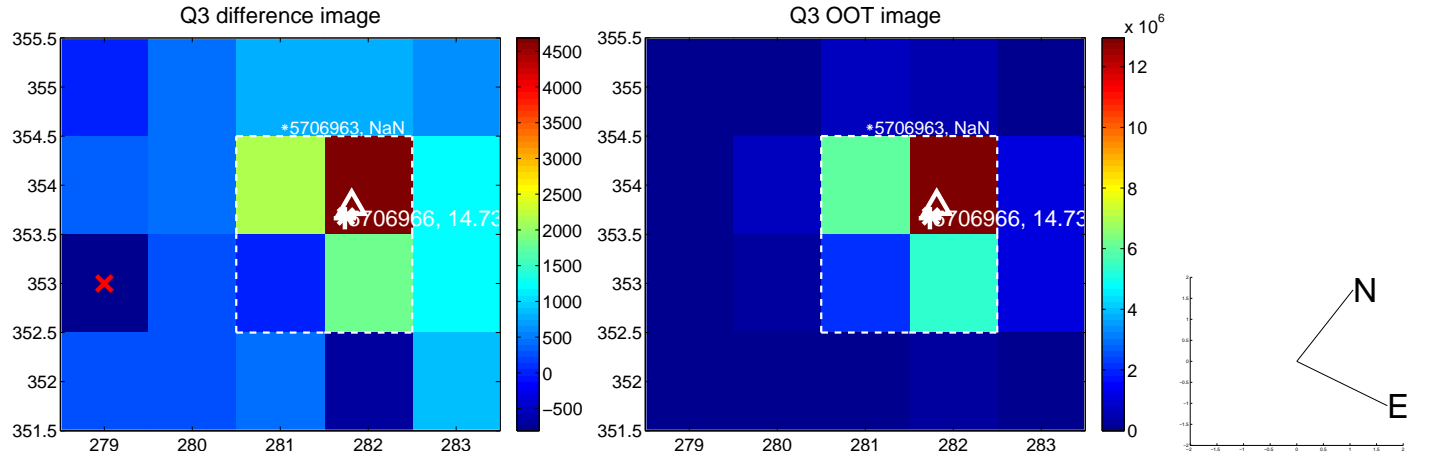
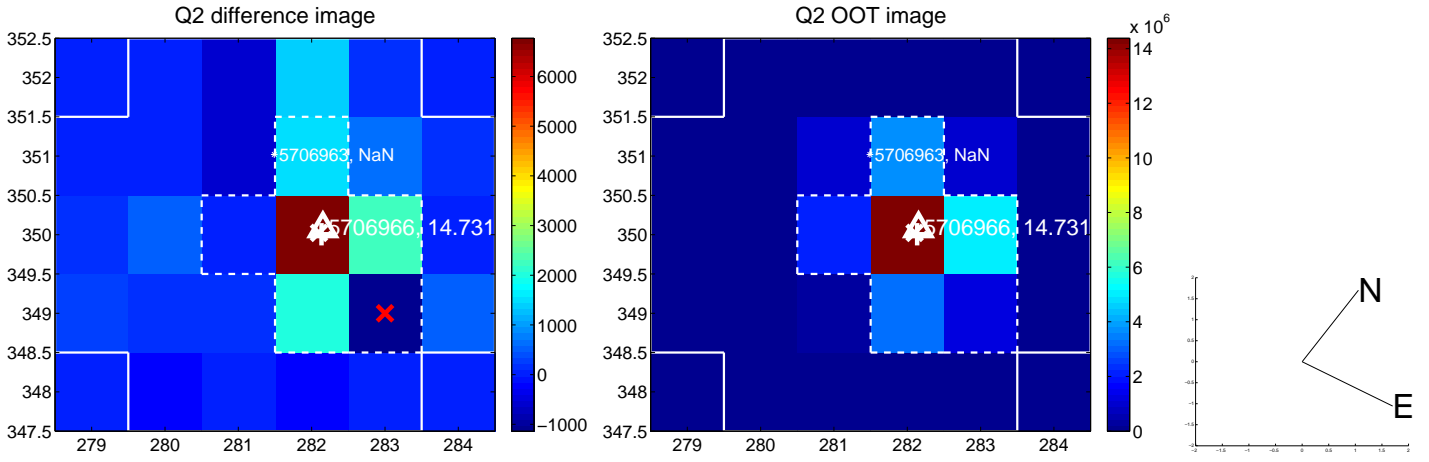
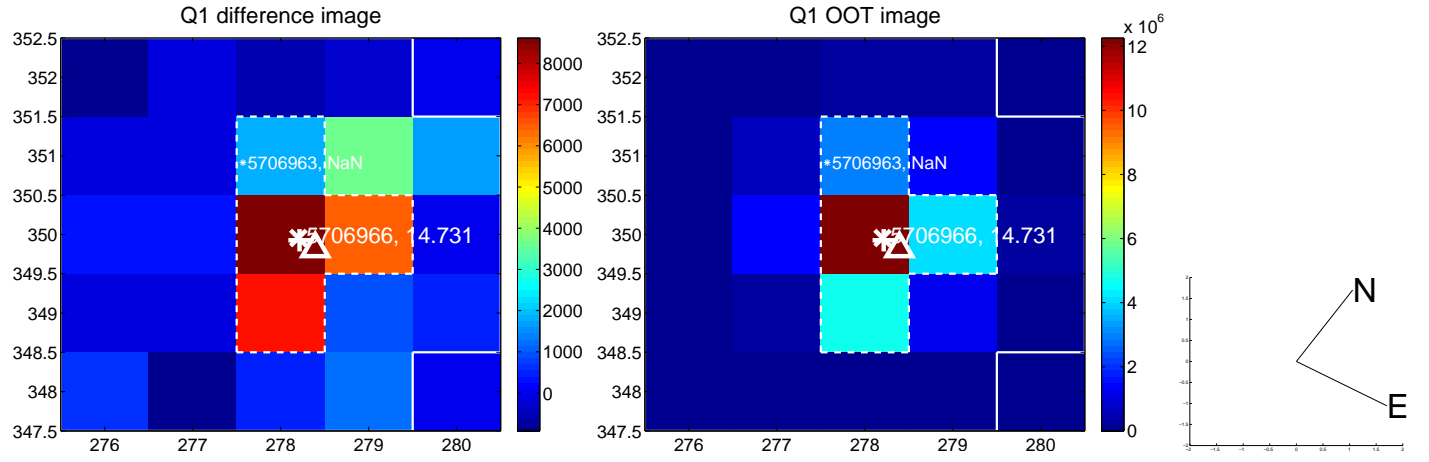
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.030 ± 0.125	0.24	0.001 ± 0.123	-0.030 ± 0.125
PRF-fit source offset from KIC position	0.114 ± 0.125	0.91	0.000 ± 0.123	-0.114 ± 0.125
photometric centroid source offset	0.43 ± 0.39	1.10	0.28 ± 0.41	-0.32 ± 0.37

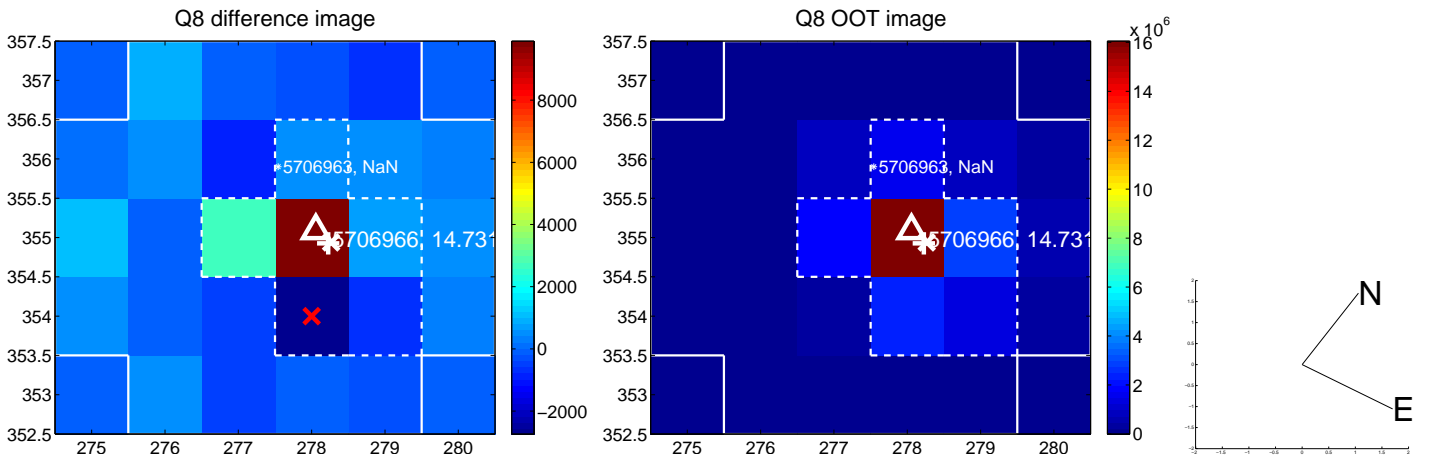
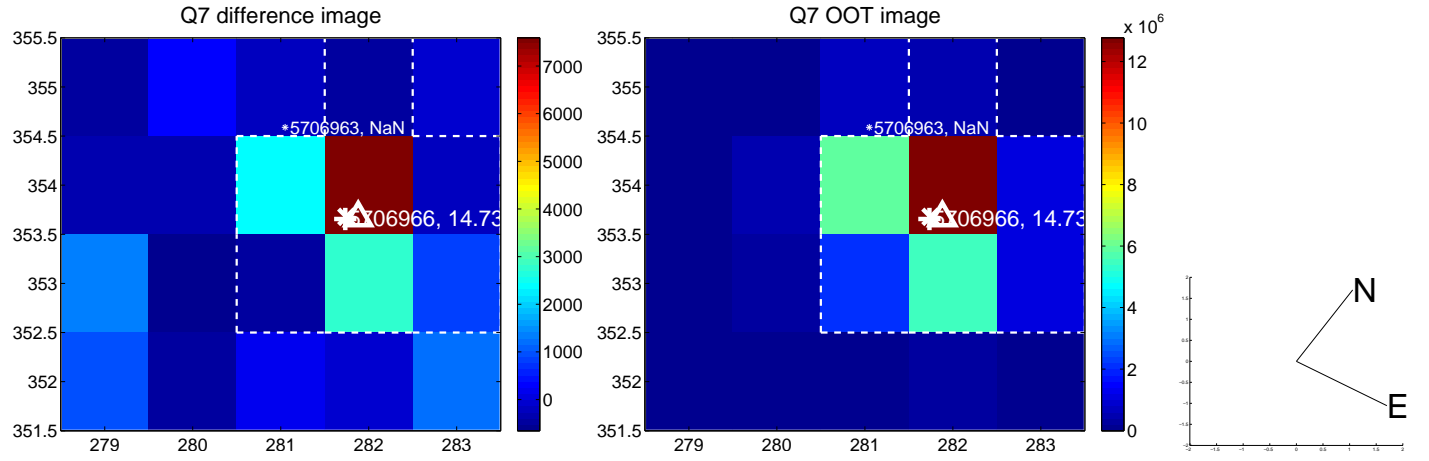
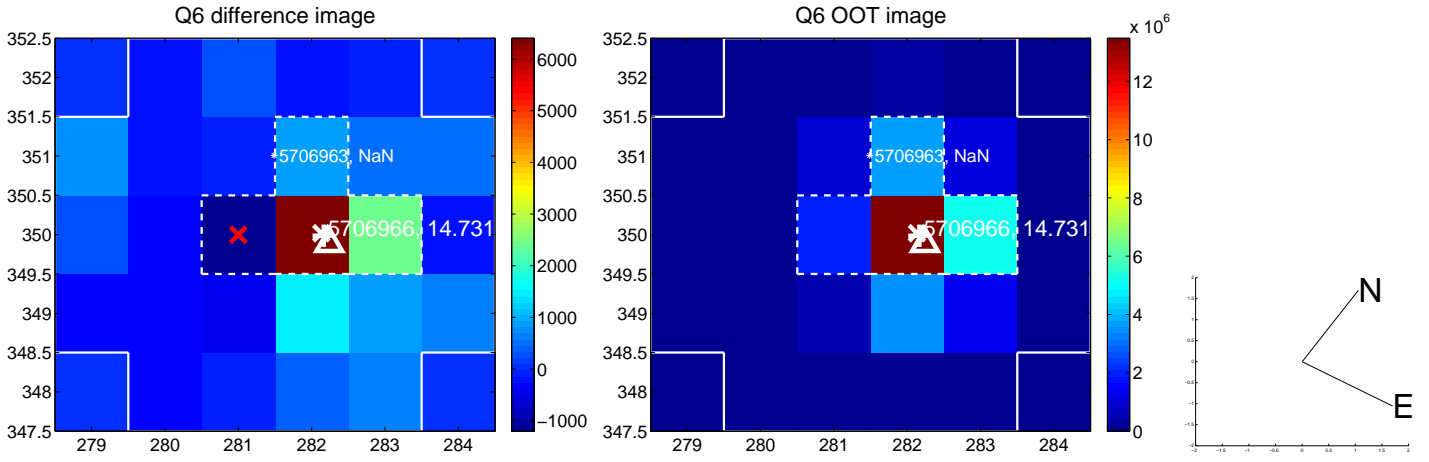
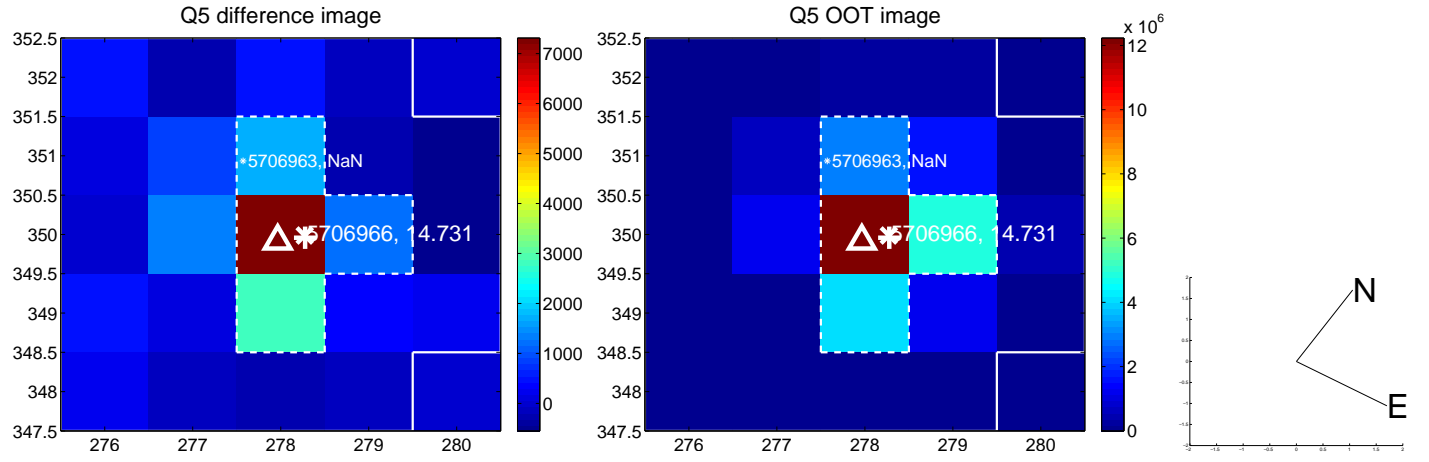


