

KIC 008806072

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})
008806072-01	OBS	1273.01	40.058771	169.910465	1239.0	5.852	46.2	47.7	0.87	5668	3.59	13.60
008806072-02	OBS	No	368.644003	233.820955	706.5	11.163	8.7	8.8	0.87	5668	2.39	0.70

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008806072-01	OBS	PC	0.93	0	0	0	0	NO_COMMENT
008806072-02	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—CENT_FEW_DIFFS—EPHEM_MATCH

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.

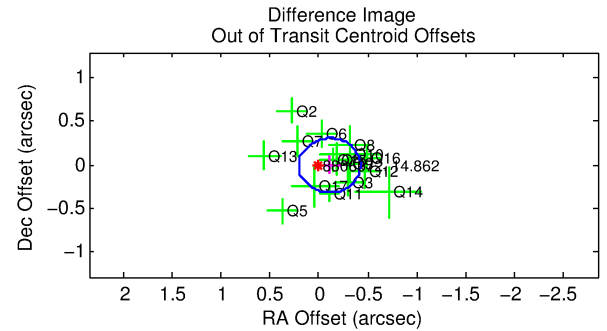
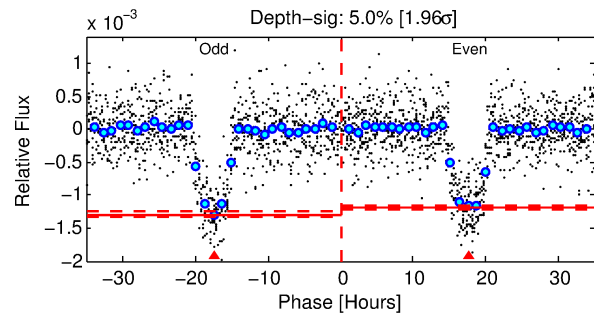
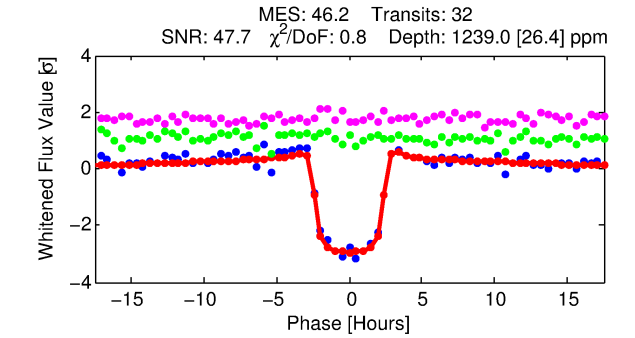
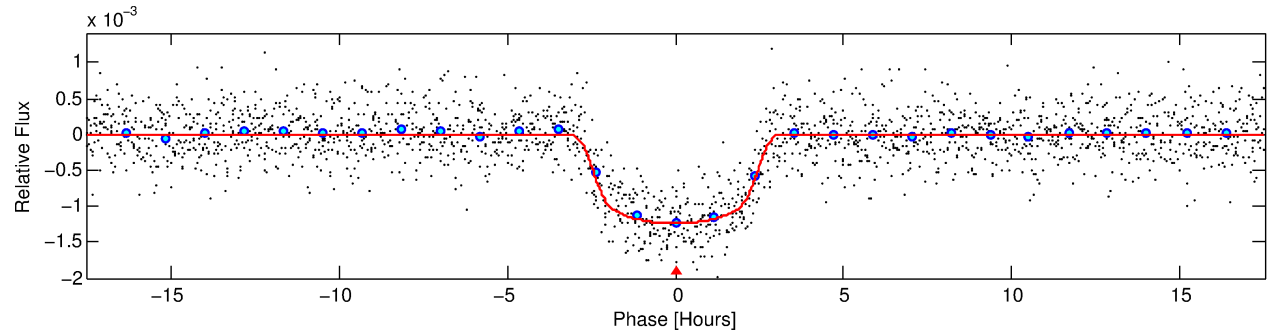
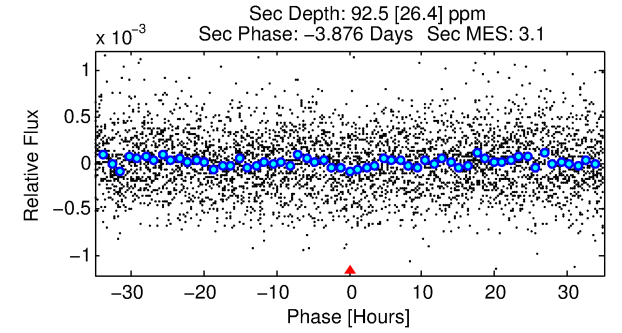
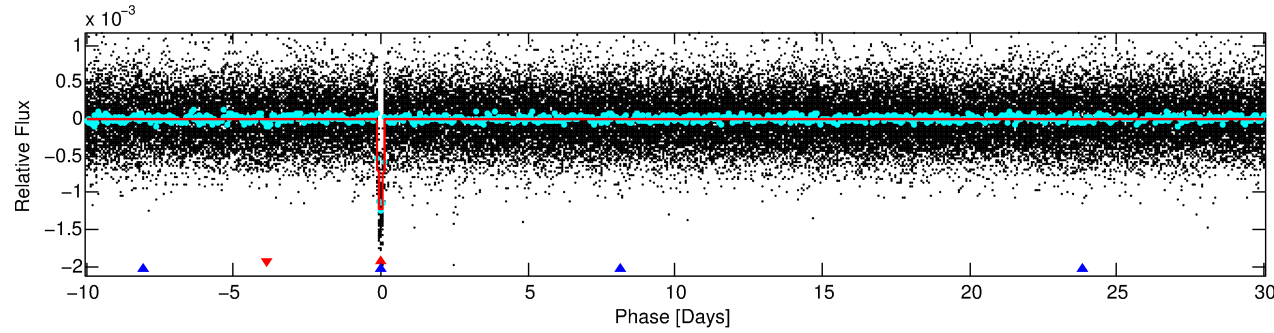
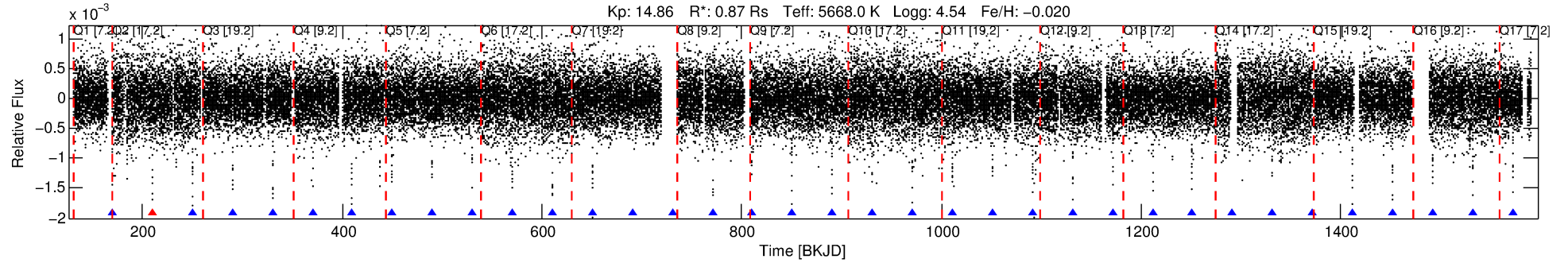
Ephemeris Match Information For 008806072-01

No Significant Match Found

DV One-Page Summary

KIC: 8806072 Candidate: 1 of 2 Period: 40.059 d

KOI: K01273.01 Corr: 0.973



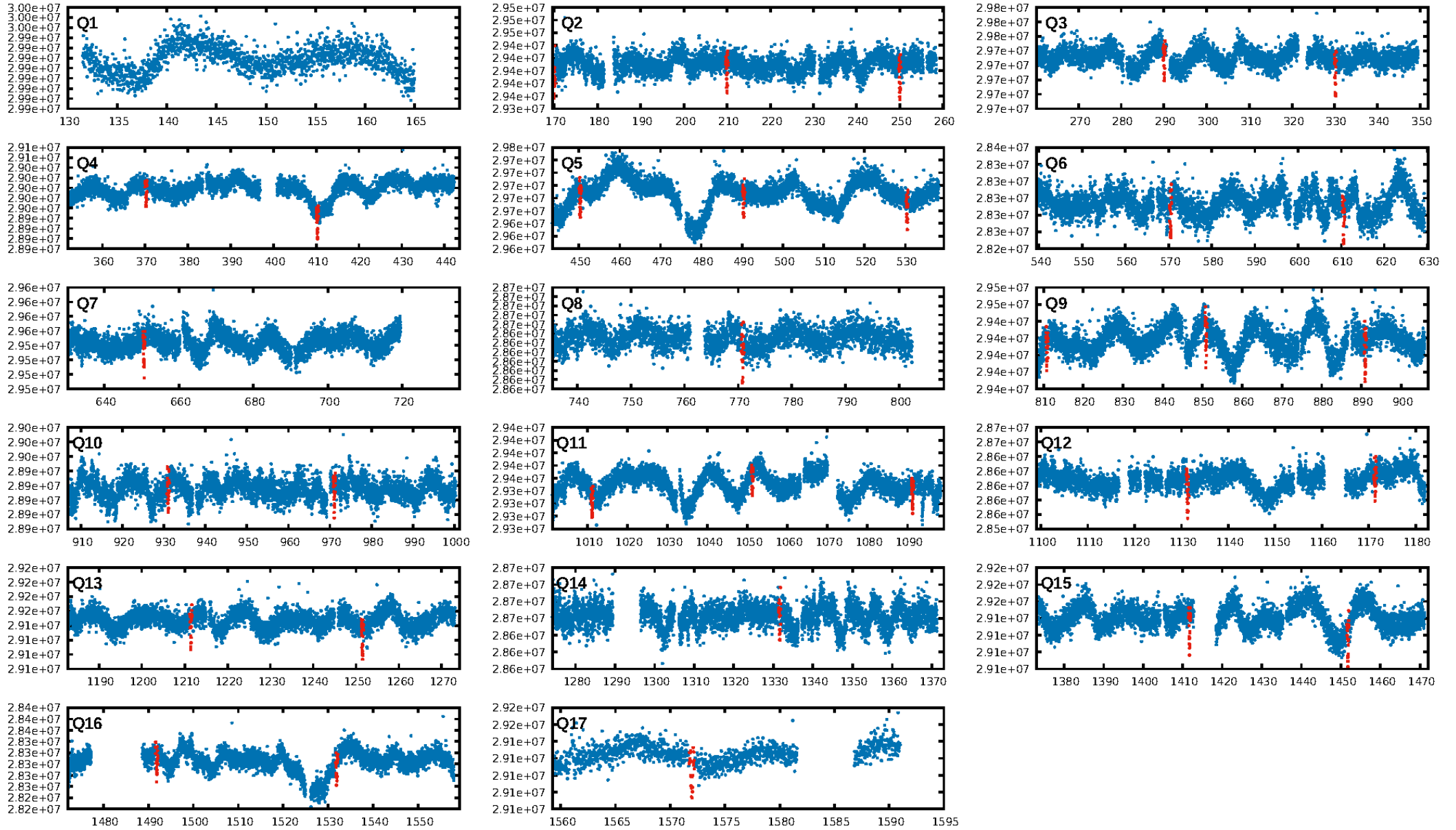
DV Fit Results:

Period = 40.05877 [0.00011] d
Epoch = 169.9105 [0.0022] BKJD
Rp/R* = 0.0379 [0.0009]
a/R* = 28.42 [2.59]
b = 0.88 [0.02]
Seff = 13.59 [5.09]
Teff = 490 [46] K
Rp = 3.59 [1.03] Re
a = 0.2264 [0.0548] AU
Ag = 201.88 [92.48] [2.17 σ]
Teffp = 2854 [224] K [10.36 σ]

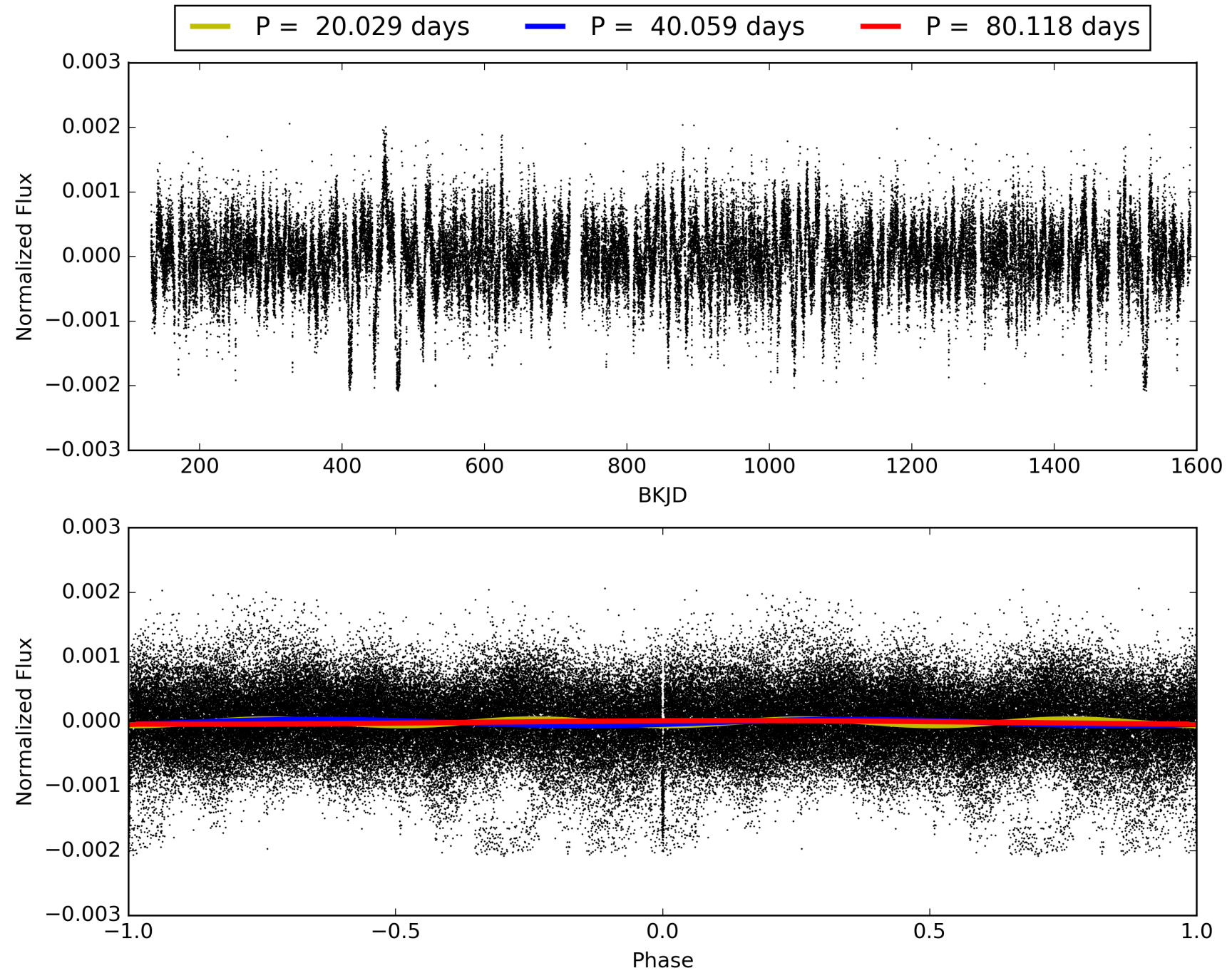
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [625.67 σ]
ModelChiSquare2-sig: 91.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.97 [30/31]
GhostDiagnostic-chr: 7.688
Centroid-sig: 36.0%
Centroid-so: 0.199 arcsec [0.74 σ]
OotOffset-rm: 0.109 arcsec [1.04 σ]
KicOffset-rm: 0.238 arcsec [2.08 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [16/16]

