

KIC 009304797

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})
009304797-01	OBS	No	369.960945	255.843492	4671.5	8.450	253.5	22.9	7.55	4837	62.65	20.68
009304797-02	OBS	No	185.613972	250.872040	44.3	4.041	197.9	0.4	7.55	4837	5.07	51.86
009304797-03	OBS	No	430.413409	515.833423	0.5	34.111	136.0	0.0	7.55	4837	0.53	16.90
009304797-04	OBS	No	365.718659	261.444331	5255.8	28.547	191.4	66.3	7.55	4837	100.81	21.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009304797-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED
009304797-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009304797-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009304797-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED

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

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

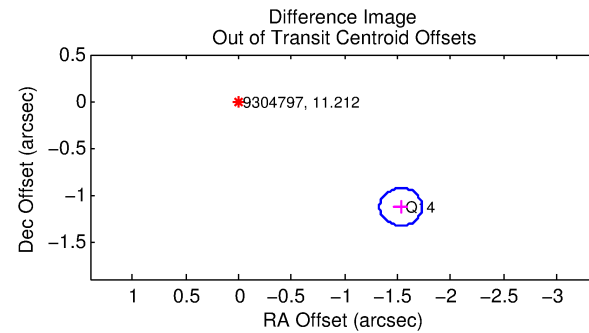
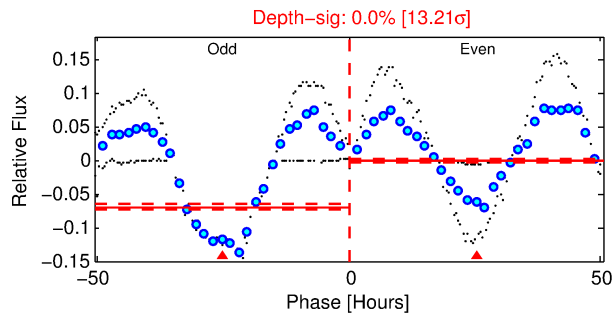
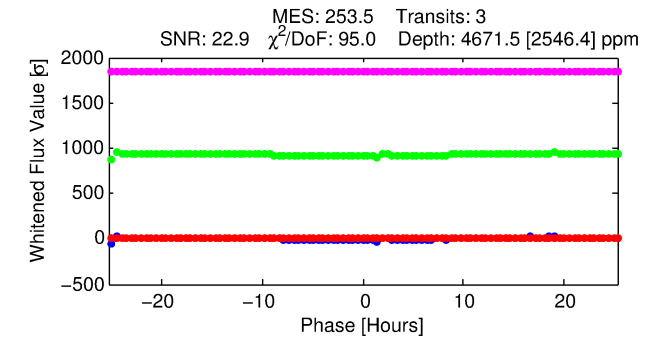
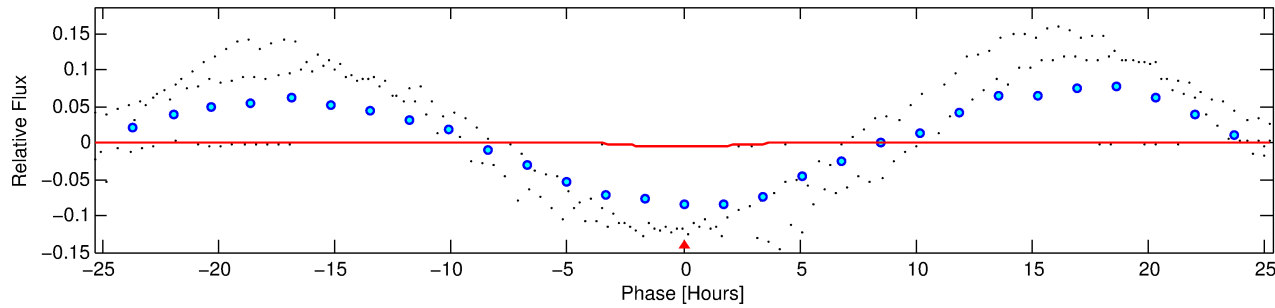
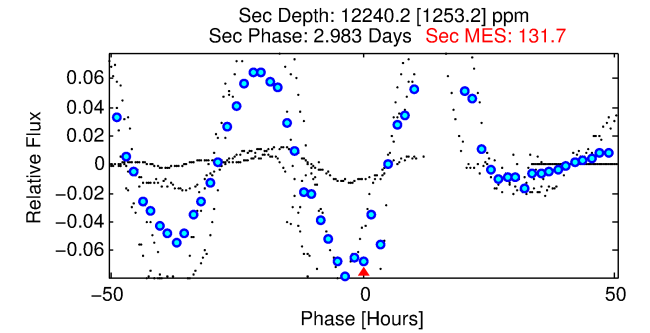
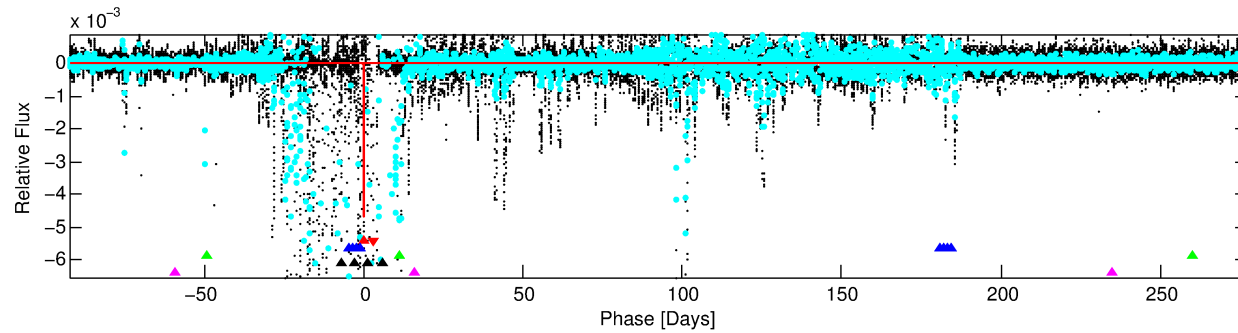
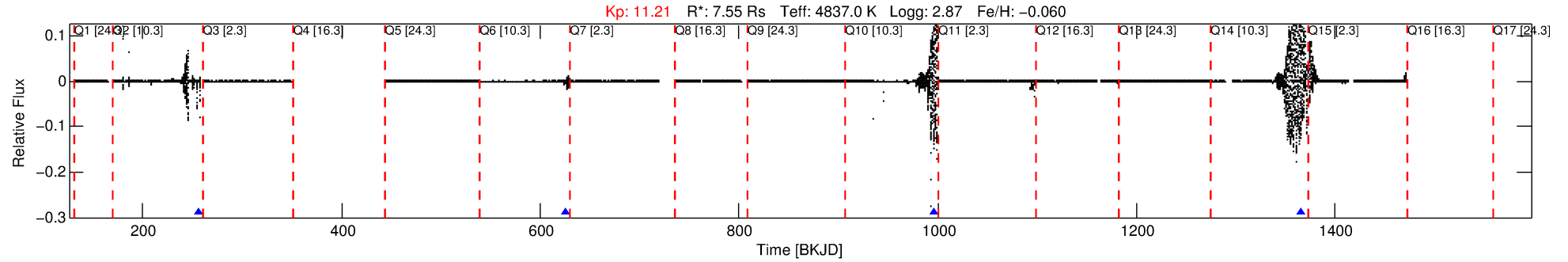
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009304797-01

No Significant Match Found

DV One-Page Summary

KIC: 9304797 Candidate: 1 of 5 Period: 369.961 d



DV Fit Results:

Period = 369.96095 [0.31535] d
Epoch = 255.8435 [0.3209] BKJD
Rp/R* = 0.0761 [0.0274]
a/R* = 202.11 [125.87]
b = 0.89 [0.16]
Seff = 20.68 [6.36]
Teq = 544 [42] K
Rp = 62.65 [27.78] Re
a = 1.1622 [0.2474] AU
Ag = 2317.40 [1823.93] [1.27 σ]
Teffp = 5833 [1063] K [4.97 σ]

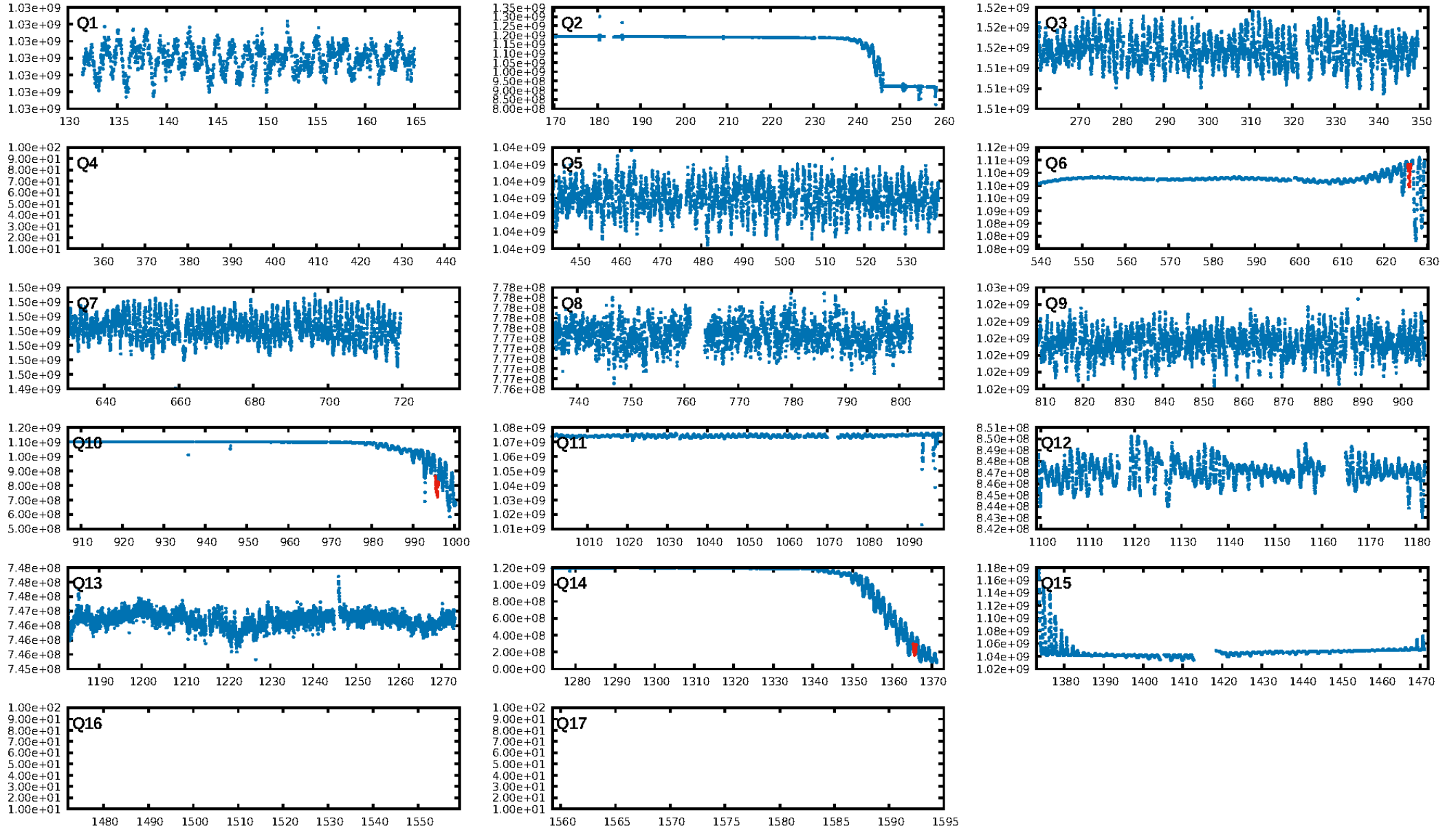
DV Diagnostic Results:

ShortPeriod-sig: 99.9% [3.42 σ]
LongPeriod-sig: 100.0% [41.29 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.298
Centroid-sig: 13.1%
Centroid-so: 13.210 arcsec [1.63 σ]
OotOffset-rm: 1.904 arcsec [28.55 σ]
KicOffset-rm: 5.294 arcsec [79.37 σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [3/3]

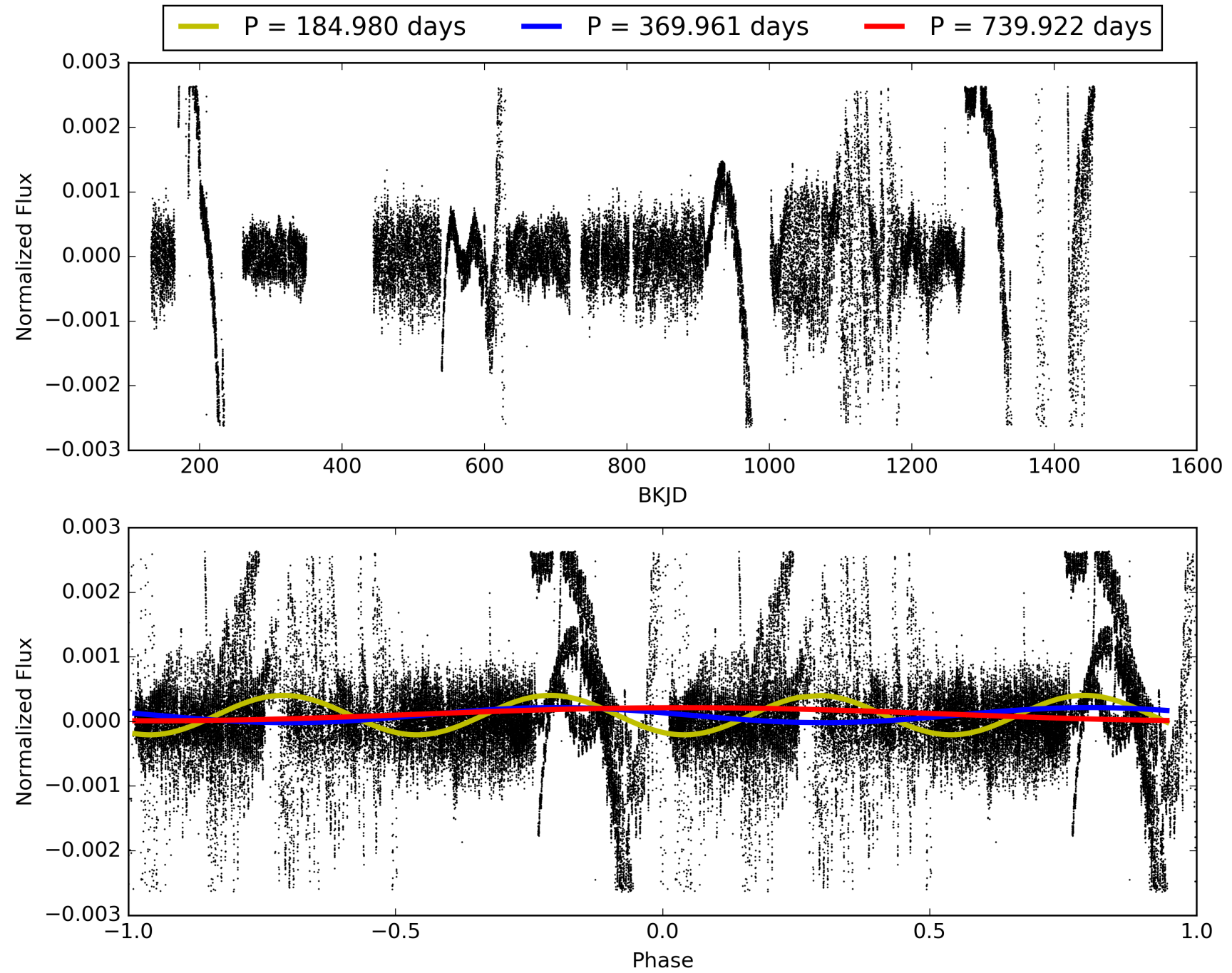
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009304797-01, PDC Light Curves

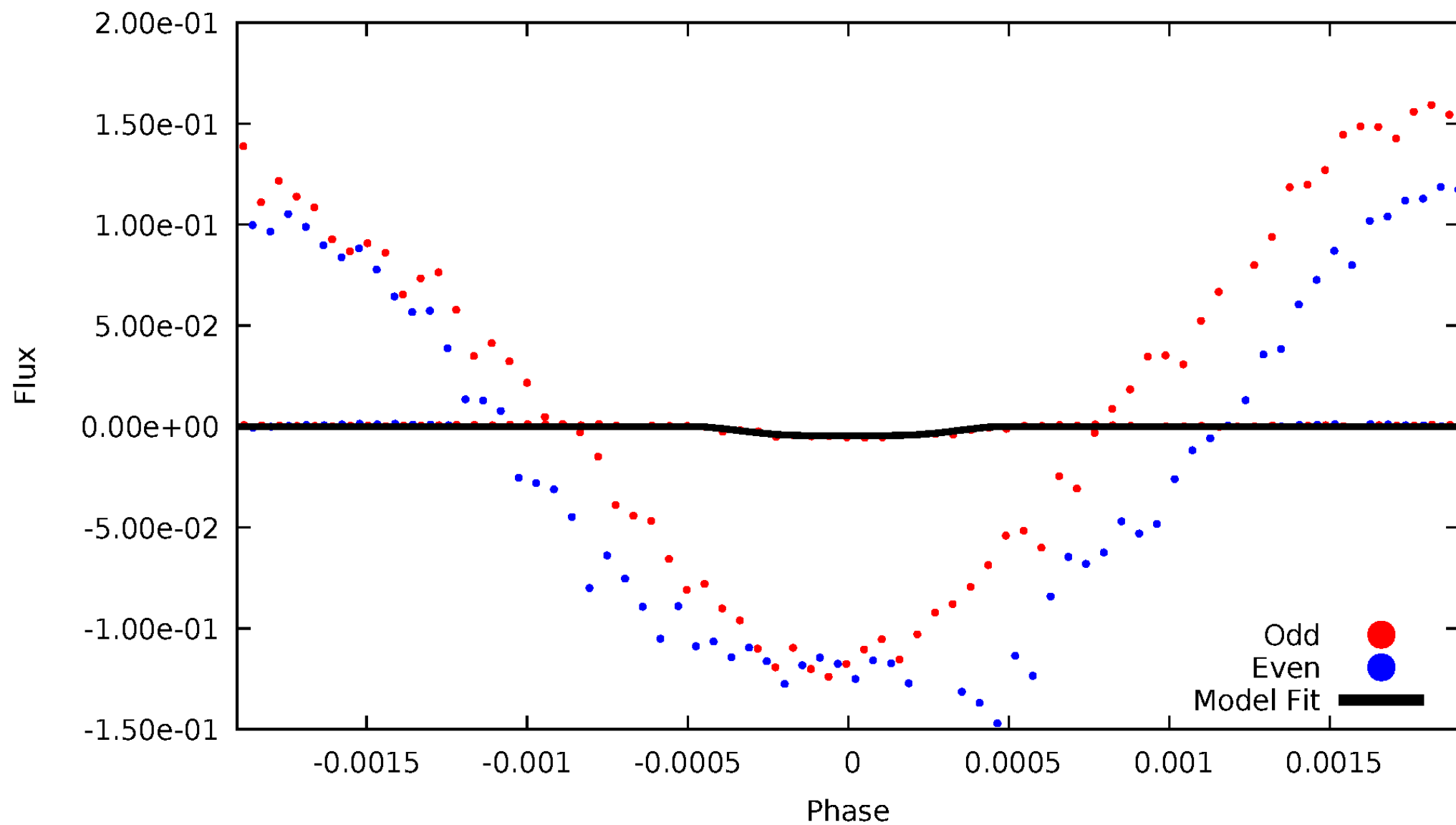


TCE 009304797-01



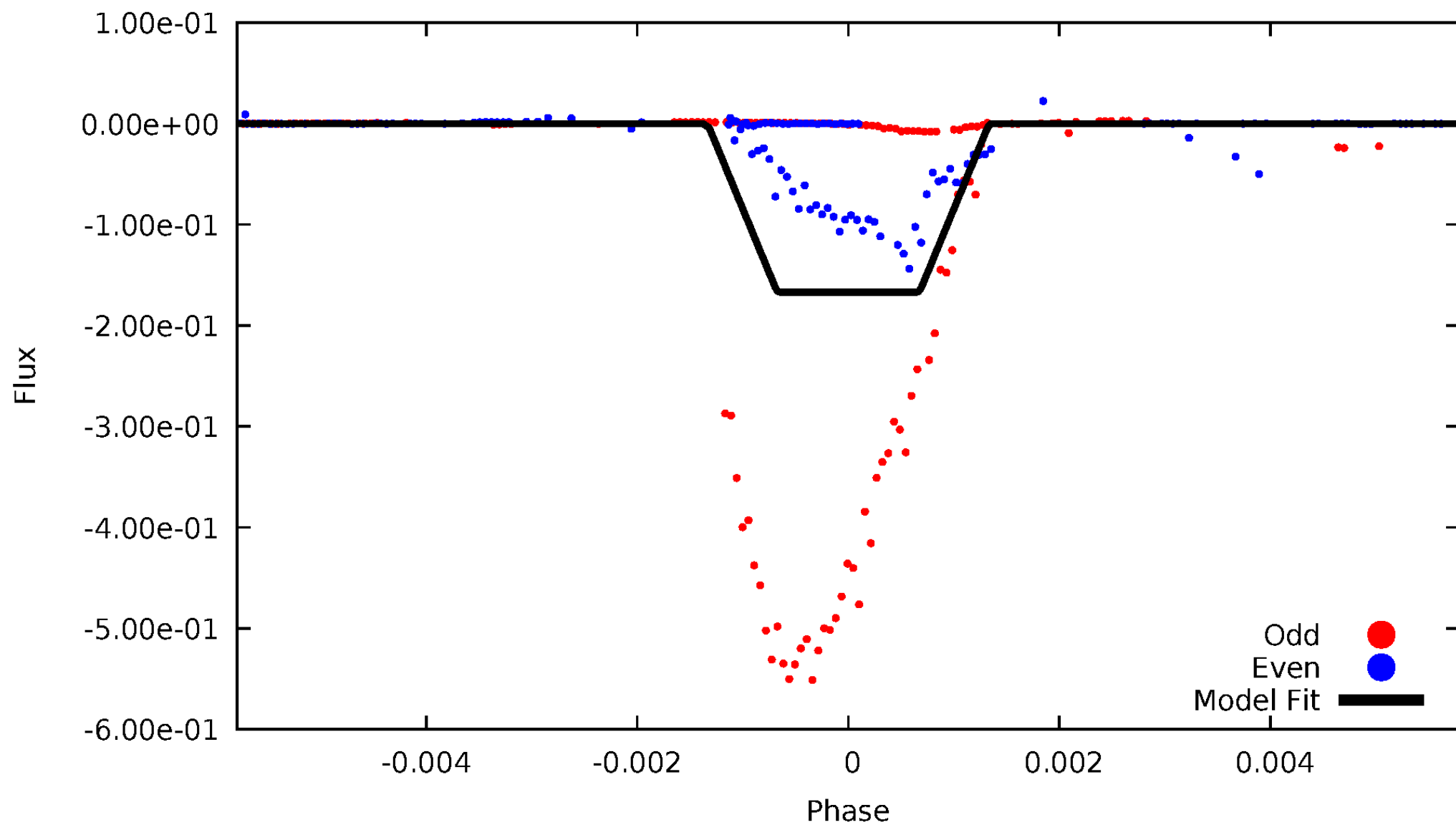
DV Odd/Even

TCE 009304797-01



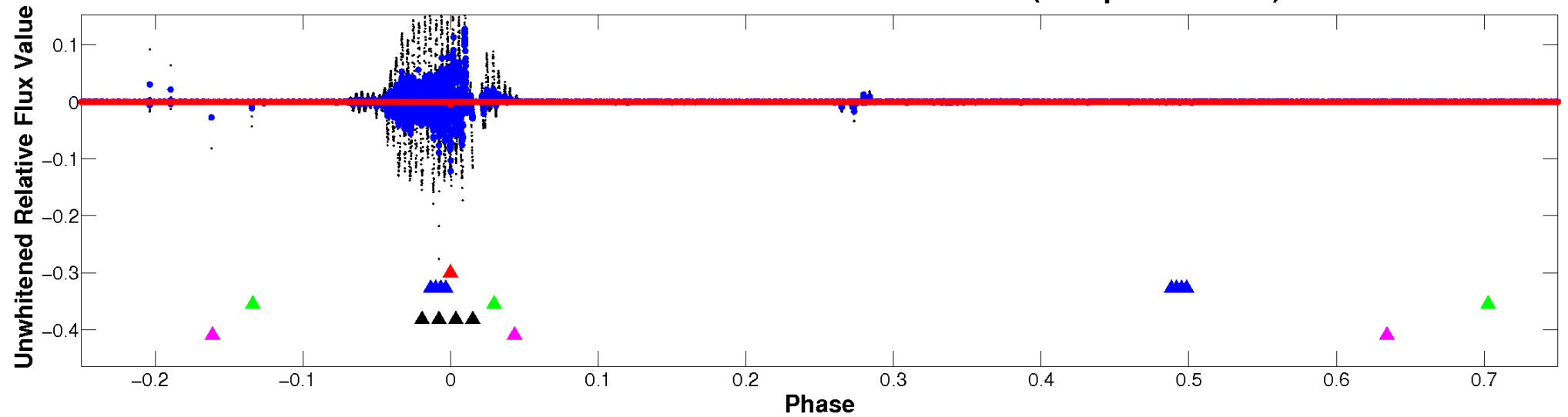
ALT Odd/Even

TCE 009304797-01

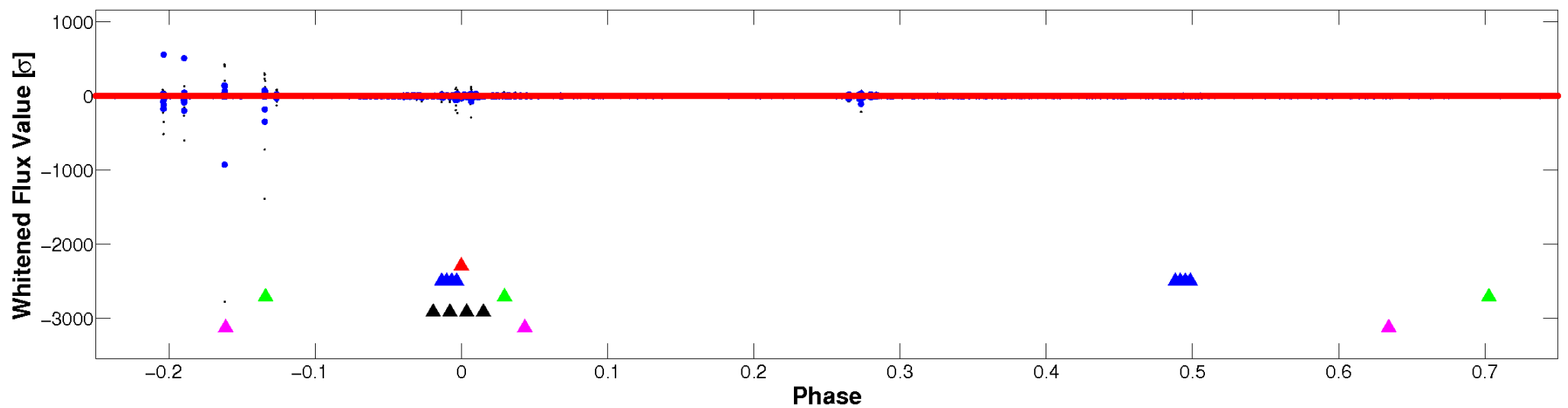


Non-Whitened Vs. Whitened Light Curve

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

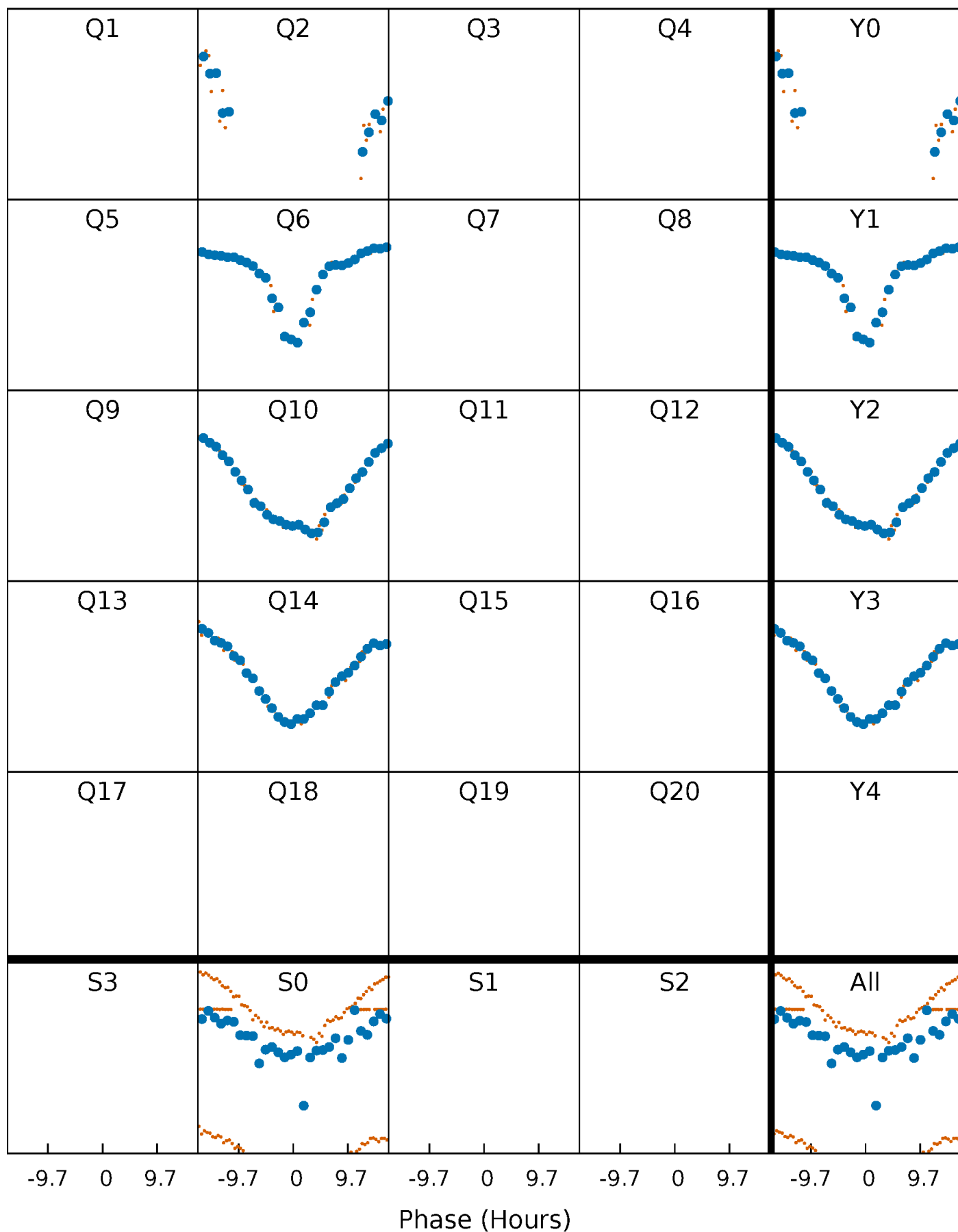


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



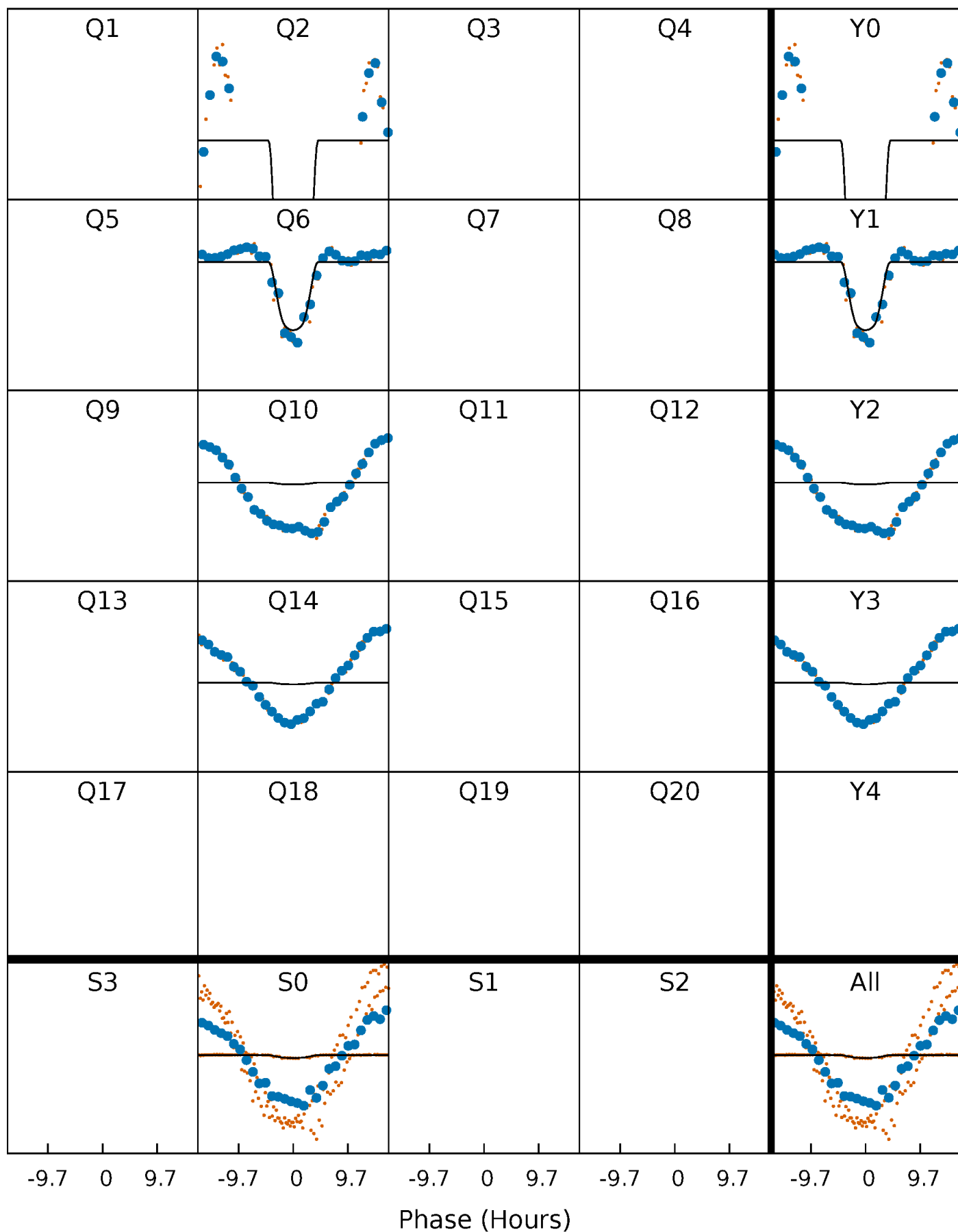
PDC Quarter-Phased Transit Curves

TCE 009304797-01 P=369.960945 Days $T_0=255.843492$ (BKJD)



