

KIC 004671547

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})
004671547-01	OBS	No	281.841230	286.743170	269.2	2.602	18.5	2.4	0.65	4166	1.10	0.21
004671547-03	OBS	No	296.361543	240.748806	137.9	15.000	14.2	-1.0	0.65	4166	0.73	0.19
004671547-04	OBS	No	557.906833	280.189324	867.8	5.776	13.5	7.0	0.65	4166	2.29	0.08
004671547-05	OBS	No	426.509156	189.433089	451.5	3.125	16.6	4.0	0.65	4166	1.66	0.12
004671547-06	OBS	No	283.282460	362.664934	509.4	4.842	13.1	4.4	0.65	4166	1.55	0.20
004671547-07	OBS	No	158.875354	248.596003	681.4	2.108	13.9	8.0	0.65	4166	1.67	0.44
004671547-08	OBS	No	408.474403	240.905682	1088.6	5.872	14.5	7.5	0.65	4166	2.11	0.13
004671547-09	OBS	No	346.096828	340.515662	138.9	12.000	13.5	-1.0	0.65	4166	0.73	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004671547-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004671547-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004671547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-06	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_SATURATED
004671547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-09	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

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

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

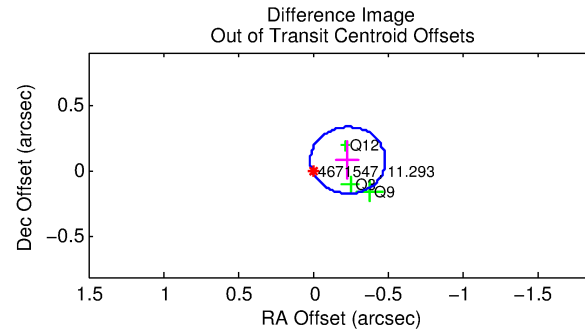
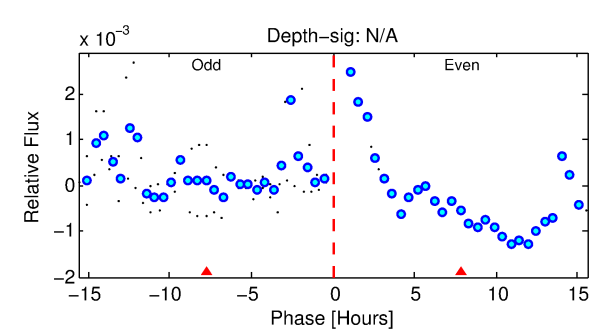
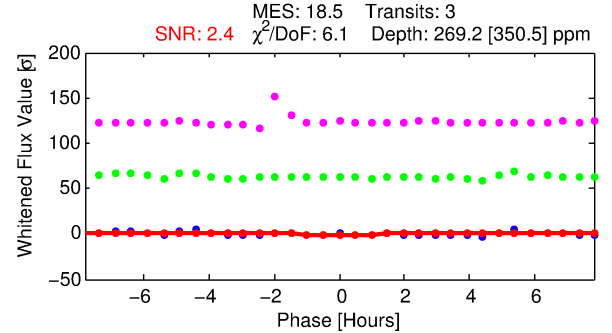
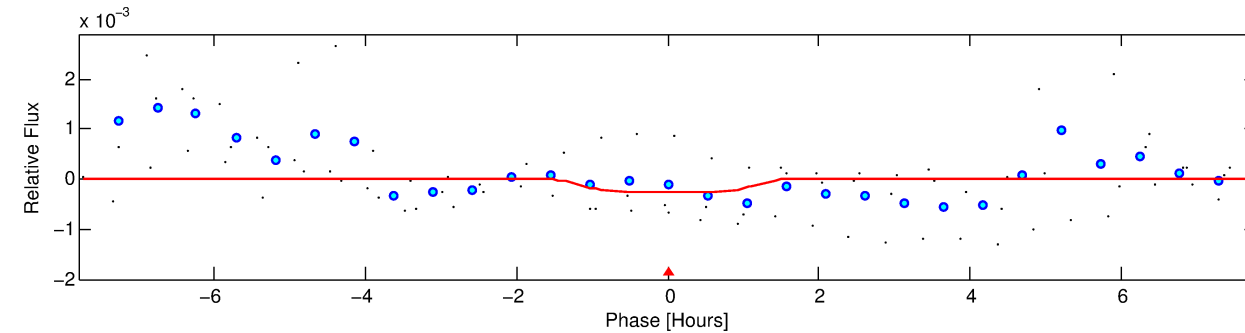
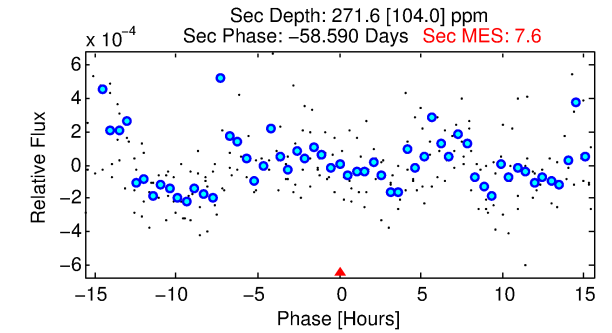
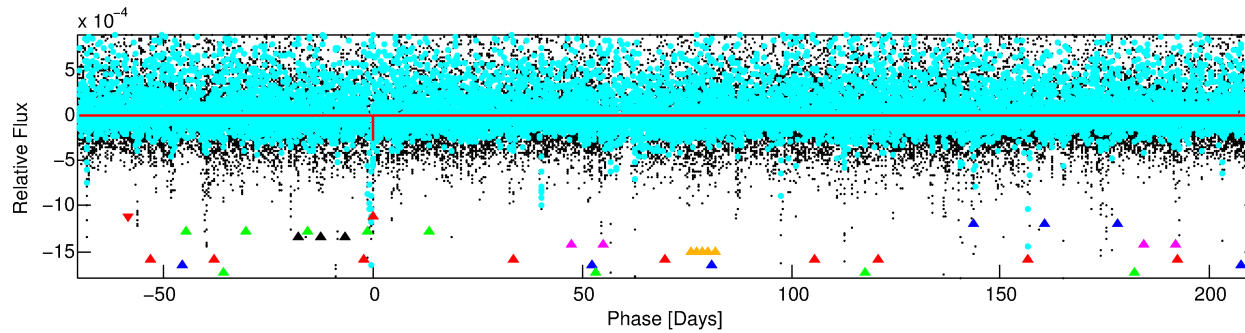
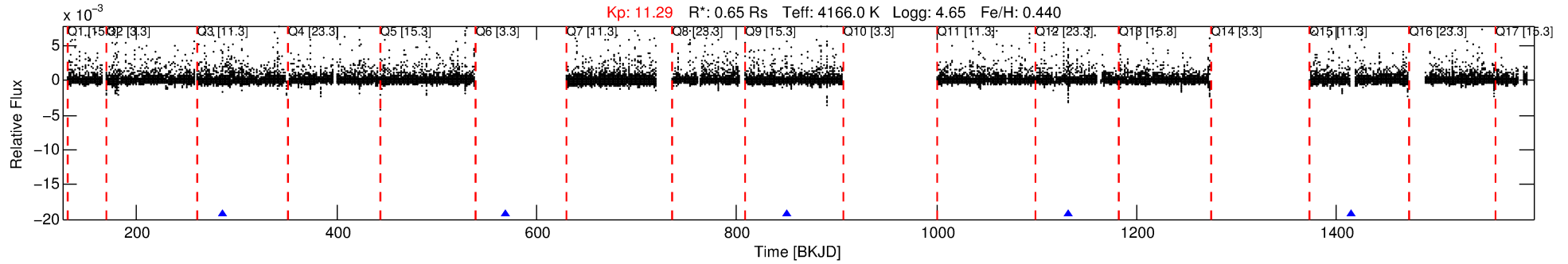
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004671547-01

No Significant Match Found

DV One-Page Summary

KIC: 4671547 Candidate: 1 of 9 Period: 281.841 d



DV Fit Results:

Period = 281.84123 [0.02295] d
Epoch = 286.7432 [0.0480] BKJD
Rp/R* = 0.0154 [0.0821]
a/R* = 679.79 [10458.82]
b = 0.60 [17.13]
Seff = 0.21 [0.04]
Teq = 172 [8] K
Rp = 1.10 [5.84] Re
a = 0.7462 [0.0398] AU
Ag = 68909.30 [732807.89] [0.09σ]
Teffp = 4303 [11442] K [0.36σ]

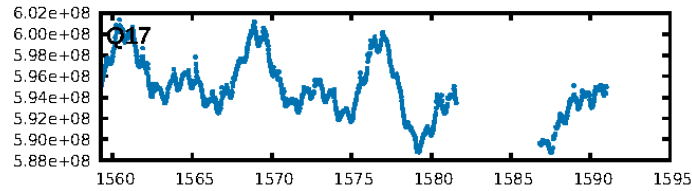
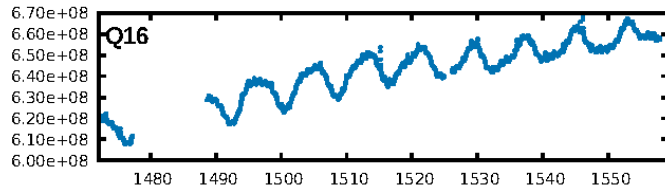
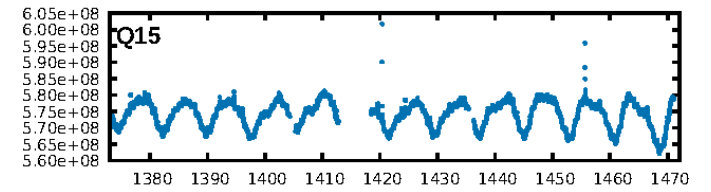
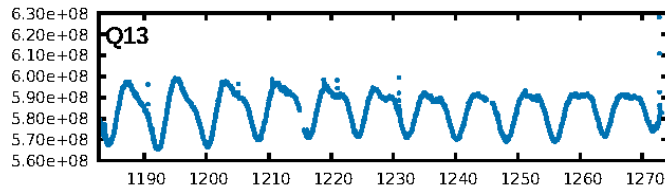
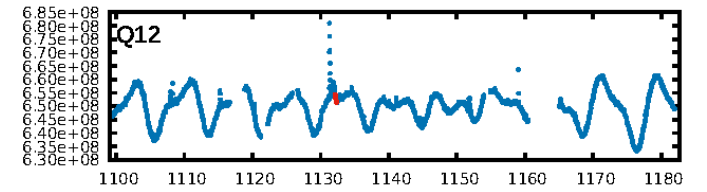
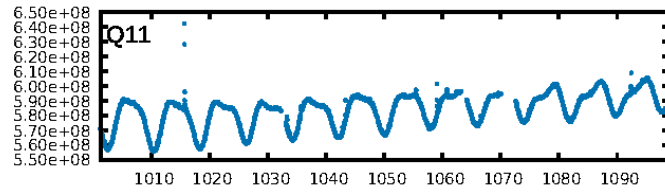
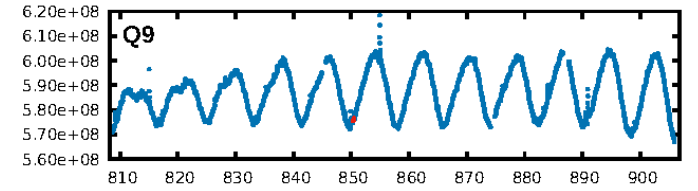
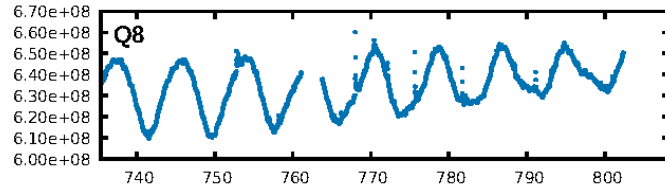
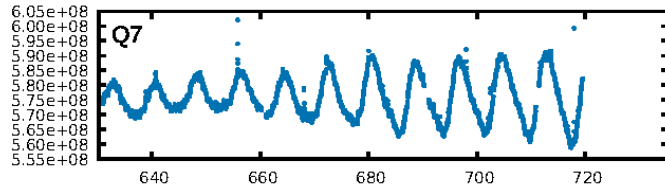
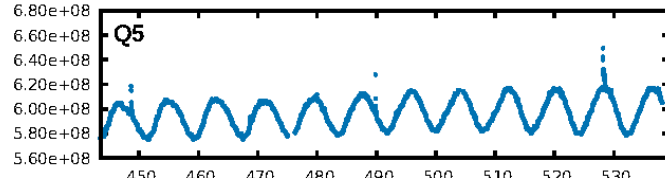
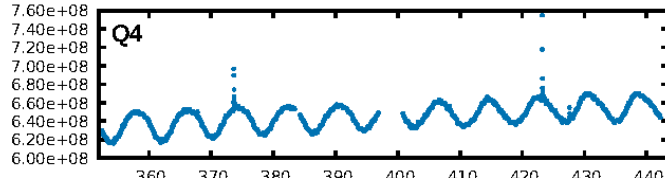
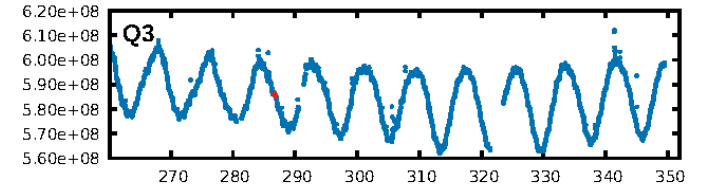
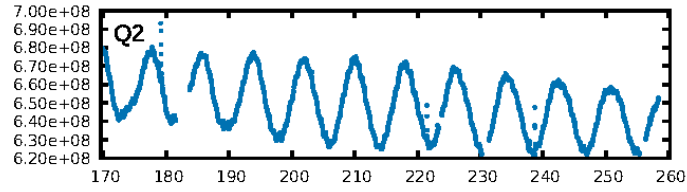
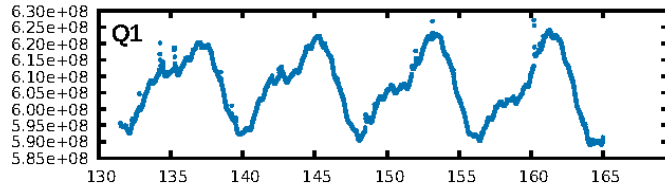
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [881.19σ]
LongPeriod-sig: 100.0% [6.29σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.5936
Centroid-sig: 90.4%
Centroid-so: 0.708 arcsec [0.40σ]
OotOffset-rm: 0.248 arcsec [2.96σ]
KicOffset-rm: 0.079 arcsec [0.85σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

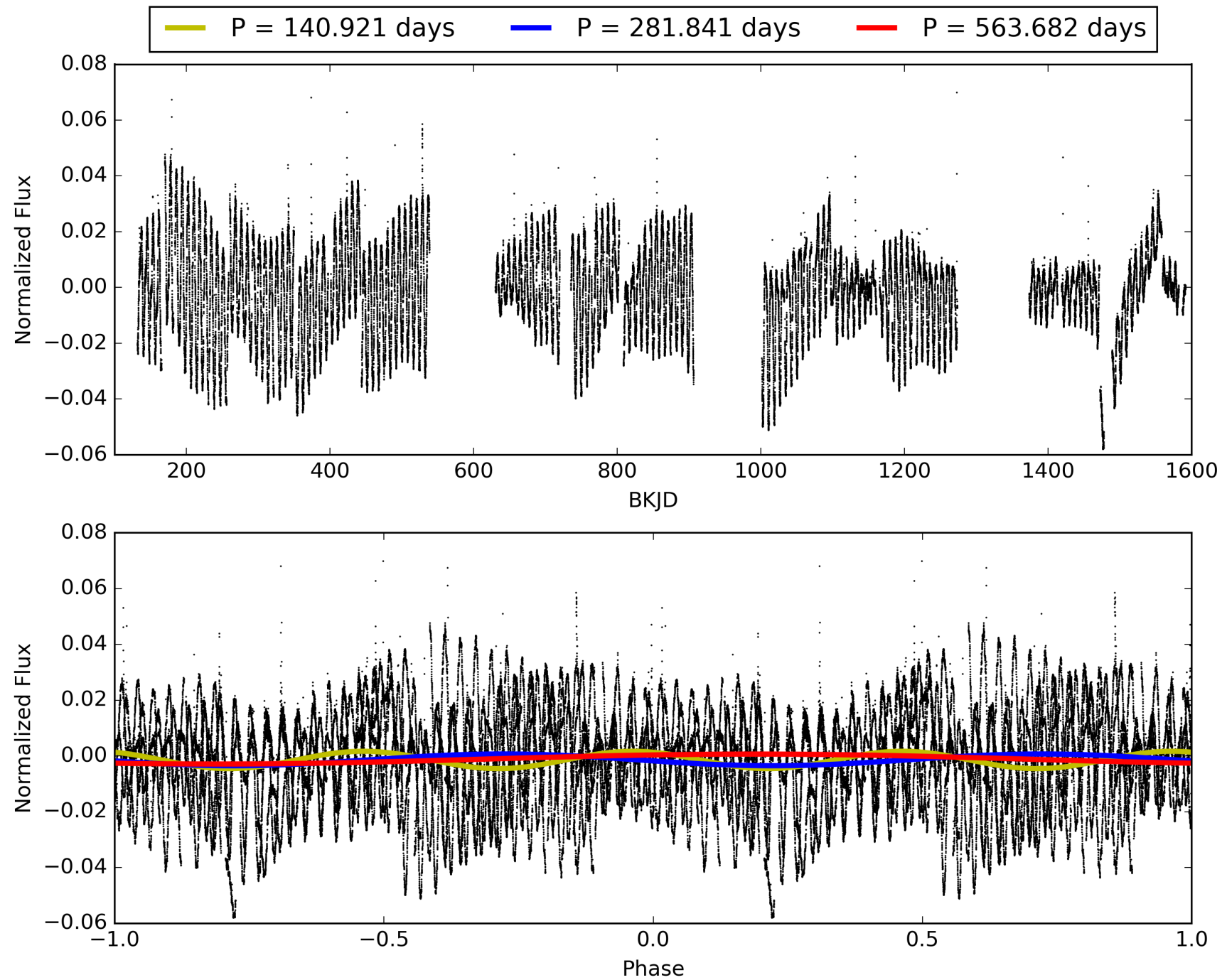
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:57:58 Z

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

TCE 004671547-01, PDC Light Curves

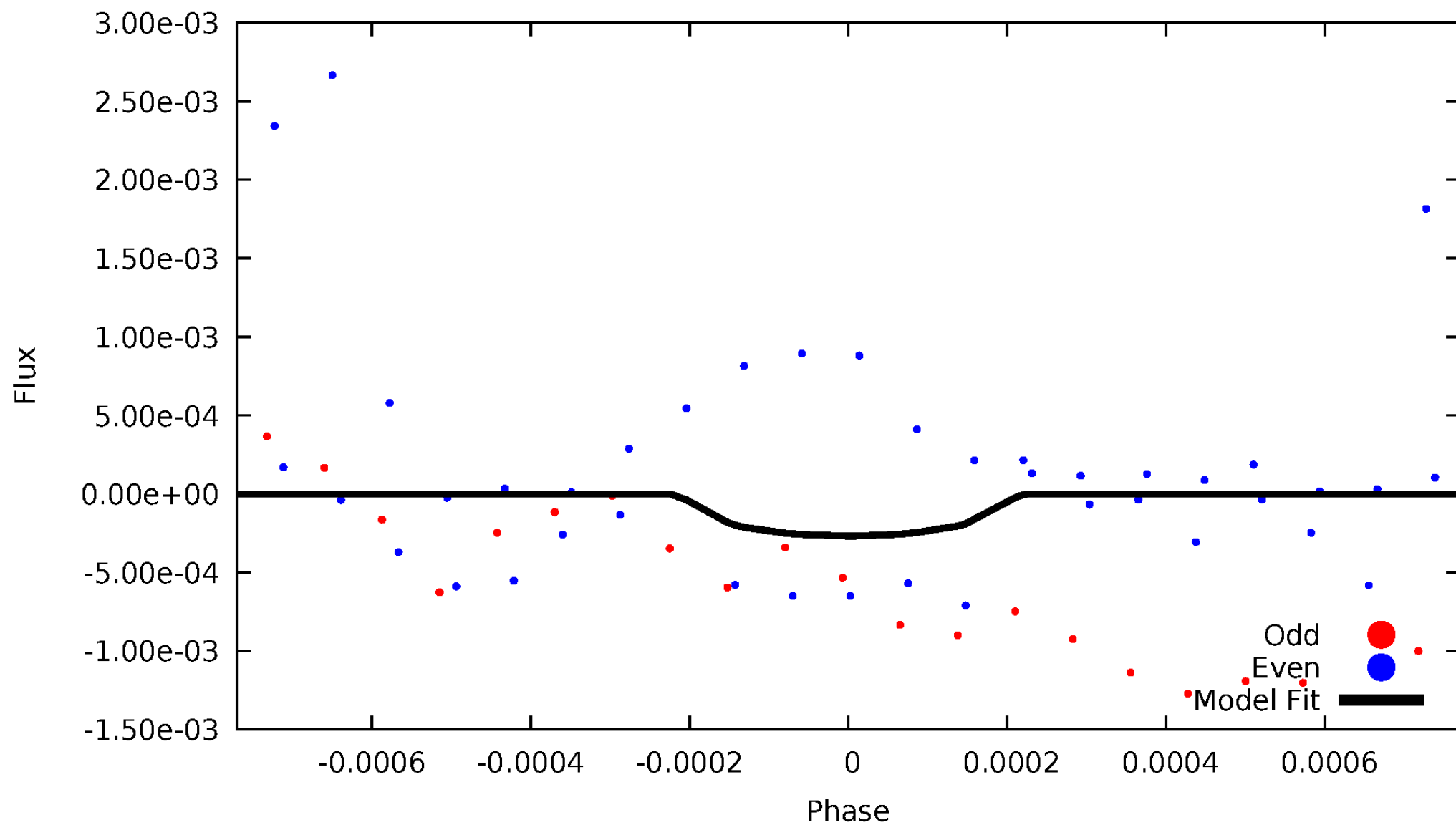


TCE 004671547-01



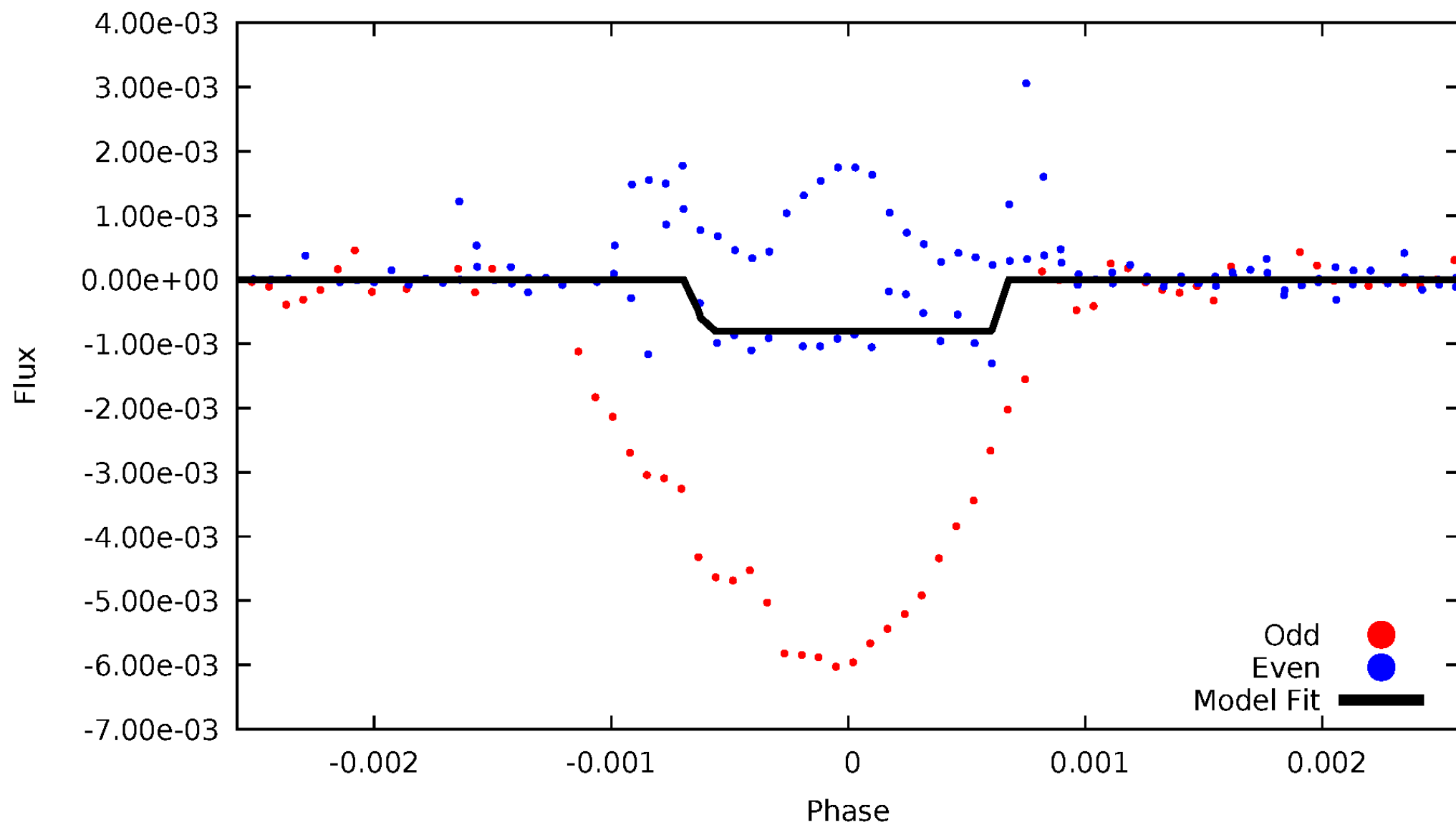
DV Odd/Even

TCE 004671547-01



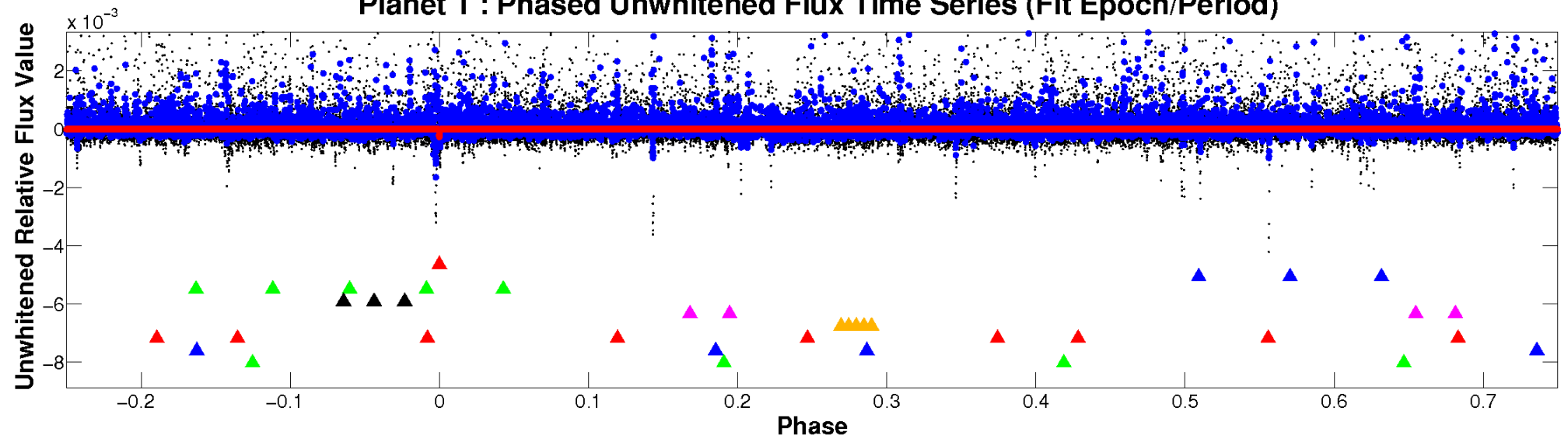
ALT Odd/Even

TCE 004671547-01

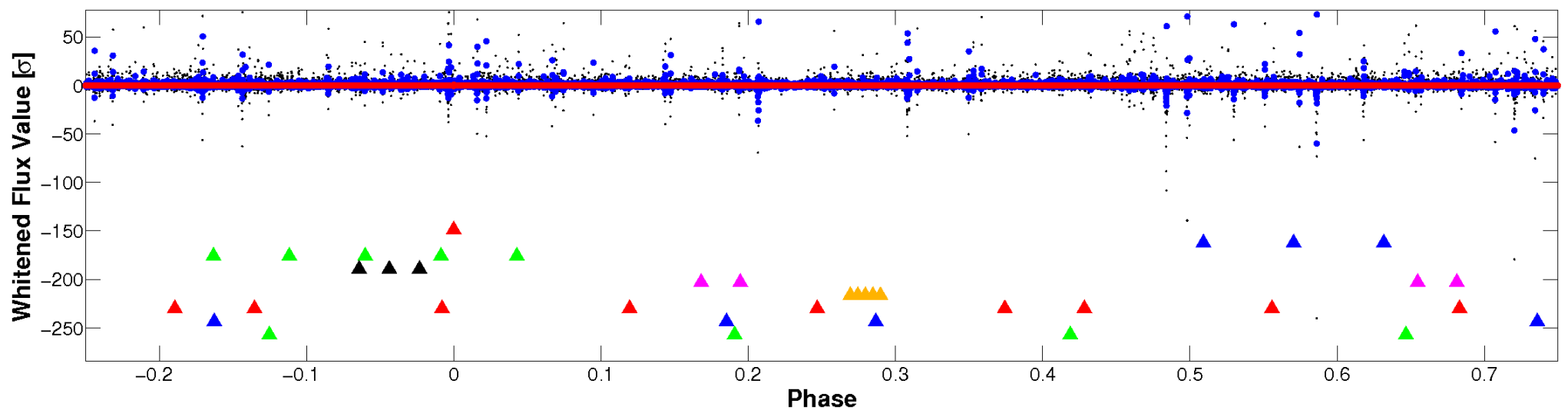


Non-Whitened Vs. Whitened Light Curve

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

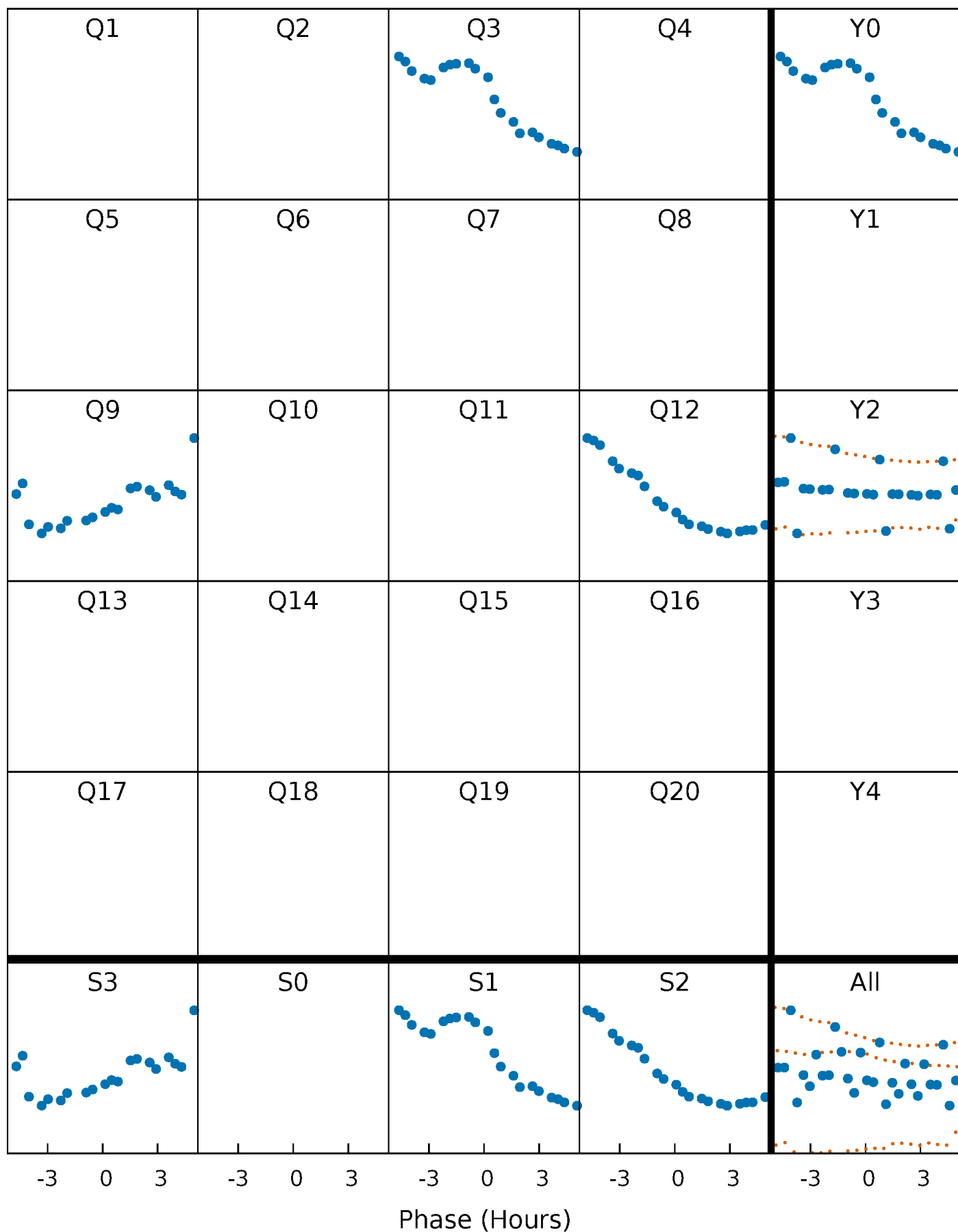


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



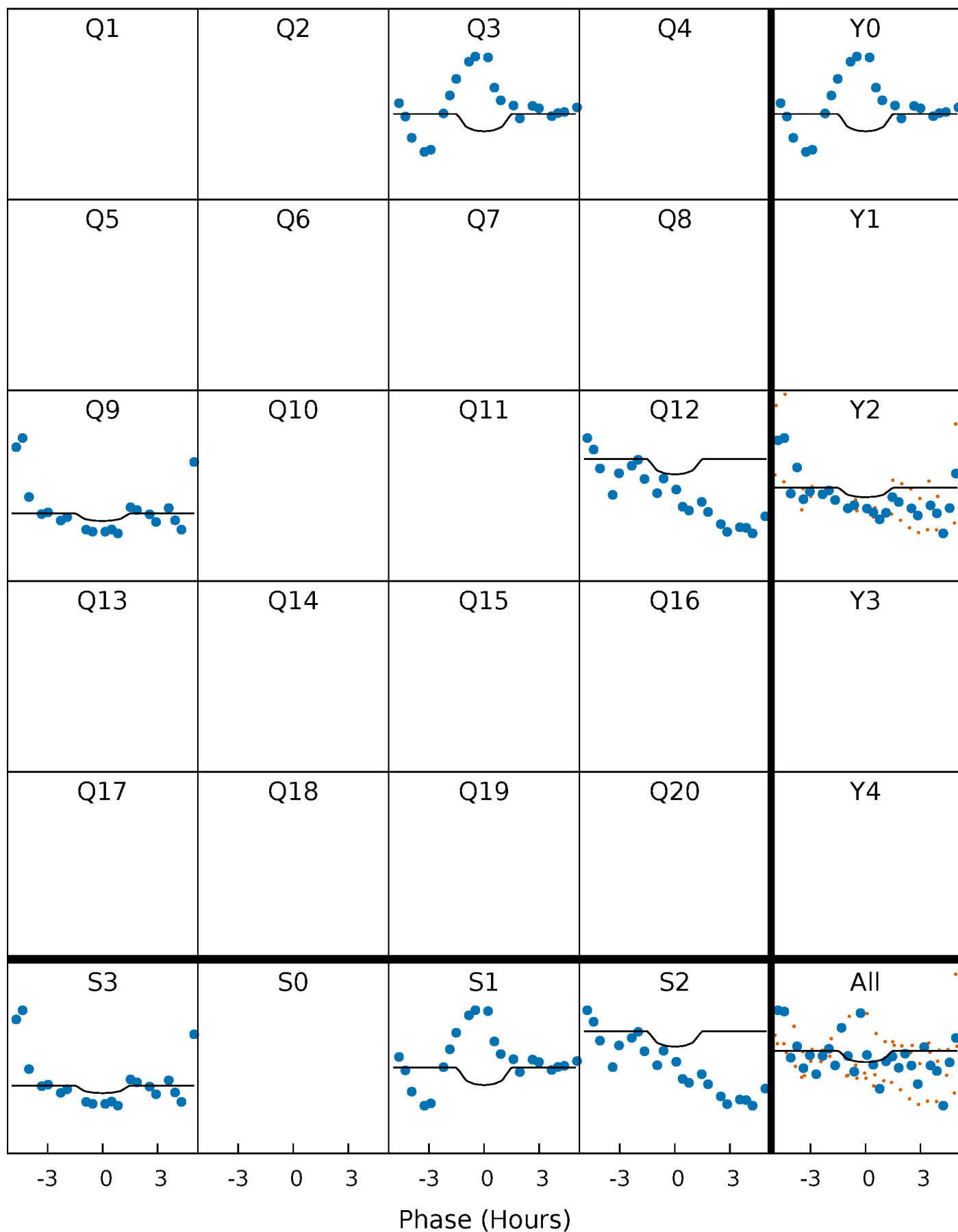
PDC Quarter-Phased Transit Curves

TCE 004671547-01 P=281.841230 Days $T_0=286.743170$ (BKJD)



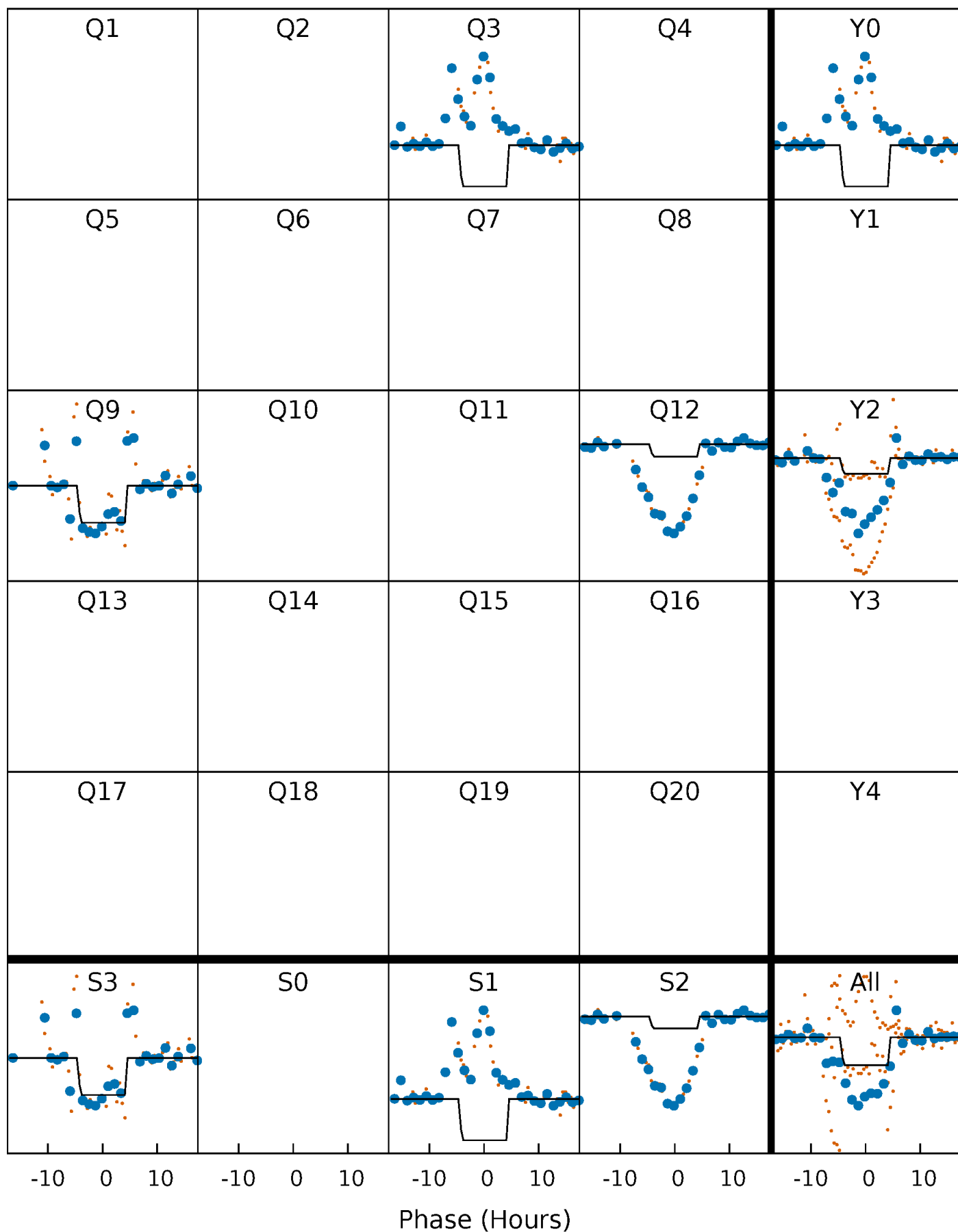
DV Quarter-Phased Transit Curves

TCE 004671547-01 P=281.841230 Days $T_0=286.743170$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

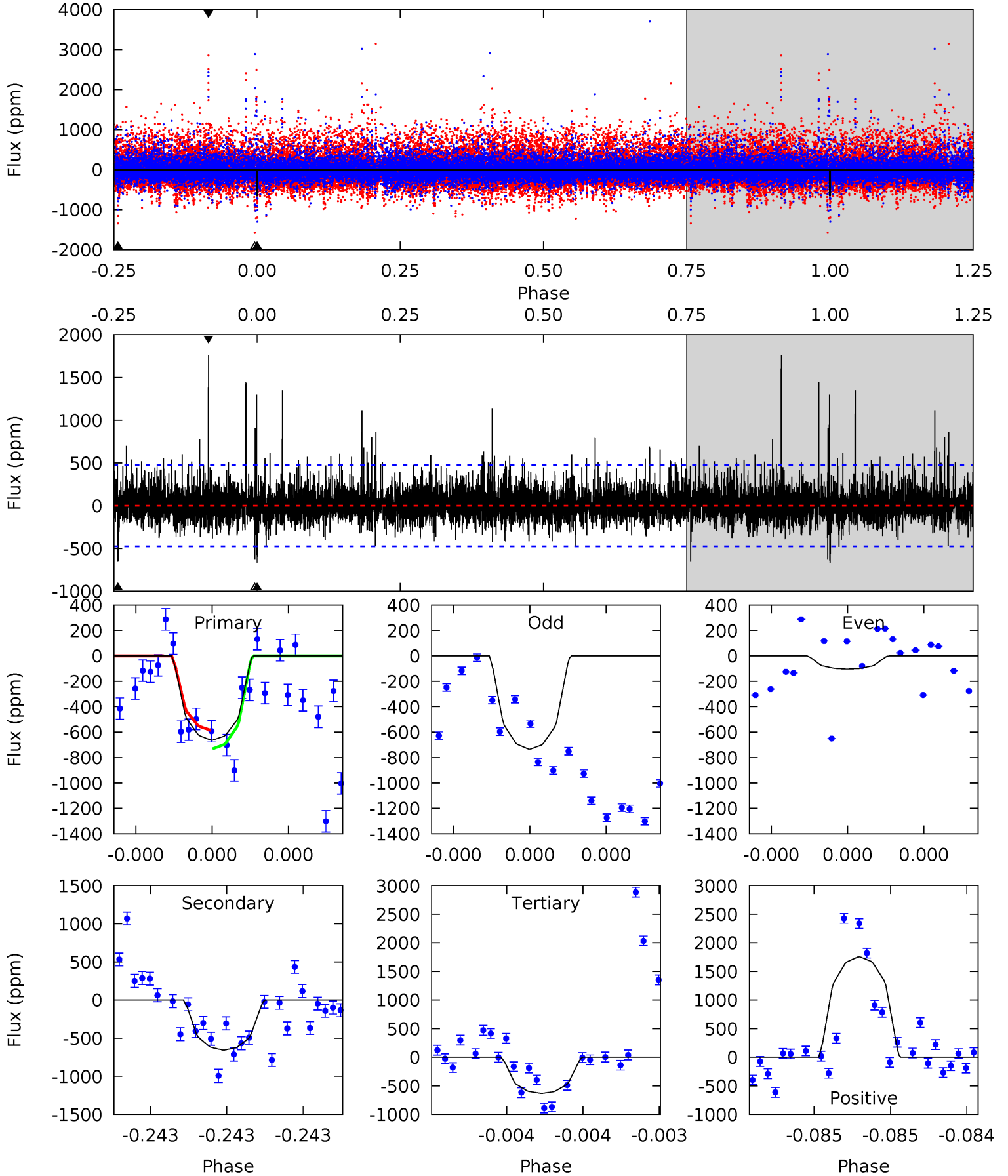
TCE 004671547-01 P=281.860527 Days $T_0=286.718434$ (BKJD)



DV Model-Shift Uniqueness Test

004671547-01, P = 281.841230 Days, E = 4.901940 Days

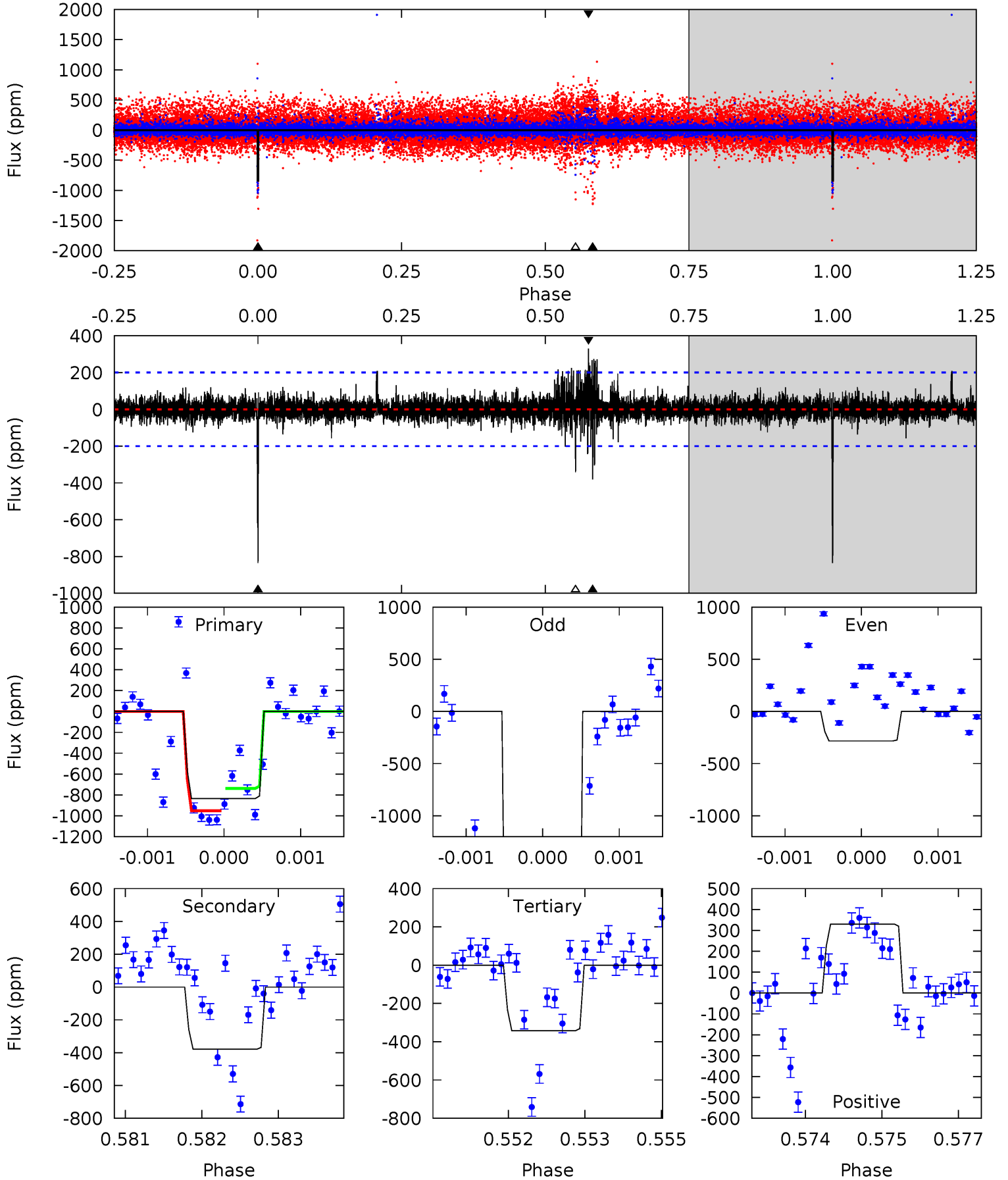
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.80	7.71	7.43	20.7	5.60	3.52	1.74	0.37	-12.9	0.29	-13.0	2.49	0.31	0.73	0.86



Alt Model-Shift Uniqueness Test

004671547-01, P = 281.860527 Days, E = 4.857907 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.5	10.2	9.23	8.90	5.40	3.21	1.09	13.3	13.6	1.01	1.33	82.2	1.98	0.28	0



Stellar Parameters For KIC 004671547

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4166^{+150}_{-167}	$4.653^{+0.028}_{-0.035}$	$0.440^{+0.050}_{-0.300}$	$0.652^{+0.036}_{-0.045}$	$0.702^{+0.030}_{-0.064}$	$3.563^{+0.474}_{-0.462}$
	+4%/-4%	+1%/-1%	+11%/-68%	+6%/-7%	+4%/-9%	+13%/-13%
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 004671547-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-655 ± 85	$4.45^{+4.29}_{-3.24}$	240^{+10}_{-10}	3113^{+1762}_{-525}	$10400^{+117657}_{-7779}$
Alt.	-379 ± 37	$4.81^{+4.54}_{-3.24}$	241^{+9}_{-10}	2813^{+1122}_{-436}	4964^{+39994}_{-3670}

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

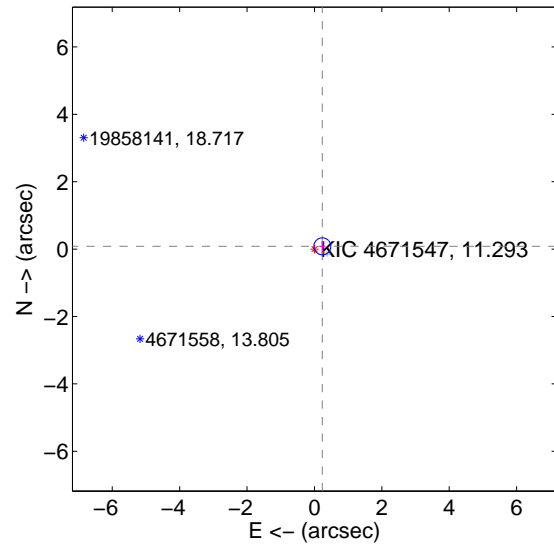
Supplemental centroid analysis for 004671547-01. **Kepler magnitude: 11.29.** Transit SNR 2.44

There are 2 quarters with good PRF difference image offsets

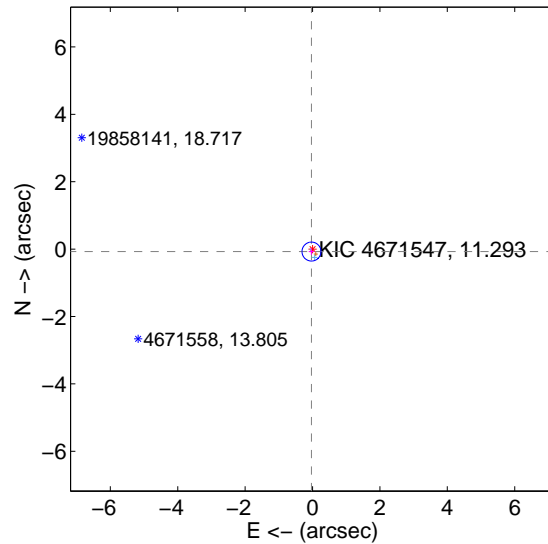
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.248 ± 0.084	2.96	-0.234 ± 0.073	0.083 ± 0.143
PRF-fit source offset from KIC position	0.079 ± 0.094	0.85	0.031 ± 0.082	-0.073 ± 0.096
photometric centroid source offset	0.71 ± 1.76	0.40	0.10 ± 2.21	-0.70 ± 1.75

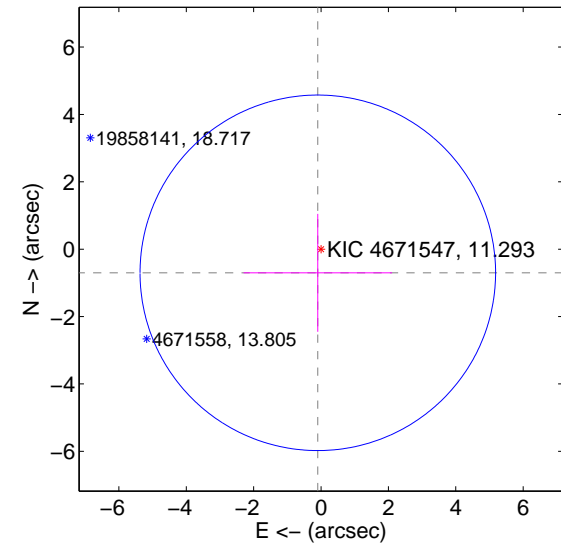
offset from difference PRF-fit to OOT PRF-fit



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.

Q1 no difference image



Q1 no OOT image



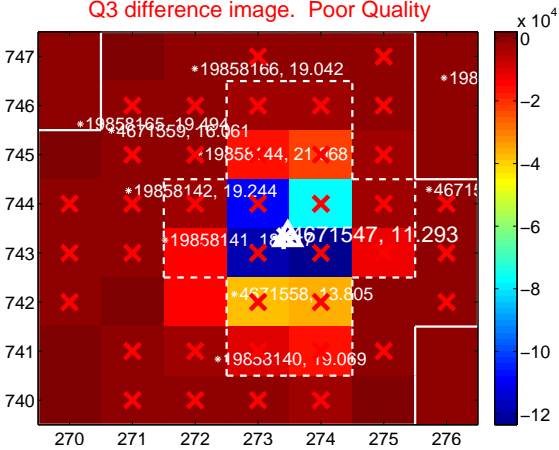
Q2 no difference image



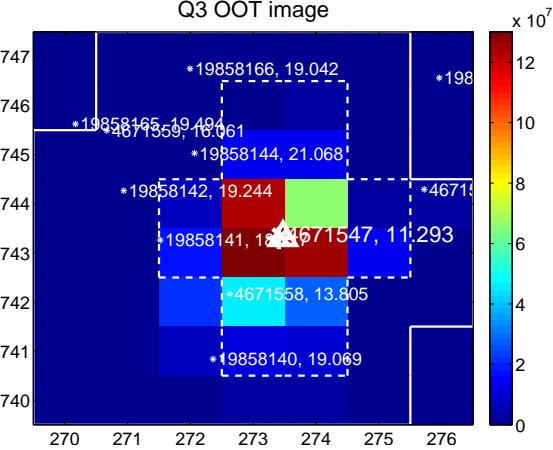
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



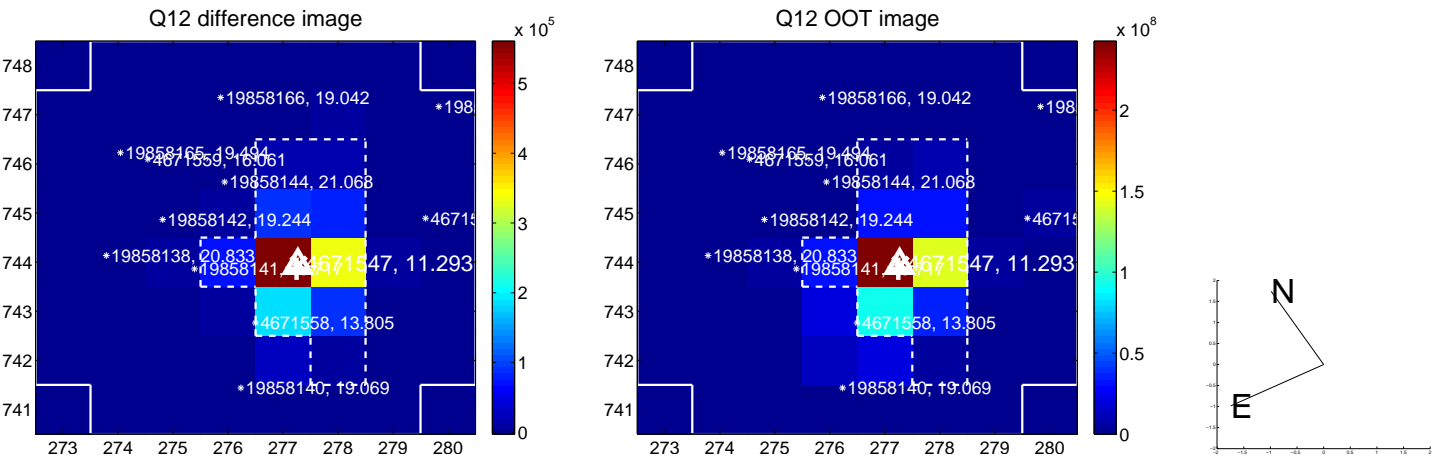
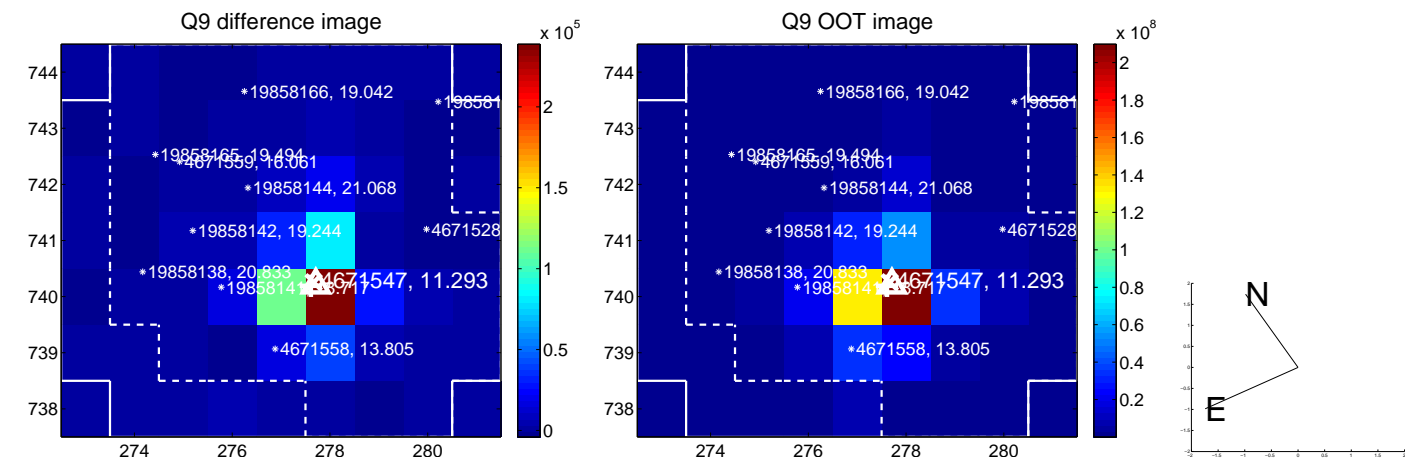
Q4 no OOT image



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



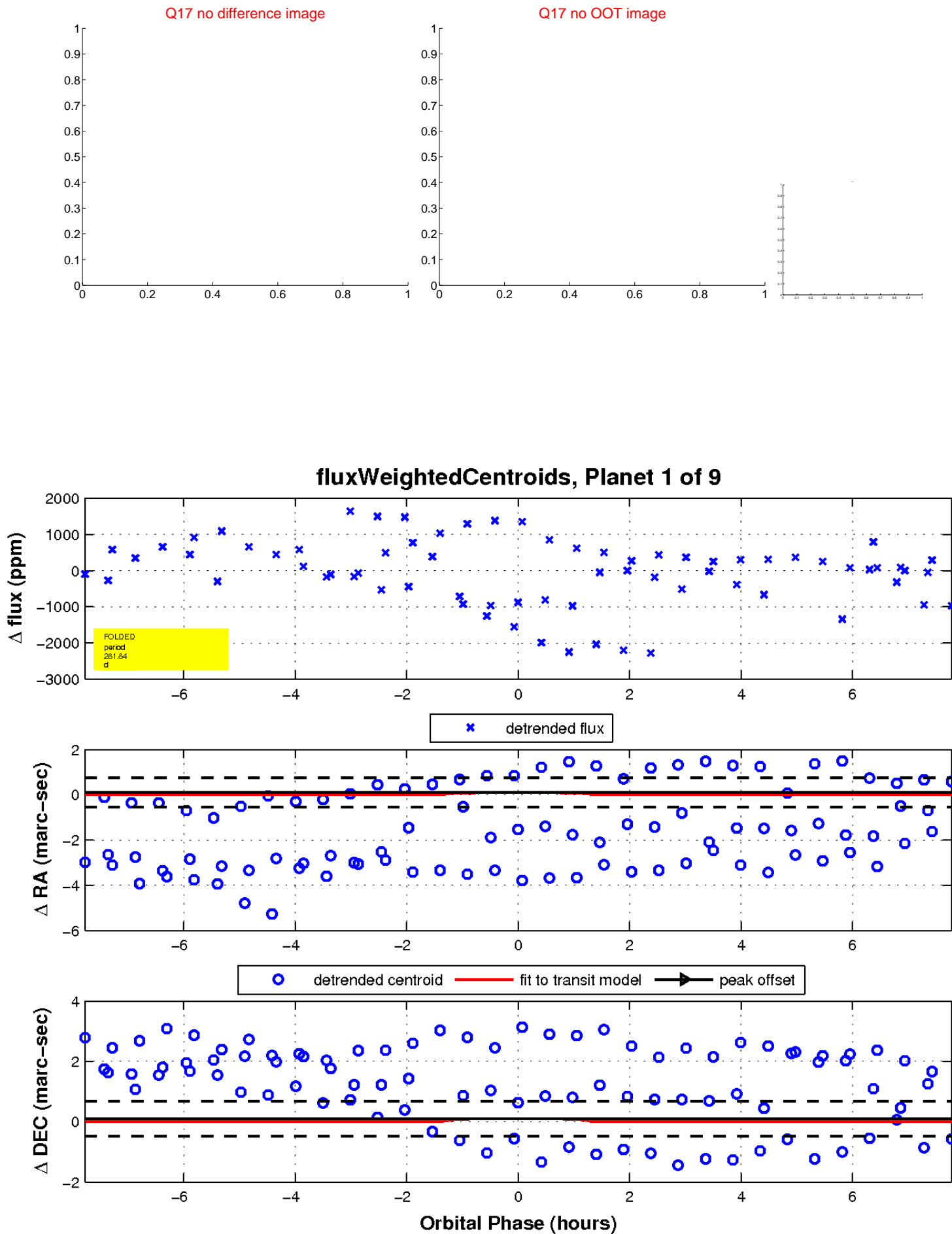
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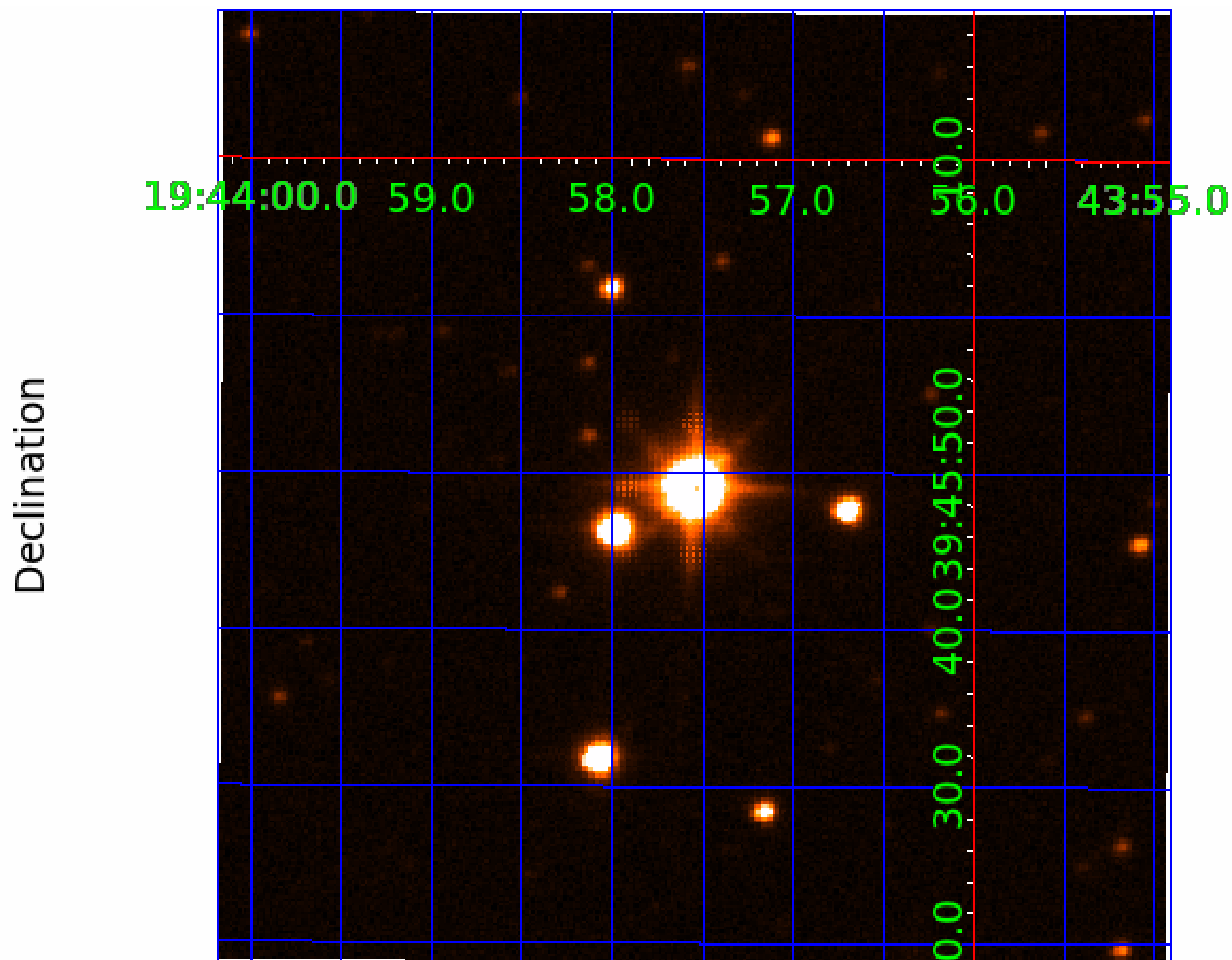
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UKIRT Image



KIC 004671547

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004671547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-06	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_SATURATED
004671547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-09	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

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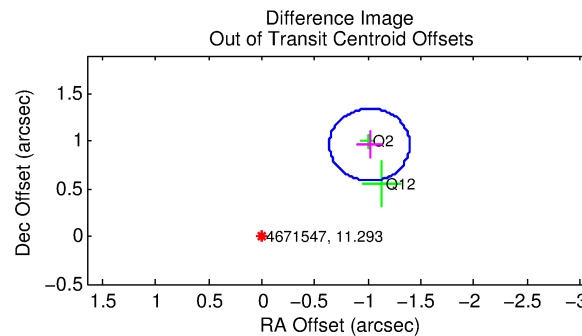
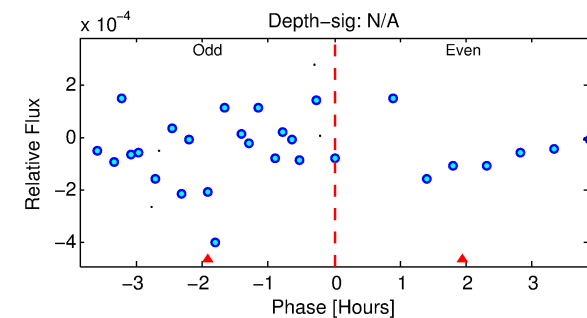
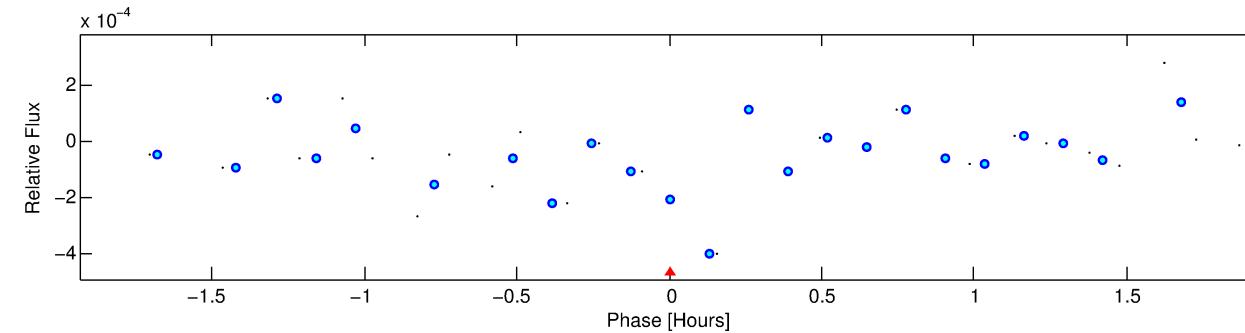
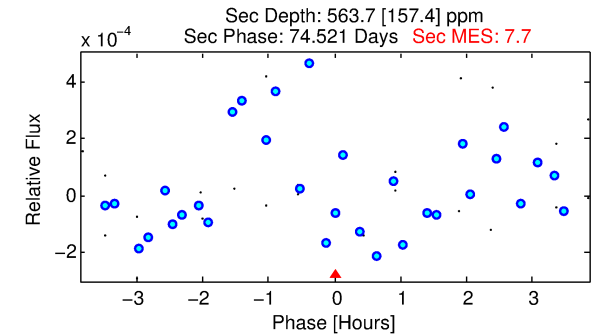
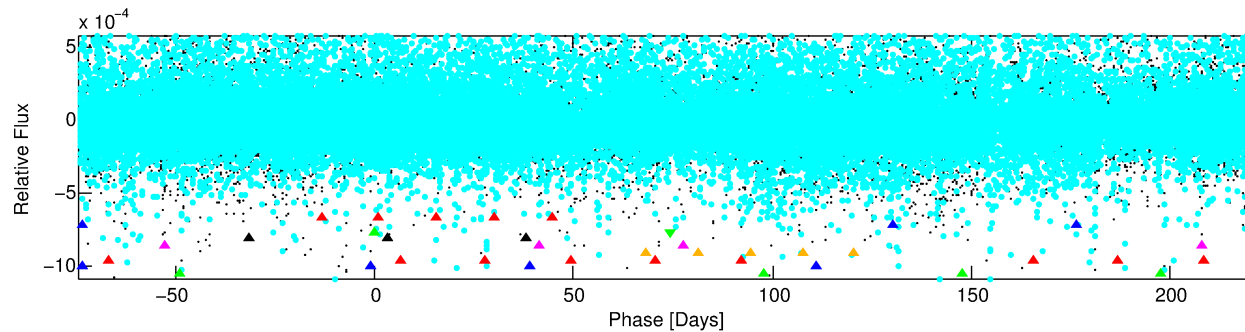
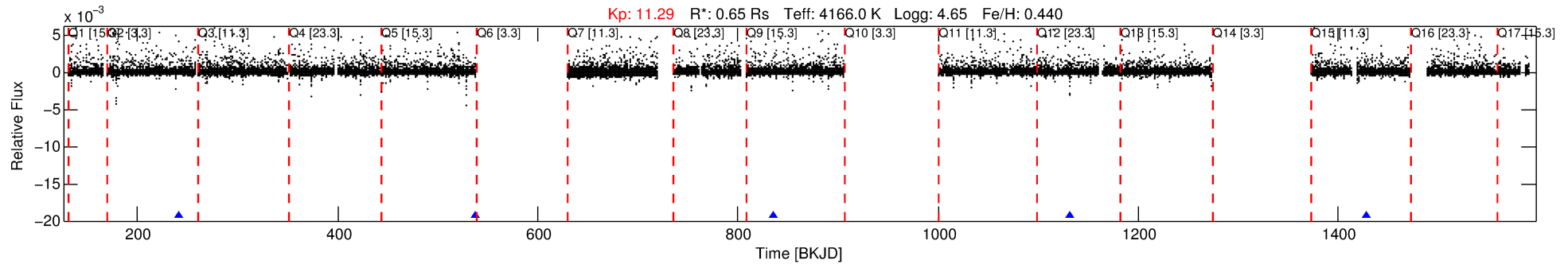
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004671547-03

No Significant Match Found

DV One-Page Summary

KIC: 4671547 Candidate: 3 of 9 Period: 296.362 d



TPS TCE Results:

Period = 296.36154 d
Epoch = 240.7488 BKJD

DV fit results are unavailable

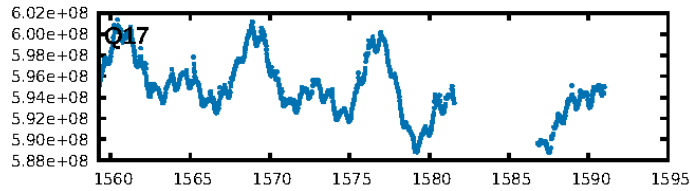
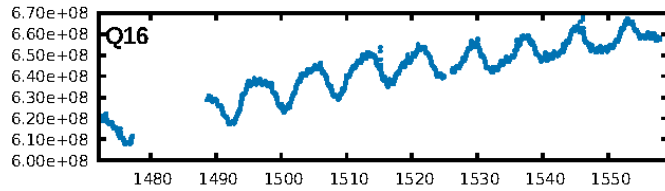
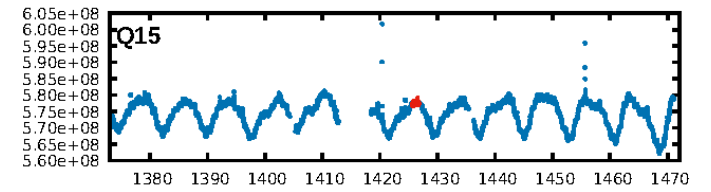
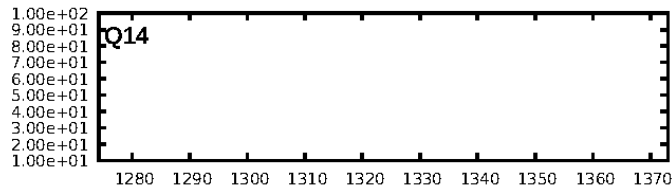
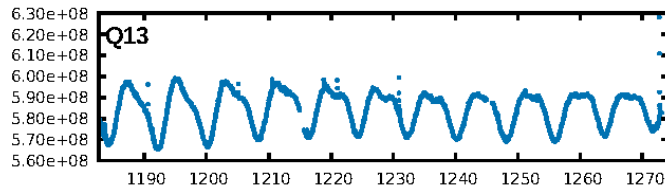
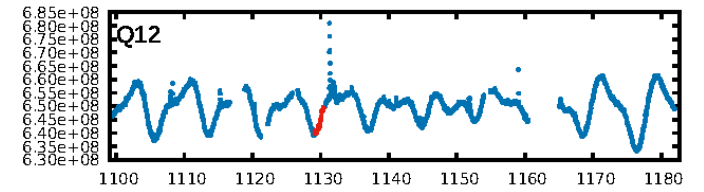
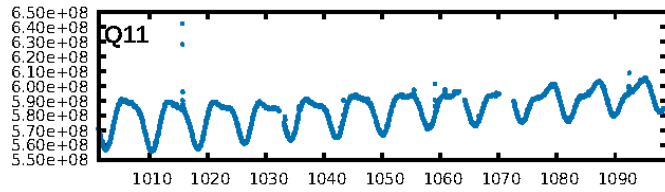
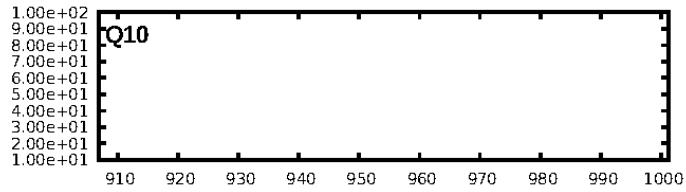
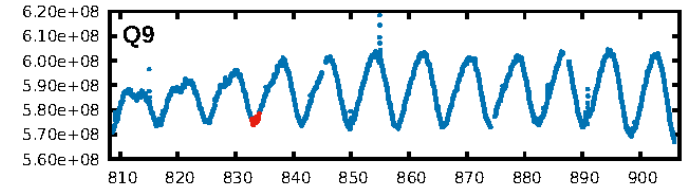
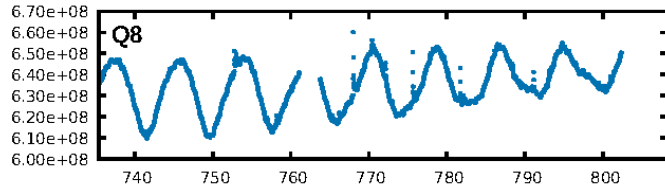
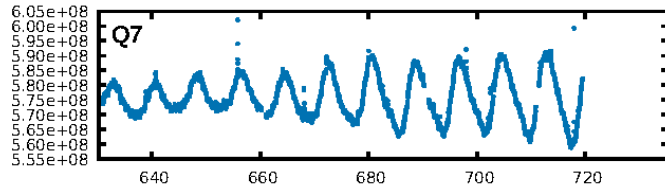
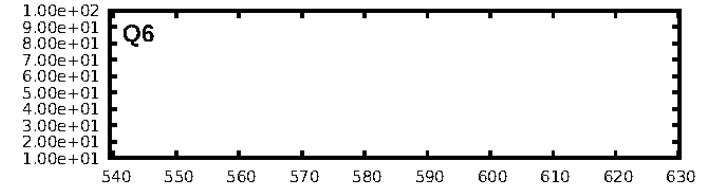
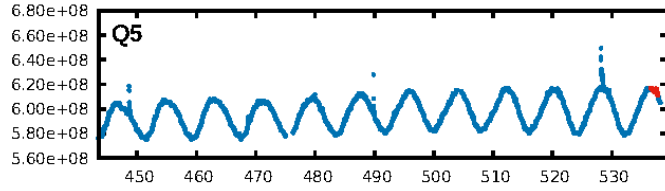
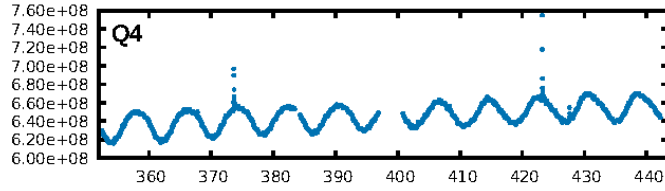
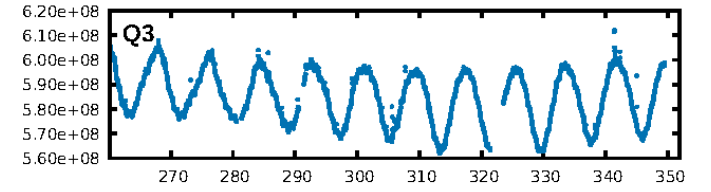
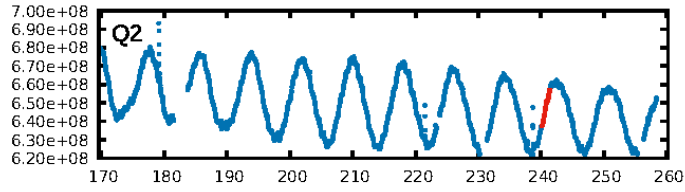
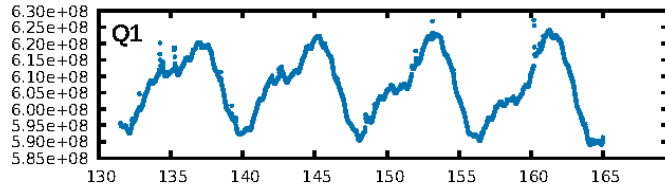
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [19.91 σ]
LongPeriod-sig: 100.0% [62.14 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.227
Centroid-sig: 67.4%
Centroid-so: 2.637 arcsec [0.46 σ]
OotOffset-rm: 1.398 arcsec [11.04 σ]
KicOffset-rm: 1.175 arcsec [5.62 σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

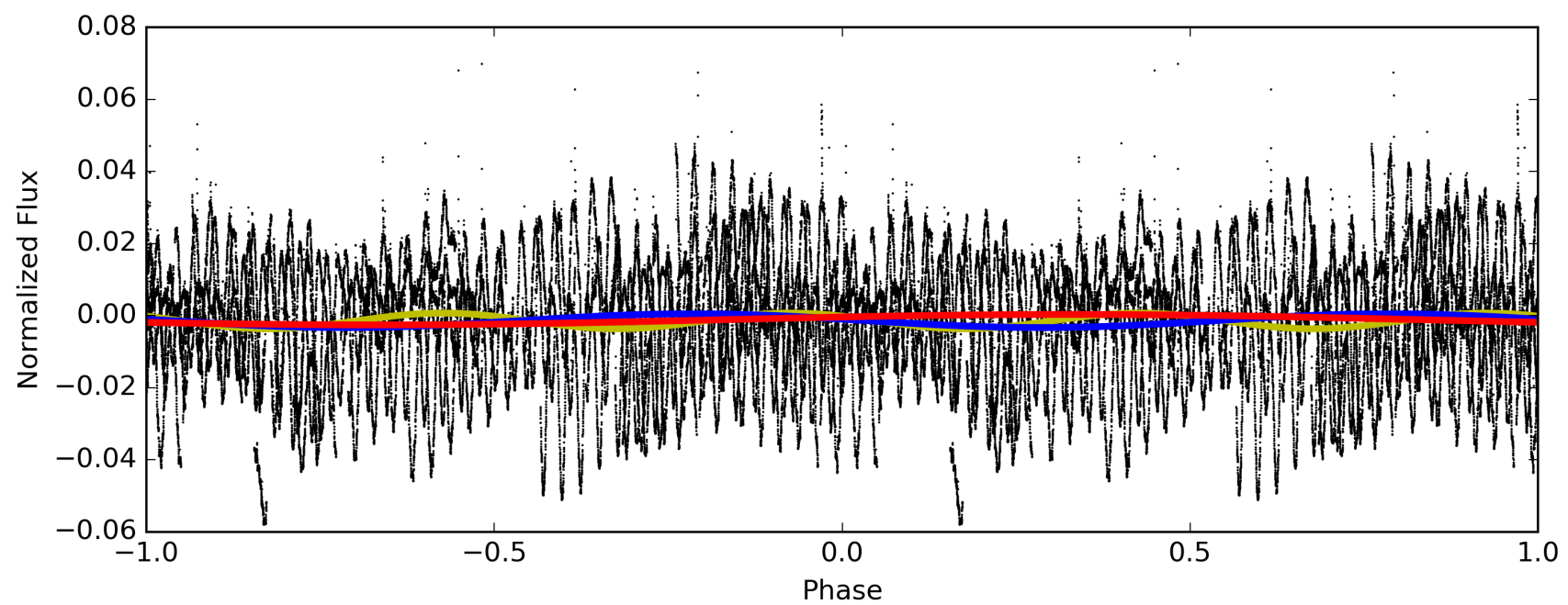
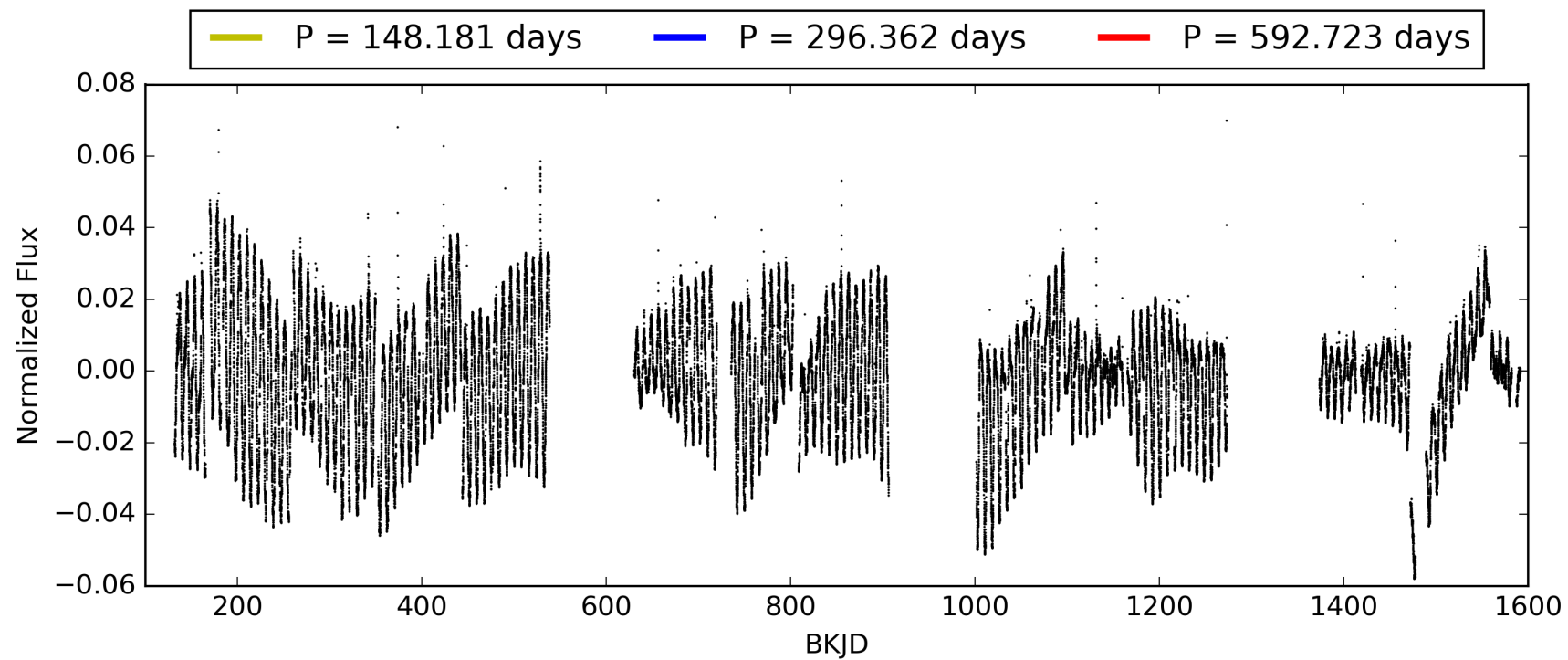
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:58:52 Z

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

TCE 004671547-03, PDC Light Curves

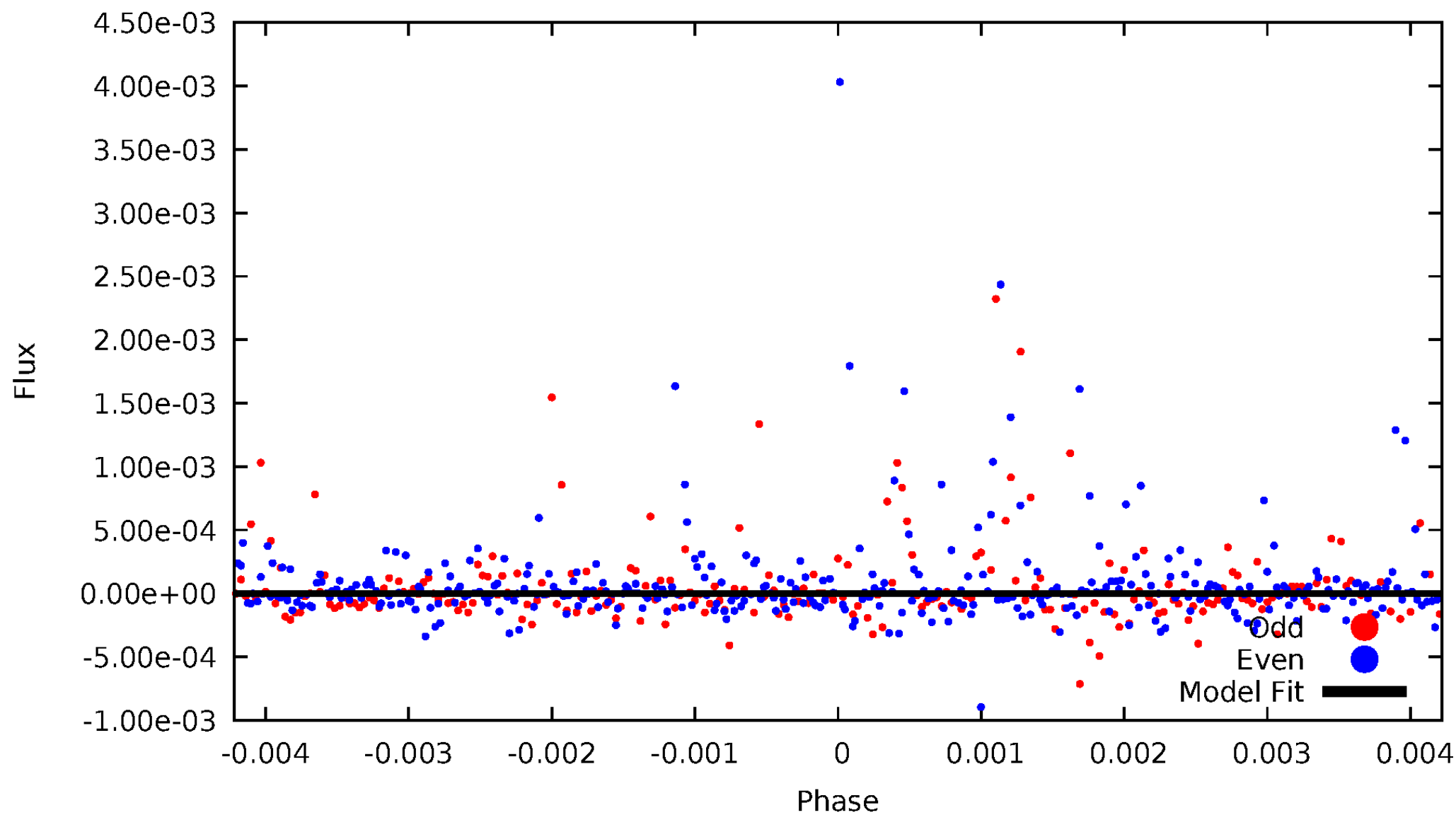


TCE 004671547-03



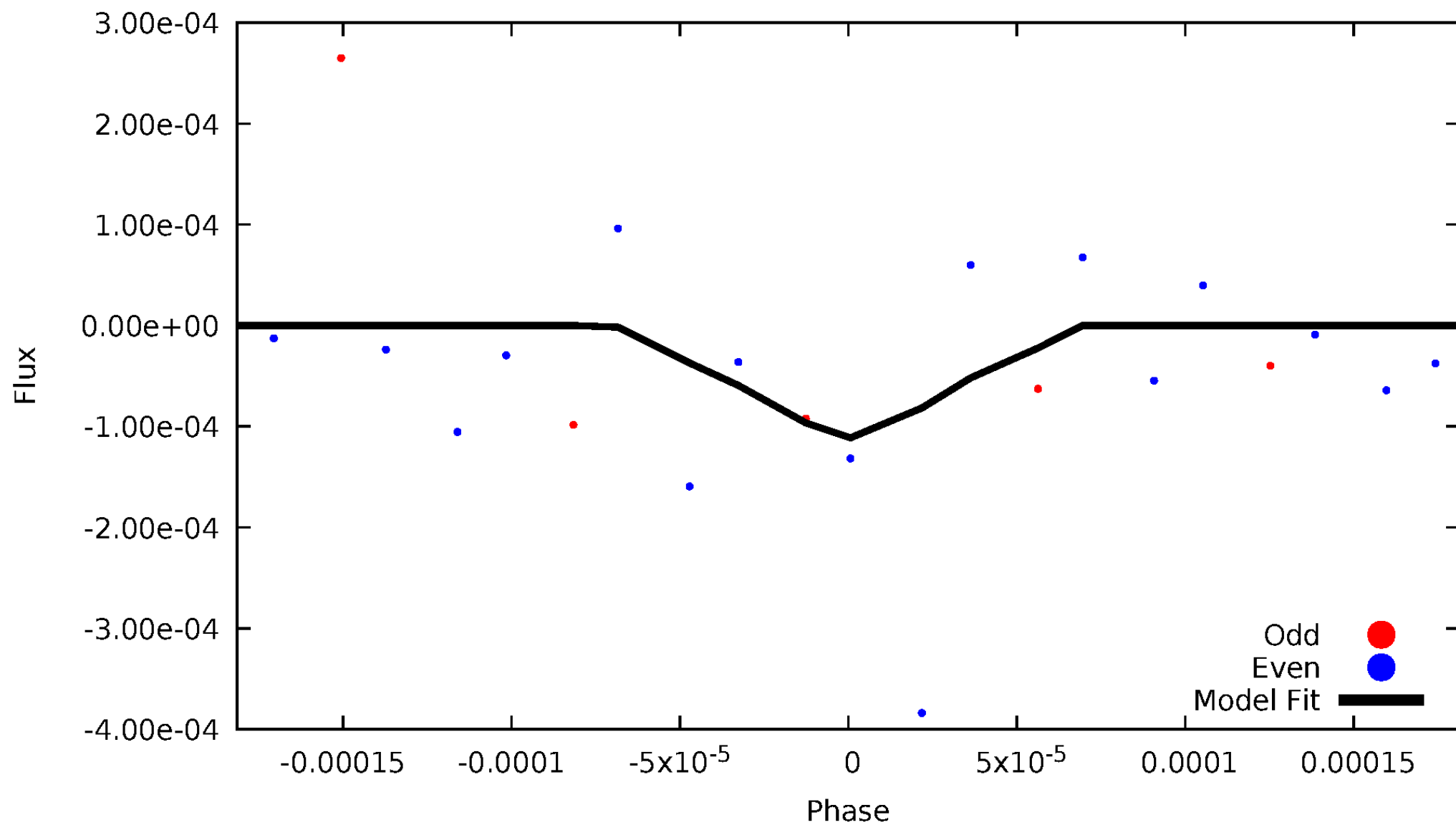
DV Odd/Even

TCE 004671547-03

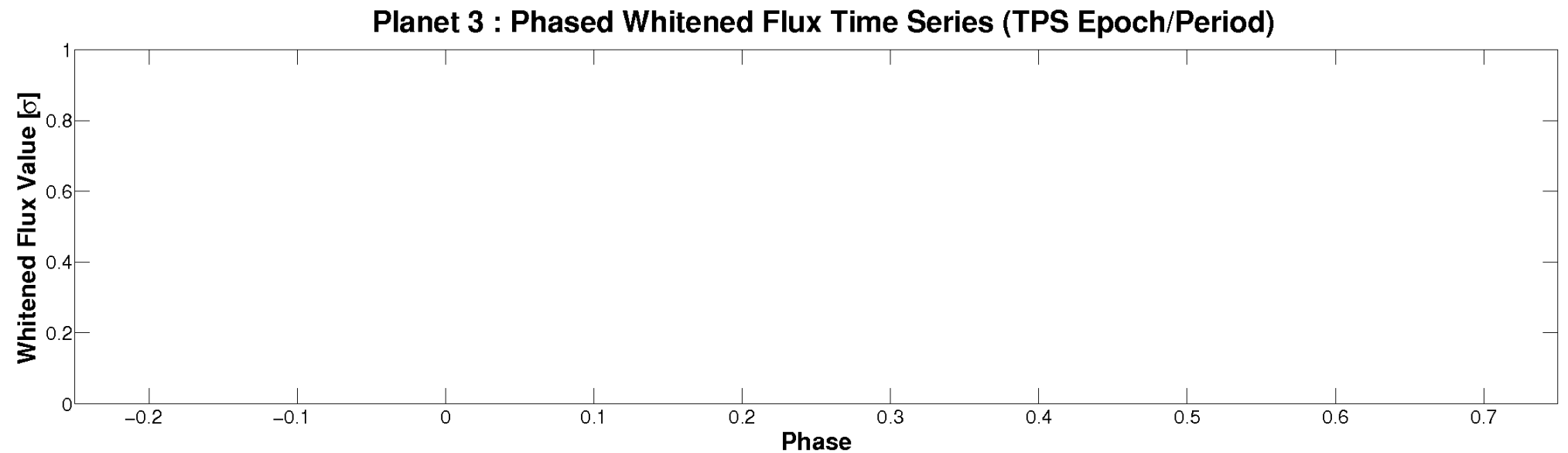
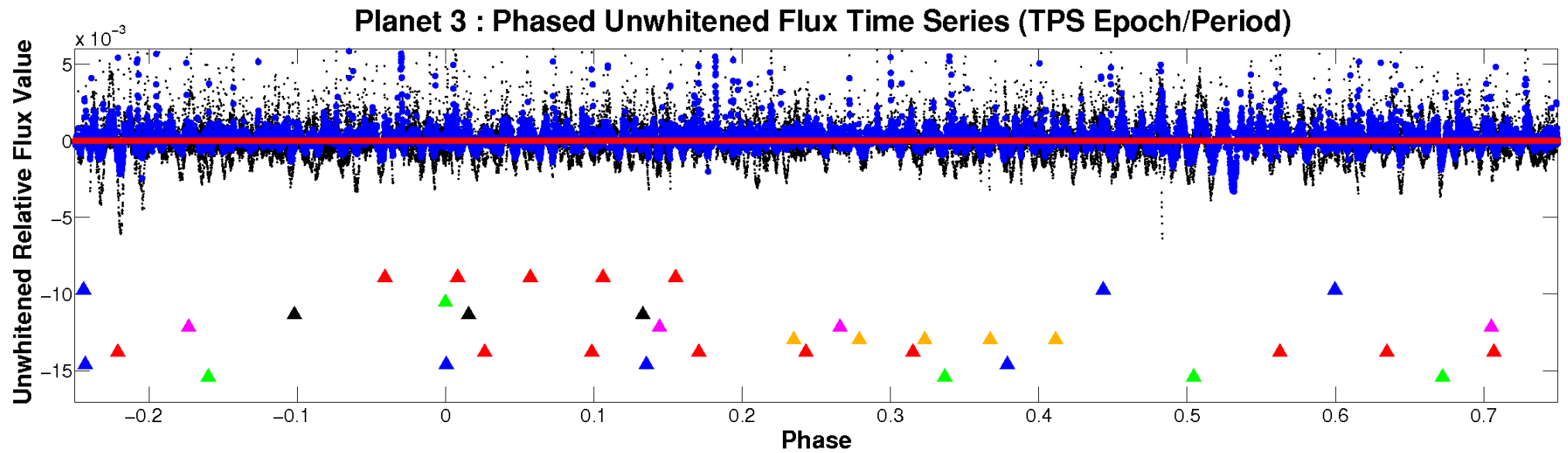


ALT Odd/Even

TCE 004671547-03

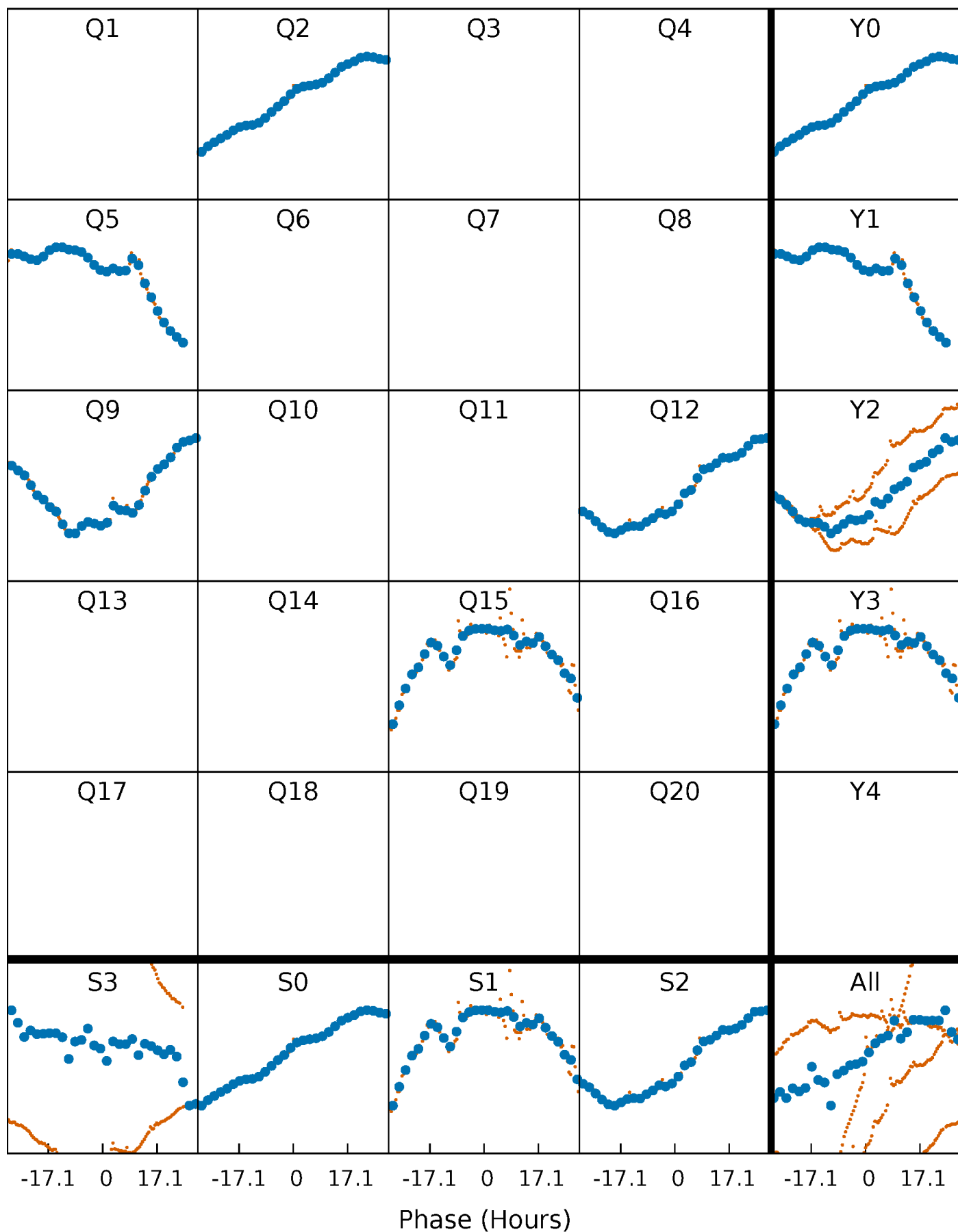


Non-Whitened Vs. Whitened Light Curve



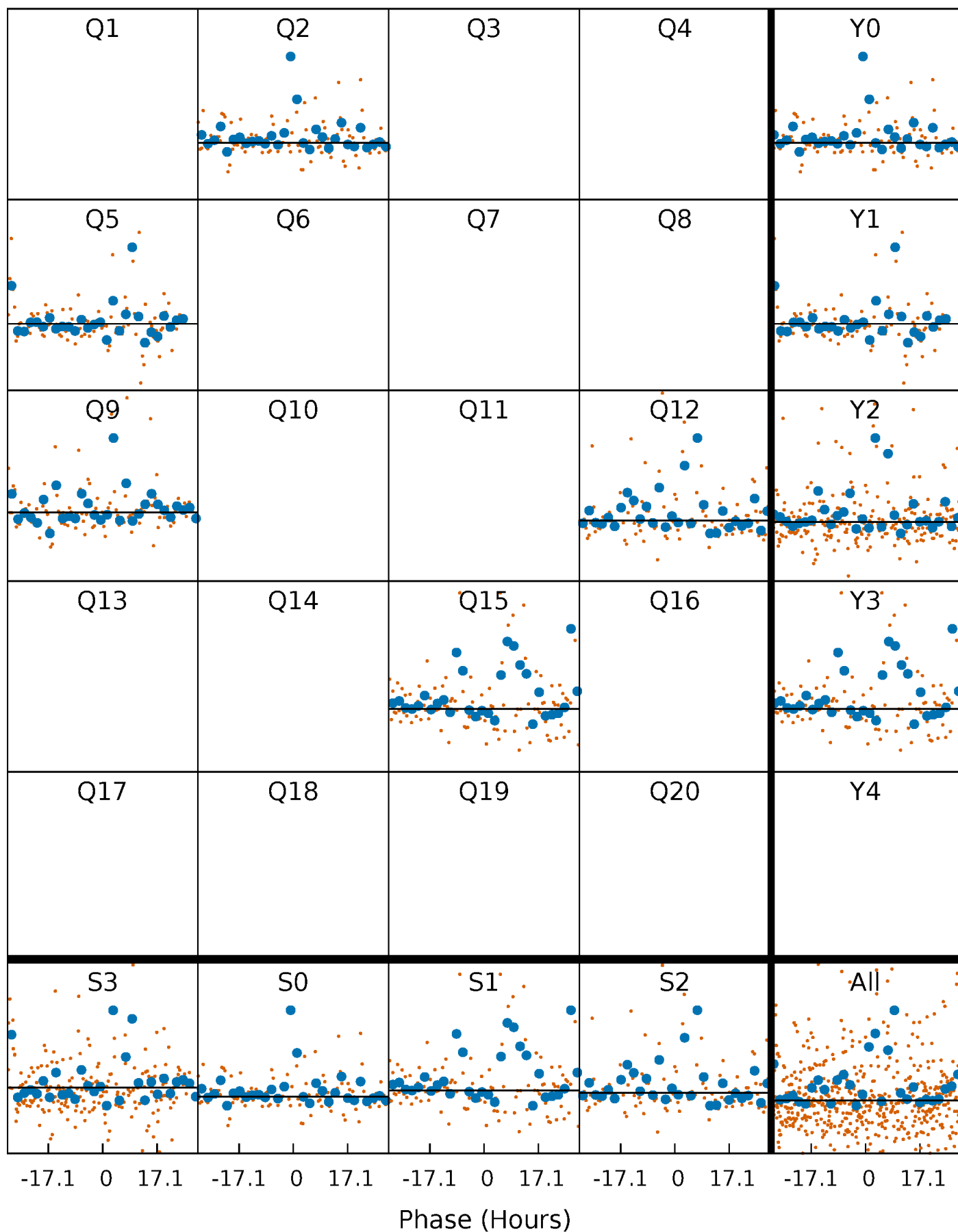
PDC Quarter-Phased Transit Curves

TCE 004671547-03 P=296.361543 Days $T_0=240.748806$ (BKJD)



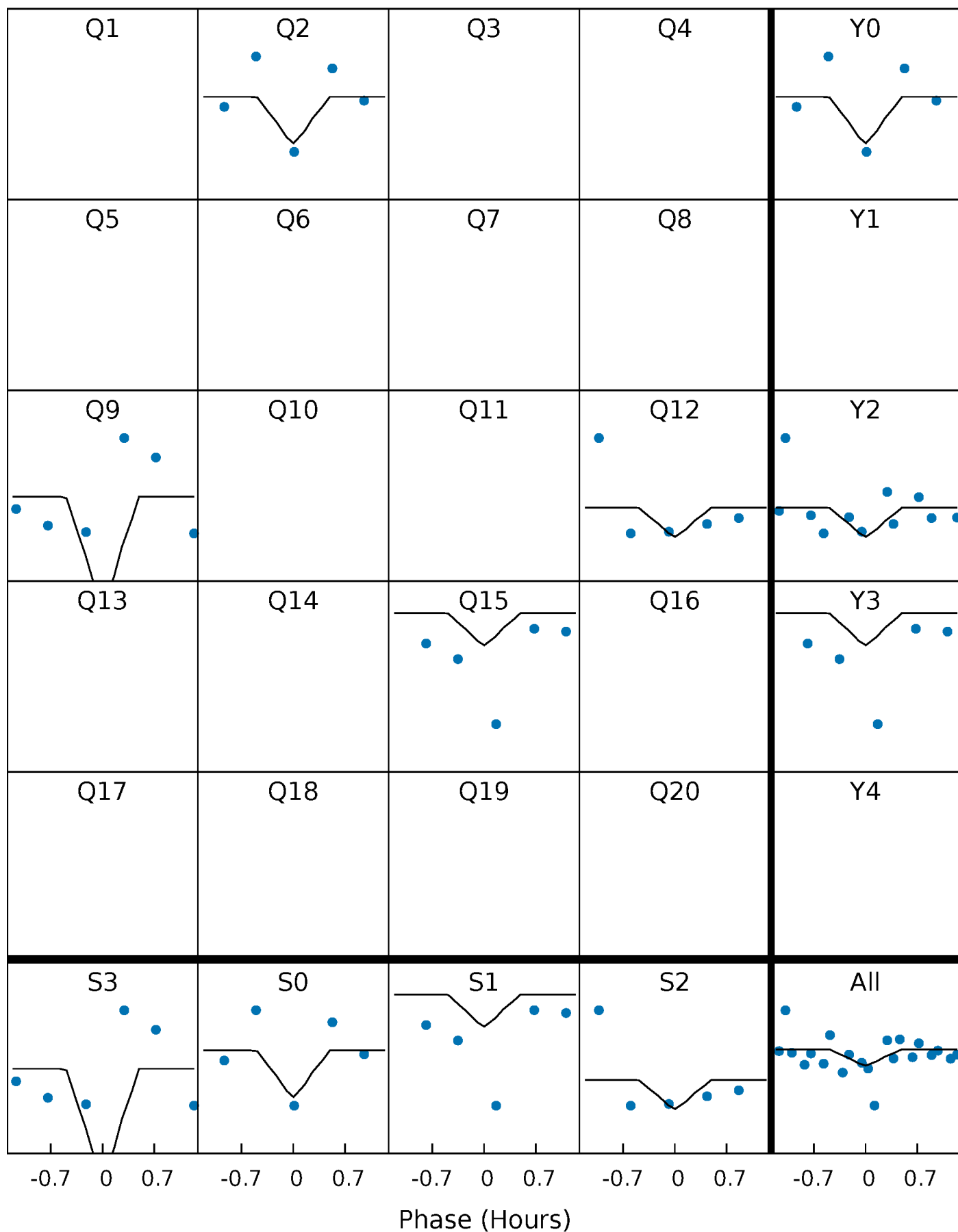
DV Quarter-Phased Transit Curves

TCE 004671547-03 $P=296.361543$ Days $T_0=240.748806$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

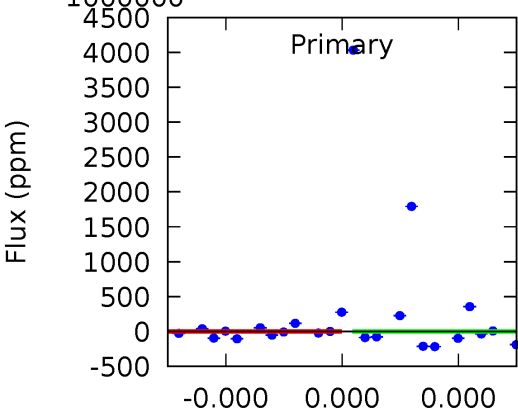
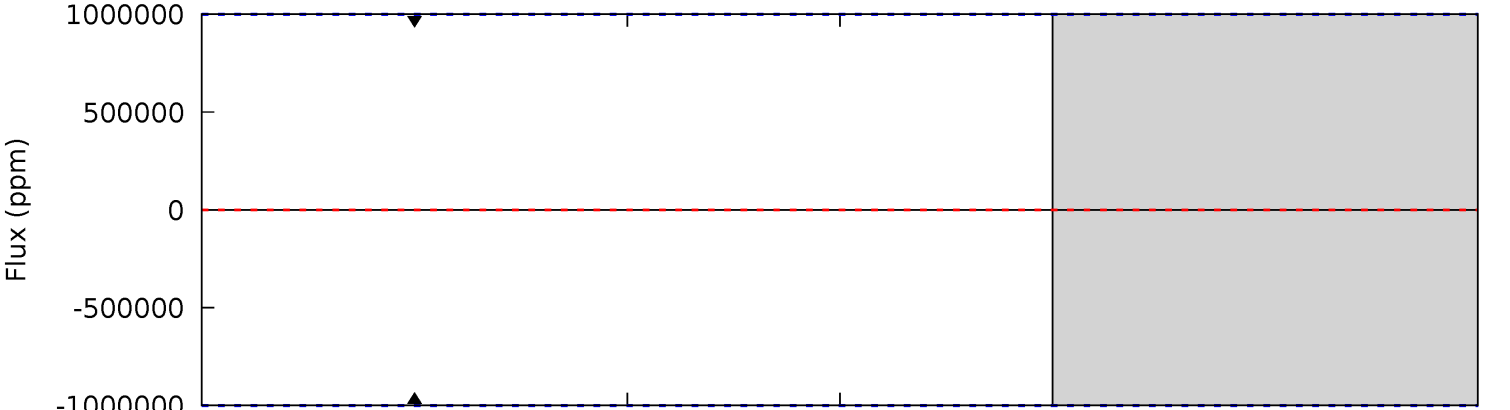
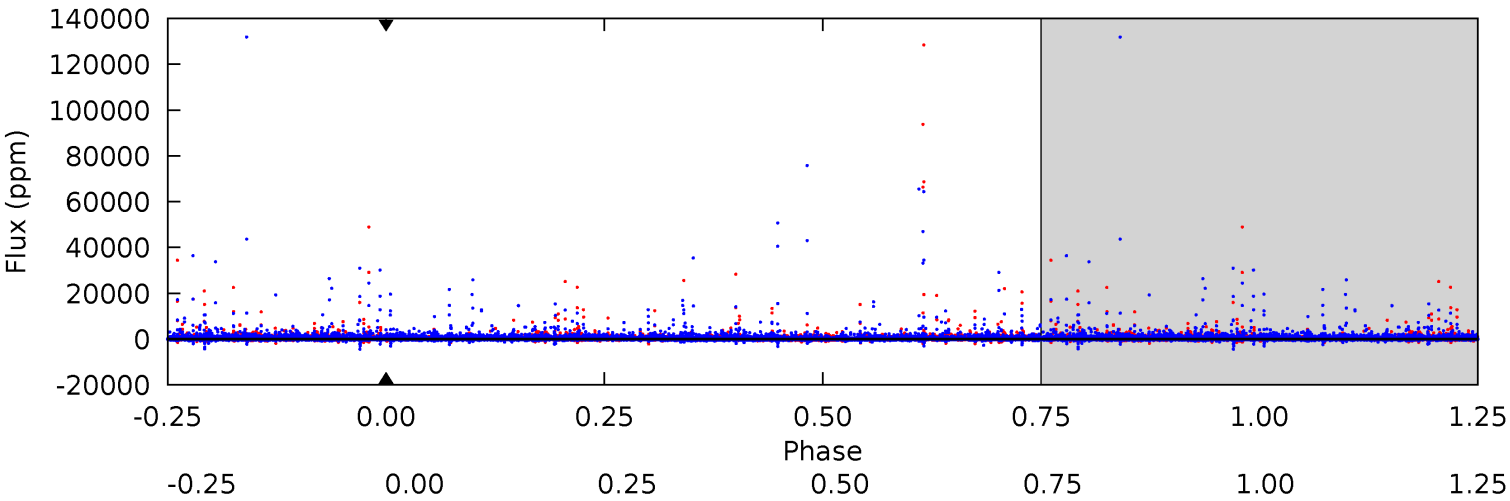
TCE 004671547-03 P=296.361543 Days $T_0=242.019229$ (BKJD)



DV Model-Shift Uniqueness Test

004671547-03, P = 296.361543 Days, E = 240.748806 Days

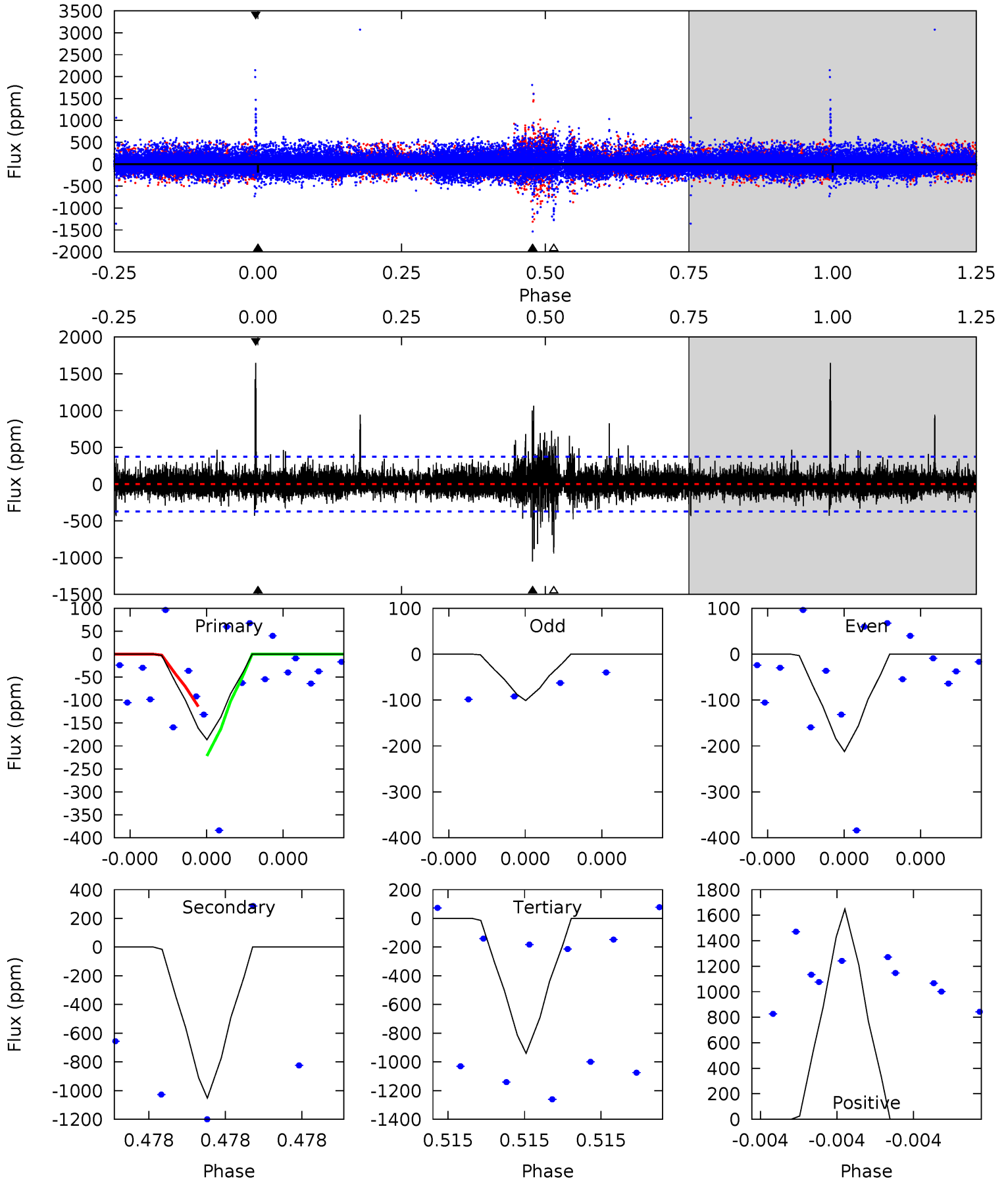
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

004671547-03, P = 296.361543 Days, E = 242.019229 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.91	16.4	14.7	25.8	5.82	3.85	1.66	-11.8	-22.8	1.74	-9.33	0.53	1.51	0.61	0.81



Stellar Parameters For KIC 004671547

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4166^{+150}_{-167}	$4.653^{+0.028}_{-0.035}$	$0.440^{+0.050}_{-0.300}$	$0.652^{+0.036}_{-0.045}$	$0.702^{+0.030}_{-0.064}$	$3.563^{+0.474}_{-0.462}$
	+4%/-4%	+1%/-1%	+11%/-68%	+6%/-7%	+4%/-9%	+13%/-13%
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 004671547-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$5.36^{+5.26}_{-3.63}$	237^{+9}_{-10}	-3901^{+13928}_{-6091}	$-44144.086^{+2031803.476}_{-2008050.487}$
Alt.	-1052 ± 64	$5.15^{+5.57}_{-3.72}$	237^{+8}_{-11}	3211^{+1800}_{-576}	$13207^{+154193}_{-10159}$

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

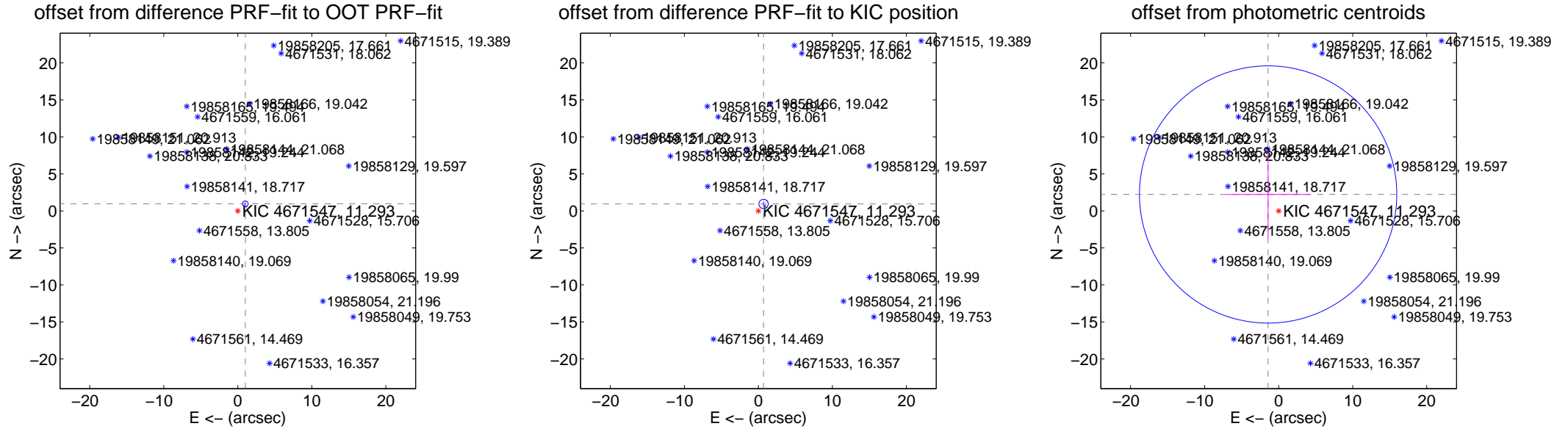
DV Centroid Data

Supplemental centroid analysis for 004671547-03. **Kepler magnitude: 11.29.** Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

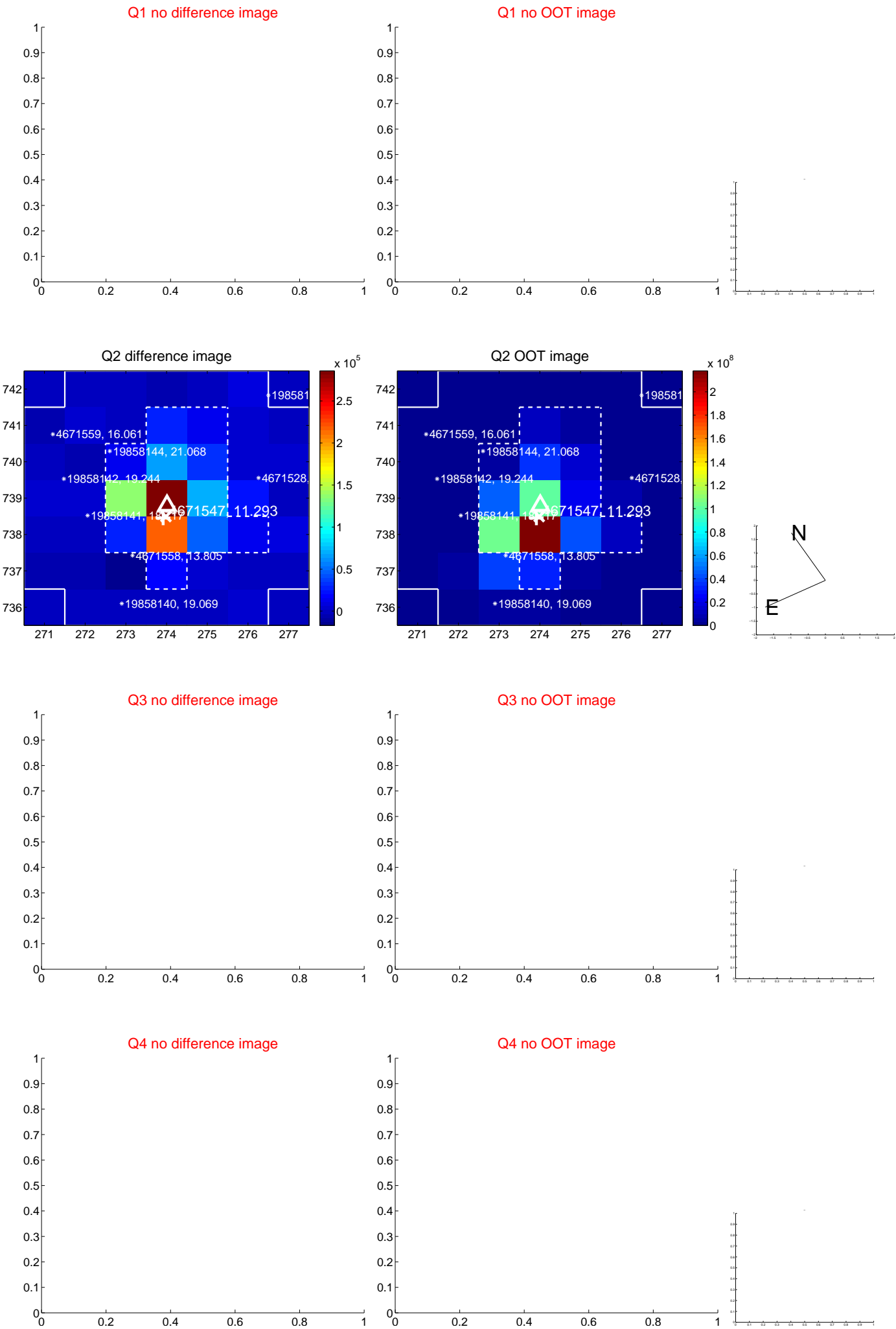
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.398 \pm 0.127	11.04	-1.015 \pm 0.115	0.962 \pm 0.139
PRF-fit source offset from KIC position	1.175 \pm 0.209	5.62	-0.704 \pm 0.106	0.941 \pm 0.316
photometric centroid source offset	2.64 \pm 5.79	0.46	1.42 \pm 5.67	2.22 \pm 5.84



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 no difference image



Q10 no OOT image



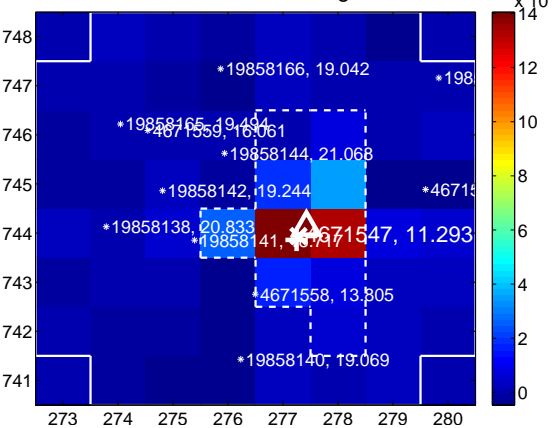
Q11 no difference image



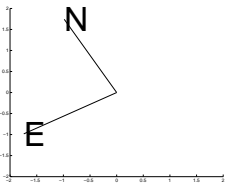
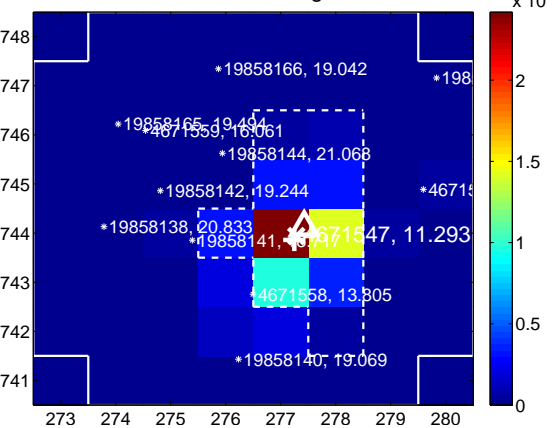
Q11 no OOT image



Q12 difference image



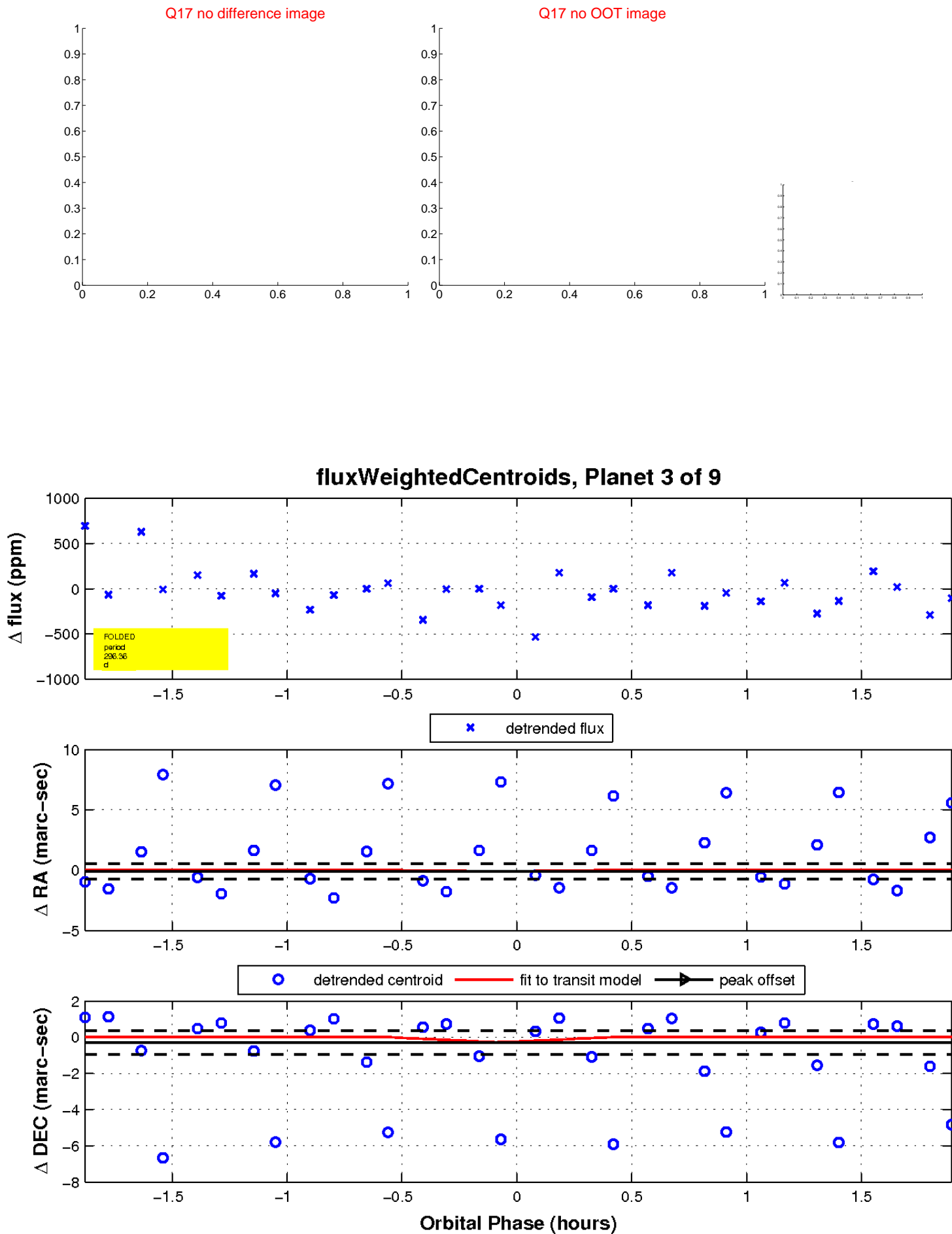
Q12 OOT image



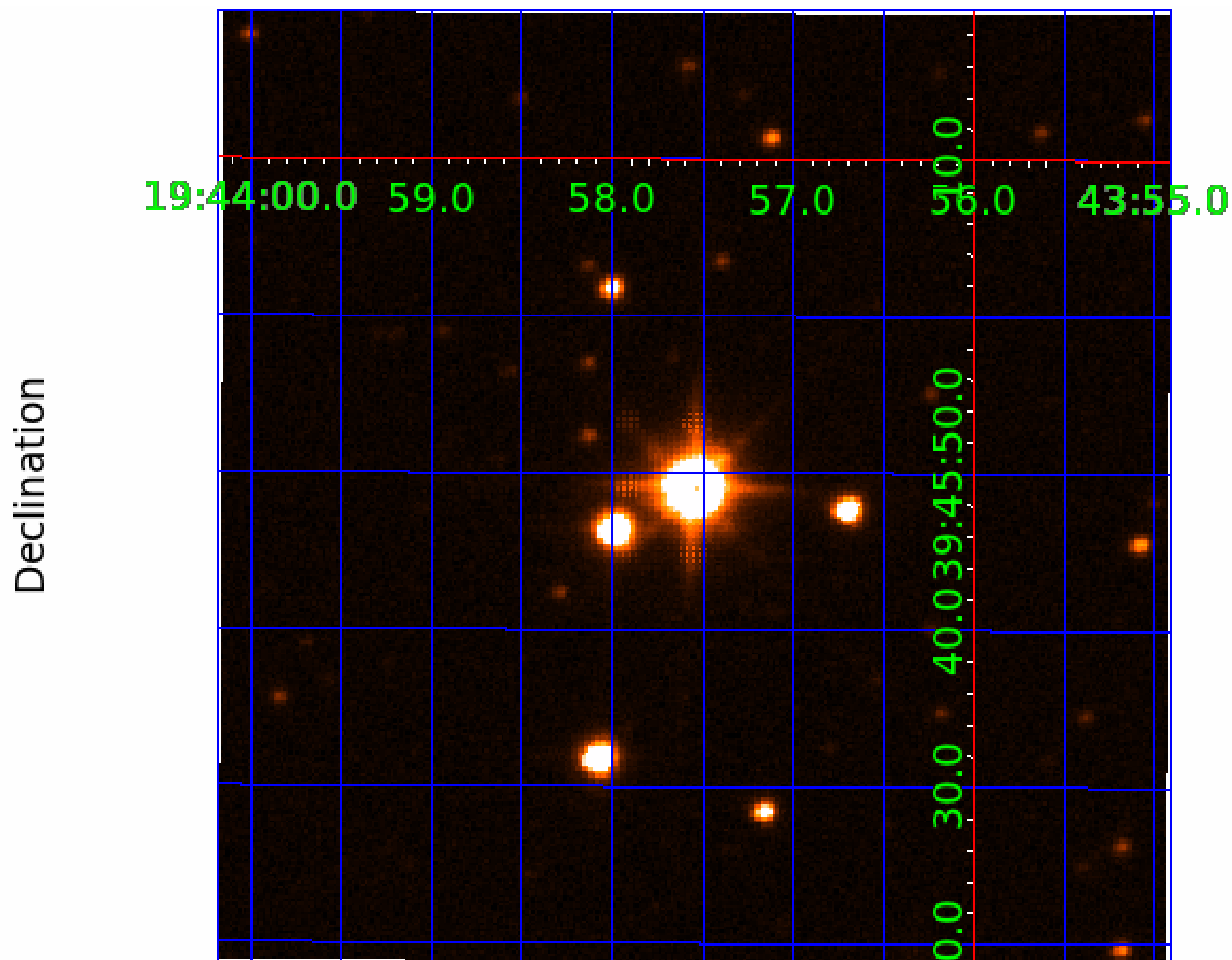
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004671547

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})
004671547-01	OBS	No	281.841230	286.743170	269.2	2.602	18.5	2.4	0.65	4166	1.10	0.21
004671547-03	OBS	No	296.361543	240.748806	137.9	15.000	14.2	-1.0	0.65	4166	0.73	0.19
004671547-04	OBS	No	557.906833	280.189324	867.8	5.776	13.5	7.0	0.65	4166	2.29	0.08
004671547-05	OBS	No	426.509156	189.433089	451.5	3.125	16.6	4.0	0.65	4166	1.66	0.12
004671547-06	OBS	No	283.282460	362.664934	509.4	4.842	13.1	4.4	0.65	4166	1.55	0.20
004671547-07	OBS	No	158.875354	248.596003	681.4	2.108	13.9	8.0	0.65	4166	1.67	0.44
004671547-08	OBS	No	408.474403	240.905682	1088.6	5.872	14.5	7.5	0.65	4166	2.11	0.13
004671547-09	OBS	No	346.096828	340.515662	138.9	12.000	13.5	-1.0	0.65	4166	0.73	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004671547-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004671547-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004671547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-06	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_SATURATED
004671547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-09	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

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

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

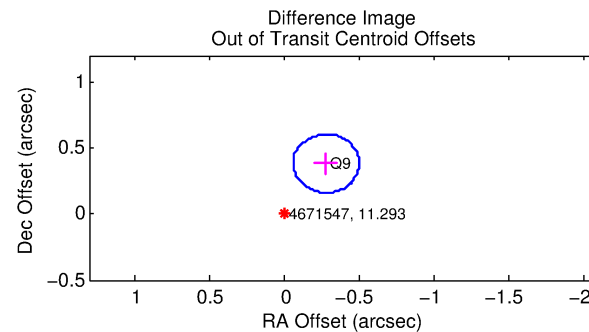
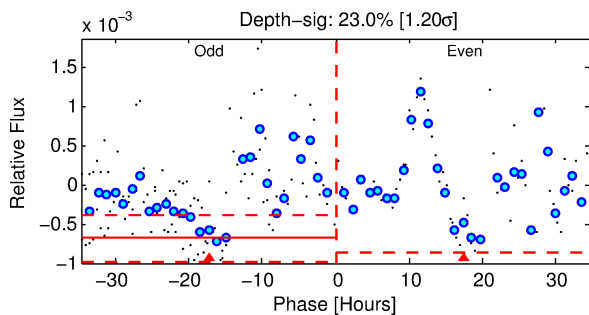
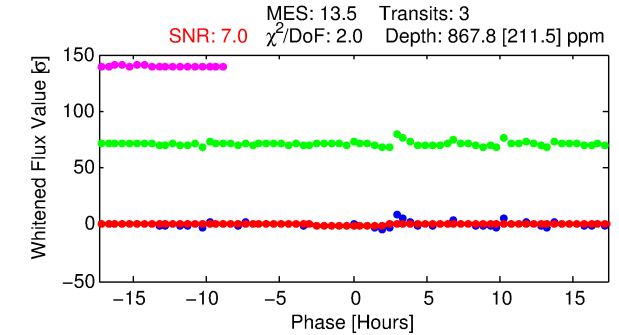
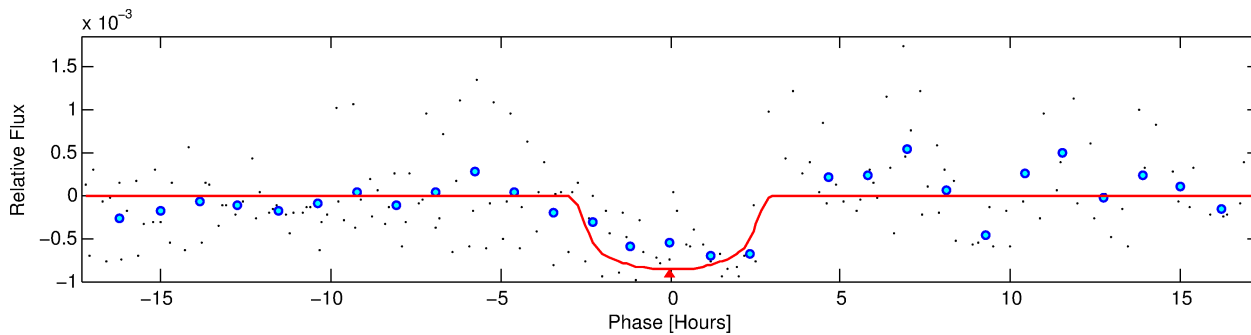
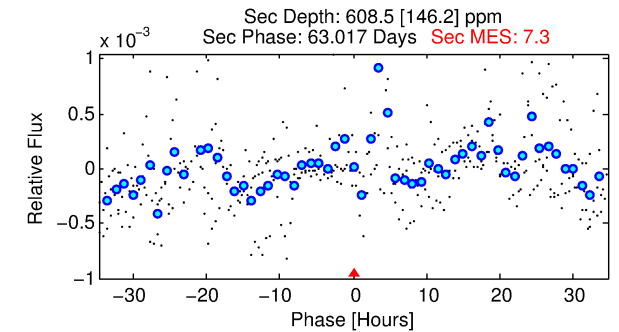
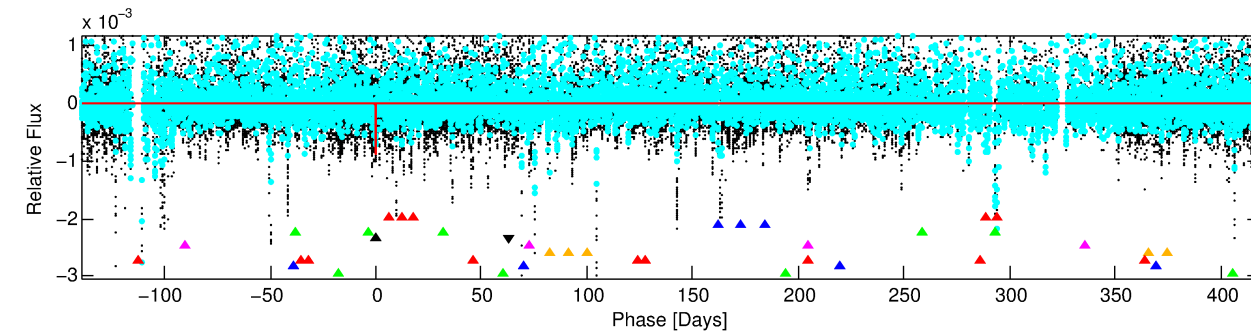
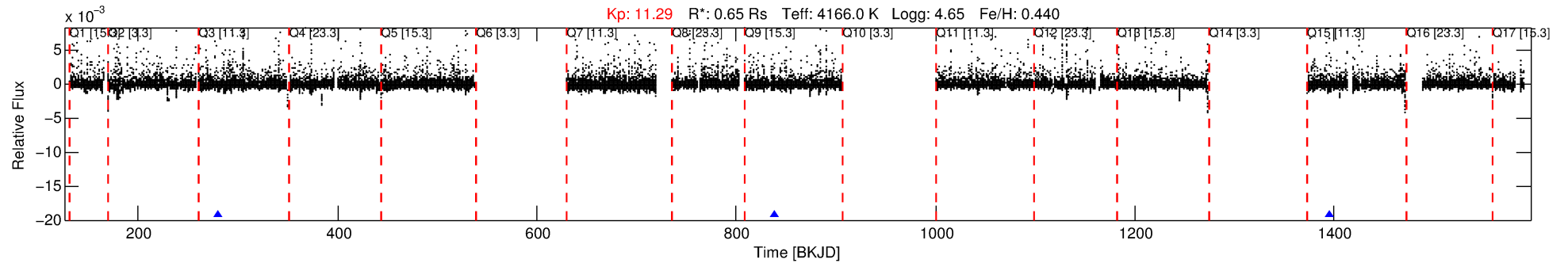
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004671547-04

No Significant Match Found

DV One-Page Summary

KIC: 4671547 Candidate: 4 of 9 Period: 557.907 d



DV Fit Results:

Period = 557.90683 [0.00891] d
Epoch = 280.1893 [0.0114] BKJD
 $R_p/R^* = 0.0322$ [0.0108]
 $a/R^* = 418.48$ [416.79]
 $b = 0.86$ [0.30]
 $\text{Seff} = 0.08$ [0.01]
 $T_{\text{eq}} = 137$ [6] K
 $R_p = 2.29$ [0.78] R_e
 $a = 1.1764$ [0.0627] AU
 $A_g = 88515.95$ [63330.69] [1.40 σ]
 $T_{\text{eff}} = 3649$ [666] K [5.28 σ]

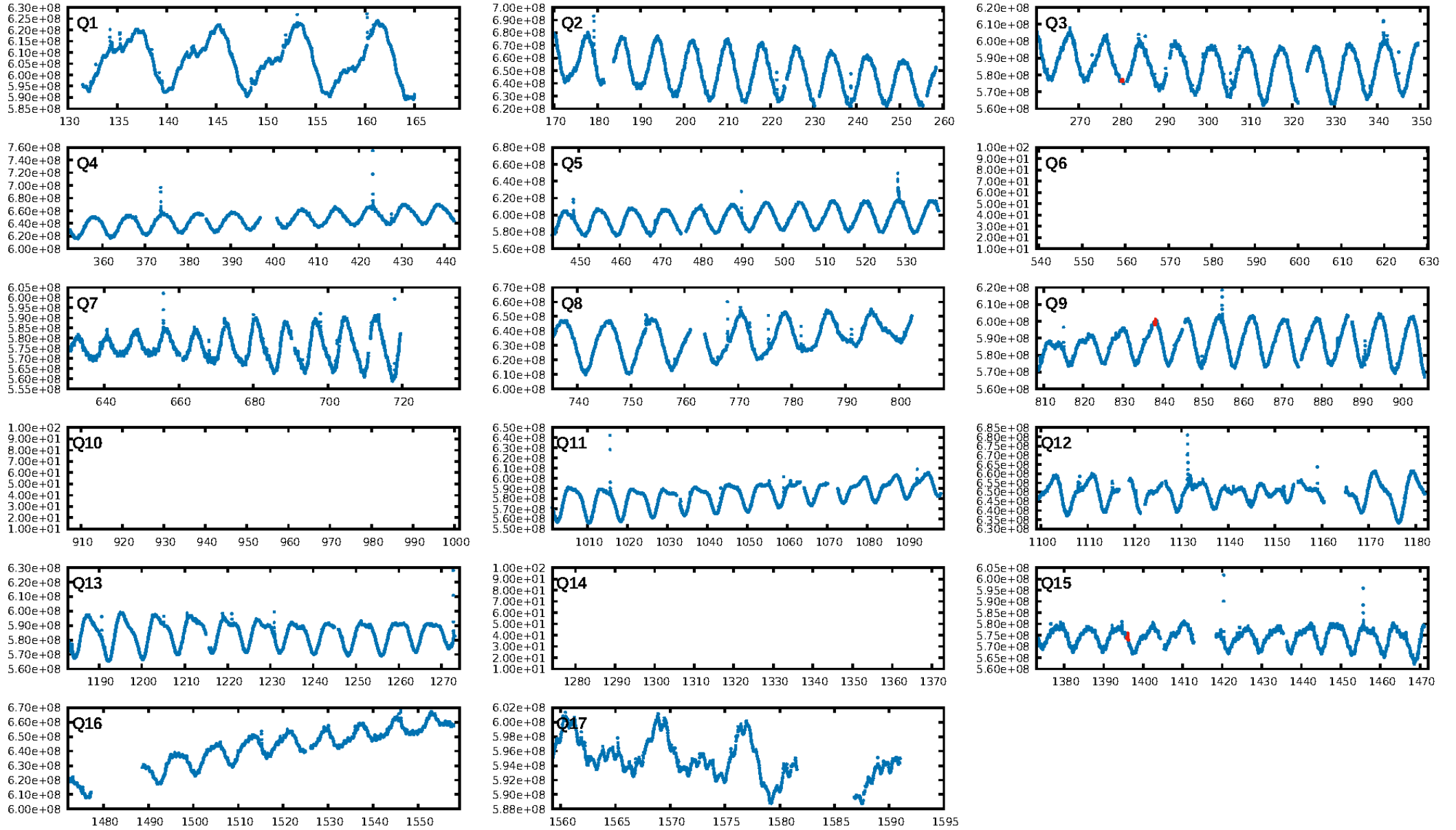
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [33.07 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 58.3%
ModelChiSquareGof-sig: 42.5%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 7.578
Centroid-sig: 0.1%
Centroid-so: 0.812 arcsec [1.35 σ]
OotOffset-rm: 0.476 arcsec [6.46 σ]
KicOffset-rm: 0.289 arcsec [3.90 σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [1/1]

