

KIC 004180534

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})
004180534-01	OBS	No	355.334762	360.469179	658.8	13.216	18.0	2.6	4.64	4746	11.93	10.71
004180534-02	OBS	No	562.851062	334.612945	392.4	12.289	19.1	1.9	4.64	4746	9.97	5.80
004180534-03	OBS	No	285.772491	330.662843	2324.9	3.579	17.4	12.0	4.64	4746	21.52	14.33
004180534-04	OBS	No	249.076967	216.068287	724.0	7.598	17.4	4.1	4.64	4746	12.28	17.21
004180534-05	OBS	No	121.151942	138.898616	495.5	2.683	13.5	5.0	4.64	4746	9.94	44.99
004180534-06	OBS	No	229.074370	290.146696	939.6	5.531	15.3	5.5	4.64	4746	13.67	19.24
004180534-07	OBS	No	270.534734	375.356328	1230.1	3.889	14.8	7.6	4.64	4746	16.17	15.41
004180534-08	OBS	No	651.020636	160.139671	878.0	8.636	11.4	4.2	4.64	4746	14.19	4.78

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004180534-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
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004180534-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004180534-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
004180534-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS
004180534-06	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—INCONSISTENT_TRANS
004180534-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
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Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

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

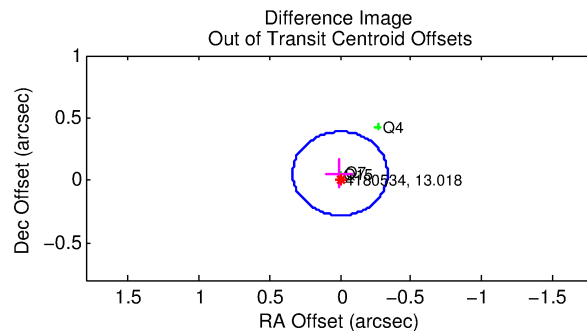
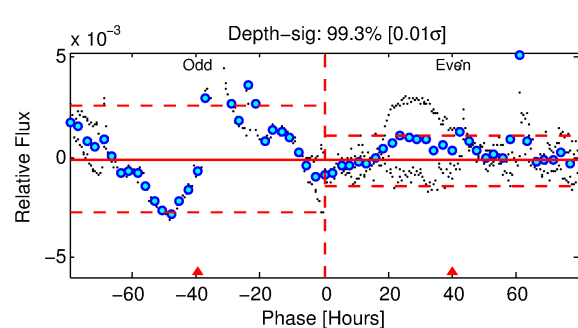
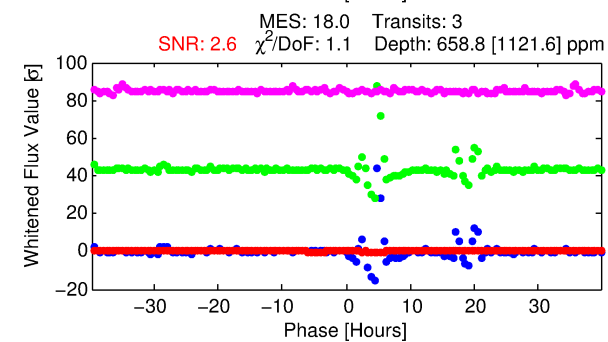
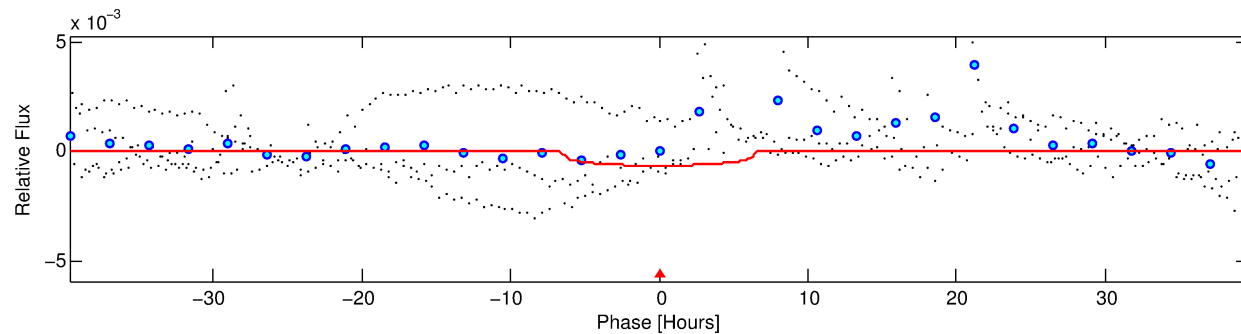
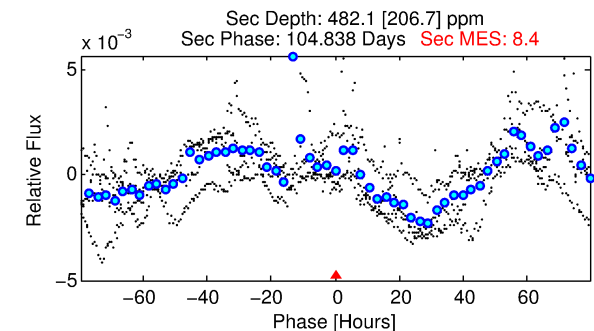
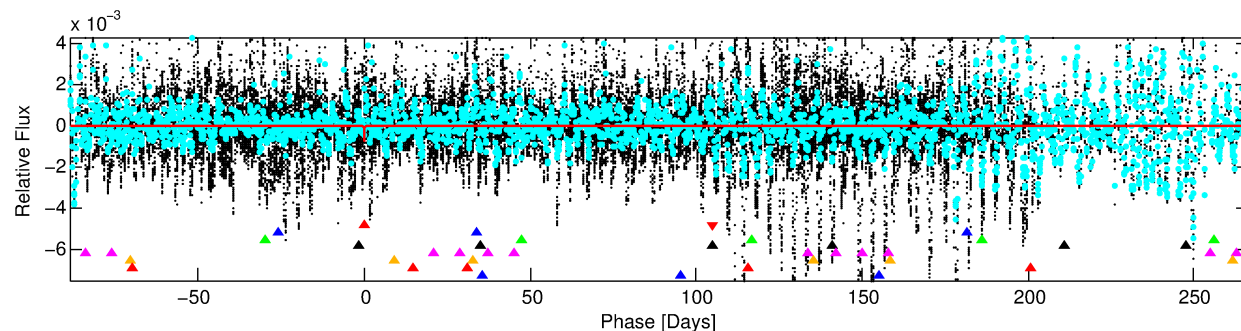
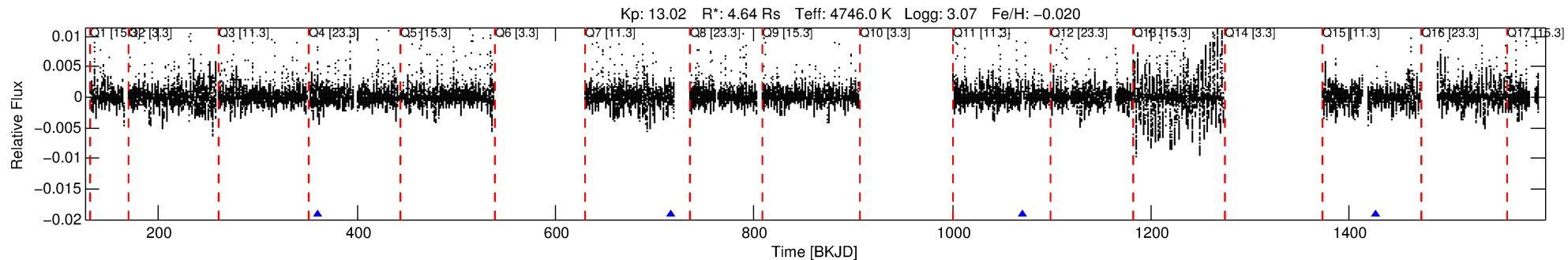
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004180534-01

No Significant Match Found

DV One-Page Summary

KIC: 4180534 Candidate: 1 of 8 Period: 355.335 d



DV Fit Results:

Period = 355.33476 [0.02872] d
Epoch = 360.4692 [0.0424] BKJD
Rp/R* = 0.0235 [0.0841]
a/R* = 185.55 [2278.89]
b = 0.48 [19.79]
Seff = 10.72 [8.74]
Teq = 461 [94] K
Rp = 11.93 [43.41] Re
a = 0.9567 [0.5409] AU
Ag = 1706.62 [12299.62] [0.14σ]
Teff = 4585 [8209] K [0.50σ]

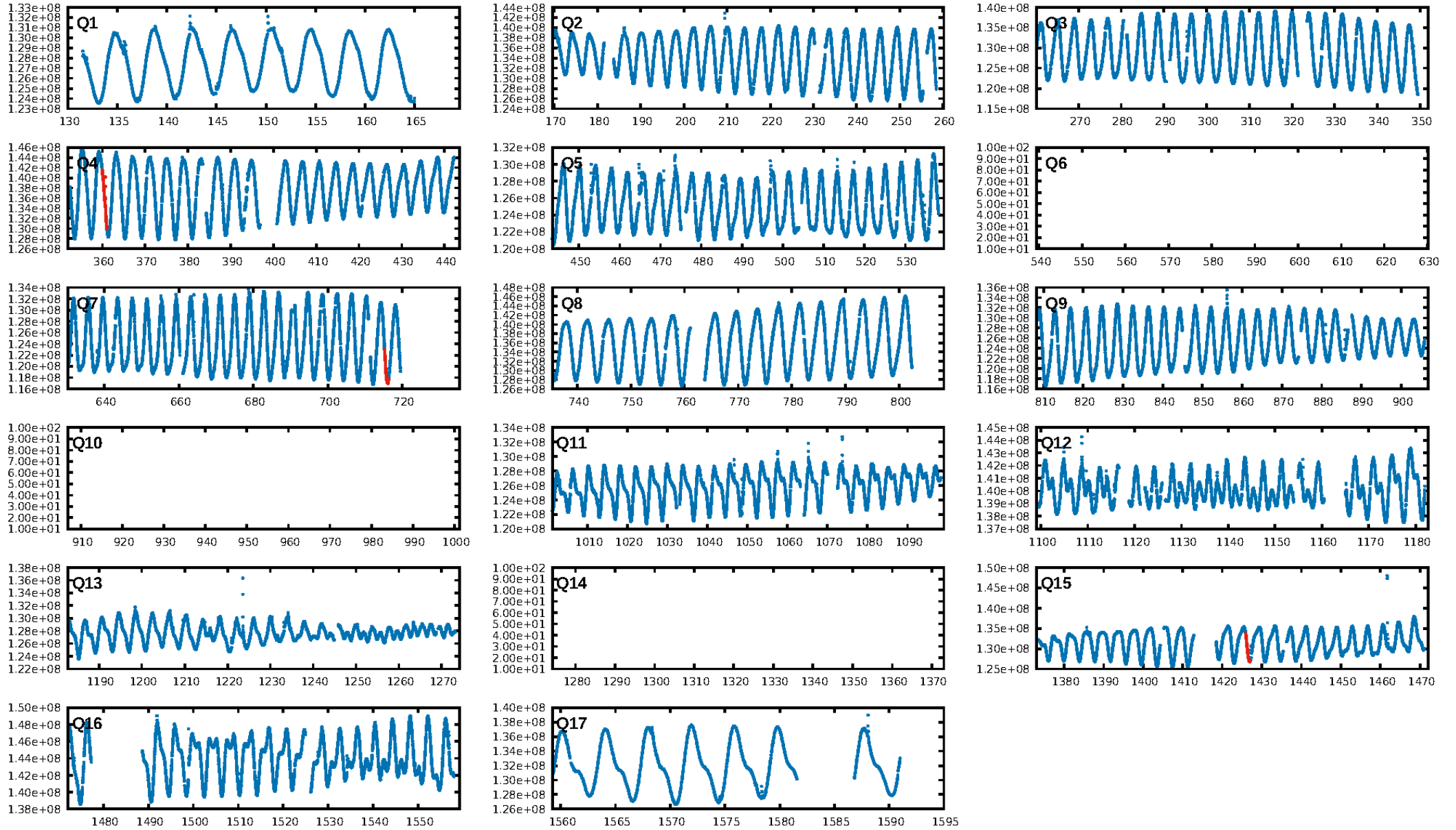
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [121.93σ]
LongPeriod-sig: 100.0% [275.98σ]
ModelChiSquare2-sig: 97.4%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 1.68e-14
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.107
Centroid-sig: 0.0%
Centroid-so: 3.382 arcsec [2.16σ]
OotOffset-rm: 0.053 arcsec [0.48σ]
KicOffset-rm: 0.318 arcsec [2.46σ]
OotOffset-st: 0/2/1/0 [3]
KicOffset-st: 0/2/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

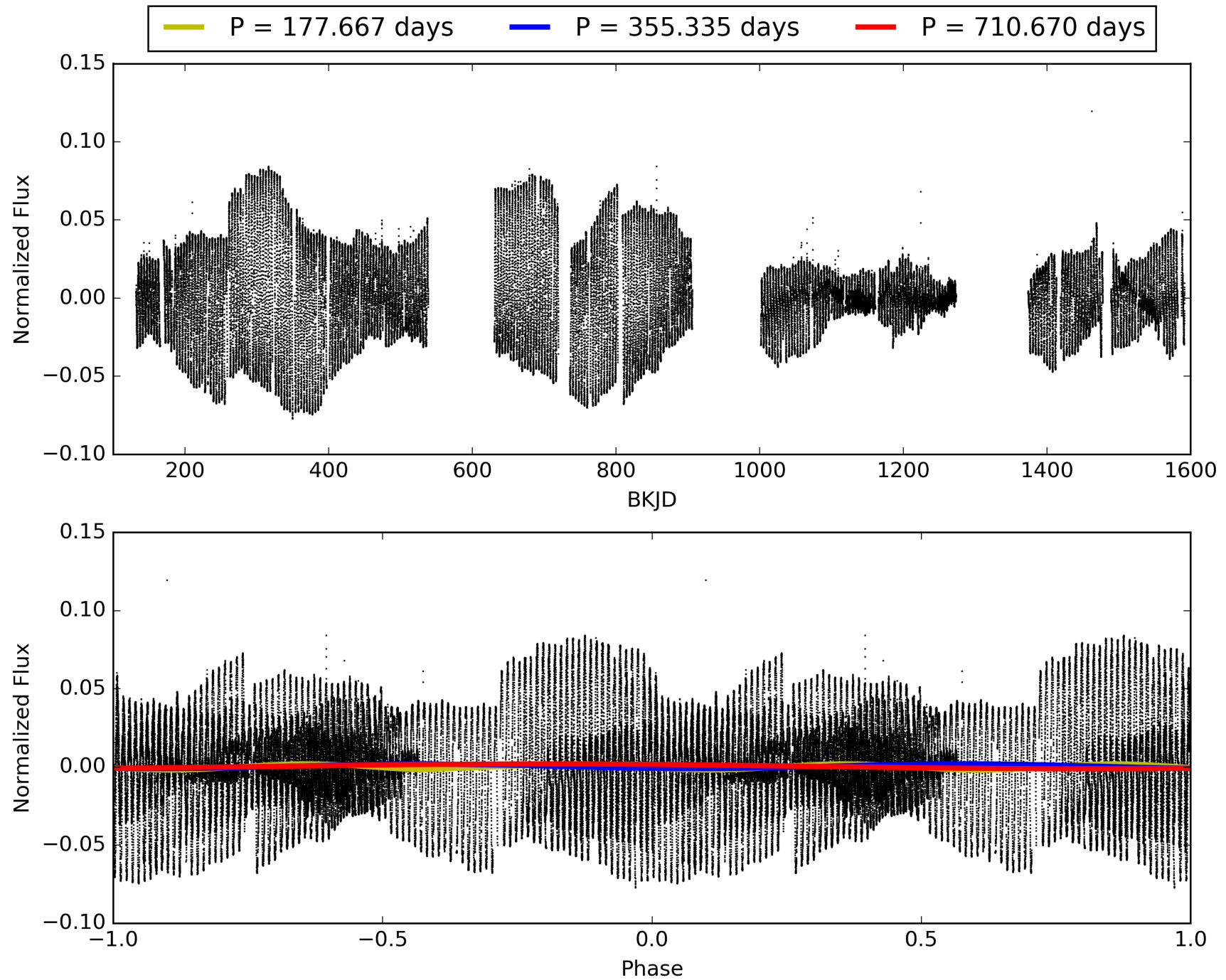
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:37:40 Z

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

TCE 004180534-01, PDC Light Curves

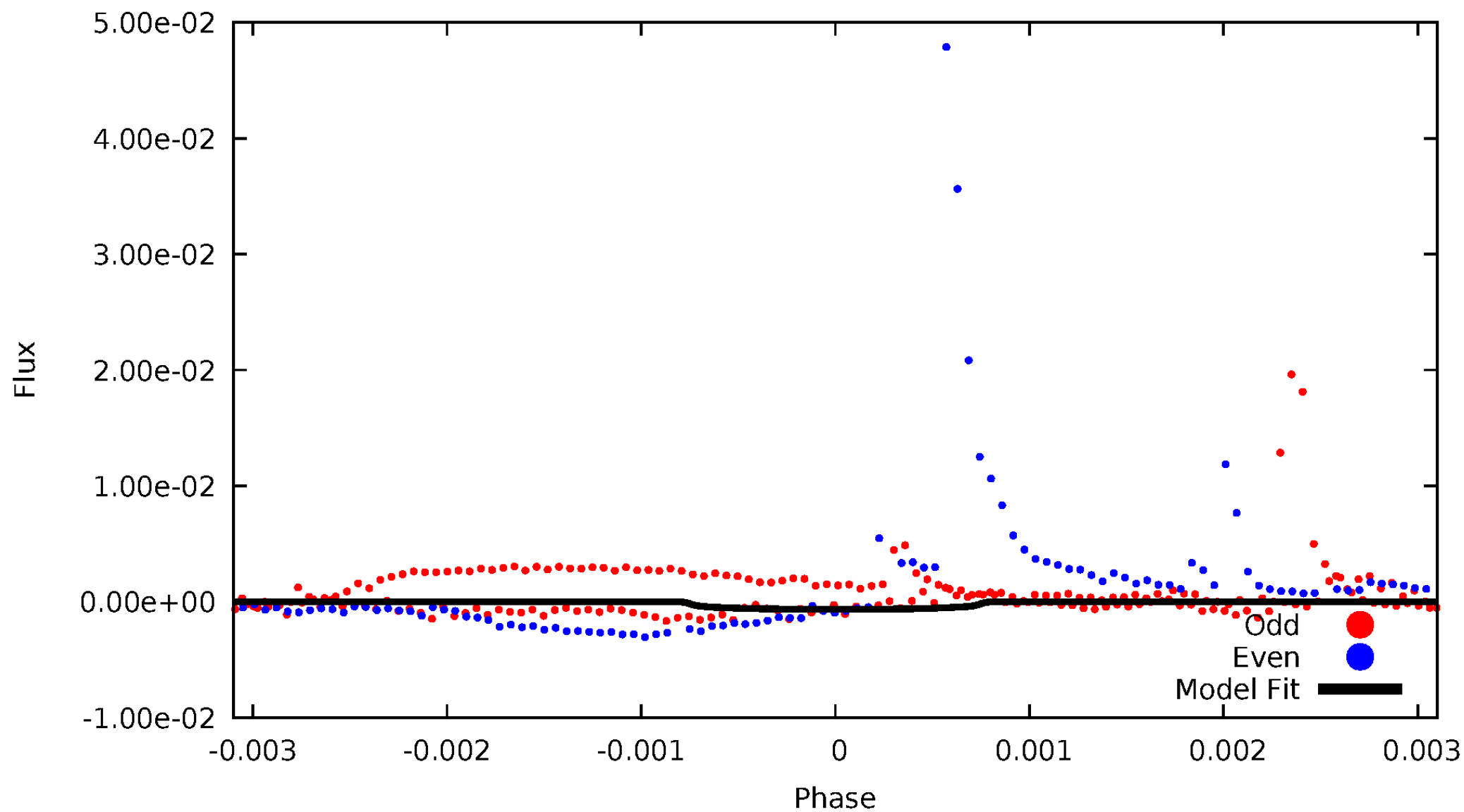


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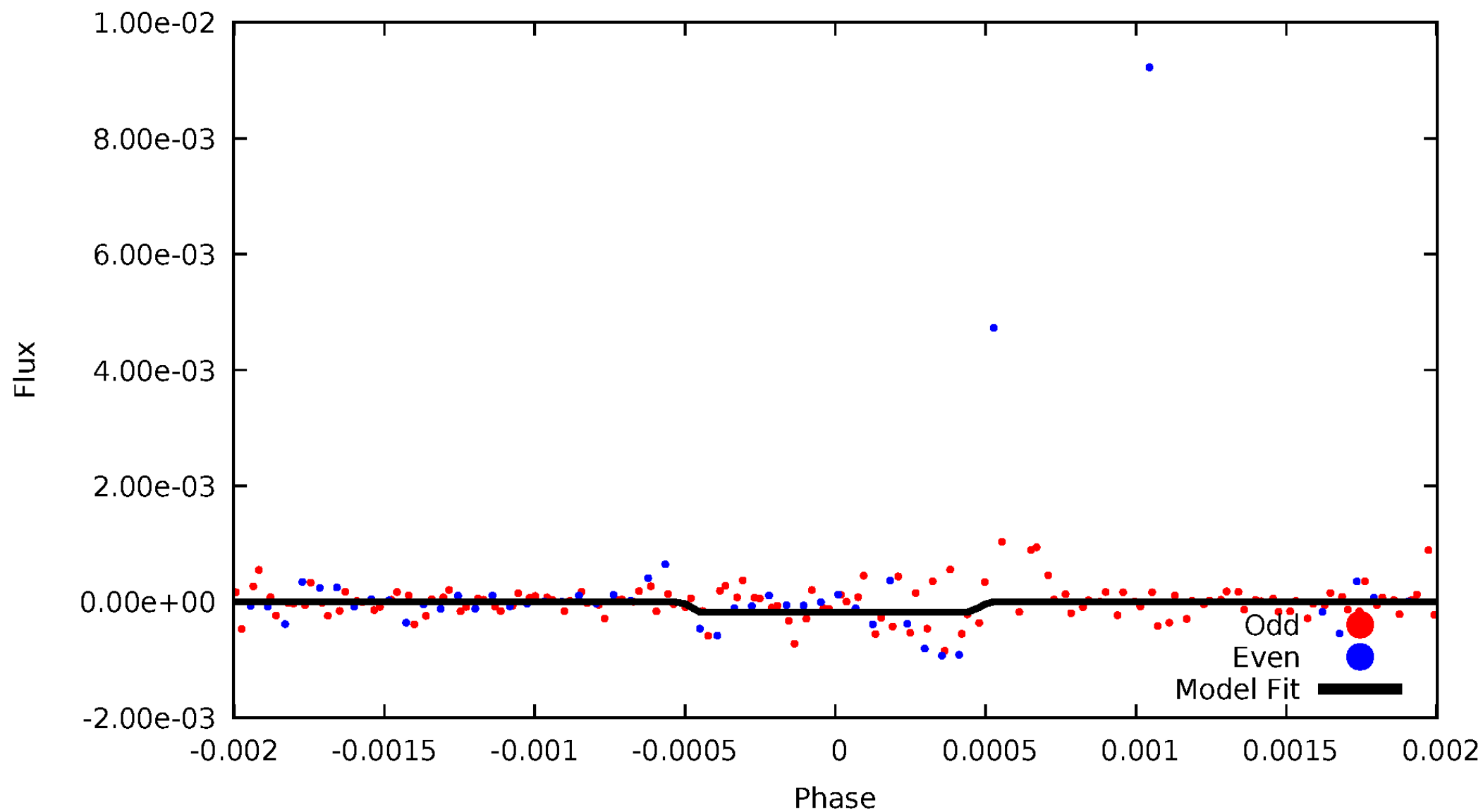
DV Odd/Even

TCE 004180534-01



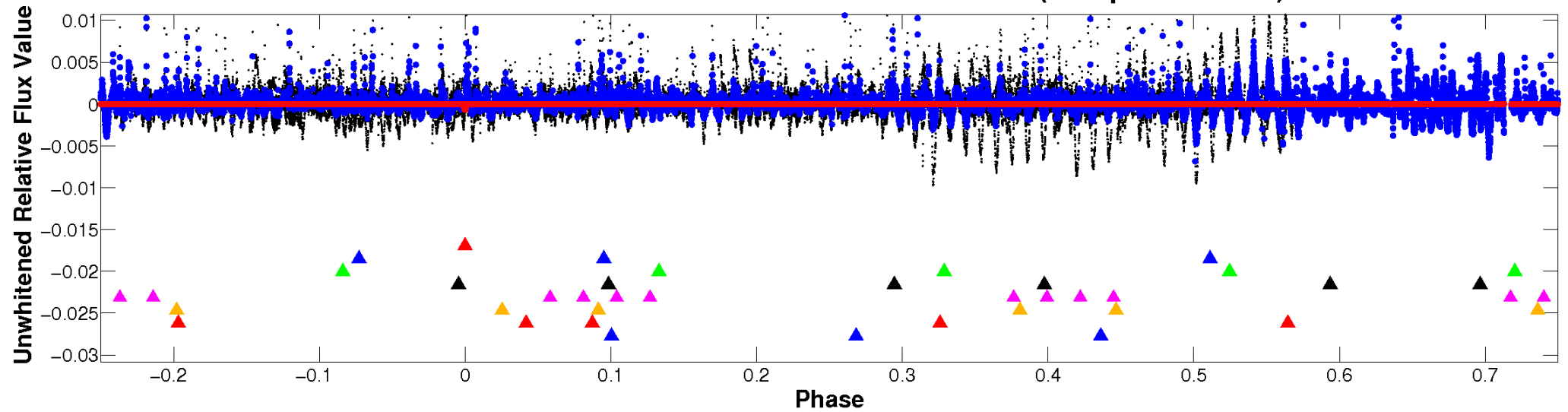
ALT Odd/Even

TCE 004180534-01

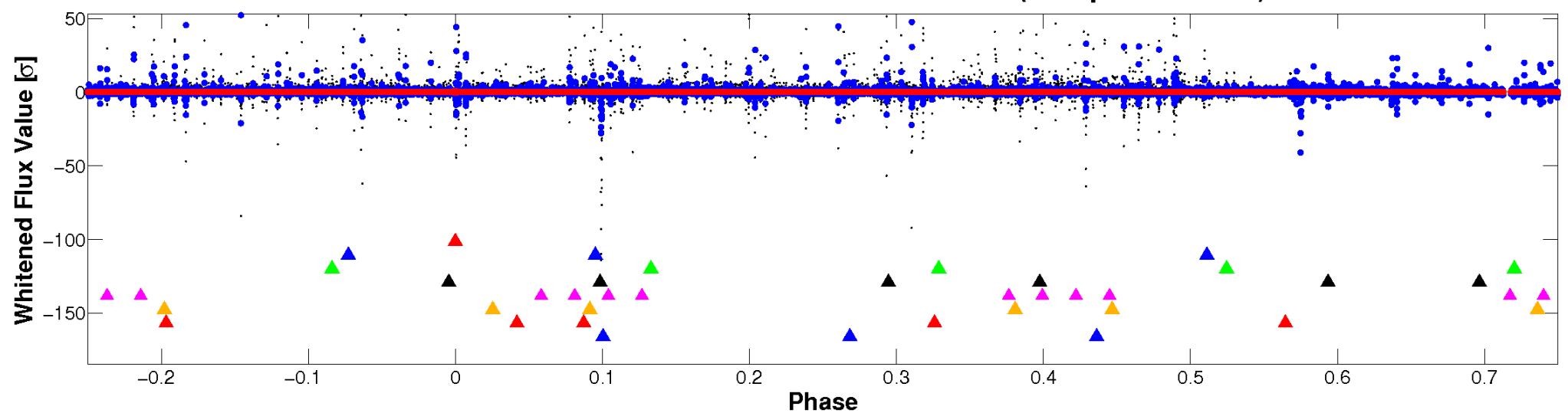


Non-Whitened Vs. Whitened Light Curve

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

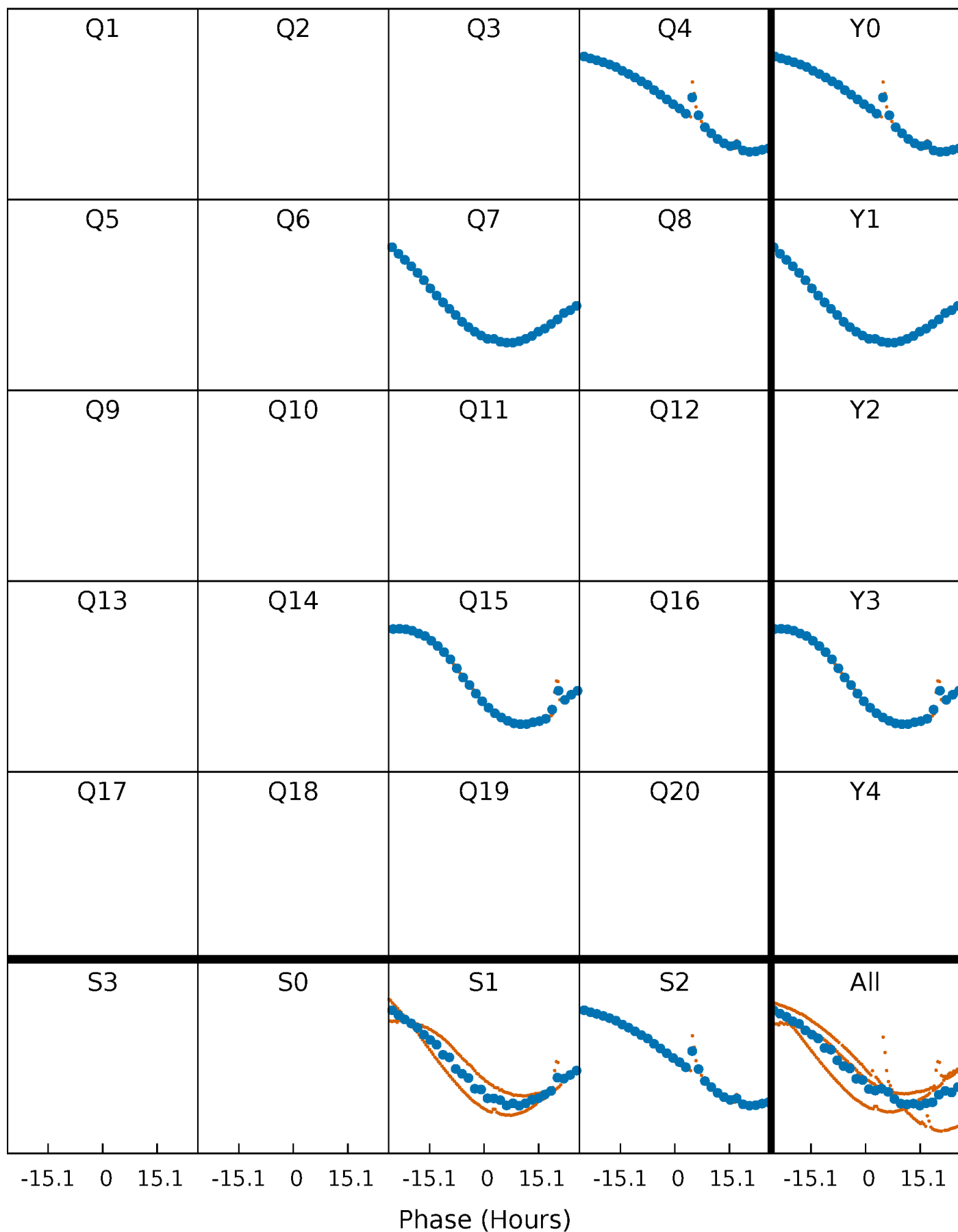


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



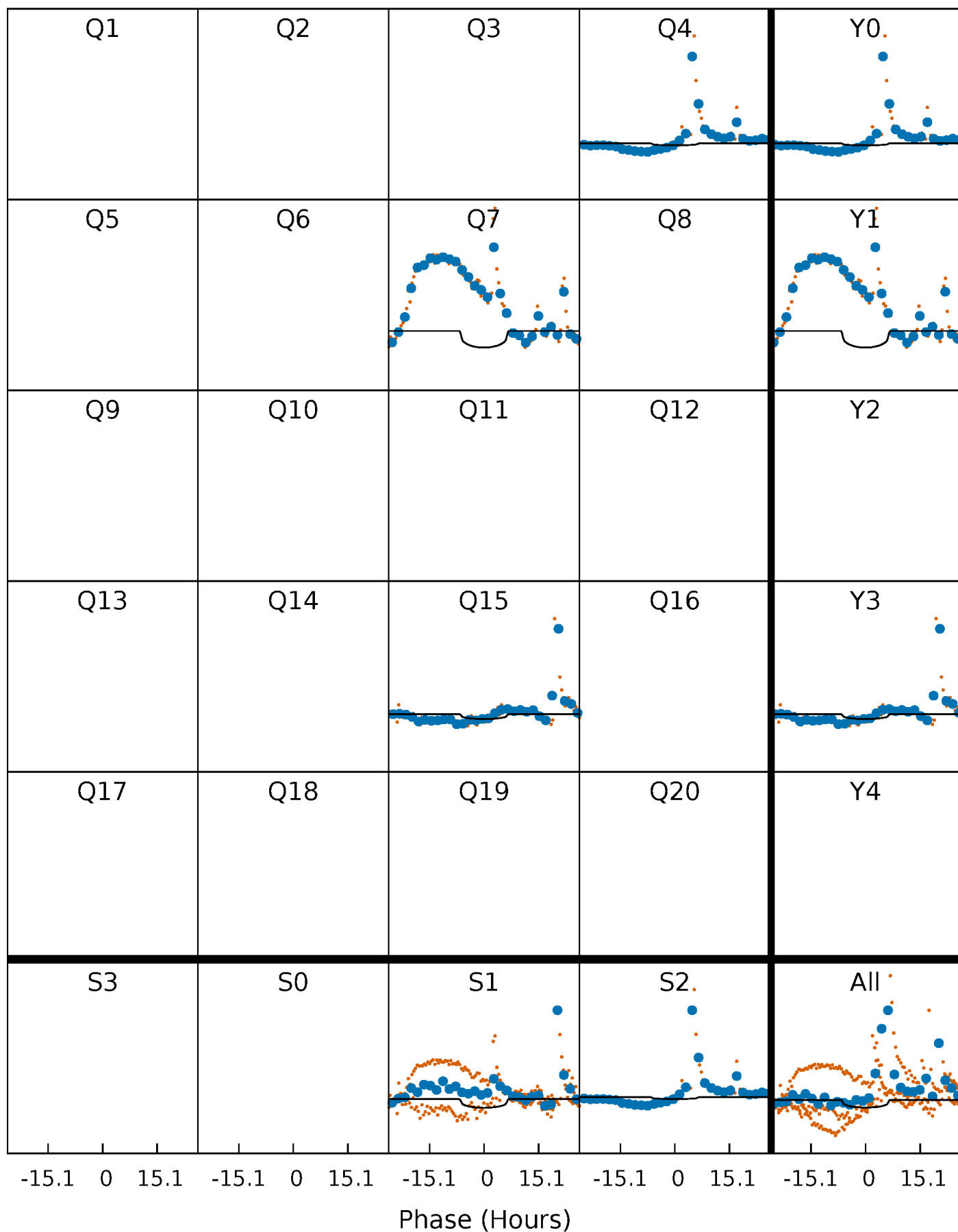
PDC Quarter-Phased Transit Curves

TCE 004180534-01 P=355.334762 Days $T_0=360.469179$ (BKJD)



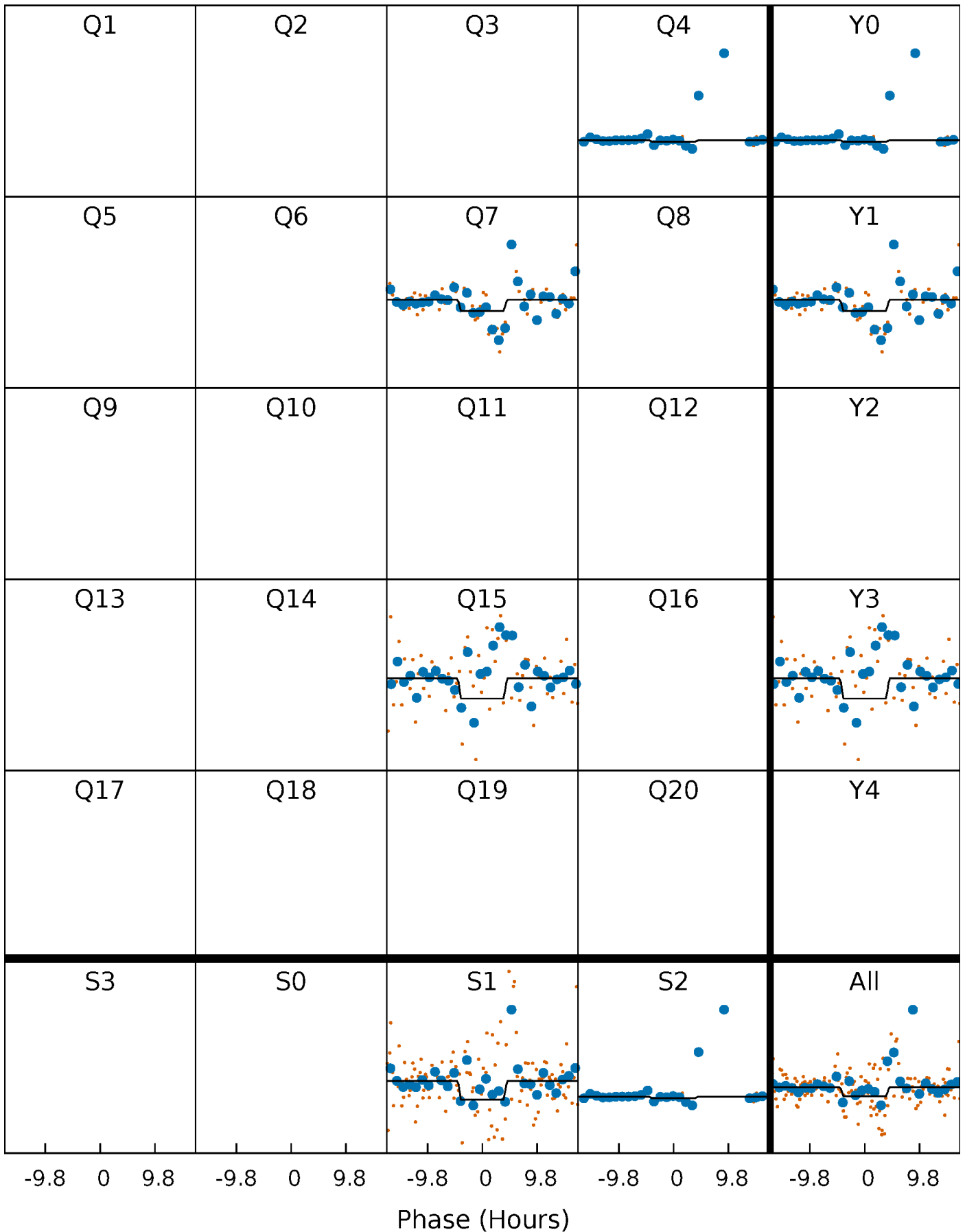
DV Quarter-Phased Transit Curves

TCE 004180534-01 P=355.334762 Days $T_0=360.469179$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

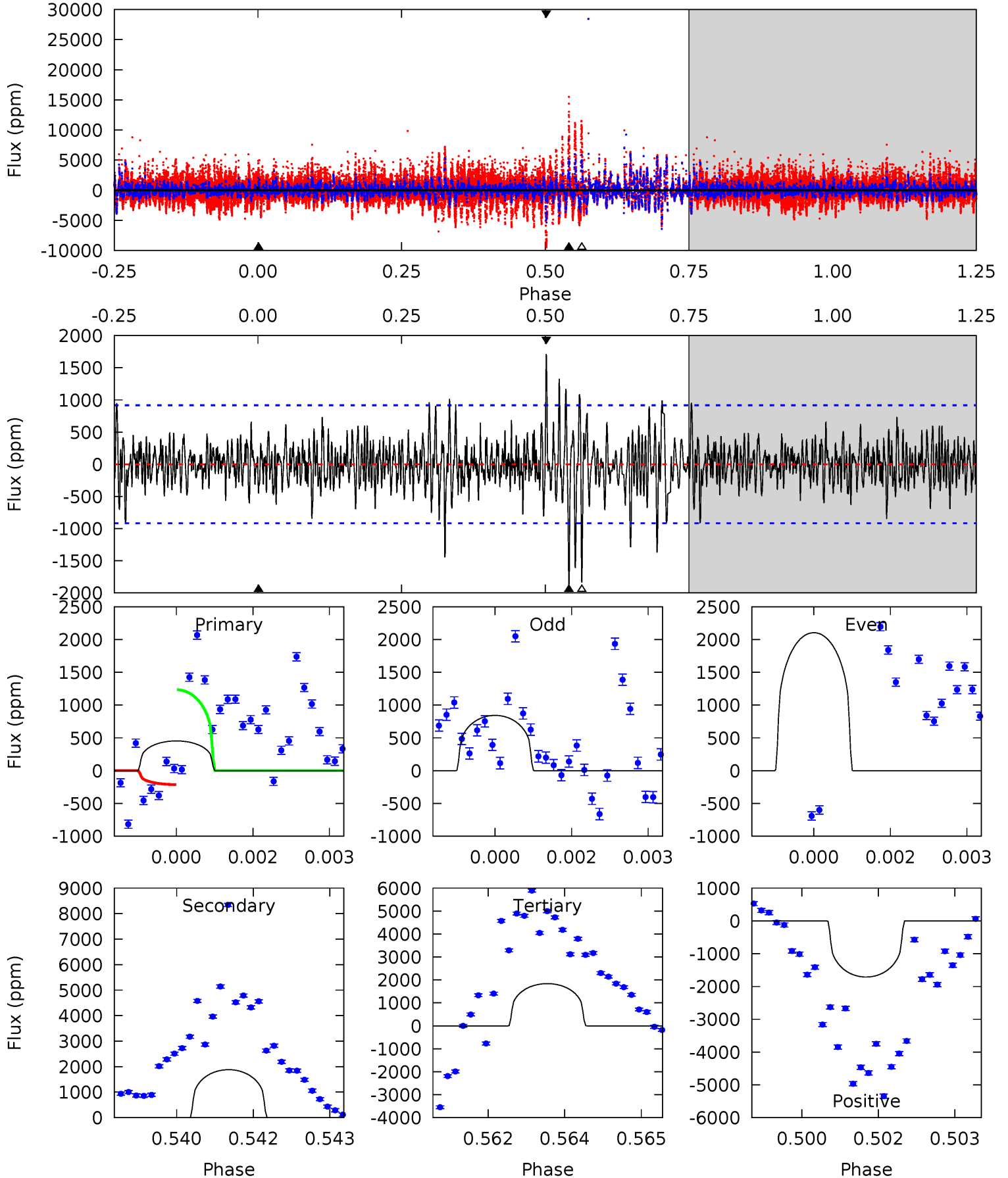
TCE 004180534-01 P=355.358245 Days $T_0=360.362345$ (BKJD)



DV Model-Shift Uniqueness Test

004180534-01, P = 355.334762 Days, E = 5.134417 Days

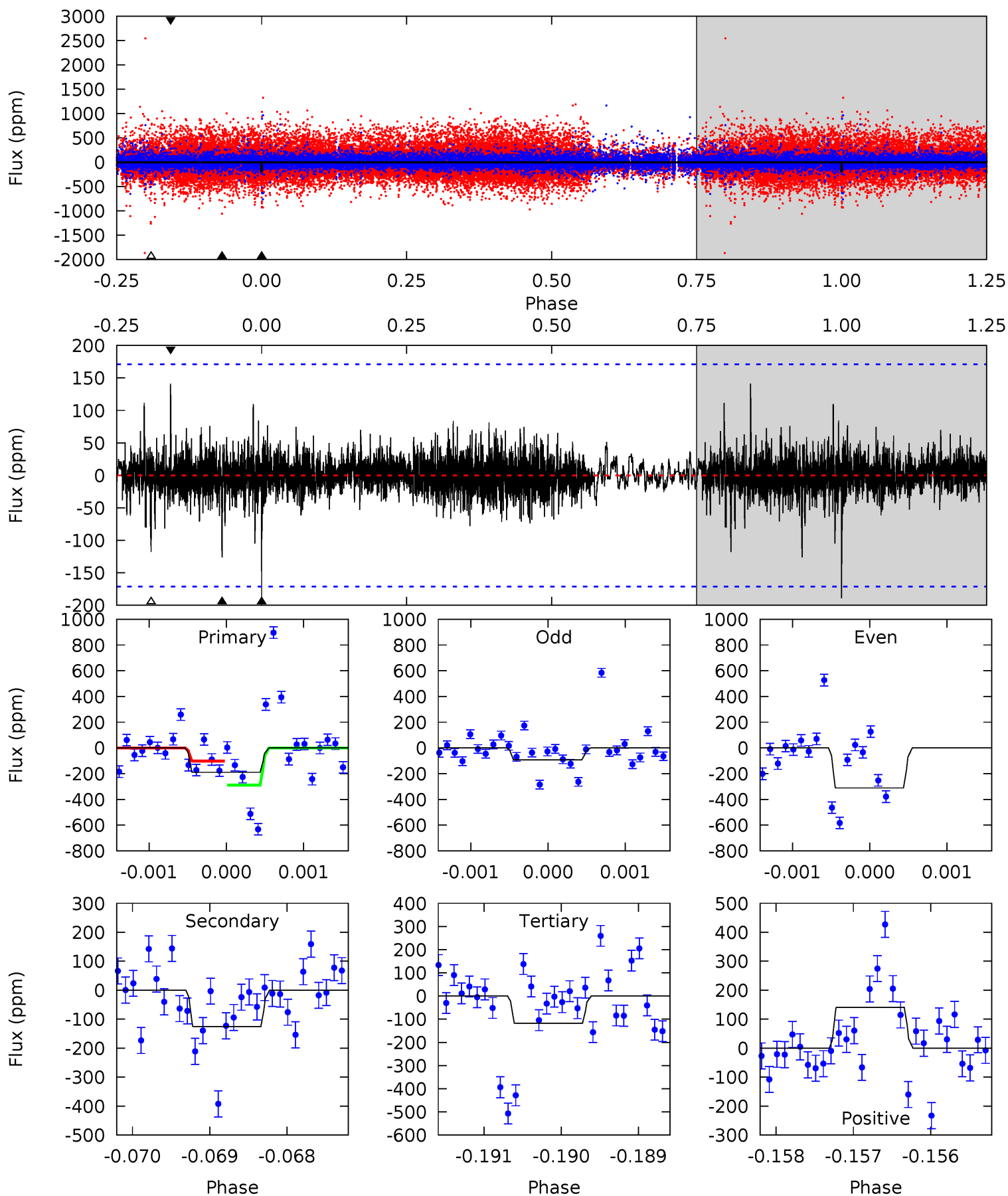
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.66	11.0	10.8	10.0	5.37	3.16	1.82	-8.12	-7.38	0.25	0.99	3.11	0.86	0.48	2.96



Alt Model-Shift Uniqueness Test

004180534-01, P = 355.358245 Days, E = 5.004100 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.02	4.01	3.75	4.49	5.45	3.29	0.68	2.27	1.53	0.26	-0.48	3.07	0.61	0.43	3.01



Stellar Parameters For KIC 004180534

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4746^{+131}_{-95}	$3.070^{+0.434}_{-0.355}$	$-0.020^{+0.250}_{-0.200}$	$4.645^{+3.183}_{-1.714}$	$0.925^{+0.288}_{-0.157}$	$0.013^{+0.037}_{-0.009}$
	+3%/-2%	+14%/-12%	+1250%/-1000%	+69%/-37%	+31%/-17%	+288%/-72%
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 004180534-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1880 ± 170	$34.94^{+37.83}_{-22.90}$	645^{+106}_{-81}	3930^{+2340}_{-722}	770^{+5401}_{-581}
Alt.	-126 ± 31	$30.47^{+37.89}_{-21.32}$	640^{+105}_{-73}	2736^{+1269}_{-455}	67^{+723}_{-53}

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

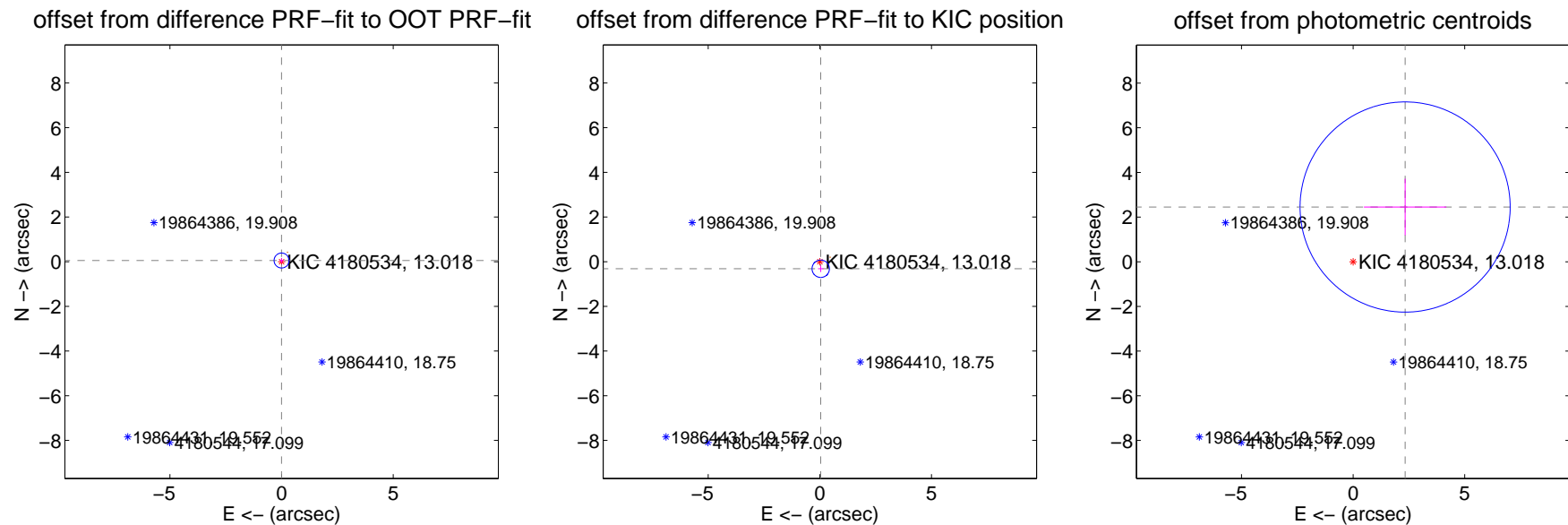
DV Centroid Data

Supplemental centroid analysis for 004180534-01. Kepler magnitude: 13.02. Transit SNR 2.58

There are 2 quarters with good PRF difference image offsets

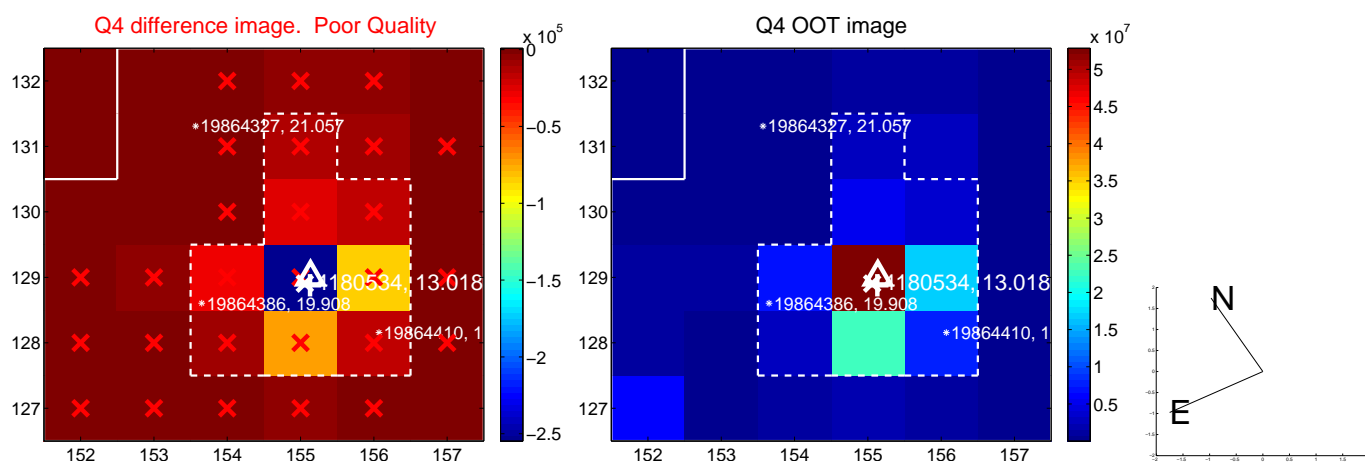
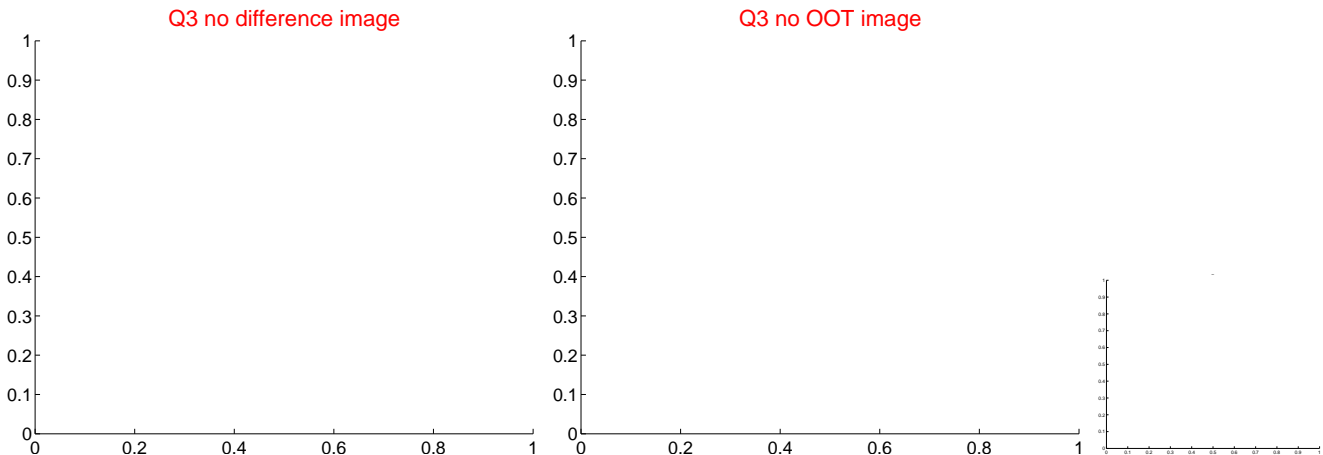
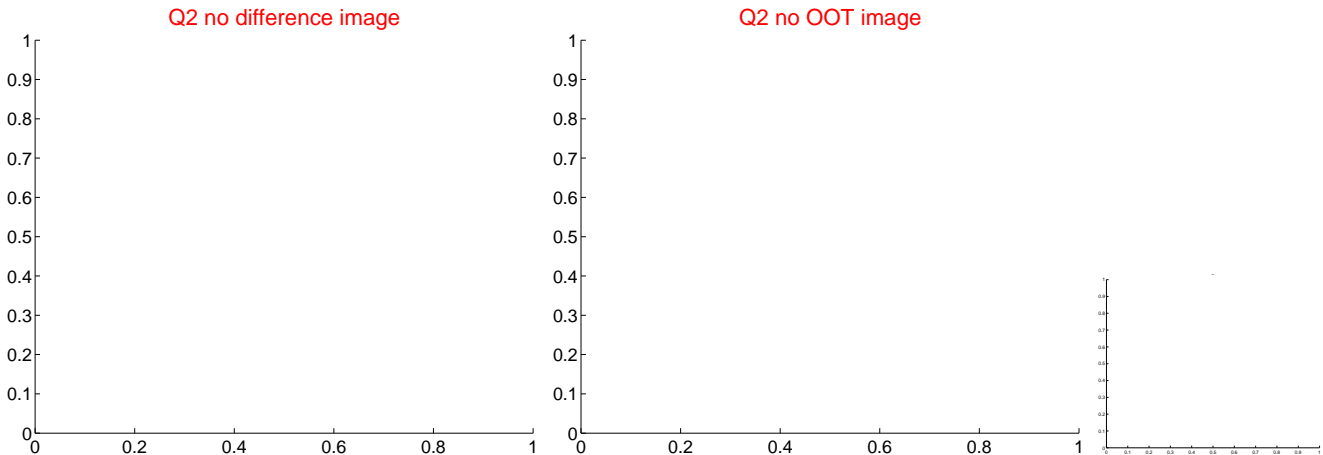
The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.053 ± 0.112	0.48	0.001 ± 0.092	0.053 ± 0.112
PRF-fit source offset from KIC position	0.318 ± 0.130	2.46	-0.039 ± 0.121	-0.316 ± 0.141
photometric centroid source offset	3.38 ± 1.57	2.16	-2.33 ± 1.85	2.45 ± 1.27



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

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



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Q5 no difference image



Q5 no OOT image



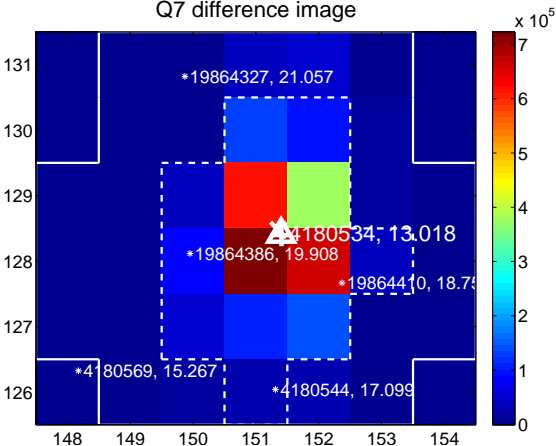
Q6 no difference image



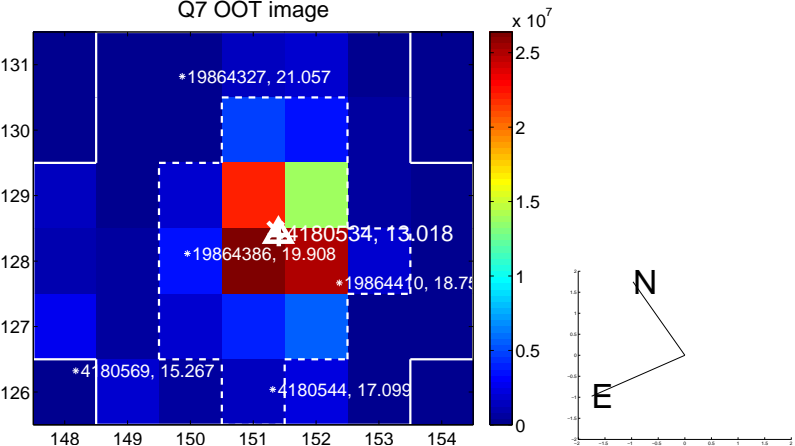
Q6 no OOT image



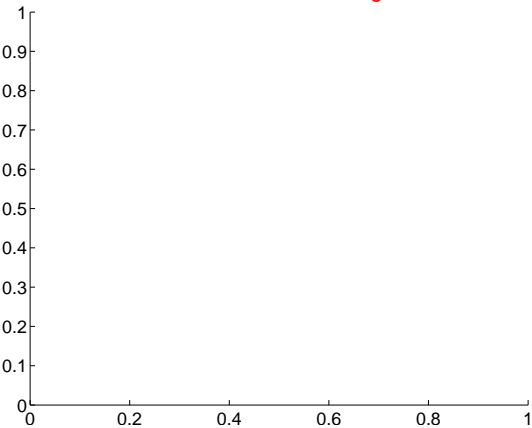
Q7 difference image



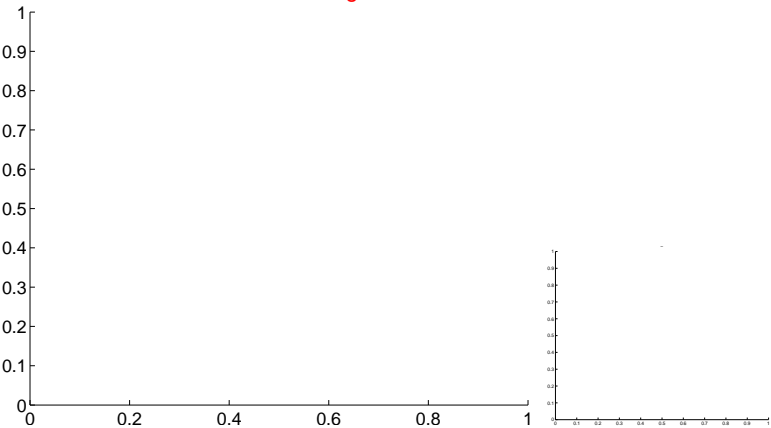
Q7 OOT image



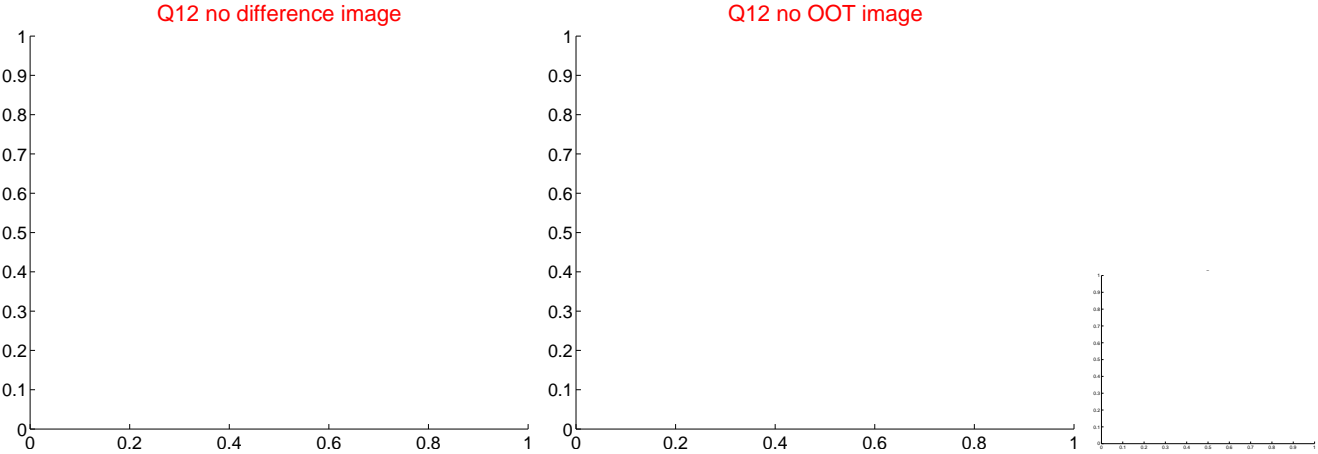
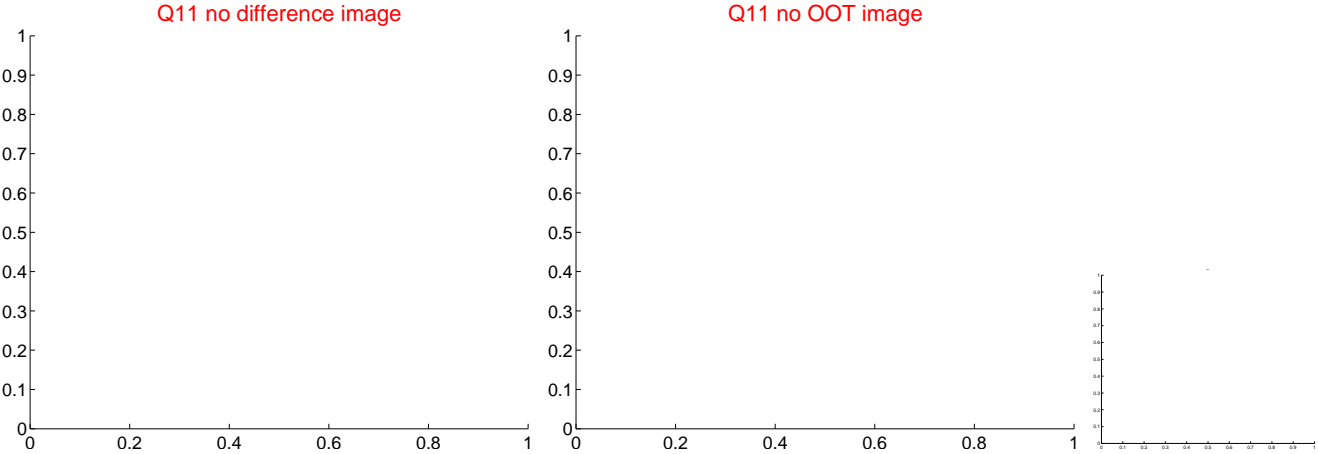
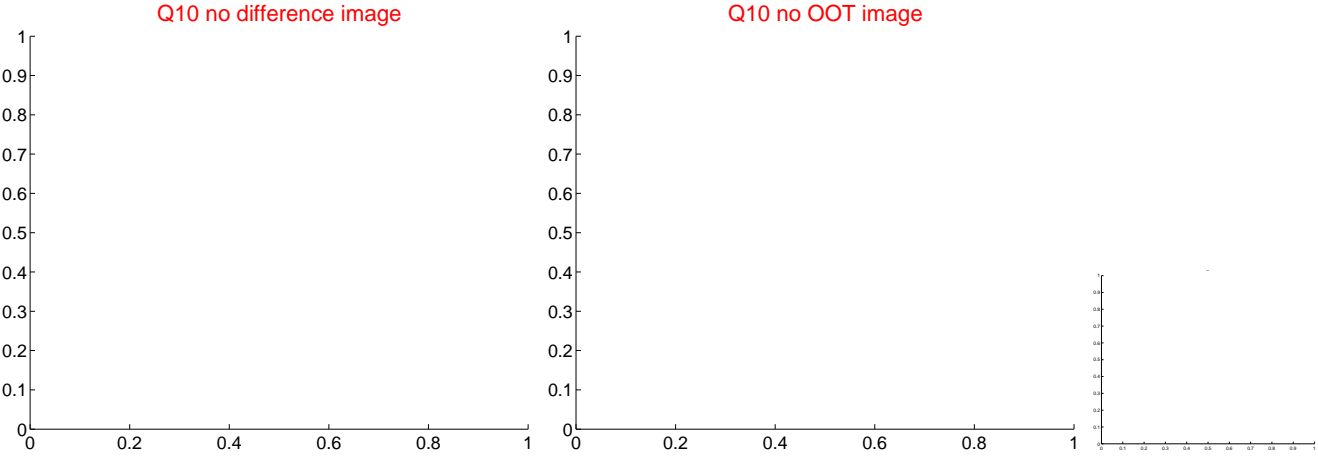
Q8 no difference image



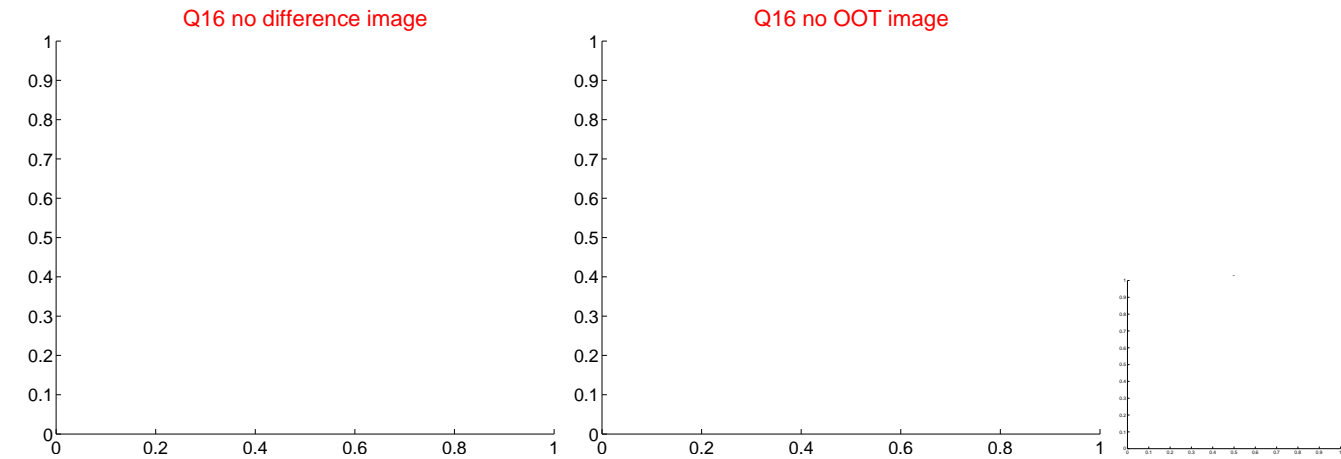
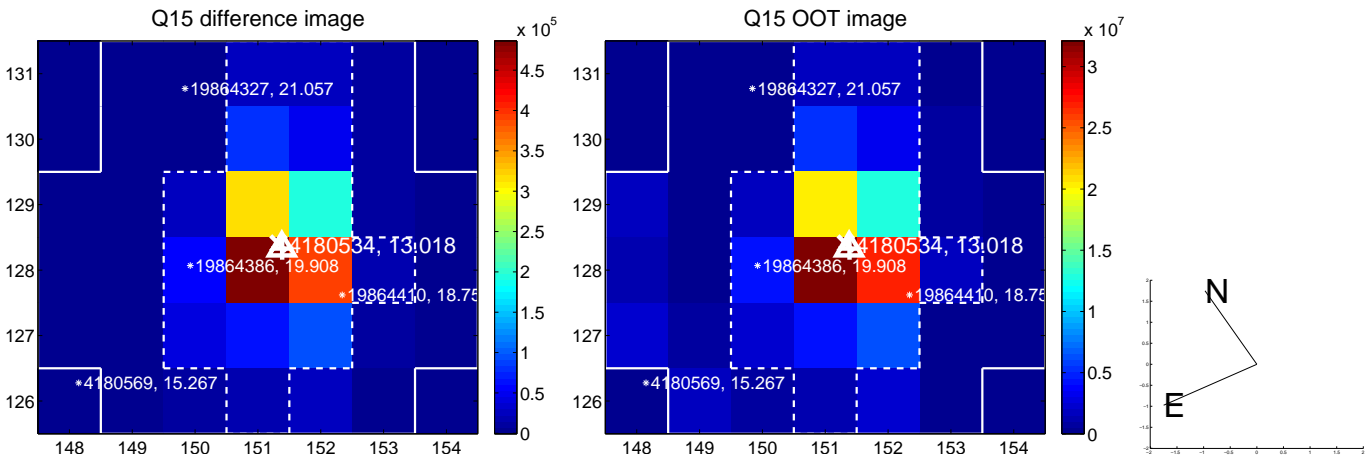
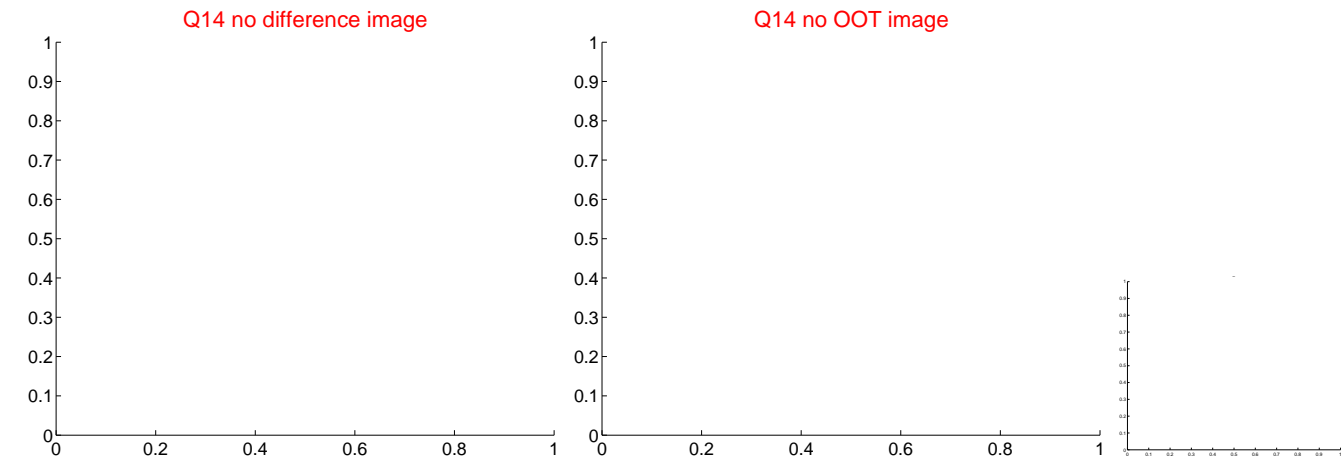
Q8 no OOT image



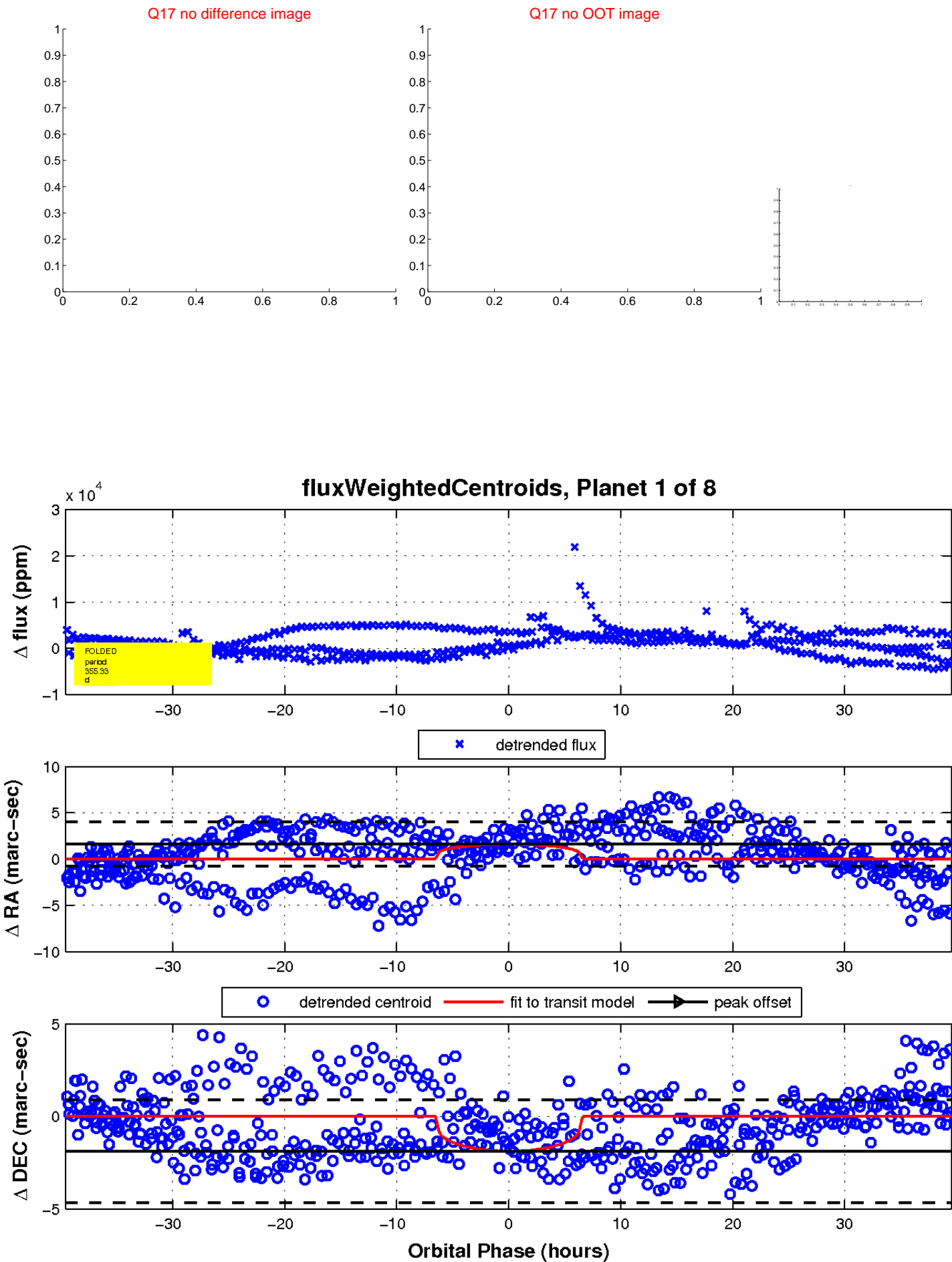
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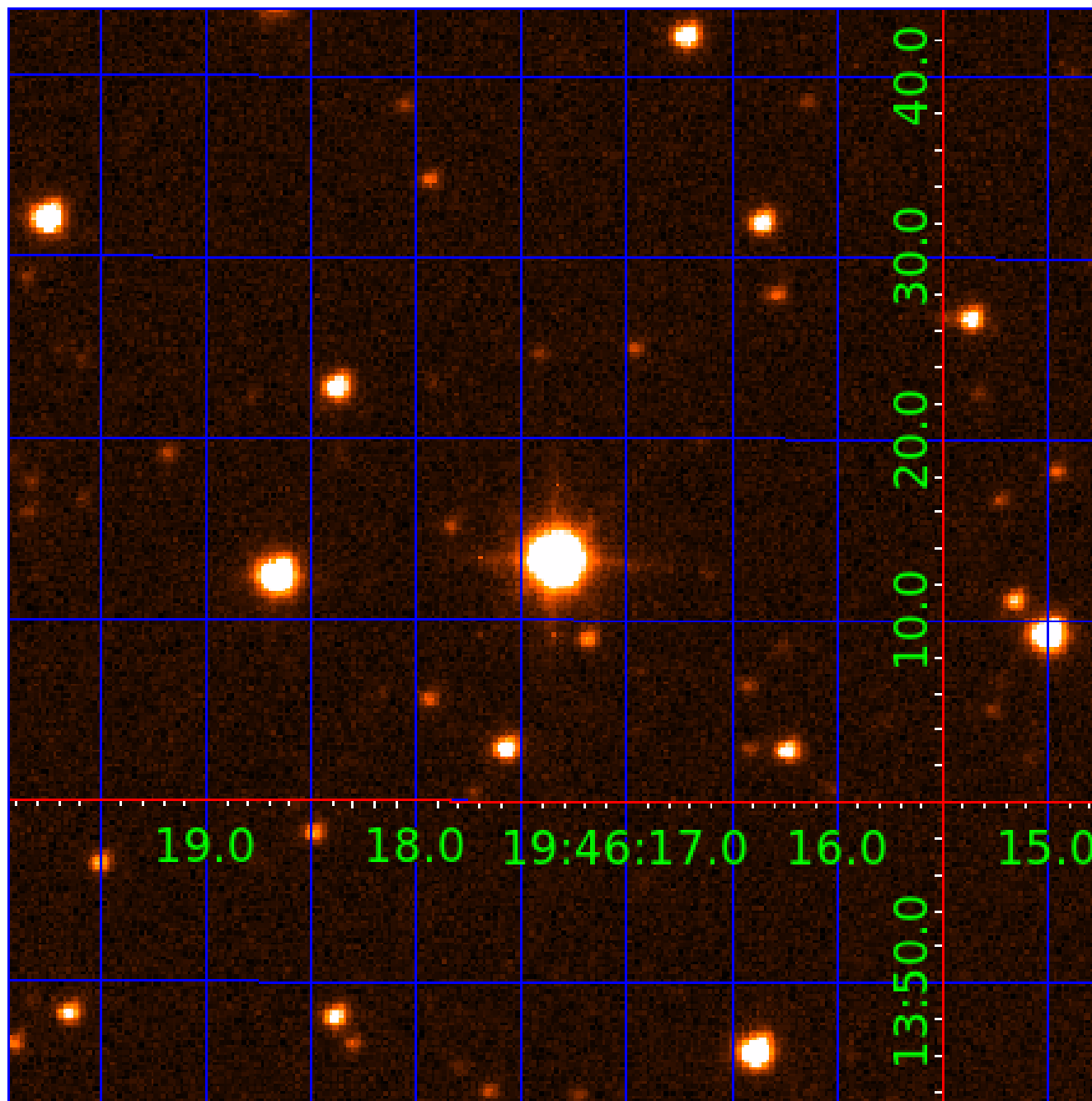