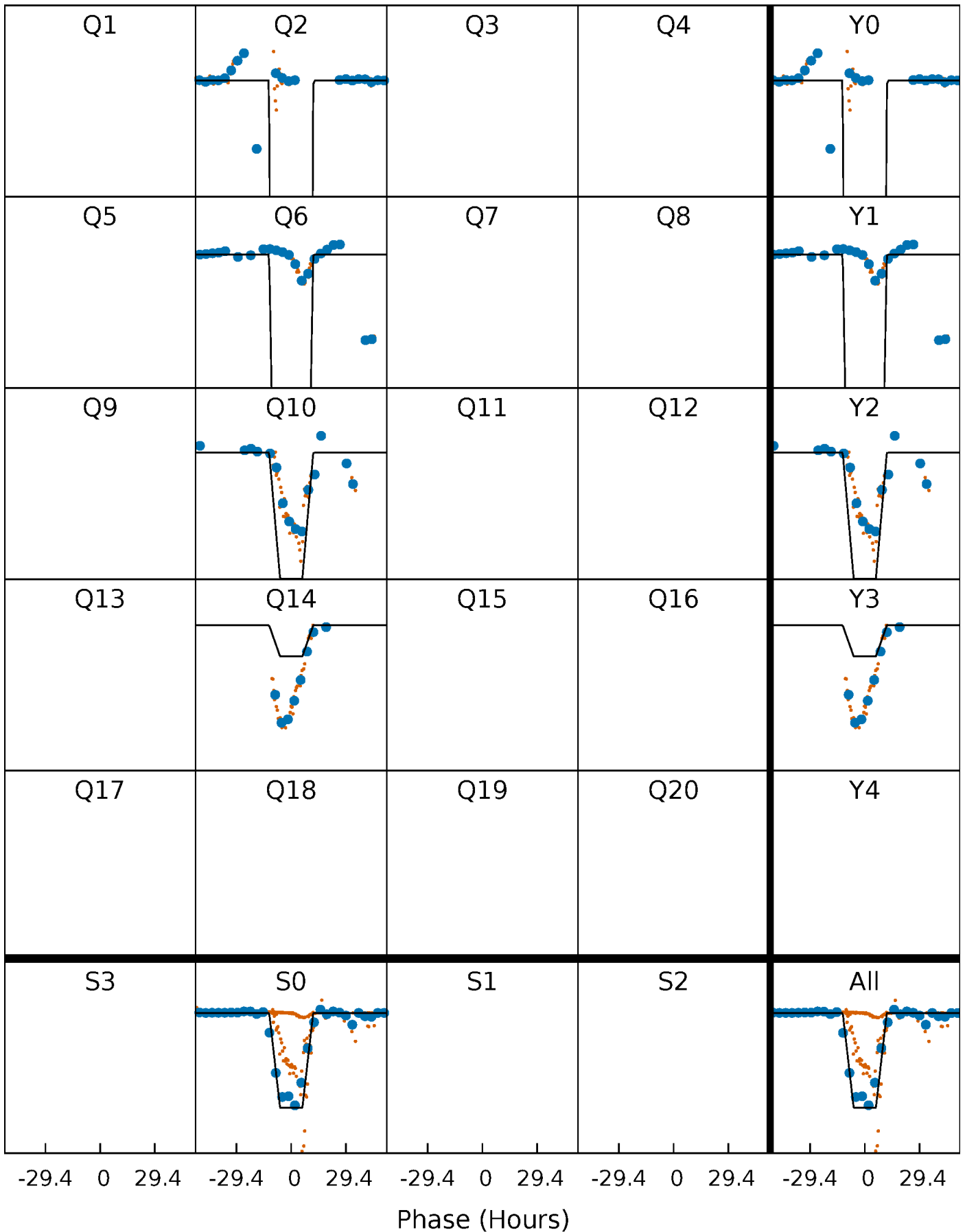
DV Quarter-Phased Transit Curves

TCE 009304797-01 P=369.960945 Days $T_0=255.843492$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

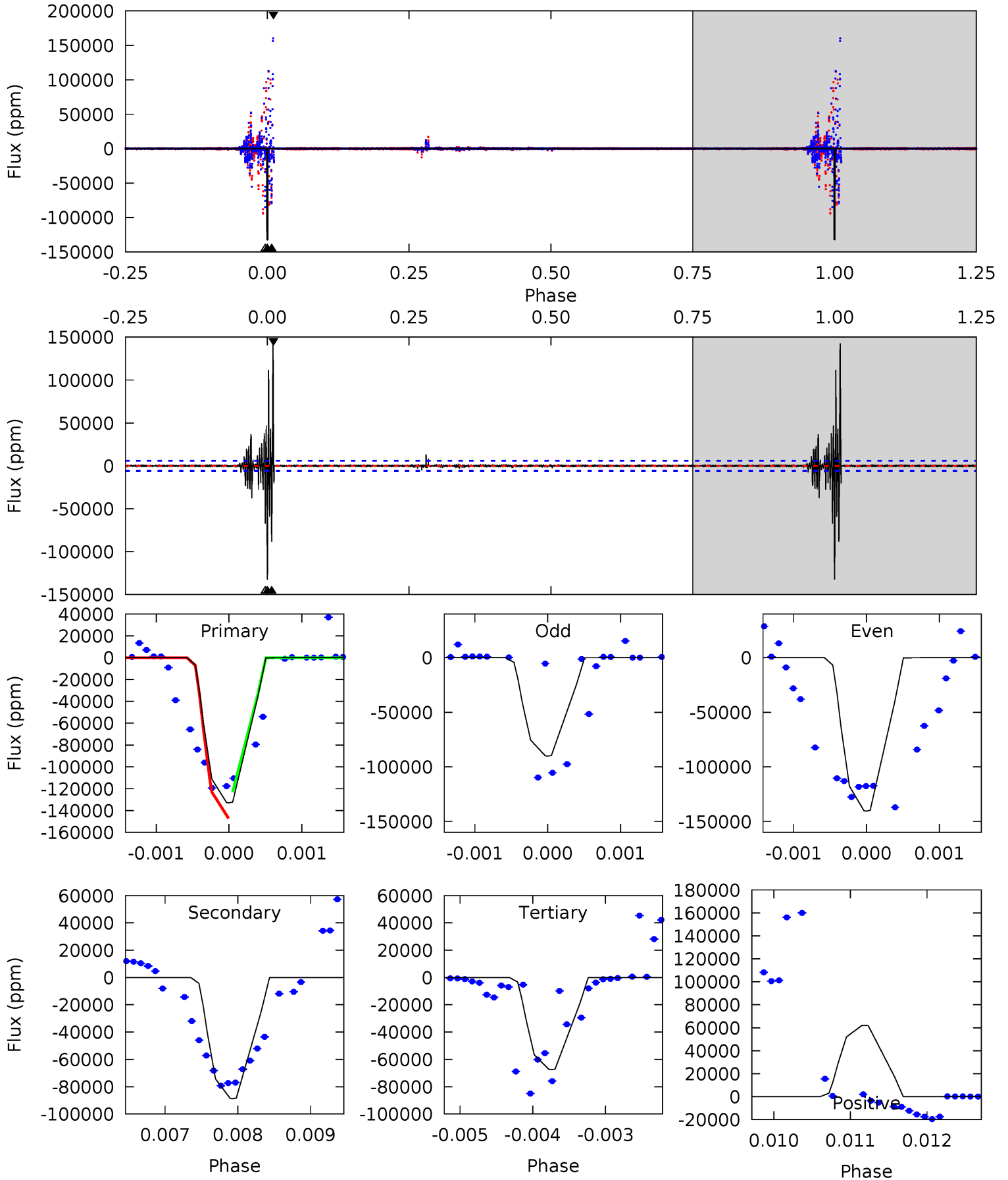
TCE 009304797-01 P=370.187995 Days $T_0=255.347074$ (BKJD)



DV Model-Shift Uniqueness Test

009304797-01, P = 369.960945 Days, E = 255.843492 Days

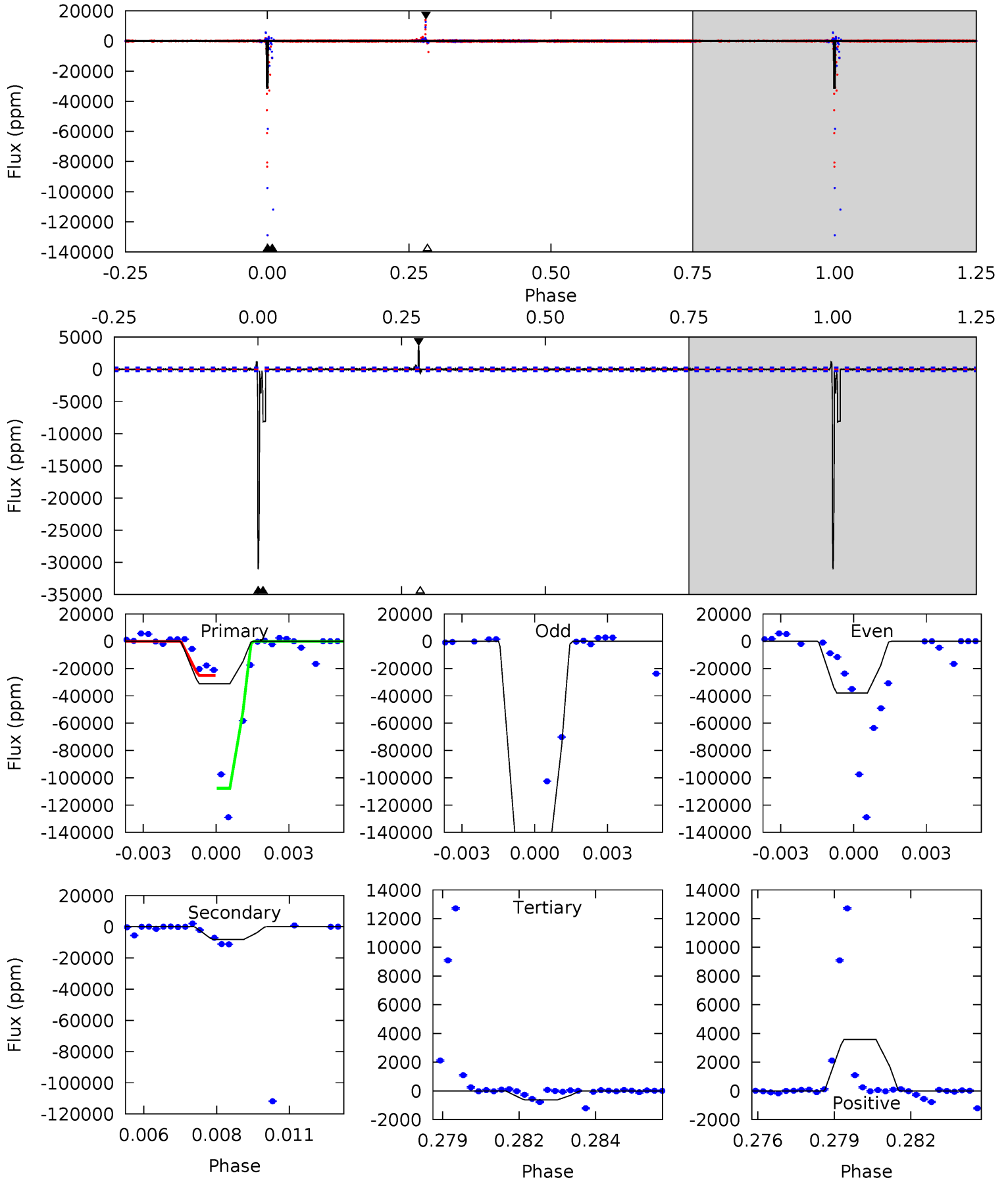
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
125.1	83.6	63.6	58.5	5.46	3.30	2.67	61.5	66.7	20.0	25.1	13.4	0.71	0.52	0



Alt Model-Shift Uniqueness Test

009304797-01, P = 370.187995 Days, E = 255.347074 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
587.5	154.8	11.9	67.7	5.27	2.99	3.14	575.6	519.8	142.9	87.1	673.9	2.99	0.10	0



Stellar Parameters For KIC 009304797

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4837^{+65}_{-65}	$2.867^{+0.162}_{-0.108}$	$-0.060^{+0.100}_{-0.150}$	$7.546^{+1.304}_{-1.956}$	$1.531^{+0.243}_{-0.451}$	$0.005^{+0.005}_{-0.002}$
	+1%/-1%	+6%/-4%	+167%/-250%	+17%/-26%	+16%/-29%	+99%/-31%
Source	SPE74	SPE74	SPE74	DSEP		

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

Secondary Eclipse Parameters for KIC 009304797-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-88345 ± 1057	$61.19^{+25.97}_{-23.88}$	760^{+33}_{-42}	10433^{+5572}_{-1991}	18807^{+31001}_{-9169}
Alt.	-8184 ± 53	$332.39^{+48.85}_{-50.43}$	753^{+38}_{-43}	2922^{+66}_{-59}	57^{+17}_{-13}

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

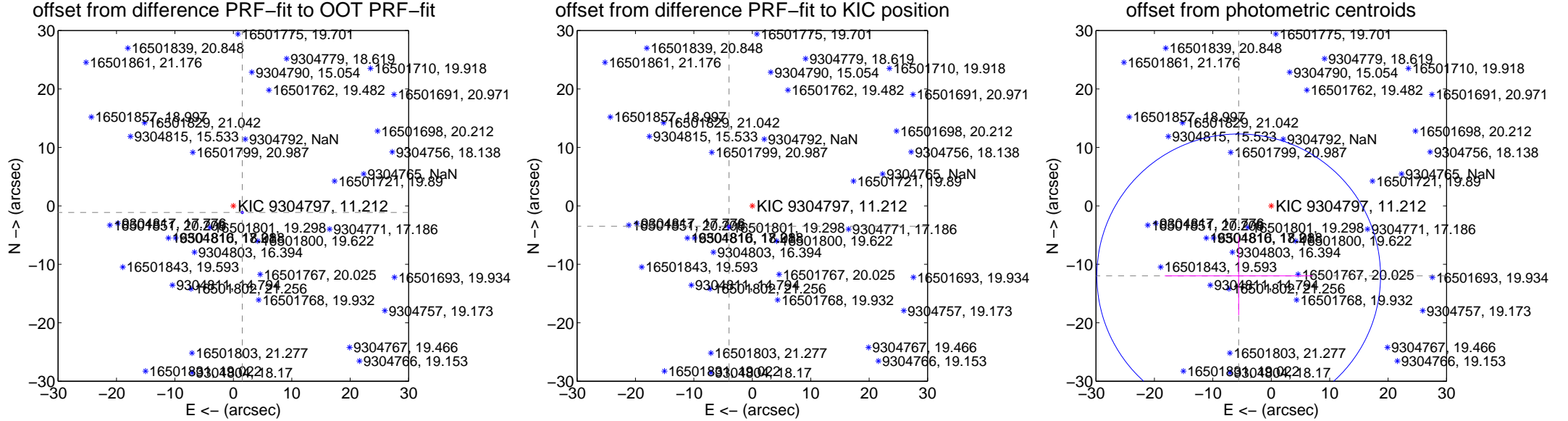
DV Centroid Data

Supplemental centroid analysis for 009304797-01. **Kepler magnitude: 11.21.** Transit SNR 22.89

There are 1 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 6.00 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.904 ± 0.067	28.55	-1.532 ± 0.067	-1.130 ± 0.067
PRF-fit source offset from KIC position	5.294 ± 0.067	79.37	3.984 ± 0.067	-3.487 ± 0.067
photometric centroid source offset	13.21 ± 8.09	1.63	5.57 ± 12.65	-11.98 ± 6.71



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.

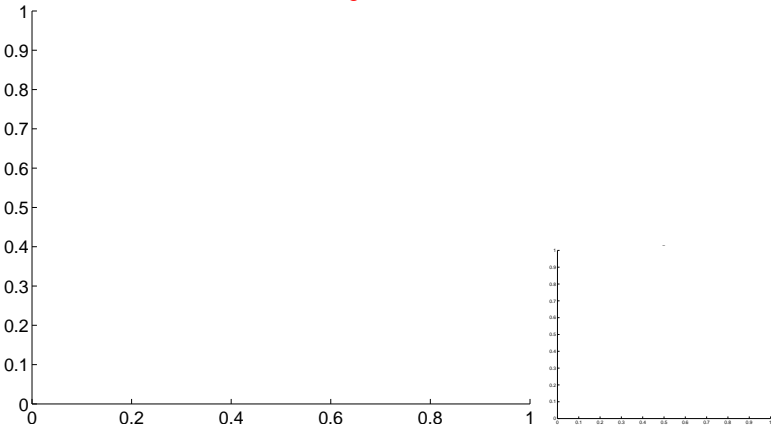


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

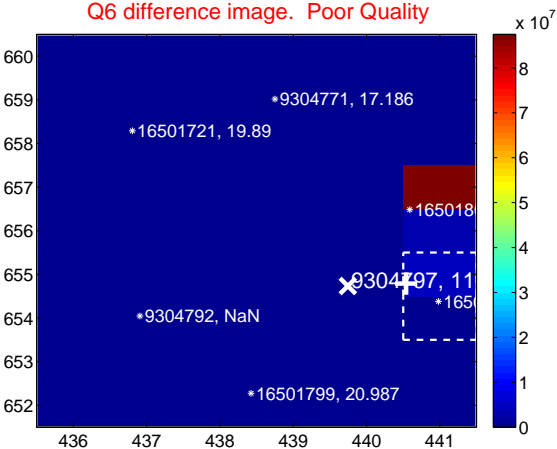
Q5 no difference image



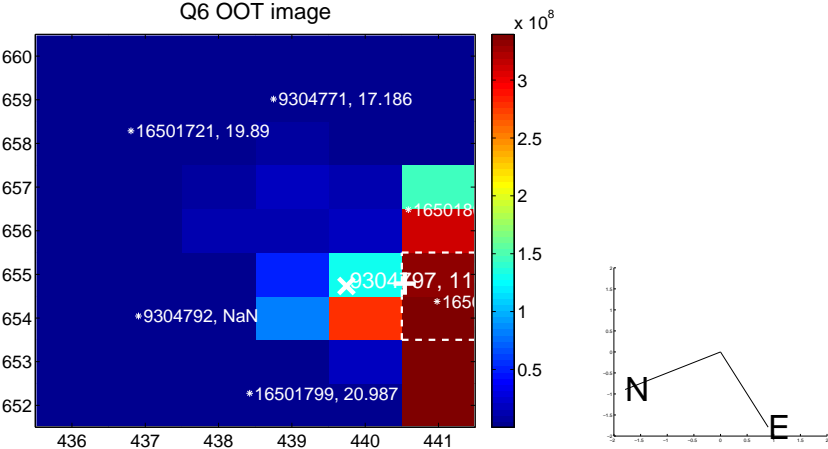
Q5 no OOT image



Q6 difference image. Poor Quality



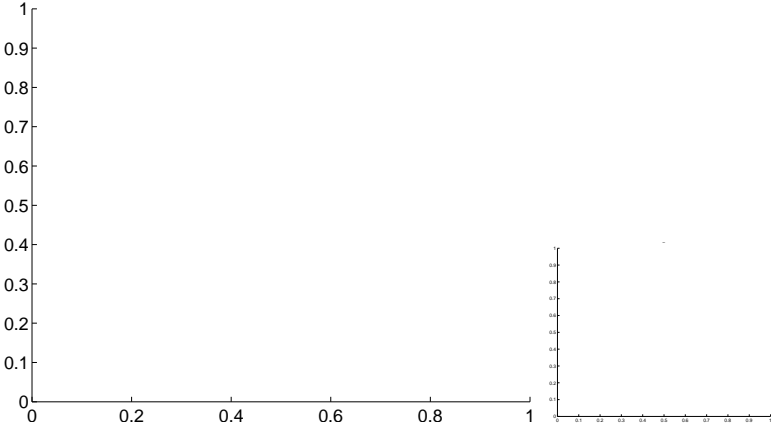
Q6 OOT image



Q7 no difference image



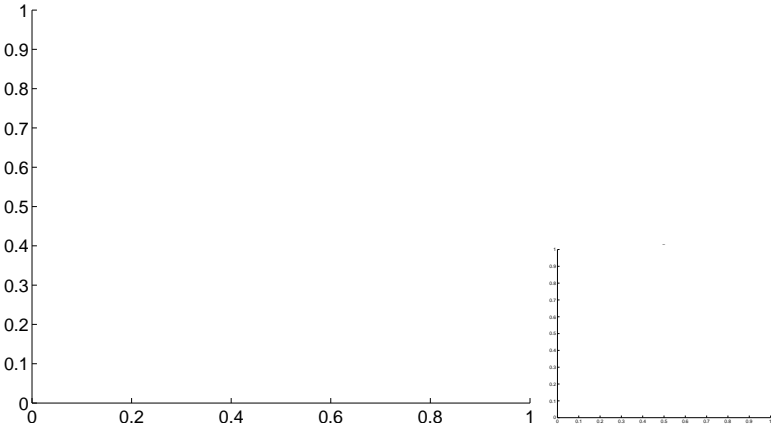
Q7 no OOT image



Q8 no difference image



Q8 no OOT image



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

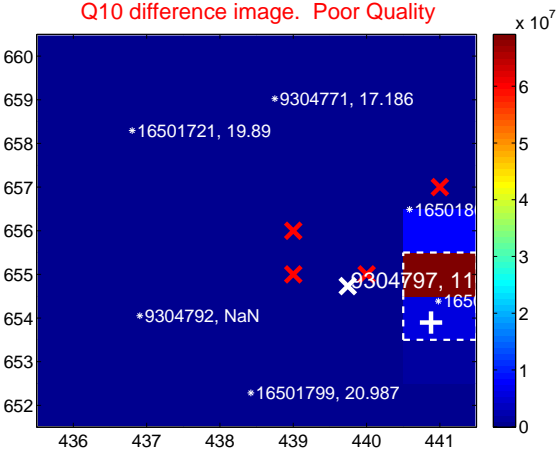
Q9 no difference image



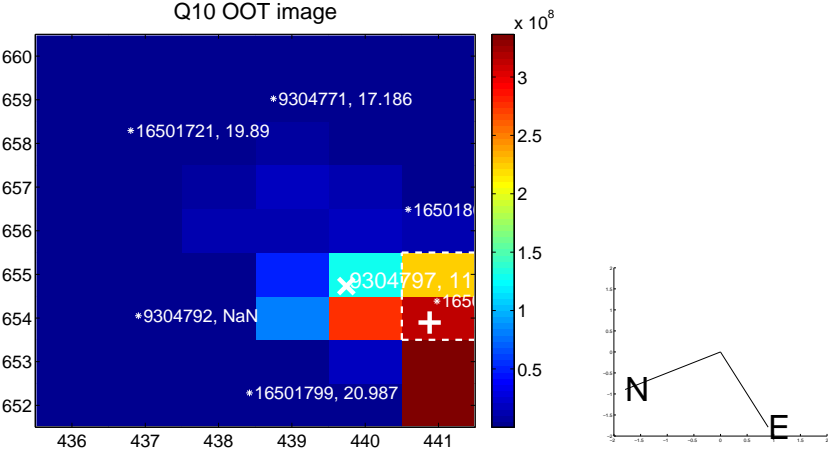
Q9 no OOT image



Q10 difference image. Poor Quality



Q10 OOT image



Q11 no difference image



Q11 no OOT image



Q12 no difference image



Q12 no OOT image



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

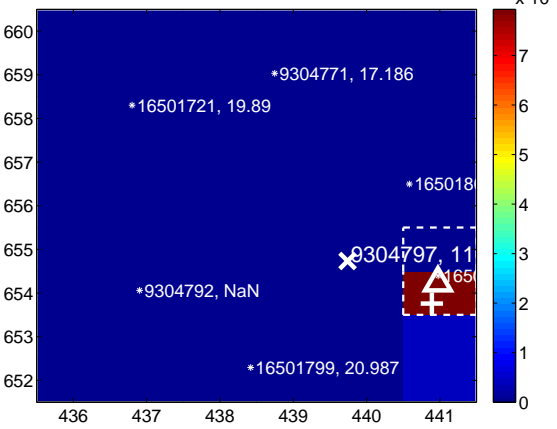
Q13 no difference image



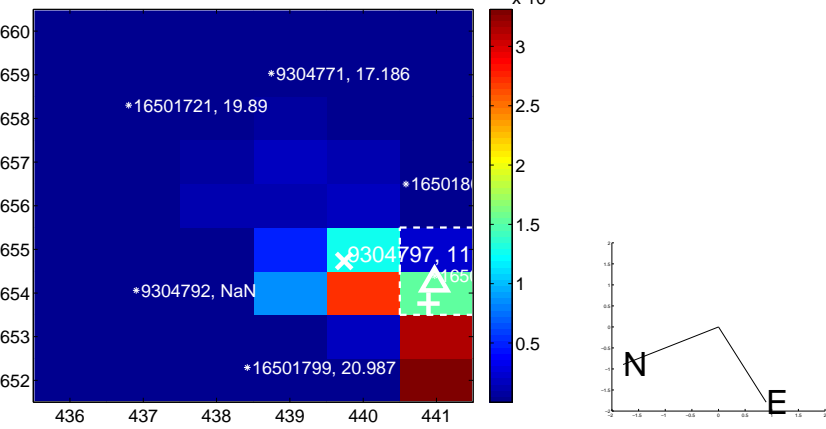
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



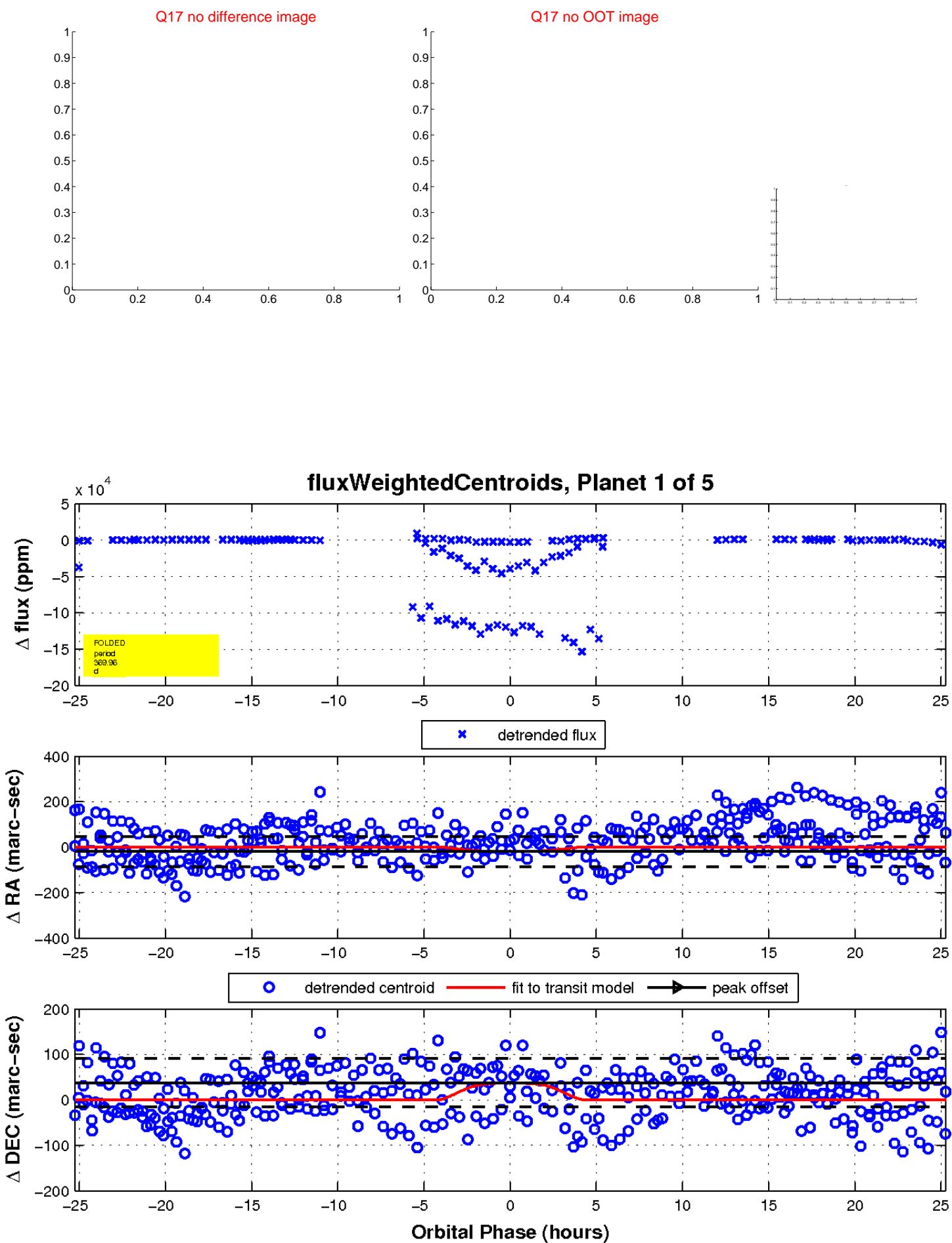
Q16 no difference image



Q16 no OOT image

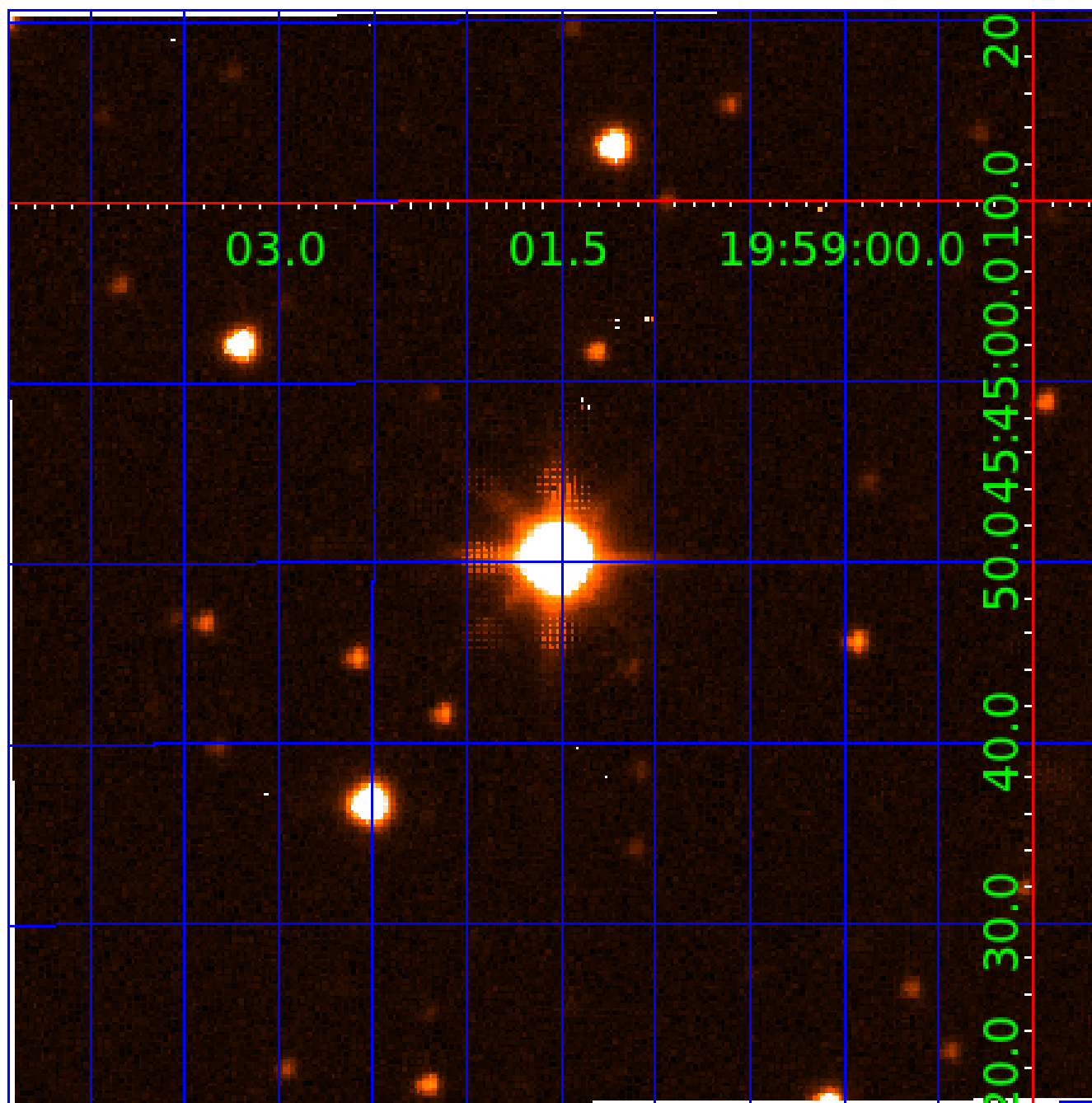


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009304797

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})
009304797-01	OBS	No	369.960945	255.843492	4671.5	8.450	253.5	22.9	7.55	4837	62.65	20.68
009304797-02	OBS	No	185.613972	250.872040	44.3	4.041	197.9	0.4	7.55	4837	5.07	51.86
009304797-03	OBS	No	430.413409	515.833423	0.5	34.111	136.0	0.0	7.55	4837	0.53	16.90
009304797-04	OBS	No	365.718659	261.444331	5255.8	28.547	191.4	66.3	7.55	4837	100.81	21.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009304797-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED
009304797-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009304797-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009304797-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED

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

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

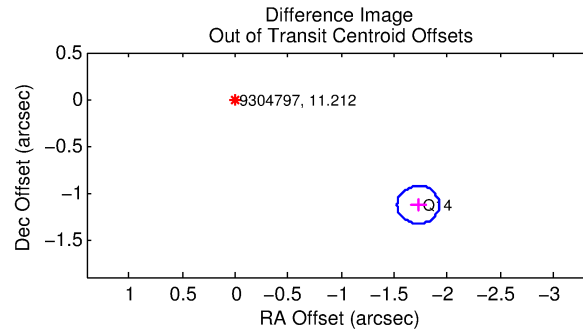
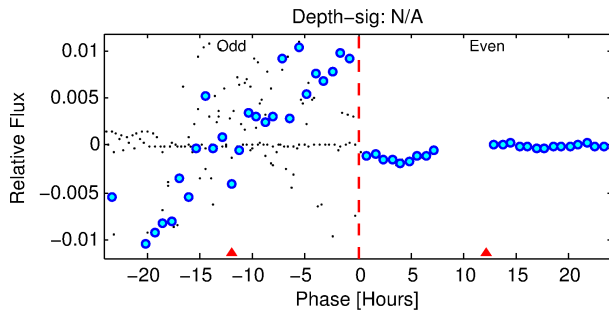
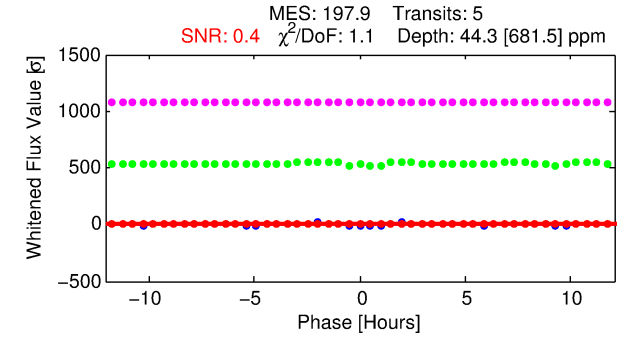
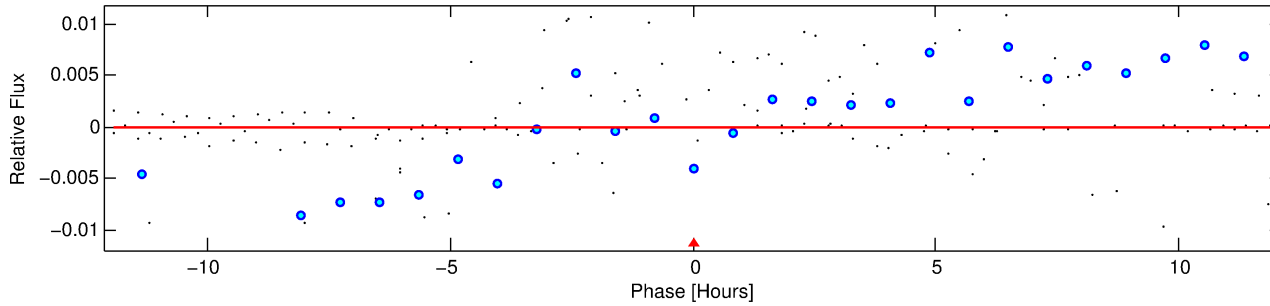
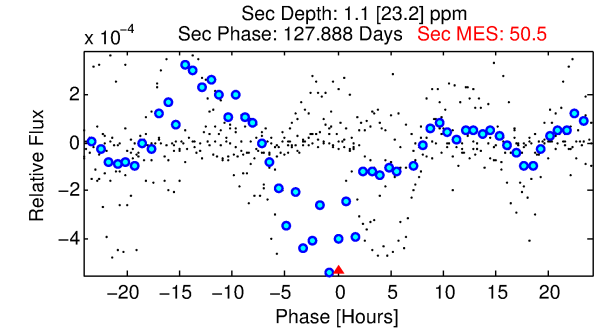
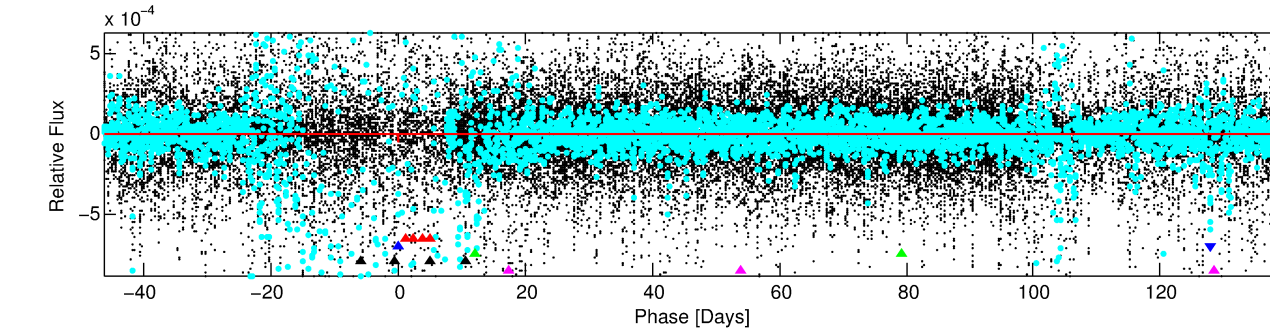
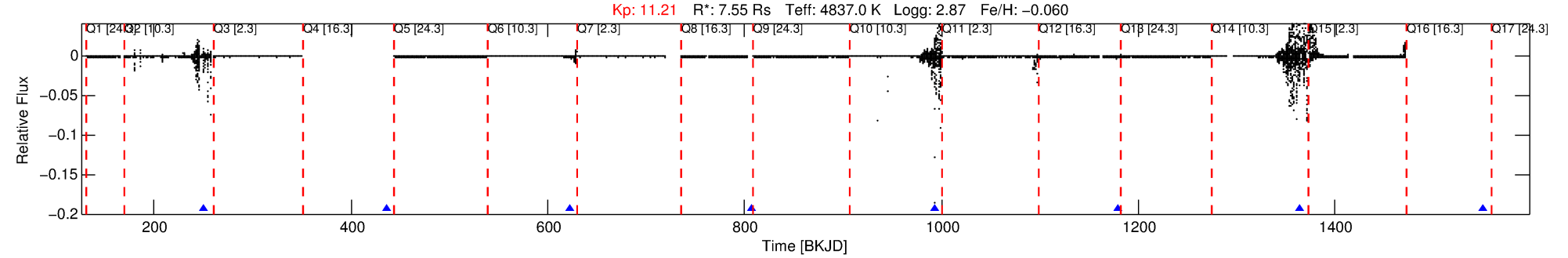
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009304797-02

No Significant Match Found

DV One-Page Summary

KIC: 9304797 Candidate: 2 of 5 Period: 185.614 d



DV Fit Results:

Period = 185.61397 [0.22711] d
Epoch = 250.8720 [0.5450] BKJD
Rp/R* = 0.0062 [0.3657]
a/R* = 304.37 [62246.25]
b = 0.51 [299.31]
Seff = 51.86 [15.95]
Teq = 684 [53] K
Rp = 5.07 [301.14] Re
a = 0.7338 [0.1562] AU
Ag = 13.21 [1592.16] [0.01 σ]
Teffp = 2017 [60772] K [0.02 σ]

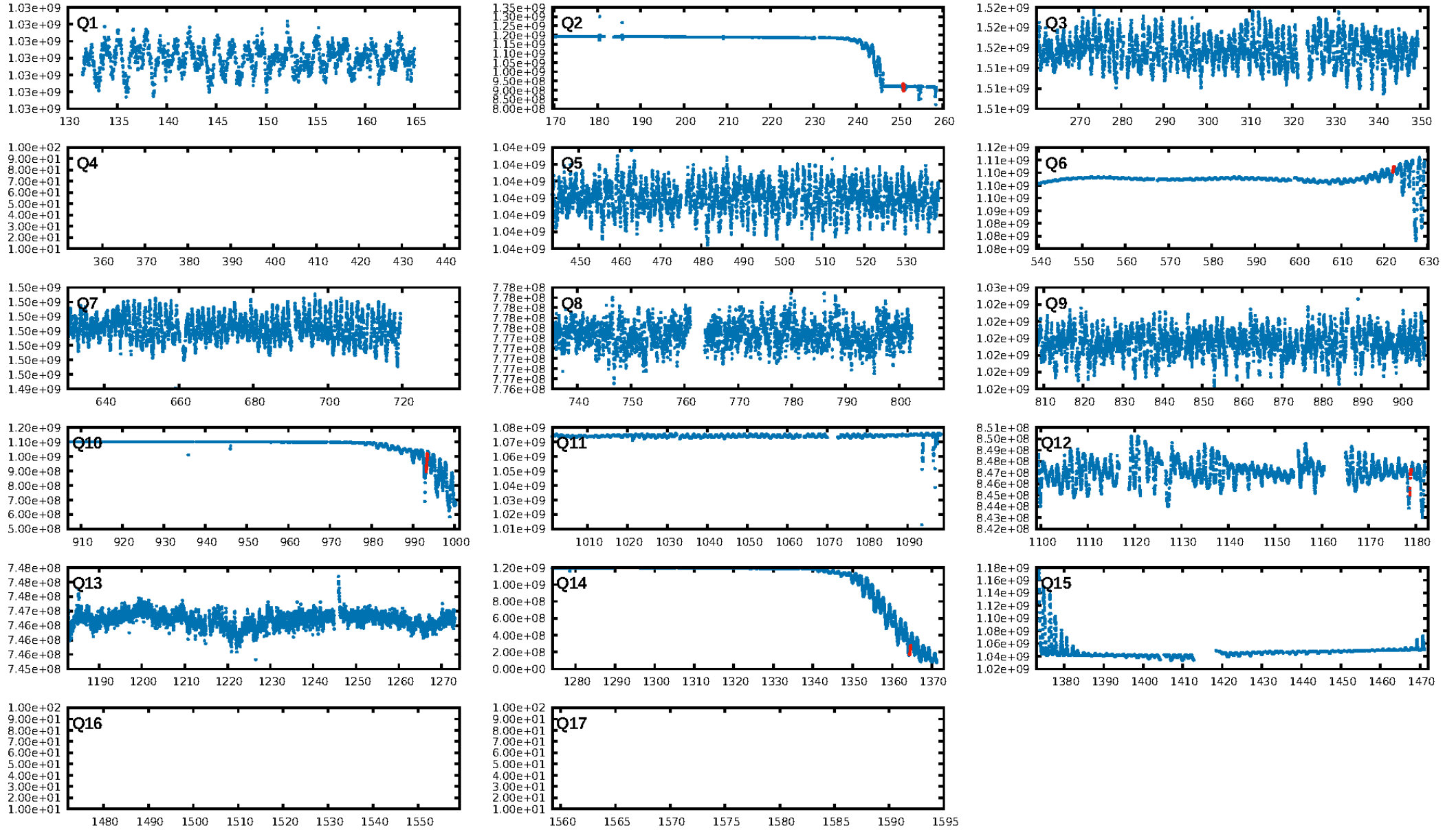
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [149.92 σ]
ModelChiSquare2-sig: 57.6%
ModelChiSquareGof-sig: 98.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 3.409
Centroid-sig: 64.6%
Centroid-so: N/A
OotOffset-rm: 2.065 arcsec [30.94 σ]
KicOffset-rm: 5.322 arcsec [79.73 σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 0.75 [3/4]

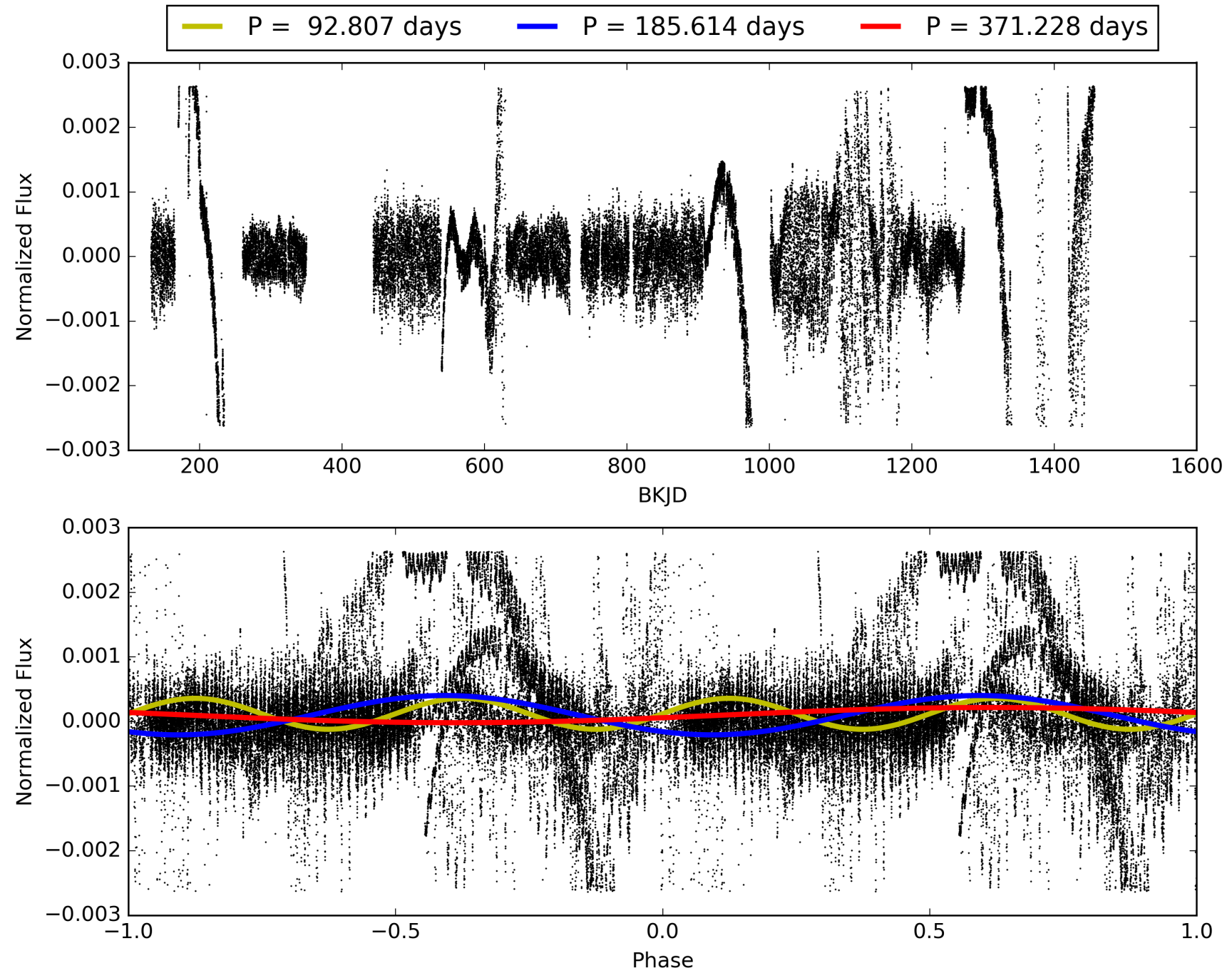
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:55:48 Z

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

TCE 009304797-02, PDC Light Curves

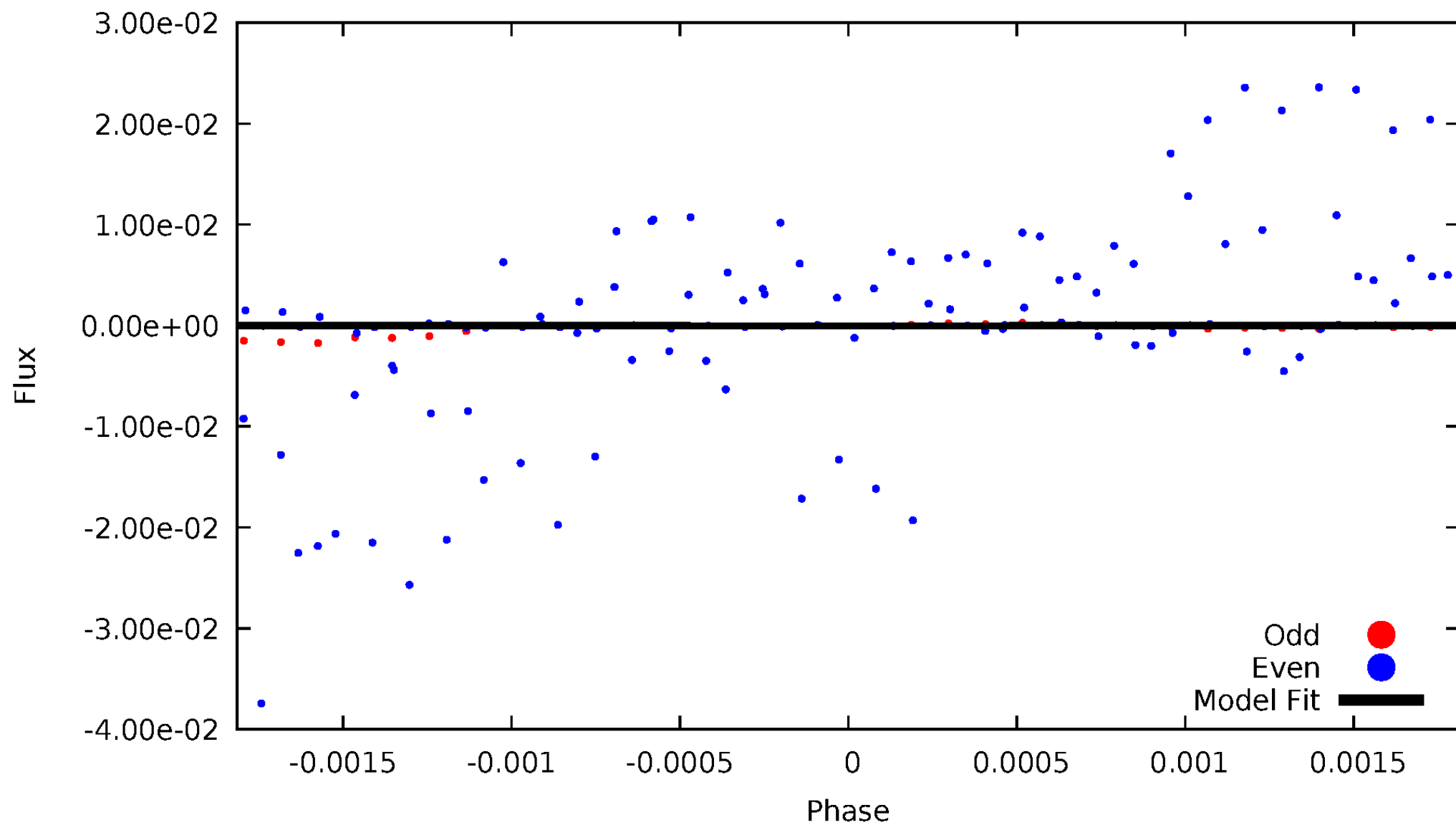


TCE 009304797-02



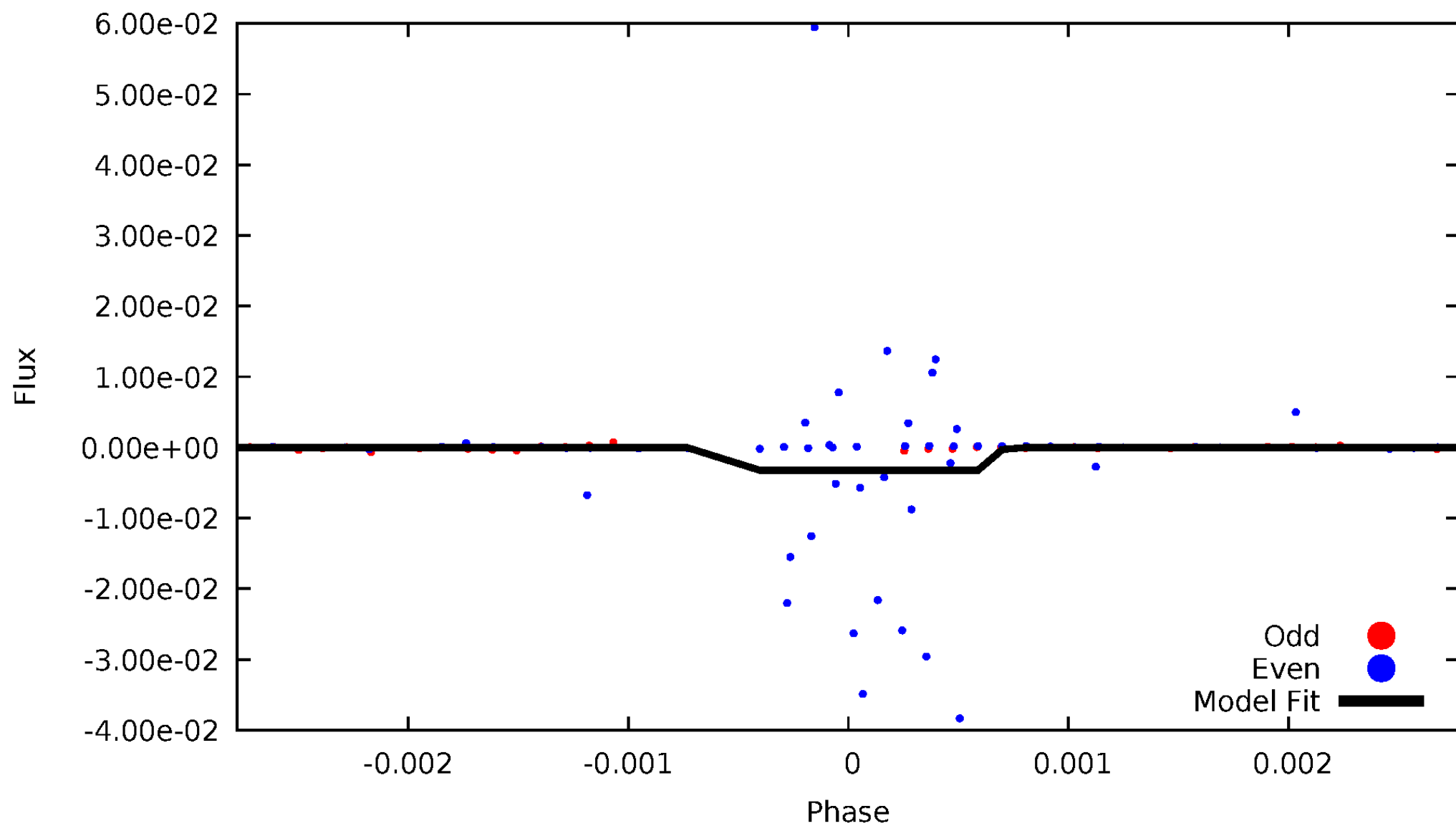
DV Odd/Even

TCE 009304797-02



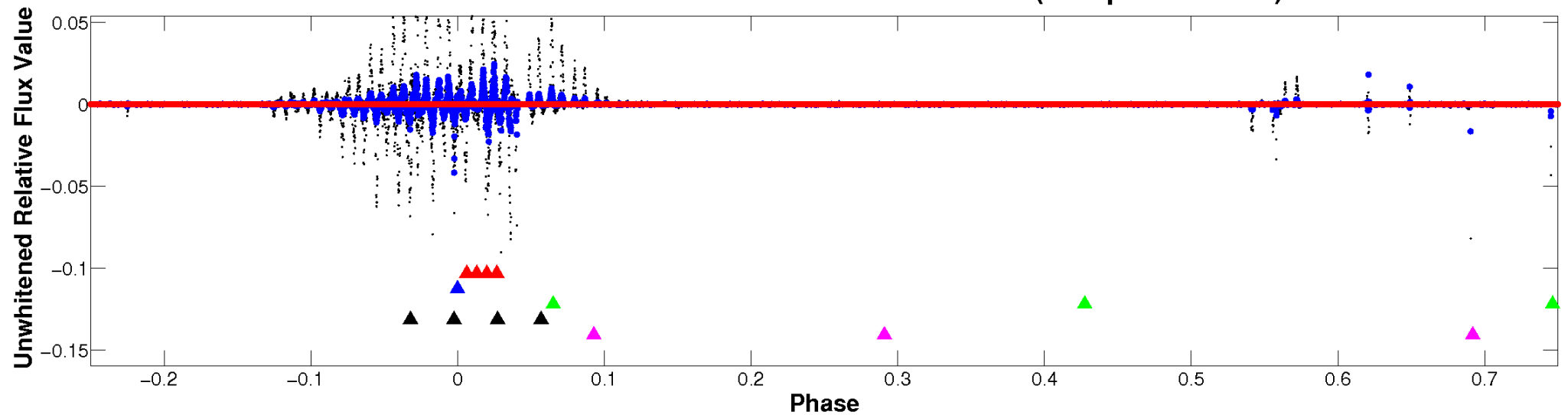
ALT Odd/Even

TCE 009304797-02

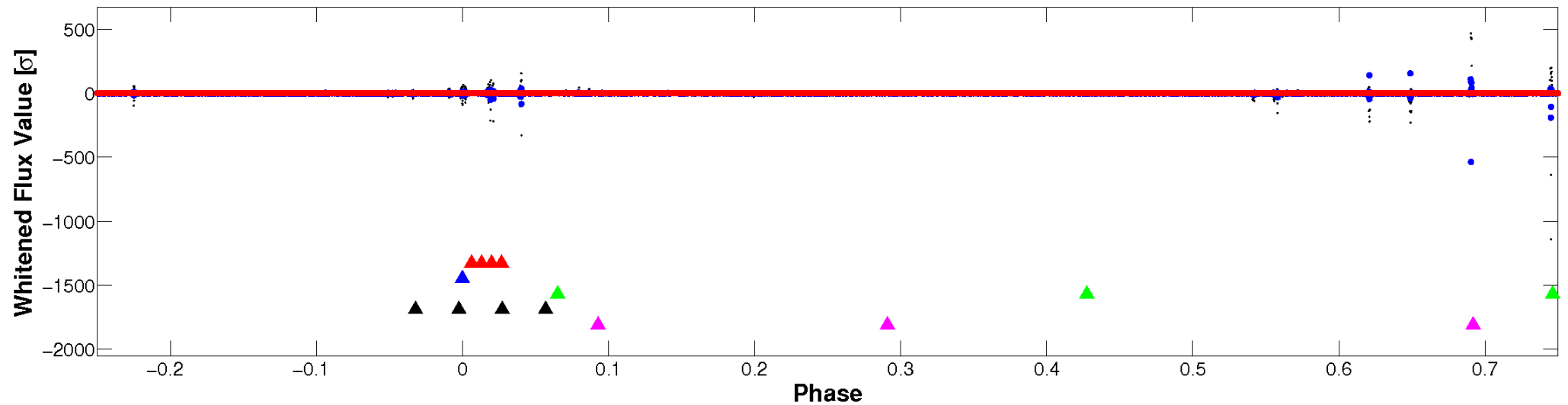


Non-Whitened Vs. Whitened Light Curve

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

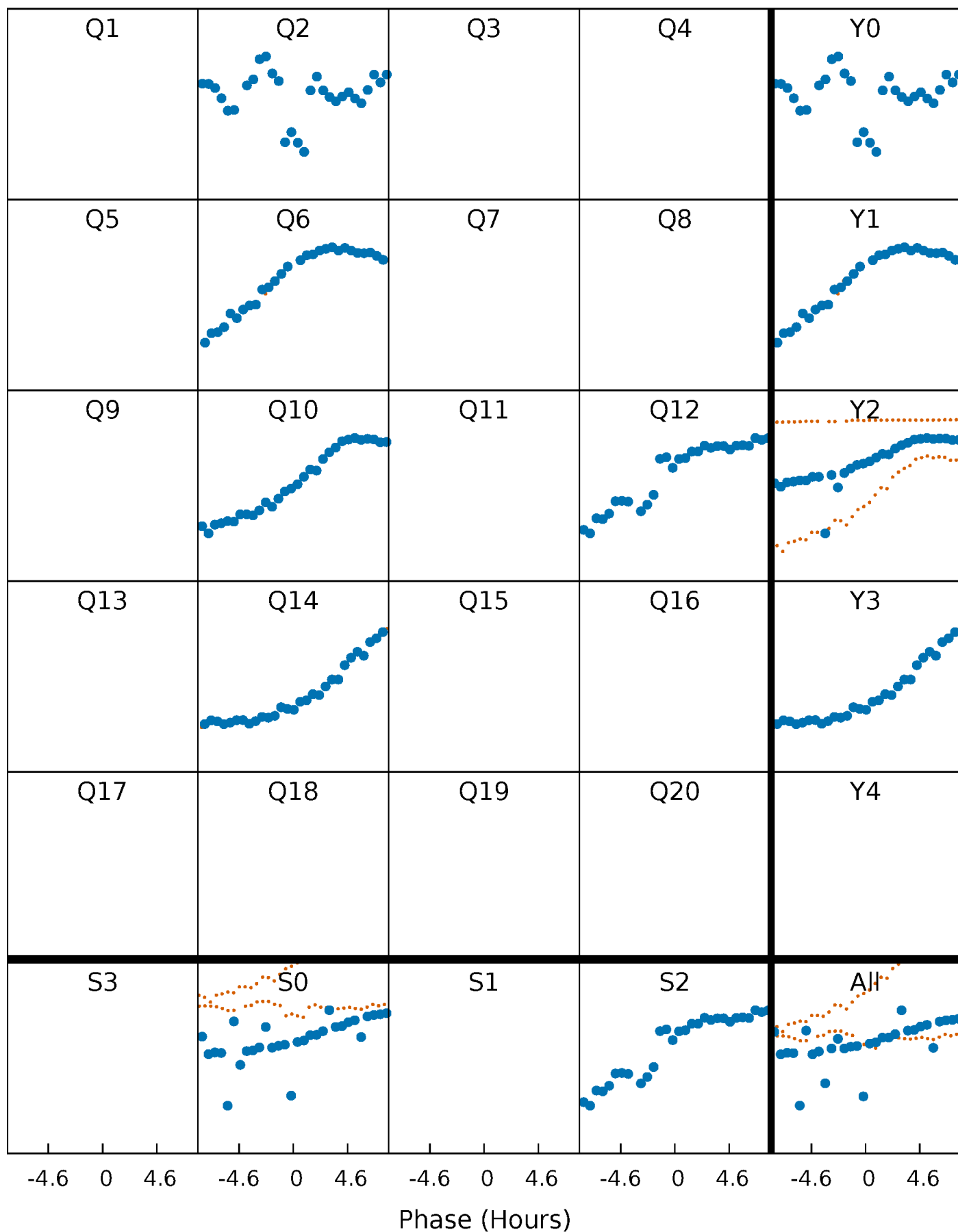


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



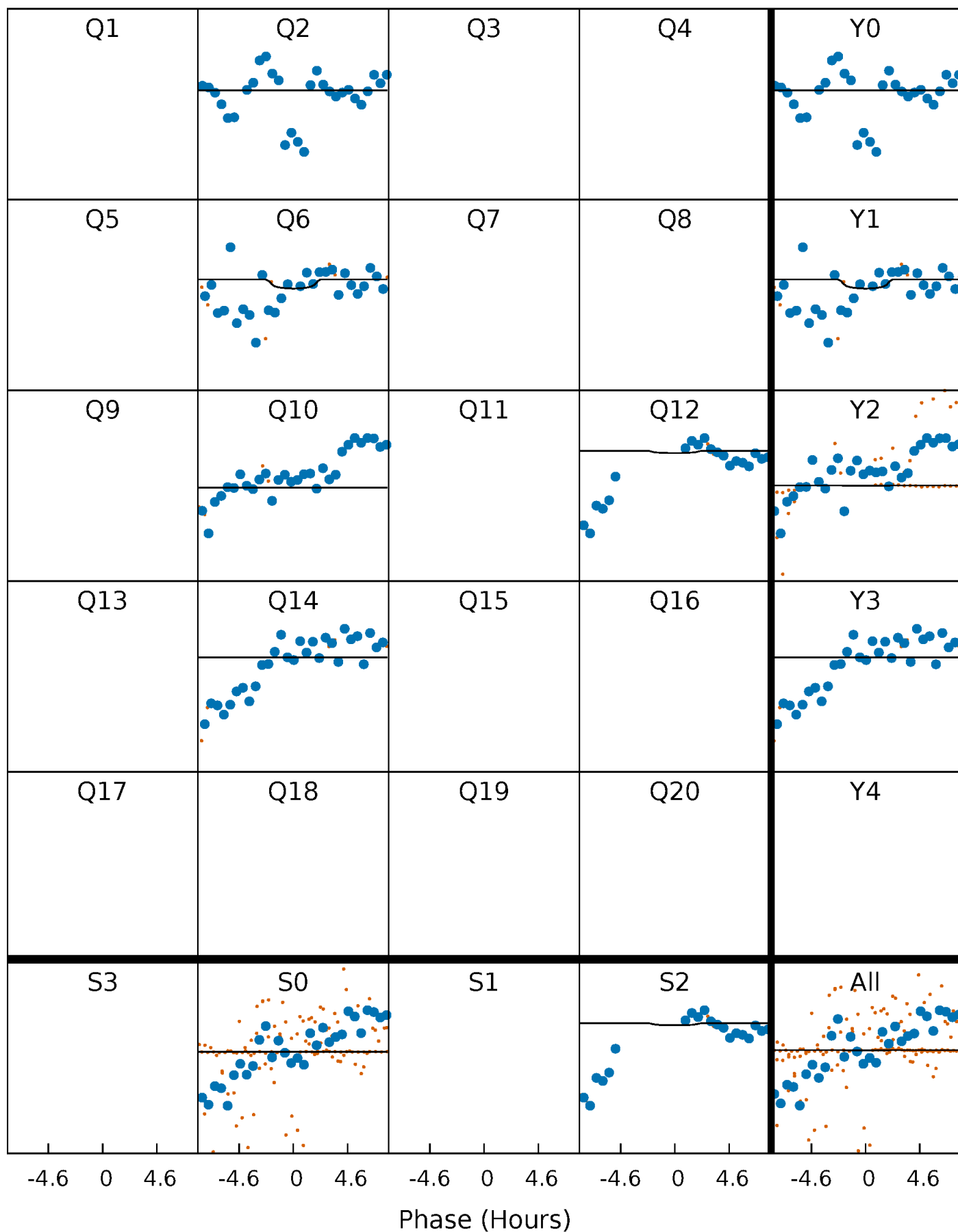
PDC Quarter-Phased Transit Curves

TCE 009304797-02 P=185.613972 Days $T_0=250.872040$ (BKJD)



