

KIC 001873543

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})
001873543-01	OBS	No	536.620443	206.109313	1166.0	15.104	15.1	7.5	0.60	3850	1.96	0.06
001873543-02	OBS	No	316.697079	445.814651	1136.3	17.281	9.3	7.0	0.60	3850	2.19	0.12
001873543-03	OBS	No	638.150243	303.077621	1121.3	16.833	11.6	8.0	0.60	3850	2.10	0.05
001873543-04	OBS	No	359.474302	337.332376	913.5	9.578	9.7	6.1	0.60	3850	1.85	0.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001873543-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
001873543-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
001873543-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
001873543-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS

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

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

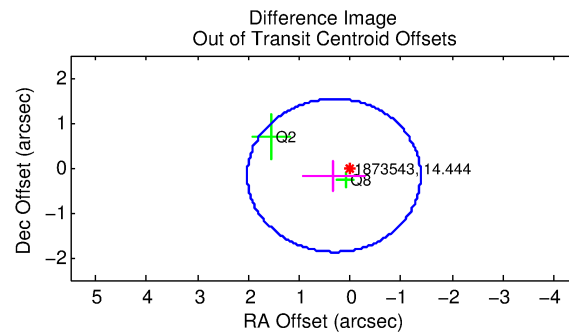
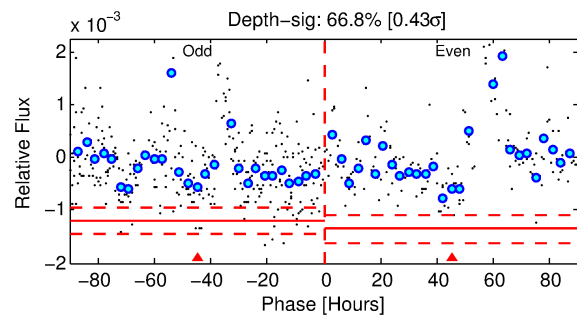
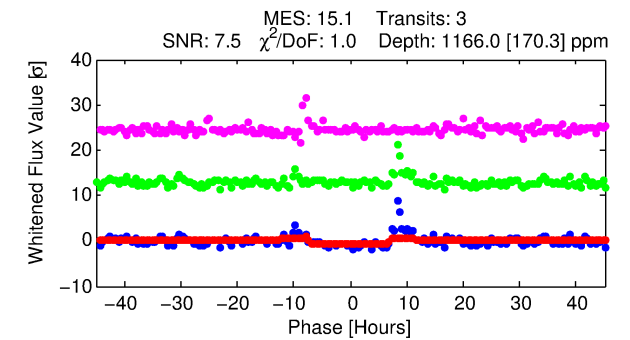
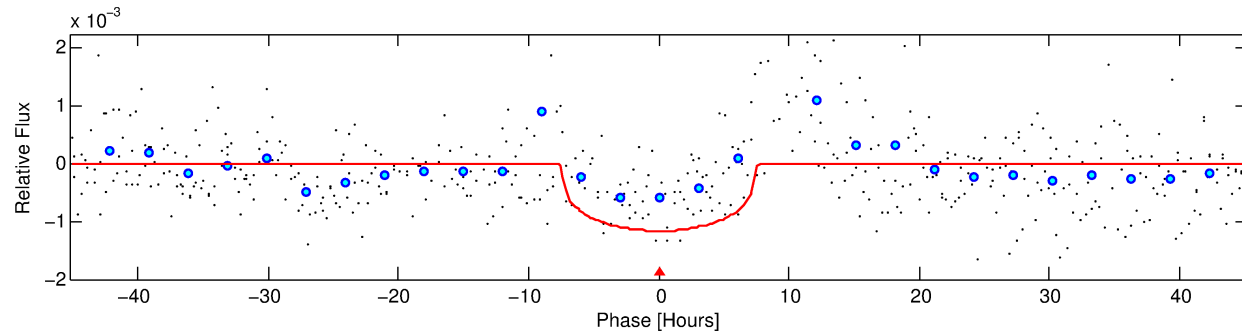
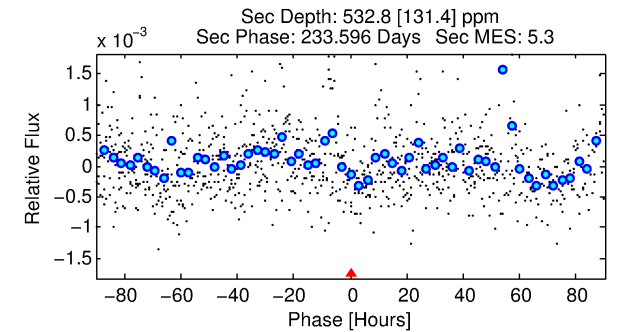
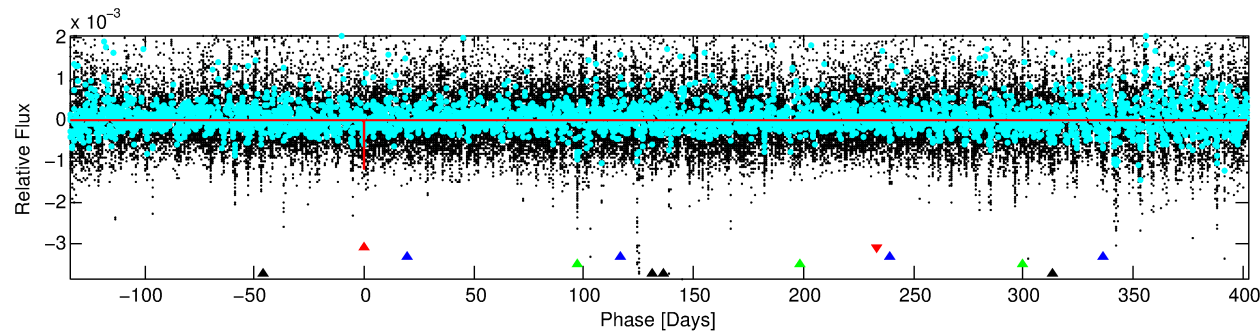
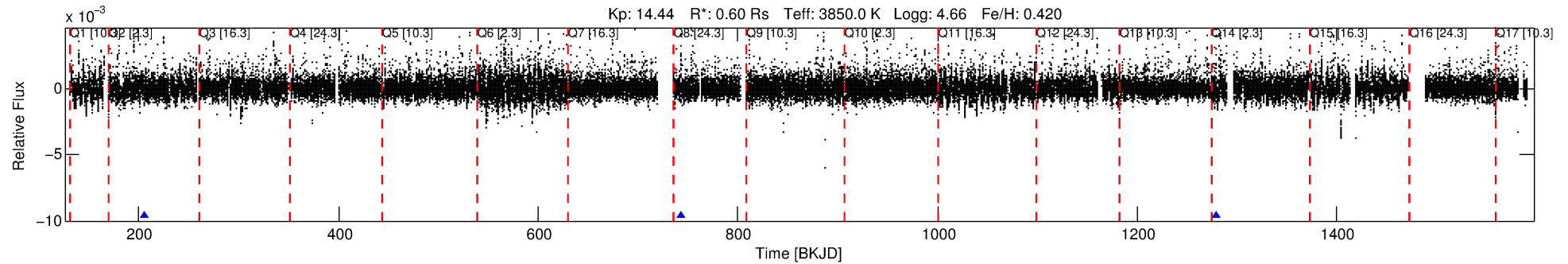
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 001873543-01

No Significant Match Found

DV One-Page Summary

KIC: 1873543 Candidate: 1 of 4 Period: 536.620 d



DV Fit Results:

Period = 536.62044 [0.01071] d
Epoch = 206.1093 [0.0138] BKJD
Rp/R* = 0.0300 [0.0166]
a/R* = 279.00 [469.79]
b = 0.06 [26.08]
Seff = 0.06 [0.01]
Teq = 126 [6] K
Rp = 1.96 [1.11] Re
a = 1.0921 [0.0977] AU
Ag = 90679.82 [103447.01] [0.88 σ]
Teffp = 3378 [967] K [3.36 σ]

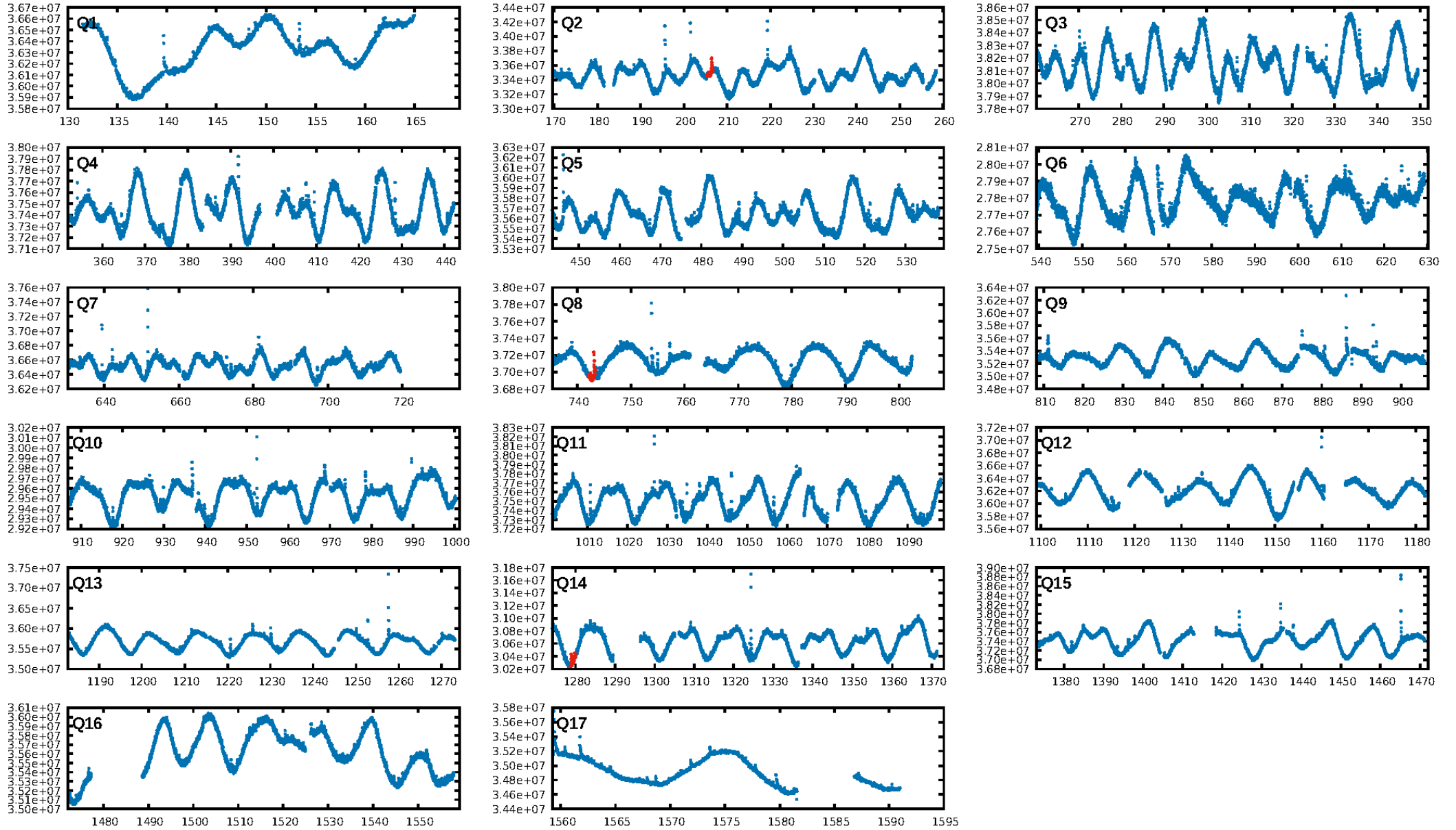
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [237.72 σ]
LongPeriod-sig: 100.0% [107.74 σ]
ModelChiSquare2-sig: 36.8%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 6.52e-18
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -11.1
Centroid-sig: 25.6%
Centroid-so: 1.064 arcsec [1.80 σ]
OotOffset-rm: 0.362 arcsec [0.64 σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-rm: 0.879 arcsec [1.86 σ]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

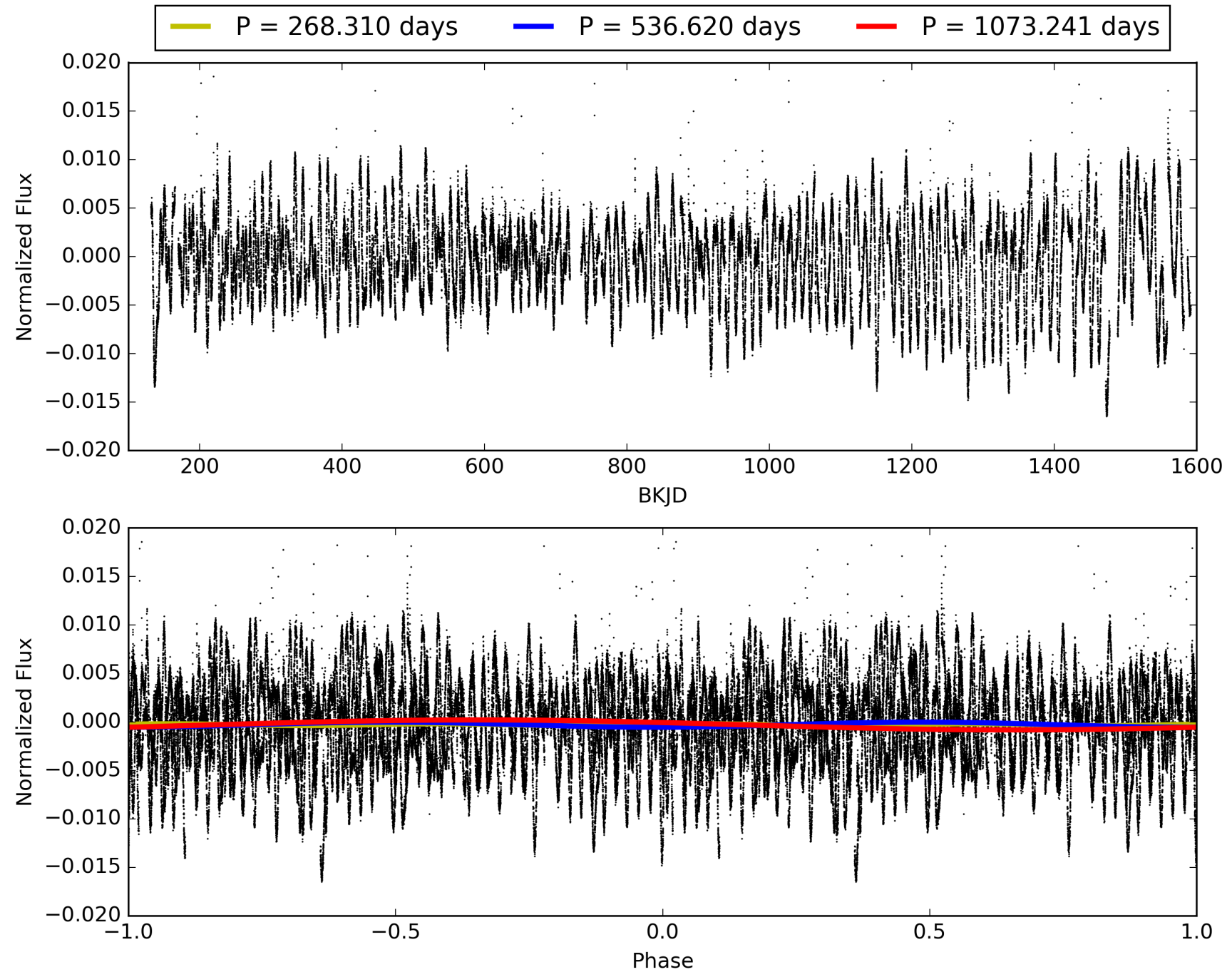
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:21:32 Z

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

TCE 001873543-01, PDC Light Curves

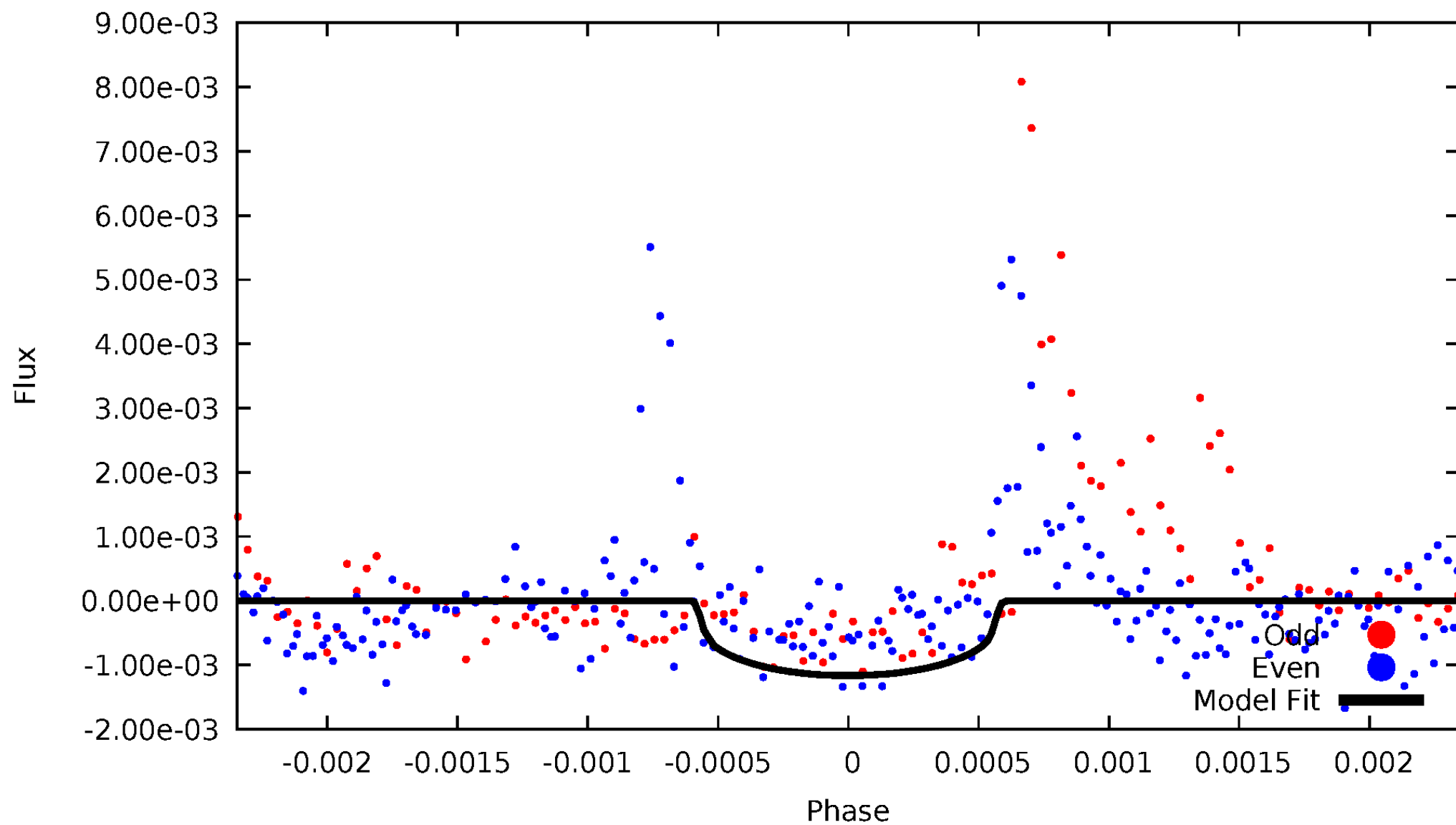


TCE 001873543-01



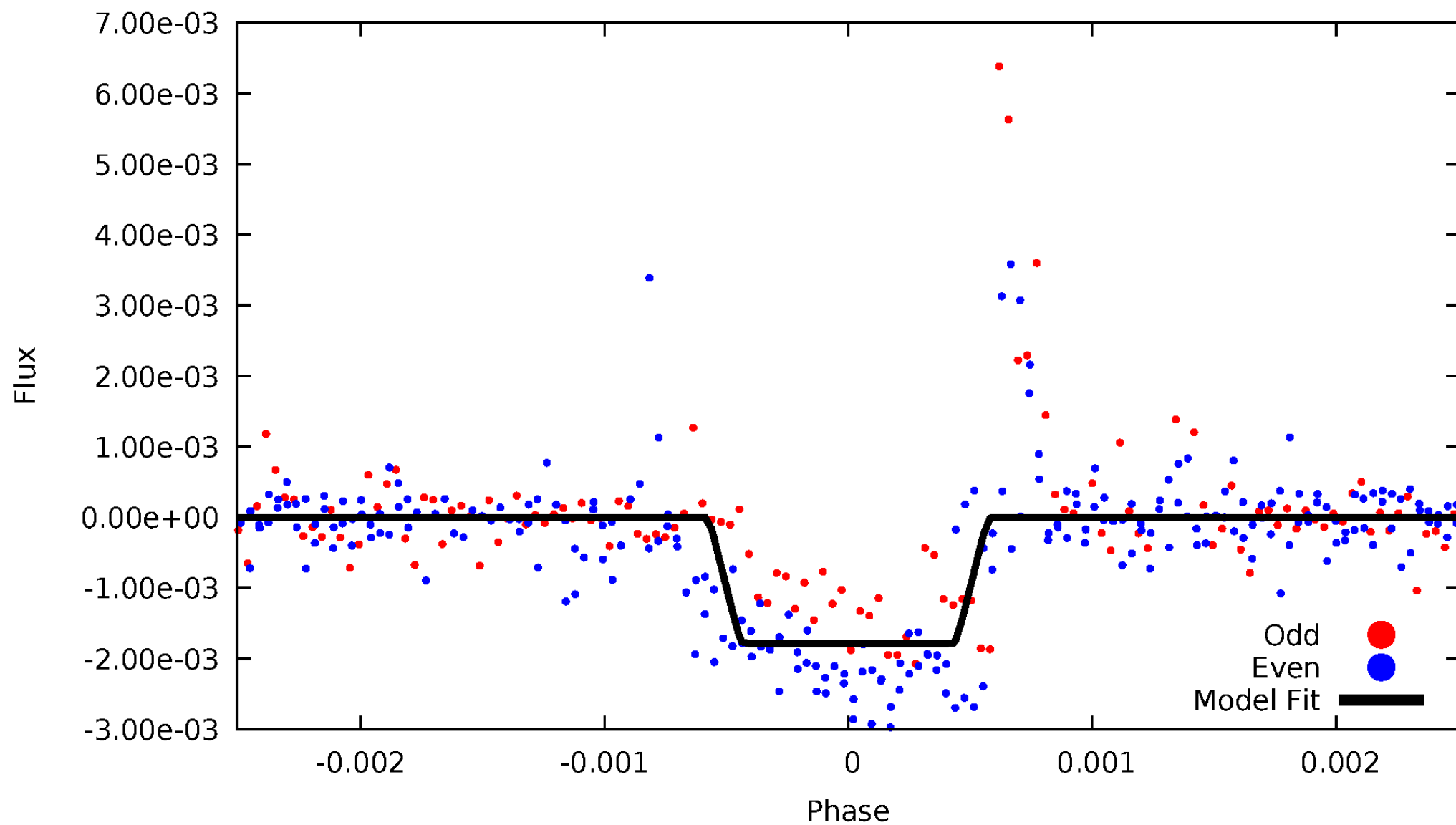
DV Odd/Even

TCE 001873543-01



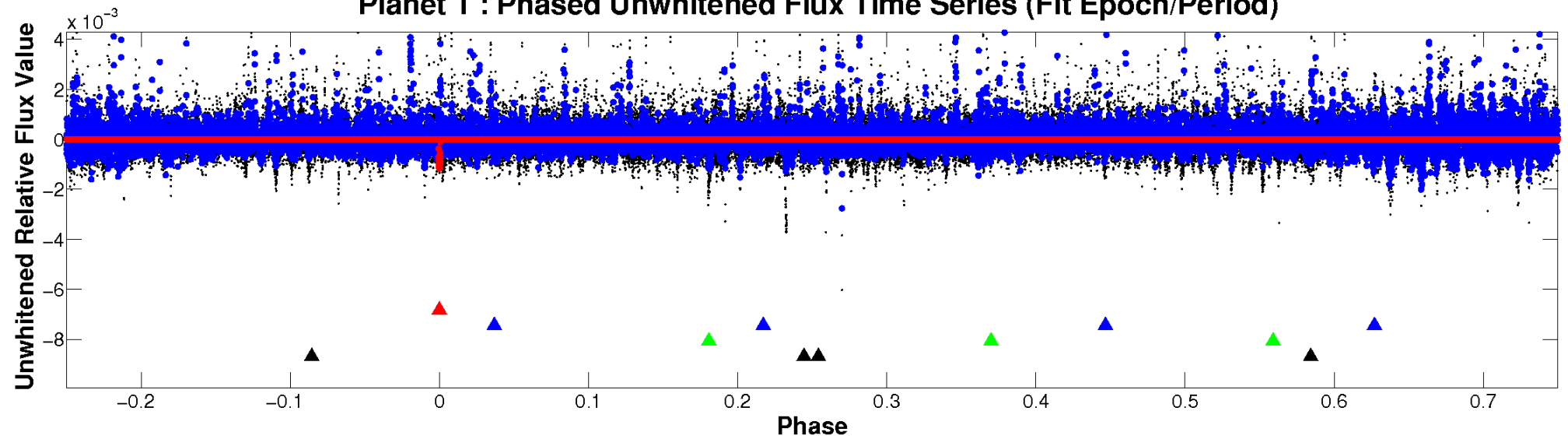
ALT Odd/Even

TCE 001873543-01

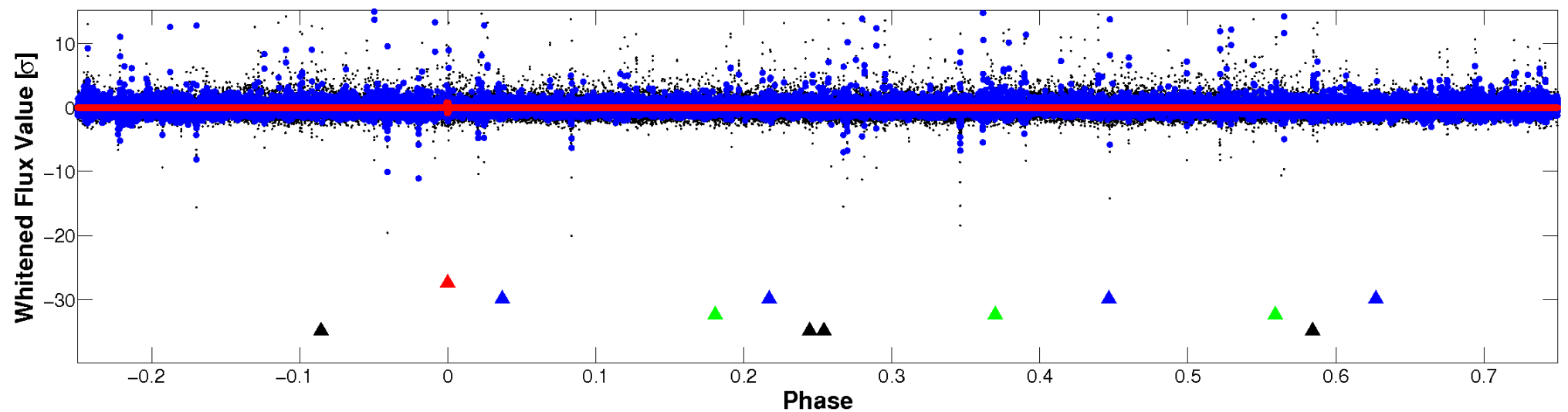


Non-Whitened Vs. Whitened Light Curve

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

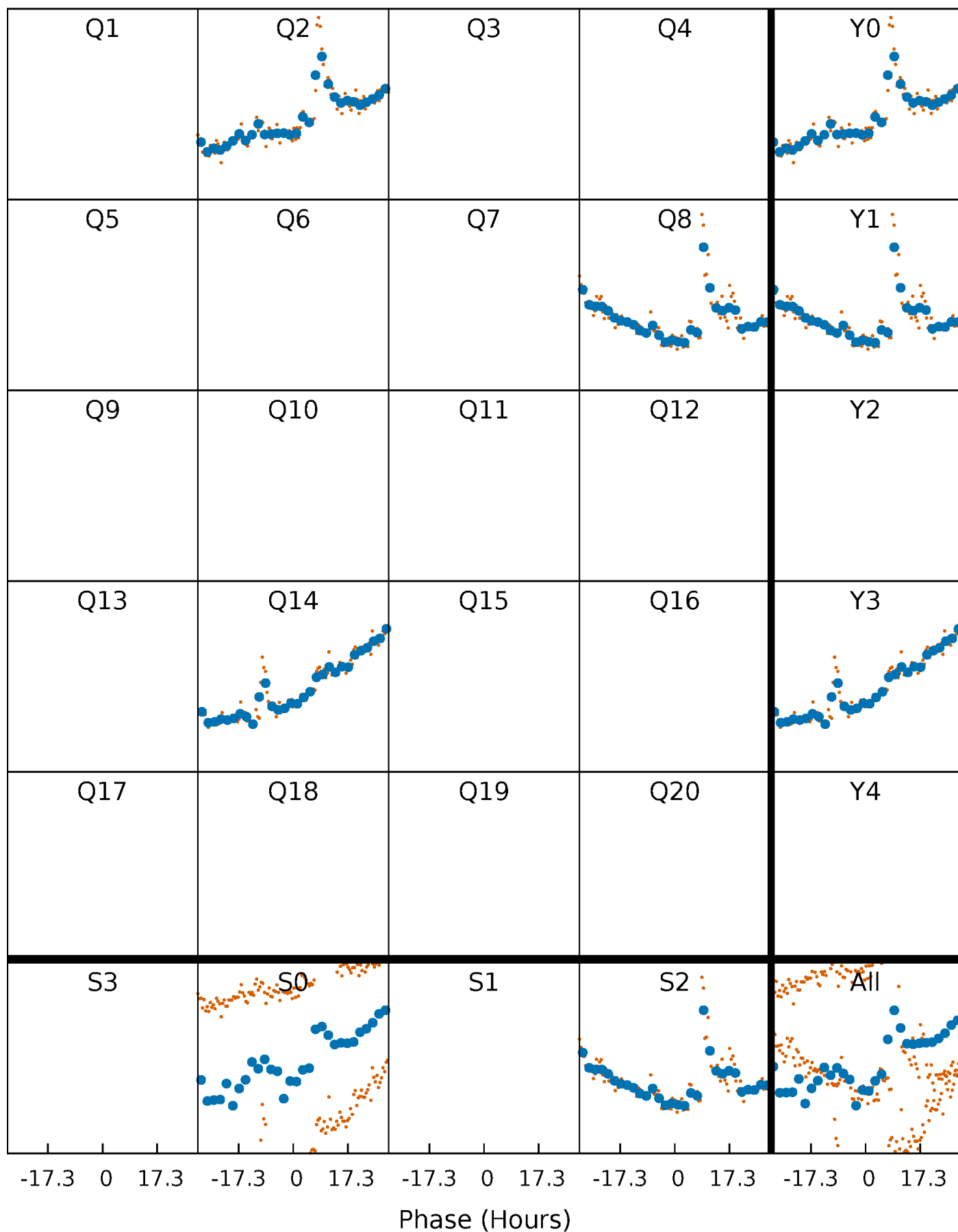


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



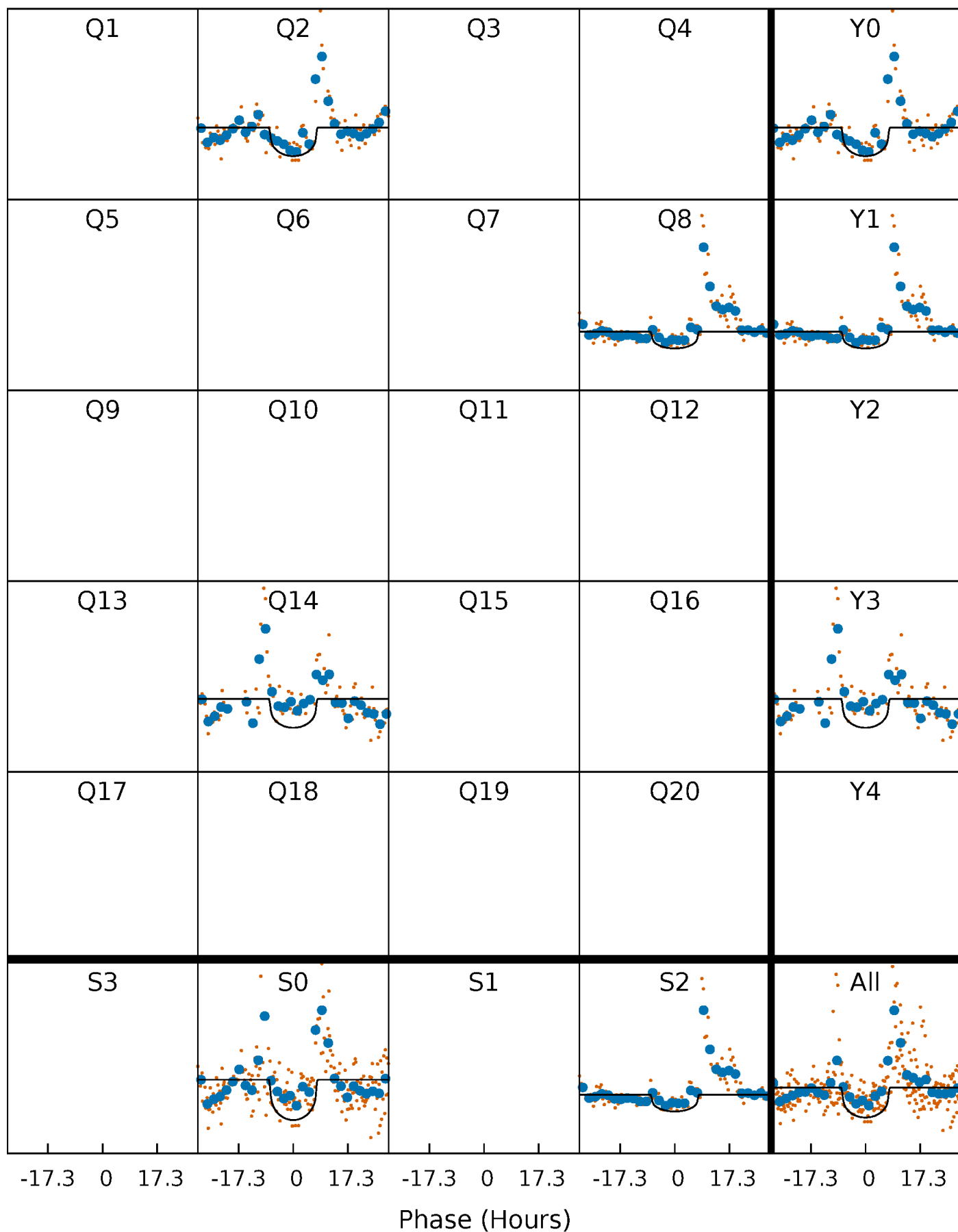
PDC Quarter-Phased Transit Curves

TCE 001873543-01 P=536.620443 Days $T_0=206.109313$ (BKJD)