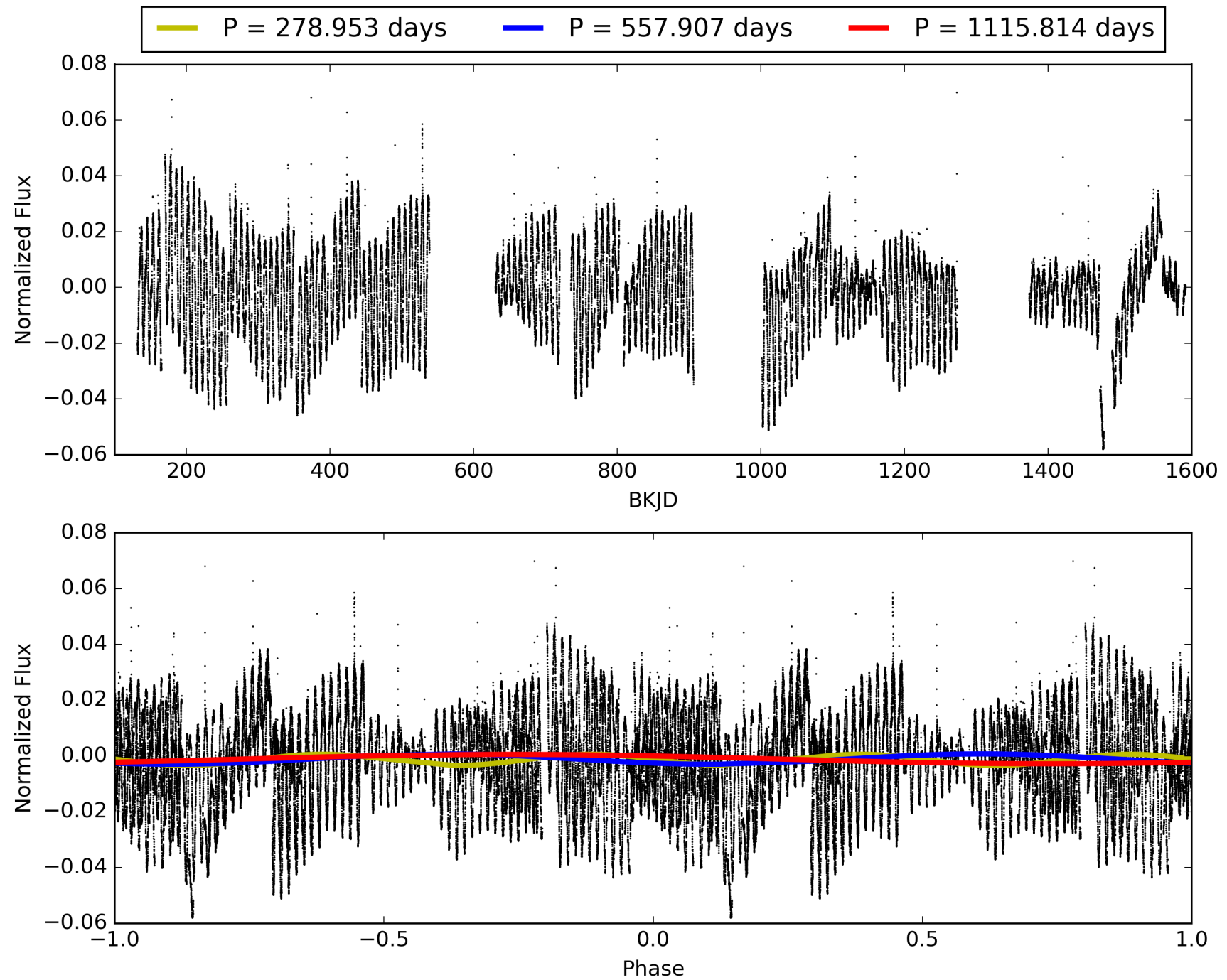
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:59:05 Z

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

TCE 004671547-04, PDC Light Curves

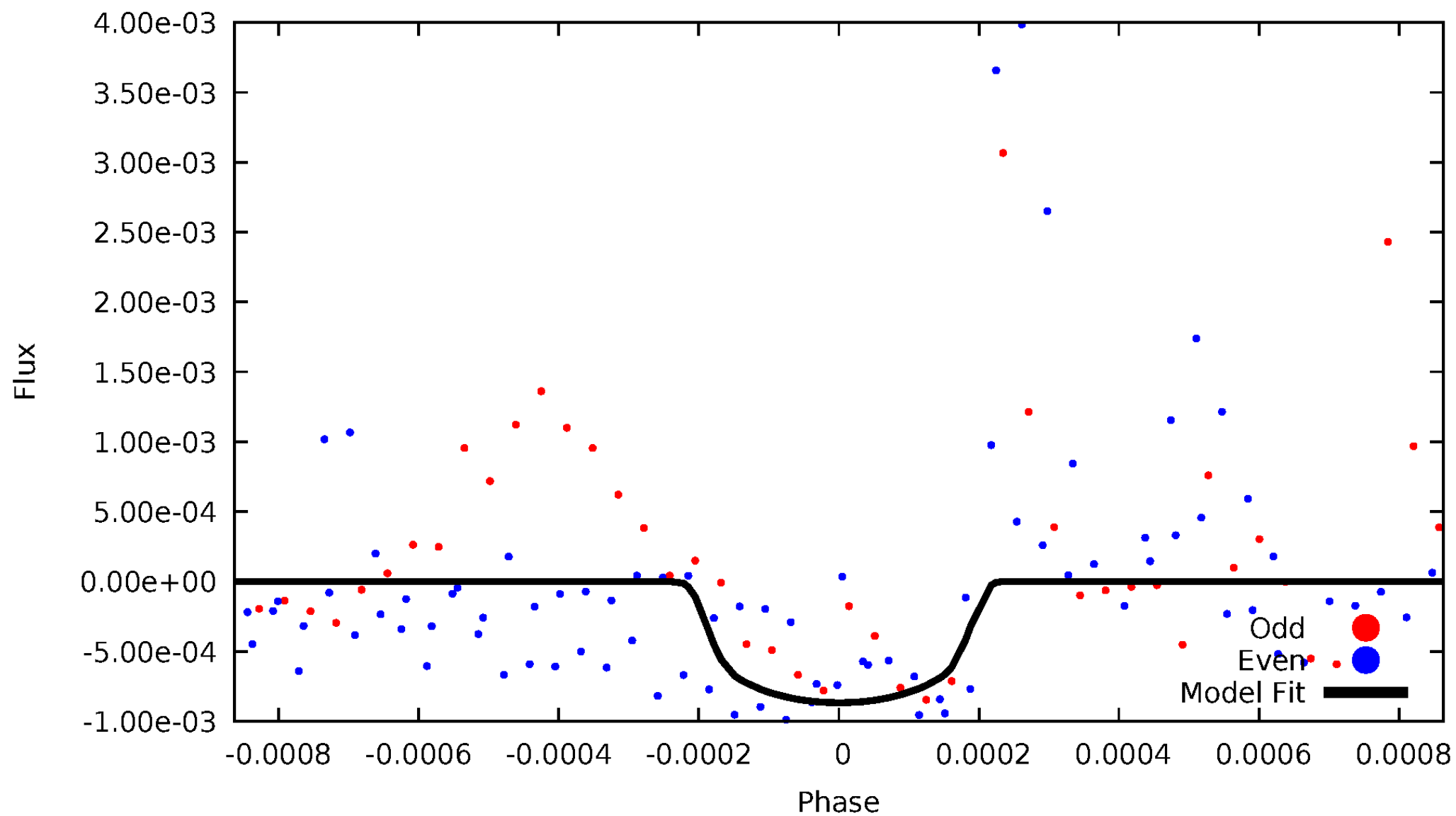


TCE 004671547-04



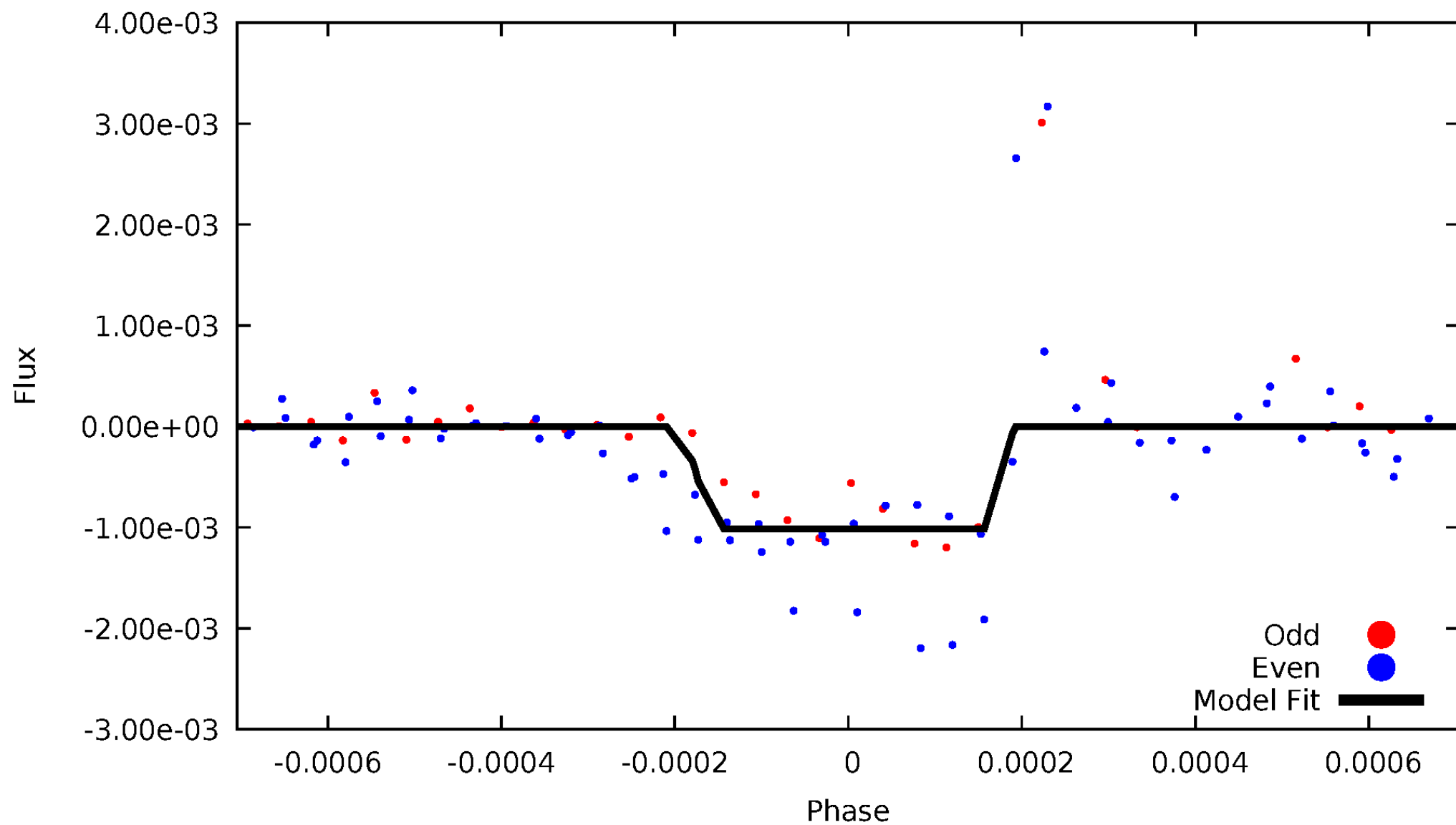
DV Odd/Even

TCE 004671547-04



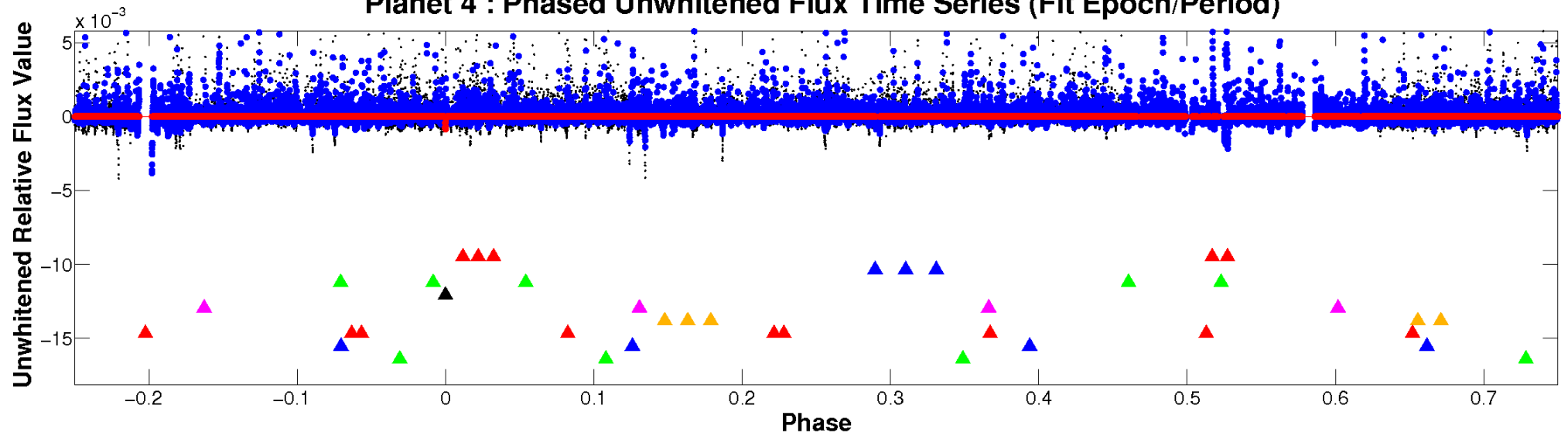
ALT Odd/Even

TCE 004671547-04

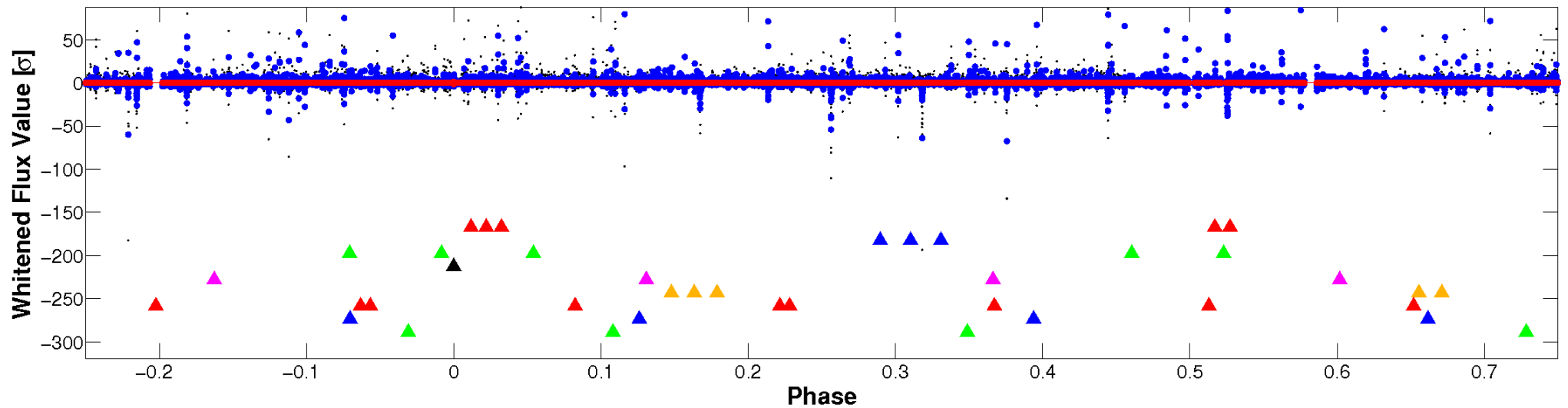


Non-Whitened Vs. Whitened Light Curve

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

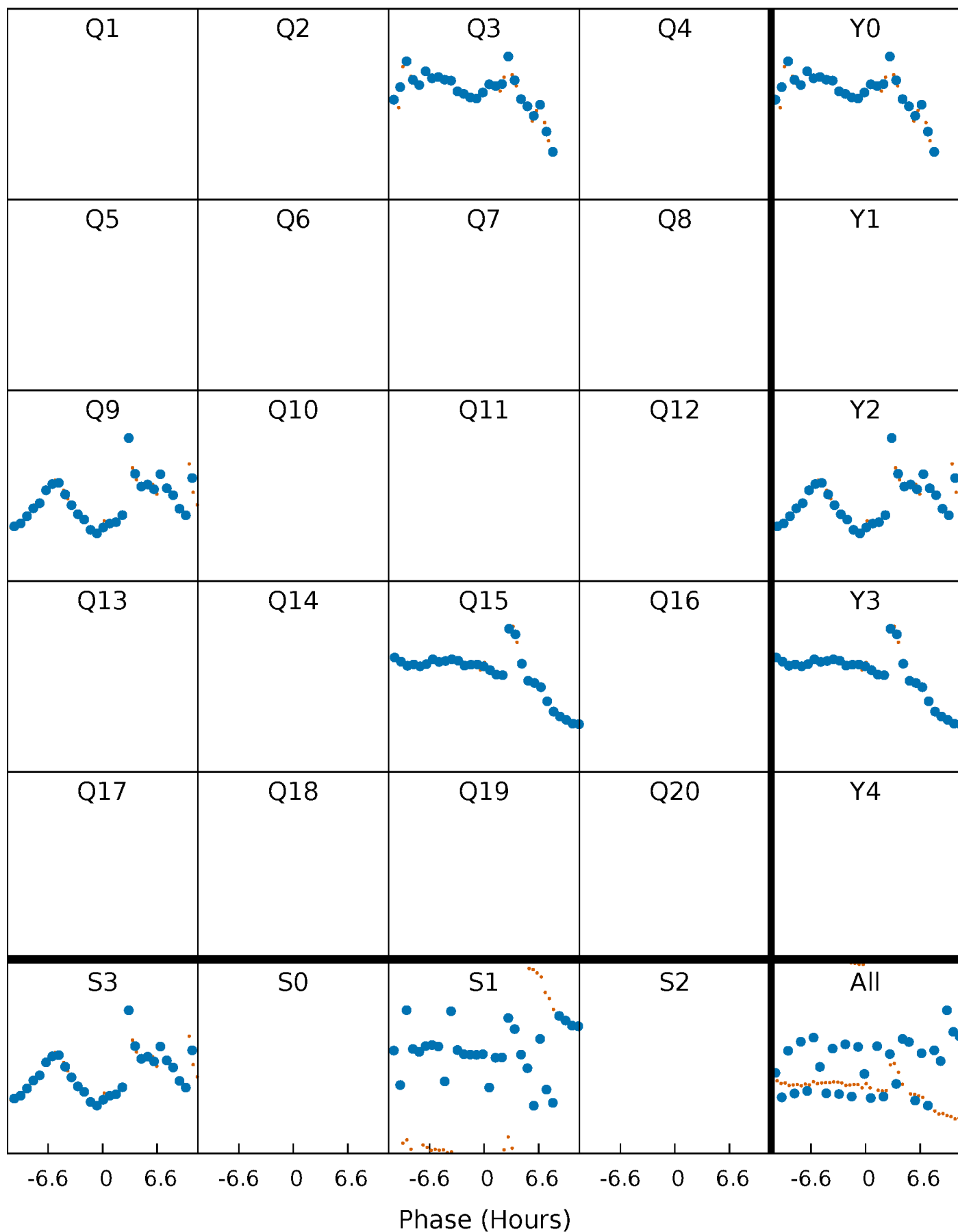


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



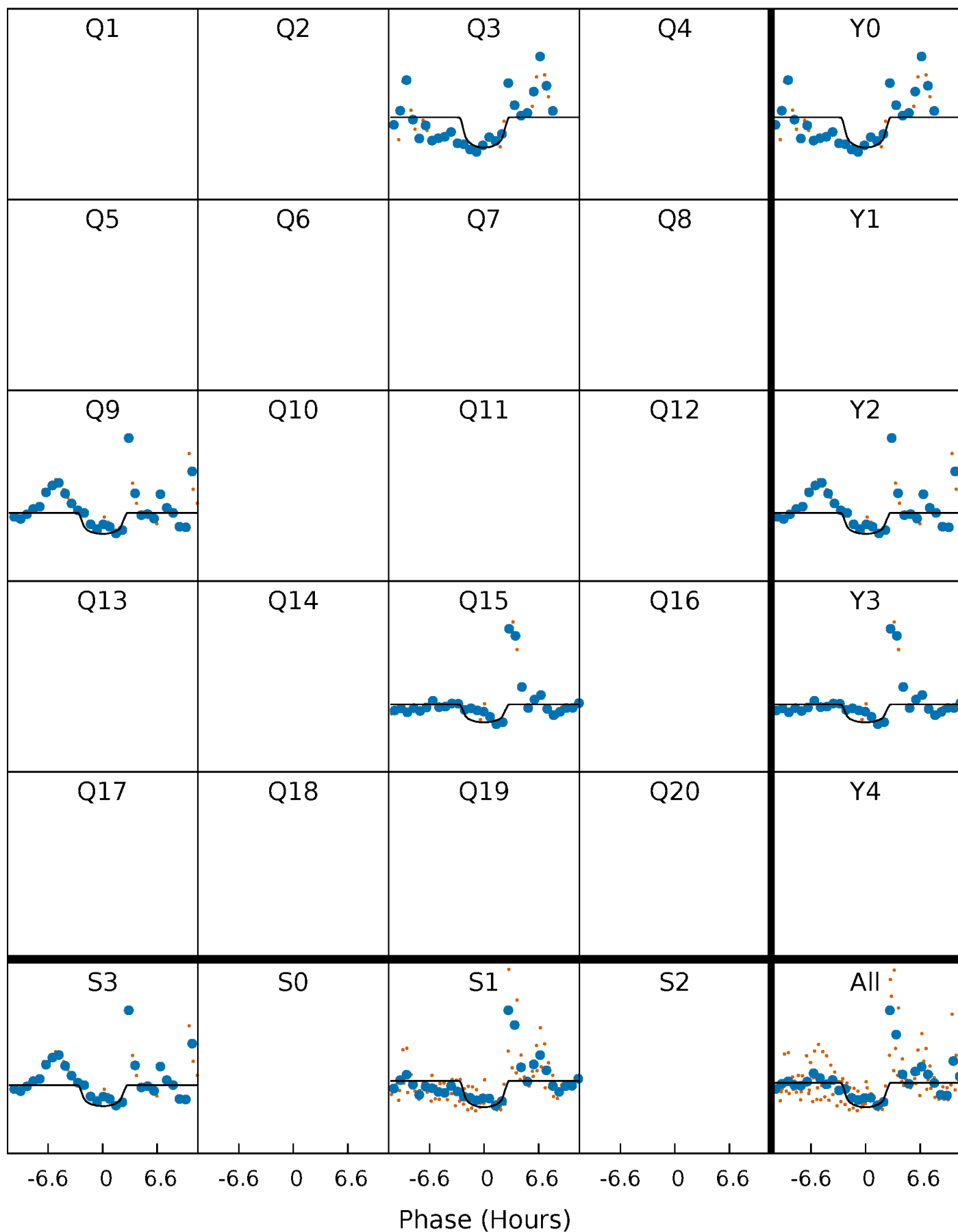
PDC Quarter-Phased Transit Curves

TCE 004671547-04 $P=557.906833$ Days $T_0=280.189324$ (BKJD)



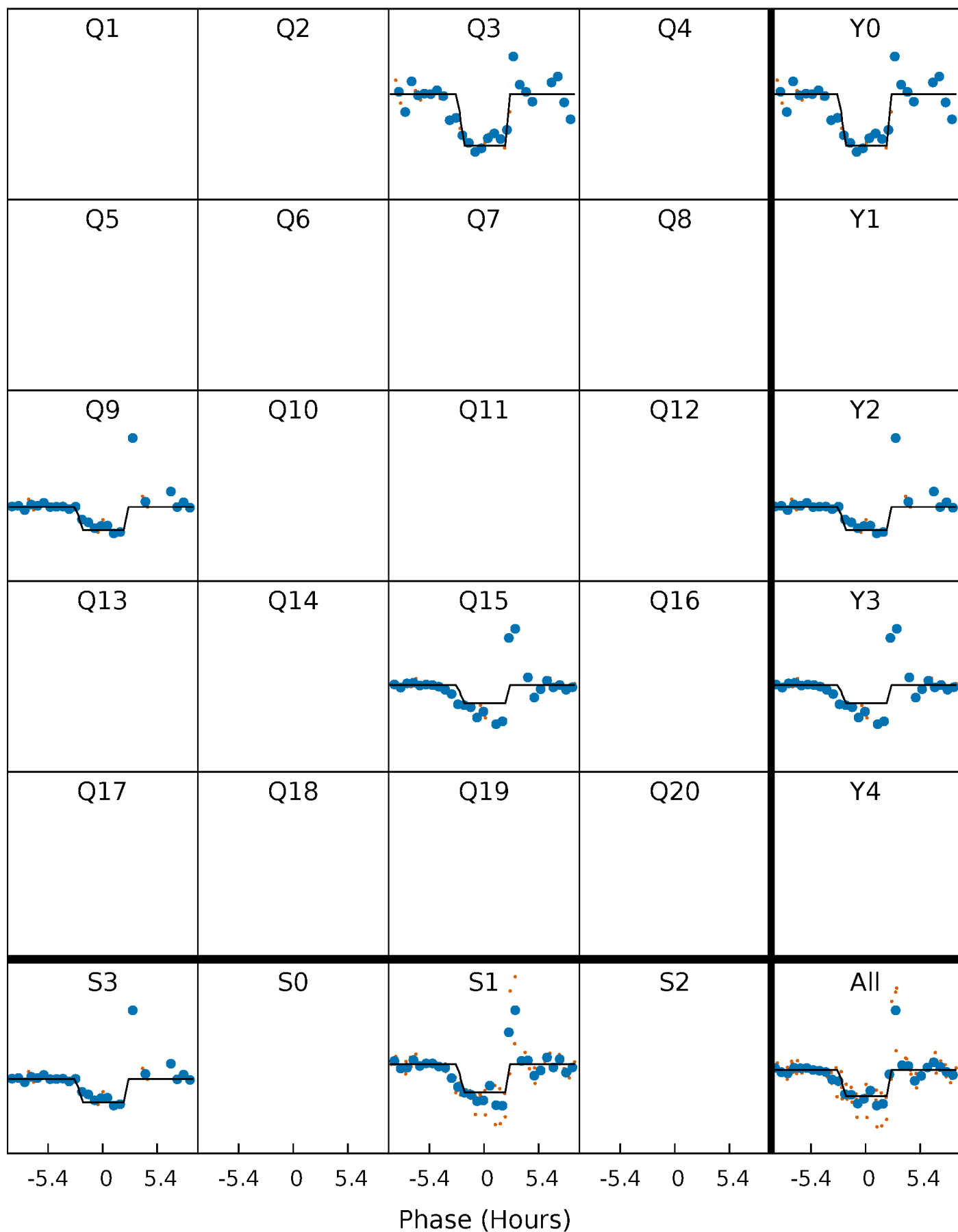
DV Quarter-Phased Transit Curves

TCE 004671547-04 $P=557.906833$ Days $T_0=280.189324$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

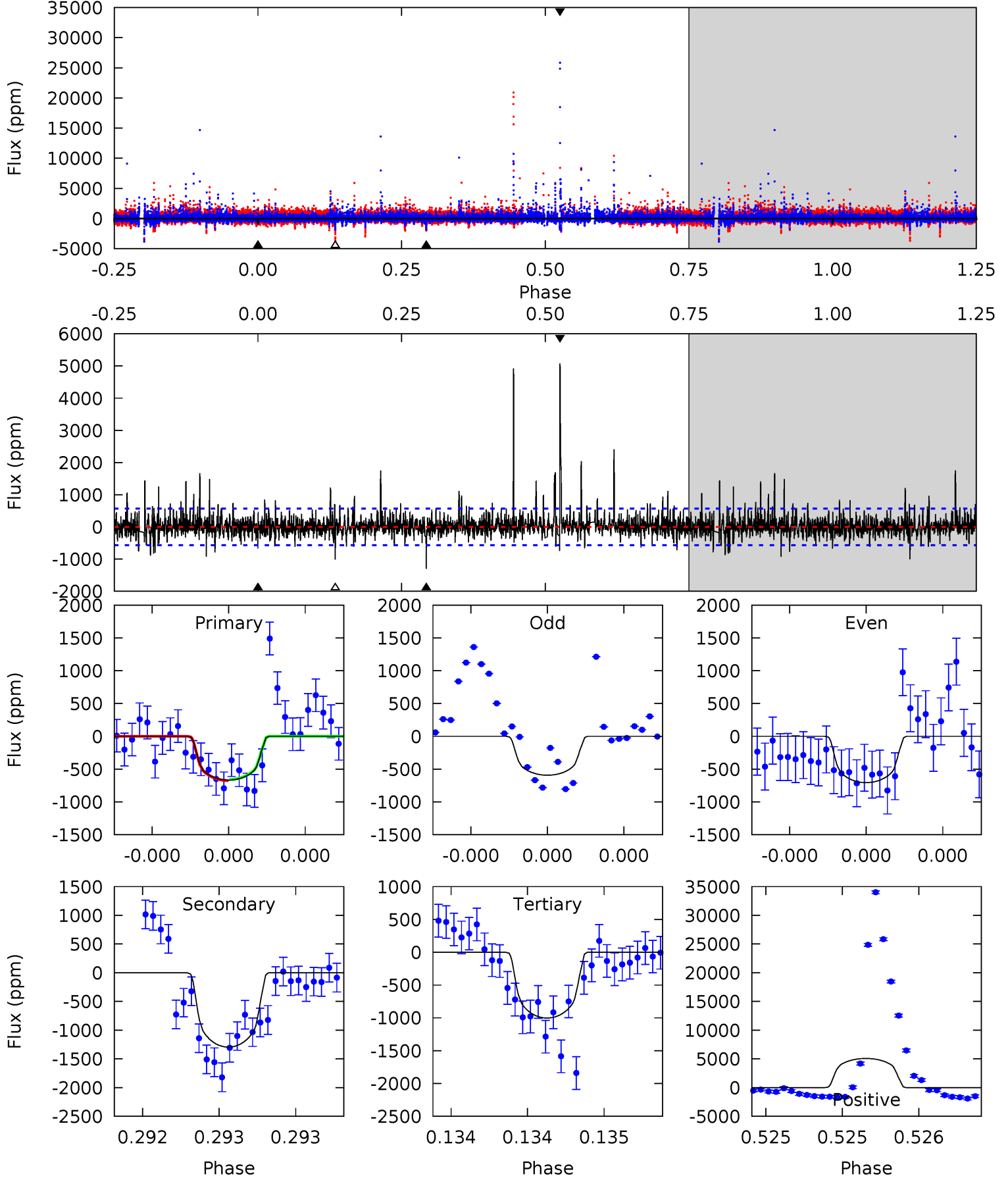
TCE 004671547-04 P=557.917922 Days $T_0=280.184623$ (BKJD)



DV Model-Shift Uniqueness Test

004671547-04, P = 557.906833 Days, E = 280.189324 Days

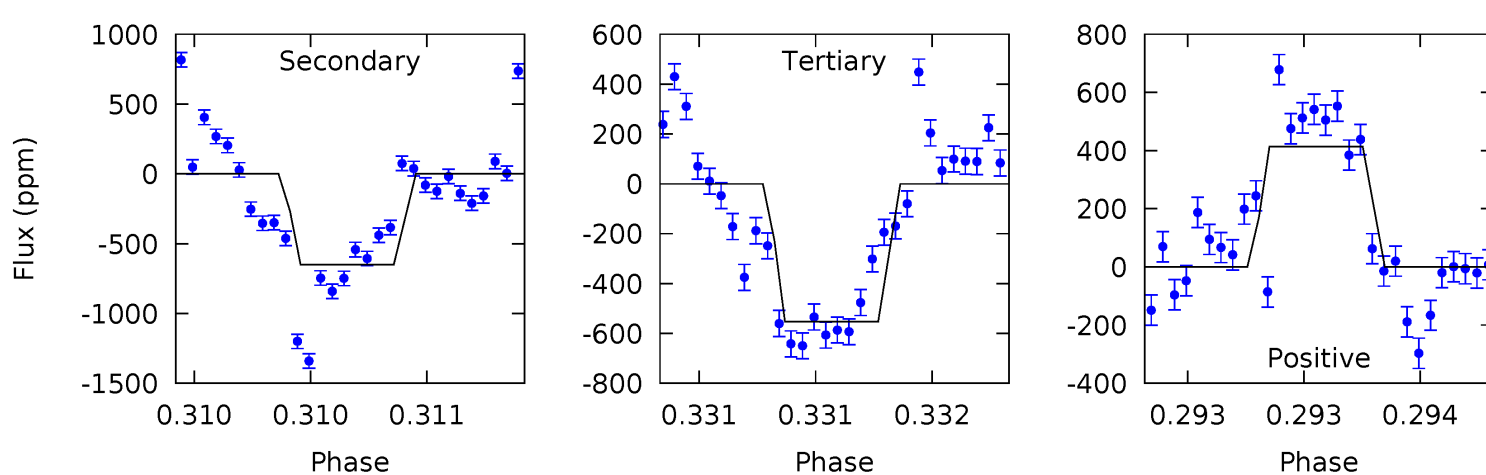
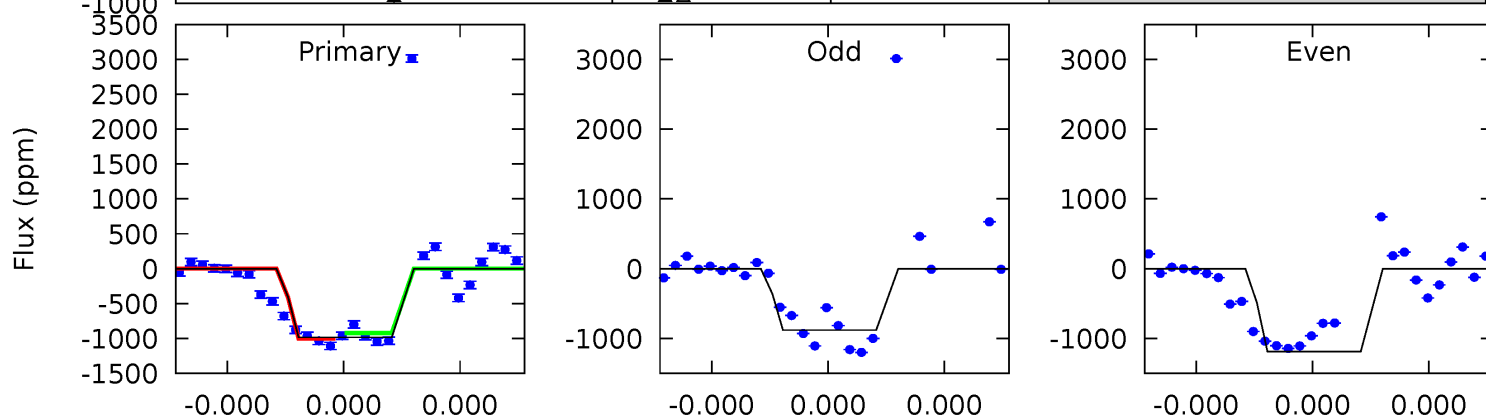
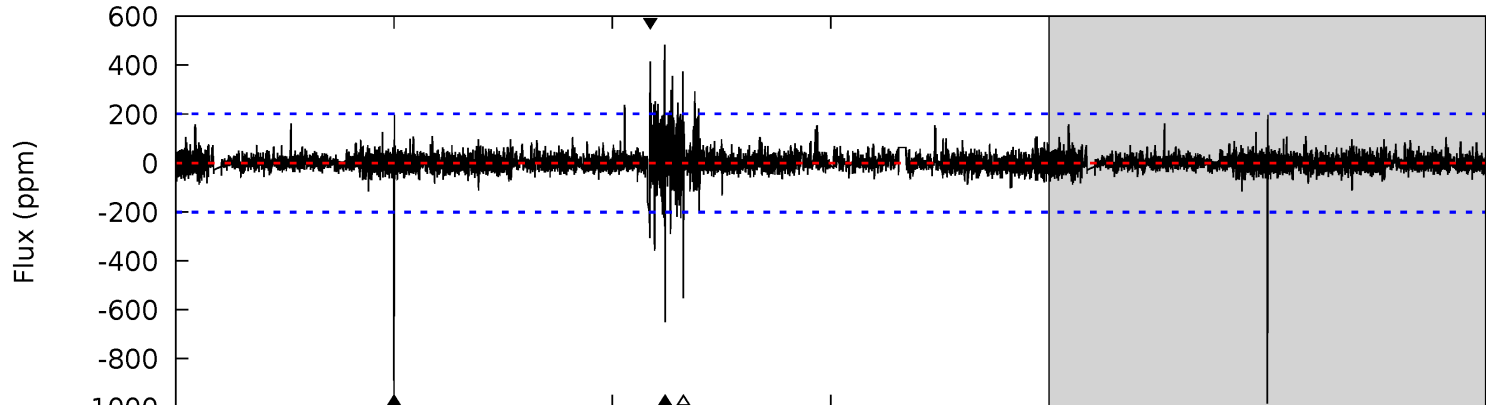
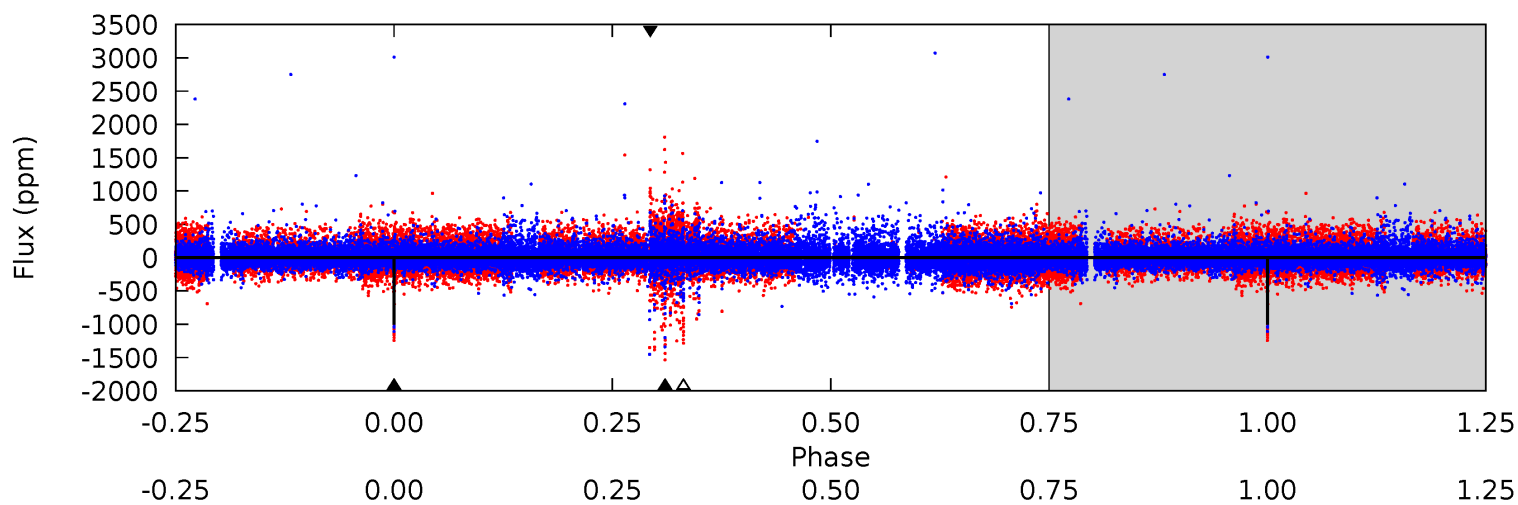
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.57	12.7	9.86	49.9	5.59	3.51	2.77	-3.29	-43.3	2.87	-37.1	0.30	1.11	0.80	0.08



Alt Model-Shift Uniqueness Test

004671547-04, P = 557.917922 Days, E = 280.184623 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.5	18.2	15.5	11.6	5.63	3.56	1.16	12.1	16.0	2.73	6.61	4.00	1.22	0.33	1.15



Stellar Parameters For KIC 004671547

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4166^{+150}_{-167}	$4.653^{+0.028}_{-0.035}$	$0.440^{+0.050}_{-0.300}$	$0.652^{+0.036}_{-0.045}$	$0.702^{+0.030}_{-0.064}$	$3.563^{+0.474}_{-0.462}$
	+4%/-4%	+1%/-1%	+11%/-68%	+6%/-7%	+4%/-9%	+13%/-13%
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 004671547-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1295 ± 102	$2.25^{+0.83}_{-0.76}$	192^{+7}_{-8}	4390^{+810}_{-518}	$197658^{+237171}_{-92756}$
Alt.	-650 ± 36	$2.28^{+0.80}_{-0.75}$	191^{+8}_{-8}	3846^{+615}_{-377}	$96320^{+115529}_{-43614}$

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

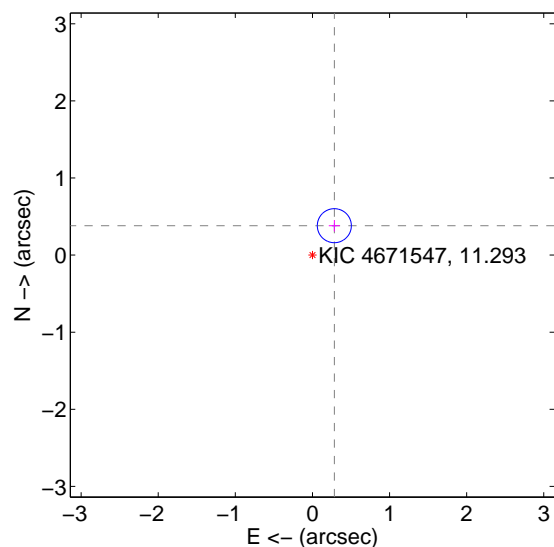
Supplemental centroid analysis for 004671547-04. **Kepler magnitude: 11.29.** Transit SNR 6.98

There are 1 quarters with good PRF difference image offsets

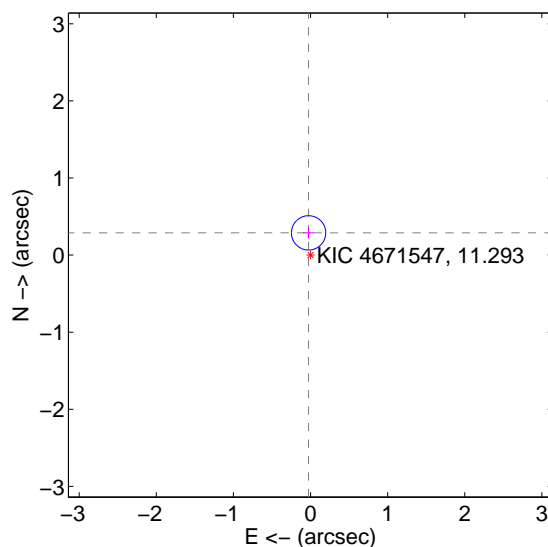
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.476 \pm 0.074	6.46	-0.284 \pm 0.072	0.381 \pm 0.074
PRF-fit source offset from KIC position	0.289 \pm 0.074	3.90	0.025 \pm 0.072	0.288 \pm 0.074
photometric centroid source offset	0.81 \pm 0.60	1.35	-0.21 \pm 0.73	0.78 \pm 0.59

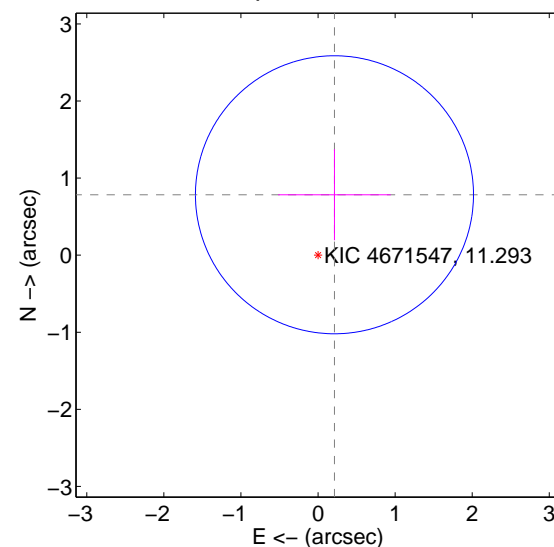
offset from difference PRF-fit to OOT PRF-fit



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.

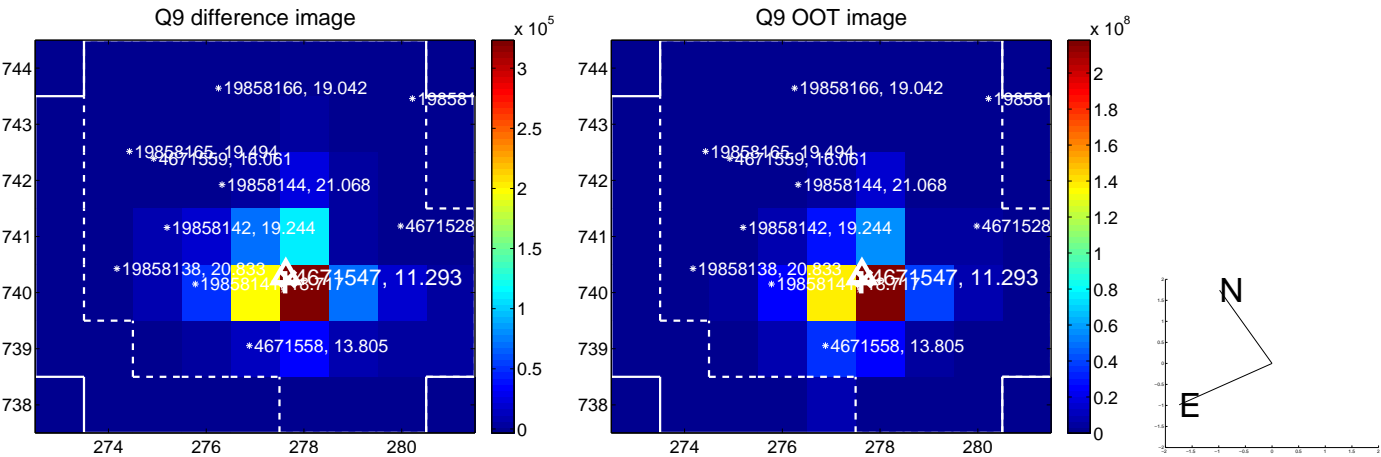
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



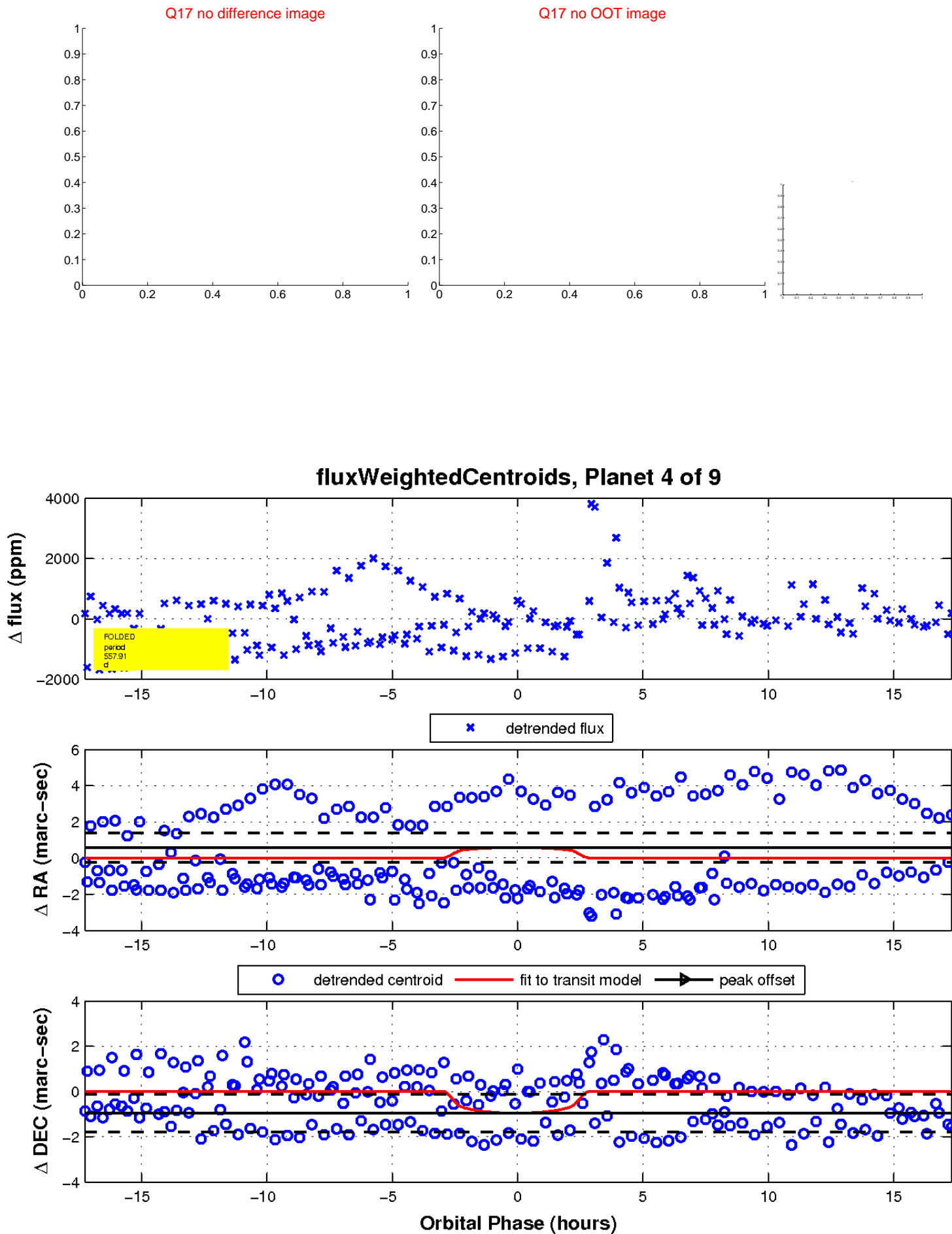
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



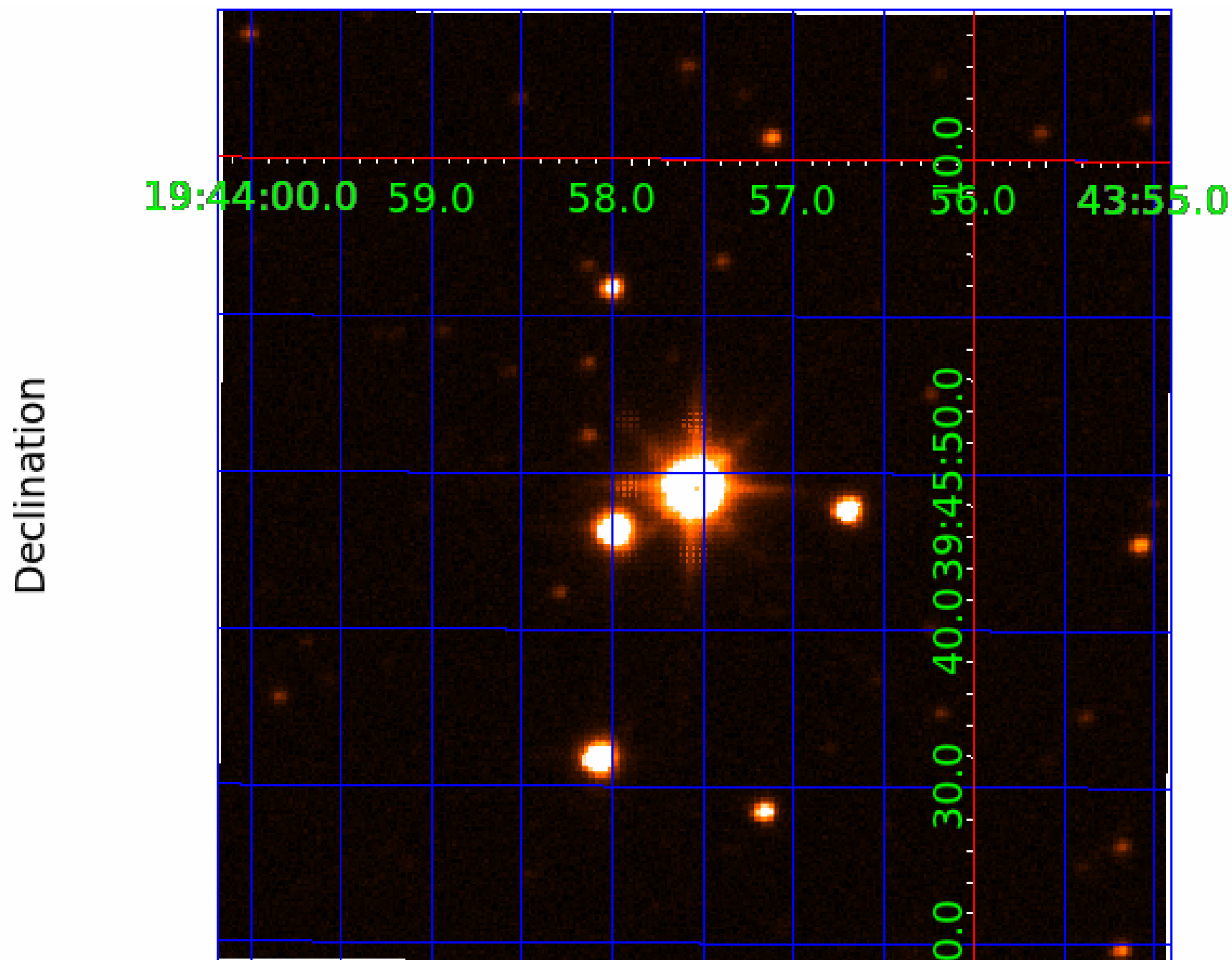
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004671547

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})
004671547-01	OBS	No	281.841230	286.743170	269.2	2.602	18.5	2.4	0.65	4166	1.10	0.21
004671547-03	OBS	No	296.361543	240.748806	137.9	15.000	14.2	-1.0	0.65	4166	0.73	0.19
004671547-04	OBS	No	557.906833	280.189324	867.8	5.776	13.5	7.0	0.65	4166	2.29	0.08
004671547-05	OBS	No	426.509156	189.433089	451.5	3.125	16.6	4.0	0.65	4166	1.66	0.12
004671547-06	OBS	No	283.282460	362.664934	509.4	4.842	13.1	4.4	0.65	4166	1.55	0.20
004671547-07	OBS	No	158.875354	248.596003	681.4	2.108	13.9	8.0	0.65	4166	1.67	0.44
004671547-08	OBS	No	408.474403	240.905682	1088.6	5.872	14.5	7.5	0.65	4166	2.11	0.13
004671547-09	OBS	No	346.096828	340.515662	138.9	12.000	13.5	-1.0	0.65	4166	0.73	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004671547-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004671547-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004671547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-06	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_SATURATED
004671547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-09	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

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

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

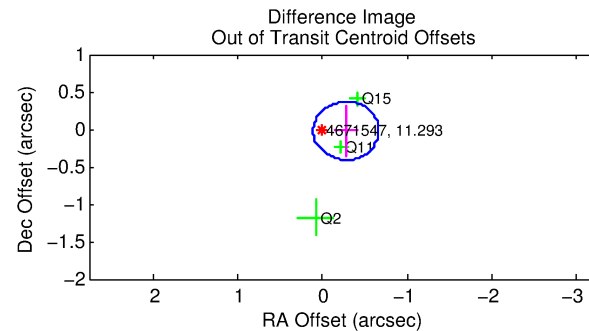
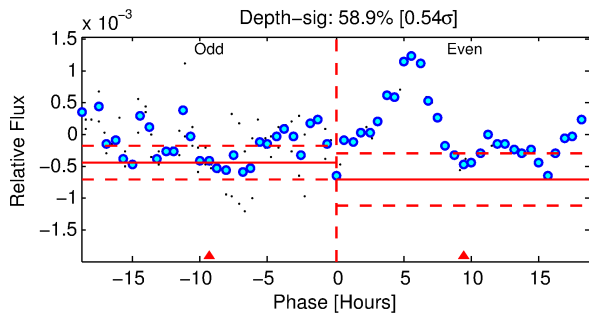
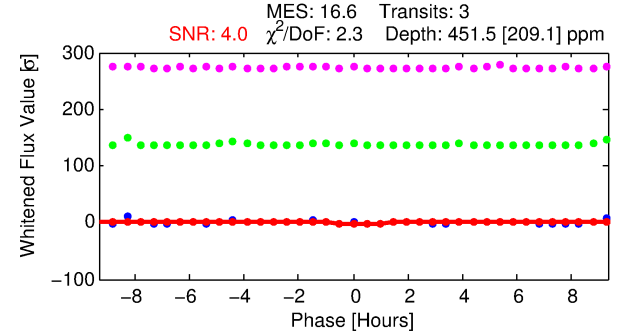
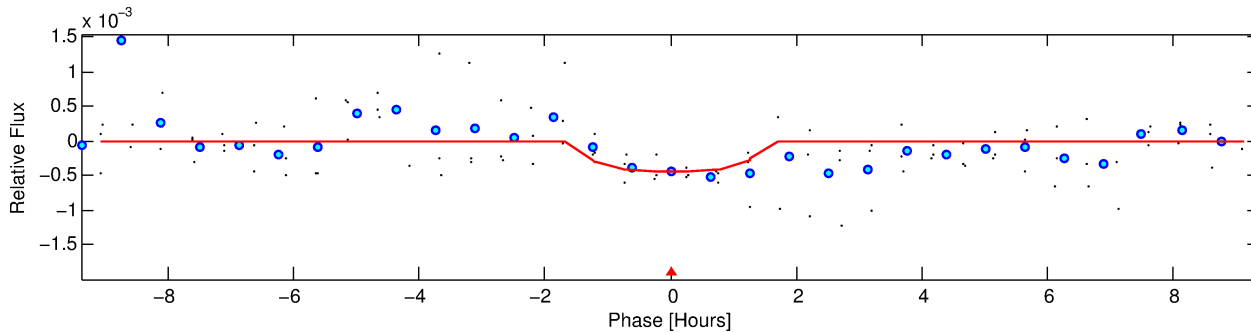
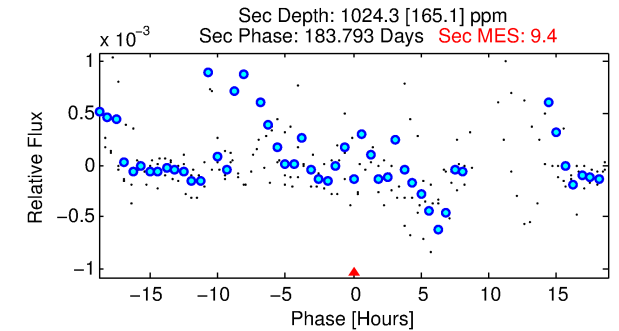
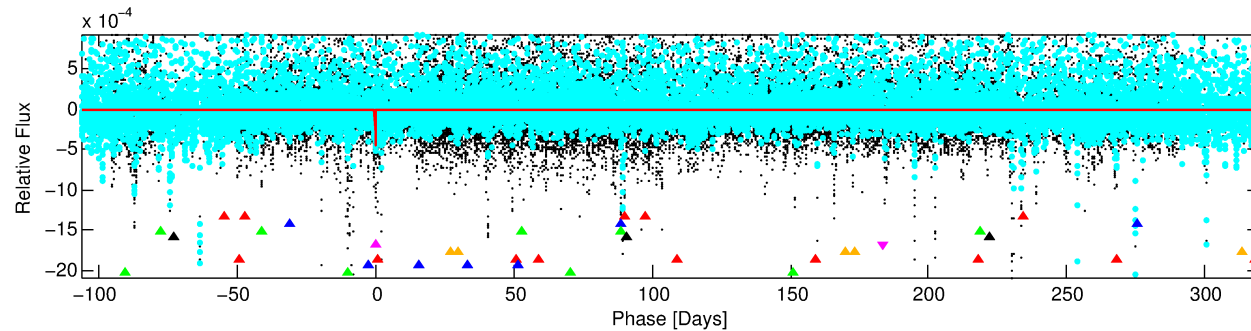
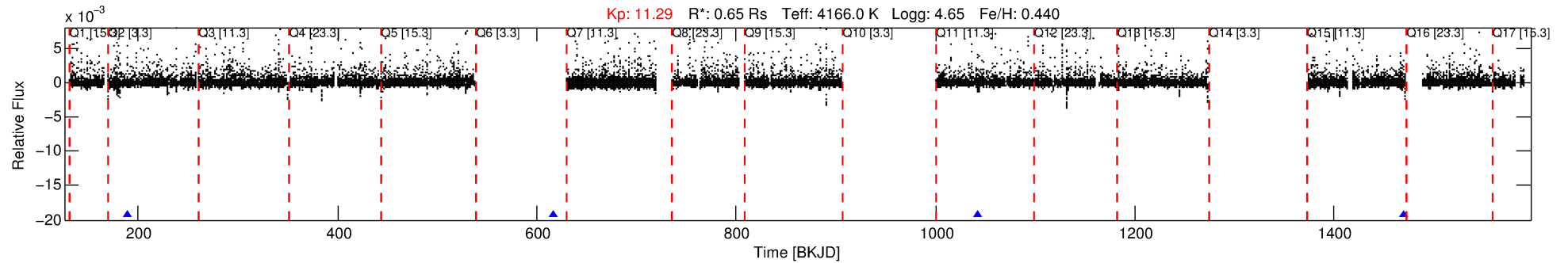
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004671547-05

No Significant Match Found

DV One-Page Summary

KIC: 4671547 Candidate: 5 of 9 Period: 426.509 d



DV Fit Results:

Period = 426.50916 [0.00770] d
Epoch = 189.4331 [0.0157] BKJD
Rp/R* = 0.0233 [0.0350]
a/R* = 575.37 [2765.62]
b = 0.86 [1.46]
Seff = 0.12 [0.02]
Teq = 150 [7] K
Rp = 1.66 [2.49] Re
a = 0.9836 [0.0524] AU
Ag = 199004.33 [599902.52] [0.33σ]
Teffp = 4886 [3687] K [1.28σ]

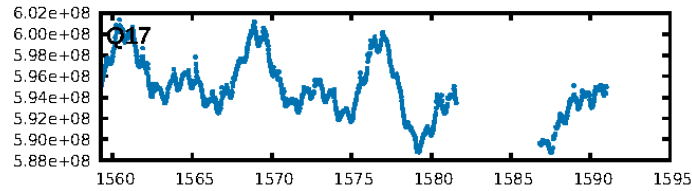
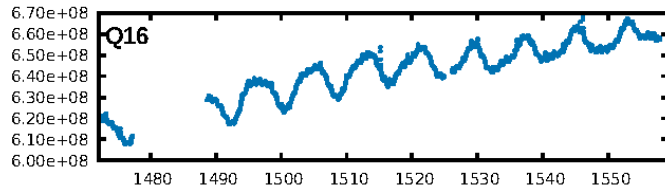
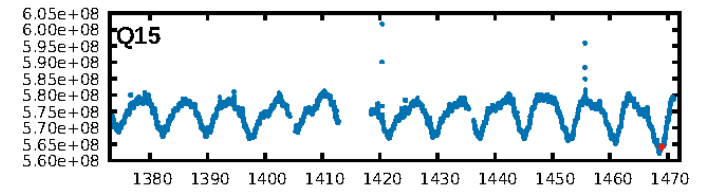
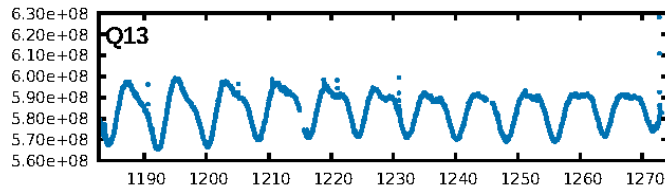
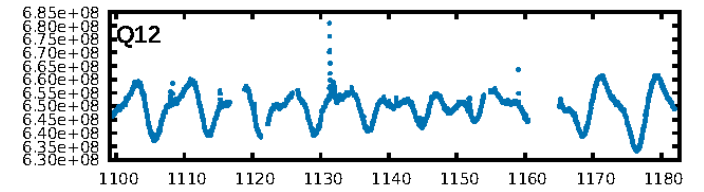
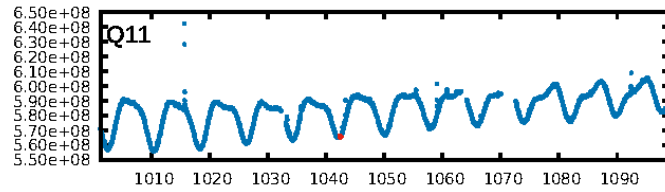
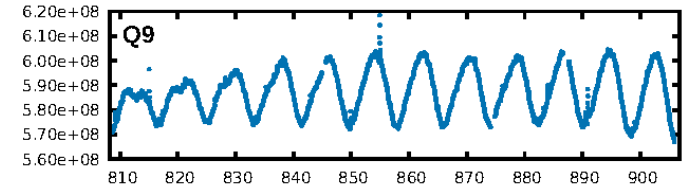
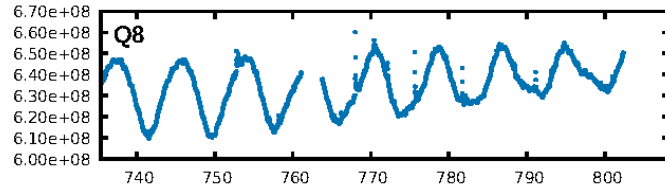
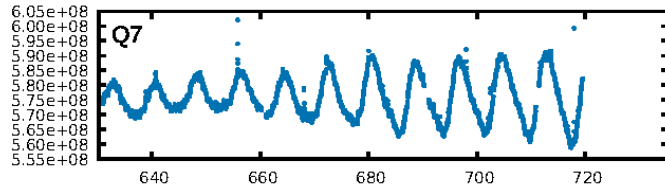
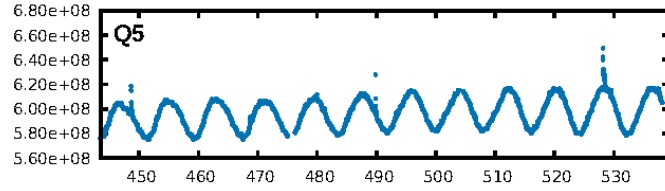
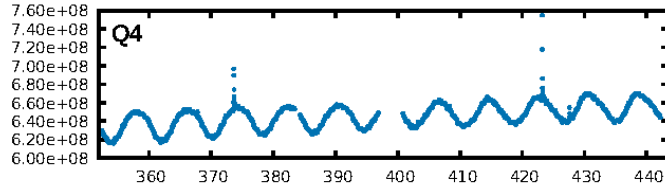
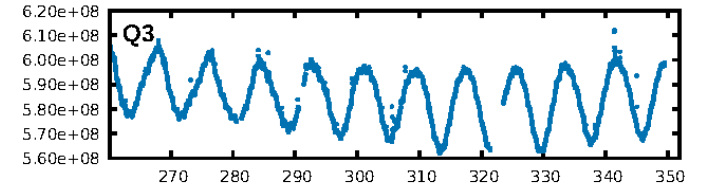
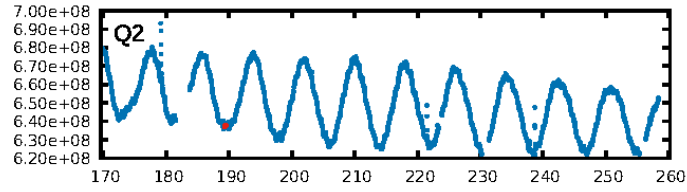
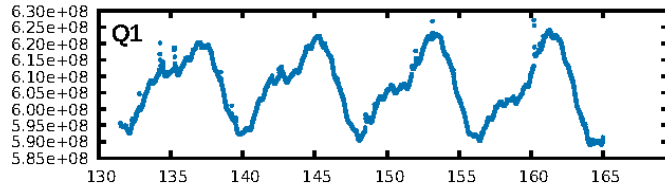
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [65.07σ]
LongPeriod-sig: 100.0% [424.21σ]
ModelChiSquare2-sig: 44.0%
ModelChiSquareGof-sig: 76.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.8325
Centroid-sig: 59.4%
Centroid-so: 0.418 arcsec [0.32σ]
OotOffset-rm: 0.280 arcsec [2.17σ]
KicOffset-rm: 0.113 arcsec [0.44σ]
OotOffset-st: 1/2/0/0 [3]
KicOffset-st: 1/2/0/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

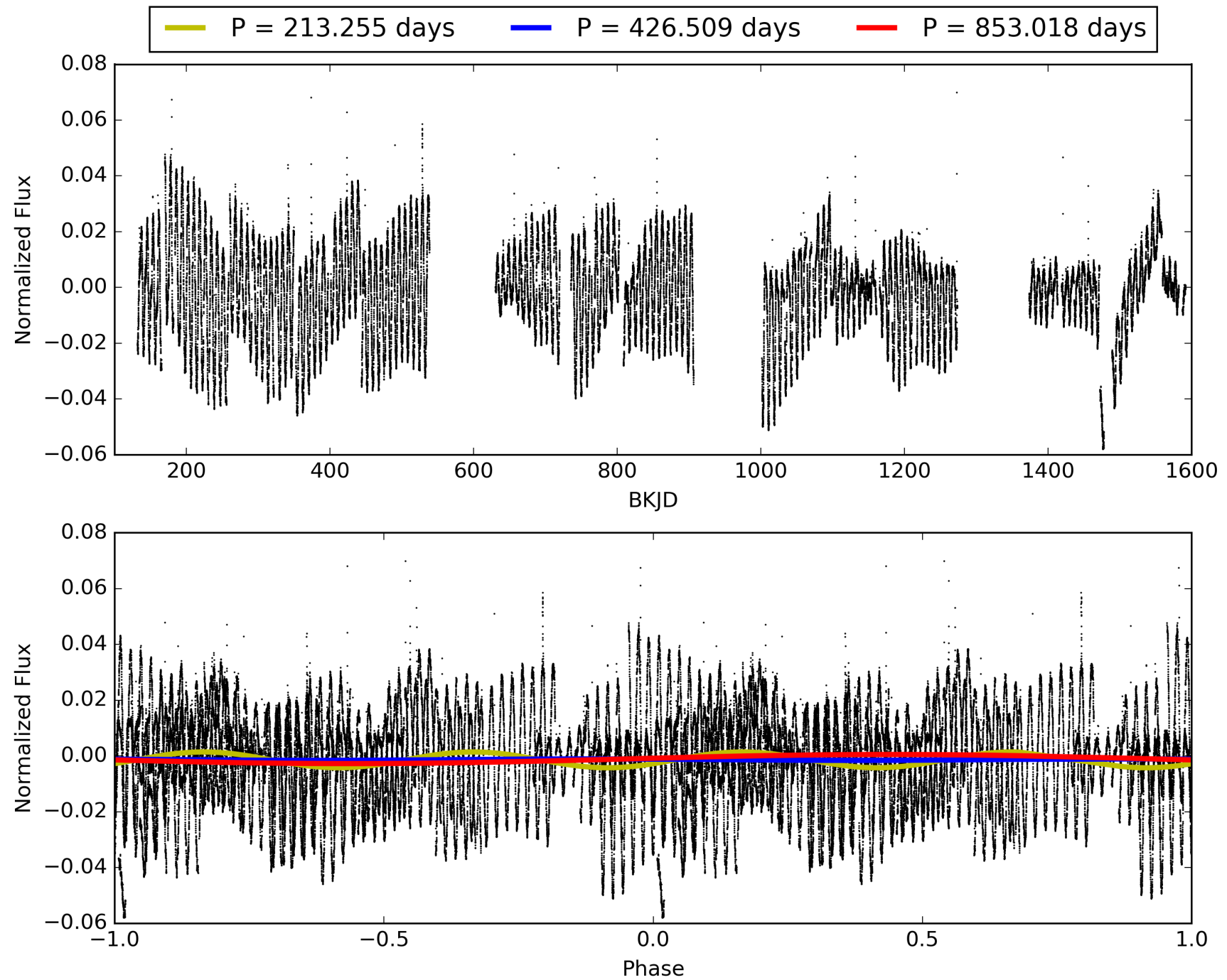
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:59:21 Z

