

KIC 006045059

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})
006045059-01	OBS	No	535.041533	277.884635	732.6	1.192	24.8	3.4	0.74	5180	2.14	0.27
006045059-02	OBS	No	507.533740	333.080100	2343.1	3.129	19.0	11.4	0.74	5180	3.56	0.29
006045059-03	OBS	No	232.341369	328.144983	916.3	8.703	13.8	7.0	0.74	5180	2.29	0.82
006045059-04	OBS	No	338.187712	428.001094	1201.5	5.861	13.1	7.1	0.74	5180	2.69	0.50
006045059-05	OBS	No	539.137994	273.954258	3665.6	9.437	18.1	13.0	0.74	5180	8.55	0.27
006045059-06	OBS	No	270.783200	251.192622	998.1	6.303	15.5	4.3	0.74	5180	2.33	0.67
006045059-07	OBS	No	423.989823	376.038716	1410.9	10.834	13.9	6.8	0.74	5180	3.46	0.37
006045059-08	OBS	No	242.906579	317.858250	1133.3	4.500	12.7	-1.0	0.74	5180	2.45	0.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006045059-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-03	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV
006045059-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
006045059-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-06	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS
006045059-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
006045059-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

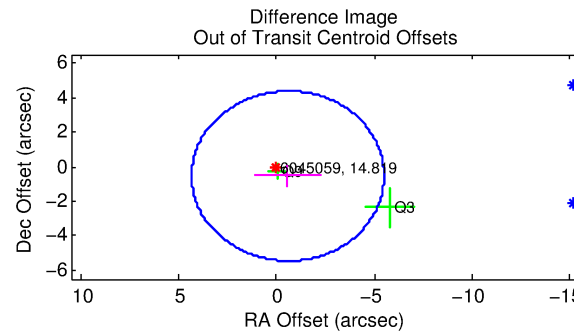
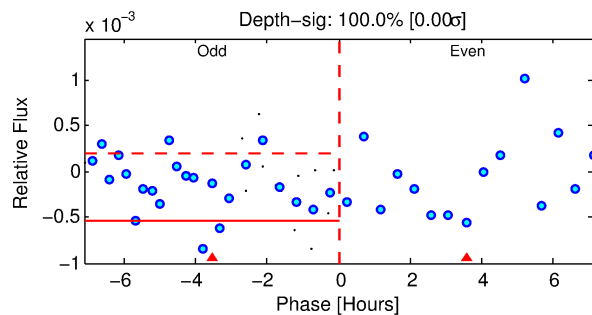
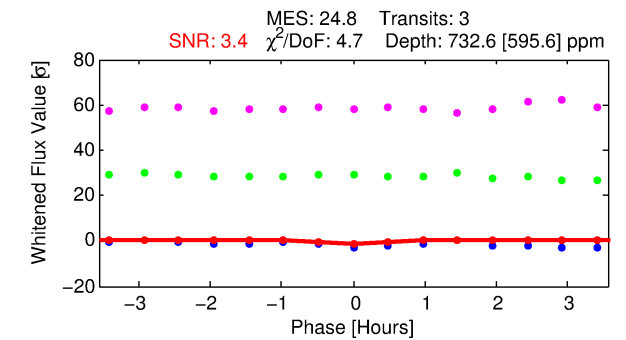
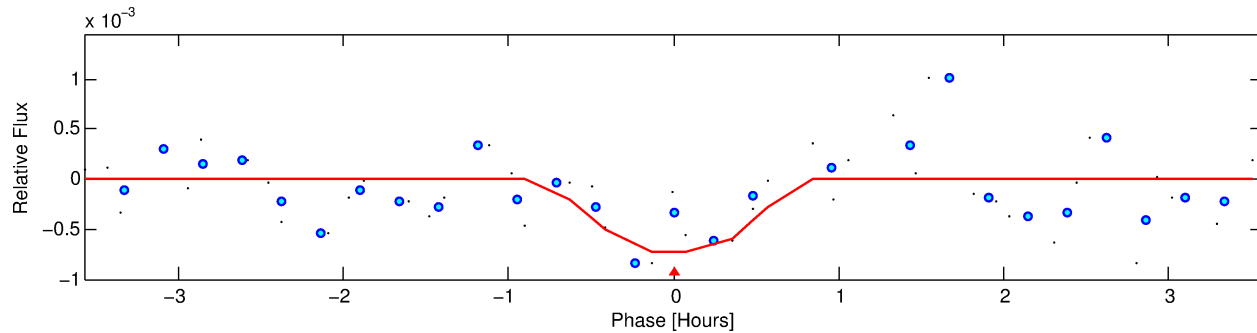
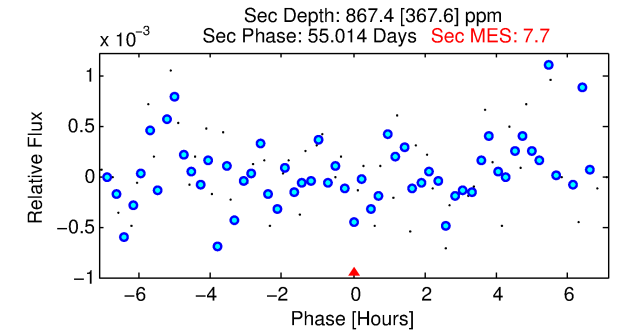
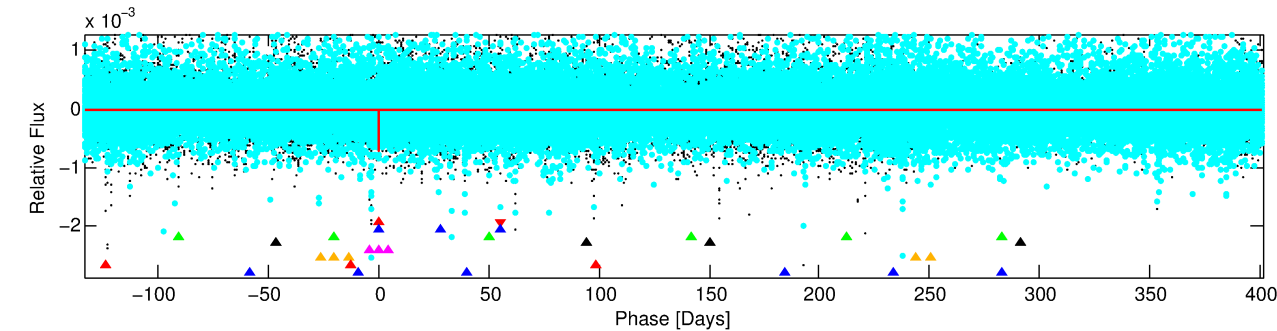
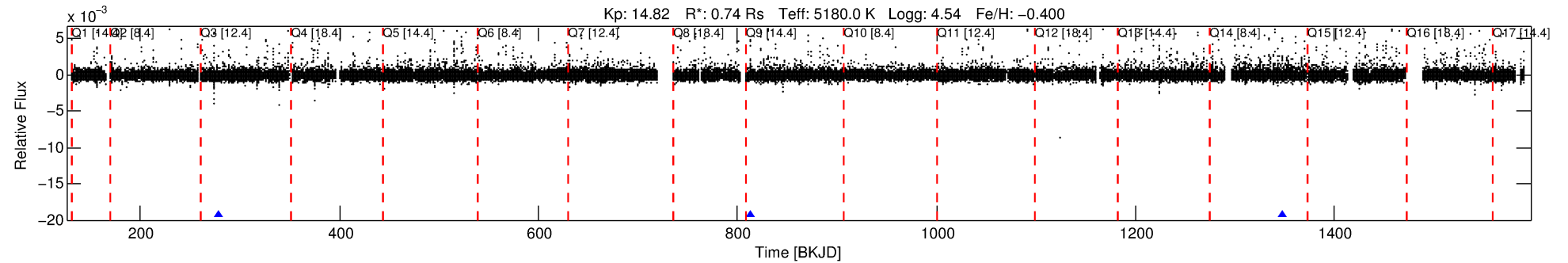
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006045059-01

No Significant Match Found

DV One-Page Summary

KIC: 6045059 Candidate: 1 of 8 Period: 535.042 d



DV Fit Results:

Period = 535.04153 [0.01472] d
Epoch = 277.8846 [0.0206] BKJD
Rp/R* = 0.0264 [0.3976]
a/R* = 2667.66 [149931.69]
b = 0.67 [48.01]
Seff = 0.27 [0.05]
Teq = 184 [9] K
Rp = 2.14 [32.19] Re
a = 1.1470 [0.1174] AU
Ag = 137450.28 [4141394.87] [0.03σ]
Teffp = 5472 [41216] K [0.13σ]

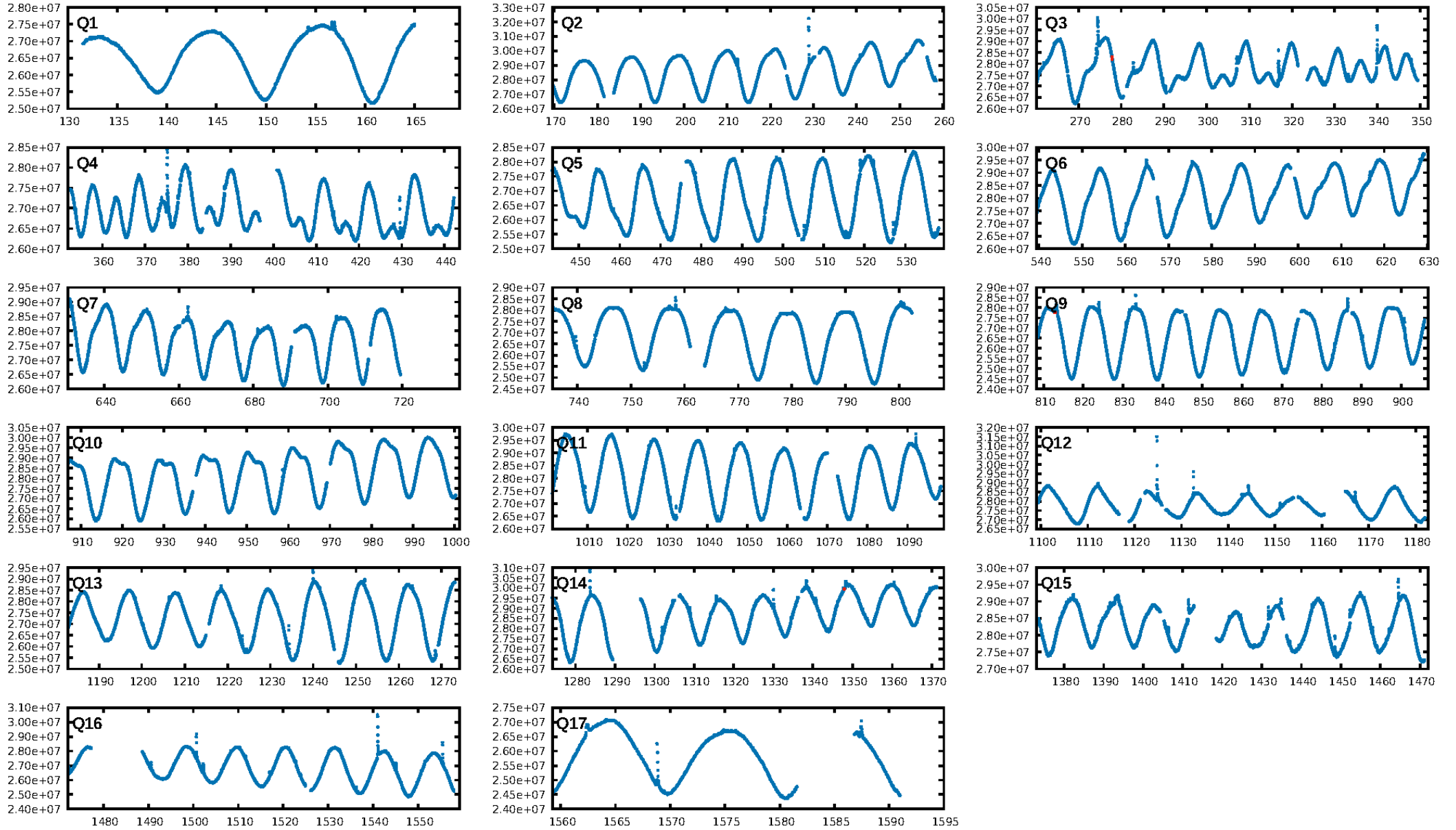
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [197.15σ]
LongPeriod-sig: 100.0% [10.34σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 19.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.9658
Centroid-sig: 61.8%
Centroid-so: 1.396 arcsec [0.49σ]
OotOffset-rm: 0.795 arcsec [0.49σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-rm: 0.812 arcsec [0.48σ]
KicOffset-st: 0/1/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.33 [1/3]

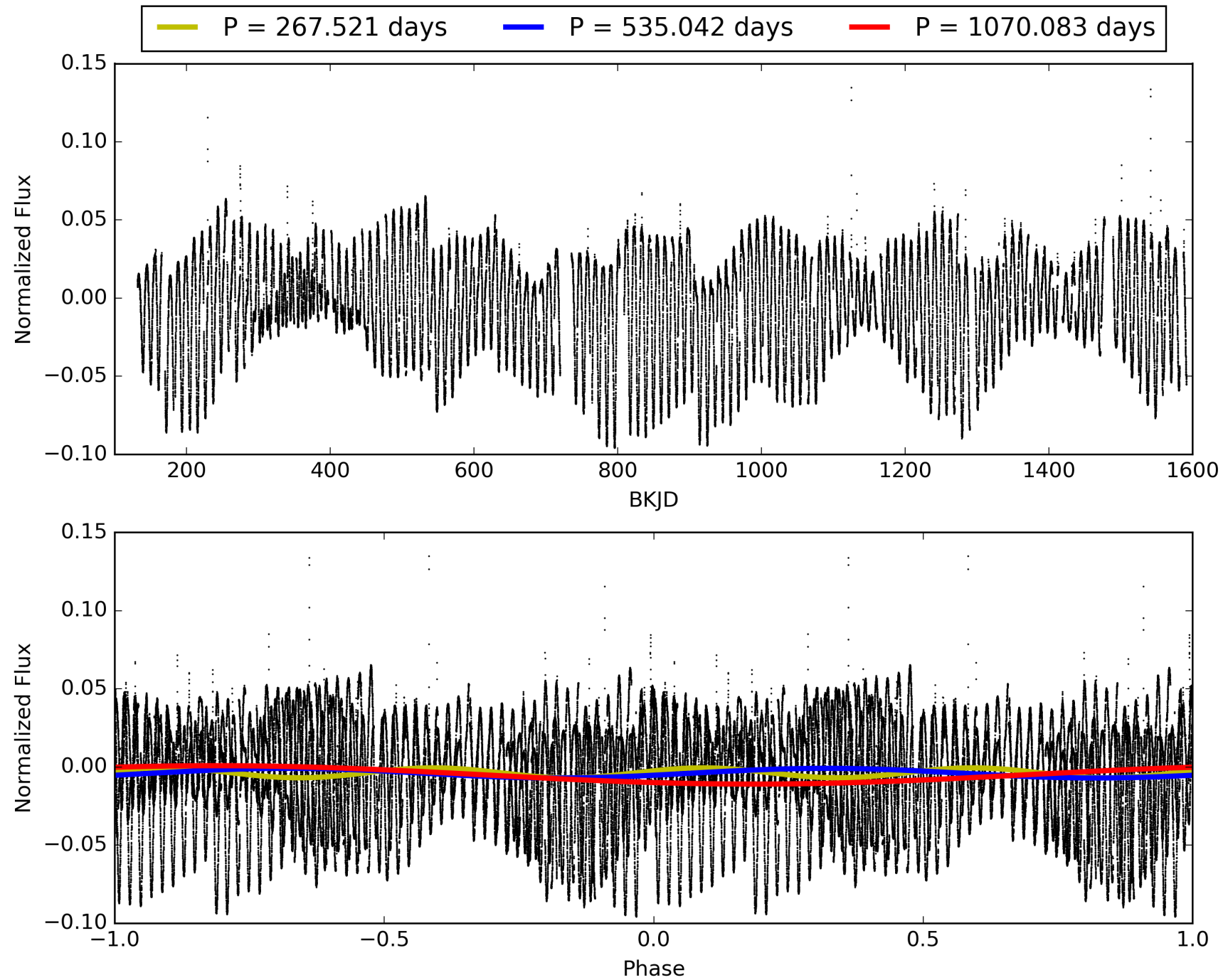
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:18:40 Z

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

TCE 006045059-01, PDC Light Curves

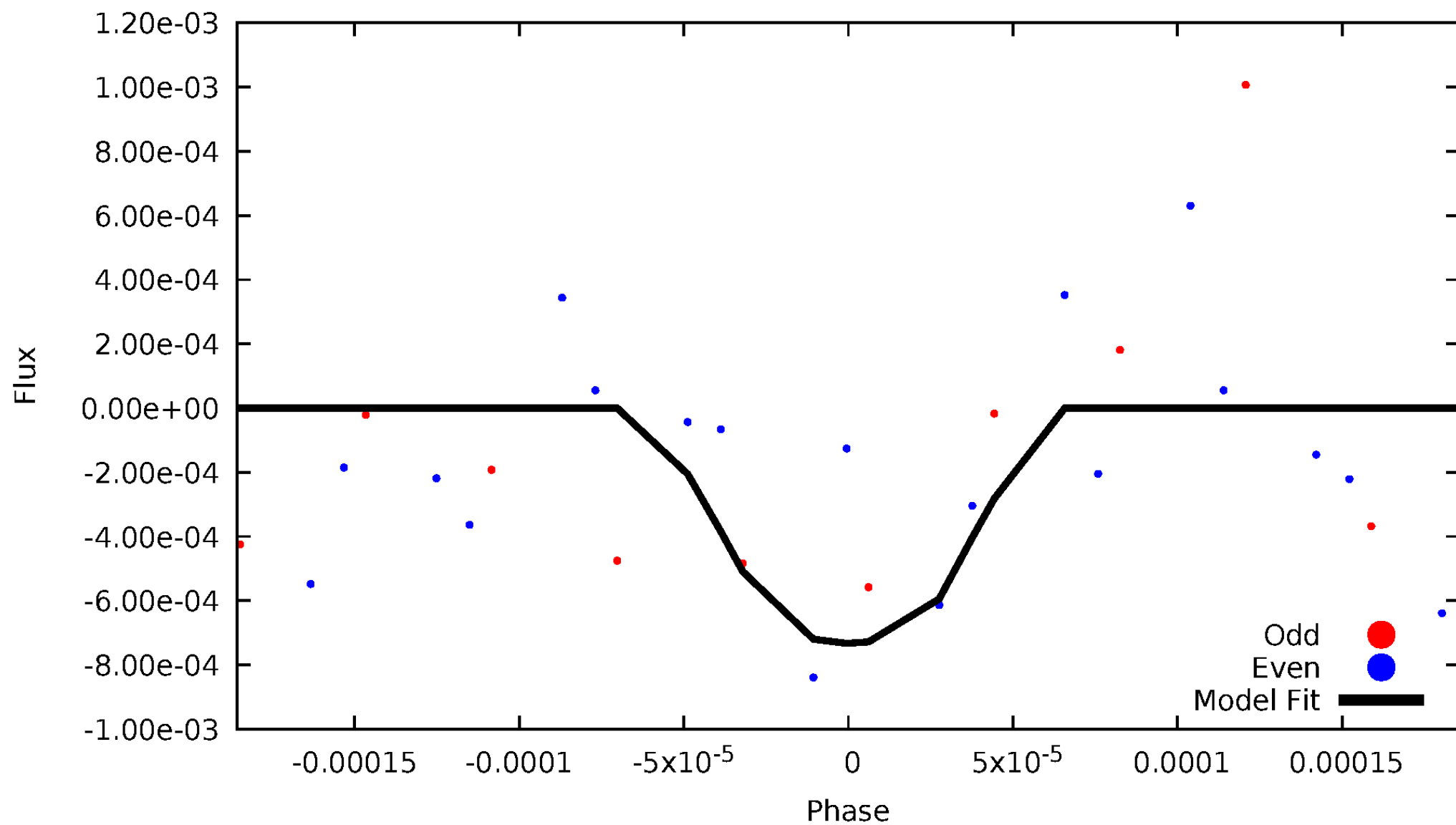


TCE 006045059-01



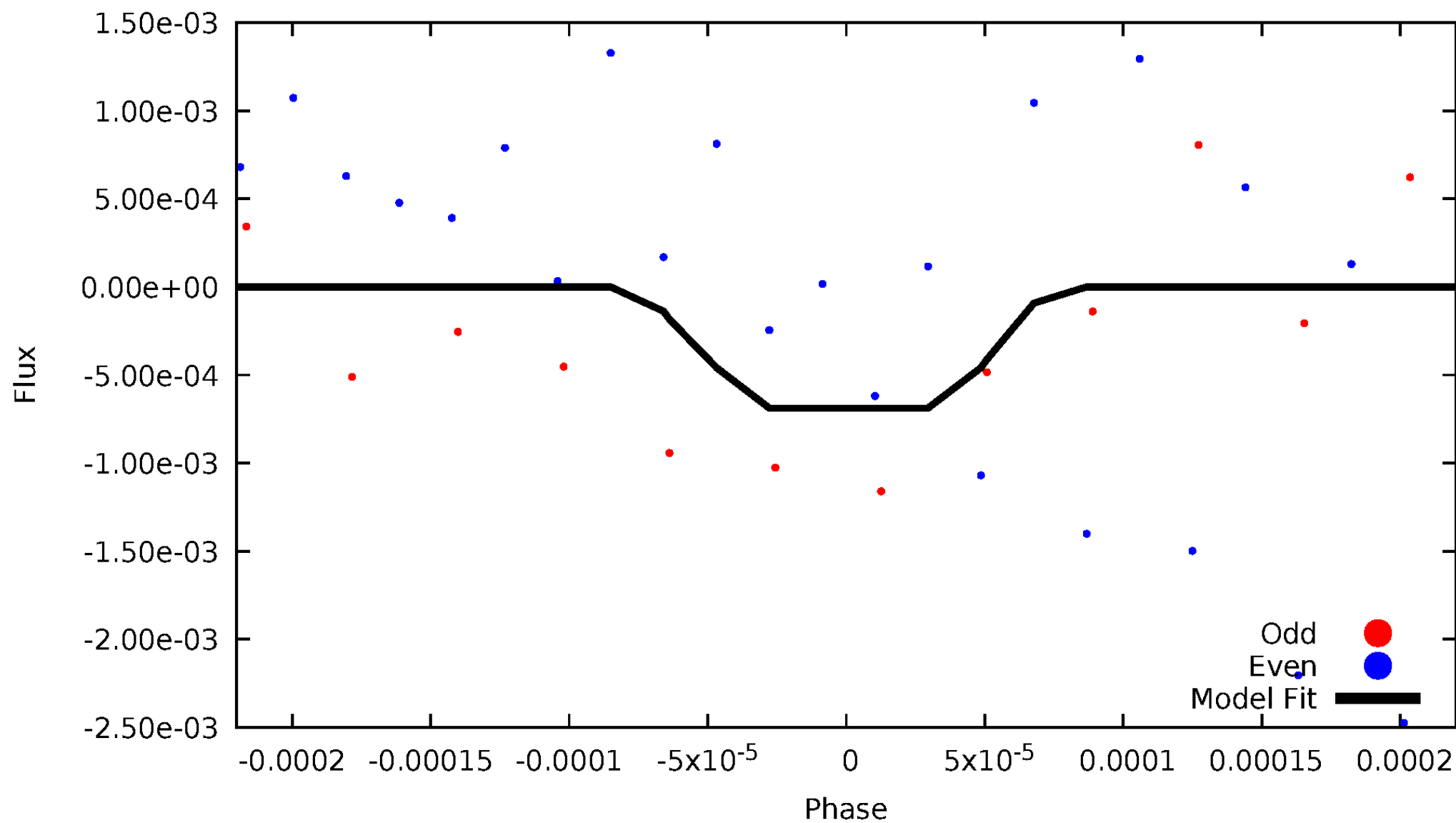
DV Odd/Even

TCE 006045059-01



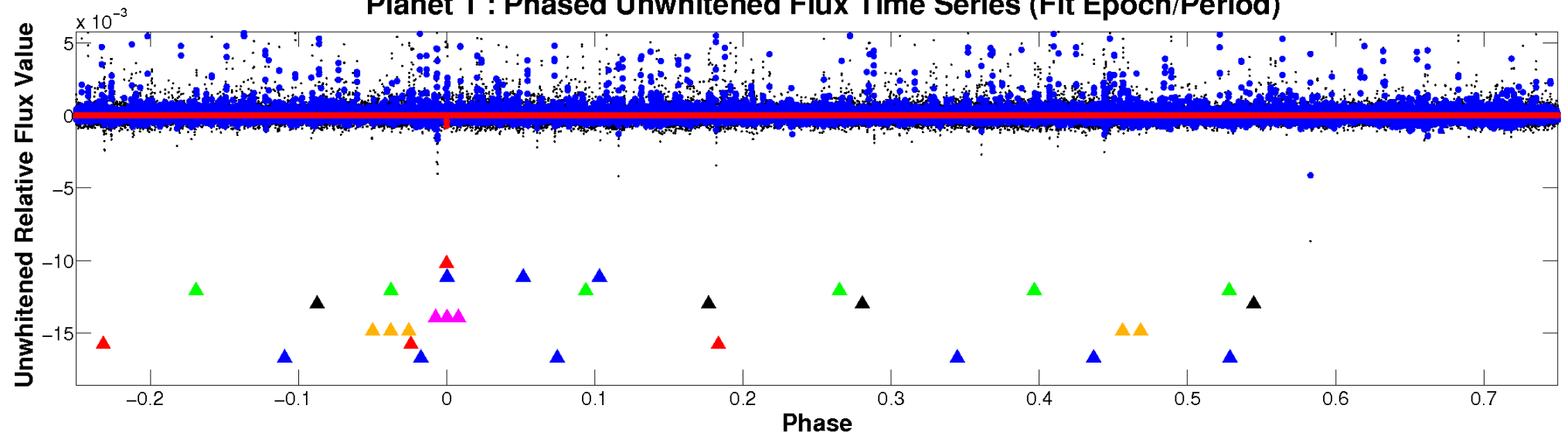
ALT Odd/Even

TCE 006045059-01

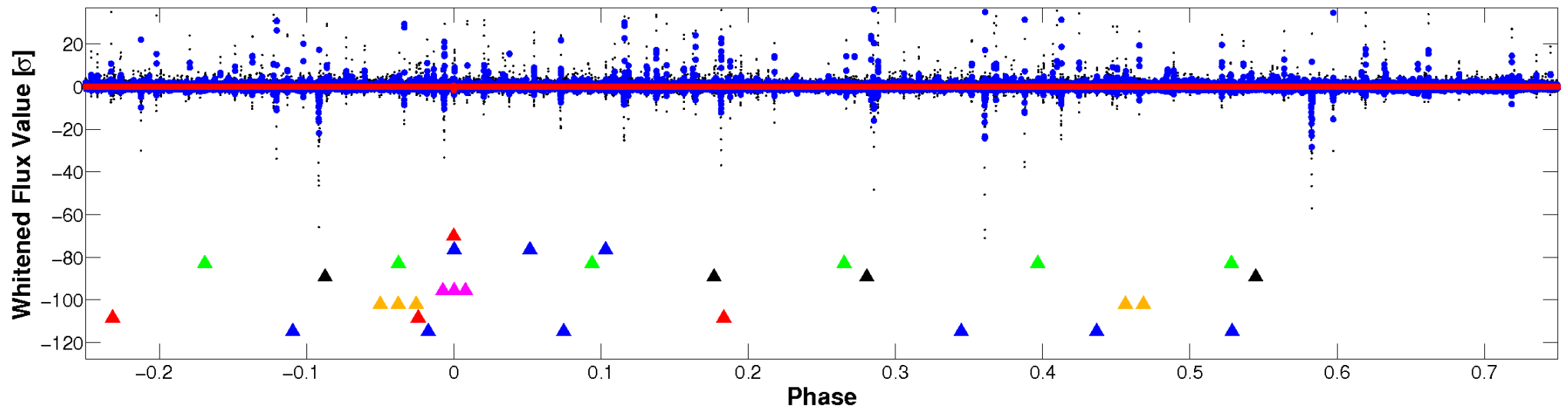


Non-Whitened Vs. Whitened Light Curve

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

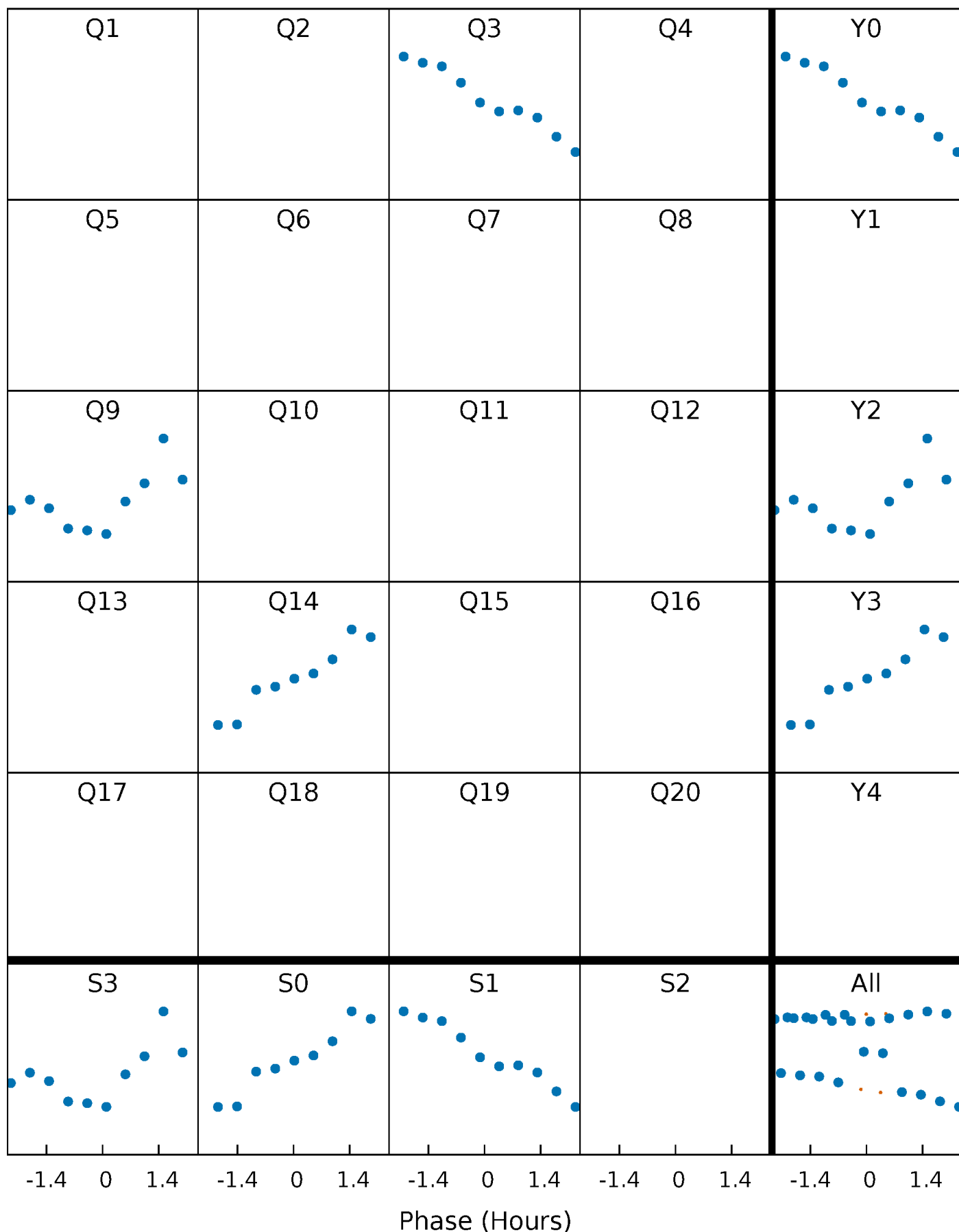


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



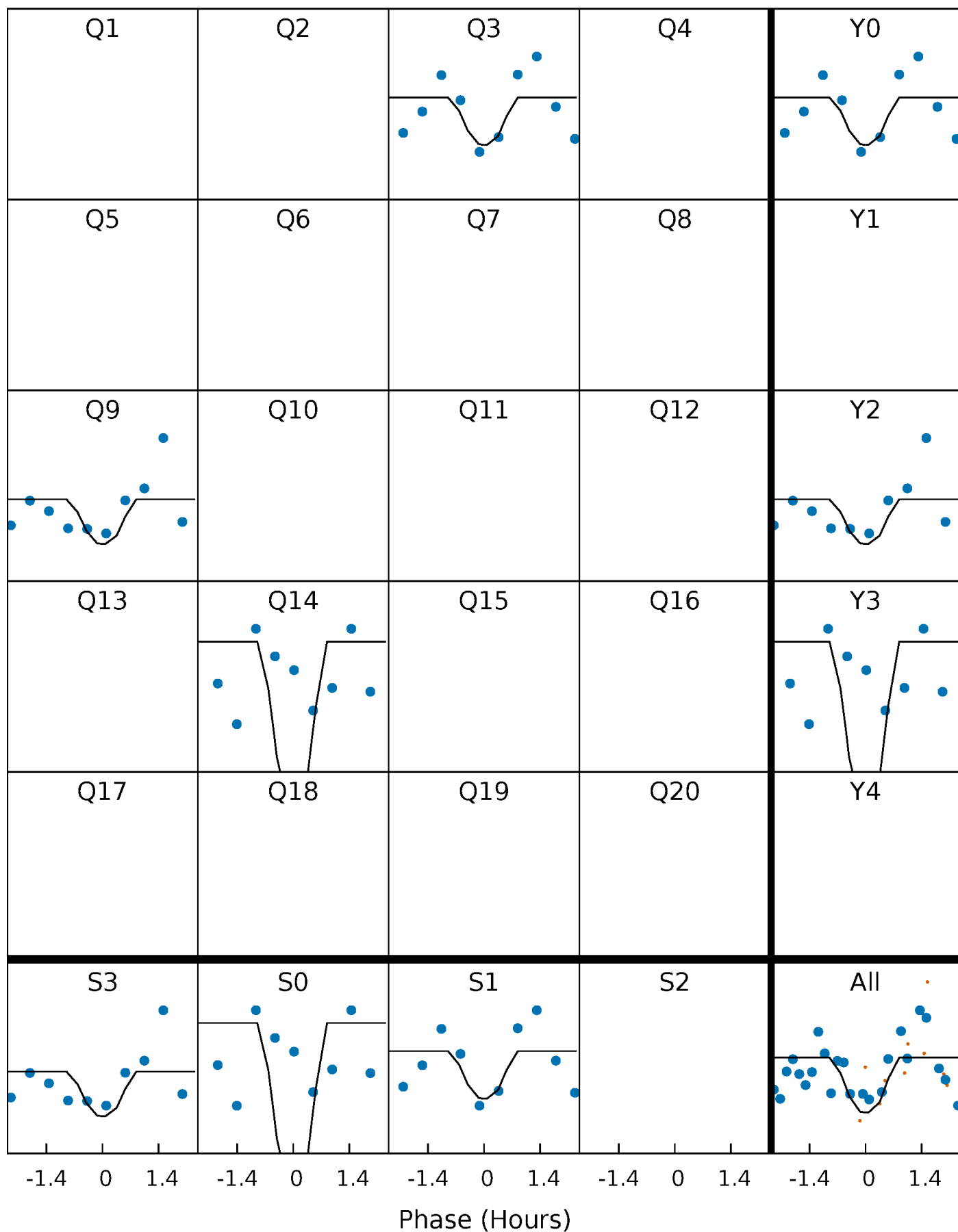
PDC Quarter-Phased Transit Curves

TCE 006045059-01 P=535.041533 Days $T_0=277.884635$ (BKJD)



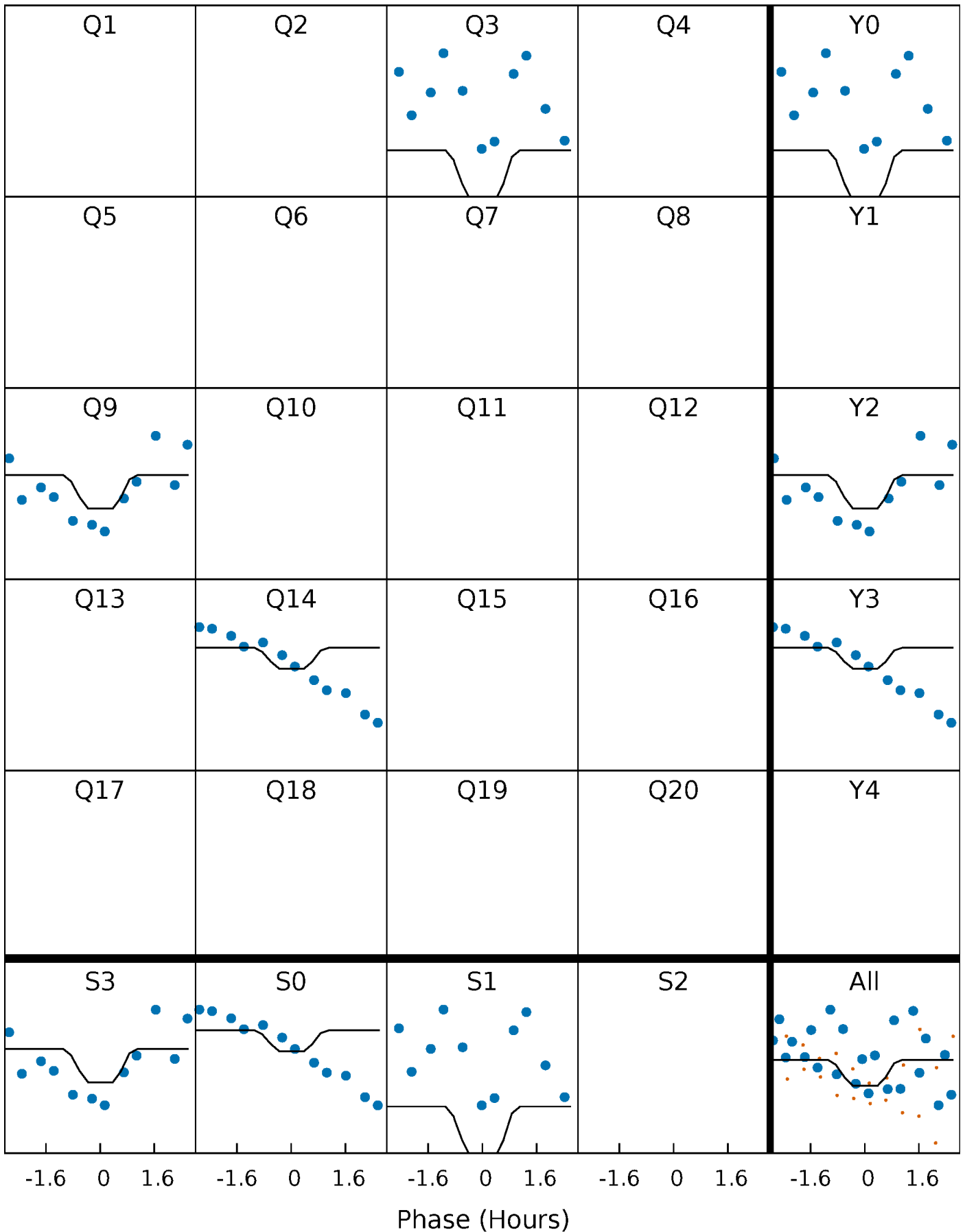
DV Quarter-Phased Transit Curves

TCE 006045059-01 P=535.041533 Days $T_0=277.884635$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

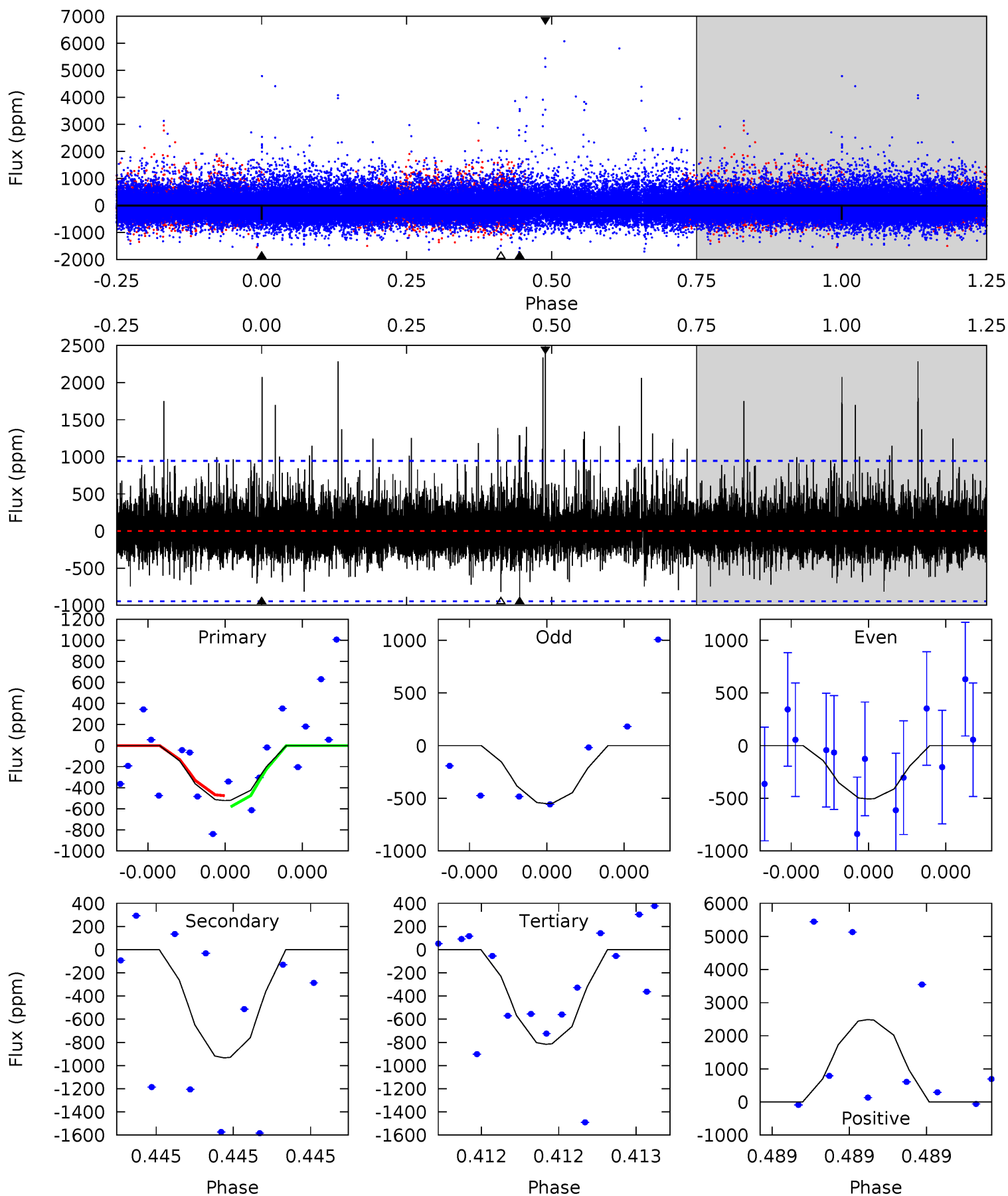
TCE 006045059-01 P=535.039146 Days $T_0=277.883581$ (BKJD)



DV Model-Shift Uniqueness Test

006045059-01, P = 535.041533 Days, E = 277.884635 Days

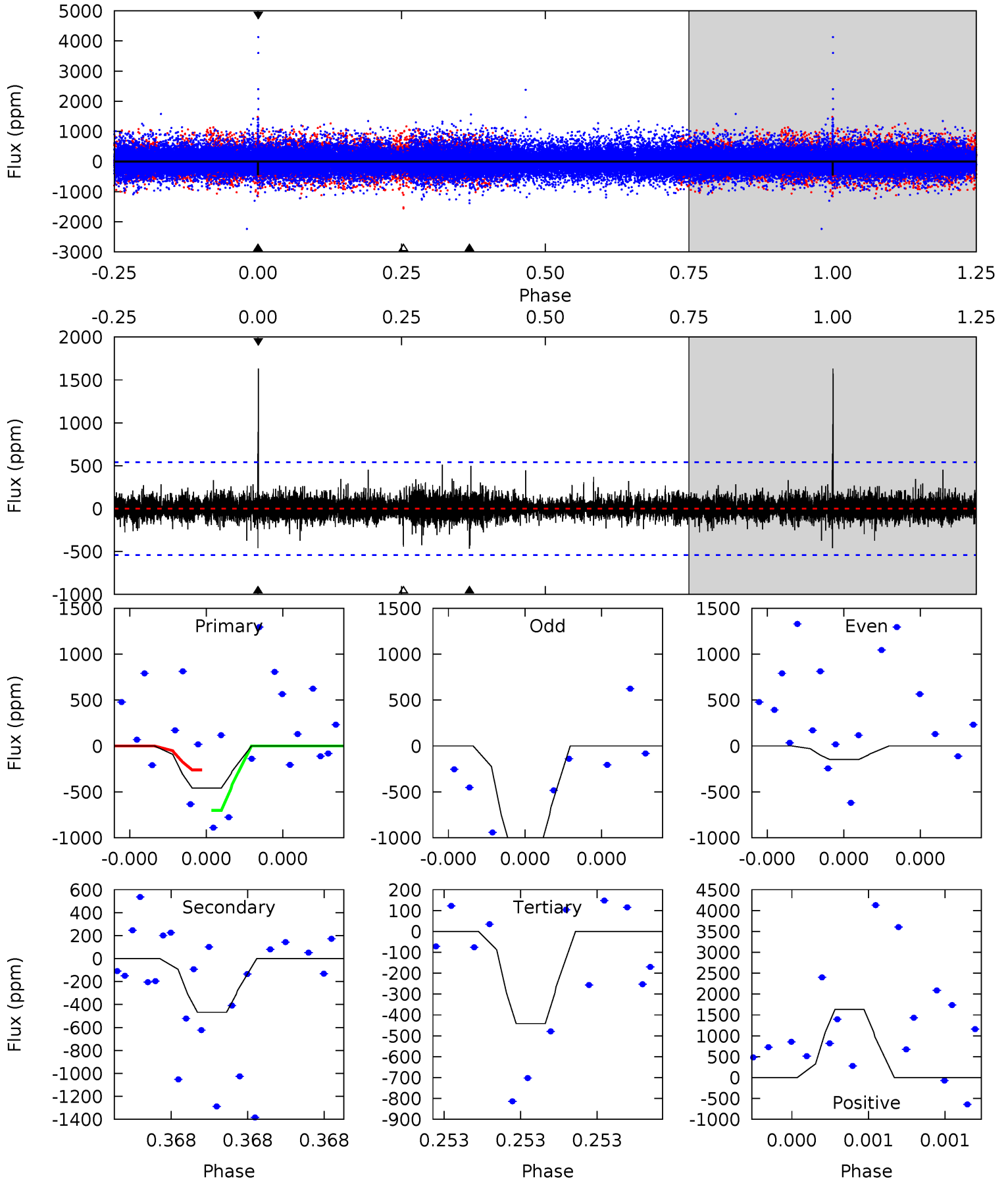
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.24	5.80	5.07	15.4	5.88	3.94	1.27	-1.83	-12.2	0.73	-9.65	0.07	0.93	0.73	0.33



Alt Model-Shift Uniqueness Test

006045059-01, P = 535.039146 Days, E = 277.883581 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.90	5.00	4.72	17.4	5.78	3.79	0.76	0.18	-12.5	0.28	-12.4	4.59	0.76	0.78	2.37



Stellar Parameters For KIC 006045059

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5180^{+154}_{-154}	$4.544^{+0.090}_{-0.060}$	$-0.400^{+0.350}_{-0.300}$	$0.742^{+0.076}_{-0.084}$	$0.702^{+0.095}_{-0.044}$	$2.426^{+0.873}_{-0.487}$
	+3%/-3%	+2%/-1%	+87%/-75%	+10%/-11%	+14%/-6%	+36%/-20%
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 006045059-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-934 ± 161	$21.74^{+23.20}_{-15.46}$	257^{+10}_{-11}	2550^{+1096}_{-385}	1470^{+15169}_{-1135}
Alt.	-468 ± 94	$22.65^{+26.04}_{-16.07}$	256^{+11}_{-10}	2339^{+878}_{-366}	687^{+6795}_{-546}

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 $A_{obs} \gg 1.0$

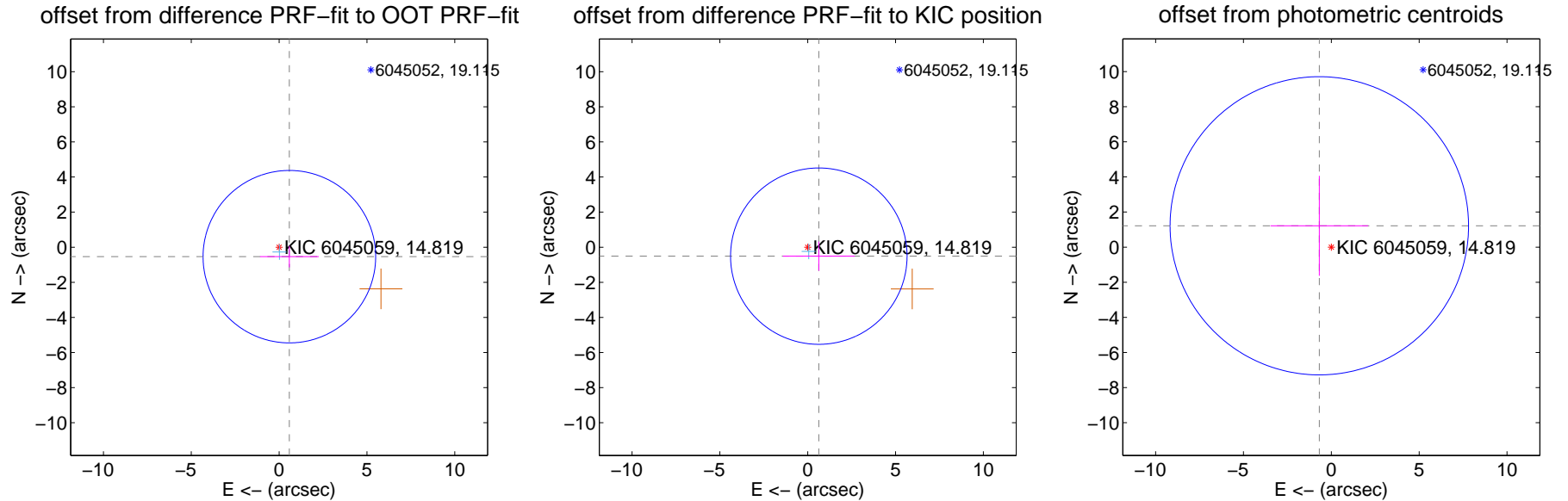
DV Centroid Data

Supplemental centroid analysis for 006045059-01. Kepler magnitude: 14.82. Transit SNR 3.41

There are 1 quarters with good PRF difference image offsets

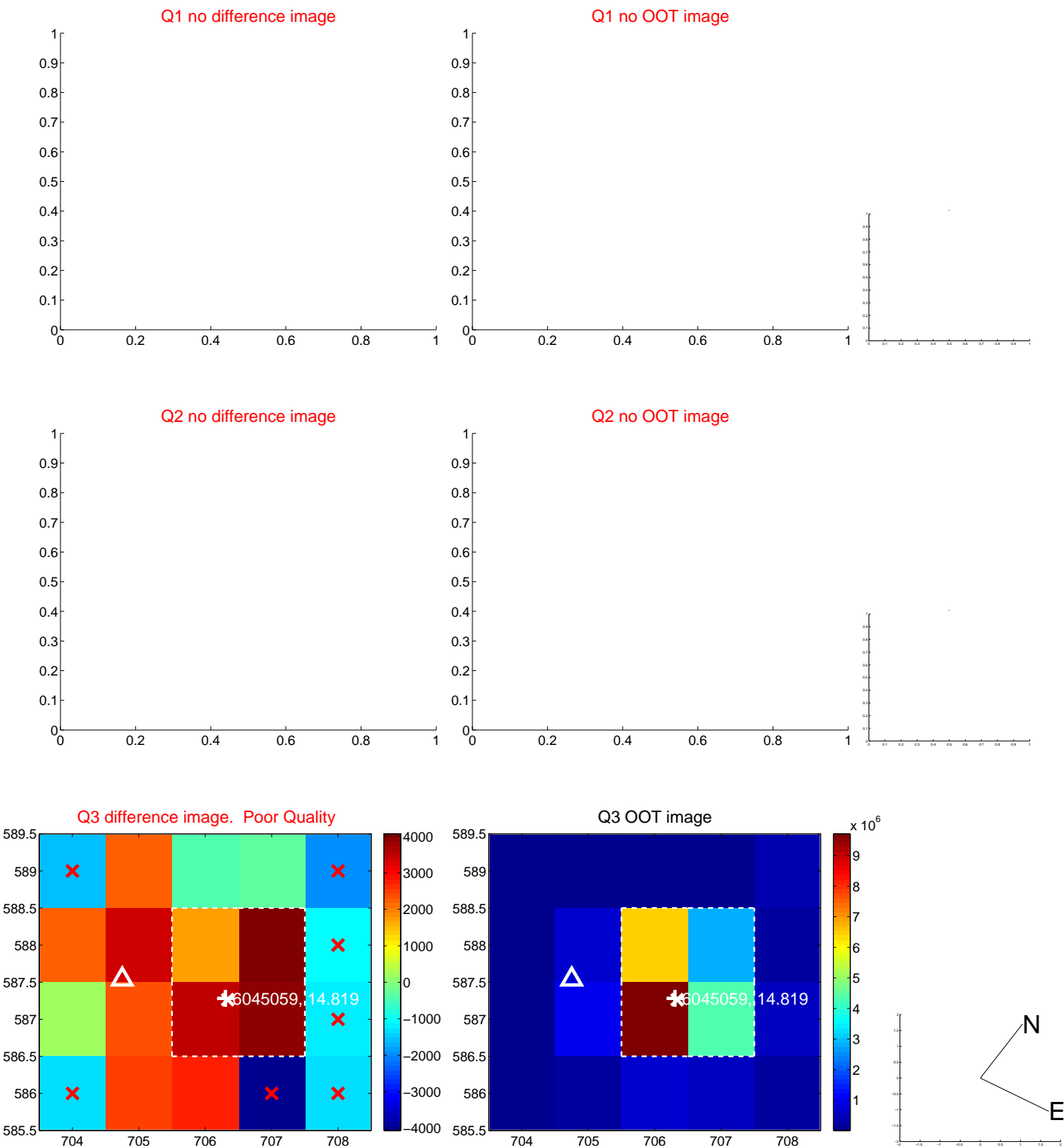
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.795 ± 1.638	0.49	-0.584 ± 1.670	-0.539 ± 0.609
PRF-fit source offset from KIC position	0.812 ± 1.675	0.48	-0.632 ± 2.045	-0.510 ± 0.833
photometric centroid source offset	1.40 ± 2.83	0.49	0.68 ± 2.78	1.22 ± 2.85

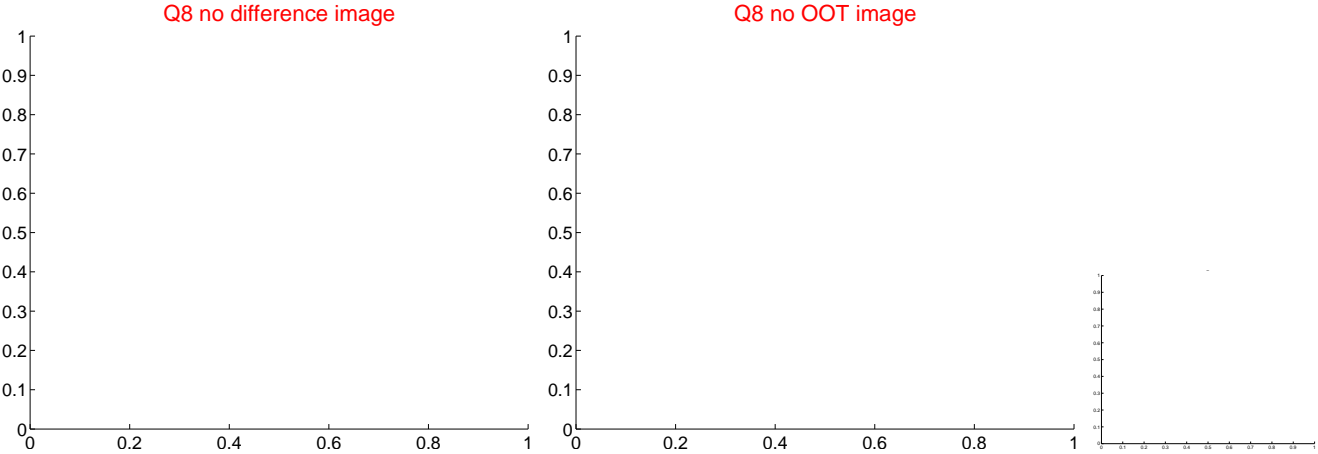
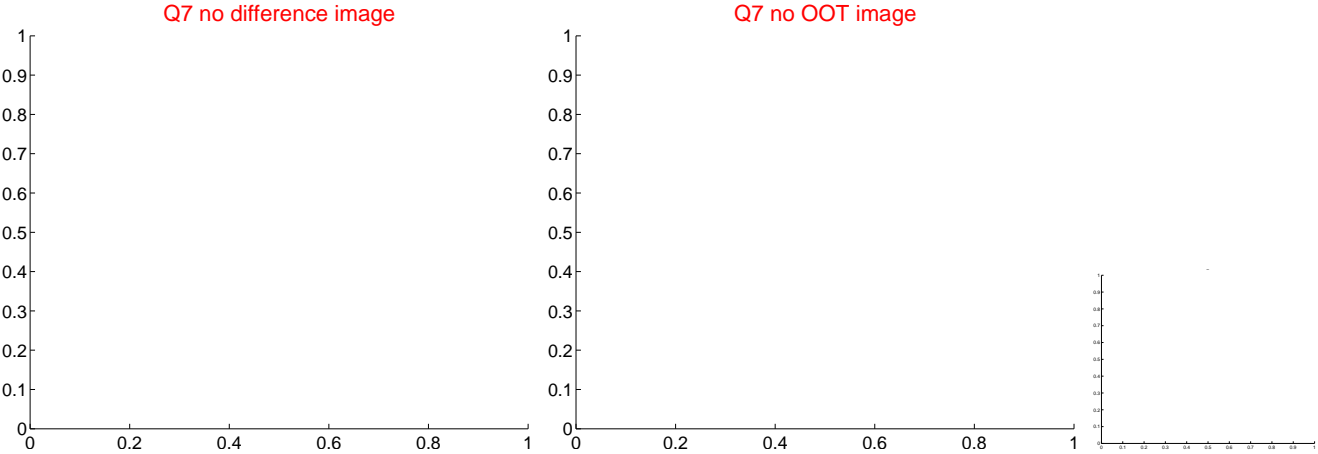
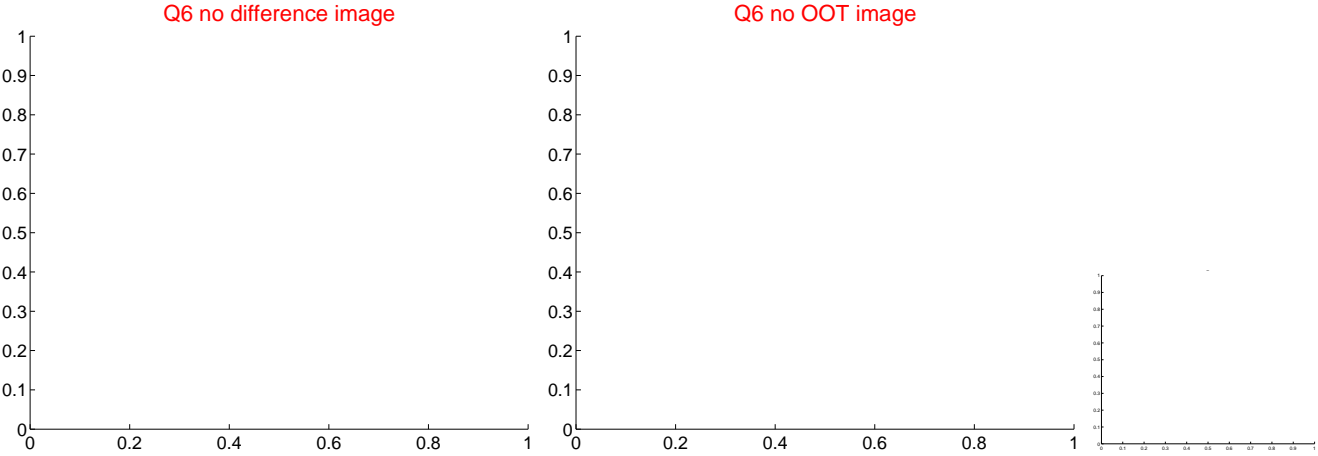
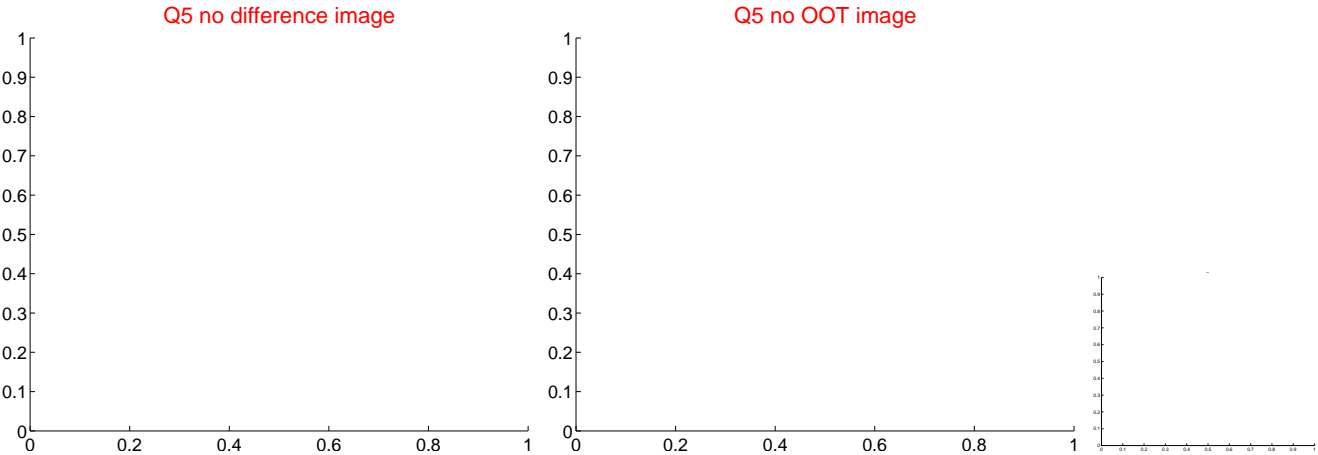


