

KIC 011554998

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})
011554998-01	OBS	No	619.682399	149.096103	483.0	5.289	14.4	3.6	16.22	4734	41.51	30.78
011554998-02	OBS	No	291.603932	394.492620	541.8	4.474	9.1	5.3	16.22	4734	37.82	84.10
011554998-03	OBS	No	312.039886	358.174547	2314.9	16.783	16.1	7.8	16.22	4734	98.85	76.84
011554998-04	OBS	No	460.244903	481.685323	1554.3	6.514	12.8	8.2	16.22	4734	85.88	45.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011554998-01	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—CENT_FEW_DIFFS
011554998-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
011554998-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011554998-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_MEAS

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

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

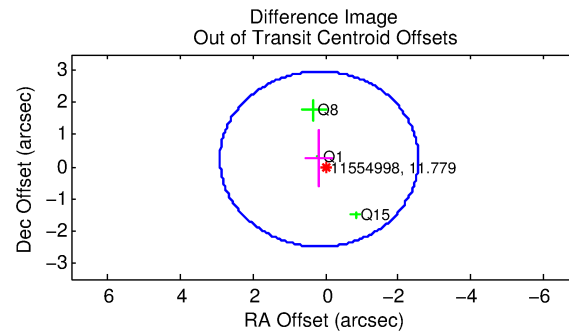
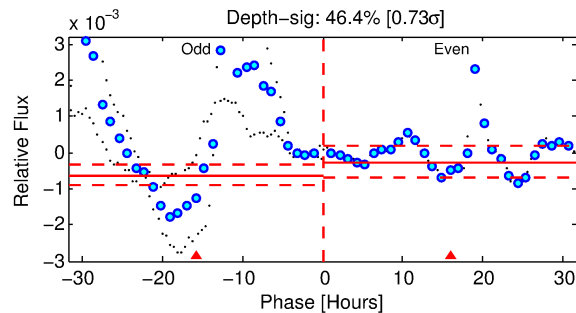
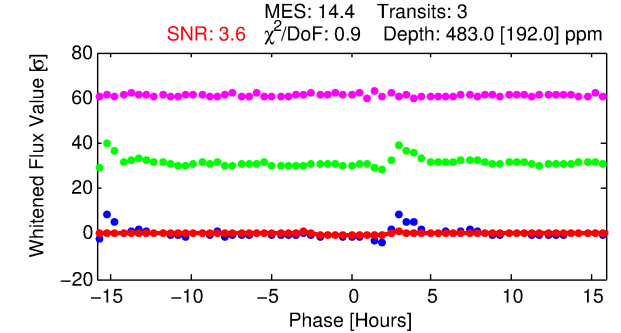
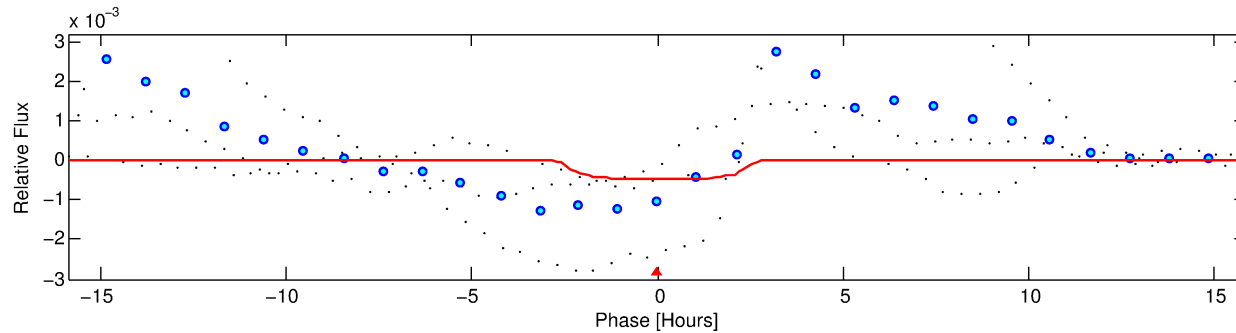
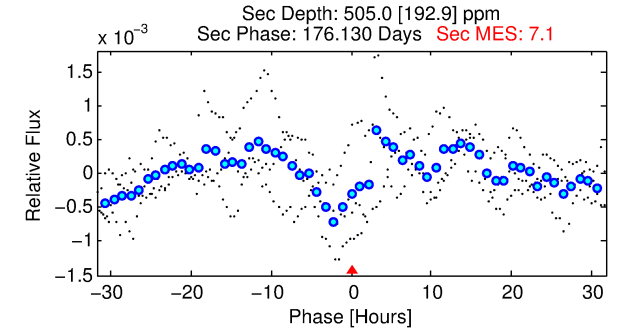
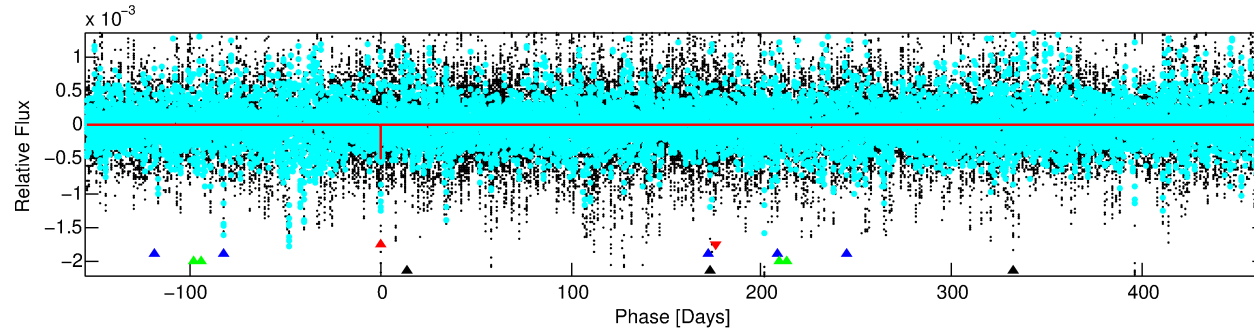
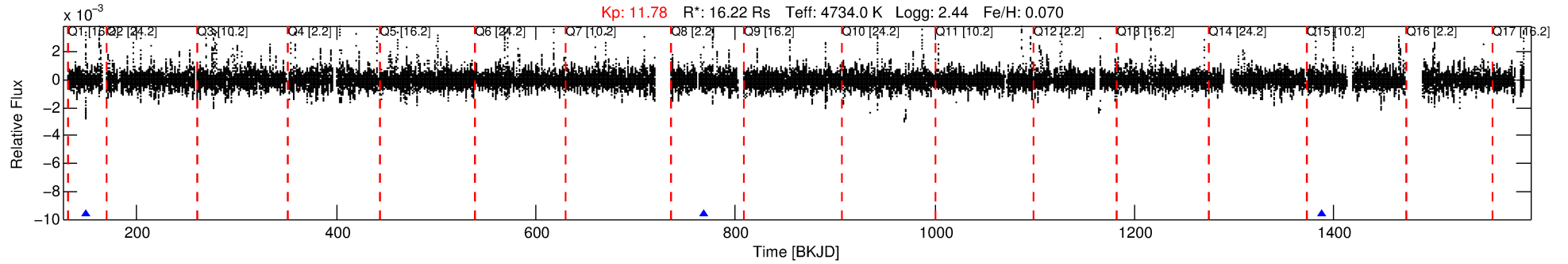
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011554998-01

No Significant Match Found

DV One-Page Summary

KIC: 11554998 Candidate: 1 of 4 Period: 619.682 d



DV Fit Results:

Period = 619.68240 [0.00764] d
Epoch = 149.0961 [0.0120] BKJD
Rp/R* = 0.0234 [0.0103]
a/R* = 512.57 [579.95]
b = 0.85 [0.38]
Seff = 30.78 [24.45]
Teq = 601 [119] K
Rp = 41.51 [30.48] Re
a = 1.9613 [1.0191] AU
Ag = 620.24 [767.02] [0.81 σ]
Teffp = 4634 [1115] K [3.60 σ]

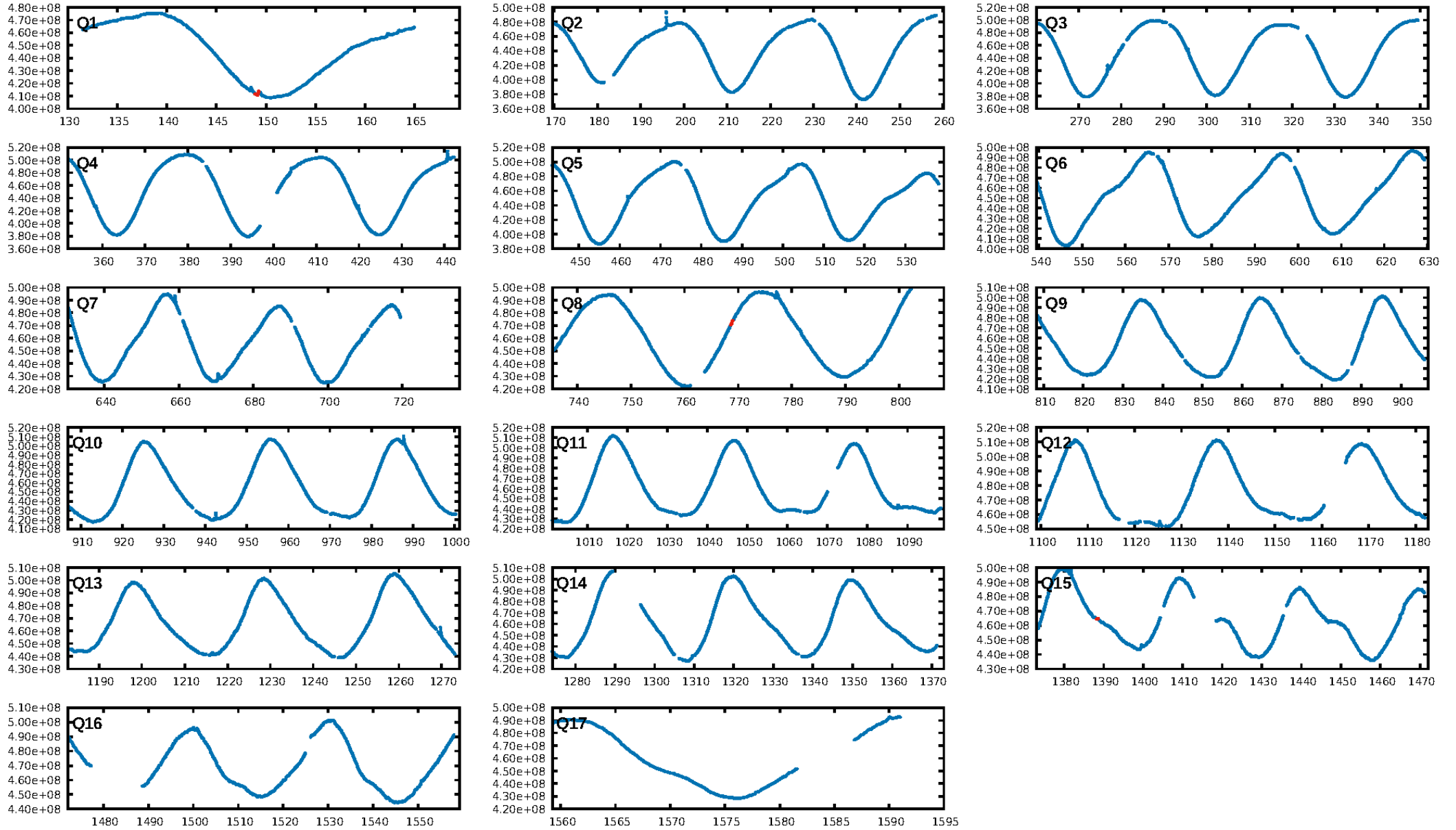
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [456.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 36.8%
ModelChiSquareGof-sig: 95.6%
Bootstrap-pfa: 6.56e-15
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.3671
Centroid-sig: 59.8%
Centroid-so: 0.474 arcsec [0.84 σ]
OotOffset-rm: 0.293 arcsec [0.32 σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-rm: 0.356 arcsec [0.29 σ]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

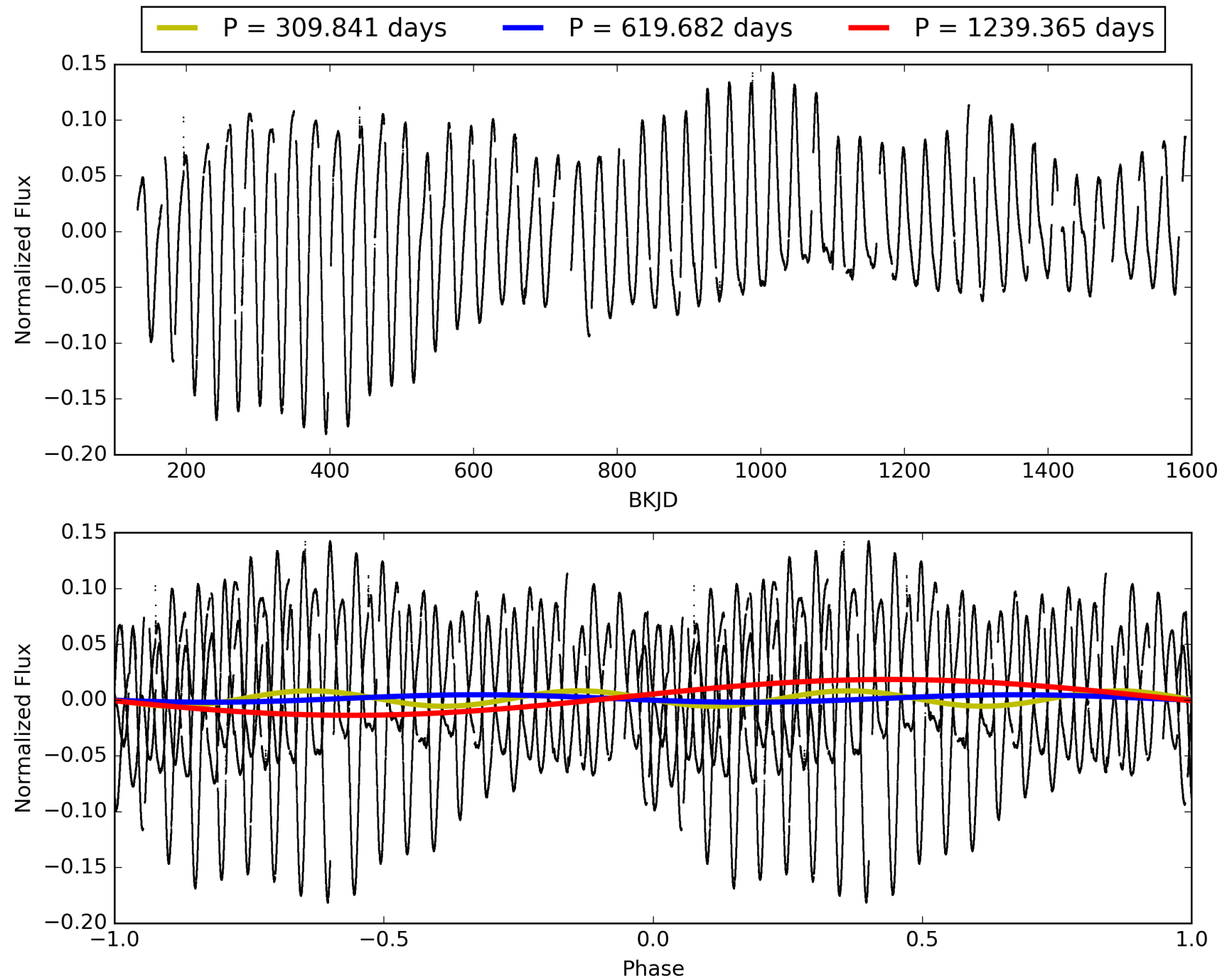
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 011554998-01, PDC Light Curves

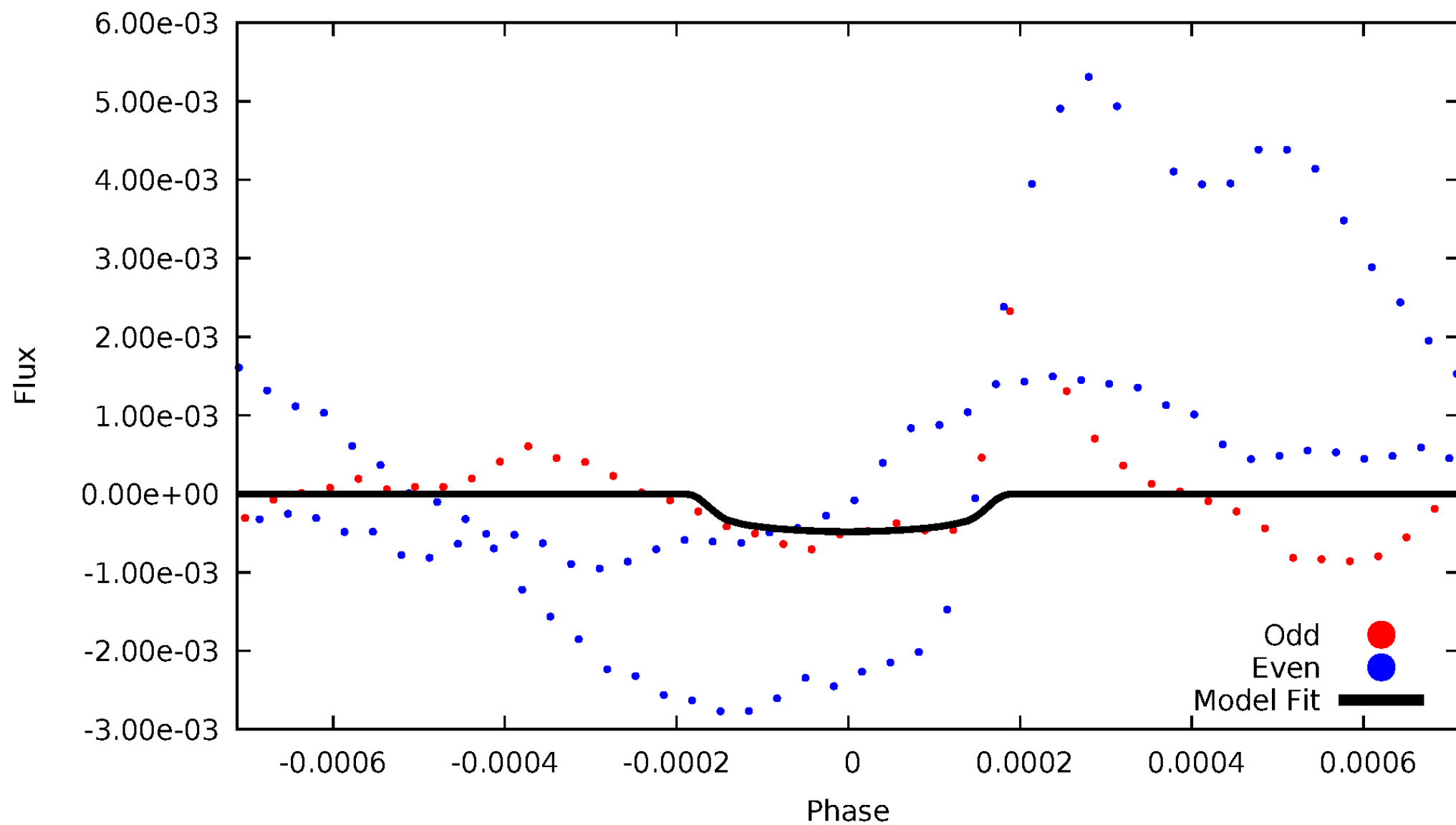


TCE 011554998-01



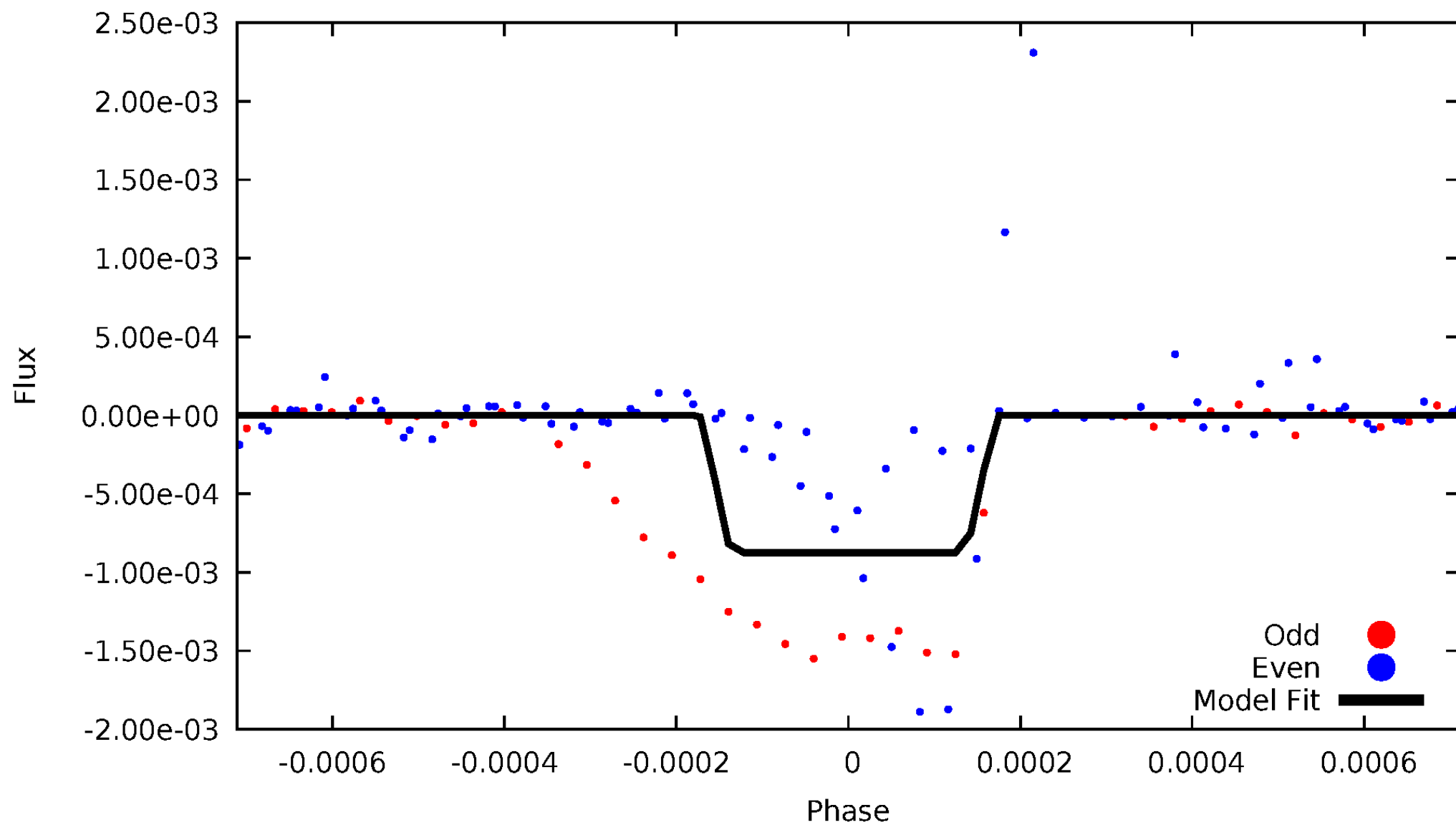
DV Odd/Even

TCE 011554998-01



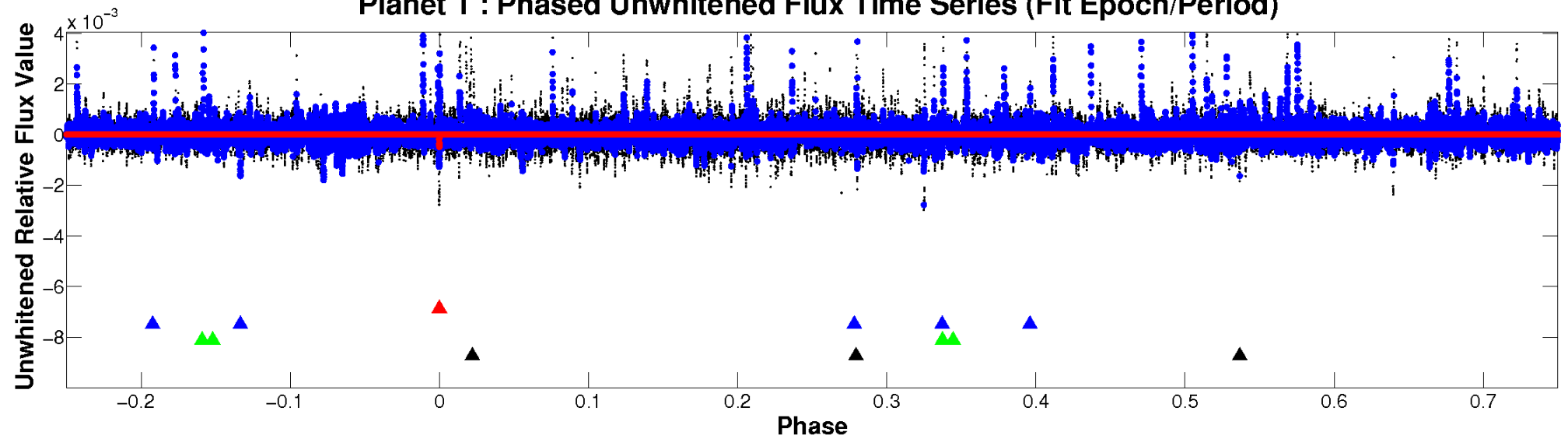
ALT Odd/Even

TCE 011554998-01

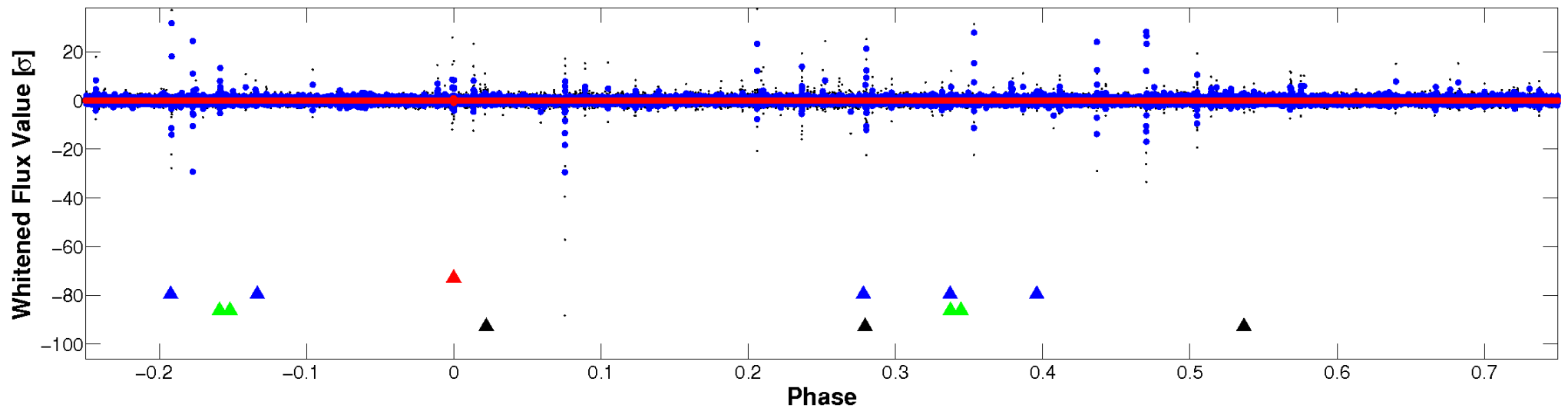


Non-Whitened Vs. Whitened Light Curve

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

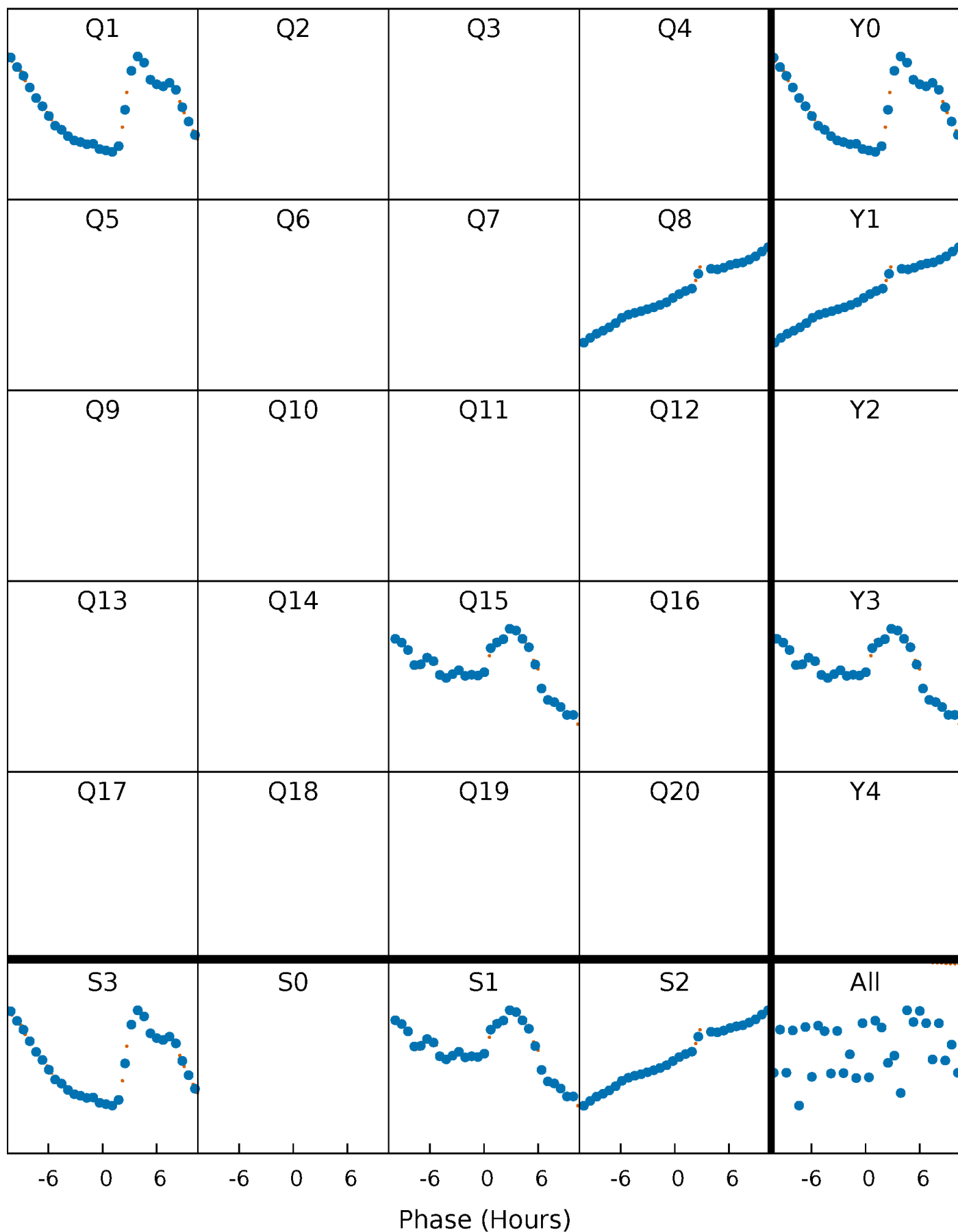


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



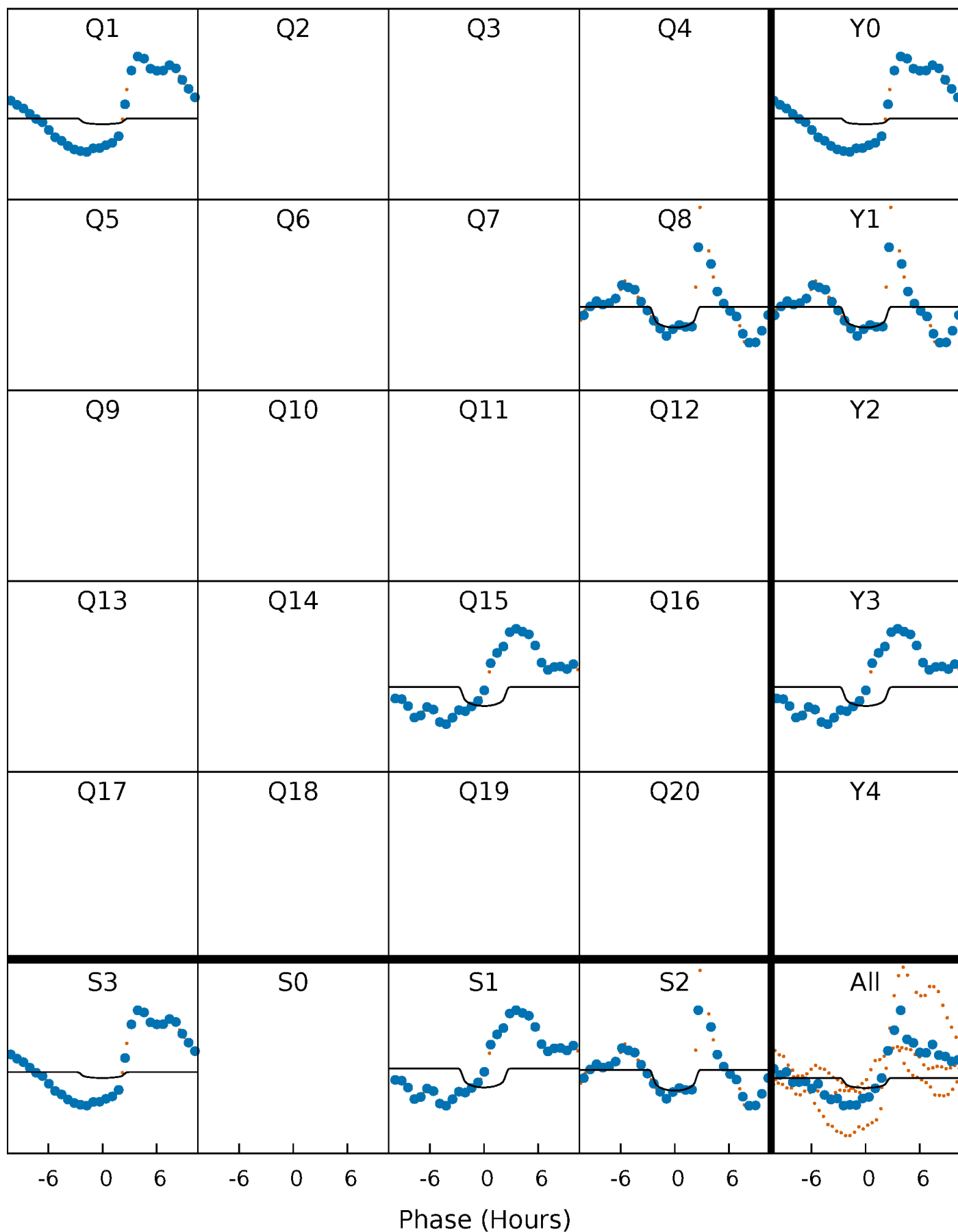
PDC Quarter-Phased Transit Curves

TCE 011554998-01 P=619.682399 Days $T_0=149.096103$ (BKJD)