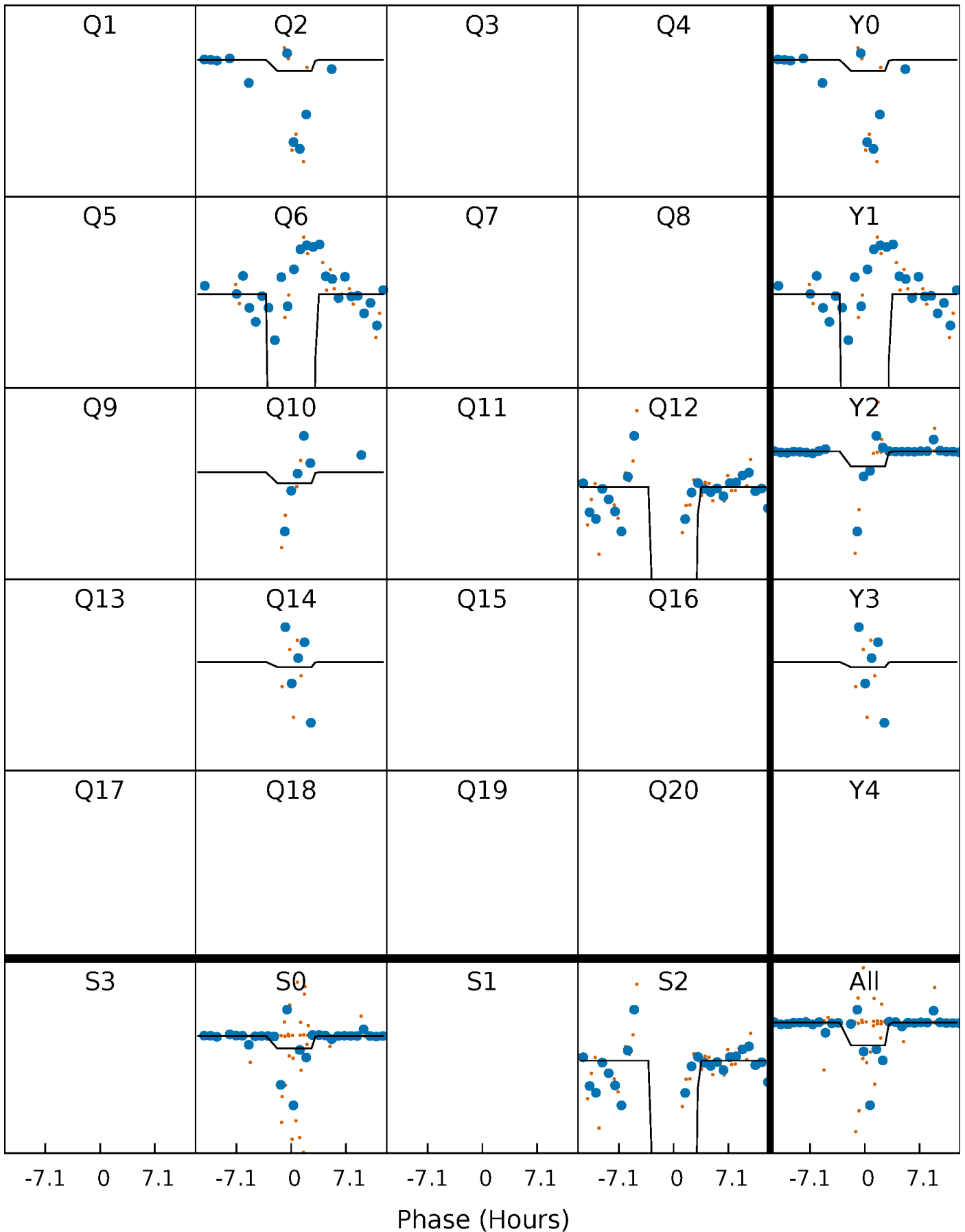
DV Quarter-Phased Transit Curves

TCE 009304797-02 $P=185.613972$ Days $T_0=250.872040$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

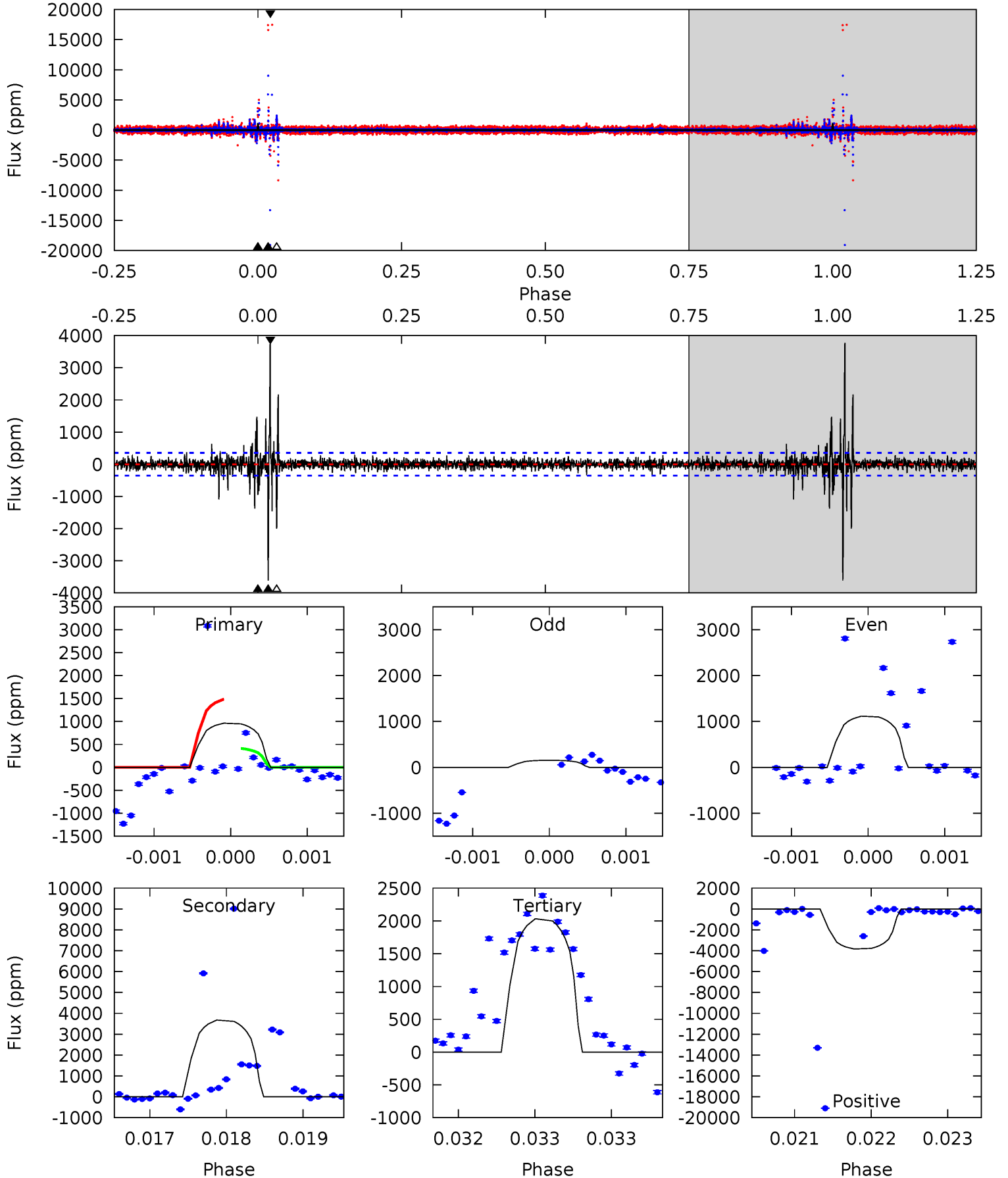
TCE 009304797-02 $P=185.617509$ Days $T_0=250.841900$ (BKJD)



DV Model-Shift Uniqueness Test

009304797-02, P = 185.613972 Days, E = 65.258068 Days

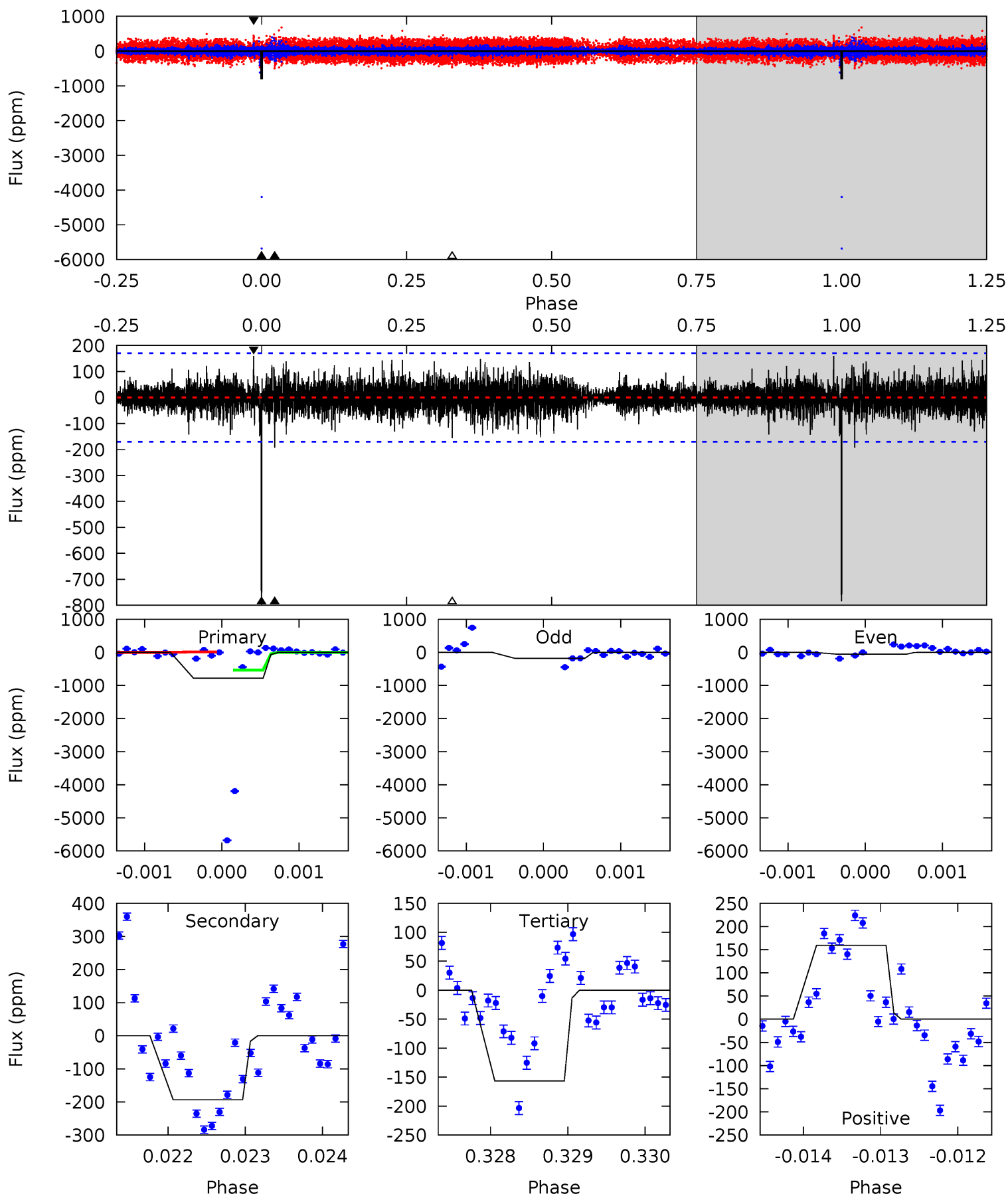
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.6	55.6	30.8	58.1	5.45	3.29	2.00	-16.2	-43.5	24.9	-2.43	3.18	-0.92	0.51	0



Alt Model-Shift Uniqueness Test

009304797-02, P = 185.617509 Days, E = 65.224391 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.0	6.15	4.99	5.08	5.43	3.26	1.10	20.0	19.9	1.16	1.08	1.12	7.62	0.17	0



Stellar Parameters For KIC 009304797

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4837^{+65}_{-65}	$2.867^{+0.162}_{-0.108}$	$-0.060^{+0.100}_{-0.150}$	$7.546^{+1.304}_{-1.956}$	$1.531^{+0.243}_{-0.451}$	$0.005^{+0.005}_{-0.002}$
	+1%/-1%	+6%/-4%	+167%/-250%	+17%/-26%	+16%/-29%	+99%/-31%
Source	SPE74	SPE74	SPE74	DSEP		

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

Secondary Eclipse Parameters for KIC 009304797-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-3614 ± 65	$197.54^{+225.36}_{-137.10}$	953^{+48}_{-54}	2999^{+1410}_{-554}	28^{+269}_{-22}
Alt.	-193 ± 31	$224.90^{+211.36}_{-152.73}$	954^{+47}_{-55}	1980^{+686}_{-3325}	$1.120^{+9.775}_{-0.830}$

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 $A_{obs} \gg 1.0$

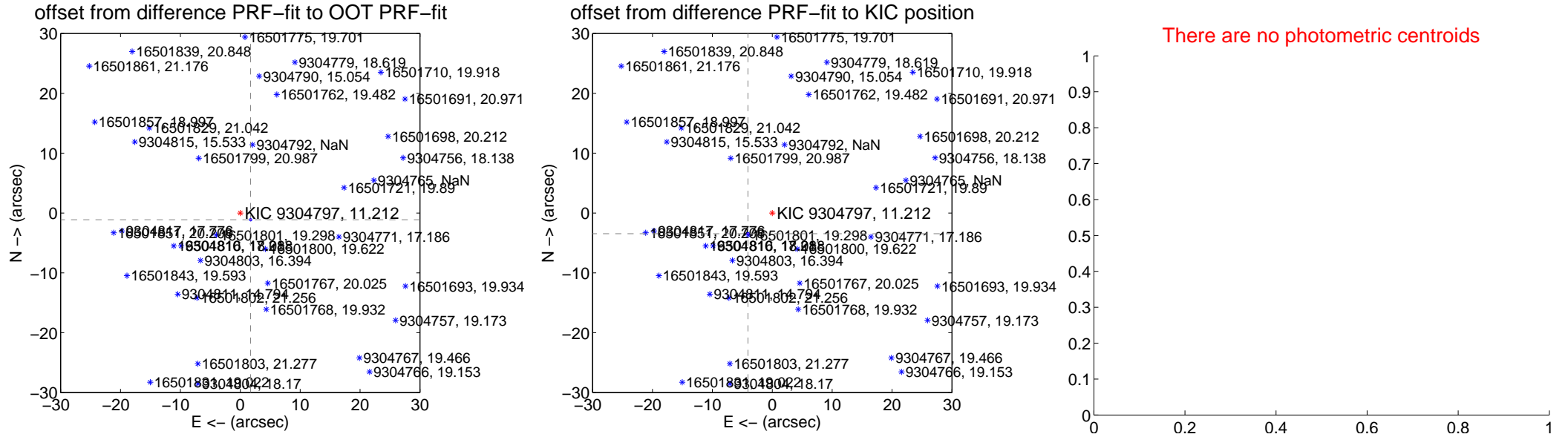
DV Centroid Data

Supplemental centroid analysis for 009304797-02. **Kepler magnitude: 11.21.** Transit SNR 0.42

There are 1 quarters with good PRF difference image offsets

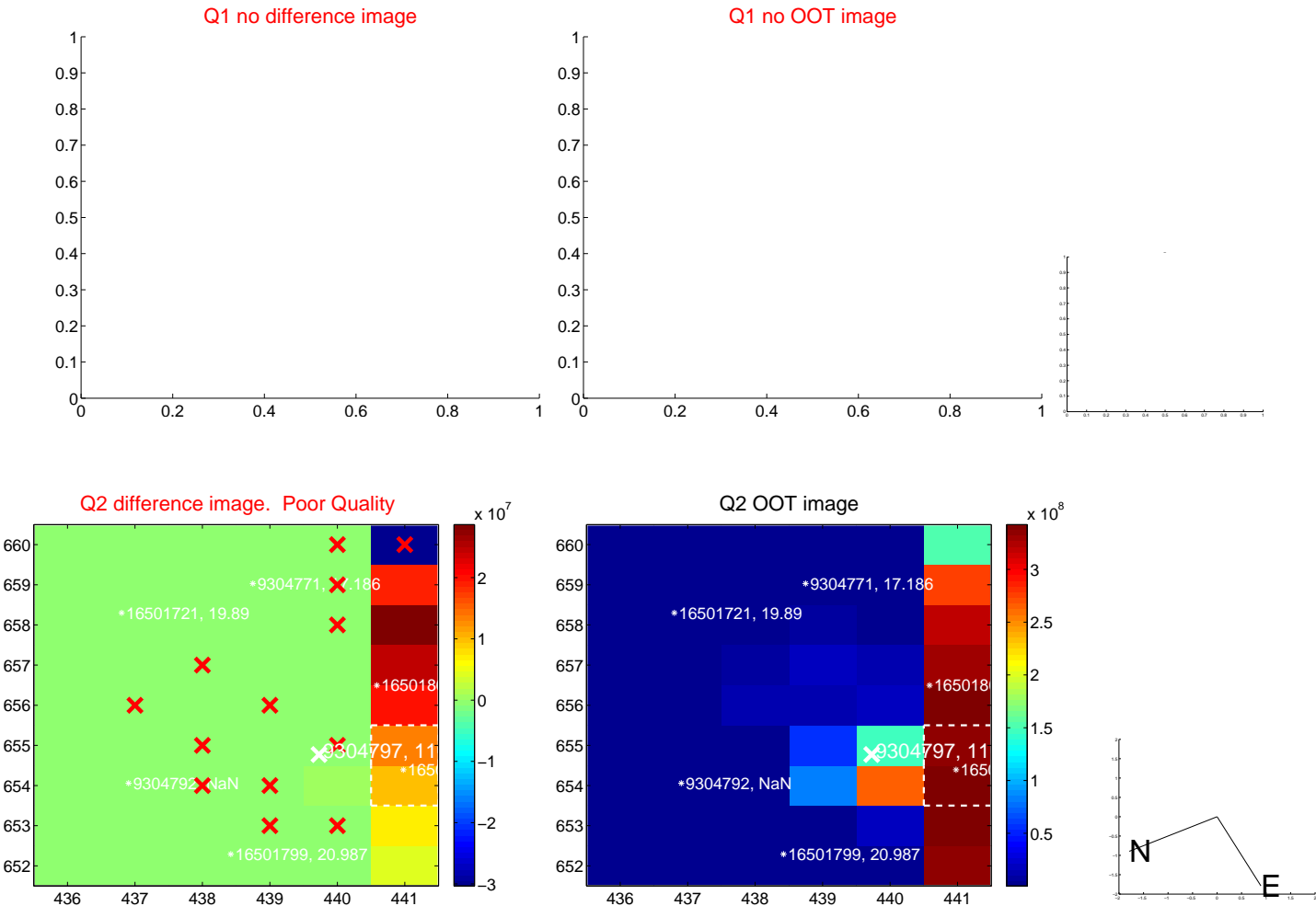
The OOT PRF centroid is offset from the target star catalog position by about 6.23 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.065 ± 0.067	30.94	-1.729 ± 0.067	-1.129 ± 0.067
PRF-fit source offset from KIC position	5.322 ± 0.067	79.73	4.047 ± 0.067	-3.456 ± 0.067
photometric centroid source offset	—	—	—	—



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.

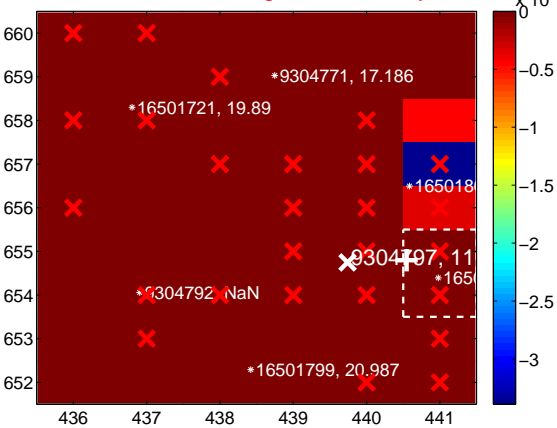
Q5 no difference image



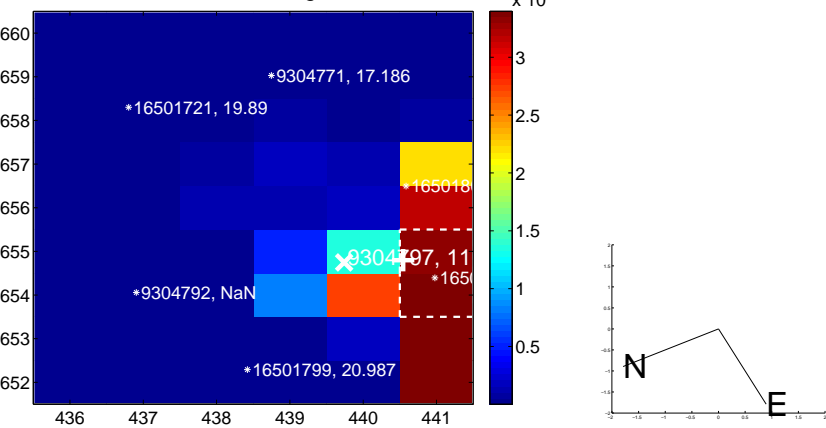
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



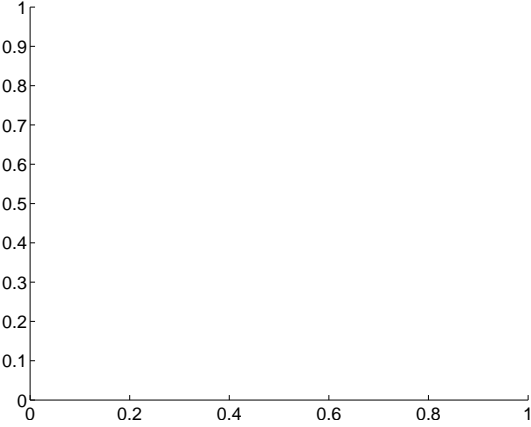
Q7 no difference image



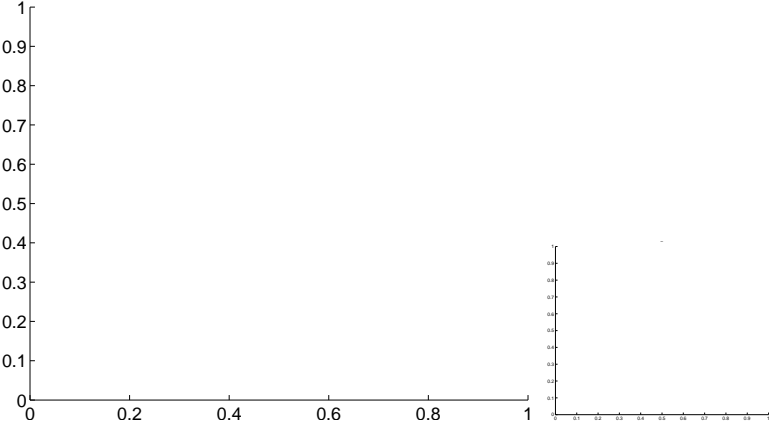
Q7 no OOT image



Q8 no difference image



Q8 no OOT image



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

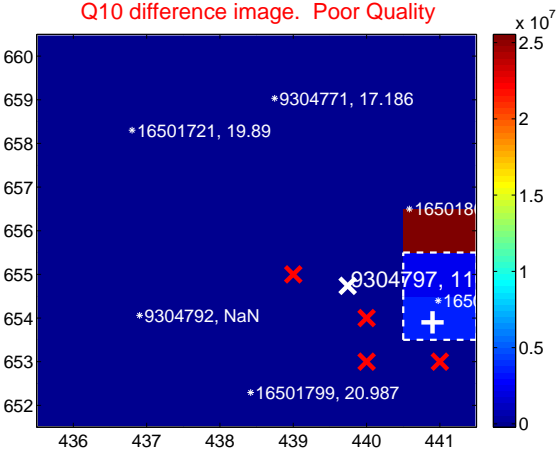
Q9 no difference image



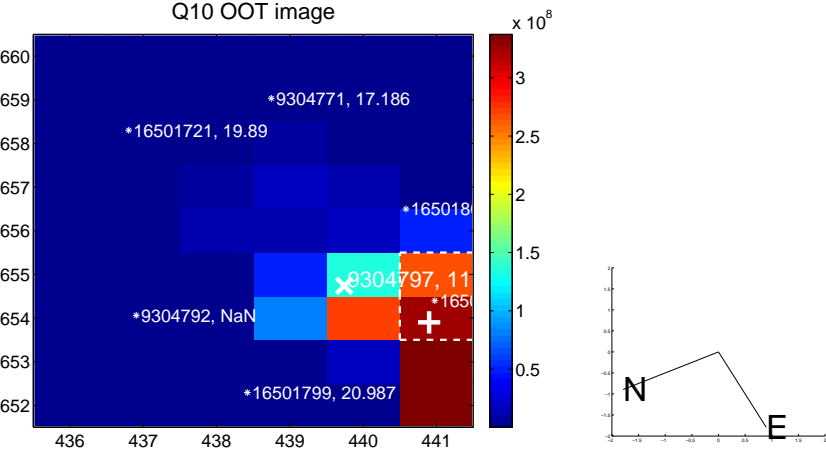
Q9 no OOT image



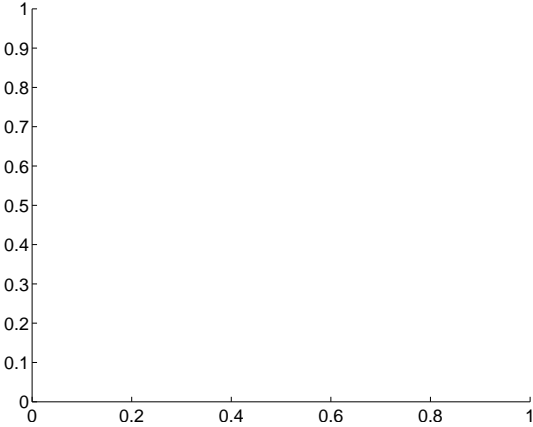
Q10 difference image. Poor Quality



Q10 OOT image



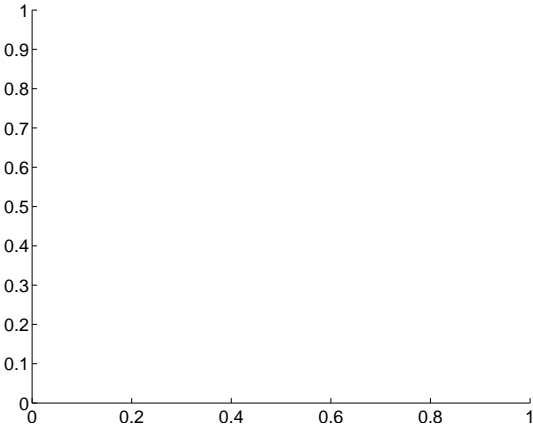
Q11 no difference image



Q11 no OOT image



Q12 no difference image



Q12 no OOT image



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

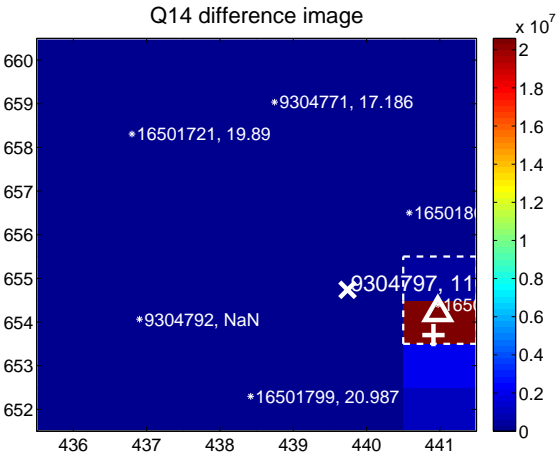
Q13 no difference image



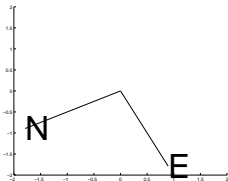
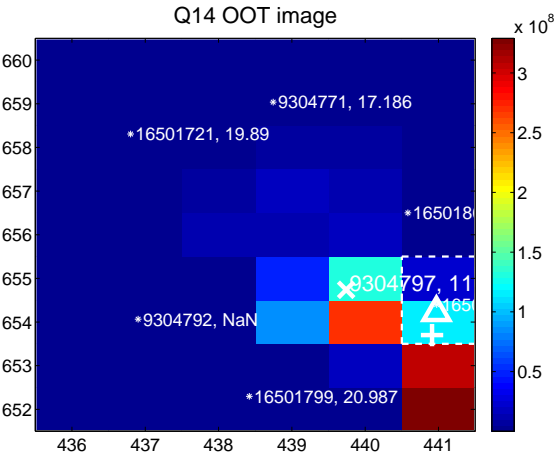
Q13 no OOT image