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TCE 004671547-05, PDC Light Curves

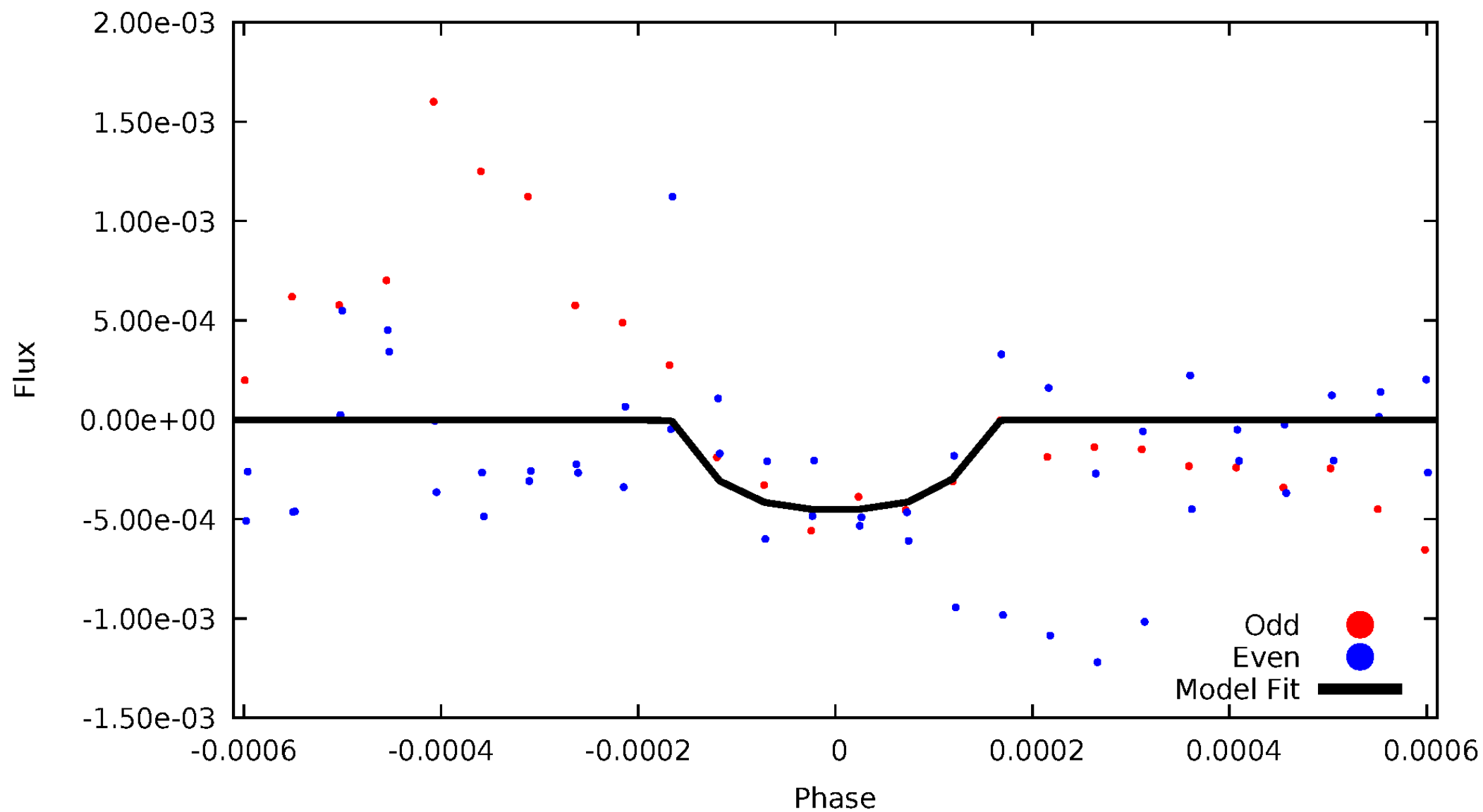


TCE 004671547-05



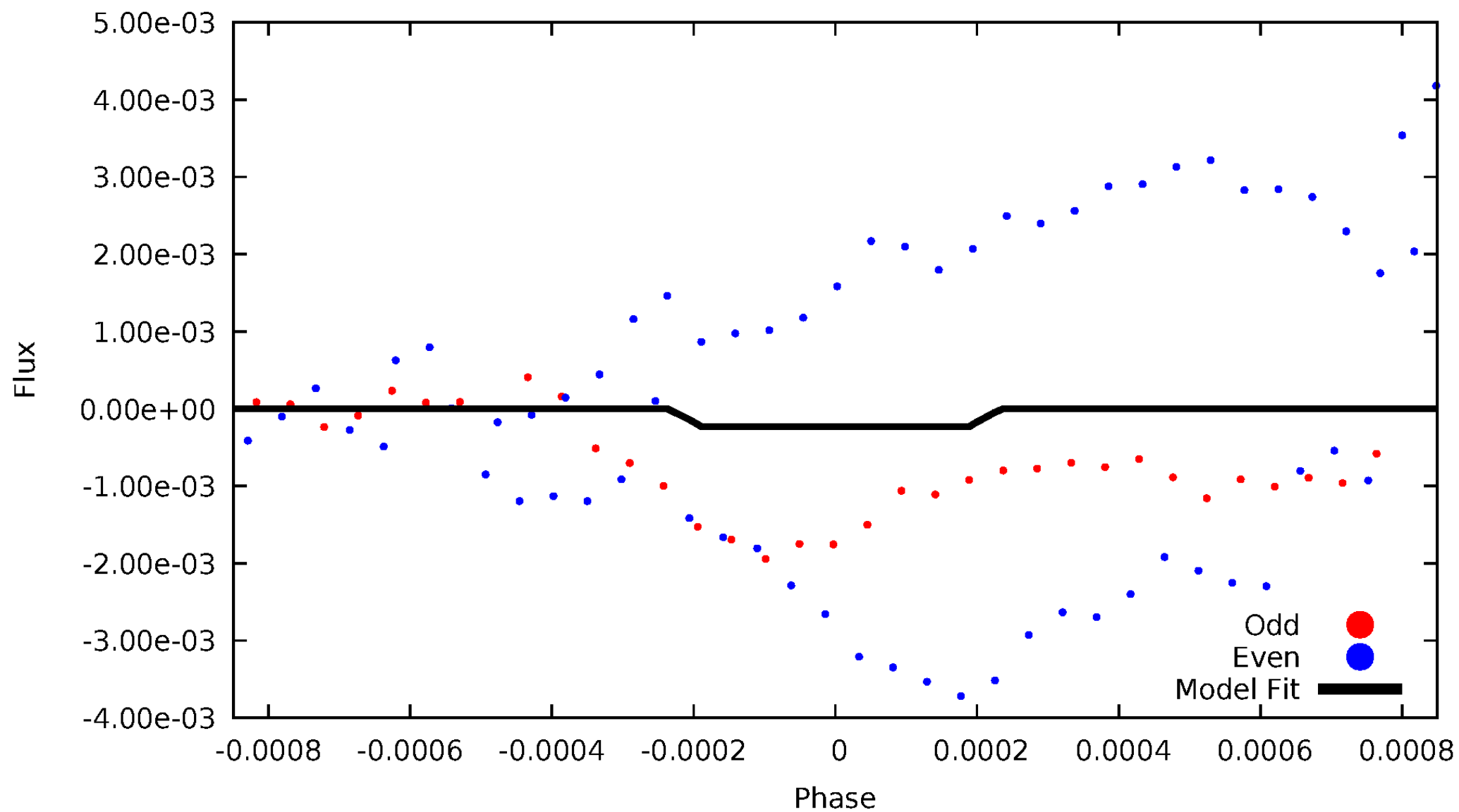
DV Odd/Even

TCE 004671547-05



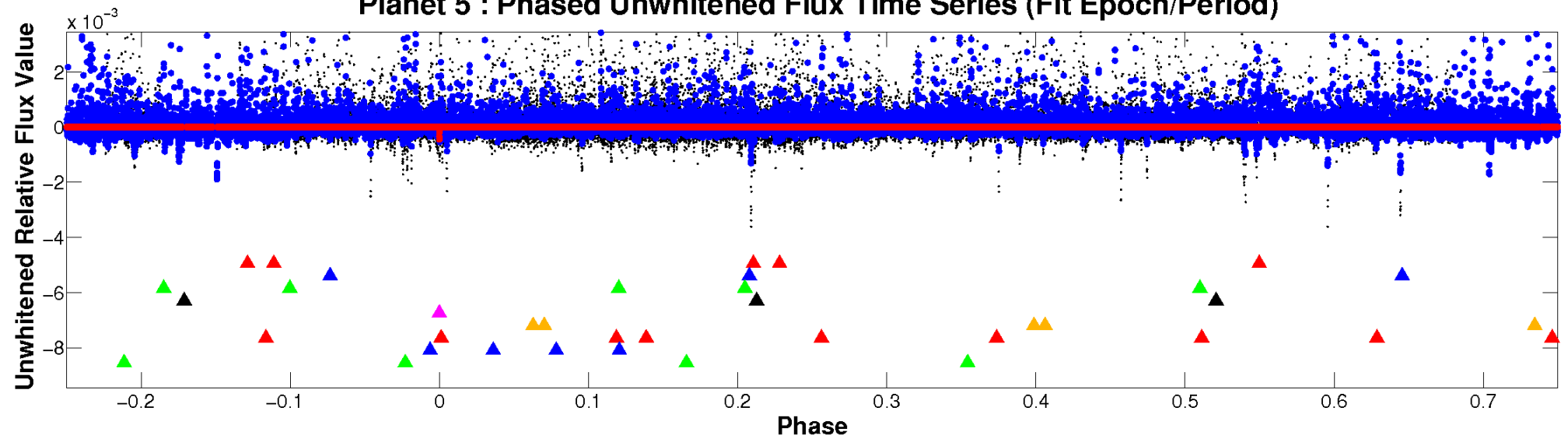
ALT Odd/Even

TCE 004671547-05

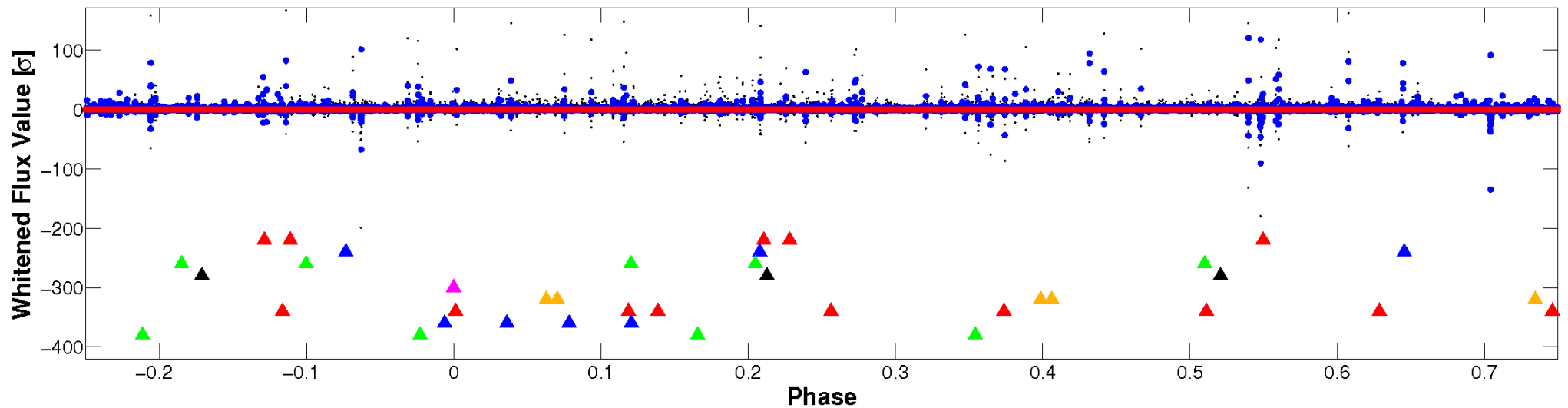


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

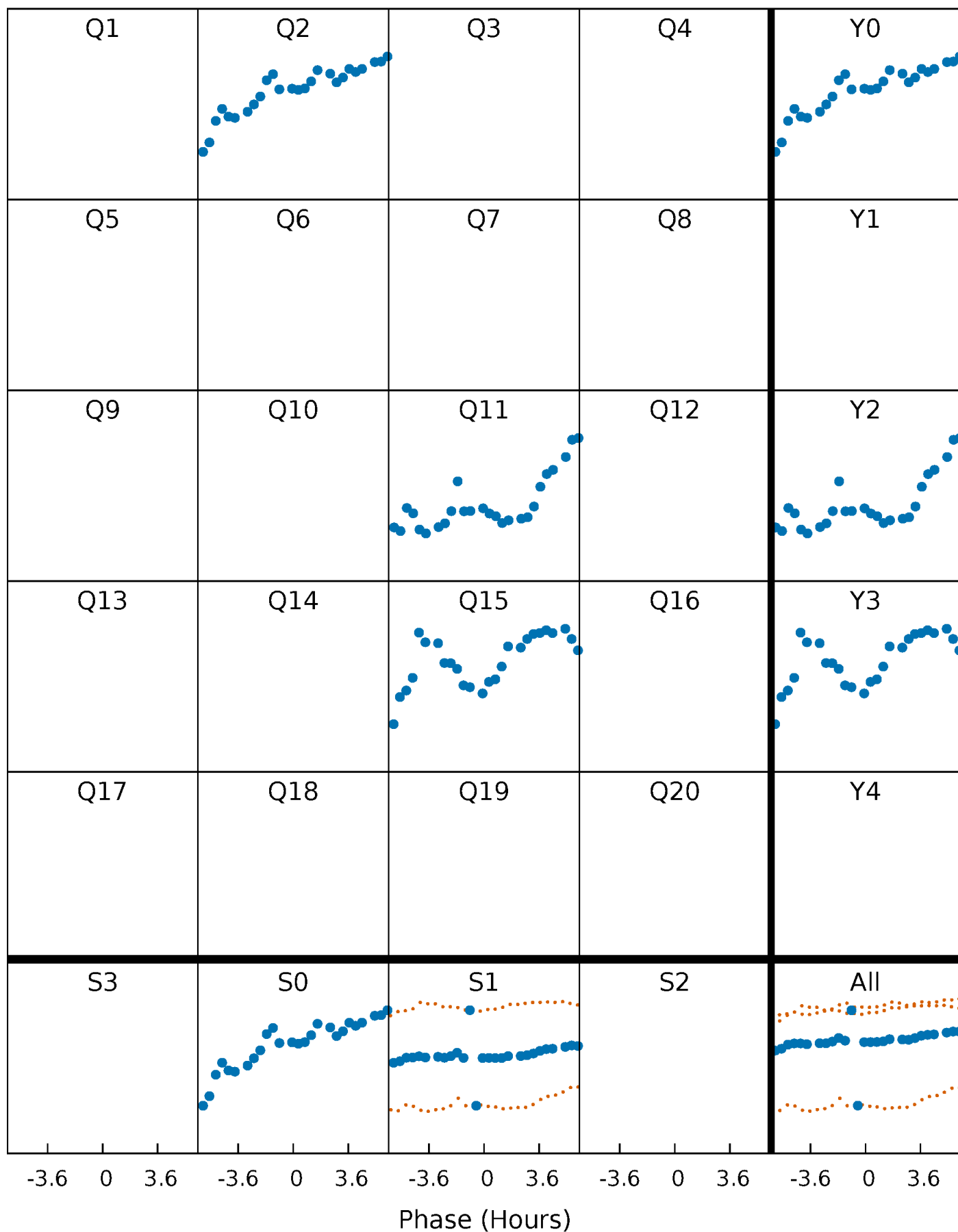


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



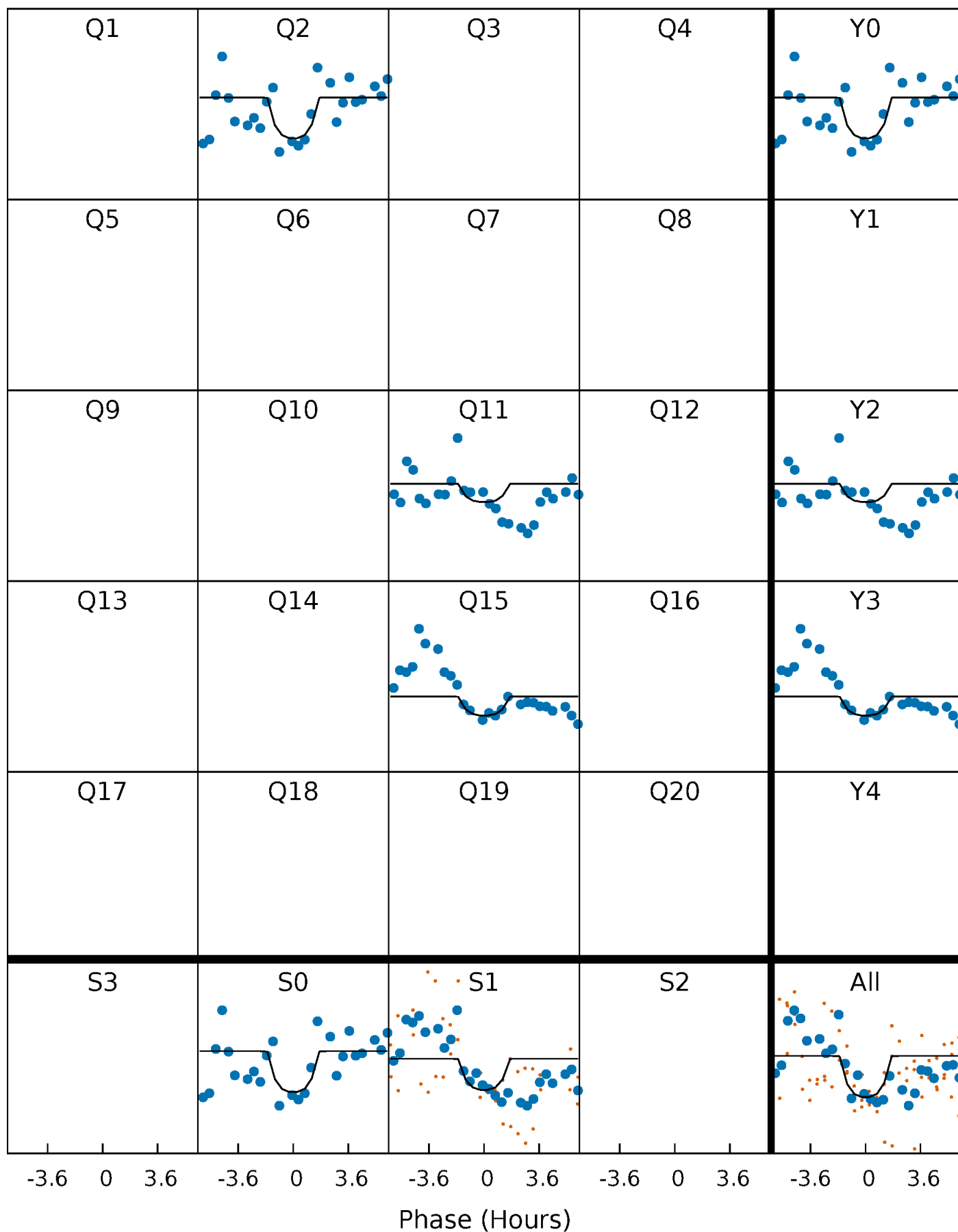
PDC Quarter-Phased Transit Curves

TCE 004671547-05 $P=426.509156$ Days $T_0=189.433089$ (BKJD)



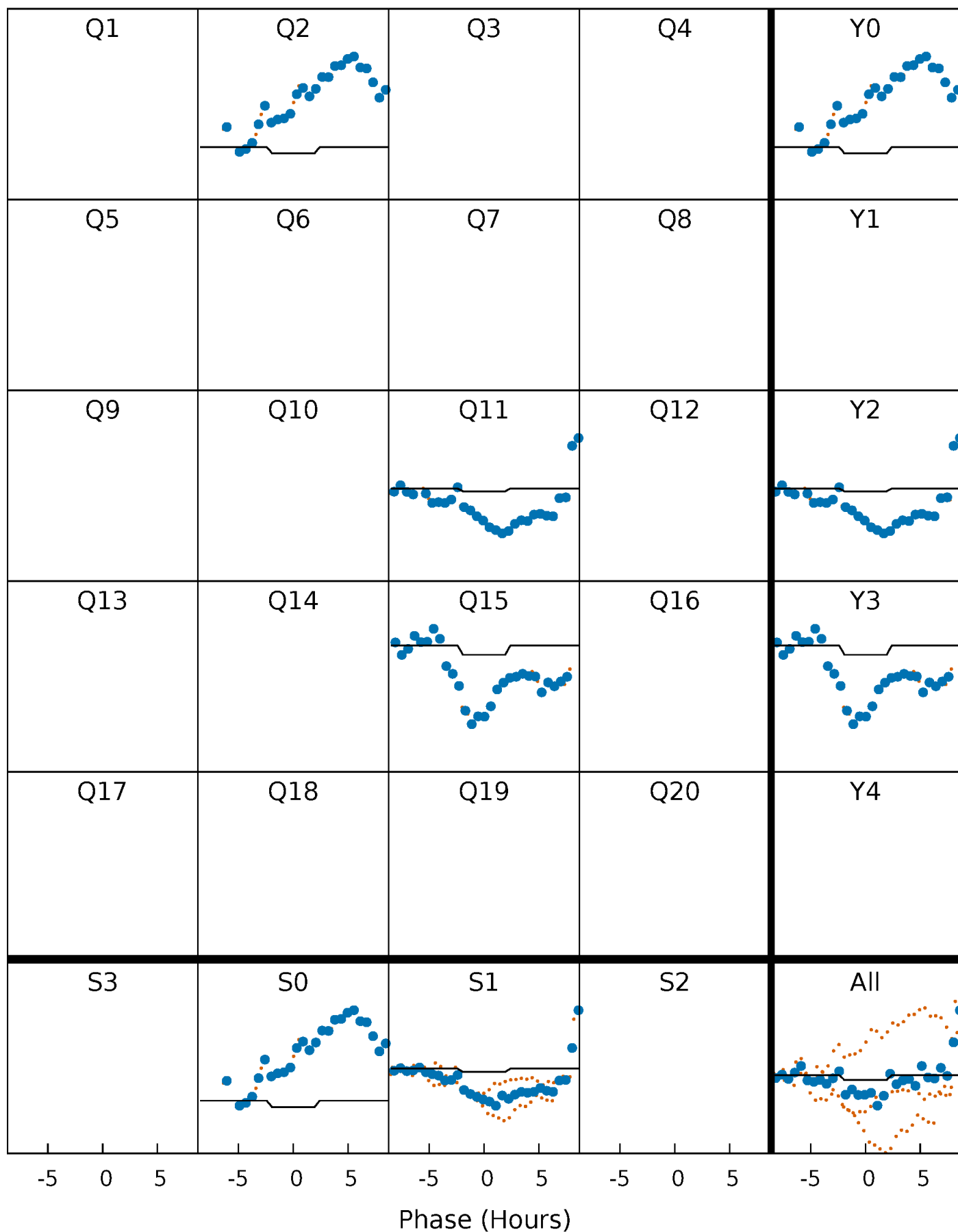
DV Quarter-Phased Transit Curves

TCE 004671547-05 $P=426.509156$ Days $T_0=189.433089$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

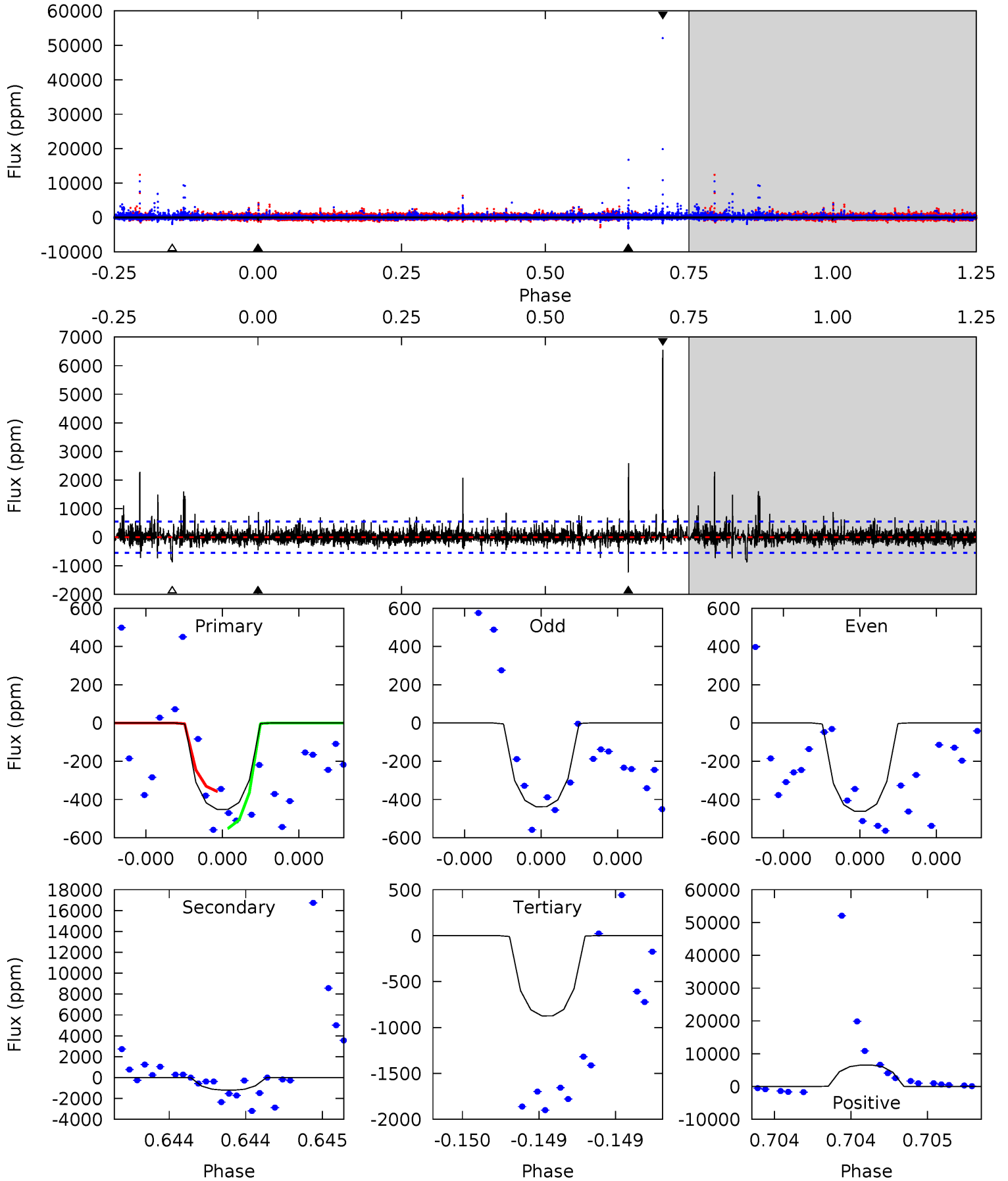
TCE 004671547-05 $P=426.502887$ Days $T_0=189.483468$ (BKJD)



DV Model-Shift Uniqueness Test

004671547-05, P = 426.509156 Days, E = 189.433089 Days

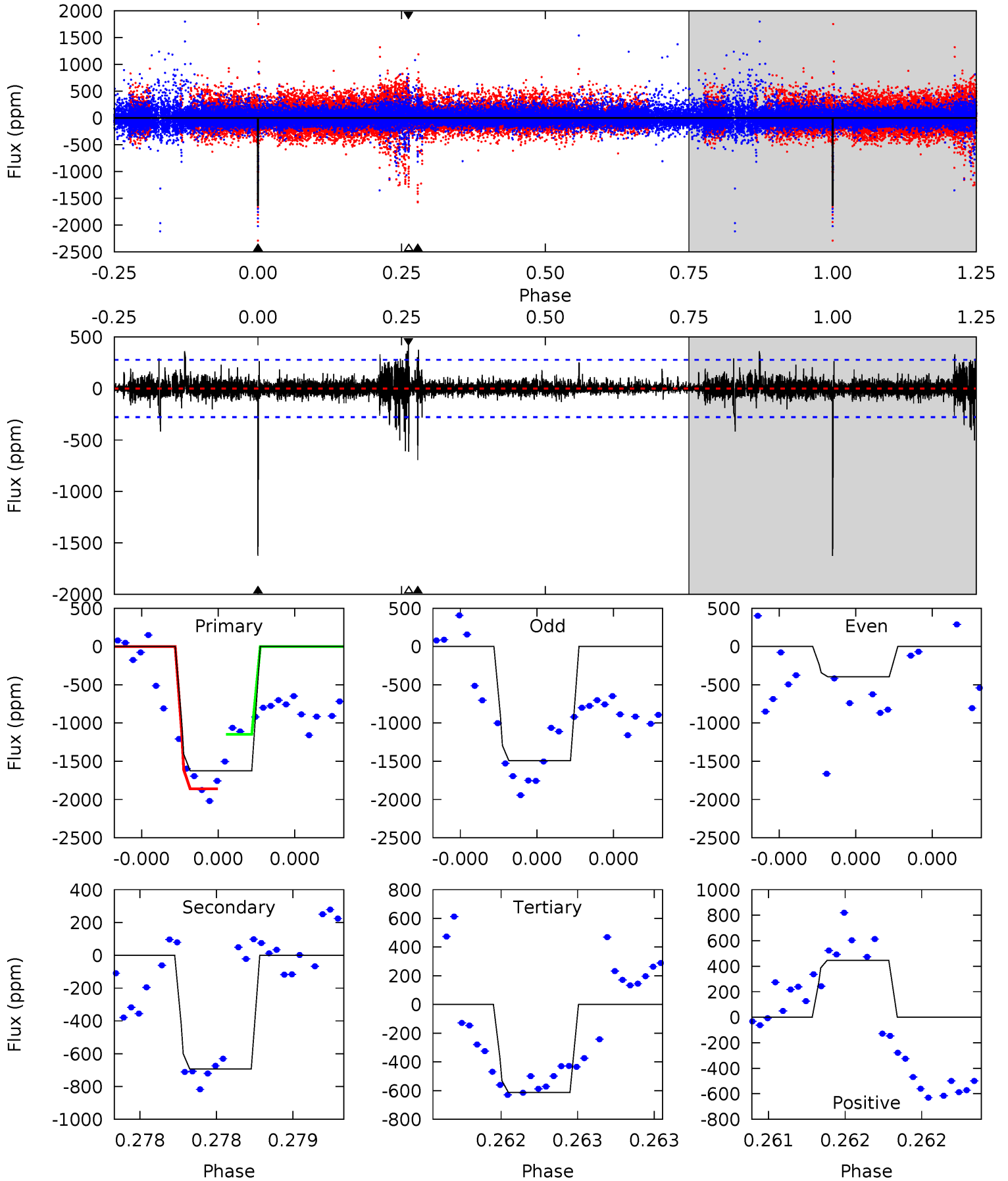
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.68	12.5	9.05	67.7	5.64	3.58	1.97	-4.37	-63.1	3.44	-55.2	0.06	1.00	0.84	0.92



Alt Model-Shift Uniqueness Test

004671547-05, P = 426.502887 Days, E = 189.483468 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.7	13.9	12.3	8.98	5.60	3.52	1.08	20.3	23.7	1.61	4.94	11.5	0.62	0.22	6.92



Stellar Parameters For KIC 004671547

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4166^{+150}_{-167}	$4.653^{+0.028}_{-0.035}$	$0.440^{+0.050}_{-0.300}$	$0.652^{+0.036}_{-0.045}$	$0.702^{+0.030}_{-0.064}$	$3.563^{+0.474}_{-0.462}$
	+4%/-4%	+1%/-1%	+11%/-68%	+6%/-7%	+4%/-9%	+13%/-13%
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 004671547-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1207 ± 97	$2.55^{+2.20}_{-1.68}$	209^{+8}_{-9}	4105^{+2542}_{-778}	$99046^{+783544}_{-71264}$
Alt.	-693 ± 50	$2.14^{+2.01}_{-1.44}$	210^{+8}_{-9}	3974^{+2414}_{-790}	$80318^{+697570}_{-59311}$

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

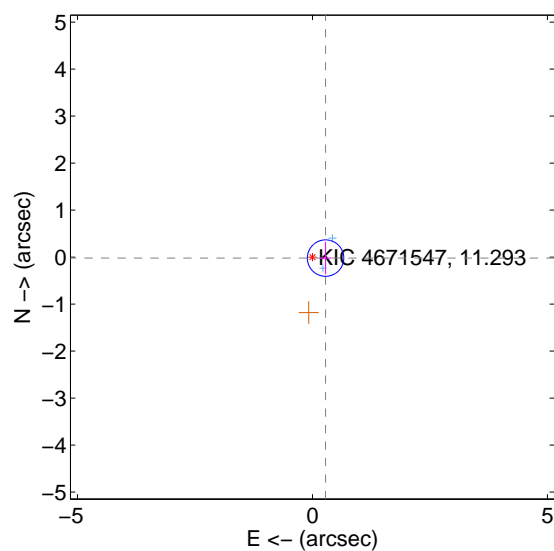
Supplemental centroid analysis for 004671547-05. **Kepler magnitude: 11.29.** Transit SNR 4.00

There are 2 quarters with good PRF difference image offsets

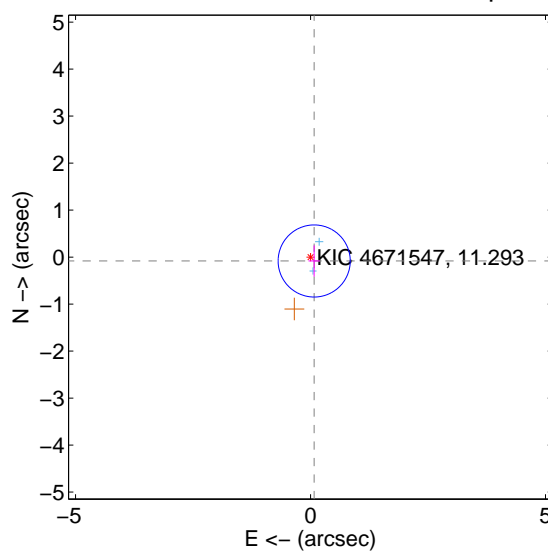
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.280 ± 0.129	2.17	-0.280 ± 0.127	-0.021 ± 0.345
PRF-fit source offset from KIC position	0.113 ± 0.256	0.44	-0.078 ± 0.121	-0.083 ± 0.332
photometric centroid source offset	0.42 ± 1.29	0.32	-0.42 ± 1.29	-0.03 ± 1.23

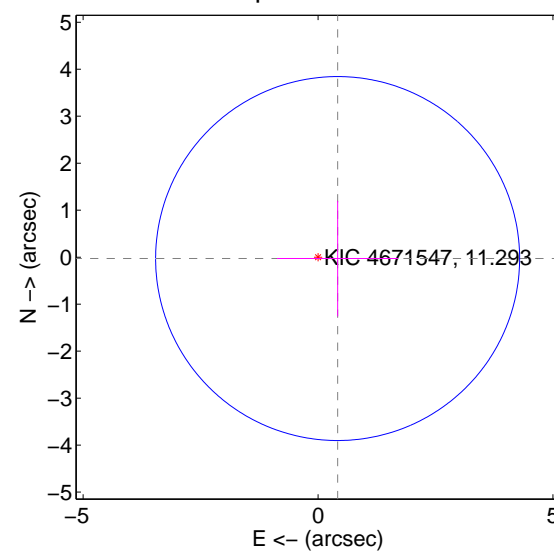
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

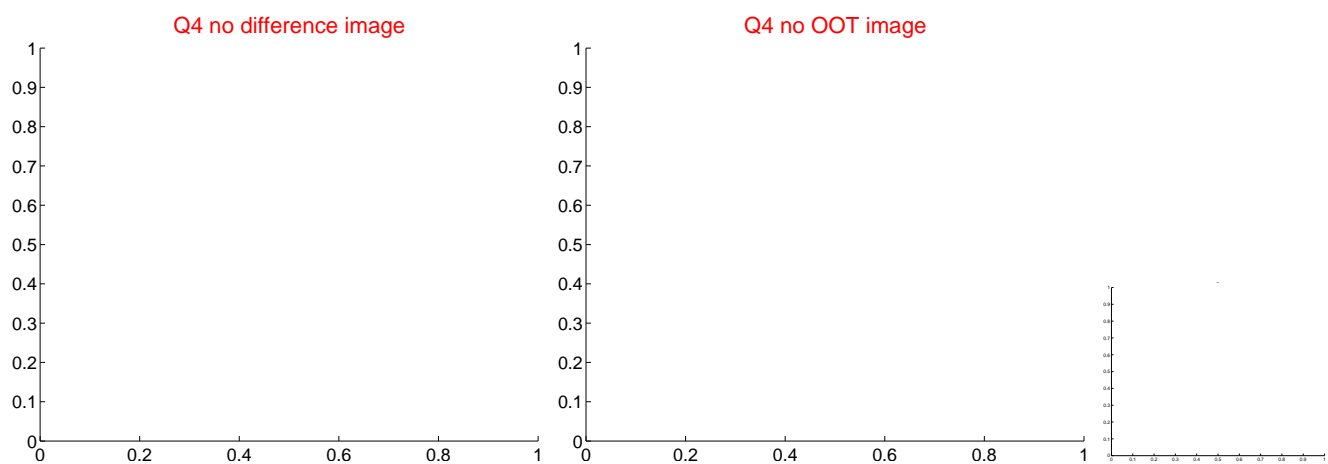
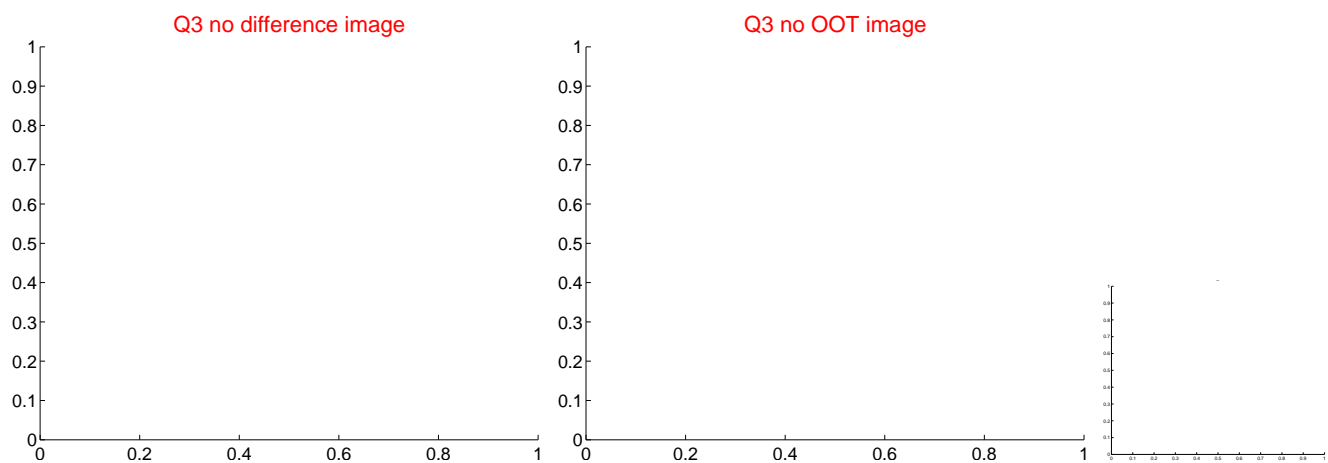
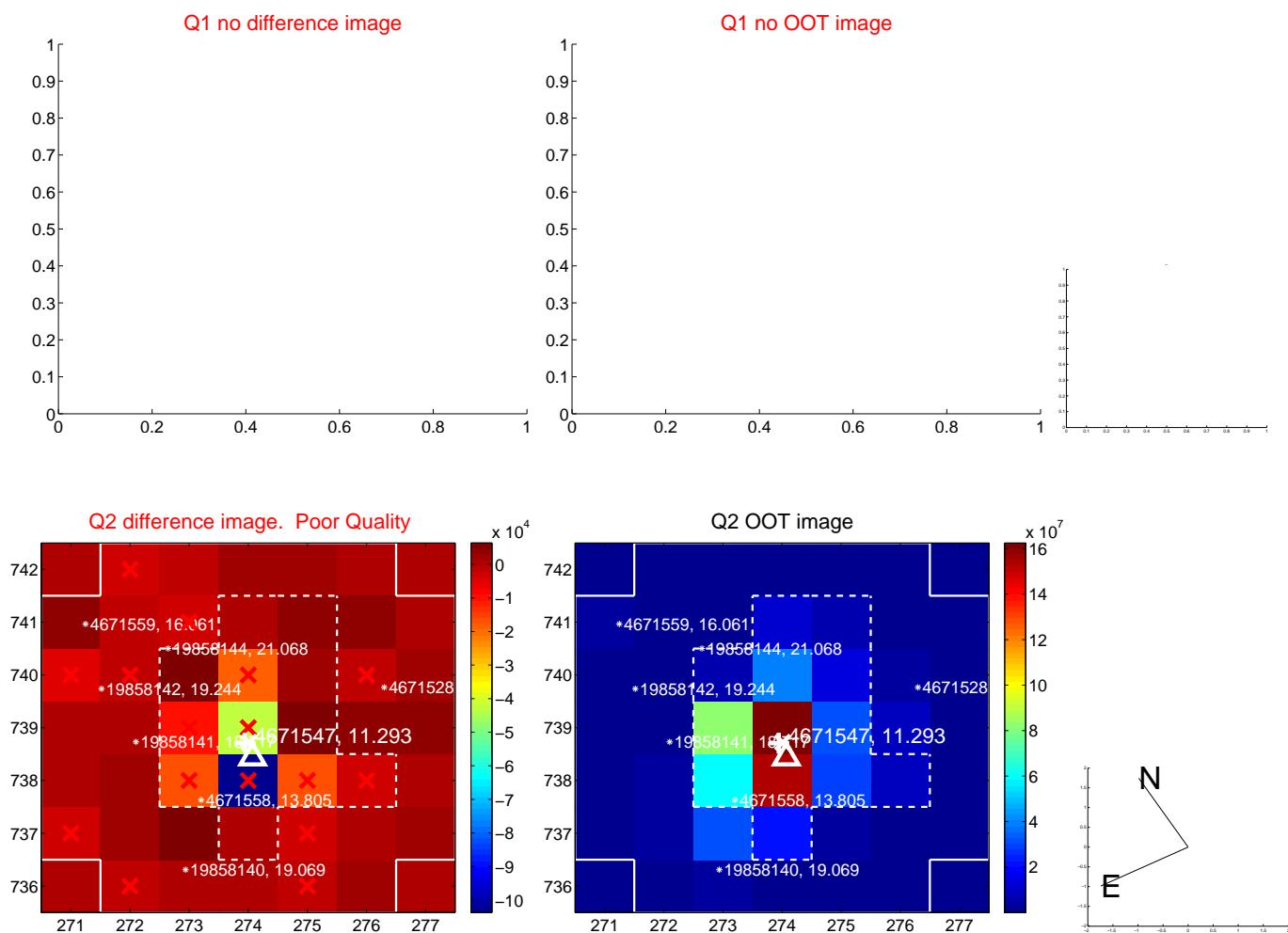


offset from photometric centroids



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.

Q9 no difference image



Q9 no OOT image



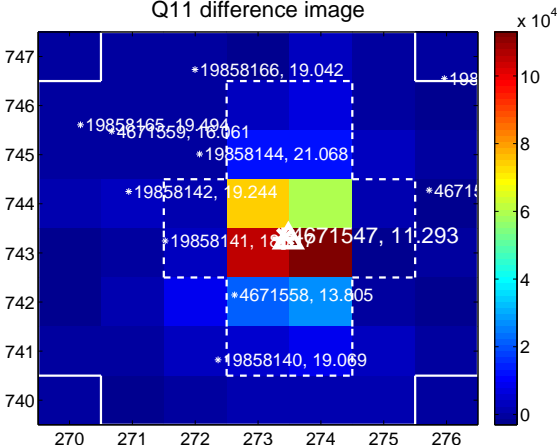
Q10 no difference image



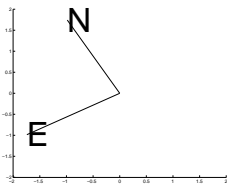
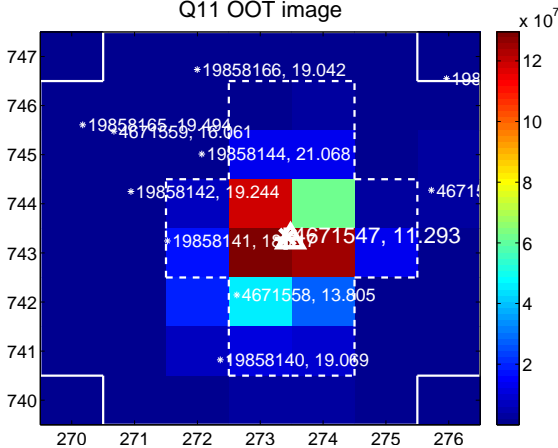
Q10 no OOT image



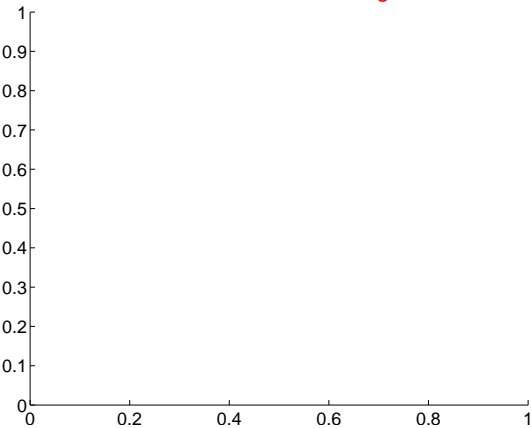
Q11 difference image



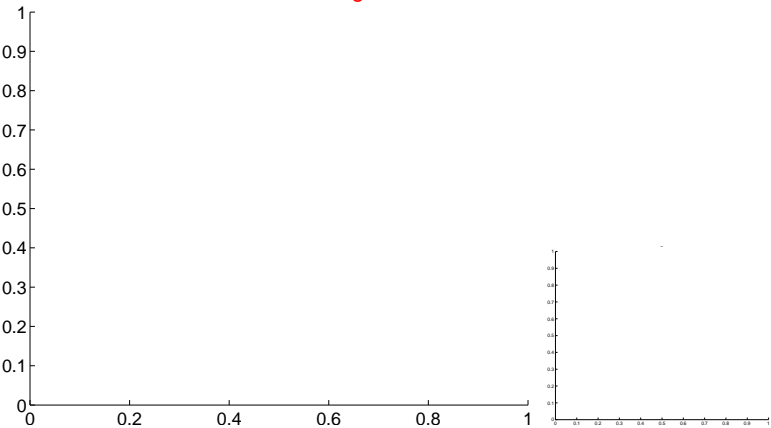
Q11 OOT image



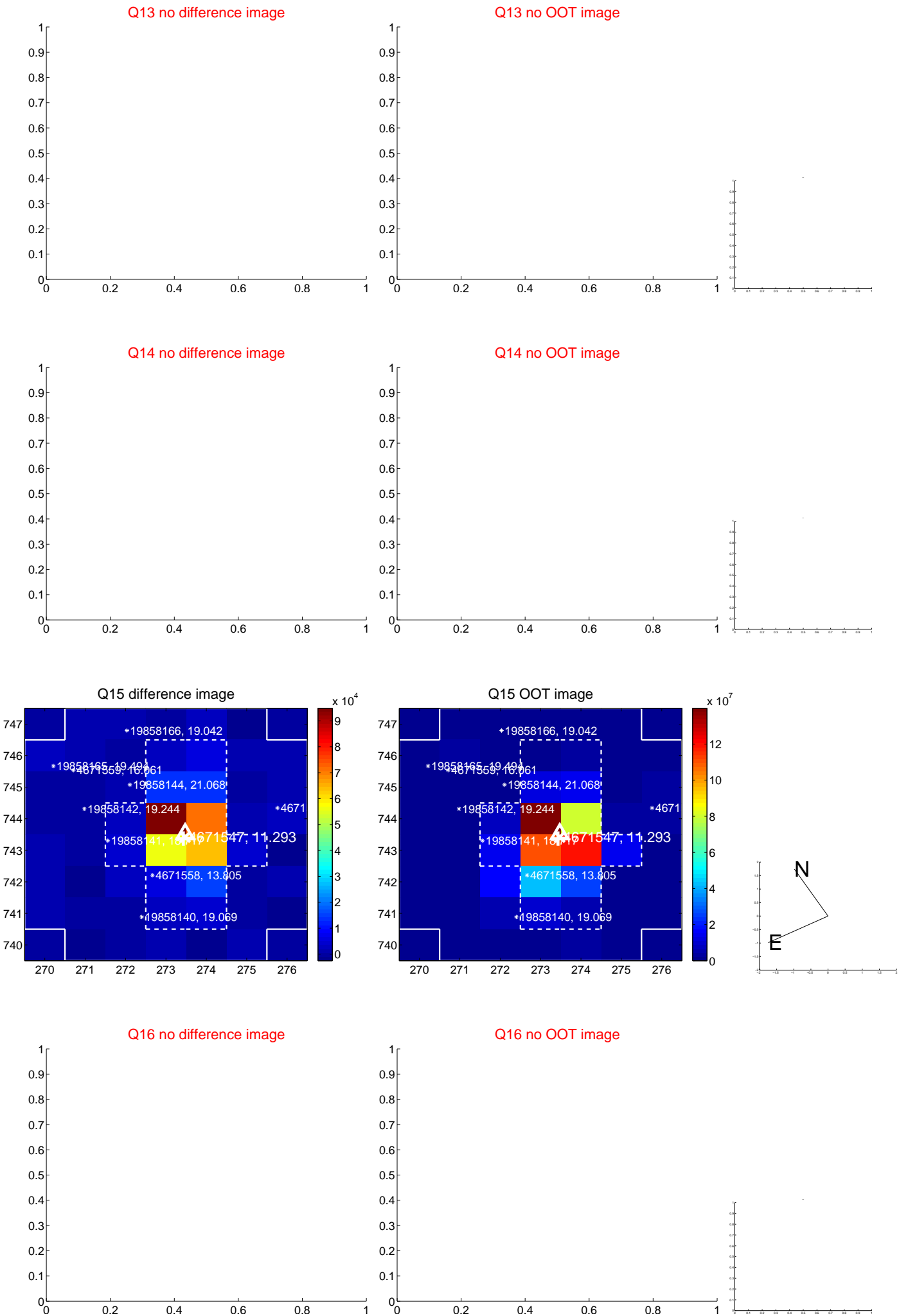
Q12 no difference image



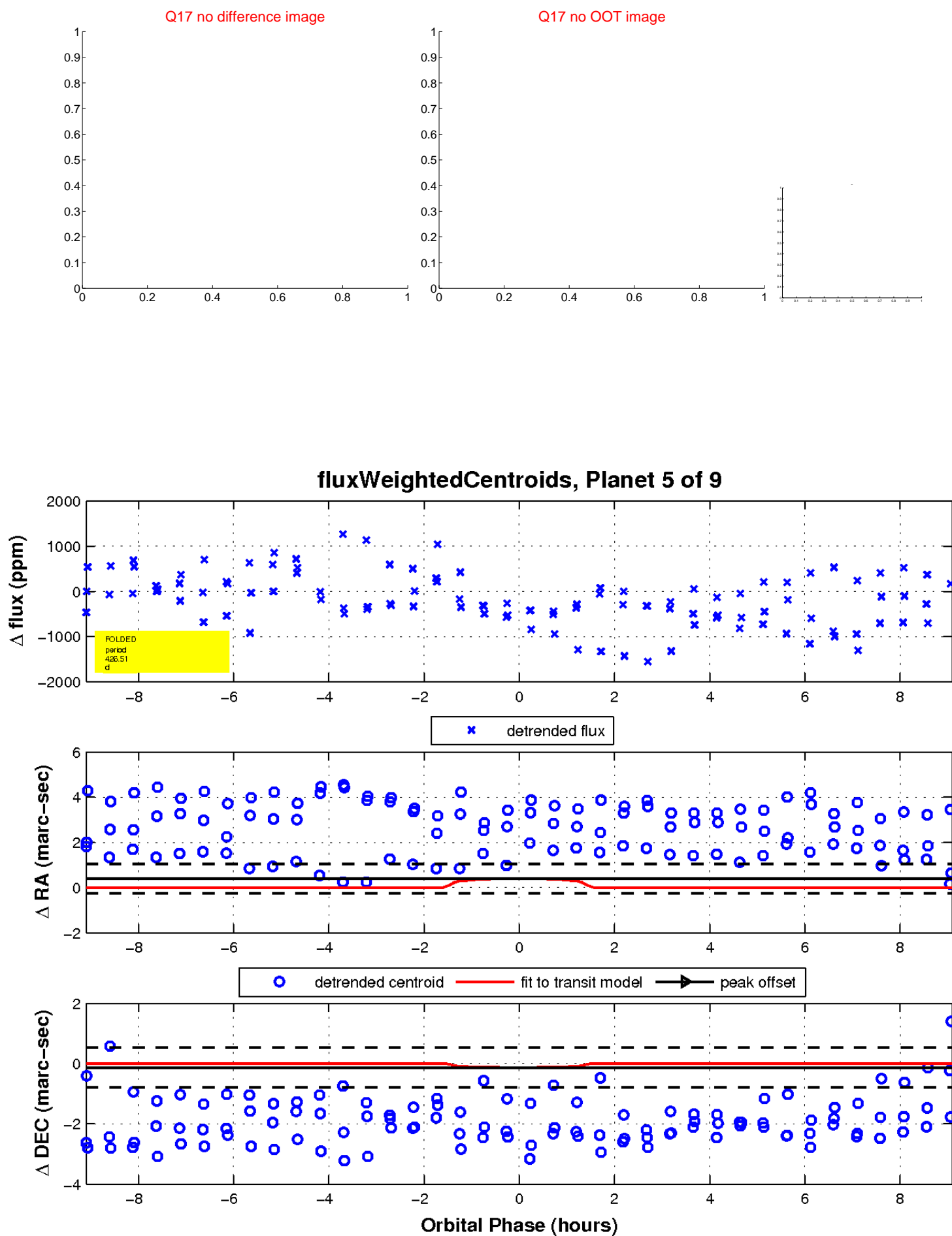
Q12 no OOT image



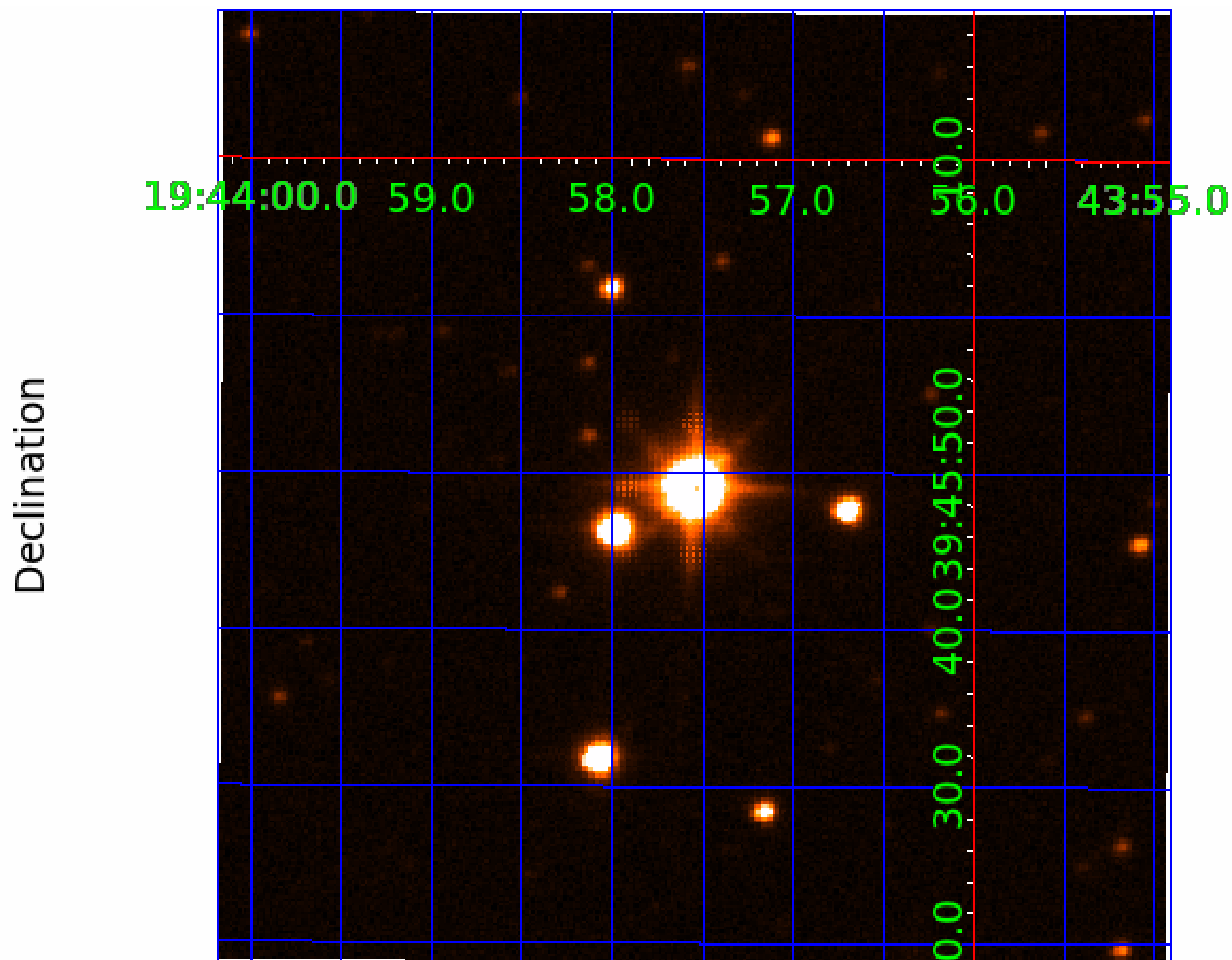
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004671547

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})
004671547-01	OBS	No	281.841230	286.743170	269.2	2.602	18.5	2.4	0.65	4166	1.10	0.21
004671547-03	OBS	No	296.361543	240.748806	137.9	15.000	14.2	-1.0	0.65	4166	0.73	0.19
004671547-04	OBS	No	557.906833	280.189324	867.8	5.776	13.5	7.0	0.65	4166	2.29	0.08
004671547-05	OBS	No	426.509156	189.433089	451.5	3.125	16.6	4.0	0.65	4166	1.66	0.12
004671547-06	OBS	No	283.282460	362.664934	509.4	4.842	13.1	4.4	0.65	4166	1.55	0.20
004671547-07	OBS	No	158.875354	248.596003	681.4	2.108	13.9	8.0	0.65	4166	1.67	0.44
004671547-08	OBS	No	408.474403	240.905682	1088.6	5.872	14.5	7.5	0.65	4166	2.11	0.13
004671547-09	OBS	No	346.096828	340.515662	138.9	12.000	13.5	-1.0	0.65	4166	0.73	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004671547-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004671547-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004671547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-06	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_SATURATED
004671547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-09	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

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

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

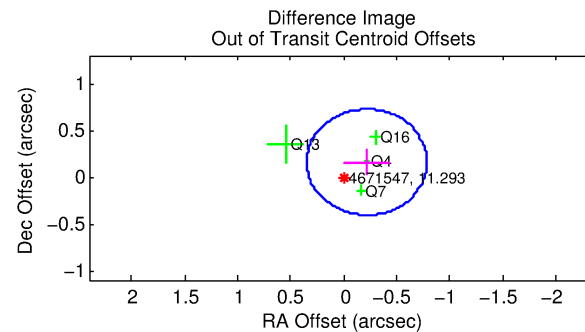
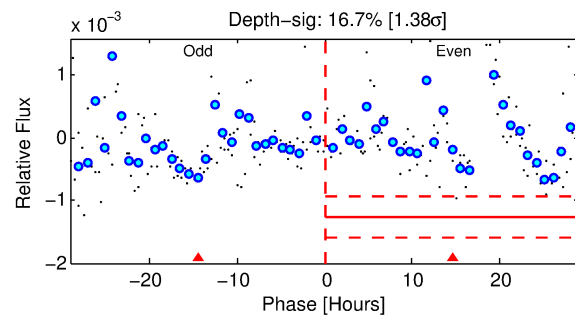
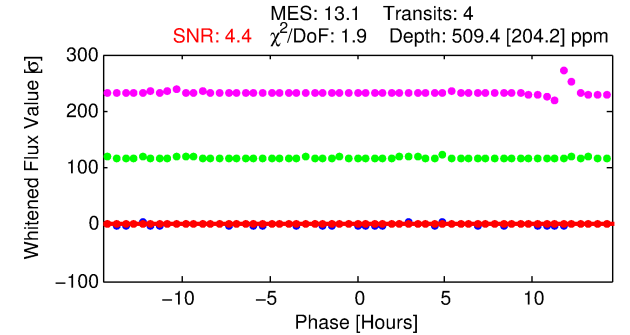
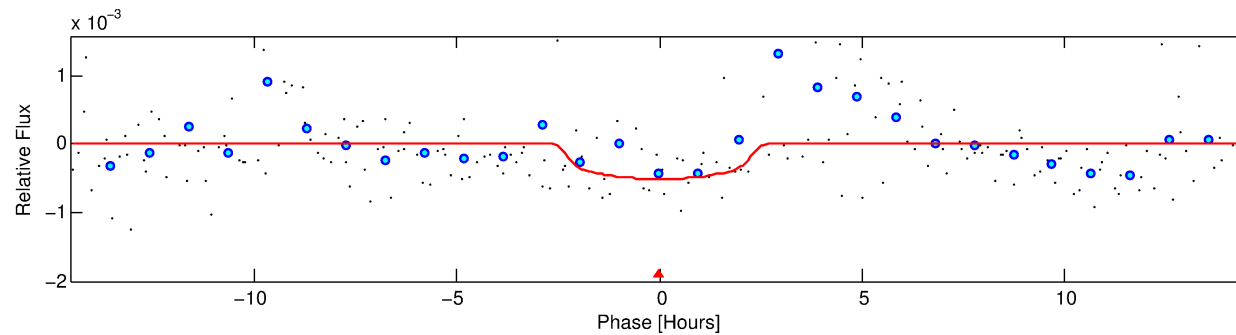
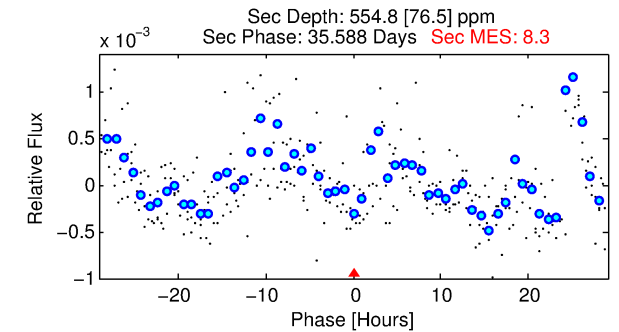
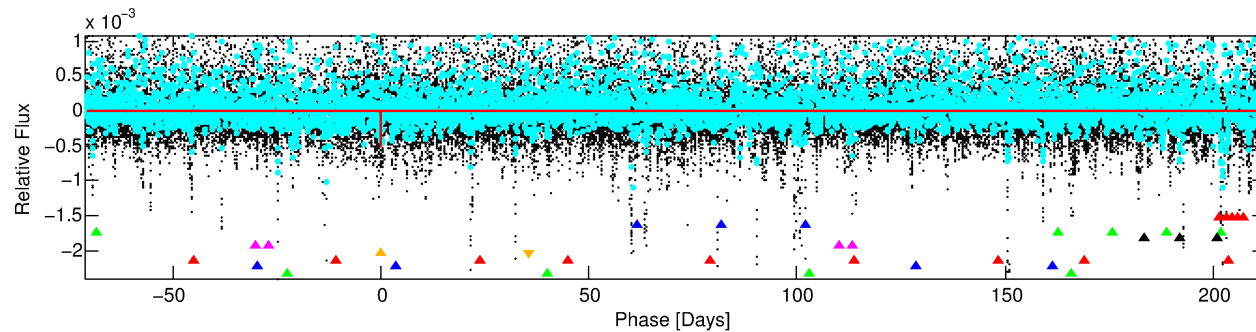
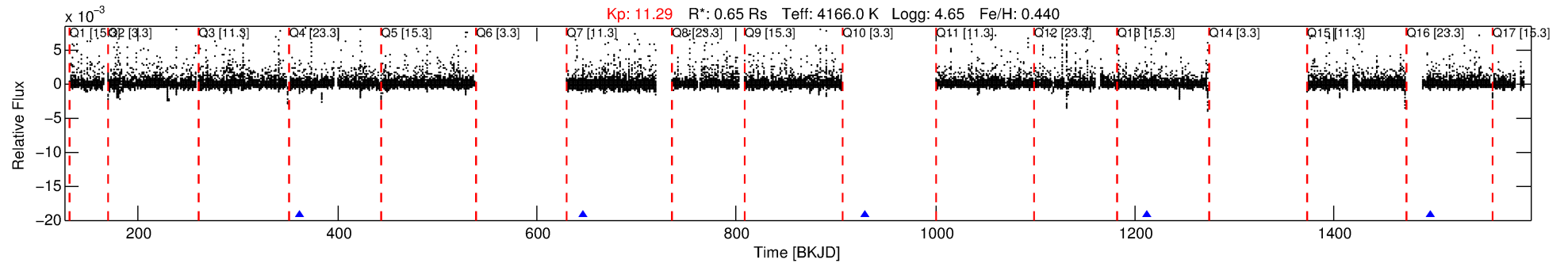
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004671547-06

No Significant Match Found

DV One-Page Summary

KIC: 4671547 Candidate: 6 of 9 Period: 283.282 d



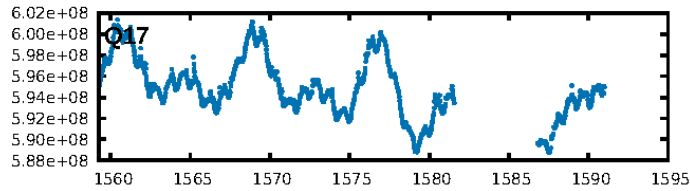
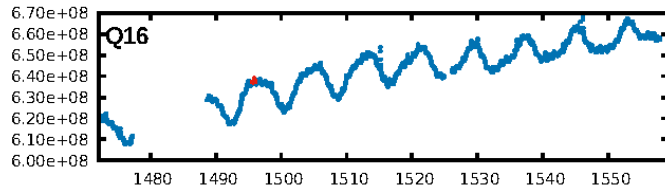
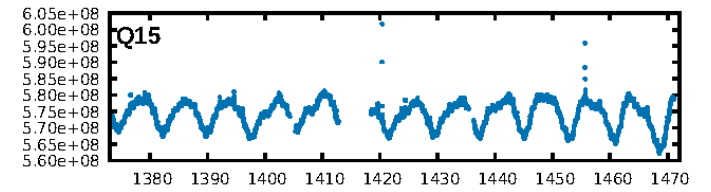
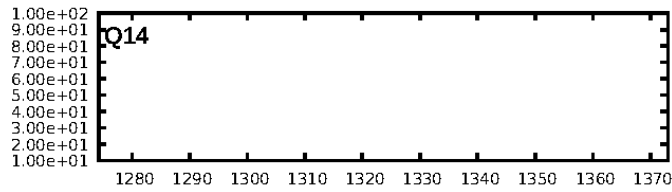
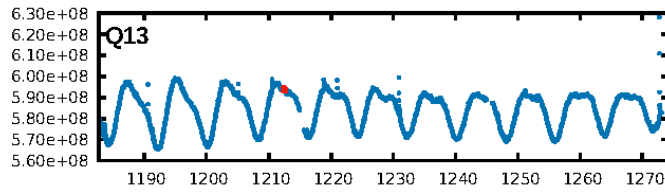
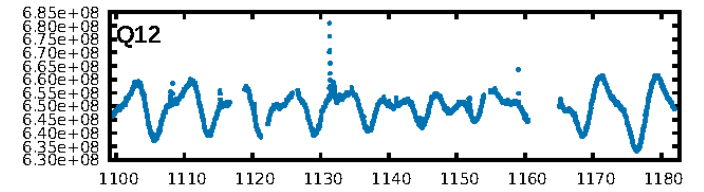
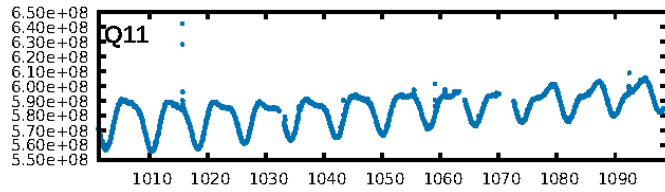
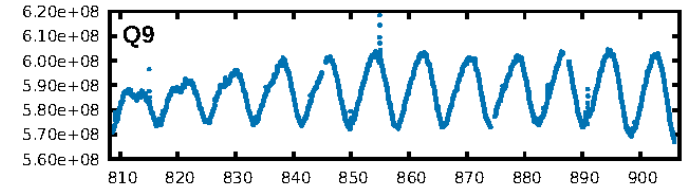
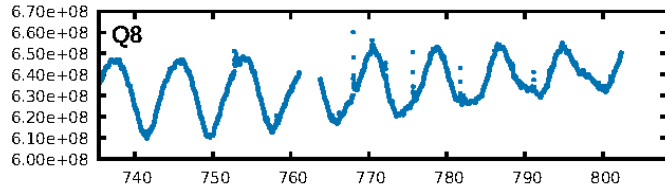
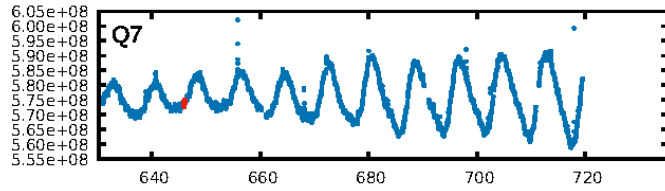
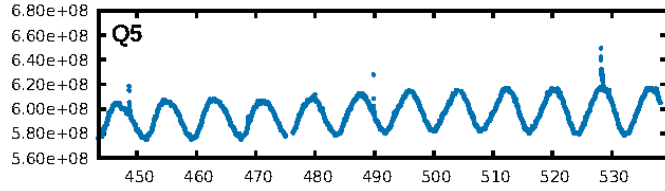
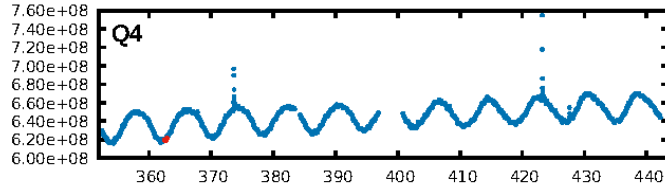
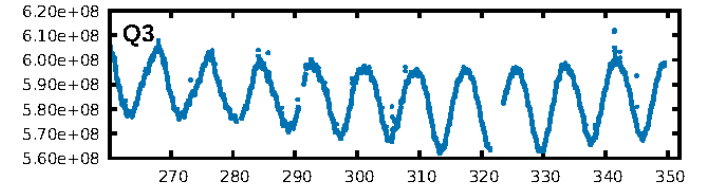
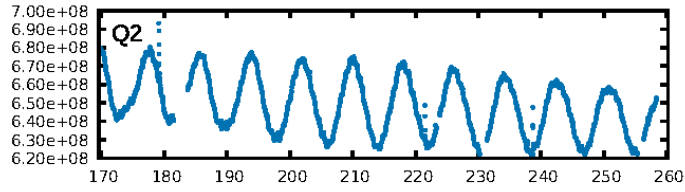
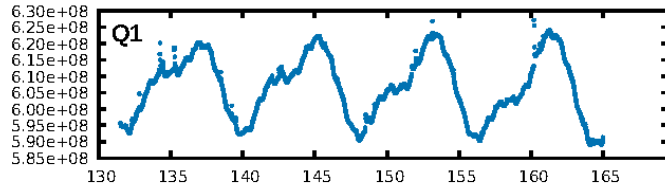
DV Fit Results:

Period = 283.28246 [0.00654] d
Epoch = 362.6649 [0.0142] BKJD
 $R_p/R^* = 0.0218$ [0.0413]
 $a/R^* = 342.49$ [1912.78]
 $b = 0.68$ [4.62]
 $\text{Seff} = 0.20$ [0.04]
 $T_{\text{eq}} = 172$ [8] K
 $R_p = 1.55$ [2.94] R_e
 $a = 0.7488$ [0.0399] AU
 $A_g = 70805.81$ [267926.31] [0.26σ]
 $T_{\text{eff}} = 4325$ [4095] K [1.01σ]