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

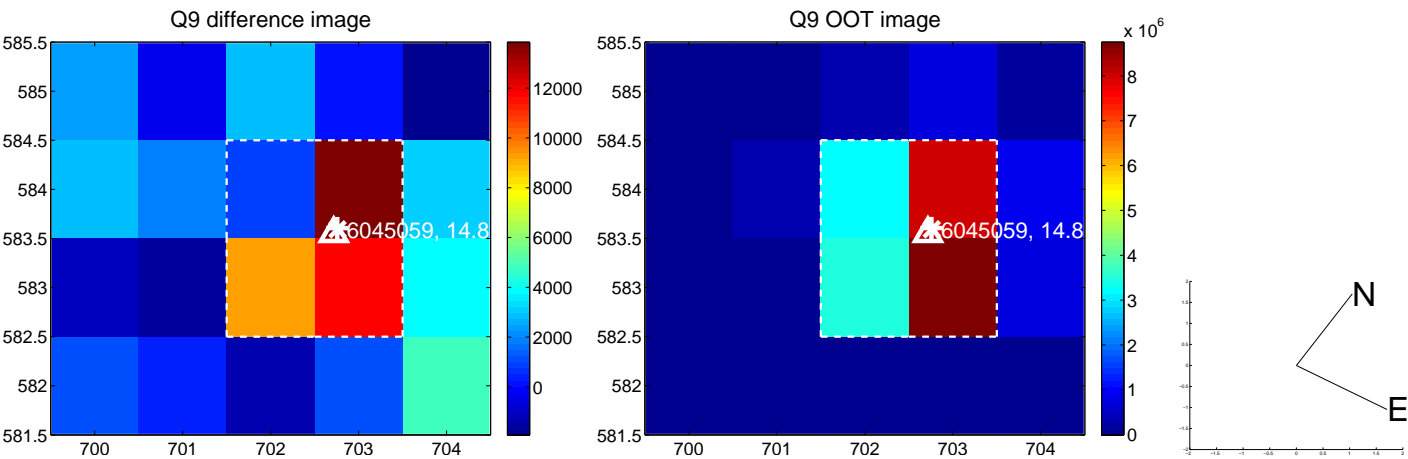
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



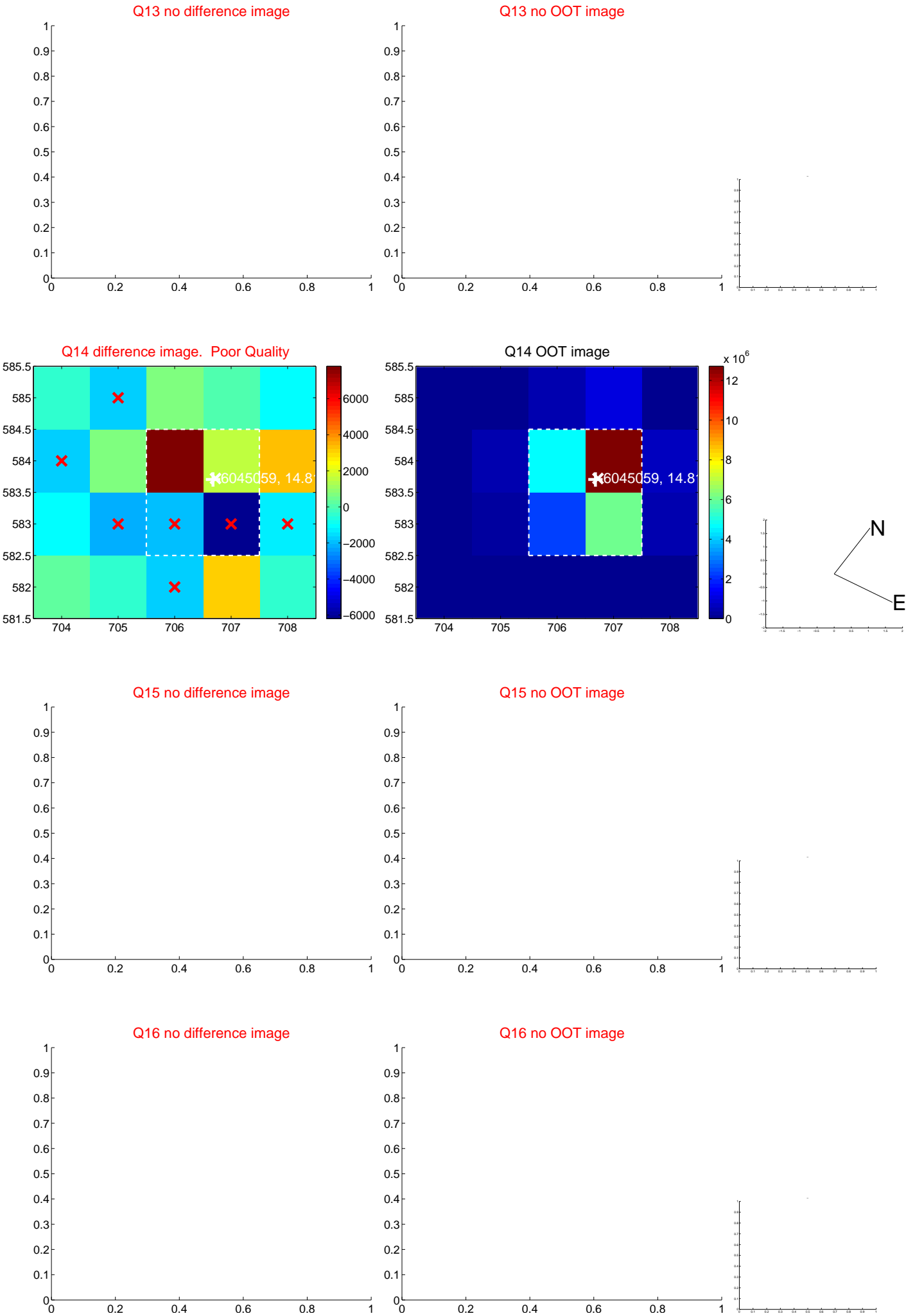
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



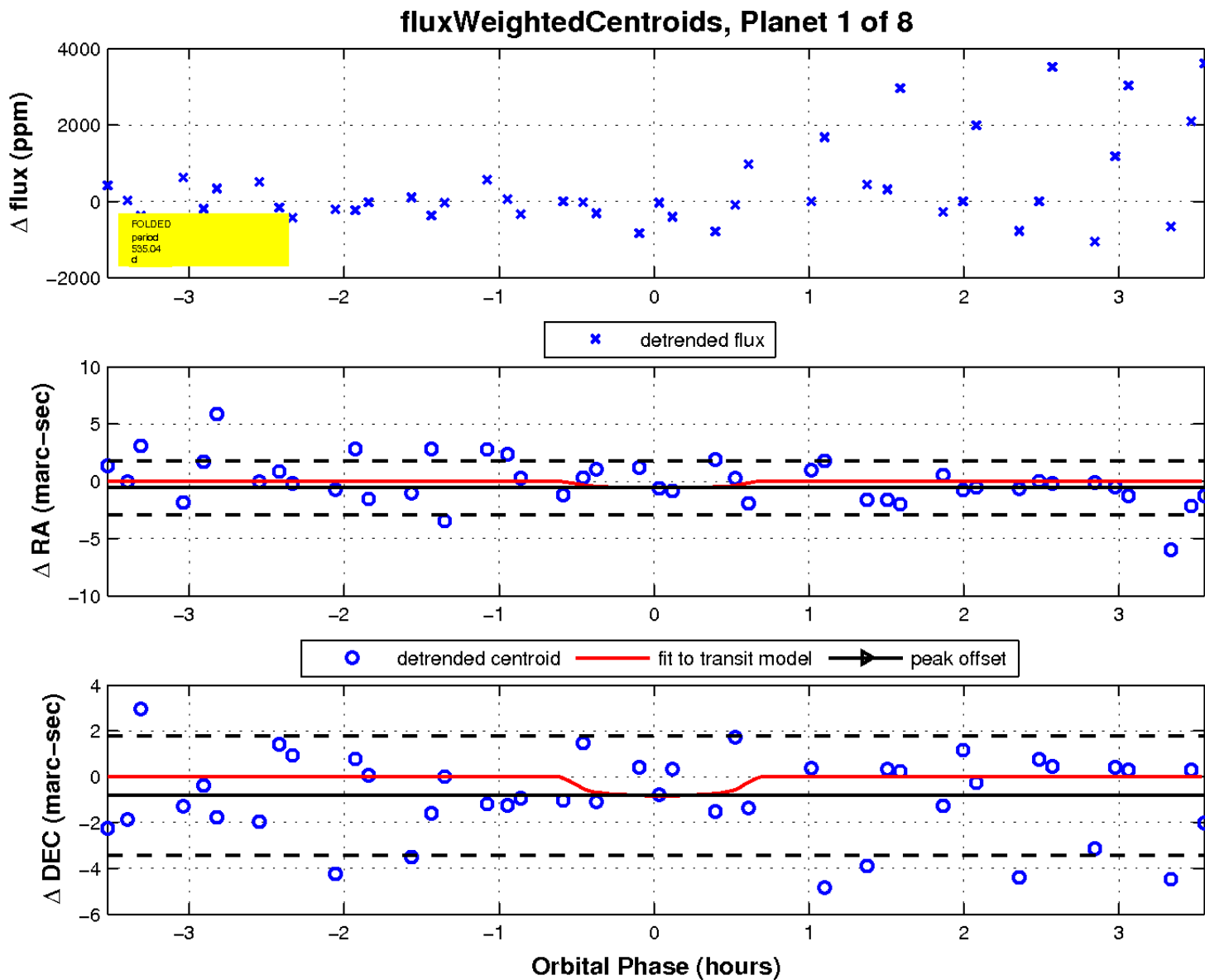
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

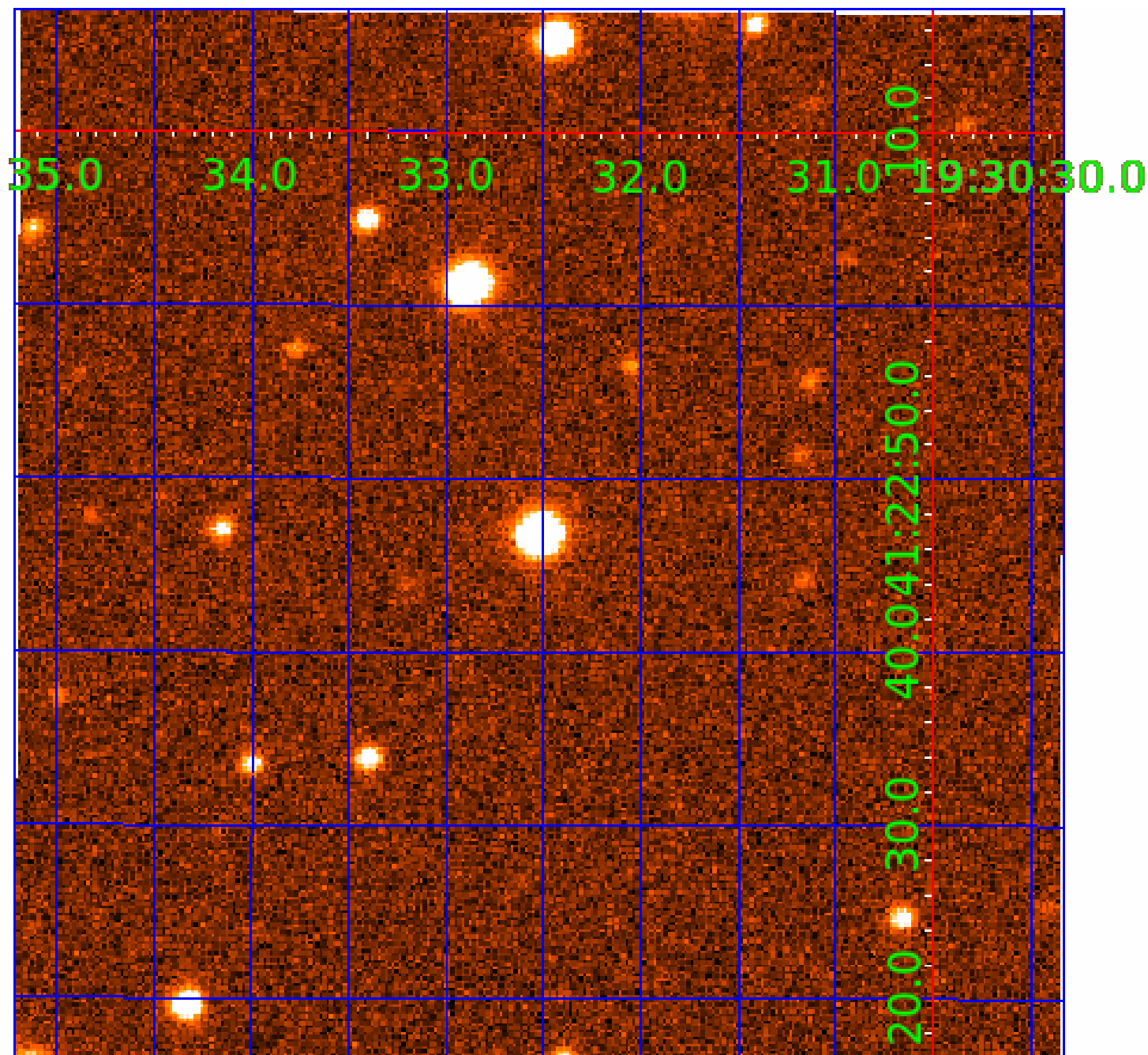


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006045059

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})
006045059-01	OBS	No	535.041533	277.884635	732.6	1.192	24.8	3.4	0.74	5180	2.14	0.27
006045059-02	OBS	No	507.533740	333.080100	2343.1	3.129	19.0	11.4	0.74	5180	3.56	0.29
006045059-03	OBS	No	232.341369	328.144983	916.3	8.703	13.8	7.0	0.74	5180	2.29	0.82
006045059-04	OBS	No	338.187712	428.001094	1201.5	5.861	13.1	7.1	0.74	5180	2.69	0.50
006045059-05	OBS	No	539.137994	273.954258	3665.6	9.437	18.1	13.0	0.74	5180	8.55	0.27
006045059-06	OBS	No	270.783200	251.192622	998.1	6.303	15.5	4.3	0.74	5180	2.33	0.67
006045059-07	OBS	No	423.989823	376.038716	1410.9	10.834	13.9	6.8	0.74	5180	3.46	0.37
006045059-08	OBS	No	242.906579	317.858250	1133.3	4.500	12.7	-1.0	0.74	5180	2.45	0.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006045059-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-03	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV
006045059-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
006045059-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-06	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS
006045059-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
006045059-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

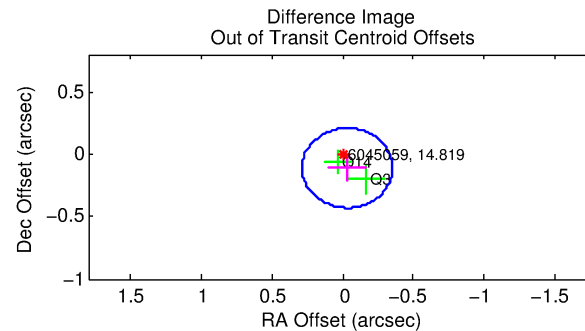
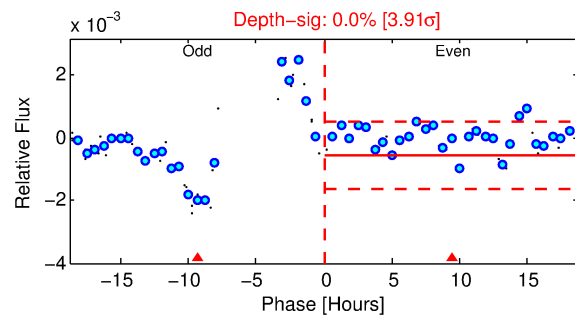
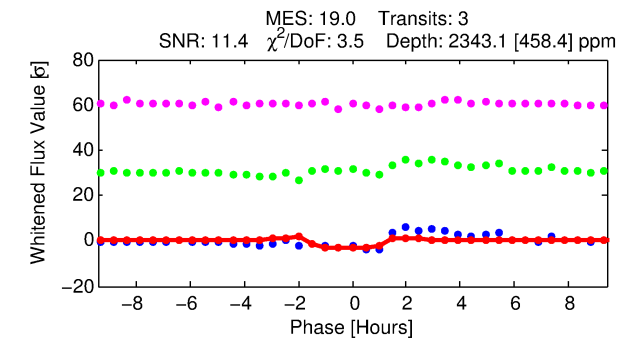
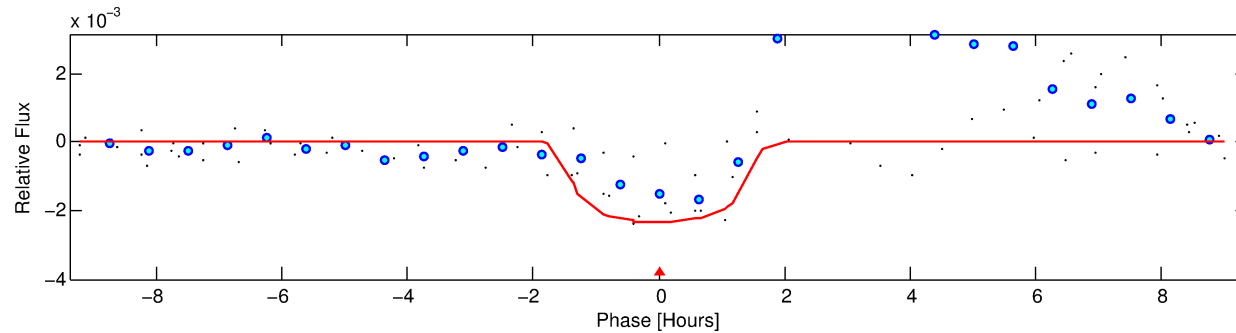
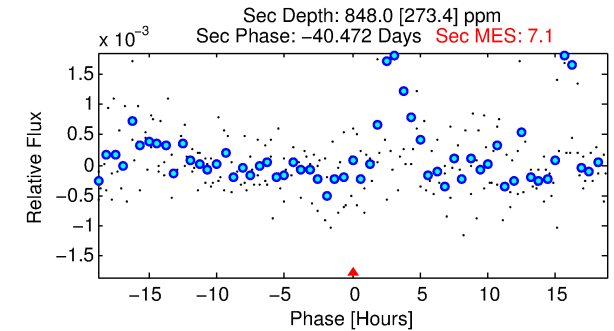
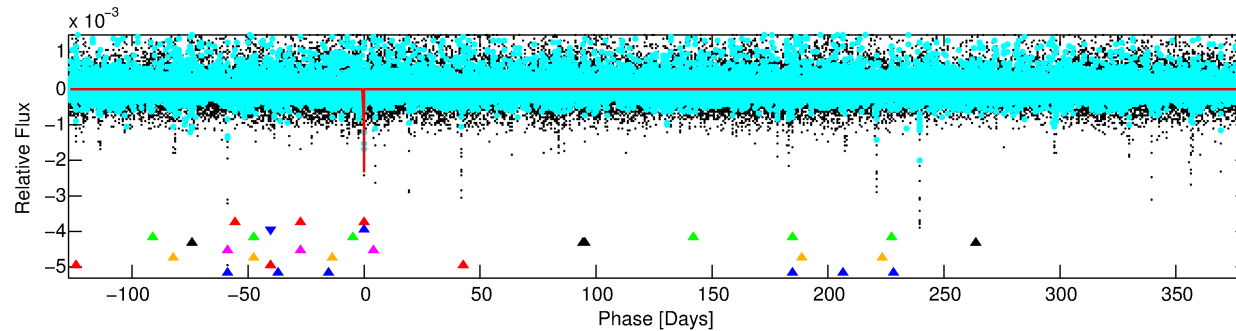
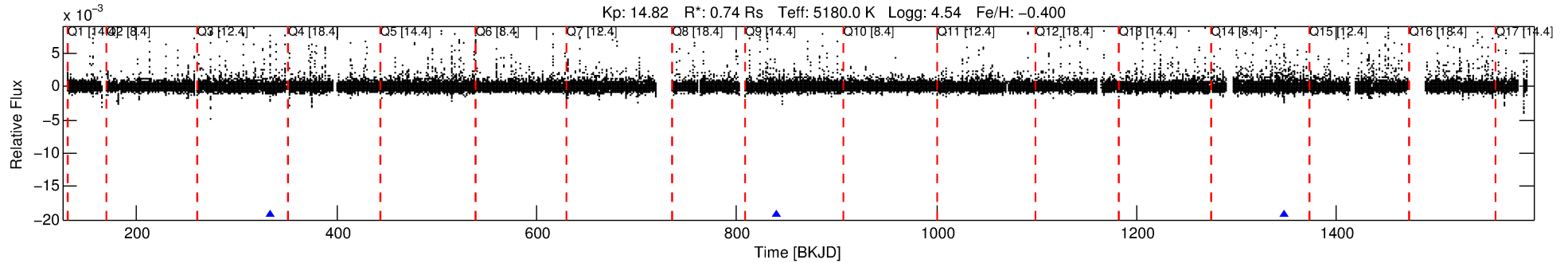
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006045059-02

No Significant Match Found

DV One-Page Summary

KIC: 6045059 Candidate: 2 of 8 Period: 507.534 d



DV Fit Results:

Period = 507.53374 [0.00532] d
Epoch = 333.0801 [0.0071] BKJD
Rp/R* = 0.0439 [0.1245]
a/R* = 1242.46 [13431.11]
b = 0.29 [34.46]
Seff = 0.29 [0.06]
Teq = 187 [9] K
Rp = 3.56 [10.09] Re
a = 1.1073 [0.1133] AU
Ag = 45223.99 [256973.41] [0.18 σ]
Teffp = 4218 [5990] K [0.67 σ]

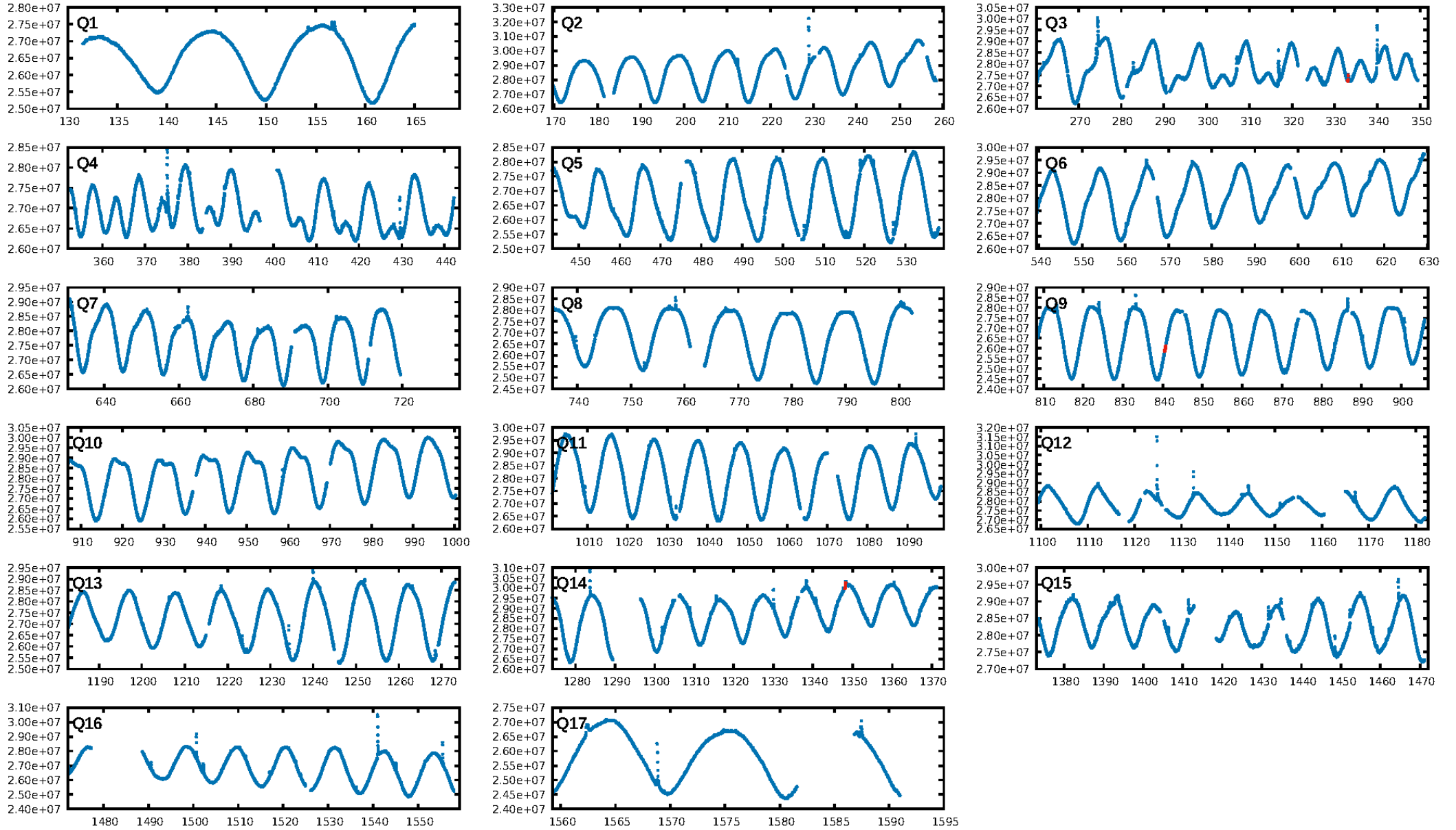
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [177.80 σ]
LongPeriod-sig: 100.0% [197.15 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.4136
Centroid-sig: 35.7%
Centroid-so: 0.551 arcsec [0.99 σ]
OotOffset-rm: 0.116 arcsec [1.08 σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-rm: 0.241 arcsec [2.23 σ]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.67 [2/3]

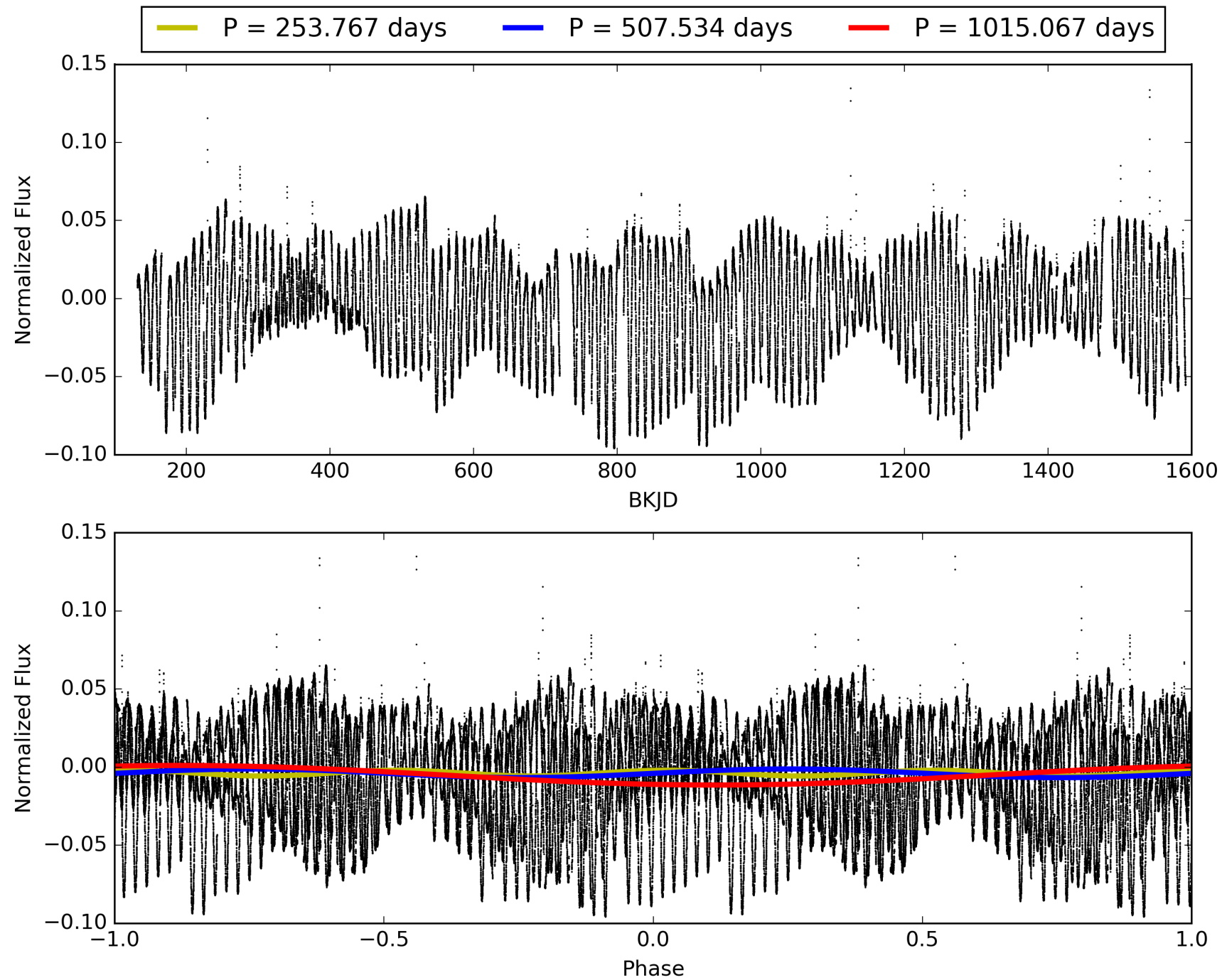
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:19:03 Z

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

TCE 006045059-02, PDC Light Curves

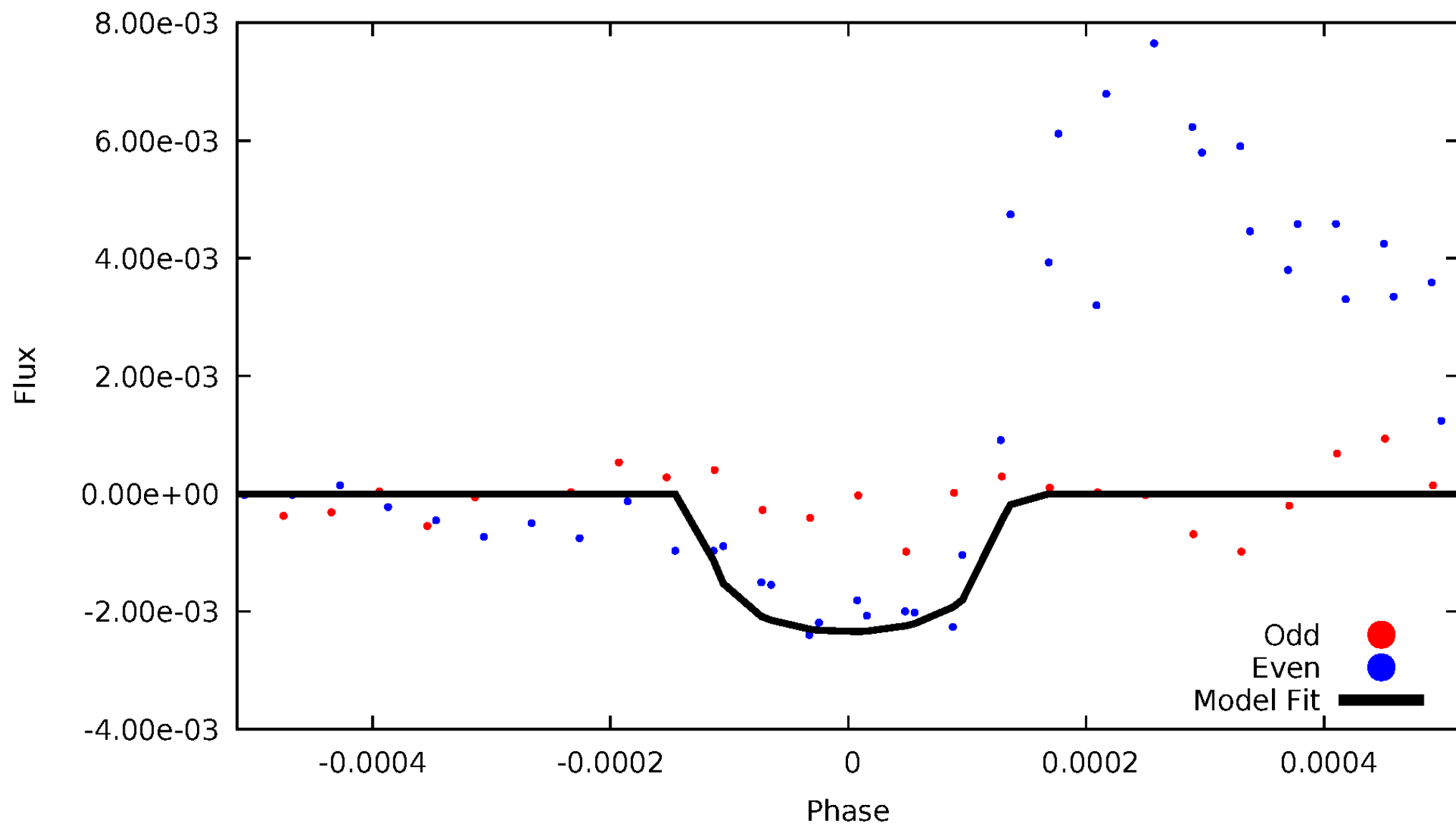


TCE 006045059-02



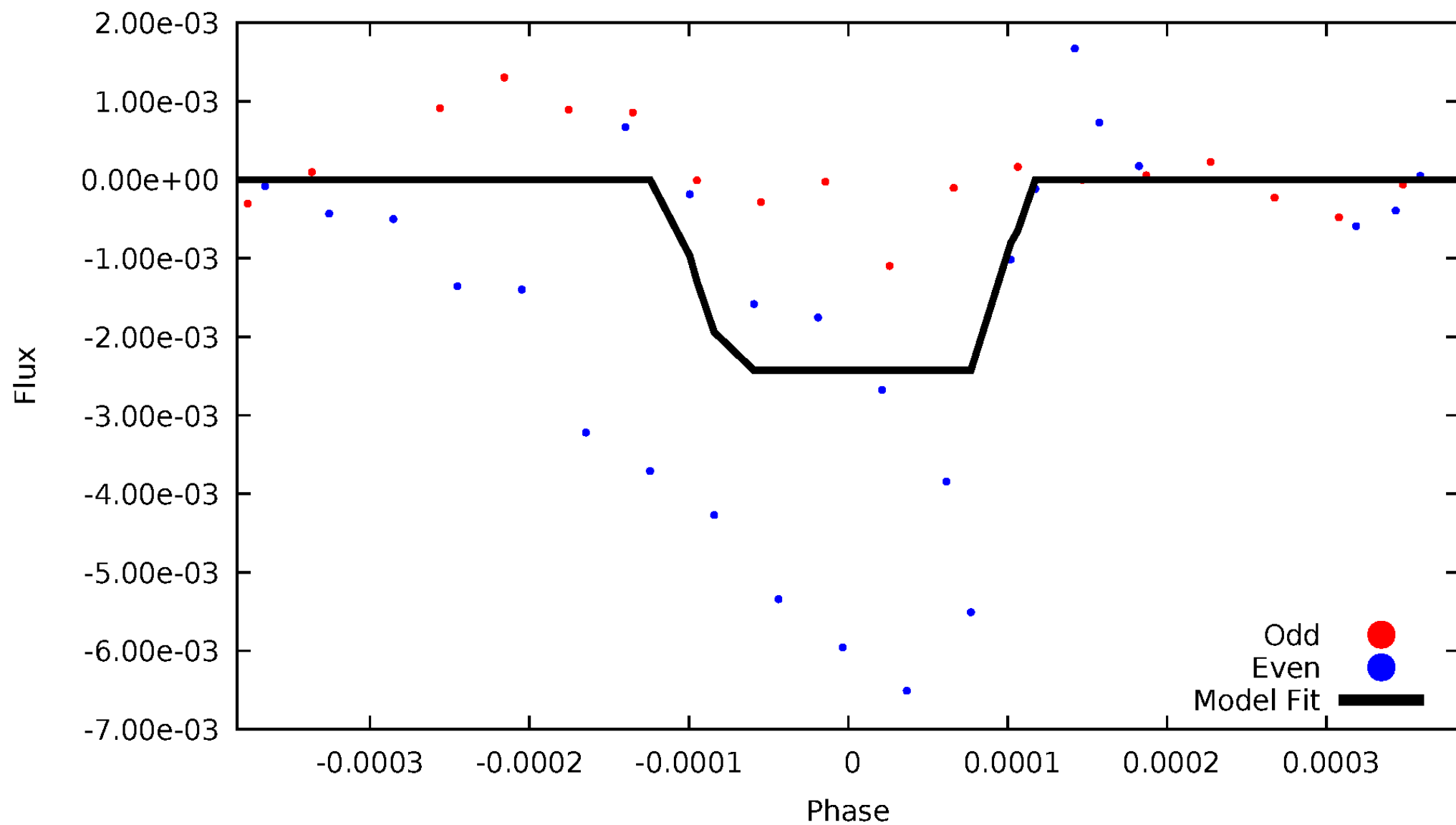
DV Odd/Even

TCE 006045059-02



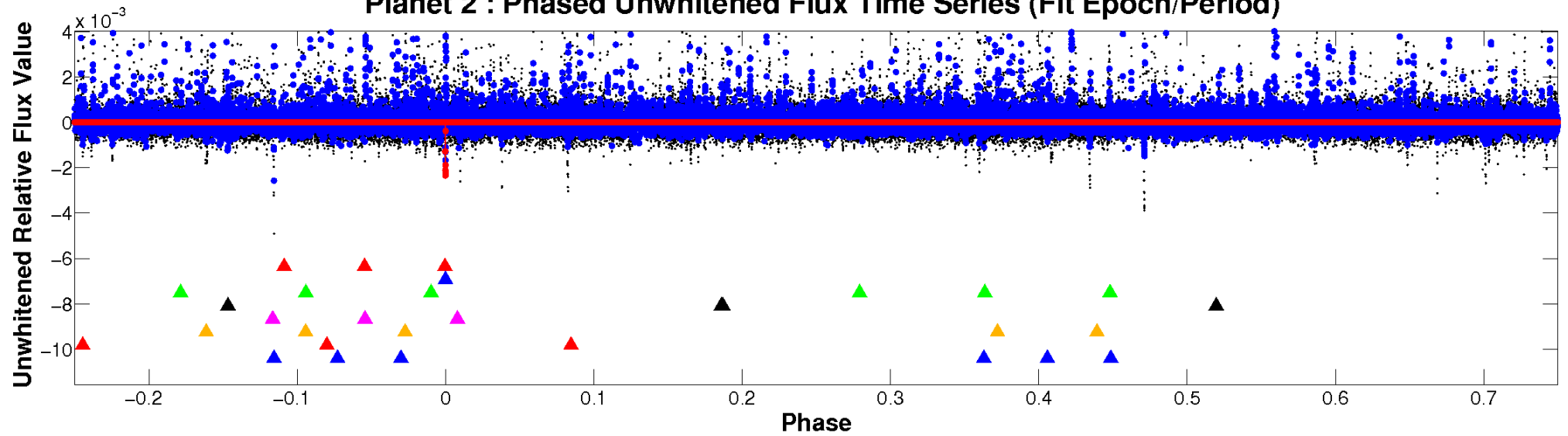
ALT Odd/Even

TCE 006045059-02

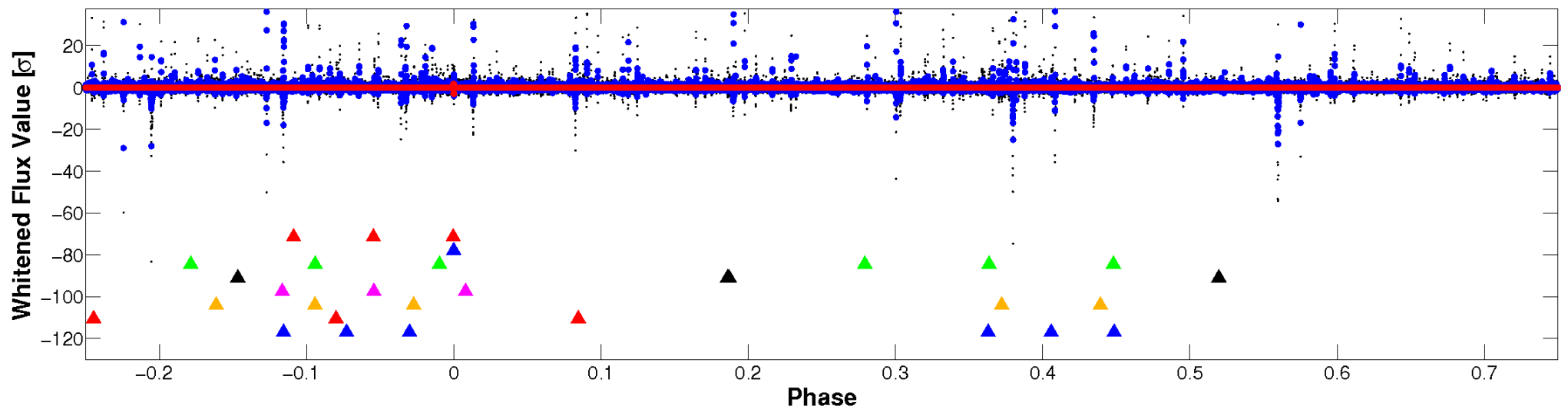


Non-Whitened Vs. Whitened Light Curve

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

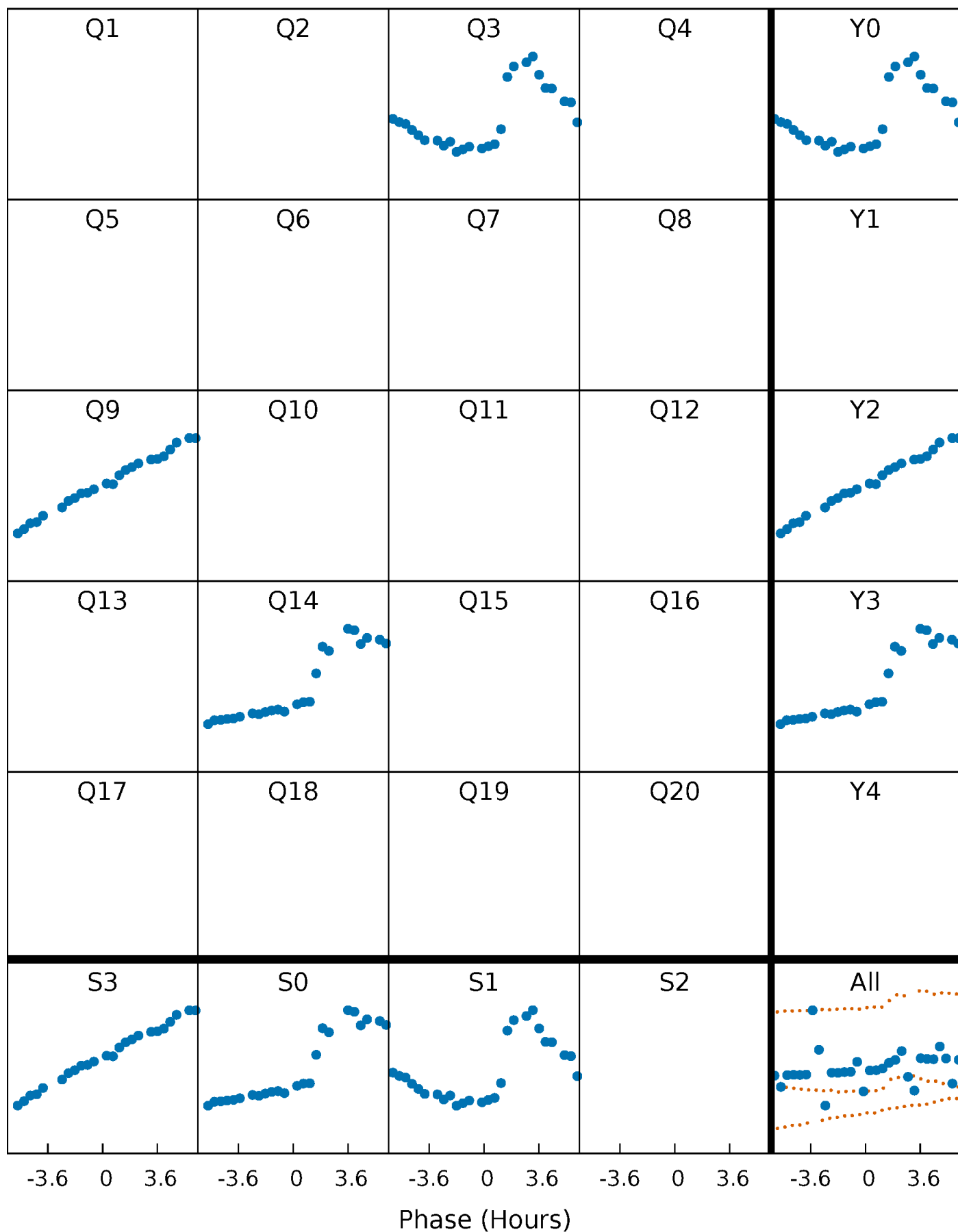


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



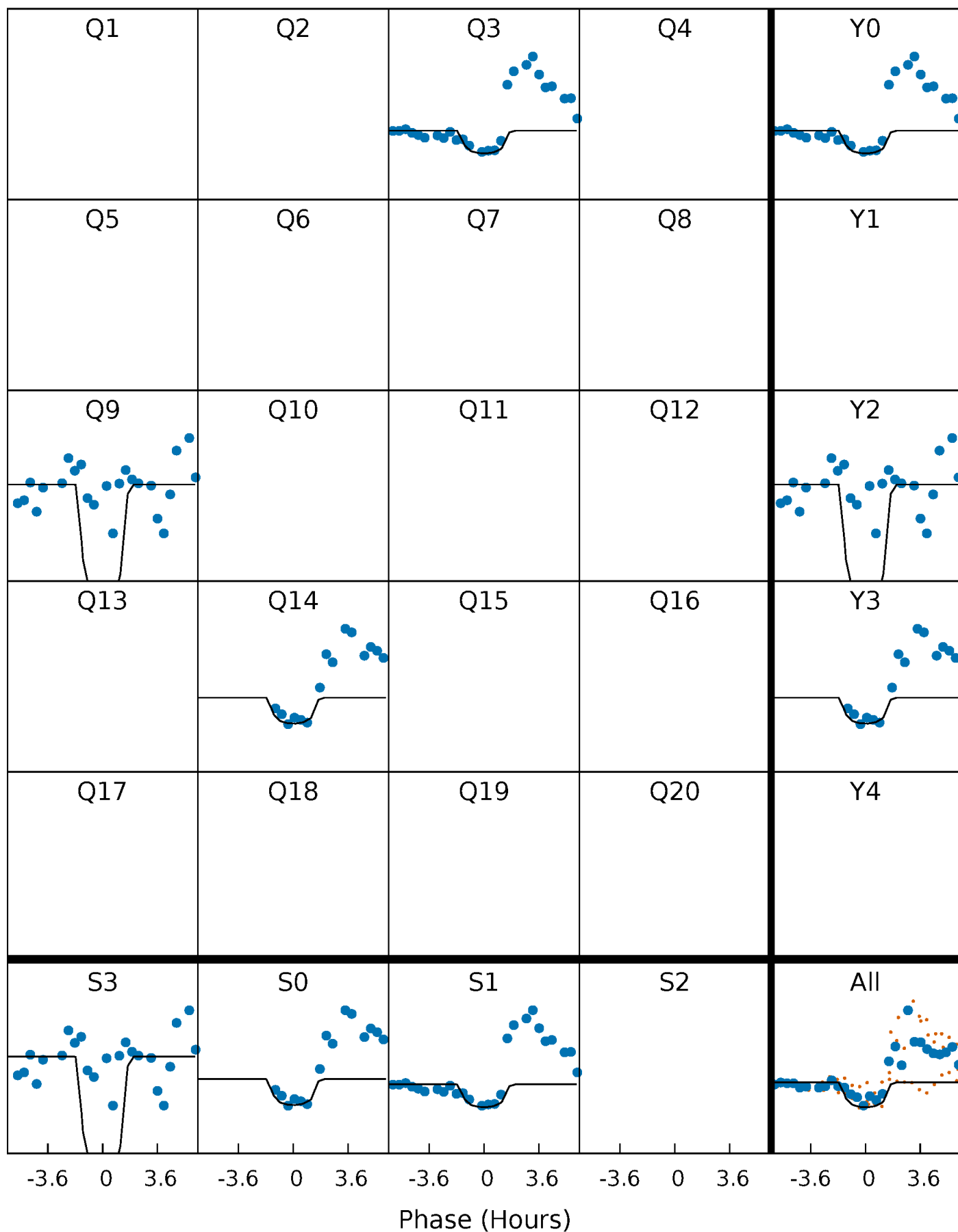
PDC Quarter-Phased Transit Curves

TCE 006045059-02 P=507.533740 Days $T_0=333.080100$ (BKJD)



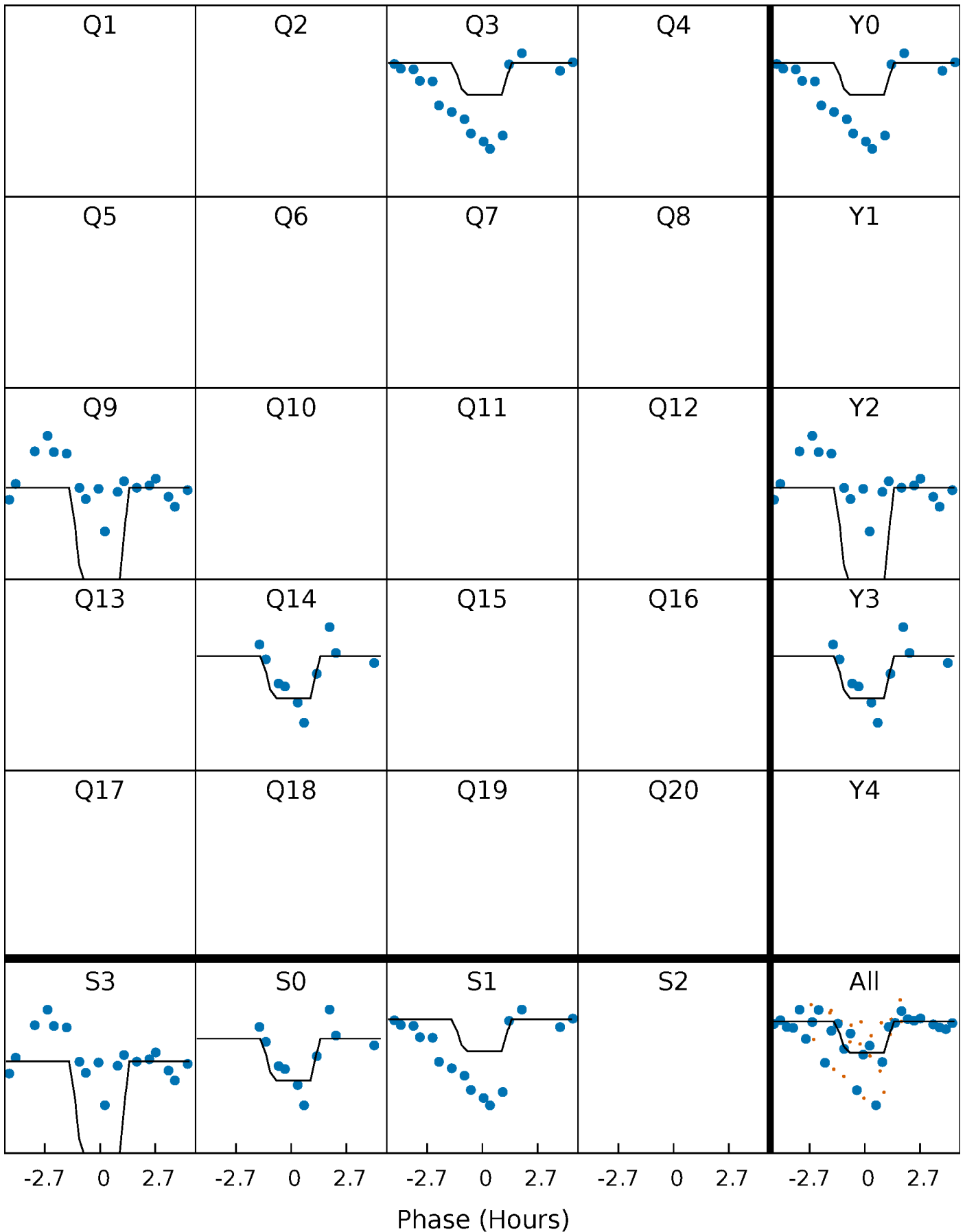
DV Quarter-Phased Transit Curves

TCE 006045059-02 P=507.533740 Days $T_0=333.080100$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

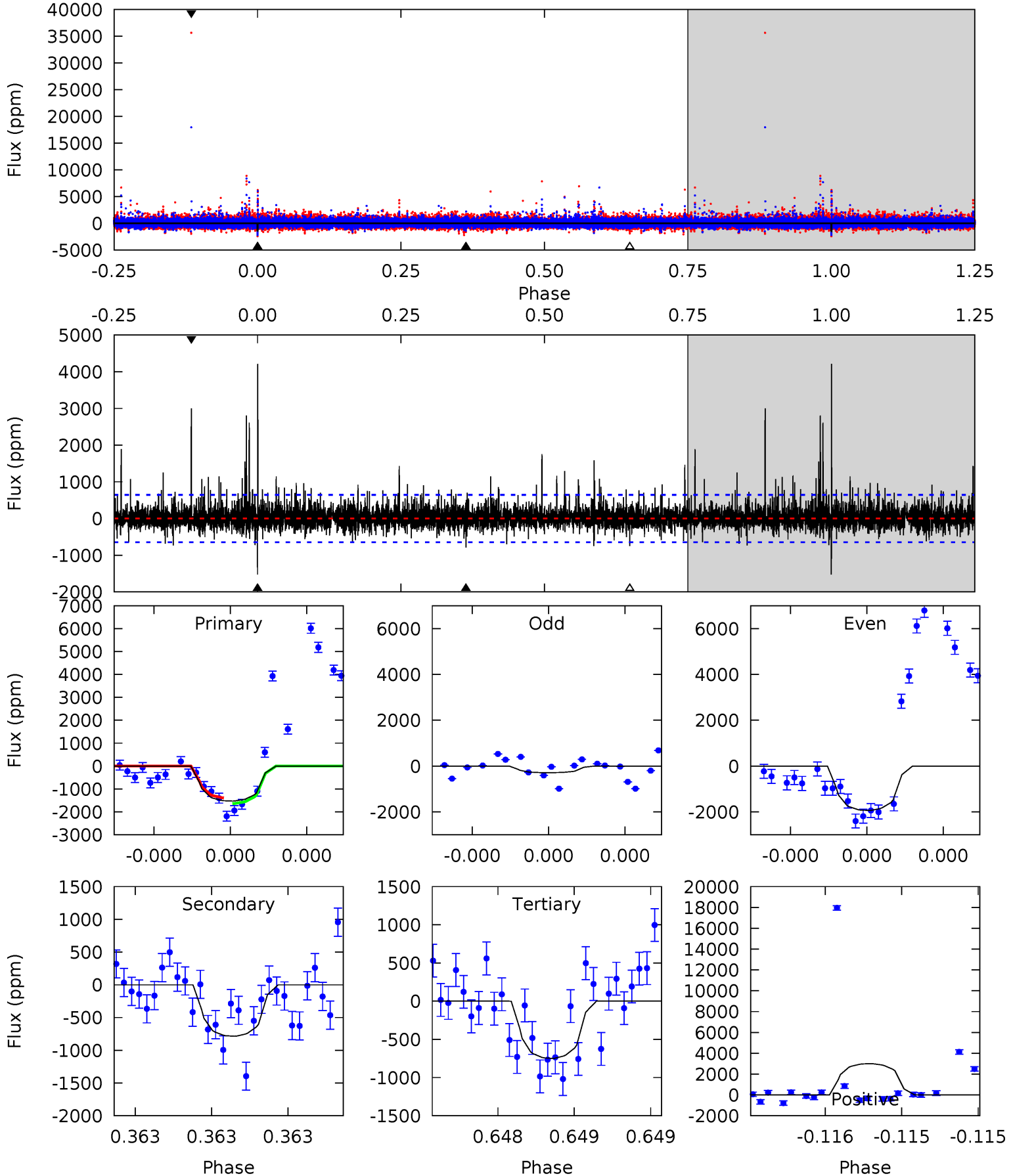
TCE 006045059-02 P=507.535574 Days $T_0=333.089814$ (BKJD)