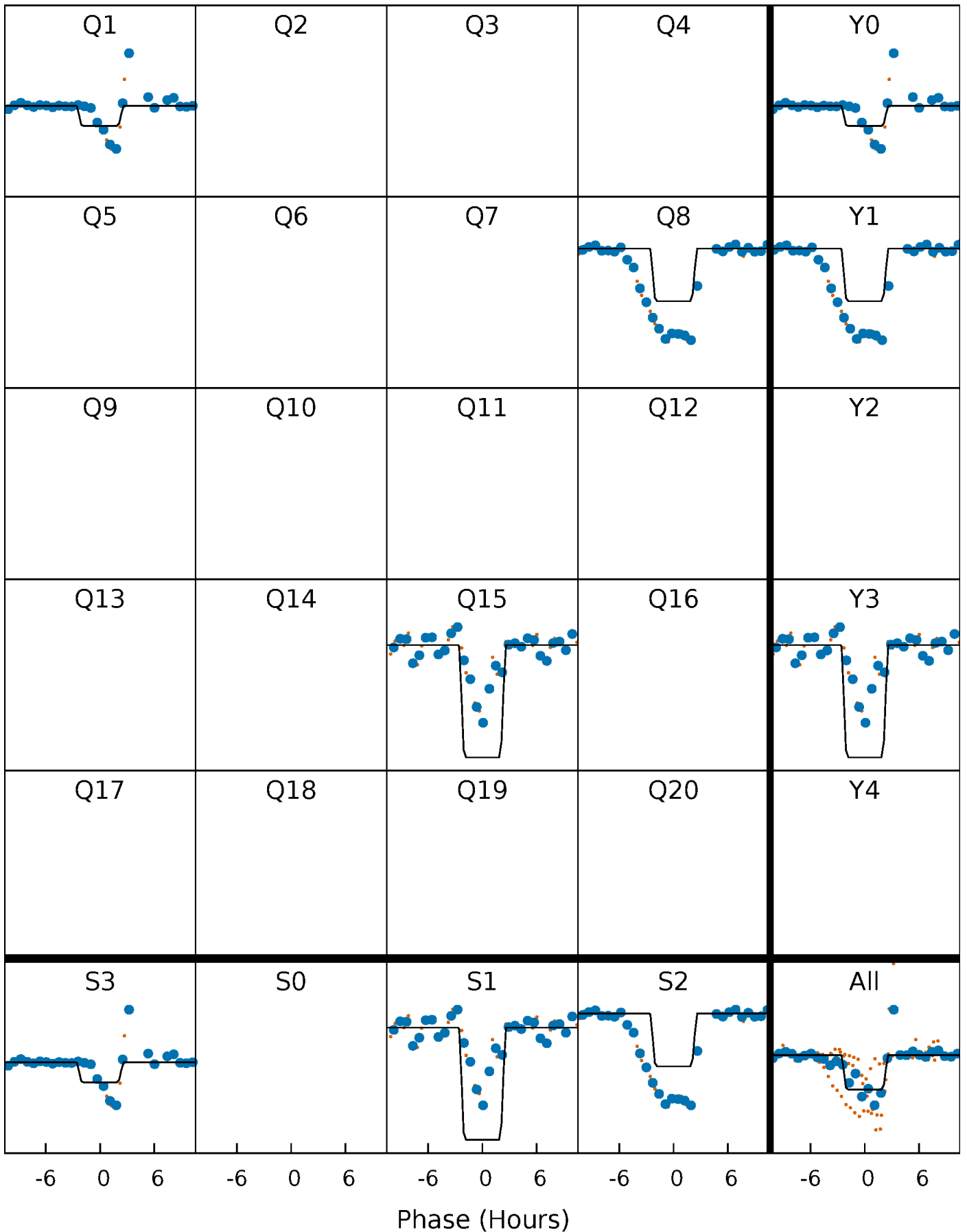
DV Quarter-Phased Transit Curves

TCE 011554998-01 P=619.682399 Days $T_0=149.096103$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

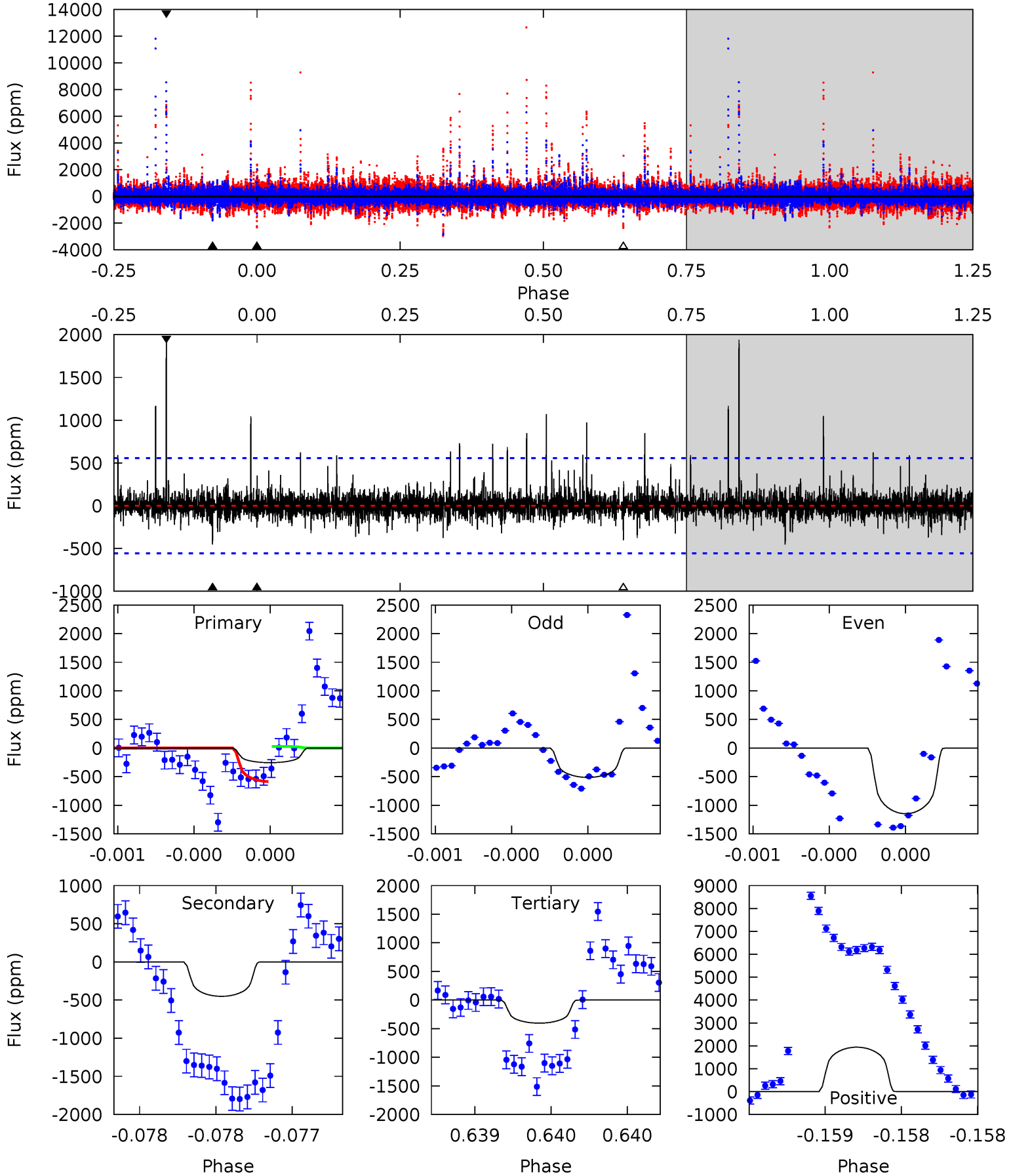
TCE 011554998-01 P=619.681763 Days $T_0=149.095274$ (BKJD)



DV Model-Shift Uniqueness Test

011554998-01, P = 619.682399 Days, E = 149.096103 Days

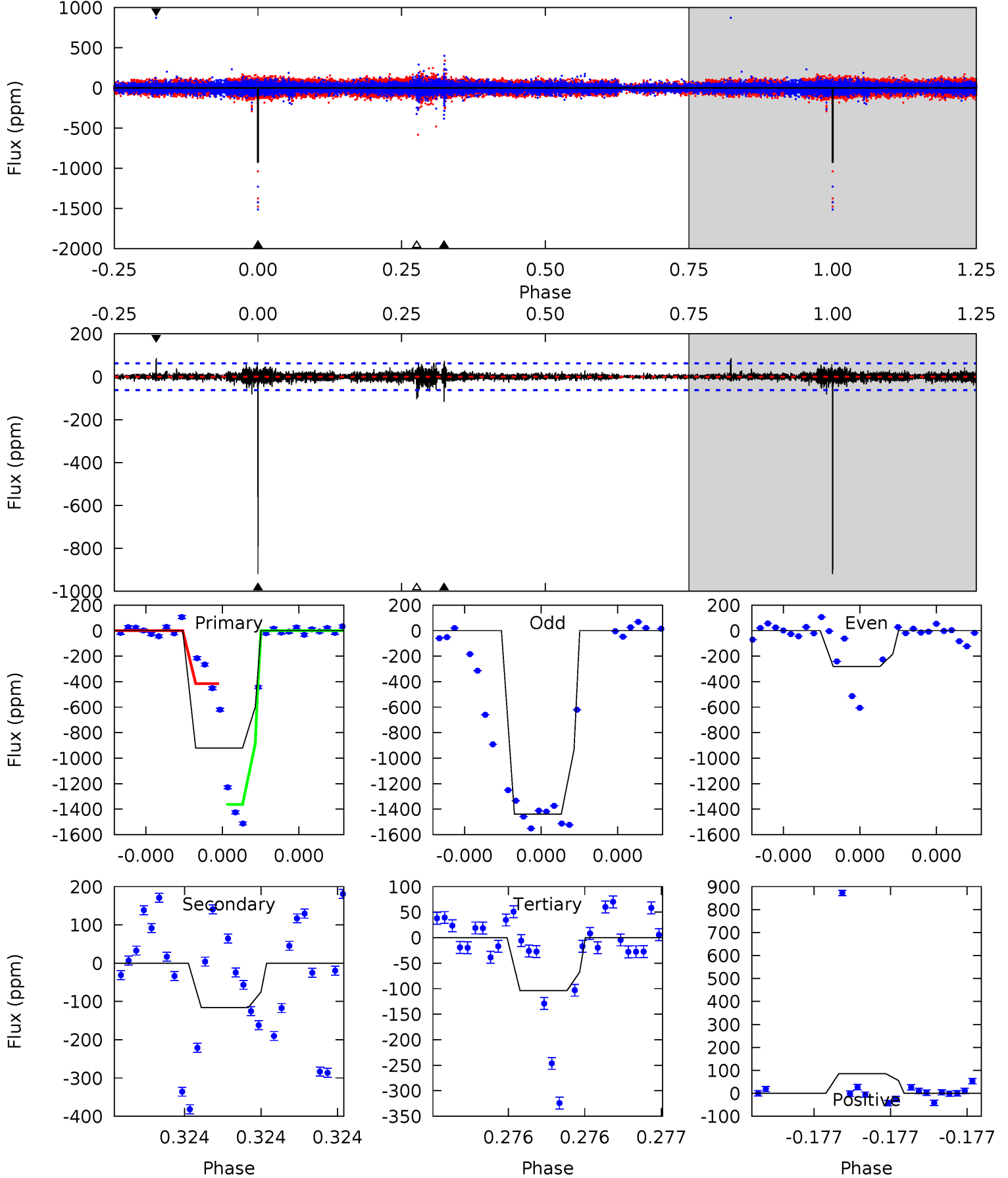
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.58	4.56	4.07	19.6	5.62	3.55	1.08	-1.49	-17.0	0.48	-15.0	2.99	1.82	0.81	2.78



Alt Model-Shift Uniqueness Test

011554998-01, P = 619.681763 Days, E = 149.095274 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
83.1	10.5	9.39	7.75	5.64	3.58	0.85	73.7	75.3	1.11	2.74	57.1	1.01	0.09	0



Stellar Parameters For KIC 011554998

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4734^{+104}_{-139}	$2.436^{+0.443}_{-0.148}$	$0.070^{+0.200}_{-0.300}$	$16.222^{+2.988}_{-9.561}$	$2.617^{+0.506}_{-1.517}$	$0.001^{+0.004}_{-0.000}$
	+2%/-3%	+18%/-6%	+286%/-429%	+18%/-59%	+19%/-58%	+508%/-36%
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 011554998-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-452 ± 99	$37.56^{+20.74}_{-18.48}$	828^{+52}_{-109}	4519^{+1298}_{-590}	666^{+1765}_{-381}
Alt.	-116 ± 11	$49.71^{+22.13}_{-19.83}$	829^{+61}_{-99}	3304^{+469}_{-280}	100^{+166}_{-51}

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)
 A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

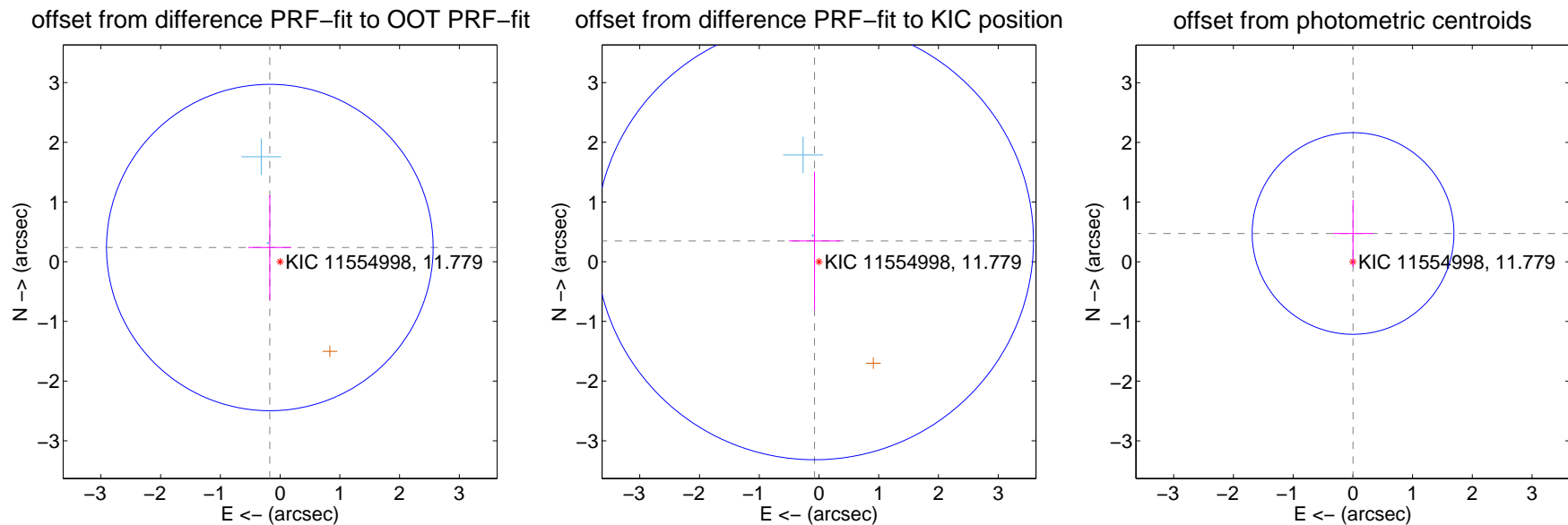
DV Centroid Data

Supplemental centroid analysis for 011554998-01. **Kepler magnitude: 11.78.** Transit SNR 3.60

There are 2 quarters with good PRF difference image offsets

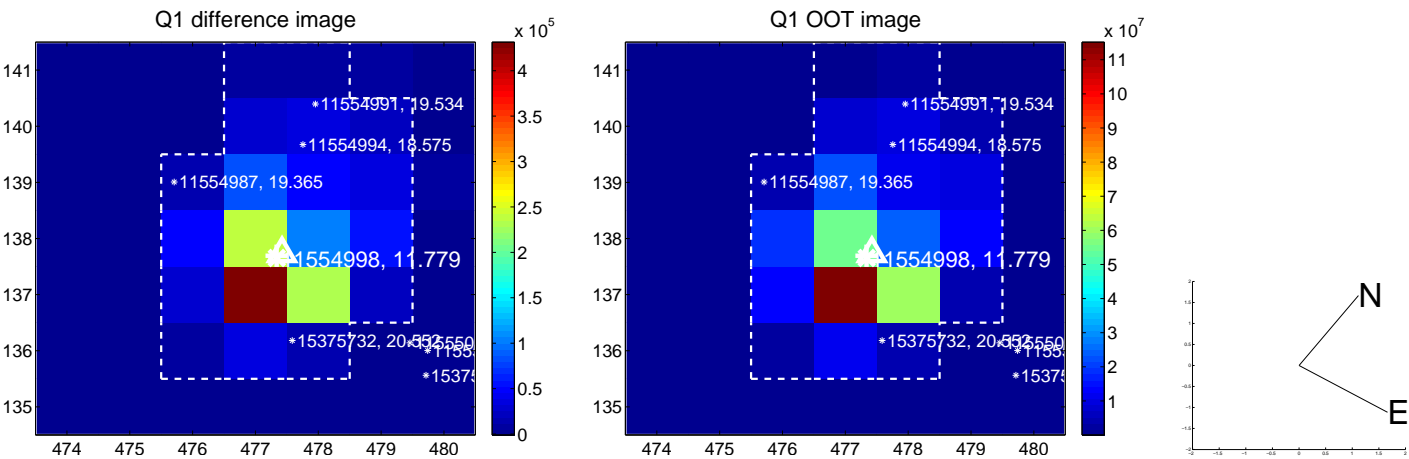
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.293 ± 0.911	0.32	0.172 ± 0.361	0.237 ± 0.875
PRF-fit source offset from KIC position	0.356 ± 1.221	0.29	0.076 ± 0.427	0.348 ± 1.159
photometric centroid source offset	0.47 ± 0.56	0.84	-0.00 ± 0.34	0.47 ± 0.56



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

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



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

Q5 no difference image



Q5 no OOT image



Q6 no difference image



Q6 no OOT image



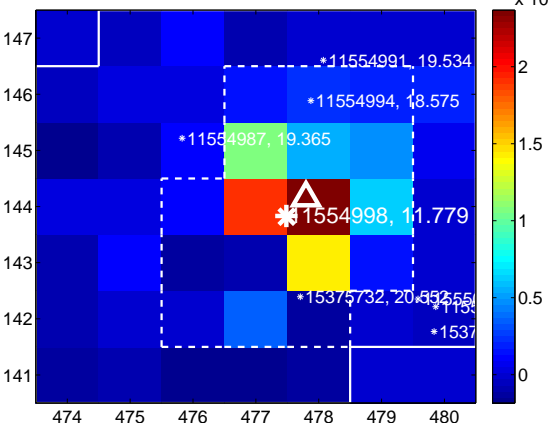
Q7 no difference image



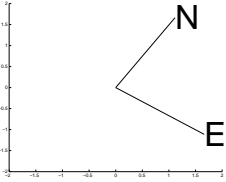
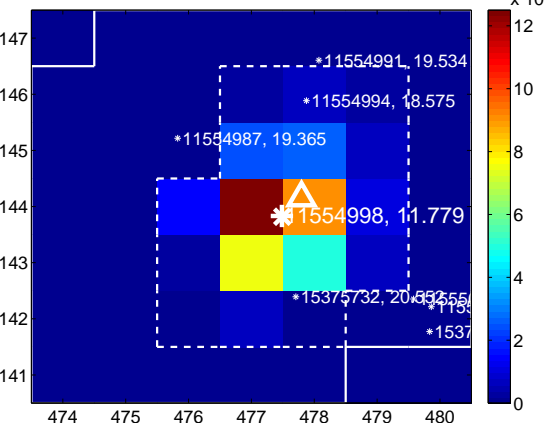
Q7 no OOT image



Q8 difference image



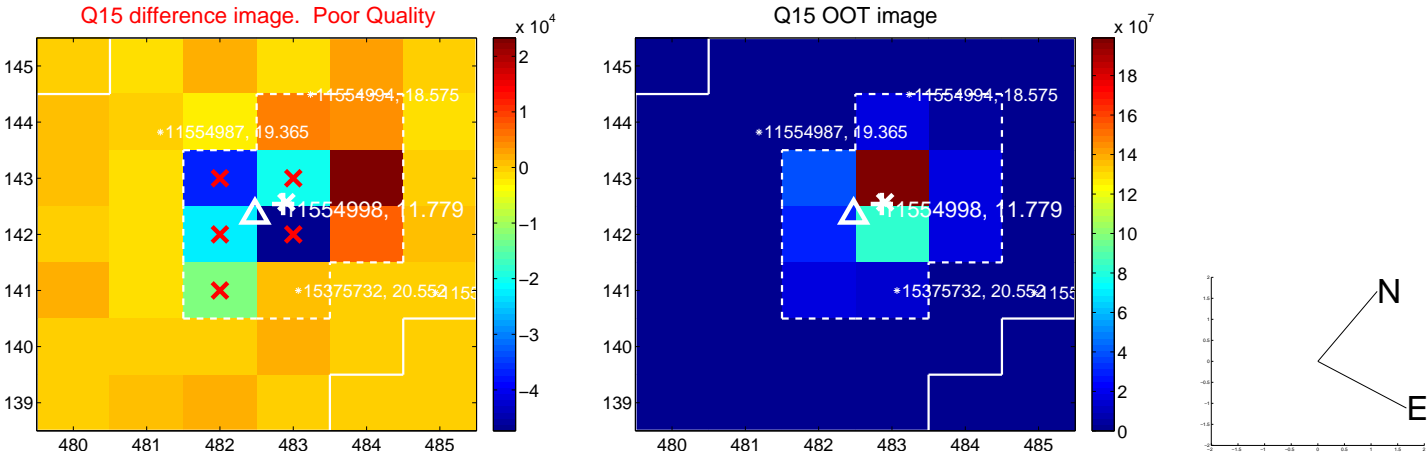
Q8 OOT image



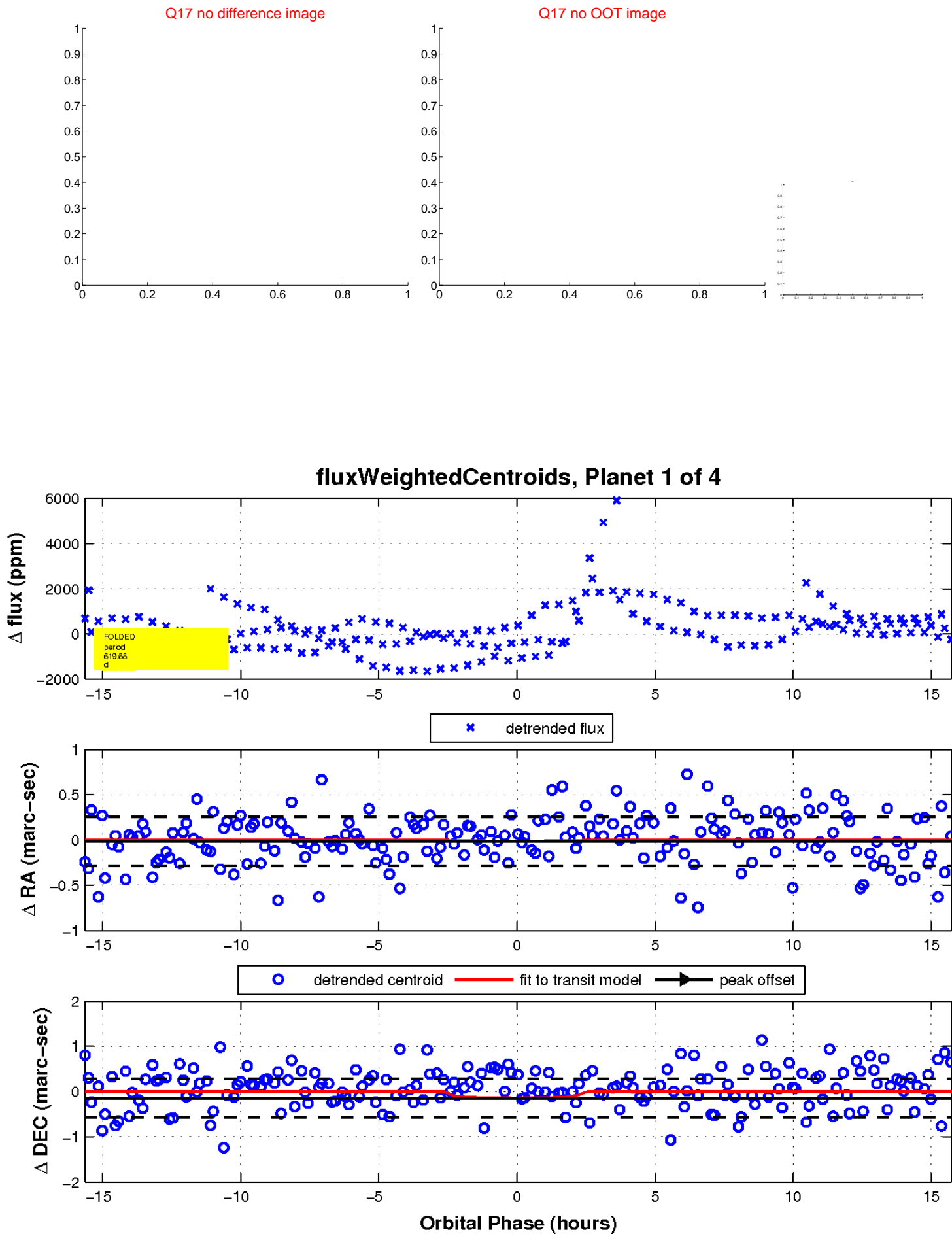
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

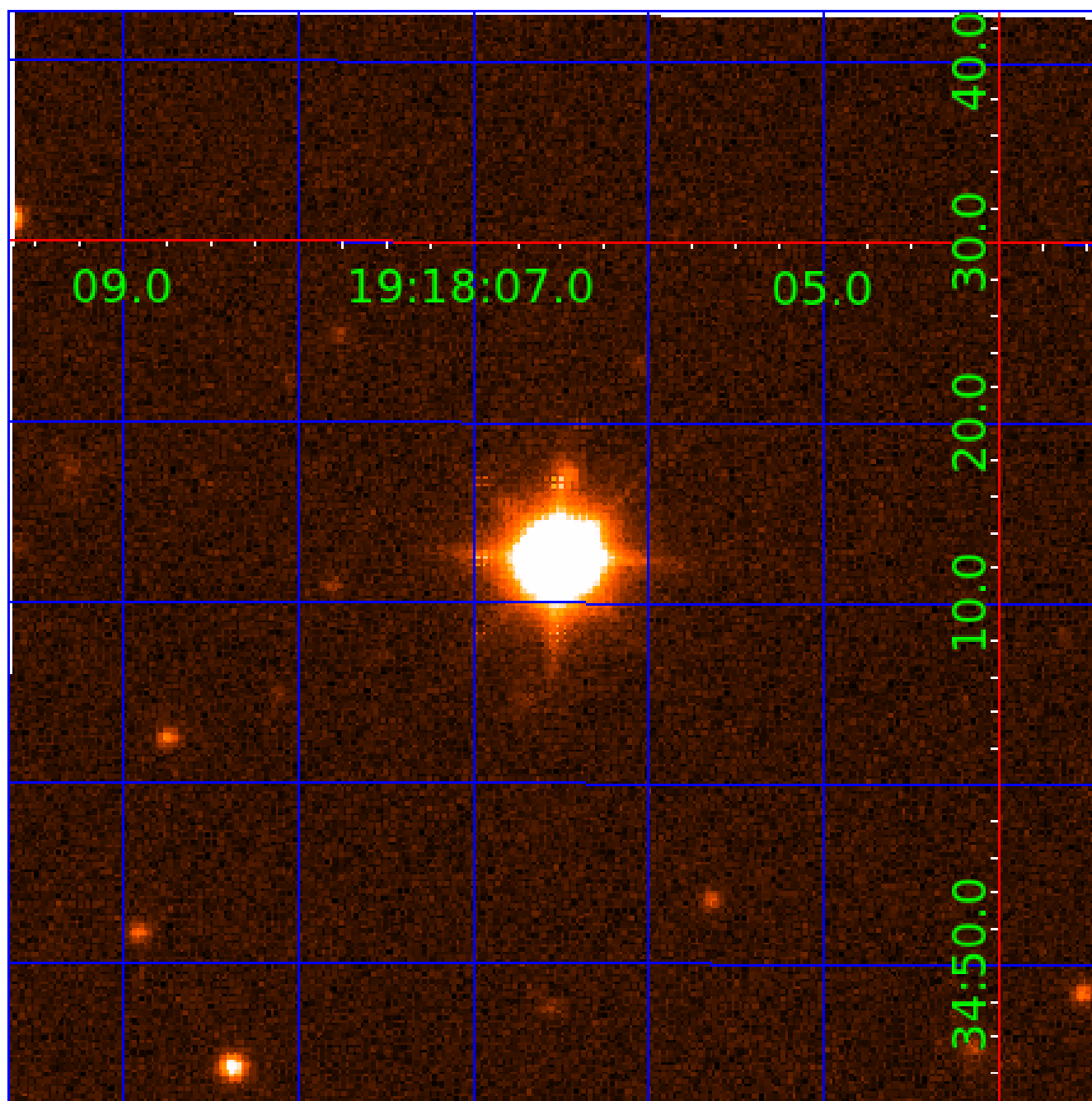


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011554998

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})
011554998-01	OBS	No	619.682399	149.096103	483.0	5.289	14.4	3.6	16.22	4734	41.51	30.78
011554998-02	OBS	No	291.603932	394.492620	541.8	4.474	9.1	5.3	16.22	4734	37.82	84.10
011554998-03	OBS	No	312.039886	358.174547	2314.9	16.783	16.1	7.8	16.22	4734	98.85	76.84
011554998-04	OBS	No	460.244903	481.685323	1554.3	6.514	12.8	8.2	16.22	4734	85.88	45.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011554998-01	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—CENT_FEW_DIFFS
011554998-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
011554998-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011554998-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_MEAS

