

KIC 008109057

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})
008109057-01	OBS	No	370.361380	231.412512	3002.1	16.815	16.1	16.6	0.58	4217	6.08	0.14
008109057-02	OBS	No	363.274804	401.682652	989.2	12.403	8.3	8.5	0.58	4217	2.17	0.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008109057-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008109057-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—MOD_POS_DV—CENT_FEW_DIFFS

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

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

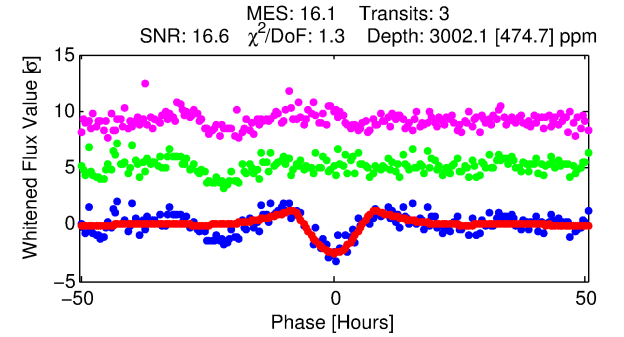
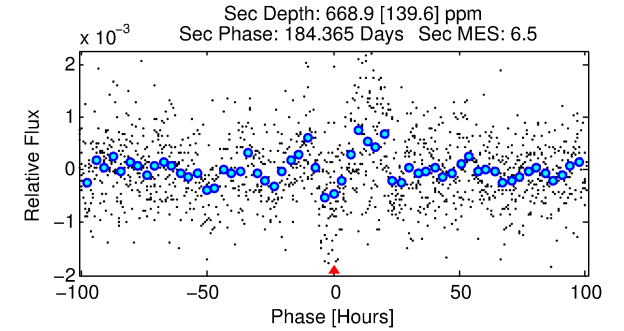
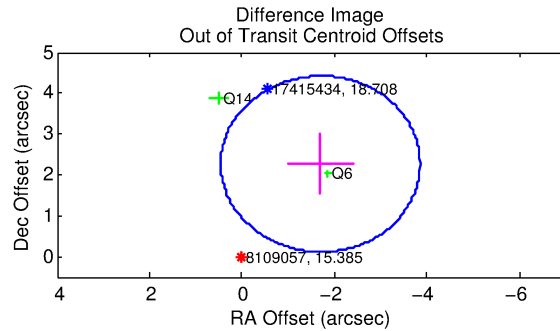
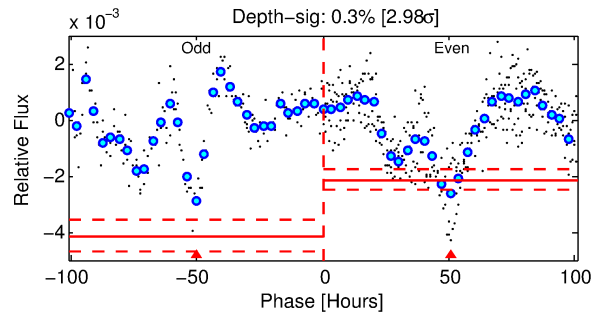
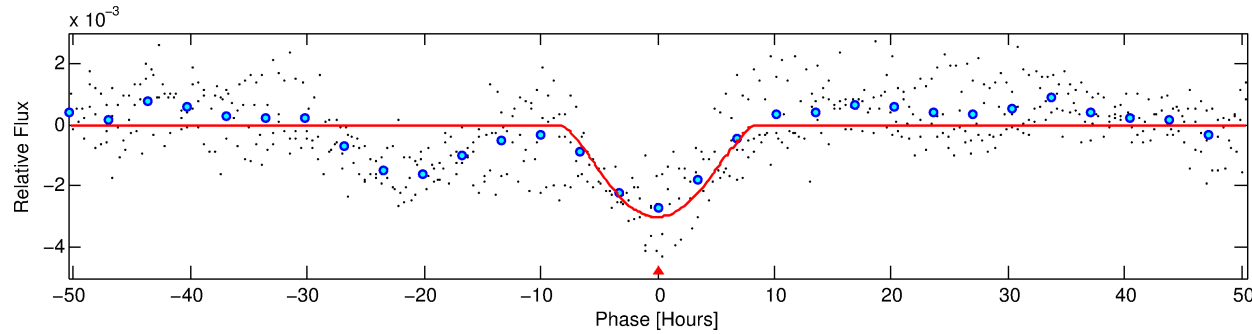
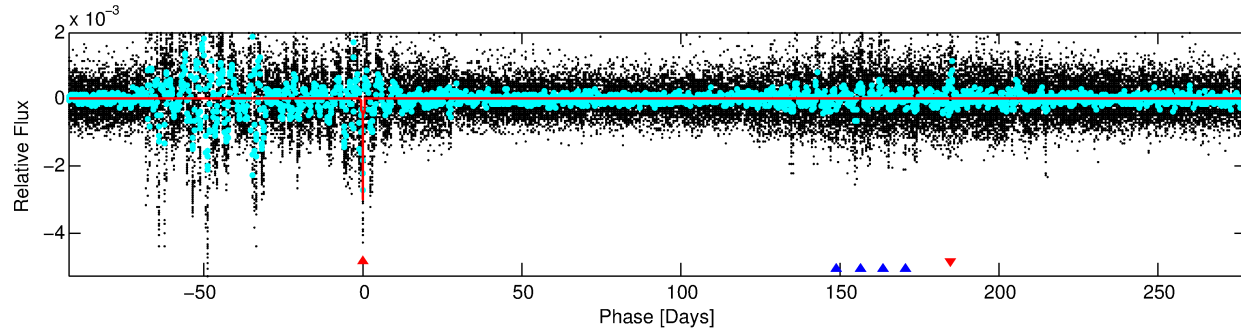
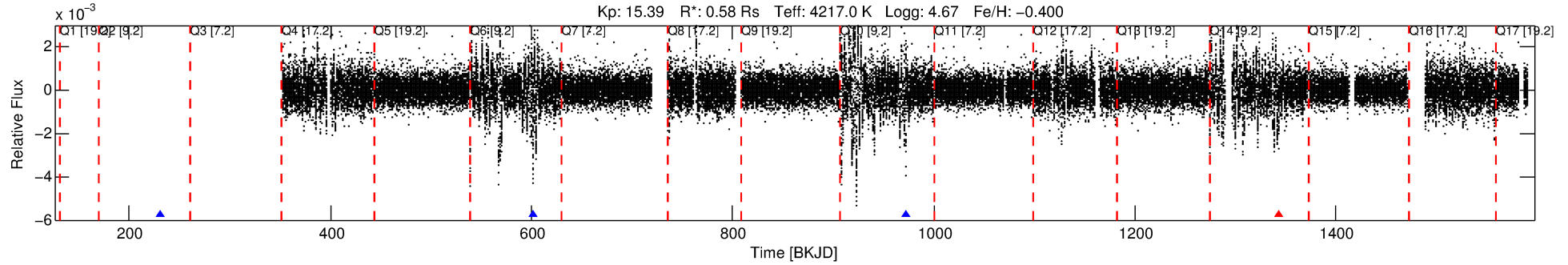
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008109057-01

No Significant Match Found

DV One-Page Summary

KIC: 8109057 Candidate: 1 of 2 Period: 370.361 d



DV Fit Results:

Period = 370.36138 [0.01358] d
Epoch = 231.4125 [0.0277] BKJD
Rp/R* = 0.0963 [0.1851]
a/R* = 75.84 [28.48]
b = 1.00 [0.27]
Seff = 0.14 [0.03]
Teq = 155 [8] K
Rp = 6.08 [11.72] Re
a = 0.8348 [0.0799] AU
Ag = 6928.88 [26688.53] [0.26 σ]
Teffp = 2186 [2105] K [0.96 σ]

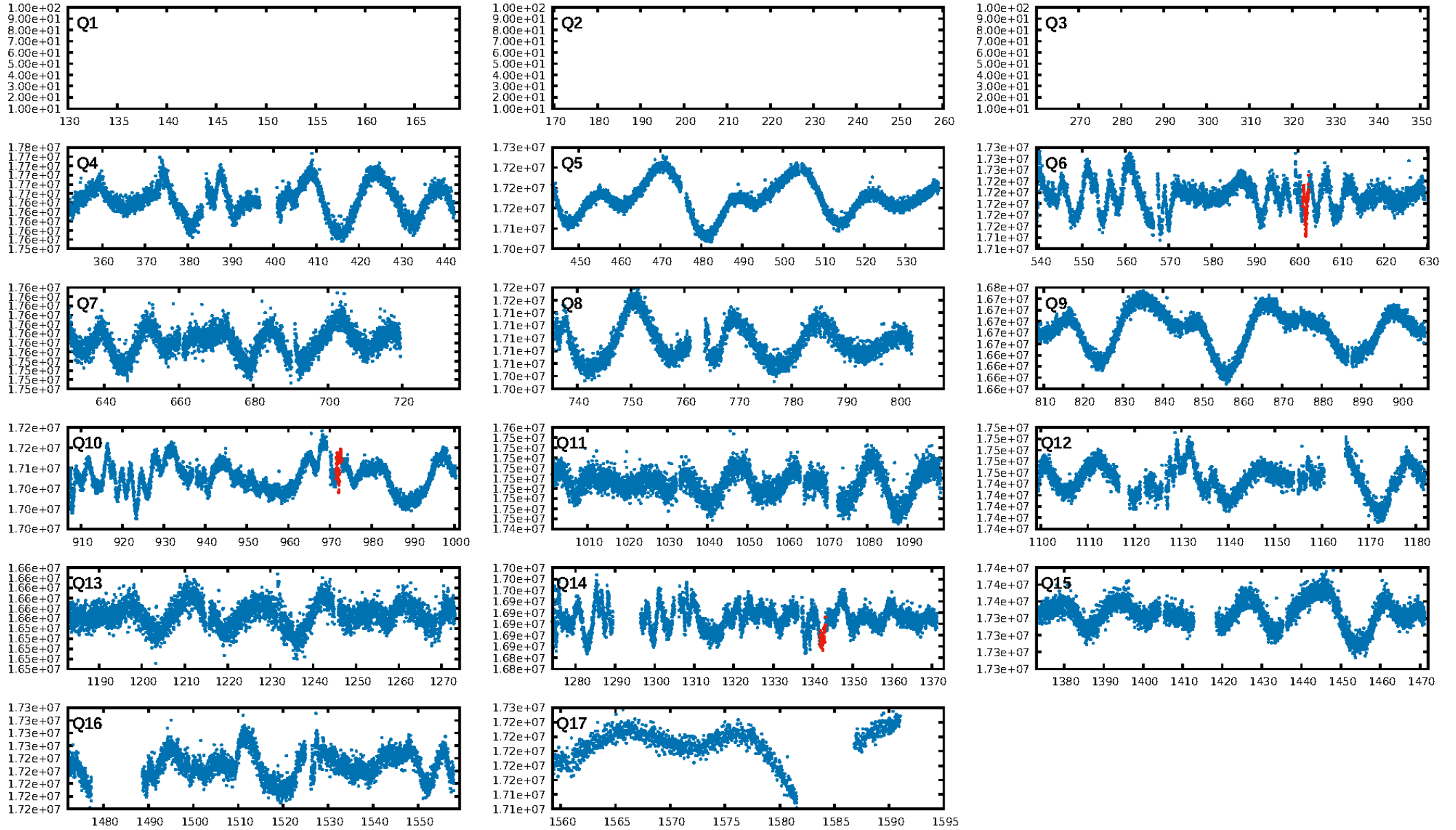
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [8.14 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 69.9%
Bootstrap-pfa: 4.50e-14
RollingBand-fgt: 0.67 [2/3]
GhostDiagnostic-chr: 5.743
Centroid-sig: 44.1%
Centroid-so: 0.772 arcsec [0.78 σ]
OotOffset-rm: 2.828 arcsec [3.94 σ]
KicOffset-rm: 2.469 arcsec [3.56 σ]
OotOffset-st: 2/0/0/0 [2]
KicOffset-st: 2/0/0/0 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 1.00 [2/2]

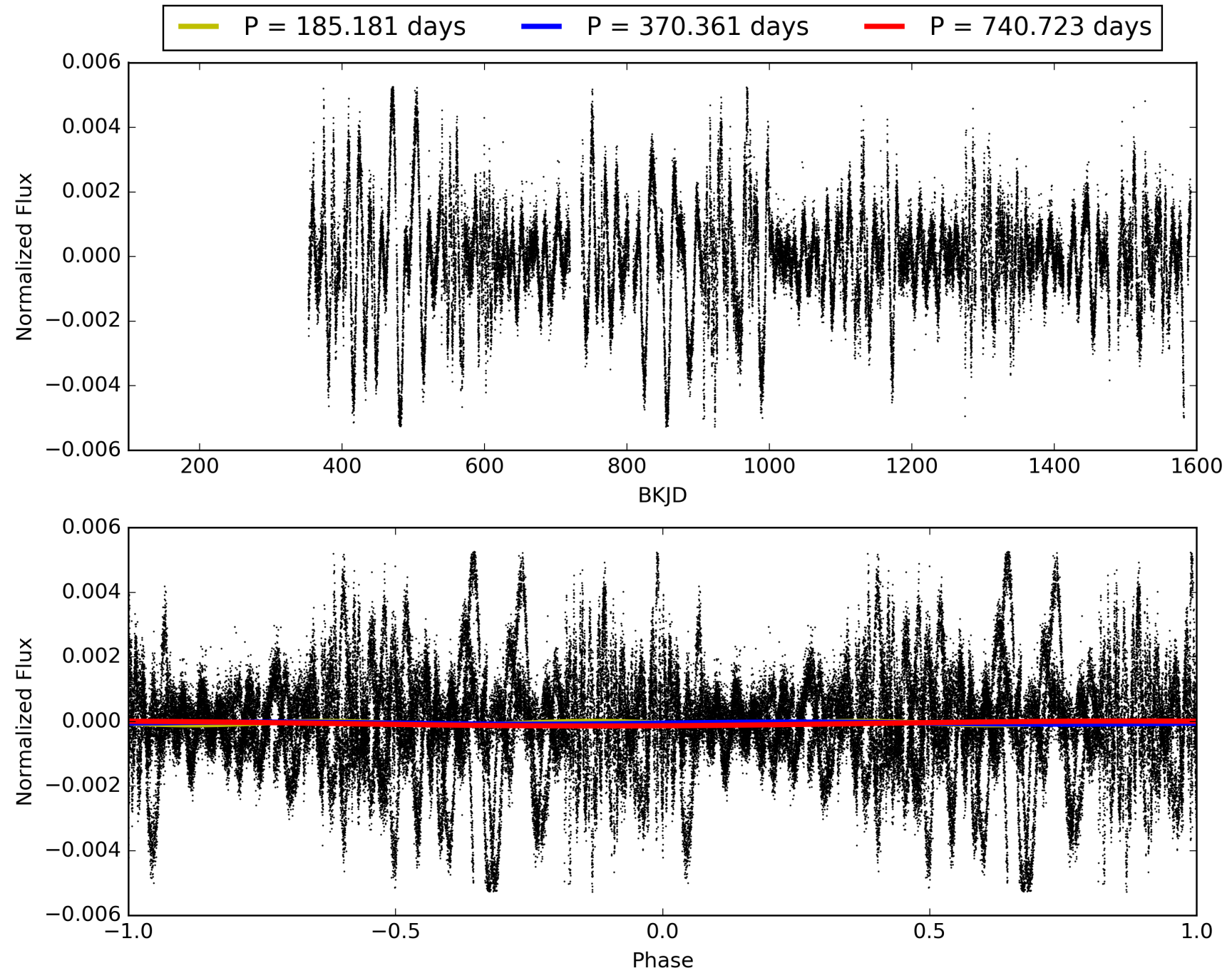
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 04:47:06 Z