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UKIRT Image

Declination



KIC 004180534

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004180534-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
004180534-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS
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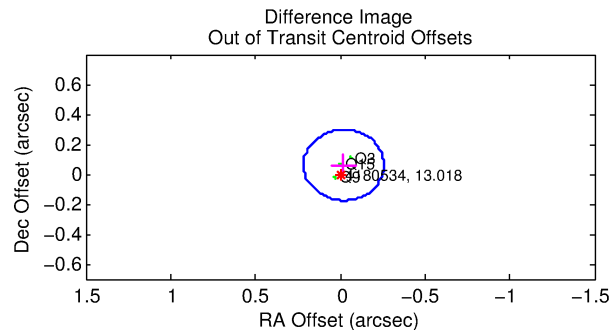
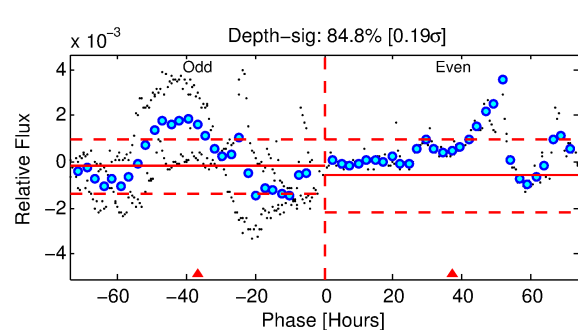
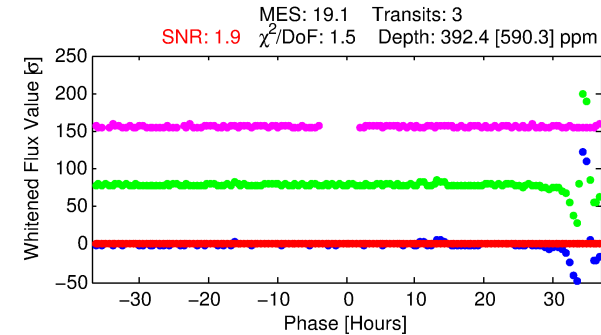
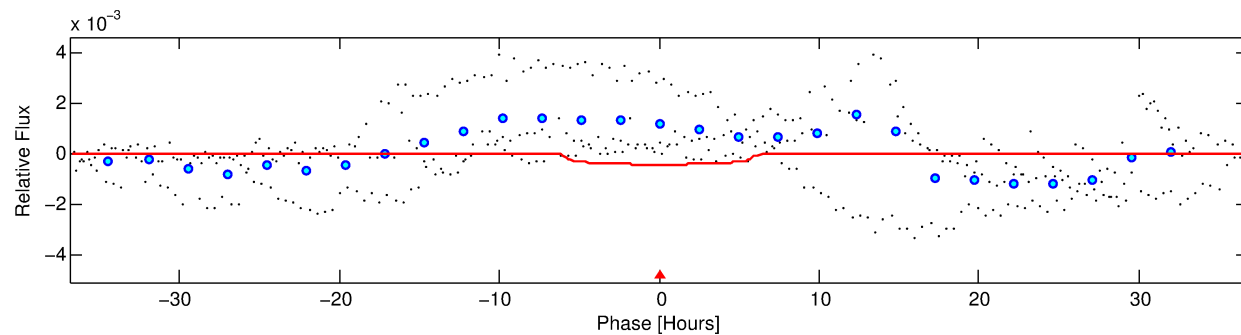
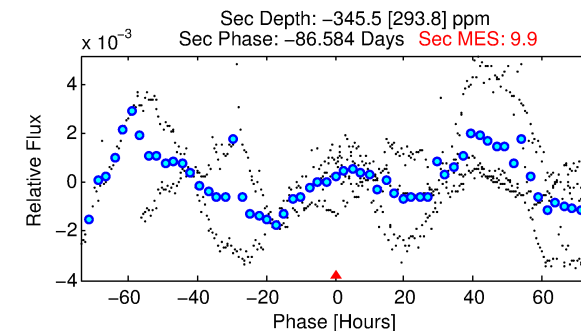
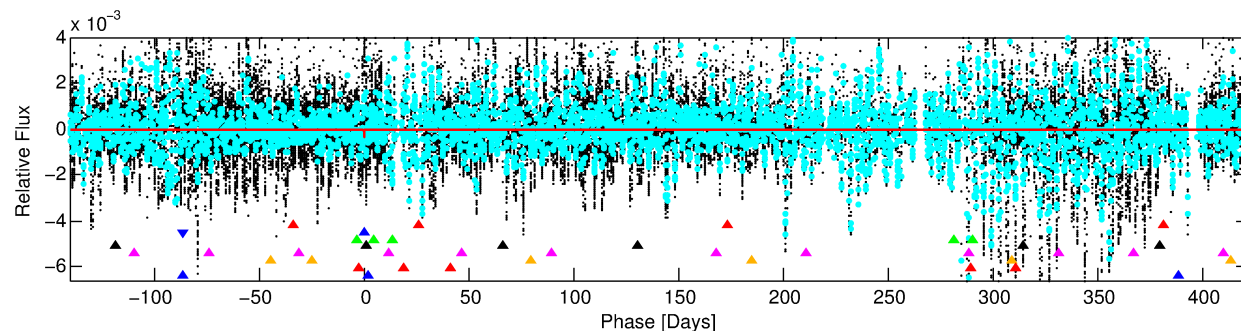
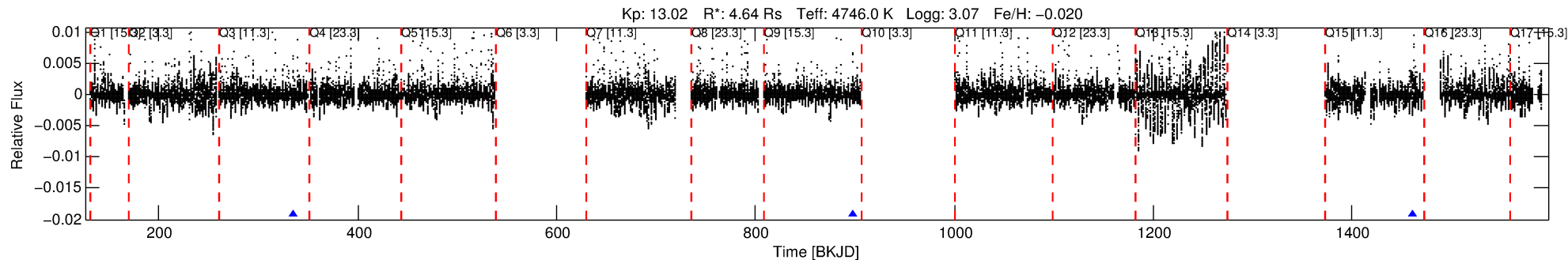
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004180534-02

No Significant Match Found

DV One-Page Summary

KIC: 4180534 Candidate: 2 of 8 Period: 562.851 d



DV Fit Results:

Period = 562.85106 [0.05376] d
Epoch = 334.6129 [0.0707] BKJD
Rp/R* = 0.0197 [0.0383]
a/R* = 246.45 [1437.54]
b = 0.74 [3.65]
Seff = 5.80 [4.73]
Teq = 396 [81] K
Rp = 9.97 [20.60] Re
a = 1.3000 [0.7350] AU
Ag = N/A
Teffp = N/A

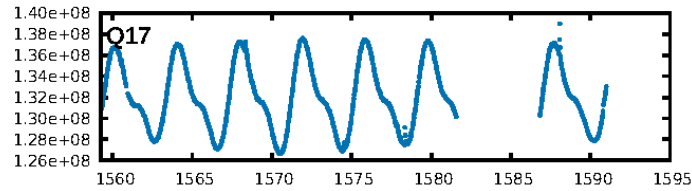
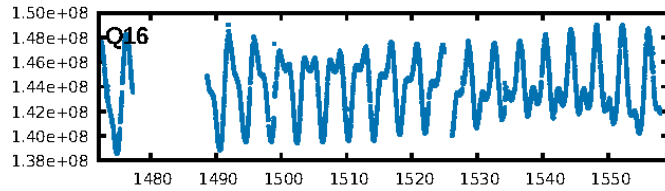
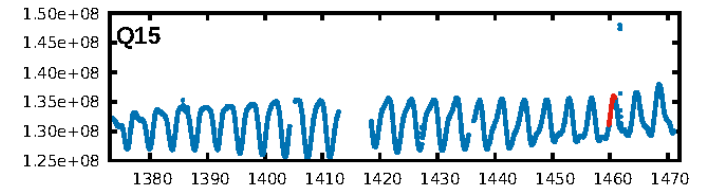
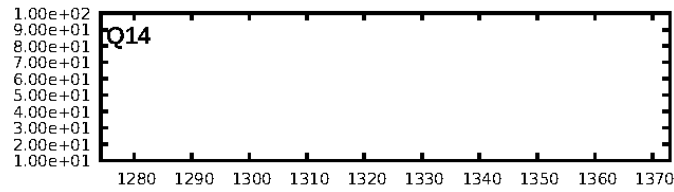
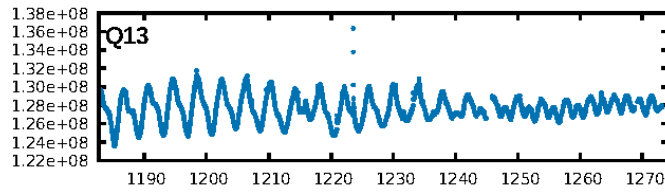
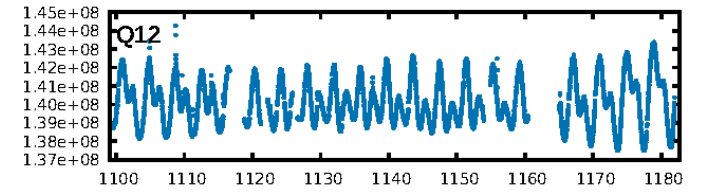
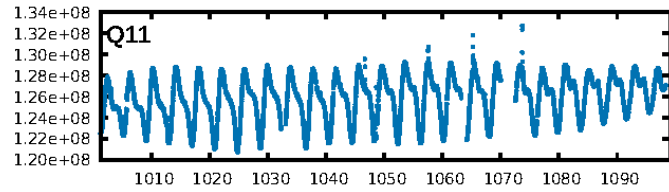
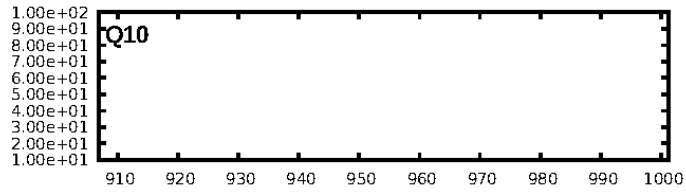
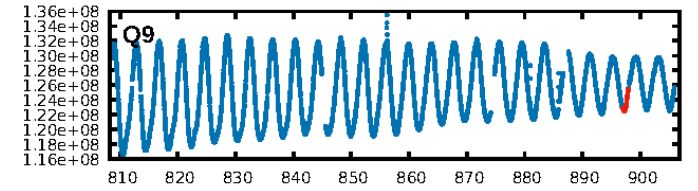
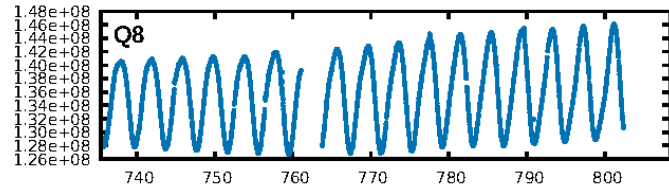
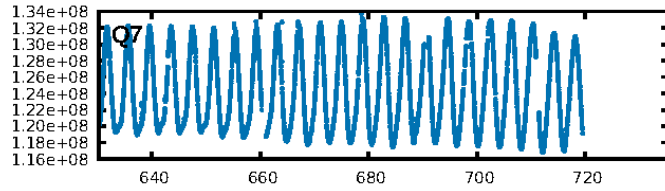
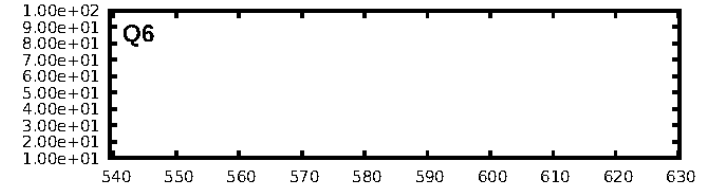
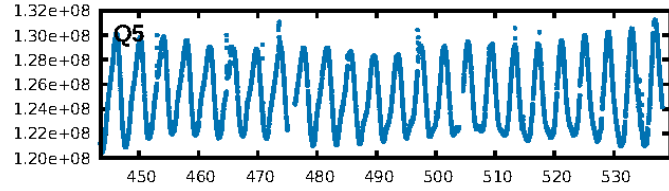
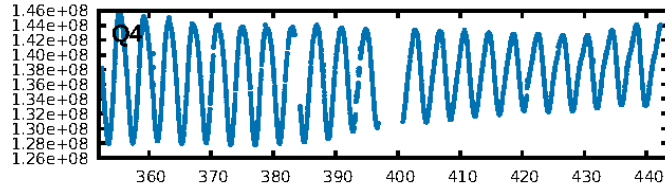
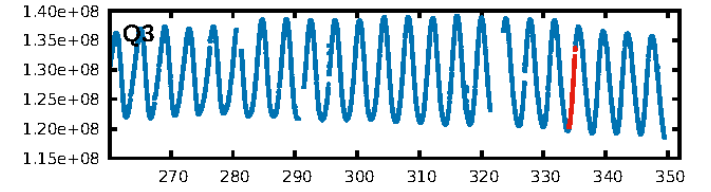
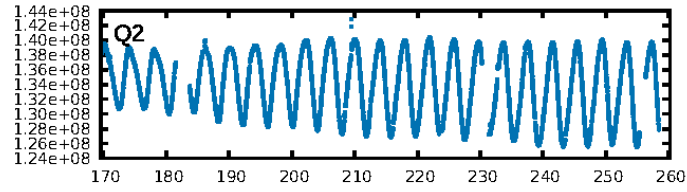
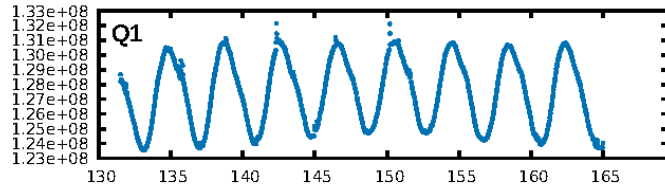
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [275.98σ]
LongPeriod-sig: 100.0% [140.89σ]
ModelChiSquare2-sig: 30.9%
ModelChiSquareGof-sig: 99.8%
Bootstrap-pfa: 1.78e-13
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.357
Centroid-sig: 2.7%
Centroid-so: 5.920 arcsec [1.89σ]
OotOffset-rm: 0.064 arcsec [0.81σ]
OotOffset-st: 0/2/0/1 [3]
KicOffset-rm: 0.225 arcsec [2.91σ]
KicOffset-st: 0/2/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

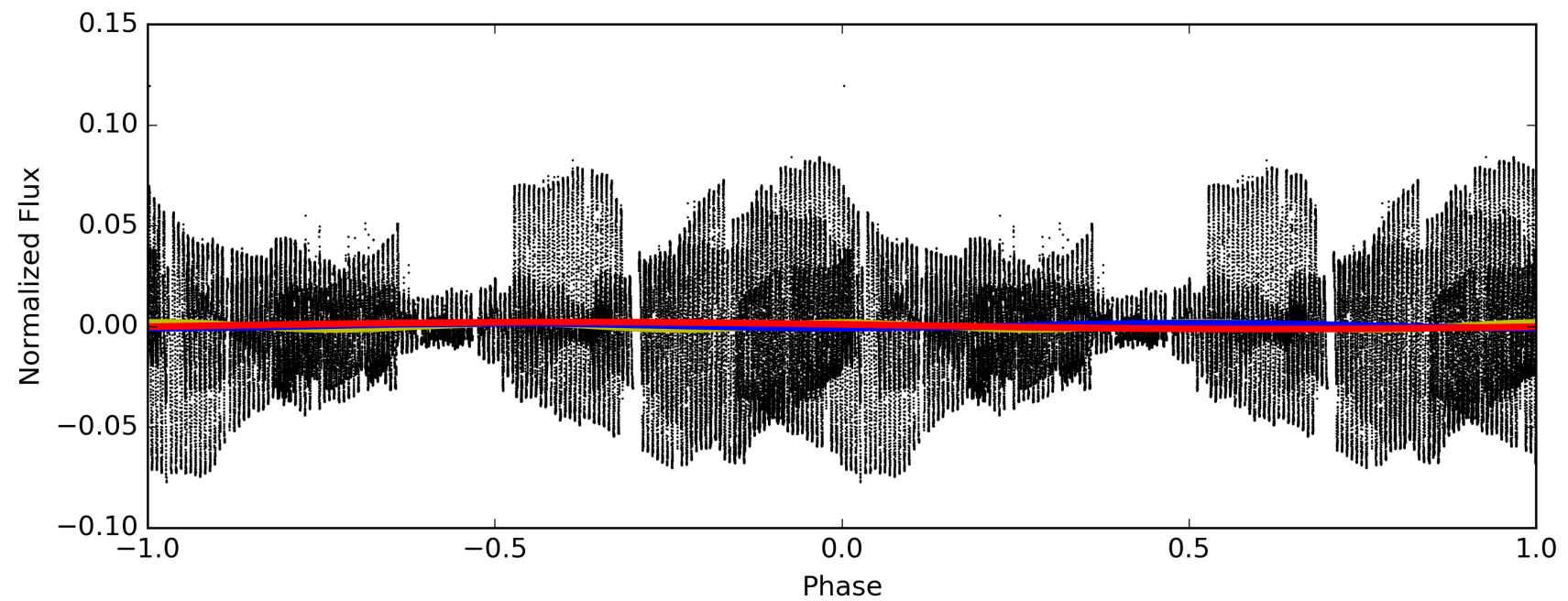
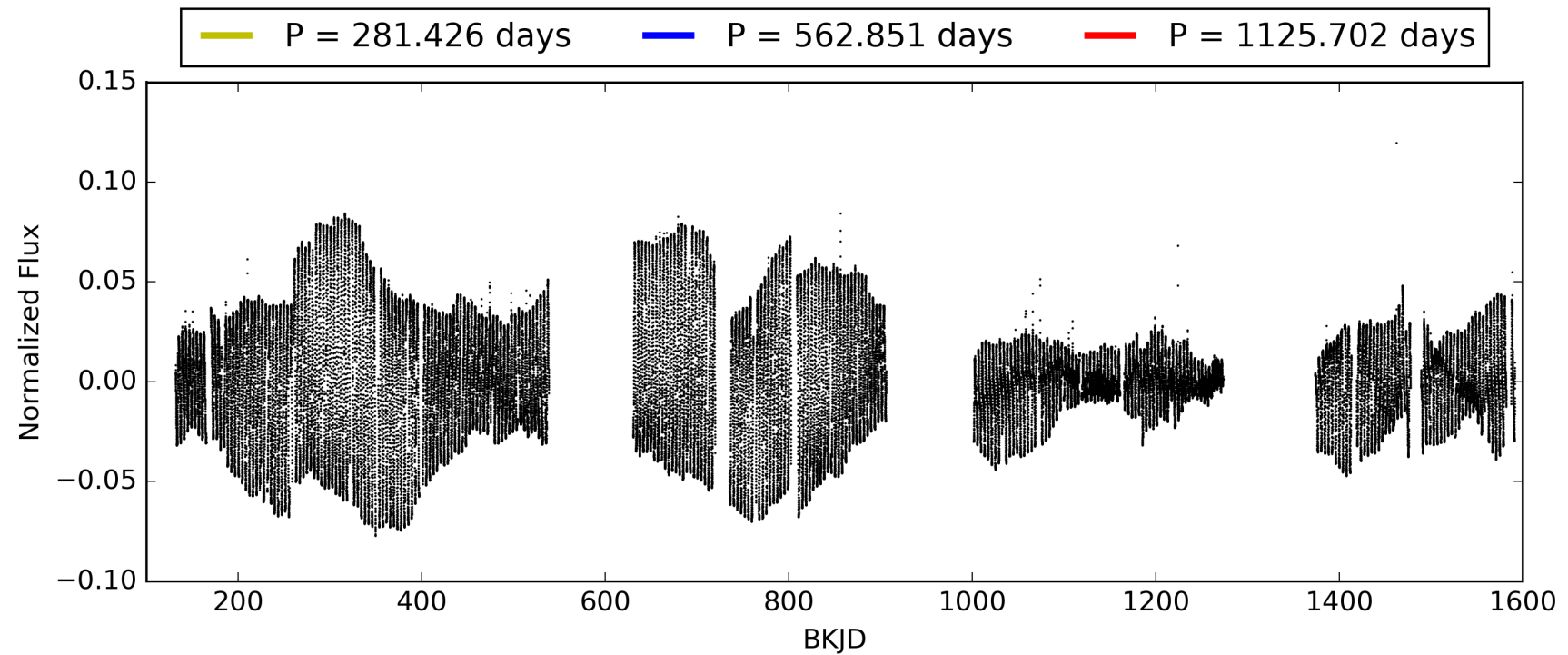
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:37:48 Z

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

TCE 004180534-02, PDC Light Curves

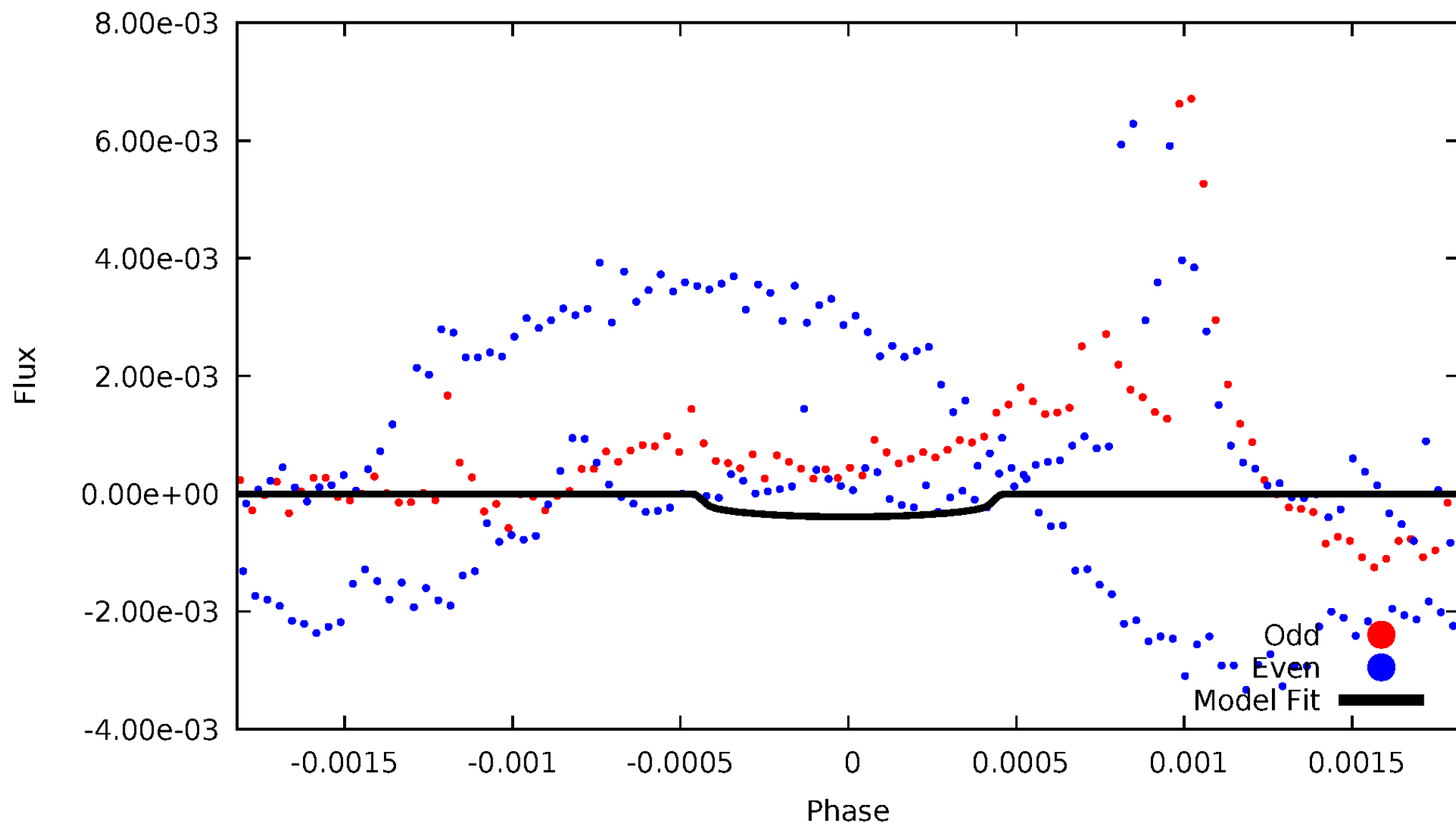


TCE 004180534-02



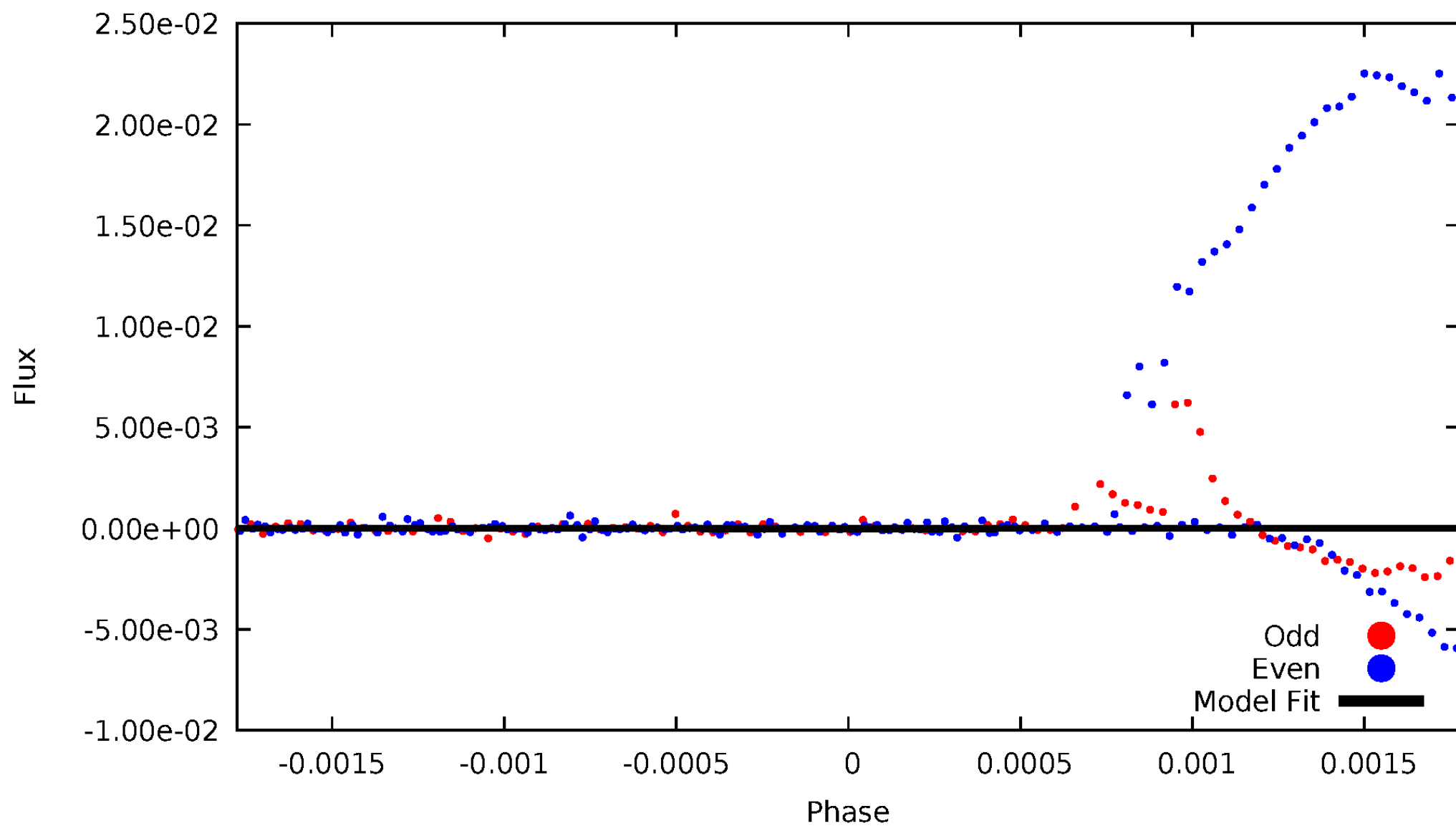
DV Odd/Even

TCE 004180534-02



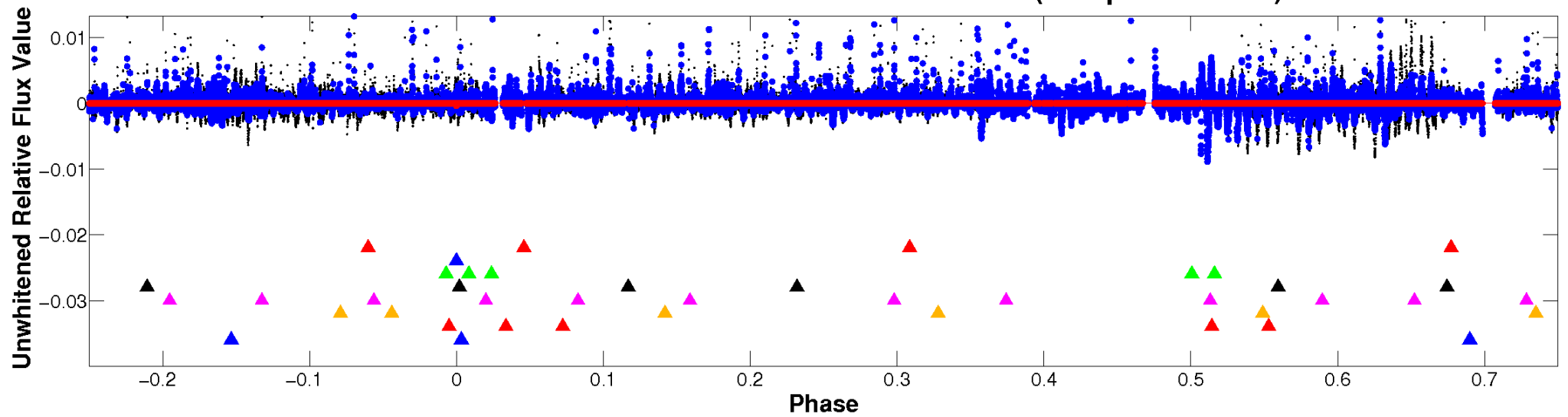
ALT Odd/Even

TCE 004180534-02

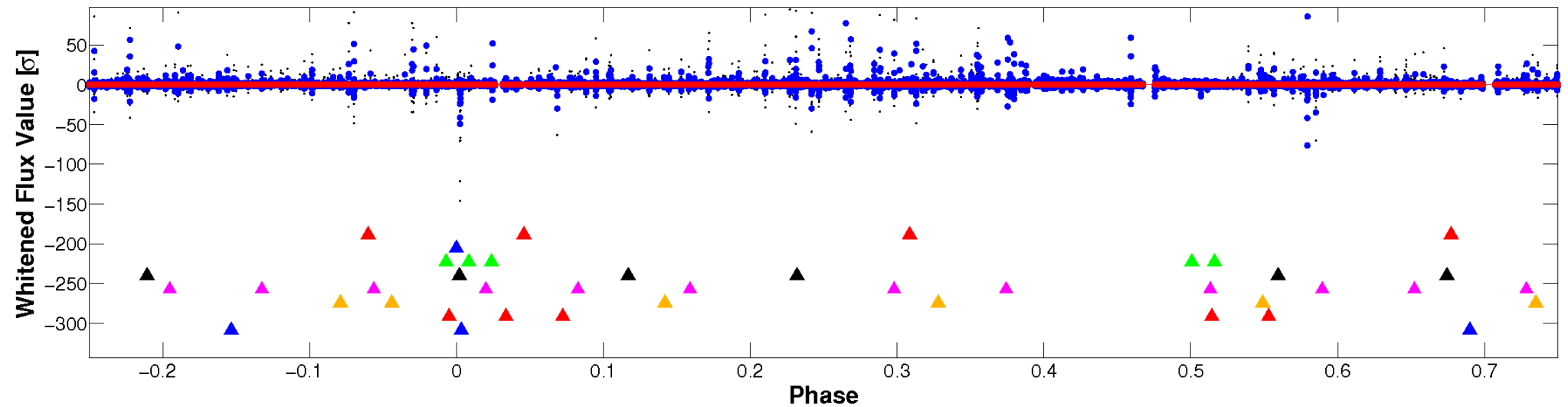


Non-Whitened Vs. Whitened Light Curve

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

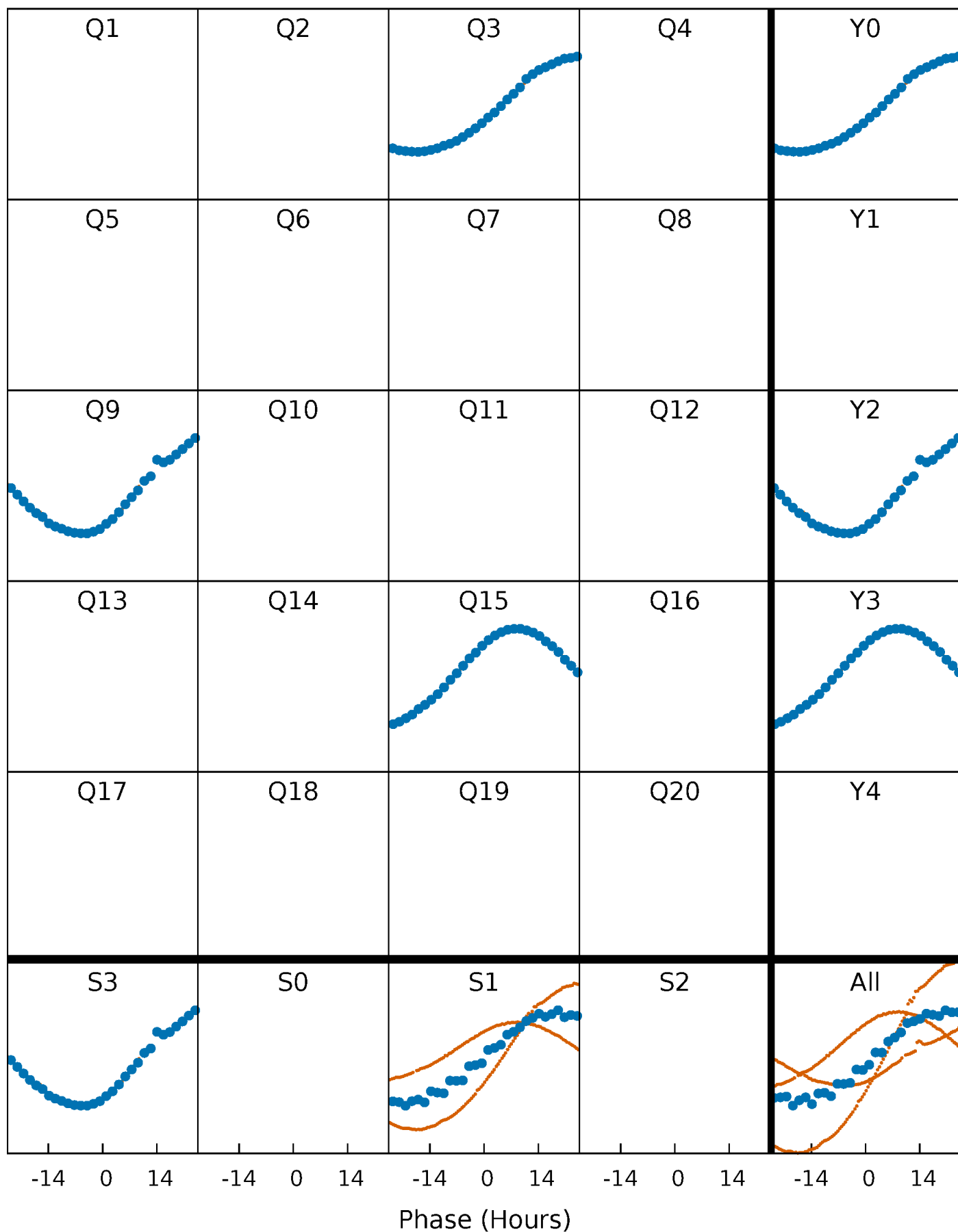


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



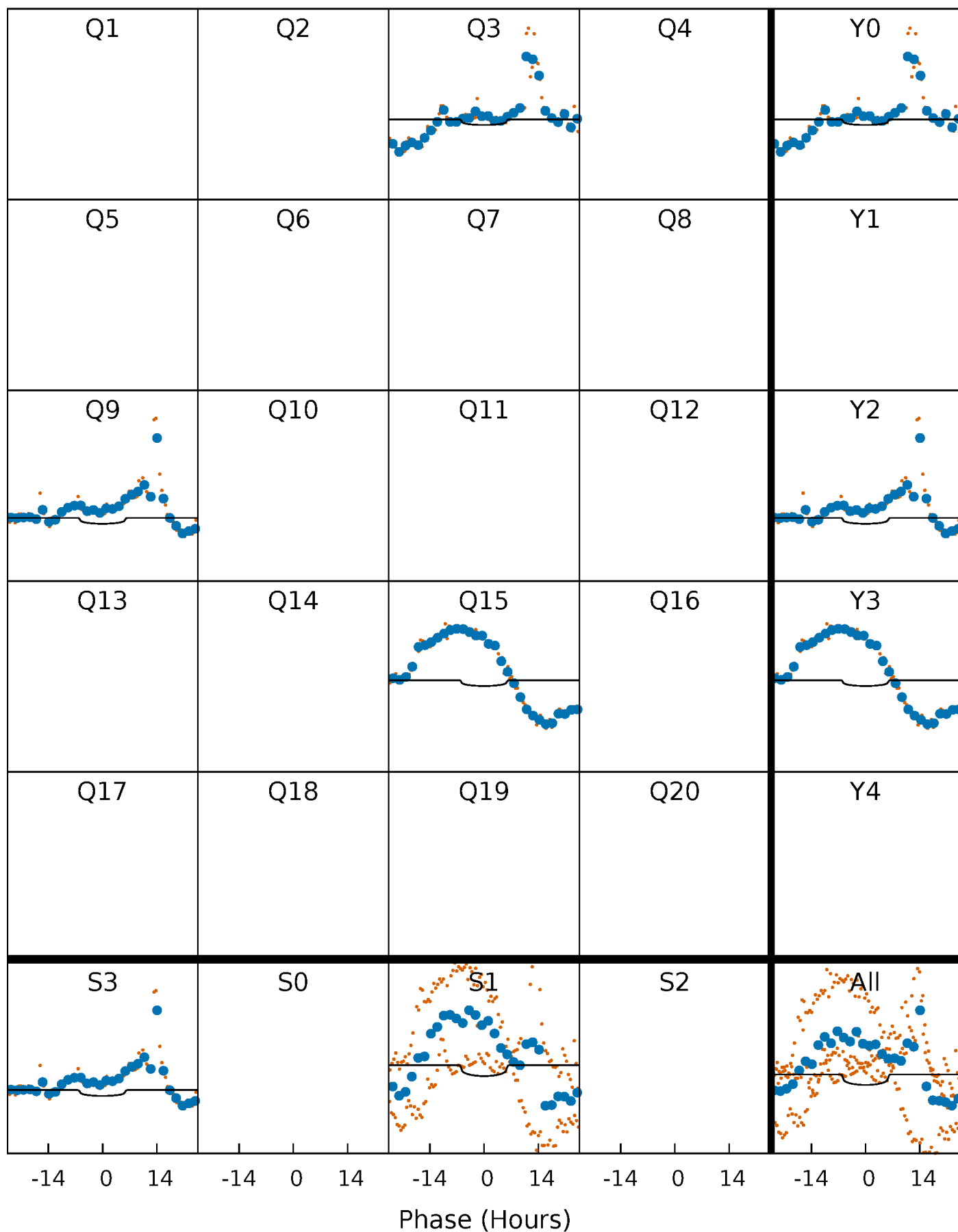
PDC Quarter-Phased Transit Curves

TCE 004180534-02 P=562.851062 Days $T_0=334.612945$ (BKJD)



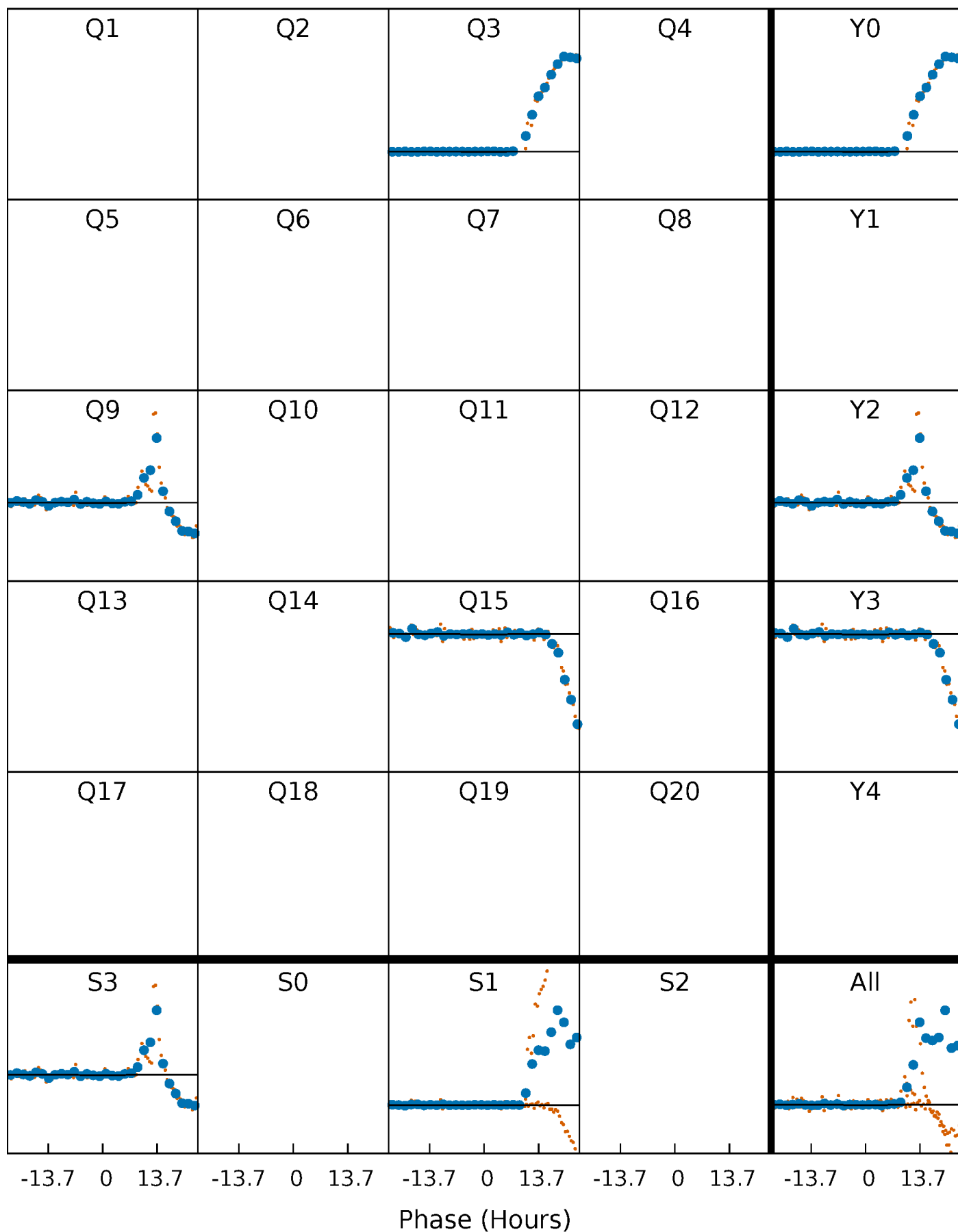
DV Quarter-Phased Transit Curves

TCE 004180534-02 $P=562.851062$ Days $T_0=334.612945$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

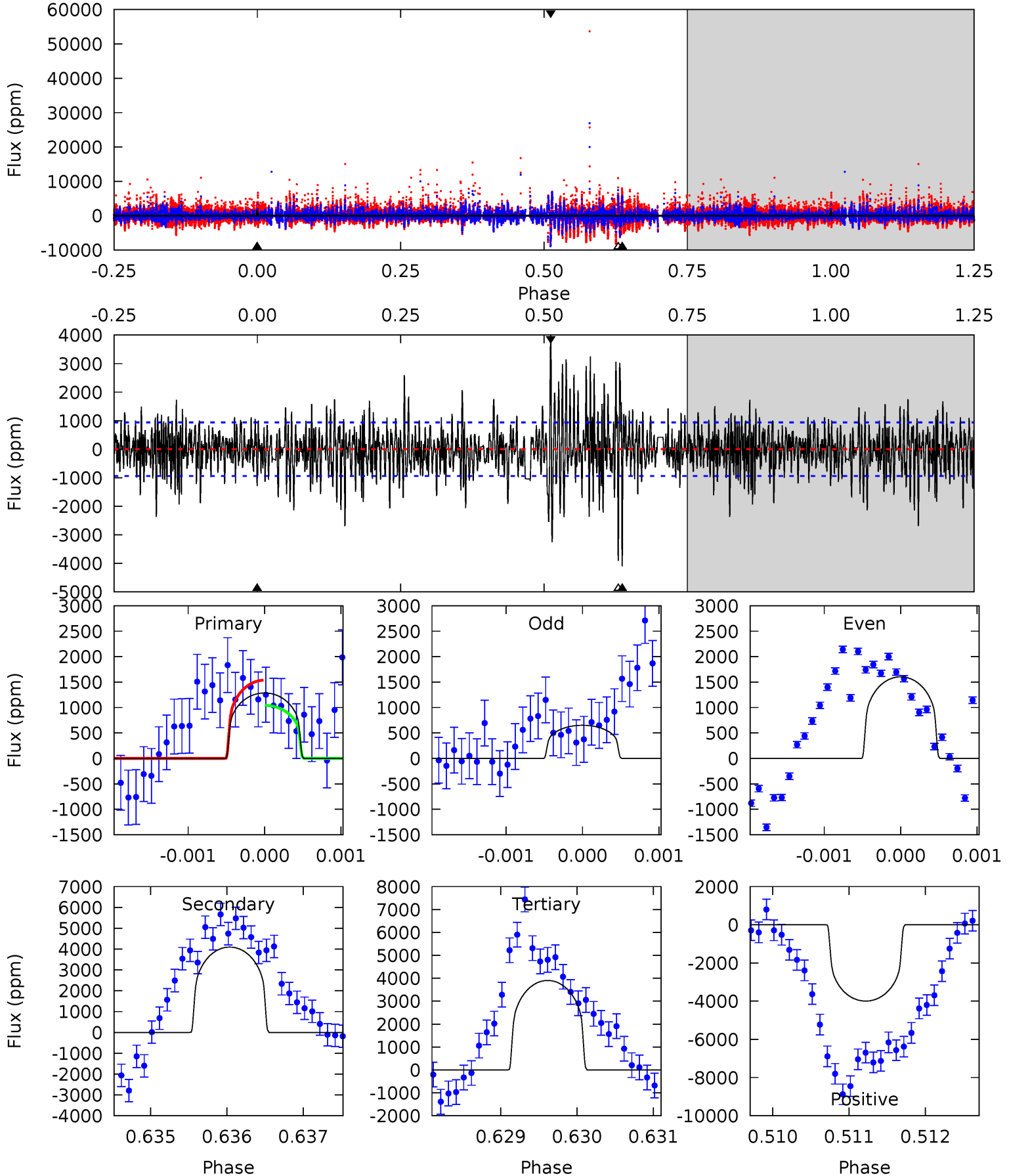
TCE 004180534-02 P=562.869655 Days $T_0=334.614297$ (BKJD)



DV Model-Shift Uniqueness Test

004180534-02, P = 562.851062 Days, E = 334.612945 Days

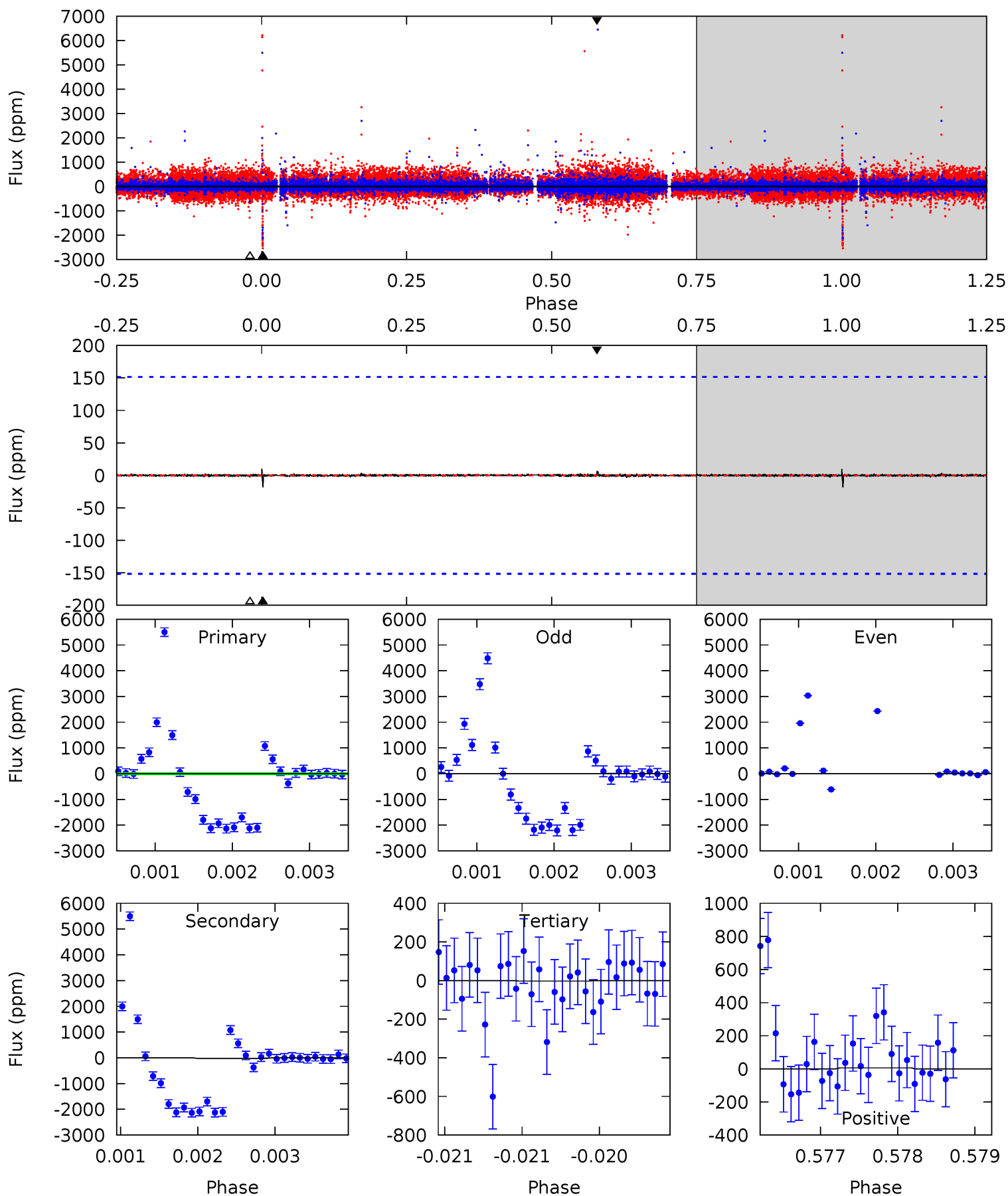
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.50	23.9	22.8	23.3	5.47	3.31	4.37	-15.3	-15.8	1.12	0.58	2.54	1.97	0.49	1.47



Alt Model-Shift Uniqueness Test

004180534-02, P = 562.869655 Days, E = 334.614297 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.36	0.65	0.09	0.21	5.47	3.32	0.02	0.28	0.15	0.56	0.44	0.24	4.04	0.36	0.21



Stellar Parameters For KIC 004180534

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4746^{+131}_{-95}	$3.070^{+0.434}_{-0.355}$	$-0.020^{+0.250}_{-0.200}$	$4.645^{+3.183}_{-1.714}$	$0.925^{+0.288}_{-0.157}$	$0.013^{+0.037}_{-0.009}$
	+3%/-2%	+14%/-12%	+1250%/-1000%	+69%/-37%	+31%/-17%	+288%/-72%
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 004180534-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-4096 ± 171	$16.18^{+17.94}_{-10.53}$	548^{+86}_{-63}	6524^{+6790}_{-1736}	$15267^{+104251}_{-11715}$
Alt.	-18 ± 28	$13.15^{+16.43}_{-9.35}$	547^{+89}_{-67}	2509^{+1167}_{-4881}	63^{+924}_{-93}

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

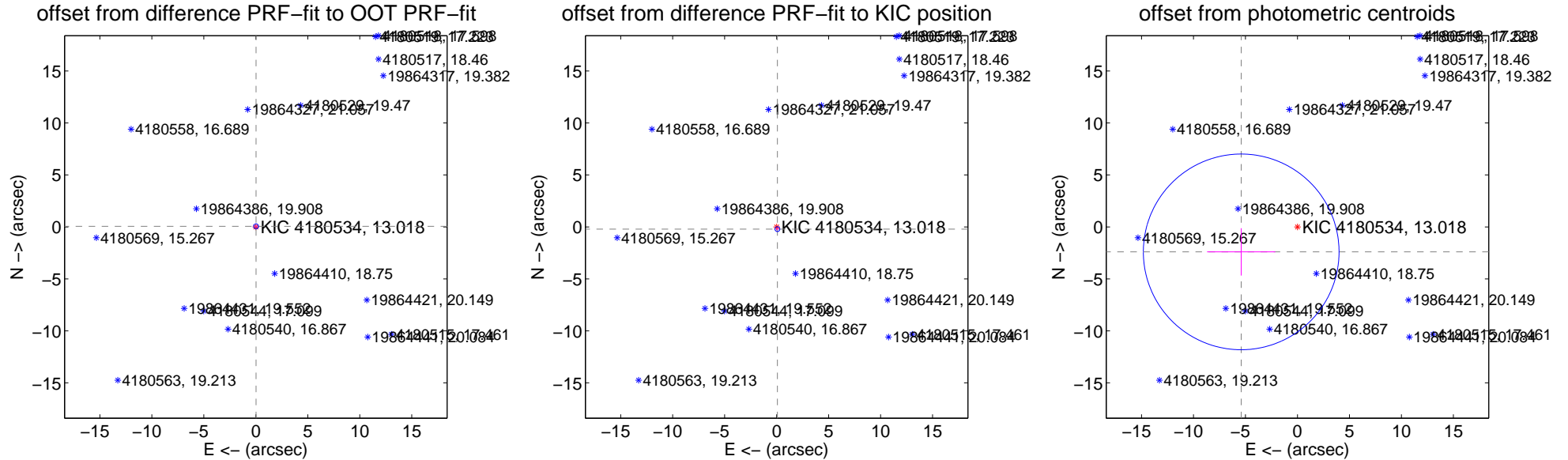
DV Centroid Data

Supplemental centroid analysis for 004180534-02. Kepler magnitude: 13.02. Transit SNR 1.93

There are 2 quarters with good PRF difference image offsets

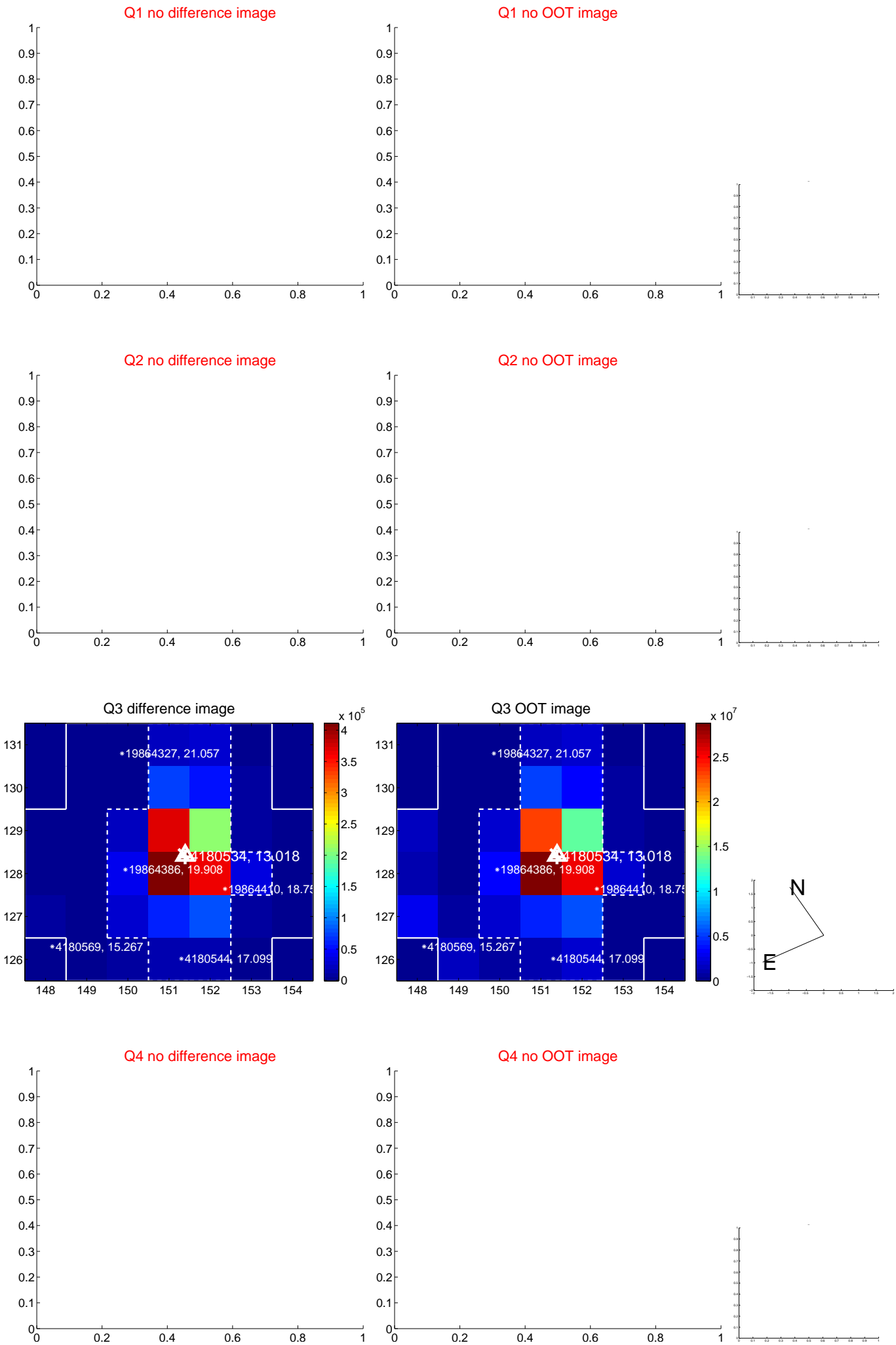
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.064 ± 0.079	0.81	-0.021 ± 0.071	0.060 ± 0.076
PRF-fit source offset from KIC position	0.225 ± 0.077	2.91	-0.073 ± 0.067	-0.213 ± 0.079
photometric centroid source offset	5.92 ± 3.14	1.89	5.41 ± 3.28	-2.40 ± 2.28



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

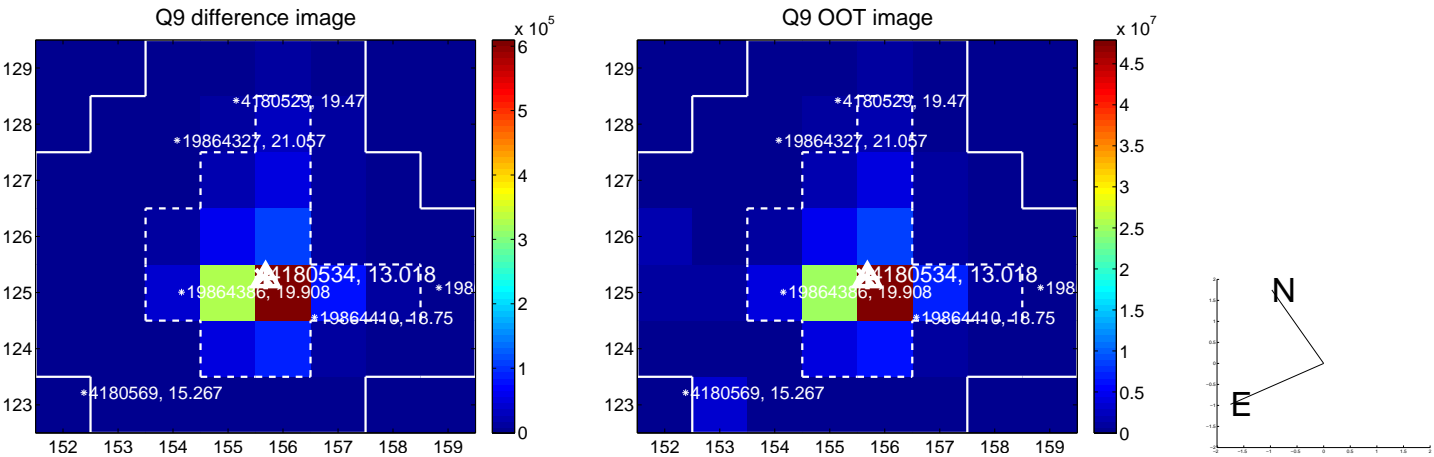
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



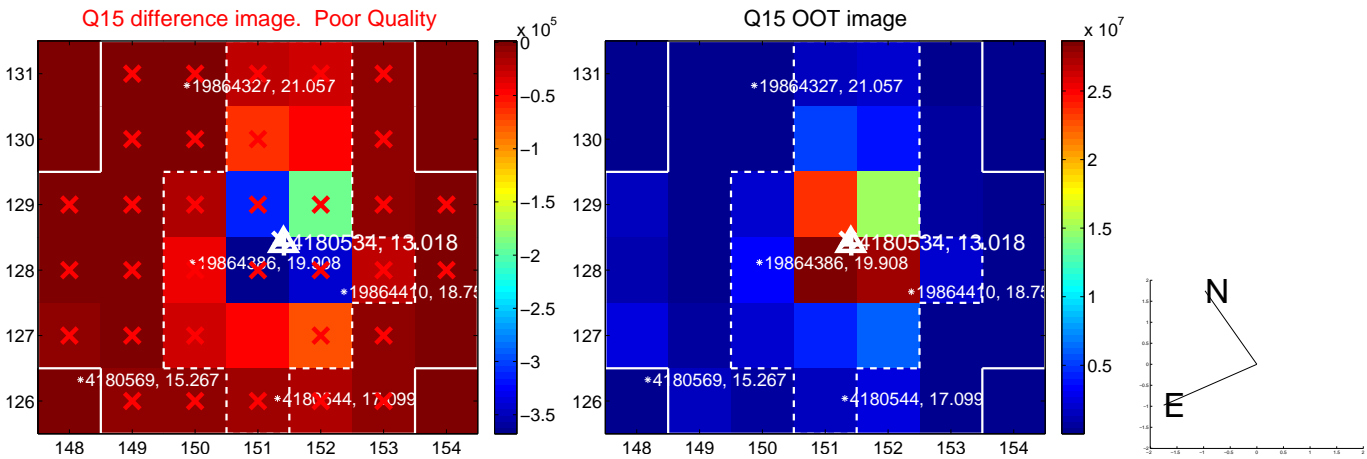
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



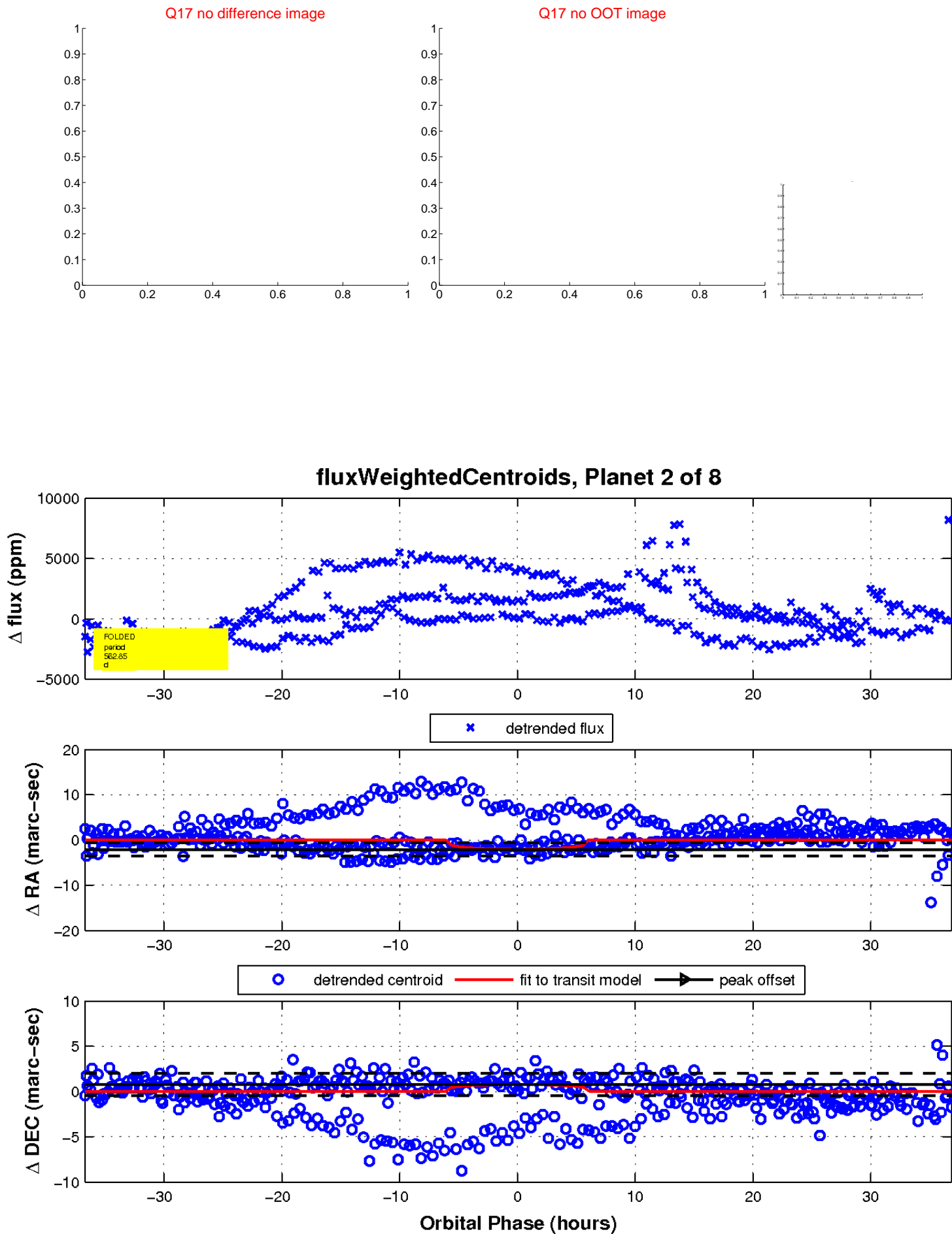
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

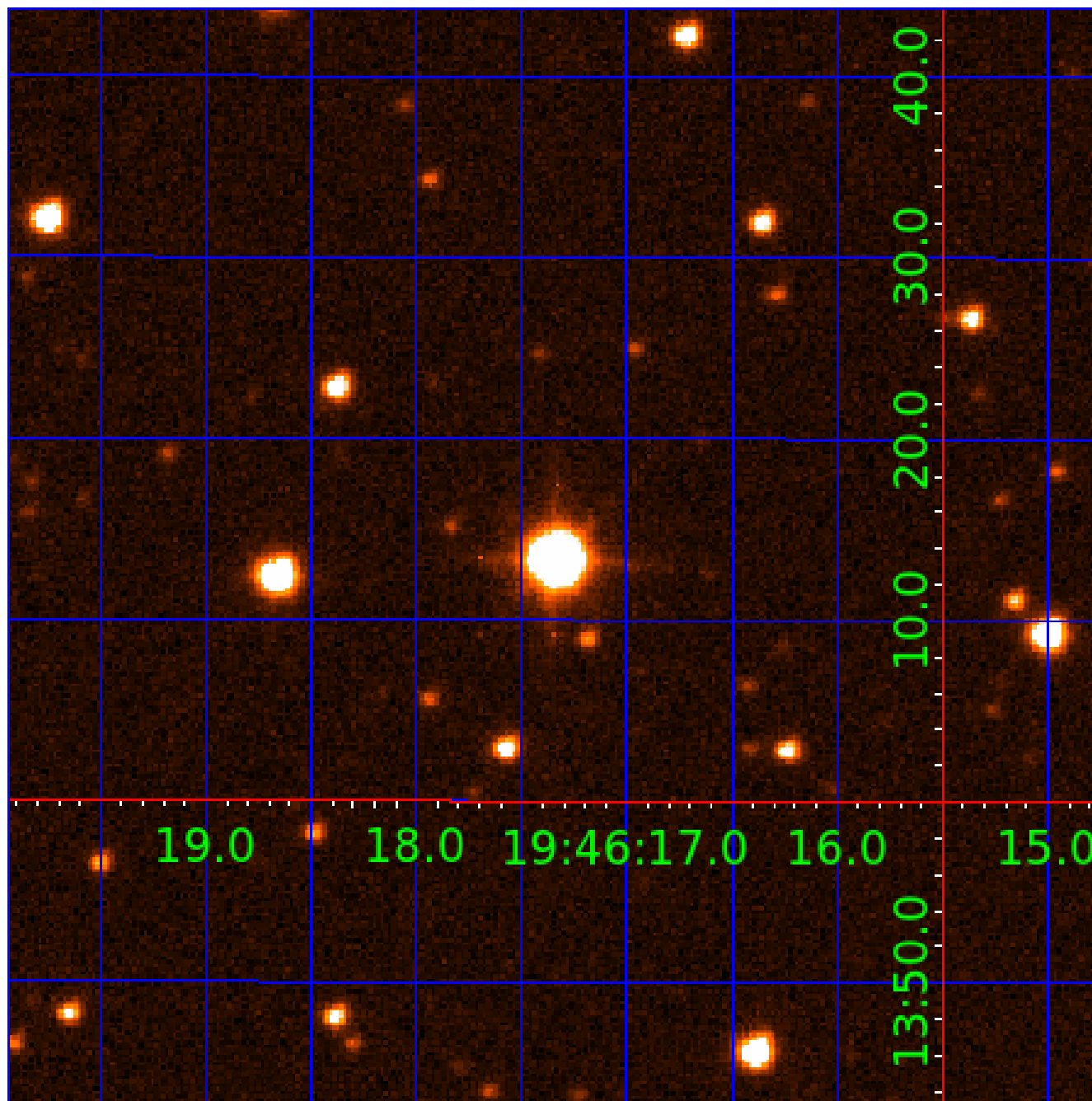


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004180534

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})
004180534-01	OBS	No	355.334762	360.469179	658.8	13.216	18.0	2.6	4.64	4746	11.93	10.71
004180534-02	OBS	No	562.851062	334.612945	392.4	12.289	19.1	1.9	4.64	4746	9.97	5.80
004180534-03	OBS	No	285.772491	330.662843	2324.9	3.579	17.4	12.0	4.64	4746	21.52	14.33
004180534-04	OBS	No	249.076967	216.068287	724.0	7.598	17.4	4.1	4.64	4746	12.28	17.21
004180534-05	OBS	No	121.151942	138.898616	495.5	2.683	13.5	5.0	4.64	4746	9.94	44.99
004180534-06	OBS	No	229.074370	290.146696	939.6	5.531	15.3	5.5	4.64	4746	13.67	19.24
004180534-07	OBS	No	270.534734	375.356328	1230.1	3.889	14.8	7.6	4.64	4746	16.17	15.41
004180534-08	OBS	No	651.020636	160.139671	878.0	8.636	11.4	4.2	4.64	4746	14.19	4.78

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004180534-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004180534-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004180534-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004180534-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
004180534-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS
004180534-06	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—INCONSISTENT_TRANS
004180534-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
004180534-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

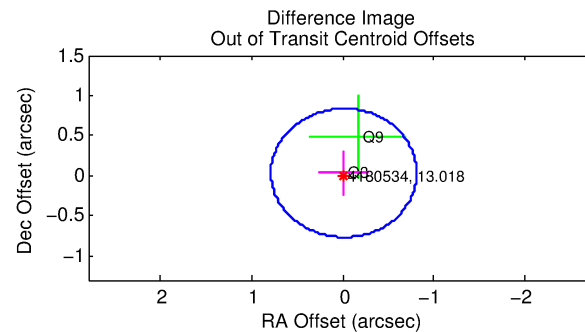
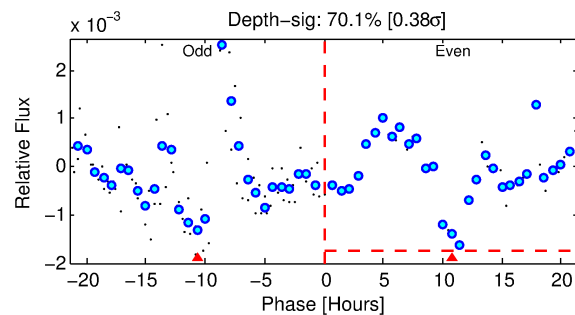
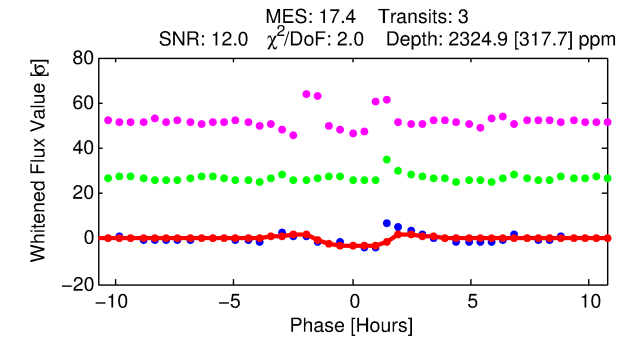
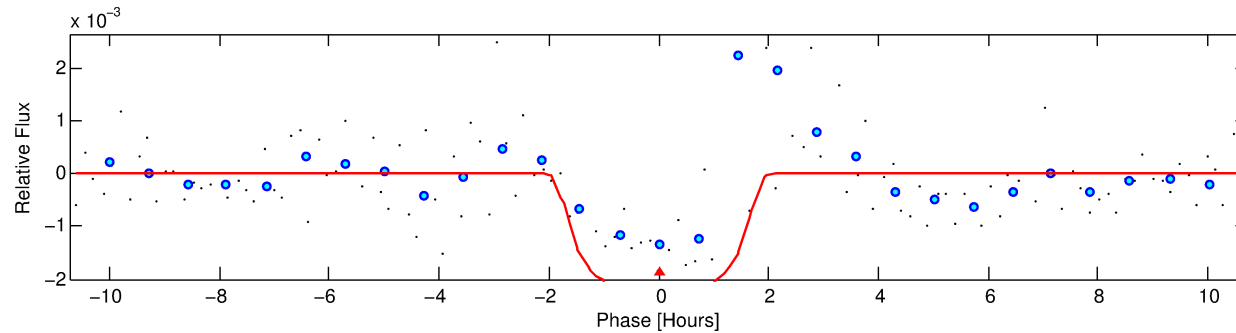
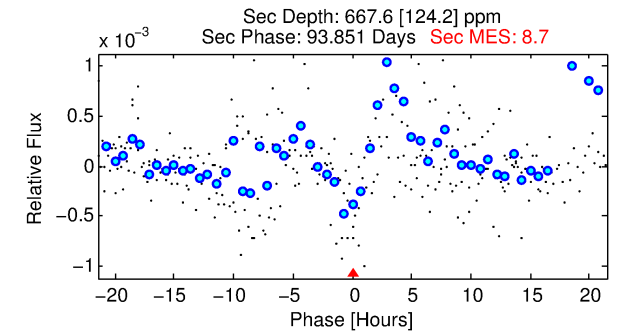
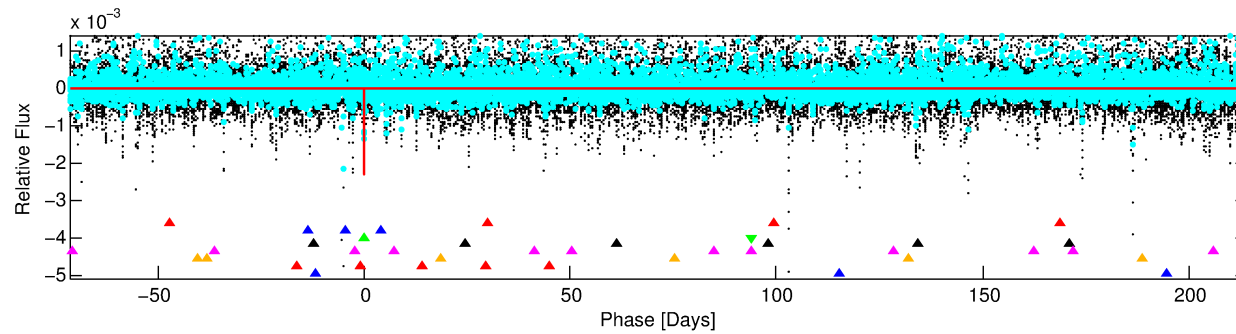
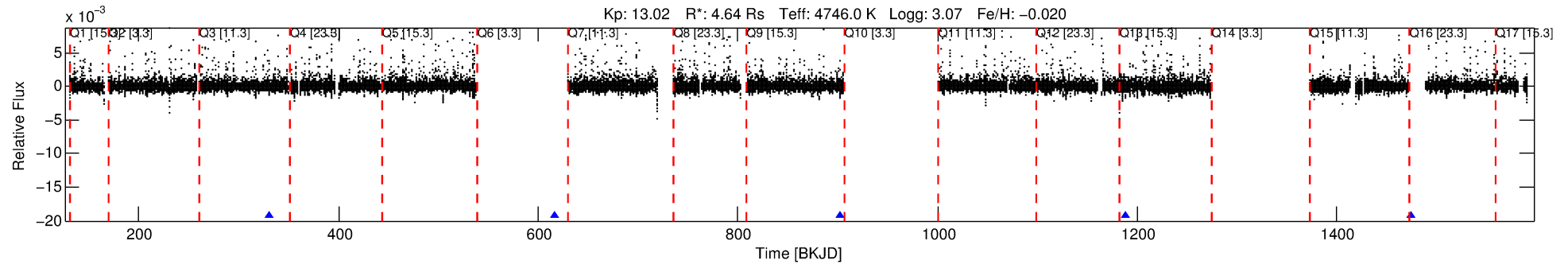
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004180534-03

