

KIC 008680857

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})
008680857-01	OBS	No	589.084633	368.365557	2055.3	20.613	13.5	5.5	0.72	4391	3.15	0.12
008680857-02	OBS	No	366.888682	375.012581	2144.6	6.470	14.0	8.1	0.72	4391	3.60	0.22
008680857-03	OBS	No	305.522072	363.738140	2588.5	3.382	12.7	8.8	0.72	4391	4.04	0.28
008680857-04	OBS	No	255.719192	178.446881	629.9	15.000	10.9	-1.0	0.72	4391	1.73	0.35
008680857-05	OBS	No	212.514764	131.894373	1487.1	2.314	11.1	6.4	0.72	4391	3.19	0.45

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008680857-01	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008680857-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
008680857-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
008680857-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008680857-05	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—MOD_POS_ALT—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.

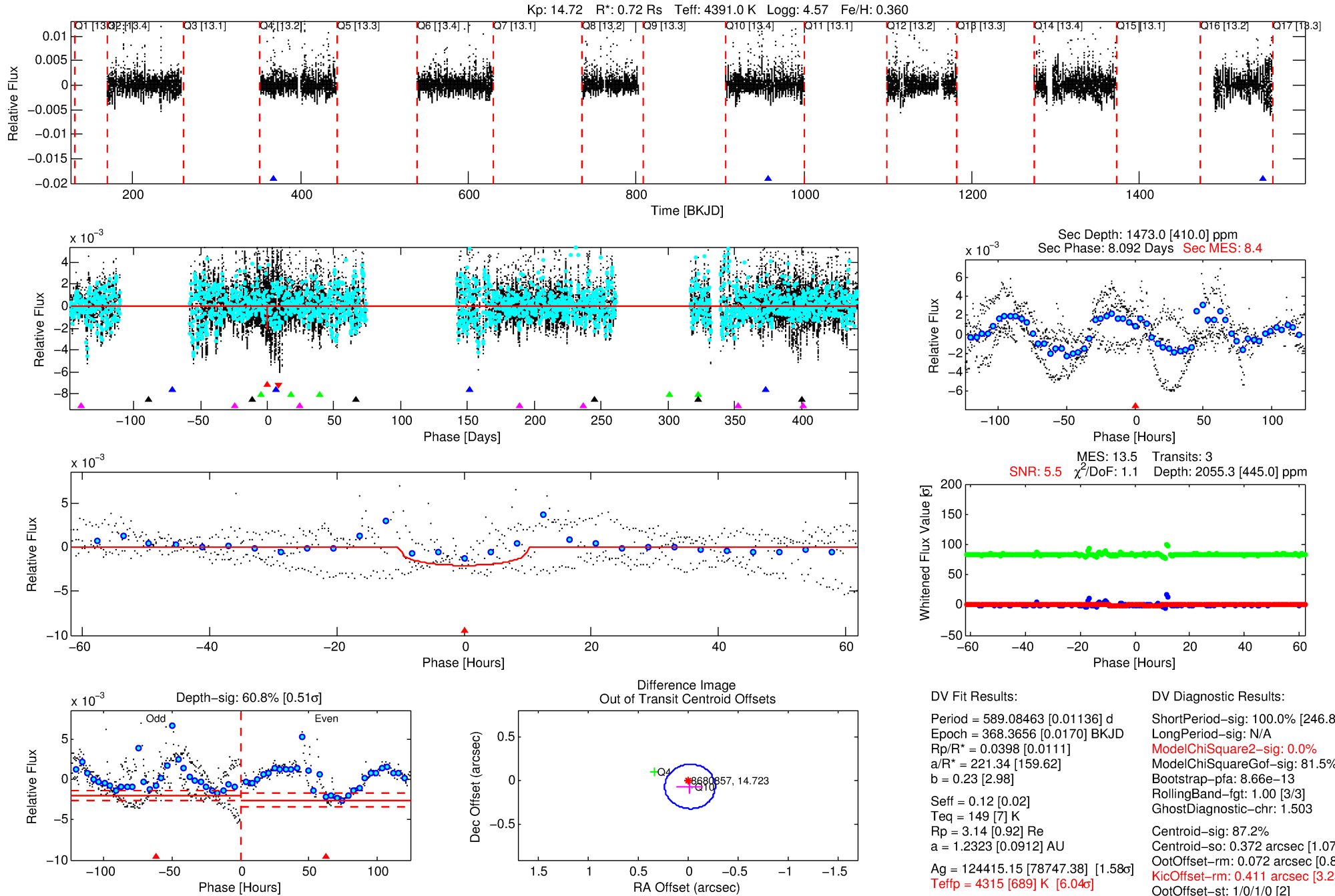
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008680857-01

No Significant Match Found

DV One-Page Summary

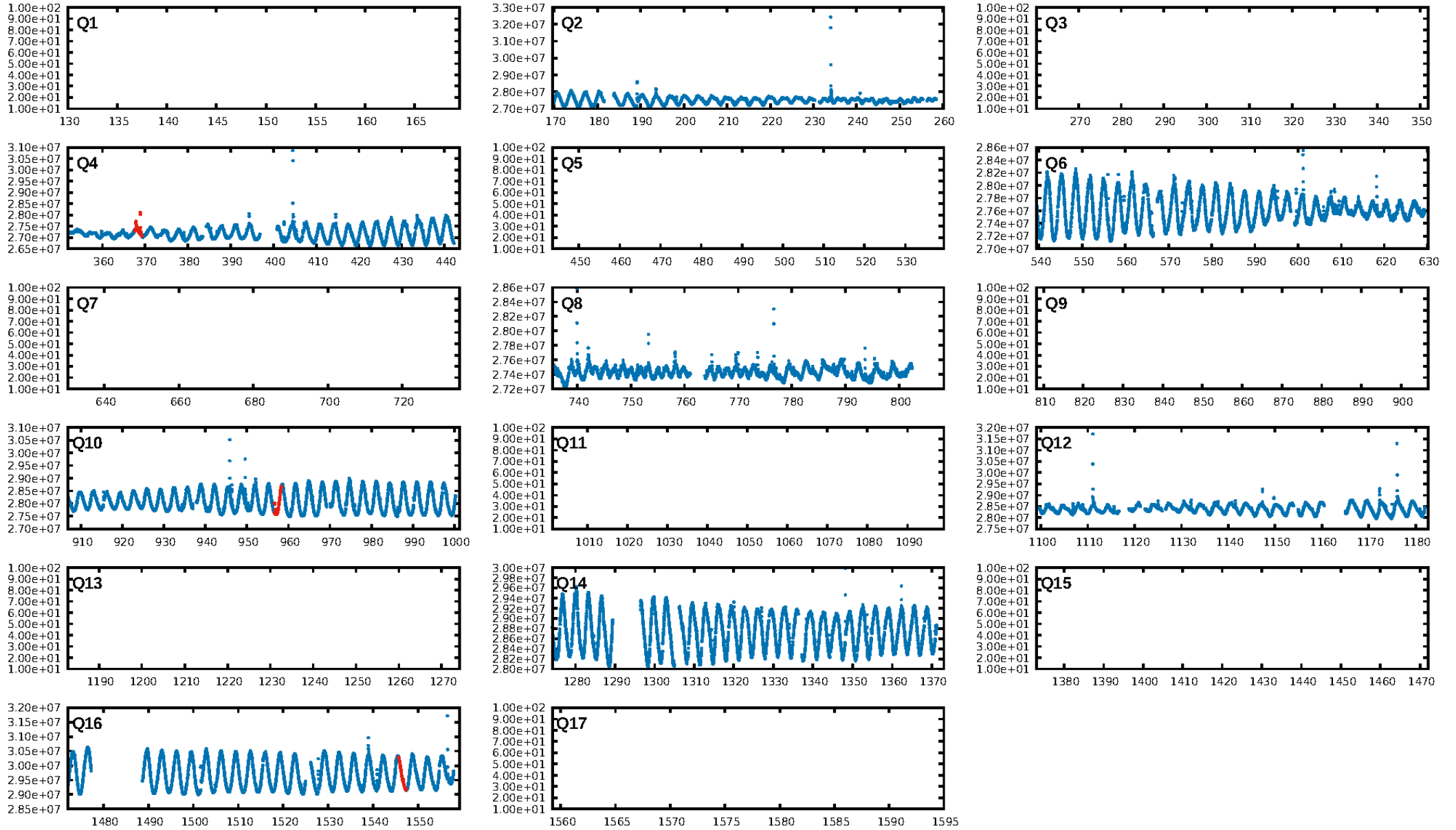
KIC: 8680857 Candidate: 1 of 5 Period: 589.085 d



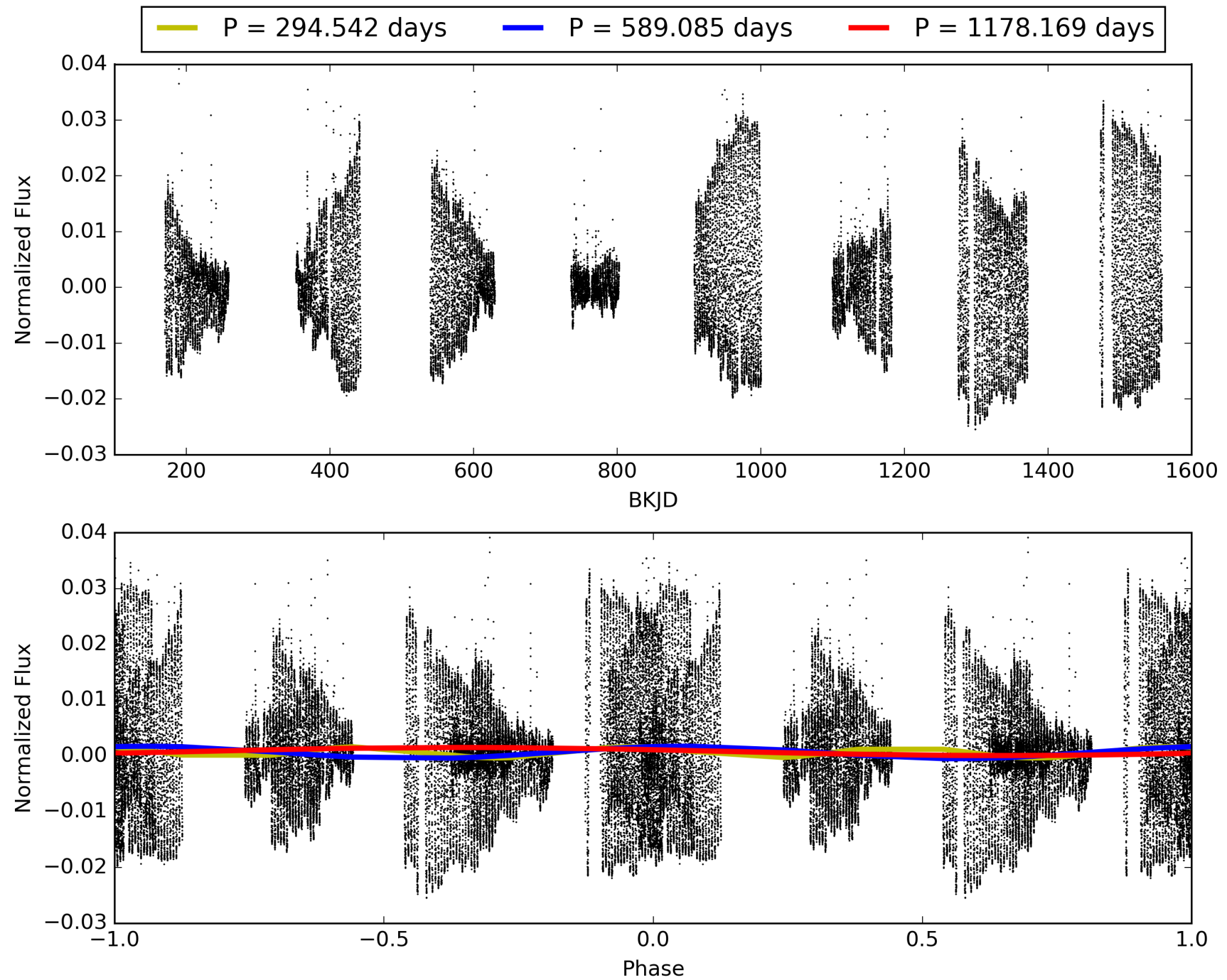
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:08:18 Z

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

TCE 008680857-01, PDC Light Curves

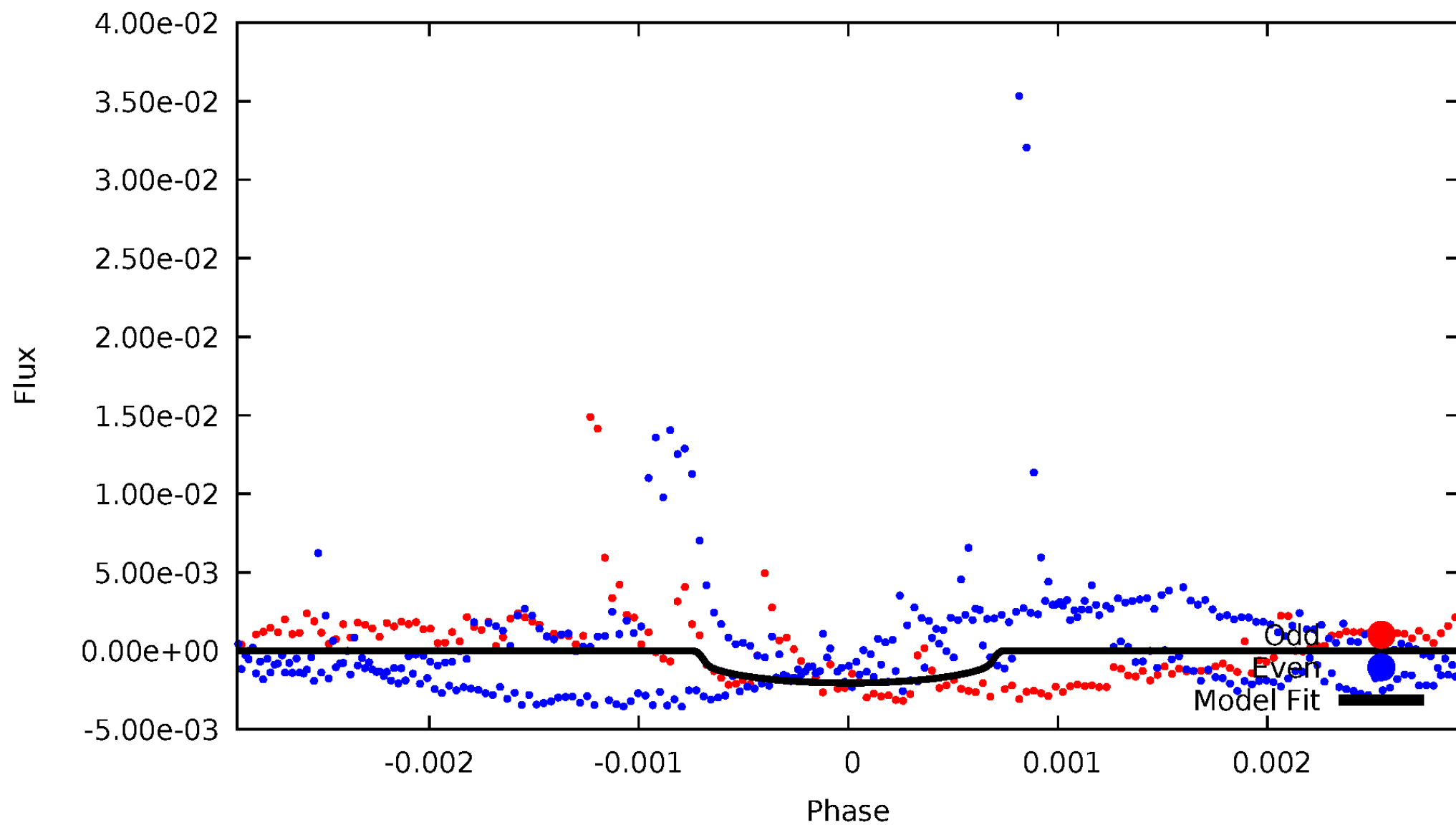


TCE 008680857-01



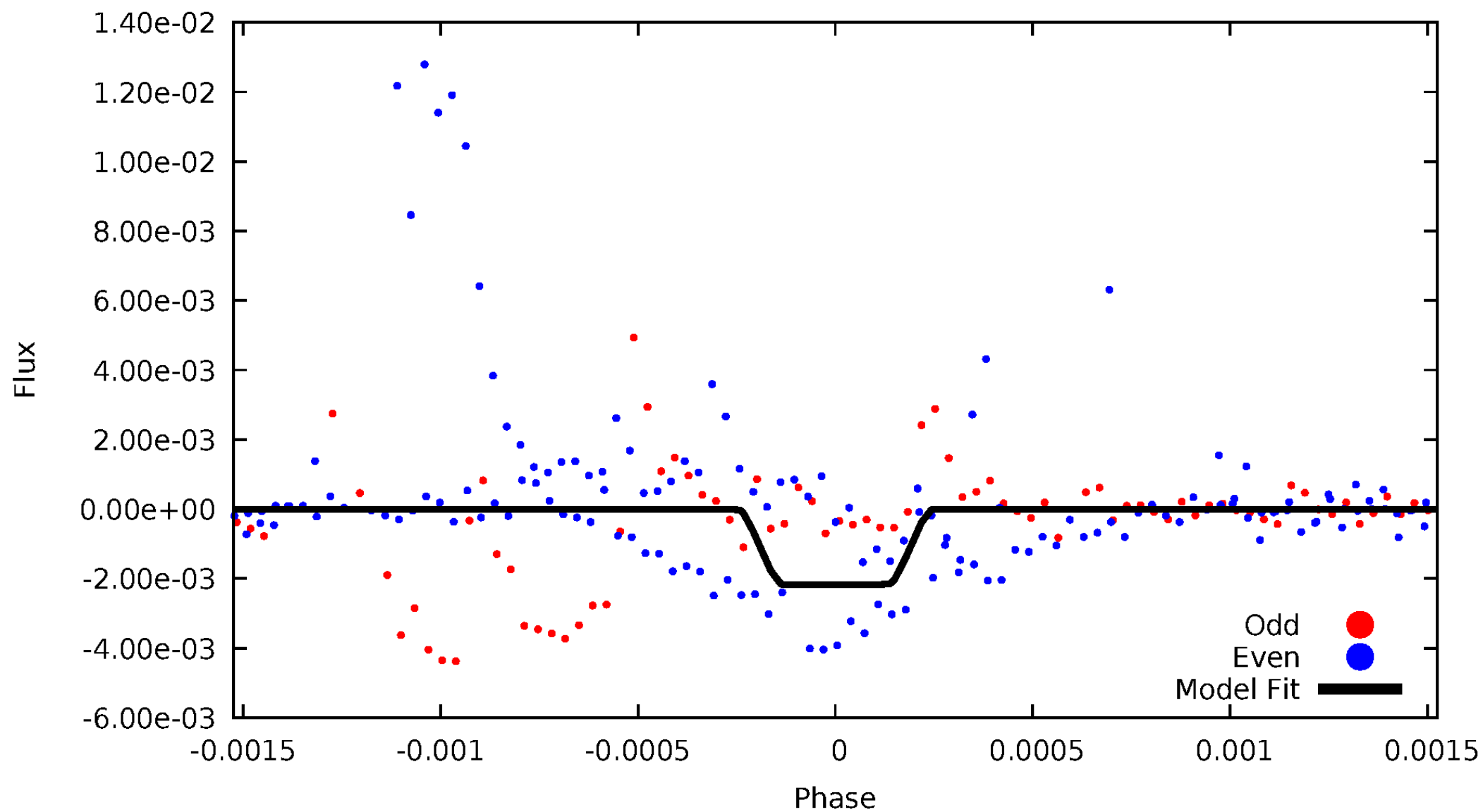
DV Odd/Even

TCE 008680857-01



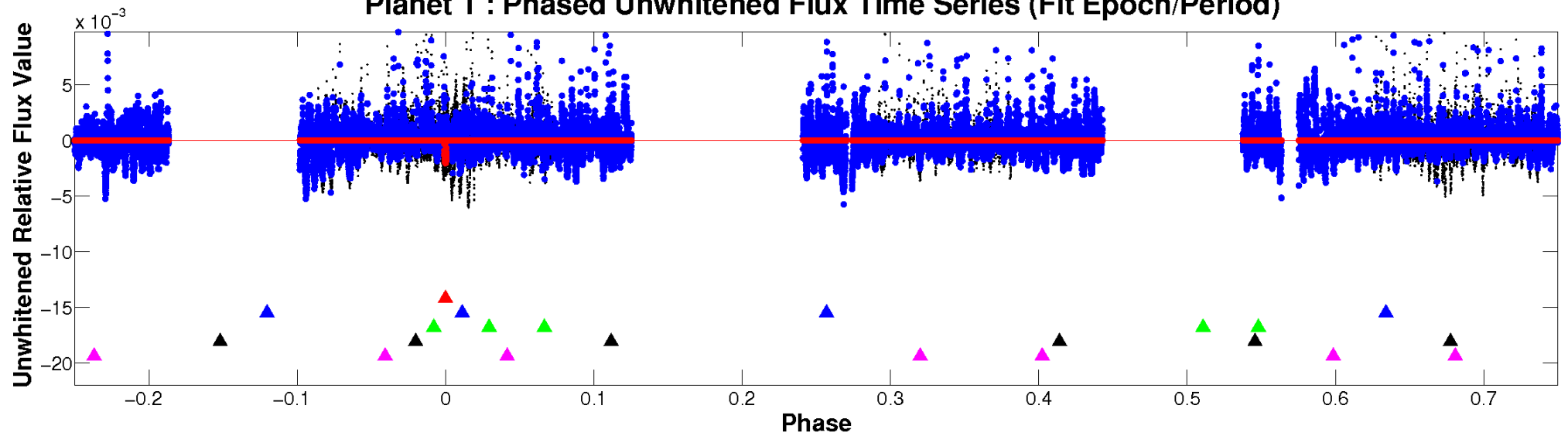
ALT Odd/Even

TCE 008680857-01

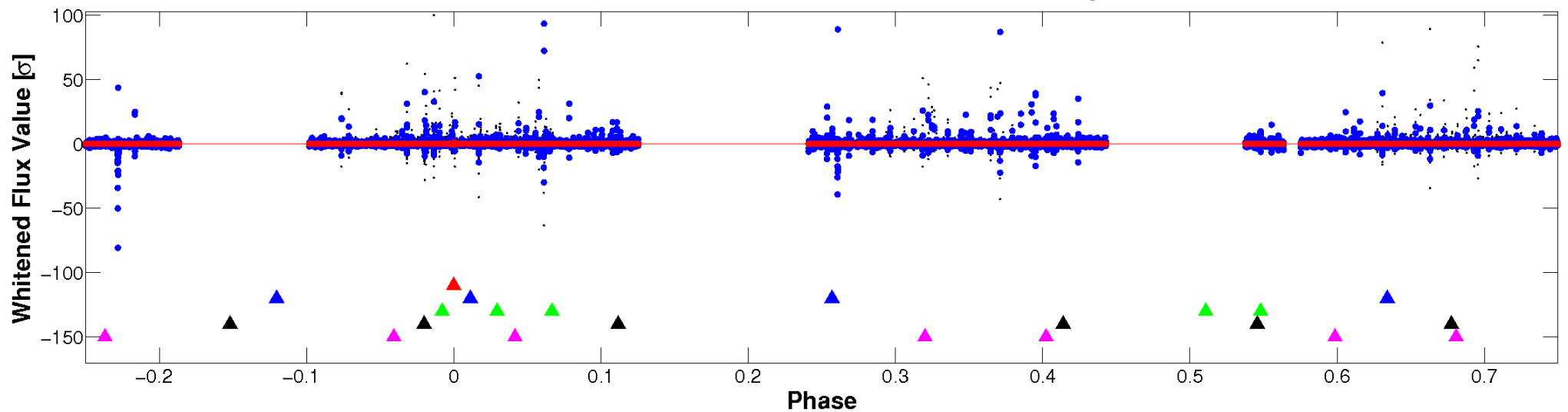


Non-Whitened Vs. Whitened Light Curve

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

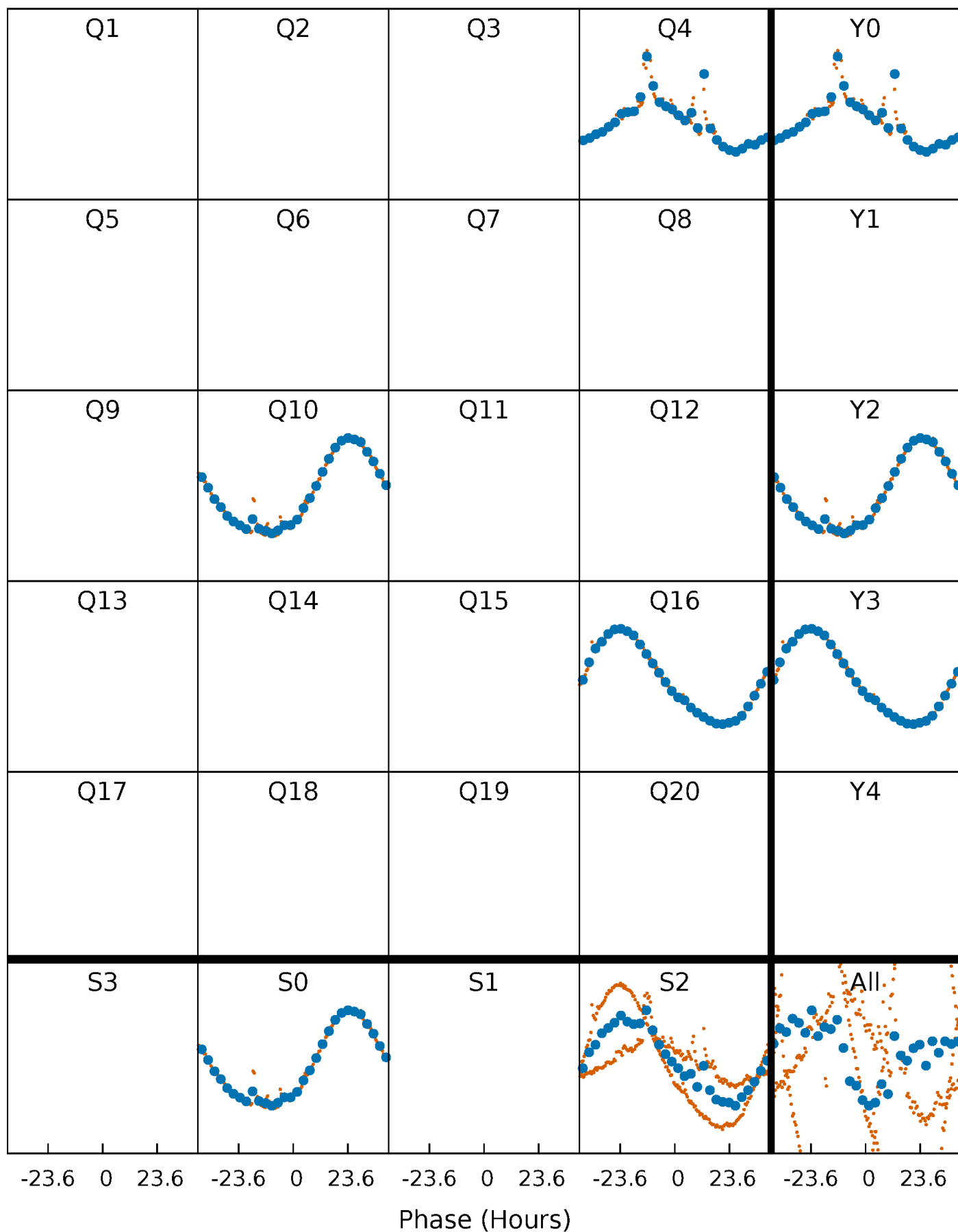


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



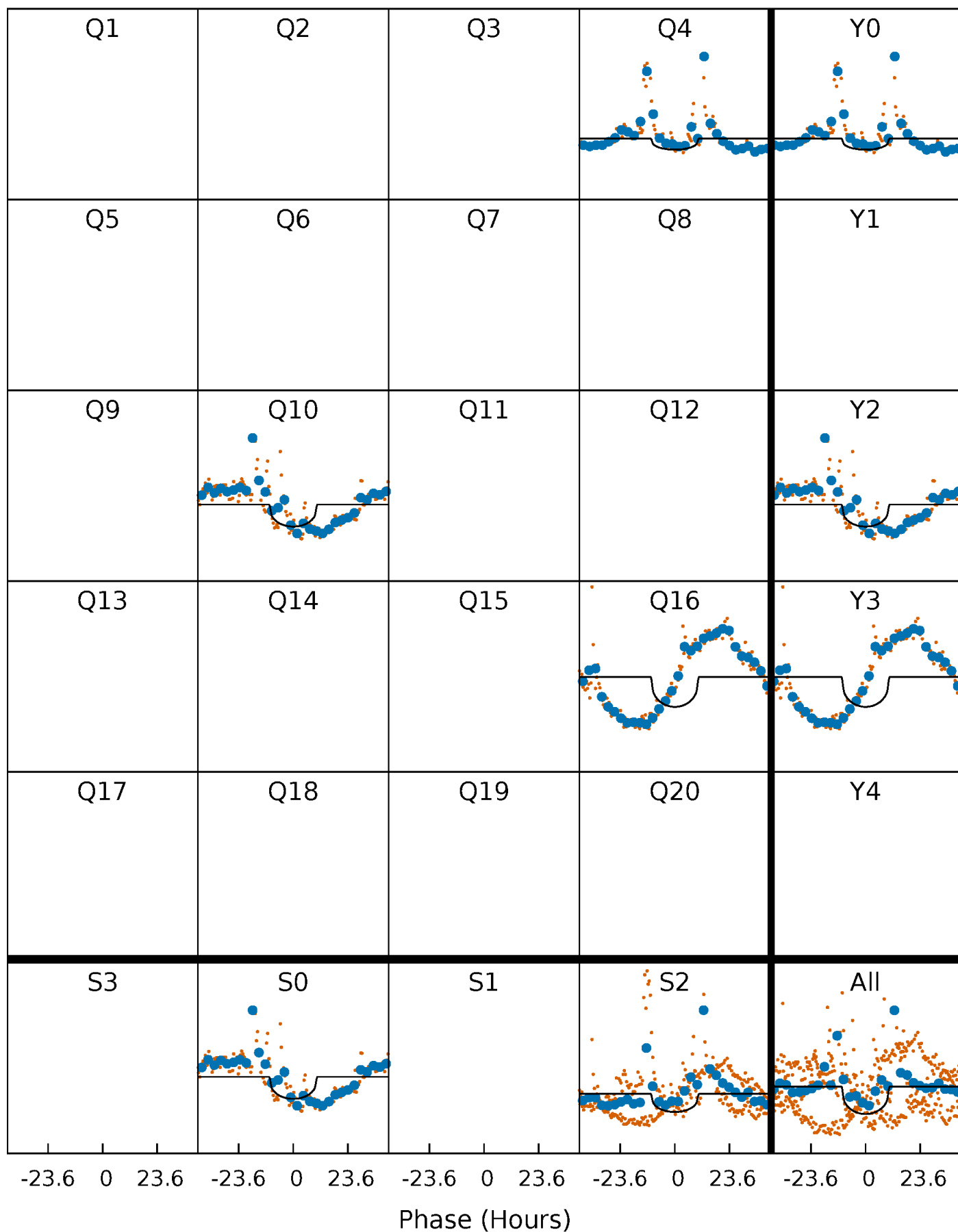
PDC Quarter-Phased Transit Curves

TCE 008680857-01 P=589.084633 Days $T_0=368.365557$ (BKJD)



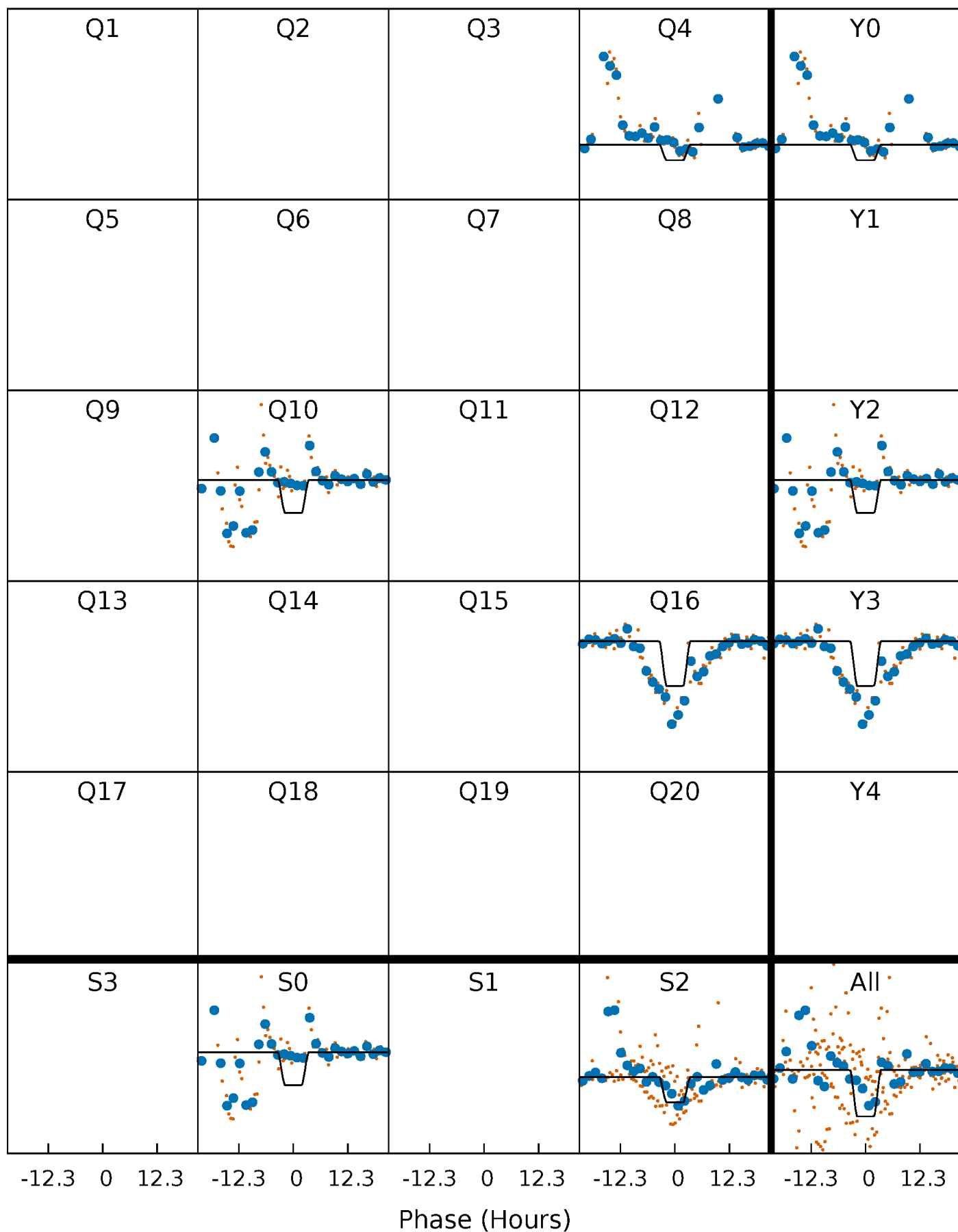
DV Quarter-Phased Transit Curves

TCE 008680857-01 $P=589.084633$ Days $T_0=368.365557$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

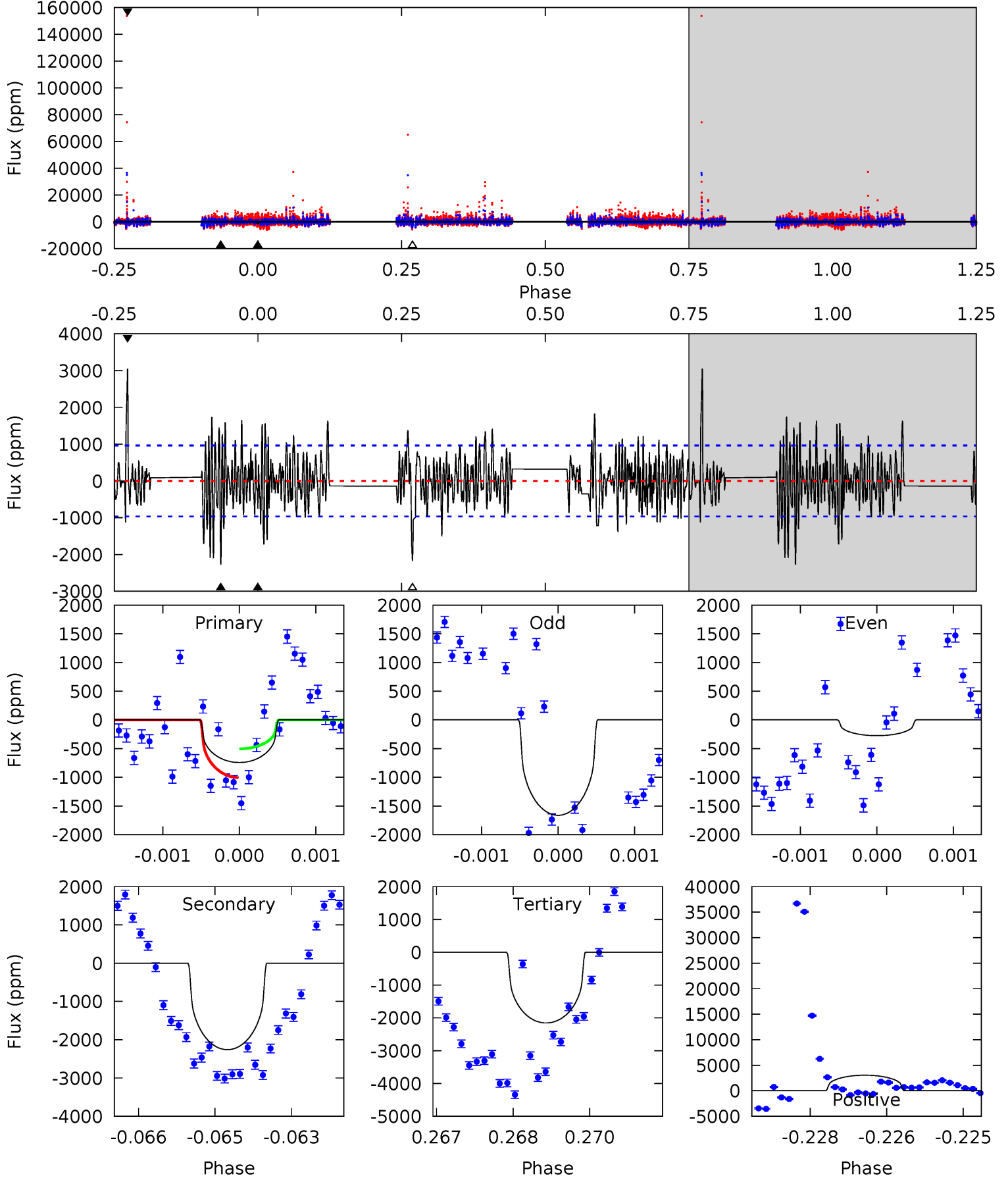
TCE 008680857-01 P=589.038234 Days $T_0=368.477846$ (BKJD)