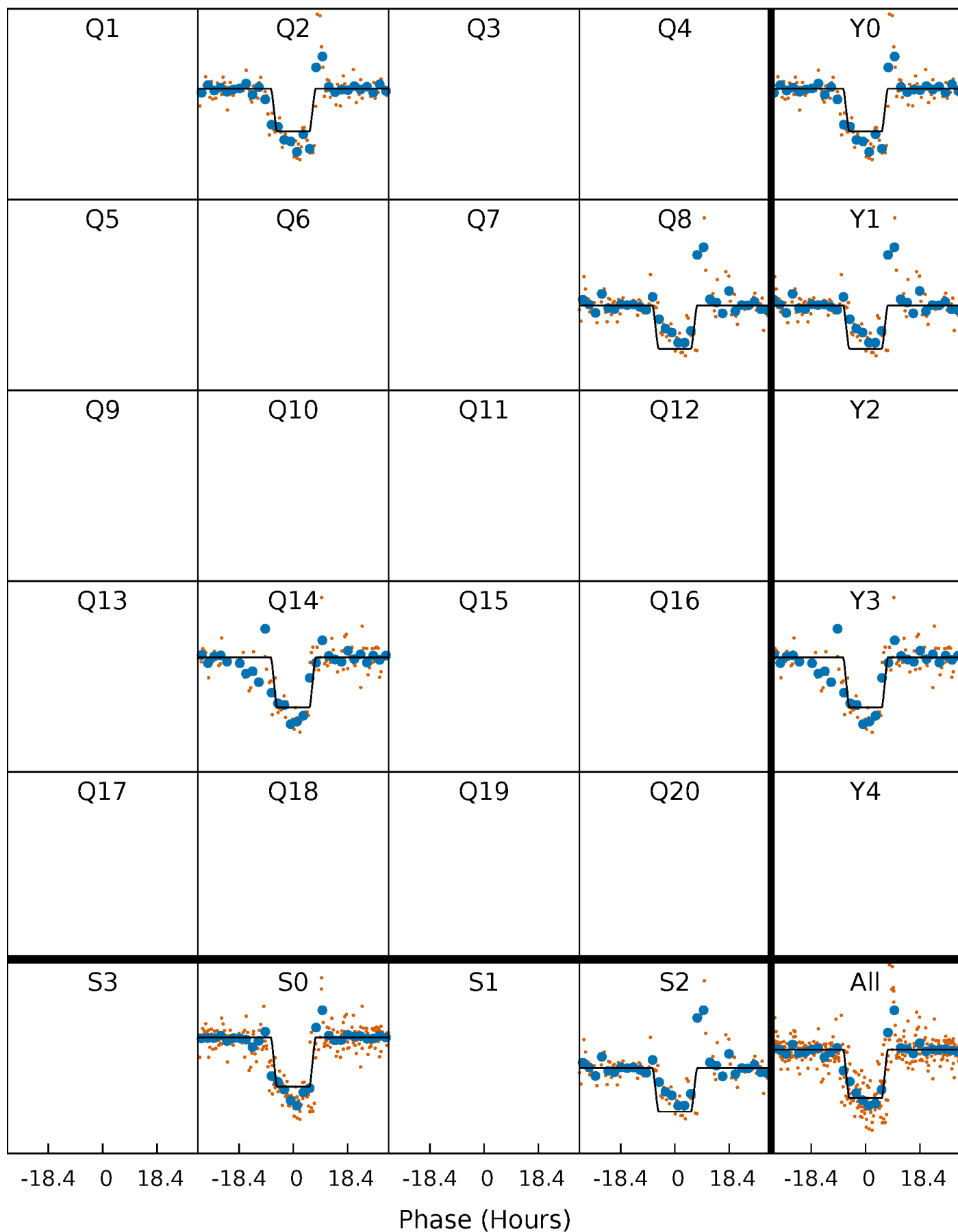
DV Quarter-Phased Transit Curves

TCE 001873543-01 P=536.620443 Days $T_0=206.109313$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

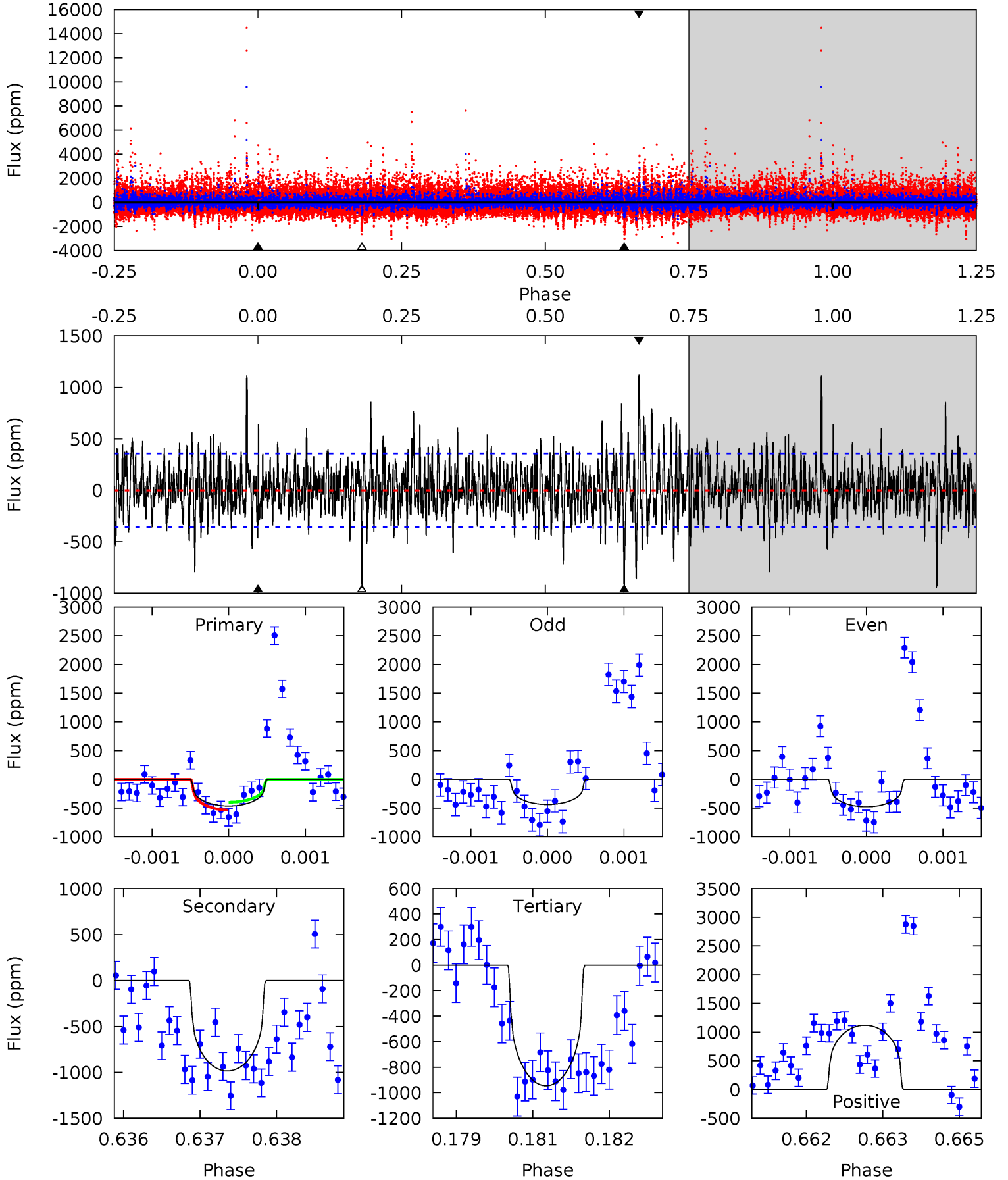
TCE 001873543-01 P=536.667020 Days $T_0=206.087002$ (BKJD)



DV Model-Shift Uniqueness Test

001873543-01, P = 536.620443 Days, E = 206.109313 Days

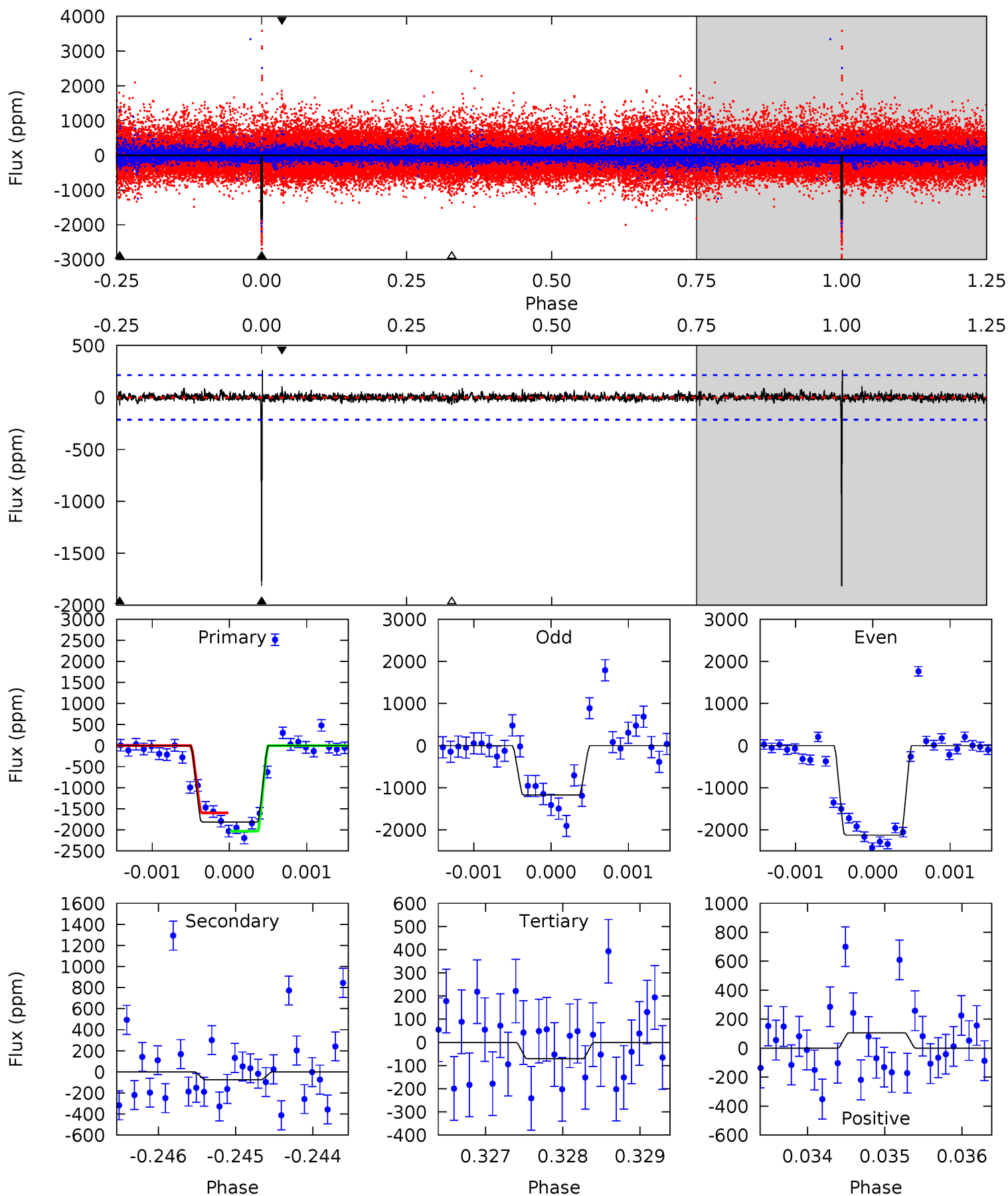
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.08	15.0	14.4	17.1	5.42	3.24	3.42	-7.31	-9.97	0.61	-2.06	0.24	1.04	0.53	1.04



Alt Model-Shift Uniqueness Test

001873543-01, P = 536.667020 Days, E = 206.087002 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.8	1.88	1.78	2.69	5.42	3.25	0.47	44.1	43.1	0.10	-0.80	10.8	0.93	0.13	5.49



Stellar Parameters For KIC 001873543

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3850^{+120}_{-147}	$4.662^{+0.060}_{-0.020}$	$0.420^{+0.050}_{-0.300}$	$0.600^{+0.032}_{-0.069}$	$0.603^{+0.040}_{-0.060}$	$3.927^{+1.148}_{-0.343}$
	+3%/-4%	+1%/-0%	+12%/-71%	+5%/-12%	+7%/-10%	+29%/-9%
Source	KIC0	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 001873543-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-985 ± 66	$2.03^{+1.07}_{-1.02}$	174^{+6}_{-7}	3833^{+1144}_{-510}	$156874^{+496449}_{-88380}$
Alt.	-75 ± 40	$2.76^{+1.03}_{-1.02}$	174^{+7}_{-7}	2432^{+364}_{-256}	6348^{+12061}_{-3871}

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 $A_{obs} \gg 1.0$

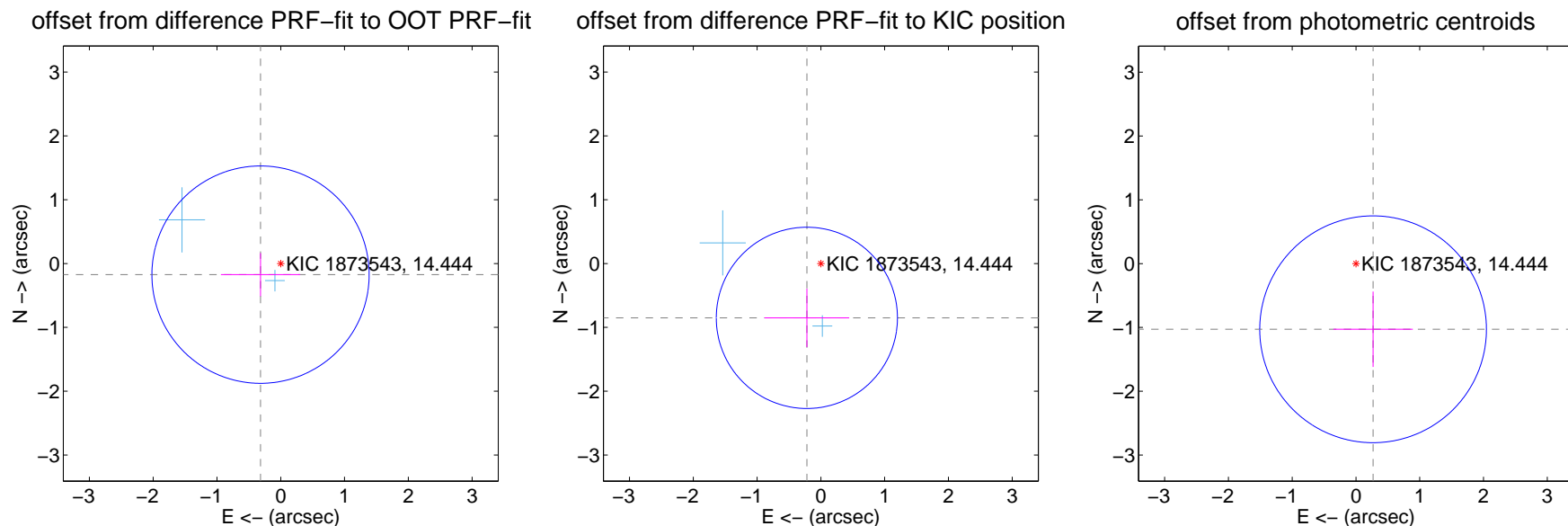
DV Centroid Data

Supplemental centroid analysis for 001873543-01. Kepler magnitude: 14.44. Transit SNR 7.48

There are 2 quarters with good PRF difference image offsets

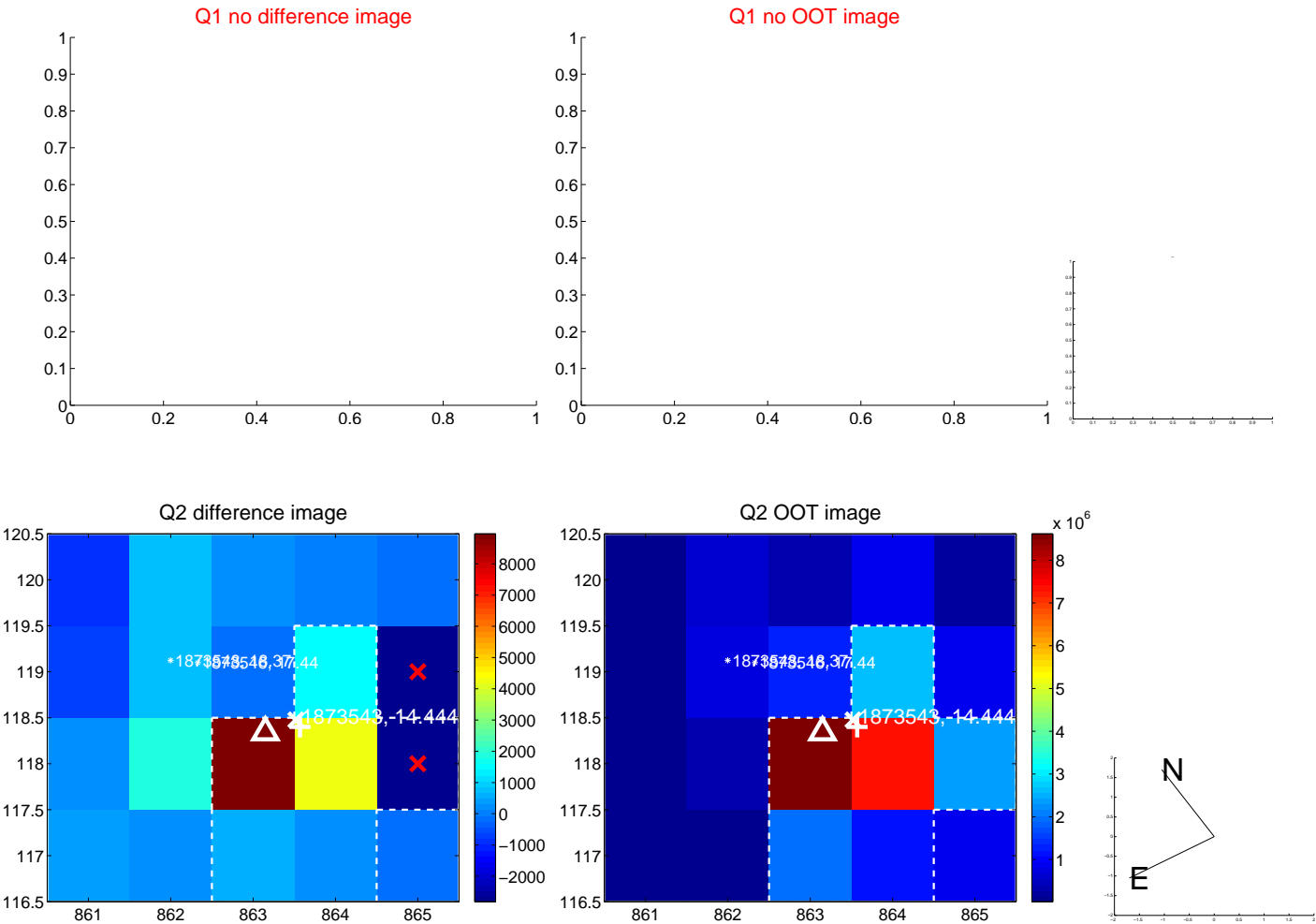
The direct PRF centroid is offset from the target star catalog position by about 0.72 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.362 ± 0.568	0.64	0.317 ± 0.621	-0.174 ± 0.338
PRF-fit source offset from KIC position	0.879 ± 0.473	1.86	0.219 ± 0.665	-0.851 ± 0.458
photometric centroid source offset	1.06 ± 0.59	1.80	-0.27 ± 0.62	-1.03 ± 0.59

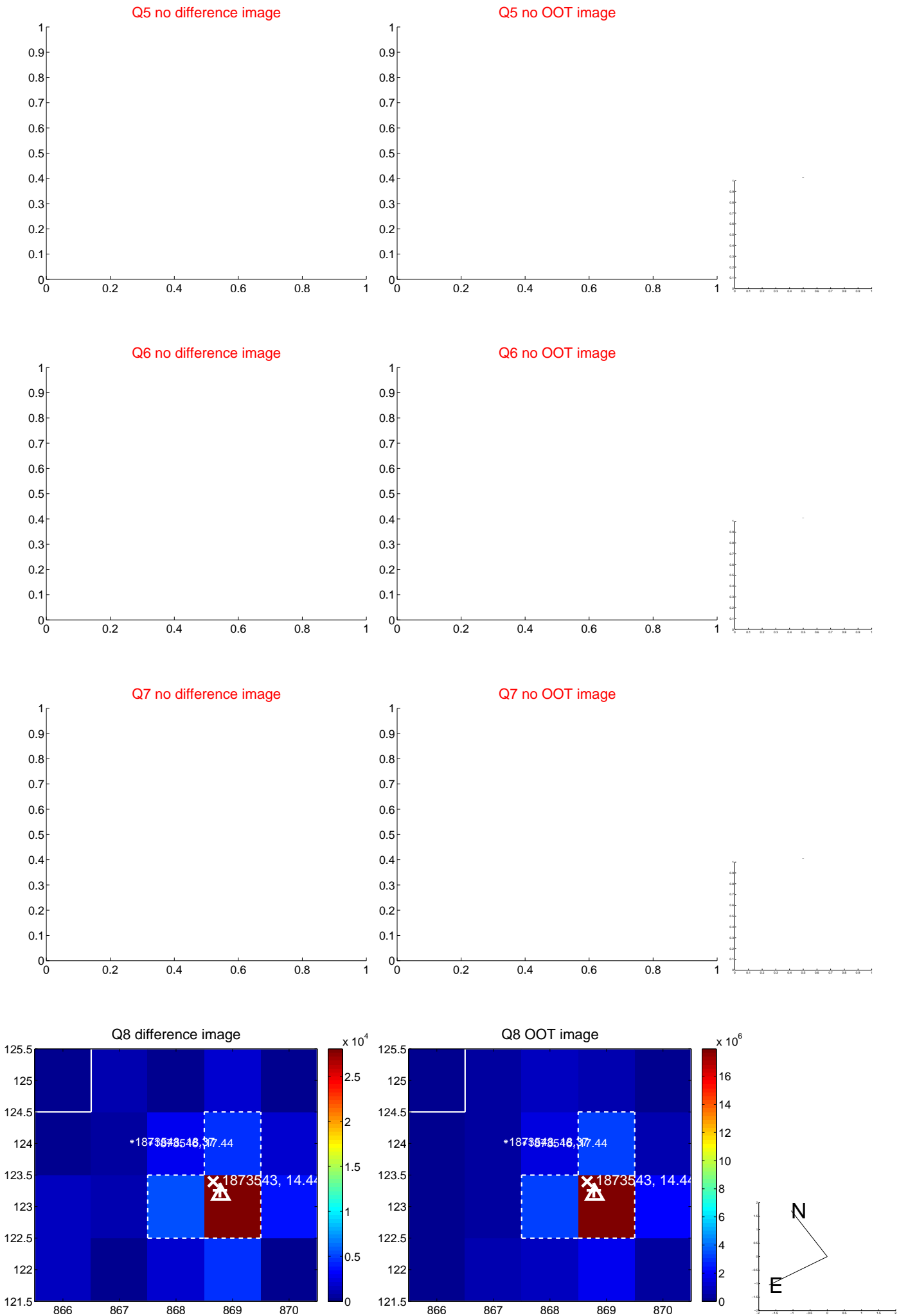


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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



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



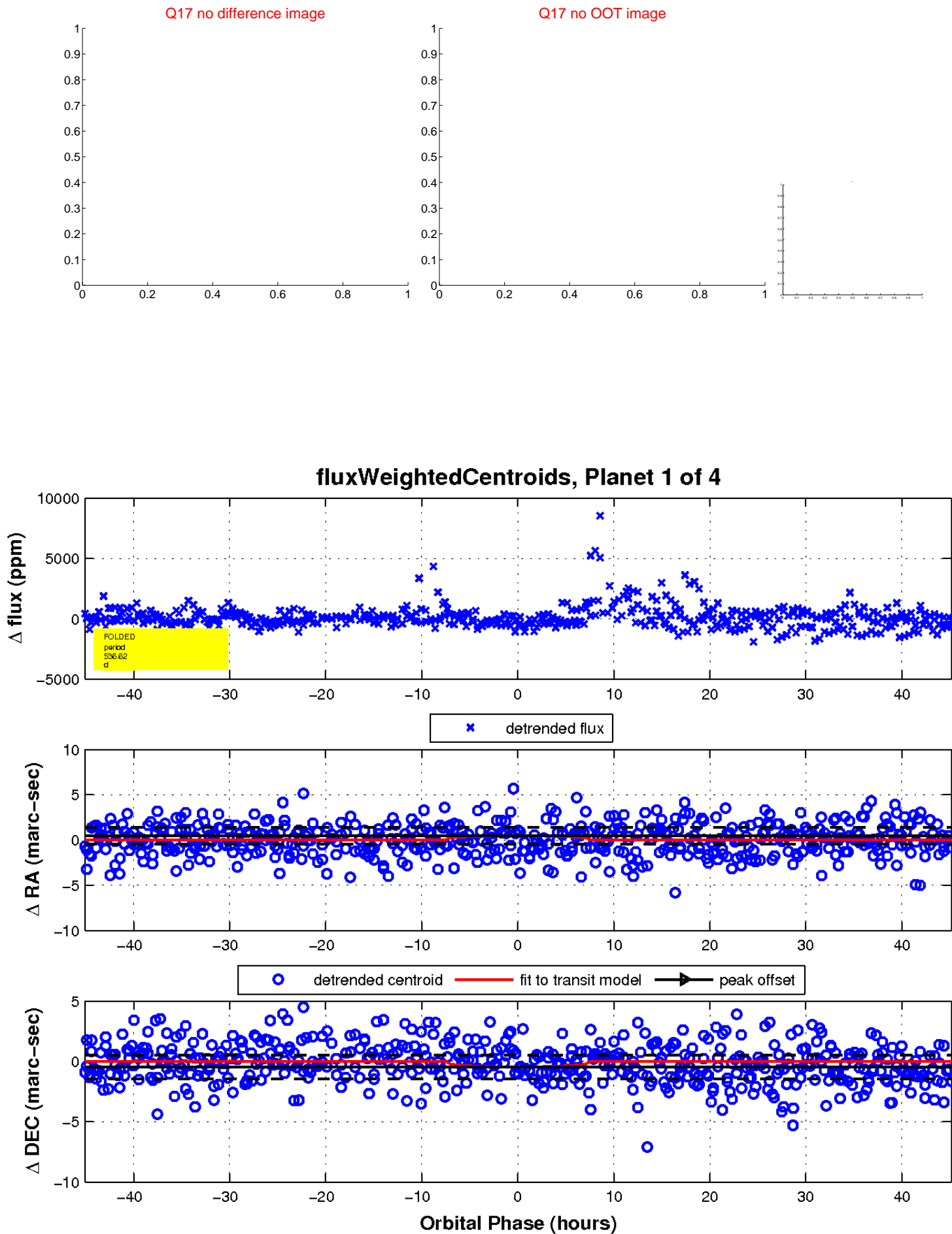
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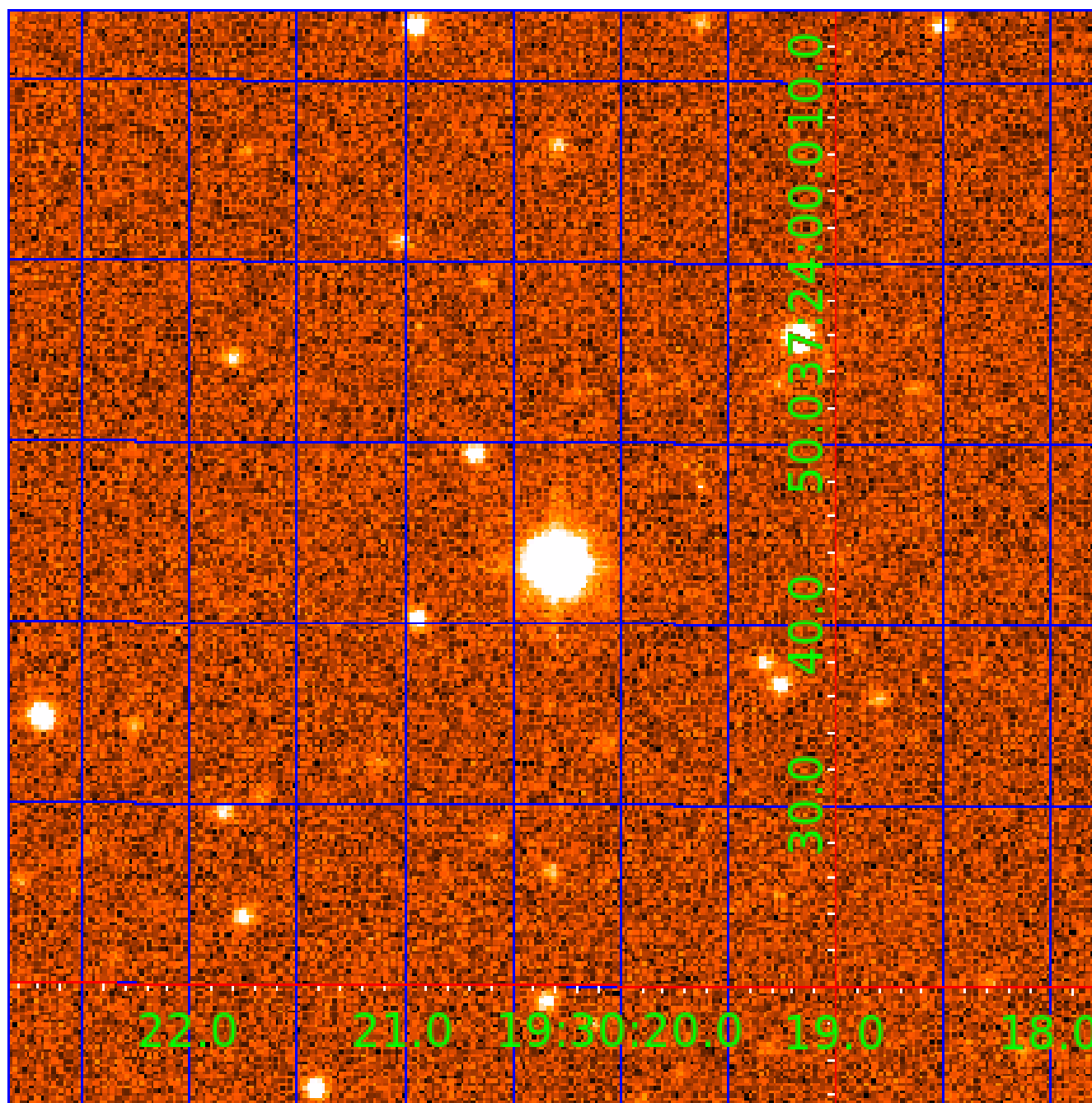


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 001873543

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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001873543-04	OBS	No	359.474302	337.332376	913.5	9.578	9.7	6.1	0.60	3850	1.85	0.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001873543-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
001873543-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
001873543-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
001873543-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS

