

KIC 009833868

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})
009833868-01	OBS	No	318.009960	372.343786	1794.0	6.499	11.8	7.4	0.62	5233	2.74	0.43
009833868-02	OBS	No	370.894377	493.556670	1962.6	4.409	14.0	7.1	0.62	5233	2.74	0.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009833868-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009833868-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_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.

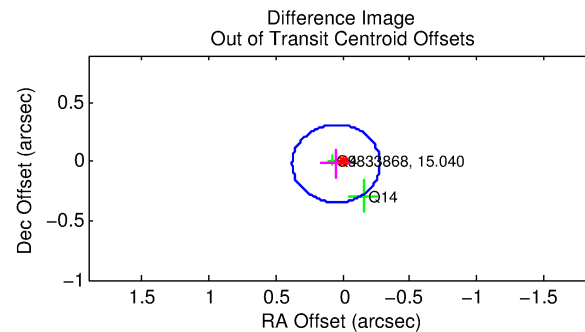
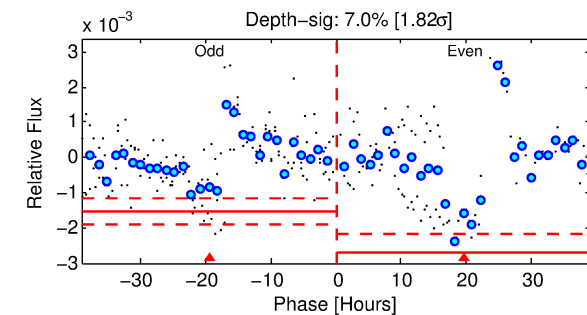
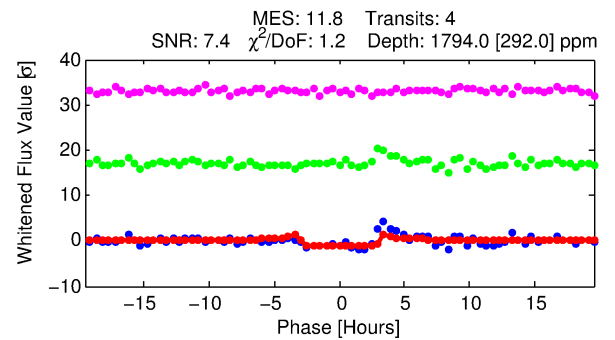
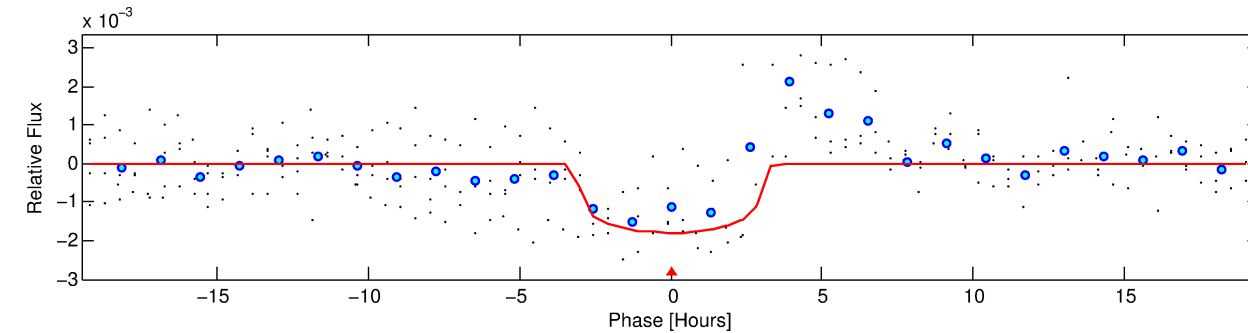
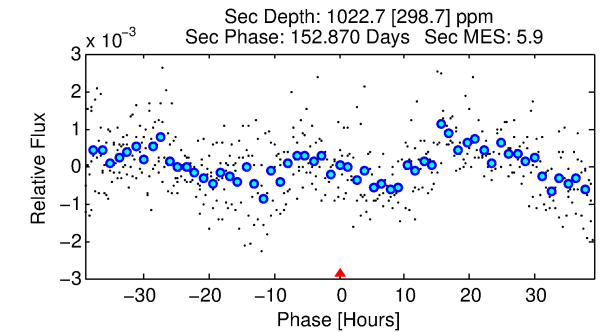
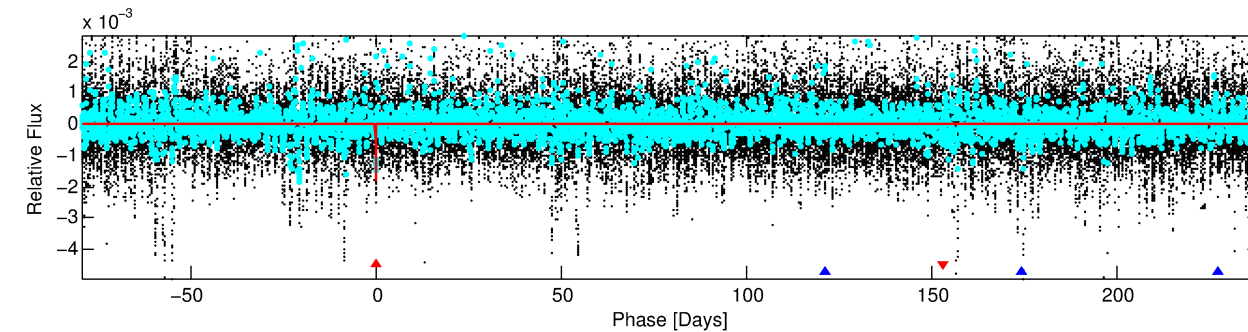
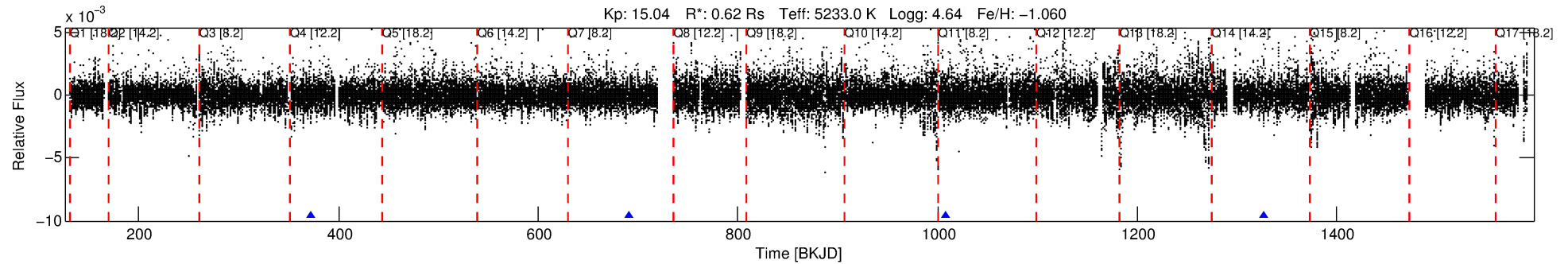
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009833868-01

No Significant Match Found

DV One-Page Summary

KIC: 9833868 Candidate: 1 of 2 Period: 318.010 d



DV Fit Results:

Period = 318.00996 [0.00347] d
Epoch = 372.3438 [0.0073] BKJD
Rp/R* = 0.0401 [0.0131]
a/R* = 326.23 [435.59]
b = 0.57 [1.61]
Seff = 0.44 [0.07]
Teq = 207 [9] K
Rp = 2.74 [0.92] Re
a = 0.7767 [0.0559] AU
Ag = 45323.20 [32902.55] [1.38 σ]
Teffp = 4672 [849] K [5.26 σ]

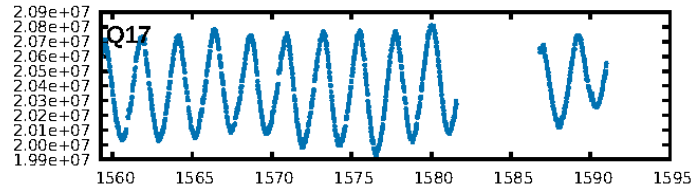
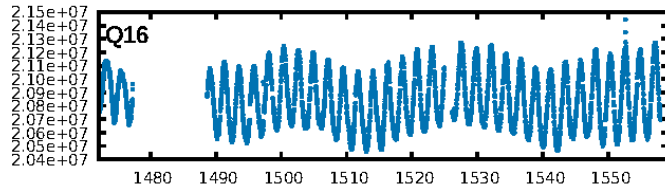
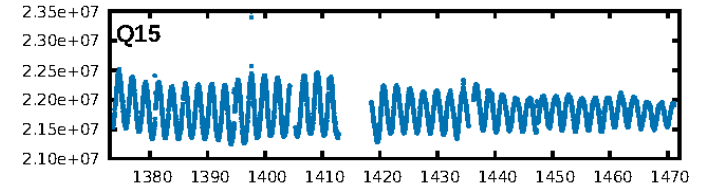
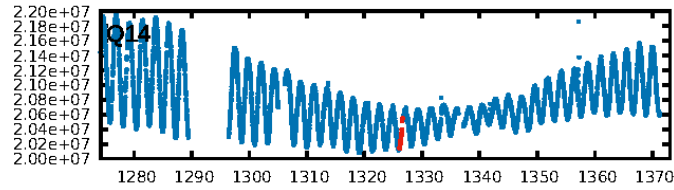
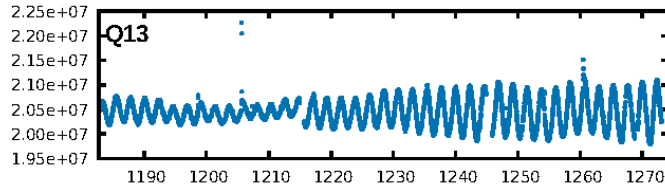
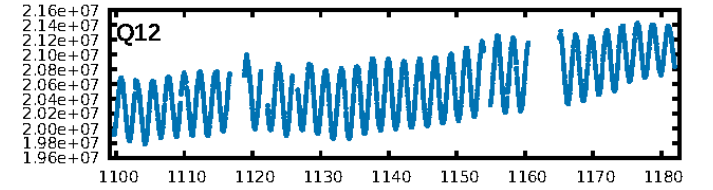
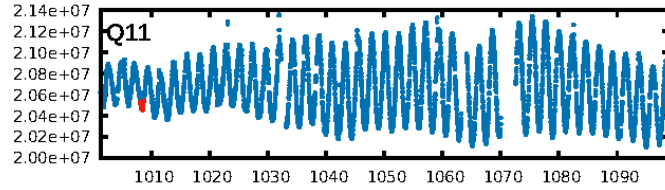
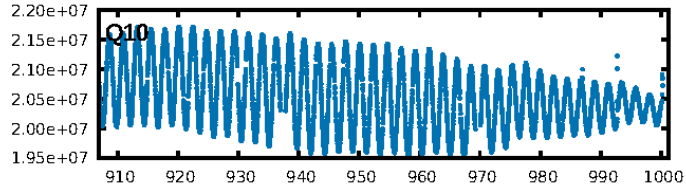
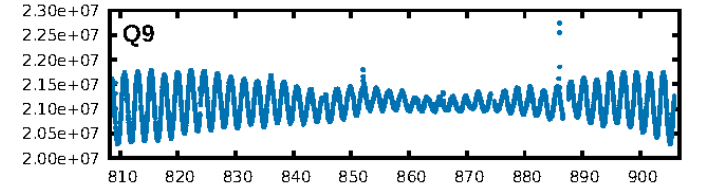
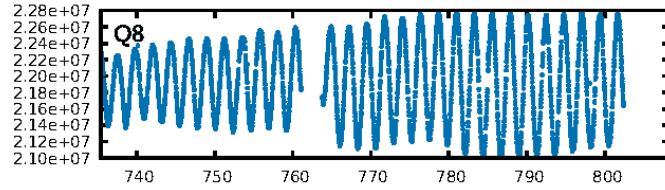
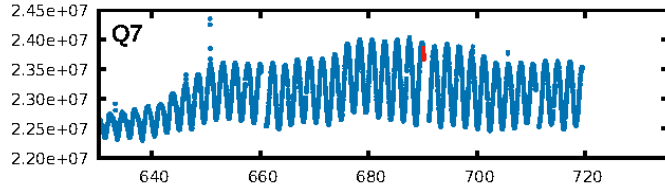
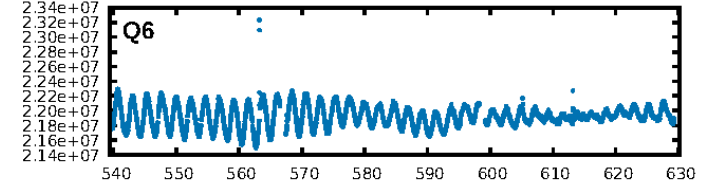
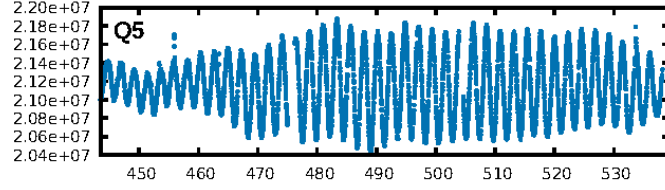
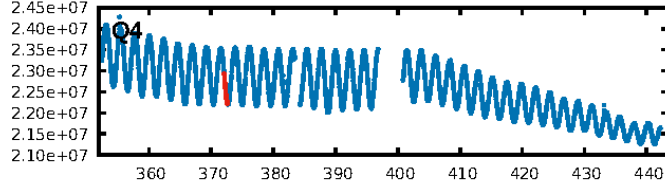
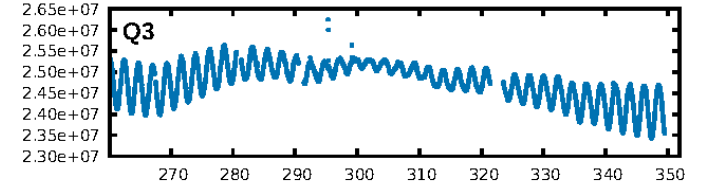
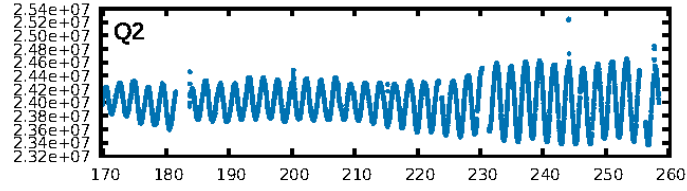
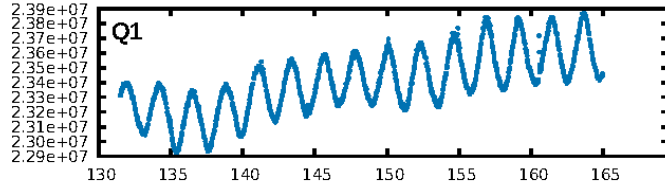
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [161.61 σ]
ModelChiSquare2-sig: 42.2%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 2.10e-12
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.6723
Centroid-sig: 20.4%
Centroid-so: 1.006 arcsec [1.59 σ]
OotOffset-rm: 0.051 arcsec [0.47 σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-rm: 0.125 arcsec [1.26 σ]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

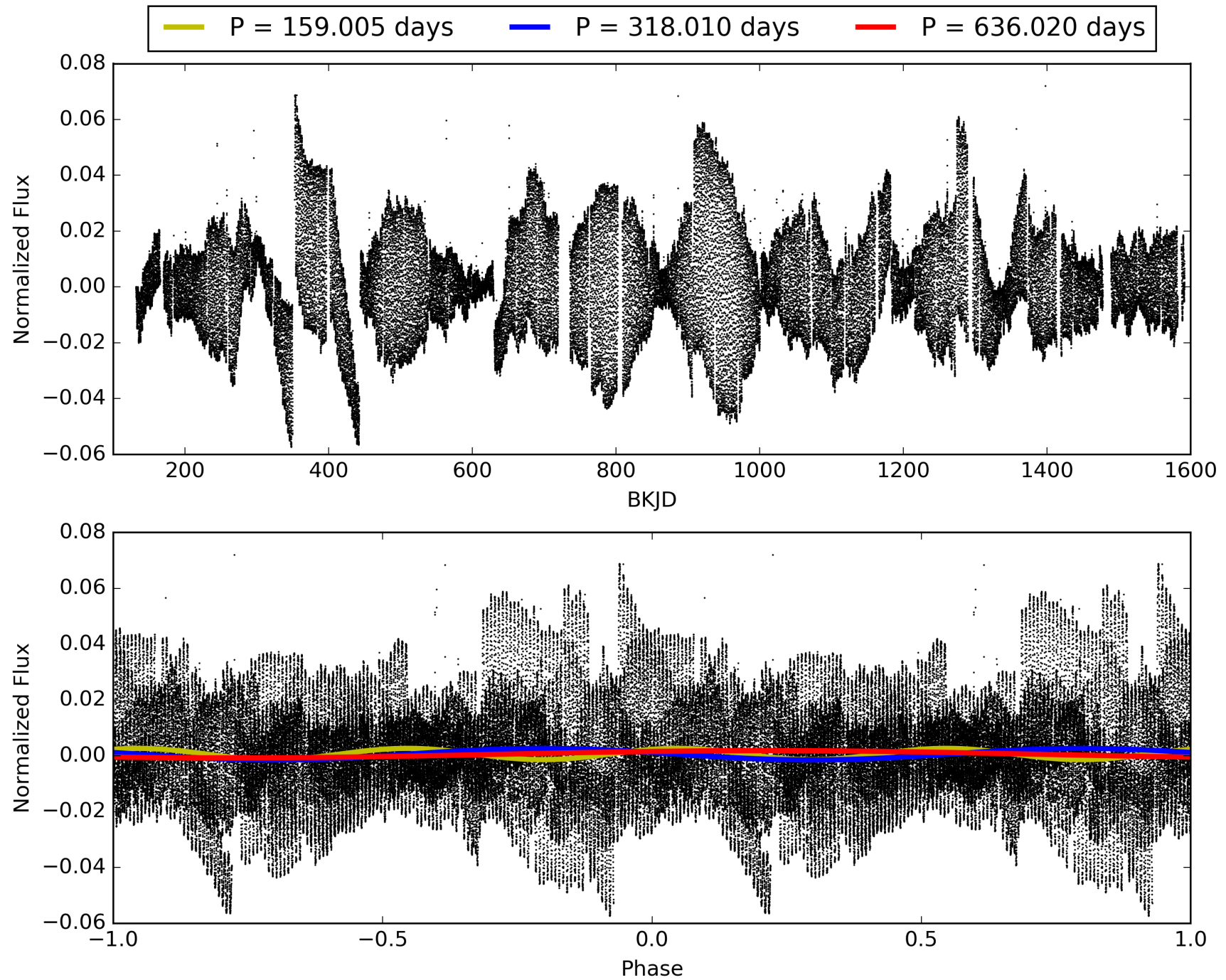
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009833868-01, PDC Light Curves