No Significant Match Found

DV One-Page Summary

KIC: 4180534 Candidate: 3 of 8 Period: 285.772 d



DV Fit Results:

Period = 285.77249 [0.00246] d
Epoch = 330.6628 [0.0048] BKJD
Rp/R* = 0.0425 [0.0848]
a/R* = 635.86 [3922.76]
b = 0.02 [386.13]
Seff = 14.33 [11.68]
Teq = 496 [101] K
Rp = 21.52 [45.45] Re
a = 0.8274 [0.4678] AU
Ag = 542.99 [2215.99] [0.24 σ]
Teffp = 3703 [3704] K [0.87 σ]

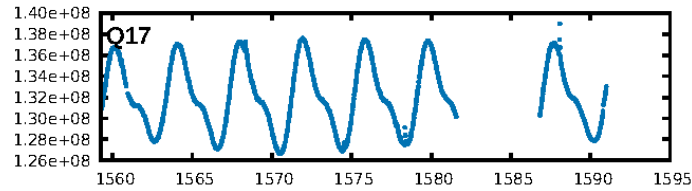
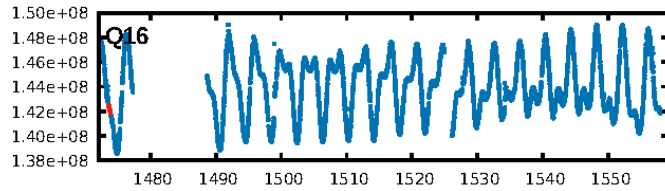
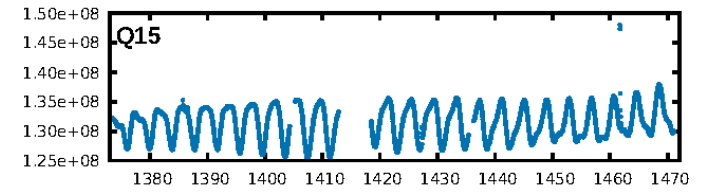
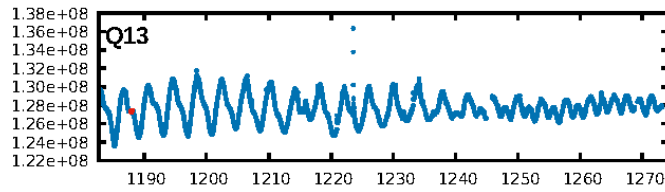
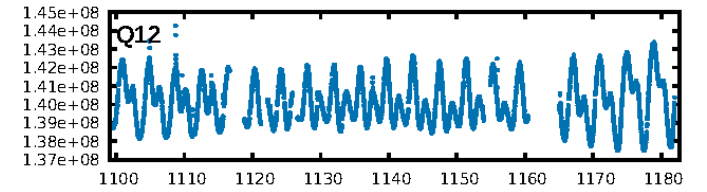
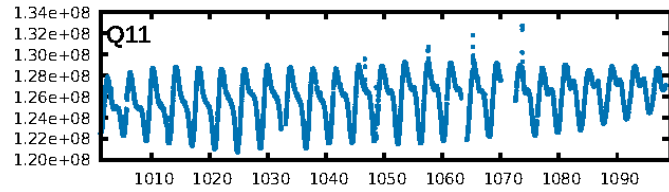
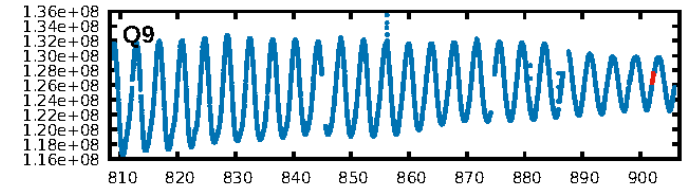
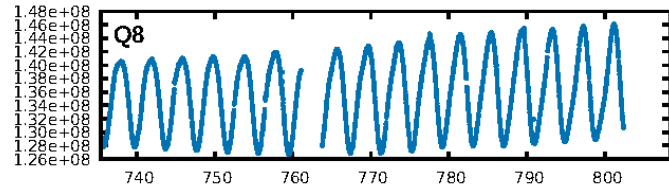
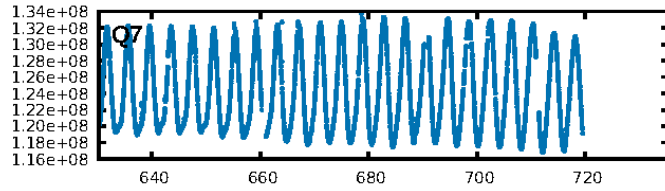
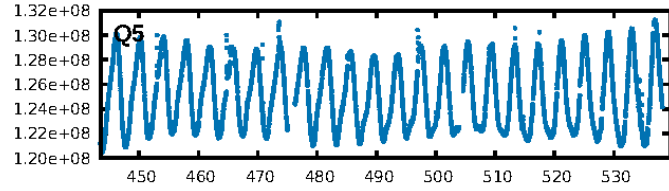
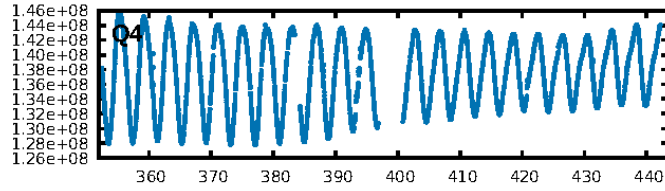
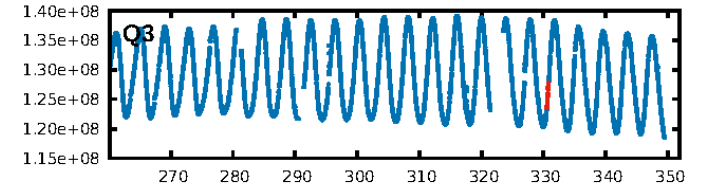
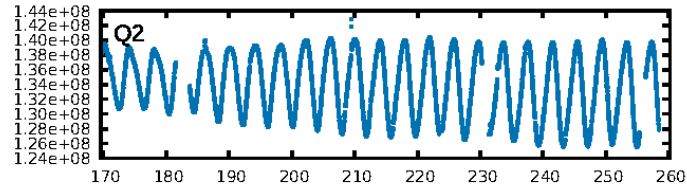
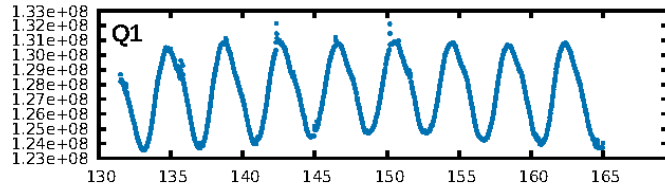
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [69.20 σ]
LongPeriod-sig: 100.0% [121.93 σ]
ModelChiSquare2-sig: 20.5%
ModelChiSquareGof-sig: 53.6%
Bootstrap-pfa: 1.34e-15
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.411
Centroid-sig: 14.2%
Centroid-so: 0.729 arcsec [1.75 σ]
OotOffset-rm: 0.036 arcsec [0.13 σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-rm: 0.274 arcsec [1.03 σ]
KicOffset-st: 0/1/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

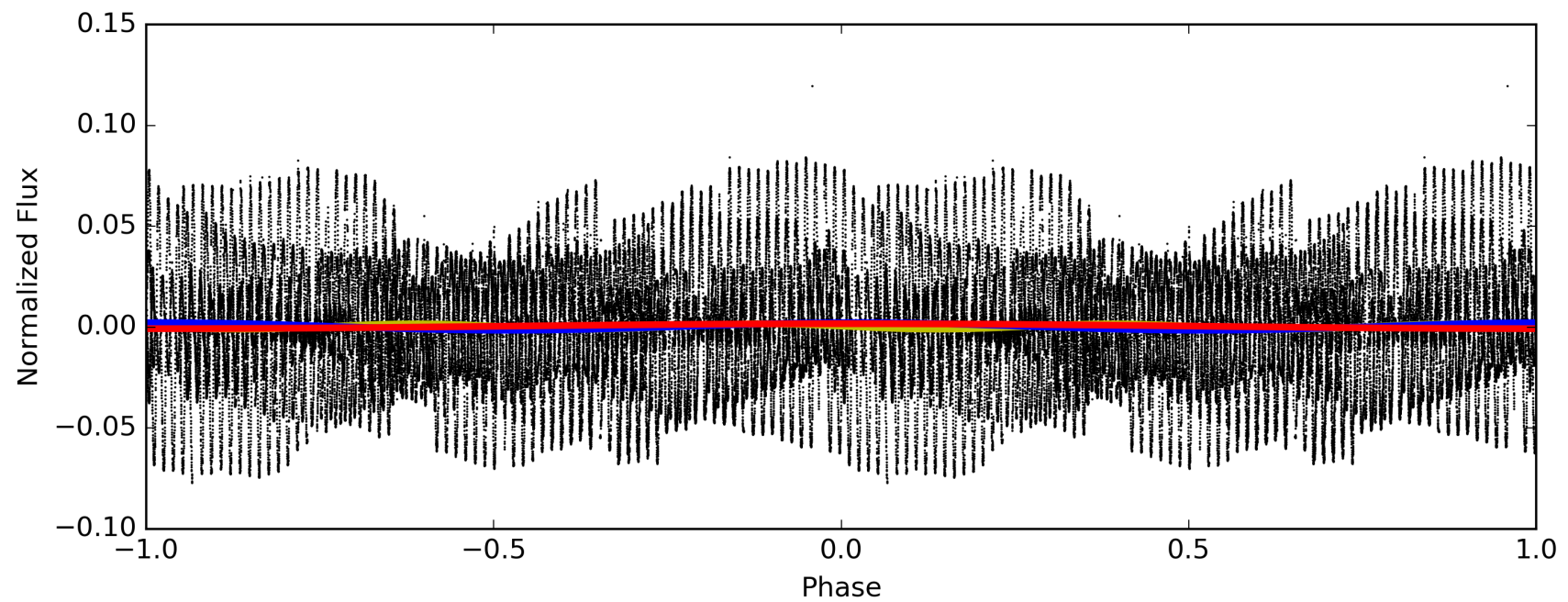
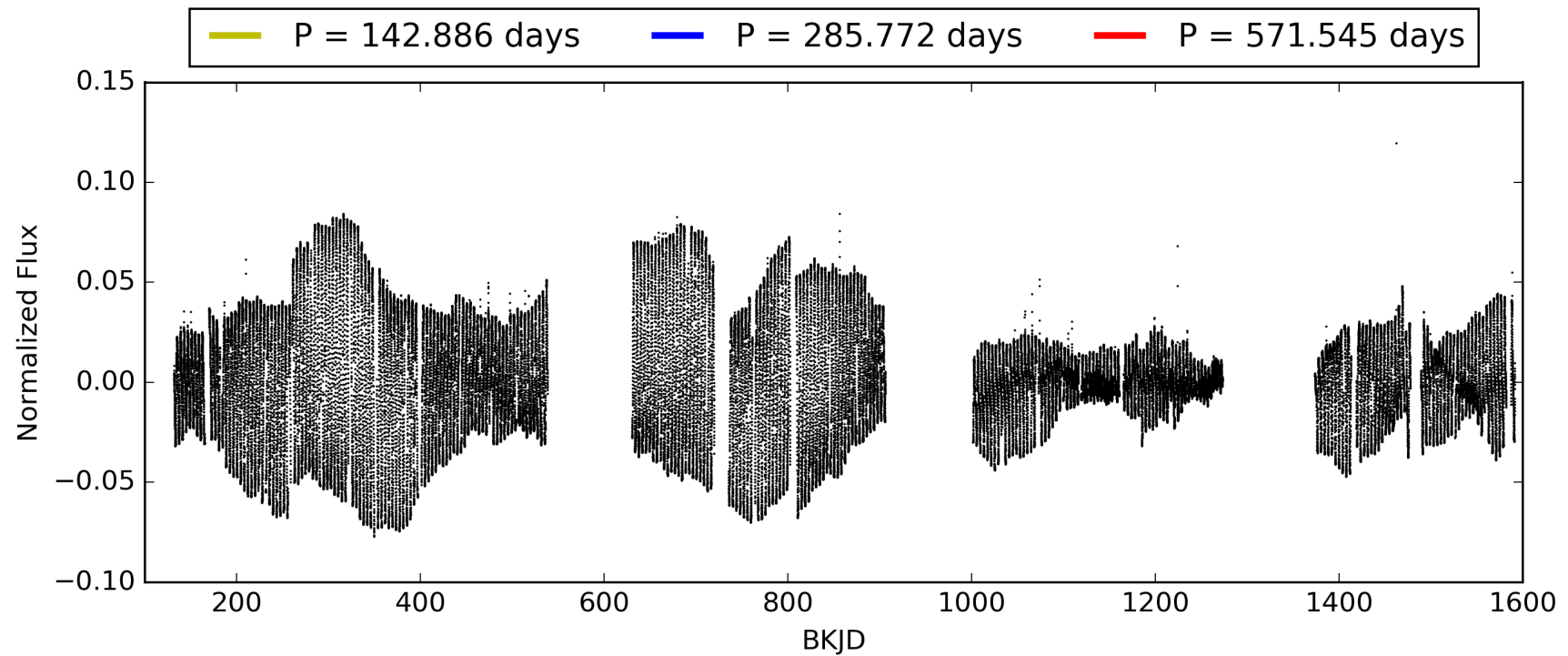
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:38:00 Z

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

TCE 004180534-03, PDC Light Curves

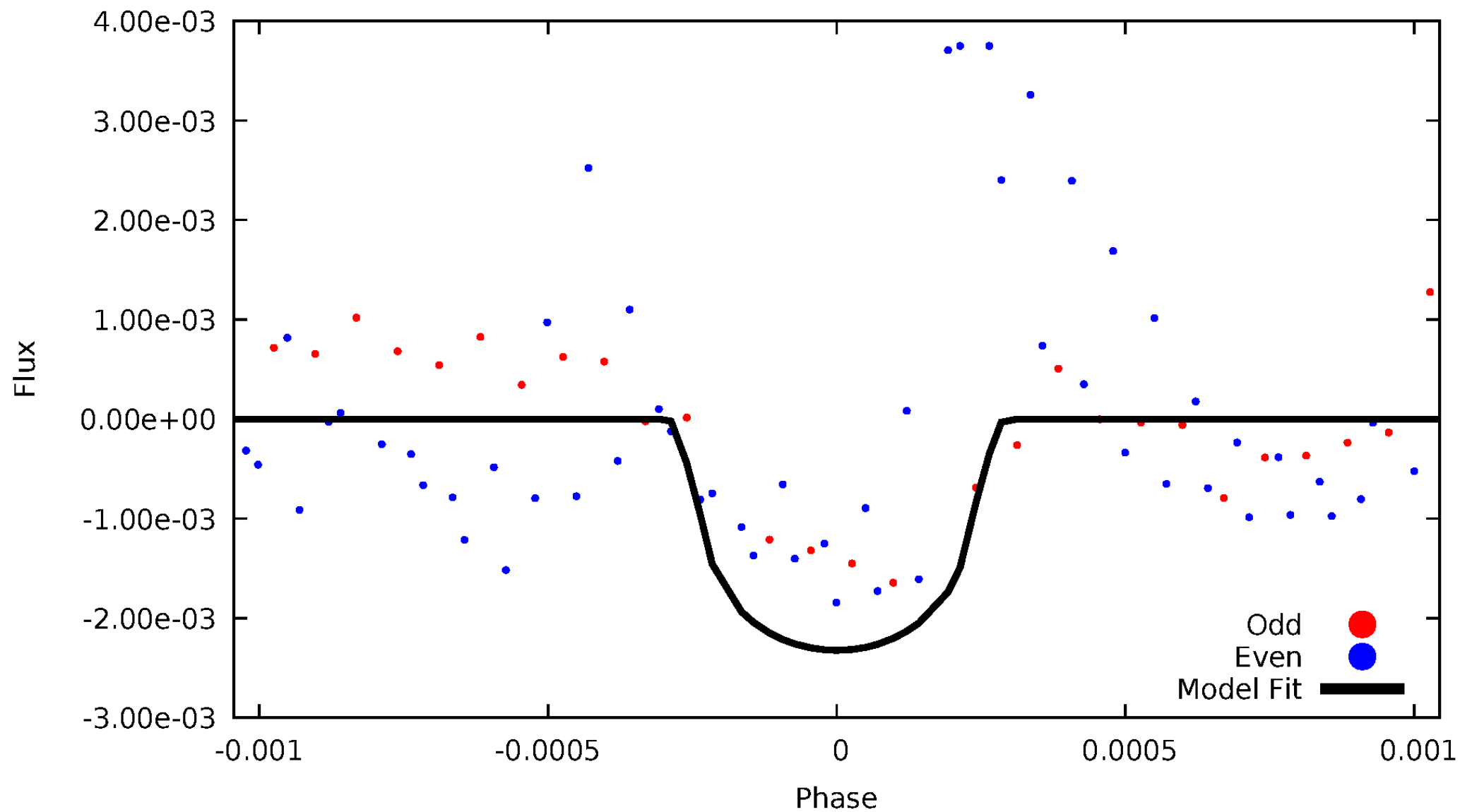


TCE 004180534-03



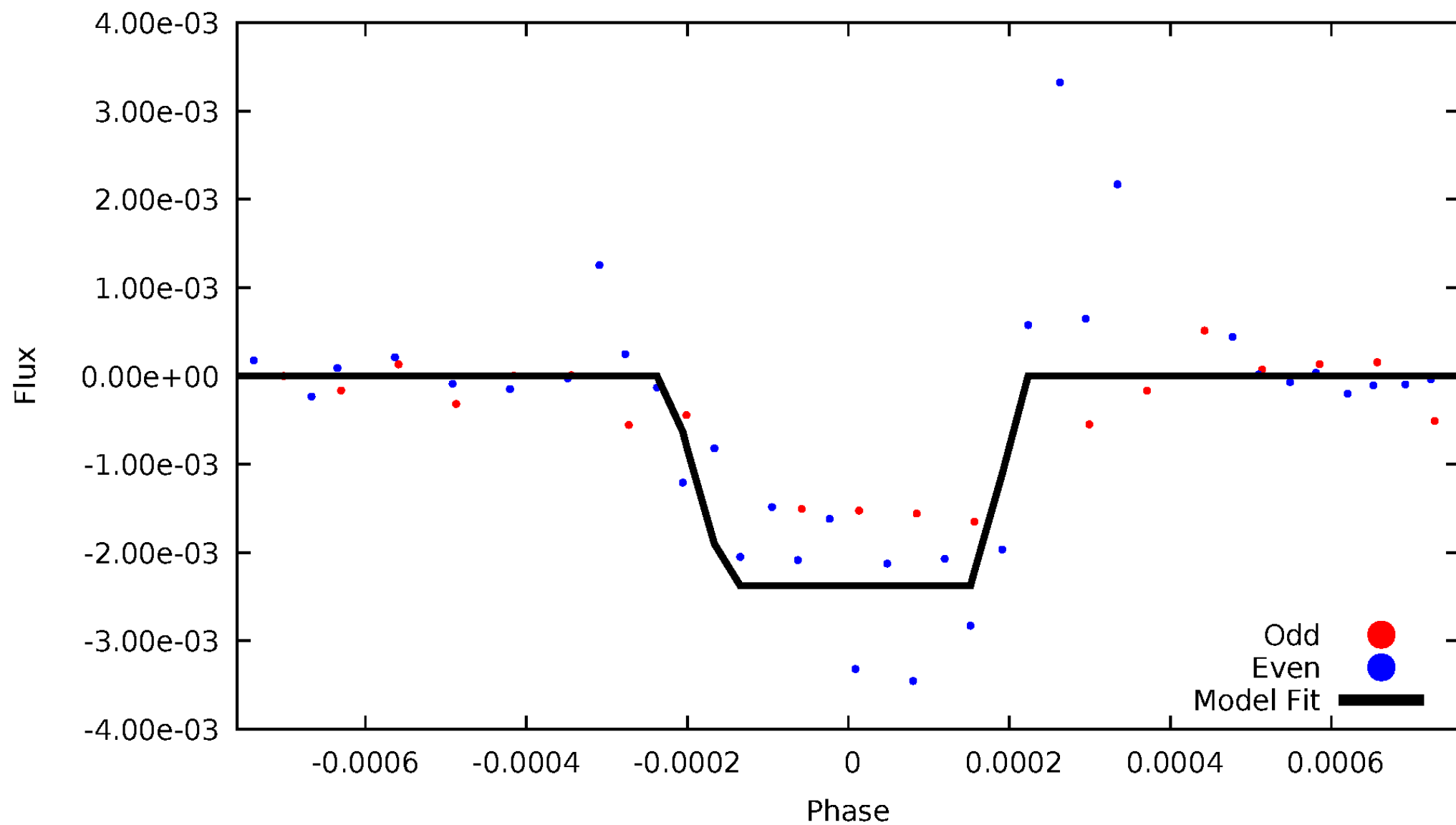
DV Odd/Even

TCE 004180534-03



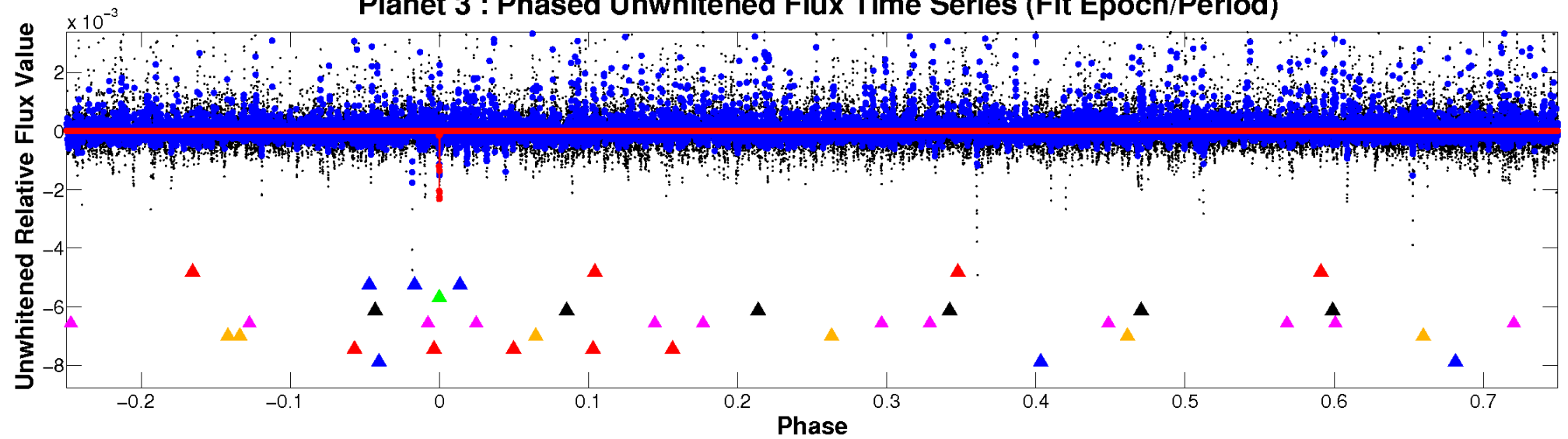
ALT Odd/Even

TCE 004180534-03

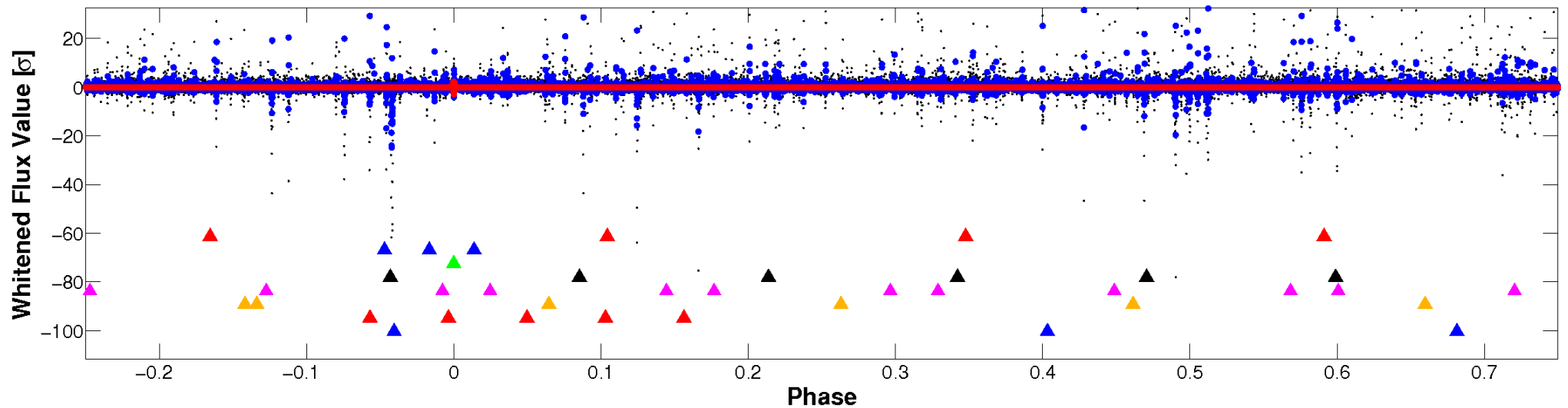


Non-Whitened Vs. Whitened Light Curve

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

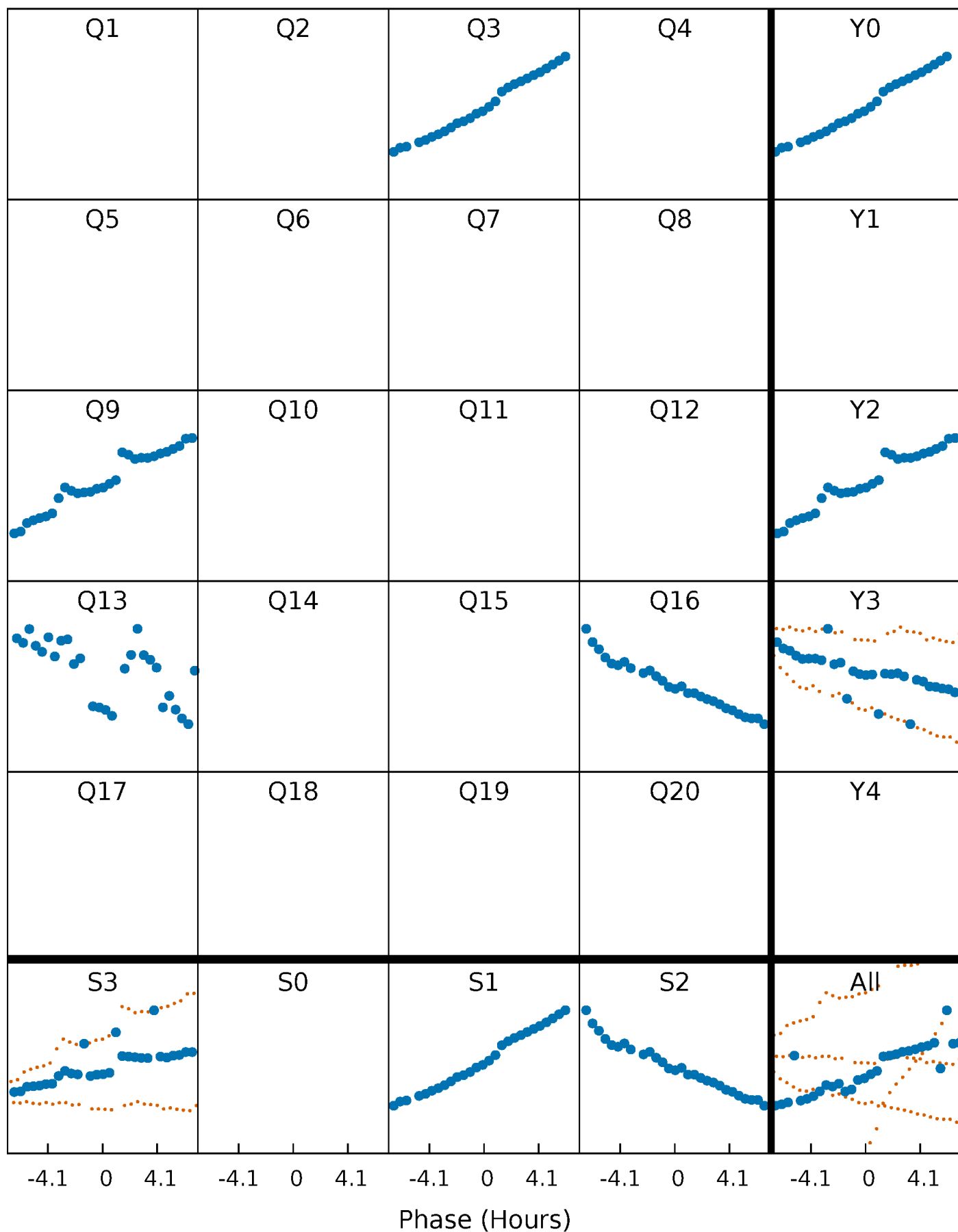


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



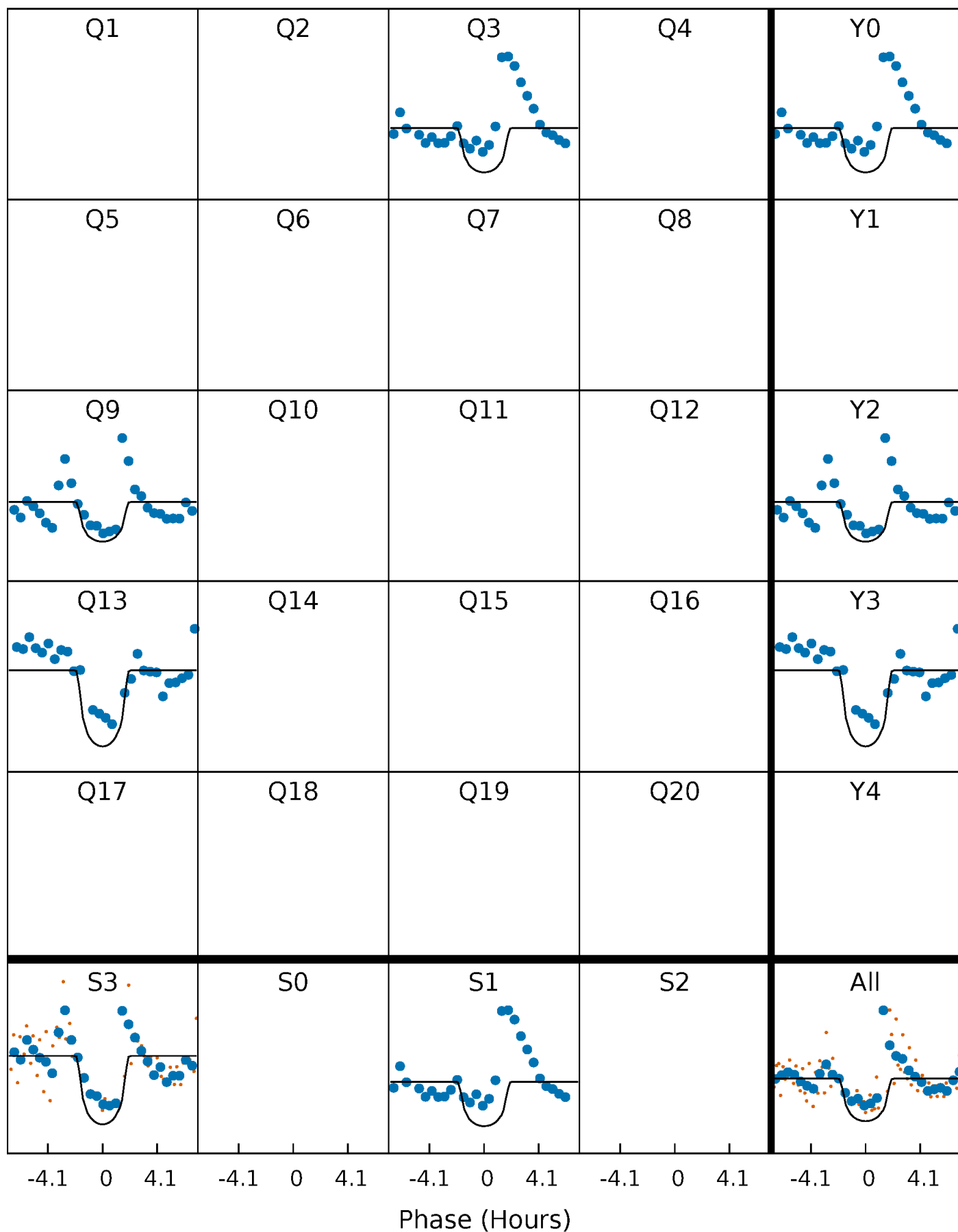
PDC Quarter-Phased Transit Curves

TCE 004180534-03 P=285.772491 Days $T_0=330.662843$ (BKJD)



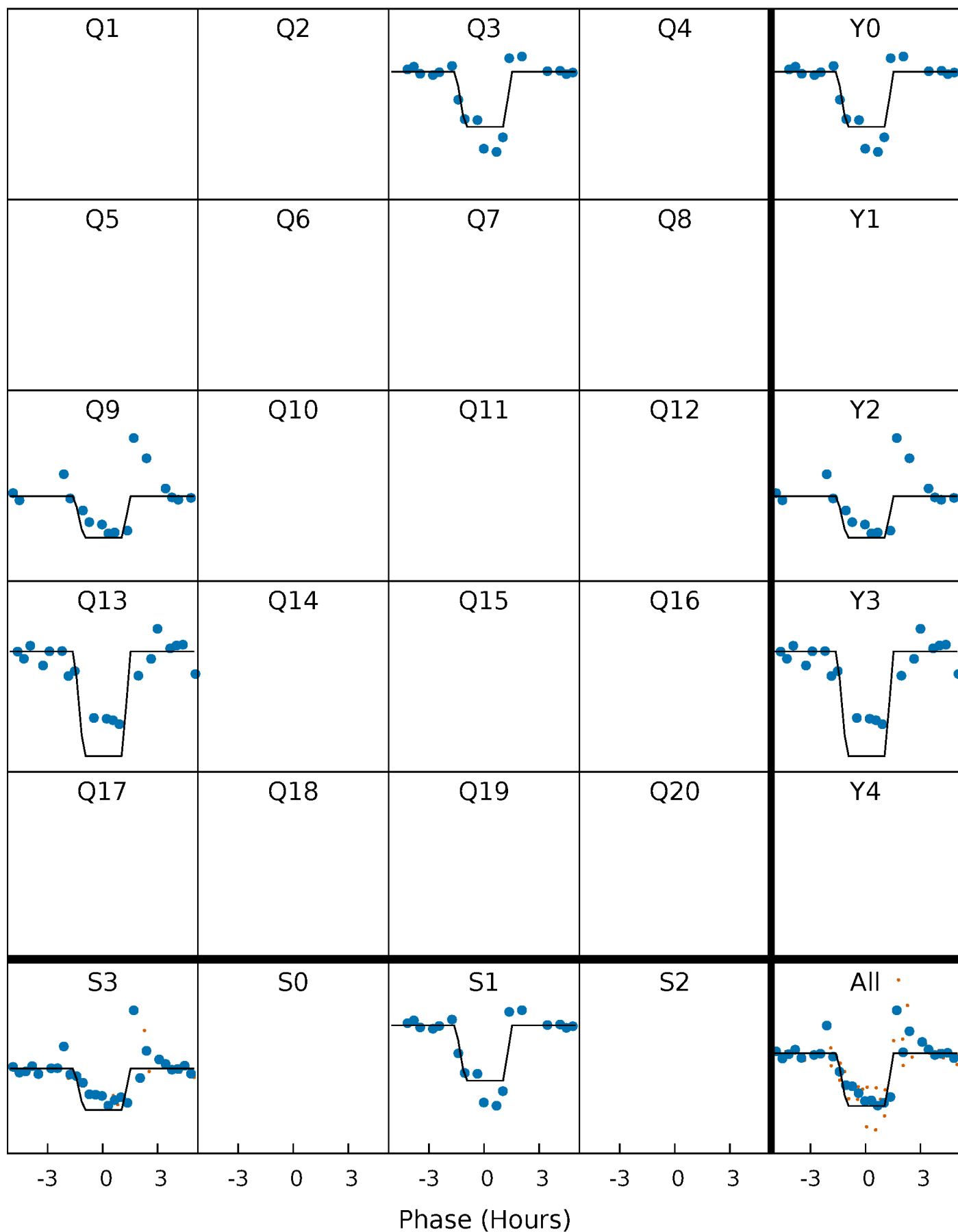
DV Quarter-Phased Transit Curves

TCE 004180534-03 $P=285.772491$ Days $T_0=330.662843$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

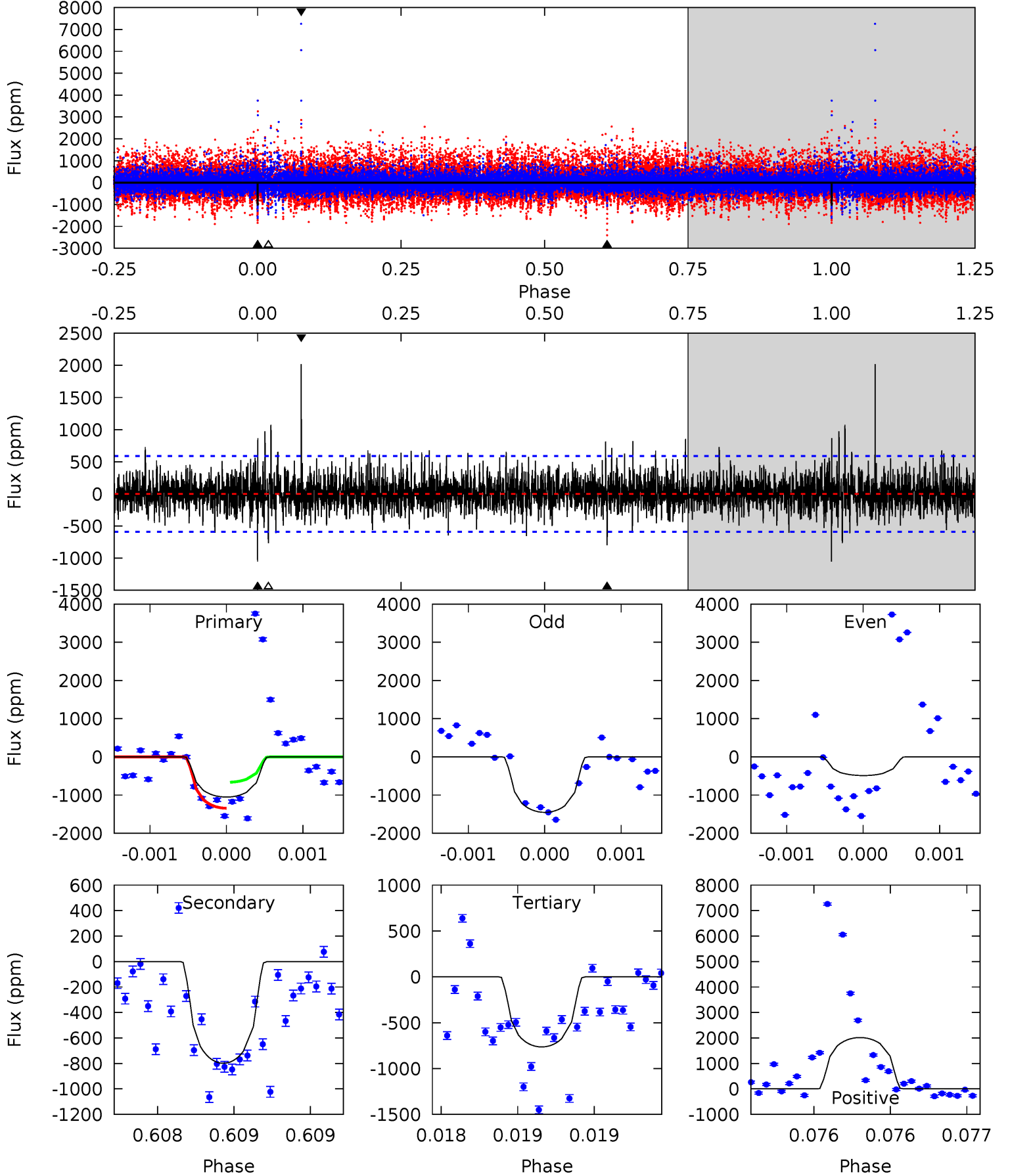
TCE 004180534-03 $P=285.769835$ Days $T_0=330.654113$ (BKJD)



DV Model-Shift Uniqueness Test

004180534-03, P = 285.772491 Days, E = 44.890352 Days

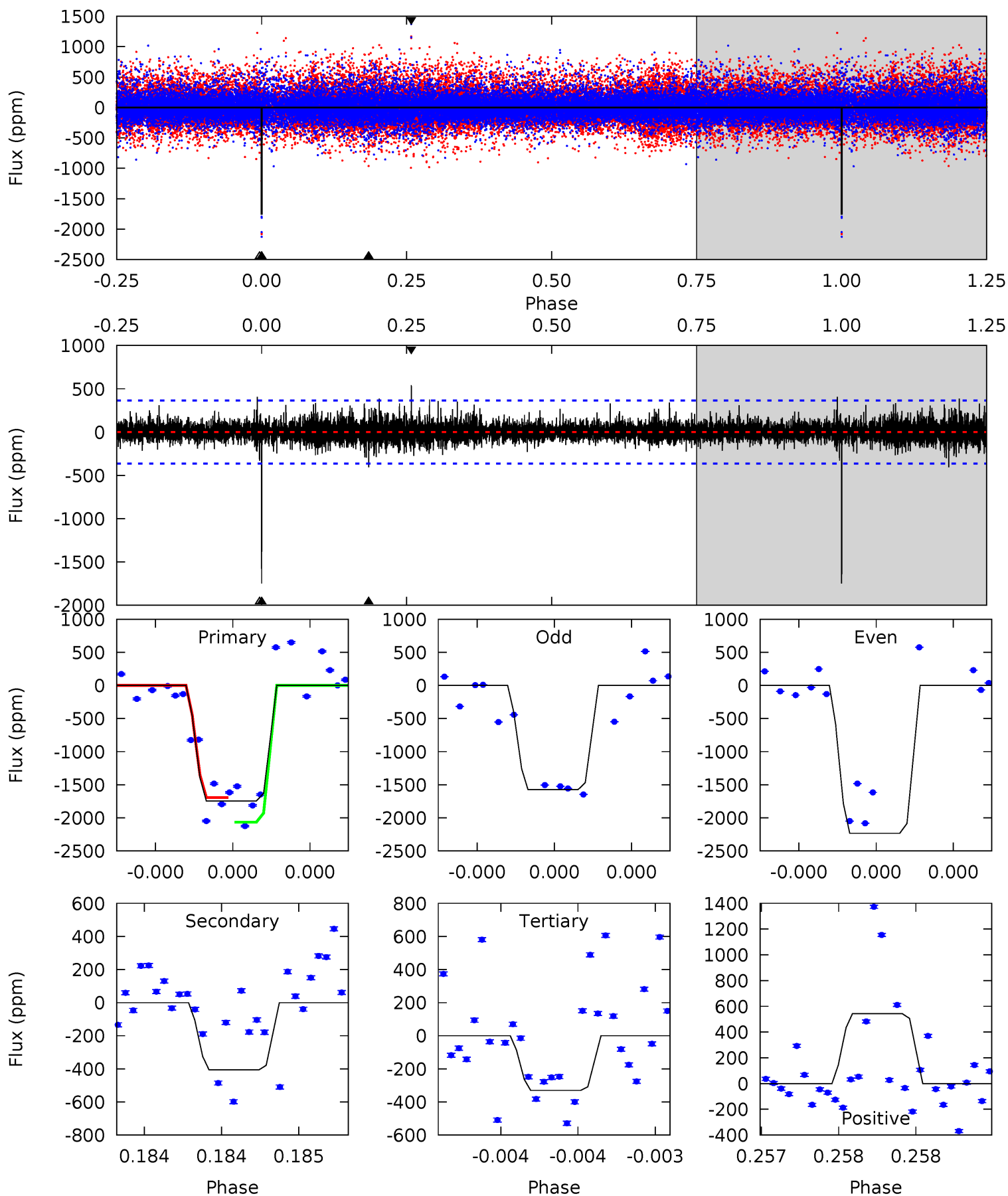
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.93	7.54	7.22	19.0	5.56	3.46	1.74	2.71	-9.10	0.32	-11.5	3.20	0.83	0.66	3.21



Alt Model-Shift Uniqueness Test

004180534-03, P = 285.769835 Days, E = 44.884278 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.9	6.26	5.09	8.36	5.62	3.55	1.09	21.8	18.6	1.16	-2.10	4.45	1.13	0.24	3.02



Stellar Parameters For KIC 004180534

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4746^{+131}_{-95}	$3.070^{+0.434}_{-0.355}$	$-0.020^{+0.250}_{-0.200}$	$4.645^{+3.183}_{-1.714}$	$0.925^{+0.288}_{-0.157}$	$0.013^{+0.037}_{-0.009}$
	+3%/-2%	+14%/-12%	+1250%/-1000%	+69%/-37%	+31%/-17%	+288%/-72%
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 004180534-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-799 ± 106	$36.73^{+39.30}_{-23.83}$	683^{+111}_{-76}	3411^{+1550}_{-659}	224^{+1624}_{-172}
Alt.	-406 ± 65	$39.80^{+38.74}_{-27.11}$	682^{+116}_{-75}	3002^{+1370}_{-491}	102^{+880}_{-78}

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

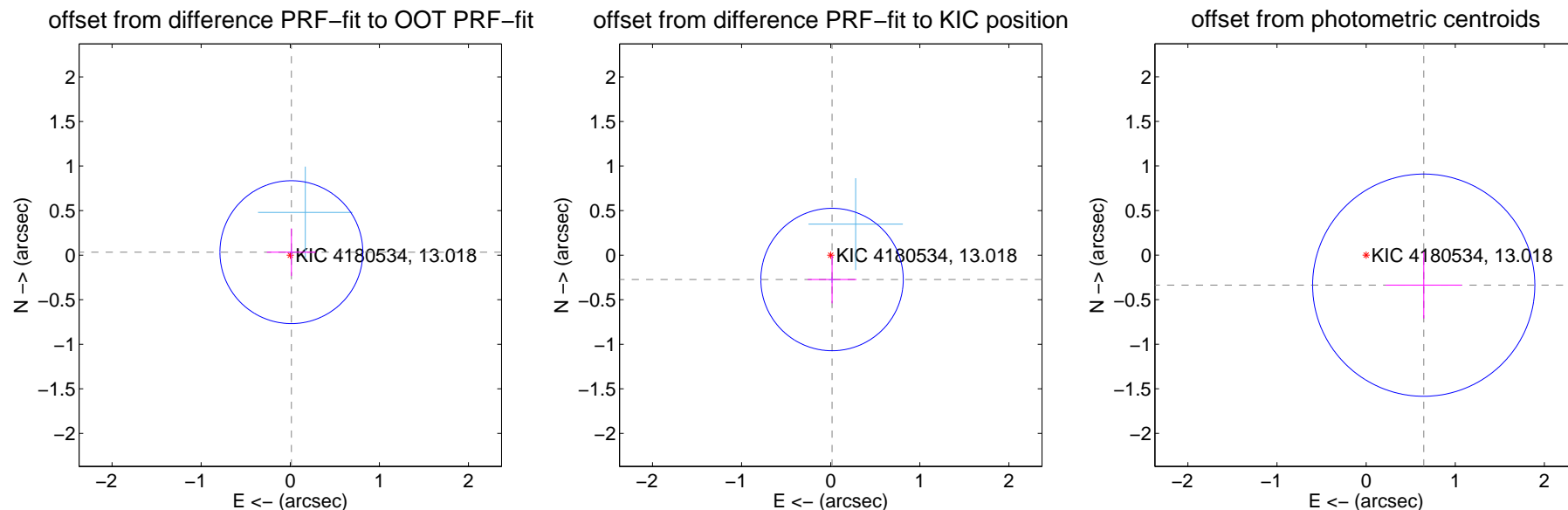
DV Centroid Data

Supplemental centroid analysis for 004180534-03. Kepler magnitude: 13.02. Transit SNR 12.00

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.036 ± 0.267	0.13	-0.012 ± 0.274	0.034 ± 0.266
PRF-fit source offset from KIC position	0.274 ± 0.266	1.03	-0.015 ± 0.274	-0.273 ± 0.266
photometric centroid source offset	0.73 ± 0.42	1.75	-0.65 ± 0.43	-0.34 ± 0.37



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



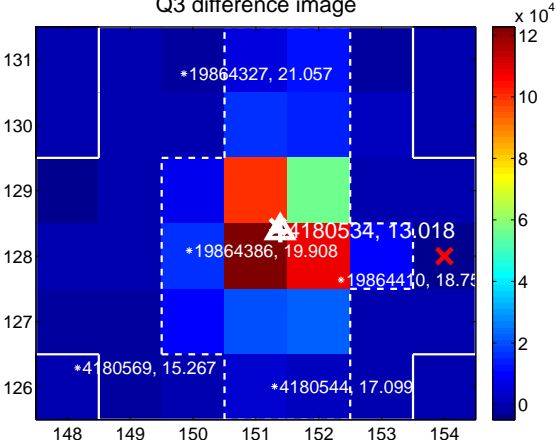
Q2 no difference image



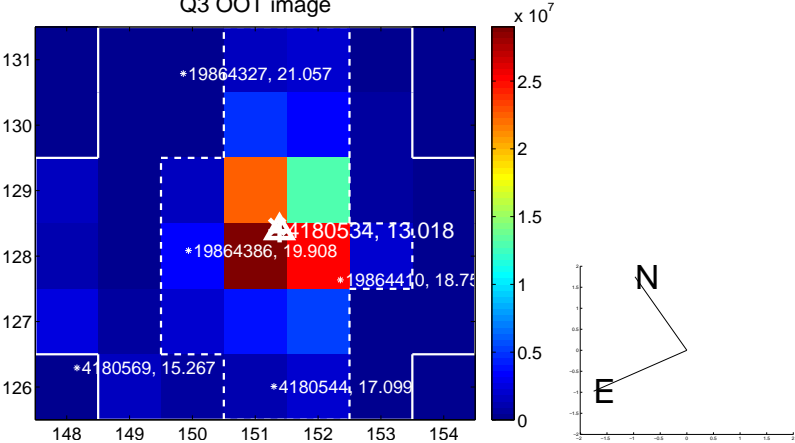
Q2 no OOT image



Q3 difference image



Q3 OOT image



Q4 no difference image



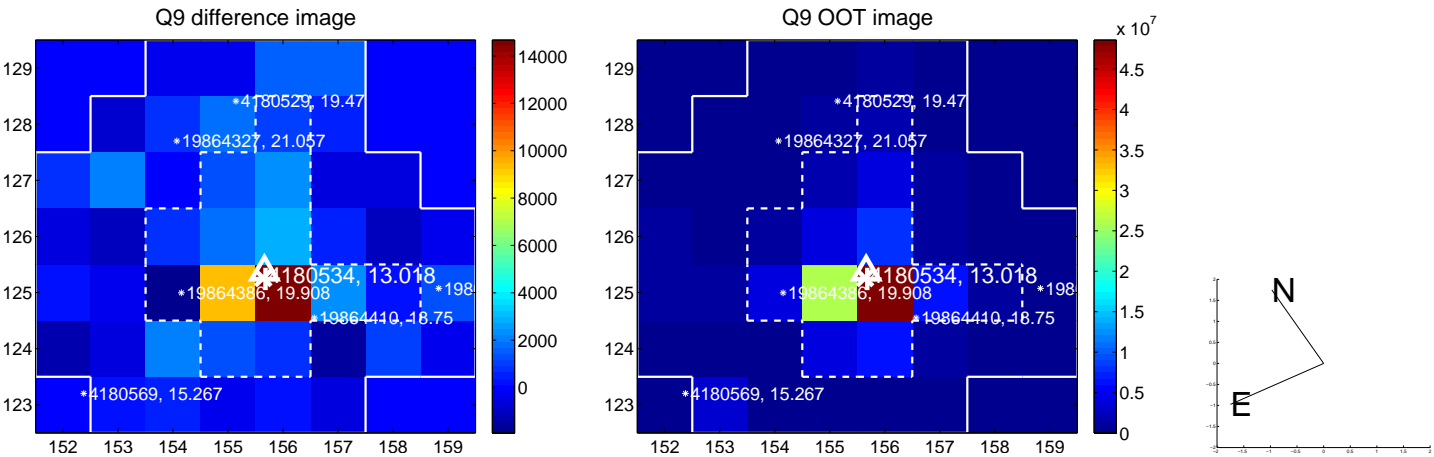
Q4 no OOT image



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



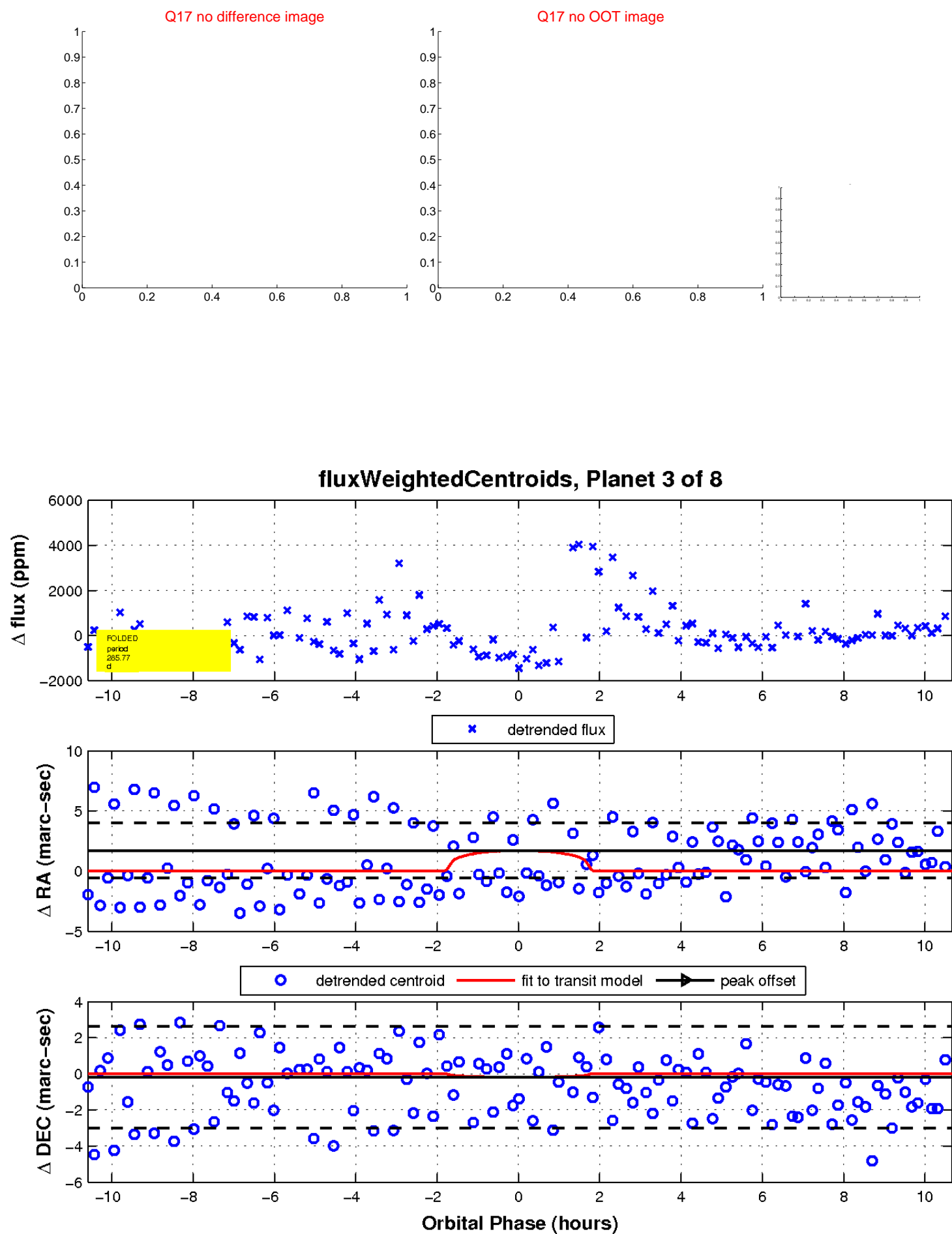
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

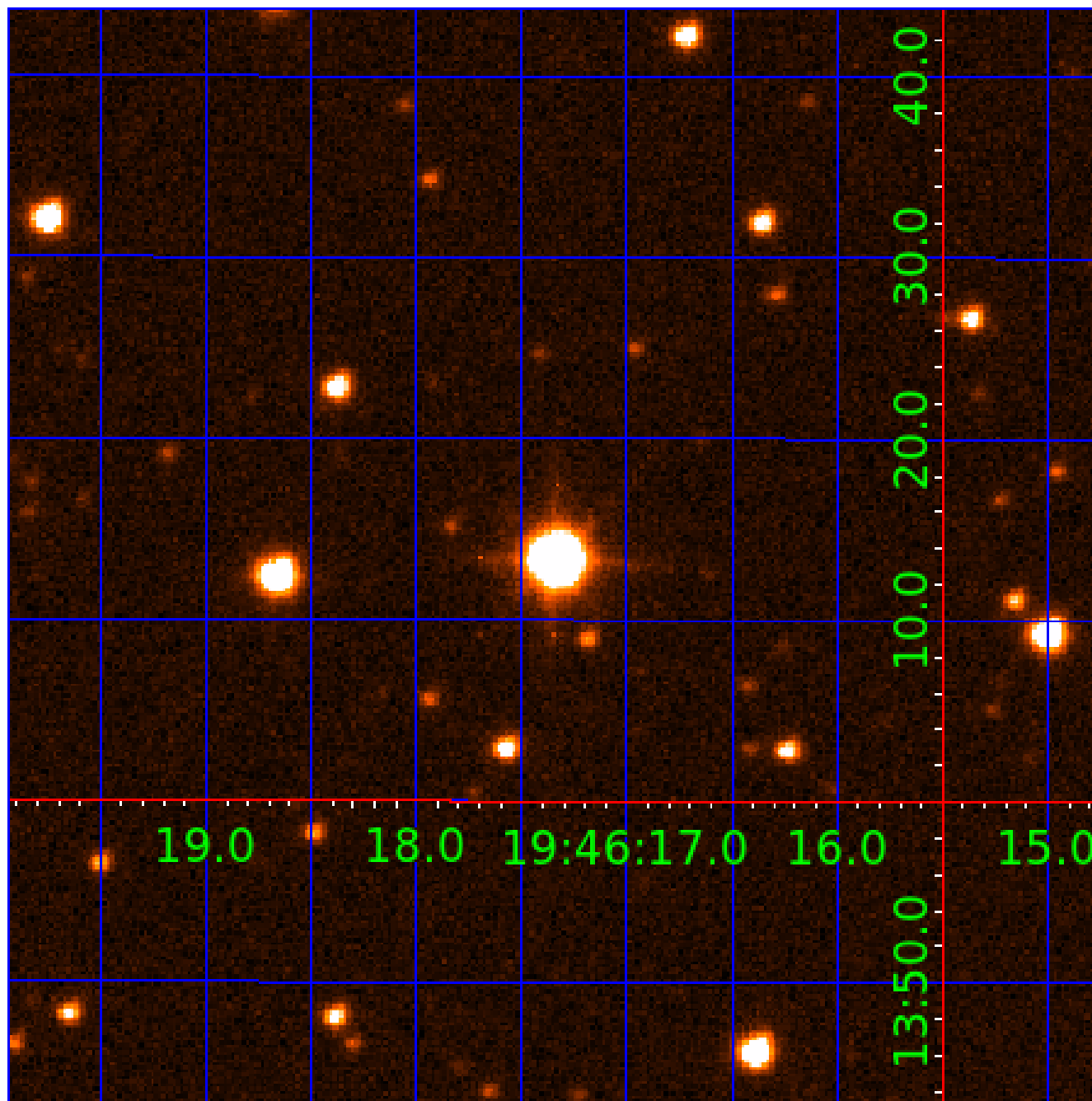


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004180534

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})
004180534-01	OBS	No	355.334762	360.469179	658.8	13.216	18.0	2.6	4.64	4746	11.93	10.71
004180534-02	OBS	No	562.851062	334.612945	392.4	12.289	19.1	1.9	4.64	4746	9.97	5.80
004180534-03	OBS	No	285.772491	330.662843	2324.9	3.579	17.4	12.0	4.64	4746	21.52	14.33
004180534-04	OBS	No	249.076967	216.068287	724.0	7.598	17.4	4.1	4.64	4746	12.28	17.21
004180534-05	OBS	No	121.151942	138.898616	495.5	2.683	13.5	5.0	4.64	4746	9.94	44.99
004180534-06	OBS	No	229.074370	290.146696	939.6	5.531	15.3	5.5	4.64	4746	13.67	19.24
004180534-07	OBS	No	270.534734	375.356328	1230.1	3.889	14.8	7.6	4.64	4746	16.17	15.41
004180534-08	OBS	No	651.020636	160.139671	878.0	8.636	11.4	4.2	4.64	4746	14.19	4.78

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004180534-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004180534-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004180534-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004180534-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
004180534-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS
004180534-06	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—INCONSISTENT_TRANS
004180534-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
004180534-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

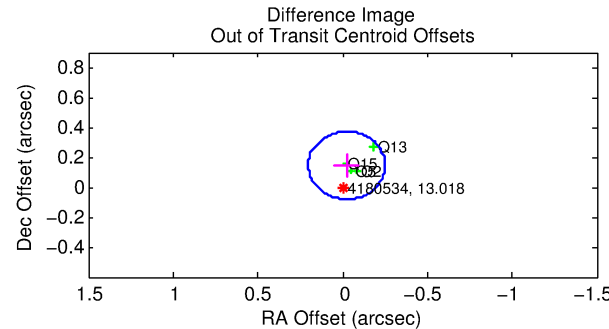
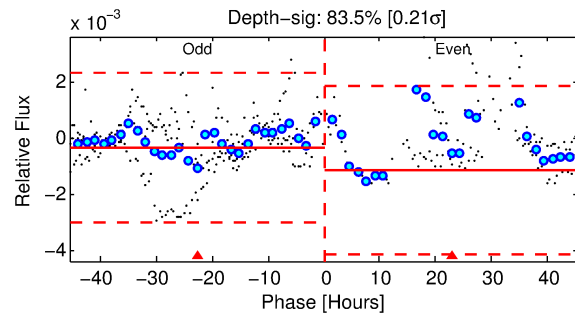
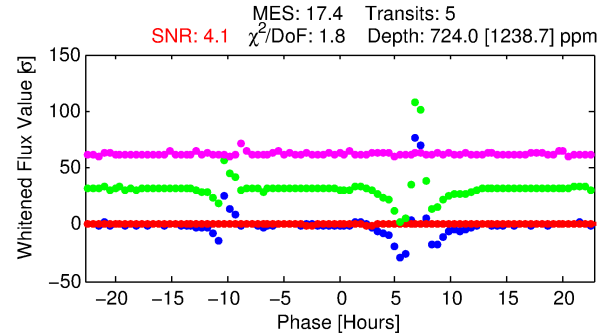
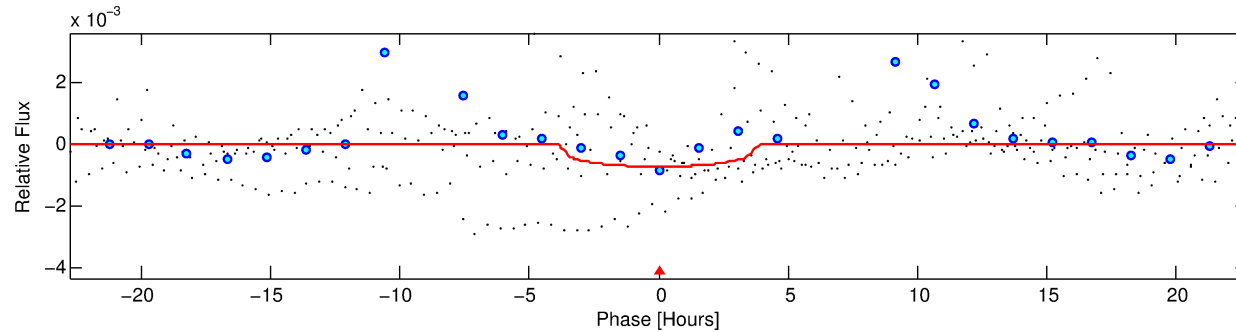
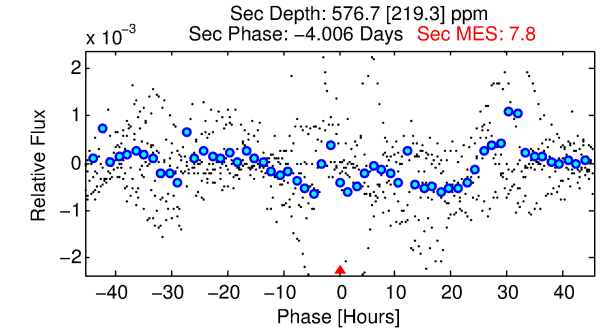
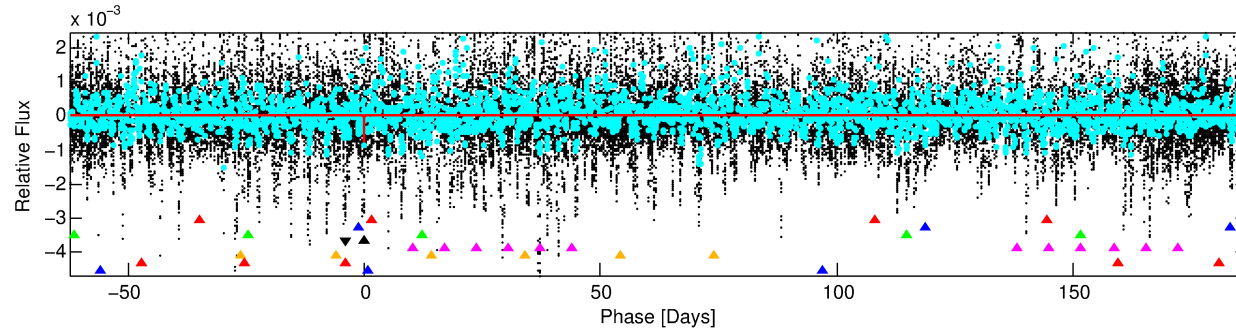
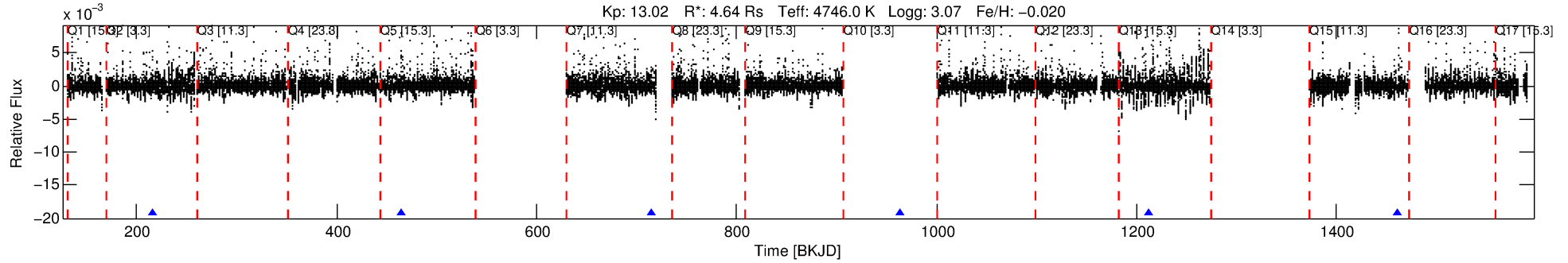
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004180534-04

No Significant Match Found

DV One-Page Summary

KIC: 4180534 Candidate: 4 of 8 Period: 249.077 d



DV Fit Results:

Period = 249.07697 [0.02479] d
Epoch = 216.0683 [0.0743] BKJD
Rp/R* = 0.0242 [0.1878]
a/R* = 239.06 [5934.83]
b = 0.37 [58.51]
Seff = 17.21 [14.03]
Teq = 519 [106] K
Rp = 12.28 [95.55] Re
a = 0.7549 [0.4268] AU
Ag = 1199.04 [18616.41] [0.06 σ]
Teffp = 4725 [18316] K [0.23 σ]

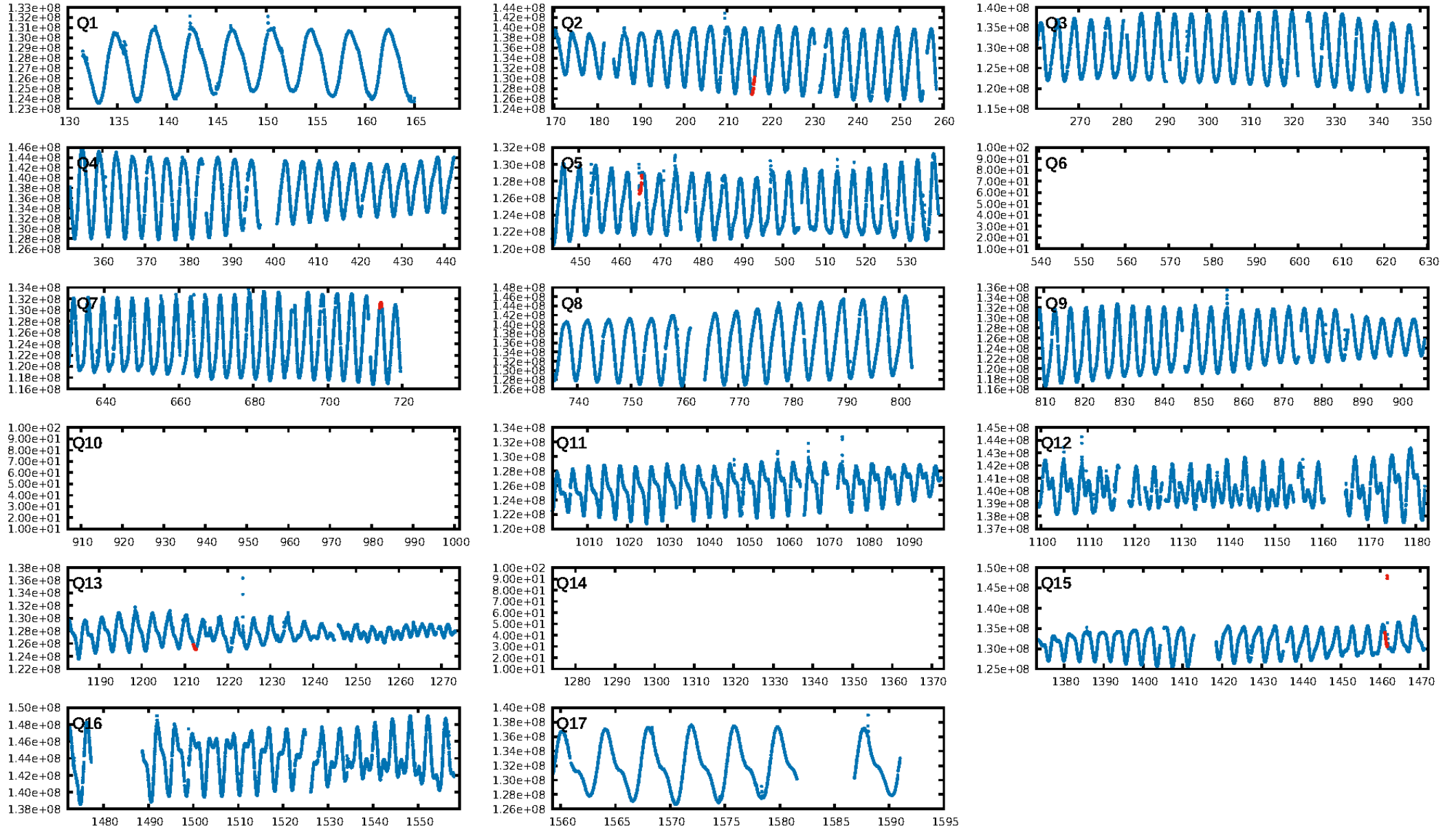
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [51.08 σ]
LongPeriod-sig: 100.0% [60.34 σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 62.9%
Bootstrap-pfa: 2.46e-16
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 5.604
Centroid-sig: 3.7%
Centroid-so: 0.698 arcsec [0.86 σ]
OotOffset-rm: 0.147 arcsec [1.95 σ]
OotOffset-st: 1/1/0/2 [4]
KicOffset-rm: 0.179 arcsec [2.31 σ]
KicOffset-st: 1/1/0/2 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 0.75 [3/4]