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

TCE 008109057-01, PDC Light Curves

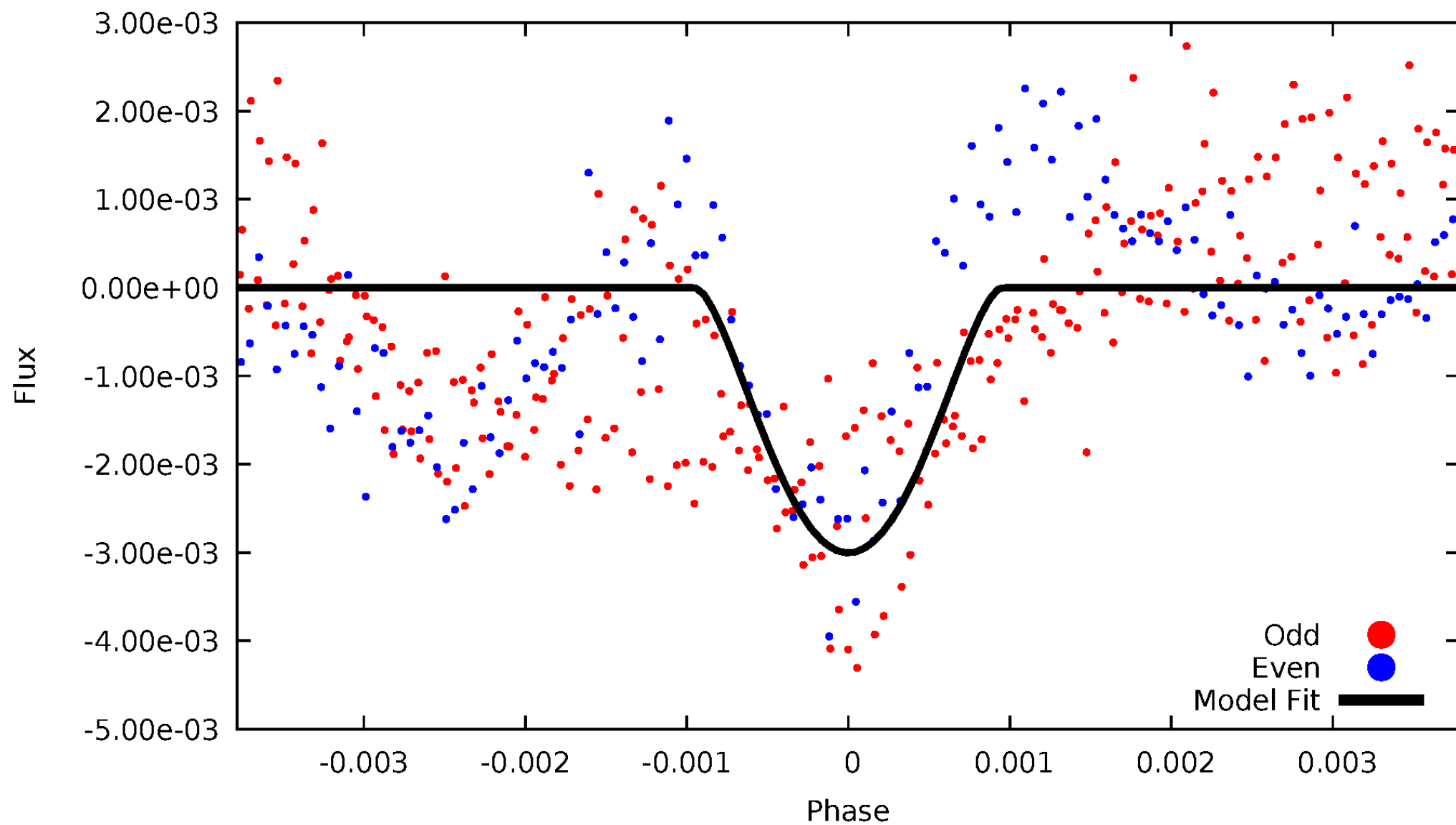


TCE 008109057-01



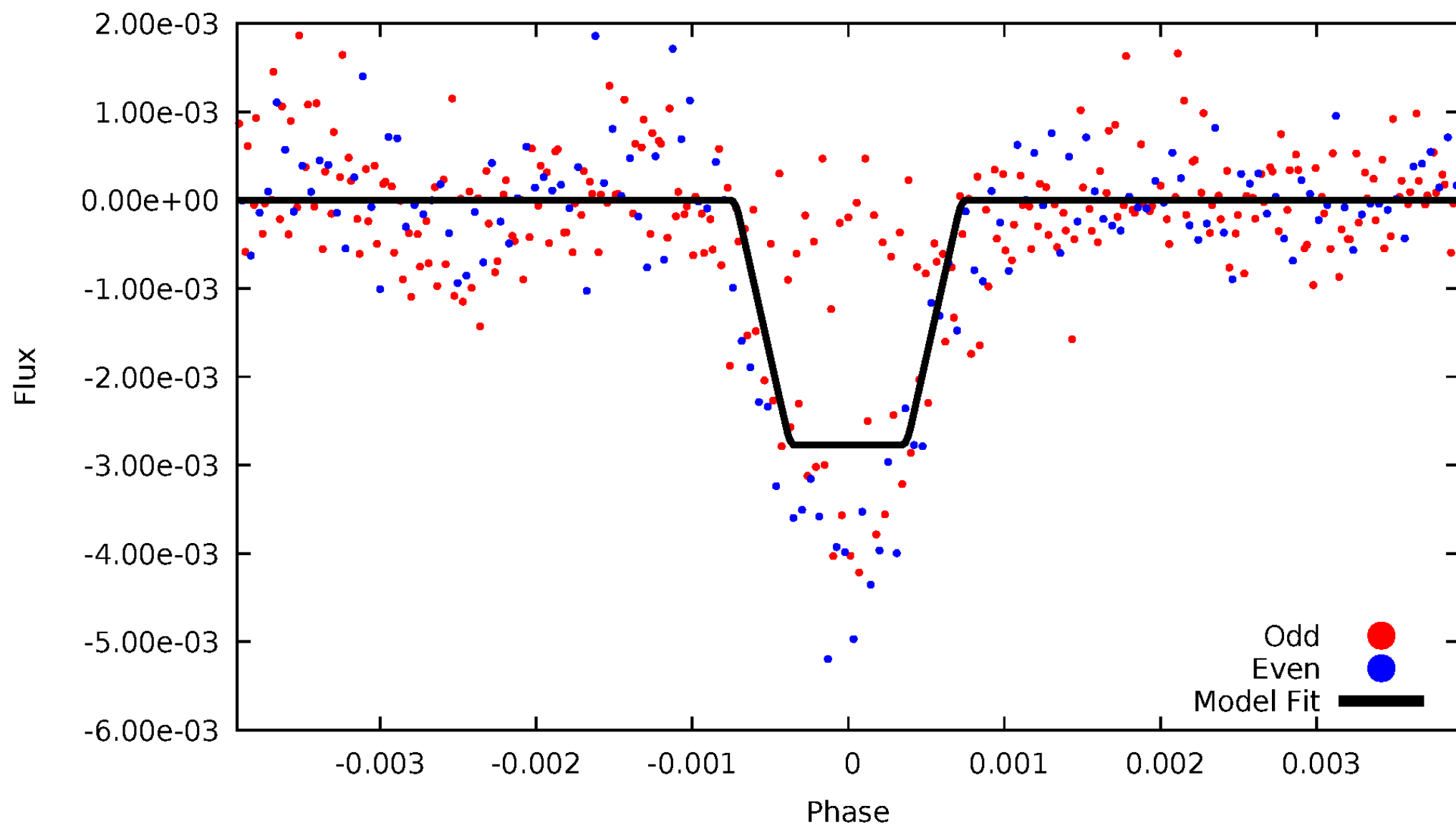
DV Odd/Even

TCE 008109057-01



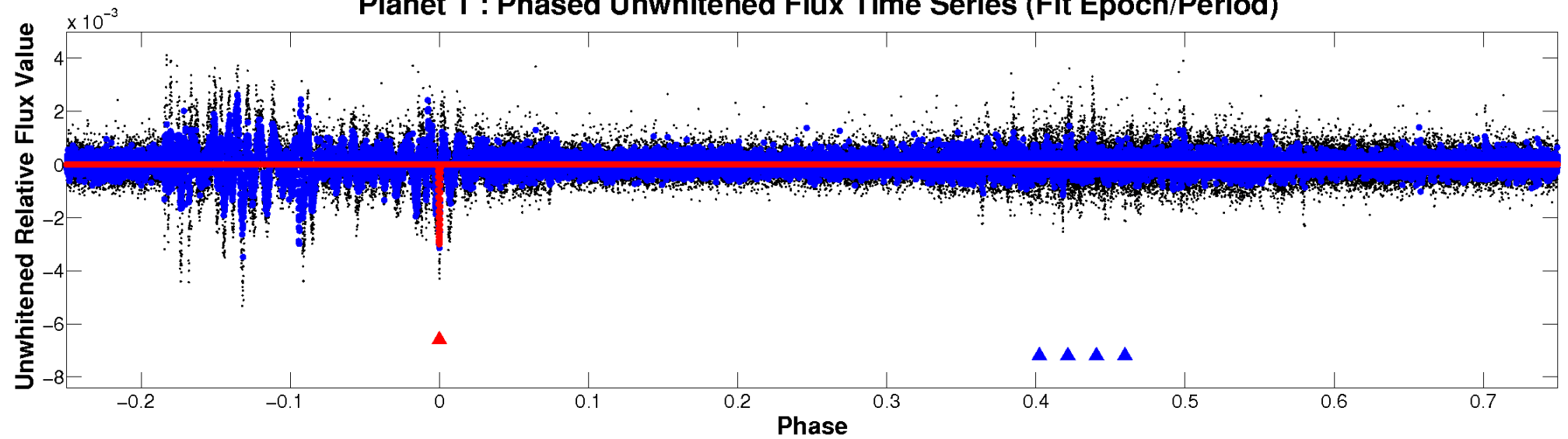
ALT Odd/Even

TCE 008109057-01

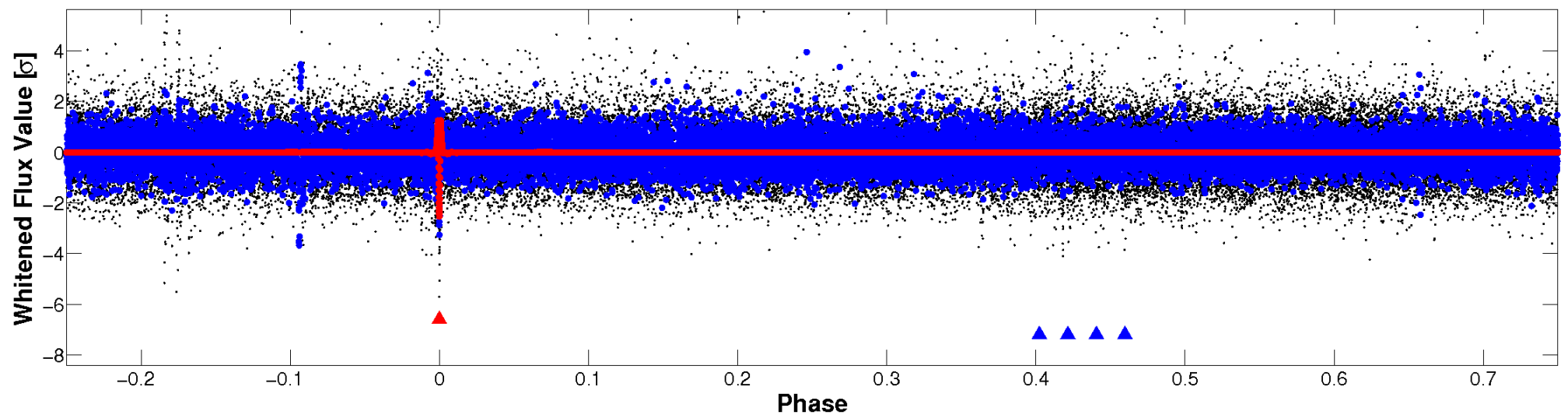


Non-Whitened Vs. Whitened Light Curve

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

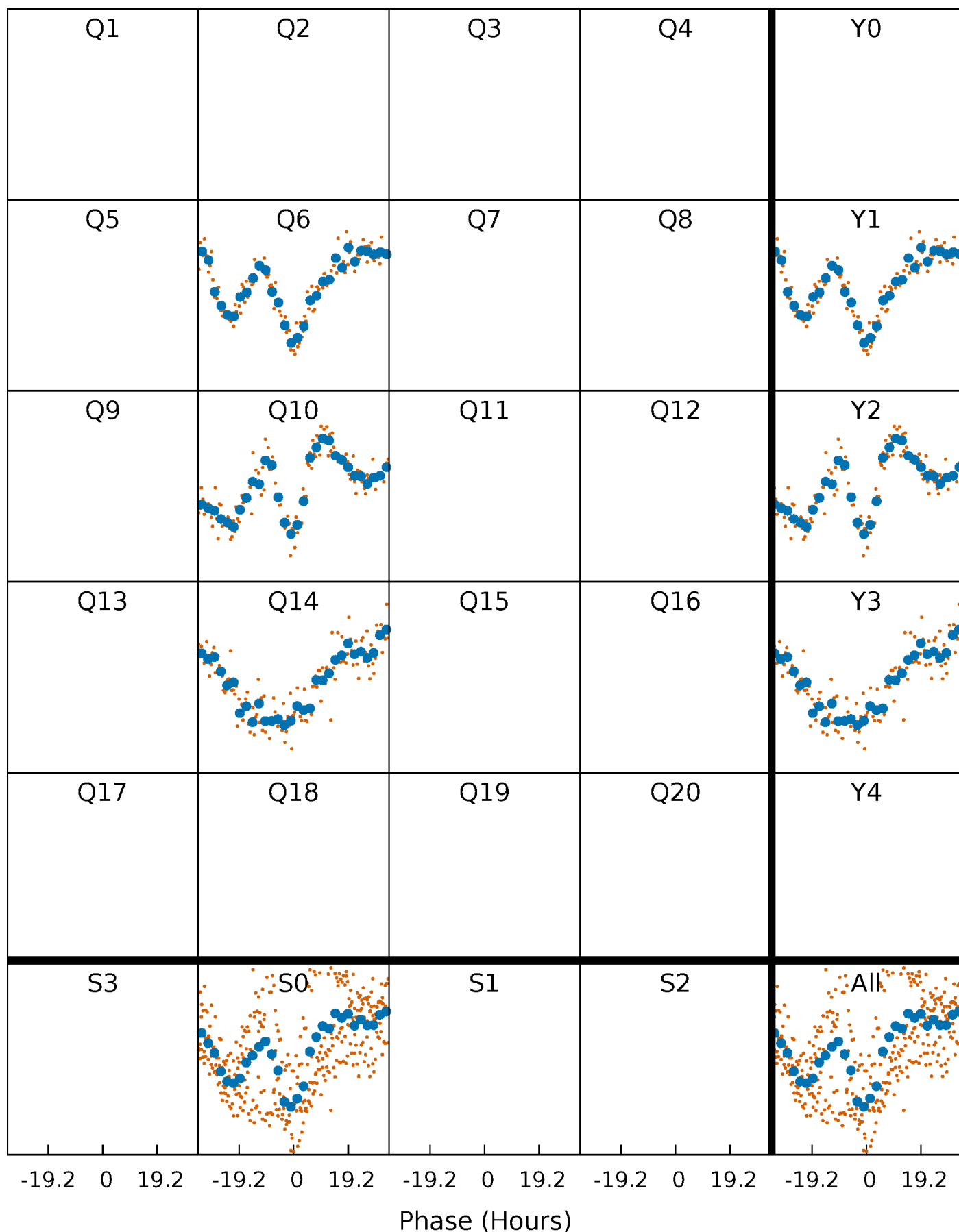


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



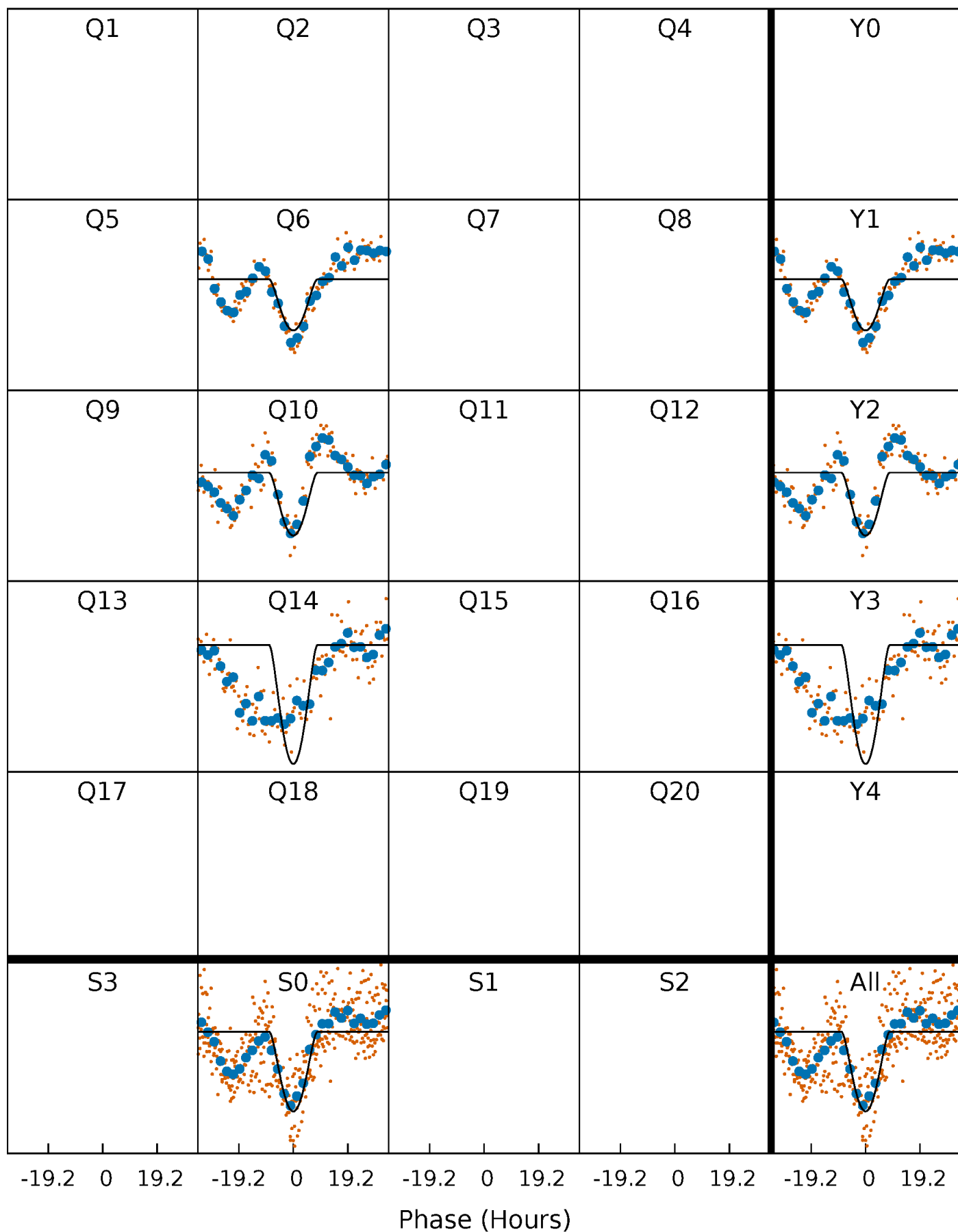
PDC Quarter-Phased Transit Curves

TCE 008109057-01 P=370.361380 Days $T_0=231.412512$ (BKJD)



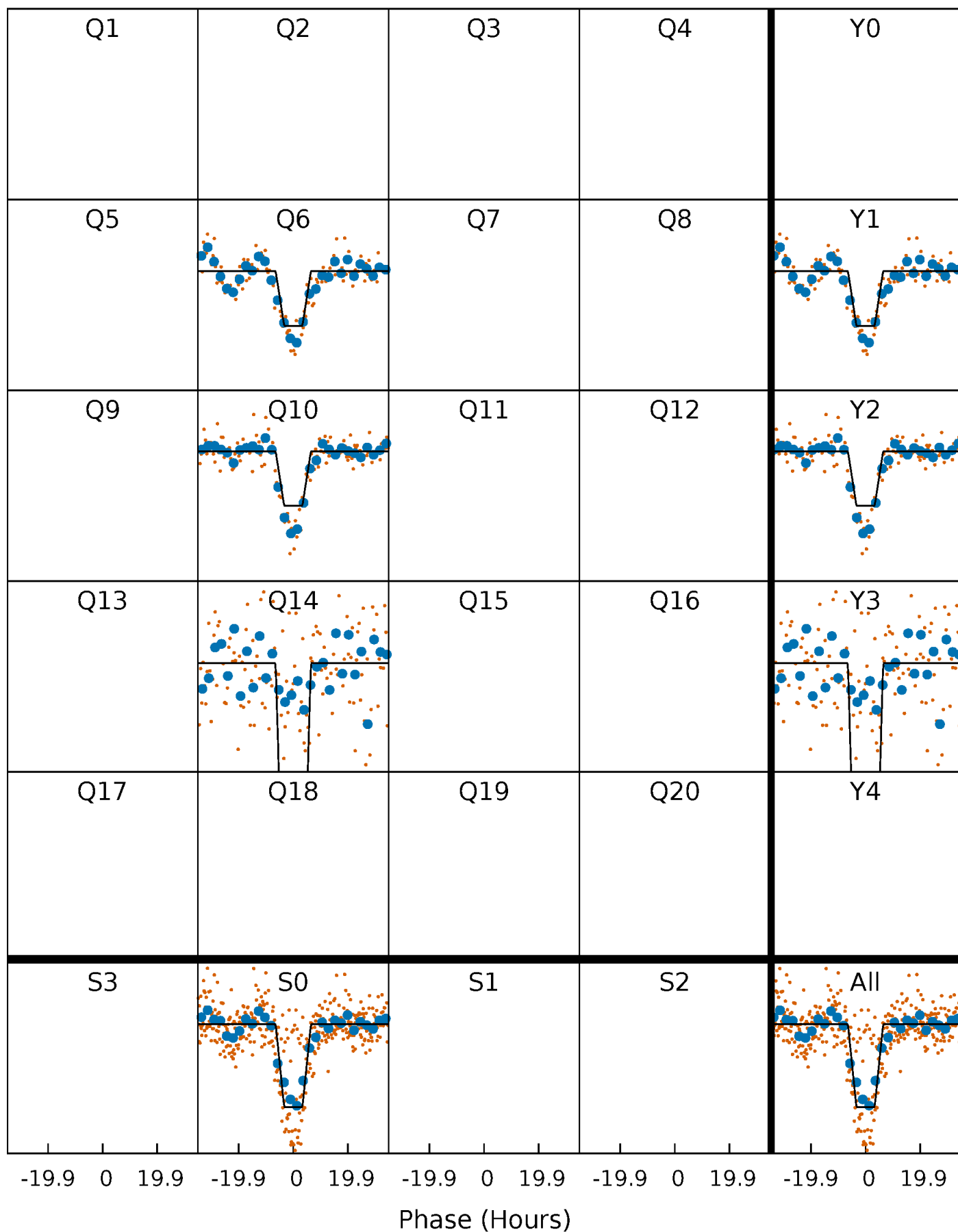
DV Quarter-Phased Transit Curves

TCE 008109057-01 P=370.361380 Days $T_0=231.412512$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

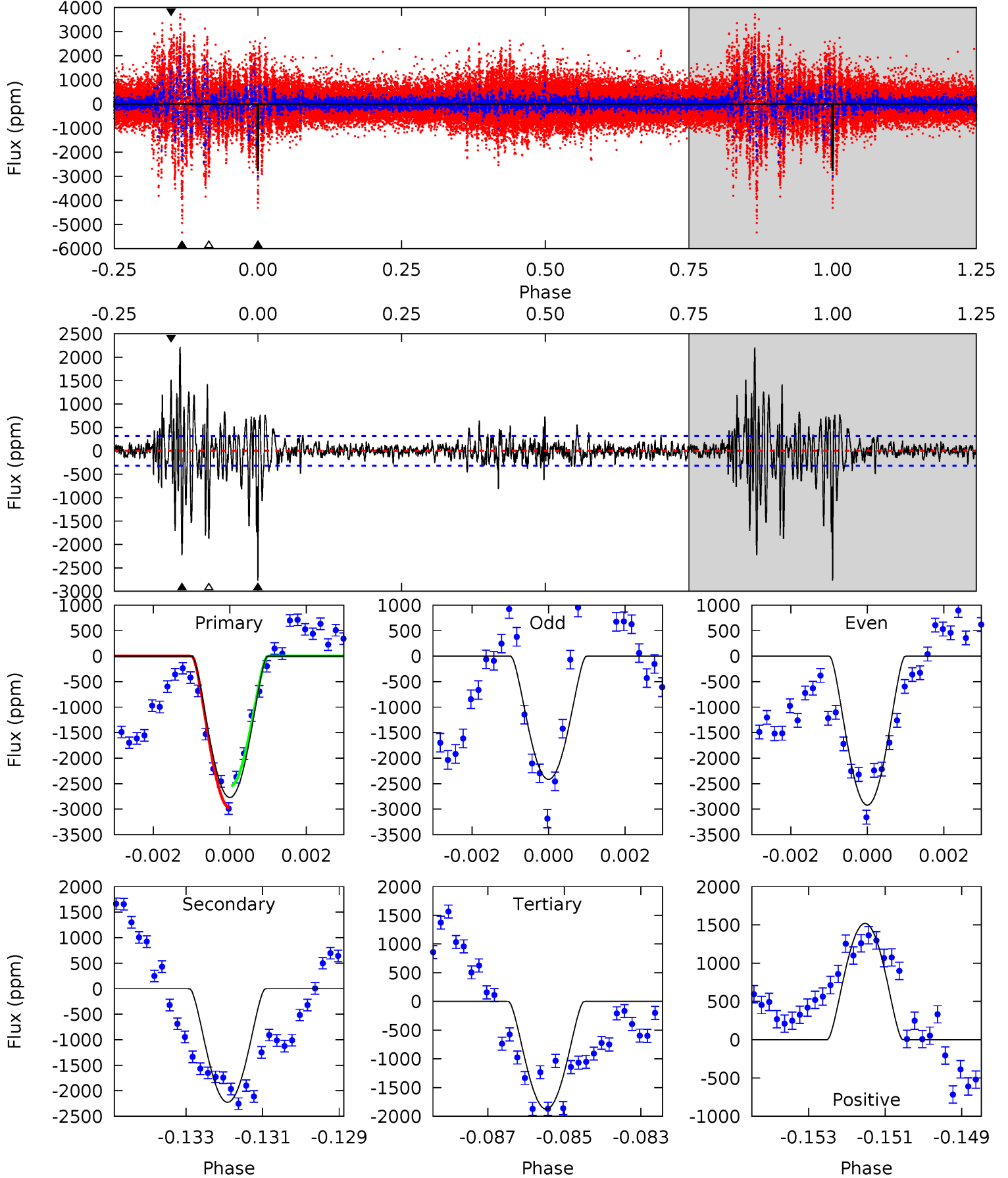
TCE 008109057-01 P=370.371897 Days $T_0=231.396164$ (BKJD)



DV Model-Shift Uniqueness Test

