

KIC 004649344

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})
004649344-01	OBS	No	283.519844	279.305080	726.4	6.048	25.4	3.9	0.72	5174	2.01	0.61
004649344-02	OBS	No	474.232561	410.482598	2045.7	8.813	18.9	10.6	0.72	5174	3.36	0.31
004649344-04	OBS	No	510.000515	147.971012	1834.8	8.694	17.8	8.8	0.72	5174	3.04	0.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004649344-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004649344-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004649344-04	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

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

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

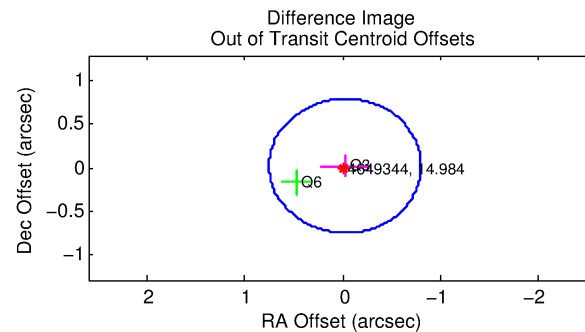
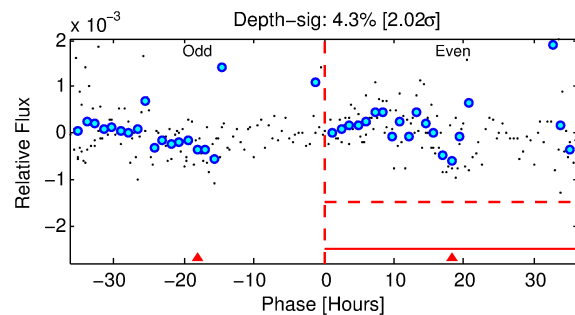
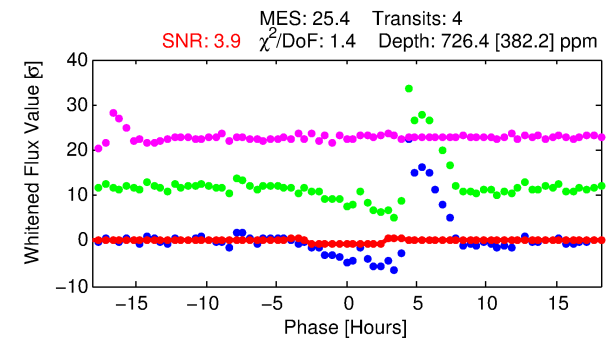
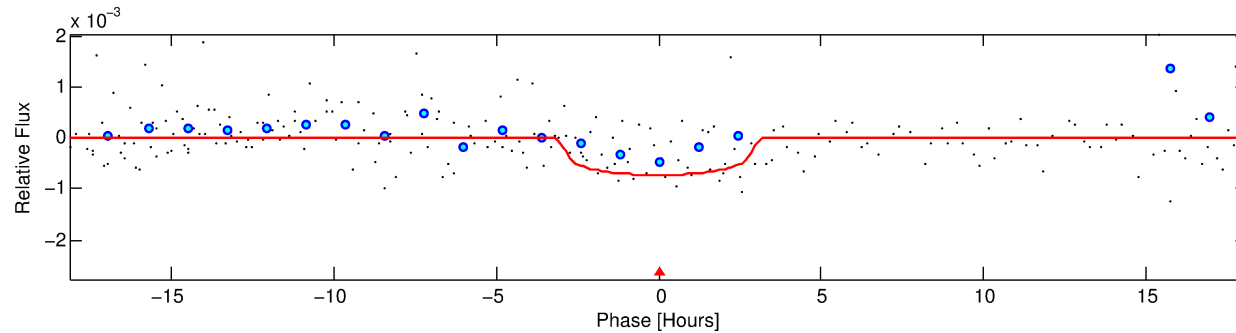
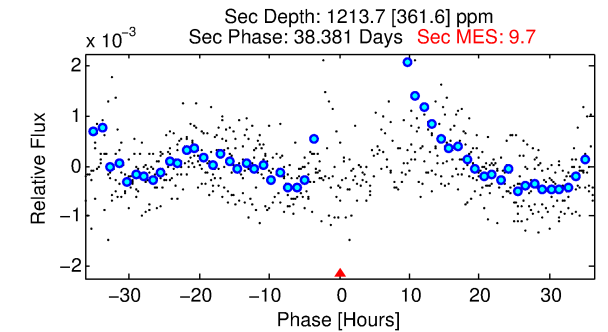
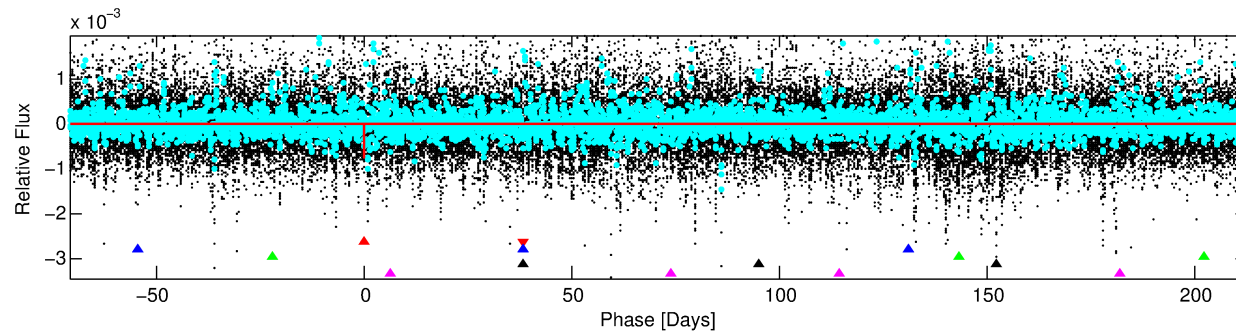
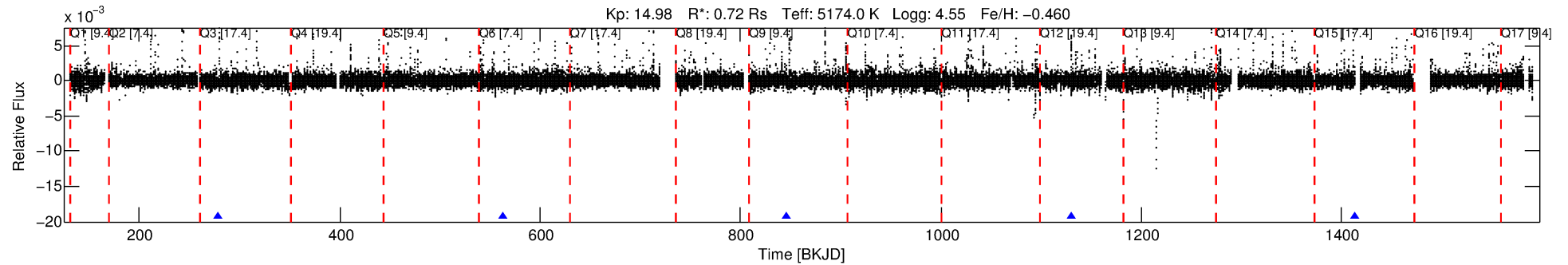
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004649344-01

No Significant Match Found

DV One-Page Summary

KIC: 4649344 Candidate: 1 of 5 Period: 283.520 d



DV Fit Results:

Period = 283.51984 [0.01362] d
Epoch = 279.3051 [0.0264] BKJD
Rp/R* = 0.0254 [0.0837]
a/R* = 305.37 [3888.09]
b = 0.57 [15.25]
Seff = 0.61 [0.12]
Teq = 225 [11] K
Rp = 2.01 [6.63] Re
a = 0.7458 [0.0811] AU
Ag = 91929.07 [606608.20] [0.15 σ]
Teffp = 6059 [9994] K [0.58 σ]

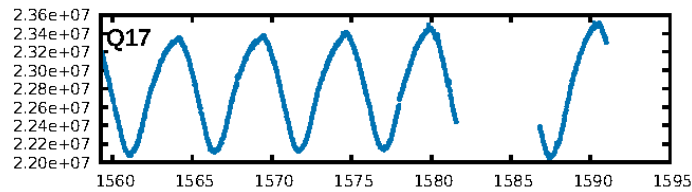
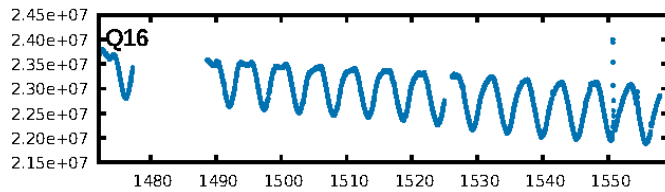
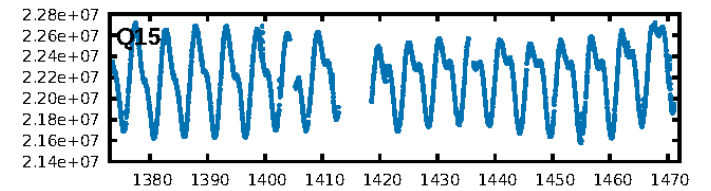
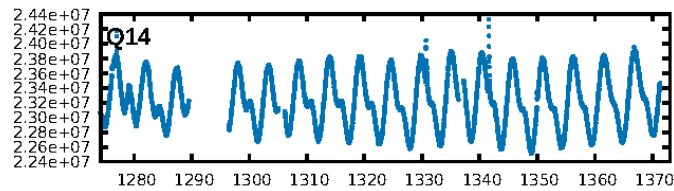
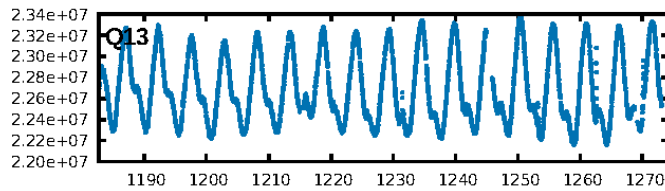
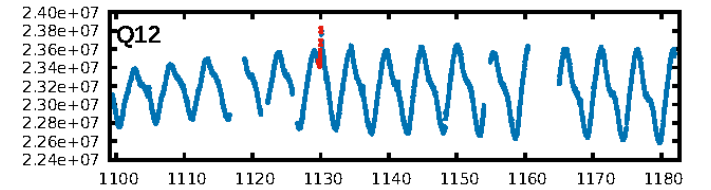
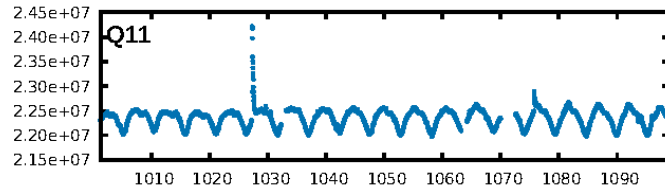
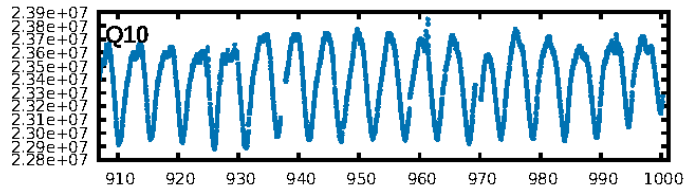
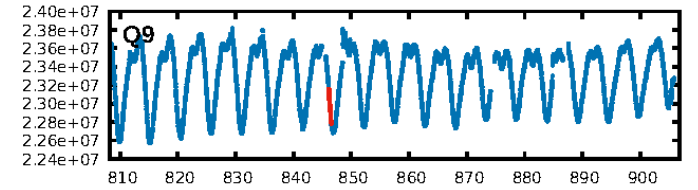
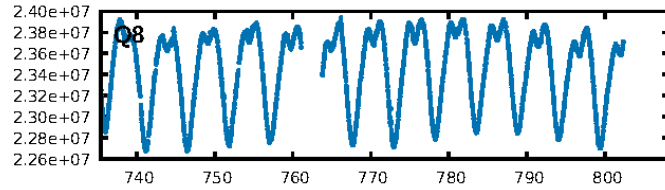
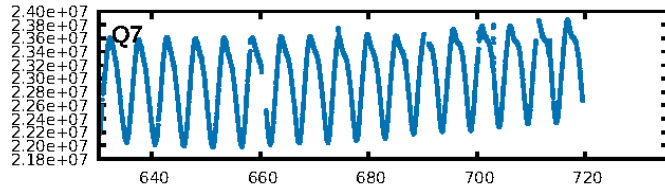
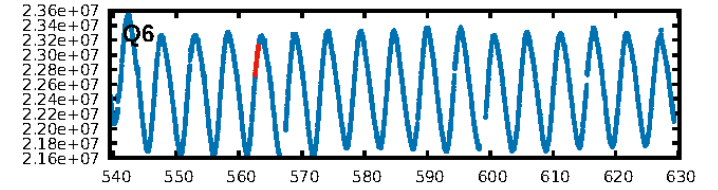
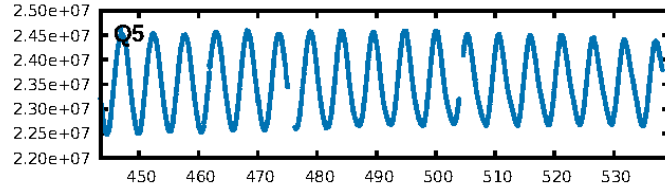
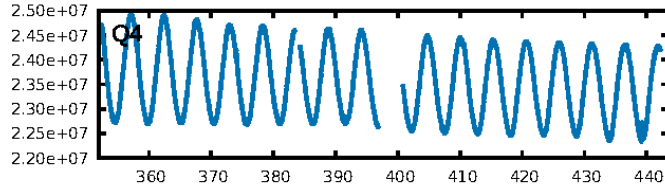
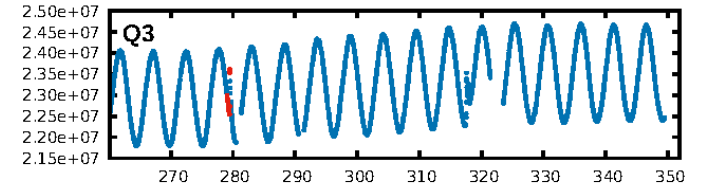
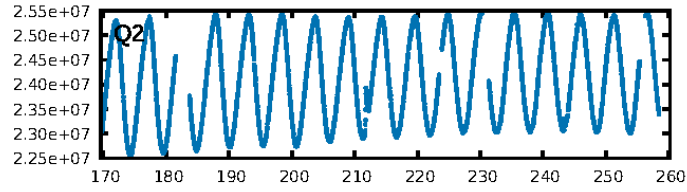
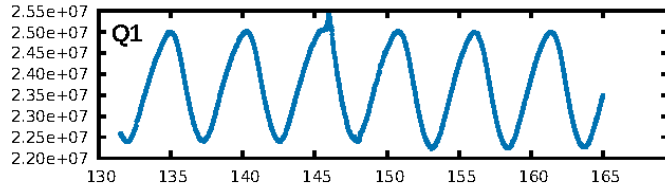
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [383.86 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 37.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.905
Centroid-sig: 58.6%
Centroid-so: 0.604 arcsec [0.42 σ]
OotOffset-rm: 0.033 arcsec [0.13 σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-rm: 0.139 arcsec [1.45 σ]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

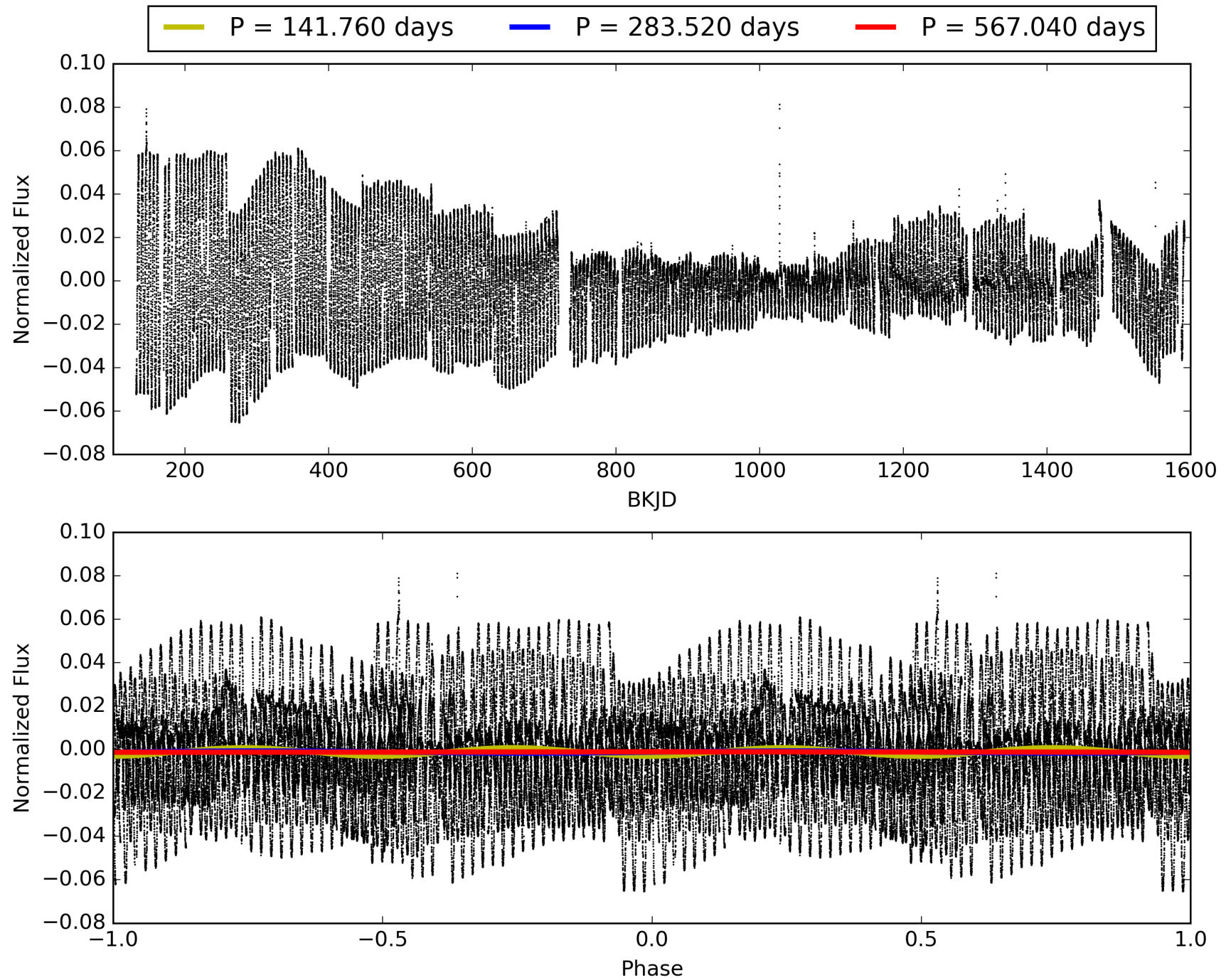
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:05:28 Z

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

TCE 004649344-01, PDC Light Curves

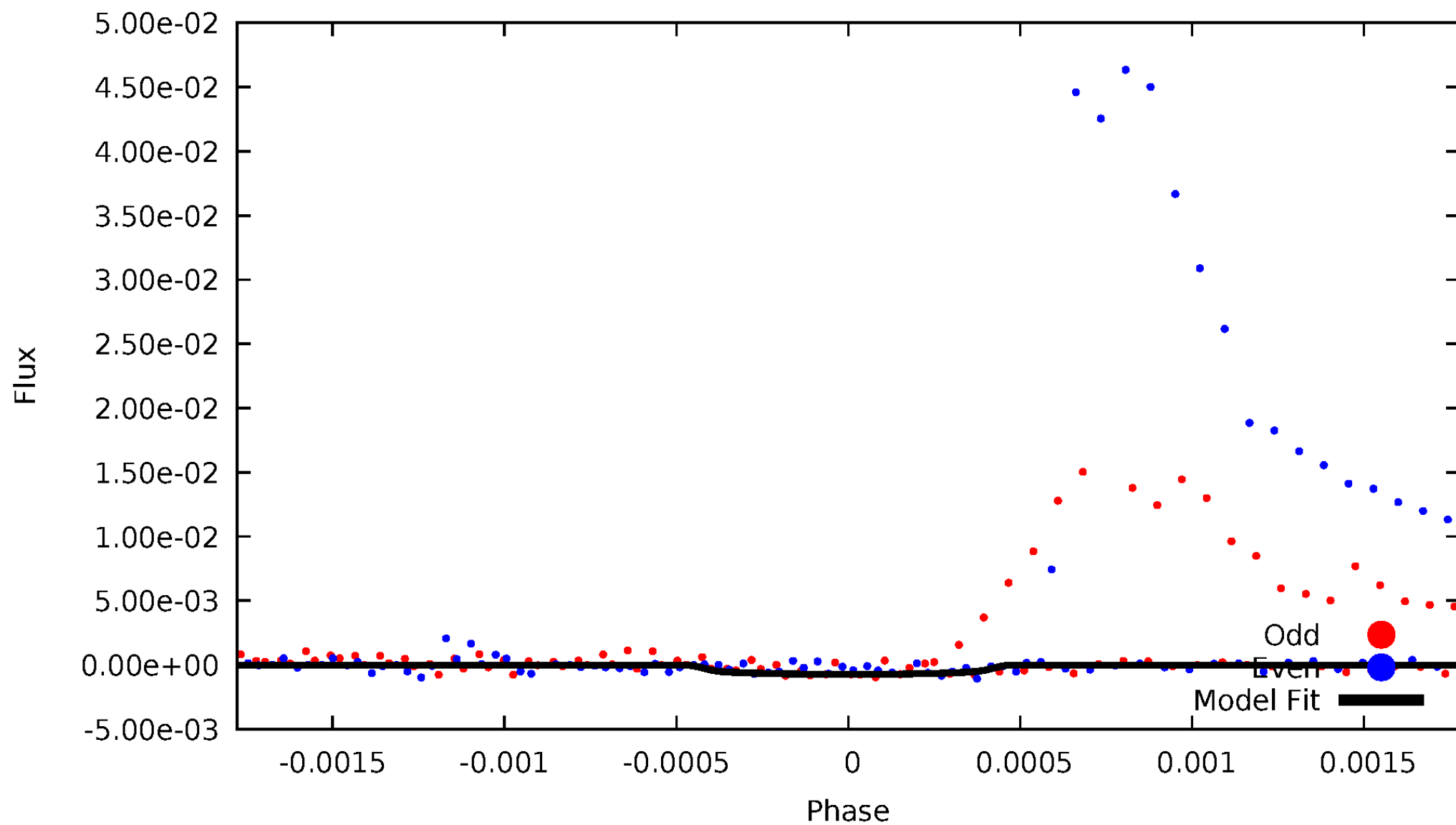


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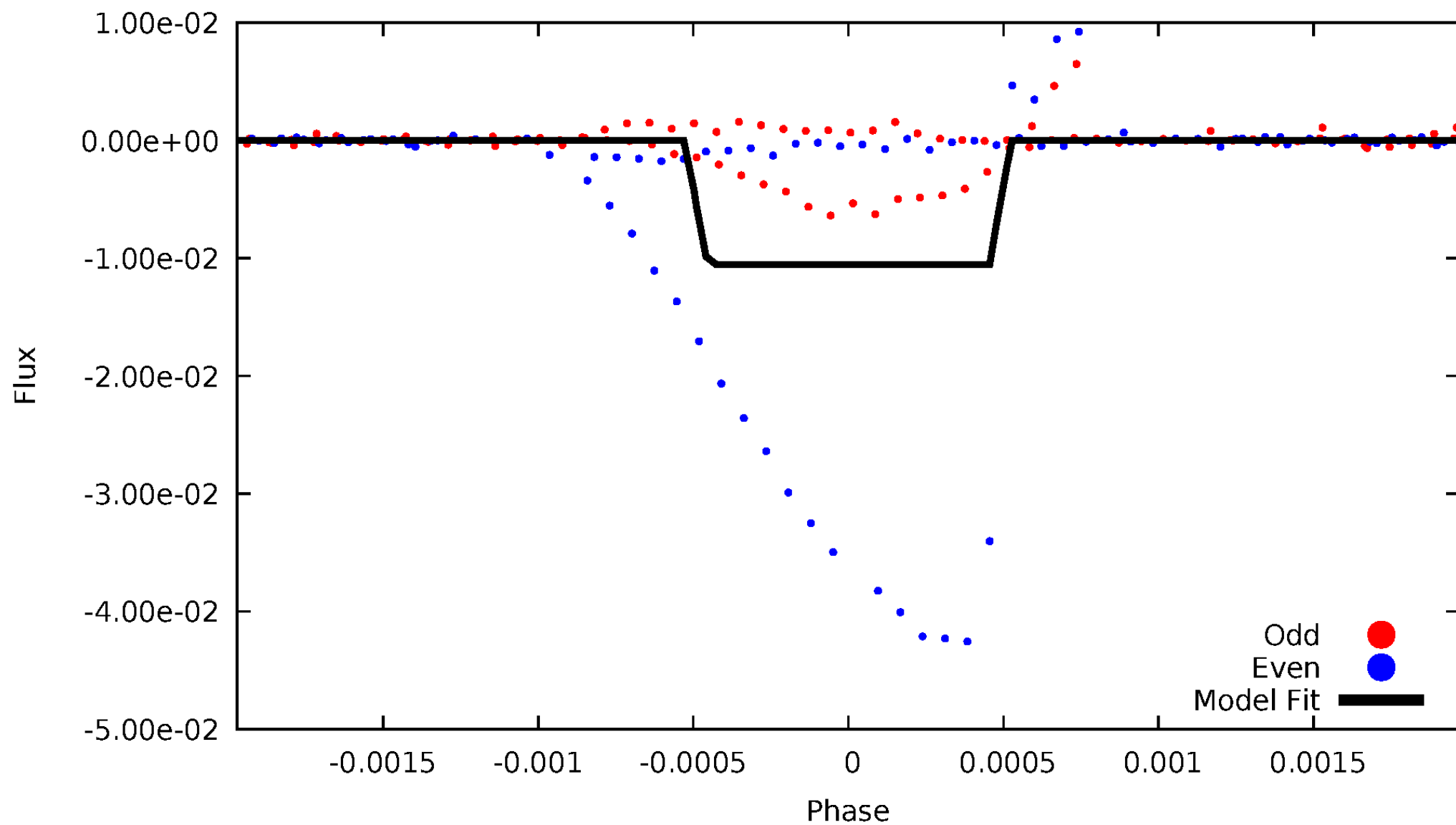
DV Odd/Even