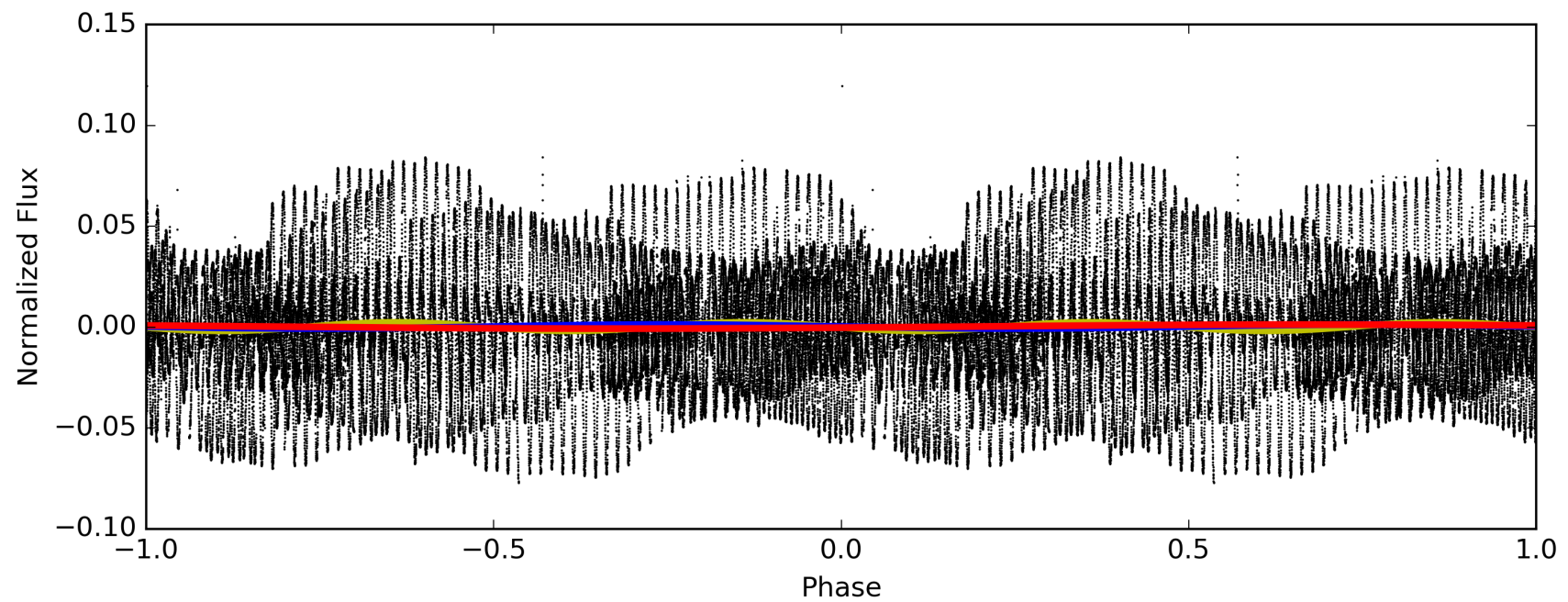
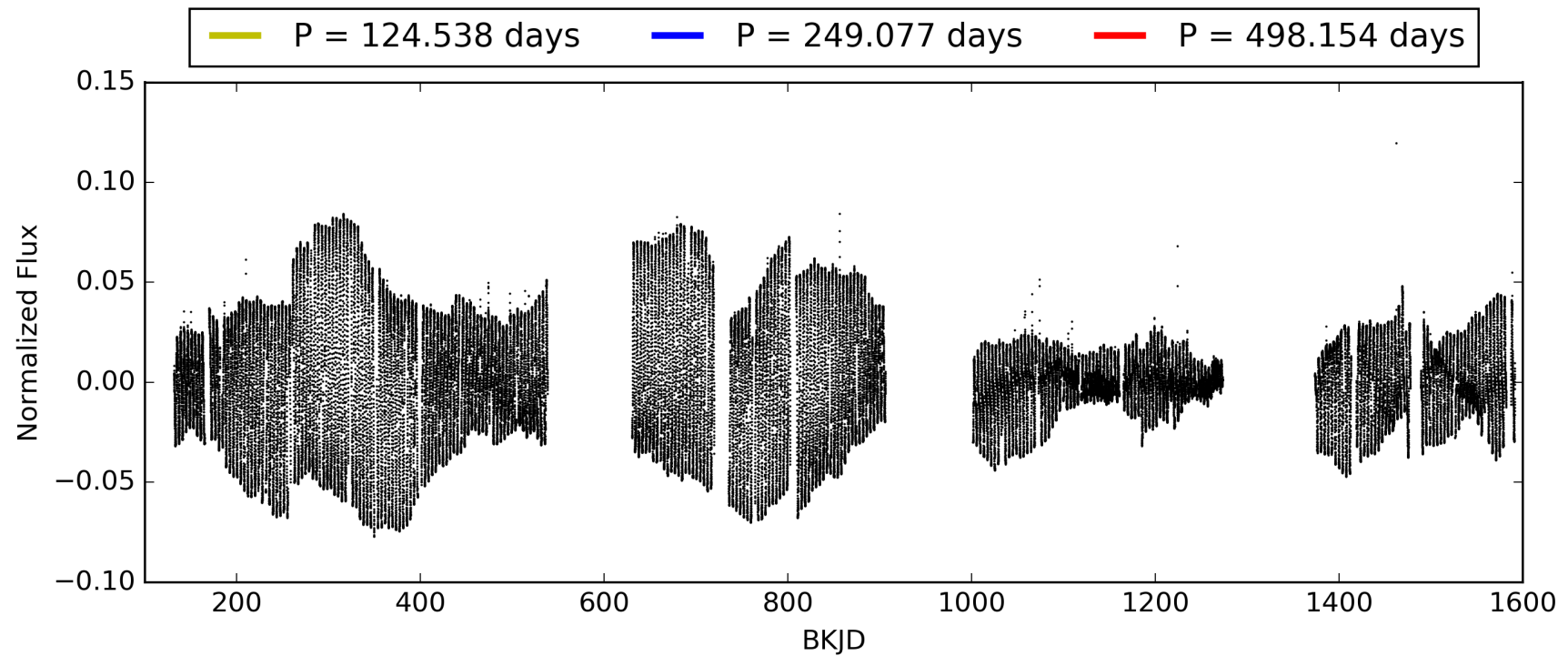
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:38:07 Z

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

TCE 004180534-04, PDC Light Curves

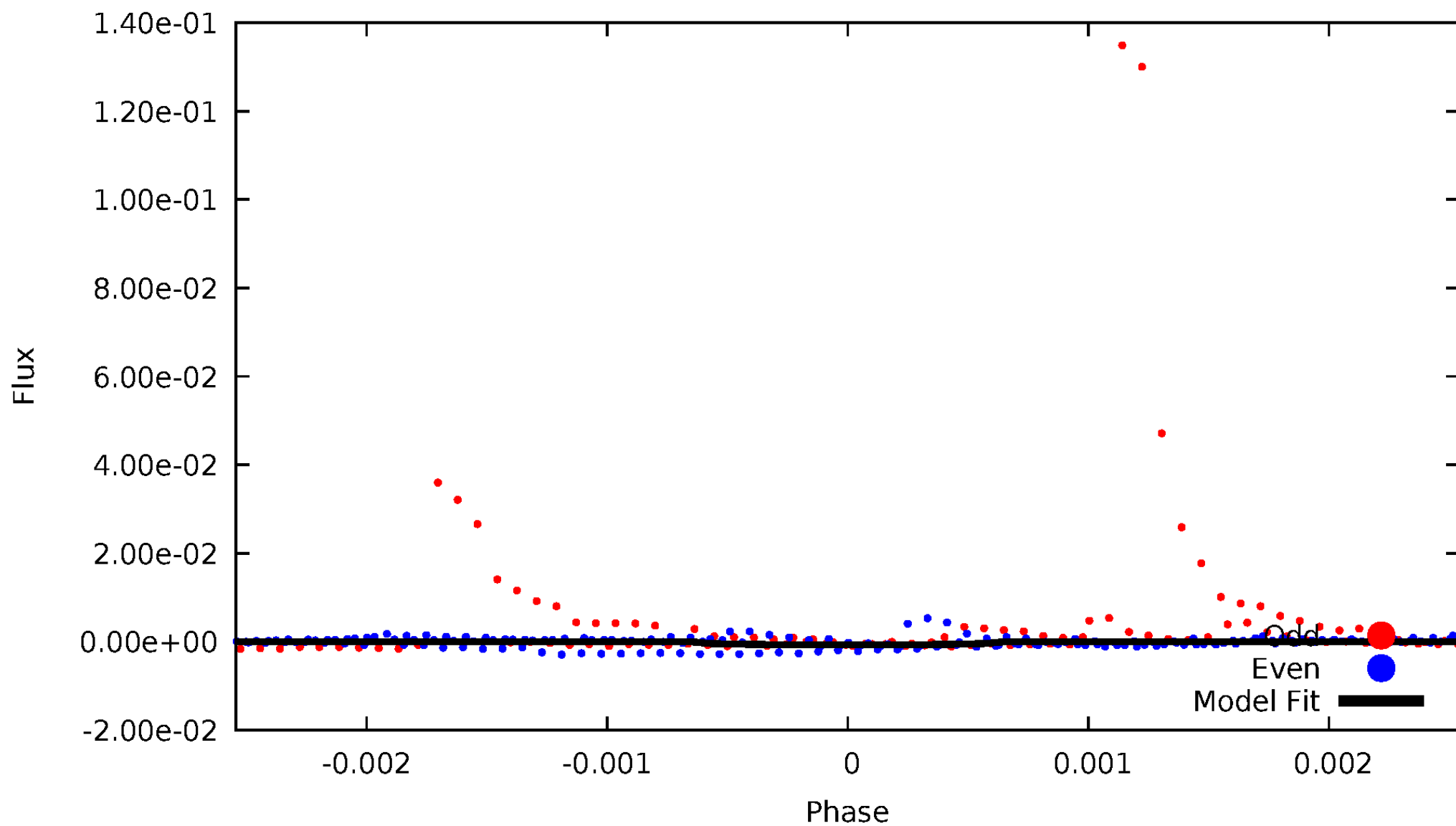


TCE 004180534-04



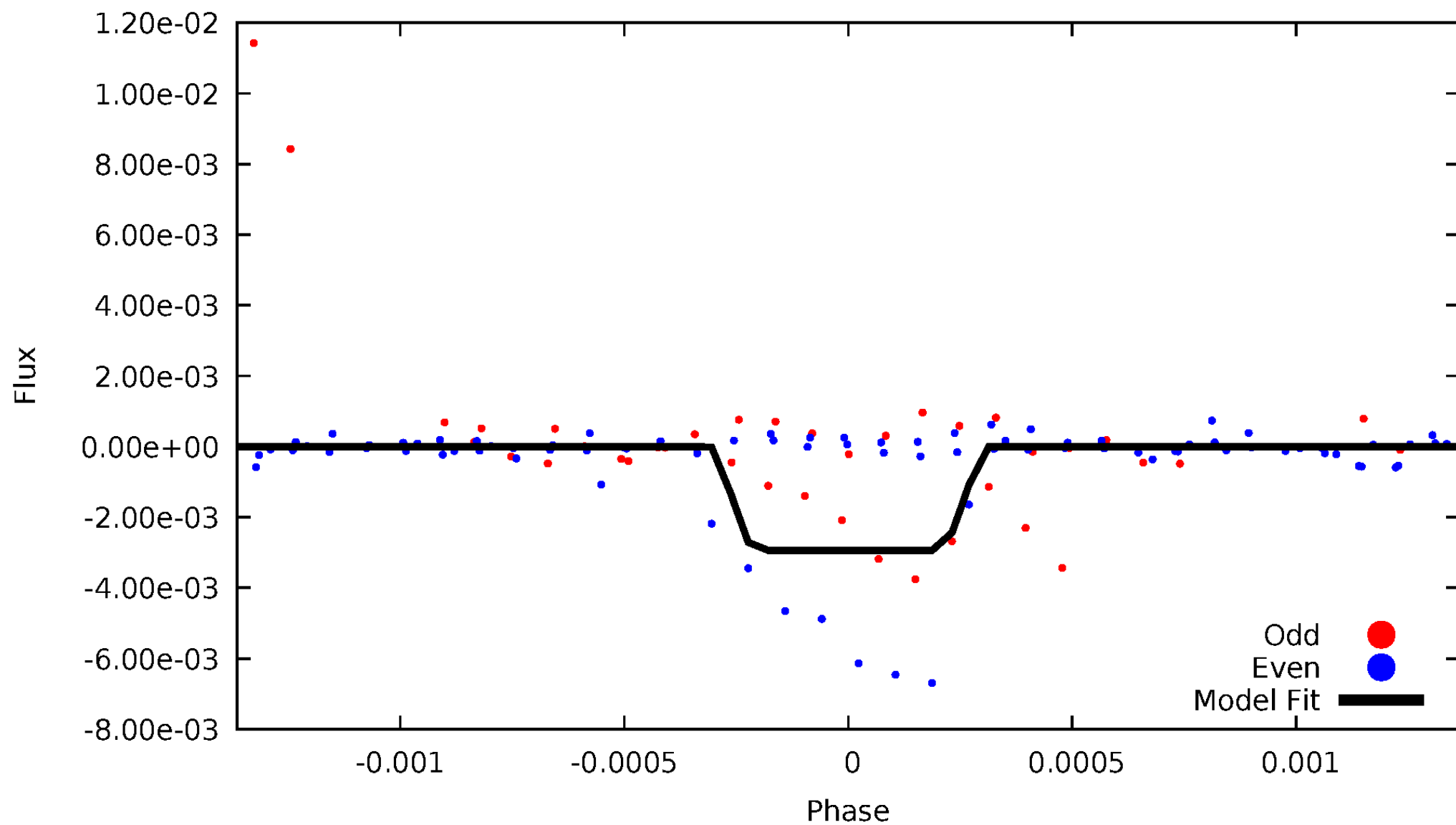
DV Odd/Even

TCE 004180534-04



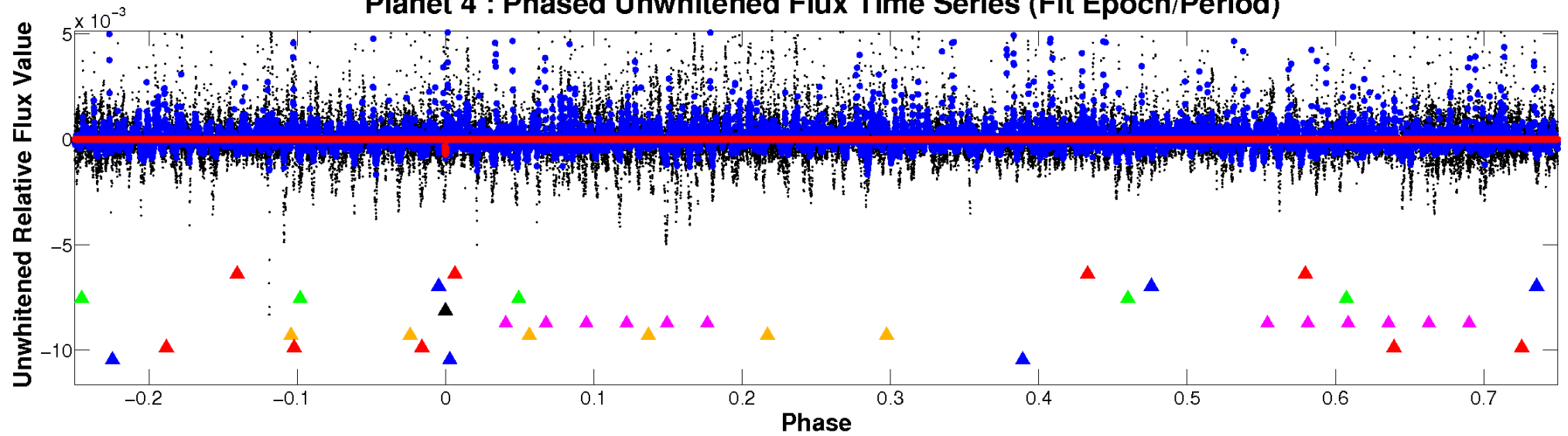
ALT Odd/Even

TCE 004180534-04

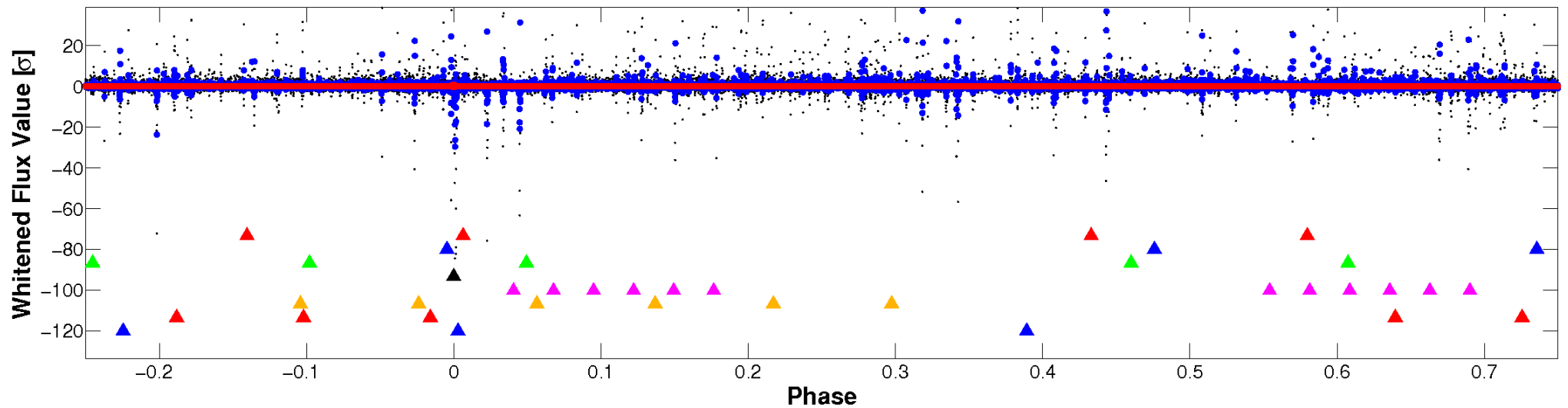


Non-Whitened Vs. Whitened Light Curve

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

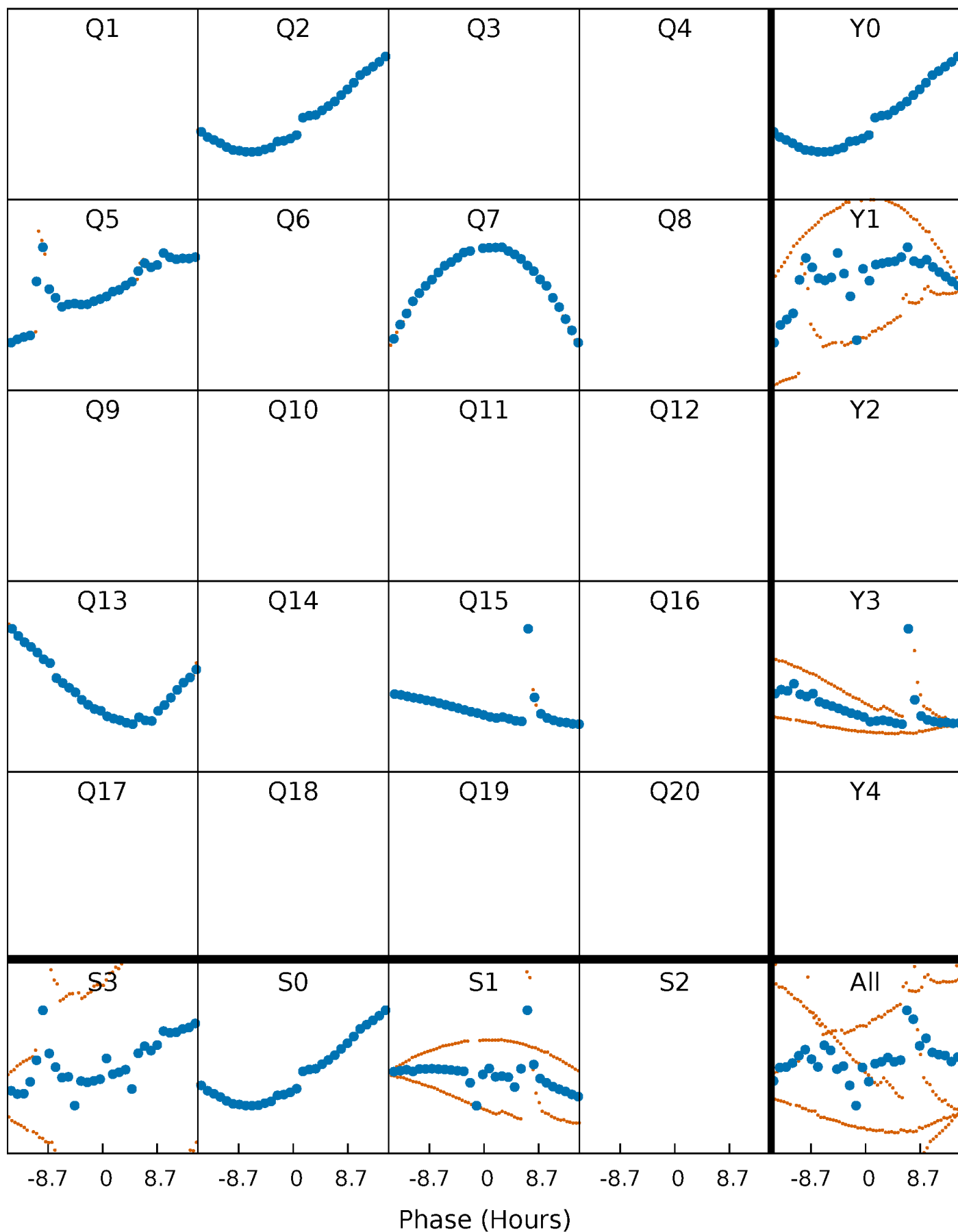


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



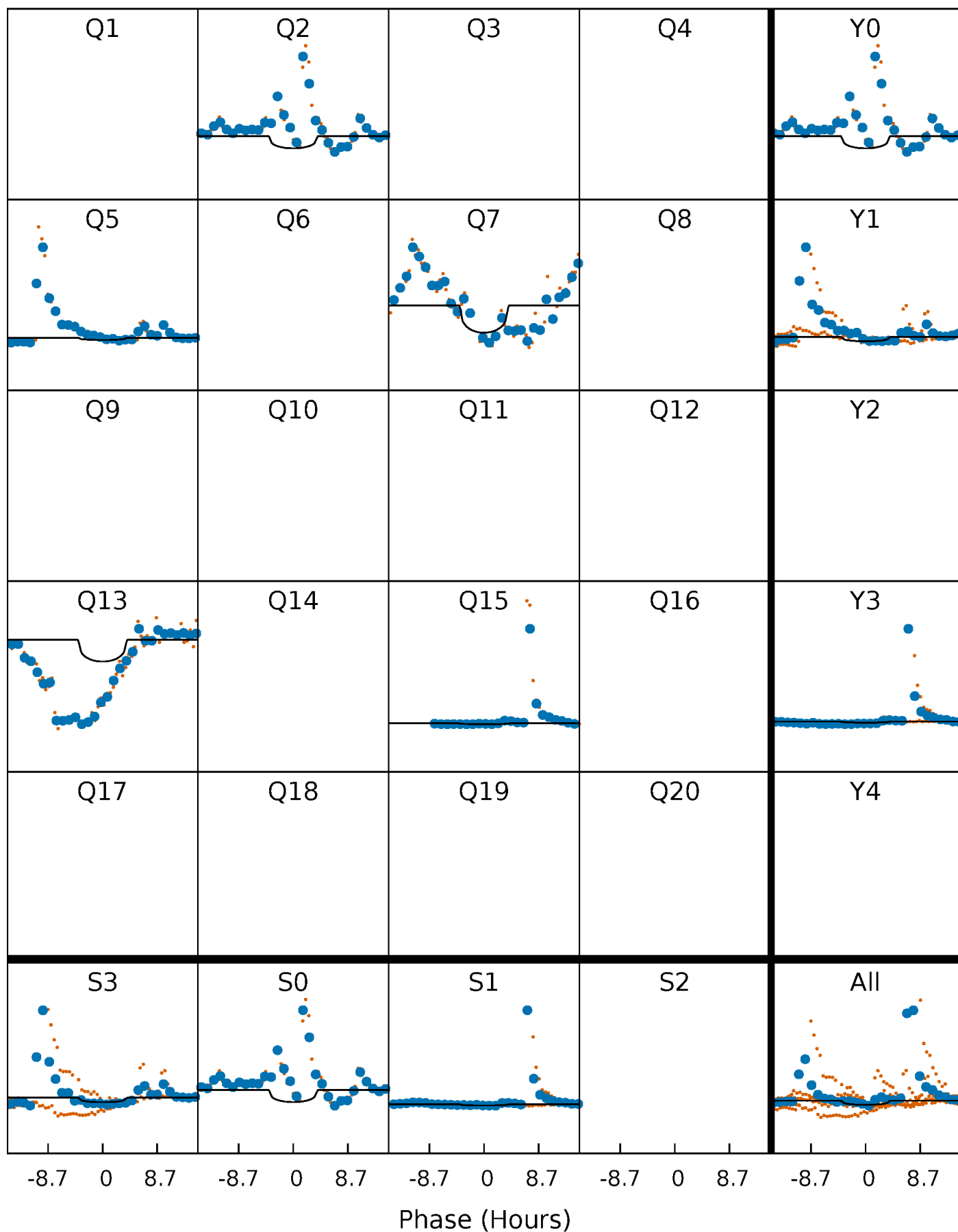
PDC Quarter-Phased Transit Curves

TCE 004180534-04 $P=249.076967$ Days $T_0=216.068287$ (BKJD)



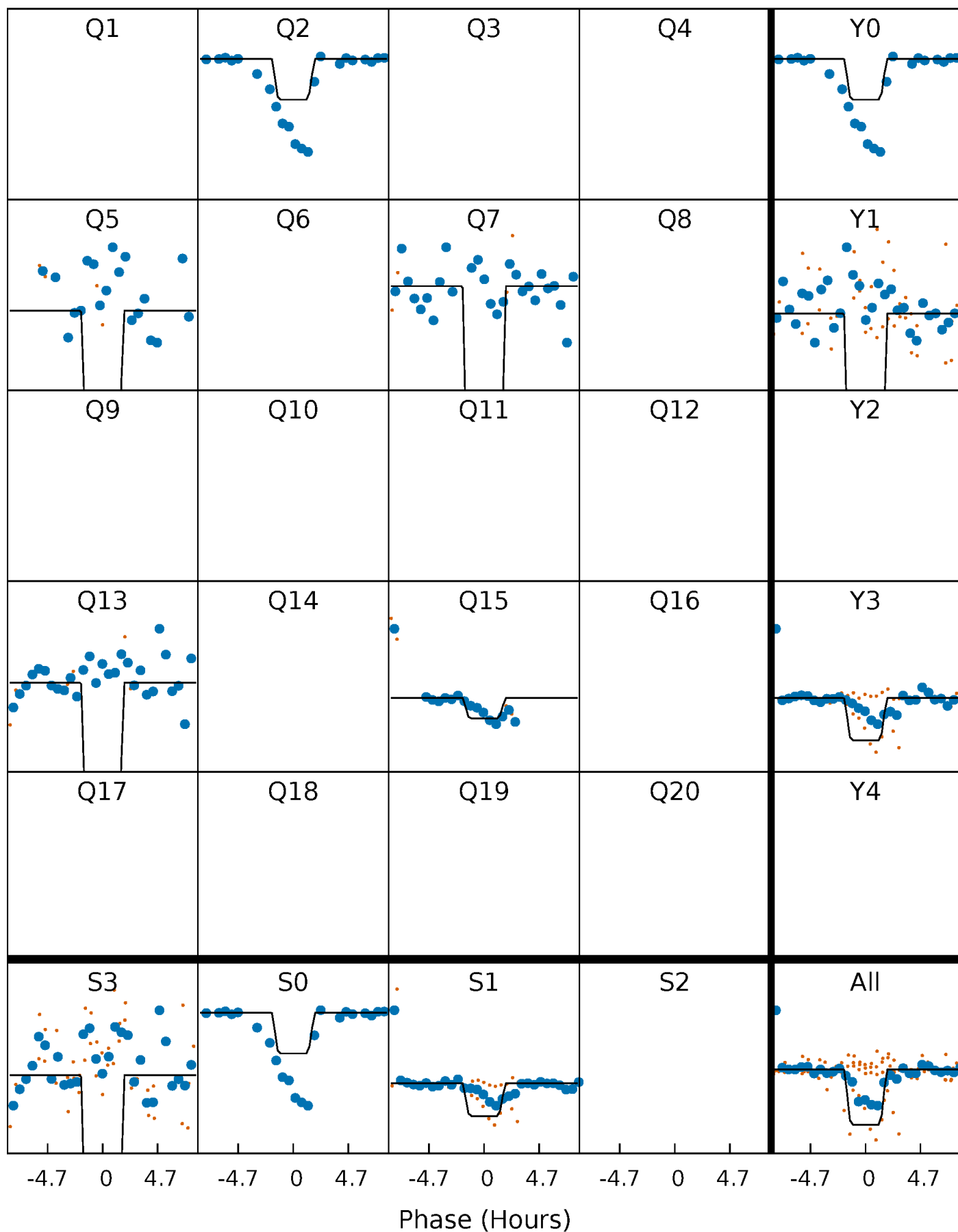
DV Quarter-Phased Transit Curves

TCE 004180534-04 P=249.076967 Days $T_0=216.068287$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

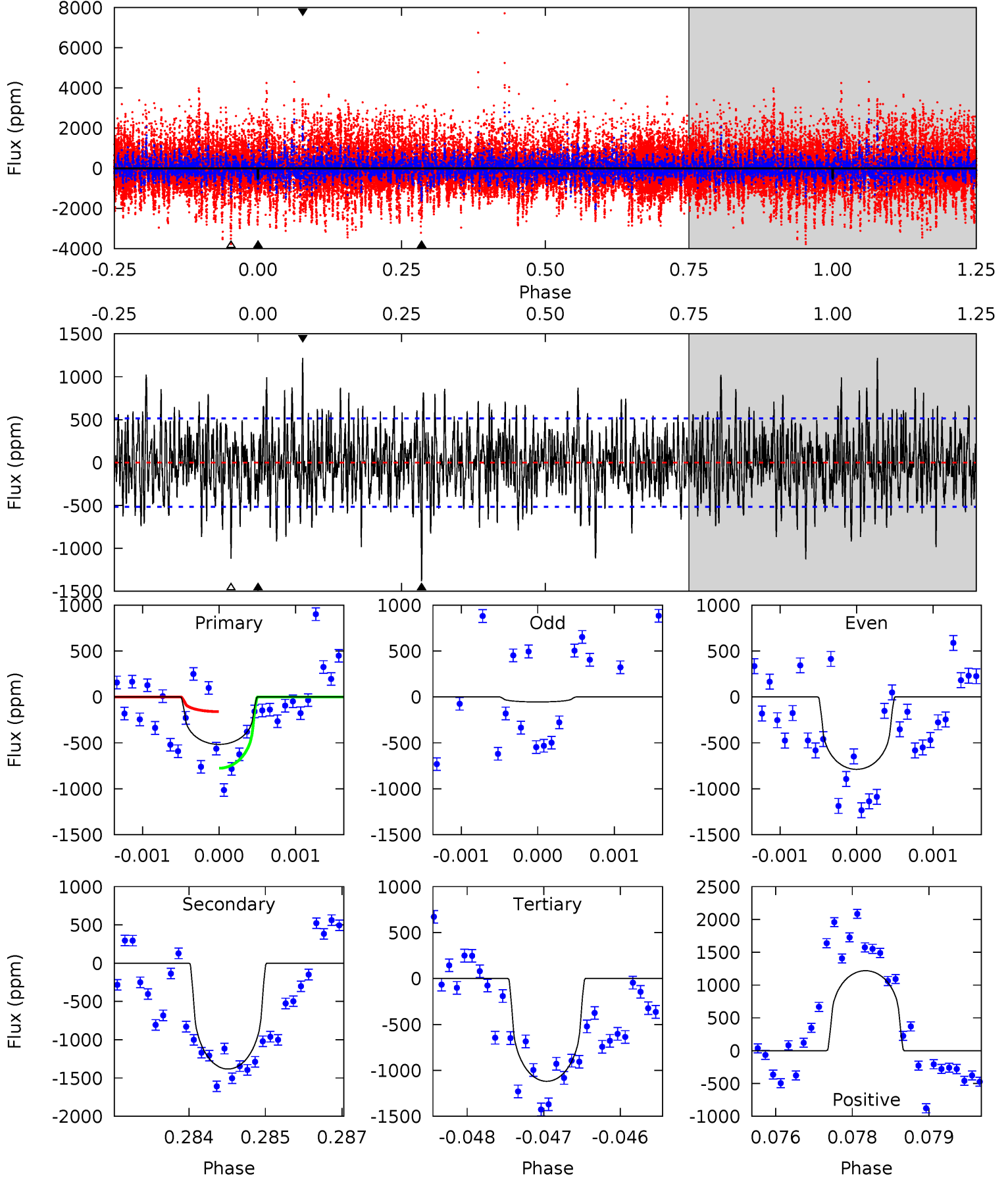
TCE 004180534-04 P=249.086492 Days $T_0=216.063325$ (BKJD)



DV Model-Shift Uniqueness Test

004180534-04, P = 249.076967 Days, E = 216.068287 Days

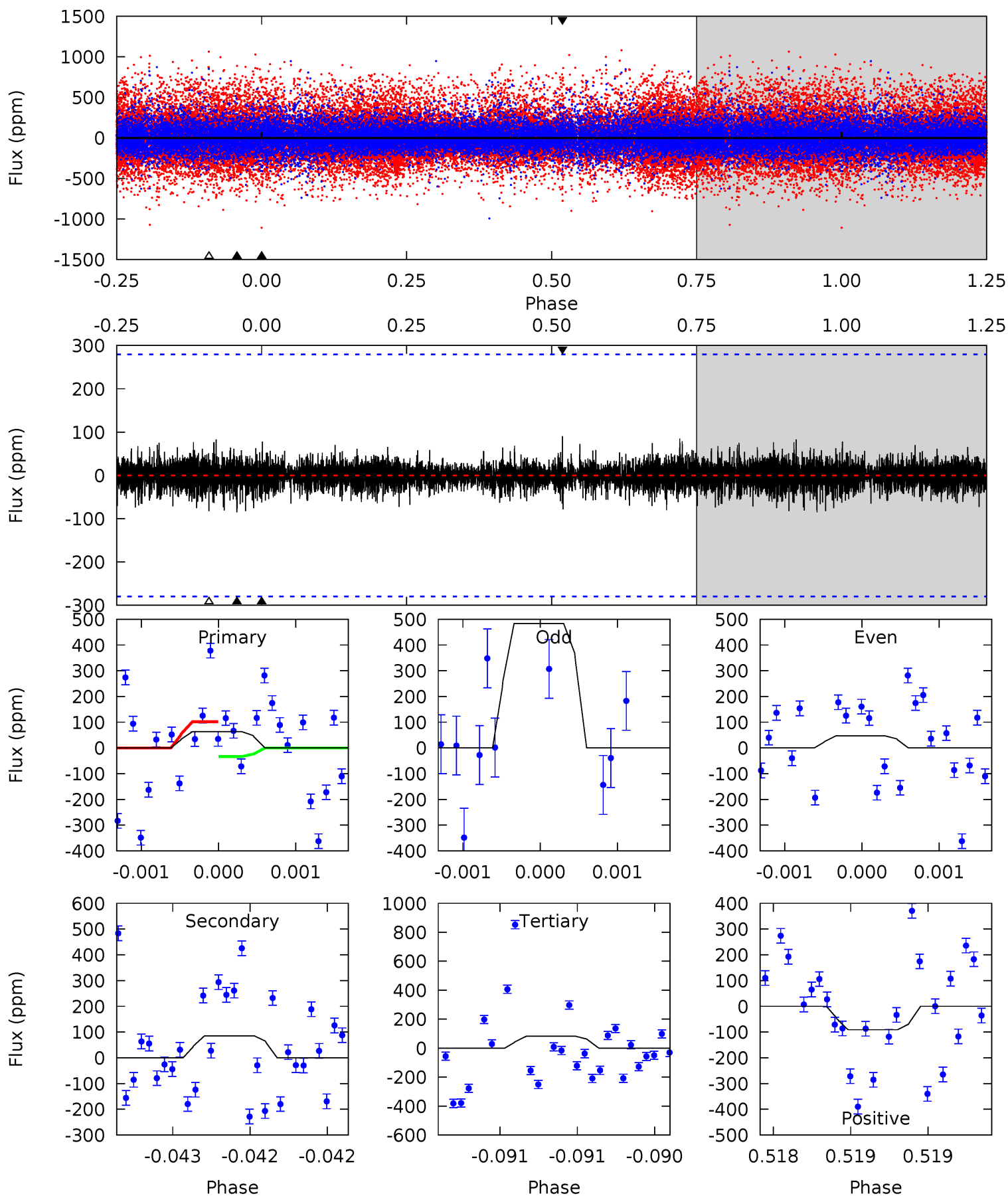
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.41	14.5	11.7	12.8	5.40	3.21	3.22	-6.31	-7.35	2.76	1.72	3.43	1.76	0.47	3.23



Alt Model-Shift Uniqueness Test

004180534-04, P = 249.086492 Days, E = 216.063325 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.26	1.70	1.64	1.81	5.56	3.47	0.39	-0.38	-0.55	0.06	-0.11	4.28	135.6	0.52	0.66



Stellar Parameters For KIC 004180534

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4746^{+131}_{-95}	$3.070^{+0.434}_{-0.355}$	$-0.020^{+0.250}_{-0.200}$	$4.645^{+3.183}_{-1.714}$	$0.925^{+0.288}_{-0.157}$	$0.013^{+0.037}_{-0.009}$
	+3%/-2%	+14%/-12%	+1250%/-1000%	+69%/-37%	+31%/-17%	+288%/-72%
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 004180534-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1383 ± 95	$69.38^{+77.25}_{-50.84}$	721^{+110}_{-88}	3059^{+1628}_{-524}	95^{+1160}_{-73}
Alt.	-85 ± 50	$70.89^{+84.25}_{-50.39}$	723^{+107}_{-94}	2072^{+709}_{-404}	$4.339^{+46.861}_{-3.656}$

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

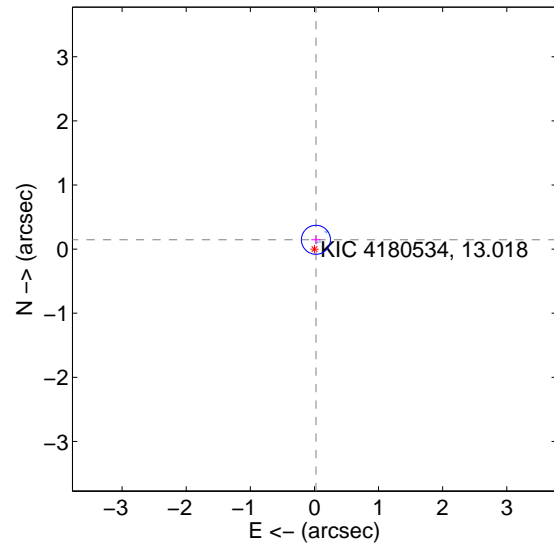
Supplemental centroid analysis for 004180534-04. Kepler magnitude: 13.02. Transit SNR 4.08

There are 4 quarters with good PRF difference image offsets

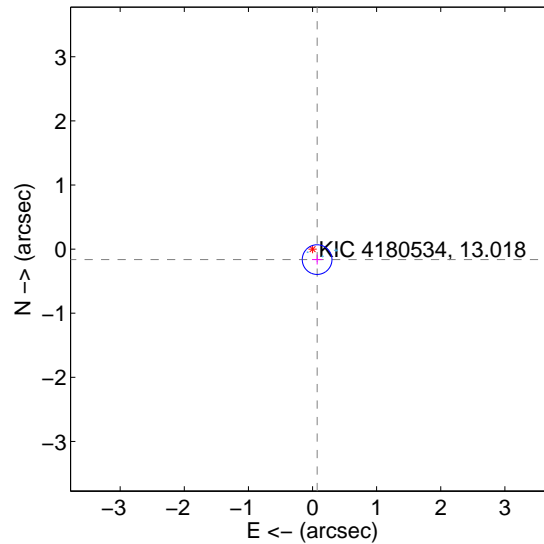
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.147 ± 0.075	1.95	-0.023 ± 0.074	0.145 ± 0.074
PRF-fit source offset from KIC position	0.179 ± 0.077	2.31	-0.072 ± 0.080	-0.164 ± 0.077
photometric centroid source offset	0.70 ± 0.82	0.86	-0.45 ± 0.94	0.53 ± 0.71

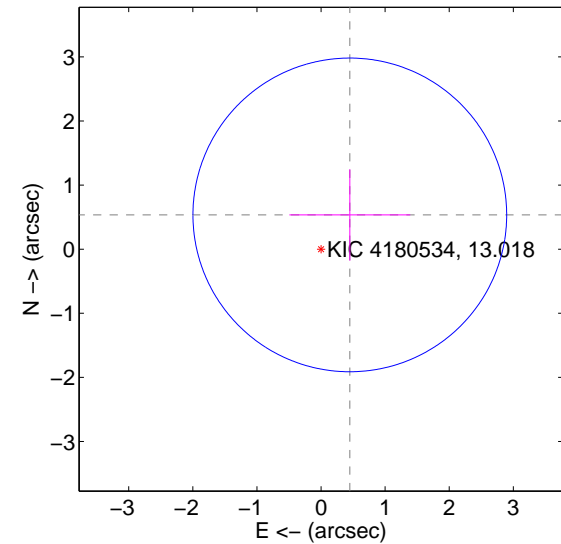
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

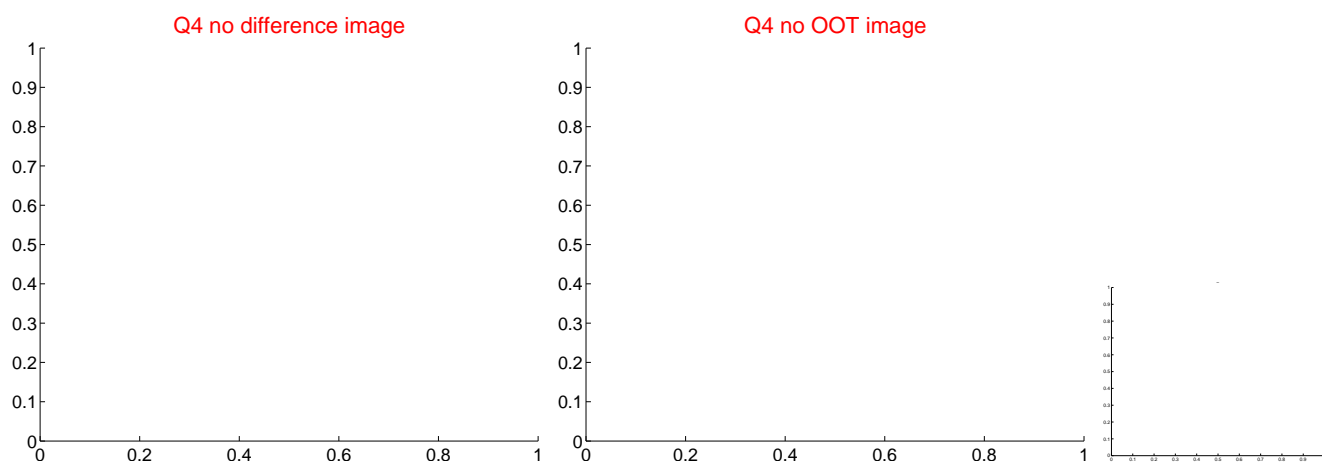
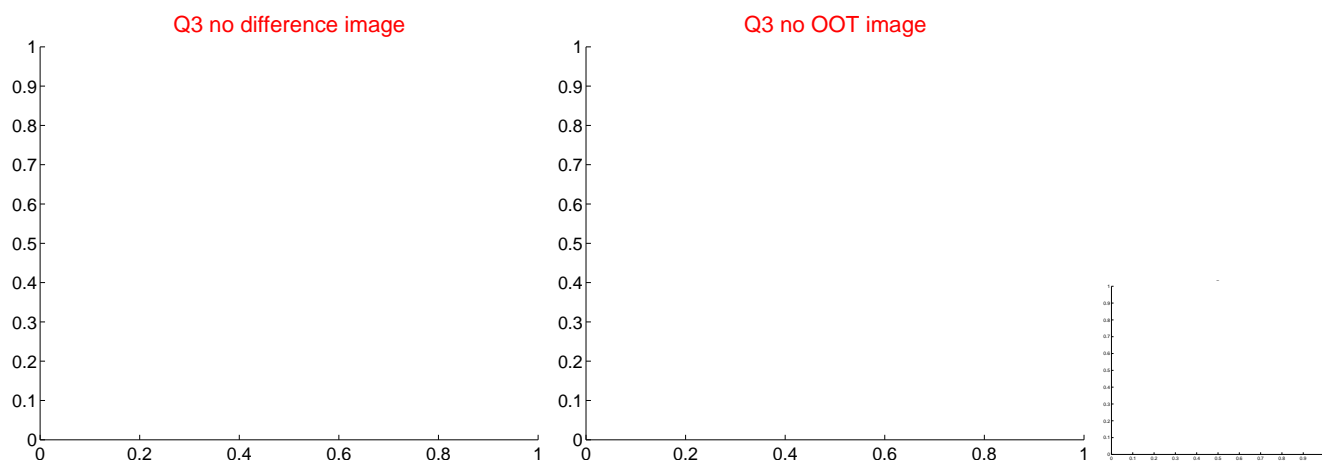
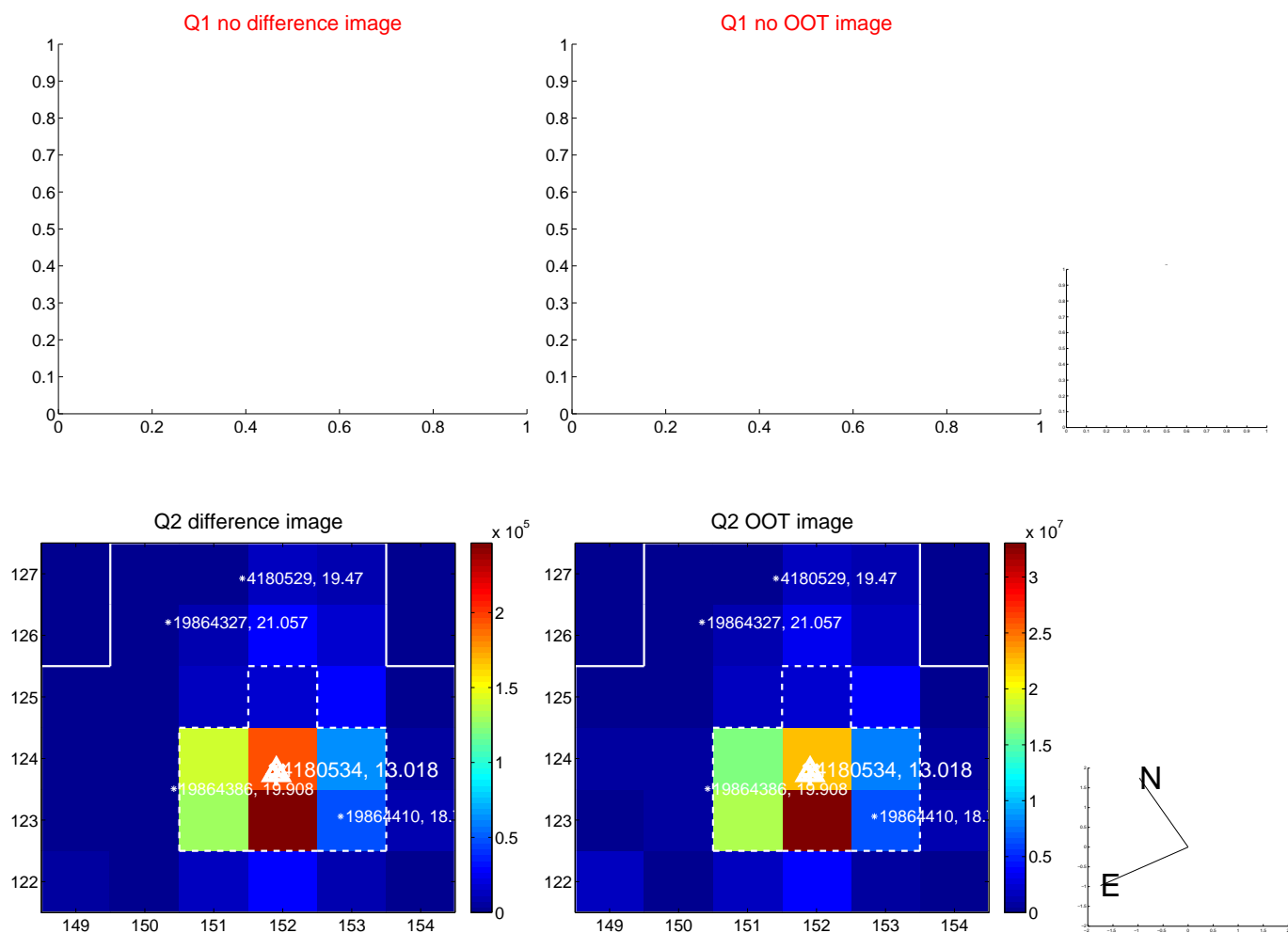


offset from photometric centroids

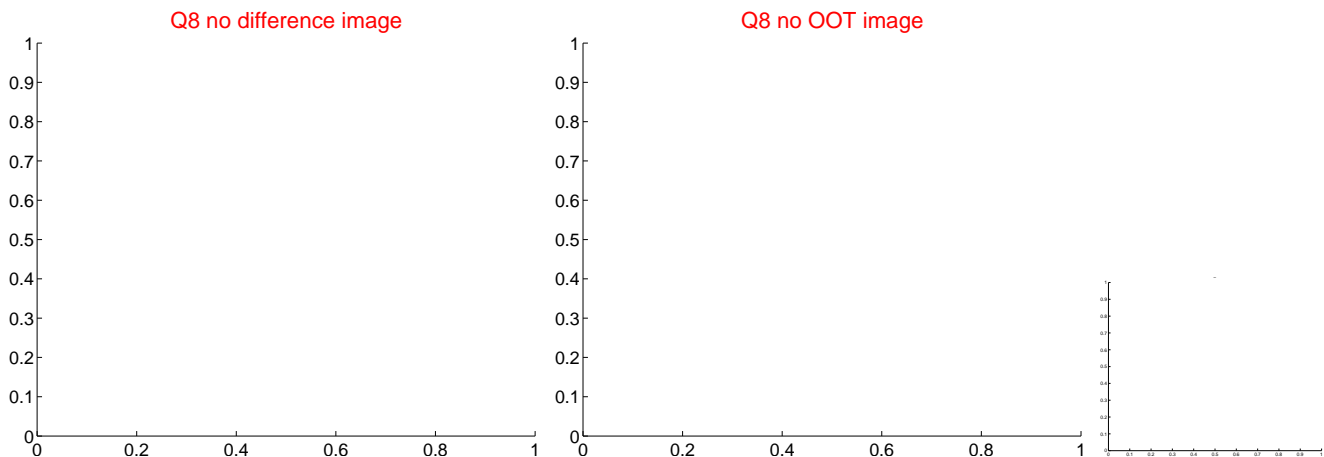
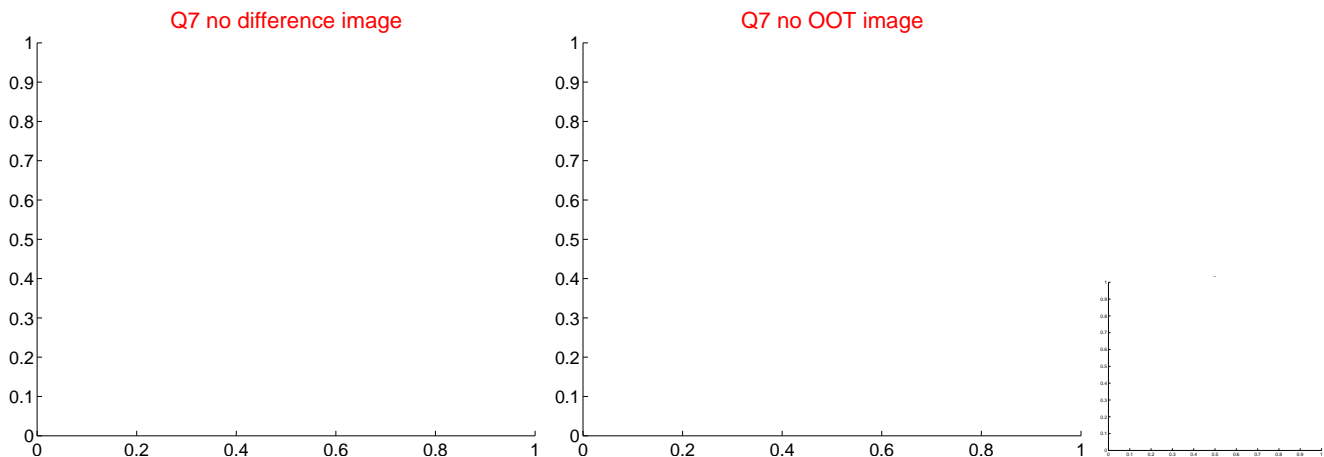
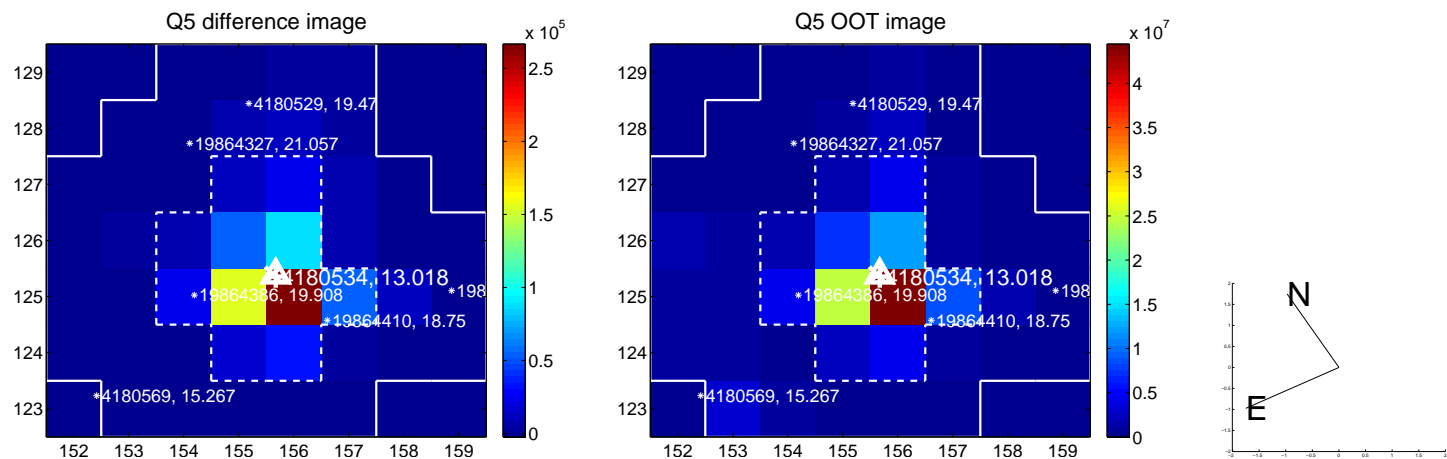


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

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



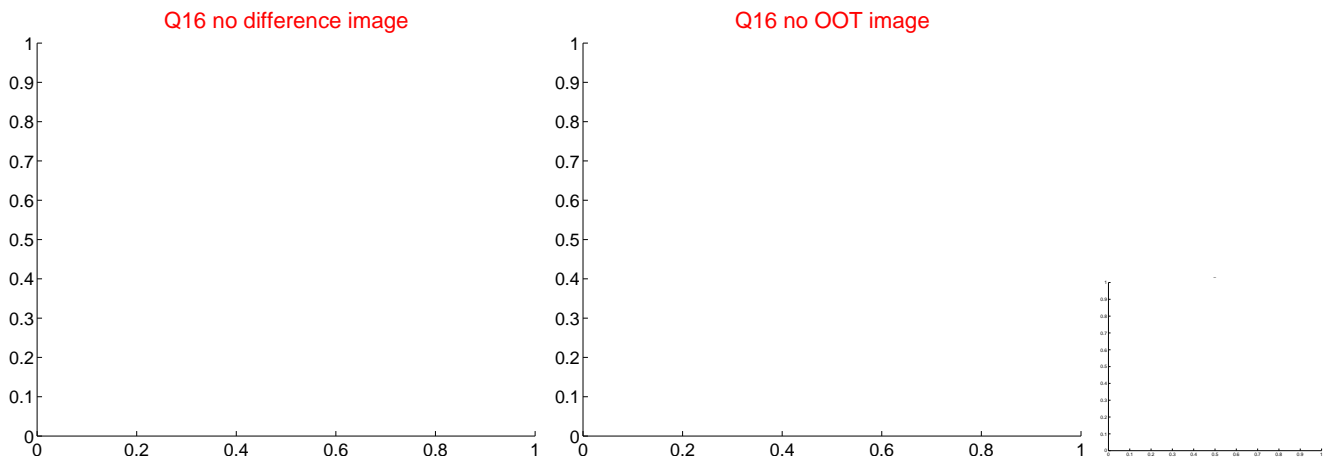
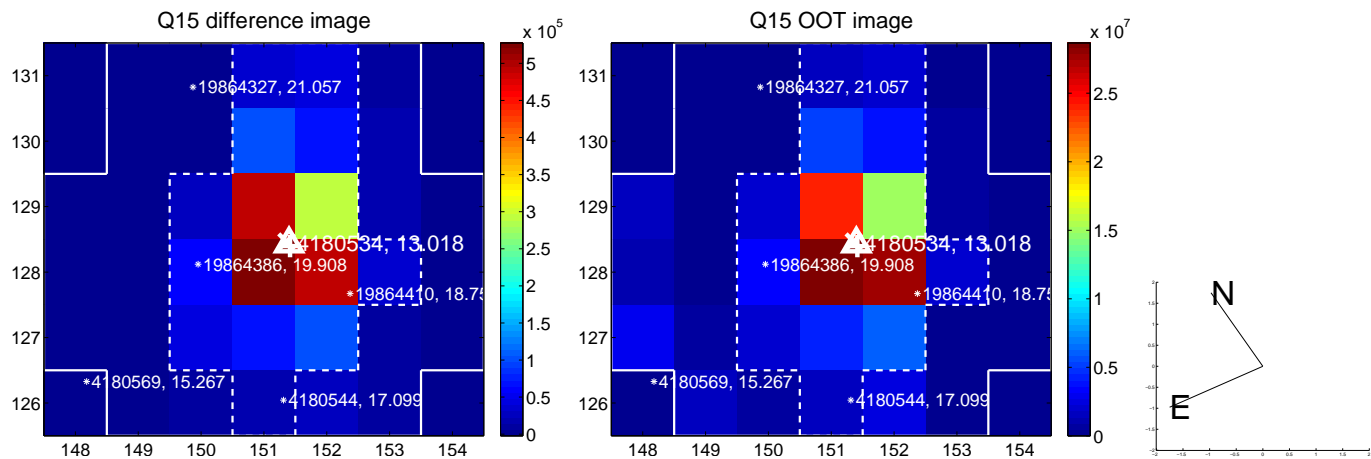
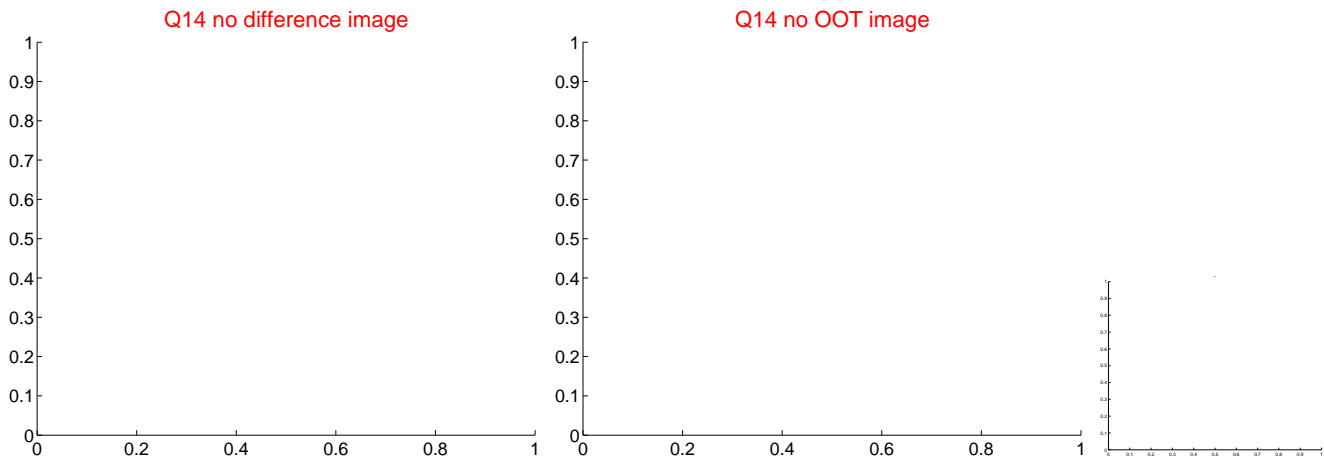
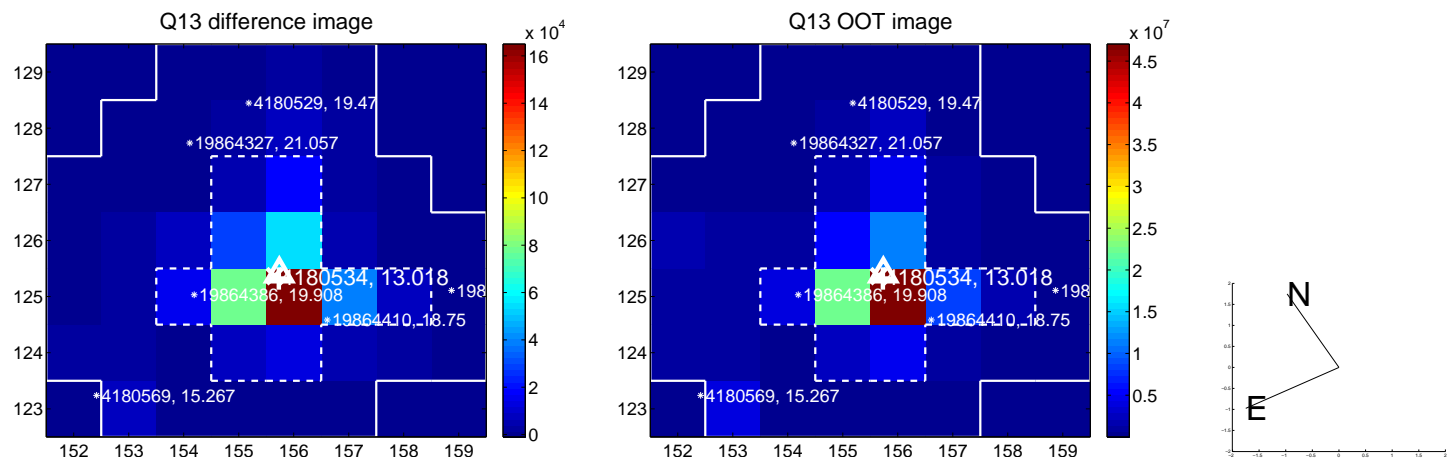
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



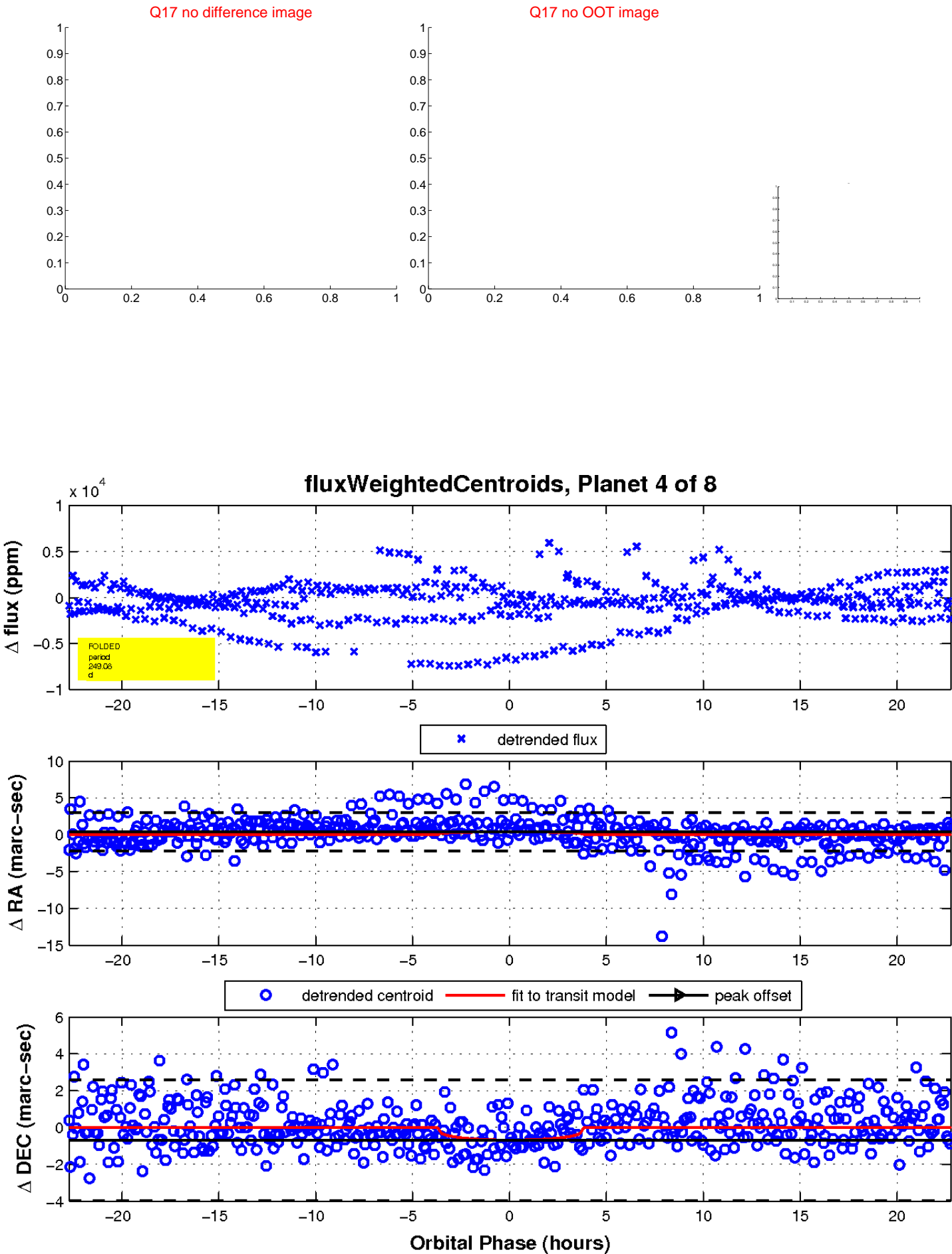
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

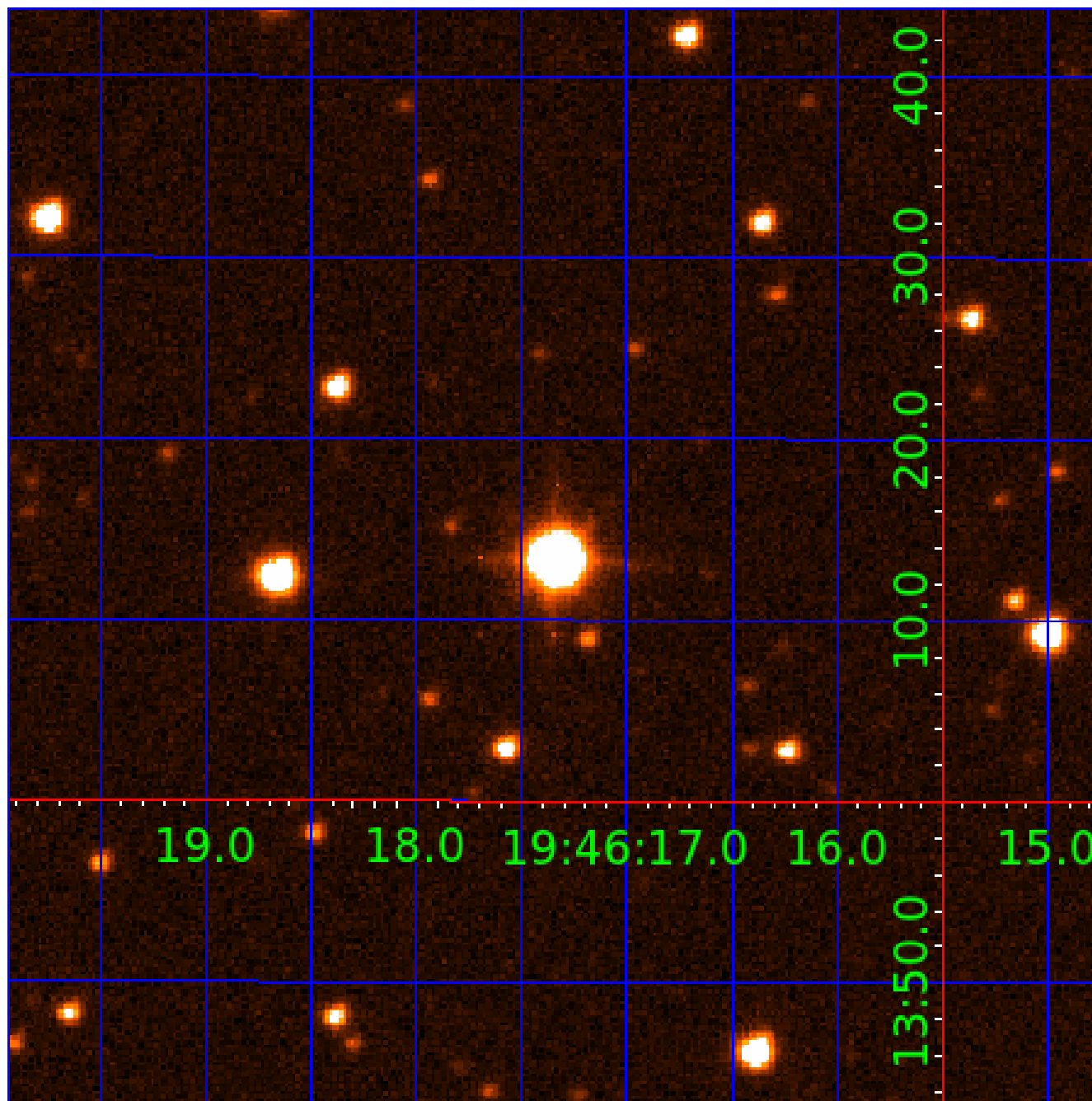


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004180534

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})
004180534-01	OBS	No	355.334762	360.469179	658.8	13.216	18.0	2.6	4.64	4746	11.93	10.71
004180534-02	OBS	No	562.851062	334.612945	392.4	12.289	19.1	1.9	4.64	4746	9.97	5.80
004180534-03	OBS	No	285.772491	330.662843	2324.9	3.579	17.4	12.0	4.64	4746	21.52	14.33
004180534-04	OBS	No	249.076967	216.068287	724.0	7.598	17.4	4.1	4.64	4746	12.28	17.21
004180534-05	OBS	No	121.151942	138.898616	495.5	2.683	13.5	5.0	4.64	4746	9.94	44.99
004180534-06	OBS	No	229.074370	290.146696	939.6	5.531	15.3	5.5	4.64	4746	13.67	19.24
004180534-07	OBS	No	270.534734	375.356328	1230.1	3.889	14.8	7.6	4.64	4746	16.17	15.41
004180534-08	OBS	No	651.020636	160.139671	878.0	8.636	11.4	4.2	4.64	4746	14.19	4.78

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004180534-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004180534-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004180534-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004180534-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
004180534-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS
004180534-06	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—INCONSISTENT_TRANS
004180534-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
004180534-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

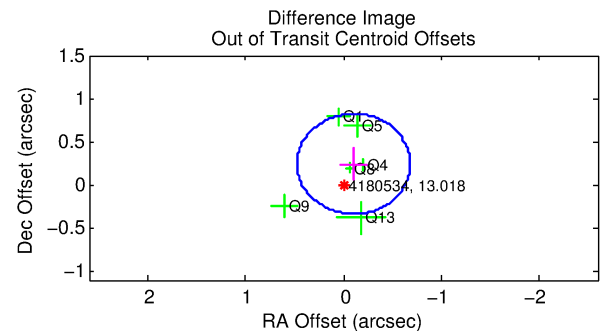
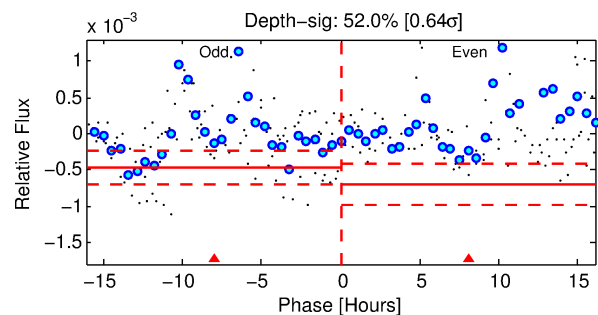
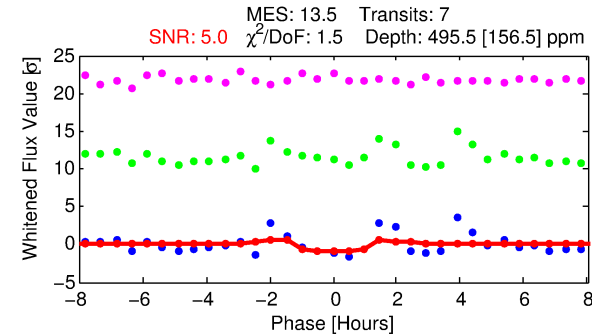
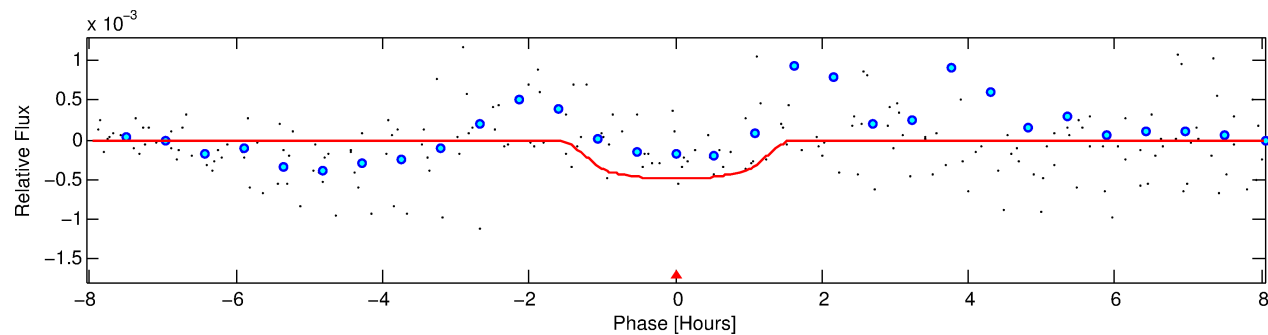
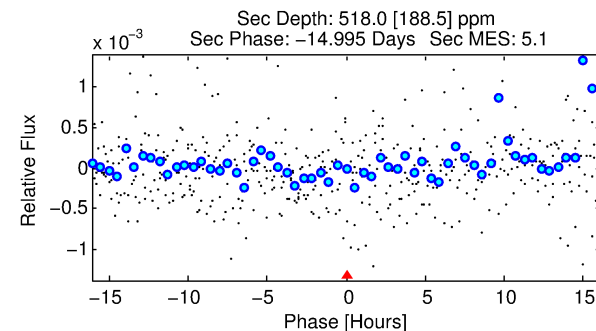
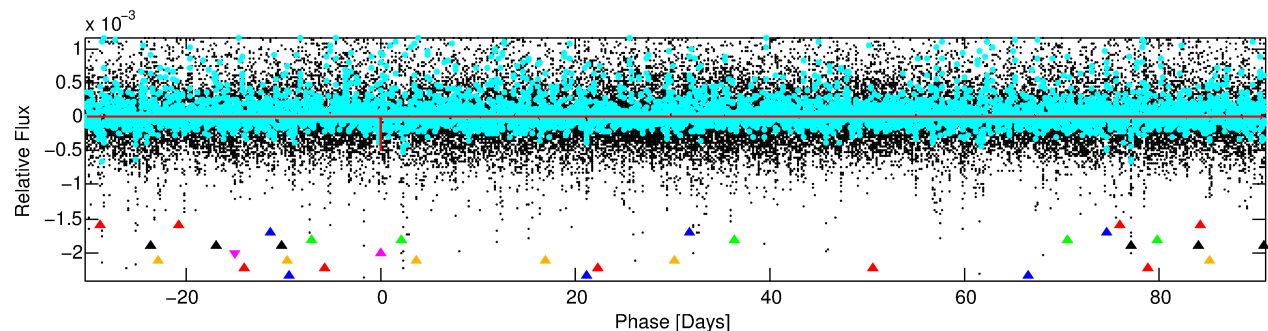
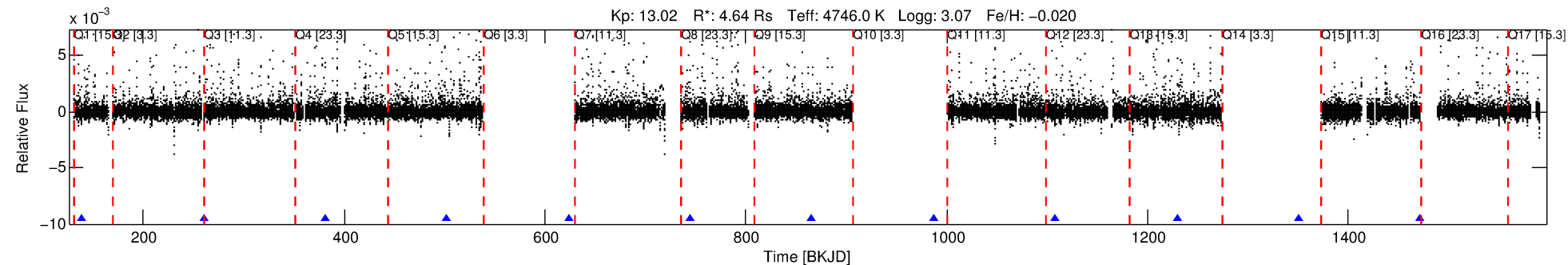
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004180534-05