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

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

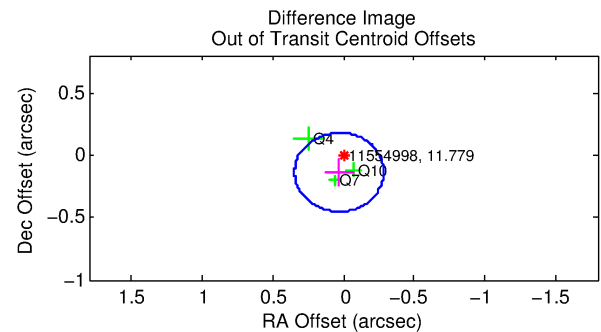
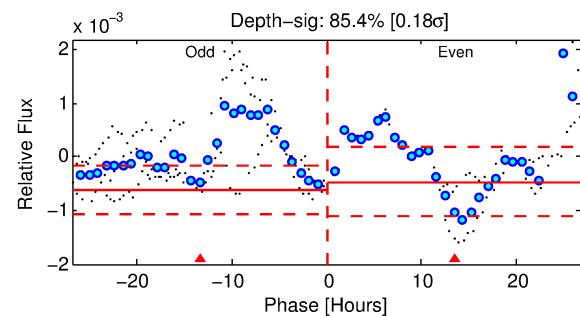
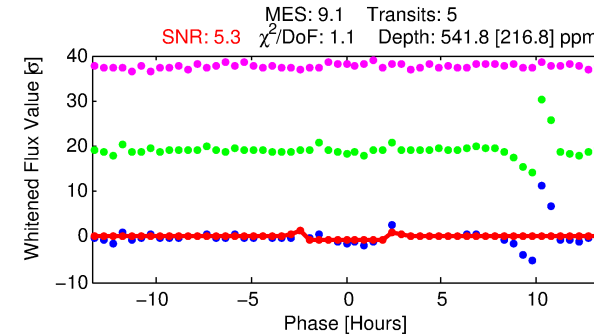
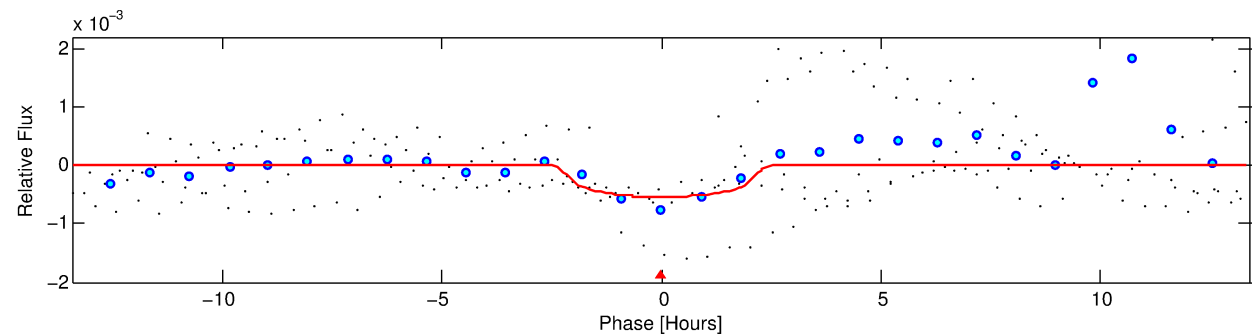
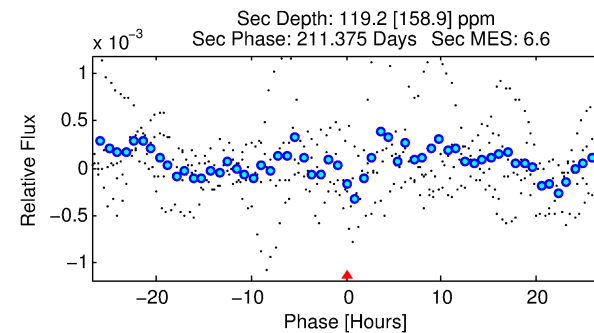
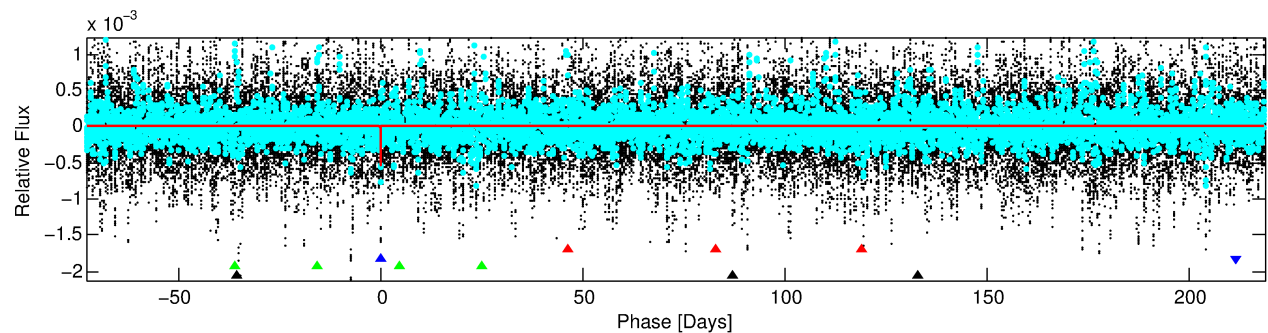
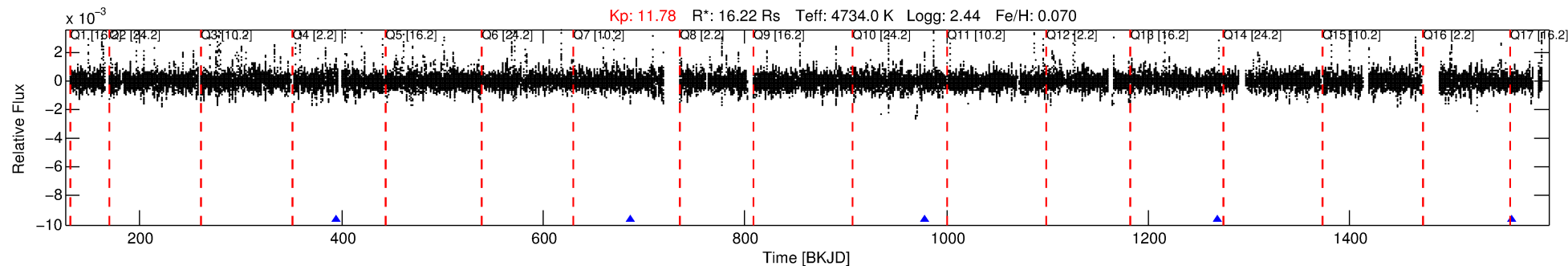
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011554998-02

No Significant Match Found

DV One-Page Summary

KIC: 11554998 Candidate: 2 of 4 Period: 291.604 d



DV Fit Results:

Period = 291.60393 [0.00337] d
Epoch = 394.4926 [0.0069] BKJD
Rp/R* = 0.0214 [0.0301]
a/R* = 447.24 [2112.21]
b = 0.49 [7.55]
Seff = 84.10 [66.79]
Teff = 772 [153] K
Rp = 37.82 [57.82] Re
a = 1.1866 [0.6166] AU
Ag = 64.53 [207.66] [0.31 σ]
Teffp = 3384 [2642] K [0.99 σ]

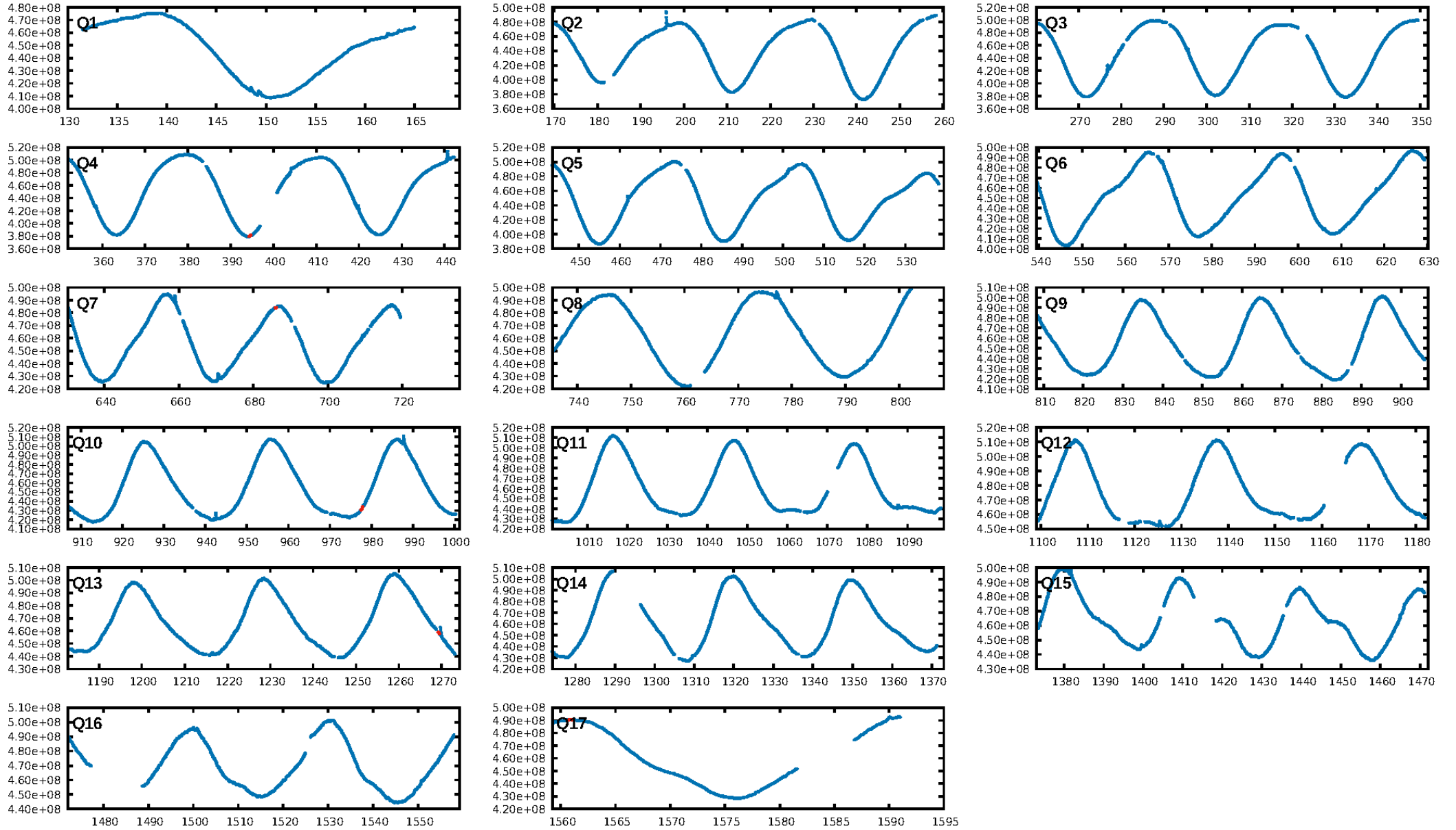
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [28.24 σ]
ModelChiSquare2-sig: 3.7%
ModelChiSquareGof-sig: 93.0%
Bootstrap-pfa: 3.66e-08
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.345
Centroid-sig: 1.2%
Centroid-so: 0.660 arcsec [1.55 σ]
OotOffset-rm: 0.140 arcsec [1.33 σ]
KicOffset-rm: 0.080 arcsec [0.44 σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

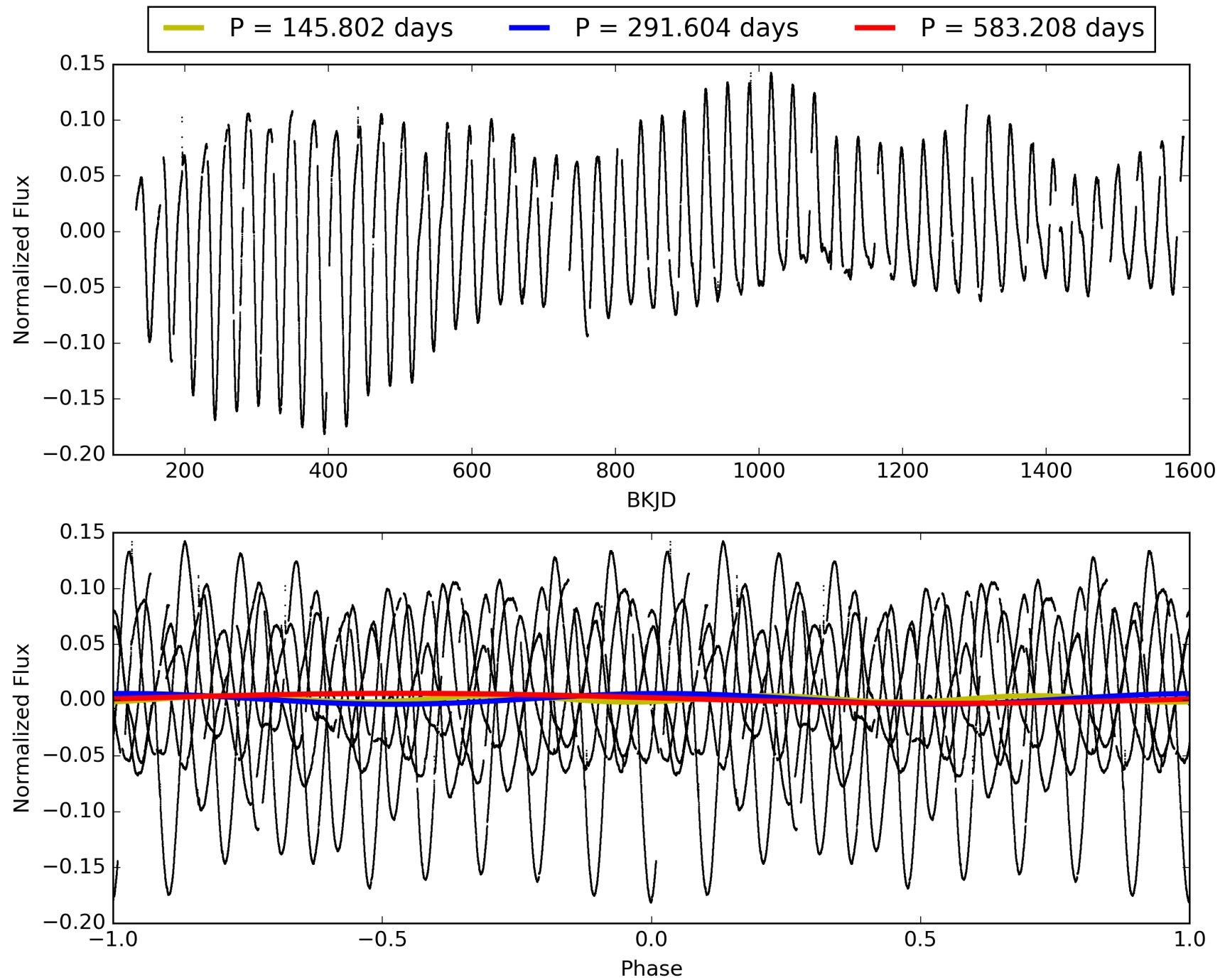
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 23:31:34 Z

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

TCE 011554998-02, PDC Light Curves

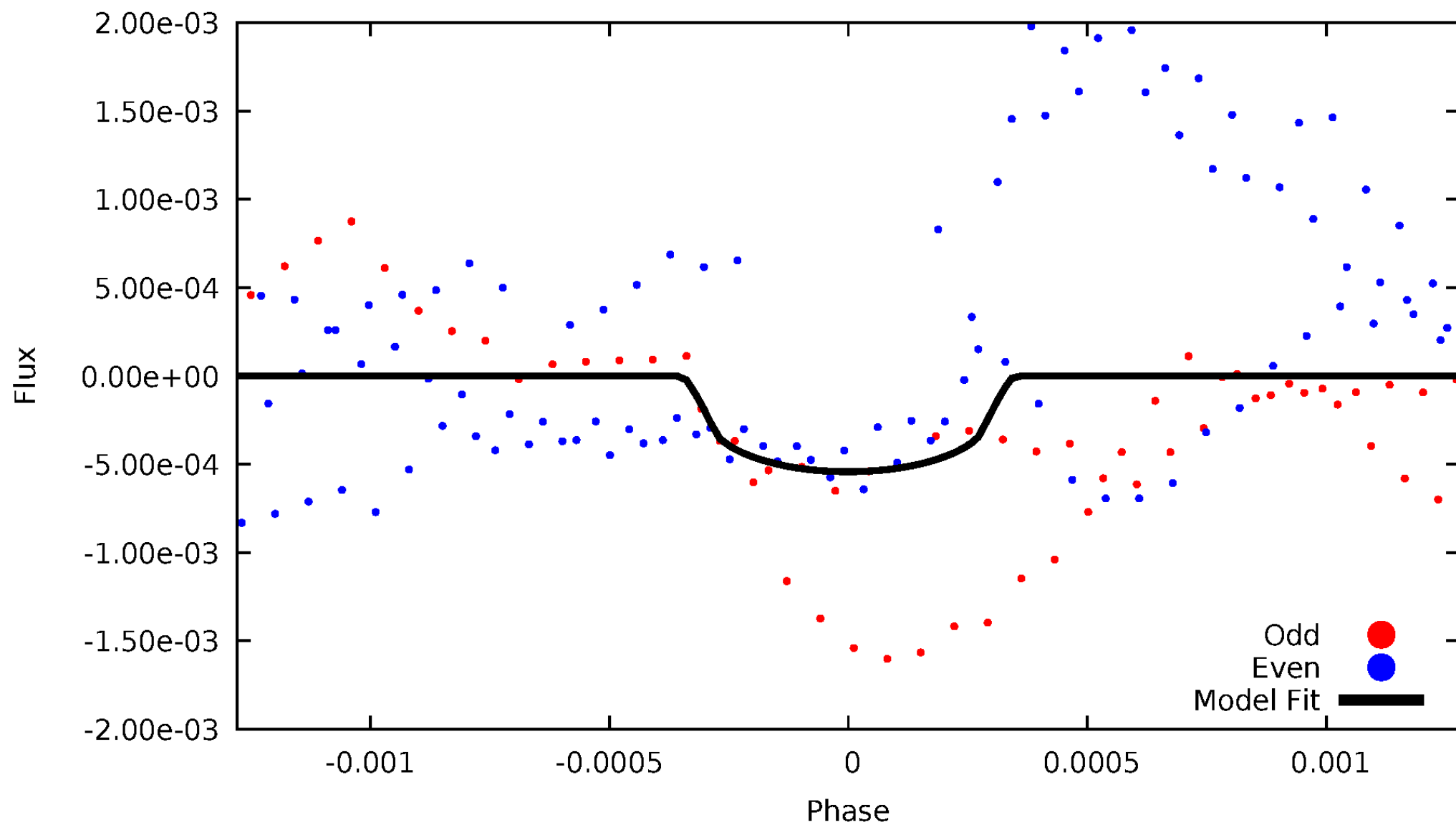


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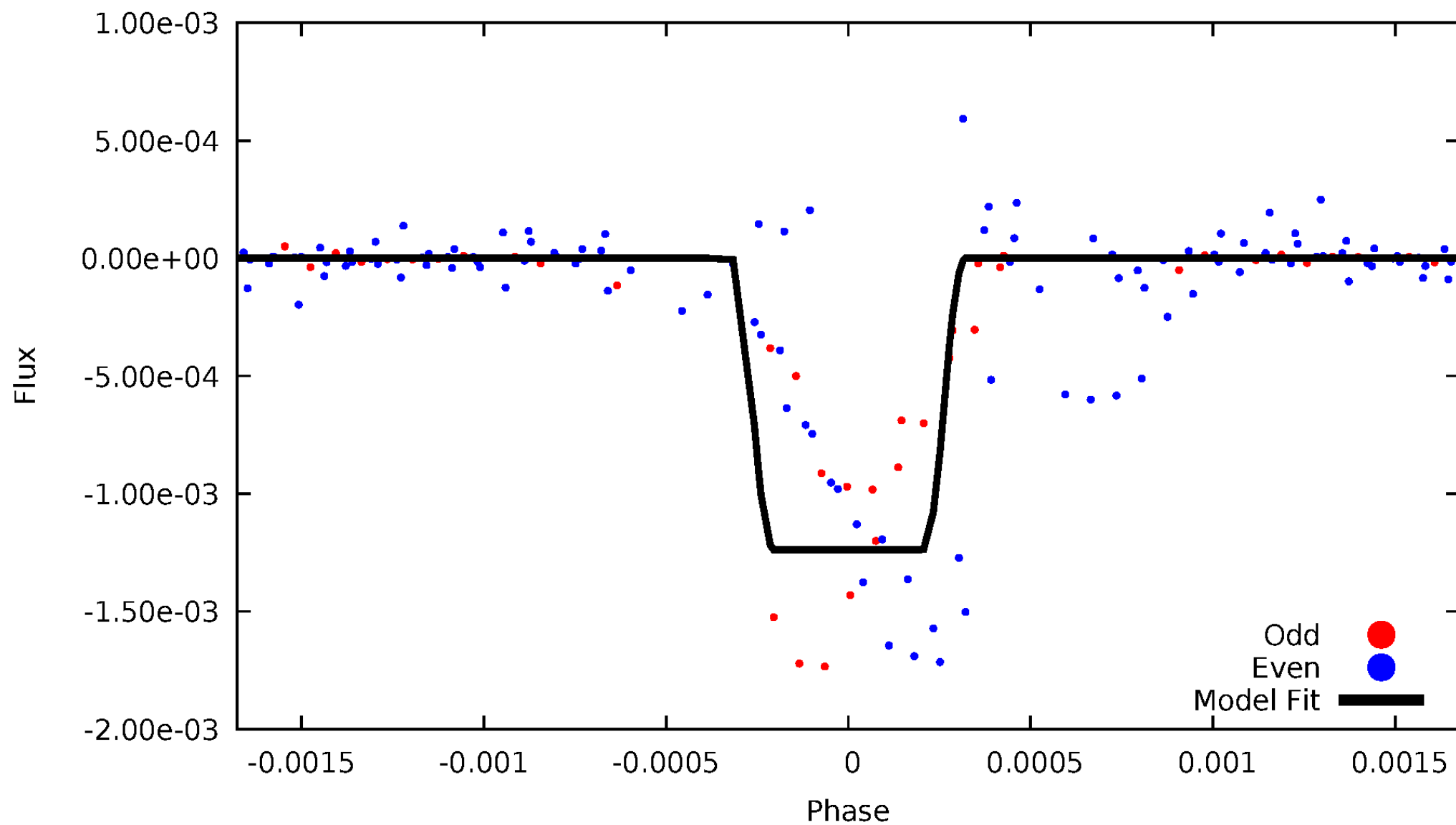
DV Odd/Even

TCE 011554998-02



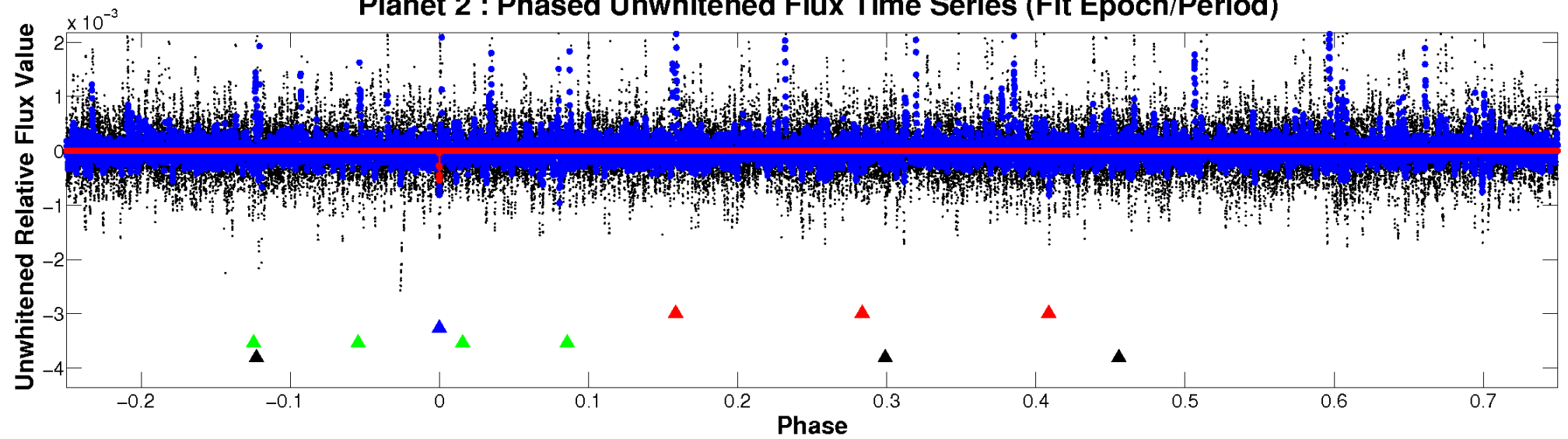
ALT Odd/Even

TCE 011554998-02

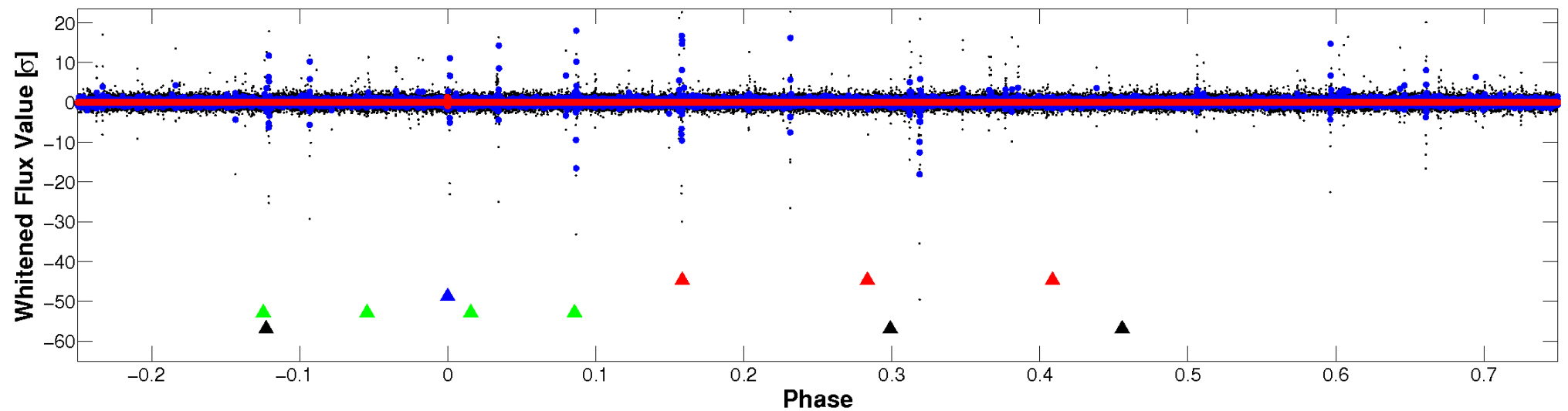


Non-Whitened Vs. Whitened Light Curve

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

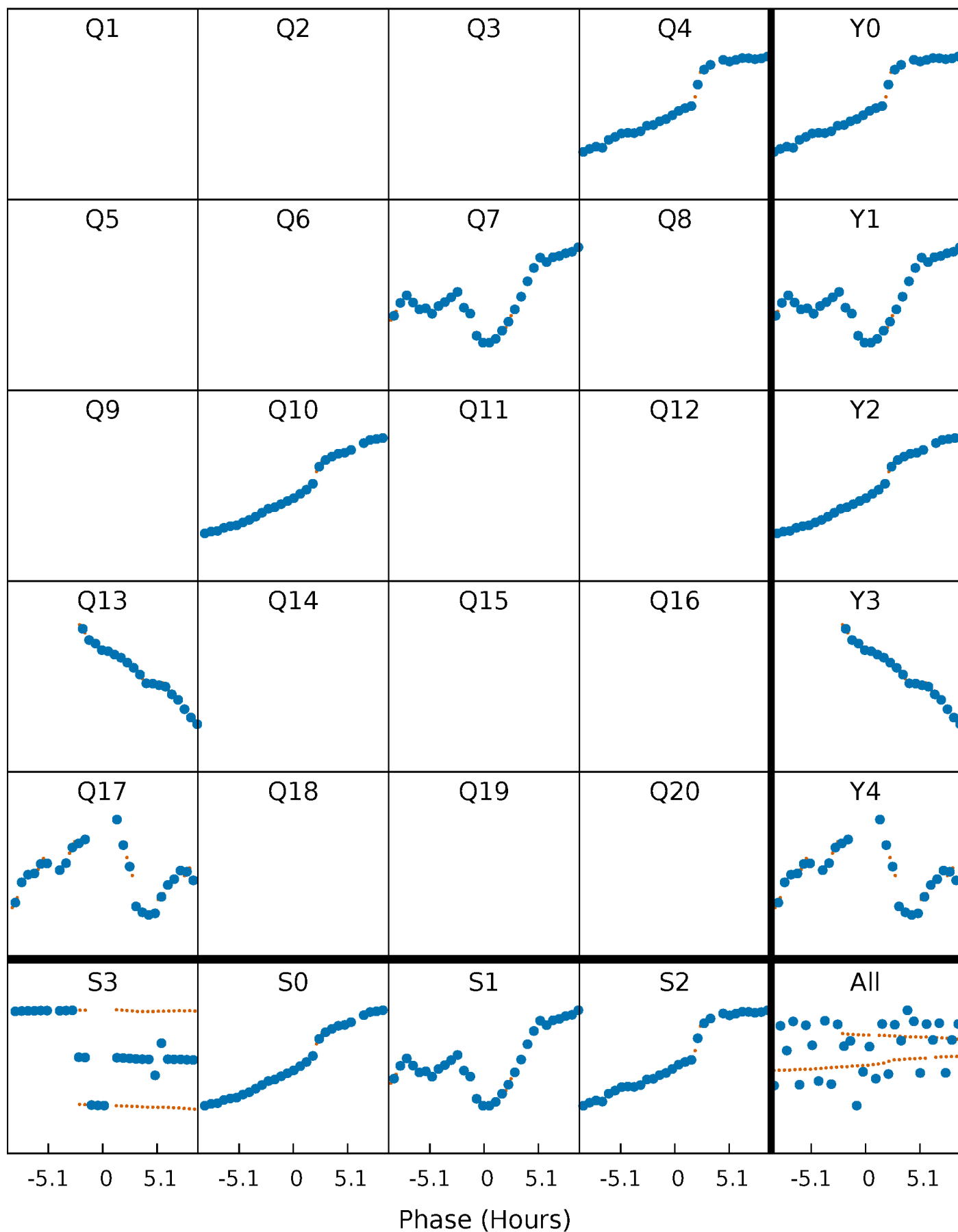


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



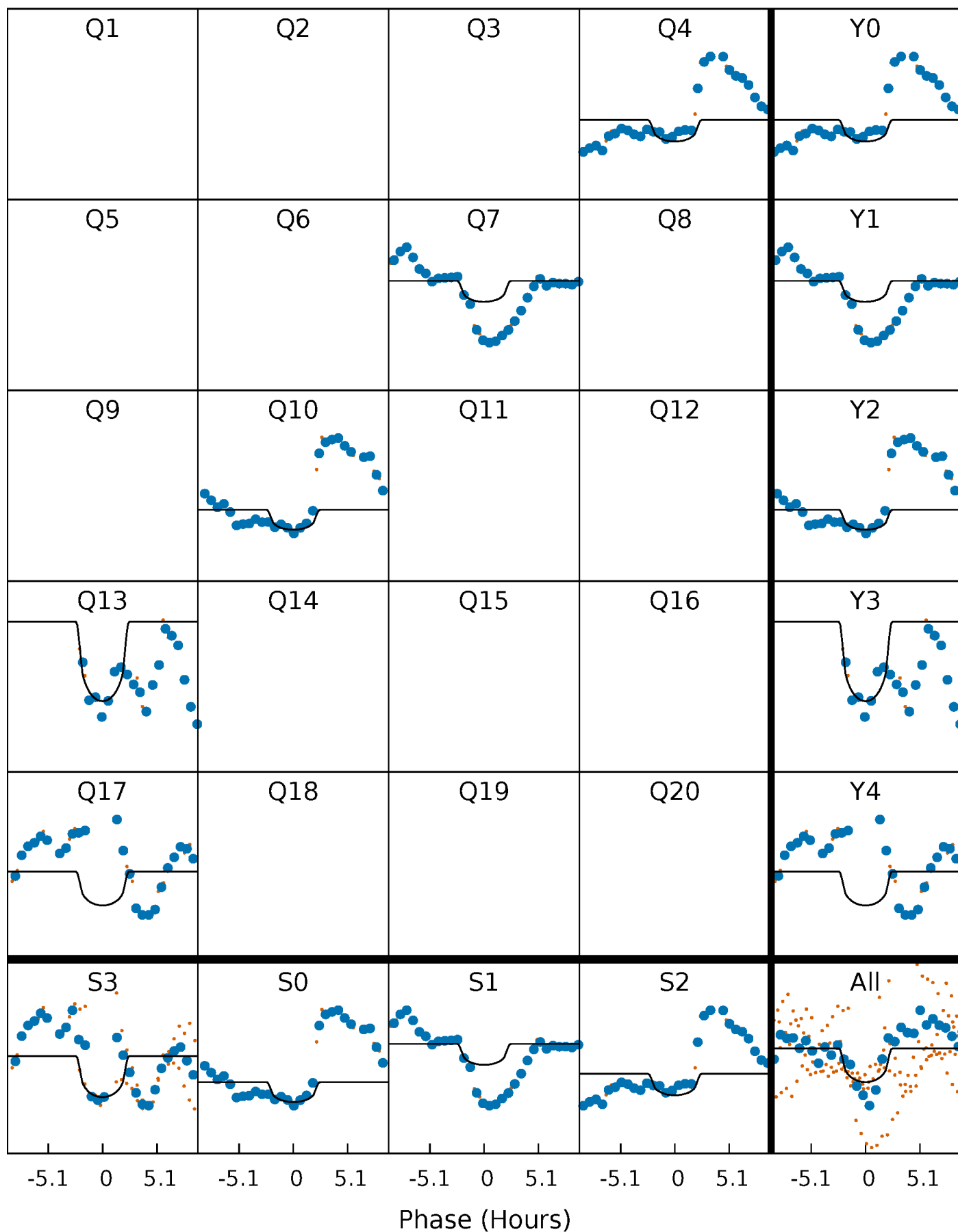
PDC Quarter-Phased Transit Curves

TCE 011554998-02 $P=291.603932$ Days $T_0=394.492620$ (BKJD)