DV Model-Shift Uniqueness Test

008680857-01, P = 589.084633 Days, E = 368.365557 Days

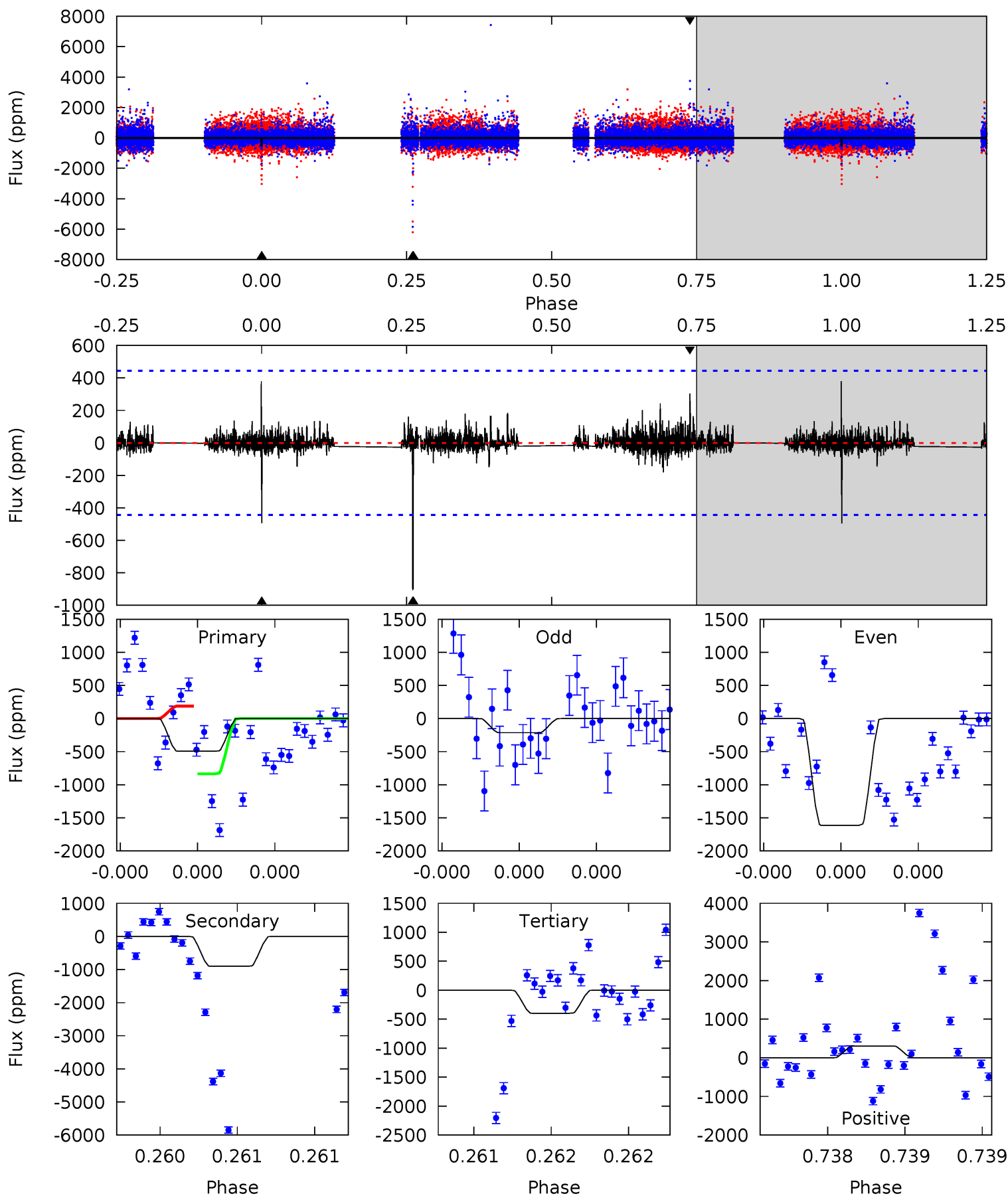
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.14	12.6	12.0	17.0	5.39	3.19	3.42	-7.88	-12.9	0.58	-4.40	3.35	2.07	0.57	1.42



Alt Model-Shift Uniqueness Test

008680857-01, P = 589.038234 Days, E = 368.477846 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.21	11.3	5.00	3.83	5.57	3.48	0.51	1.21	2.39	6.34	7.51	8.17	6.08	0.30	4.03



Stellar Parameters For KIC 008680857

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4391^{+154}_{-154}	$4.574^{+0.060}_{-0.016}$	$0.360^{+0.100}_{-0.300}$	$0.725^{+0.025}_{-0.063}$	$0.719^{+0.041}_{-0.050}$	$2.657^{+0.670}_{-0.192}$
	+4%/-4%	+1%/-0%	+28%/-83%	+3%/-9%	+6%/-7%	+25%/-7%
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 008680857-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-2259 ± 179	$3.11^{+0.88}_{-0.89}$	206^{+7}_{-8}	4705^{+744}_{-466}	$198714^{+180446}_{-80100}$
Alt.	-902 ± 80	$3.69^{+0.86}_{-0.91}$	206^{+8}_{-8}	3722^{+401}_{-262}	55257^{+40189}_{-19182}

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

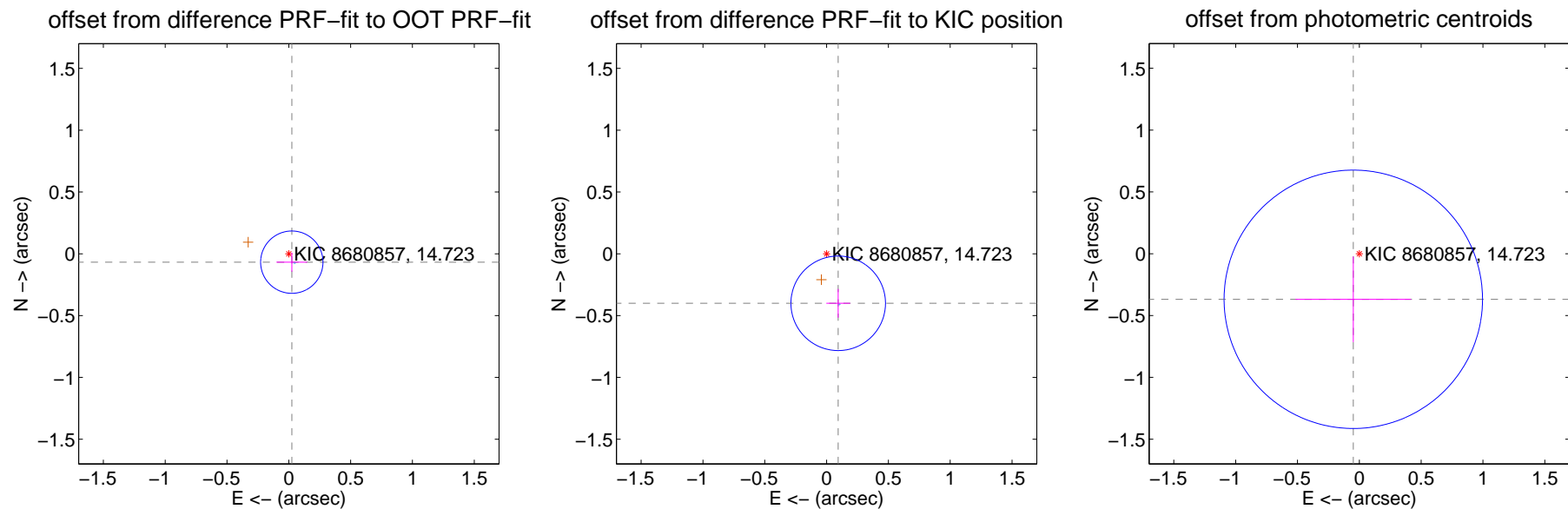
DV Centroid Data

Supplemental centroid analysis for 008680857-01. Kepler magnitude: 14.72. Transit SNR 5.53

There are 1 quarters with good PRF difference image offsets

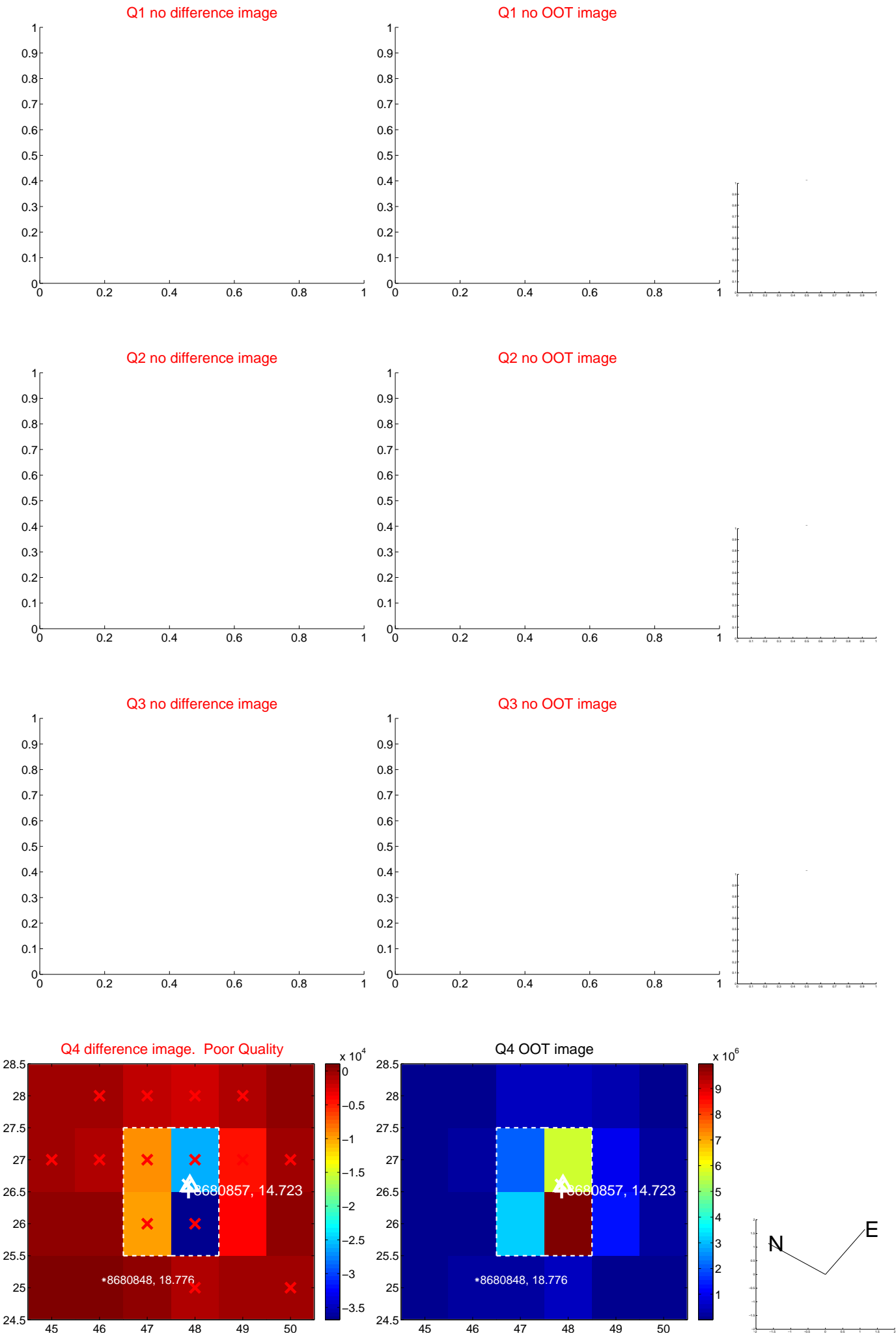
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.072 ± 0.084	0.86	-0.024 ± 0.125	-0.068 ± 0.077
PRF-fit source offset from KIC position	0.411 ± 0.127	3.23	-0.094 ± 0.096	-0.401 ± 0.116
photometric centroid source offset	0.37 ± 0.35	1.07	0.05 ± 0.47	-0.37 ± 0.35



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

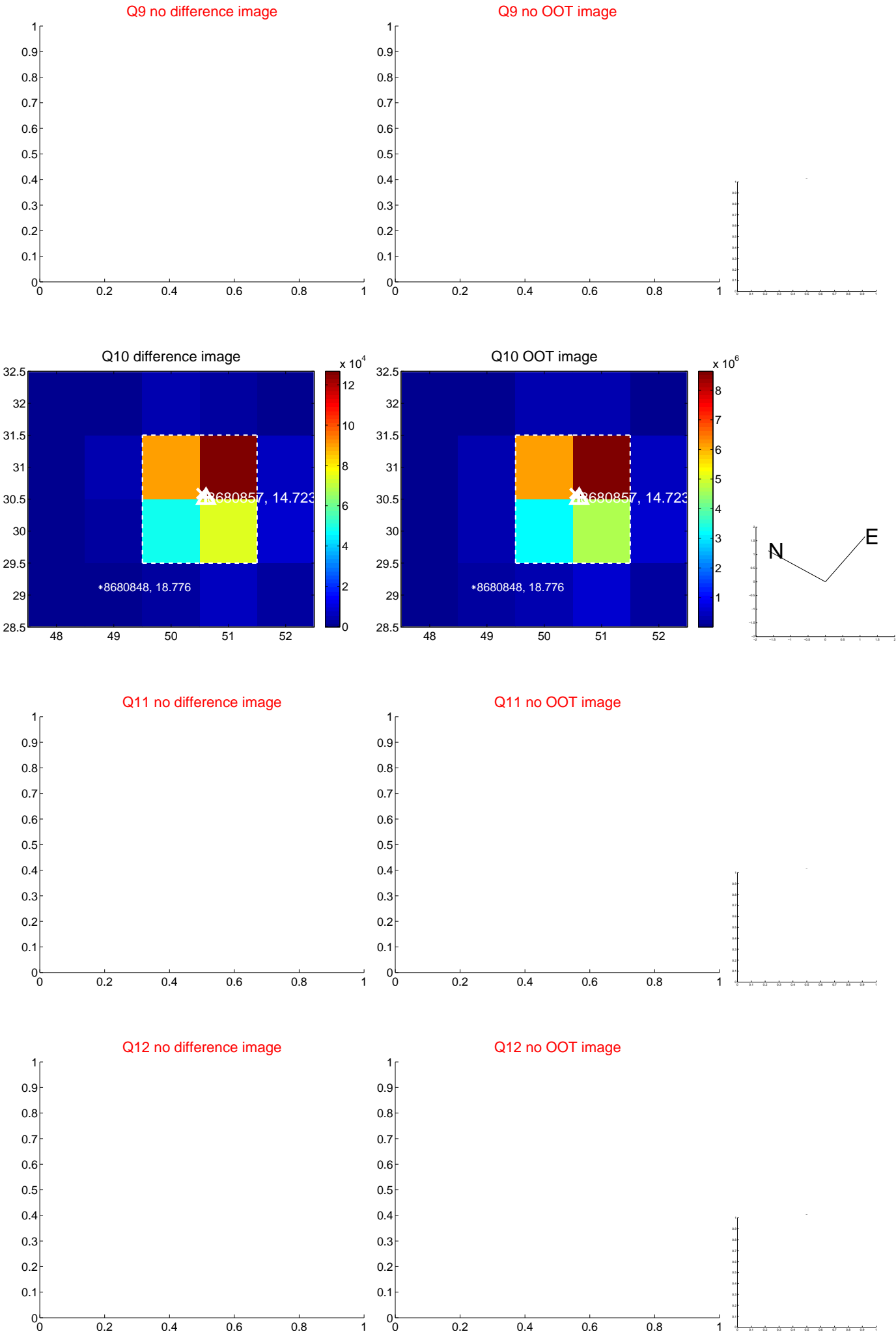
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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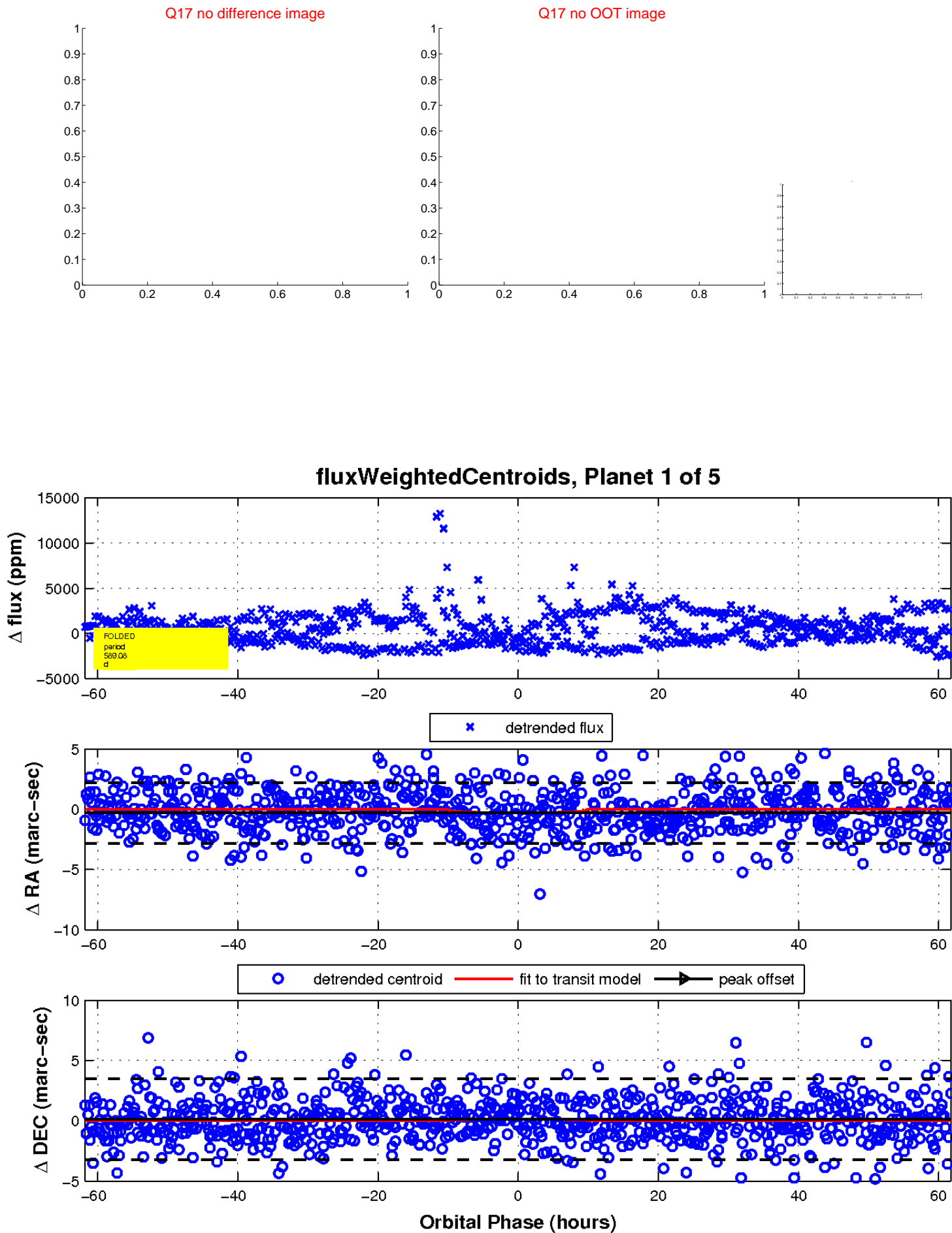
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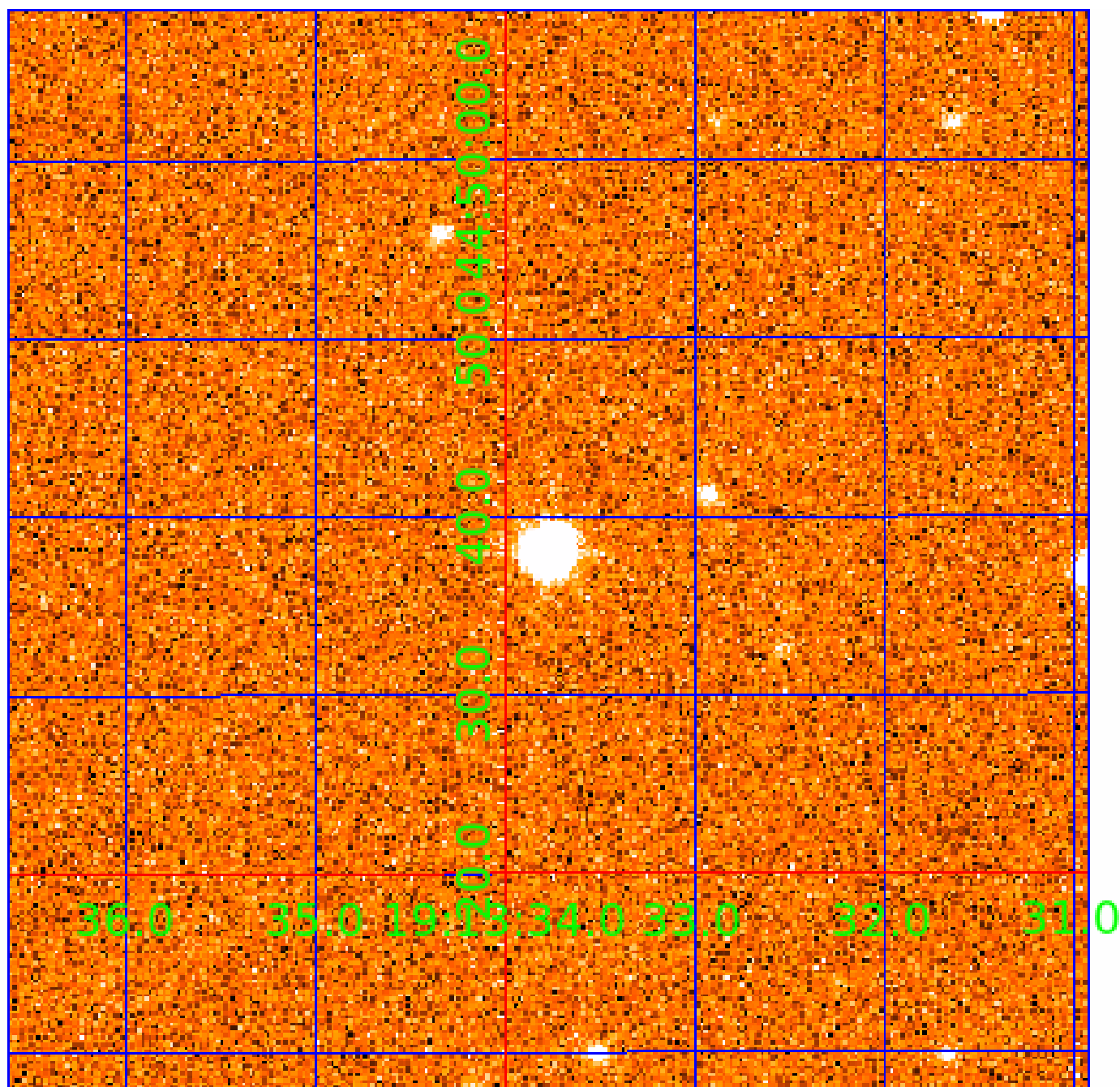


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008680857

Q1-17 DR25 TCE Parameters

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Robovetter Results

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008680857-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
008680857-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
008680857-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008680857-05	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—MOD_POS_ALT—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.

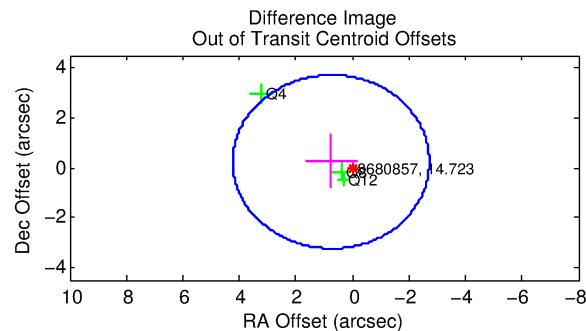
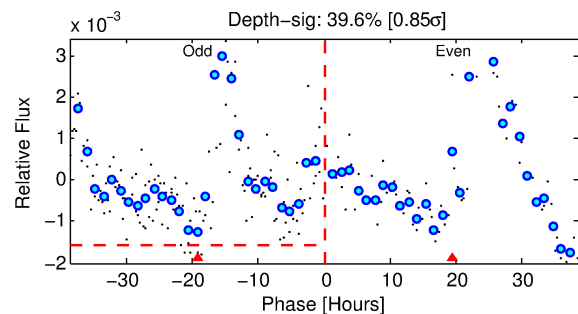
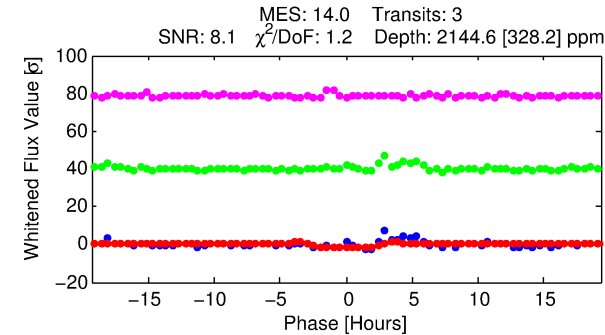
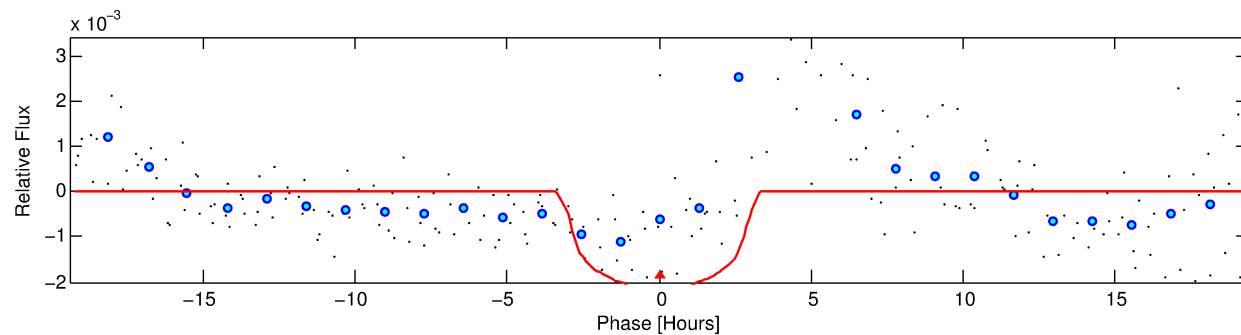
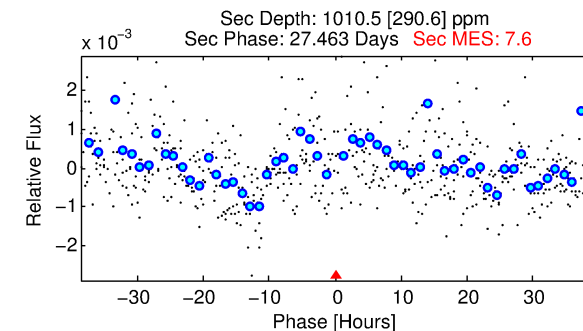
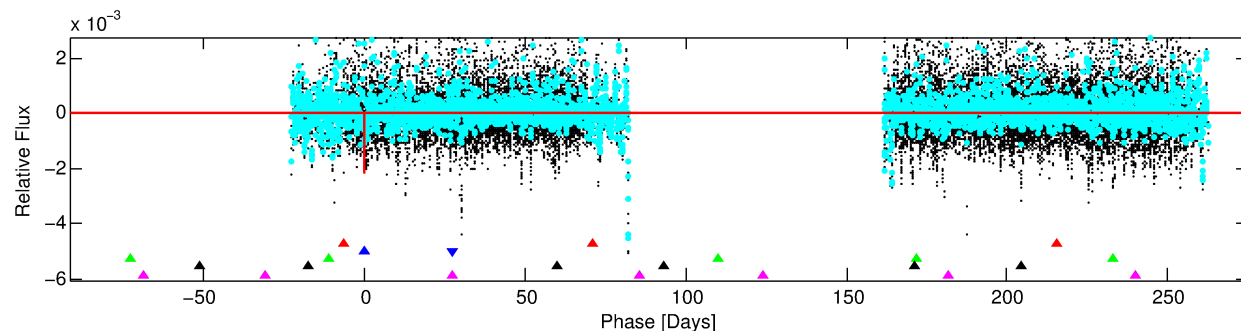
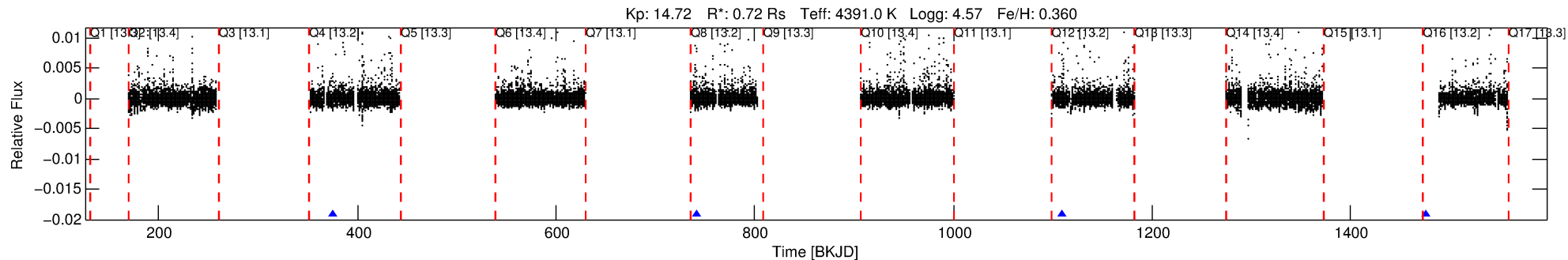
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008680857-02

No Significant Match Found

DV One-Page Summary

KIC: 8680857 Candidate: 2 of 5 Period: 366.889 d



DV Fit Results:

Period = 366.88868 [0.00760] d
Epoch = 375.0126 [0.0096] BKJD
Rp/R* = 0.0456 [0.0287]
a/R* = 331.79 [613.53]
b = 0.71 [1.32]
Seff = 0.22 [0.04]
Teq = 174 [8] K
Rp = 3.60 [2.29] Re
a = 0.8987 [0.0665] AU
Ag = 34563.95 [44859.51] [0.77σ]
Teff = 3668 [1193] K [2.93σ]

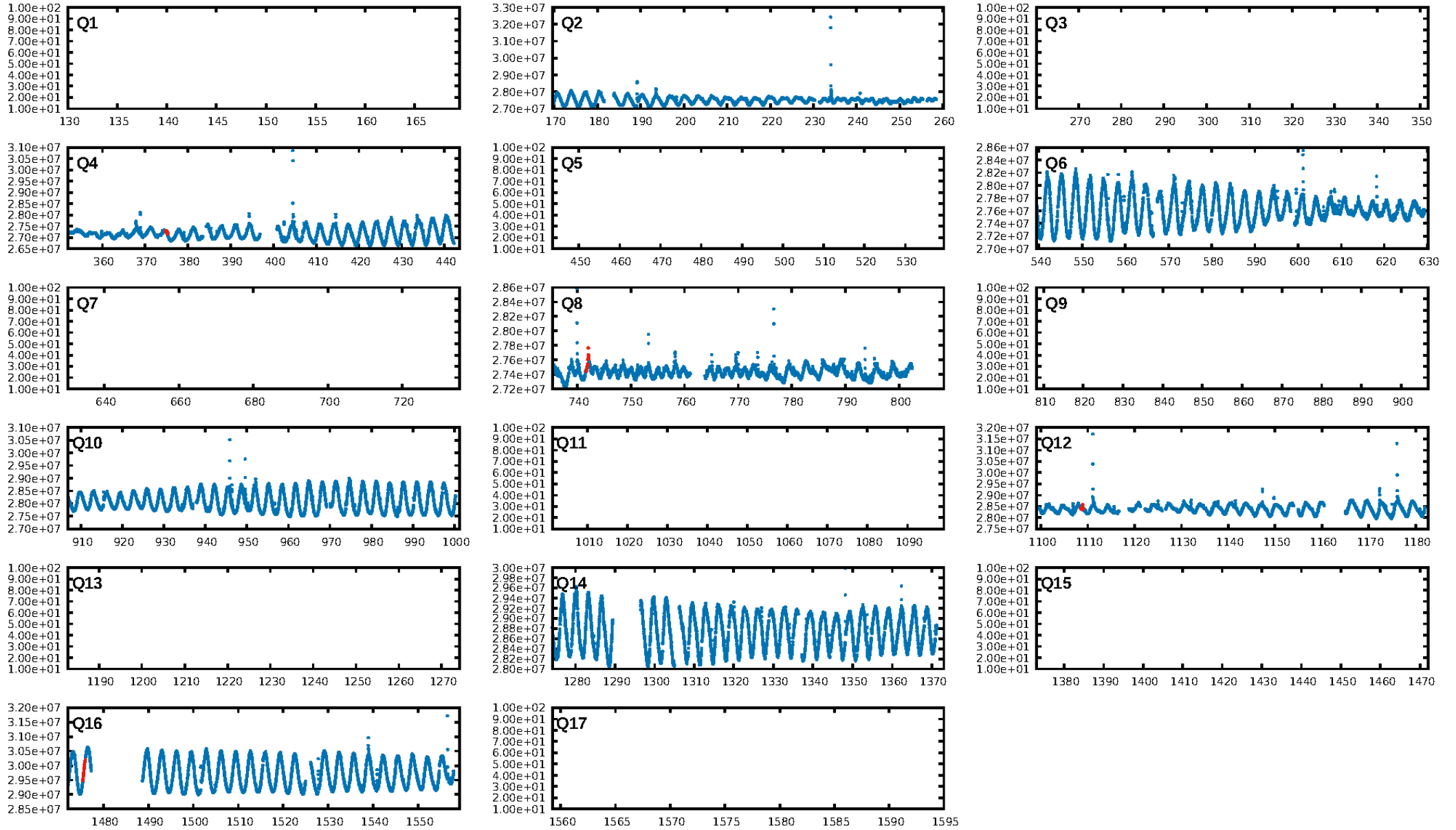
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [201.74σ]
LongPeriod-sig: 100.0% [246.84σ]
ModelChiSquare2-sig: 59.8%
ModelChiSquareGof-sig: 98.6%
Bootstrap-pfa: 5.93e-14
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 60.81
Centroid-sig: 6.4%
Centroid-so: 0.939 arcsec [2.21σ]
OotOffset-rm: 0.787 arcsec [0.68σ]
KicOffset-rm: 0.498 arcsec [0.54σ]
OotOffset-st: 0/0/3/0 [3]
KicOffset-st: 0/0/3/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

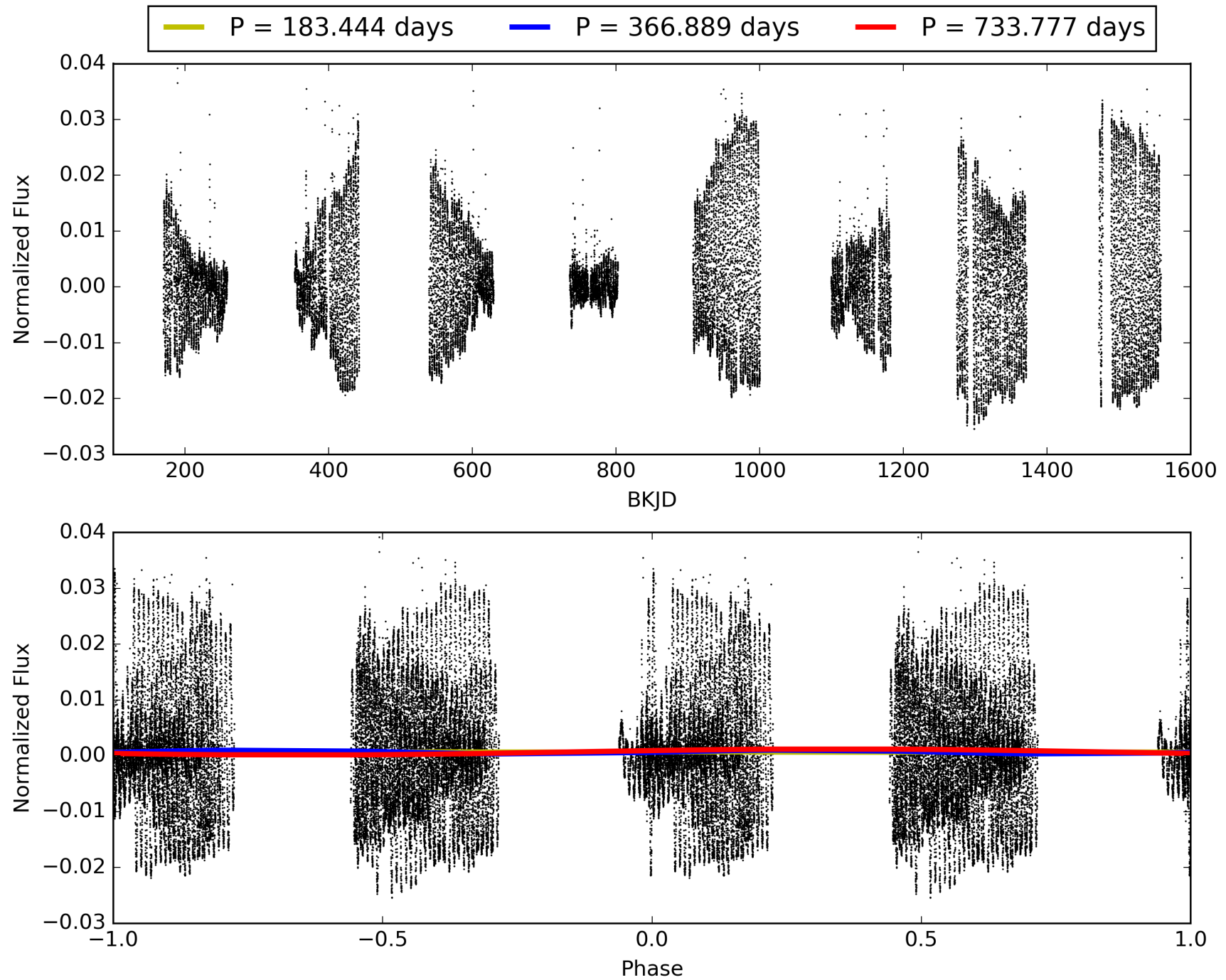
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:08:25 Z

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TCE 008680857-02, PDC Light Curves

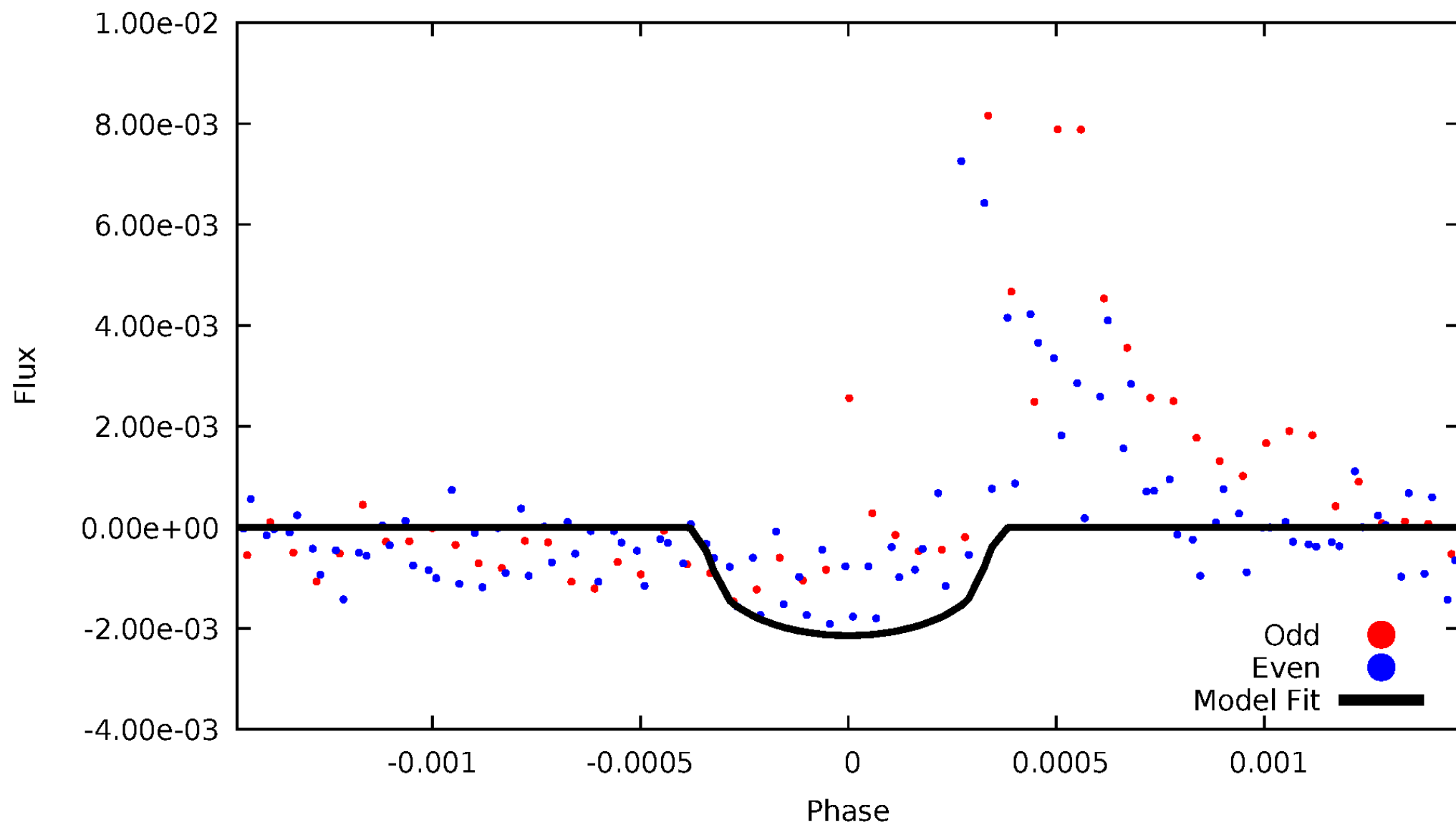


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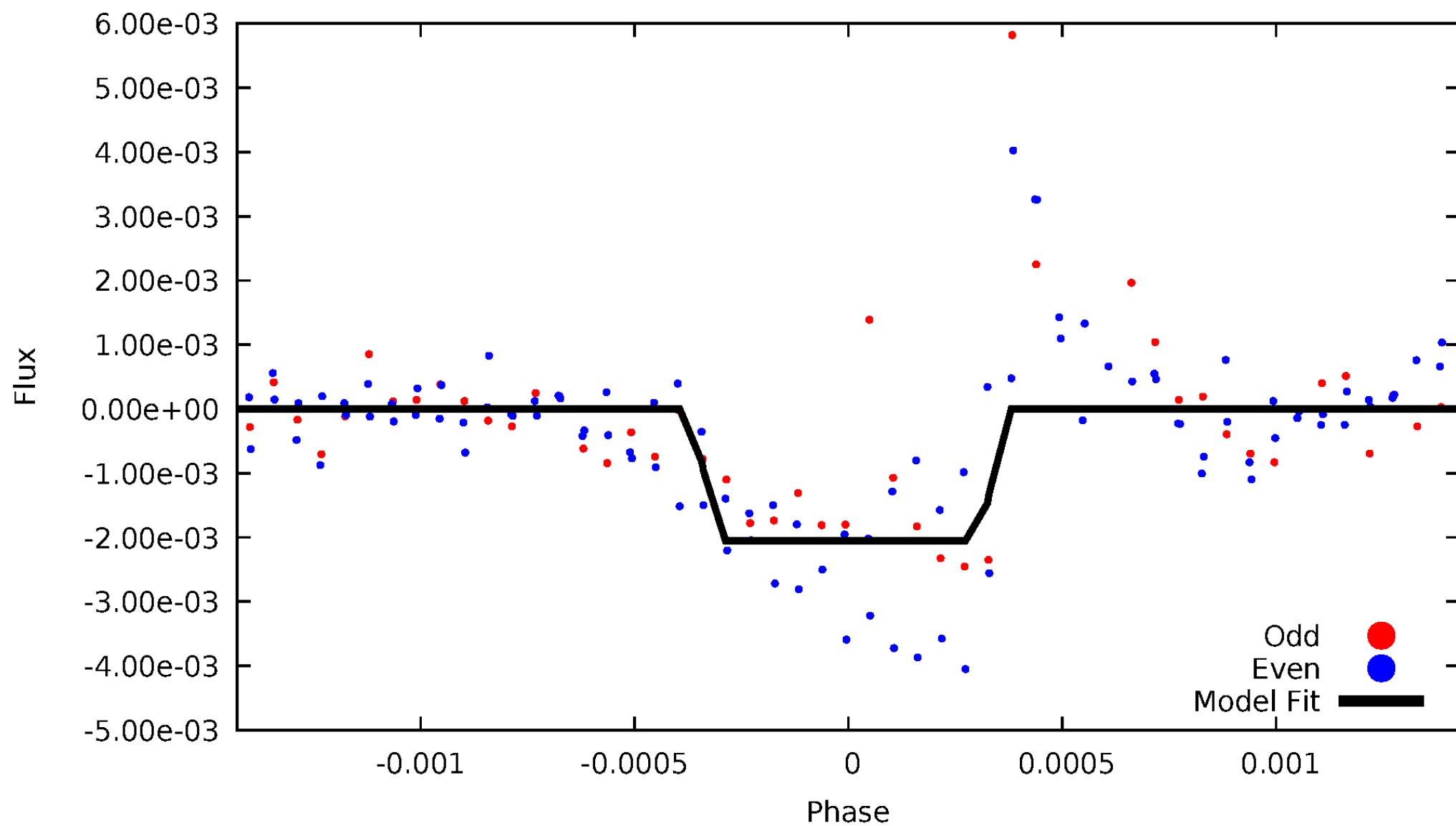
DV Odd/Even