No Significant Match Found

DV One-Page Summary

KIC: 4180534 Candidate: 5 of 8 Period: 121.152 d



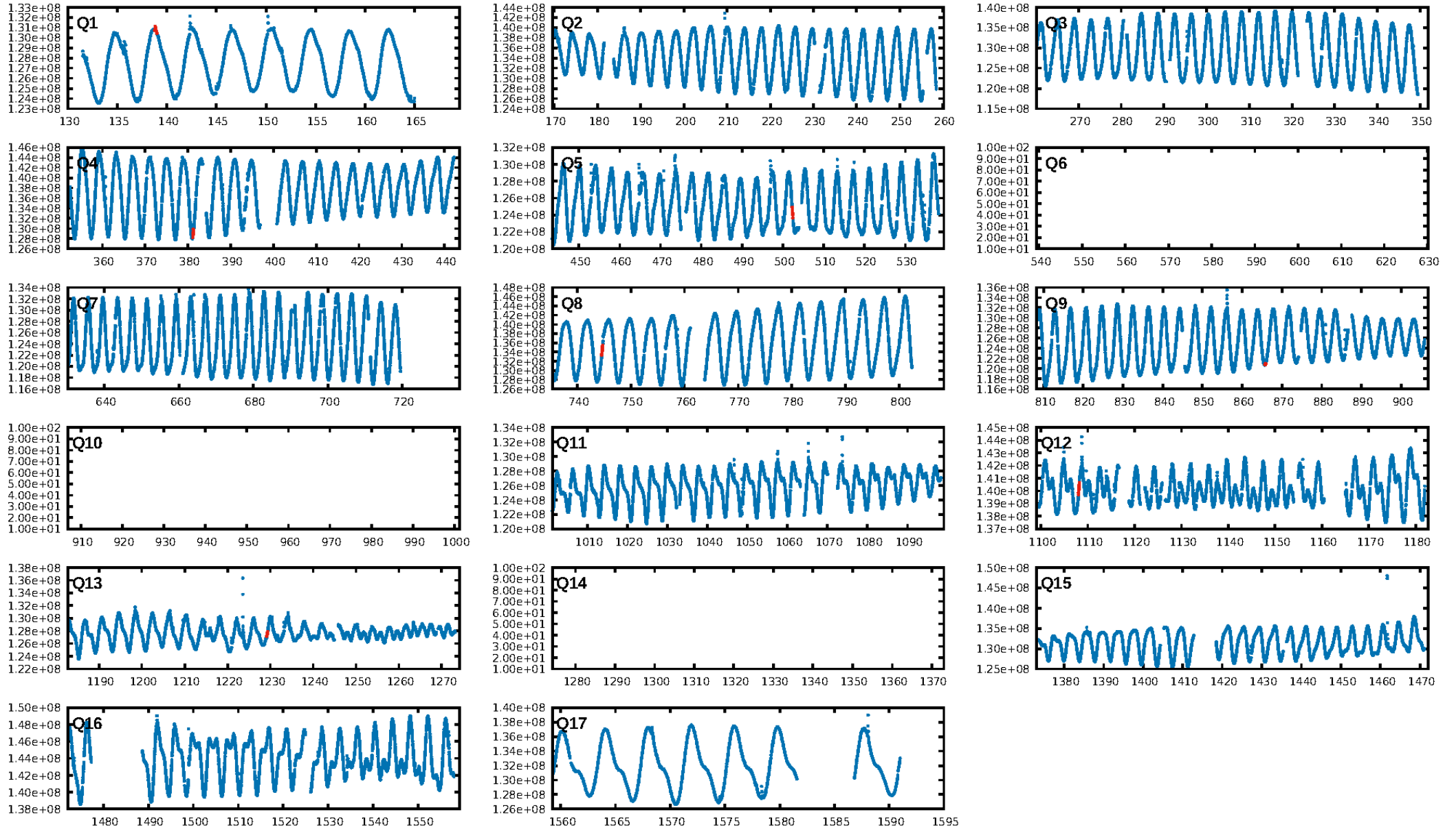
DV Fit Results:

Period = 121.15194 [0.00223] d
Epoch = 138.8986 [0.0103] BKJD
Rp/R* = 0.0196 [0.0647]
a/R* = 351.43 [3657.80]
b = 0.04 [281.18]
Seff = 44.99 [36.68]
Teq = 660 [135] K
Rp = 9.94 [33.48] Re
a = 0.4669 [0.2640] AU
Ag = 628.47 [4181.12] [0.15σ]
Teffp = 5112 [8441] K [0.53σ]

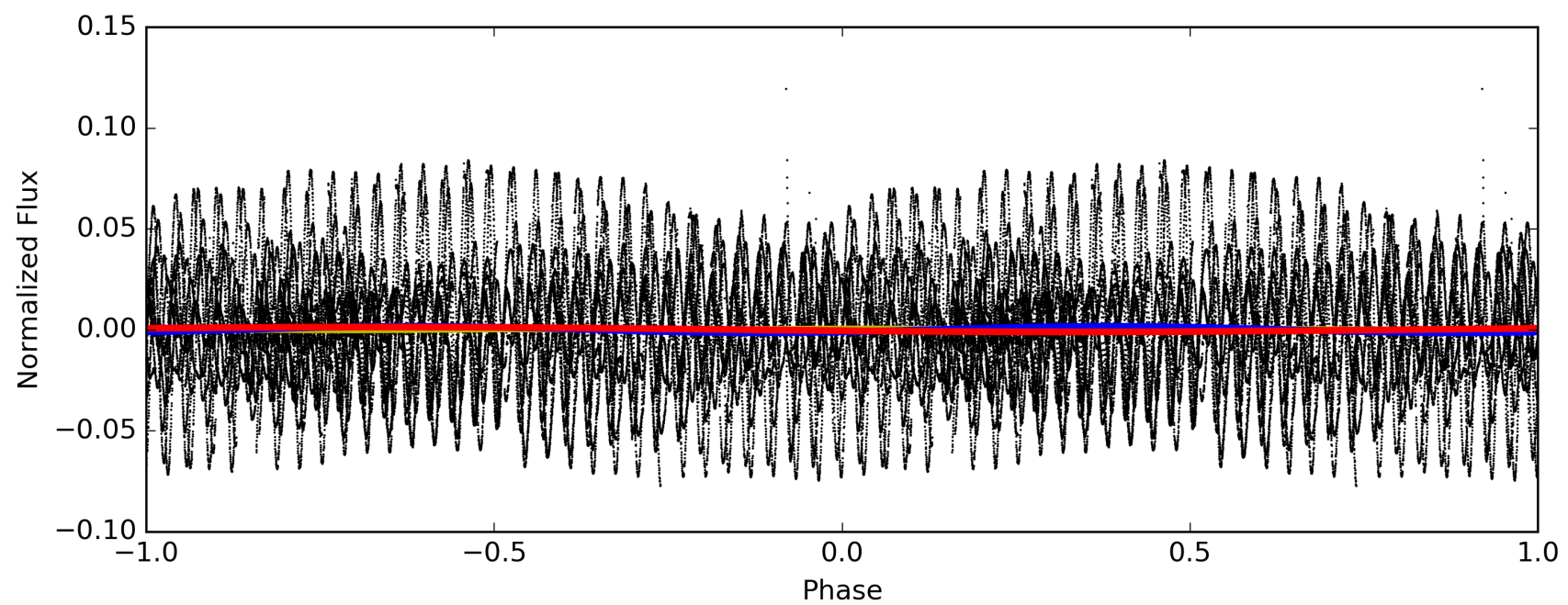
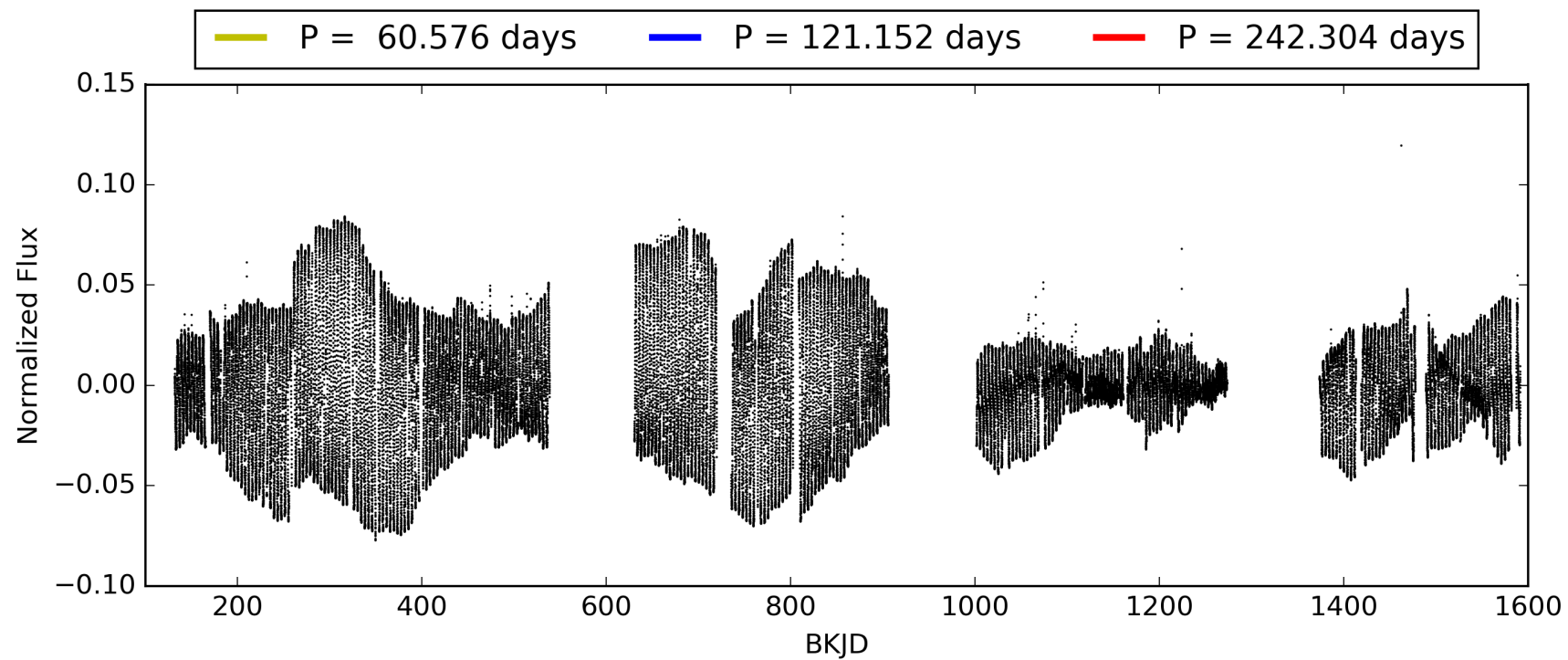
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [421.35σ]
ModelChiSquare2-sig: 24.6%
ModelChiSquareGof-sig: 88.8%
Bootstrap-pfa: 6.17e-13
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -1.917
Centroid-sig: 19.9%
Centroid-so: 1.666 arcsec [1.47σ]
OotOffset-rm: 0.264 arcsec [1.37σ]
KicOffset-rm: 0.255 arcsec [1.81σ]
OotOffset-st: 0/0/2/4 [6]
KicOffset-st: 0/0/2/4 [6]
DiffImageQuality-fgm: 0.83 [5/6]
DiffImageOverlap-fno: 1.00 [7/7]

TCE 004180534-05, PDC Light Curves

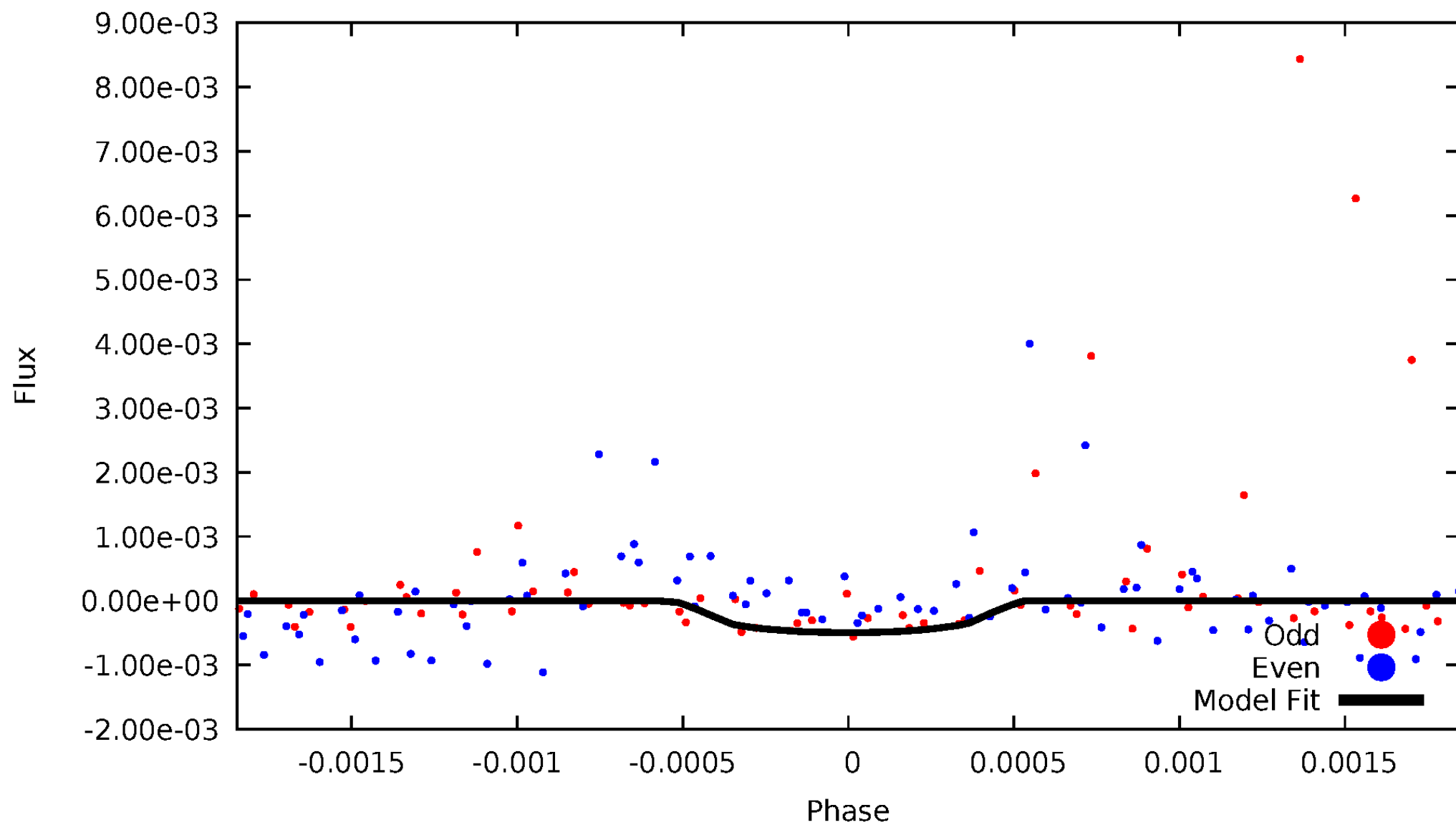


TCE 004180534-05



DV Odd/Even

TCE 004180534-05

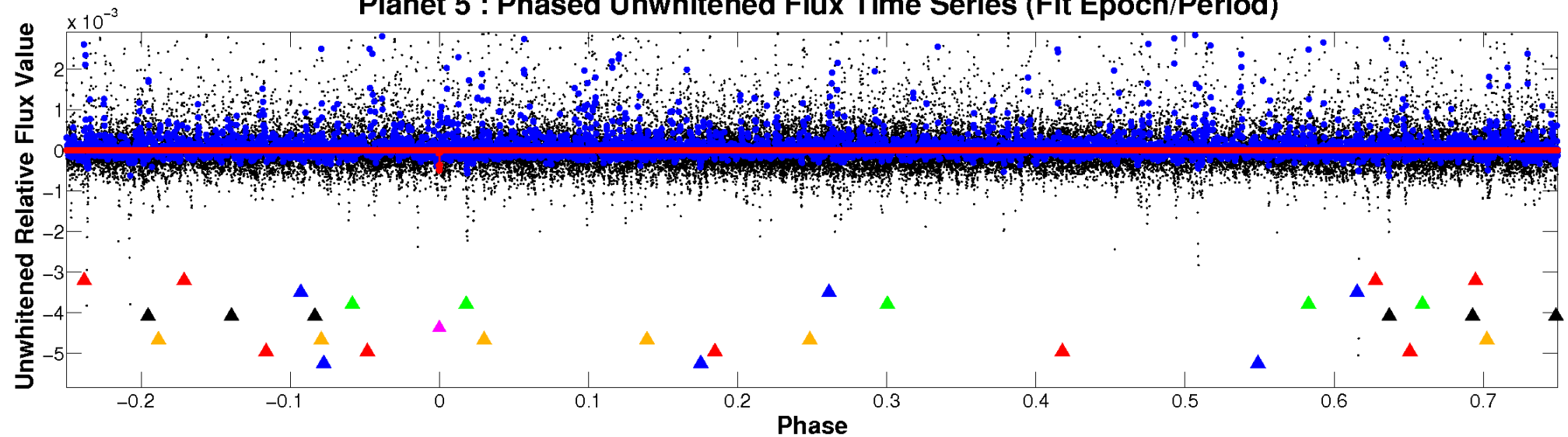


ALT Odd/Even

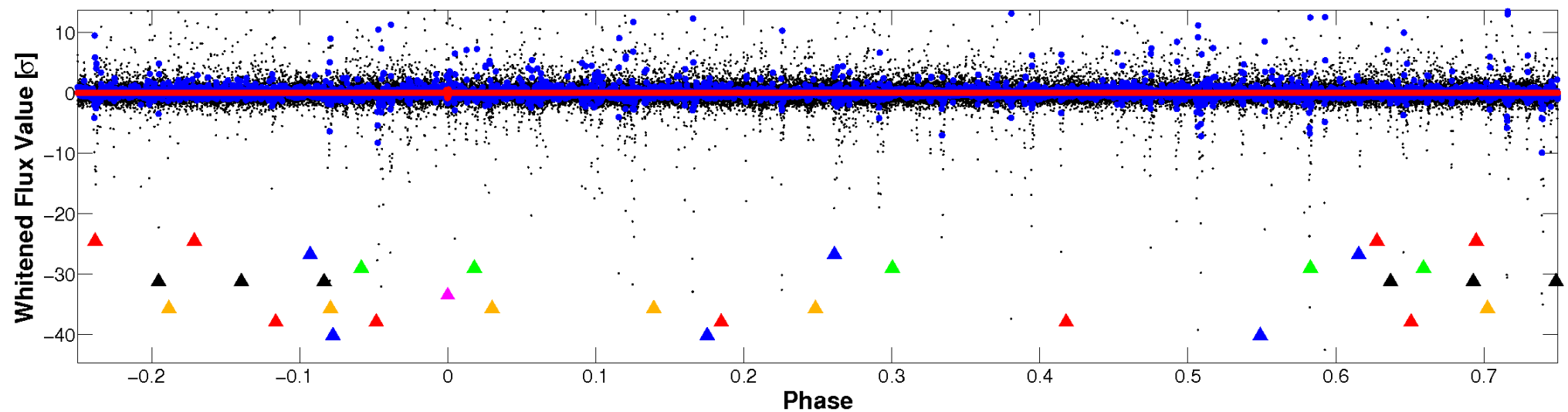
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

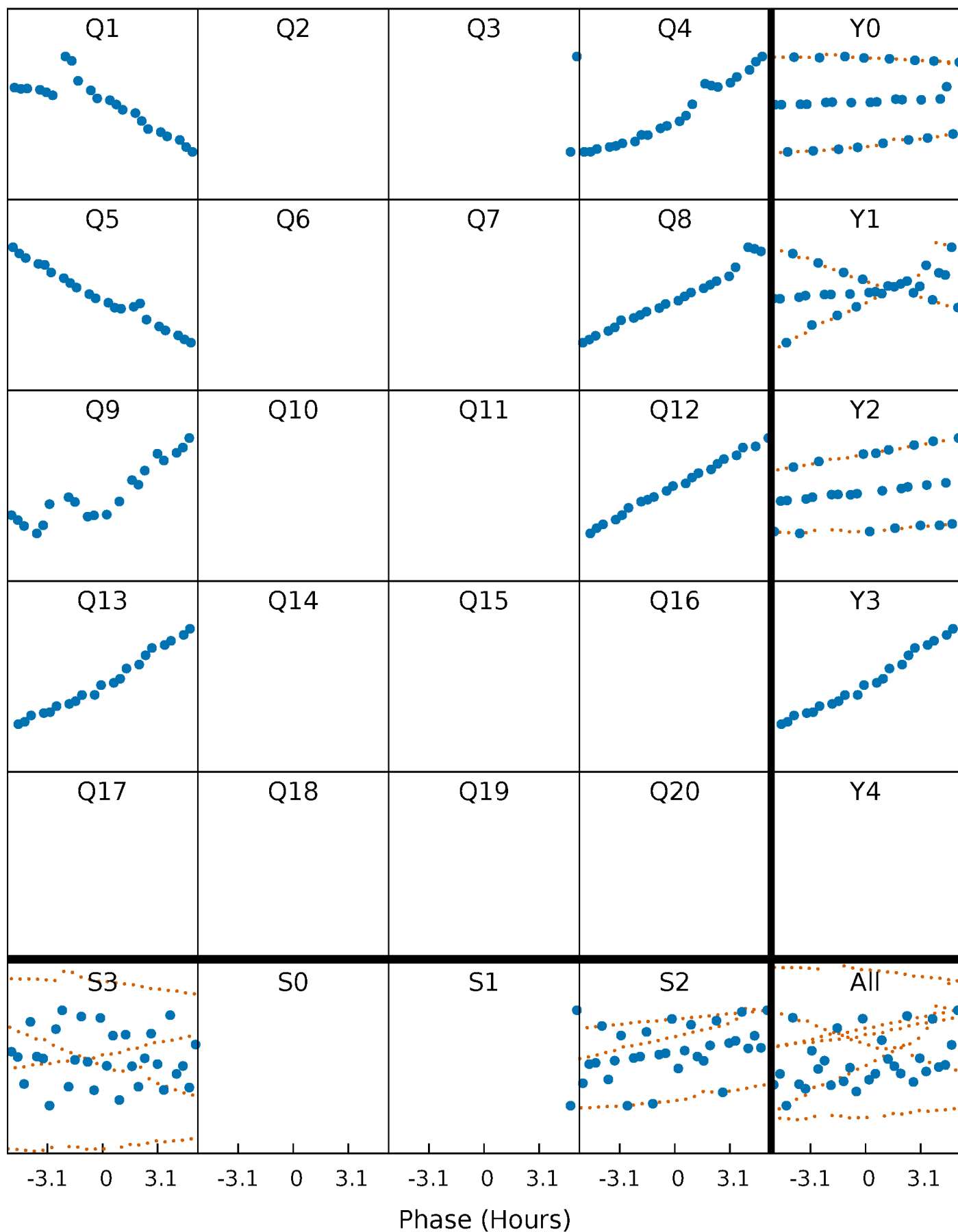


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



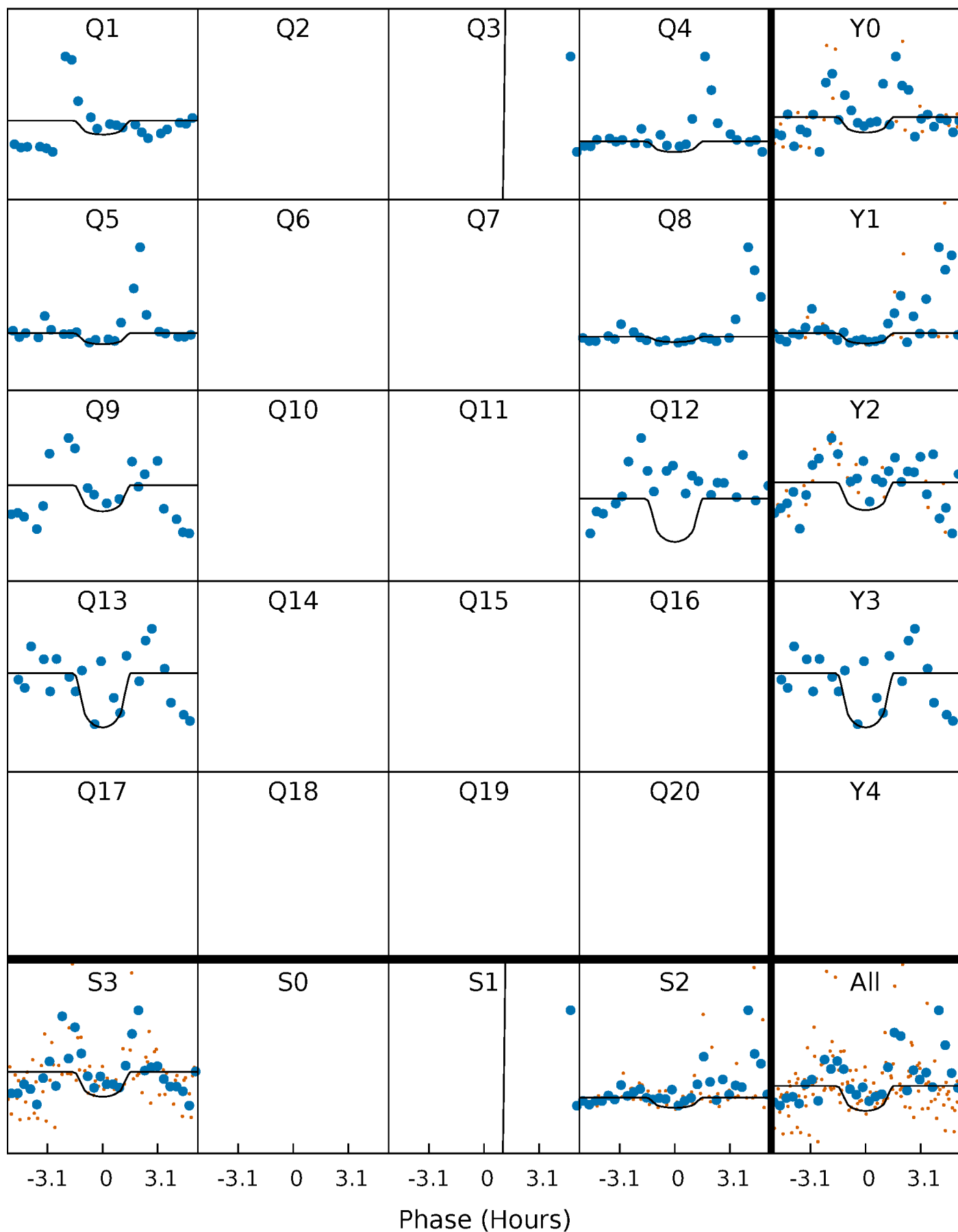
PDC Quarter-Phased Transit Curves

TCE 004180534-05 $P=121.151942$ Days $T_0=138.898616$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 004180534-05 $P=121.151942$ Days $T_0=138.898616$ (BKJD)

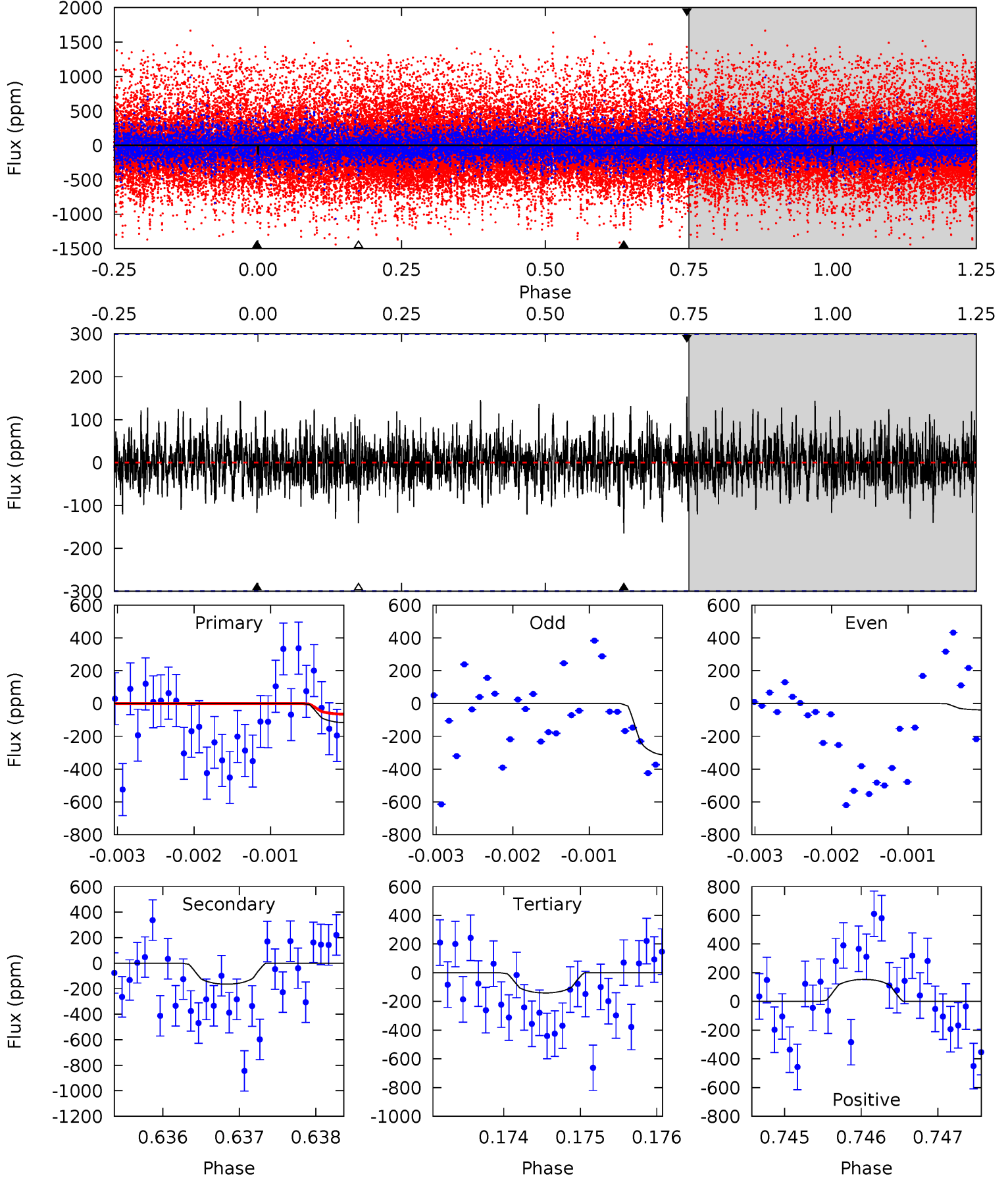


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

004180534-05, P = 121.151942 Days, E = 17.746674 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.13	2.99	2.56	2.79	5.44	3.28	0.72	-0.43	-0.66	0.44	0.20	2.42	0.60	0.48	0.96



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 004180534

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4746^{+131}_{-95}	$3.070^{+0.434}_{-0.355}$	$-0.020^{+0.250}_{-0.200}$	$4.645^{+3.183}_{-1.714}$	$0.925^{+0.288}_{-0.157}$	$0.013^{+0.037}_{-0.009}$
	+3%/-2%	+14%/-12%	+1250%/-1000%	+69%/-37%	+31%/-17%	+288%/-72%
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 004180534-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-165 ± 55	$25.52^{+29.03}_{-16.46}$	916^{+151}_{-118}	2947^{+1292}_{-498}	28^{+230}_{-22}
Alt.	N/A	N/A	N/A	N/A	N/A

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

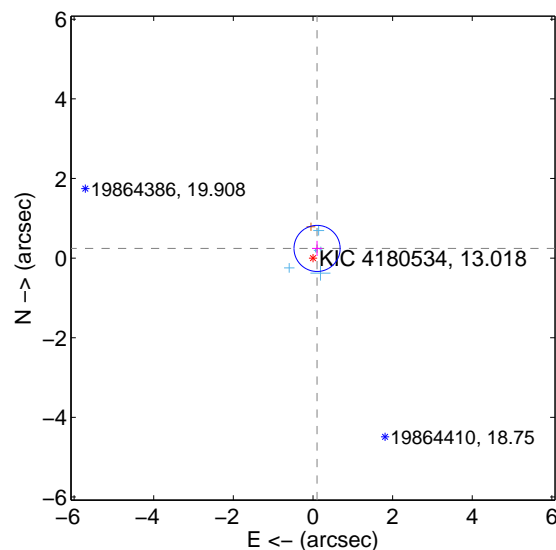
Supplemental centroid analysis for 004180534-05. Kepler magnitude: 13.02. Transit SNR 5.02

There are 5 quarters with good PRF difference image offsets

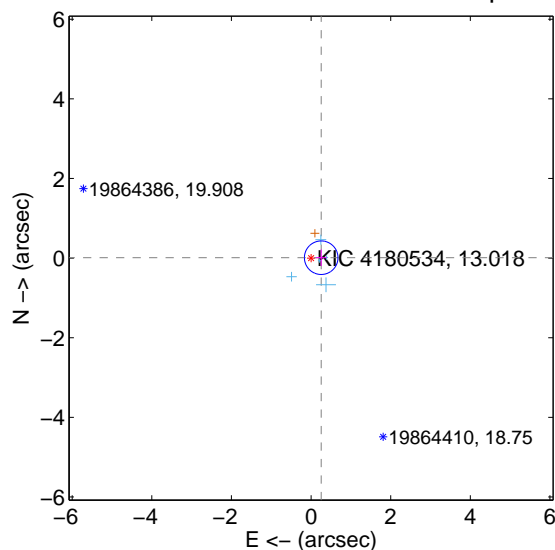
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.264 ± 0.193	1.37	-0.103 ± 0.127	0.243 ± 0.190
PRF-fit source offset from KIC position	0.255 ± 0.140	1.81	-0.255 ± 0.139	0.010 ± 0.207
photometric centroid source offset	1.67 ± 1.13	1.47	1.13 ± 1.27	-1.22 ± 1.00

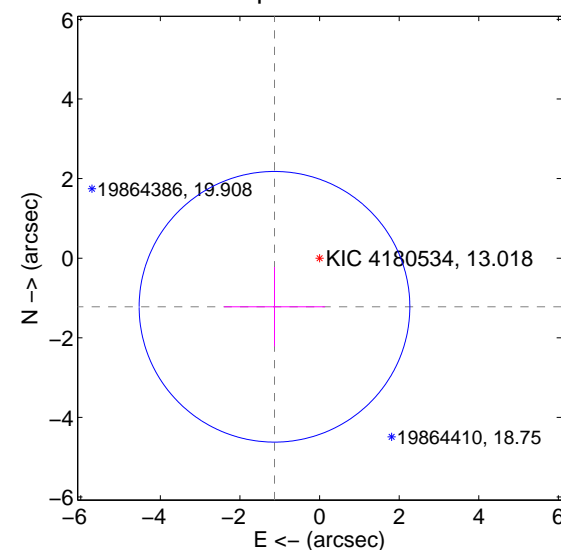
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

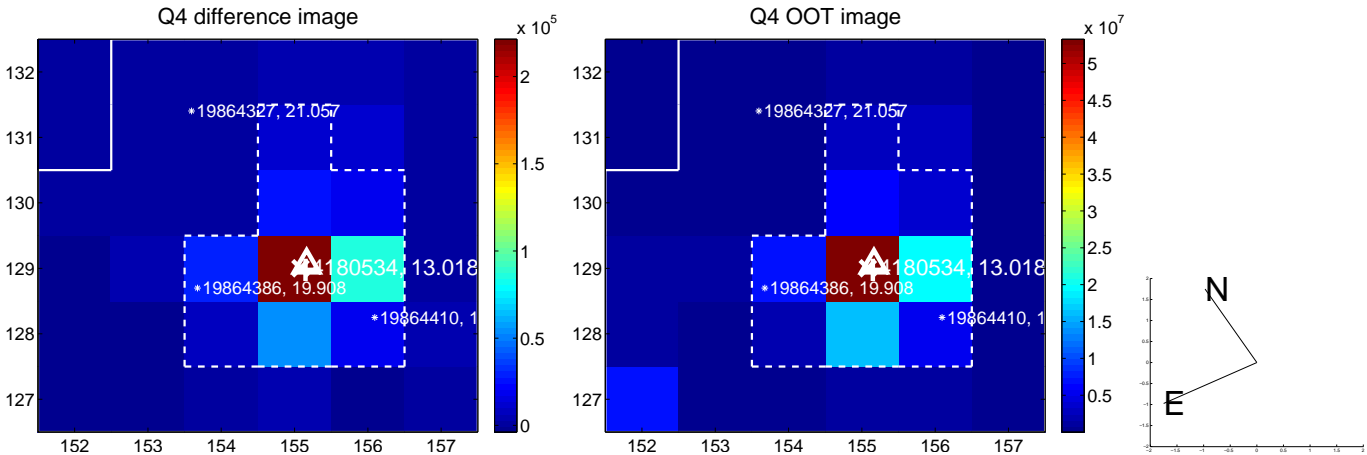
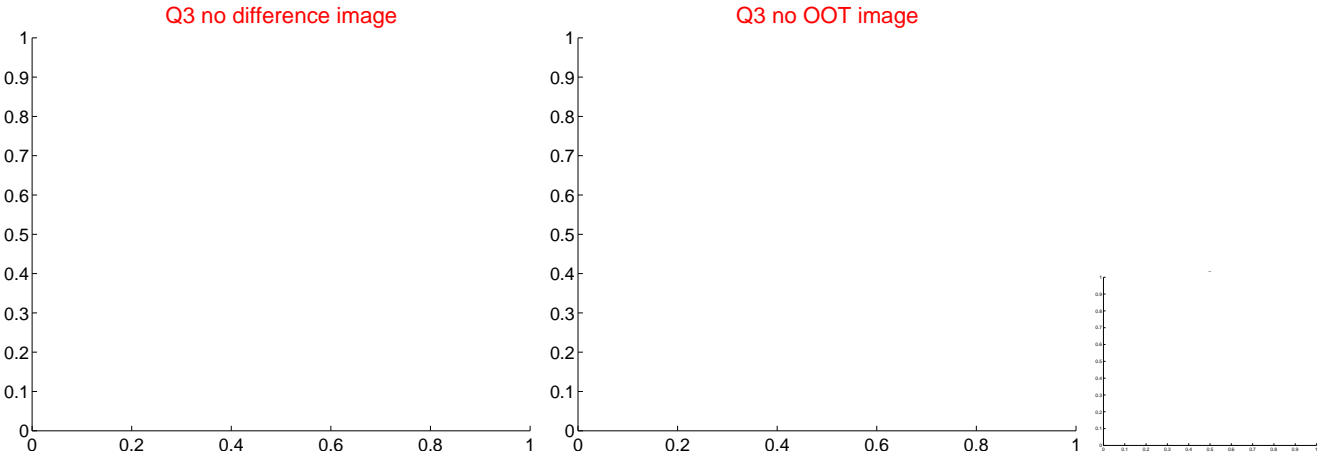
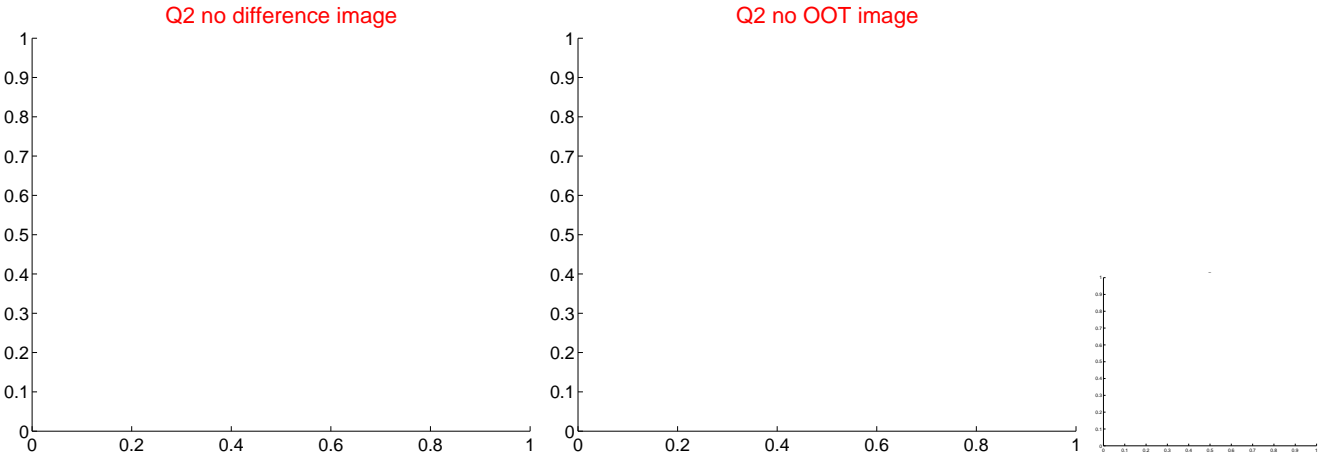
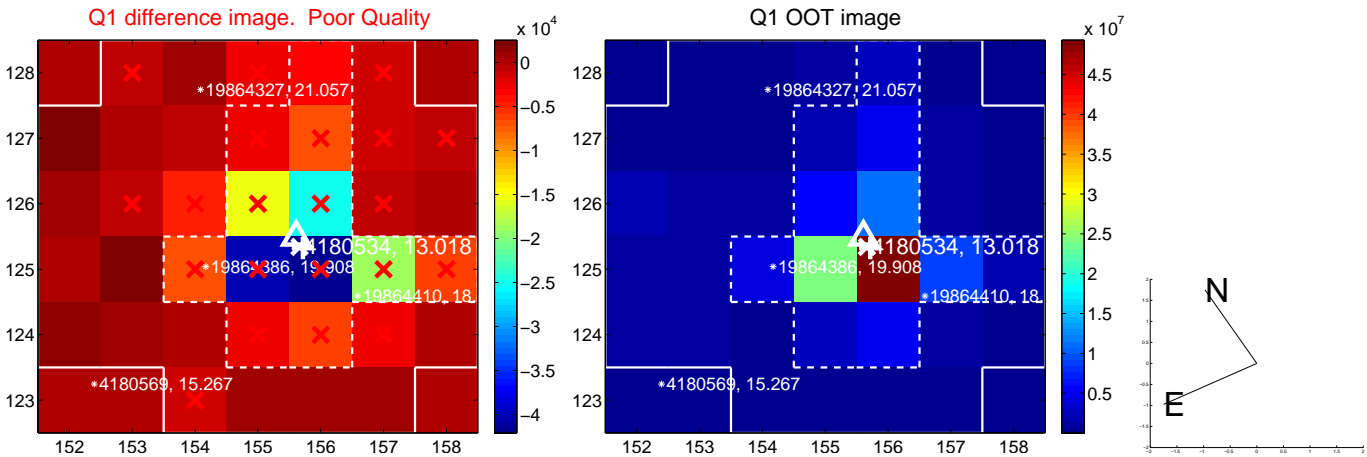


offset from photometric centroids

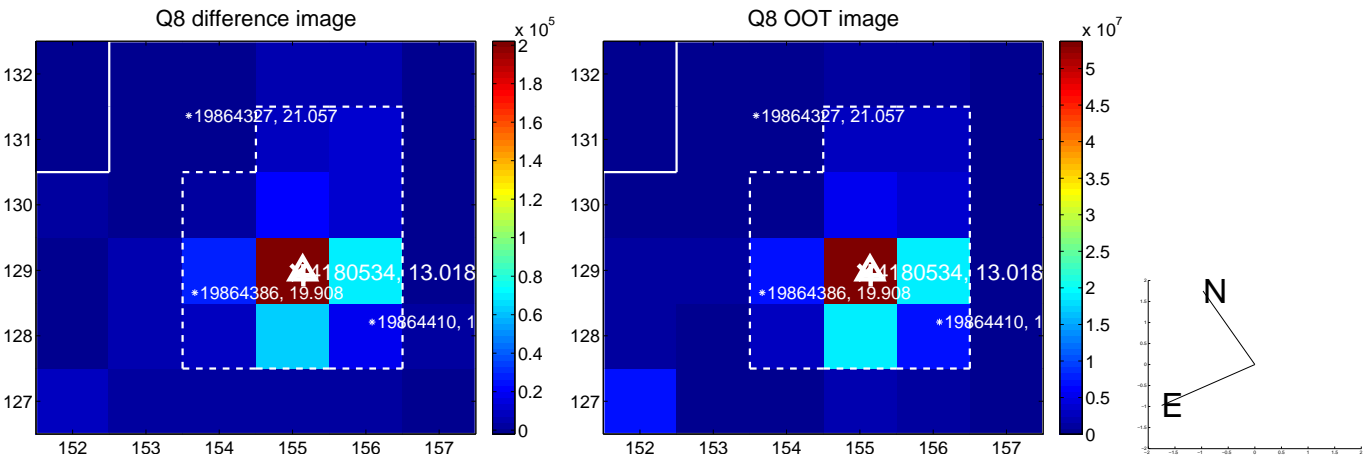
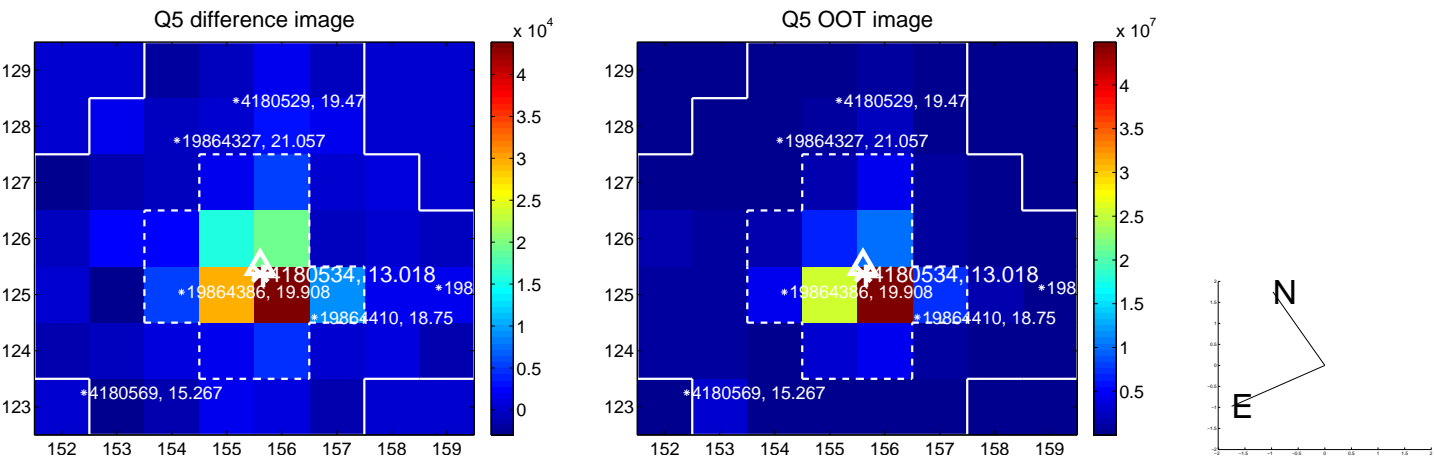


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

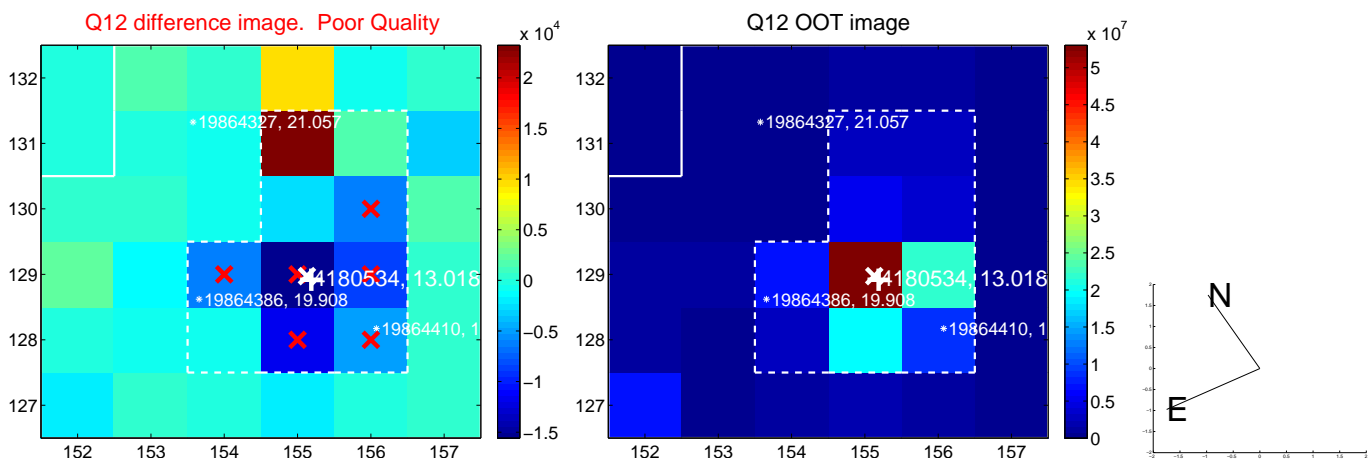
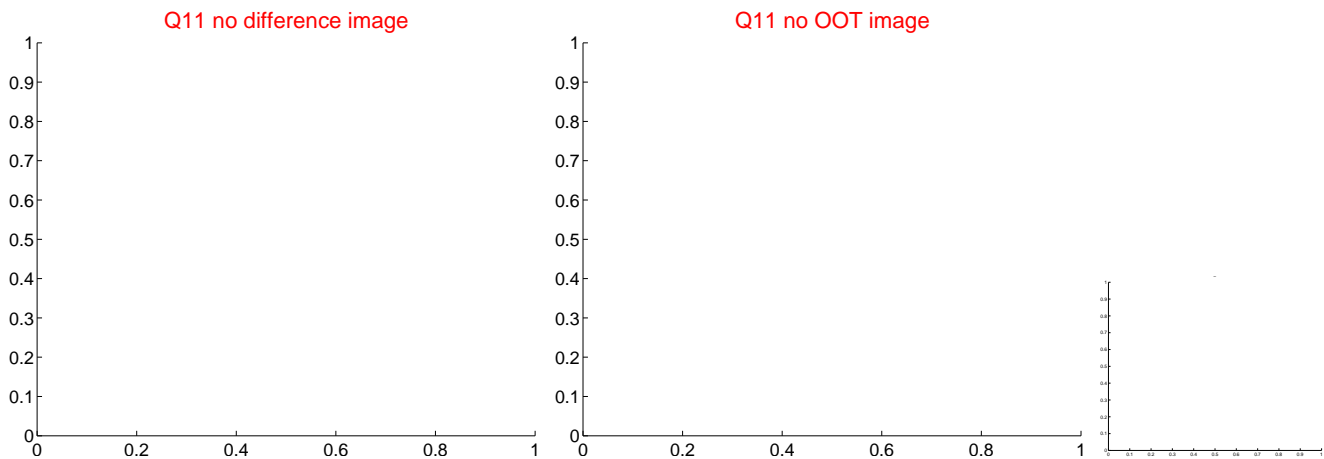
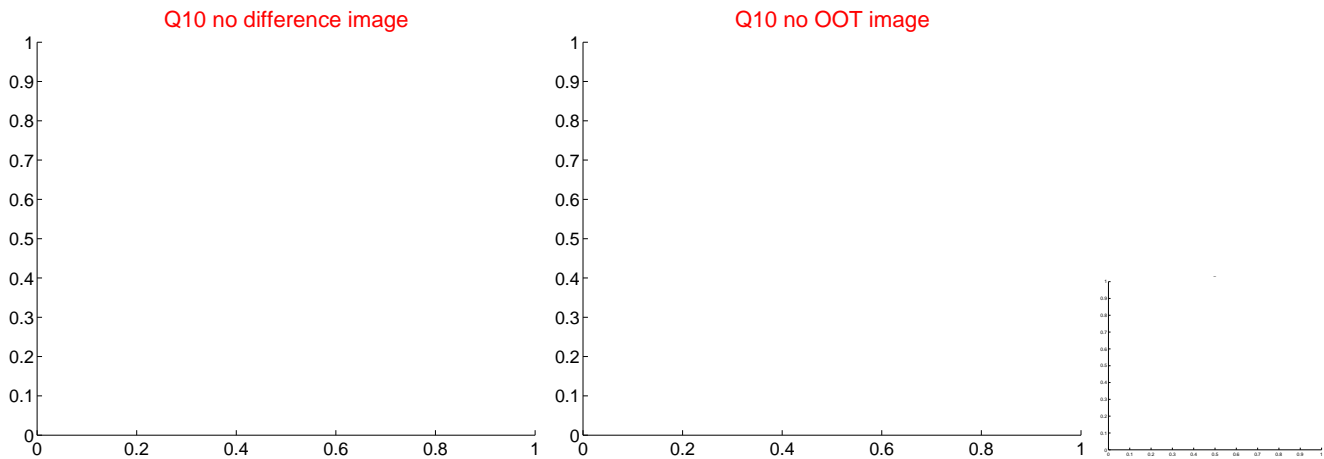
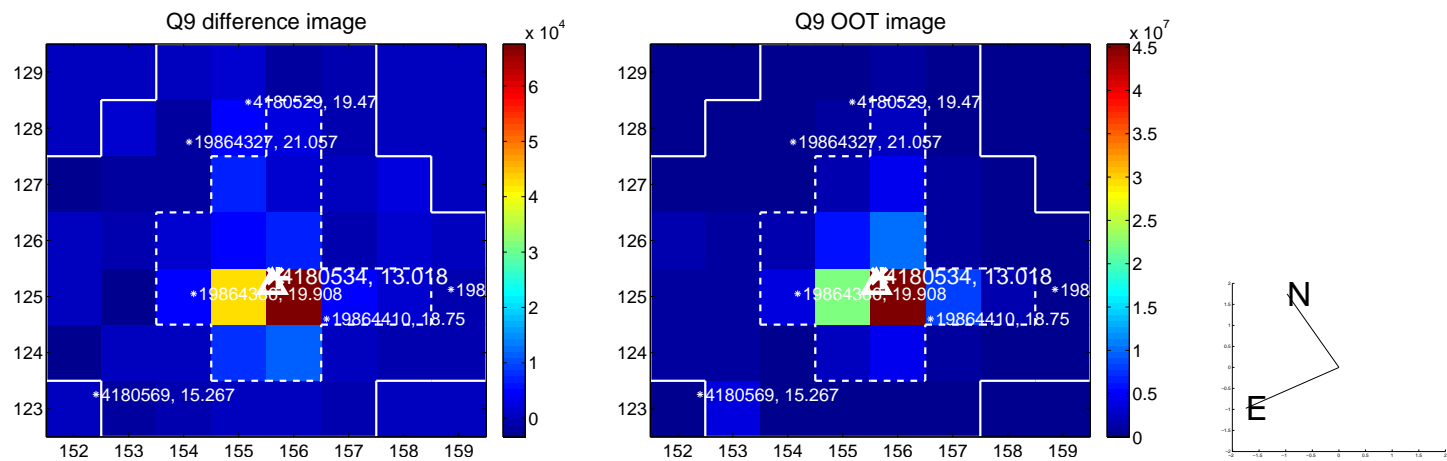
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



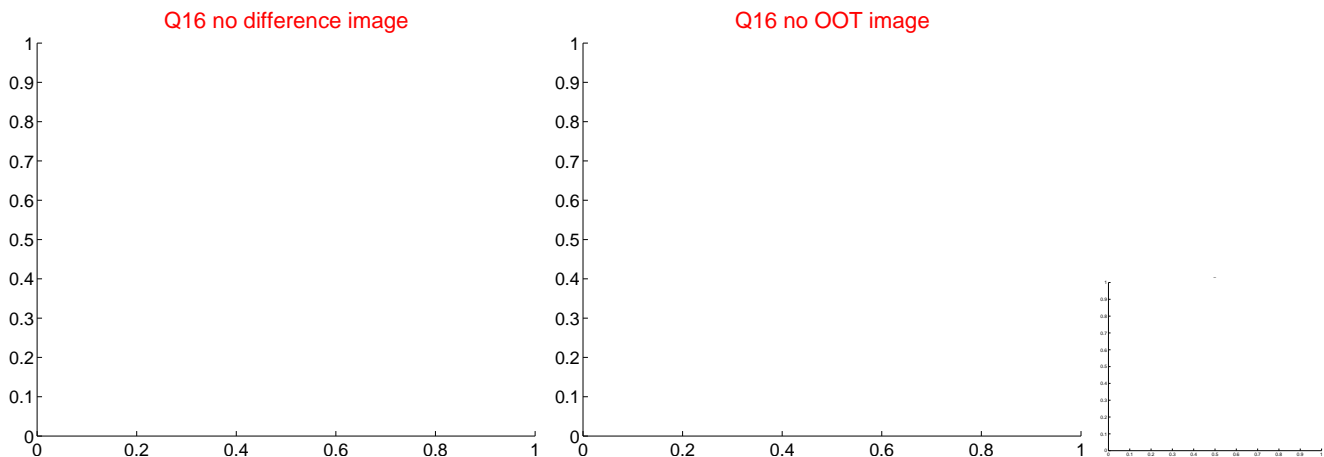
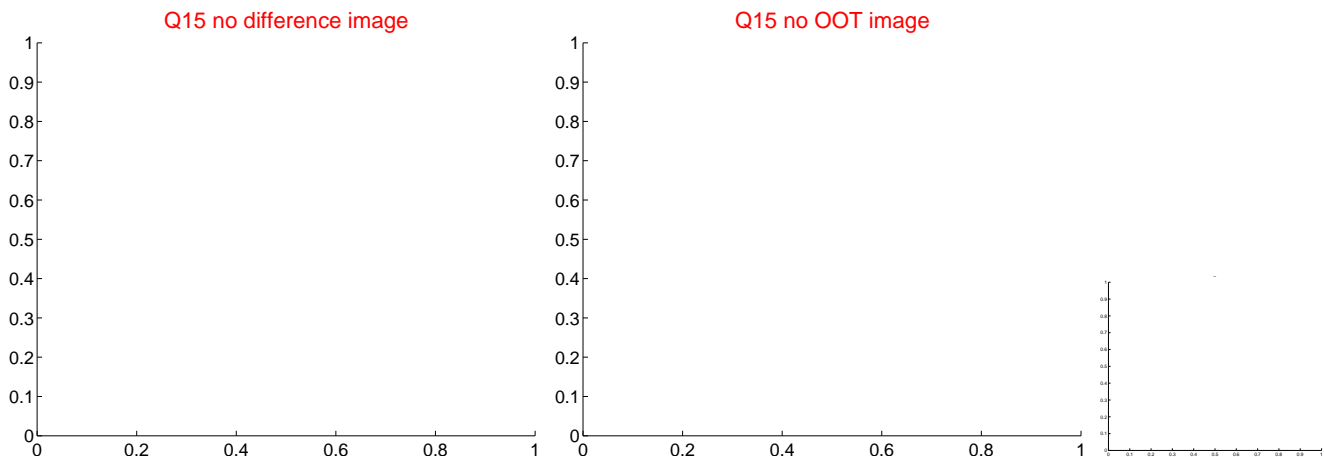
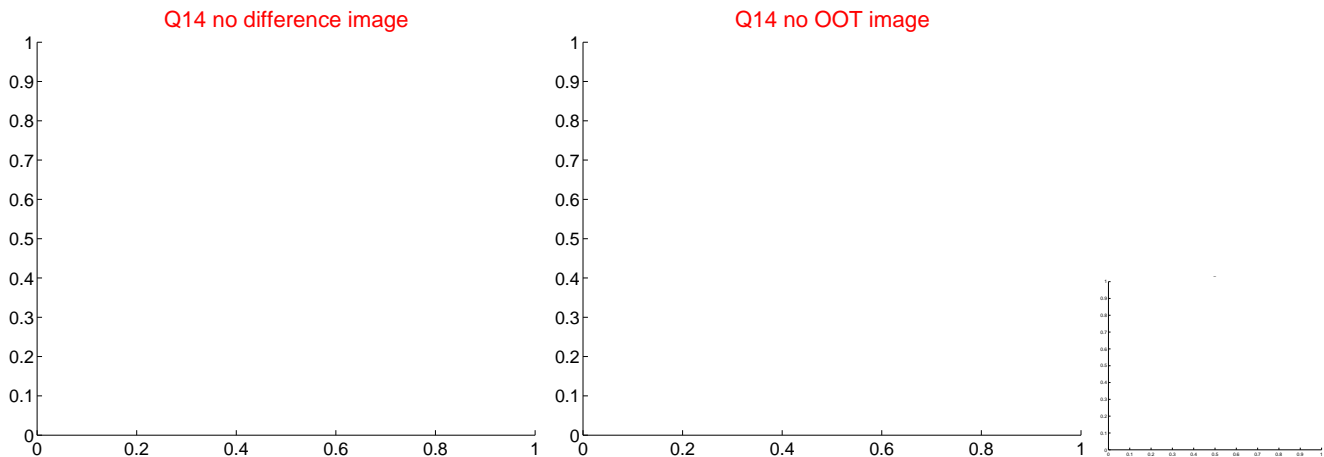
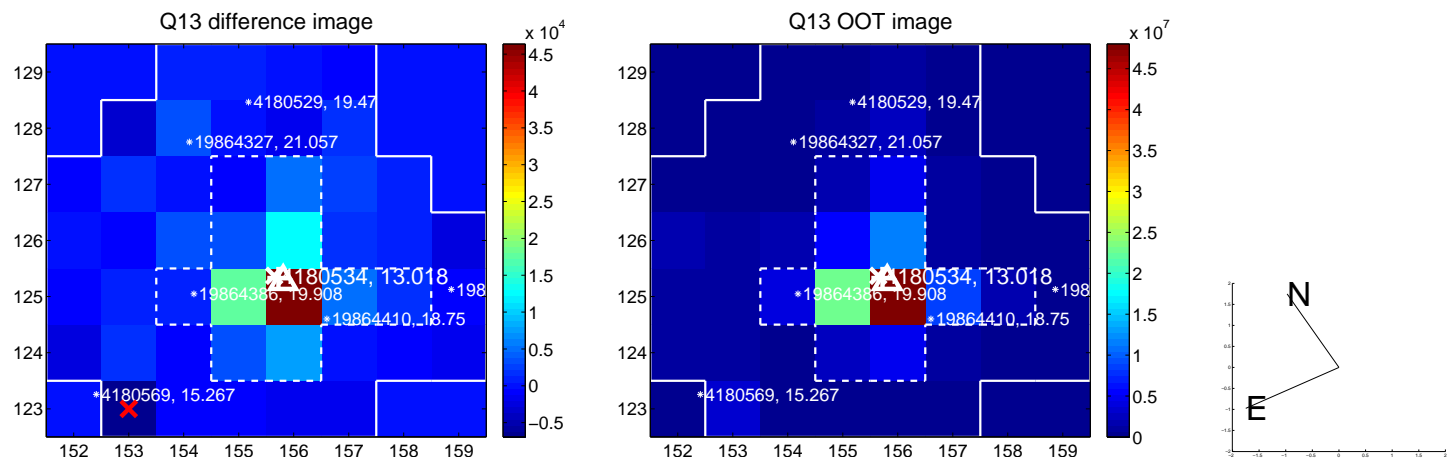
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



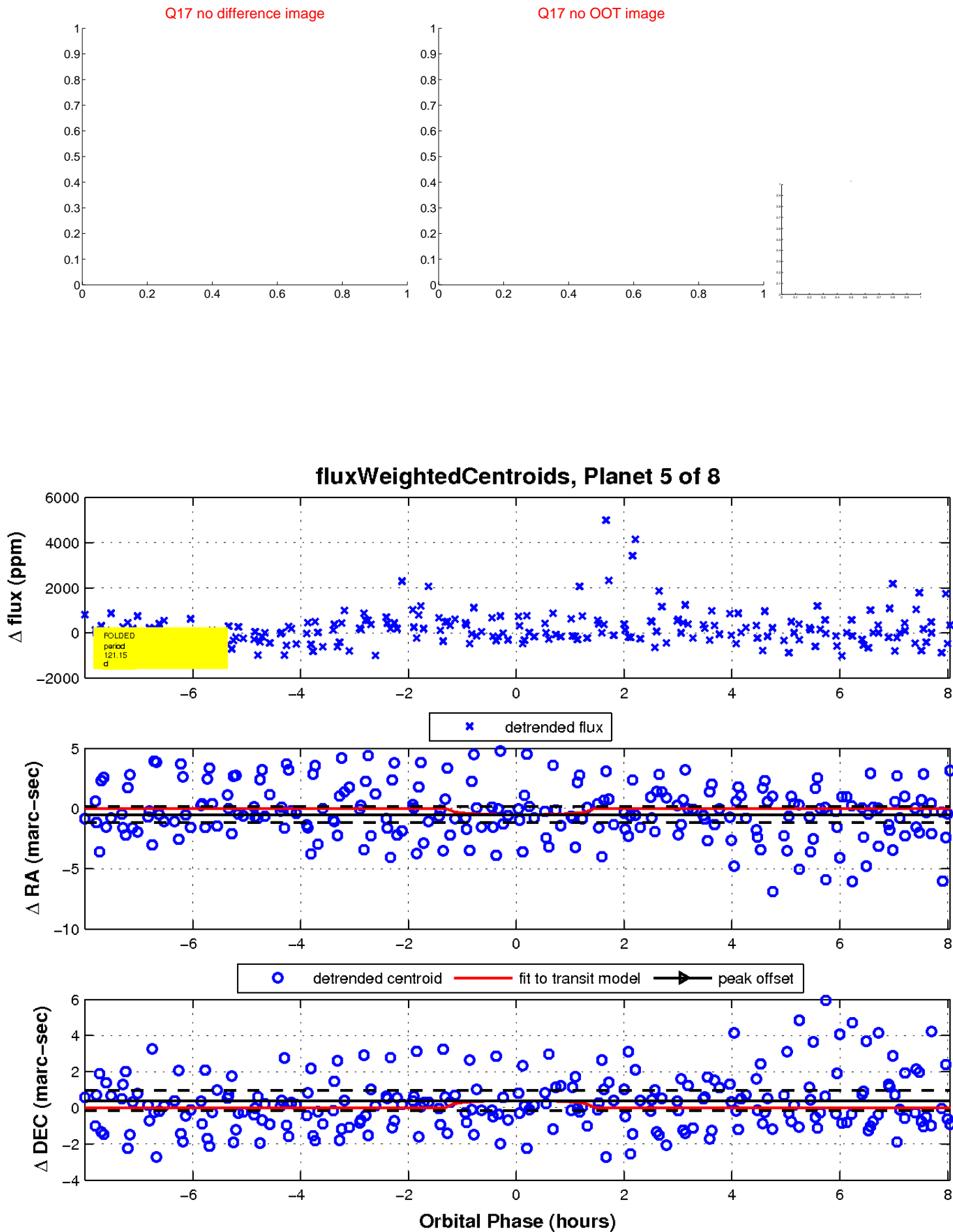
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

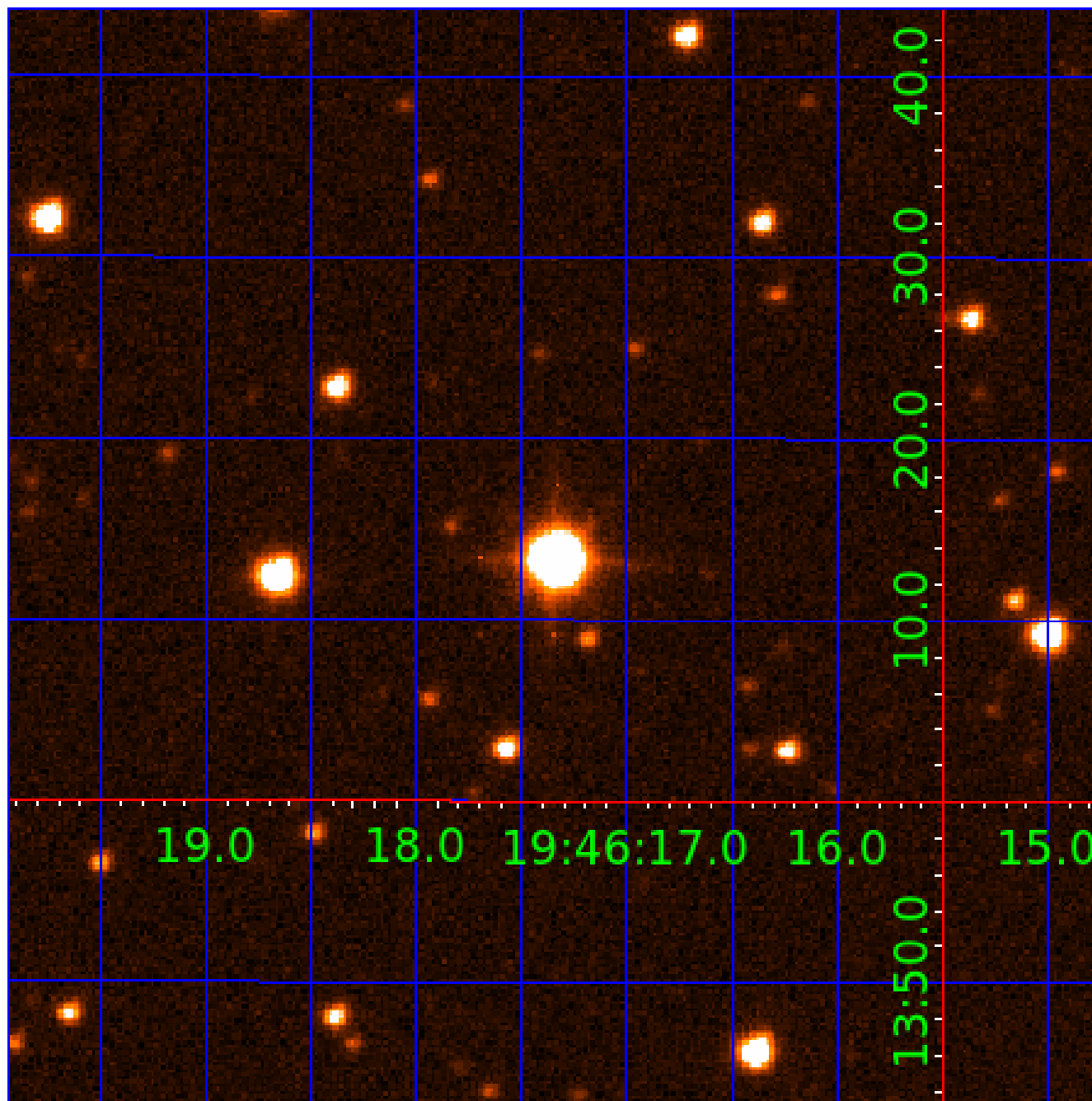


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004180534

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})
004180534-01	OBS	No	355.334762	360.469179	658.8	13.216	18.0	2.6	4.64	4746	11.93	10.71
004180534-02	OBS	No	562.851062	334.612945	392.4	12.289	19.1	1.9	4.64	4746	9.97	5.80
004180534-03	OBS	No	285.772491	330.662843	2324.9	3.579	17.4	12.0	4.64	4746	21.52	14.33
004180534-04	OBS	No	249.076967	216.068287	724.0	7.598	17.4	4.1	4.64	4746	12.28	17.21
004180534-05	OBS	No	121.151942	138.898616	495.5	2.683	13.5	5.0	4.64	4746	9.94	44.99
004180534-06	OBS	No	229.074370	290.146696	939.6	5.531	15.3	5.5	4.64	4746	13.67	19.24
004180534-07	OBS	No	270.534734	375.356328	1230.1	3.889	14.8	7.6	4.64	4746	16.17	15.41
004180534-08	OBS	No	651.020636	160.139671	878.0	8.636	11.4	4.2	4.64	4746	14.19	4.78

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004180534-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004180534-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004180534-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004180534-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
004180534-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS
004180534-06	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—INCONSISTENT_TRANS
004180534-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
004180534-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

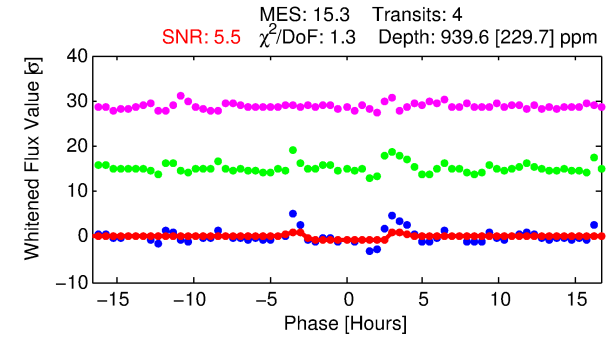
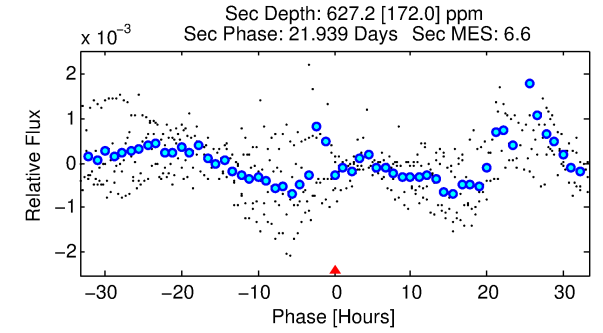
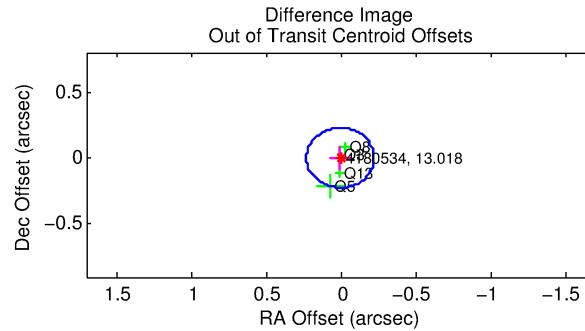
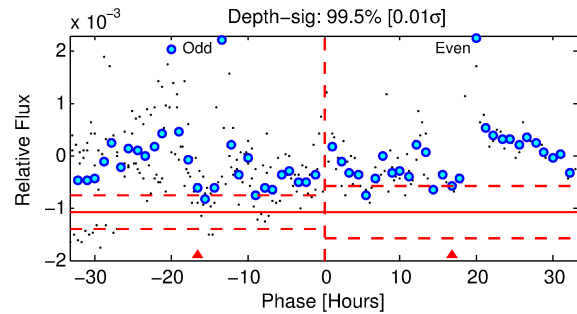
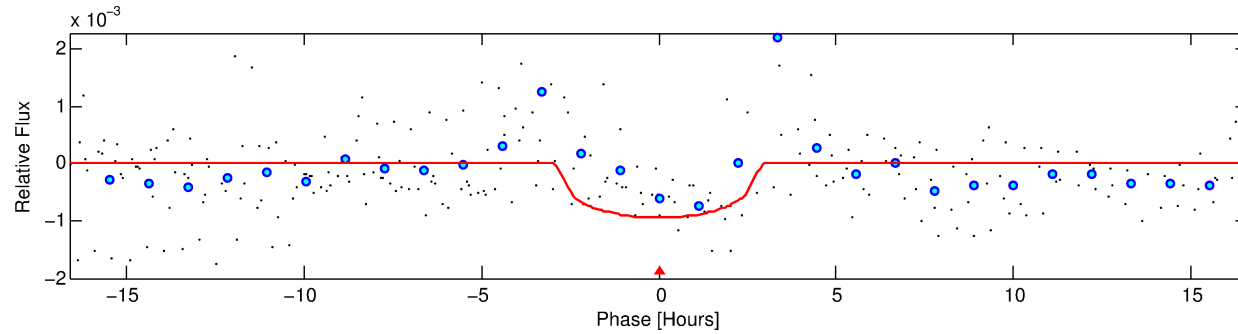
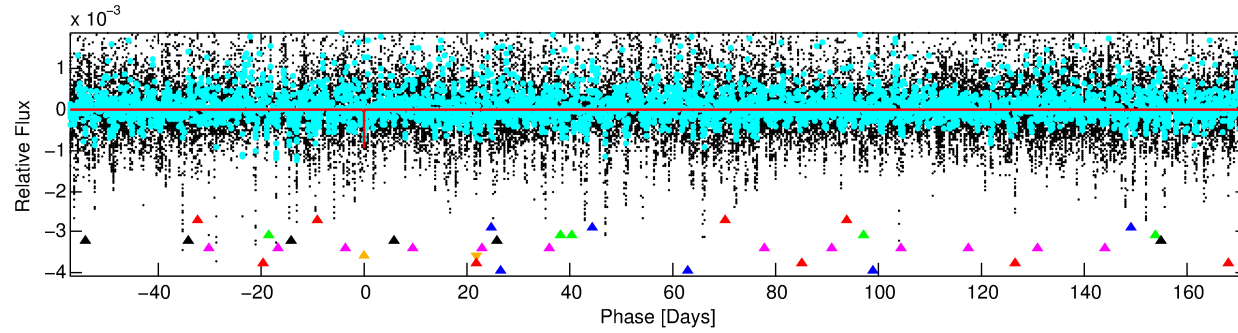
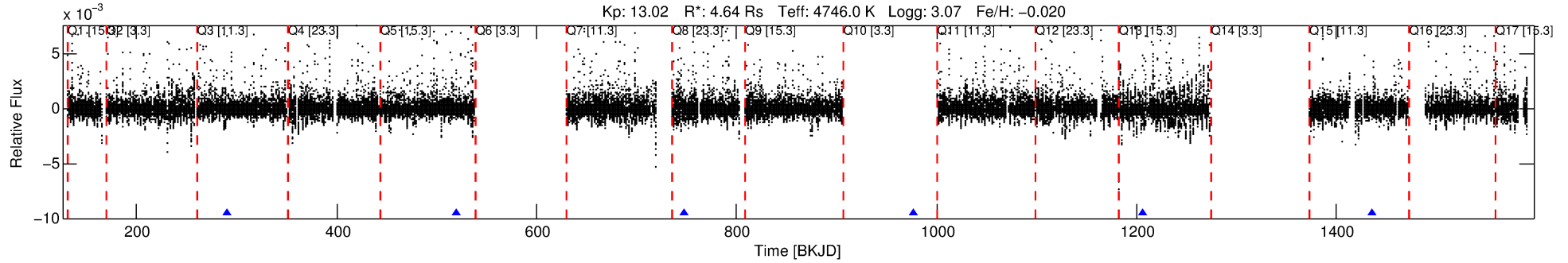
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004180534-06

No Significant Match Found

DV One-Page Summary

KIC: 4180534 Candidate: 6 of 8 Period: 229.074 d



DV Fit Results:

Period = 229.07437 [0.00362] d
Epoch = 290.1467 [0.0083] BKJD
Rp/R* = 0.0270 [0.0543]
a/R* = 324.90 [2068.98]
b = 0.02 [326.13]
Seff = 19.24 [15.69]
Teq = 534 [109] K
Rp = 13.67 [29.09] Re
a = 0.7140 [0.4037] AU
Ag = 941.24 [3876.69] [0.24 σ]
Teffp = 4573 [4620] K [0.87 σ]