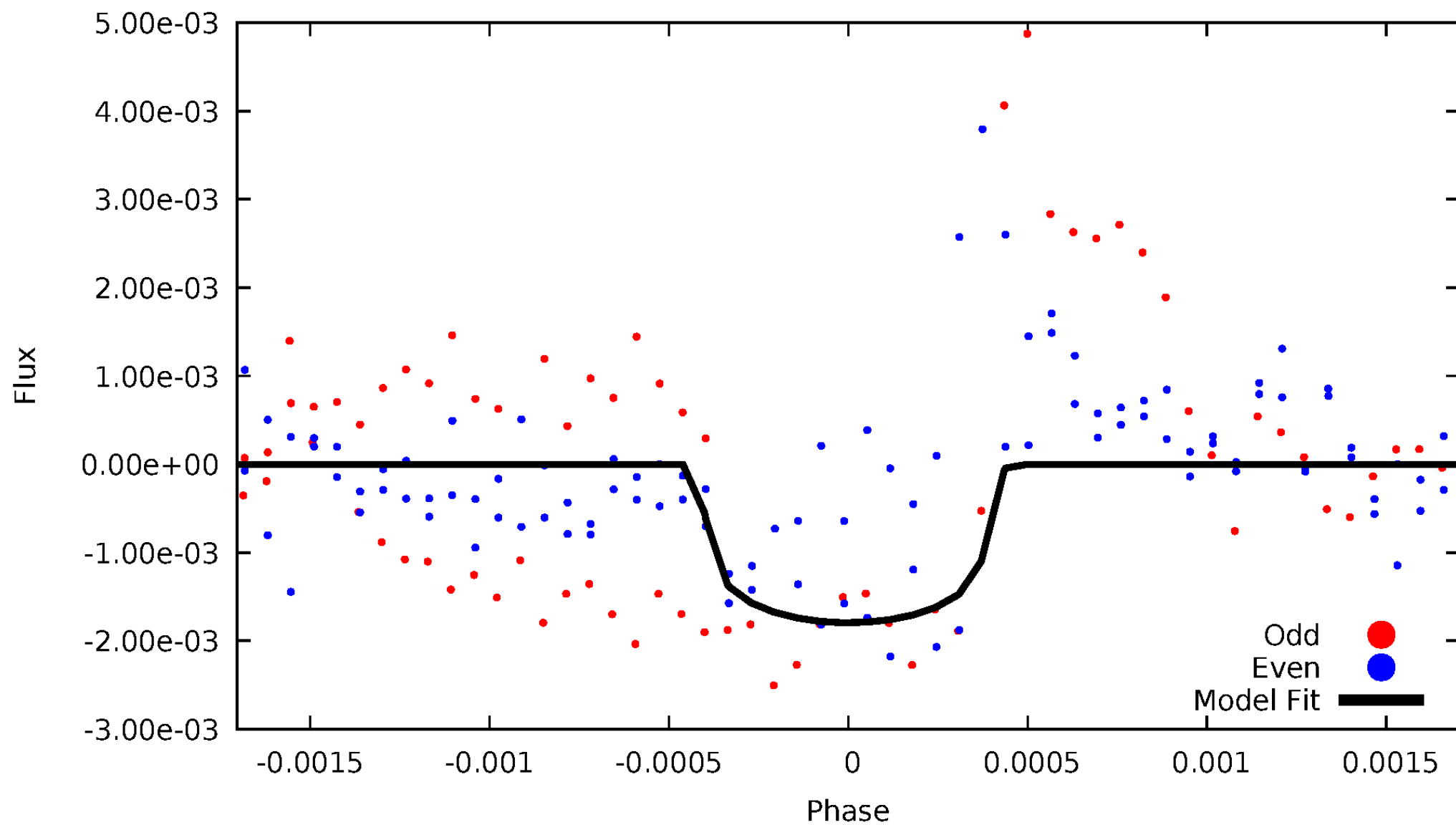


TCE 009833868-01



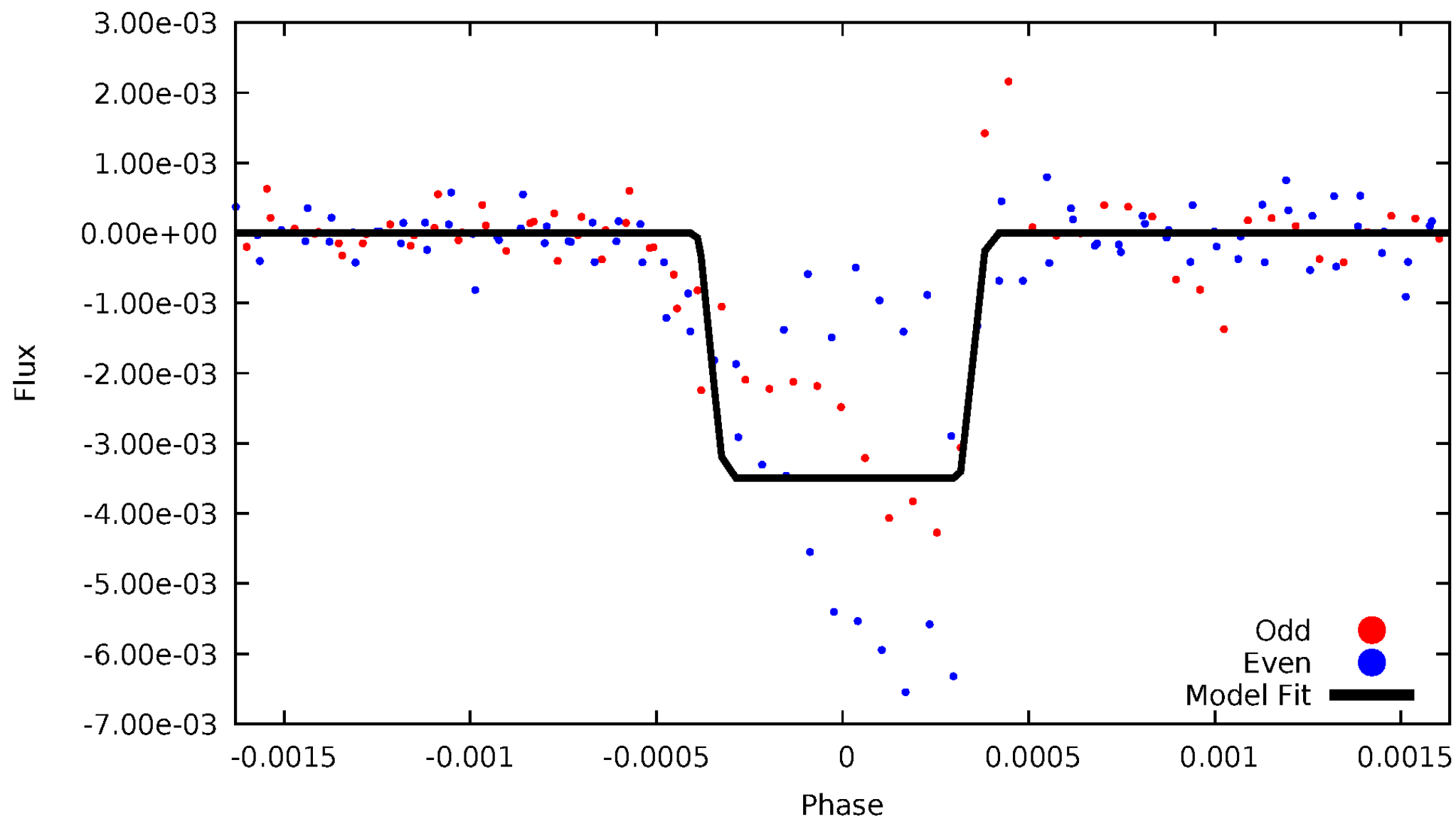
DV Odd/Even

TCE 009833868-01



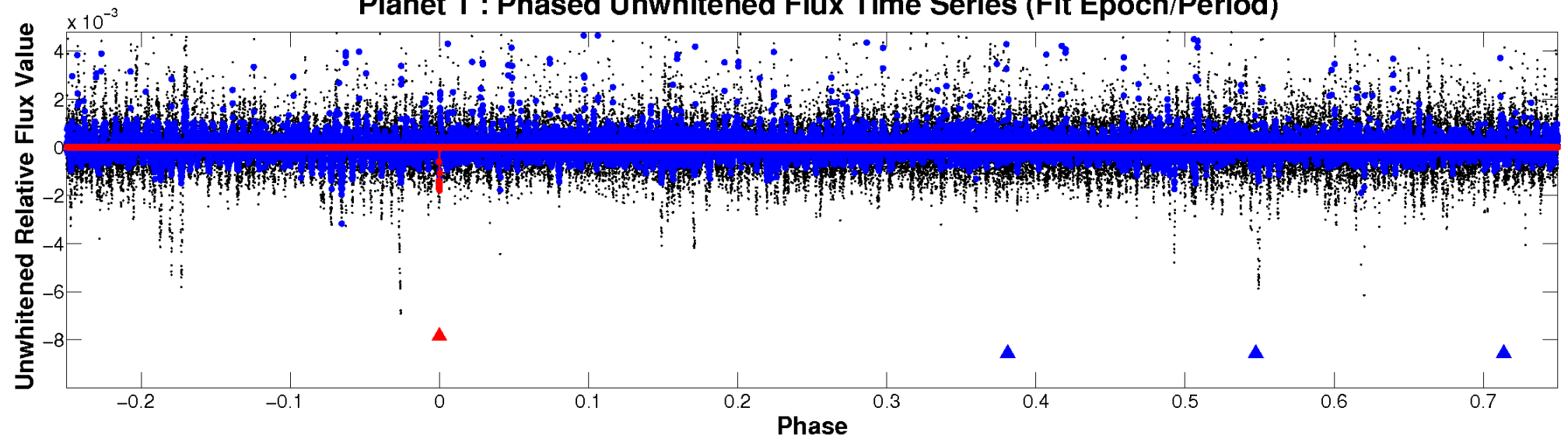
ALT Odd/Even

TCE 009833868-01

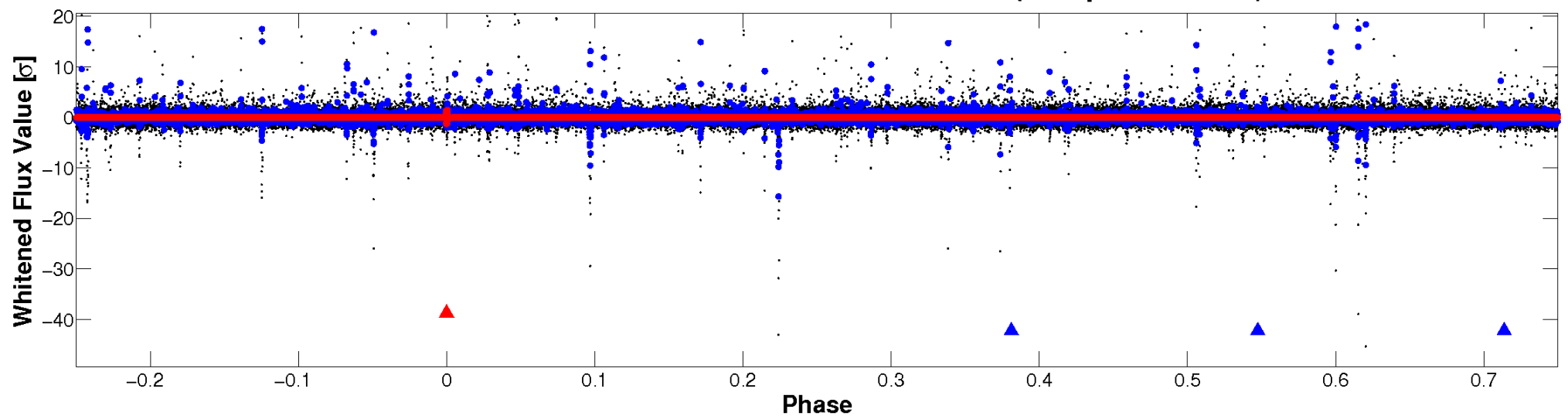


Non-Whitened Vs. Whitened Light Curve

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

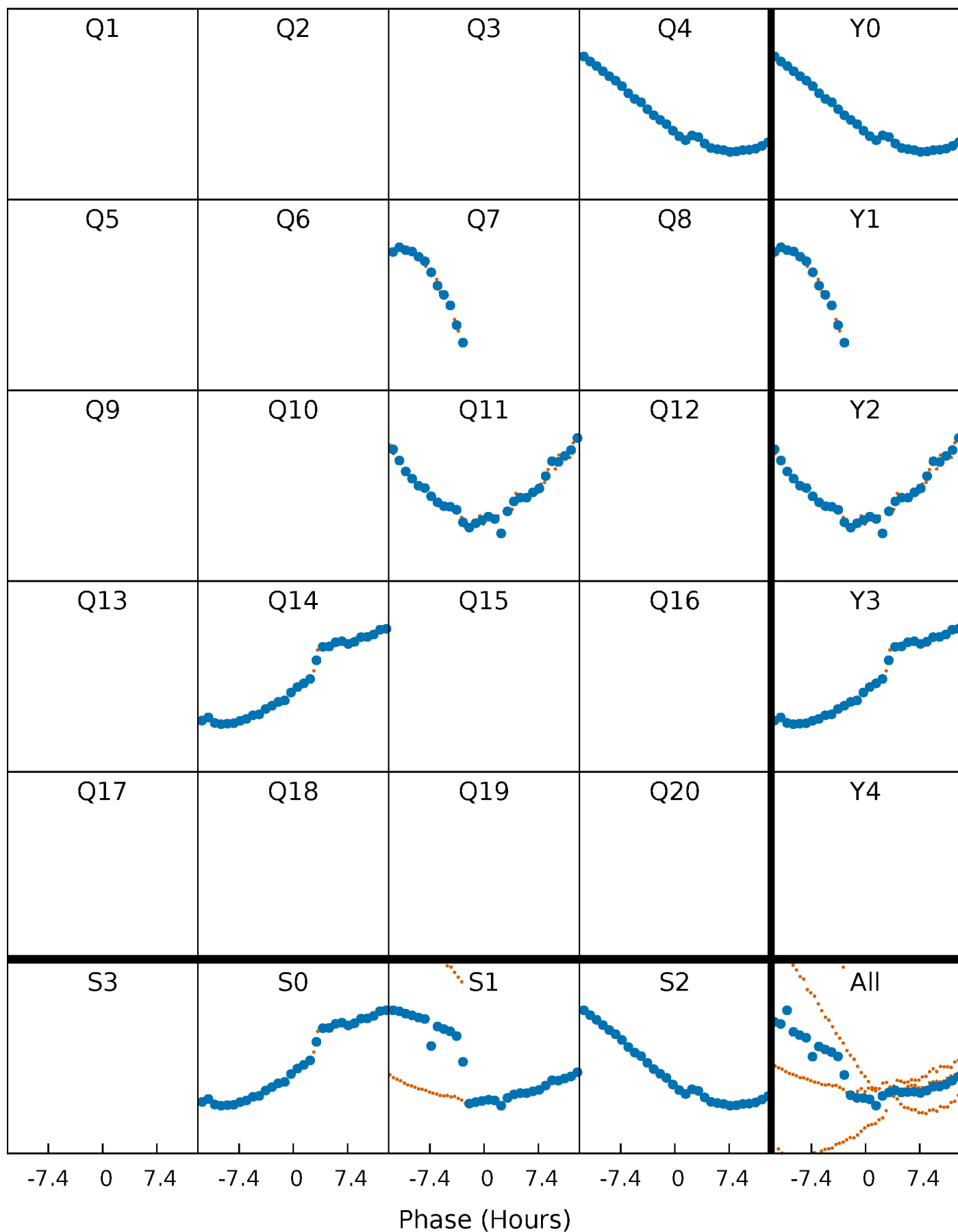


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



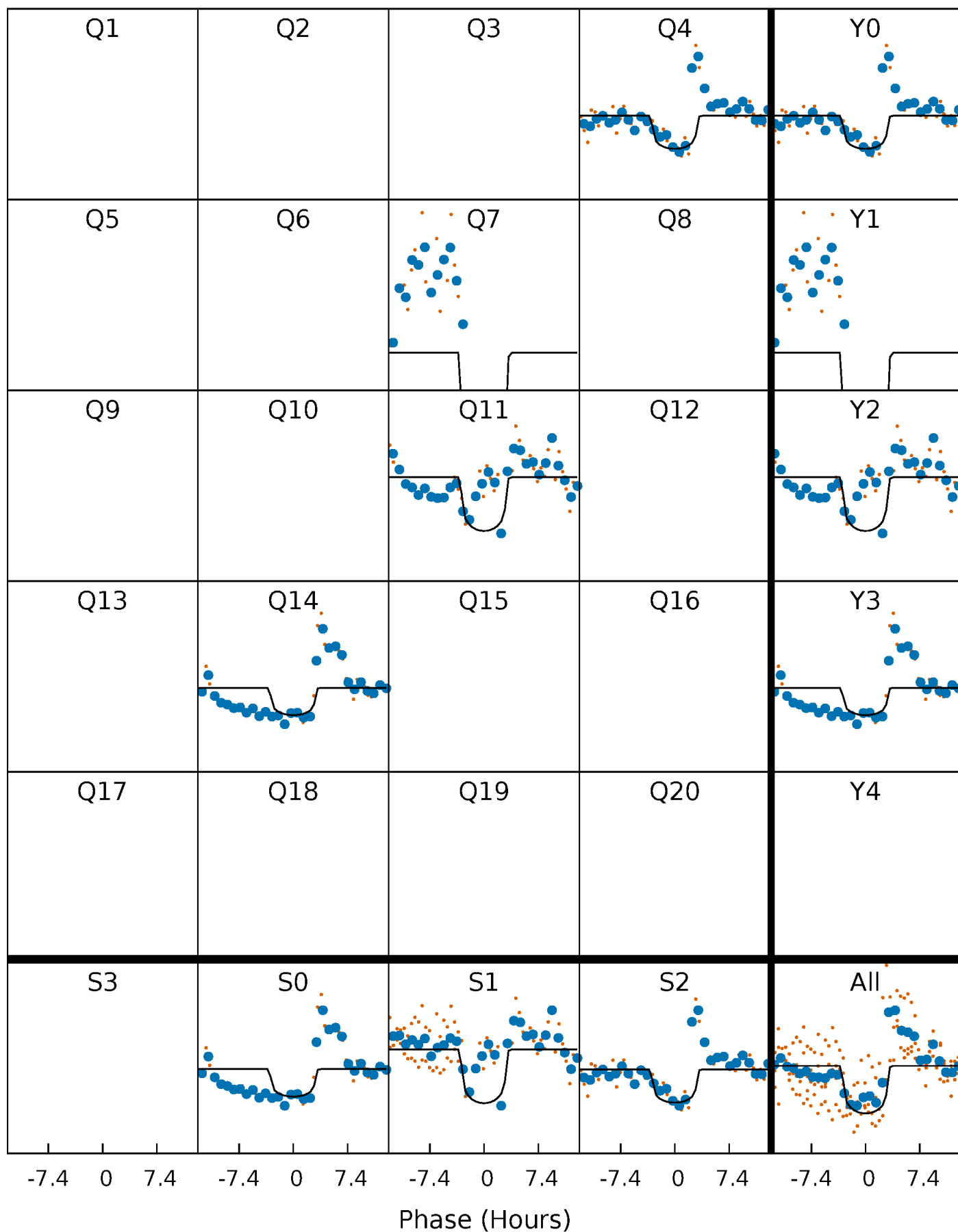
PDC Quarter-Phased Transit Curves

TCE 009833868-01 P=318.009960 Days $T_0=372.343786$ (BKJD)



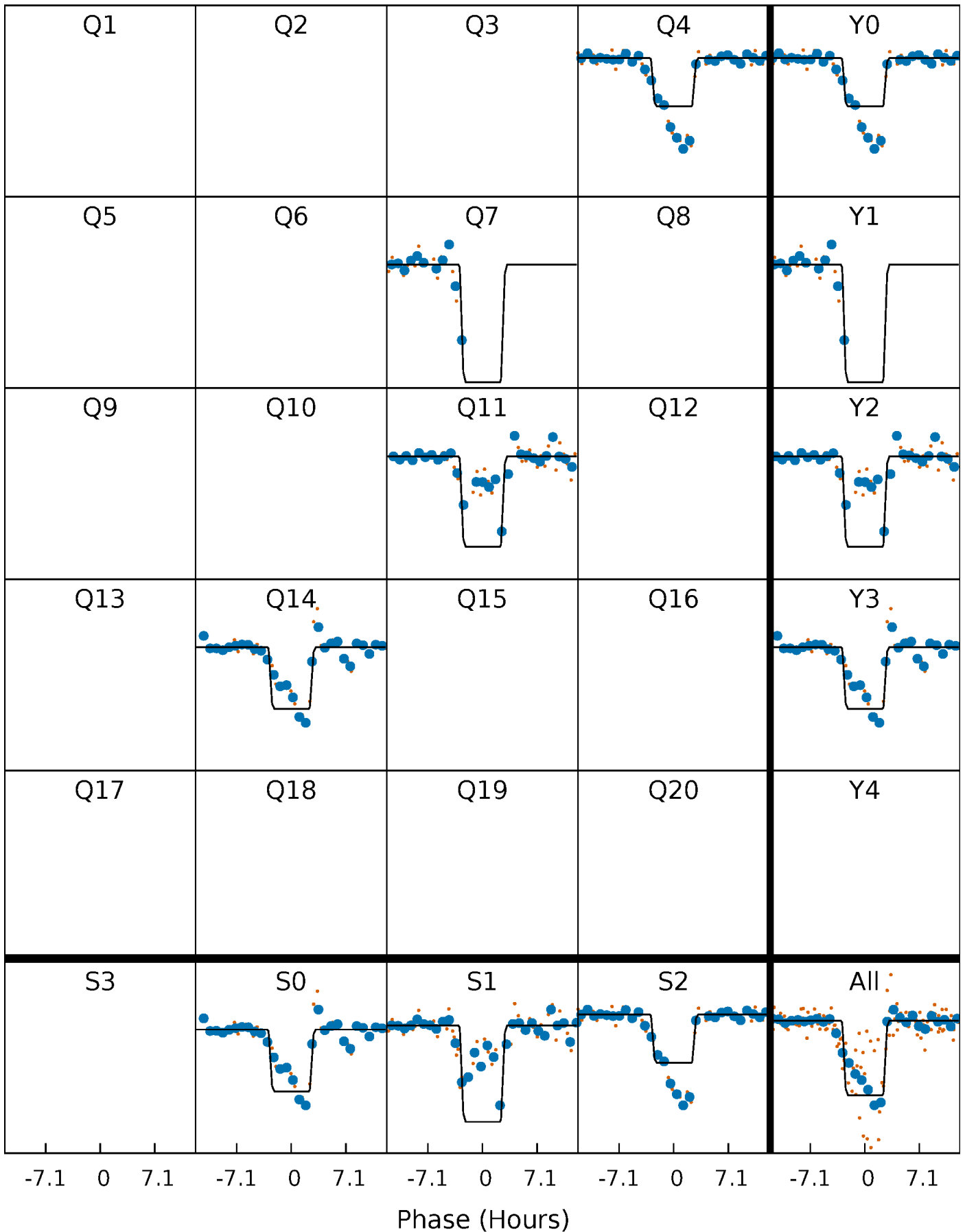
DV Quarter-Phased Transit Curves

TCE 009833868-01 P=318.009960 Days $T_0=372.343786$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

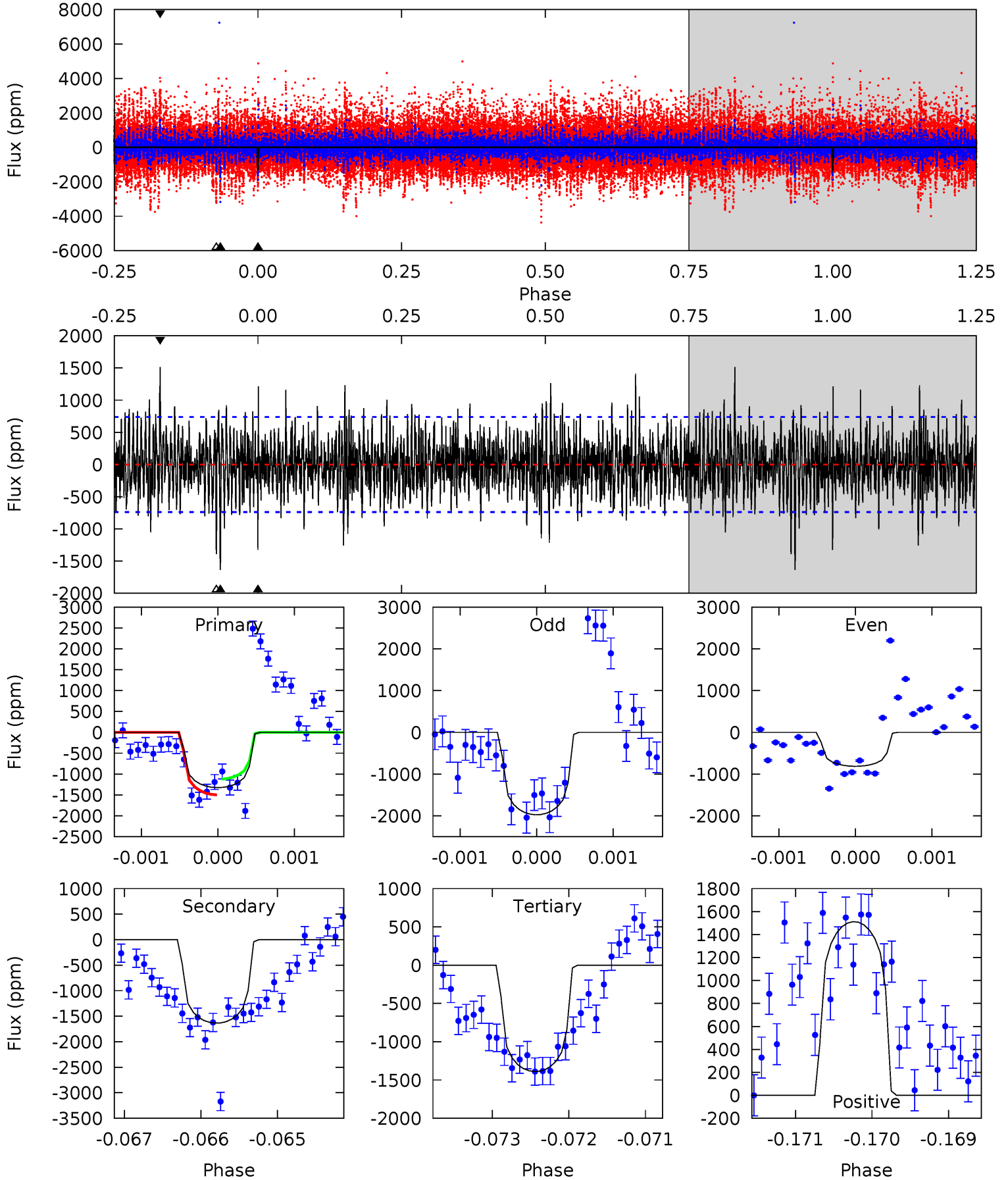
TCE 009833868-01 P=318.021117 Days $T_0=372.327041$ (BKJD)



DV Model-Shift Uniqueness Test

009833868-01, $P = 318.009960$ Days, $E = 54.333826$ Days

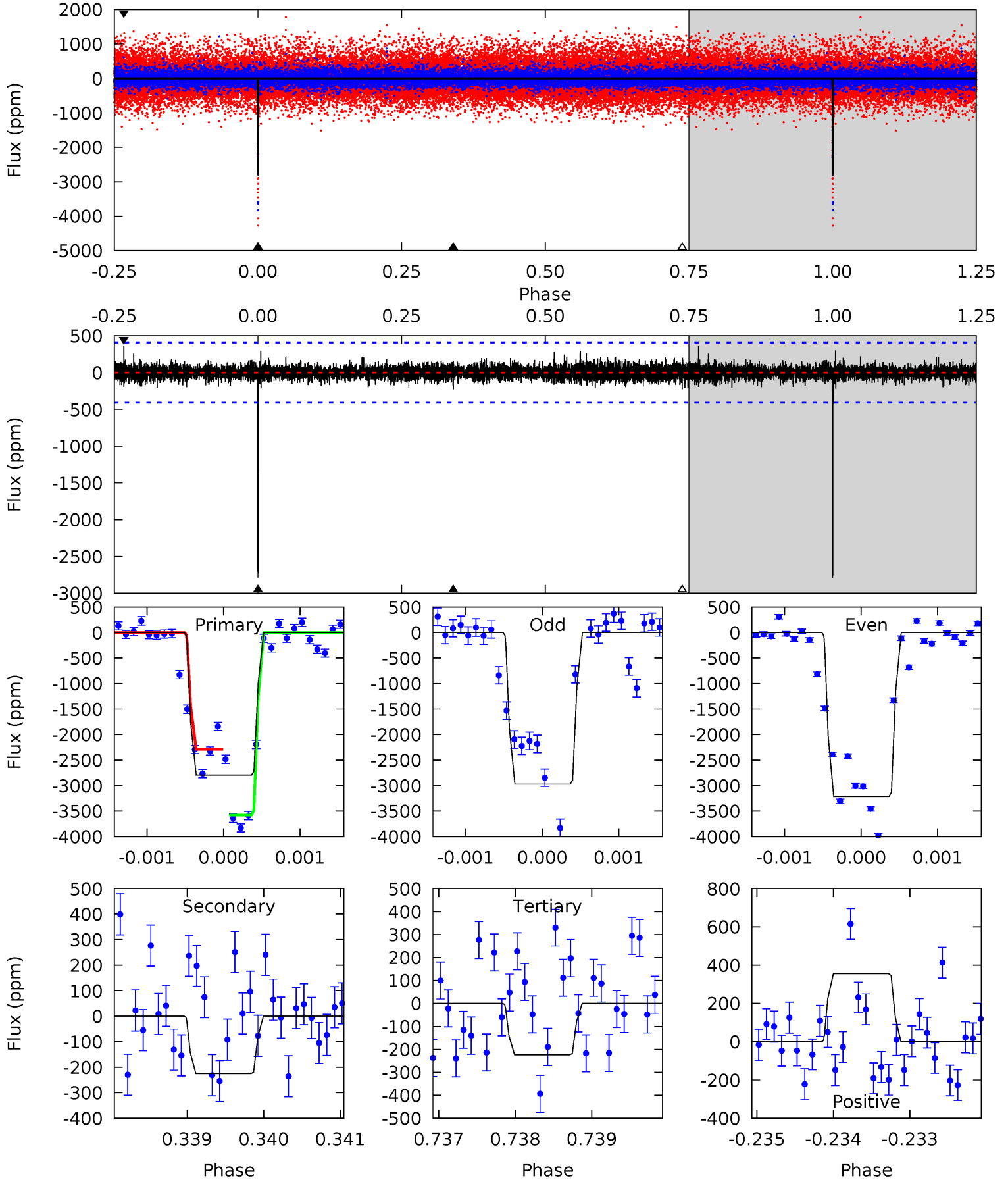
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.81	12.1	10.3	11.2	5.47	3.32	2.52	-0.48	-1.39	1.82	0.91	3.77	1.21	0.48	1.41