008109057-01, P = 370.361380 Days, E = 231.412512 Days

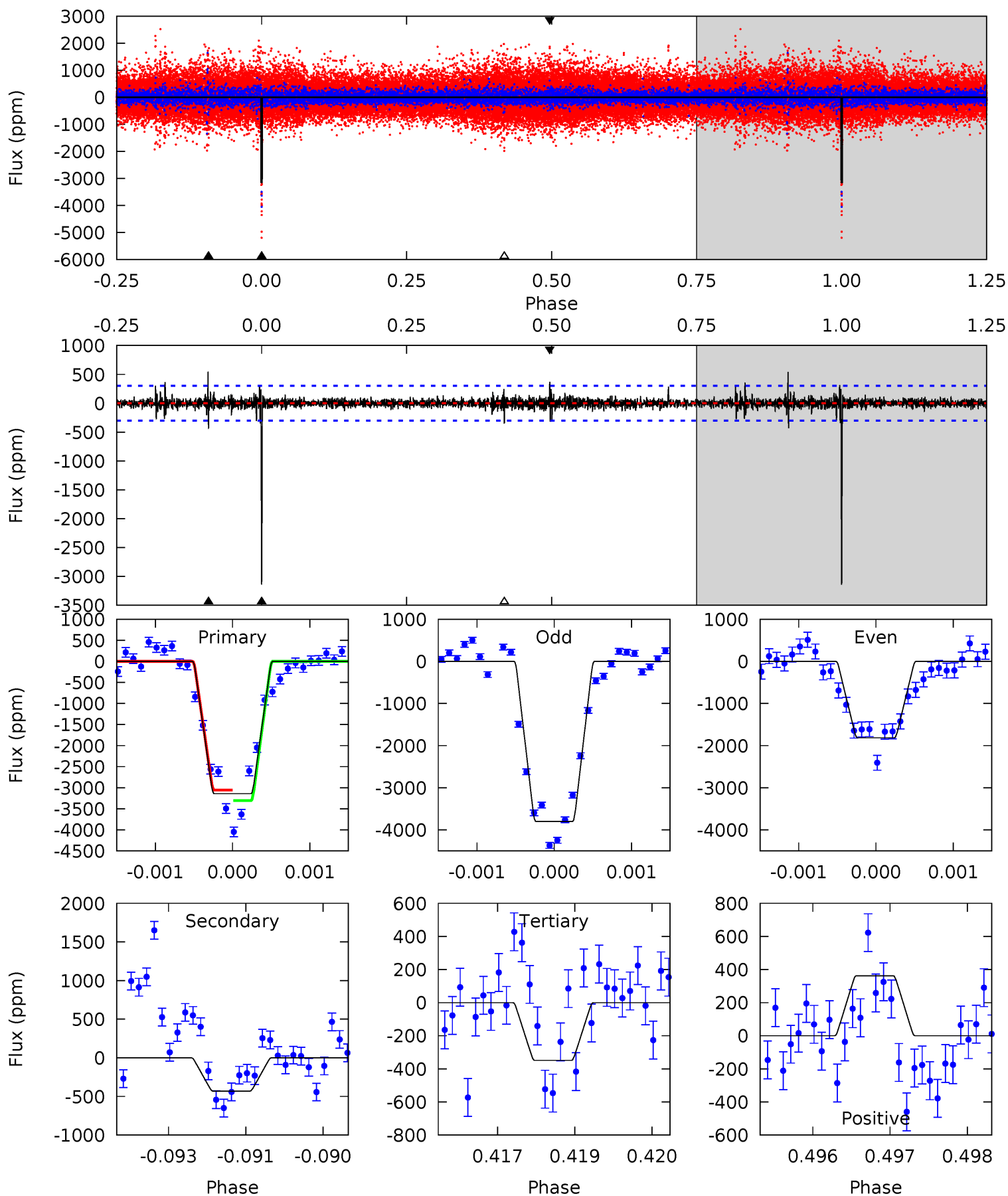
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
46.4	37.3	31.4	25.5	5.33	3.10	4.97	15.0	21.0	5.84	11.8	3.90	1.14	0.44	3.57



Alt Model-Shift Uniqueness Test

008109057-01, P = 370.371897 Days, E = 231.396164 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
56.3	7.73	6.26	6.50	5.38	3.18	0.98	50.1	49.8	1.47	1.22	18.3	0.76	0.15	2.23



Stellar Parameters For KIC 008109057

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4217^{+134}_{-164}	$4.665^{+0.065}_{-0.025}$	$-0.400^{+0.300}_{-0.300}$	$0.579^{+0.044}_{-0.071}$	$0.565^{+0.062}_{-0.057}$	$4.105^{+1.278}_{-0.558}$
	+3%/-4%	+1%/-1%	+75%/-75%	+8%/-12%	+11%/-10%	+31%/-14%
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 008109057-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2227 ± 60	$10.43^{+9.36}_{-7.18}$	214^{+8}_{-9}	2816^{+1227}_{-418}	8052^{+74865}_{-5818}
Alt.	-431 ± 56	$9.51^{+9.25}_{-7.03}$	214^{+8}_{-9}	2366^{+955}_{-348}	1870^{+23762}_{-1404}