TCE 008680857-02



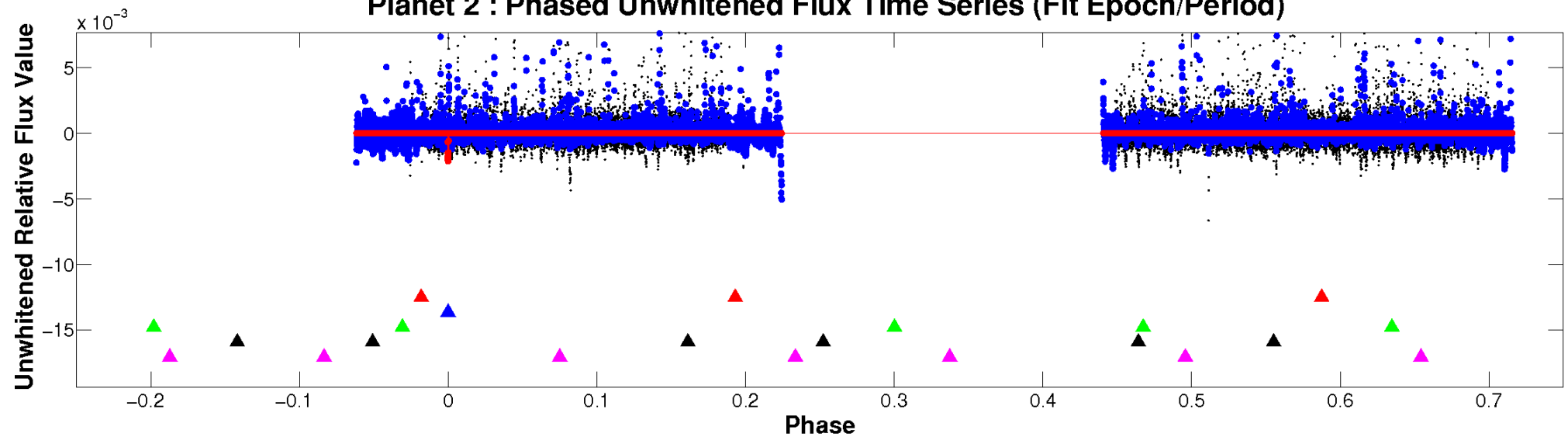
ALT Odd/Even

TCE 008680857-02

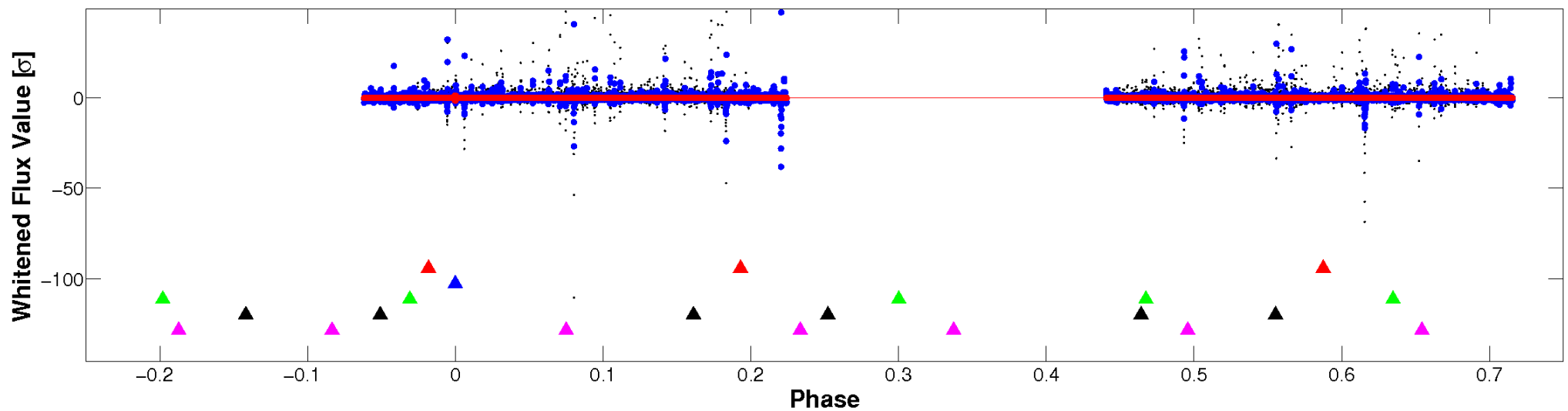


Non-Whitened Vs. Whitened Light Curve

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

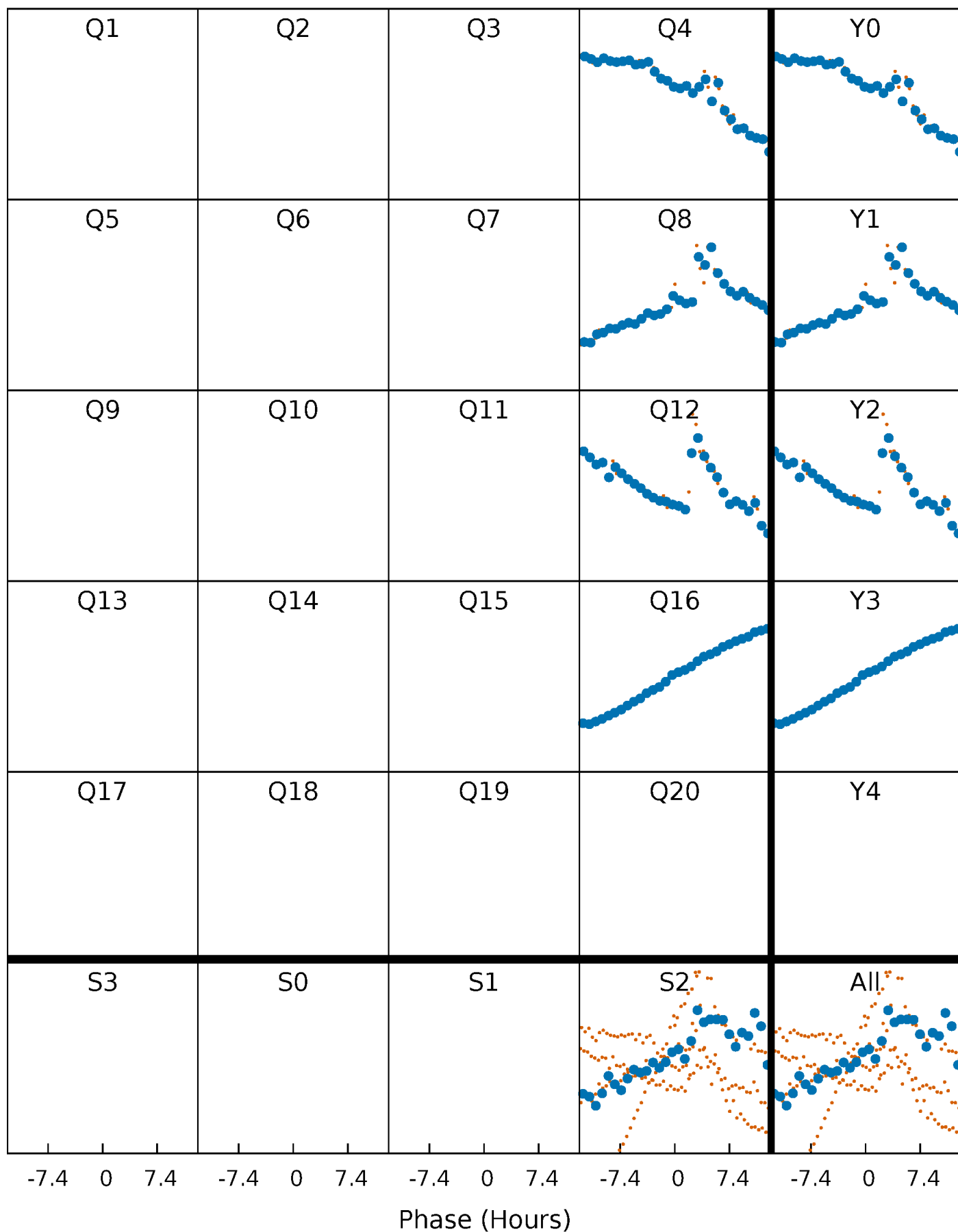


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



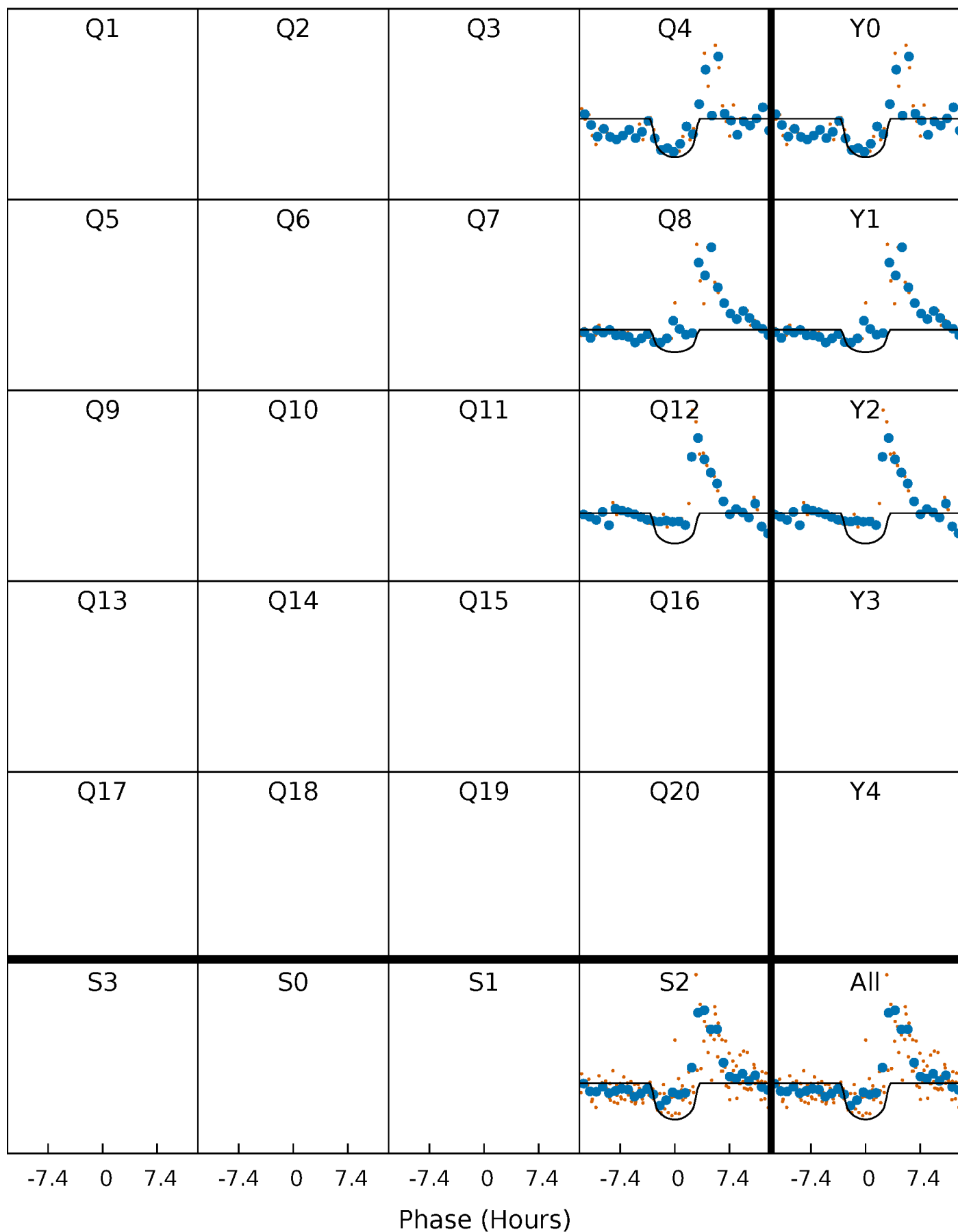
PDC Quarter-Phased Transit Curves

TCE 008680857-02 P=366.888682 Days $T_0=375.012581$ (BKJD)



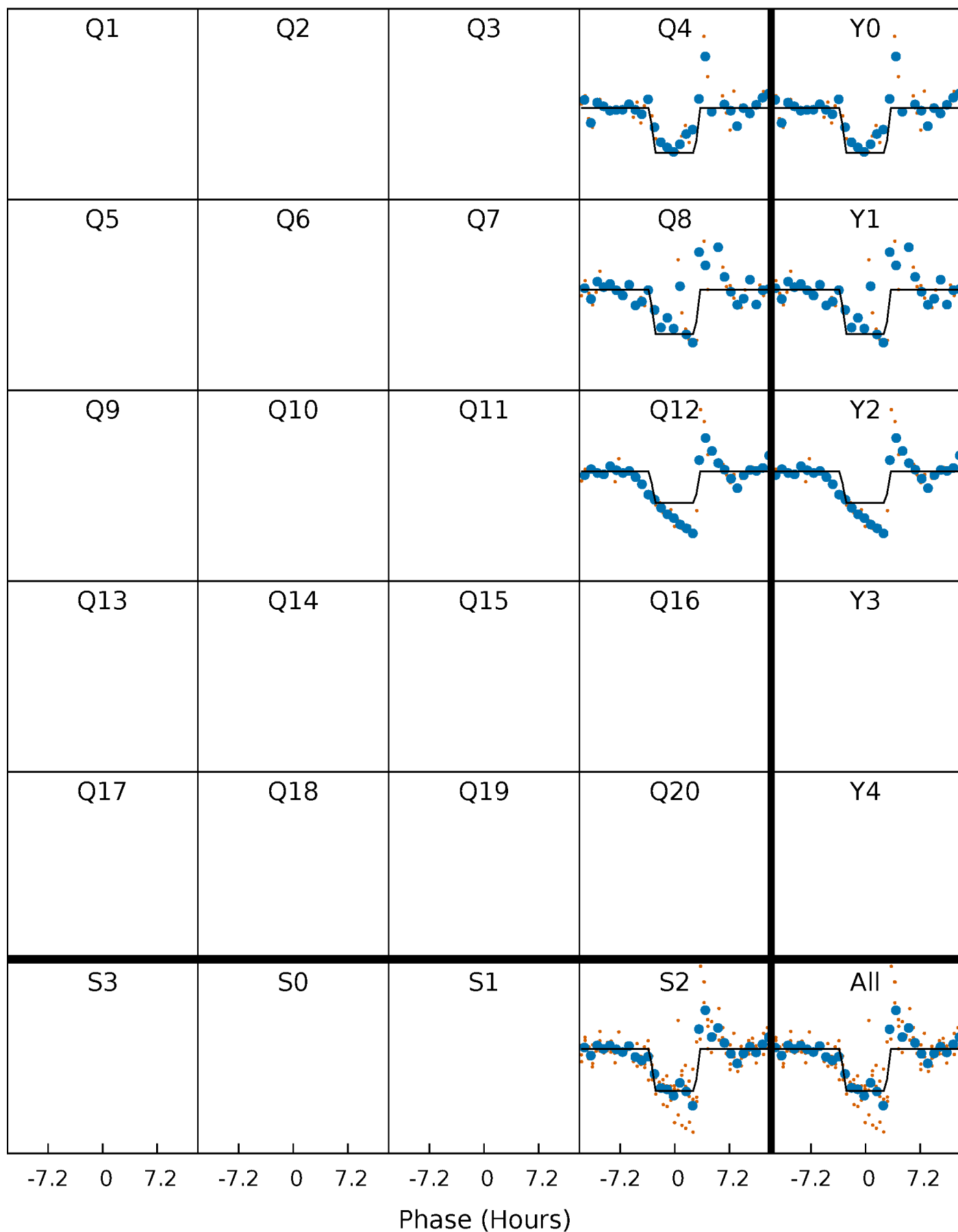
DV Quarter-Phased Transit Curves

TCE 008680857-02 $P=366.888682$ Days $T_0=375.012581$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

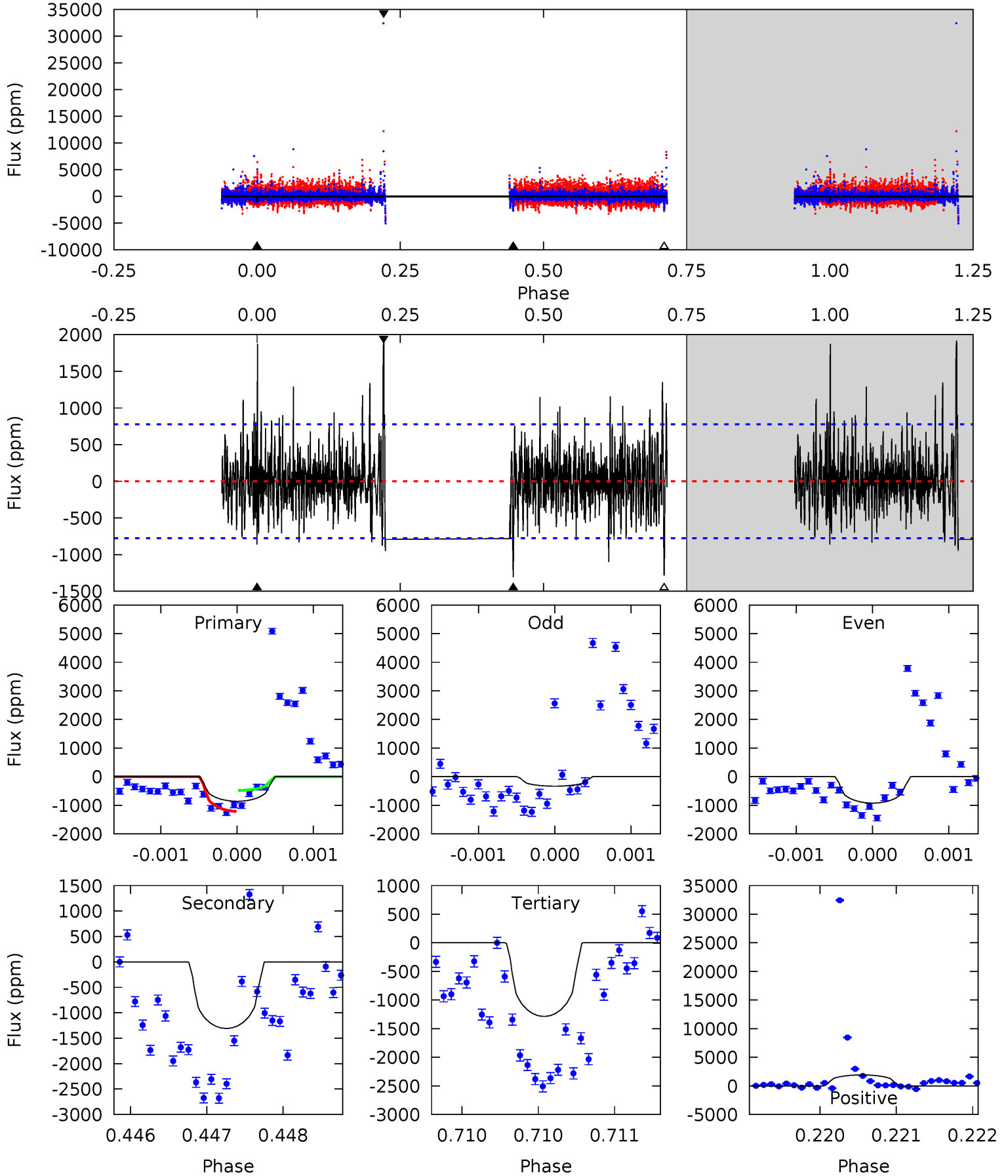
TCE 008680857-02 P=366.864136 Days $T_0=375.019940$ (BKJD)



DV Model-Shift Uniqueness Test

008680857-02, P = 366.888682 Days, E = 8.123899 Days

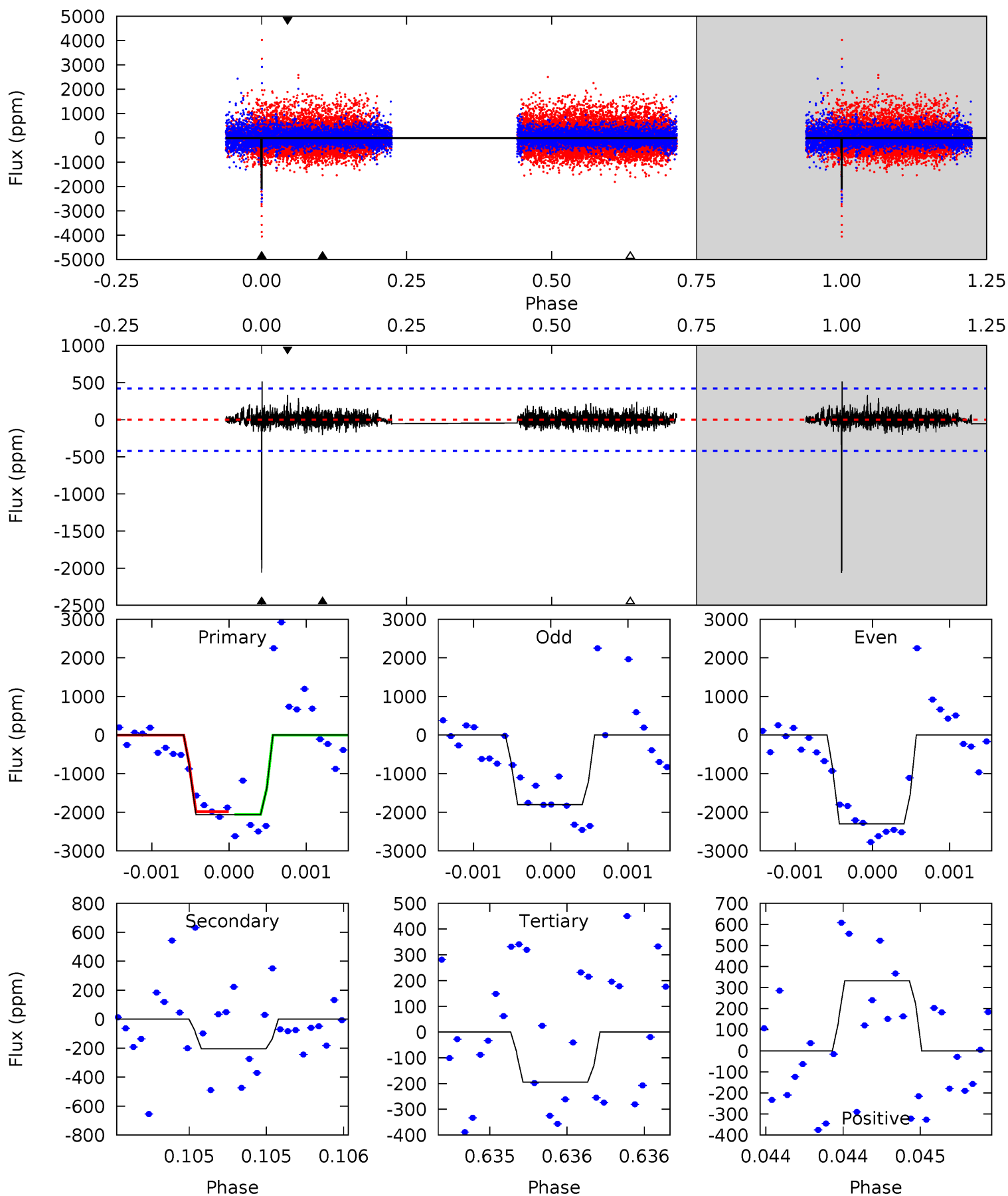
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.09	9.26	9.10	13.6	5.50	3.36	2.24	-3.00	-7.47	0.16	-4.30	1.63	4.98	0.59	2.59



Alt Model-Shift Uniqueness Test

008680857-02, P = 366.864136 Days, E = 8.155804 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.0	2.67	2.55	4.35	5.52	3.40	0.76	24.5	22.7	0.12	-1.68	3.19	1.34	0.20	0.44



Stellar Parameters For KIC 008680857

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4391^{+154}_{-154}	$4.574^{+0.060}_{-0.016}$	$0.360^{+0.100}_{-0.300}$	$0.725^{+0.025}_{-0.063}$	$0.719^{+0.041}_{-0.050}$	$2.657^{+0.670}_{-0.192}$
	+4%/-4%	+1%/-0%	+28%/-83%	+3%/-9%	+6%/-7%	+25%/-7%
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 008680857-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1308 ± 141	$3.74^{+2.21}_{-2.11}$	241^{+9}_{-9}	3968^{+1538}_{-589}	$42338^{+173098}_{-25776}$
Alt.	-204 ± 76	$3.62^{+2.19}_{-1.92}$	241^{+9}_{-10}	2965^{+816}_{-394}	6509^{+23310}_{-4184}

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

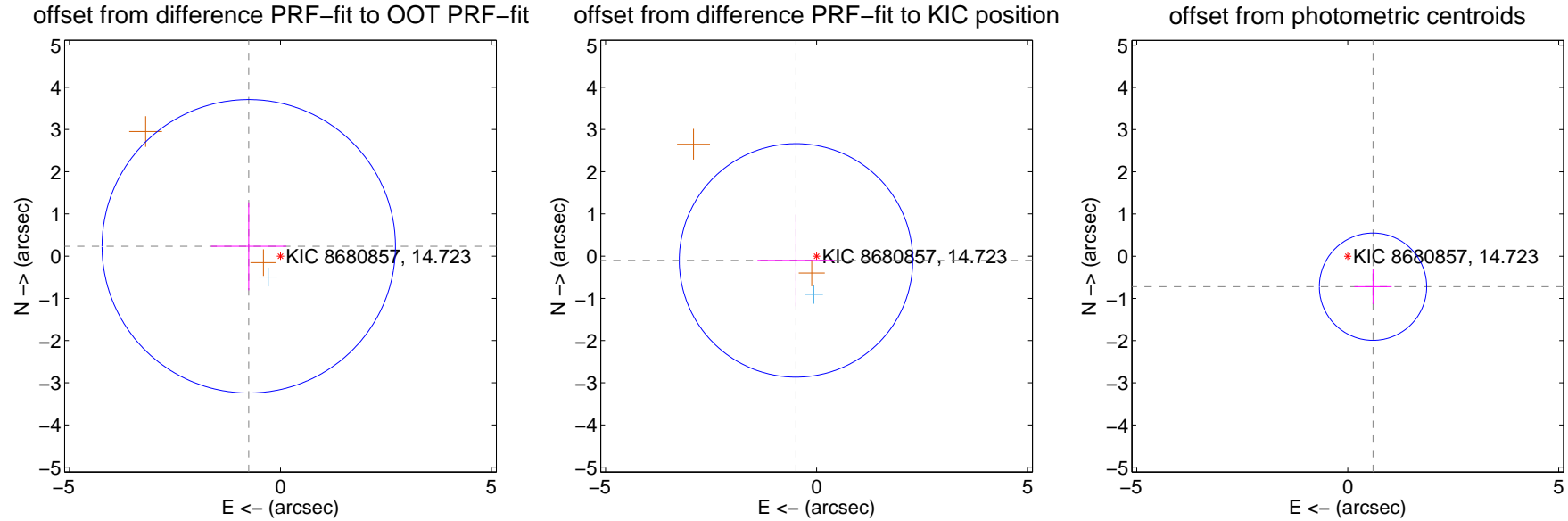
DV Centroid Data

Supplemental centroid analysis for 008680857-02. Kepler magnitude: 14.72. Transit SNR 8.14

There are 1 quarters with good PRF difference image offsets

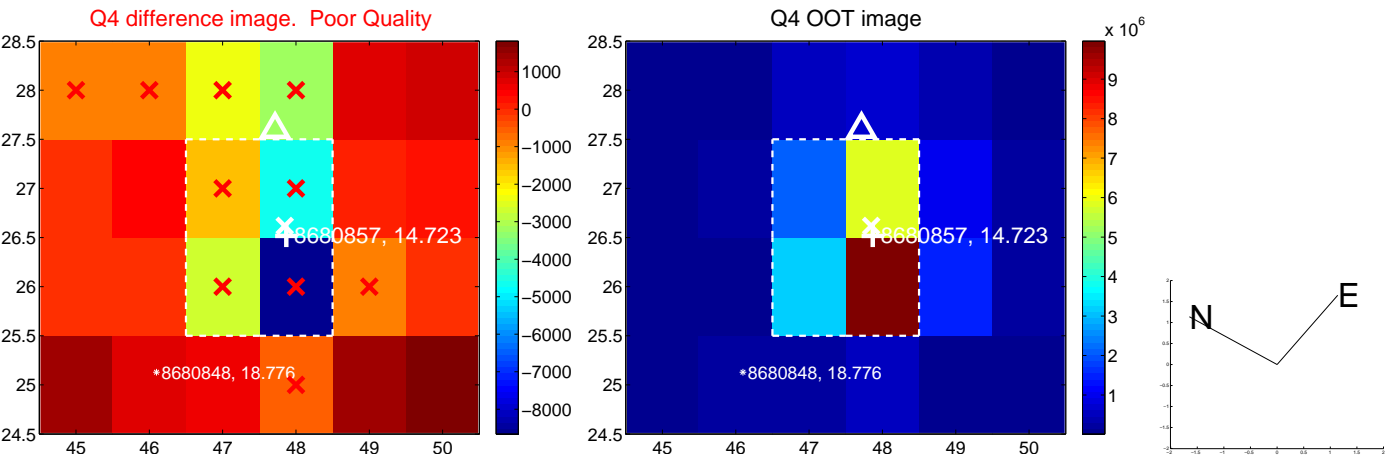
The direct PRF centroid is offset from the target star catalog position by about 0.47 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.787 ± 1.159	0.68	0.752 ± 0.892	0.233 ± 1.042
PRF-fit source offset from KIC position	0.498 ± 0.922	0.54	0.487 ± 0.914	-0.102 ± 1.089
photometric centroid source offset	0.94 ± 0.42	2.21	-0.60 ± 0.44	-0.72 ± 0.41

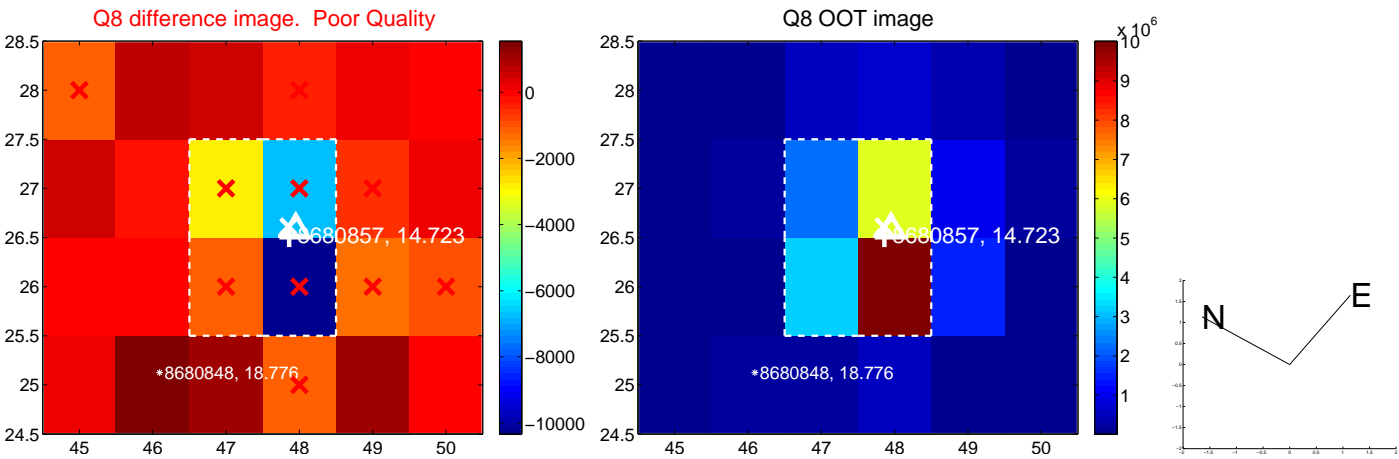


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

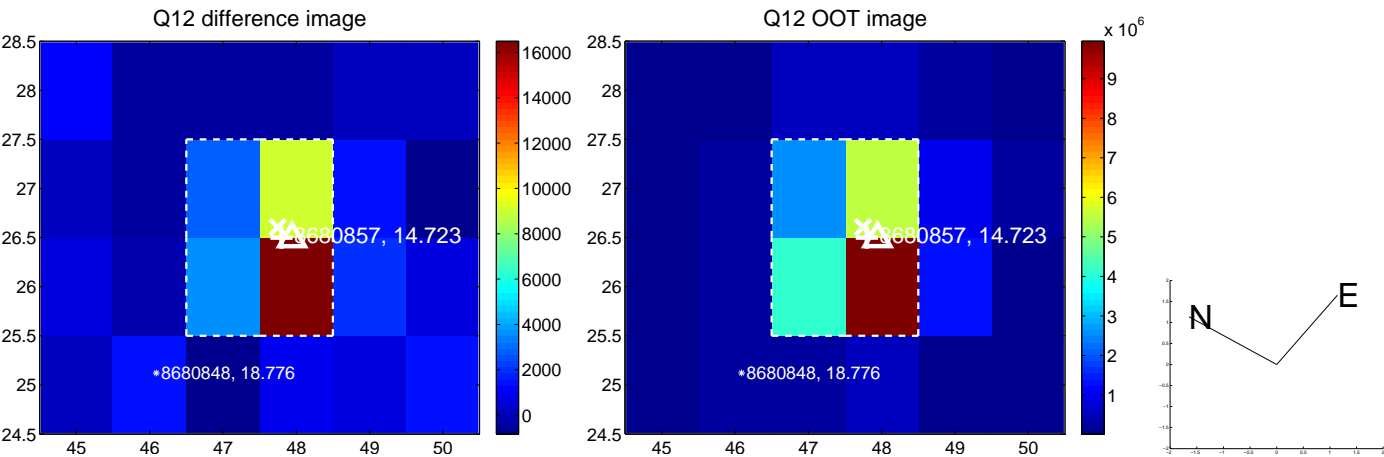
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



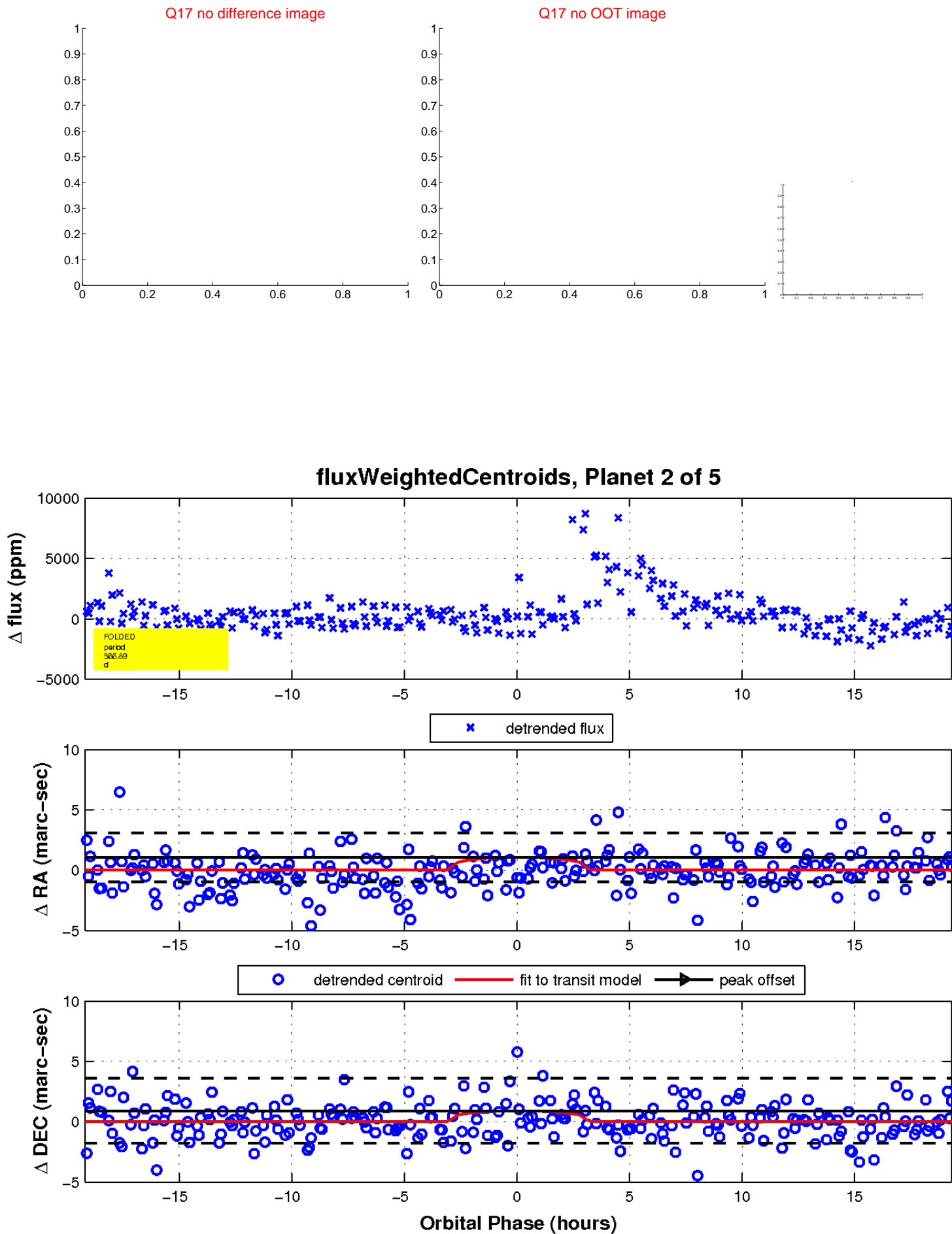
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

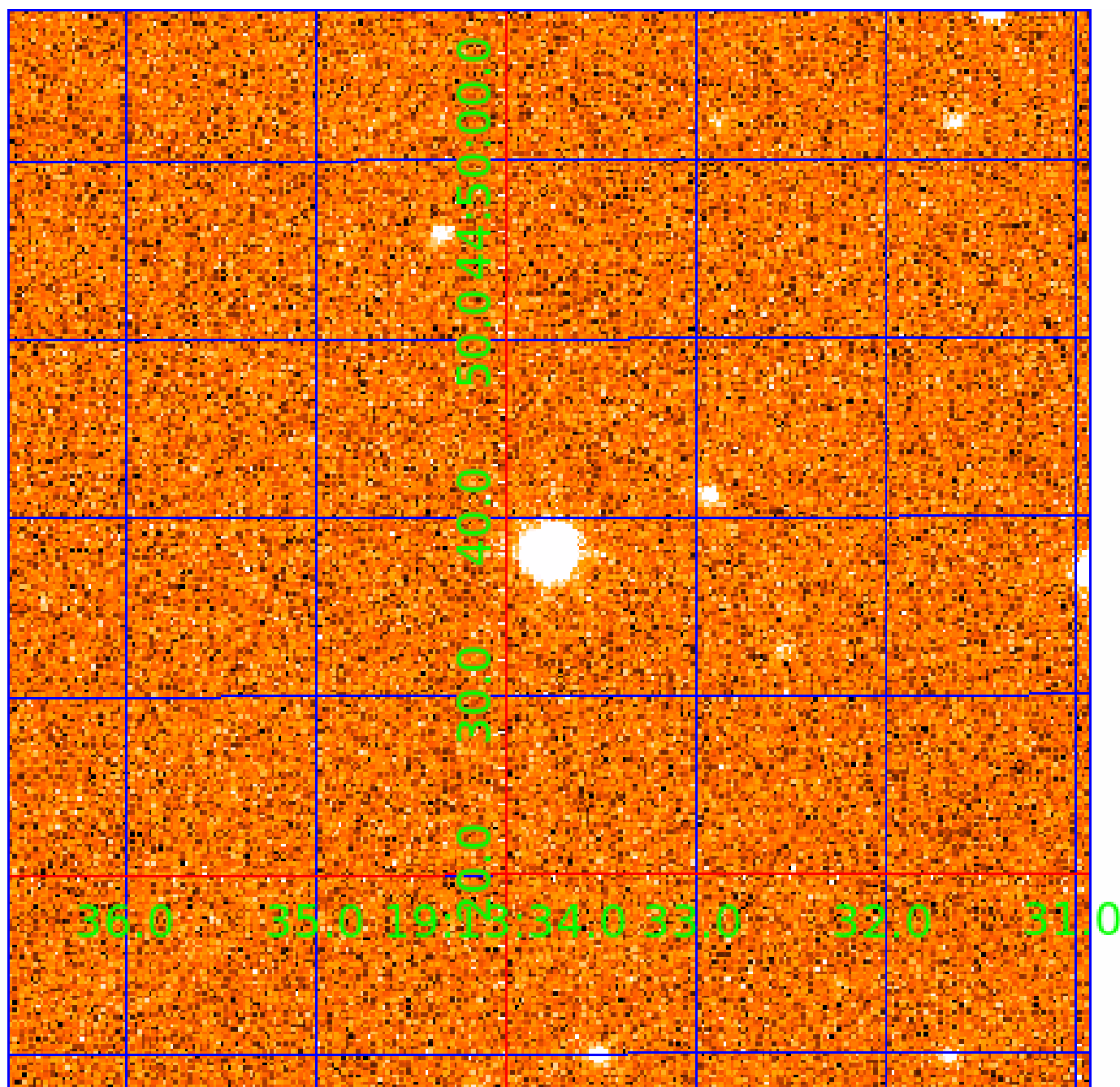


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008680857

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})
008680857-01	OBS	No	589.084633	368.365557	2055.3	20.613	13.5	5.5	0.72	4391	3.15	0.12
008680857-02	OBS	No	366.888682	375.012581	2144.6	6.470	14.0	8.1	0.72	4391	3.60	0.22
008680857-03	OBS	No	305.522072	363.738140	2588.5	3.382	12.7	8.8	0.72	4391	4.04	0.28
008680857-04	OBS	No	255.719192	178.446881	629.9	15.000	10.9	-1.0	0.72	4391	1.73	0.35
008680857-05	OBS	No	212.514764	131.894373	1487.1	2.314	11.1	6.4	0.72	4391	3.19	0.45

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008680857-01	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008680857-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
008680857-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
008680857-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008680857-05	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—MOD_POS_ALT—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.