Alt Model-Shift Uniqueness Test

009833868-01, P = 318.021117 Days, E = 54.305924 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.4	3.02	3.00	4.77	5.49	3.35	0.76	34.4	32.7	0.02	-1.75	1.91	1.08	0.11	8.22



Stellar Parameters For KIC 009833868

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5233^{+156}_{-156}	$4.637^{+0.066}_{-0.038}$	$-1.060^{+0.300}_{-0.300}$	$0.625^{+0.048}_{-0.043}$	$0.618^{+0.053}_{-0.023}$	$3.564^{+0.879}_{-0.543}$
	+3%/-3%	+1%/-1%	+28%/-28%	+8%/-7%	+9%/-4%	+25%/-15%
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 009833868-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1635 ± 135	$2.78^{+0.84}_{-0.93}$	289^{+10}_{-11}	5234^{+1126}_{-566}	72732^{+90634}_{-29828}
Alt.	-225 ± 75	$4.07^{+0.89}_{-0.97}$	288^{+10}_{-10}	3188^{+306}_{-242}	4594^{+3658}_{-1961}

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 $A_{obs} \gg 1.0$

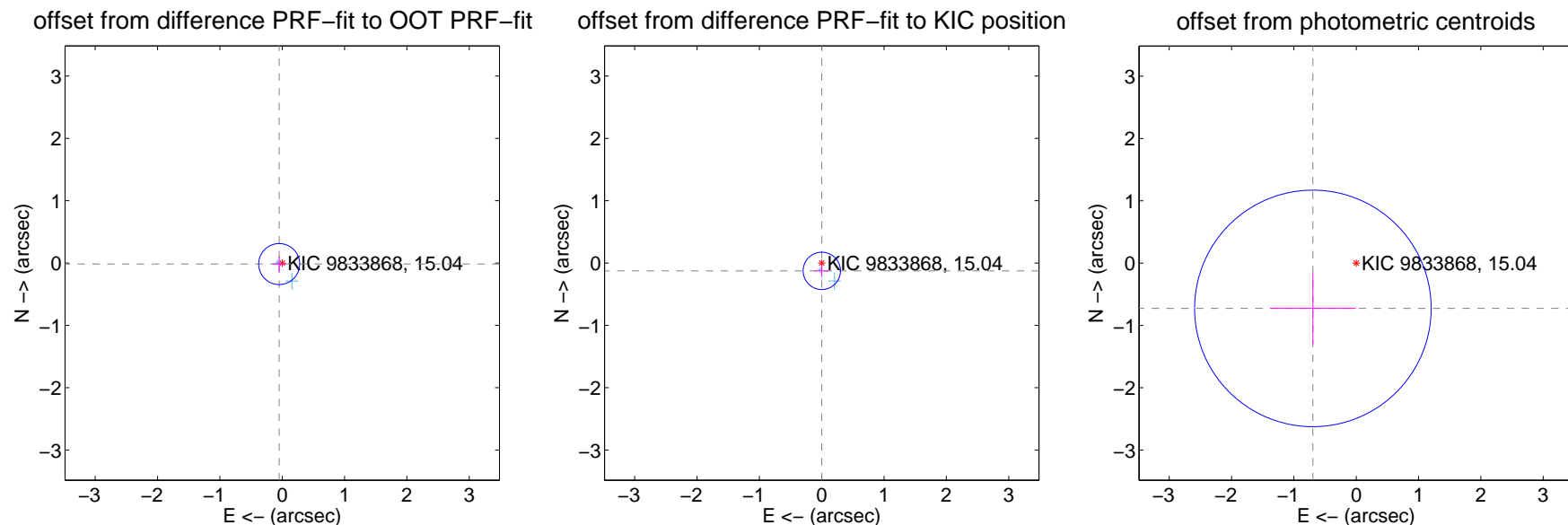
DV Centroid Data

Supplemental centroid analysis for 009833868-01. Kepler magnitude: 15.04. Transit SNR 7.45