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

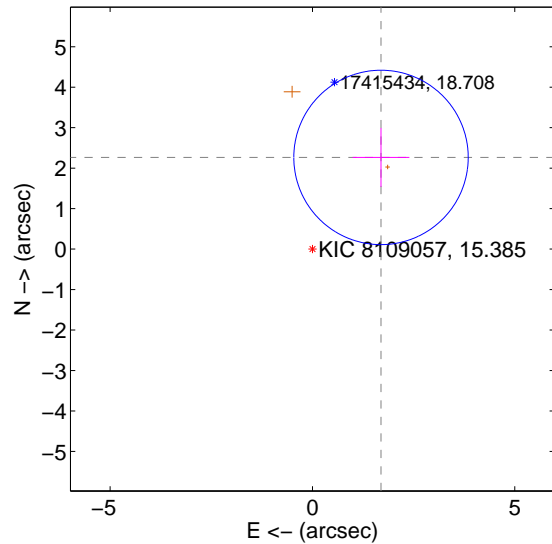
Supplemental centroid analysis for 008109057-01. Kepler magnitude: 15.38. Transit SNR 16.55

There are 0 quarters with good PRF difference image offsets

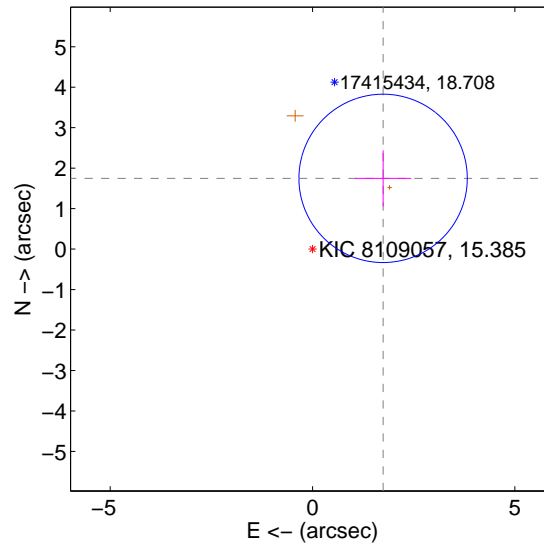
The direct PRF centroid is offset from the target star catalog position by about 0.60 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.828 ± 0.718	3.94	-1.694 ± 0.701	2.265 ± 0.727
PRF-fit source offset from KIC position	2.469 ± 0.693	3.56	-1.744 ± 0.693	1.747 ± 0.693
photometric centroid source offset	0.77 ± 0.99	0.78	-0.58 ± 0.72	-0.51 ± 1.25

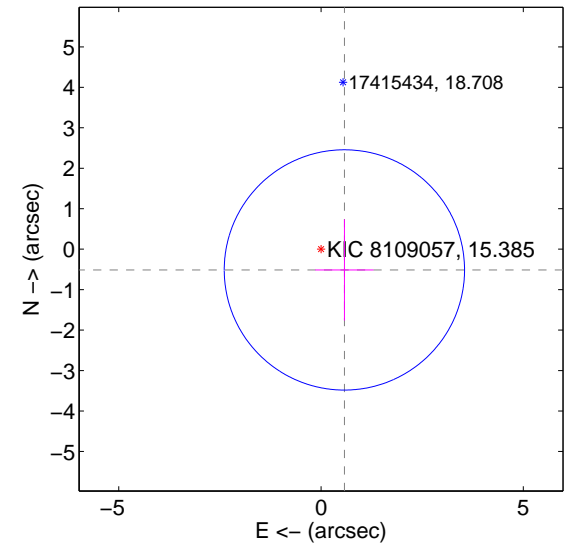
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



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.

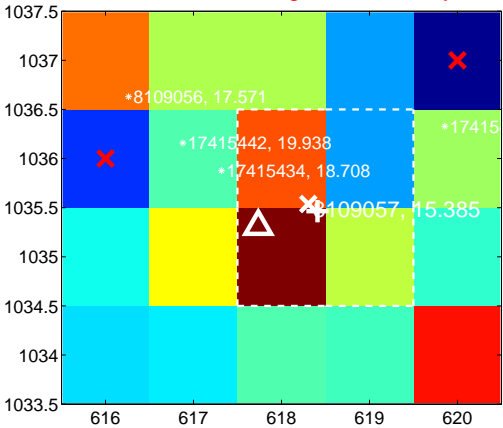
Q5 no difference image



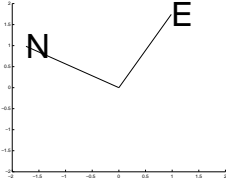
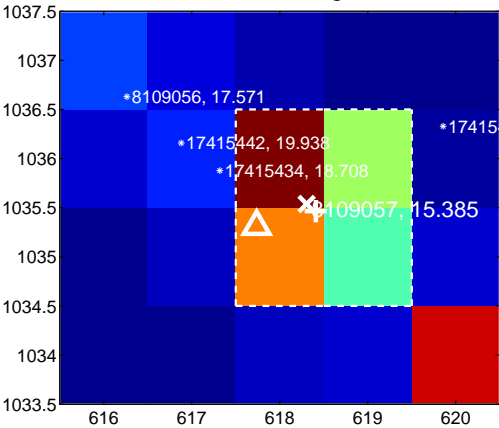
Q5 no OOT image



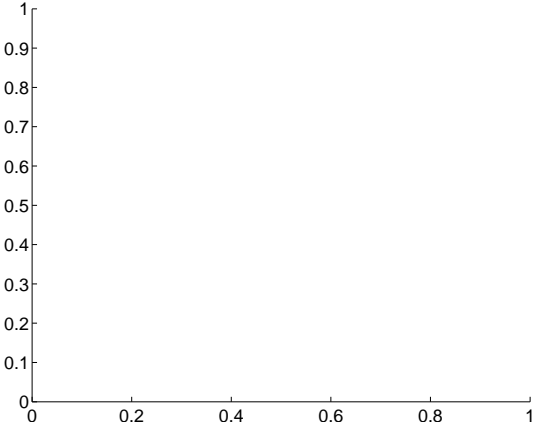
Q6 difference image. Poor Quality



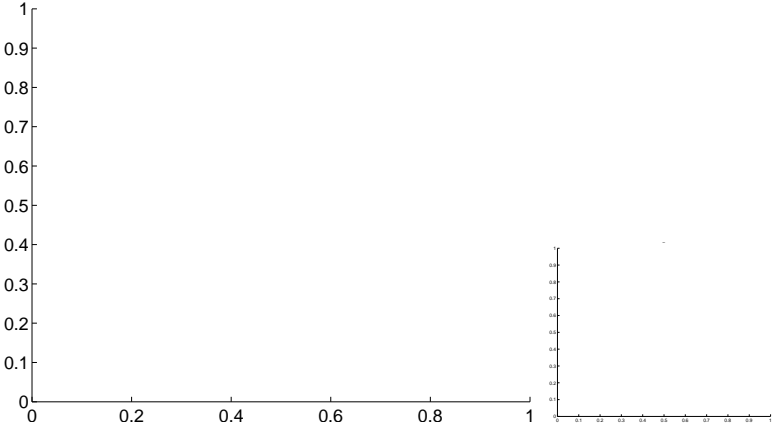
Q6 OOT image



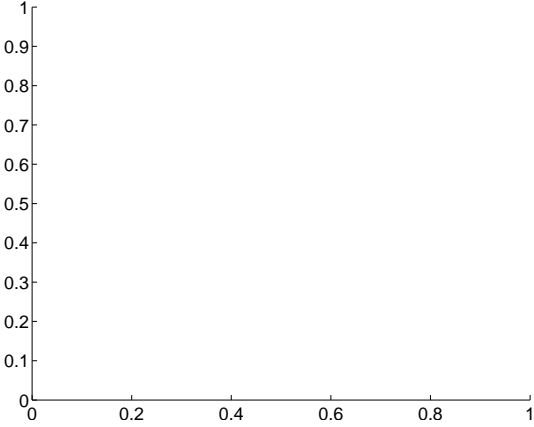
Q7 no difference image



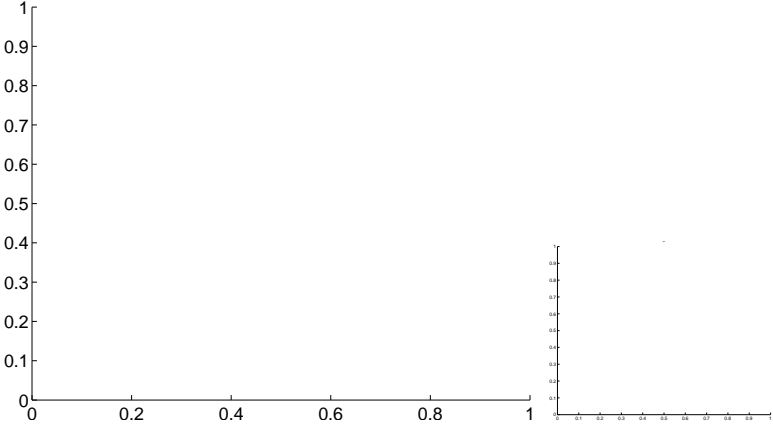
Q7 no OOT image



Q8 no difference image



Q8 no OOT image



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.

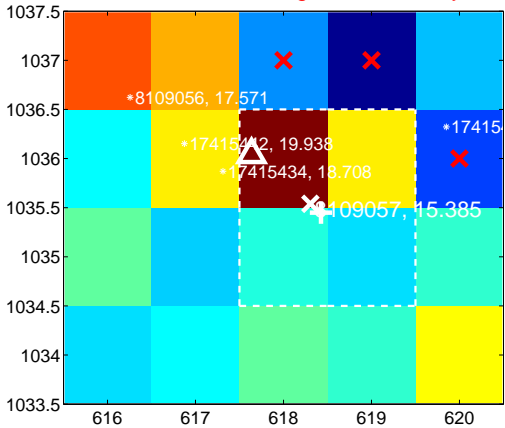
Q13 no difference image



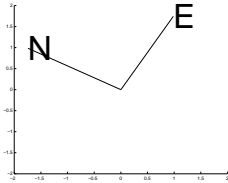
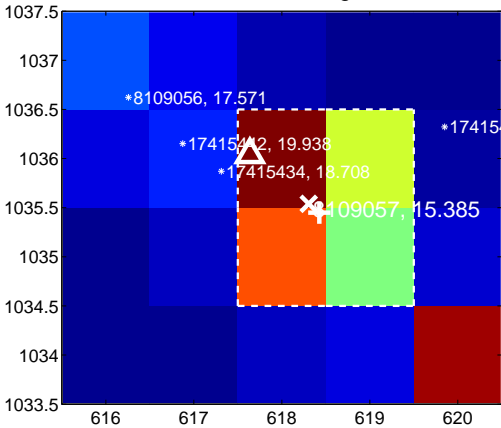
Q13 no OOT image