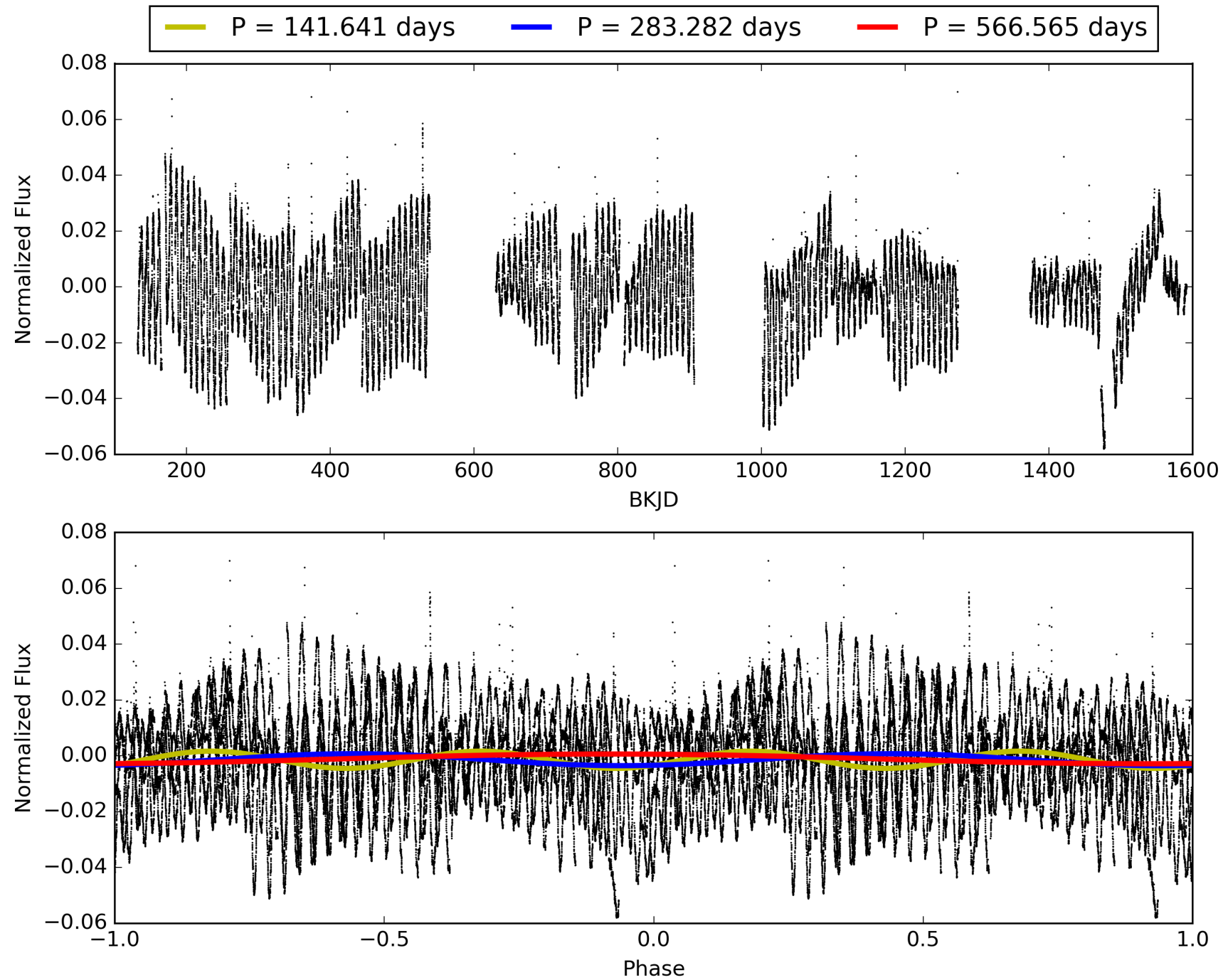
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.29σ]
LongPeriod-sig: 100.0% [19.91σ]
ModelChiSquare2-sig: 12.2%
ModelChiSquareGof-sig: 59.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.6645
Centroid-sig: 65.0%
Centroid-so: 1.028 arcsec [1.17σ]
OotOffset-rm: 0.271 arcsec [1.44σ]
KicOffset-rm: 0.042 arcsec [0.33σ]
OotOffset-st: 0/1/2/1 [4]
KicOffset-st: 0/1/2/1 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 1.00 [4/4]

TCE 004671547-06, PDC Light Curves

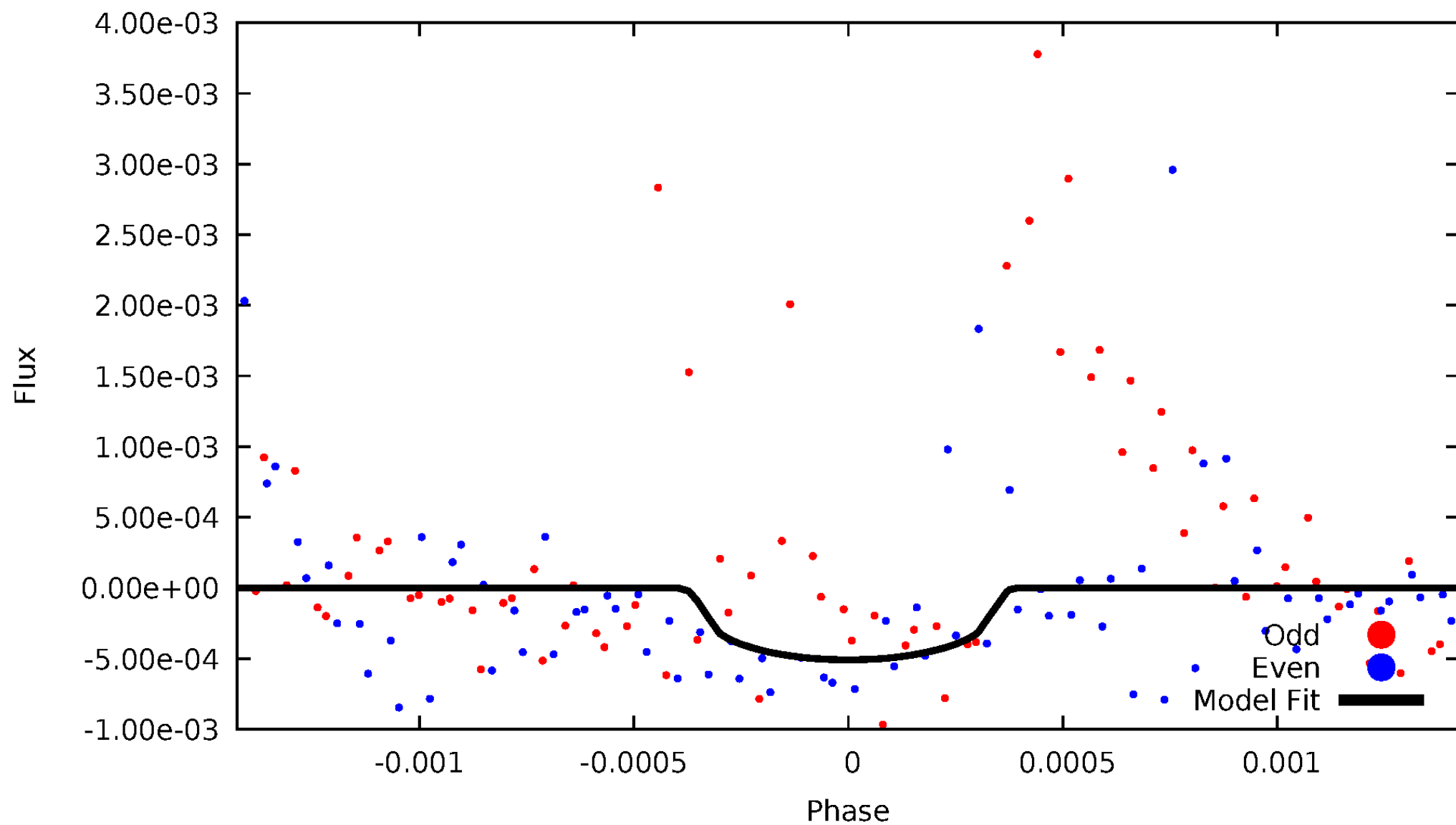


TCE 004671547-06



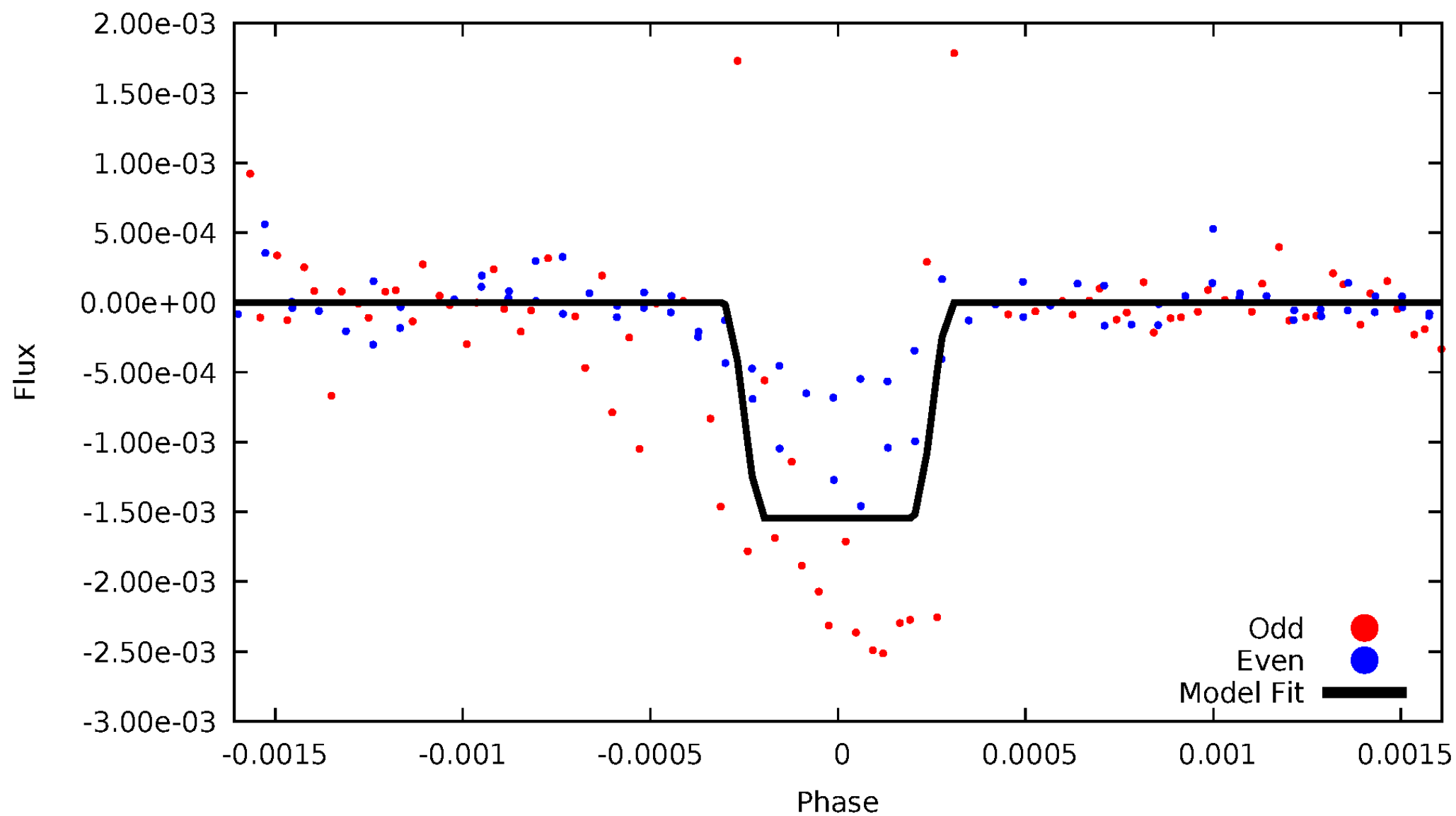
DV Odd/Even

TCE 004671547-06



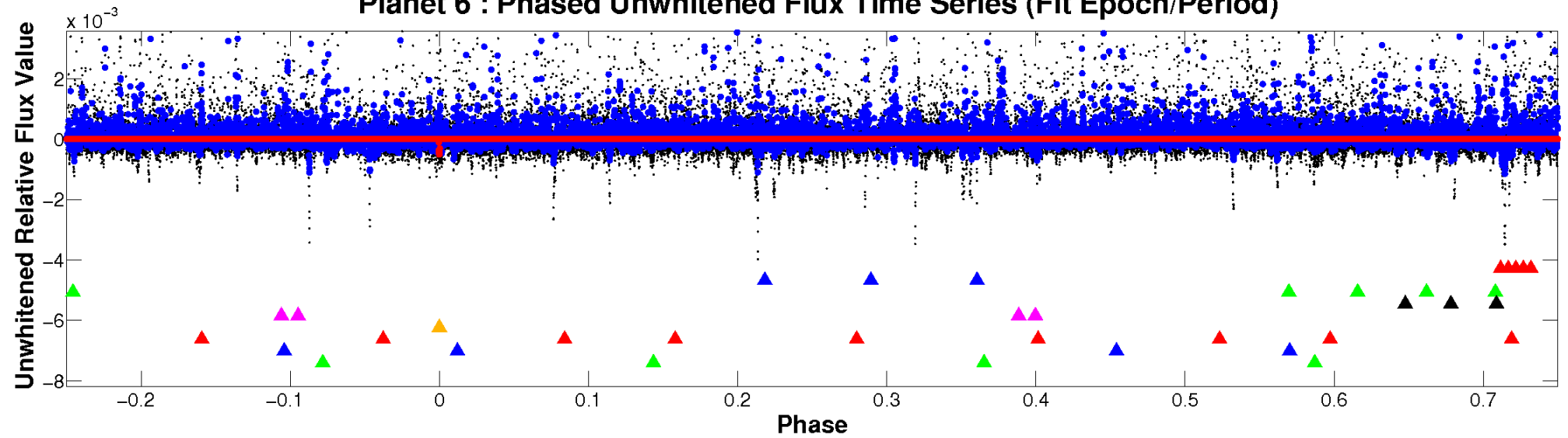
ALT Odd/Even

TCE 004671547-06

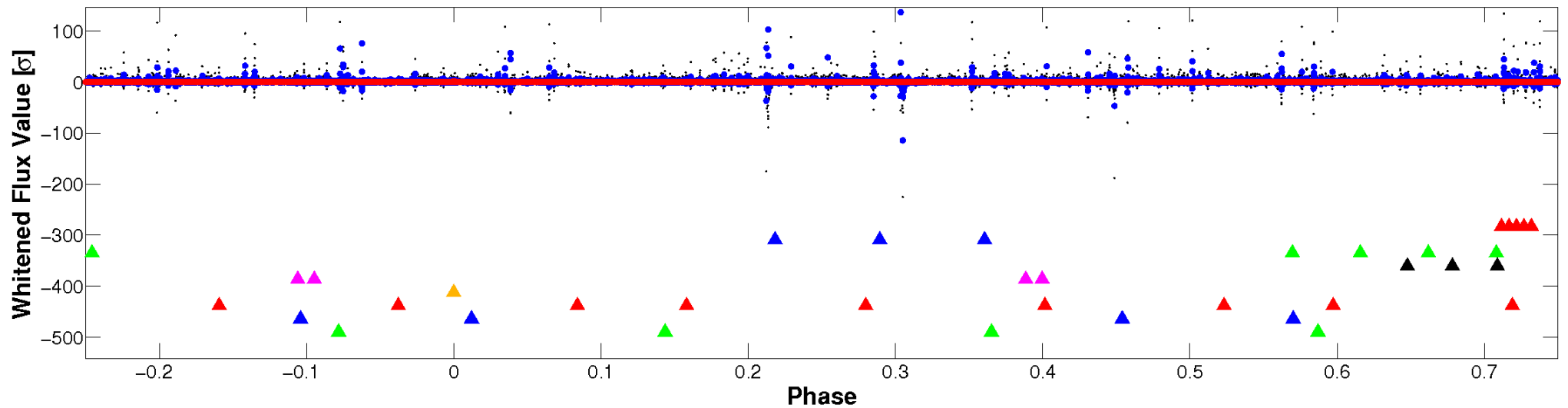


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

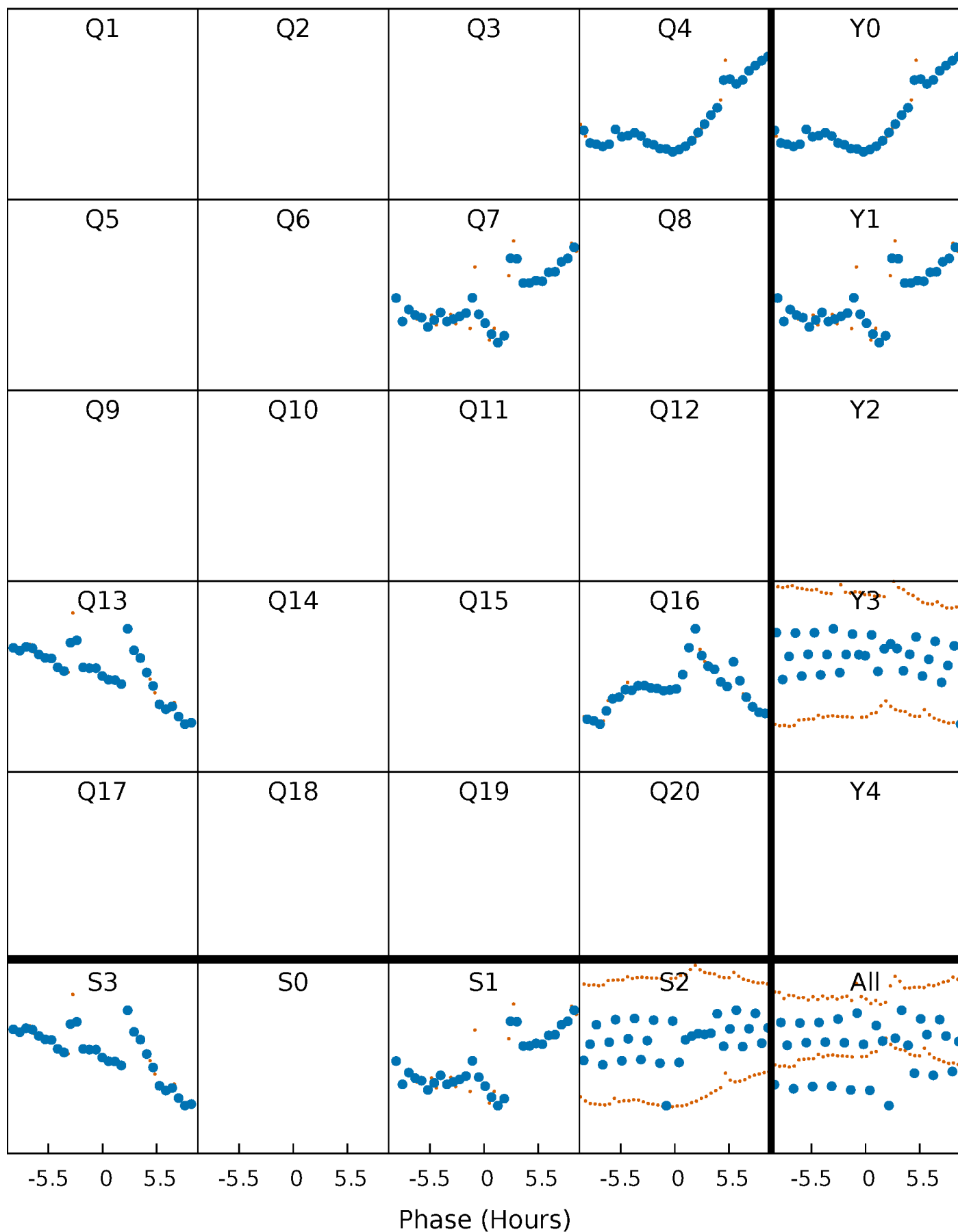


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



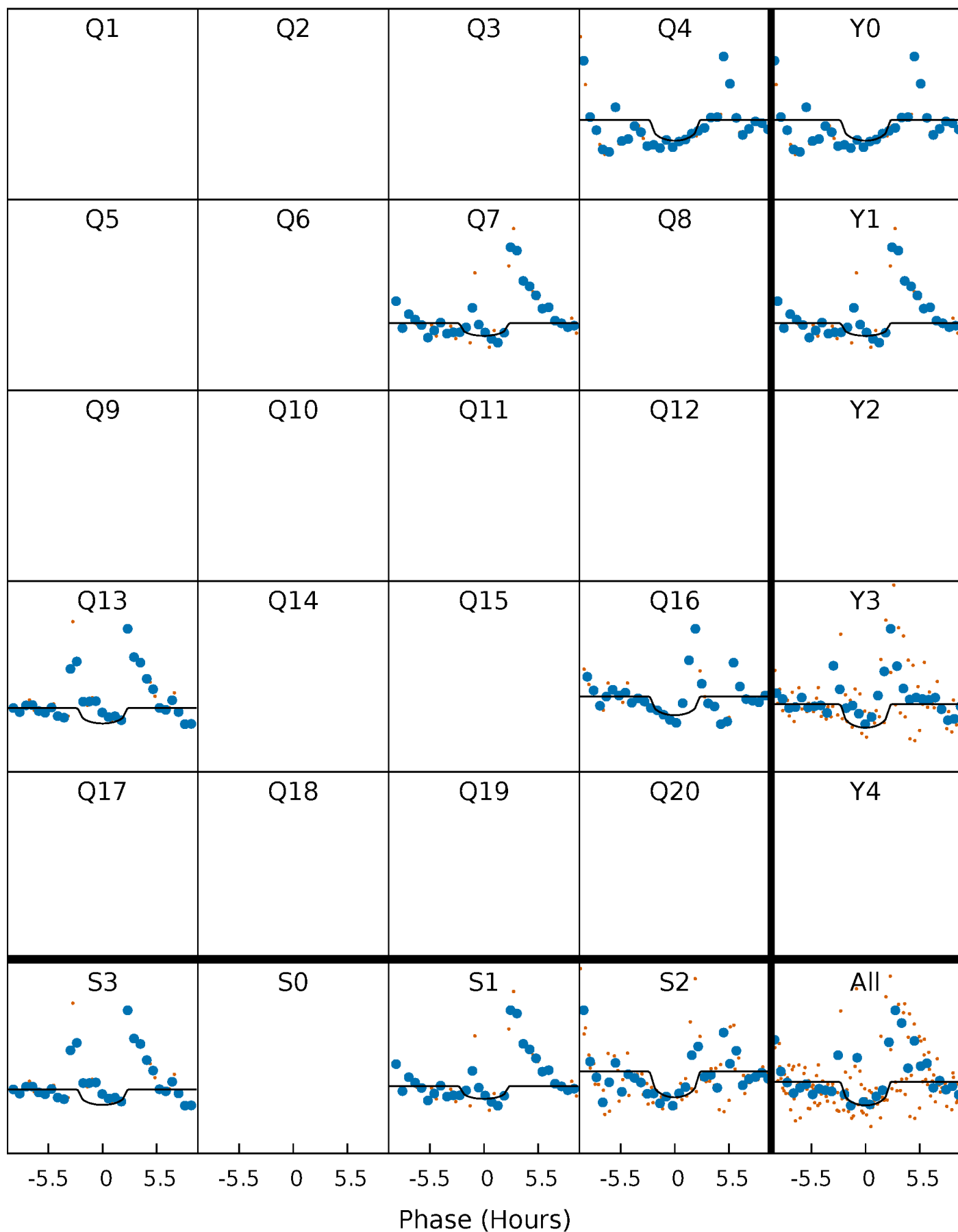
PDC Quarter-Phased Transit Curves

TCE 004671547-06 P=283.282460 Days $T_0=362.664934$ (BKJD)



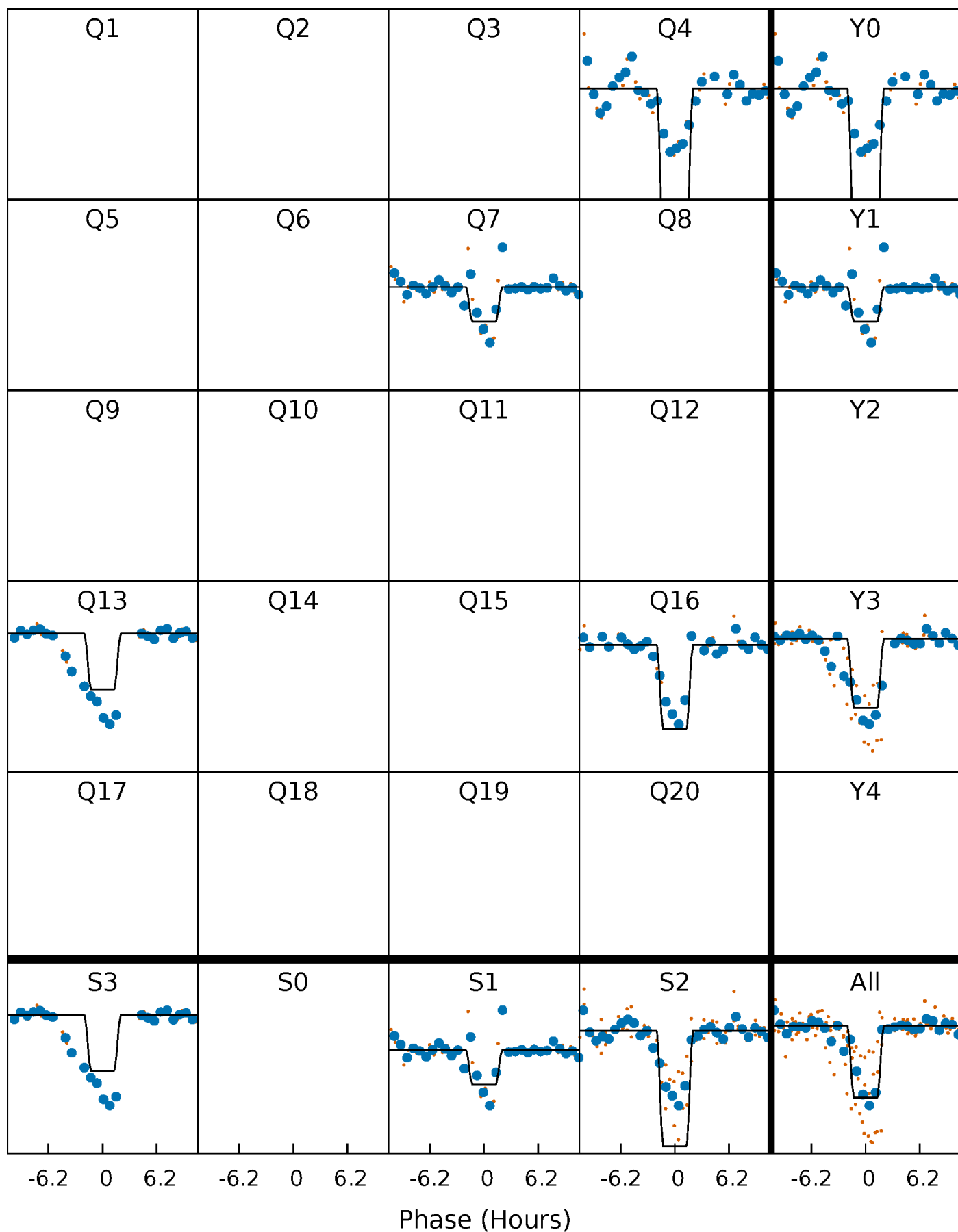
DV Quarter-Phased Transit Curves

TCE 004671547-06 $P=283.282460$ Days $T_0=362.664934$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

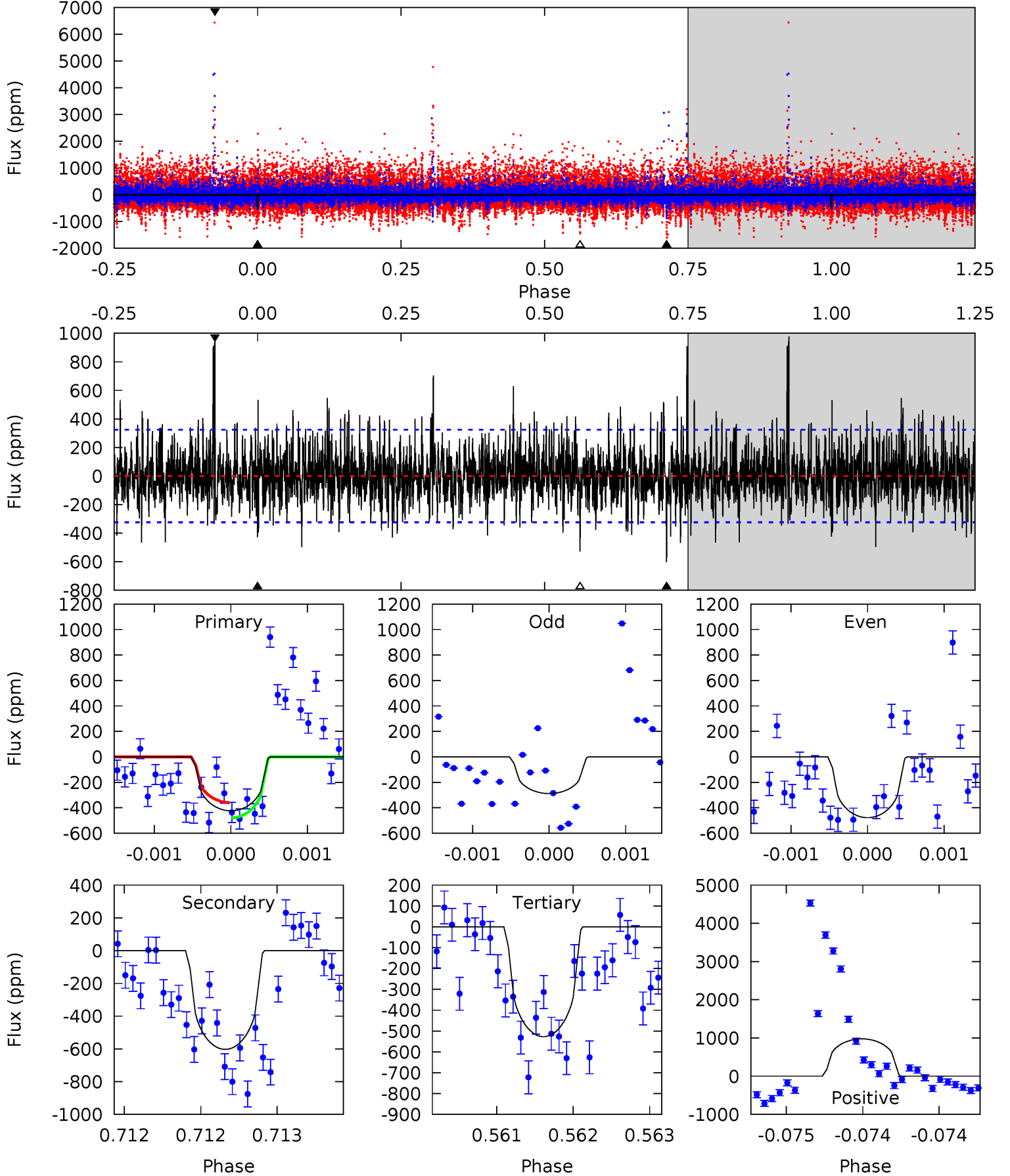
TCE 004671547-06 P=283.265667 Days $T_0=362.719165$ (BKJD)



DV Model-Shift Uniqueness Test

004671547-06, $P = 283.282460$ Days, $E = 79.382474$ Days

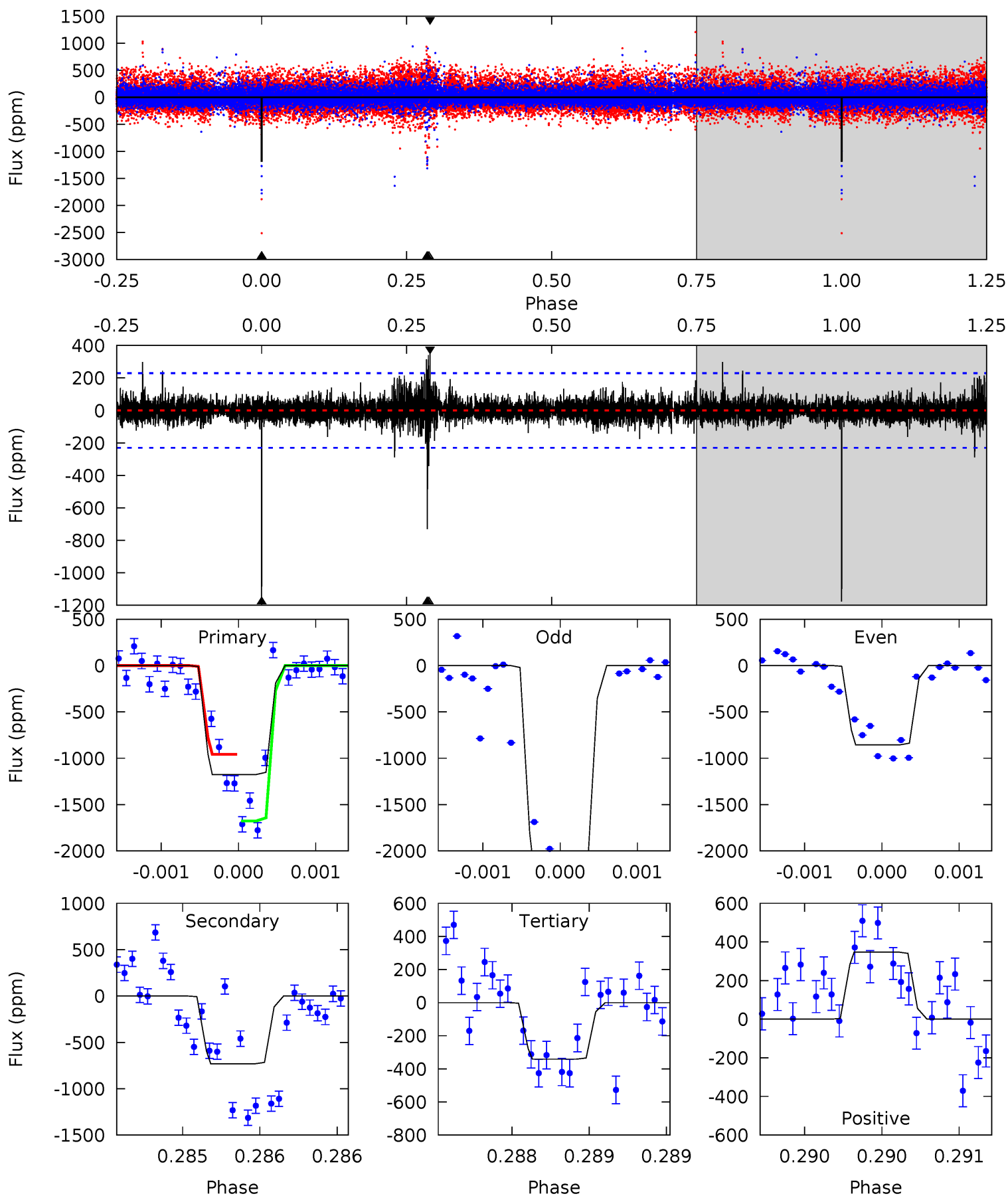
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.18	10.2	8.94	16.6	5.50	3.36	2.46	-1.76	-9.38	1.28	-6.34	0.96	1.73	0.62	1.02



Alt Model-Shift Uniqueness Test

004671547-06, P = 283.265667 Days, E = 79.453498 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.3	17.6	8.22	8.38	5.55	3.44	1.07	20.1	20.0	9.40	9.24	19.2	1.05	0.23	8.78



Stellar Parameters For KIC 004671547

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4166^{+150}_{-167}	$4.653^{+0.028}_{-0.035}$	$0.440^{+0.050}_{-0.300}$	$0.652^{+0.036}_{-0.045}$	$0.702^{+0.030}_{-0.064}$	$3.563^{+0.474}_{-0.462}$
	+4%/-4%	+1%/-1%	+11%/-68%	+6%/-7%	+4%/-9%	+13%/-13%
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 004671547-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-603 ± 59	$2.55^{+2.45}_{-1.67}$	241^{+9}_{-10}	3633^{+1844}_{-651}	$27492^{+204727}_{-19998}$
Alt.	-731 ± 41	$3.56^{+2.60}_{-2.31}$	240^{+9}_{-10}	3389^{+1529}_{-511}	$17783^{+125329}_{-11781}$

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

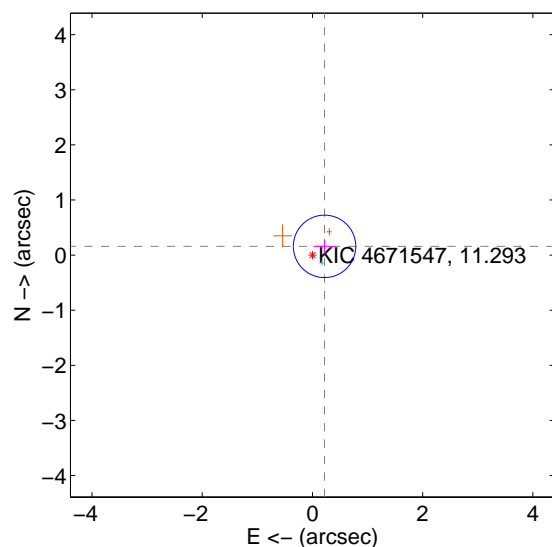
Supplemental centroid analysis for 004671547-06. **Kepler magnitude: 11.29.** Transit SNR 4.41

There are 2 quarters with good PRF difference image offsets

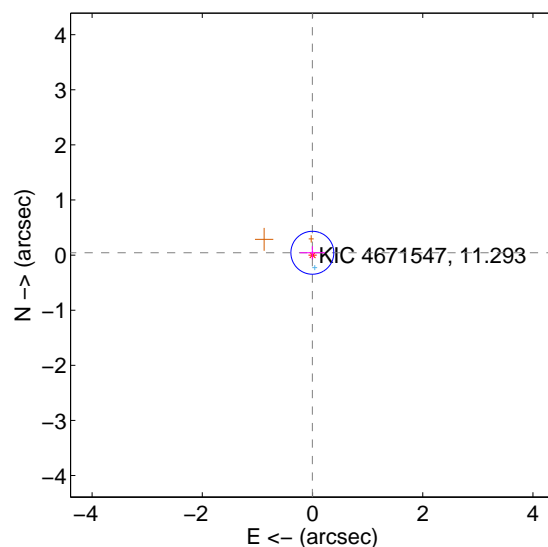
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.271 ± 0.189	1.44	-0.220 ± 0.204	0.159 ± 0.130
PRF-fit source offset from KIC position	0.042 ± 0.130	0.33	0.003 ± 0.228	0.042 ± 0.120
photometric centroid source offset	1.03 ± 0.88	1.17	0.77 ± 0.98	-0.68 ± 0.73

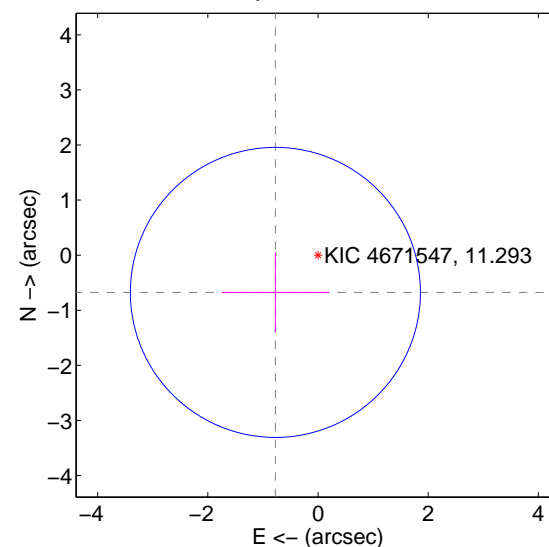
offset from difference PRF-fit to OOT PRF-fit



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.

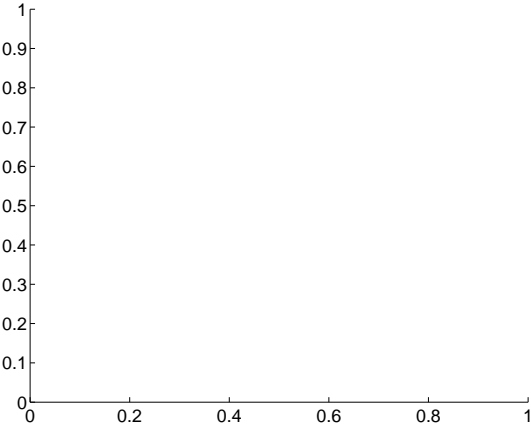
Q1 no difference image



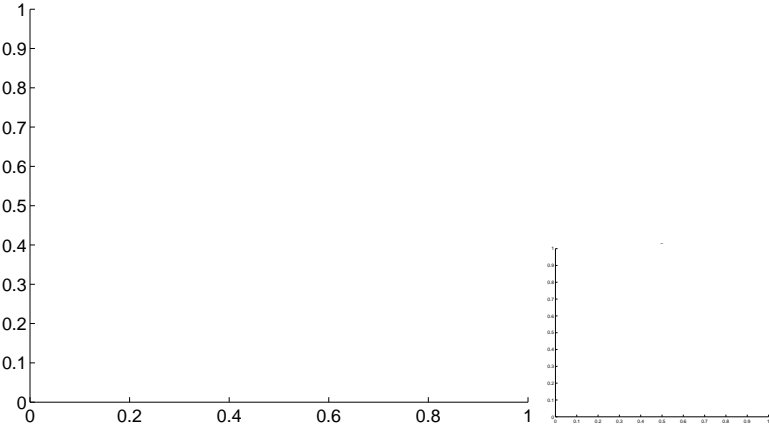
Q1 no OOT image



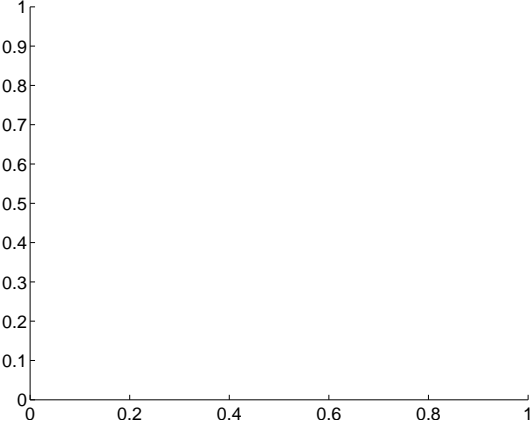
Q2 no difference image



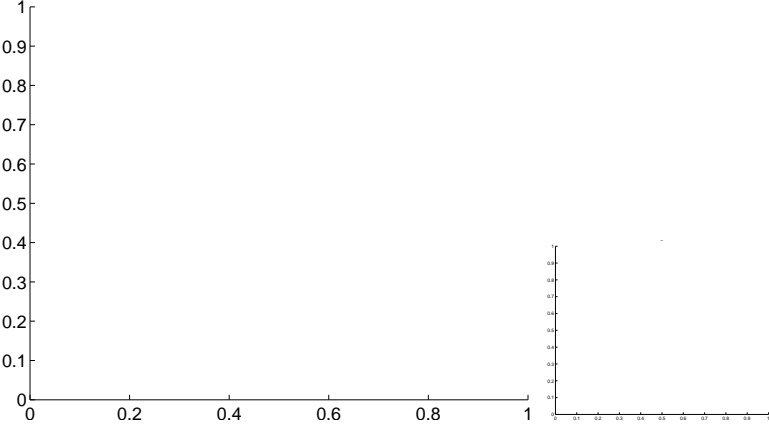
Q2 no OOT image



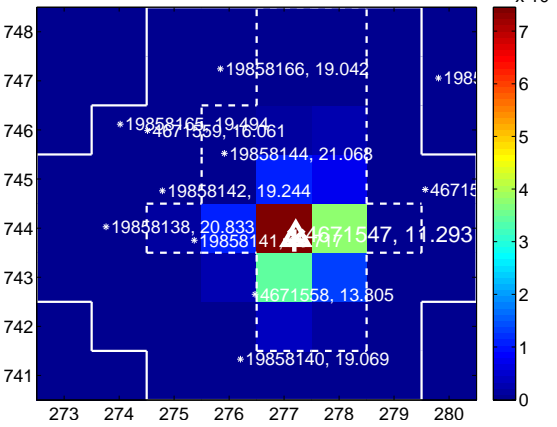
Q3 no difference image



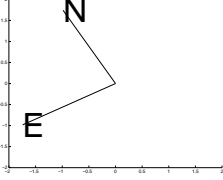
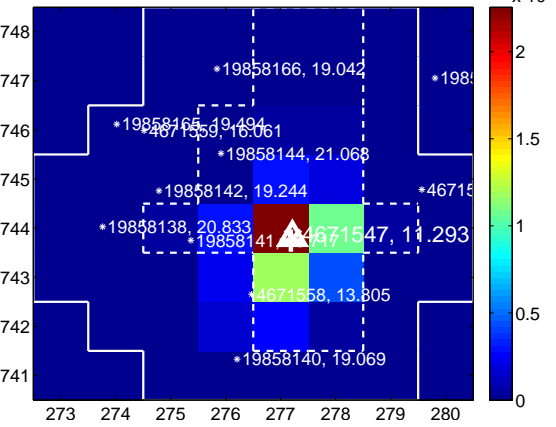
Q3 no OOT image



Q4 difference image



Q4 OOT image



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

Q5 no difference image



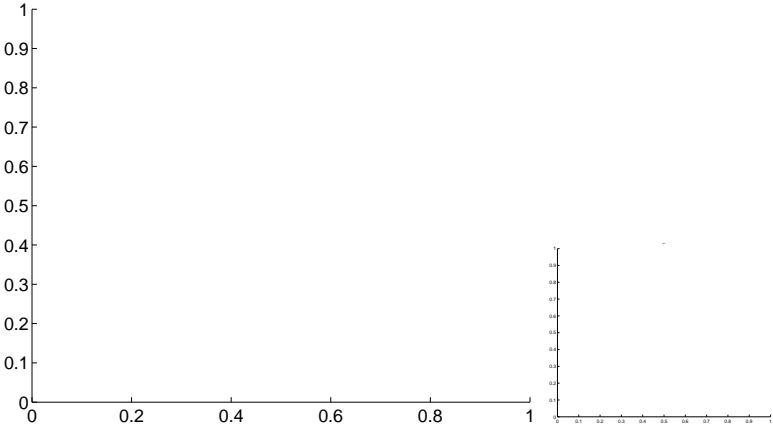
Q5 no OOT image



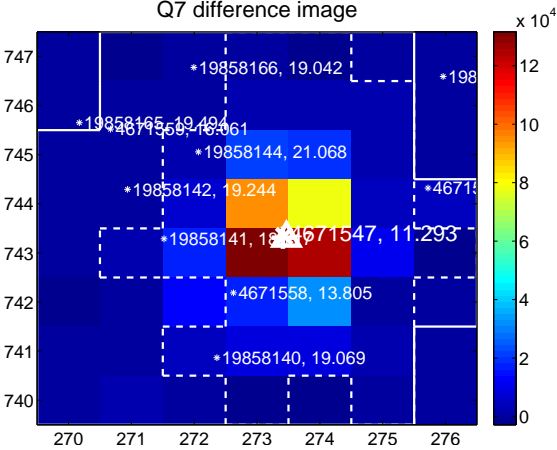
Q6 no difference image



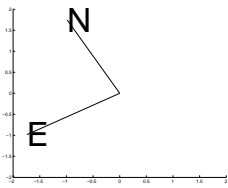
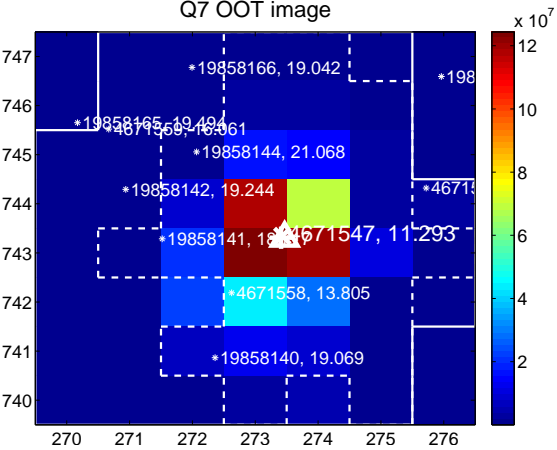
Q6 no OOT image



Q7 difference image



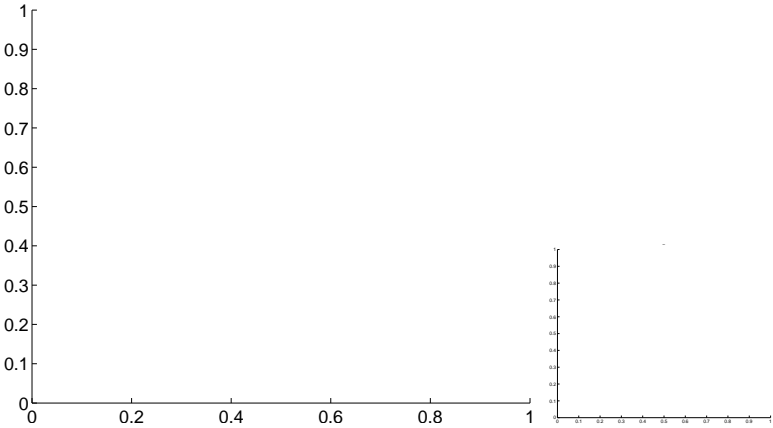
Q7 OOT image



Q8 no difference image



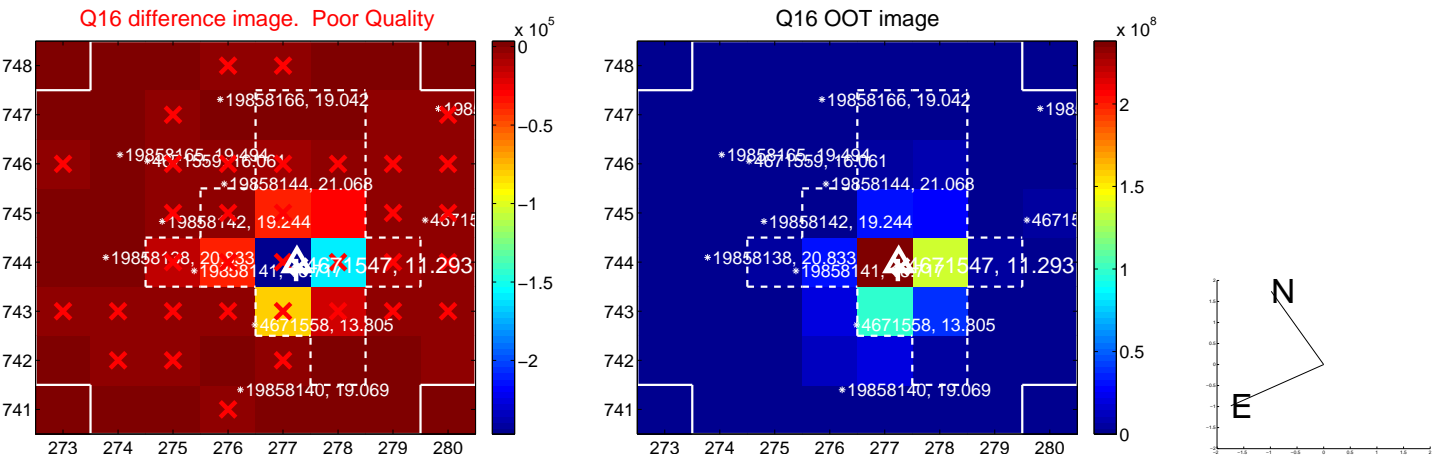
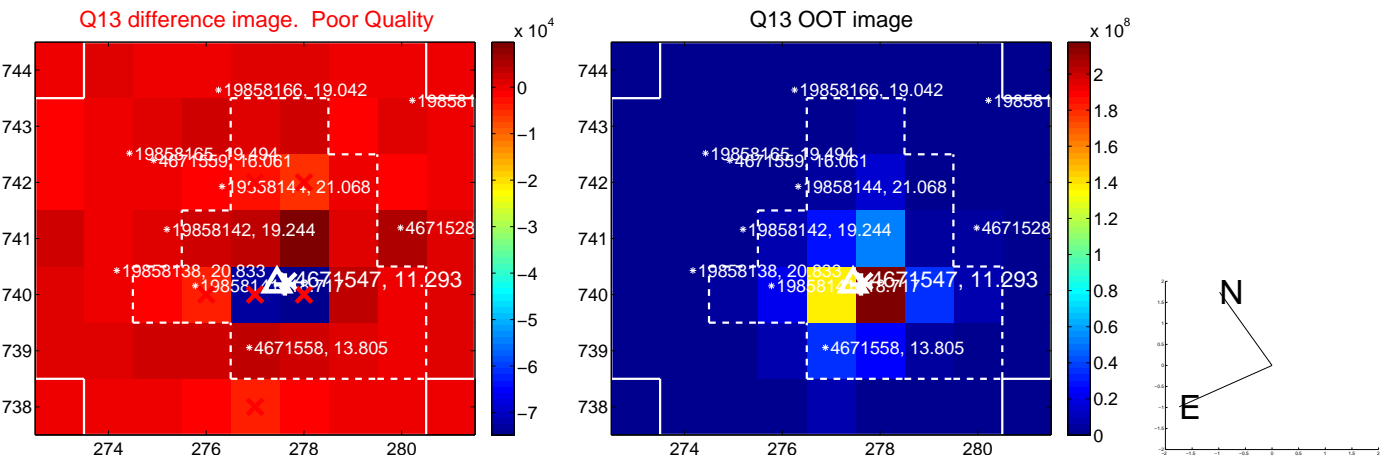
Q8 no OOT image



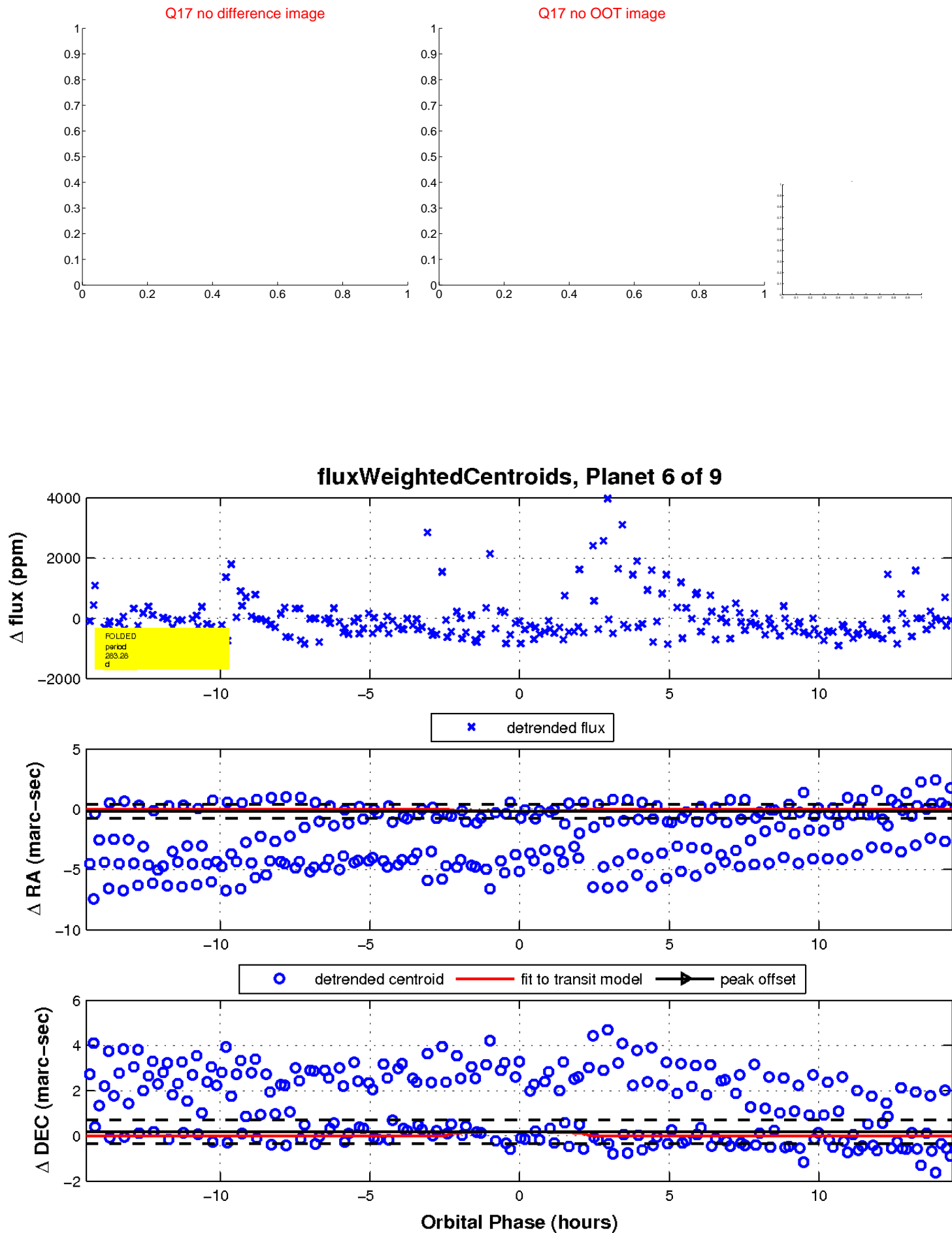
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



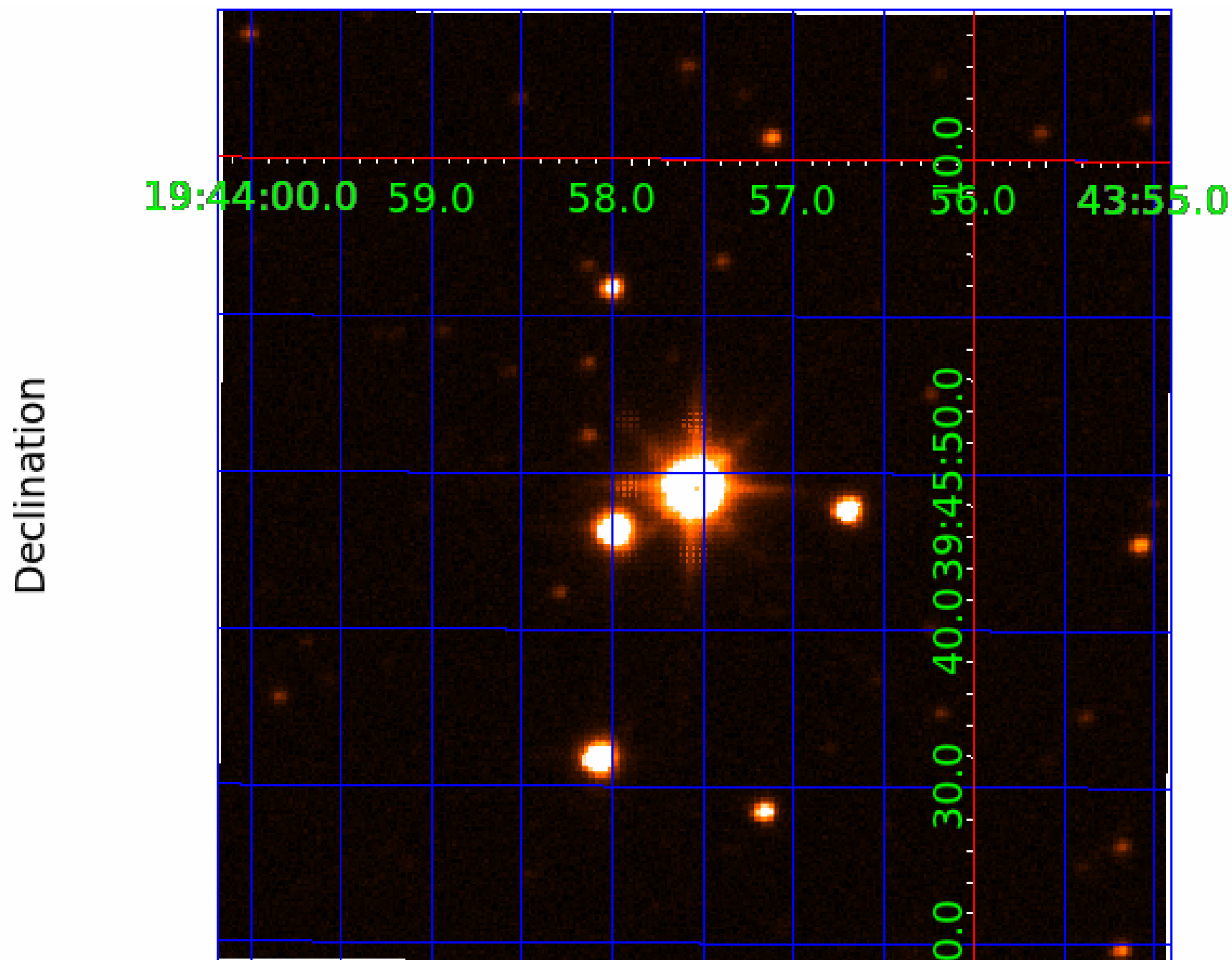
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004671547

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})
004671547-01	OBS	No	281.841230	286.743170	269.2	2.602	18.5	2.4	0.65	4166	1.10	0.21
004671547-03	OBS	No	296.361543	240.748806	137.9	15.000	14.2	-1.0	0.65	4166	0.73	0.19
004671547-04	OBS	No	557.906833	280.189324	867.8	5.776	13.5	7.0	0.65	4166	2.29	0.08
004671547-05	OBS	No	426.509156	189.433089	451.5	3.125	16.6	4.0	0.65	4166	1.66	0.12
004671547-06	OBS	No	283.282460	362.664934	509.4	4.842	13.1	4.4	0.65	4166	1.55	0.20
004671547-07	OBS	No	158.875354	248.596003	681.4	2.108	13.9	8.0	0.65	4166	1.67	0.44
004671547-08	OBS	No	408.474403	240.905682	1088.6	5.872	14.5	7.5	0.65	4166	2.11	0.13
004671547-09	OBS	No	346.096828	340.515662	138.9	12.000	13.5	-1.0	0.65	4166	0.73	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004671547-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004671547-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004671547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-06	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_SATURATED
004671547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-09	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

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

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

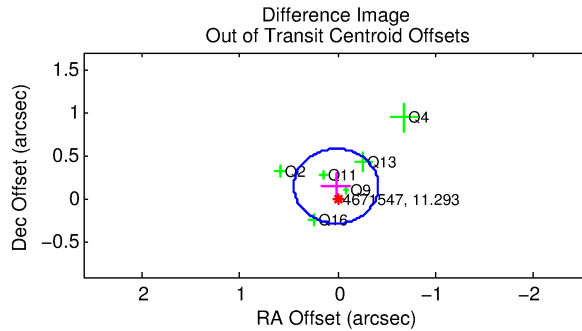
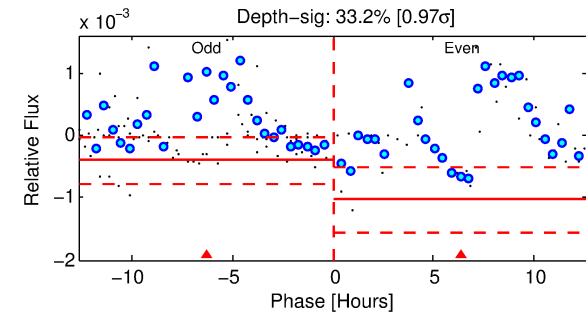
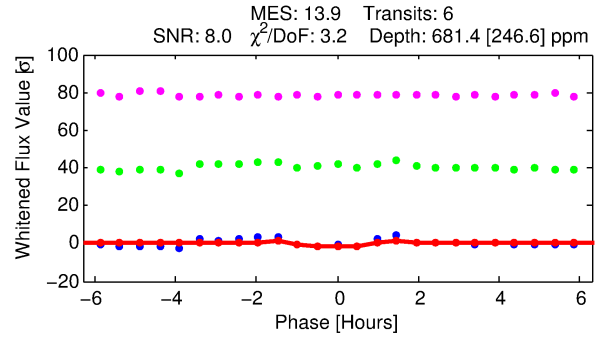
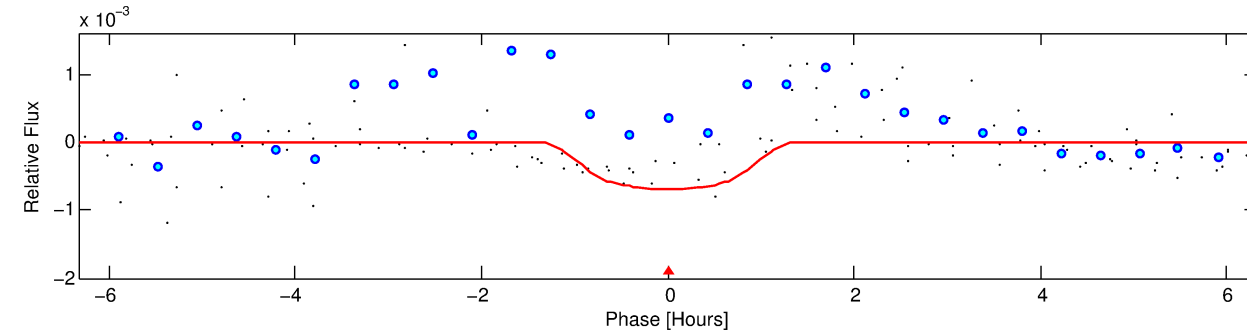
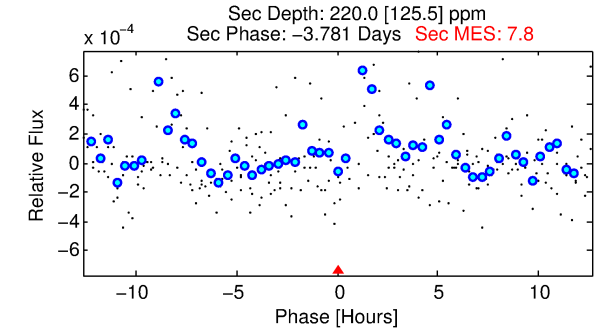
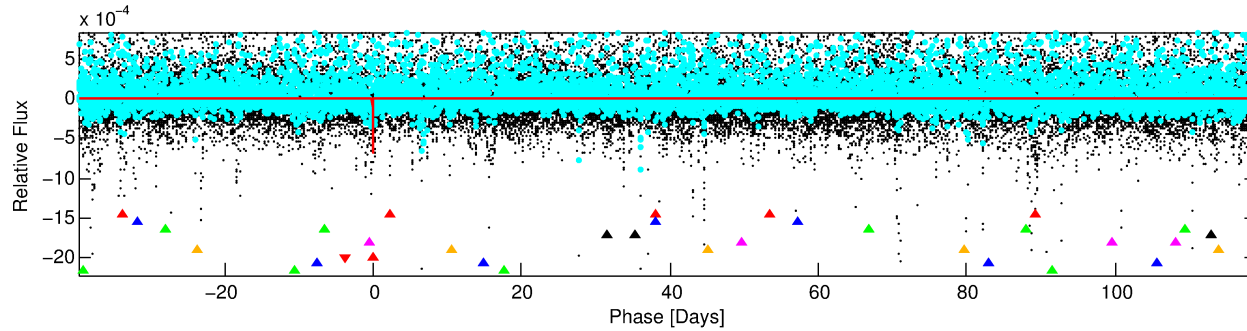
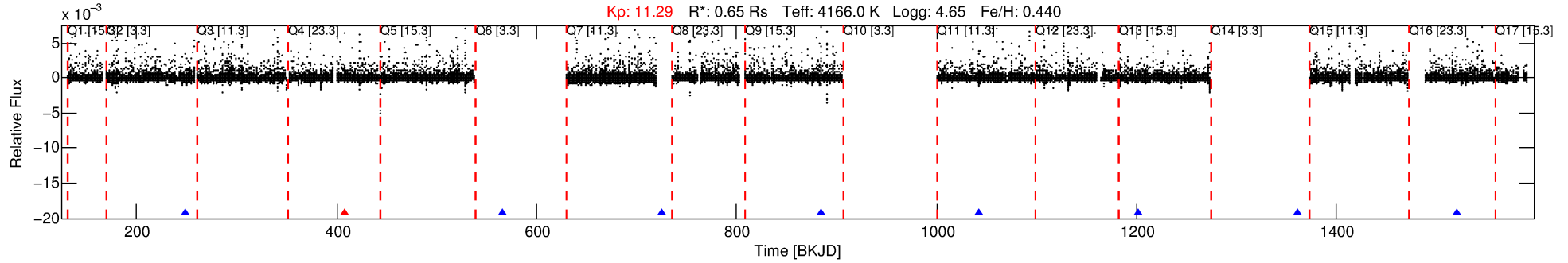
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004671547-07

No Significant Match Found

DV One-Page Summary

KIC: 4671547 Candidate: 7 of 9 Period: 158.875 d



DV Fit Results:

Period = 158.87535 [0.00163] d
Epoch = 248.5960 [0.0092] BKJD
Rp/R* = 0.0235 [0.0717]
a/R* = 542.49 [4514.49]
b = 0.40 [18.17]
Seff = 0.44 [0.08]
Teq = 208 [9] K
Rp = 1.67 [5.10] Re
a = 0.5092 [0.0271] AU
Ag = 11271.43 [69222.11] [0.16σ]
Teffp = 3313 [5088] K [0.61σ]

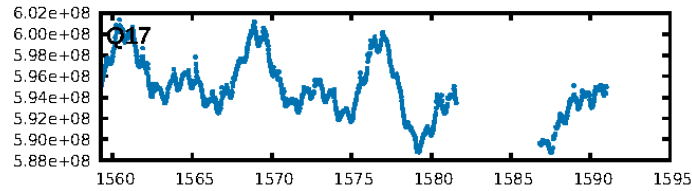
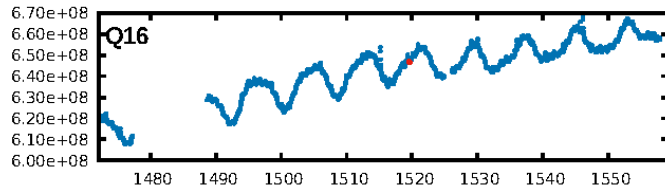
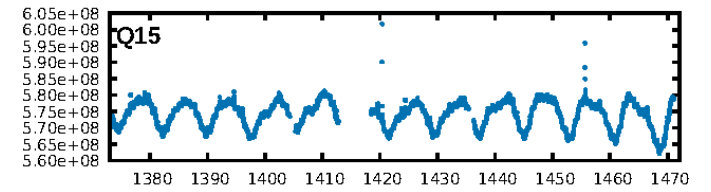
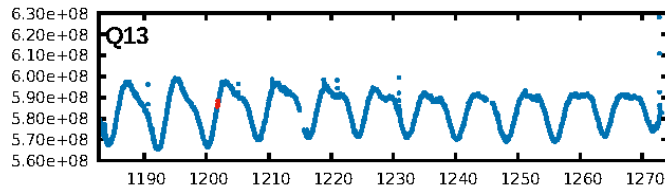
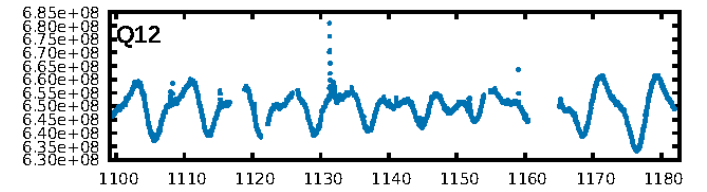
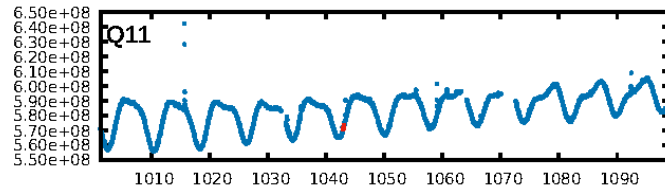
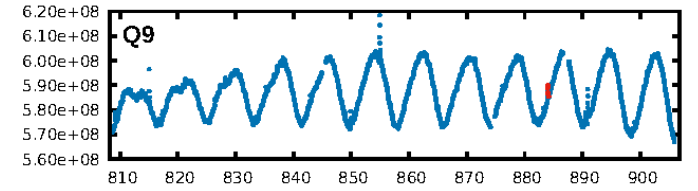
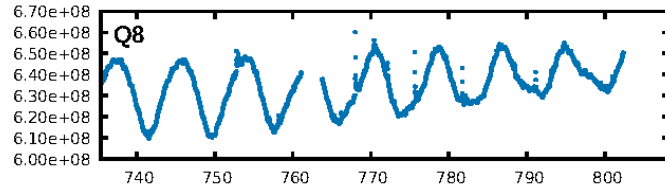
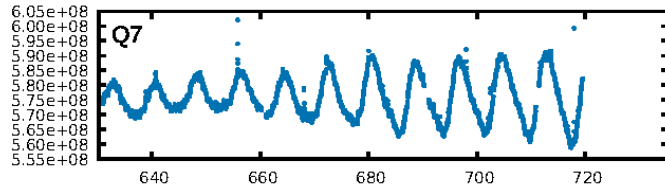
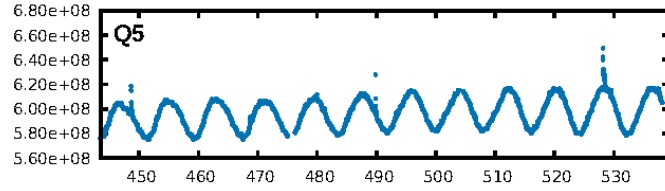
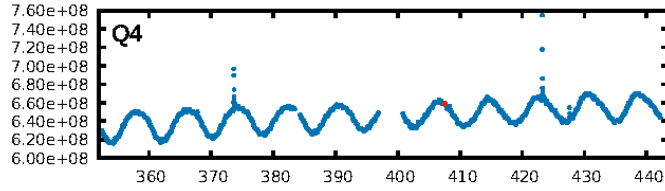
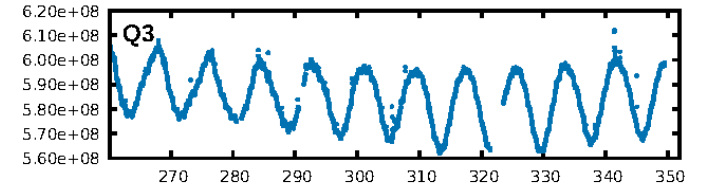
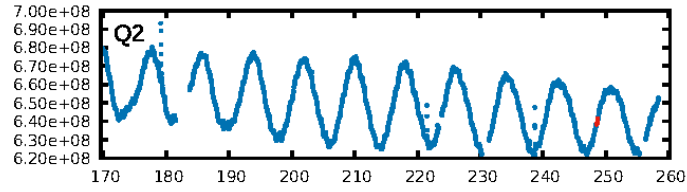
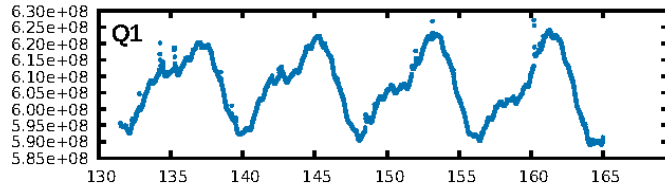
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [881.19σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.83 [5/6]
GhostDiagnostic-chr: 1.335
Centroid-sig: 98.3%
Centroid-so: 0.489 arcsec [0.78σ]
OotOffset-rm: 0.152 arcsec [1.06σ]
OotOffset-st: 1/1/2/2 [6]
KicOffset-rm: 0.306 arcsec [2.27σ]
KicOffset-st: 1/1/2/2 [6]
DiffImageQuality-fgm: 0.83 [5/6]
DiffImageOverlap-fno: 1.00 [6/6]