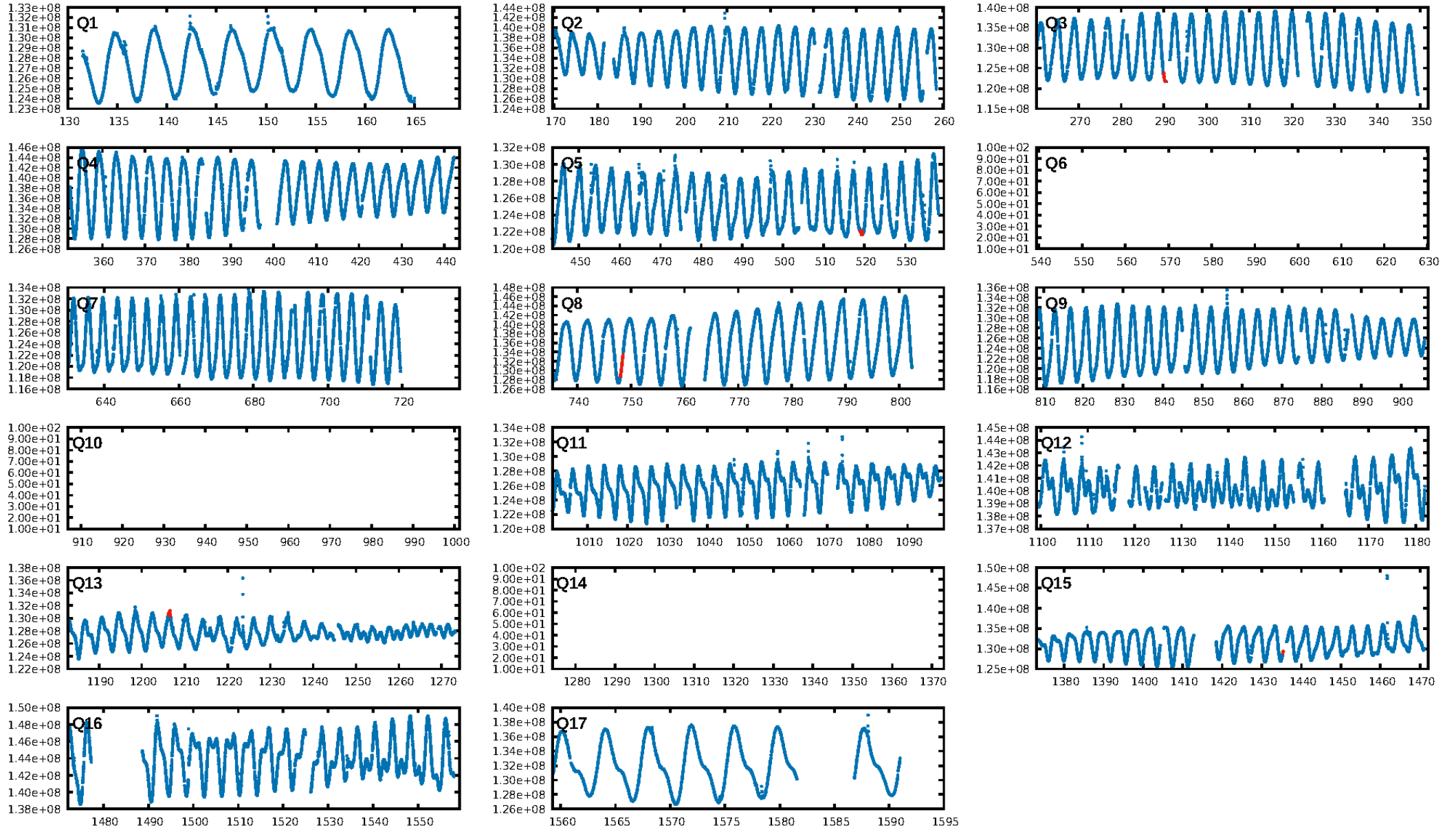
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [421.35 σ]
LongPeriod-sig: 100.0% [51.08 σ]
ModelChiSquare2-sig: 58.8%
ModelChiSquareGof-sig: 84.4%
Bootstrap-pfa: 9.73e-13
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -2.919
Centroid-sig: 0.3%
Centroid-so: 1.061 arcsec [1.30 σ]
OotOffset-rm: 0.003 arcsec [0.05 σ]
KicOffset-rm: 0.320 arcsec [4.07 σ]
OotOffset-st: 0/1/1/2 [4]
KicOffset-st: 0/1/1/2 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 1.00 [4/4]

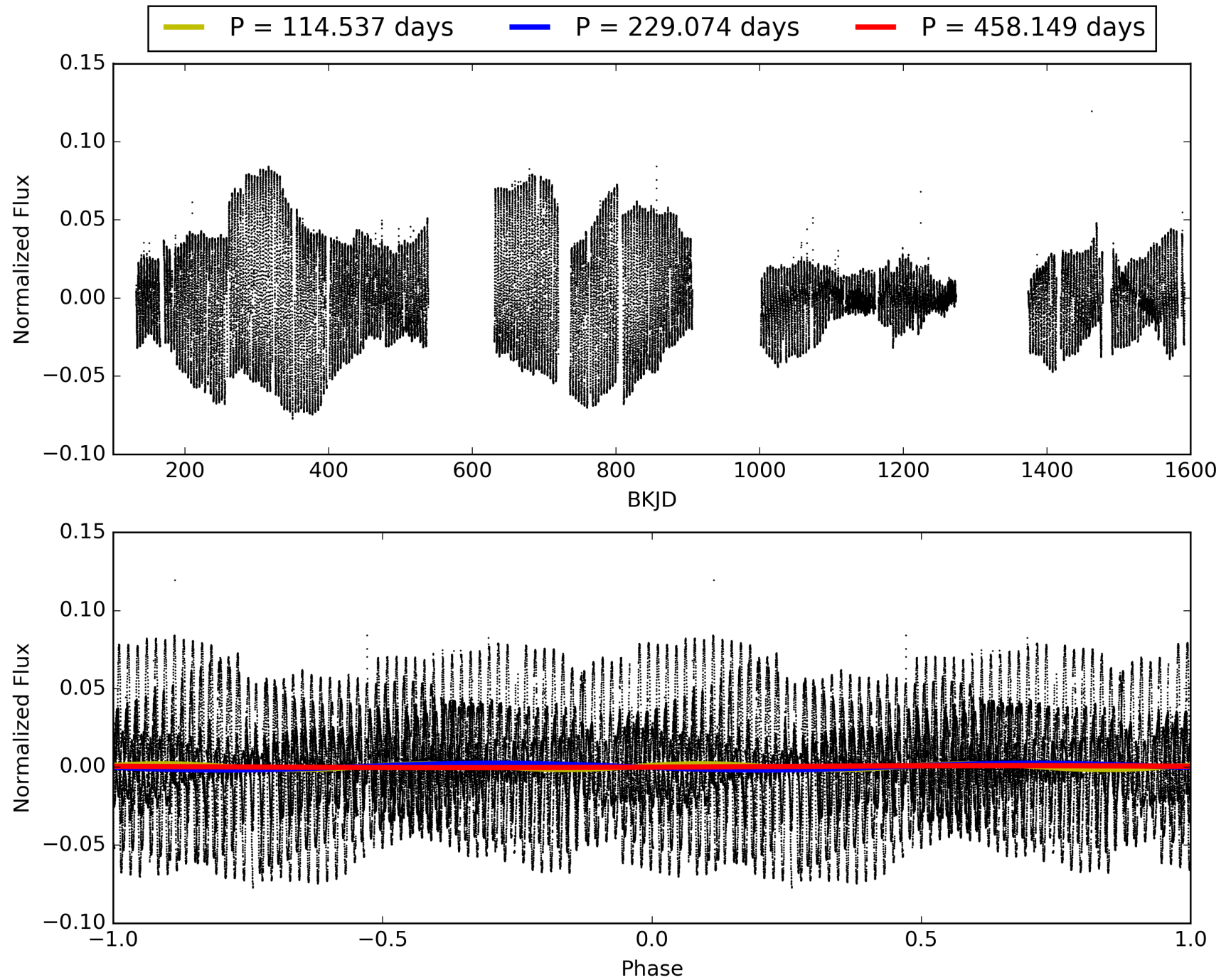
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:38:24 Z

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

TCE 004180534-06, PDC Light Curves

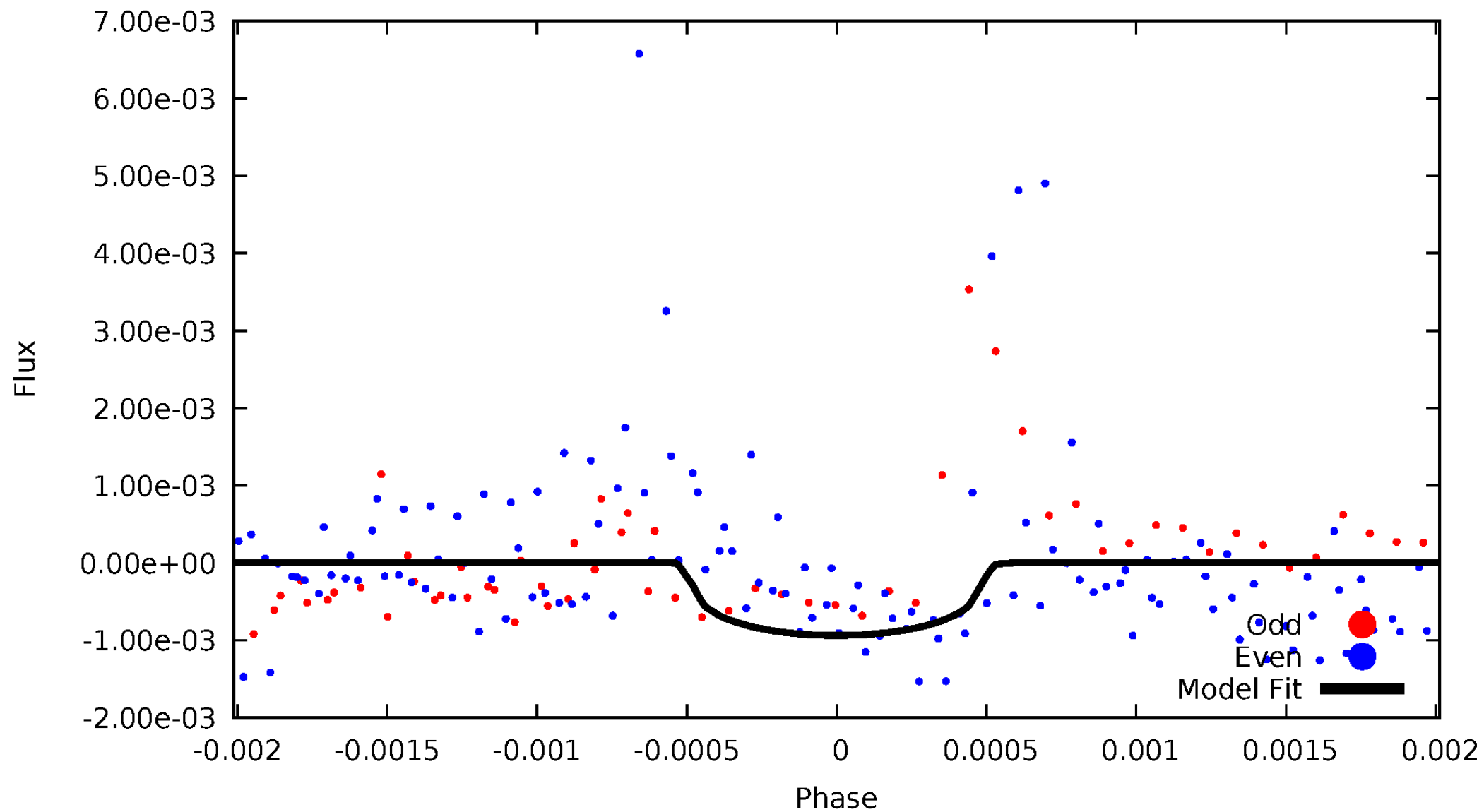


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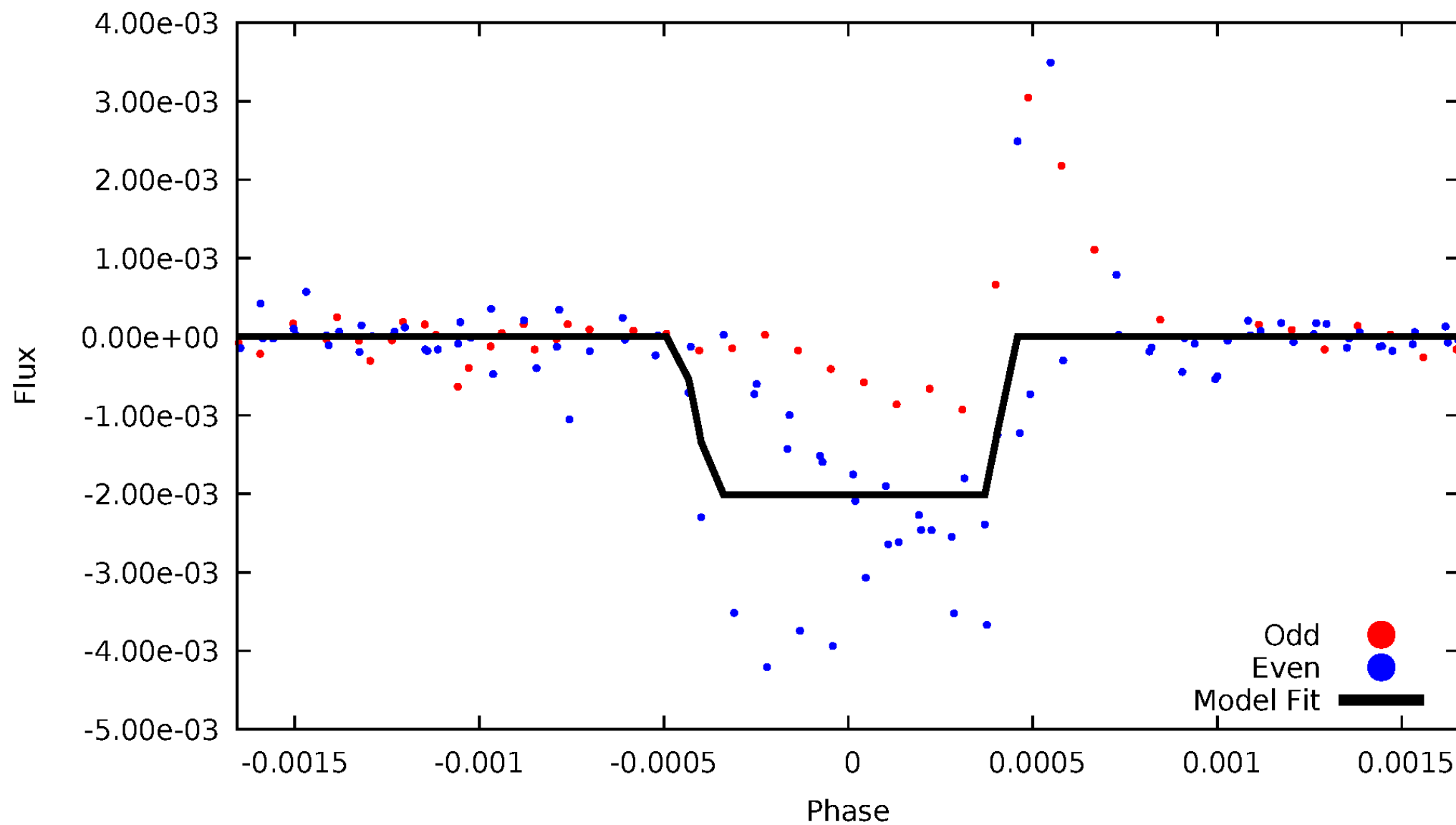
DV Odd/Even

TCE 004180534-06



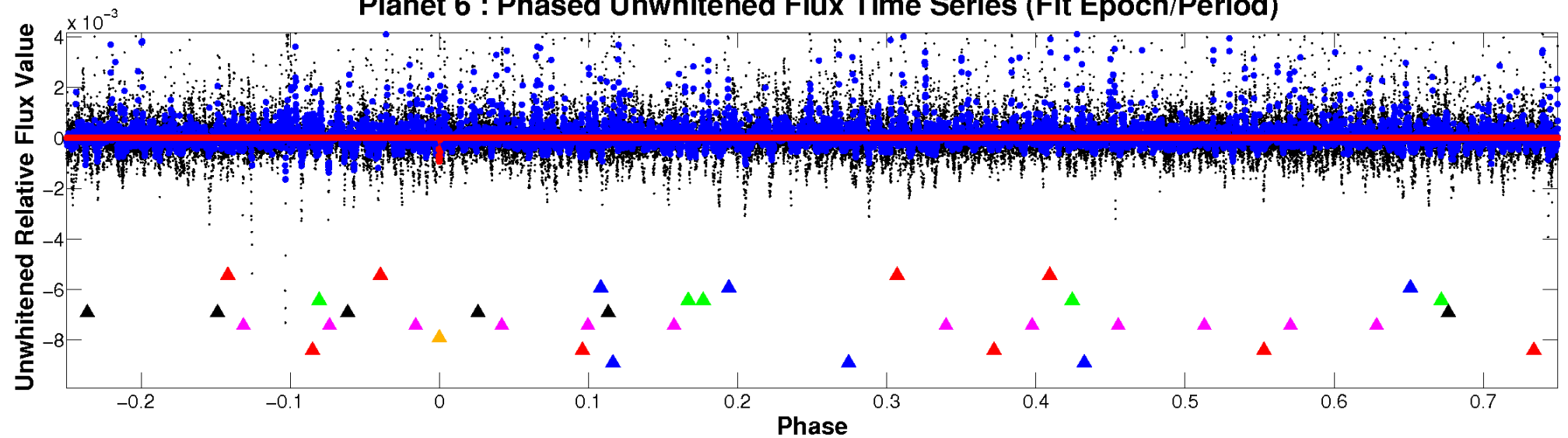
ALT Odd/Even

TCE 004180534-06

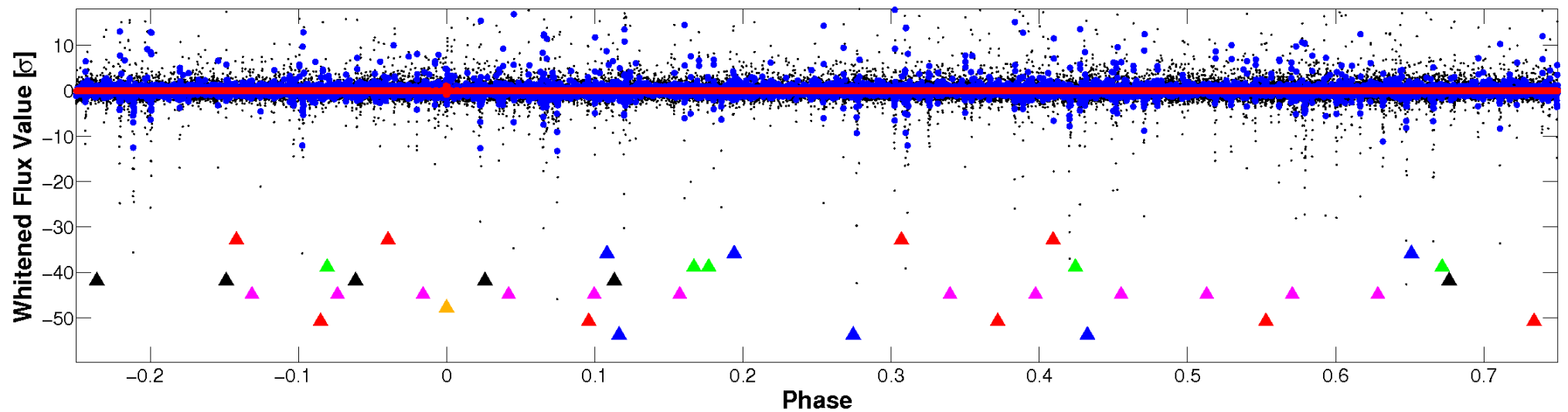


Non-Whitened Vs. Whitened Light Curve

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

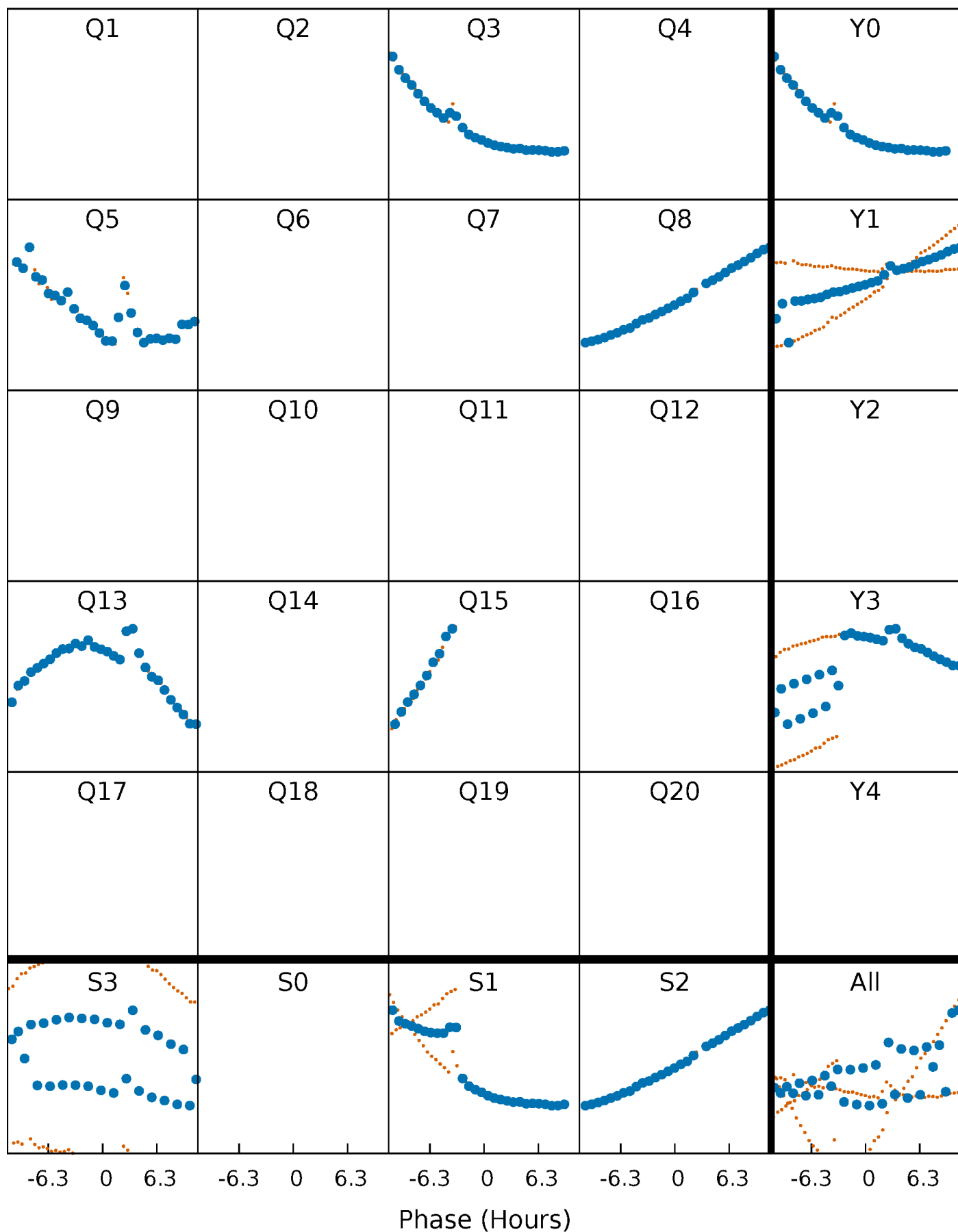


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



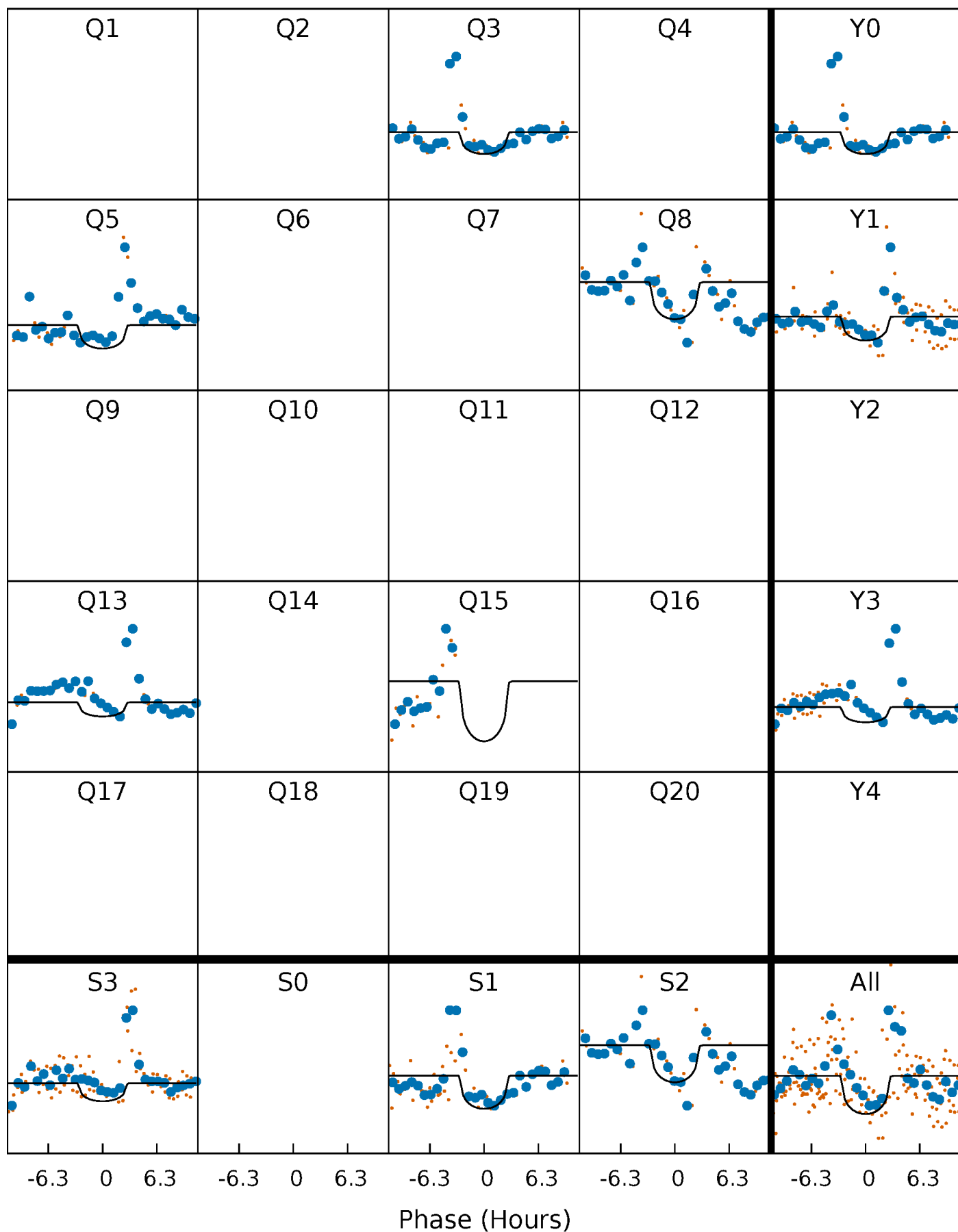
PDC Quarter-Phased Transit Curves

TCE 004180534-06 P=229.074370 Days $T_0=290.146696$ (BKJD)



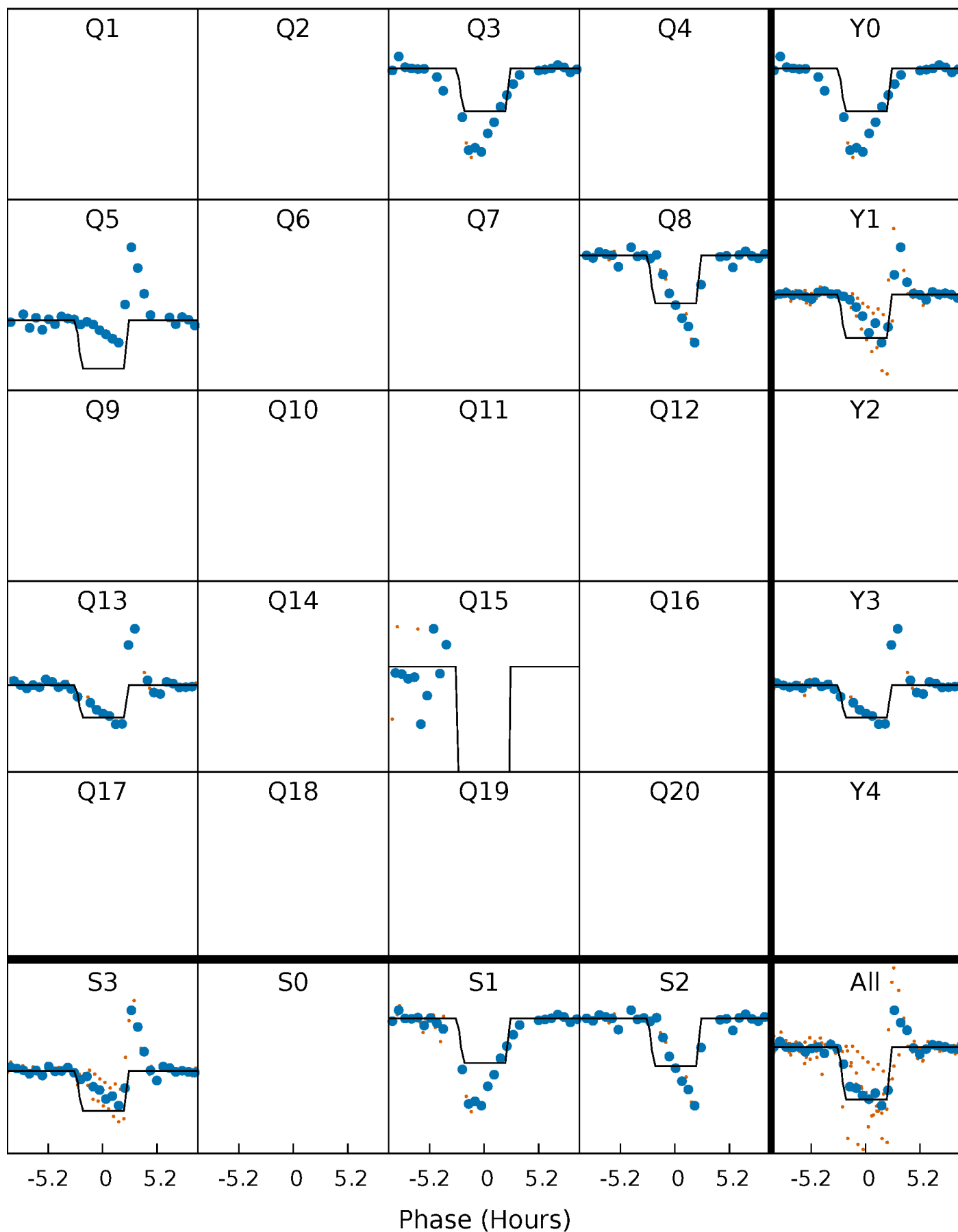
DV Quarter-Phased Transit Curves

TCE 004180534-06 $P=229.074370$ Days $T_0=290.146696$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

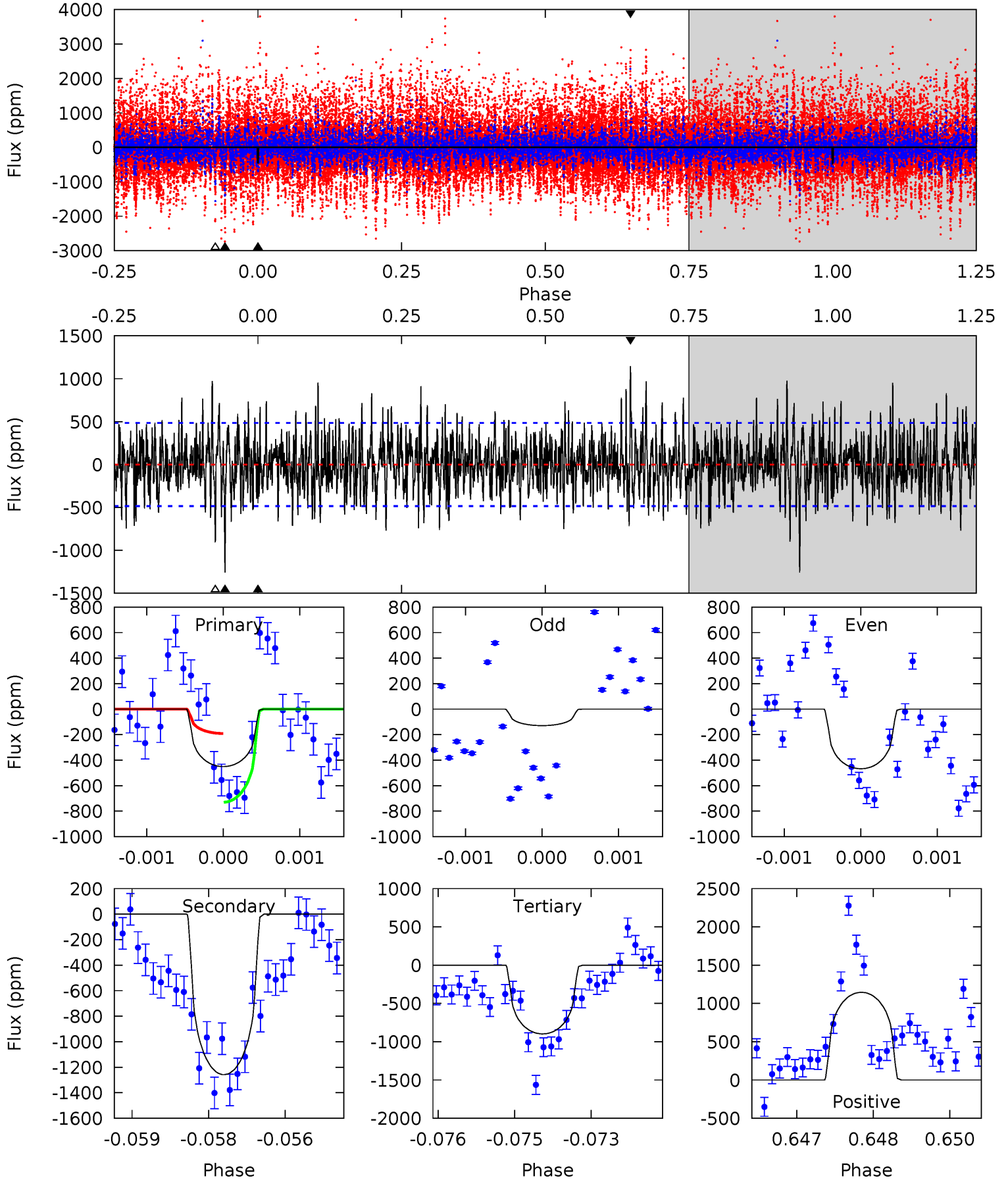
TCE 004180534-06 P=229.082381 Days $T_0=290.128109$ (BKJD)



DV Model-Shift Uniqueness Test

004180534-06, P = 229.074370 Days, E = 61.072326 Days

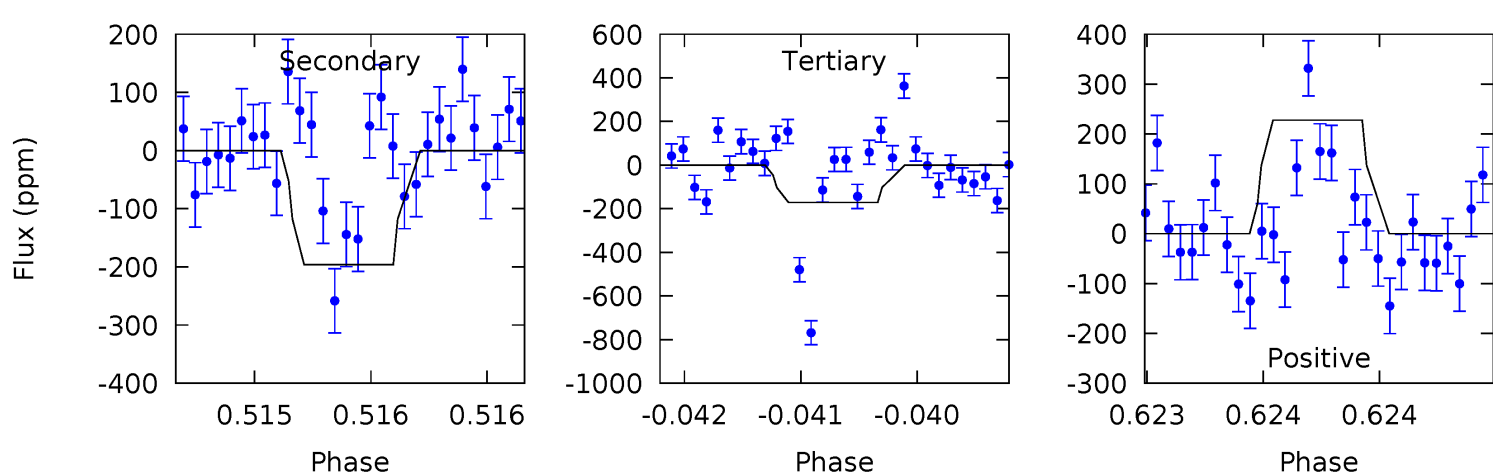
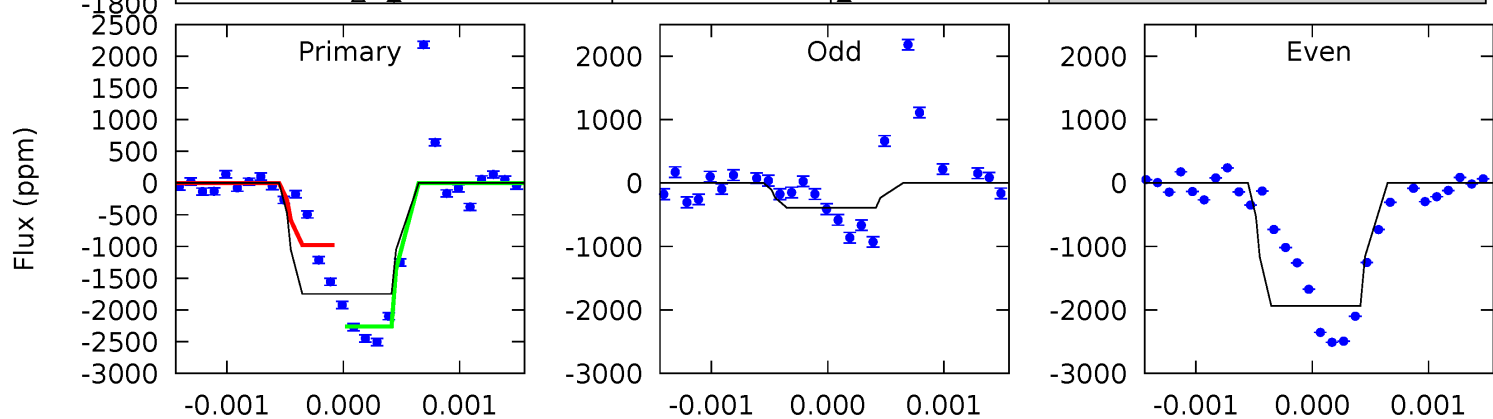
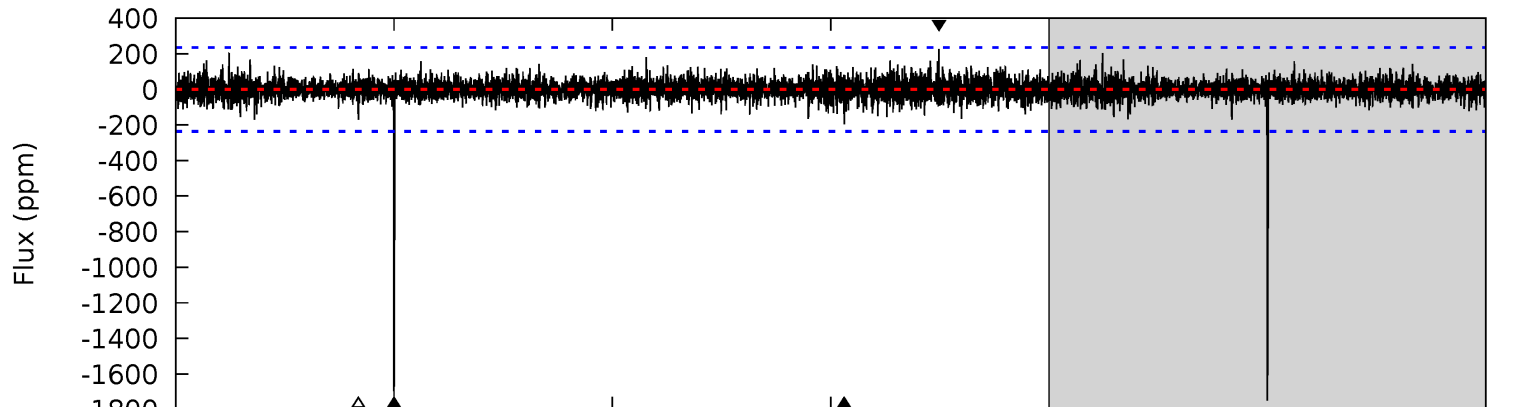
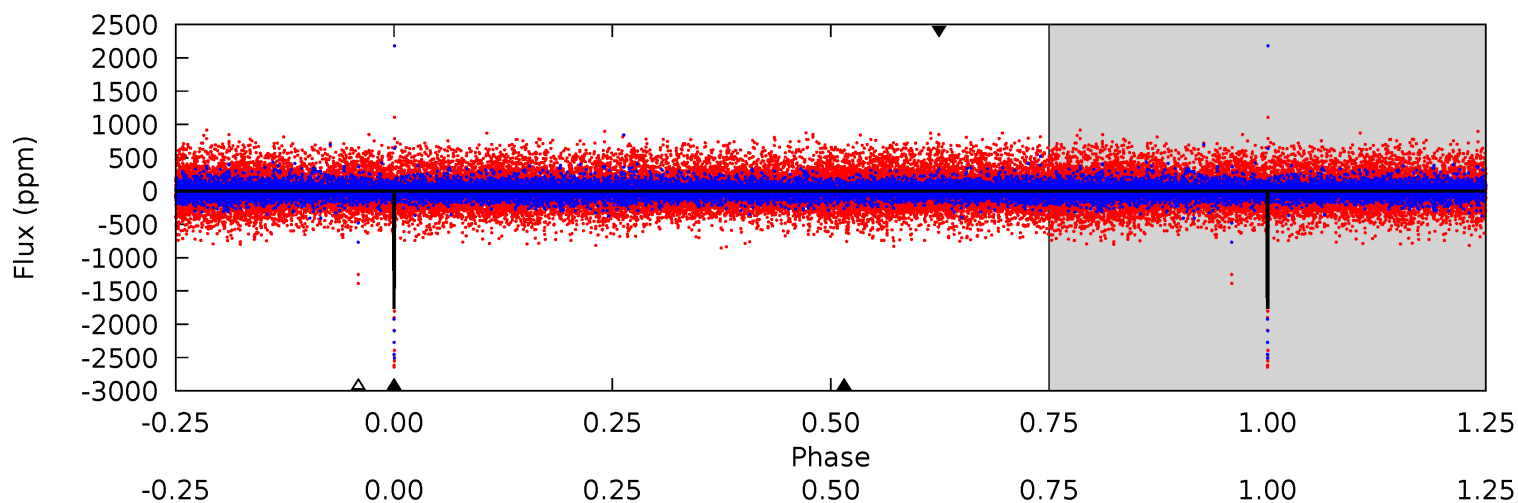
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.04	14.1	10.1	12.8	5.43	3.26	2.91	-5.01	-7.78	4.03	1.26	1.49	0.97	0.48	3.05



Alt Model-Shift Uniqueness Test

004180534-06, P = 229.082381 Days, E = 61.045728 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.5	4.54	3.96	5.28	5.47	3.32	0.95	36.6	35.3	0.58	-0.73	19.8	0.97	0.12	0



Stellar Parameters For KIC 004180534

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4746^{+131}_{-95}	$3.070^{+0.434}_{-0.355}$	$-0.020^{+0.250}_{-0.200}$	$4.645^{+3.183}_{-1.714}$	$0.925^{+0.288}_{-0.157}$	$0.013^{+0.037}_{-0.009}$
	+3%/-2%	+14%/-12%	+1250%/-1000%	+69%/-37%	+31%/-17%	+288%/-72%
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 004180534-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1258 ± 89	$25.36^{+24.57}_{-17.33}$	745^{+114}_{-86}	4145^{+2472}_{-742}	573^{+4948}_{-422}
Alt.	-196 ± 43	$27.36^{+27.72}_{-17.70}$	744^{+119}_{-84}	3000^{+1190}_{-482}	70^{+534}_{-53}

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

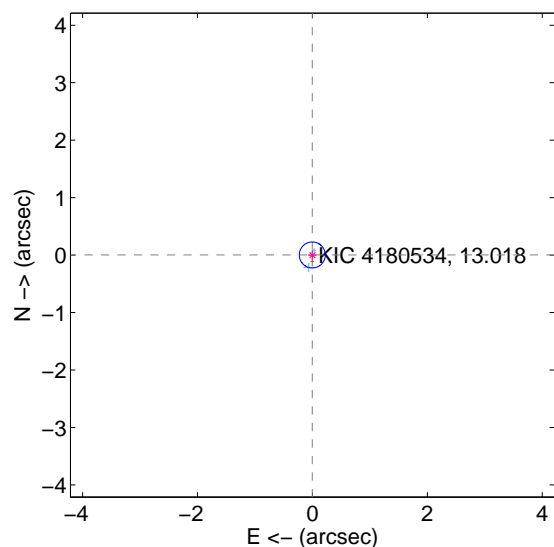
Supplemental centroid analysis for 004180534-06. Kepler magnitude: 13.02. Transit SNR 5.52

There are 3 quarters with good PRF difference image offsets

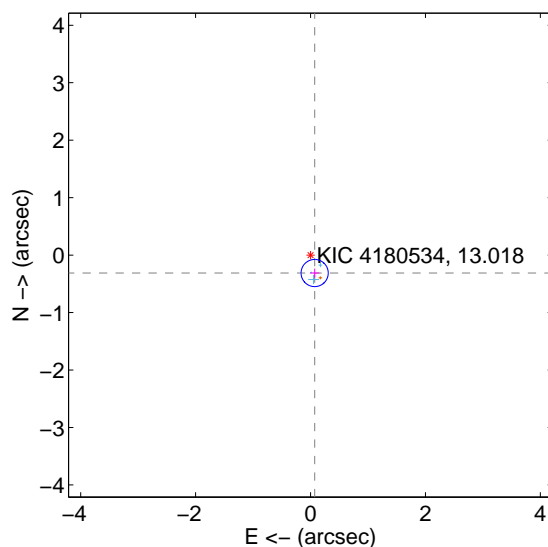
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.003 ± 0.075	0.05	0.002 ± 0.067	0.002 ± 0.083
PRF-fit source offset from KIC position	0.320 ± 0.079	4.07	-0.072 ± 0.083	-0.312 ± 0.079
photometric centroid source offset	1.06 ± 0.82	1.30	-0.75 ± 0.94	0.75 ± 0.67

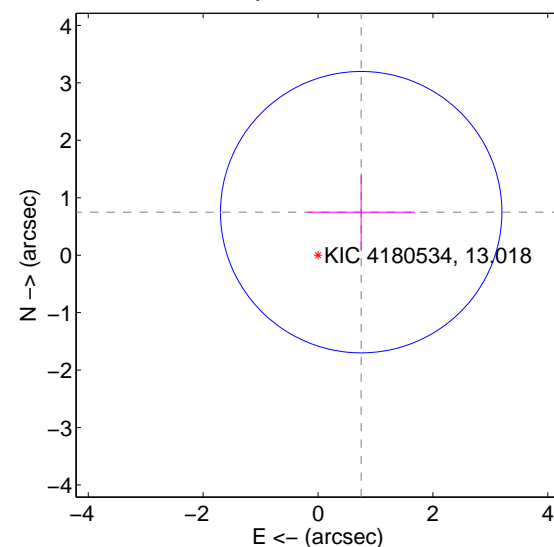
offset from difference PRF-fit to OOT PRF-fit



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.

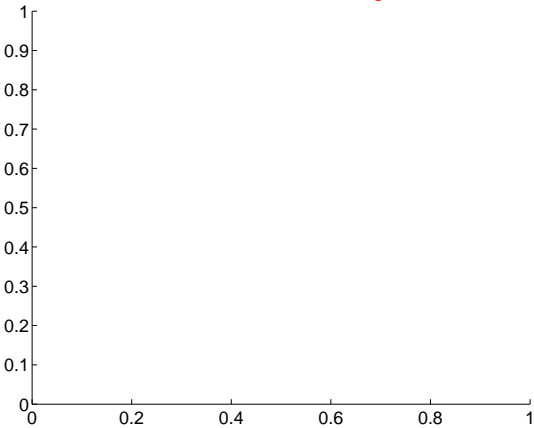
Q1 no difference image



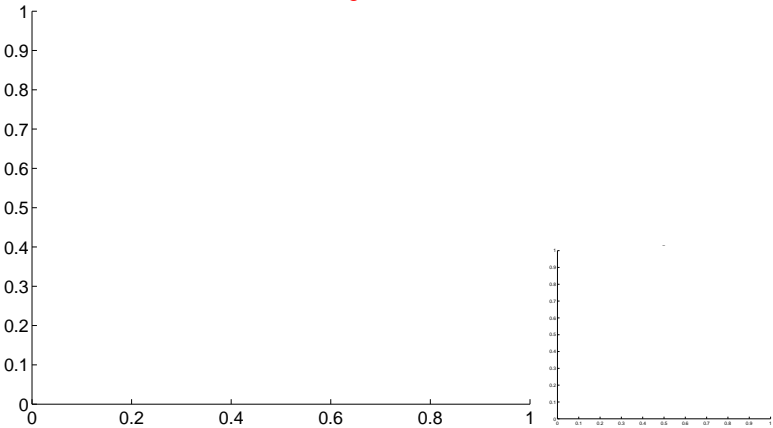
Q1 no OOT image



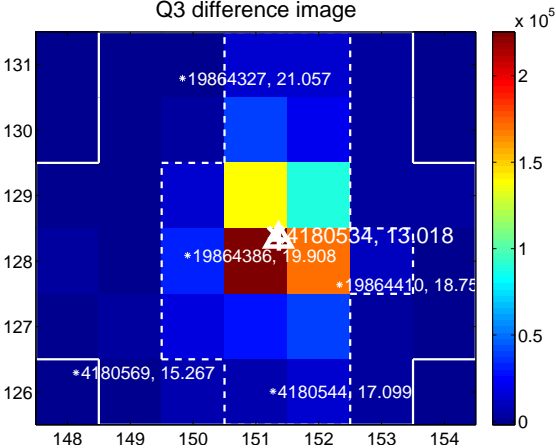
Q2 no difference image



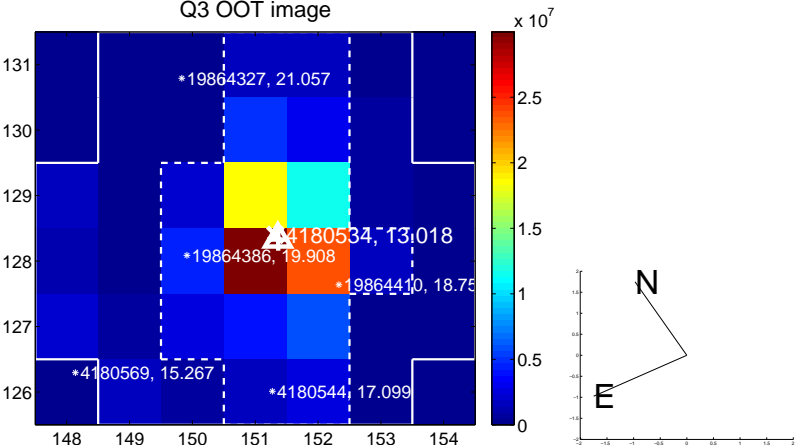
Q2 no OOT image



Q3 difference image



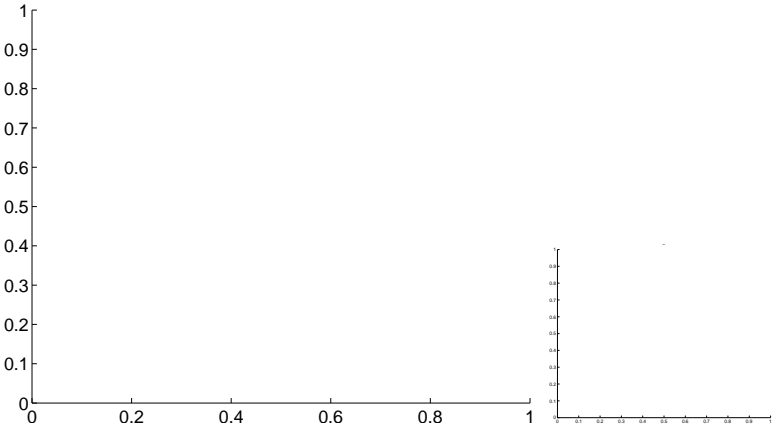
Q3 OOT image



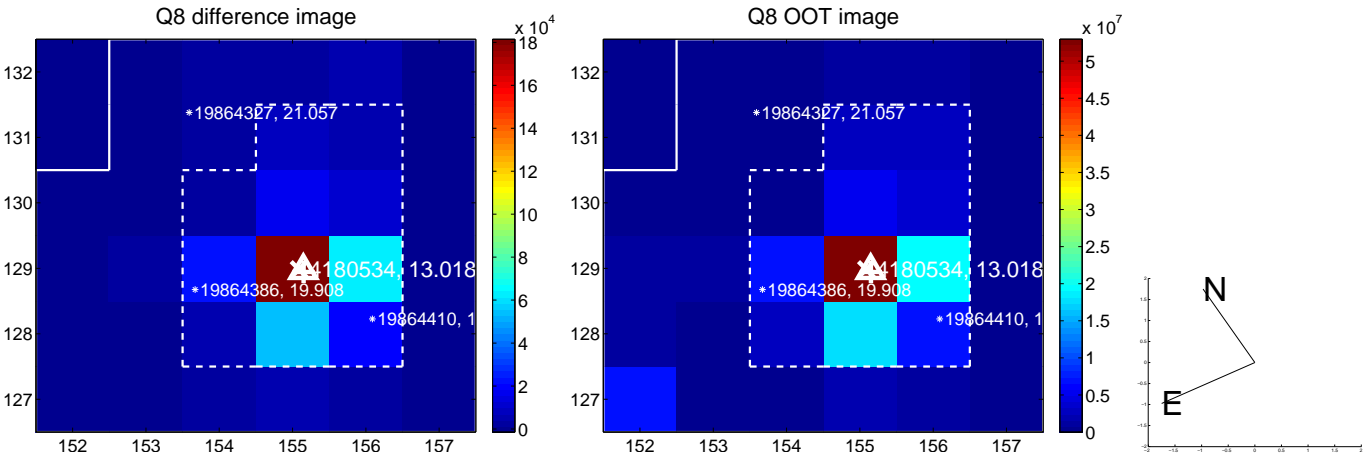
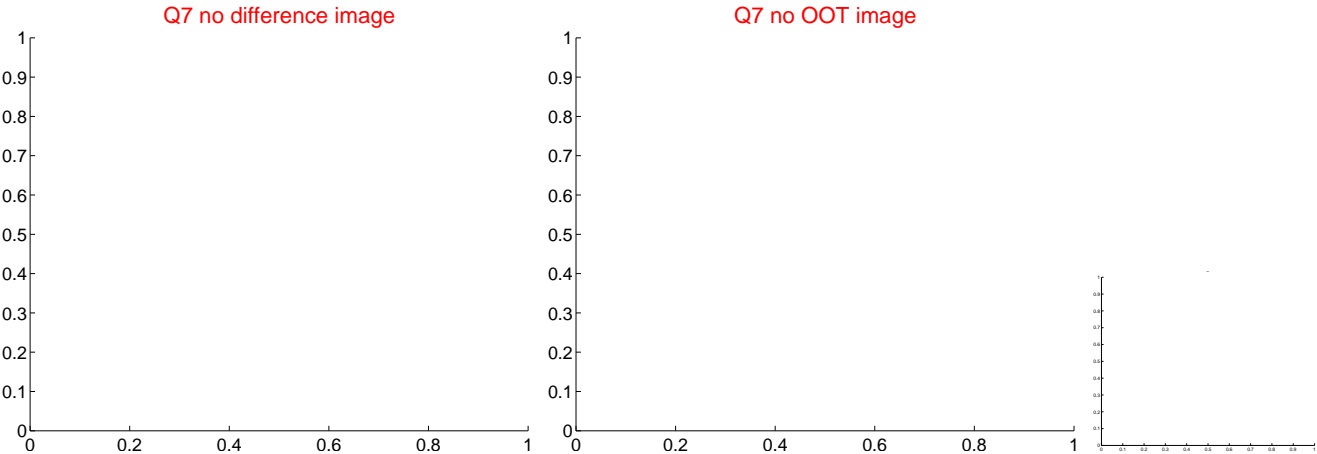
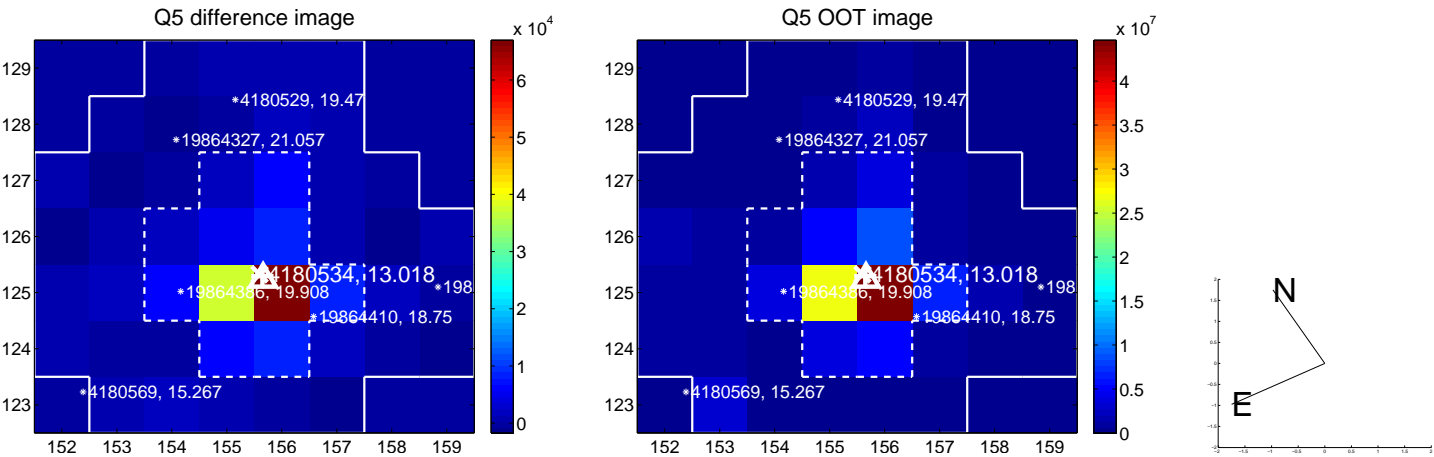
Q4 no difference image



Q4 no OOT image



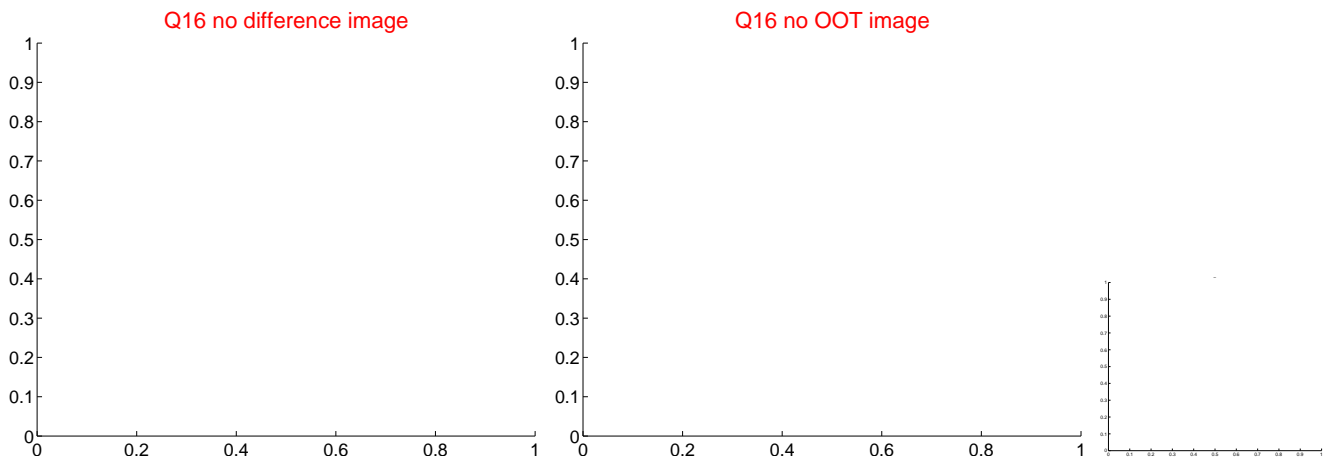
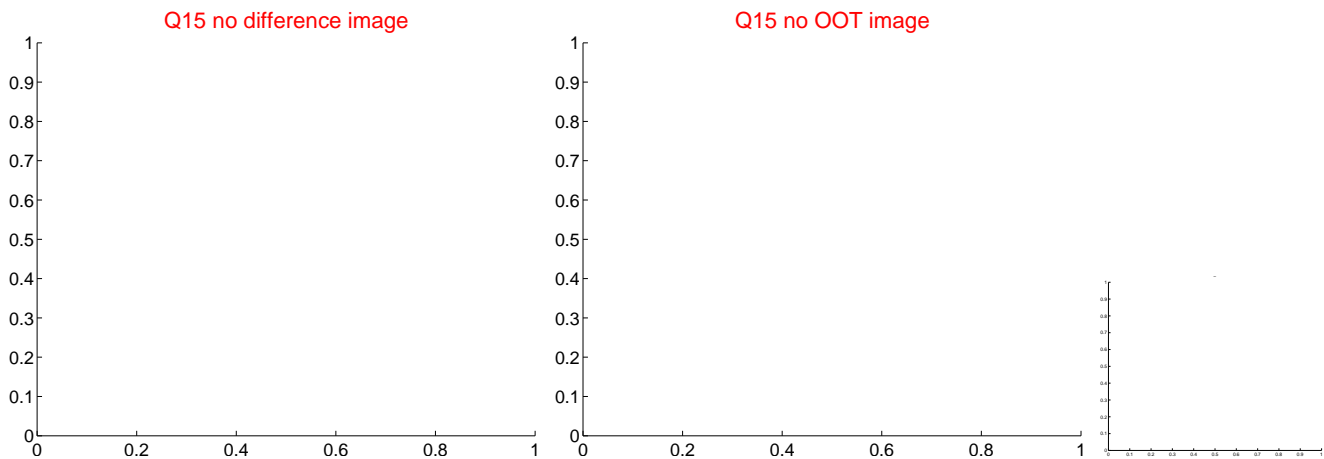
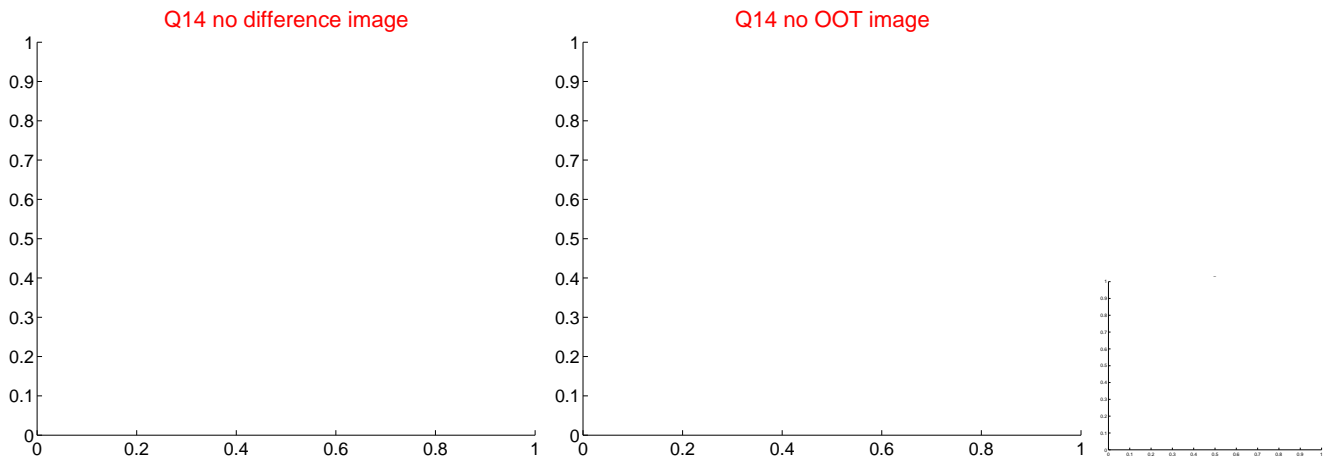
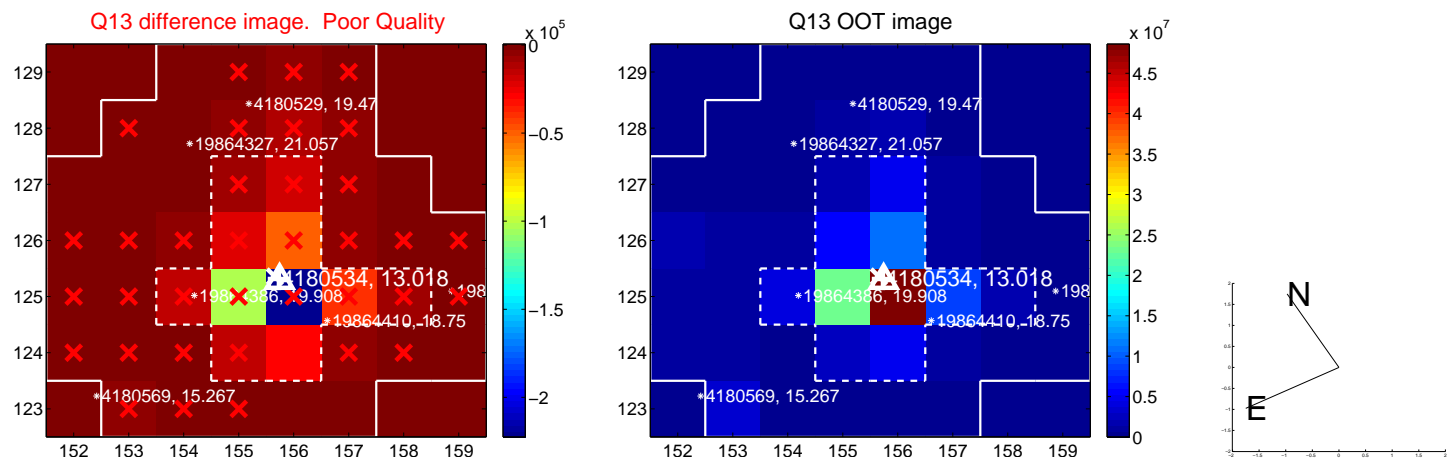
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



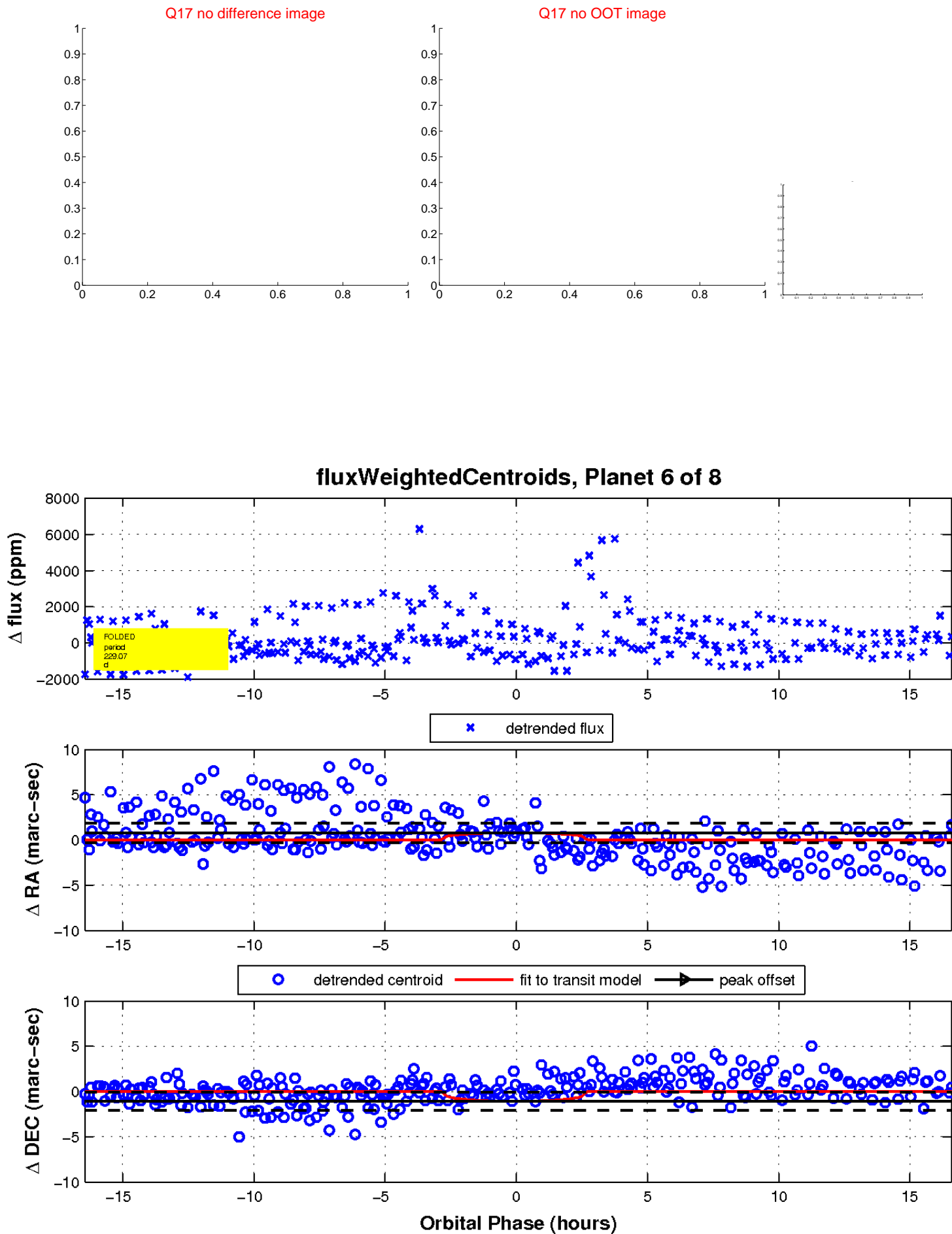
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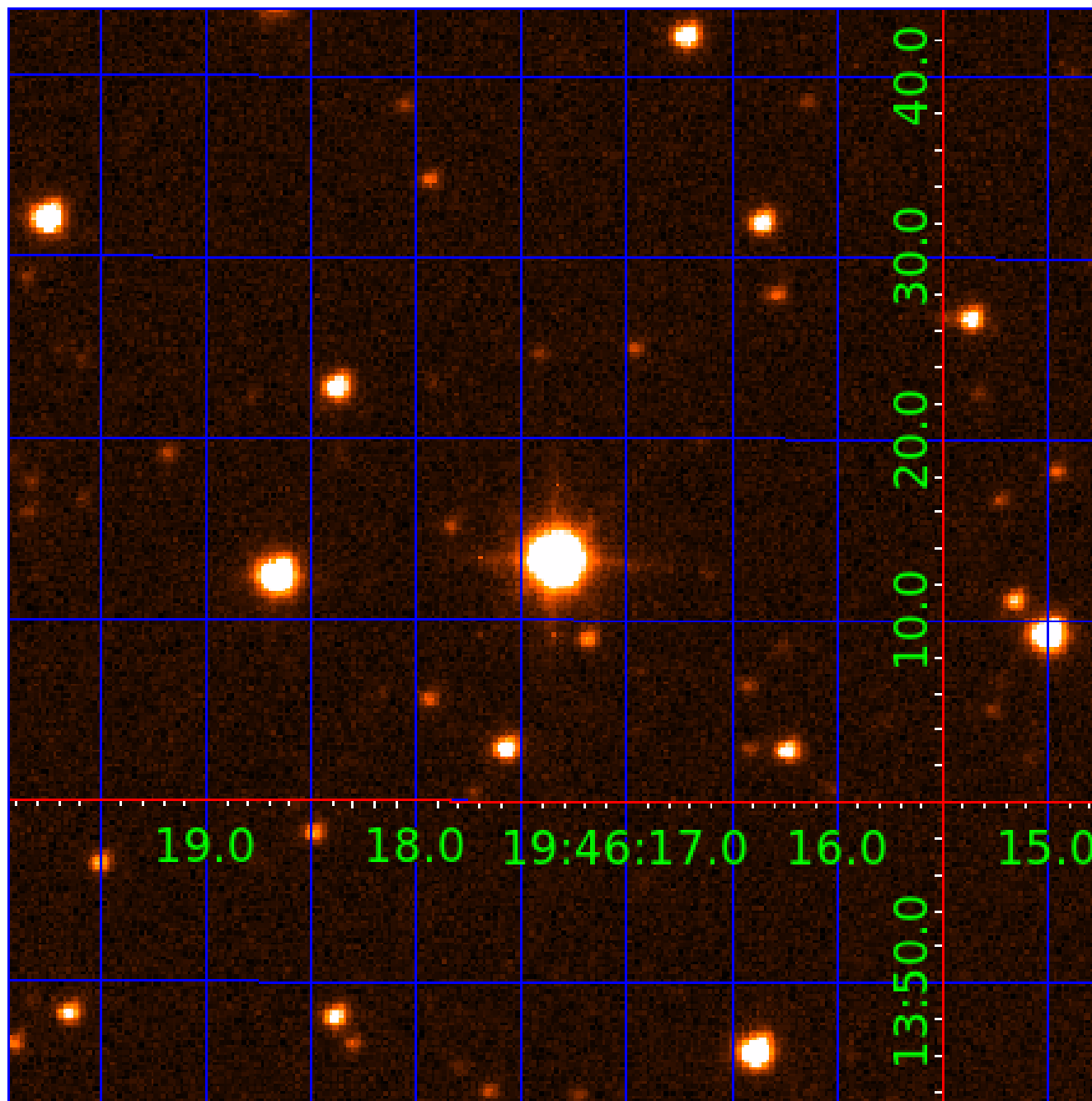


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004180534

Q1-17 DR25 TCE Parameters

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

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004180534-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004180534-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004180534-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
004180534-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS
004180534-06	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—INCONSISTENT_TRANS
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Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

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

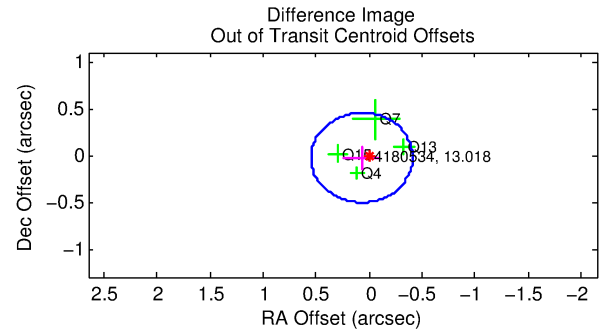
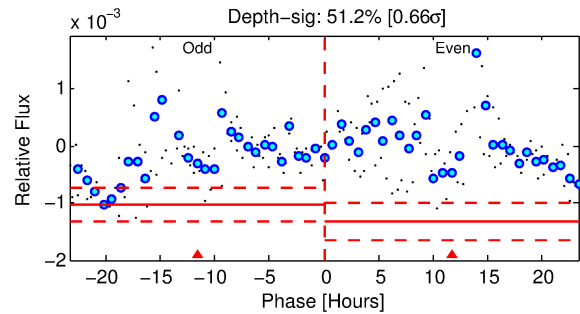
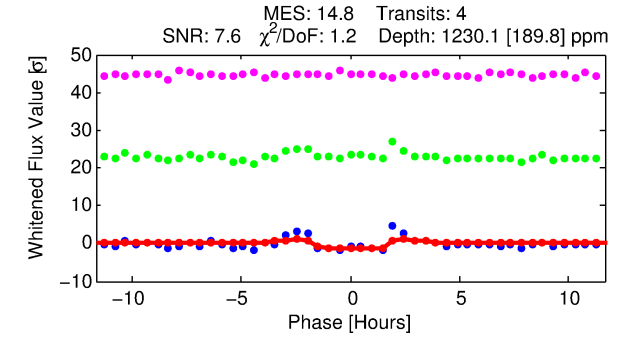
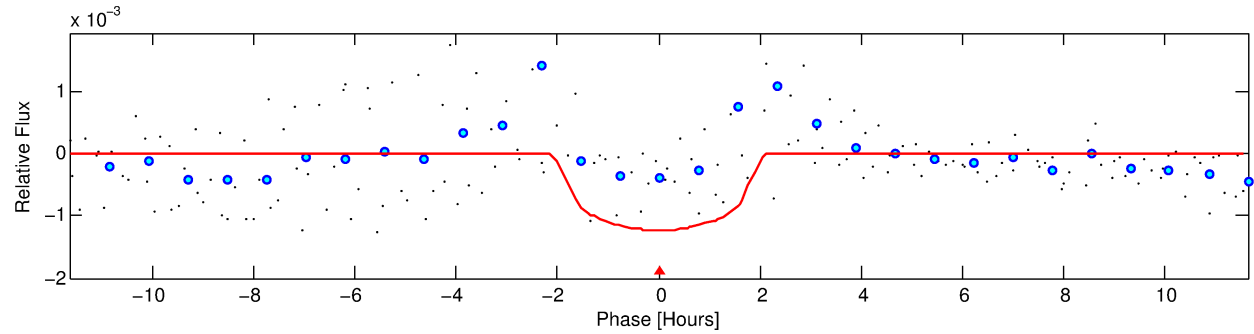
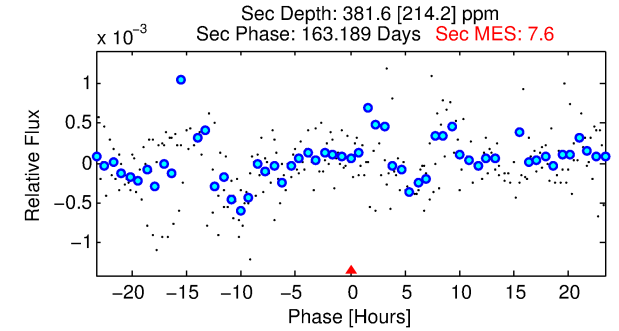
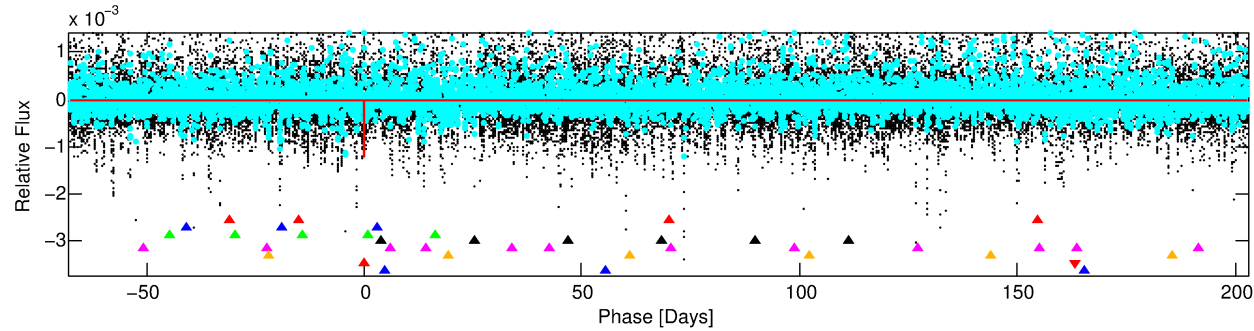
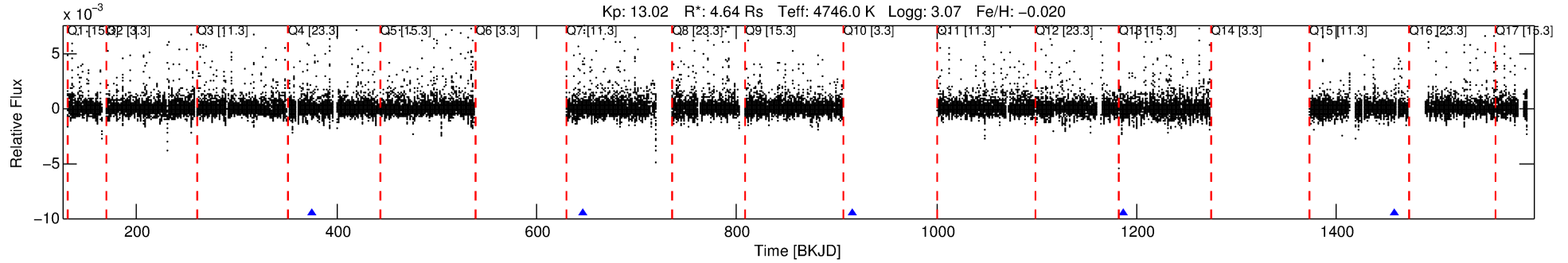
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004180534-07