TCE 008806072-01, PDC Light Curves

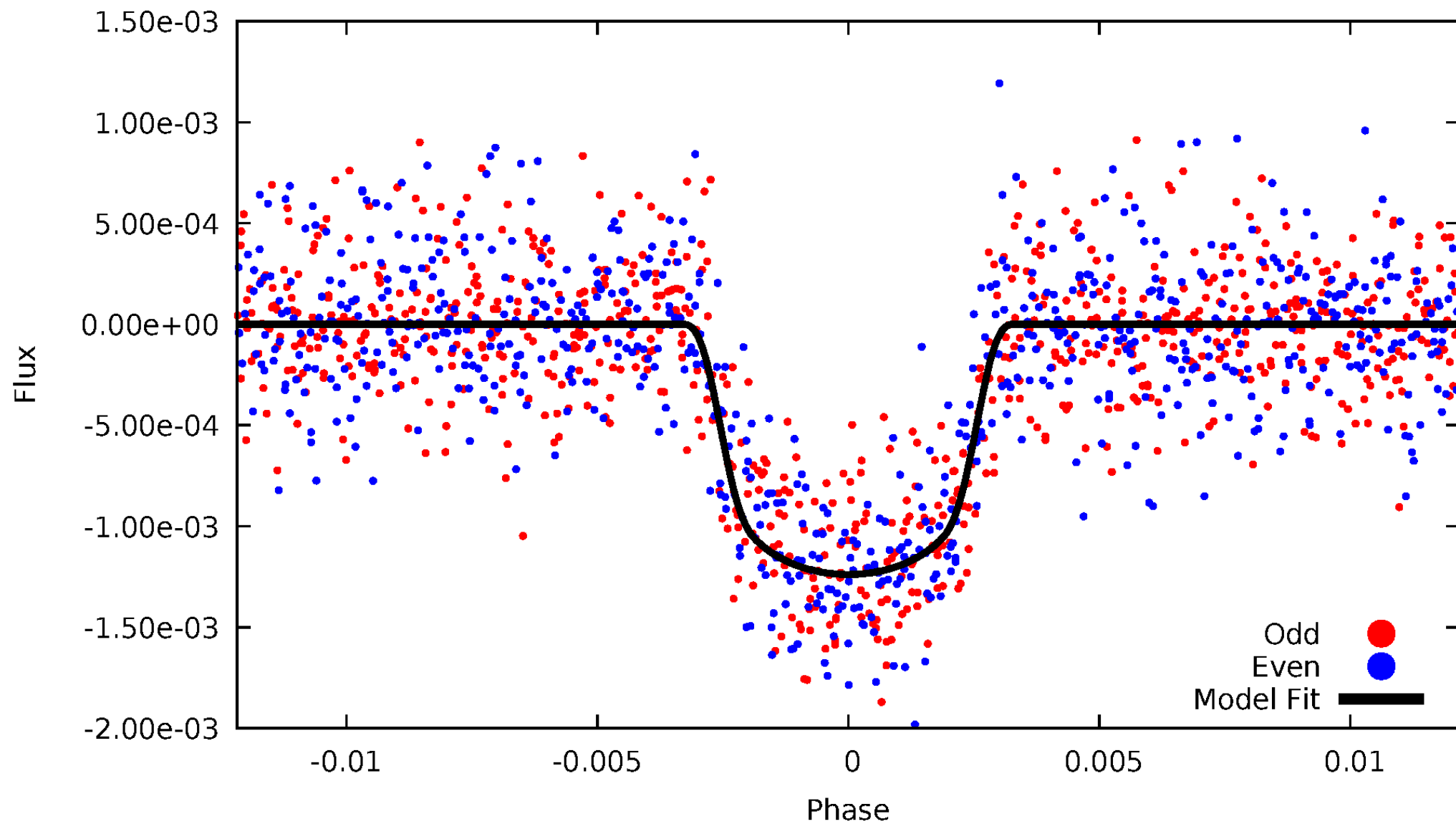


TCE 008806072-01



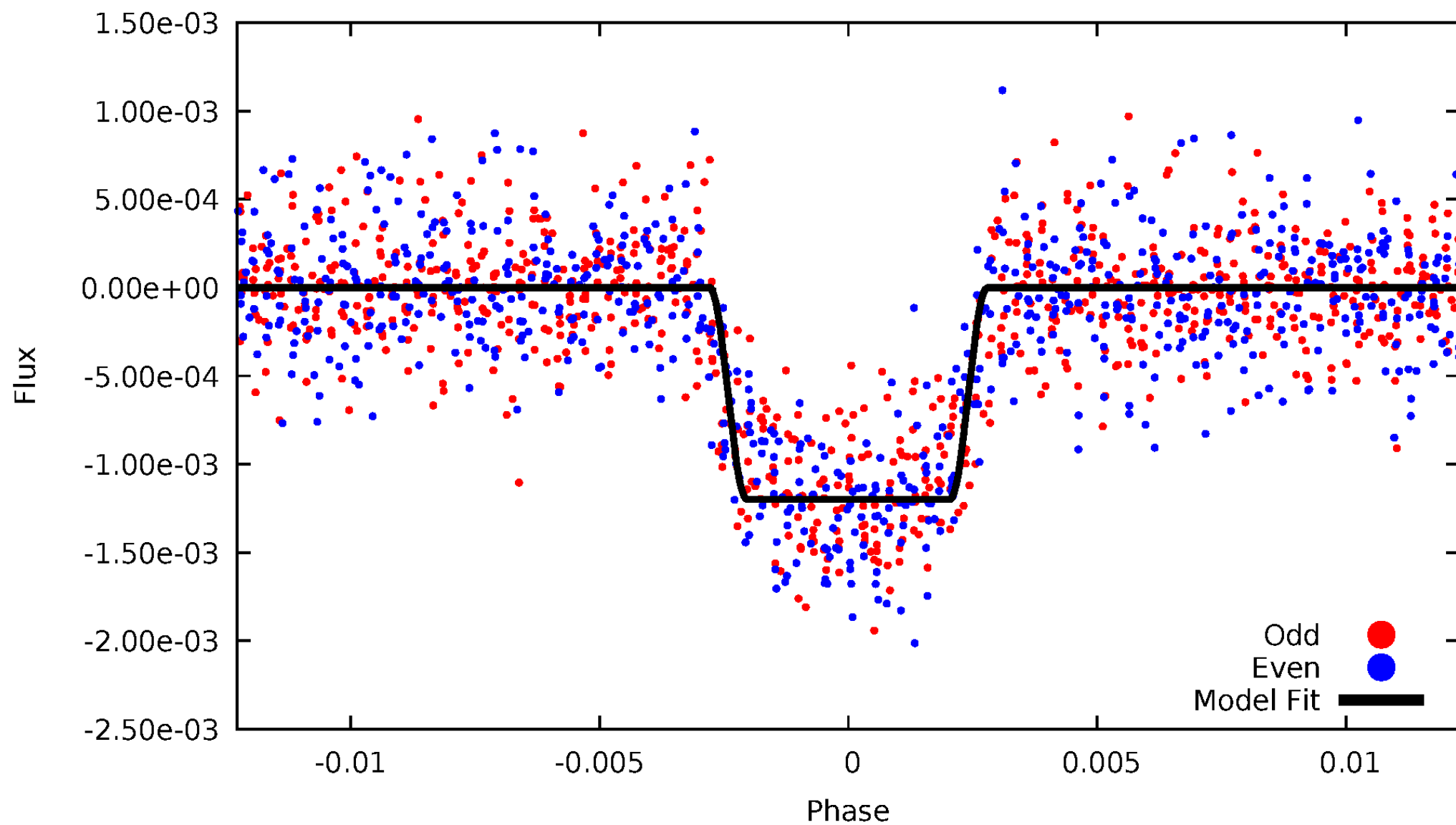
DV Odd/Even

TCE 008806072-01

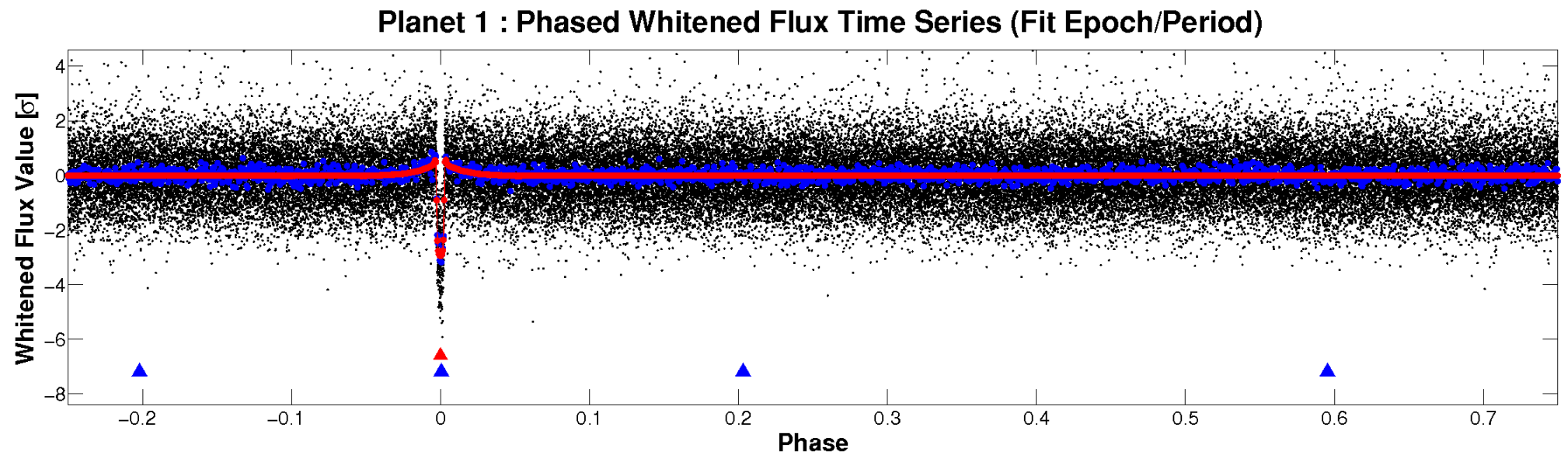
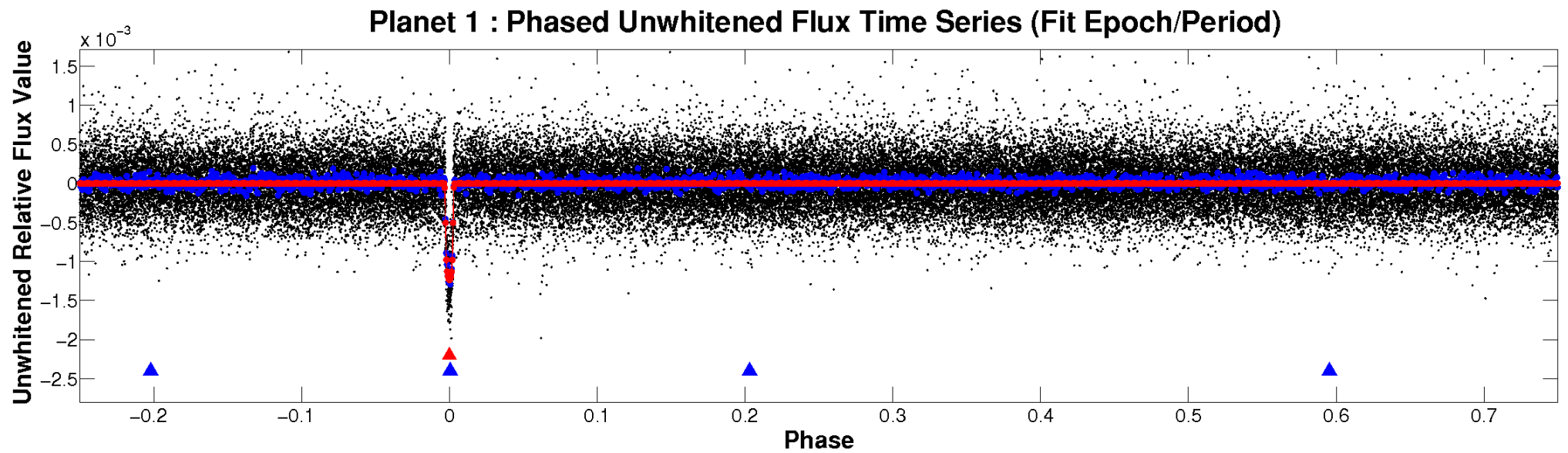


ALT Odd/Even

TCE 008806072-01

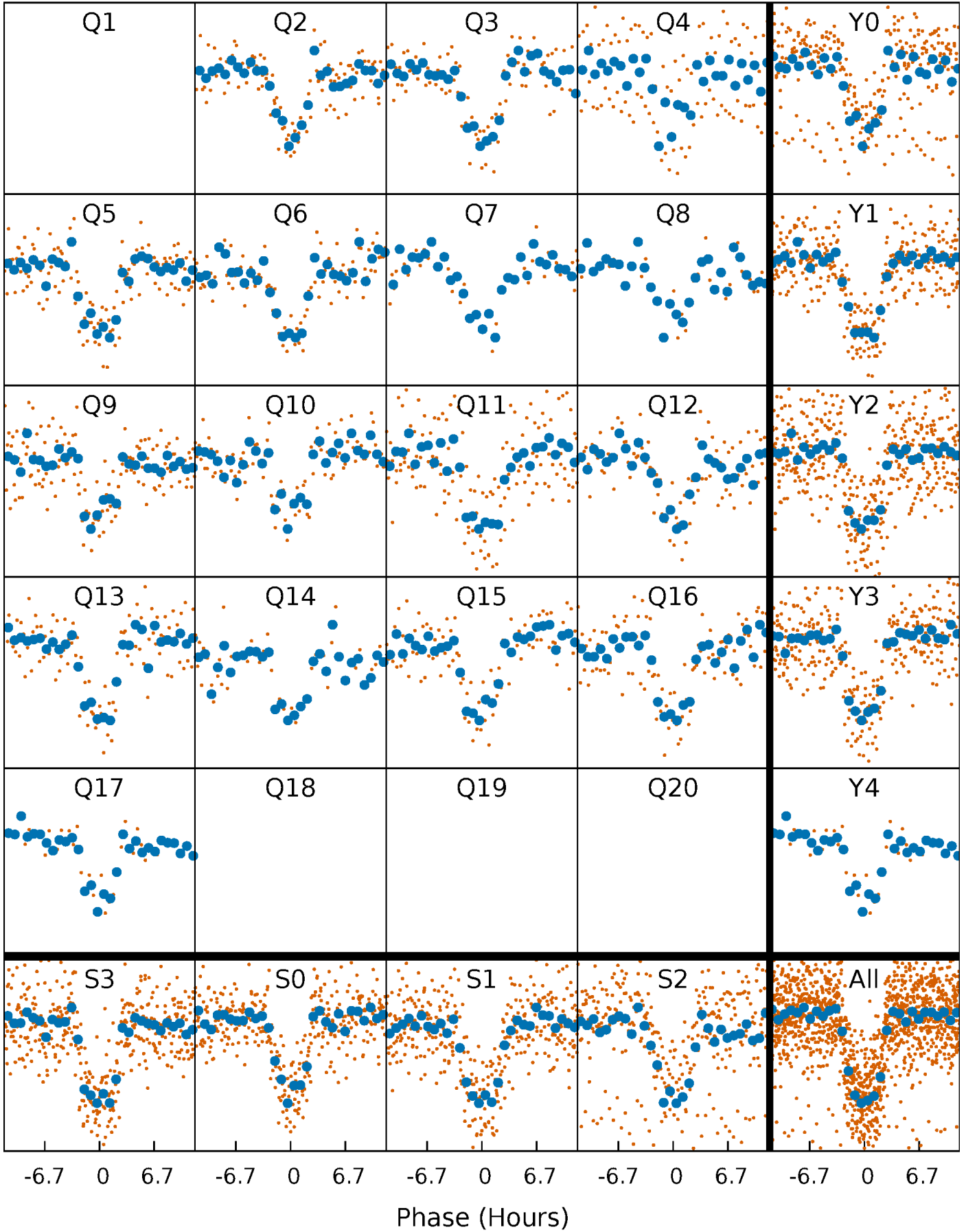


Non-Whitened Vs. Whitened Light Curve



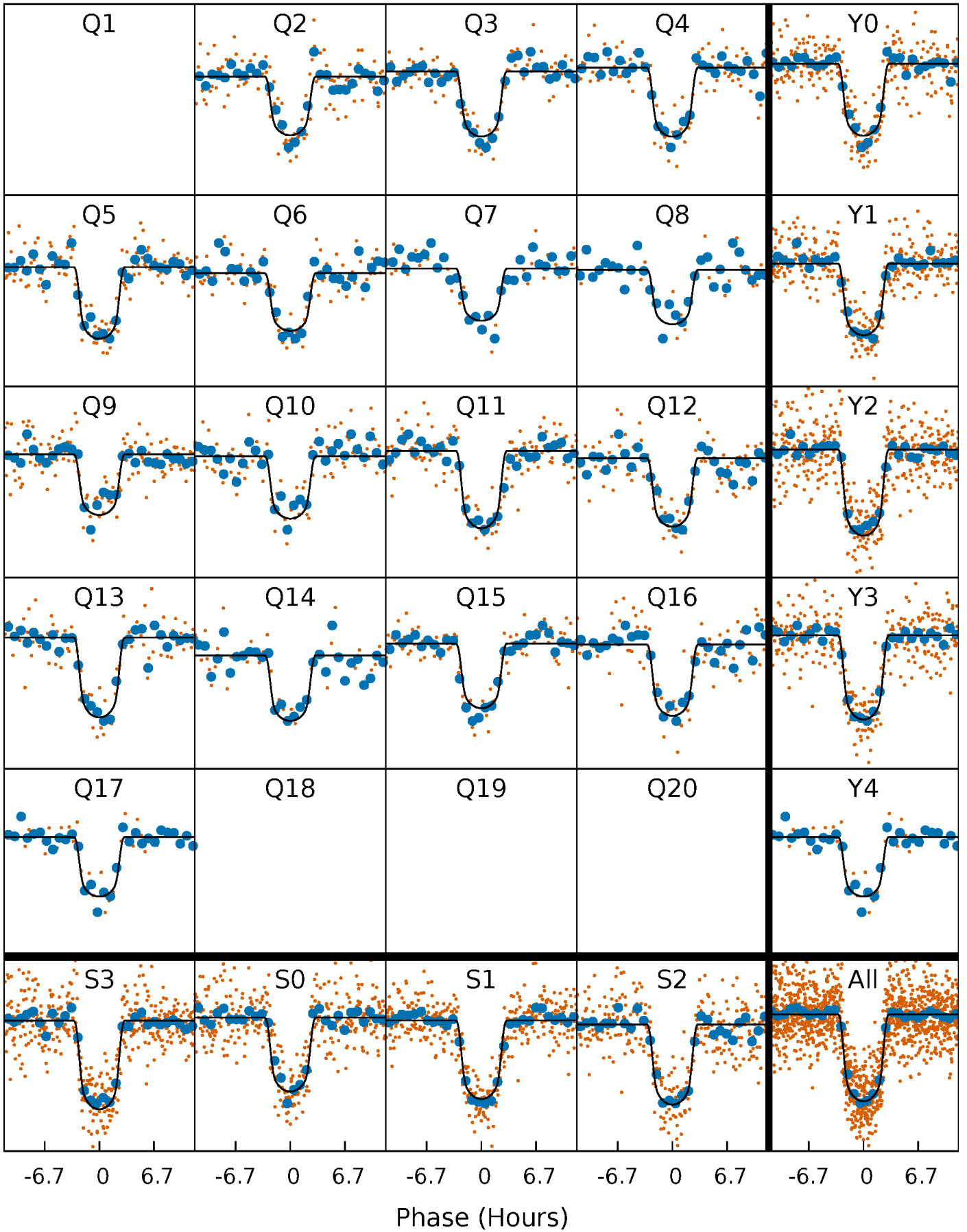
PDC Quarter-Phased Transit Curves

TCE 008806072-01 P= 40.058771 Days $T_0=169.910465$ (BKJD)



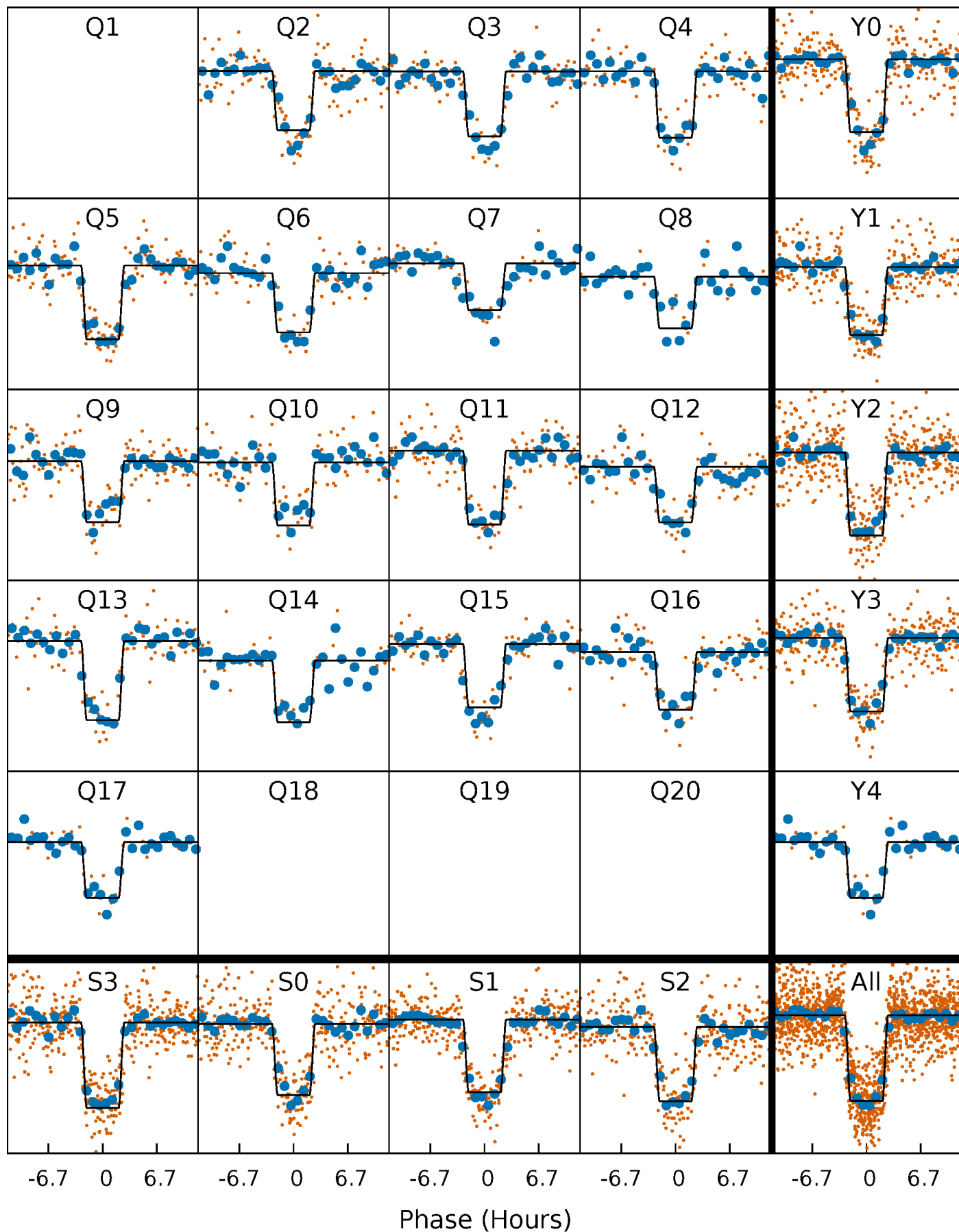
DV Quarter-Phased Transit Curves

TCE 008806072-01 P= 40.058771 Days $T_0=169.910465$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

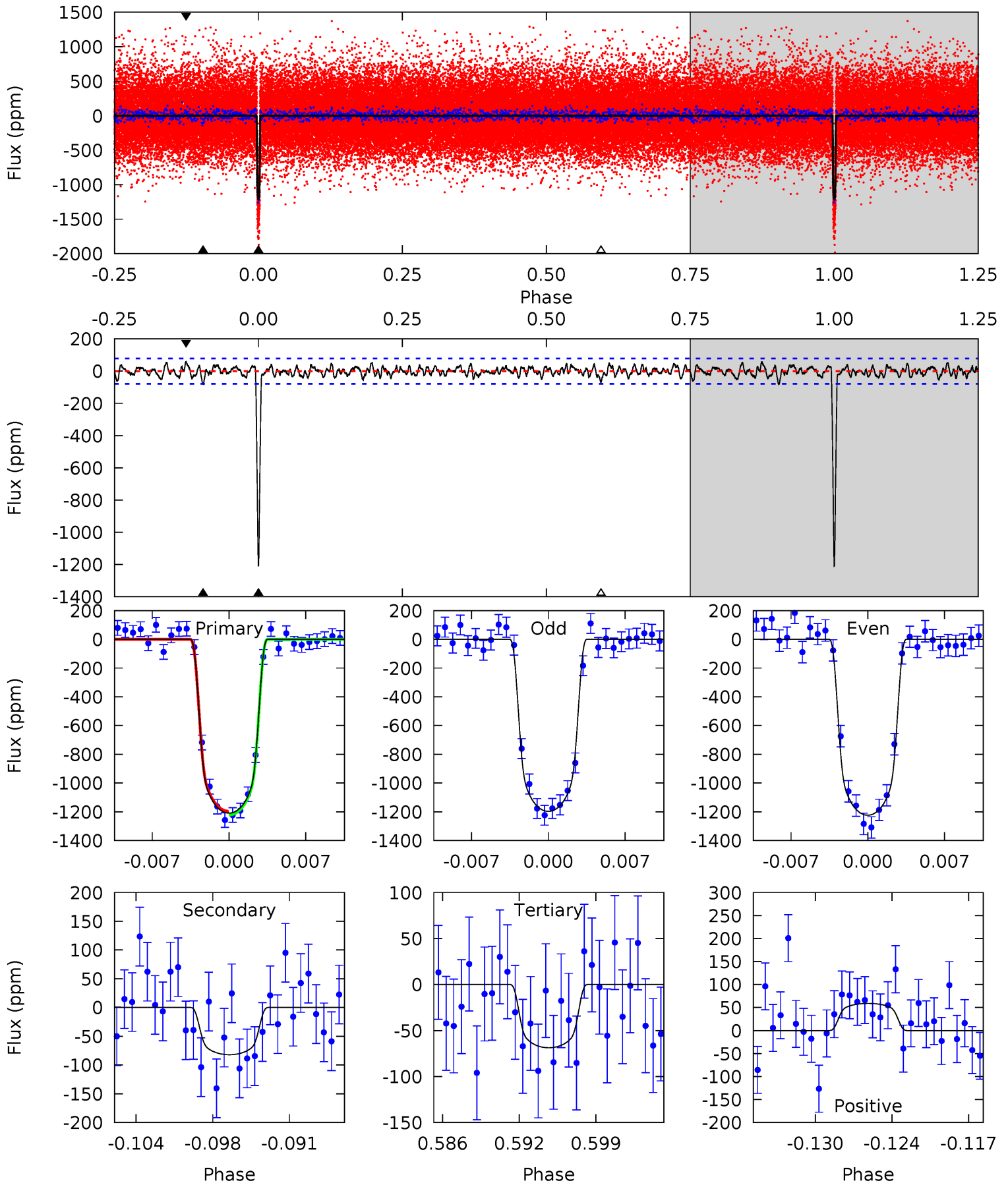
TCE 008806072-01 P= 40.059046 Days $T_0=169.906936$ (BKJD)