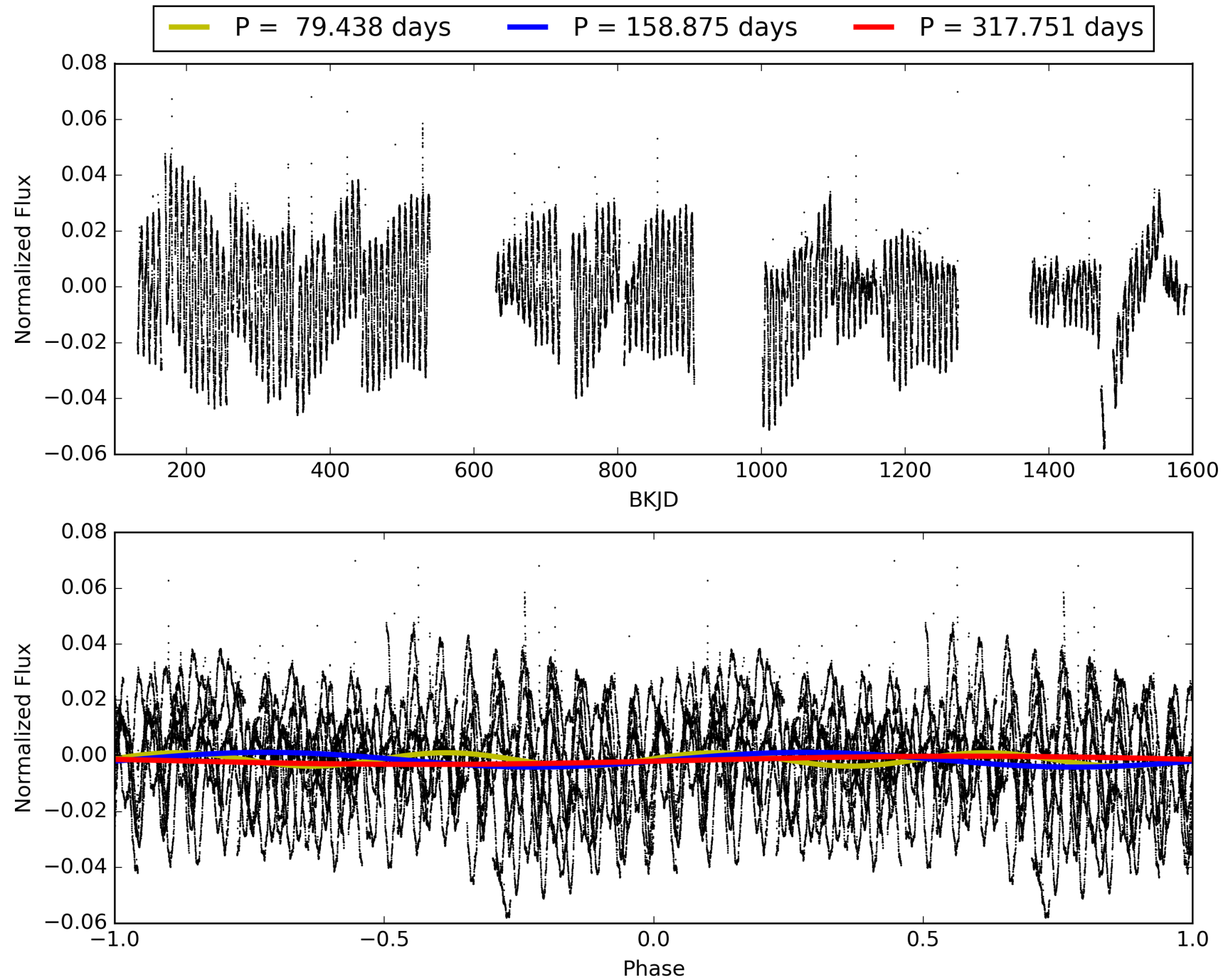
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:59:42 Z

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

TCE 004671547-07, PDC Light Curves

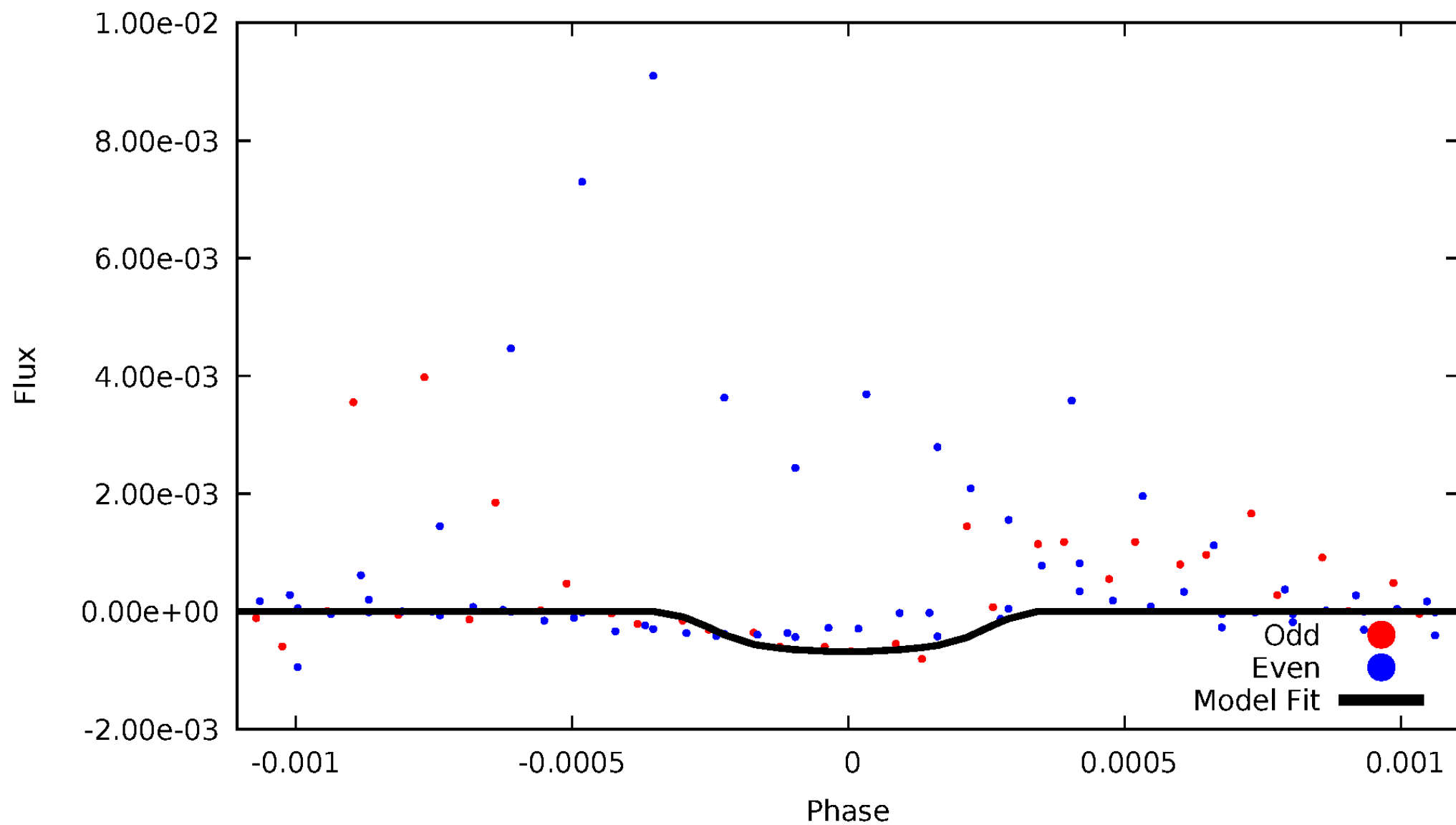


TCE 004671547-07



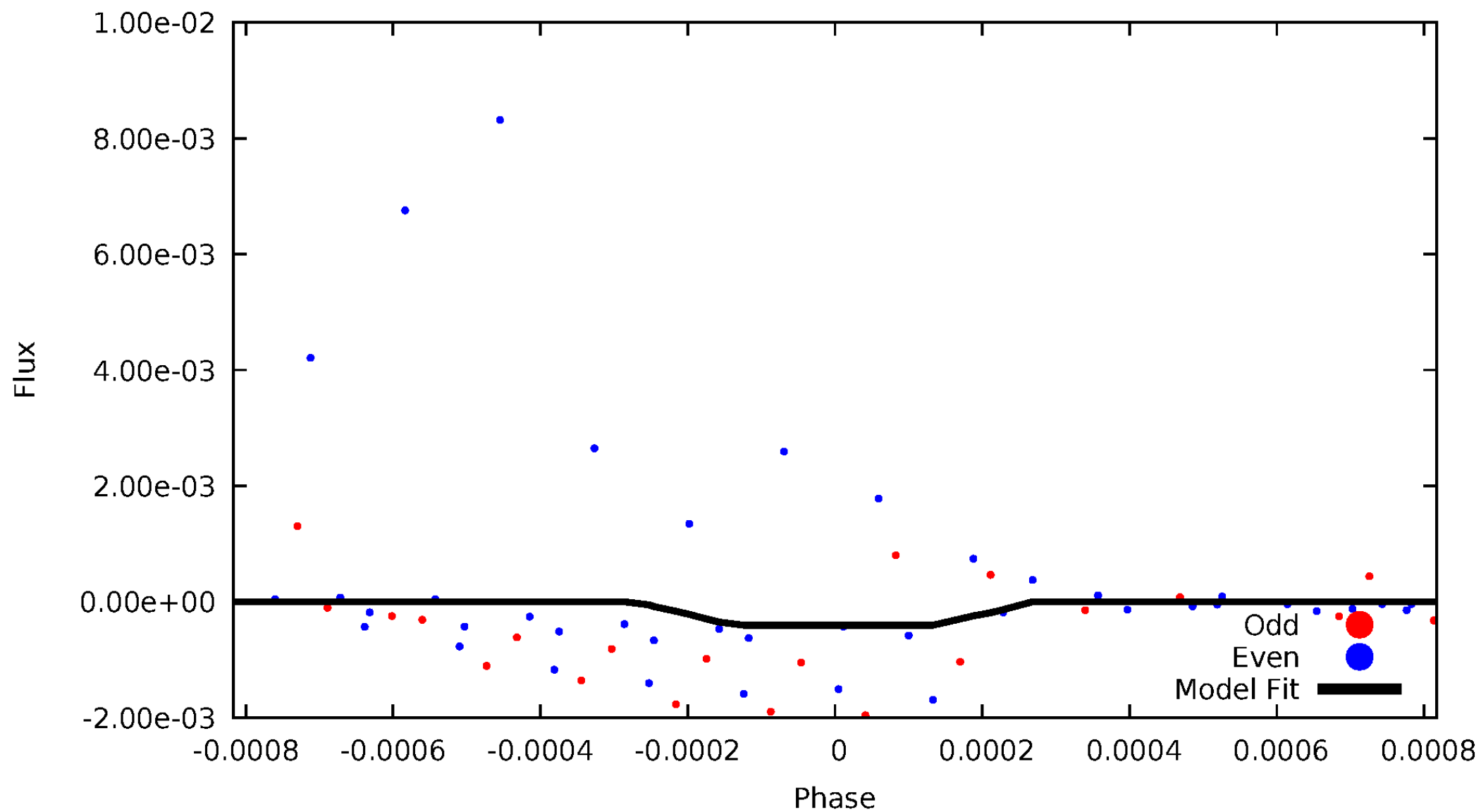
DV Odd/Even

TCE 004671547-07



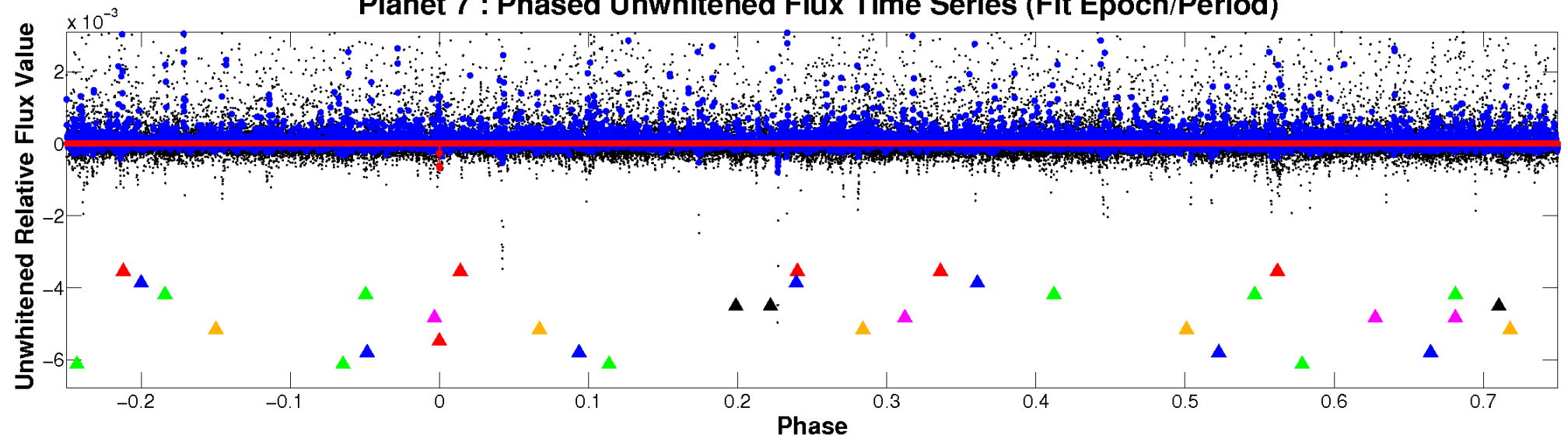
ALT Odd/Even

TCE 004671547-07

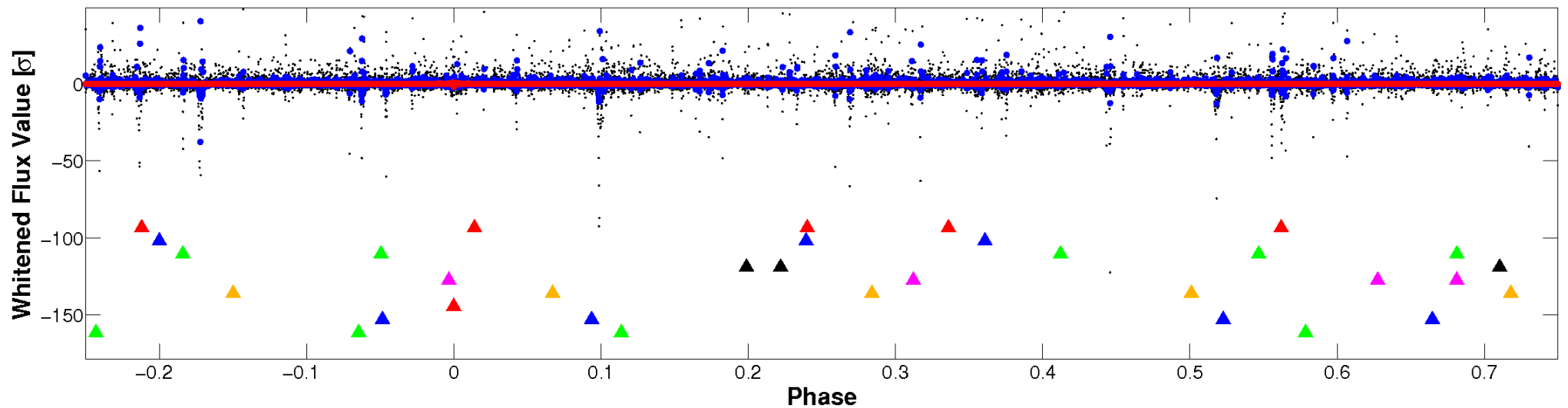


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

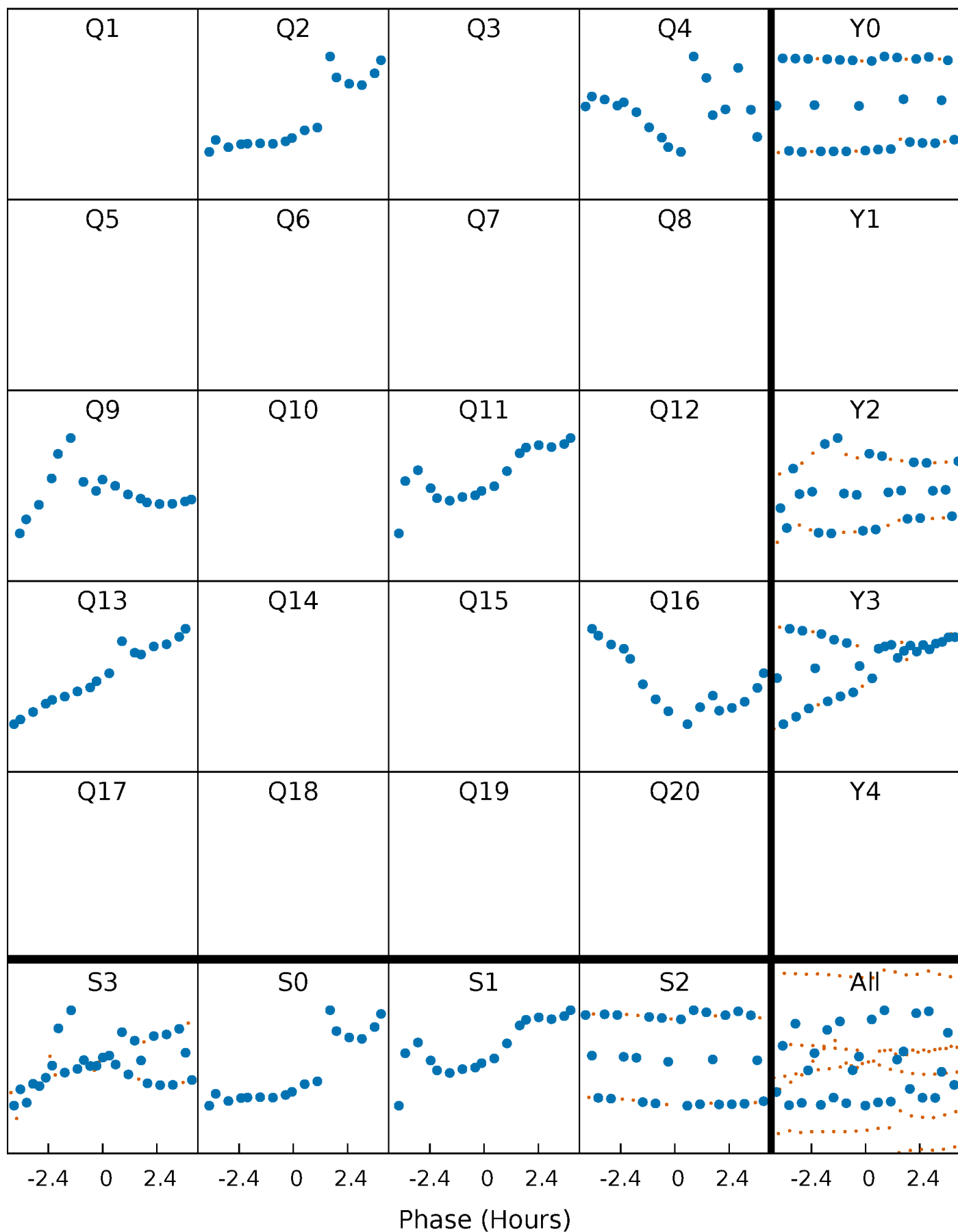


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



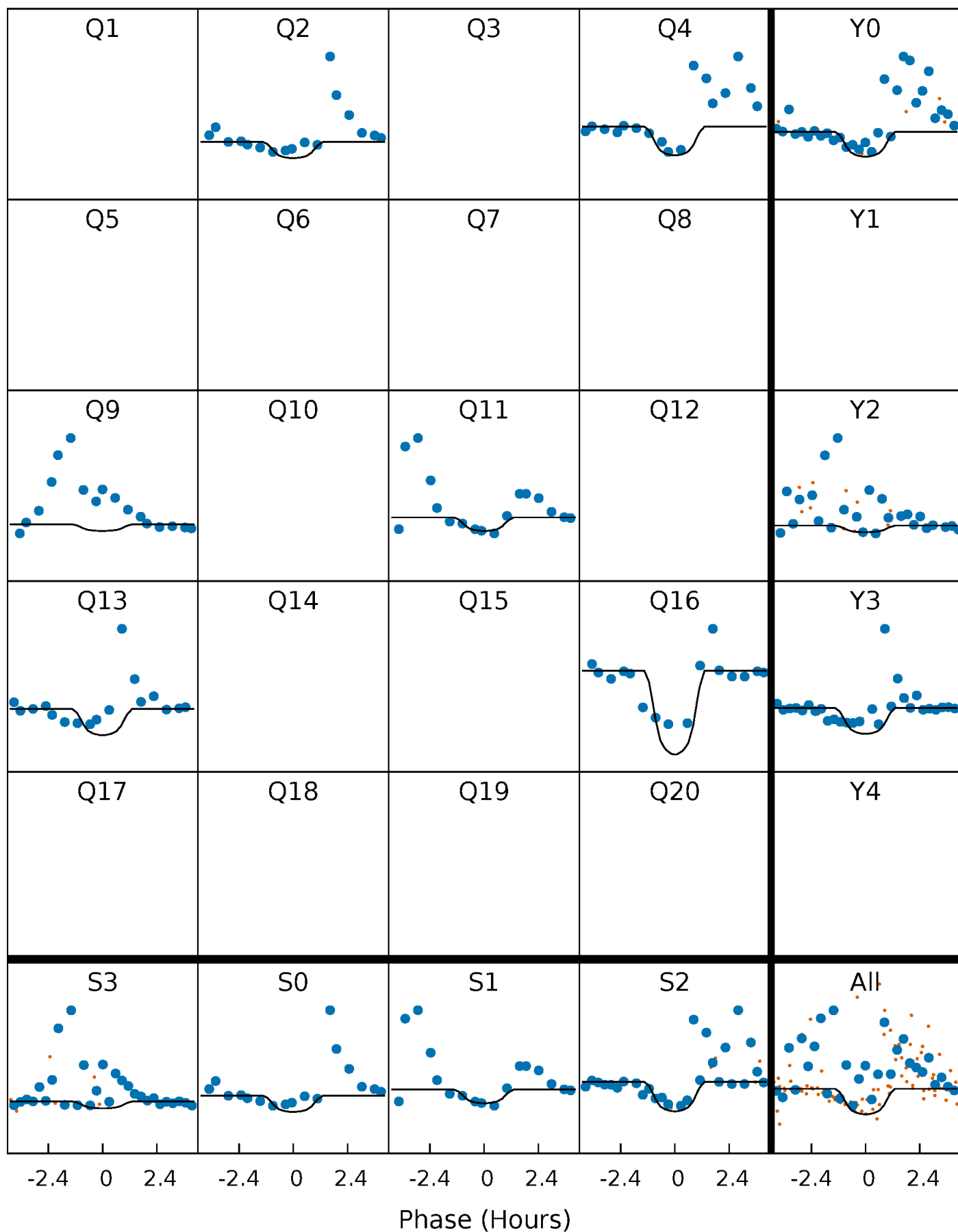
PDC Quarter-Phased Transit Curves

TCE 004671547-07 P=158.875354 Days $T_0=248.596003$ (BKJD)



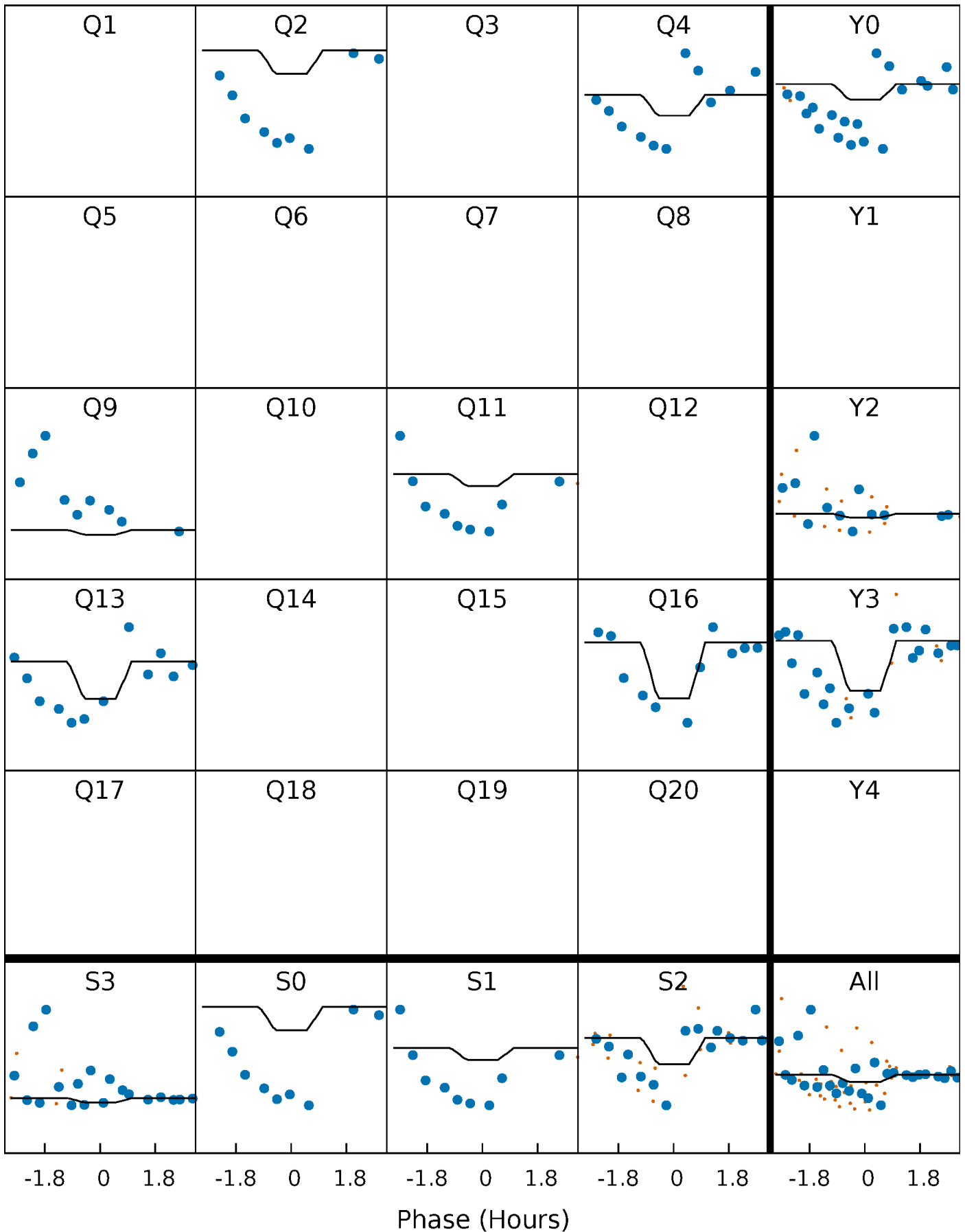
DV Quarter-Phased Transit Curves

TCE 004671547-07 P=158.875354 Days $T_0=248.596003$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

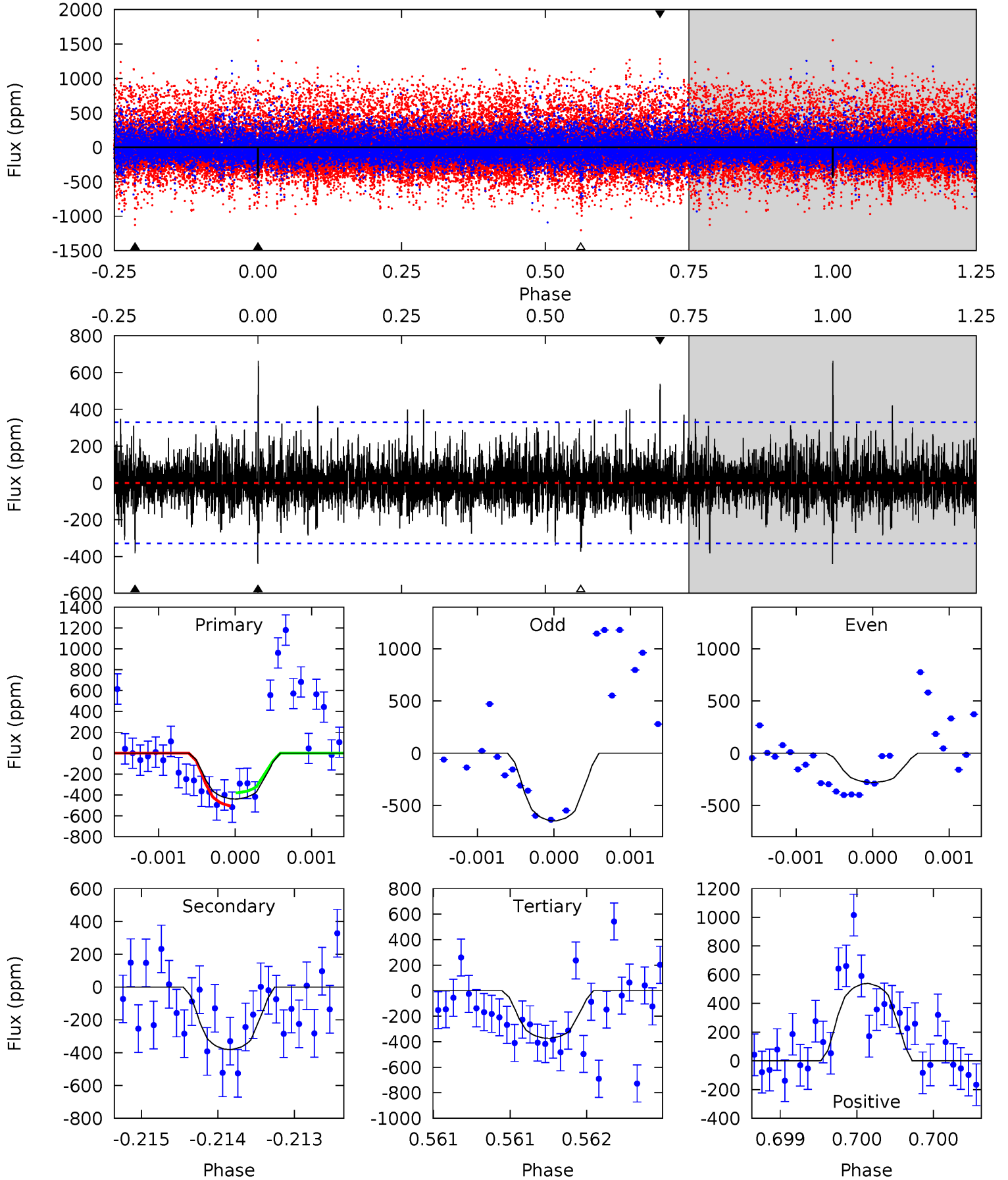
TCE 004671547-07 P=158.873752 Days $T_0=248.618582$ (BKJD)



DV Model-Shift Uniqueness Test

004671547-07, P = 158.875354 Days, E = 89.720649 Days

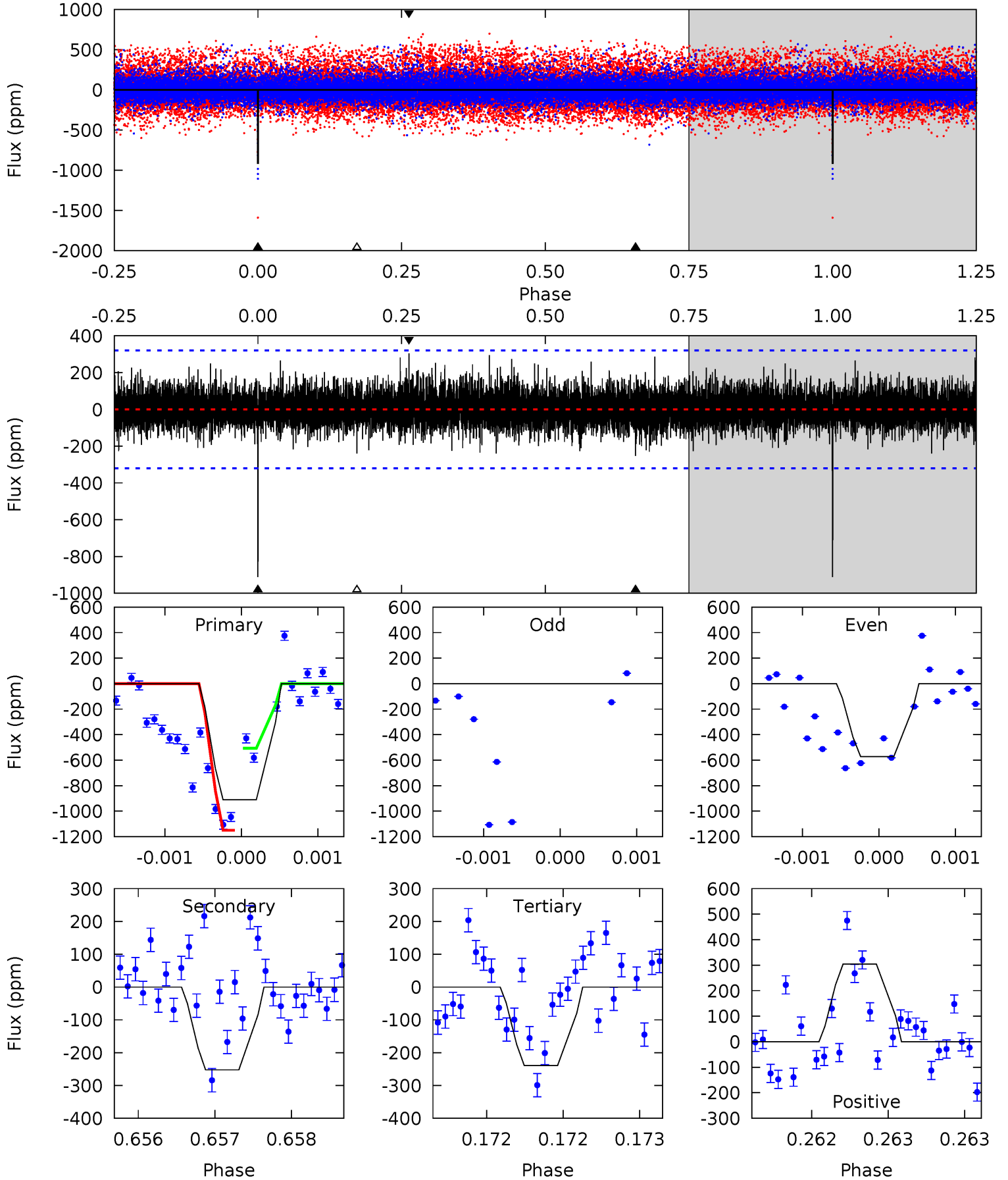
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.41	6.42	6.29	9.08	5.55	3.44	1.50	1.12	-1.67	0.13	-2.66	2.55	-1.51	0.60	1.04



Alt Model-Shift Uniqueness Test

004671547-07, $P = 158.873752$ Days, $E = 89.744830$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	4.38	4.16	5.28	5.57	3.47	1.11	11.7	10.5	0.23	-0.90	0	0.86	0.25	5.57



Stellar Parameters For KIC 004671547

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4166^{+150}_{-167}	$4.653^{+0.028}_{-0.035}$	$0.440^{+0.050}_{-0.300}$	$0.652^{+0.036}_{-0.045}$	$0.702^{+0.030}_{-0.064}$	$3.563^{+0.474}_{-0.462}$
	+4%/-4%	+1%/-1%	+11%/-68%	+6%/-7%	+4%/-9%	+13%/-13%
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 004671547-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-381 ± 59	$3.93^{+4.31}_{-2.70}$	291^{+12}_{-12}	2970^{+1427}_{-500}	3496^{+32900}_{-2705}
Alt.	-252 ± 58	$4.04^{+4.08}_{-2.84}$	291^{+11}_{-12}	2817^{+1257}_{-465}	2307^{+23767}_{-1779}

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

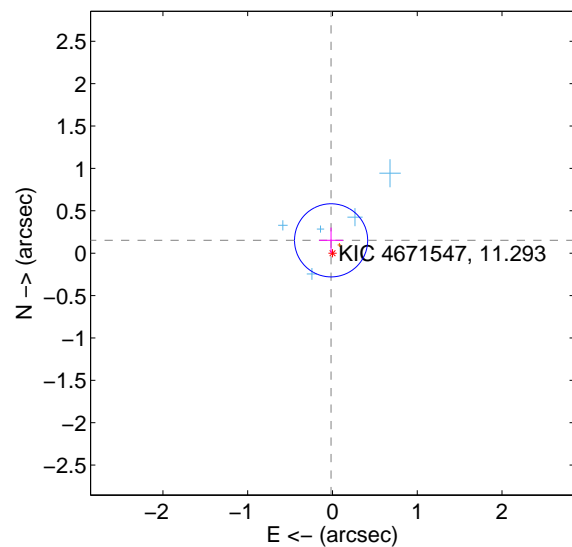
Supplemental centroid analysis for 004671547-07. **Kepler magnitude: 11.29.** Transit SNR 8.00

There are 5 quarters with good PRF difference image offsets

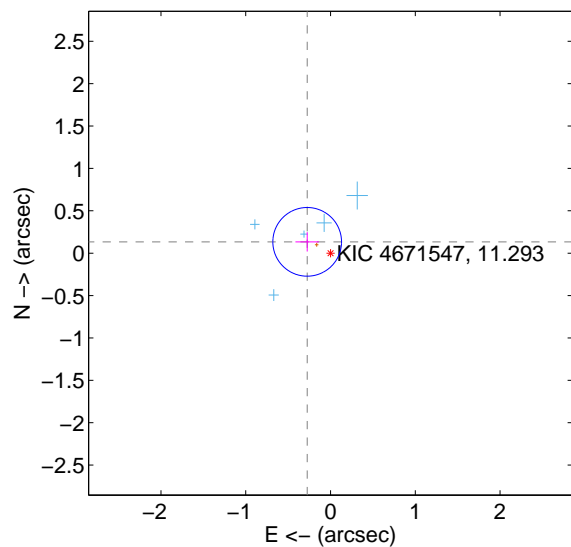
The direct PRF centroid is offset from the target star catalog position by about 0.49 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.152 ± 0.144	1.06	0.016 ± 0.141	0.151 ± 0.151
PRF-fit source offset from KIC position	0.306 ± 0.135	2.27	0.275 ± 0.139	0.134 ± 0.115
photometric centroid source offset	0.49 ± 0.63	0.78	0.40 ± 0.69	-0.28 ± 0.50

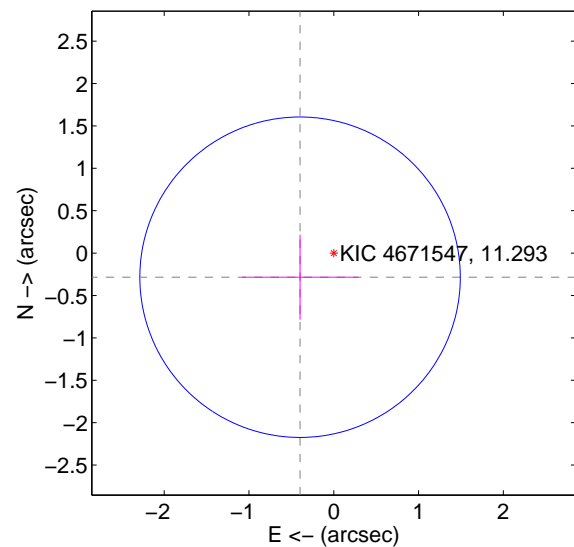
offset from difference PRF-fit to OOT PRF-fit



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.

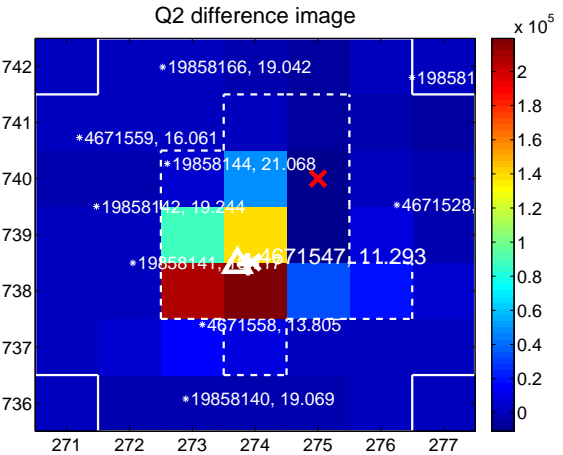
Q1 no difference image



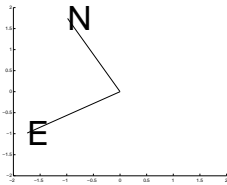
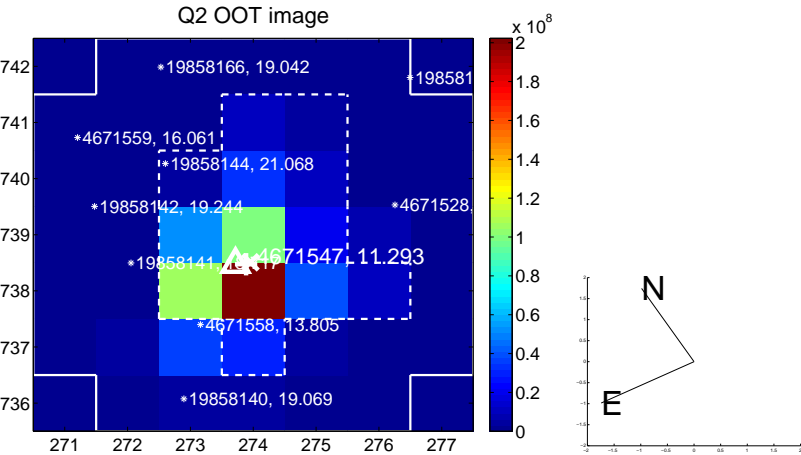
Q1 no OOT image



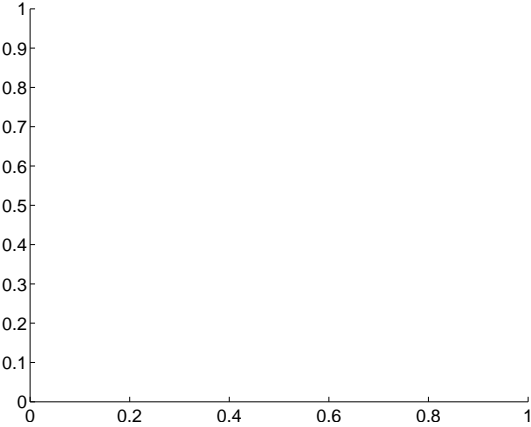
Q2 difference image



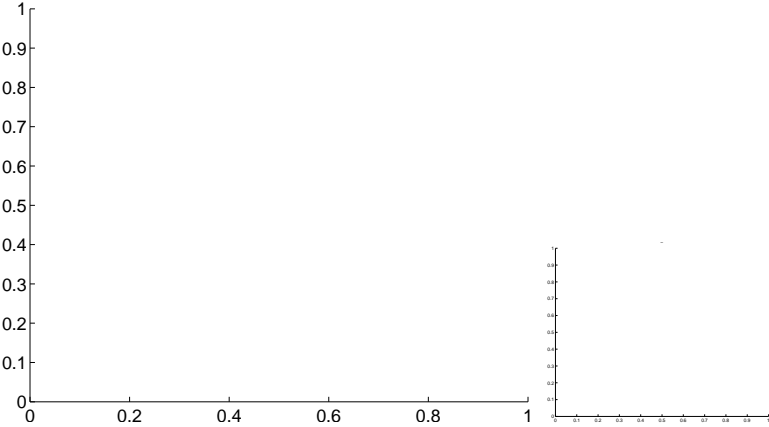
Q2 OOT image



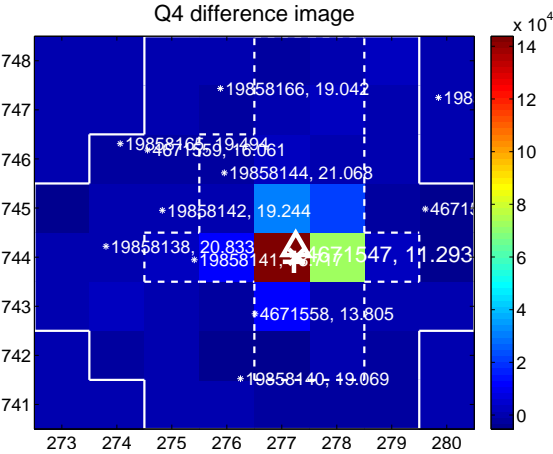
Q3 no difference image



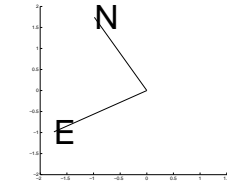
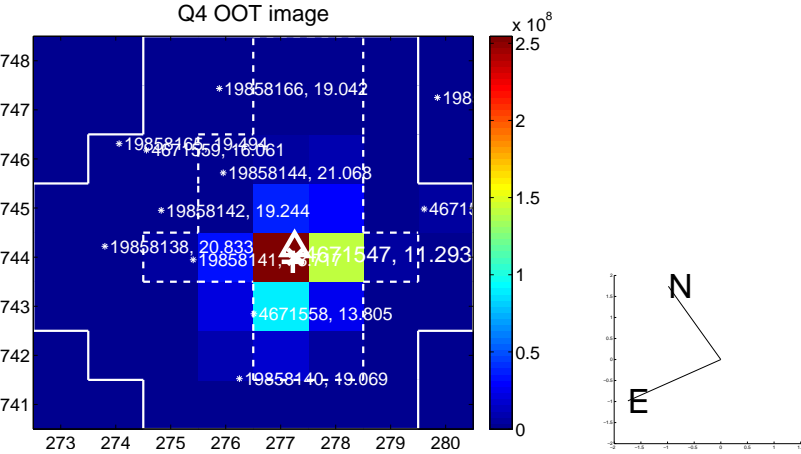
Q3 no OOT image



Q4 difference image



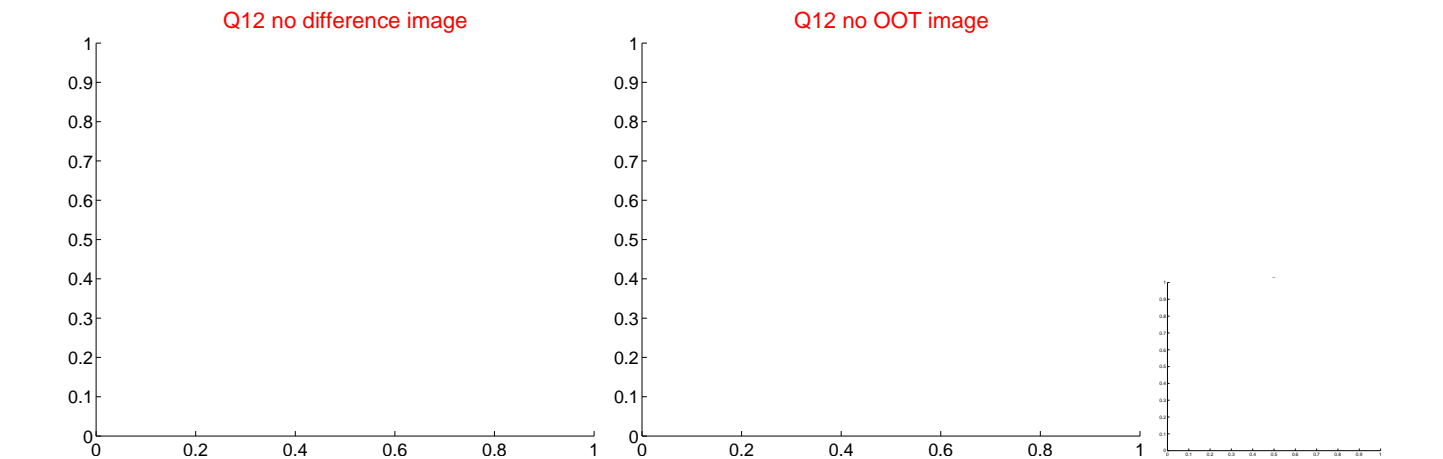
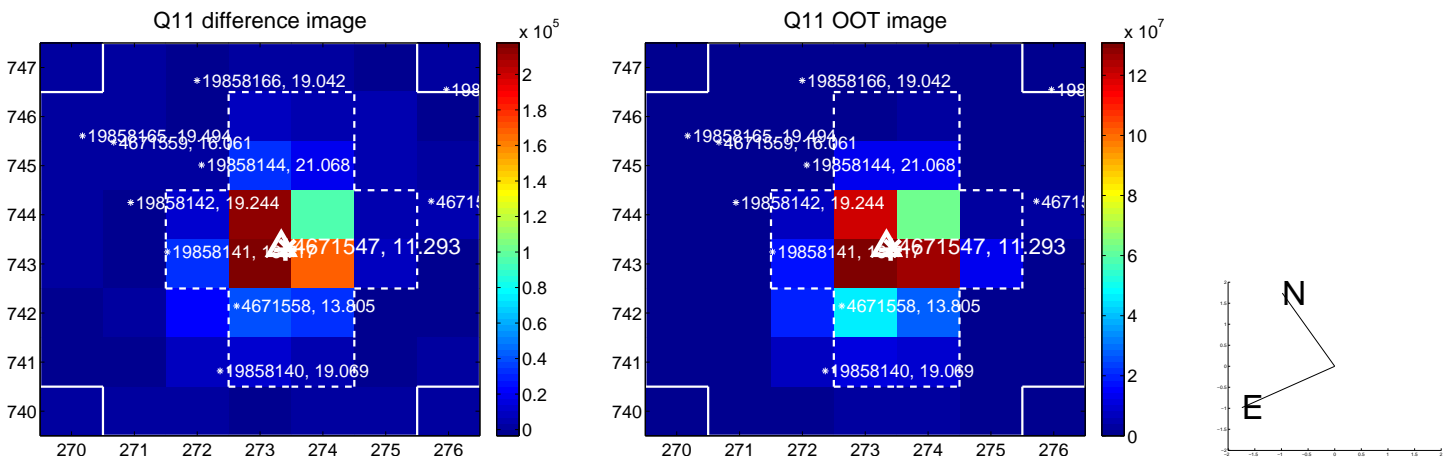
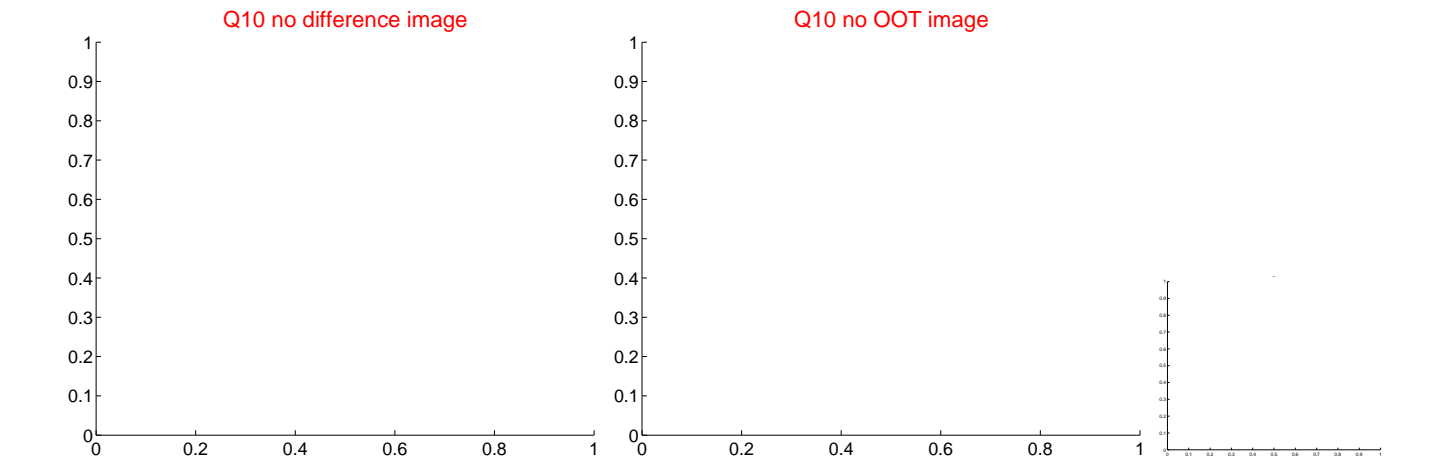
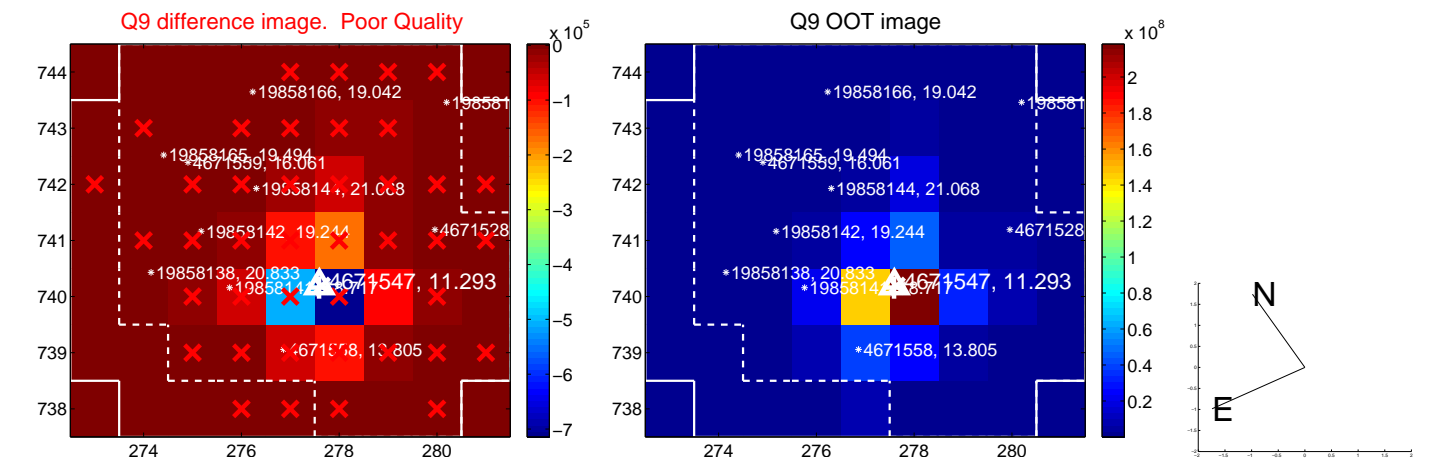
Q4 OOT image



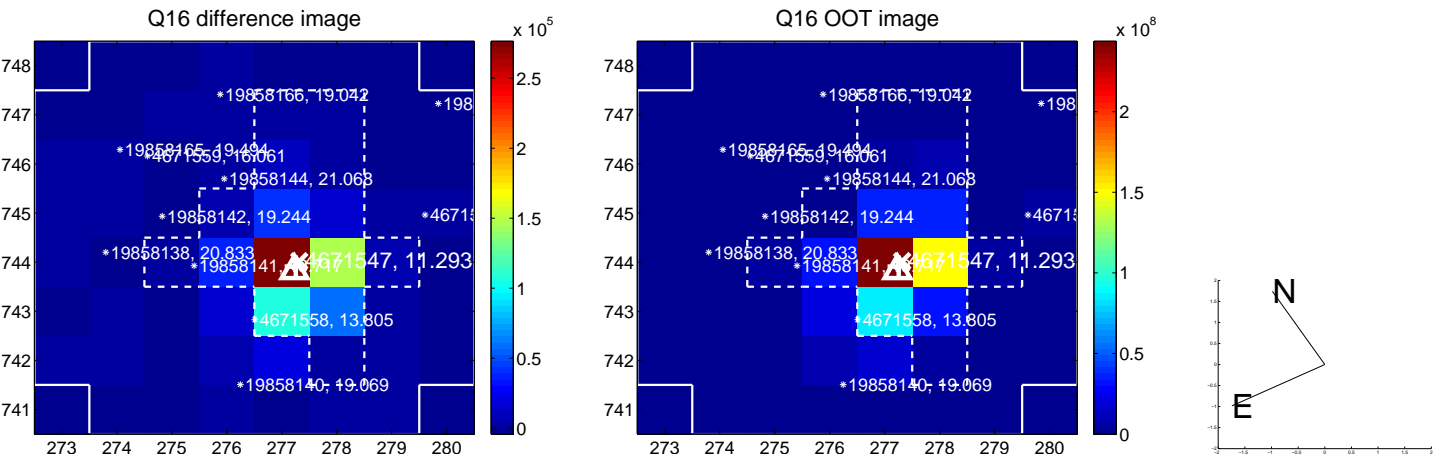
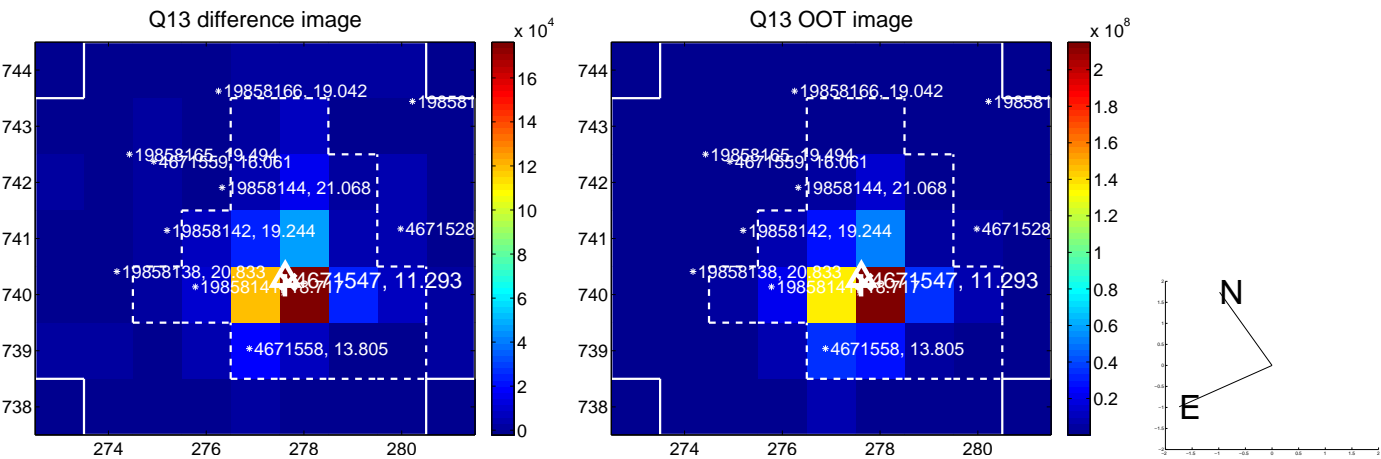
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



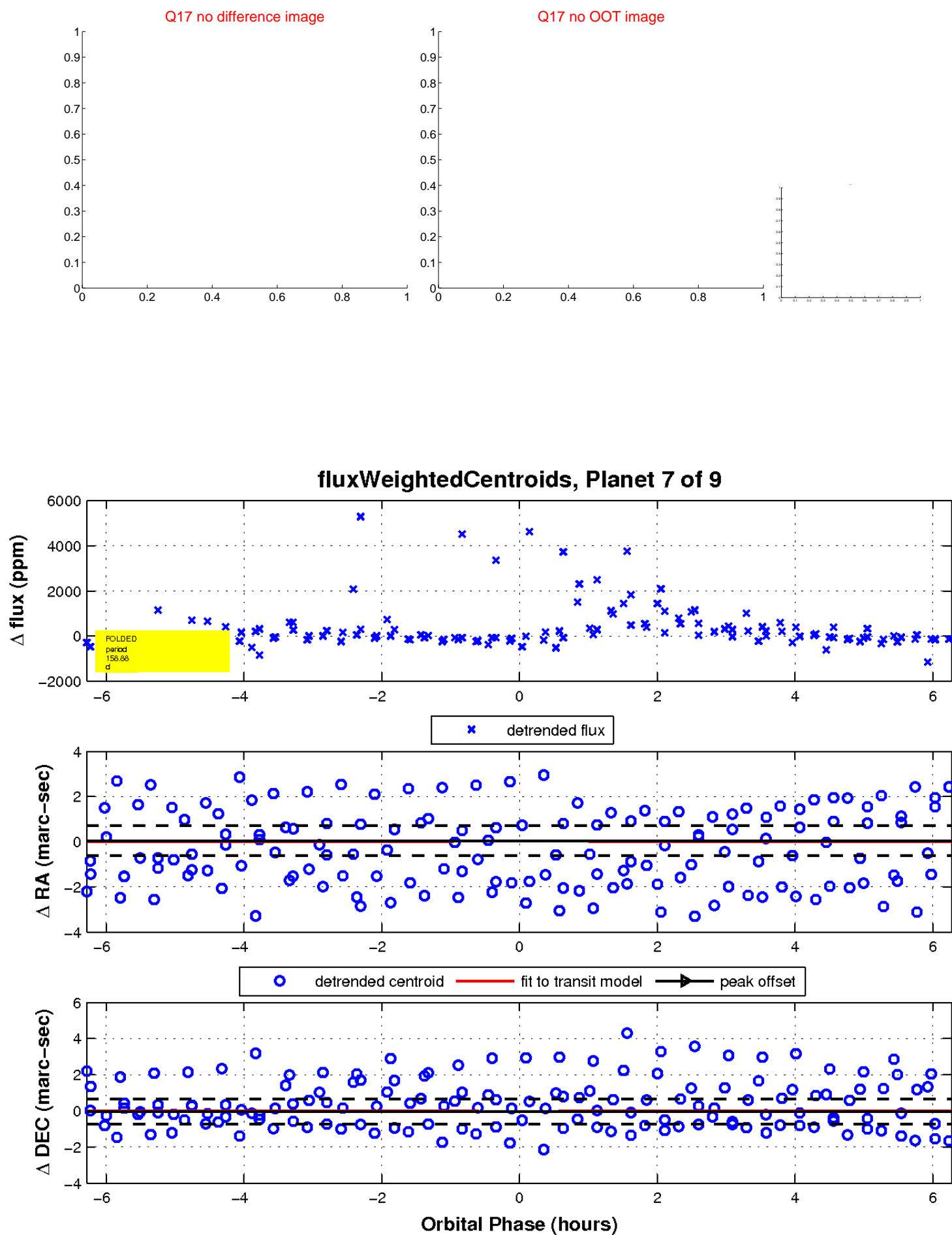
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



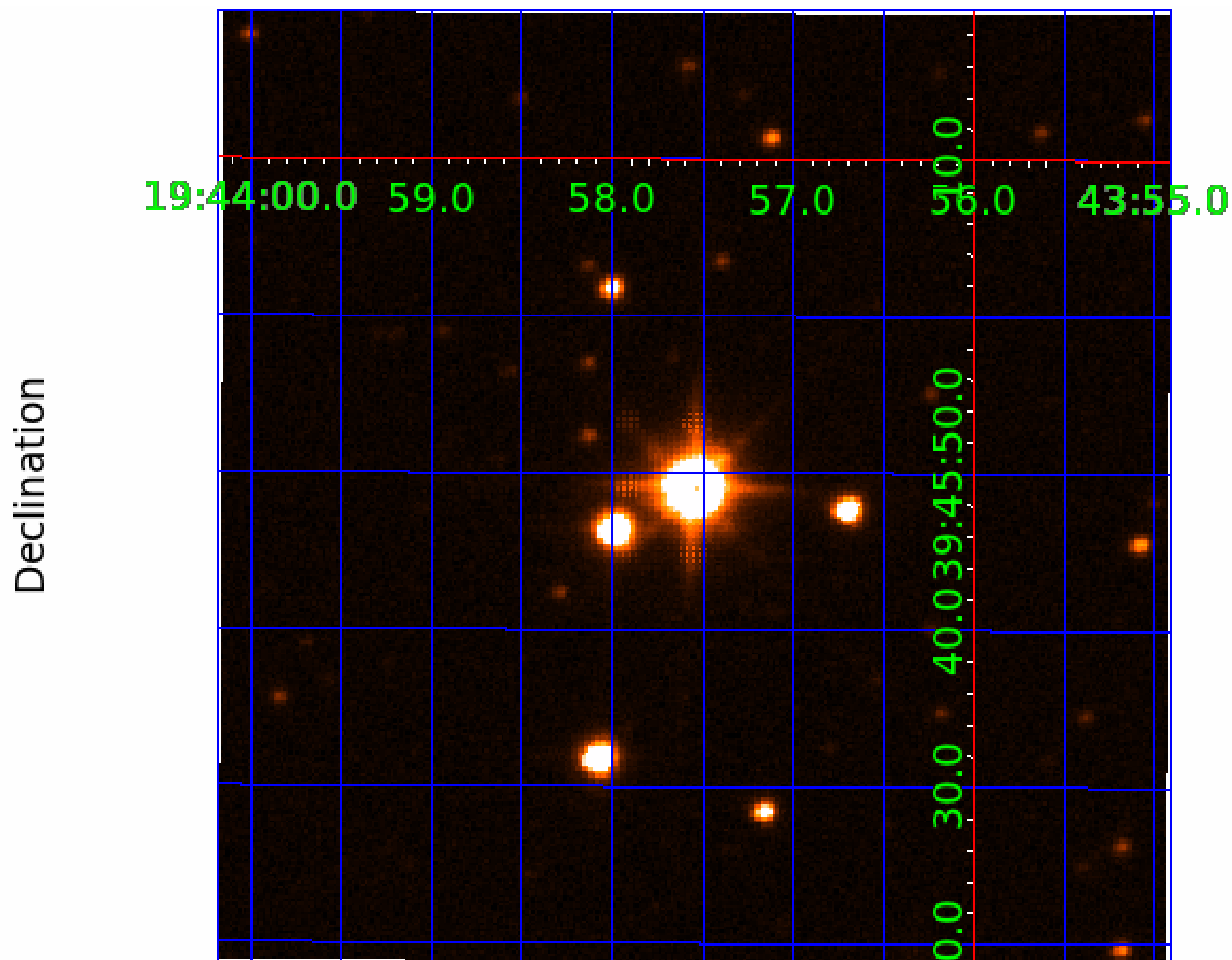
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004671547

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})
004671547-01	OBS	No	281.841230	286.743170	269.2	2.602	18.5	2.4	0.65	4166	1.10	0.21
004671547-03	OBS	No	296.361543	240.748806	137.9	15.000	14.2	-1.0	0.65	4166	0.73	0.19
004671547-04	OBS	No	557.906833	280.189324	867.8	5.776	13.5	7.0	0.65	4166	2.29	0.08
004671547-05	OBS	No	426.509156	189.433089	451.5	3.125	16.6	4.0	0.65	4166	1.66	0.12
004671547-06	OBS	No	283.282460	362.664934	509.4	4.842	13.1	4.4	0.65	4166	1.55	0.20
004671547-07	OBS	No	158.875354	248.596003	681.4	2.108	13.9	8.0	0.65	4166	1.67	0.44
004671547-08	OBS	No	408.474403	240.905682	1088.6	5.872	14.5	7.5	0.65	4166	2.11	0.13
004671547-09	OBS	No	346.096828	340.515662	138.9	12.000	13.5	-1.0	0.65	4166	0.73	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004671547-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004671547-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004671547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-06	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_SATURATED
004671547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-09	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

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

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

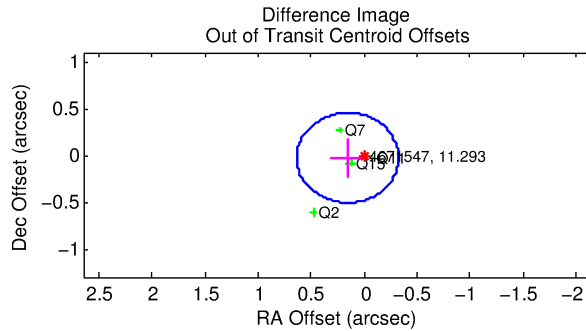
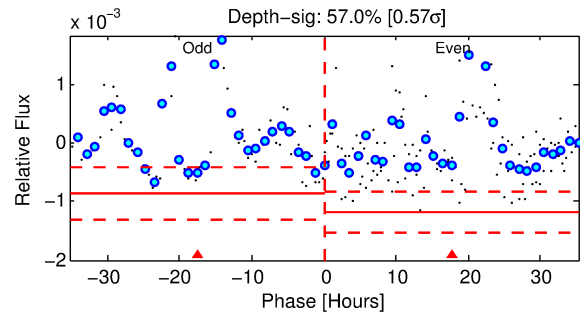
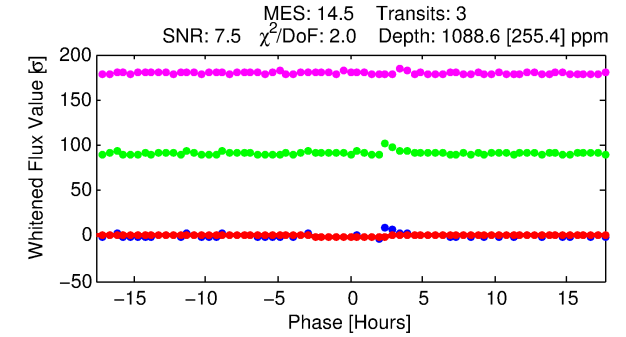
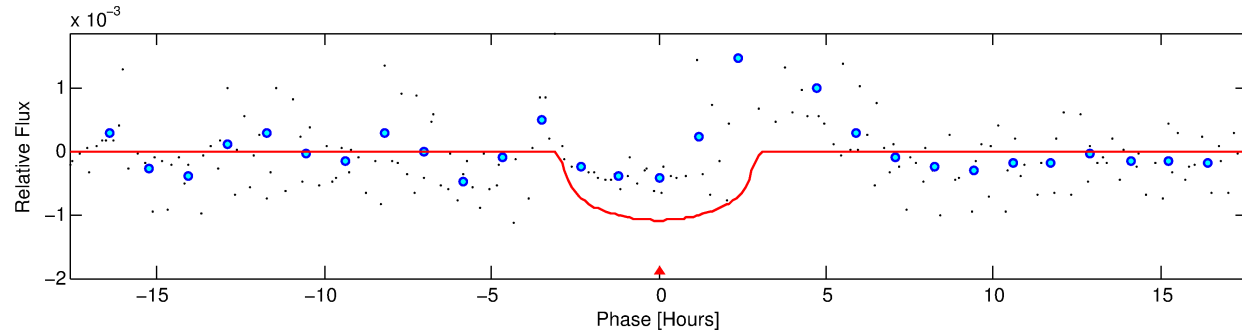
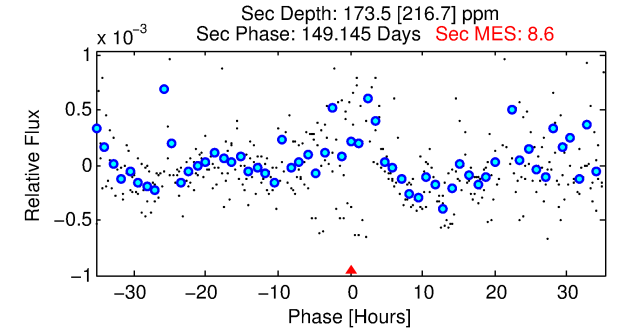
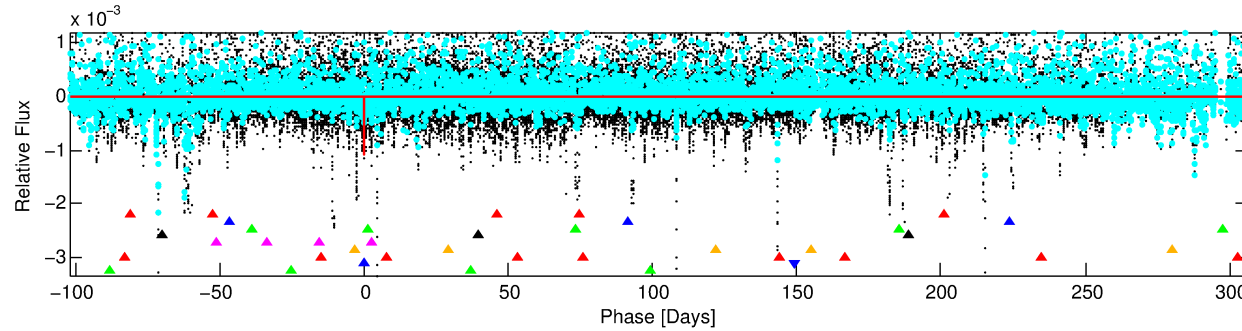
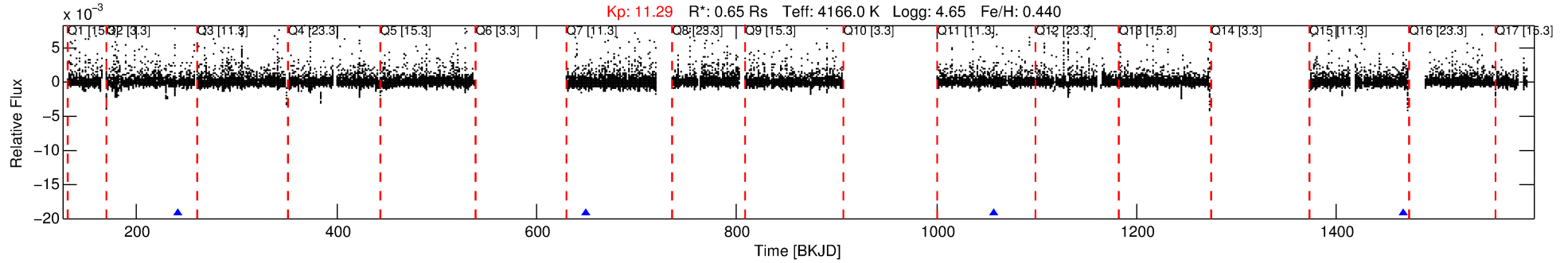
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004671547-08