TCE 004649344-01



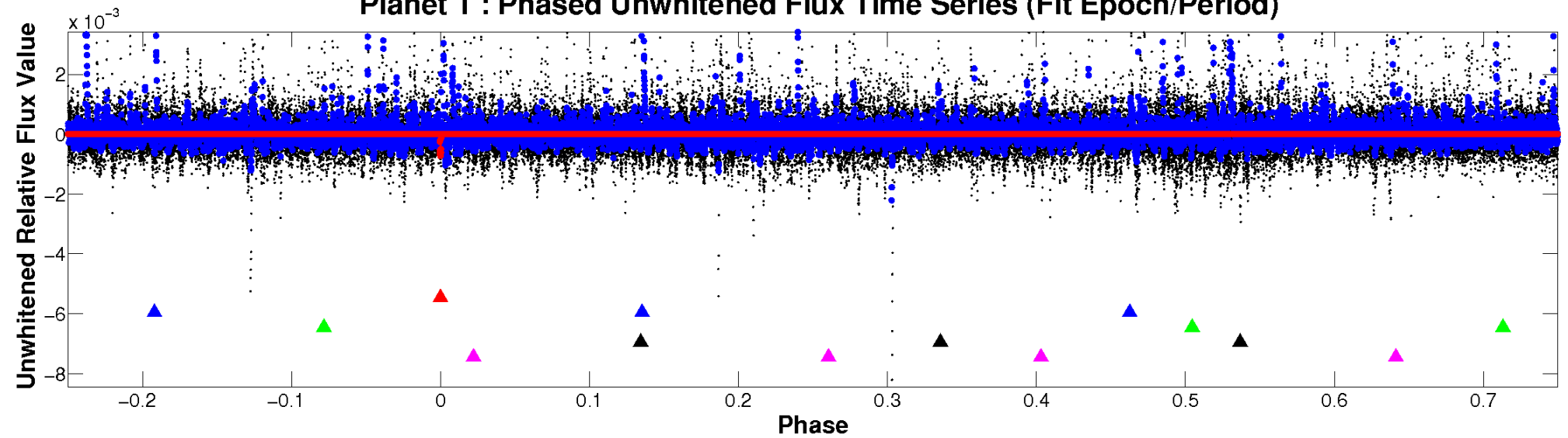
ALT Odd/Even

TCE 004649344-01

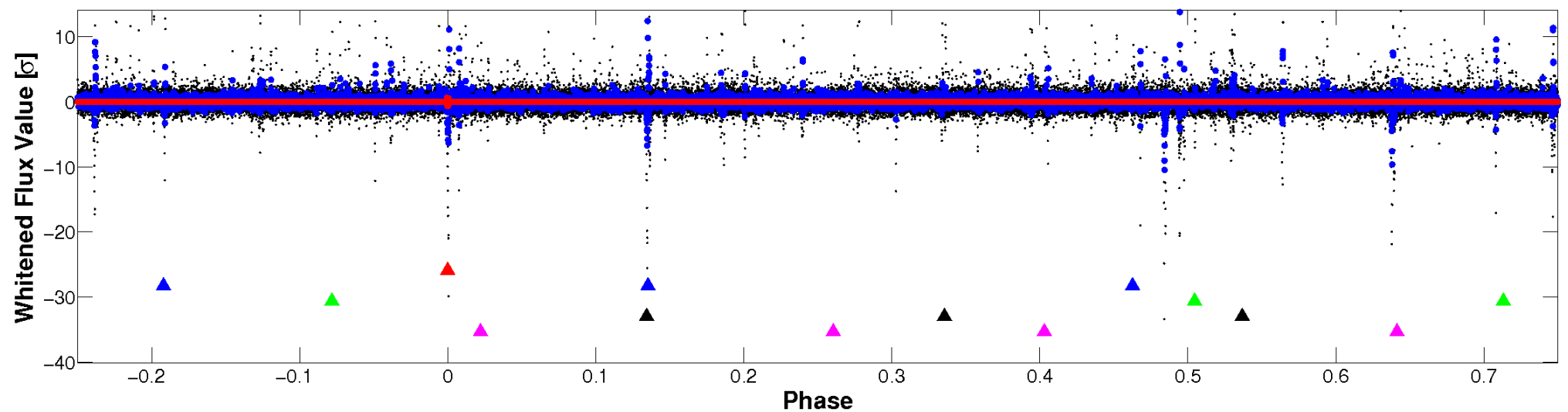


Non-Whitened Vs. Whitened Light Curve

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

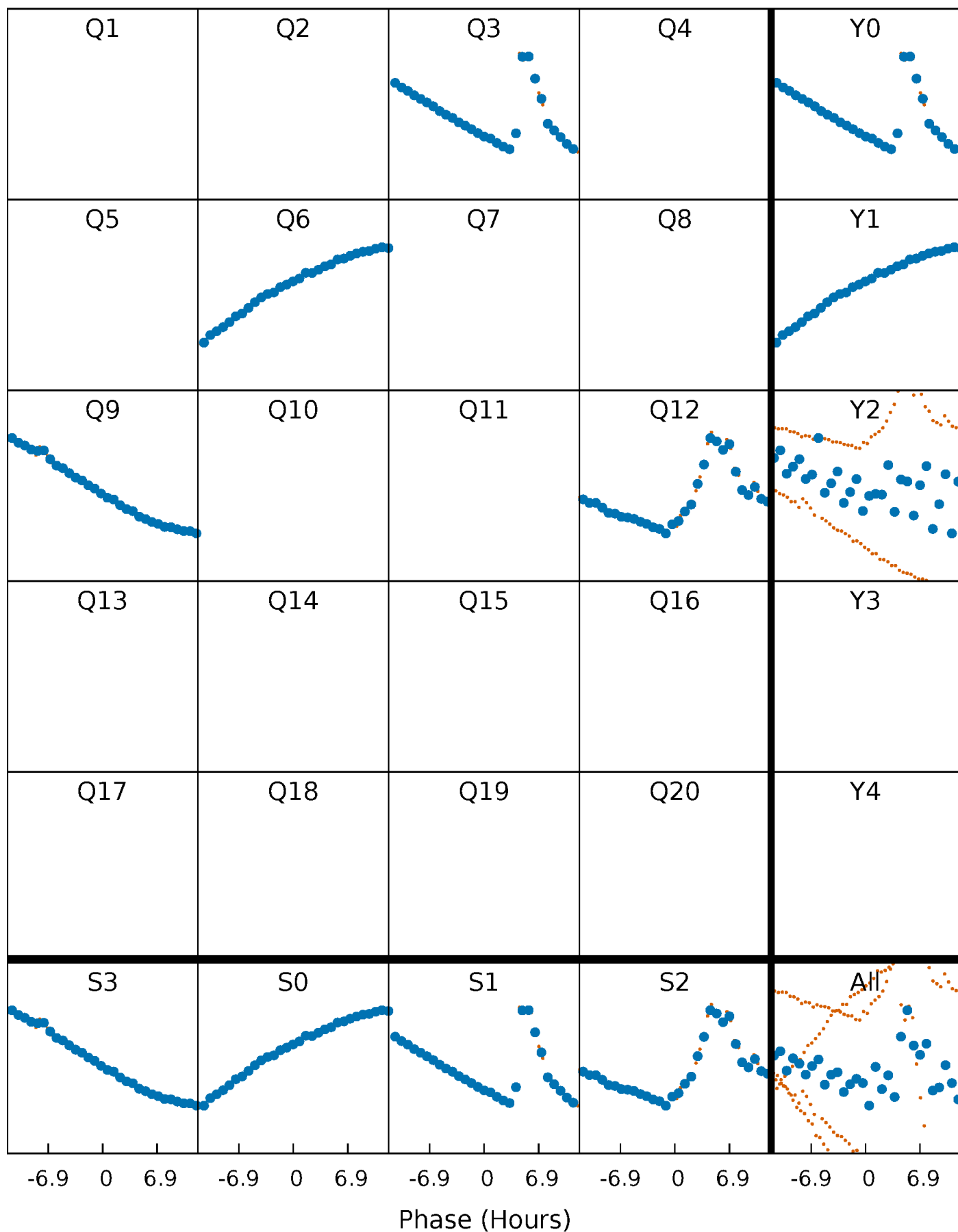


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



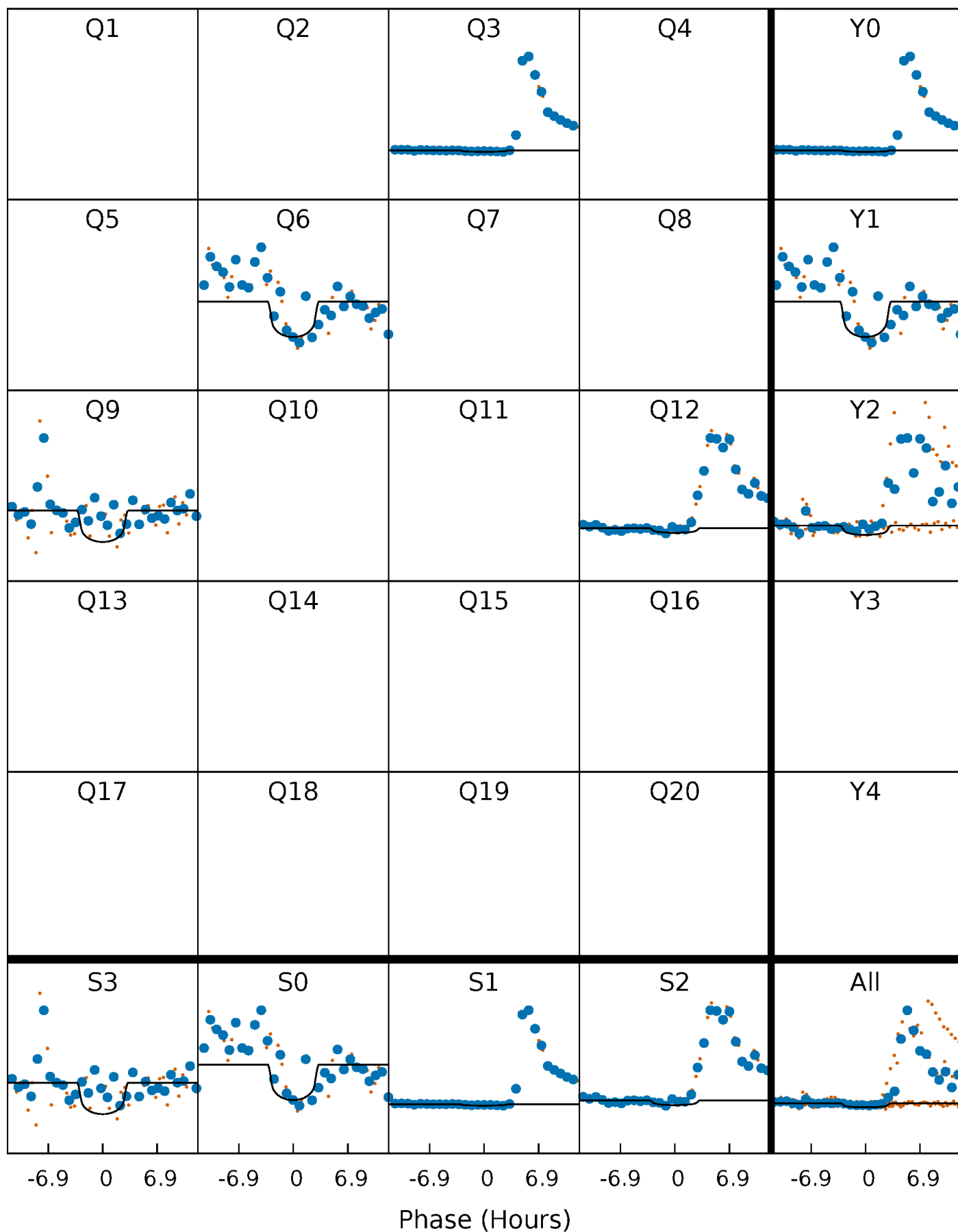
PDC Quarter-Phased Transit Curves

TCE 004649344-01 P=283.519844 Days $T_0=279.305080$ (BKJD)



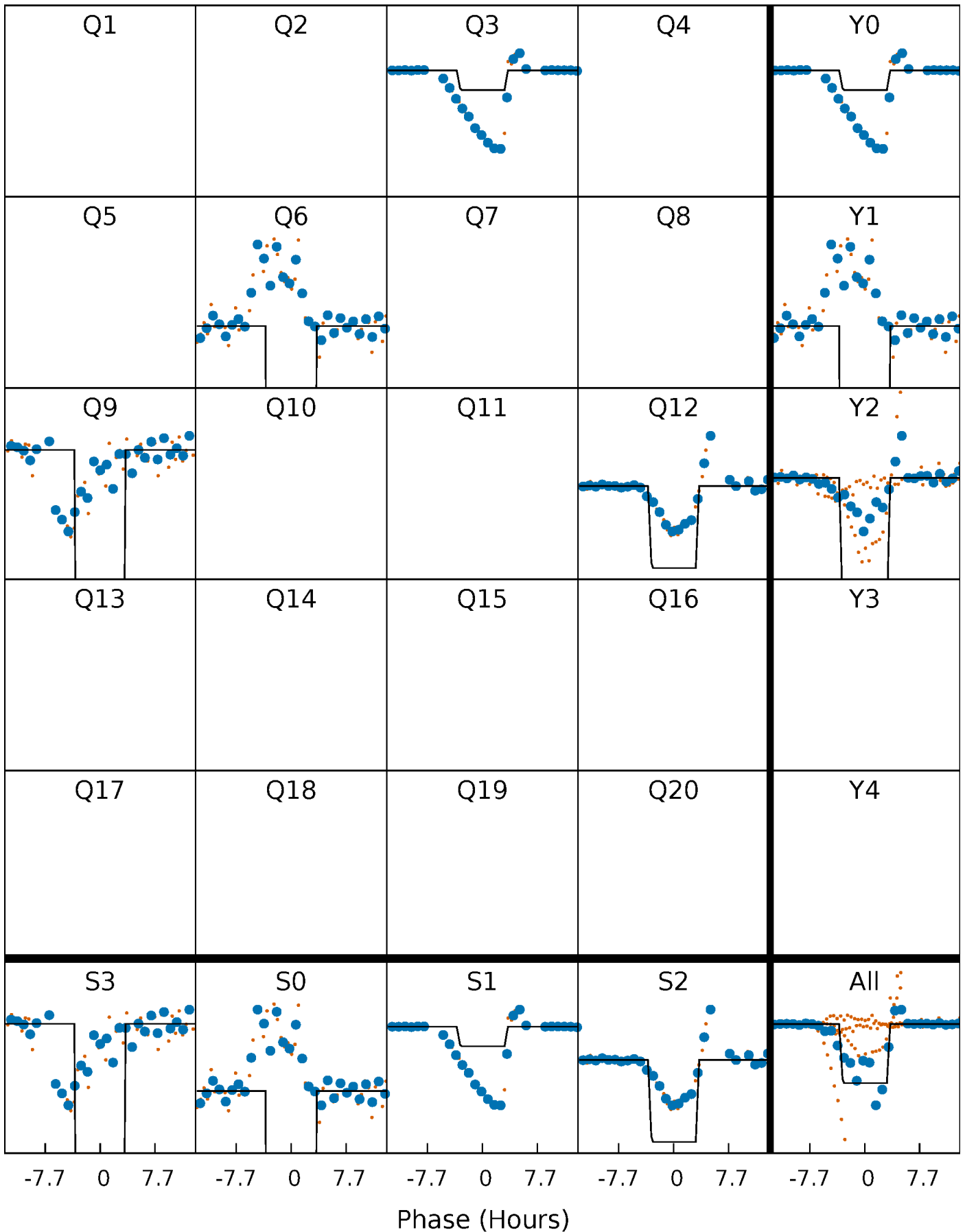
DV Quarter-Phased Transit Curves

TCE 004649344-01 P=283.519844 Days $T_0=279.305080$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

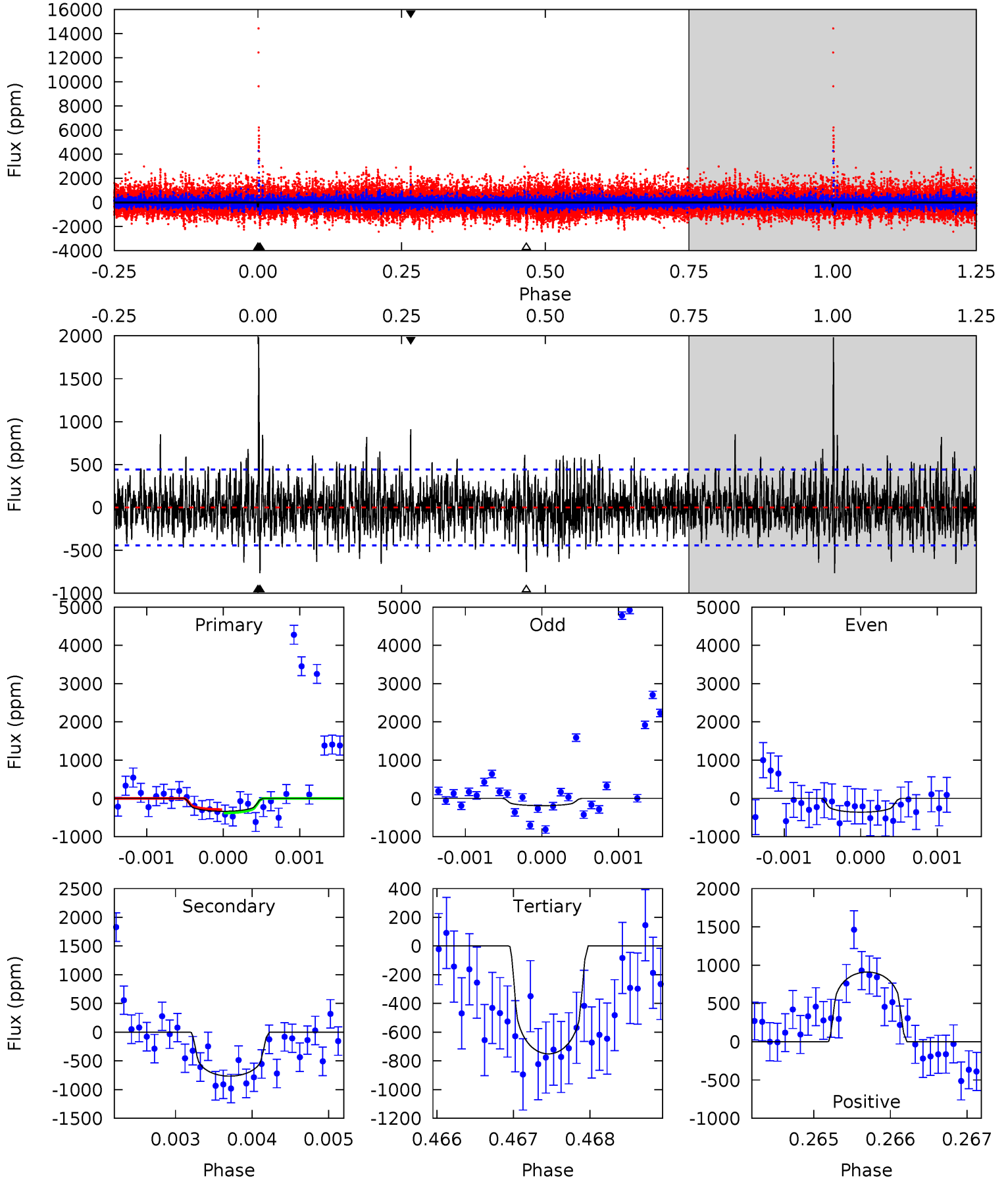
TCE 004649344-01 P=283.502023 Days $T_0=279.343364$ (BKJD)



DV Model-Shift Uniqueness Test

004649344-01, P = 283.519844 Days, E = 279.305080 Days

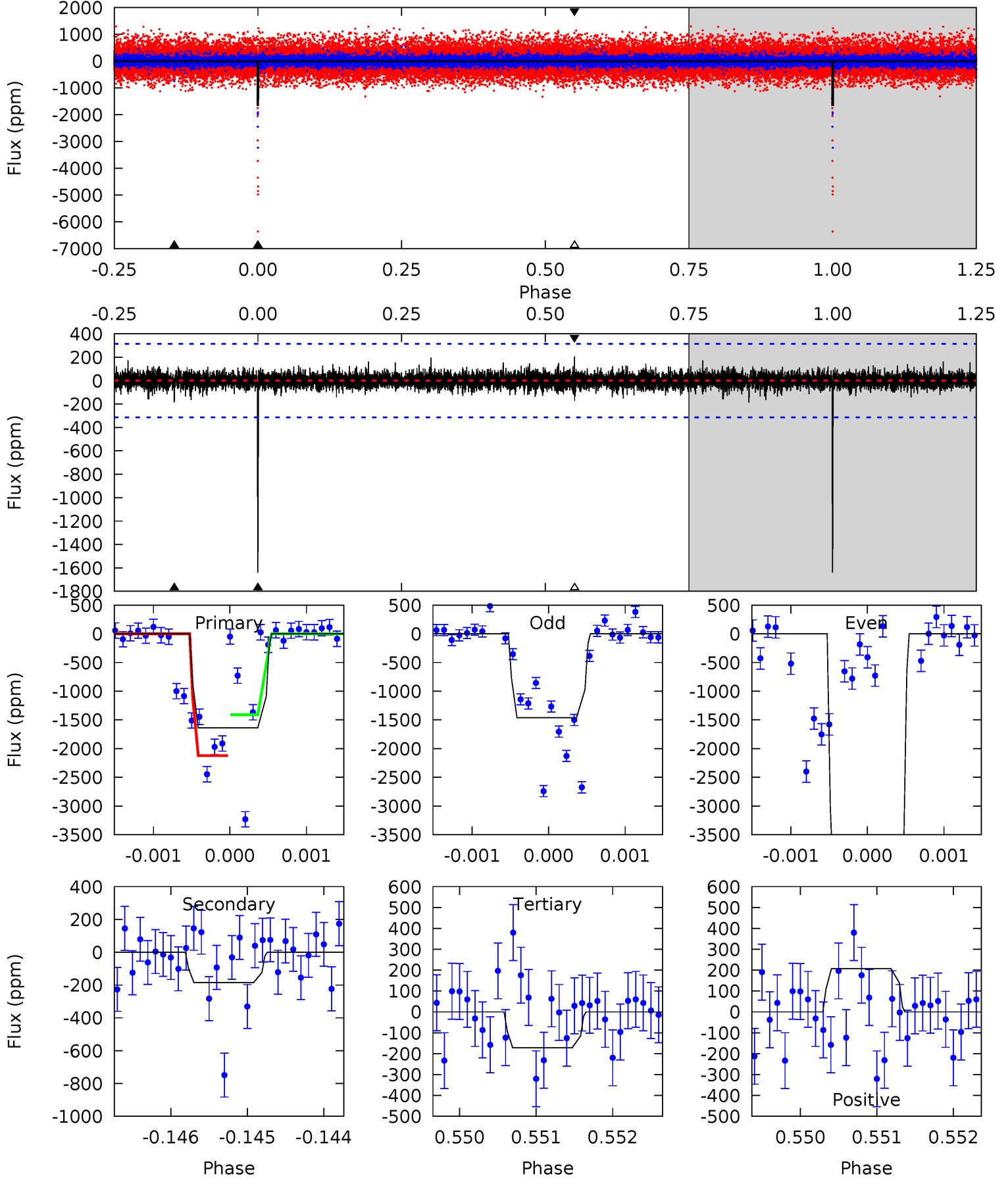
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.16	9.46	9.28	11.2	5.46	3.31	2.59	-5.13	-7.09	0.17	-1.79	0.86	0.88	0.72	0.54



Alt Model-Shift Uniqueness Test

004649344-01, P = 283.502023 Days, E = 279.343364 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.4	3.22	2.98	3.59	5.45	3.29	0.65	25.4	24.8	0.24	-0.38	40.8	3.84	0.11	5.93