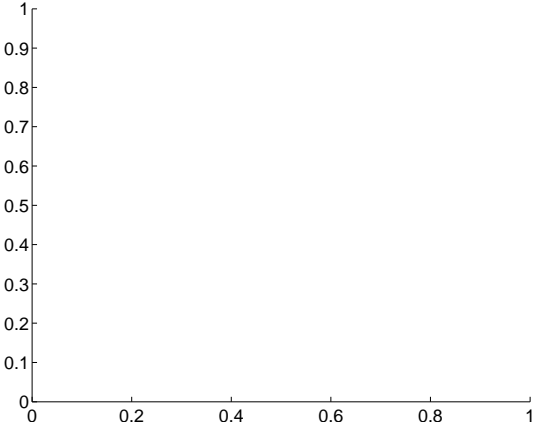
Q14 difference image



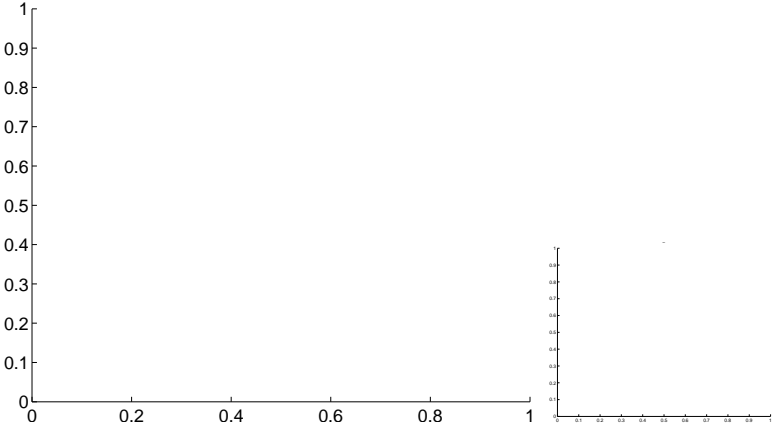
Q14 OOT image



Q15 no difference image



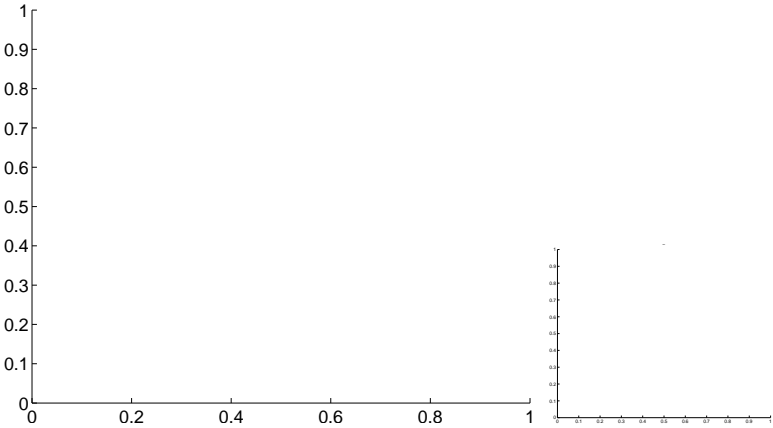
Q15 no OOT image



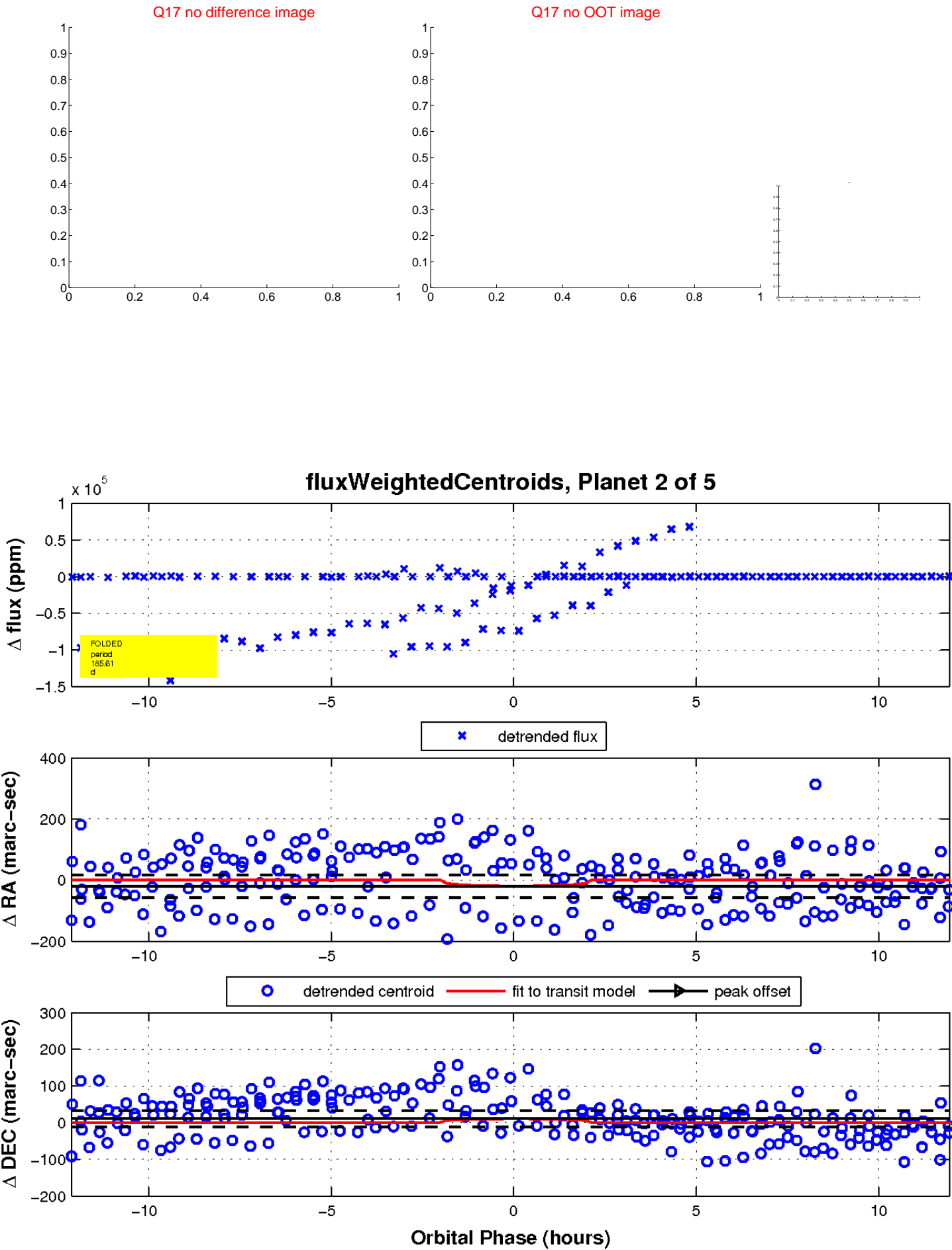
Q16 no difference image



Q16 no OOT image

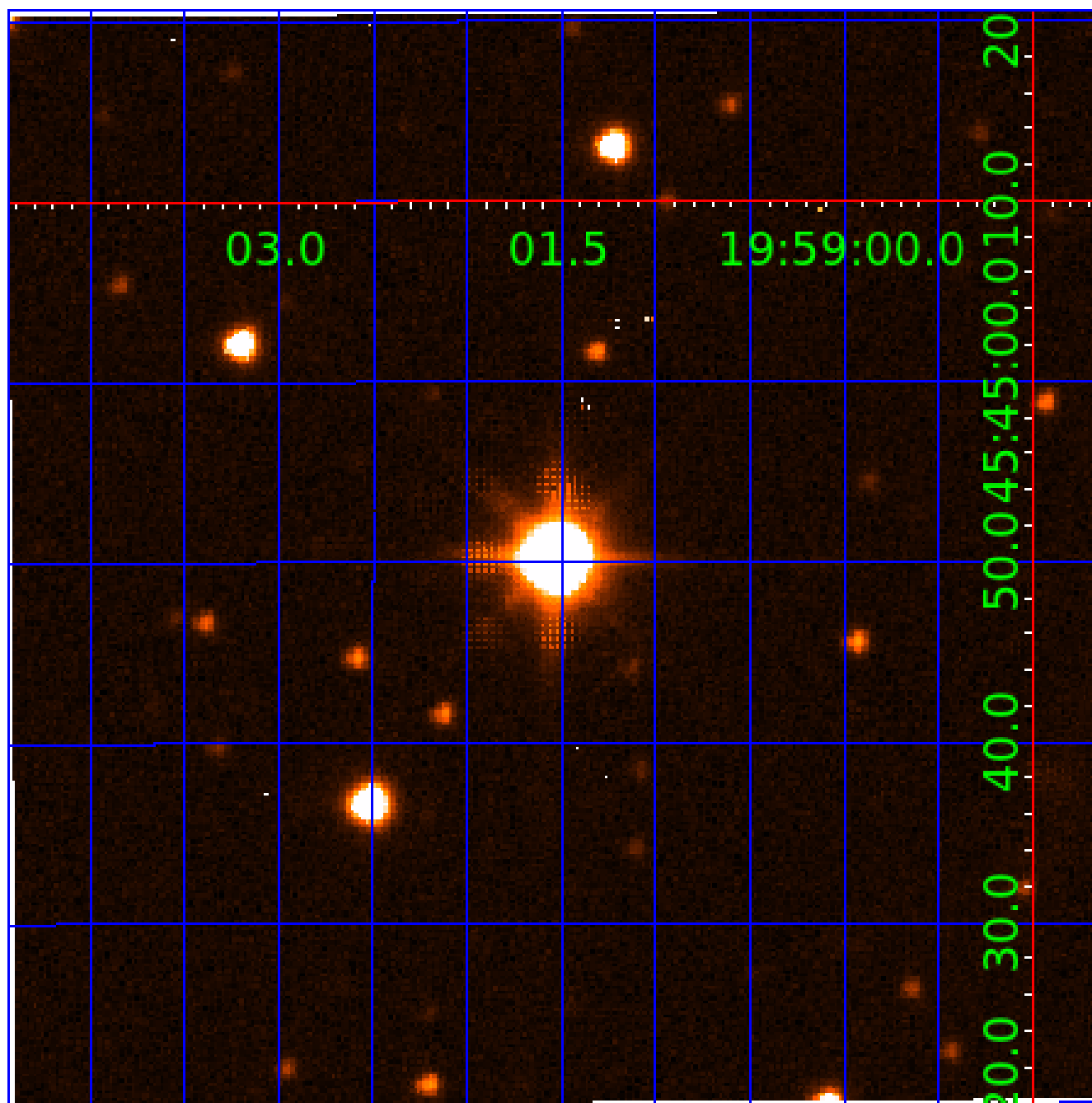


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009304797

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})
009304797-01	OBS	No	369.960945	255.843492	4671.5	8.450	253.5	22.9	7.55	4837	62.65	20.68
009304797-02	OBS	No	185.613972	250.872040	44.3	4.041	197.9	0.4	7.55	4837	5.07	51.86
009304797-03	OBS	No	430.413409	515.833423	0.5	34.111	136.0	0.0	7.55	4837	0.53	16.90
009304797-04	OBS	No	365.718659	261.444331	5255.8	28.547	191.4	66.3	7.55	4837	100.81	21.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009304797-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED
009304797-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009304797-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009304797-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED

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

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

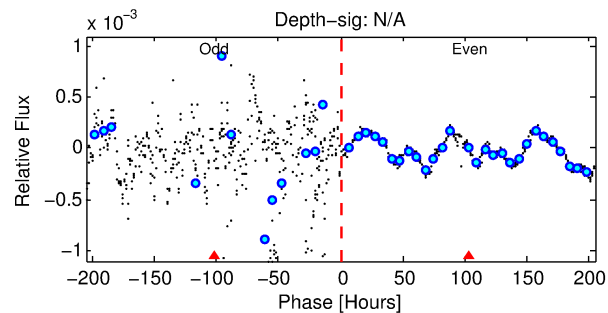
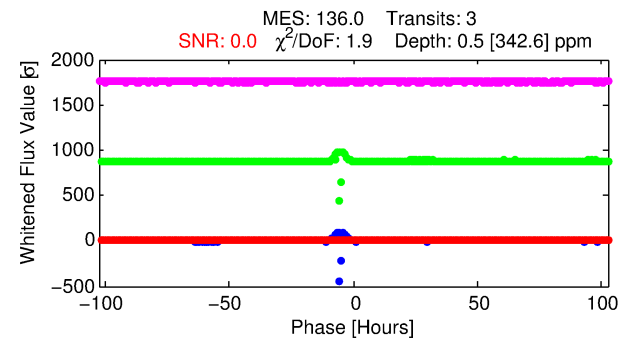
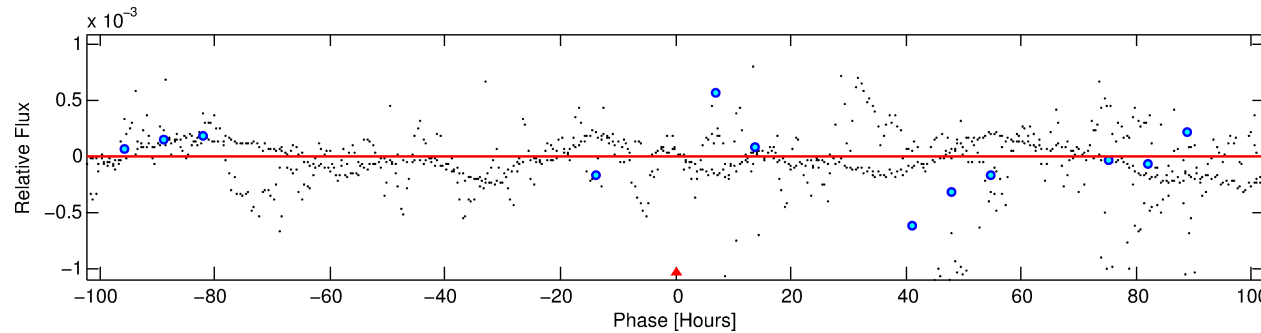
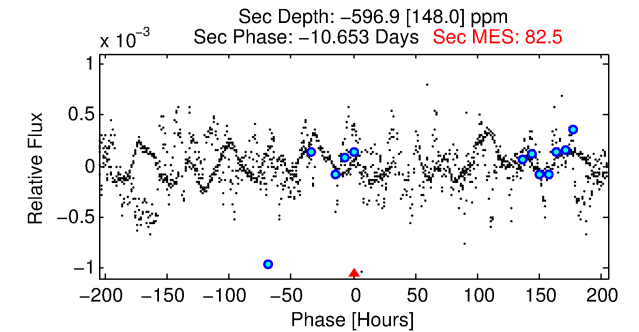
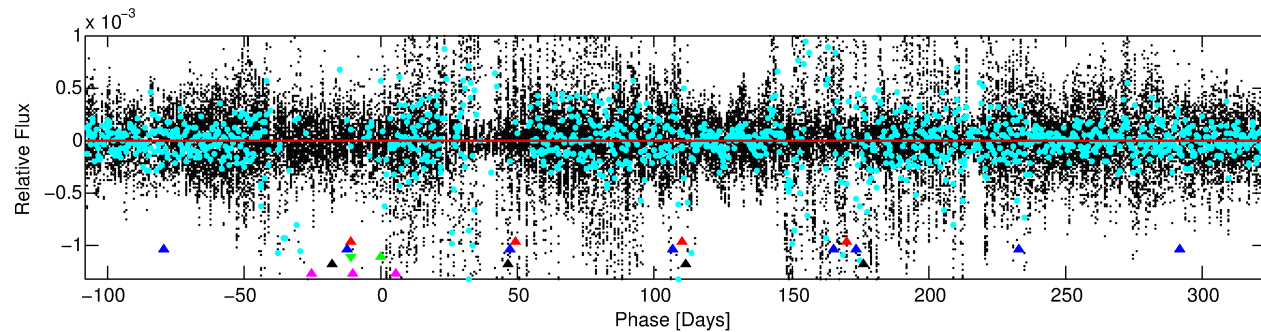
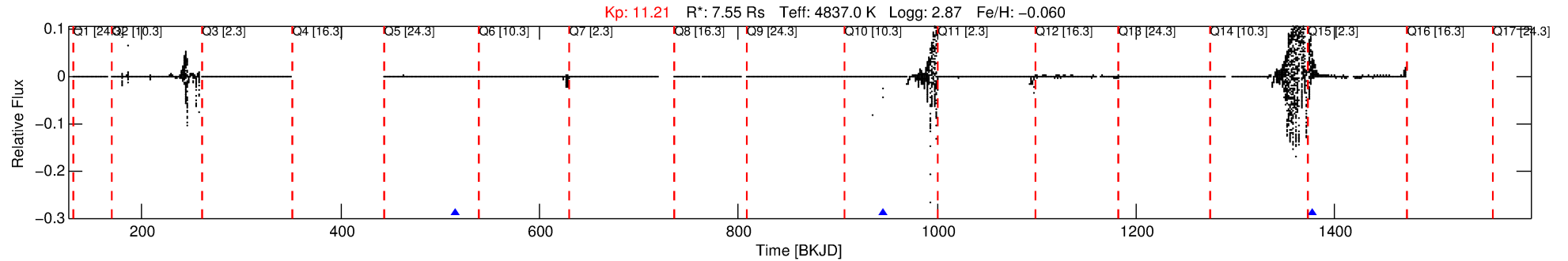
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009304797-03

No Significant Match Found

DV One-Page Summary

KIC: 9304797 Candidate: 3 of 5 Period: 430.413 d



DV Fit Results:

Period = 430.41341 [42.51562] d
Epoch = 515.8334 [19.2305] BKJD
Rp/R* = 0.0006 [0.2407]
a/R* = 79.11 [17493.66]
b = 0.57 [255.90]
Seff = 16.90 [5.65]
Teq = 517 [43] K
Rp = 0.53 [198.19] Re
a = 1.2856 [0.2865] AU
Ag = N/A
Teffp = N/A

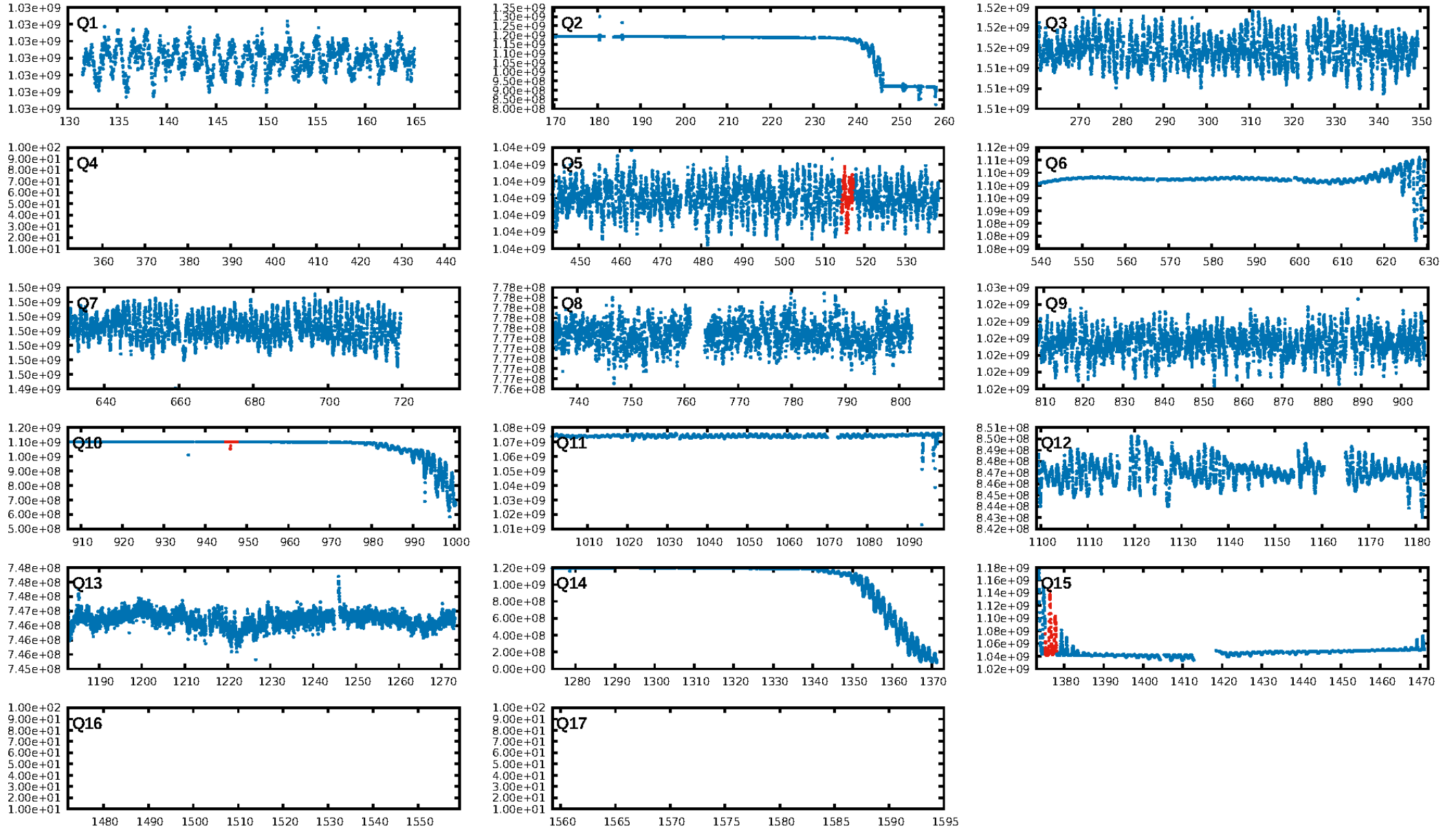
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [41.29 σ]
LongPeriod-sig: 100.0% [10.63 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 79.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [2/2]

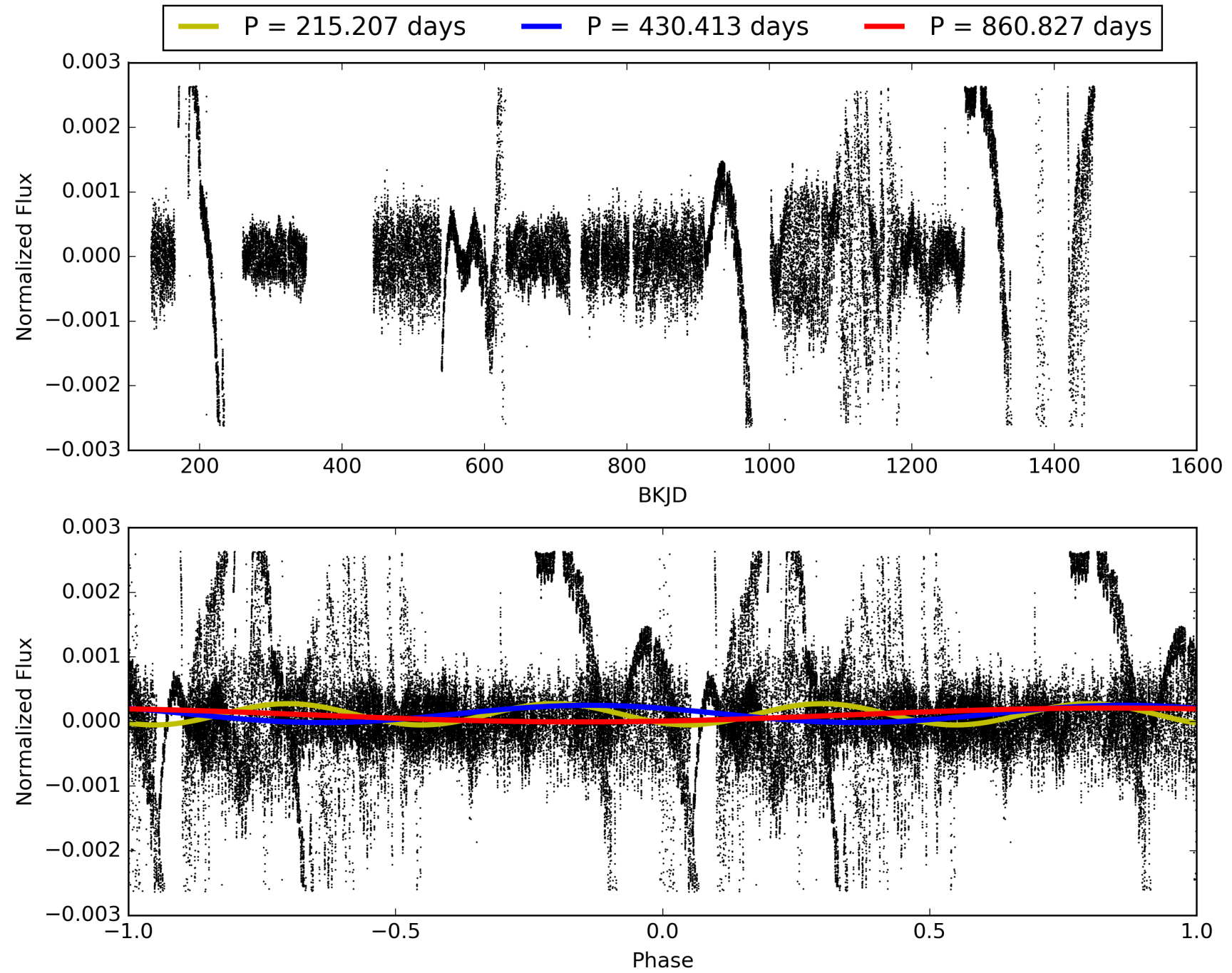
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:55:54 Z