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

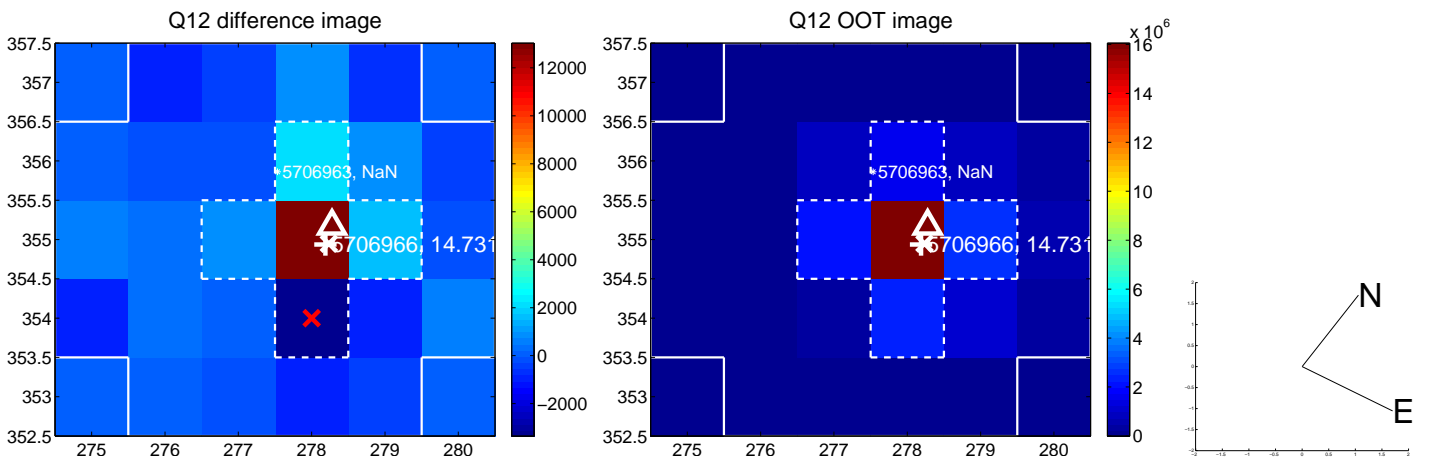
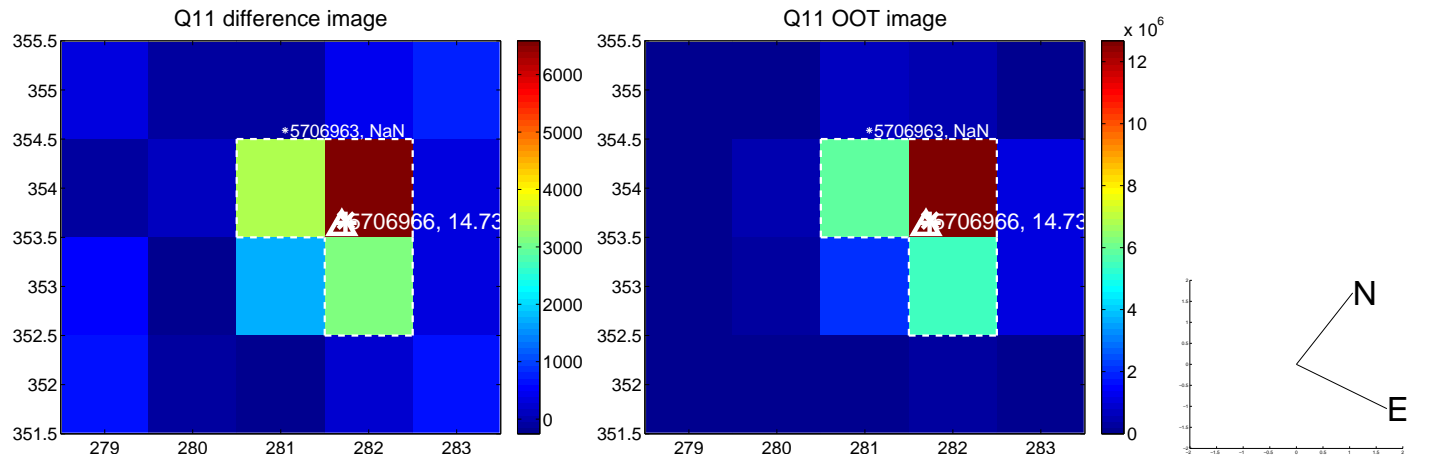
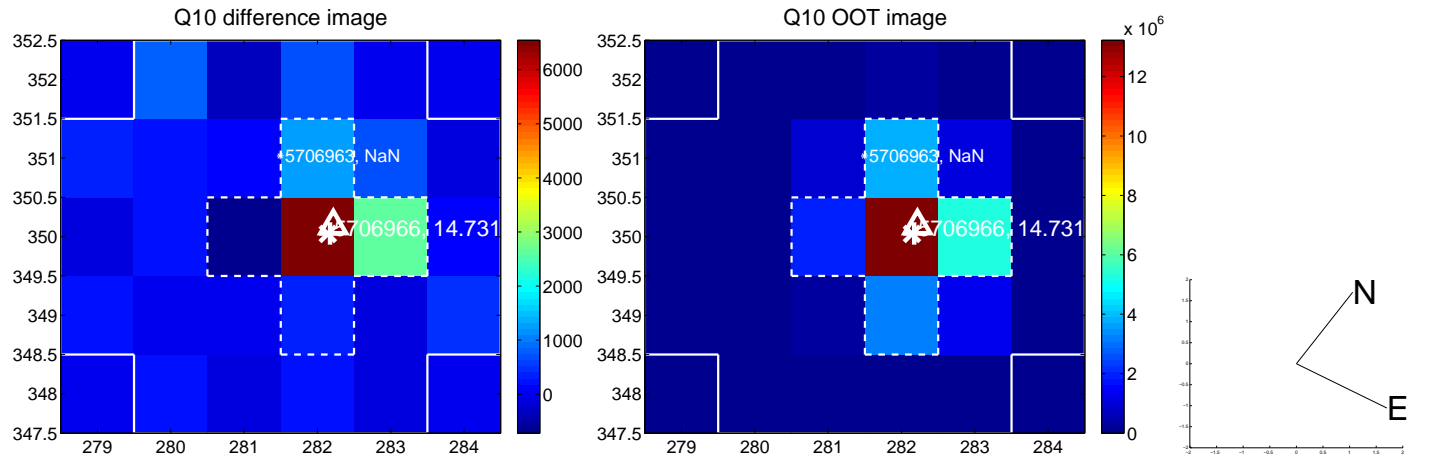
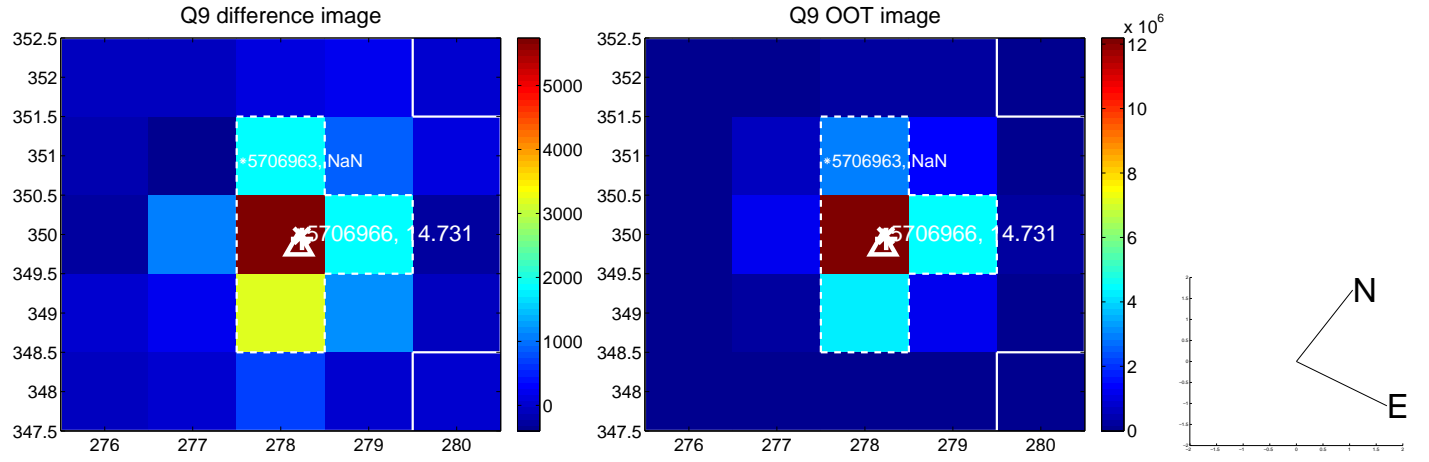
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



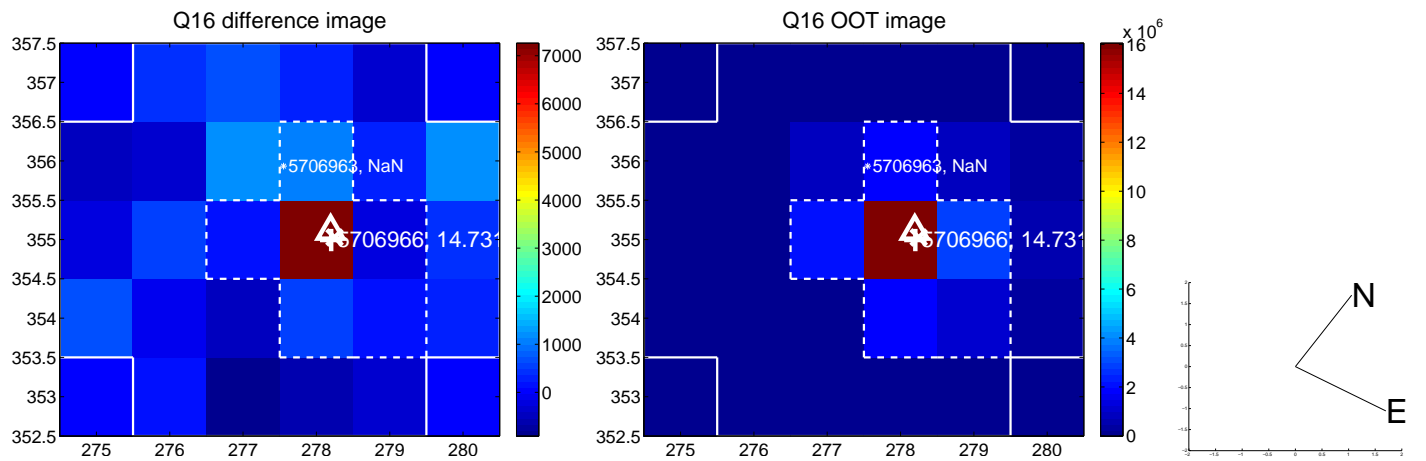
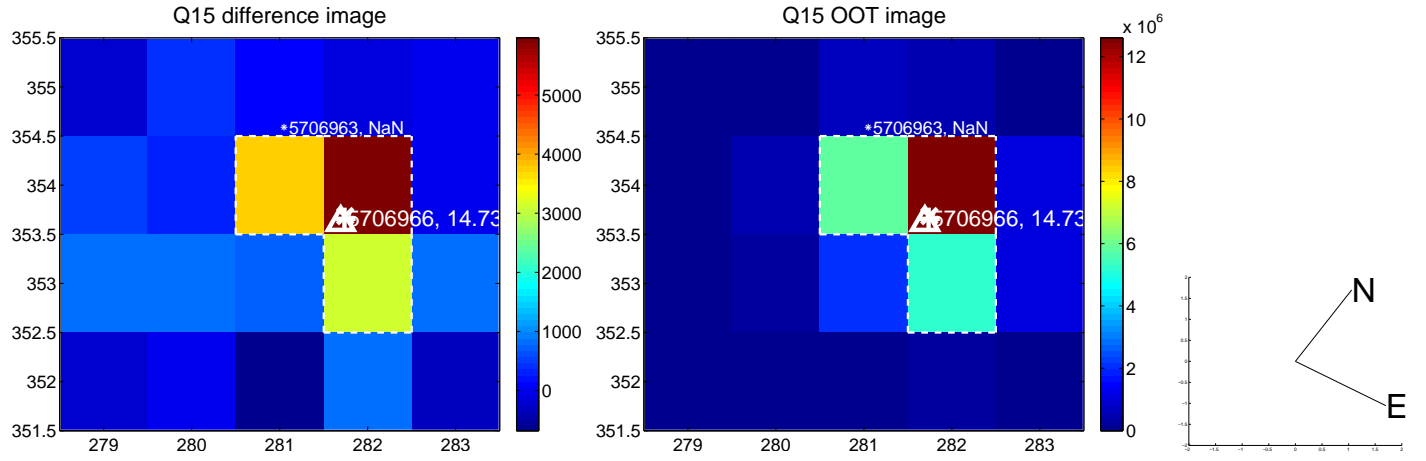
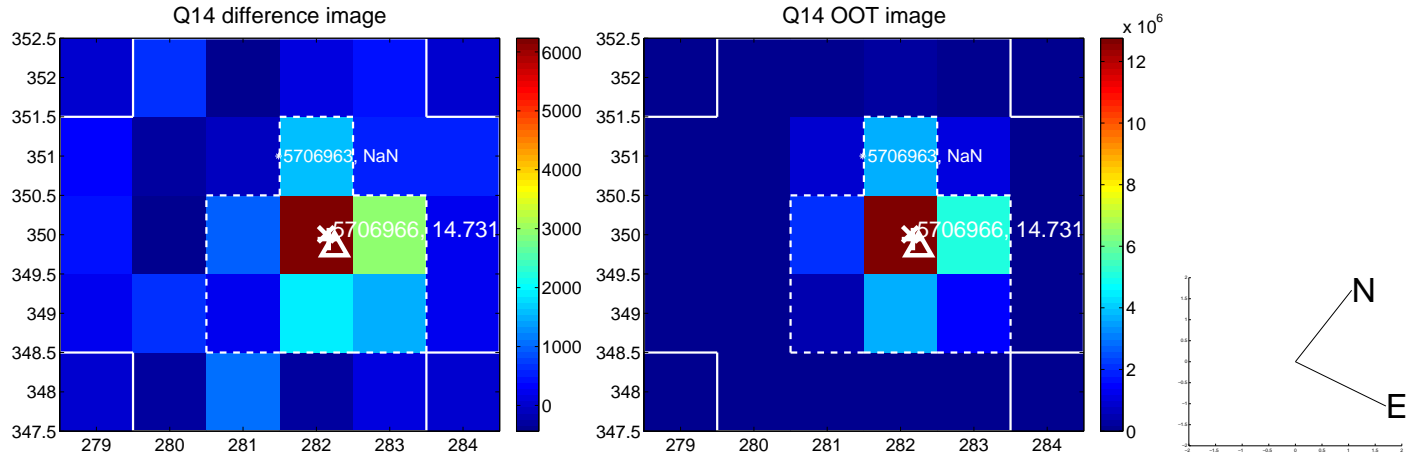
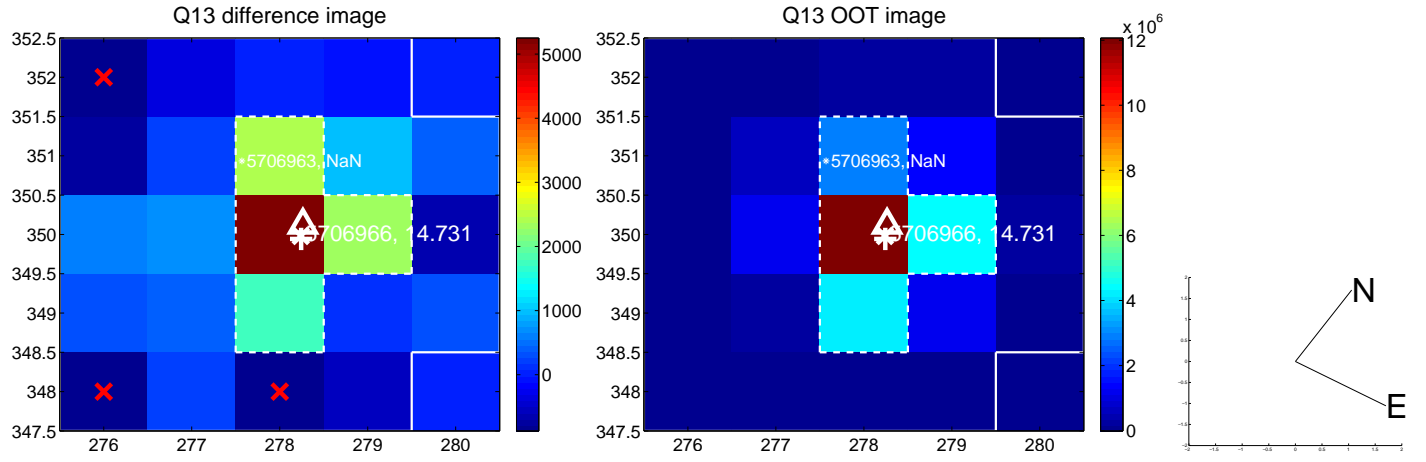
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