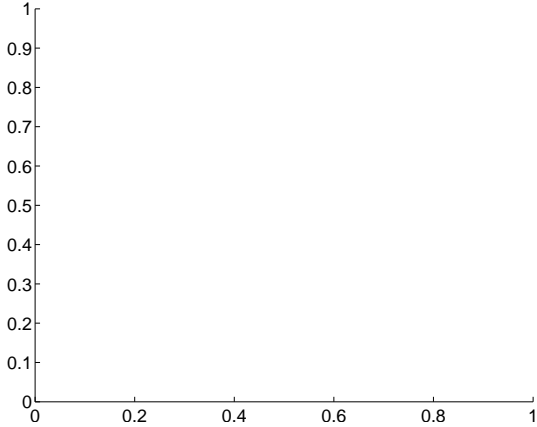
Q14 difference image. Poor Quality



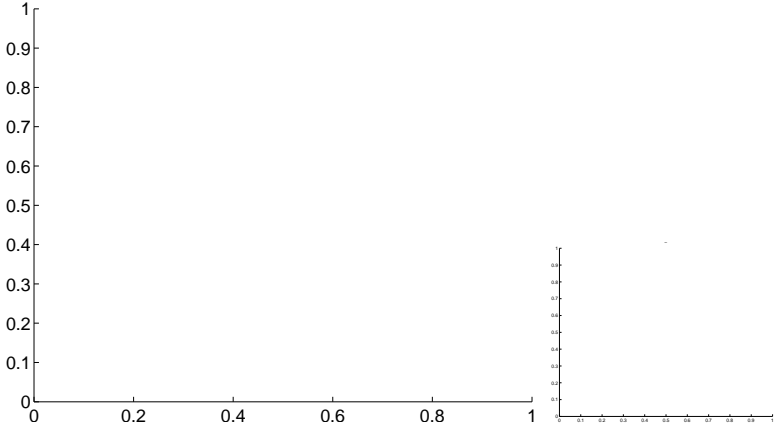
Q14 OOT image



Q15 no difference image



Q15 no OOT image



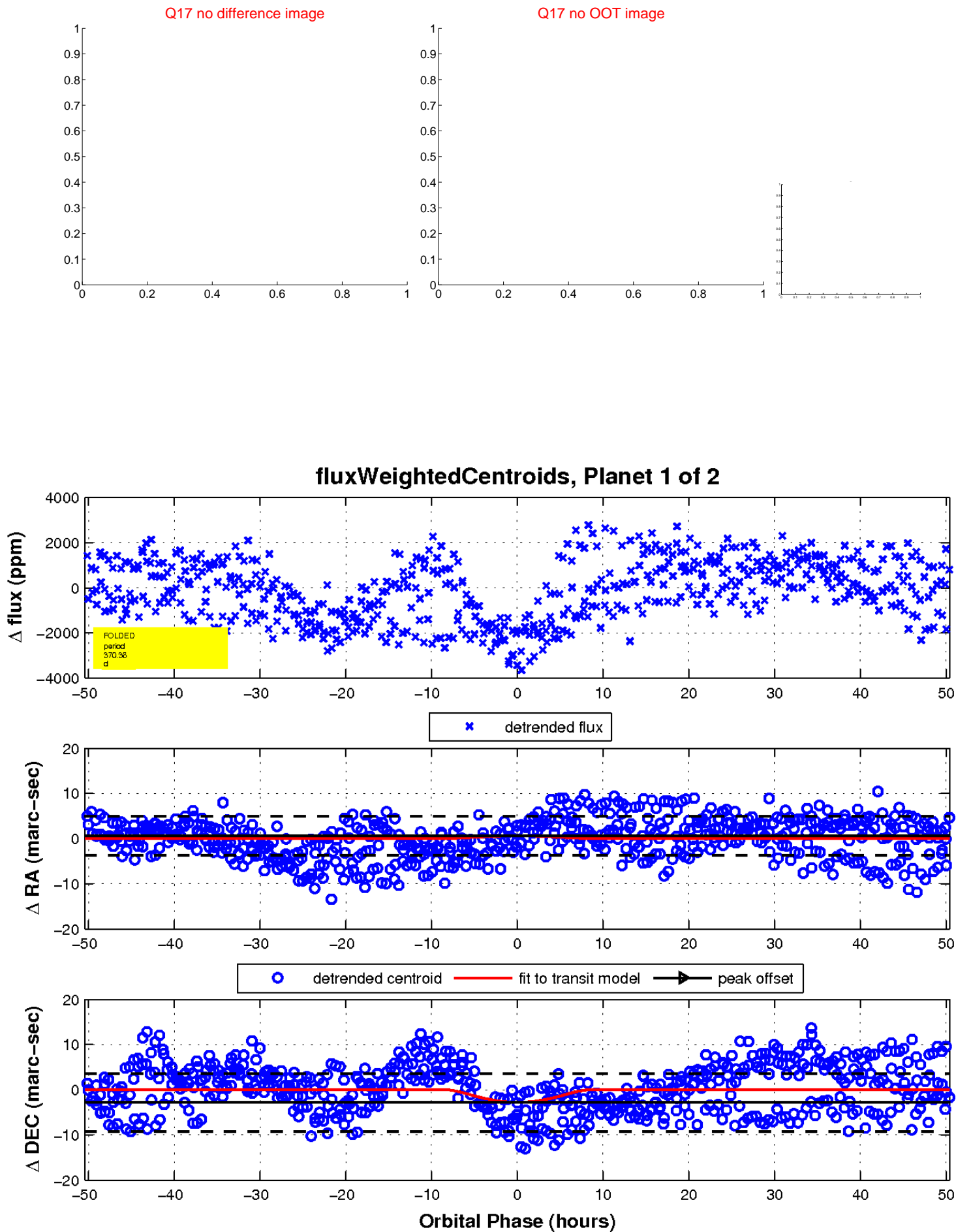
Q16 no difference image



Q16 no OOT image

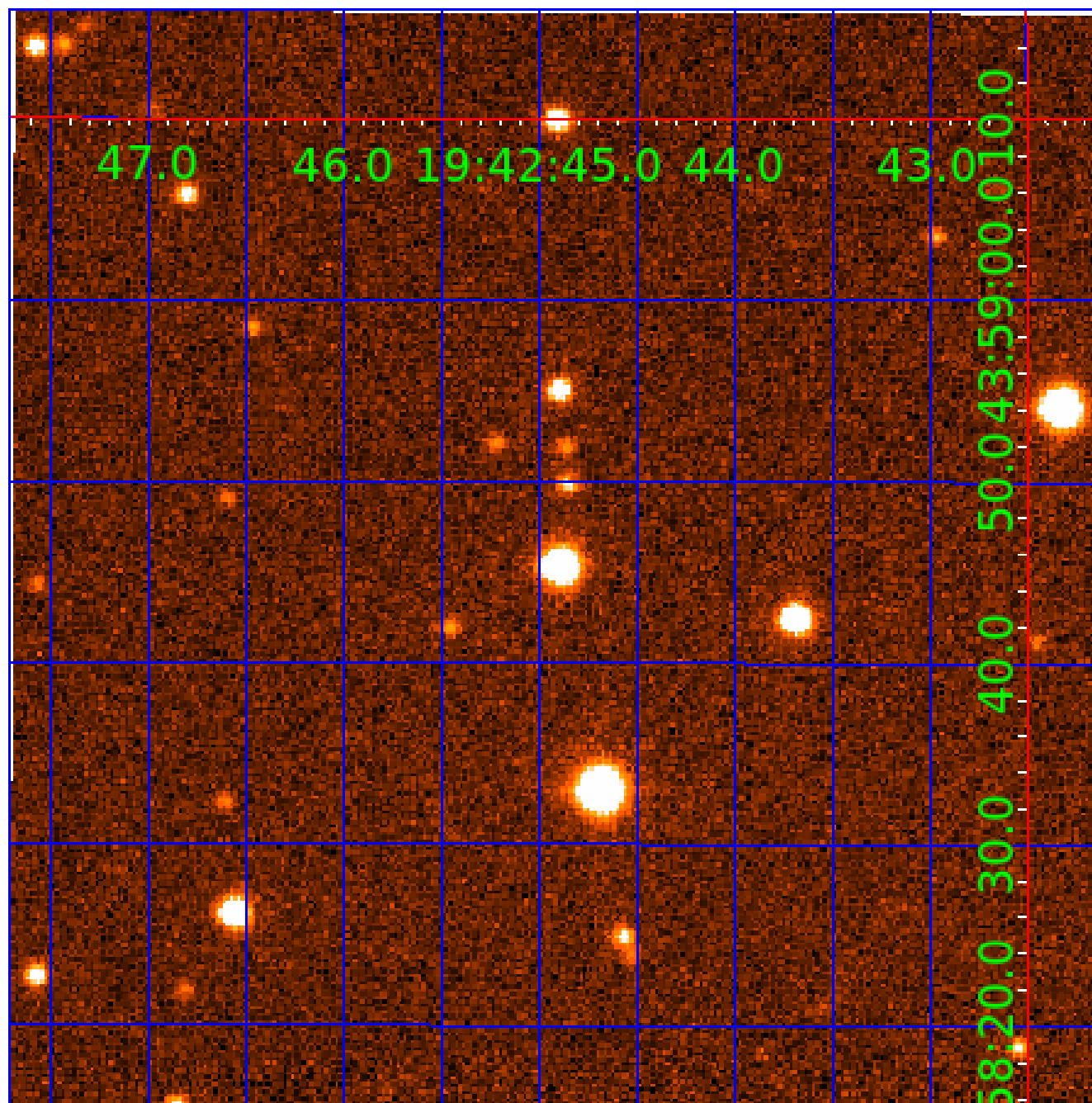


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008109057

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})
008109057-01	OBS	No	370.361380	231.412512	3002.1	16.815	16.1	16.6	0.58	4217	6.08	0.14
008109057-02	OBS	No	363.274804	401.682652	989.2	12.403	8.3	8.5	0.58	4217	2.17	0.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008109057-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008109057-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—MOD_POS_DV—CENT_FEW_DIFFS

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

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

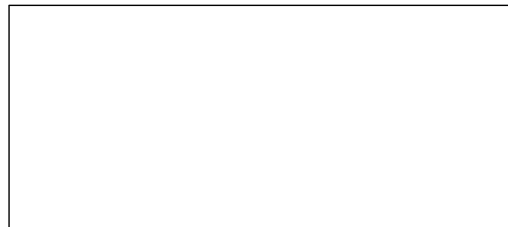
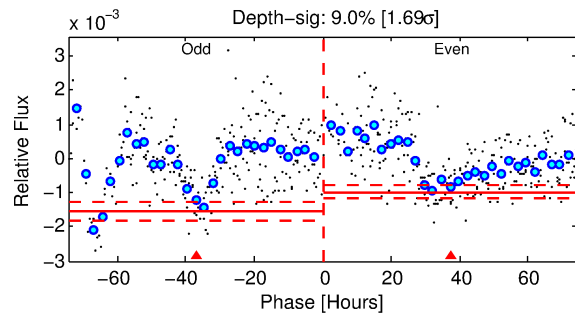
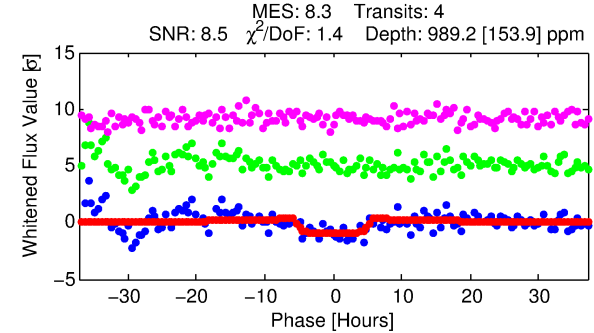
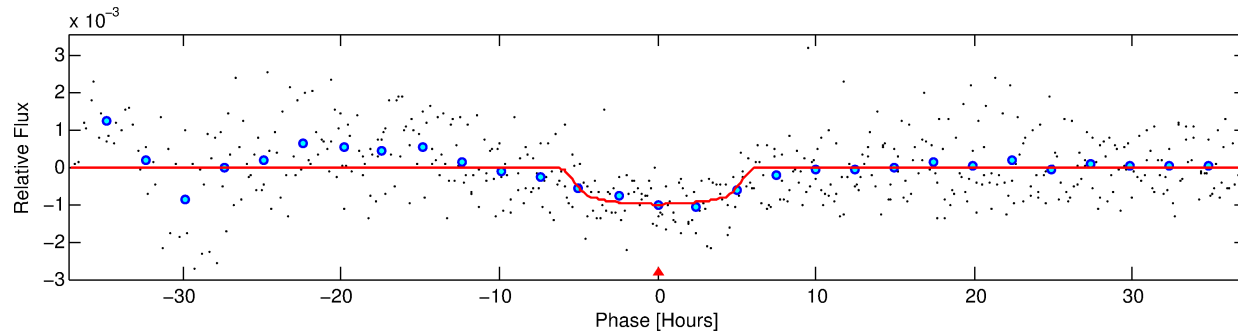
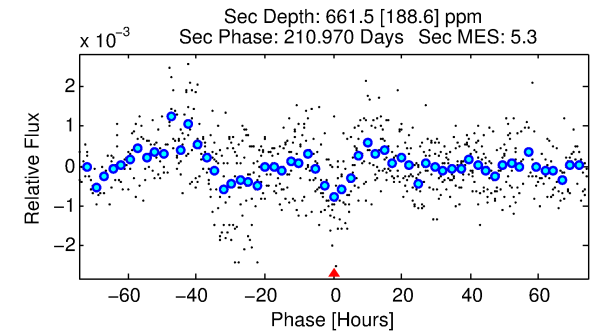
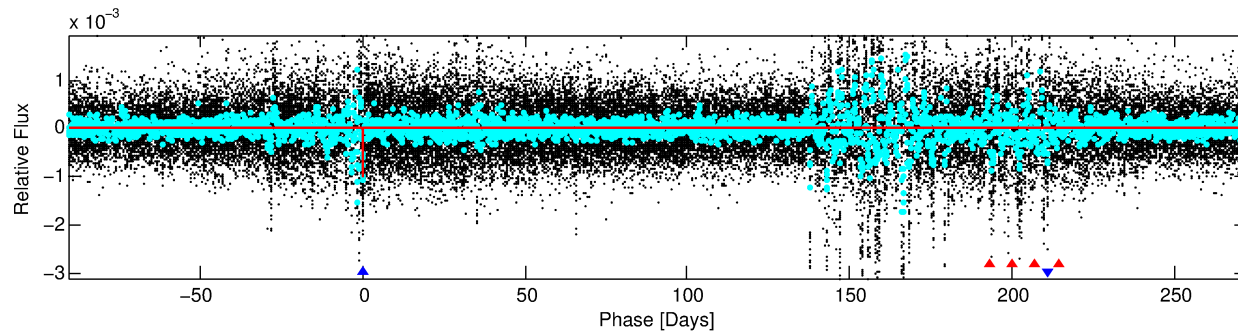
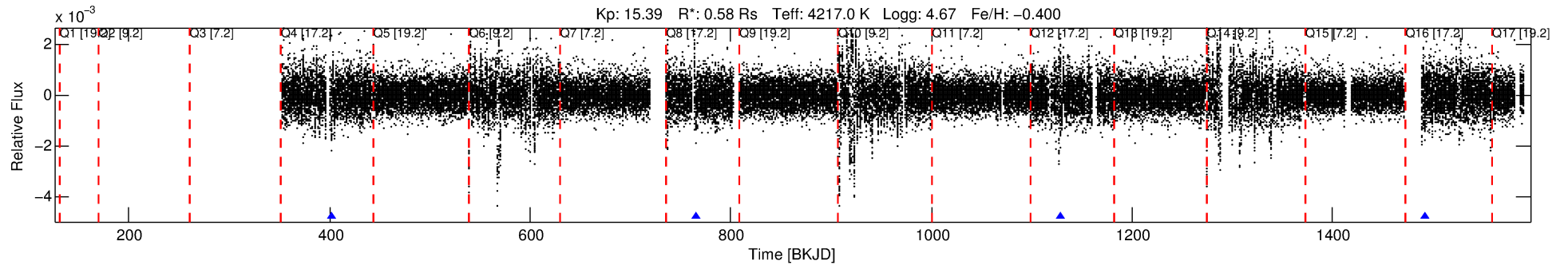
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008109057-02

No Significant Match Found

DV One-Page Summary

KIC: 8109057 Candidate: 2 of 2 Period: 363.275 d



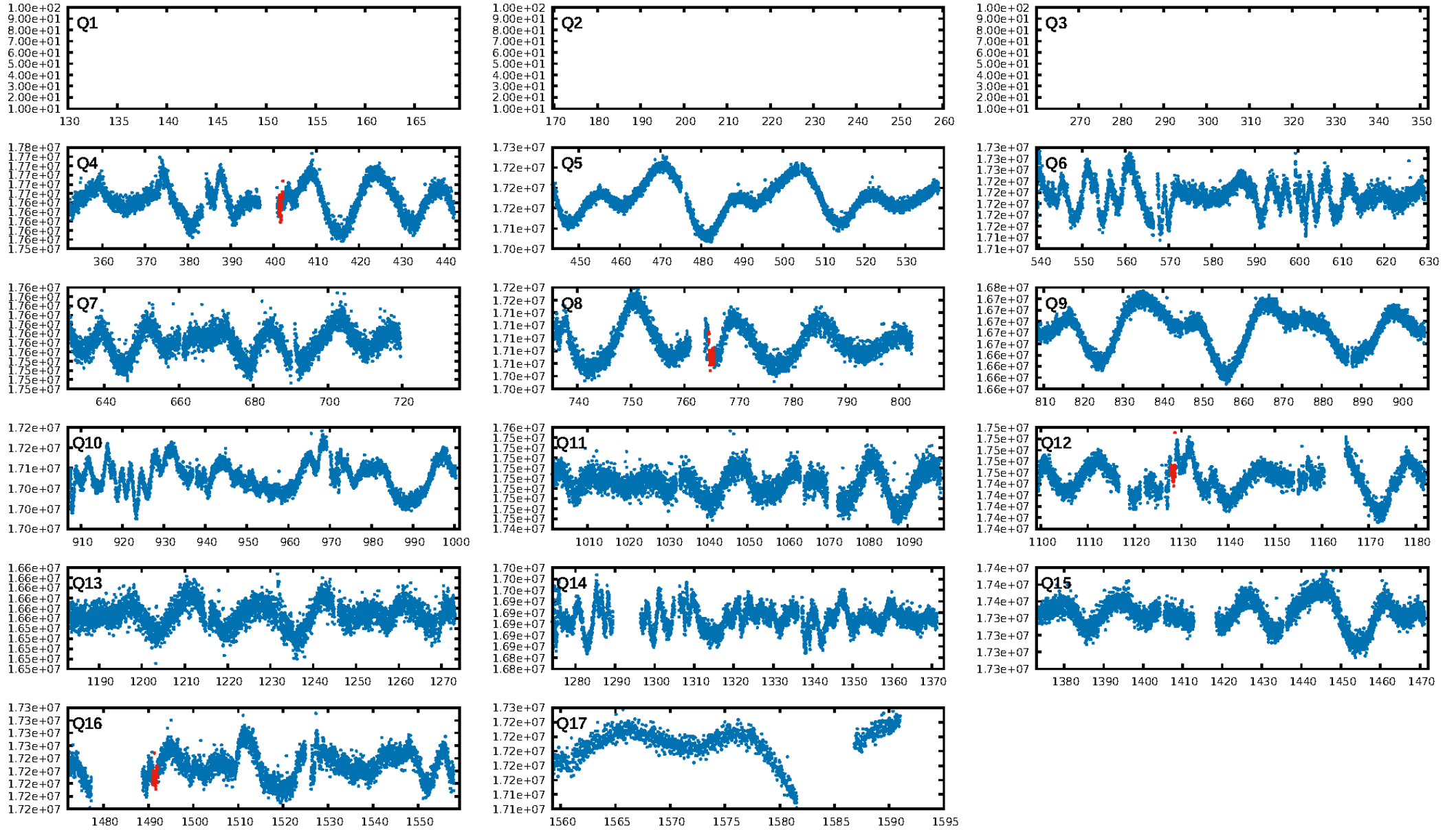
DV Fit Results:

Period = 363.27480 [0.01279] d
Epoch = 401.6827 [0.0237] BKJD
Rp/R* = 0.0343 [0.0049]
a/R* = 119.05 [52.76]
b = 0.89 [0.11]
Seff = 0.14 [0.03]
Teq = 156 [8] K
Rp = 2.17 [0.41] Re
a = 0.8241 [0.0789] AU
Ag = 52504.87 [22145.81] [2.37σ]
Teffp = 3650 [393] K [8.89σ]