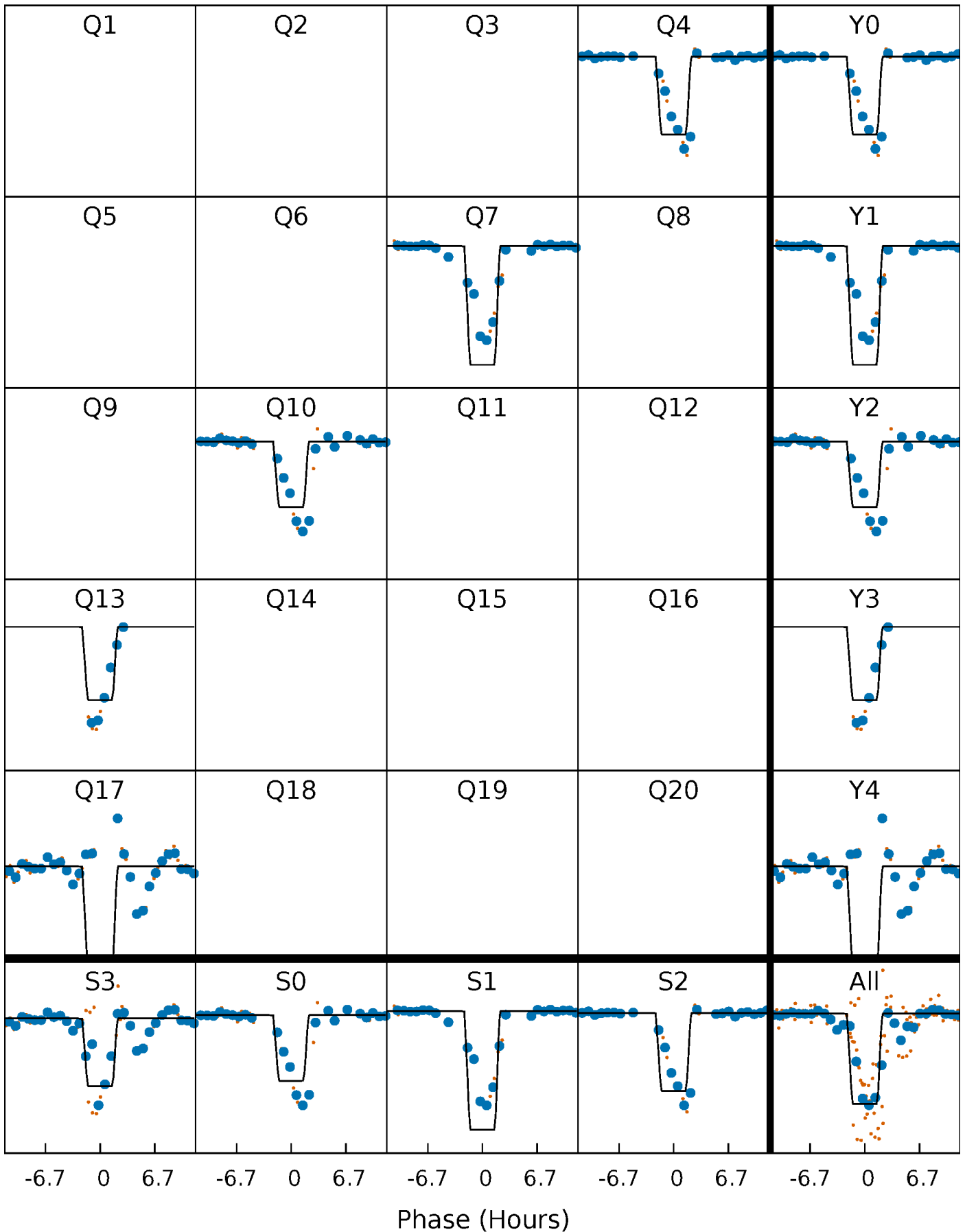
DV Quarter-Phased Transit Curves

TCE 011554998-02 $P=291.603932$ Days $T_0=394.492620$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

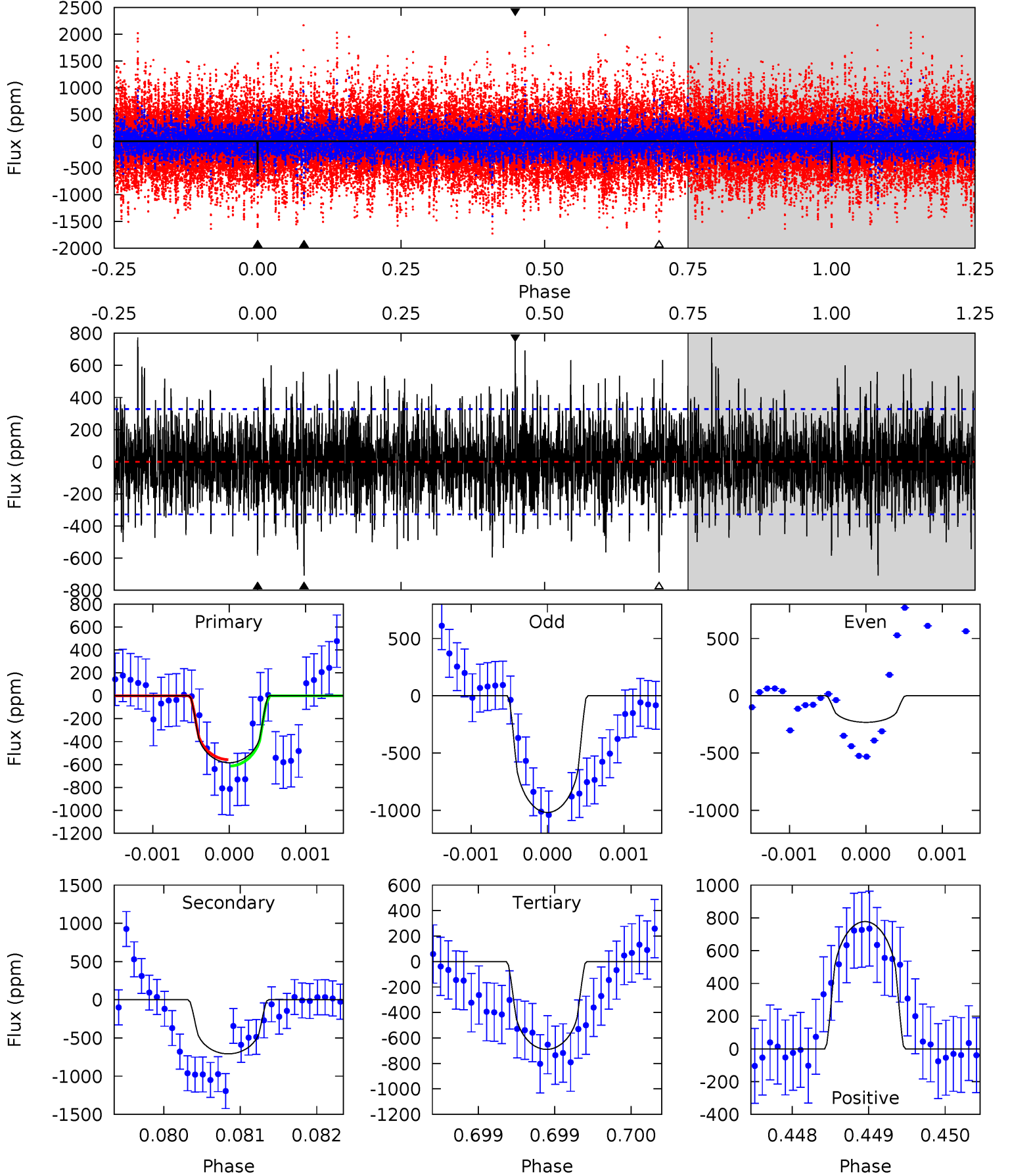
TCE 011554998-02 P=291.596979 Days $T_0=394.483515$ (BKJD)



DV Model-Shift Uniqueness Test

011554998-02, $P = 291.603932$ Days, $E = 102.888688$ Days

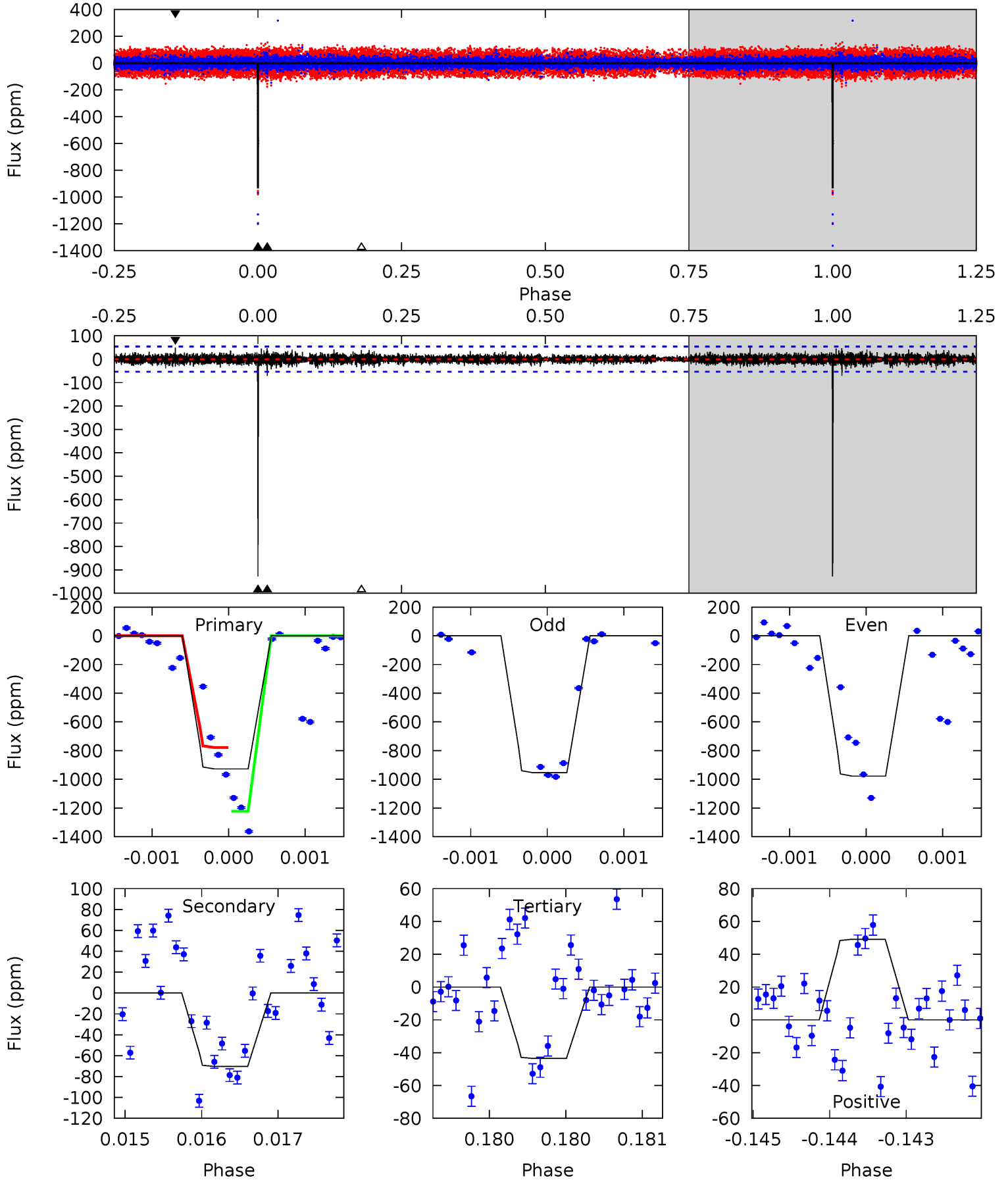
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.84	11.9	11.6	13.1	5.52	3.40	3.01	-1.78	-3.25	0.30	-1.18	5.80	0.87	0.52	0.47



Alt Model-Shift Uniqueness Test

011554998-02, P = 291.596979 Days, E = 102.886536 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
95.6	7.24	4.48	5.06	5.53	3.42	0.91	91.1	90.5	2.76	2.18	1.32	0.82	0.05	20.7



Stellar Parameters For KIC 011554998

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4734^{+104}_{-139}	$2.436^{+0.443}_{-0.148}$	$0.070^{+0.200}_{-0.300}$	$16.222^{+2.988}_{-9.561}$	$2.617^{+0.506}_{-1.517}$	$0.001^{+0.004}_{-0.000}$
	+2%/-3%	+18%/-6%	+286%/-429%	+18%/-59%	+19%/-58%	+508%/-36%
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 011554998-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-707 ± 59	$51.36^{+46.26}_{-34.12}$	1060^{+70}_{-119}	4456^{+3107}_{-876}	207^{+1737}_{-147}
Alt.	-70 ± 10	$62.39^{+53.93}_{-39.84}$	1059^{+72}_{-142}	2831^{+912}_{-393}	13^{+87}_{-9}

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

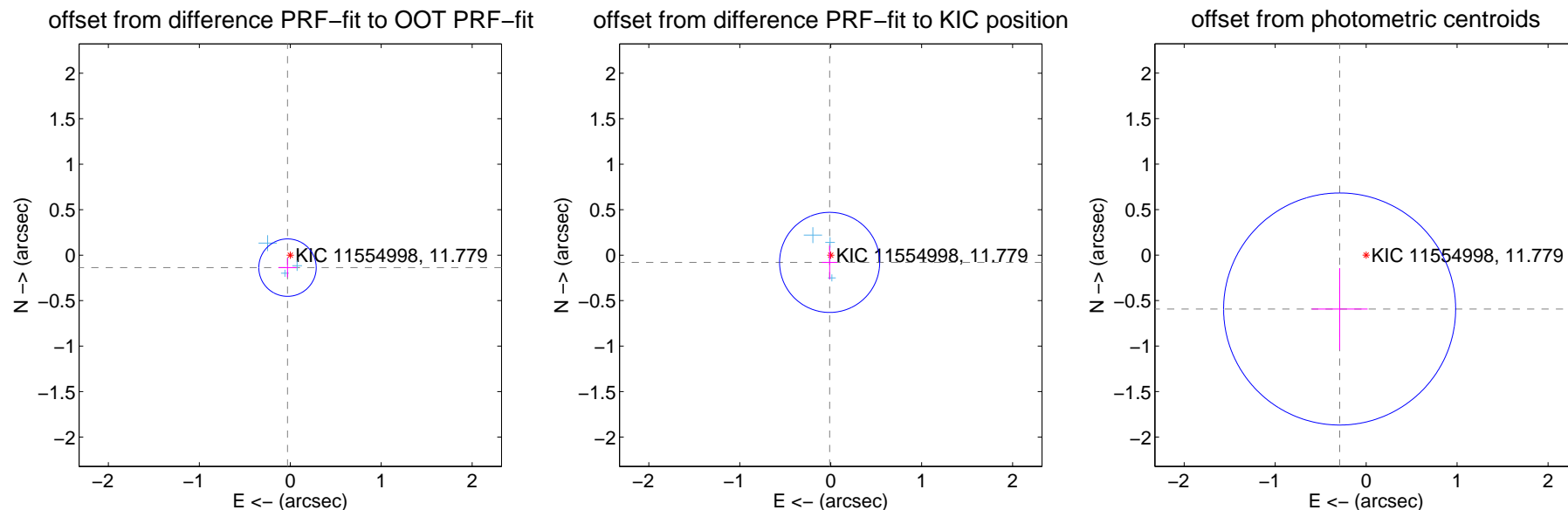
DV Centroid Data

Supplemental centroid analysis for 011554998-02. **Kepler magnitude: 11.78.** Transit SNR 5.35

There are 3 quarters with good PRF difference image offsets

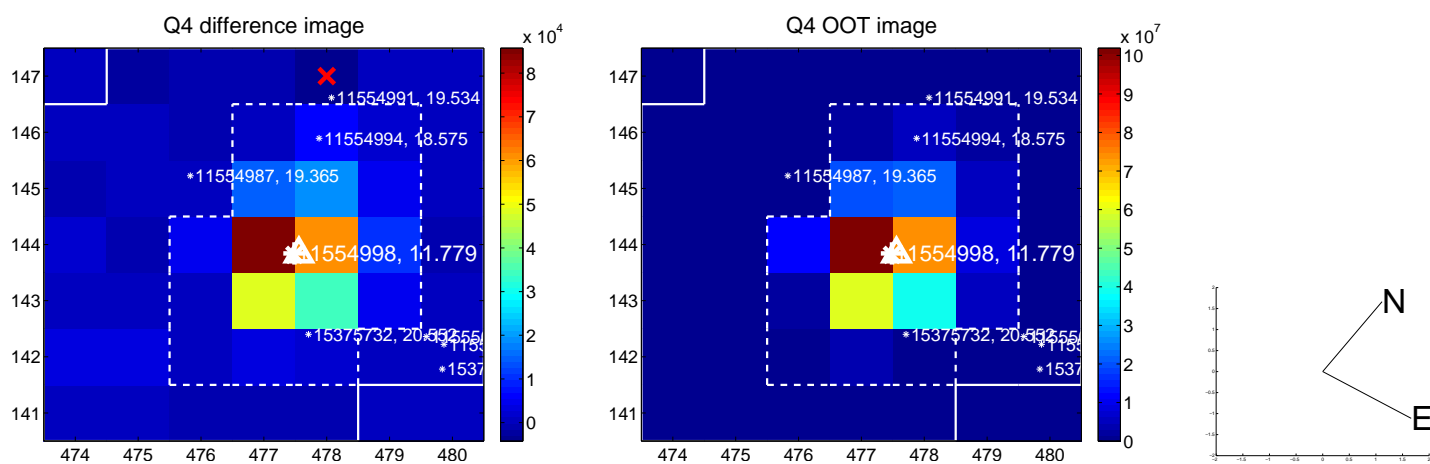
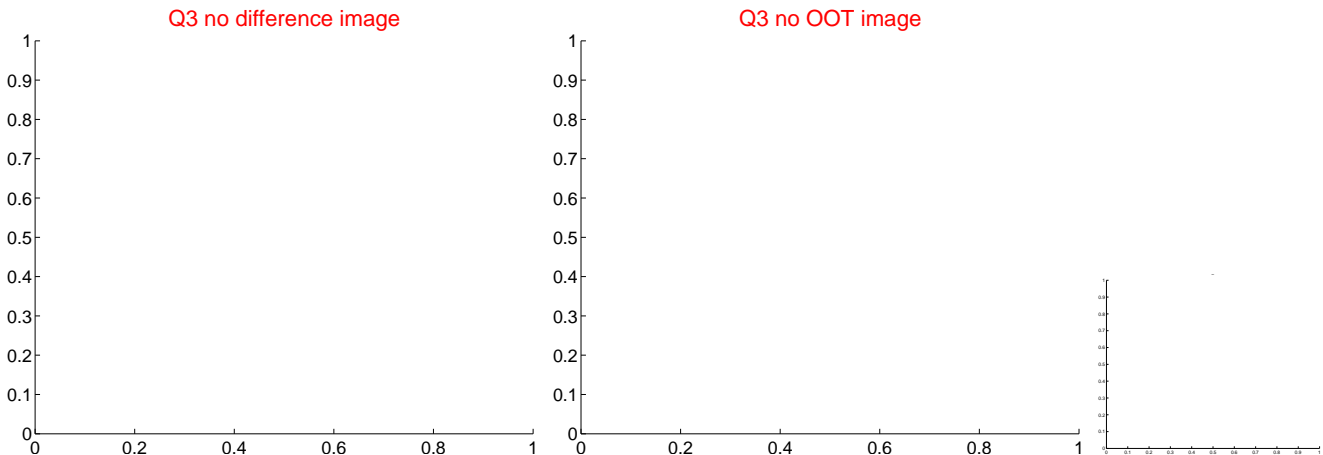
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.140 ± 0.105	1.33	0.030 ± 0.100	-0.137 ± 0.105
PRF-fit source offset from KIC position	0.080 ± 0.183	0.44	0.012 ± 0.083	-0.080 ± 0.185
photometric centroid source offset	0.66 ± 0.43	1.55	0.29 ± 0.31	-0.59 ± 0.45



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

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



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

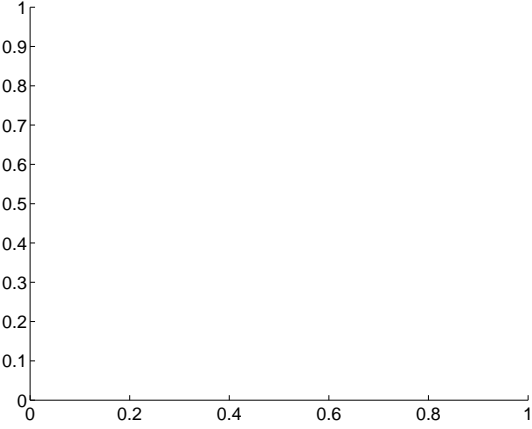
Q5 no difference image



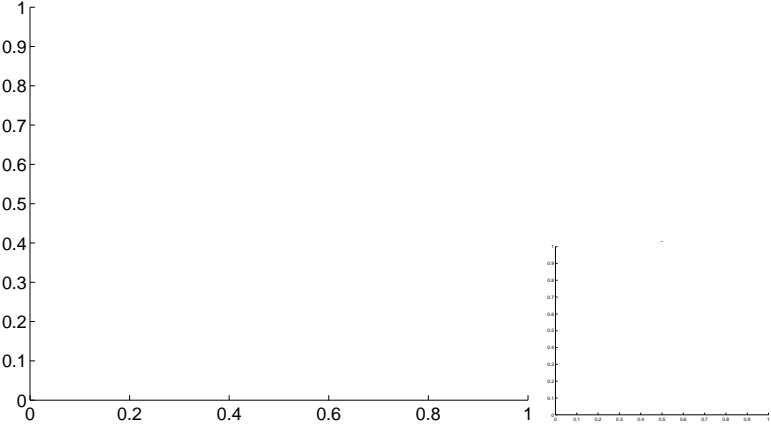
Q5 no OOT image



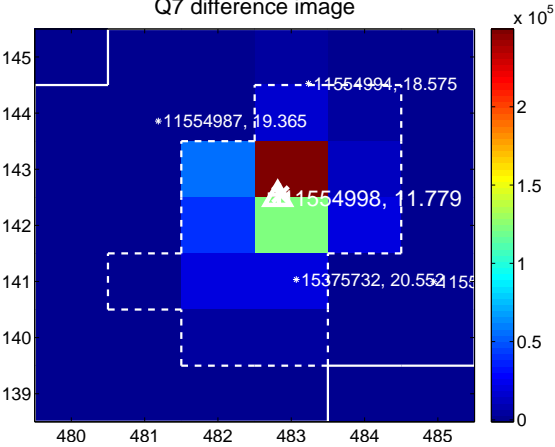
Q6 no difference image



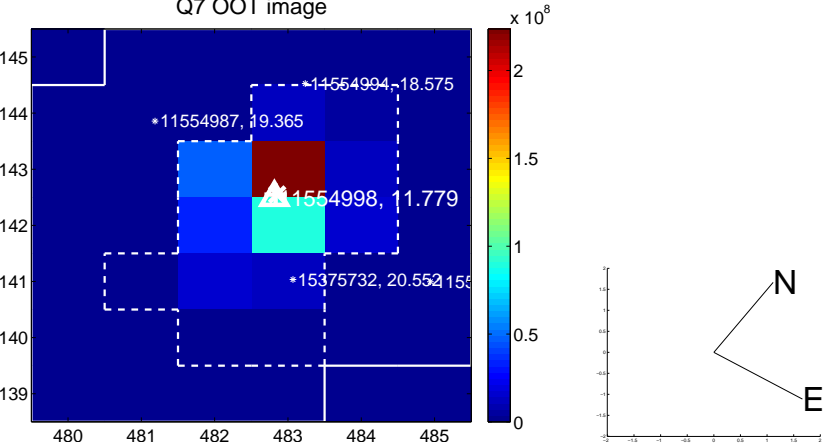
Q6 no OOT image



Q7 difference image



Q7 OOT image



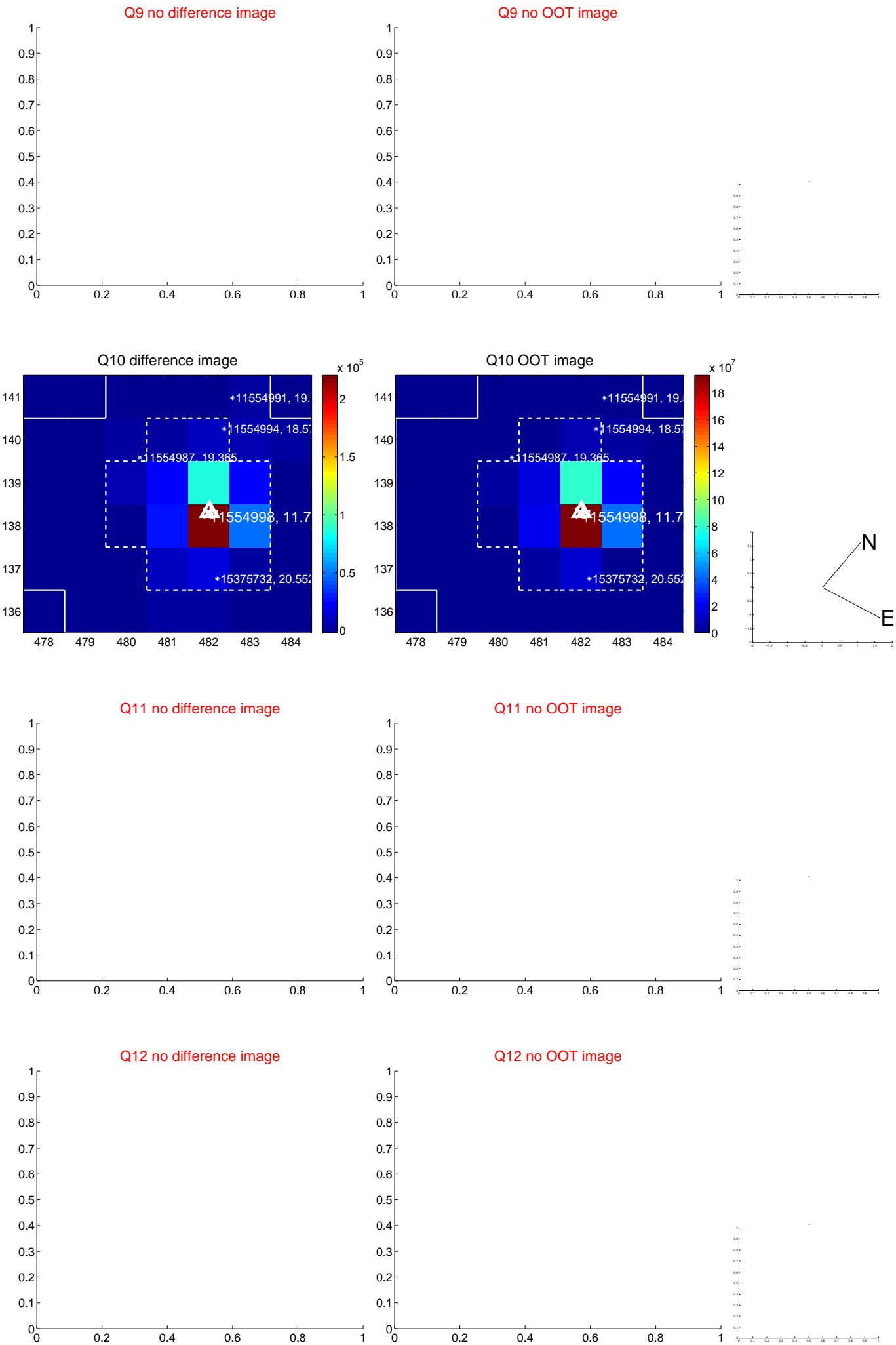
Q8 no difference image



Q8 no OOT image



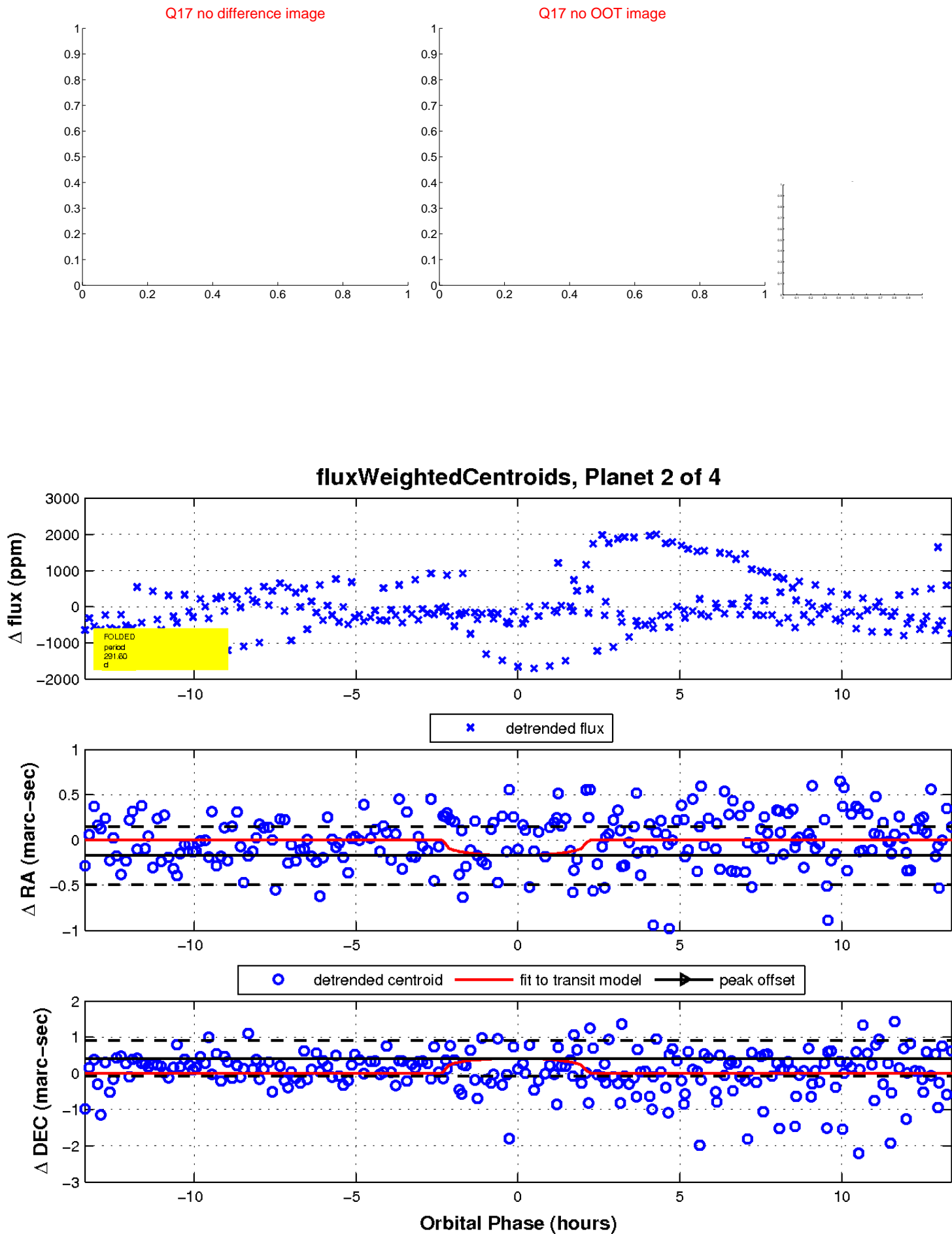
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