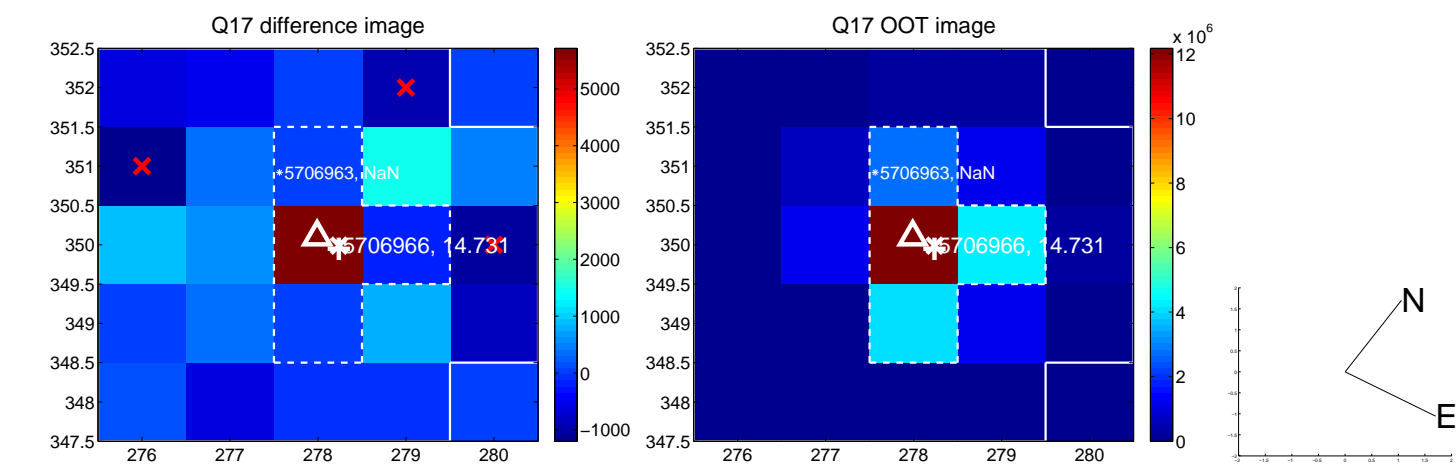
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



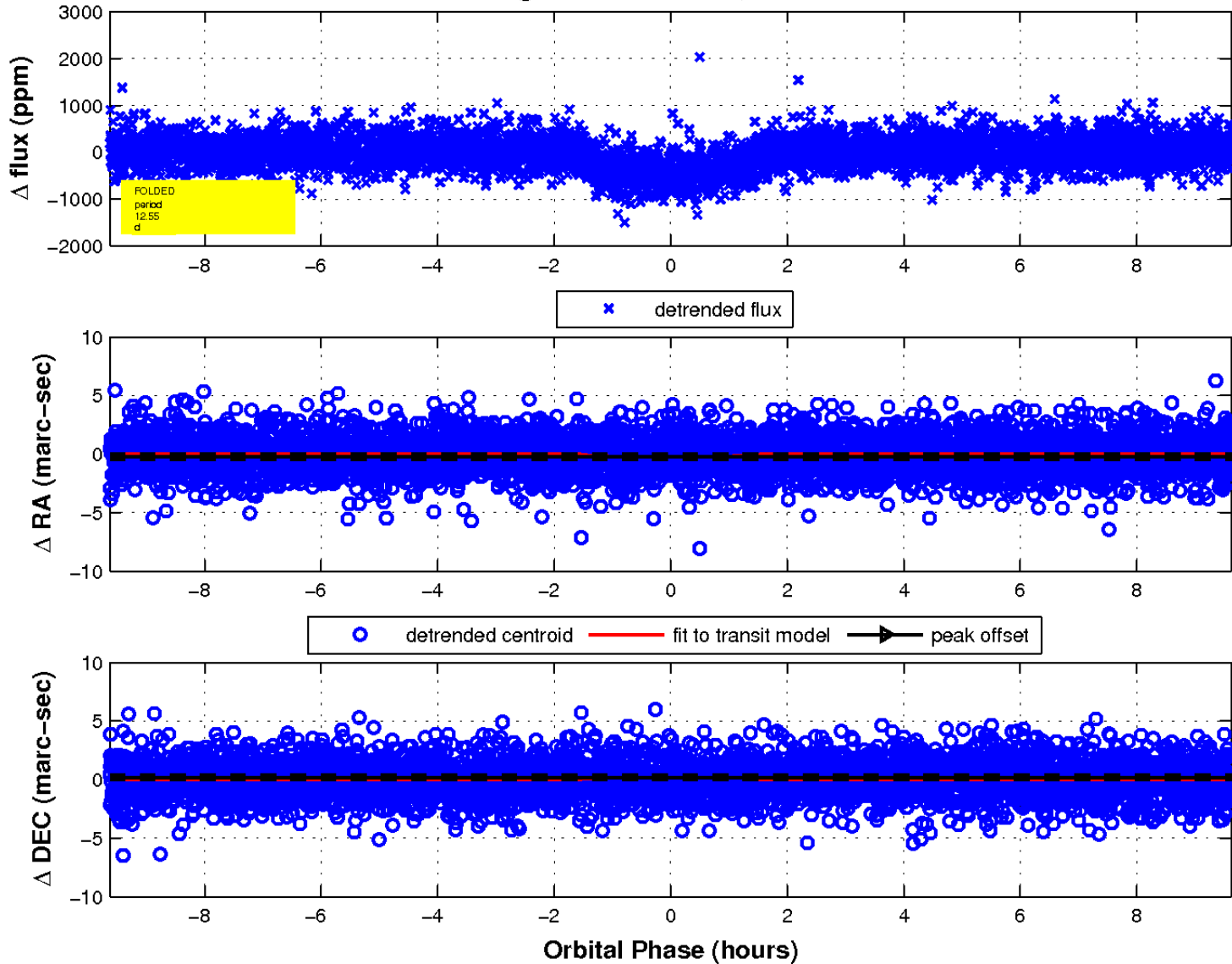
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

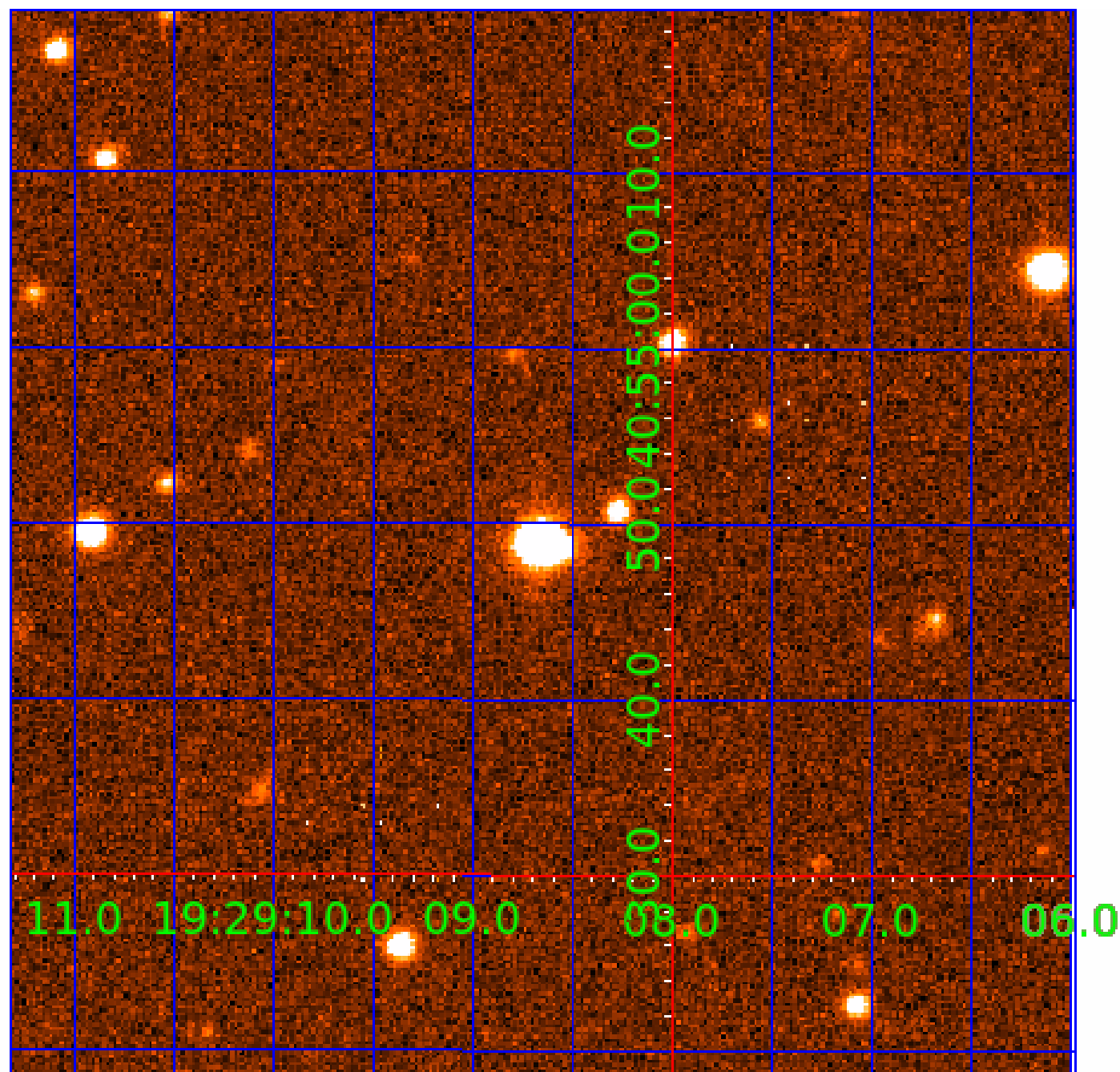


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 005706966

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})
005706966-01	OBS	1908.01	12.551123	137.261109	498.9	3.209	27.2	31.3	0.60	4213	1.50	12.57
005706966-02	OBS	1908.02	24.088259	134.423839	380.5	4.028	15.8	18.0	0.60	4213	1.39	5.27

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005706966-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005706966-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

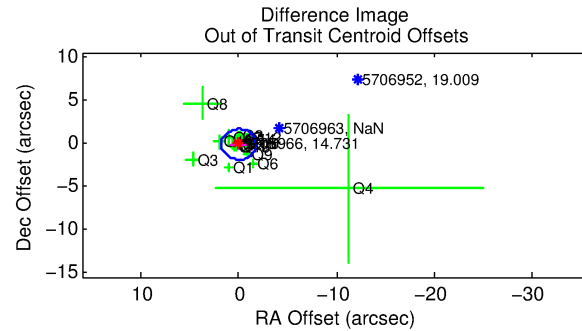
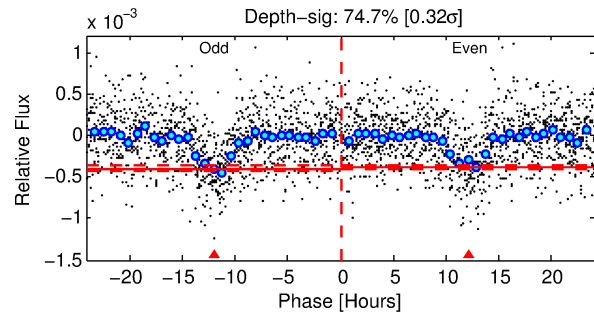
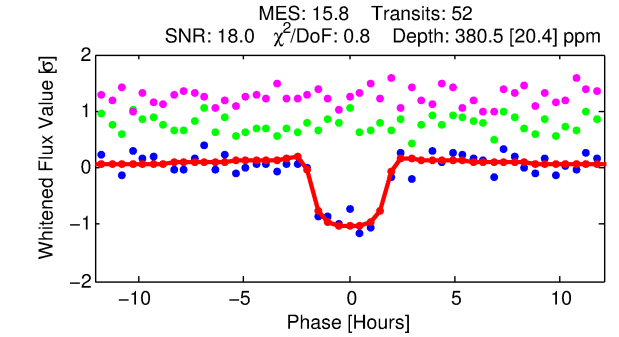
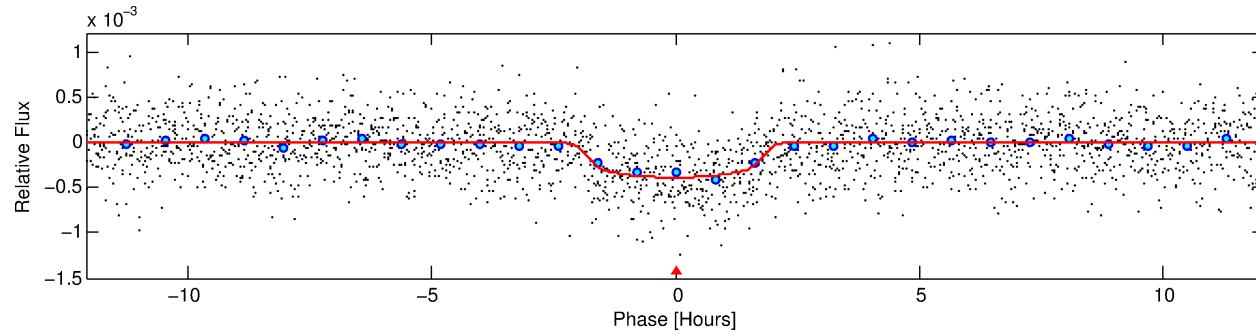
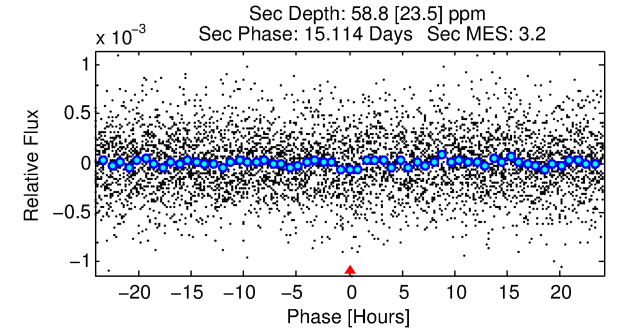
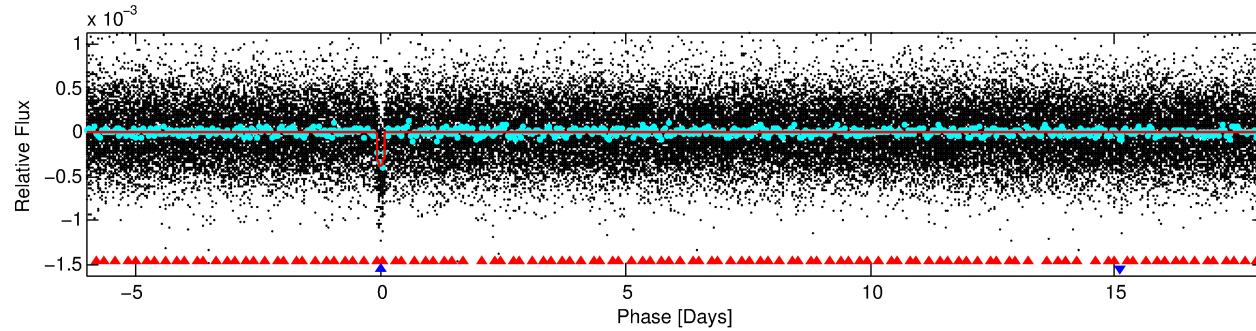
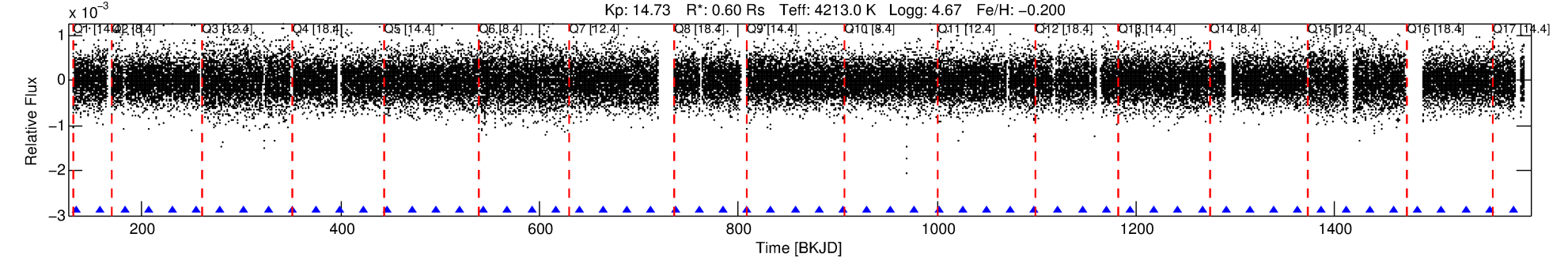
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005706966-02