DV Model-Shift Uniqueness Test

008806072-01, P = 40.058771 Days, E = 129.851694 Days

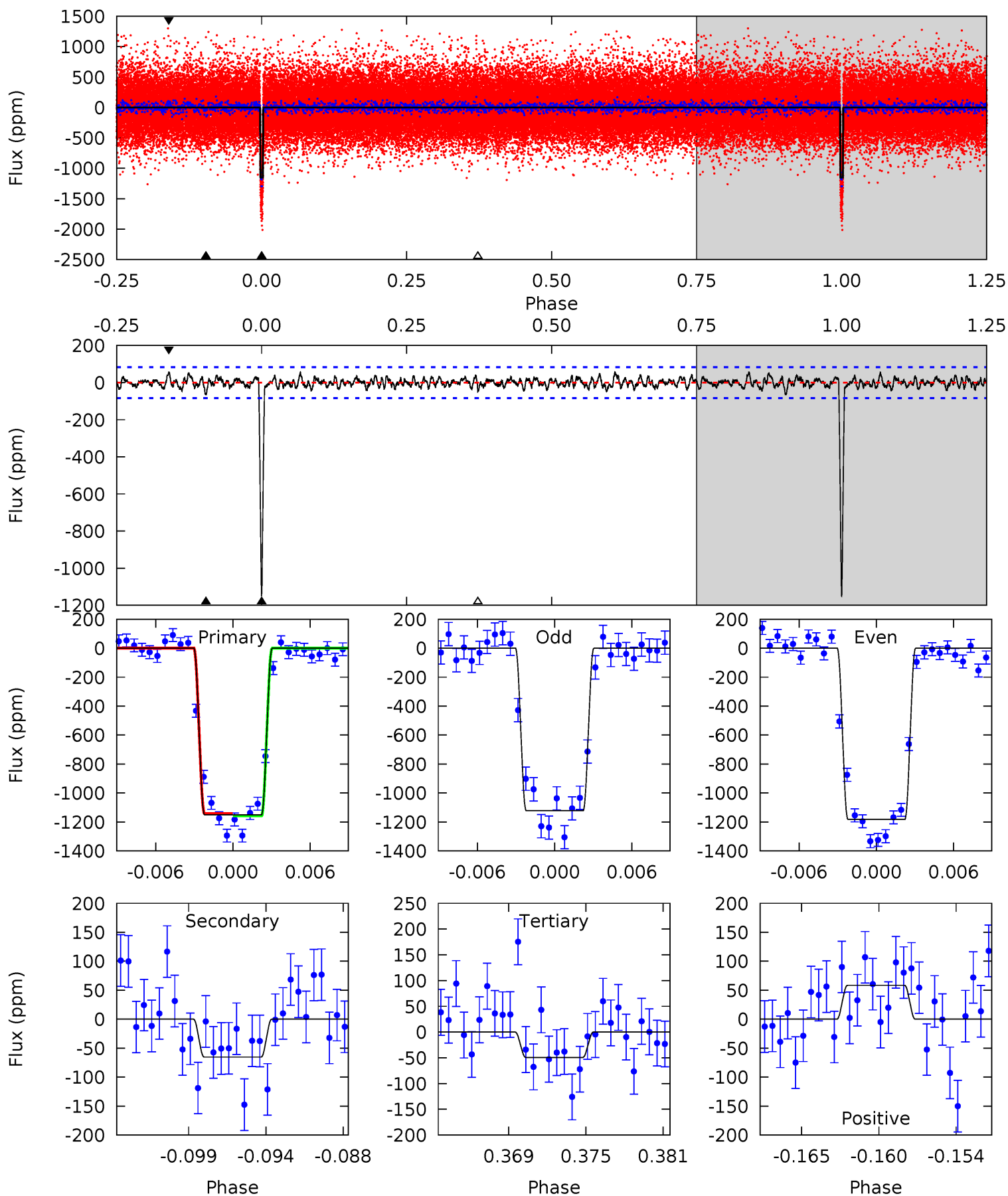
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
78.8	5.34	4.48	3.84	5.11	2.72	1.42	74.3	75.0	0.87	1.50	0.87	0.99	0.05	0.80



Alt Model-Shift Uniqueness Test

008806072-01, P = 40.059046 Days, E = 129.847890 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
70.6	4.01	3.02	3.59	5.14	2.78	1.14	67.6	67.0	1.00	0.42	1.84	1.02	0.05	0.47



Stellar Parameters For KIC 008806072

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5668^{+152}_{-169}	$4.545^{+0.034}_{-0.195}$	$-0.020^{+0.250}_{-0.300}$	$0.868^{+0.248}_{-0.078}$	$0.963^{+0.094}_{-0.104}$	$2.073^{+0.398}_{-1.046}$
	+3%/-3%	+1%/-4%	+1250%/-1500%	+29%/-9%	+10%/-11%	+19%/-50%
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 008806072-01 / KOI 1273.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-82 ± 15	$3.72^{+0.52}_{-0.28}$	700^{+46}_{-28}	3317^{+110}_{-136}	158^{+46}_{-41}
Alt.	-65 ± 16	$3.40^{+0.54}_{-0.27}$	701^{+45}_{-32}	3293^{+128}_{-157}	152^{+48}_{-46}

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

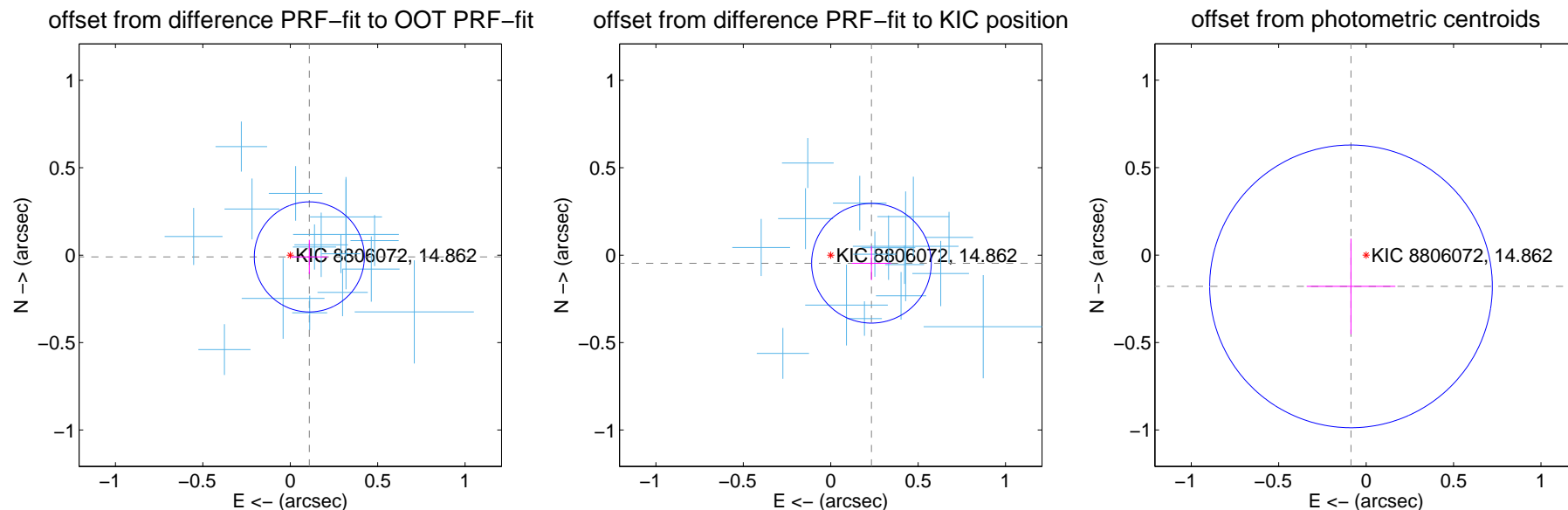
DV Centroid Data

Supplemental centroid analysis for 008806072-01. Kepler magnitude: 14.86. Transit SNR 47.68

There are 16 quarters with good PRF difference image offsets

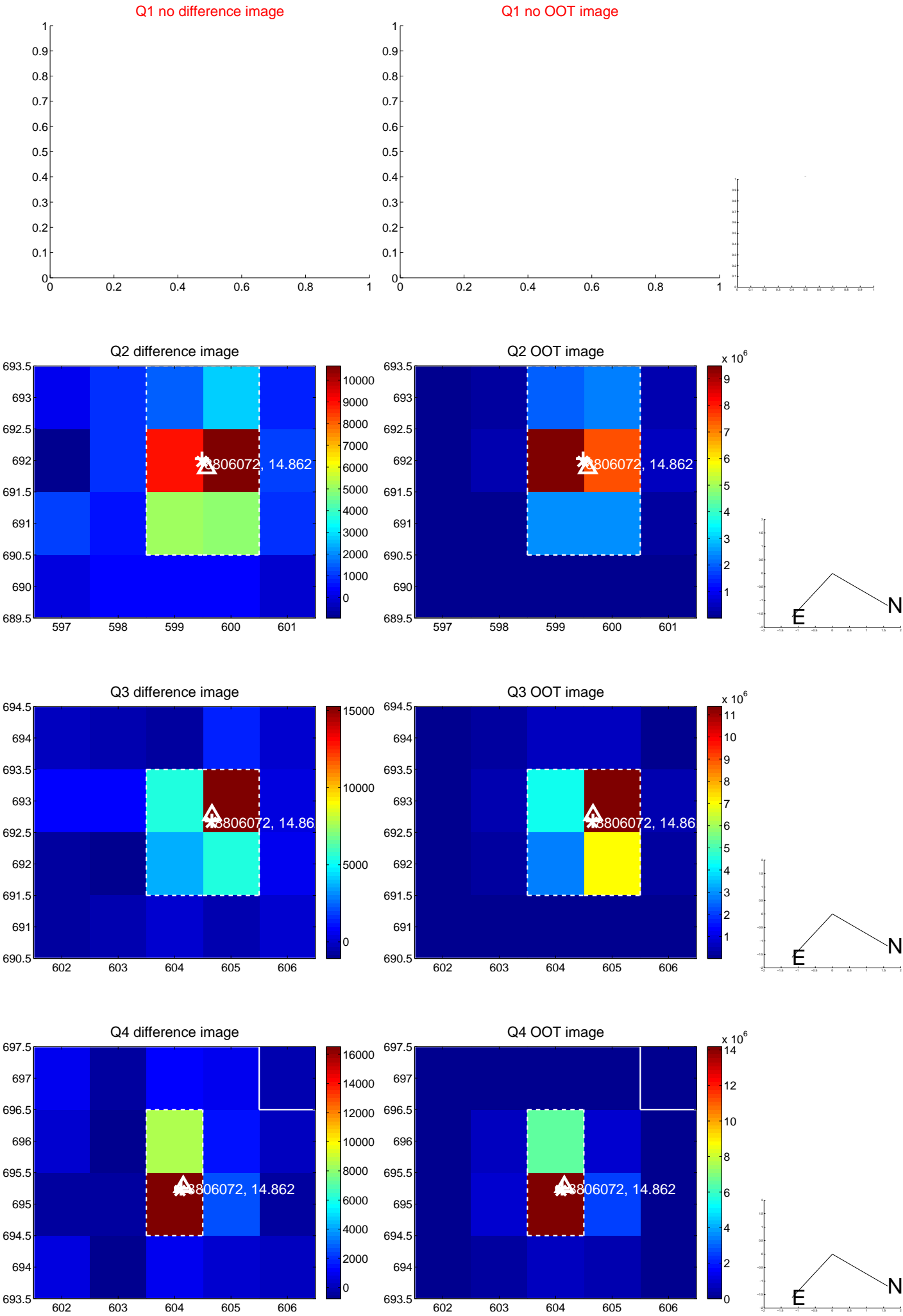
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.109 ± 0.105	1.04	-0.109 ± 0.104	-0.010 ± 0.097
PRF-fit source offset from KIC position	0.238 ± 0.114	2.08	-0.233 ± 0.112	-0.046 ± 0.097
photometric centroid source offset	0.20 ± 0.27	0.74	0.09 ± 0.25	-0.18 ± 0.27

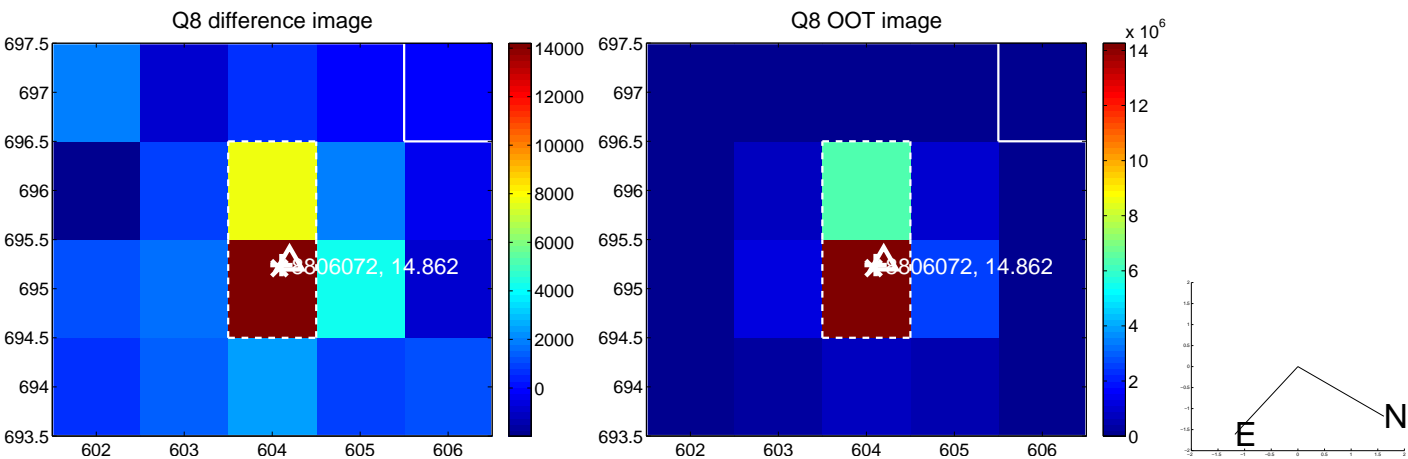
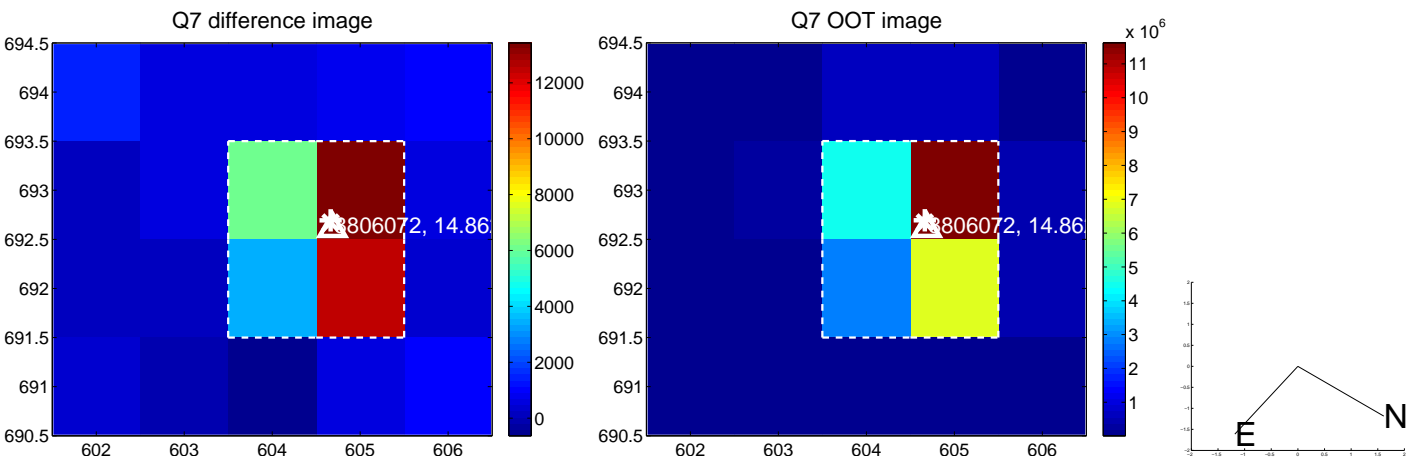
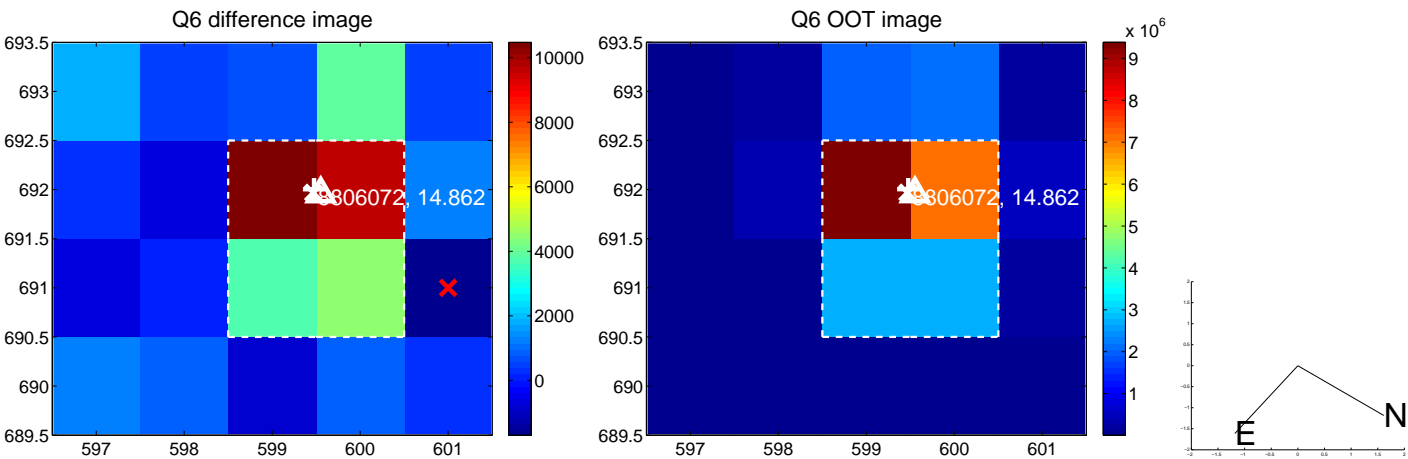
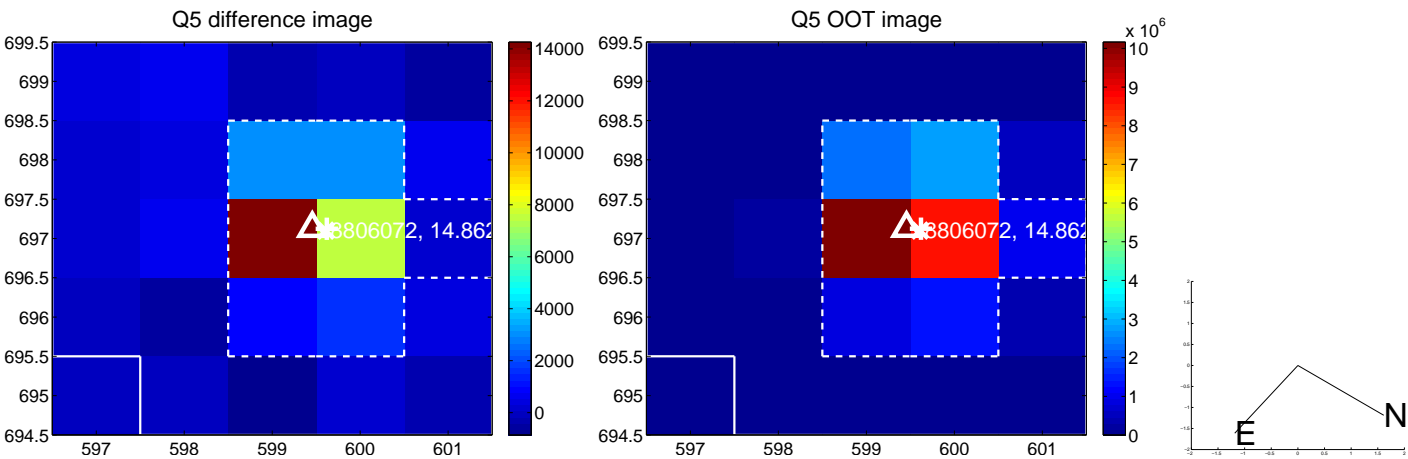