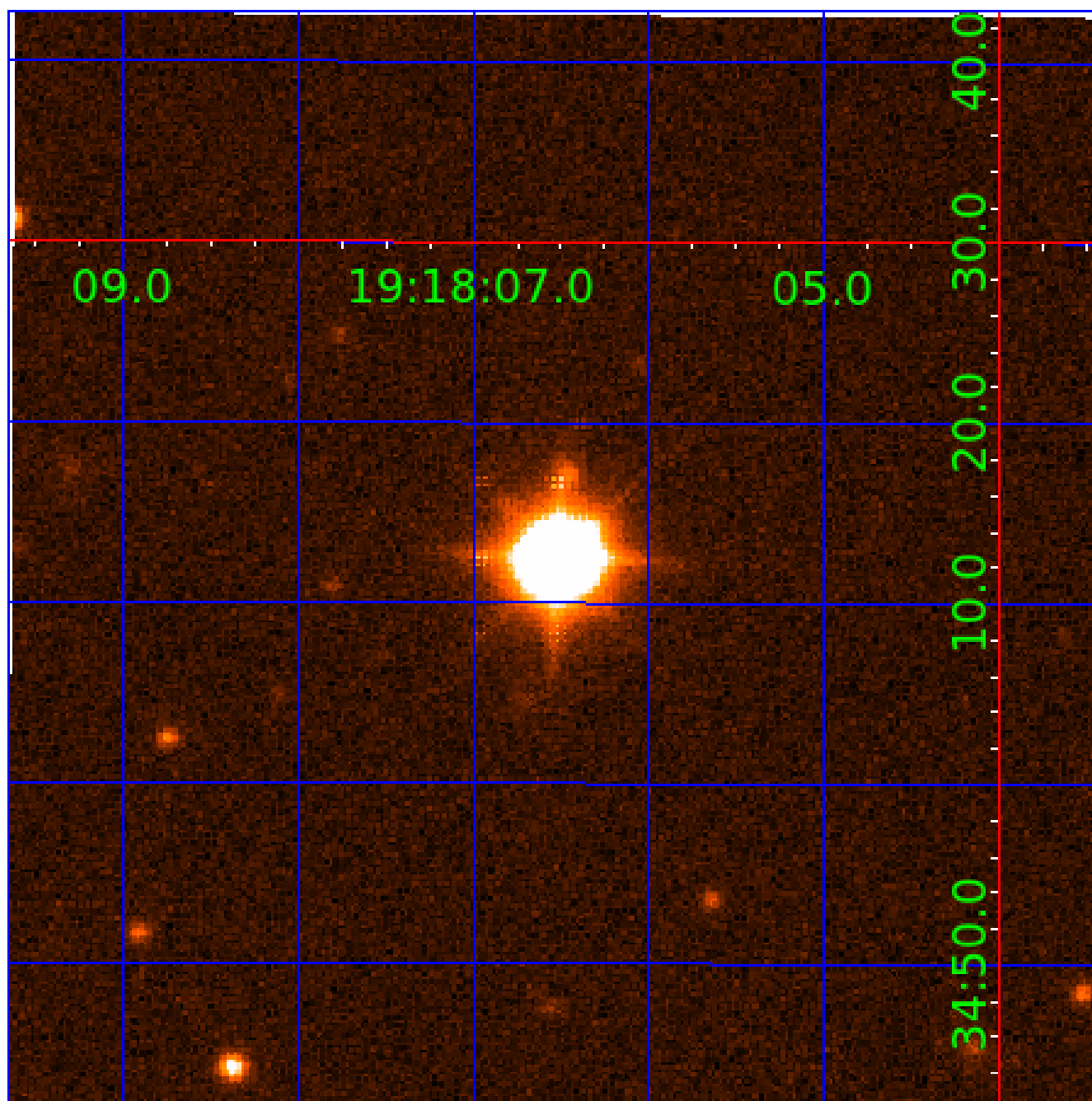


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011554998

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})
011554998-01	OBS	No	619.682399	149.096103	483.0	5.289	14.4	3.6	16.22	4734	41.51	30.78
011554998-02	OBS	No	291.603932	394.492620	541.8	4.474	9.1	5.3	16.22	4734	37.82	84.10
011554998-03	OBS	No	312.039886	358.174547	2314.9	16.783	16.1	7.8	16.22	4734	98.85	76.84
011554998-04	OBS	No	460.244903	481.685323	1554.3	6.514	12.8	8.2	16.22	4734	85.88	45.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011554998-01	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—CENT_FEW_DIFFS
011554998-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
011554998-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011554998-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_MEAS

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

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

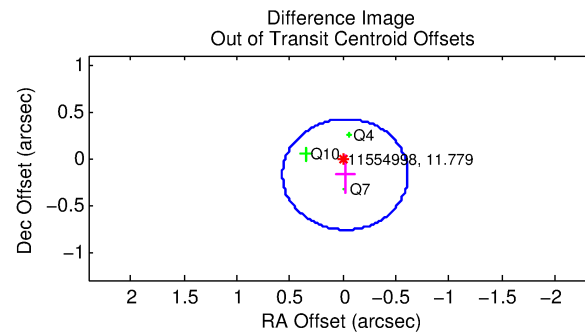
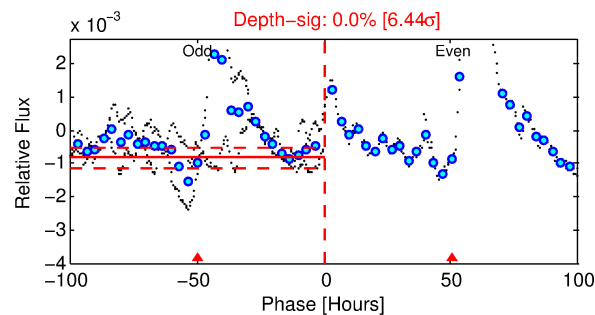
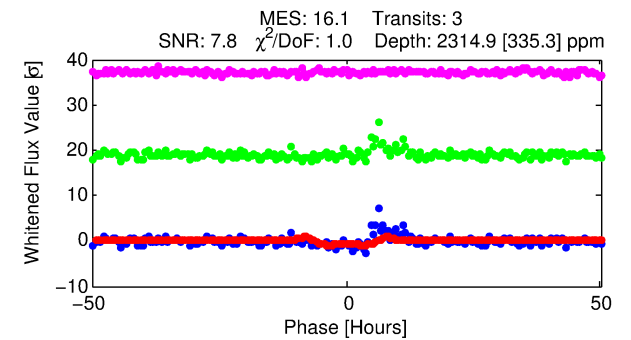
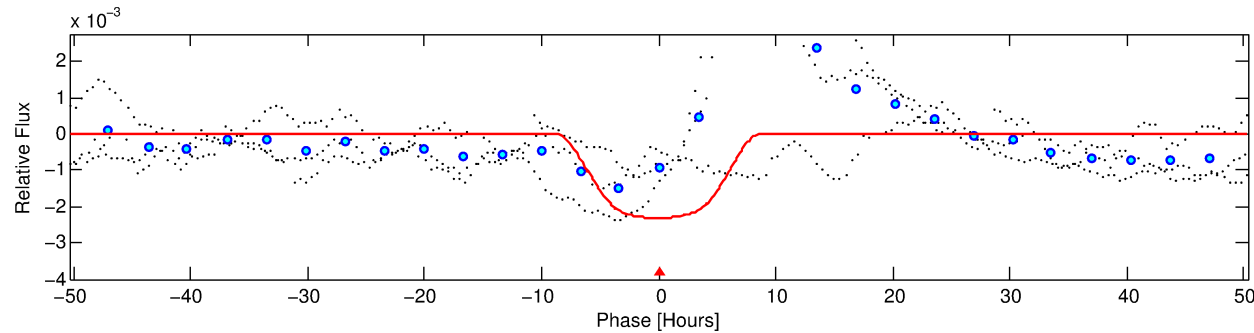
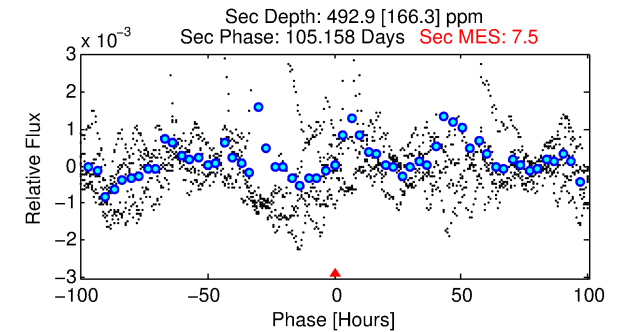
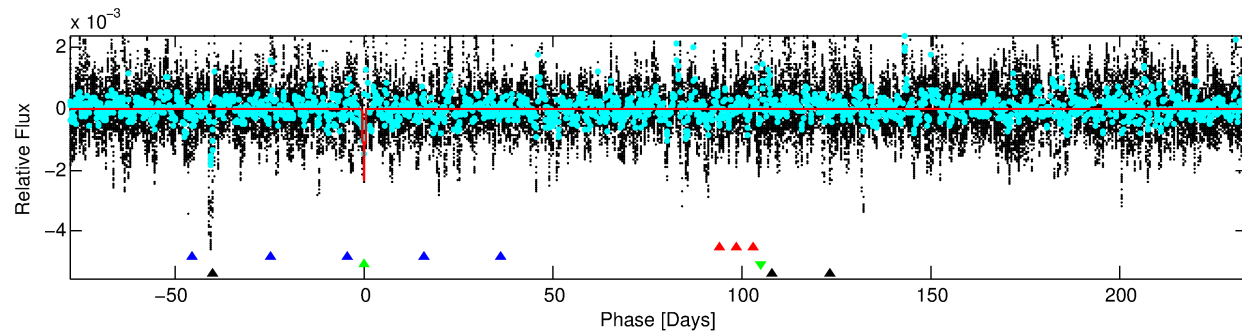
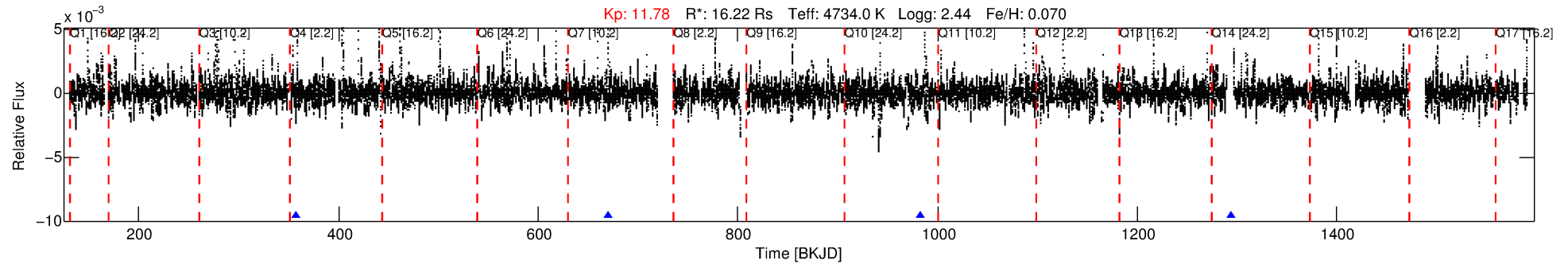
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011554998-03

No Significant Match Found

DV One-Page Summary

KIC: 11554998 Candidate: 3 of 4 Period: 312.040 d



DV Fit Results:

Period = 312.03989 [0.01228] d
Epoch = 358.1745 [0.0165] BKJD
Rp/R* = 0.0558 [0.0041]
a/R* = 73.61 [4.55]
b = 0.92 [0.01]
Seff = 76.84 [61.02]
Teq = 755 [150] K
Rp = 98.85 [58.72] Re
a = 1.2414 [0.6450] AU
Ag = 42.77 [37.10] [1.13 σ]
Teffp = 2985 [289] K [6.86 σ]

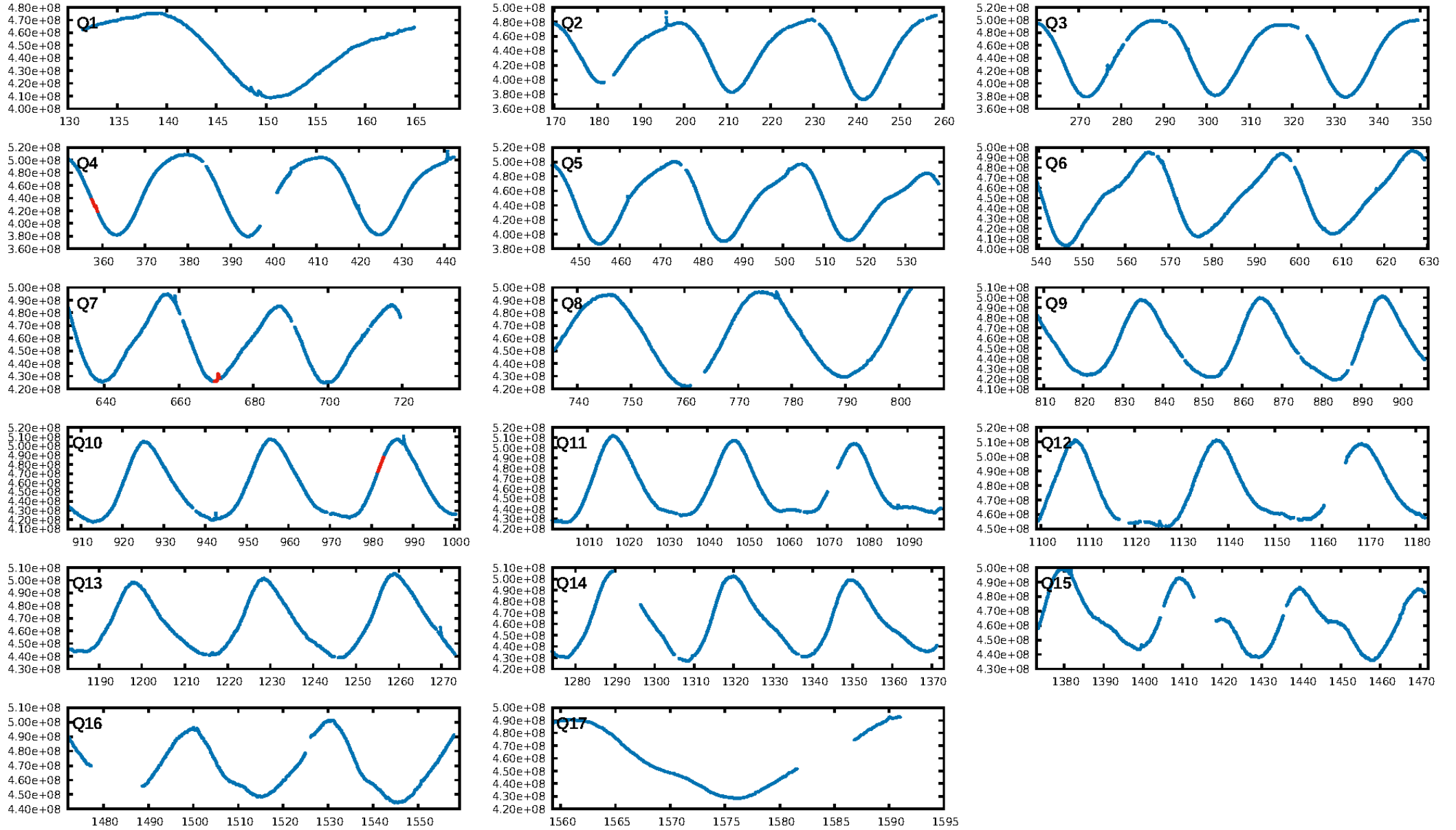
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [28.24 σ]
LongPeriod-sig: 100.0% [197.57 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 98.8%
Bootstrap-pfa: 4.79e-14
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 6.606
Centroid-sig: 86.7%
Centroid-so: 0.186 arcsec [1.56 σ]
OotOffset-rm: 0.174 arcsec [0.88 σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-rm: 0.236 arcsec [0.97 σ]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

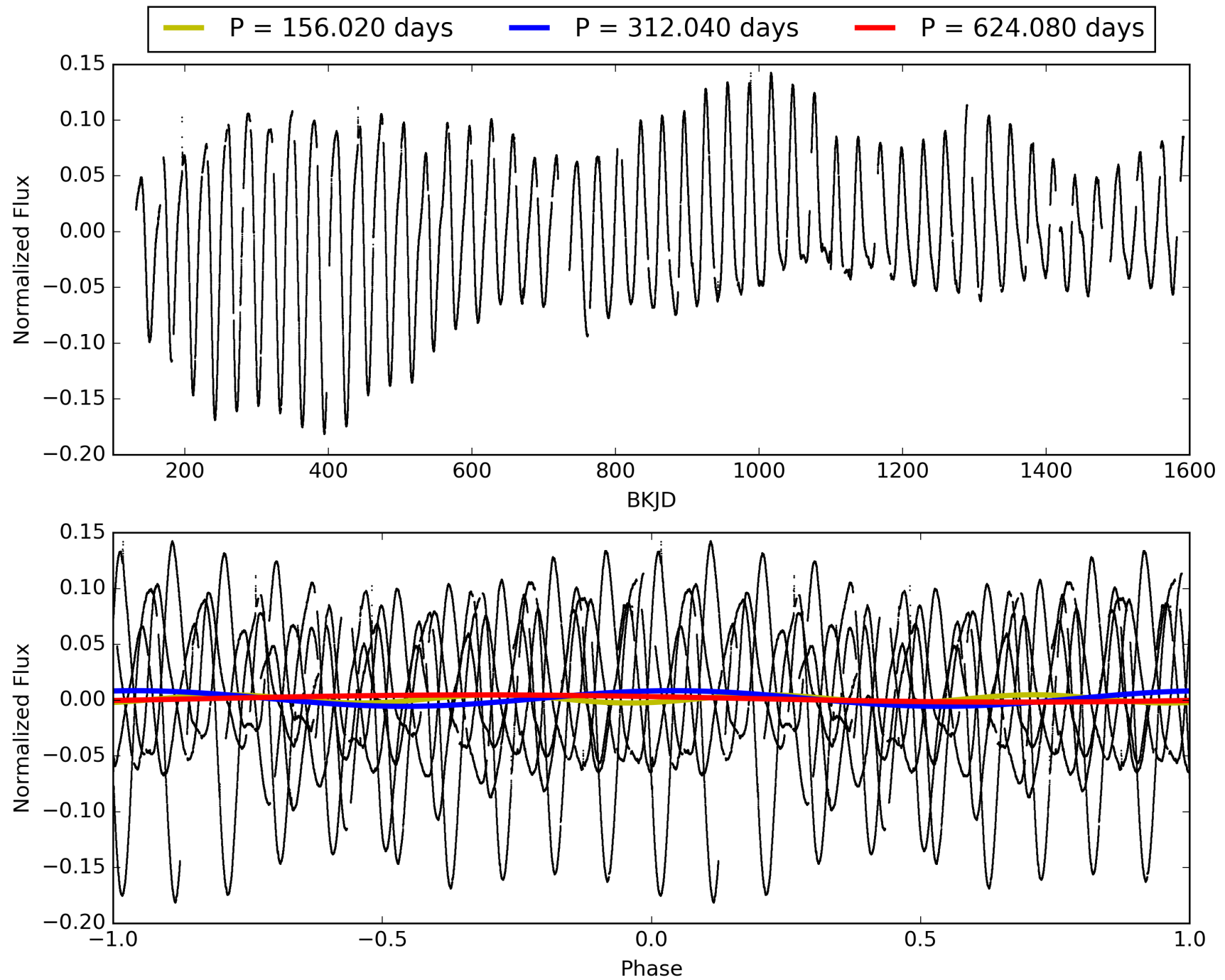
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 23:31:42 Z

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

TCE 011554998-03, PDC Light Curves

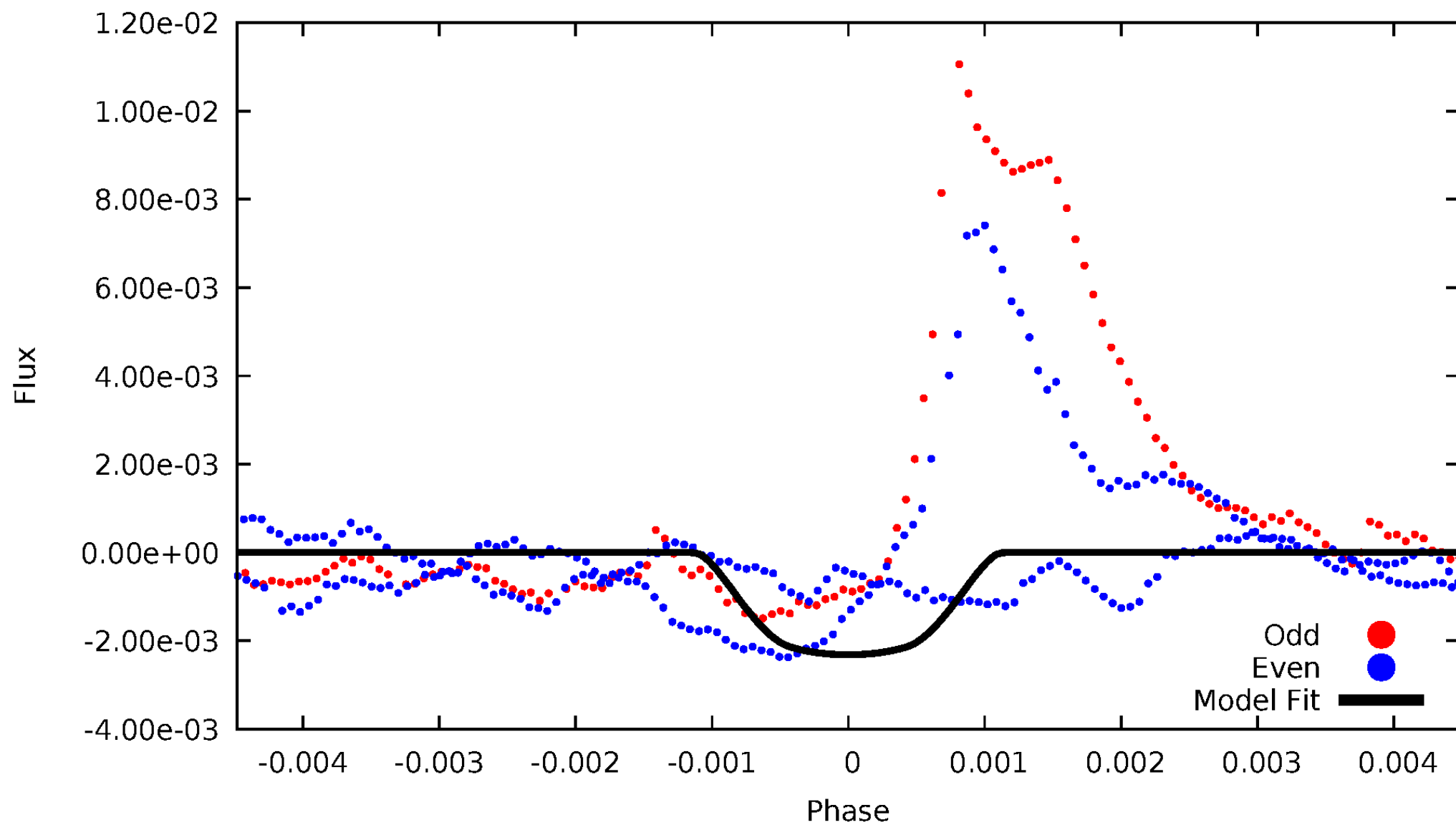


TCE 011554998-03



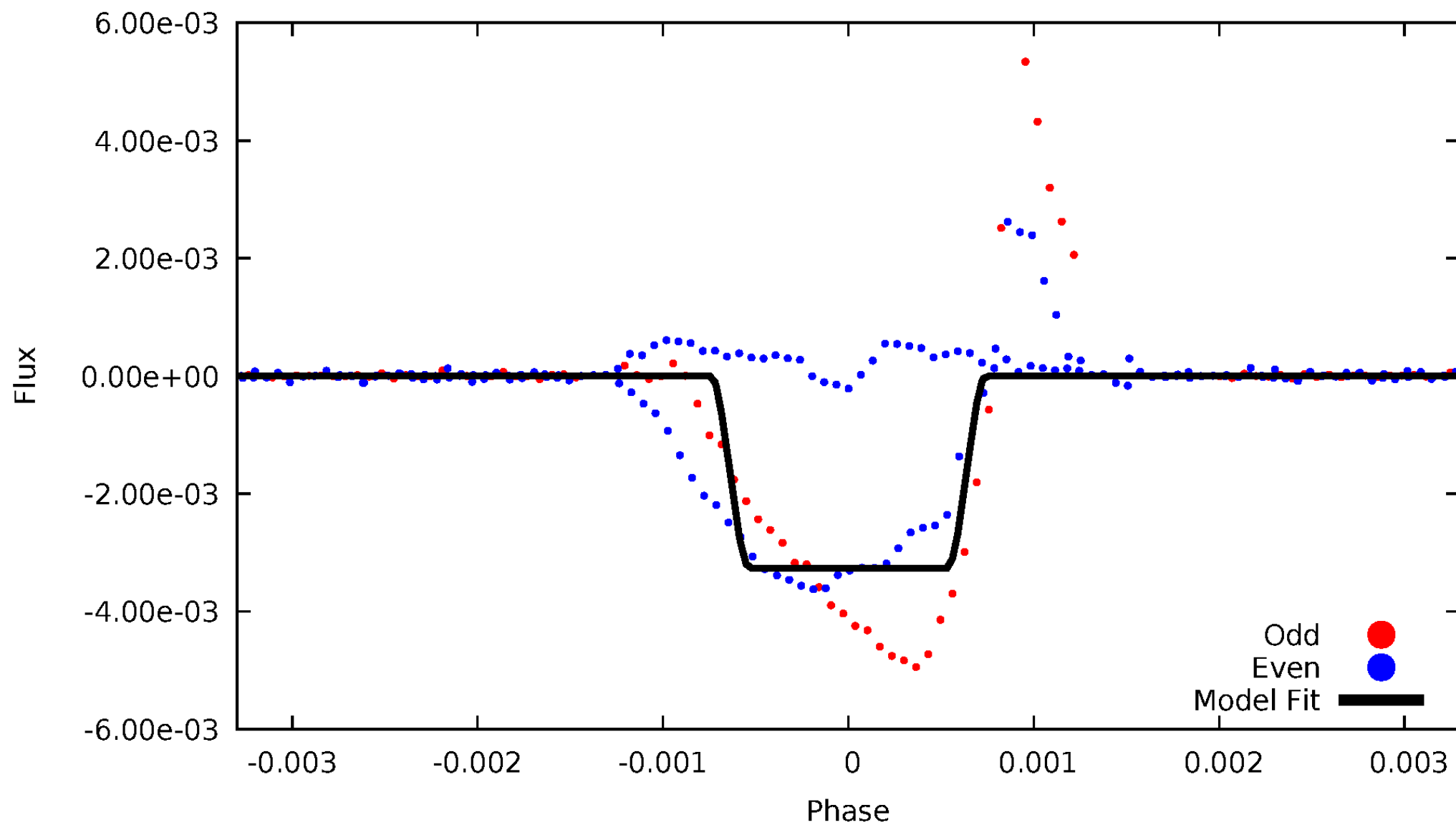
DV Odd/Even

TCE 011554998-03



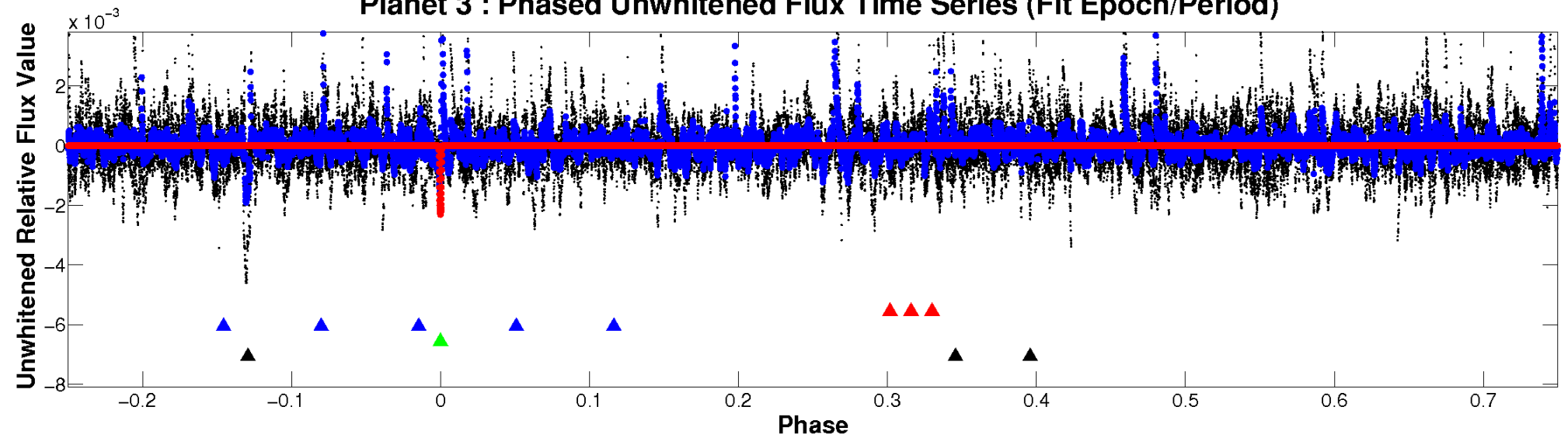
ALT Odd/Even

TCE 011554998-03

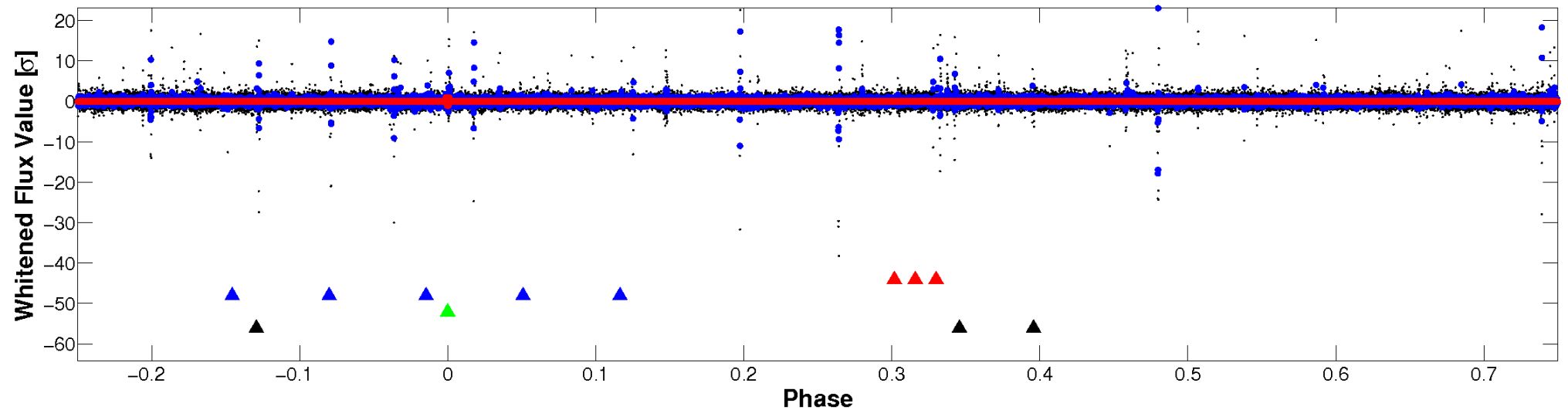


Non-Whitened Vs. Whitened Light Curve

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

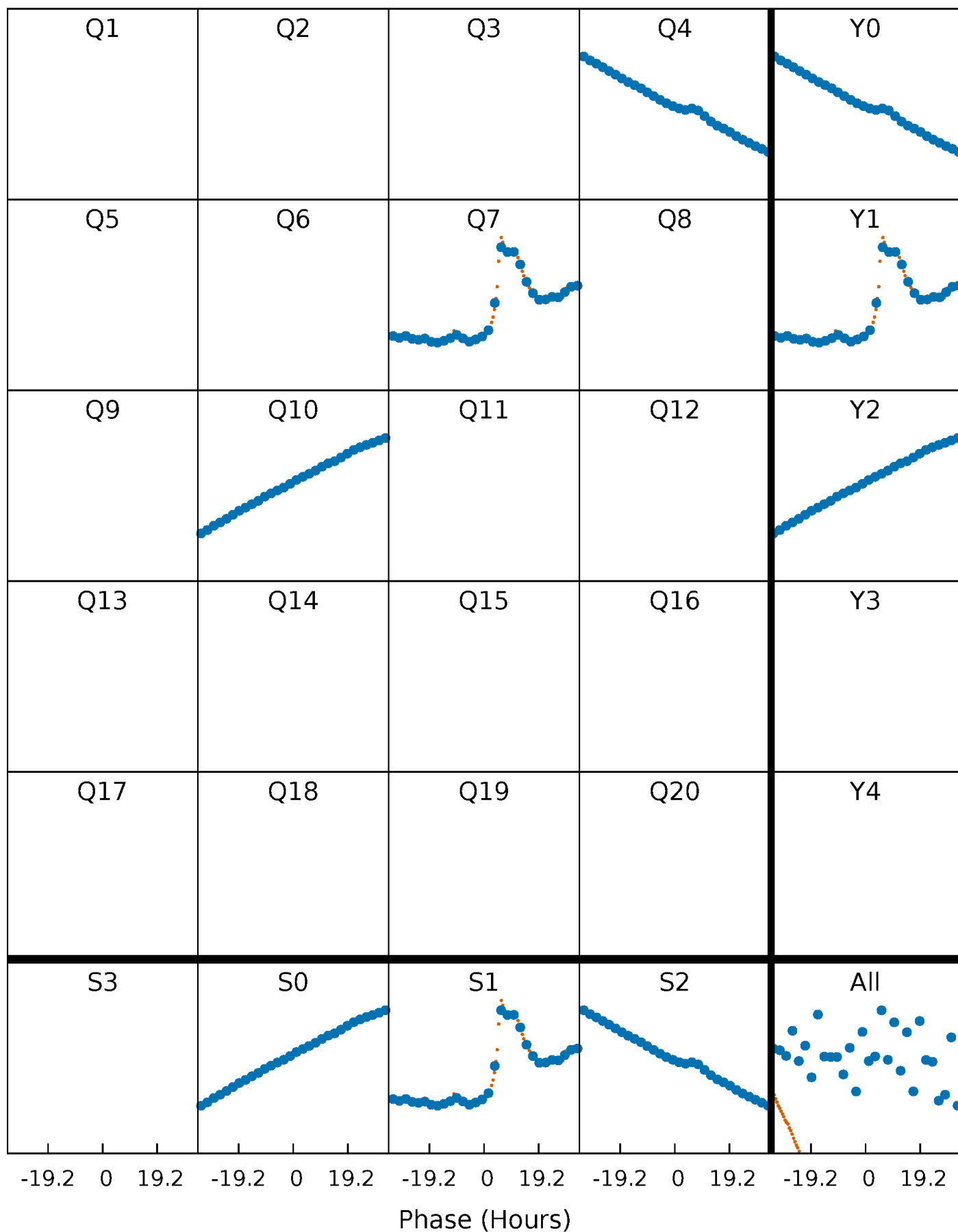


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



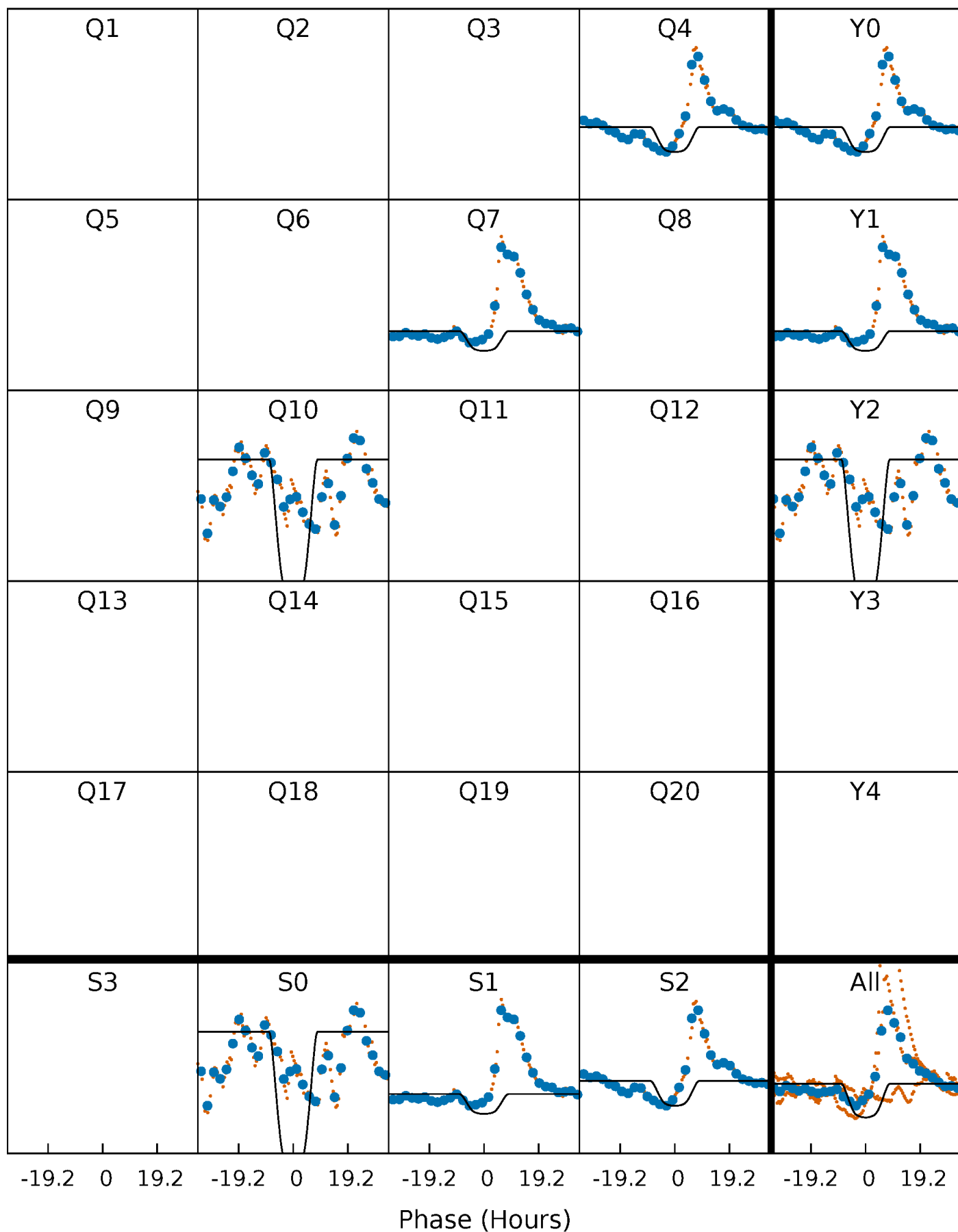
PDC Quarter-Phased Transit Curves

TCE 011554998-03 $P=312.039886$ Days $T_0=358.174547$ (BKJD)