No Significant Match Found

DV One-Page Summary

KIC: 5706966 Candidate: 2 of 2 Period: 24.088 d
KOI: K01908.02 Name: Kepler-333c Corr: 0.991



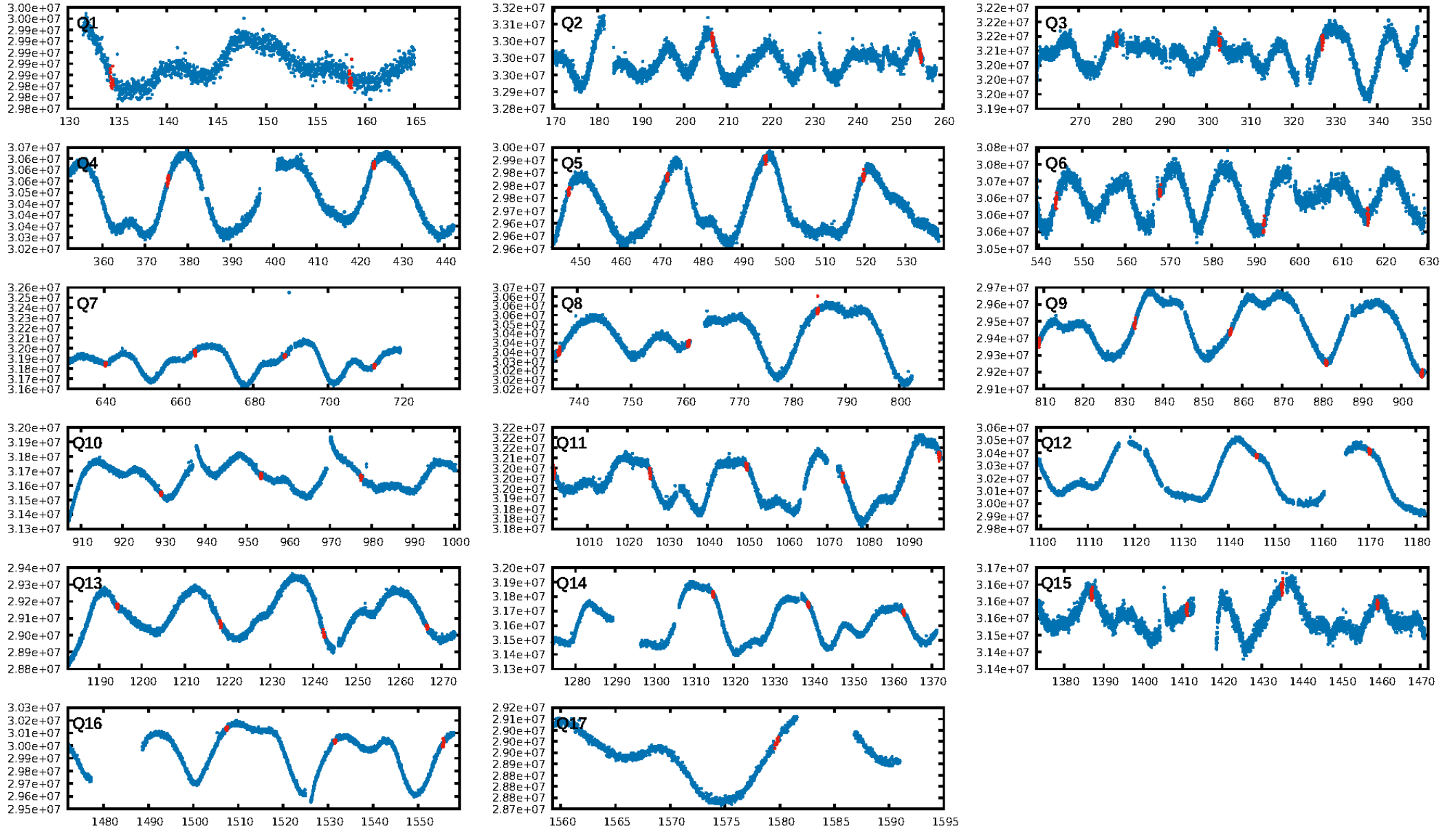
DV Fit Results:

Period = 24.08826 [0.00013] d
Epoch = 134.4238 [0.0046] BKJD
Rp/R* = 0.0213 [0.0047]
a/R* = 23.63 [20.43]
b = 0.88 [0.22]
Seff = 5.27 [0.49]
Teff = 386 [9] K
Rp = 1.39 [0.31] Re
a = 0.1384 [0.0051] AU
Ag = 320.86 [191.62] [1.67 σ]
Teffp = 2528 [380] K [5.64 σ]

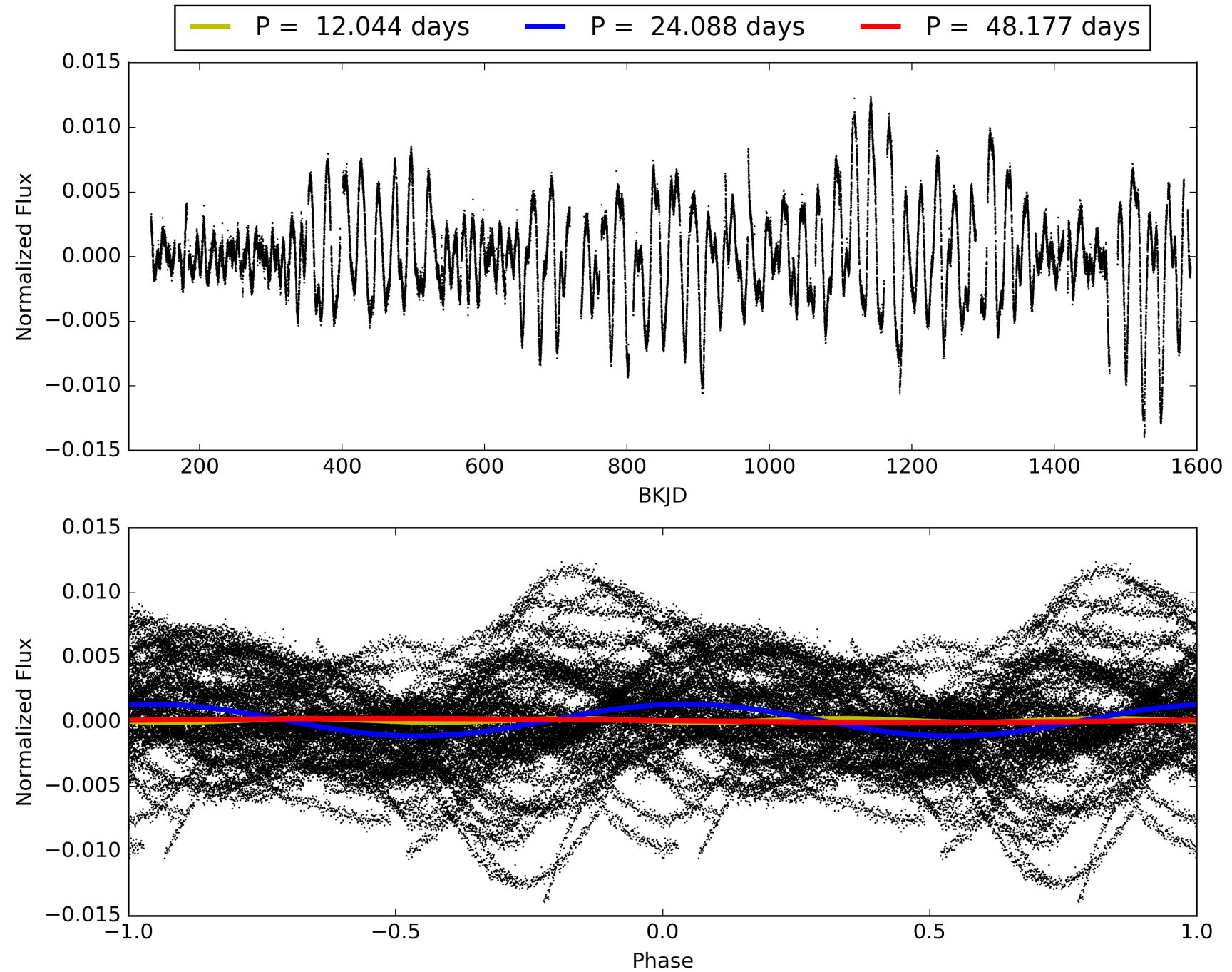
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [53.77 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.52e-56
RollingBand-fgt: 1.00 [49/49]
GhostDiagnostic-chr: 1.884
Centroid-sig: 65.1%
Centroid-so: 0.343 arcsec [0.57 σ]
OotOffset-rm: 0.141 arcsec [0.24 σ]
KicOffset-rm: 0.136 arcsec [0.16 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.76 [13/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 005706966-02, PDC Light Curves