Stellar Parameters For KIC 004649344

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5174^{+154}_{-154}	$4.555^{+0.081}_{-0.081}$	$-0.460^{+0.300}_{-0.300}$	$0.725^{+0.097}_{-0.079}$	$0.689^{+0.098}_{-0.042}$	$2.543^{+0.931}_{-0.623}$
	+3%/-3%	+2%/-2%	+65%/-65%	+13%/-11%	+14%/-6%	+37%/-24%
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 004649344-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-765 ± 81	$5.46^{+5.76}_{-3.73}$	314^{+14}_{-13}	3677^{+2078}_{-731}	7963^{+70356}_{-6124}
Alt.	-186 ± 58	$9.03^{+6.98}_{-5.53}$	315^{+14}_{-14}	2587^{+775}_{-346}	695^{+3874}_{-491}

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

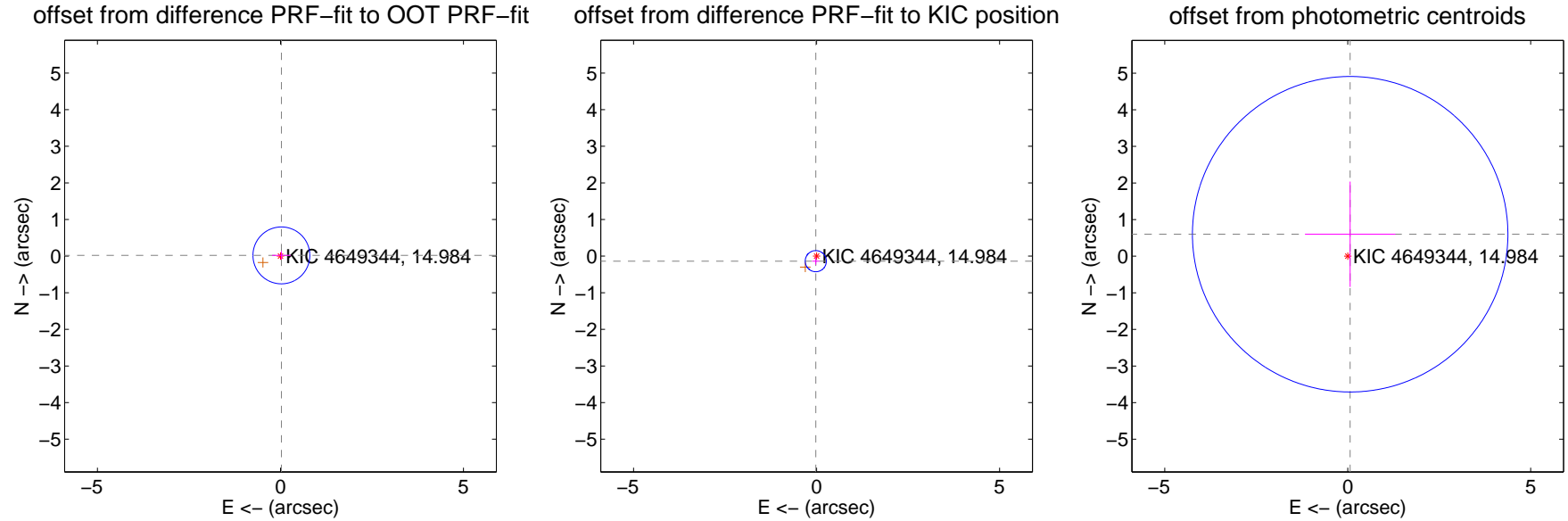
DV Centroid Data

Supplemental centroid analysis for 004649344-01. Kepler magnitude: 14.98. Transit SNR 3.85

There are 1 quarters with good PRF difference image offsets

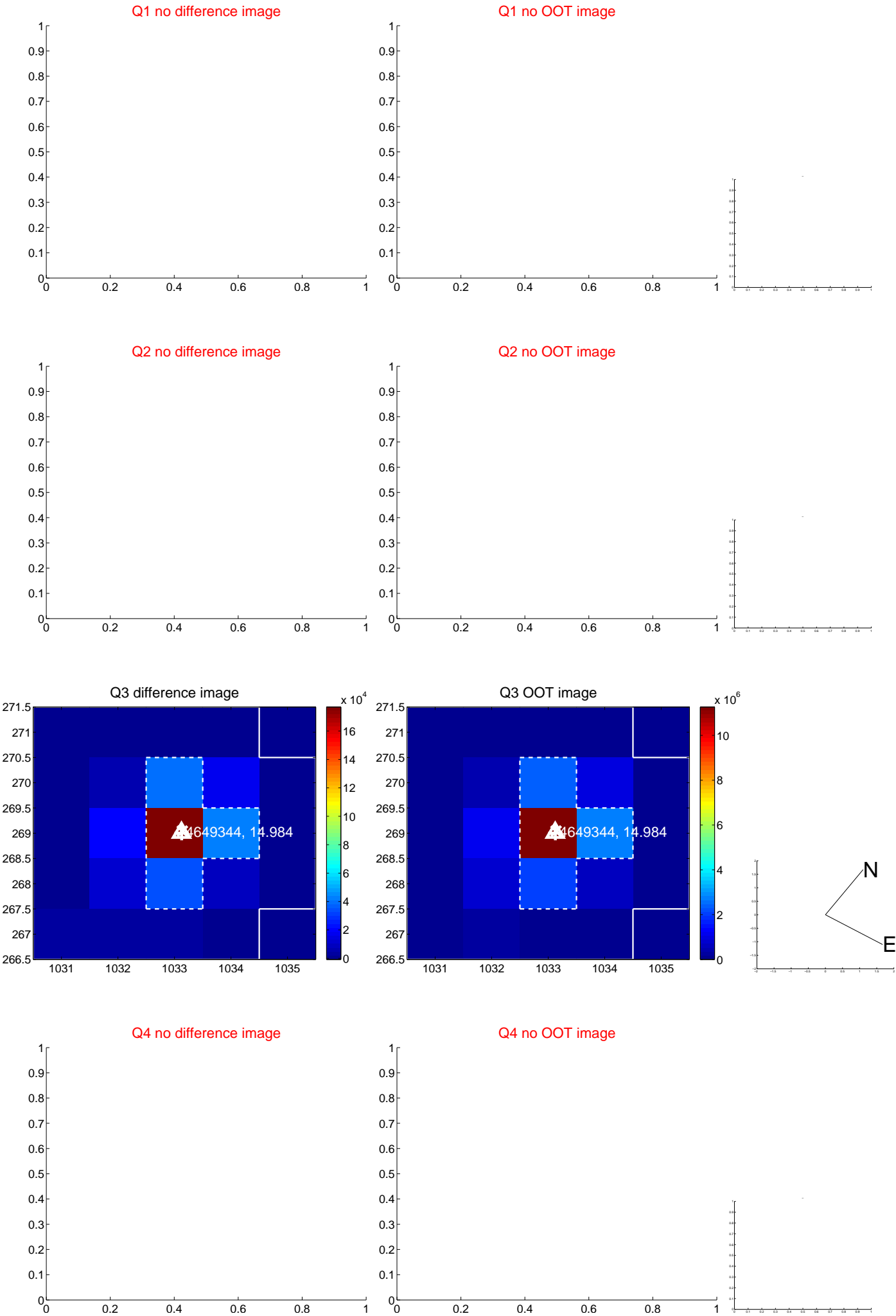
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.033 ± 0.259	0.13	-0.026 ± 0.253	0.020 ± 0.115
PRF-fit source offset from KIC position	0.139 ± 0.096	1.45	0.022 ± 0.099	-0.138 ± 0.096
photometric centroid source offset	0.60 ± 1.44	0.42	-0.07 ± 1.23	0.60 ± 1.44

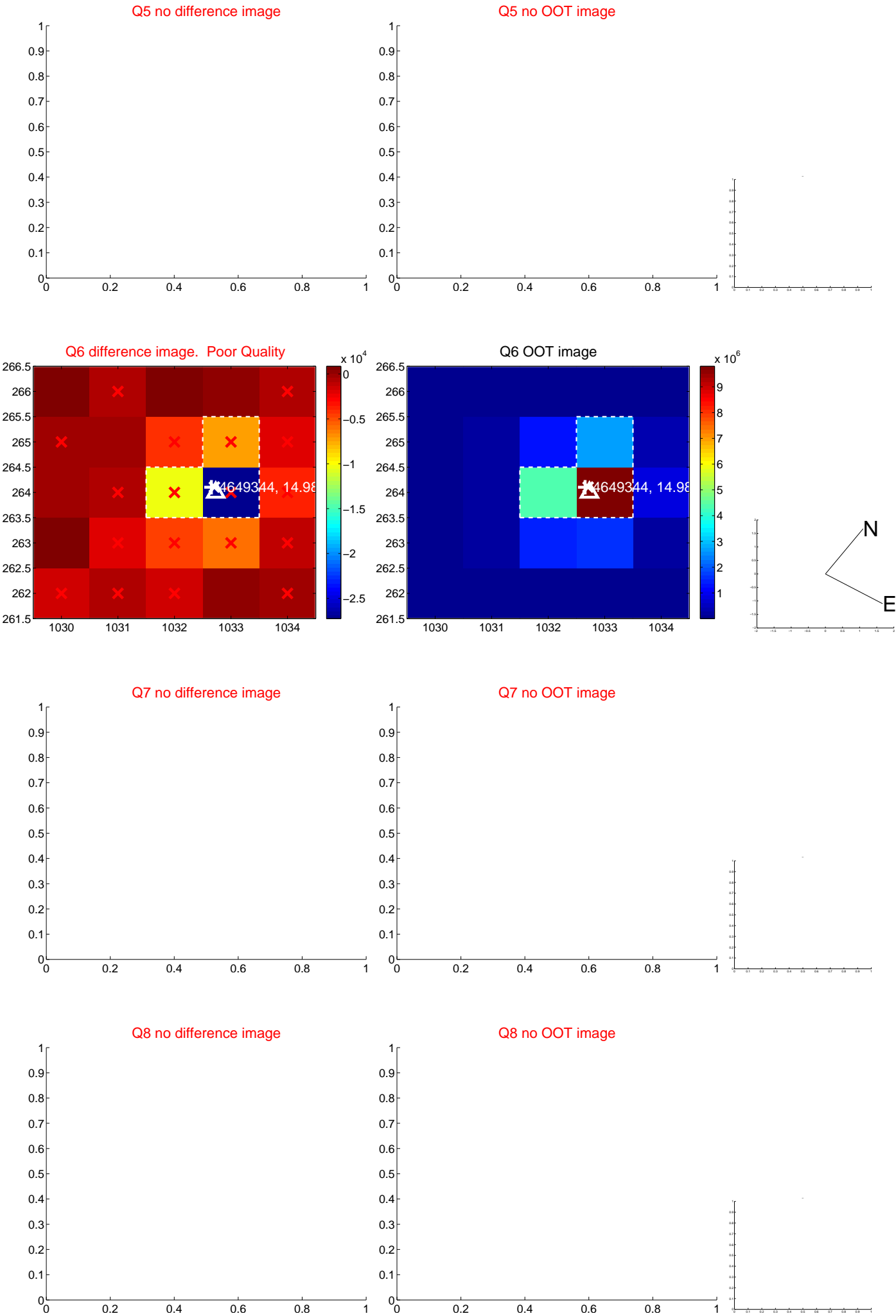


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



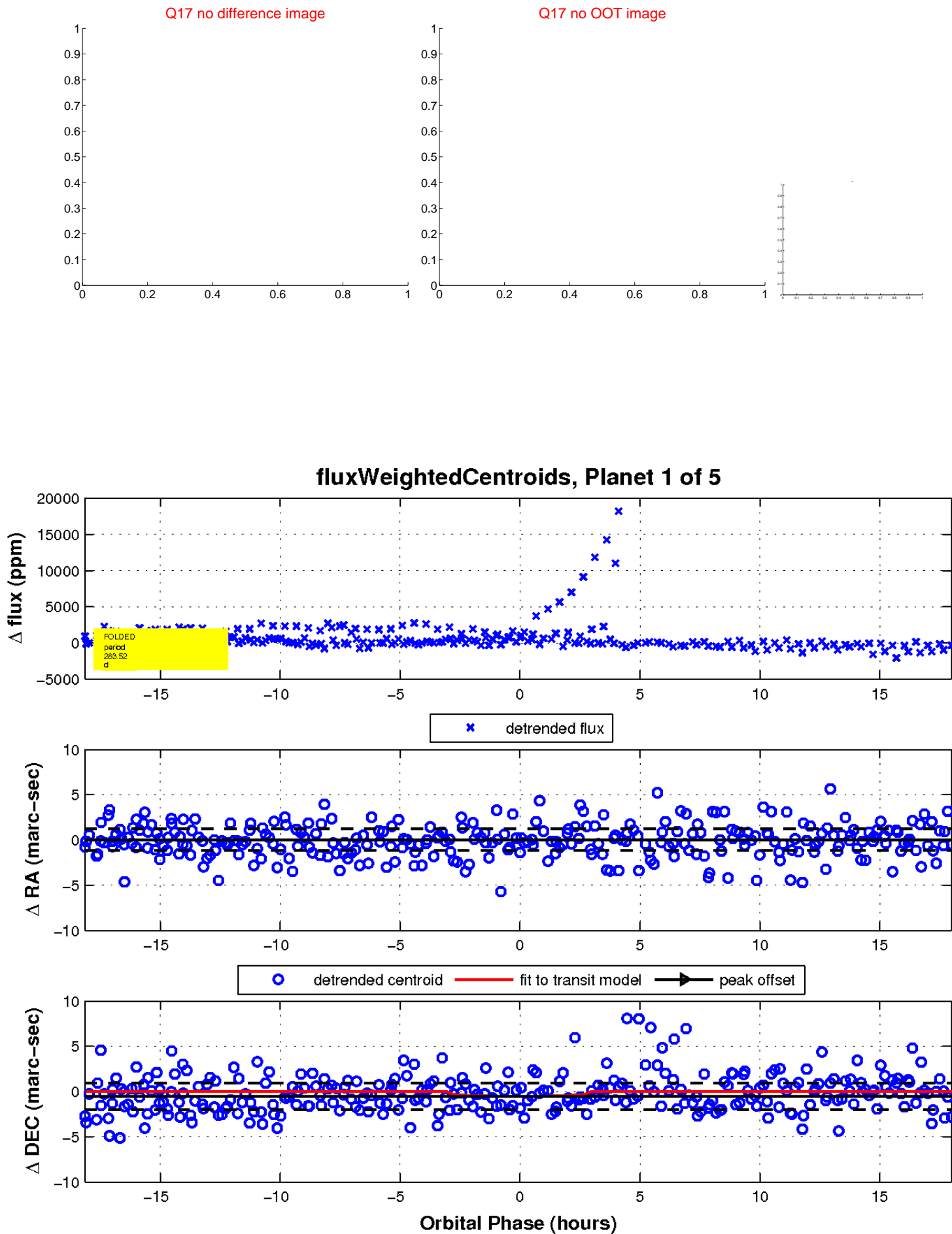
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

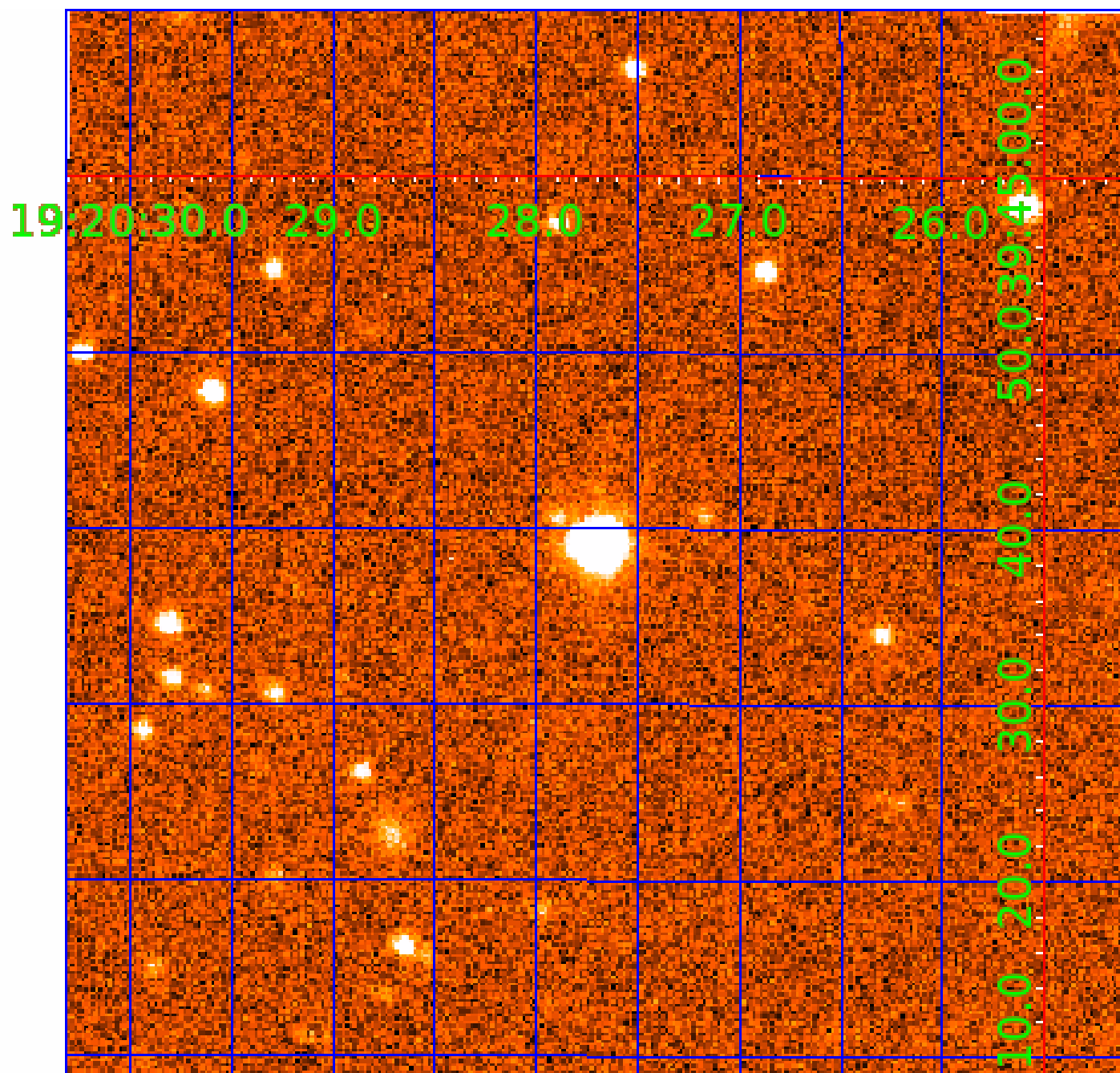


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004649344

Q1-17 DR25 TCE Parameters

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Robovetter Results

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004649344-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004649344-04	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

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

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

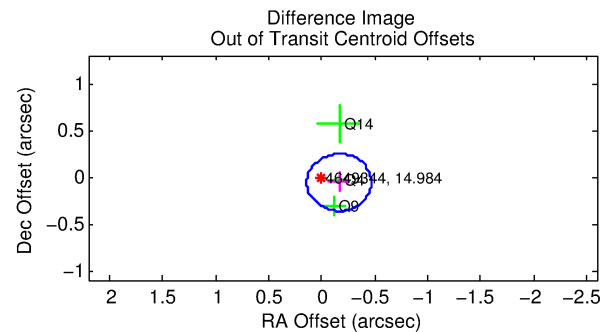
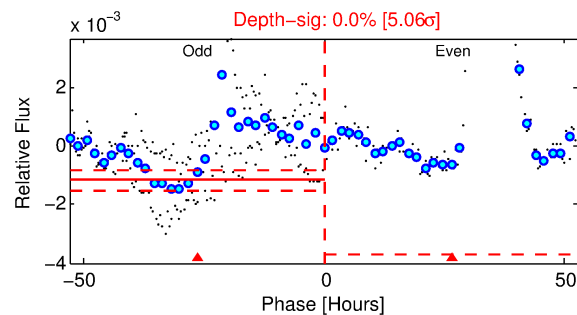
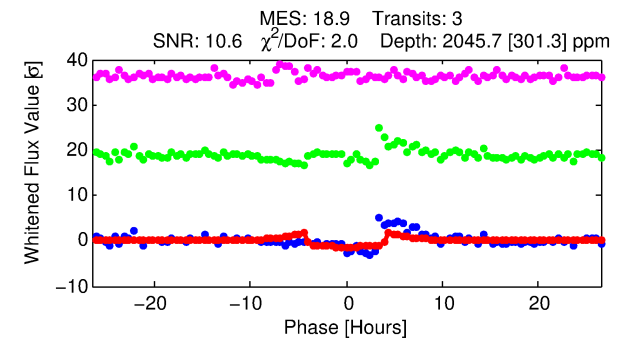
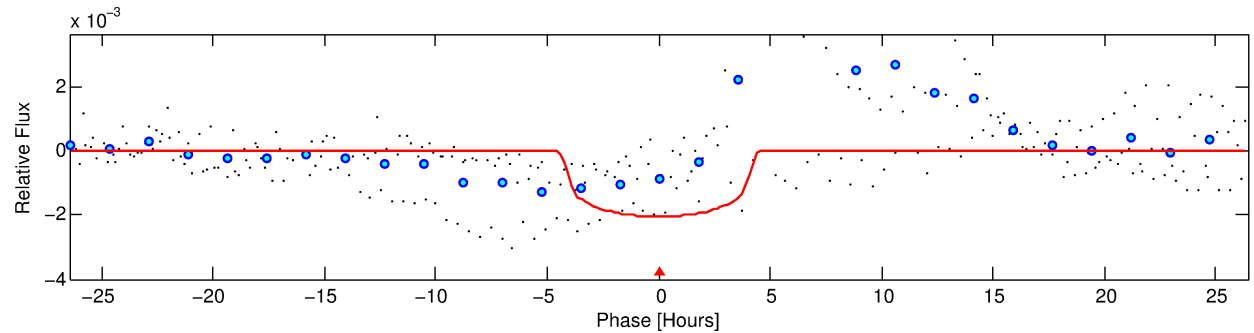
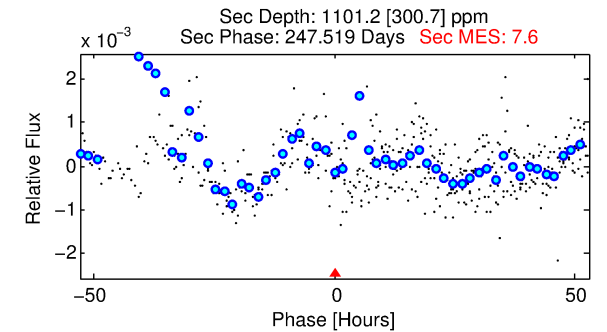
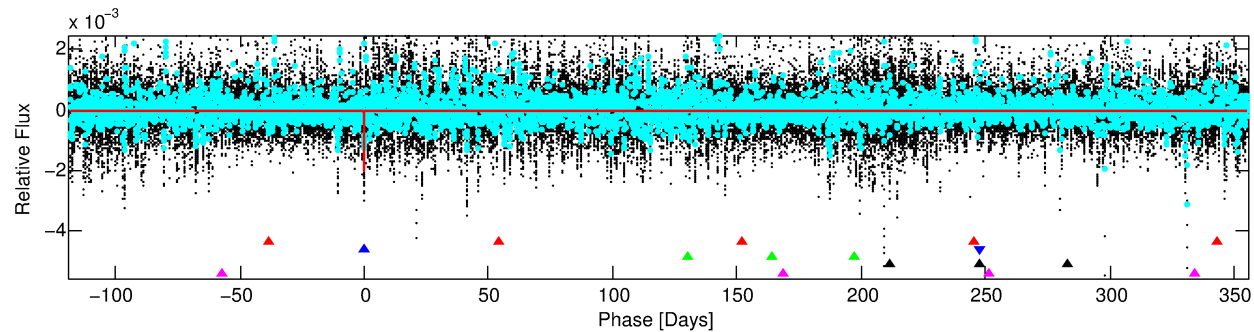
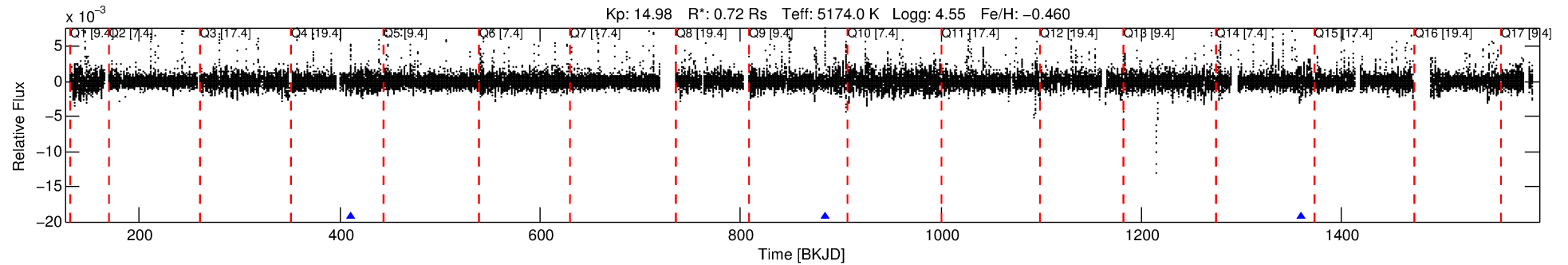
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004649344-02