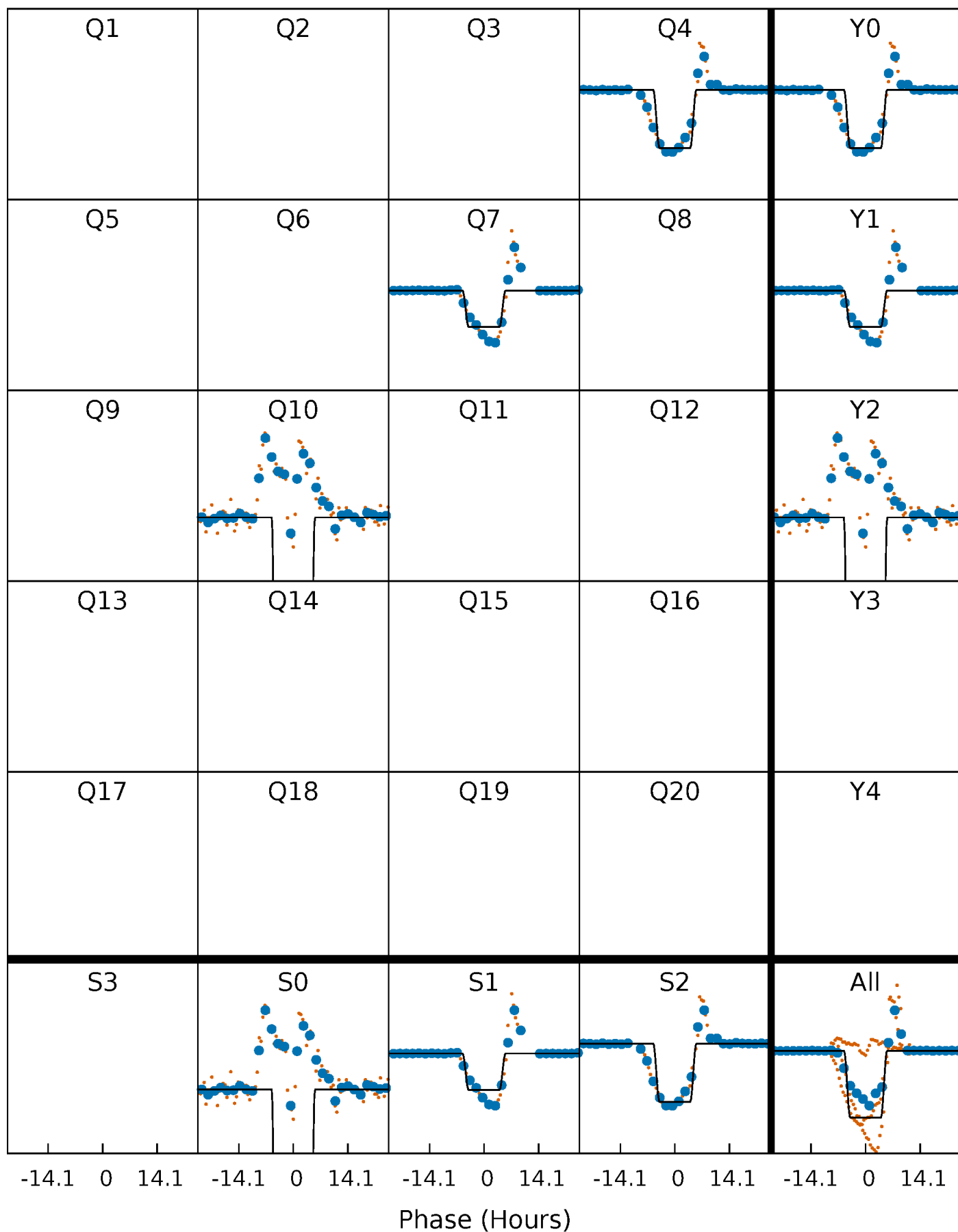
DV Quarter-Phased Transit Curves

TCE 011554998-03 $P=312.039886$ Days $T_0=358.174547$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

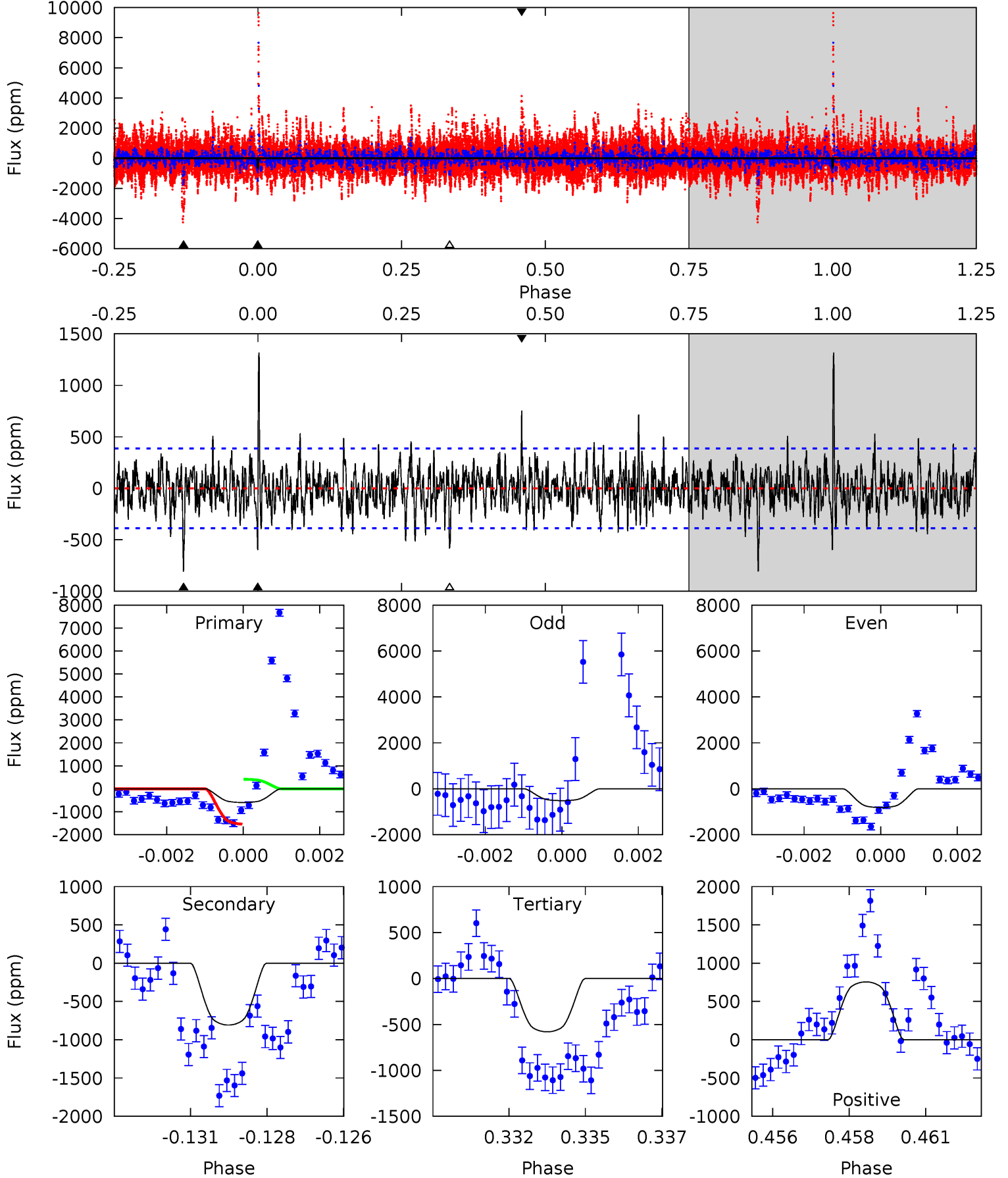
TCE 011554998-03 $P=311.993216$ Days $T_0=358.177561$ (BKJD)



DV Model-Shift Uniqueness Test

011554998-03, P = 312.039886 Days, E = 46.134661 Days

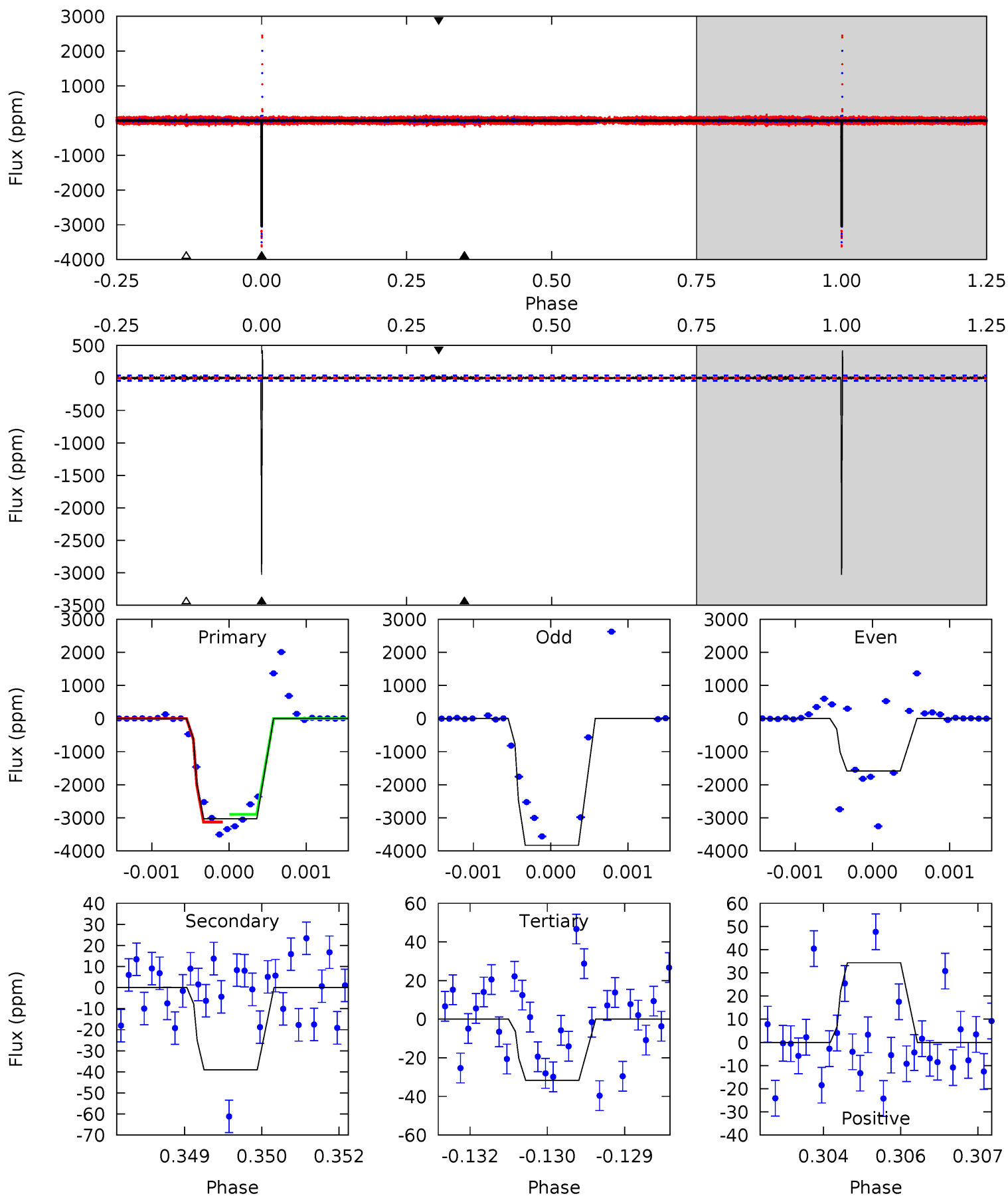
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.20	11.1	7.95	10.3	5.30	3.05	2.21	0.25	-2.14	3.11	0.72	1.86	0.47	0.62	7.71



Alt Model-Shift Uniqueness Test

011554998-03, P = 311.993216 Days, E = 46.184345 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
402.1	5.18	4.20	4.56	5.38	3.18	0.89	397.9	397.6	0.98	0.62	206.9	0.71	0.12	0



Stellar Parameters For KIC 011554998

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4734^{+104}_{-139}	$2.436^{+0.443}_{-0.148}$	$0.070^{+0.200}_{-0.300}$	$16.222^{+2.988}_{-9.561}$	$2.617^{+0.506}_{-1.517}$	$0.001^{+0.004}_{-0.000}$
	+2%/-3%	+18%/-6%	+286%/-429%	+18%/-59%	+19%/-58%	+508%/-36%
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 011554998-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-808 ± 73	$98.56^{+18.01}_{-25.98}$	1042^{+69}_{-114}	3684^{+141}_{-126}	75^{+46}_{-22}
Alt.	-39 ± 8	$100.65^{+17.53}_{-27.86}$	1042^{+71}_{-124}	2375^{+83}_{-84}	$3.423^{+2.091}_{-1.085}$

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)
 A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

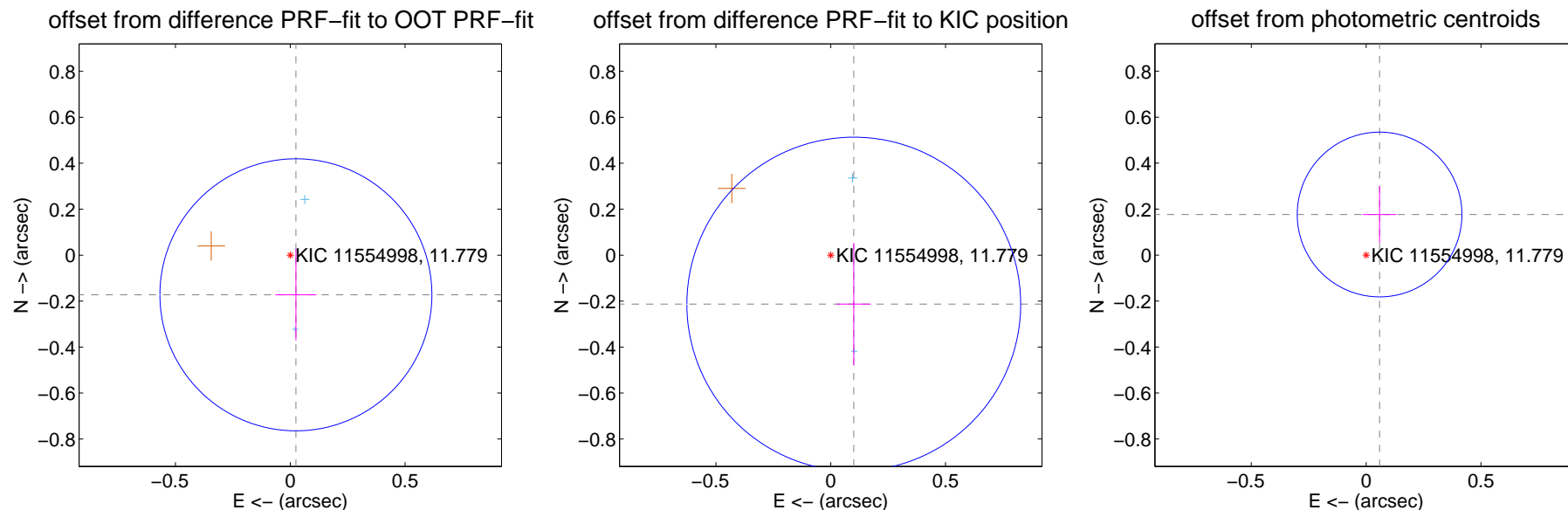
DV Centroid Data

Supplemental centroid analysis for 011554998-03. **Kepler magnitude: 11.78.** Transit SNR 7.77

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.174 ± 0.197	0.88	-0.025 ± 0.090	-0.173 ± 0.199
PRF-fit source offset from KIC position	0.236 ± 0.242	0.97	-0.100 ± 0.074	-0.213 ± 0.265
photometric centroid source offset	0.19 ± 0.12	1.56	-0.06 ± 0.07	0.18 ± 0.12



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

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

Q1 no difference image



Q1 no OOT image



Q2 no difference image



Q2 no OOT image



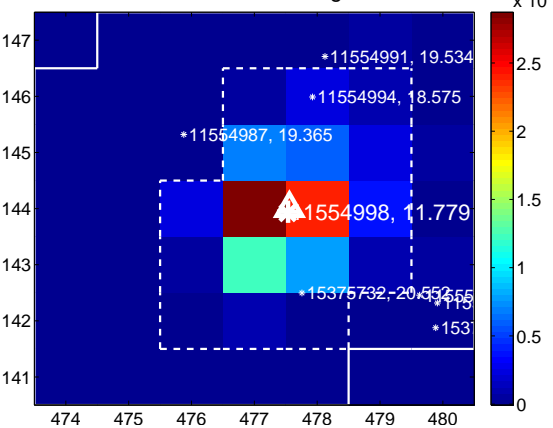
Q3 no difference image



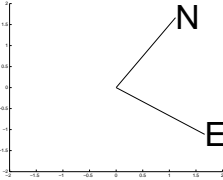
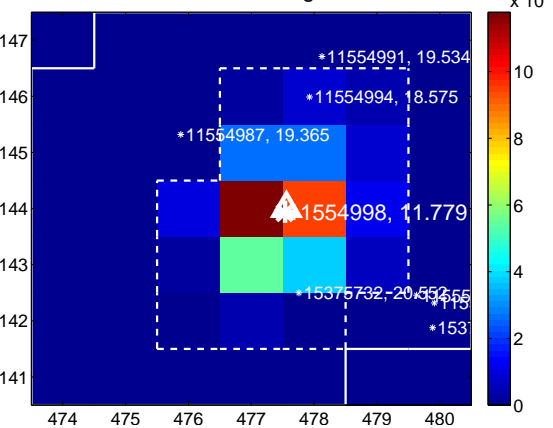
Q3 no OOT image



Q4 difference image



Q4 OOT image



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

Q5 no difference image



Q5 no OOT image



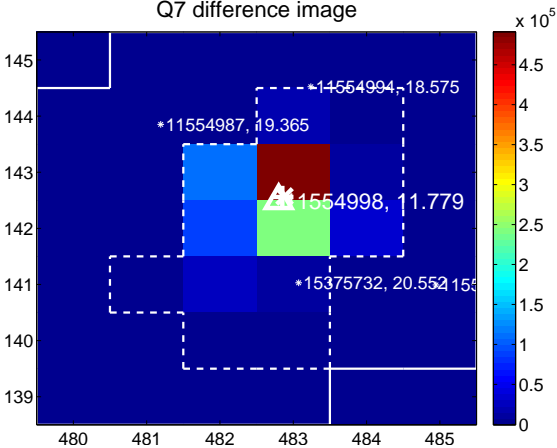
Q6 no difference image



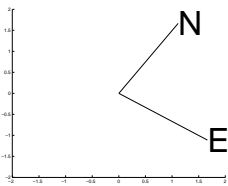
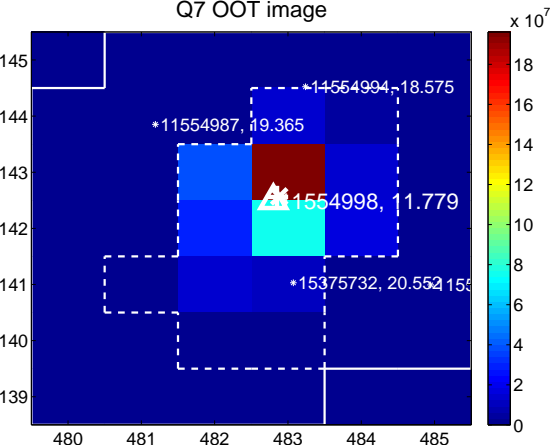
Q6 no OOT image



Q7 difference image



Q7 OOT image



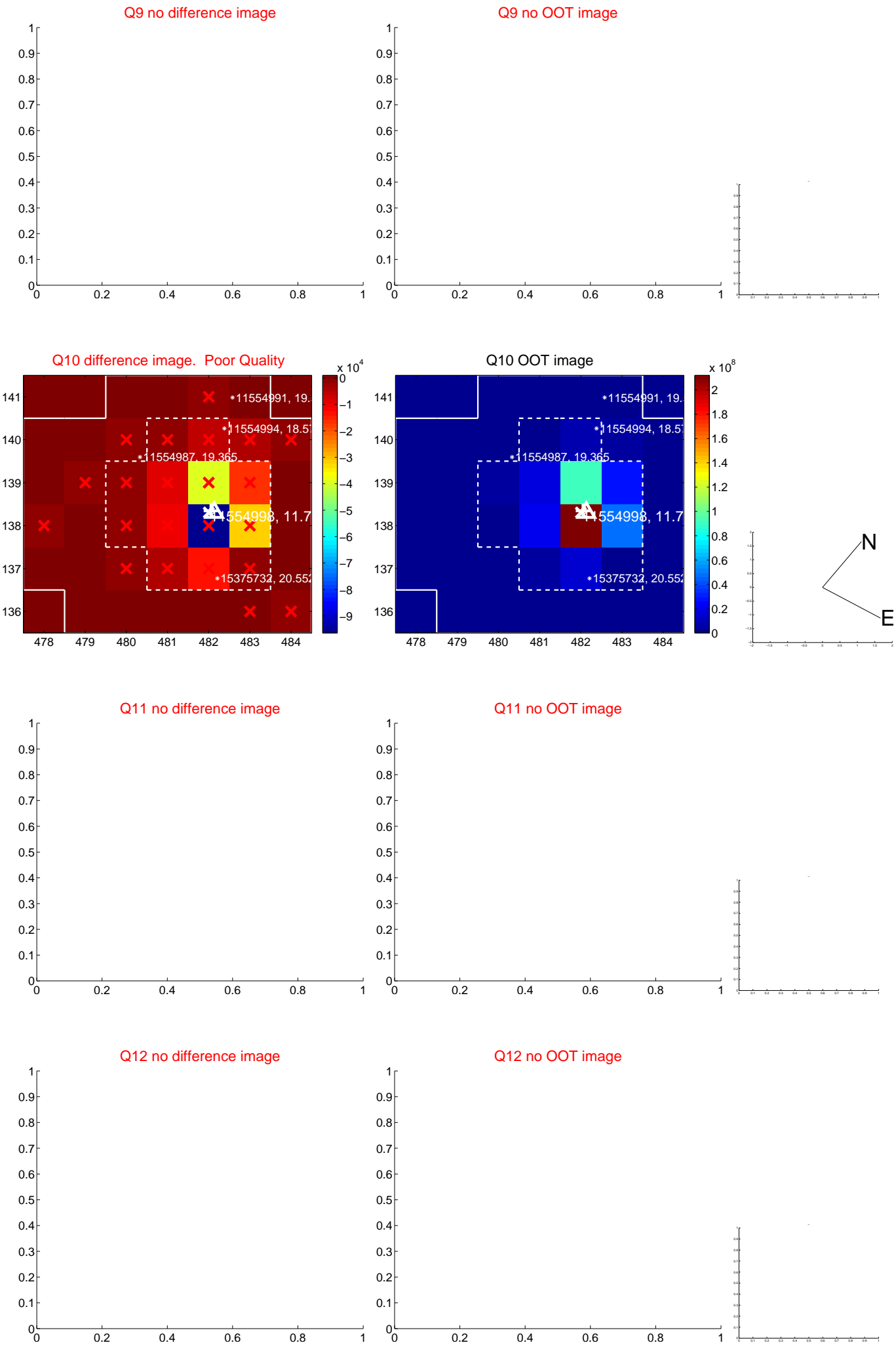
Q8 no difference image



Q8 no OOT image



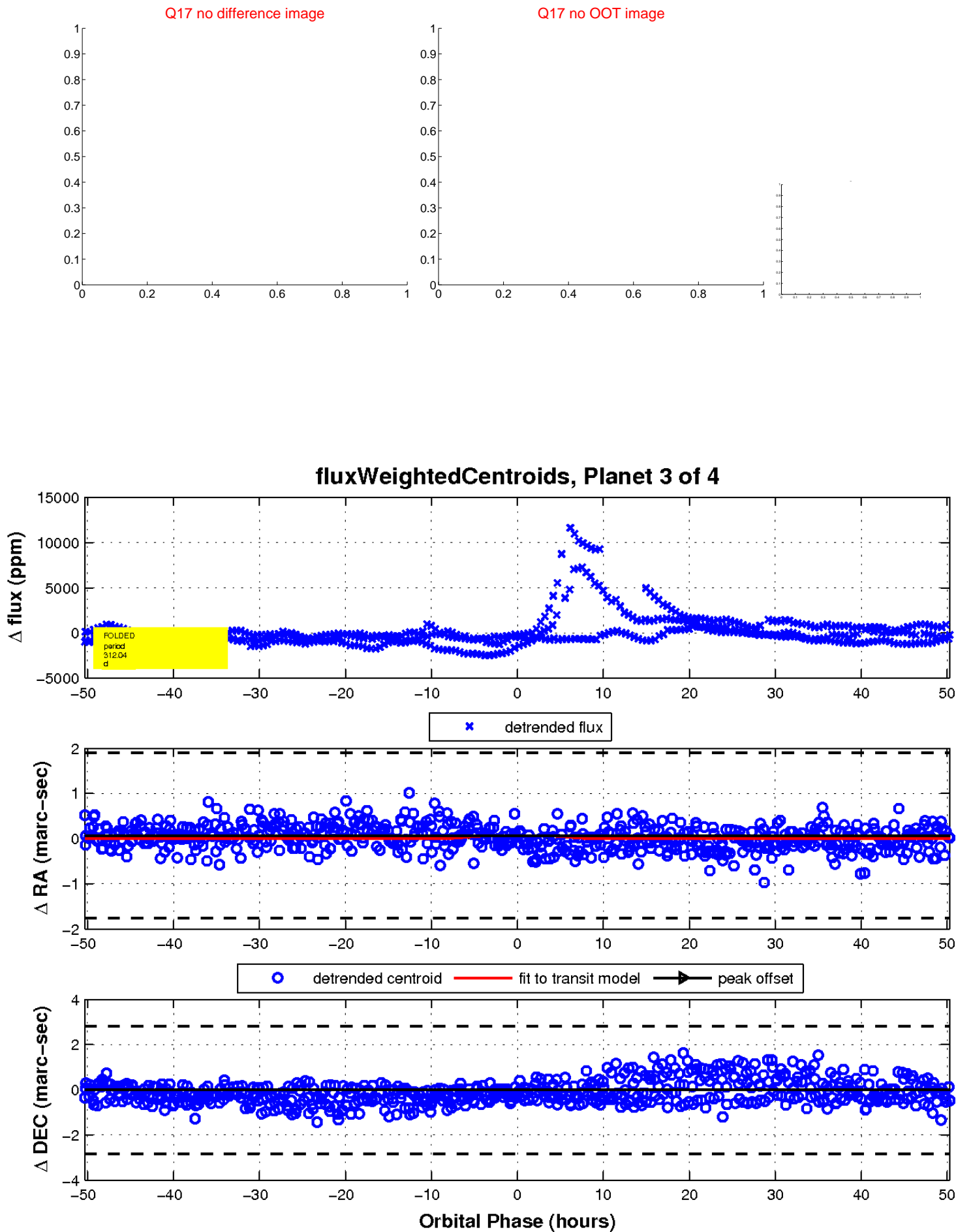
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