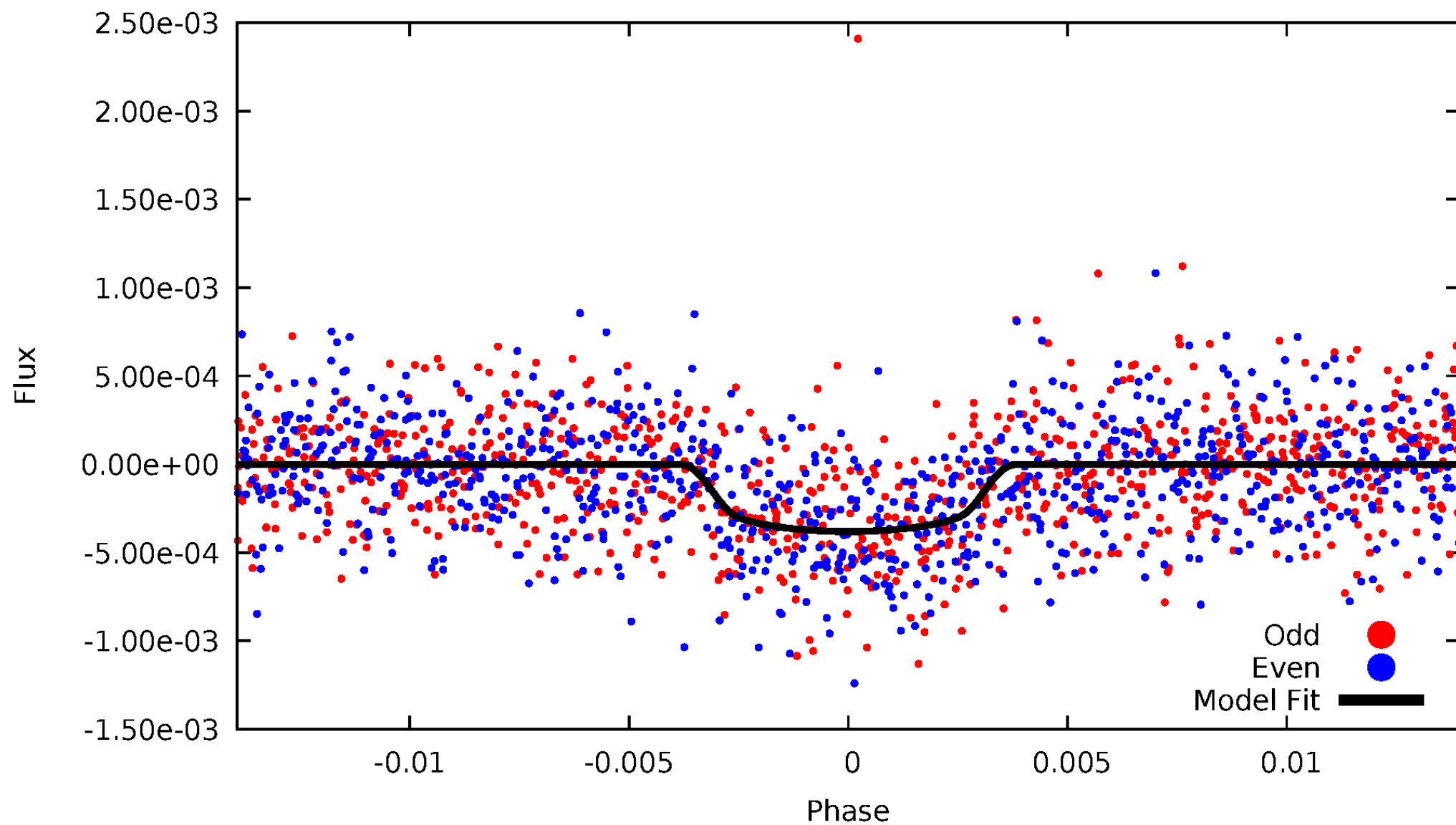


TCE 005706966-02



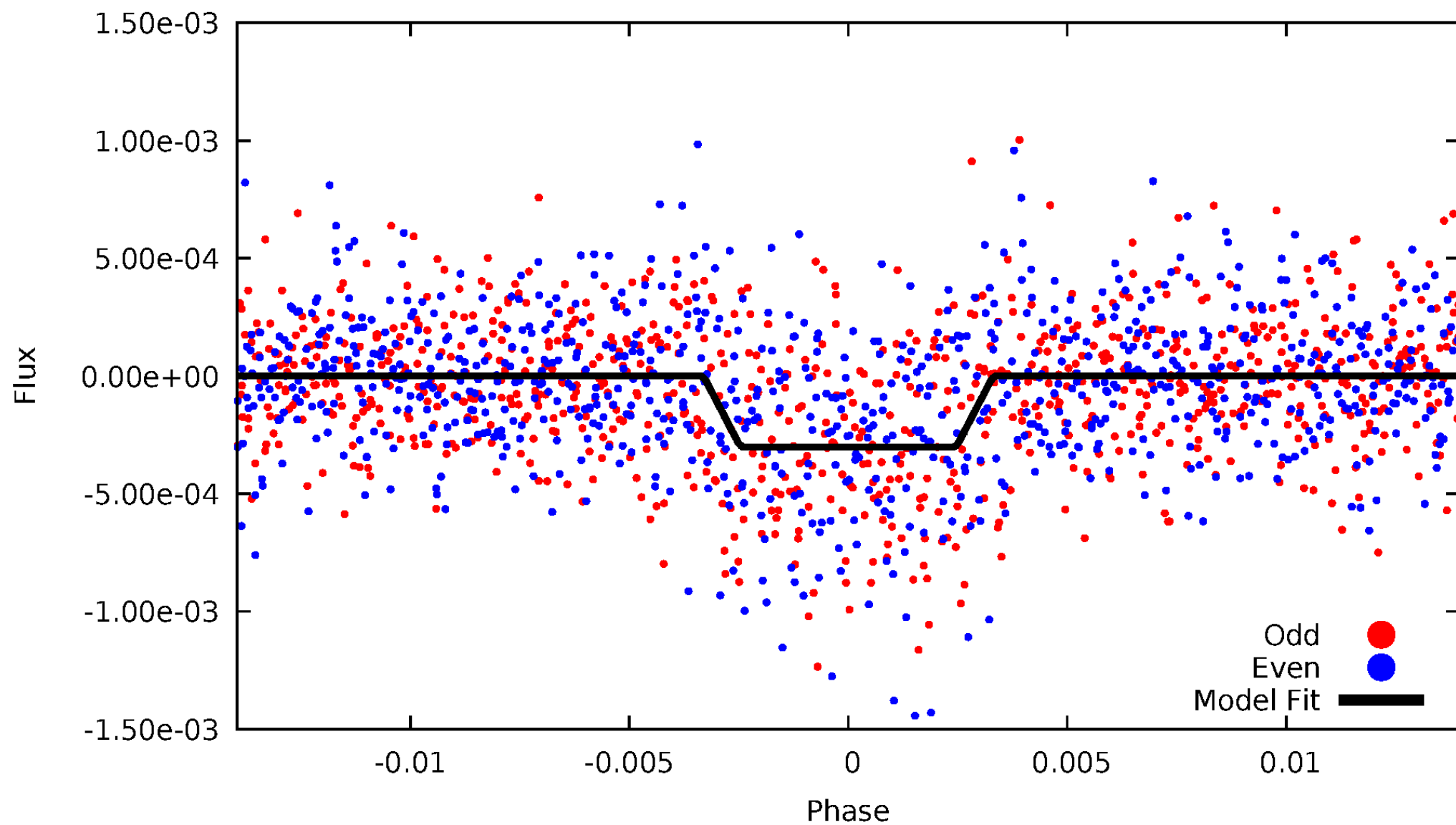
DV Odd/Even

TCE 005706966-02



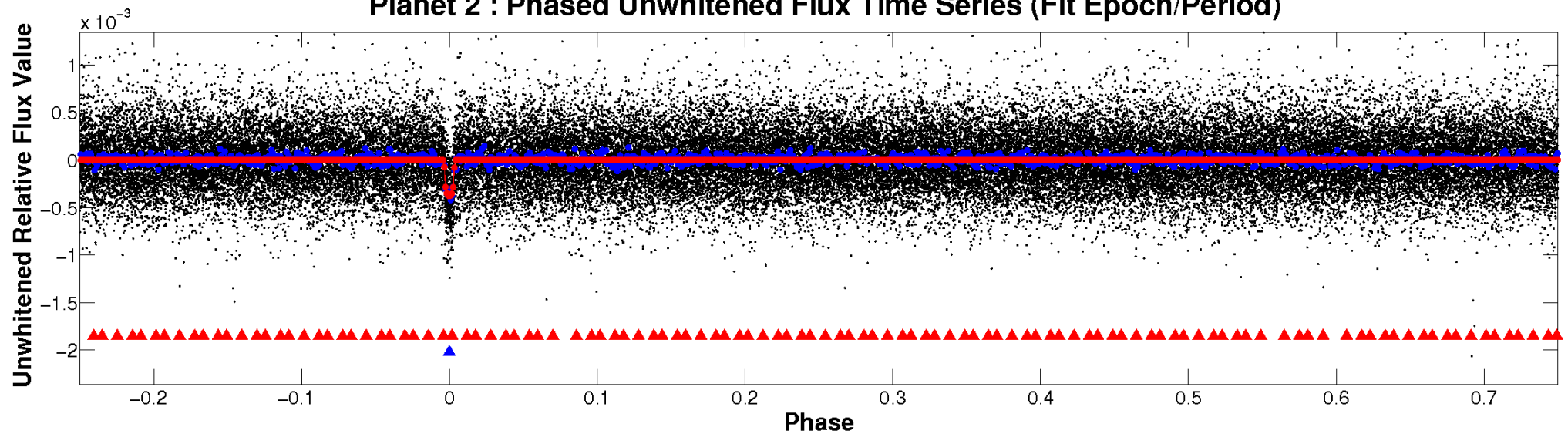
ALT Odd/Even

TCE 005706966-02

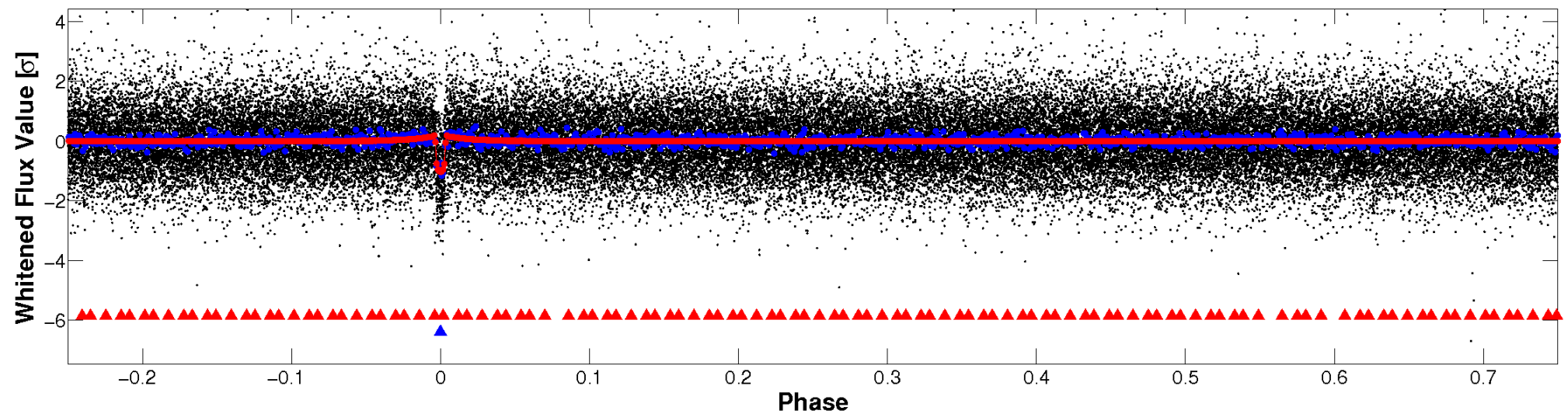


Non-Whitened Vs. Whitened Light Curve

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

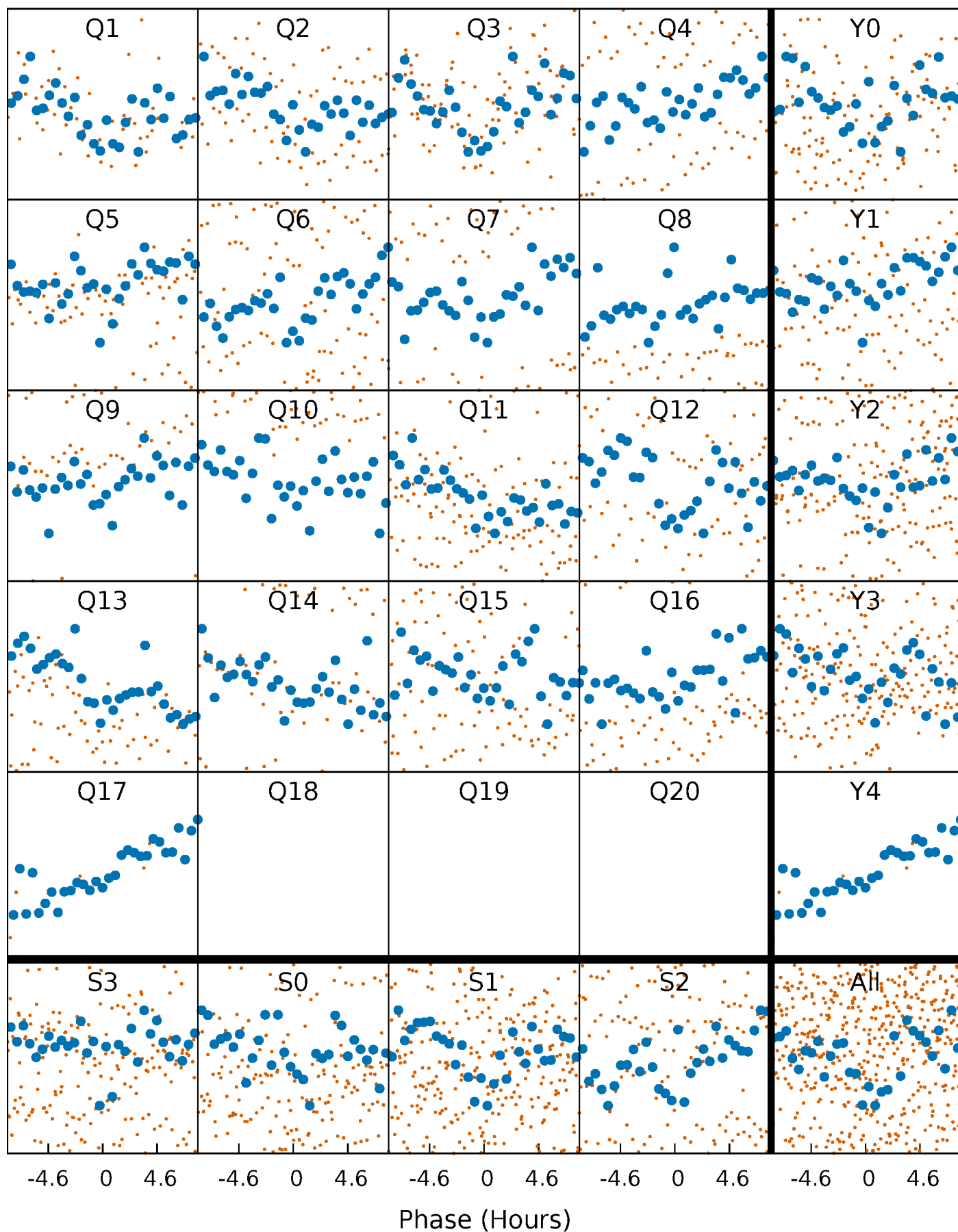


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



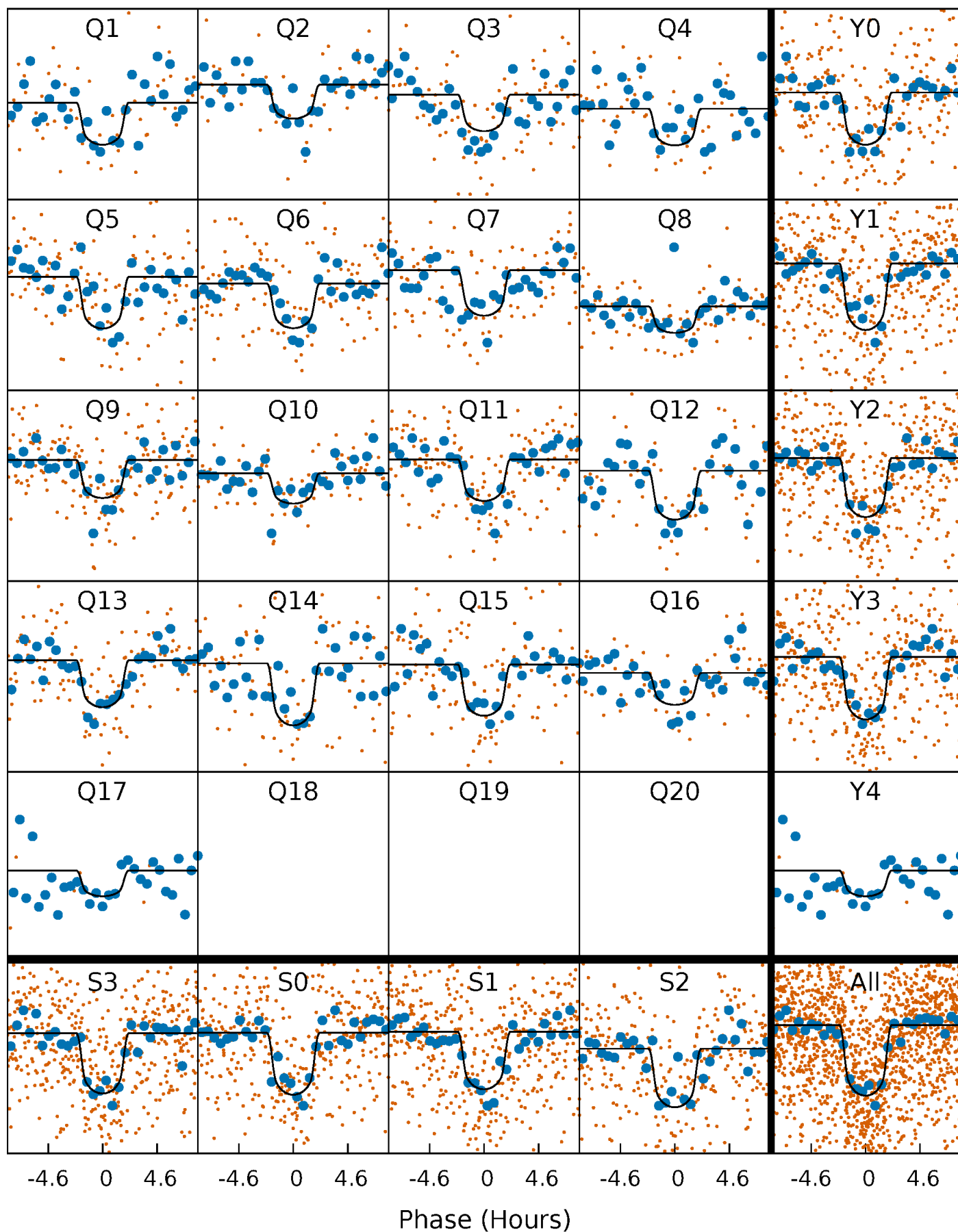
PDC Quarter-Phased Transit Curves

TCE 005706966-02 P= 24.088259 Days $T_0=134.423839$ (BKJD)



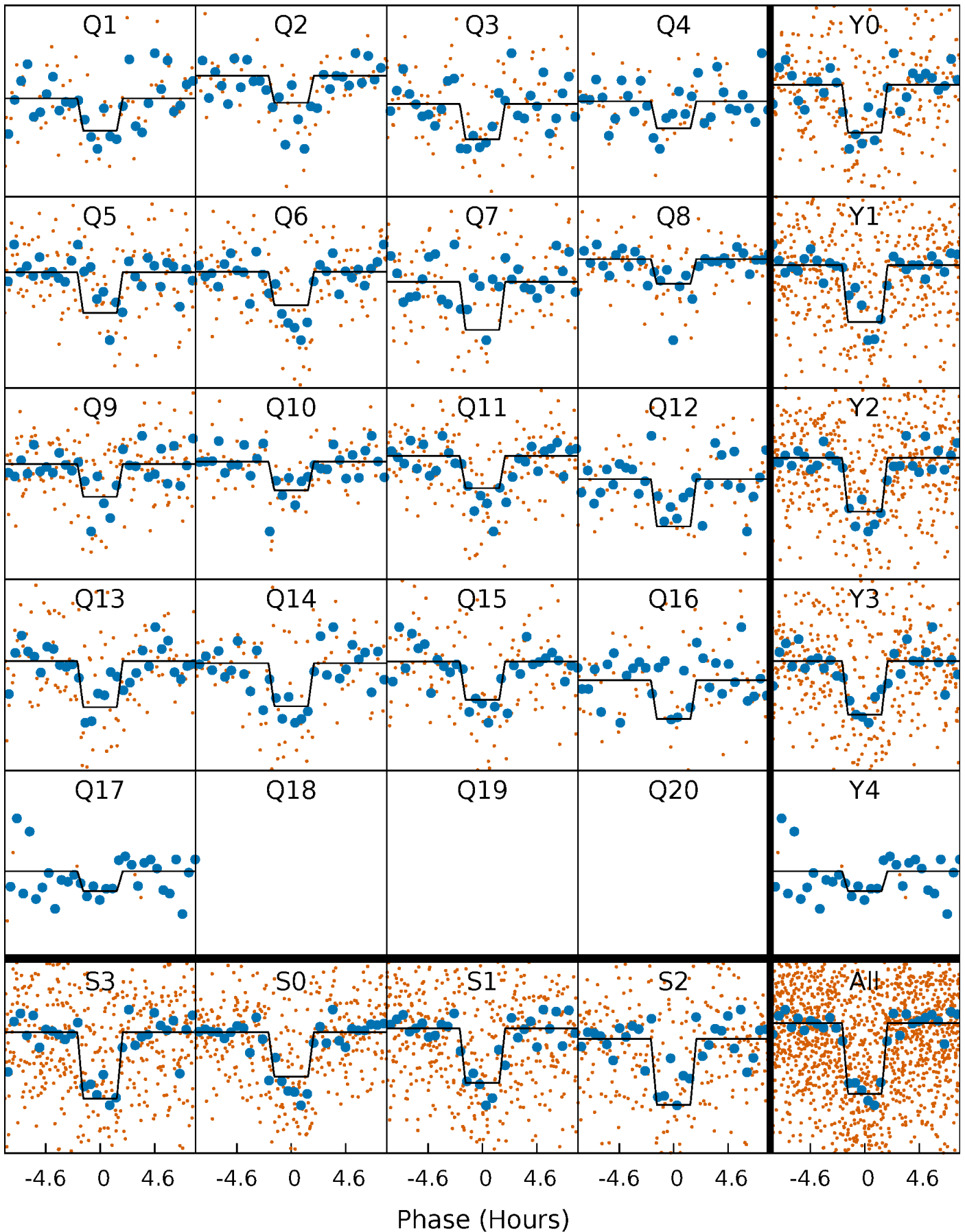
DV Quarter-Phased Transit Curves

TCE 005706966-02 P= 24.088259 Days $T_0=134.423839$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