There are 2 quarters with good PRF difference image offsets

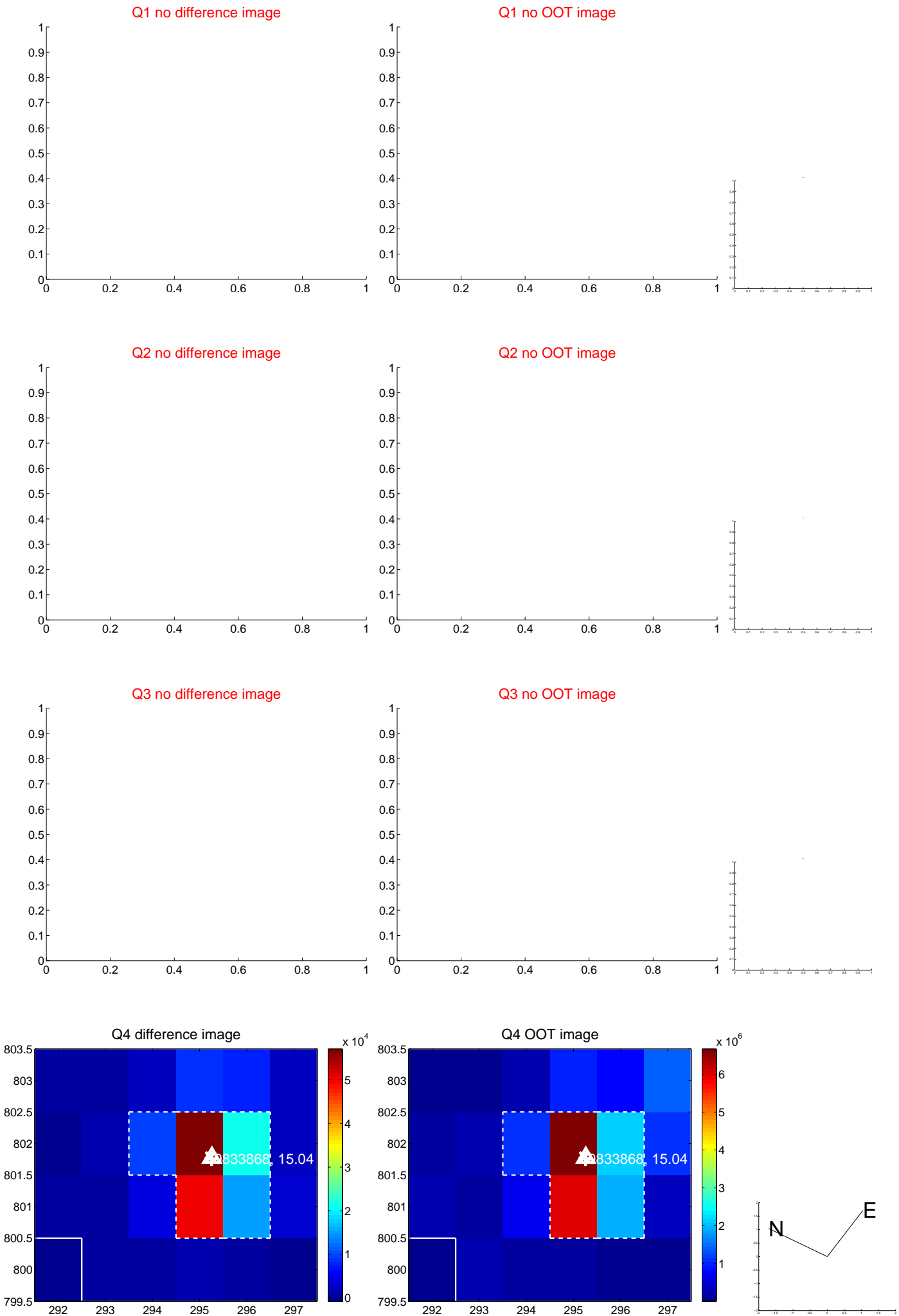
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.051 ± 0.110	0.47	0.049 ± 0.108	-0.016 ± 0.124
PRF-fit source offset from KIC position	0.125 ± 0.100	1.26	-0.001 ± 0.115	-0.125 ± 0.099
photometric centroid source offset	1.01 ± 0.63	1.59	0.69 ± 0.69	-0.73 ± 0.58



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.



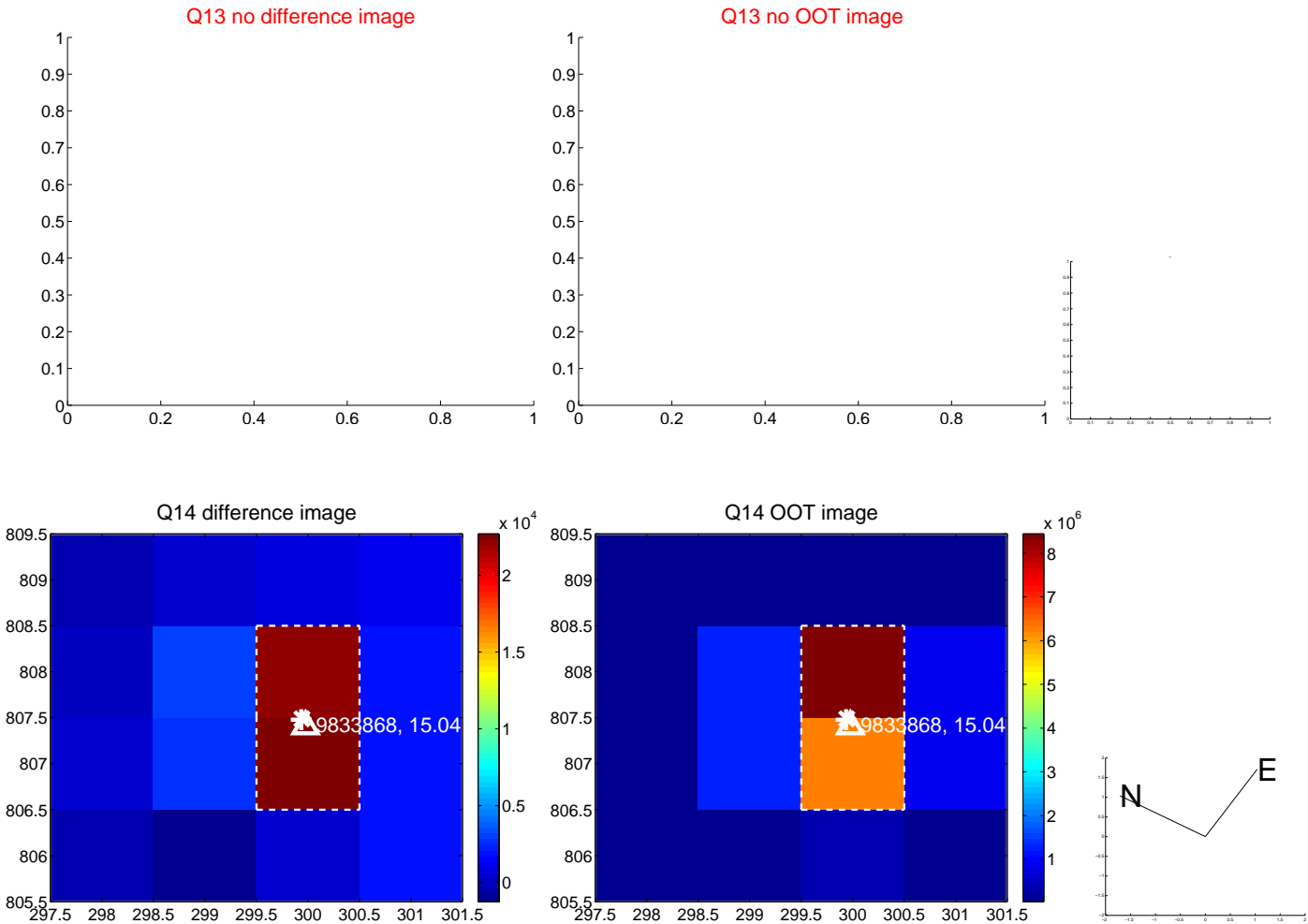
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



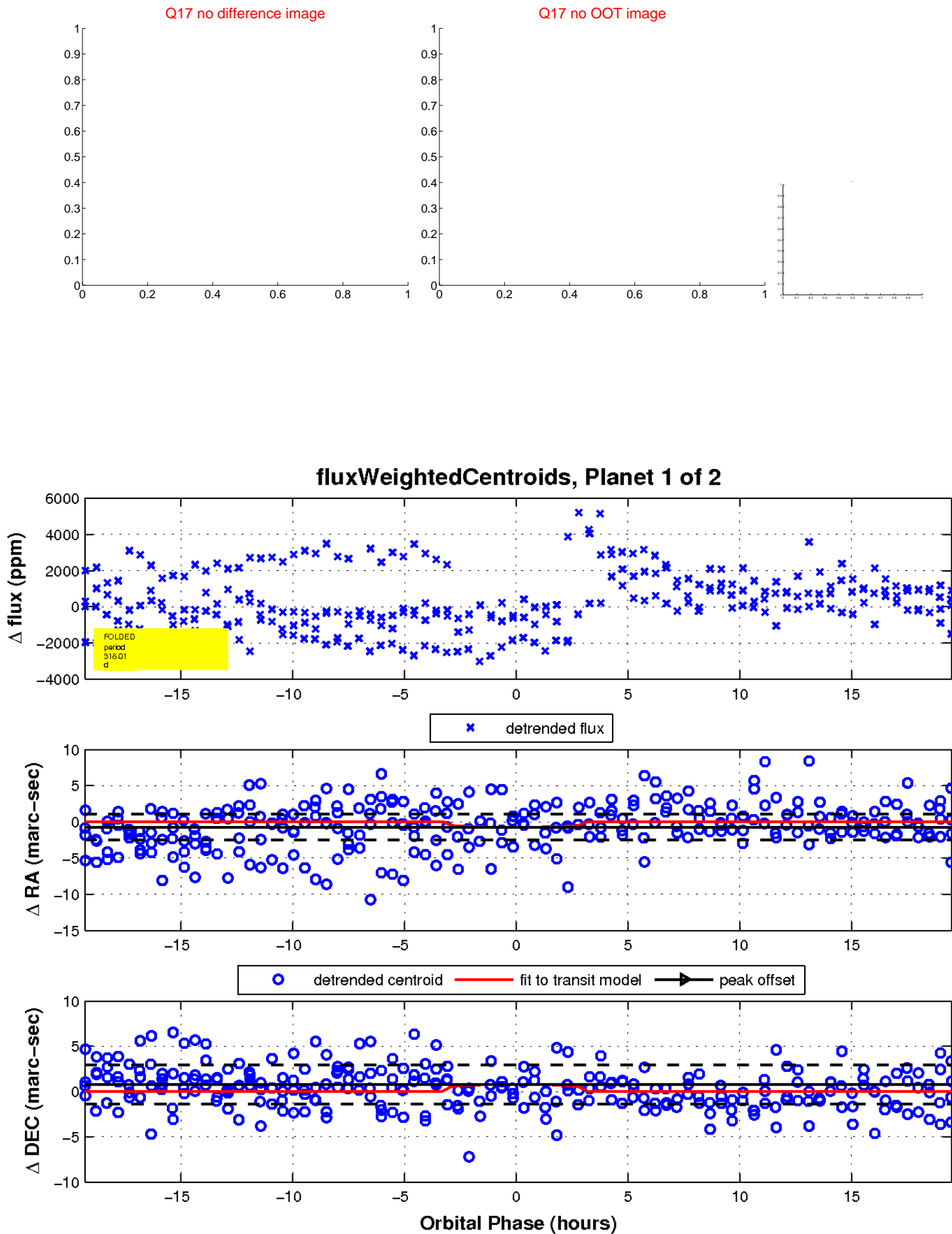
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

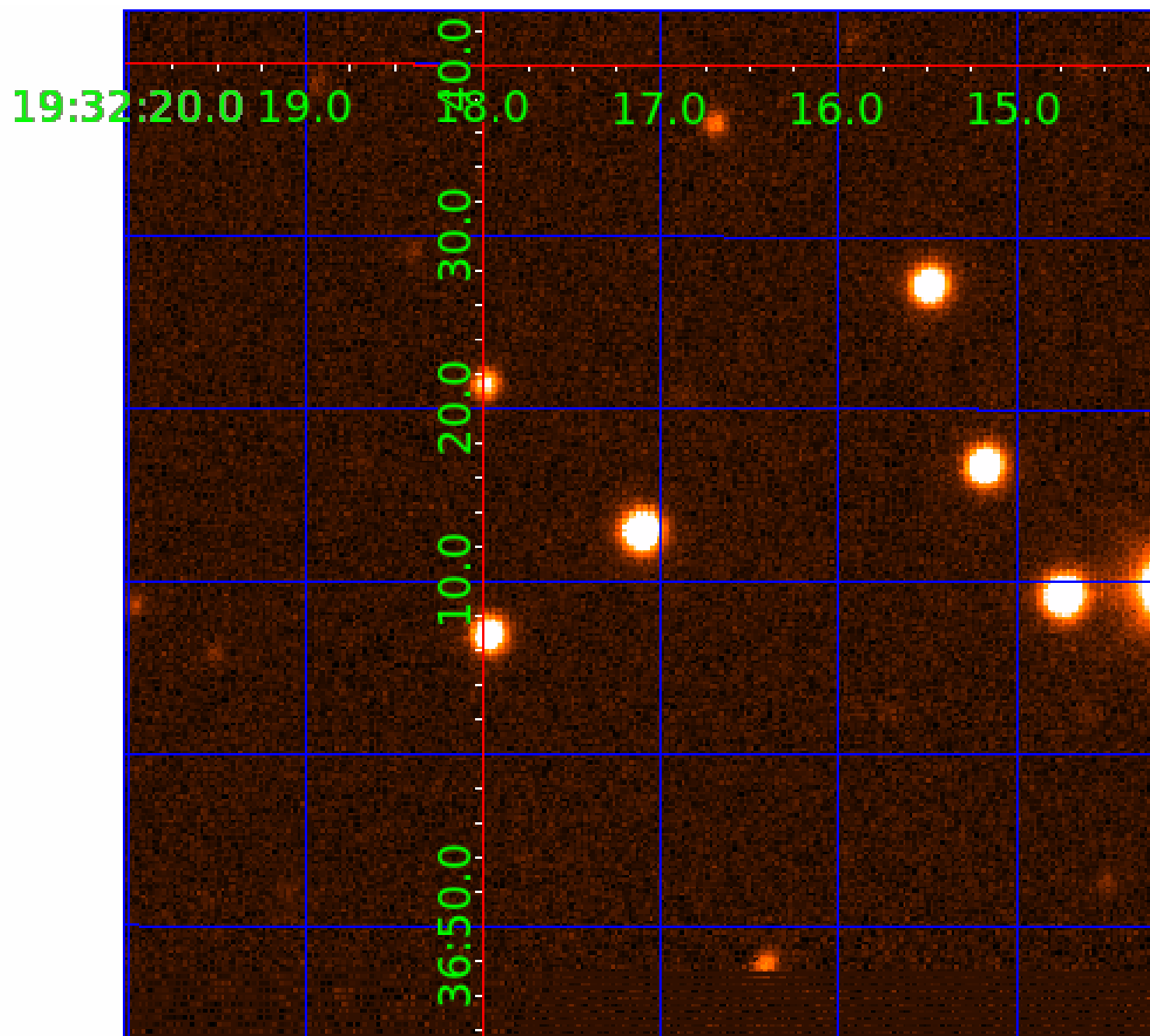


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009833868

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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009833868-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_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.