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

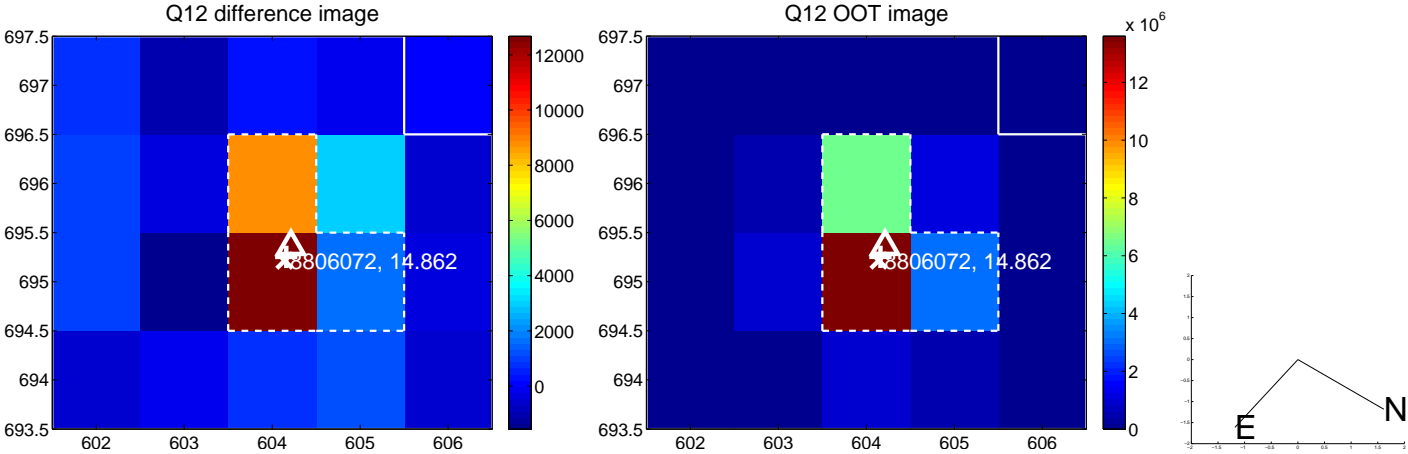
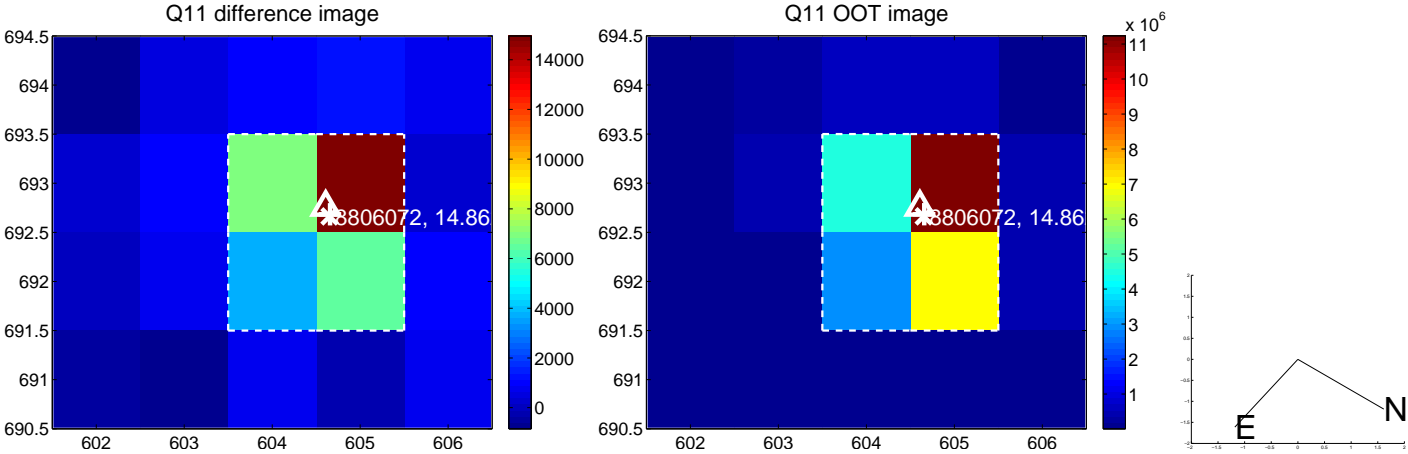
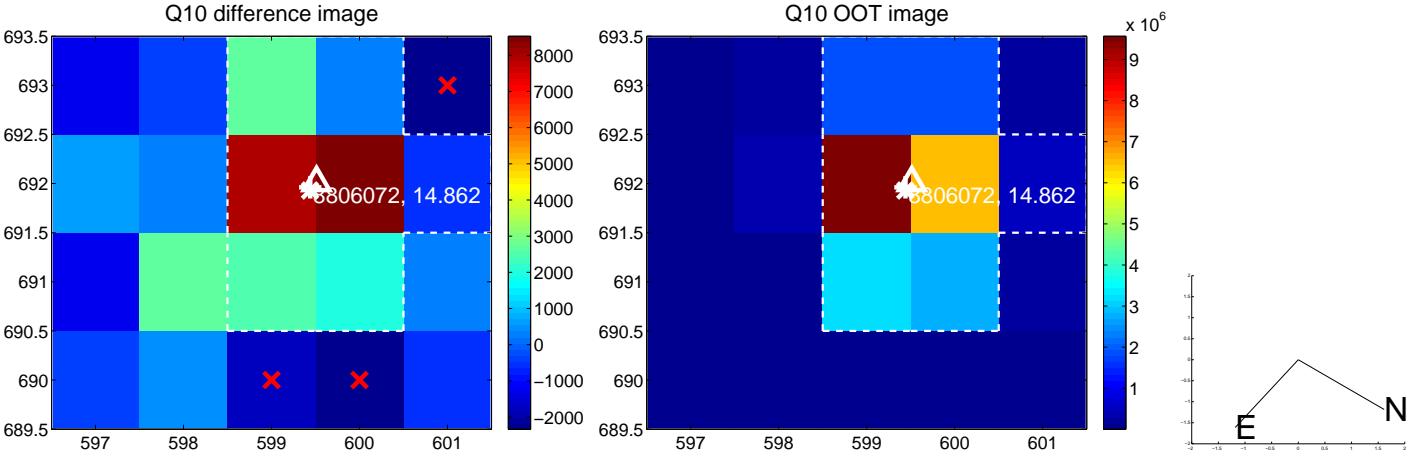
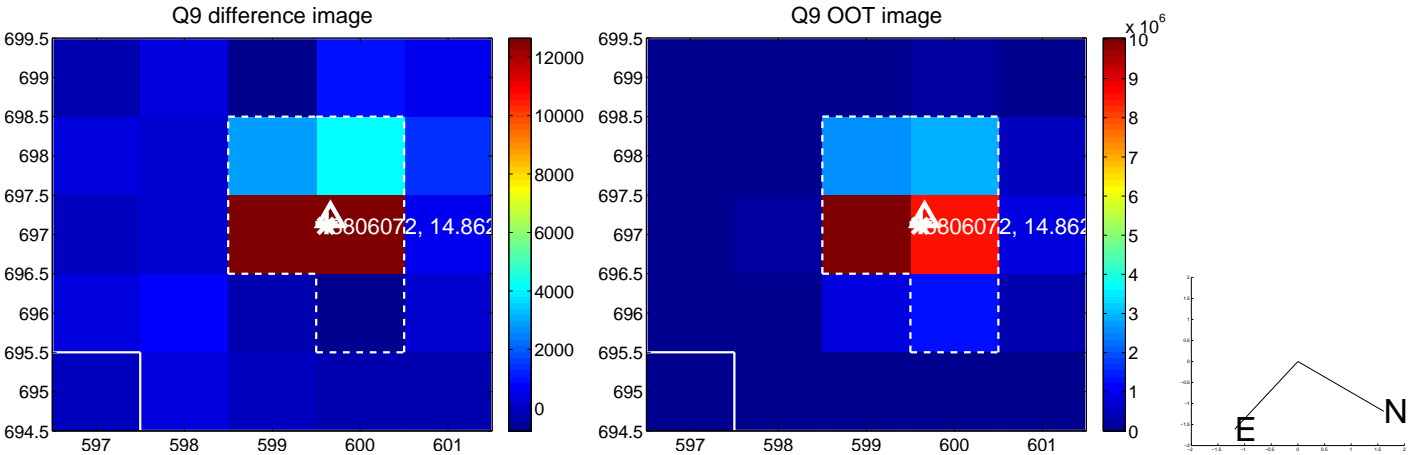
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



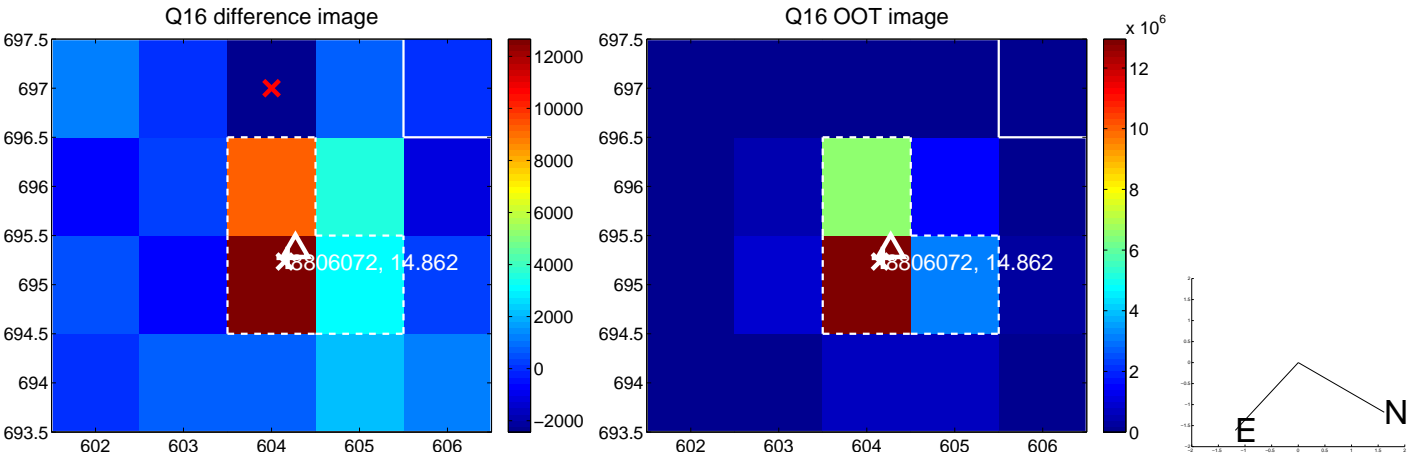
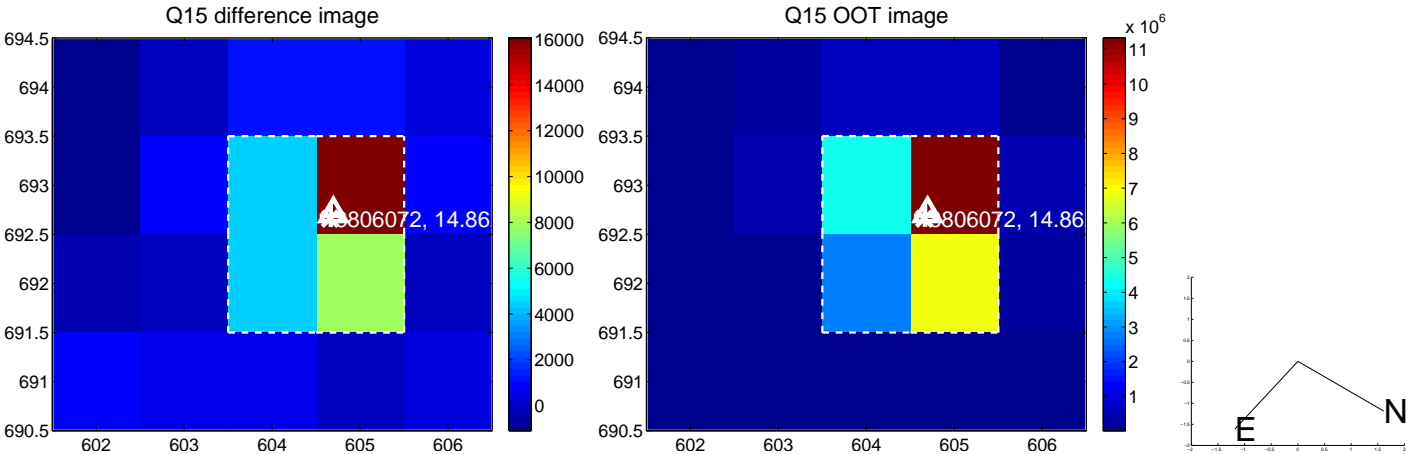
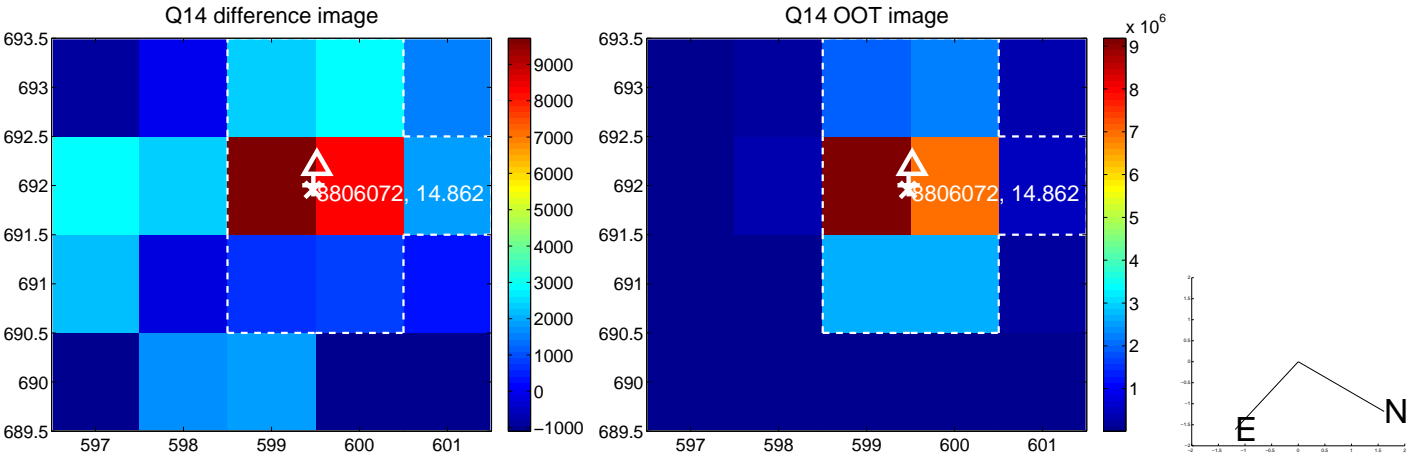
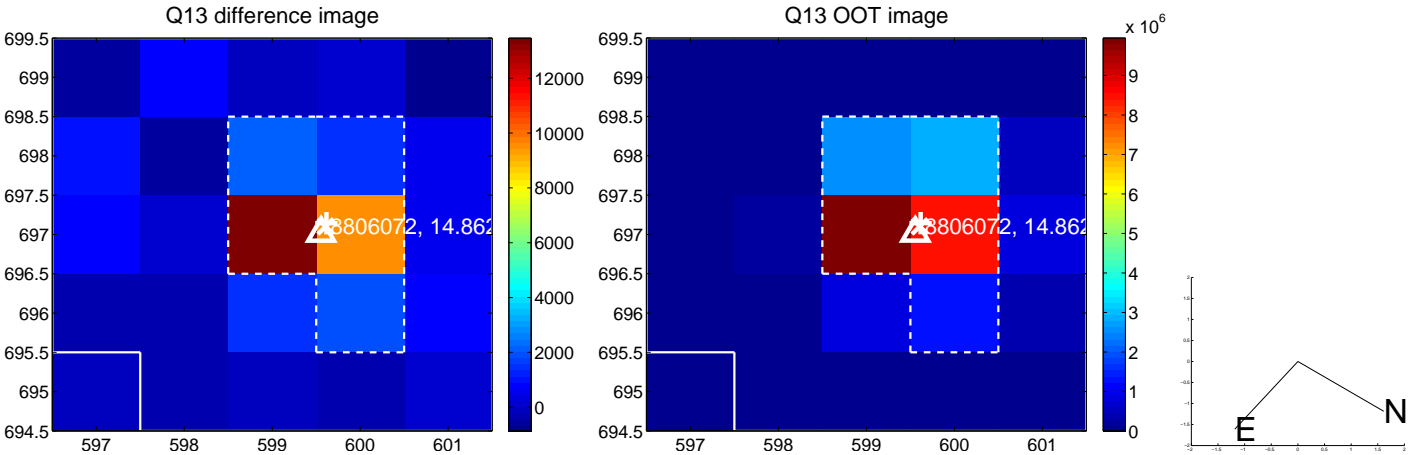
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



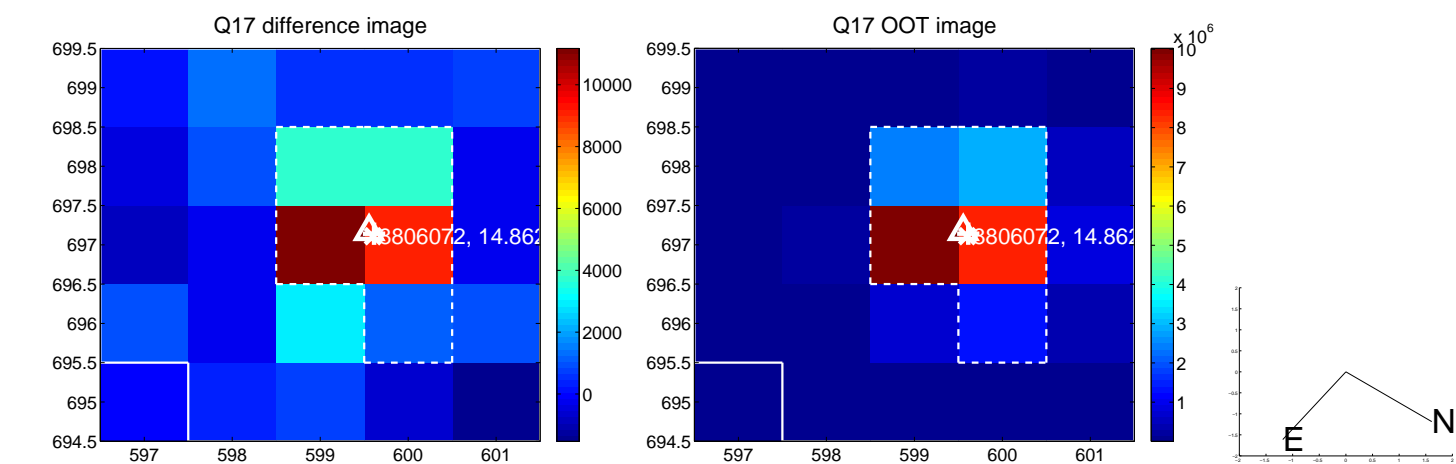
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