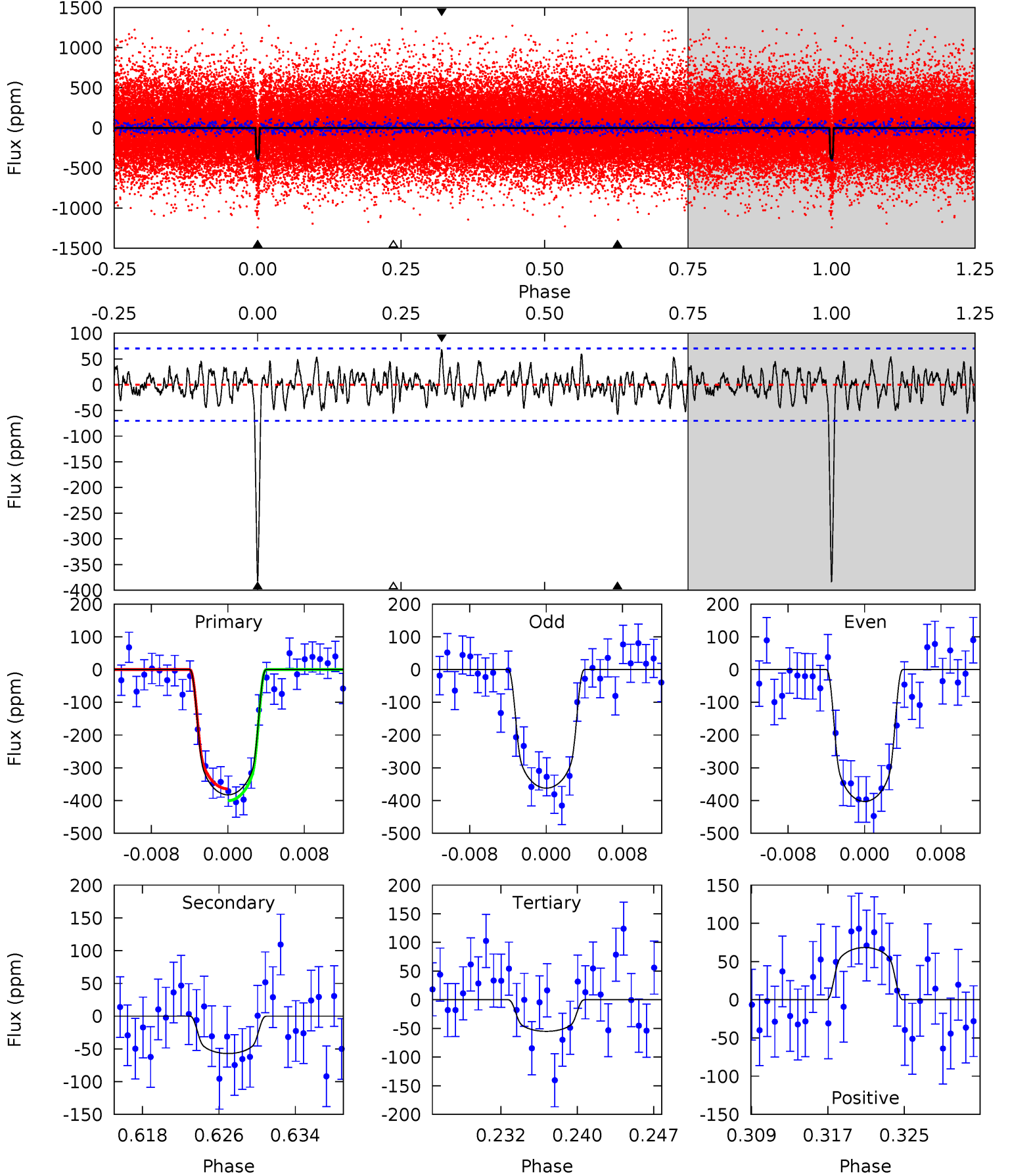
TCE 005706966-02 P= 24.088329 Days $T_0=134.421196$ (BKJD)



DV Model-Shift Uniqueness Test

005706966-02, P = 24.088259 Days, E = 110.335580 Days

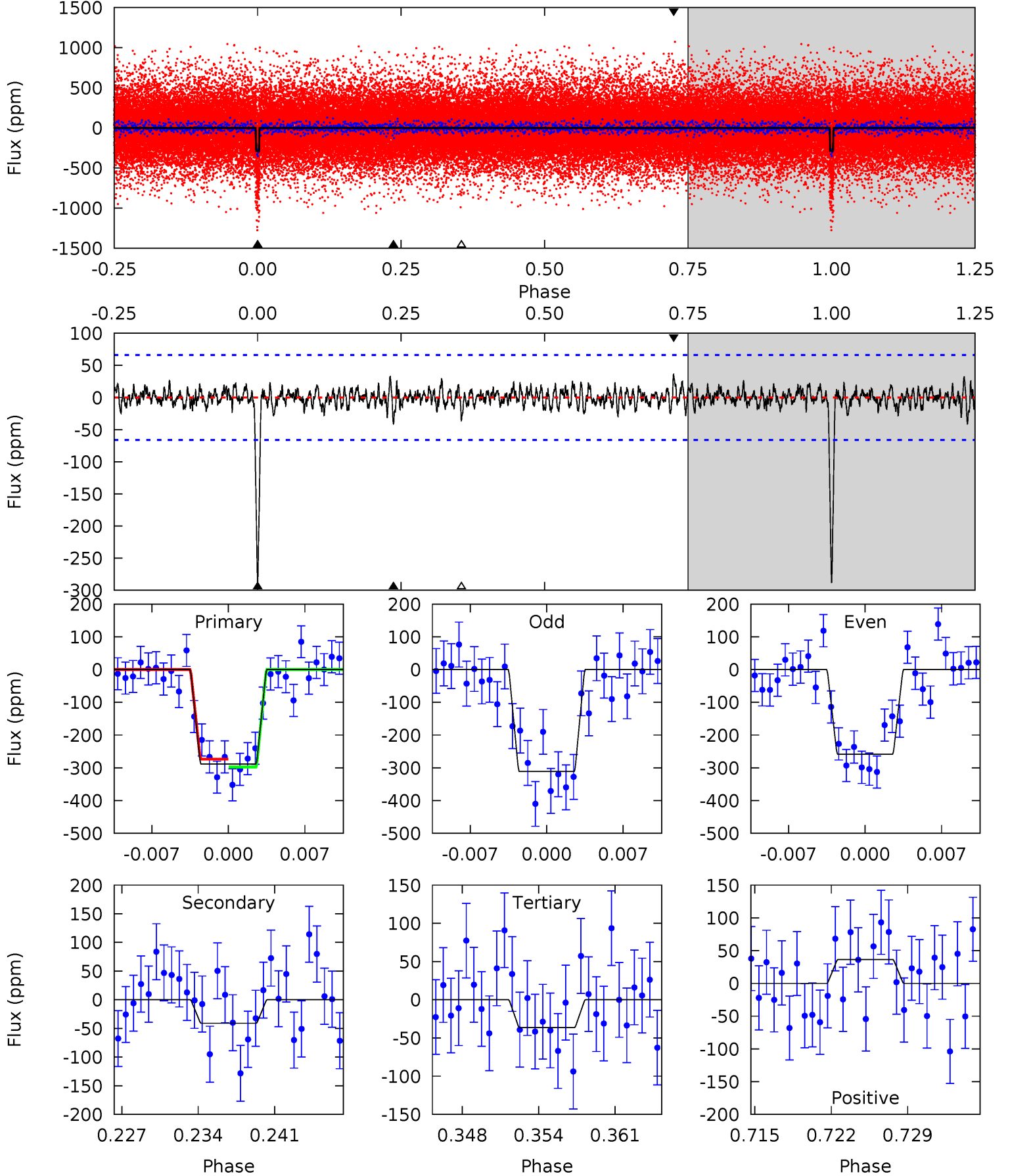
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.6	4.12	3.98	4.93	5.08	2.66	1.45	23.6	22.7	0.14	-0.81	1.47	1.00	0.15	1.31



Alt Model-Shift Uniqueness Test

005706966-02, $P = 24.088329$ Days, $E = 110.332867$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.3	3.17	2.81	2.80	5.10	2.71	0.80	19.5	19.5	0.36	0.37	2.04	1.23	0.11	0.93



Stellar Parameters For KIC 005706966

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4213^{+84}_{-84}	$4.669^{+0.024}_{-0.022}$	$-0.200^{+0.150}_{-0.150}$	$0.598^{+0.029}_{-0.029}$	$0.609^{+0.033}_{-0.033}$	$4.008^{+0.427}_{-0.352}$
	+2%/-2%	+1%/-0%	+75%/-75%	+5%/-5%	+5%/-5%	+11%/-9%
Source	SPE60	SPE60	SPE60	DSEP		

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

Secondary Eclipse Parameters for KIC 005706966-02 / KOI 1908.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-57 ± 14	$1.39^{+0.30}_{-0.33}$	540^{+12}_{-12}	3023^{+260}_{-205}	315^{+239}_{-123}
Alt.	-41 ± 13	$1.12^{+0.32}_{-0.31}$	540^{+12}_{-13}	3040^{+361}_{-256}	333^{+366}_{-155}

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 $A_{obs} \gg 1.0$

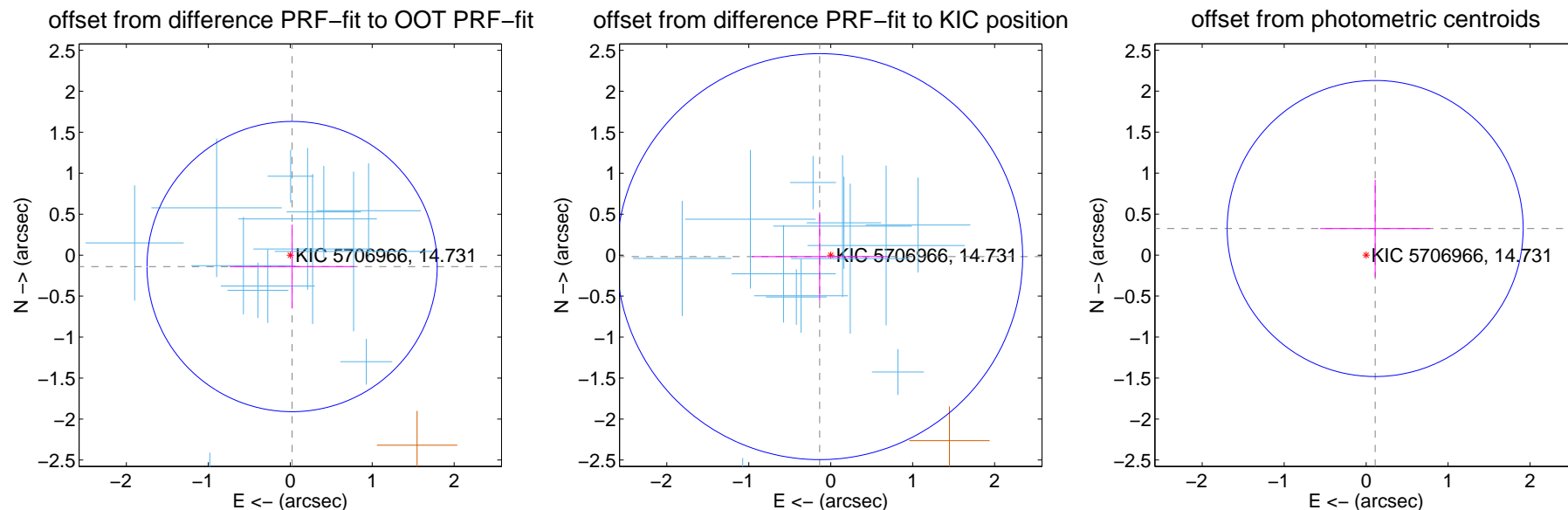
DV Centroid Data

Supplemental centroid analysis for 005706966-02. Kepler magnitude: 14.73. Transit SNR 18.04