No Significant Match Found

DV One-Page Summary

KIC: 4649344 Candidate: 2 of 5 Period: 474.233 d



DV Fit Results:

Period = 474.23256 [0.00582] d
Epoch = 410.4826 [0.0077] BKJD
Rp/R* = 0.0425 [0.0133]
a/R* = 364.09 [402.92]
b = 0.55 [1.42]
Seff = 0.31 [0.06]
Teq = 190 [9] K
Rp = 3.36 [1.14] Re
a = 1.0510 [0.1143] AU
Ag = 59300.16 [41492.17] [1.43 σ]
Teffp = 4574 [793] K [5.53 σ]

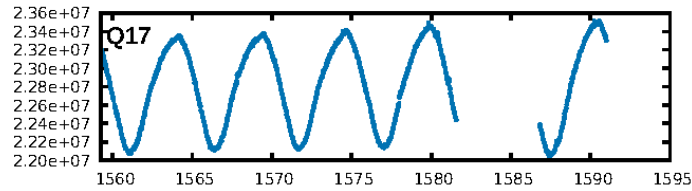
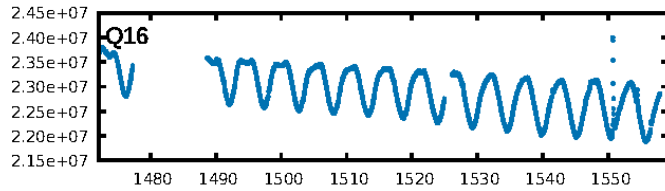
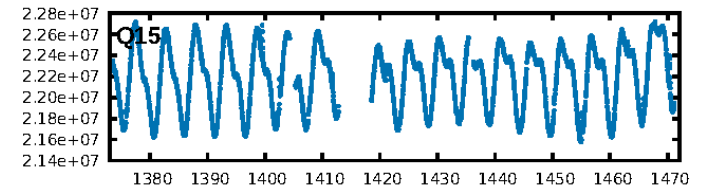
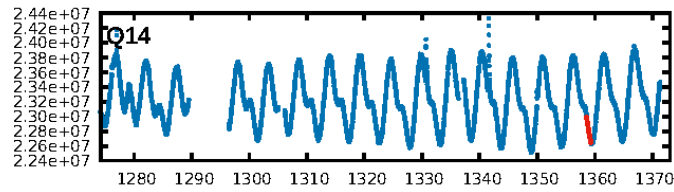
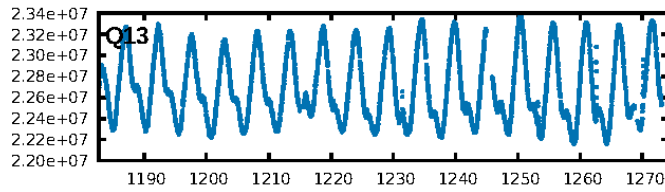
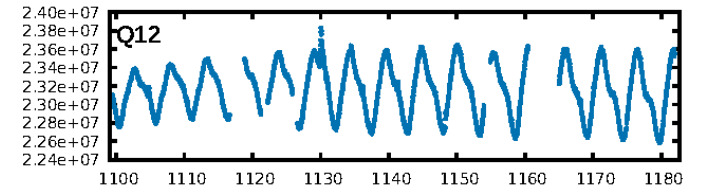
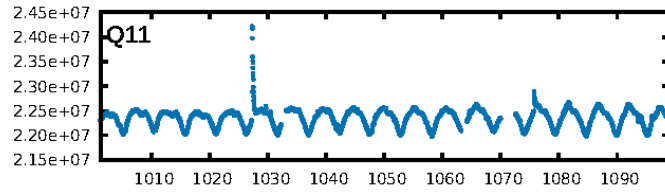
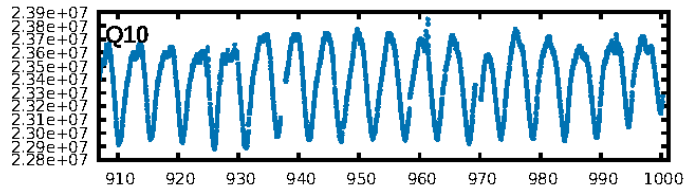
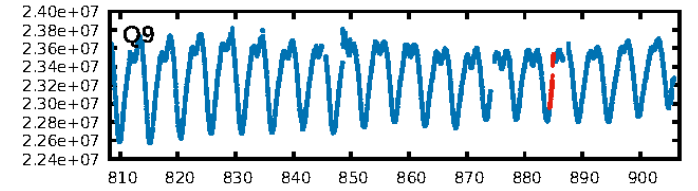
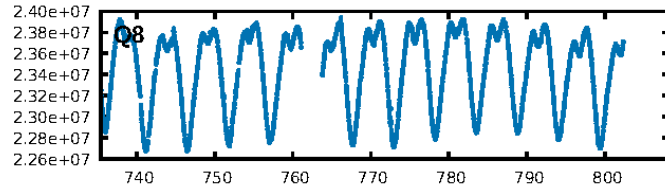
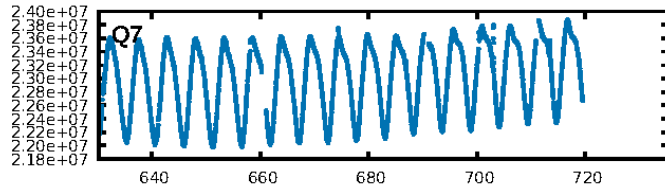
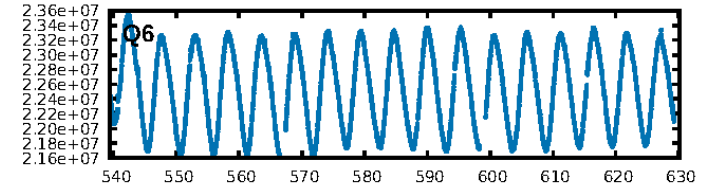
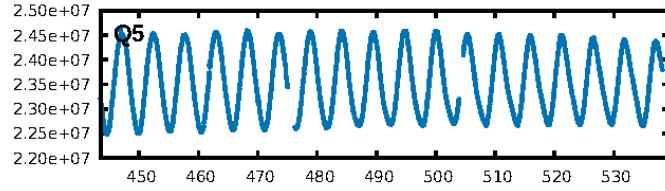
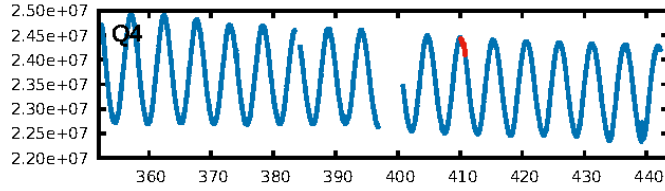
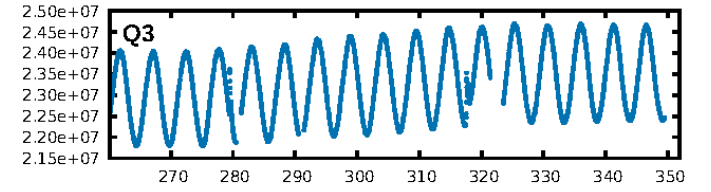
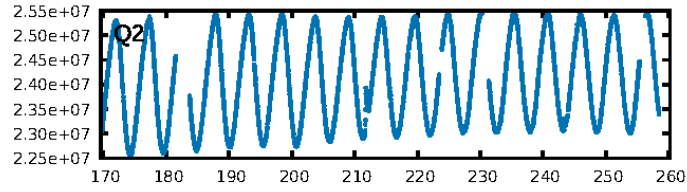
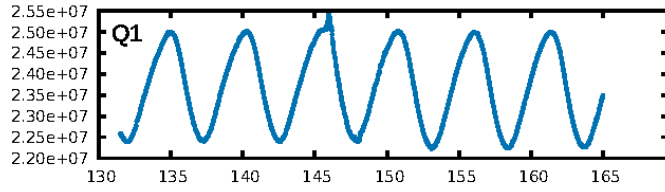
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [213.28 σ]
LongPeriod-sig: 100.0% [86.43 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 5.4%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.125
Centroid-sig: 2.5%
Centroid-so: 0.864 arcsec [1.84 σ]
OotOffset-rm: 0.176 arcsec [1.73 σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-rm: 0.173 arcsec [1.39 σ]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

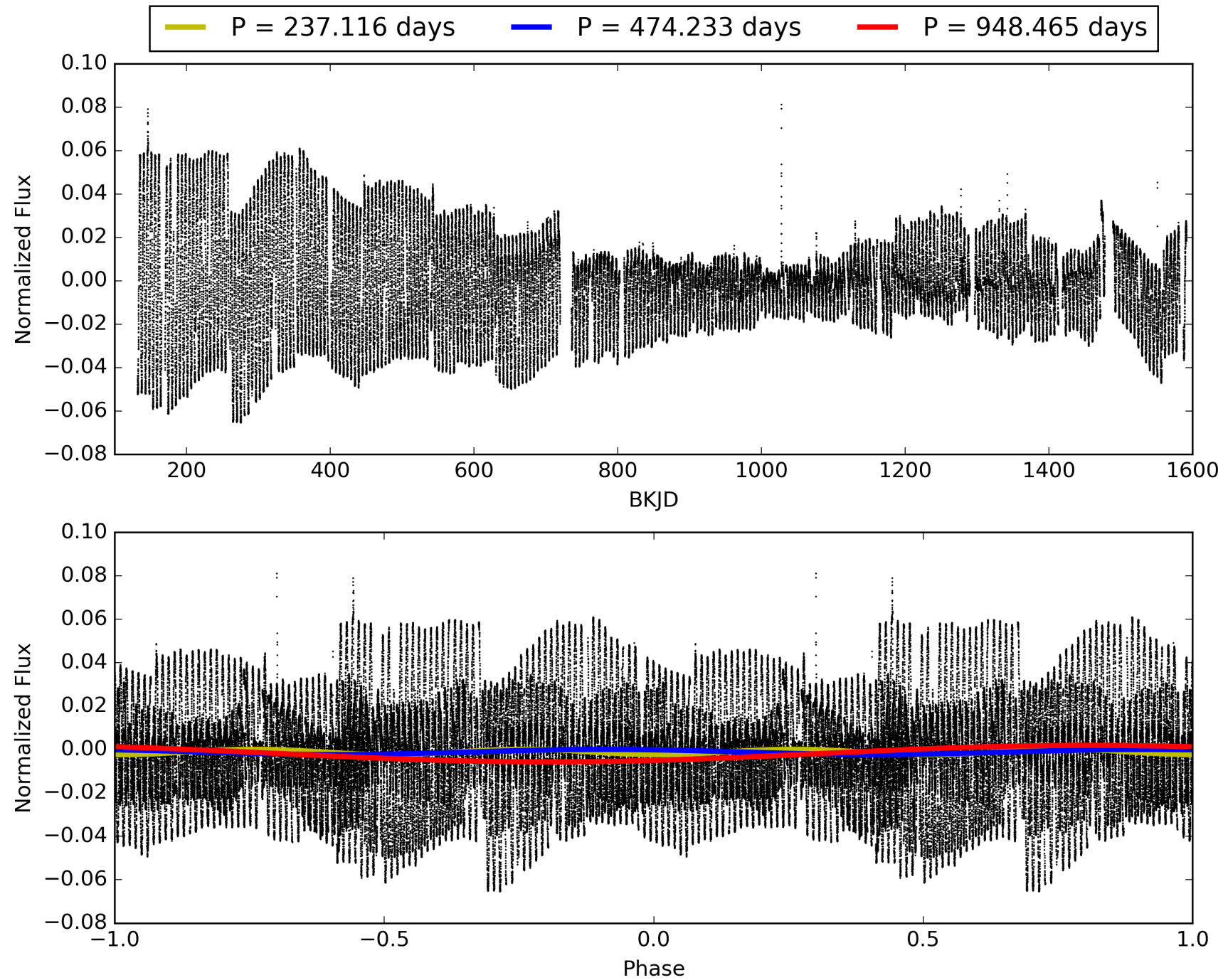
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:05:39 Z