DV Model-Shift Uniqueness Test

006045059-02, P = 507.533740 Days, E = 333.080100 Days

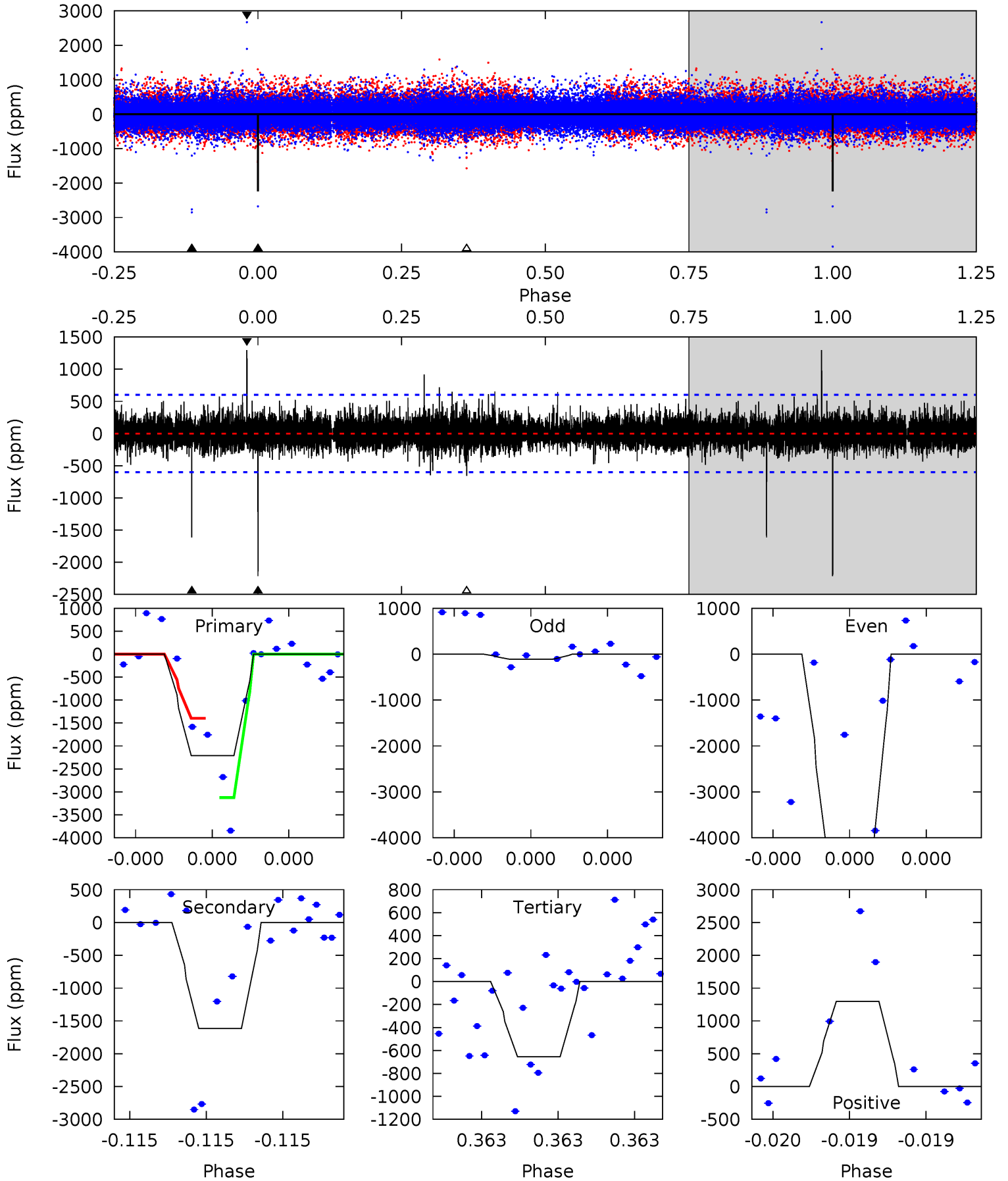
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	6.92	6.60	26.4	5.67	3.63	1.96	6.85	-13.0	0.32	-19.5	3.88	0.77	0.73	1.09



Alt Model-Shift Uniqueness Test

006045059-02, P = 507.535574 Days, E = 333.089814 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.1	15.4	6.23	12.3	5.72	3.70	1.10	14.8	8.72	9.14	3.04	27.2	1.18	0.37	0



Stellar Parameters For KIC 006045059

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5180^{+154}_{-154}	$4.544^{+0.090}_{-0.060}$	$-0.400^{+0.350}_{-0.300}$	$0.742^{+0.076}_{-0.084}$	$0.702^{+0.095}_{-0.044}$	$2.426^{+0.873}_{-0.487}$
	+3%/-3%	+2%/-1%	+87%/-75%	+10%/-11%	+14%/-6%	+36%/-20%
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 006045059-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-786 ± 114	$8.48^{+7.99}_{-5.70}$	260^{+10}_{-10}	3200^{+1574}_{-499}	7315^{+66949}_{-5289}
Alt.	-1615 ± 105	$8.28^{+8.66}_{-5.75}$	260^{+10}_{-11}	3640^{+2222}_{-705}	$16044^{+150079}_{-12130}$

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 $A_{obs} \gg 1.0$

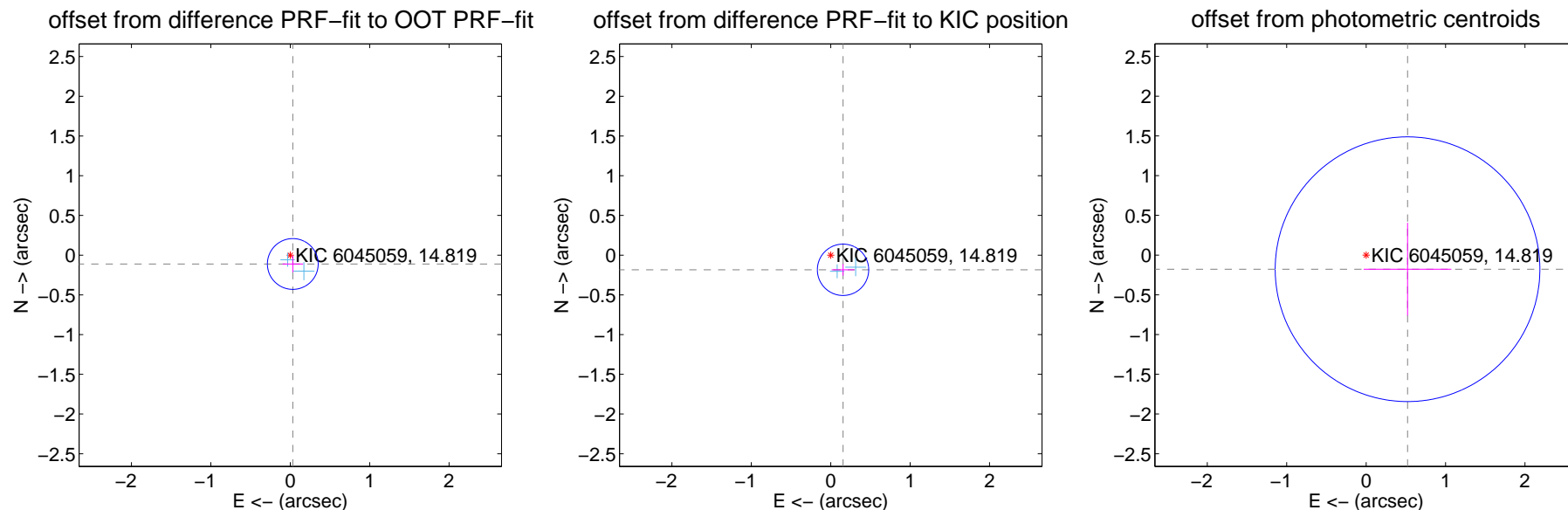
DV Centroid Data

Supplemental centroid analysis for 006045059-02. Kepler magnitude: 14.82. Transit SNR 11.36

There are 2 quarters with good PRF difference image offsets

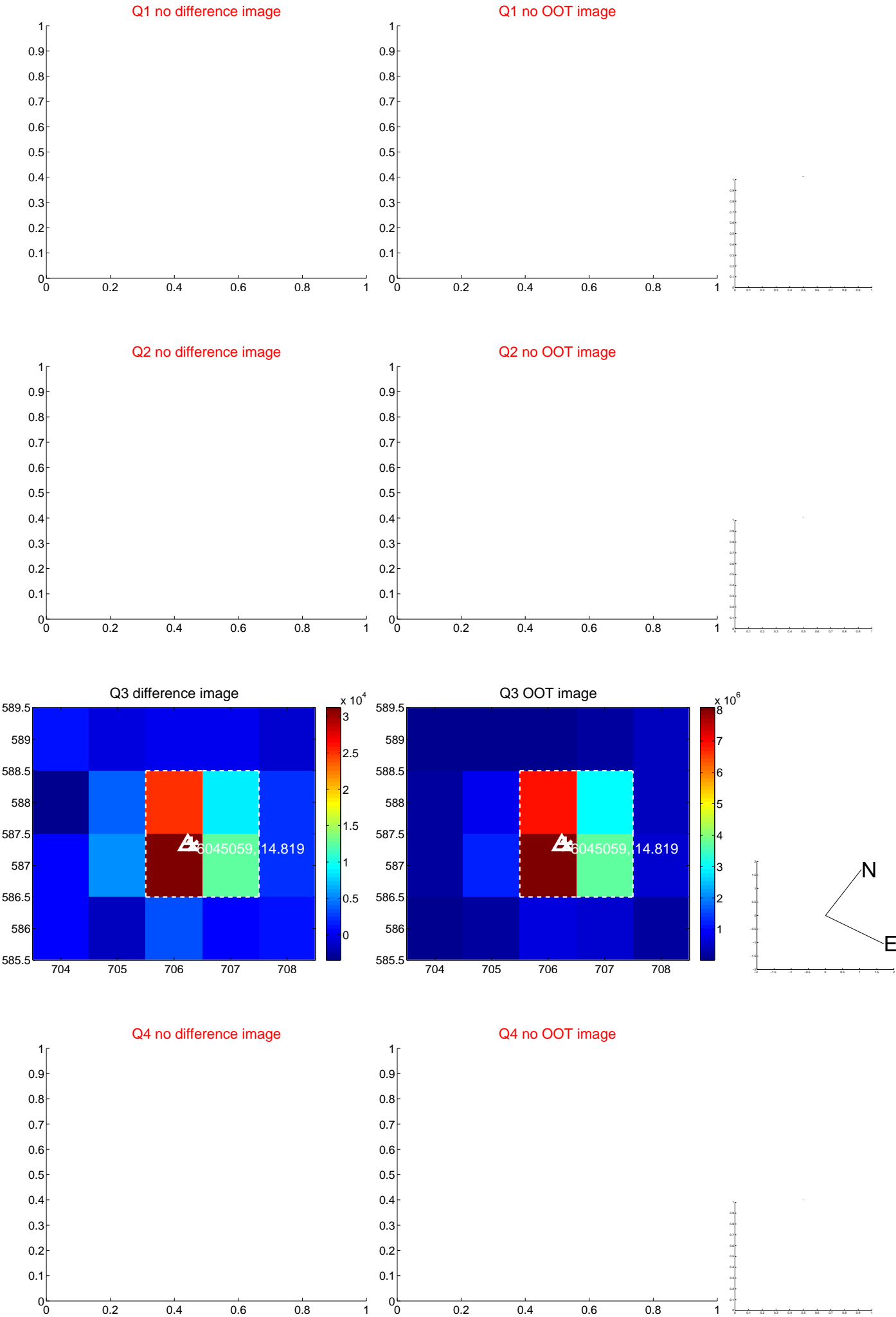
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.116 ± 0.107	1.08	-0.032 ± 0.130	-0.111 ± 0.104
PRF-fit source offset from KIC position	0.241 ± 0.108	2.23	-0.155 ± 0.143	-0.184 ± 0.073
photometric centroid source offset	0.55 ± 0.56	0.99	-0.52 ± 0.55	-0.18 ± 0.58



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

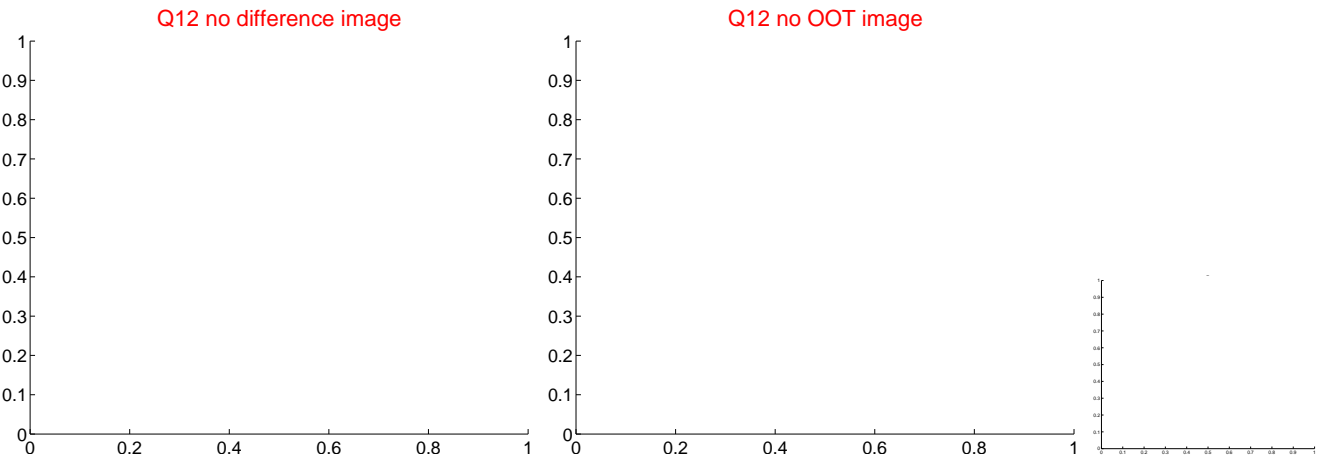
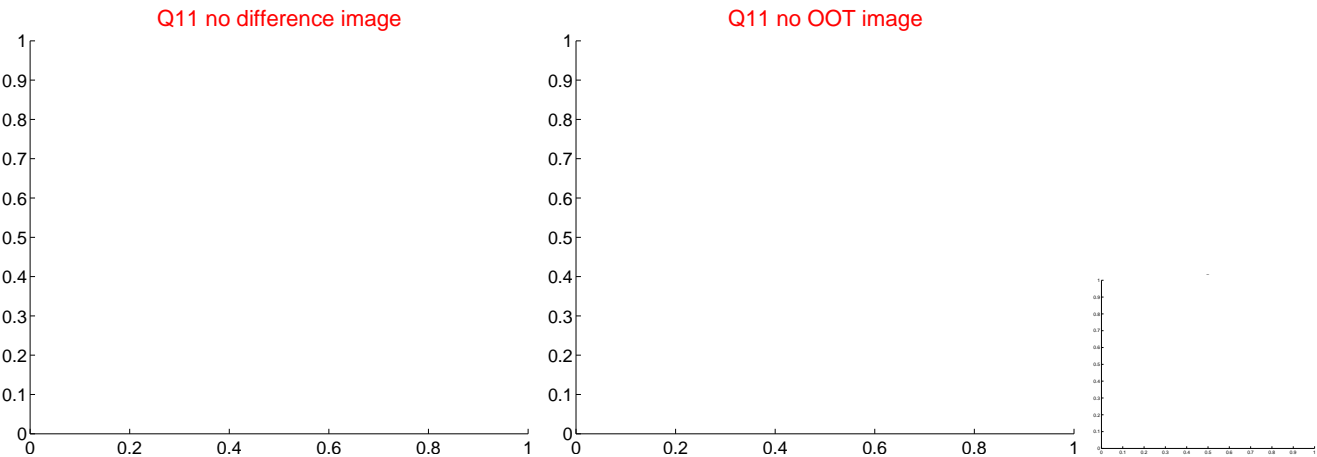
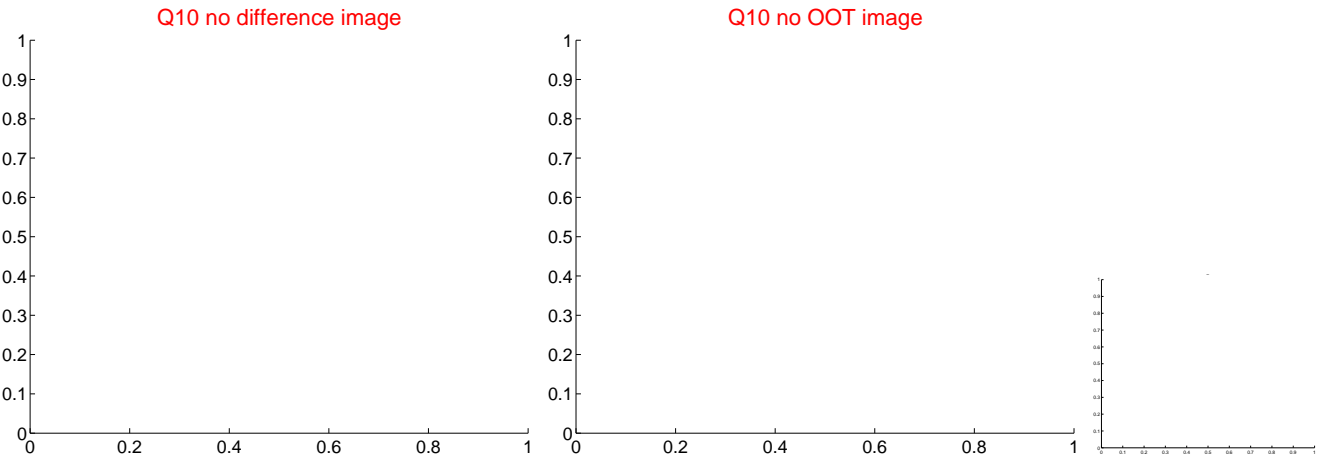
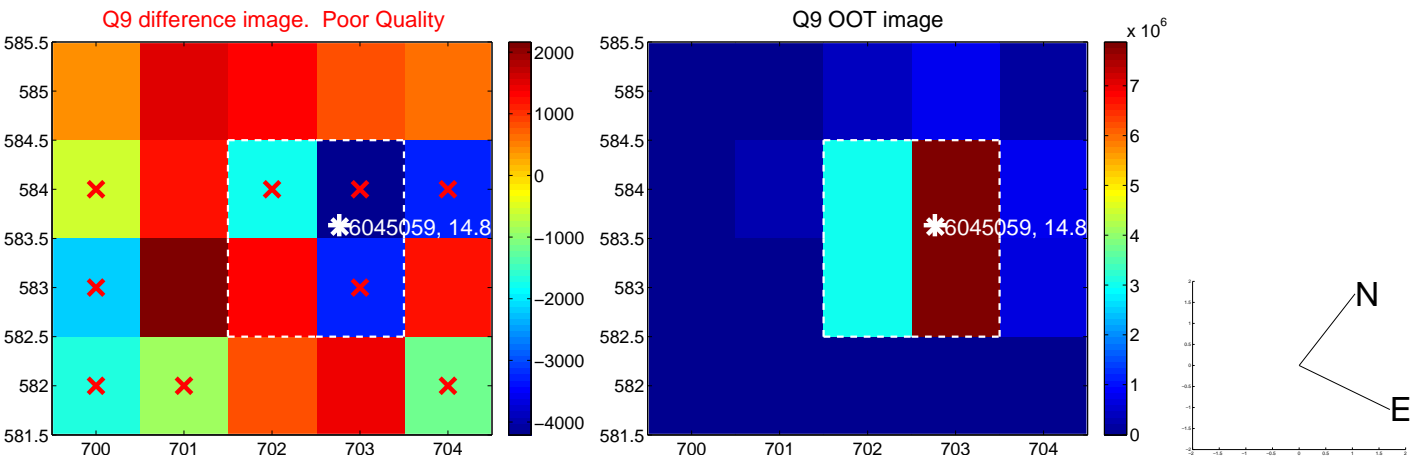
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

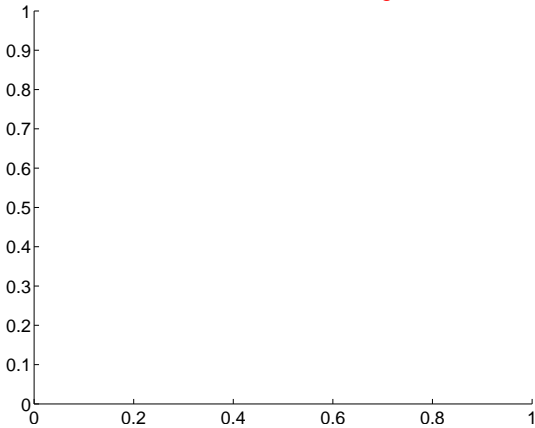


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

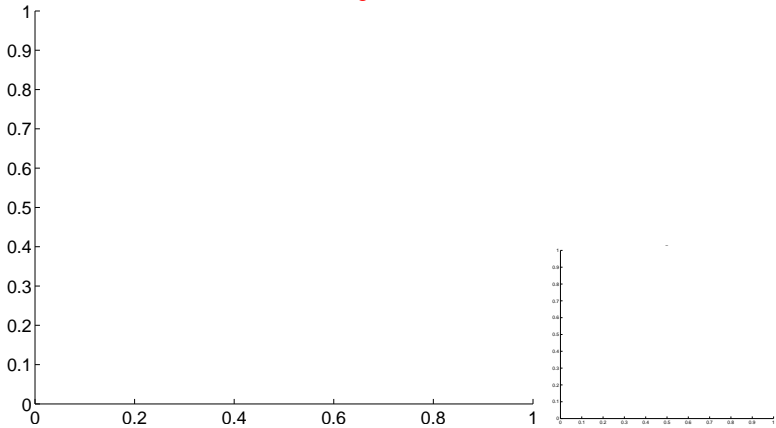


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

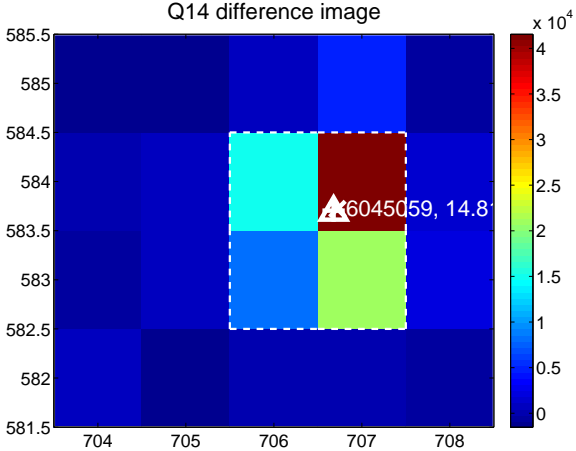
Q13 no difference image



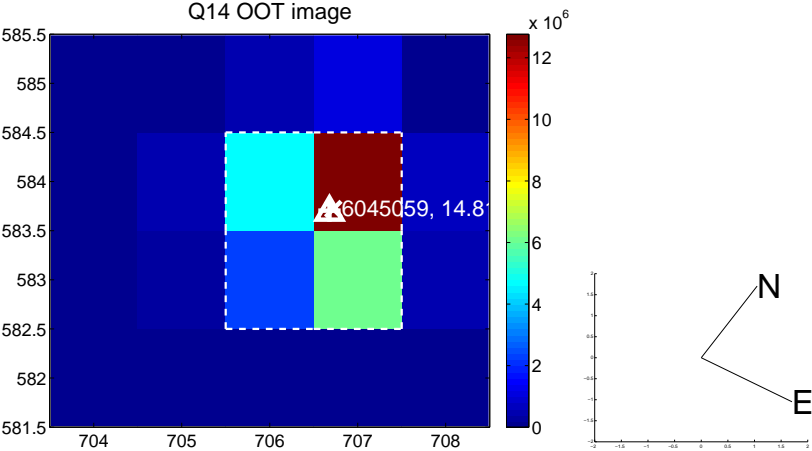
Q13 no OOT image



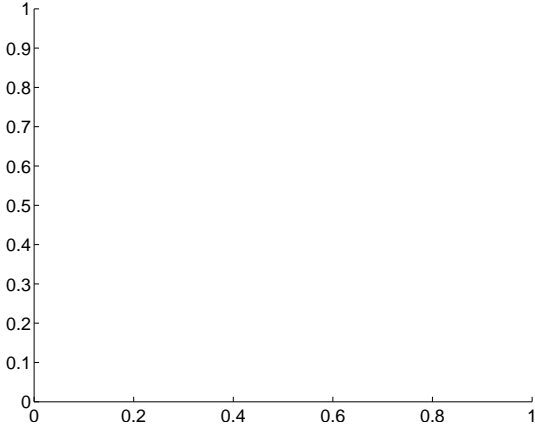
Q14 difference image



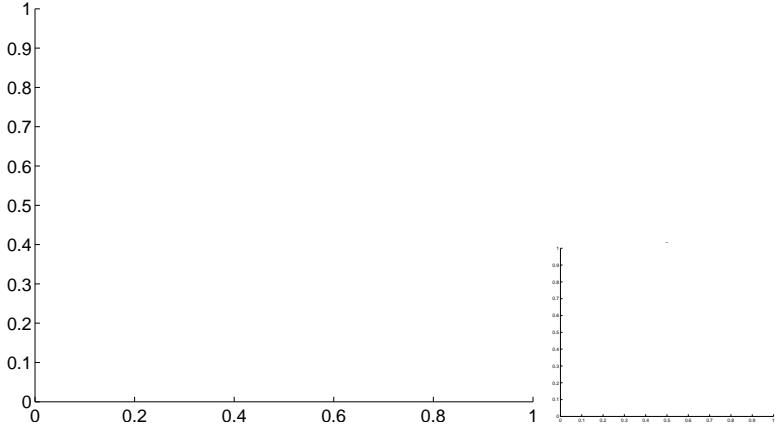
Q14 OOT image



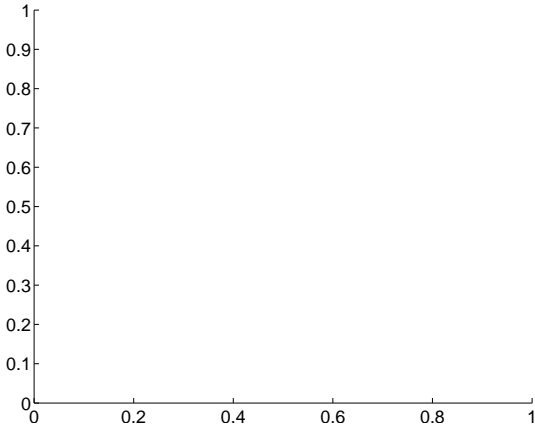
Q15 no difference image



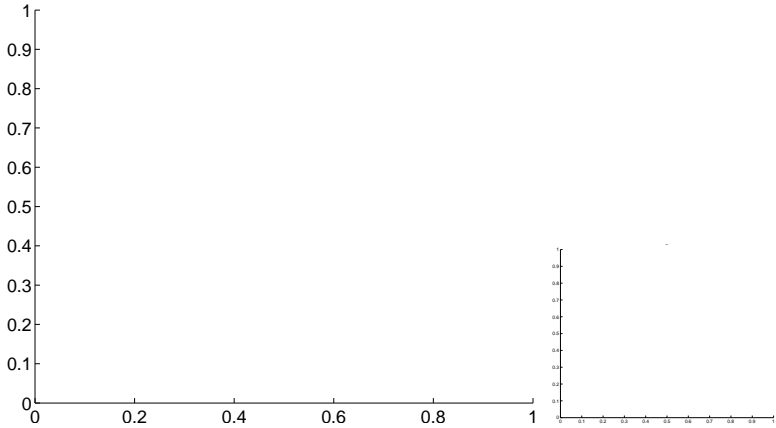
Q15 no OOT image



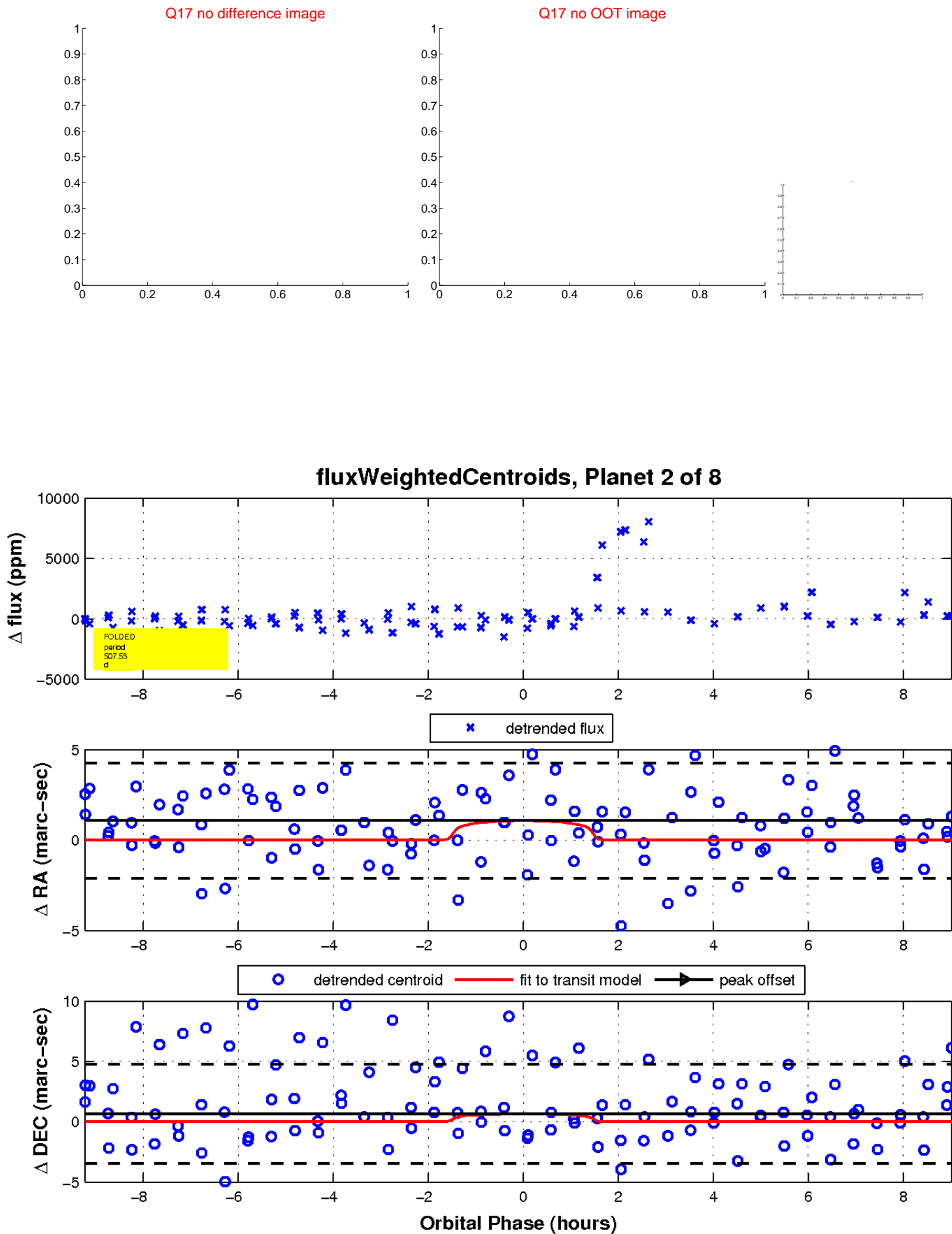
Q16 no difference image



Q16 no OOT image

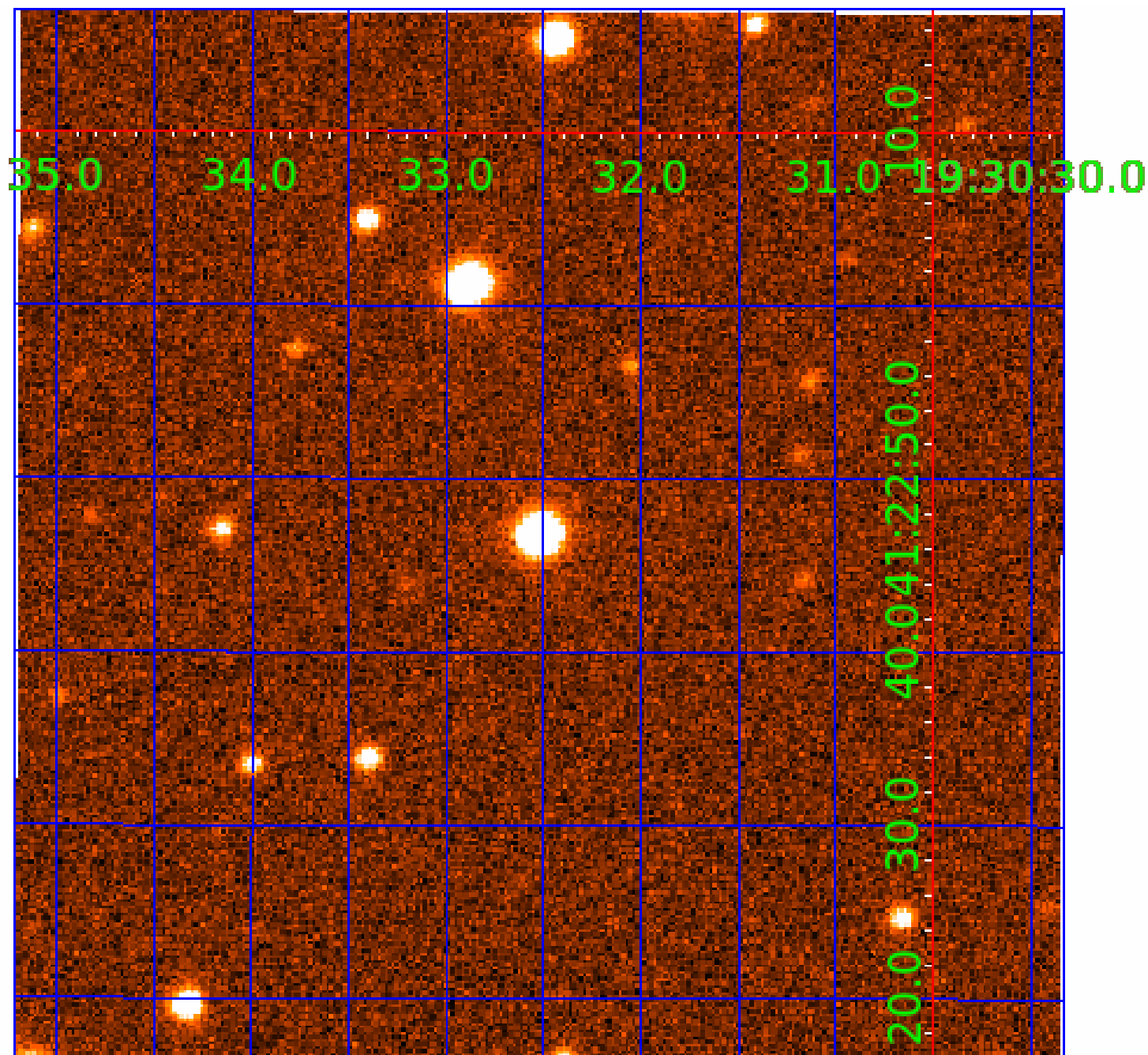


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006045059

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})
006045059-01	OBS	No	535.041533	277.884635	732.6	1.192	24.8	3.4	0.74	5180	2.14	0.27
006045059-02	OBS	No	507.533740	333.080100	2343.1	3.129	19.0	11.4	0.74	5180	3.56	0.29
006045059-03	OBS	No	232.341369	328.144983	916.3	8.703	13.8	7.0	0.74	5180	2.29	0.82
006045059-04	OBS	No	338.187712	428.001094	1201.5	5.861	13.1	7.1	0.74	5180	2.69	0.50
006045059-05	OBS	No	539.137994	273.954258	3665.6	9.437	18.1	13.0	0.74	5180	8.55	0.27
006045059-06	OBS	No	270.783200	251.192622	998.1	6.303	15.5	4.3	0.74	5180	2.33	0.67
006045059-07	OBS	No	423.989823	376.038716	1410.9	10.834	13.9	6.8	0.74	5180	3.46	0.37
006045059-08	OBS	No	242.906579	317.858250	1133.3	4.500	12.7	-1.0	0.74	5180	2.45	0.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006045059-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-03	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV
006045059-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
006045059-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-06	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS
006045059-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
006045059-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

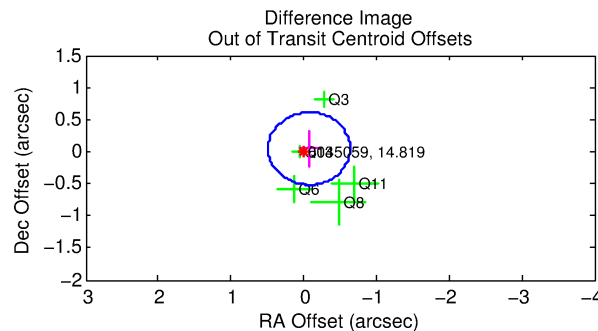
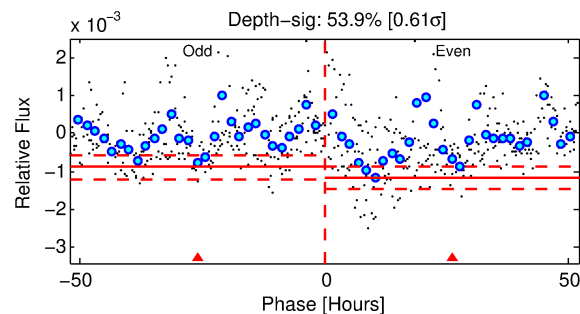
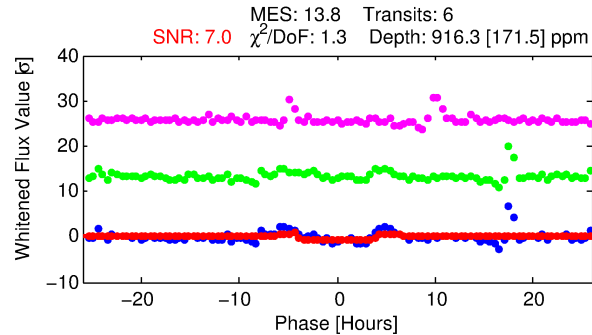
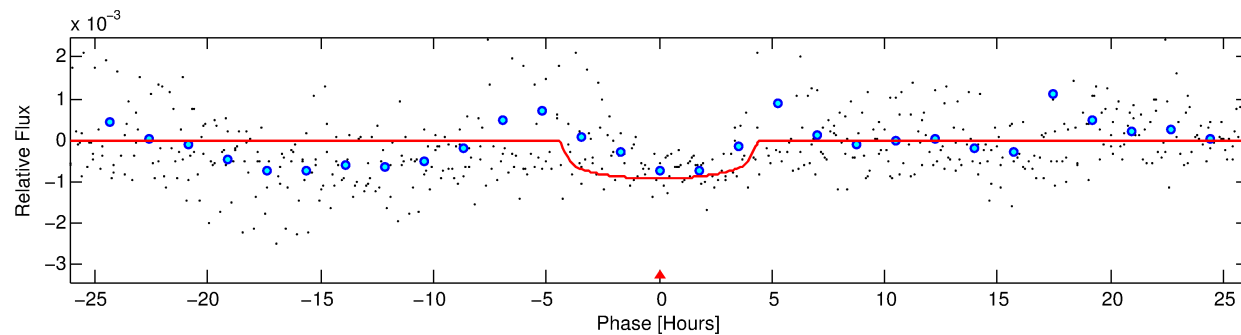
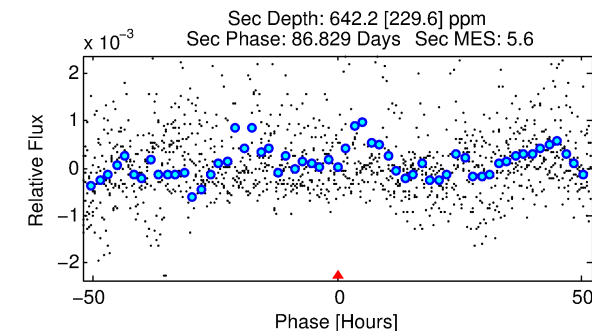
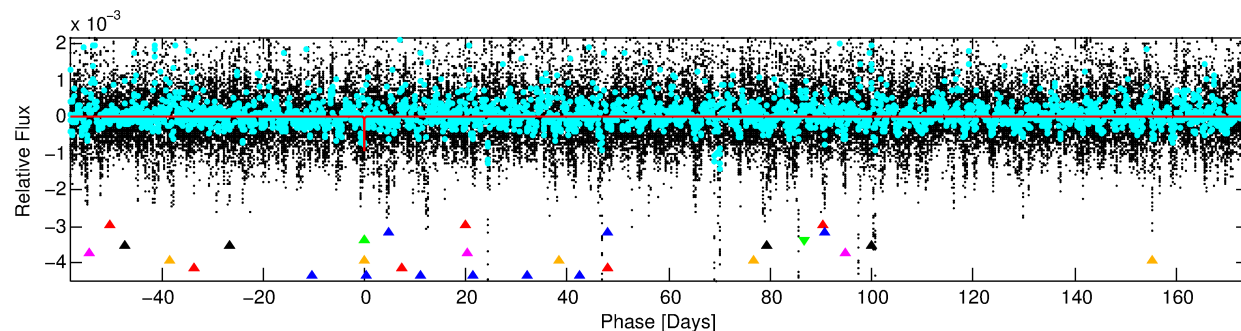
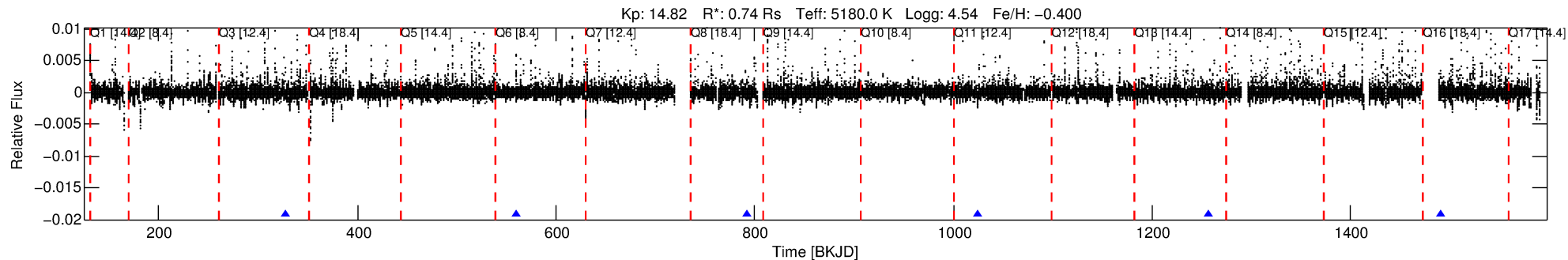
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006045059-03

No Significant Match Found

DV One-Page Summary

KIC: 6045059 Candidate: 3 of 8 Period: 232.341 d



DV Fit Results:

Period = 232.34137 [0.00401] d
Epoch = 328.1450 [0.0119] BKJD
Rp/R* = 0.0283 [0.0194]
a/R* = 179.82 [462.83]
b = 0.53 [3.54]
Seff = 0.82 [0.16]
Teq = 243 [12] K
Rp = 2.29 [1.59] Re
a = 0.6577 [0.0673] AU
Ag = 29129.00 [41598.84] [0.70σ]
Teff = 4903 [1746] K [2.67σ]

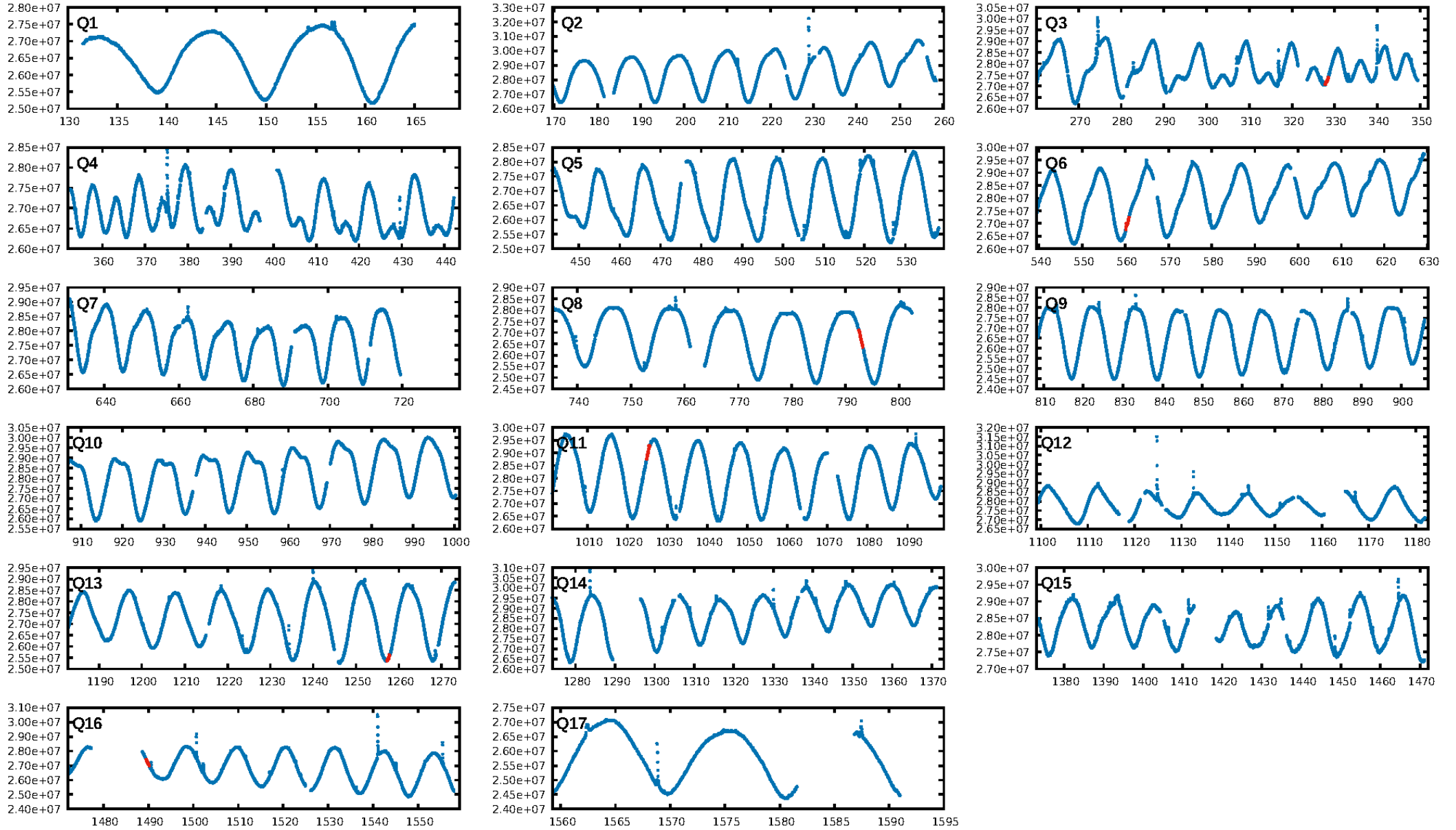
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [25.88σ]
ModelChiSquare2-sig: 70.2%
ModelChiSquareGof-sig: 99.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 1.616
Centroid-sig: 1.4%
Centroid-so: 1.602 arcsec [2.23σ]
OotOffset-rm: 0.085 arcsec [0.45σ]
KicOffset-rm: 0.162 arcsec [0.86σ]
OotOffset-st: 1/2/1/1 [5]
KicOffset-st: 1/2/1/1 [5]
DiffImageQuality-fgm: 0.60 [3/5]
DiffImageOverlap-fno: 0.60 [3/5]

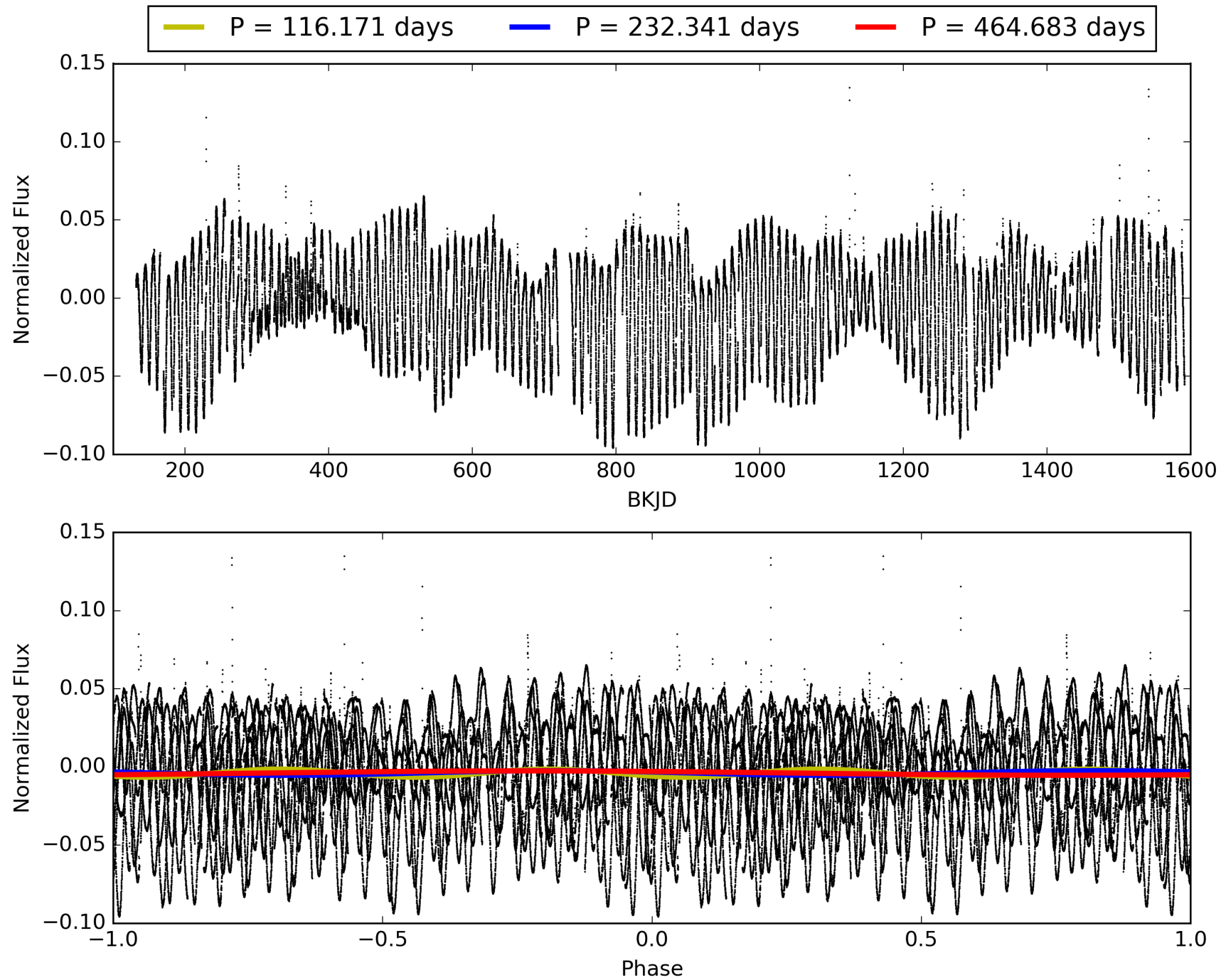
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:19:13 Z