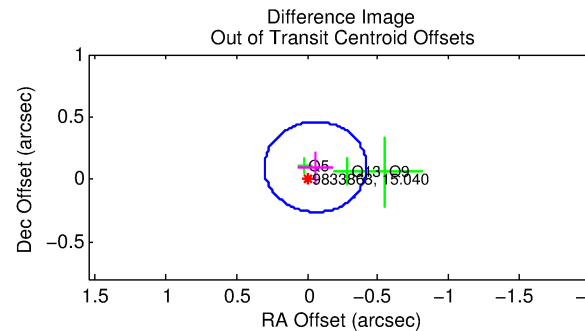
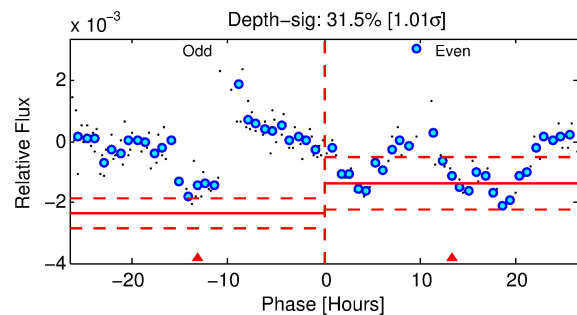
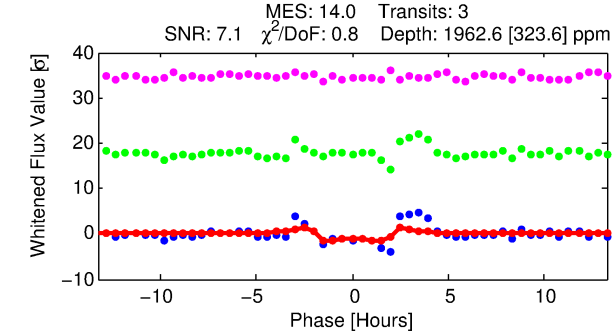
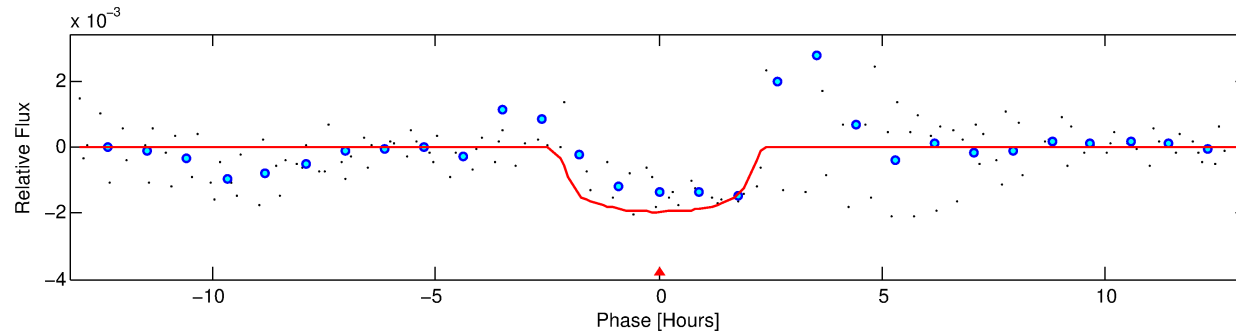
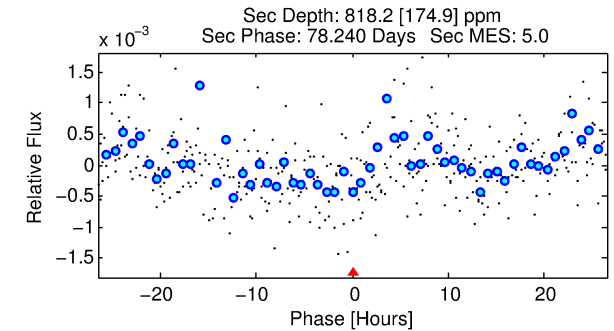
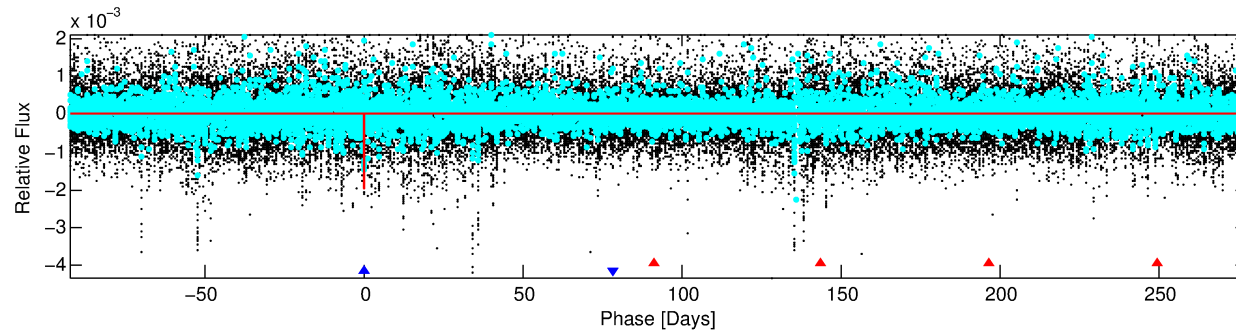
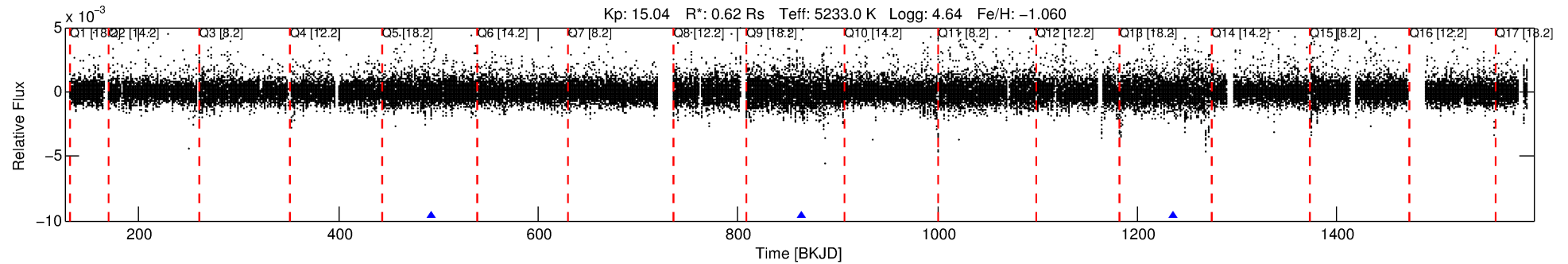
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009833868-02

No Significant Match Found

DV One-Page Summary

KIC: 9833868 Candidate: 2 of 2 Period: 370.894 d



DV Fit Results:

Period = 370.89438 [0.00524] d
Epoch = 493.5567 [0.0076] BKJD
Rp/R* = 0.0402 [0.0515]
a/R* = 667.53 [3755.02]
b = 0.06 [97.18]
Seff = 0.35 [0.06]
Teq = 197 [8] K
Rp = 2.74 [3.52] Re
a = 0.8606 [0.0620] AU
Ag = 44258.61 [113833.26] [0.39 σ]
Teffp = 4412 [2837] K [1.49 σ]

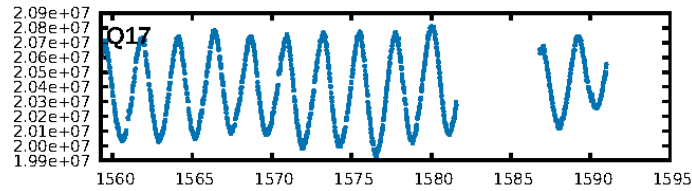
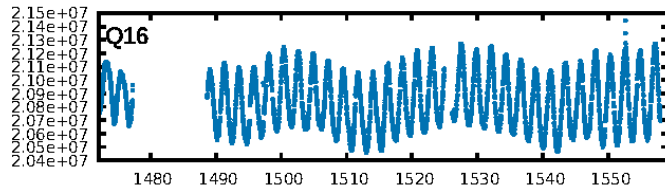
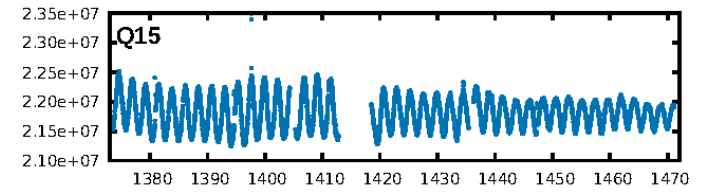
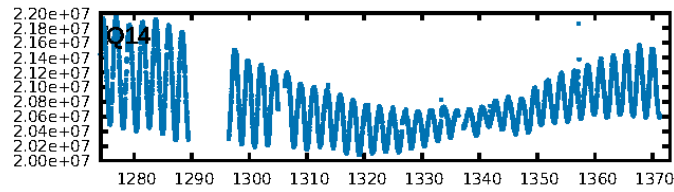
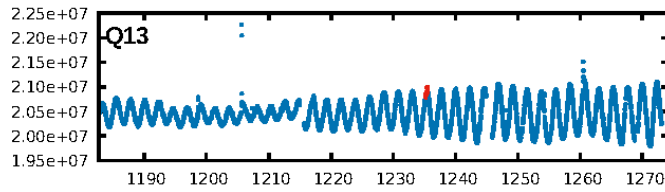
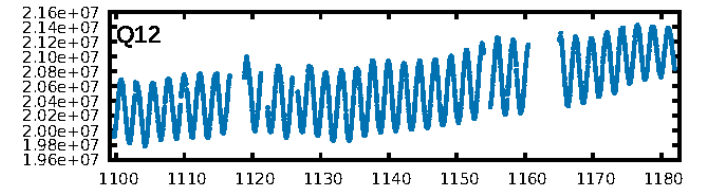
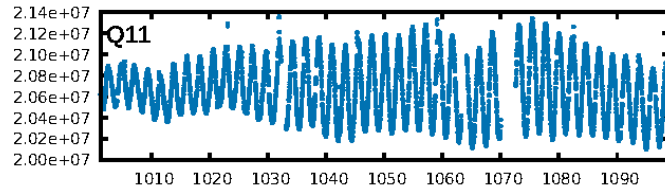
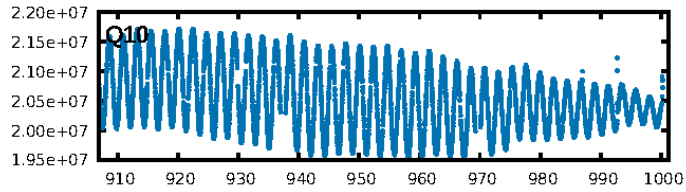
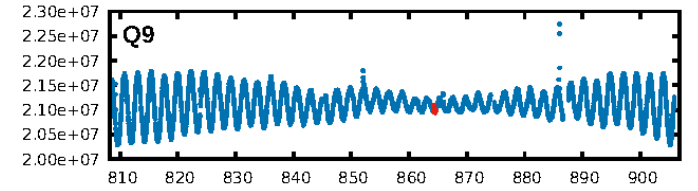
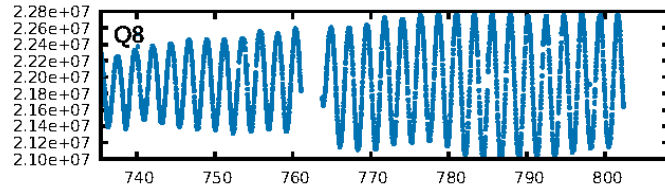
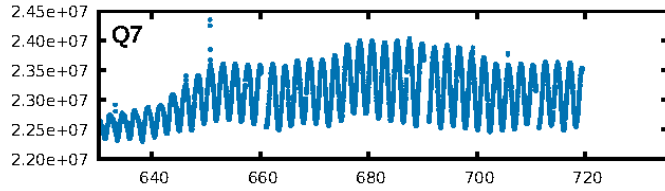
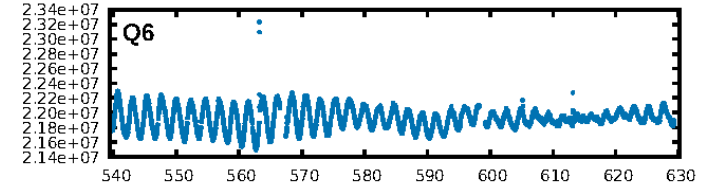
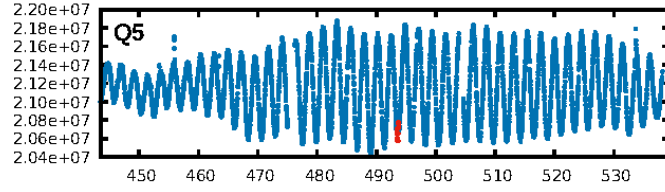
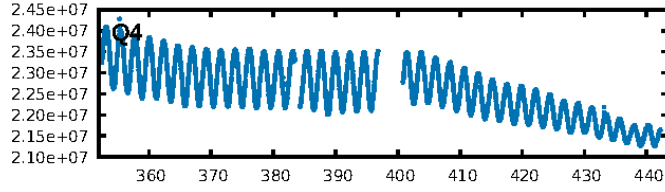
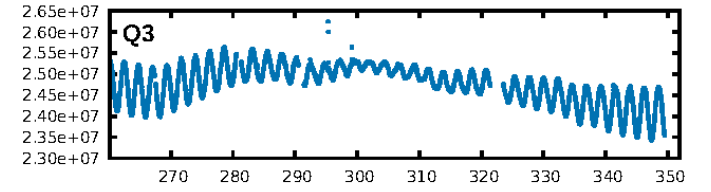
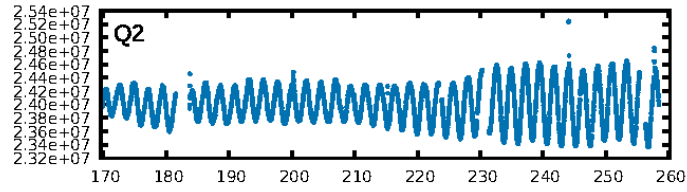
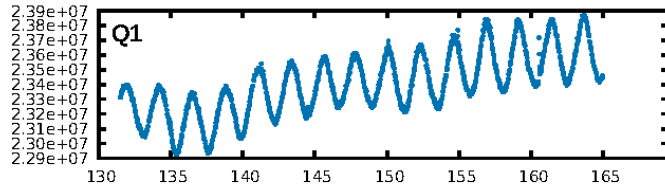
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [161.61 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 90.9%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 4.54e-15
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -15.37
Centroid-sig: 99.8%
Centroid-so: 0.416 arcsec [0.55 σ]
OotOffset-rm: 0.113 arcsec [0.94 σ]
OotOffset-st: 0/0/0/3 [3]
KicOffset-rm: 0.043 arcsec [0.26 σ]
KicOffset-st: 0/0/0/3 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

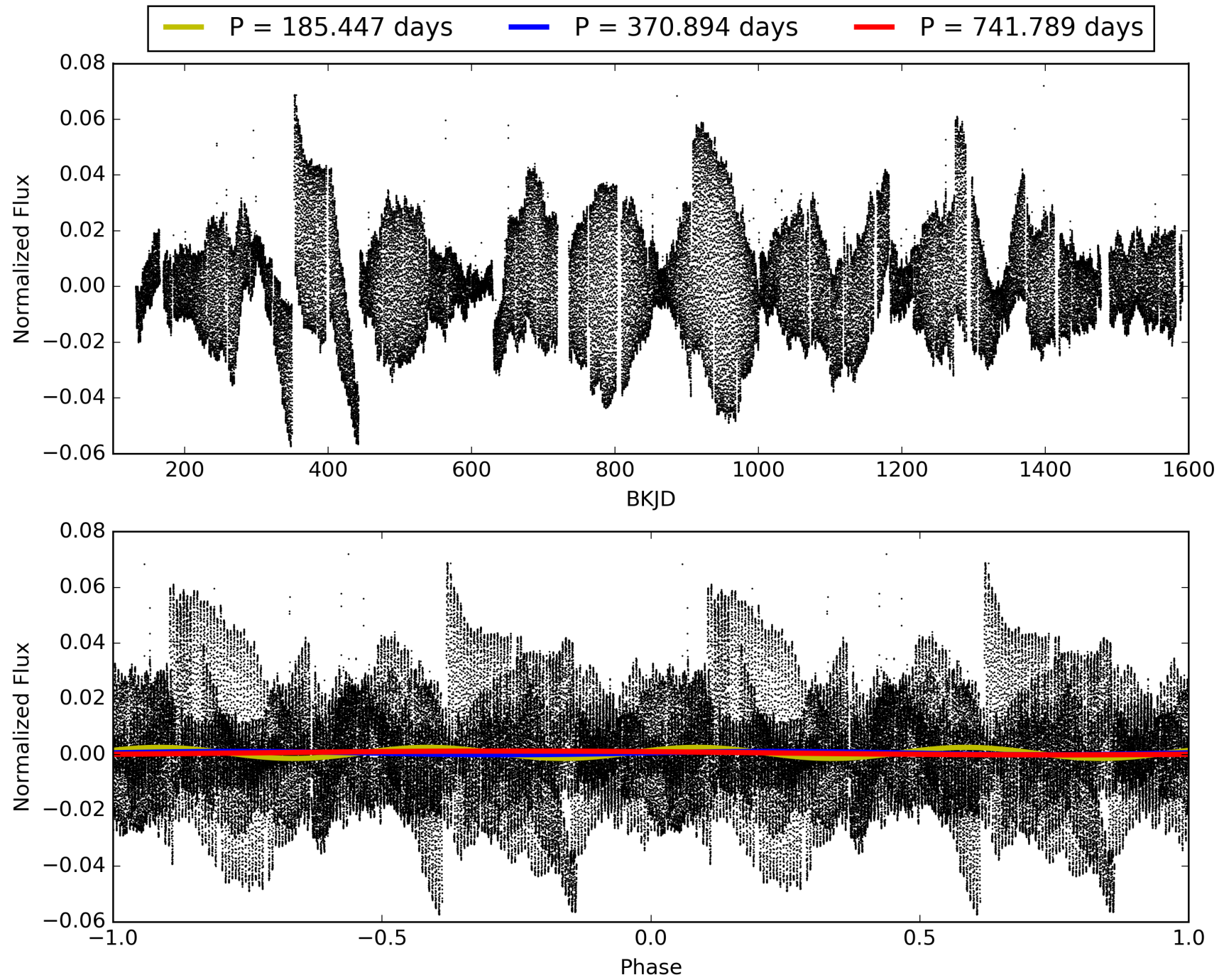
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:17:37 Z