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

TCE 004649344-02, PDC Light Curves

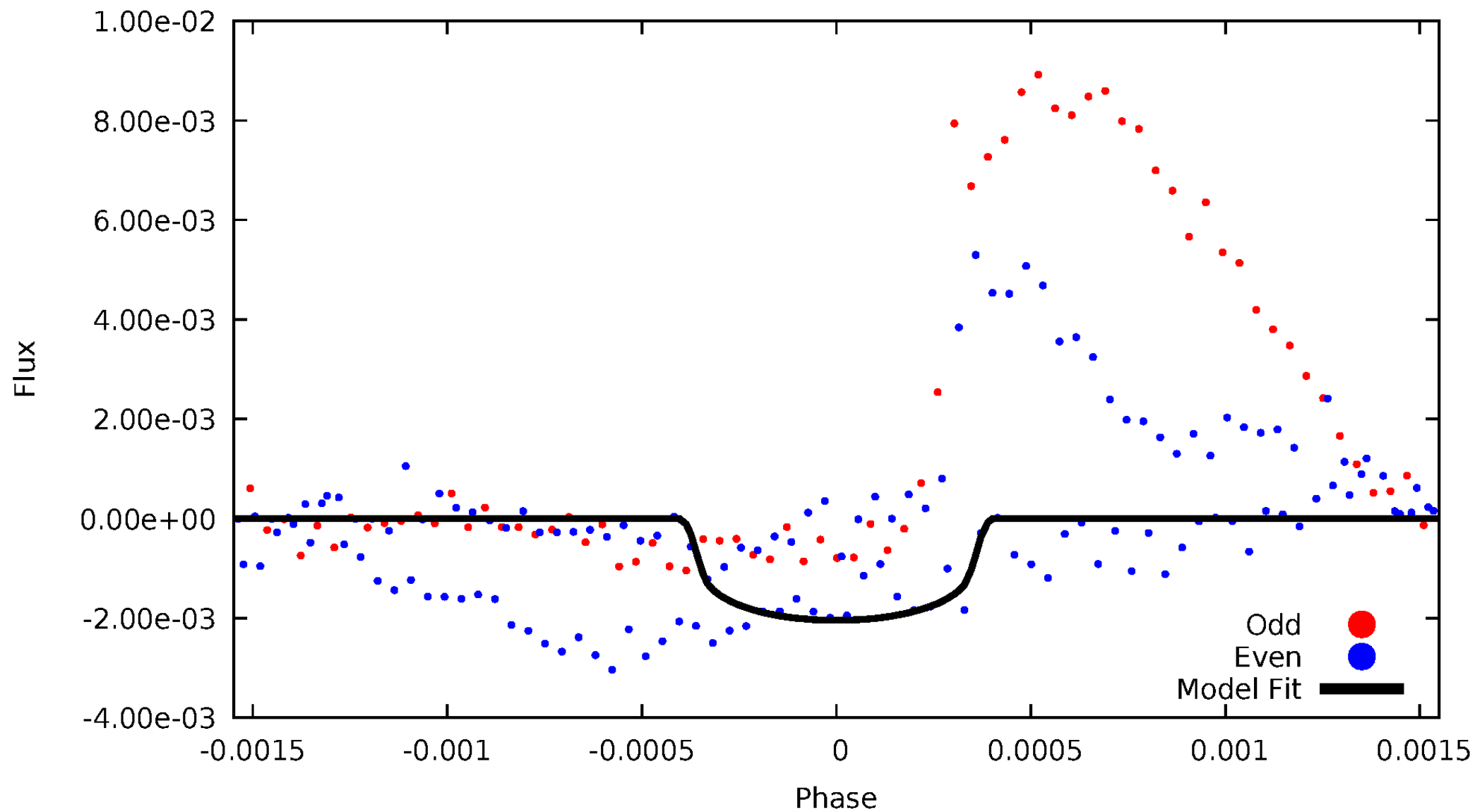


TCE 004649344-02



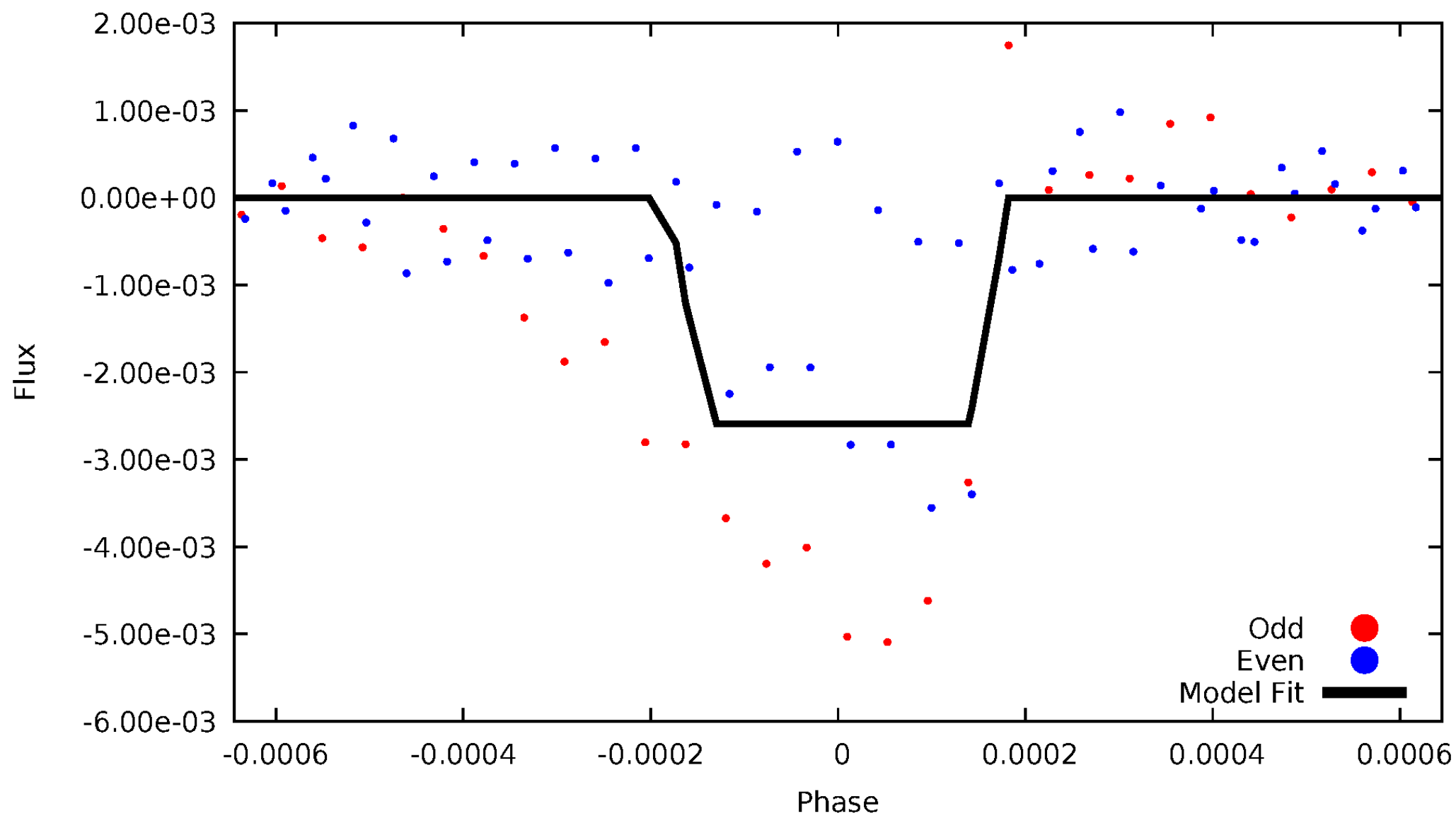
DV Odd/Even

TCE 004649344-02



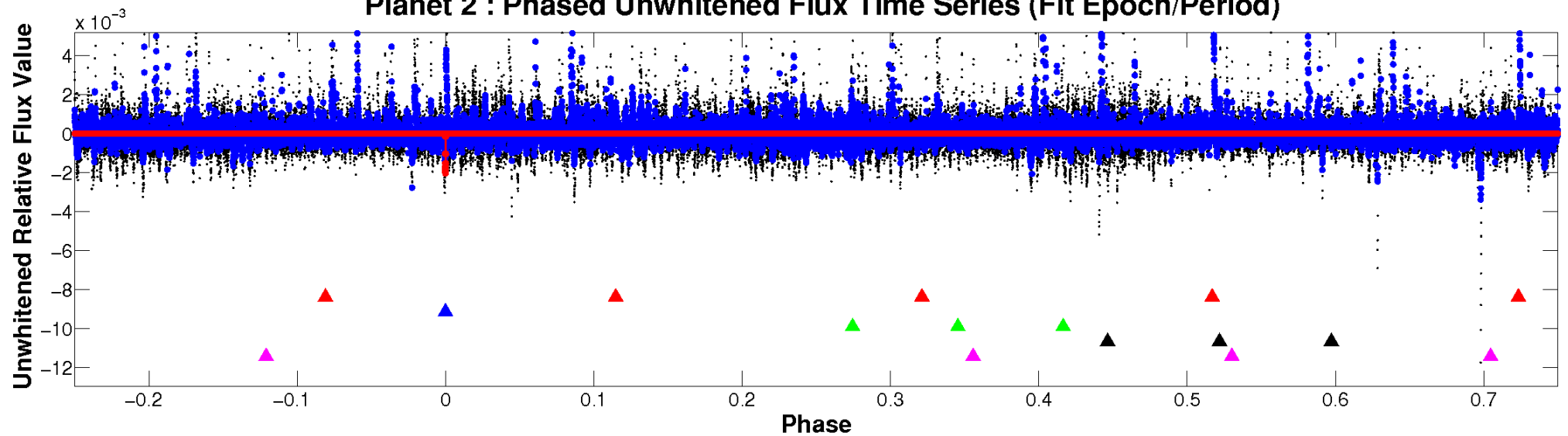
ALT Odd/Even

TCE 004649344-02

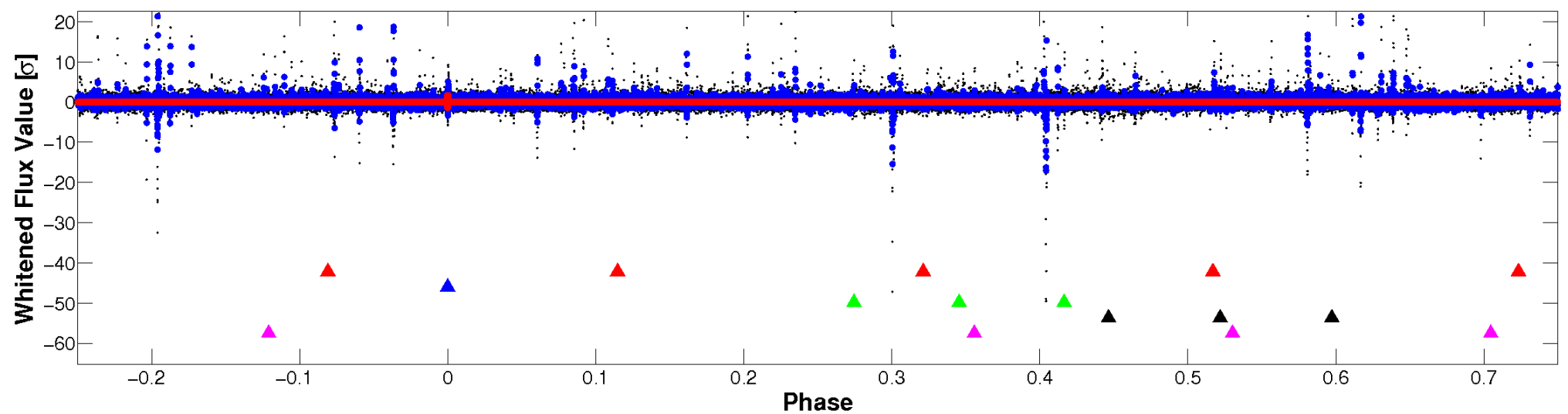


Non-Whitened Vs. Whitened Light Curve

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

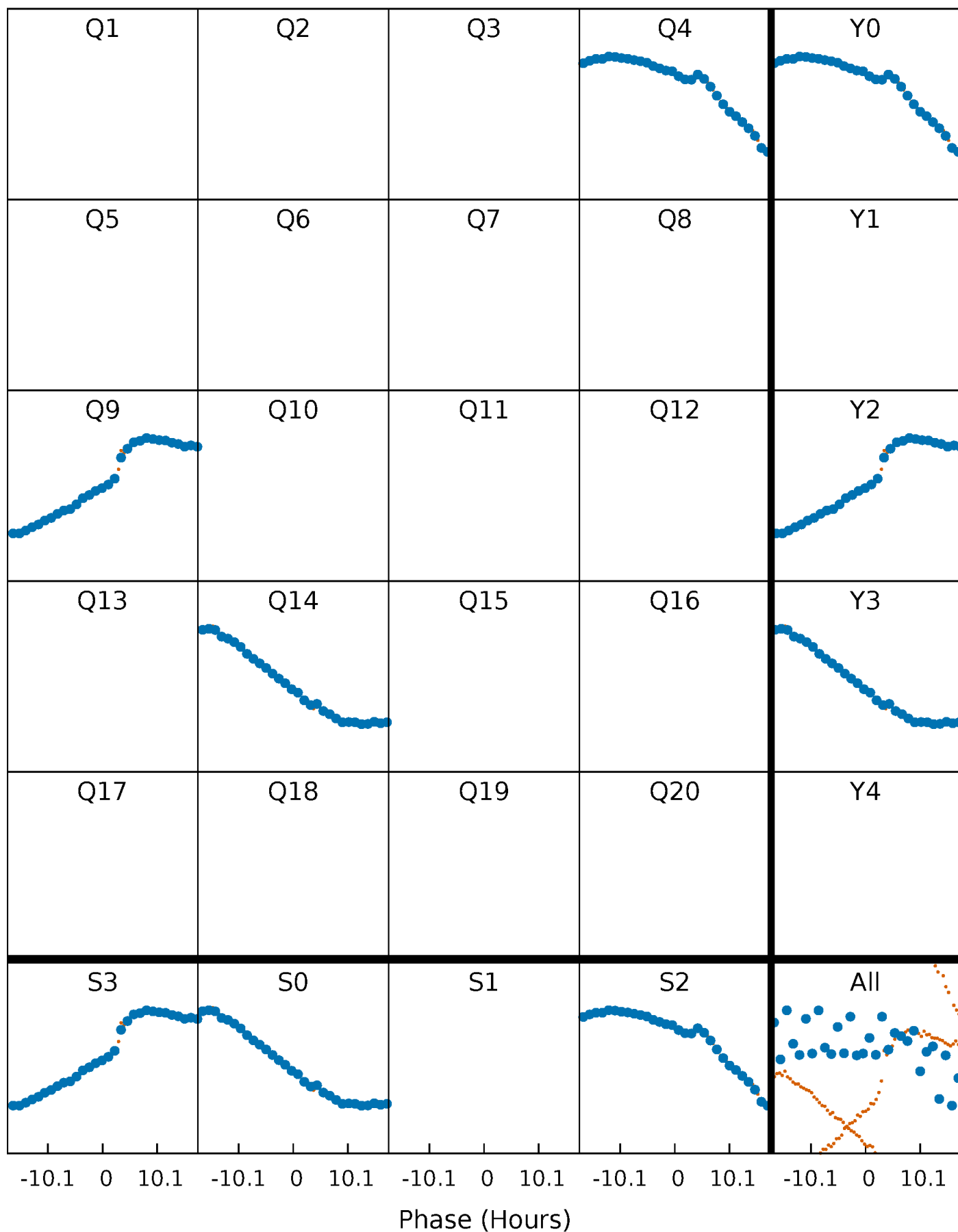


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



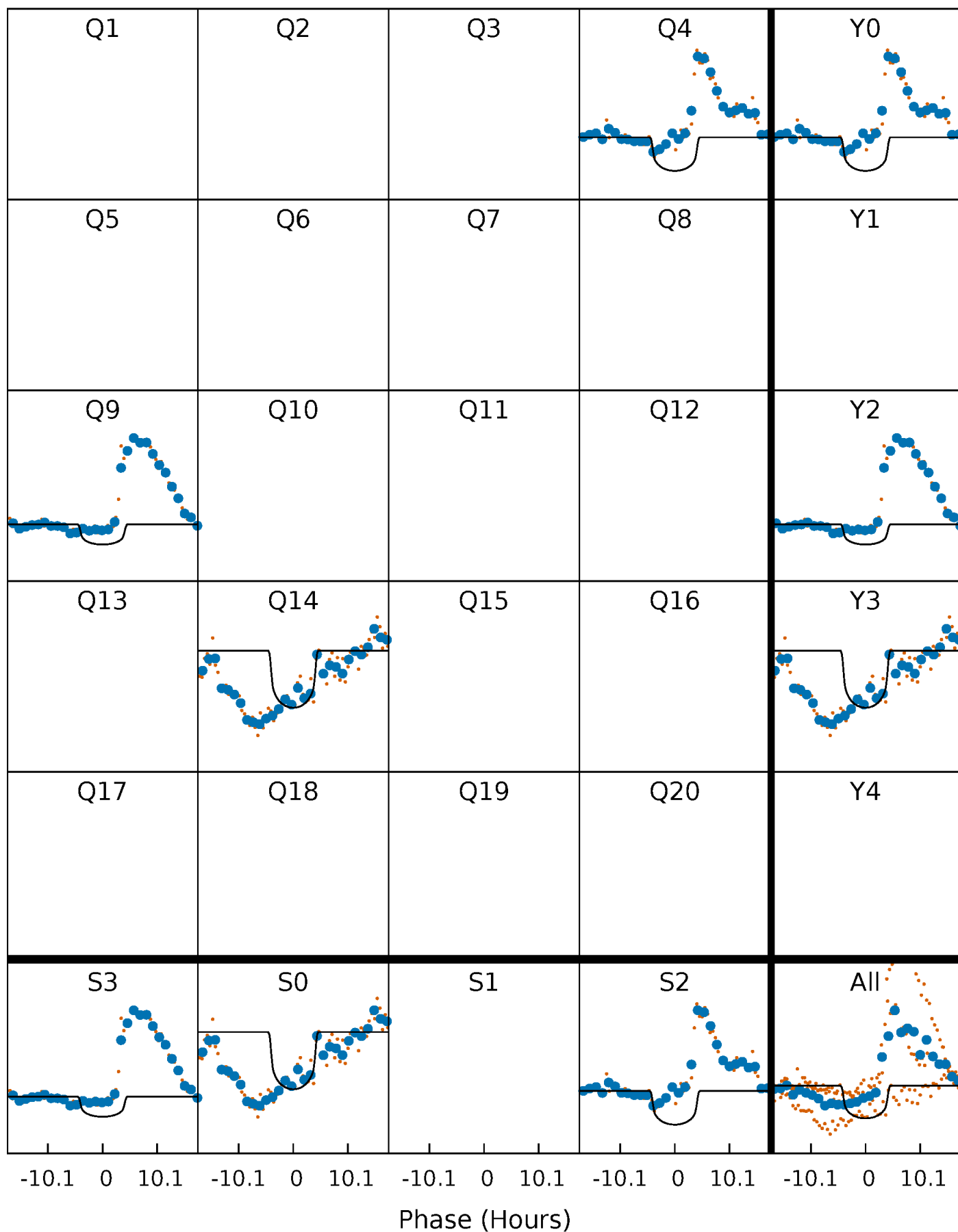
PDC Quarter-Phased Transit Curves

TCE 004649344-02 $P=474.232561$ Days $T_0=410.482598$ (BKJD)



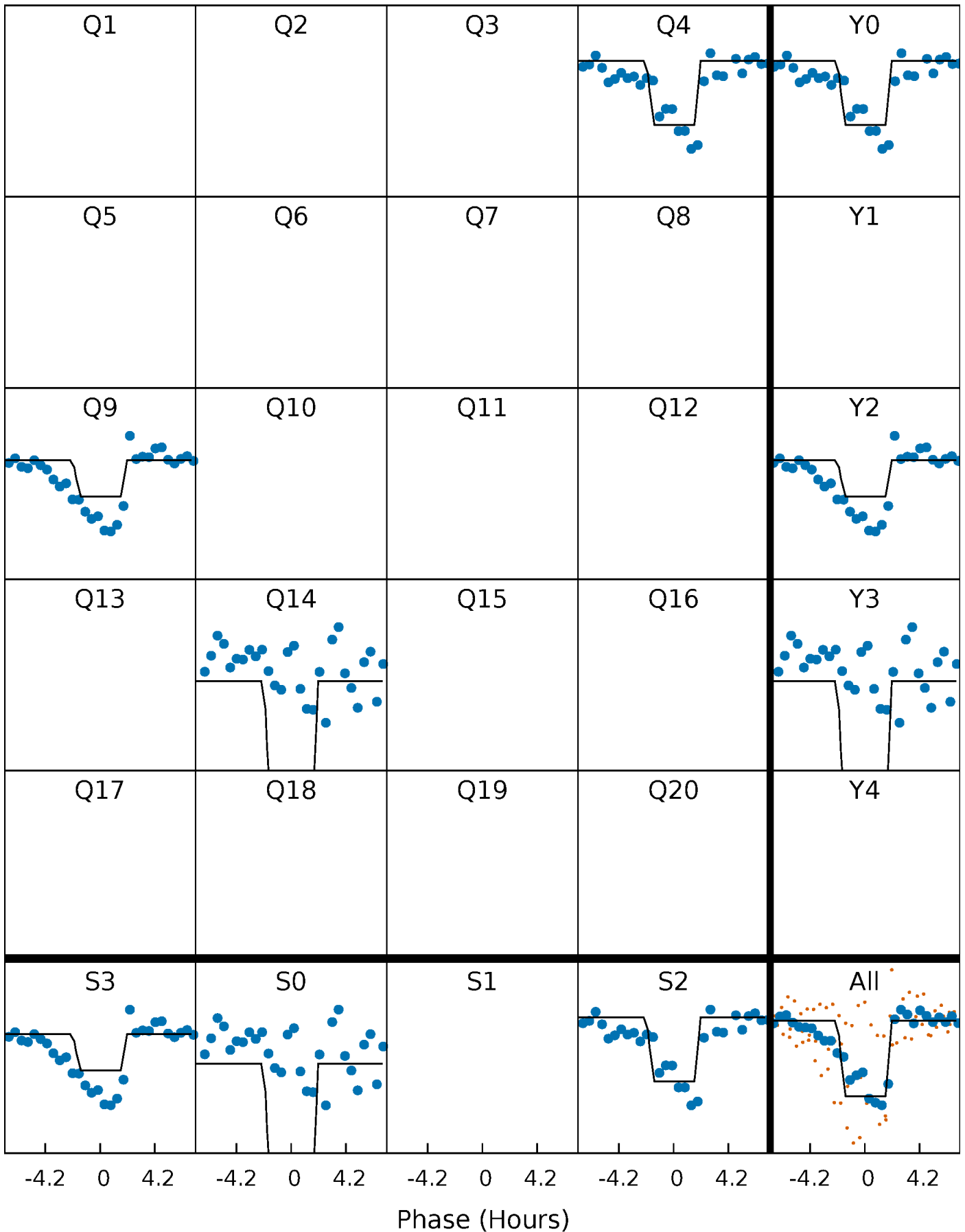
DV Quarter-Phased Transit Curves

TCE 004649344-02 $P=474.232561$ Days $T_0=410.482598$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

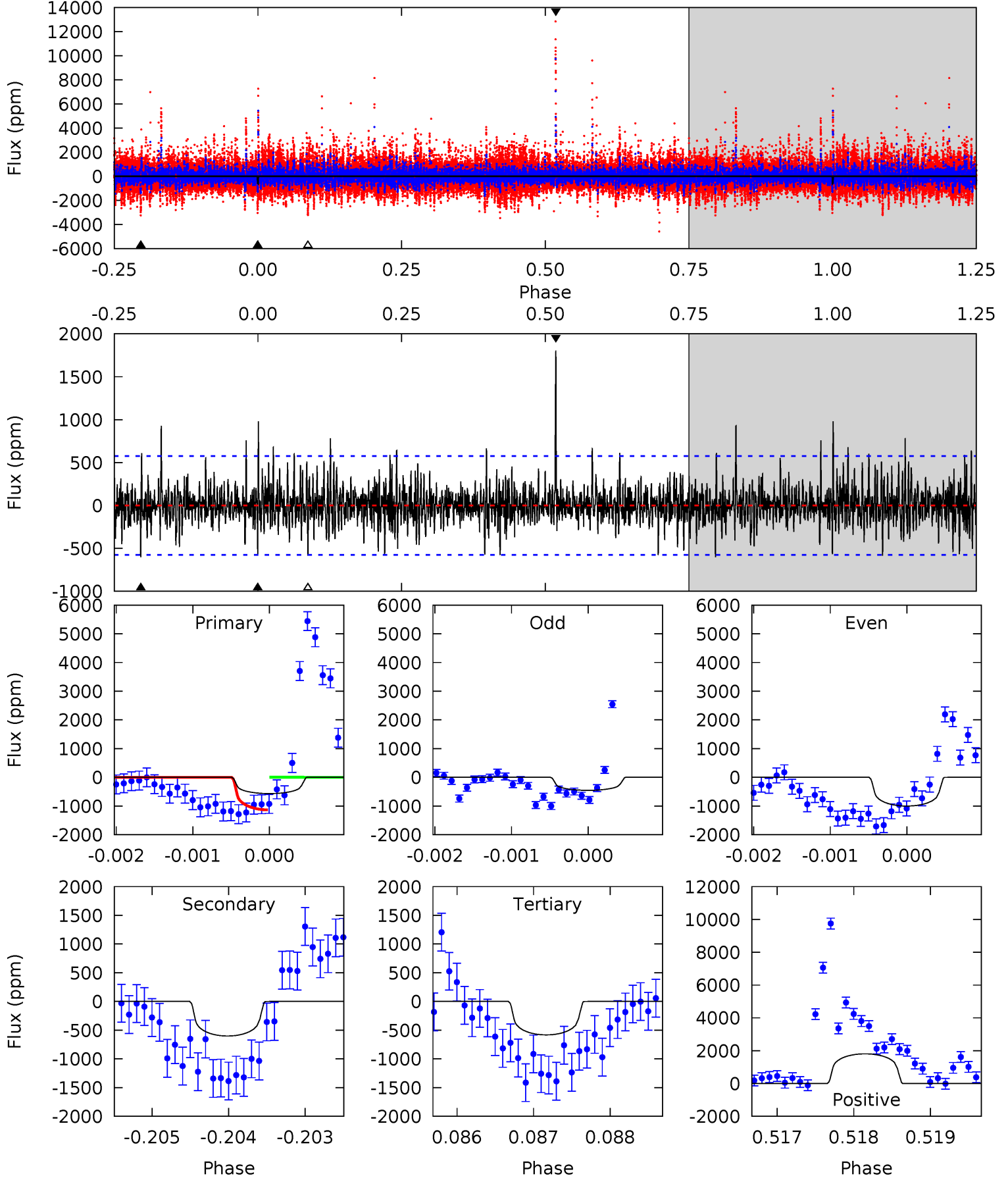
TCE 004649344-02 P=474.228872 Days $T_0=410.543865$ (BKJD)



DV Model-Shift Uniqueness Test

004649344-02, P = 474.232561 Days, E = 410.482598 Days

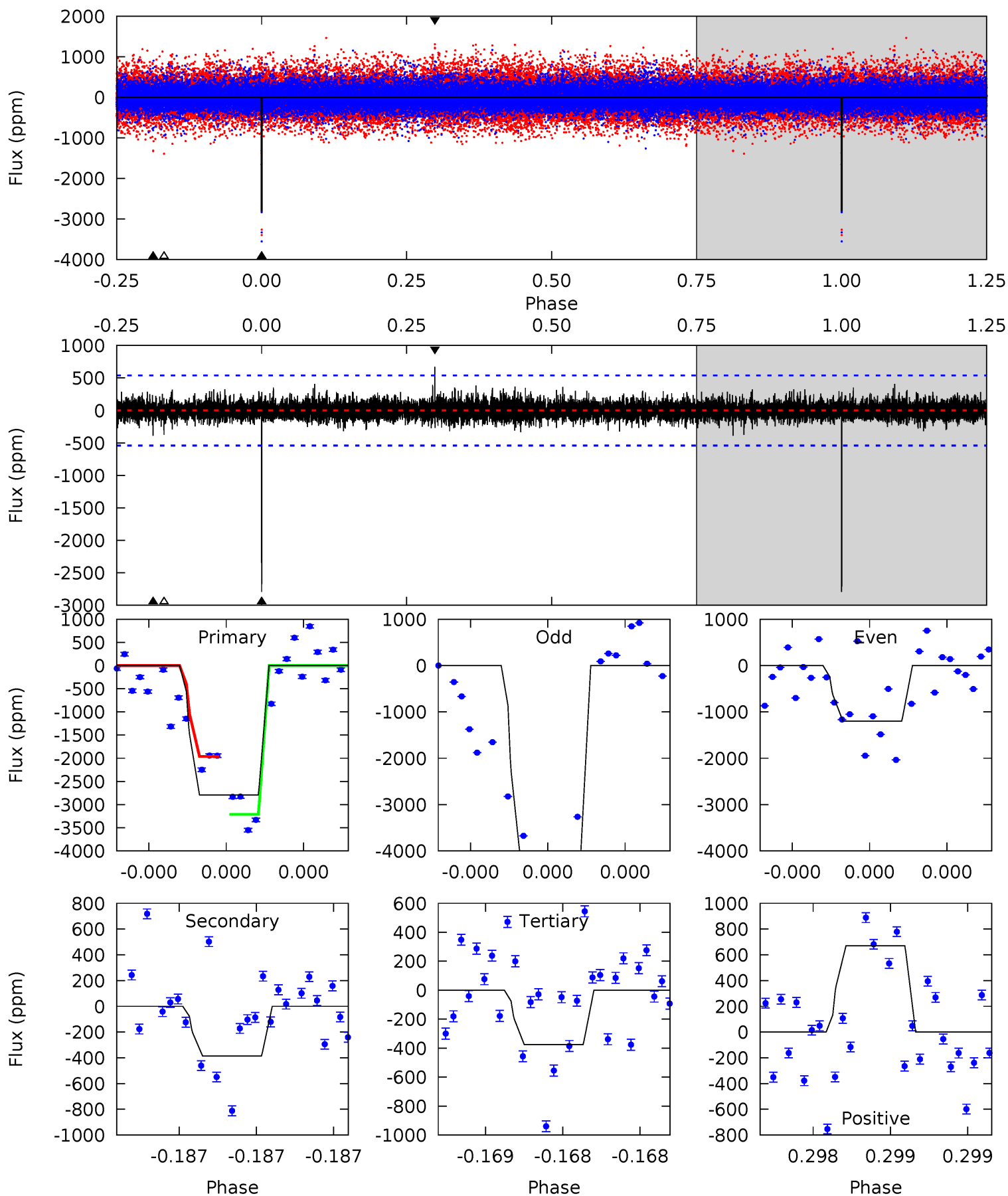
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.40	5.73	5.55	17.2	5.49	3.35	1.67	-0.15	-11.8	0.18	-11.5	1.87	-2.25	0.75	5.47



Alt Model-Shift Uniqueness Test

004649344-02, P = 474.228872 Days, E = 410.543865 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.1	4.03	3.92	6.99	5.64	3.59	0.82	25.2	22.2	0.11	-2.96	21.3	0.88	0.19	0



Stellar Parameters For KIC 004649344

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5174^{+154}_{-154}	$4.555^{+0.081}_{-0.081}$	$-0.460^{+0.300}_{-0.300}$	$0.725^{+0.097}_{-0.079}$	$0.689^{+0.098}_{-0.042}$	$2.543^{+0.931}_{-0.623}$
	+3%/-3%	+2%/-2%	+65%/-65%	+13%/-11%	+14%/-6%	+37%/-24%
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 004649344-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-602 ± 105	$3.37^{+1.19}_{-1.09}$	265^{+11}_{-11}	4150^{+638}_{-418}	32111^{+36325}_{-14671}
Alt.	-386 ± 96	$4.10^{+1.03}_{-1.14}$	265^{+11}_{-11}	3631^{+435}_{-326}	14328^{+14334}_{-6034}

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

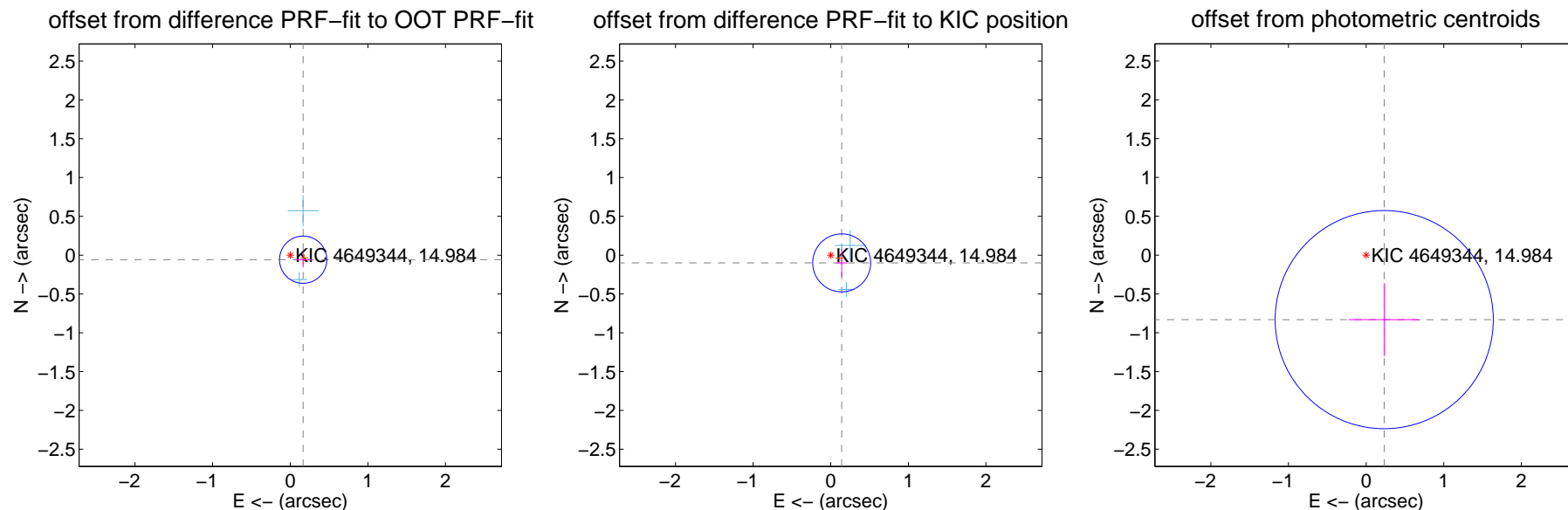
DV Centroid Data

Supplemental centroid analysis for 004649344-02. Kepler magnitude: 14.98. Transit SNR 10.65

There are 2 quarters with good PRF difference image offsets

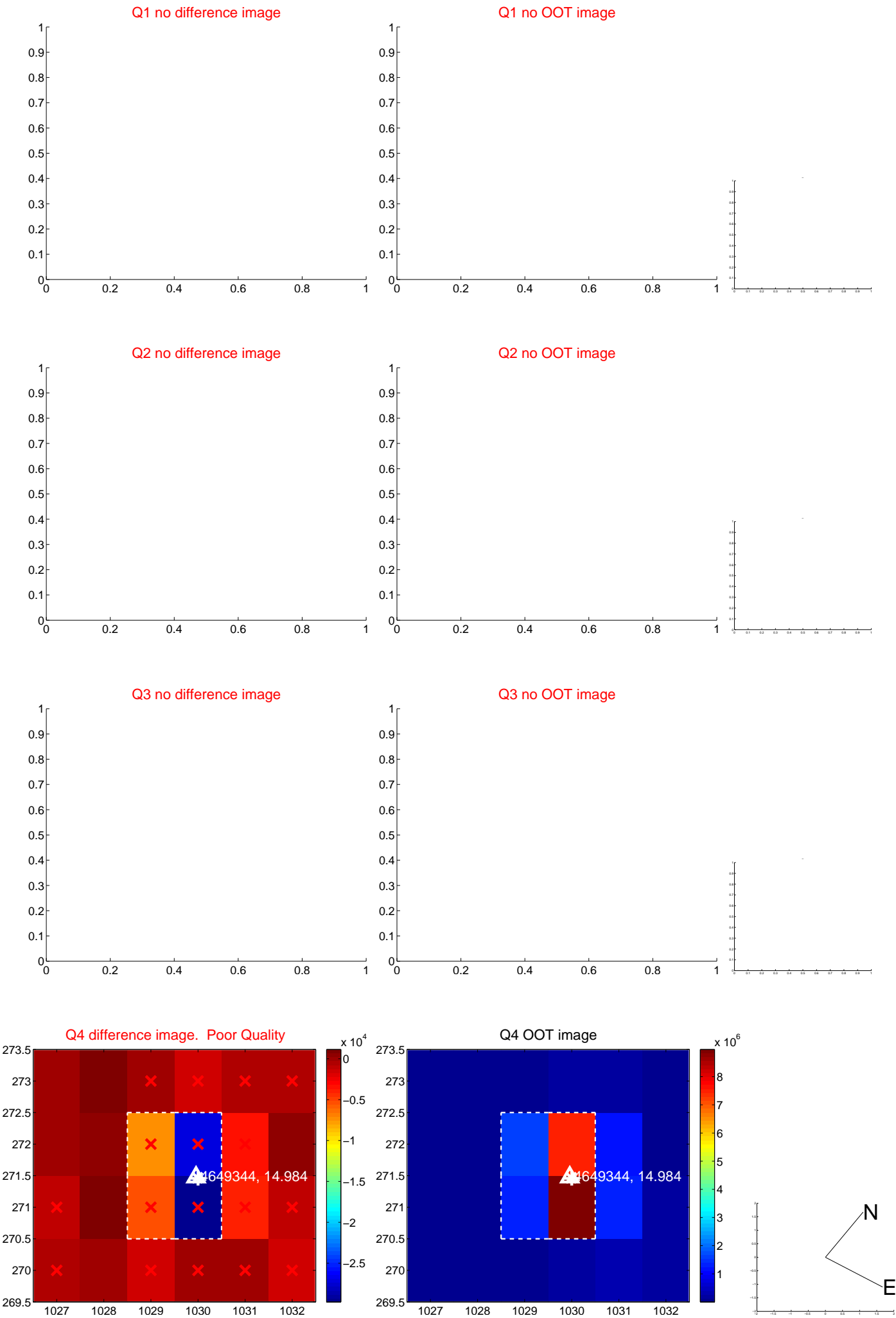
The direct PRF centroid is offset from the target star catalog position by about 0.46 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.176 ± 0.101	1.73	-0.166 ± 0.102	-0.058 ± 0.100
PRF-fit source offset from KIC position	0.173 ± 0.124	1.39	-0.141 ± 0.075	-0.100 ± 0.178
photometric centroid source offset	0.86 ± 0.47	1.84	-0.23 ± 0.46	-0.83 ± 0.47



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.