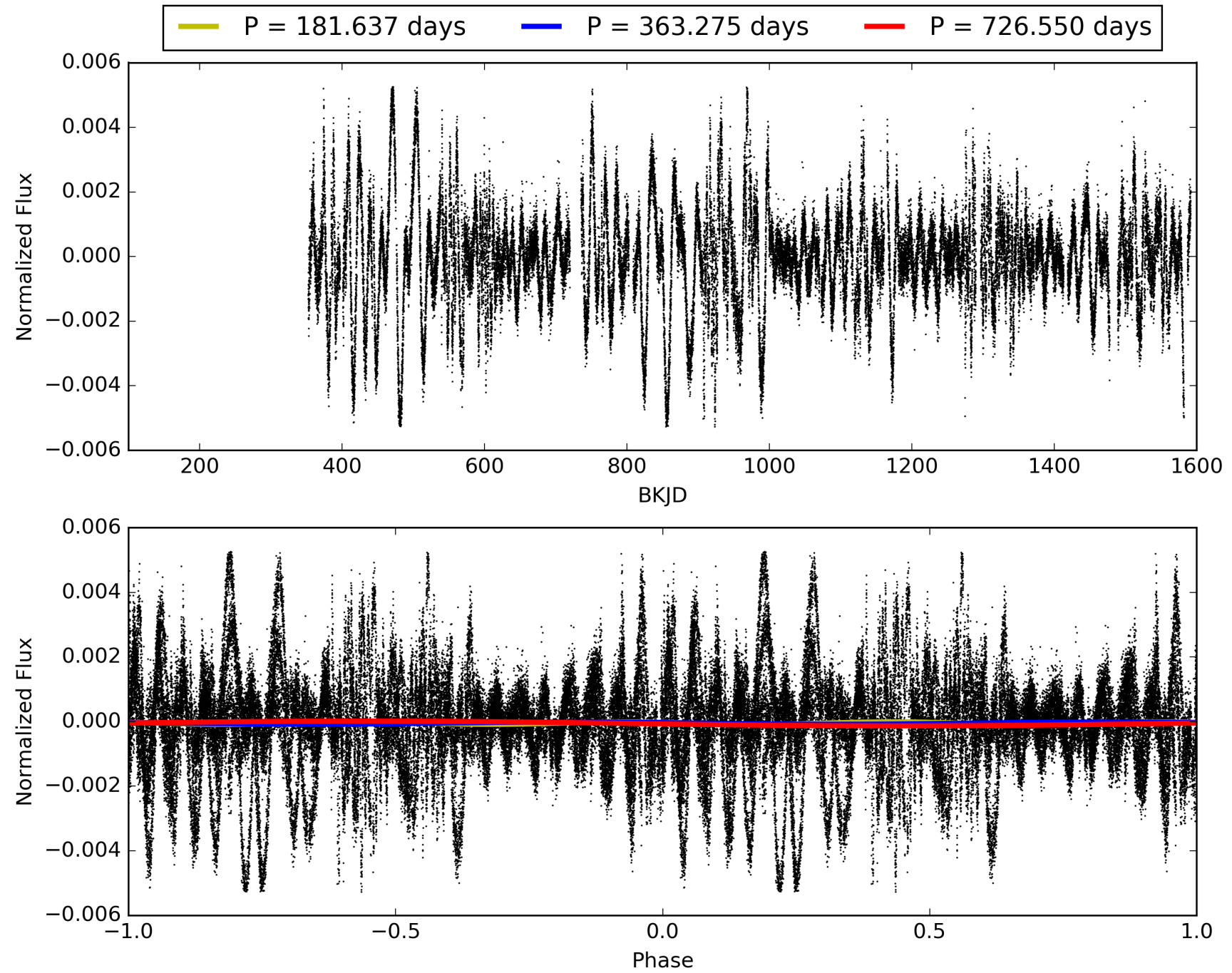
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [8.14σ]
ModelChiSquare2-sig: 61.0%
ModelChiSquareGof-sig: 99.4%
Bootstrap-pfa: 3.48e-08
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -2.291
Centroid-sig: 12.0%
Centroid-so: 1.335 arcsec [0.81σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0 [0]
KicOffset-st: 0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [1/1]