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

TCE 009833868-02, PDC Light Curves

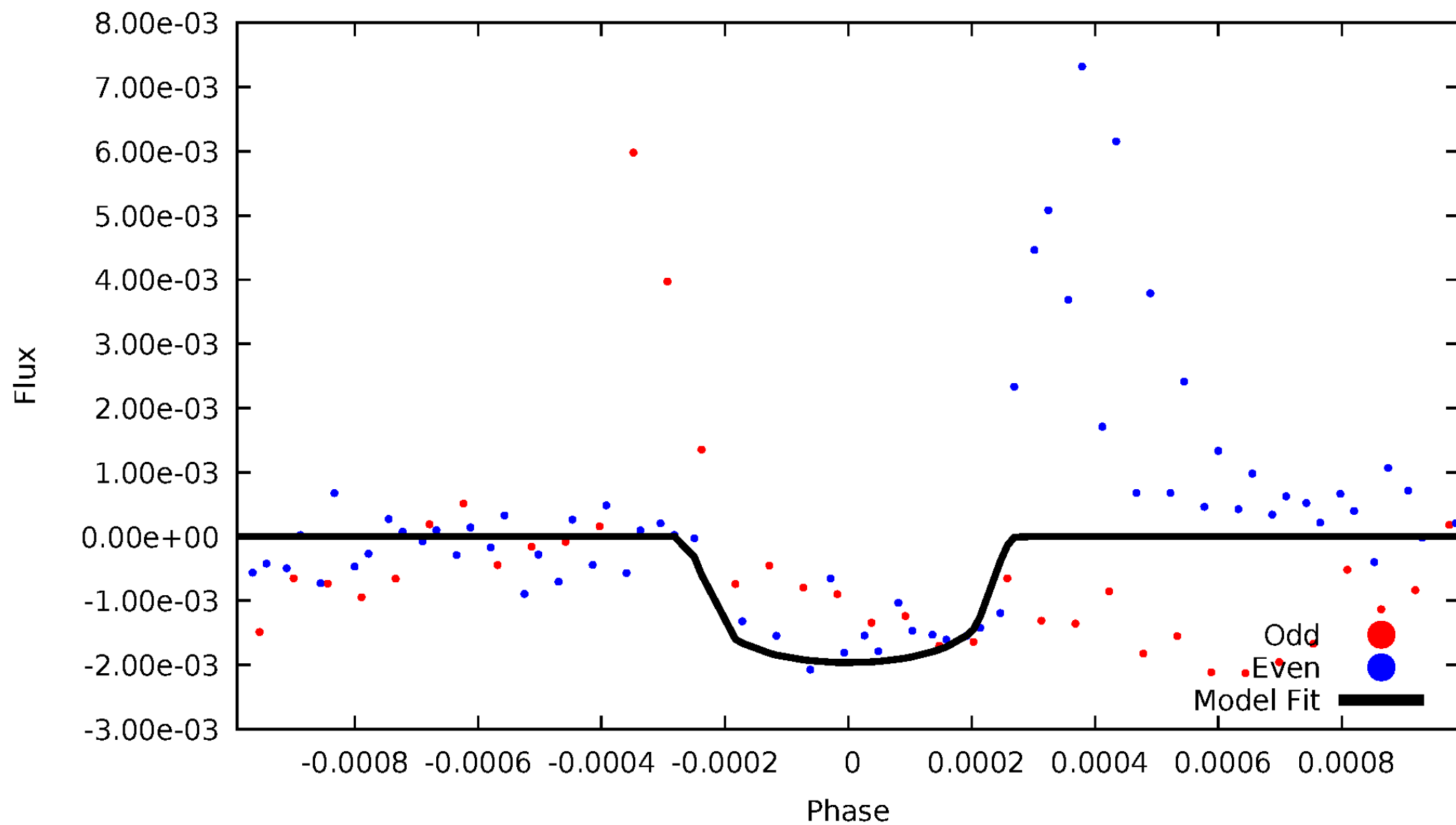


TCE 009833868-02



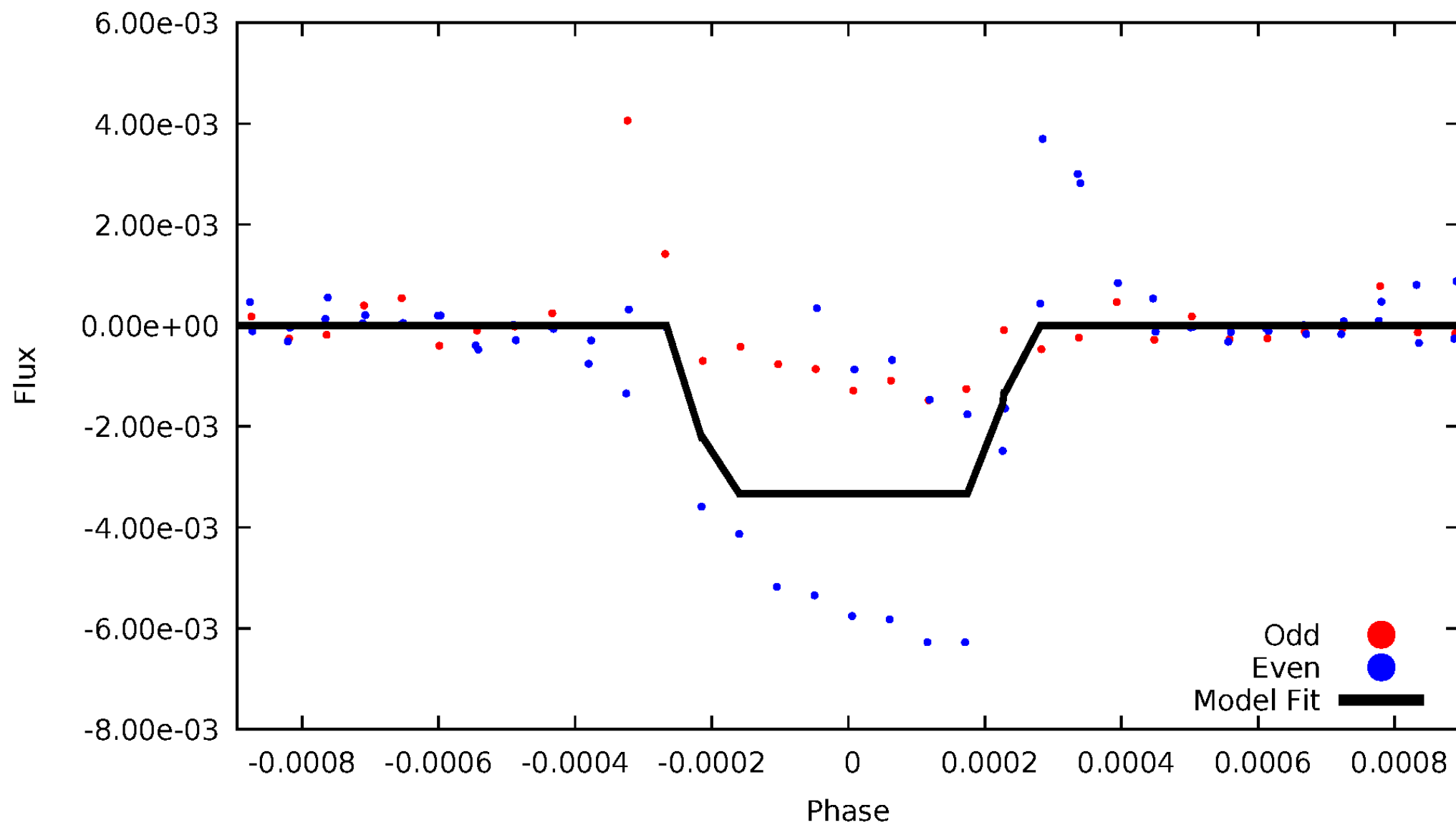
DV Odd/Even

TCE 009833868-02



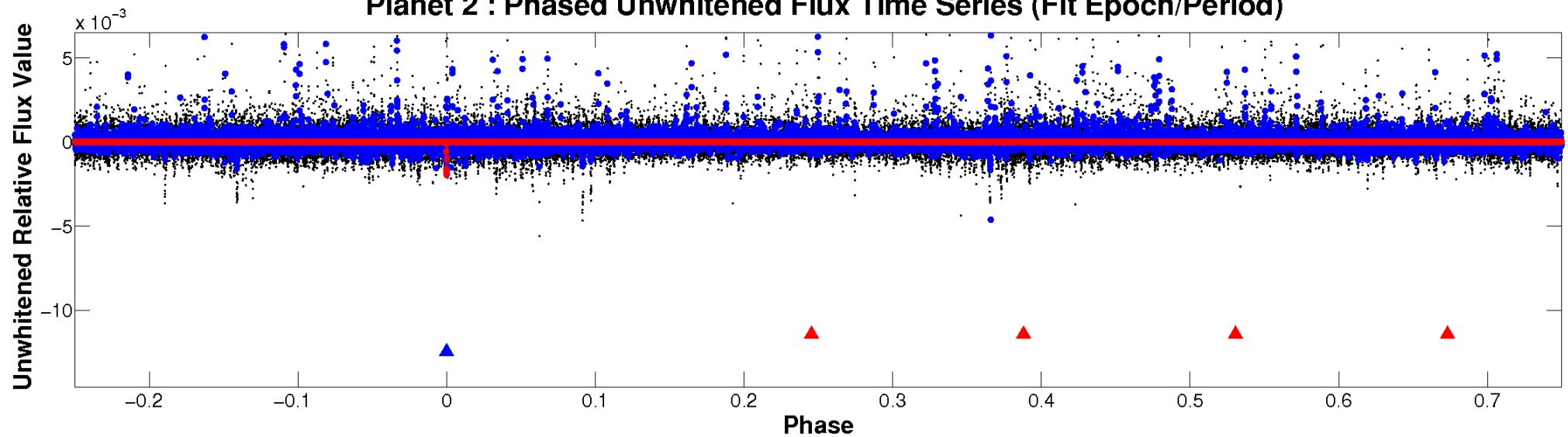
ALT Odd/Even

TCE 009833868-02

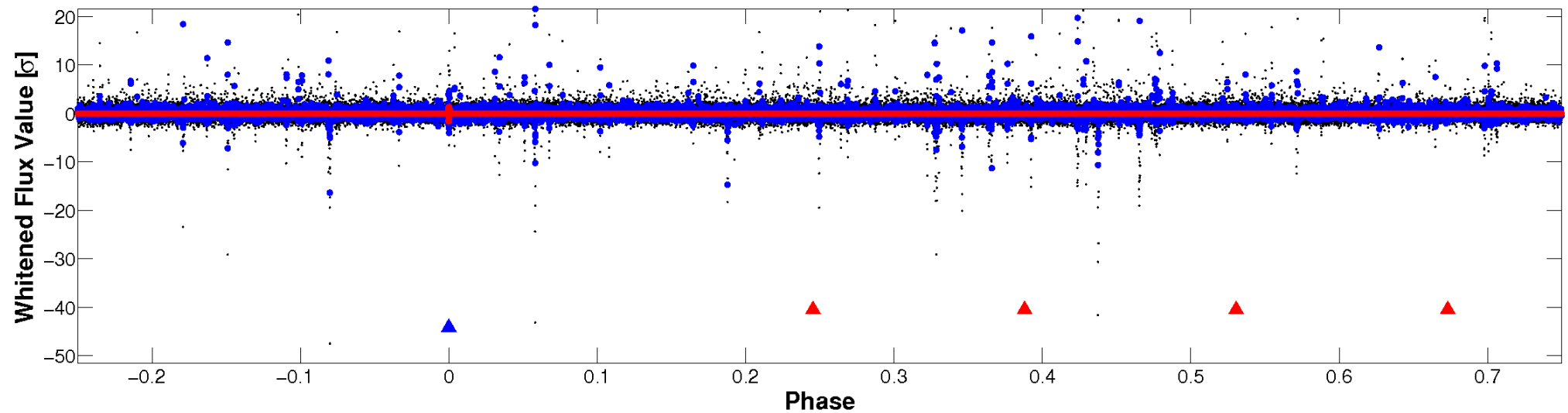


Non-Whitened Vs. Whitened Light Curve

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

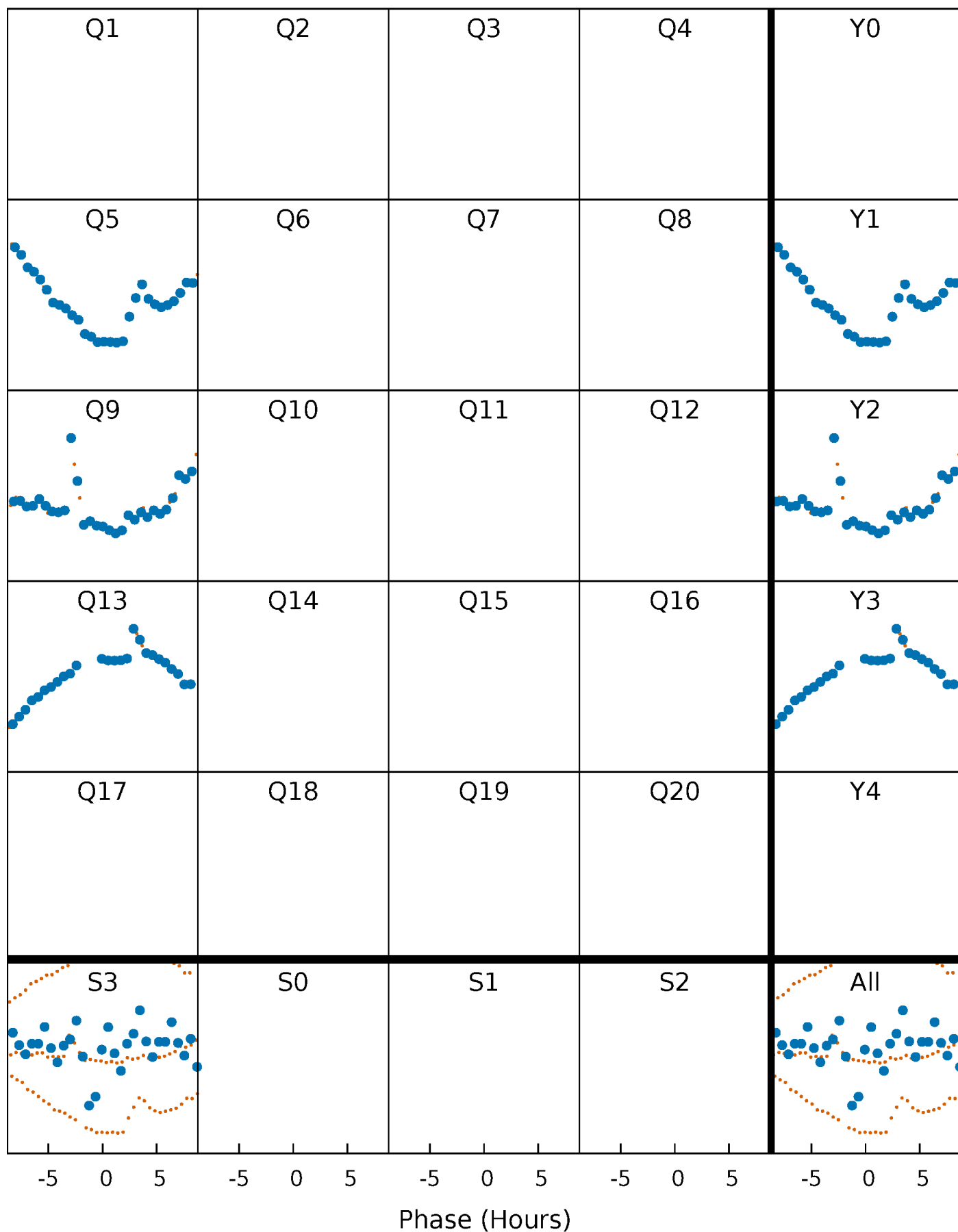


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



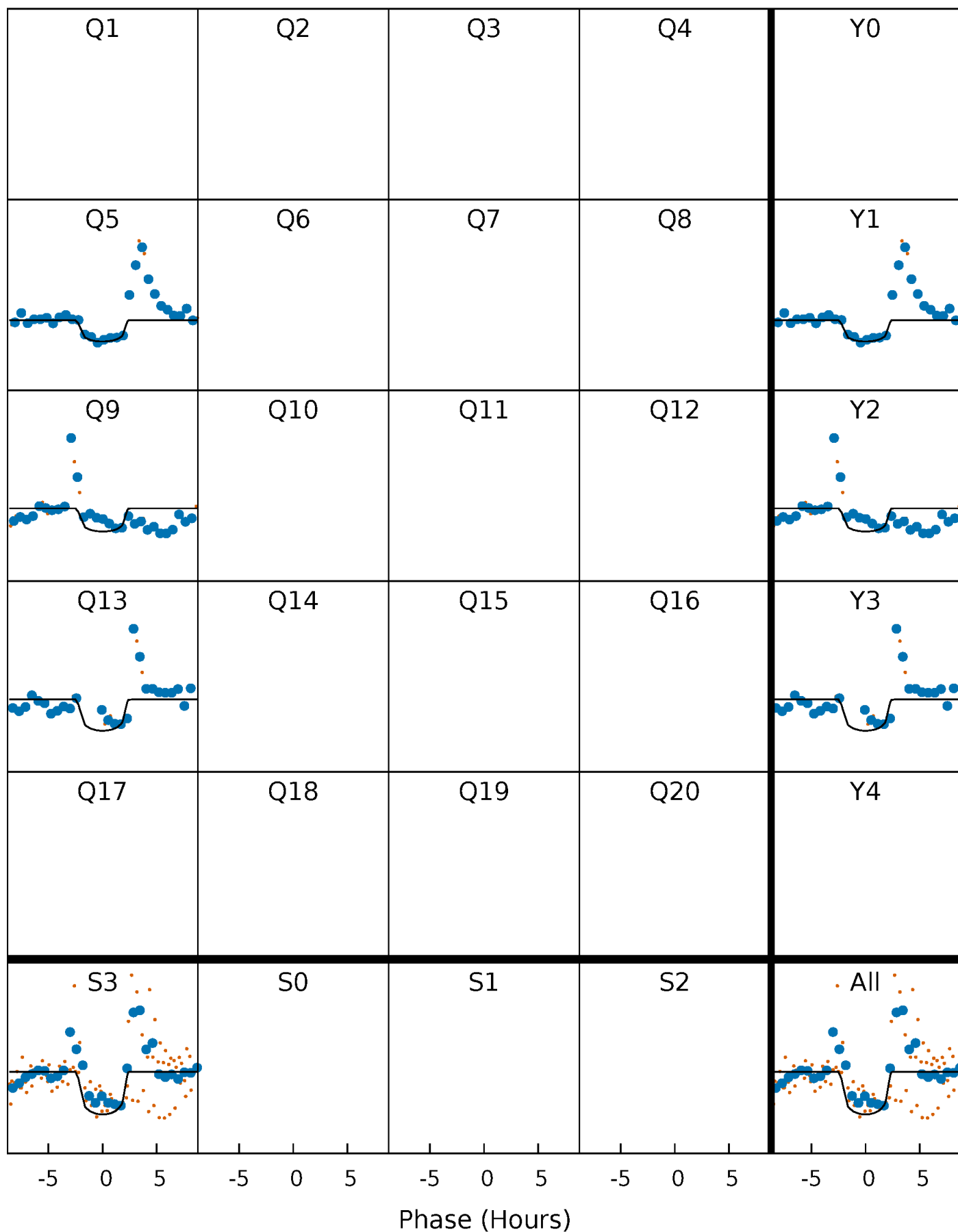
PDC Quarter-Phased Transit Curves

TCE 009833868-02 $P=370.894377$ Days $T_0=493.556670$ (BKJD)