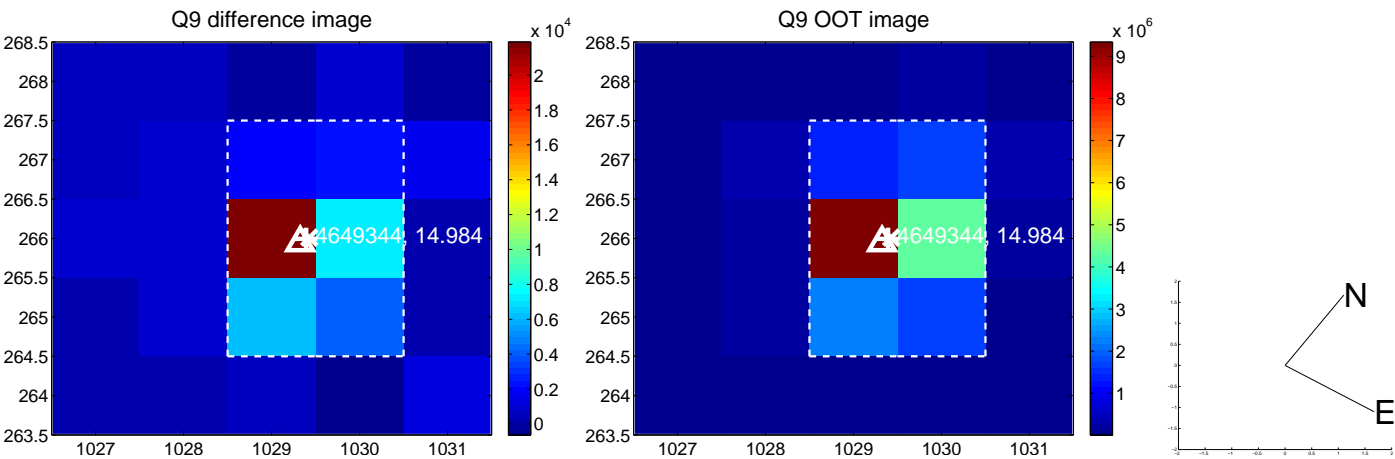
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

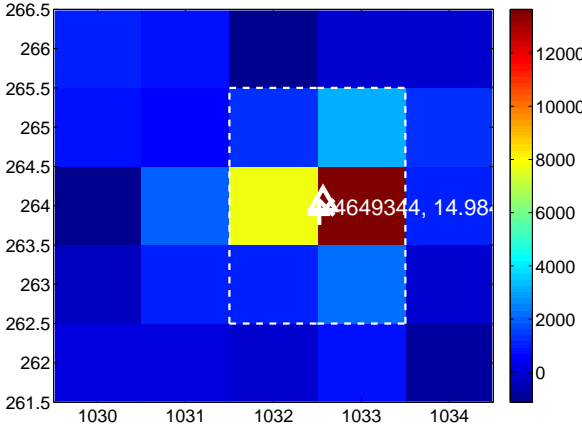
Q13 no difference image



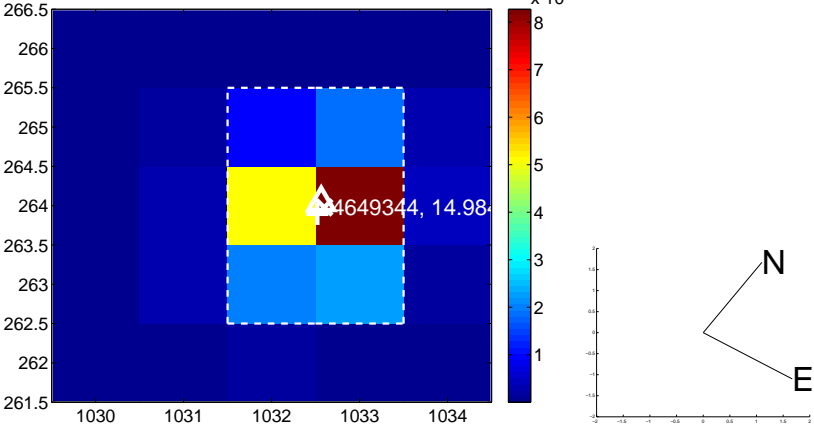
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



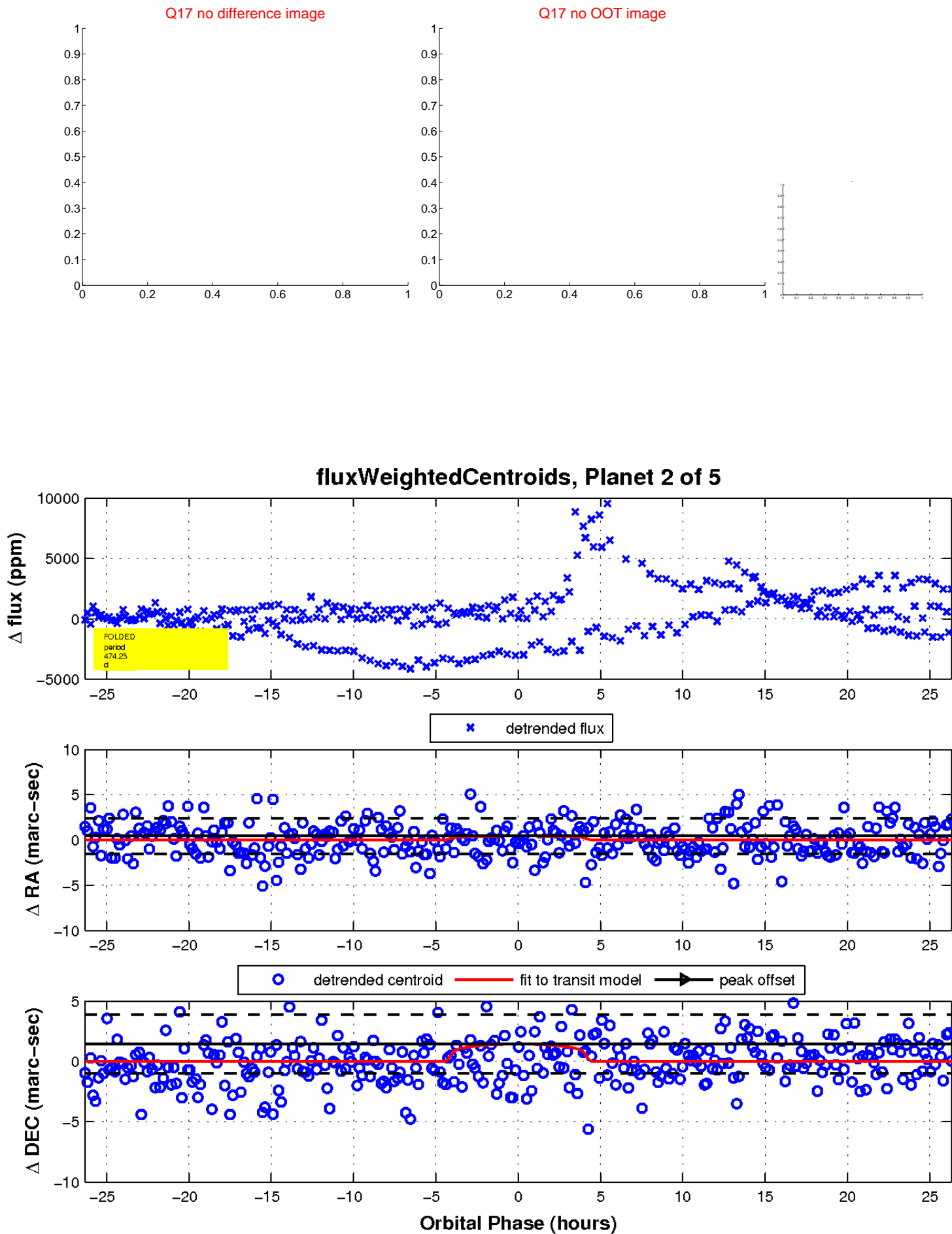
Q16 no difference image



Q16 no OOT image

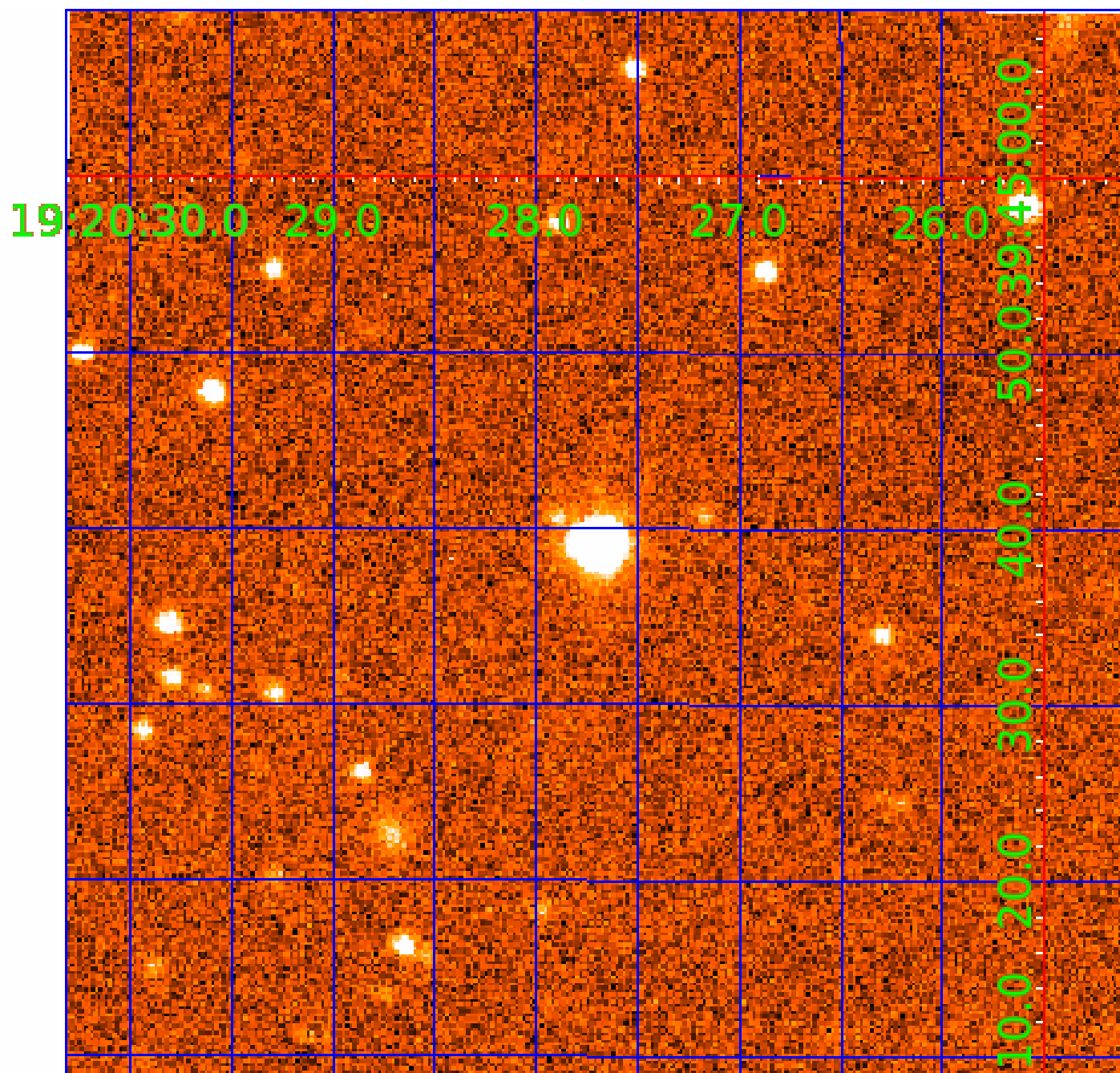


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004649344

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})
004649344-01	OBS	No	283.519844	279.305080	726.4	6.048	25.4	3.9	0.72	5174	2.01	0.61
004649344-02	OBS	No	474.232561	410.482598	2045.7	8.813	18.9	10.6	0.72	5174	3.36	0.31
004649344-04	OBS	No	510.000515	147.971012	1834.8	8.694	17.8	8.8	0.72	5174	3.04	0.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004649344-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004649344-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004649344-04	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

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

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

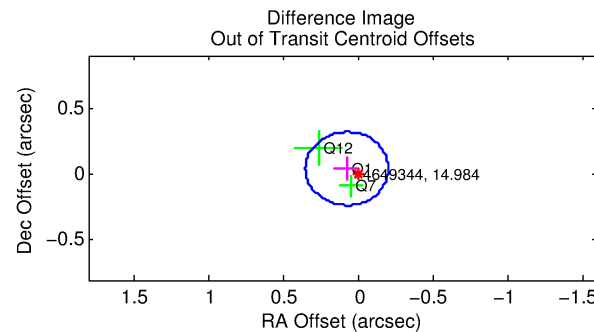
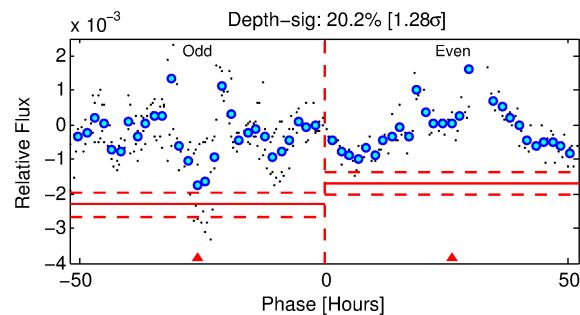
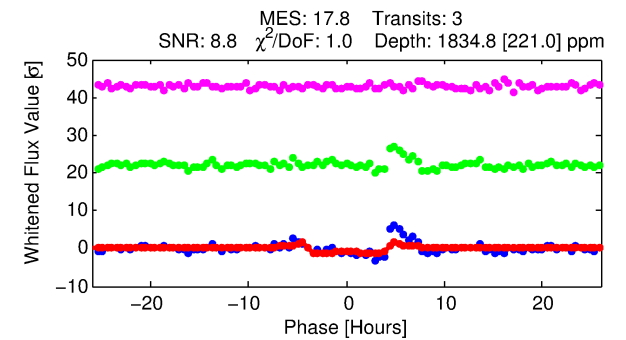
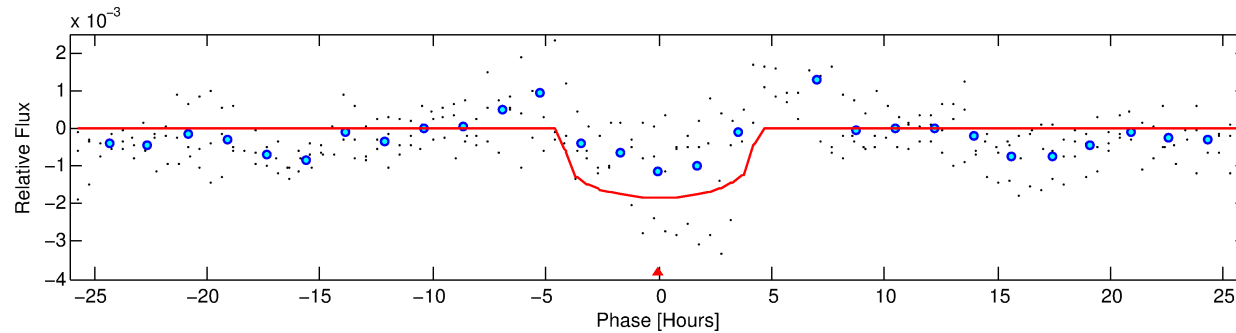
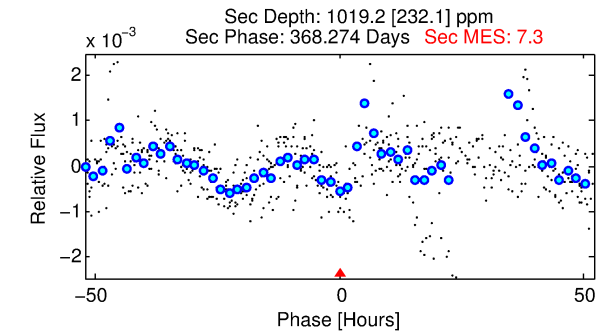
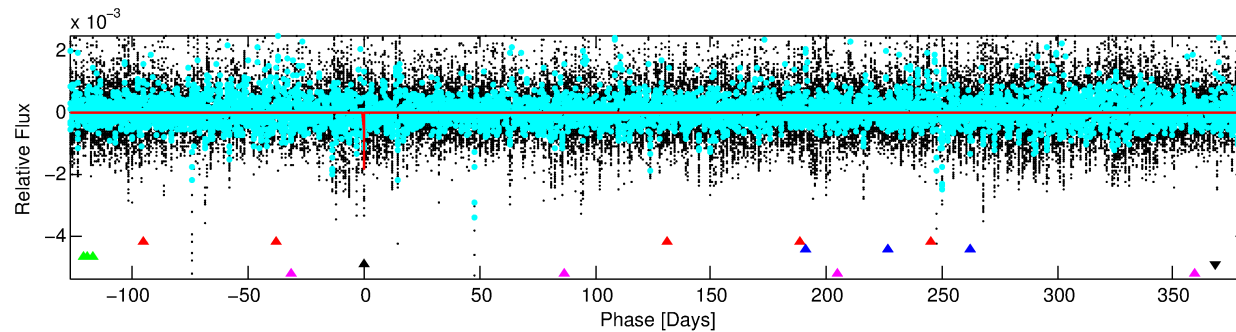
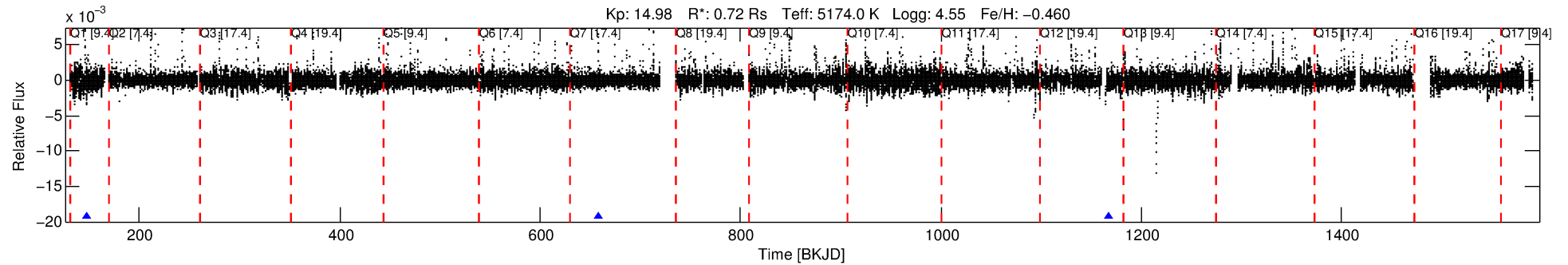
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004649344-04

No Significant Match Found

DV One-Page Summary

KIC: 4649344 Candidate: 4 of 5 Period: 510.001 d



DV Fit Results:

Period = 510.00051 [0.00466] d
Epoch = 147.9710 [0.0061] BKJD
Rp/R* = 0.0384 [0.0595]
a/R* = 465.33 [2795.51]
b = 0.00 [10260.65]
Seff = 0.28 [0.05]
Teq = 185 [9] K
Rp = 3.04 [4.73] Re
a = 1.1032 [0.1199] AU
Ag = 73887.58 [229895.30] [0.32 σ]
Teffp = 4717 [3667] K [1.24 σ]

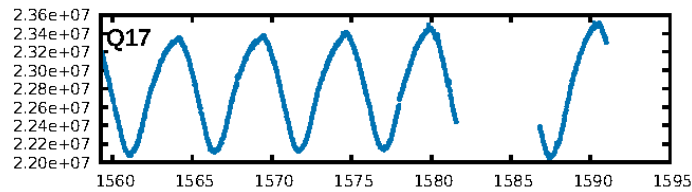
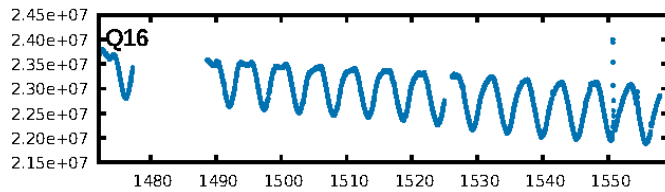
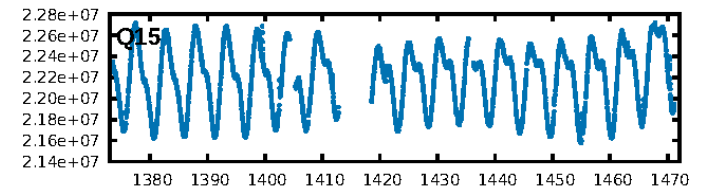
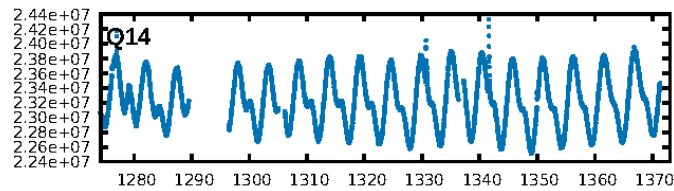
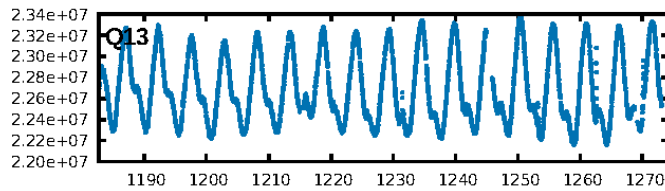
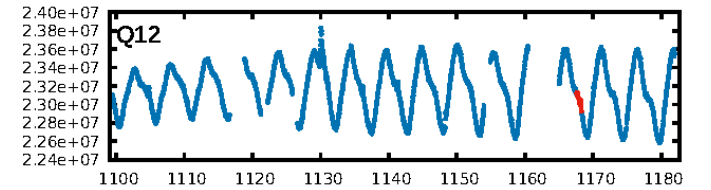
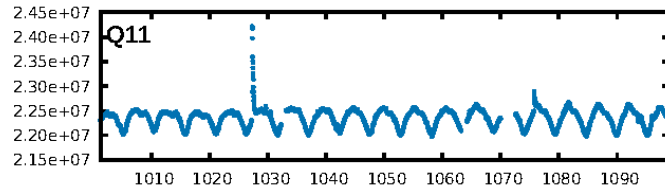
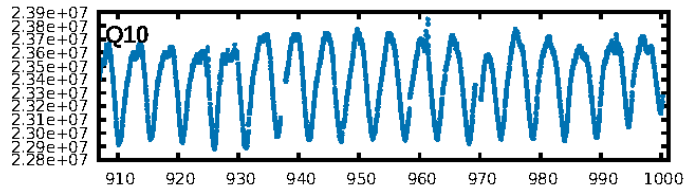
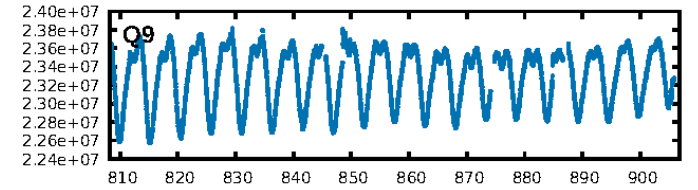
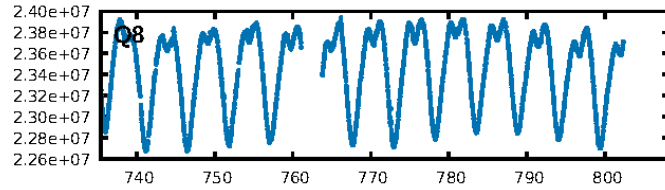
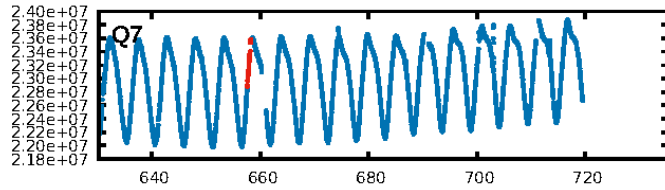
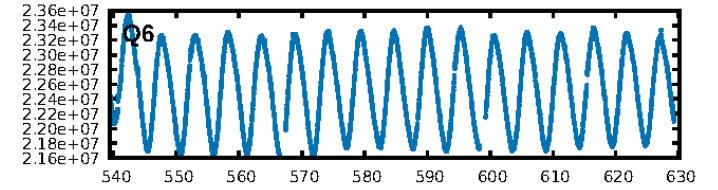
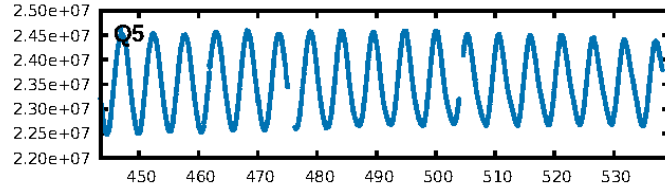
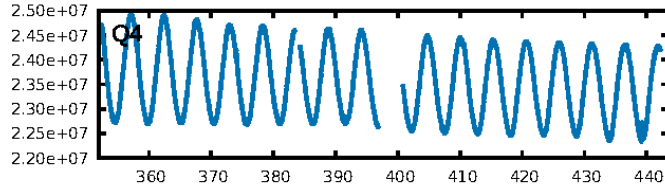
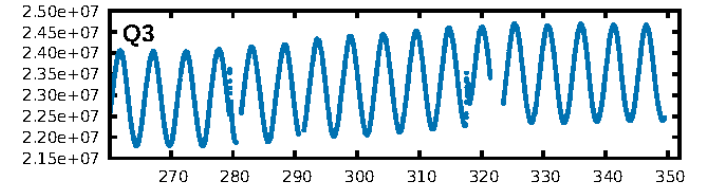
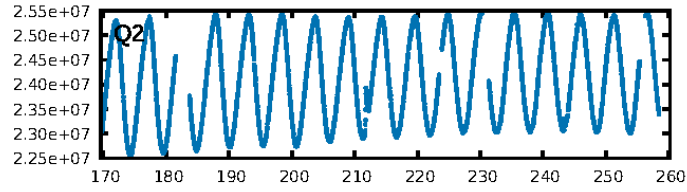
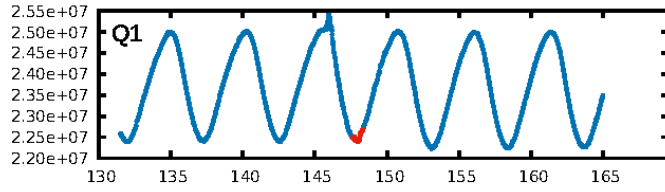
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.46 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 75.5%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.6734
Centroid-sig: 86.5%
Centroid-so: 0.293 arcsec [0.48 σ]
OotOffset-rm: 0.085 arcsec [0.92 σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-rm: 0.051 arcsec [0.56 σ]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