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

TCE 006045059-03, PDC Light Curves

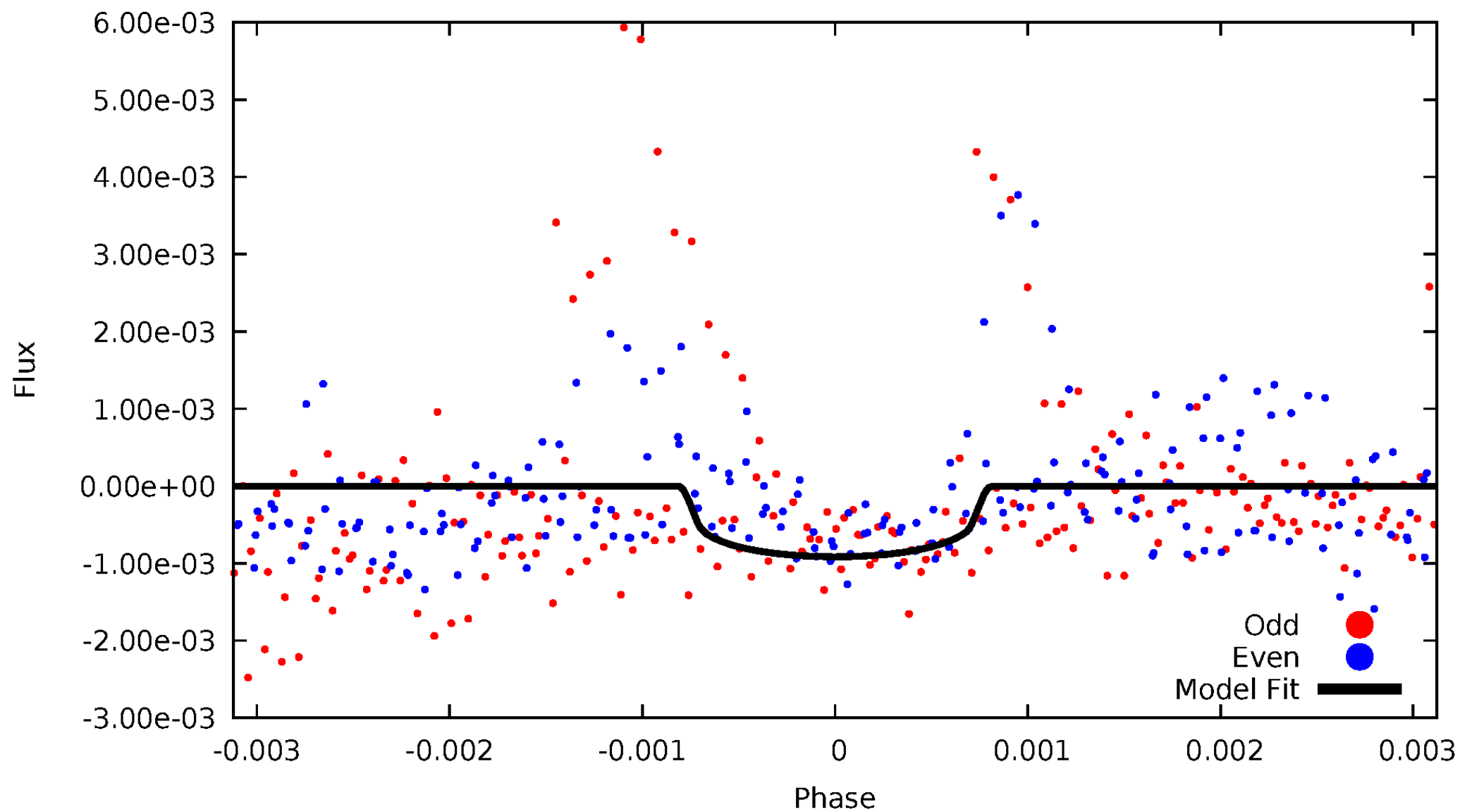


TCE 006045059-03



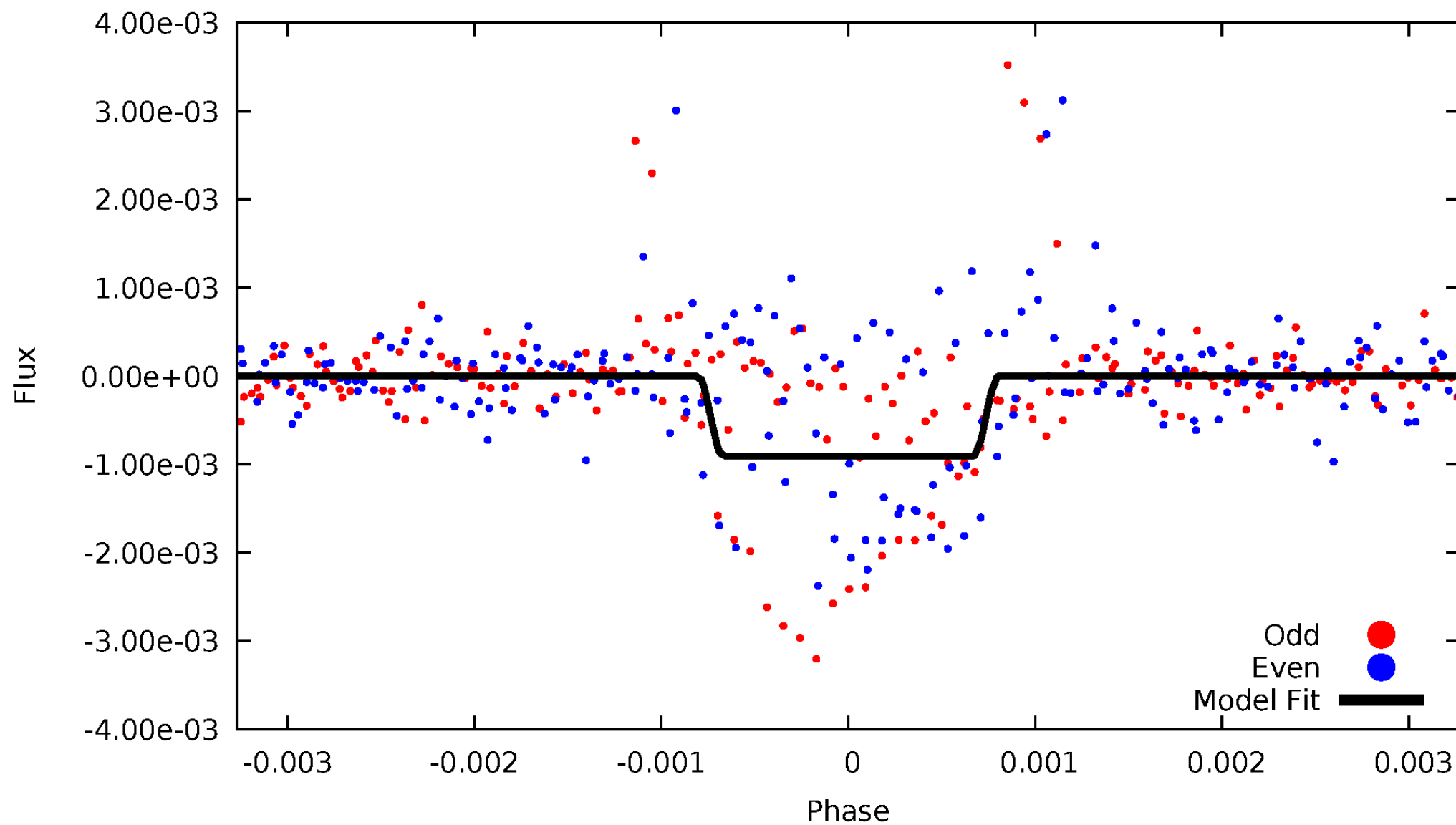
DV Odd/Even

TCE 006045059-03



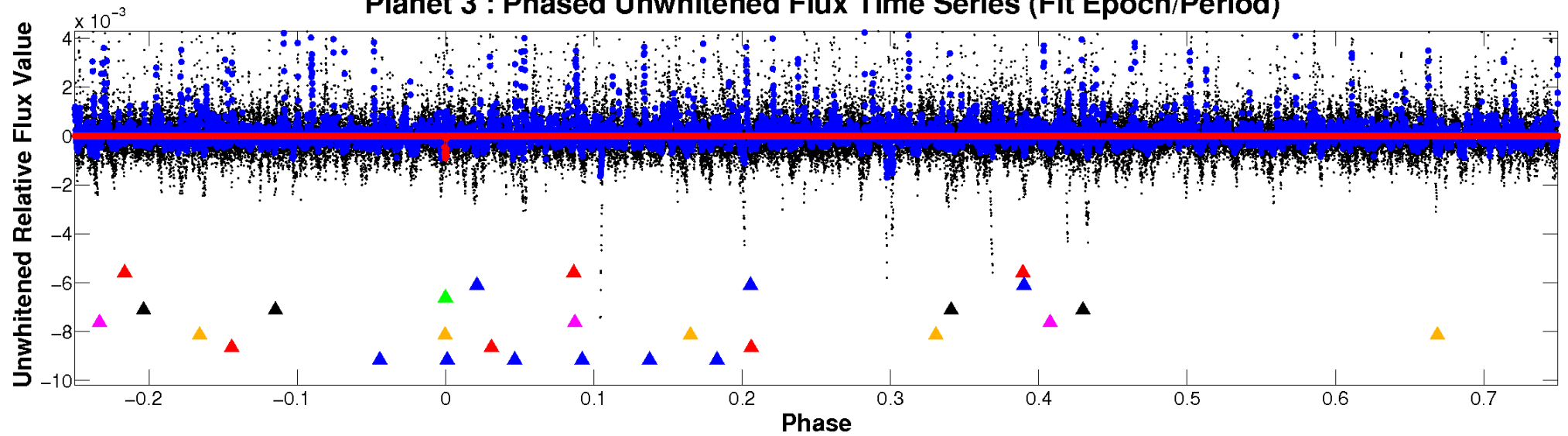
ALT Odd/Even

TCE 006045059-03

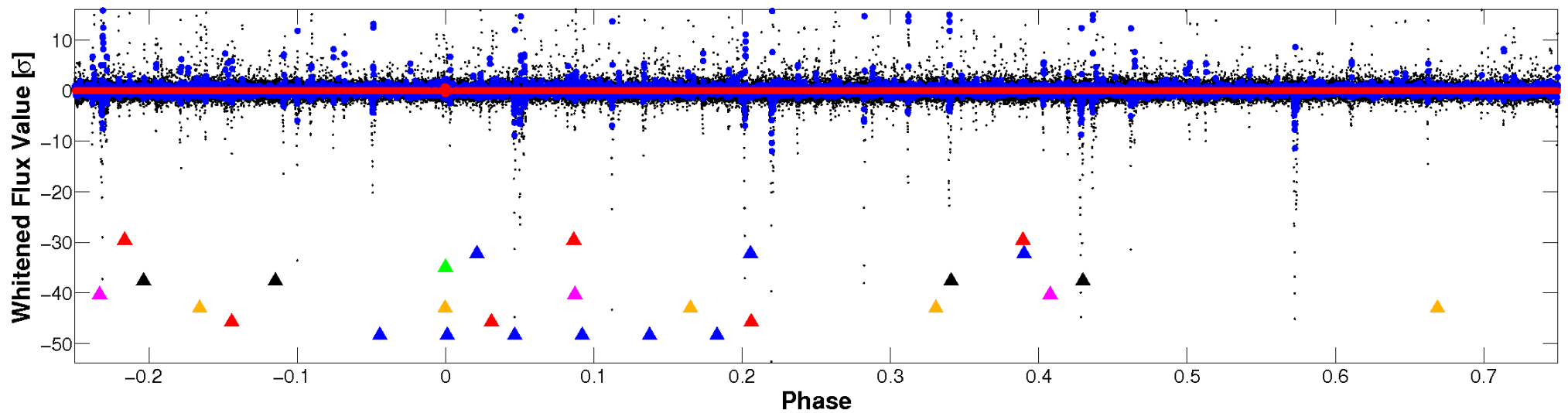


Non-Whitened Vs. Whitened Light Curve

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

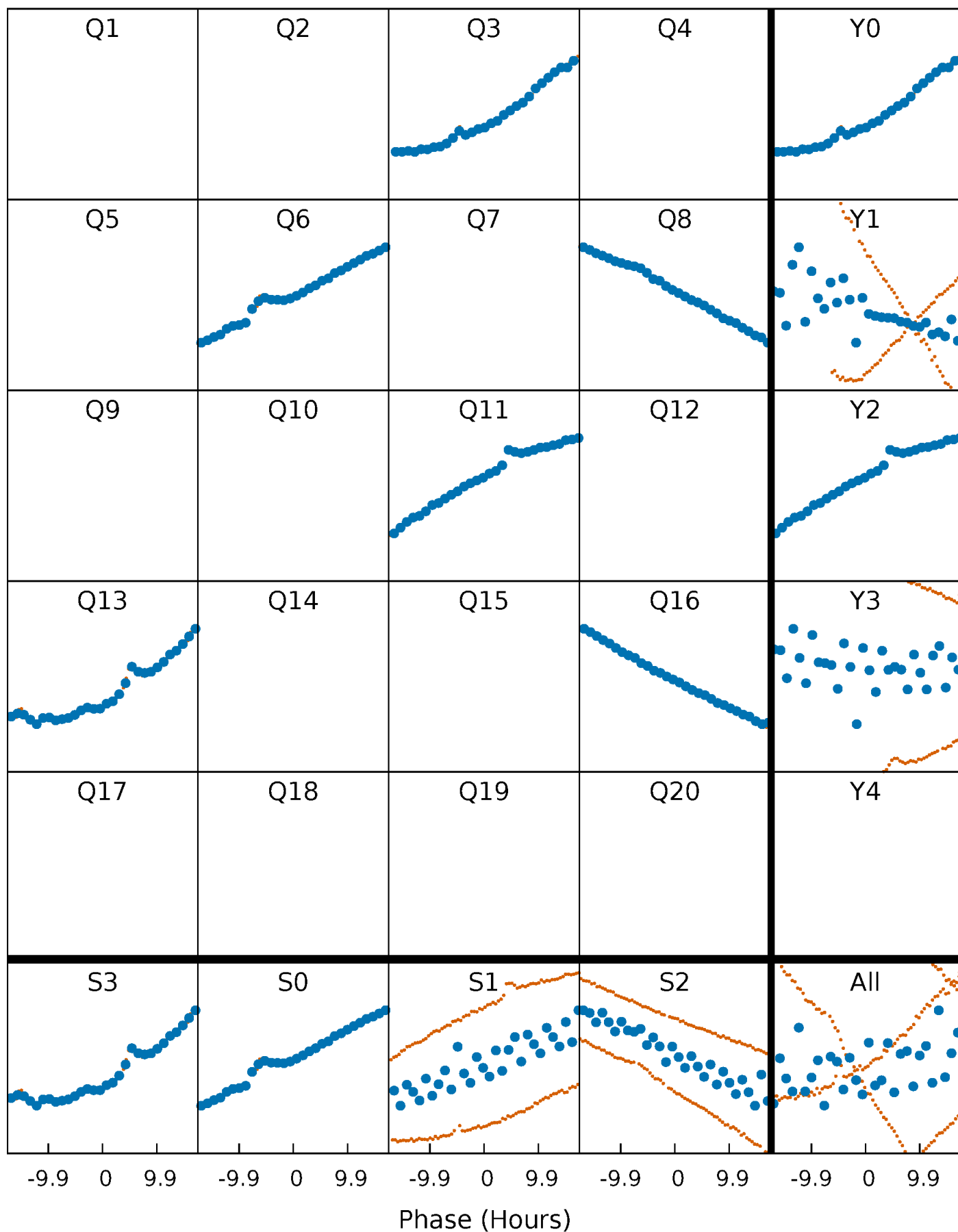


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



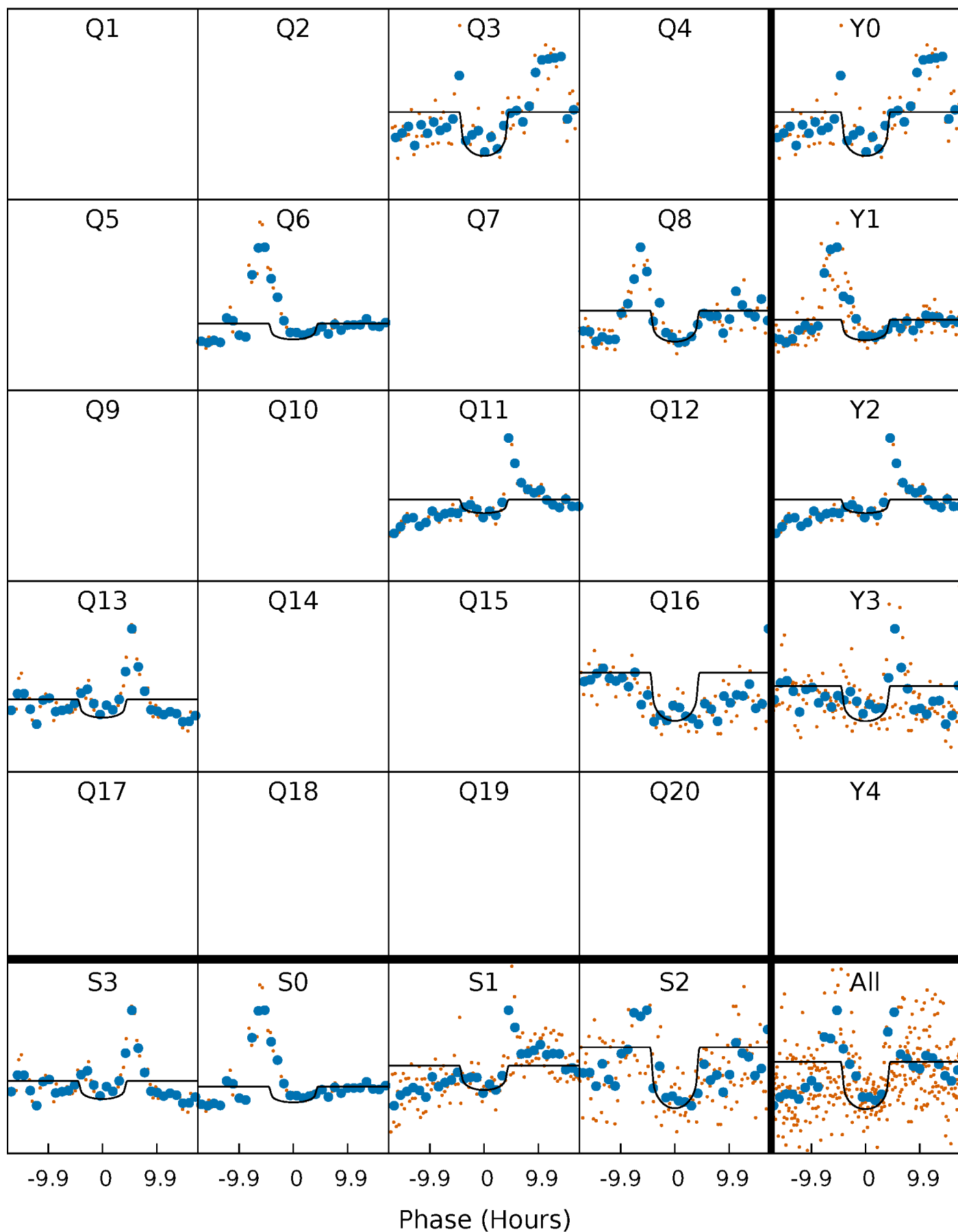
PDC Quarter-Phased Transit Curves

TCE 006045059-03 P=232.341369 Days $T_0=328.144983$ (BKJD)



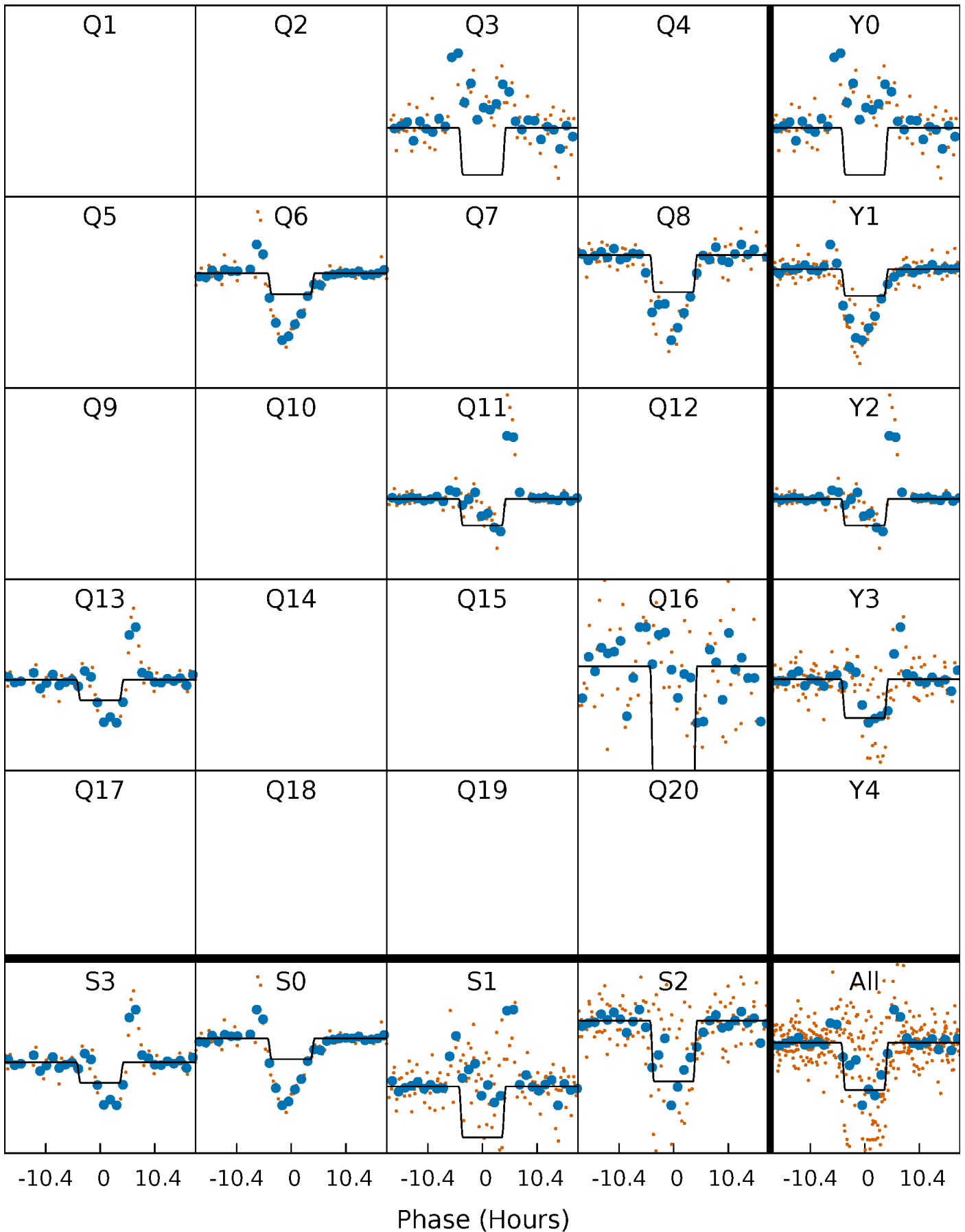
DV Quarter-Phased Transit Curves

TCE 006045059-03 P=232.341369 Days $T_0=328.144983$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

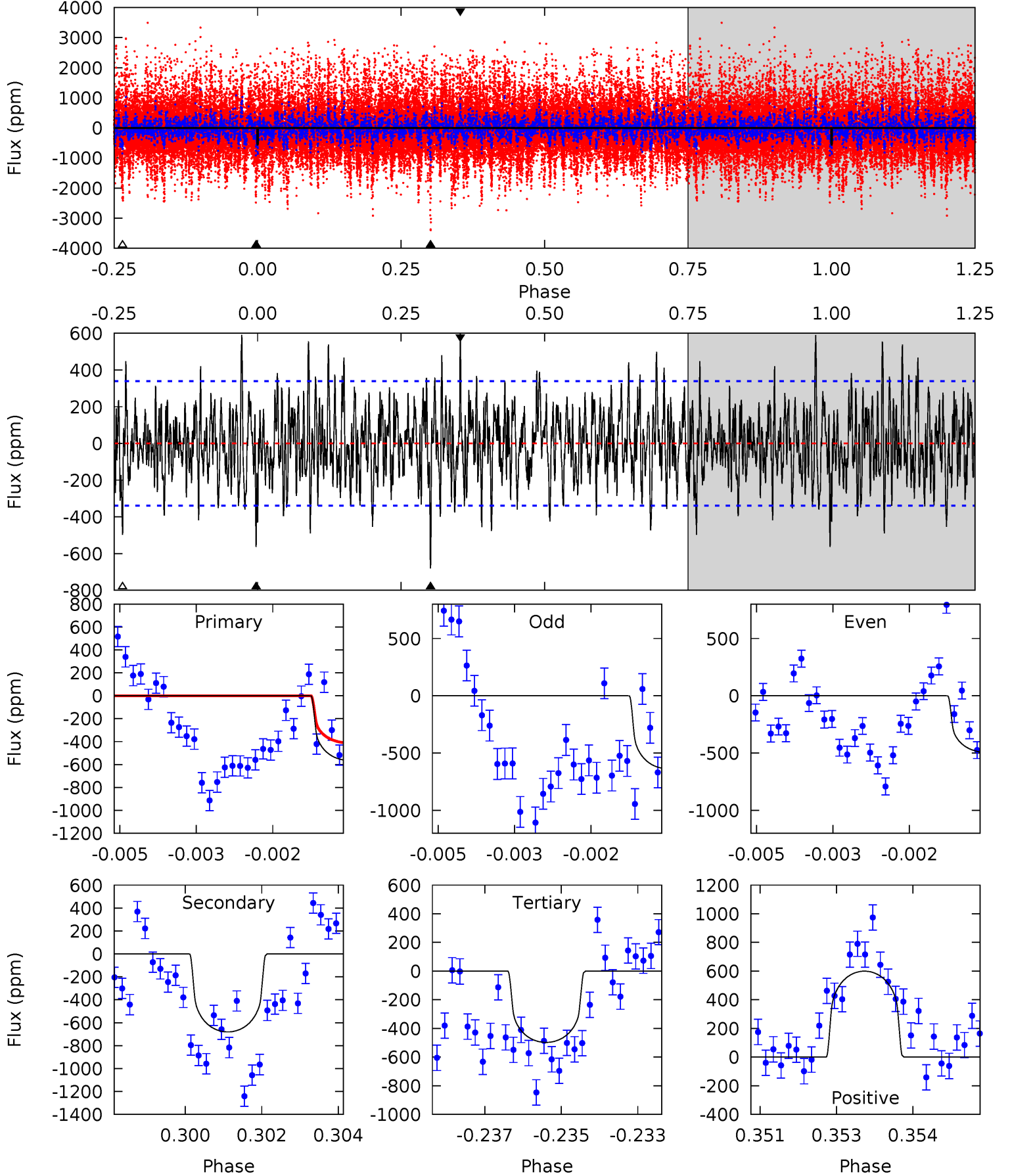
TCE 006045059-03 $P=232.322766$ Days $T_0=328.173457$ (BKJD)



DV Model-Shift Uniqueness Test

006045059-03, P = 232.341369 Days, E = 95.803614 Days

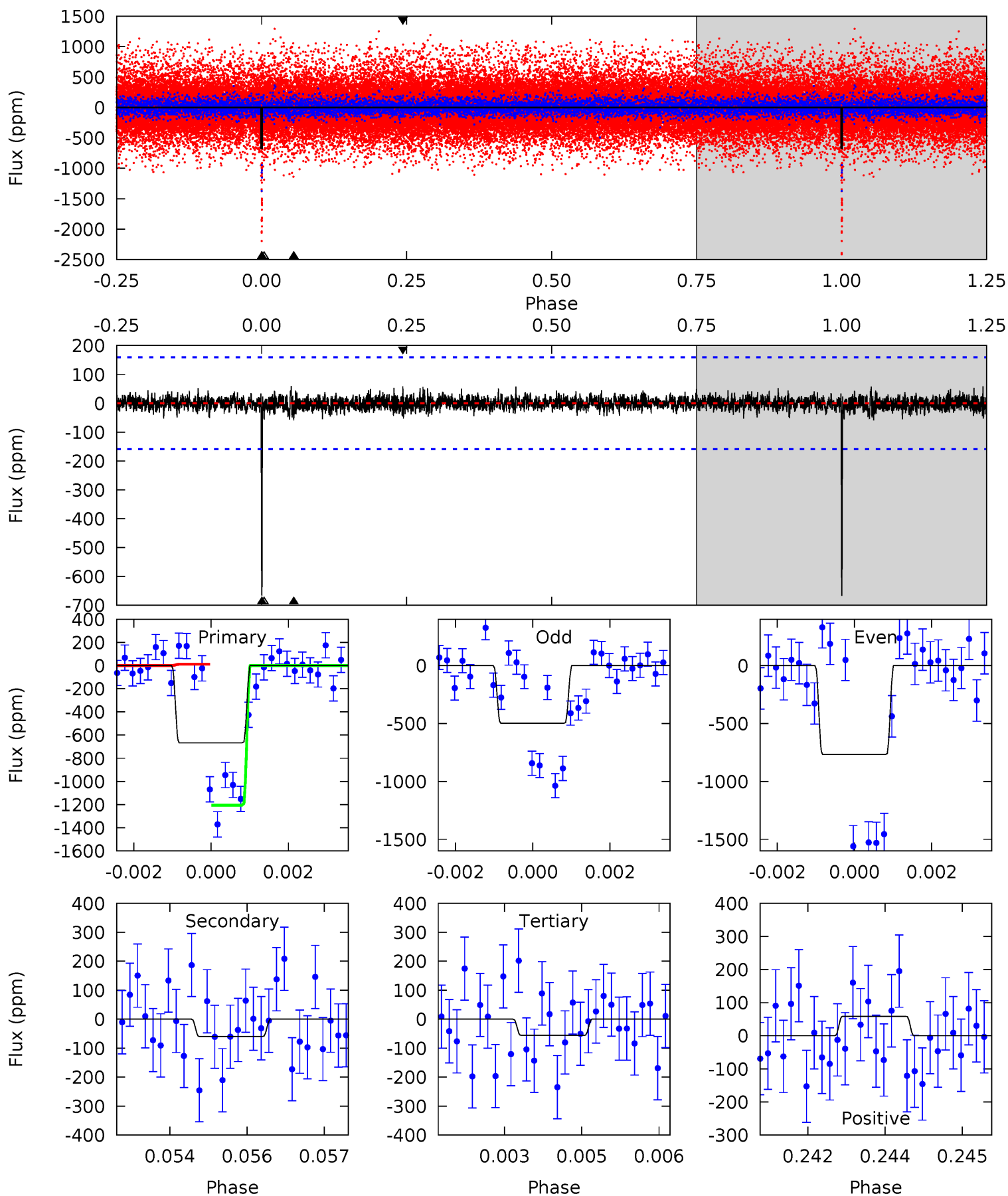
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.92	10.8	7.87	9.48	5.36	3.15	2.65	1.05	-0.56	2.90	1.28	1.09	0.79	0.47	2.38



Alt Model-Shift Uniqueness Test

006045059-03, $P = 232.322766$ Days, $E = 95.850691$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.5	2.01	1.88	1.97	5.37	3.16	0.48	20.6	20.5	0.13	0.04	4.41	1.04	0.08	19.9



Stellar Parameters For KIC 006045059

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5180^{+154}_{-154}	$4.544^{+0.090}_{-0.060}$	$-0.400^{+0.350}_{-0.300}$	$0.742^{+0.076}_{-0.084}$	$0.702^{+0.095}_{-0.044}$	$2.426^{+0.873}_{-0.487}$
	+3%/-3%	+2%/-1%	+87%/-75%	+10%/-11%	+14%/-6%	+36%/-20%
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 006045059-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-680 ± 63	$2.39^{+1.39}_{-1.27}$	338^{+14}_{-14}	4920^{+2254}_{-846}	$28895^{+104671}_{-17522}$
Alt.	-60 ± 30	$2.47^{+1.60}_{-1.33}$	338^{+13}_{-13}	3117^{+970}_{-451}	2120^{+8640}_{-1470}

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 $A_{obs} \gg 1.0$

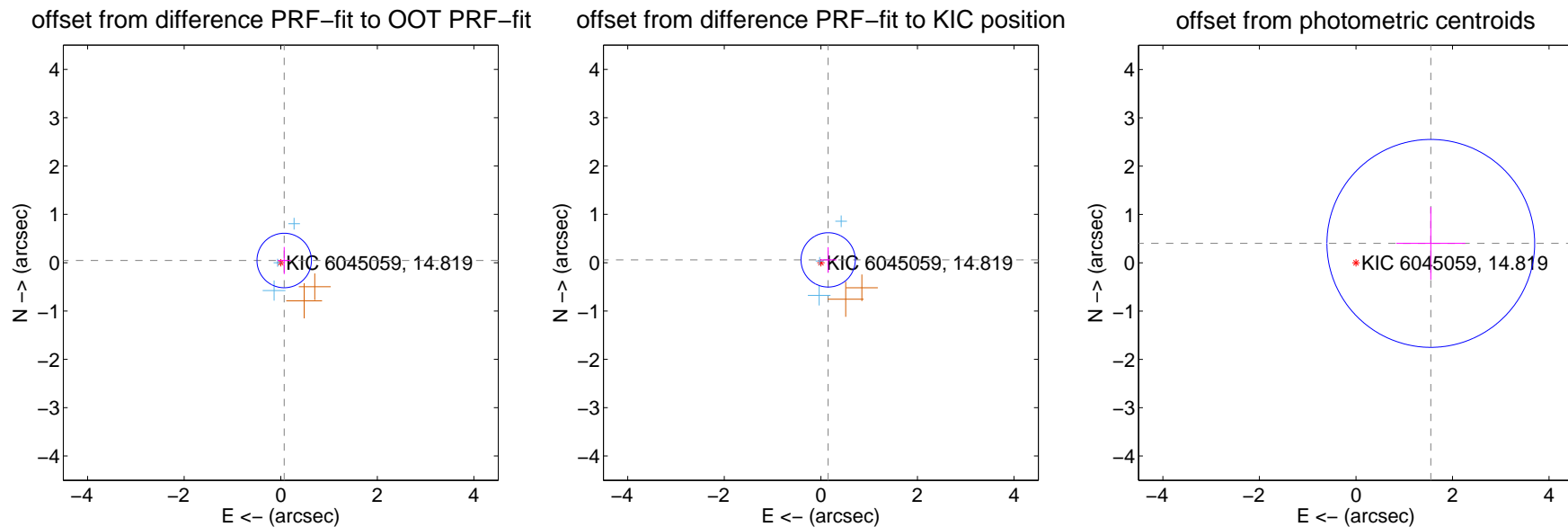
DV Centroid Data

Supplemental centroid analysis for 006045059-03. Kepler magnitude: 14.82. Transit SNR 7.01

There are 3 quarters with good PRF difference image offsets

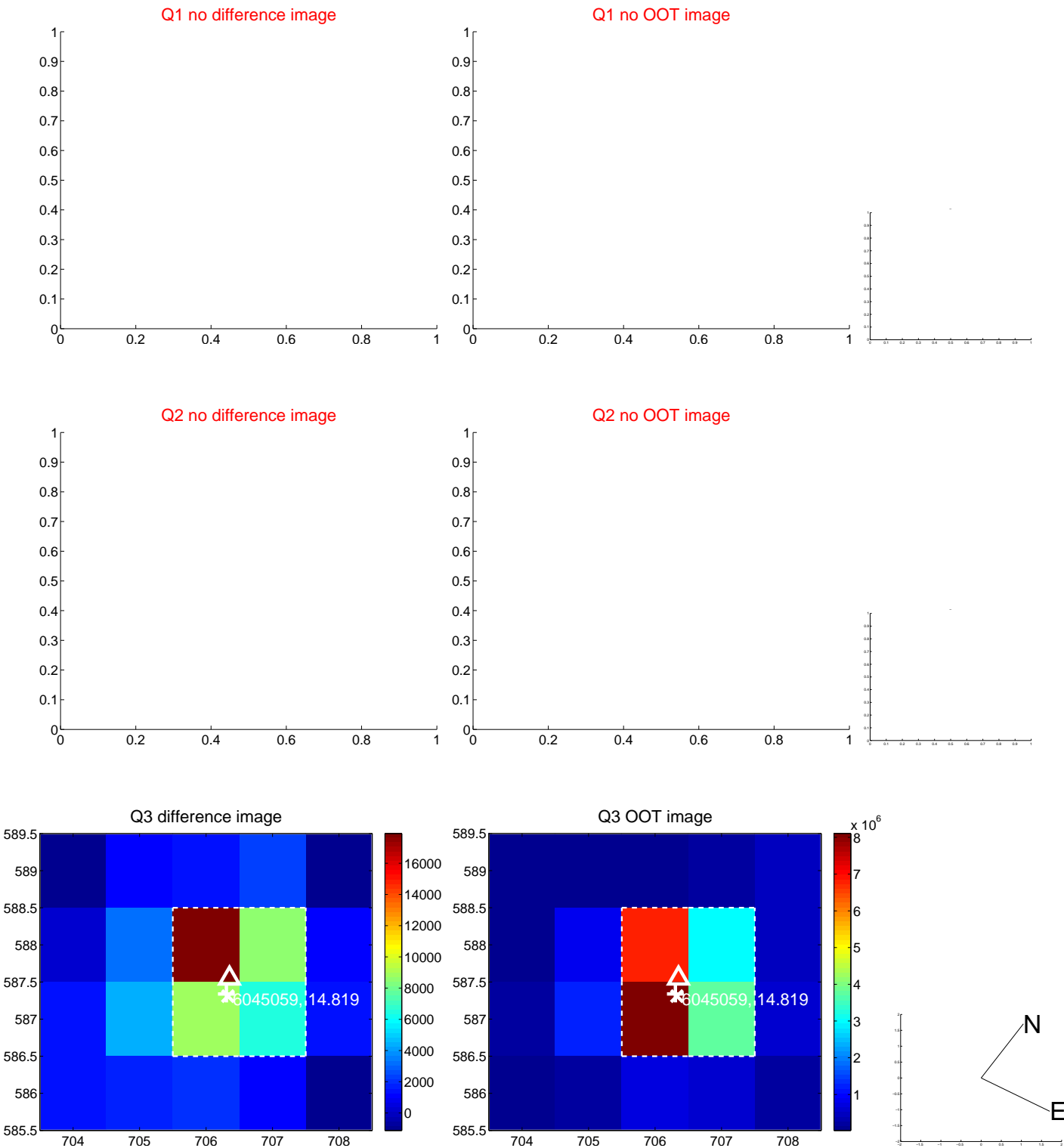
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.085 ± 0.188	0.45	-0.072 ± 0.135	0.045 ± 0.280
PRF-fit source offset from KIC position	0.162 ± 0.187	0.86	-0.151 ± 0.170	0.058 ± 0.264
photometric centroid source offset	1.60 ± 0.72	2.23	-1.55 ± 0.71	0.40 ± 0.75

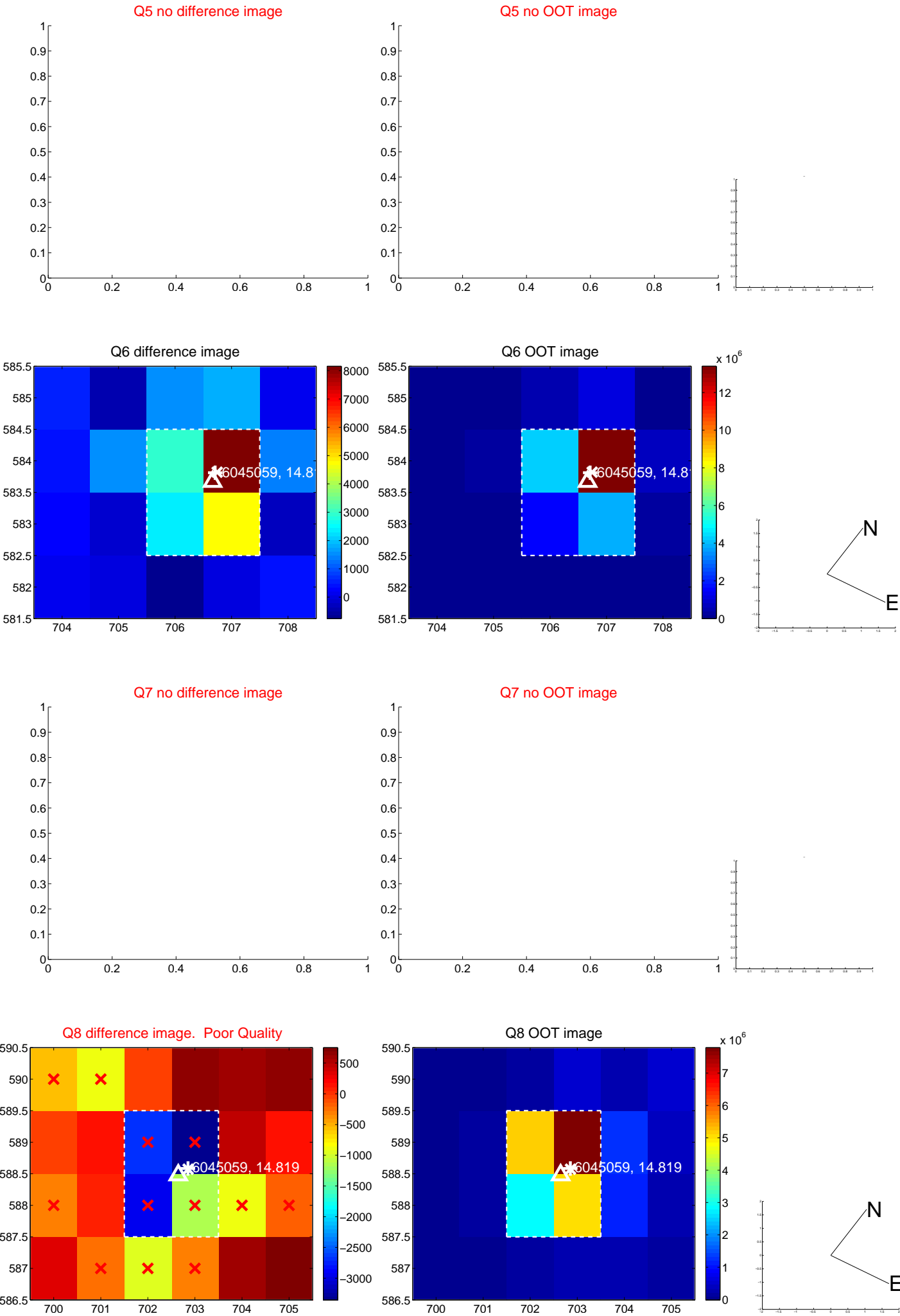


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



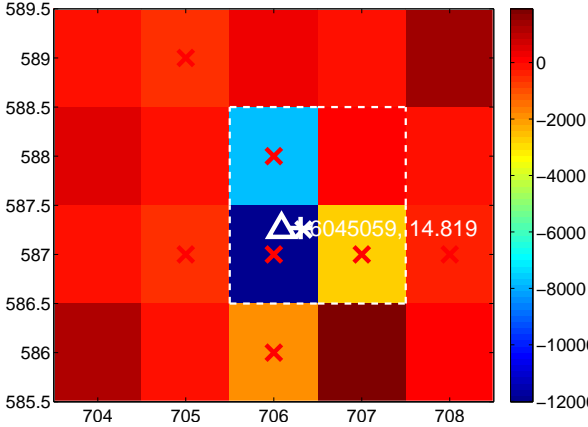
Q10 no difference image



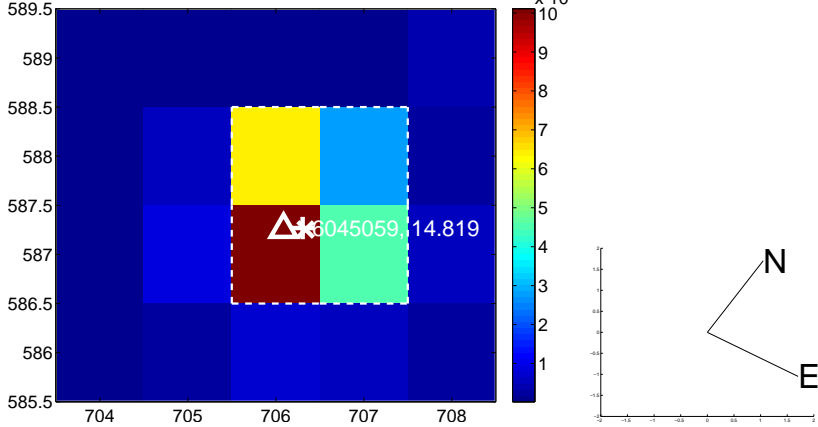
Q10 no OOT image



Q11 difference image. Poor Quality



Q11 OOT image



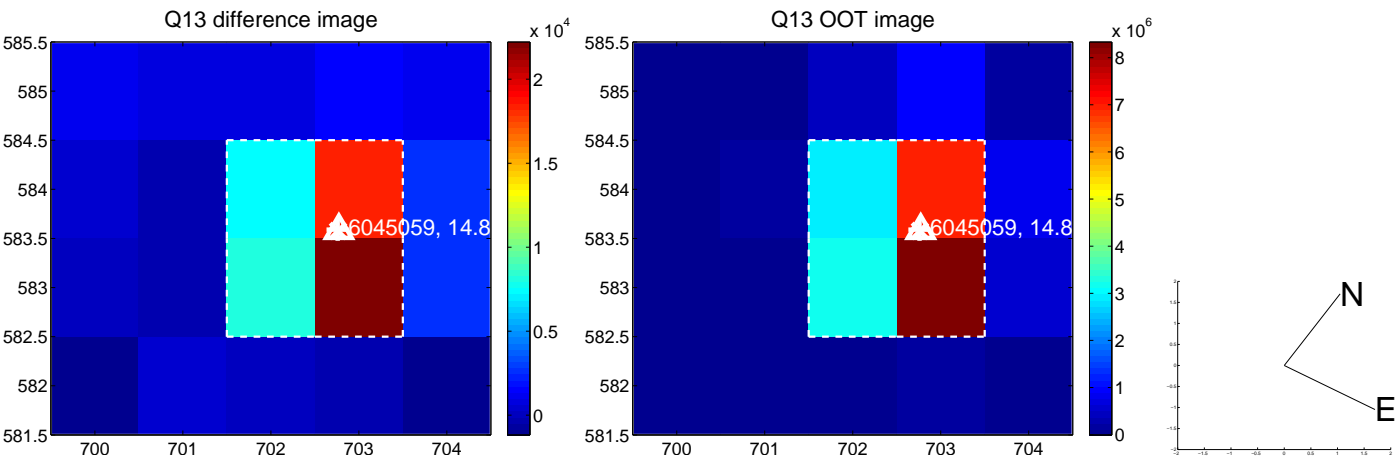
Q12 no difference image



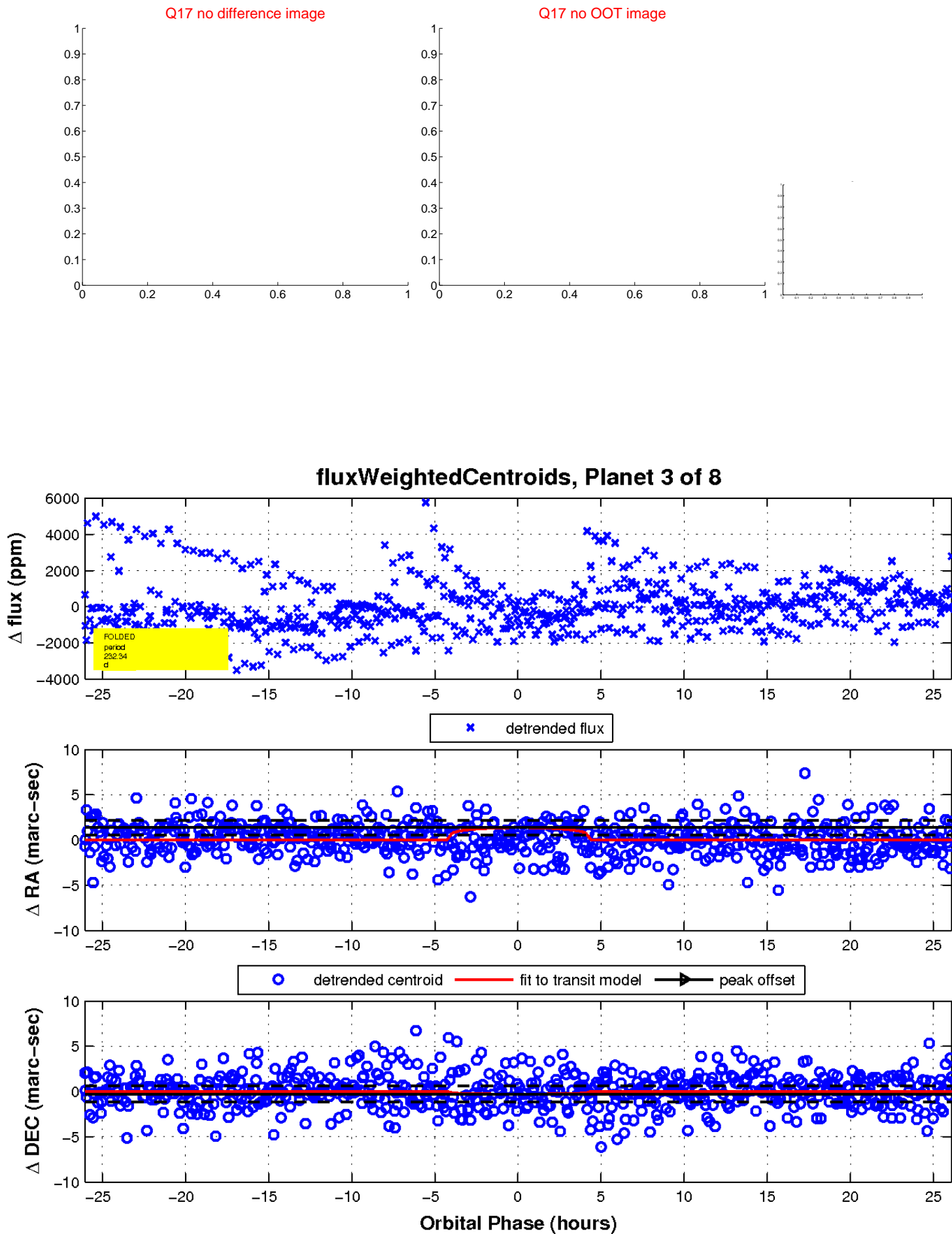
Q12 no OOT image



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

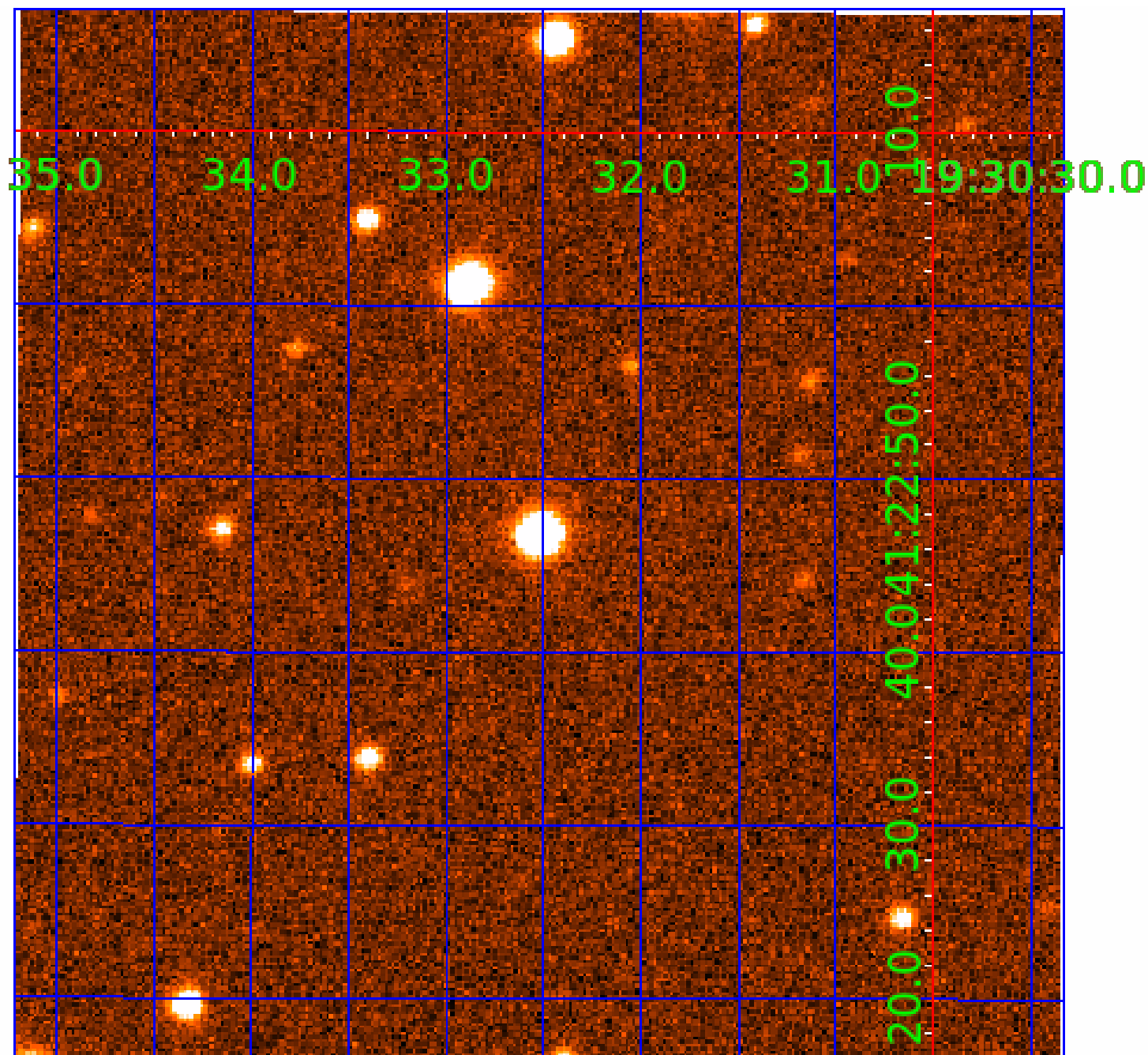


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006045059

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})
006045059-01	OBS	No	535.041533	277.884635	732.6	1.192	24.8	3.4	0.74	5180	2.14	0.27
006045059-02	OBS	No	507.533740	333.080100	2343.1	3.129	19.0	11.4	0.74	5180	3.56	0.29
006045059-03	OBS	No	232.341369	328.144983	916.3	8.703	13.8	7.0	0.74	5180	2.29	0.82
006045059-04	OBS	No	338.187712	428.001094	1201.5	5.861	13.1	7.1	0.74	5180	2.69	0.50
006045059-05	OBS	No	539.137994	273.954258	3665.6	9.437	18.1	13.0	0.74	5180	8.55	0.27
006045059-06	OBS	No	270.783200	251.192622	998.1	6.303	15.5	4.3	0.74	5180	2.33	0.67
006045059-07	OBS	No	423.989823	376.038716	1410.9	10.834	13.9	6.8	0.74	5180	3.46	0.37
006045059-08	OBS	No	242.906579	317.858250	1133.3	4.500	12.7	-1.0	0.74	5180	2.45	0.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006045059-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-03	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV
006045059-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
006045059-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-06	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS
006045059-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
006045059-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

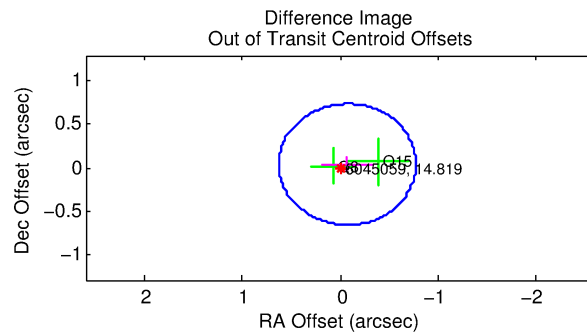
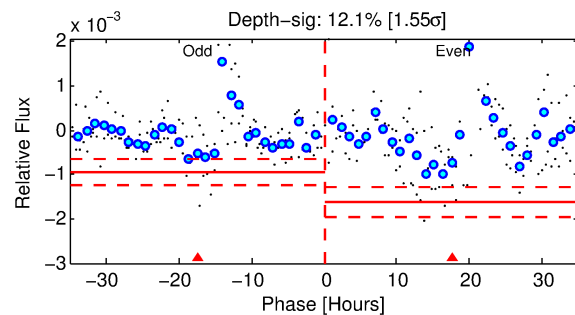
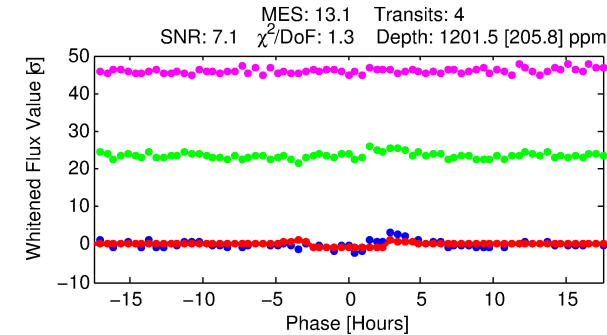
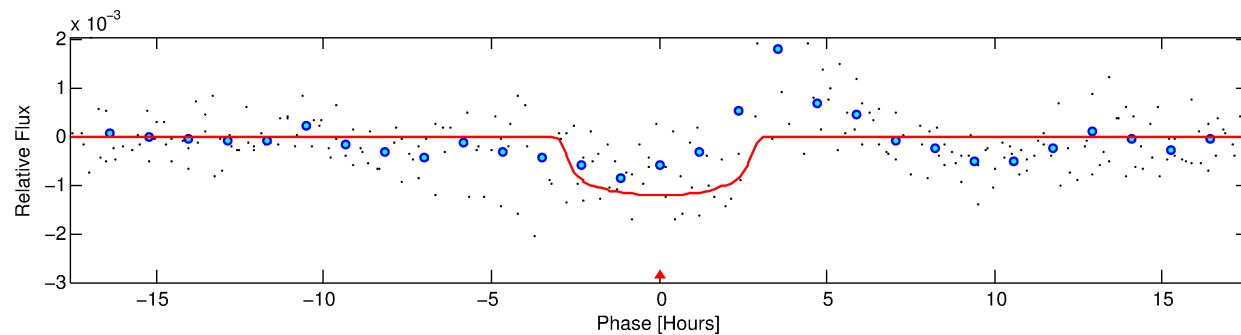
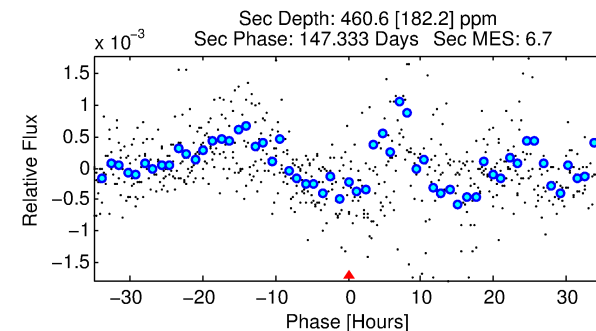
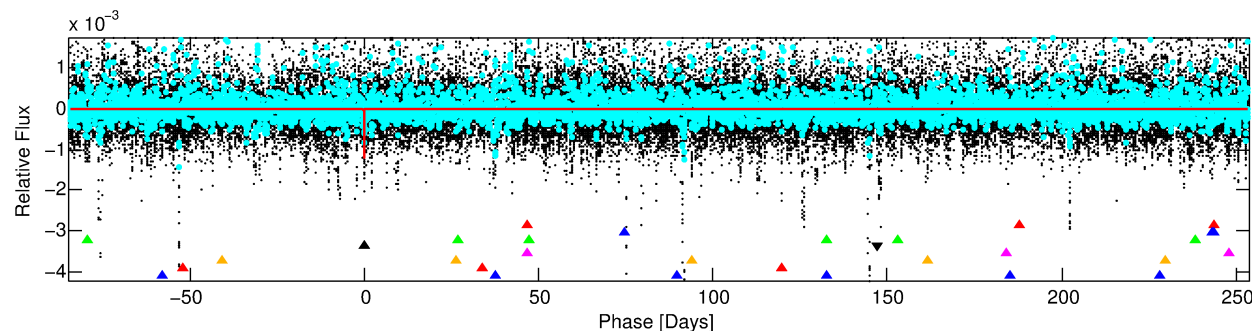
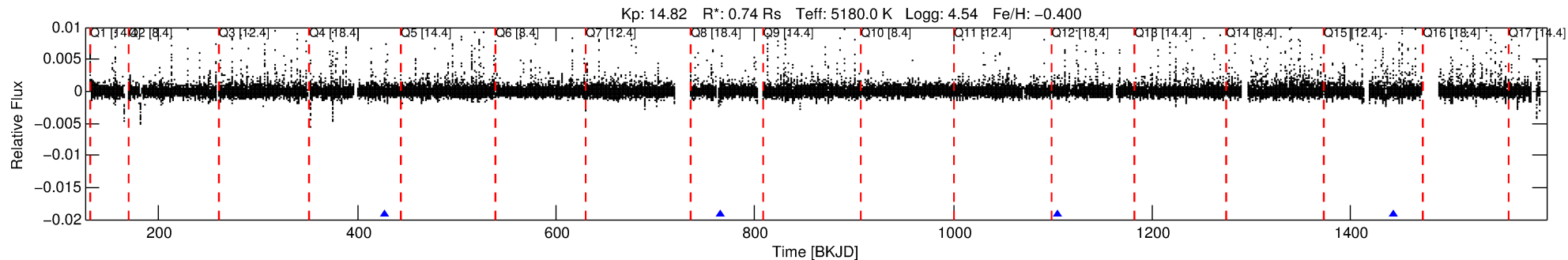
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006045059-04

No Significant Match Found

DV One-Page Summary

KIC: 6045059 Candidate: 4 of 8 Period: 338.188 d



DV Fit Results:

Period = 338.18771 [0.00439] d
Epoch = 428.0011 [0.0089] BKJD
Rp/R* = 0.0333 [0.0207]
a/R* = 356.06 [820.42]
b = 0.64 [2.12]
Seff = 0.50 [0.10]
Teq = 214 [11] K
Rp = 2.70 [1.70] Re
a = 0.8448 [0.0864] AU
Ag = 24897.62 [32733.45] [0.76σ]
Teff = 4159 [1363] K [2.89σ]

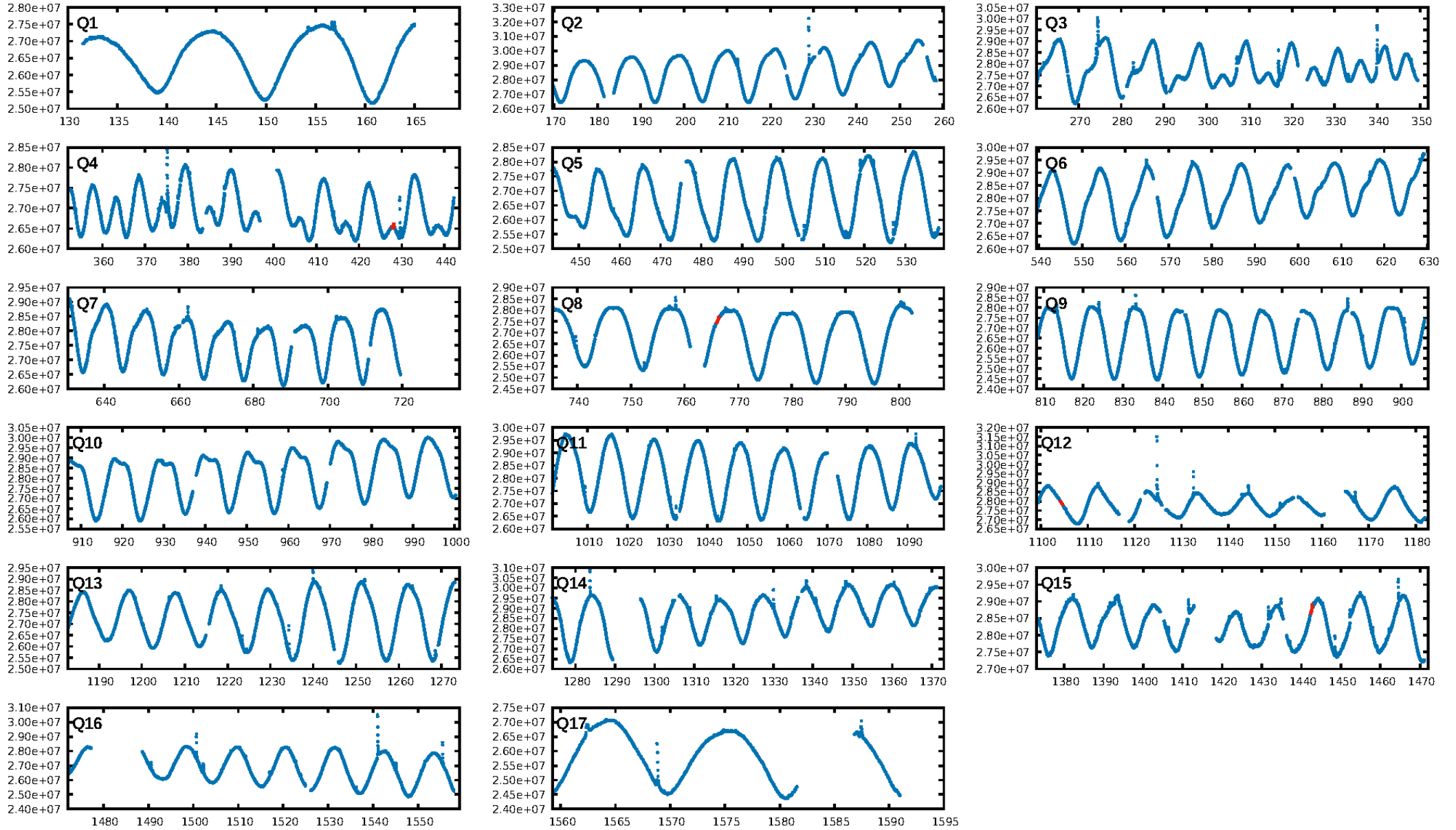
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [187.96σ]
LongPeriod-sig: 100.0% [167.18σ]
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 86.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.211
Centroid-sig: 3.4%
Centroid-so: 1.247 arcsec [1.54σ]
OotOffset-rm: 0.081 arcsec [0.35σ]
KicOffset-rm: 0.150 arcsec [0.50σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [3/3]

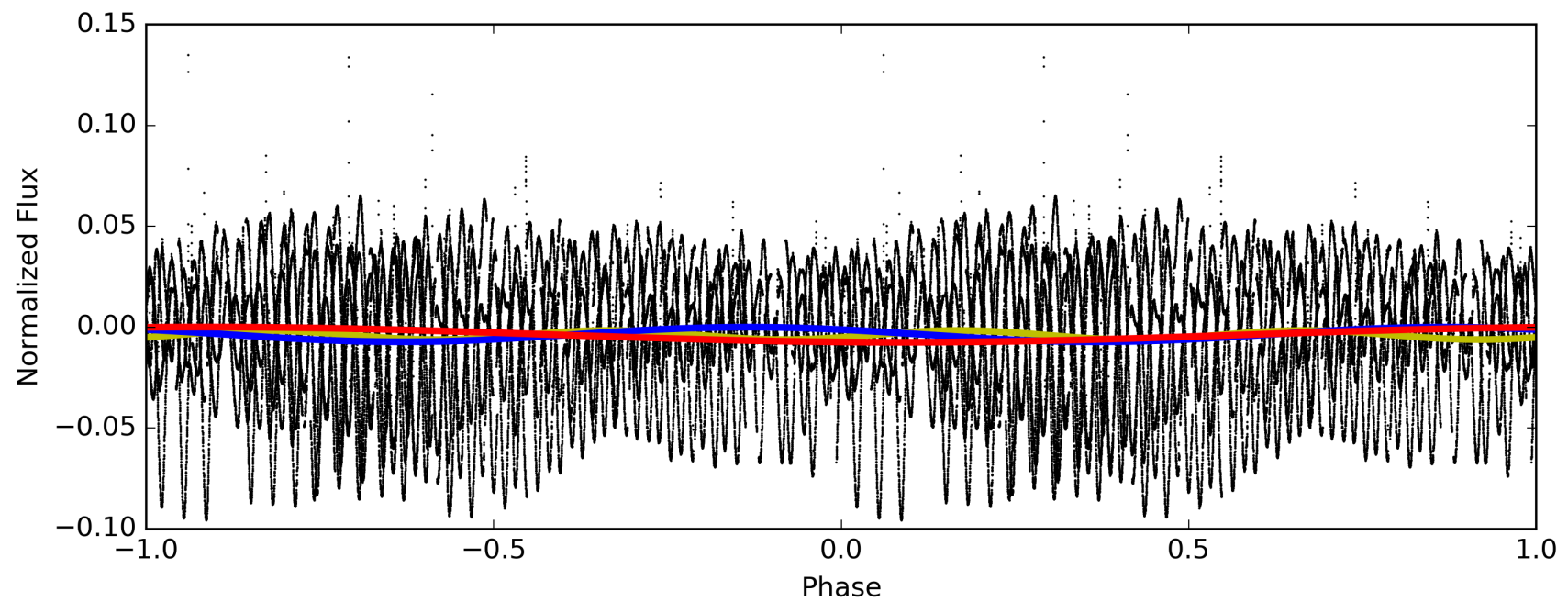
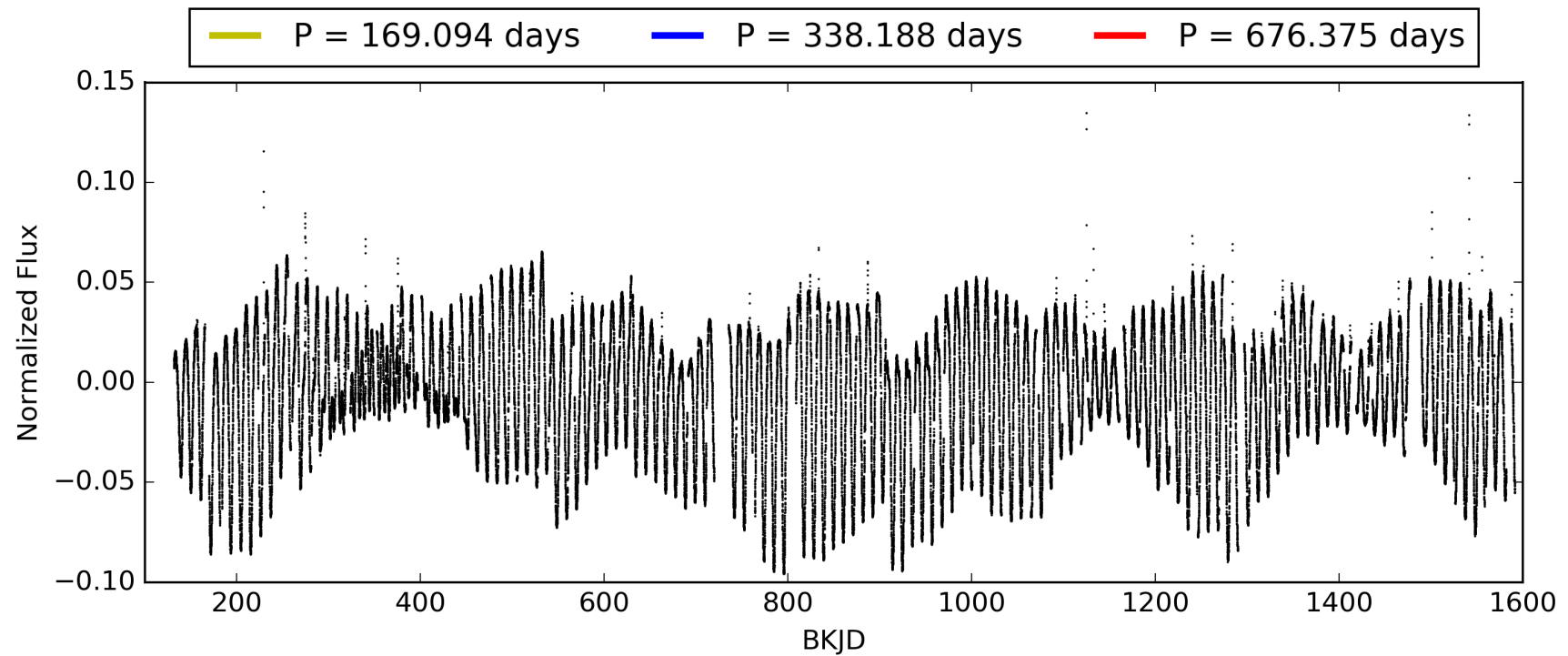
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:19:24 Z