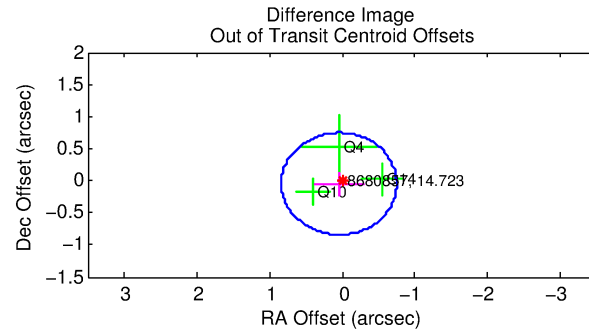
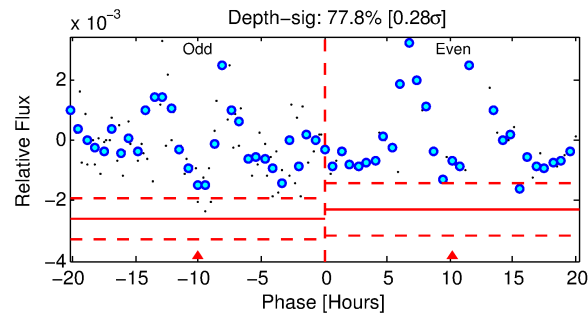
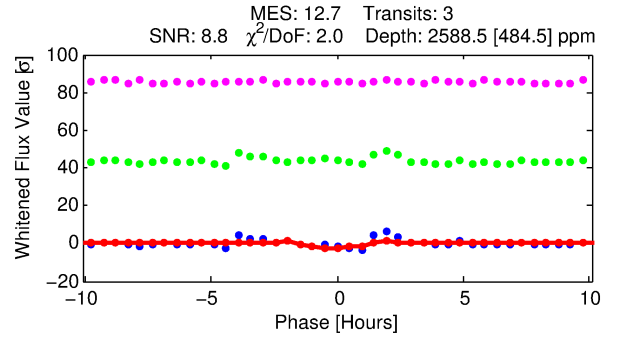
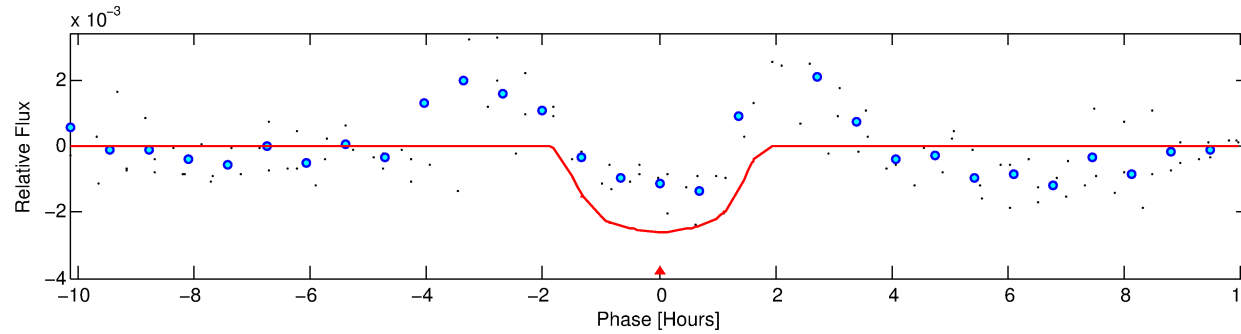
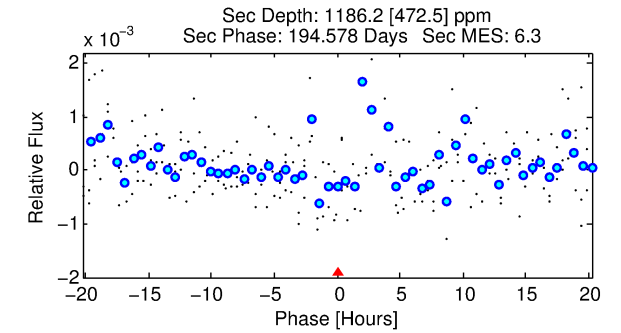
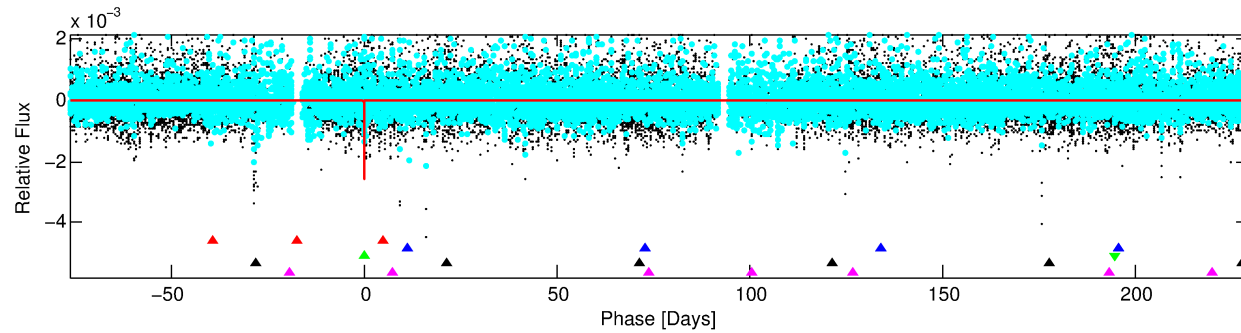
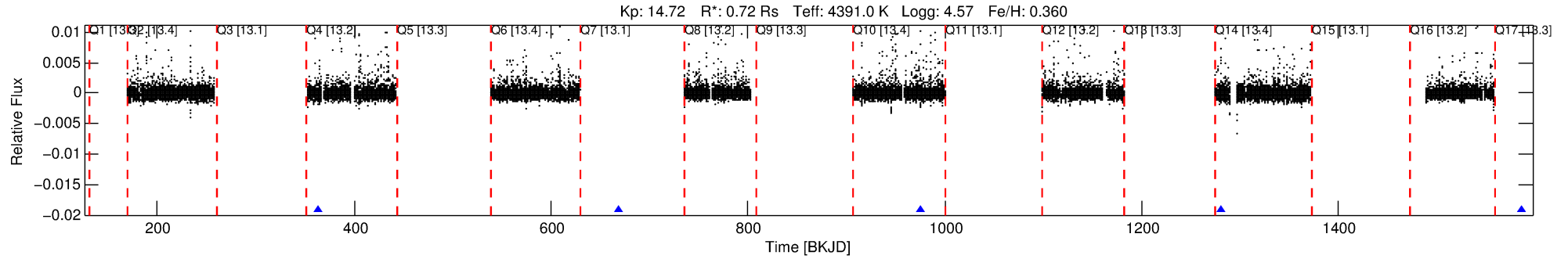
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008680857-03

No Significant Match Found

DV One-Page Summary

KIC: 8680857 Candidate: 3 of 5 Period: 305.522 d



DV Fit Results:

Period = 305.52207 [0.00390] d
Epoch = 363.7381 [0.0076] BKJD
Rp/R* = 0.0510 [0.0461]
a/R* = 510.55 [1338.71]
b = 0.75 [1.61]
Seff = 0.28 [0.05]
Teq = 185 [8] K
Rp = 4.04 [3.66] Re
a = 0.7955 [0.0589] AU
Ag = 25338.45 [46920.18] [0.54 σ]
Teff = 3608 [1672] K [2.05 σ]

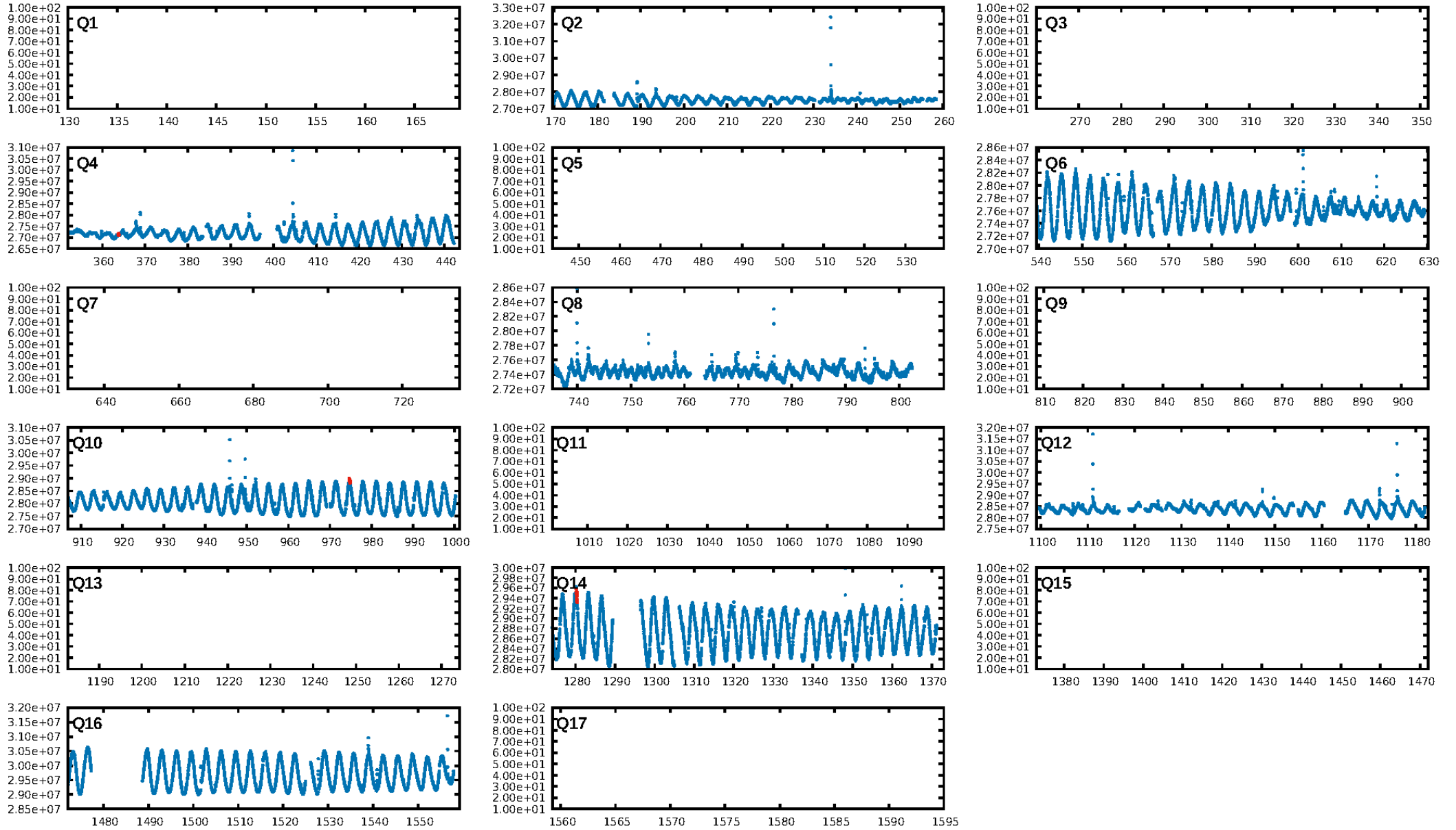
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [77.73 σ]
LongPeriod-sig: 100.0% [201.74 σ]
ModelChiSquare2-sig: 10.7%
ModelChiSquareGof-sig: 69.2%
Bootstrap-pfa: 1.80e-12
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.166
Centroid-sig: 98.9%
Centroid-so: 0.336 arcsec [0.57 σ]
OotOffset-rm: 0.065 arcsec [0.25 σ]
KicOffset-rm: 0.392 arcsec [1.57 σ]
OotOffset-st: 2/0/1/0 [3]
KicOffset-st: 2/0/1/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

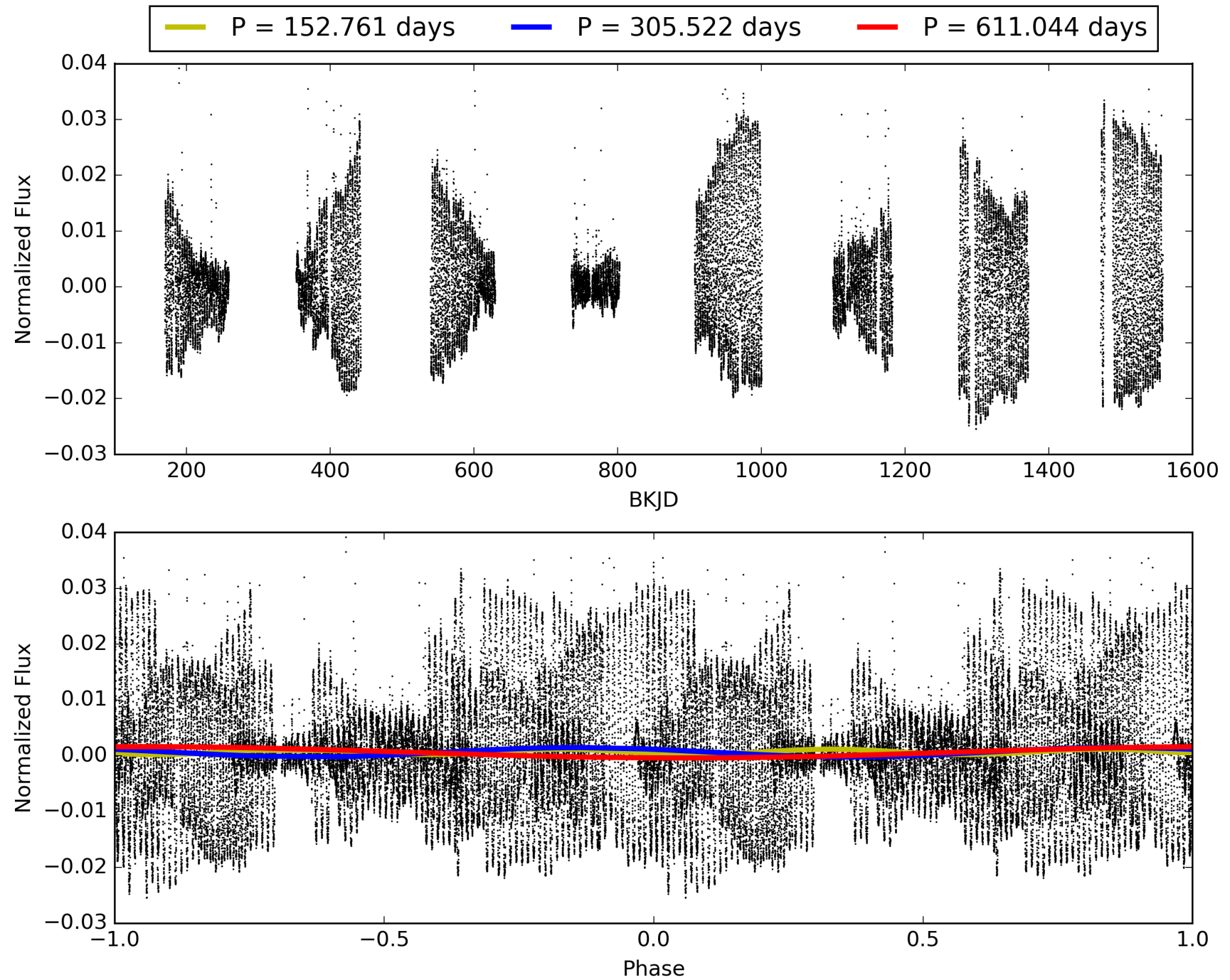
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:08:34 Z

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

TCE 008680857-03, PDC Light Curves

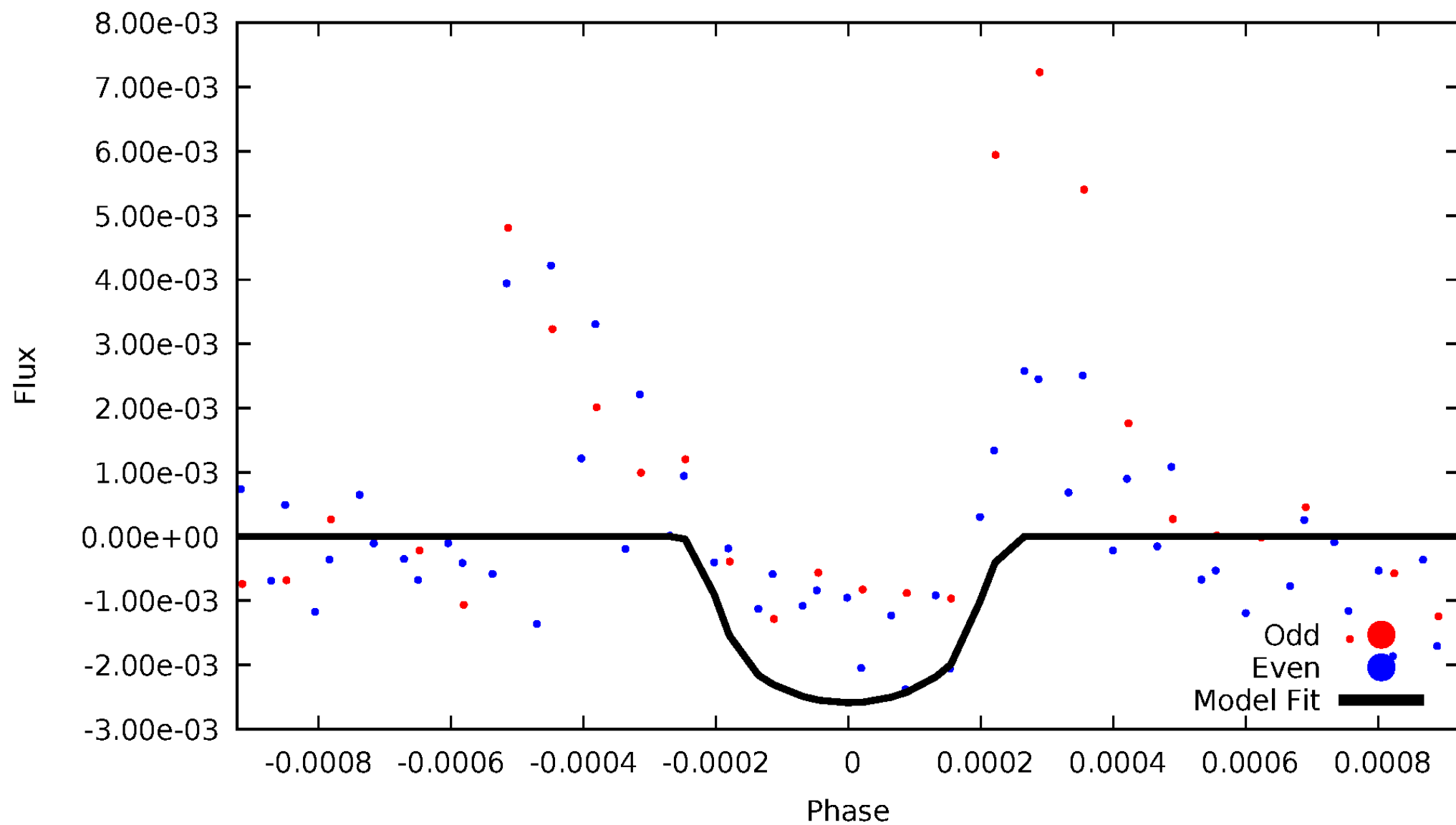


TCE 008680857-03



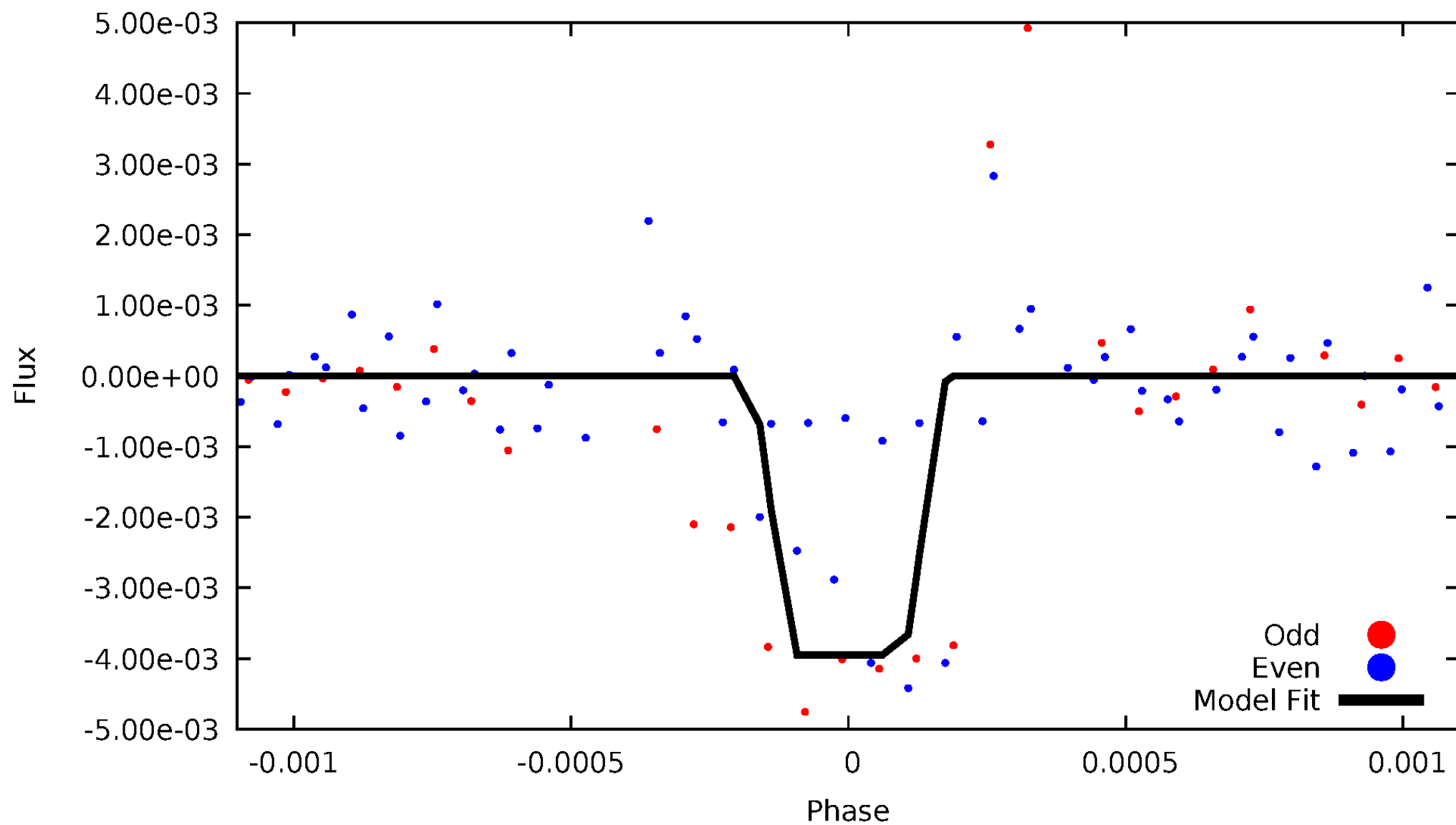
DV Odd/Even

TCE 008680857-03



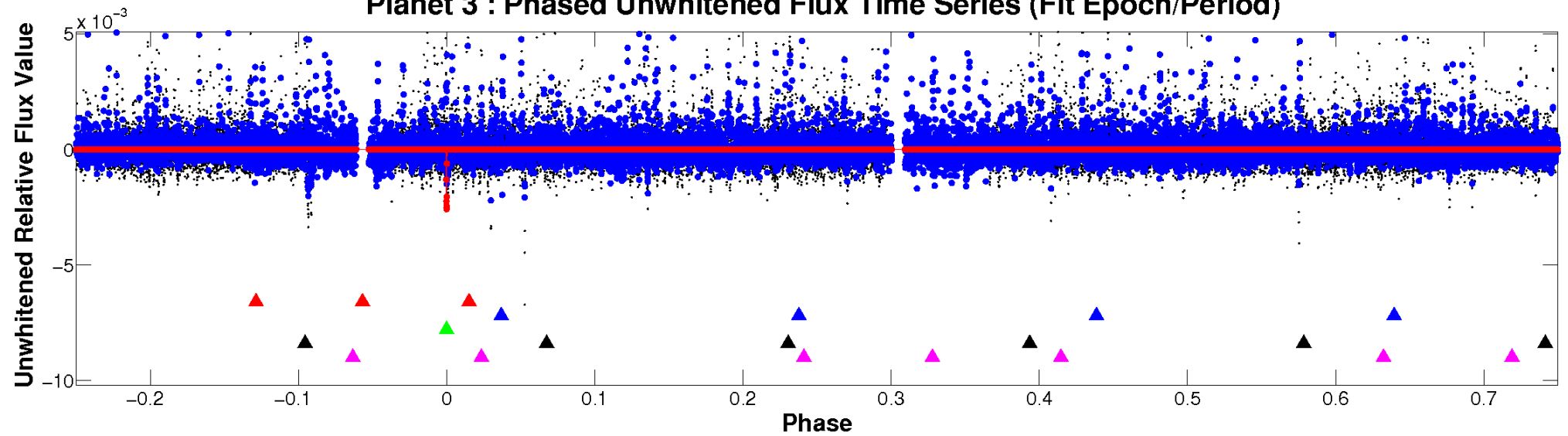
ALT Odd/Even

TCE 008680857-03

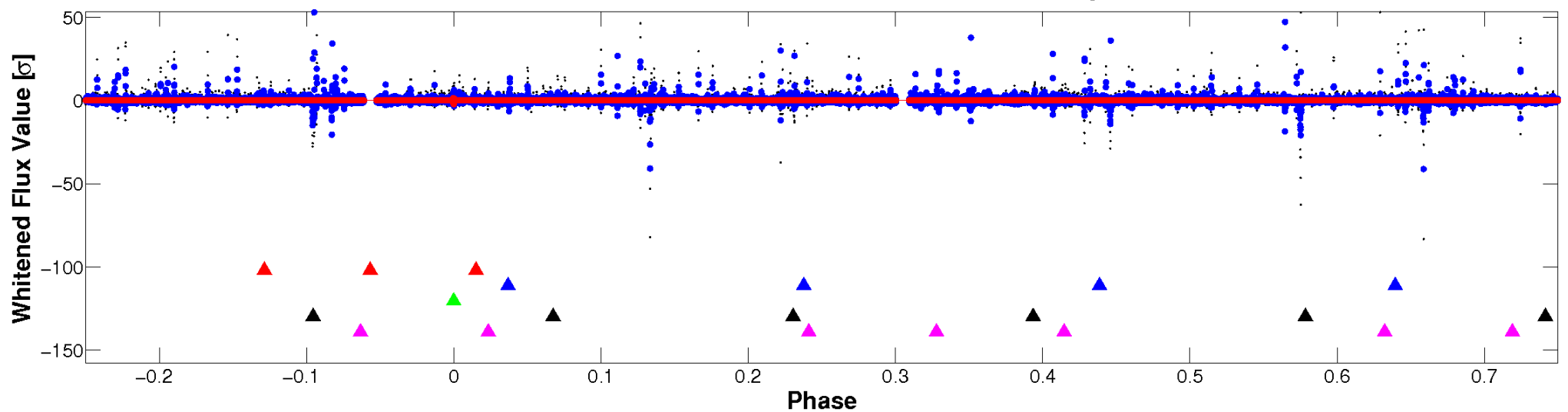


Non-Whitened Vs. Whitened Light Curve

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

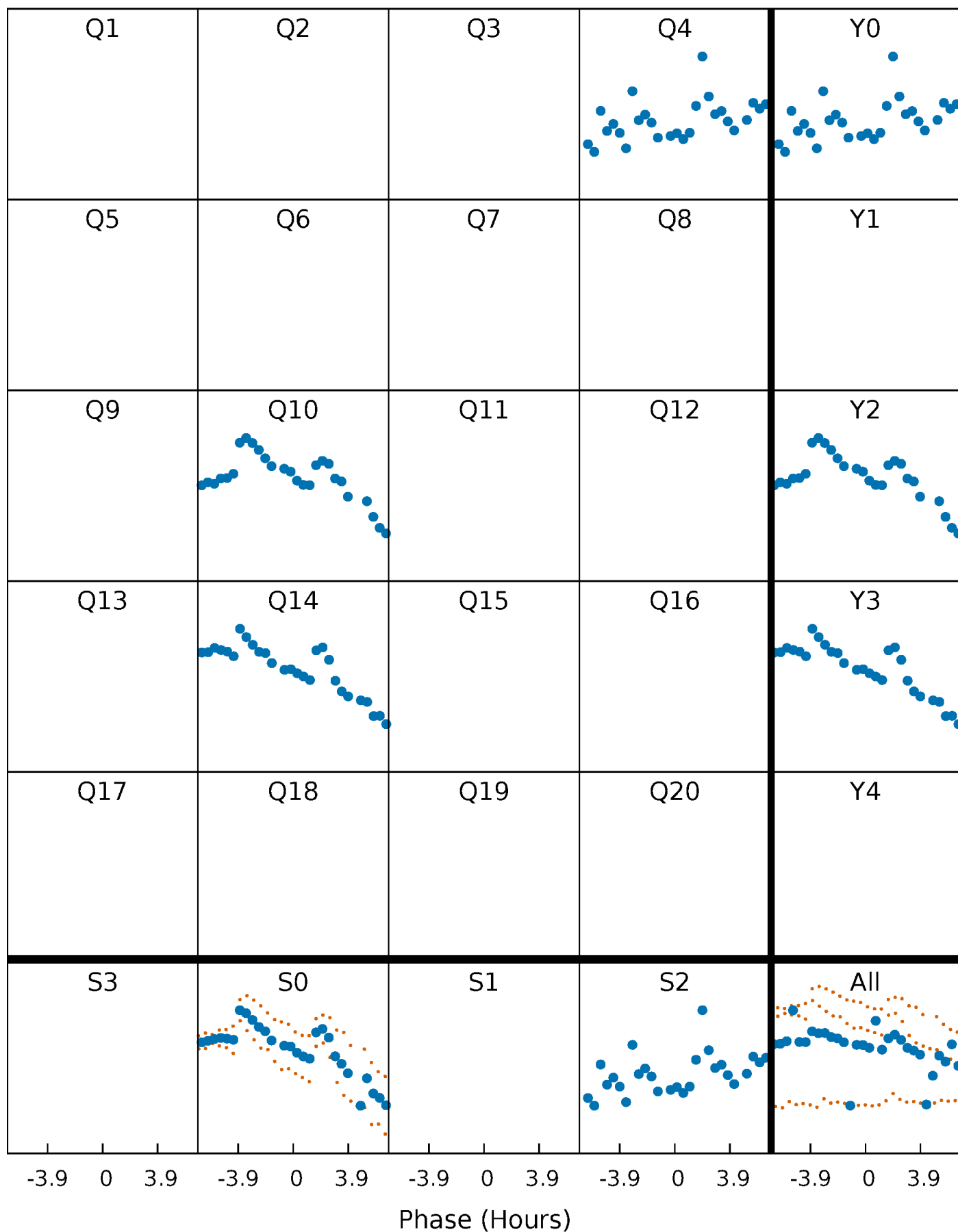


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



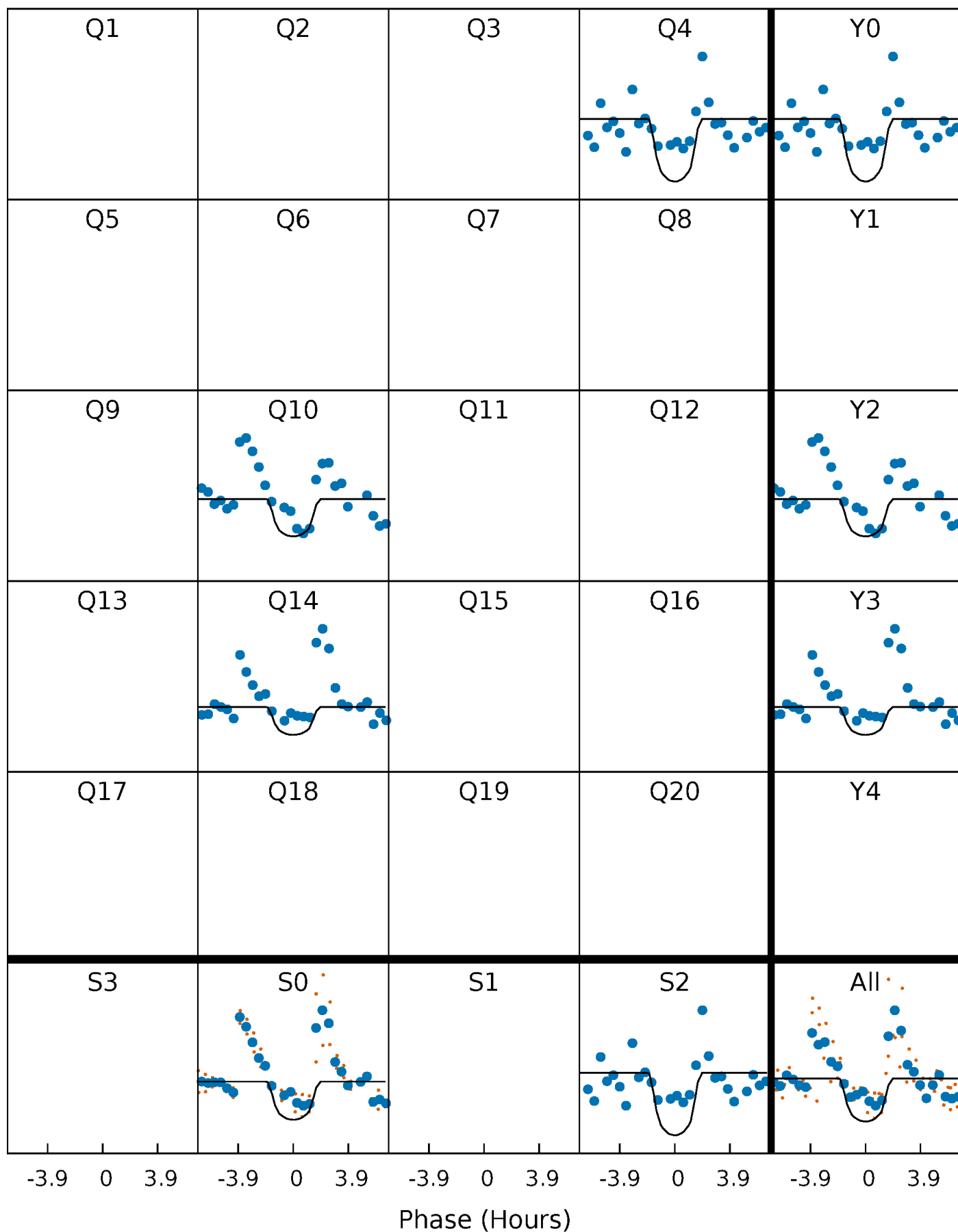
PDC Quarter-Phased Transit Curves

TCE 008680857-03 $P=305.522072$ Days $T_0=363.738140$ (BKJD)