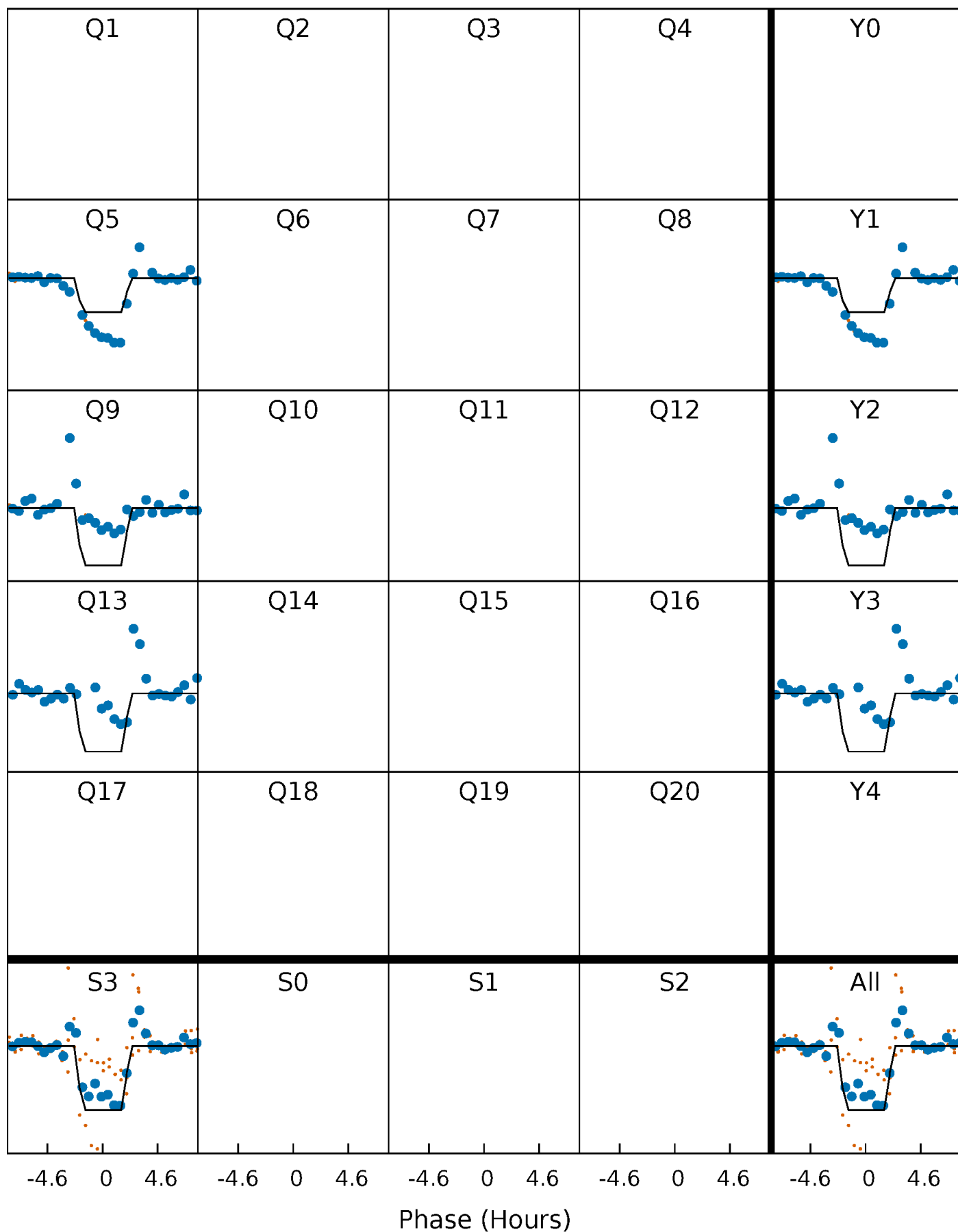
DV Quarter-Phased Transit Curves

TCE 009833868-02 $P=370.894377$ Days $T_0=493.556670$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

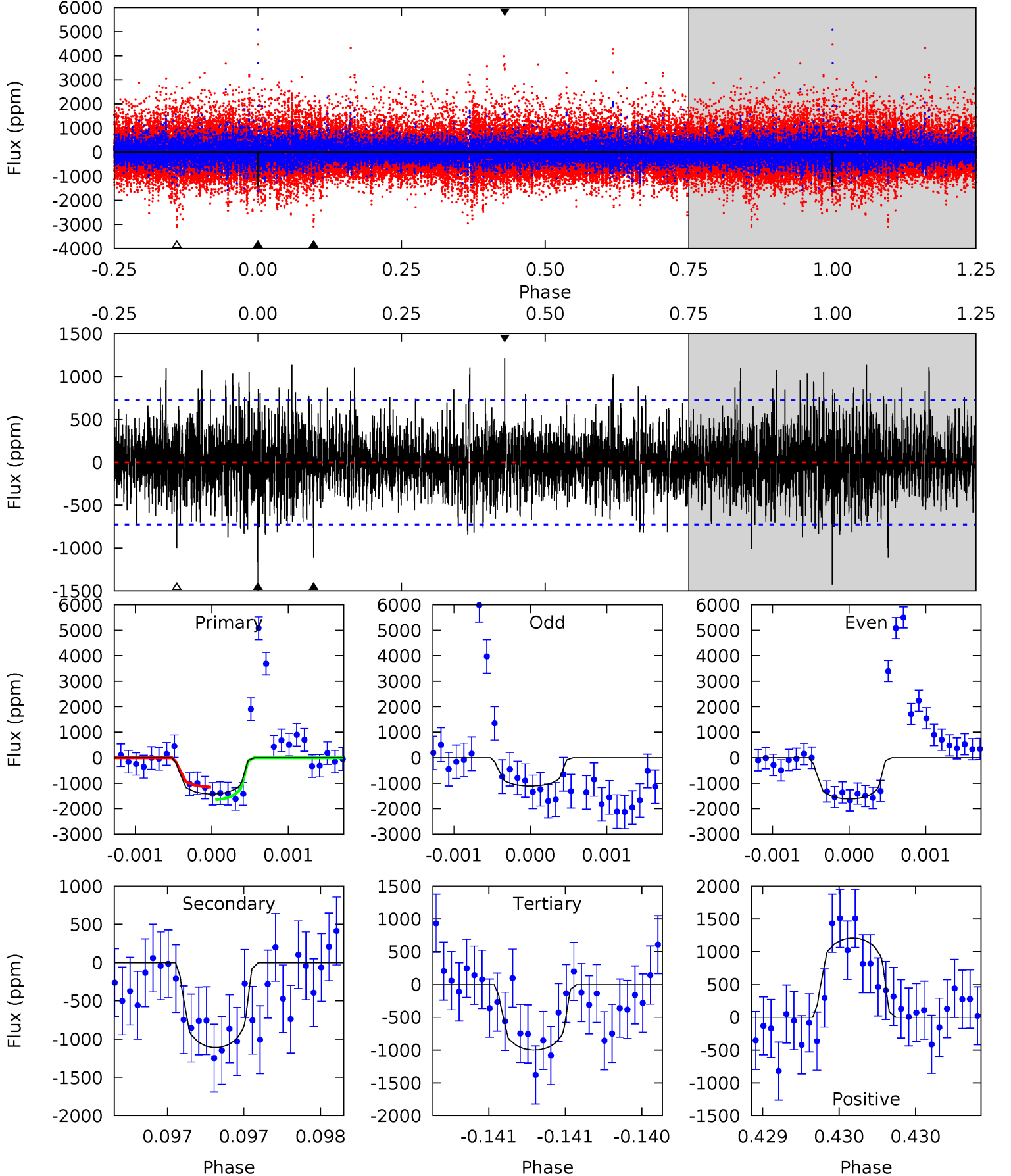
TCE 009833868-02 $P=370.889547$ Days $T_0=493.572660$ (BKJD)



DV Model-Shift Uniqueness Test

009833868-02, $P = 370.894377$ Days, $E = 122.662293$ Days

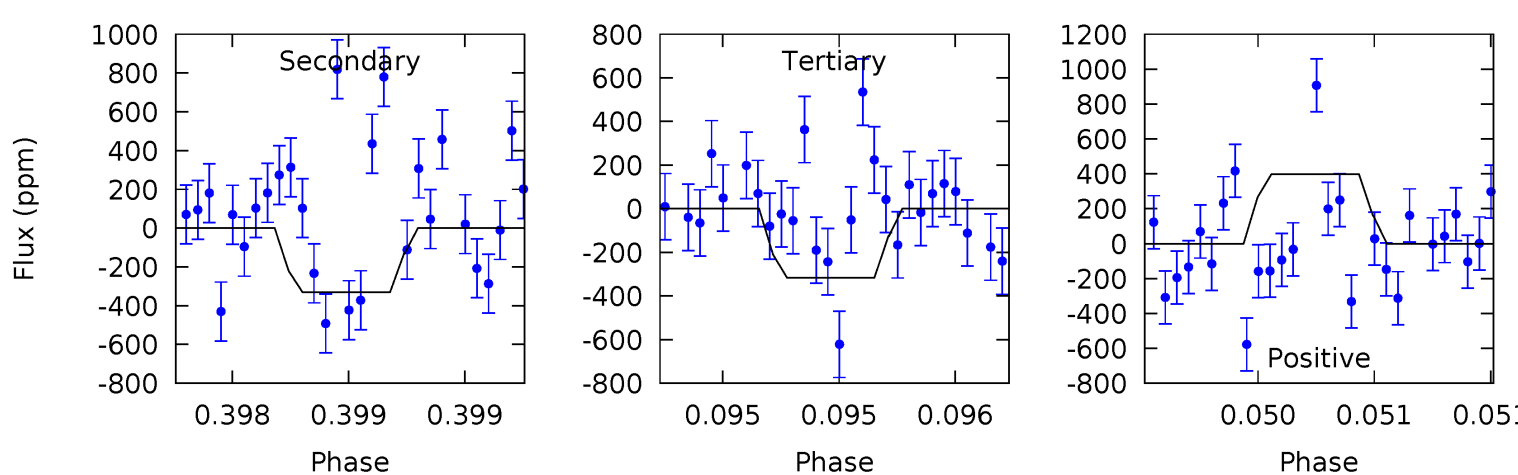
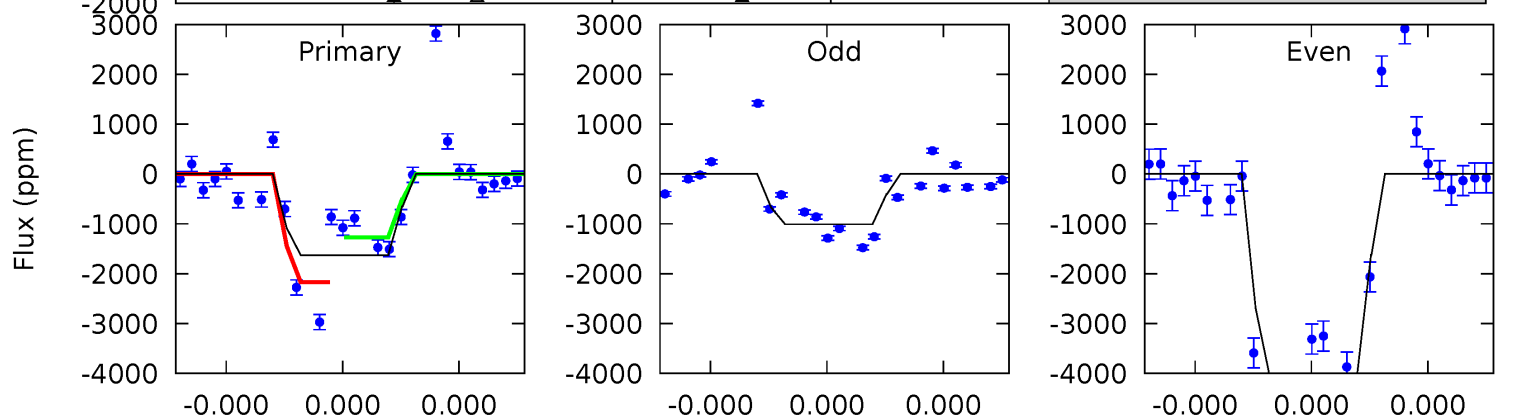
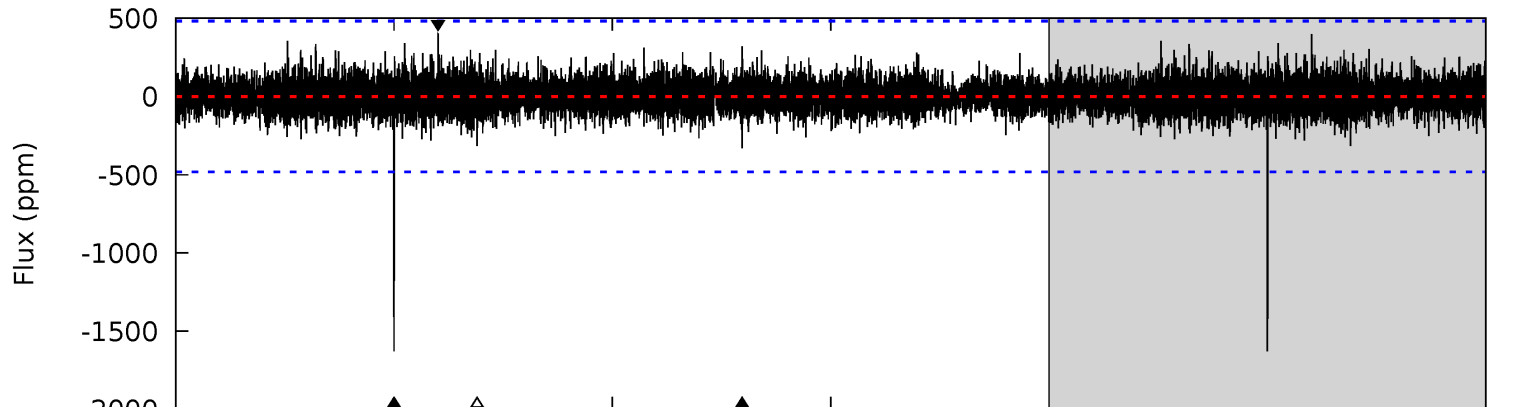
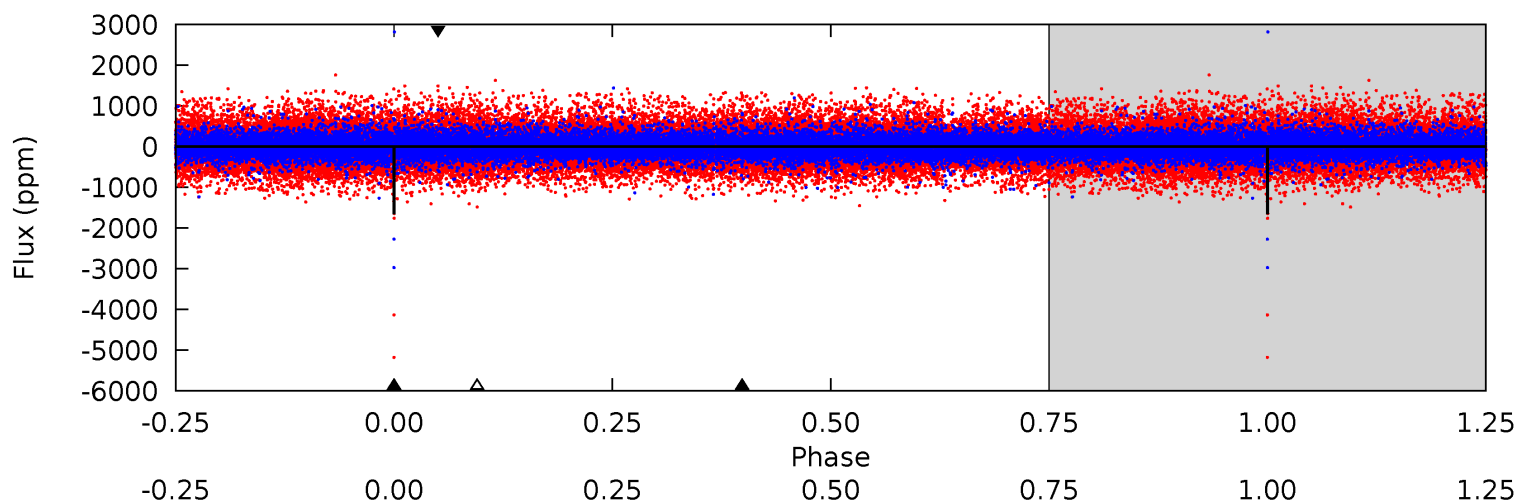
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	8.52	7.67	9.28	5.56	3.46	1.96	3.26	1.66	0.85	-0.76	1.70	1.05	0.46	1.90



Alt Model-Shift Uniqueness Test

009833868-02, P = 370.889547 Days, E = 122.683113 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.9	3.84	3.66	4.62	5.59	3.51	0.82	15.2	14.3	0.18	-0.79	20.2	2.49	0.20	0