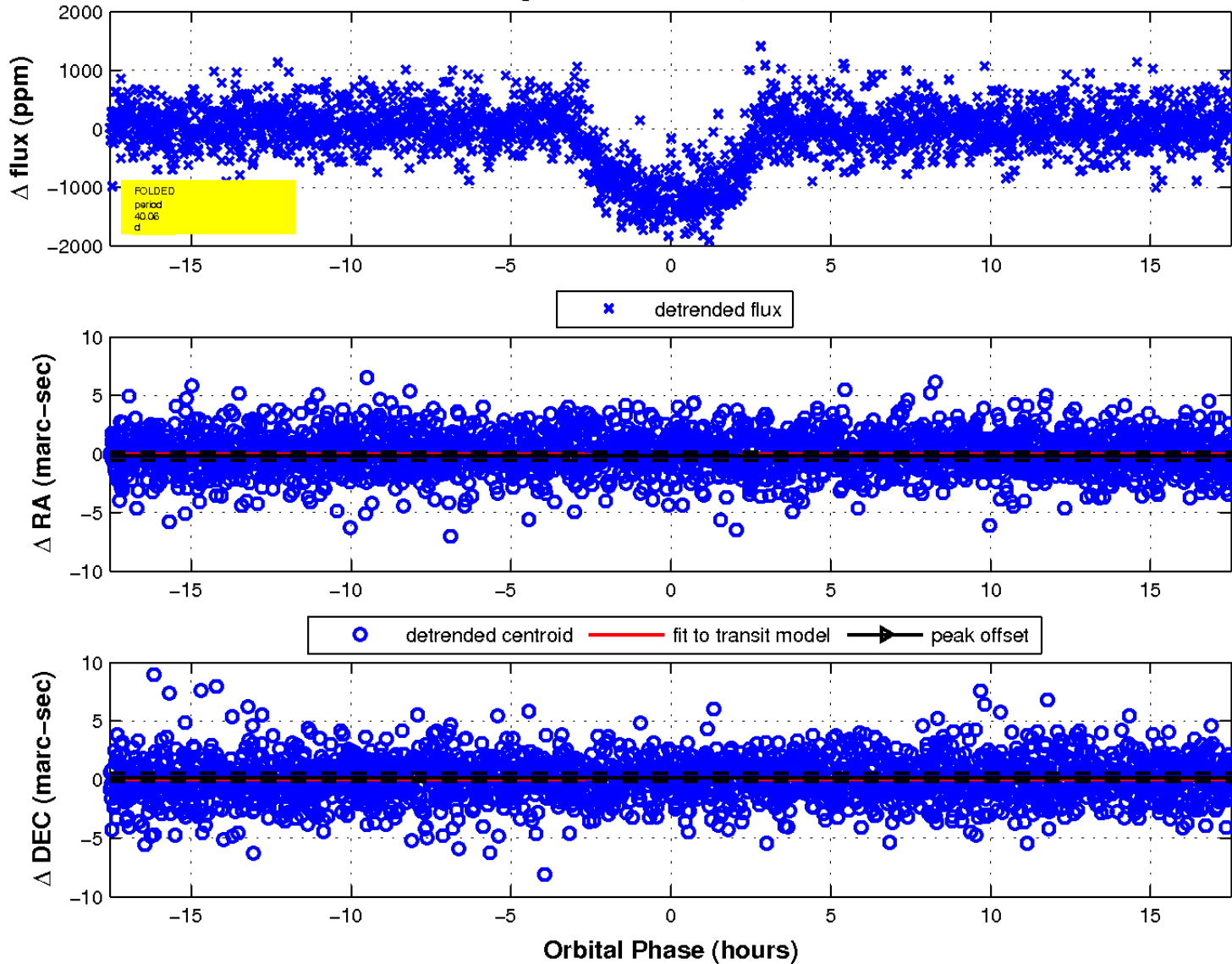
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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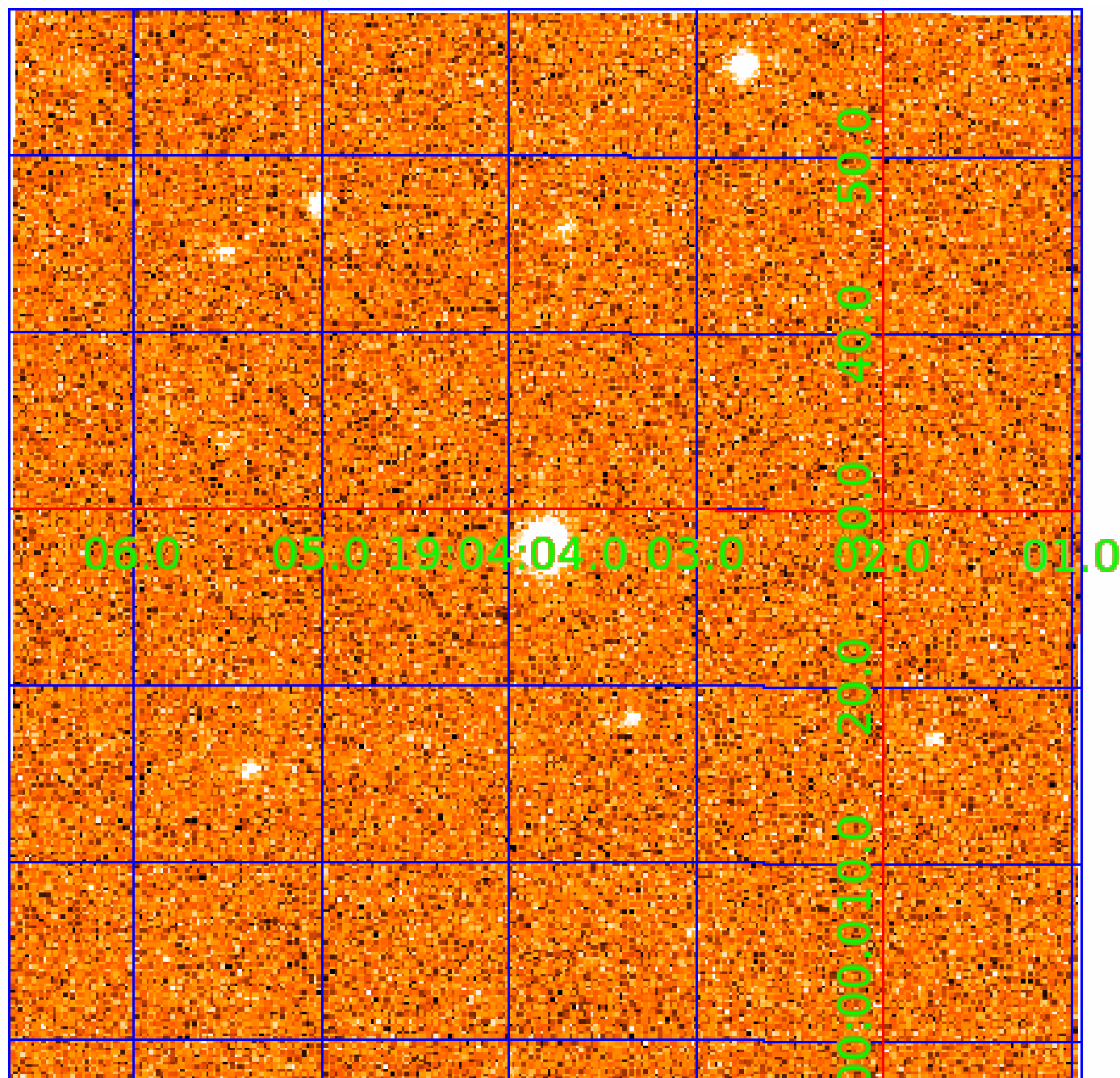


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 008806072

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})
008806072-01	OBS	1273.01	40.058771	169.910465	1239.0	5.852	46.2	47.7	0.87	5668	3.59	13.60
008806072-02	OBS	No	368.644003	233.820955	706.5	11.163	8.7	8.8	0.87	5668	2.39	0.70

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008806072-01	OBS	PC	0.93	0	0	0	0	NO_COMMENT
008806072-02	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—CENT_FEW_DIFFS—EPHEM_MATCH

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 008806072-02

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
008806072-02	8806072	008176161-01	8176161	1:1	24113.3	-146	130	14.88	14.86	1.08	Reflection	1	2.29	0.14

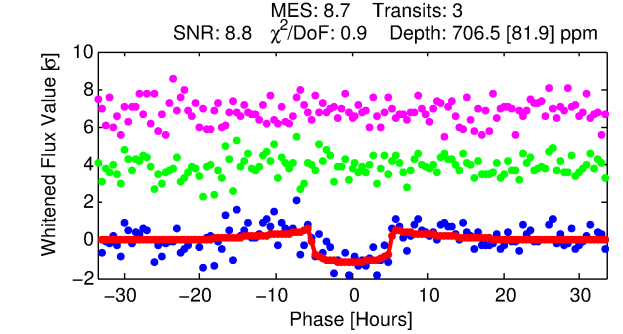
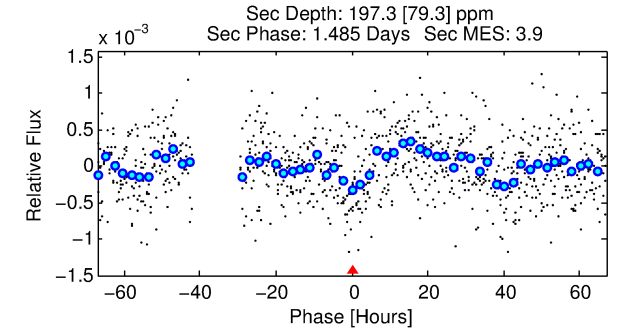
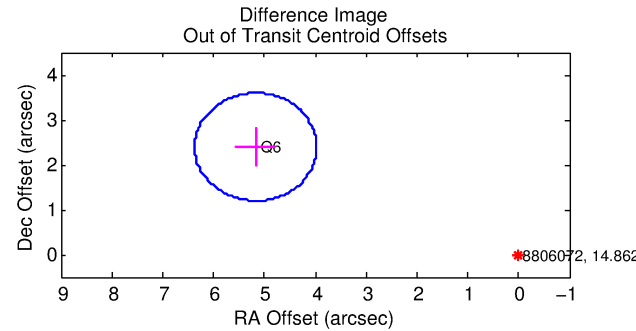
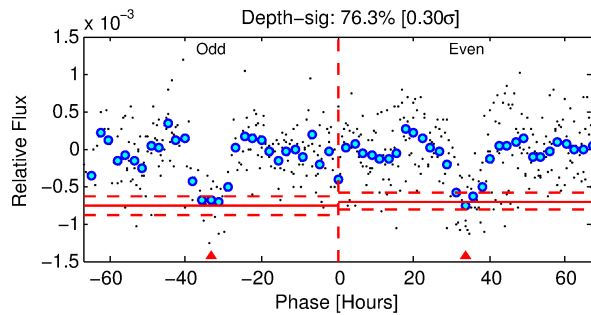
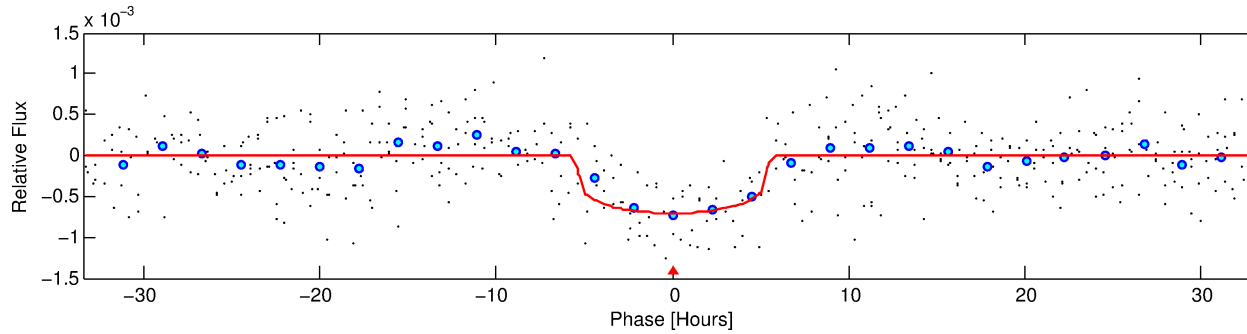
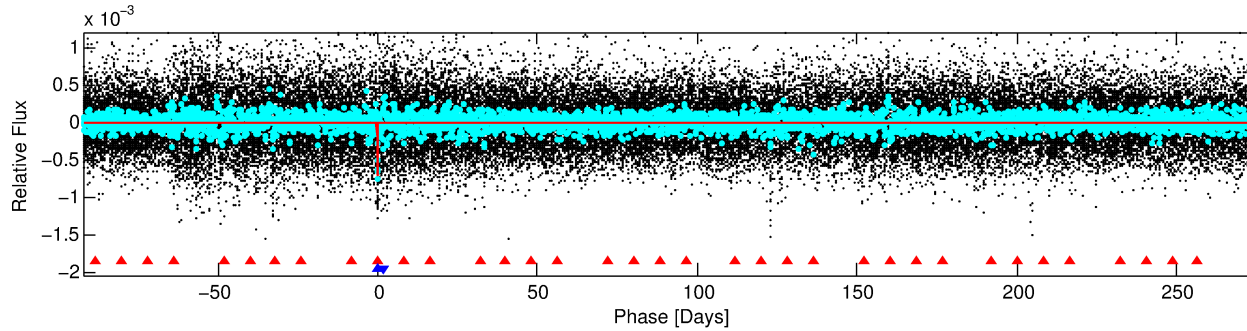
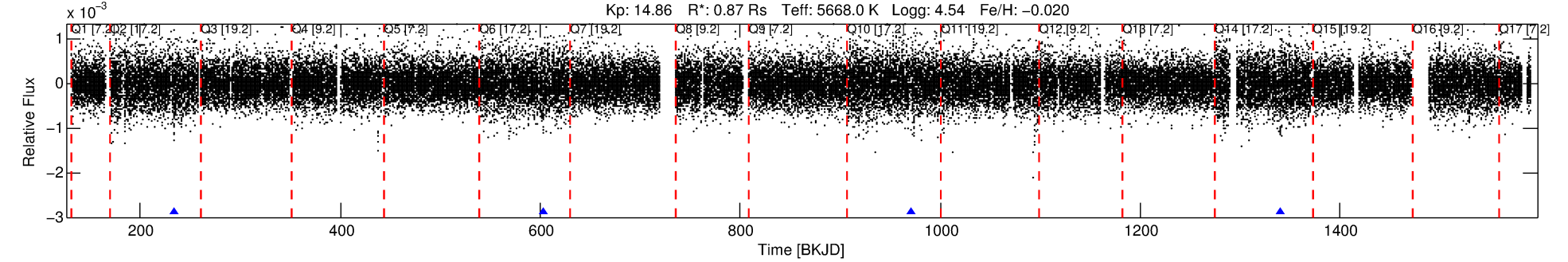
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match 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: 8806072 Candidate: 2 of 2 Period: 368.644 d

KOI: K01273 Corr: No Ephemeris Match

Kp: 14.86 R*: 0.87 Rs Teff: 5668.0 K Logg: 4.54 Fe/H: -0.020



DV Fit Results:

Period = 368.64400 [0.00627] d
Epoch = 233.8210 [0.0119] BKJD
Rp/R* = 0.0252 [0.0242]
a/R* = 211.94 [859.43]
b = 0.59 [4.57]
Seff = 0.70 [0.26]
Teq = 234 [22] K
Rp = 2.39 [2.39] Re
a = 0.9941 [0.2408] AU
Ag = 18762.37 [37363.62] [0.50σ]
Teffp = 4228 [2075] K [1.92σ]

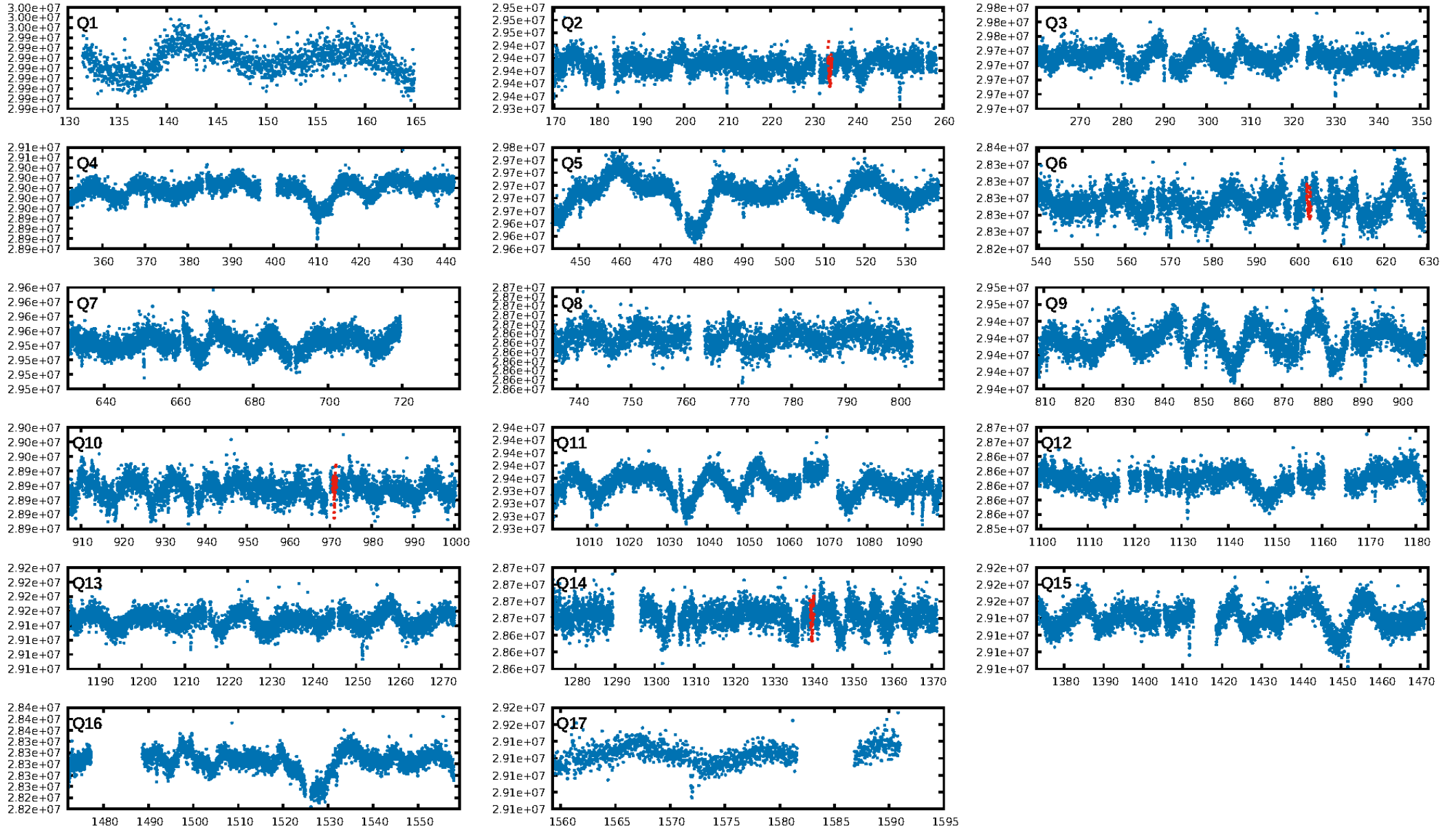
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [625.67σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 44.9%
ModelChiSquareGof-sig: 98.1%
Bootstrap-pfa: 6.46e-13
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -4.05
Centroid-sig: 0.2%
Centroid-so: 4.091 arcsec [2.54σ]
OotOffset-rm: 5.700 arcsec [14.25σ]
KicOffset-rm: 5.539 arcsec [13.85σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [3/3]

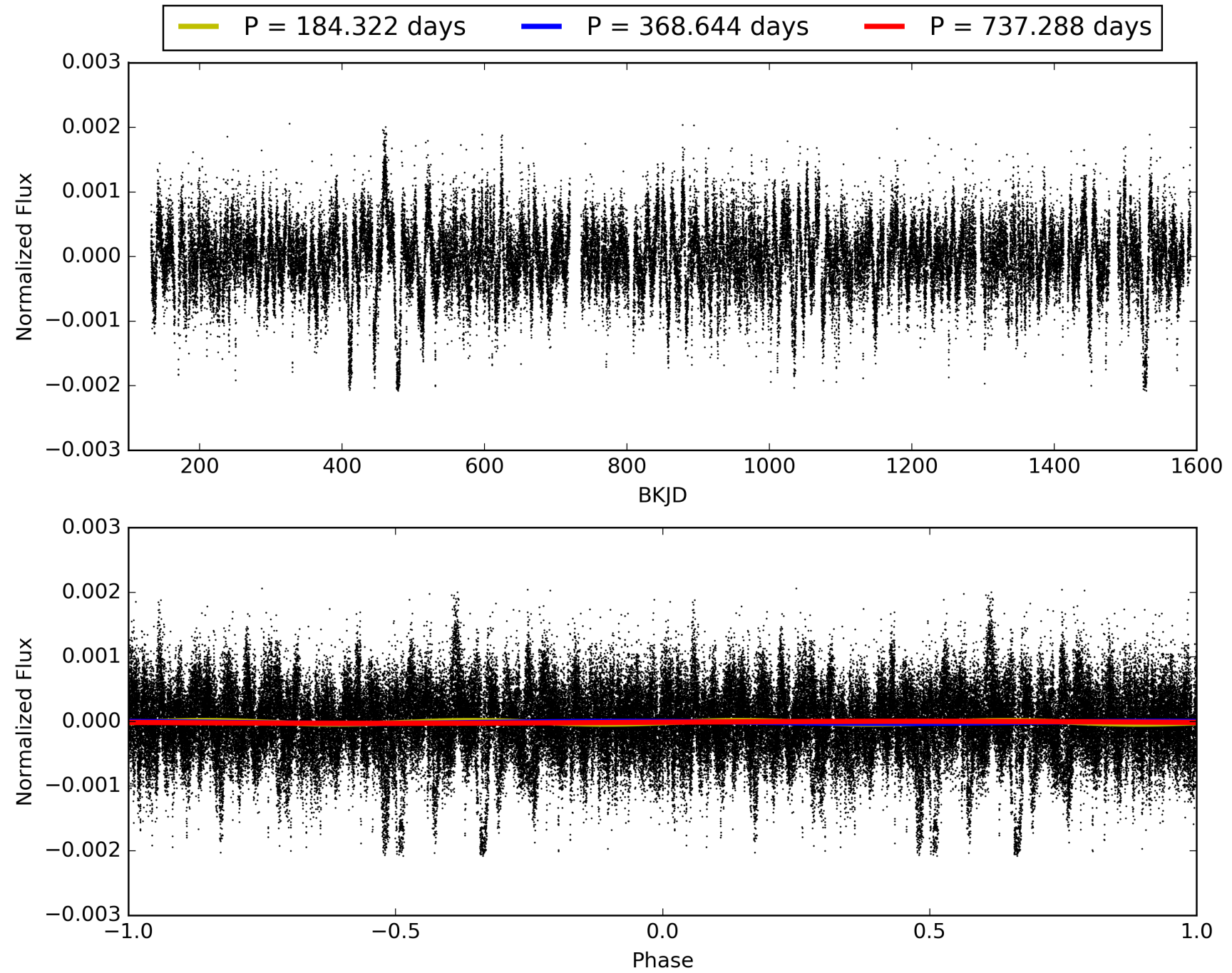
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 008806072-02, PDC Light Curves