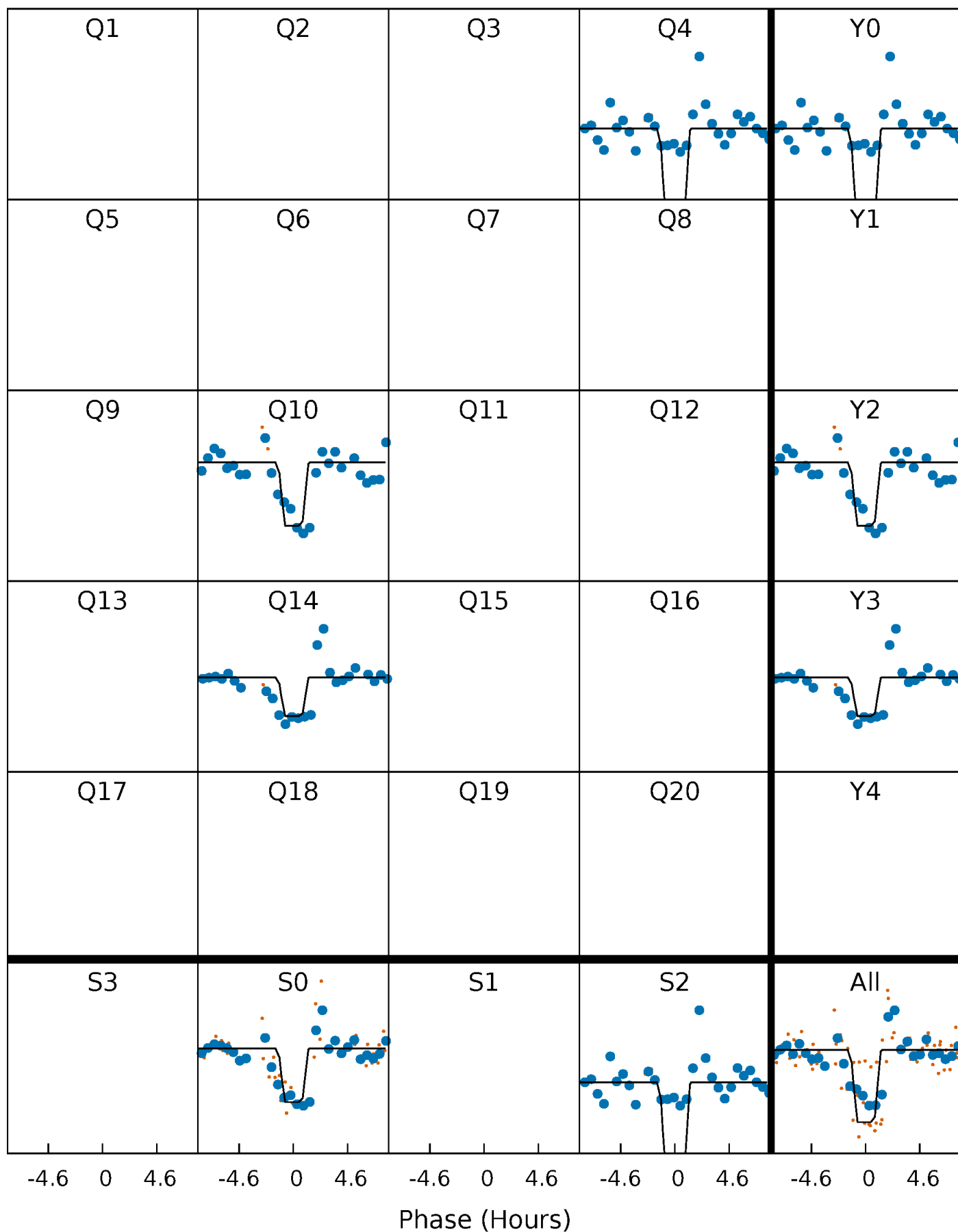
DV Quarter-Phased Transit Curves

TCE 008680857-03 P=305.522072 Days $T_0=363.738140$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

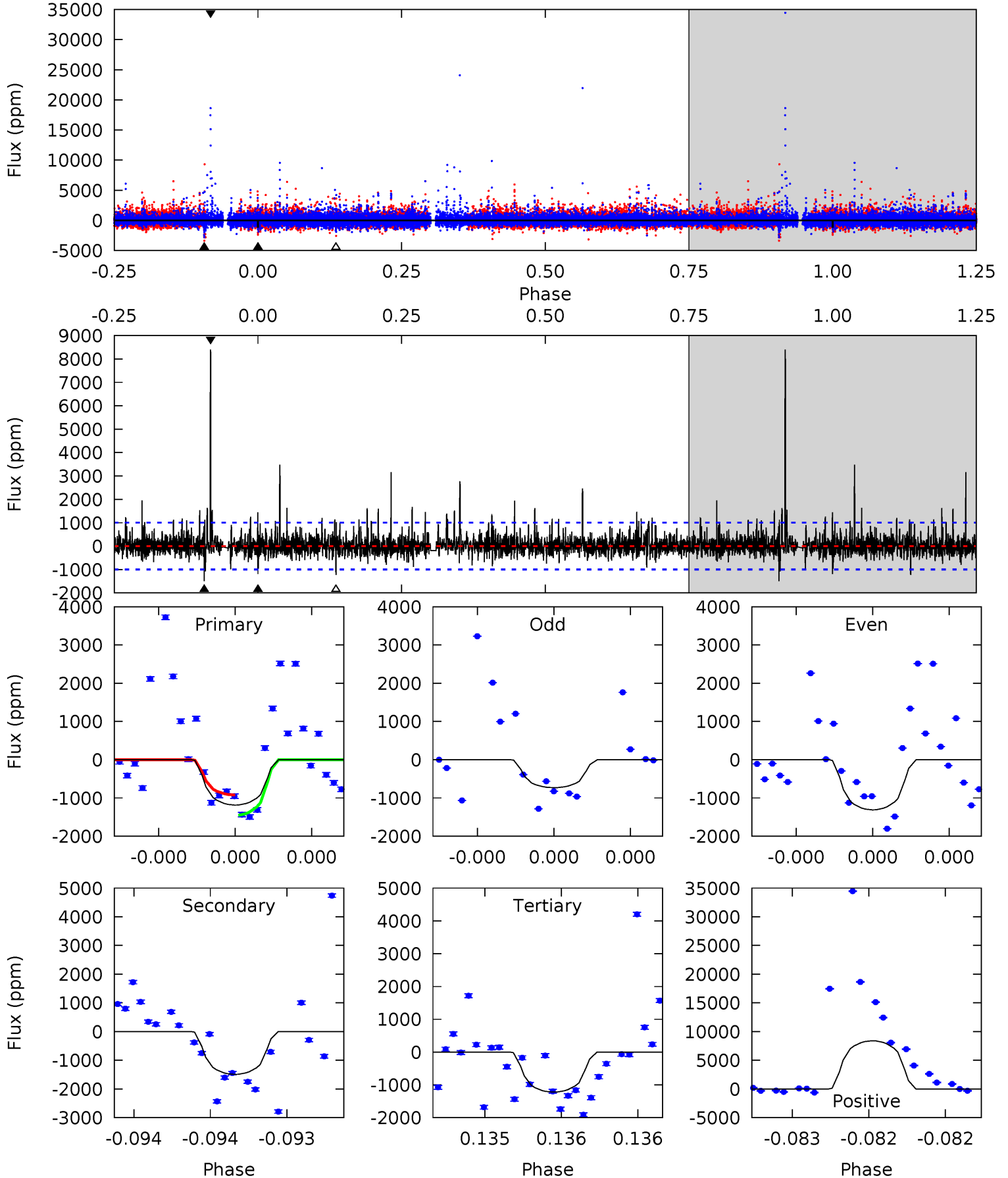
TCE 008680857-03 P=305.518233 Days $T_0=363.739197$ (BKJD)



DV Model-Shift Uniqueness Test

008680857-03, P = 305.522072 Days, E = 58.216068 Days

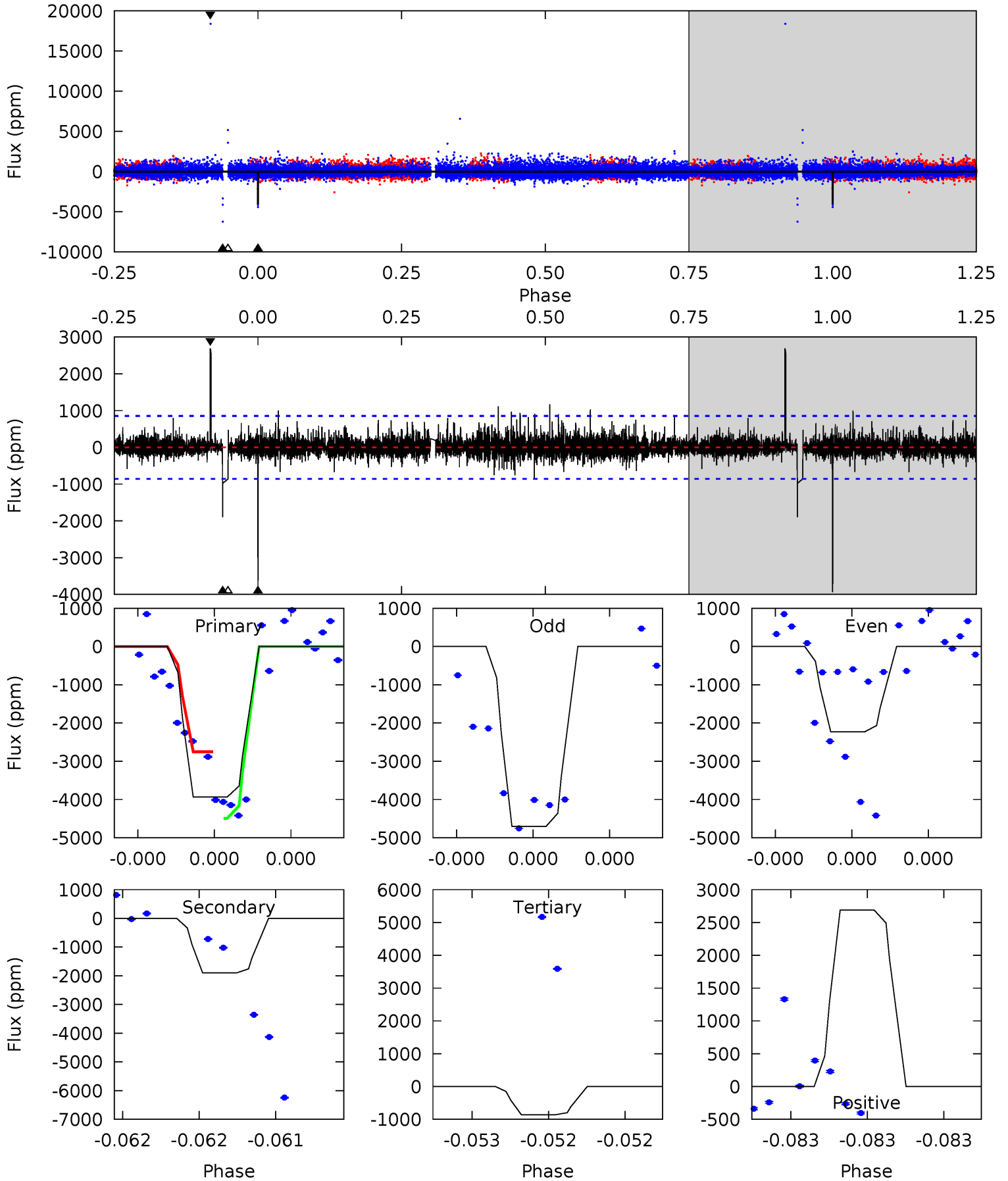
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.63	8.33	6.82	46.9	5.58	3.50	2.10	-0.19	-40.2	1.51	-38.5	0.86	1.03	0.85	1.50



Alt Model-Shift Uniqueness Test

008680857-03, P = 305.518233 Days, E = 58.220964 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.9	12.5	5.68	17.7	5.64	3.59	1.16	20.2	8.20	6.84	-5.21	9.47	0.85	0.41	5.95



Stellar Parameters For KIC 008680857

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4391^{+154}_{-154}	$4.574^{+0.060}_{-0.016}$	$0.360^{+0.100}_{-0.300}$	$0.725^{+0.025}_{-0.063}$	$0.719^{+0.041}_{-0.050}$	$2.657^{+0.670}_{-0.192}$
	+4%/-4%	+1%/-0%	+28%/-83%	+3%/-9%	+6%/-7%	+25%/-7%
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 008680857-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1493 ± 179	$4.34^{+3.66}_{-2.52}$	255^{+10}_{-10}	3820^{+1645}_{-657}	$27596^{+125719}_{-19440}$
Alt.	-1899 ± 152	$5.46^{+3.48}_{-3.12}$	256^{+10}_{-10}	3736^{+1420}_{-577}	22592^{+98667}_{-14294}

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

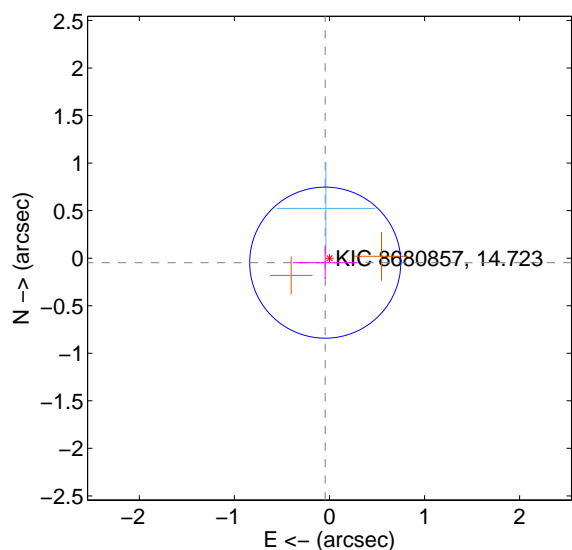
Supplemental centroid analysis for 008680857-03. Kepler magnitude: 14.72. Transit SNR 8.80

There are 1 quarters with good PRF difference image offsets

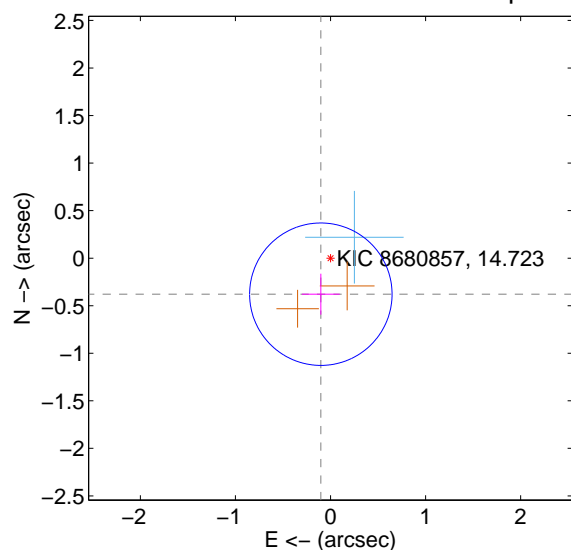
The direct PRF centroid is offset from the target star catalog position by about 0.49 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.065 ± 0.265	0.25	0.045 ± 0.339	-0.047 ± 0.173
PRF-fit source offset from KIC position	0.392 ± 0.250	1.57	0.102 ± 0.199	-0.379 ± 0.215
photometric centroid source offset	0.34 ± 0.59	0.57	-0.16 ± 0.58	-0.29 ± 0.60

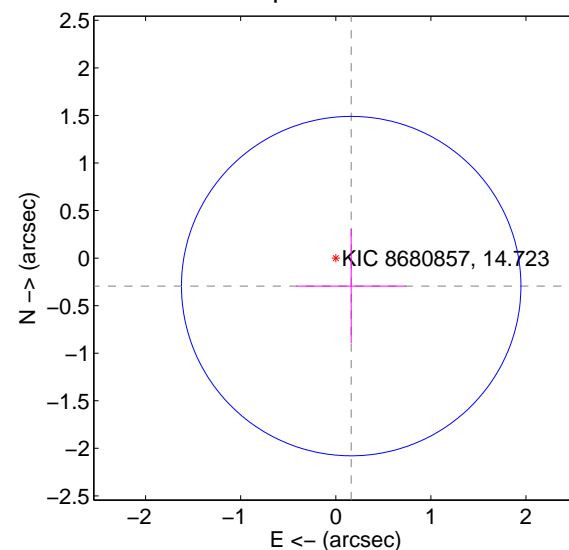
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

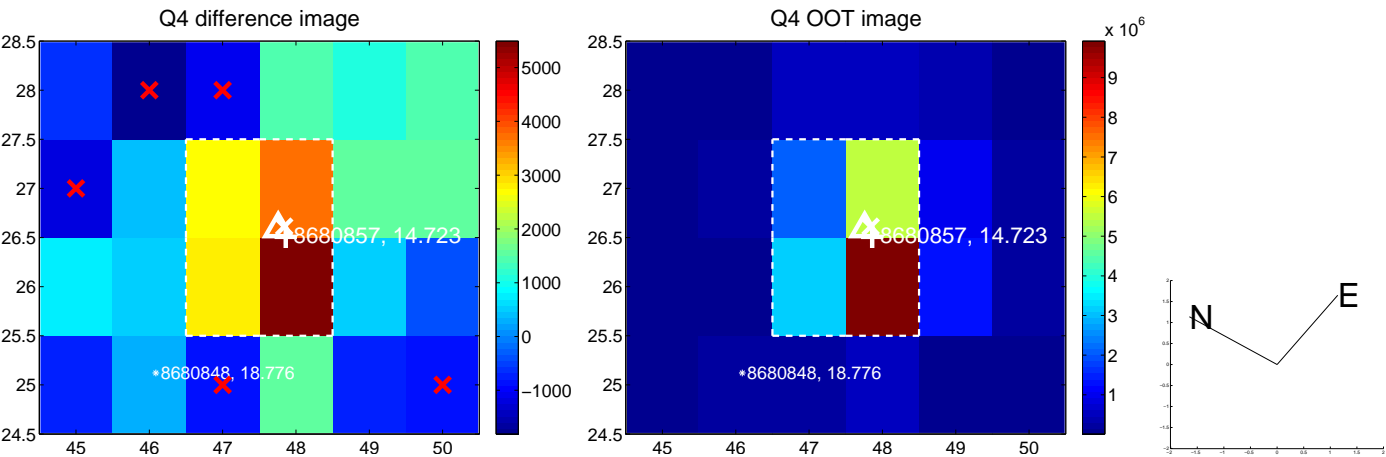


offset from photometric centroids



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.

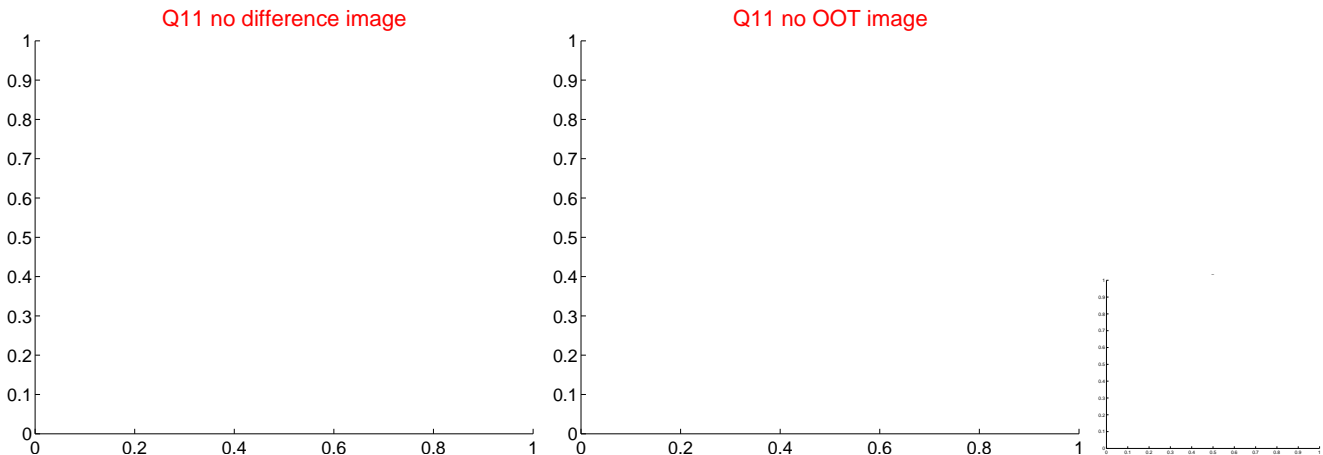
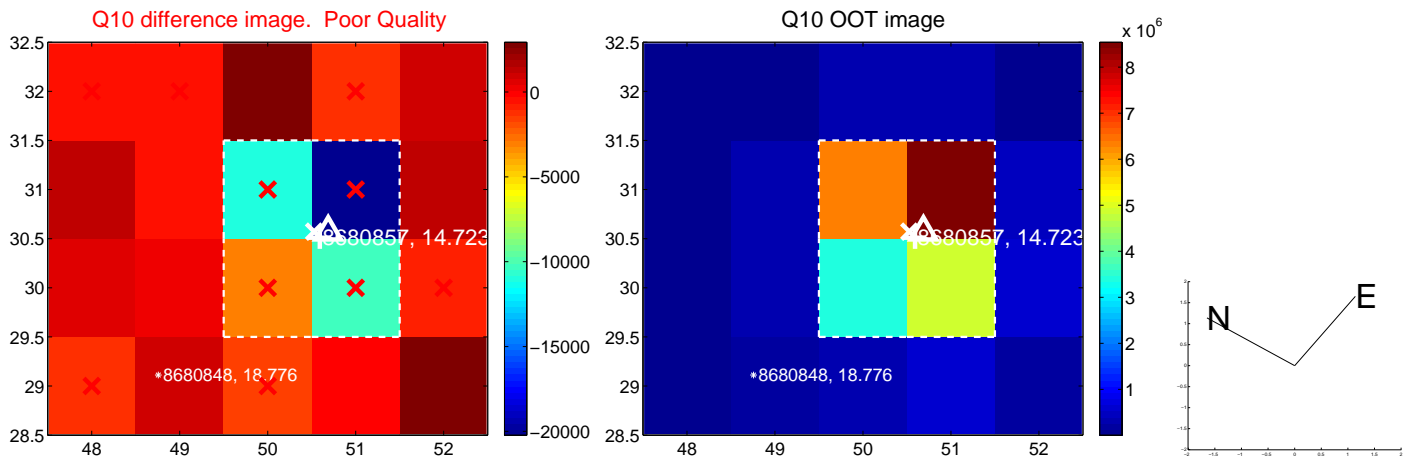
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



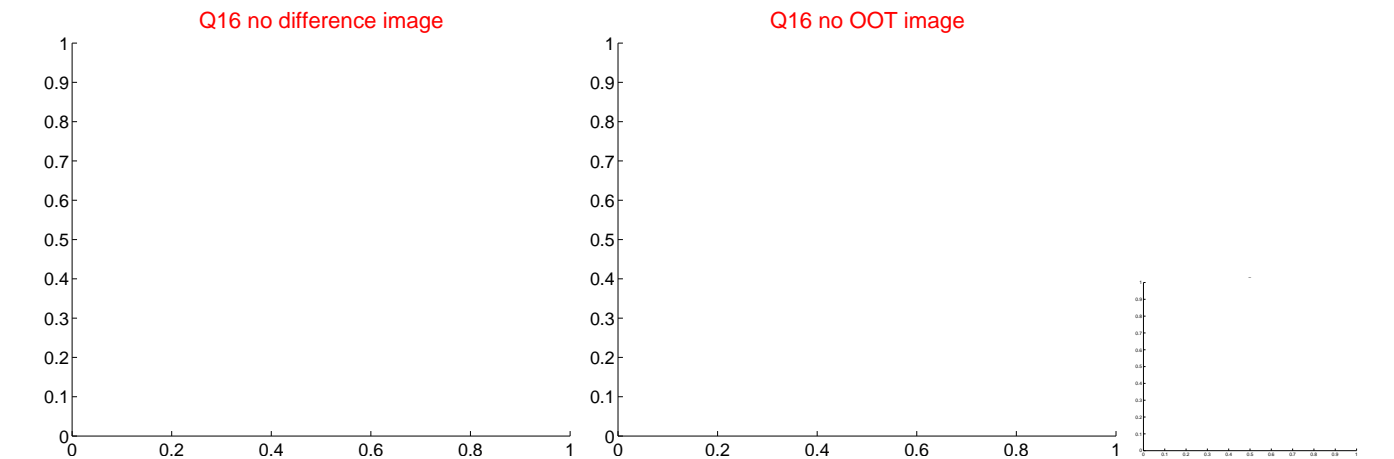
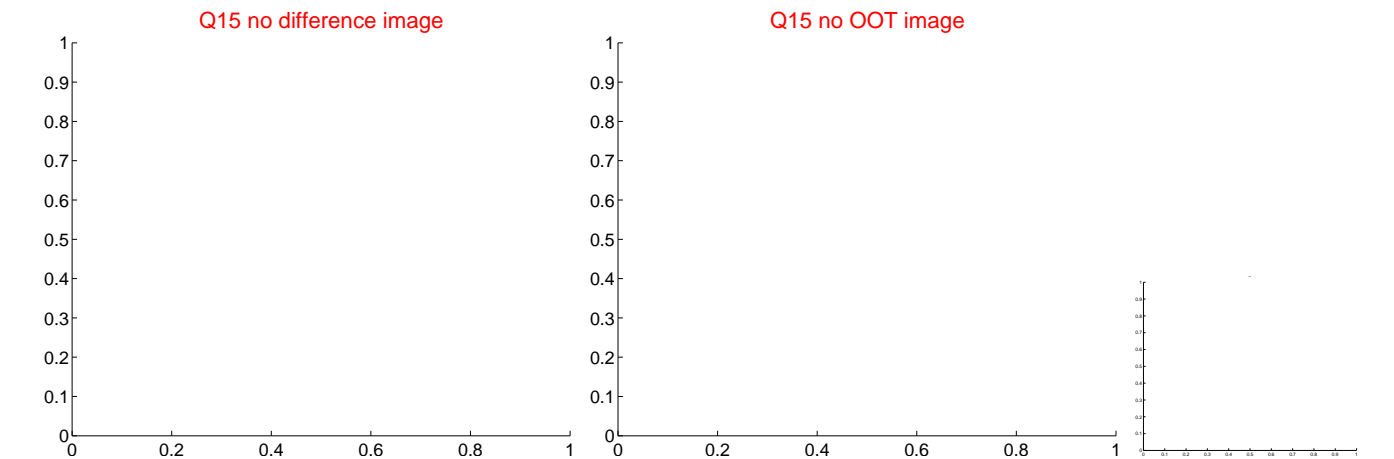
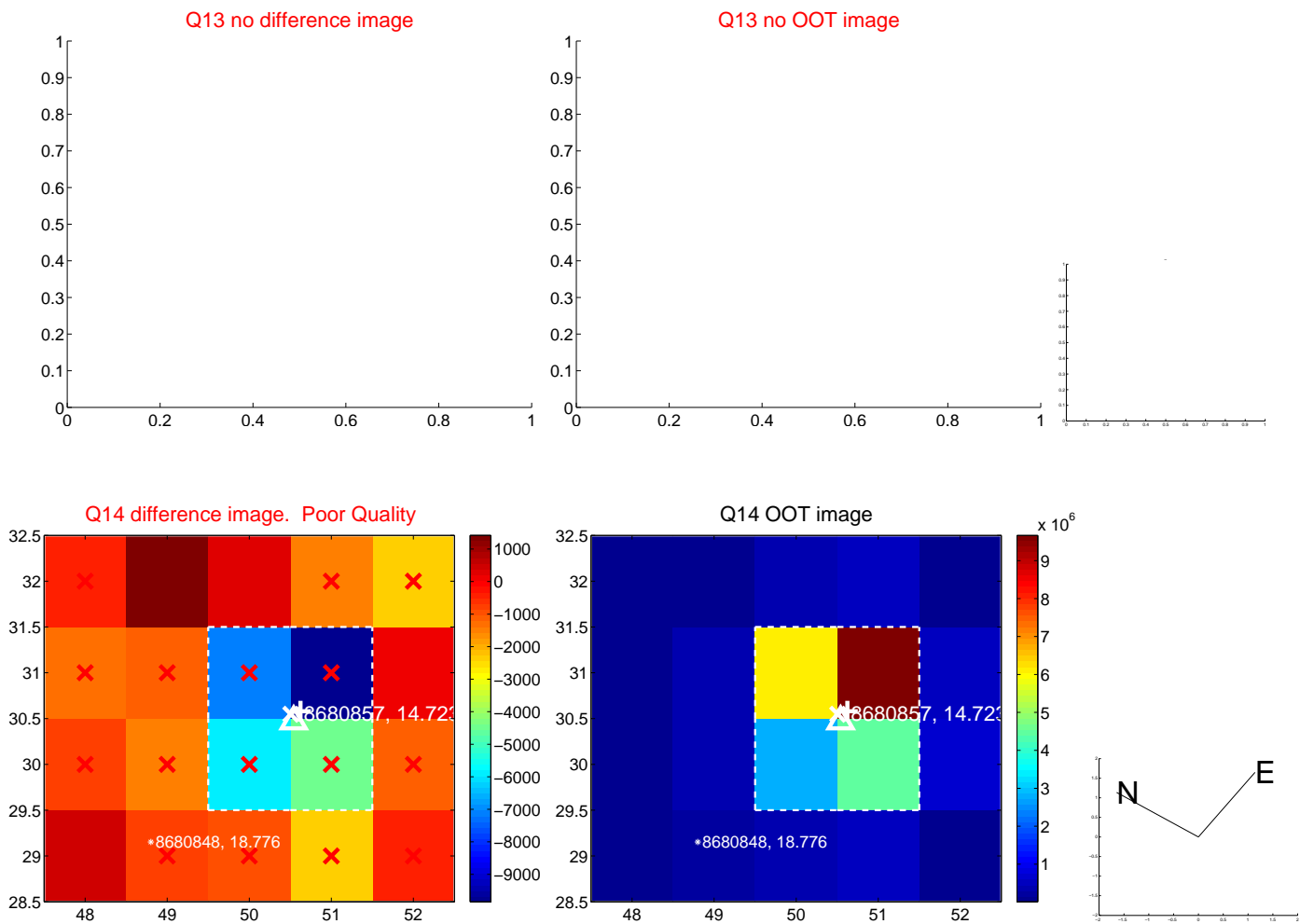
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



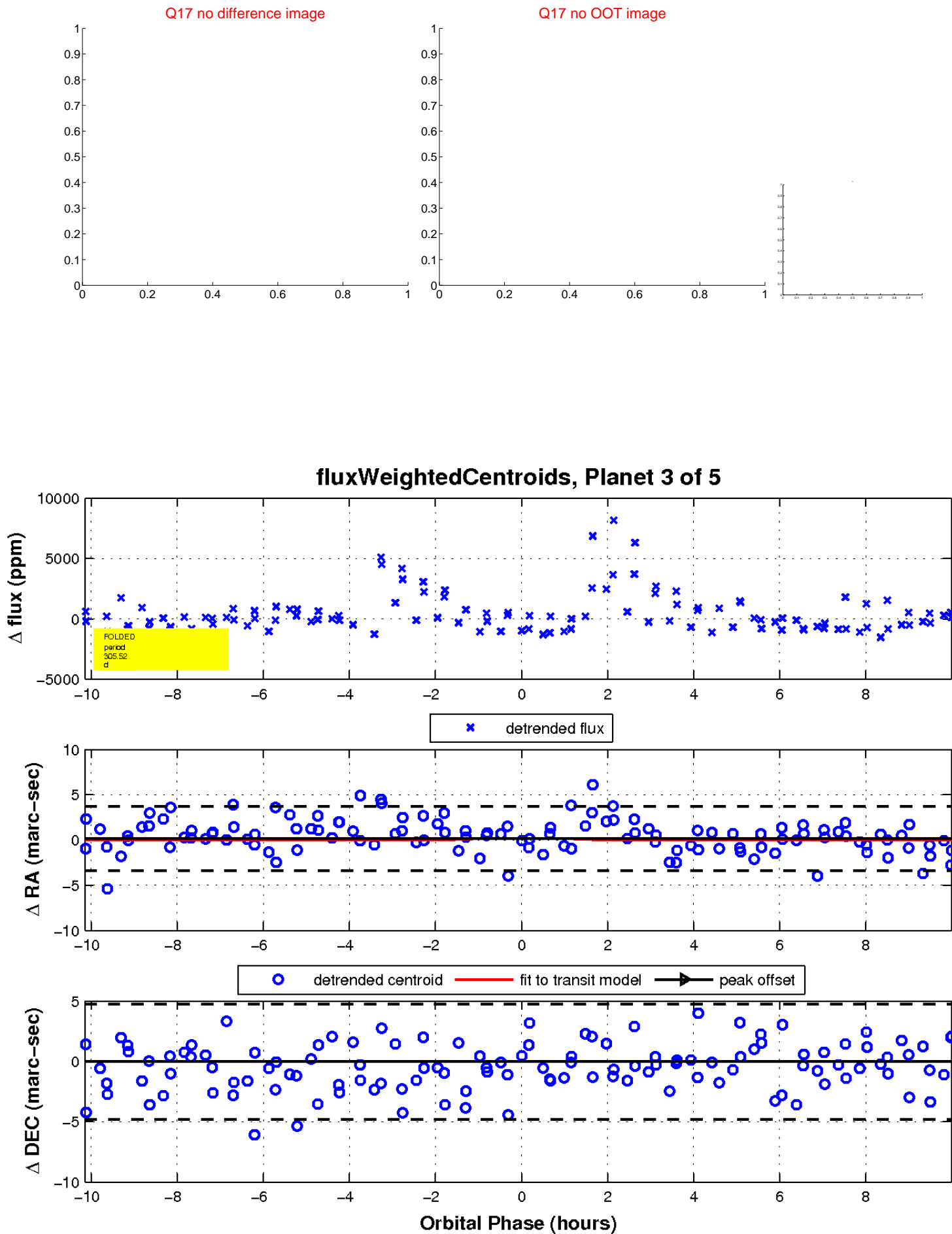
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

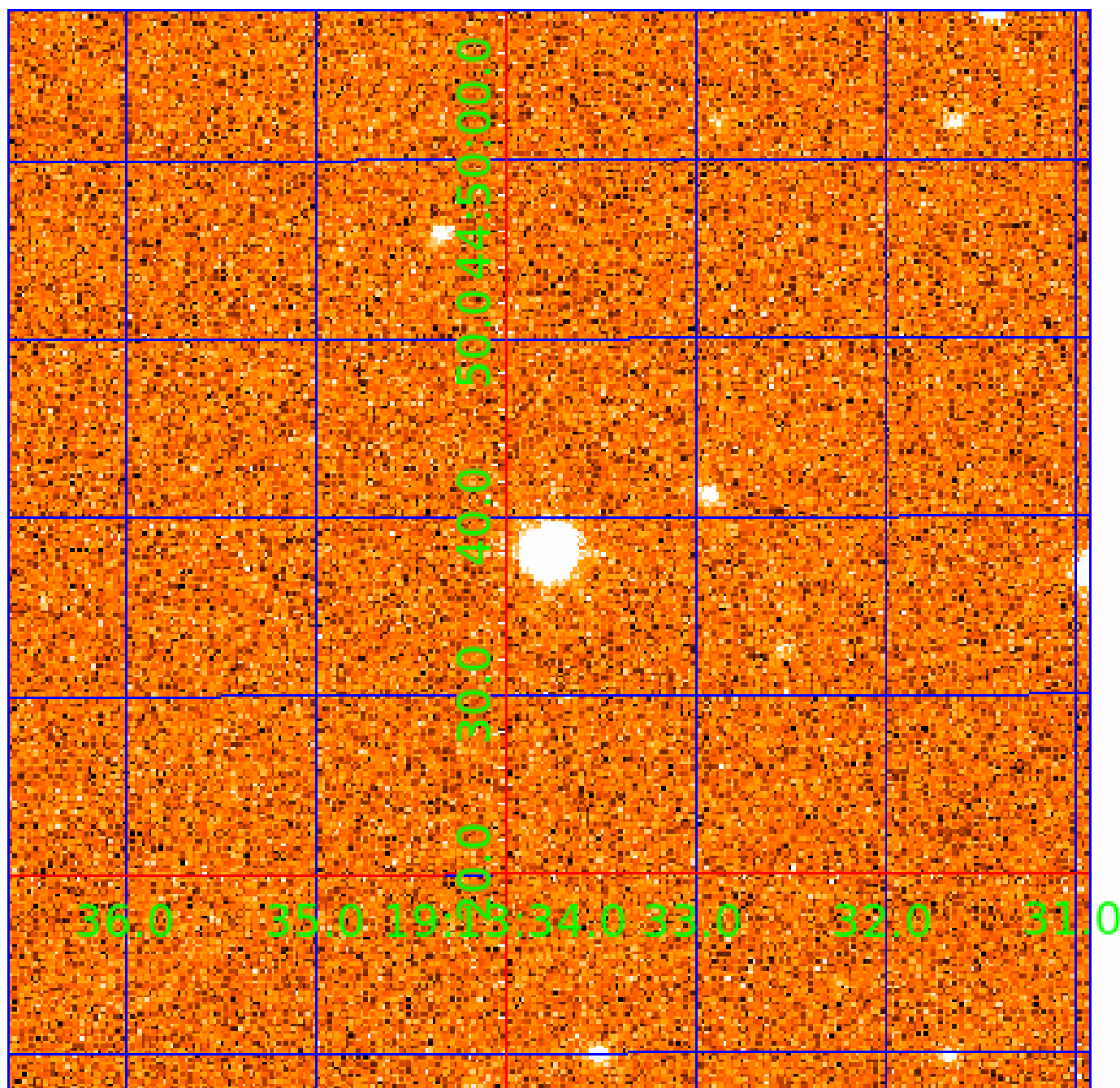


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008680857

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})
008680857-01	OBS	No	589.084633	368.365557	2055.3	20.613	13.5	5.5	0.72	4391	3.15	0.12
008680857-02	OBS	No	366.888682	375.012581	2144.6	6.470	14.0	8.1	0.72	4391	3.60	0.22
008680857-03	OBS	No	305.522072	363.738140	2588.5	3.382	12.7	8.8	0.72	4391	4.04	0.28
008680857-04	OBS	No	255.719192	178.446881	629.9	15.000	10.9	-1.0	0.72	4391	1.73	0.35
008680857-05	OBS	No	212.514764	131.894373	1487.1	2.314	11.1	6.4	0.72	4391	3.19	0.45

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008680857-01	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008680857-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
008680857-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
008680857-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008680857-05	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—MOD_POS_ALT—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.