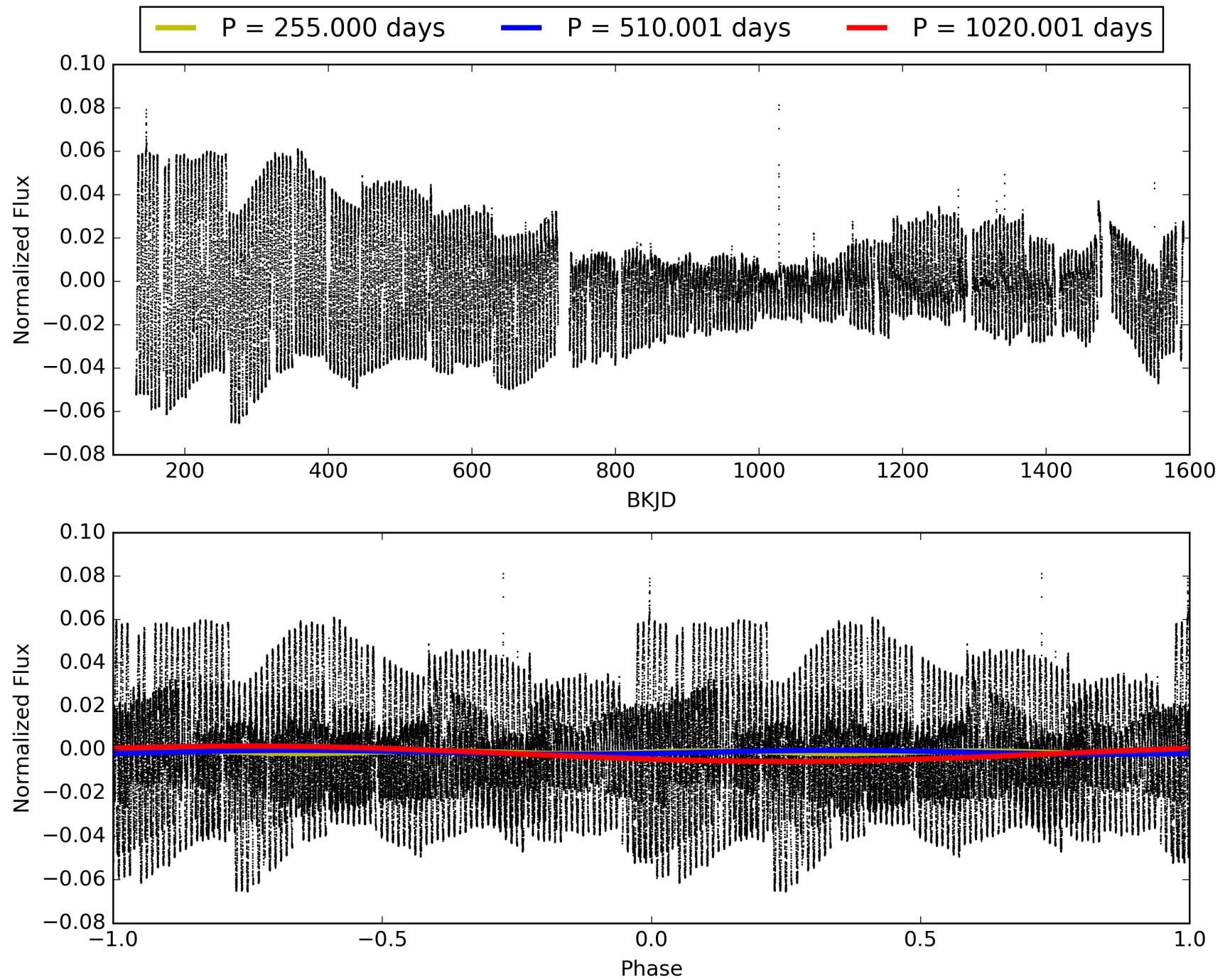
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:06:12 Z

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

TCE 004649344-04, PDC Light Curves

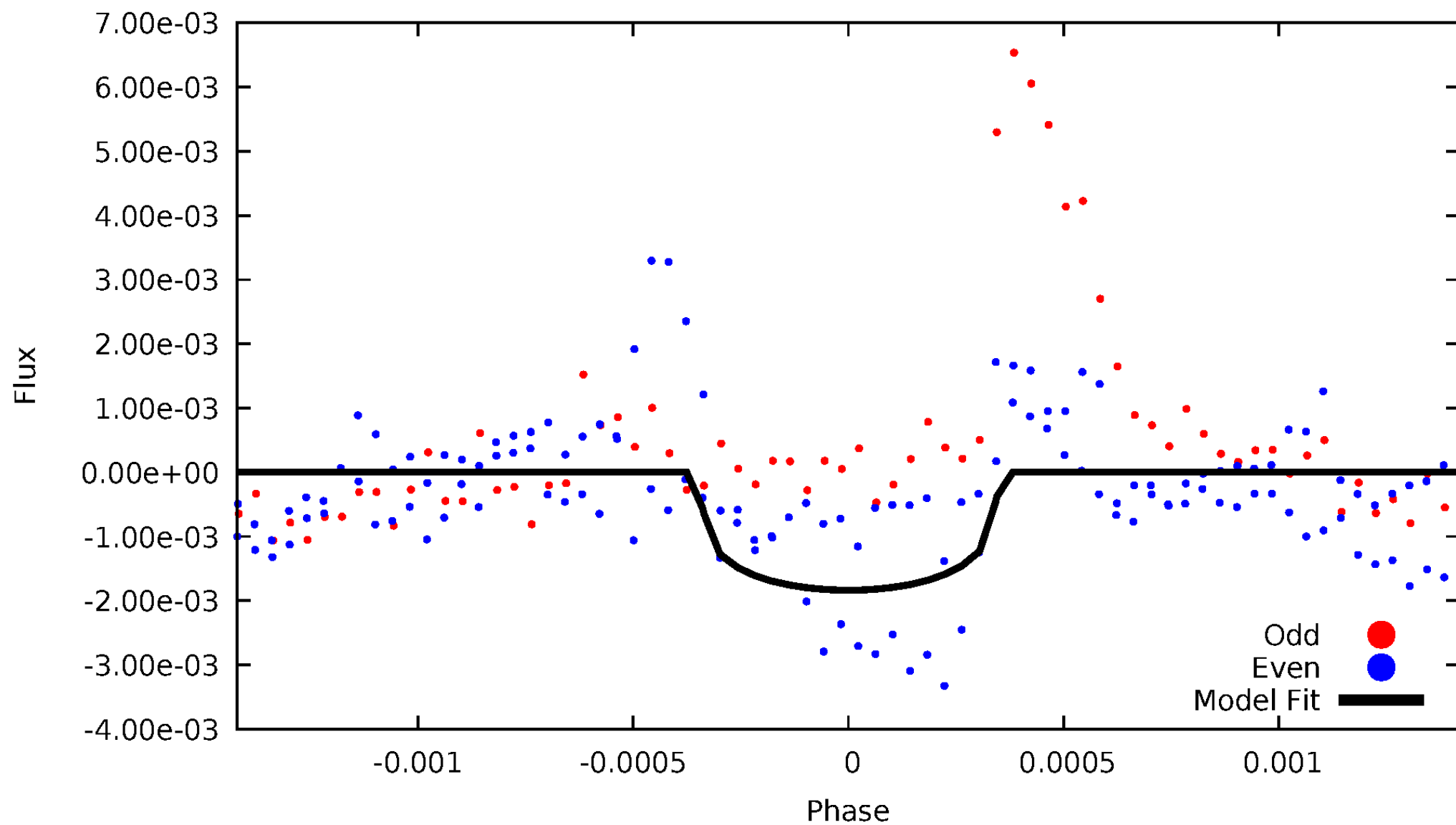


TCE 004649344-04



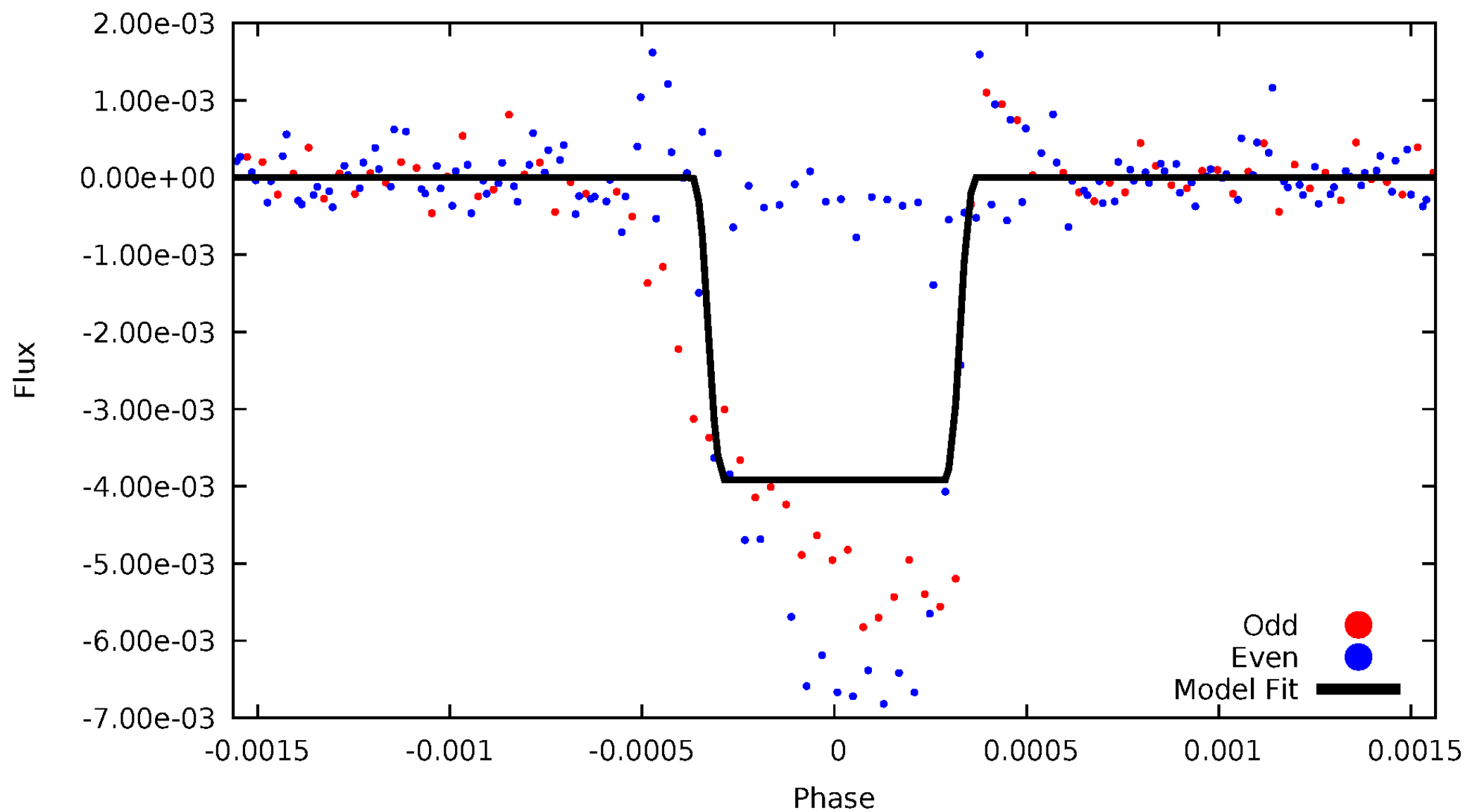
DV Odd/Even

TCE 004649344-04



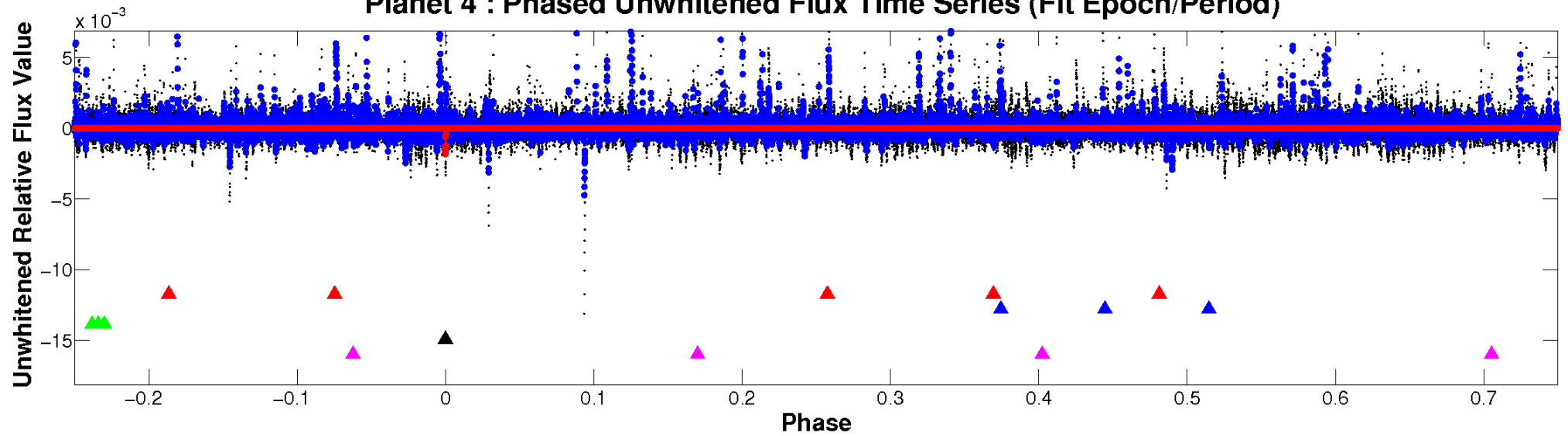
ALT Odd/Even

TCE 004649344-04

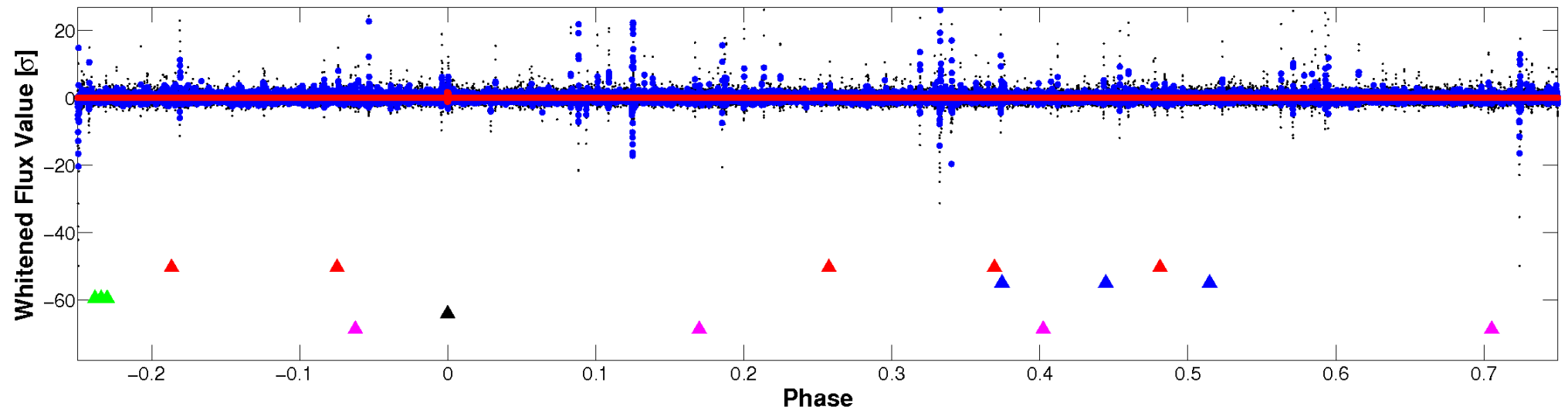


Non-Whitened Vs. Whitened Light Curve

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

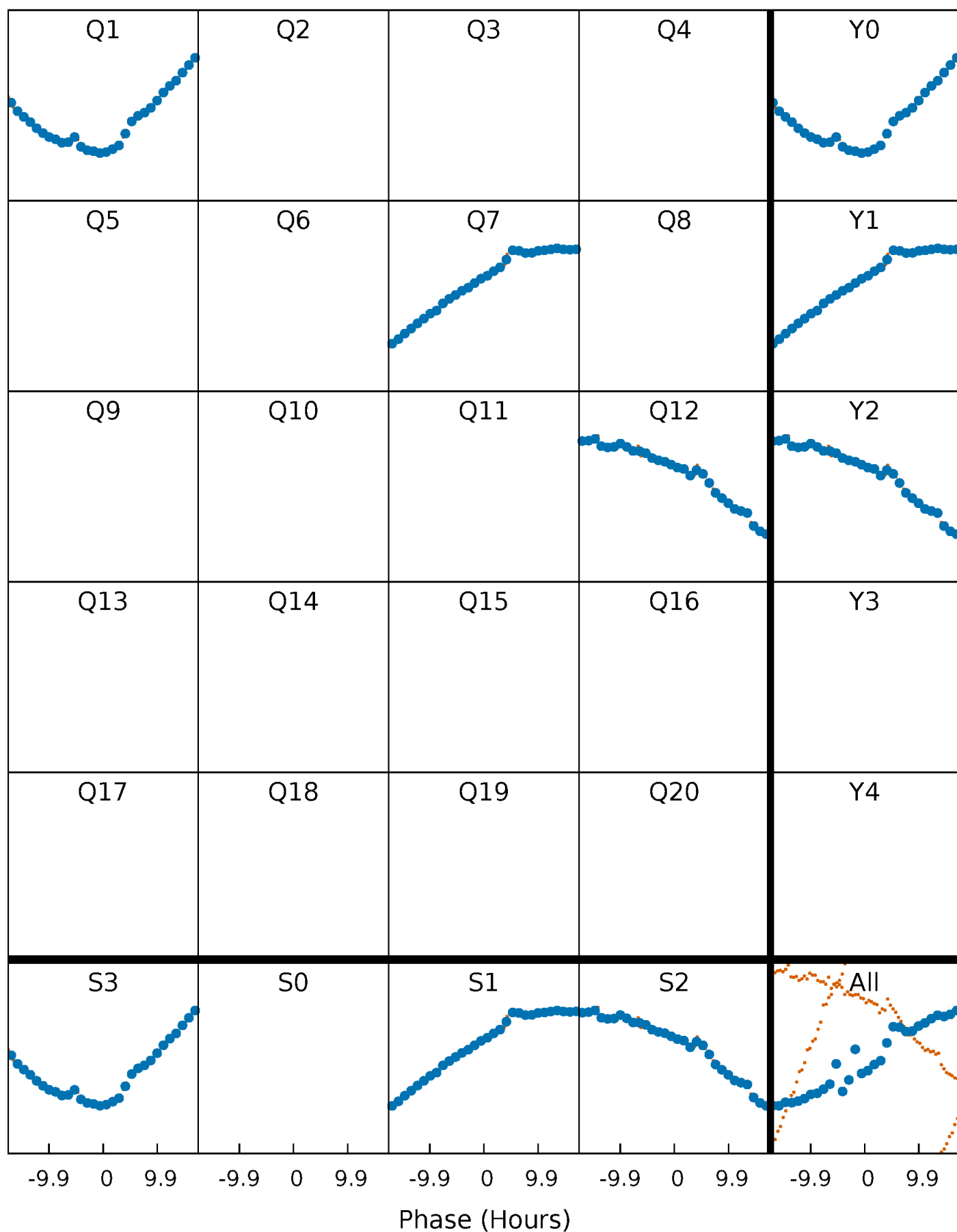


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 004649344-04 $P=510.000515$ Days $T_0=147.971012$ (BKJD)



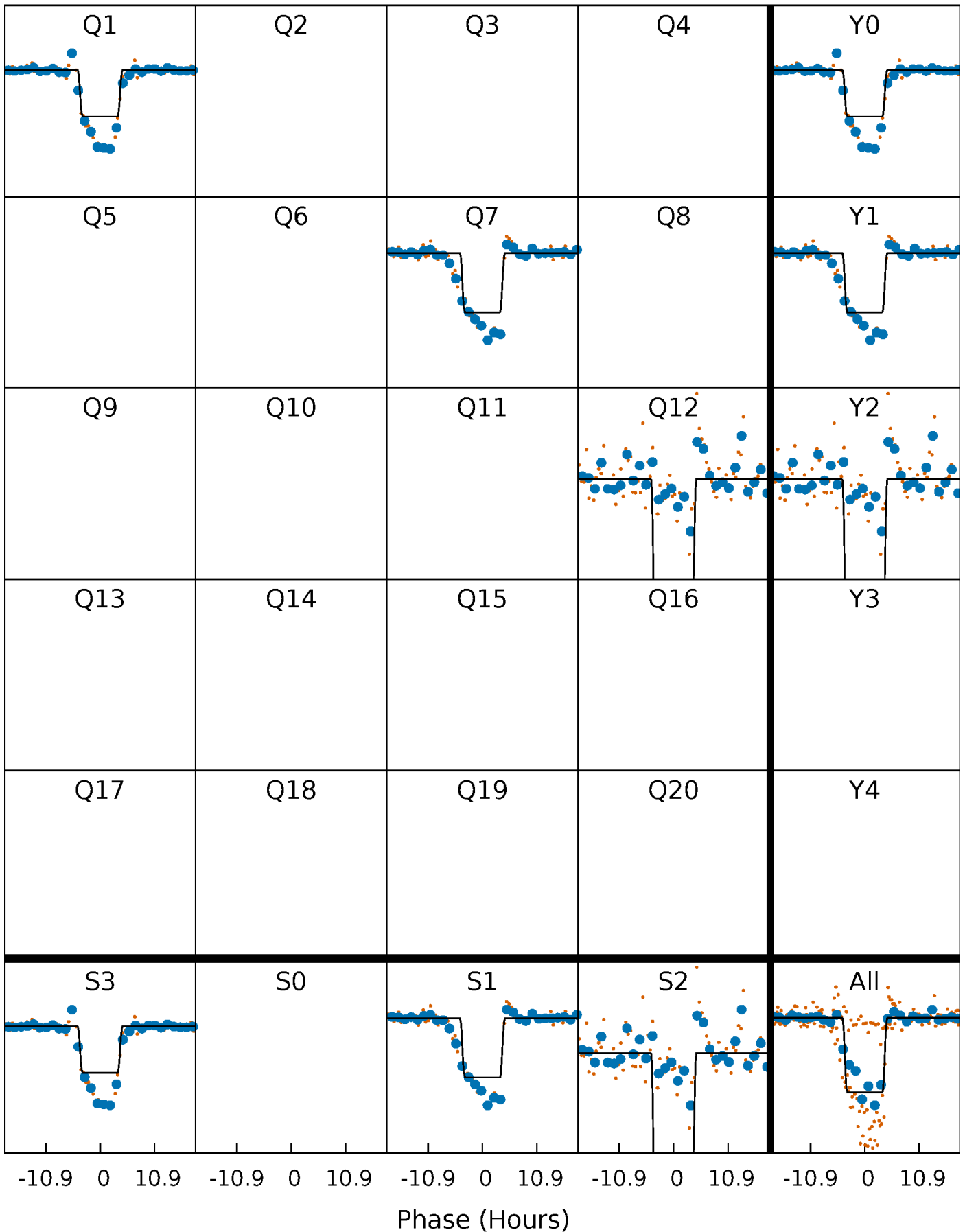
DV Quarter-Phased Transit Curves

TCE 004649344-04 $P=510.000515$ Days $T_0=147.971012$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