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

TCE 006045059-04, PDC Light Curves

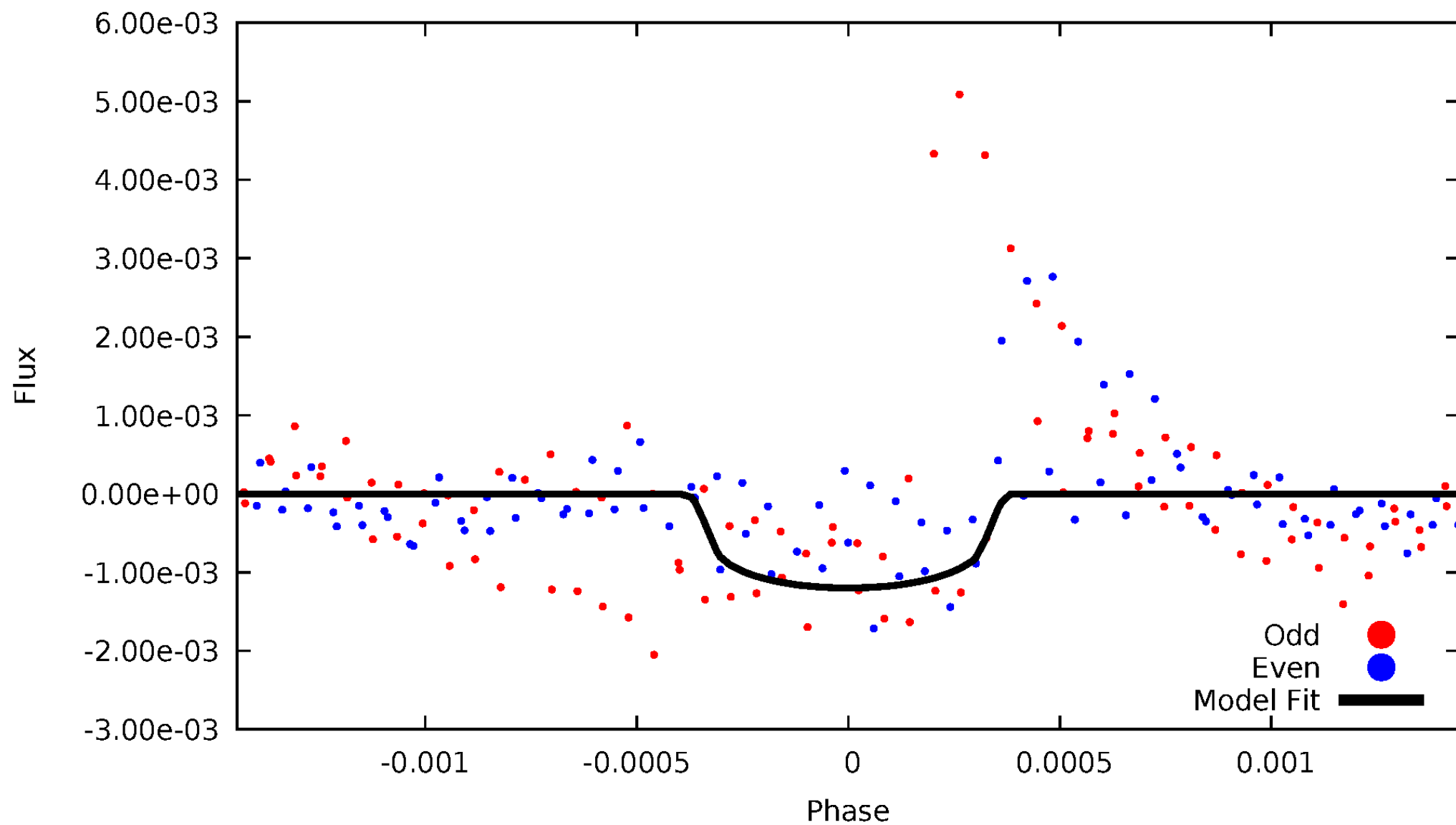


TCE 006045059-04



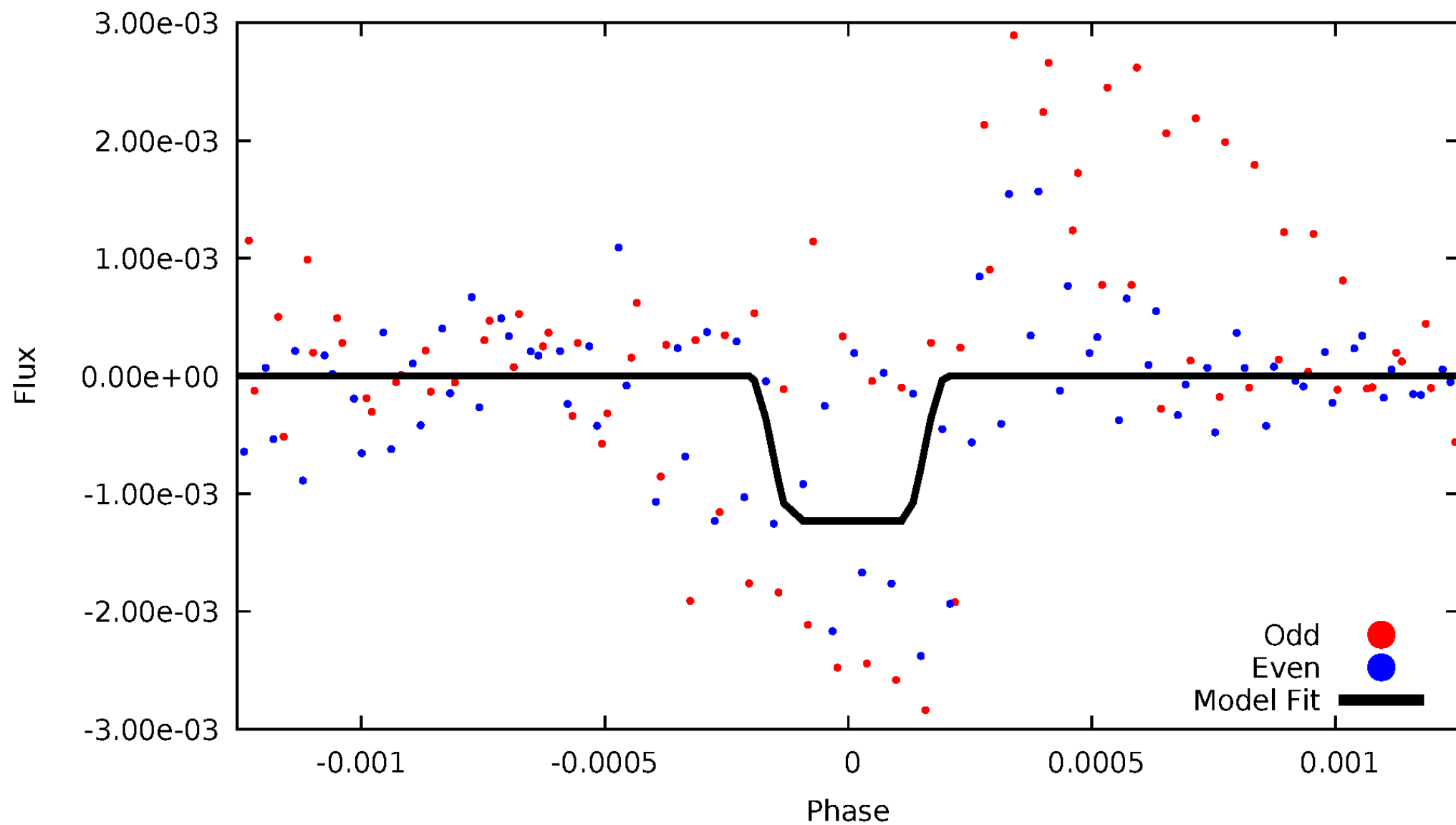
DV Odd/Even

TCE 006045059-04



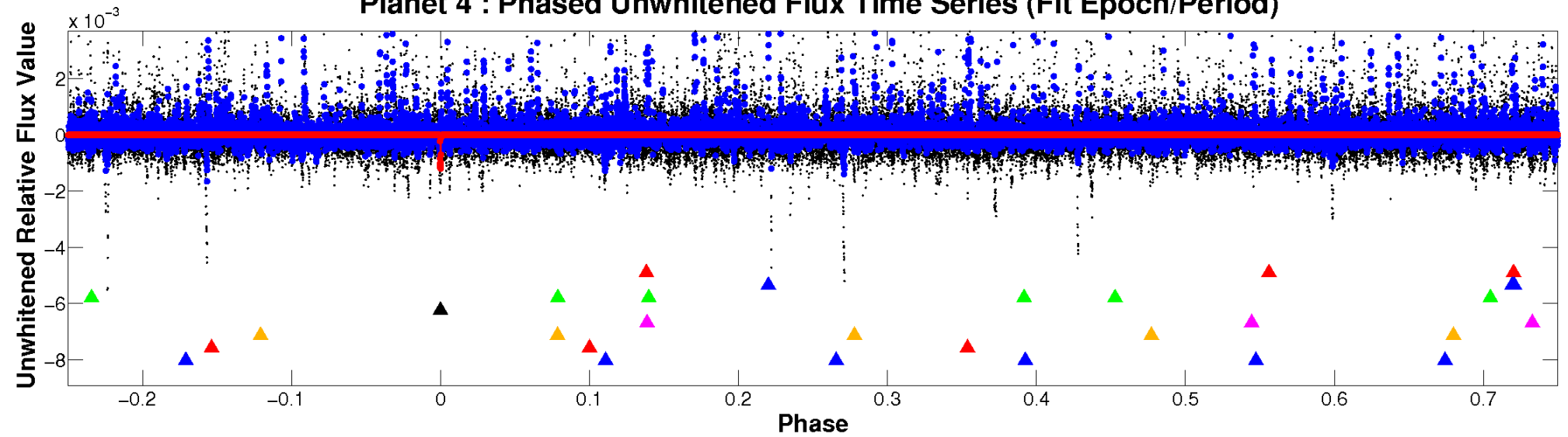
ALT Odd/Even

TCE 006045059-04

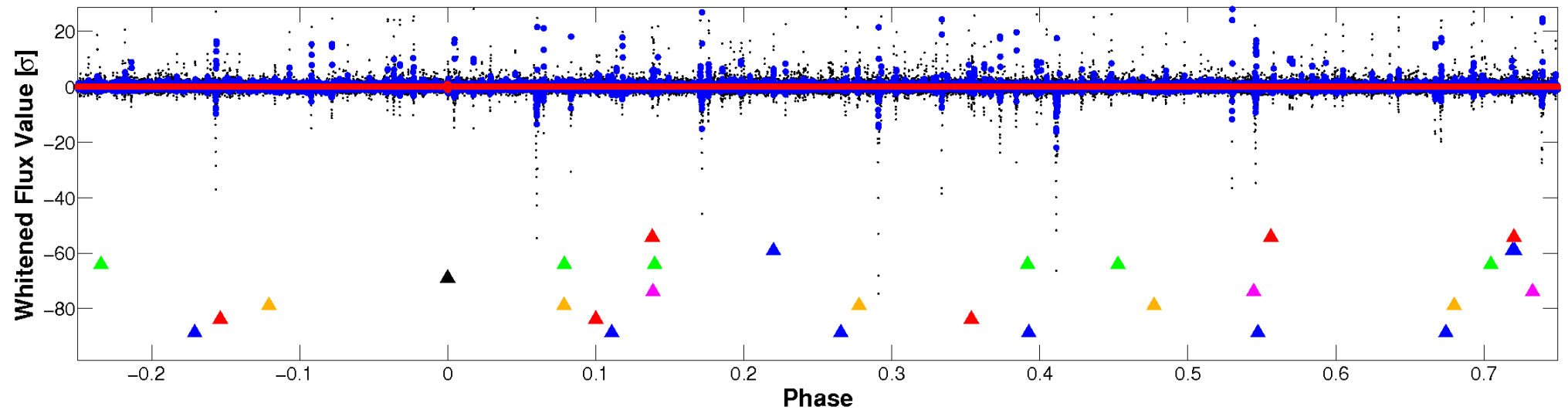


Non-Whitened Vs. Whitened Light Curve

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

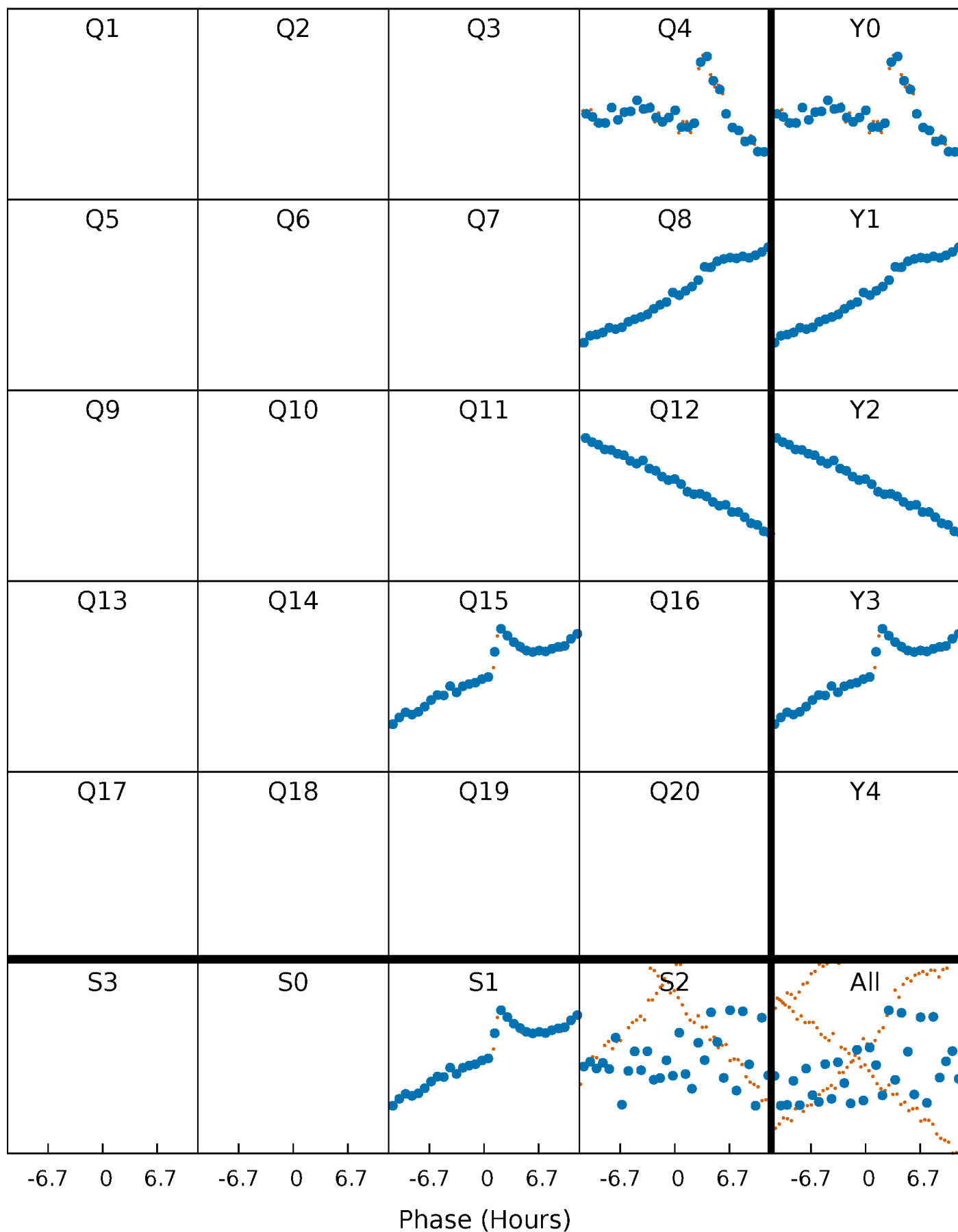


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



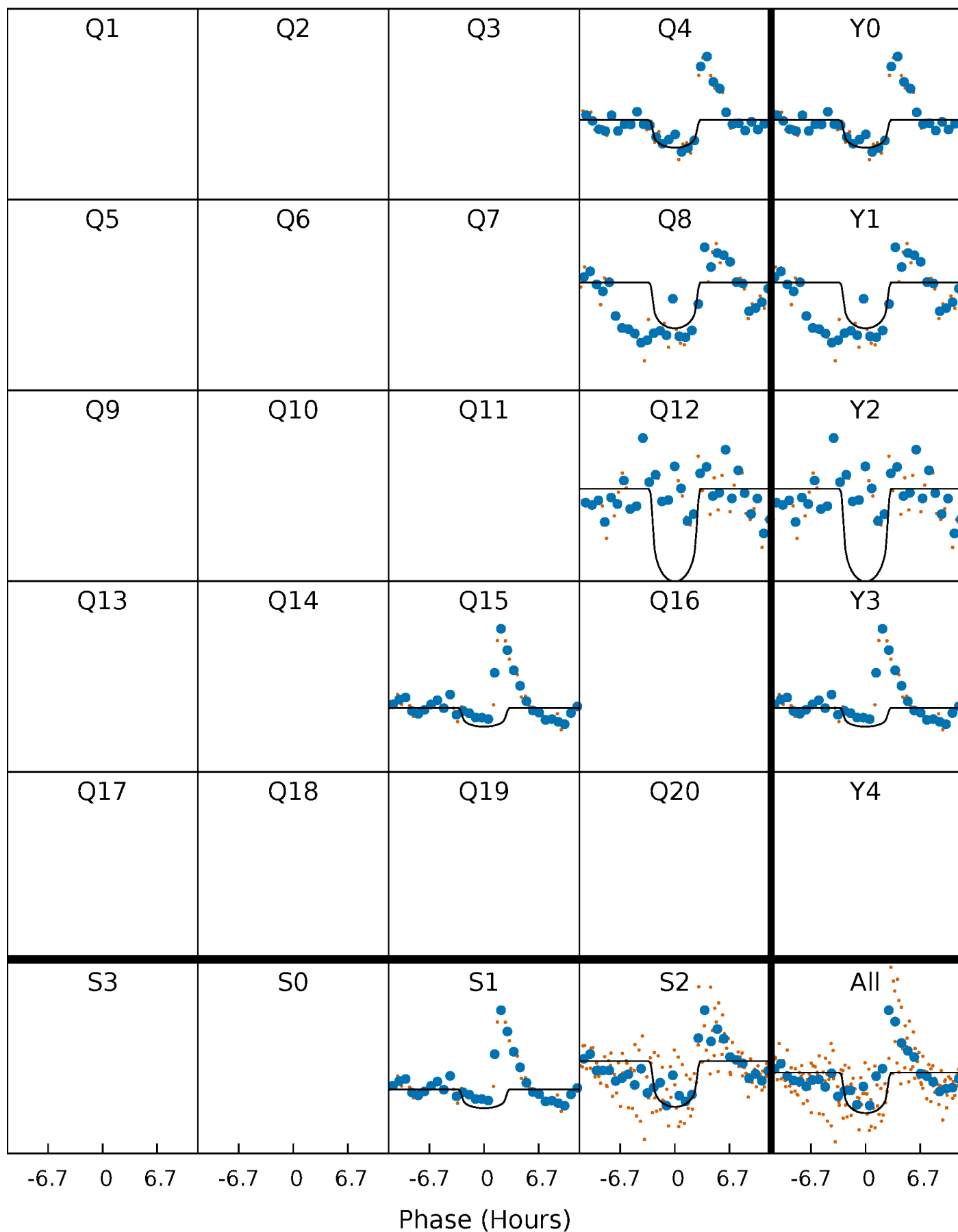
PDC Quarter-Phased Transit Curves

TCE 006045059-04 P=338.187712 Days $T_0=428.001094$ (BKJD)



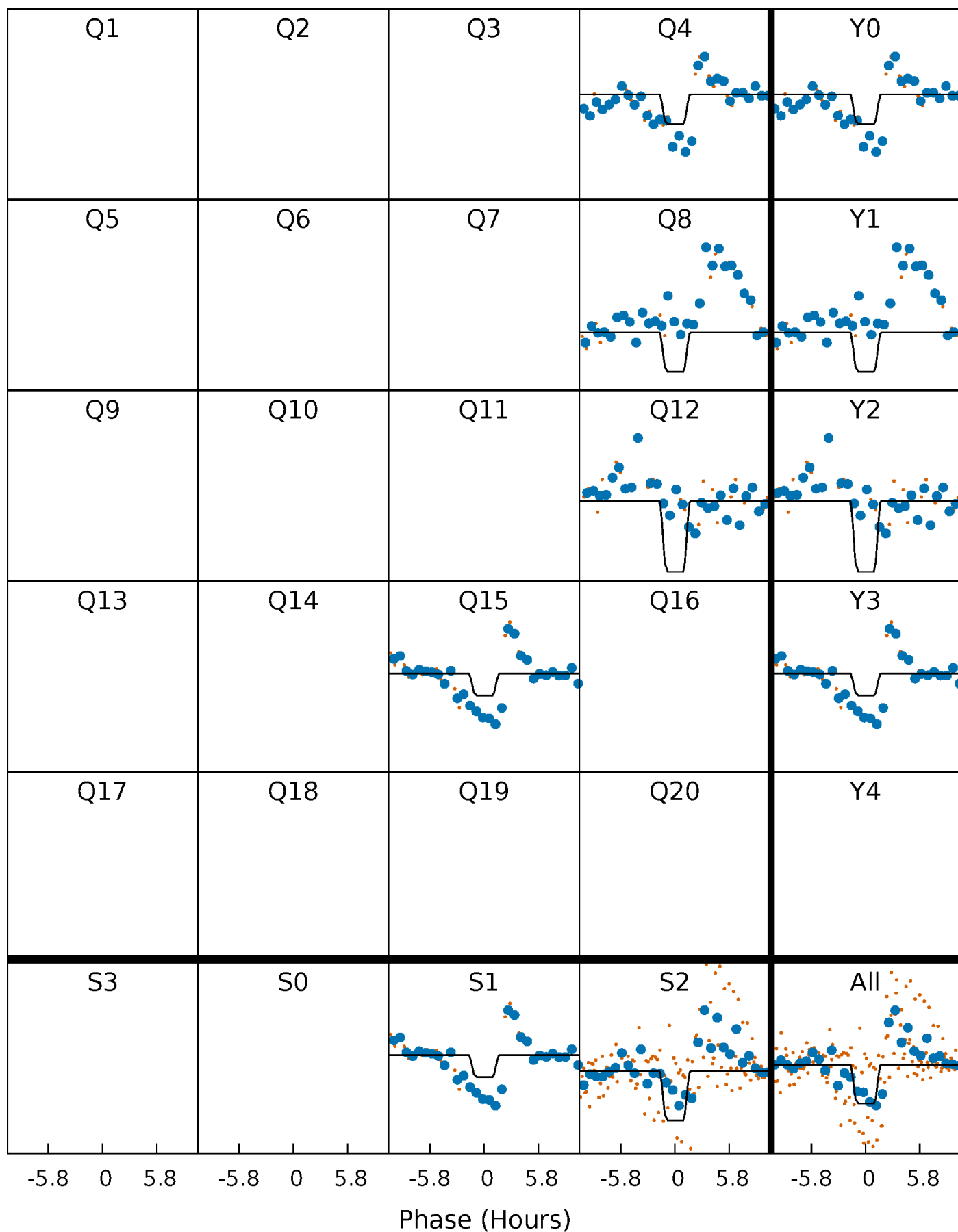
DV Quarter-Phased Transit Curves

TCE 006045059-04 P=338.187712 Days $T_0=428.001094$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

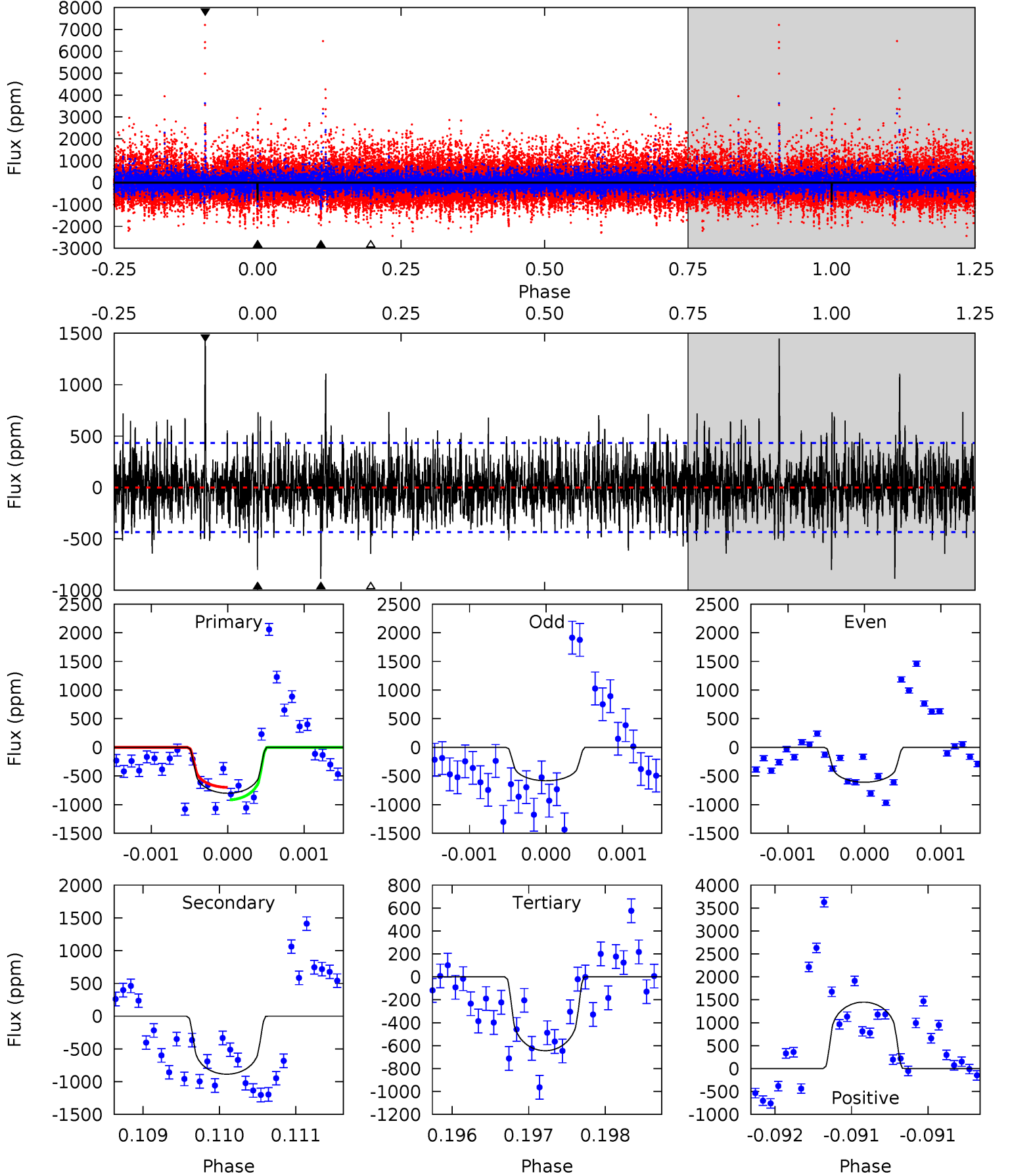
TCE 006045059-04 P=338.168607 Days $T_0=428.032353$ (BKJD)



DV Model-Shift Uniqueness Test

006045059-04, P = 338.187712 Days, E = 89.813382 Days

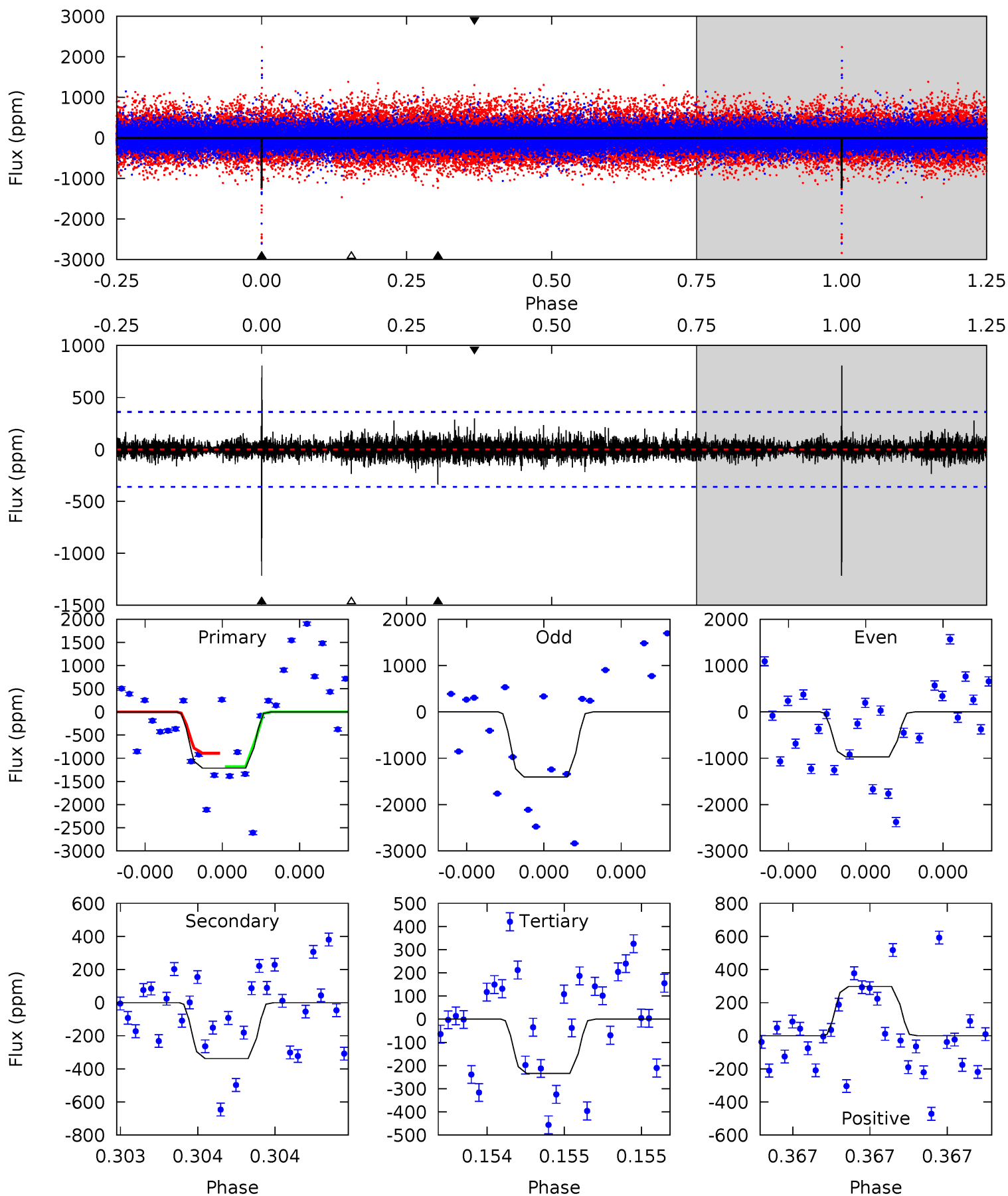
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	11.3	8.19	18.4	5.50	3.37	2.49	2.00	-8.22	3.07	-7.14	0.12	0.79	0.62	1.39



Alt Model-Shift Uniqueness Test

006045059-04, P = 338.168607 Days, E = 89.863746 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.9	5.26	3.65	4.64	5.63	3.57	0.79	15.3	14.3	1.61	0.62	3.30	1.11	0.40	2.09



Stellar Parameters For KIC 006045059

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5180^{+154}_{-154}	$4.544^{+0.090}_{-0.060}$	$-0.400^{+0.350}_{-0.300}$	$0.742^{+0.076}_{-0.084}$	$0.702^{+0.095}_{-0.044}$	$2.426^{+0.873}_{-0.487}$
	+3%/-3%	+2%/-1%	+87%/-75%	+10%/-11%	+14%/-6%	+36%/-20%
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 006045059-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-886 ± 79	$2.77^{+1.60}_{-1.44}$	297^{+12}_{-12}	4841^{+2123}_{-796}	$44188^{+148027}_{-25719}$
Alt.	-338 ± 64	$2.88^{+1.52}_{-1.42}$	298^{+12}_{-12}	3988^{+1155}_{-579}	16193^{+43205}_{-9794}

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 $A_{obs} \gg 1.0$

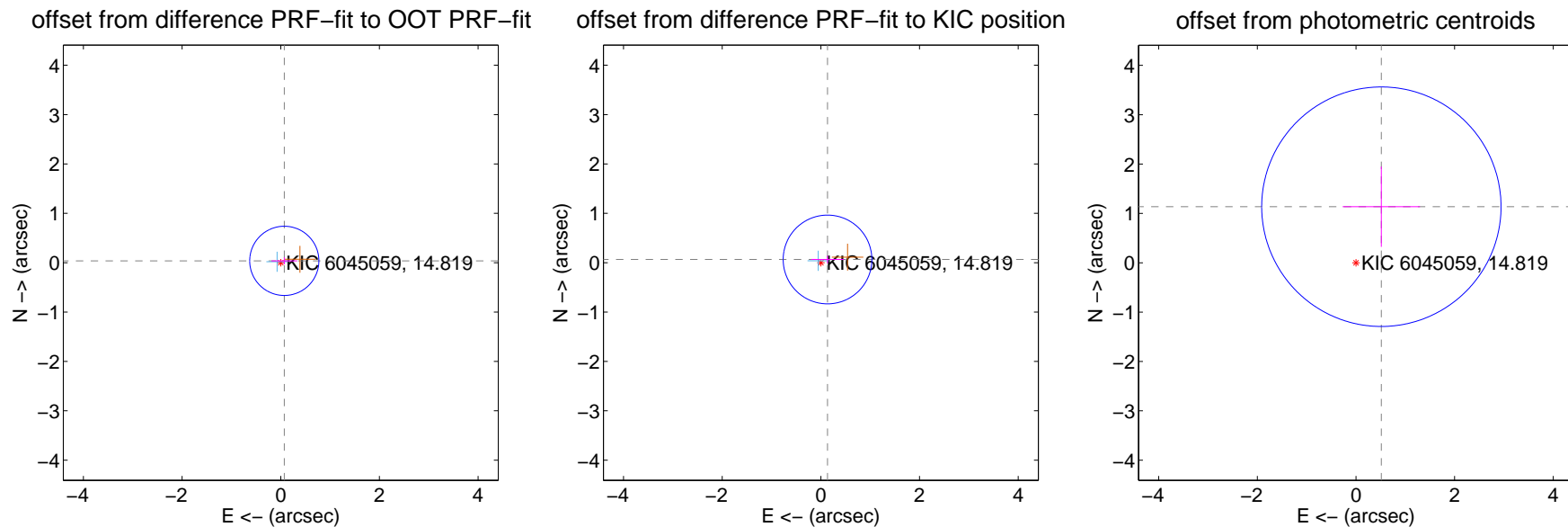
DV Centroid Data

Supplemental centroid analysis for 006045059-04. Kepler magnitude: 14.82. Transit SNR 7.12

There are 1 quarters with good PRF difference image offsets

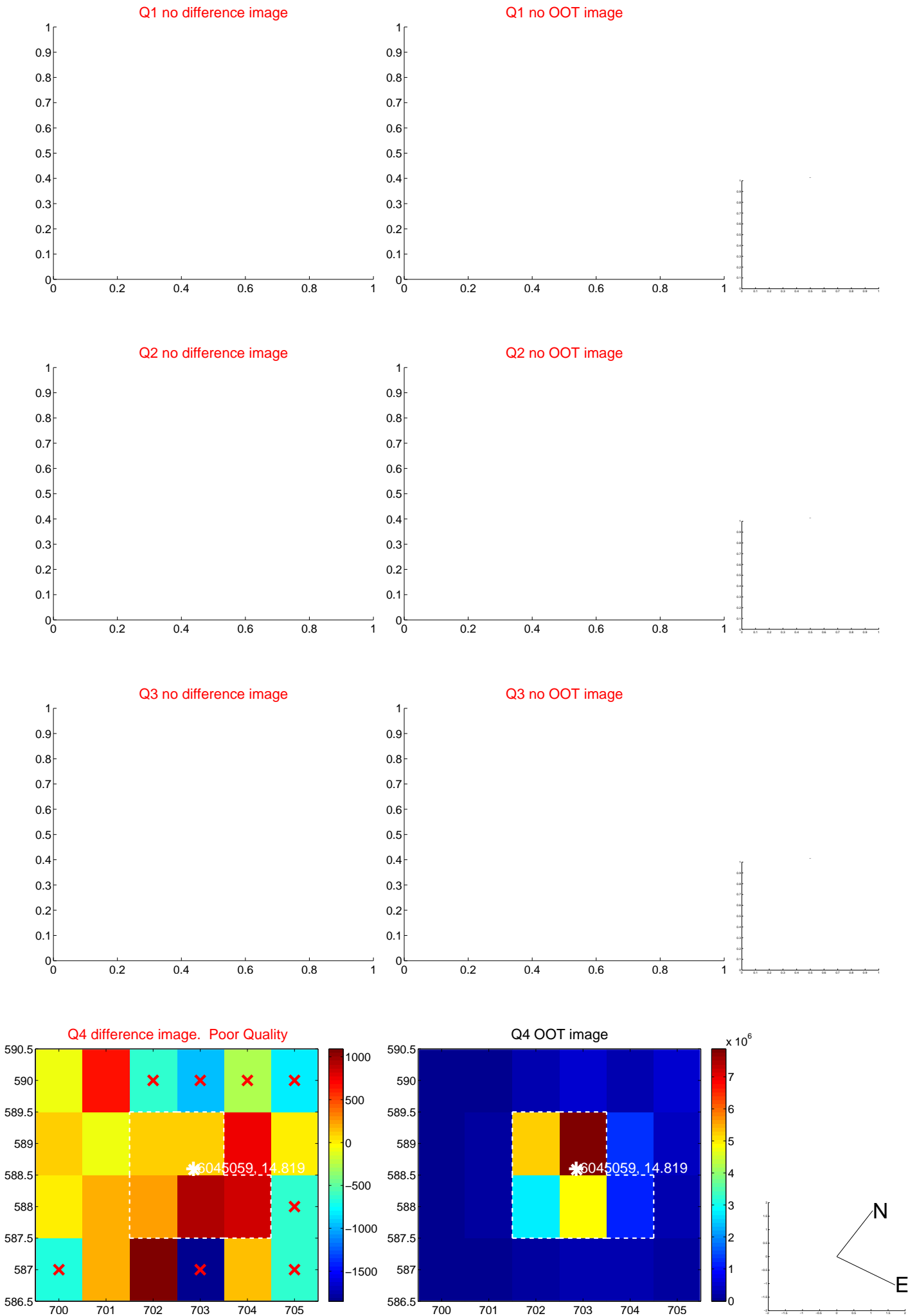
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.081 ± 0.234	0.35	-0.072 ± 0.260	0.037 ± 0.072
PRF-fit source offset from KIC position	0.150 ± 0.300	0.50	-0.135 ± 0.330	0.065 ± 0.078
photometric centroid source offset	1.25 ± 0.81	1.54	-0.52 ± 0.78	1.14 ± 0.81

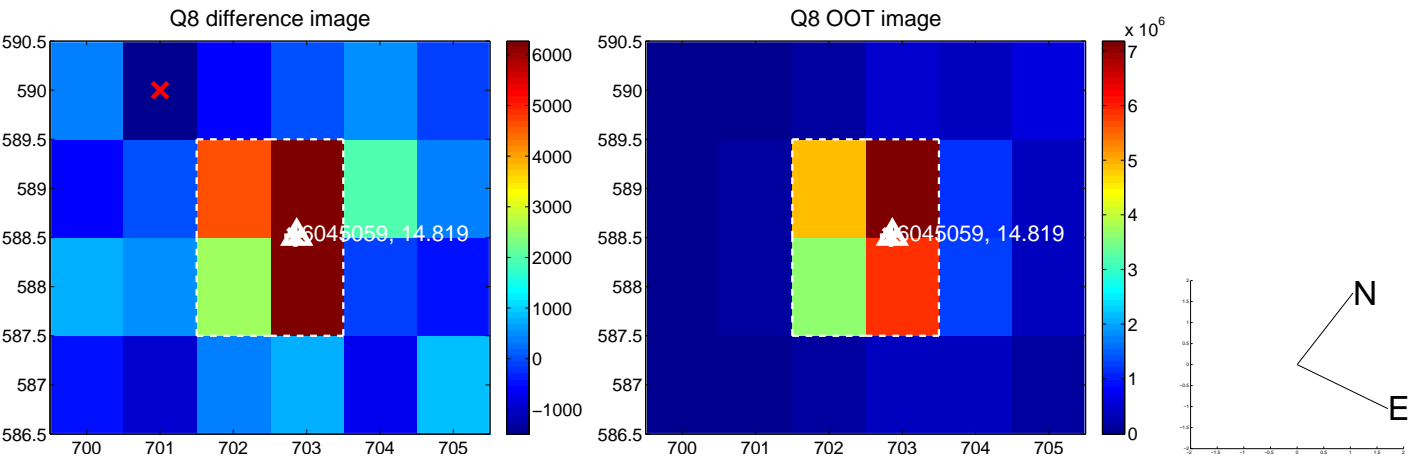


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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



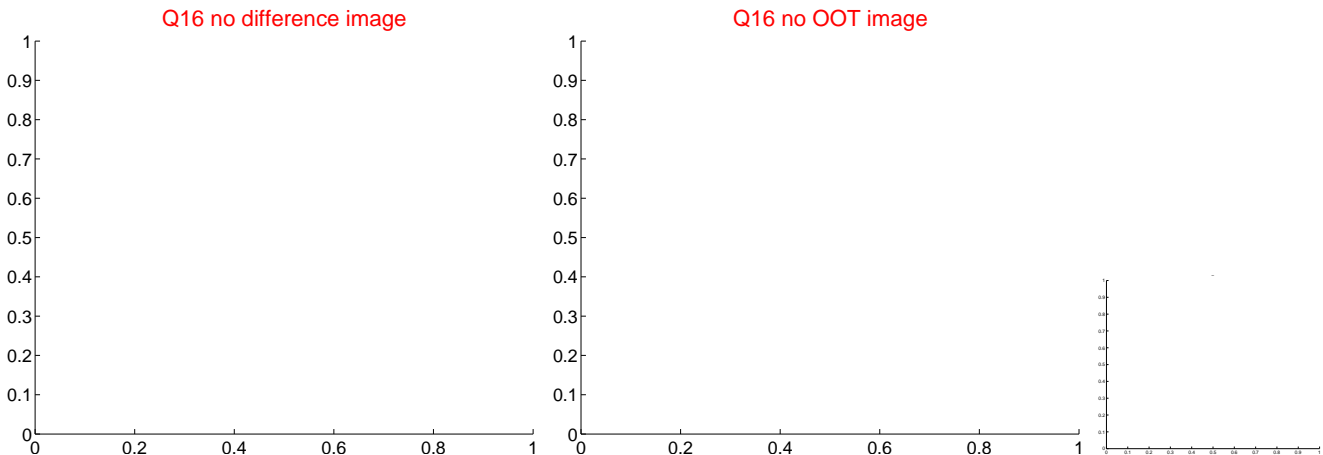
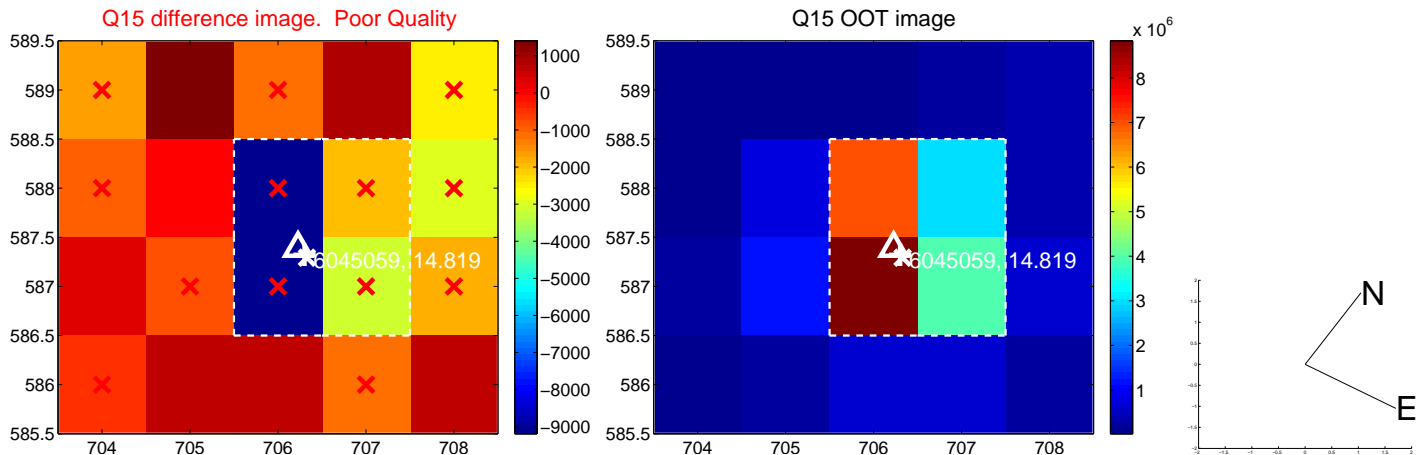
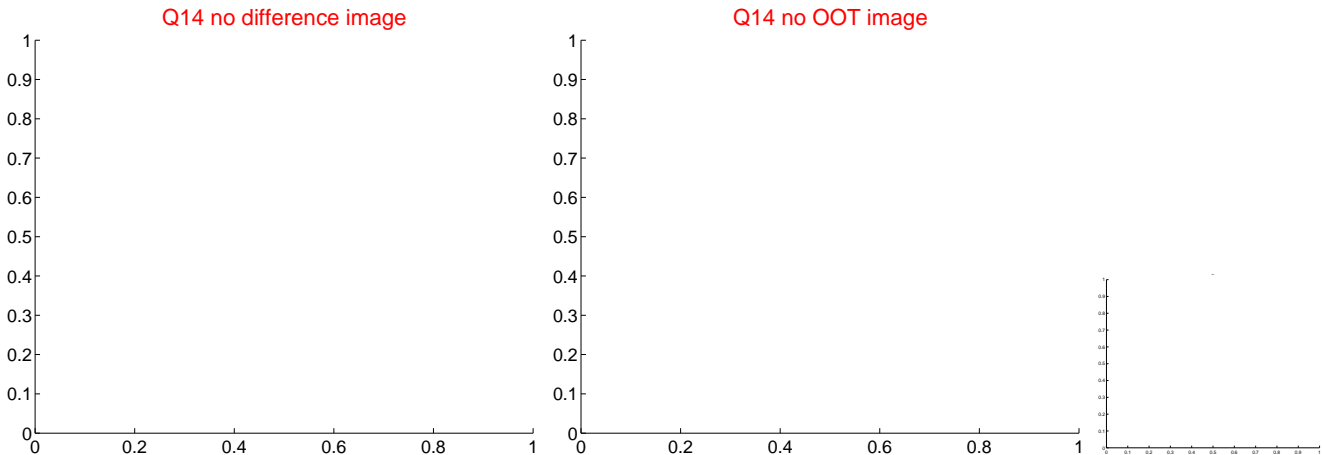
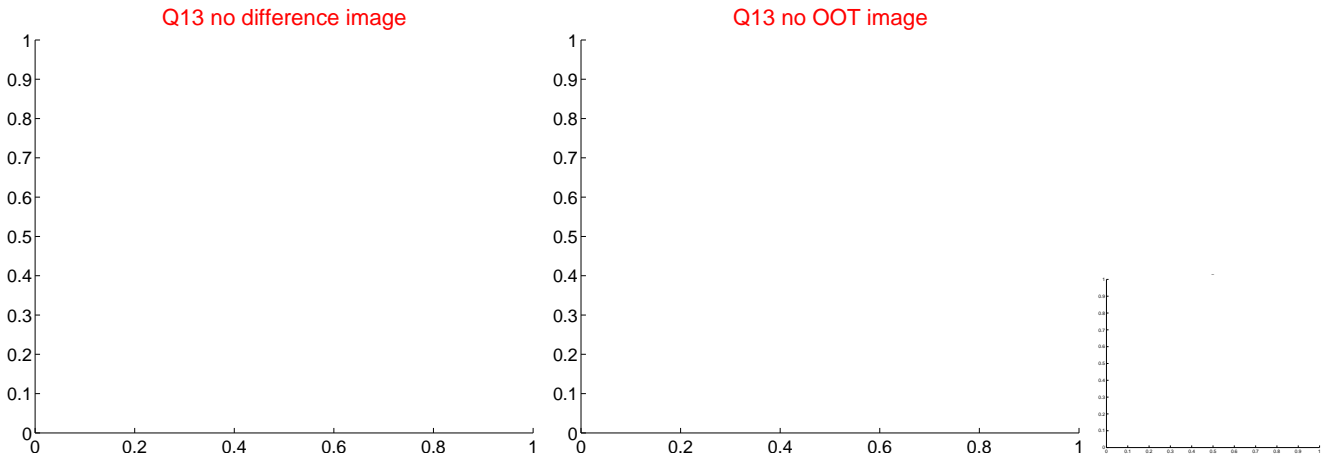
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



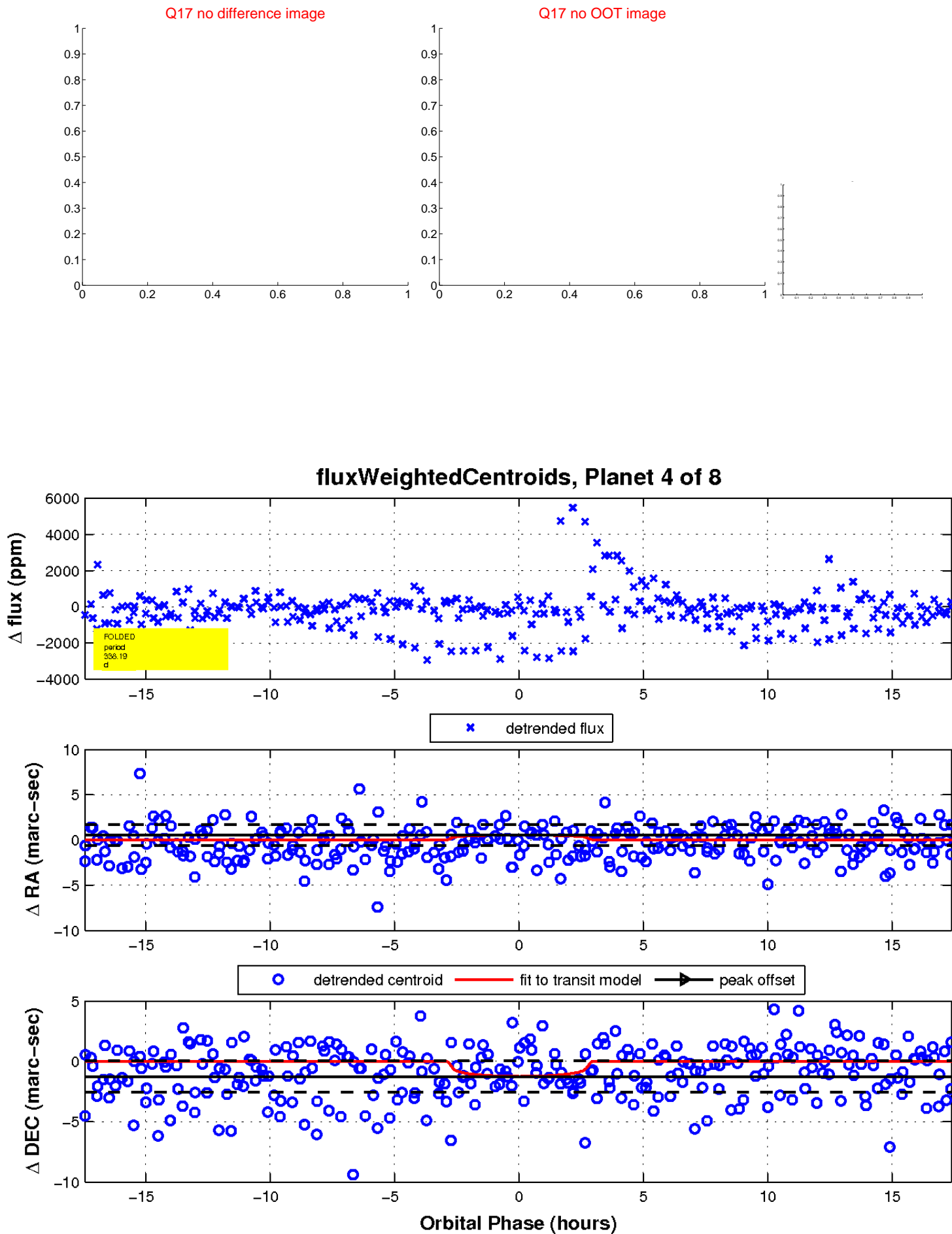
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

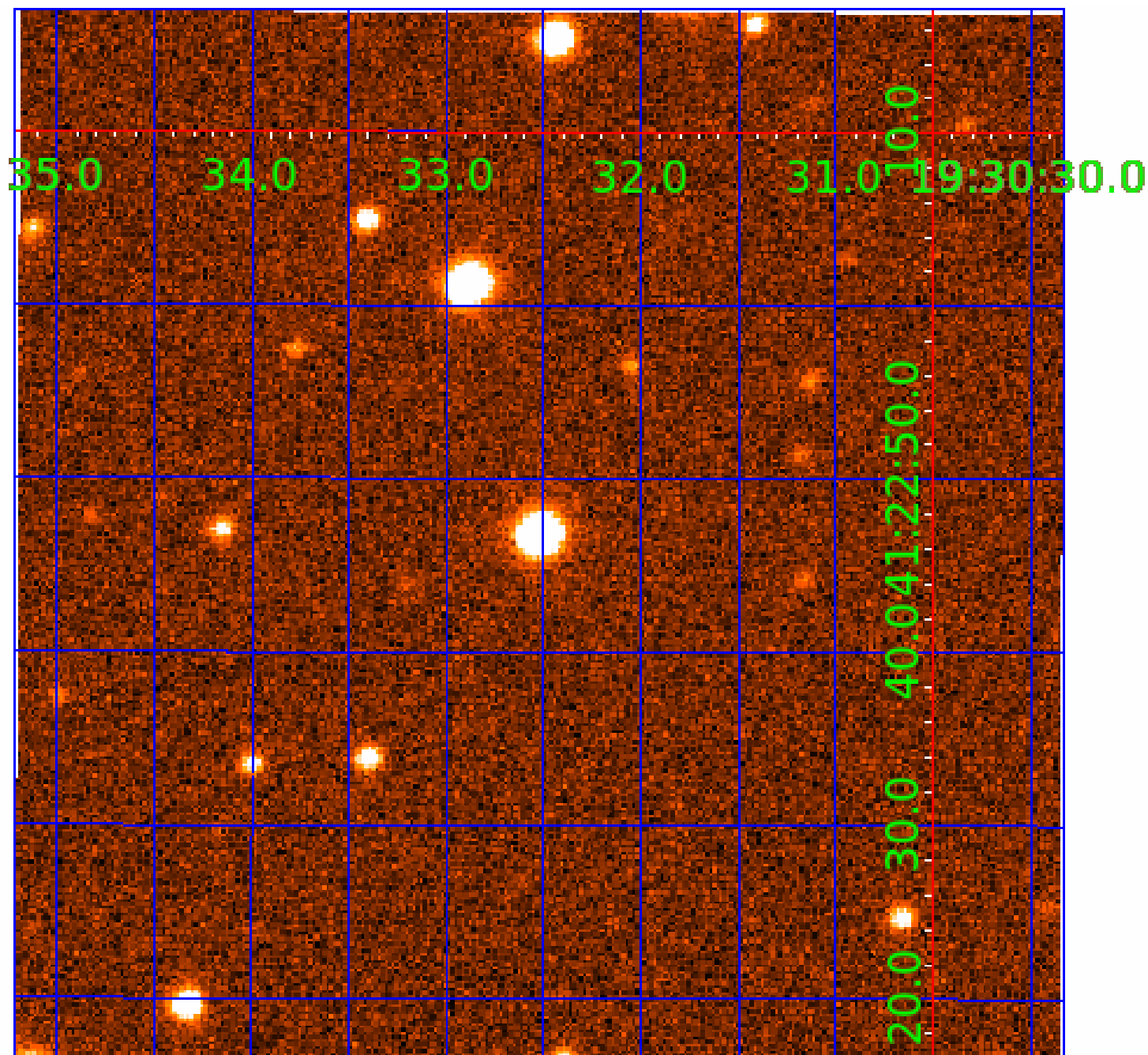


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006045059

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})
006045059-01	OBS	No	535.041533	277.884635	732.6	1.192	24.8	3.4	0.74	5180	2.14	0.27
006045059-02	OBS	No	507.533740	333.080100	2343.1	3.129	19.0	11.4	0.74	5180	3.56	0.29
006045059-03	OBS	No	232.341369	328.144983	916.3	8.703	13.8	7.0	0.74	5180	2.29	0.82
006045059-04	OBS	No	338.187712	428.001094	1201.5	5.861	13.1	7.1	0.74	5180	2.69	0.50
006045059-05	OBS	No	539.137994	273.954258	3665.6	9.437	18.1	13.0	0.74	5180	8.55	0.27
006045059-06	OBS	No	270.783200	251.192622	998.1	6.303	15.5	4.3	0.74	5180	2.33	0.67
006045059-07	OBS	No	423.989823	376.038716	1410.9	10.834	13.9	6.8	0.74	5180	3.46	0.37
006045059-08	OBS	No	242.906579	317.858250	1133.3	4.500	12.7	-1.0	0.74	5180	2.45	0.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006045059-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-03	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV
006045059-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
006045059-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-06	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS
006045059-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
006045059-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