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

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

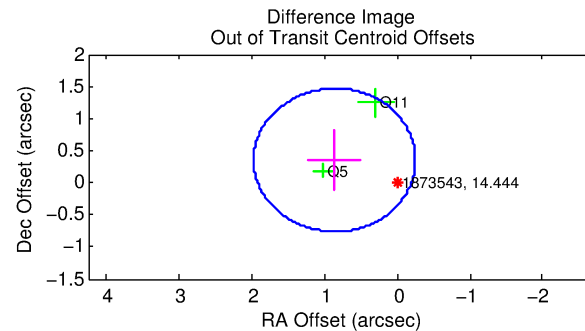
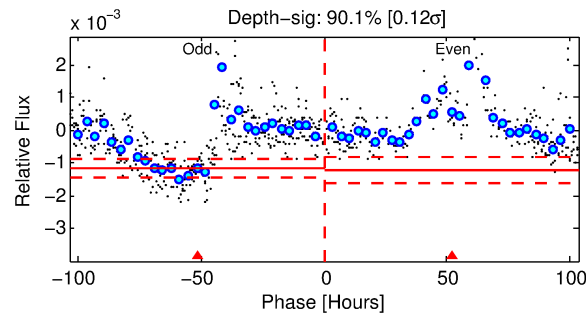
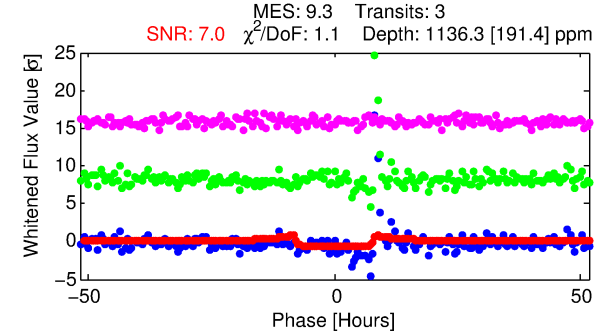
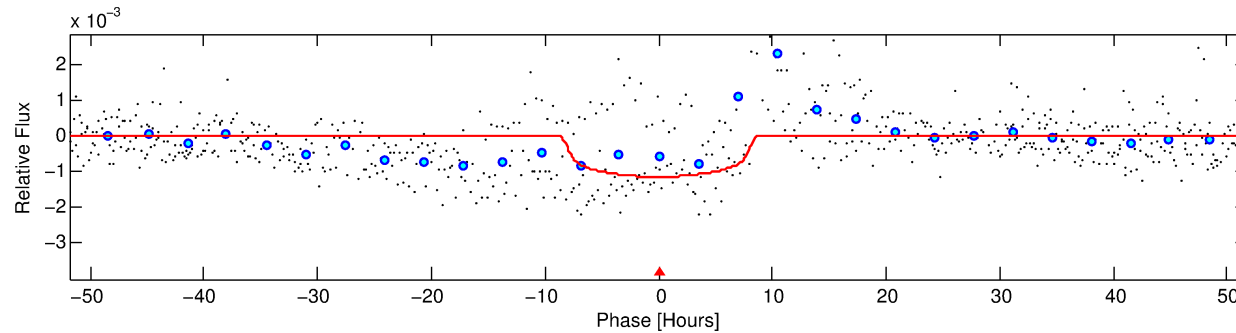
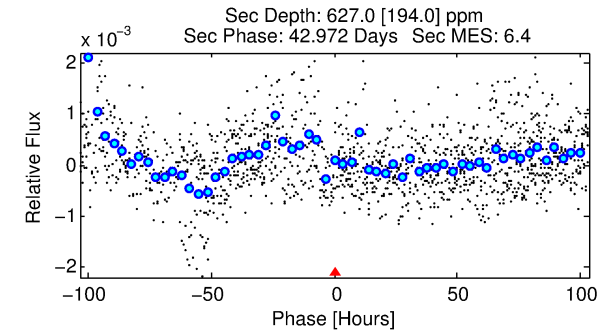
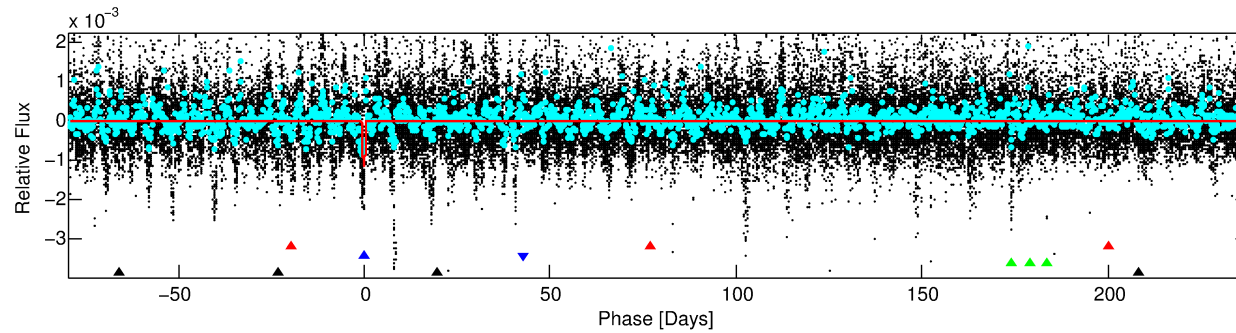
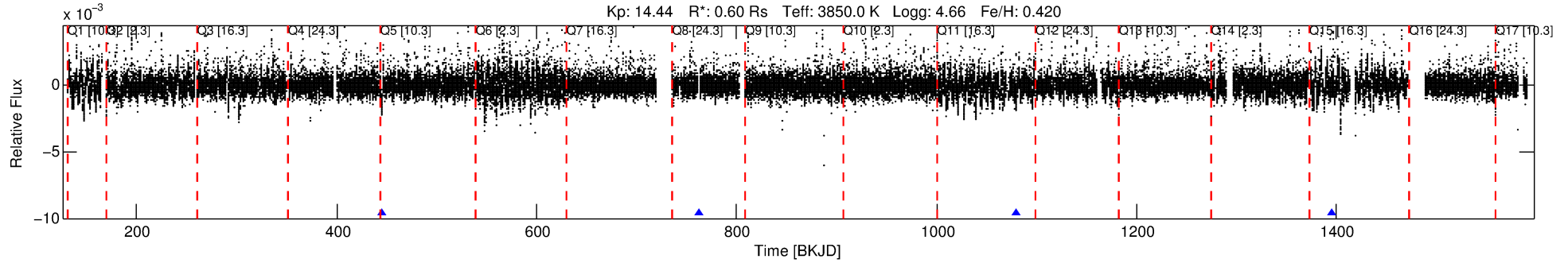
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 001873543-02

No Significant Match Found

DV One-Page Summary

KIC: 1873543 Candidate: 2 of 4 Period: 316.697 d



DV Fit Results:

Period = 316.69708 [0.00888] d
Epoch = 445.8147 [0.0190] BKJD
Rp/R* = 0.0335 [0.0057]
a/R* = 101.55 [47.73]
b = 0.74 [0.30]
Seff = 0.12 [0.02]
Teq = 150 [7] K
Rp = 2.19 [0.45] Re
a = 0.7684 [0.0687] AU
Ag = 42341.08 [20148.24] [2.10σ]
Teffp = 3329 [404] K [7.87σ]

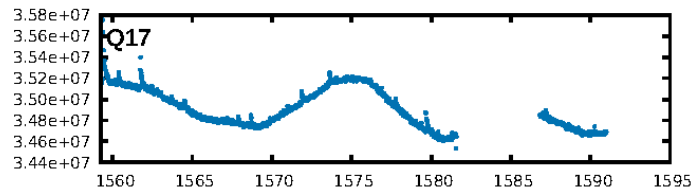
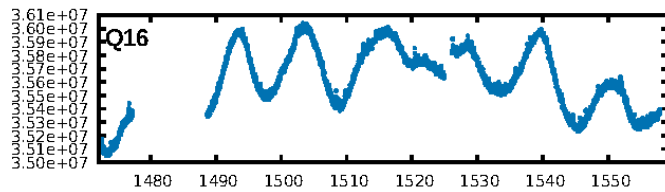
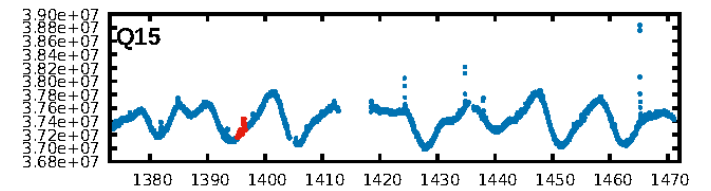
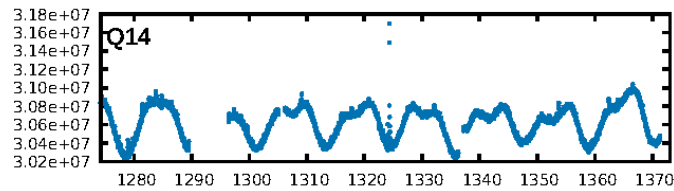
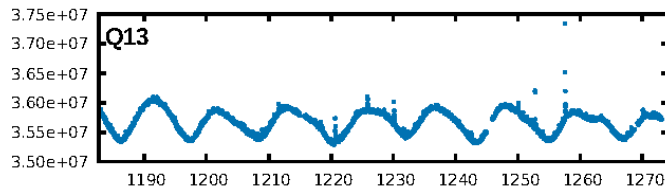
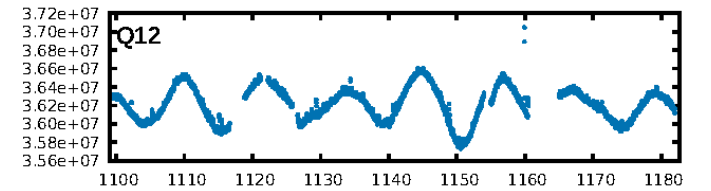
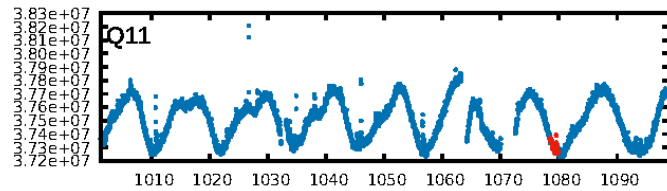
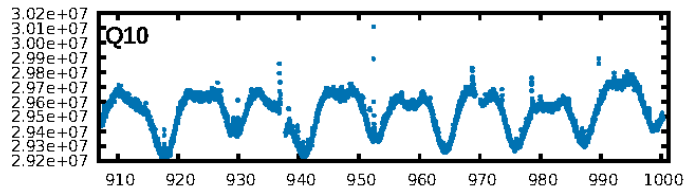
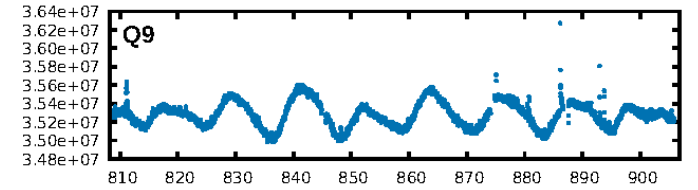
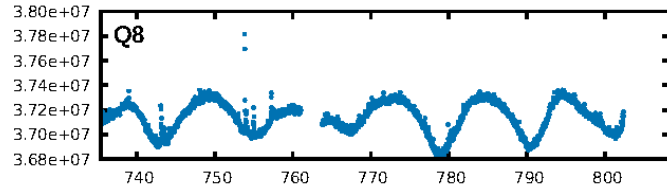
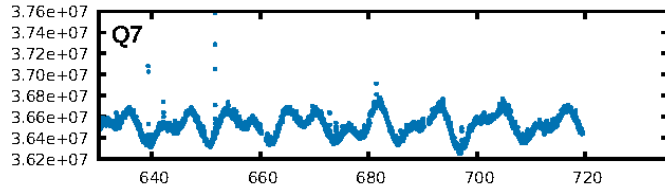
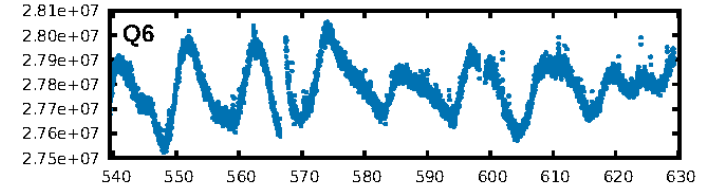
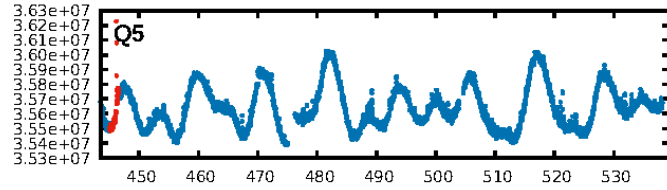
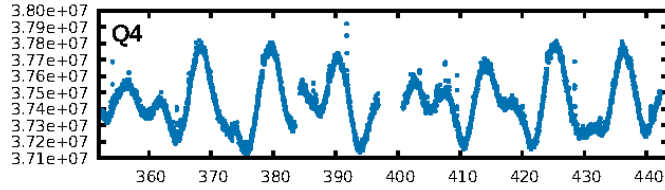
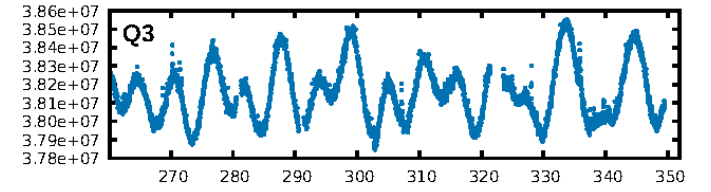
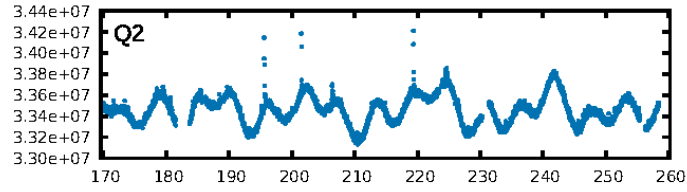
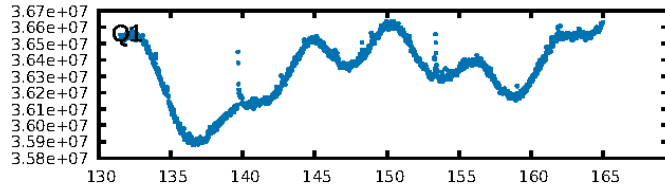
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [51.96σ]
ModelChiSquare2-sig: 9.2%
ModelChiSquareGof-sig: 92.5%
Bootstrap-pfa: 2.87e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -16.08
Centroid-sig: 7.5%
Centroid-so: 1.559 arcsec [2.62σ]
OotOffset-rm: 0.931 arcsec [2.50σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-rm: 0.764 arcsec [2.02σ]
KicOffset-st: 0/1/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

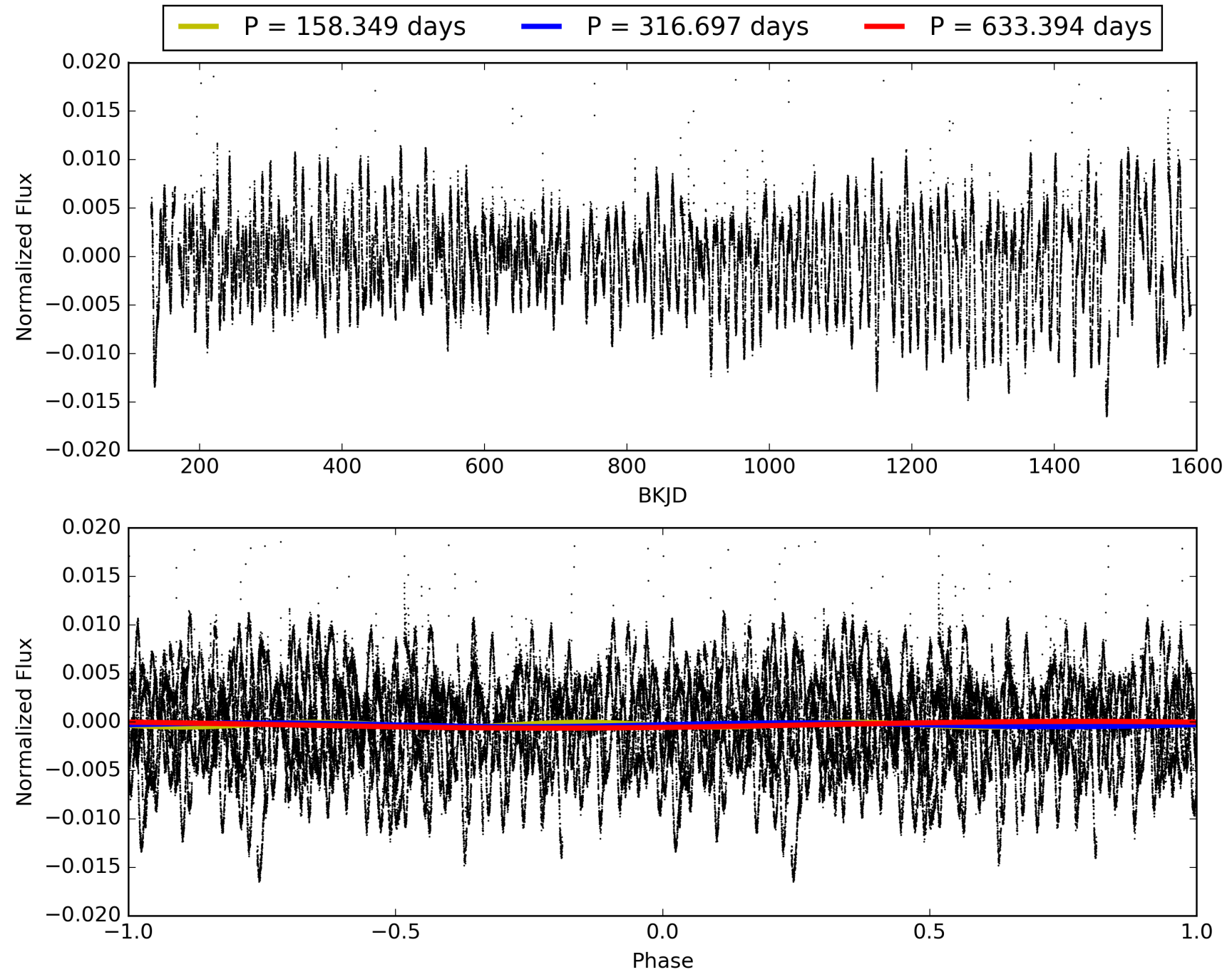
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 001873543-02, PDC Light Curves

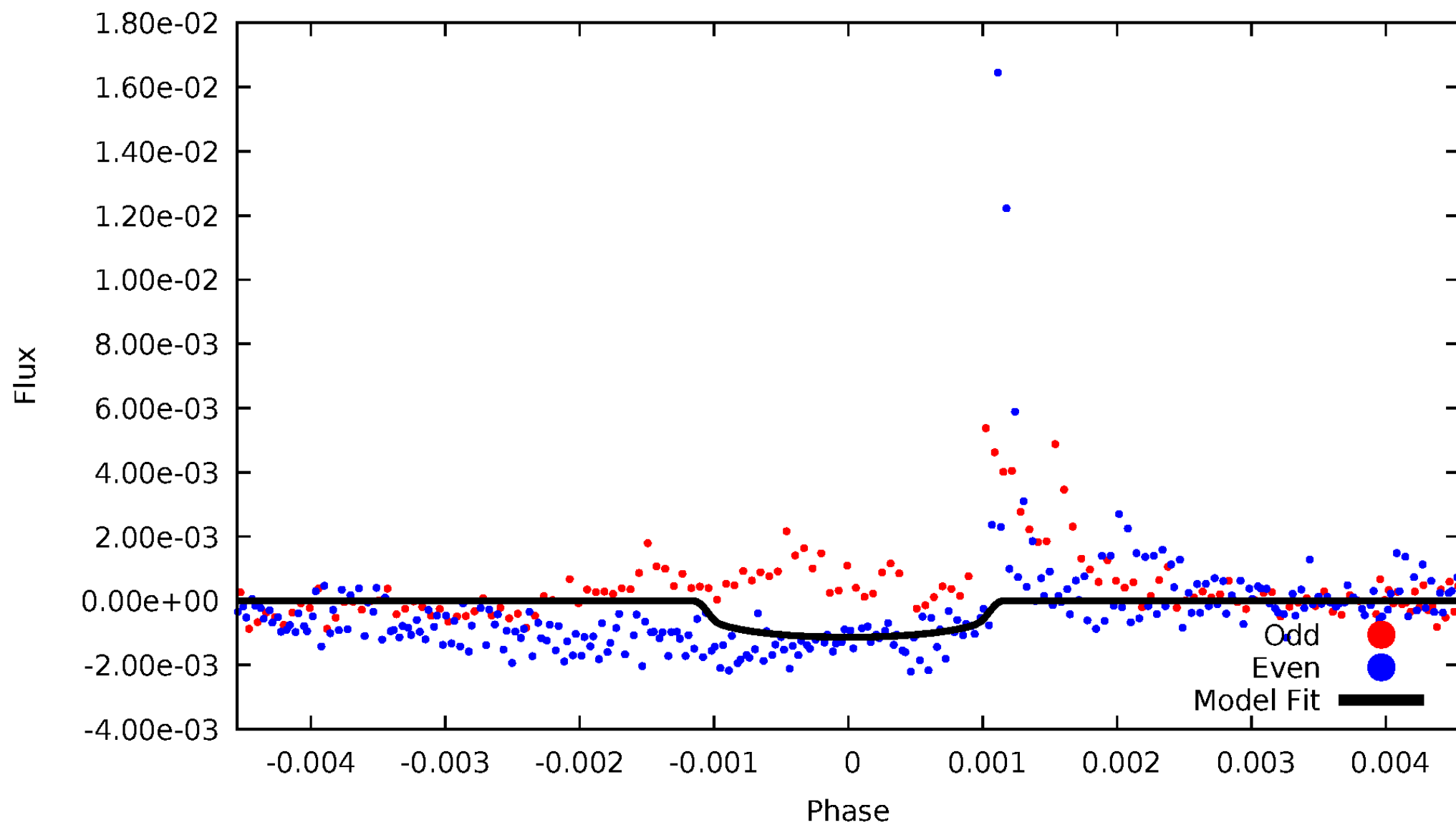


TCE 001873543-02



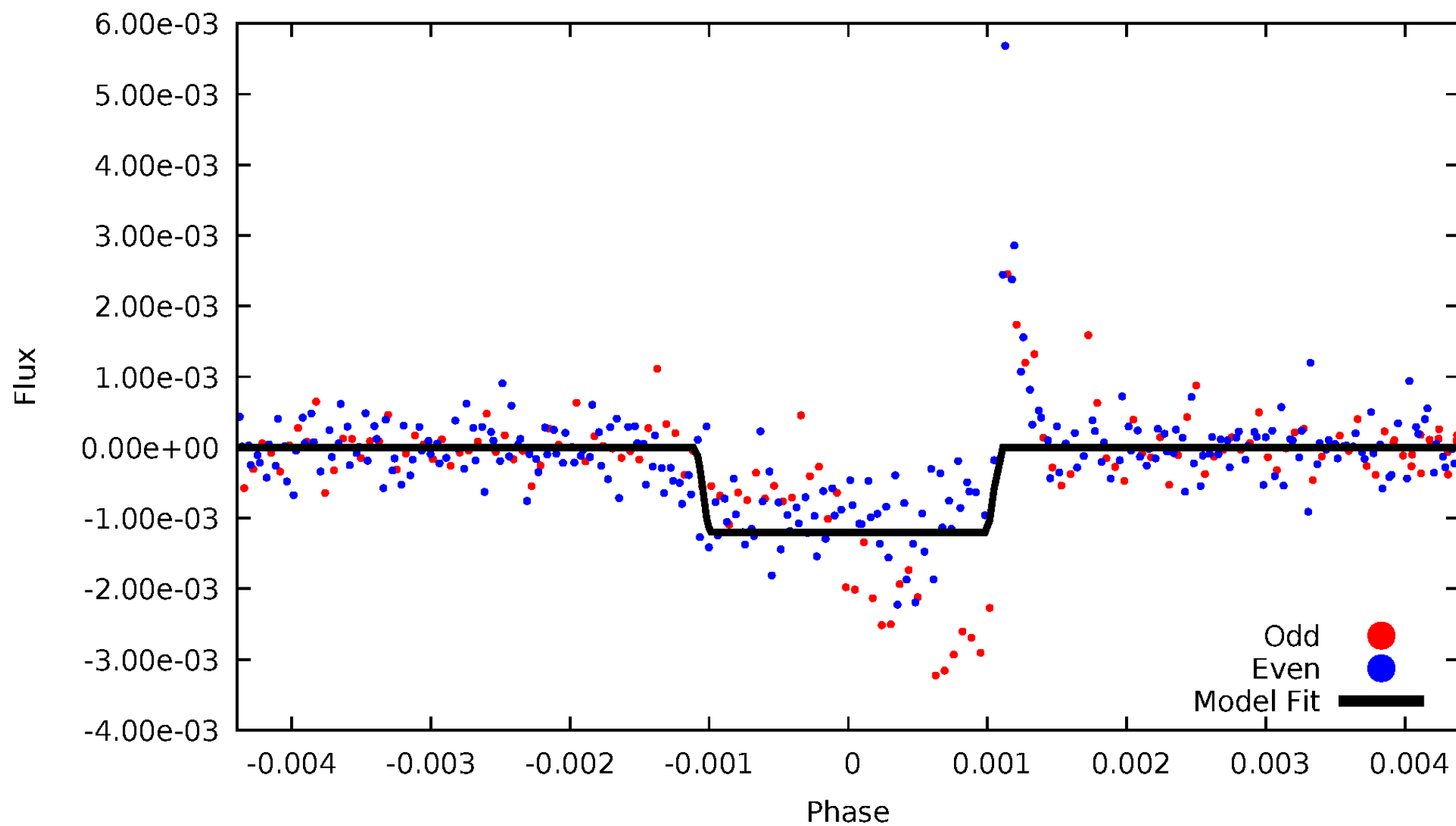
DV Odd/Even

TCE 001873543-02



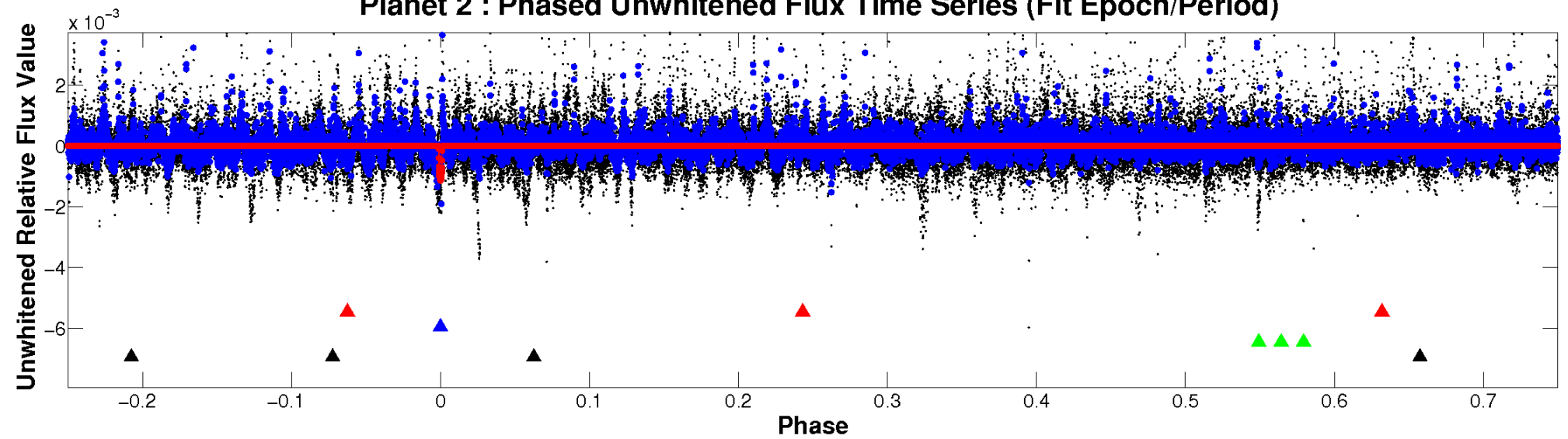
ALT Odd/Even

TCE 001873543-02

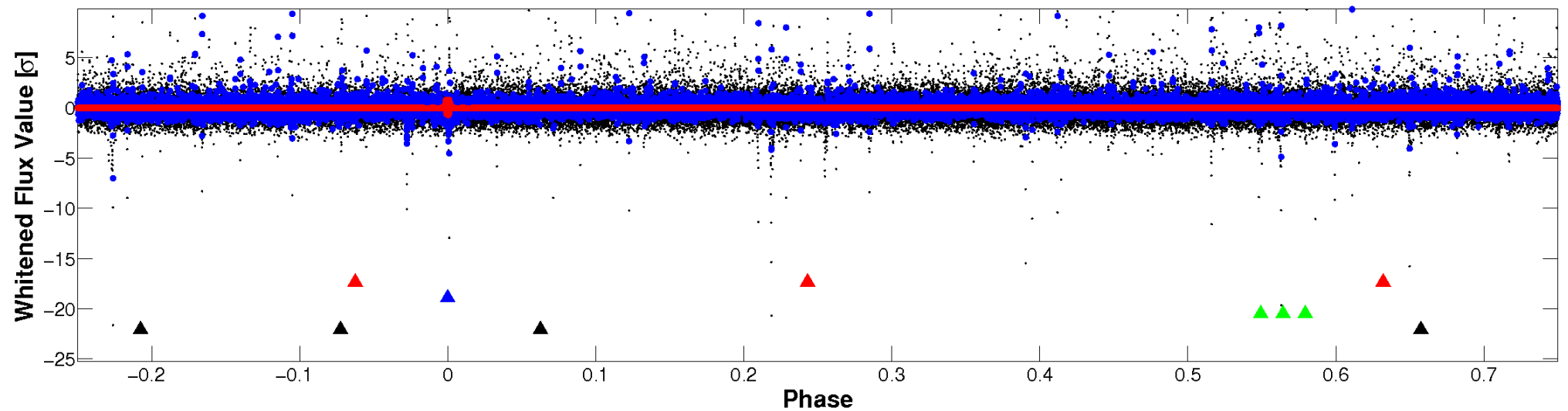


Non-Whitened Vs. Whitened Light Curve

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



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



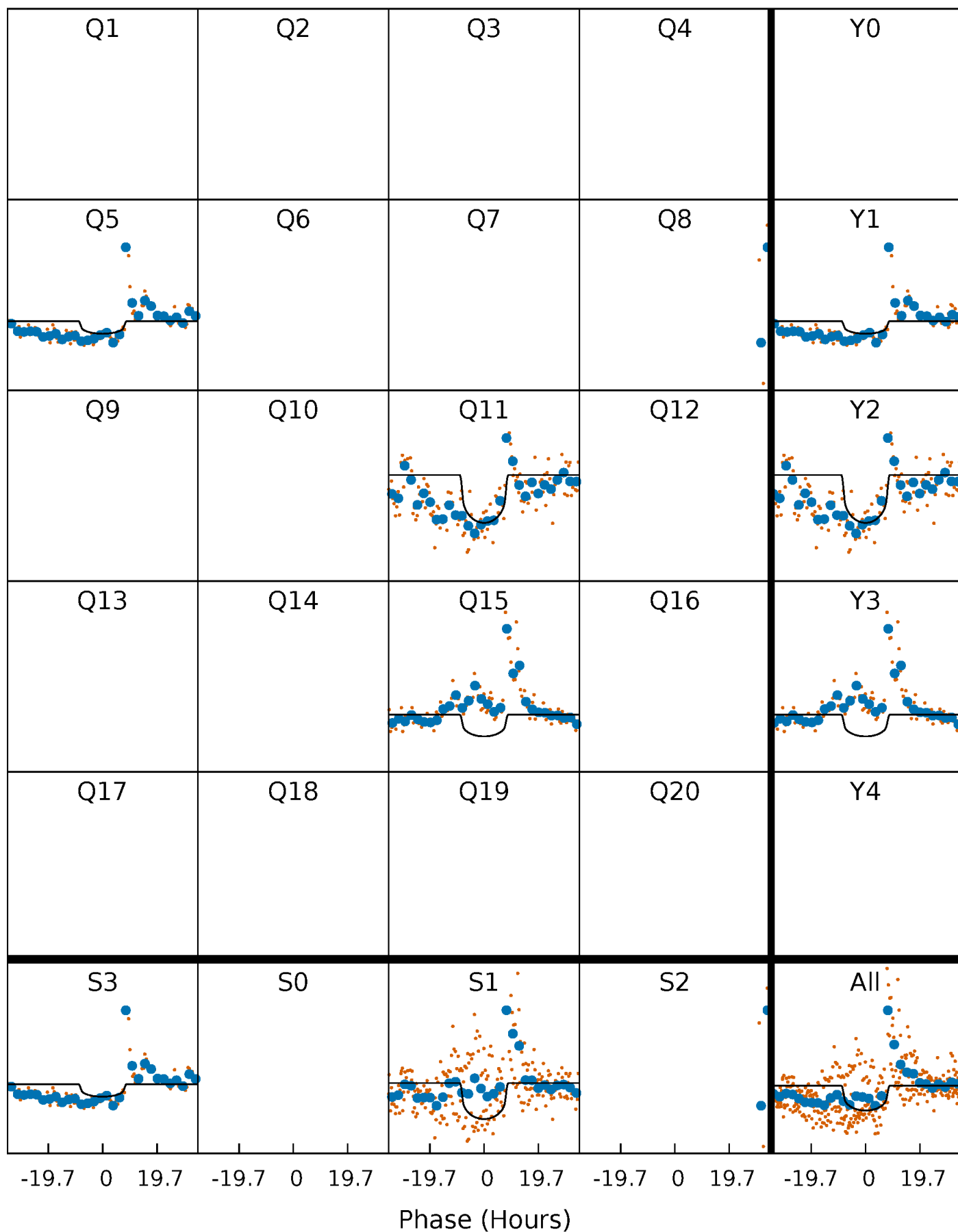
PDC Quarter-Phased Transit Curves

TCE 001873543-02 P=316.697079 Days $T_0=445.814651$ (BKJD)