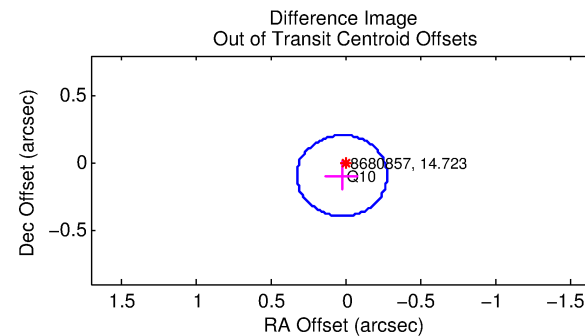
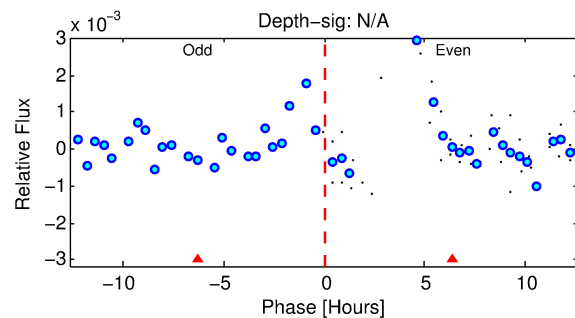
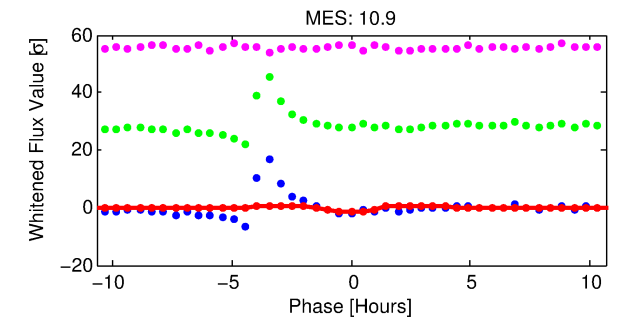
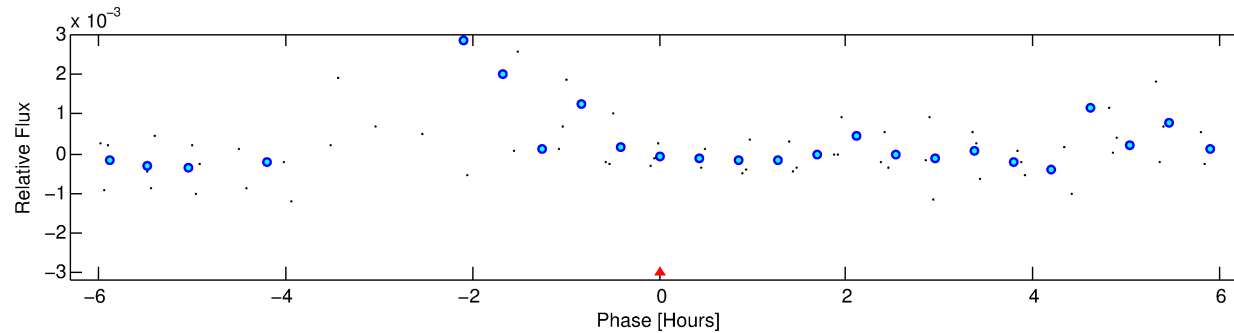
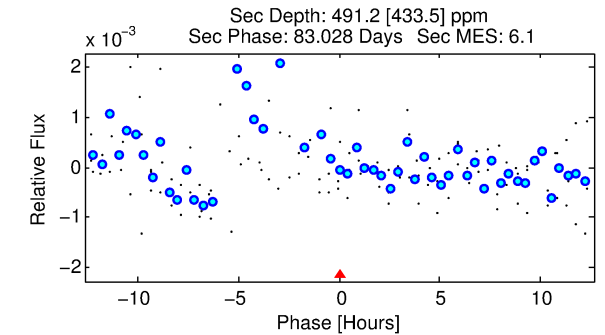
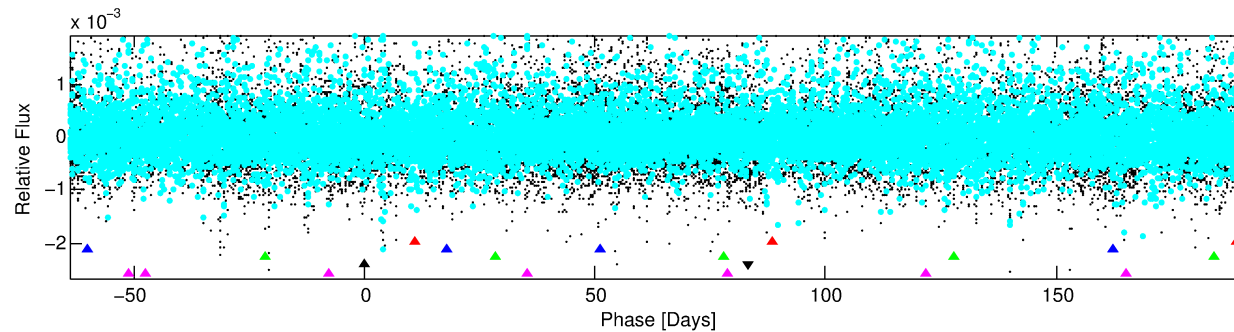
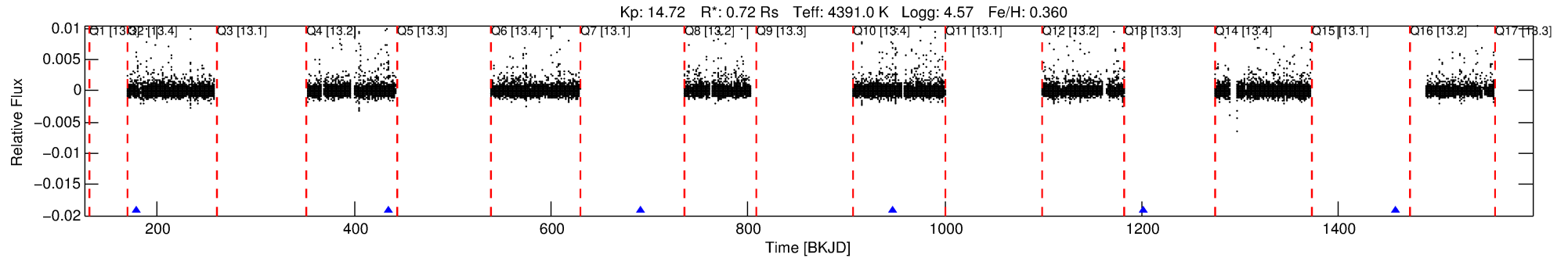
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008680857-04

No Significant Match Found

DV One-Page Summary

KIC: 8680857 Candidate: 4 of 5 Period: 255.719 d



TPS TCE Results:

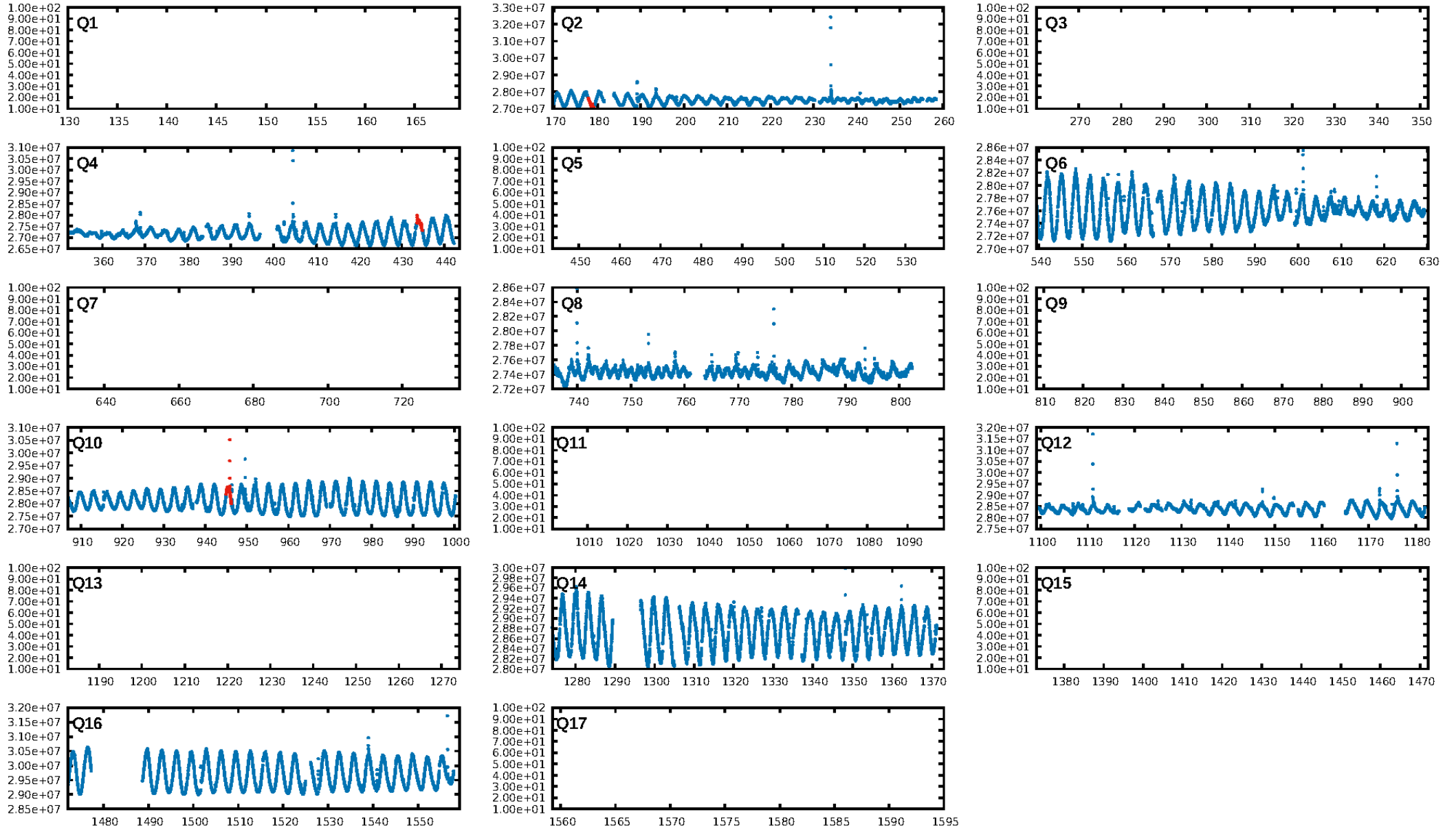
Period = 255.71919 d
Epoch = 178.4469 BKJD

DV fit results are unavailable

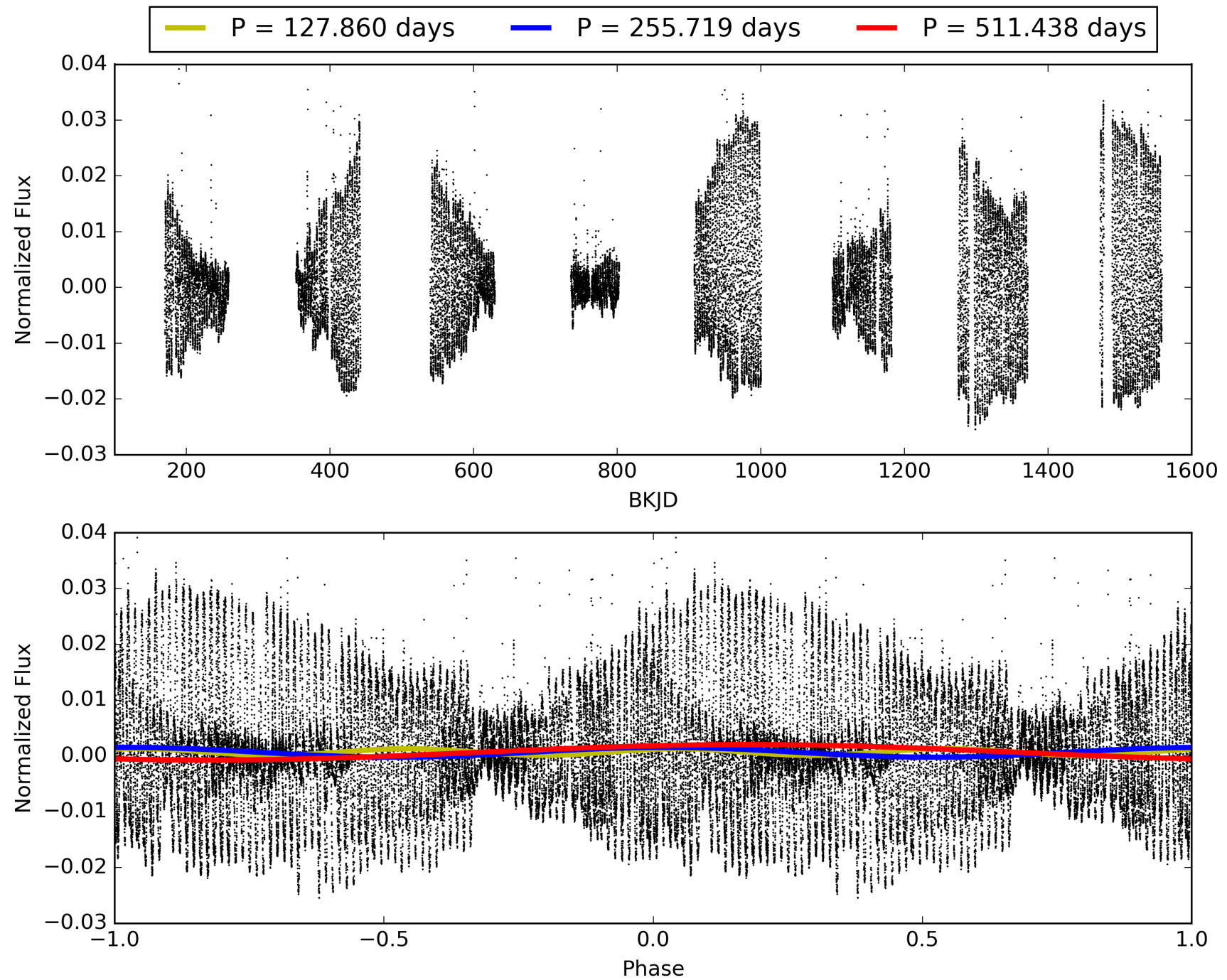
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [68.32σ]
LongPeriod-sig: 100.0% [77.73σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: 2.45e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.526
Centroid-sig: 37.5%
Centroid-so: 13.156 arcsec [0.76σ]
OotOffset-rm: 0.097 arcsec [0.96σ]
KicOffset-rm: 0.422 arcsec [4.22σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 008680857-04, PDC Light Curves

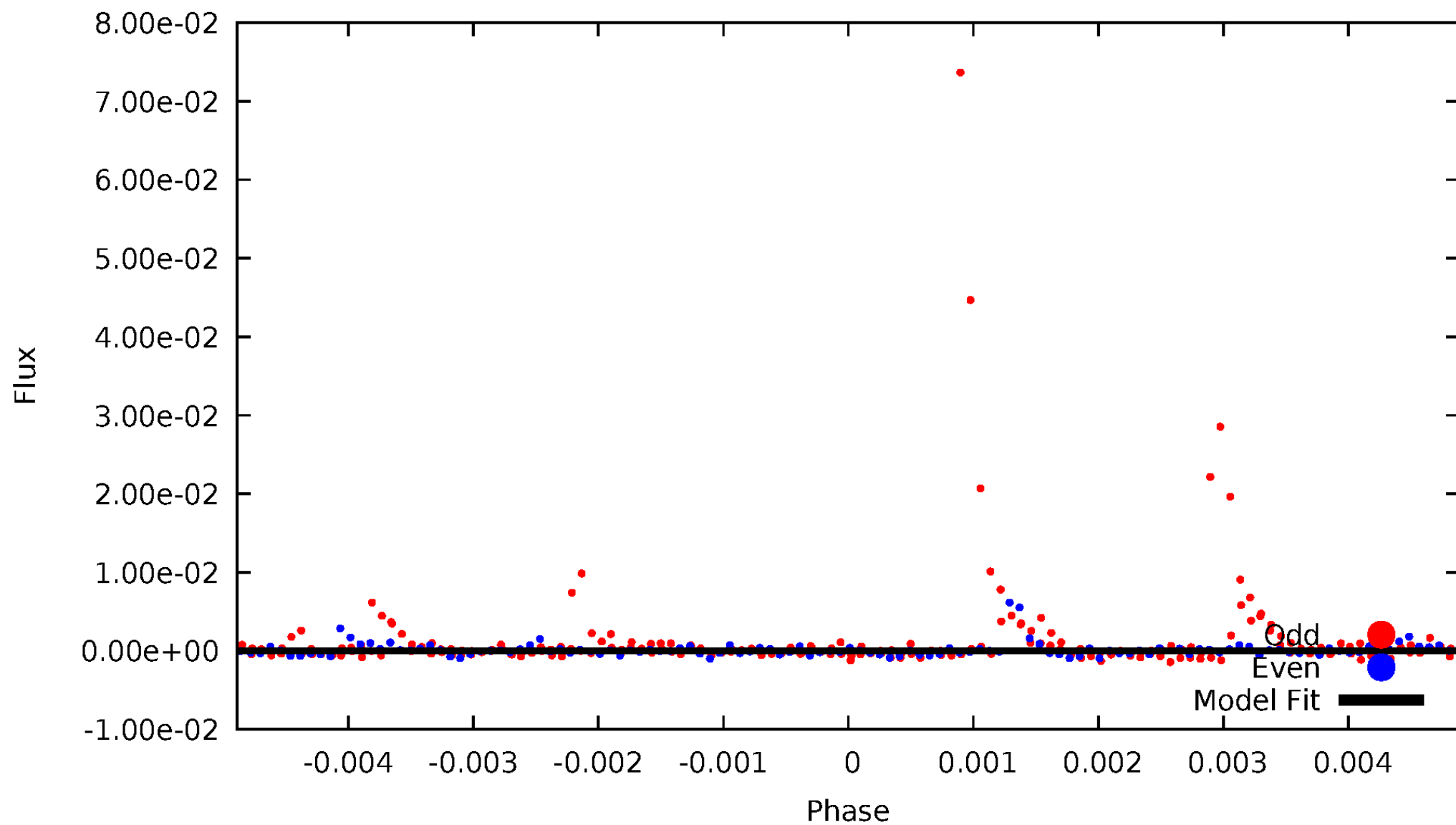


TCE 008680857-04



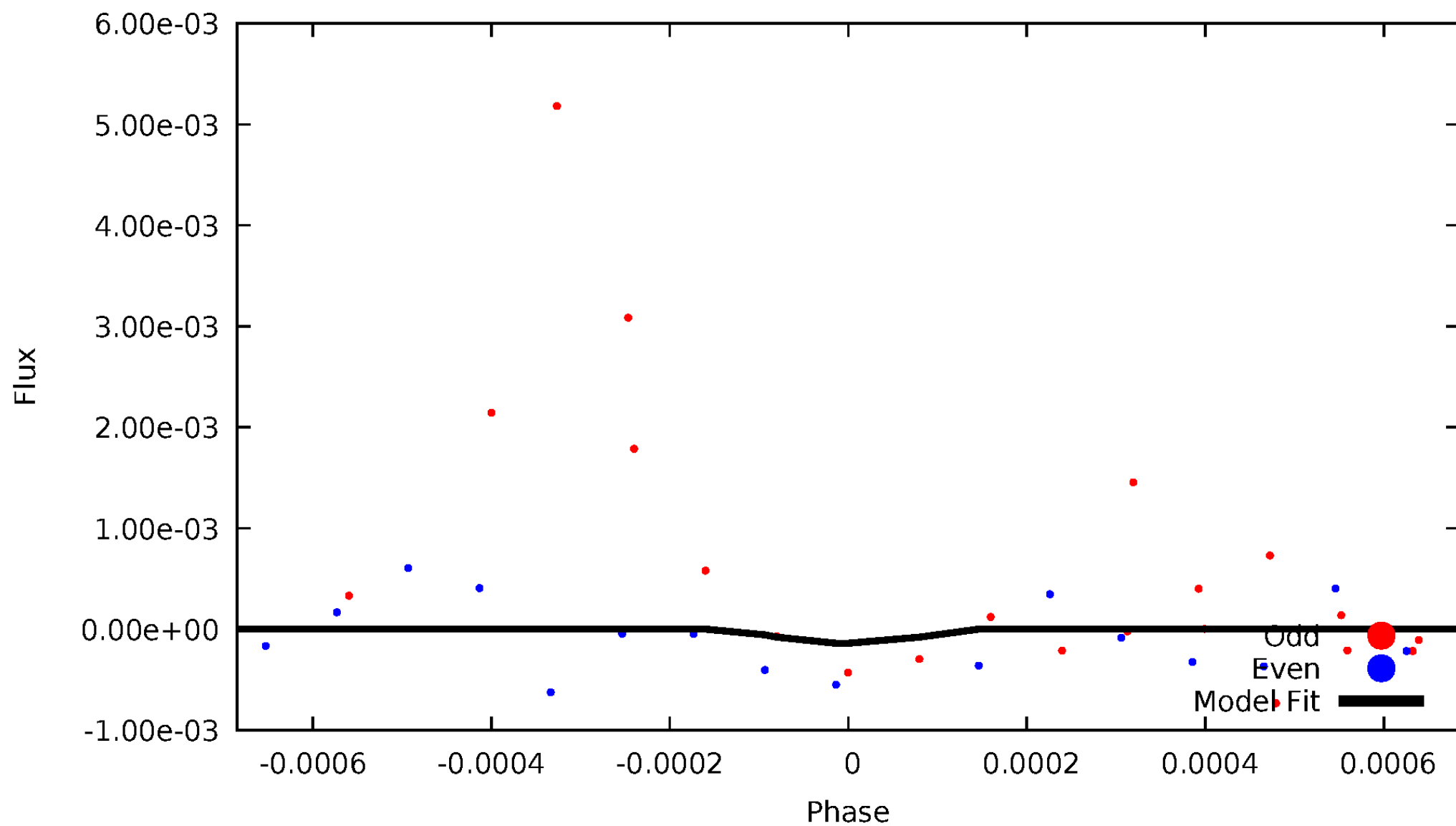
DV Odd/Even

TCE 008680857-04



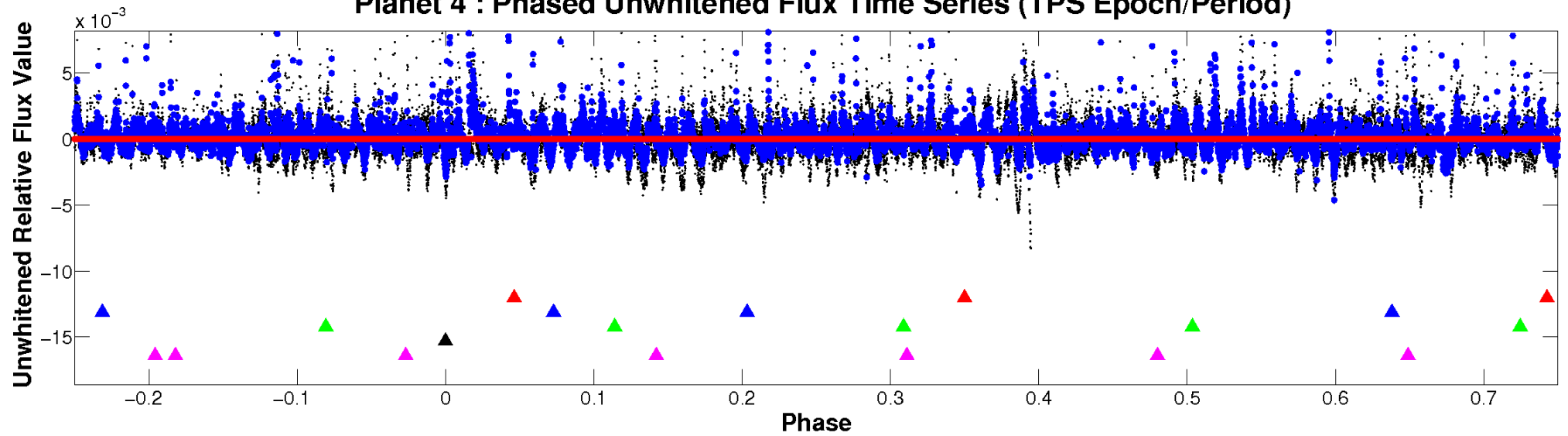
ALT Odd/Even

TCE 008680857-04

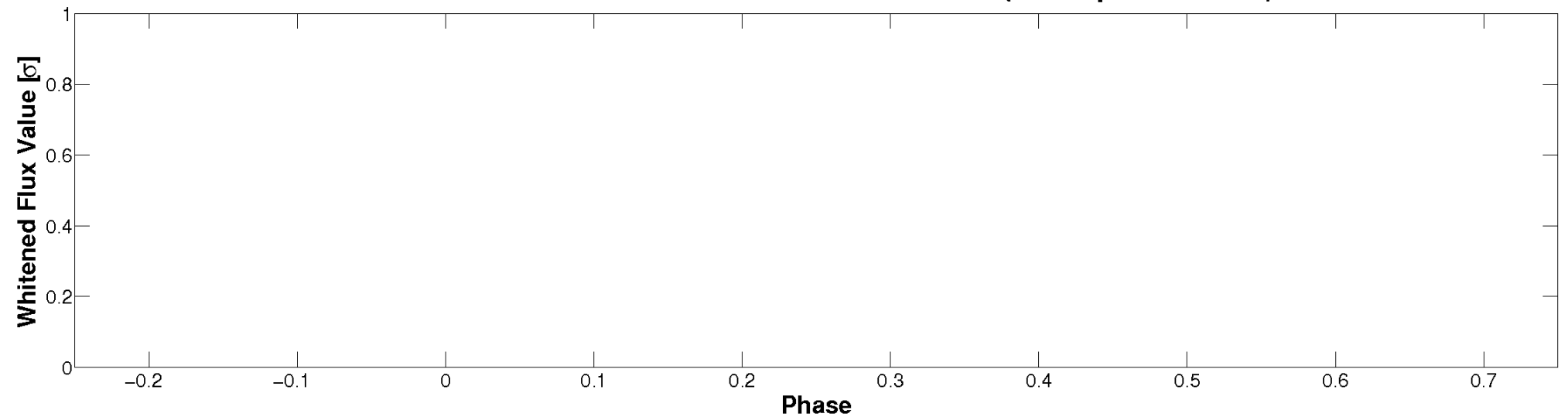


Non-Whitened Vs. Whitened Light Curve

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

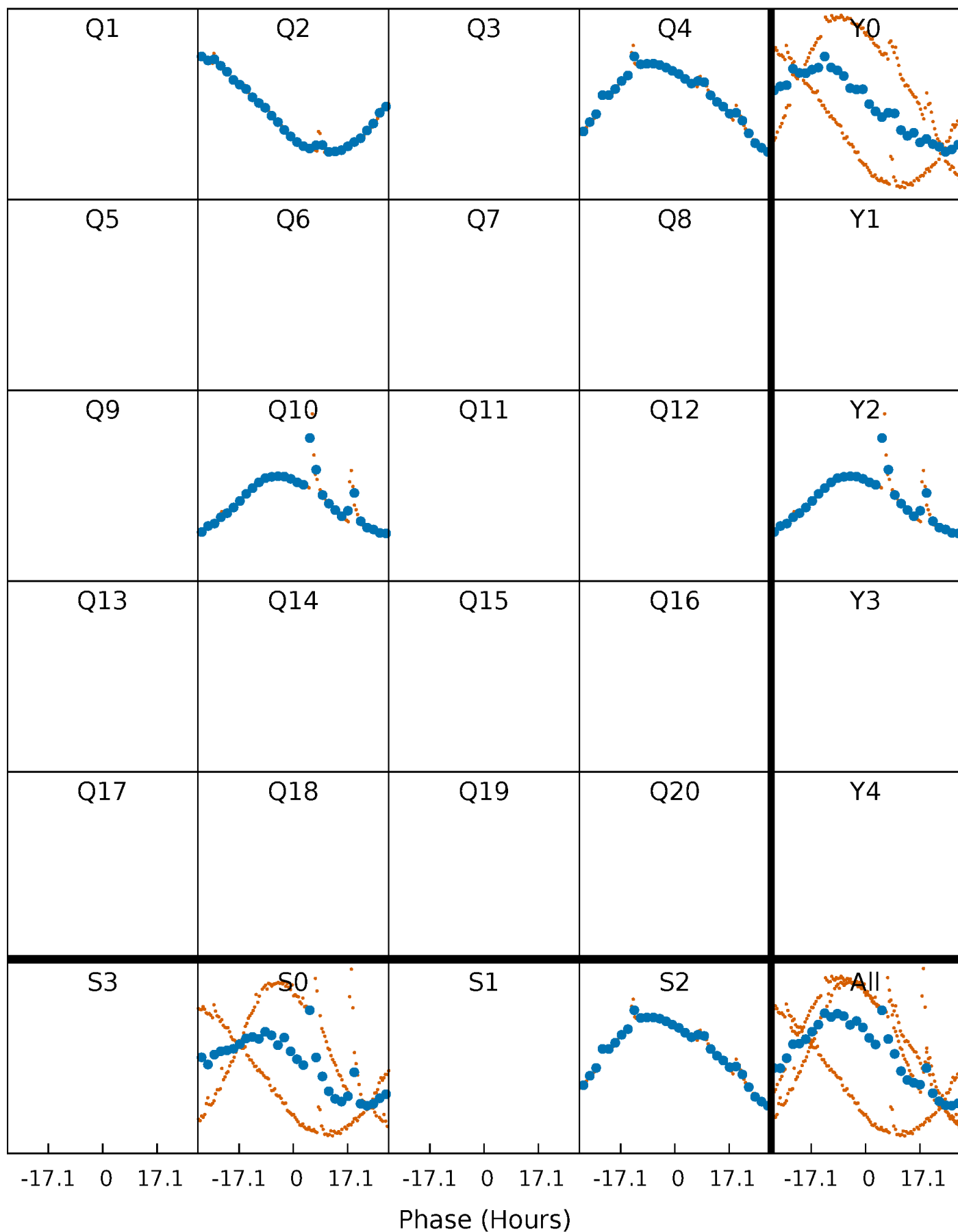


Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)



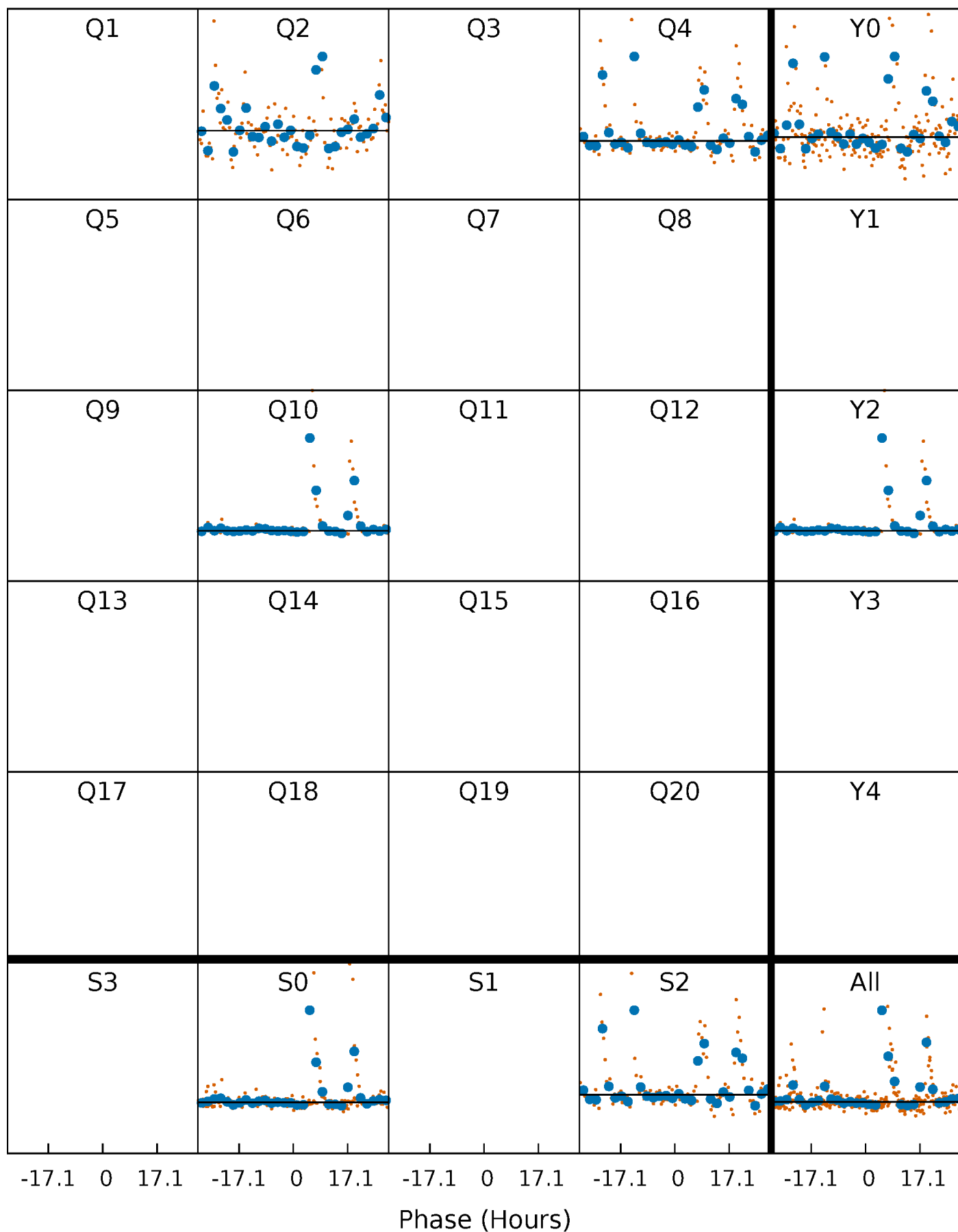
PDC Quarter-Phased Transit Curves

TCE 008680857-04 P=255.719192 Days $T_0=178.446881$ (BKJD)



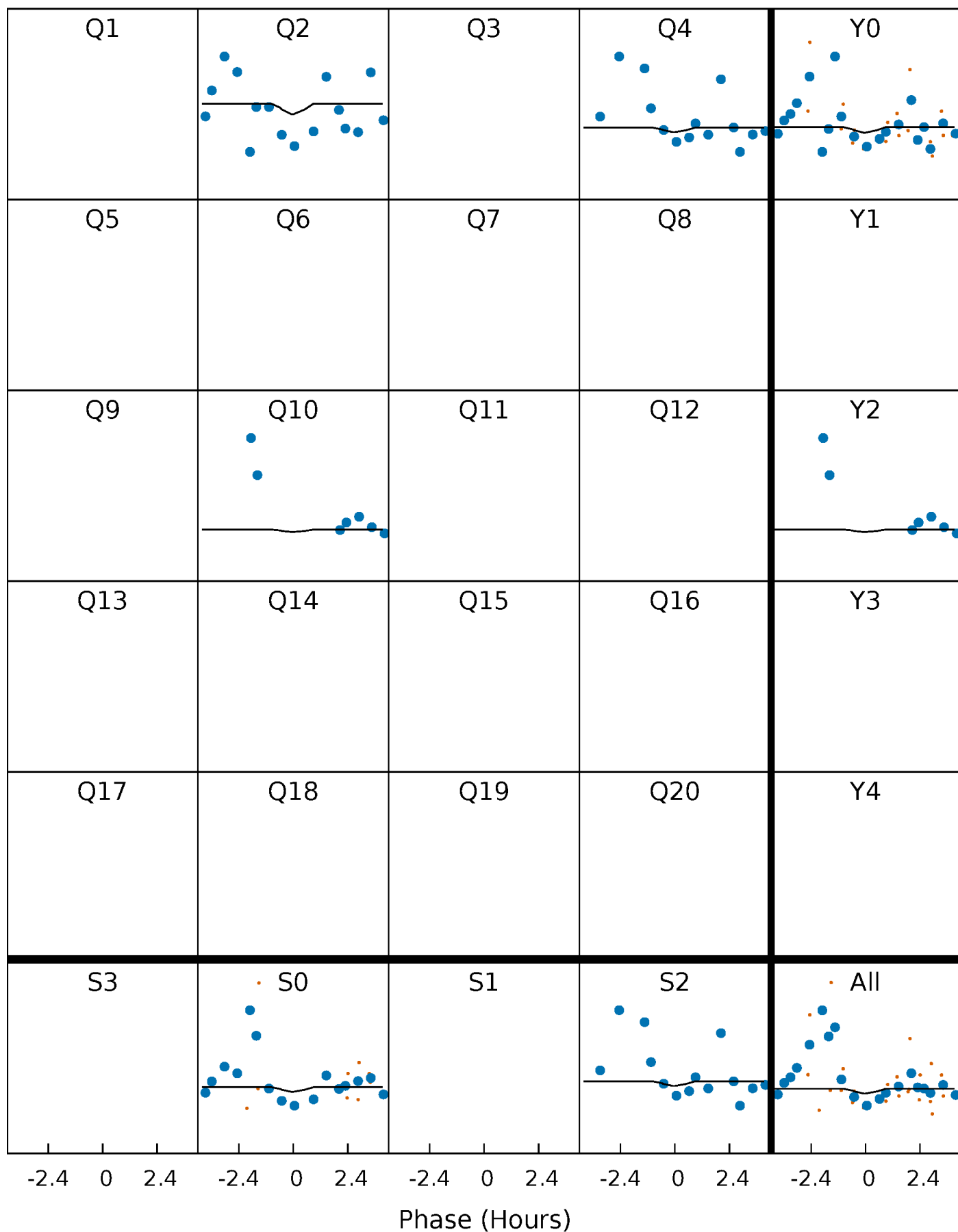
DV Quarter-Phased Transit Curves

TCE 008680857-04 P=255.719192 Days $T_0=178.446881$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

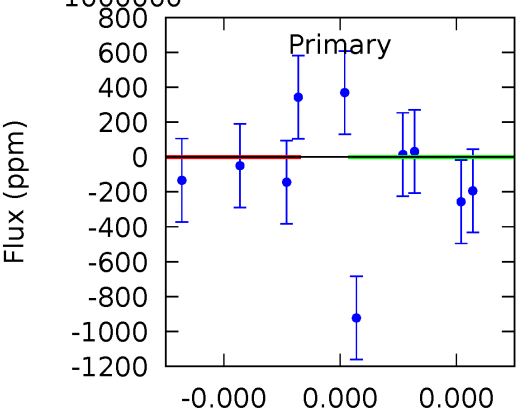
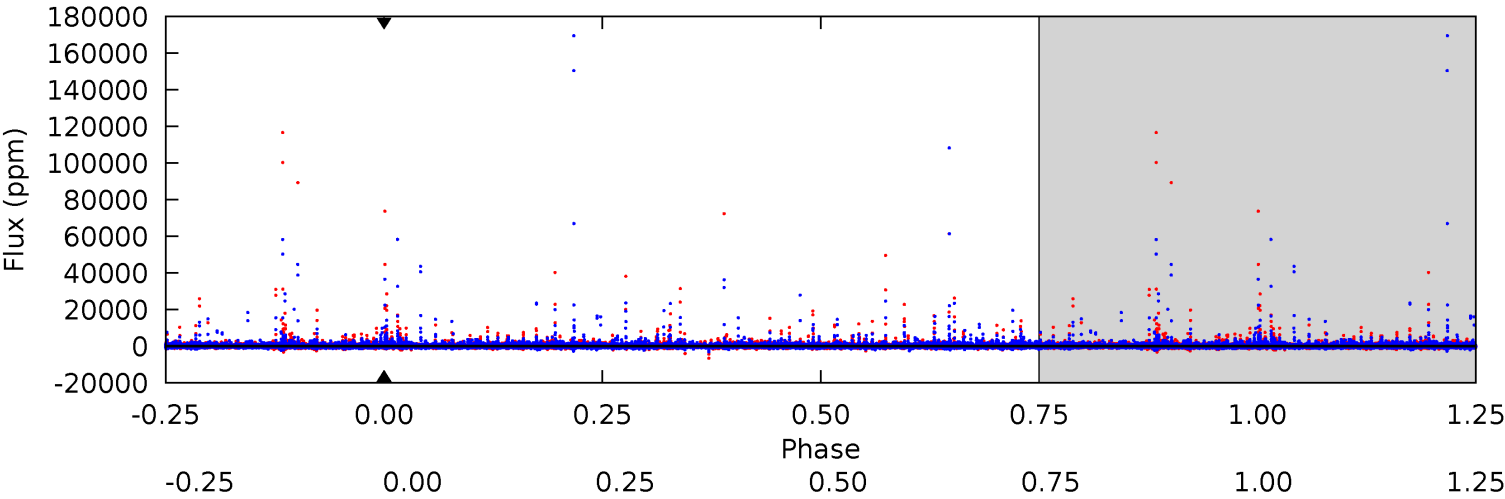
TCE 008680857-04 P=255.719192 Days $T_0=179.372873$ (BKJD)



DV Model-Shift Uniqueness Test

008680857-04, P = 255.719192 Days, E = 178.446881 Days

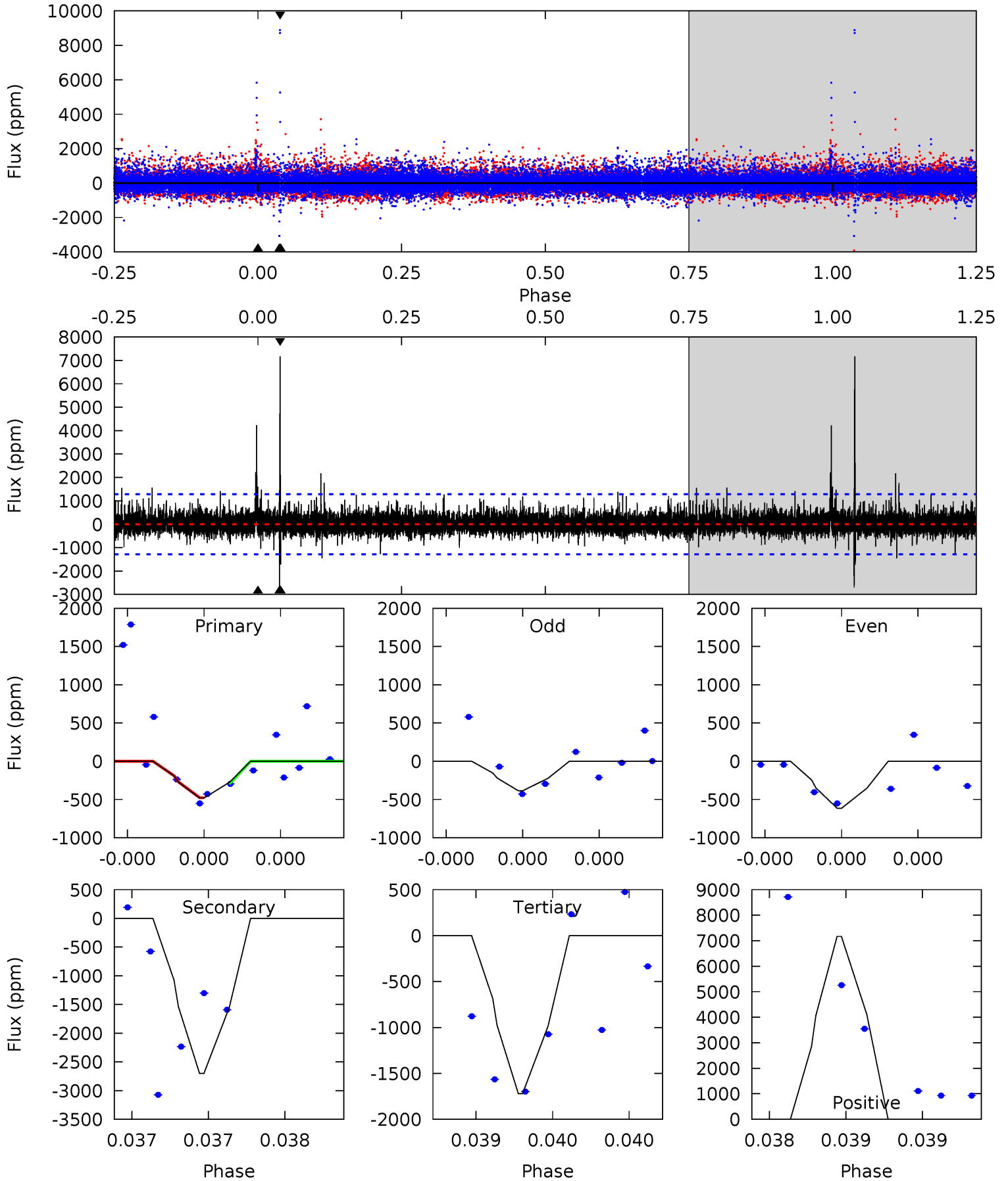
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