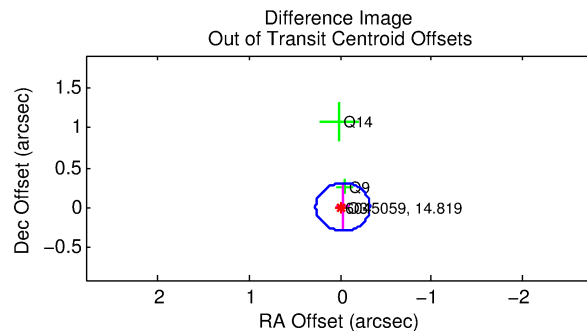
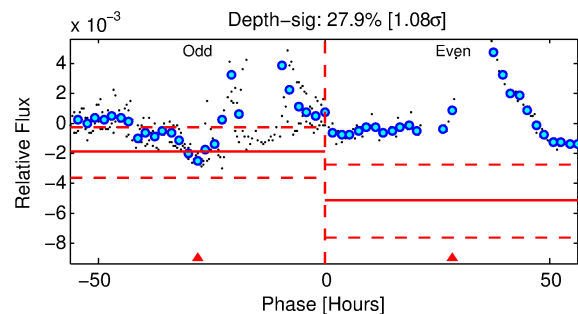
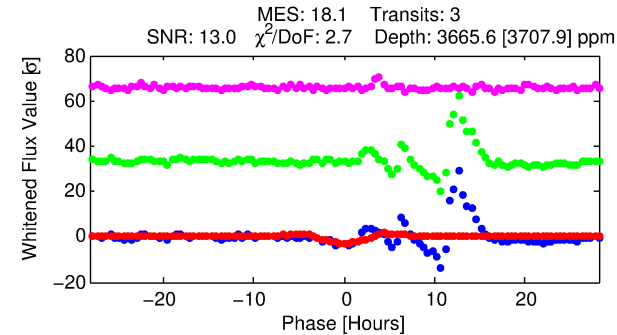
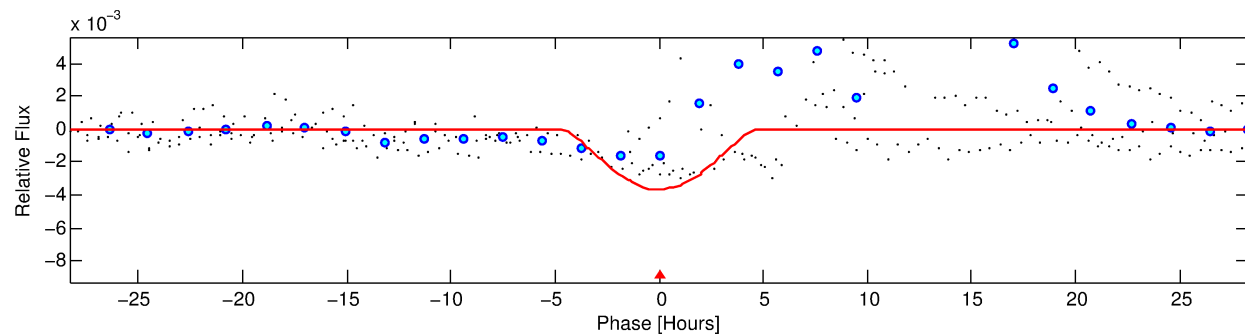
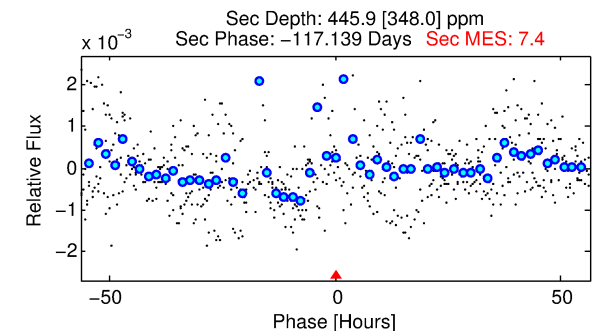
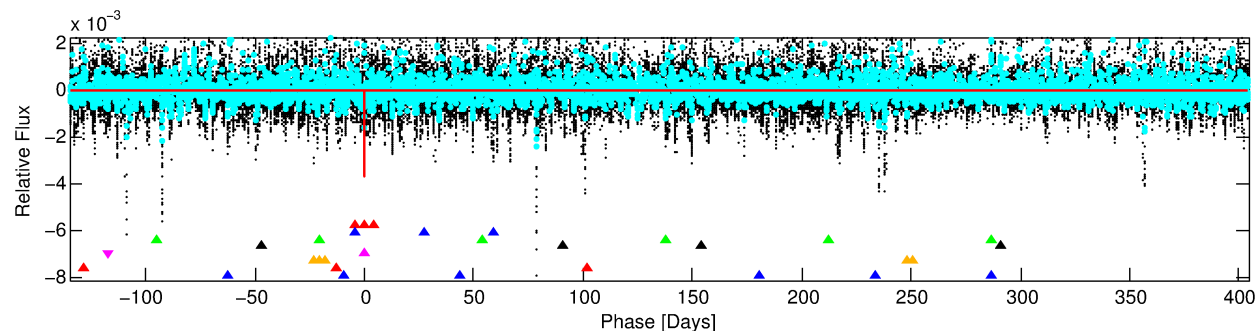
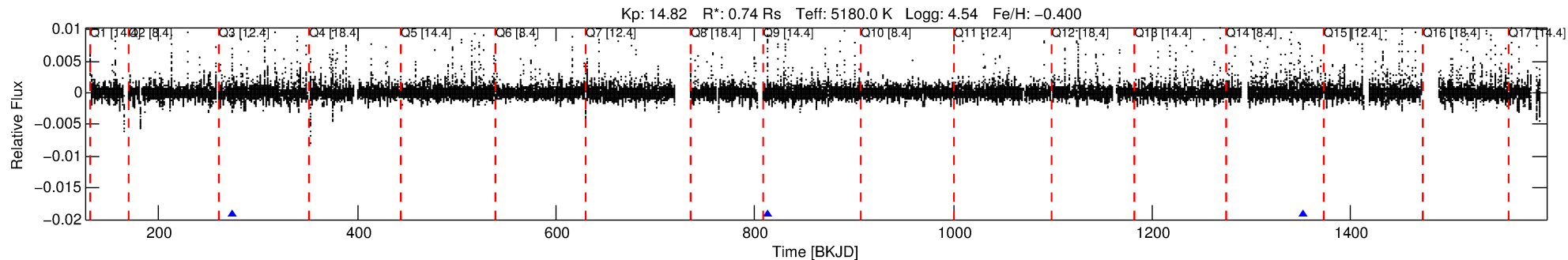
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006045059-05

No Significant Match Found

DV One-Page Summary

KIC: 6045059 Candidate: 5 of 8 Period: 539.138 d



DV Fit Results:

Period = 539.13799 [0.02789] d
Epoch = 273.9543 [0.0343] BKJD
Rp/R* = 0.1056 [0.6085]
a/R* = 205.87 [221.48]
b = 1.00 [0.92]
Seff = 0.27 [0.05]
Teq = 183 [9] K
Rp = 8.55 [49.28] Re
a = 1.1528 [0.1179] AU
Ag = 4460.08 [51525.48] [0.09σ]
Teffp = 2316 [6690] K [0.32σ]

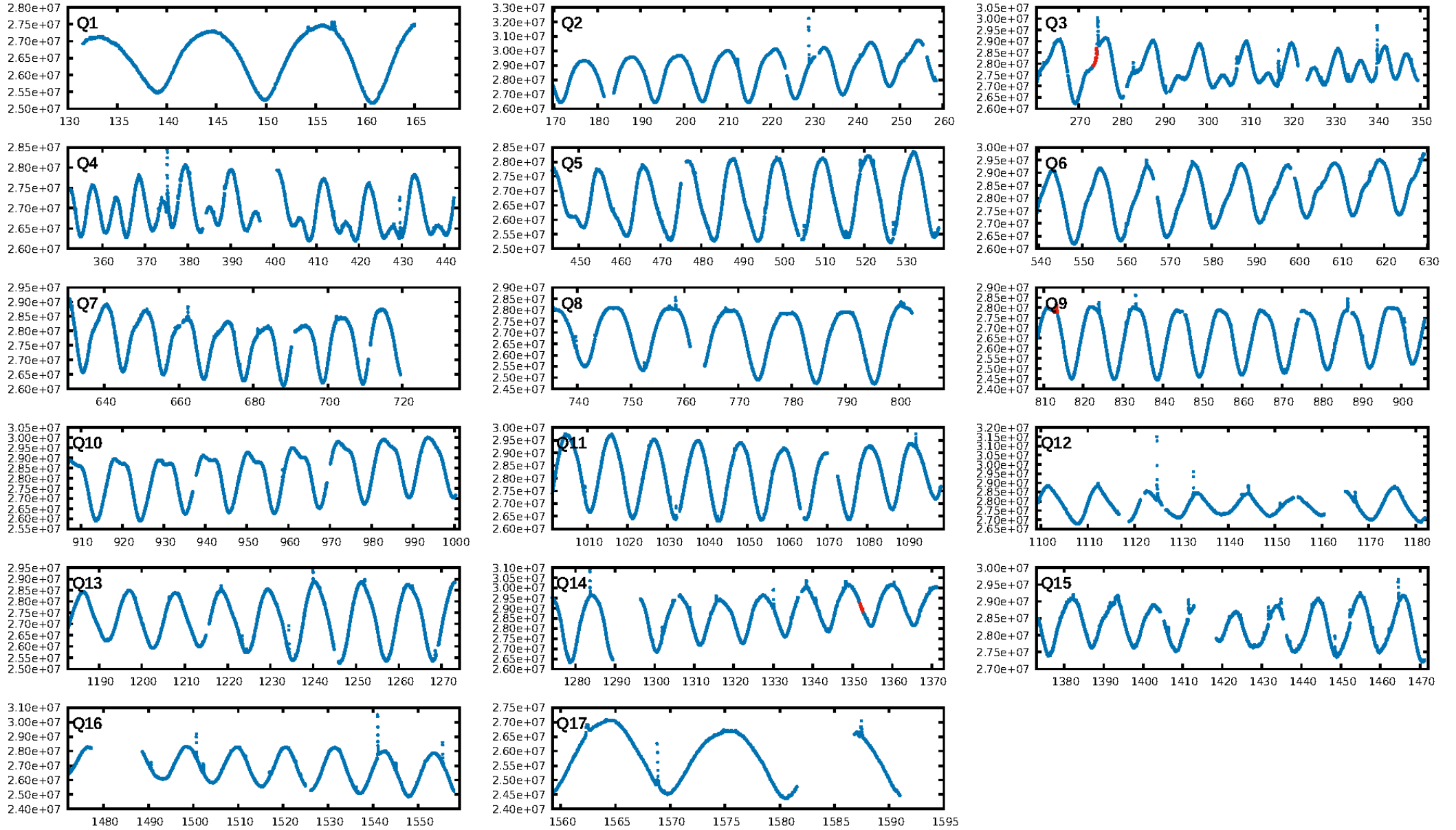
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.34σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.7338
Centroid-sig: 2.7%
Centroid-so: 0.397 arcsec [1.39σ]
OotOffset-rm: 0.032 arcsec [0.32σ]
KicOffset-rm: 0.174 arcsec [1.76σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.67 [2/3]

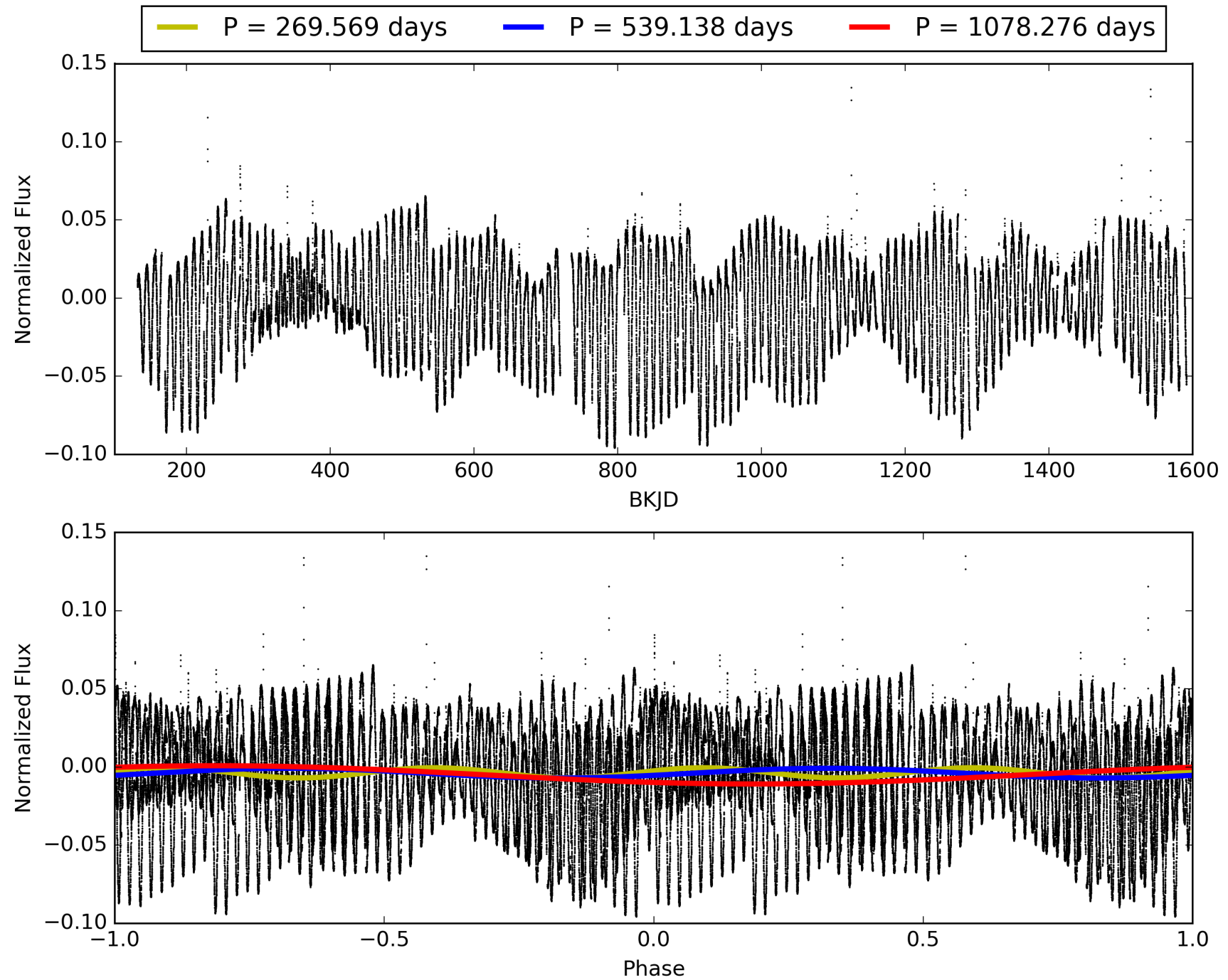
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:19:35 Z

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

TCE 006045059-05, PDC Light Curves

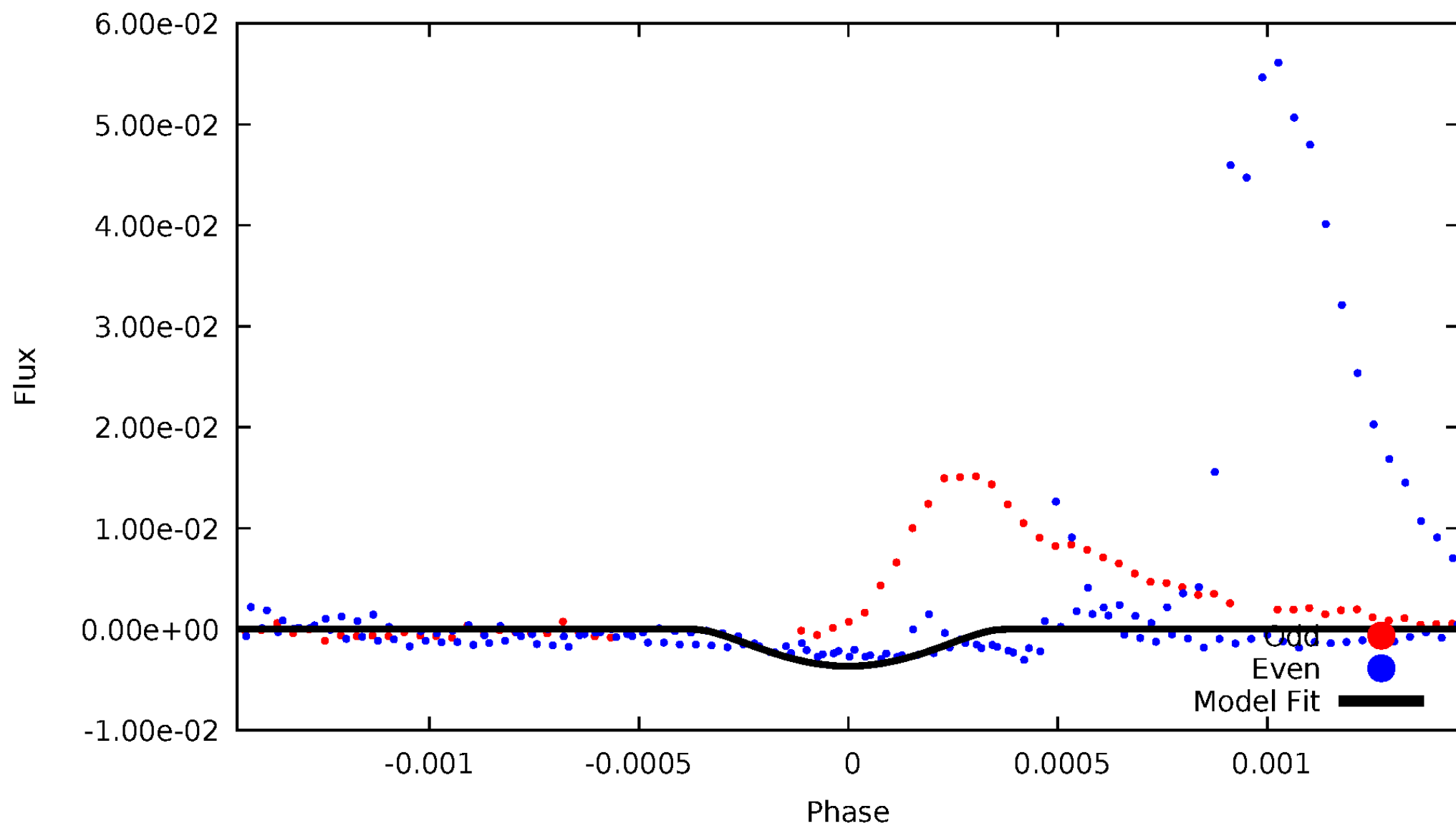


TCE 006045059-05



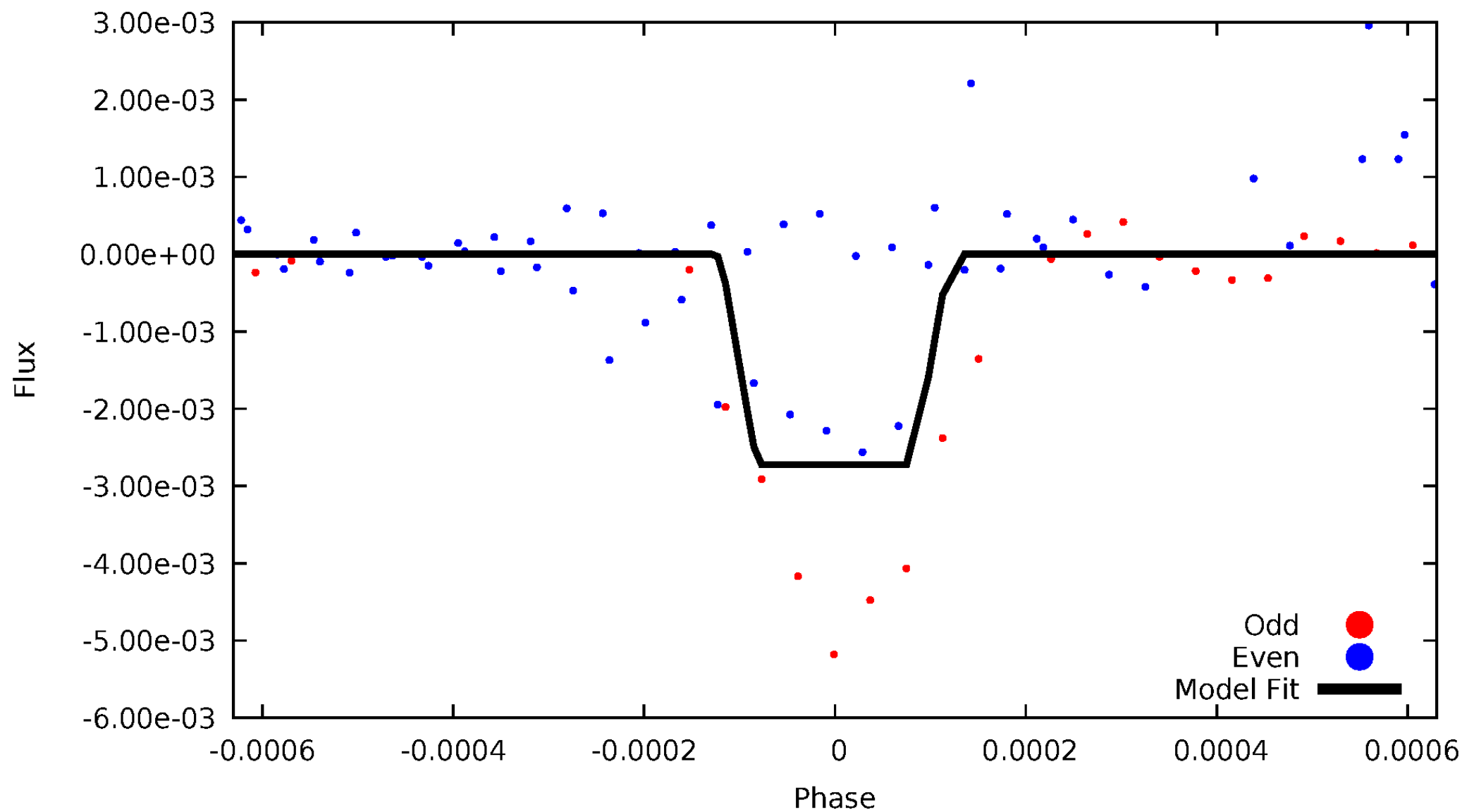
DV Odd/Even

TCE 006045059-05



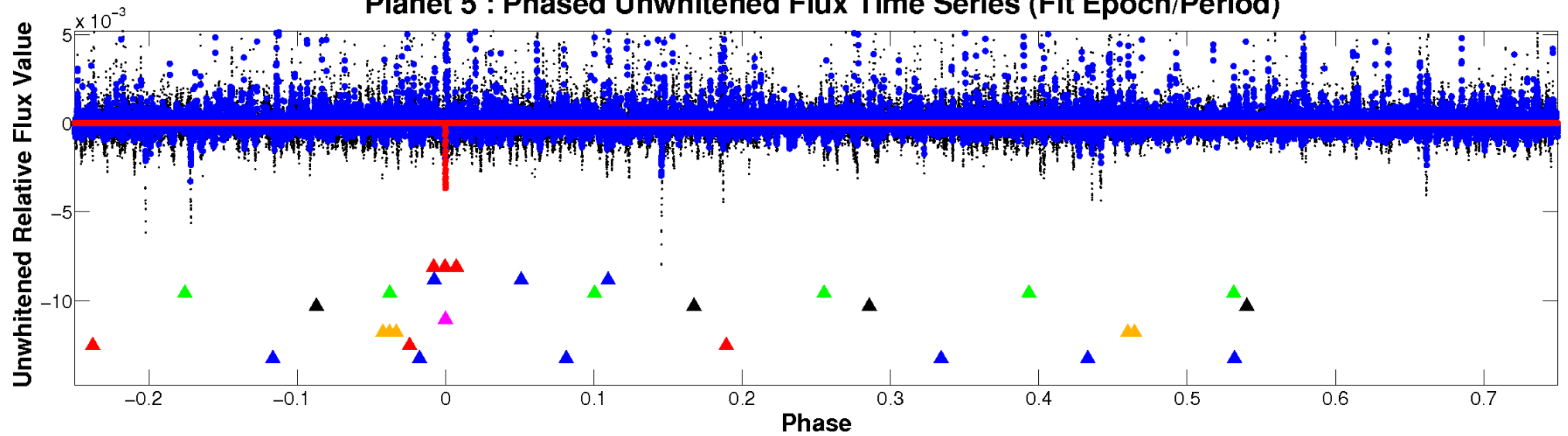
ALT Odd/Even

TCE 006045059-05

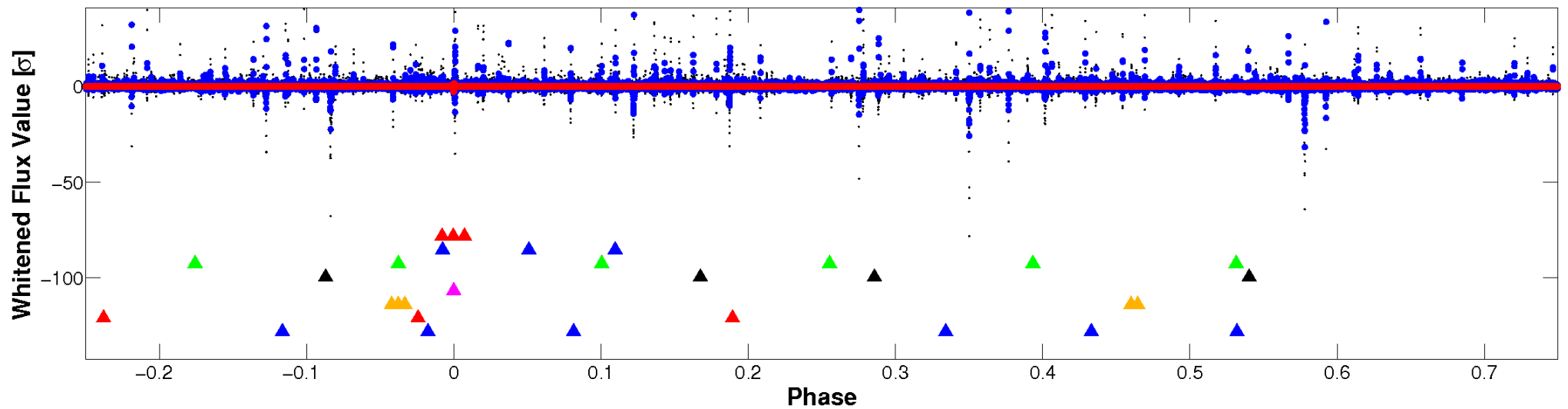


Non-Whitened Vs. Whitened Light Curve

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

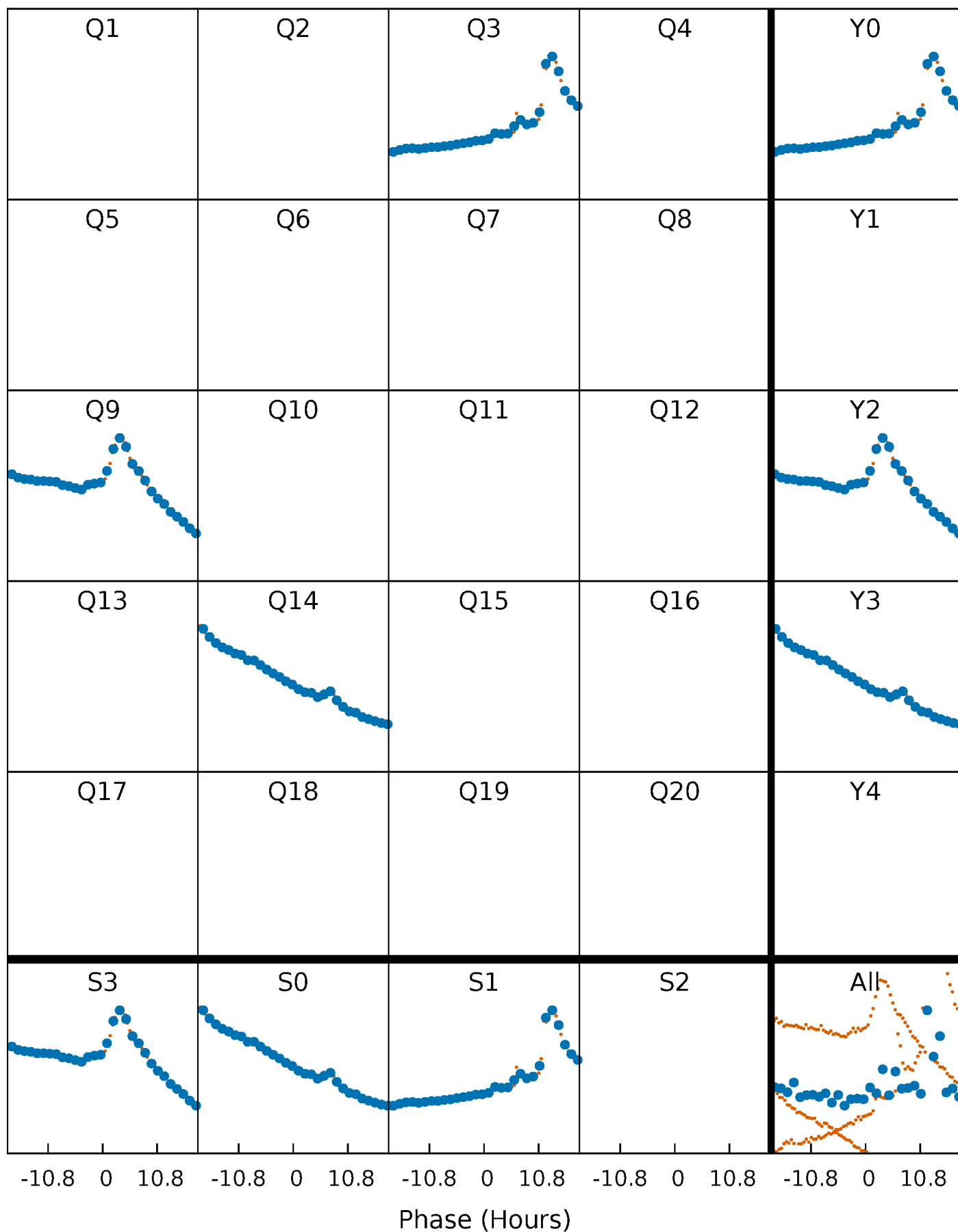


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



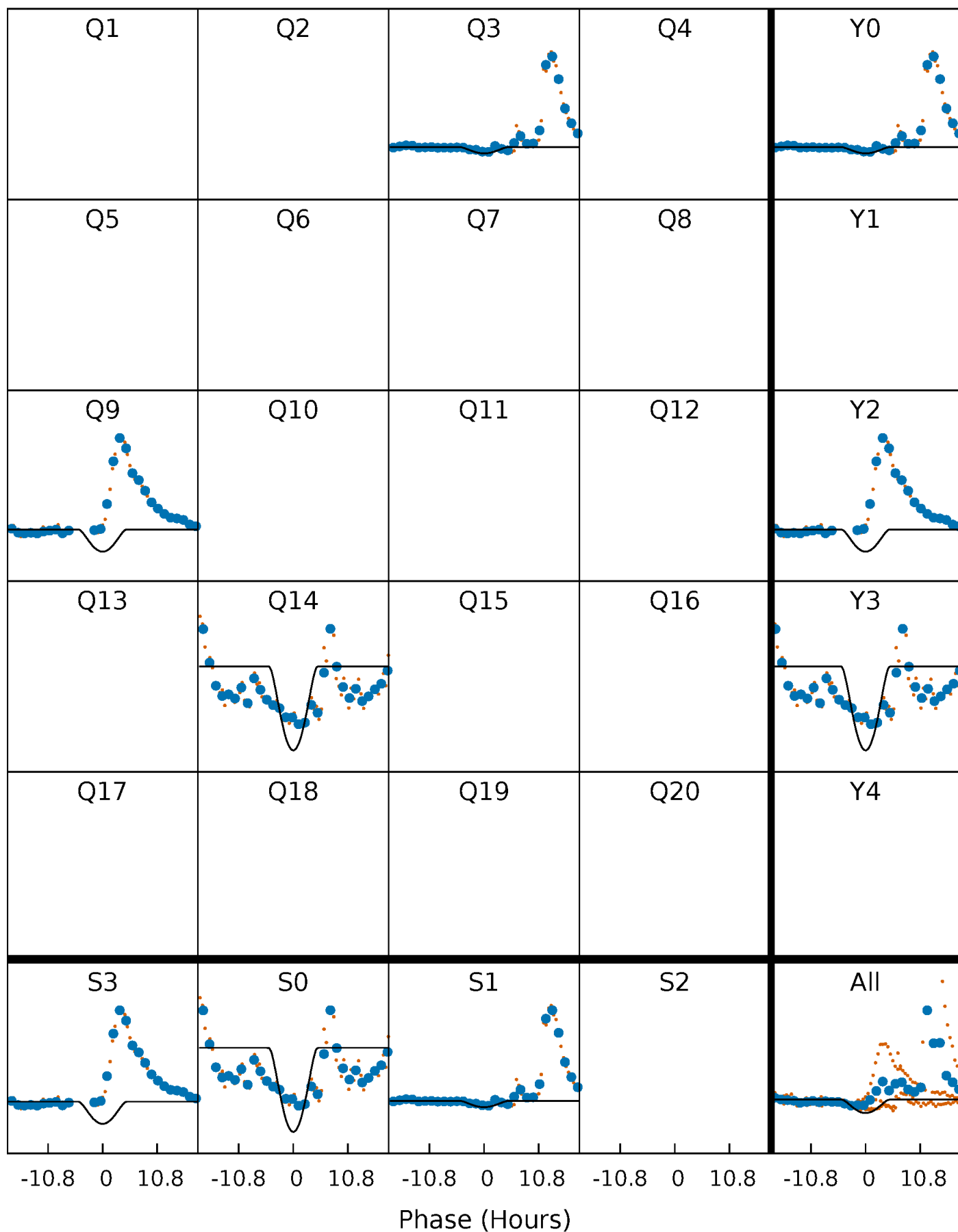
PDC Quarter-Phased Transit Curves

TCE 006045059-05 $P=539.137994$ Days $T_0=273.954258$ (BKJD)



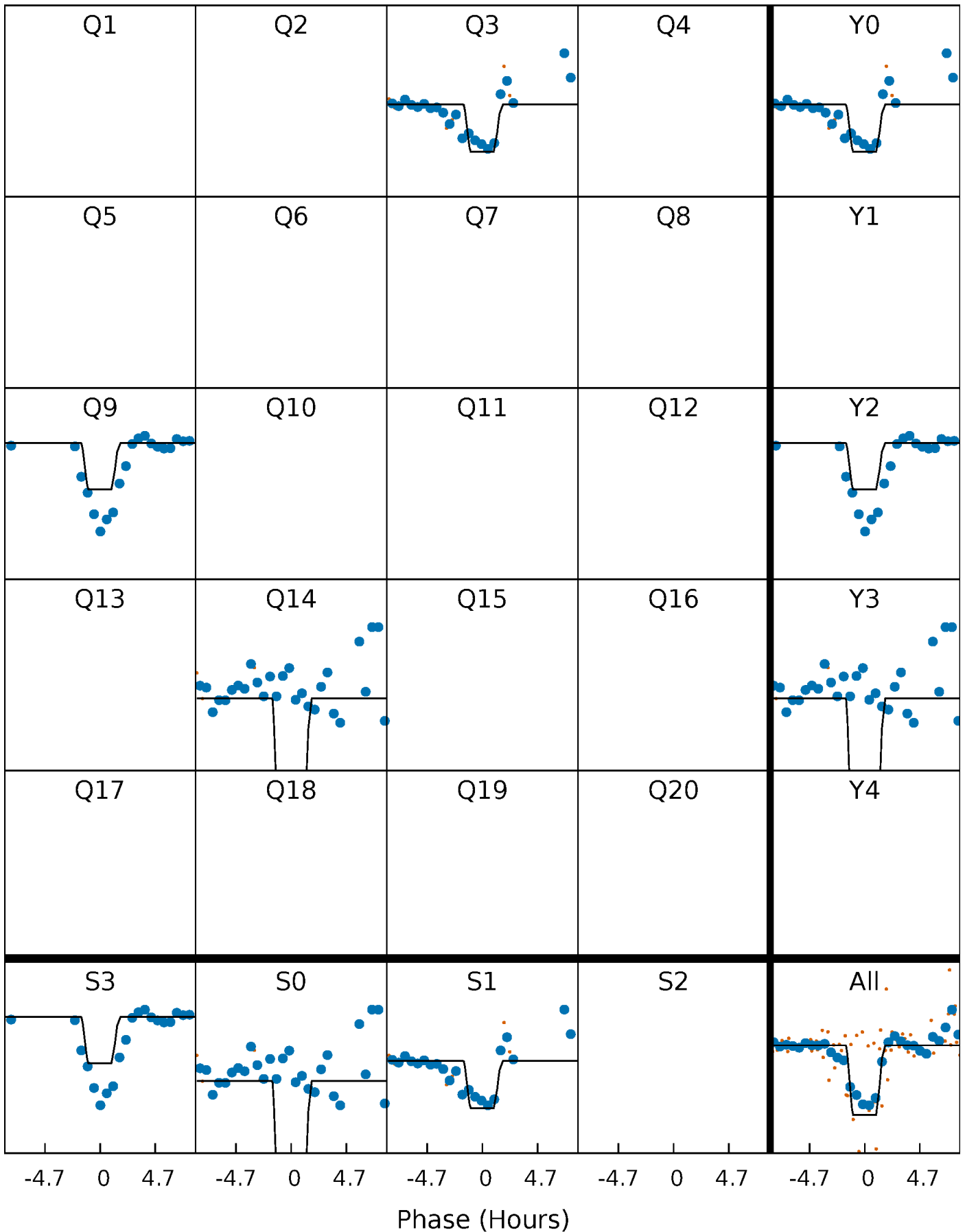
DV Quarter-Phased Transit Curves

TCE 006045059-05 $P=539.137994$ Days $T_0=273.954258$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

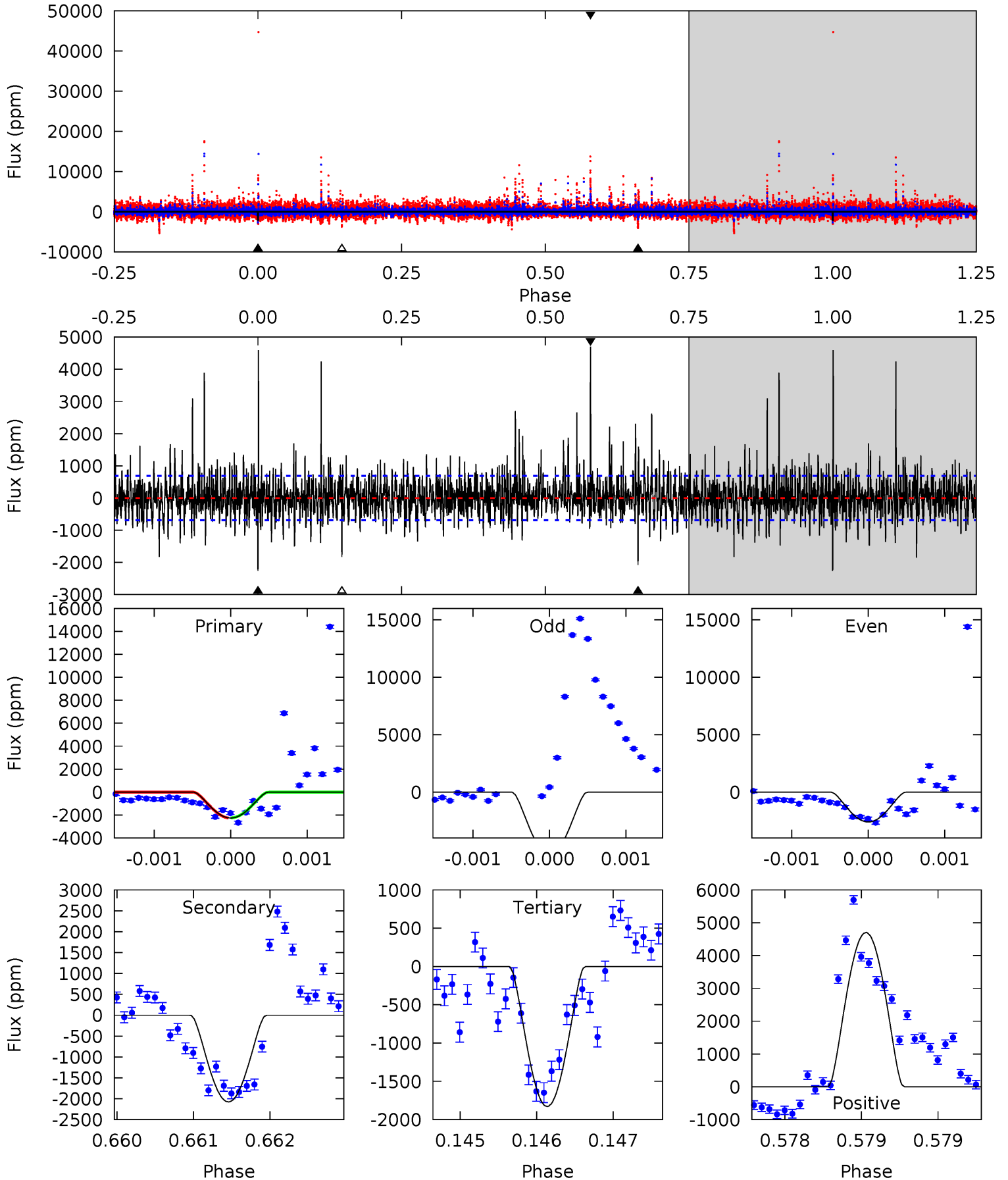
TCE 006045059-05 P=539.132669 Days $T_0=273.981227$ (BKJD)



DV Model-Shift Uniqueness Test

006045059-05, P = 539.137994 Days, E = 273.954258 Days

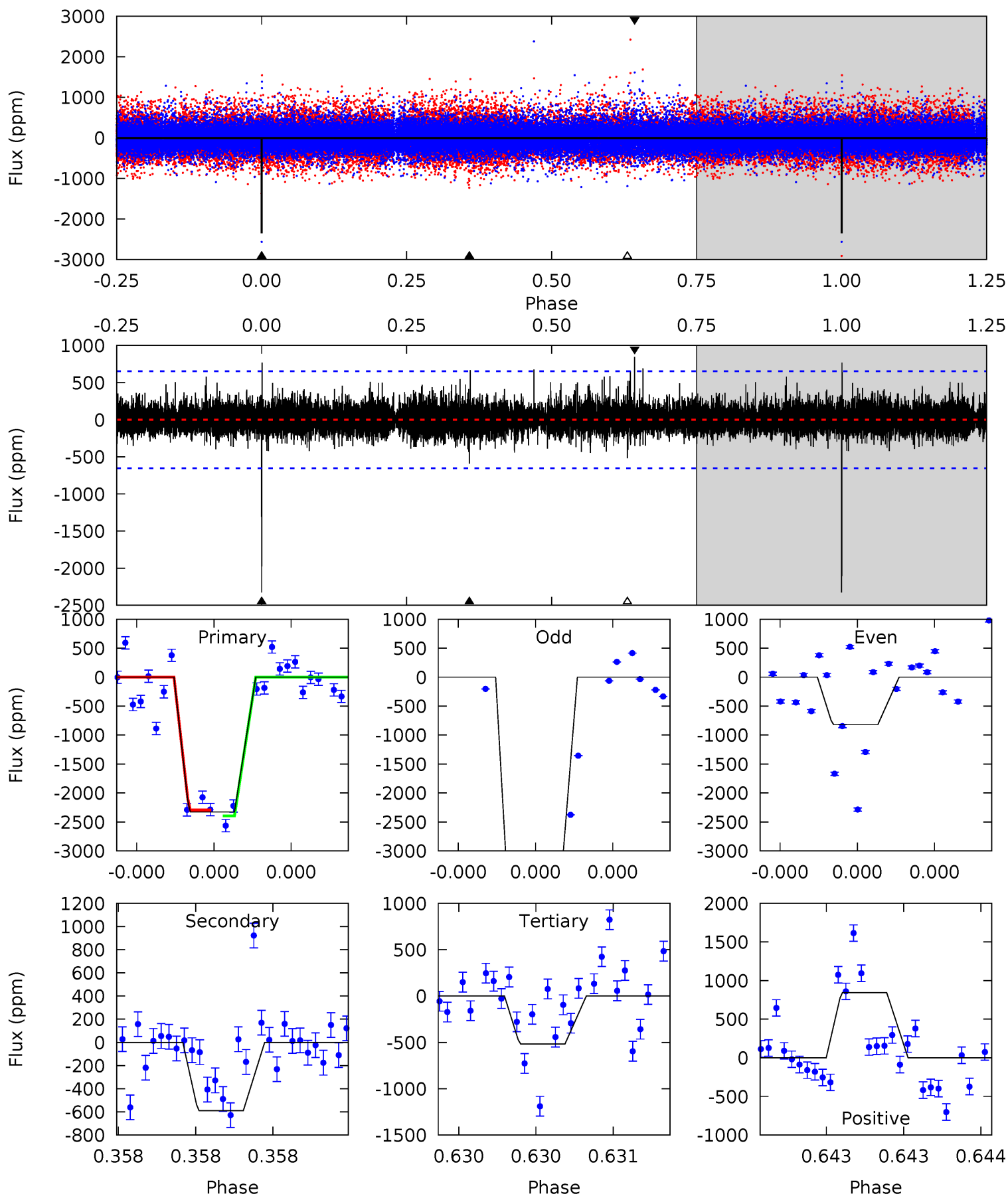
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.0	16.6	14.6	37.5	5.50	3.37	3.94	3.41	-19.5	1.97	-20.9	8.20	-0.04	0.68	0.09



Alt Model-Shift Uniqueness Test

006045059-05, P = 539.132669 Days, E = 273.981227 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.3	5.13	4.51	7.35	5.69	3.66	0.92	15.8	12.9	0.62	-2.22	23.0	0.98	0.27	0



Stellar Parameters For KIC 006045059

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5180^{+154}_{-154}	$4.544^{+0.090}_{-0.060}$	$-0.400^{+0.350}_{-0.300}$	$0.742^{+0.076}_{-0.084}$	$0.702^{+0.095}_{-0.044}$	$2.426^{+0.873}_{-0.487}$
	+3%/-3%	+2%/-1%	+87%/-75%	+10%/-11%	+14%/-6%	+36%/-20%
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 006045059-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2077 ± 125	$36.31^{+36.99}_{-25.50}$	255^{+11}_{-10}	2489^{+1016}_{-367}	1169^{+12082}_{-883}
Alt.	-589 ± 115	$34.02^{+36.02}_{-23.98}$	254^{+11}_{-10}	2192^{+785}_{-317}	385^{+4128}_{-298}

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 $A_{obs} \gg 1.0$

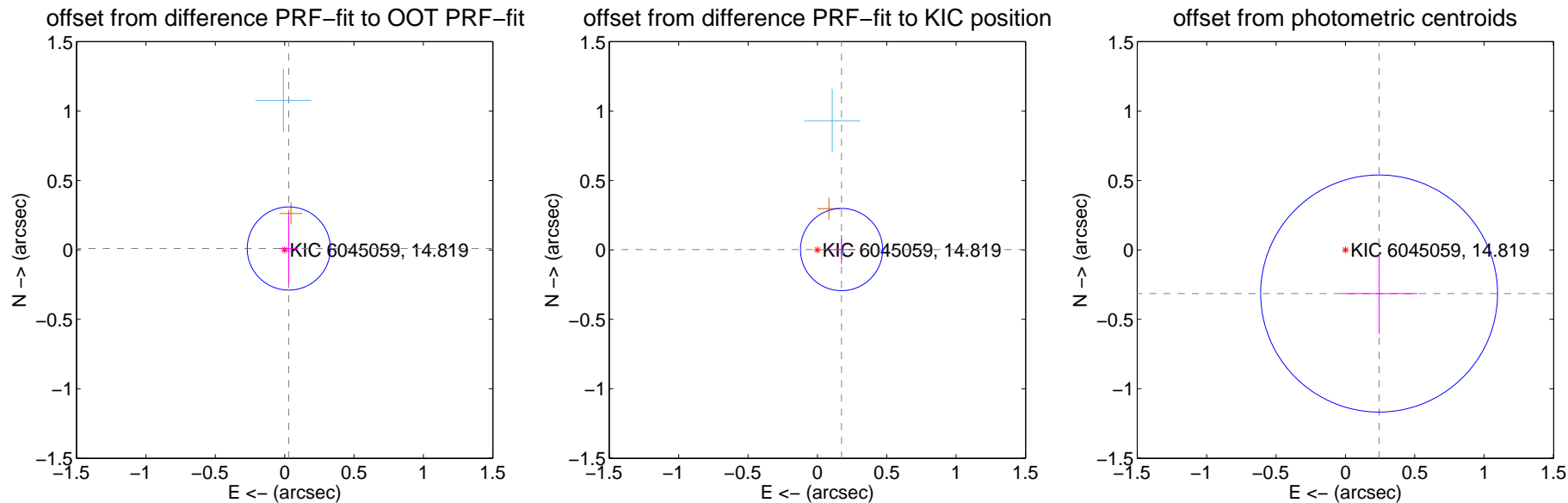
DV Centroid Data

Supplemental centroid analysis for 006045059-05. Kepler magnitude: 14.82. Transit SNR 13.04

There are 2 quarters with good PRF difference image offsets

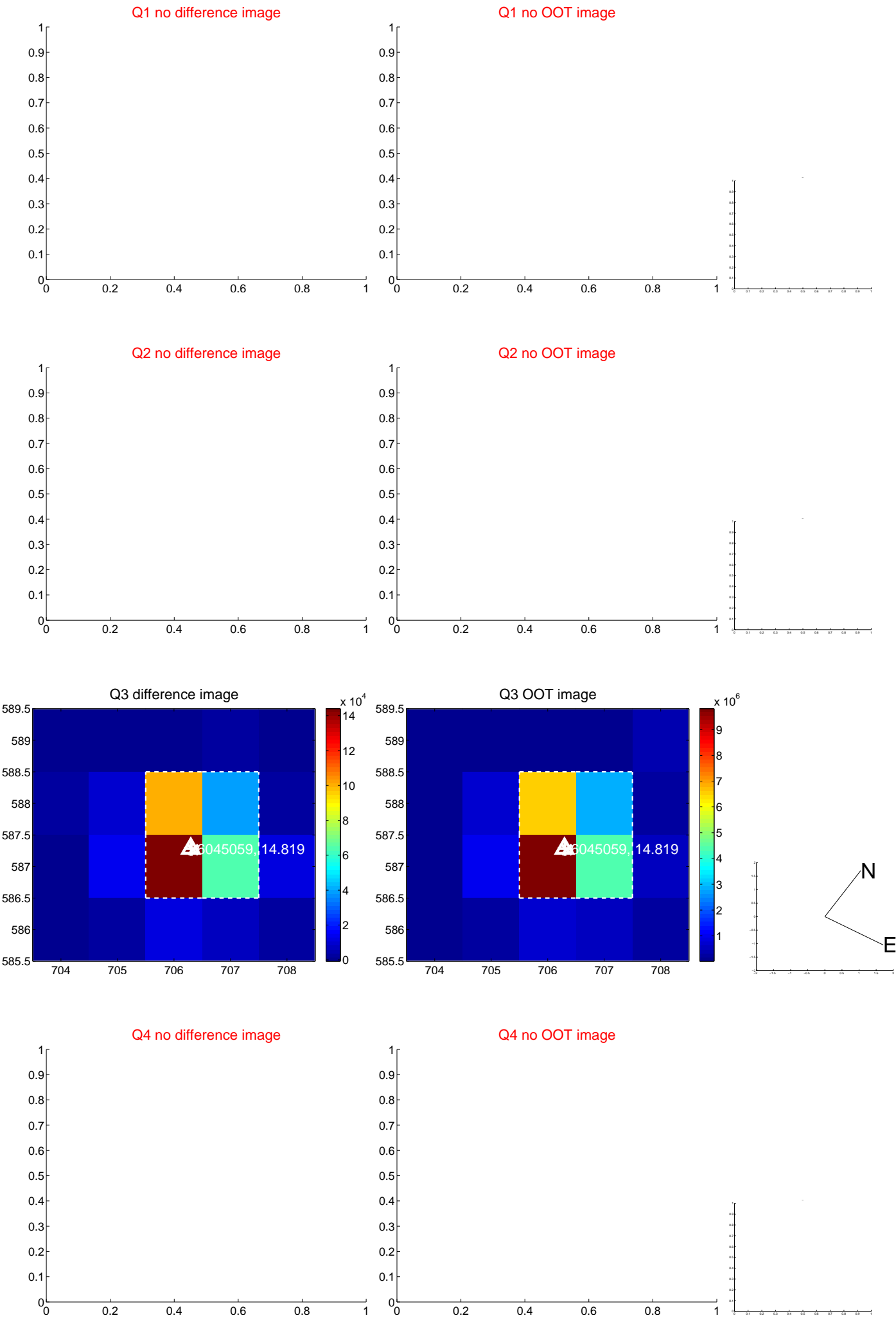
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.032 ± 0.100	0.32	-0.030 ± 0.067	0.010 ± 0.259
PRF-fit source offset from KIC position	0.174 ± 0.099	1.76	-0.174 ± 0.099	0.003 ± 0.105
photometric centroid source offset	0.40 ± 0.28	1.39	-0.24 ± 0.28	-0.31 ± 0.29

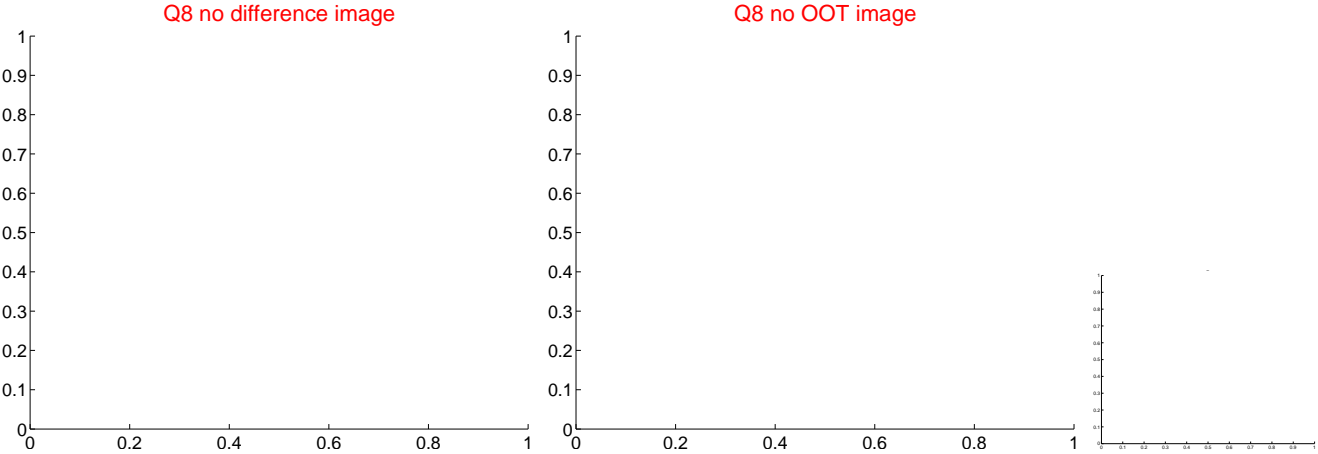
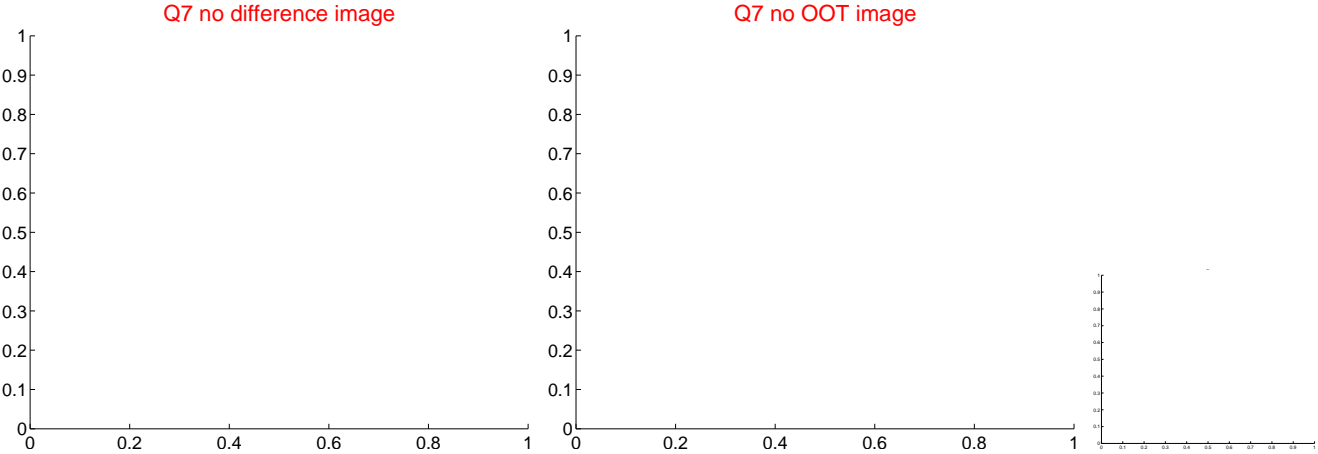
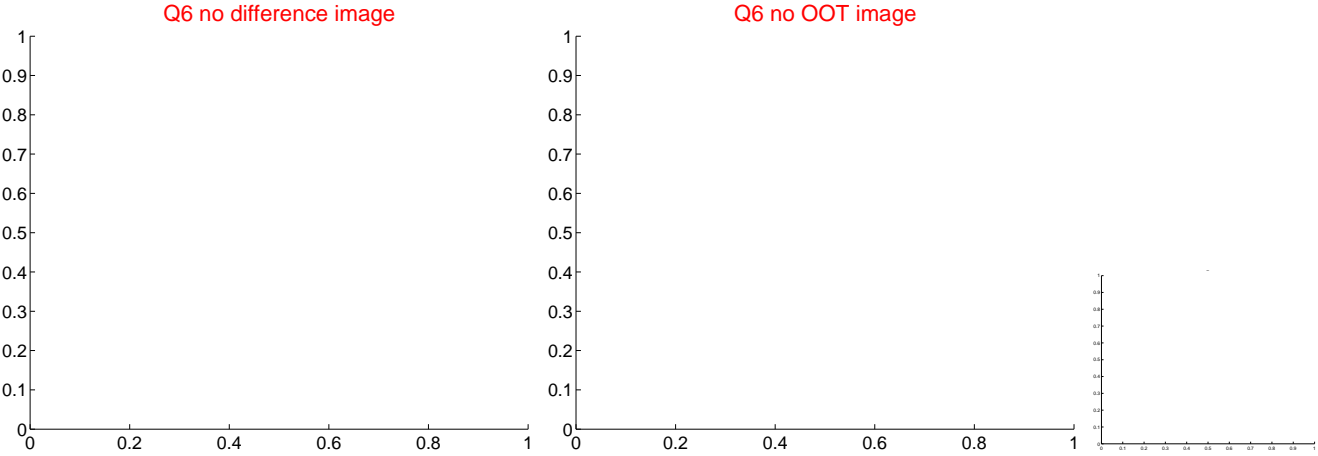