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

TCE 009304797-03, PDC Light Curves

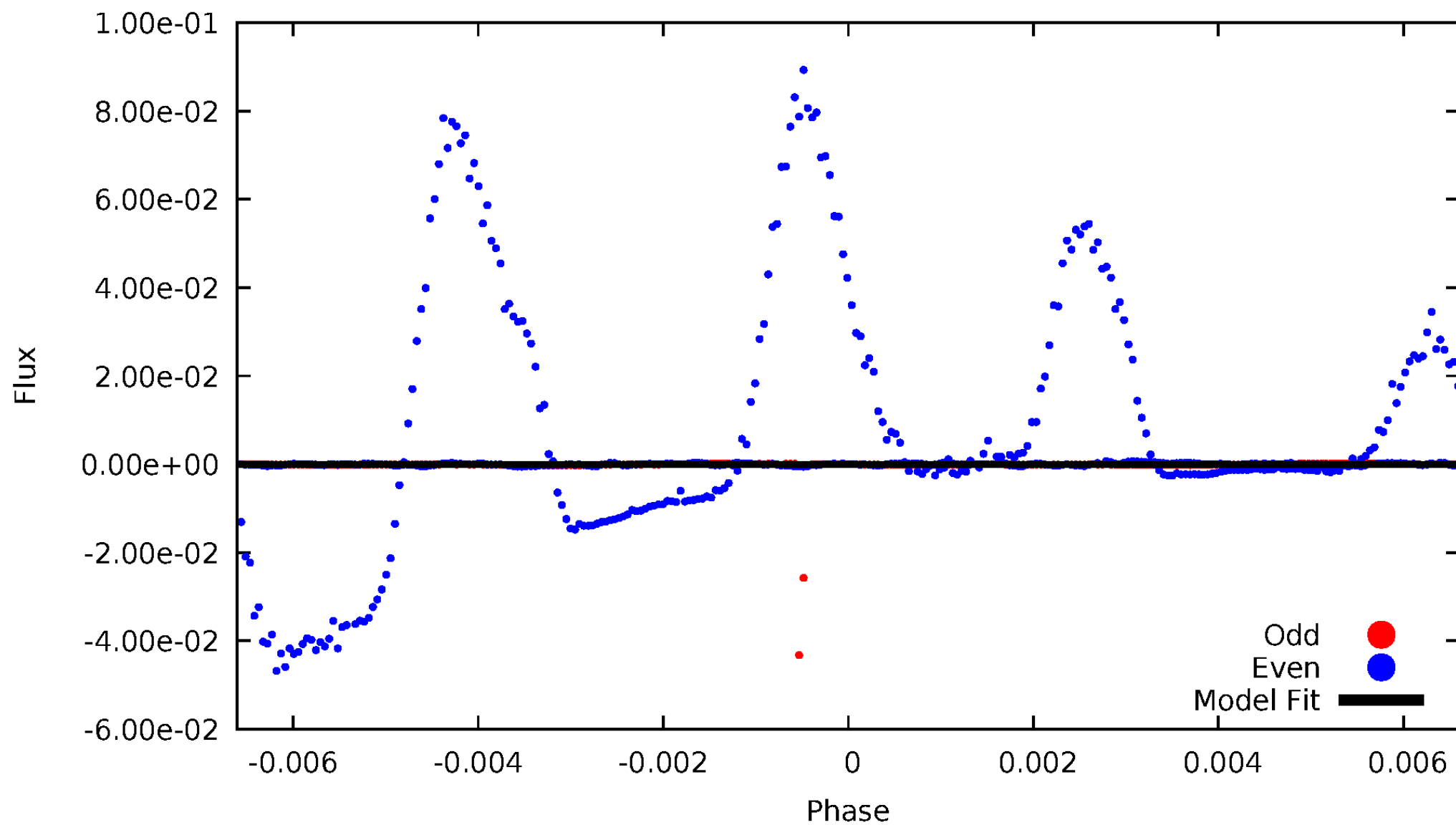


TCE 009304797-03



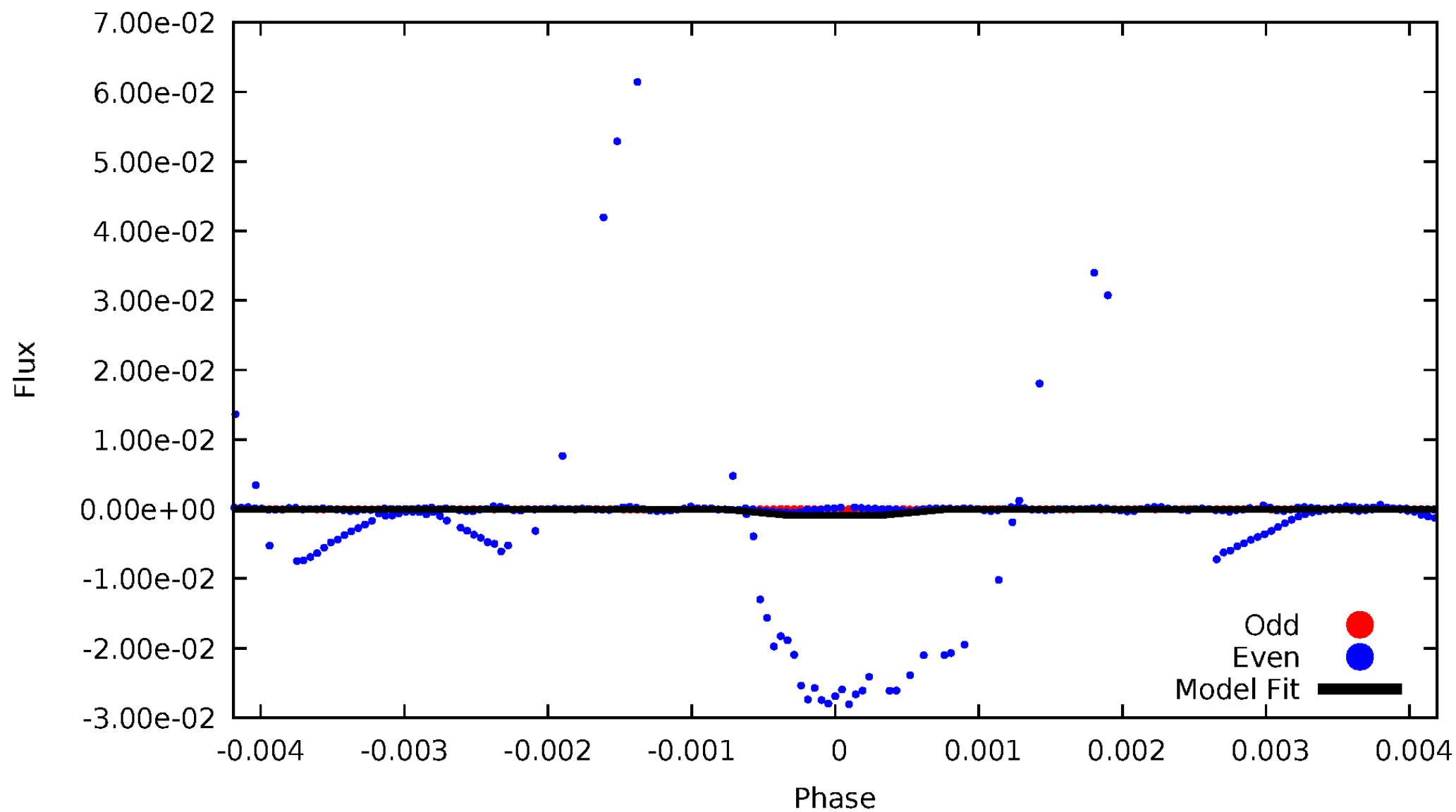
DV Odd/Even

TCE 009304797-03



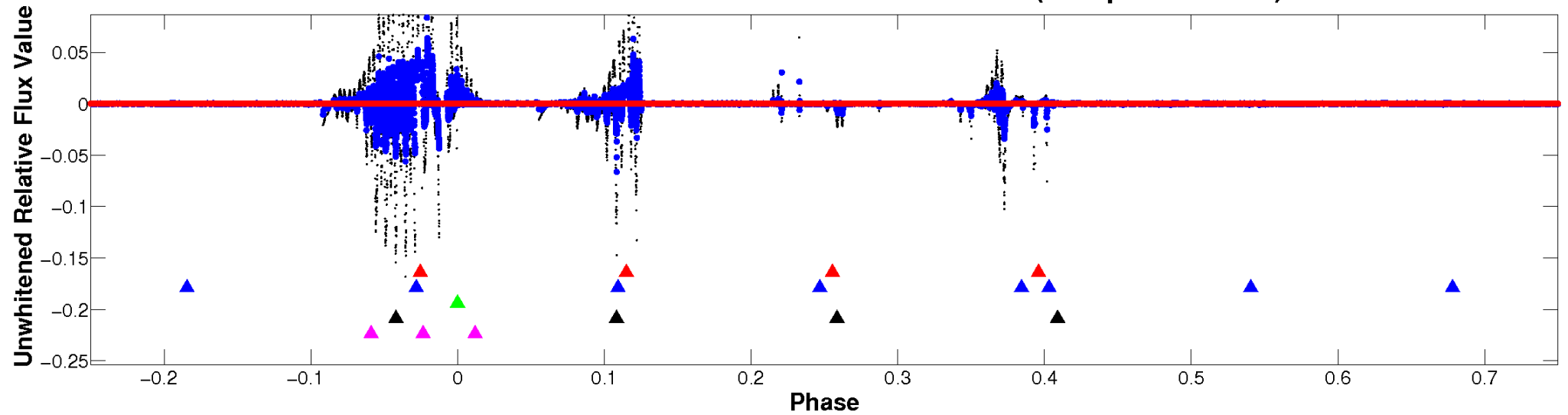
ALT Odd/Even

TCE 009304797-03

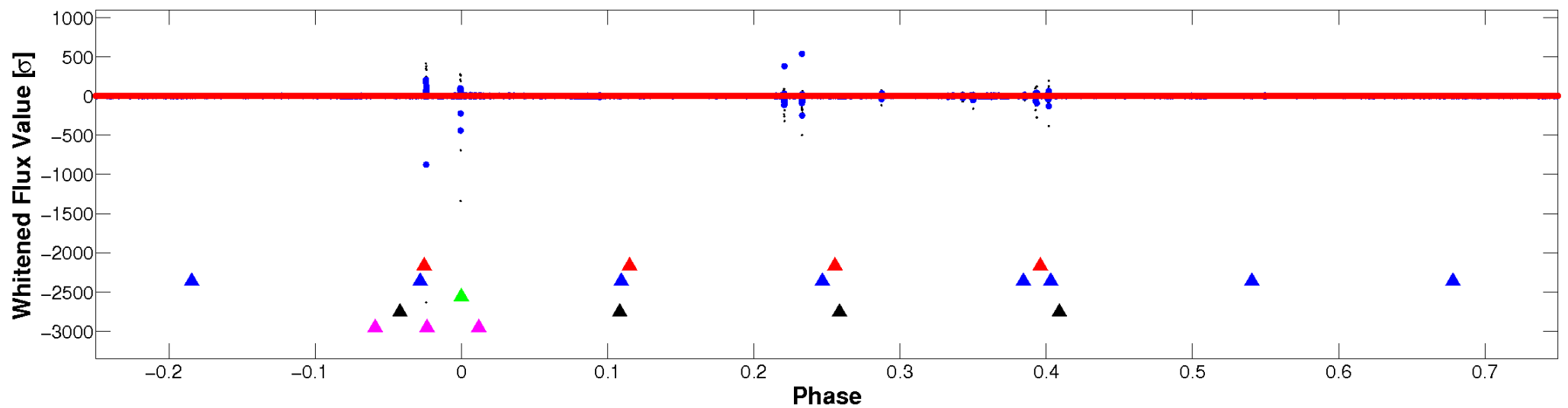


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

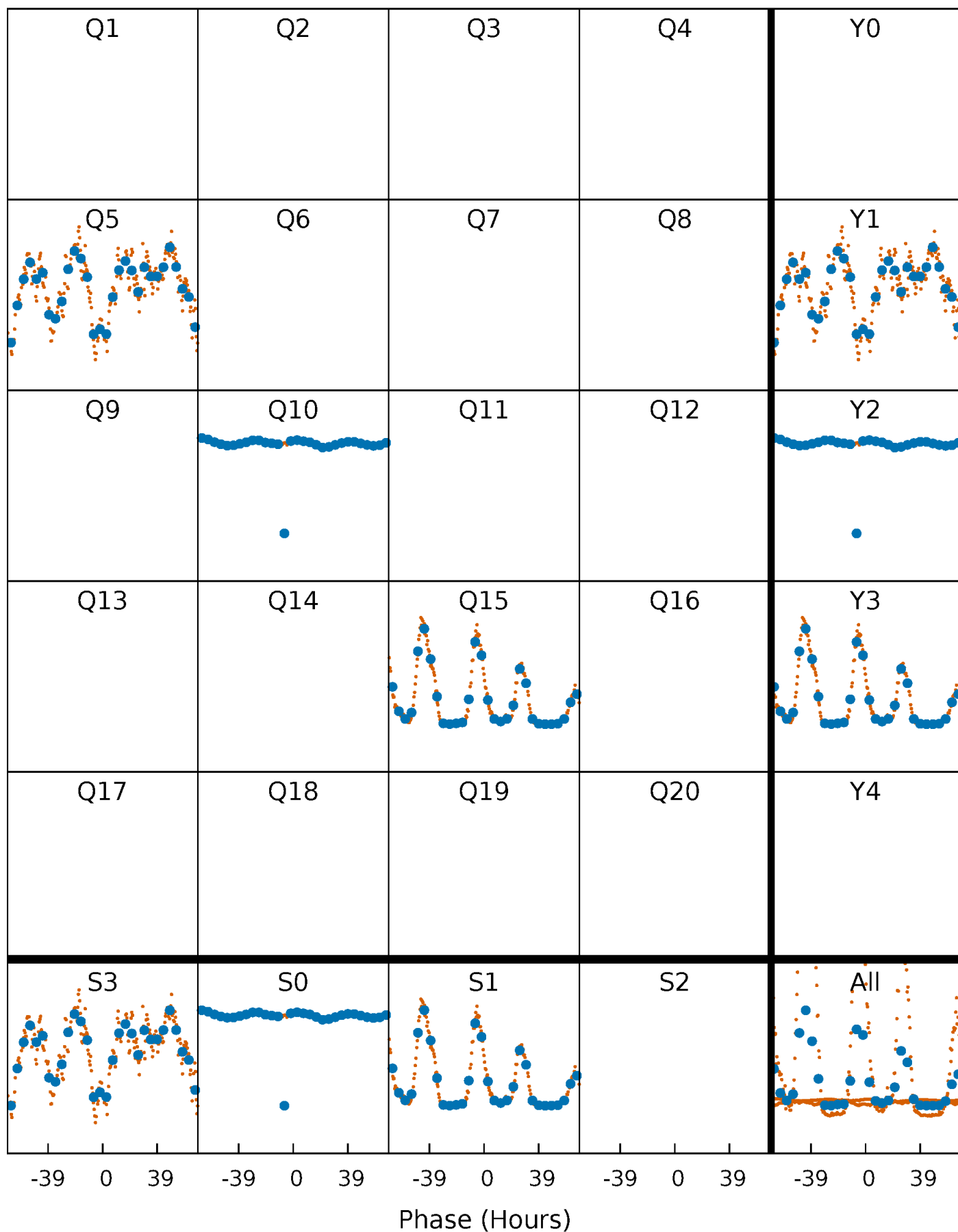


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



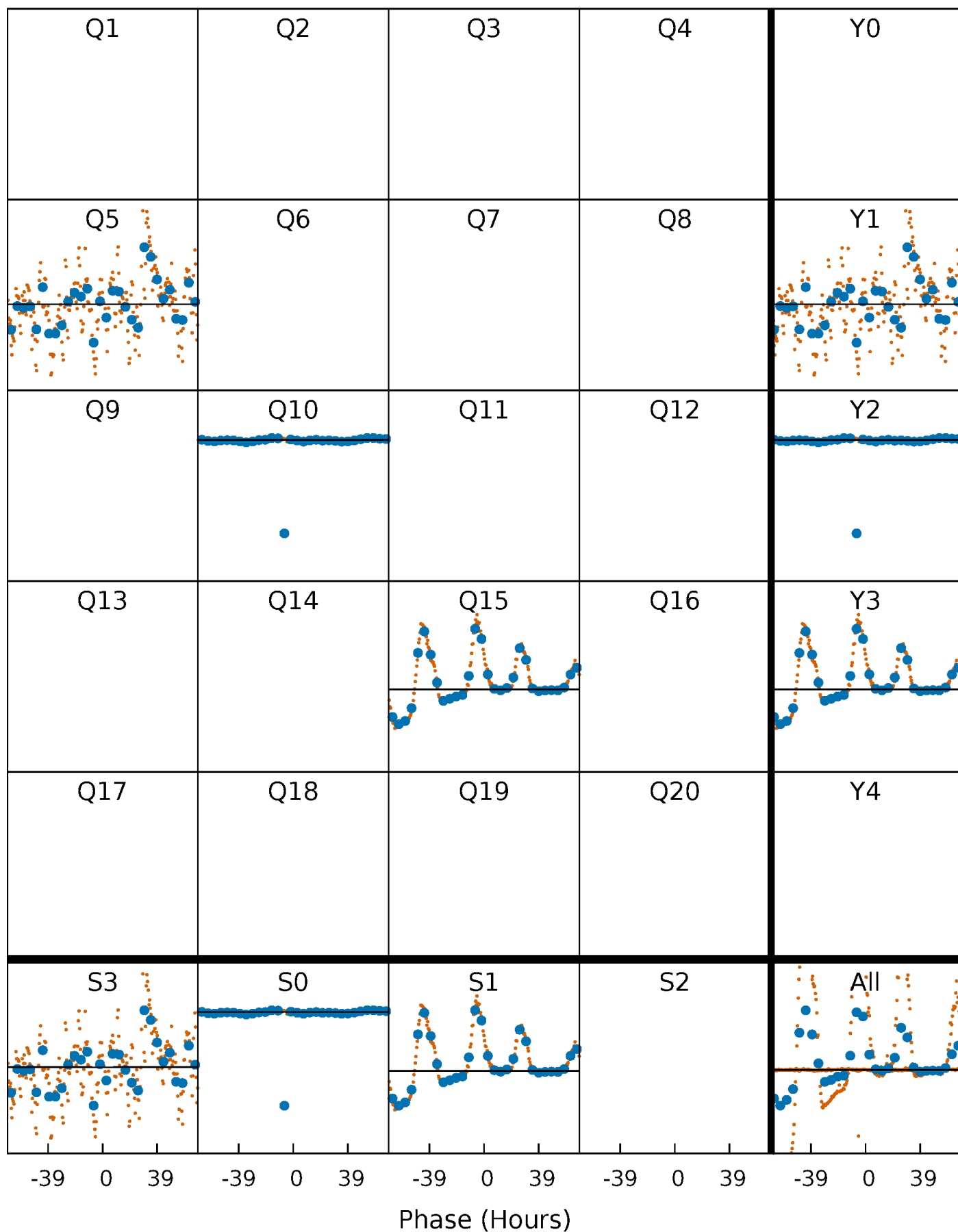
PDC Quarter-Phased Transit Curves

TCE 009304797-03 $P=430.413409$ Days $T_0=515.833423$ (BKJD)



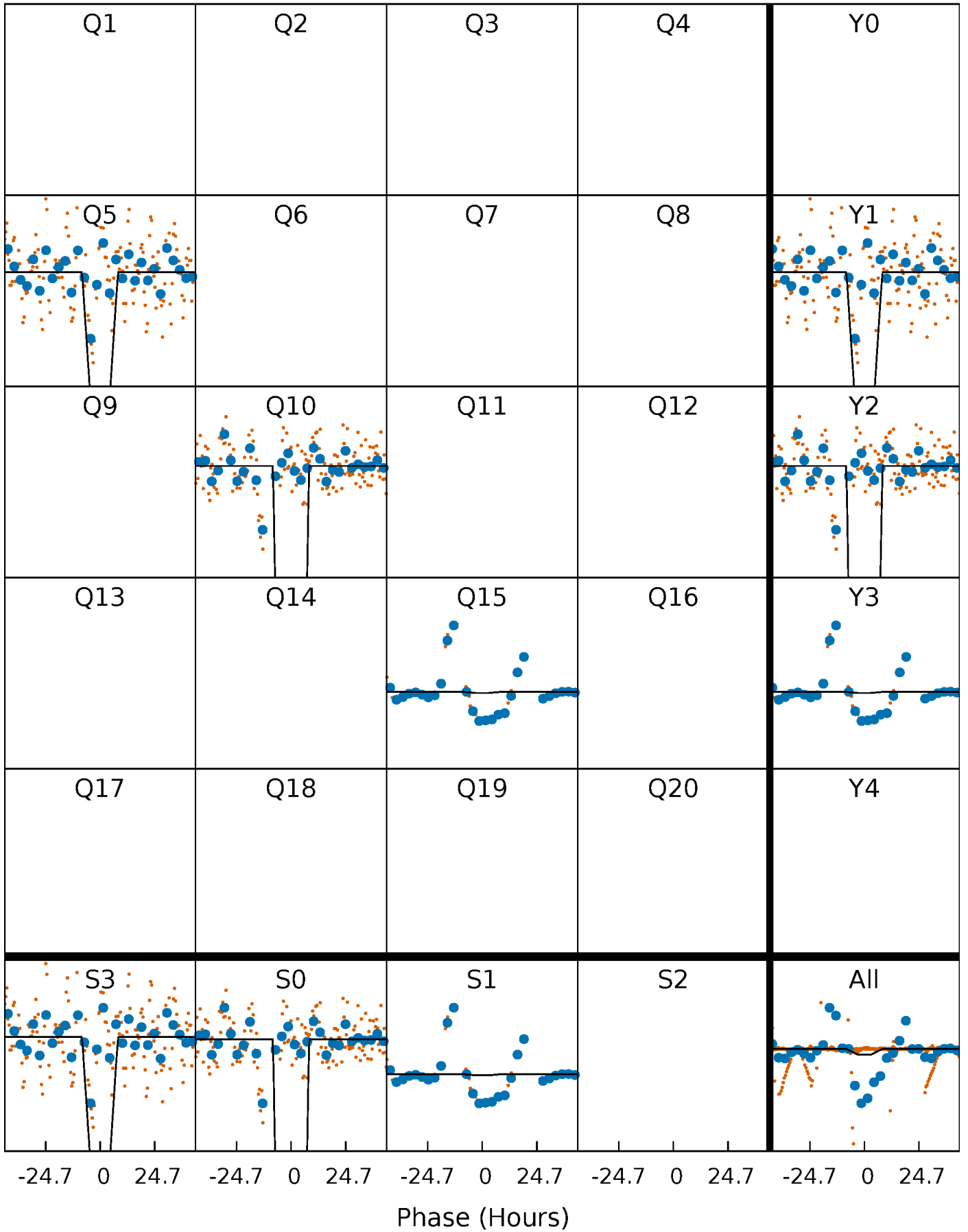
DV Quarter-Phased Transit Curves

TCE 009304797-03 $P=430.413409$ Days $T_0=515.833423$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

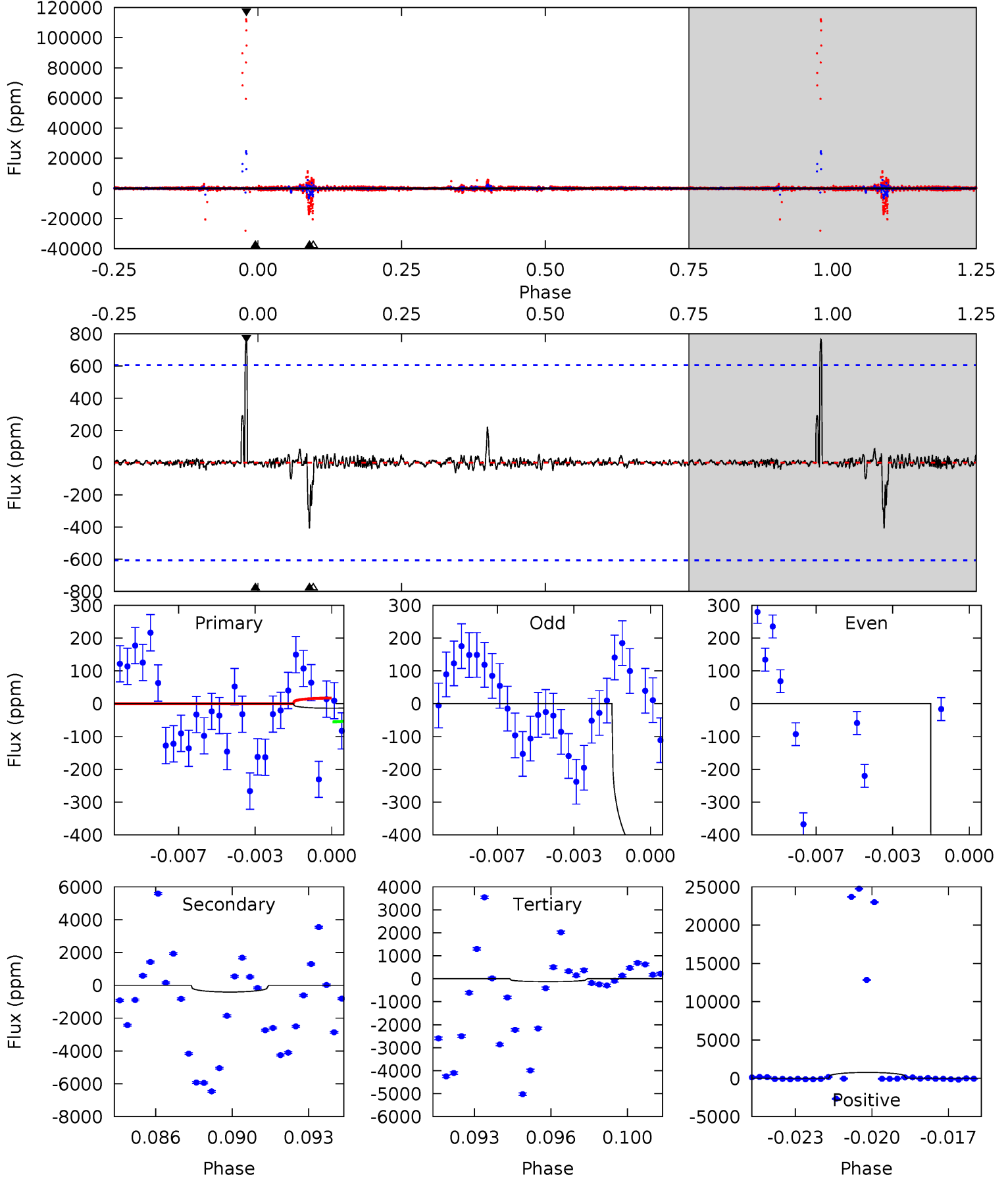
TCE 009304797-03 $P=430.637277$ Days $T_0=515.749040$ (BKJD)



DV Model-Shift Uniqueness Test

009304797-03, P = 430.413409 Days, E = 85.420014 Days

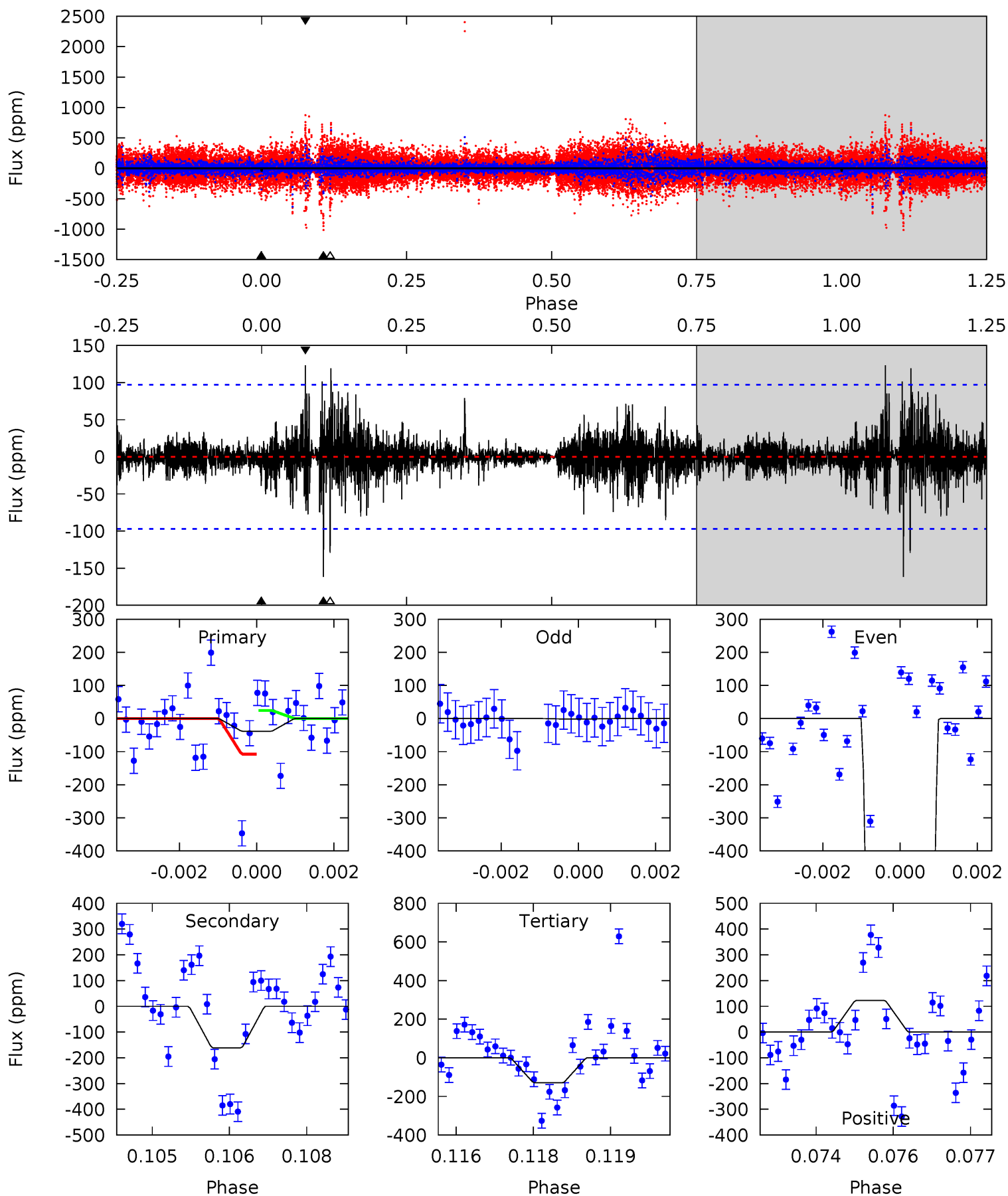
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.12	3.52	1.09	6.62	5.23	2.94	0.37	-0.97	-6.50	2.43	-3.10	7.09	-640.8	0.65	0.28



Alt Model-Shift Uniqueness Test

009304797-03, P = 430.637277 Days, E = 85.111763 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.13	8.93	7.15	6.80	5.37	3.15	1.02	-5.02	-4.67	1.78	2.13	71.7	88.8	0.43	0



Stellar Parameters For KIC 009304797

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4837^{+65}_{-65}	$2.867^{+0.162}_{-0.108}$	$-0.060^{+0.100}_{-0.150}$	$7.546^{+1.304}_{-1.956}$	$1.531^{+0.243}_{-0.451}$	$0.005^{+0.005}_{-0.002}$
	+1%/-1%	+6%/-4%	+167%/-250%	+17%/-26%	+16%/-29%	+99%/-31%
Source	SPE74	SPE74	SPE74	DSEP		

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

Secondary Eclipse Parameters for KIC 009304797-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-408 ± 116	$125.33^{+154.41}_{-85.49}$	719^{+45}_{-46}	2519^{+933}_{-426}	23^{+196}_{-19}
Alt.	-162 ± 18	$144.82^{+145.03}_{-100.79}$	719^{+44}_{-46}	2203^{+732}_{-316}	$6.942^{+66.235}_{-5.203}$

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 $A_{obs} \gg 1.0$

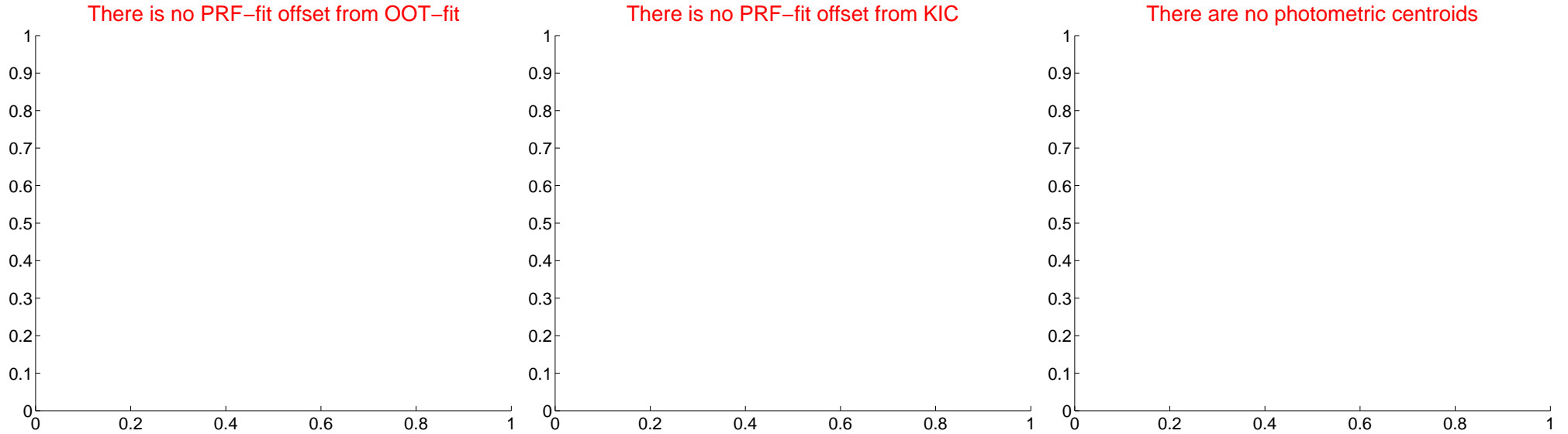
DV Centroid Data

Supplemental centroid analysis for 009304797-03. **Kepler magnitude: 11.21.** Transit SNR 0.01

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	—	—	—	—

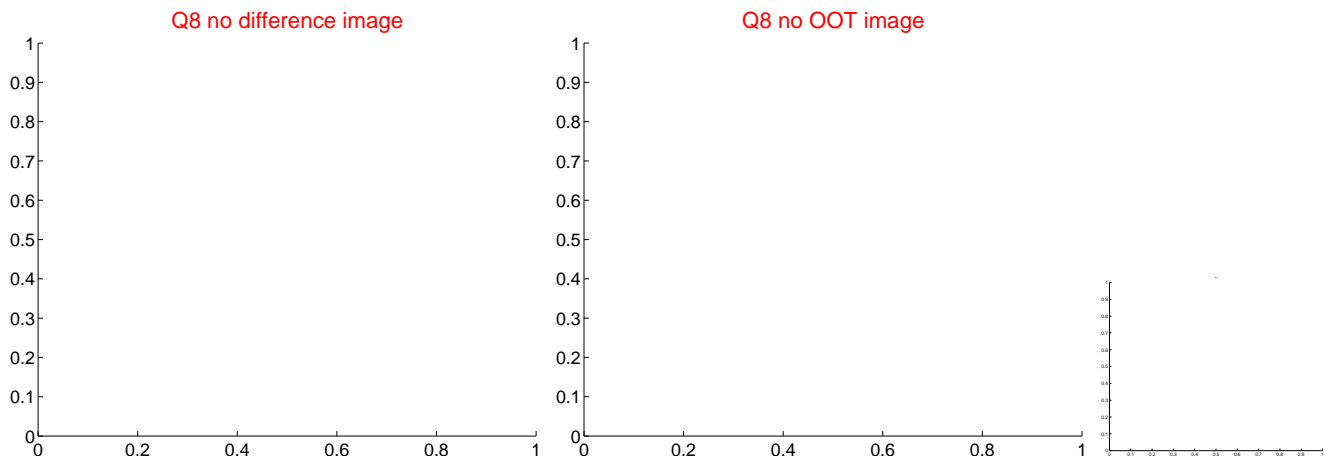
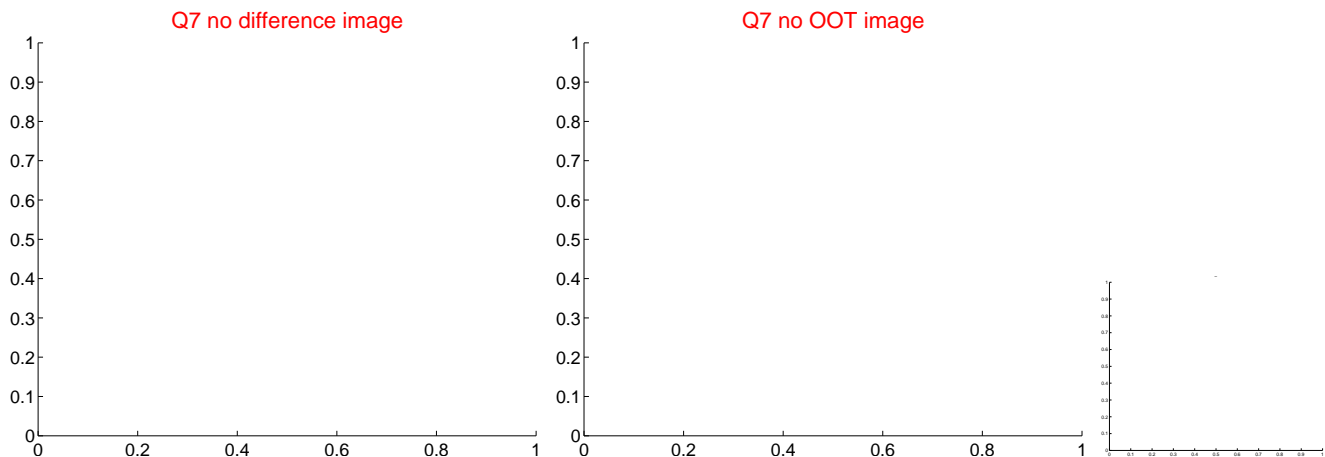
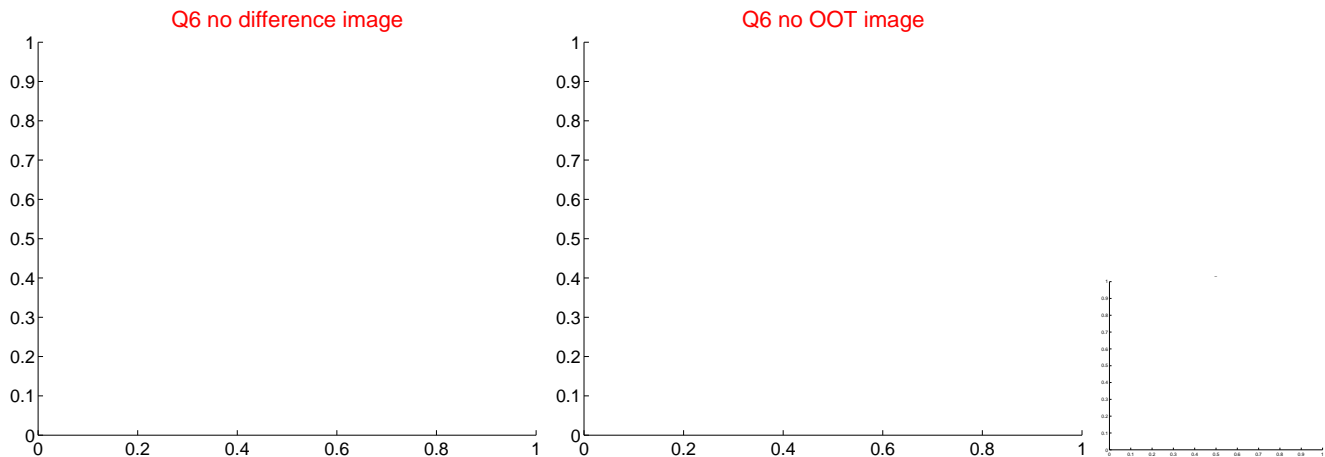
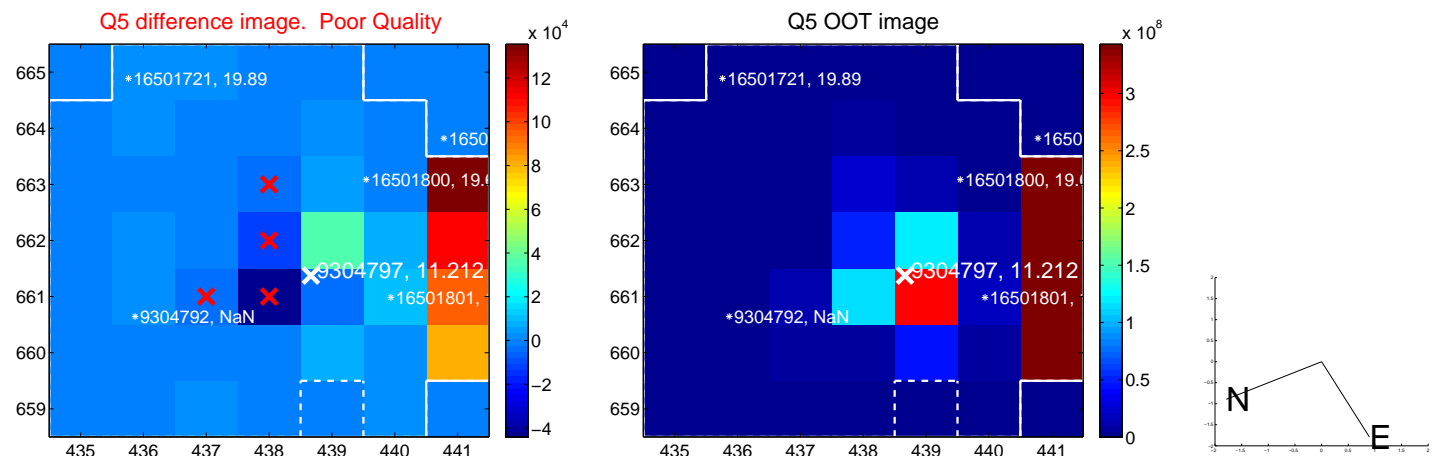


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

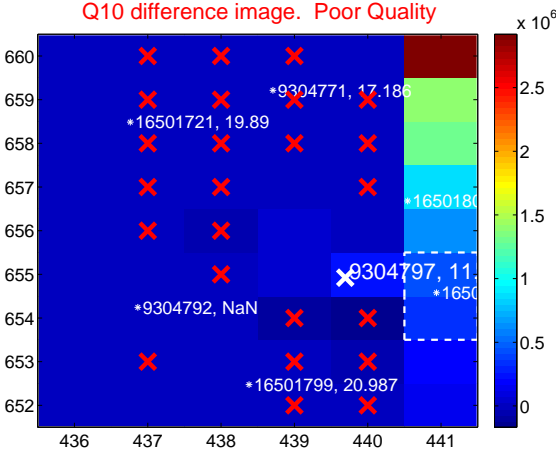
Q9 no difference image



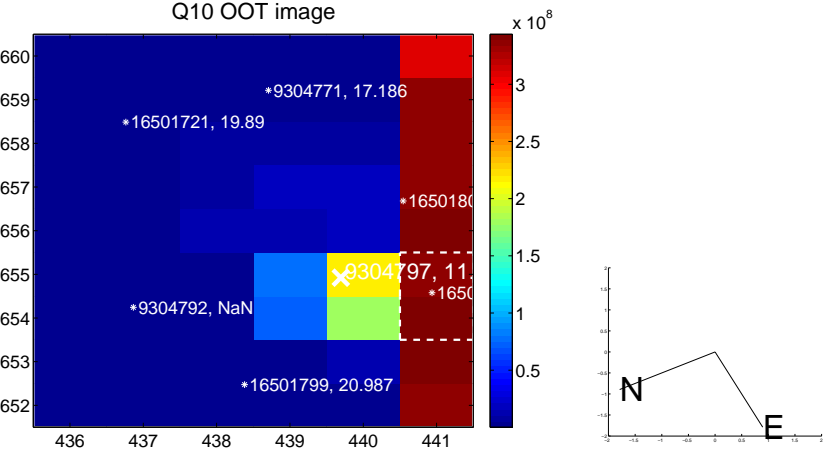
Q9 no OOT image



Q10 difference image. Poor Quality



Q10 OOT image



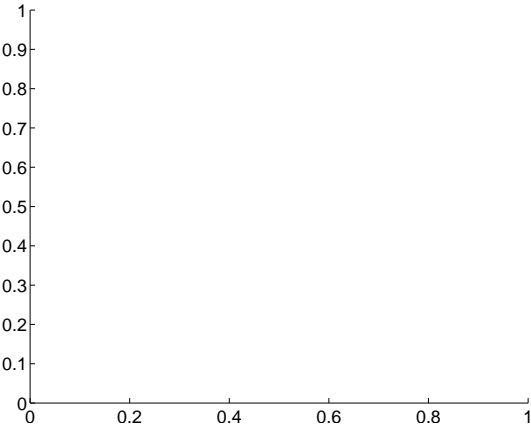
Q11 no difference image



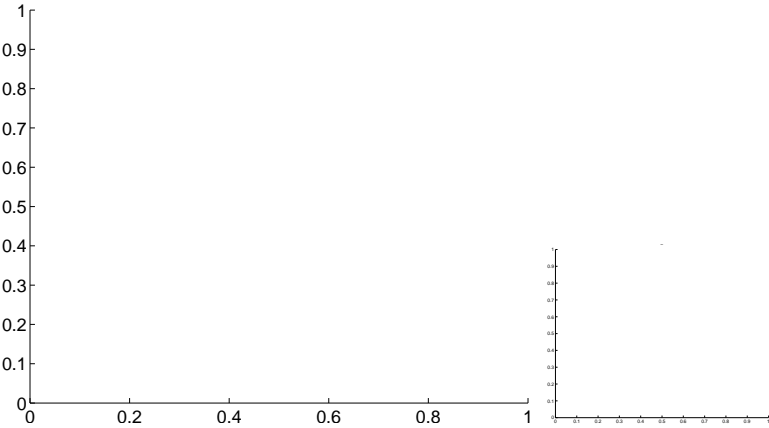
Q11 no OOT image



Q12 no difference image



Q12 no OOT image



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



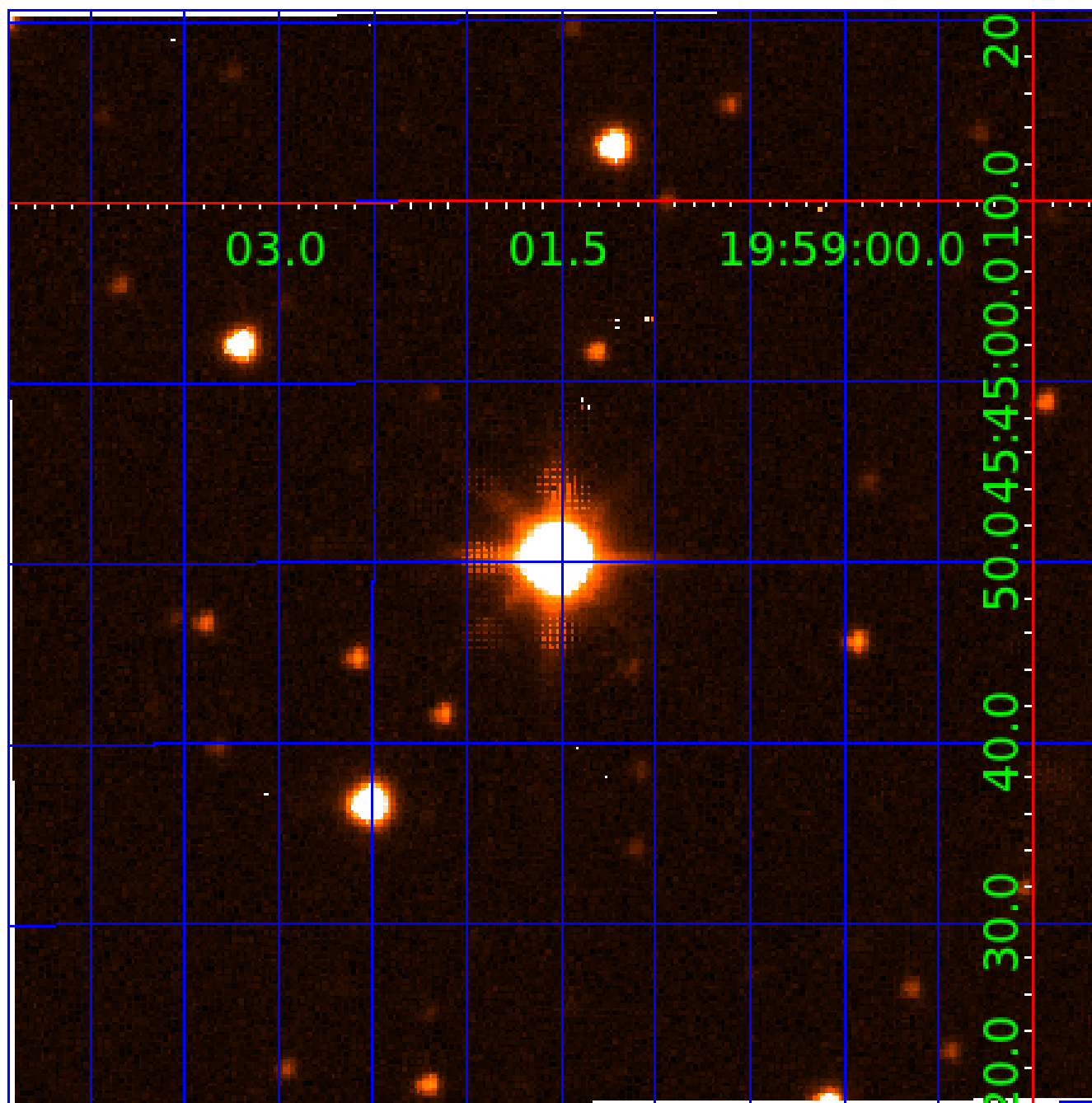
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 009304797