No Significant Match Found

DV One-Page Summary

KIC: 4180534 Candidate: 7 of 8 Period: 270.535 d



DV Fit Results:

Period = 270.53473 [0.00230] d
Epoch = 375.3563 [0.0065] BKJD
Rp/R* = 0.0319 [0.0450]
a/R* = 498.13 [2200.53]
b = 0.43 [8.51]
Seff = 15.41 [12.57]
Teq = 505 [103] K
Rp = 16.17 [25.37] Re
a = 0.7977 [0.4510] AU
Ag = 511.07 [1527.72] [0.33 σ]
Teffp = 3714 [2674] K [1.20 σ]

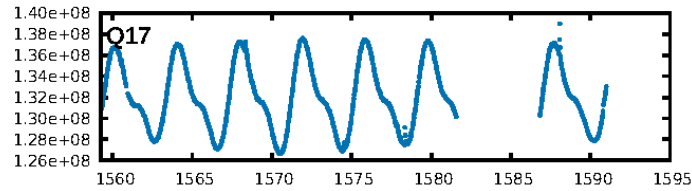
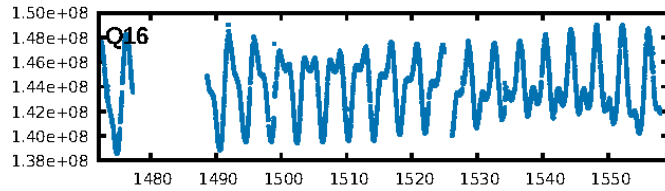
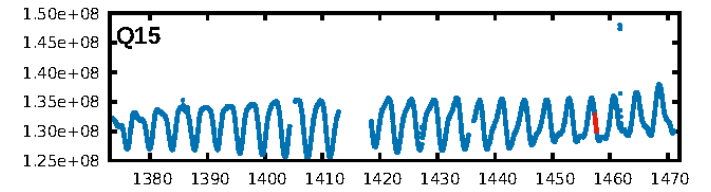
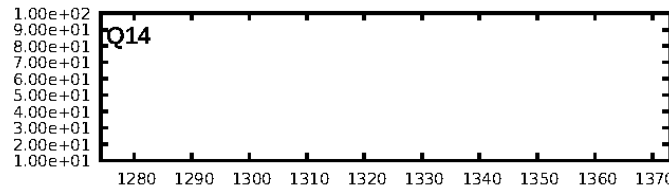
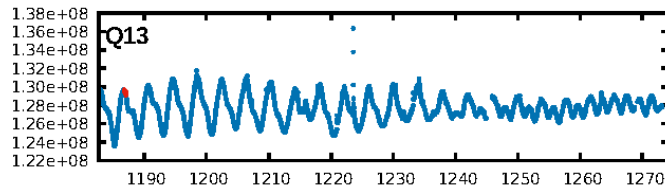
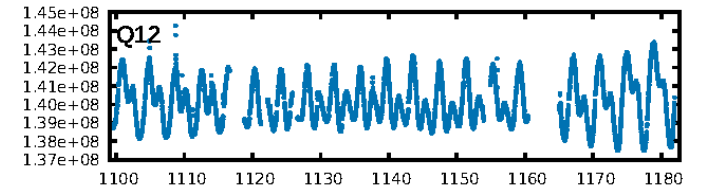
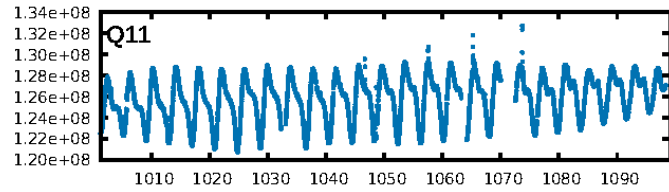
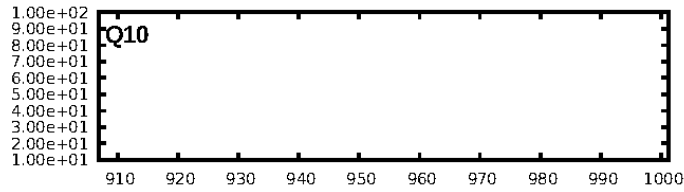
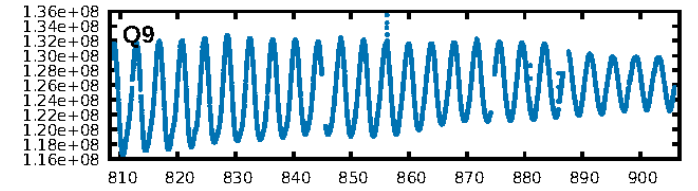
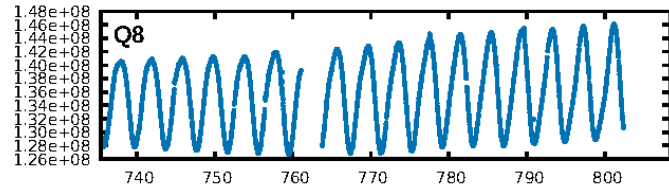
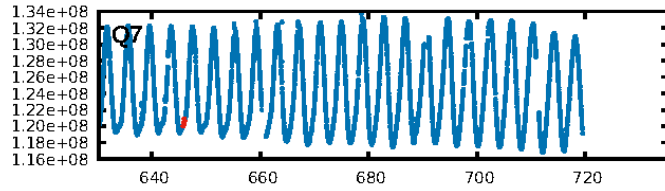
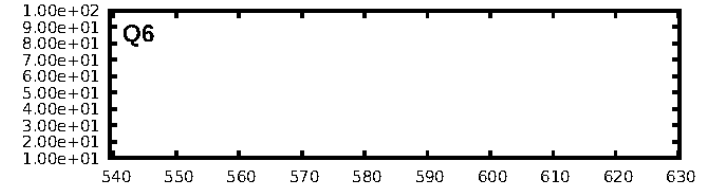
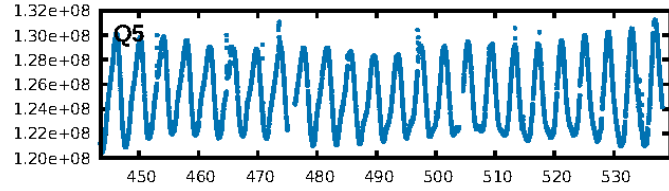
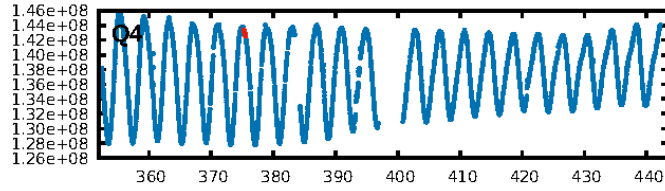
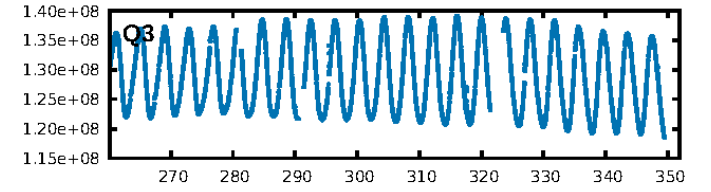
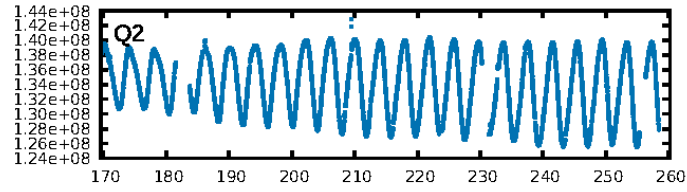
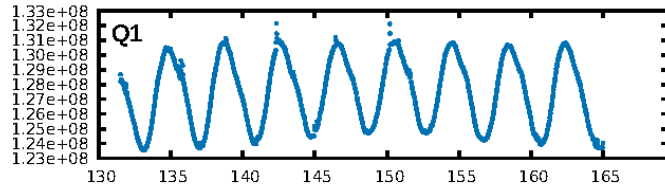
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [60.34 σ]
LongPeriod-sig: 100.0% [69.20 σ]
ModelChiSquare2-sig: 4.0%
ModelChiSquareGof-sig: 92.3%
Bootstrap-pfa: 1.07e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -2.118
Centroid-sig: 0.4%
Centroid-so: 0.609 arcsec [1.11 σ]
OotOffset-rm: 0.074 arcsec [0.46 σ]
OotOffset-st: 0/2/1/1 [4]
KicOffset-rm: 0.321 arcsec [3.02 σ]
KicOffset-st: 0/2/1/1 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 1.00 [4/4]

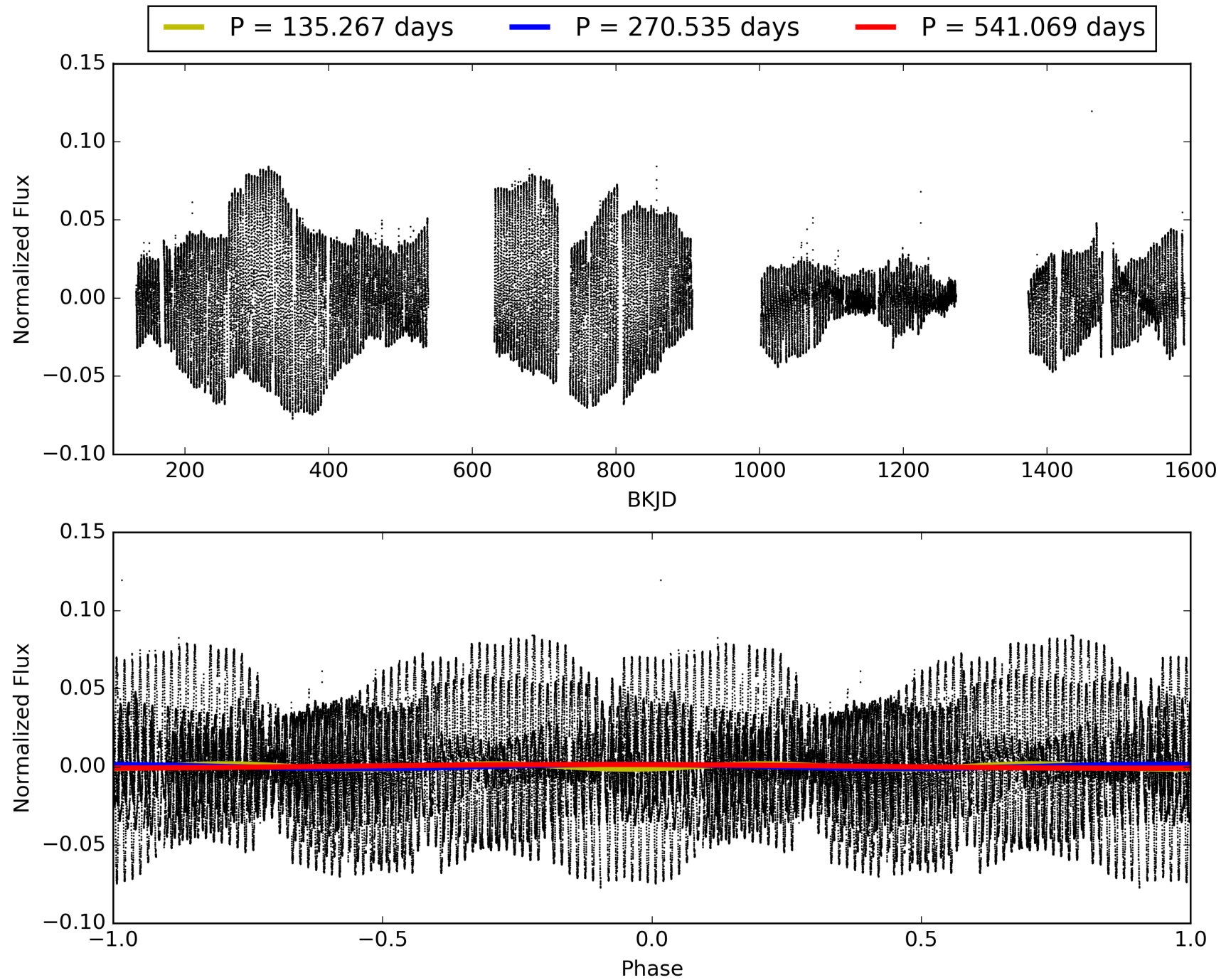
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:38:35 Z

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

TCE 004180534-07, PDC Light Curves

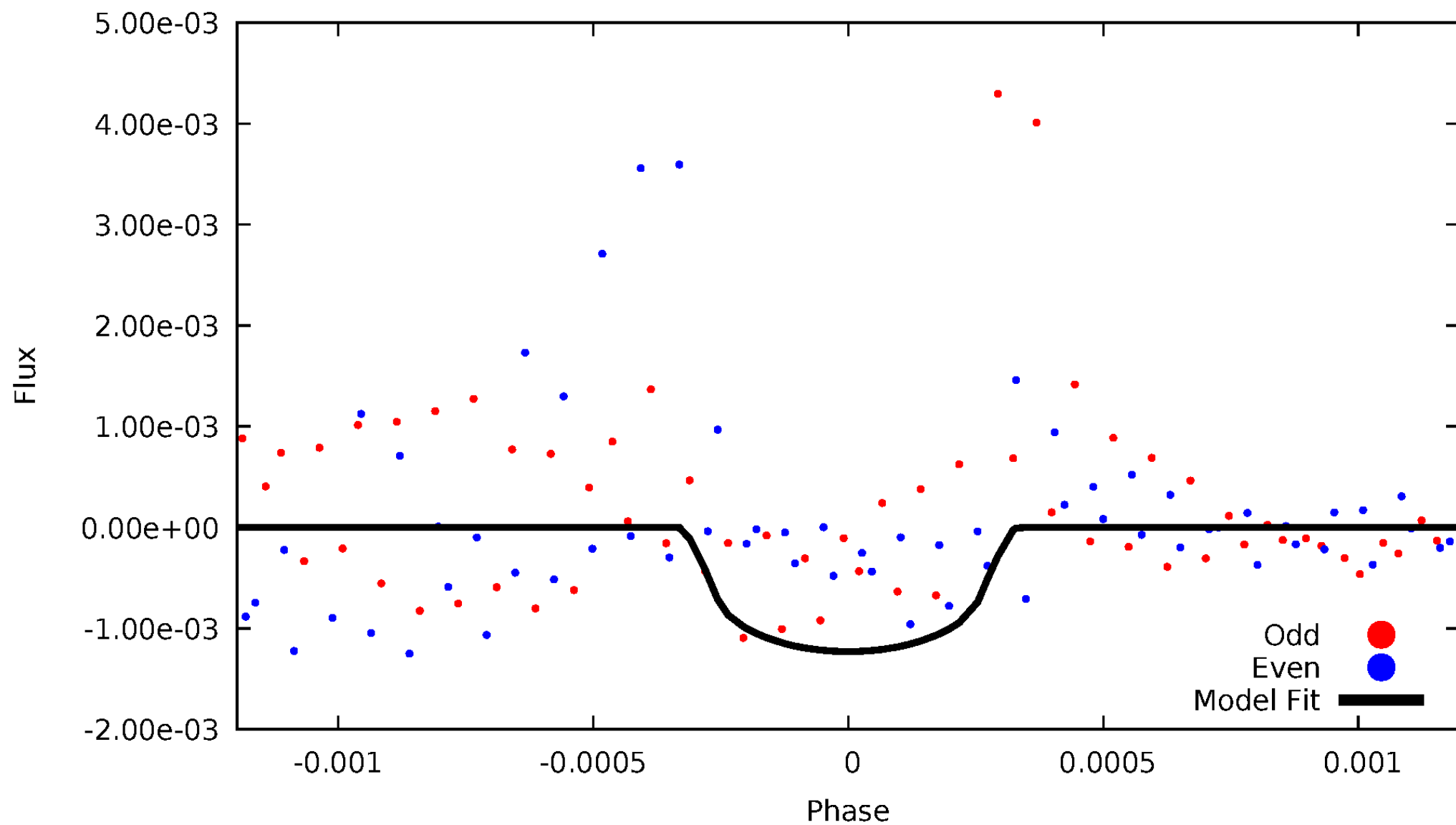


TCE 004180534-07



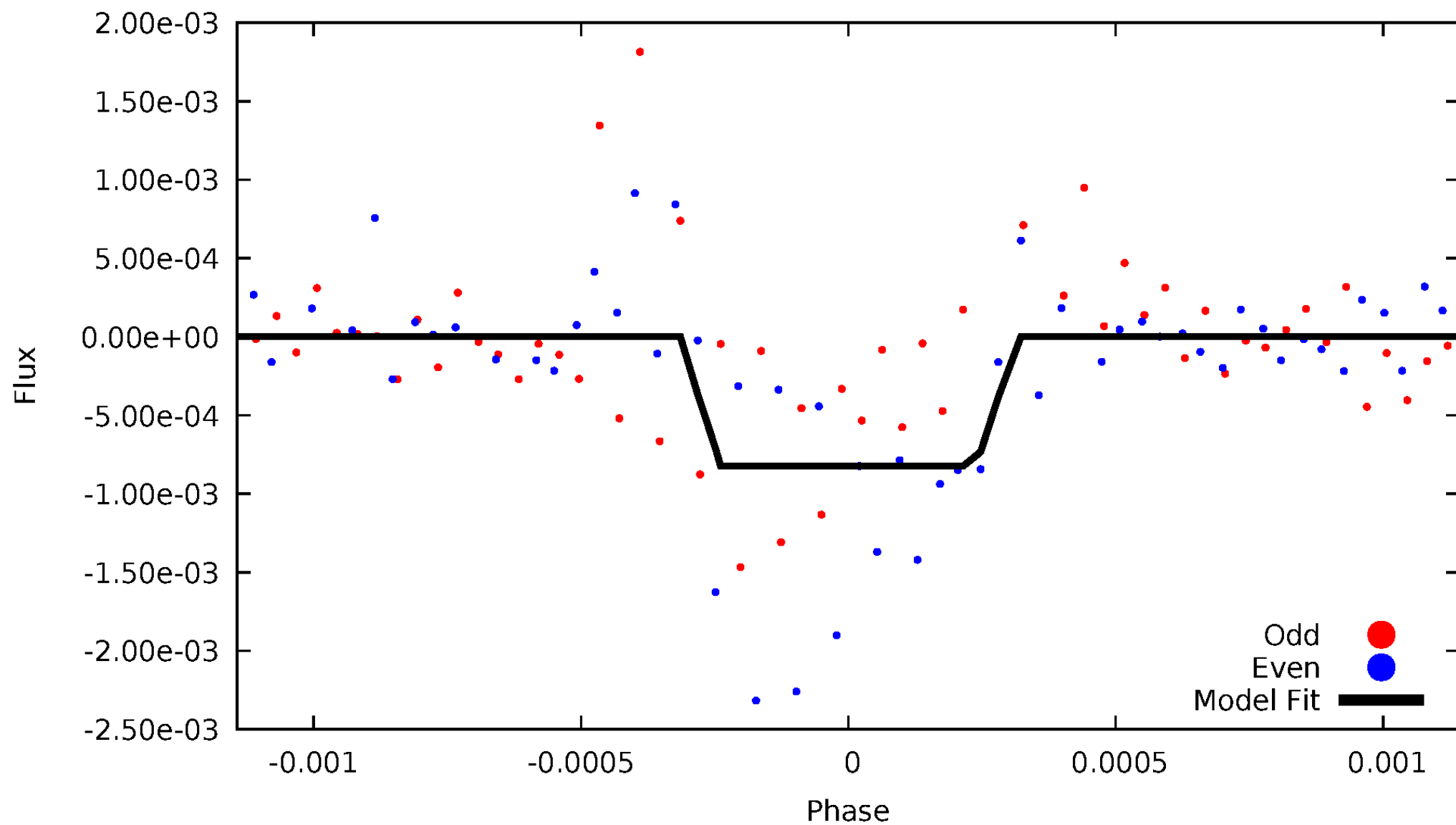
DV Odd/Even

TCE 004180534-07



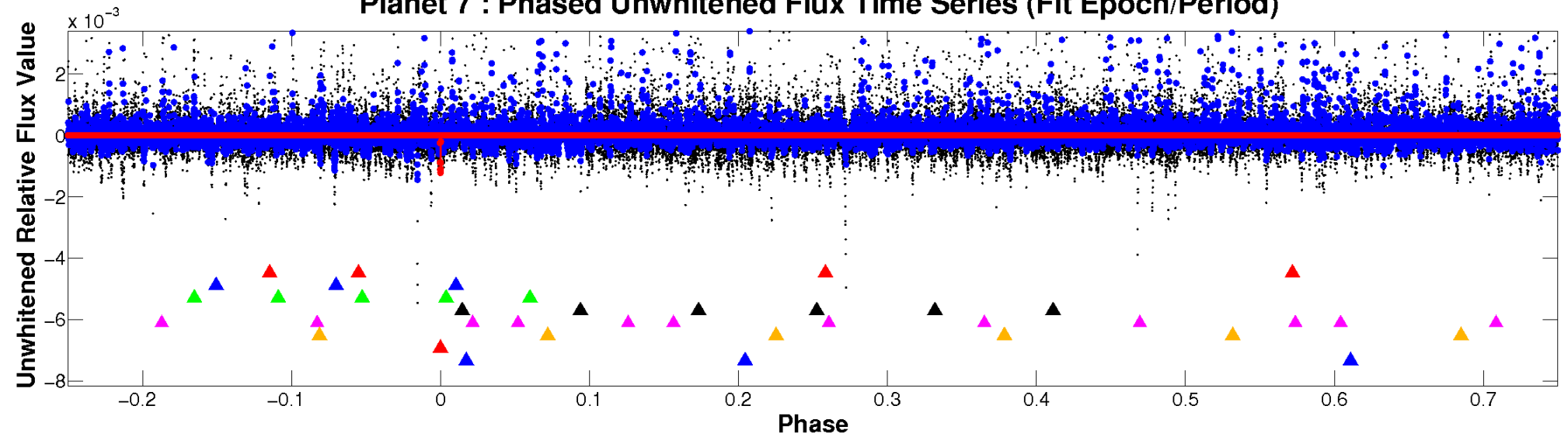
ALT Odd/Even

TCE 004180534-07

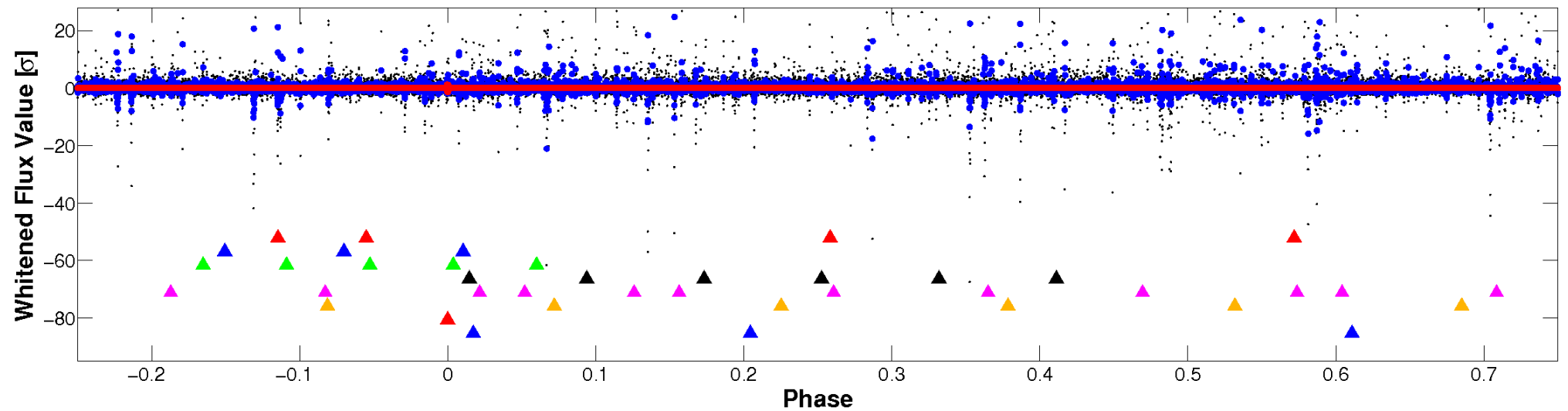


Non-Whitened Vs. Whitened Light Curve

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

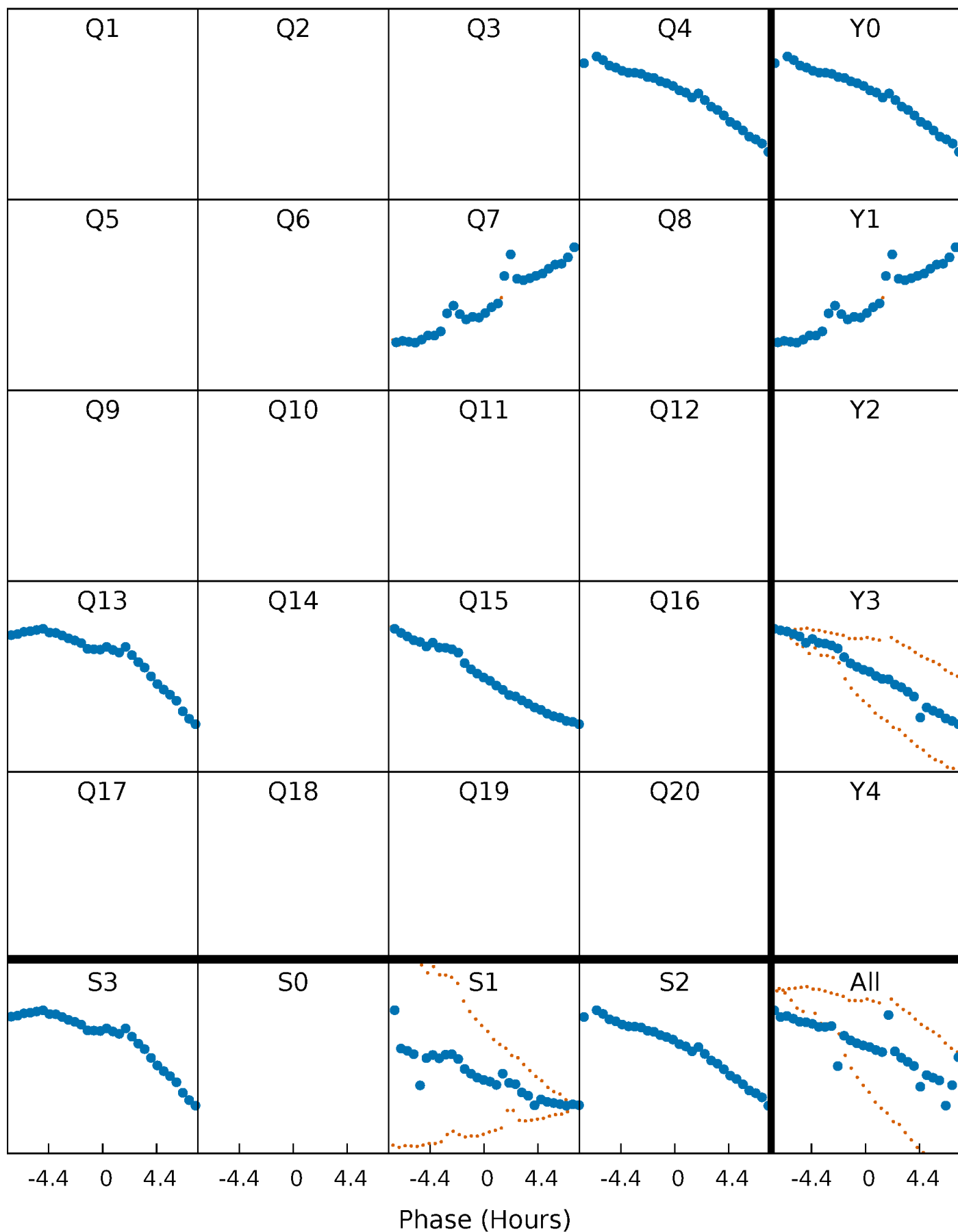


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



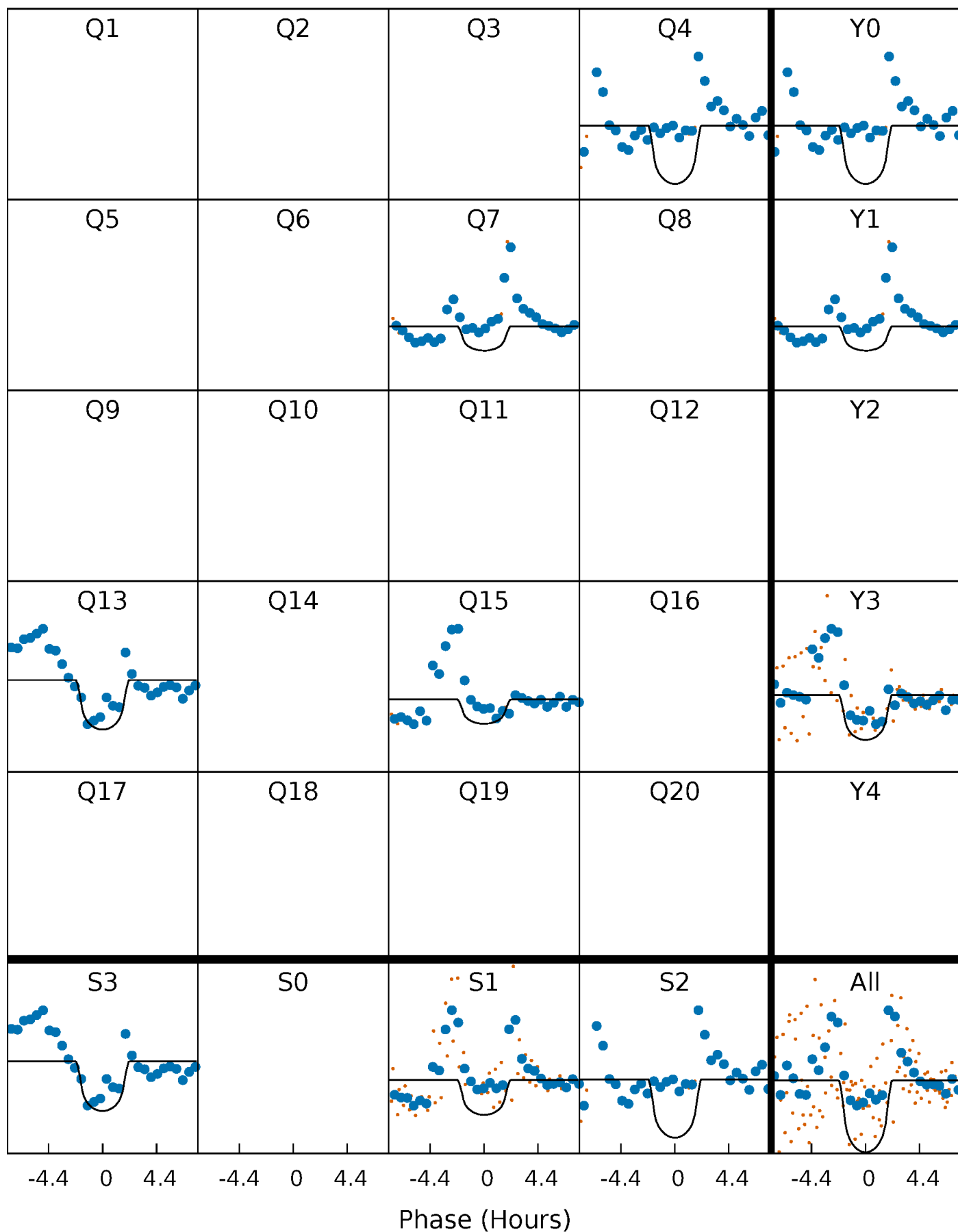
PDC Quarter-Phased Transit Curves

TCE 004180534-07 $P=270.534734$ Days $T_0=375.356328$ (BKJD)



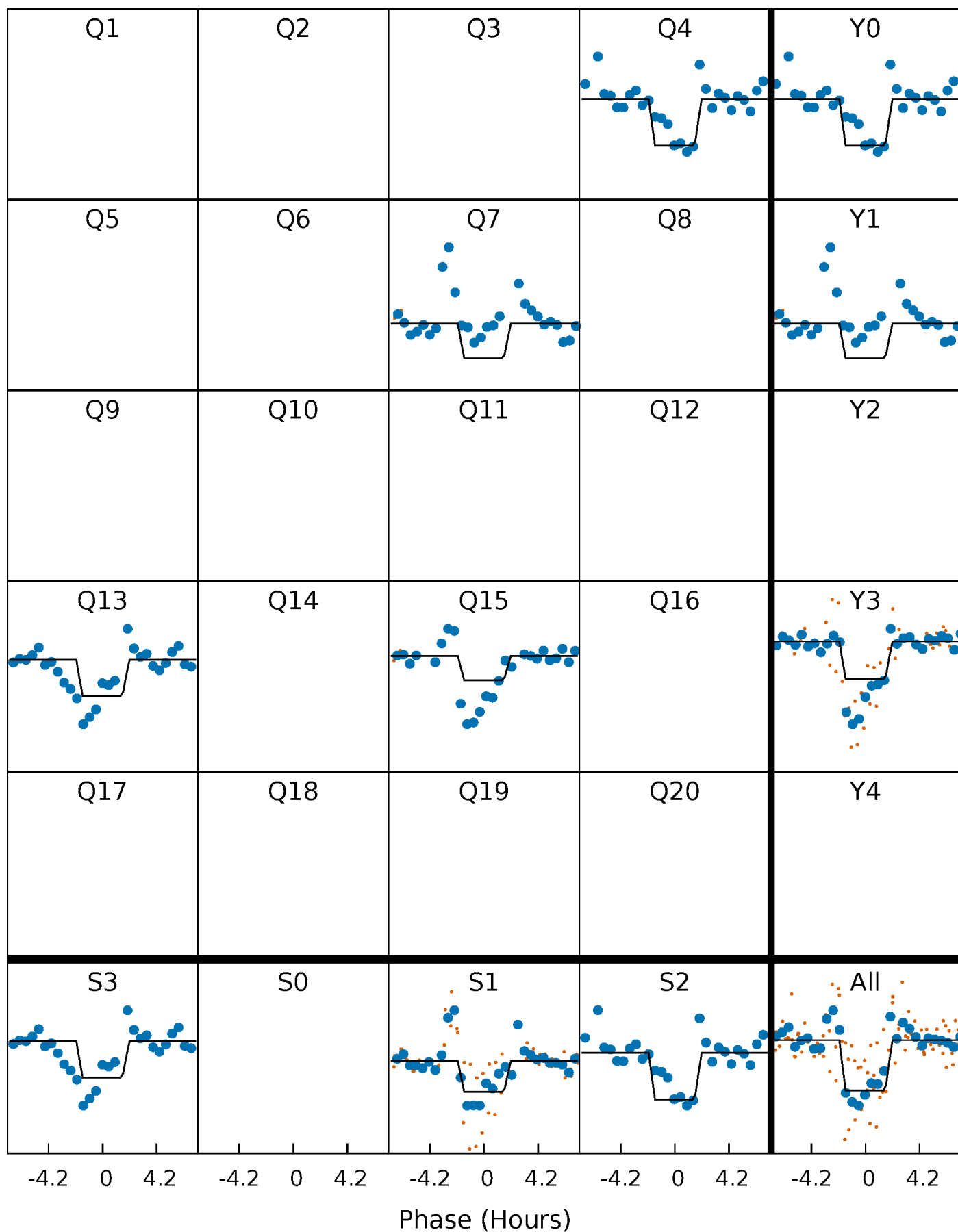
DV Quarter-Phased Transit Curves

TCE 004180534-07 P=270.534734 Days $T_0=375.356328$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

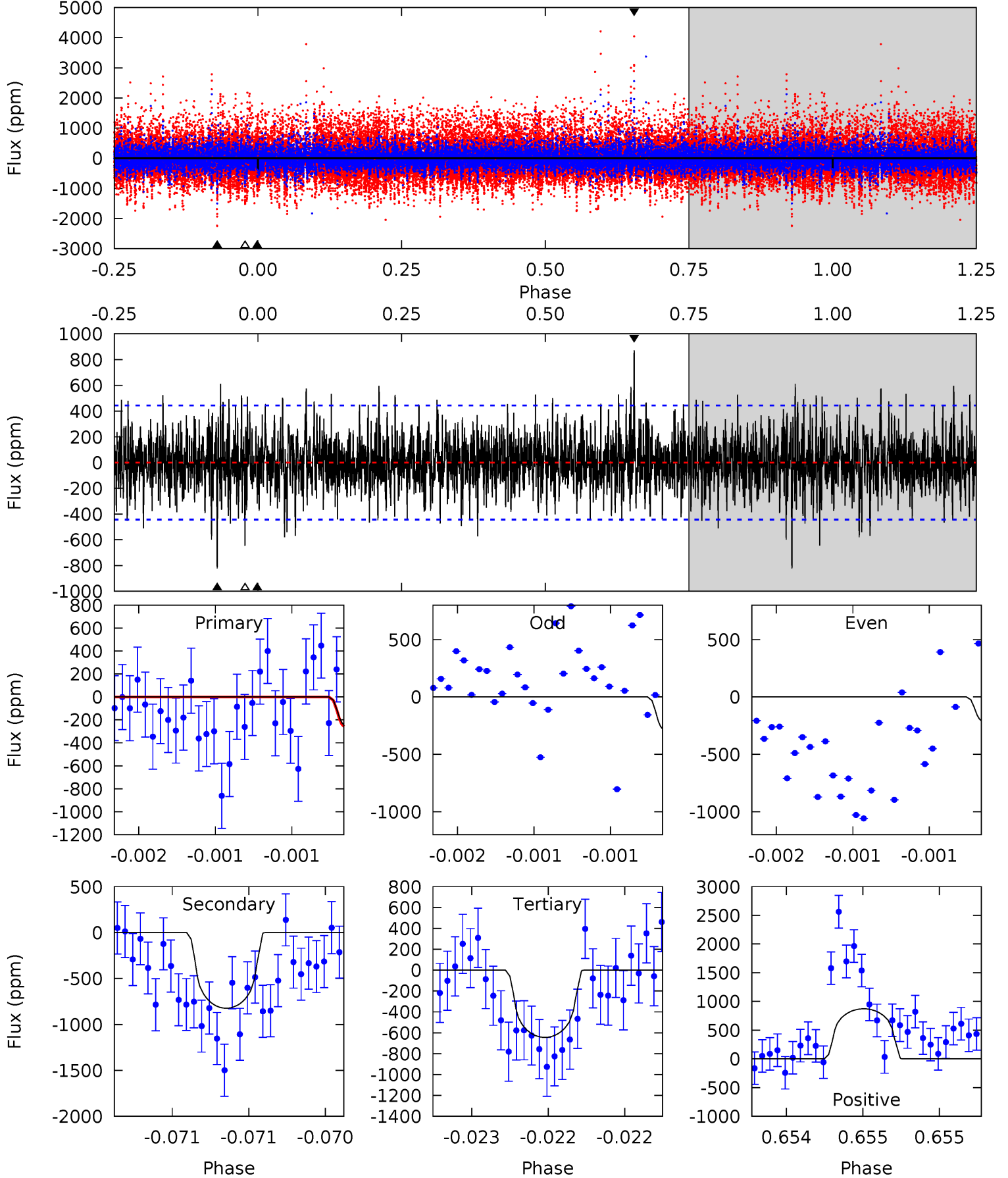
TCE 004180534-07 P=270.533780 Days $T_0=375.358051$ (BKJD)



DV Model-Shift Uniqueness Test

004180534-07, P = 270.534734 Days, E = 104.821594 Days

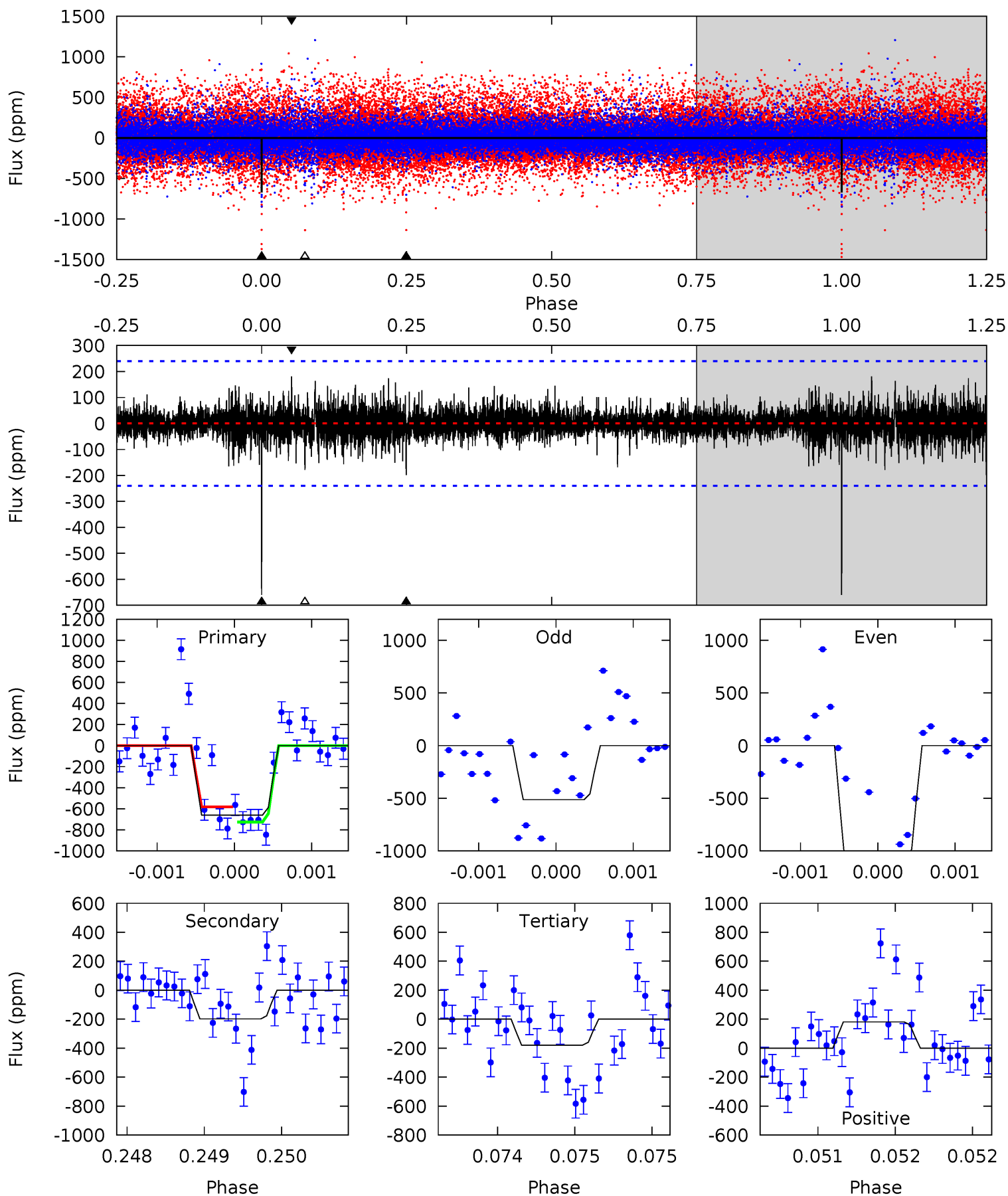
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.96	10.3	8.02	10.9	5.52	3.40	2.05	-4.07	-6.91	2.24	-0.60	0.48	1.03	0.51	0.26



Alt Model-Shift Uniqueness Test

004180534-07, P = 270.533780 Days, E = 104.824271 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.3	4.59	4.15	4.18	5.55	3.45	0.86	11.1	11.1	0.44	0.40	7.20	1.07	0.21	1.68



Stellar Parameters For KIC 004180534

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4746^{+131}_{-95}	$3.070^{+0.434}_{-0.355}$	$-0.020^{+0.250}_{-0.200}$	$4.645^{+3.183}_{-1.714}$	$0.925^{+0.288}_{-0.157}$	$0.013^{+0.037}_{-0.009}$
	+3%/-2%	+14%/-12%	+1250%/-1000%	+69%/-37%	+31%/-17%	+288%/-72%
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 004180534-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-824 ± 80	$22.64^{+24.51}_{-15.72}$	695^{+115}_{-83}	3957^{+2663}_{-727}	595^{+5611}_{-457}
Alt.	-198 ± 43	$22.79^{+20.34}_{-14.33}$	700^{+112}_{-89}	3168^{+1220}_{-472}	139^{+867}_{-102}

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

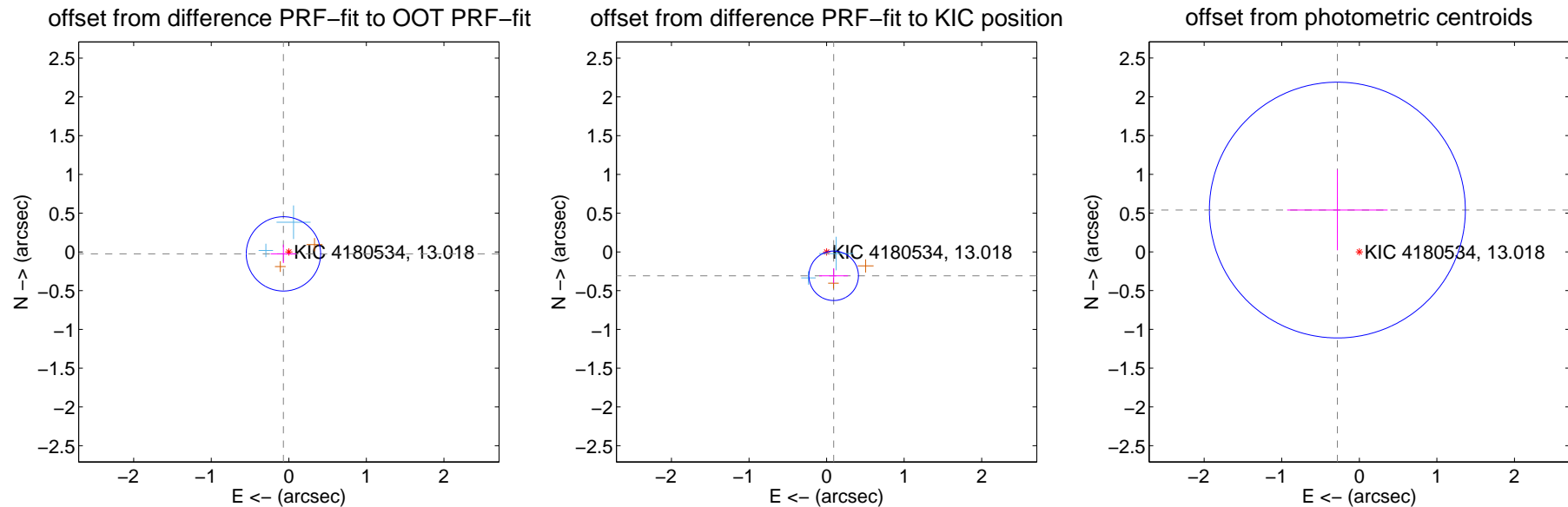
DV Centroid Data

Supplemental centroid analysis for 004180534-07. Kepler magnitude: 13.02. Transit SNR 7.59

There are 2 quarters with good PRF difference image offsets

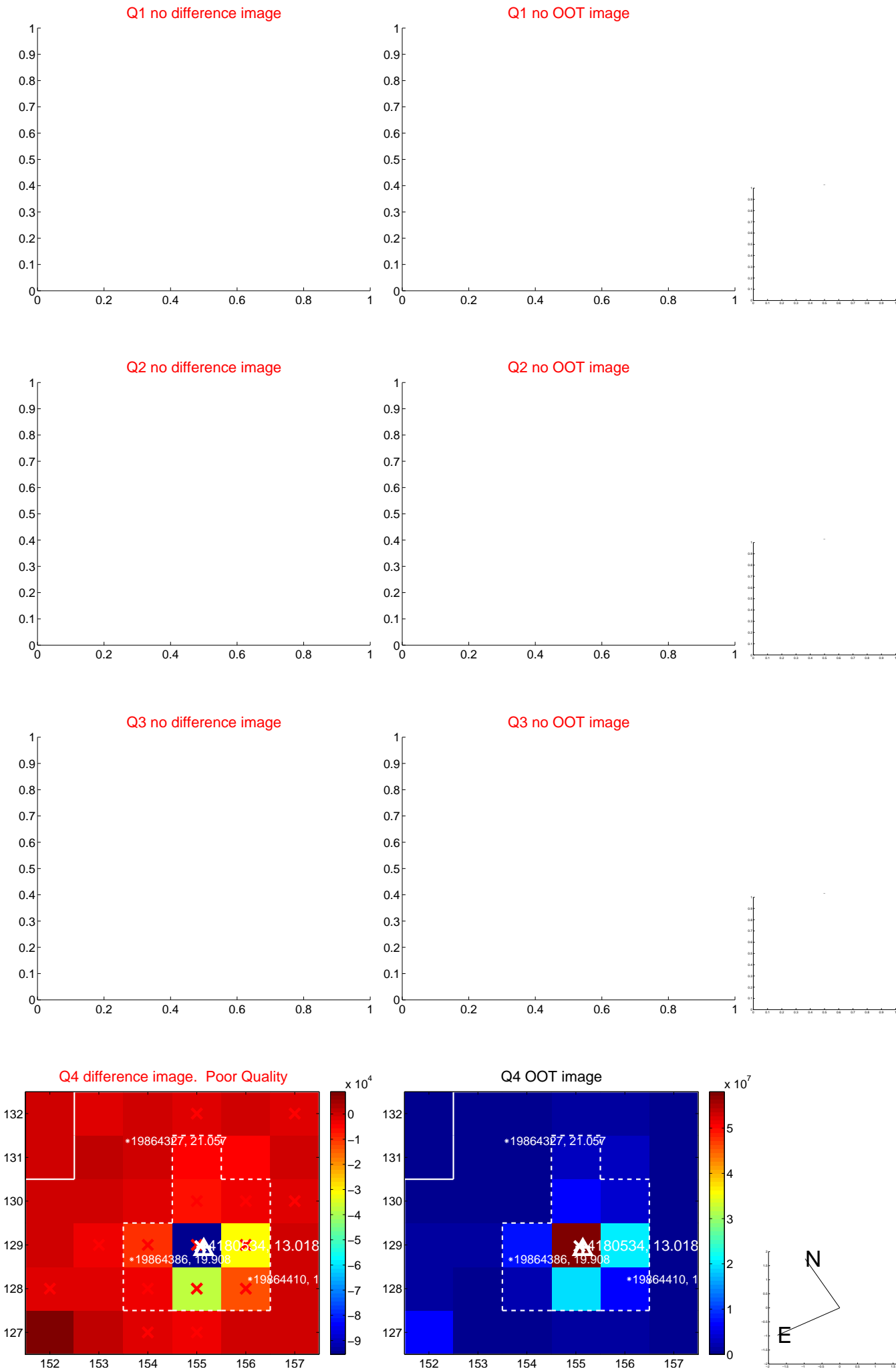
The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.074 ± 0.160	0.46	0.069 ± 0.164	-0.025 ± 0.119
PRF-fit source offset from KIC position	0.321 ± 0.106	3.02	-0.092 ± 0.185	-0.308 ± 0.096
photometric centroid source offset	0.61 ± 0.55	1.11	0.28 ± 0.65	0.54 ± 0.52

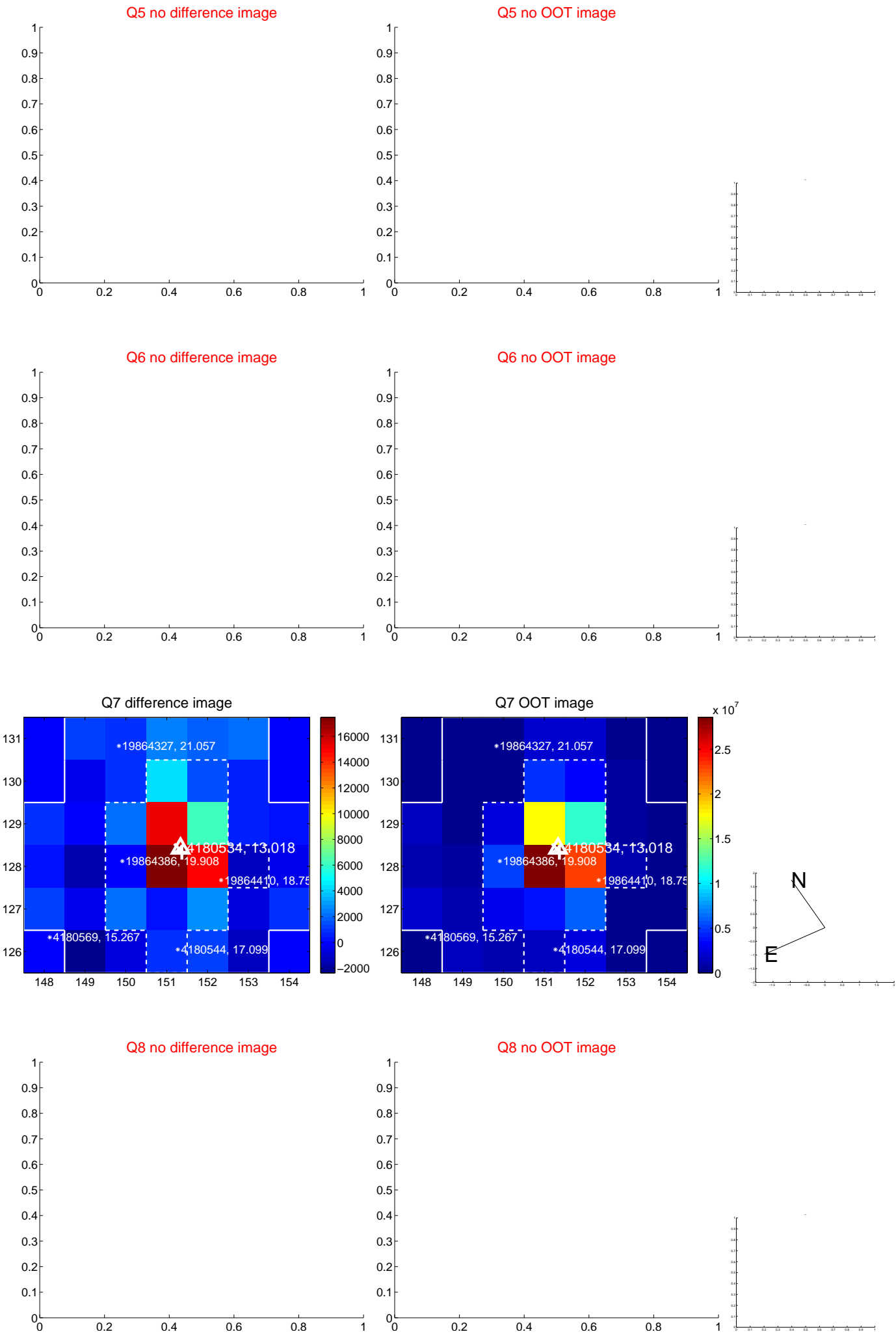


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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



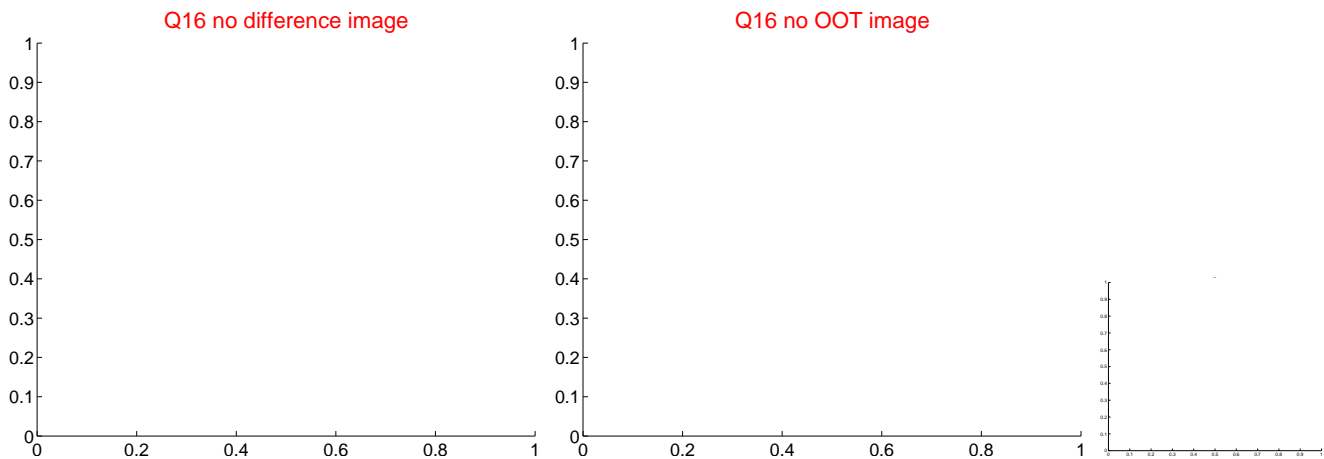
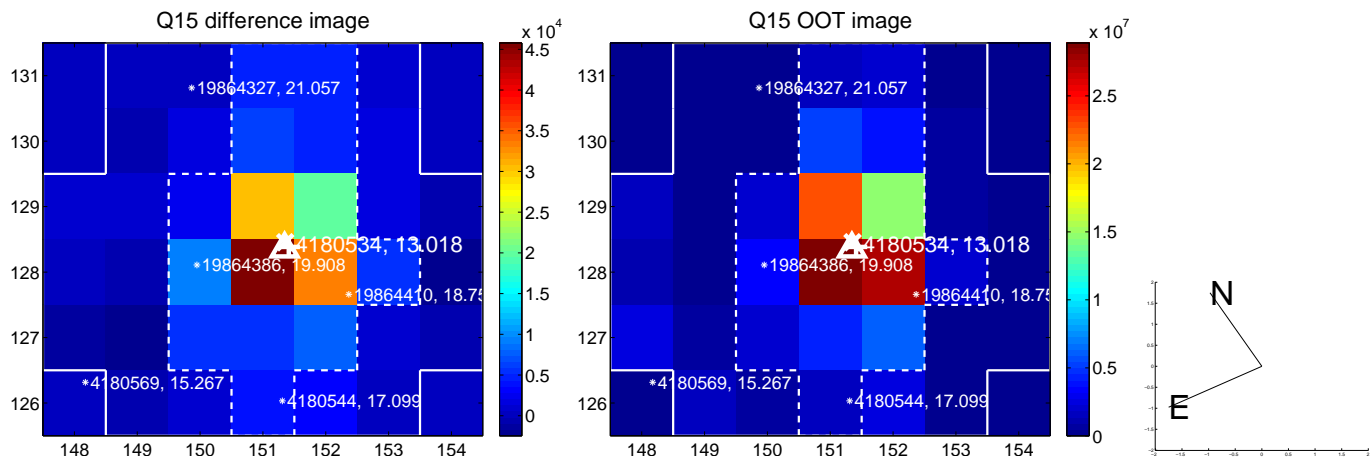
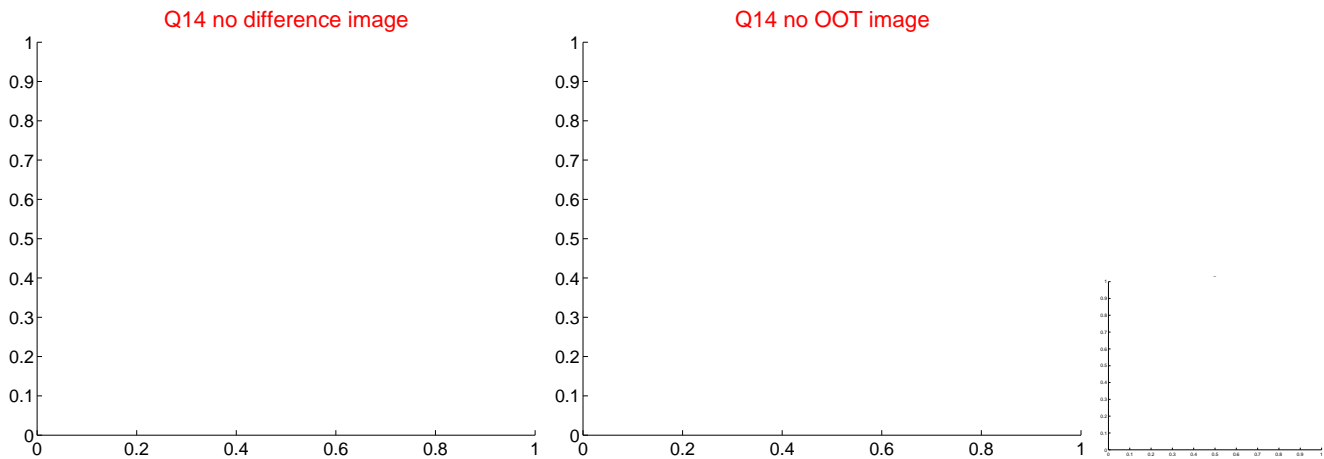
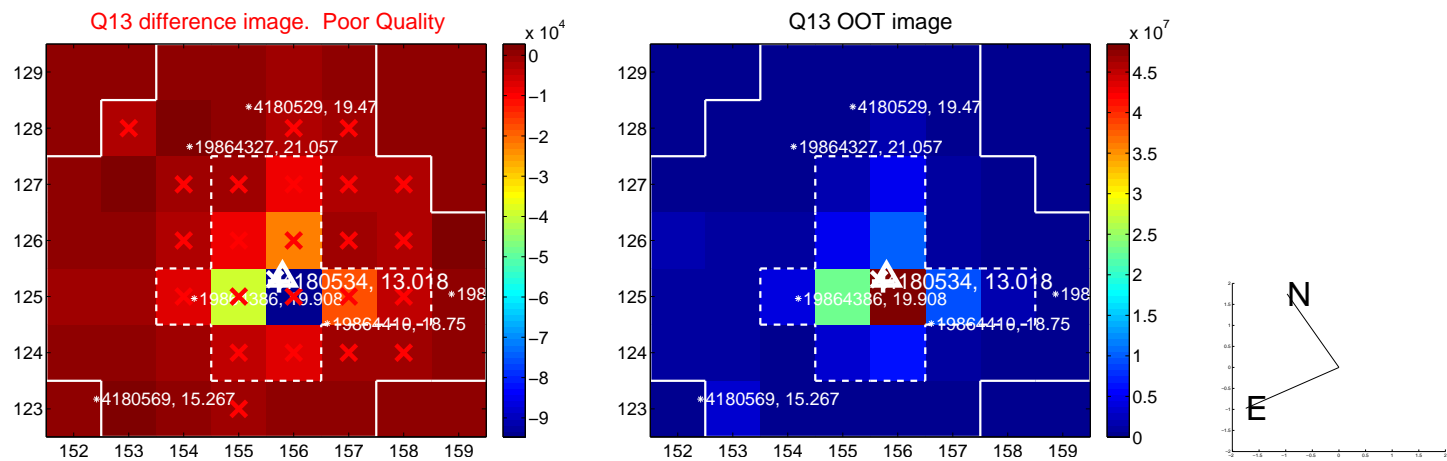
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



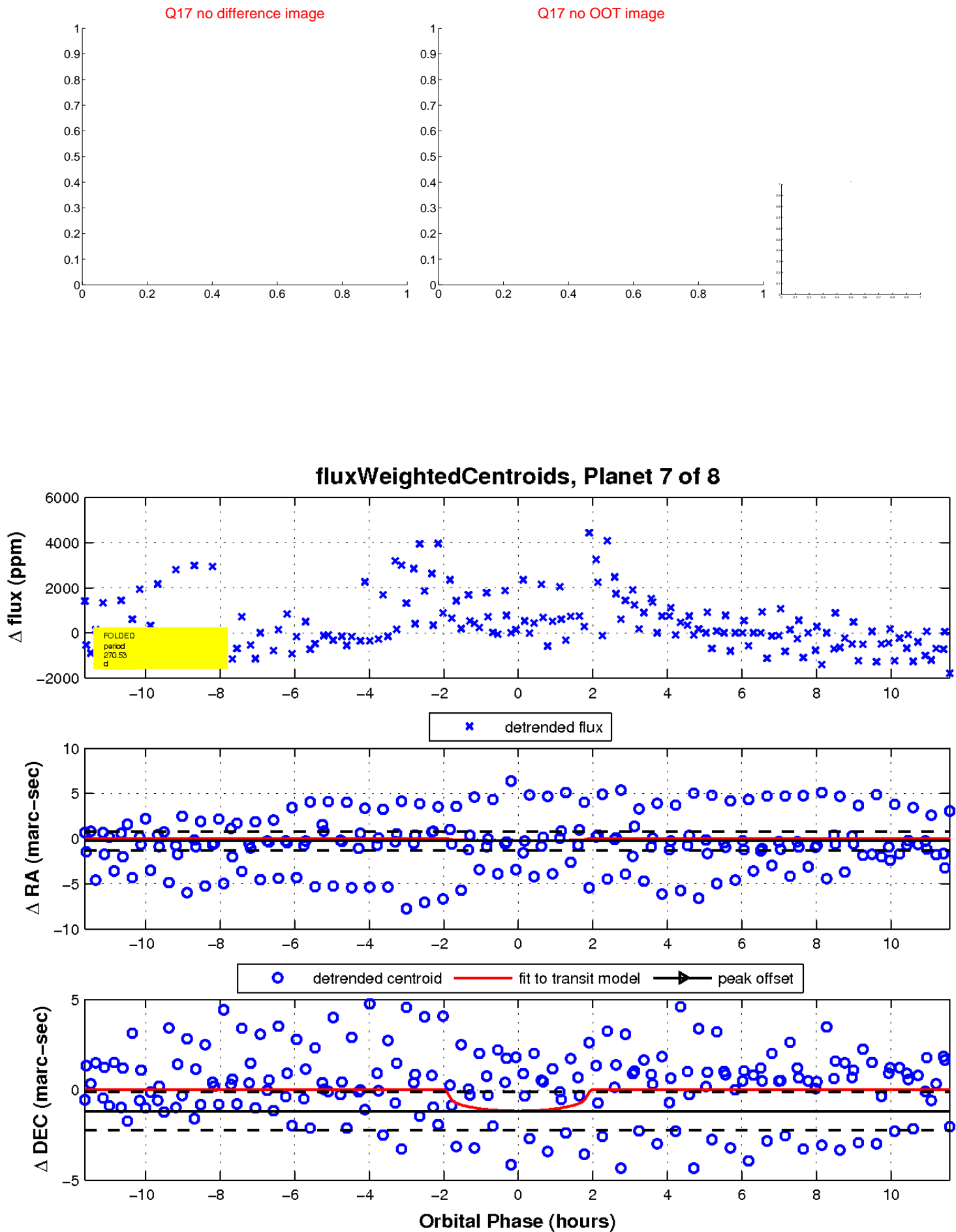
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

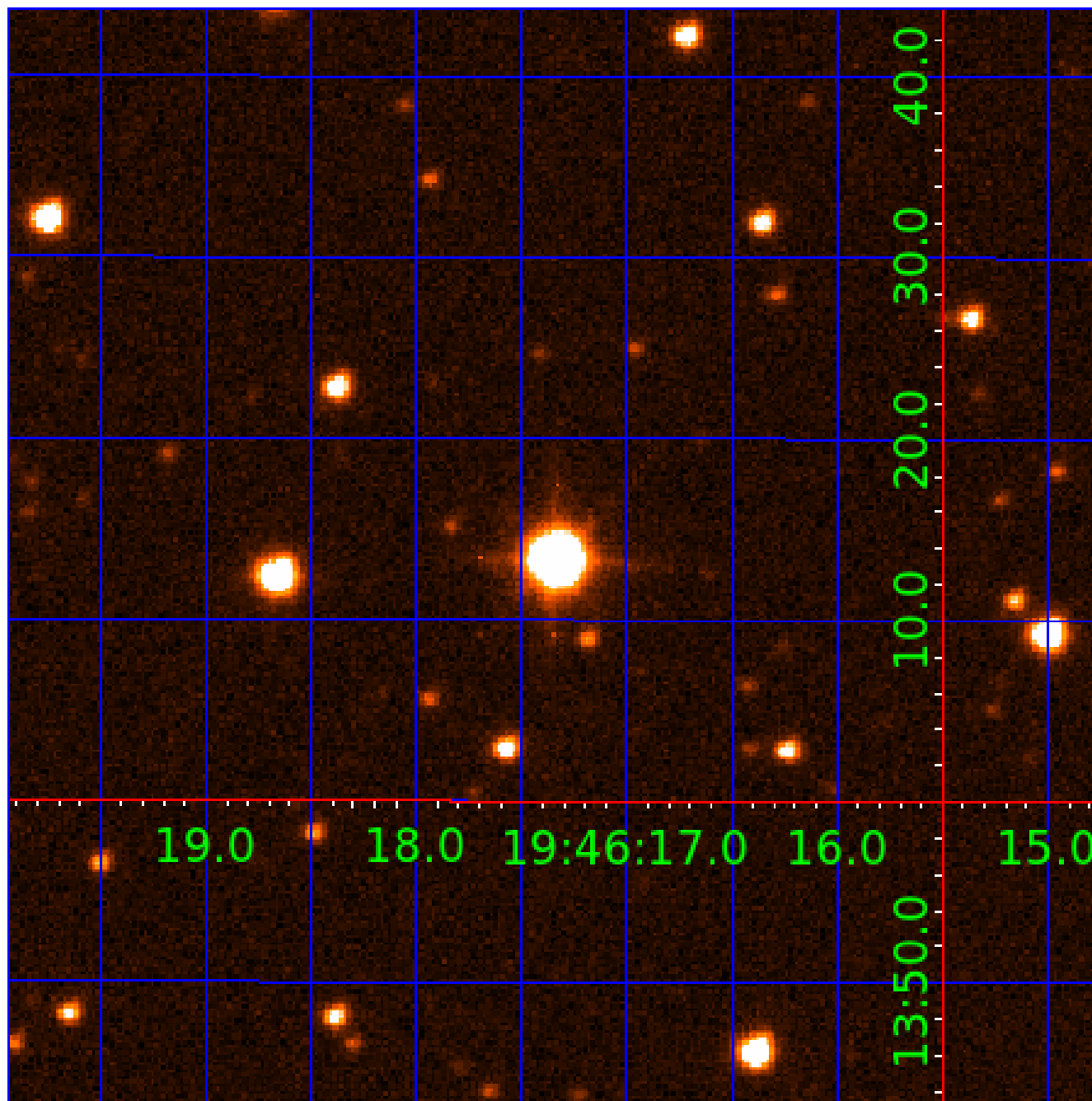


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004180534

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})
004180534-01	OBS	No	355.334762	360.469179	658.8	13.216	18.0	2.6	4.64	4746	11.93	10.71
004180534-02	OBS	No	562.851062	334.612945	392.4	12.289	19.1	1.9	4.64	4746	9.97	5.80
004180534-03	OBS	No	285.772491	330.662843	2324.9	3.579	17.4	12.0	4.64	4746	21.52	14.33
004180534-04	OBS	No	249.076967	216.068287	724.0	7.598	17.4	4.1	4.64	4746	12.28	17.21
004180534-05	OBS	No	121.151942	138.898616	495.5	2.683	13.5	5.0	4.64	4746	9.94	44.99
004180534-06	OBS	No	229.074370	290.146696	939.6	5.531	15.3	5.5	4.64	4746	13.67	19.24
004180534-07	OBS	No	270.534734	375.356328	1230.1	3.889	14.8	7.6	4.64	4746	16.17	15.41
004180534-08	OBS	No	651.020636	160.139671	878.0	8.636	11.4	4.2	4.64	4746	14.19	4.78

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004180534-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004180534-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004180534-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004180534-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
004180534-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS
004180534-06	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—INCONSISTENT_TRANS
004180534-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
004180534-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

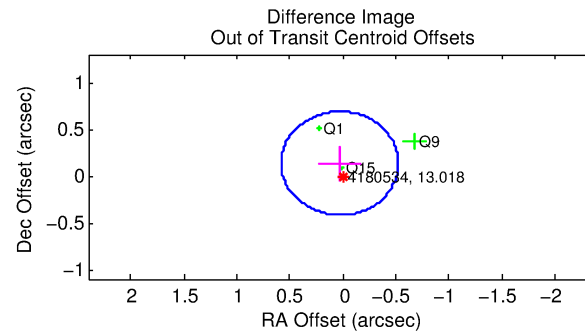
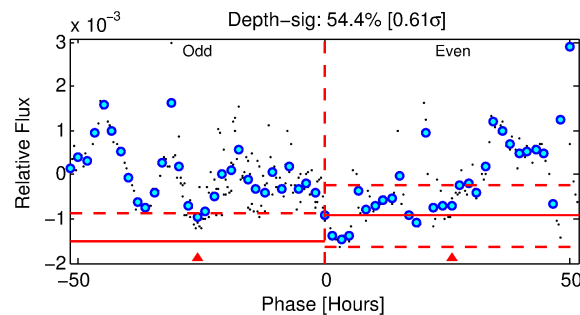
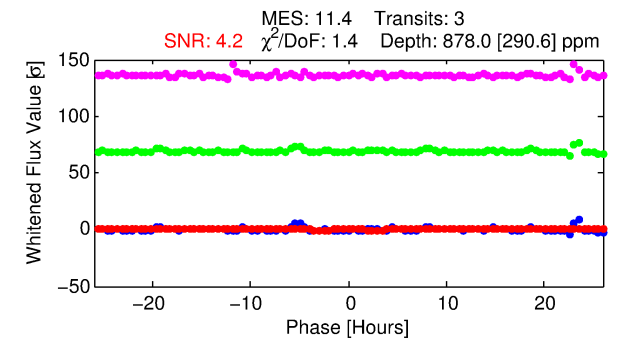
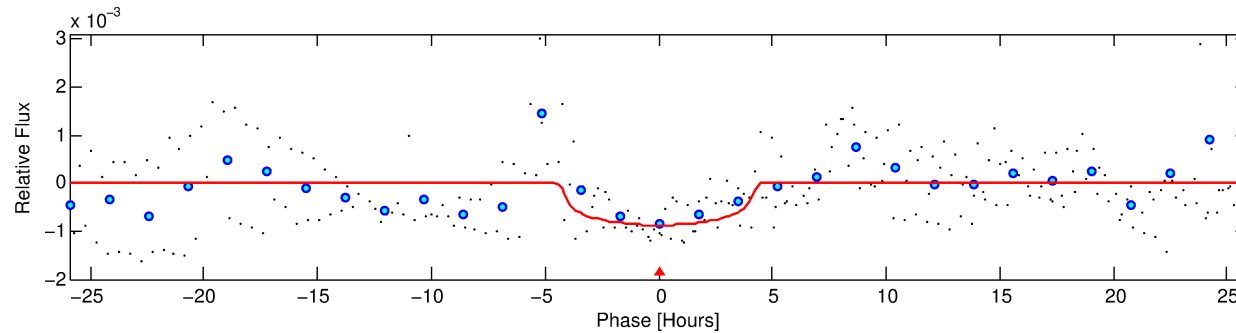
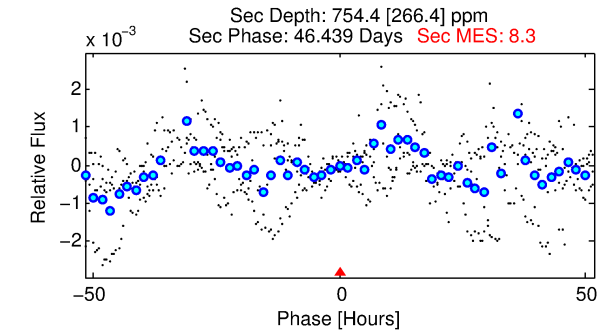
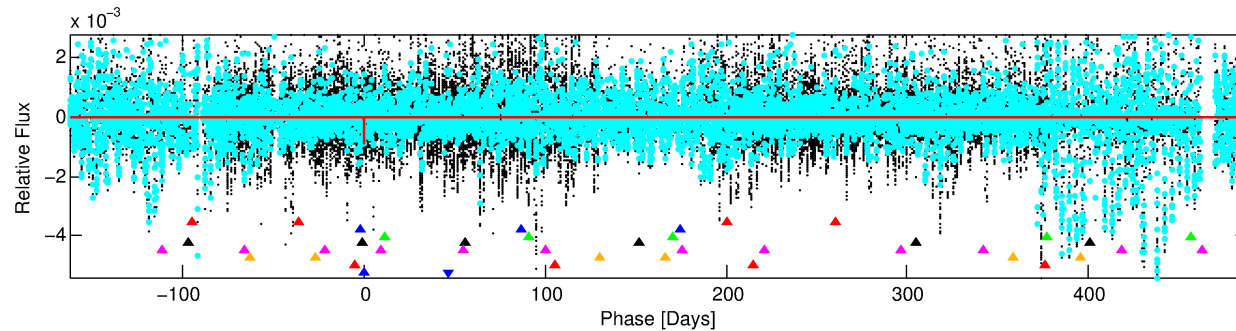
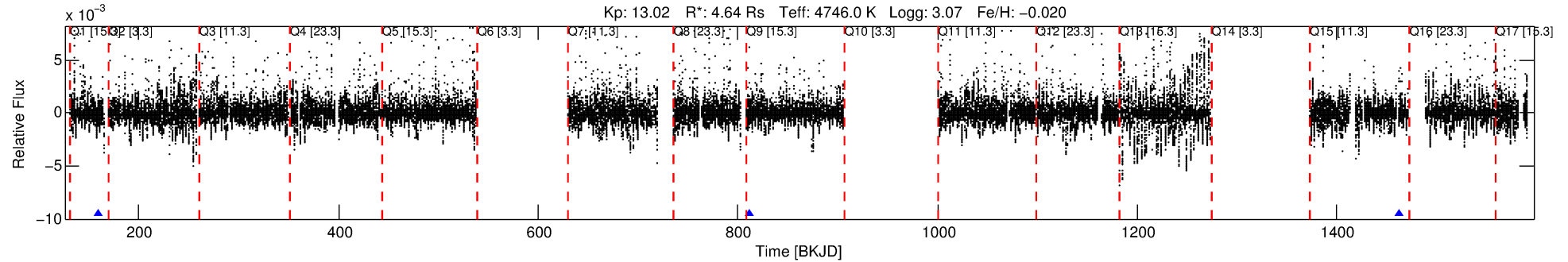
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004180534-08