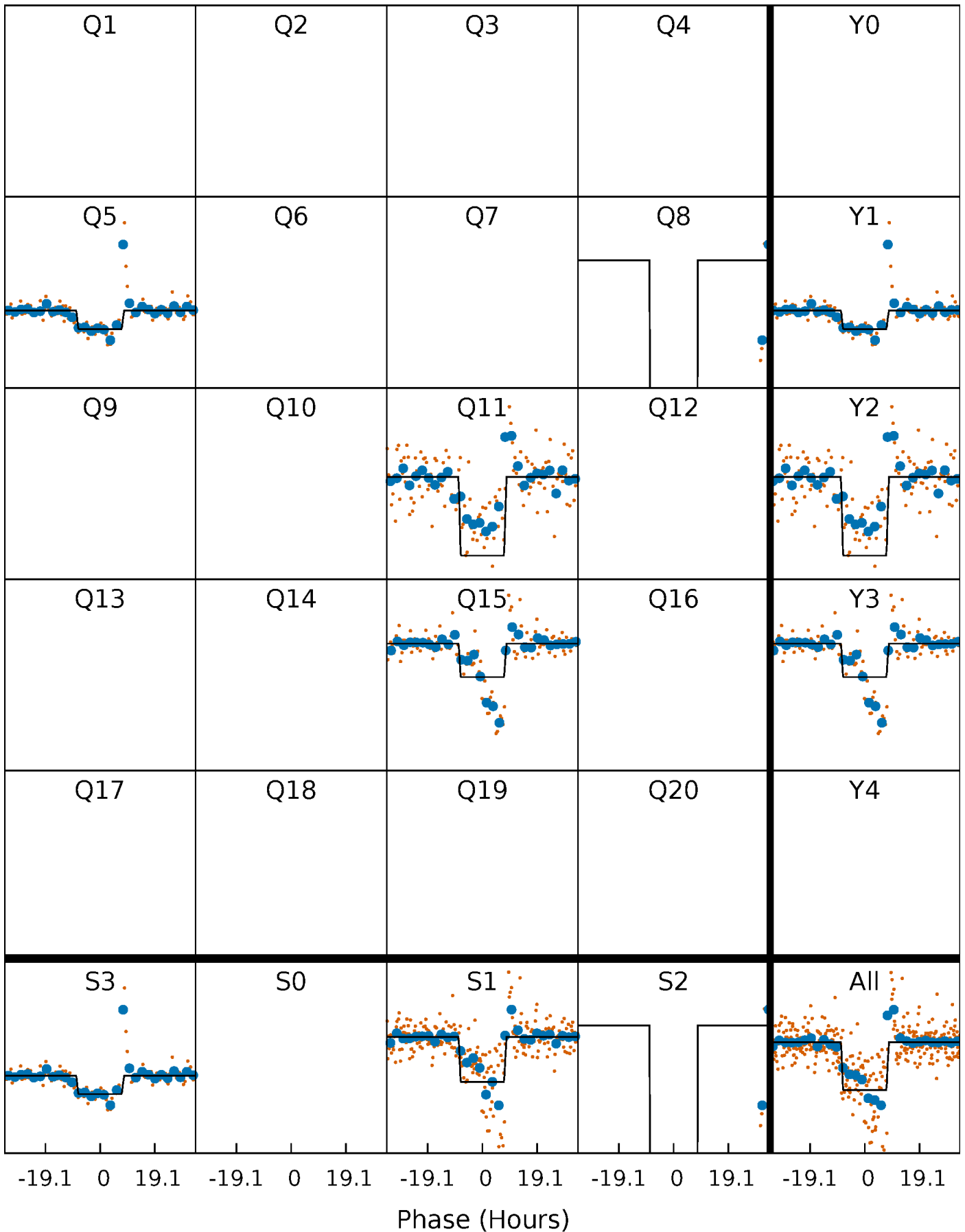
DV Quarter-Phased Transit Curves

TCE 001873543-02 $P=316.697079$ Days $T_0=445.814651$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

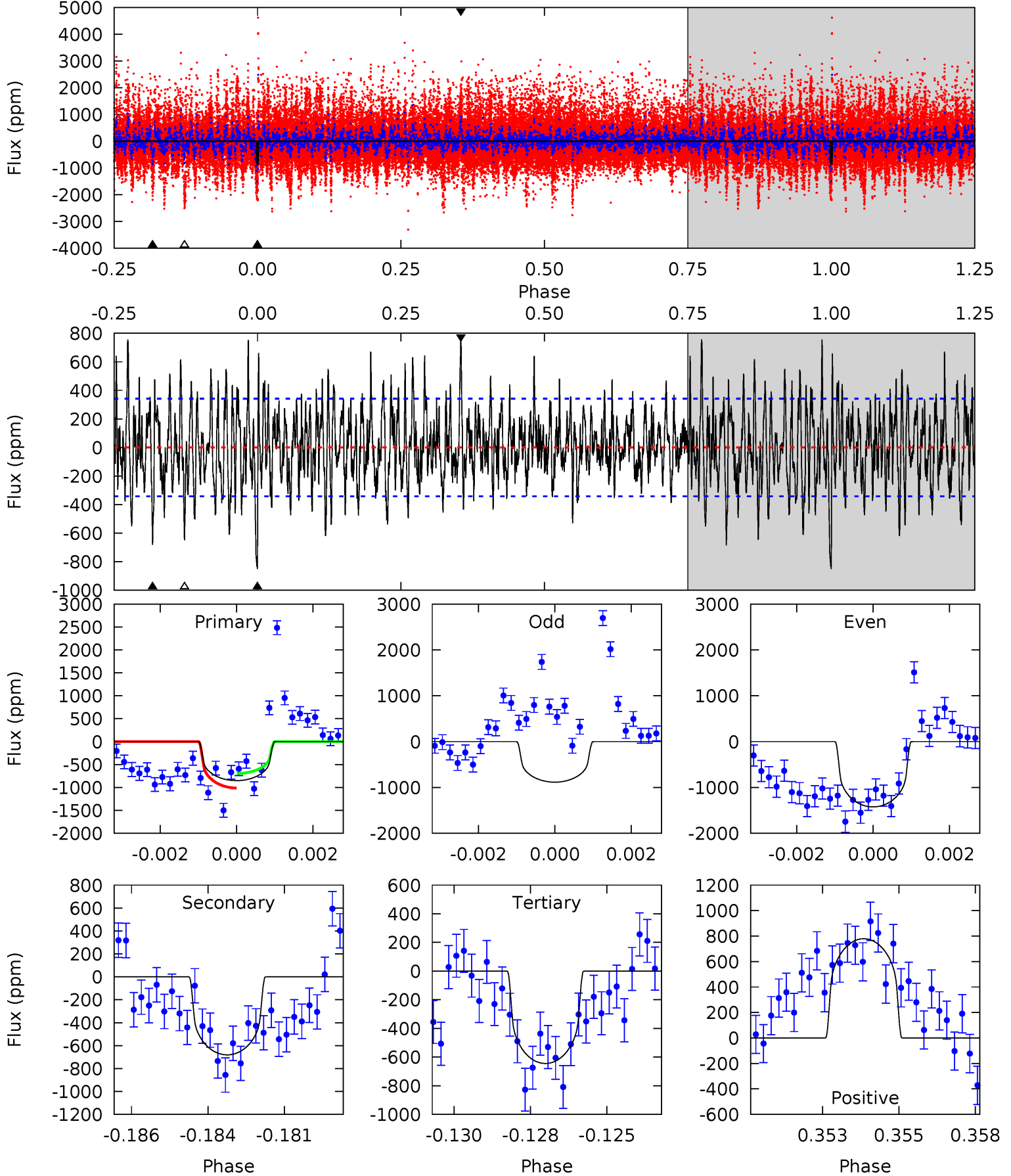
TCE 001873543-02 $P=316.672502$ Days $T_0=445.850527$ (BKJD)



DV Model-Shift Uniqueness Test

001873543-02, P = 316.697079 Days, E = 129.117572 Days

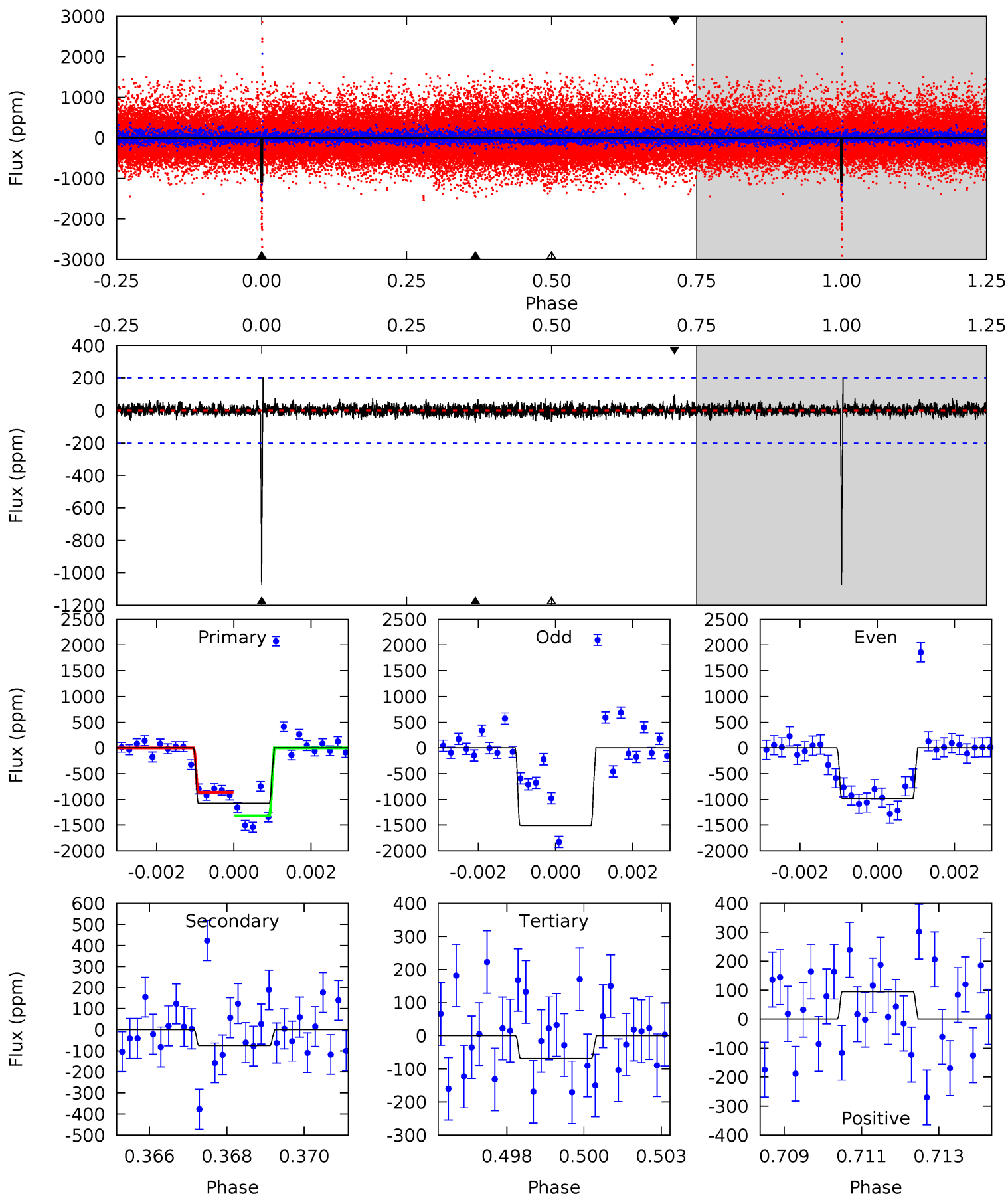
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	10.5	9.98	12.1	5.30	3.05	3.30	3.20	1.12	0.56	-1.53	3.92	0.54	0.48	2.47



Alt Model-Shift Uniqueness Test

001873543-02, P = 316.672502 Days, E = 129.178025 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.1	1.97	1.78	2.49	5.32	3.07	0.48	26.3	25.6	0.18	-0.52	6.73	0.89	0.16	6.07



Stellar Parameters For KIC 001873543

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3850^{+120}_{-147}	$4.662^{+0.060}_{-0.020}$	$0.420^{+0.050}_{-0.300}$	$0.600^{+0.032}_{-0.069}$	$0.603^{+0.040}_{-0.060}$	$3.927^{+1.148}_{-0.343}$
	+3%/-4%	+1%/-0%	+12%/-71%	+5%/-12%	+7%/-10%	+29%/-9%
Source	KIC0	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 001873543-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-680 ± 65	$2.14^{+0.39}_{-0.38}$	208^{+7}_{-9}	3547^{+261}_{-213}	48216^{+22560}_{-13640}
Alt.	-75 ± 38	$2.26^{+0.39}_{-0.42}$	208^{+8}_{-8}	2551^{+216}_{-238}	4638^{+3967}_{-2395}

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

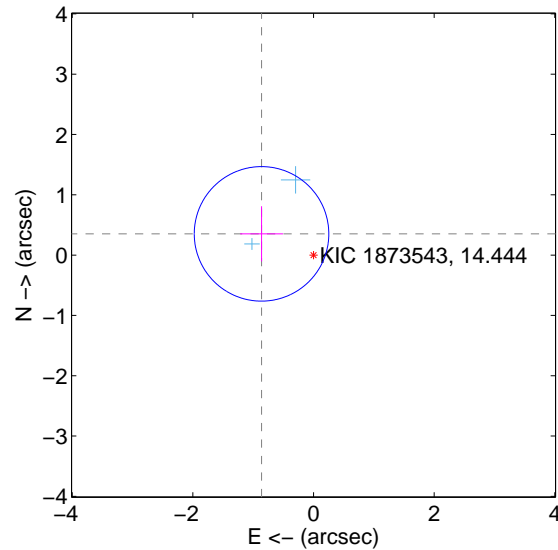
Supplemental centroid analysis for 001873543-02. Kepler magnitude: 14.44. Transit SNR 7.02

There are 2 quarters with good PRF difference image offsets

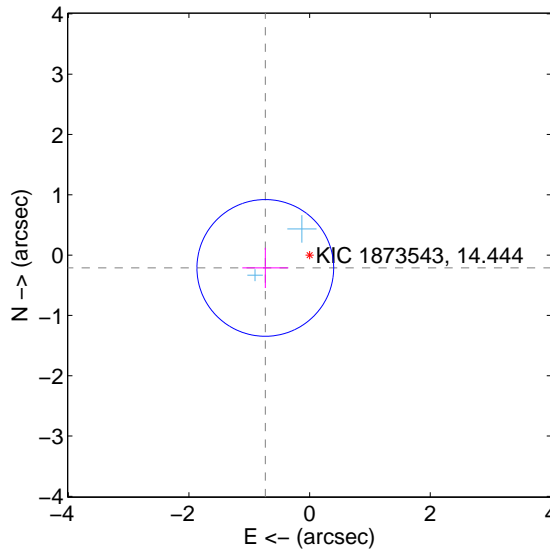
The direct PRF centroid is offset from the target star catalog position by about 0.83 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.931 ± 0.372	2.50	0.862 ± 0.355	0.352 ± 0.458
PRF-fit source offset from KIC position	0.764 ± 0.378	2.02	0.734 ± 0.381	-0.213 ± 0.334
photometric centroid source offset	1.56 ± 0.59	2.62	-0.74 ± 0.51	-1.37 ± 0.62

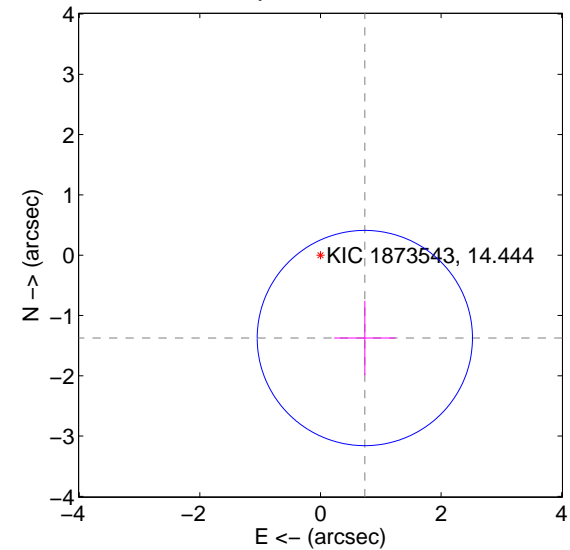
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

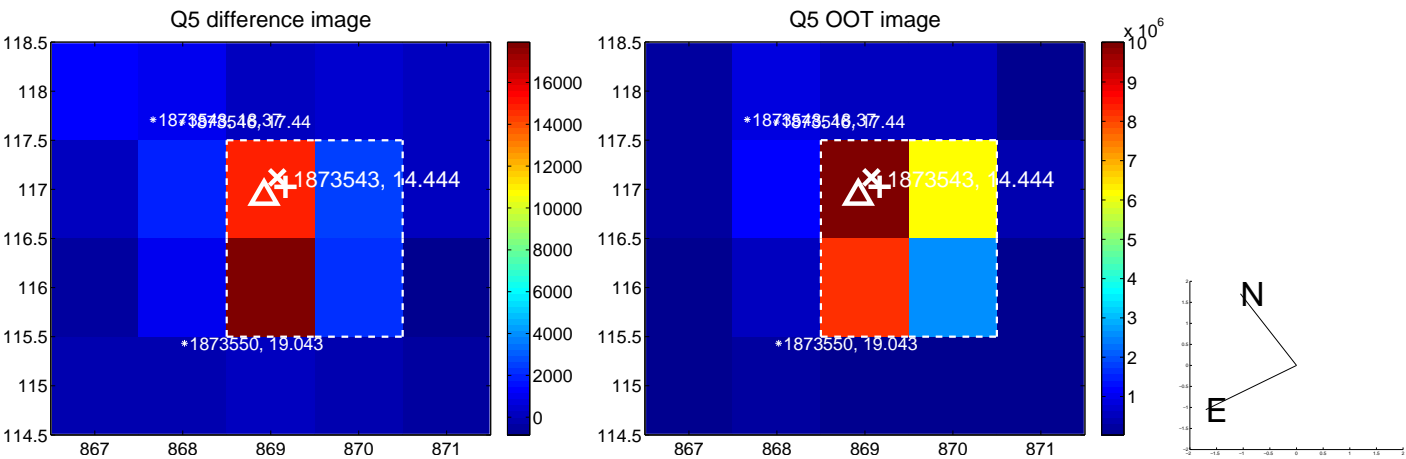


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

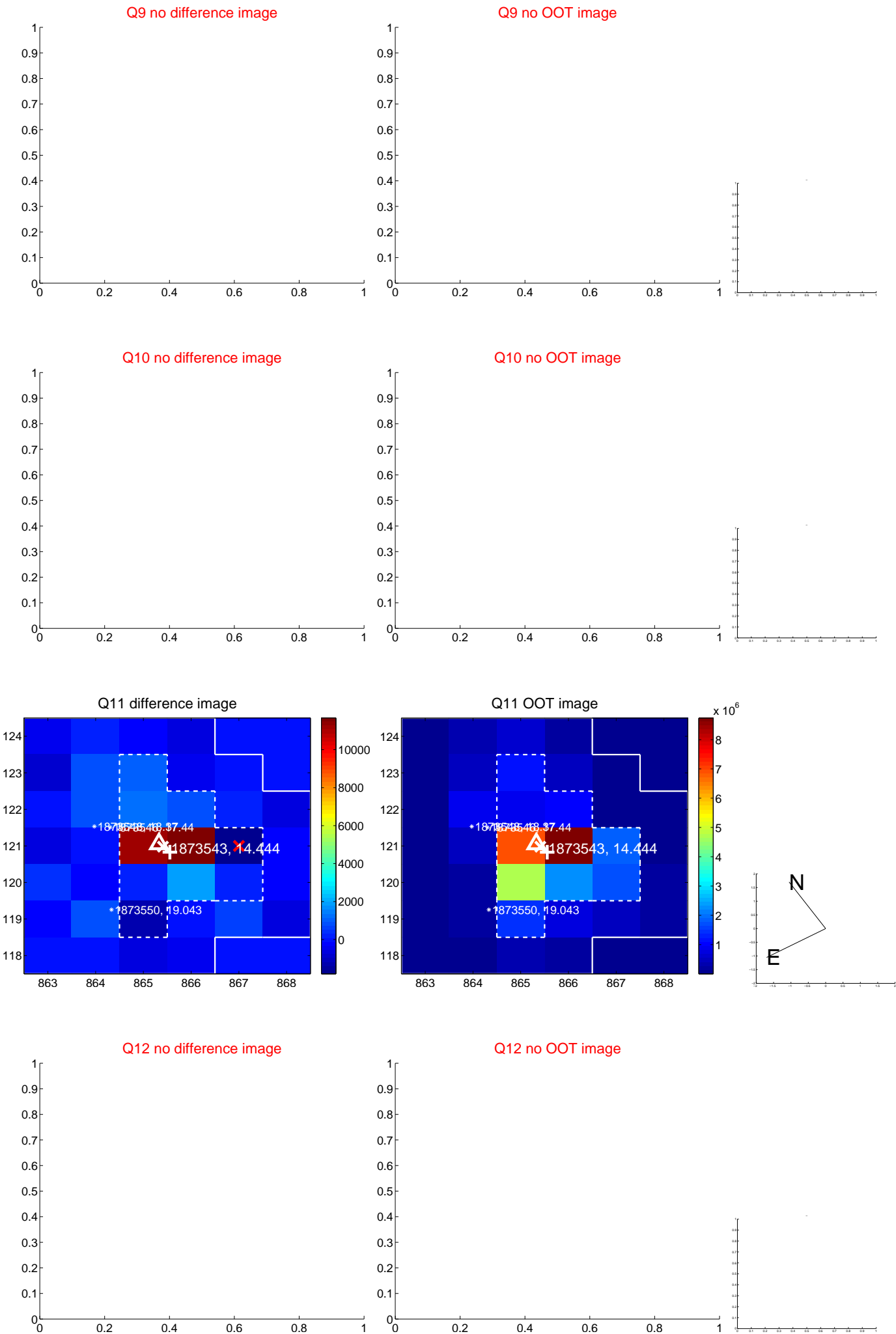
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



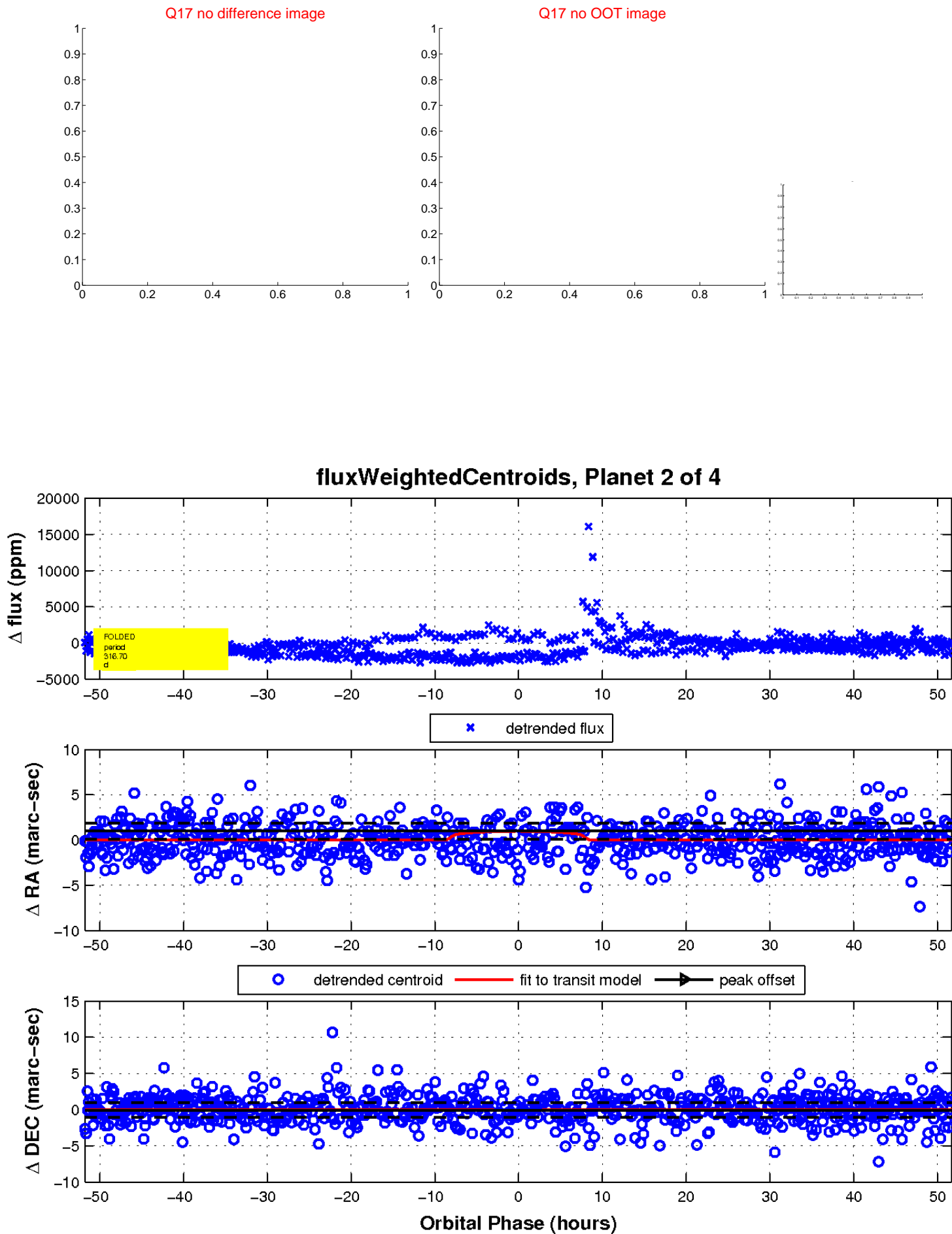
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

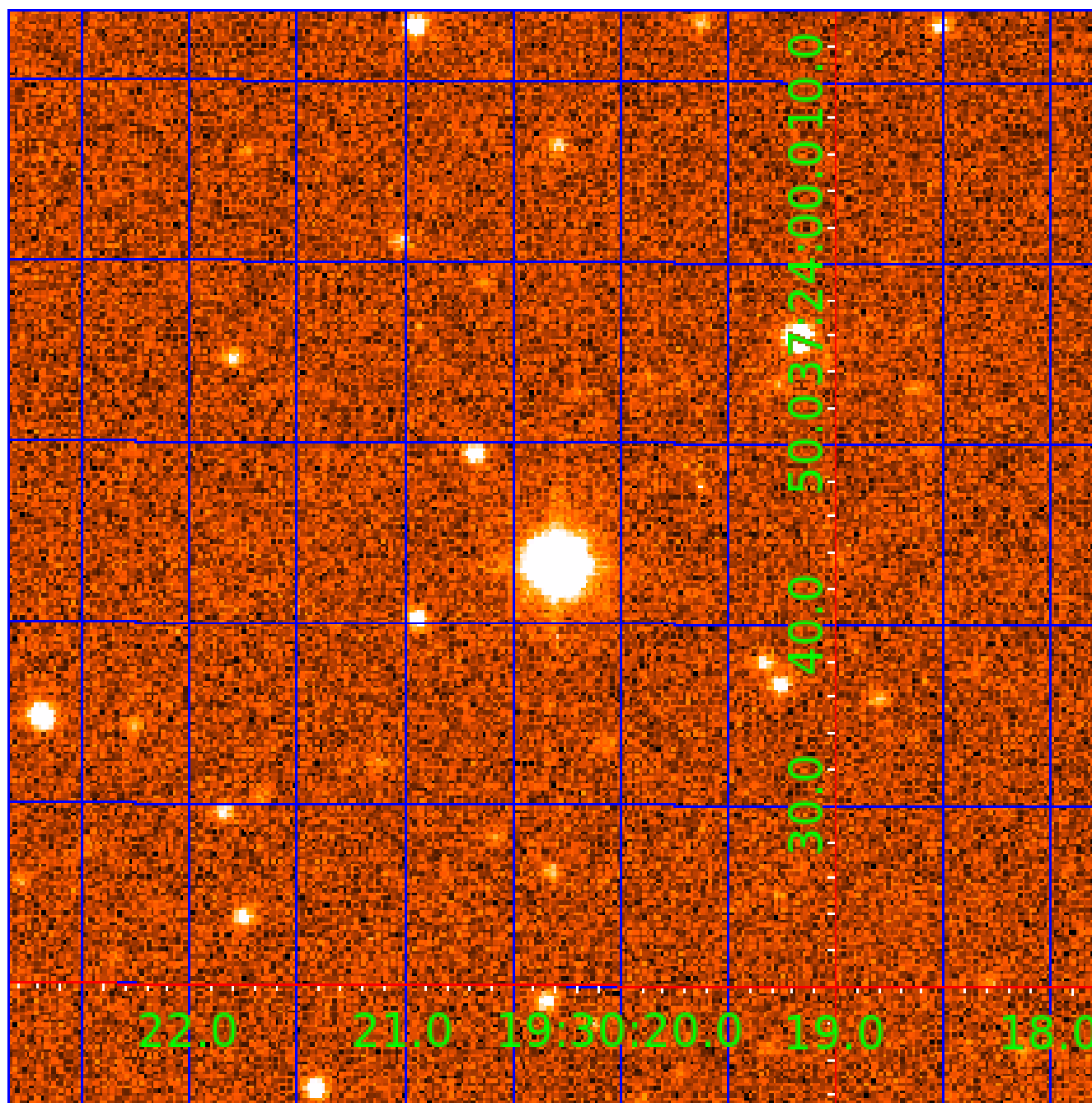


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 001873543

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})
001873543-01	OBS	No	536.620443	206.109313	1166.0	15.104	15.1	7.5	0.60	3850	1.96	0.06
001873543-02	OBS	No	316.697079	445.814651	1136.3	17.281	9.3	7.0	0.60	3850	2.19	0.12
001873543-03	OBS	No	638.150243	303.077621	1121.3	16.833	11.6	8.0	0.60	3850	2.10	0.05
001873543-04	OBS	No	359.474302	337.332376	913.5	9.578	9.7	6.1	0.60	3850	1.85	0.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001873543-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
001873543-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
001873543-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
001873543-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS