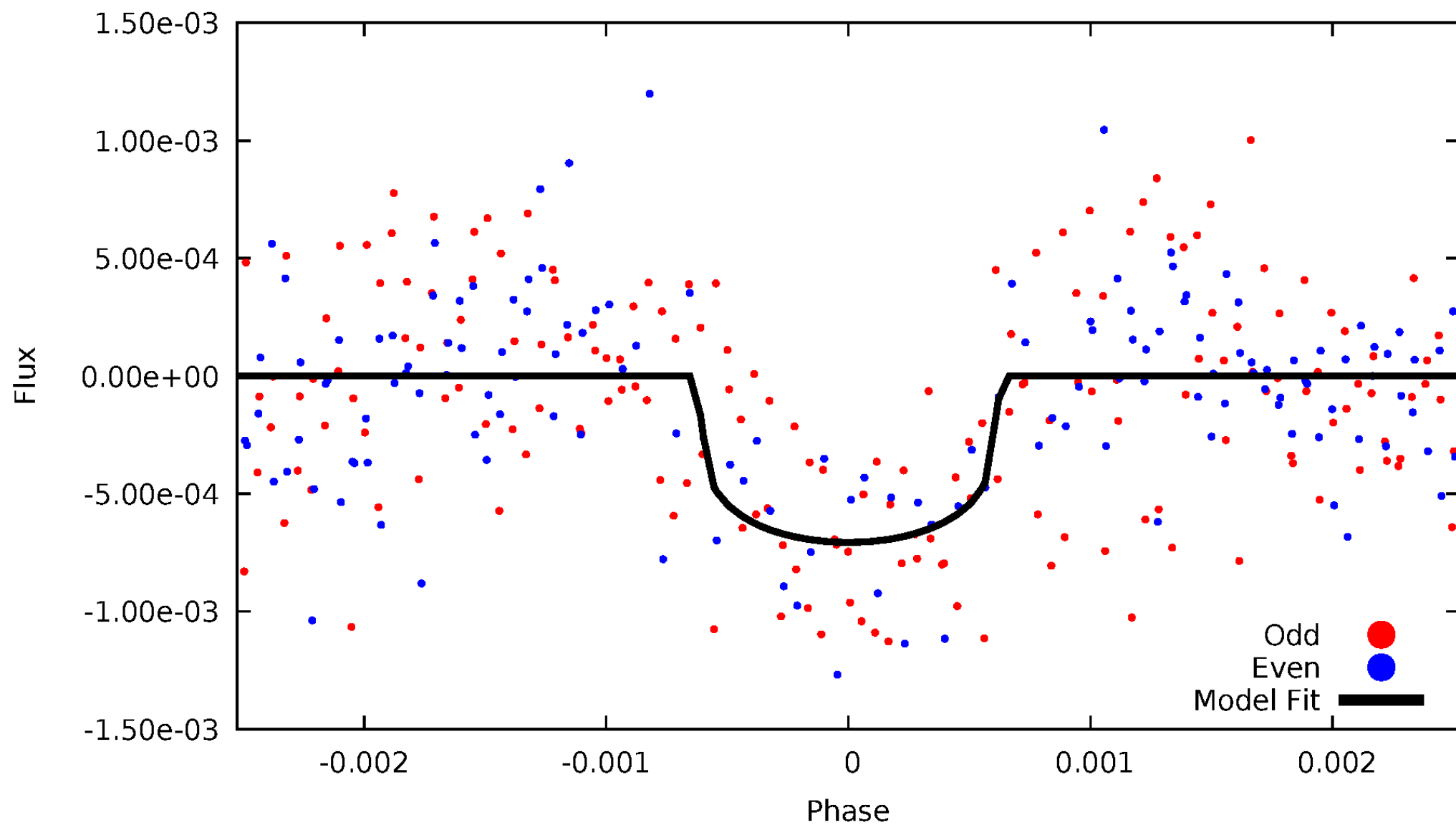


TCE 008806072-02



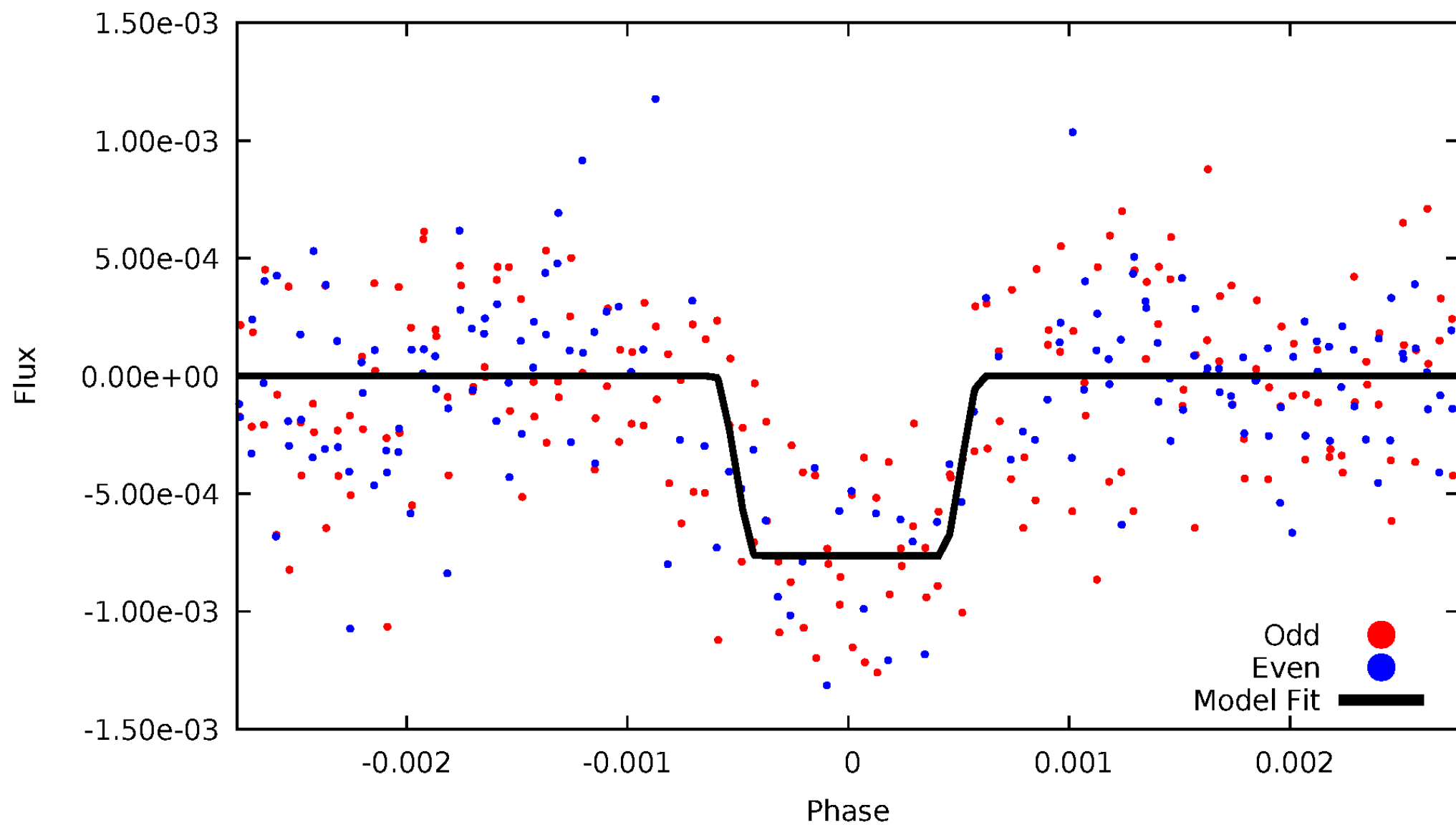
DV Odd/Even

TCE 008806072-02



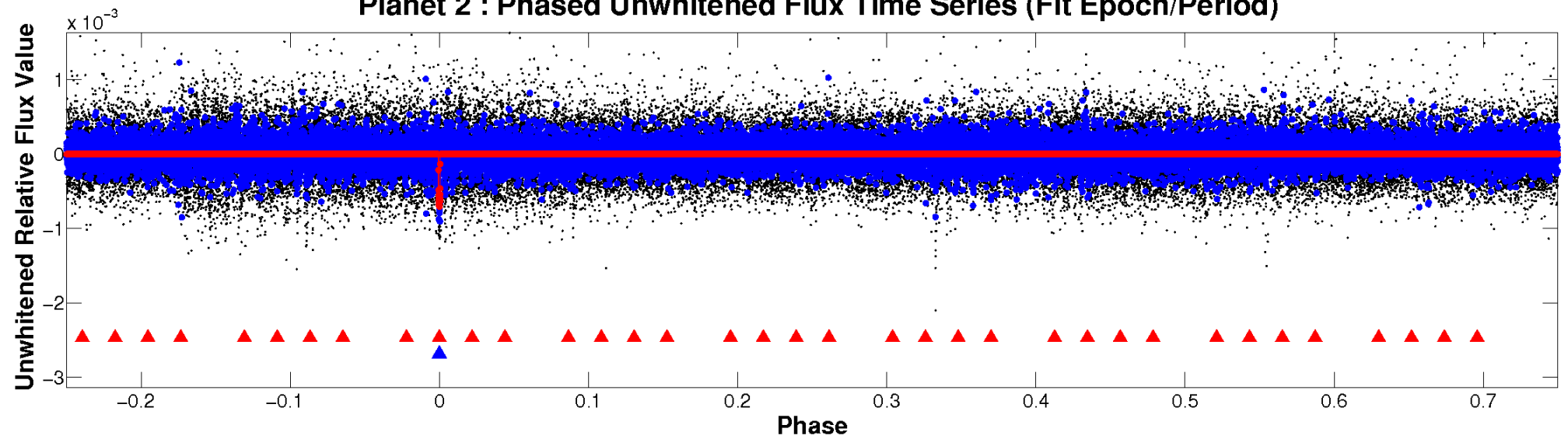
ALT Odd/Even

TCE 008806072-02

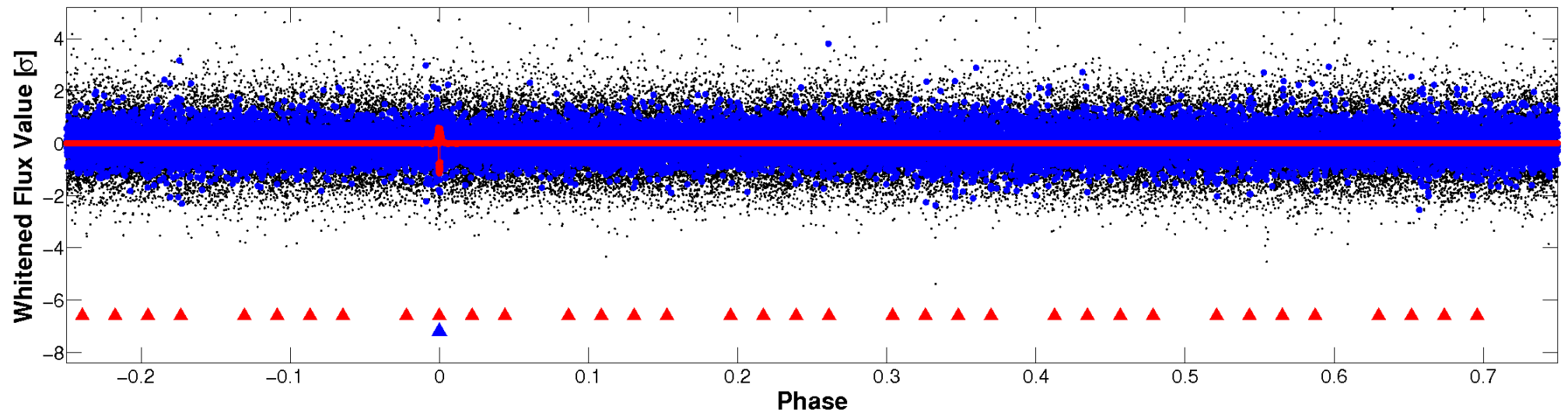


Non-Whitened Vs. Whitened Light Curve

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

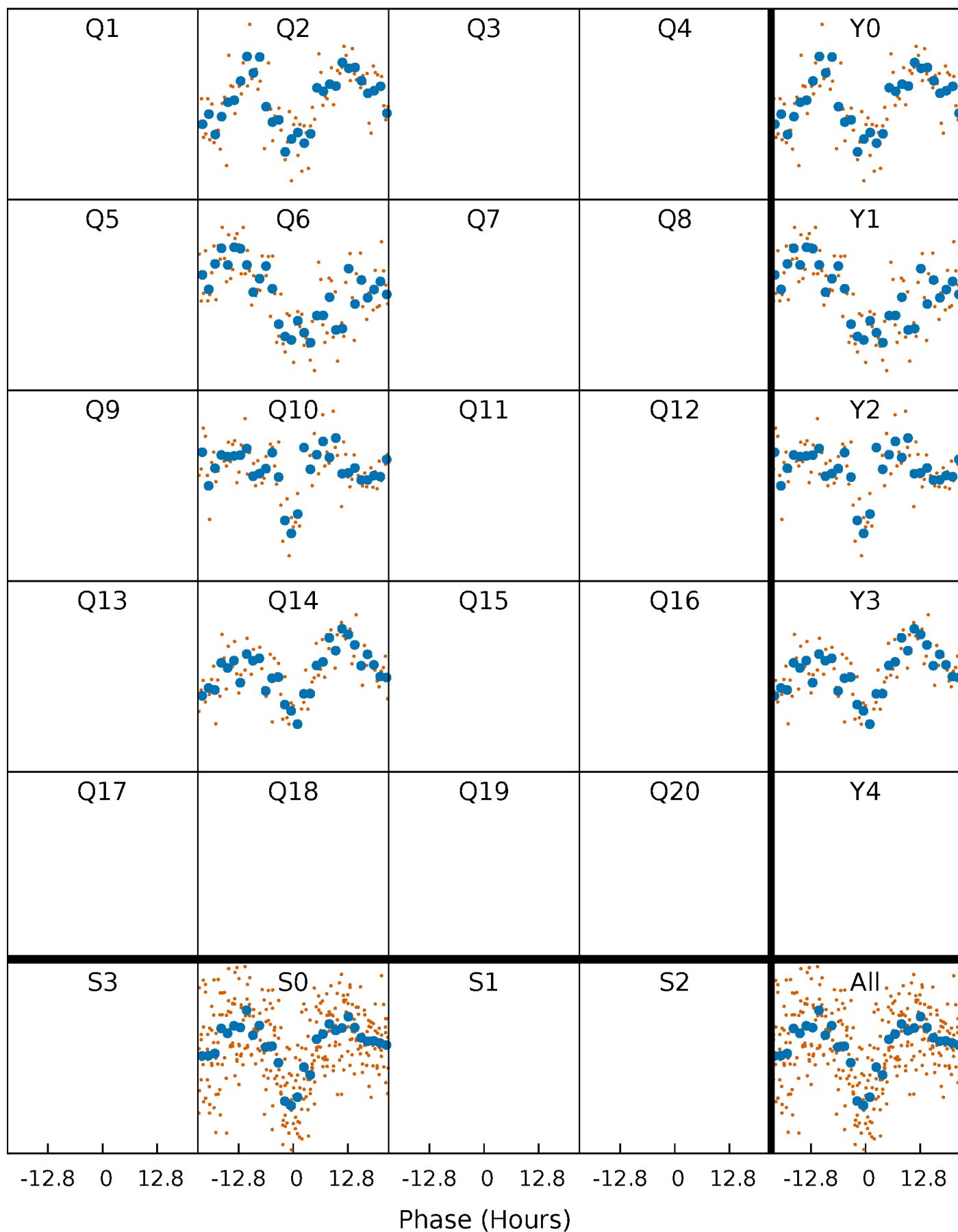


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



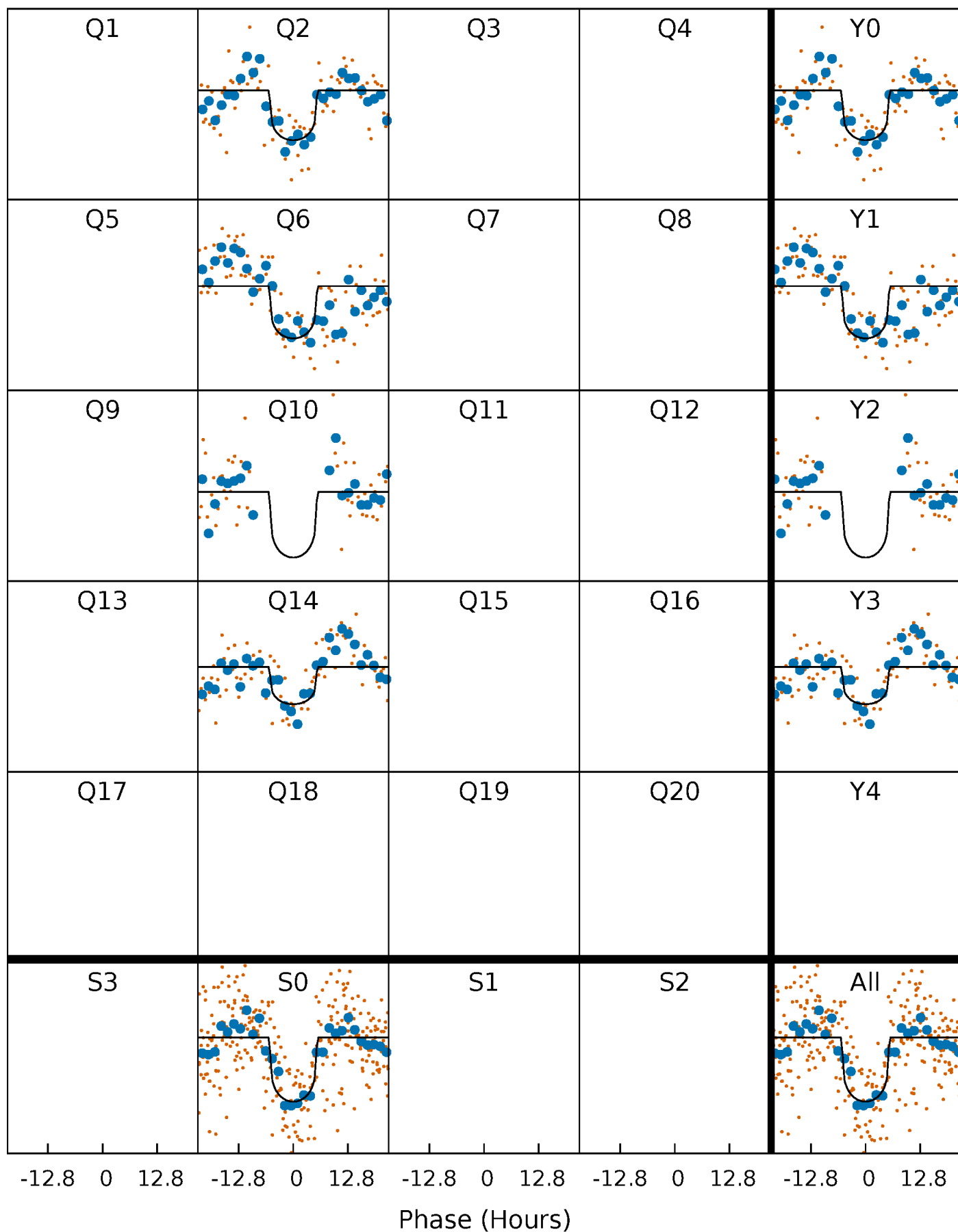
PDC Quarter-Phased Transit Curves

TCE 008806072-02 $P=368.644003$ Days $T_0=233.820955$ (BKJD)