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

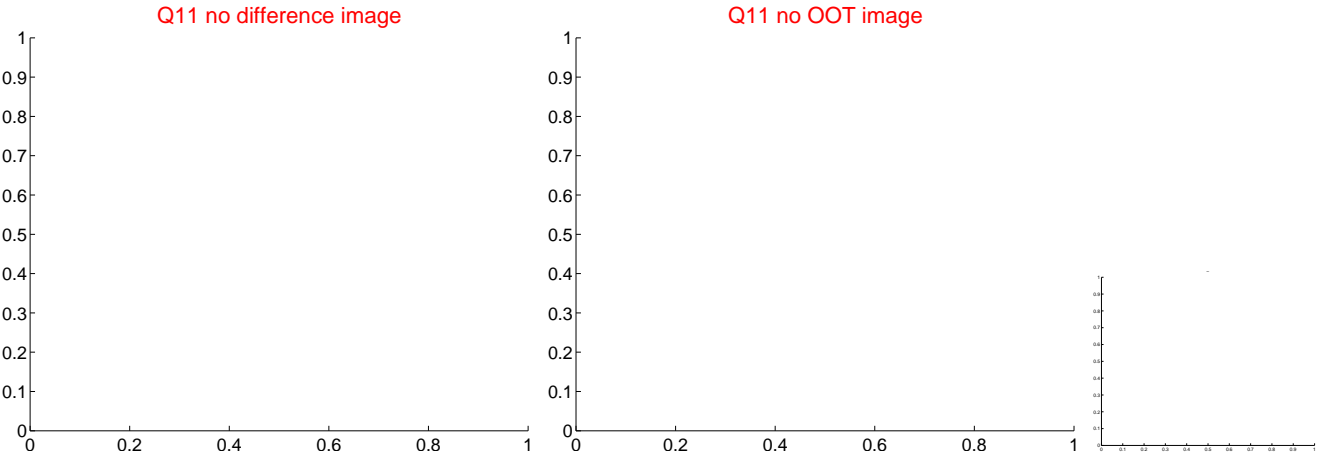
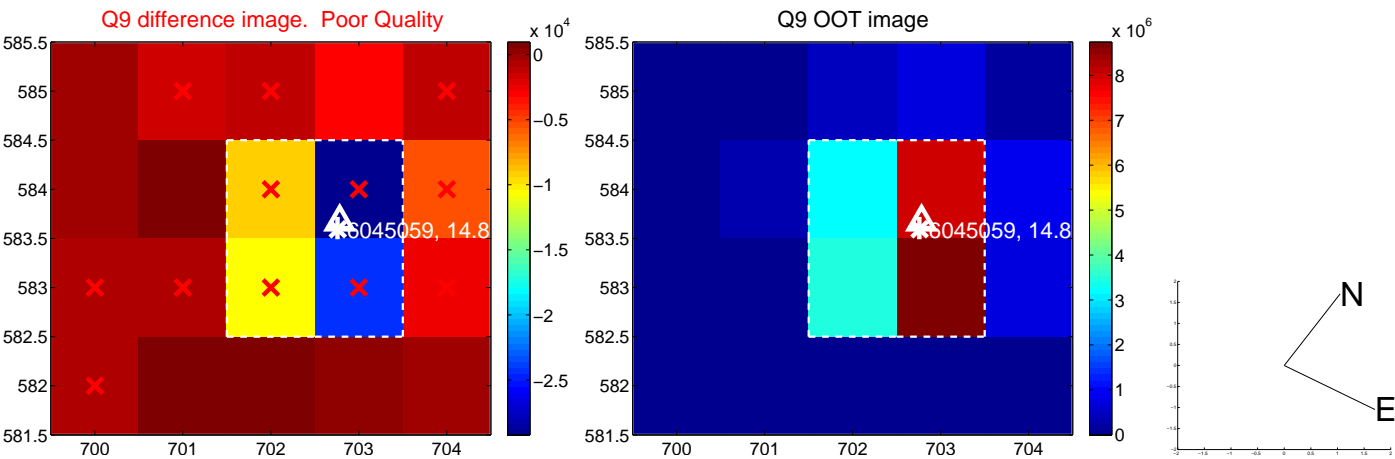
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

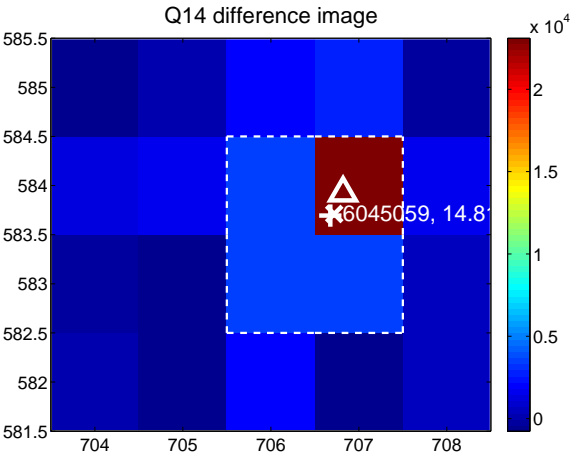
Q13 no difference image



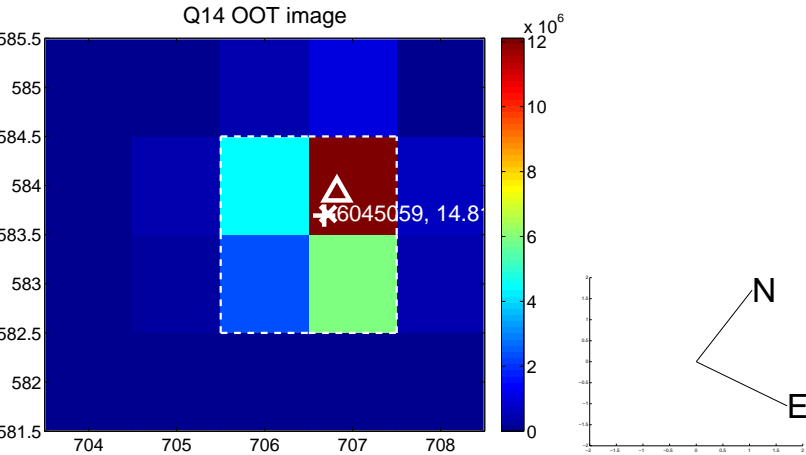
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



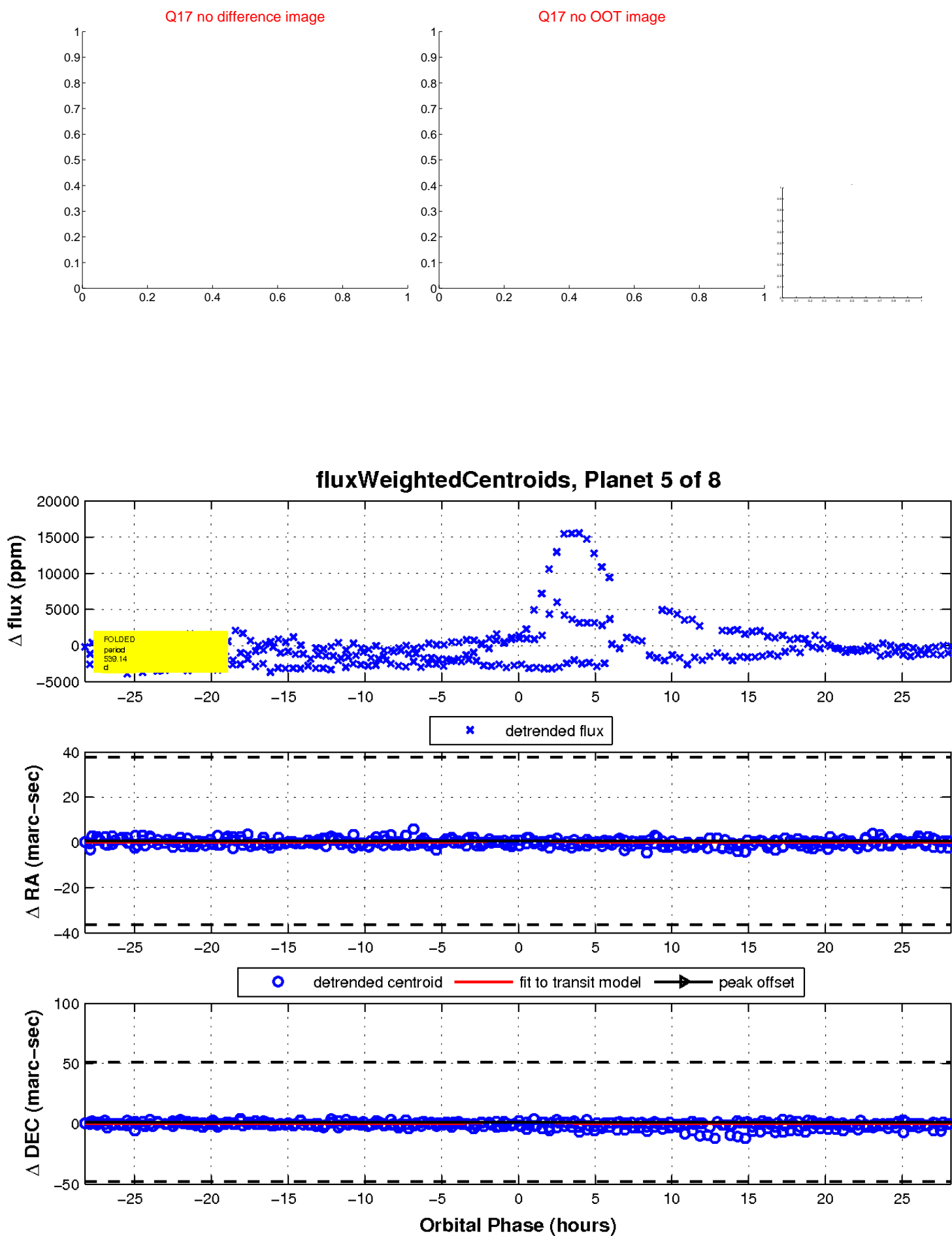
Q16 no difference image



Q16 no OOT image

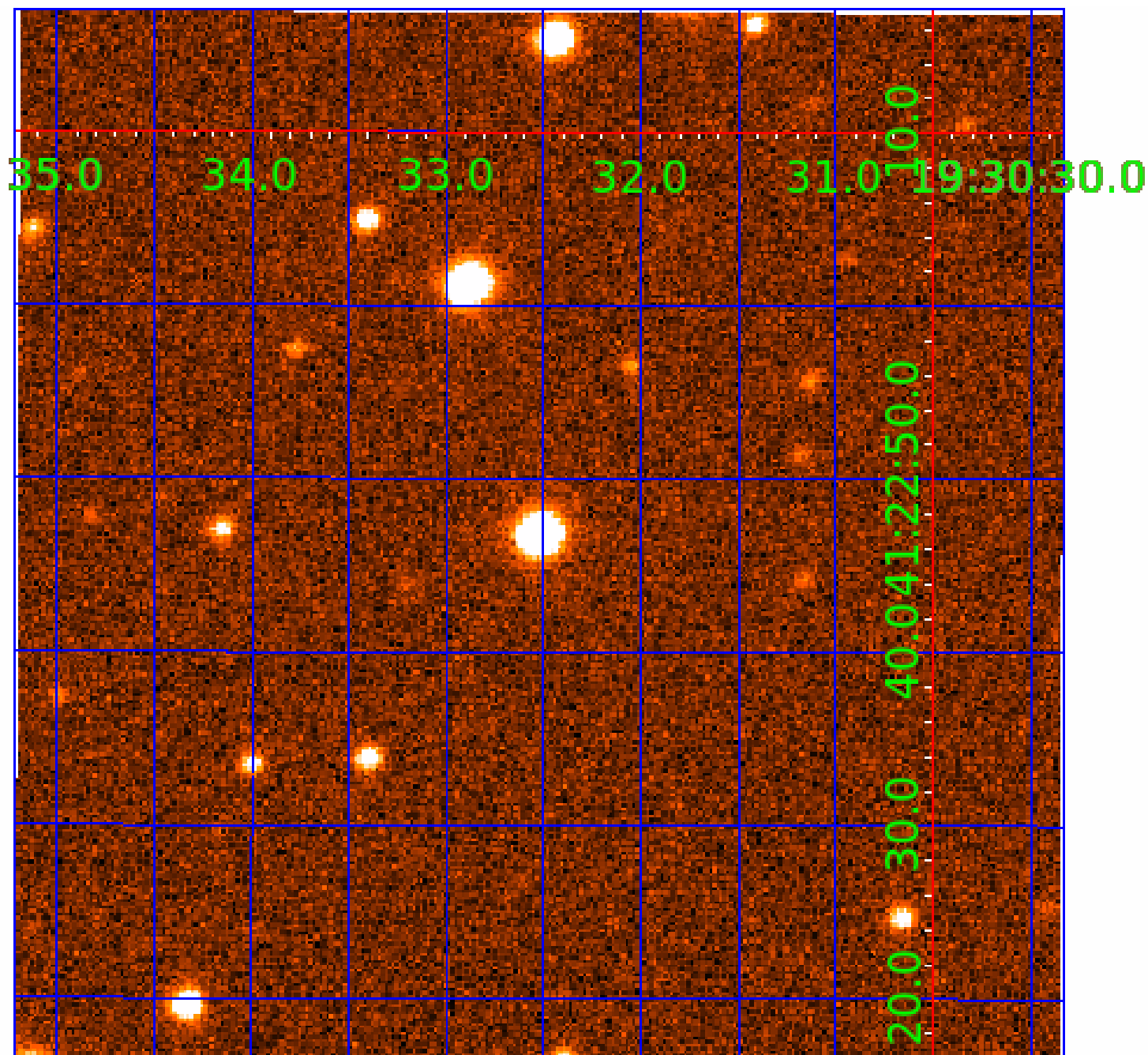


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006045059

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})
006045059-01	OBS	No	535.041533	277.884635	732.6	1.192	24.8	3.4	0.74	5180	2.14	0.27
006045059-02	OBS	No	507.533740	333.080100	2343.1	3.129	19.0	11.4	0.74	5180	3.56	0.29
006045059-03	OBS	No	232.341369	328.144983	916.3	8.703	13.8	7.0	0.74	5180	2.29	0.82
006045059-04	OBS	No	338.187712	428.001094	1201.5	5.861	13.1	7.1	0.74	5180	2.69	0.50
006045059-05	OBS	No	539.137994	273.954258	3665.6	9.437	18.1	13.0	0.74	5180	8.55	0.27
006045059-06	OBS	No	270.783200	251.192622	998.1	6.303	15.5	4.3	0.74	5180	2.33	0.67
006045059-07	OBS	No	423.989823	376.038716	1410.9	10.834	13.9	6.8	0.74	5180	3.46	0.37
006045059-08	OBS	No	242.906579	317.858250	1133.3	4.500	12.7	-1.0	0.74	5180	2.45	0.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006045059-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-03	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV
006045059-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
006045059-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-06	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS
006045059-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
006045059-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

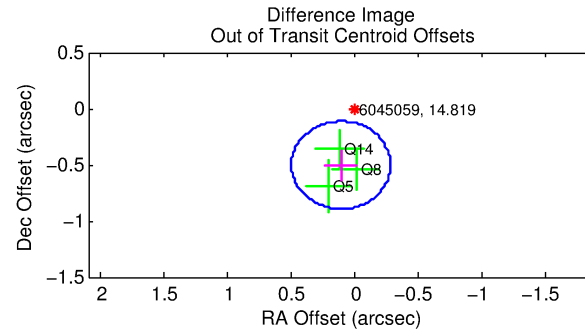
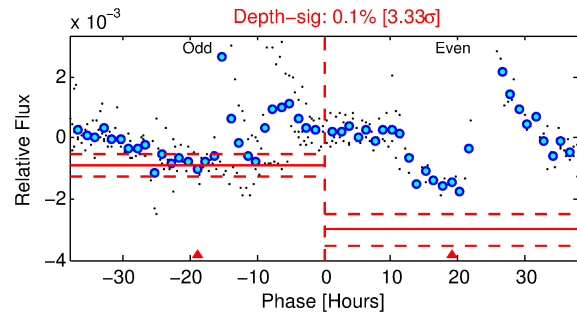
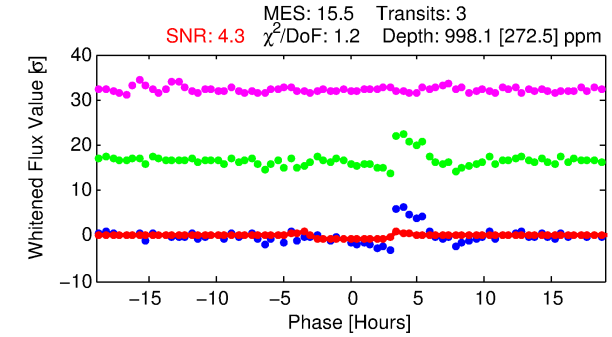
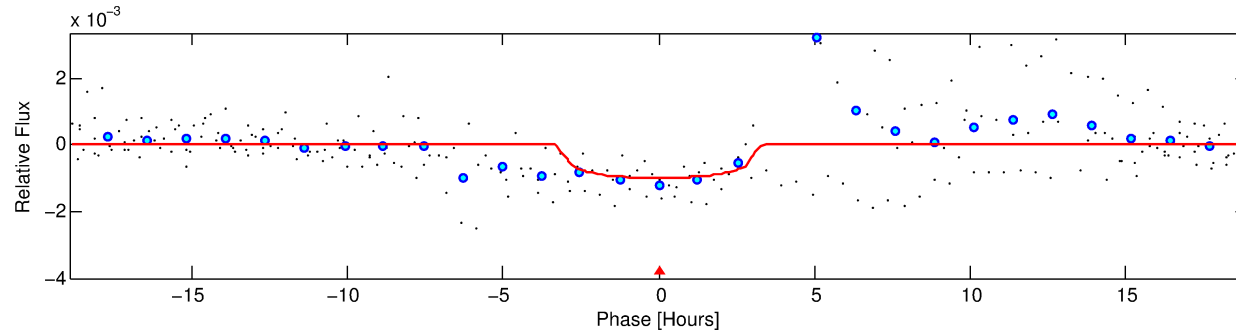
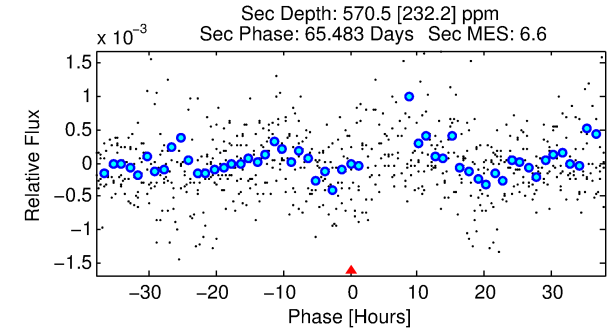
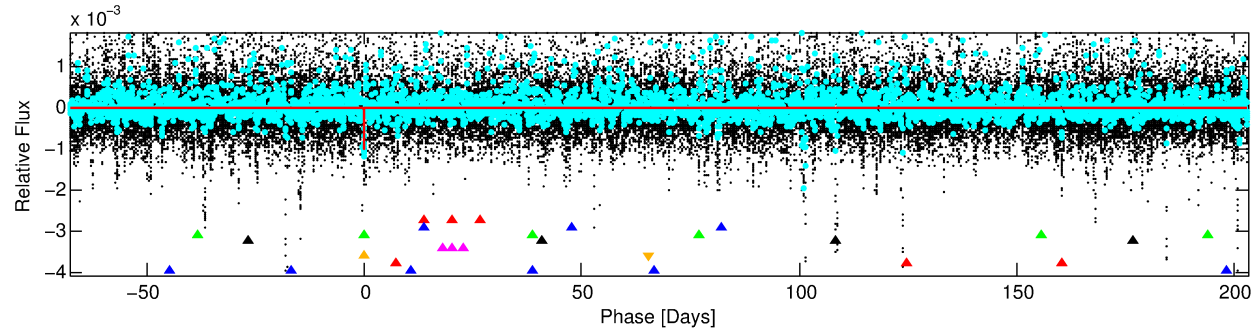
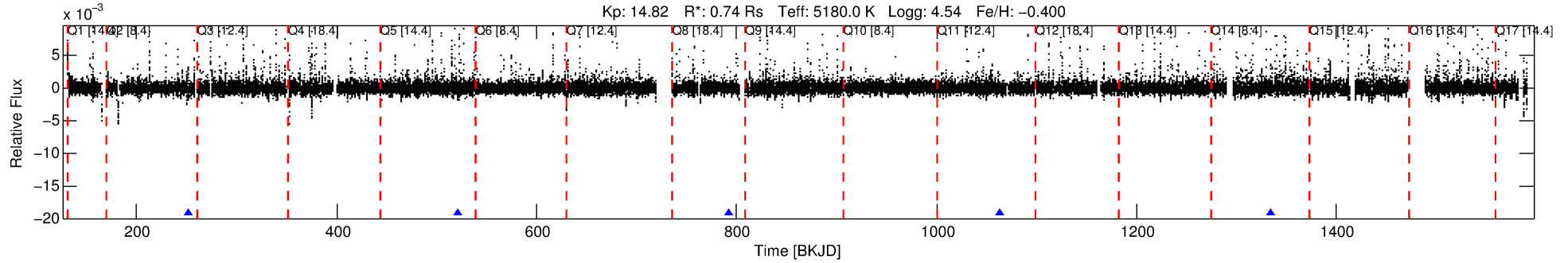
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006045059-06

No Significant Match Found

DV One-Page Summary

KIC: 6045059 Candidate: 6 of 8 Period: 270.783 d



DV Fit Results:

Period = 270.78320 [0.00466] d
Epoch = 251.1926 [0.0091] BKJD
Rp/R* = 0.0288 [0.0746]
a/R* = 318.06 [3140.78]
b = 0.35 [25.48]
Seff = 0.67 [0.13]
Teq = 231 [11] K
Rp = 2.33 [6.05] Re
a = 0.7284 [0.0745] AU
Ag = 30688.47 [159775.32] [0.19 σ]
Teffp = 4720 [6142] K [0.73 σ]

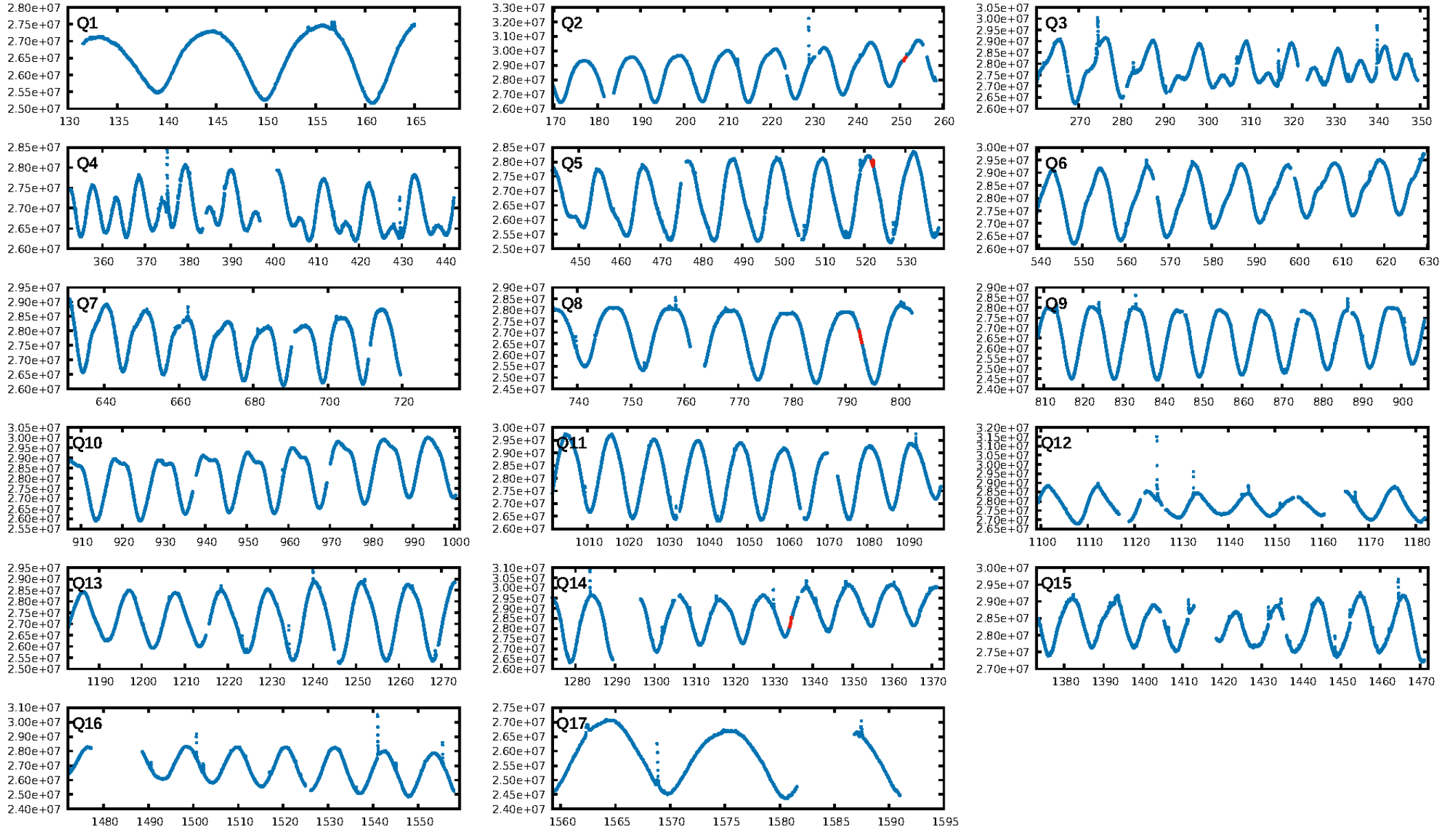
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [86.39 σ]
LongPeriod-sig: 100.0% [187.96 σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGoF-sig: 84.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.85
Centroid-sig: 77.7%
Centroid-so: 0.452 arcsec [0.58 σ]
OotOffset-rm: 0.517 arcsec [3.98 σ]
KicOffset-rm: 0.544 arcsec [4.18 σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.75 [3/4]

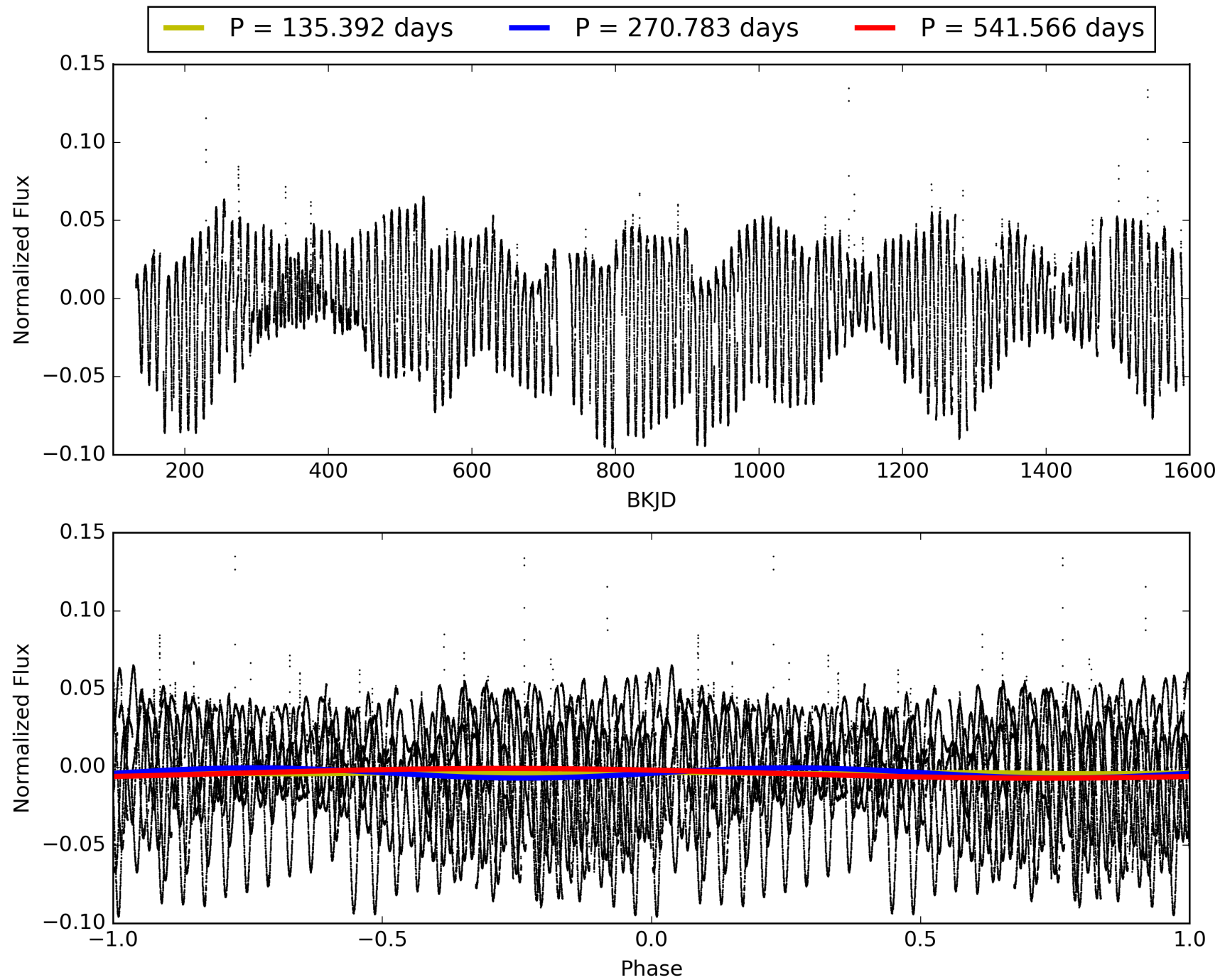
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:19:45 Z

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

TCE 006045059-06, PDC Light Curves

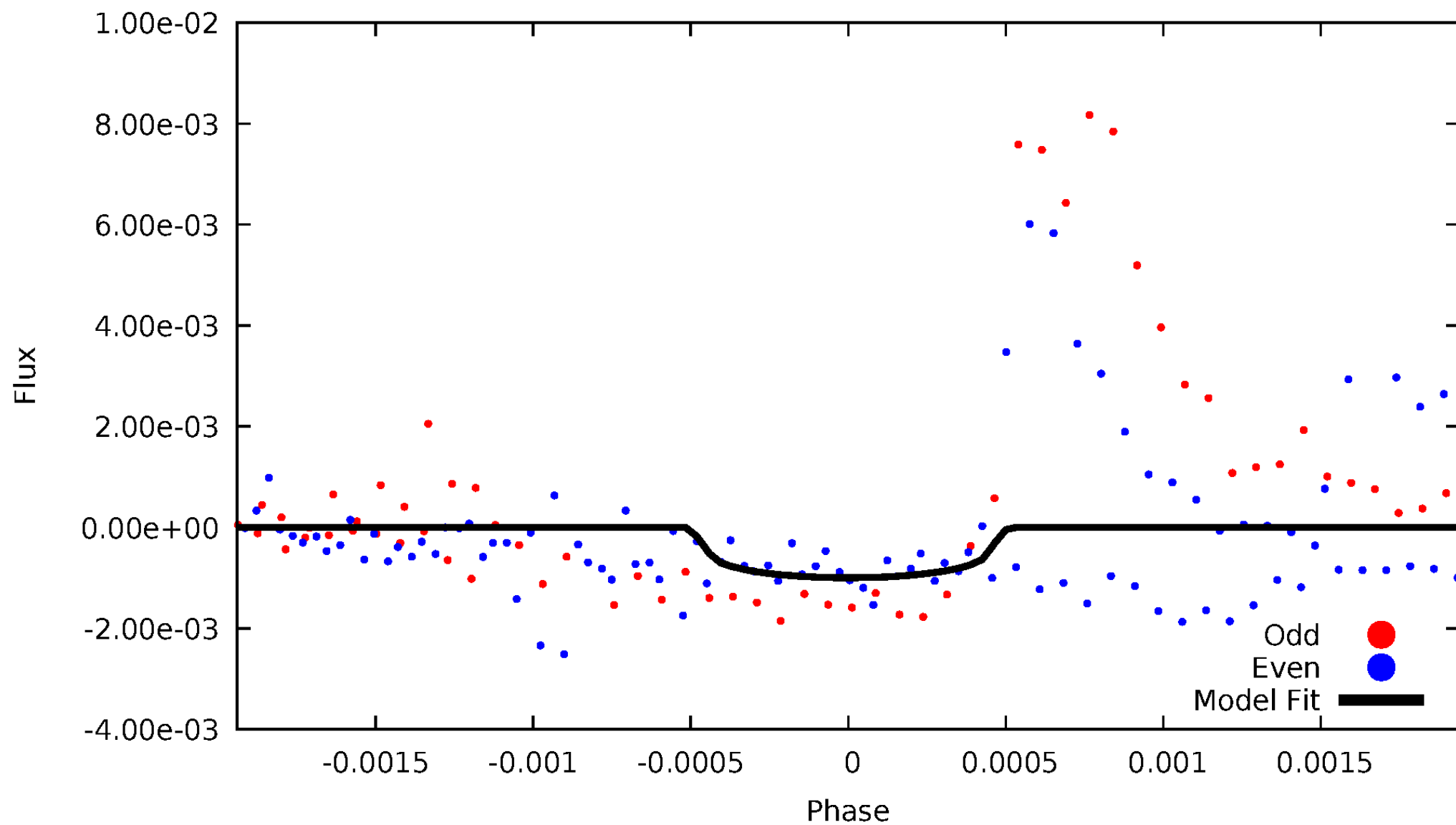


TCE 006045059-06



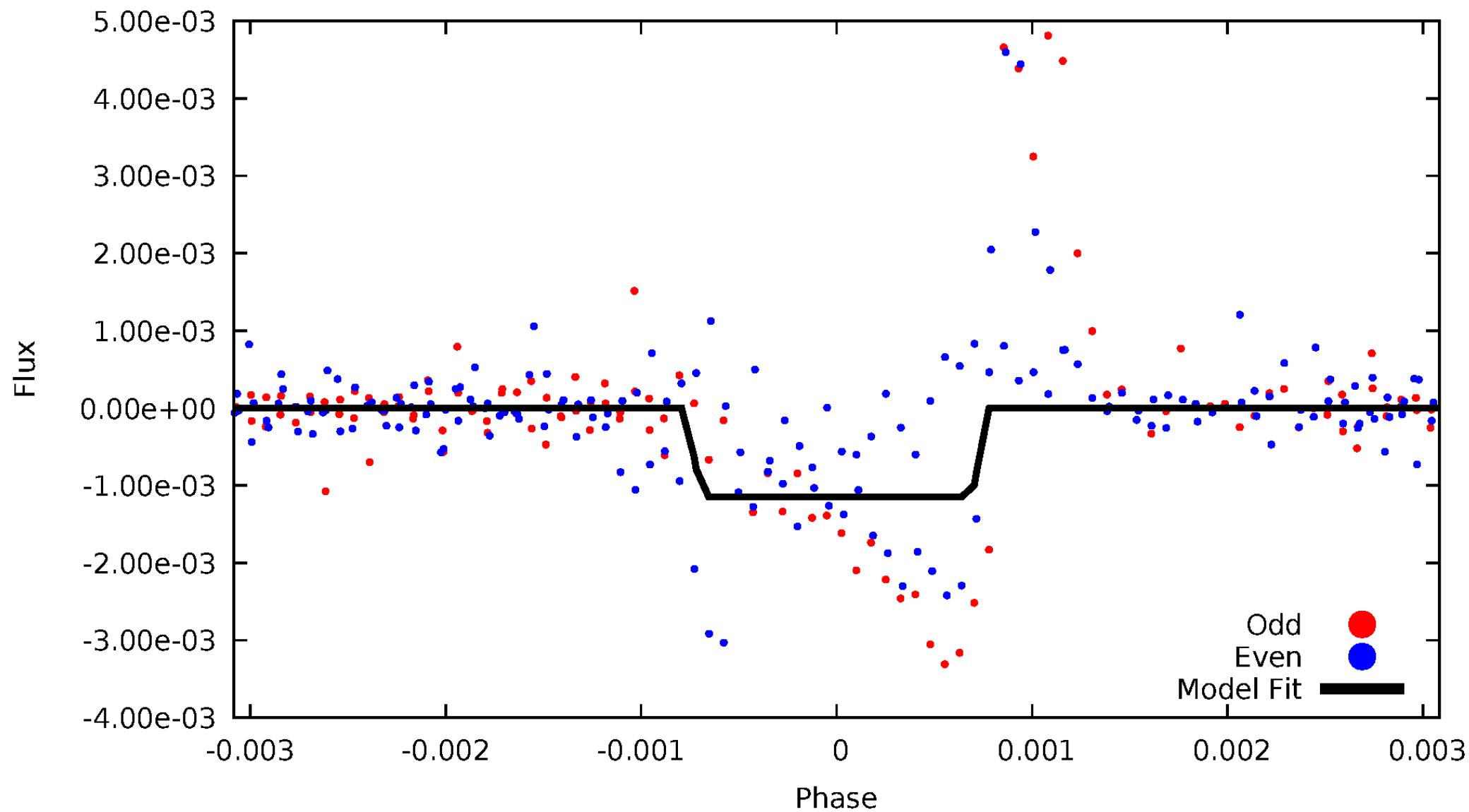
DV Odd/Even

TCE 006045059-06



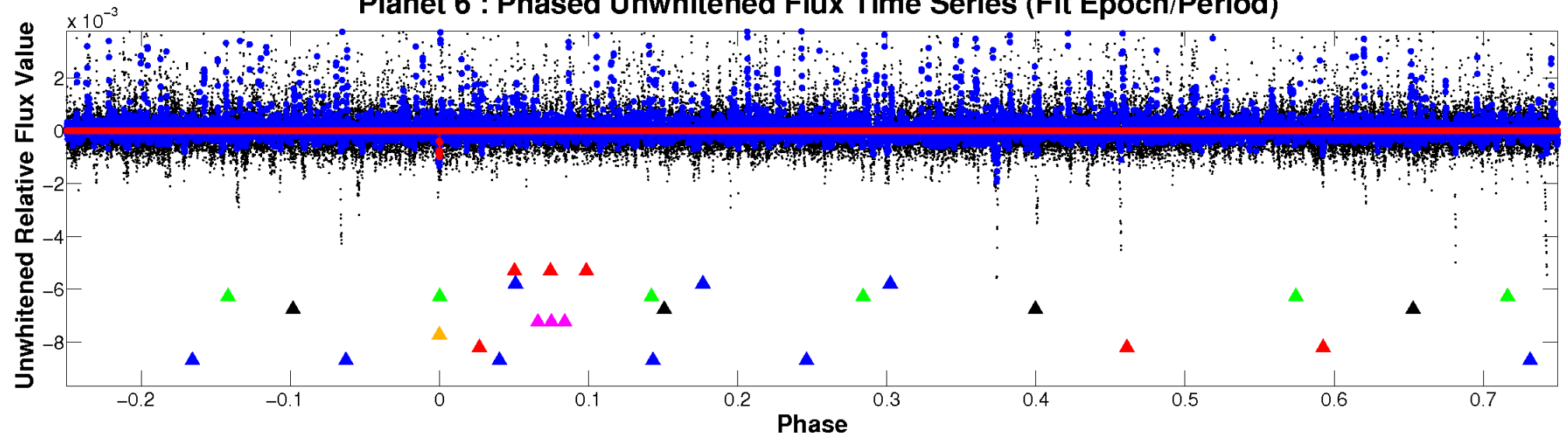
ALT Odd/Even

TCE 006045059-06

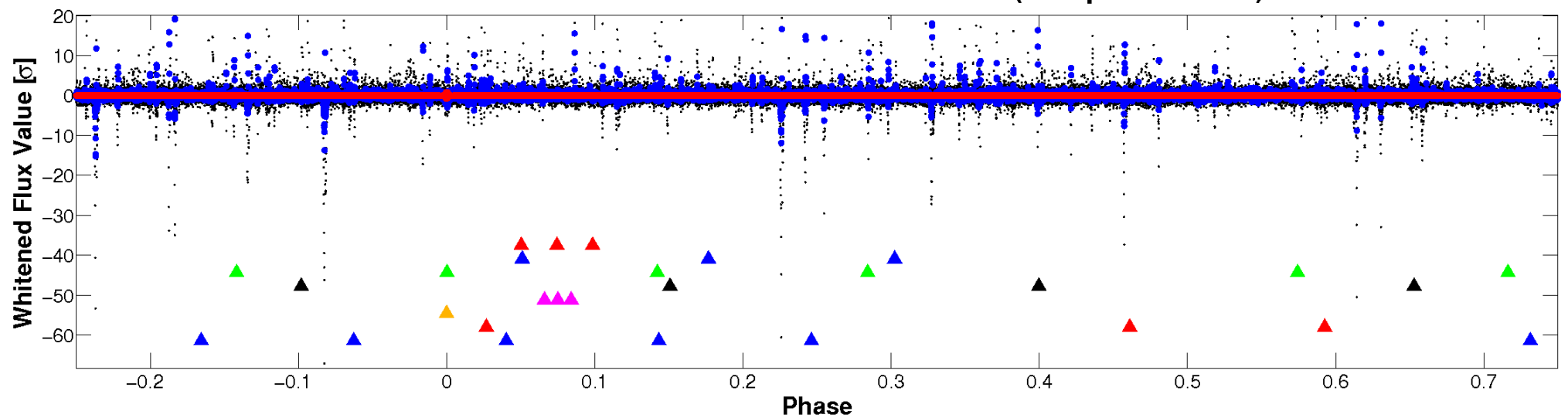


Non-Whitened Vs. Whitened Light Curve

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

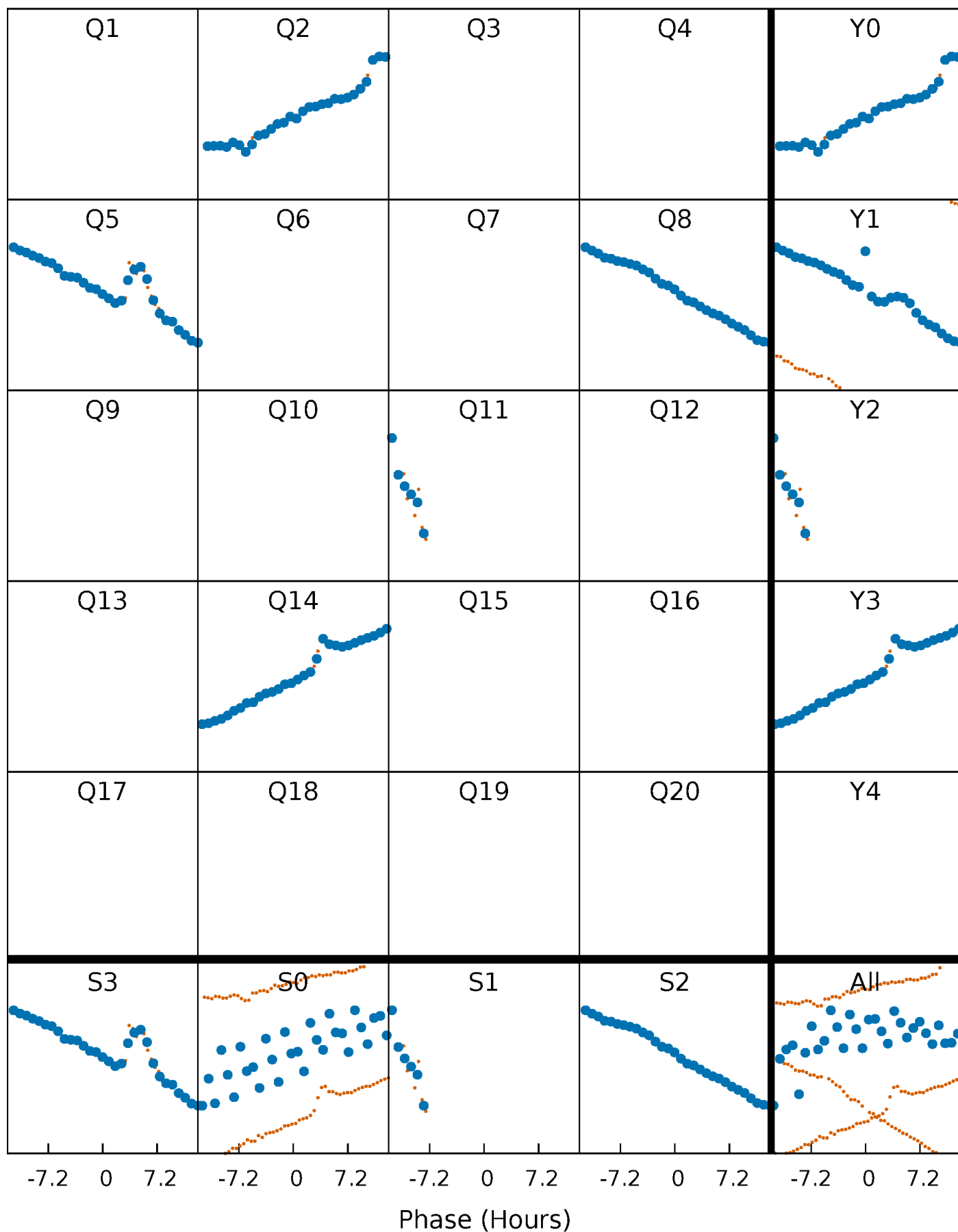


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



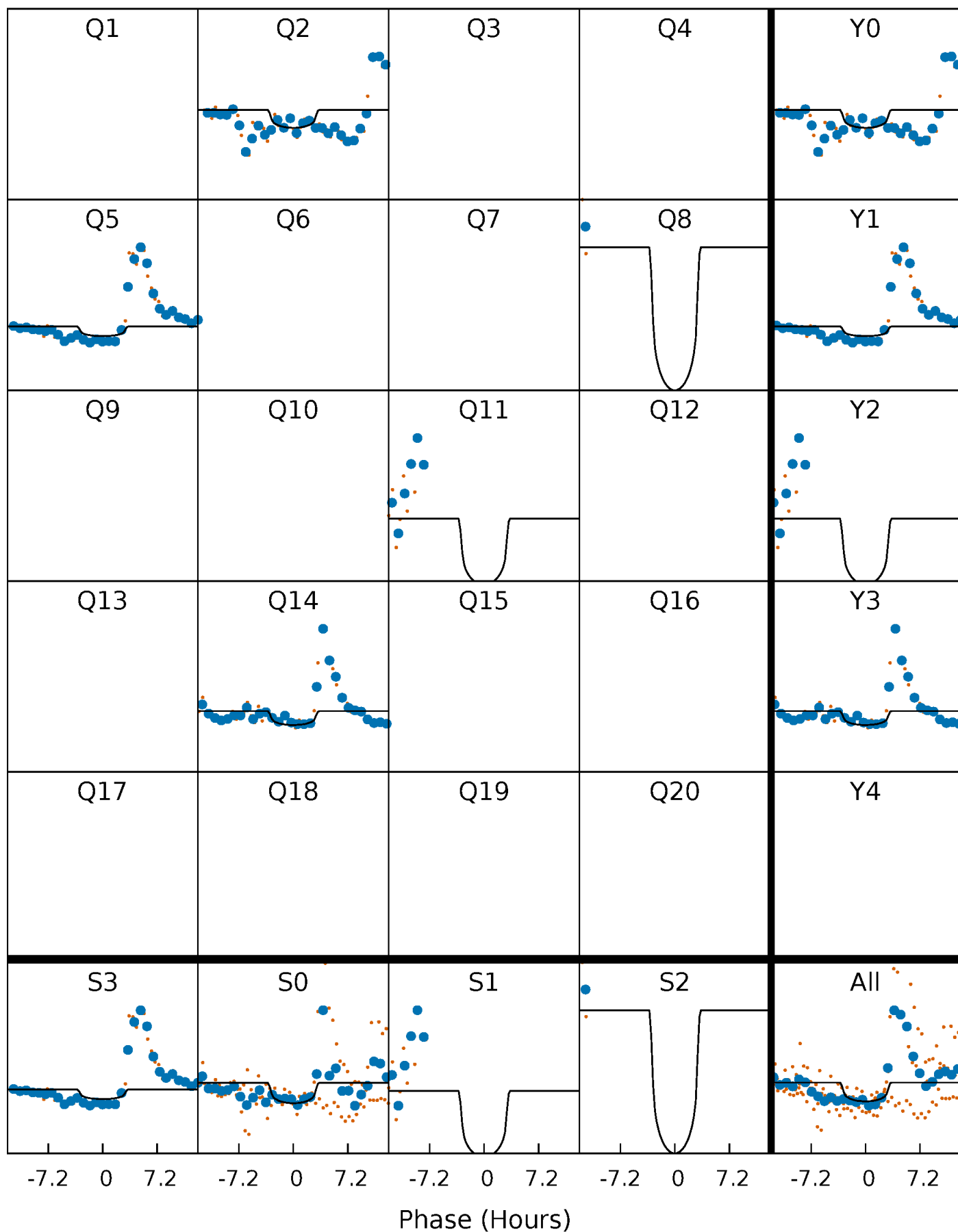
PDC Quarter-Phased Transit Curves

TCE 006045059-06 P=270.783200 Days $T_0=251.192622$ (BKJD)



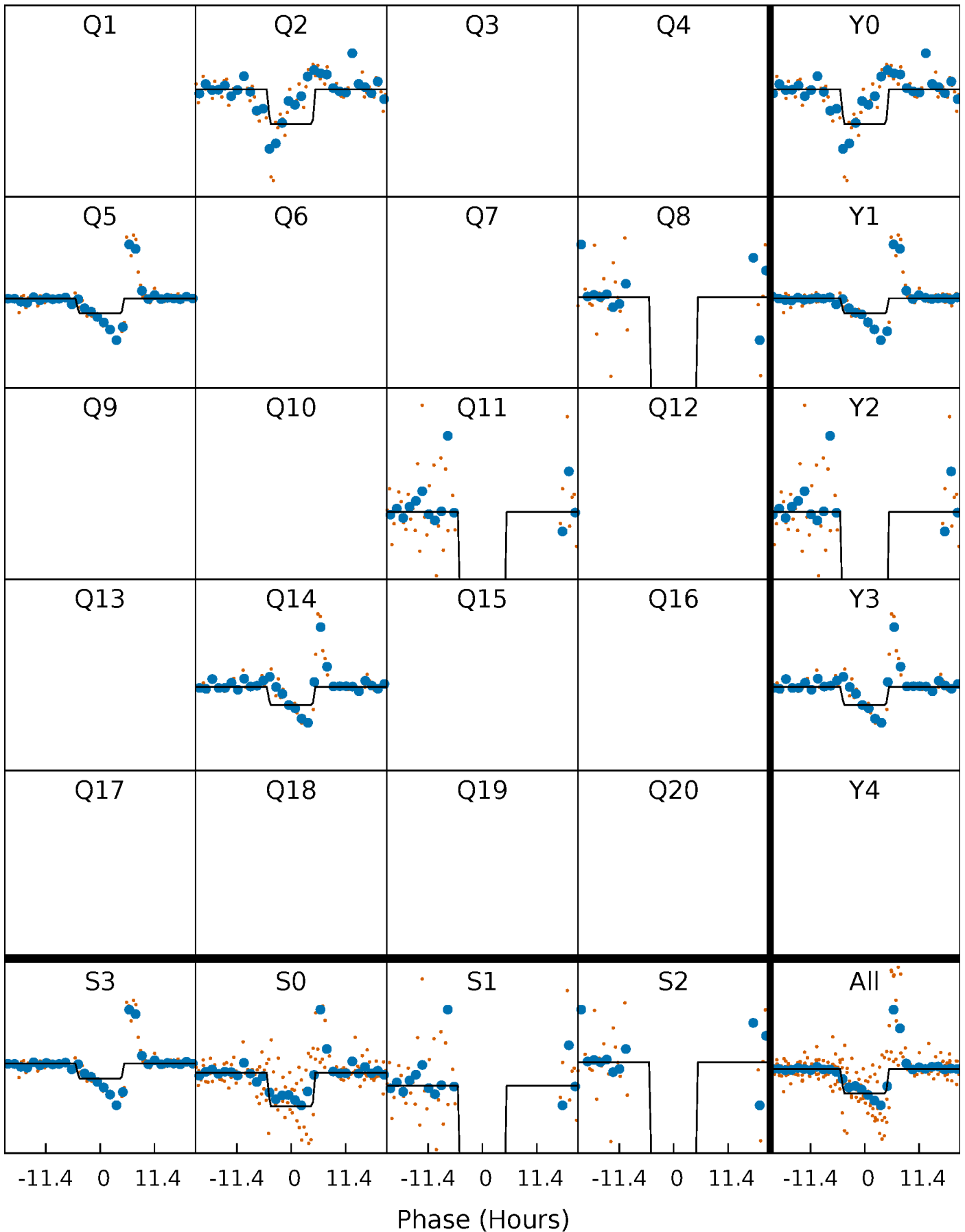
DV Quarter-Phased Transit Curves

TCE 006045059-06 $P=270.783200$ Days $T_0=251.192622$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

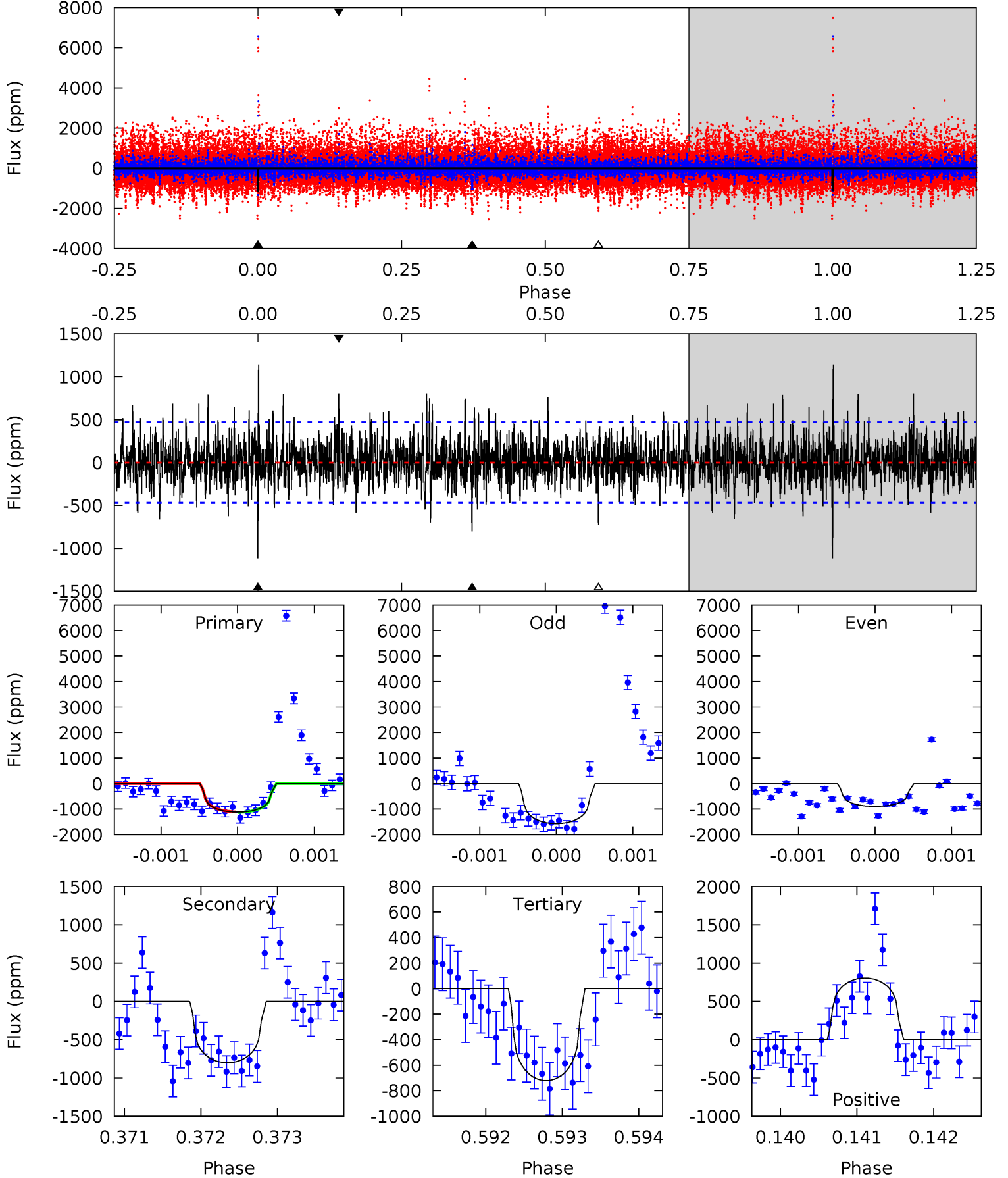
TCE 006045059-06 P=270.785537 Days $T_0=251.104684$ (BKJD)



DV Model-Shift Uniqueness Test

006045059-06, P = 270.783200 Days, E = 251.192622 Days

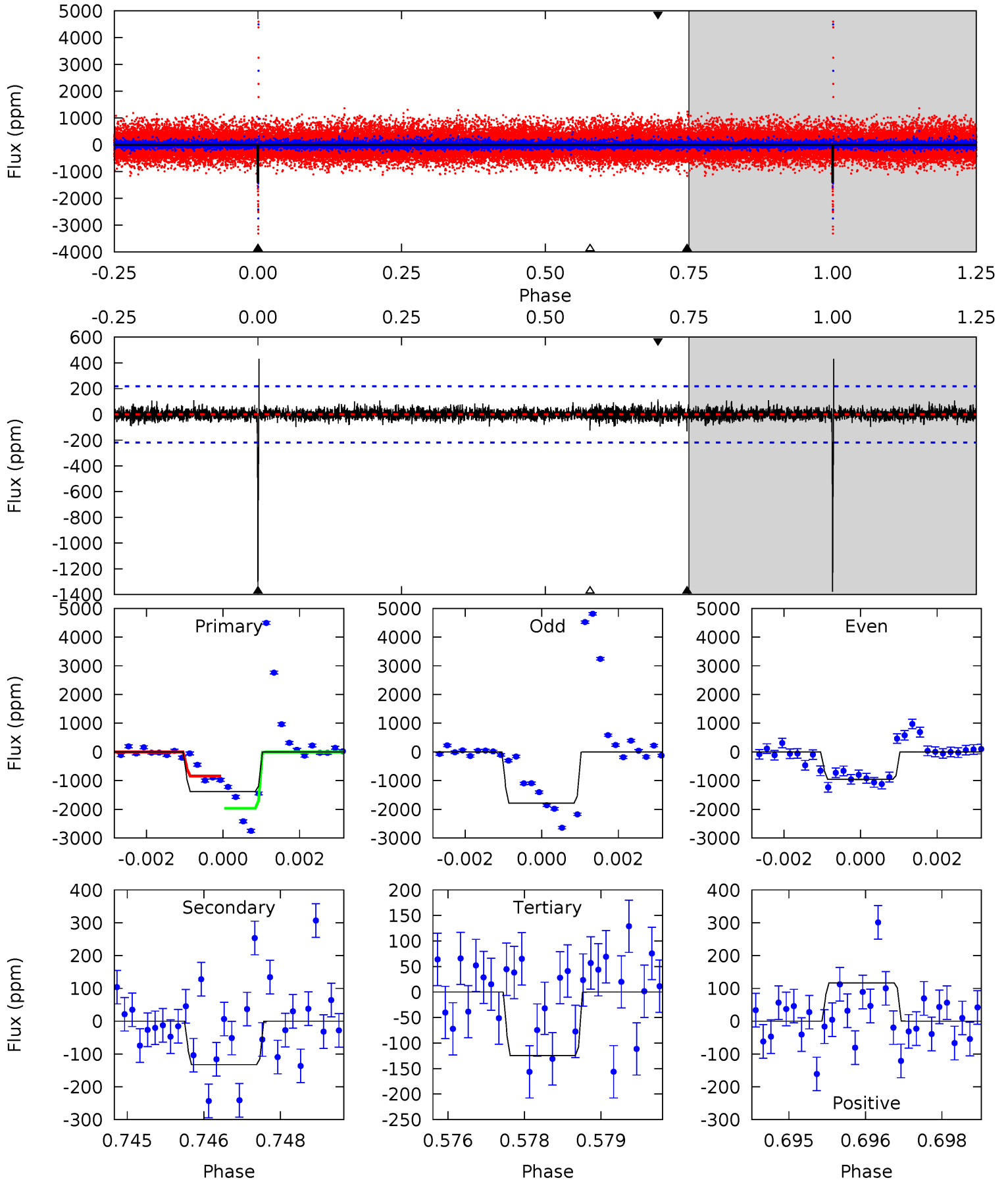
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	9.25	8.32	9.32	5.44	3.28	2.19	4.59	3.59	0.93	-0.07	3.31	1.17	0.51	0.11



Alt Model-Shift Uniqueness Test

006045059-06, P = 270.785537 Days, E = 251.104684 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.9	3.26	3.06	2.87	5.38	3.17	0.61	30.8	31.0	0.20	0.39	10.4	1.12	0.24	13.7



Stellar Parameters For KIC 006045059

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5180^{+154}_{-154}	$4.544^{+0.090}_{-0.060}$	$-0.400^{+0.350}_{-0.300}$	$0.742^{+0.076}_{-0.084}$	$0.702^{+0.095}_{-0.044}$	$2.426^{+0.873}_{-0.487}$
	+3%/-3%	+2%/-1%	+87%/-75%	+10%/-11%	+14%/-6%	+36%/-20%
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 006045059-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-800 ± 87	$5.02^{+4.54}_{-3.55}$	320^{+13}_{-13}	3837^{+2466}_{-702}	9429^{+99396}_{-6773}
Alt.	-132 ± 41	$5.33^{+4.80}_{-3.52}$	321^{+13}_{-14}	2880^{+1081}_{-500}	1354^{+10254}_{-1026}