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

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

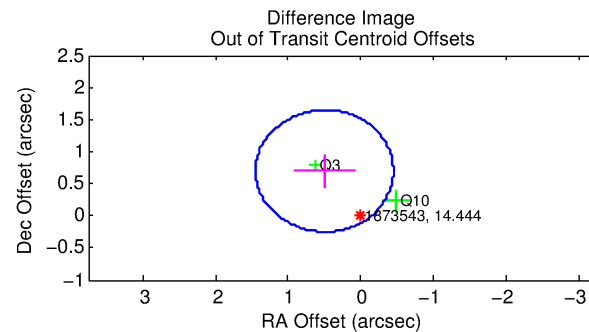
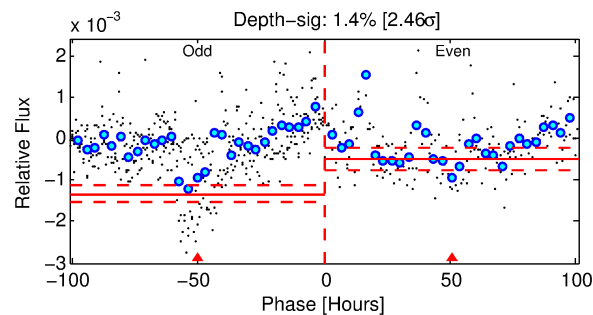
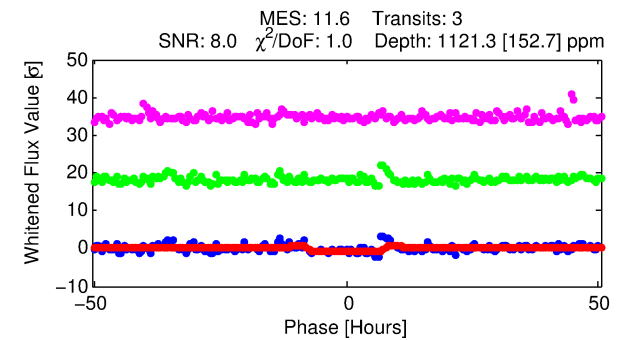
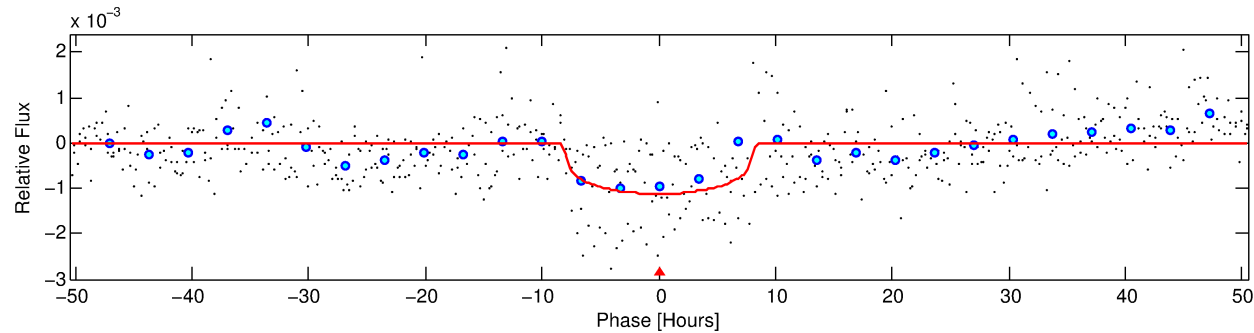
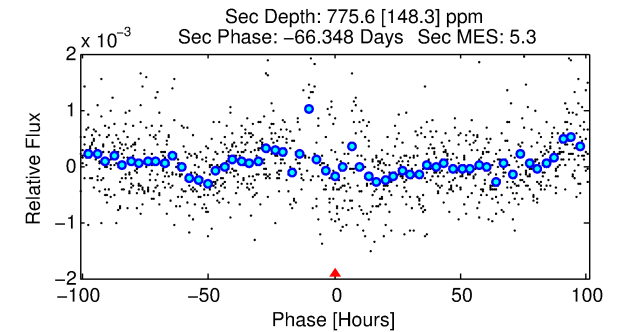
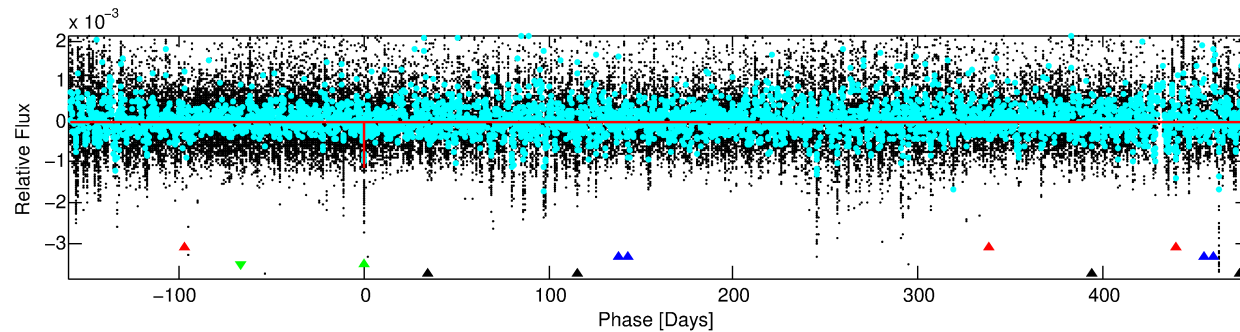
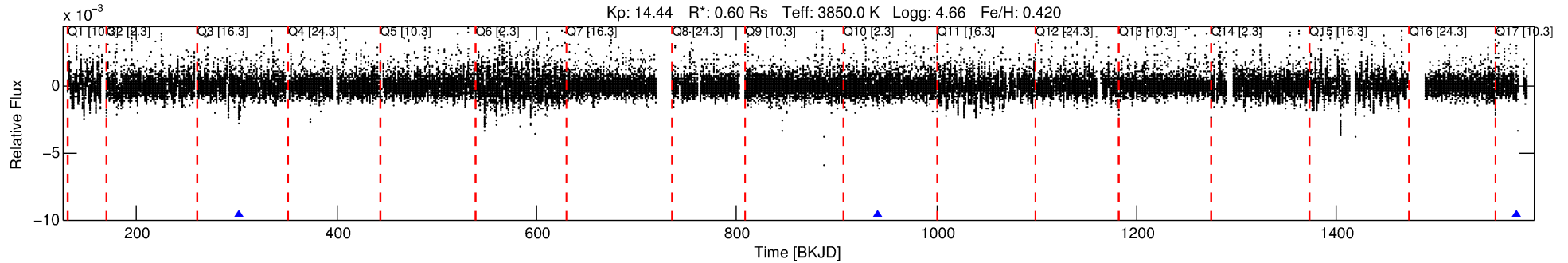
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 001873543-03

No Significant Match Found

DV One-Page Summary

KIC: 1873543 Candidate: 3 of 4 Period: 638.150 d



DV Fit Results:

Period = 638.15024 [0.01141] d
Epoch = 303.0776 [0.0164] BKJD
Rp/R* = 0.0321 [0.0071]
a/R* = 232.52 [154.35]
b = 0.65 [0.60]
Seff = 0.05 [0.01]
Teq = 119 [6] K
Rp = 2.10 [0.52] Re
a = 1.2258 [0.1096] AU
Ag = 145214.18 [71770.19] [2.02 σ]
Teffp = 3586 [451] K [7.68 σ]

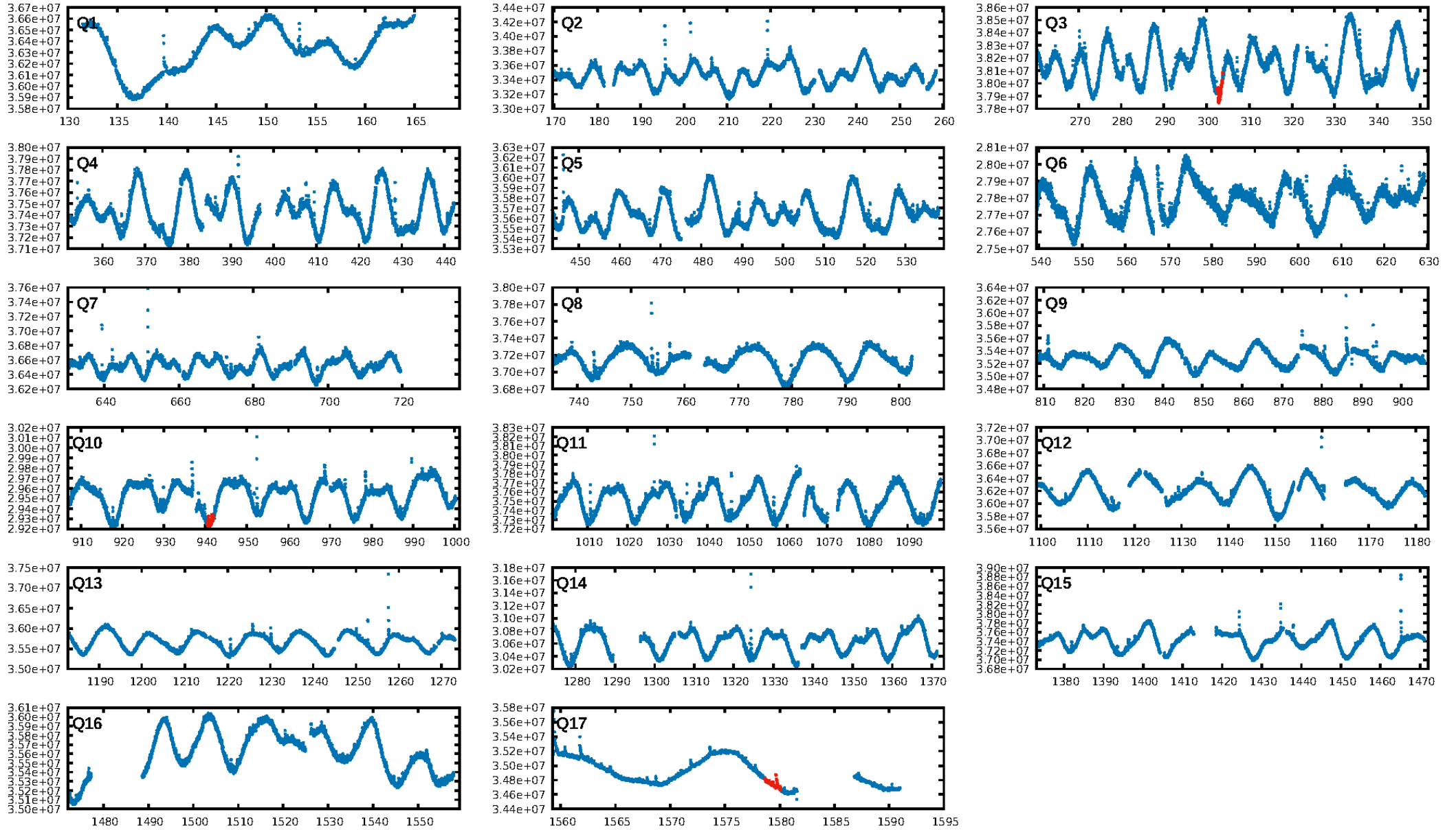
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [107.74 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 3.0%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 3.20e-12
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.9163
Centroid-sig: 7.6%
Centroid-so: 1.570 arcsec [2.90 σ]
OotOffset-rm: 0.859 arcsec [2.71 σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-rm: 0.412 arcsec [0.90 σ]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

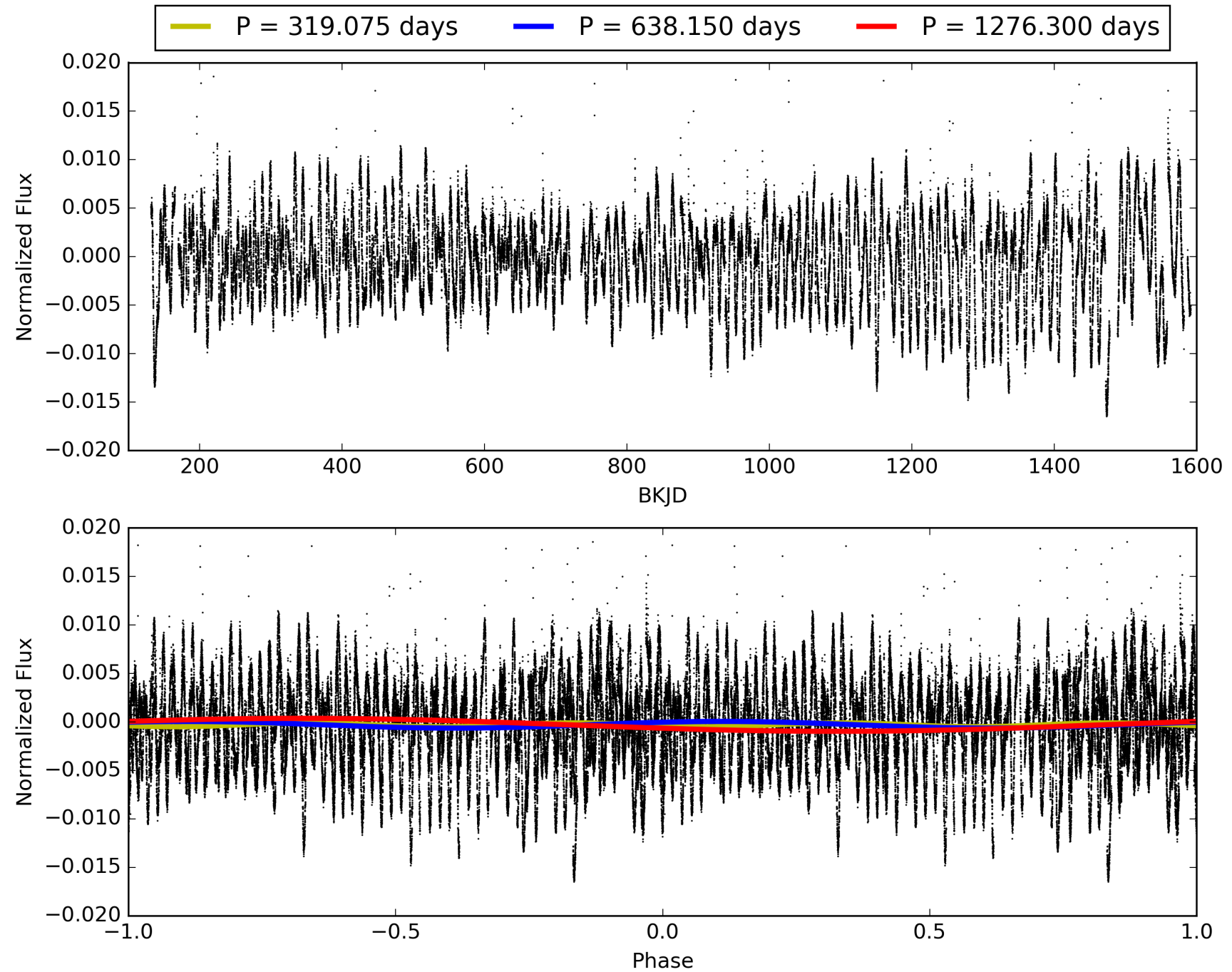
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:21:50 Z

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

TCE 001873543-03, PDC Light Curves

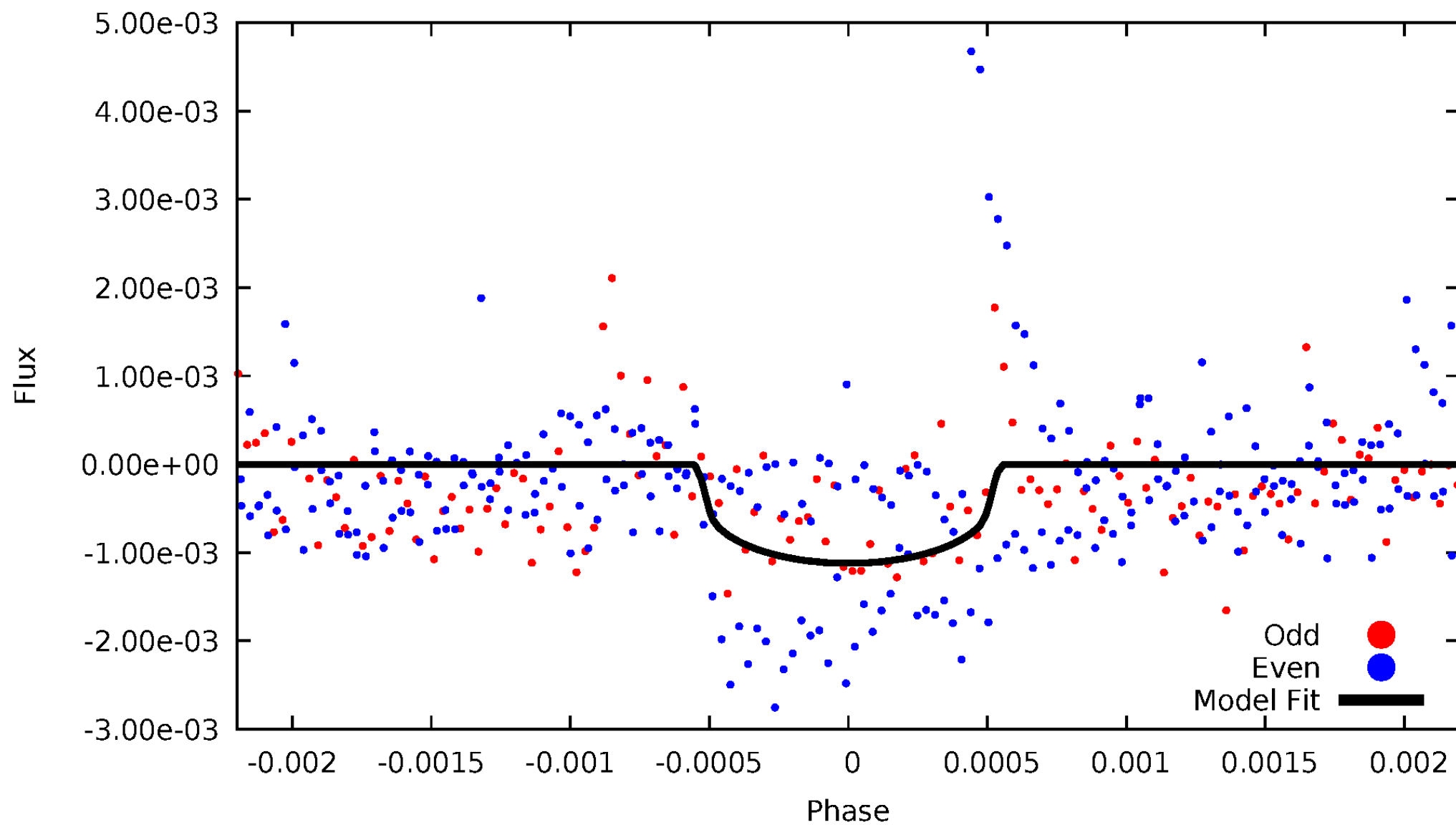


TCE 001873543-03



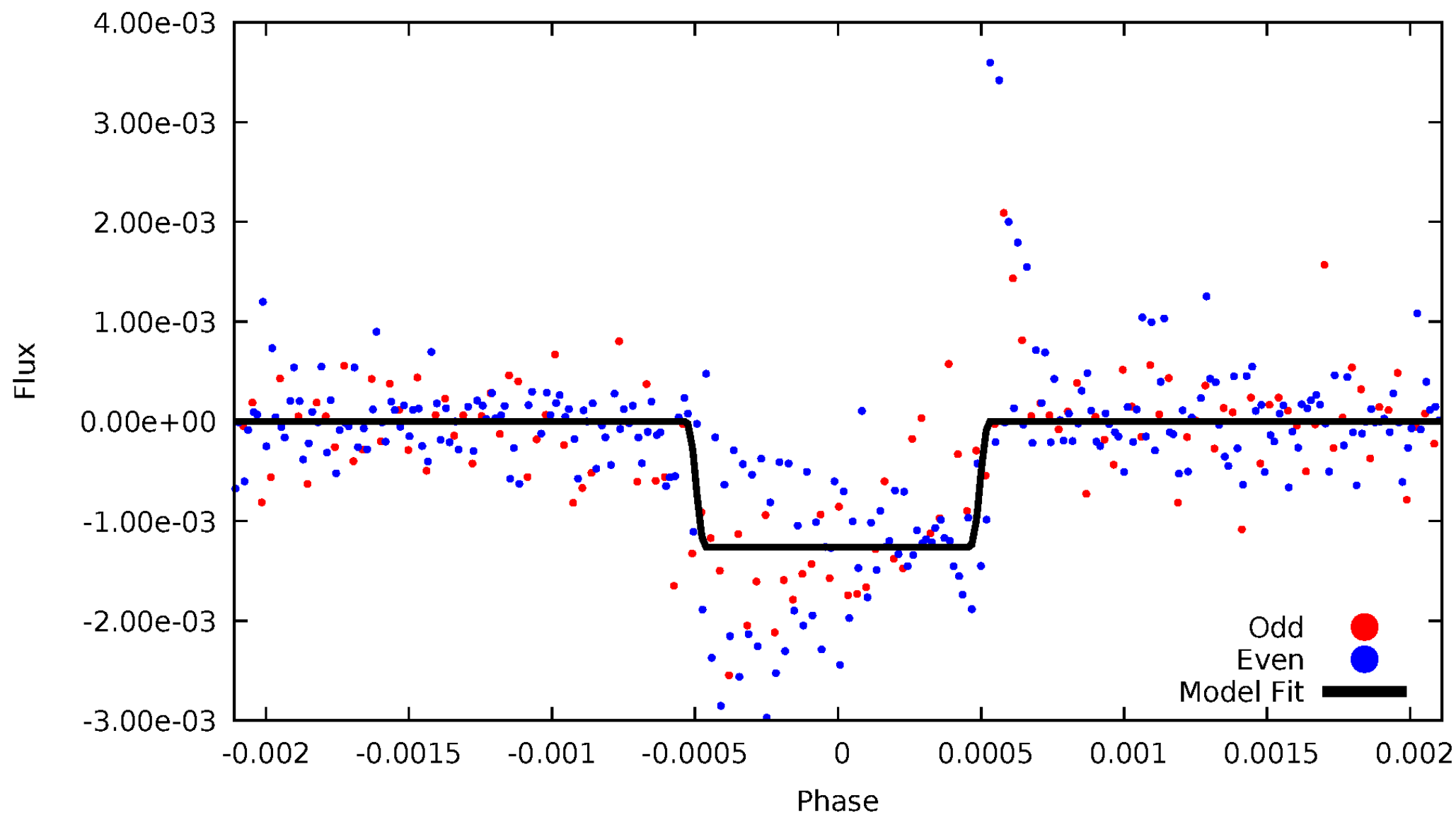
DV Odd/Even

TCE 001873543-03



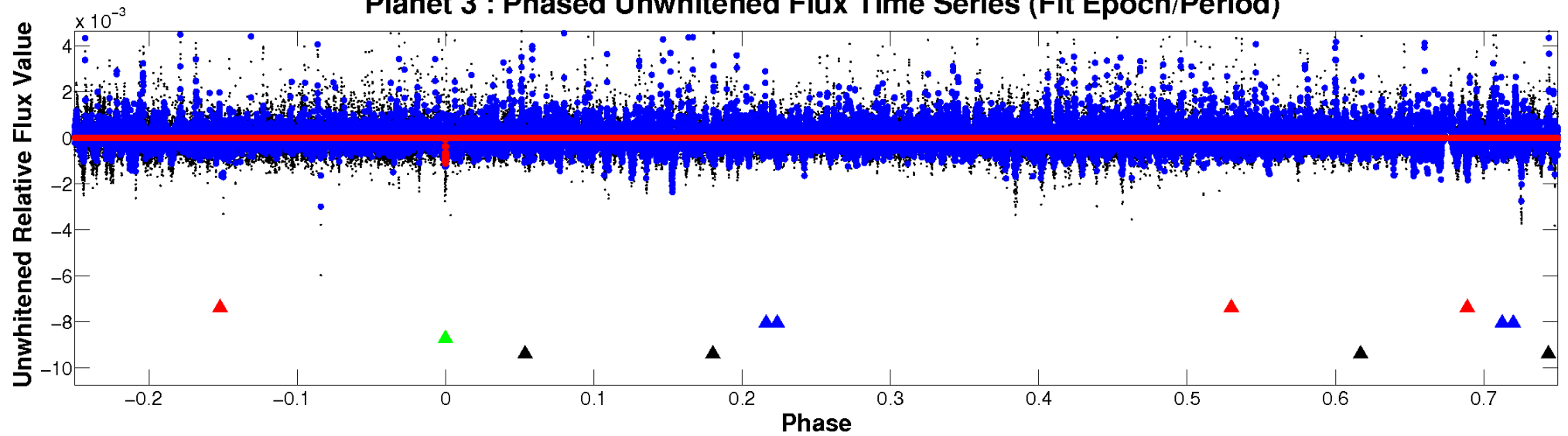
ALT Odd/Even

TCE 001873543-03

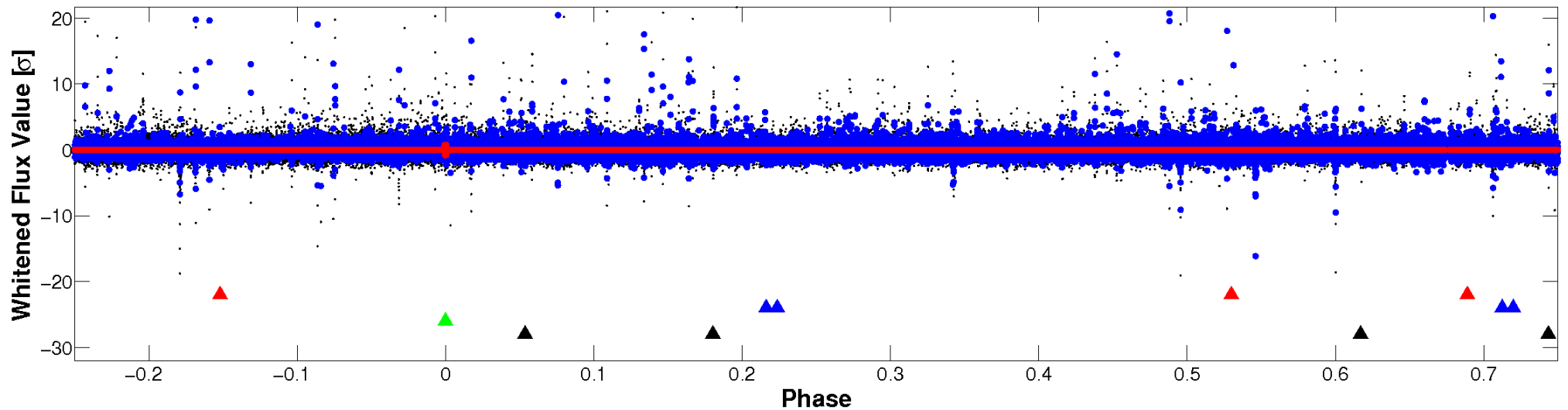


Non-Whitened Vs. Whitened Light Curve

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

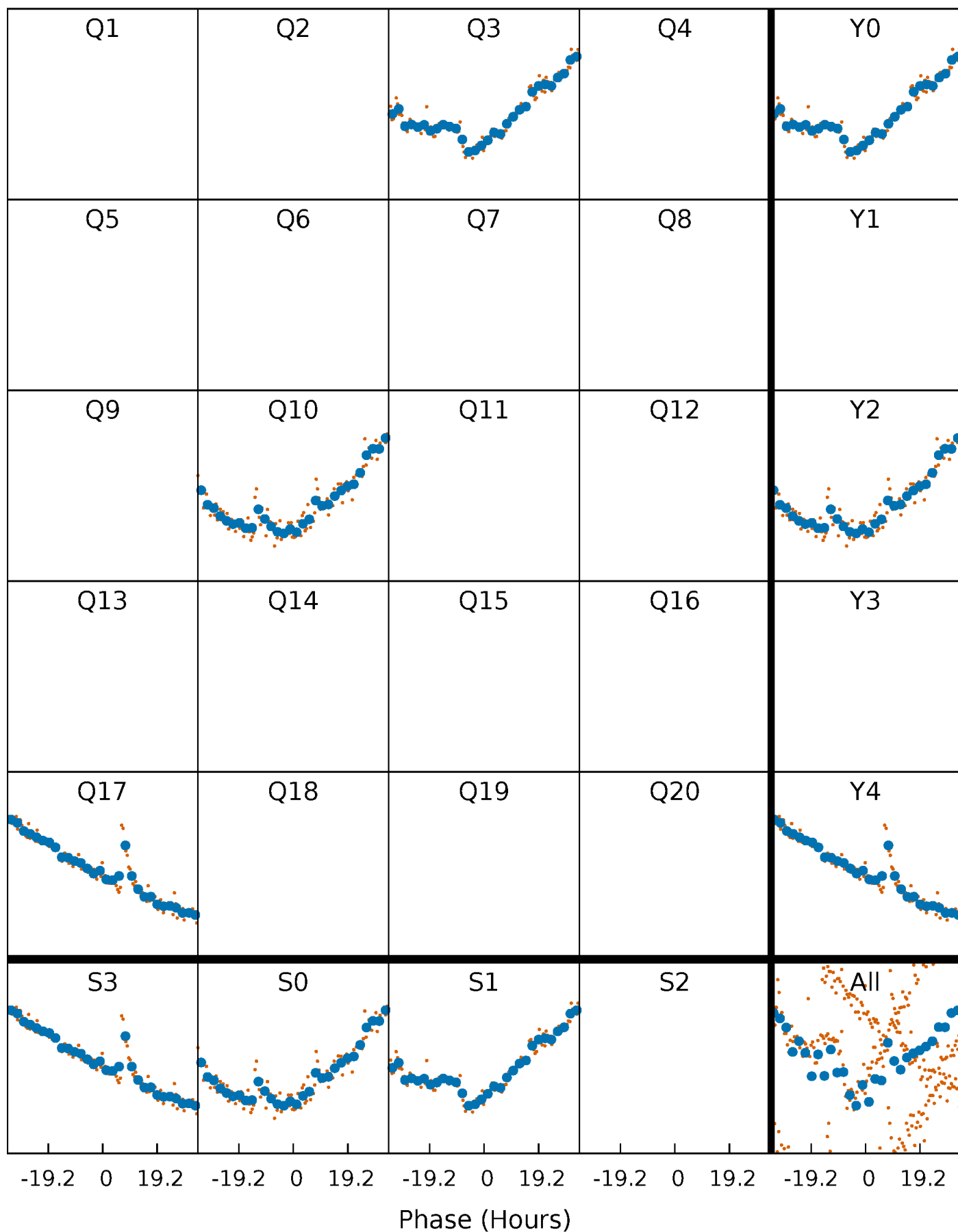


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



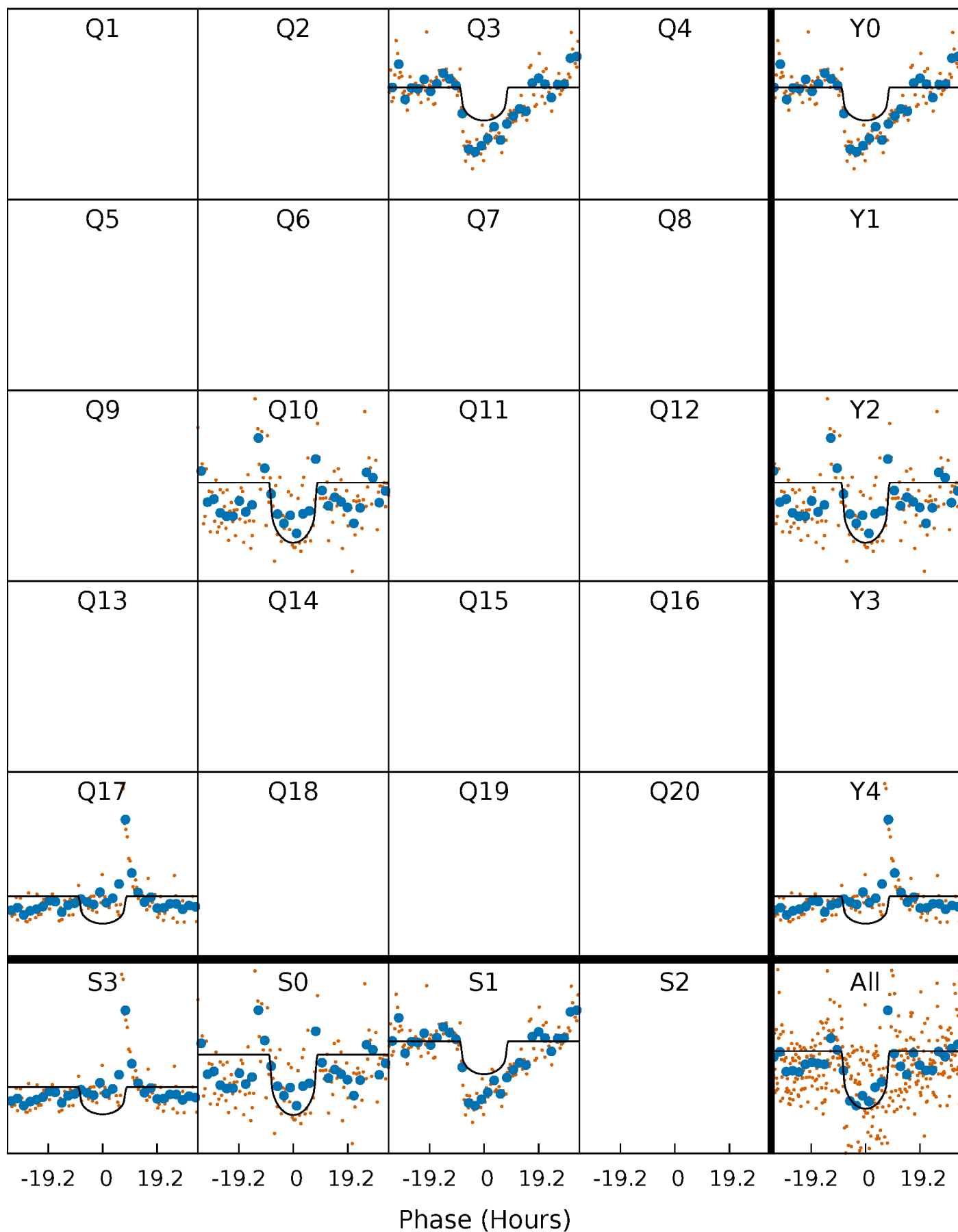
PDC Quarter-Phased Transit Curves

TCE 001873543-03 $P=638.150243$ Days $T_0=303.077621$ (BKJD)