No Significant Match Found

DV One-Page Summary

KIC: 4671547 Candidate: 8 of 9 Period: 408.474 d



DV Fit Results:

Period = 408.47440 [0.00658] d
Epoch = 240.9057 [0.0152] BKJD
Rp/R* = 0.0296 [0.0333]
a/R* = 502.65 [1564.76]
b = 0.41 [6.55]
Seff = 0.13 [0.02]
Teq = 152 [7] K
Rp = 2.11 [2.38] Re
a = 0.9557 [0.0509] AU
Ag = 19660.07 [50667.60] [0.39 σ]
Teffp = 2779 [1793] K [1.47 σ]

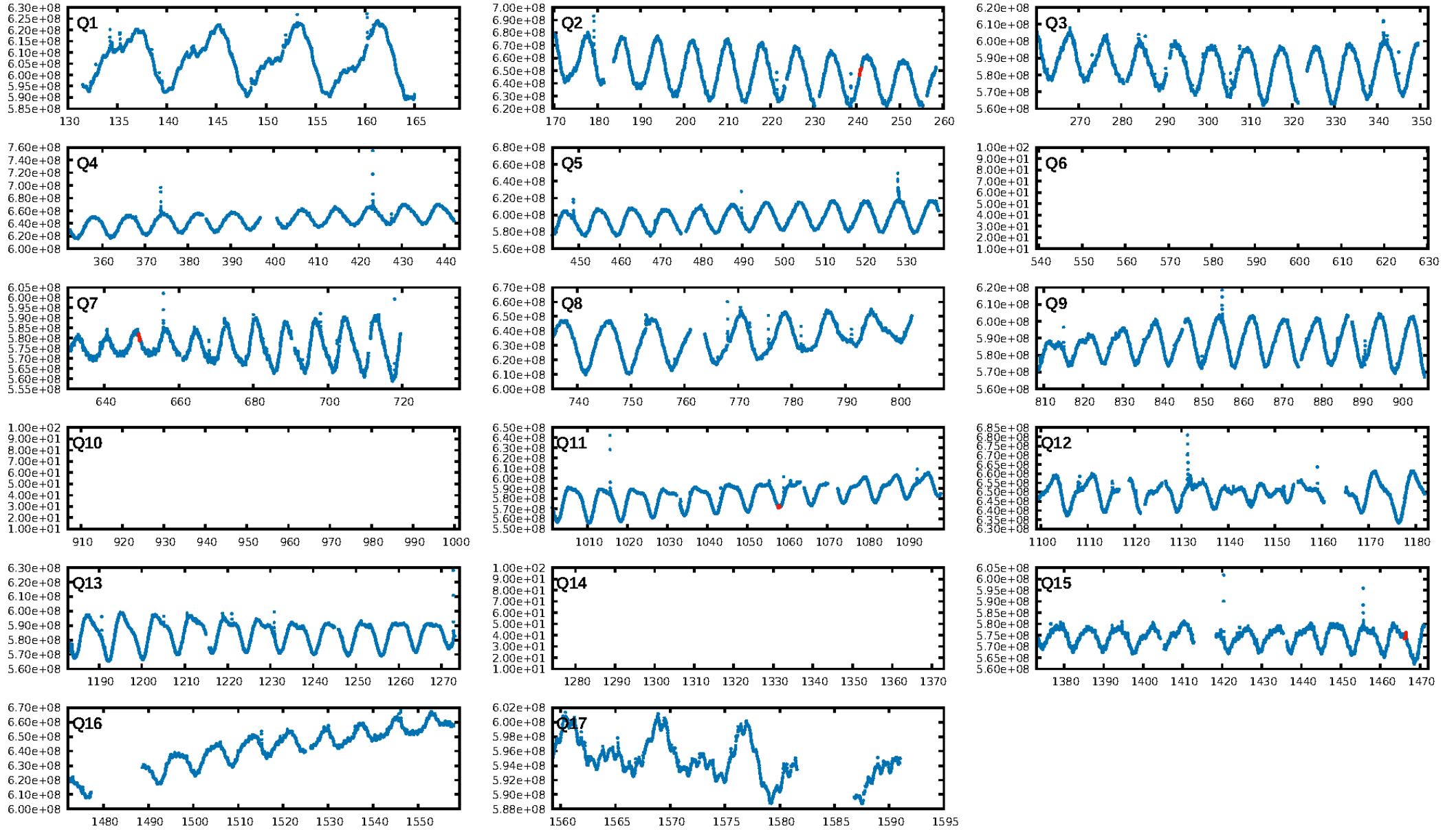
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [112.06 σ]
LongPeriod-sig: 100.0% [65.07 σ]
ModelChiSquare2-sig: 52.4%
ModelChiSquareGof-sig: 75.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.8025
Centroid-sig: 1.2%
Centroid-so: 0.399 arcsec [0.83 σ]
OotOffset-rm: 0.159 arcsec [0.99 σ]
KicOffset-rm: 0.366 arcsec [1.91 σ]
OotOffset-st: 1/3/0/0 [4]
KicOffset-st: 1/3/0/0 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 1.00 [4/4]

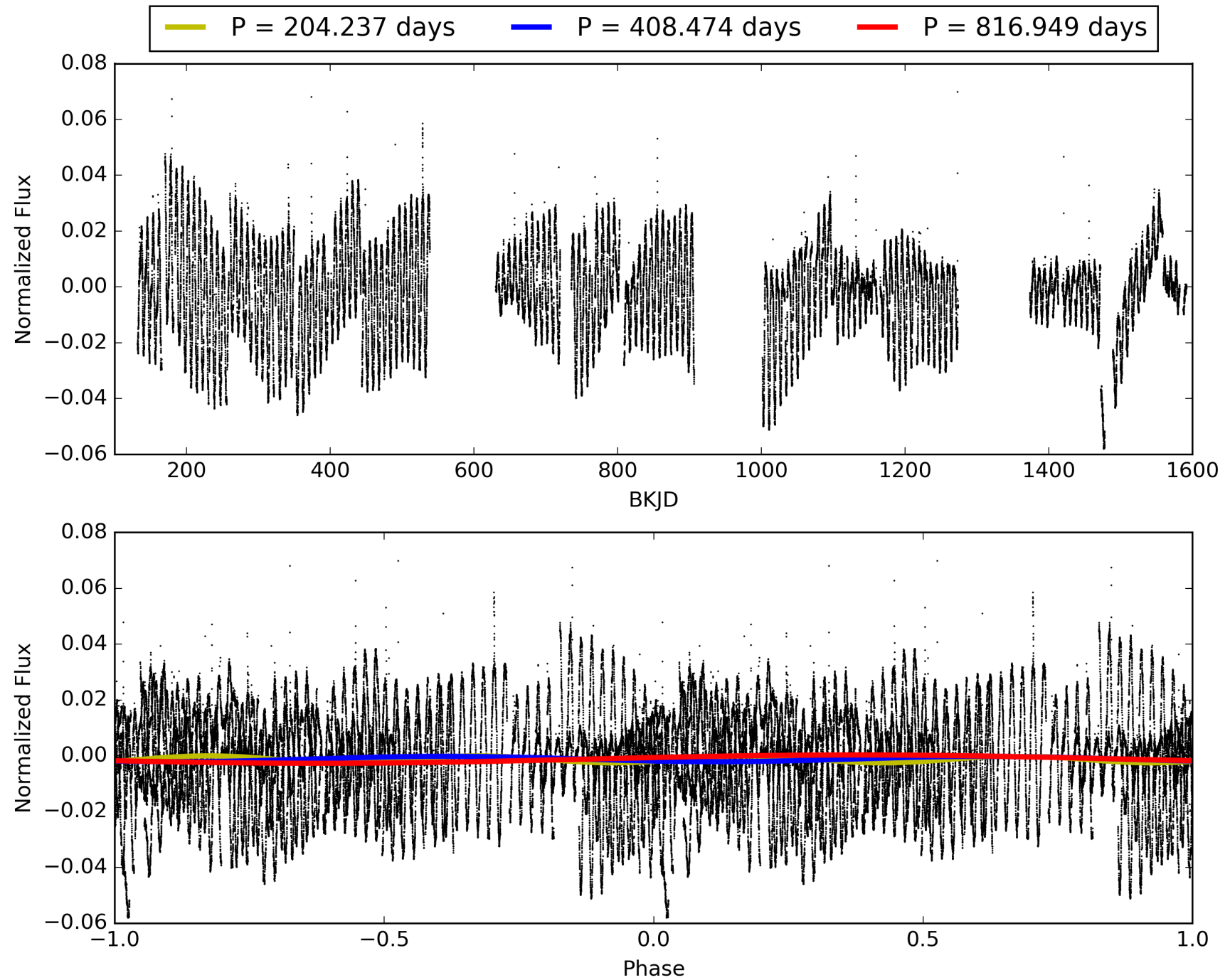
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:59:52 Z

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

TCE 004671547-08, PDC Light Curves

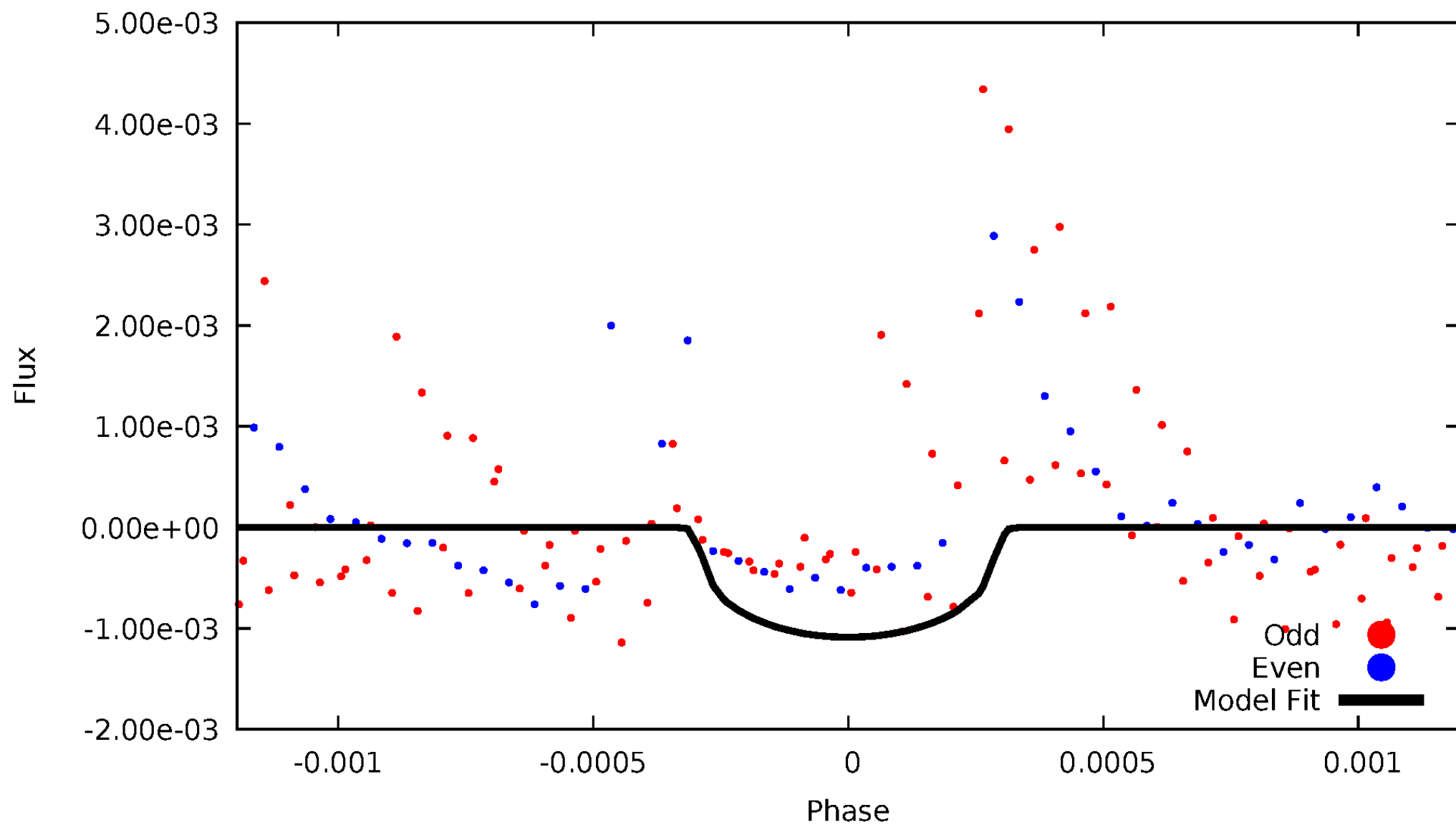


TCE 004671547-08



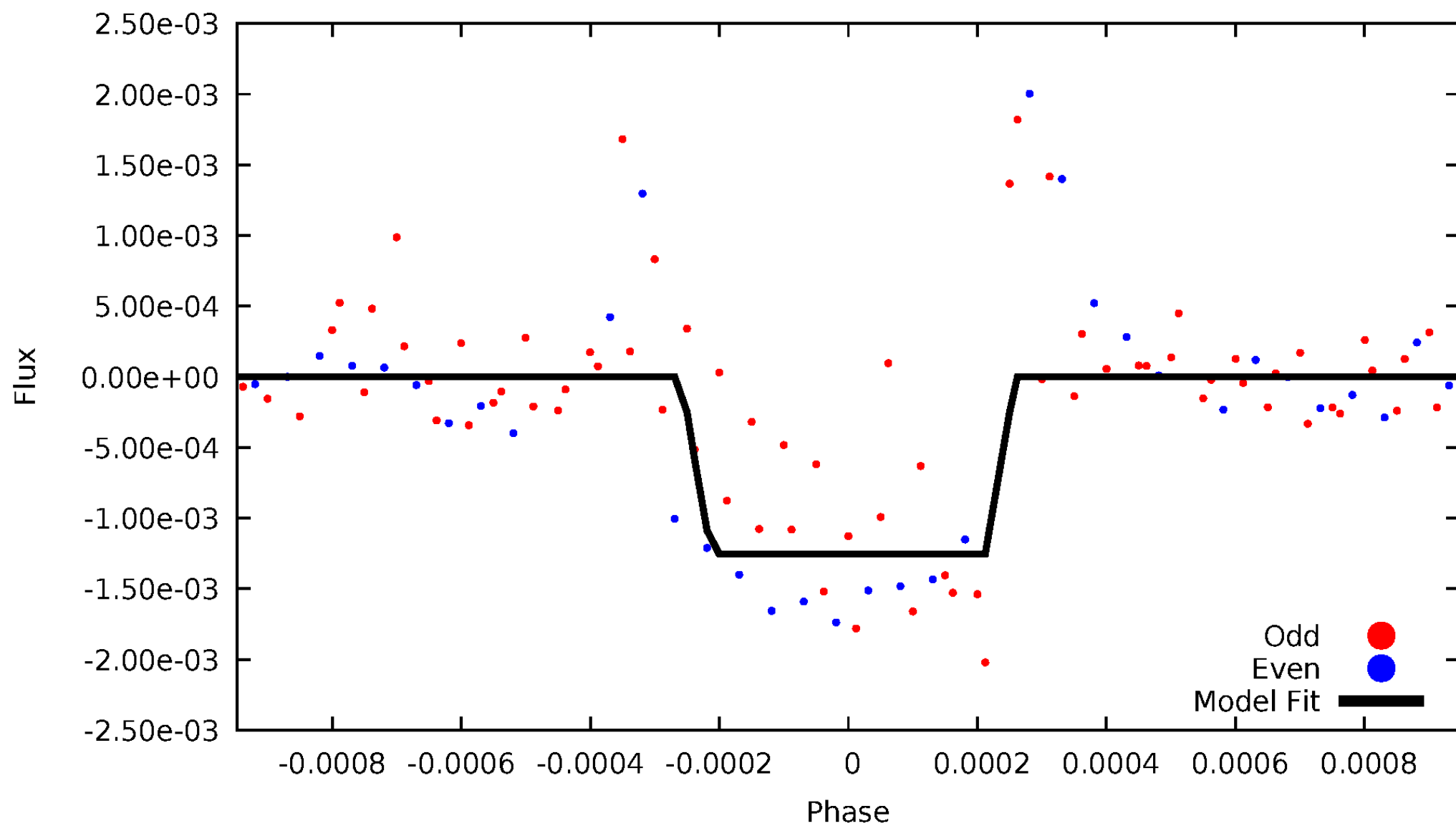
DV Odd/Even

TCE 004671547-08



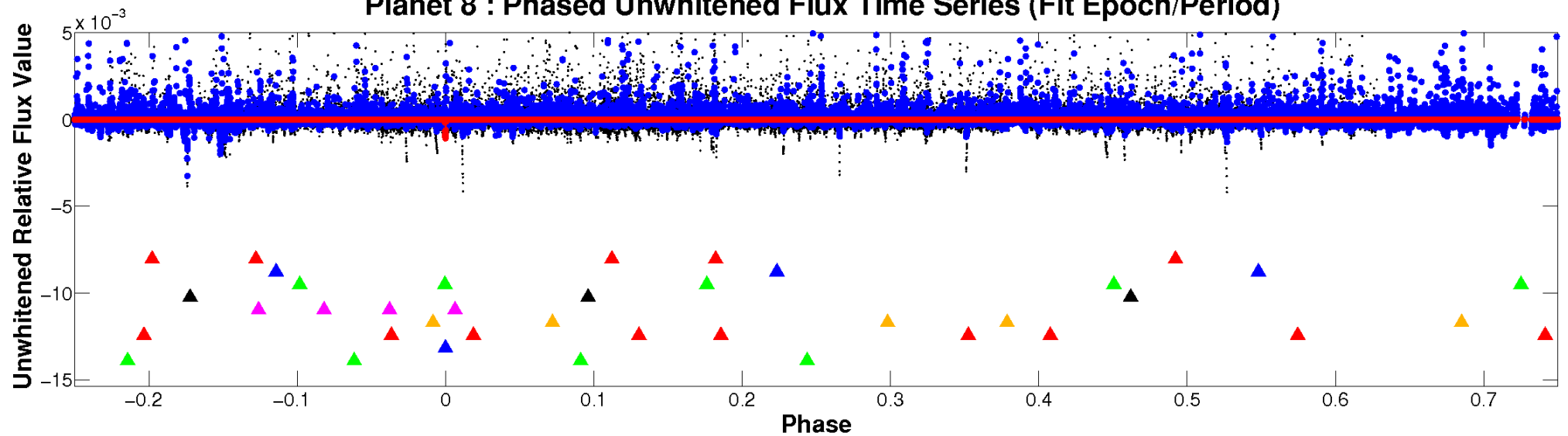
ALT Odd/Even

TCE 004671547-08

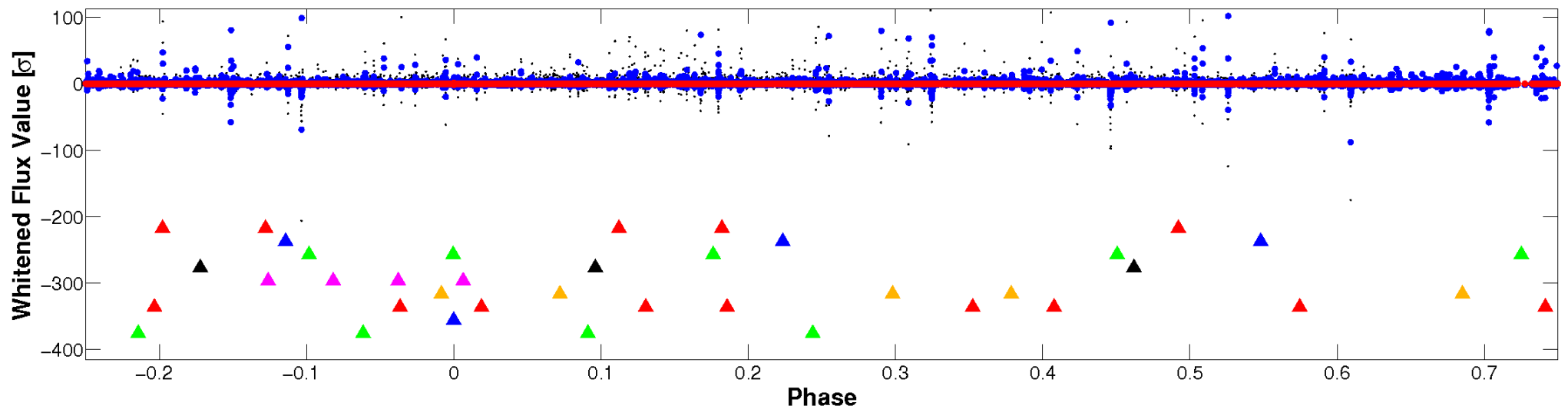


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

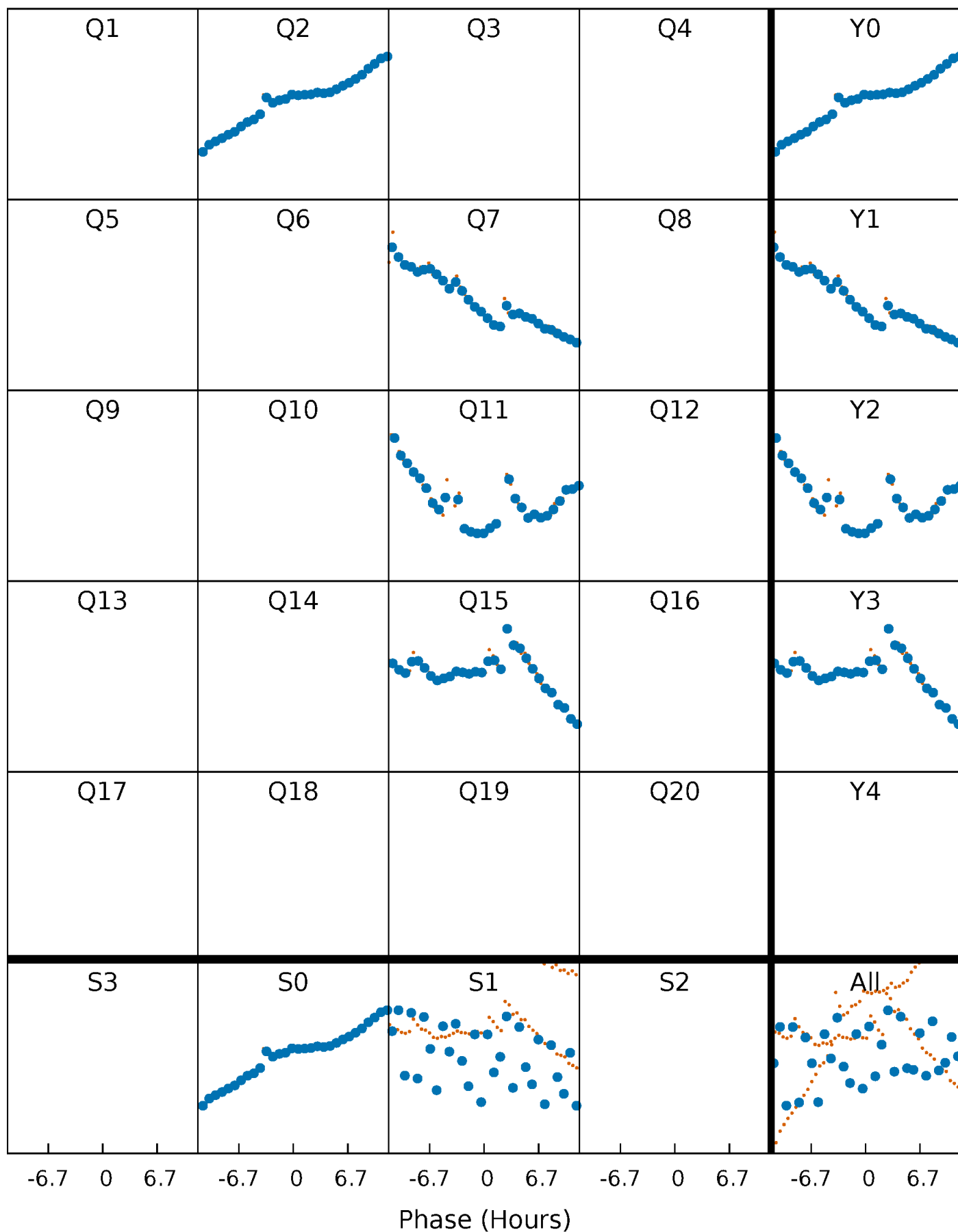


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



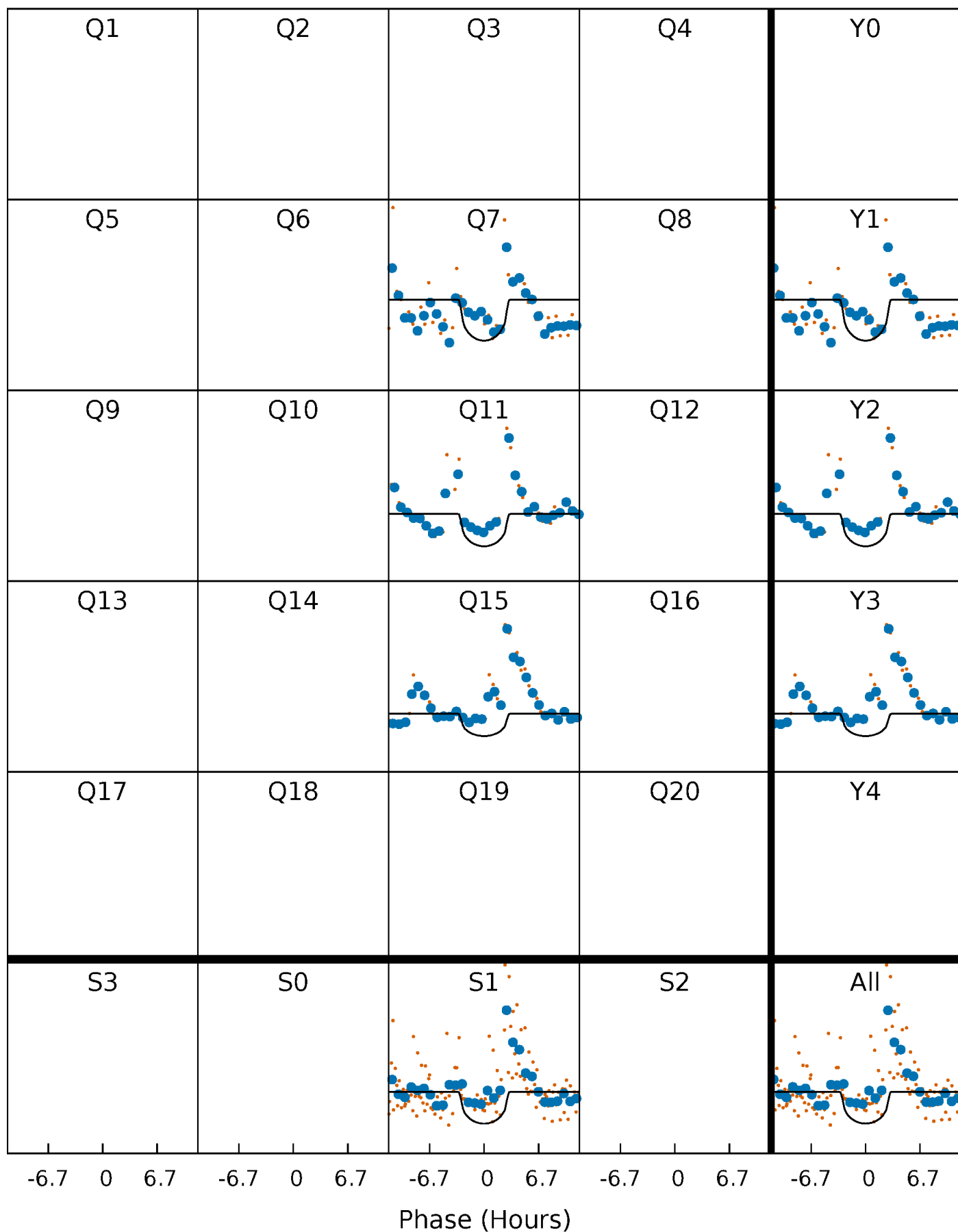
PDC Quarter-Phased Transit Curves

TCE 004671547-08 P=408.474403 Days $T_0=240.905682$ (BKJD)



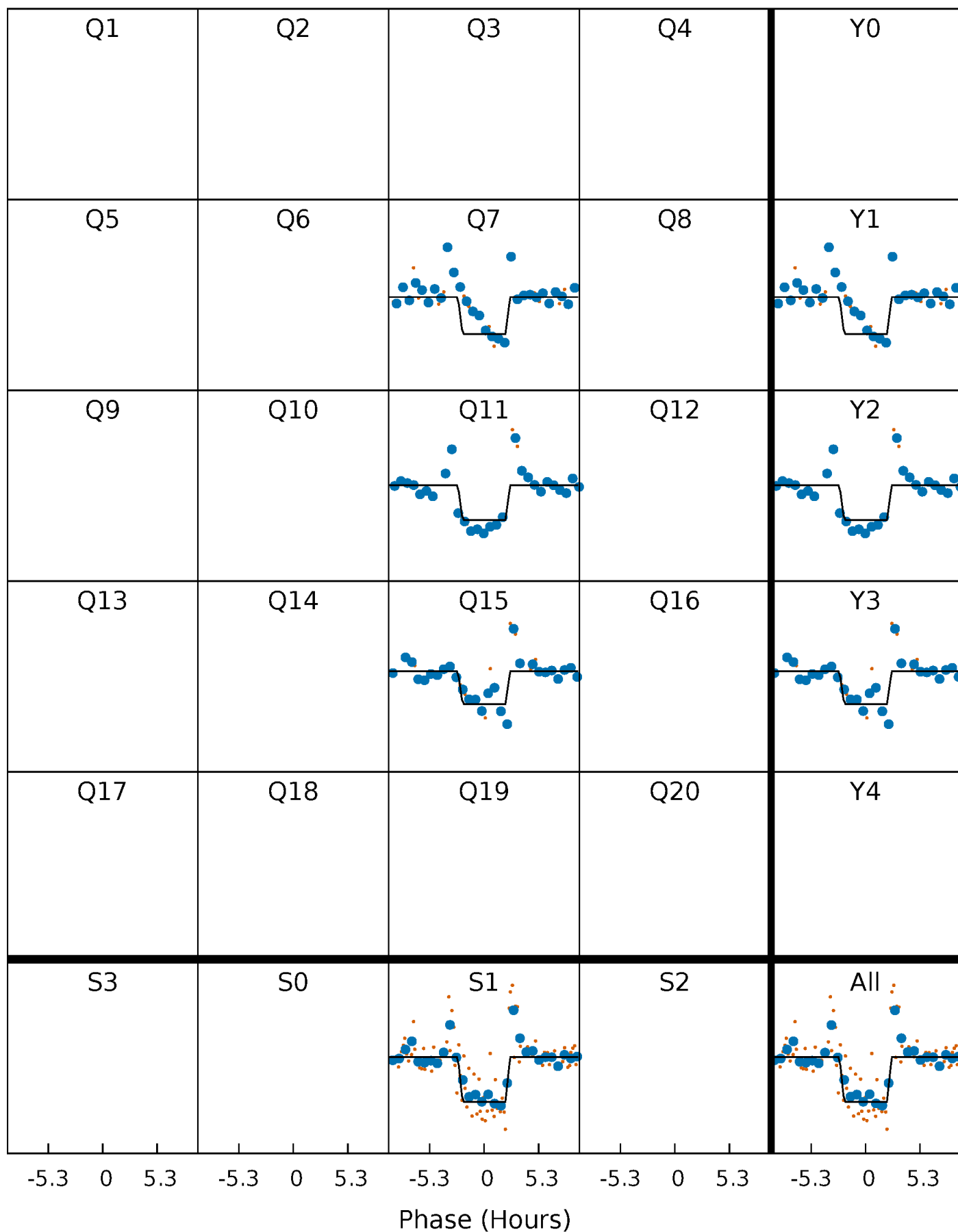
DV Quarter-Phased Transit Curves

TCE 004671547-08 $P=408.474403$ Days $T_0=240.905682$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

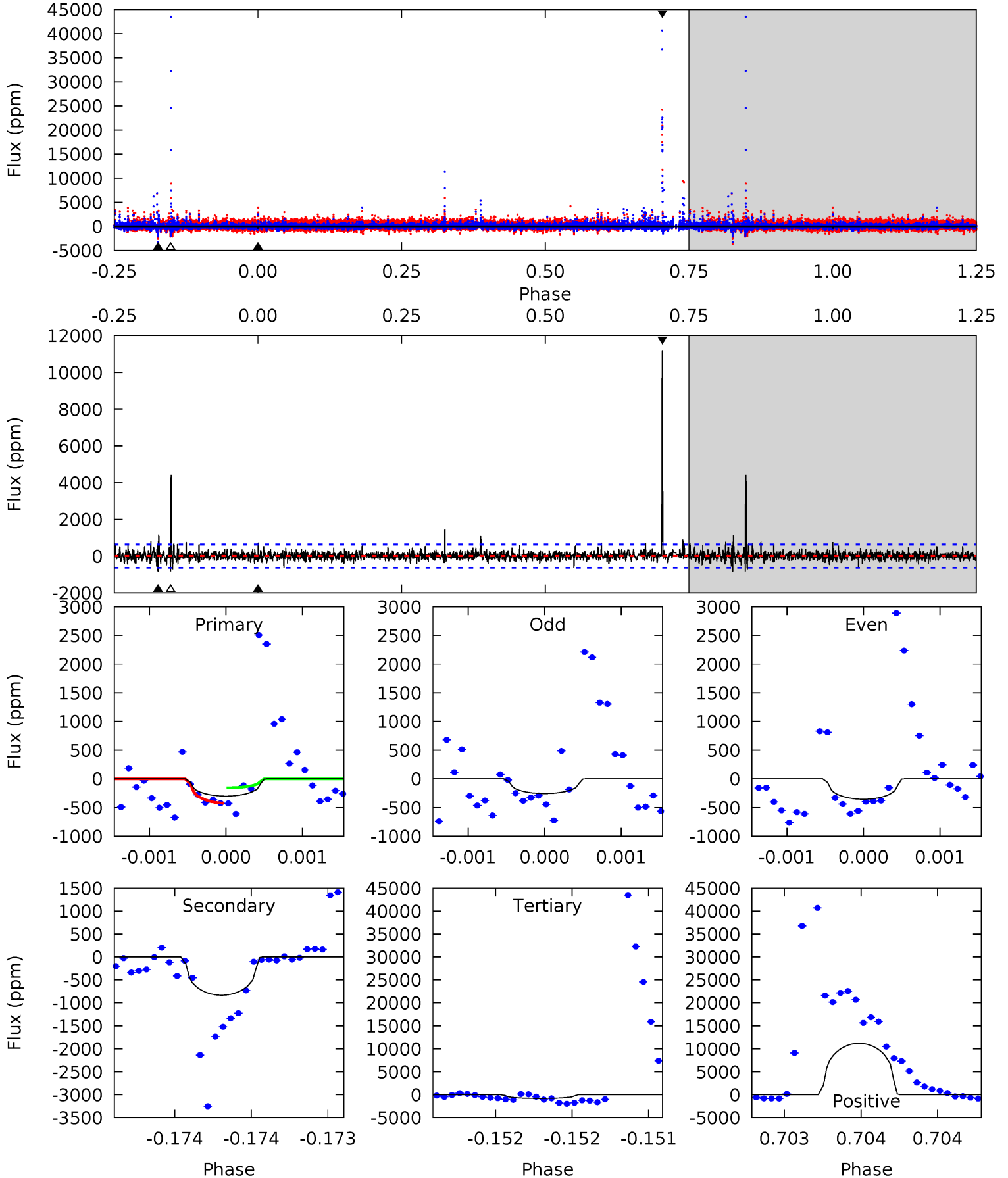
TCE 004671547-08 $P=408.473676$ Days $T_0=240.908820$ (BKJD)



DV Model-Shift Uniqueness Test

004671547-08, P = 408.474403 Days, E = 240.905682 Days

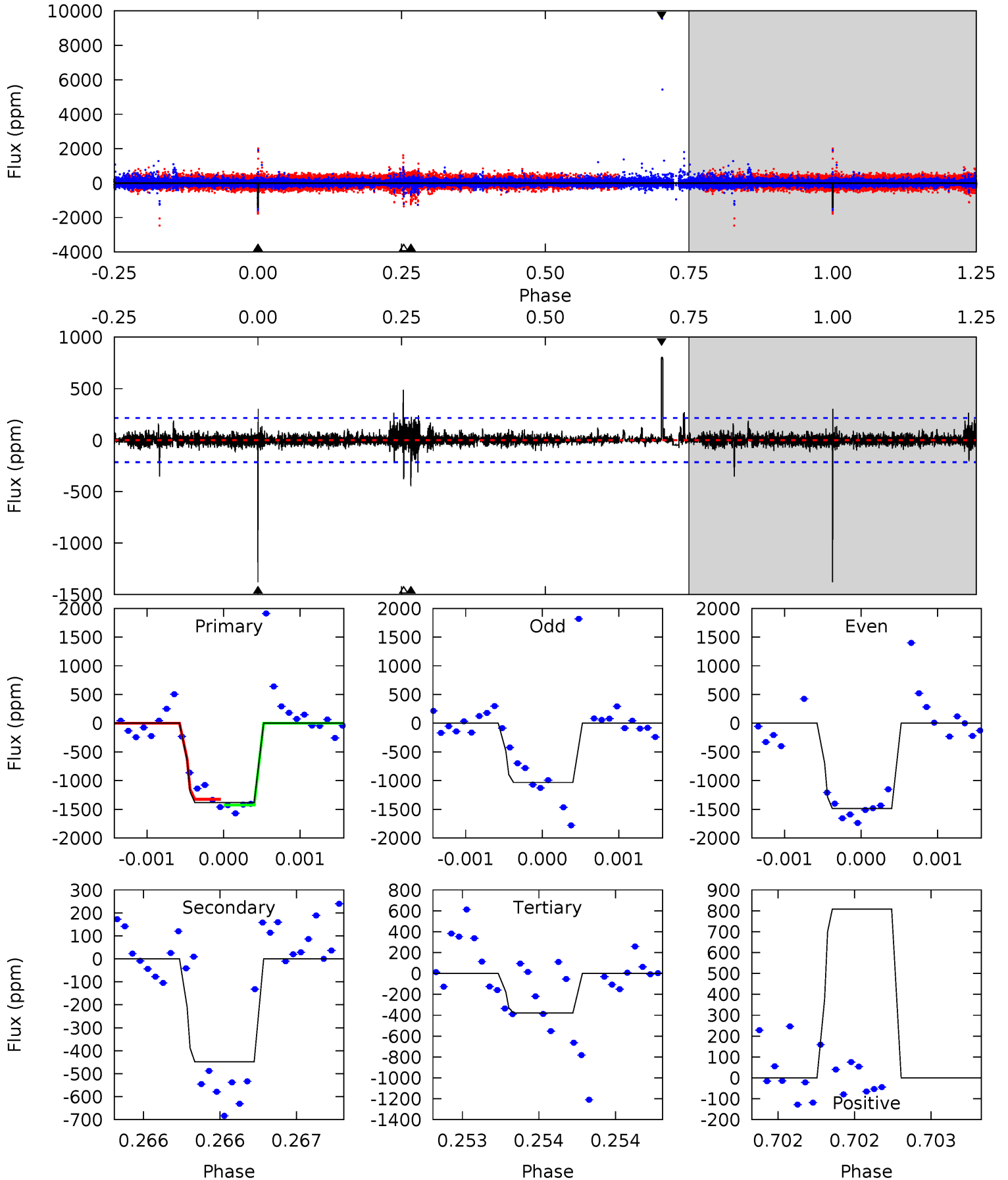
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.62	7.25	7.18	97.3	5.53	3.42	2.55	-4.55	-94.7	0.07	-90.1	0.33	0.16	0.93	1.11



Alt Model-Shift Uniqueness Test

004671547-08, P = 408.473676 Days, E = 240.908820 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.8	11.6	9.83	21.0	5.57	3.48	1.07	26.0	14.9	1.81	-9.33	5.36	1.01	0.37	1.21



Stellar Parameters For KIC 004671547

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	4166^{+150}_{-167}	$4.653^{+0.028}_{-0.035}$	$0.440^{+0.050}_{-0.300}$	$0.652^{+0.036}_{-0.045}$	$0.702^{+0.030}_{-0.064}$	$3.563^{+0.474}_{-0.462}$
	+4%/-4%	+1%/-1%	+11%/-68%	+6%/-7%	+4%/-9%	+13%/-13%
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 004671547-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-834 ± 115	$2.64^{+2.17}_{-1.74}$	212^{+8}_{-9}	3805^{+2062}_{-651}	$57799^{+455668}_{-39516}$
Alt.	-448 ± 39	$2.92^{+2.05}_{-1.73}$	212^{+8}_{-9}	3330^{+1276}_{-486}	$25811^{+137485}_{-16852}$

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 $A_{obs} \gg 1.0$

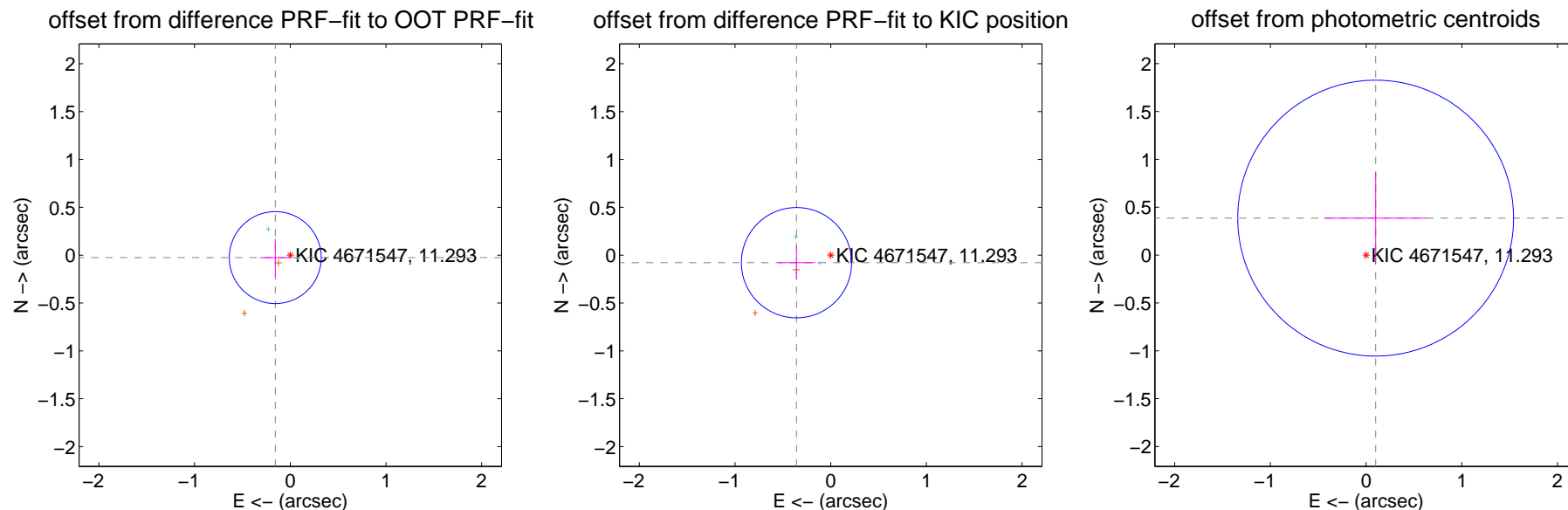
DV Centroid Data

Supplemental centroid analysis for 004671547-08. **Kepler magnitude: 11.29.** Transit SNR 7.47

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.159 ± 0.160	0.99	0.157 ± 0.159	-0.026 ± 0.196
PRF-fit source offset from KIC position	0.366 ± 0.192	1.91	0.358 ± 0.193	-0.079 ± 0.179
photometric centroid source offset	0.40 ± 0.48	0.83	-0.10 ± 0.54	0.39 ± 0.48



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.

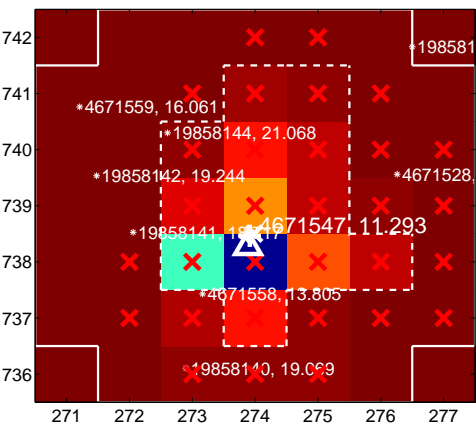
Q1 no difference image



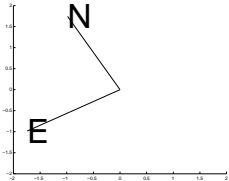
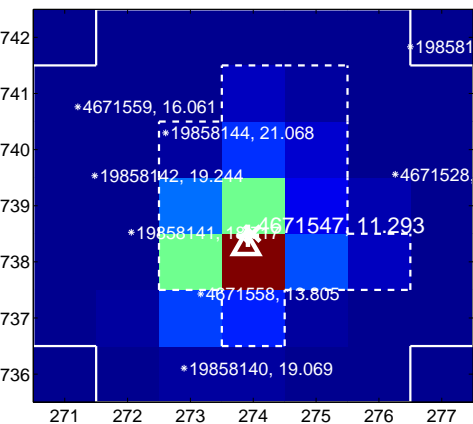
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



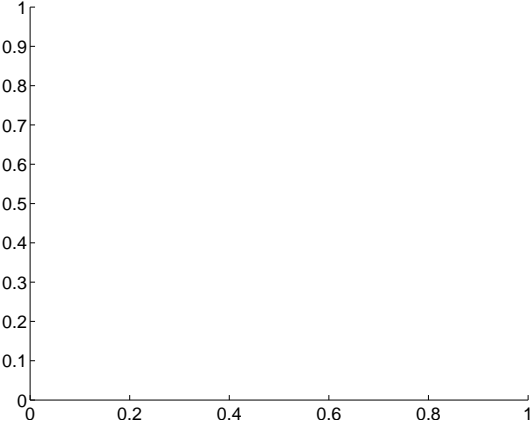
Q3 no difference image



Q3 no OOT image



Q4 no difference image



Q4 no OOT image



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

Q5 no difference image



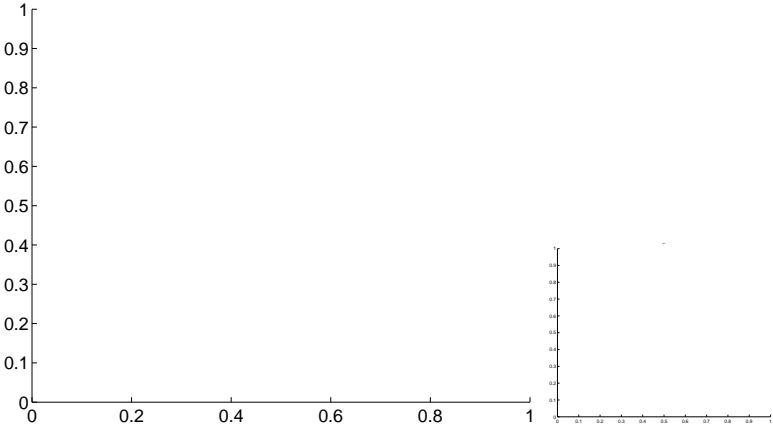
Q5 no OOT image



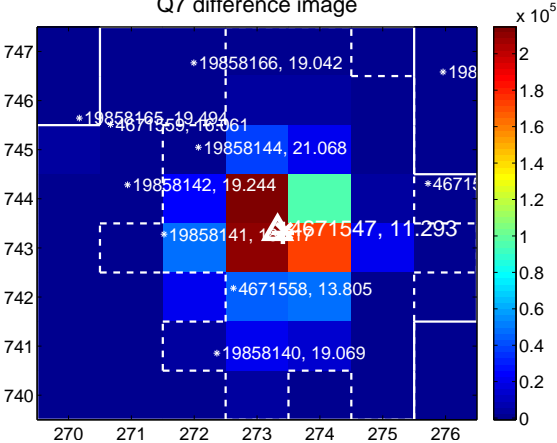
Q6 no difference image



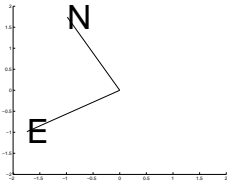
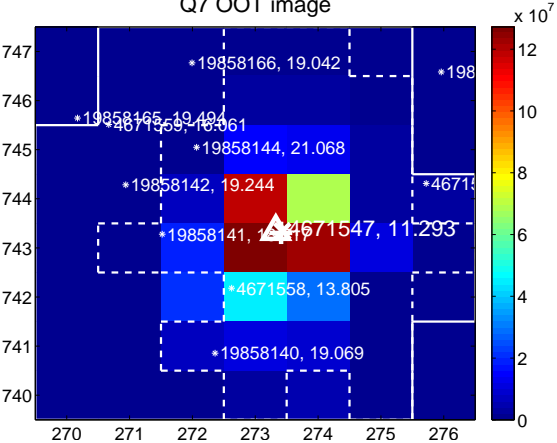
Q6 no OOT image



Q7 difference image



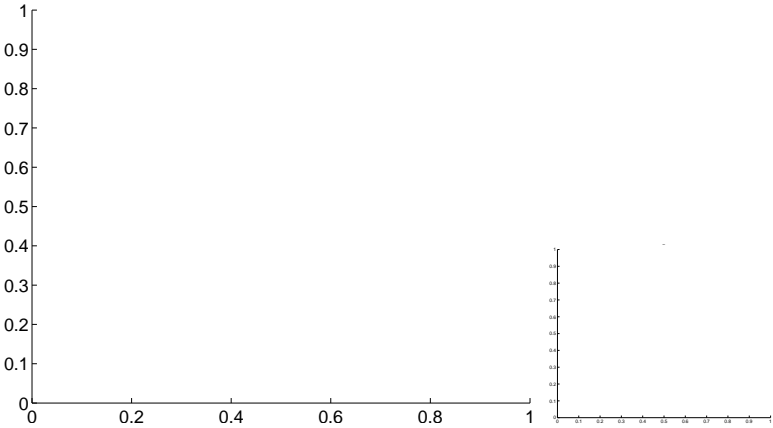
Q7 OOT image



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



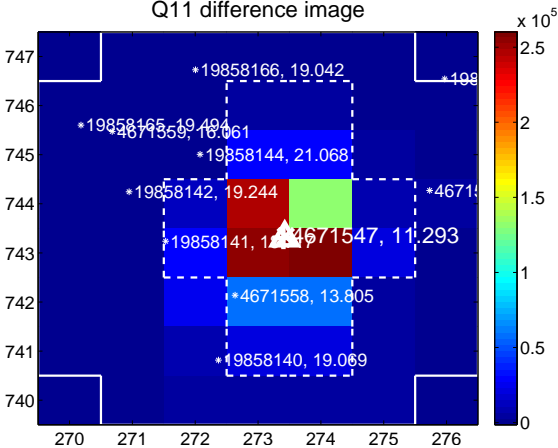
Q10 no difference image



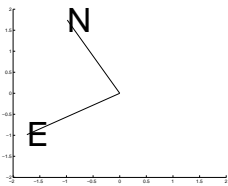
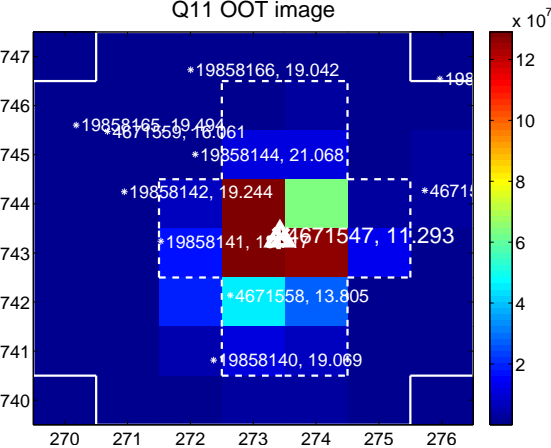
Q10 no OOT image



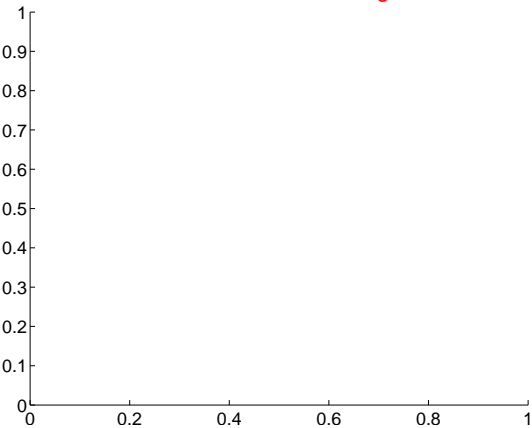
Q11 difference image



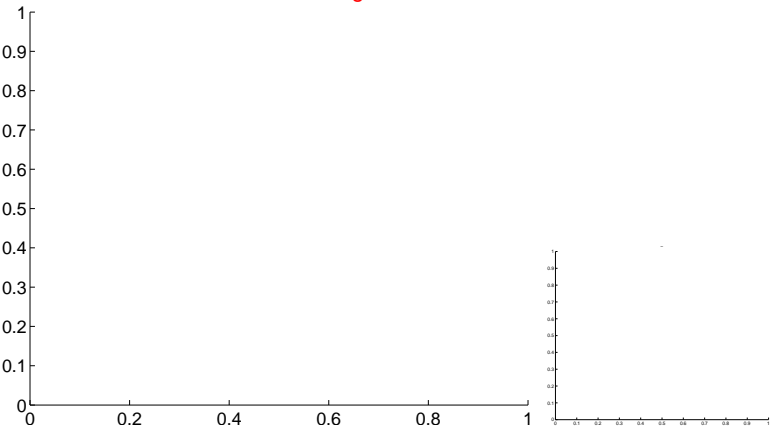
Q11 OOT image



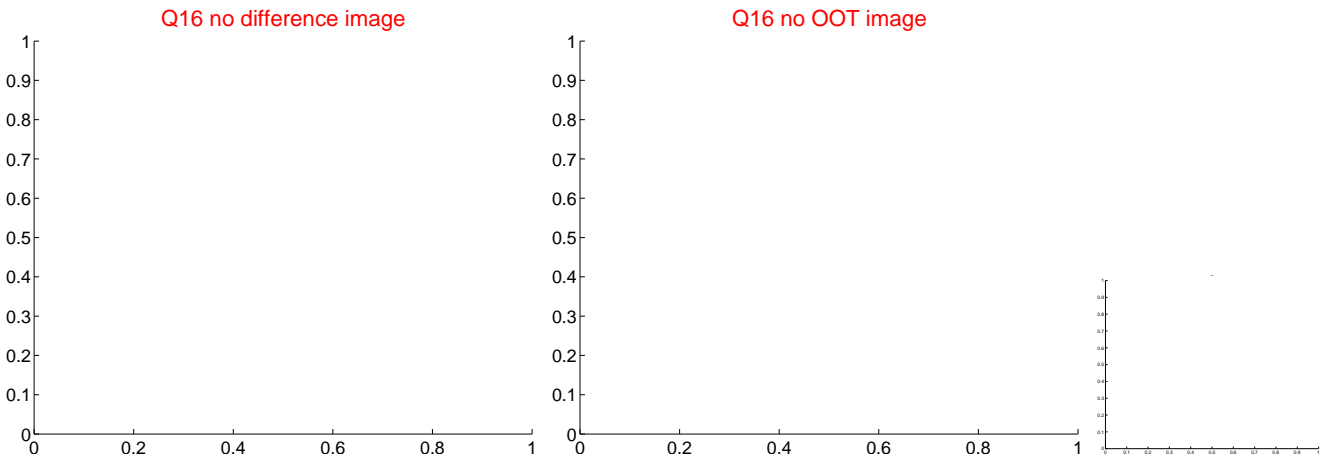
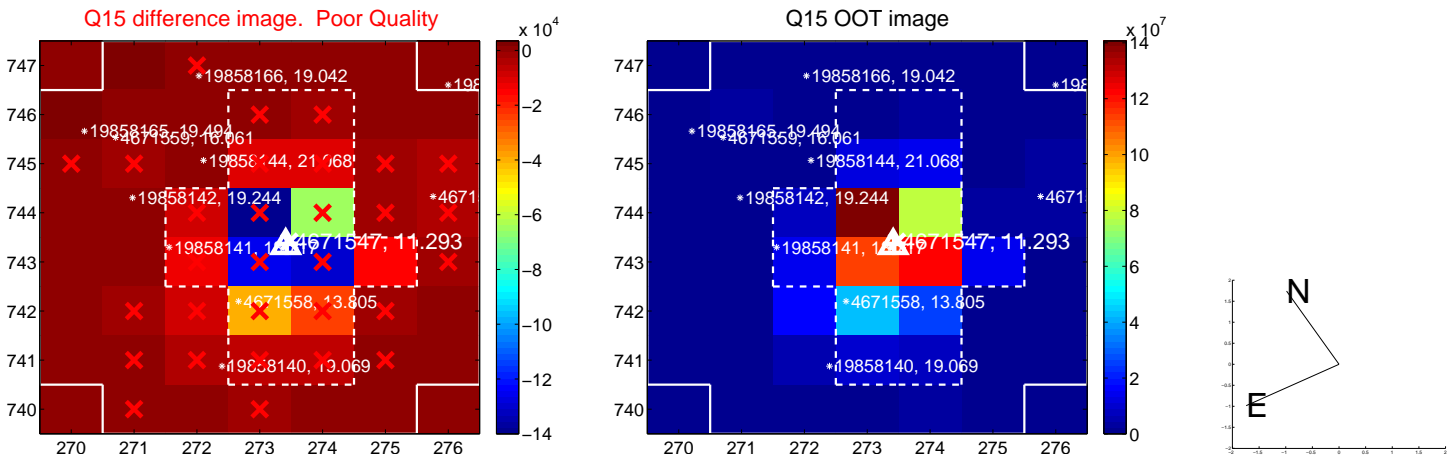
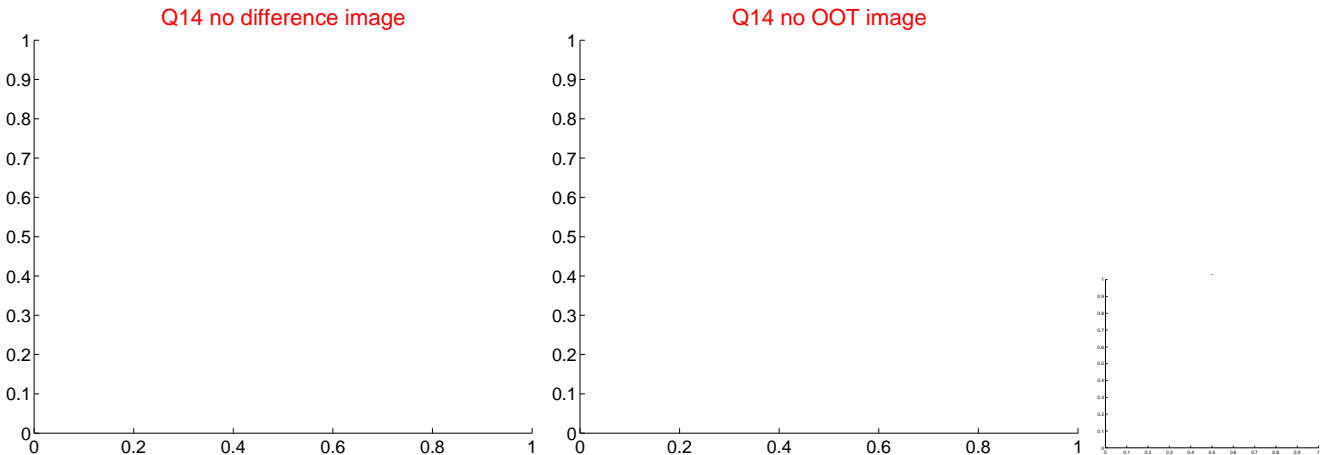
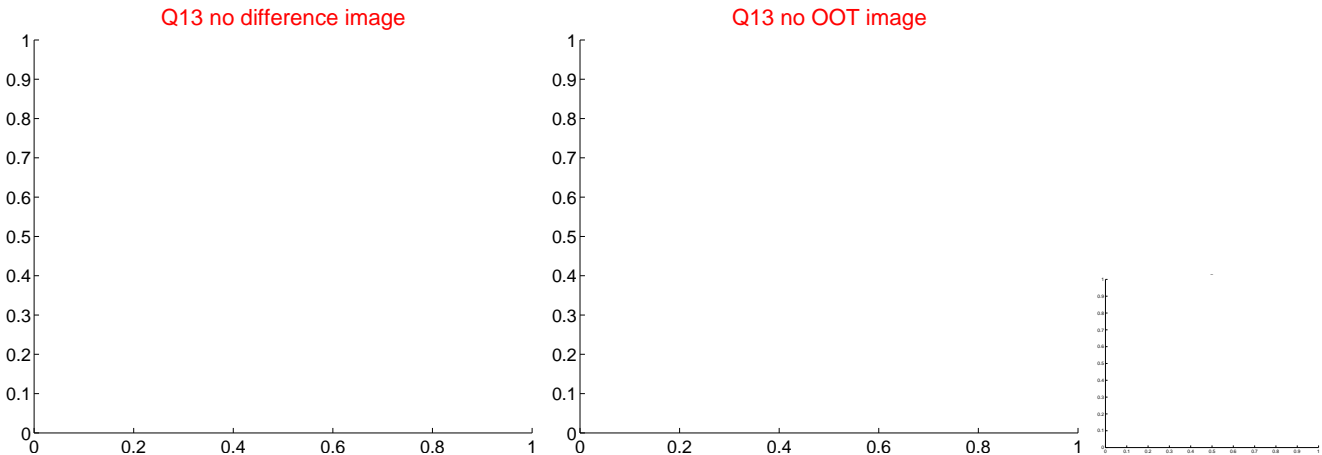
Q12 no difference image



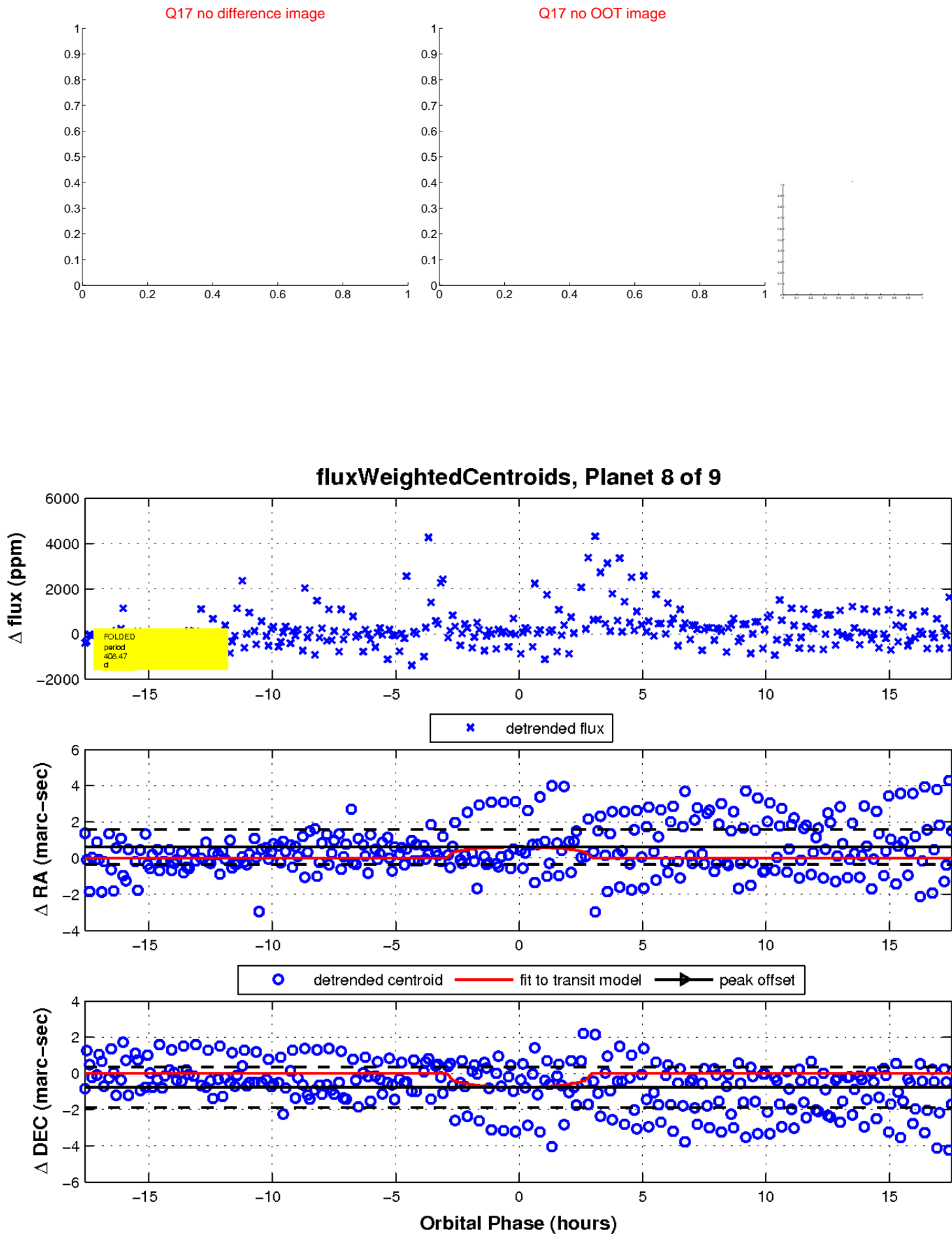
Q12 no OOT image



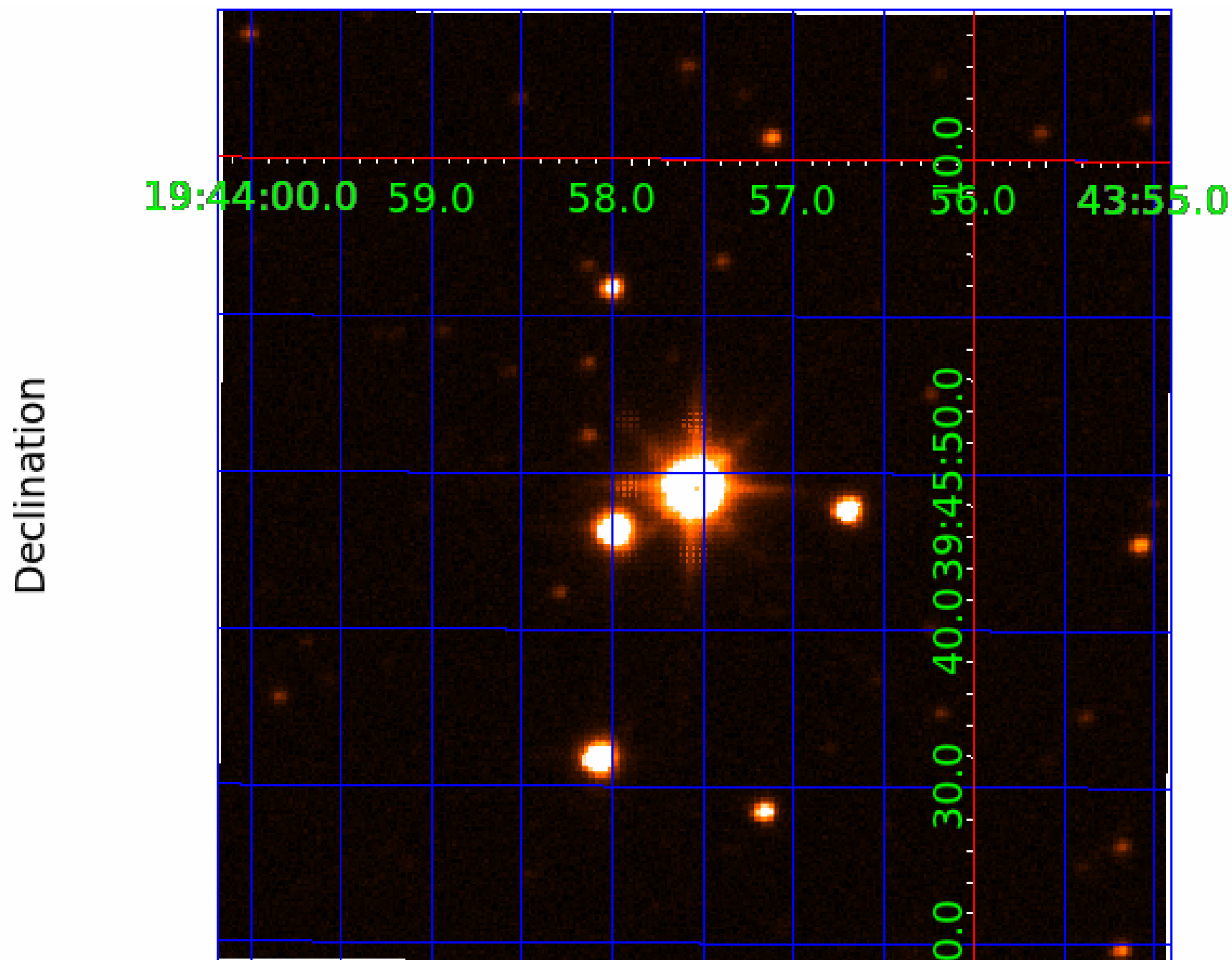
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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



UKIRT Image



KIC 004671547

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})
004671547-01	OBS	No	281.841230	286.743170	269.2	2.602	18.5	2.4	0.65	4166	1.10	0.21
004671547-03	OBS	No	296.361543	240.748806	137.9	15.000	14.2	-1.0	0.65	4166	0.73	0.19
004671547-04	OBS	No	557.906833	280.189324	867.8	5.776	13.5	7.0	0.65	4166	2.29	0.08
004671547-05	OBS	No	426.509156	189.433089	451.5	3.125	16.6	4.0	0.65	4166	1.66	0.12
004671547-06	OBS	No	283.282460	362.664934	509.4	4.842	13.1	4.4	0.65	4166	1.55	0.20
004671547-07	OBS	No	158.875354	248.596003	681.4	2.108	13.9	8.0	0.65	4166	1.67	0.44
004671547-08	OBS	No	408.474403	240.905682	1088.6	5.872	14.5	7.5	0.65	4166	2.11	0.13
004671547-09	OBS	No	346.096828	340.515662	138.9	12.000	13.5	-1.0	0.65	4166	0.73	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004671547-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004671547-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004671547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-06	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_SATURATED
004671547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
004671547-09	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