No Significant Match Found

DV One-Page Summary

KIC: 4180534 Candidate: 8 of 8 Period: 651.021 d



DV Fit Results:

Period = 651.02064 [0.00948] d
Epoch = 160.1397 [0.0116] BKJD
Rp/R* = 0.0280 [0.0173]
a/R* = 478.52 [911.86]
b = 0.61 [2.01]
Seff = 4.78 [3.90]
Teq = 377 [77] K
Rp = 14.19 [13.09] Re
a = 1.4325 [0.8099] AU
Ag = 4228.36 [6415.60] [0.66 σ]
Teffp = 4701 [1515] K [2.85 σ]

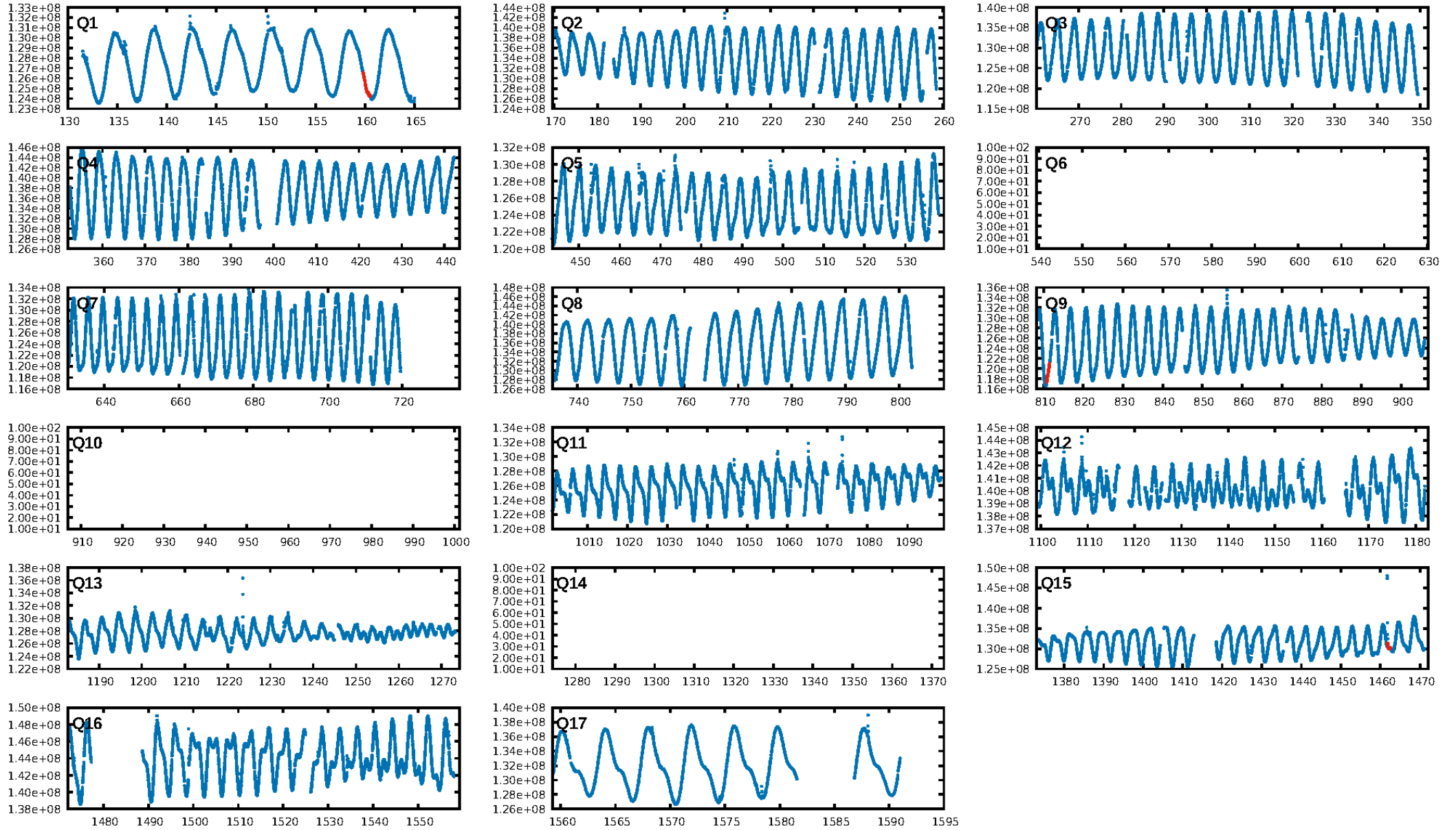
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [140.89 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 71.5%
ModelChiSquareGof-sig: 64.9%
Bootstrap-pfa: 4.89e-07
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: -1.484
Centroid-sig: 1.5%
Centroid-so: 1.960 arcsec [2.06 σ]
OotOffset-rm: 0.139 arcsec [0.75 σ]
OotOffset-st: 0/1/0/2 [3]
KicOffset-rm: 0.190 arcsec [0.96 σ]
KicOffset-st: 0/1/0/2 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.67 [2/3]

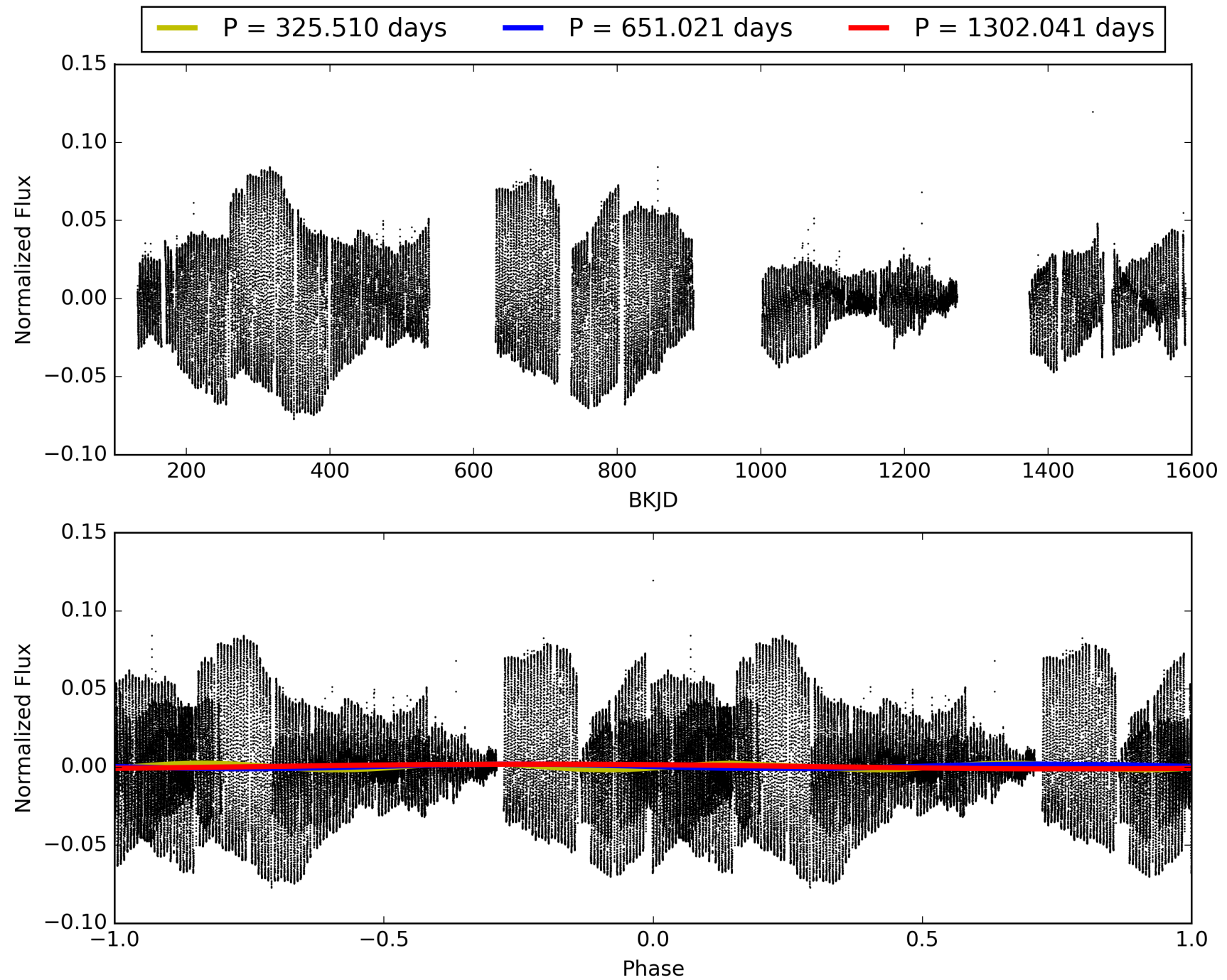
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:38:46 Z

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

TCE 004180534-08, PDC Light Curves

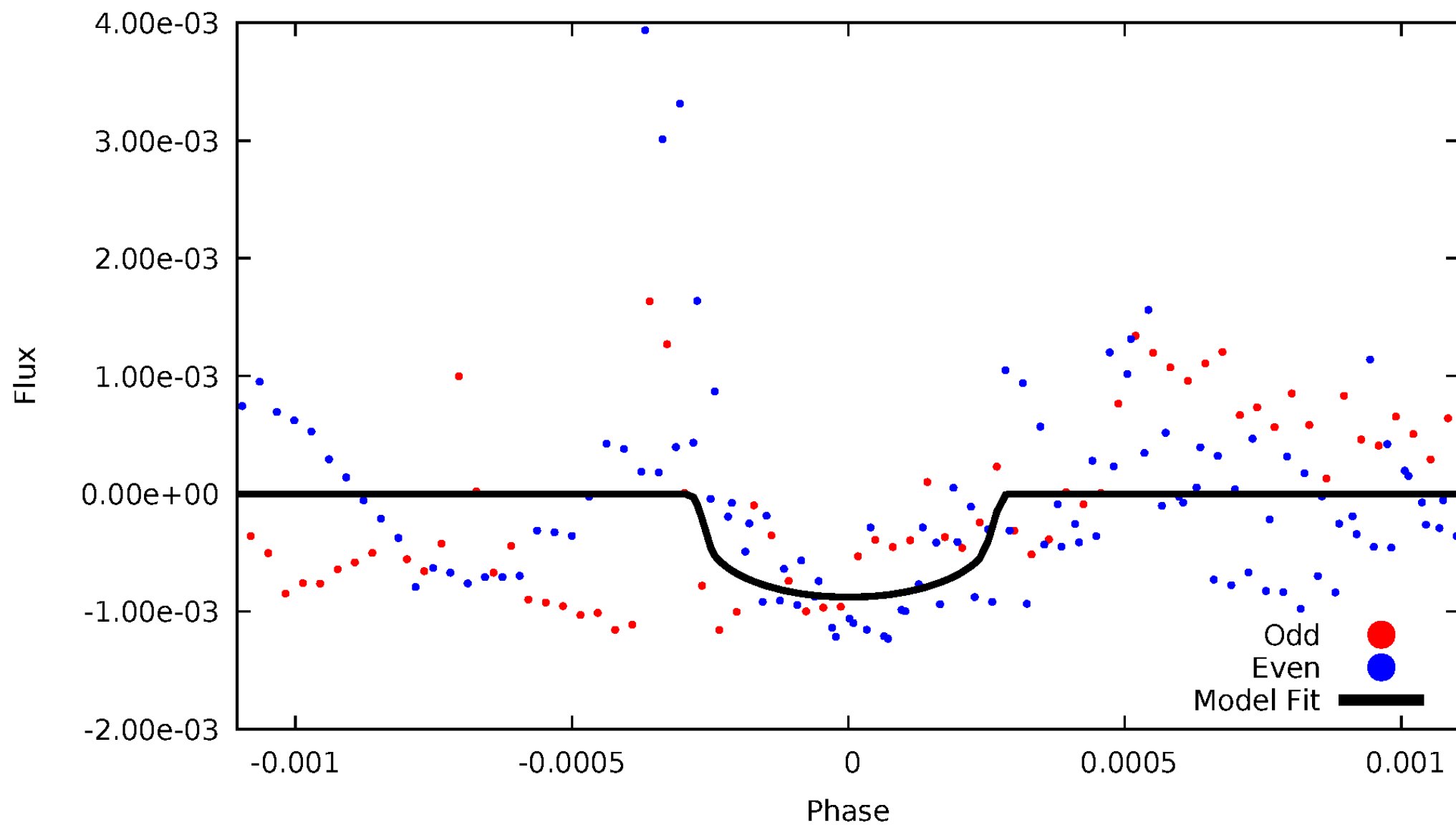


TCE 004180534-08



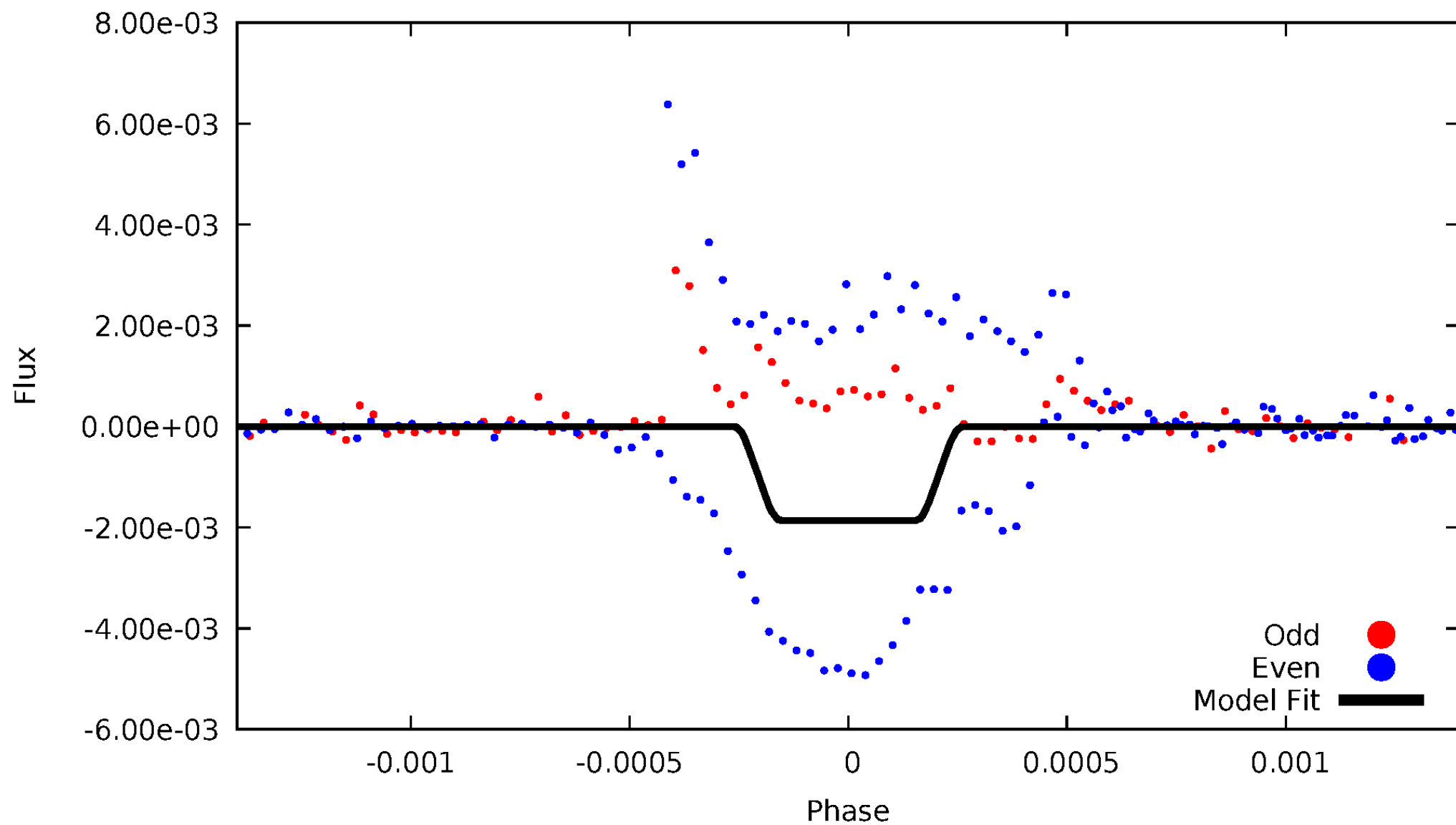
DV Odd/Even

TCE 004180534-08



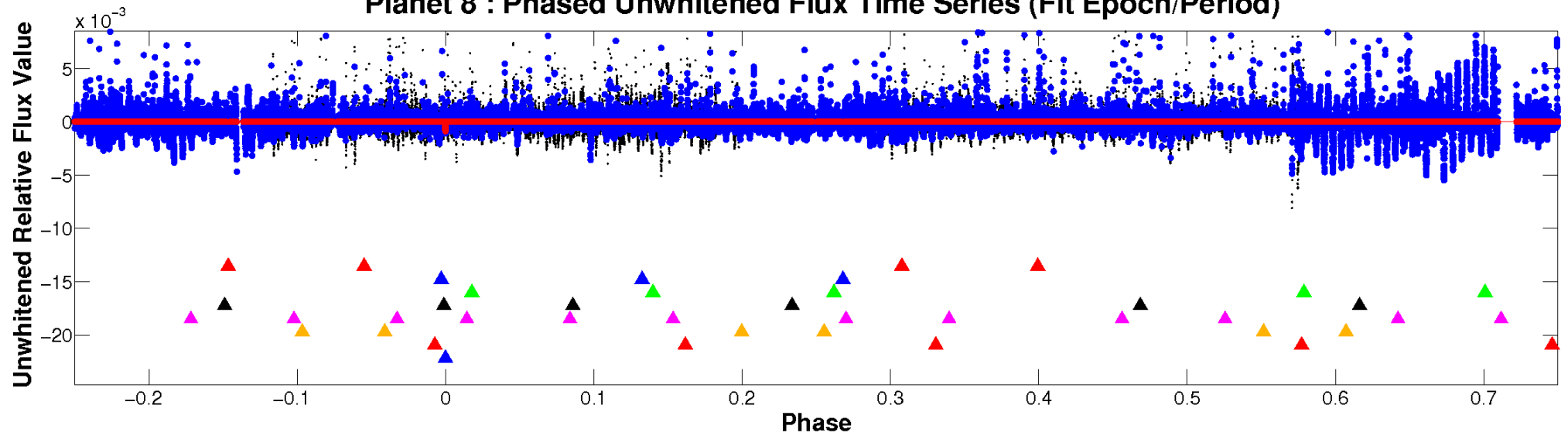
ALT Odd/Even

TCE 004180534-08

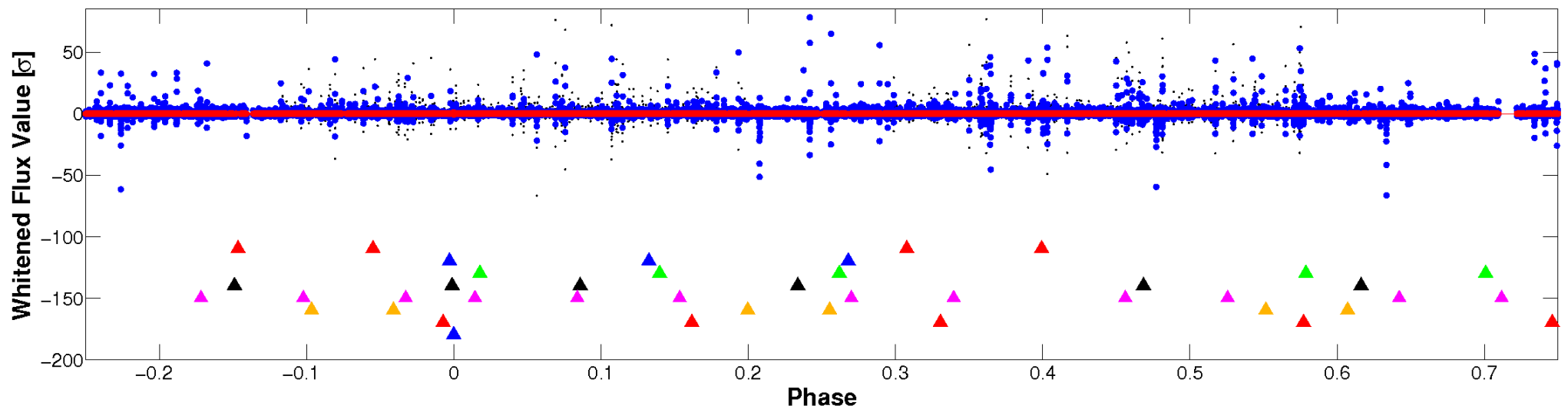


Non-Whitened Vs. Whitened Light Curve

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

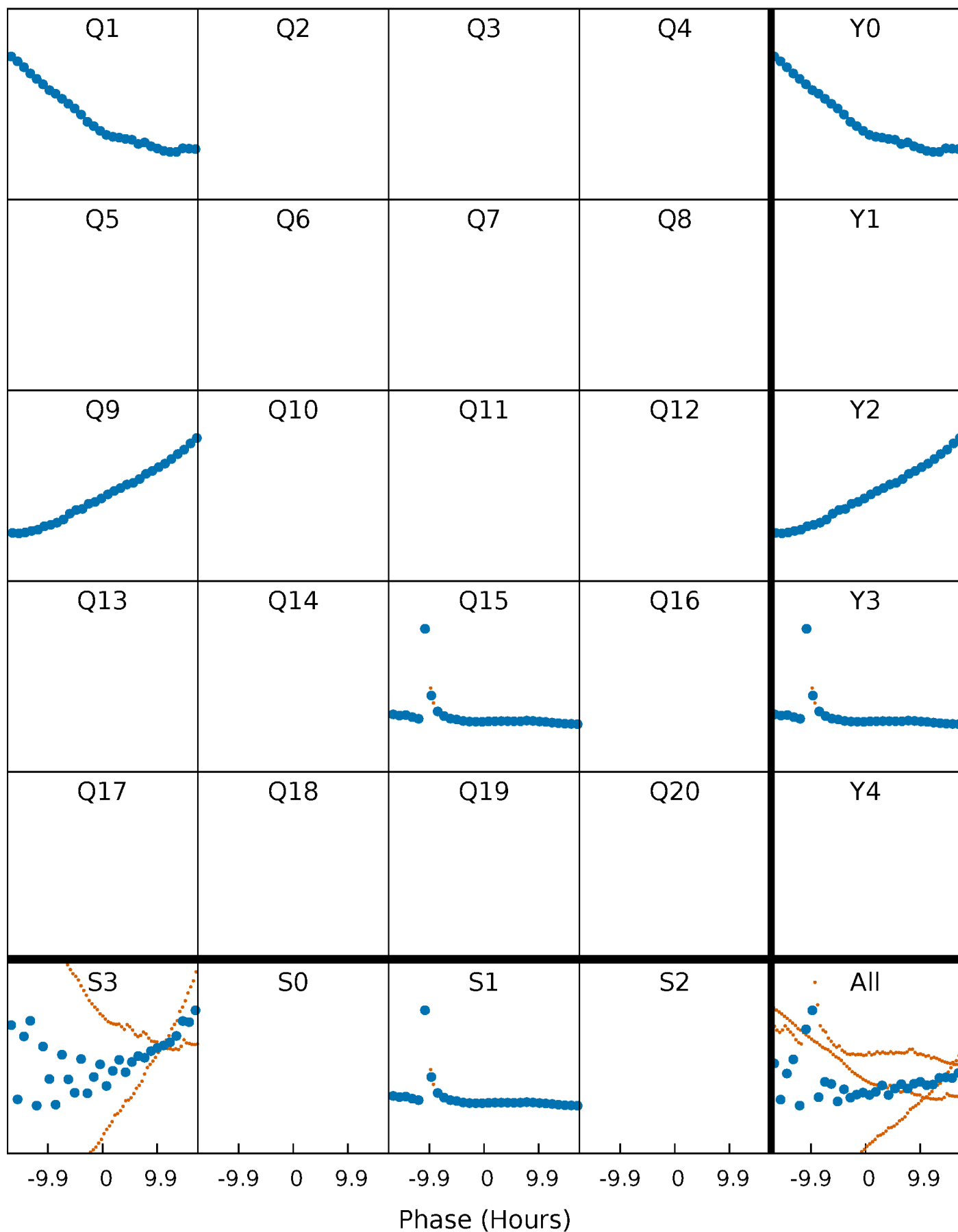


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



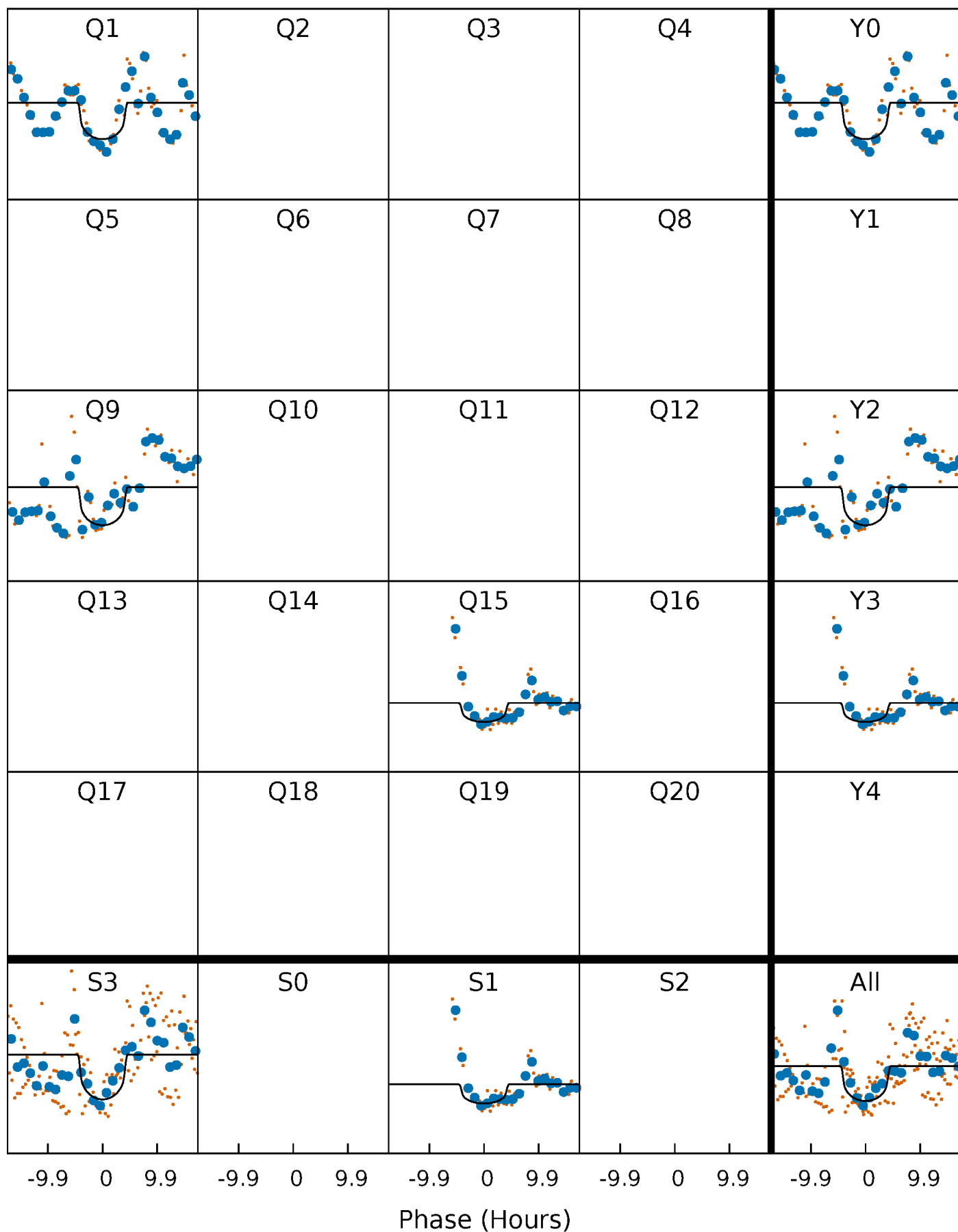
PDC Quarter-Phased Transit Curves

TCE 004180534-08 $P=651.020636$ Days $T_0=160.139671$ (BKJD)



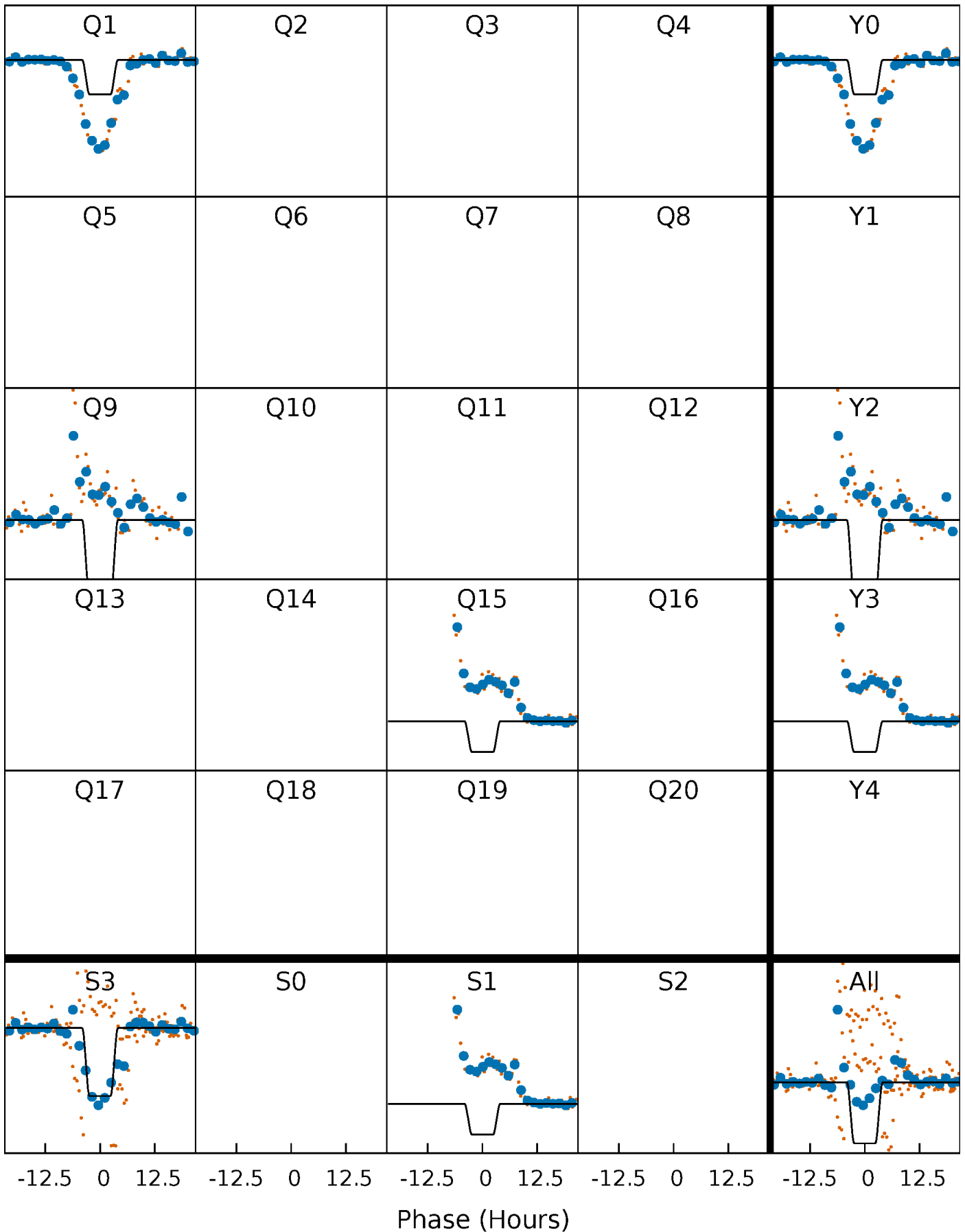
DV Quarter-Phased Transit Curves

TCE 004180534-08 $P=651.020636$ Days $T_0=160.139671$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

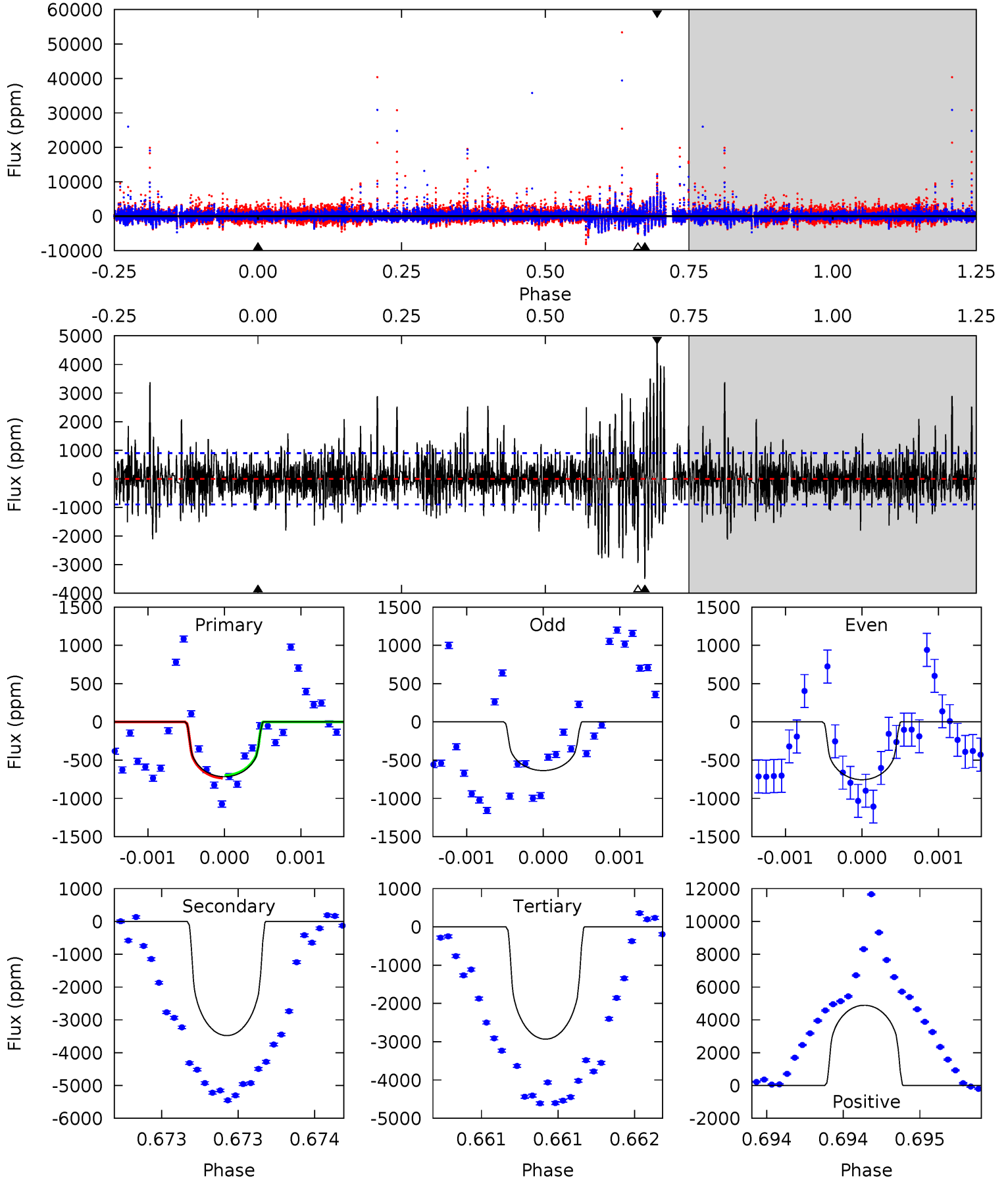
TCE 004180534-08 $P=651.026844$ Days $T_0=160.156655$ (BKJD)



DV Model-Shift Uniqueness Test

004180534-08, P = 651.020636 Days, E = 160.139671 Days

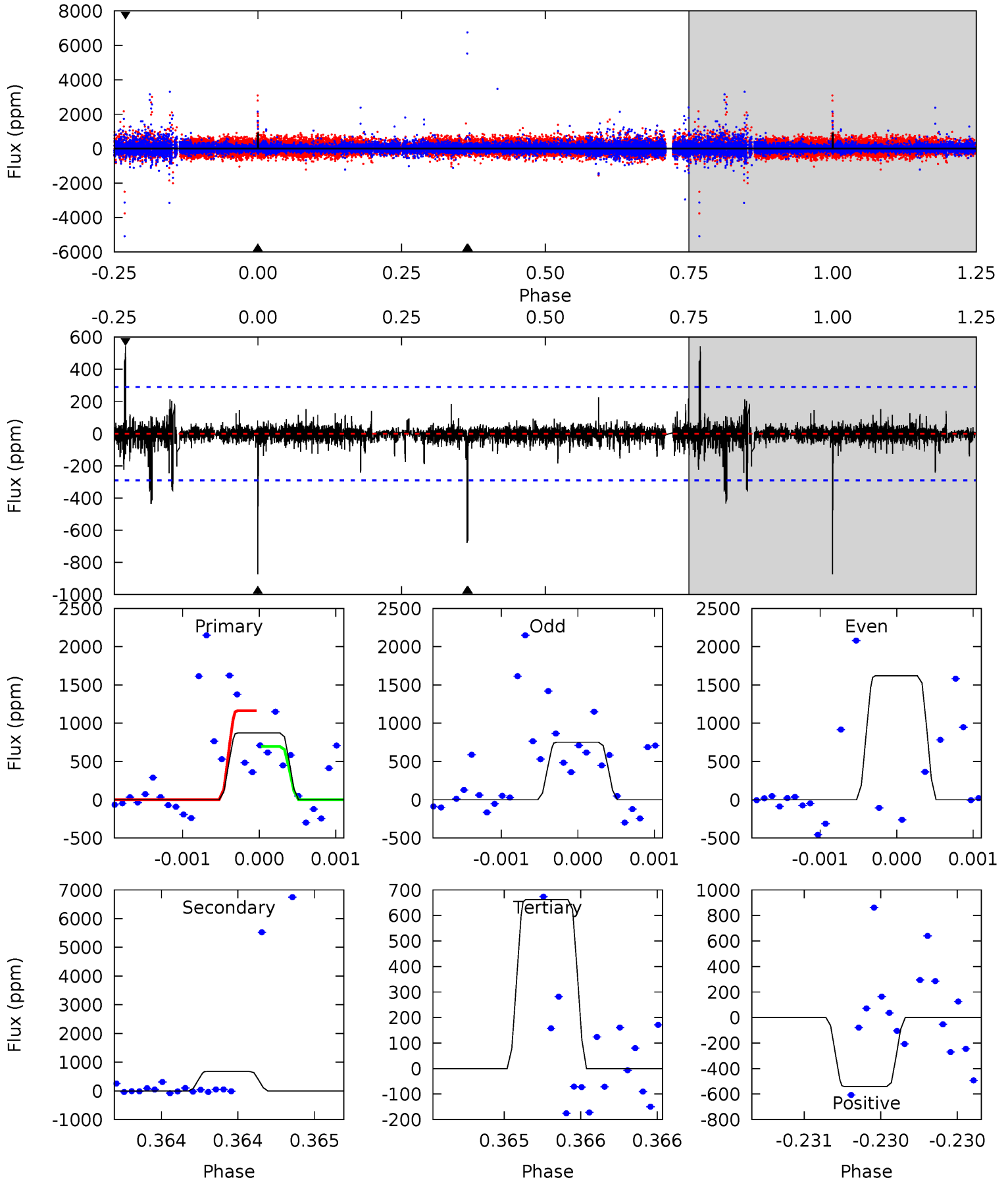
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.44	21.6	18.2	30.3	5.55	3.44	3.99	-13.8	-25.9	3.39	-8.75	0.32	1.06	0.58	0.11



Alt Model-Shift Uniqueness Test

004180534-08, P = 651.026844 Days, E = 160.156655 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.8	13.0	12.7	10.4	5.57	3.47	0.62	4.04	6.37	0.31	2.63	10.6	-0.64	0.38	0



Stellar Parameters For KIC 004180534

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4746^{+131}_{-95}	$3.070^{+0.434}_{-0.355}$	$-0.020^{+0.250}_{-0.200}$	$4.645^{+3.183}_{-1.714}$	$0.925^{+0.288}_{-0.157}$	$0.013^{+0.037}_{-0.009}$
	+3%/-2%	+14%/-12%	+1250%/-1000%	+69%/-37%	+31%/-17%	+288%/-72%
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 004180534-08 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-3480 ± 161	$14.33^{+10.09}_{-8.21}$	523^{+84}_{-60}	6659^{+4643}_{-1408}	19792^{+85178}_{-13120}
Alt.	-678 ± 52	$21.39^{+12.86}_{-10.11}$	527^{+83}_{-64}	3963^{+820}_{-440}	1718^{+4362}_{-1076}

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

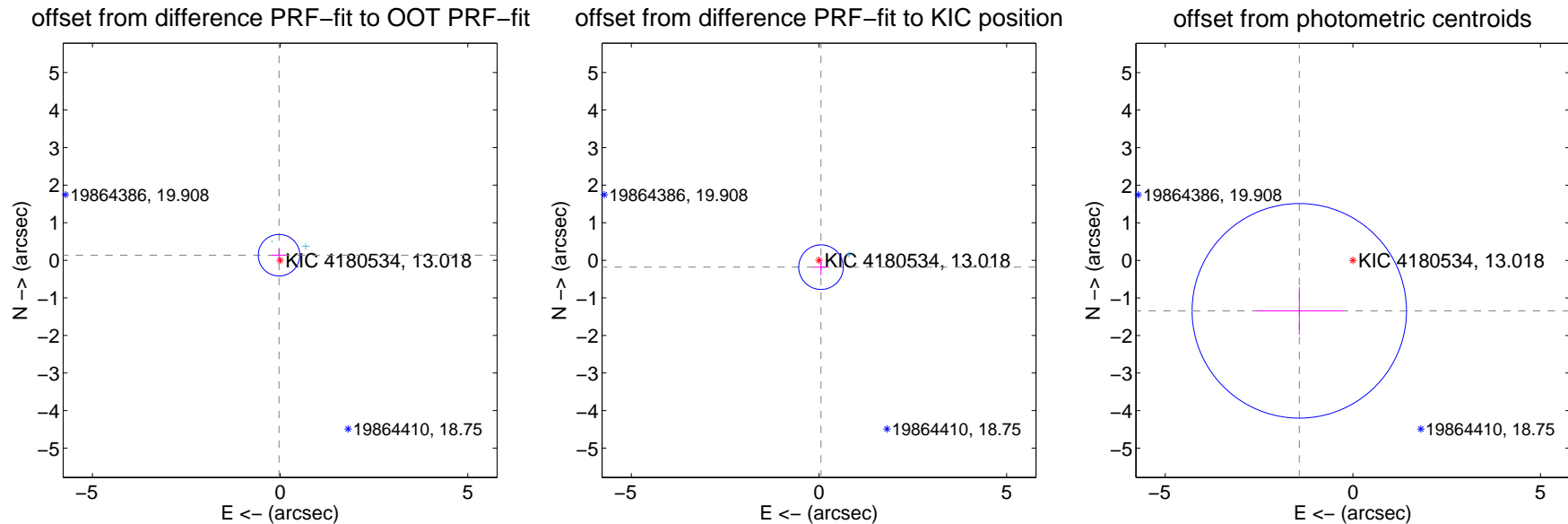
DV Centroid Data

Supplemental centroid analysis for 004180534-08. Kepler magnitude: 13.02. Transit SNR 4.21

There are 3 quarters with good PRF difference image offsets

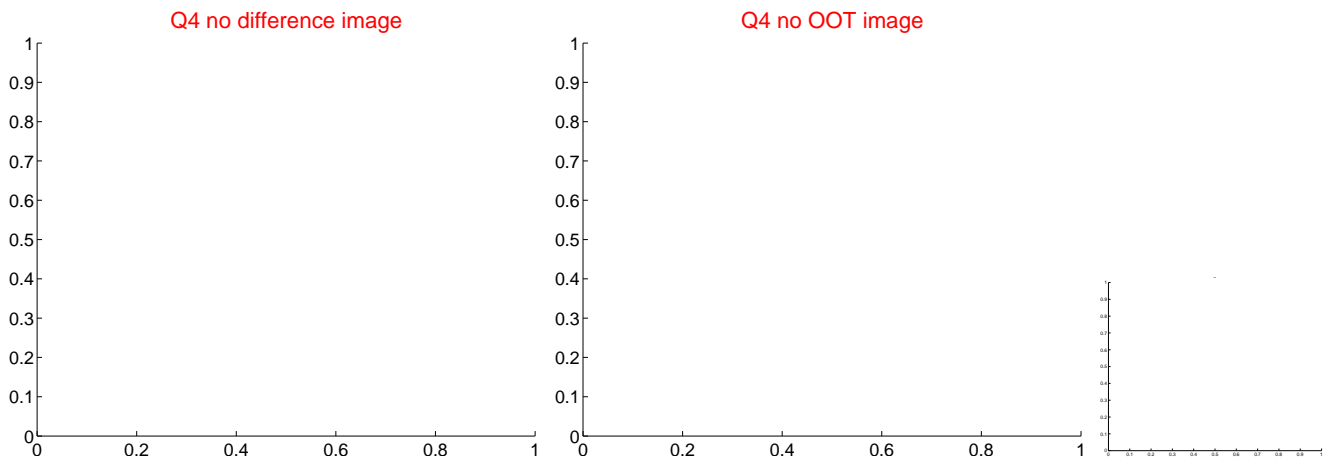
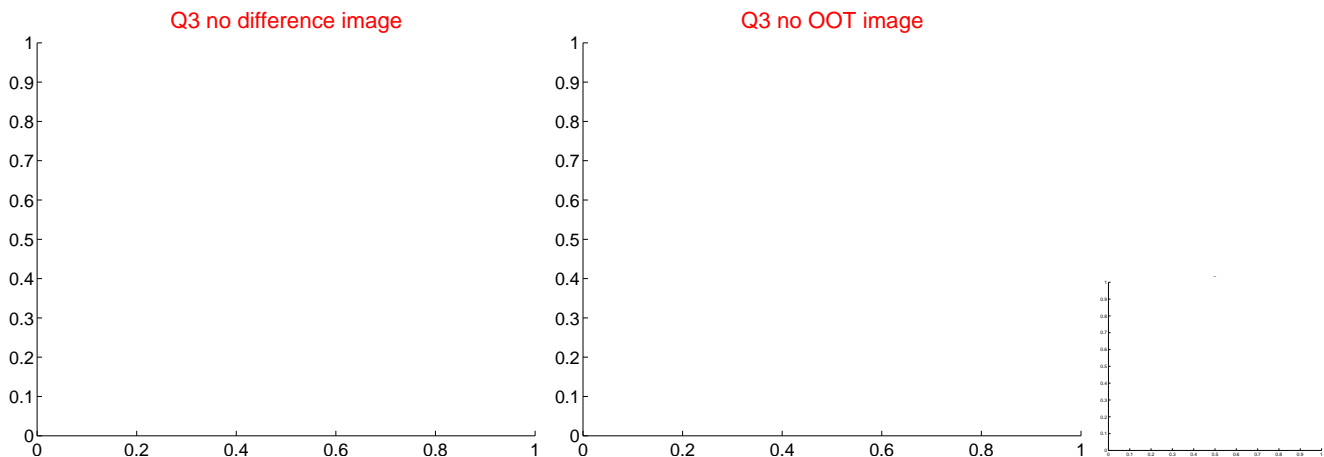
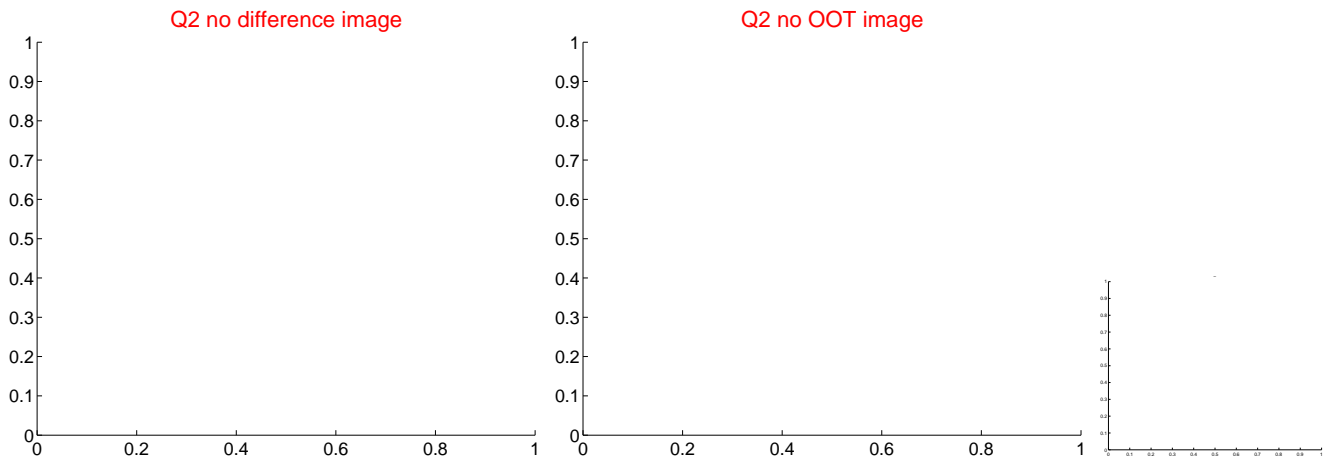
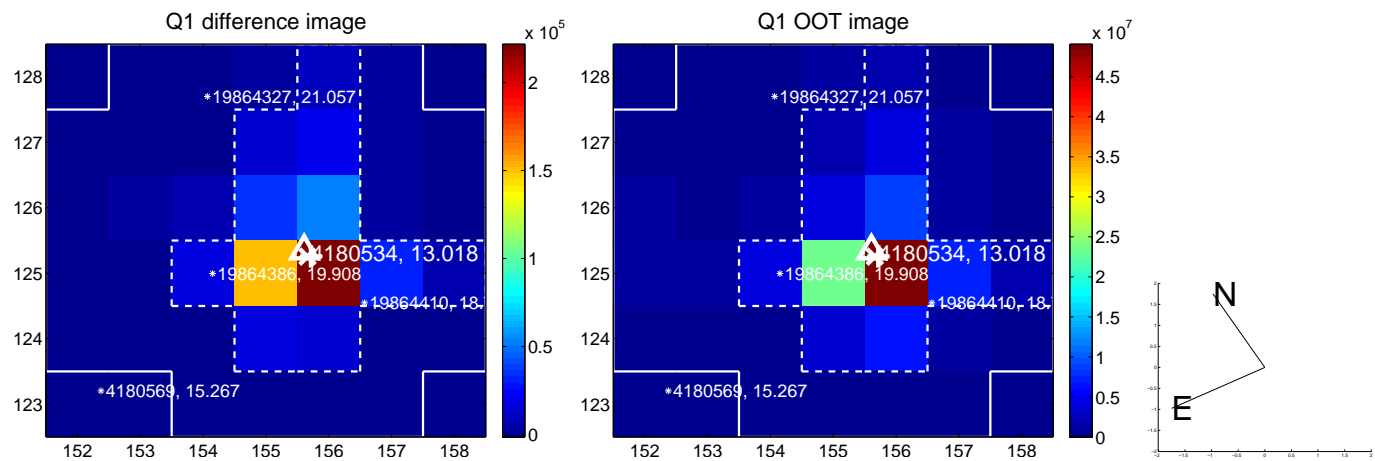
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.139 ± 0.184	0.75	0.029 ± 0.192	0.136 ± 0.182
PRF-fit source offset from KIC position	0.190 ± 0.198	0.96	-0.054 ± 0.192	-0.182 ± 0.217
photometric centroid source offset	1.96 ± 0.95	2.06	1.43 ± 1.16	-1.34 ± 0.64

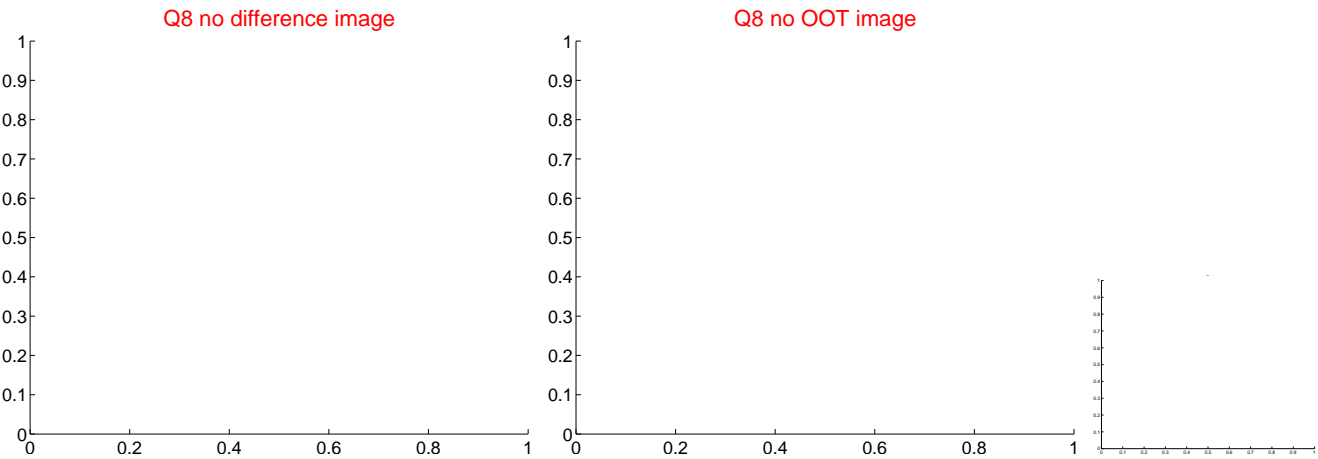
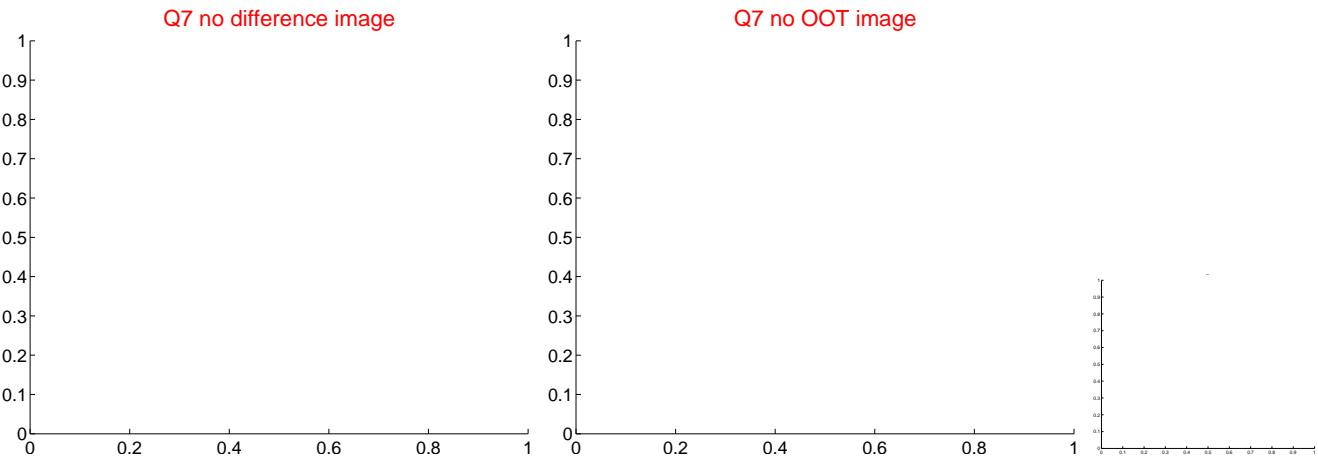
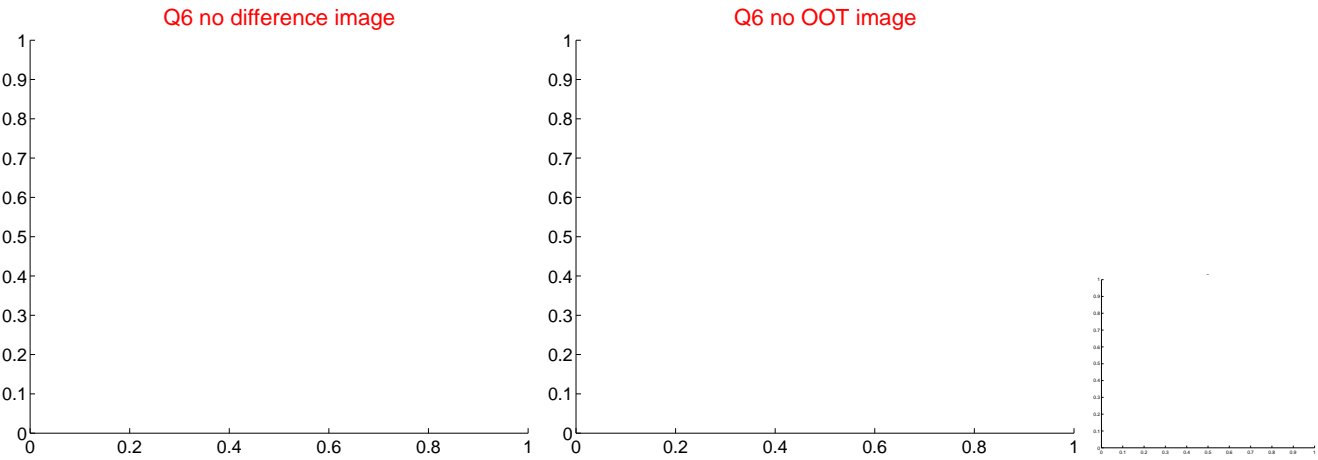
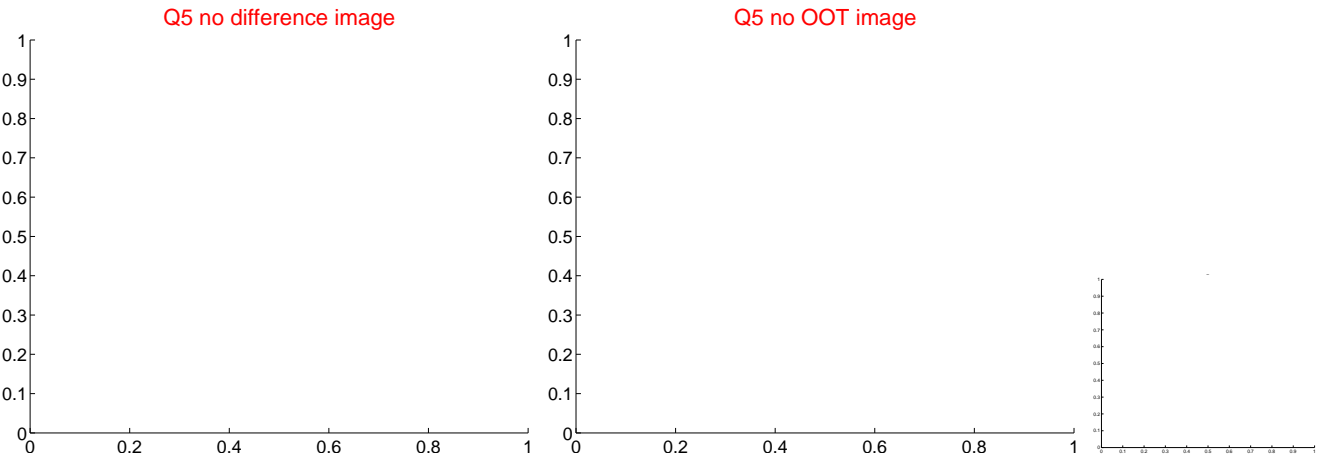


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

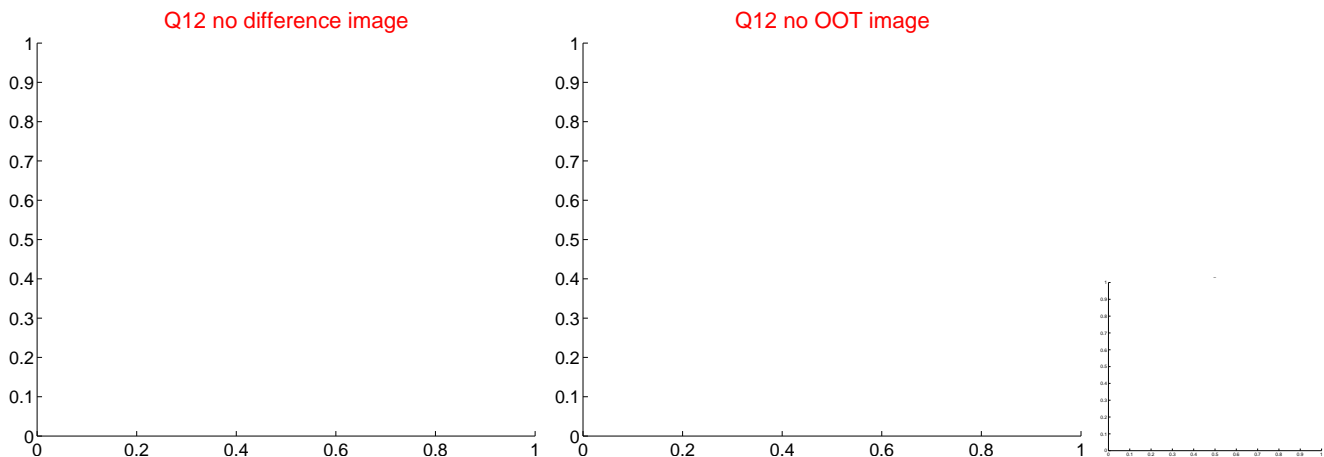
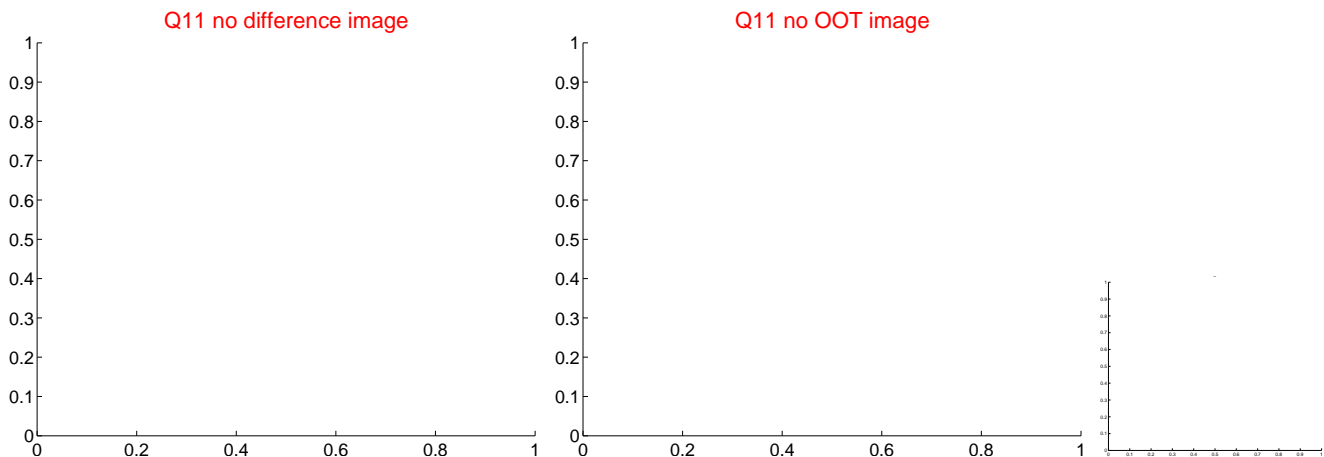
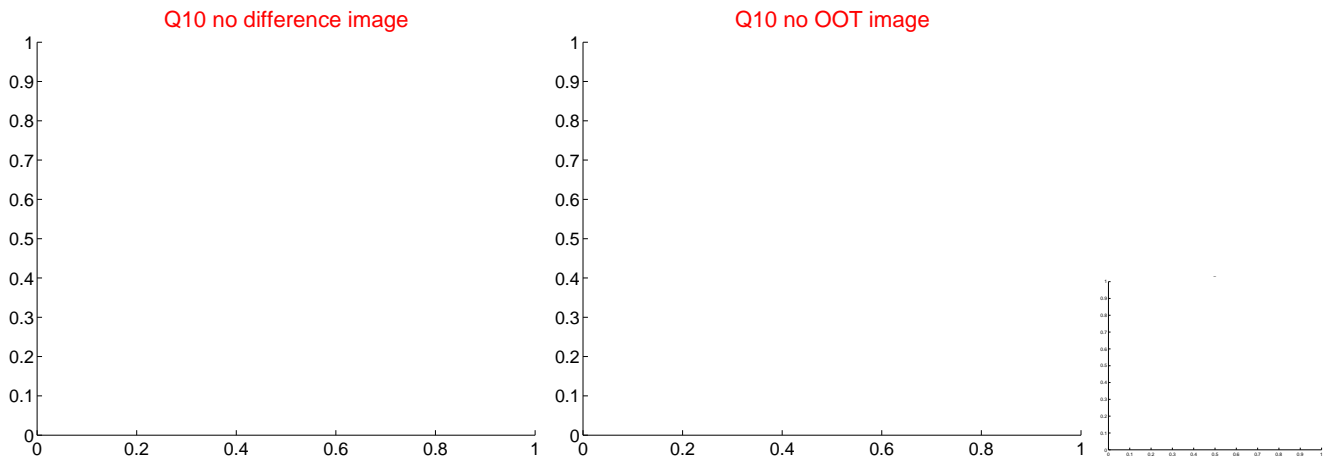
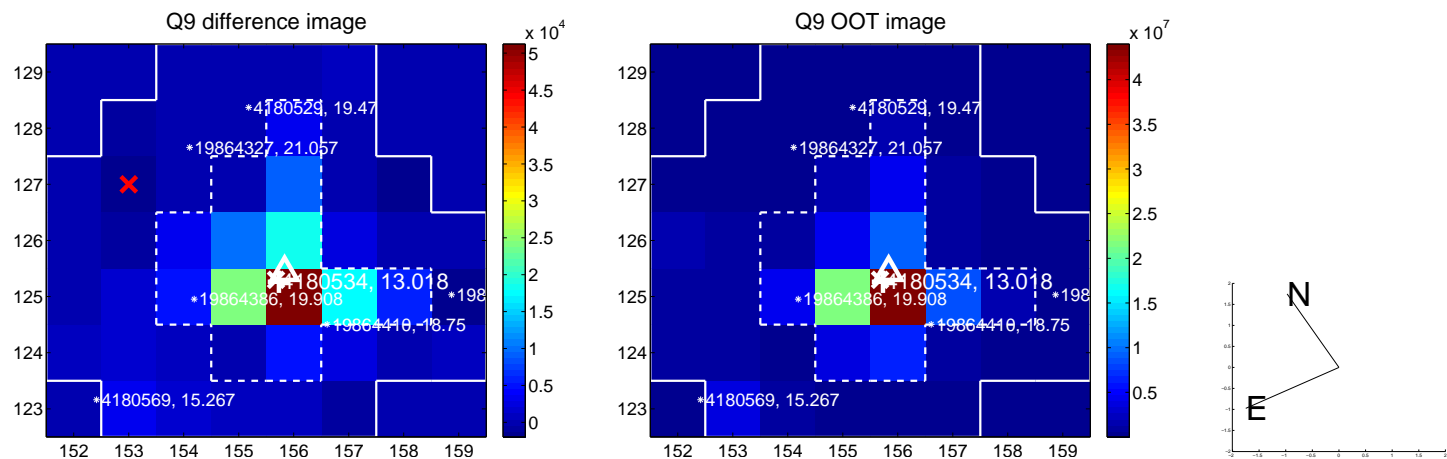
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



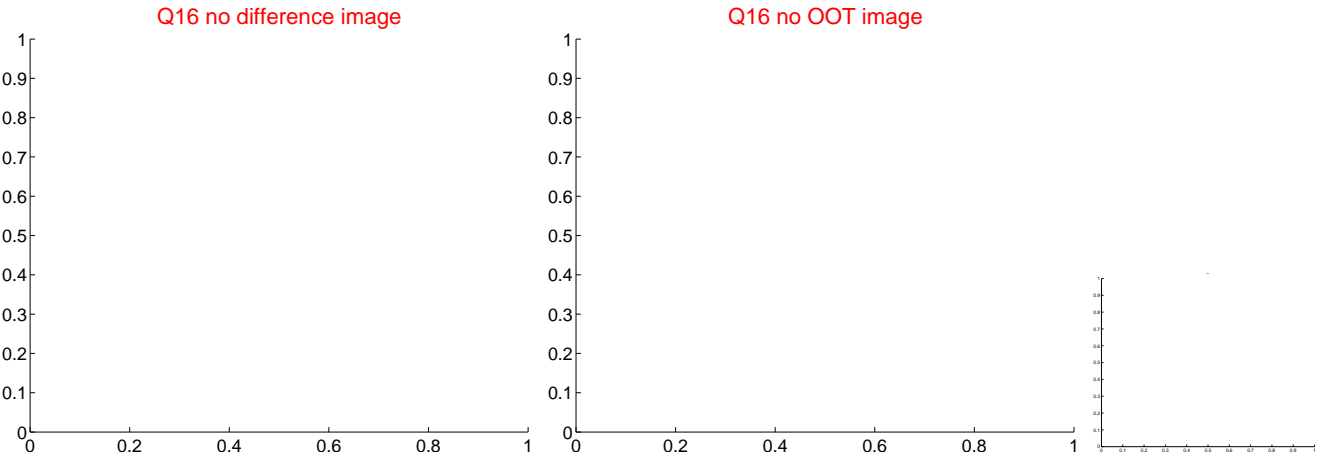
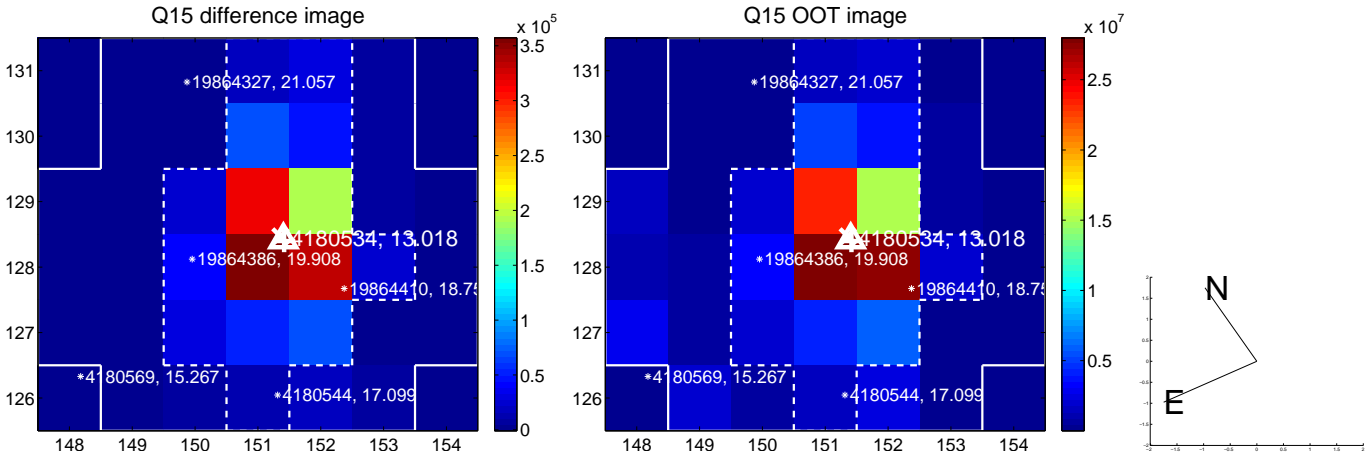
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



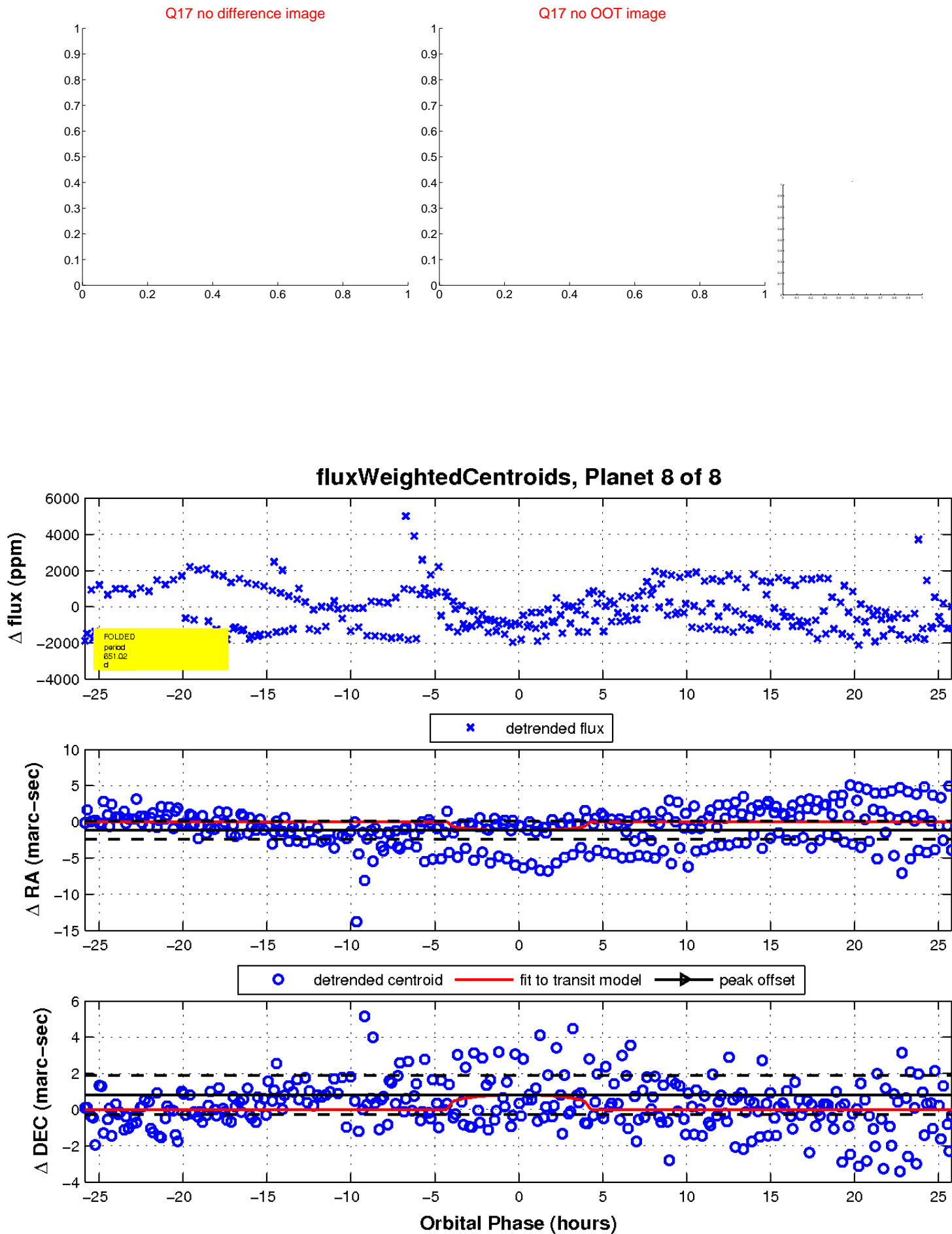
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