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})
009304797-01	OBS	No	369.960945	255.843492	4671.5	8.450	253.5	22.9	7.55	4837	62.65	20.68
009304797-02	OBS	No	185.613972	250.872040	44.3	4.041	197.9	0.4	7.55	4837	5.07	51.86
009304797-03	OBS	No	430.413409	515.833423	0.5	34.111	136.0	0.0	7.55	4837	0.53	16.90
009304797-04	OBS	No	365.718659	261.444331	5255.8	28.547	191.4	66.3	7.55	4837	100.81	21.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009304797-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED
009304797-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009304797-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009304797-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED

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

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

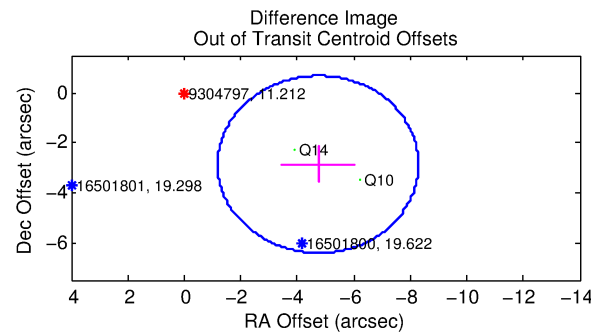
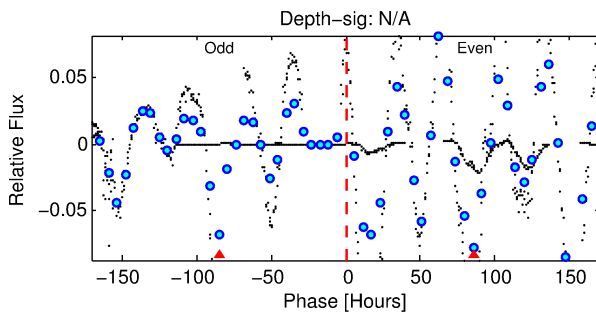
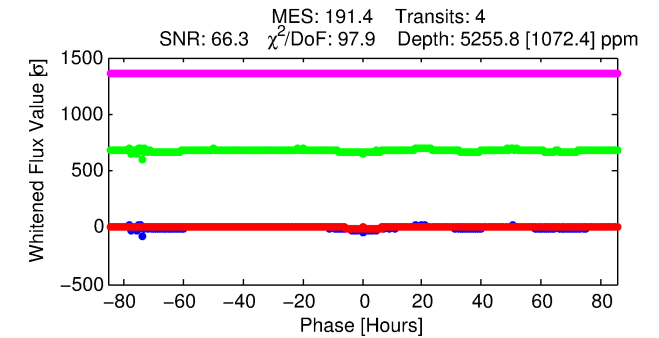
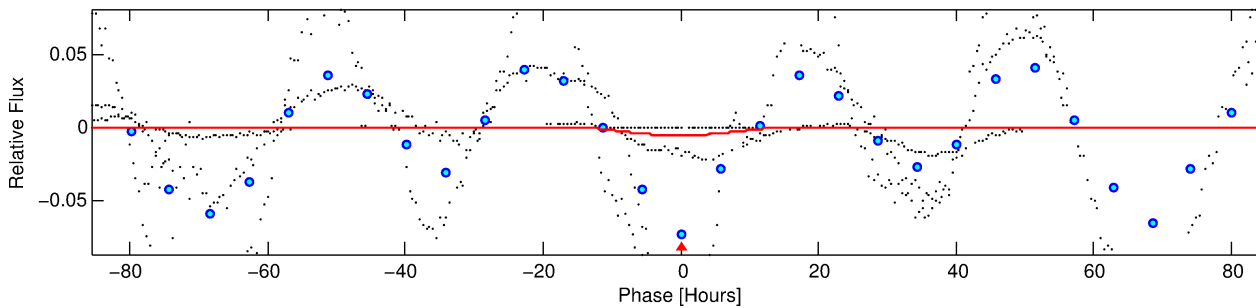
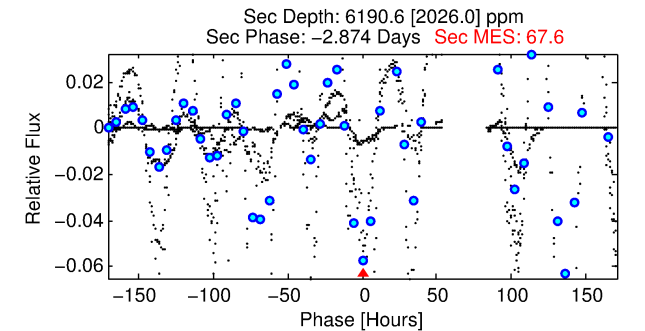
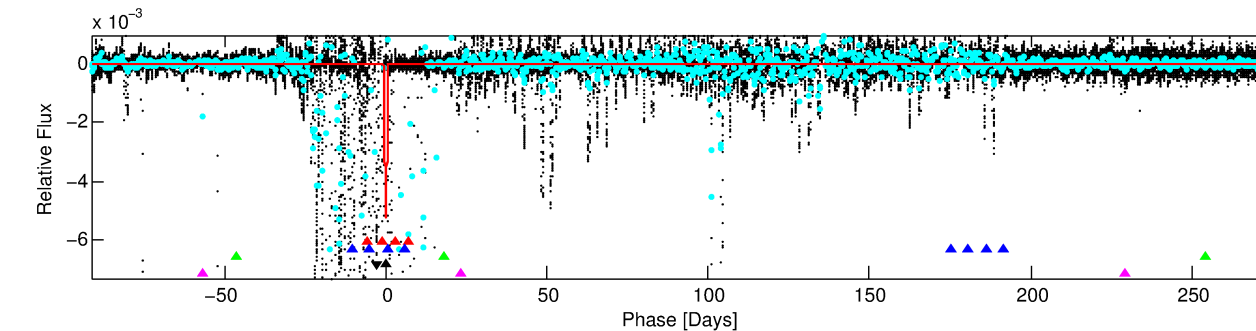
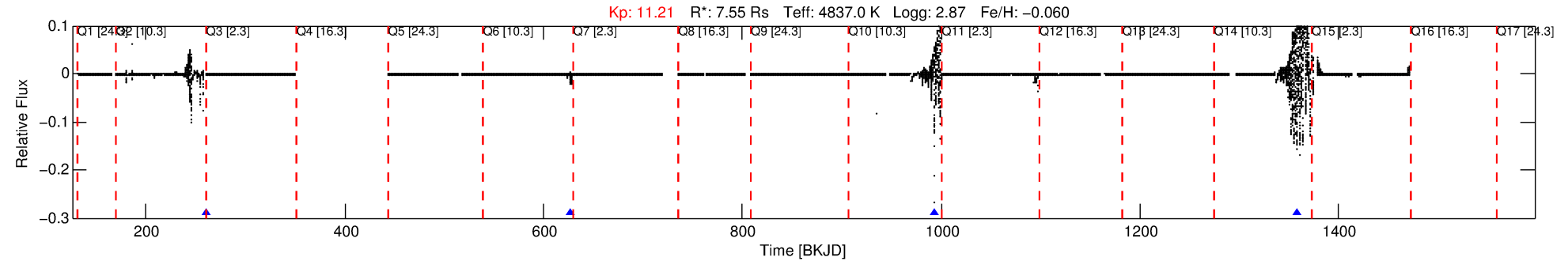
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009304797-04

No Significant Match Found

DV One-Page Summary

KIC: 9304797 Candidate: 4 of 5 Period: 365.719 d



DV Fit Results:

Period = 365.71866 [0.10496] d
Epoch = 261.4443 [0.0527] BKJD
Rp/R* = 0.1224 [0.5300]
a/R* = 51.19 [37.96]
b = 0.99 [0.77]
Seff = 21.00 [6.46]
Teq = 546 [42] K
Rp = 100.81 [437.24] Re
a = 1.1533 [0.2455] AU
Ag = 445.76 [3865.02] [0.12 σ]
Teffp = 3878 [8401] K [0.40 σ]

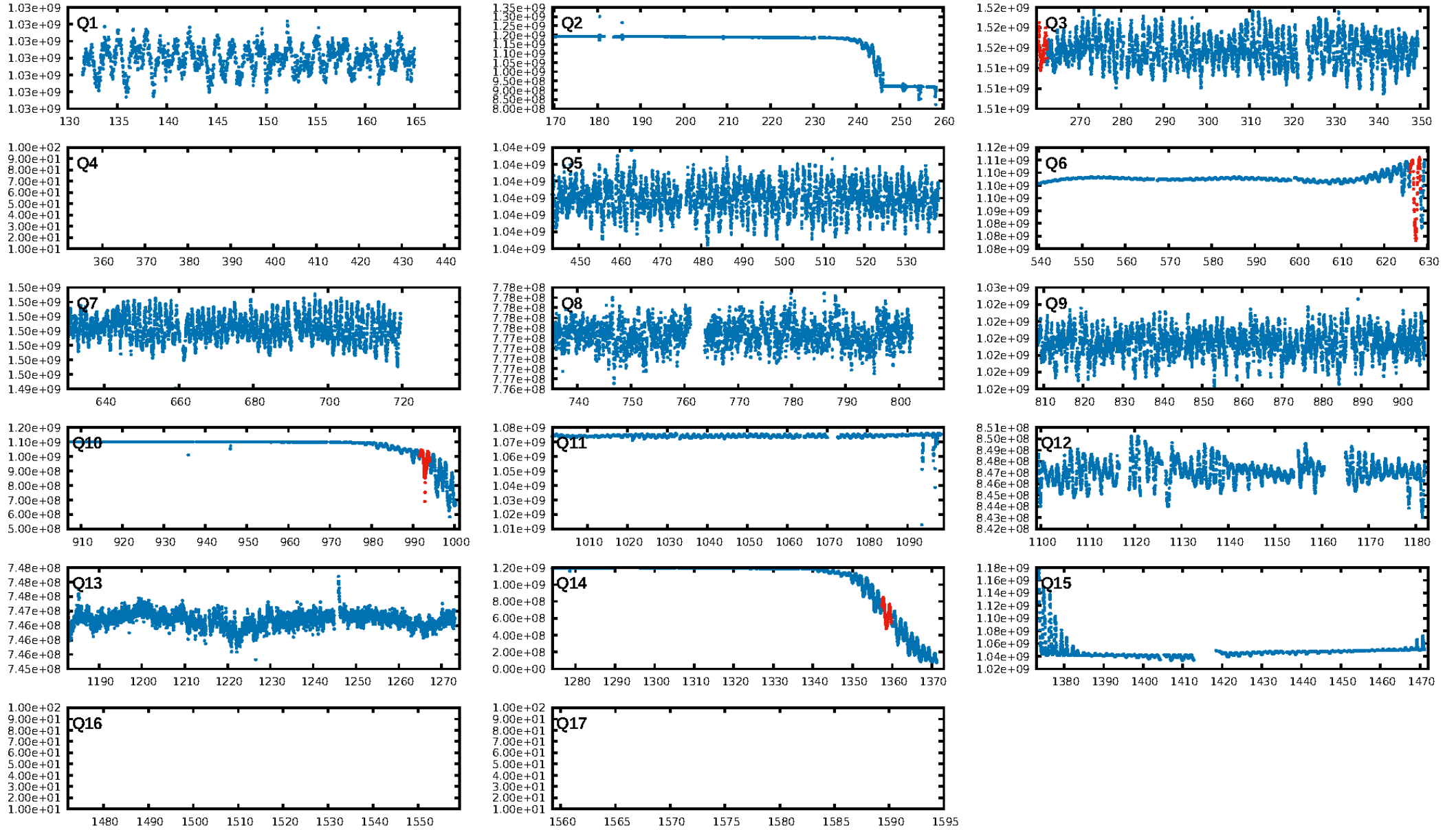
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [149.92 σ]
LongPeriod-sig: 99.9% [3.42 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.5127
Centroid-sig: 0.4%
Centroid-so: 12.221 arcsec [2.39 σ]
OotOffset-rm: 5.539 arcsec [4.68 σ]
KicOffset-rm: 5.438 arcsec [6.96 σ]
OotOffset-st: 2/0/0/0 [2]
KicOffset-st: 2/0/0/0 [2]
DiffImageQuality-figm: 1.00 [2/2]
DiffImageOverlap-fno: 0.33 [1/3]

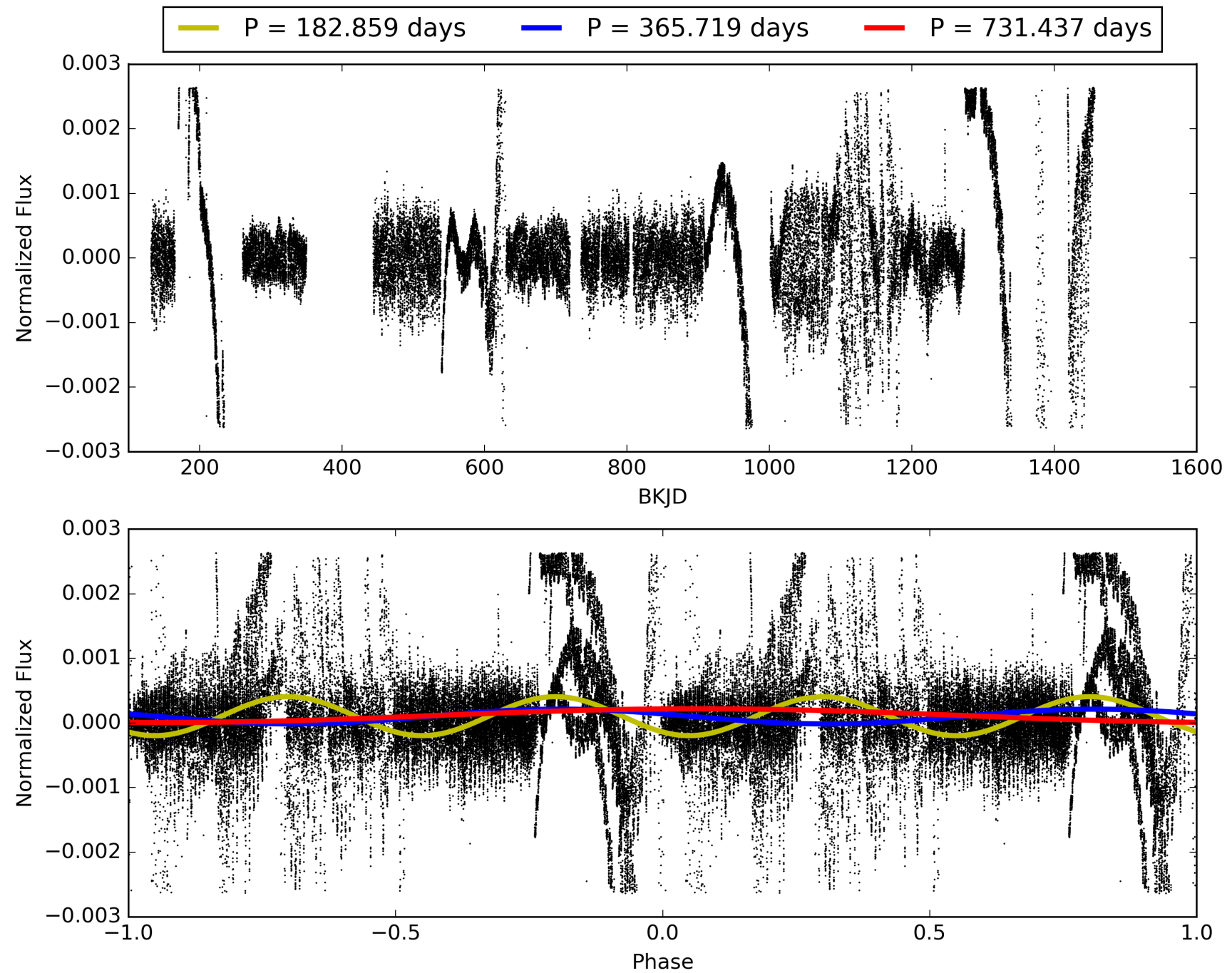
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:56:00 Z

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

TCE 009304797-04, PDC Light Curves

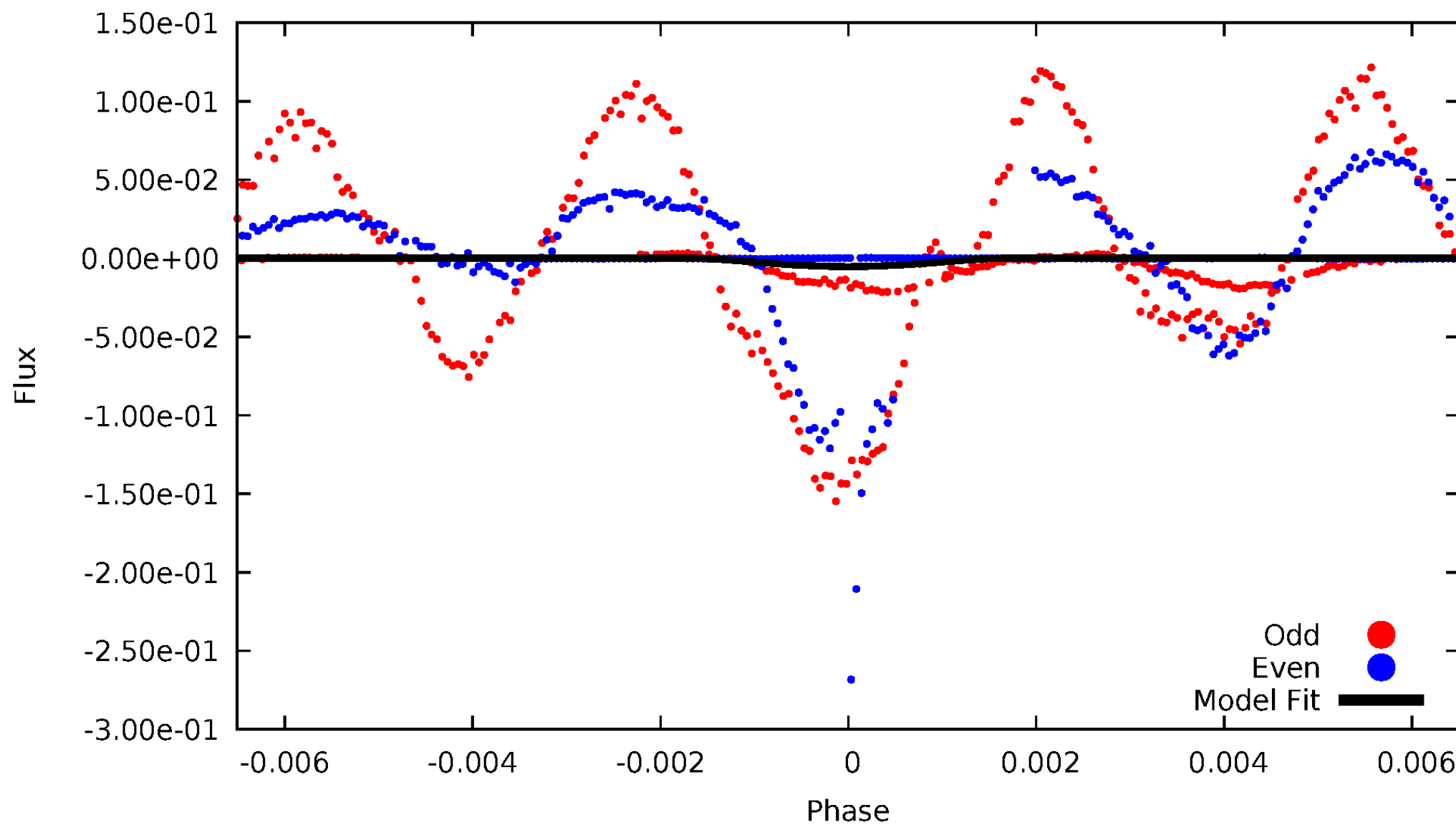


TCE 009304797-04



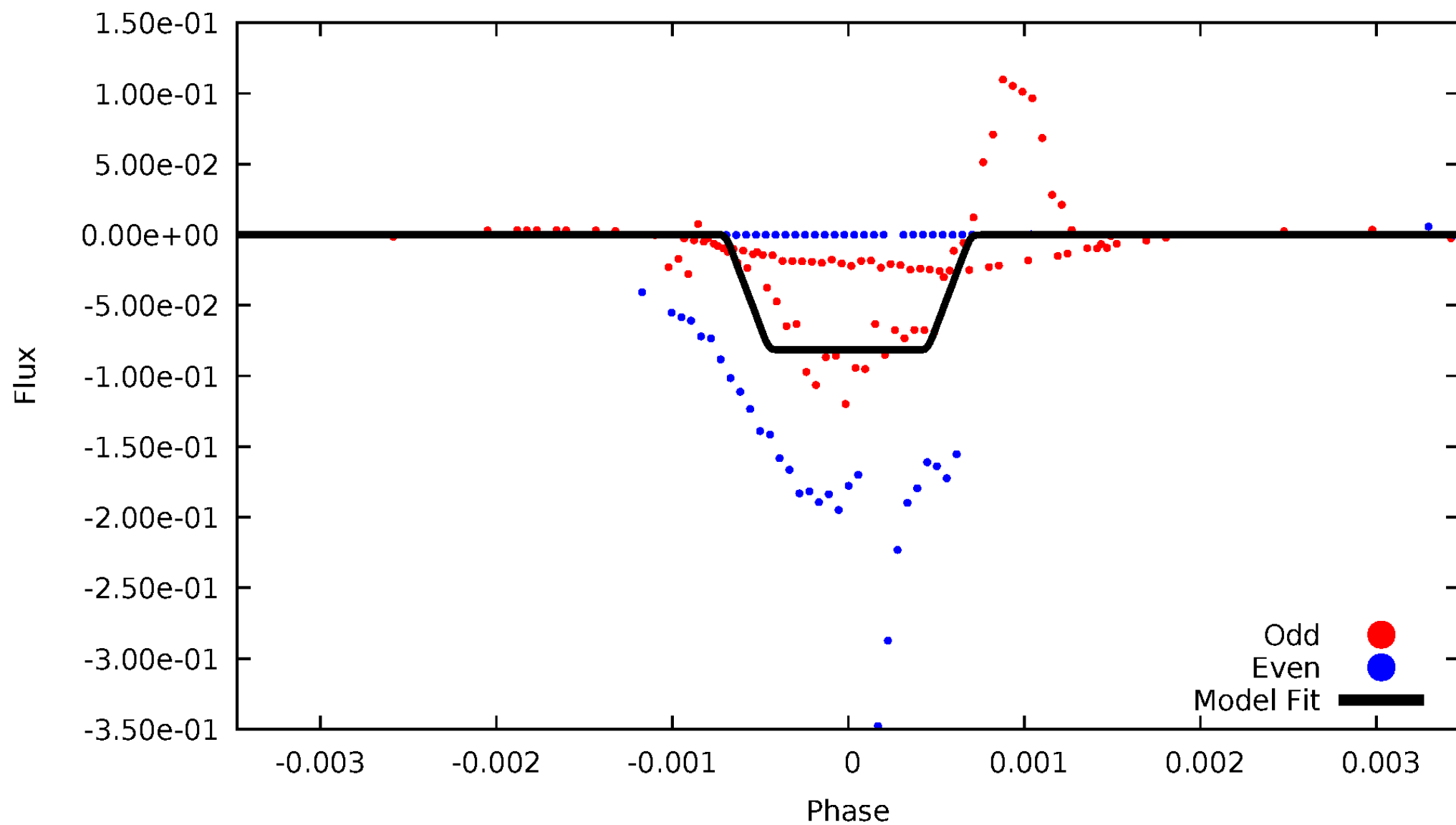
DV Odd/Even

TCE 009304797-04



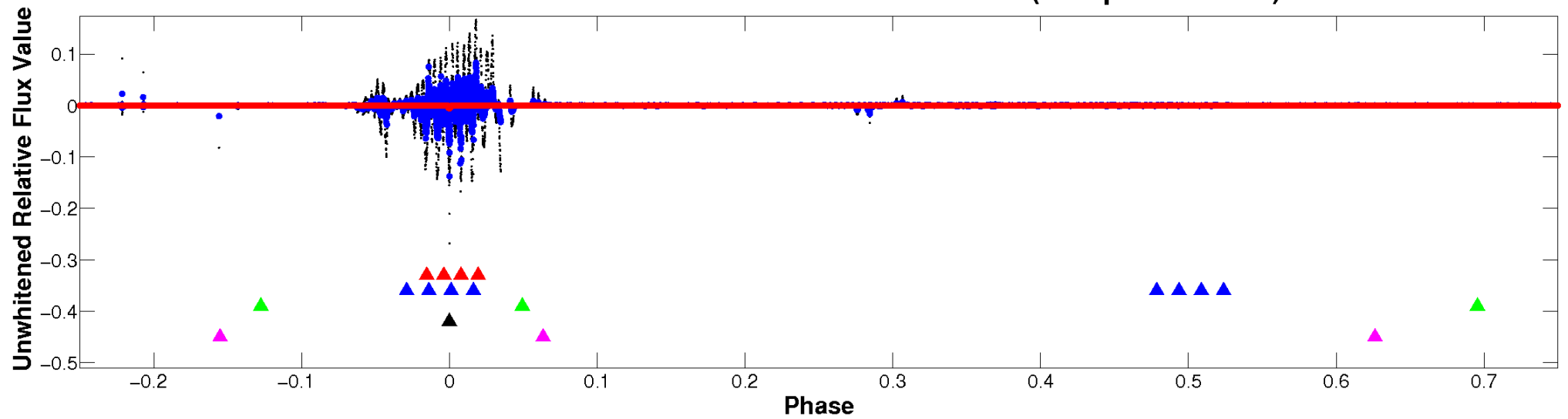
ALT Odd/Even

TCE 009304797-04

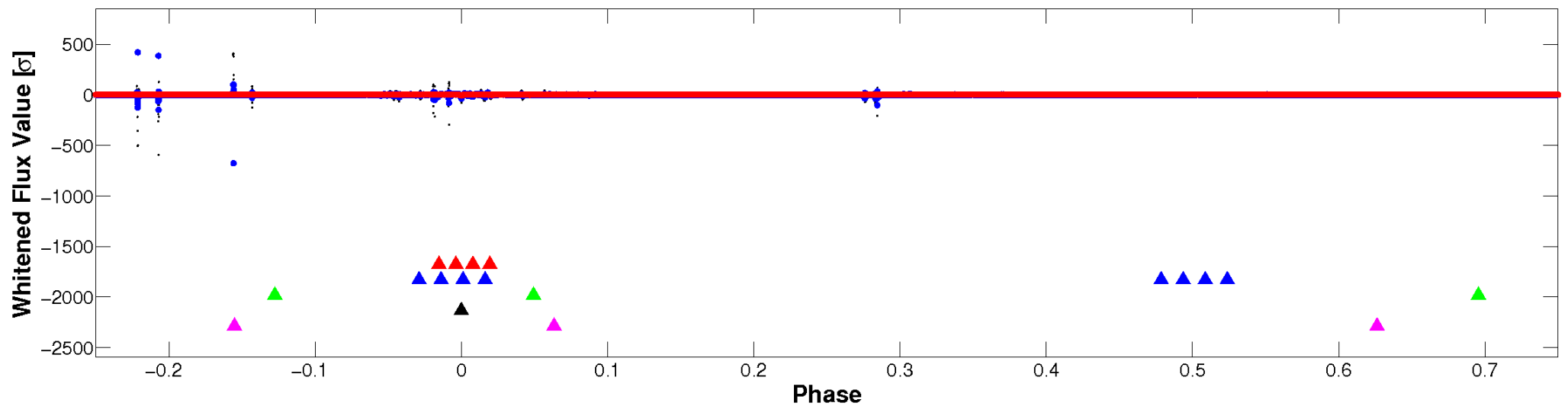


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

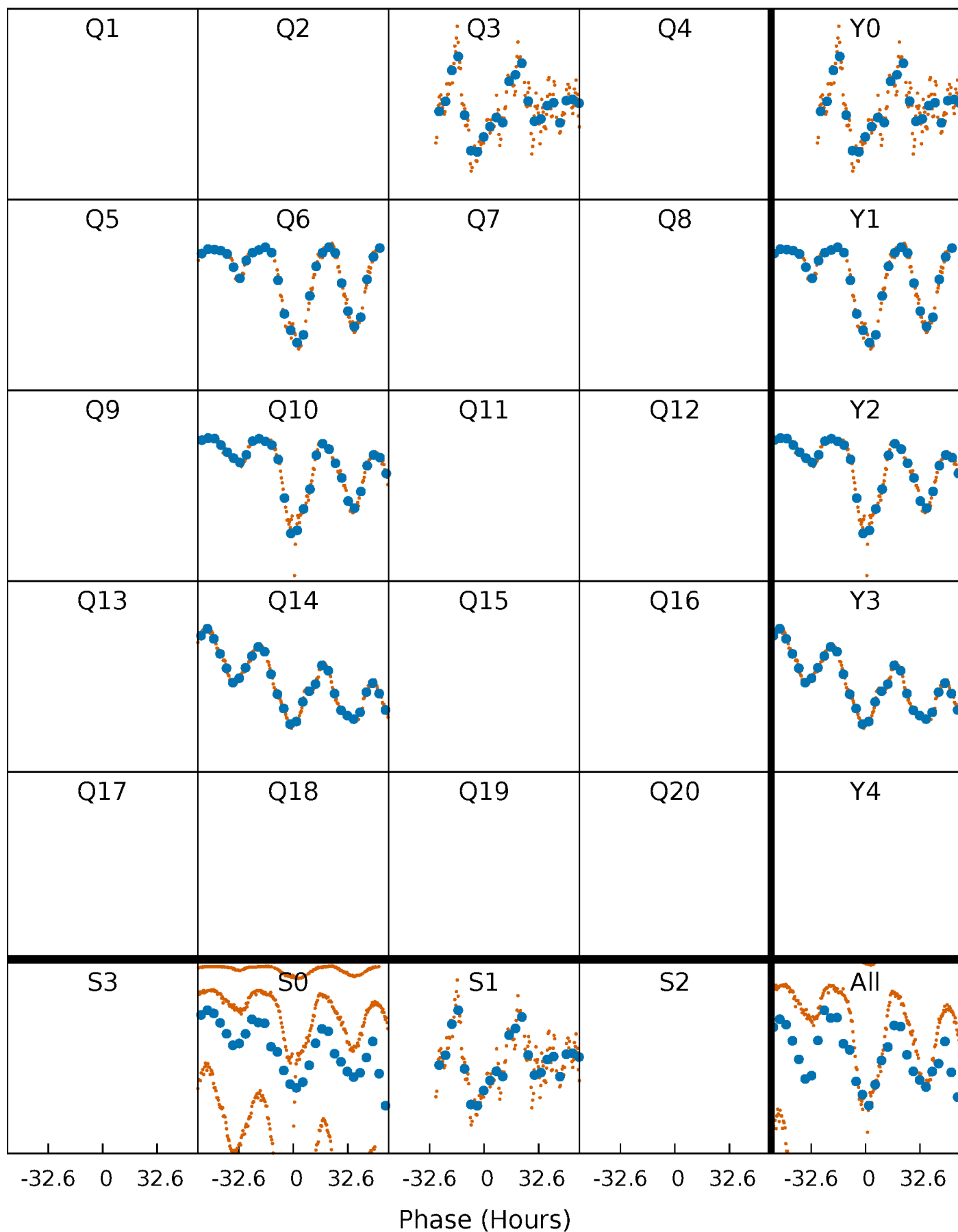


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



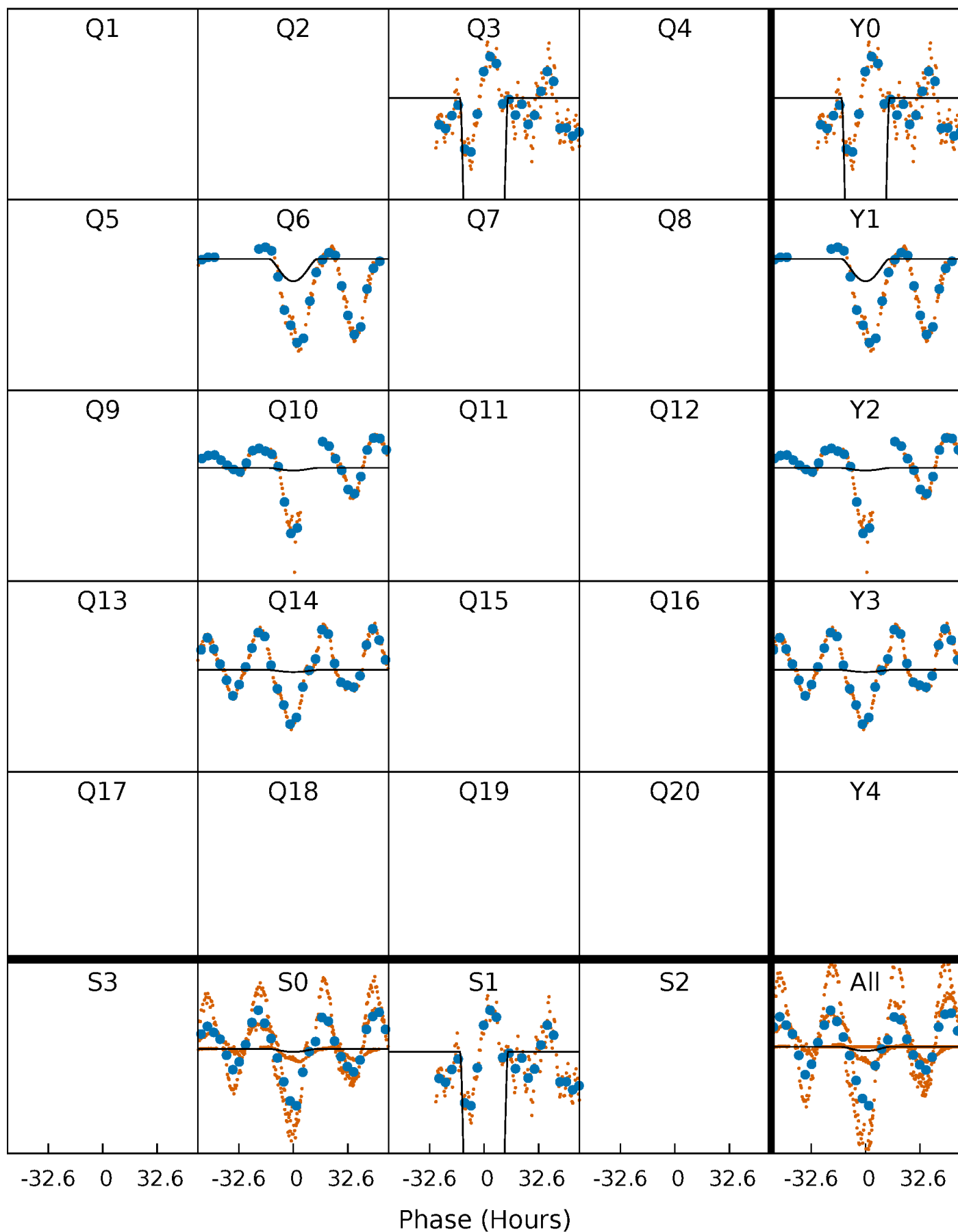
PDC Quarter-Phased Transit Curves

TCE 009304797-04 P=365.718659 Days $T_0=261.444331$ (BKJD)