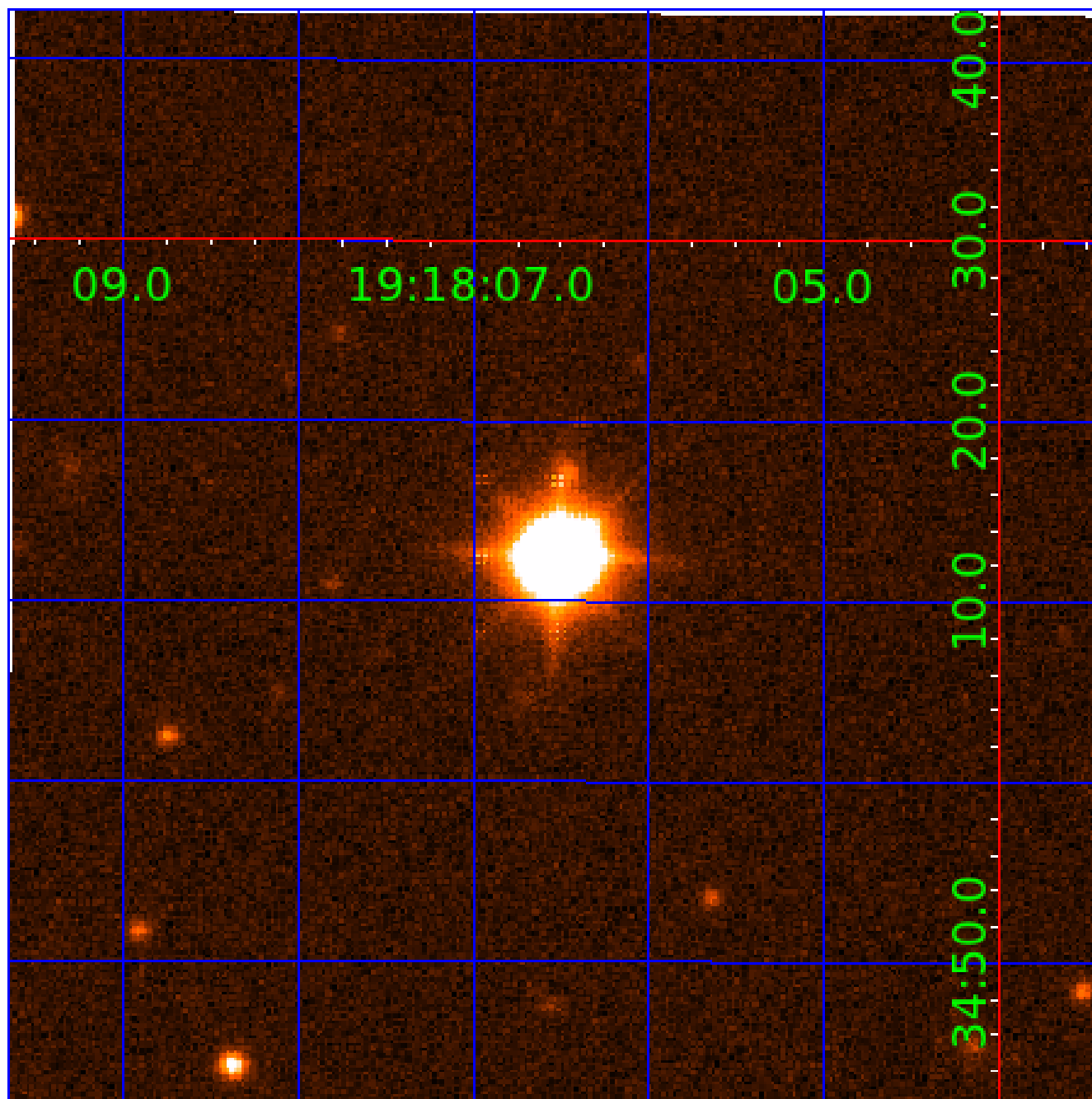


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011554998

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})
011554998-01	OBS	No	619.682399	149.096103	483.0	5.289	14.4	3.6	16.22	4734	41.51	30.78
011554998-02	OBS	No	291.603932	394.492620	541.8	4.474	9.1	5.3	16.22	4734	37.82	84.10
011554998-03	OBS	No	312.039886	358.174547	2314.9	16.783	16.1	7.8	16.22	4734	98.85	76.84
011554998-04	OBS	No	460.244903	481.685323	1554.3	6.514	12.8	8.2	16.22	4734	85.88	45.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011554998-01	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—CENT_FEW_DIFFS
011554998-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
011554998-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011554998-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_MEAS

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

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

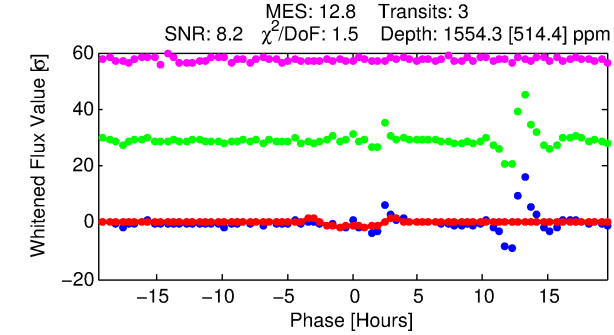
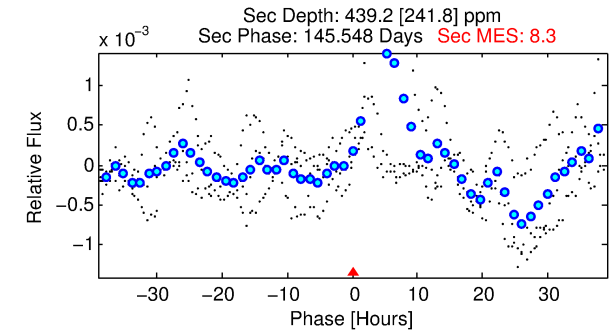
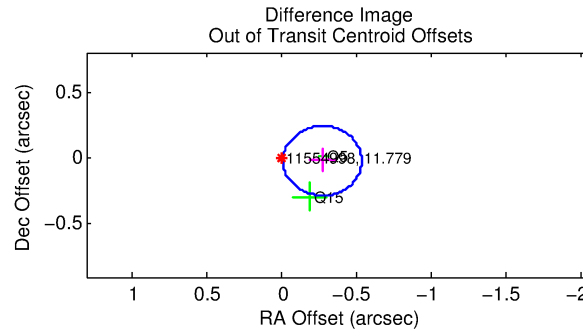
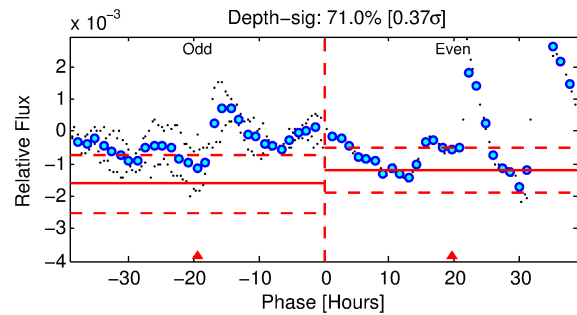
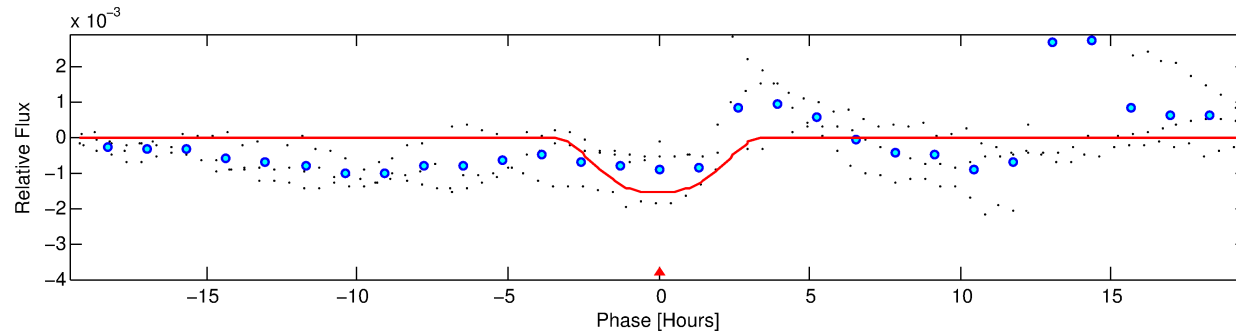
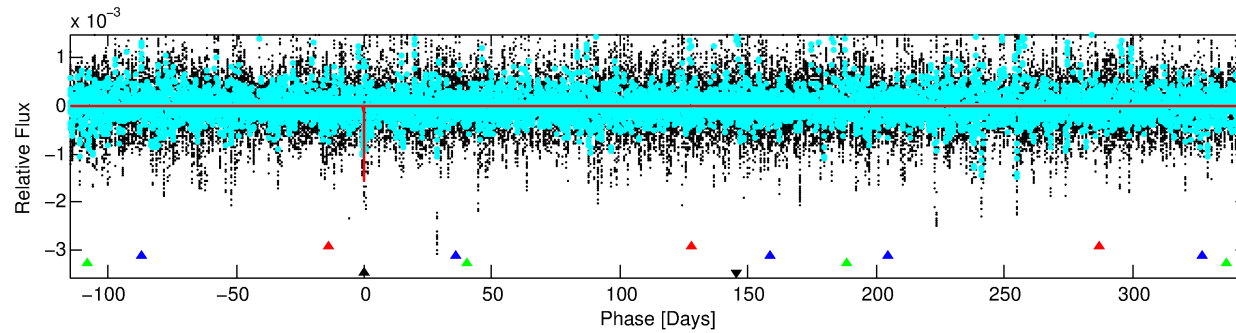
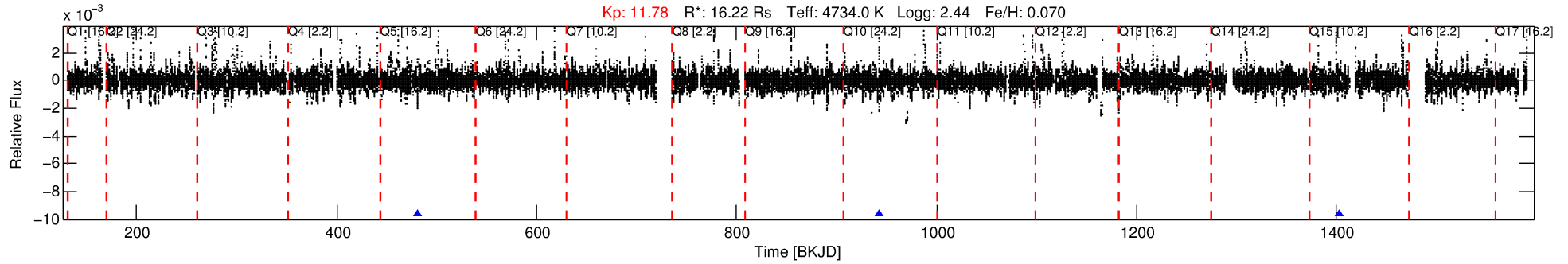
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011554998-04

No Significant Match Found

DV One-Page Summary

KIC: 11554998 Candidate: 4 of 4 Period: 460.245 d



DV Fit Results:

Period = 460.24490 [0.01187] d
Epoch = 481.6853 [0.0168] BKJD
Rp/R* = 0.0485 [0.0091]
a/R* = 239.88 [28.84]
b = 0.95 [0.02]
Seff = 45.77 [36.34]
Teq = 663 [132] K
Rp = 85.88 [53.10] Re
a = 1.6085 [0.8358] AU
Ag = 84.76 [87.24] [0.96 σ]
Teffp = 3111 [525] K [4.52 σ]

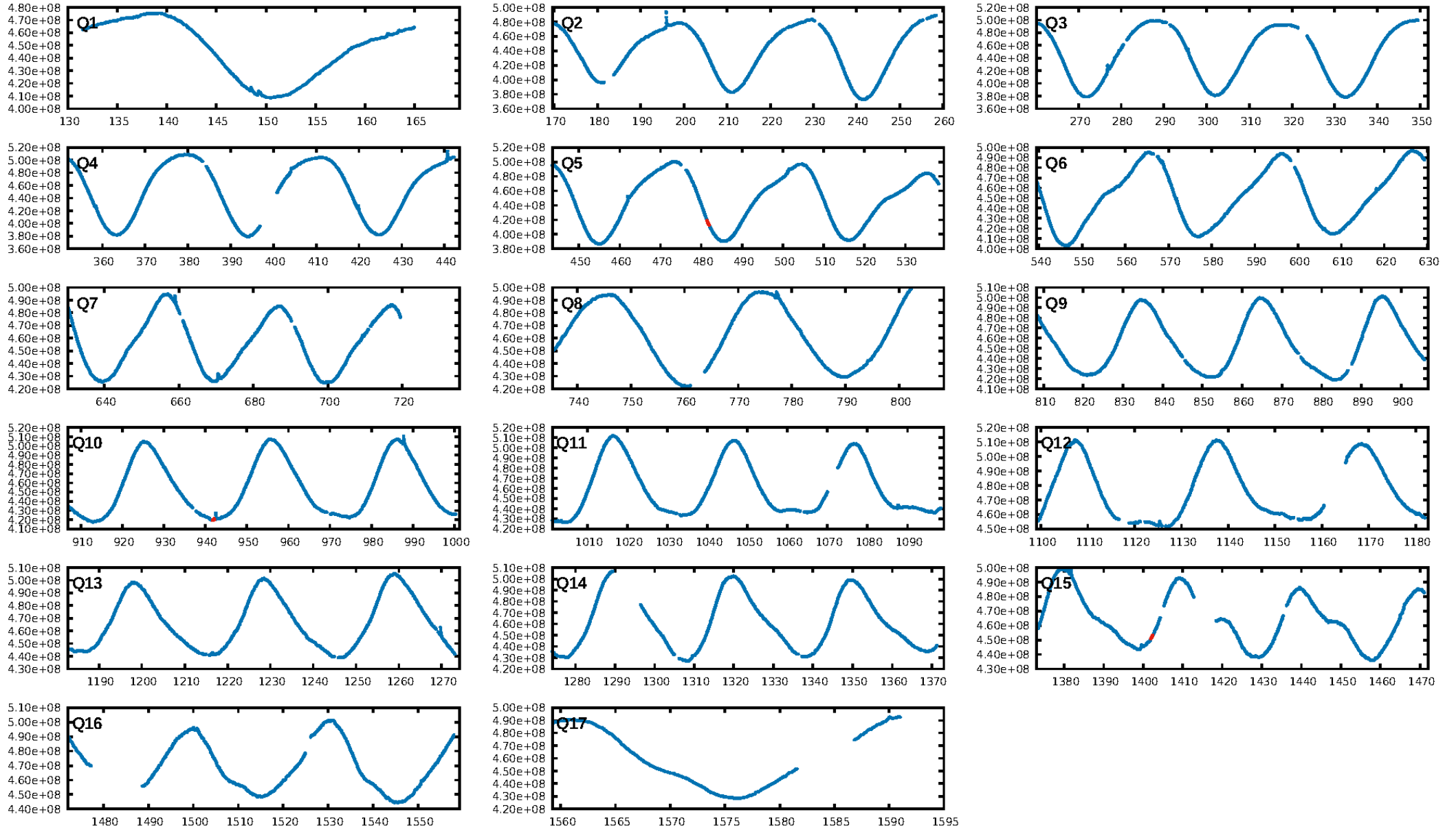
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [197.57 σ]
LongPeriod-sig: 100.0% [456.00 σ]
ModelChiSquare2-sig: 4.0%
ModelChiSquareGof-sig: 35.6%
Bootstrap-pfa: 1.91e-12
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.407
Centroid-sig: 49.1%
Centroid-so: 0.082 arcsec [0.50 σ]
OotOffset-rm: 0.278 arcsec [3.17 σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-rm: 0.396 arcsec [4.52 σ]
KicOffset-st: 0/1/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

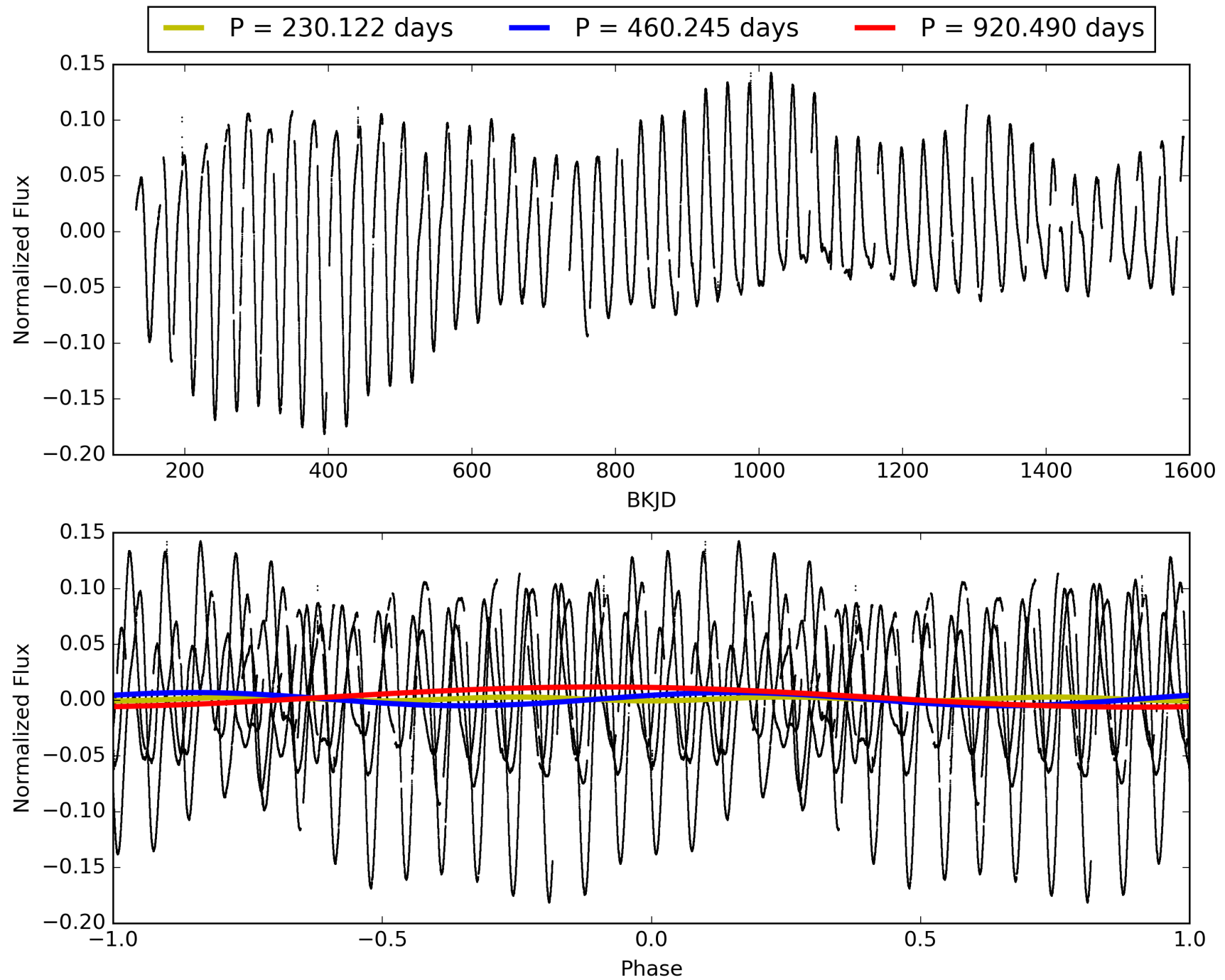
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 23:31:54 Z

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

TCE 011554998-04, PDC Light Curves

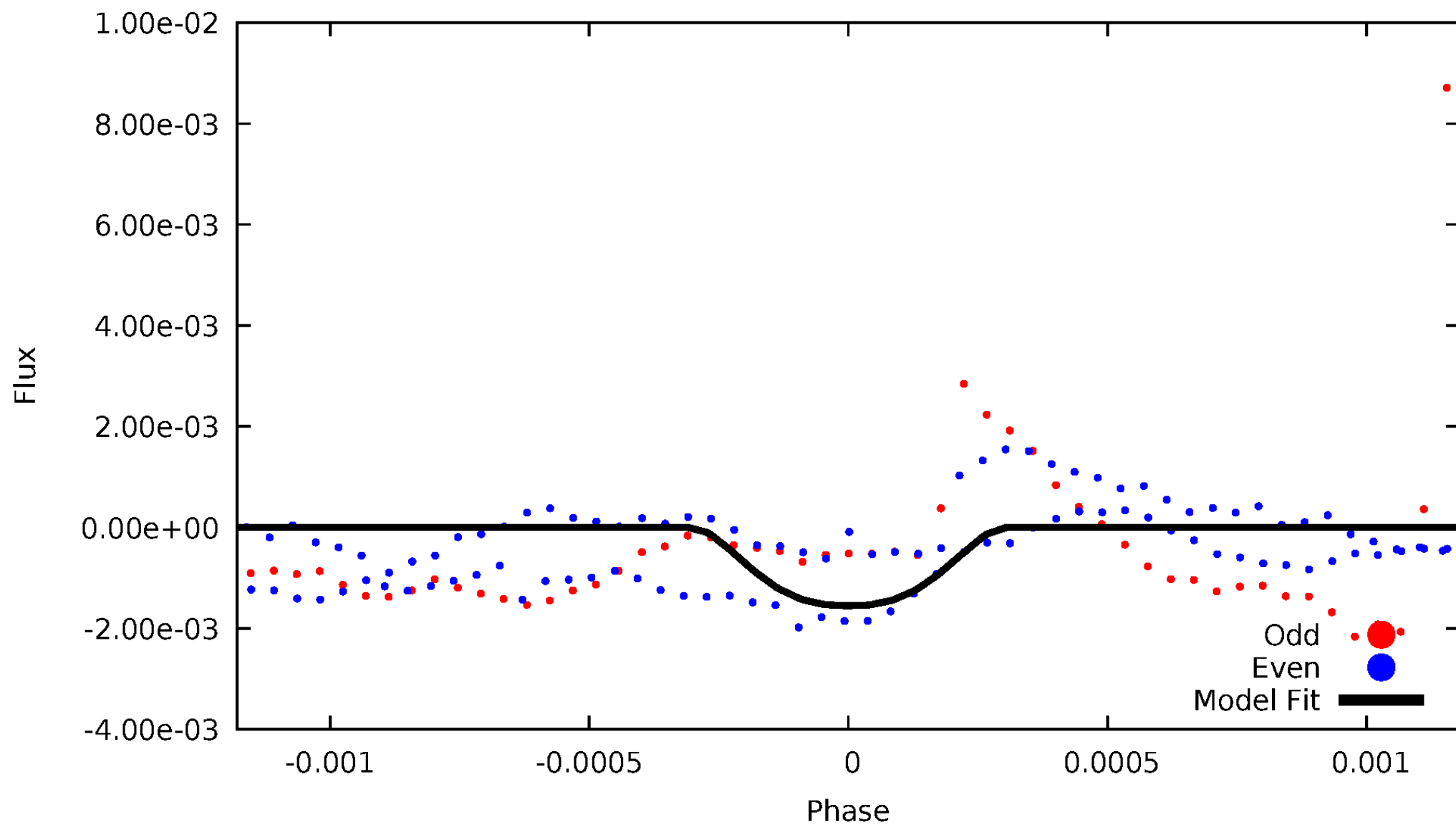


TCE 011554998-04



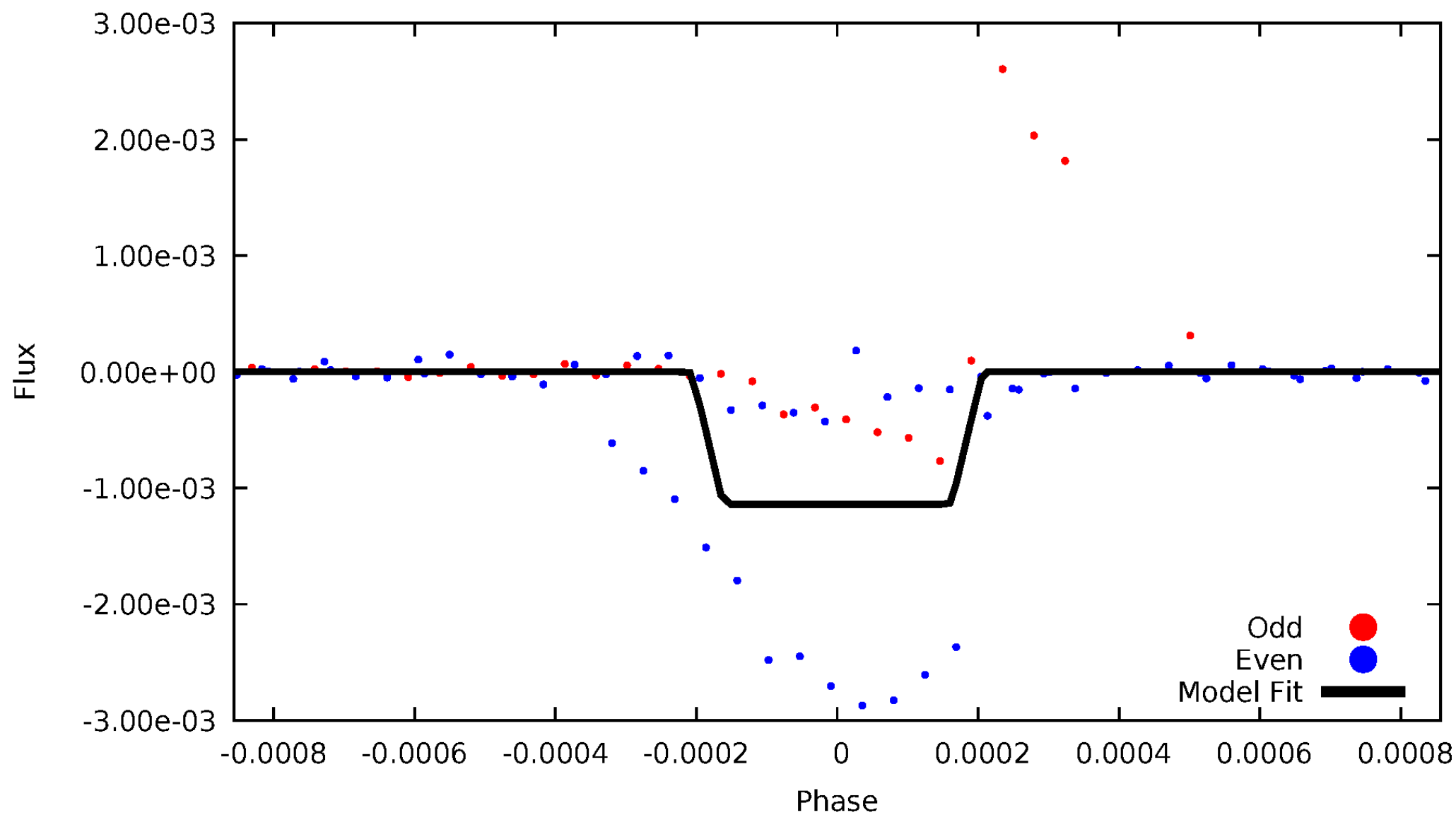
DV Odd/Even

TCE 011554998-04



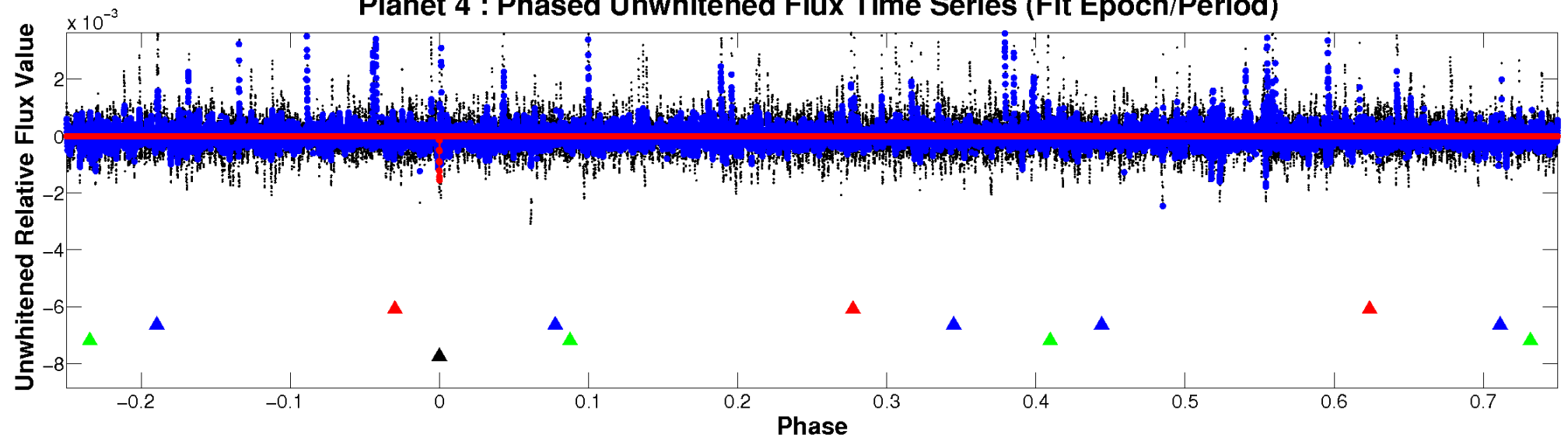
ALT Odd/Even

TCE 011554998-04

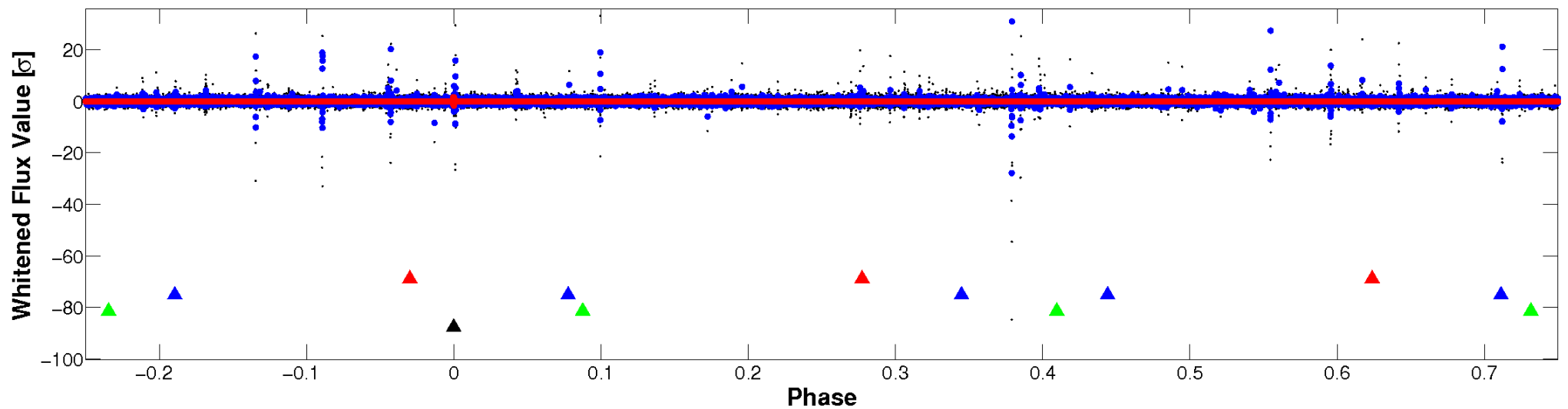


Non-Whitened Vs. Whitened Light Curve

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

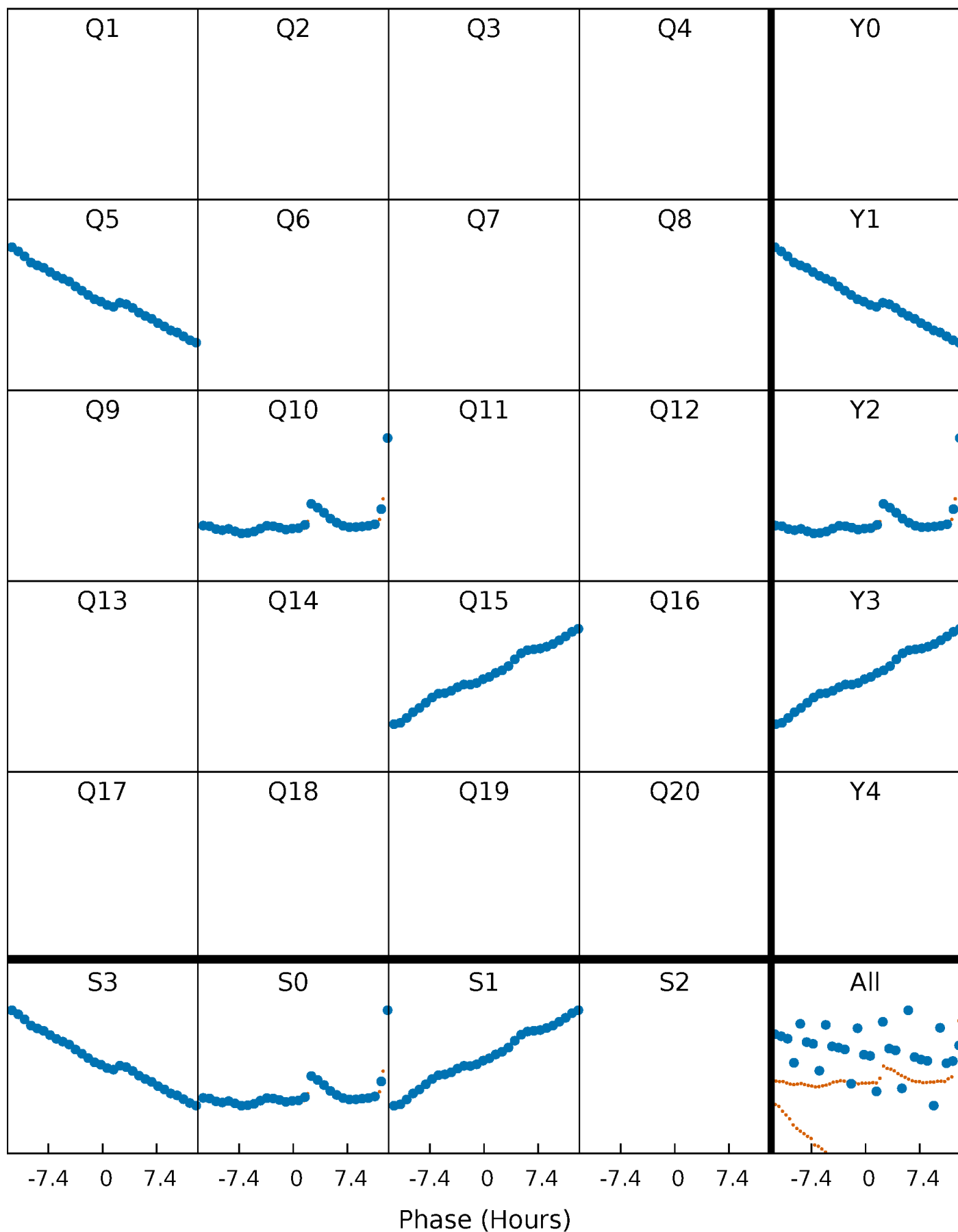


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



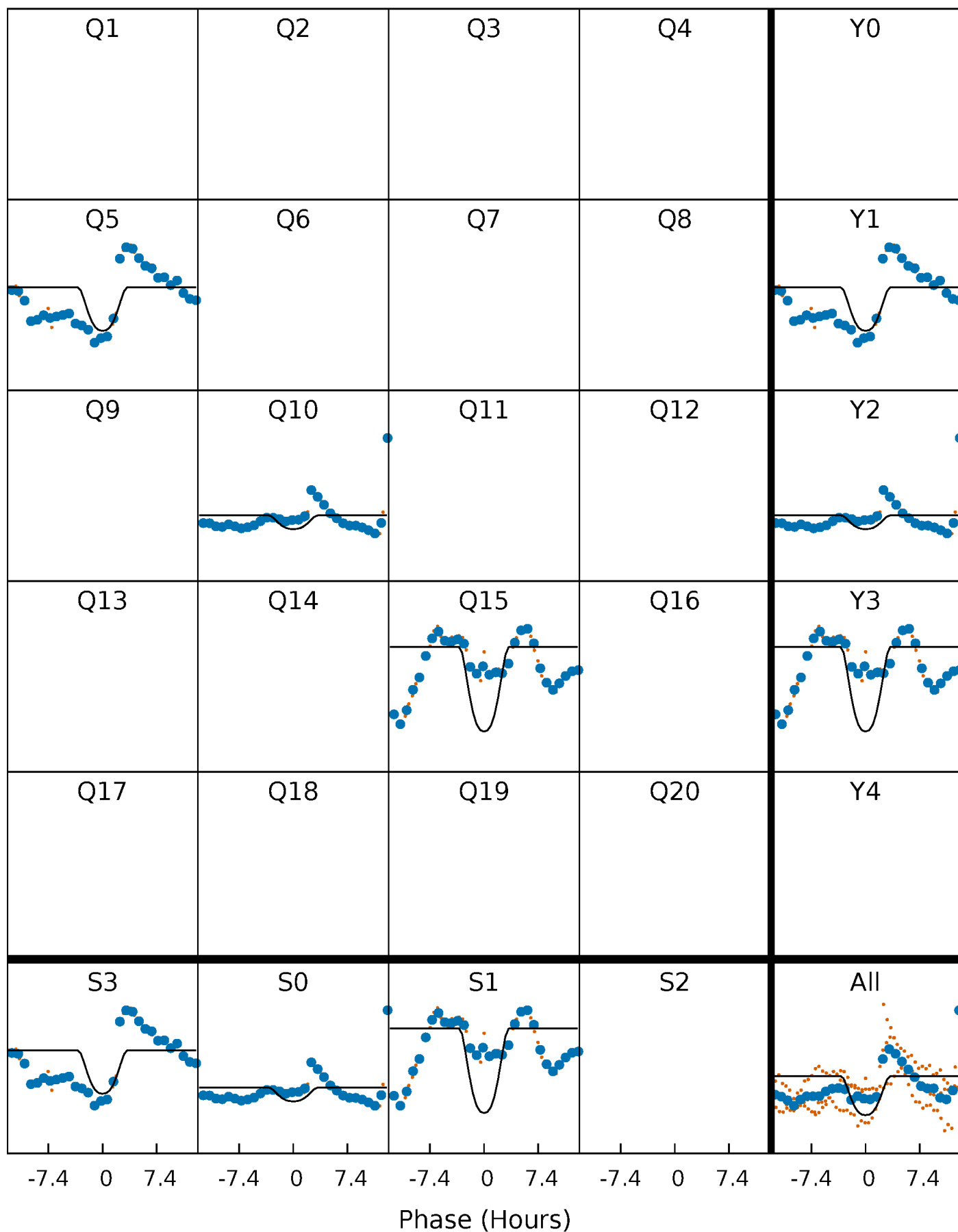
PDC Quarter-Phased Transit Curves

TCE 011554998-04 $P=460.244903$ Days $T_0=481.685323$ (BKJD)