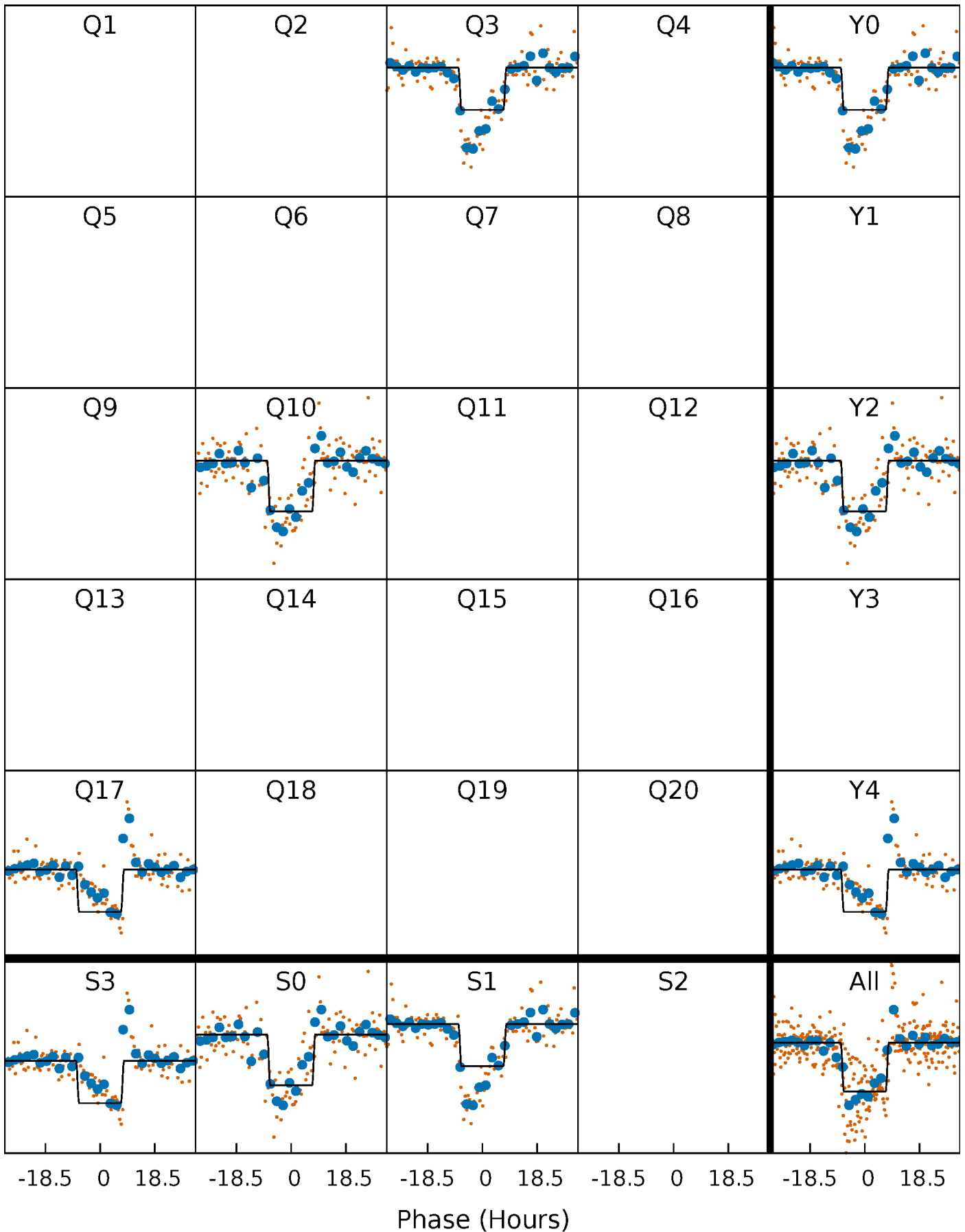
DV Quarter-Phased Transit Curves

TCE 001873543-03 $P=638.150243$ Days $T_0=303.077621$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

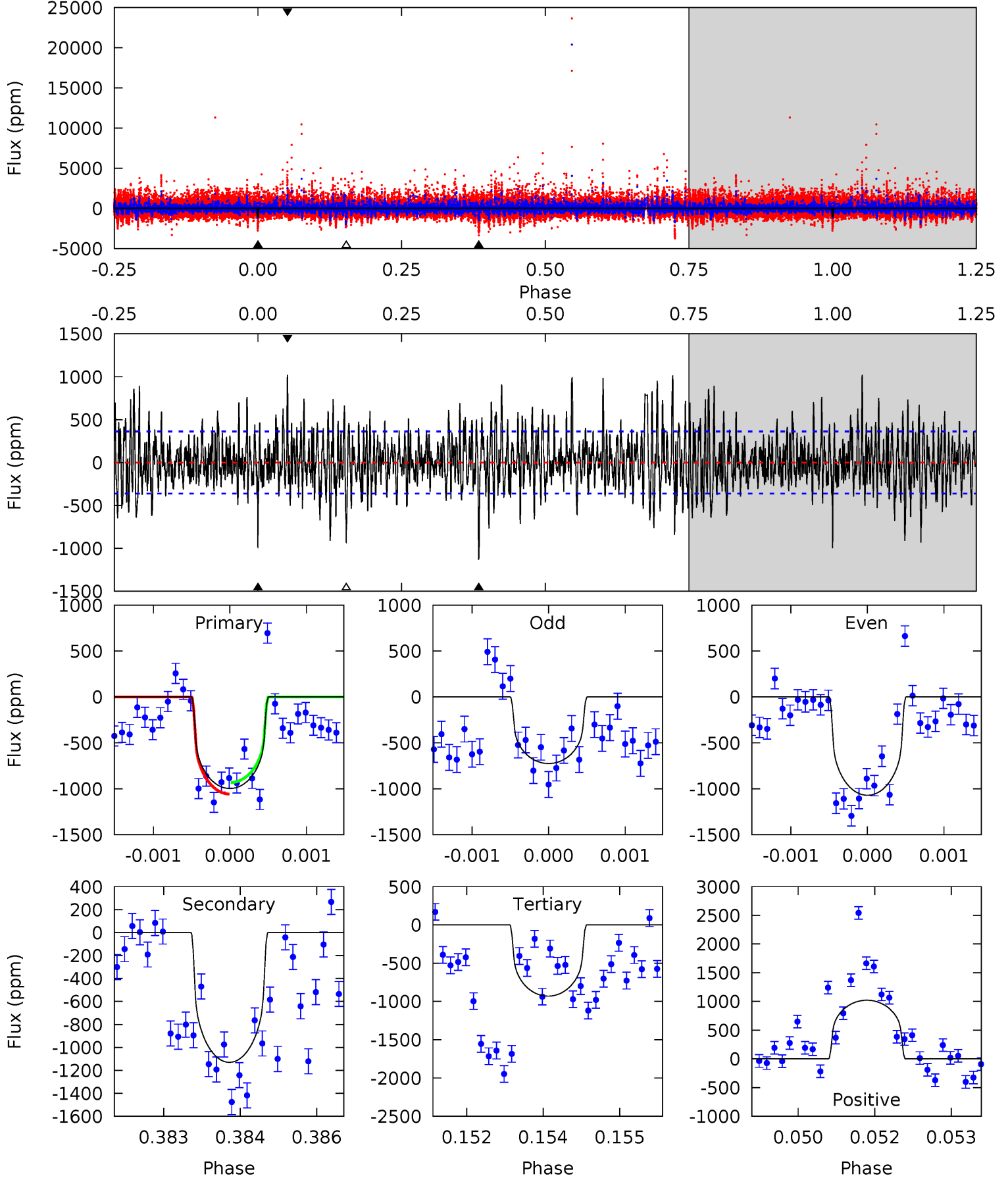
TCE 001873543-03 $P=638.126456$ Days $T_0=303.067917$ (BKJD)



DV Model-Shift Uniqueness Test

001873543-03, P = 638.150243 Days, E = 303.077621 Days

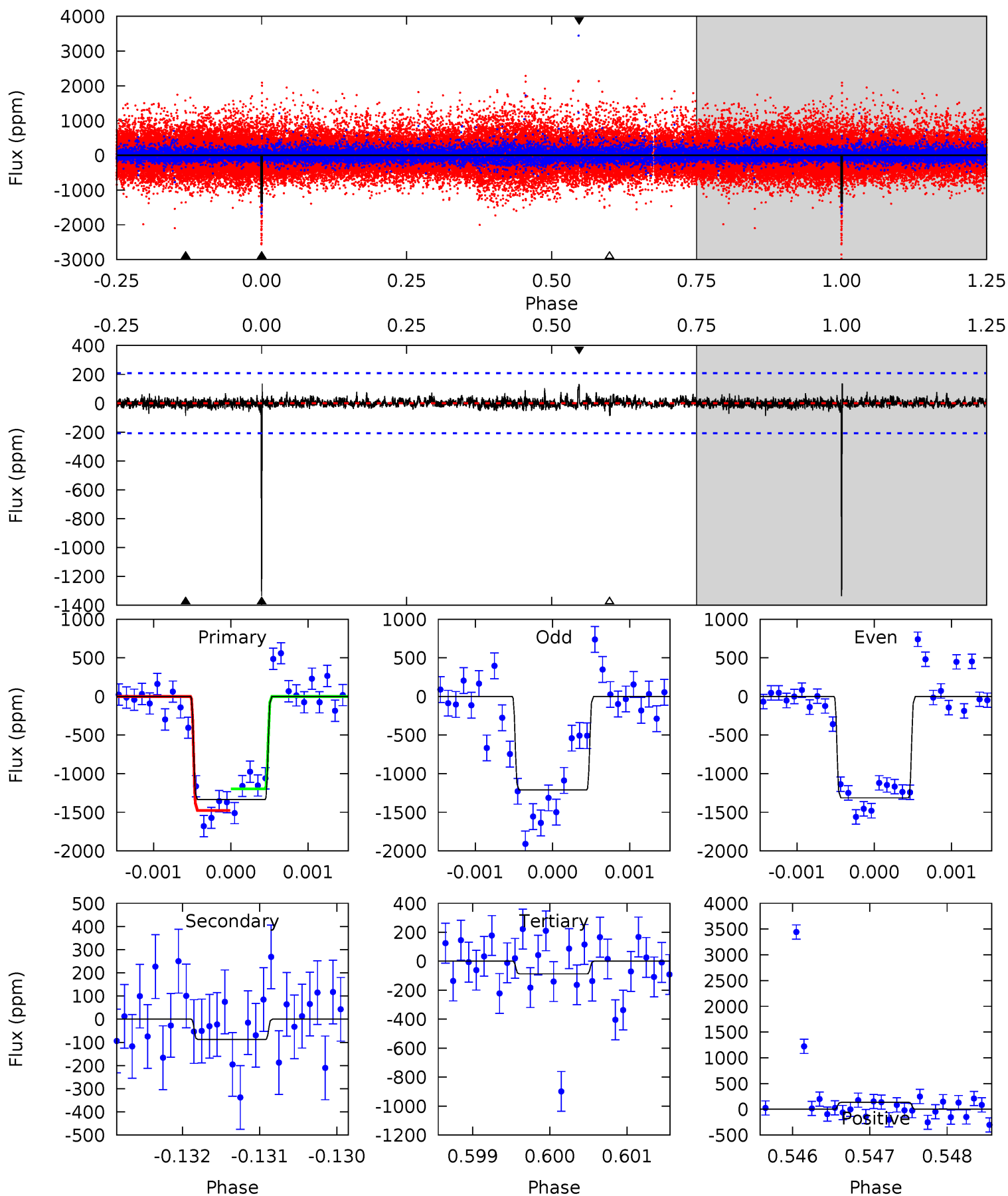
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.0	17.0	14.0	15.4	5.43	3.26	4.01	1.00	-0.36	3.00	1.63	2.07	1.25	0.47	0.95



Alt Model-Shift Uniqueness Test

001873543-03, P = 638.126456 Days, E = 303.067917 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.0	2.29	2.28	3.52	5.45	3.28	0.48	32.7	31.5	0.01	-1.22	1.26	1.06	0.09	3.71



Stellar Parameters For KIC 001873543

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3850^{+120}_{-147}	$4.662^{+0.060}_{-0.020}$	$0.420^{+0.050}_{-0.300}$	$0.600^{+0.032}_{-0.069}$	$0.603^{+0.040}_{-0.060}$	$3.927^{+1.148}_{-0.343}$
	+3%/-4%	+1%/-0%	+12%/-71%	+5%/-12%	+7%/-10%	+29%/-9%
Source	KIC0	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 001873543-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1130 ± 66	$2.06^{+0.46}_{-0.46}$	165^{+6}_{-6}	3924^{+375}_{-297}	$222868^{+137836}_{-75401}$
Alt.	-88 ± 38	$2.29^{+0.48}_{-0.49}$	164^{+6}_{-7}	2585^{+215}_{-205}	13219^{+10775}_{-6182}

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

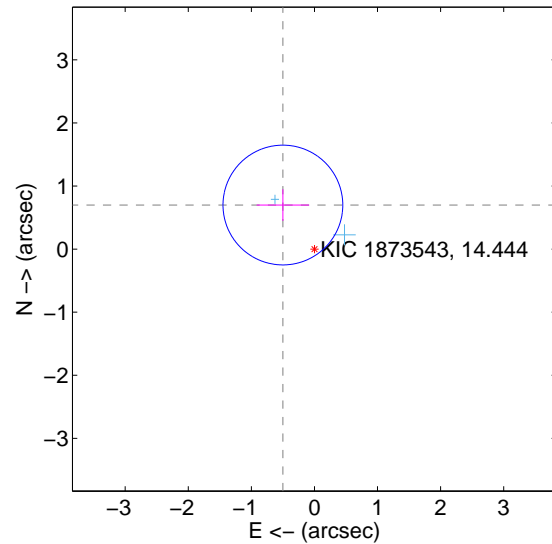
Supplemental centroid analysis for 001873543-03. Kepler magnitude: 14.44. Transit SNR 7.95

There are 2 quarters with good PRF difference image offsets

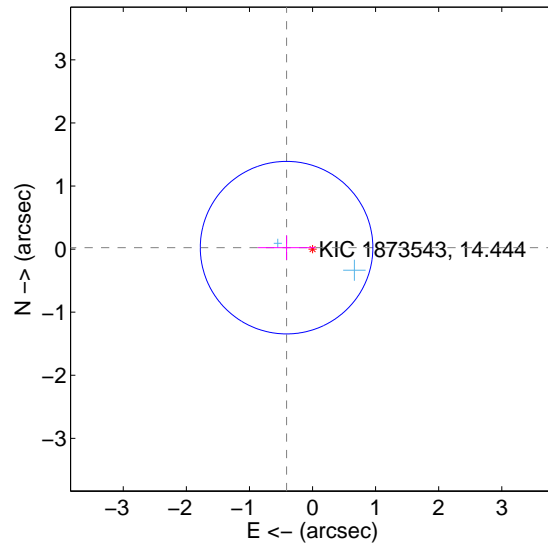
The direct PRF centroid is offset from the target star catalog position by about 0.59 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.859 ± 0.316	2.71	0.500 ± 0.415	0.698 ± 0.251
PRF-fit source offset from KIC position	0.412 ± 0.456	0.90	0.411 ± 0.456	0.023 ± 0.195
photometric centroid source offset	1.57 ± 0.54	2.90	1.03 ± 0.57	-1.19 ± 0.52

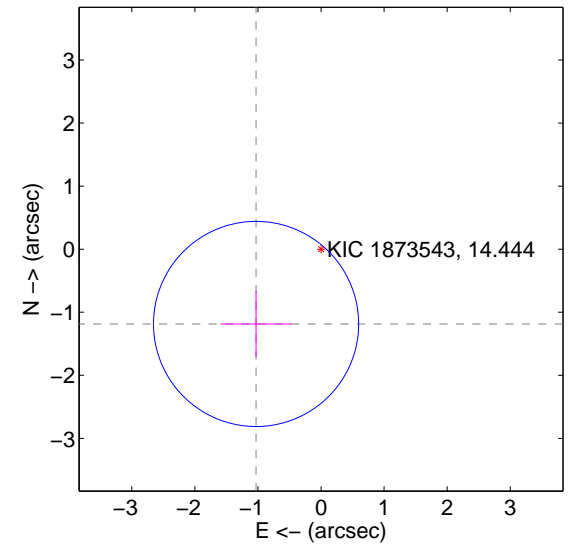
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

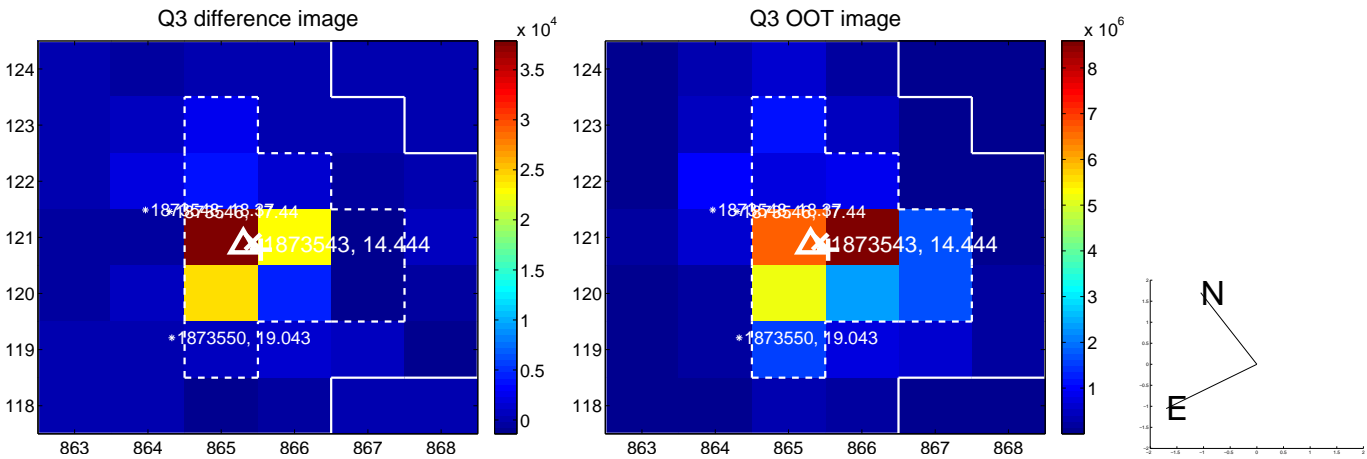


offset from photometric centroids



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.

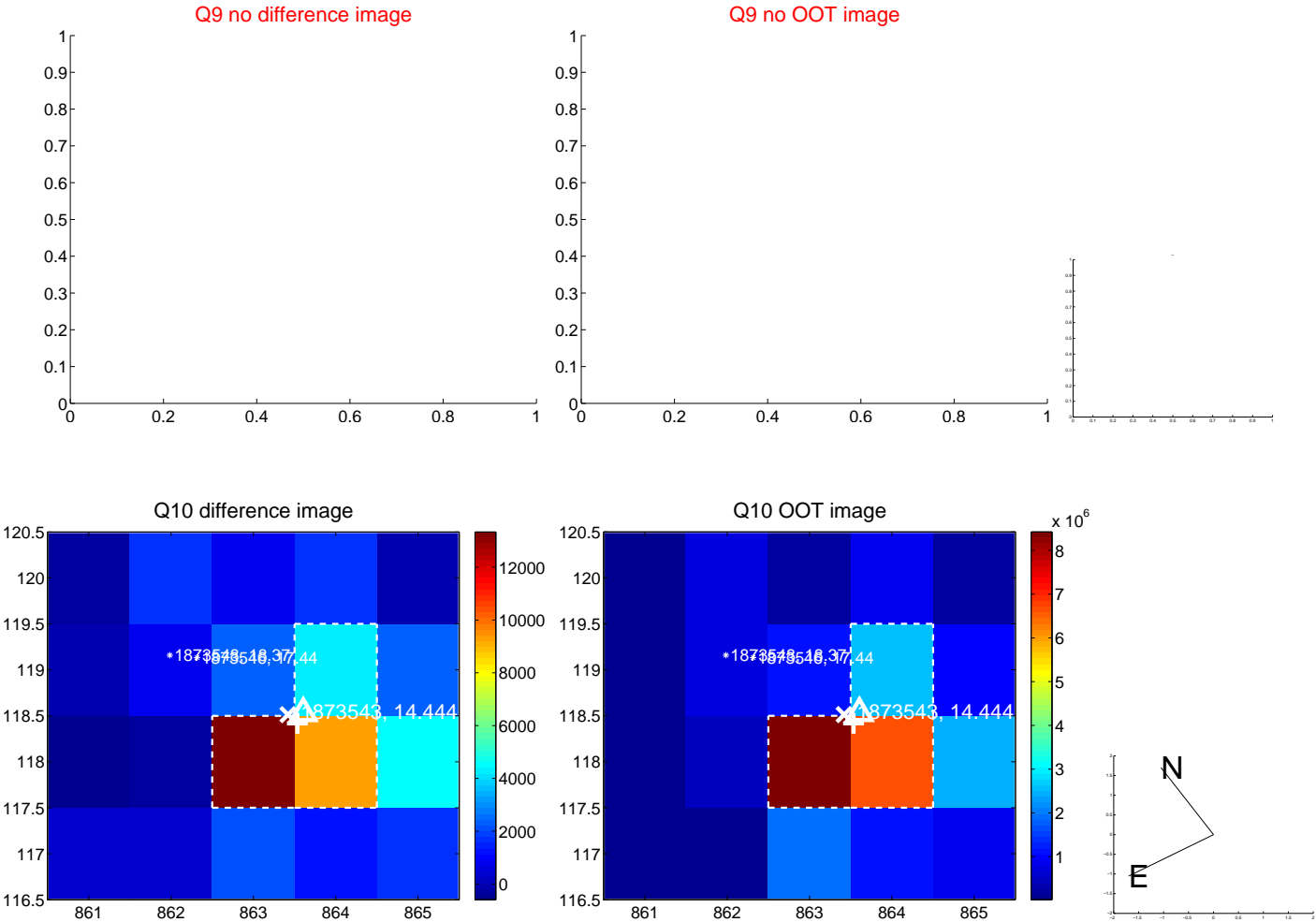
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



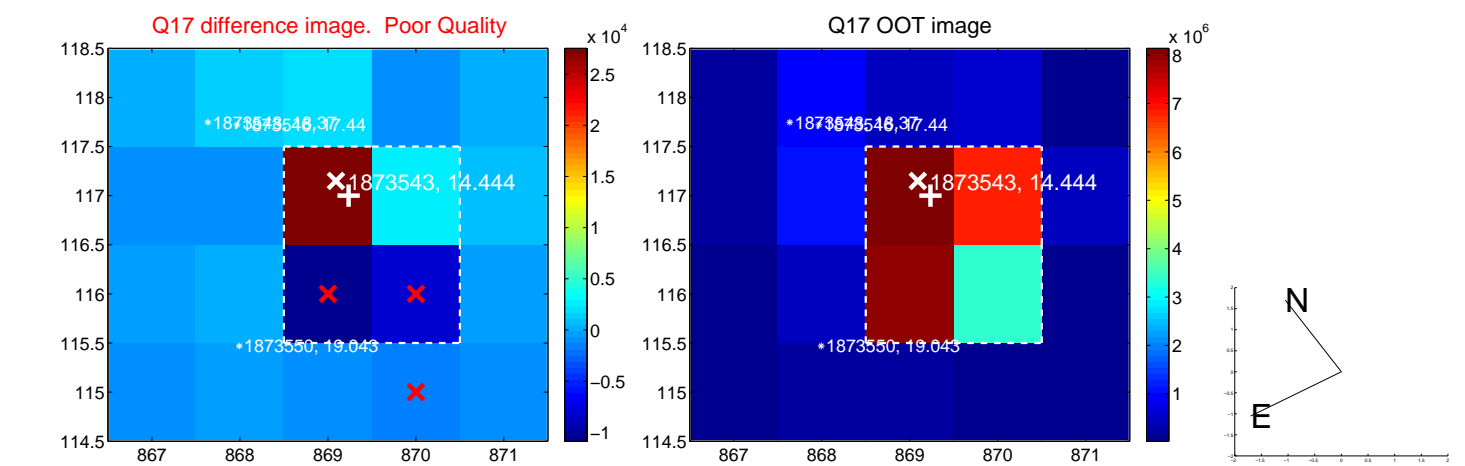
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



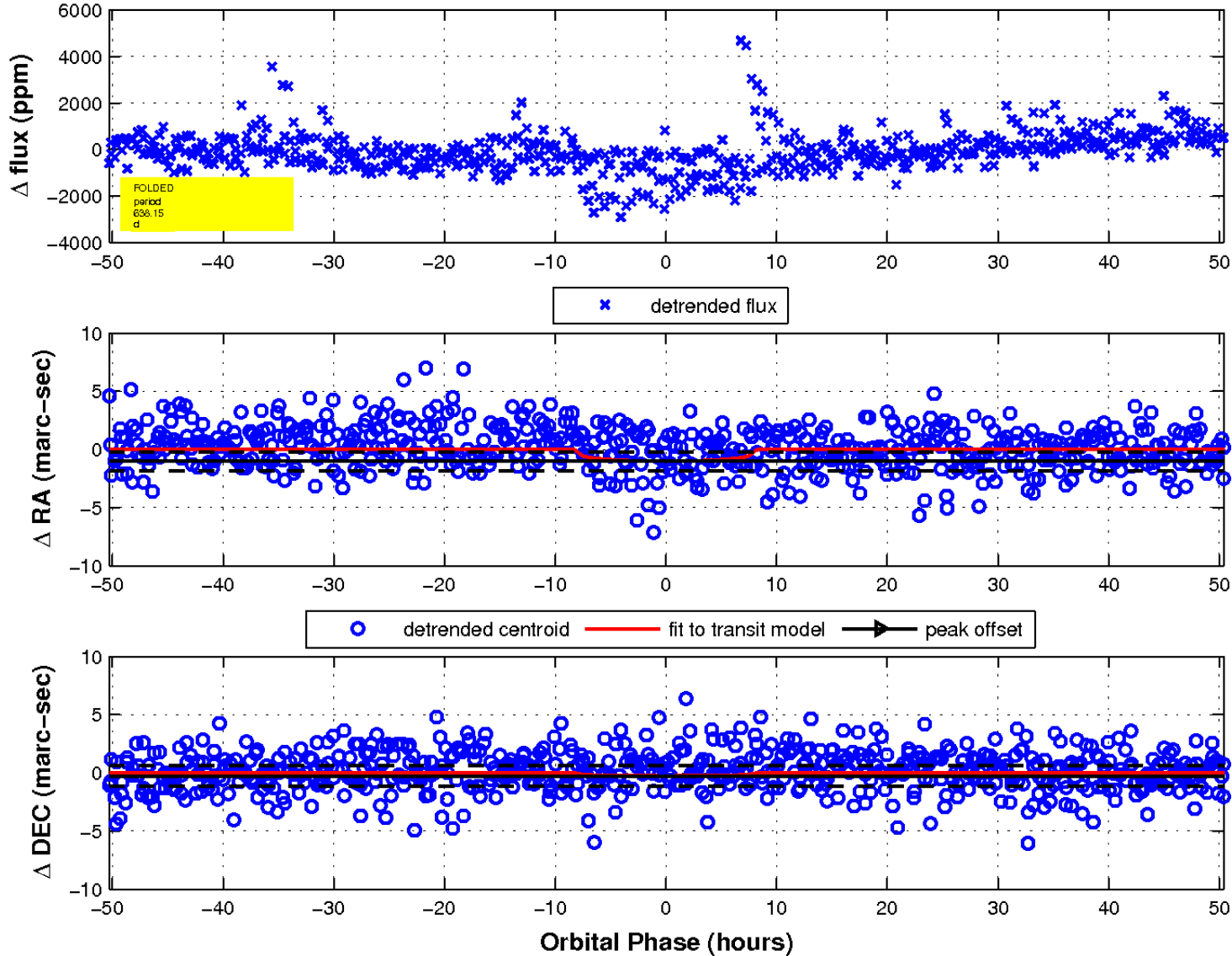
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

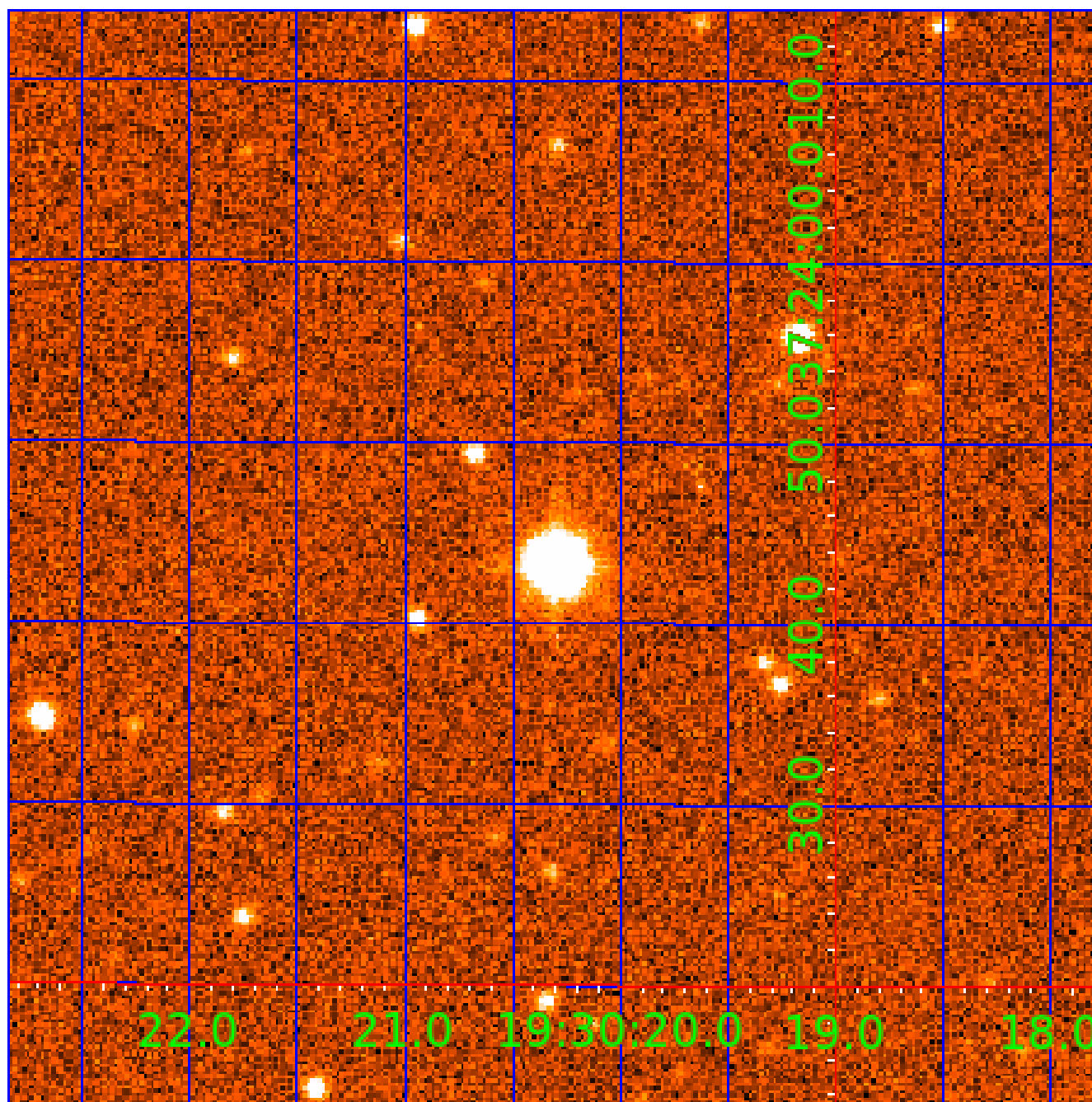


fluxWeightedCentroids, Planet 3 of 4



UKIRT Image

Declination



KIC 001873543

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})
001873543-01	OBS	No	536.620443	206.109313	1166.0	15.104	15.1	7.5	0.60	3850	1.96	0.06
001873543-02	OBS	No	316.697079	445.814651	1136.3	17.281	9.3	7.0	0.60	3850	2.19	0.12
001873543-03	OBS	No	638.150243	303.077621	1121.3	16.833	11.6	8.0	0.60	3850	2.10	0.05
001873543-04	OBS	No	359.474302	337.332376	913.5	9.578	9.7	6.1	0.60	3850	1.85	0.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001873543-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
001873543-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
001873543-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
001873543-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS

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

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

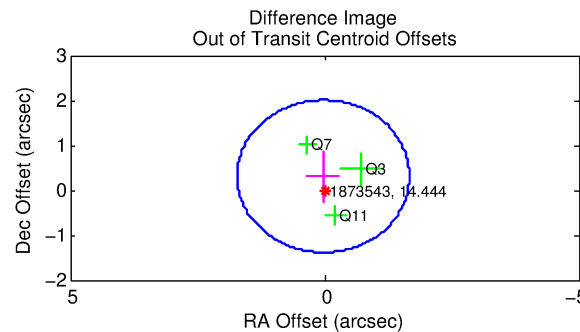
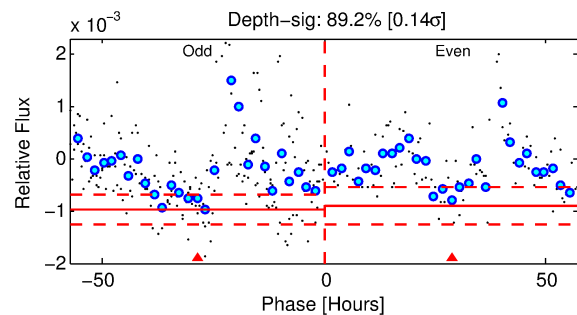
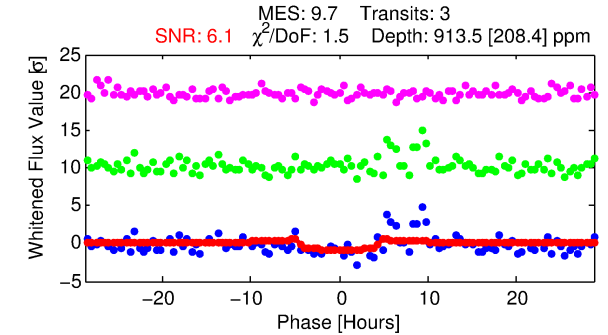
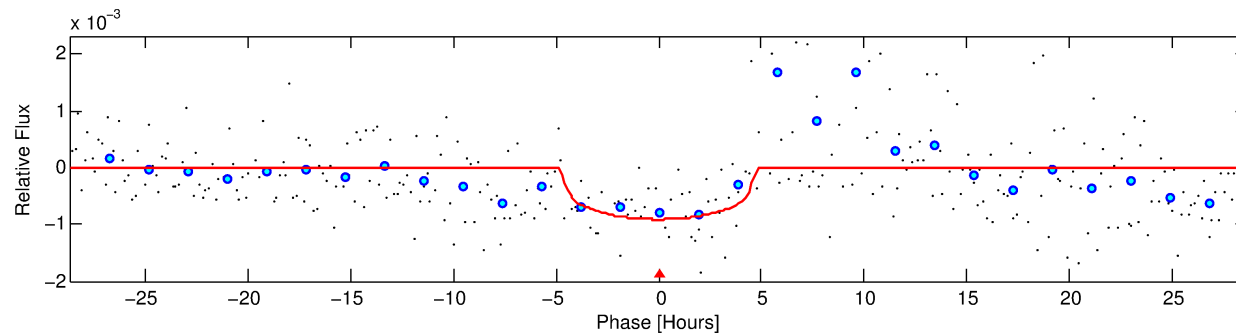
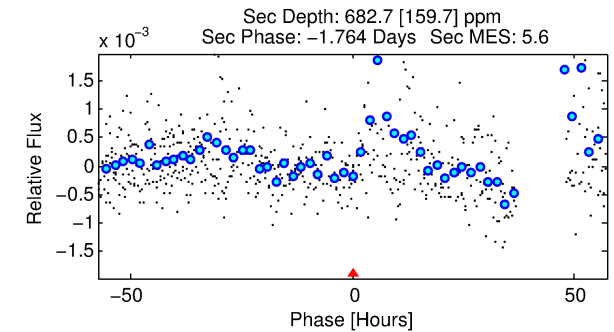
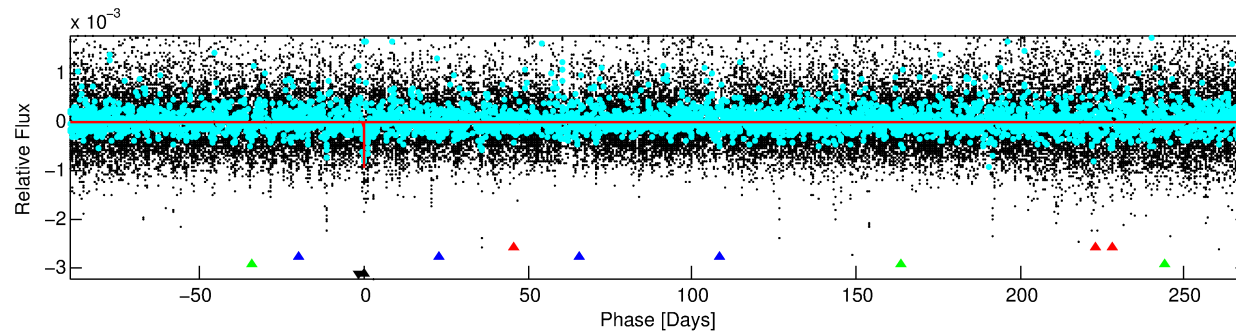
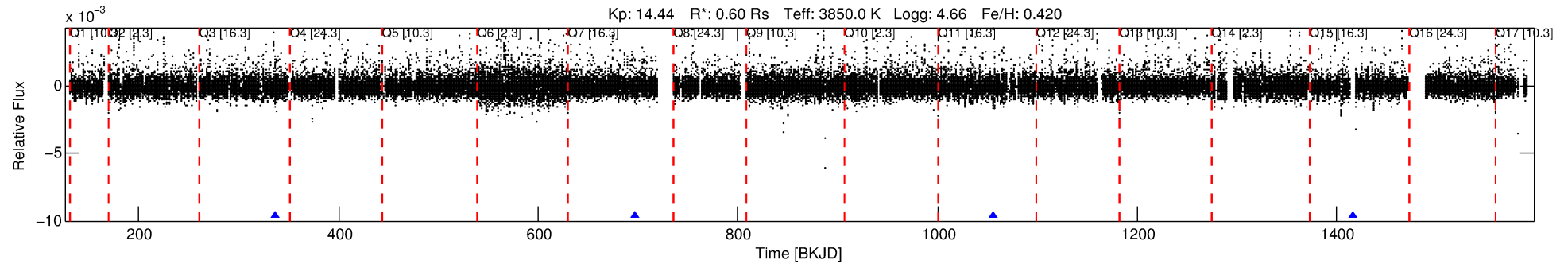
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 001873543-04

No Significant Match Found

DV One-Page Summary

KIC: 1873543 Candidate: 4 of 4 Period: 359.474 d



DV Fit Results:

Period = 359.47430 [0.01420] d
Epoch = 337.3324 [0.0182] BKJD
Rp/R* = 0.0282 [0.0263]
a/R* = 247.31 [725.87]
b = 0.56 [3.65]
Seff = 0.10 [0.02]
Teq = 144 [7] K
Rp = 1.85 [1.73] Re
a = 0.8361 [0.0748] AU
Ag = 77022.52 [145035.13] [0.53σ]
Teffp = 3706 [1747] K [2.04σ]

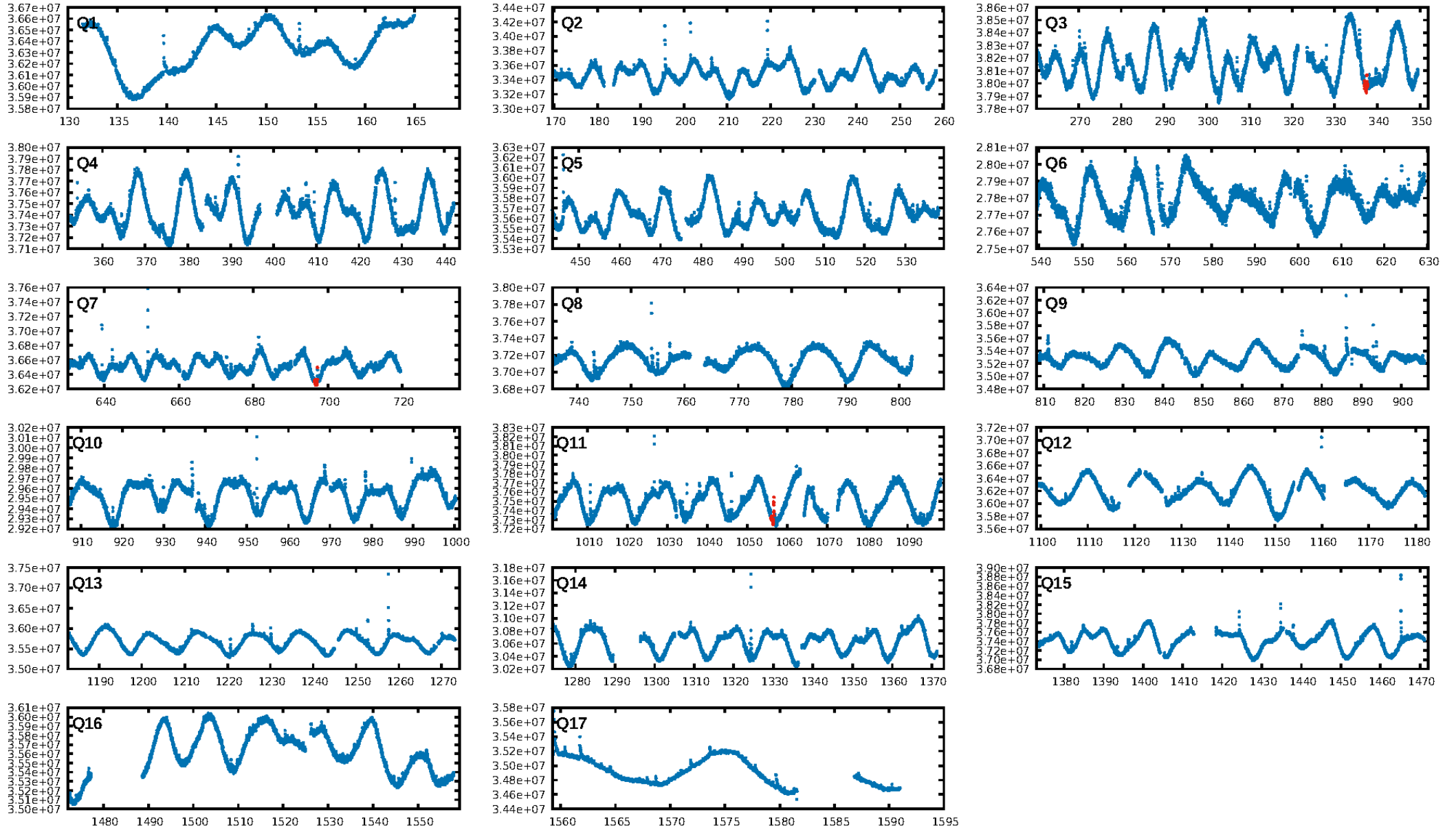
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [51.96σ]
LongPeriod-sig: 100.0% [237.72σ]
ModelChiSquare2-sig: 31.9%
ModelChiSquareGof-sig: 80.6%
Bootstrap-pfa: 2.09e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.112
Centroid-sig: 15.2%
Centroid-so: 1.337 arcsec [1.32σ]
OotOffset-rm: 0.308 arcsec [0.55σ]
OotOffset-st: 0/3/0/0 [3]
KicOffset-rm: 0.493 arcsec [0.87σ]
KicOffset-st: 0/3/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

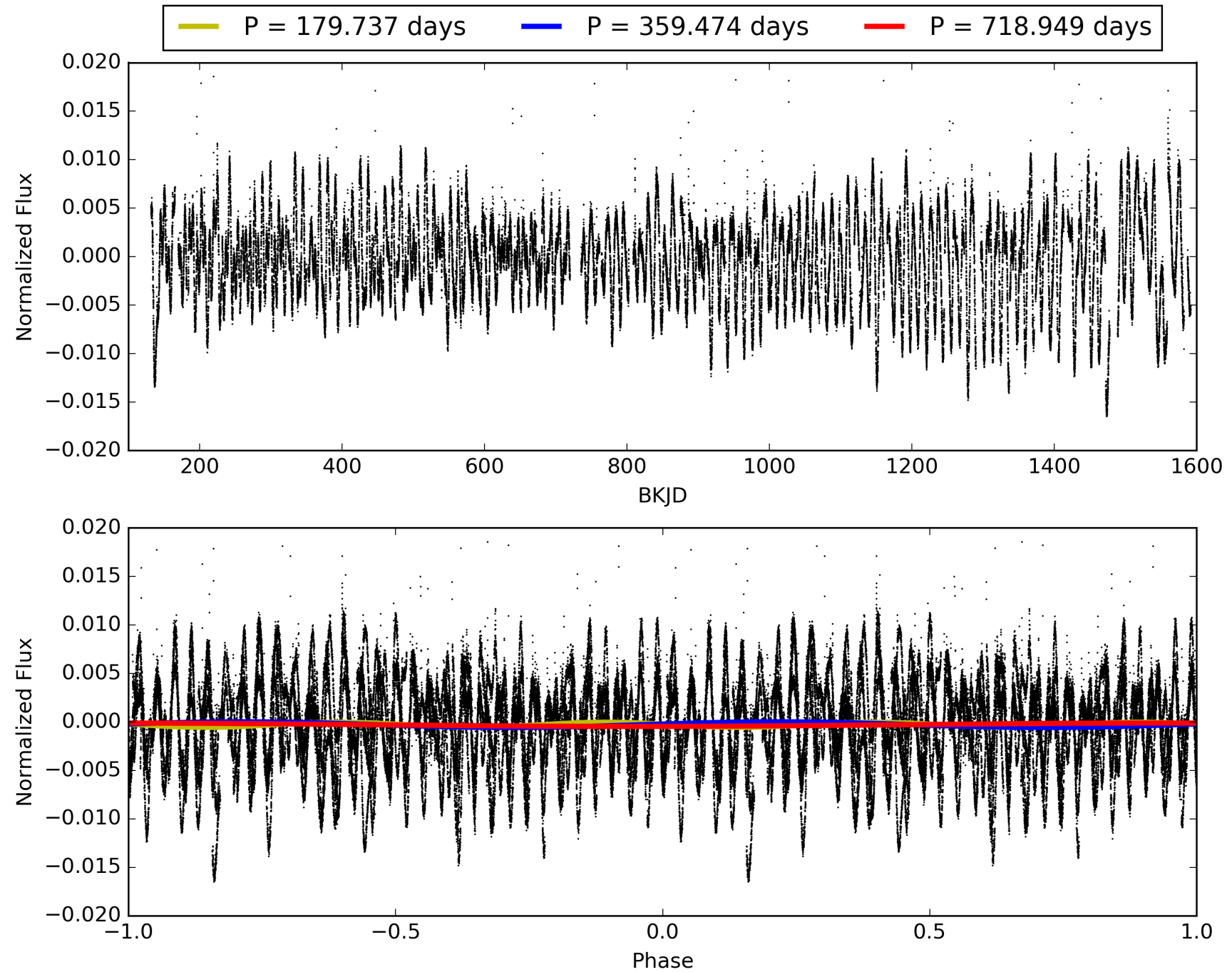
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:21:59 Z

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

TCE 001873543-04, PDC Light Curves

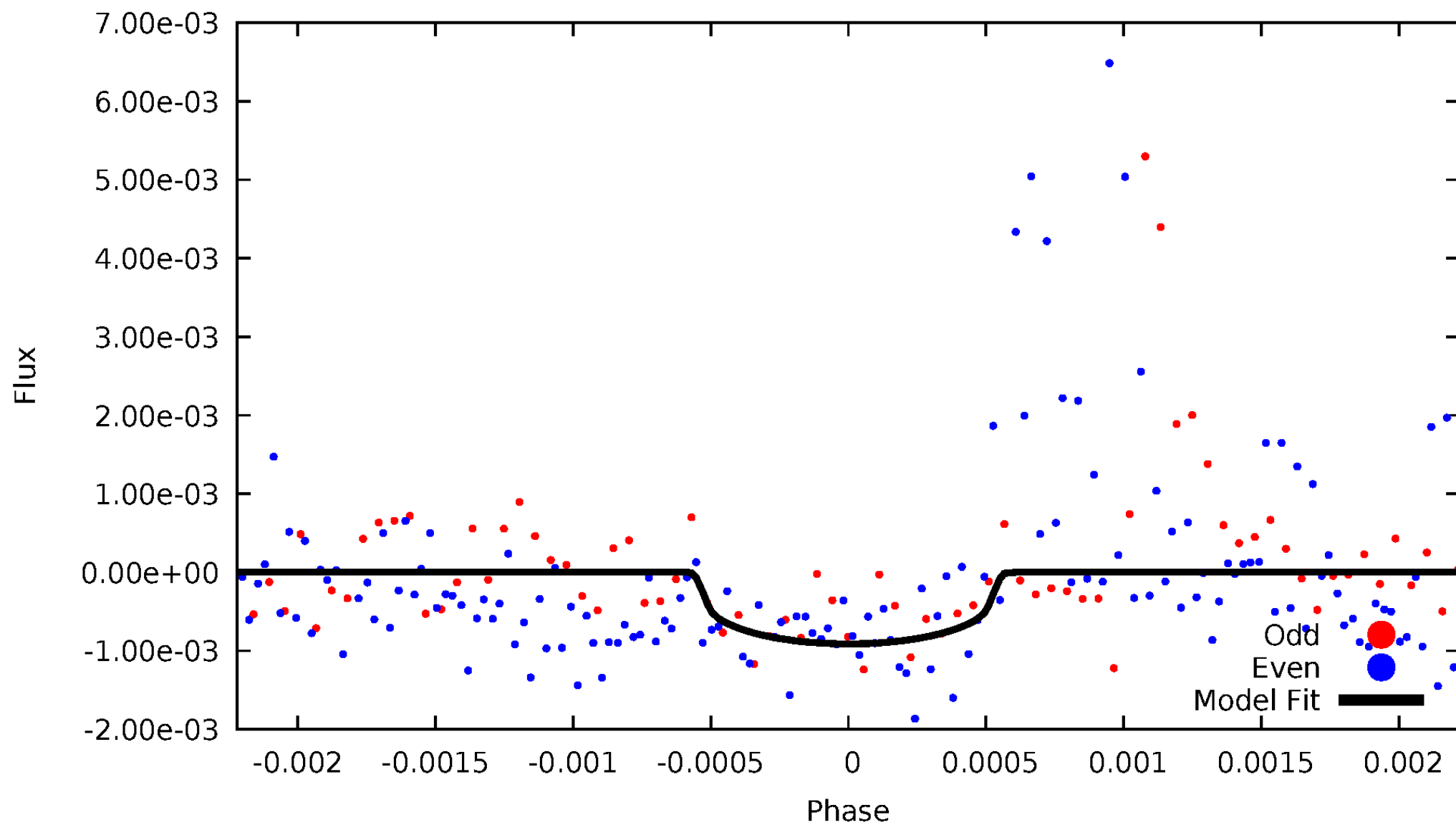


TCE 001873543-04



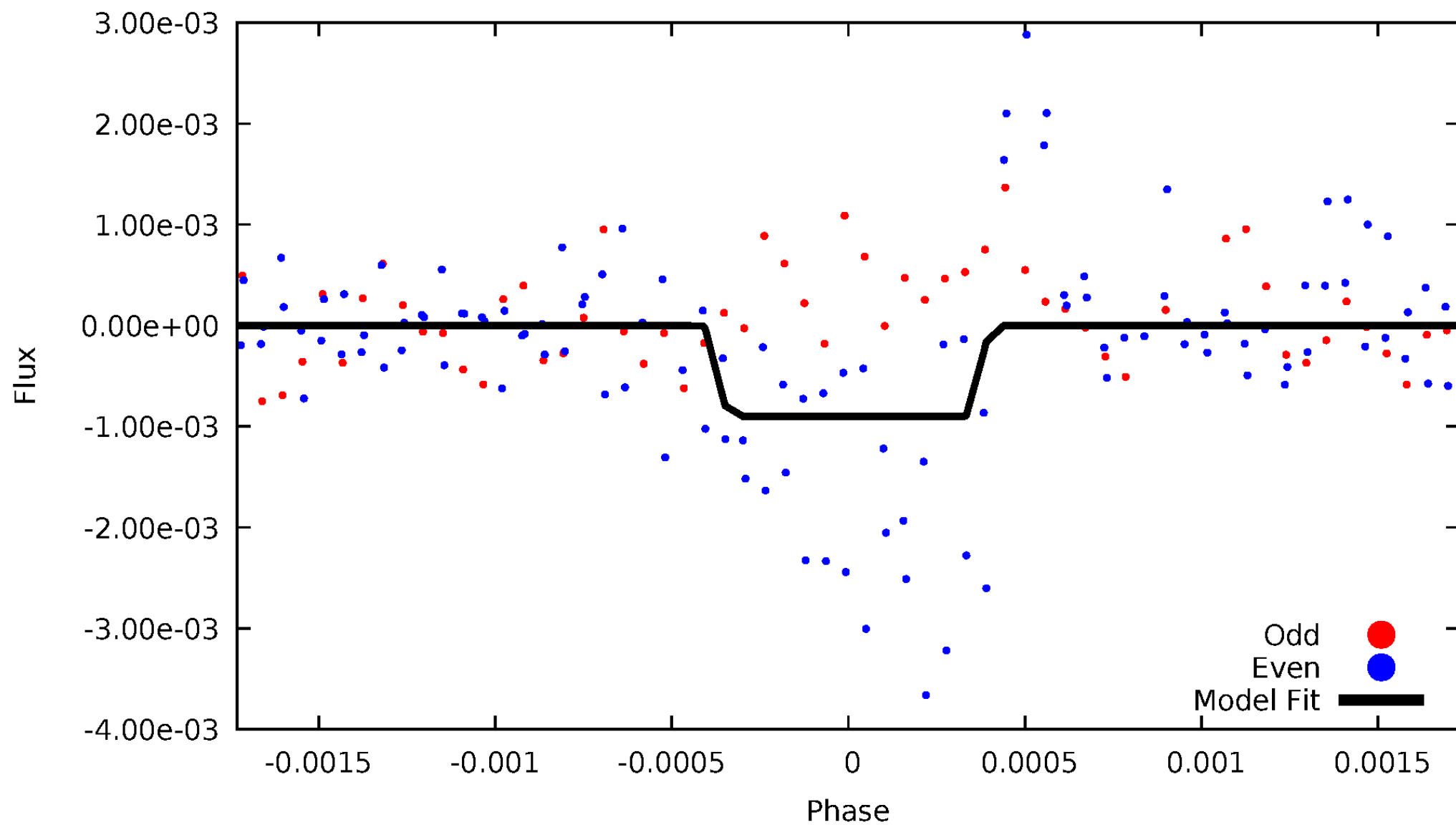
DV Odd/Even

TCE 001873543-04



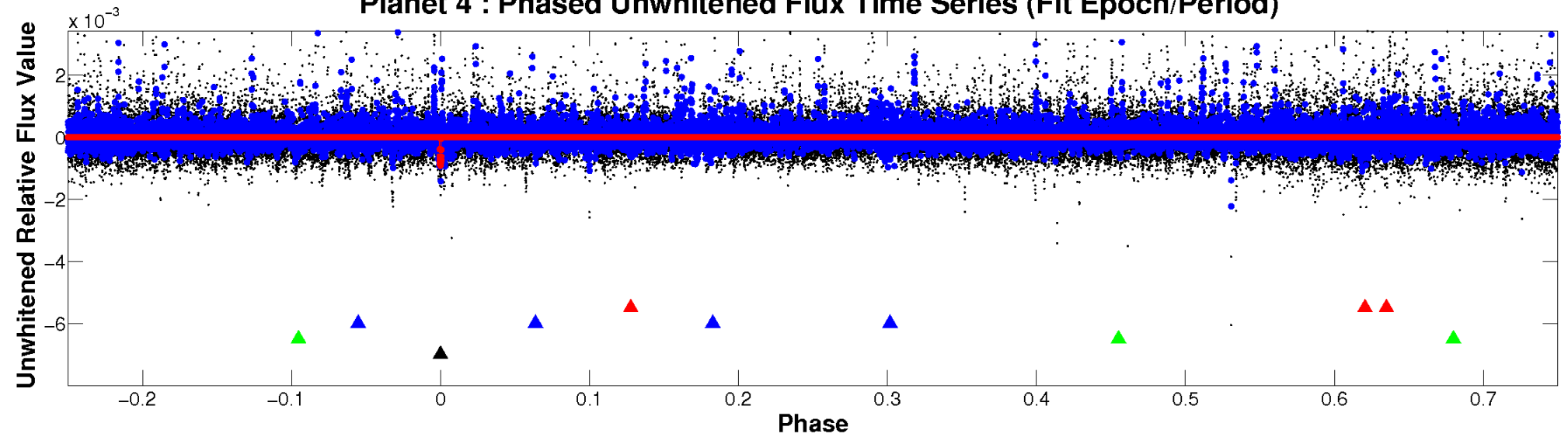
ALT Odd/Even

TCE 001873543-04

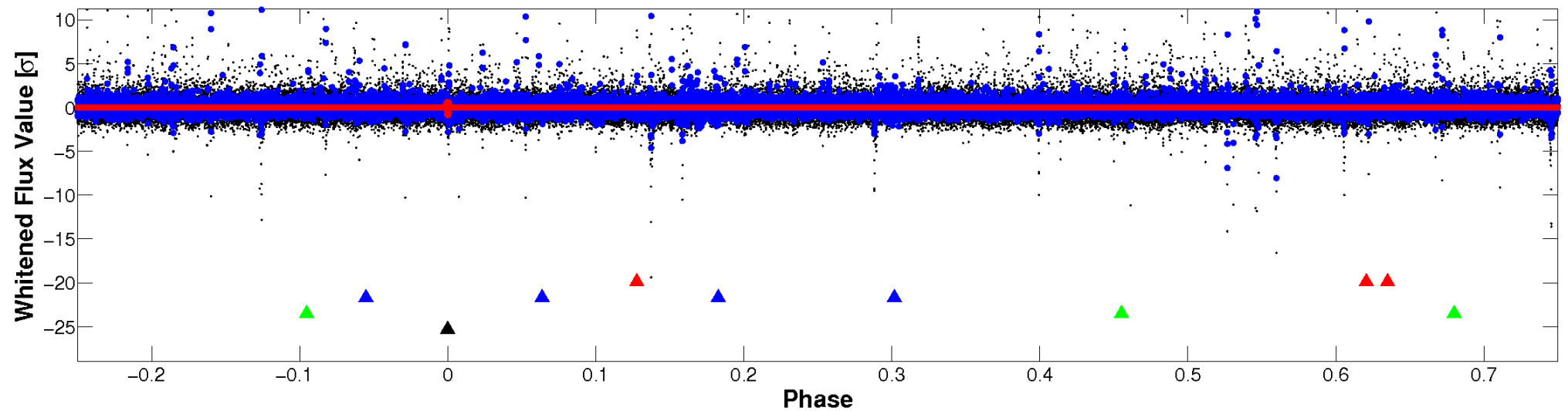


Non-Whitened Vs. Whitened Light Curve

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

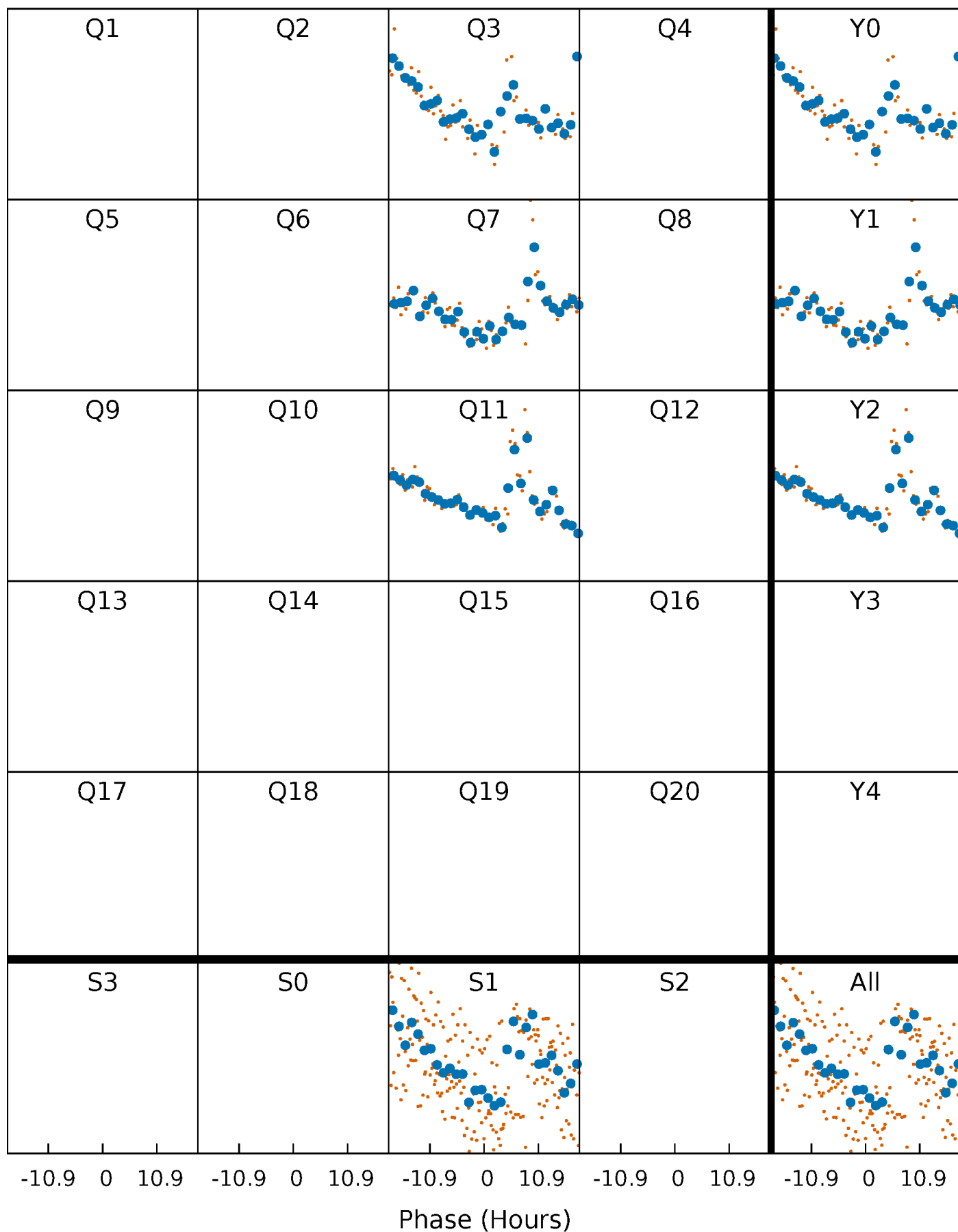


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



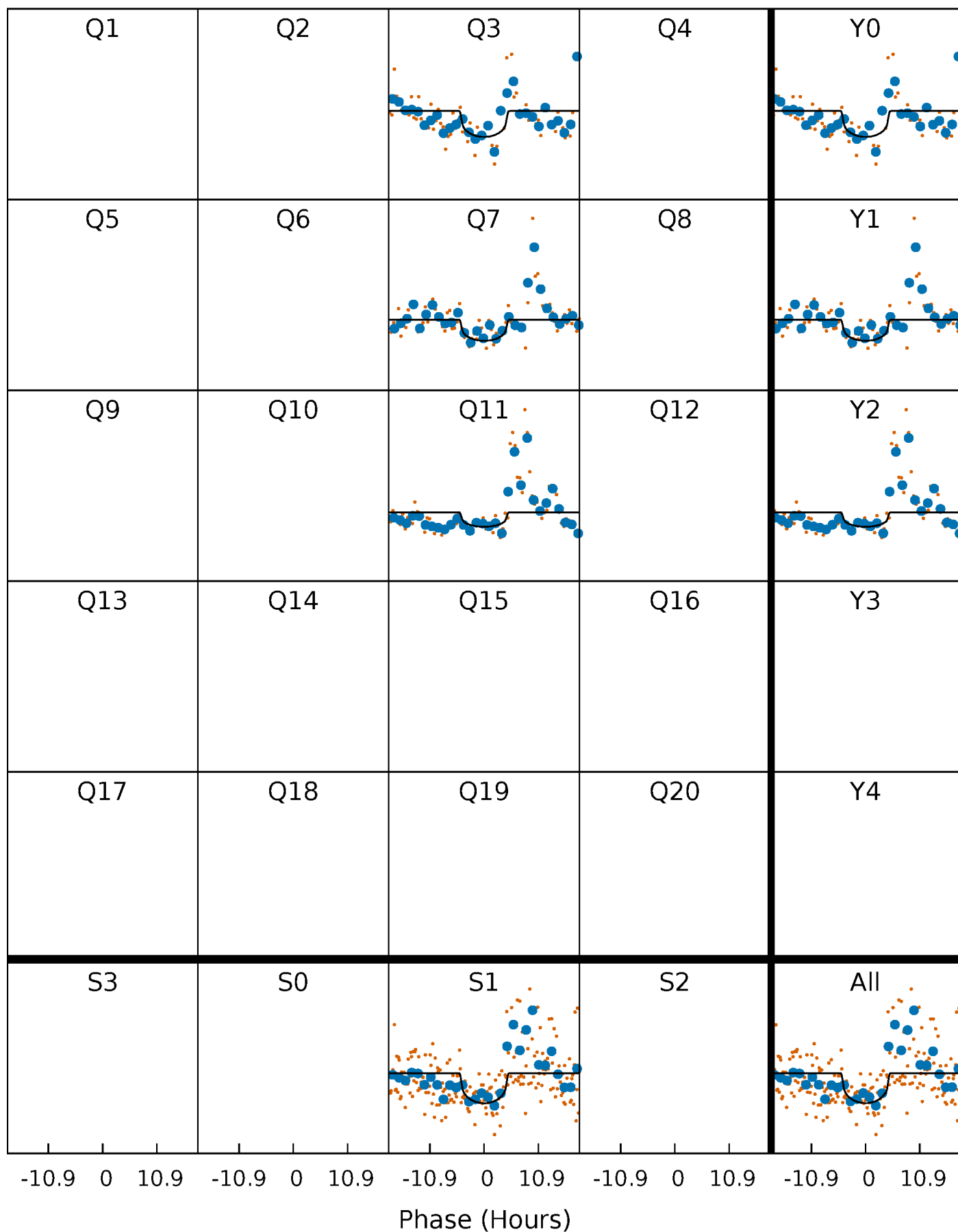
PDC Quarter-Phased Transit Curves

TCE 001873543-04 $P=359.474302$ Days $T_0=337.332376$ (BKJD)