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

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

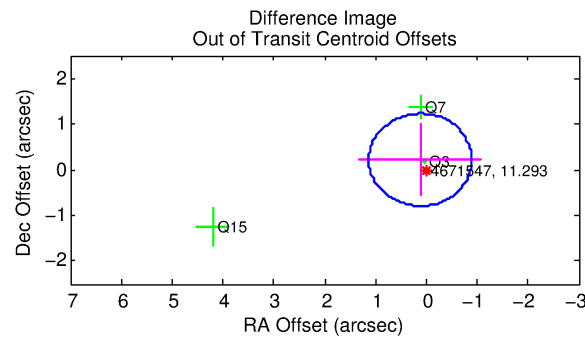
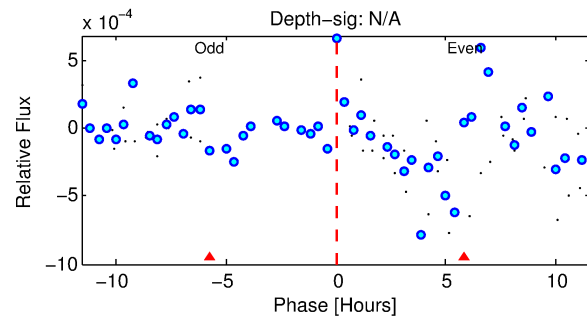
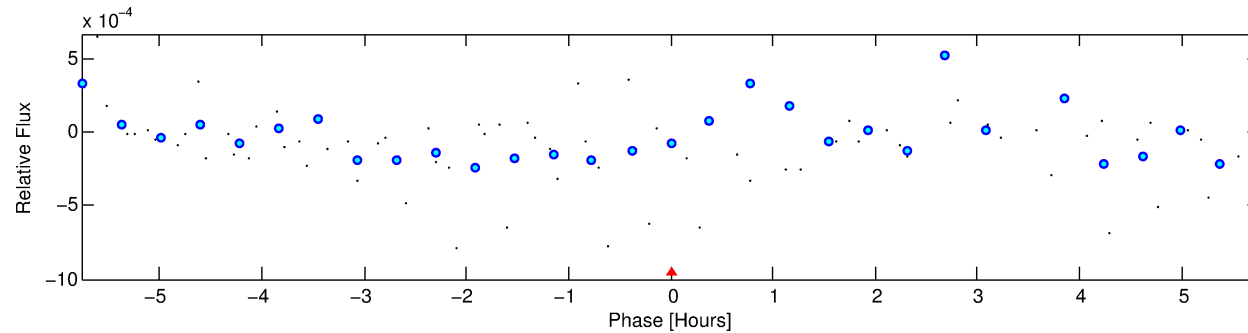
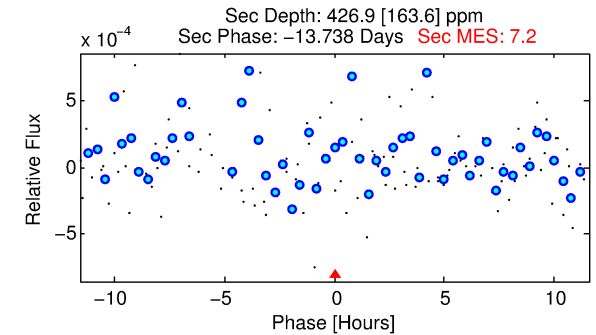
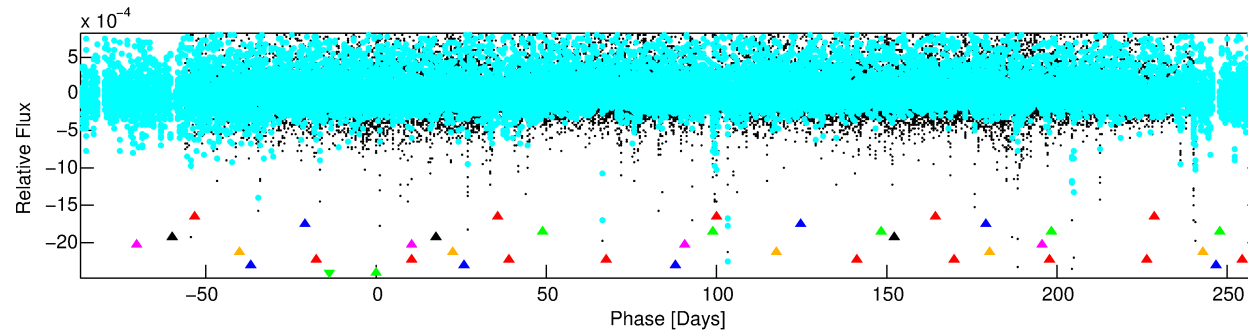
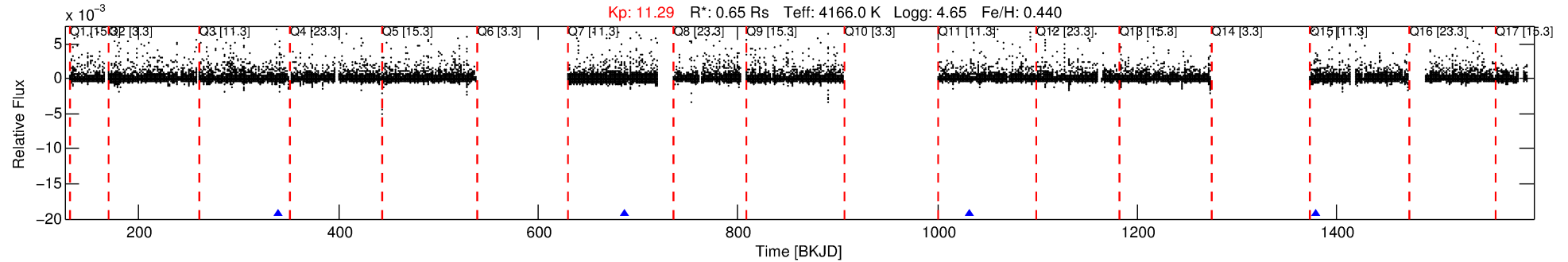
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004671547-09

No Significant Match Found

DV One-Page Summary

KIC: 4671547 Candidate: 9 of 9 Period: 346.097 d



TPS TCE Results:

Period = 346.09683 d
Epoch = 340.5157 BKJD

DV fit results are unavailable

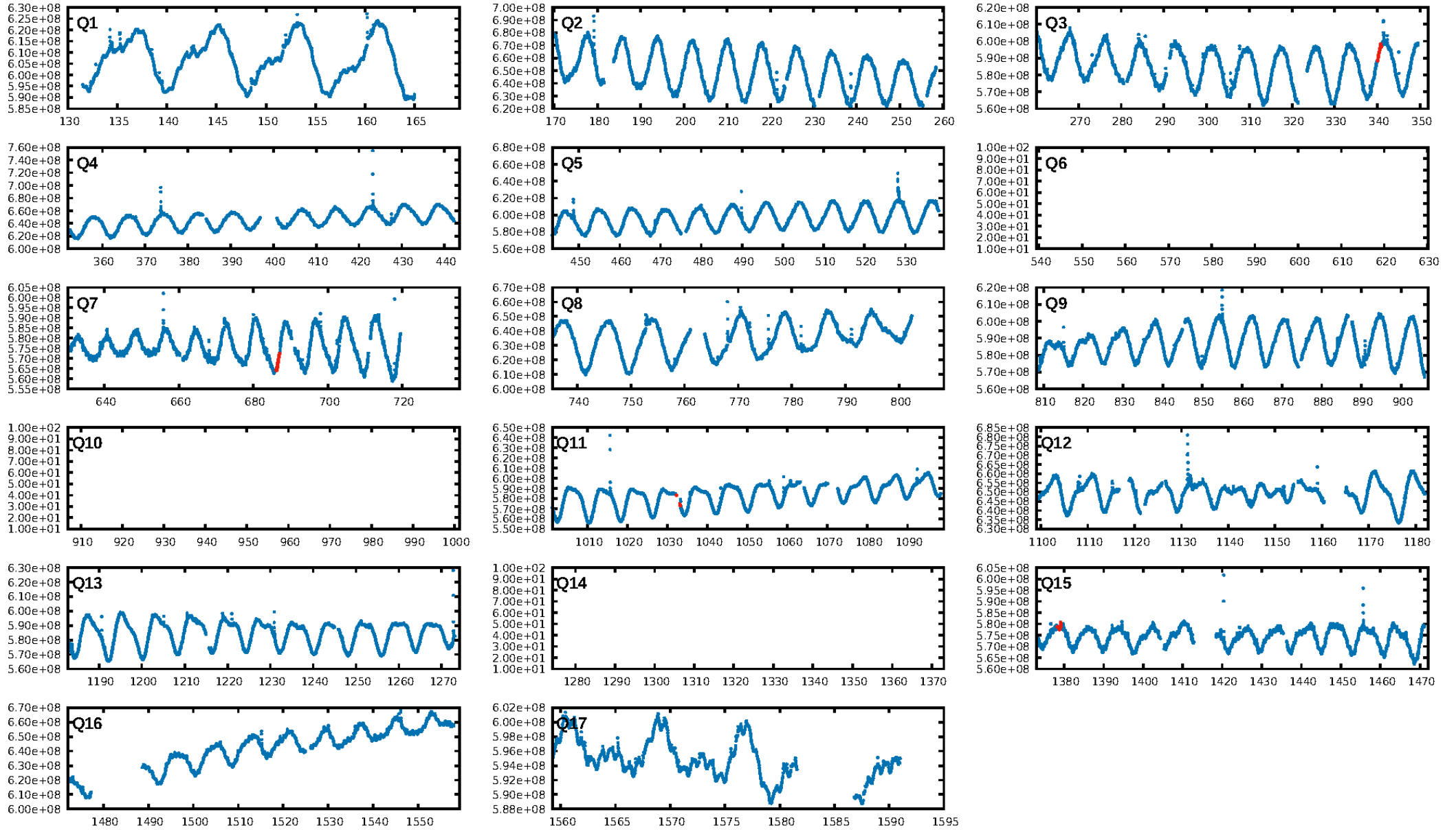
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [62.14 σ]
LongPeriod-sig: 100.0% [112.06 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.1969
Centroid-sig: 53.4%
Centroid-so: 0.875 arcsec [1.38 σ]
OotOffset-rm: 0.250 arcsec [0.74 σ]
KicOffset-rm: 0.381 arcsec [0.62 σ]
OotOffset-st: 0/3/0/0 [3]
KicOffset-st: 0/3/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

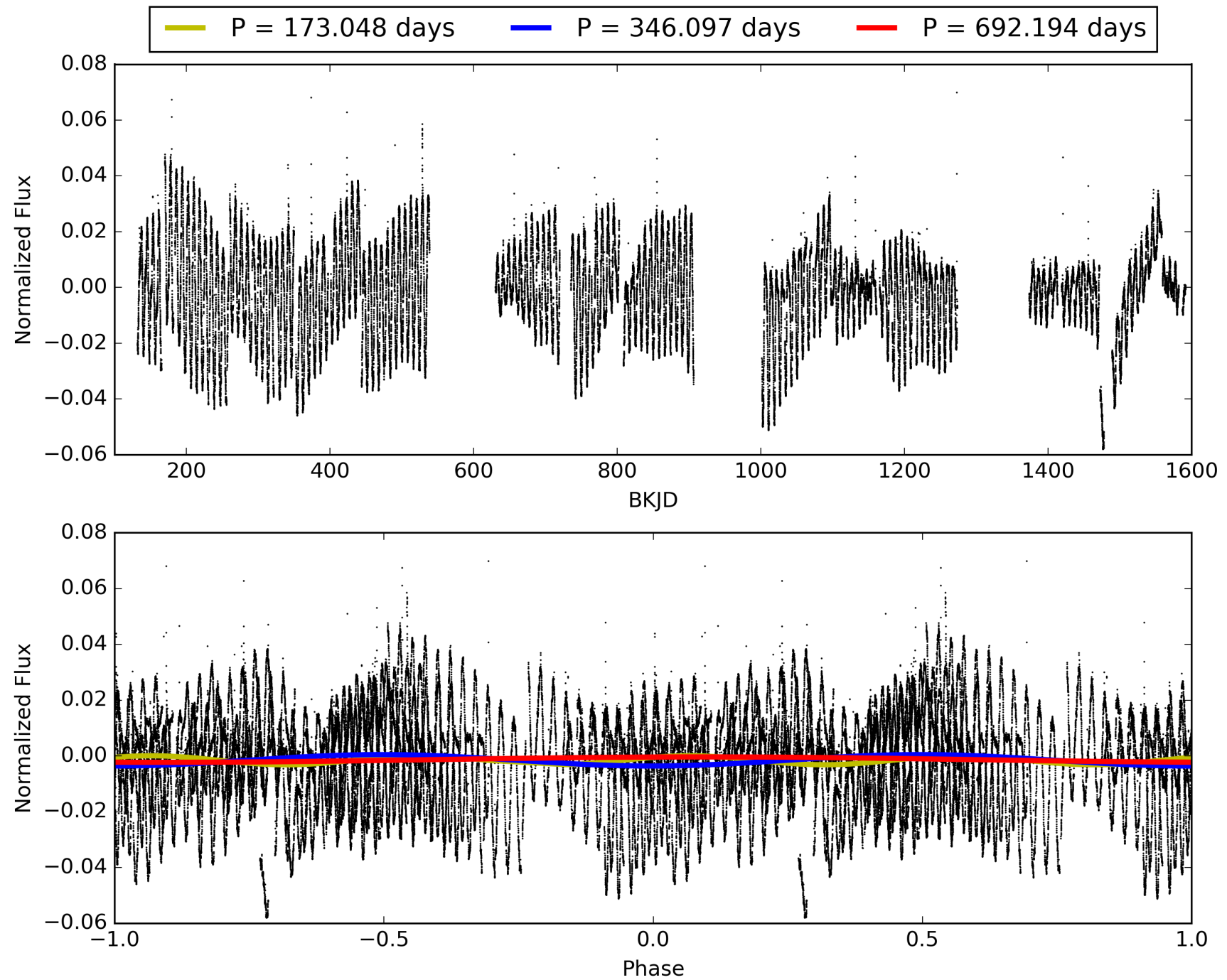
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:00:11 Z

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

TCE 004671547-09, PDC Light Curves

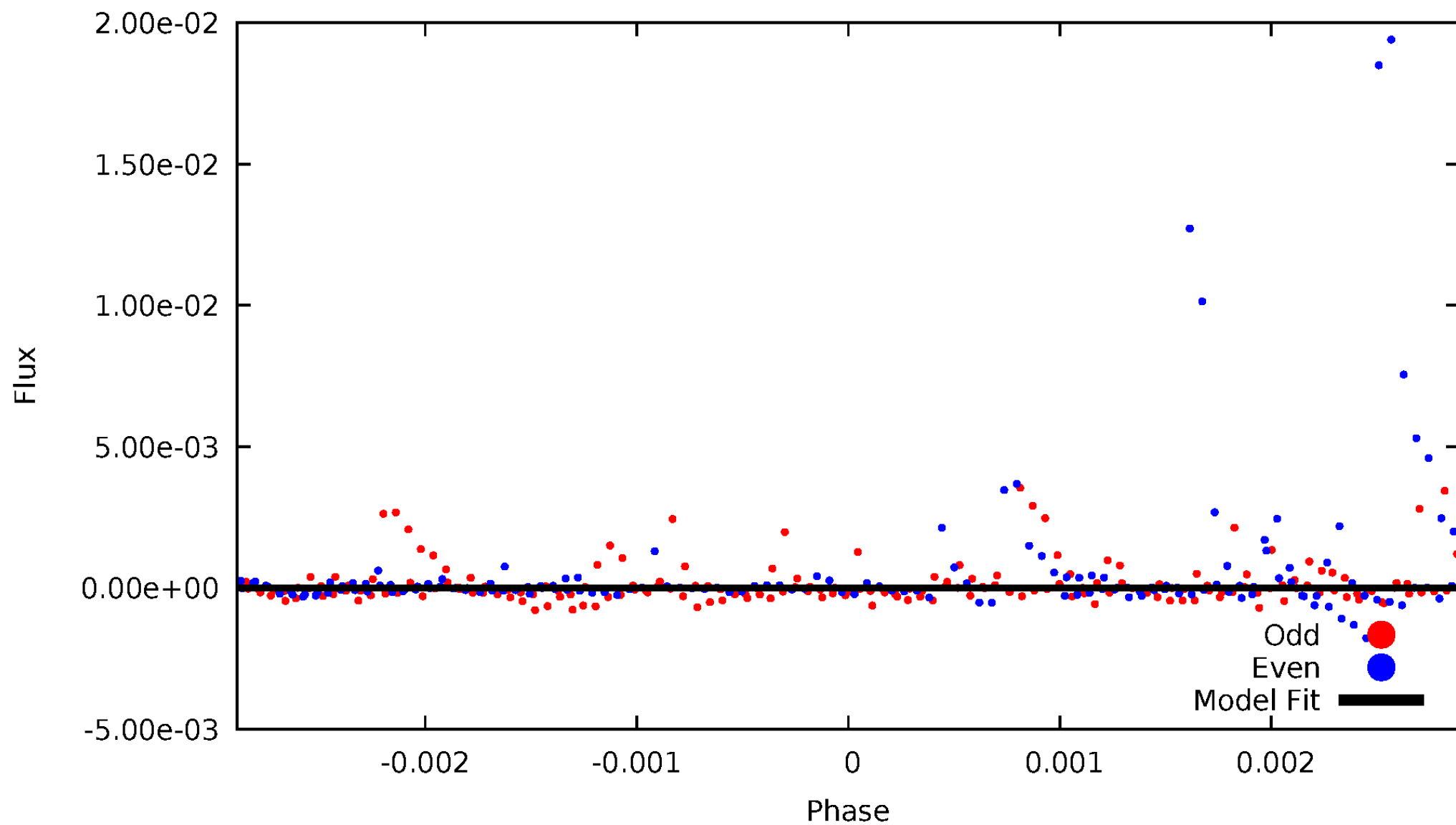


TCE 004671547-09



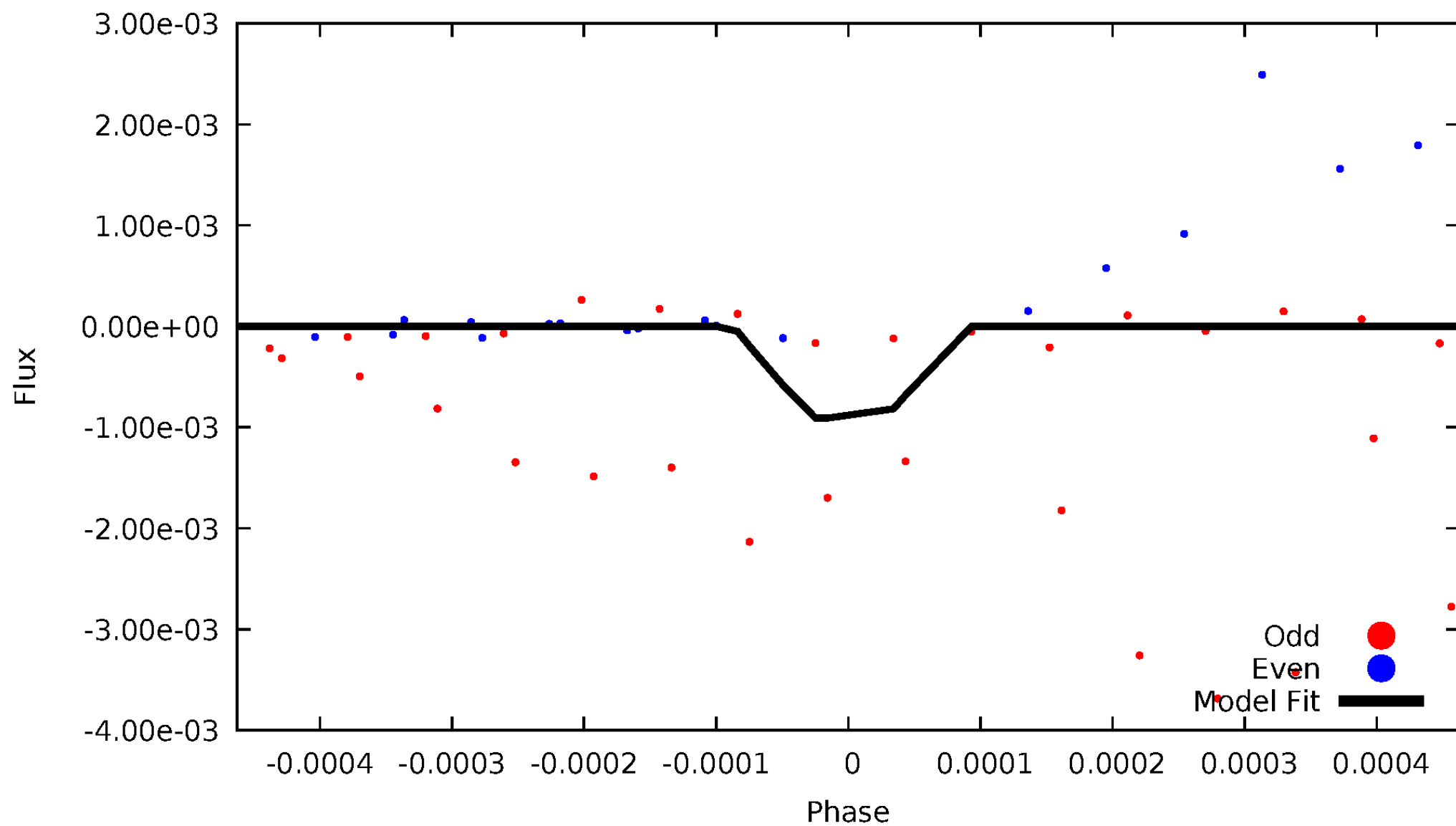
DV Odd/Even

TCE 004671547-09

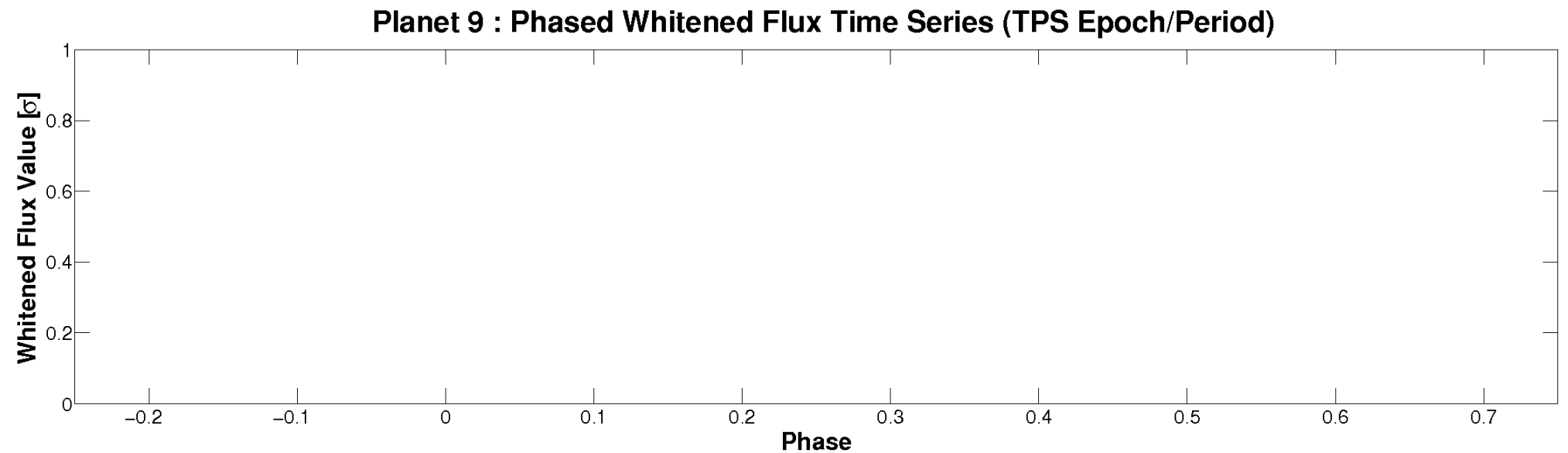
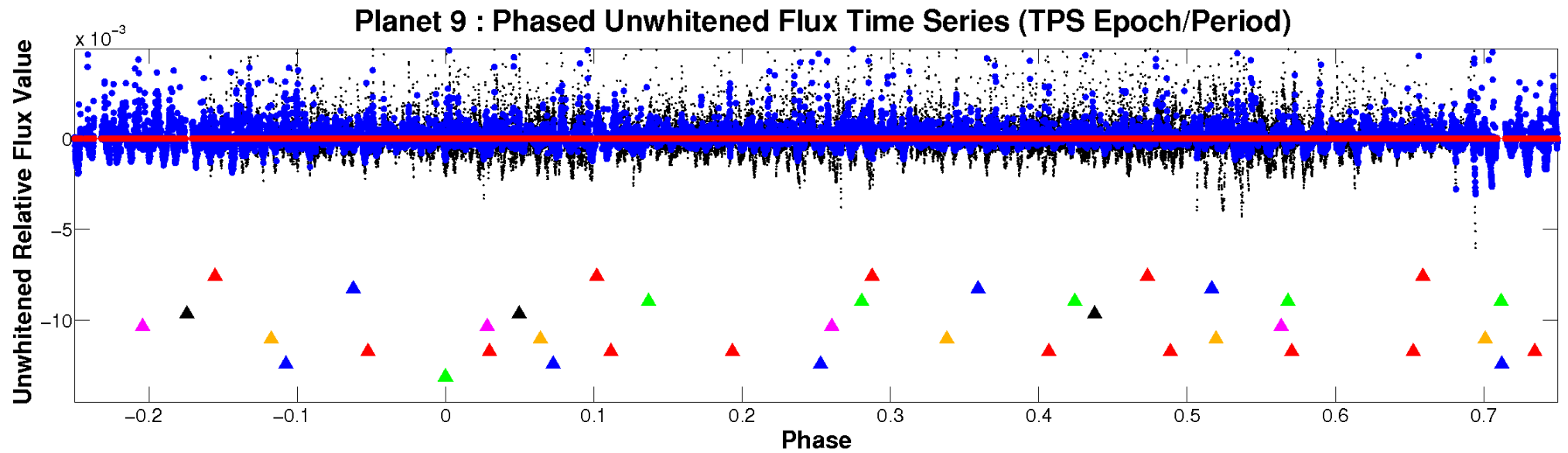


ALT Odd/Even

TCE 004671547-09

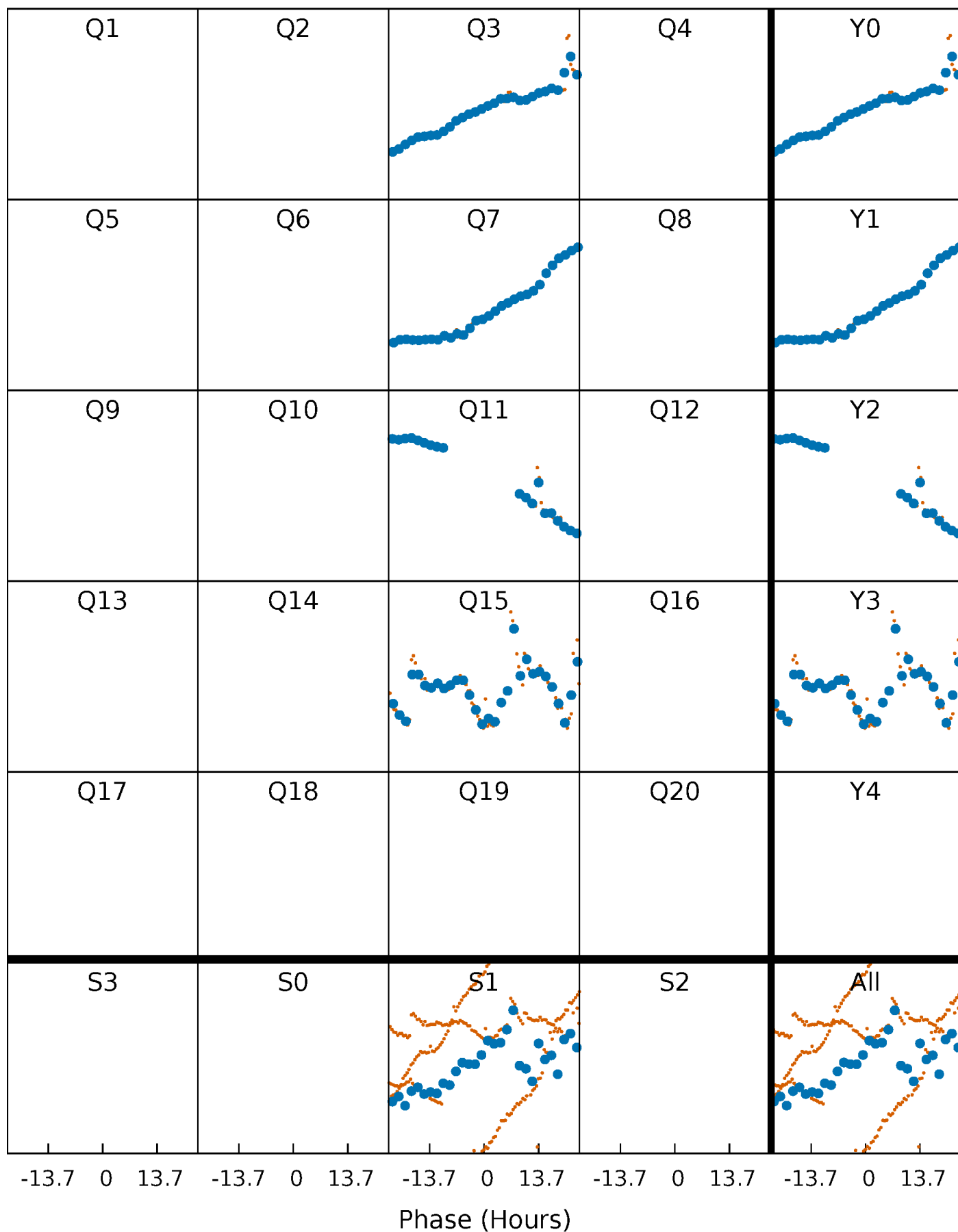


Non-Whitened Vs. Whitened Light Curve



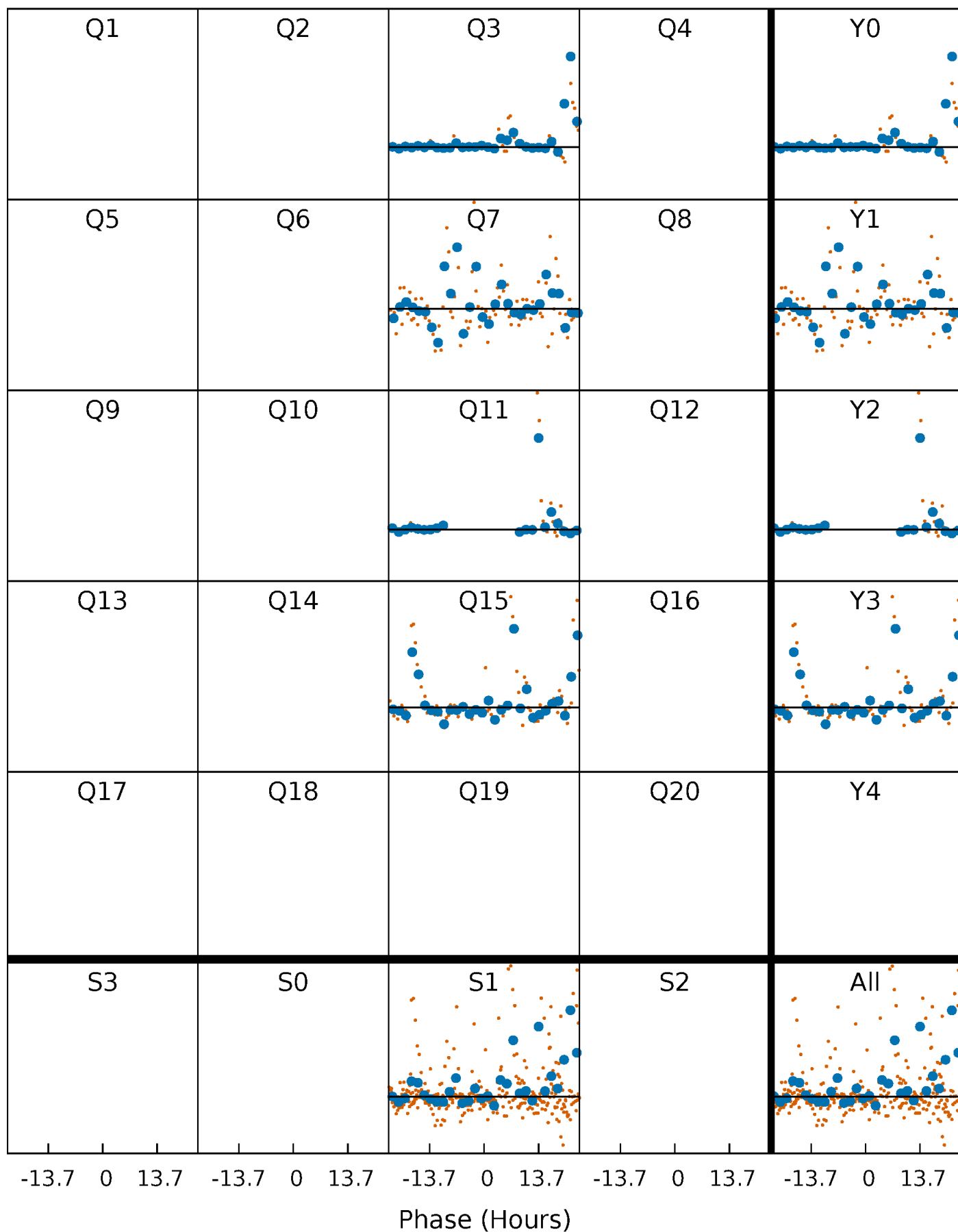
PDC Quarter-Phased Transit Curves

TCE 004671547-09 P=346.096828 Days $T_0=340.515662$ (BKJD)



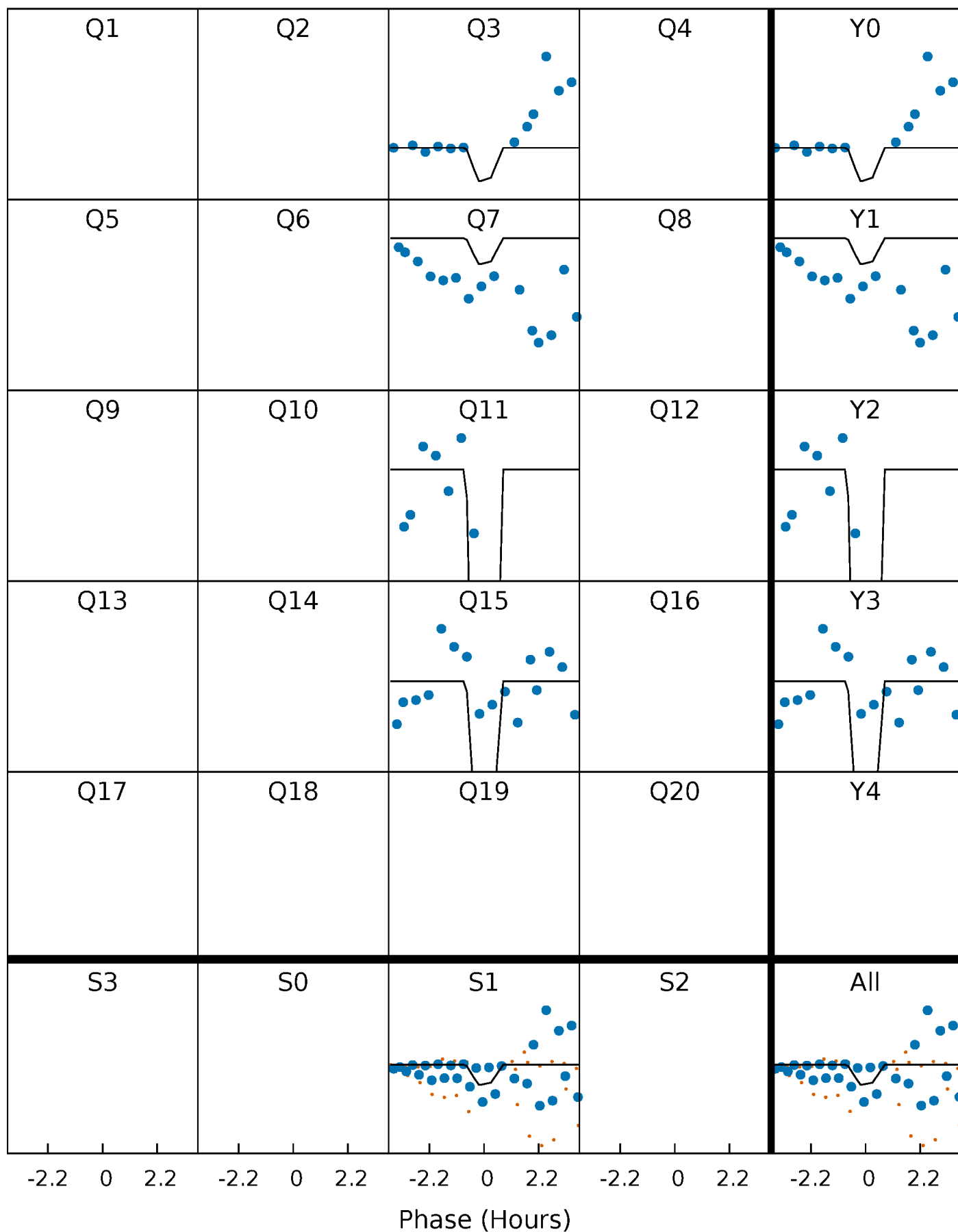
DV Quarter-Phased Transit Curves

TCE 004671547-09 $P=346.096828$ Days $T_0=340.515662$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

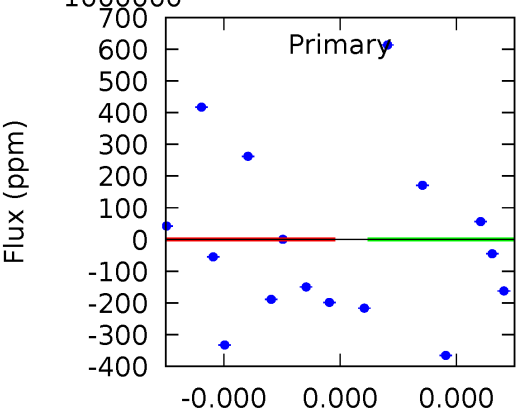
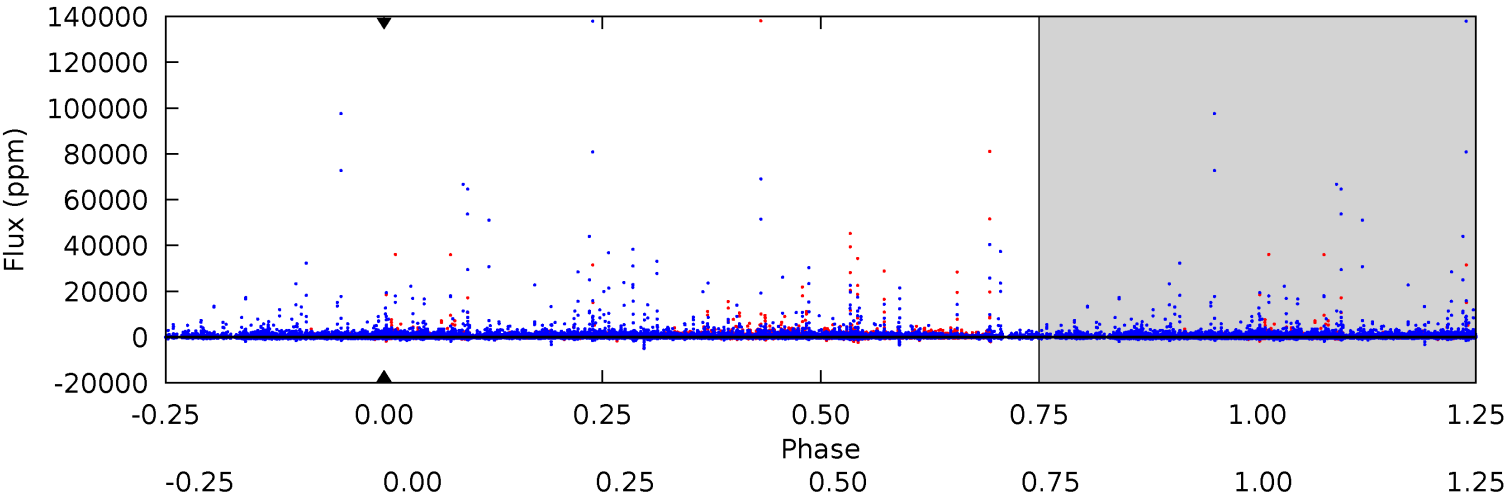
TCE 004671547-09 P=346.096828 Days $T_0=340.090253$ (BKJD)



DV Model-Shift Uniqueness Test

004671547-09, P = 346.096828 Days, E = 340.515662 Days

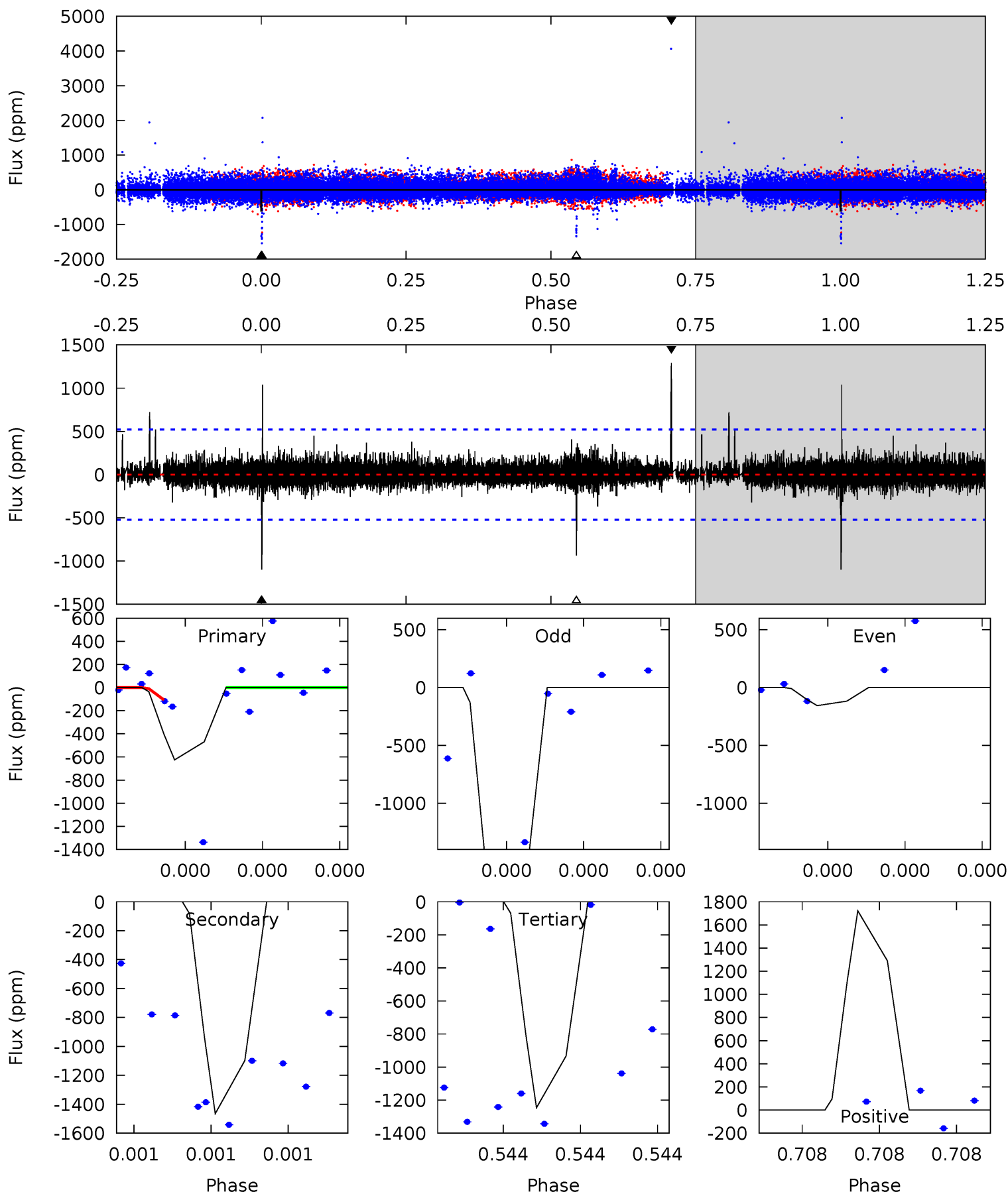
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

004671547-09, P = 346.096828 Days, E = 340.090253 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.16	12.1	10.3	14.2	5.75	3.75	0.79	-5.12	-9.05	1.81	-2.12	6.64	1.00	0.54	0



Stellar Parameters For KIC 004671547

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	4166^{+150}_{-167}	$4.653^{+0.028}_{-0.035}$	$0.440^{+0.050}_{-0.300}$	$0.652^{+0.036}_{-0.045}$	$0.702^{+0.030}_{-0.064}$	$3.563^{+0.474}_{-0.462}$
	+4%/-4%	+1%/-1%	+11%/-68%	+6%/-7%	+4%/-9%	+13%/-13%
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 004671547-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$4.98^{+5.51}_{-3.39}$	224^{+9}_{-9}	3872^{+7387}_{-13947}	$47195^{+3523360}_{-2663474}$
Alt.	-1097 ± 91	$5.58^{+5.83}_{-3.85}$	224^{+9}_{-9}	3143^{+1532}_{-555}	$13998^{+135356}_{-10587}$

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 $A_{obs} \gg 1.0$

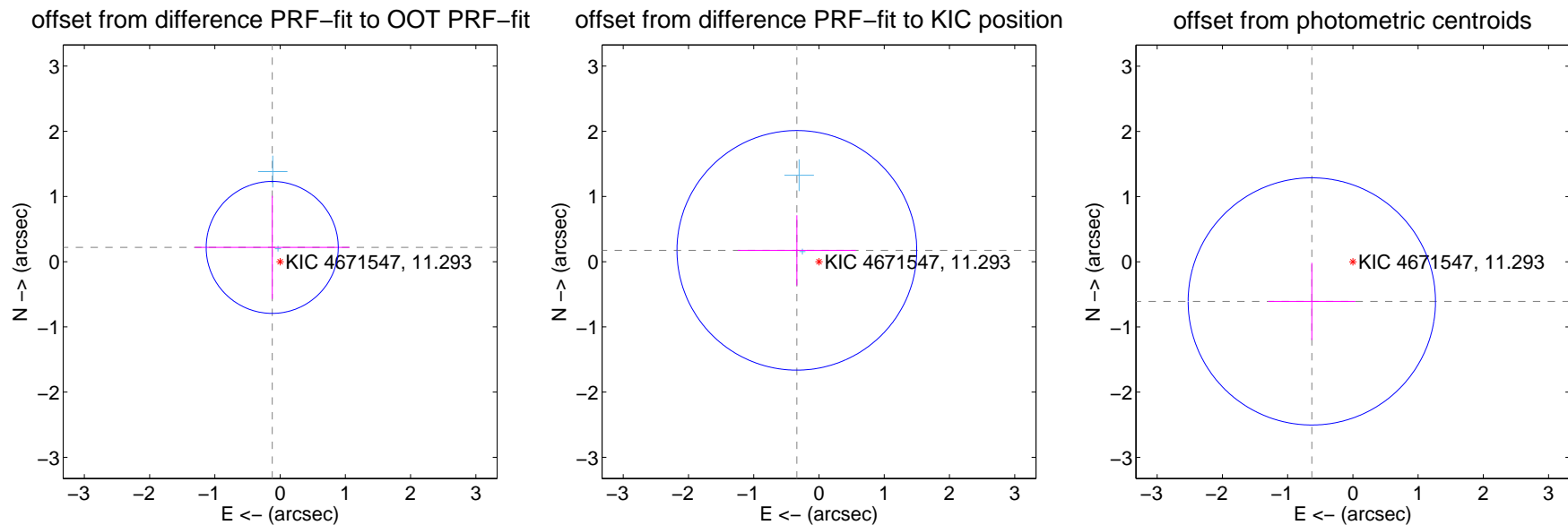
DV Centroid Data

Supplemental centroid analysis for 004671547-09. **Kepler magnitude: 11.29.** Transit SNR -1.00

There are 3 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.250 ± 0.337	0.74	0.121 ± 1.185	0.219 ± 0.790
PRF-fit source offset from KIC position	0.381 ± 0.612	0.62	0.339 ± 0.904	0.174 ± 0.538
photometric centroid source offset	0.88 ± 0.63	1.38	0.63 ± 0.67	-0.61 ± 0.59



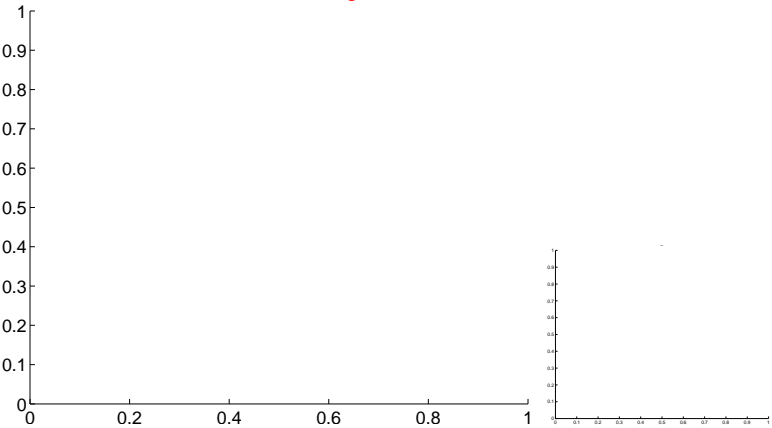
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

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

Q1 no difference image



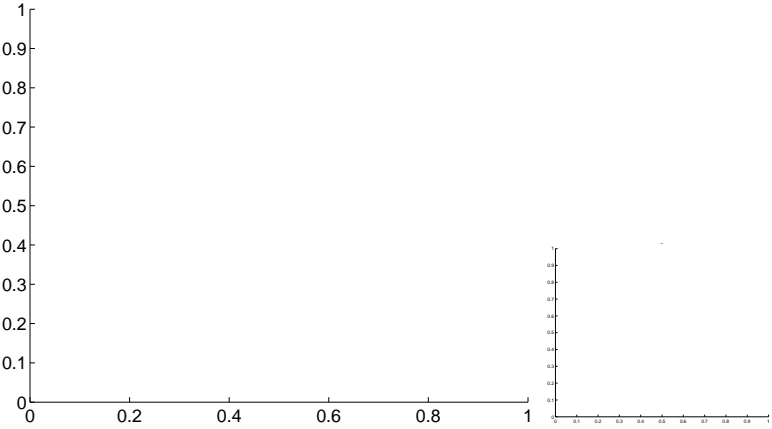
Q1 no OOT image



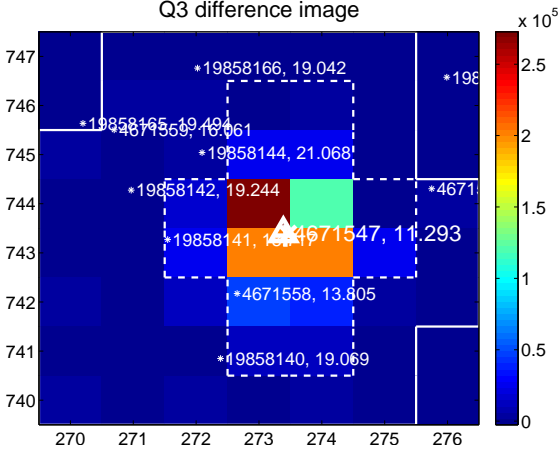
Q2 no difference image



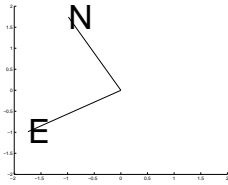
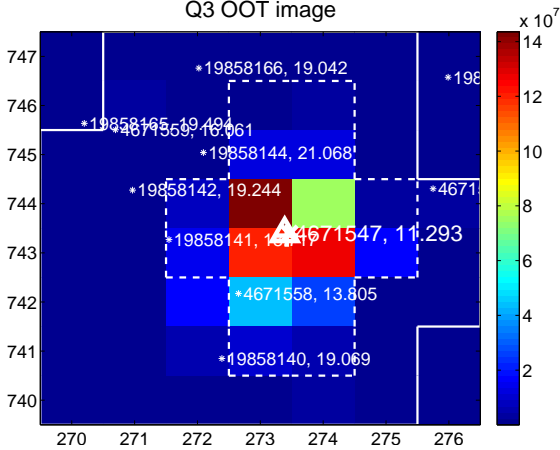
Q2 no OOT image



Q3 difference image



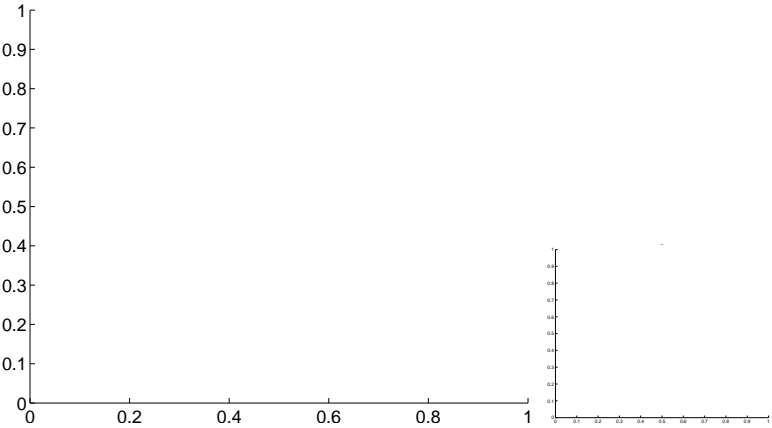
Q3 OOT image



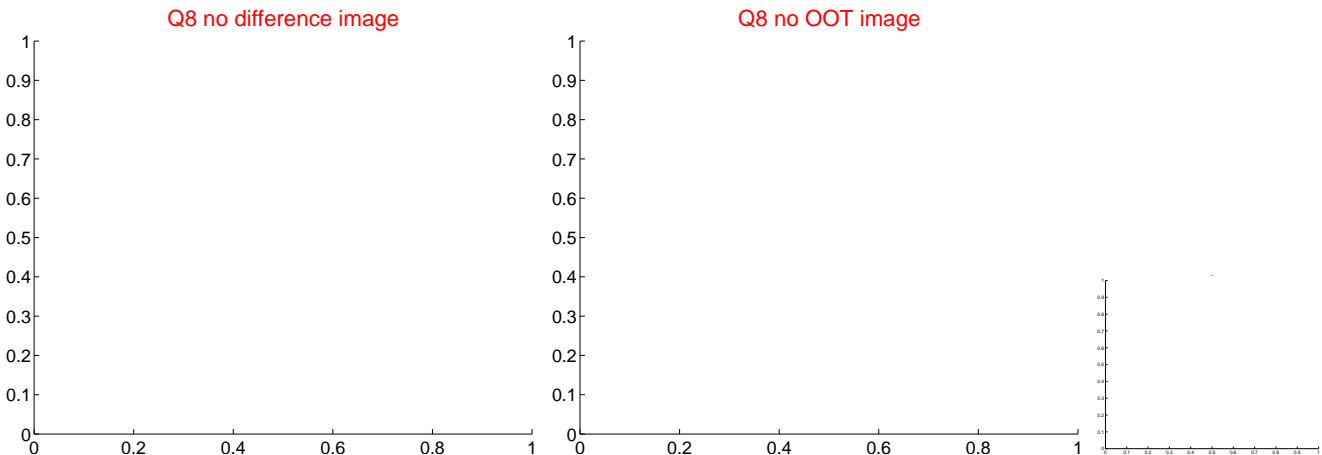
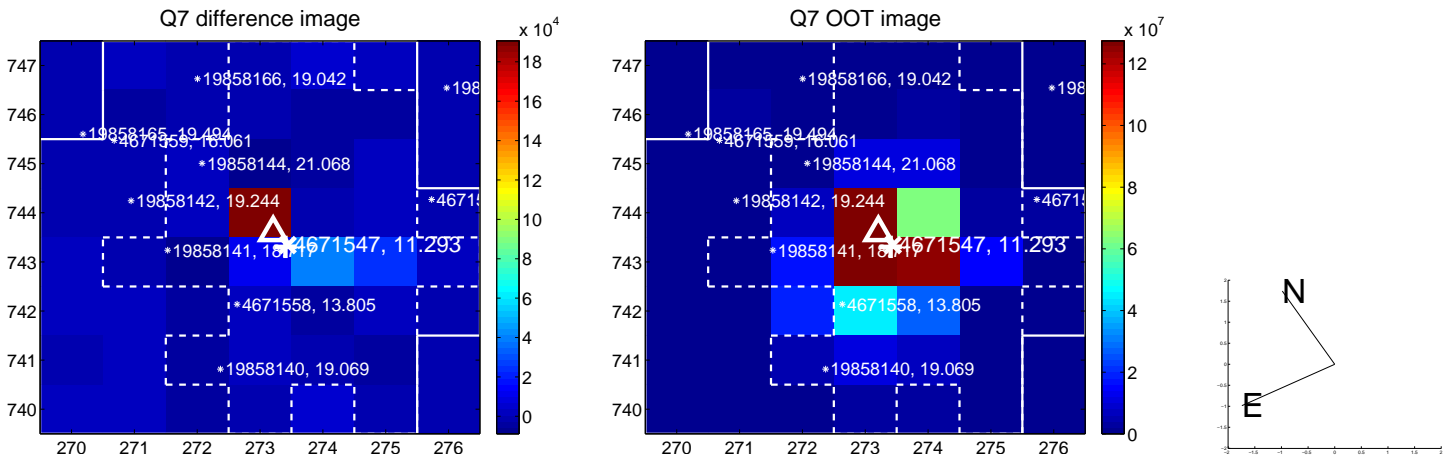
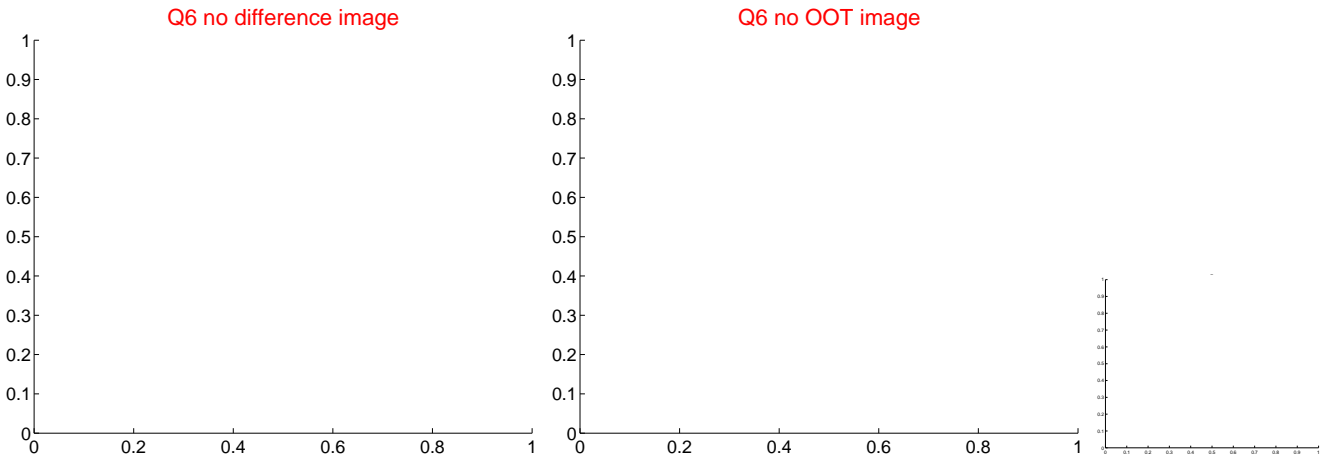
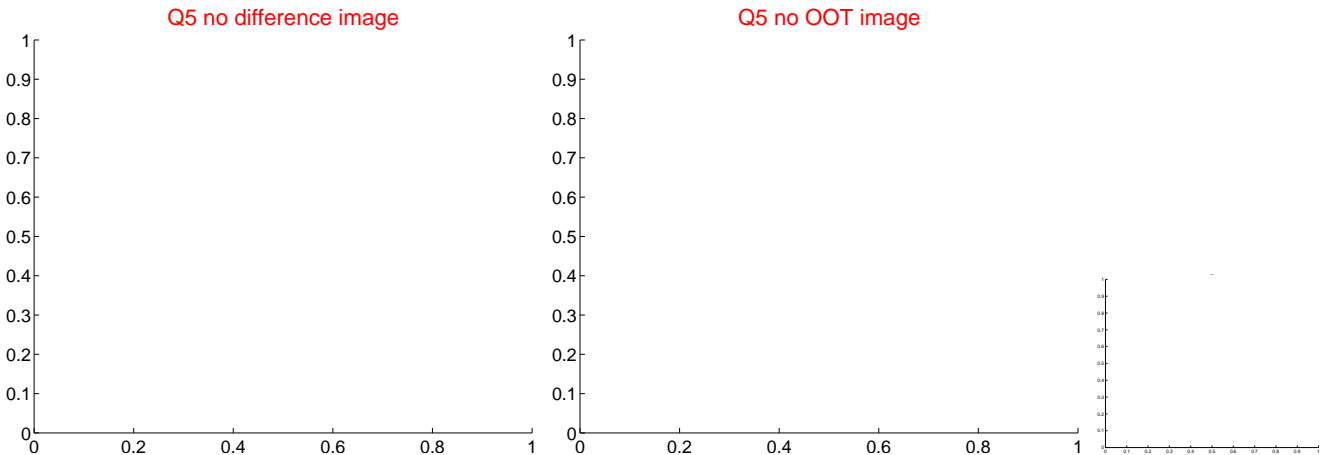
Q4 no difference image



Q4 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.

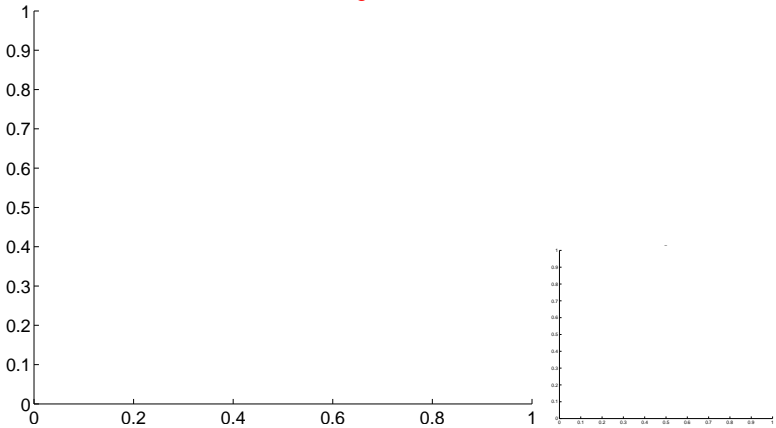


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q13 no difference image



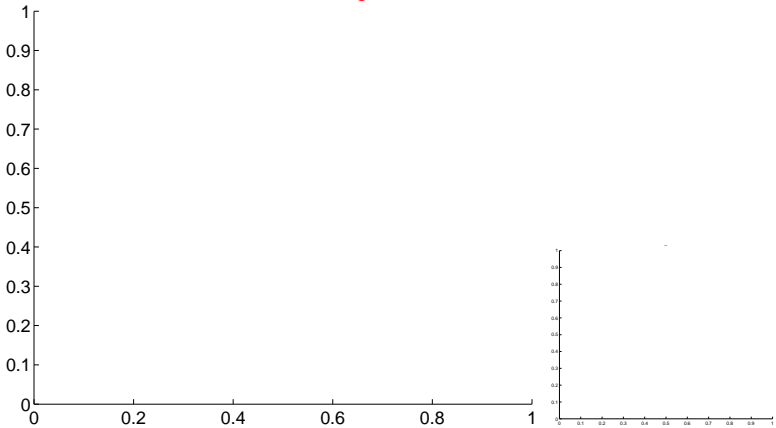
Q13 no OOT image



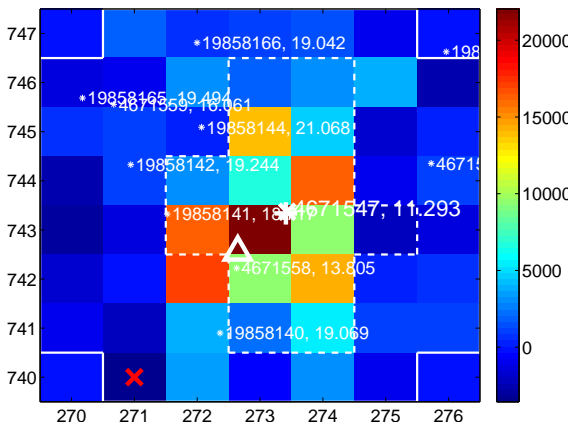
Q14 no difference image



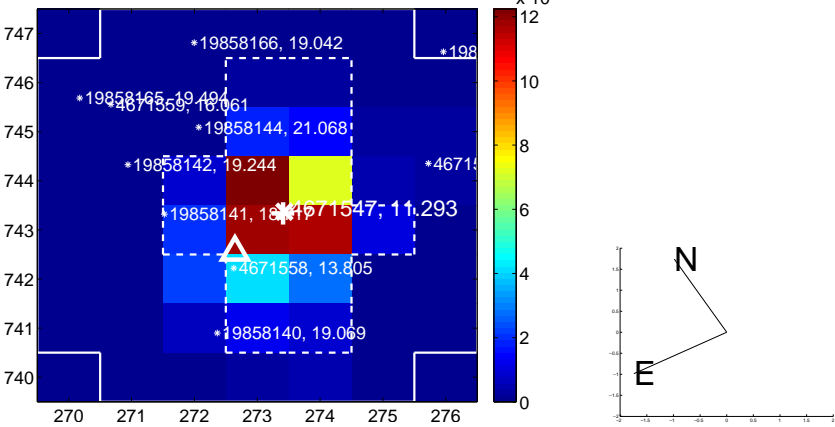
Q14 no OOT image



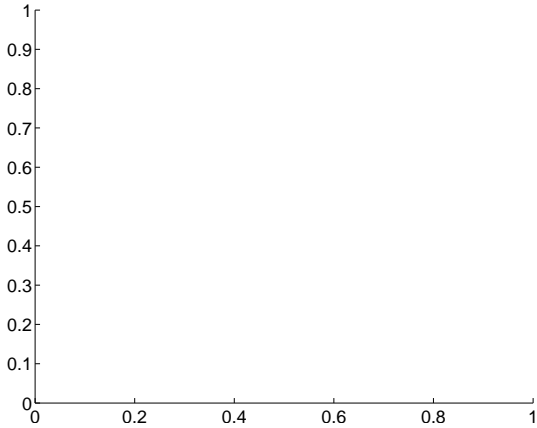
Q15 difference image



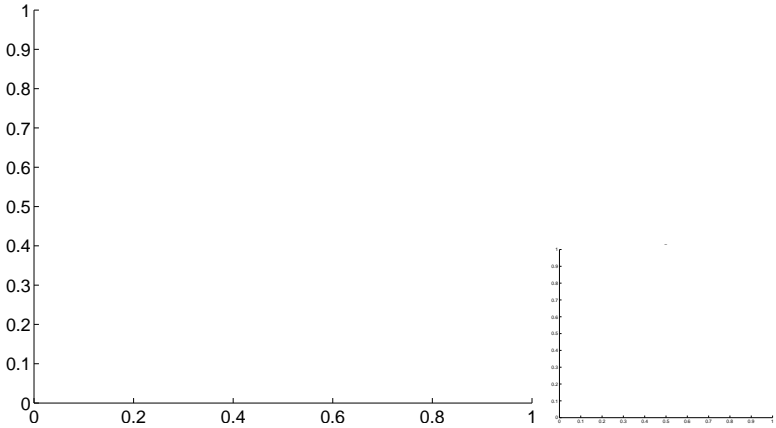
Q15 OOT image



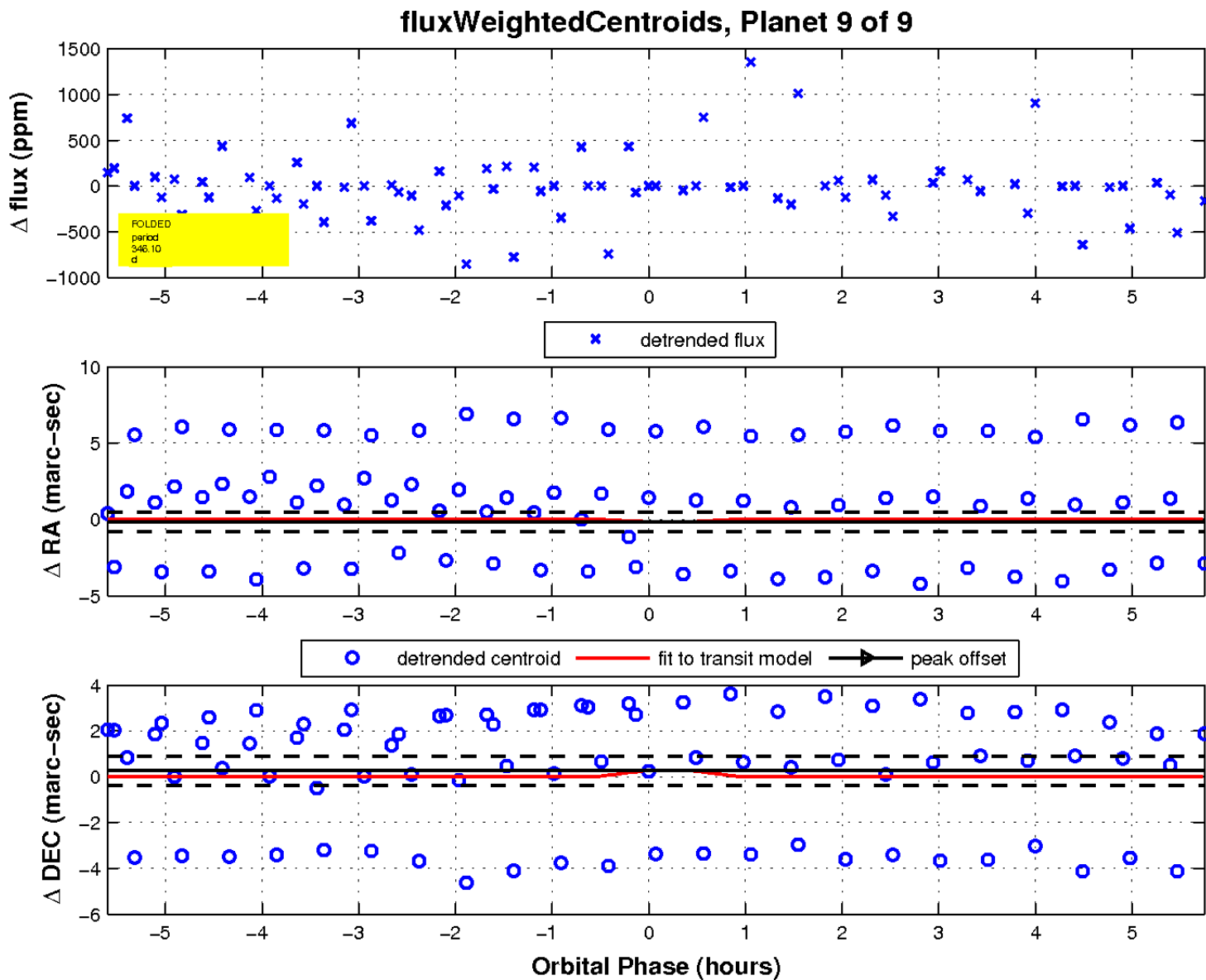
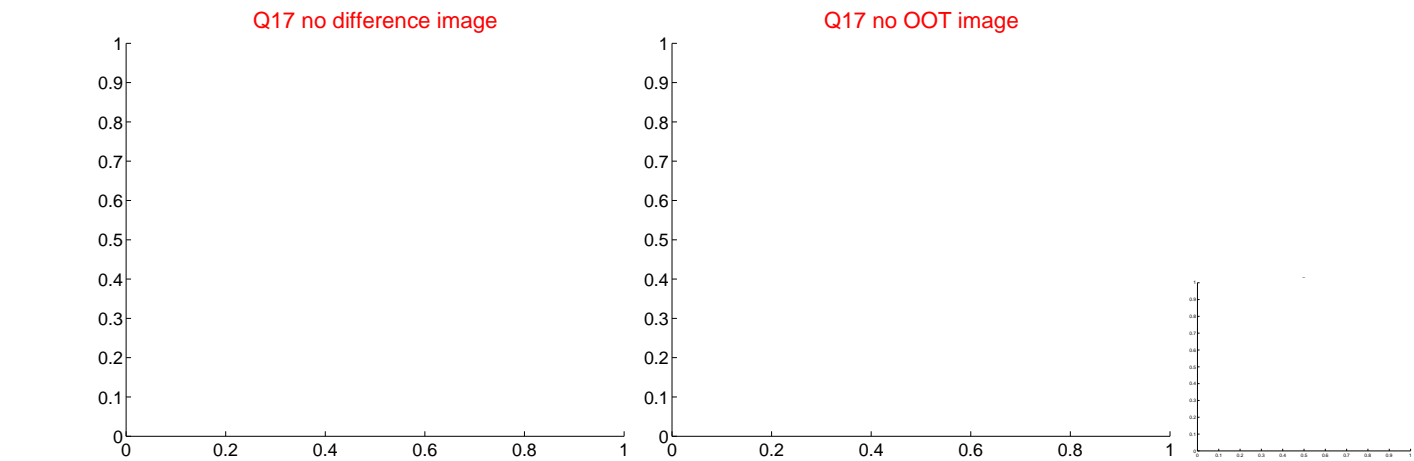
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