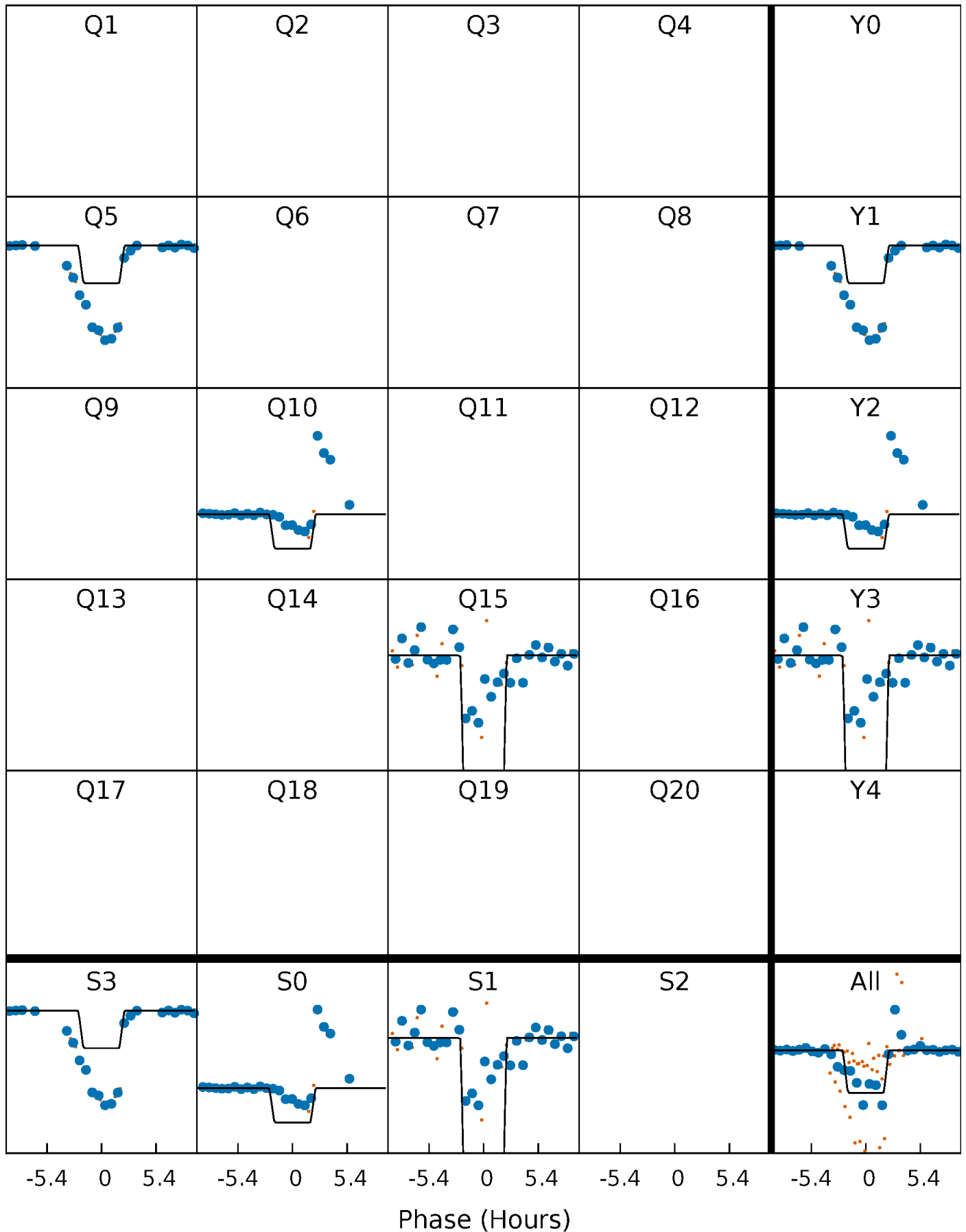
DV Quarter-Phased Transit Curves

TCE 011554998-04 $P=460.244903$ Days $T_0=481.685323$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

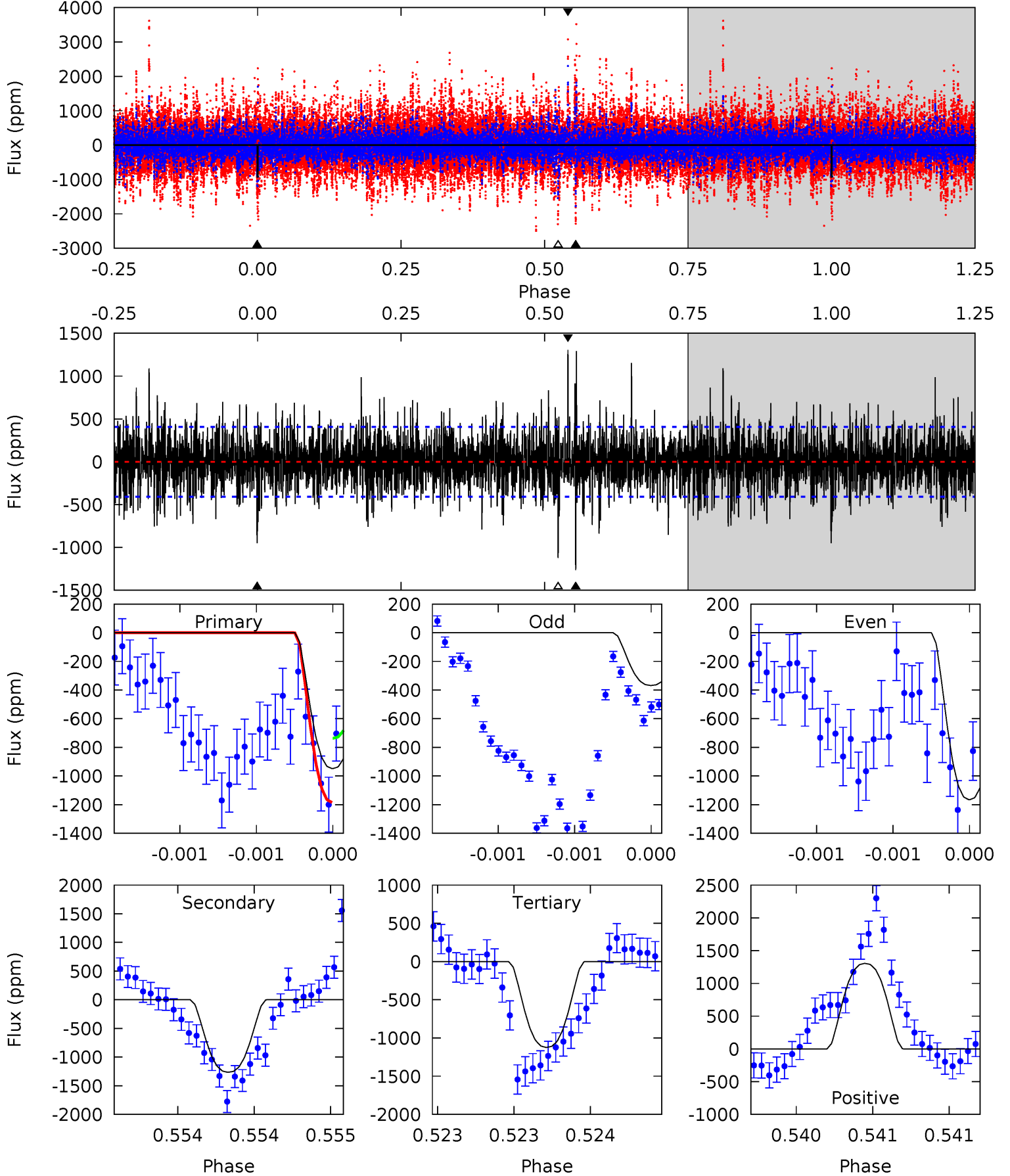
TCE 011554998-04 $P=460.238694$ Days $T_0=481.686068$ (BKJD)



DV Model-Shift Uniqueness Test

011554998-04, P = 460.244903 Days, E = 21.440420 Days

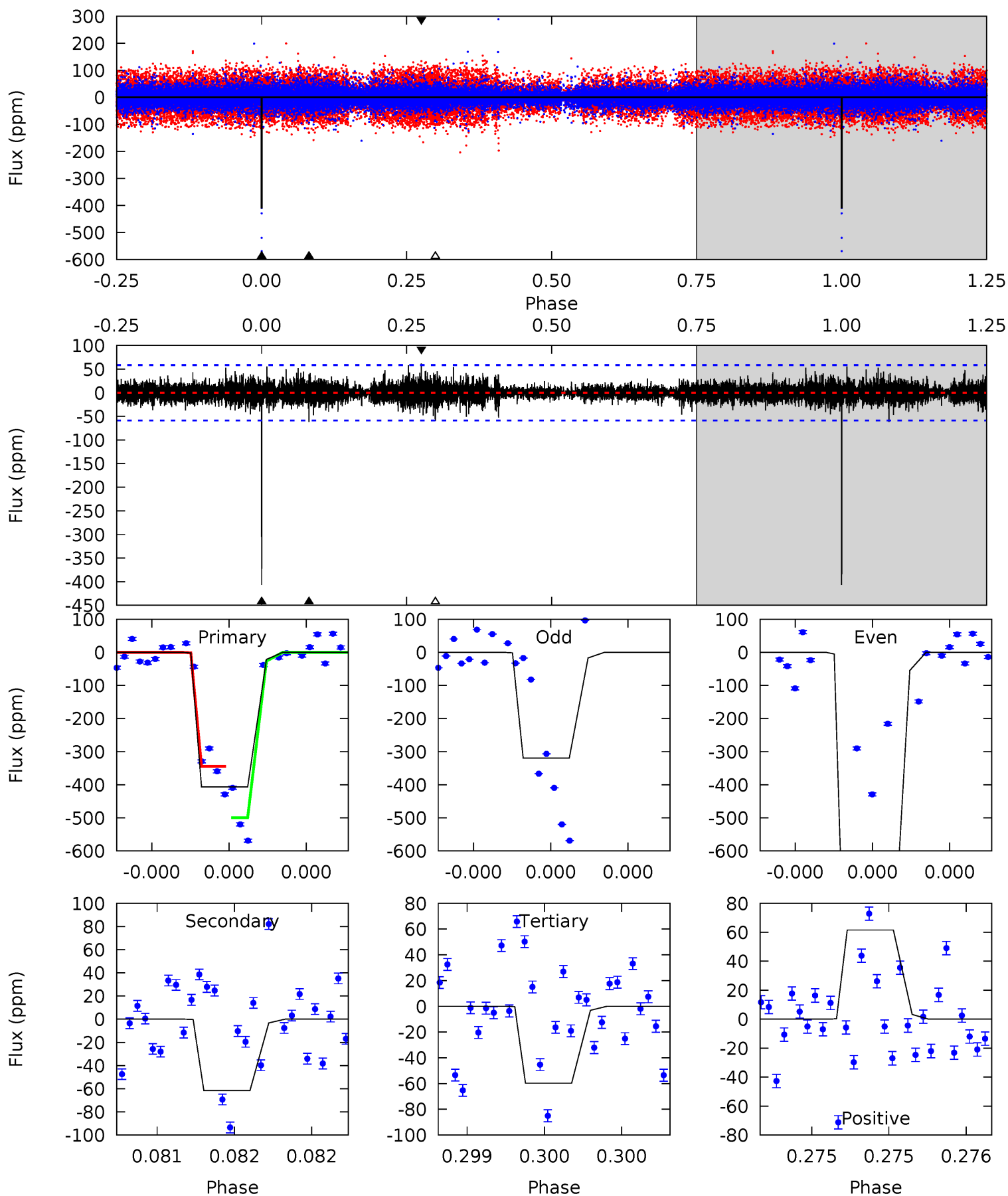
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	17.2	15.2	17.7	5.54	3.42	3.20	-2.37	-4.84	1.92	-0.55	4.13	1.76	0.51	3.06



Alt Model-Shift Uniqueness Test

011554998-04, P = 460.238694 Days, E = 21.447374 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.9	5.88	5.70	5.88	5.60	3.53	0.97	33.2	33.0	0.18	0.00	40.7	2.81	0.13	0



Stellar Parameters For KIC 011554998

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4734^{+104}_{-139}	$2.436^{+0.443}_{-0.148}$	$0.070^{+0.200}_{-0.300}$	$16.222^{+2.988}_{-9.561}$	$2.617^{+0.506}_{-1.517}$	$0.001^{+0.004}_{-0.000}$
	+2%/-3%	+18%/-6%	+286%/-429%	+18%/-59%	+19%/-58%	+508%/-36%
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 011554998-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1264 ± 74	$81.75^{+24.83}_{-26.54}$	909^{+61}_{-127}	4167^{+367}_{-265}	277^{+272}_{-111}
Alt.	-62 ± 10	$57.14^{+19.89}_{-20.62}$	913^{+60}_{-119}	2892^{+287}_{-194}	27^{+35}_{-12}

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)
 A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

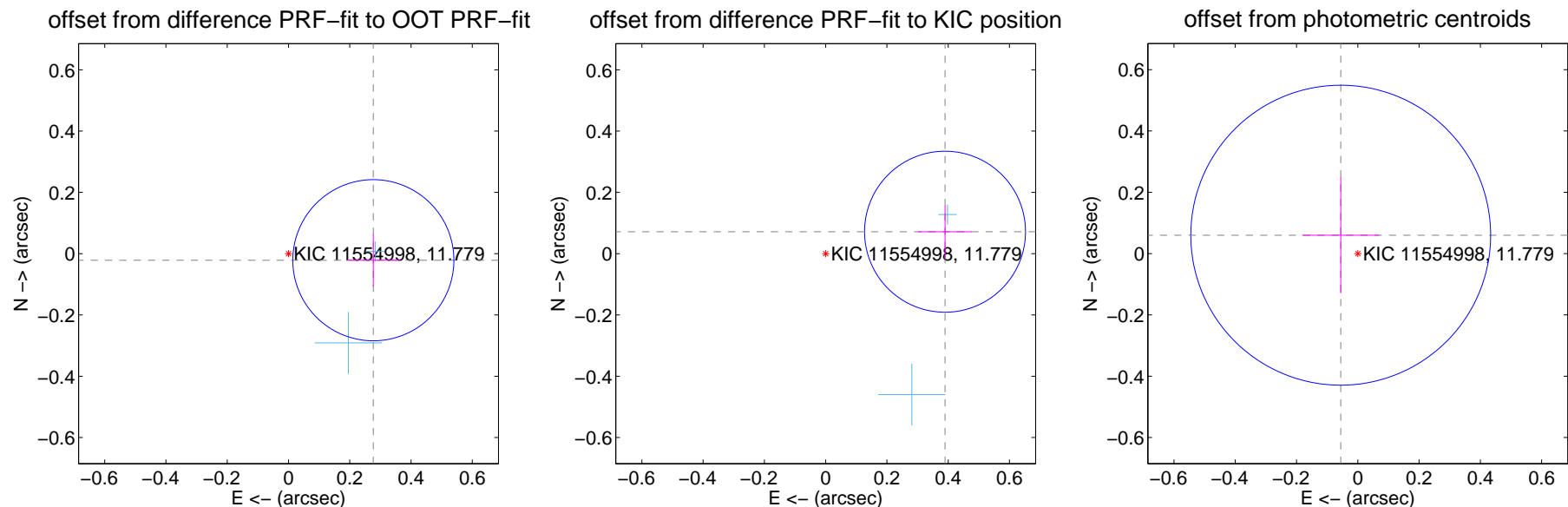
DV Centroid Data

Supplemental centroid analysis for 011554998-04. **Kepler magnitude: 11.78.** Transit SNR 8.16

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.278 ± 0.088	3.17	-0.277 ± 0.088	-0.021 ± 0.085
PRF-fit source offset from KIC position	0.396 ± 0.088	4.52	-0.390 ± 0.088	0.072 ± 0.085
photometric centroid source offset	0.08 ± 0.16	0.50	0.06 ± 0.13	0.06 ± 0.19

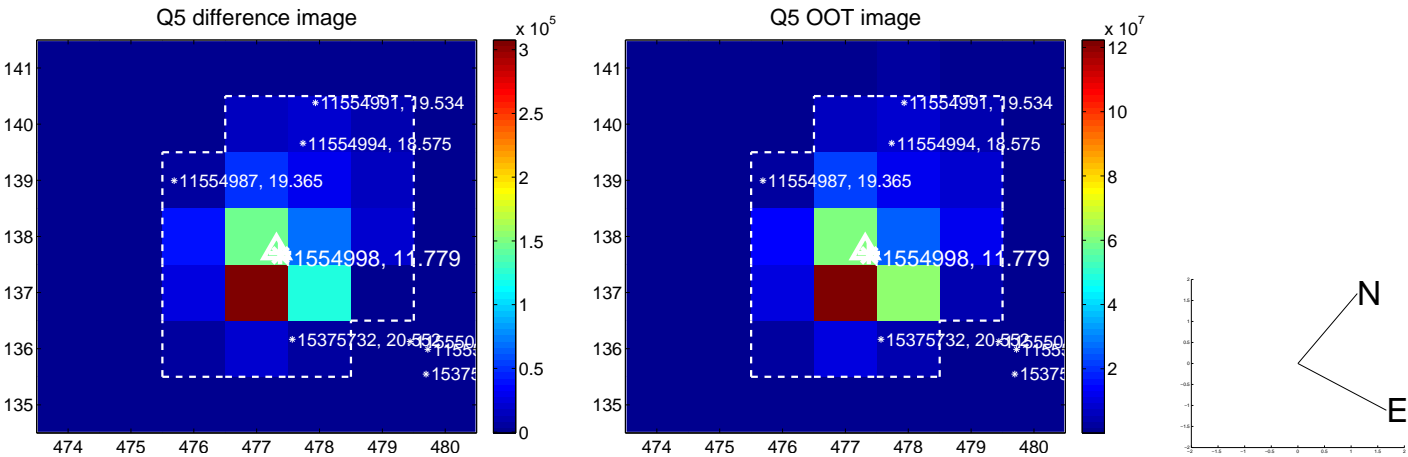


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

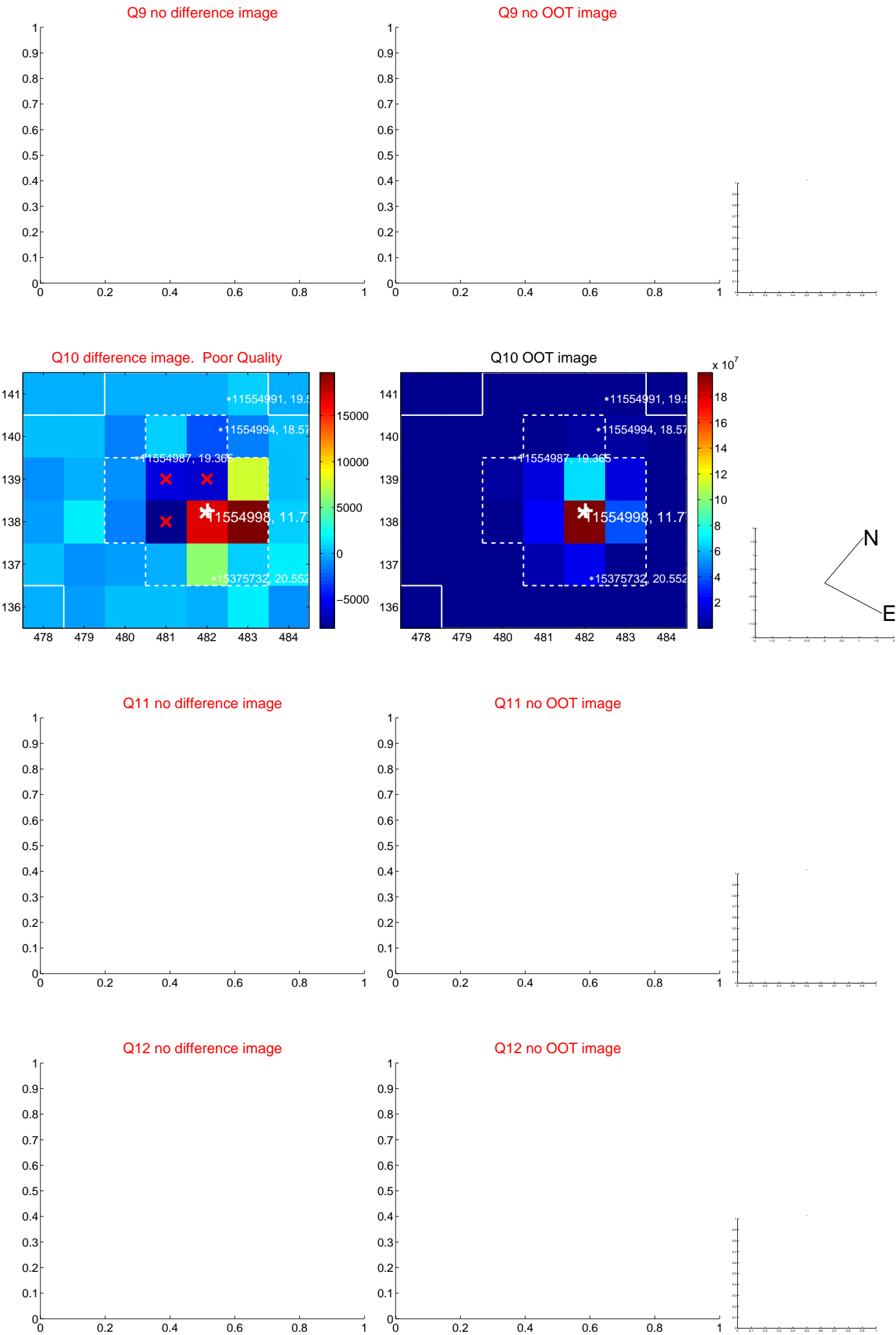
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

Q13 no difference image



Q13 no OOT image



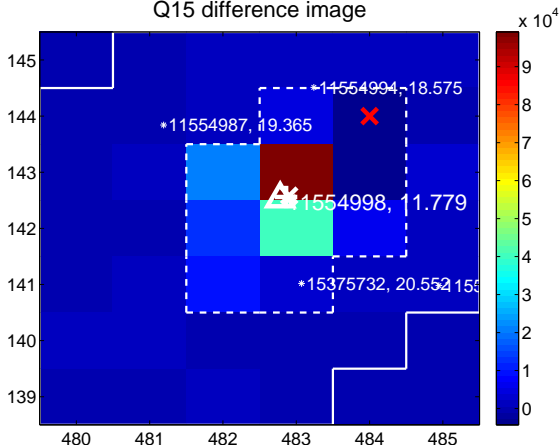
Q14 no difference image



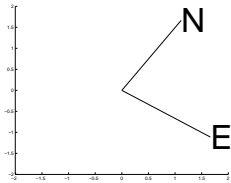
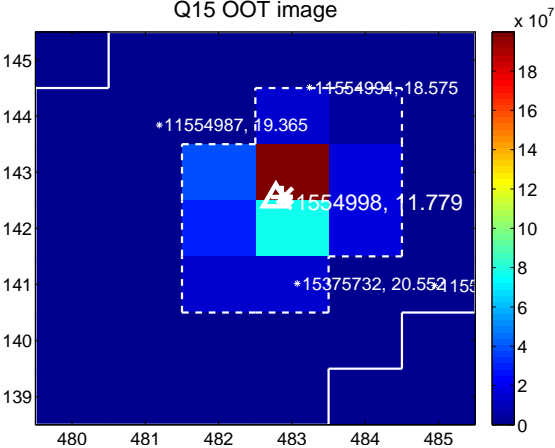
Q14 no OOT image



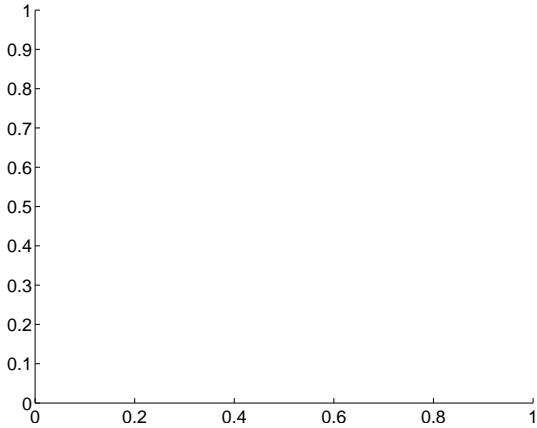
Q15 difference image



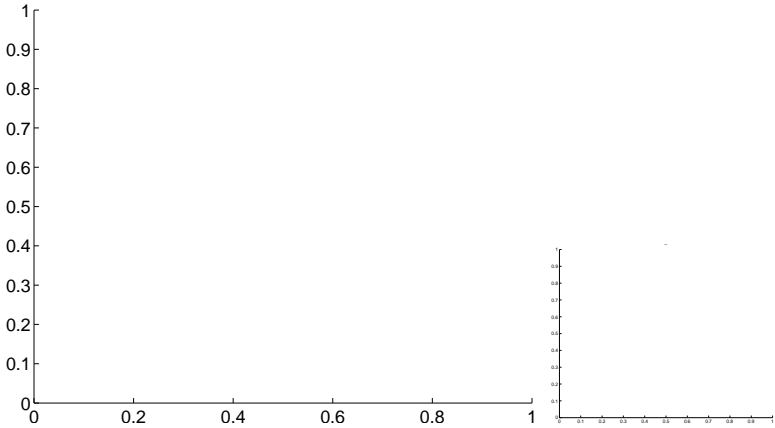
Q15 OOT image



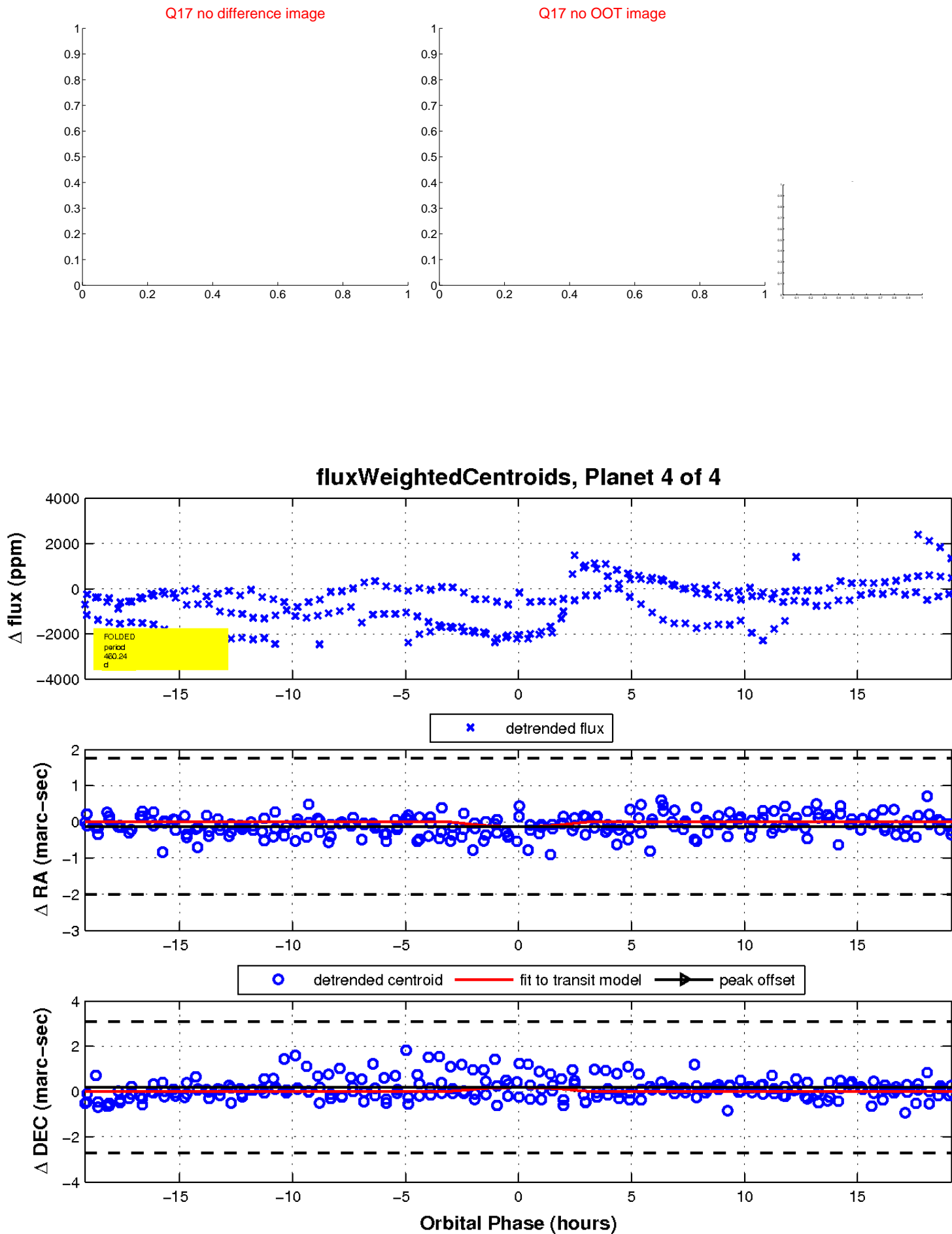
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