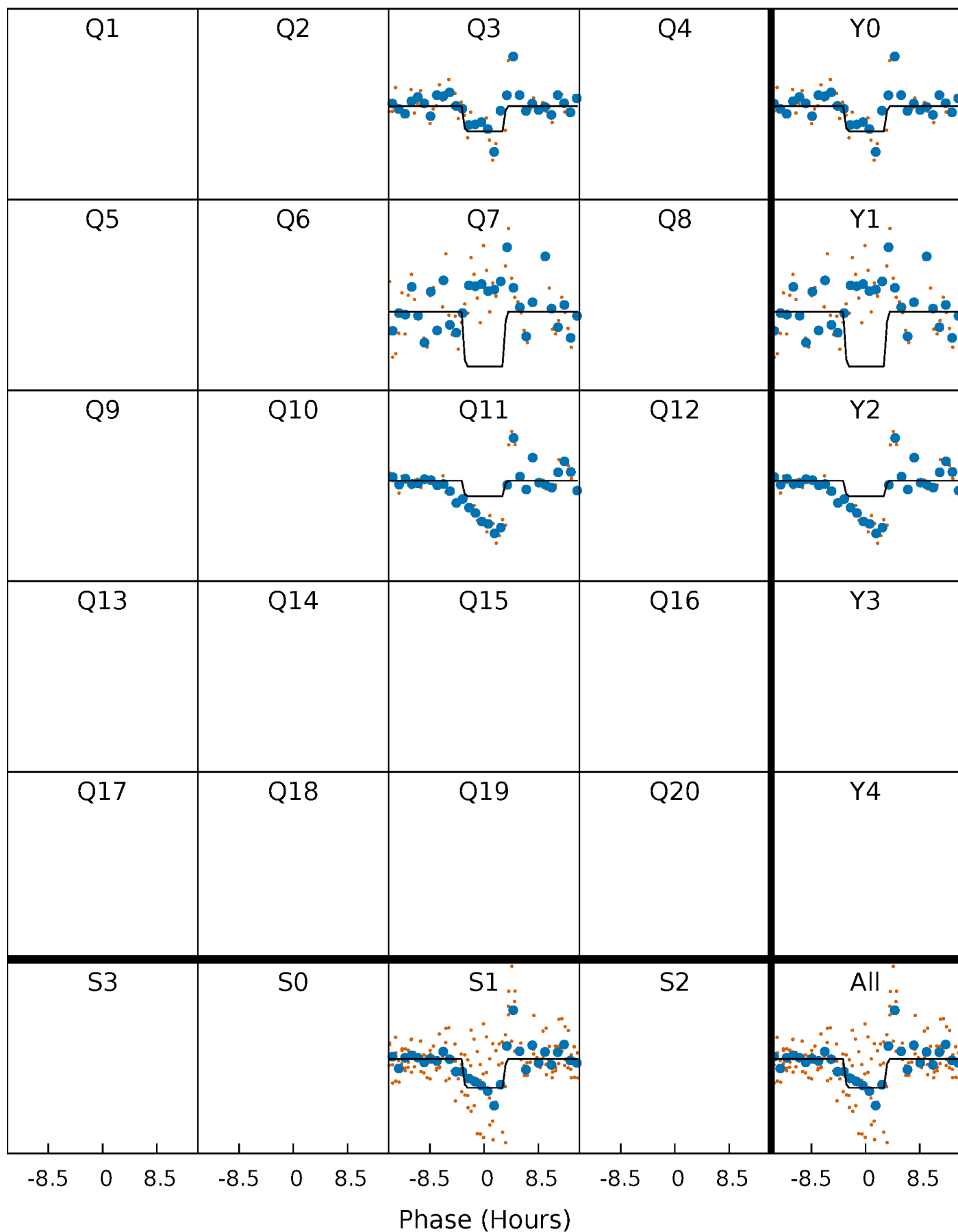
DV Quarter-Phased Transit Curves

TCE 001873543-04 $P=359.474302$ Days $T_0=337.332376$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

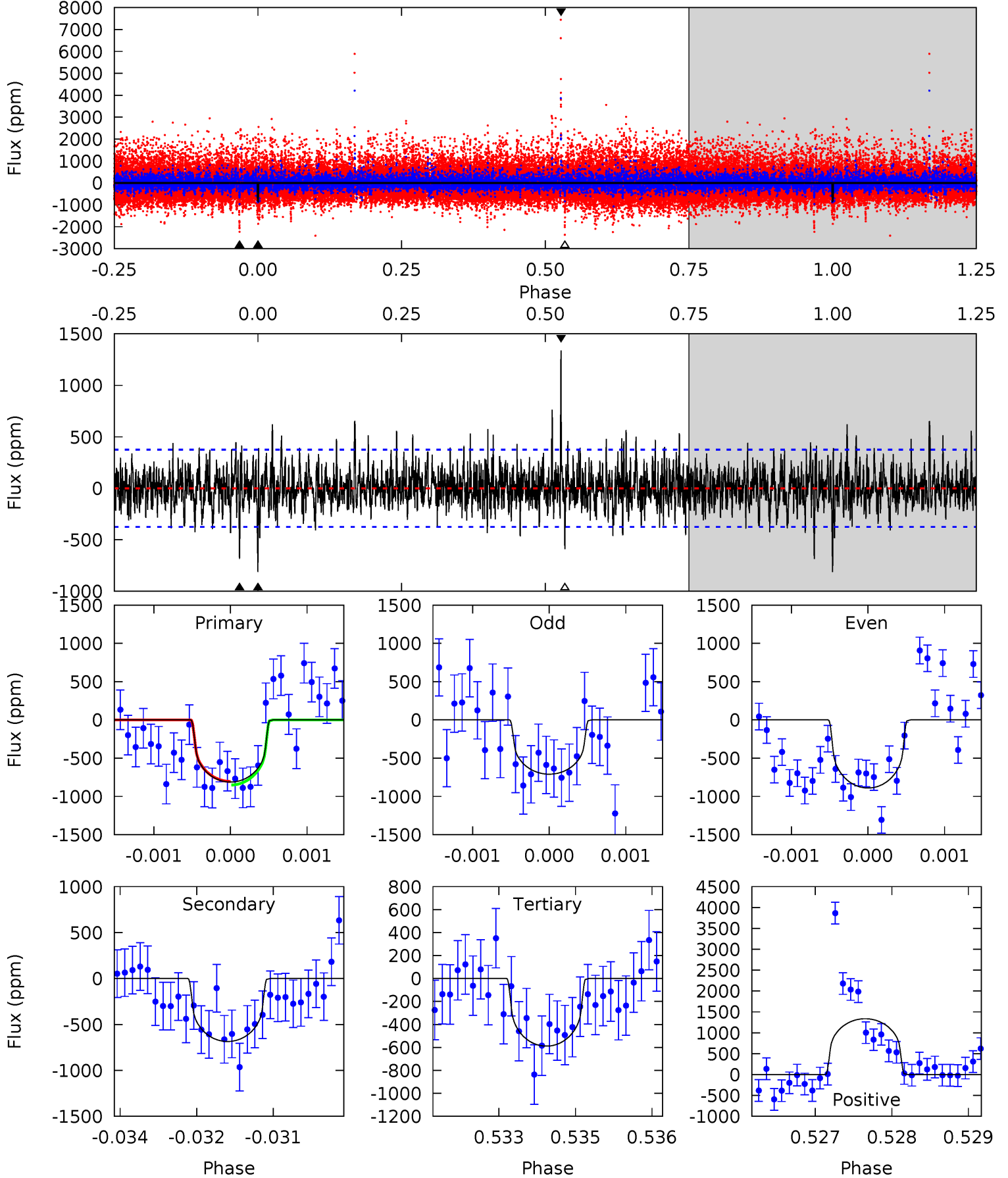
TCE 001873543-04 $P=359.487621$ Days $T_0=337.363330$ (BKJD)



DV Model-Shift Uniqueness Test

001873543-04, P = 359.474302 Days, E = 337.332376 Days

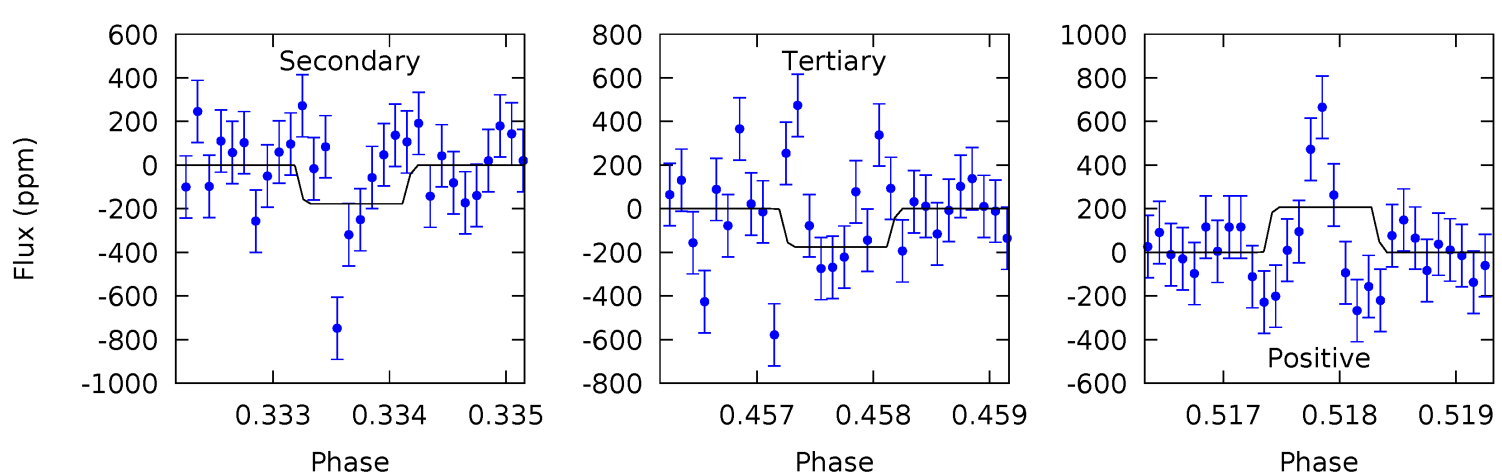
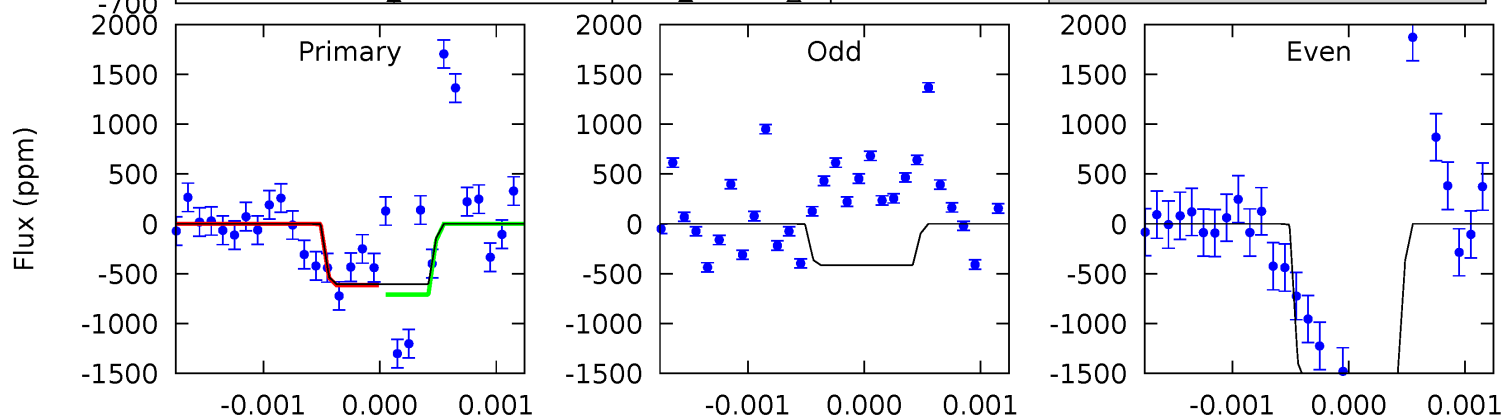
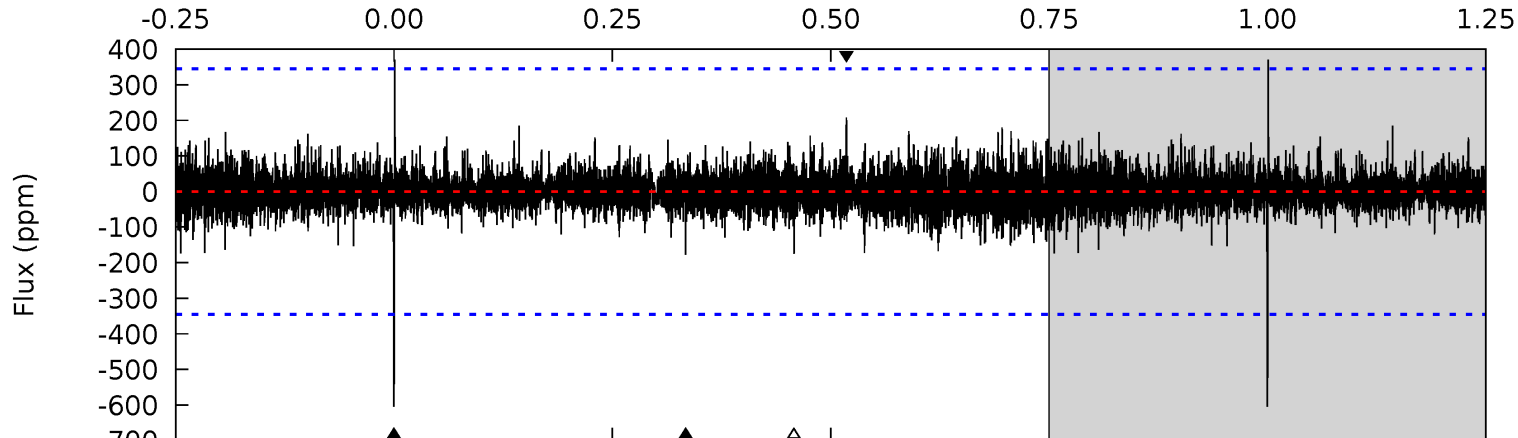
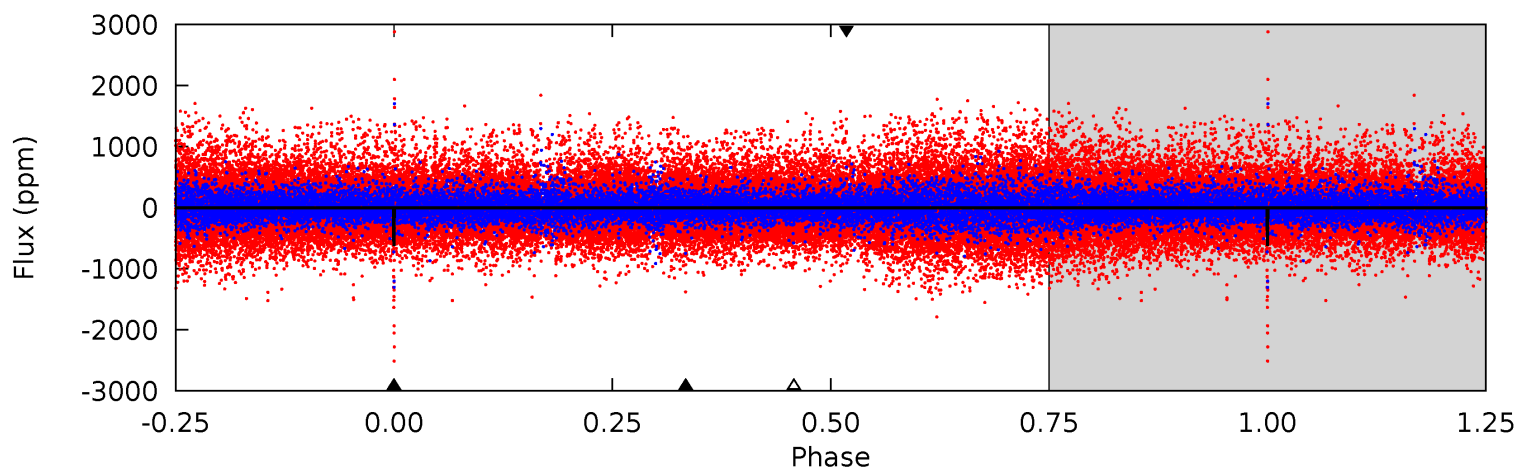
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.8	9.93	8.53	19.3	5.43	3.26	2.24	3.23	-7.59	1.40	-9.42	1.08	0.96	0.62	0.33



Alt Model-Shift Uniqueness Test

001873543-04, P = 359.487621 Days, E = 337.363330 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.63	2.82	2.78	3.30	5.49	3.35	0.66	6.84	6.33	0.04	-0.48	9.56	1.19	0.38	0.76



Stellar Parameters For KIC 001873543

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3850^{+120}_{-147}	$4.662^{+0.060}_{-0.020}$	$0.420^{+0.050}_{-0.300}$	$0.600^{+0.032}_{-0.069}$	$0.603^{+0.040}_{-0.060}$	$3.927^{+1.148}_{-0.343}$
	+3%/-4%	+1%/-0%	+12%/-71%	+5%/-12%	+7%/-10%	+29%/-9%
Source	KIC0	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 001873543-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-686 ± 69	$2.00^{+1.58}_{-1.23}$	199^{+7}_{-8}	3641^{+1570}_{-611}	$68000^{+385960}_{-46727}$
Alt.	-177 ± 63	$2.17^{+1.57}_{-1.39}$	199^{+7}_{-8}	2881^{+1002}_{-413}	13932^{+85514}_{-9547}

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

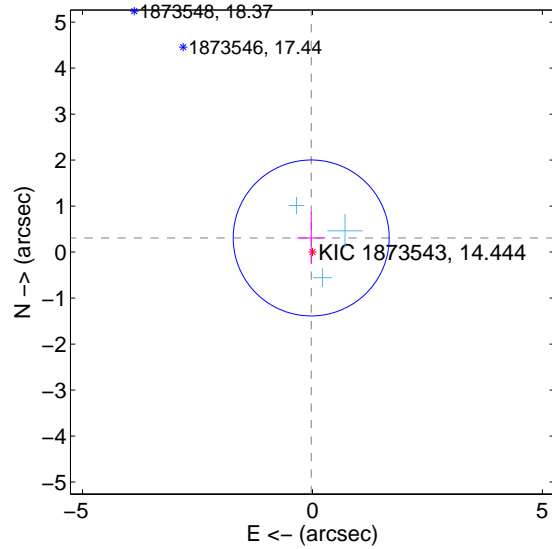
Supplemental centroid analysis for 001873543-04. Kepler magnitude: 14.44. Transit SNR 6.12

There are 3 quarters with good PRF difference image offsets

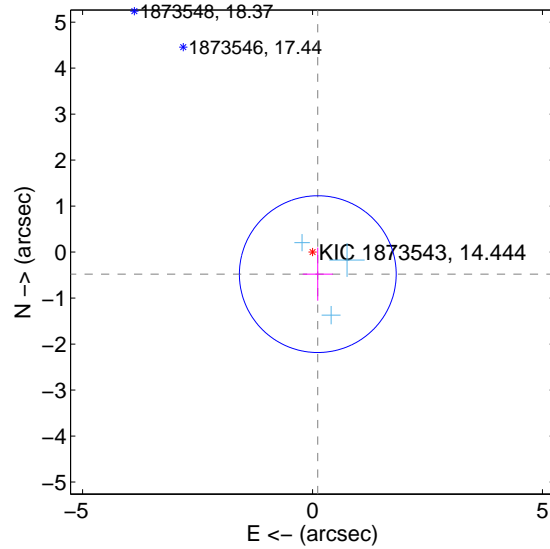
The direct PRF centroid is offset from the target star catalog position by about 0.84 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.308 ± 0.565	0.55	0.027 ± 0.305	0.307 ± 0.567
PRF-fit source offset from KIC position	0.493 ± 0.568	0.87	-0.114 ± 0.328	-0.479 ± 0.579
photometric centroid source offset	1.34 ± 1.02	1.32	1.17 ± 1.00	-0.65 ± 1.08

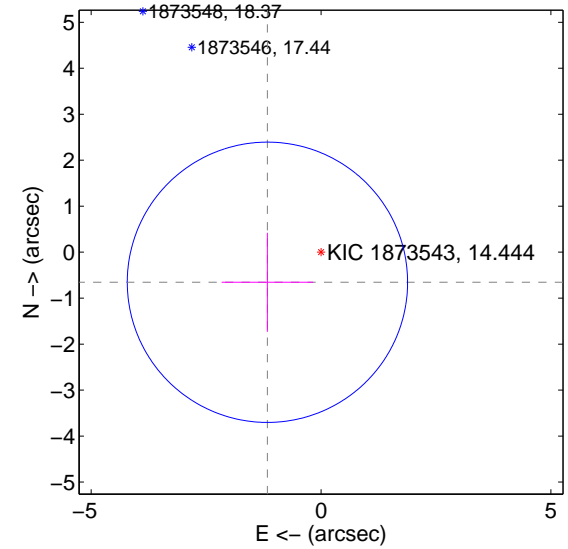
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

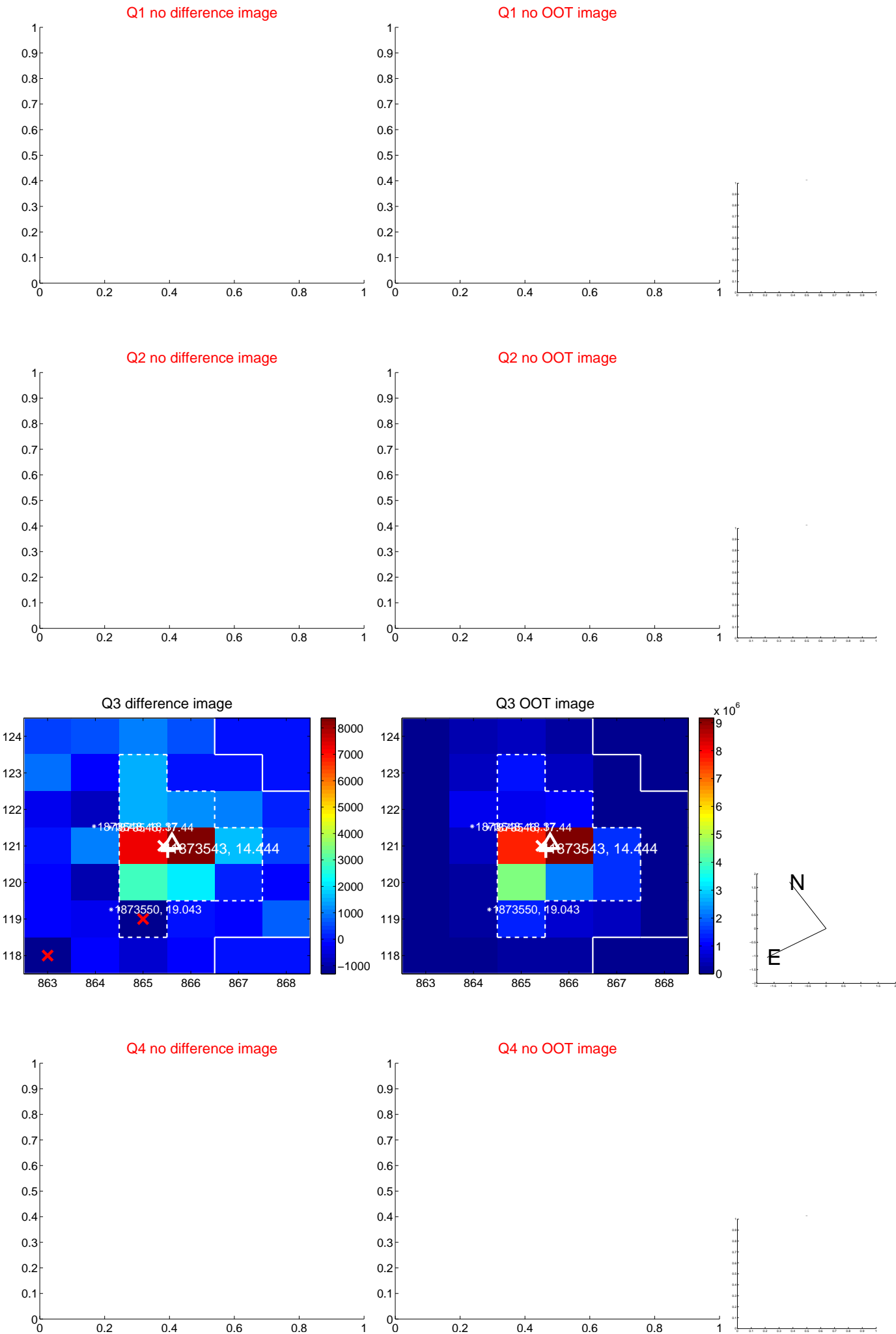


offset from photometric centroids

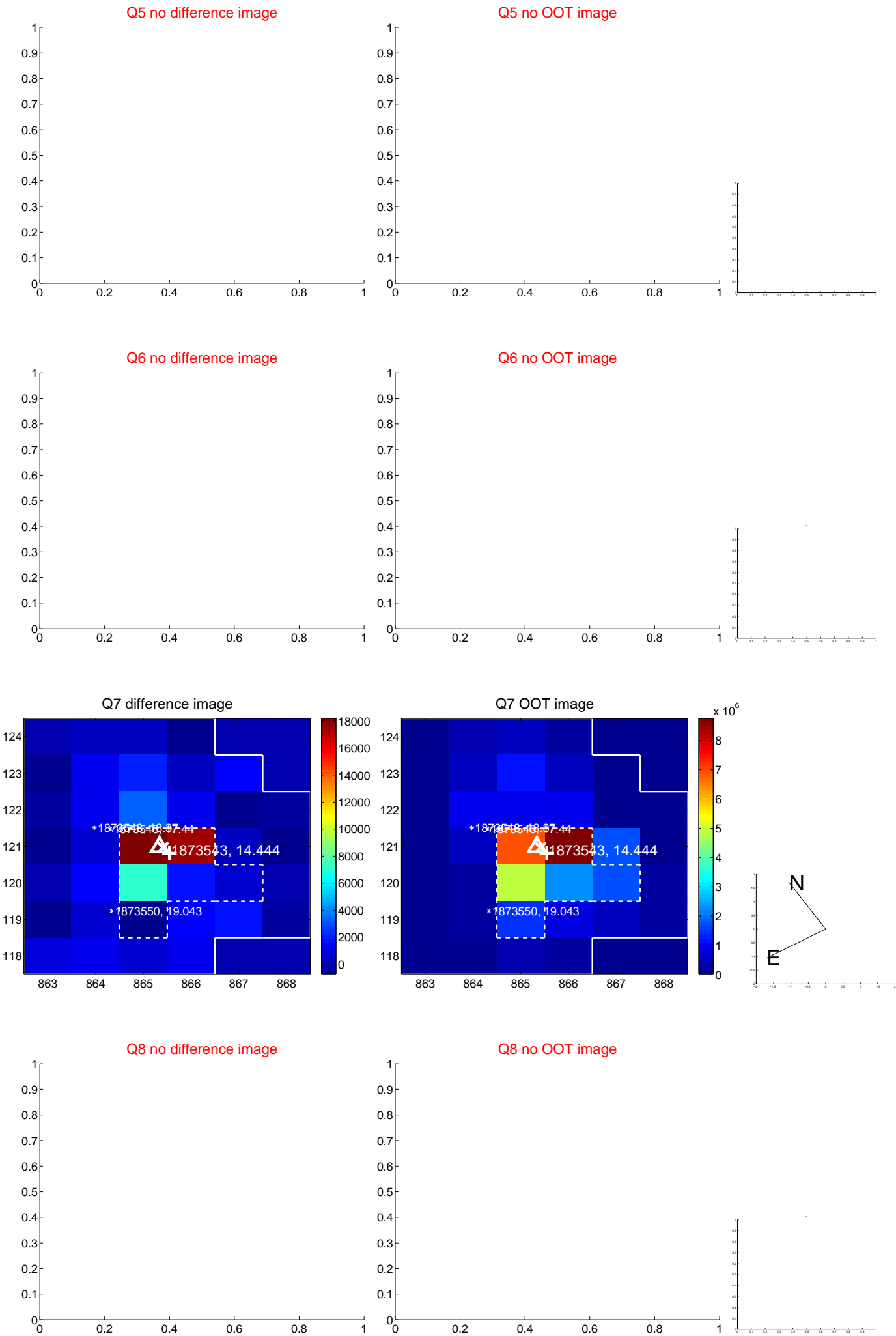


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

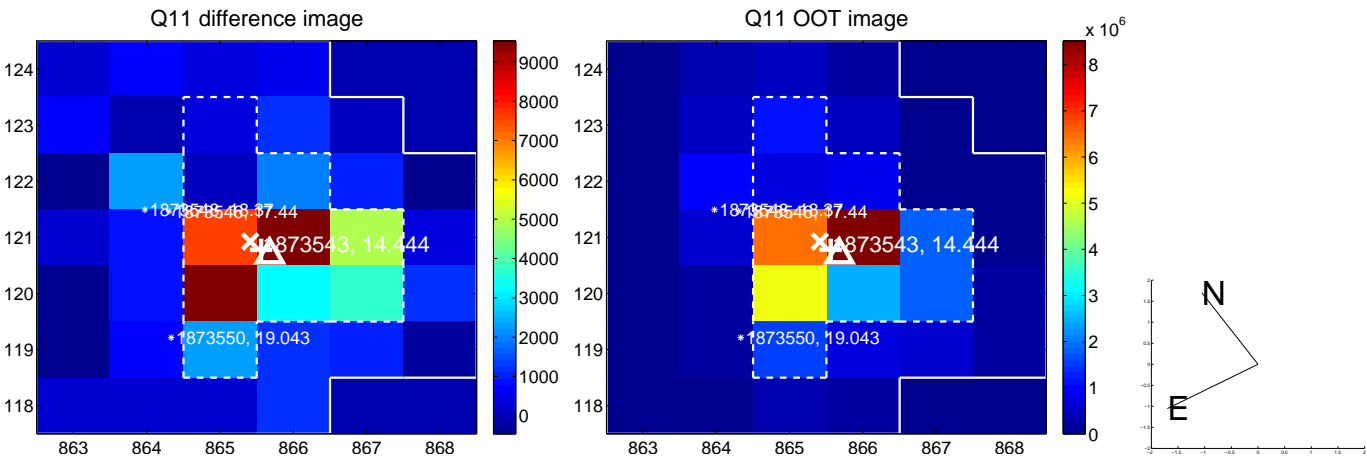
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



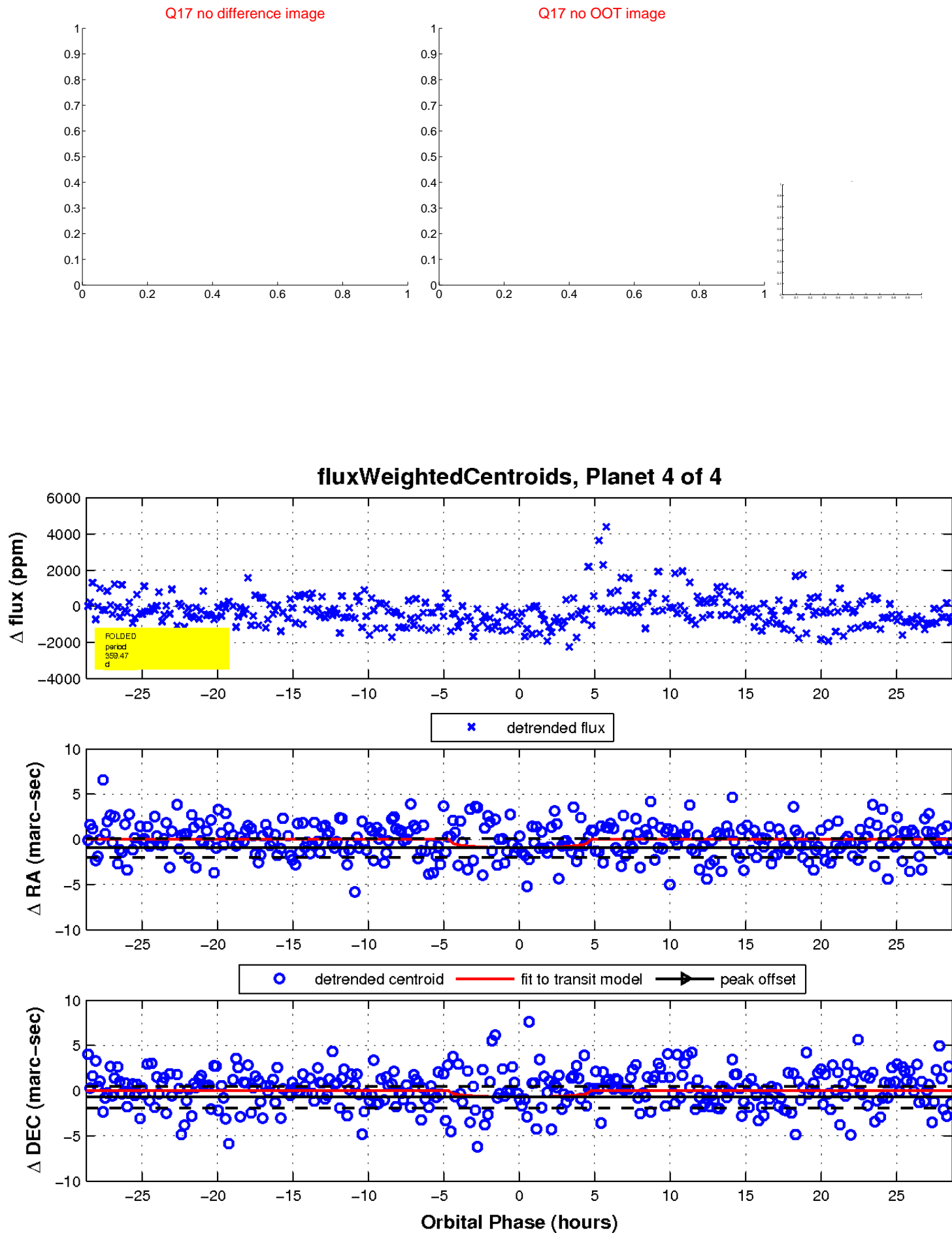
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



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



UKIRT Image

Declination