TCE 008109057-02, PDC Light Curves

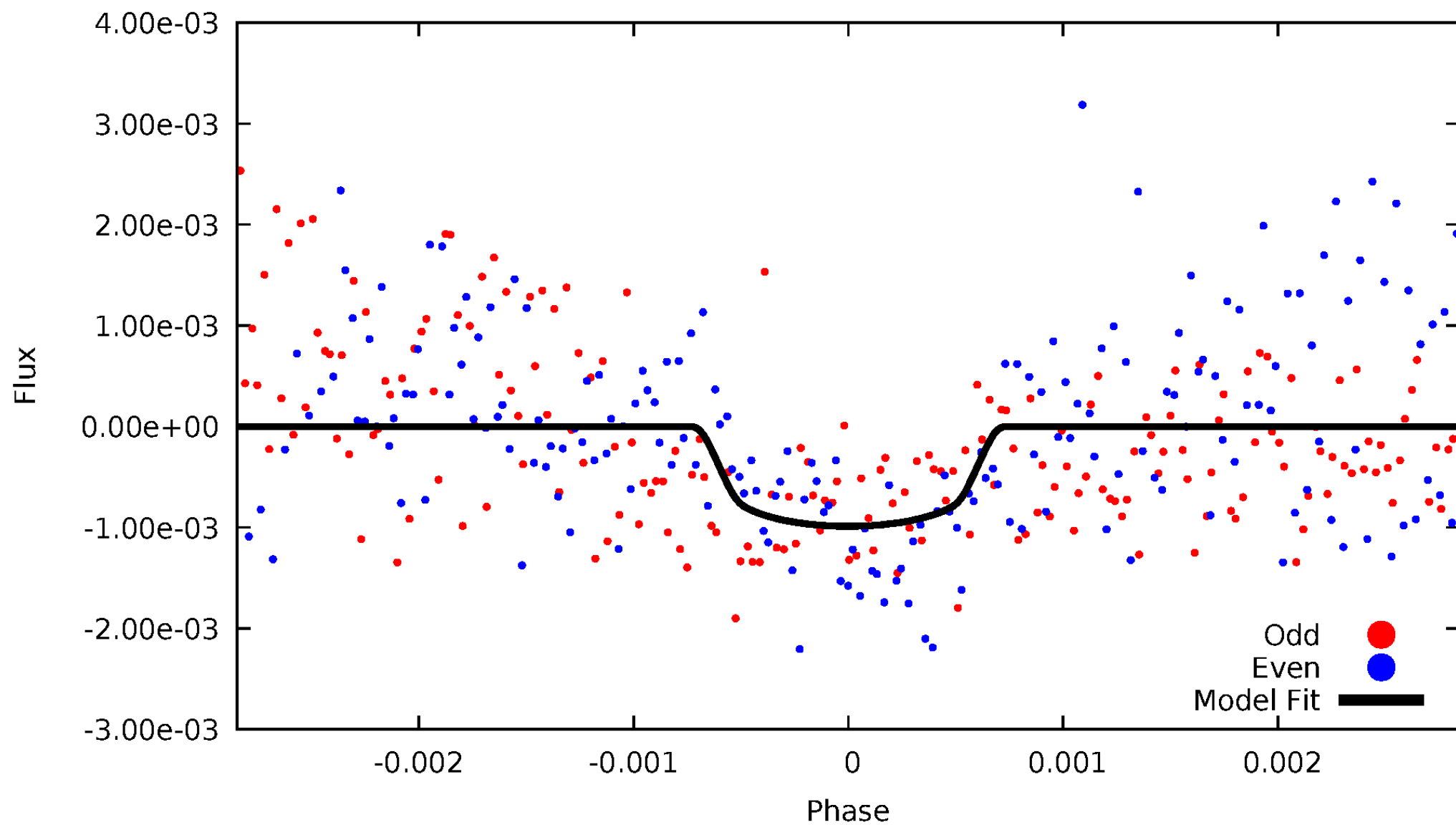


TCE 008109057-02



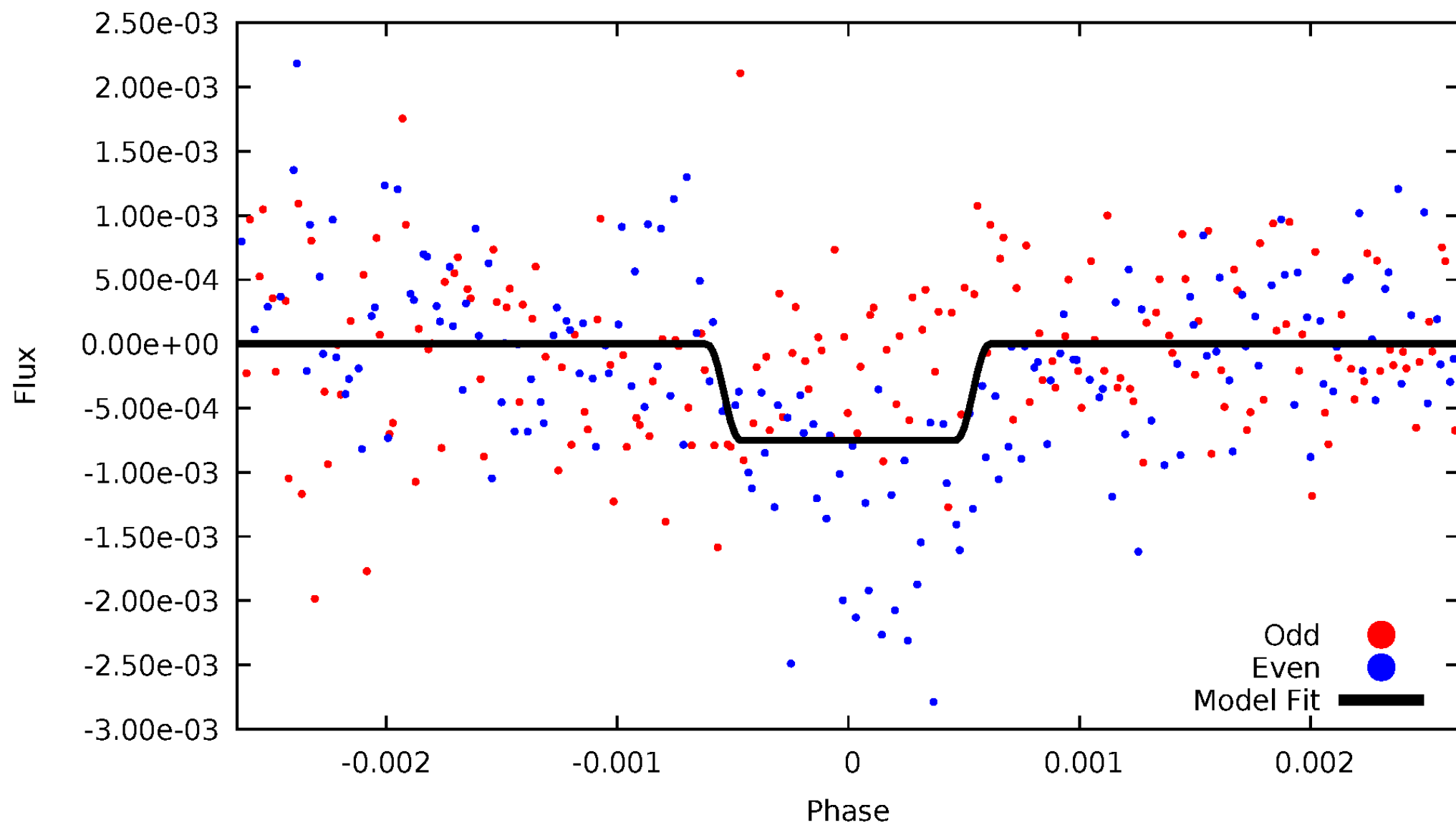
DV Odd/Even

TCE 008109057-02



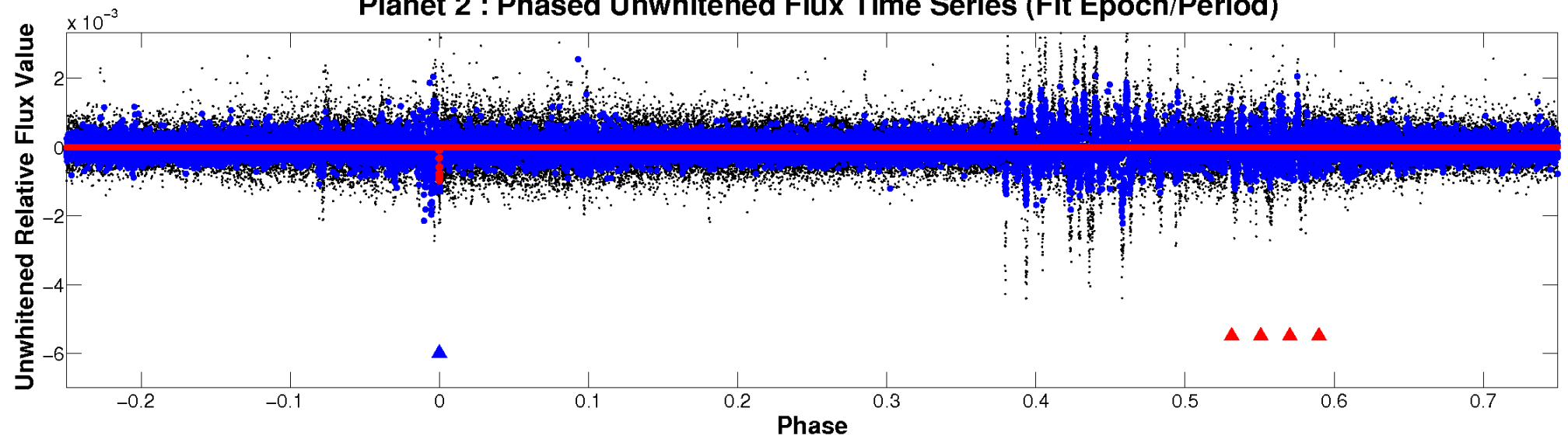
ALT Odd/Even

TCE 008109057-02

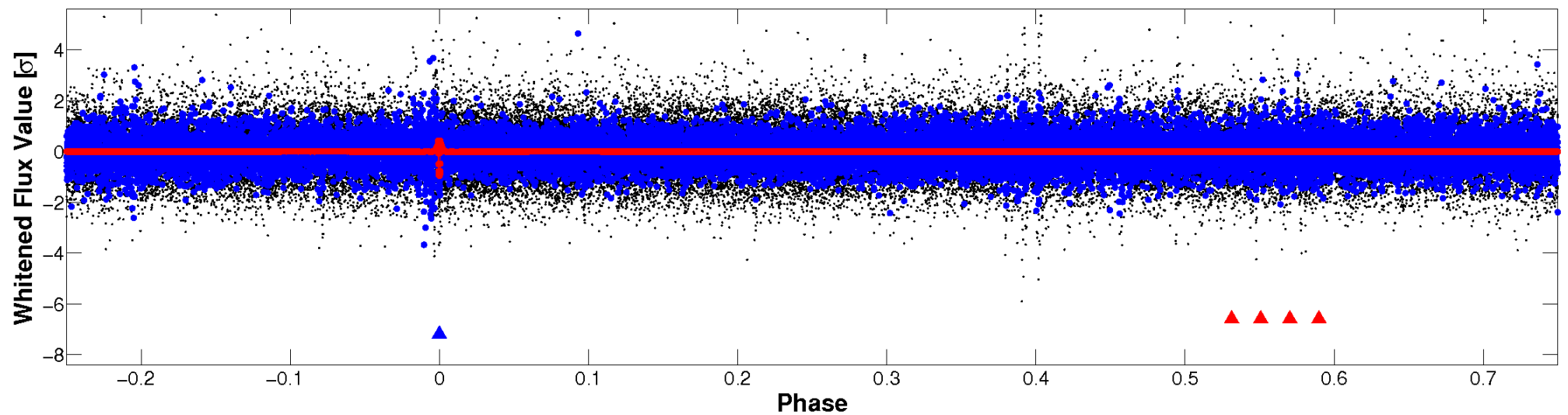


Non-Whitened Vs. Whitened Light Curve

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



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



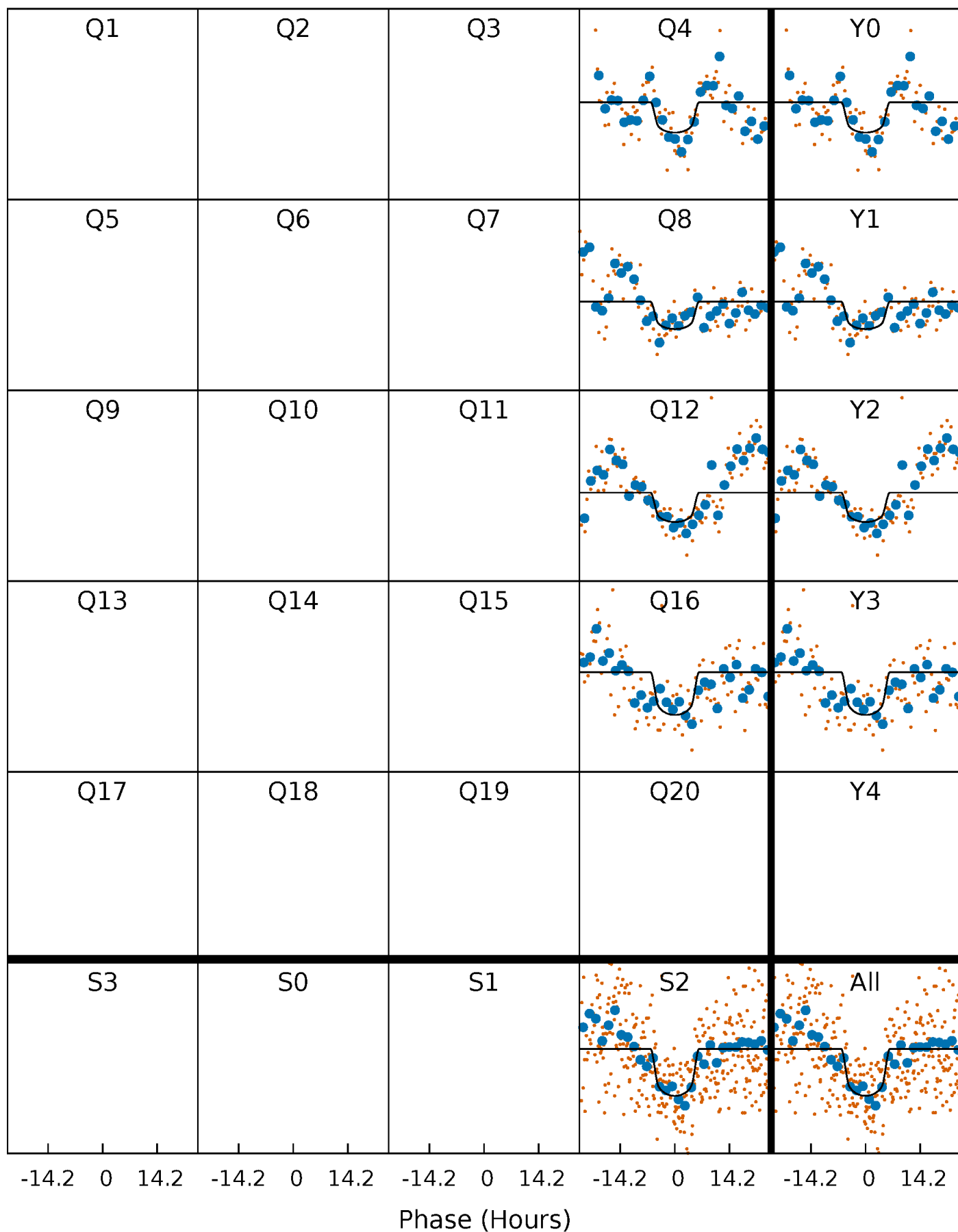
PDC Quarter-Phased Transit Curves

TCE 008109057-02 $P=363.274804$ Days $T_0=401.682652$ (BKJD)



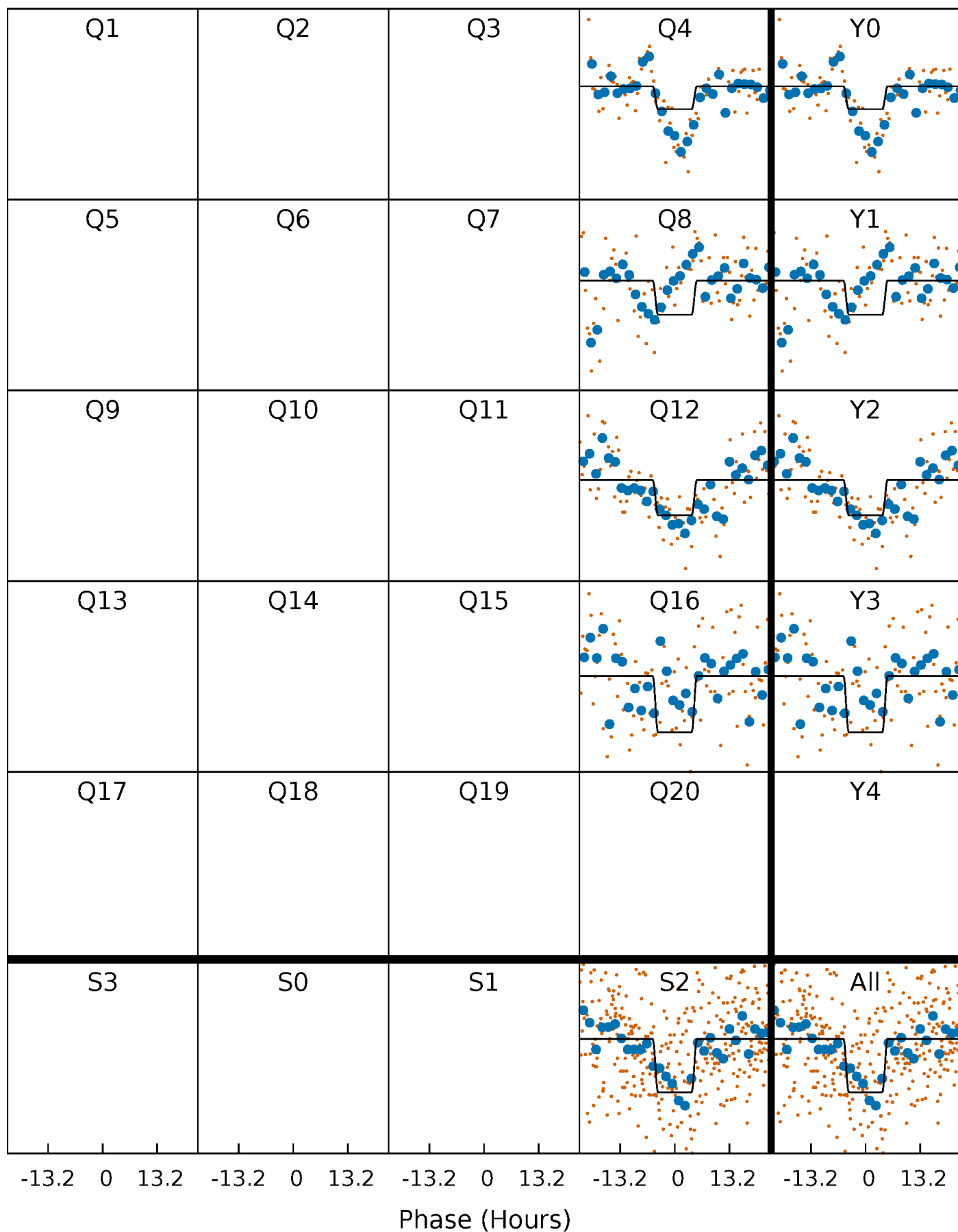
DV Quarter-Phased Transit Curves

TCE 008109057-02 $P=363.274804$ Days $T_0=401.682652$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

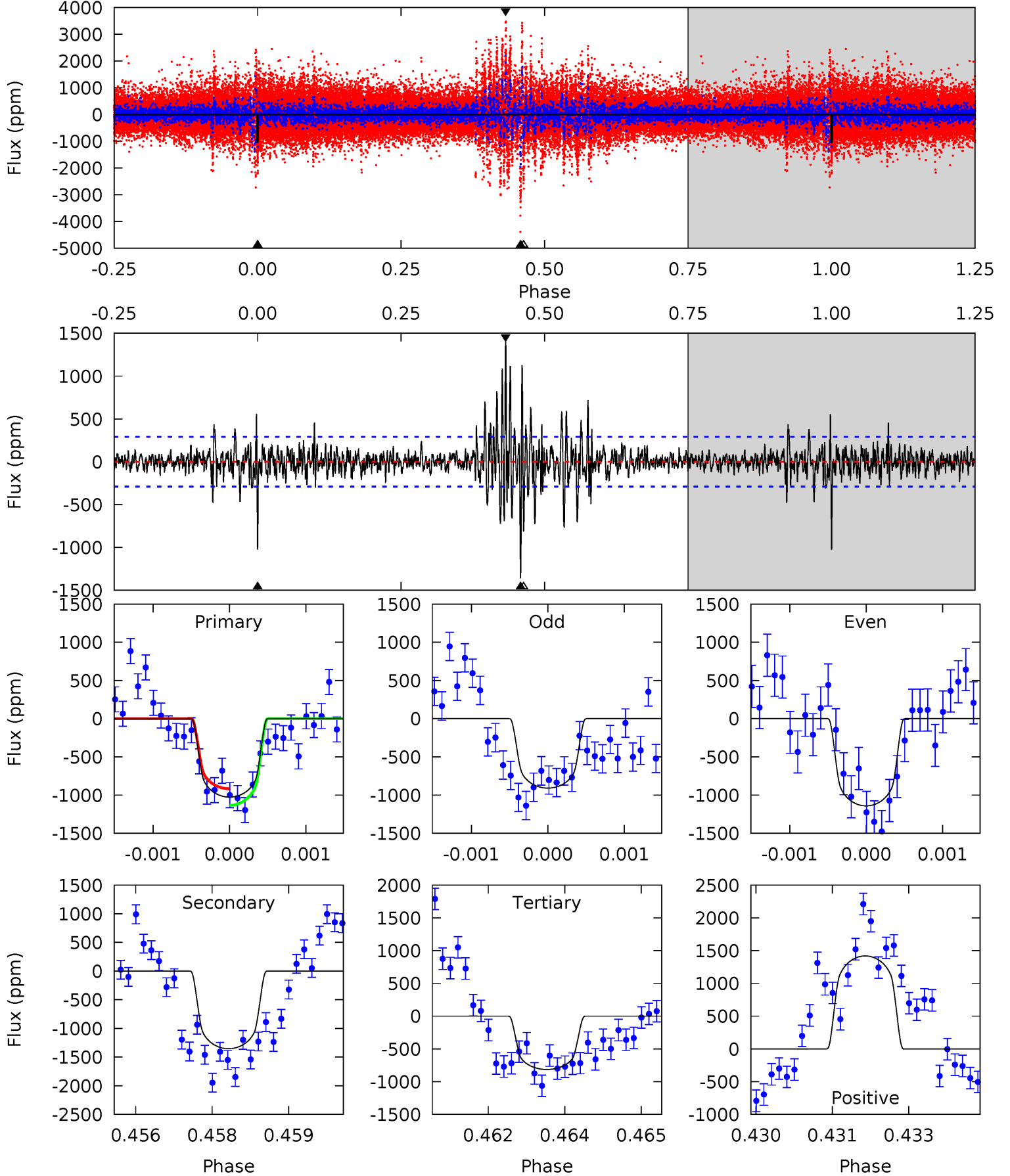
TCE 008109057-02 P=363.281452 Days $T_0=401.690878$ (BKJD)



DV Model-Shift Uniqueness Test

008109057-02, P = 363.274804 Days, E = 38.407848 Days

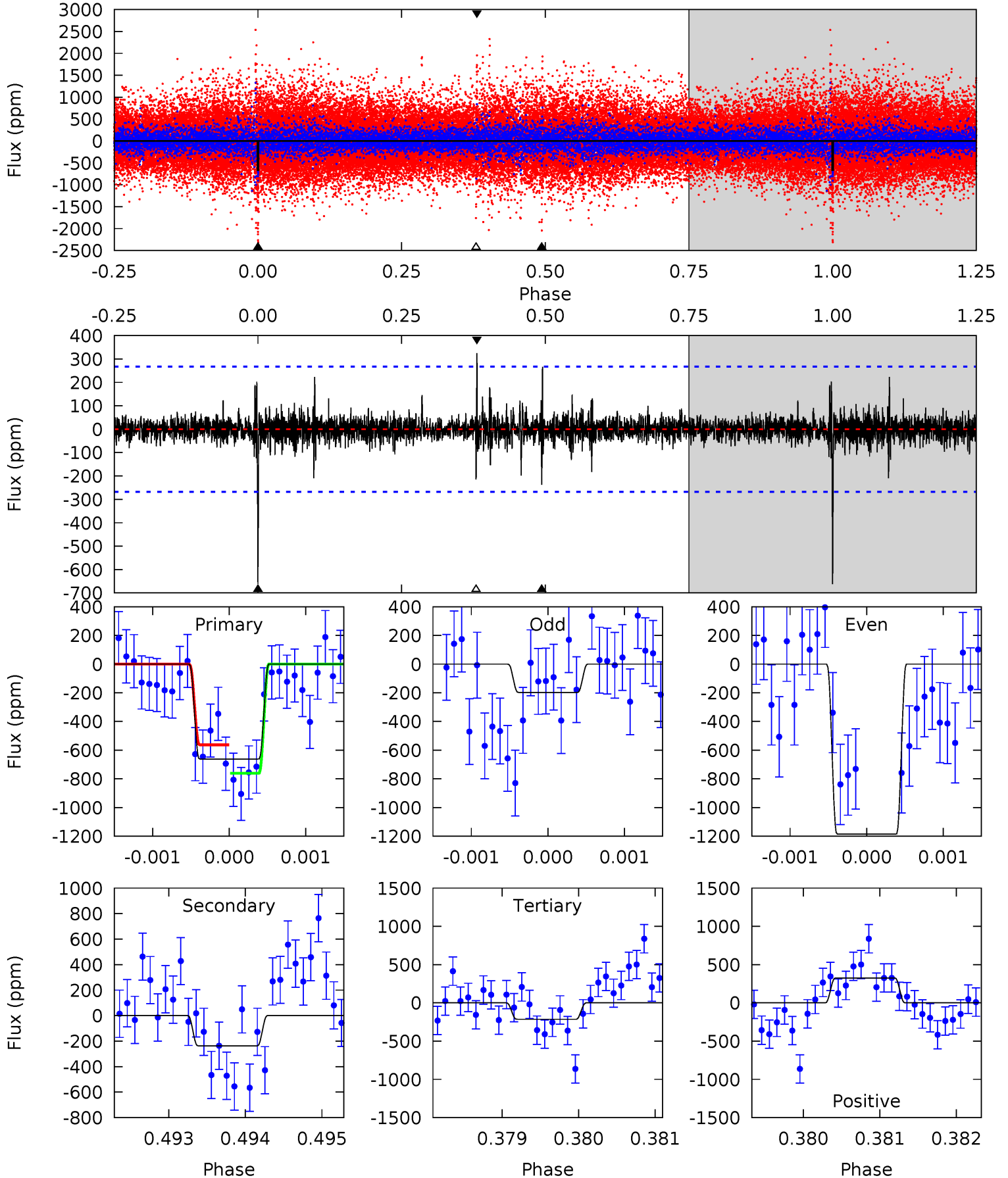
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.0	25.1	15.1	26.3	5.38	3.18	3.21	3.94	-7.28	10.0	-1.21	2.10	0.99	0.51	2.03



Alt Model-Shift Uniqueness Test

008109057-02, P = 363.281452 Days, E = 38.409426 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.4	4.80	4.34	6.59	5.42	3.24	0.73	9.08	6.83	0.46	-1.79	10.2	1.22	0.33	2.01