008680857-04, P = 255.71912 Days, E = 179.372873 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.14	12.0	7.64	31.9	5.70	3.67	1.28	-5.51	-29.7	4.36	-19.9	0.52	1.00	0.73	0.35



Stellar Parameters For KIC 008680857

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4391^{+154}_{-154}	$4.574^{+0.060}_{-0.016}$	$0.360^{+0.100}_{-0.300}$	$0.725^{+0.025}_{-0.063}$	$0.719^{+0.041}_{-0.050}$	$2.657^{+0.670}_{-0.192}$
	+4%/-4%	+1%/-0%	+28%/-83%	+3%/-9%	+6%/-7%	+25%/-7%
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 008680857-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$5.84^{+6.15}_{-4.17}$	272^{+10}_{-11}	3072^{+9481}_{-14116}	$5431^{+1825641}_{-1298253}$
Alt.	-2702 ± 225	$5.42^{+6.09}_{-3.92}$	272^{+10}_{-11}	3922^{+2836}_{-822}	$25211^{+296673}_{-19415}$

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

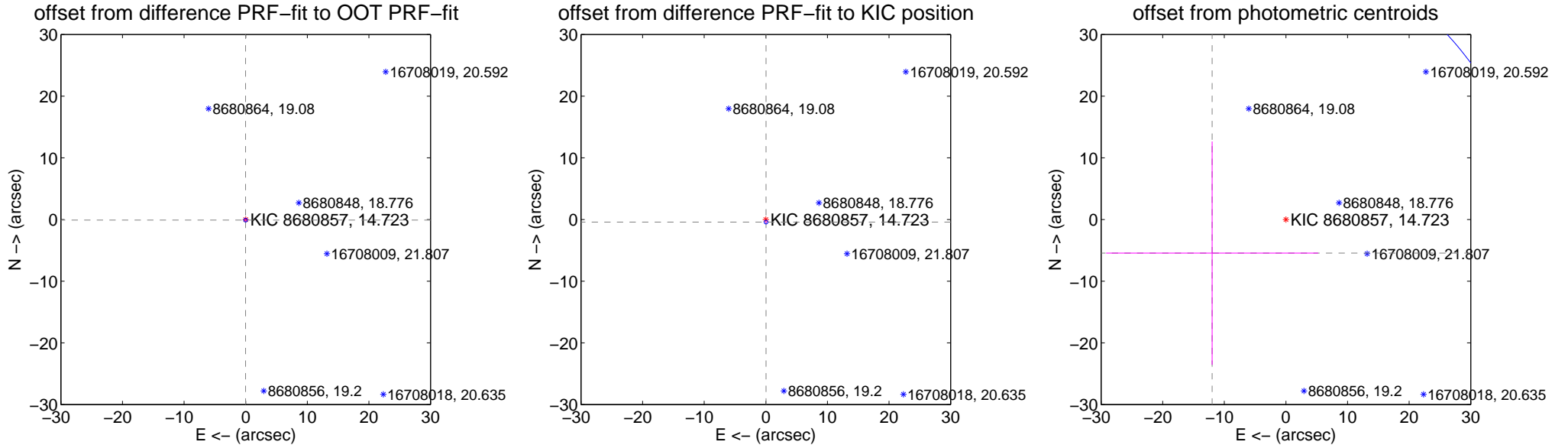
DV Centroid Data

Supplemental centroid analysis for 008680857-04. Kepler magnitude: 14.72. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.097 ± 0.101	0.96	0.022 ± 0.109	-0.094 ± 0.100
PRF-fit source offset from KIC position	0.422 ± 0.100	4.22	-0.034 ± 0.109	-0.421 ± 0.100
photometric centroid source offset	13.16 ± 17.36	0.76	11.98 ± 17.20	-5.45 ± 18.10



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

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

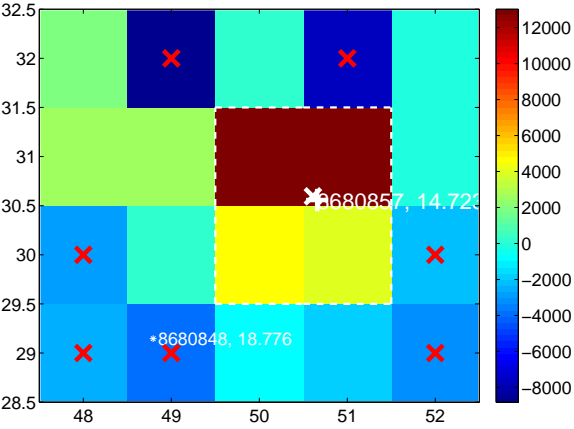
Q1 no difference image



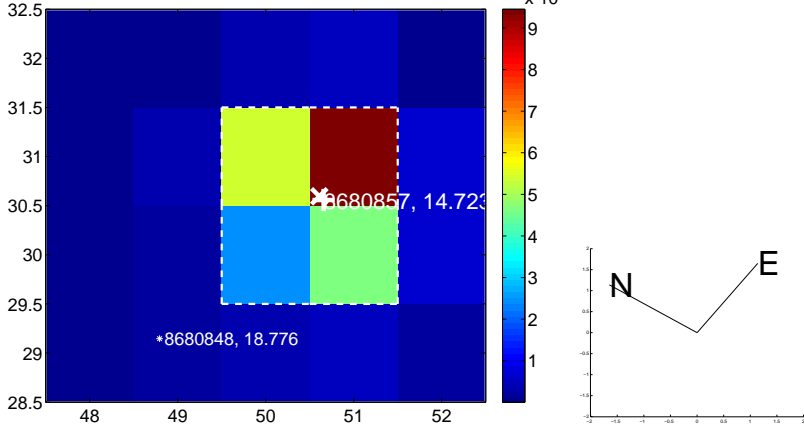
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



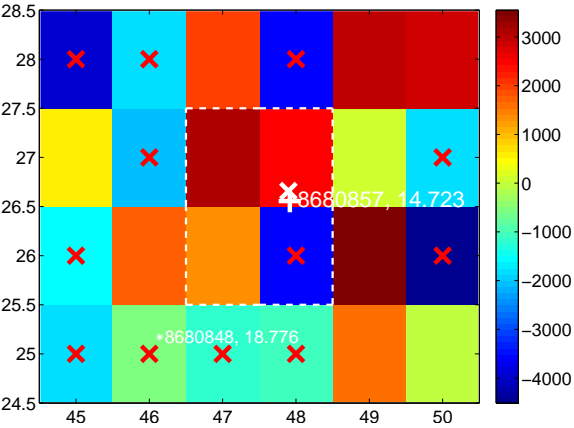
Q3 no difference image



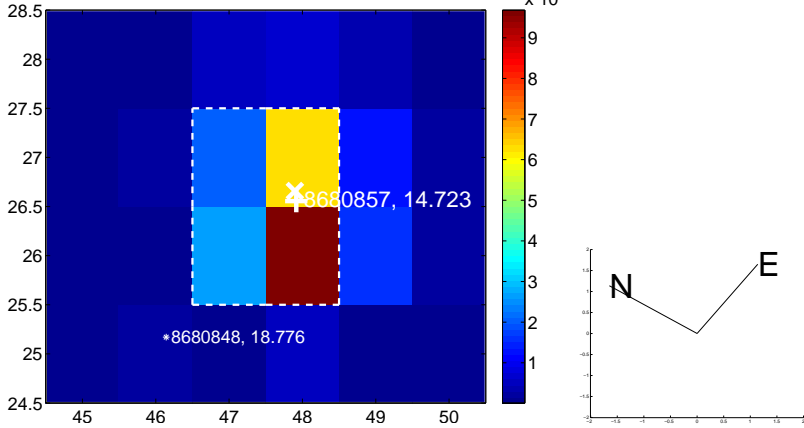
Q3 no OOT image



Q4 difference image. Poor Quality



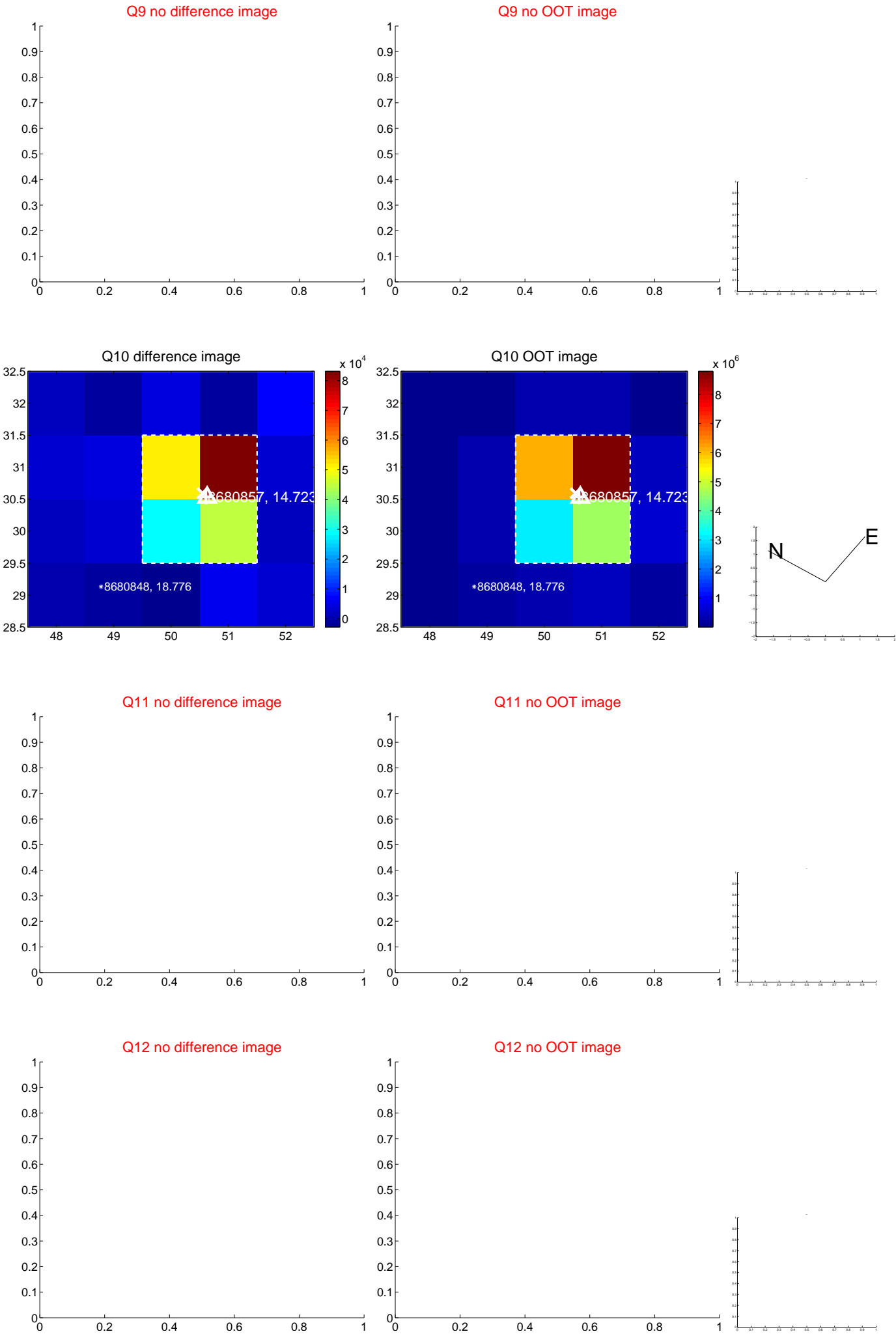
Q4 OOT image



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



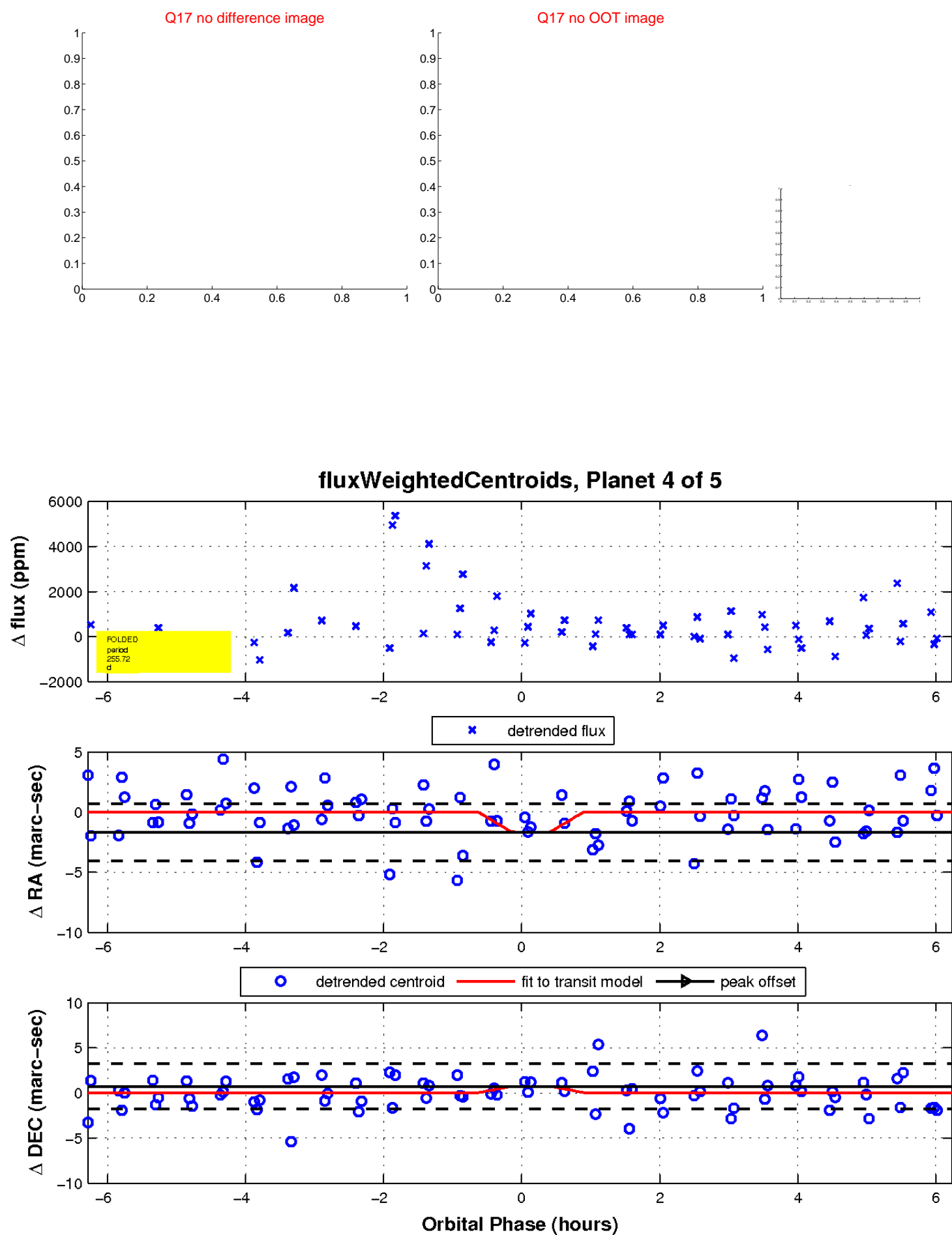
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

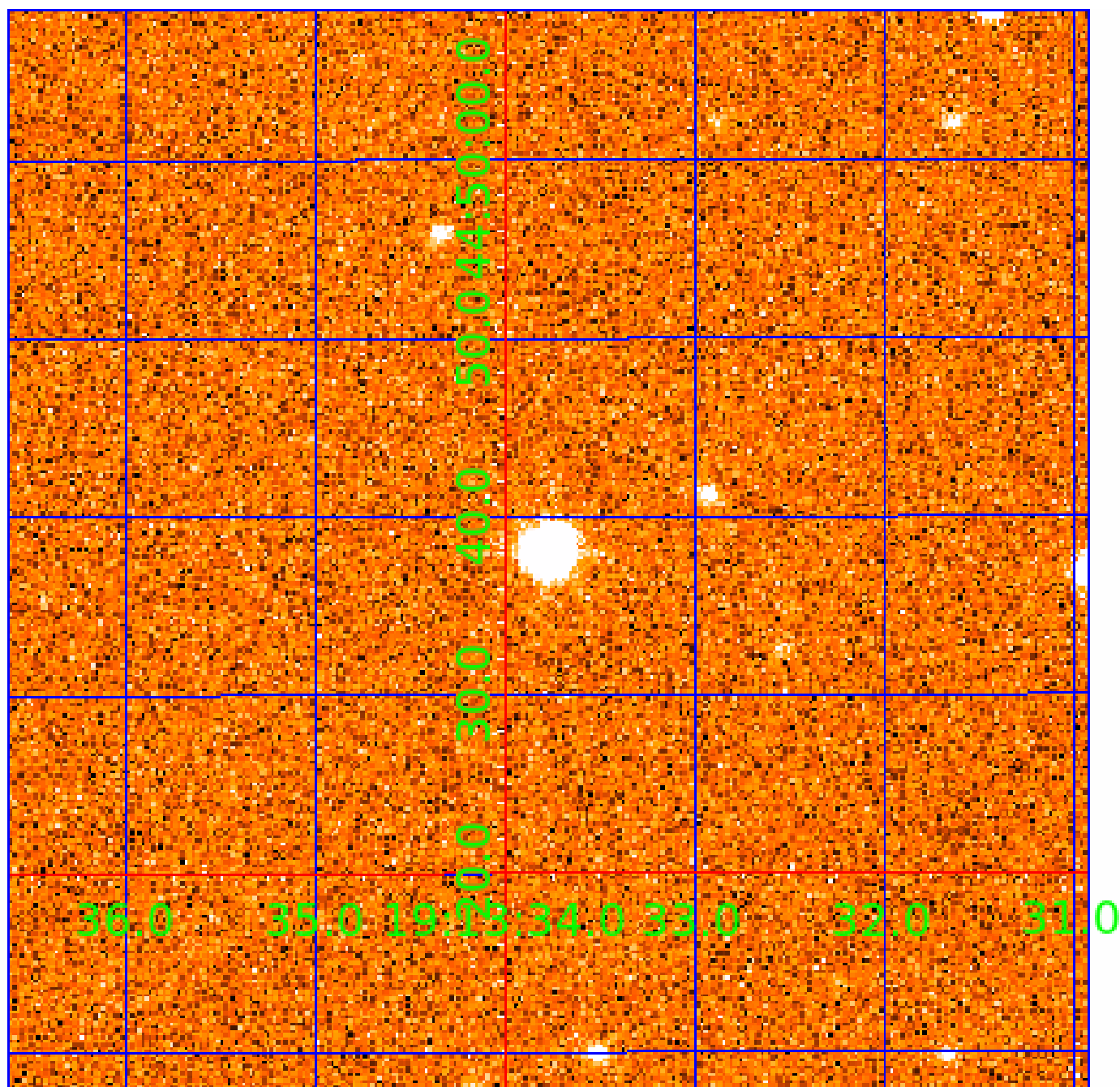


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008680857

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})
008680857-01	OBS	No	589.084633	368.365557	2055.3	20.613	13.5	5.5	0.72	4391	3.15	0.12
008680857-02	OBS	No	366.888682	375.012581	2144.6	6.470	14.0	8.1	0.72	4391	3.60	0.22
008680857-03	OBS	No	305.522072	363.738140	2588.5	3.382	12.7	8.8	0.72	4391	4.04	0.28
008680857-04	OBS	No	255.719192	178.446881	629.9	15.000	10.9	-1.0	0.72	4391	1.73	0.35
008680857-05	OBS	No	212.514764	131.894373	1487.1	2.314	11.1	6.4	0.72	4391	3.19	0.45

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008680857-01	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008680857-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
008680857-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
008680857-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008680857-05	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—MOD_POS_ALT—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.

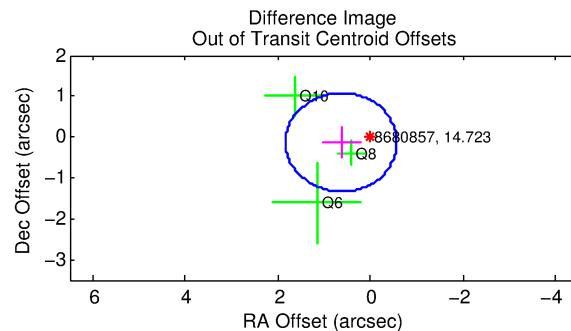
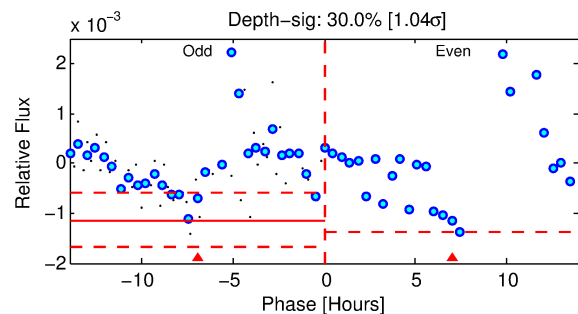
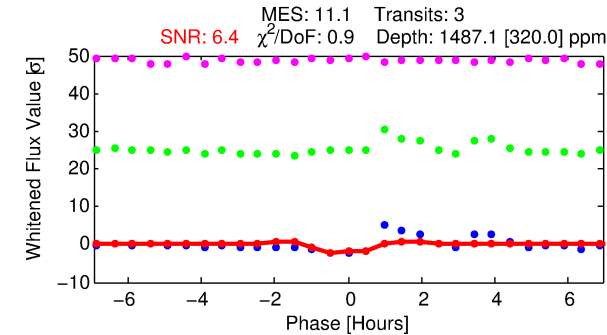
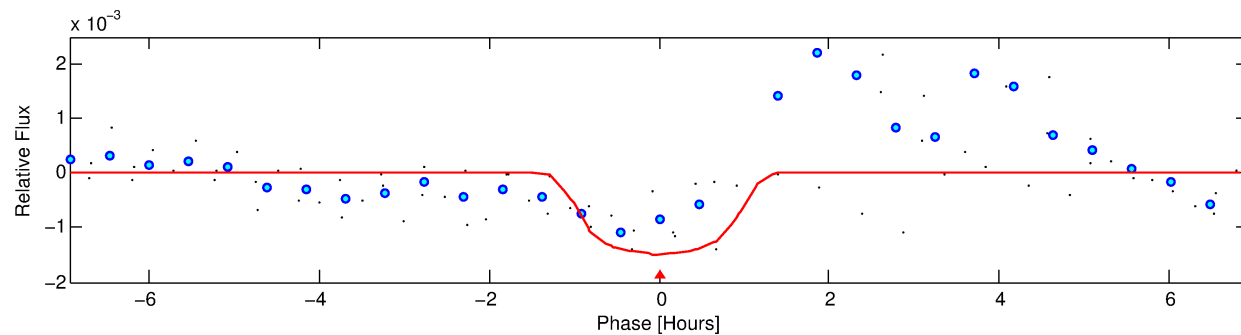
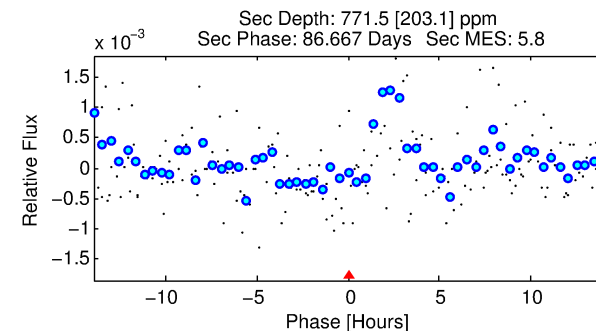
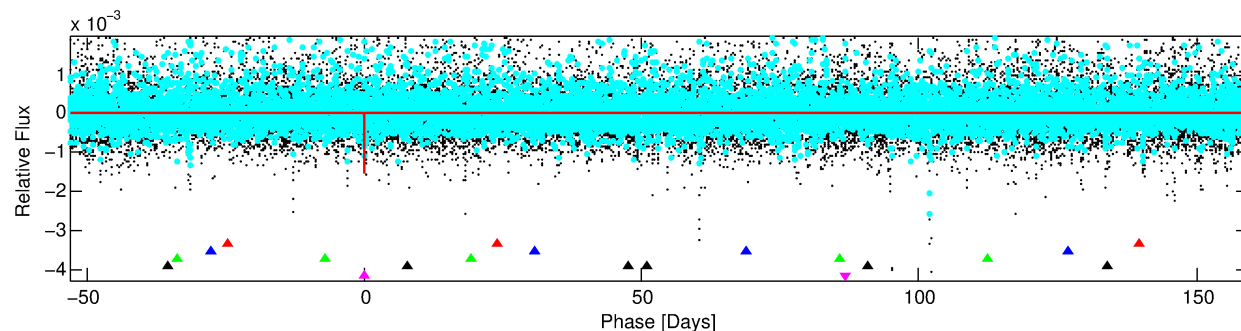
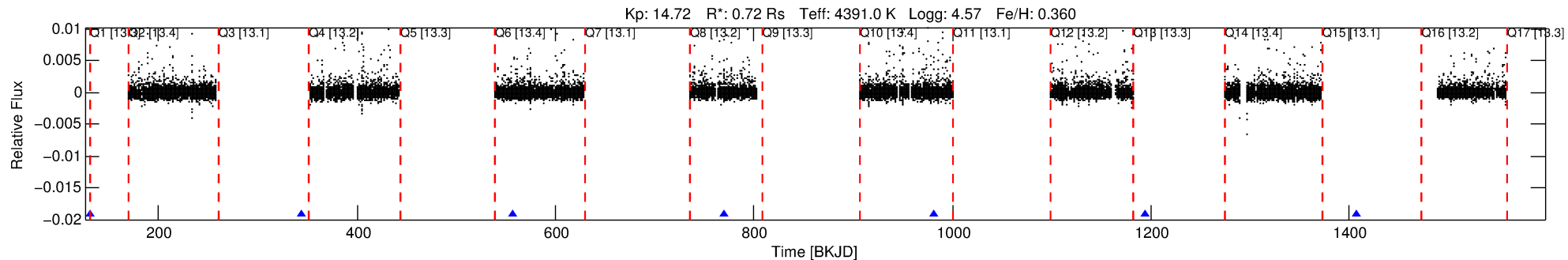
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008680857-05

No Significant Match Found

DV One-Page Summary

KIC: 8680857 Candidate: 5 of 5 Period: 212.515 d



DV Fit Results:

Period = 212.51476 [0.00686] d
Epoch = 131.8944 [0.0210] BKJD
Rp/R* = 0.0404 [0.0563]
a/R* = 457.30 [1961.16]
b = 0.81 [1.88]
Seff = 0.45 [0.08]
Teq = 209 [9] K
Rp = 3.19 [4.46] Re
a = 0.6245 [0.0462] AU
Ag = 16233.68 [45506.05] [0.36 σ]
Teff = 3643 [2554] K [1.34 σ]

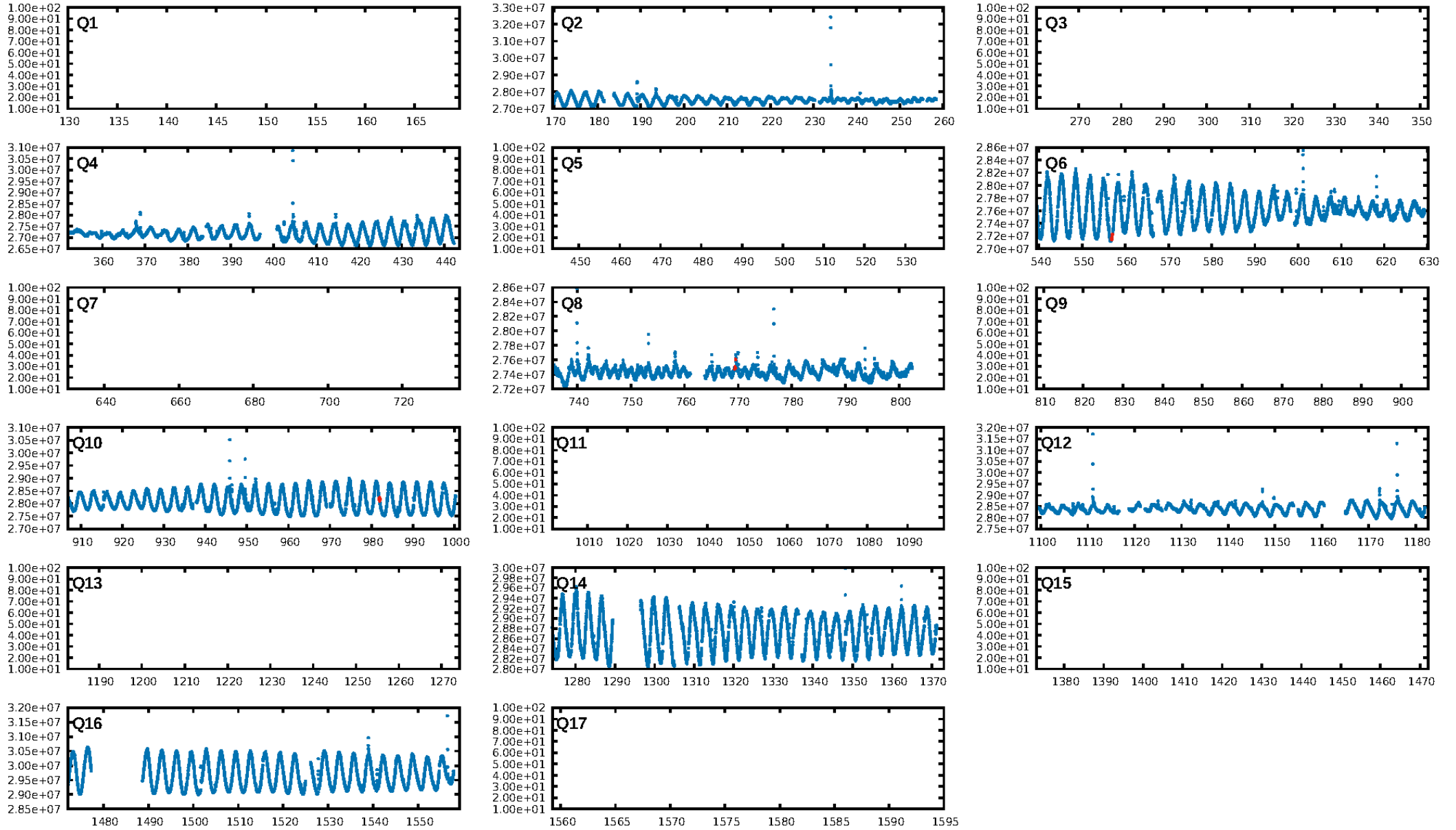
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [68.32 σ]
ModelChiSquare2-sig: 18.2%
ModelChiSquareGof-sig: 98.0%
Bootstrap-pfa: 9.82e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.042
Centroid-sig: 61.2%
Centroid-so: 0.872 arcsec [0.73 σ]
OotOffset-rm: 0.644 arcsec [1.60 σ]
KicOffset-st: 2/0/1/0 [3]
KicOffset-st: 2/0/1/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

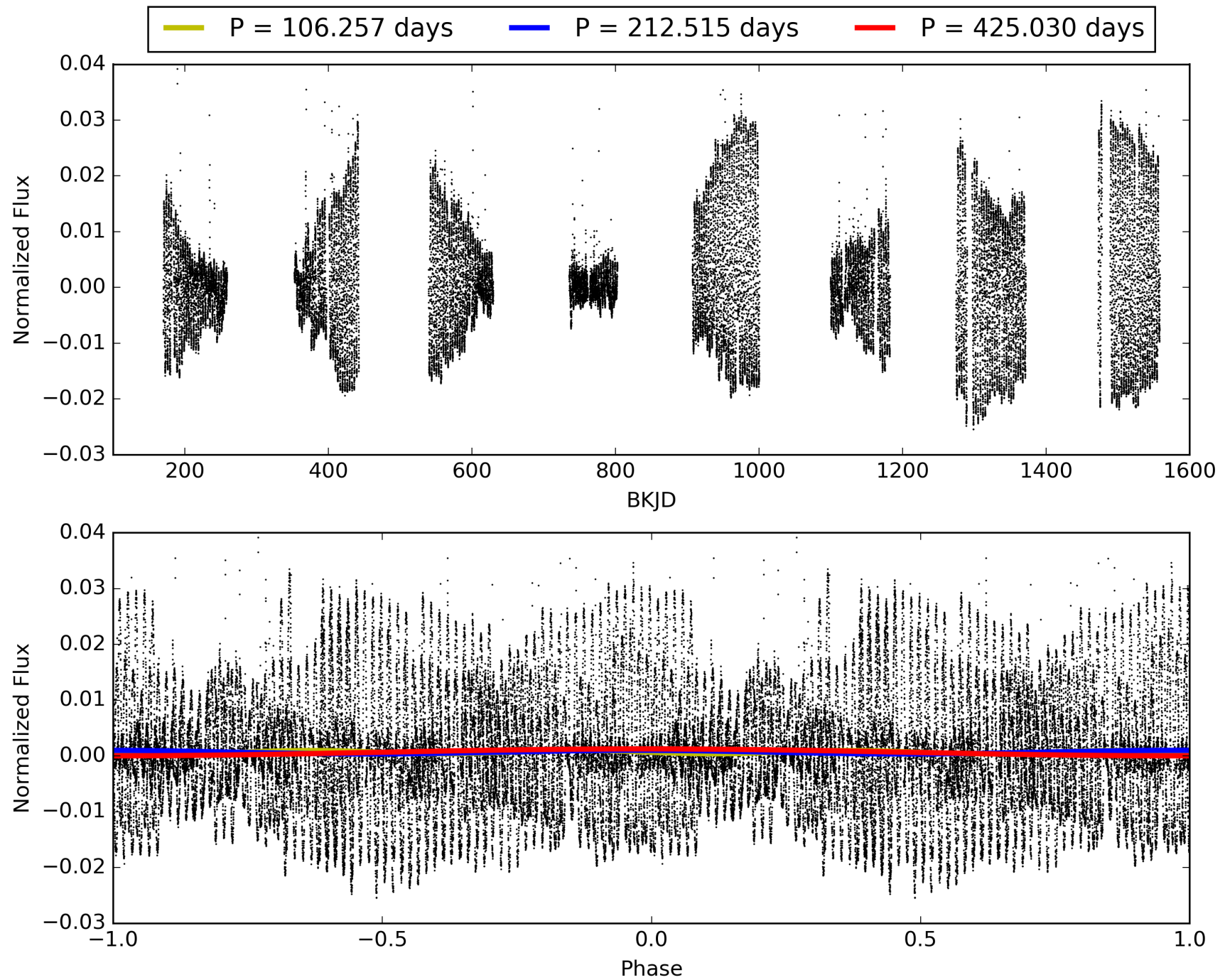
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:08:53 Z