Stellar Parameters For KIC 009833868

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5233^{+156}_{-156}	$4.637^{+0.066}_{-0.038}$	$-1.060^{+0.300}_{-0.300}$	$0.625^{+0.048}_{-0.043}$	$0.618^{+0.053}_{-0.023}$	$3.564^{+0.879}_{-0.543}$
	+3%/-3%	+1%/-1%	+28%/-28%	+8%/-7%	+9%/-4%	+25%/-15%
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 009833868-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1110 ± 130	$3.86^{+3.14}_{-2.51}$	273^{+9}_{-10}	4230^{+2571}_{-797}	$31481^{+234763}_{-22285}$
Alt.	-331 ± 86	$4.47^{+3.22}_{-2.57}$	274^{+10}_{-10}	3294^{+1141}_{-489}	6684^{+34067}_{-4479}

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

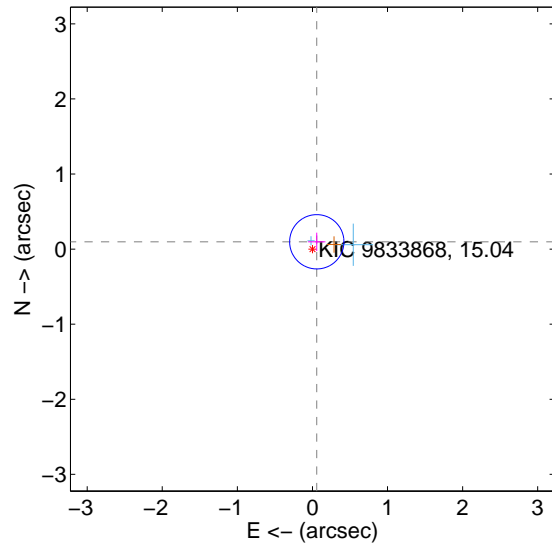
Supplemental centroid analysis for 009833868-02. Kepler magnitude: 15.04. Transit SNR 7.14

There are 2 quarters with good PRF difference image offsets

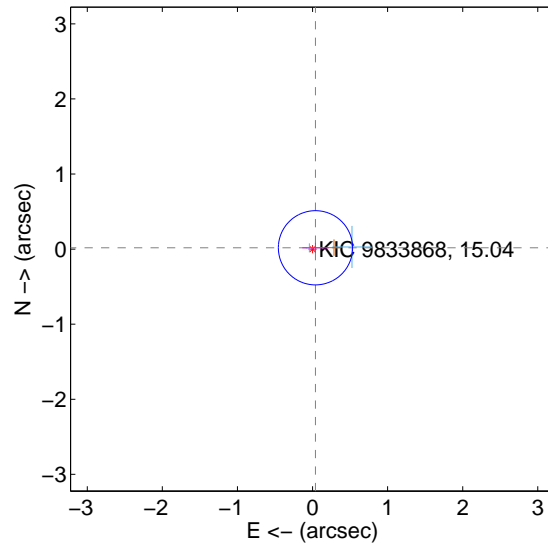
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.113 ± 0.121	0.94	-0.058 ± 0.116	0.097 ± 0.122
PRF-fit source offset from KIC position	0.043 ± 0.165	0.26	-0.039 ± 0.176	0.017 ± 0.067
photometric centroid source offset	0.42 ± 0.76	0.55	0.31 ± 0.79	-0.28 ± 0.71

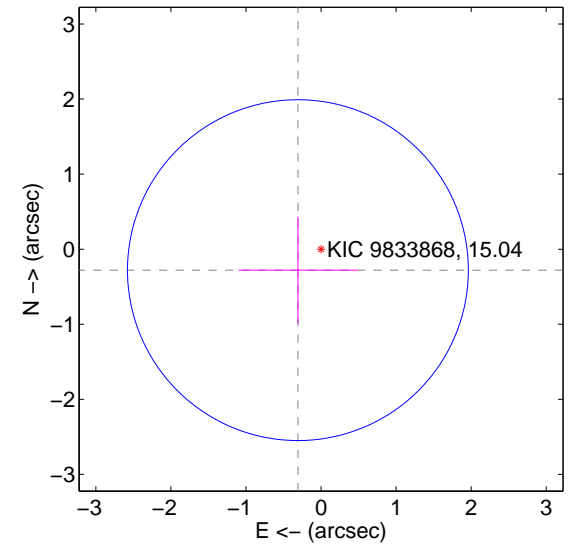
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

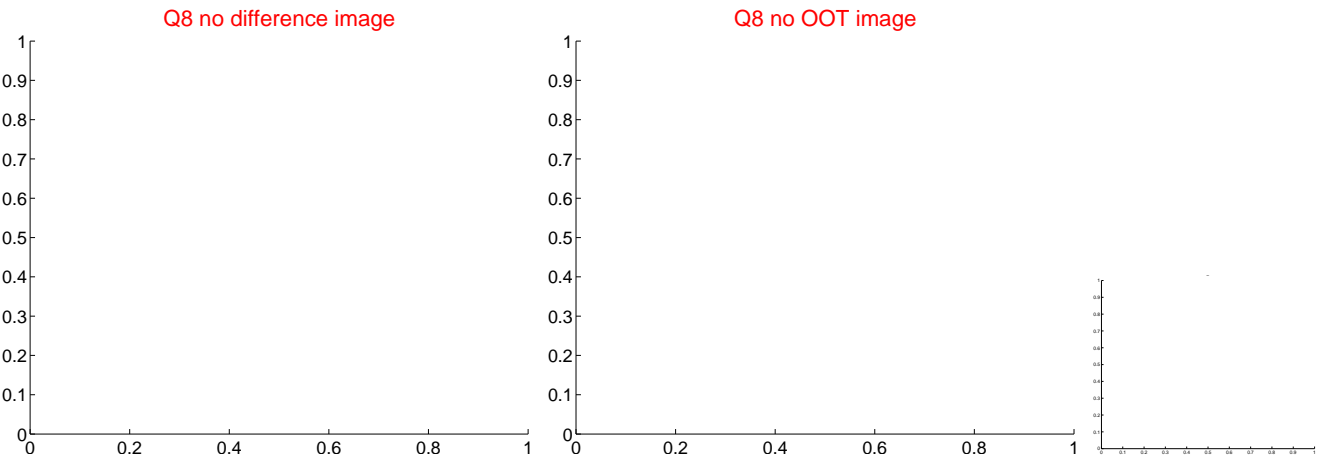
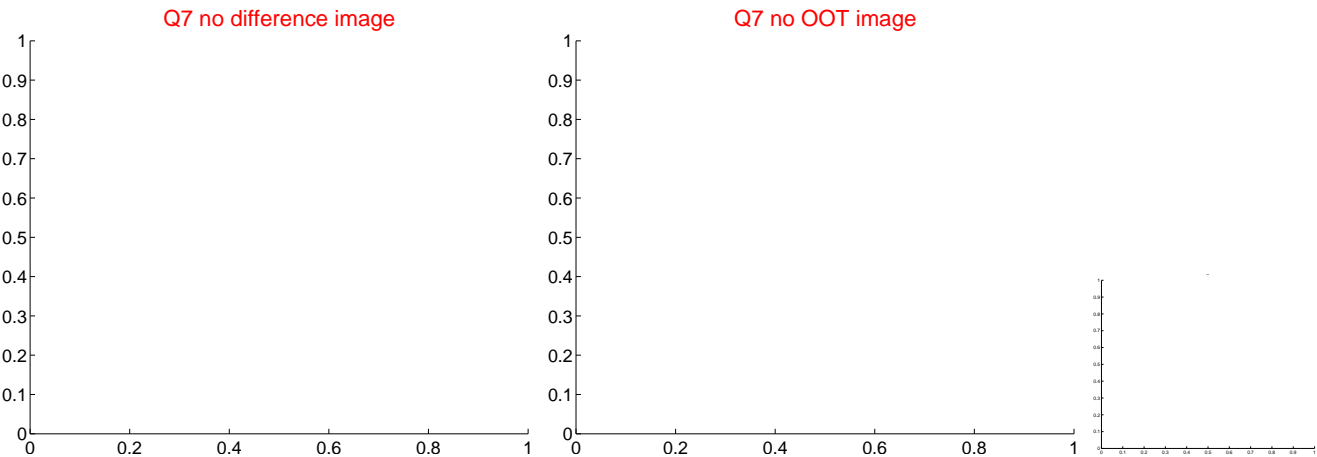
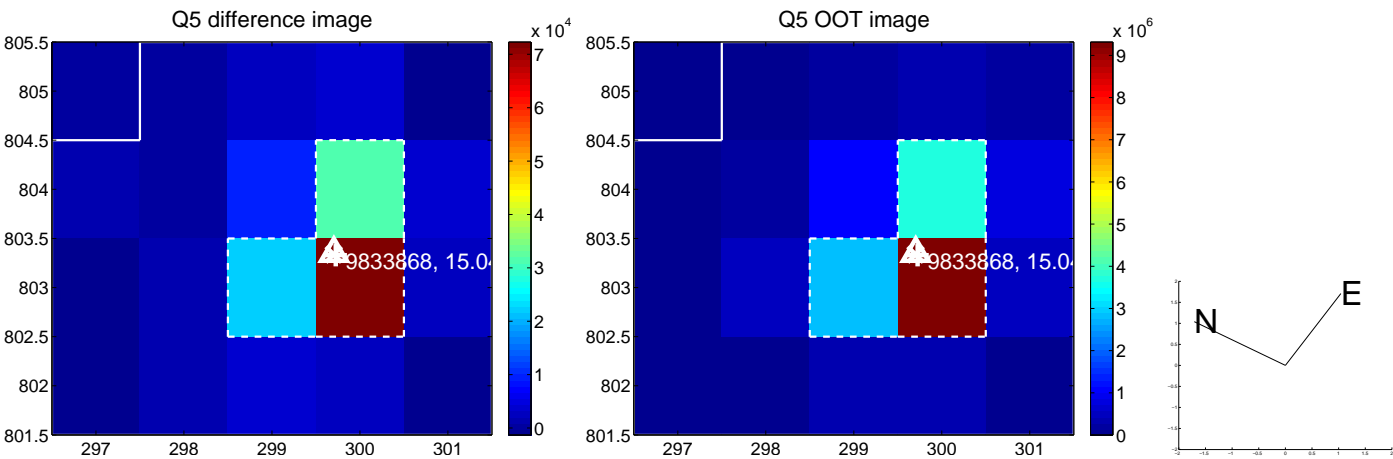


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

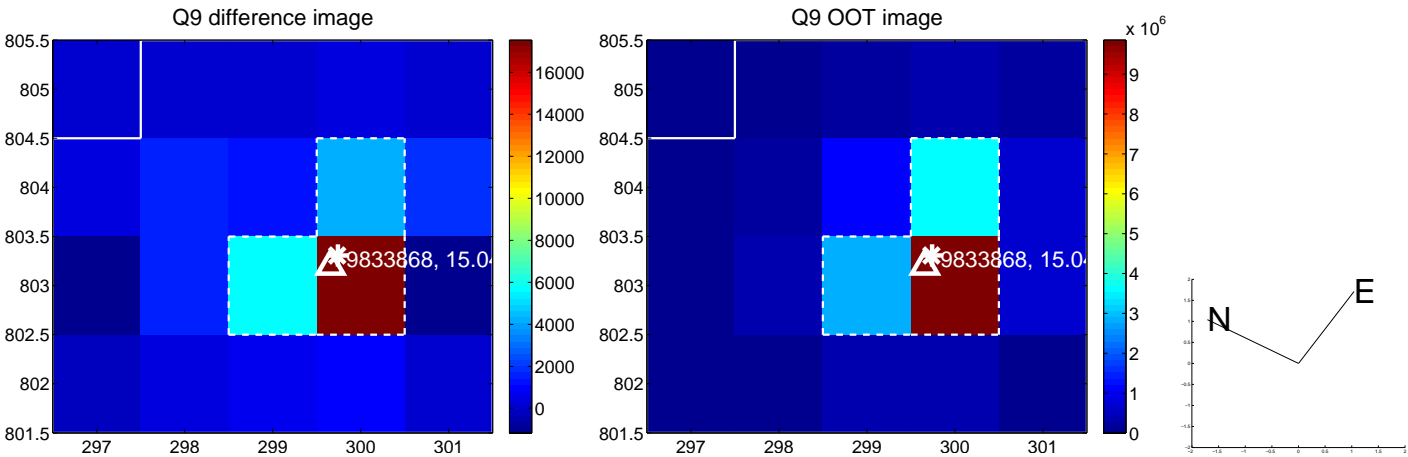
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



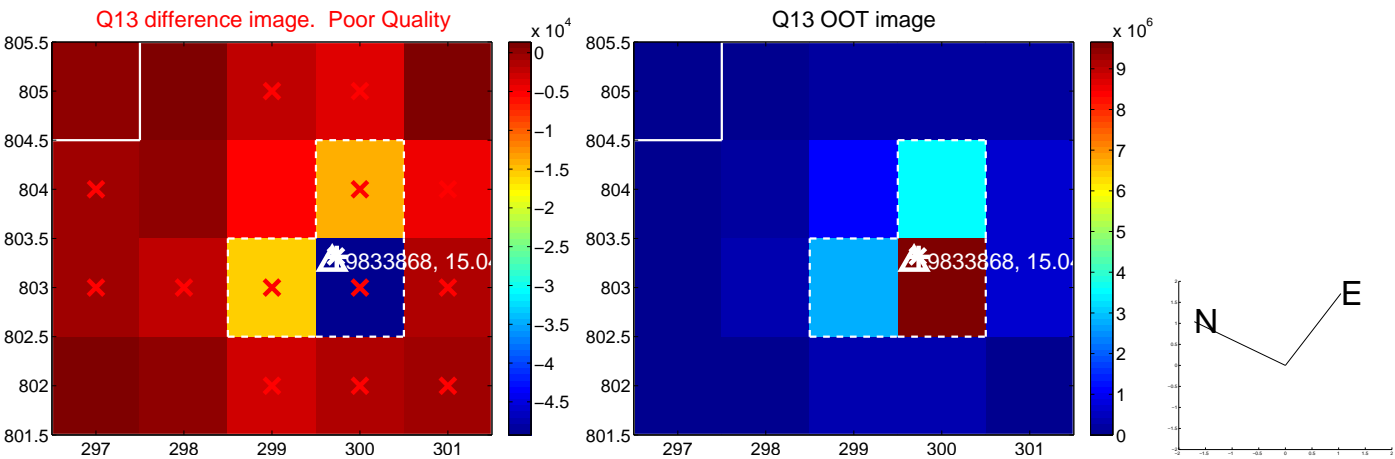
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



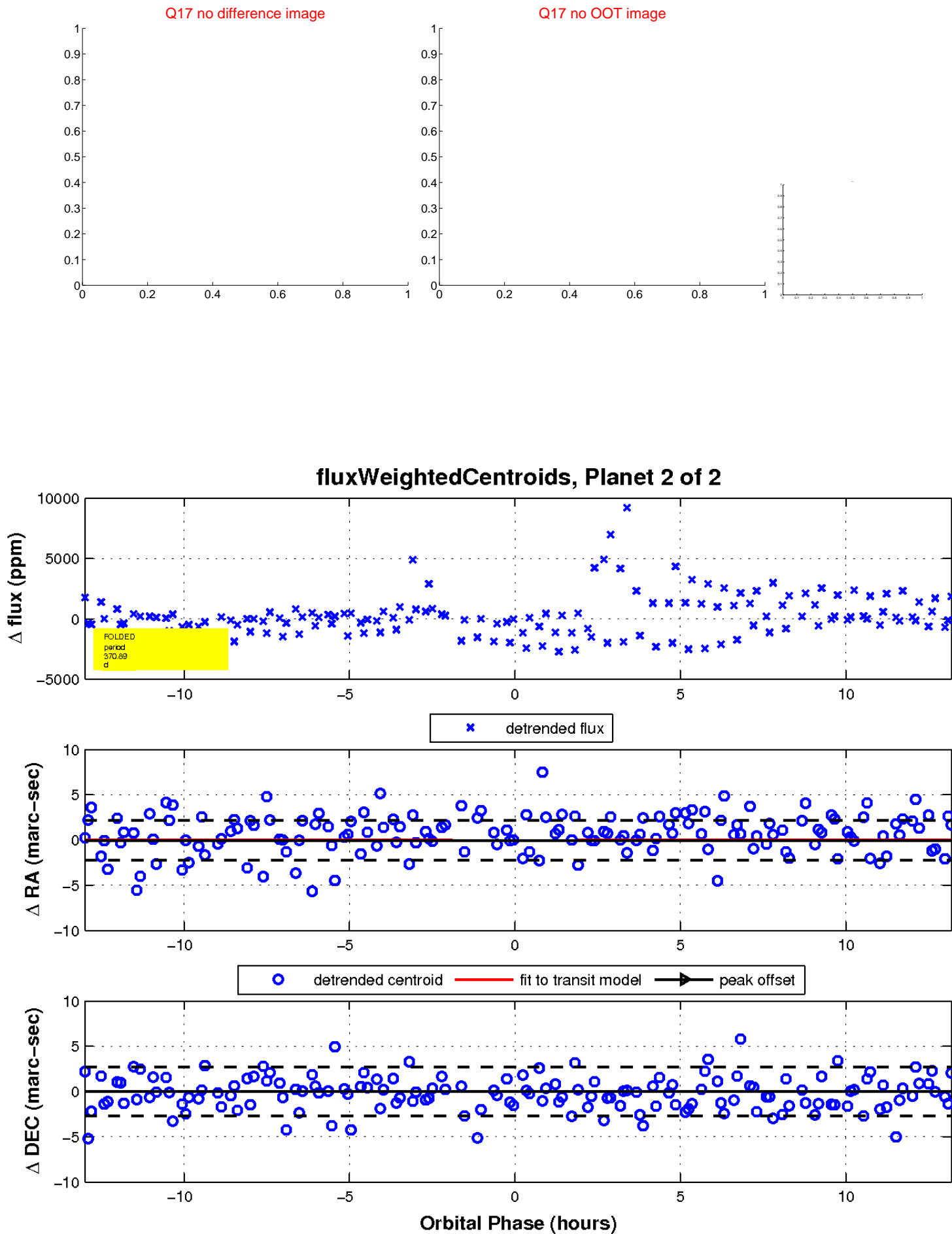
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