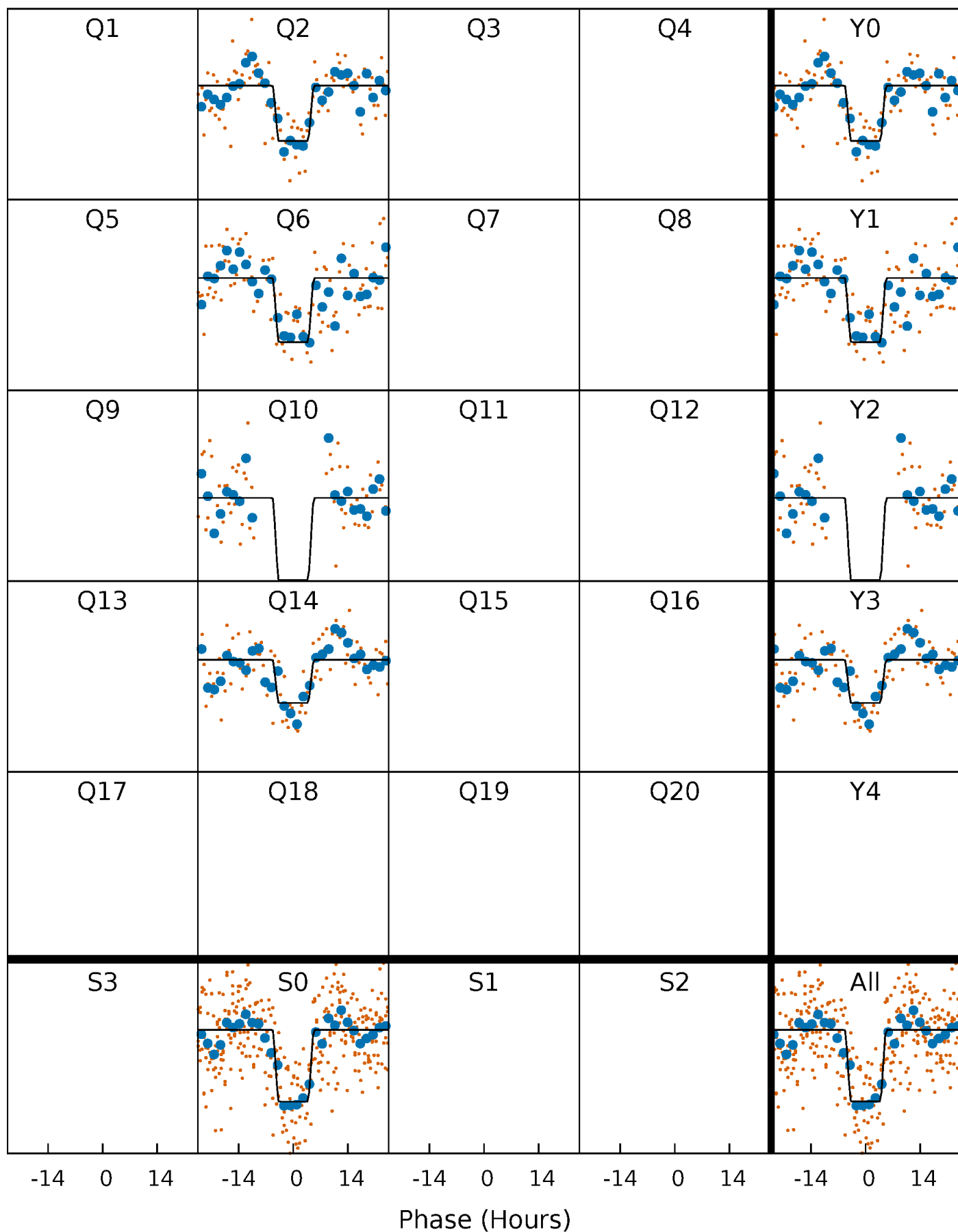
DV Quarter-Phased Transit Curves

TCE 008806072-02 P=368.644003 Days $T_0=233.820955$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

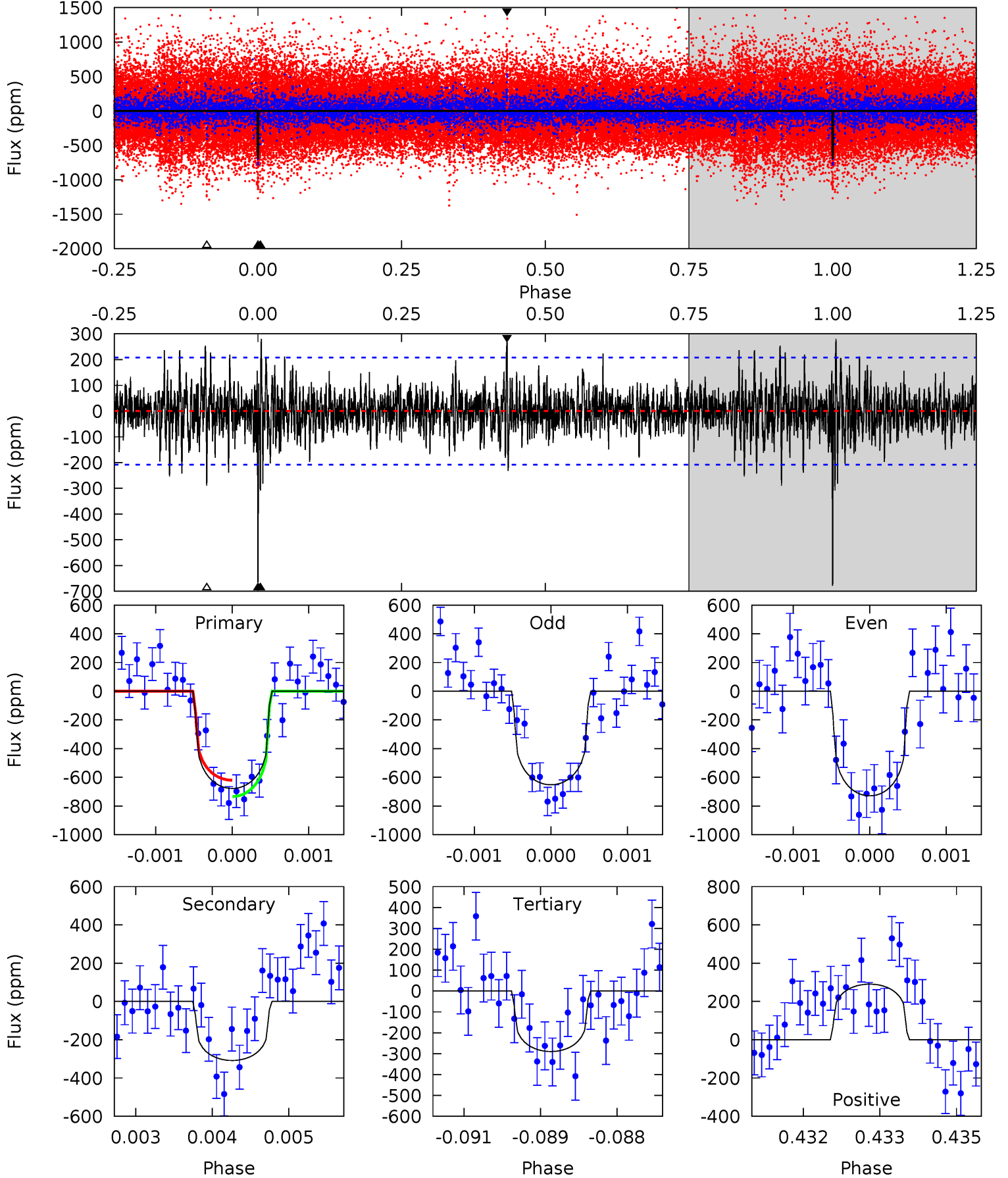
TCE 008806072-02 P=368.641856 Days $T_0=233.840109$ (BKJD)



DV Model-Shift Uniqueness Test

008806072-02, P = 368.644003 Days, E = 233.820955 Days

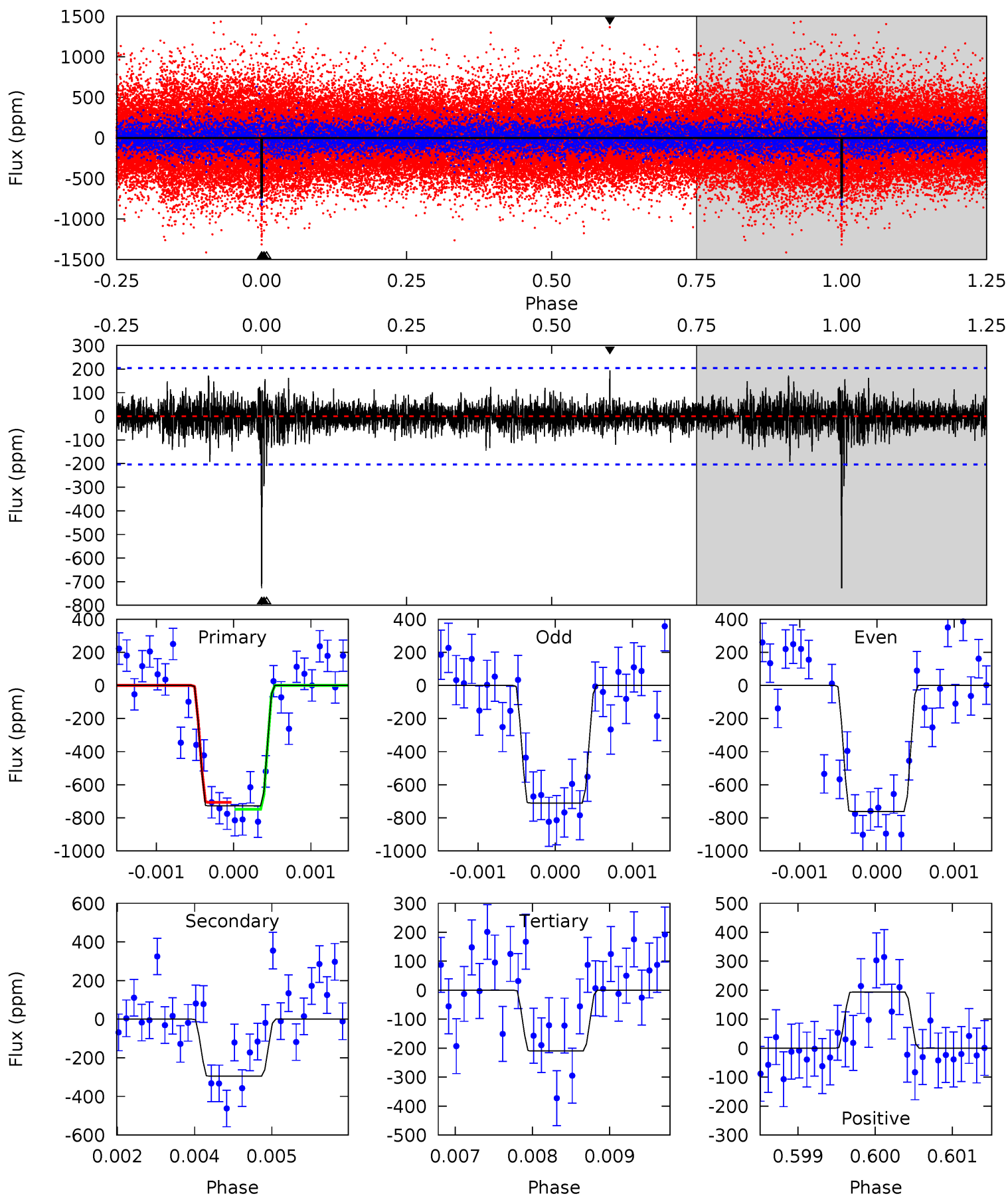
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.6	8.02	7.54	7.56	5.41	3.22	1.65	10.1	10.1	0.49	0.47	0.93	0.99	0.30	1.49



Alt Model-Shift Uniqueness Test

008806072-02, P = 368.641856 Days, E = 233.840109 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	7.83	5.57	5.14	5.42	3.25	1.06	13.8	14.2	2.26	2.69	0.64	0.96	0.21	0.55



Stellar Parameters For KIC 008806072

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5668^{+152}_{-169}	$4.545^{+0.034}_{-0.195}$	$-0.020^{+0.250}_{-0.300}$	$0.868^{+0.248}_{-0.078}$	$0.963^{+0.094}_{-0.104}$	$2.073^{+0.398}_{-1.046}$
	+3%/-3%	+1%/-4%	+1250%/-1500%	+29%/-9%	+10%/-11%	+19%/-50%
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 008806072-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-308 ± 38	$2.97^{+2.45}_{-1.78}$	336^{+22}_{-15}	4517^{+2392}_{-836}	18701^{+98596}_{-13204}
Alt.	-295 ± 38	$3.19^{+2.41}_{-1.95}$	335^{+23}_{-16}	4346^{+2375}_{-749}	15244^{+87864}_{-10268}

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

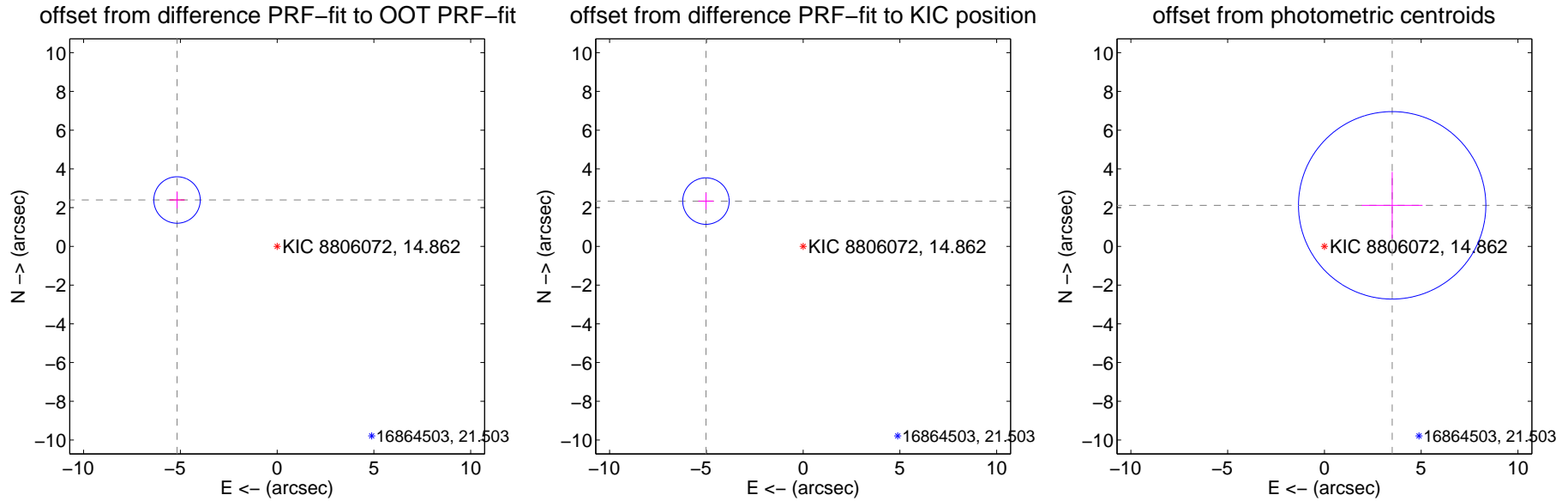
DV Centroid Data

Supplemental centroid analysis for 008806072-02. Kepler magnitude: 14.86. Transit SNR 8.79

There are 0 quarters with good PRF difference image offsets

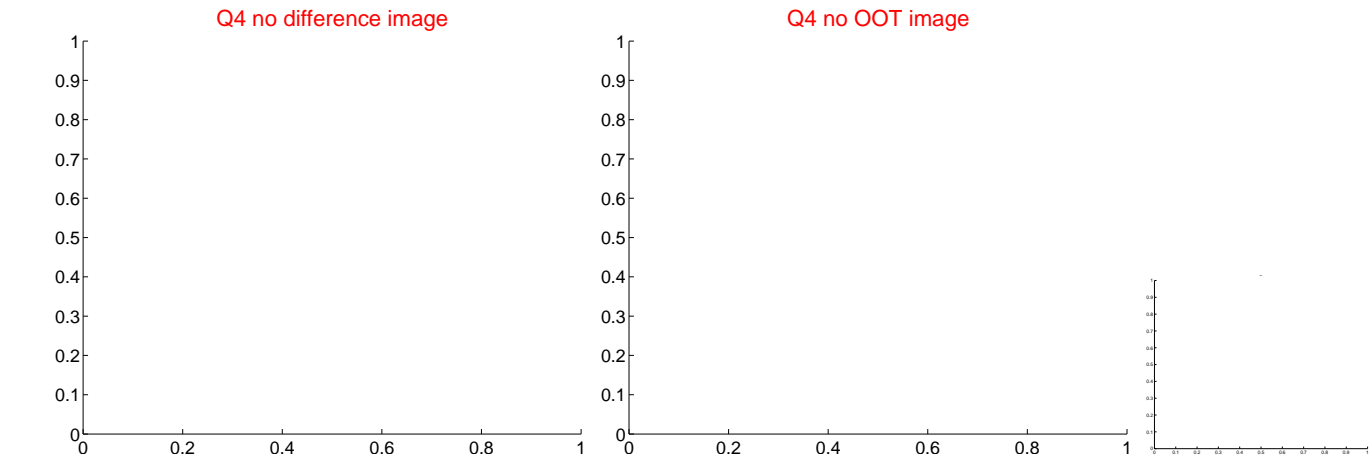
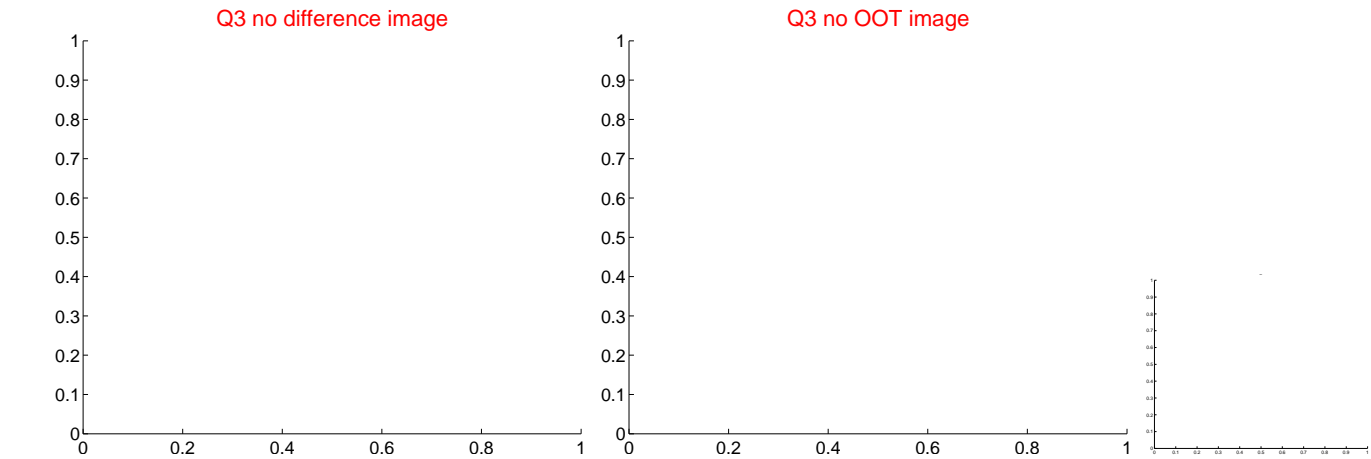
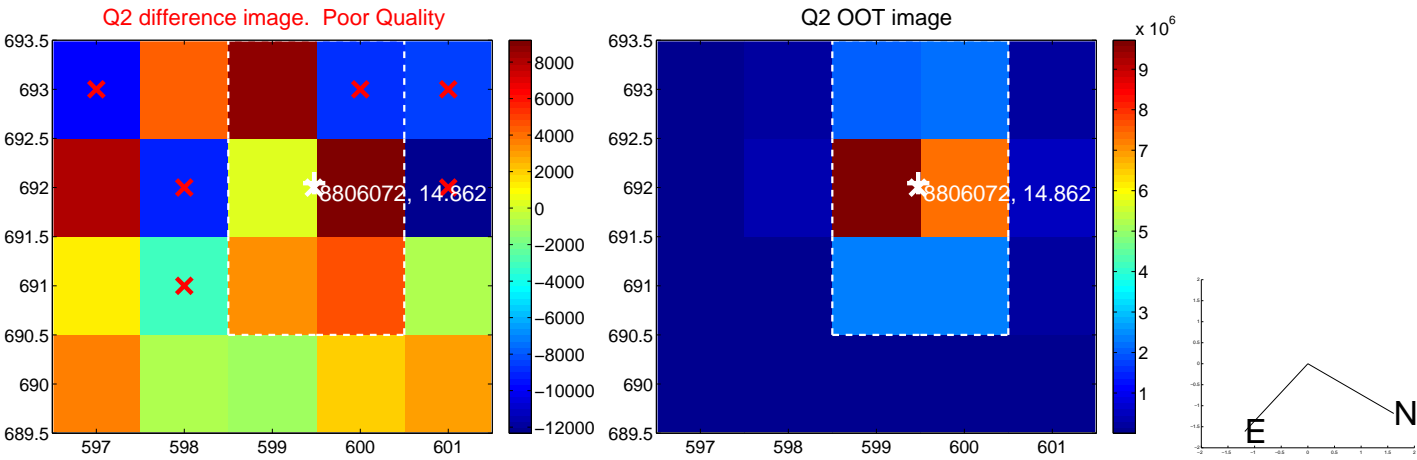
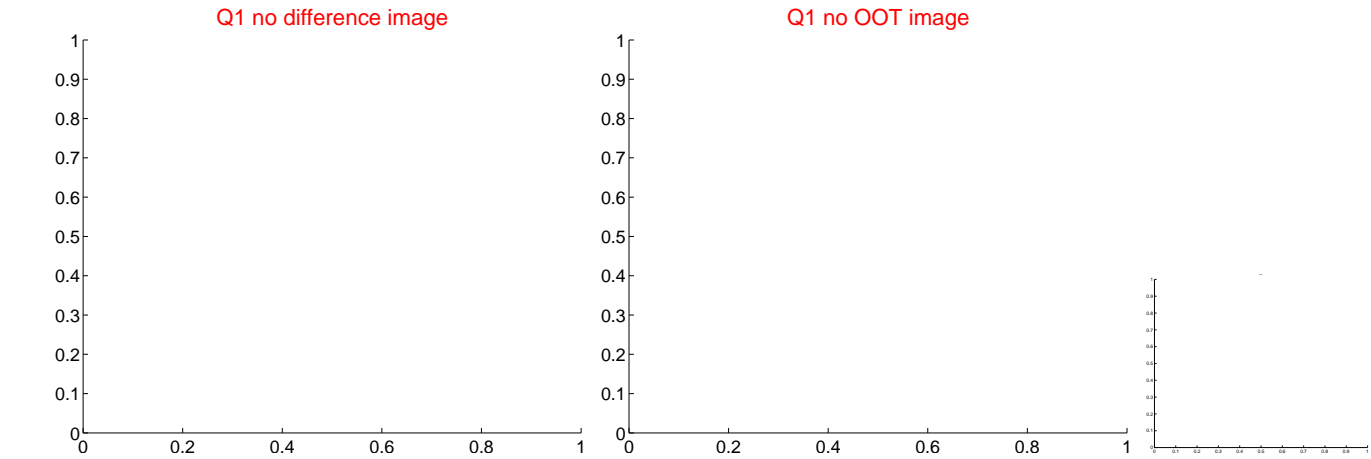
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.700 ± 0.400	14.25	5.172 ± 0.394	2.394 ± 0.427
PRF-fit source offset from KIC position	5.539 ± 0.400	13.85	5.021 ± 0.394	2.338 ± 0.427
photometric centroid source offset	4.09 ± 1.61	2.54	-3.50 ± 1.57	2.12 ± 1.73