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

TCE 008680857-05, PDC Light Curves

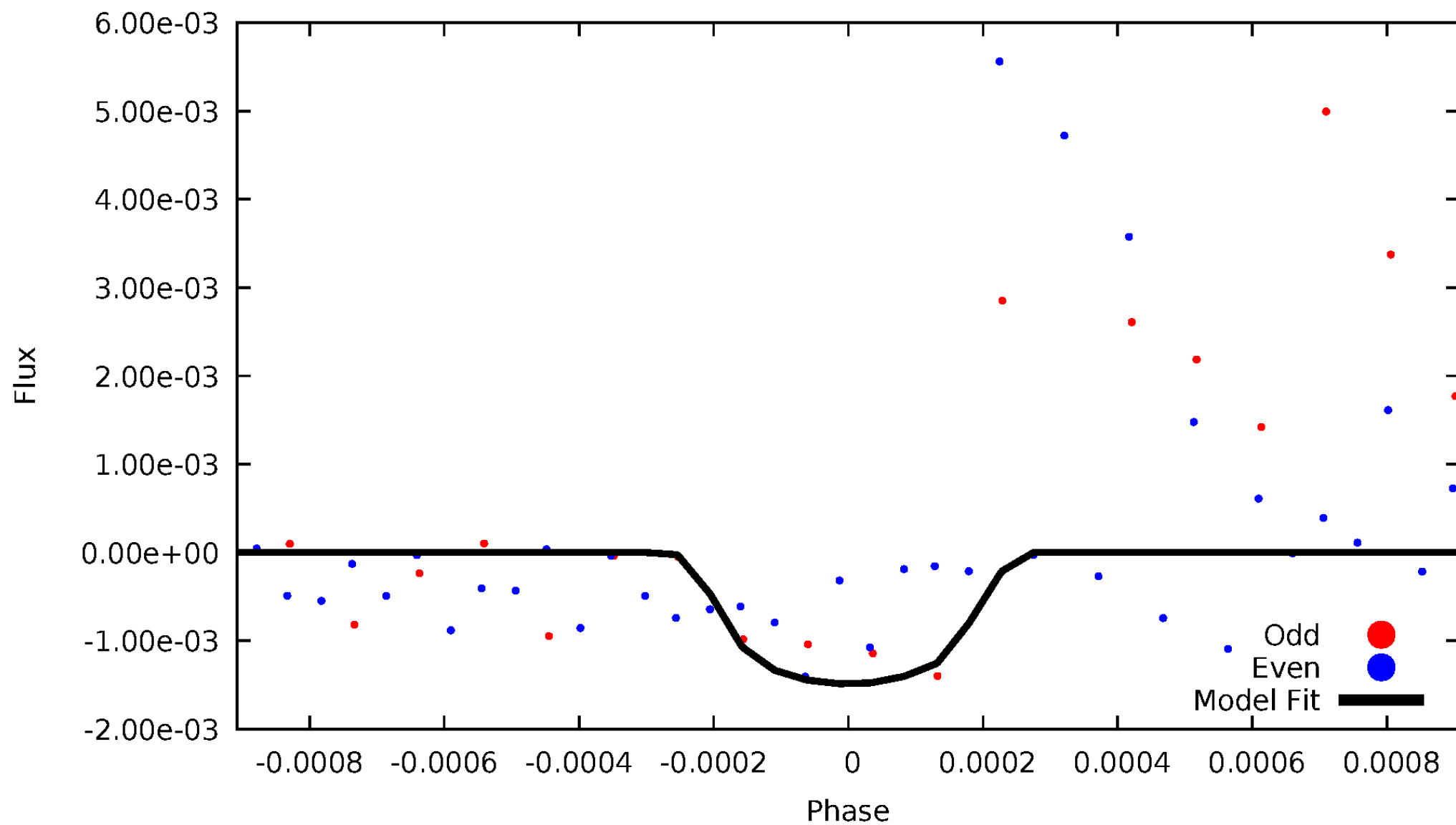


TCE 008680857-05



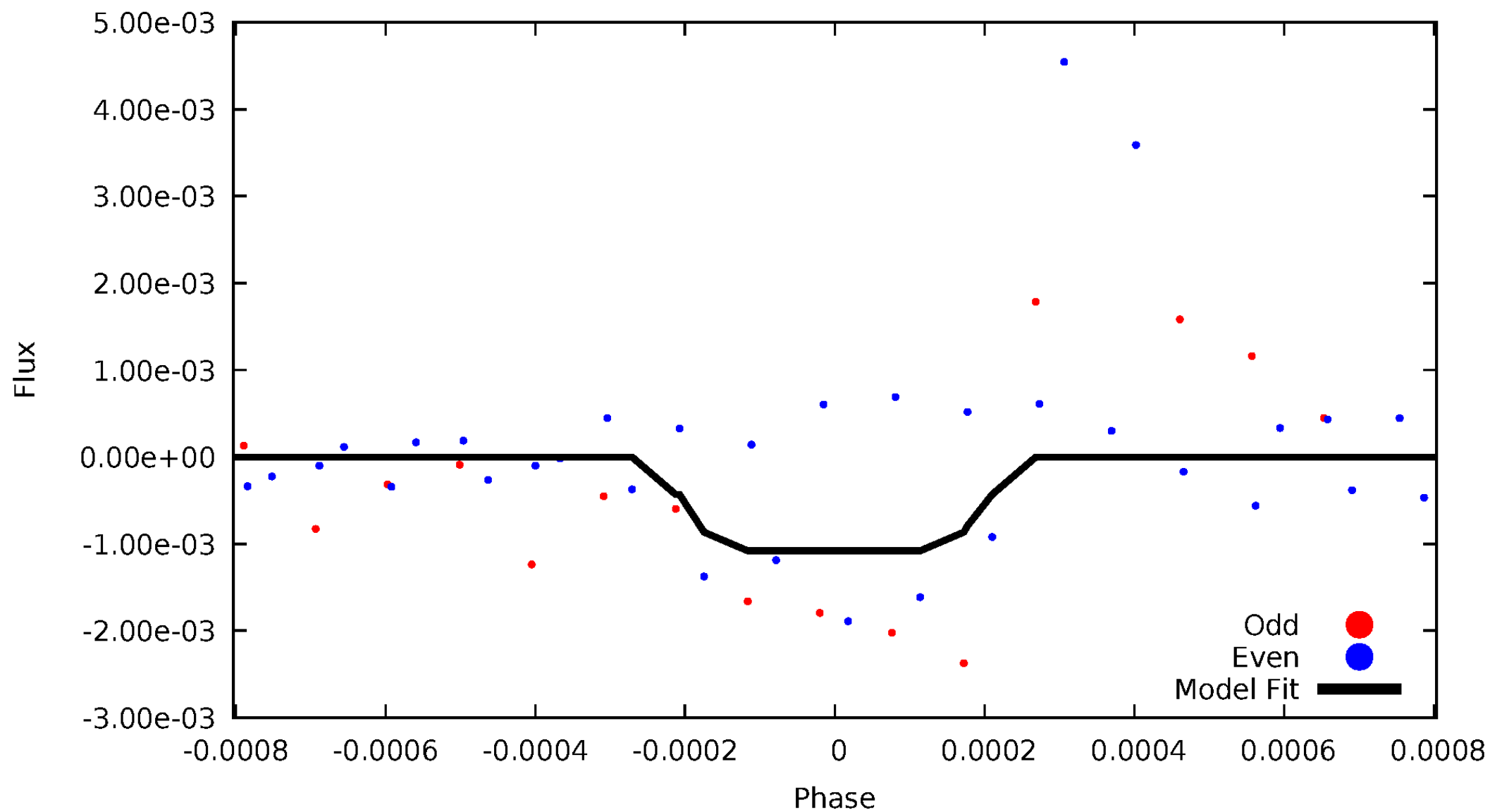
DV Odd/Even

TCE 008680857-05



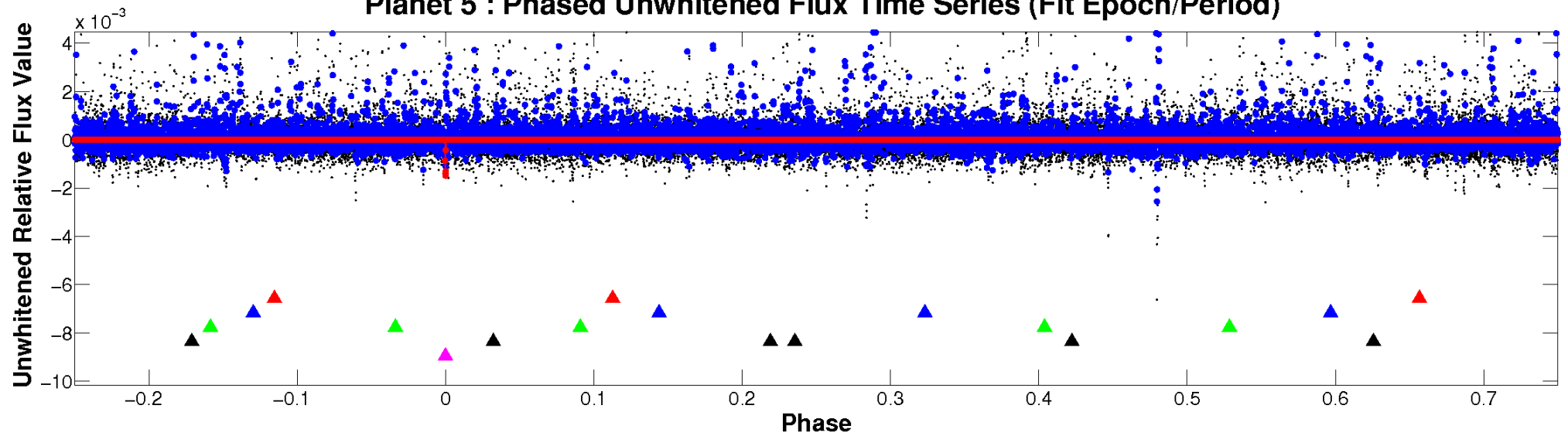
ALT Odd/Even

TCE 008680857-05

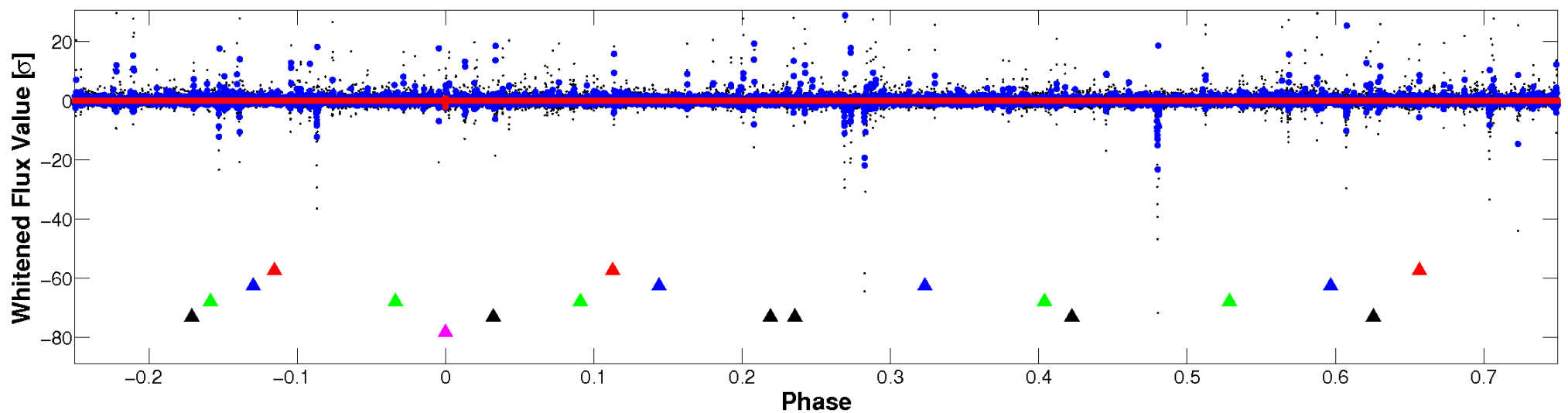


Non-Whitened Vs. Whitened Light Curve

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

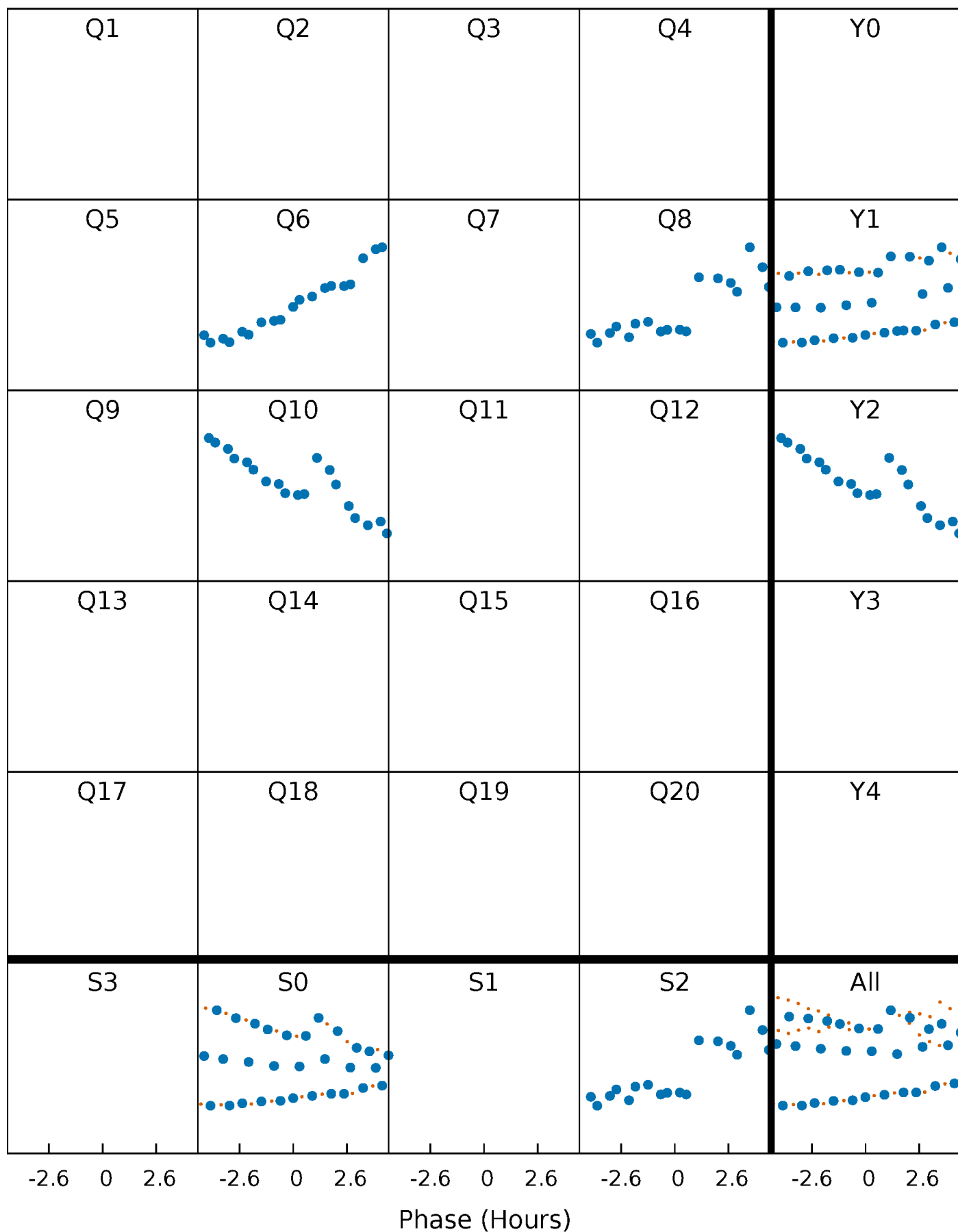


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



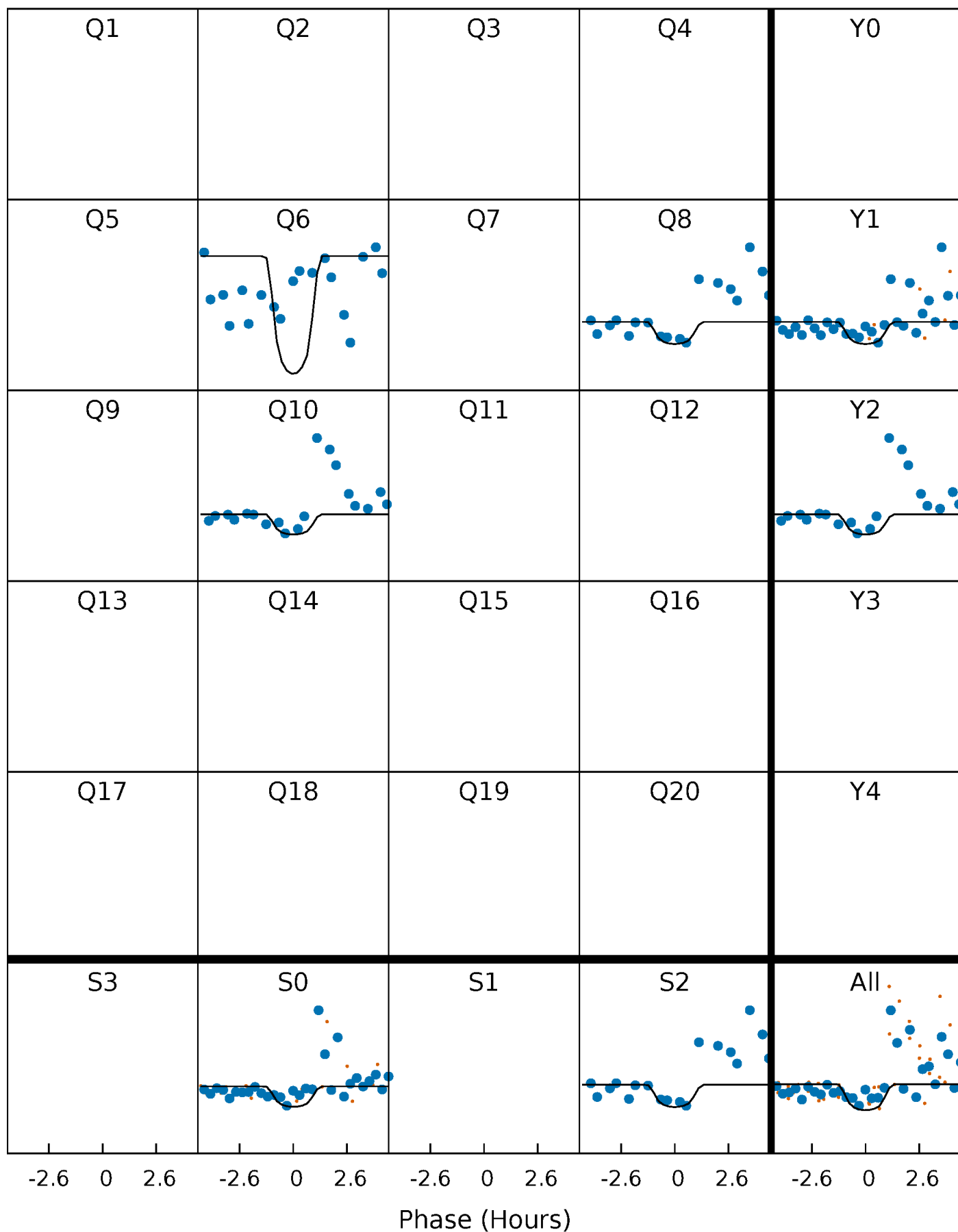
PDC Quarter-Phased Transit Curves

TCE 008680857-05 $P=212.514764$ Days $T_0=131.894373$ (BKJD)



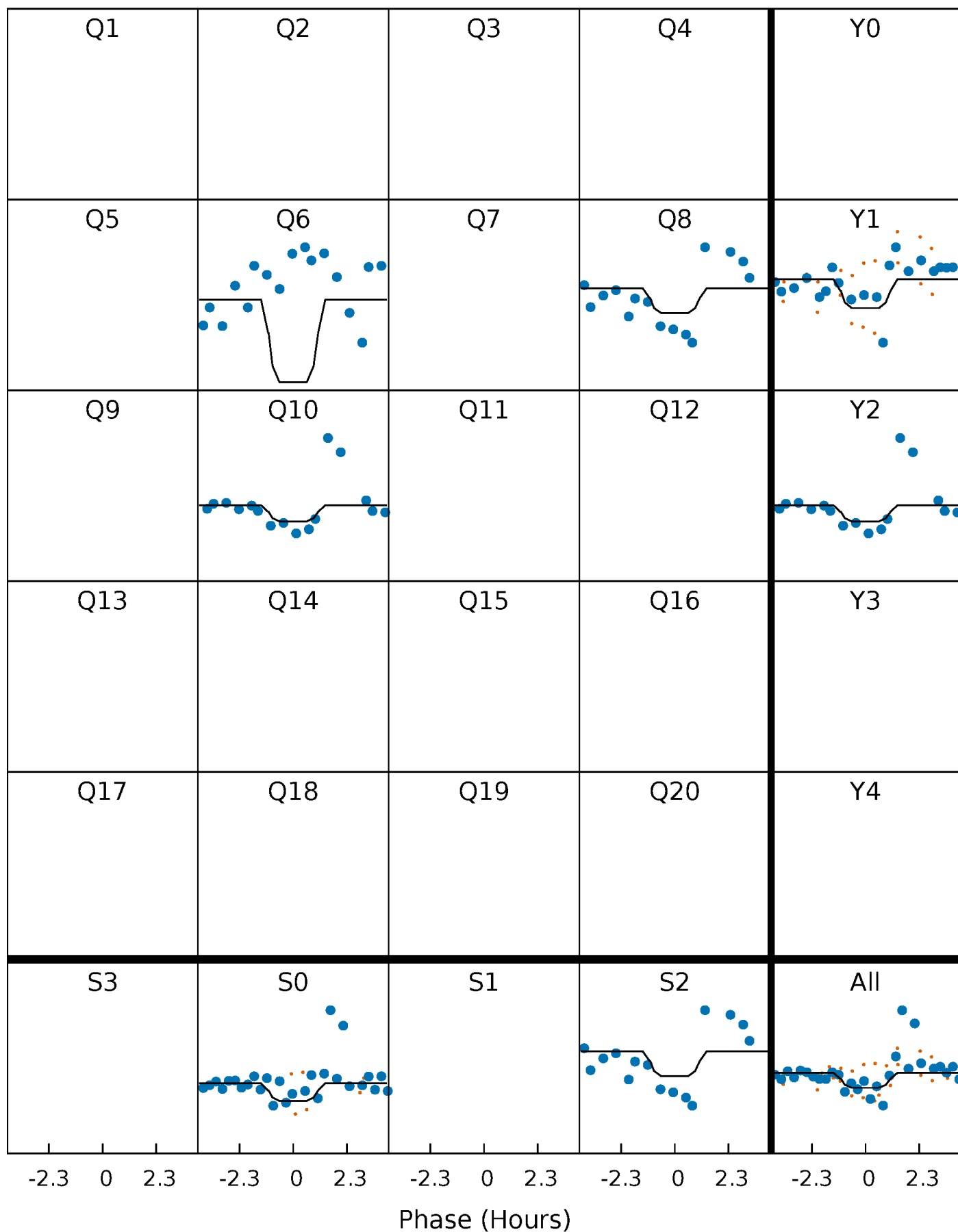
DV Quarter-Phased Transit Curves

TCE 008680857-05 $P=212.514764$ Days $T_0=131.894373$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

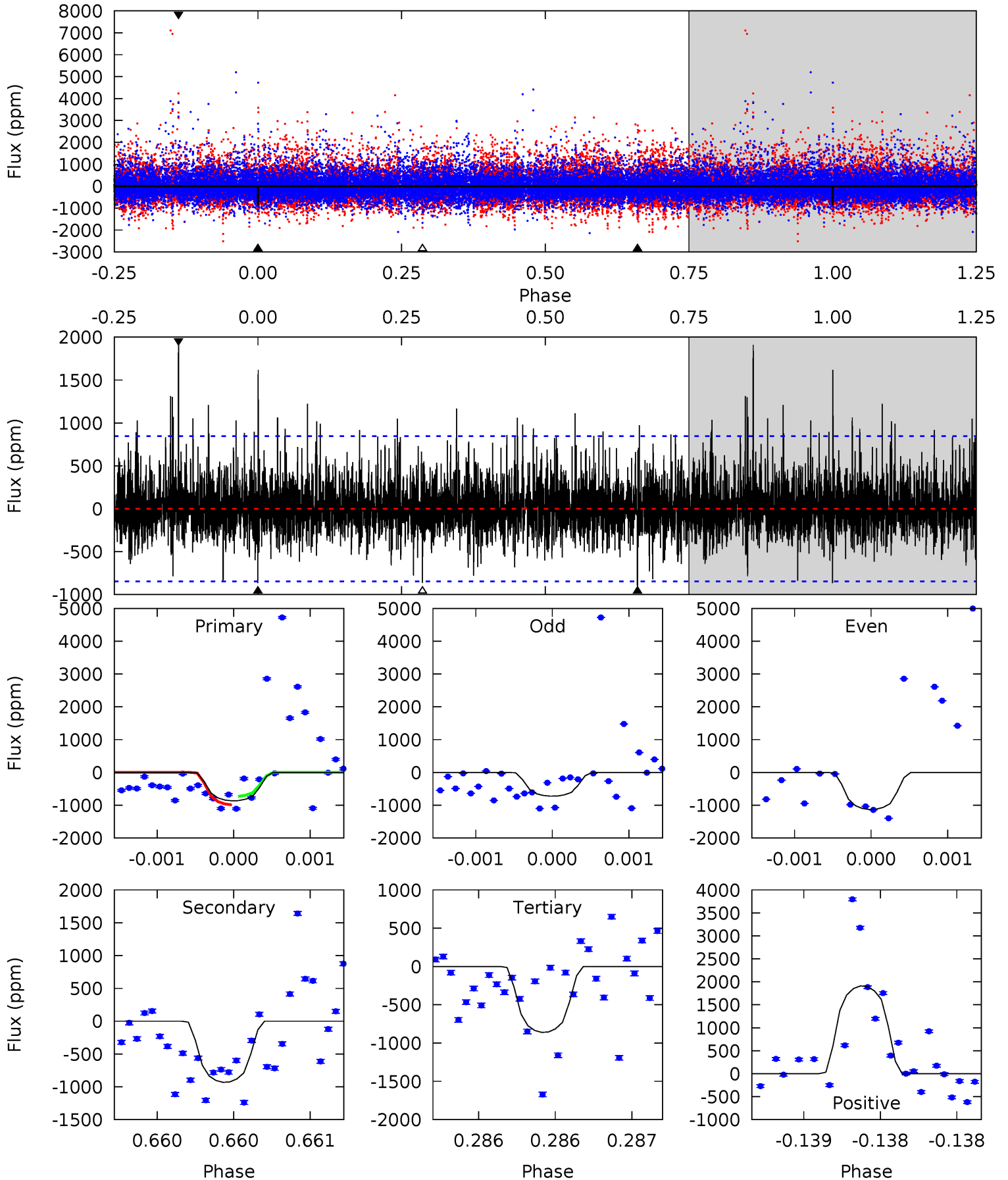
TCE 008680857-05 $P=212.505908$ Days $T_0=131.912481$ (BKJD)



DV Model-Shift Uniqueness Test

008680857-05, P = 212.514764 Days, E = 131.894373 Days

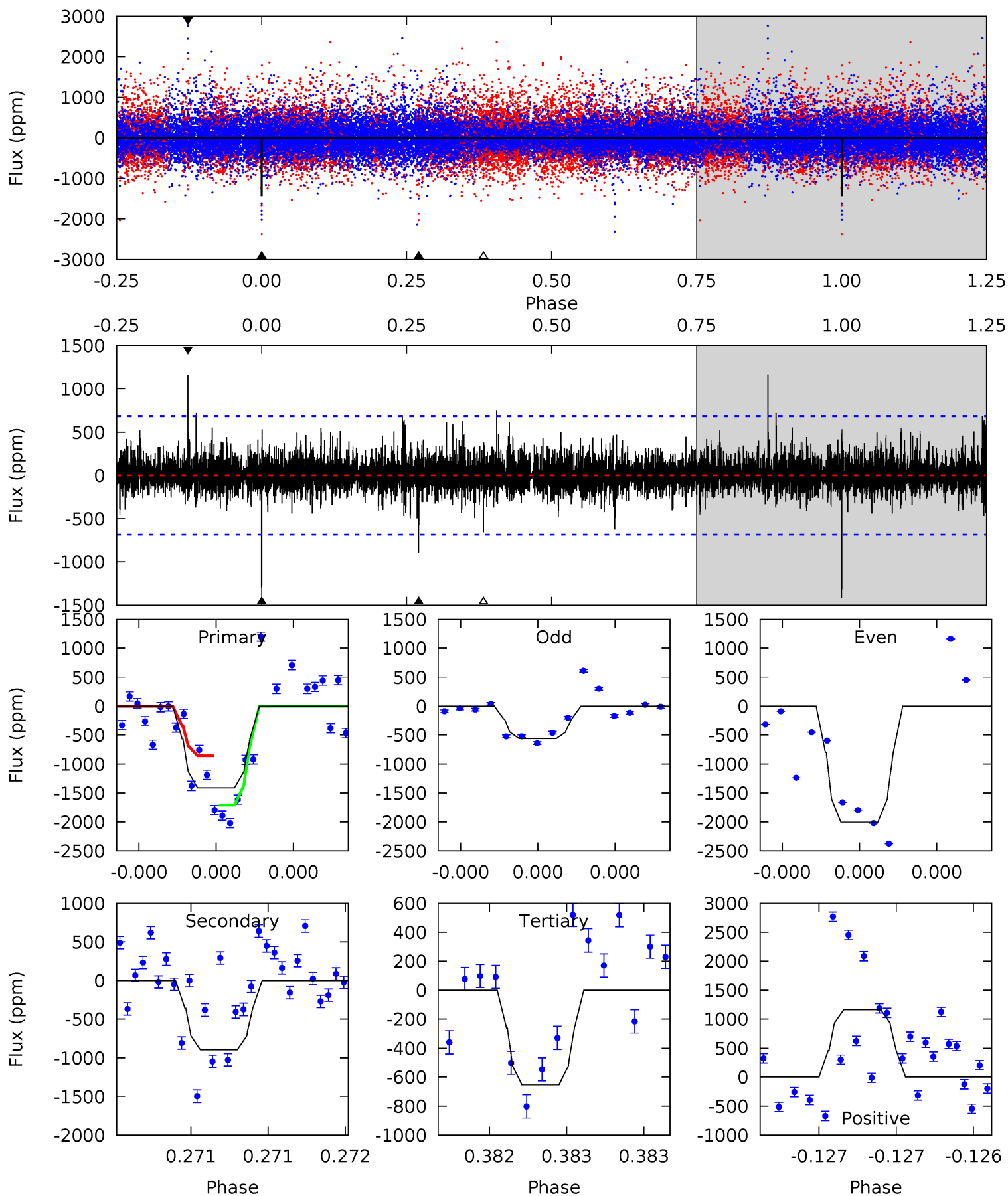
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.68	6.12	5.65	12.5	5.56	3.46	1.65	0.03	-6.86	0.46	-6.42	0.72	1.17	0.67	0.85



Alt Model-Shift Uniqueness Test

008680857-05, P = 212.505908 Days, E = 131.912481 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	7.30	5.34	9.50	5.58	3.49	1.13	6.17	2.01	1.97	-2.20	6.21	0.64	0.45	3.63



Stellar Parameters For KIC 008680857

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4391^{+154}_{-154}	$4.574^{+0.060}_{-0.016}$	$0.360^{+0.100}_{-0.300}$	$0.725^{+0.025}_{-0.063}$	$0.719^{+0.041}_{-0.050}$	$2.657^{+0.670}_{-0.192}$
	+4%/-4%	+1%/-0%	+28%/-83%	+3%/-9%	+6%/-7%	+25%/-7%
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 008680857-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-931 ± 152	$4.53^{+3.82}_{-2.96}$	289^{+11}_{-12}	3533^{+1672}_{-630}	10047^{+76231}_{-7179}
Alt.	-895 ± 123	$4.11^{+3.91}_{-2.75}$	289^{+12}_{-12}	3593^{+1932}_{-647}	10851^{+99014}_{-7847}

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

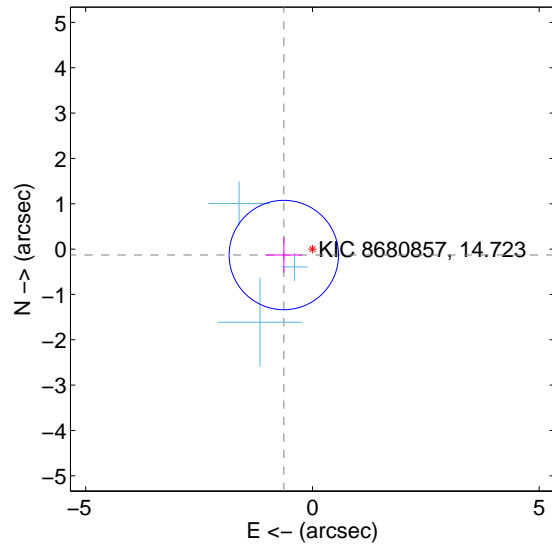
Supplemental centroid analysis for 008680857-05. Kepler magnitude: 14.72. Transit SNR 6.37

There are 3 quarters with good PRF difference image offsets

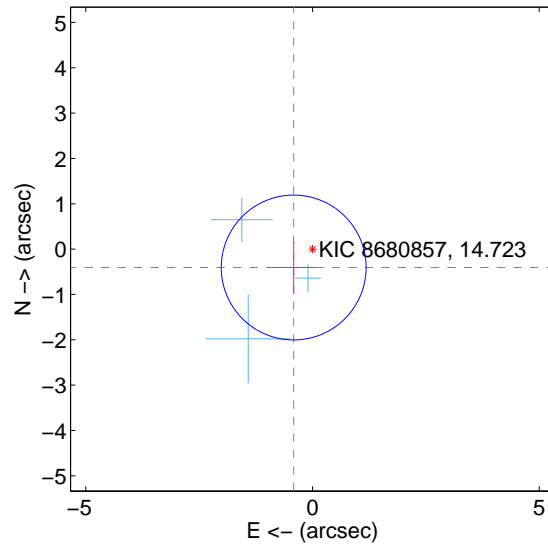
The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.644 ± 0.402	1.60	0.631 ± 0.403	-0.131 ± 0.386
PRF-fit source offset from KIC position	0.581 ± 0.532	1.09	0.415 ± 0.476	-0.406 ± 0.585
photometric centroid source offset	0.87 ± 1.19	0.73	0.10 ± 1.07	-0.87 ± 1.19

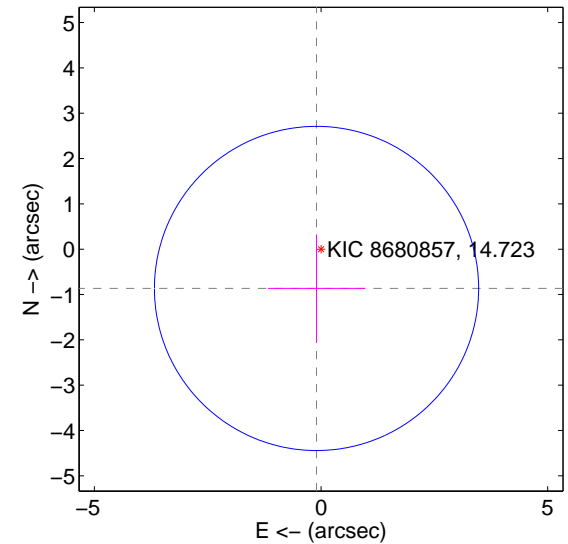
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

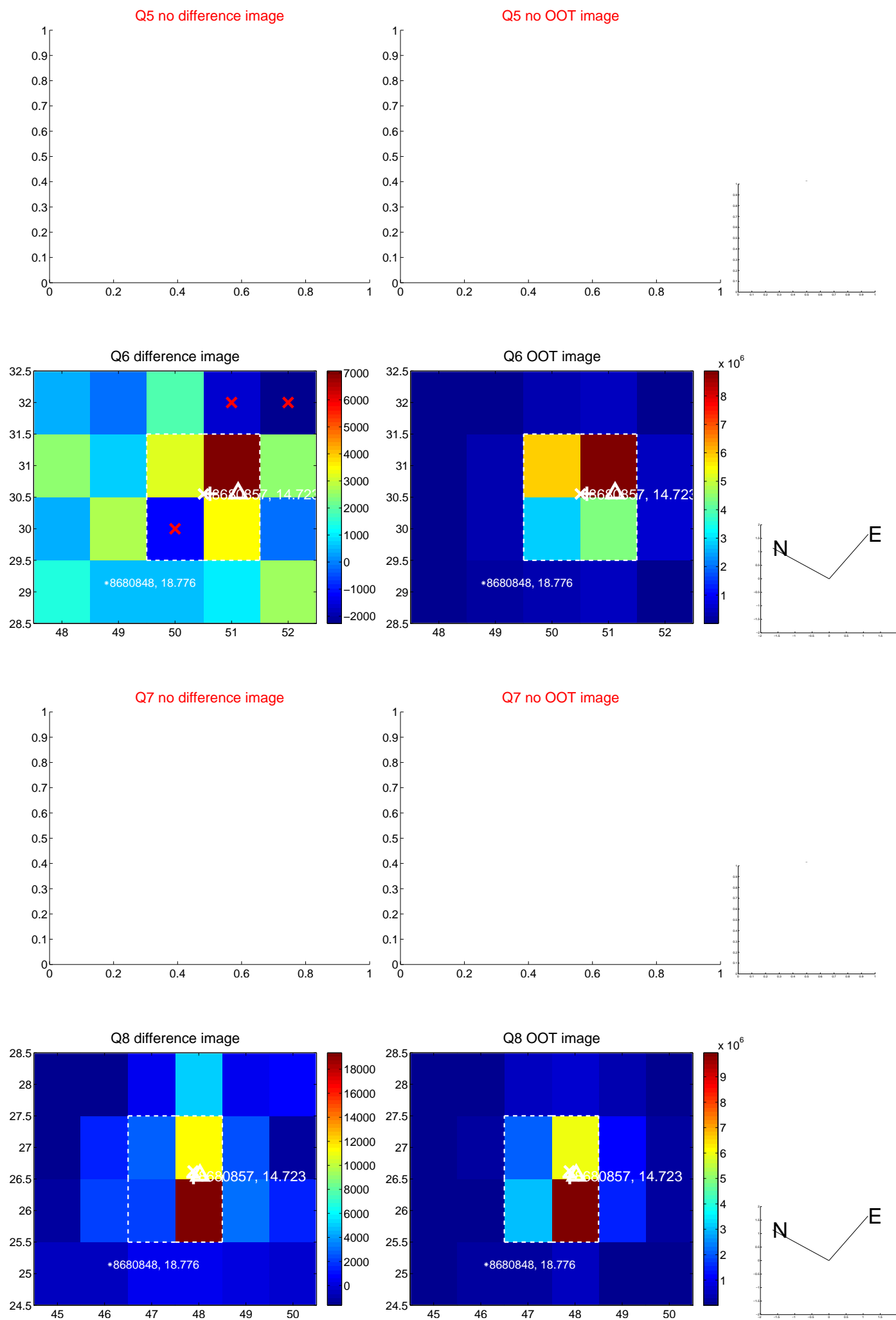


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

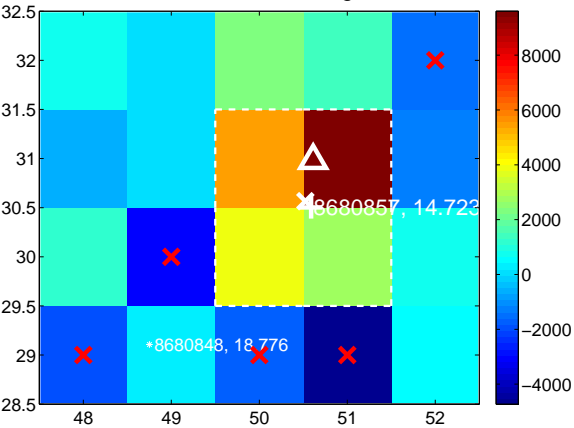
Q9 no difference image



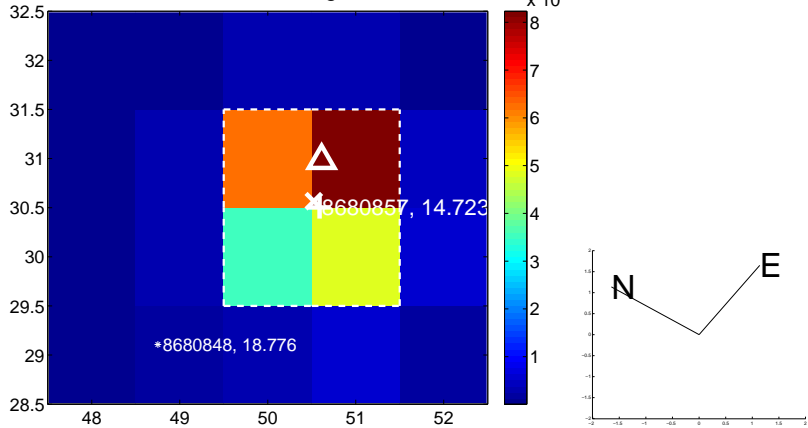
Q9 no OOT image



Q10 difference image



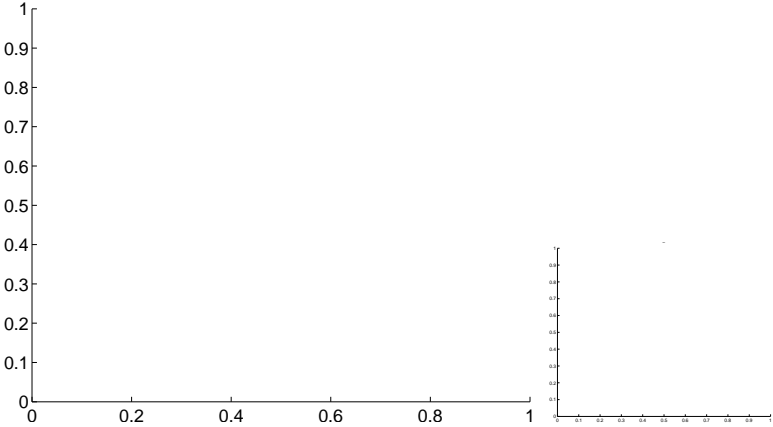
Q10 OOT image



Q11 no difference image



Q11 no OOT image



Q12 no difference image



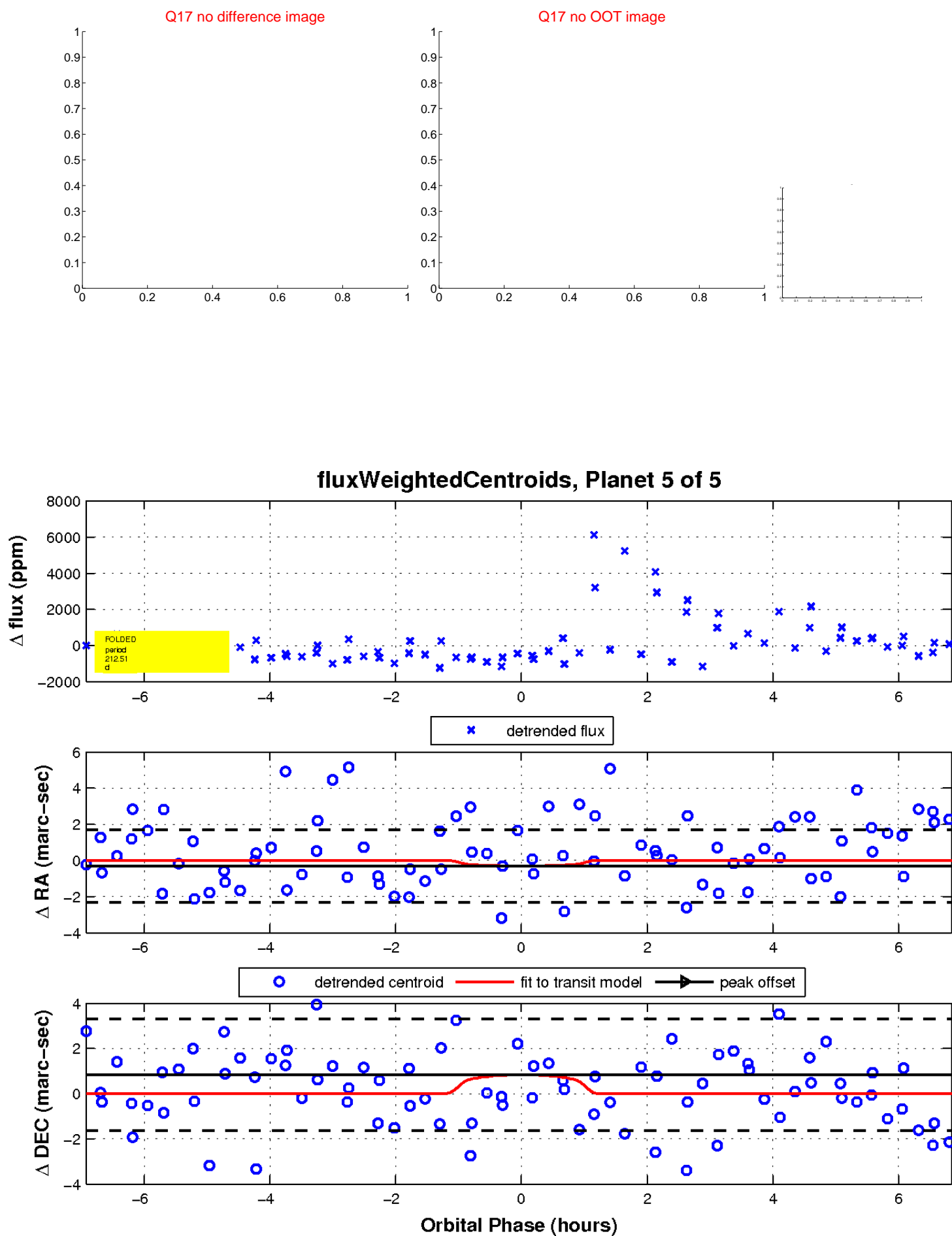
Q12 no OOT image



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



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



UKIRT Image

Declination