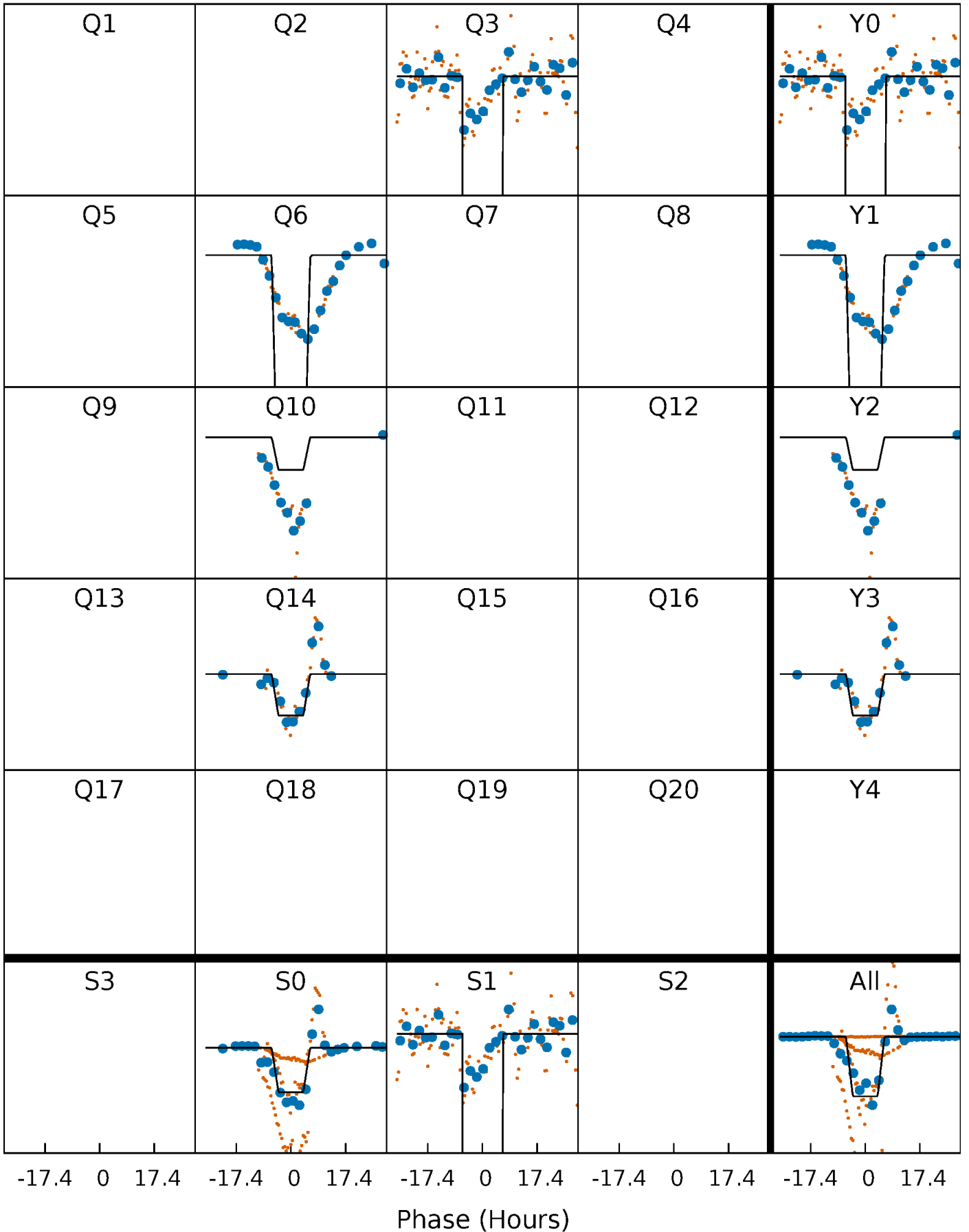
DV Quarter-Phased Transit Curves

TCE 009304797-04 P=365.718659 Days $T_0=261.444331$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

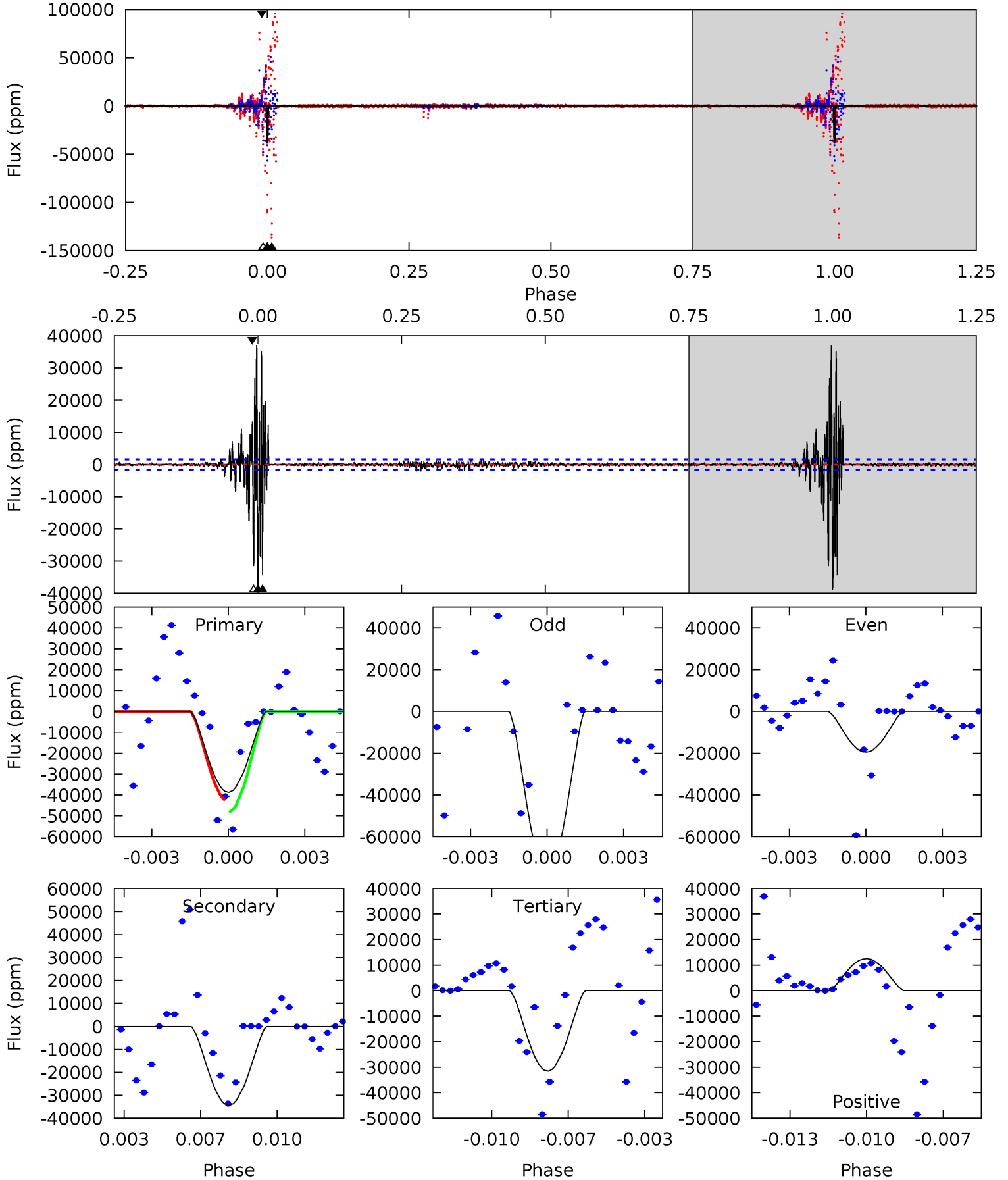
TCE 009304797-04 $P=365.726668$ Days $T_0=261.377651$ (BKJD)



DV Model-Shift Uniqueness Test

009304797-04, P = 365.718659 Days, E = 261.444331 Days

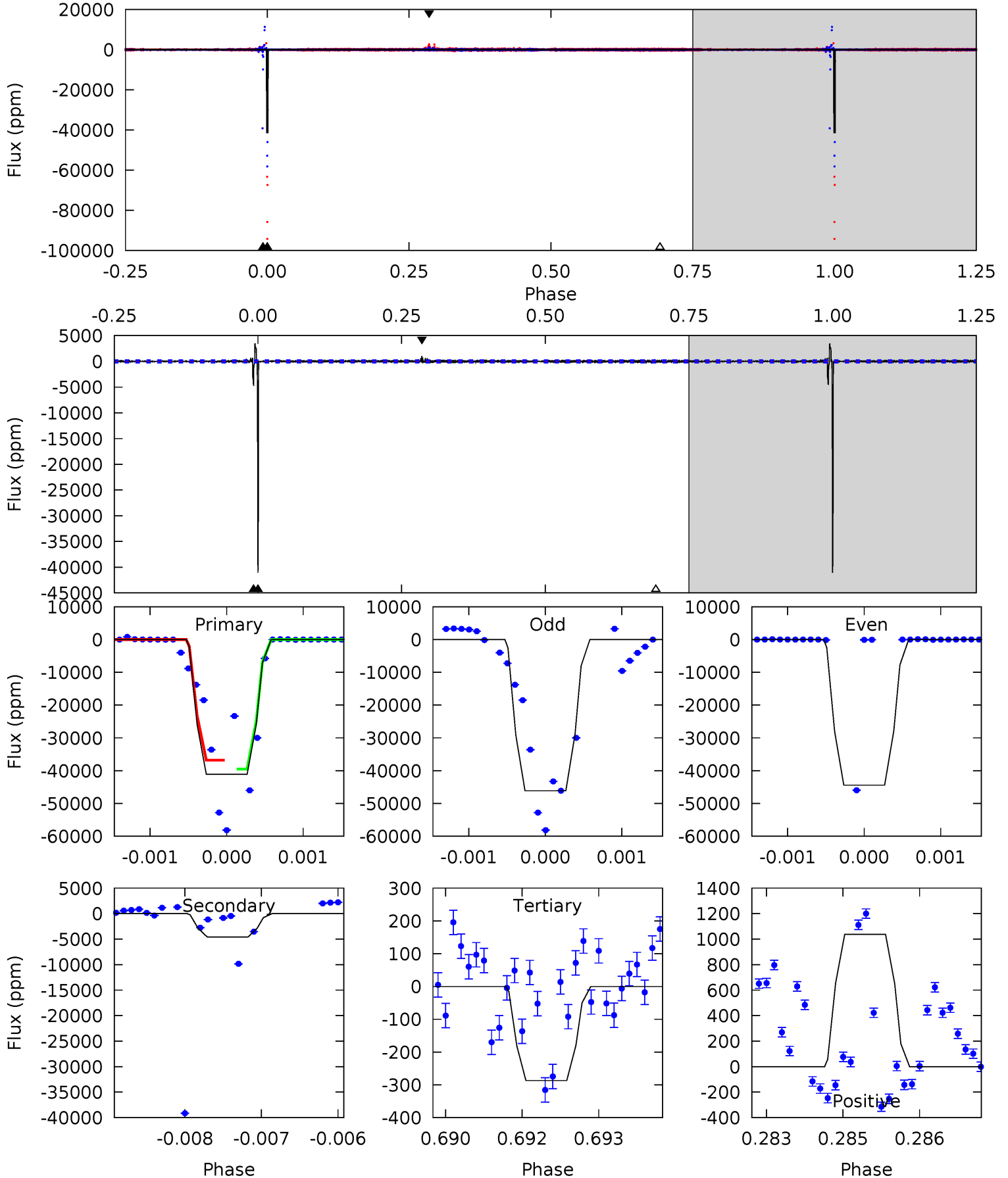
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
125.1	111.0	101.8	40.6	5.24	2.94	3.96	23.3	84.5	9.24	70.5	53.8	0.94	0.49	0



Alt Model-Shift Uniqueness Test

009304797-04, P = 365.726668 Days, E = 261.377651 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1039	115.5	7.25	26.2	5.39	3.19	2.00	1032	1013	108.3	89.3	18.3	1.55	0.08	0



Stellar Parameters For KIC 009304797

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4837^{+65}_{-65}	$2.867^{+0.162}_{-0.108}$	$-0.060^{+0.100}_{-0.150}$	$7.546^{+1.304}_{-1.956}$	$1.531^{+0.243}_{-0.451}$	$0.005^{+0.005}_{-0.002}$
	+1%/-1%	+6%/-4%	+167%/-250%	+17%/-26%	+16%/-29%	+99%/-31%
Source	SPE74	SPE74	SPE74	DSEP		

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

Secondary Eclipse Parameters for KIC 009304797-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-34397 ± 310	$316.99^{+348.01}_{-217.04}$	760^{+38}_{-45}	3688^{+1987}_{-725}	252^{+2203}_{-192}
Alt.	-4570 ± 40	$402.96^{+372.47}_{-256.29}$	762^{+34}_{-43}	2567^{+842}_{-355}	20^{+138}_{-15}

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

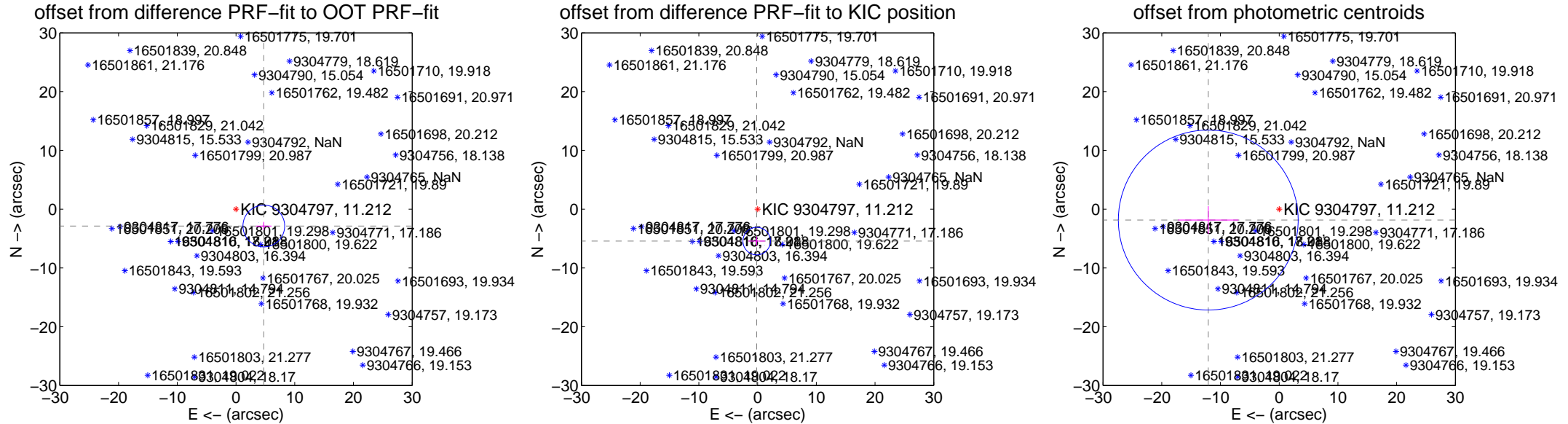
DV Centroid Data

Supplemental centroid analysis for 009304797-04. **Kepler magnitude: 11.21.** Transit SNR 66.35

There are 2 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 5.70 arcsec so the offset from difference PRF-fit to OOT-PRF-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.539 ± 1.184	4.68	-4.737 ± 1.318	-2.870 ± 0.699
PRF-fit source offset from KIC position	5.438 ± 0.781	6.96	0.150 ± 1.406	-5.436 ± 0.781
photometric centroid source offset	12.22 ± 5.10	2.39	12.08 ± 5.15	-1.85 ± 2.36



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.

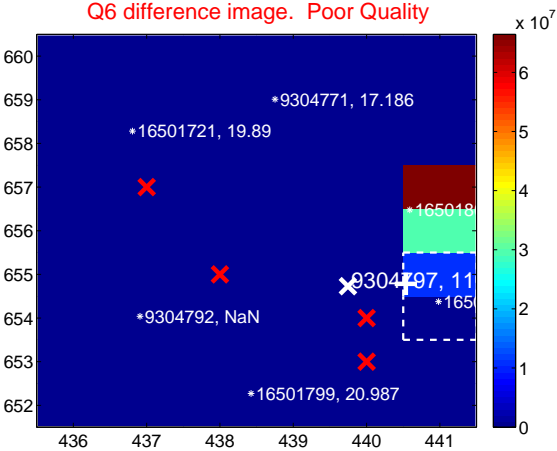
Q5 no difference image



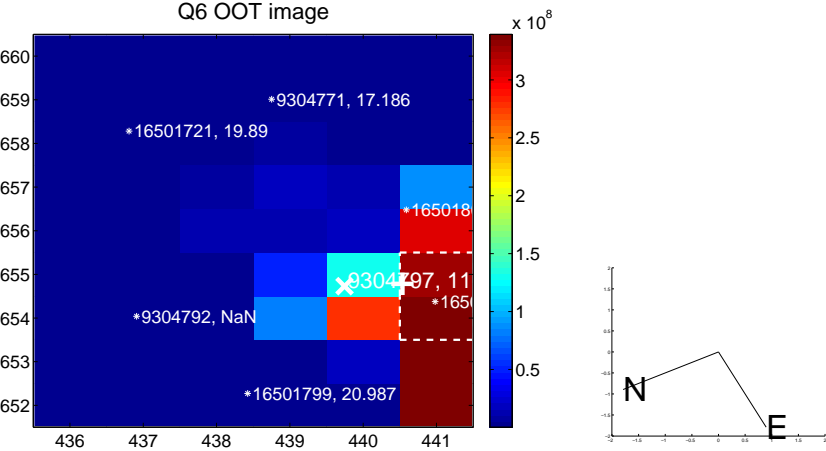
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



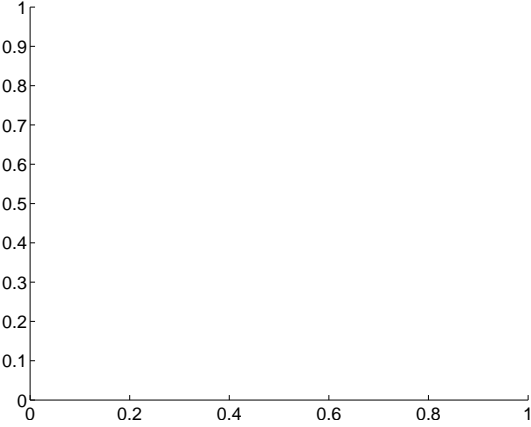
Q7 no difference image



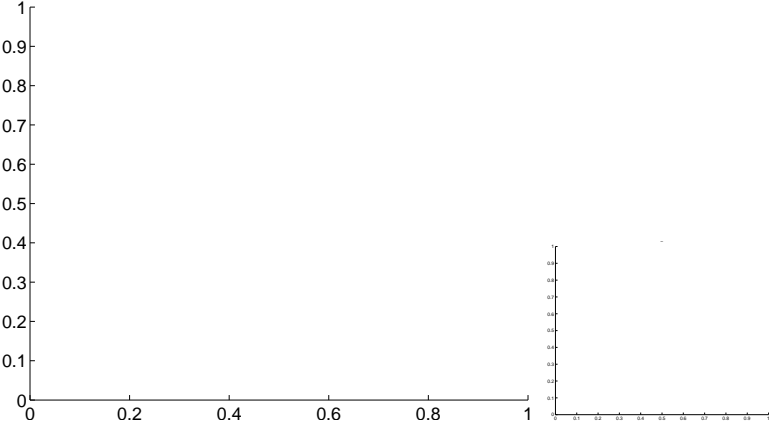
Q7 no OOT image



Q8 no difference image



Q8 no OOT image



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

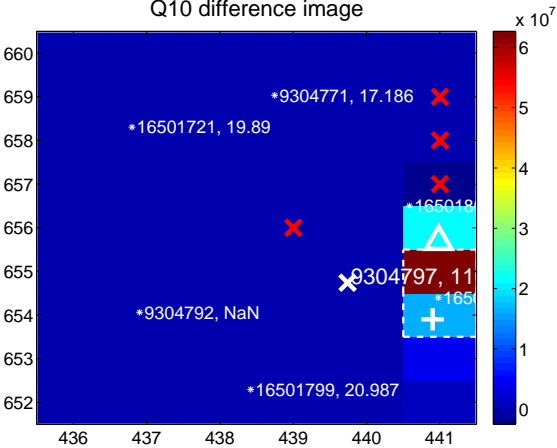
Q9 no difference image



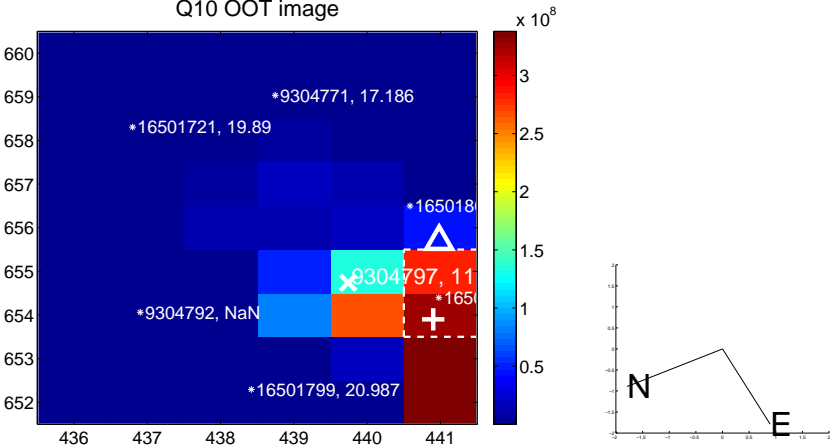
Q9 no OOT image



Q10 difference image



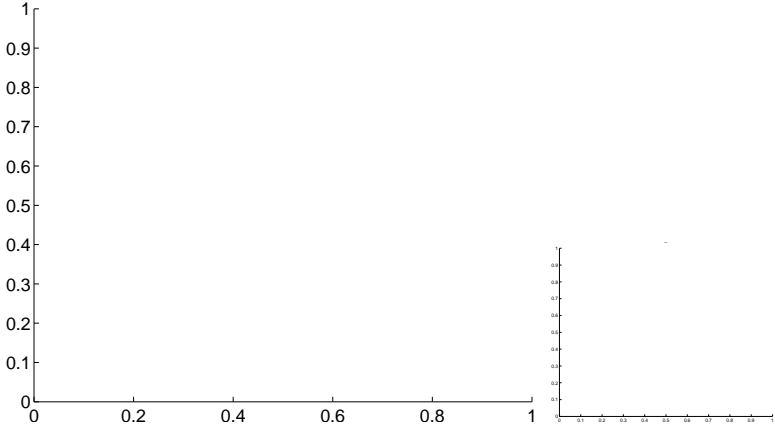
Q10 OOT image



Q11 no difference image



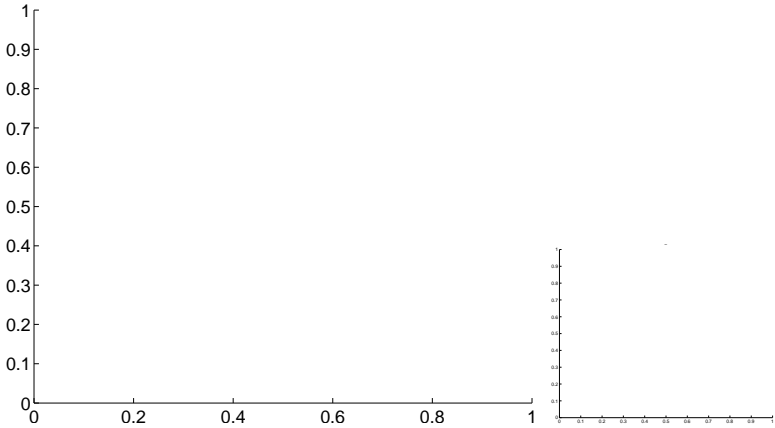
Q11 no OOT image



Q12 no difference image



Q12 no OOT image



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

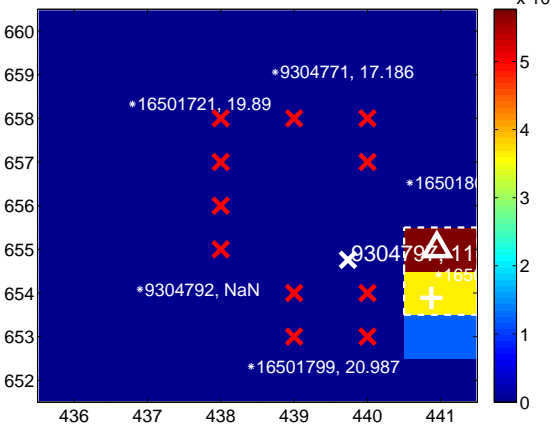
Q13 no difference image



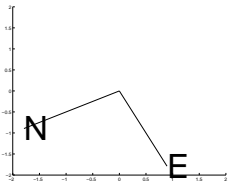
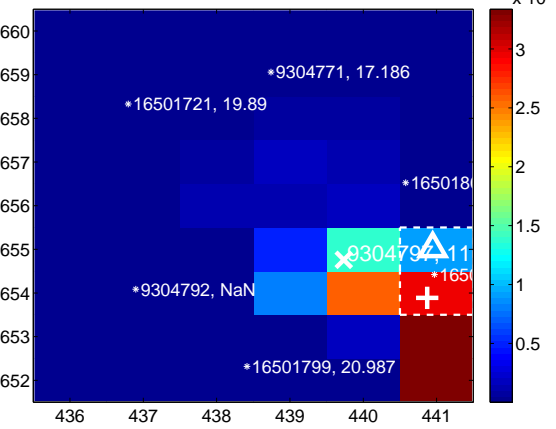
Q13 no OOT image



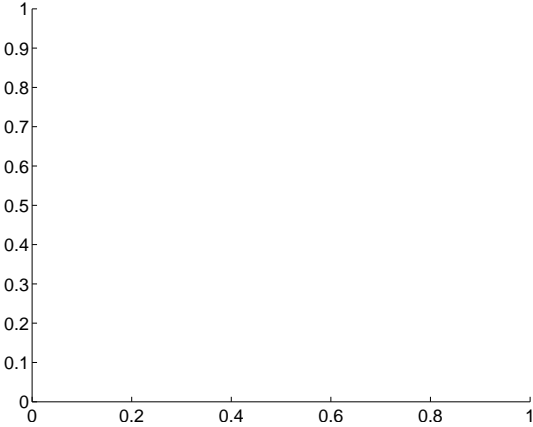
Q14 difference image



Q14 OOT image



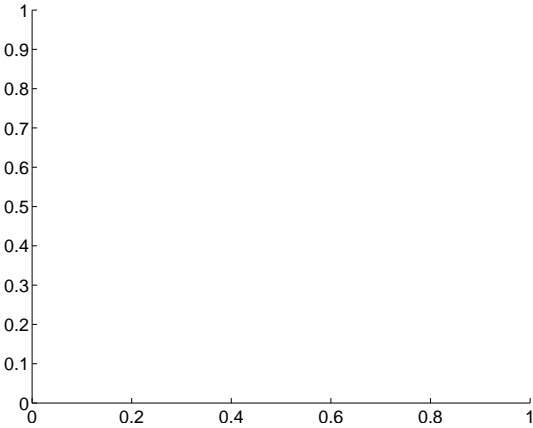
Q15 no difference image



Q15 no OOT image



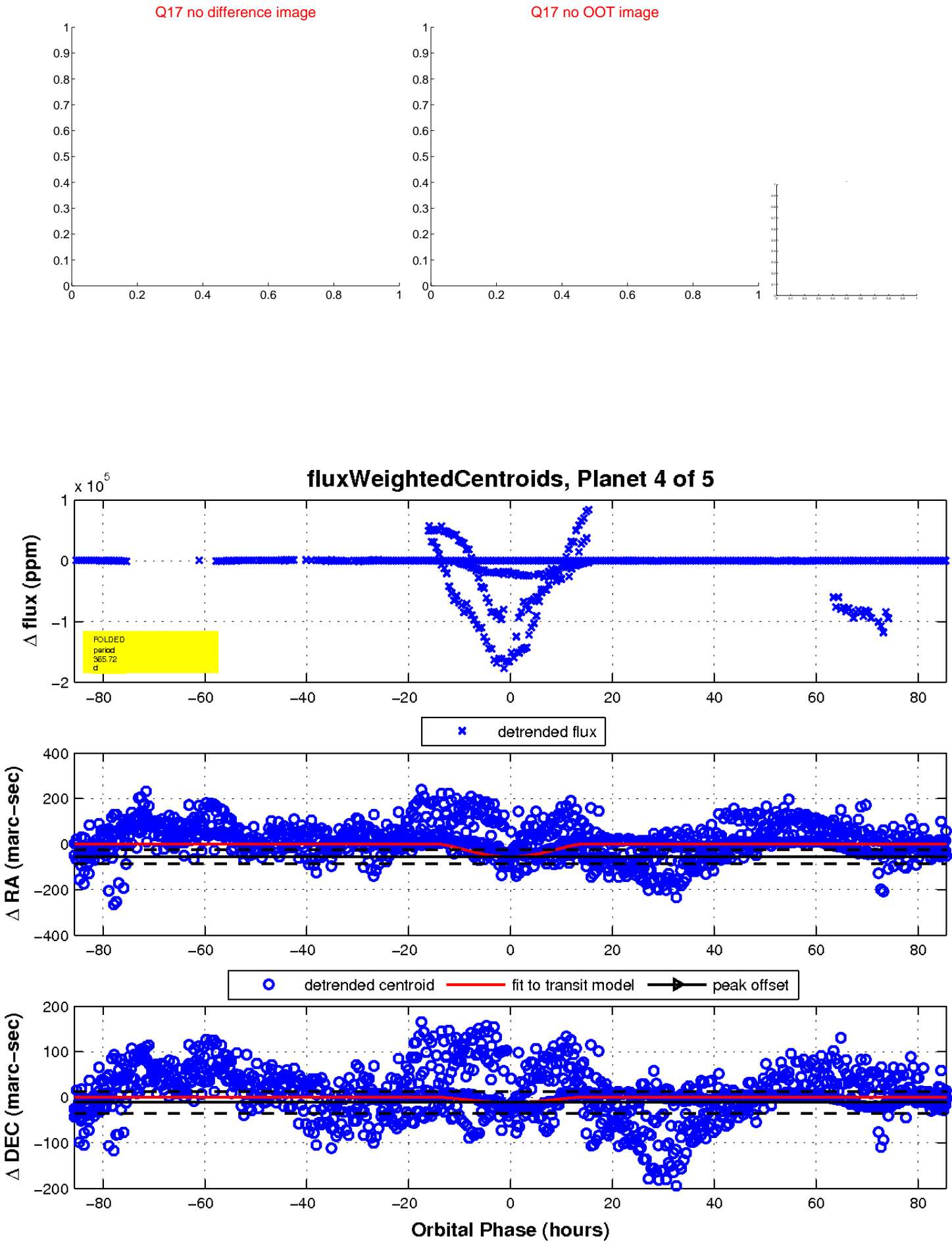
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