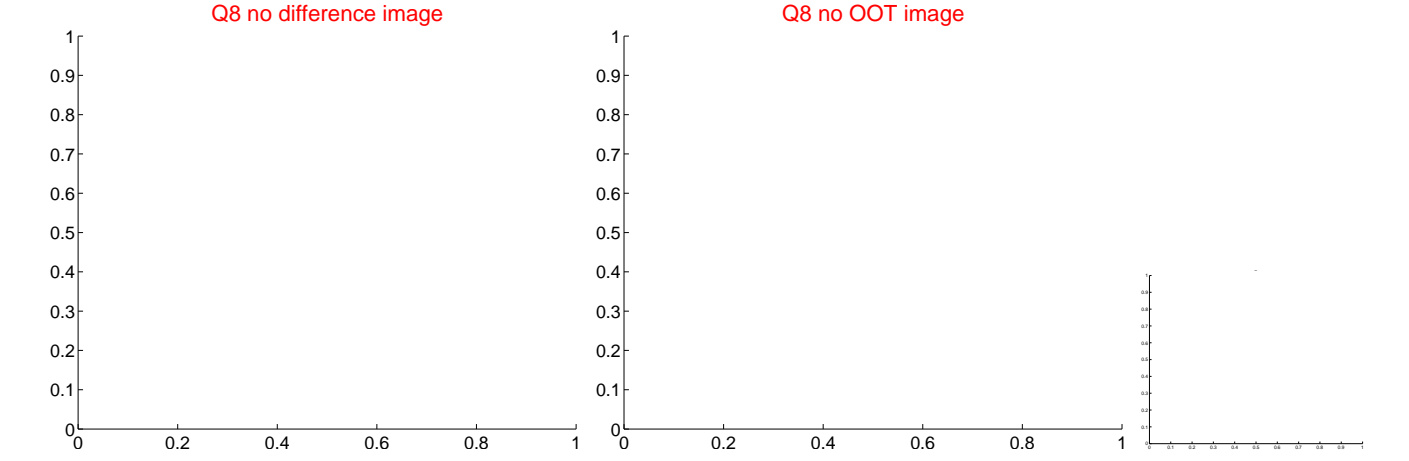
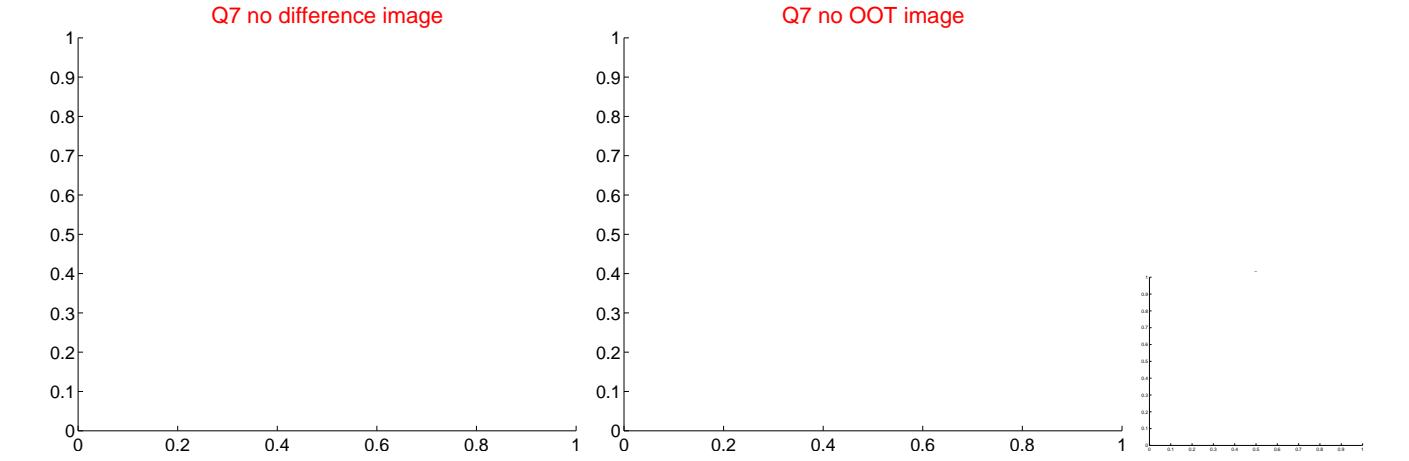
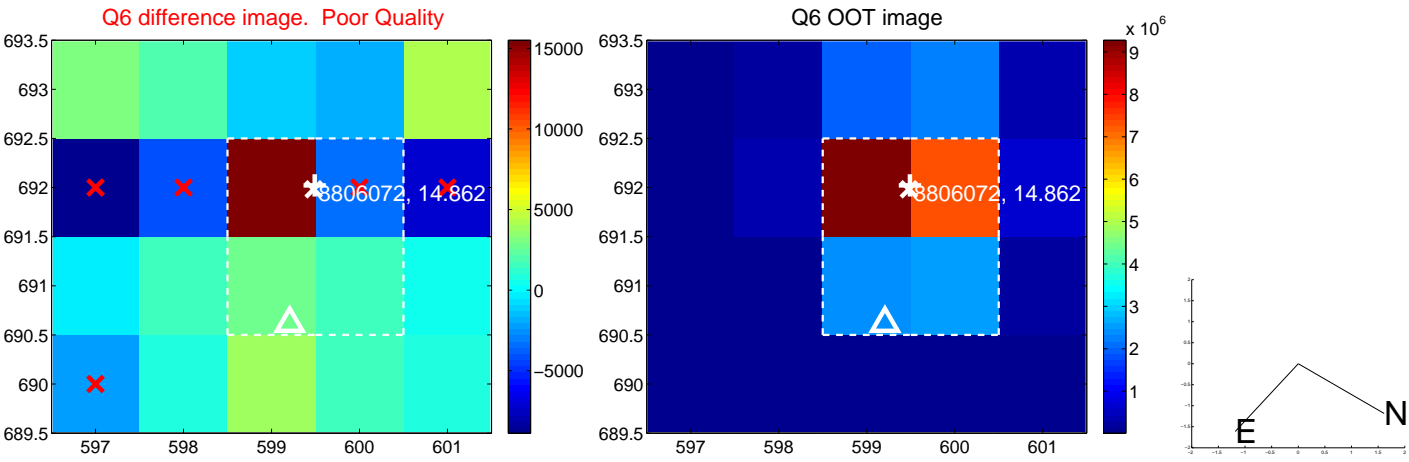
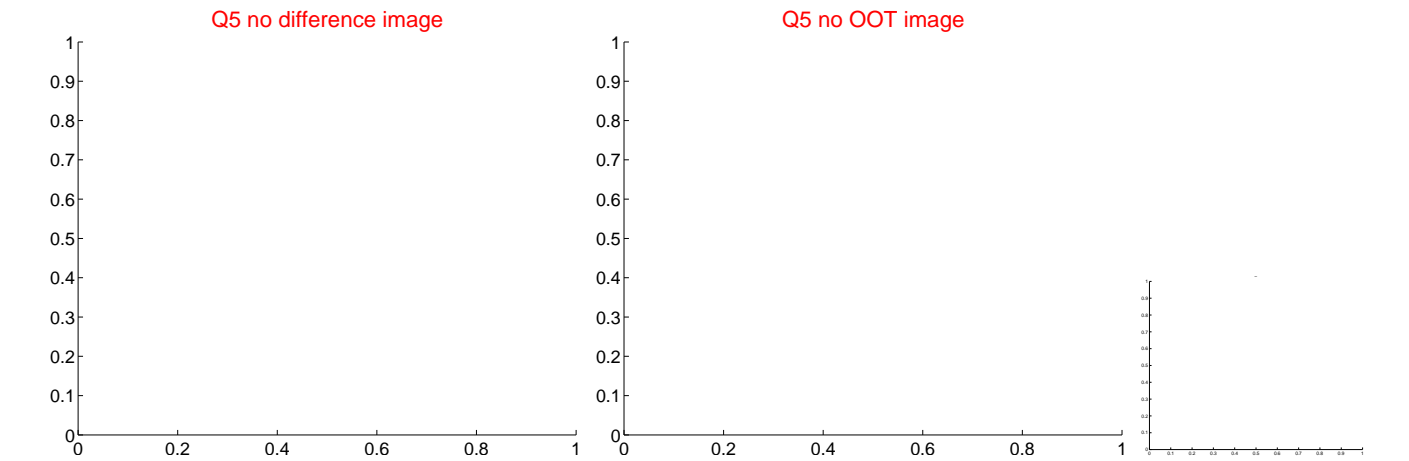


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



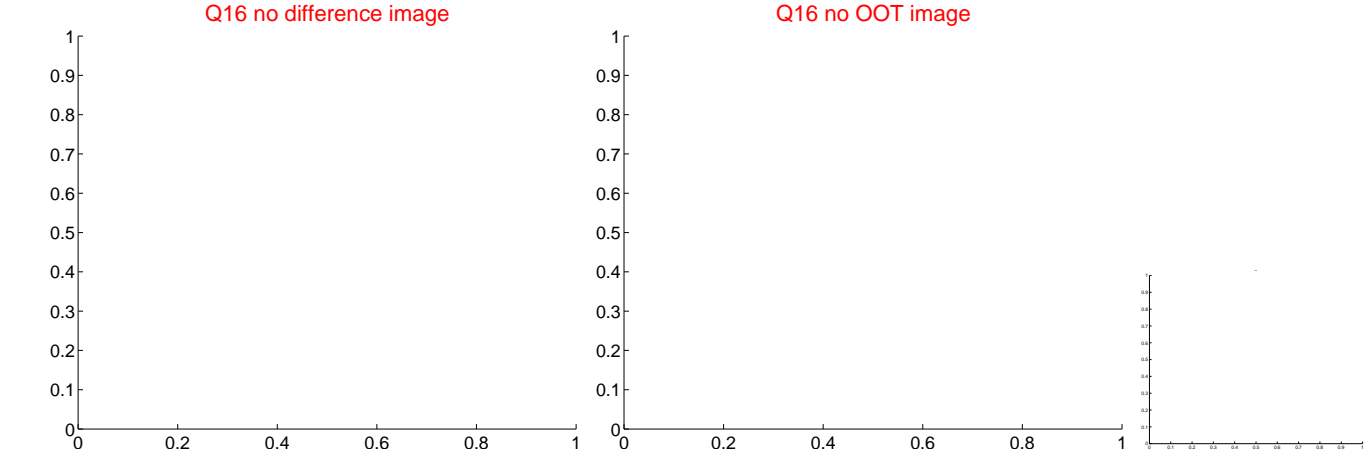
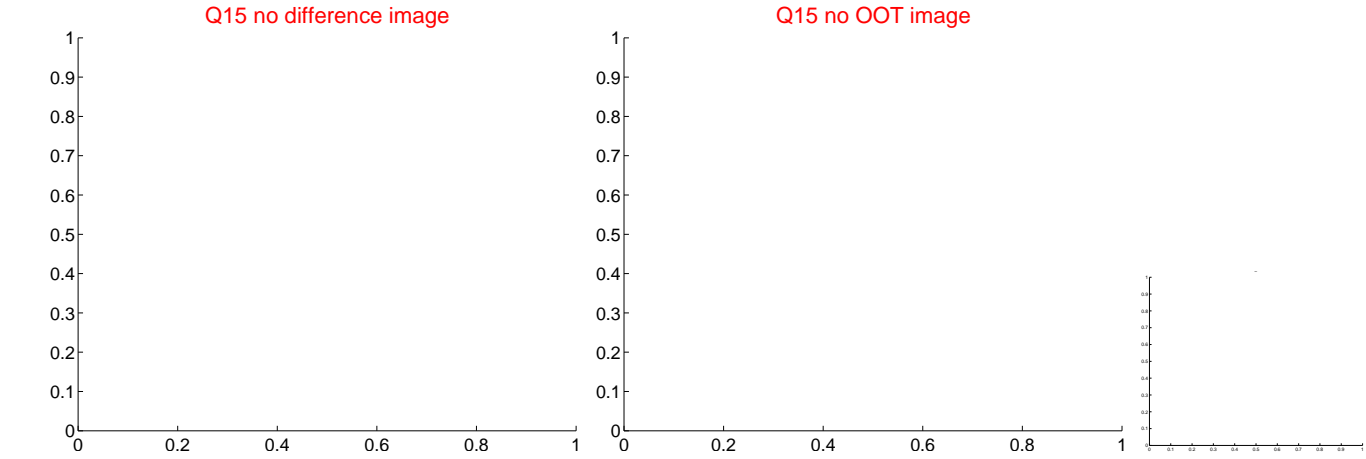
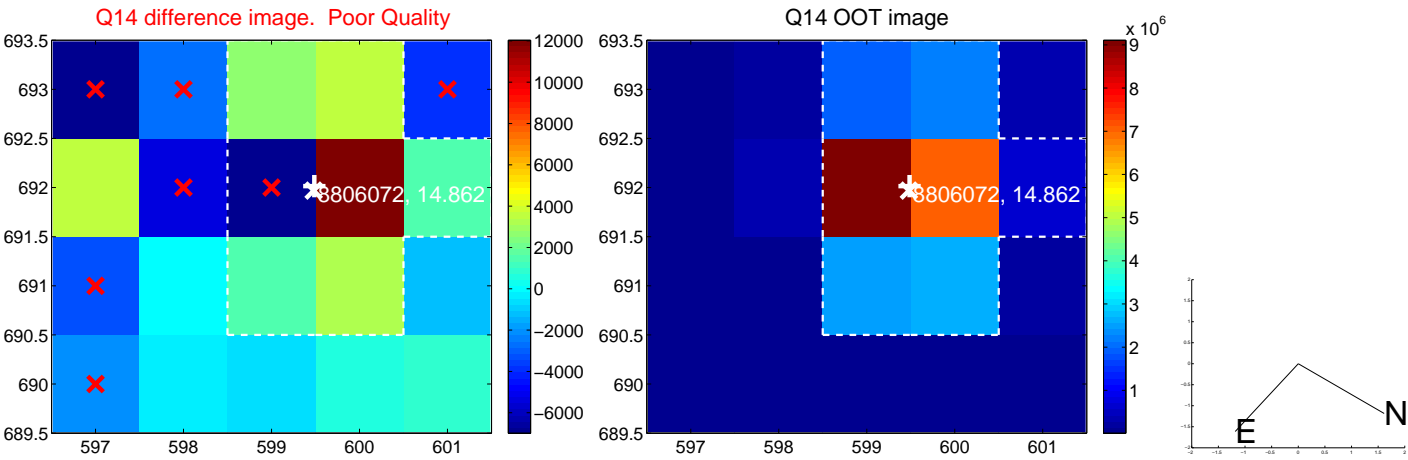
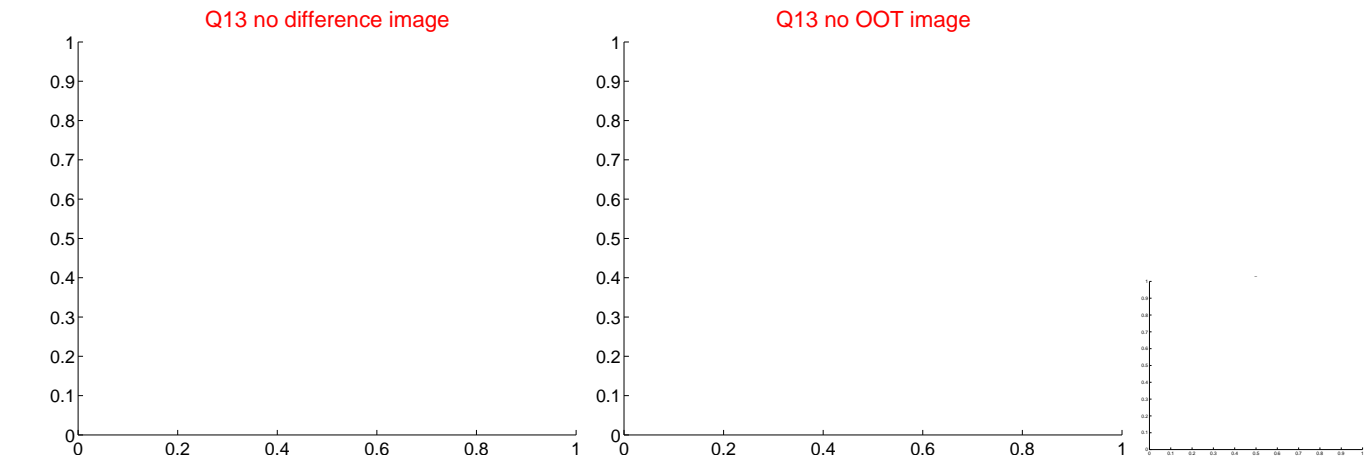
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



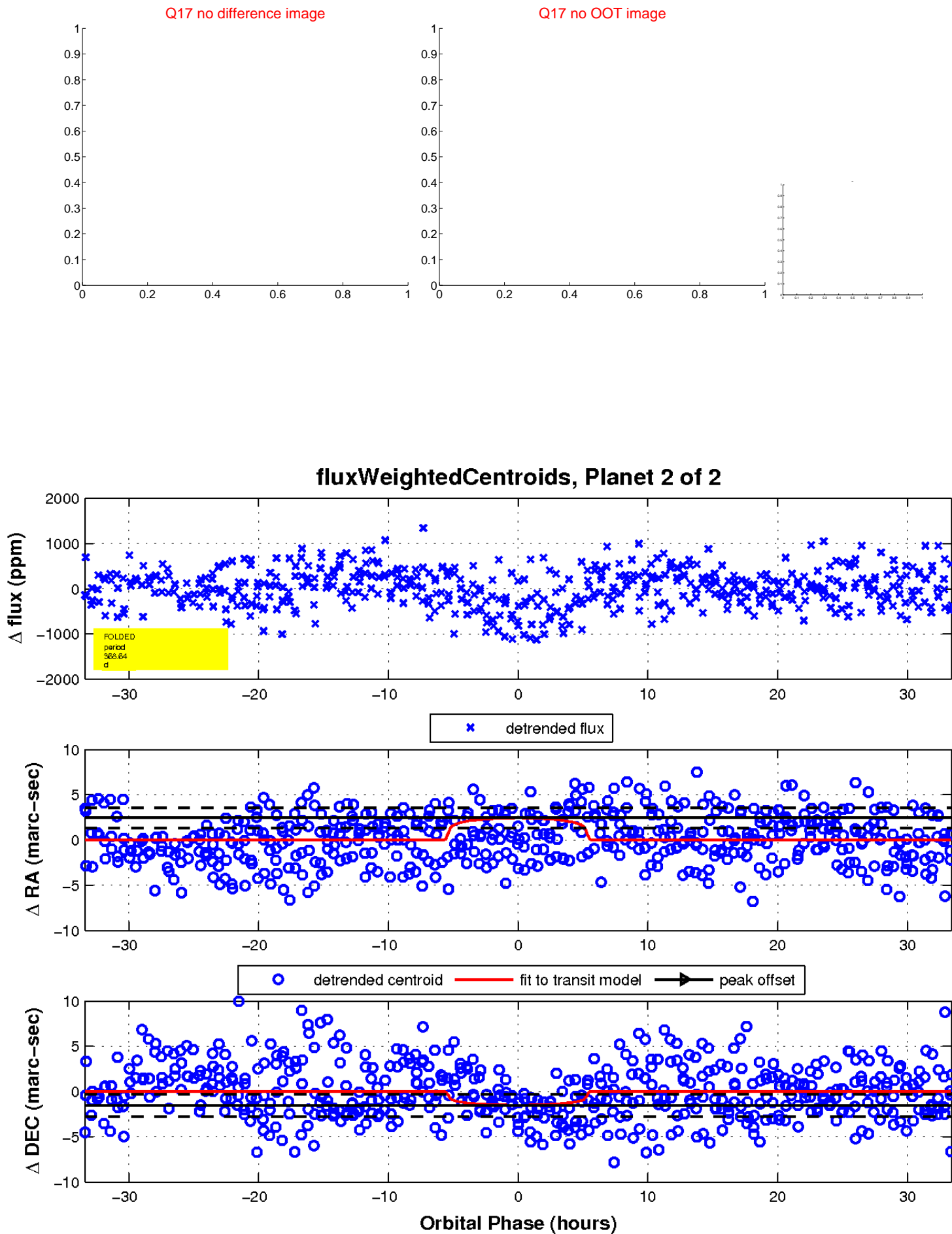
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white ×: 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.



UKIRT Image

Declination