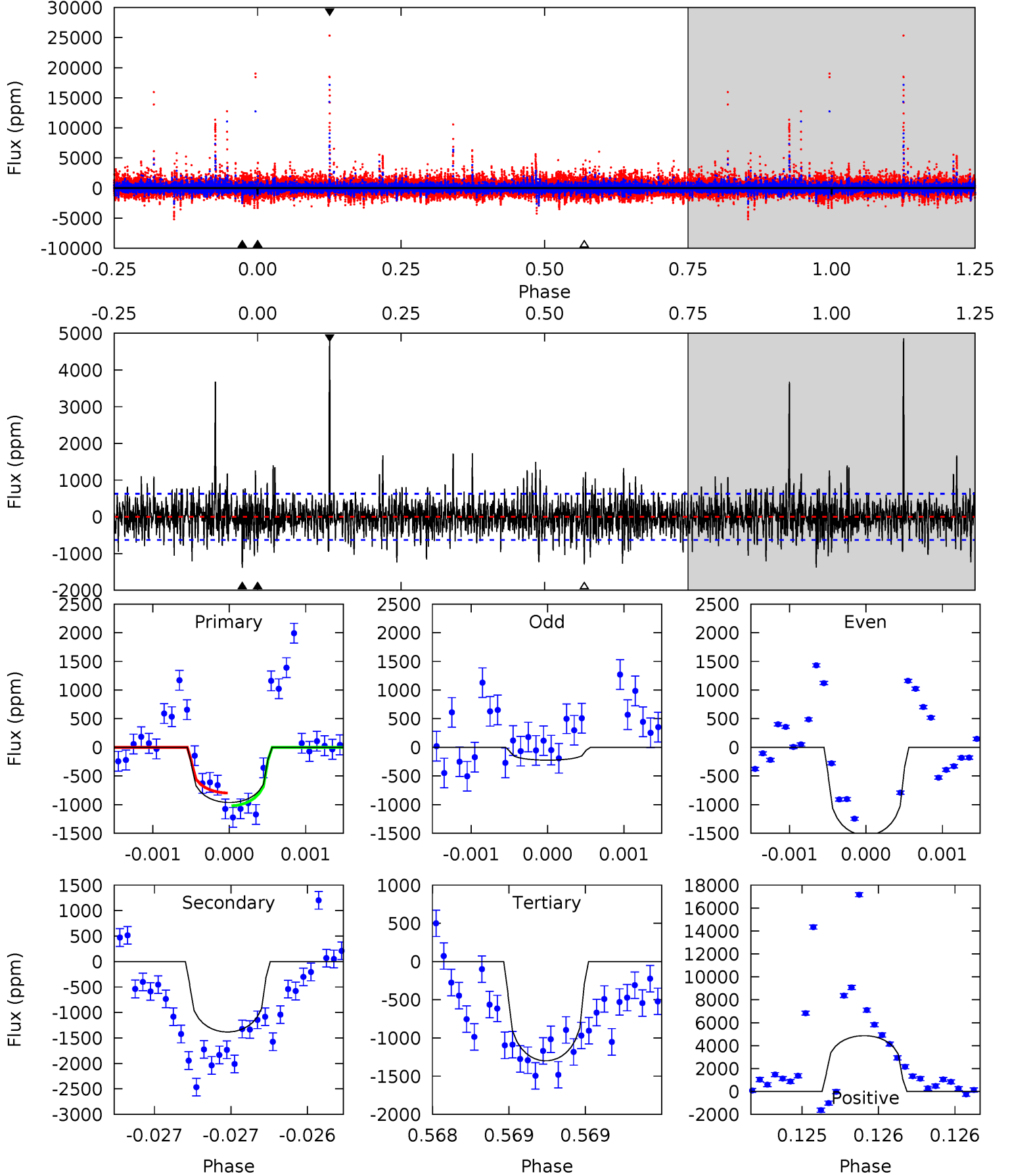
TCE 004649344-04 P=509.987602 Days $T_0=147.978681$ (BKJD)



DV Model-Shift Uniqueness Test

004649344-04, P = 510.000515 Days, E = 147.971012 Days

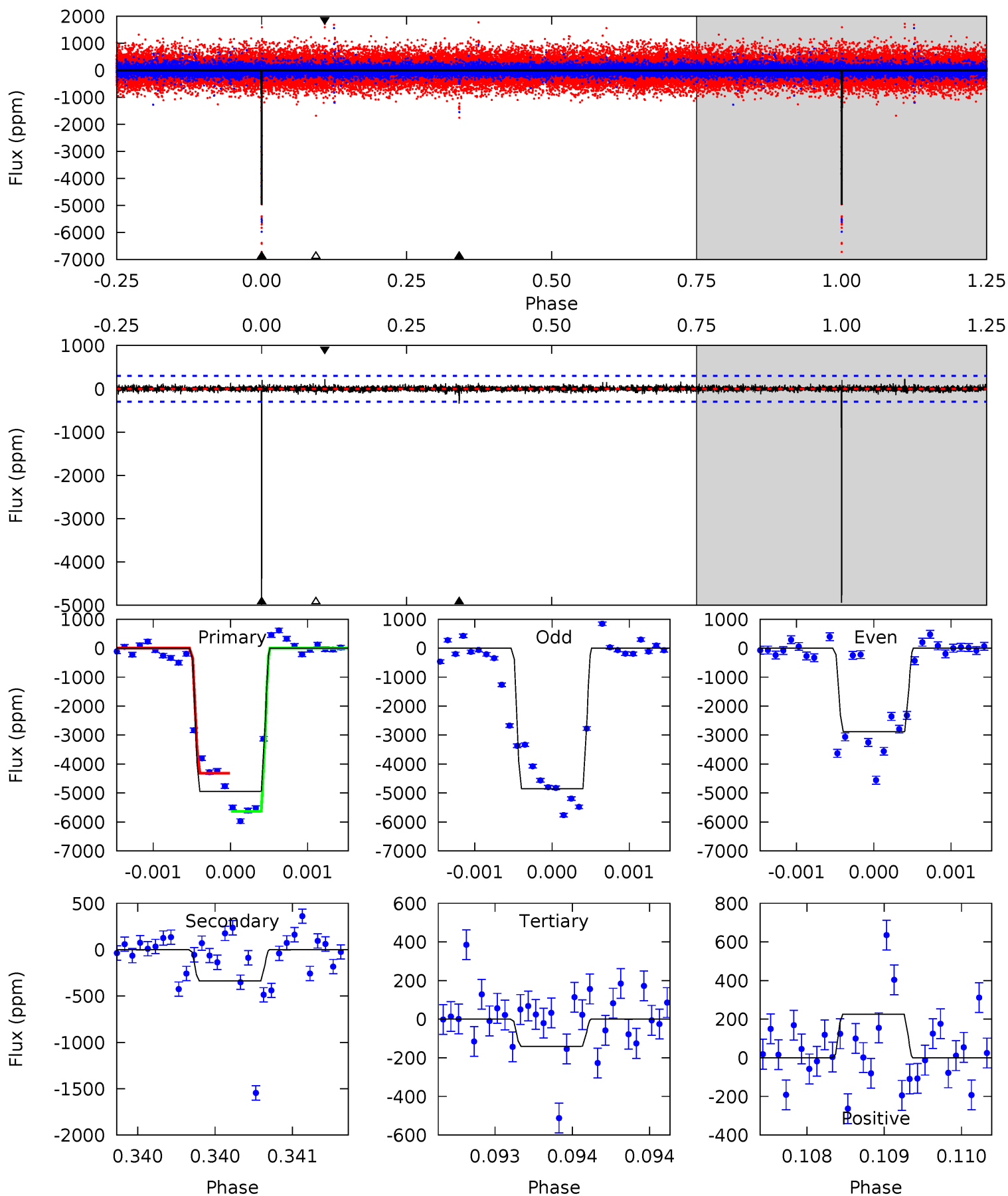
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.44	12.1	11.4	42.6	5.52	3.40	3.41	-2.94	-34.2	0.74	-30.5	3.95	1.21	0.78	0.98



Alt Model-Shift Uniqueness Test

004649344-04, P = 509.987602 Days, E = 147.978681 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
91.1	6.22	2.59	4.15	5.51	3.38	0.55	88.5	86.9	3.64	2.07	22.2	0.75	0.04	12.2



Stellar Parameters For KIC 004649344

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5174^{+154}_{-154}	$4.555^{+0.081}_{-0.081}$	$-0.460^{+0.300}_{-0.300}$	$0.725^{+0.097}_{-0.079}$	$0.689^{+0.098}_{-0.042}$	$2.543^{+0.931}_{-0.623}$
	+3%/-3%	+2%/-2%	+65%/-65%	+13%/-11%	+14%/-6%	+37%/-24%
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 004649344-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1382±114	$4.82^{+3.87}_{-3.08}$	258^{+12}_{-11}	4273^{+2351}_{-802}	$40790^{+268979}_{-28000}$
Alt.	-338±54	$5.83^{+4.19}_{-3.59}$	259^{+11}_{-11}	3150^{+1178}_{-429}	6415^{+40651}_{-4196}

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

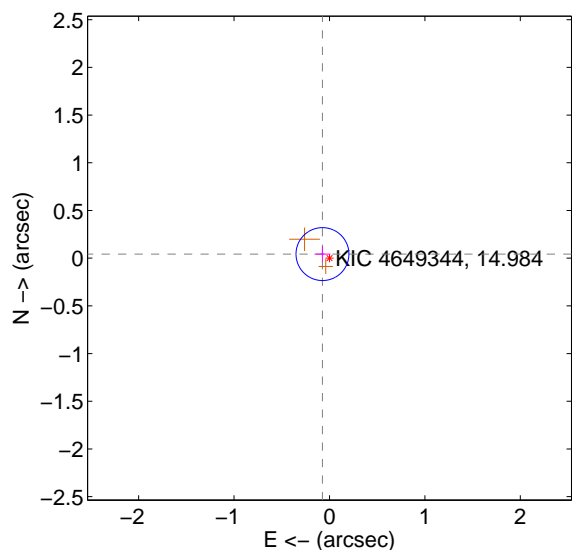
Supplemental centroid analysis for 004649344-04. Kepler magnitude: 14.98. Transit SNR 8.76

There are 1 quarters with good PRF difference image offsets

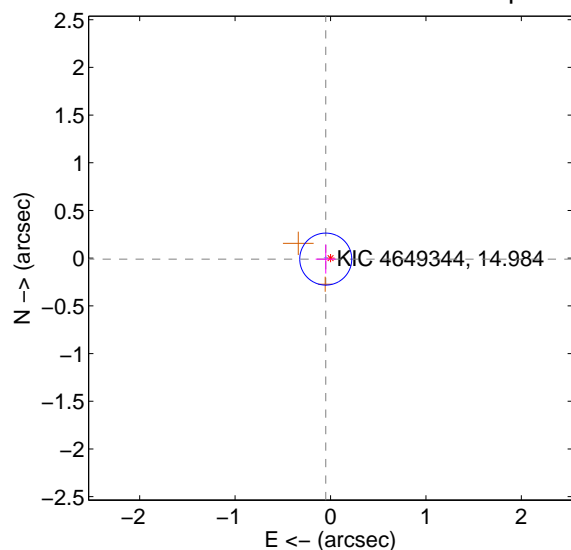
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.085 ± 0.092	0.92	0.073 ± 0.083	0.043 ± 0.081
PRF-fit source offset from KIC position	0.051 ± 0.091	0.56	0.050 ± 0.106	-0.010 ± 0.151
photometric centroid source offset	0.29 ± 0.61	0.48	0.08 ± 0.64	-0.28 ± 0.60

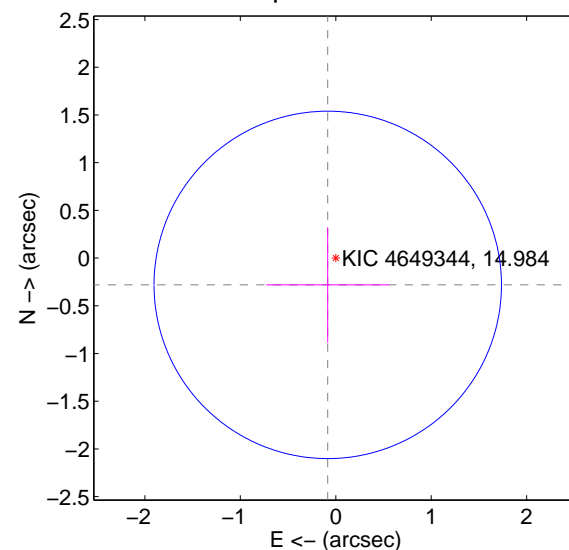
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

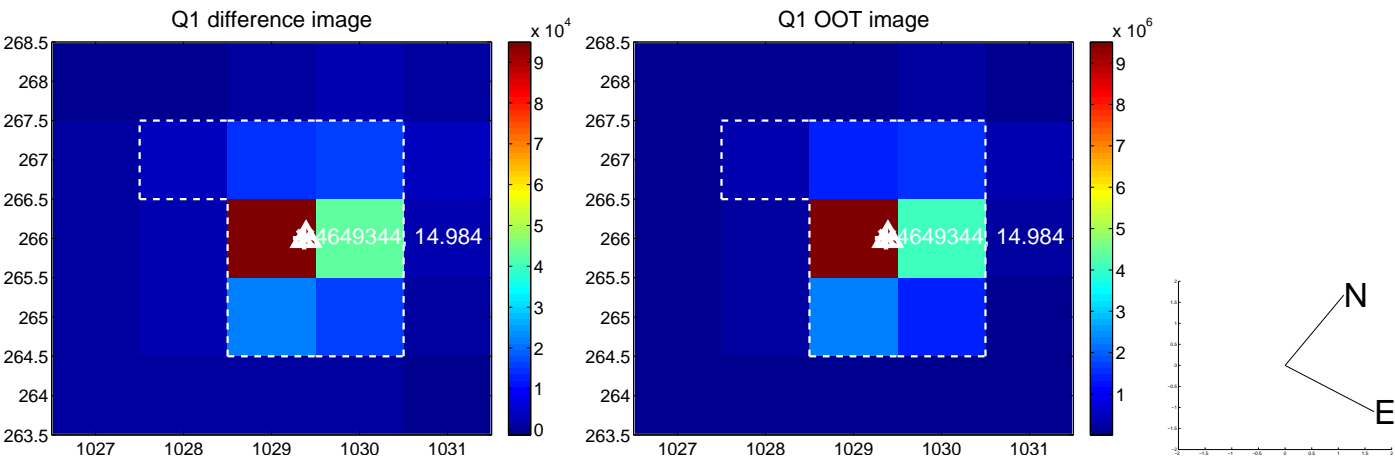


offset from photometric centroids

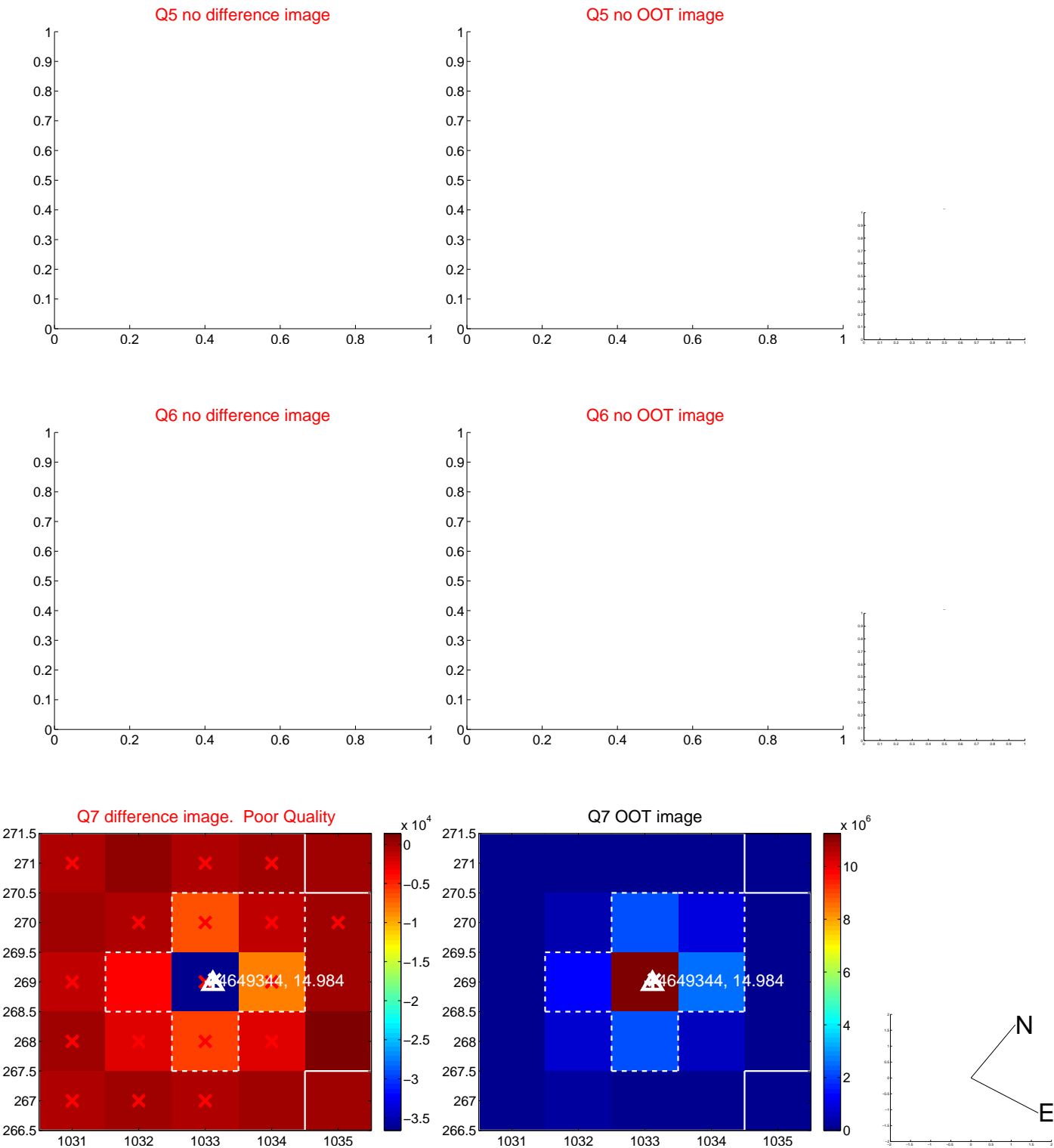


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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



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



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

Q9 no difference image



Q9 no OOT image



Q10 no difference image



Q10 no OOT image



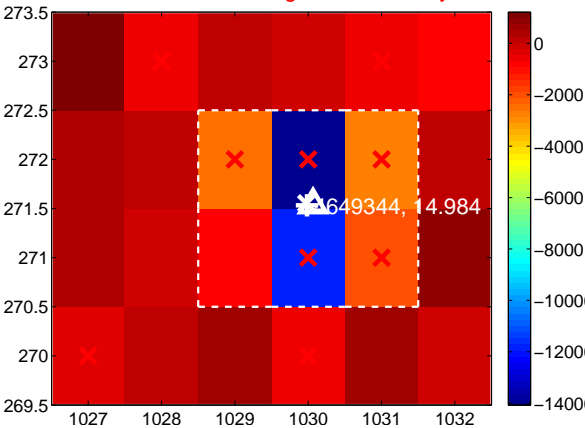
Q11 no difference image



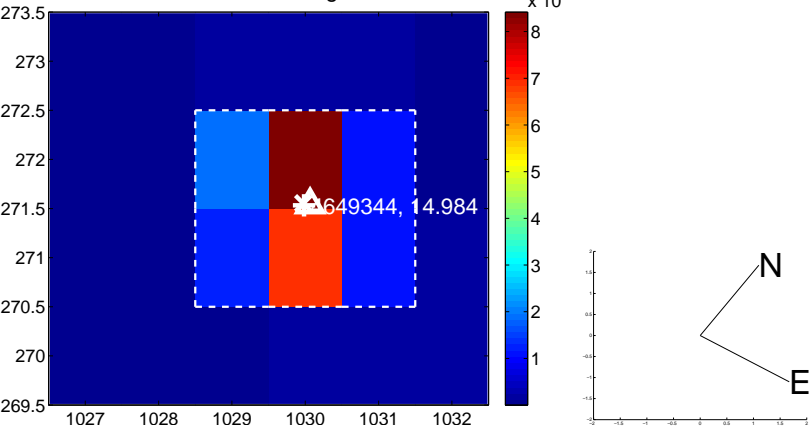
Q11 no OOT image



Q12 difference image. Poor Quality



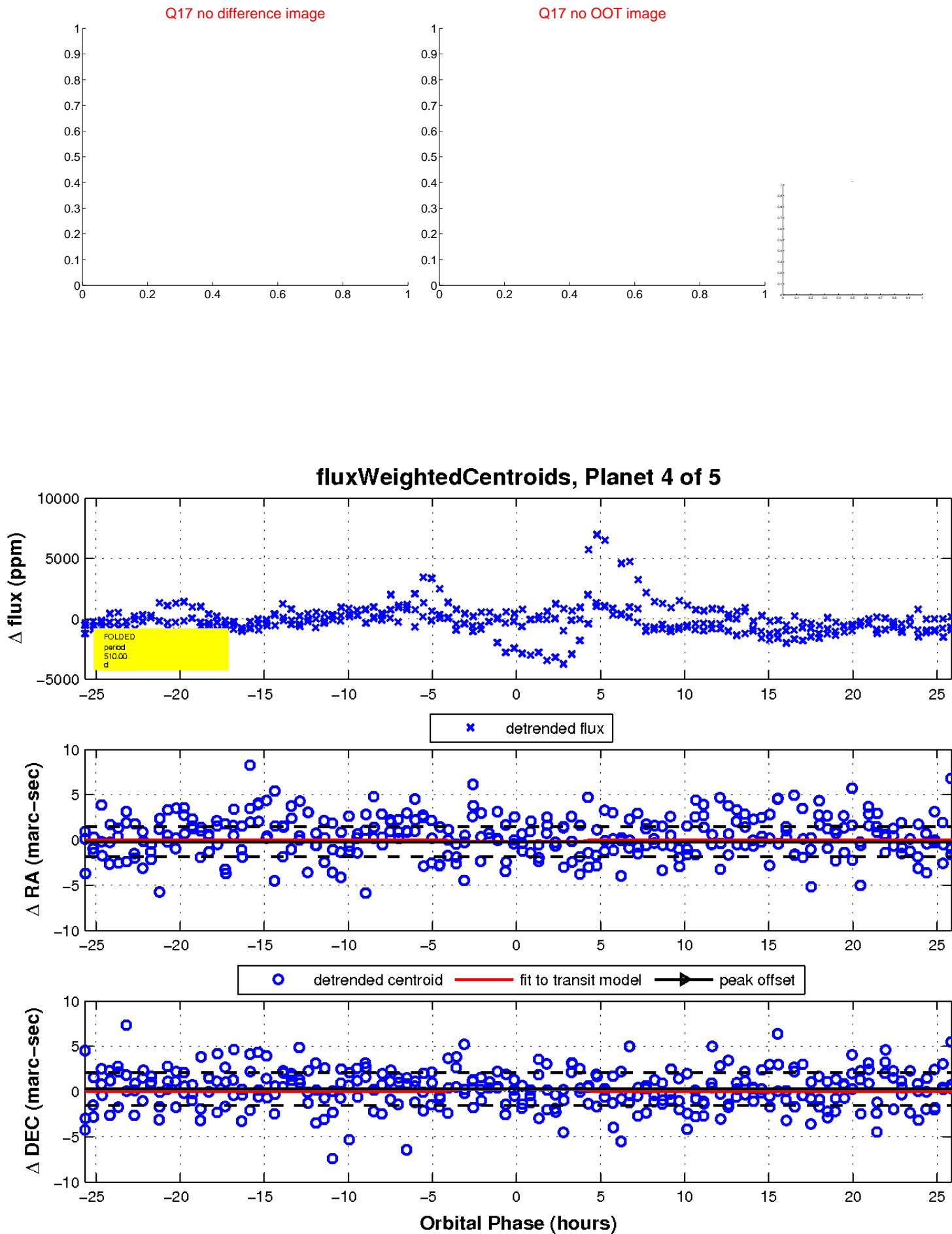
Q12 OOT image



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



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



UKIRT Image

Declination