There are 13 quarters with good PRF difference image offsets

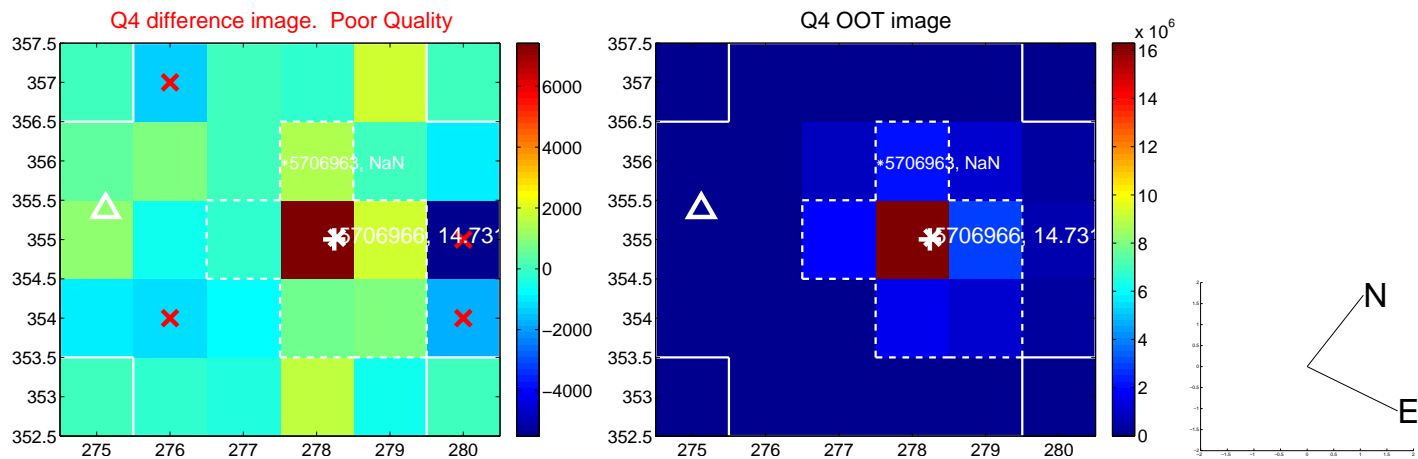
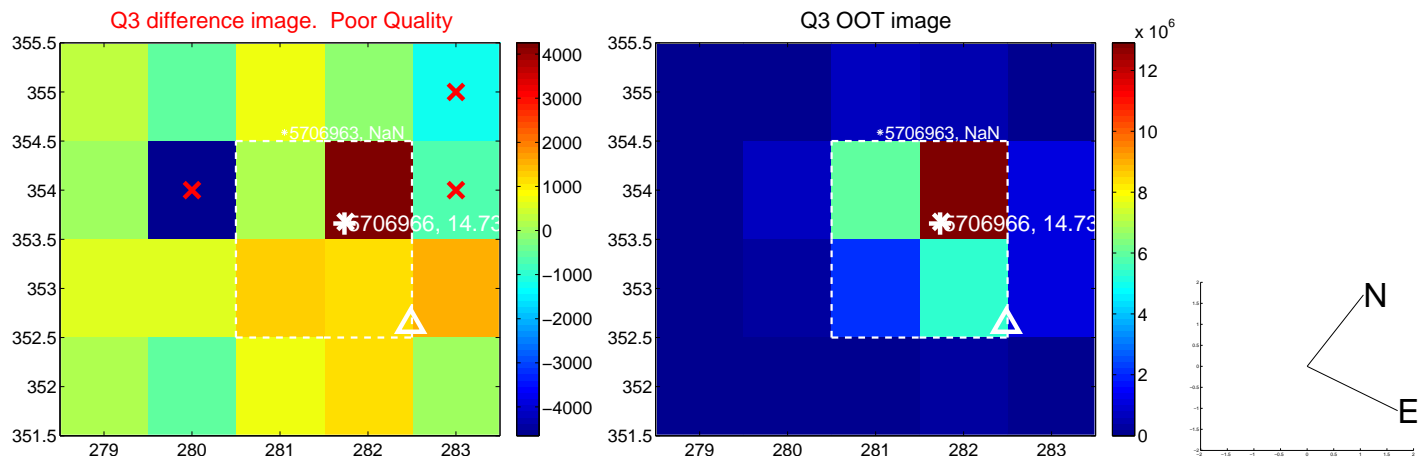
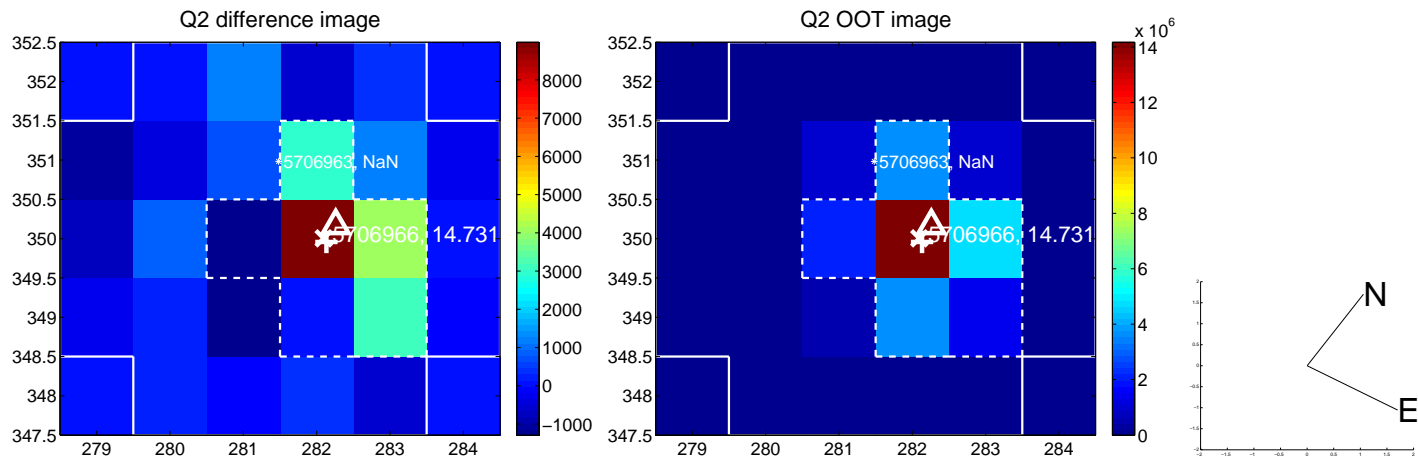
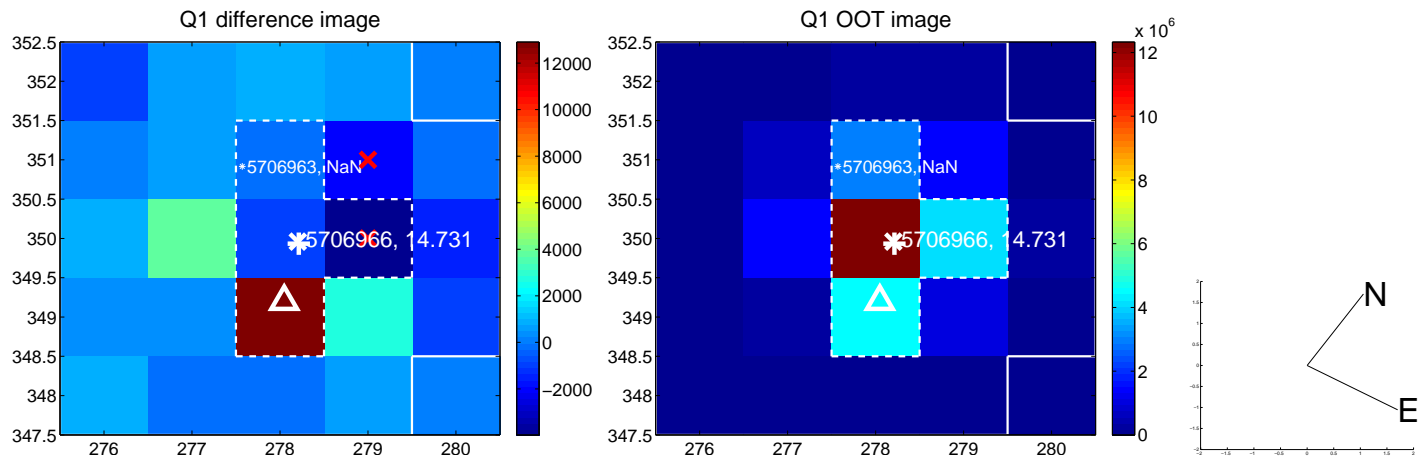
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.141 ± 0.590	0.24	-0.022 ± 0.761	-0.139 ± 0.512
PRF-fit source offset from KIC position	0.136 ± 0.826	0.16	0.135 ± 0.830	-0.018 ± 0.539
photometric centroid source offset	0.34 ± 0.60	0.57	-0.11 ± 0.67	0.32 ± 0.59

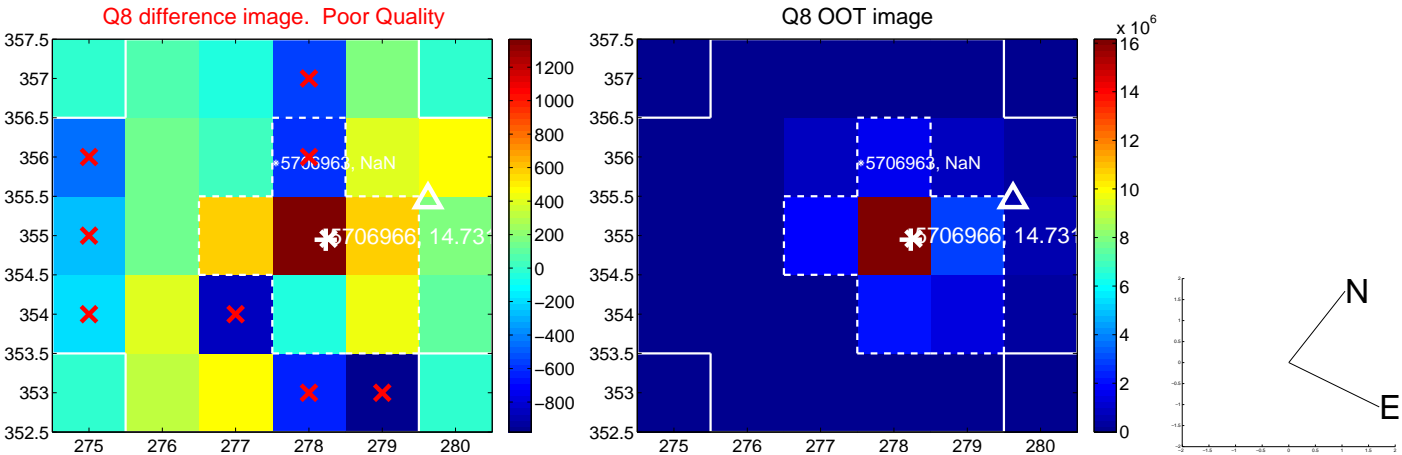
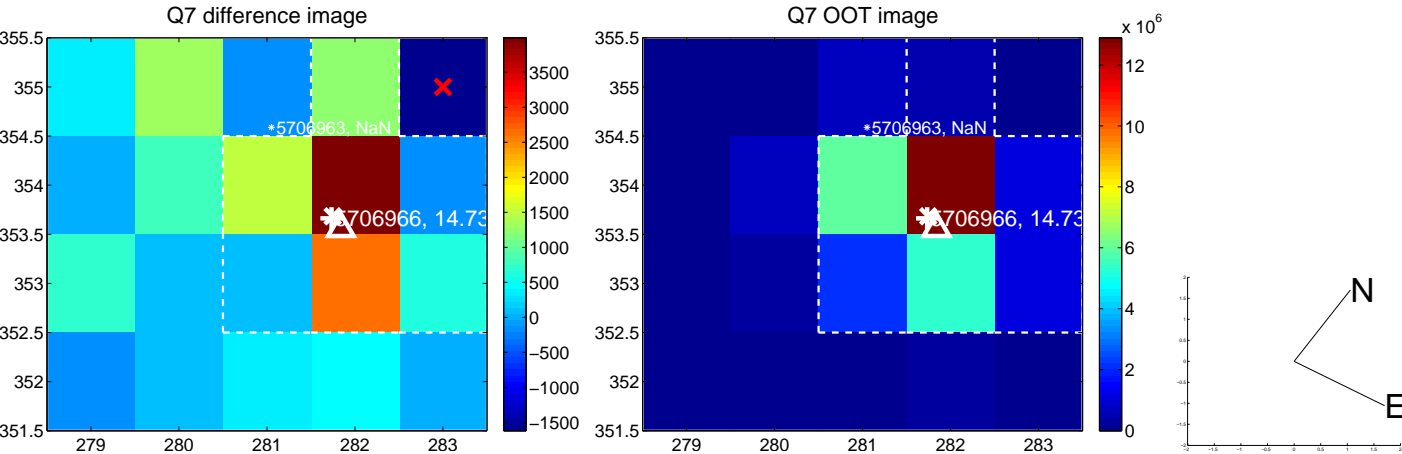
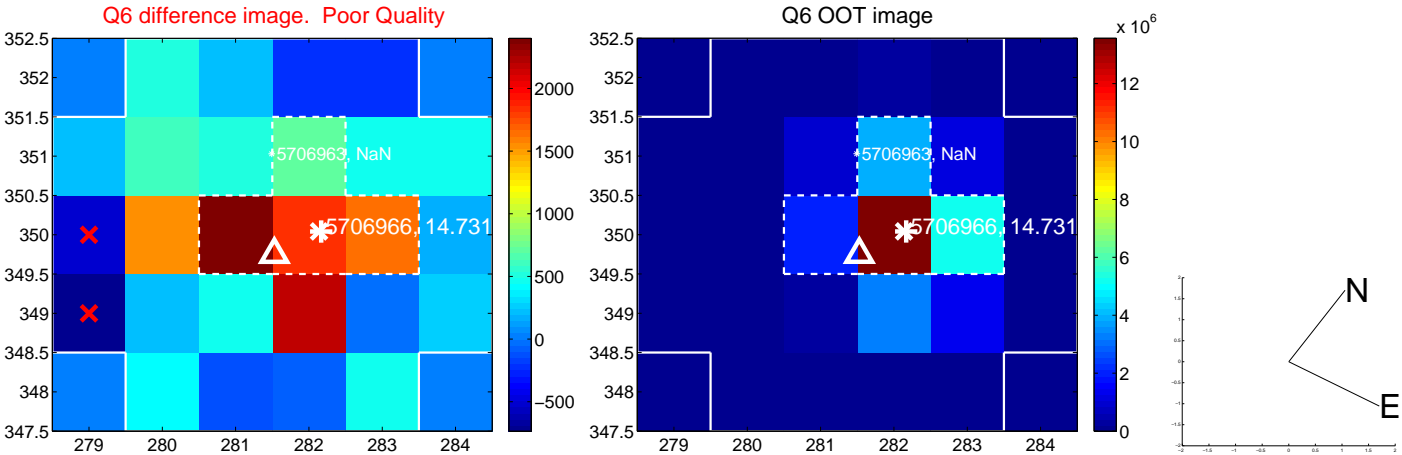
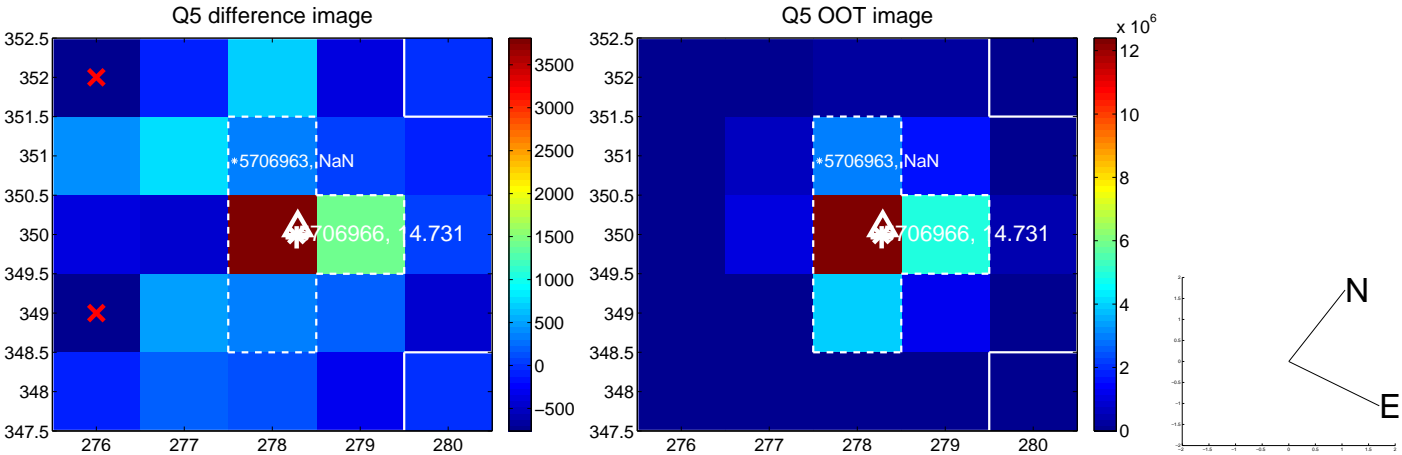