Stellar Parameters For KIC 008109057

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4217^{+134}_{-164}	$4.665^{+0.065}_{-0.025}$	$-0.400^{+0.300}_{-0.300}$	$0.579^{+0.044}_{-0.071}$	$0.565^{+0.062}_{-0.057}$	$4.105^{+1.278}_{-0.558}$
	+3%/-4%	+1%/-1%	+75%/-75%	+8%/-12%	+11%/-10%	+31%/-14%
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 008109057-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1354 ± 54	$2.14^{+0.34}_{-0.33}$	215^{+9}_{-9}	4301^{+340}_{-254}	112864^{+43115}_{-28936}
Alt.	-237 ± 49	$1.69^{+0.32}_{-0.29}$	216^{+8}_{-10}	3481^{+265}_{-240}	31423^{+17082}_{-10917}

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

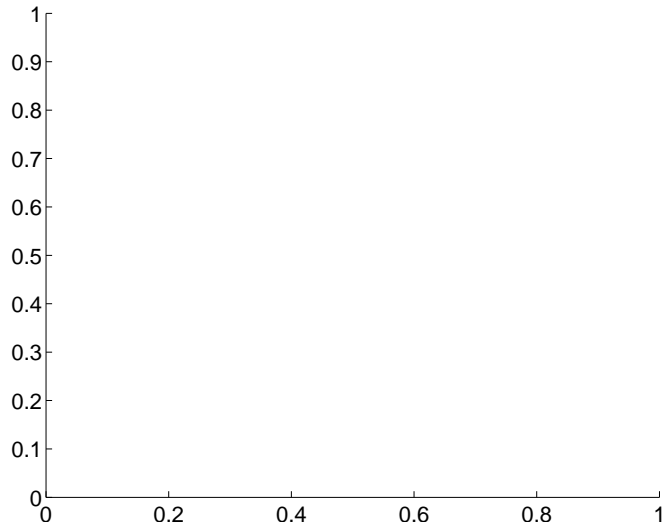
Supplemental centroid analysis for 008109057-02. Kepler magnitude: 15.38. Transit SNR 8.54

There are 0 quarters with good PRF difference image offsets

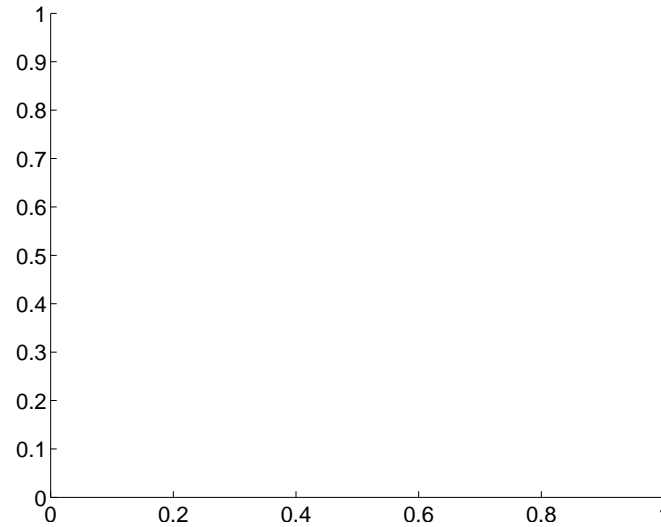
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	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	1.34 ± 1.64	0.81	-1.06 ± 1.23	0.81 ± 2.18

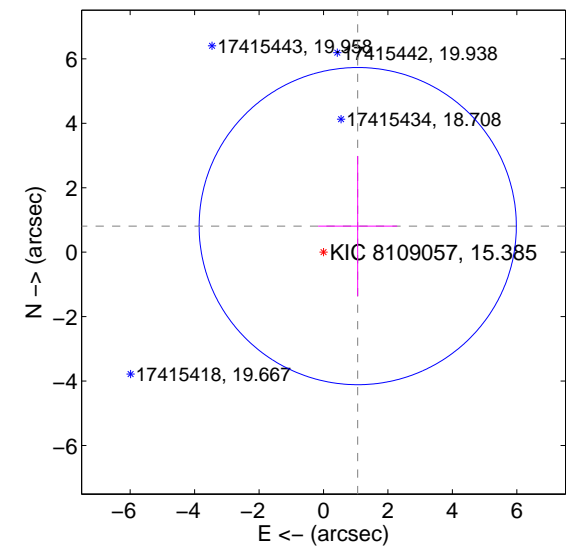
There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC



offset from photometric centroids



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.



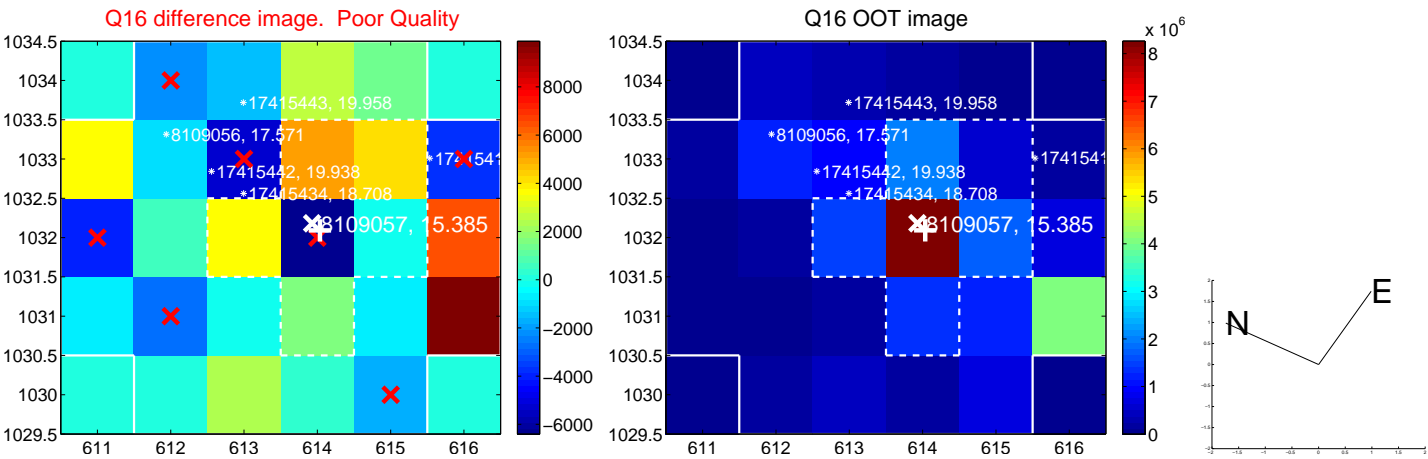
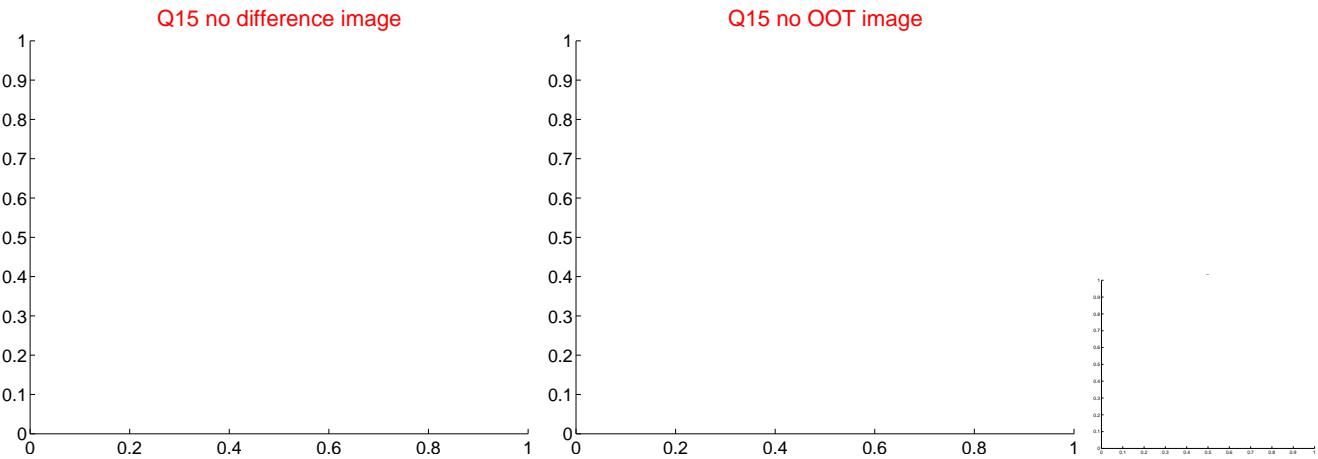
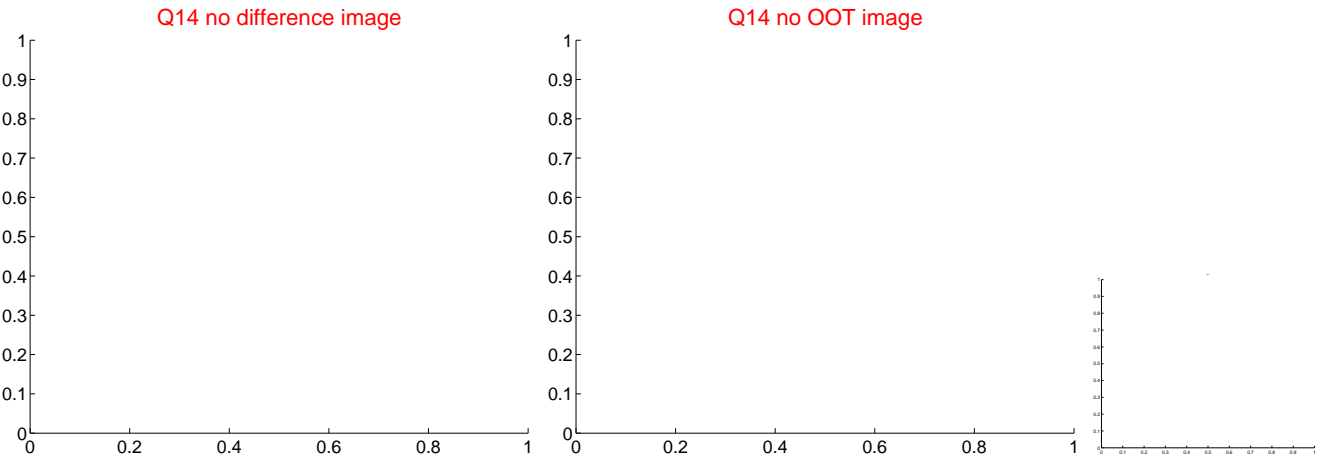
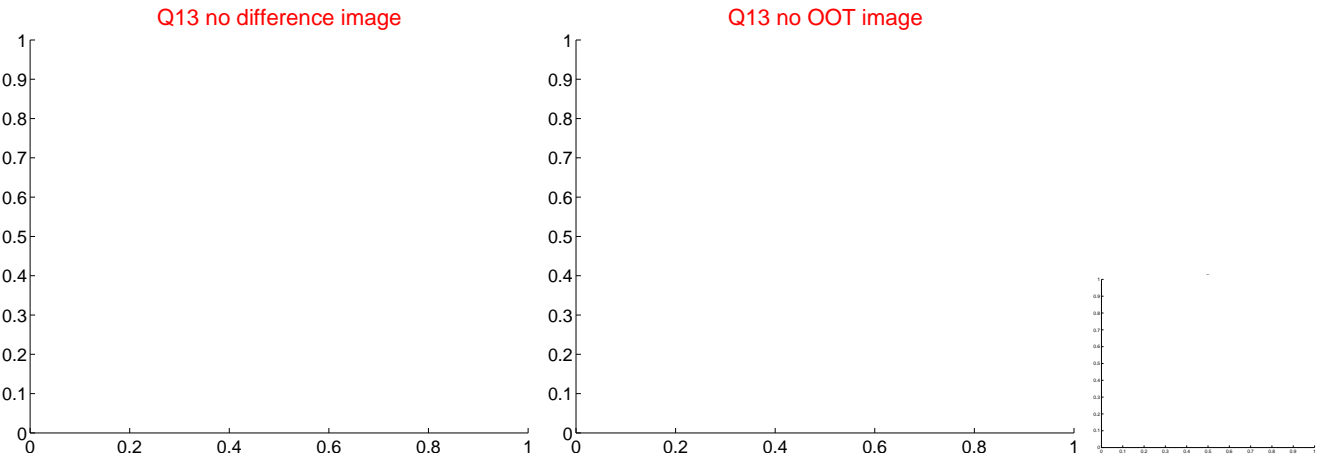
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



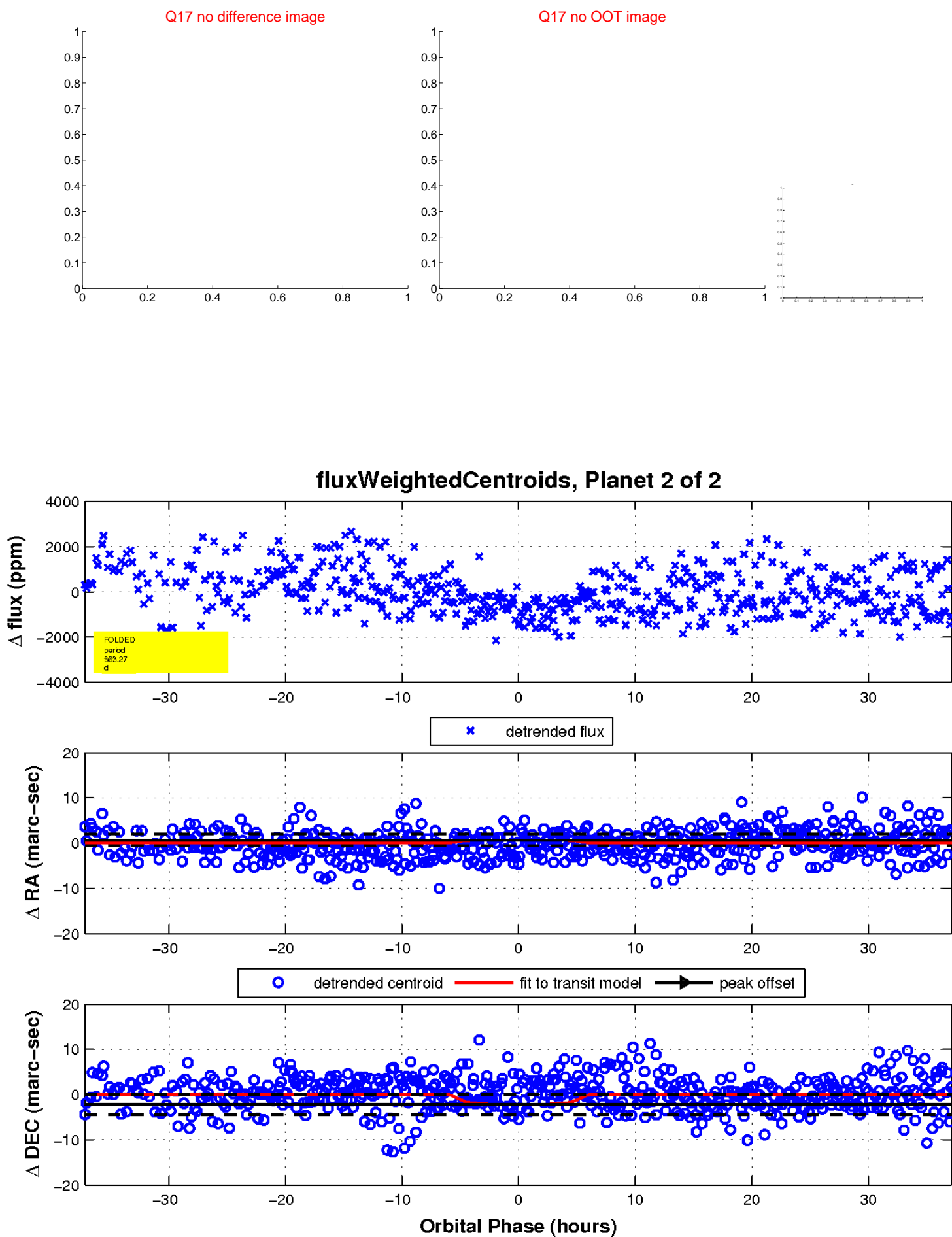
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white ×: 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