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

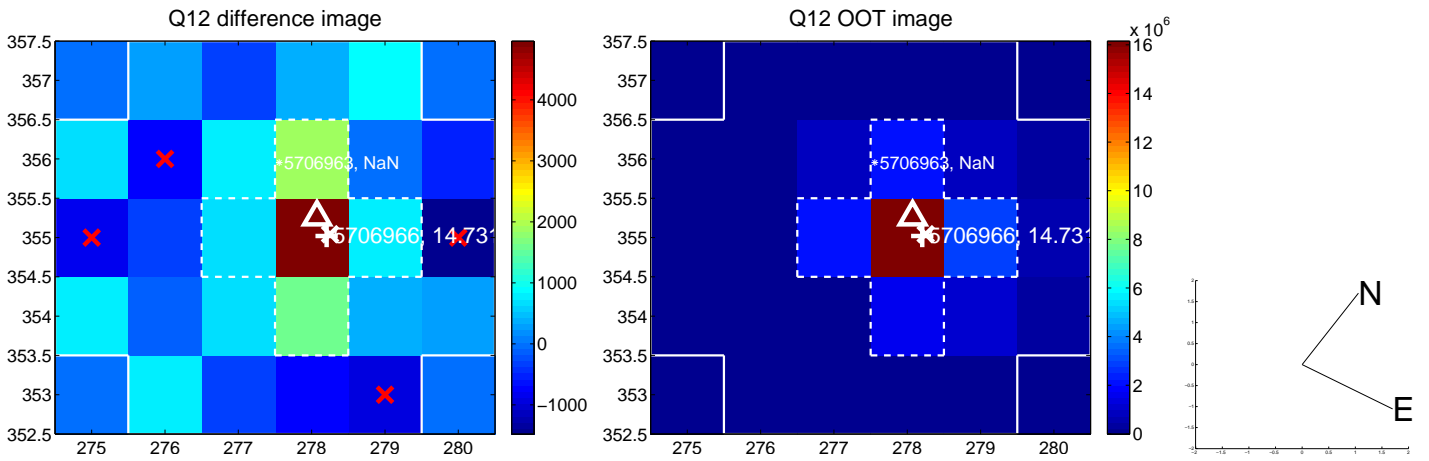
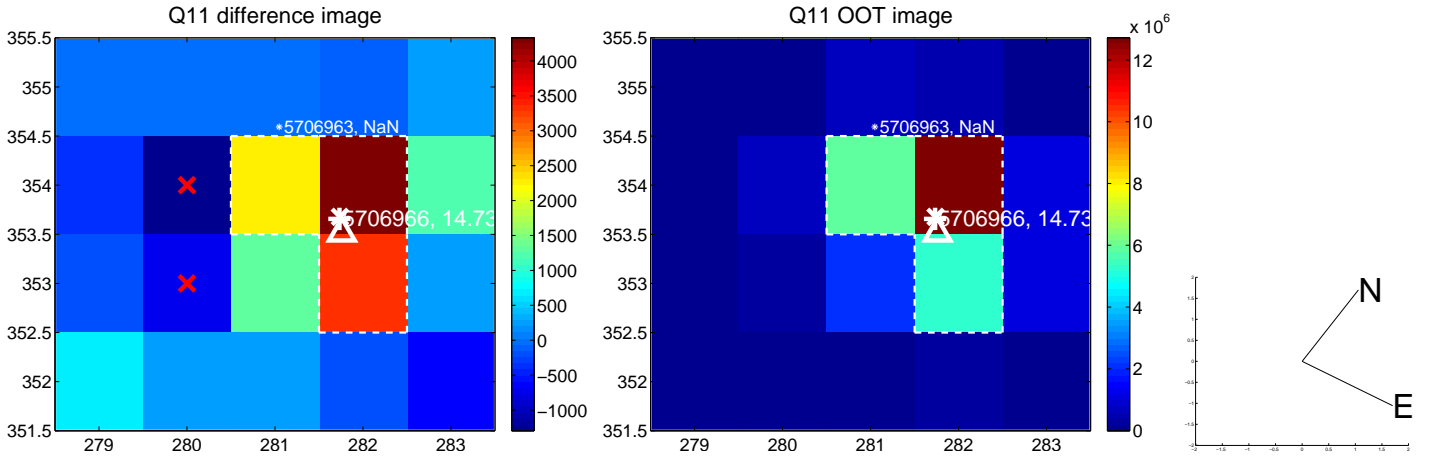
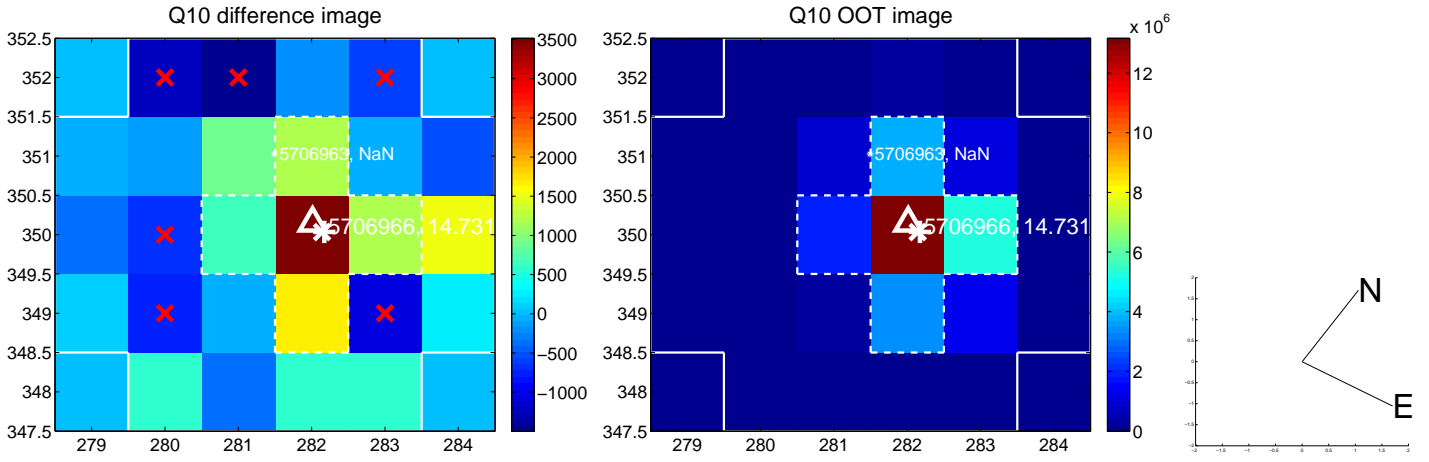
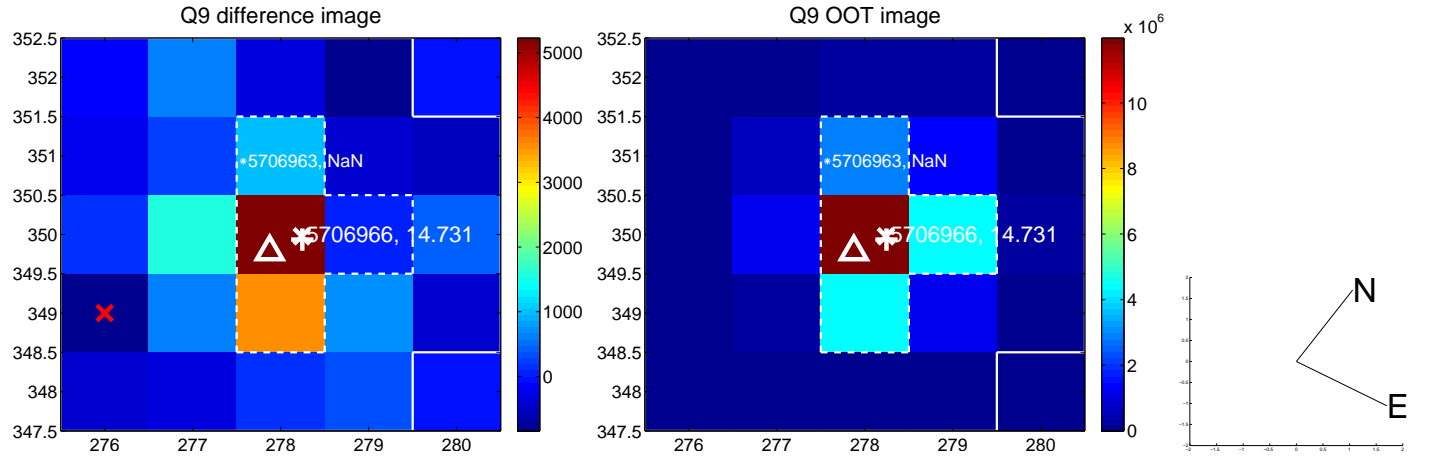
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



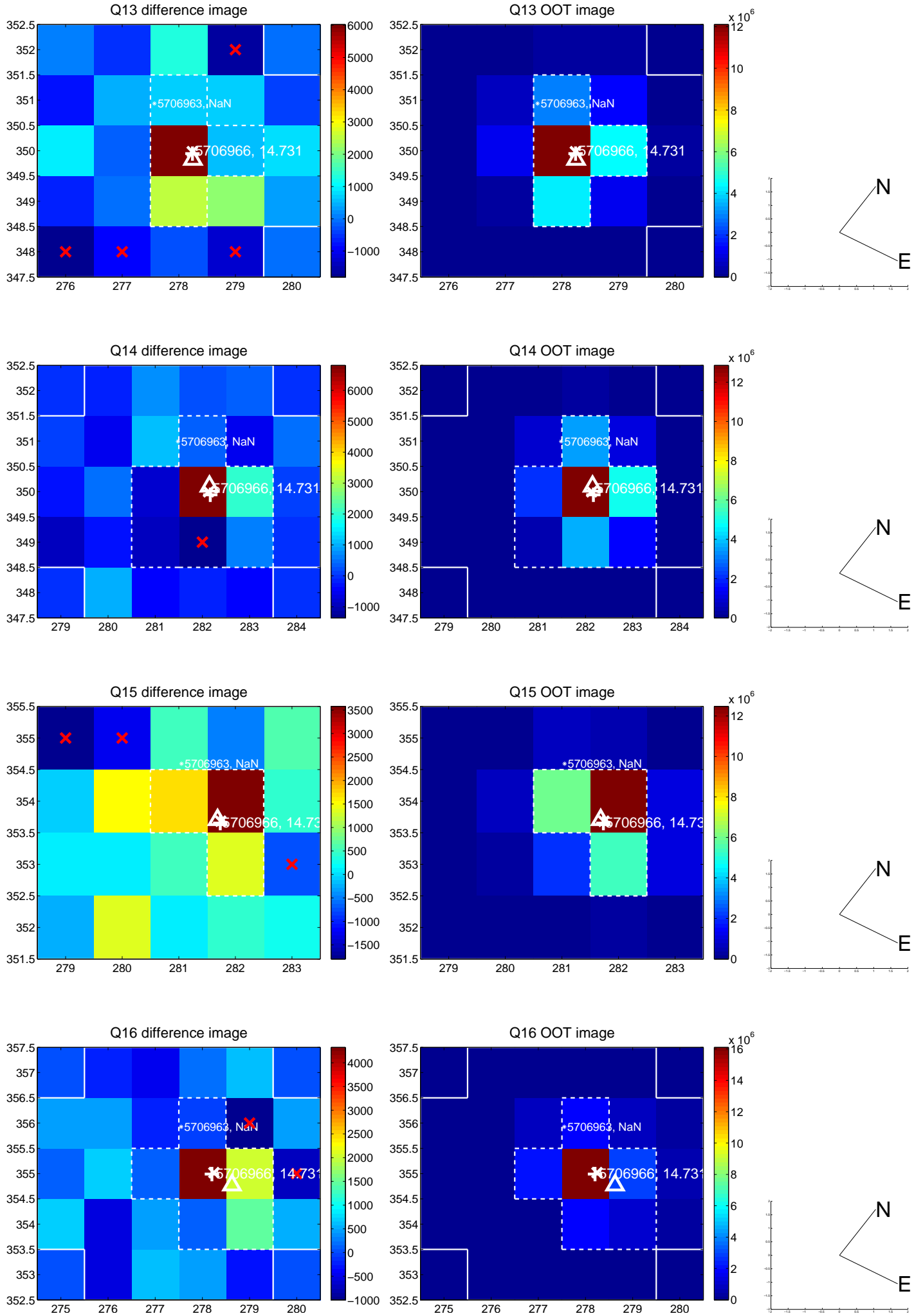
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



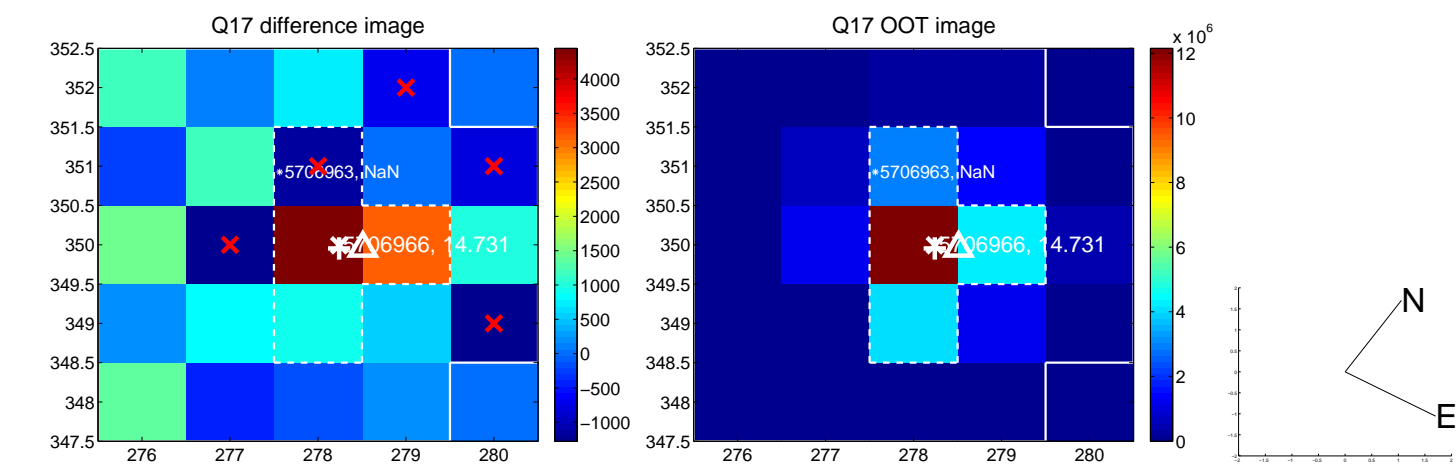
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



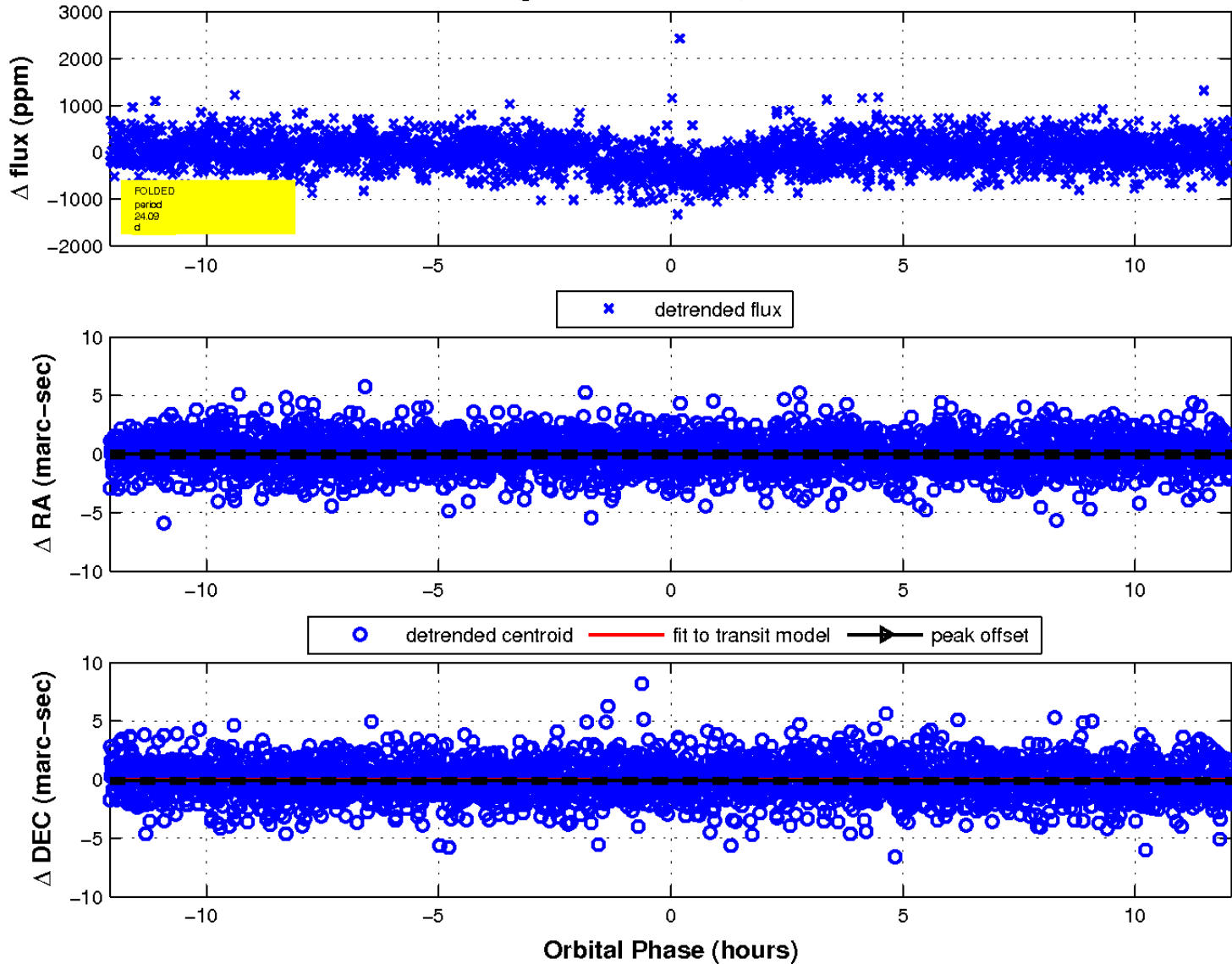
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