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

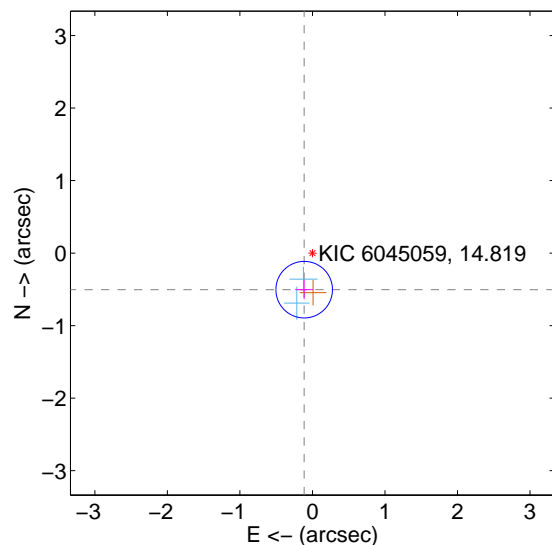
Supplemental centroid analysis for 006045059-06. Kepler magnitude: 14.82. Transit SNR 4.32

There are 2 quarters with good PRF difference image offsets

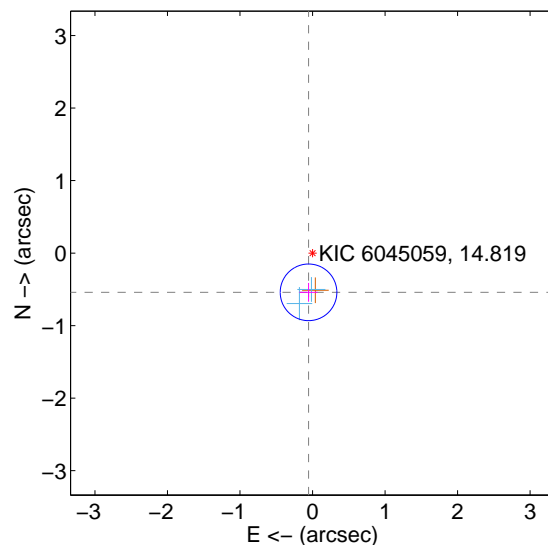
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.517 ± 0.130	3.98	0.114 ± 0.126	-0.504 ± 0.130
PRF-fit source offset from KIC position	0.544 ± 0.130	4.18	0.055 ± 0.126	-0.541 ± 0.130
photometric centroid source offset	0.45 ± 0.78	0.58	-0.36 ± 0.76	0.28 ± 0.80

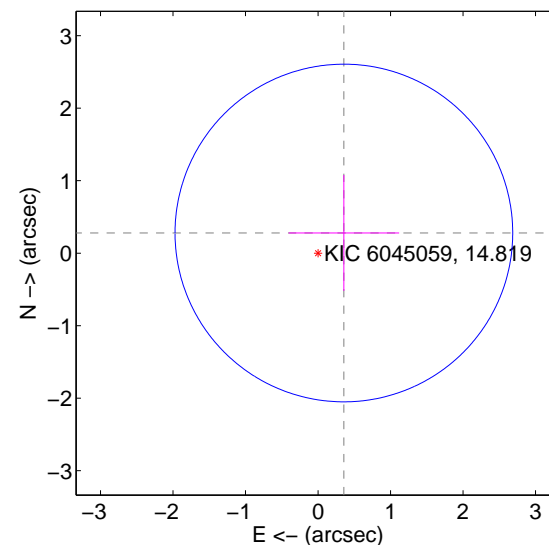
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

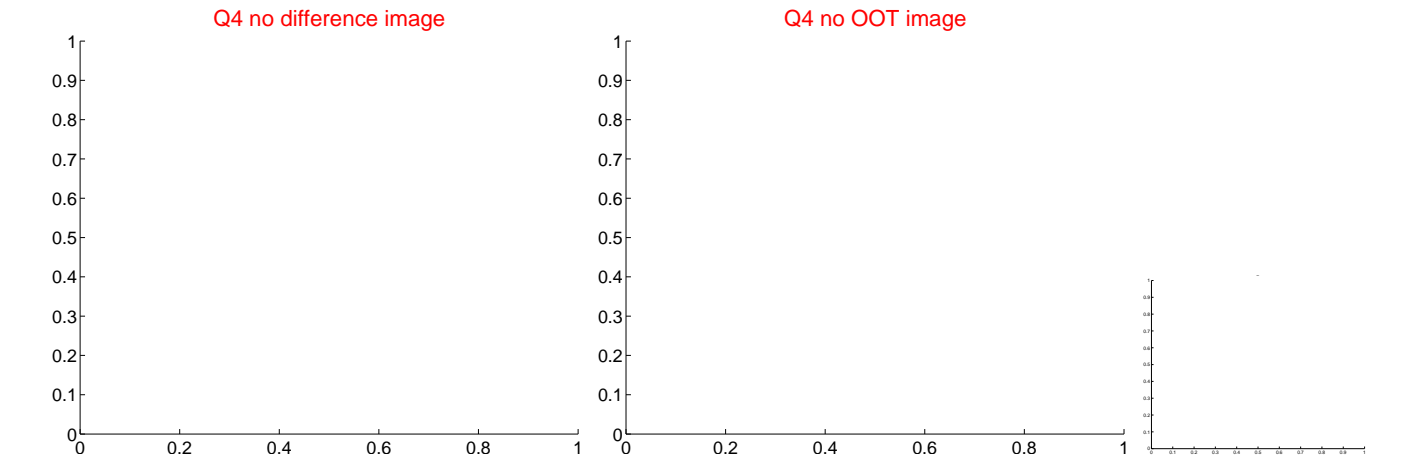
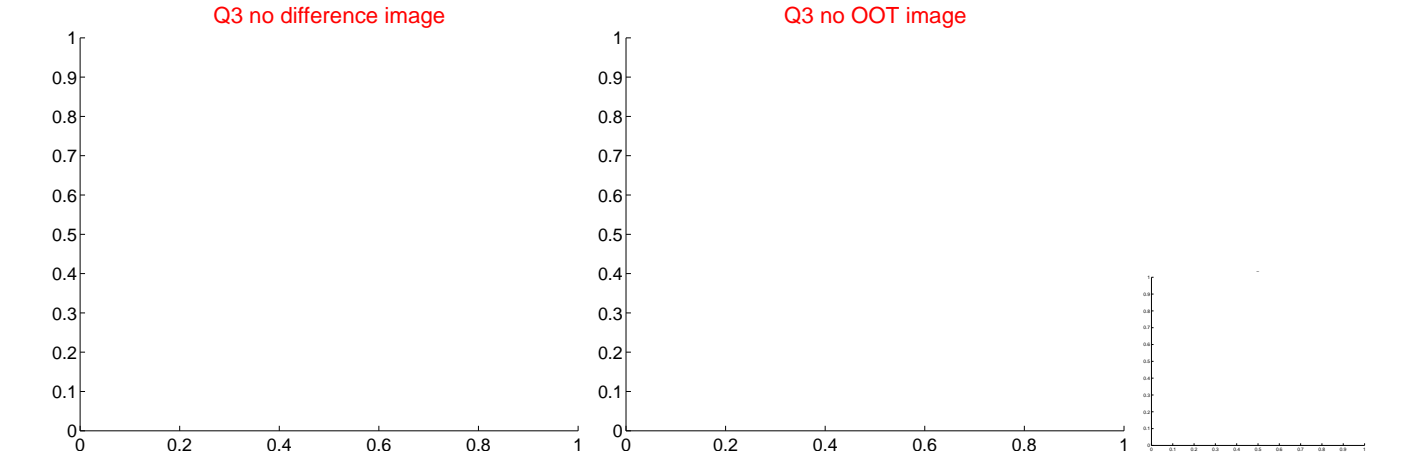
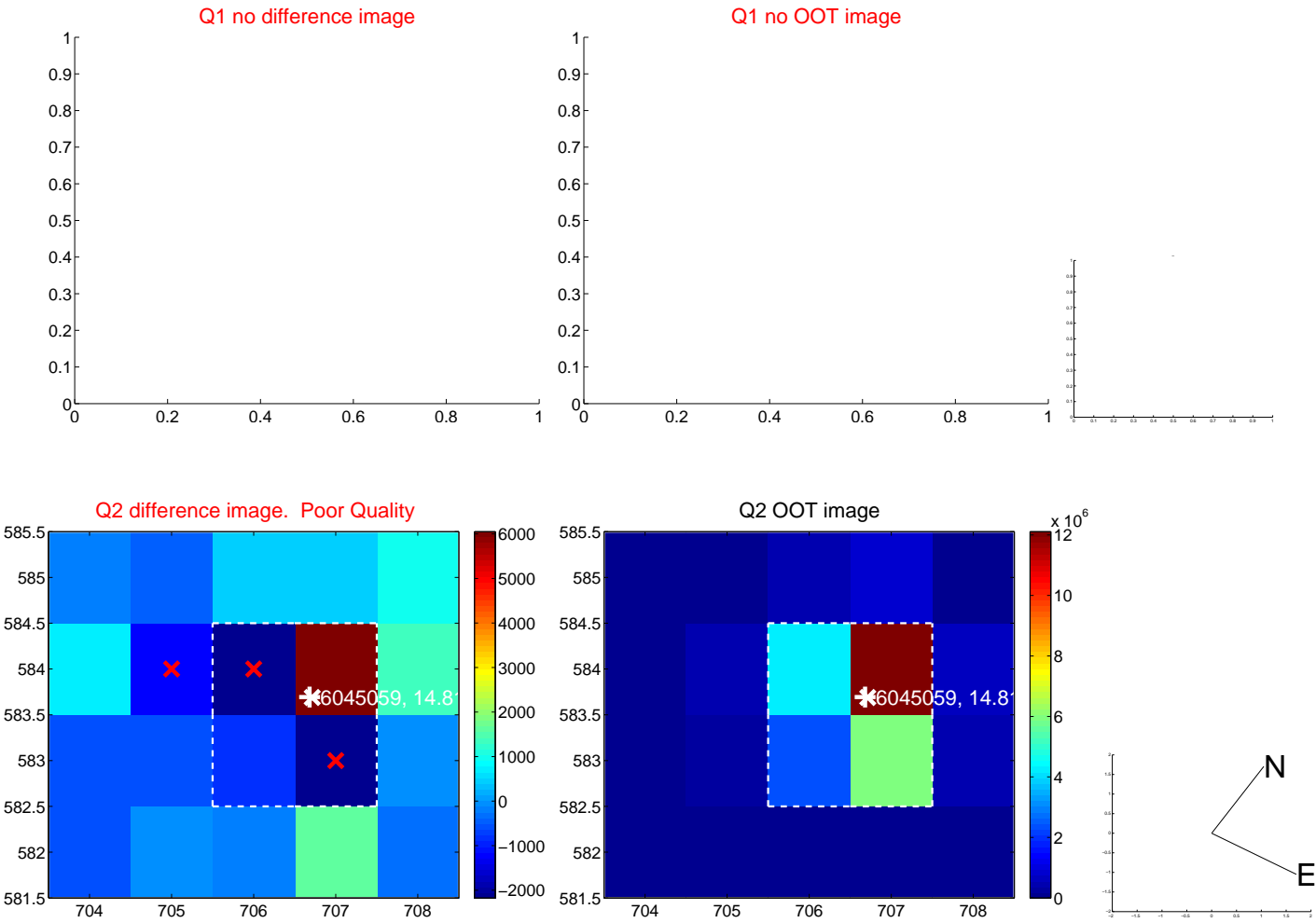


offset from photometric centroids

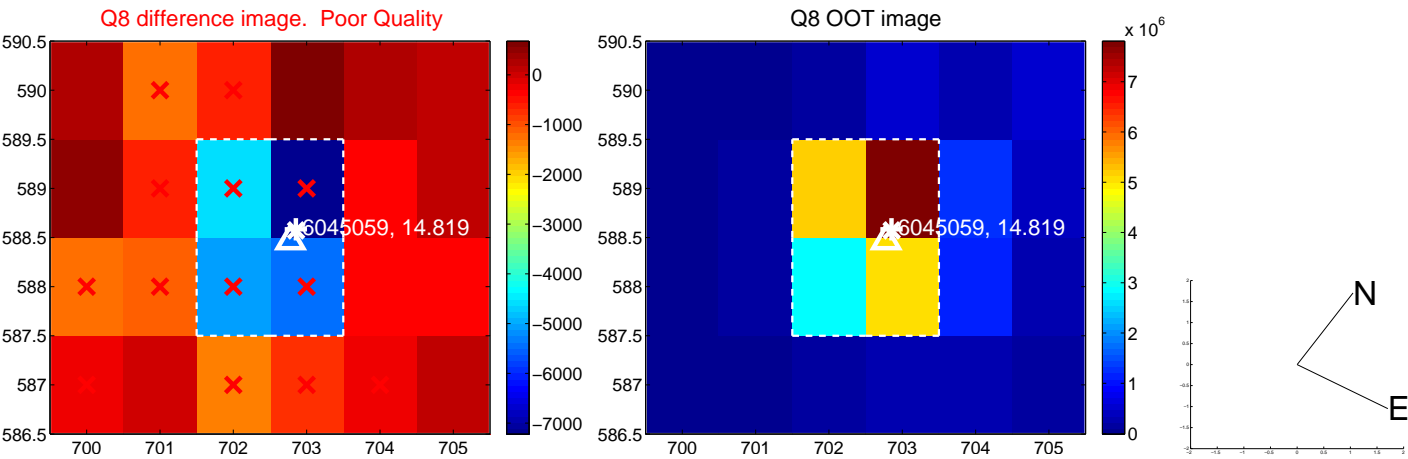
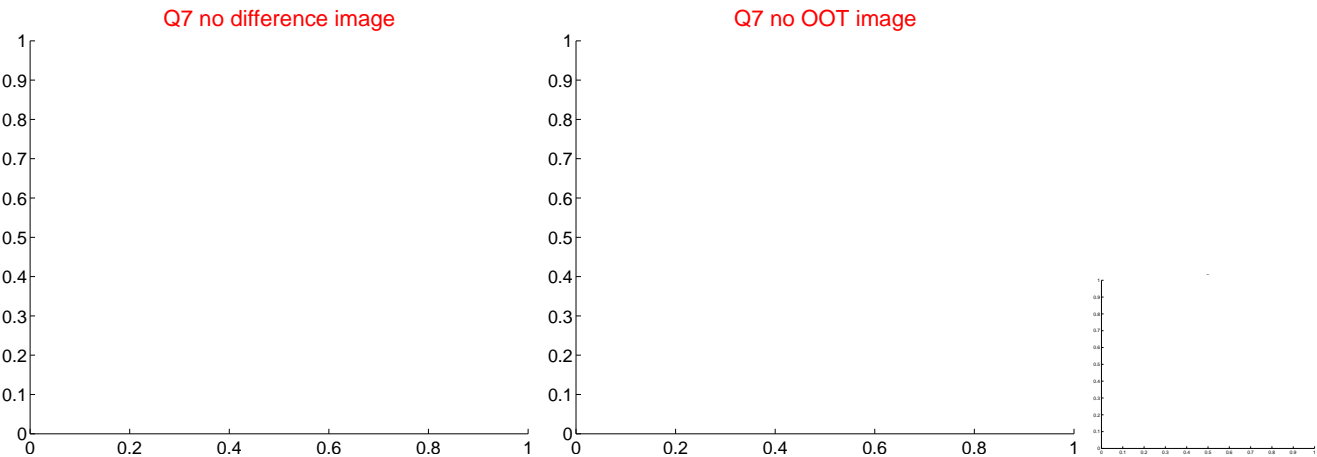
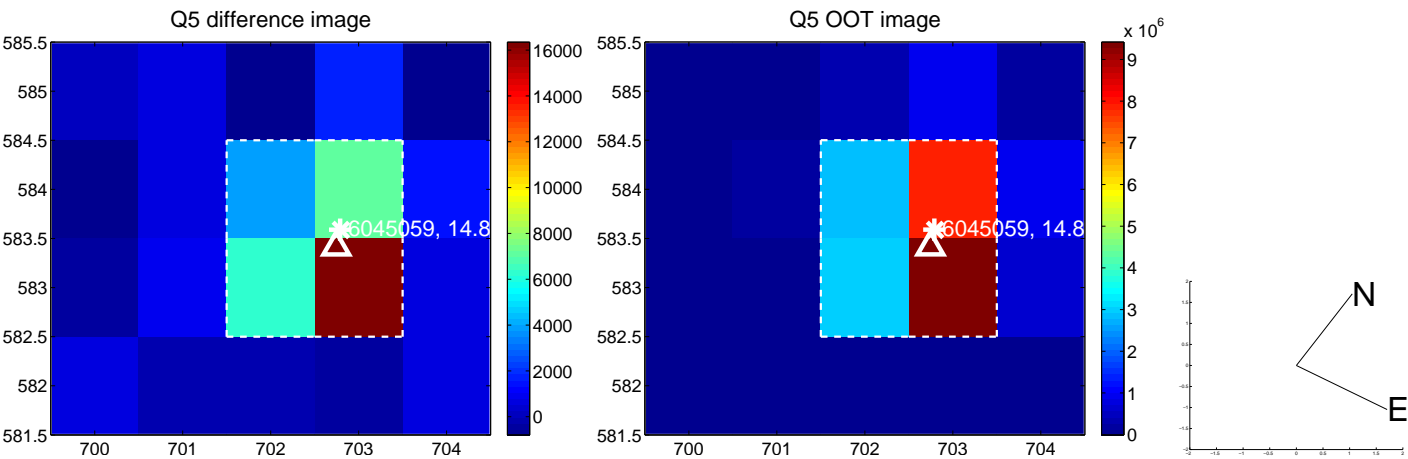


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

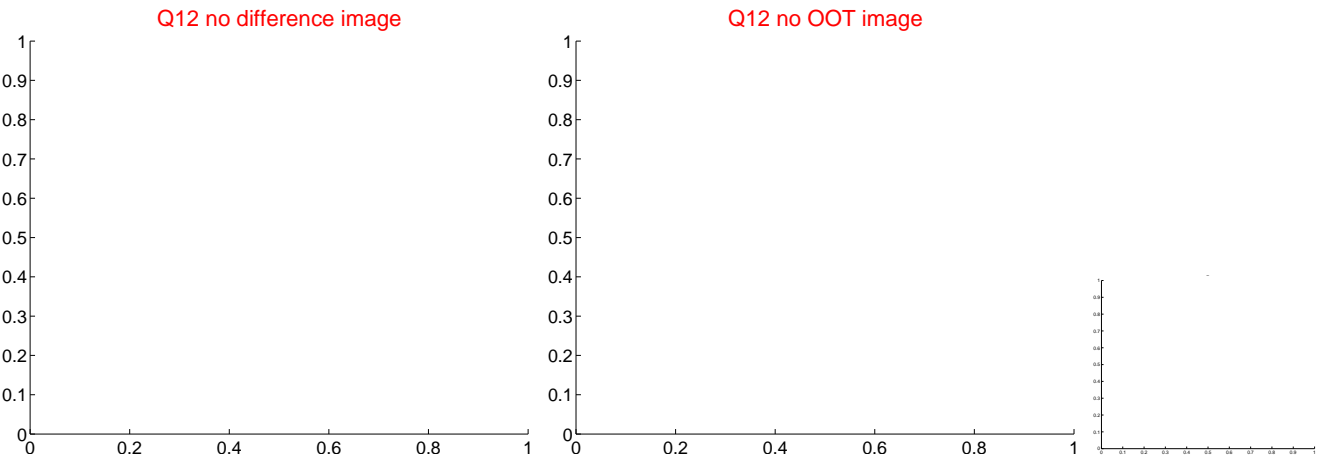
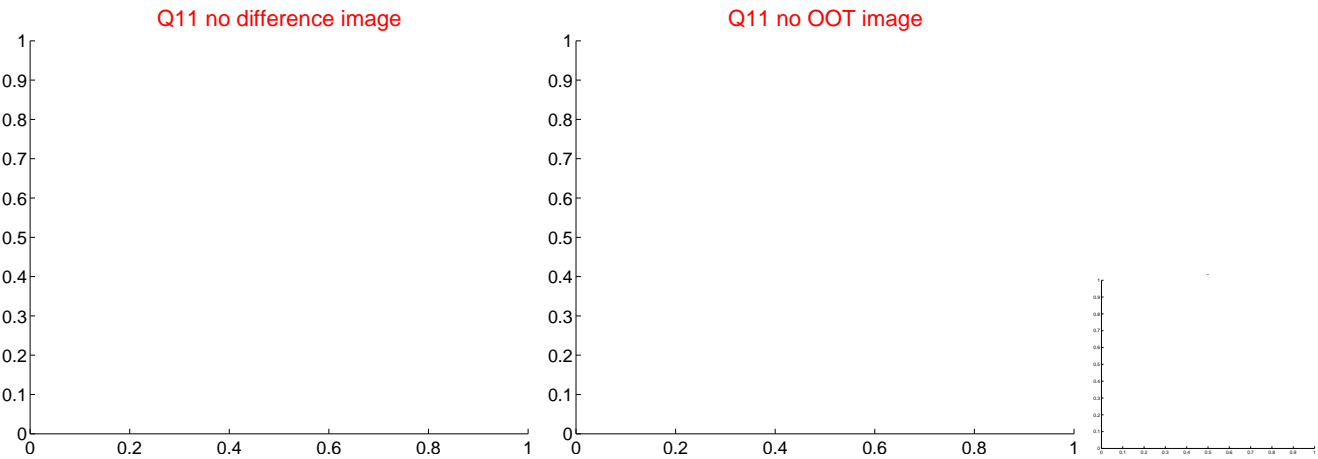
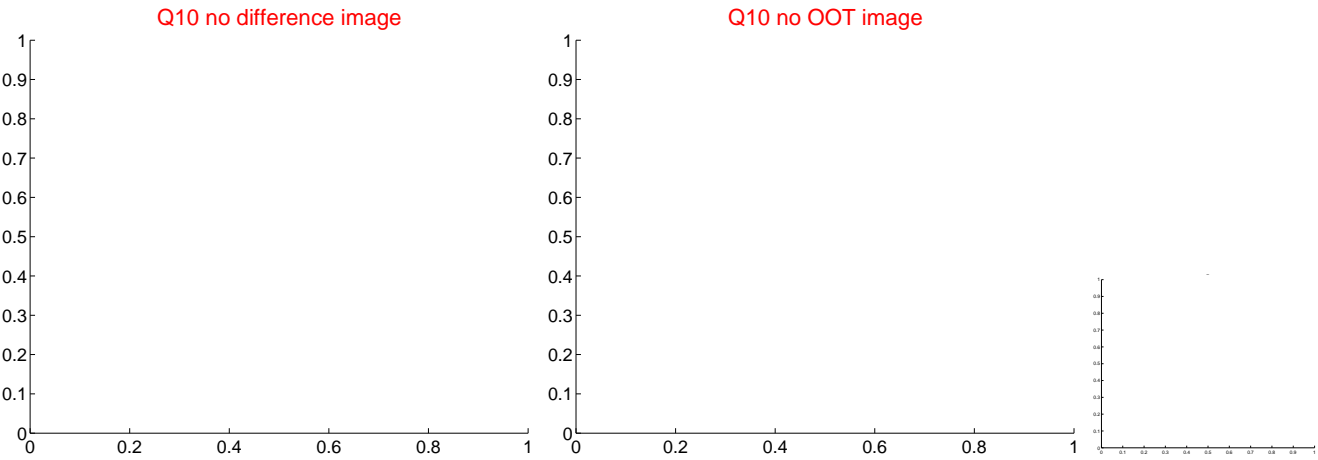
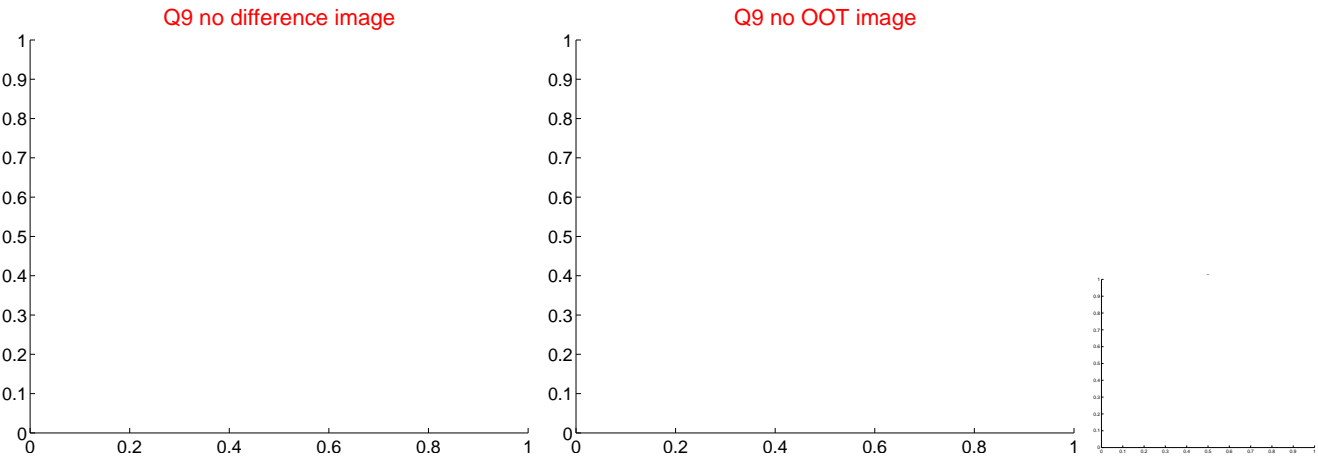
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

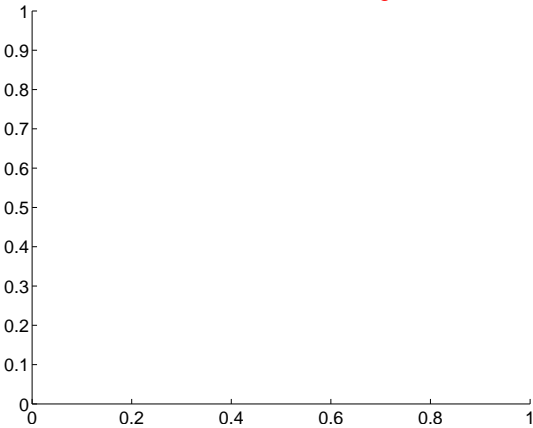


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

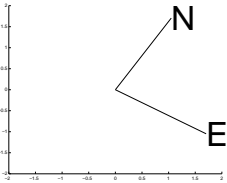
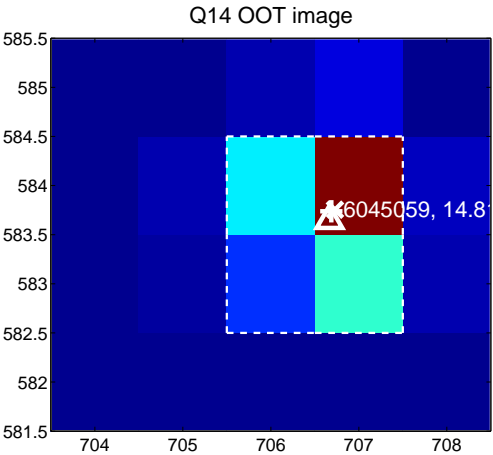
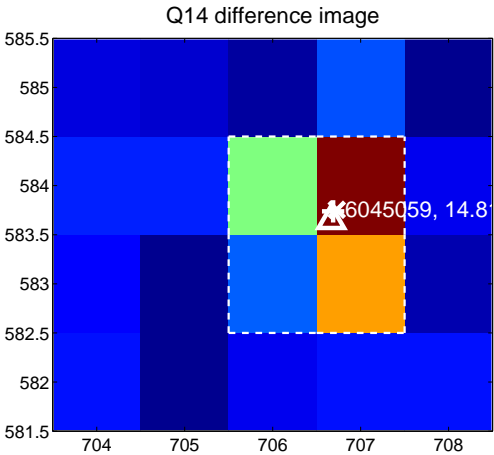
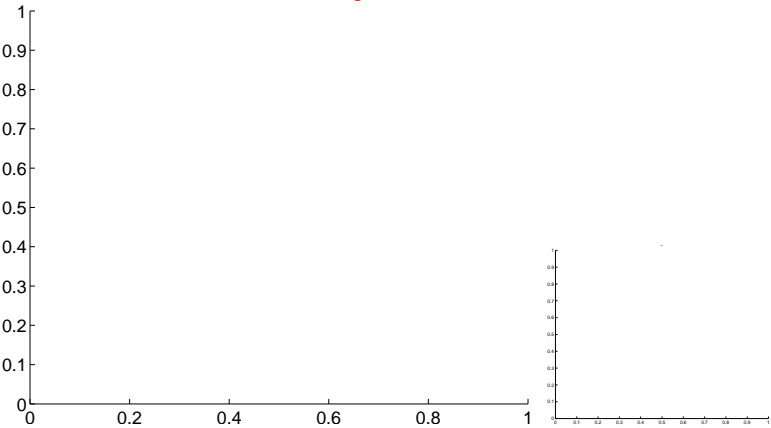


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

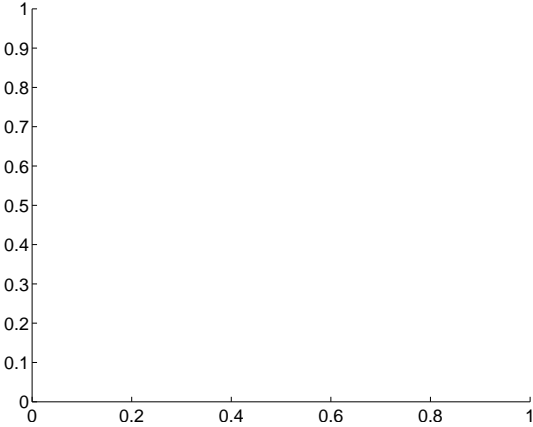
Q13 no difference image



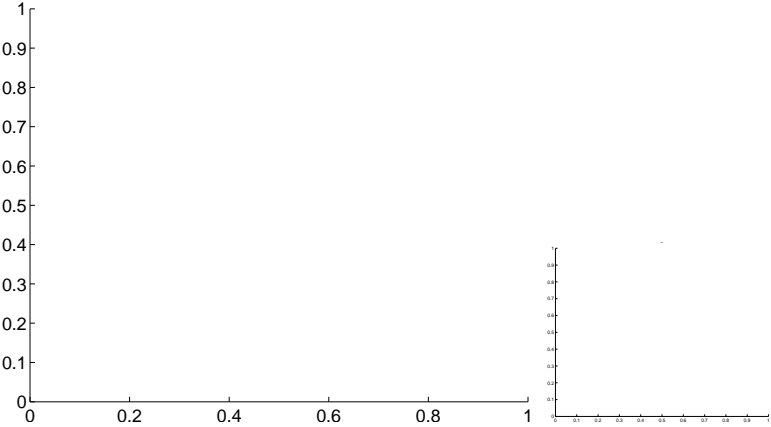
Q13 no OOT image



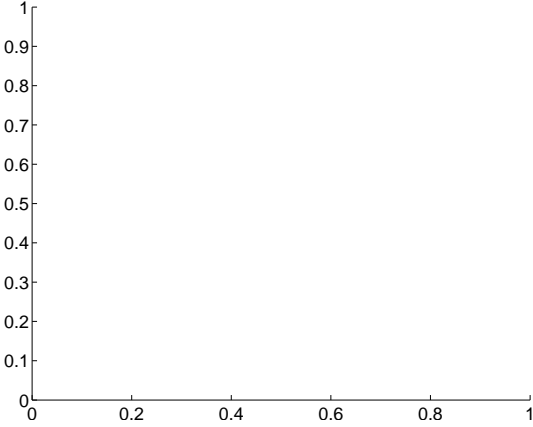
Q15 no difference image



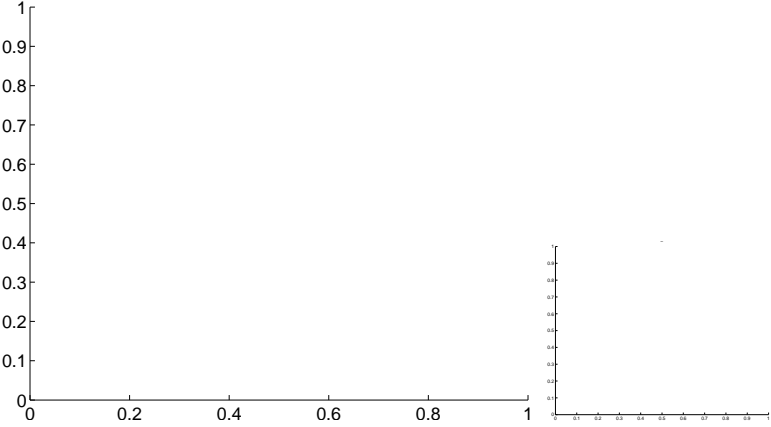
Q15 no OOT image



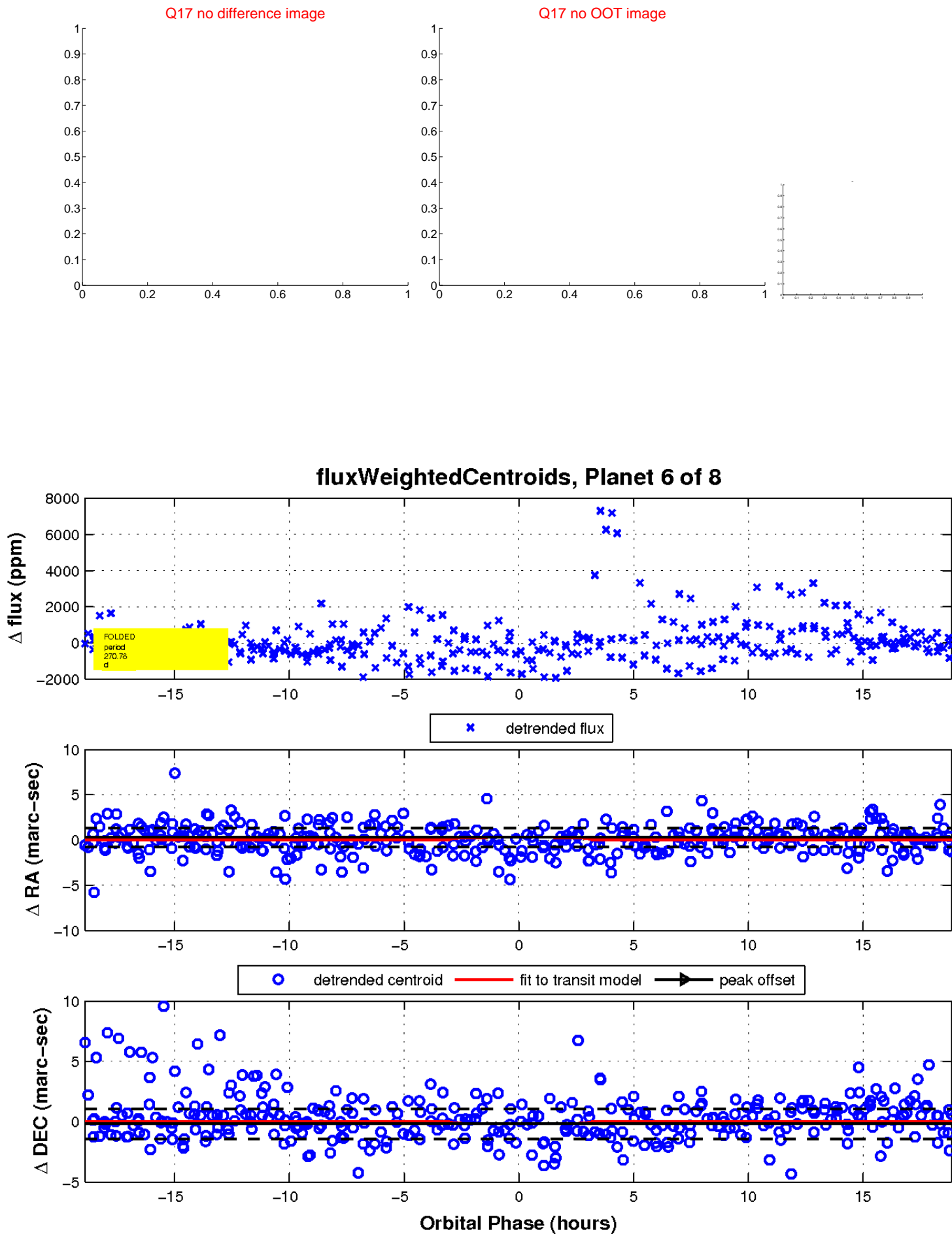
Q16 no difference image



Q16 no OOT image

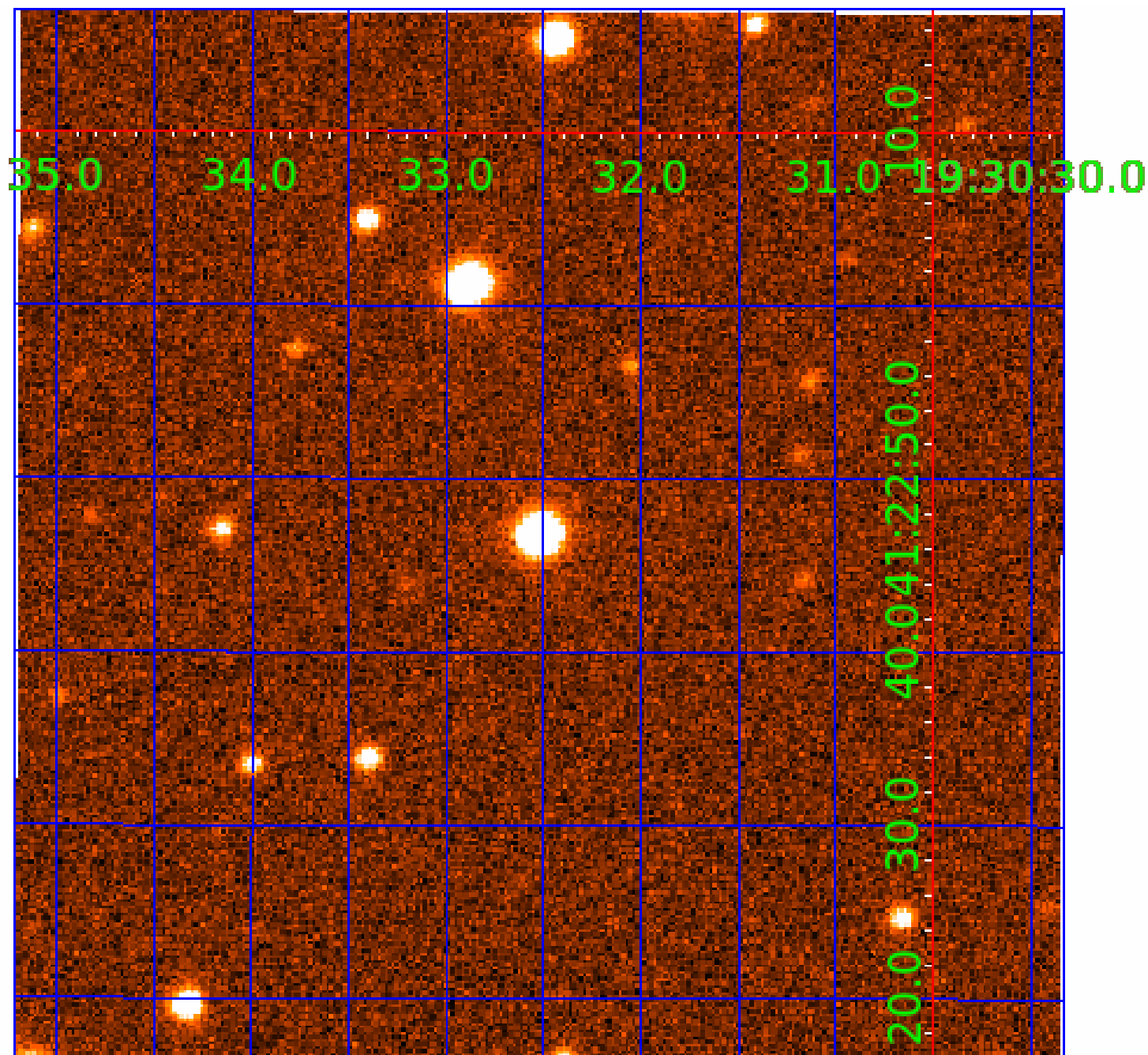


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006045059

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})
006045059-01	OBS	No	535.041533	277.884635	732.6	1.192	24.8	3.4	0.74	5180	2.14	0.27
006045059-02	OBS	No	507.533740	333.080100	2343.1	3.129	19.0	11.4	0.74	5180	3.56	0.29
006045059-03	OBS	No	232.341369	328.144983	916.3	8.703	13.8	7.0	0.74	5180	2.29	0.82
006045059-04	OBS	No	338.187712	428.001094	1201.5	5.861	13.1	7.1	0.74	5180	2.69	0.50
006045059-05	OBS	No	539.137994	273.954258	3665.6	9.437	18.1	13.0	0.74	5180	8.55	0.27
006045059-06	OBS	No	270.783200	251.192622	998.1	6.303	15.5	4.3	0.74	5180	2.33	0.67
006045059-07	OBS	No	423.989823	376.038716	1410.9	10.834	13.9	6.8	0.74	5180	3.46	0.37
006045059-08	OBS	No	242.906579	317.858250	1133.3	4.500	12.7	-1.0	0.74	5180	2.45	0.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006045059-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-03	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV
006045059-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
006045059-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-06	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS
006045059-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
006045059-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

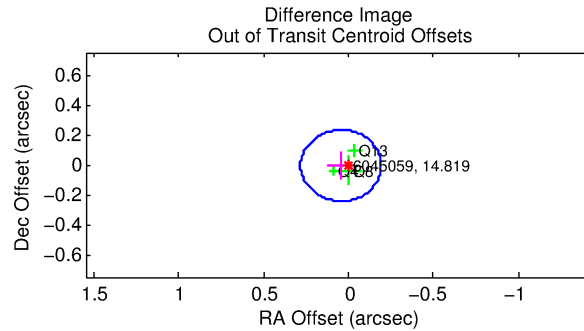
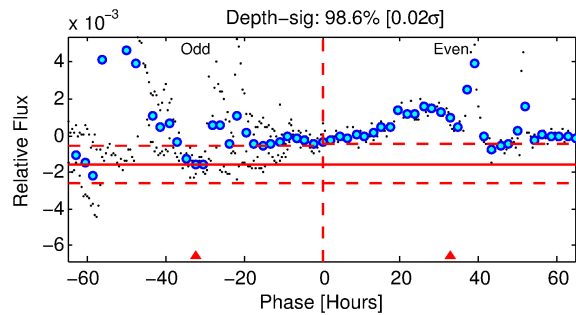
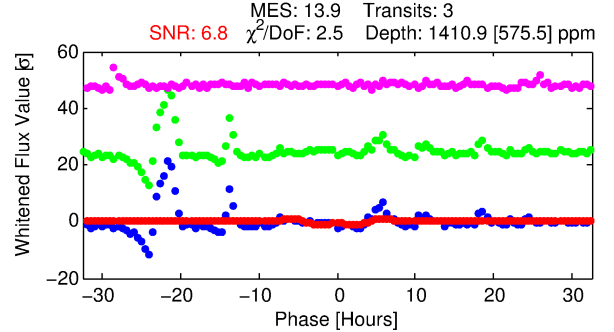
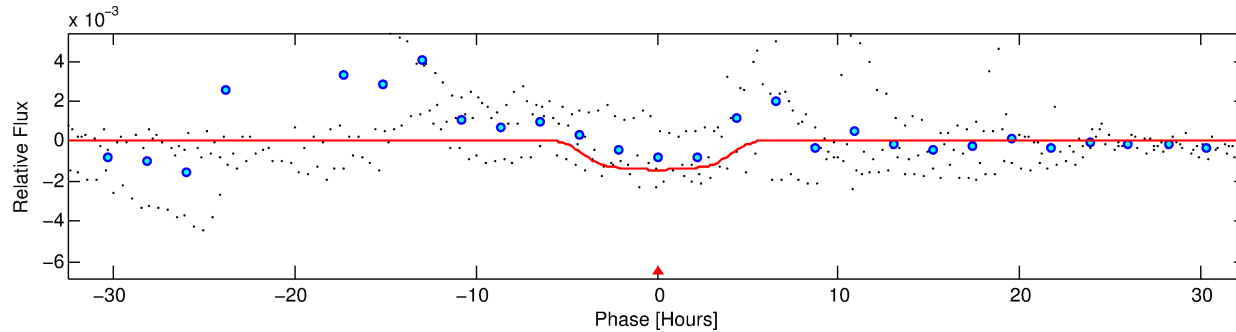
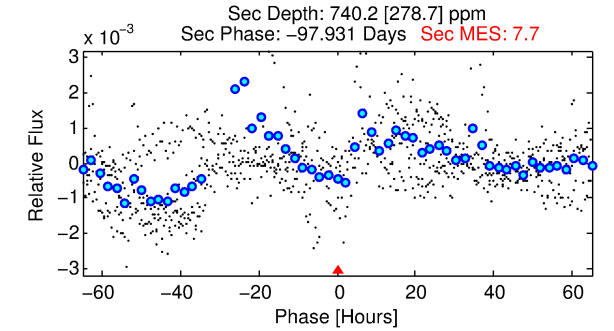
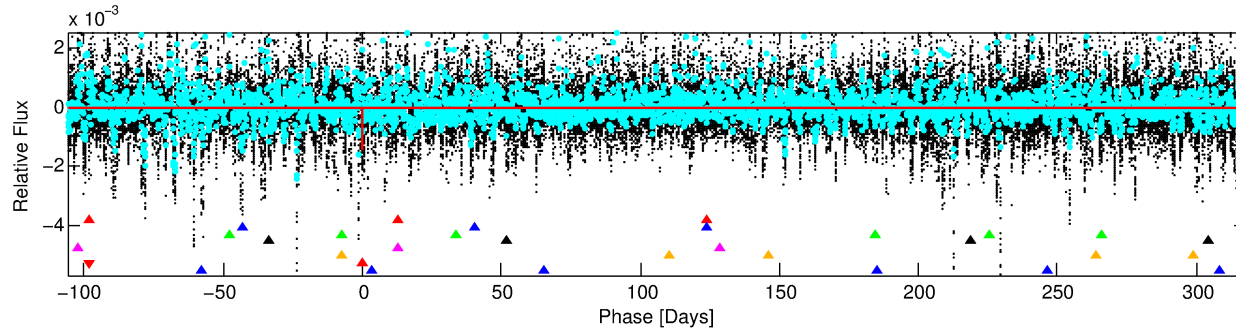
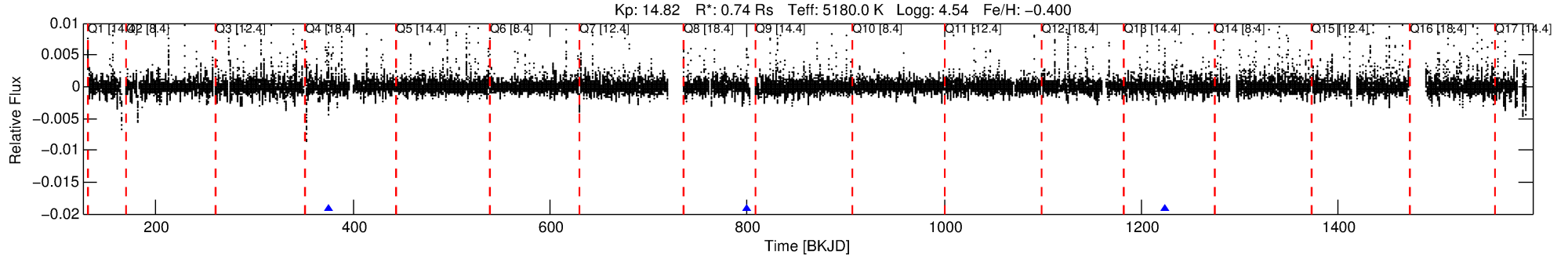
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006045059-07

No Significant Match Found

DV One-Page Summary

KIC: 6045059 Candidate: 7 of 8 Period: 423.990 d



DV Fit Results:

Period = 423.98982 [0.03037] d
Epoch = 376.0387 [0.0414] BKJD
Rp/R* = 0.0427 [0.0104]
a/R* = 145.31 [58.85]
b = 0.92 [0.07]
Seff = 0.37 [0.07]
Teq = 199 [10] K
Rp = 3.46 [0.93] Re
a = 0.9822 [0.1005] AU
Ag = 32882.40 [20894.18] [1.57σ]
Teffp = 4135 [648] K [6.07σ]

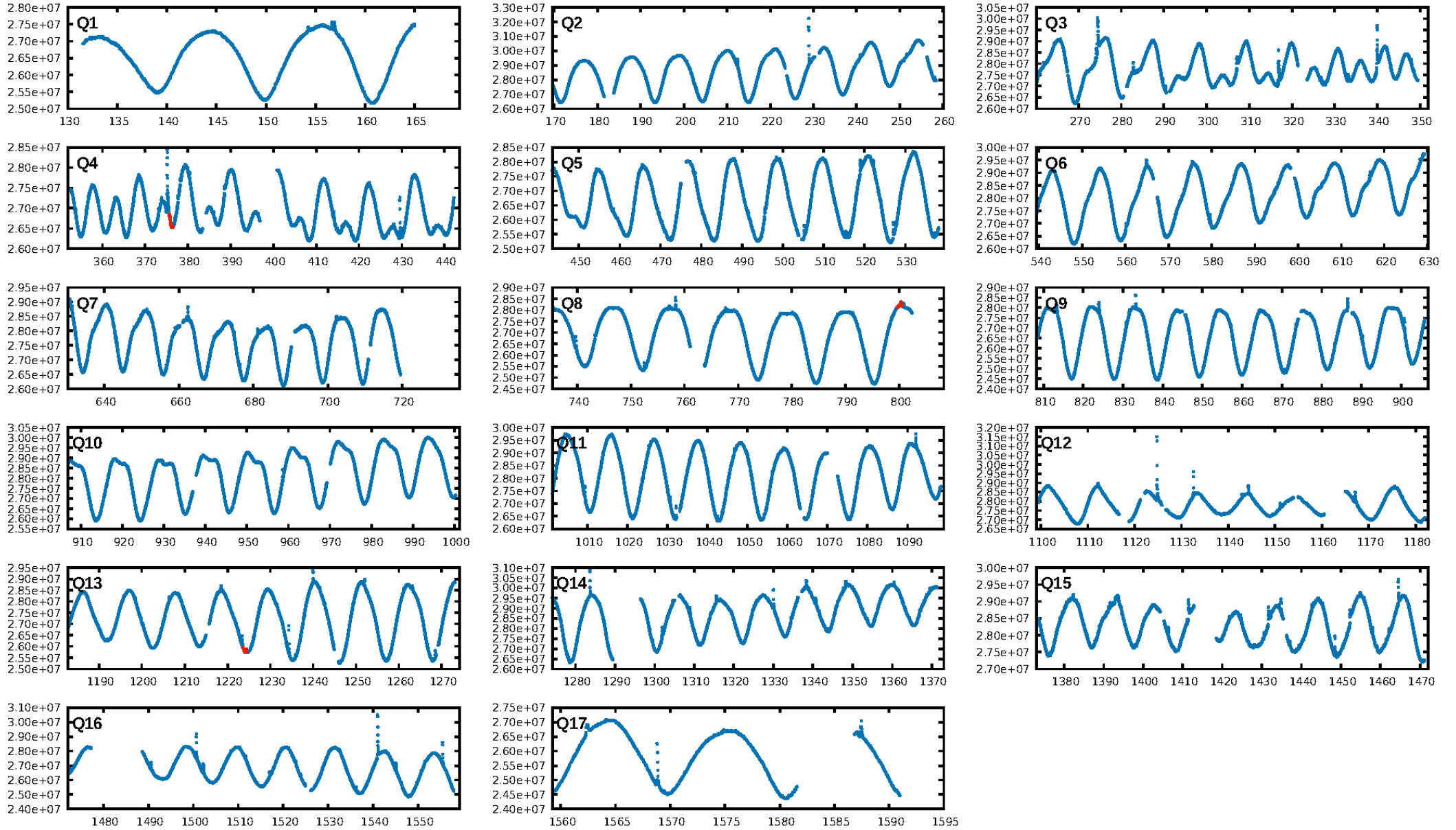
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [167.18σ]
LongPeriod-sig: 100.0% [177.80σ]
ModelChiSquare2-sig: 42.6%
ModelChiSquareGof-sig: 6.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.0861
Centroid-sig: 34.1%
Centroid-so: 0.616 arcsec [0.98σ]
OotOffset-rm: 0.047 arcsec [0.59σ]
KicOffset-rm: 0.015 arcsec [0.16σ]
OotOffset-st: 0/0/2/1 [3]
KicOffset-st: 0/0/2/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

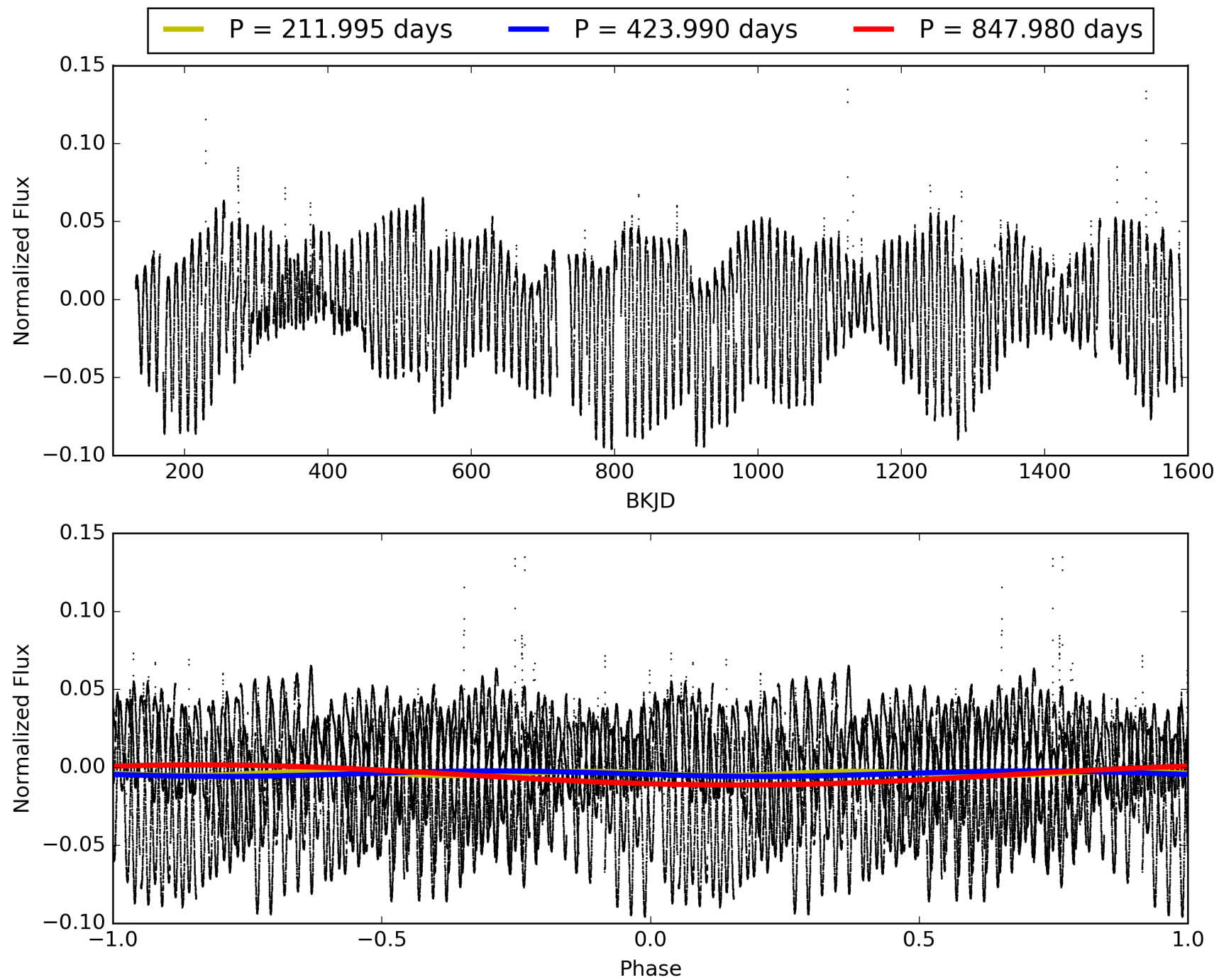
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:19:55 Z

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

TCE 006045059-07, PDC Light Curves

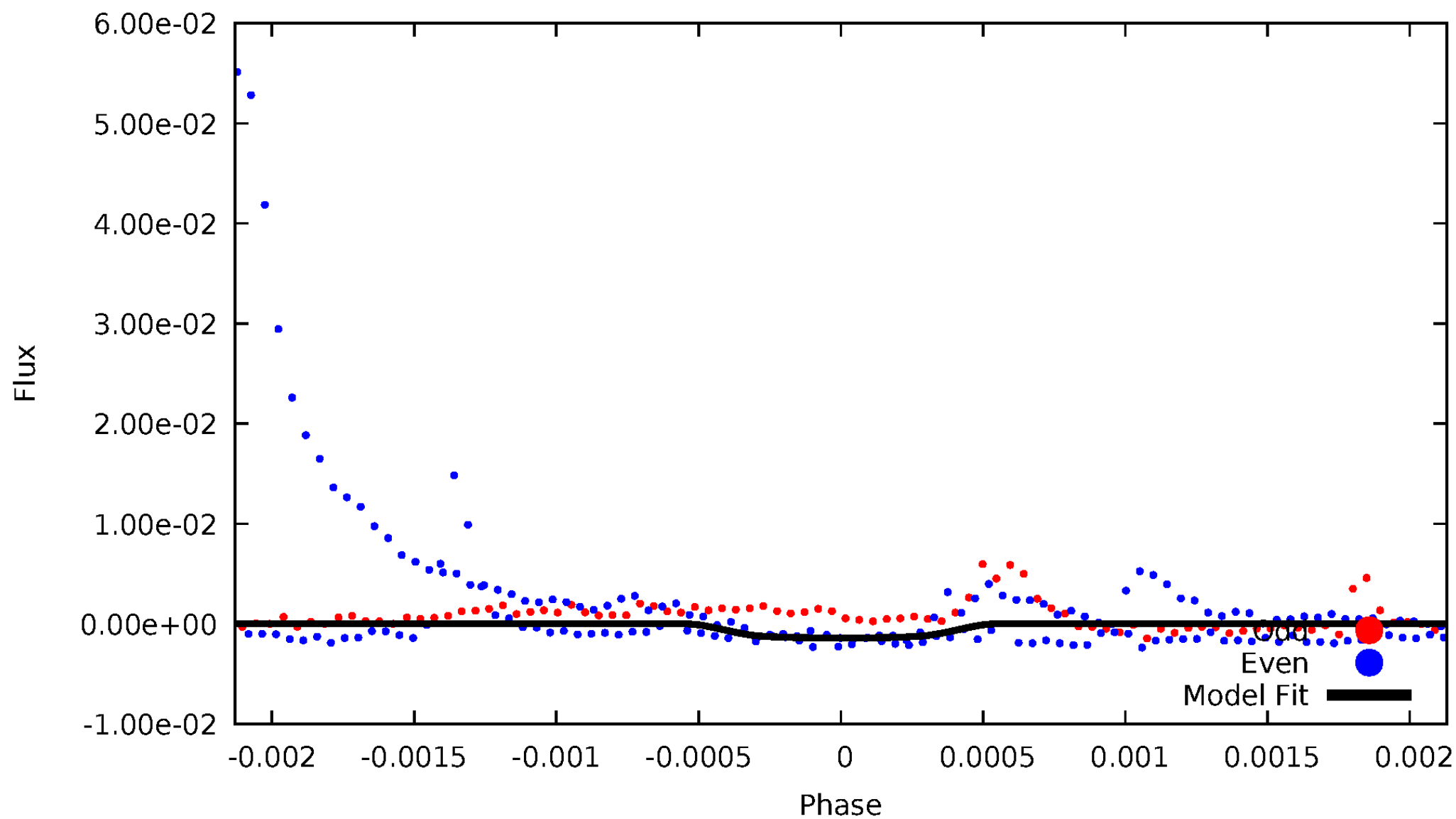


TCE 006045059-07



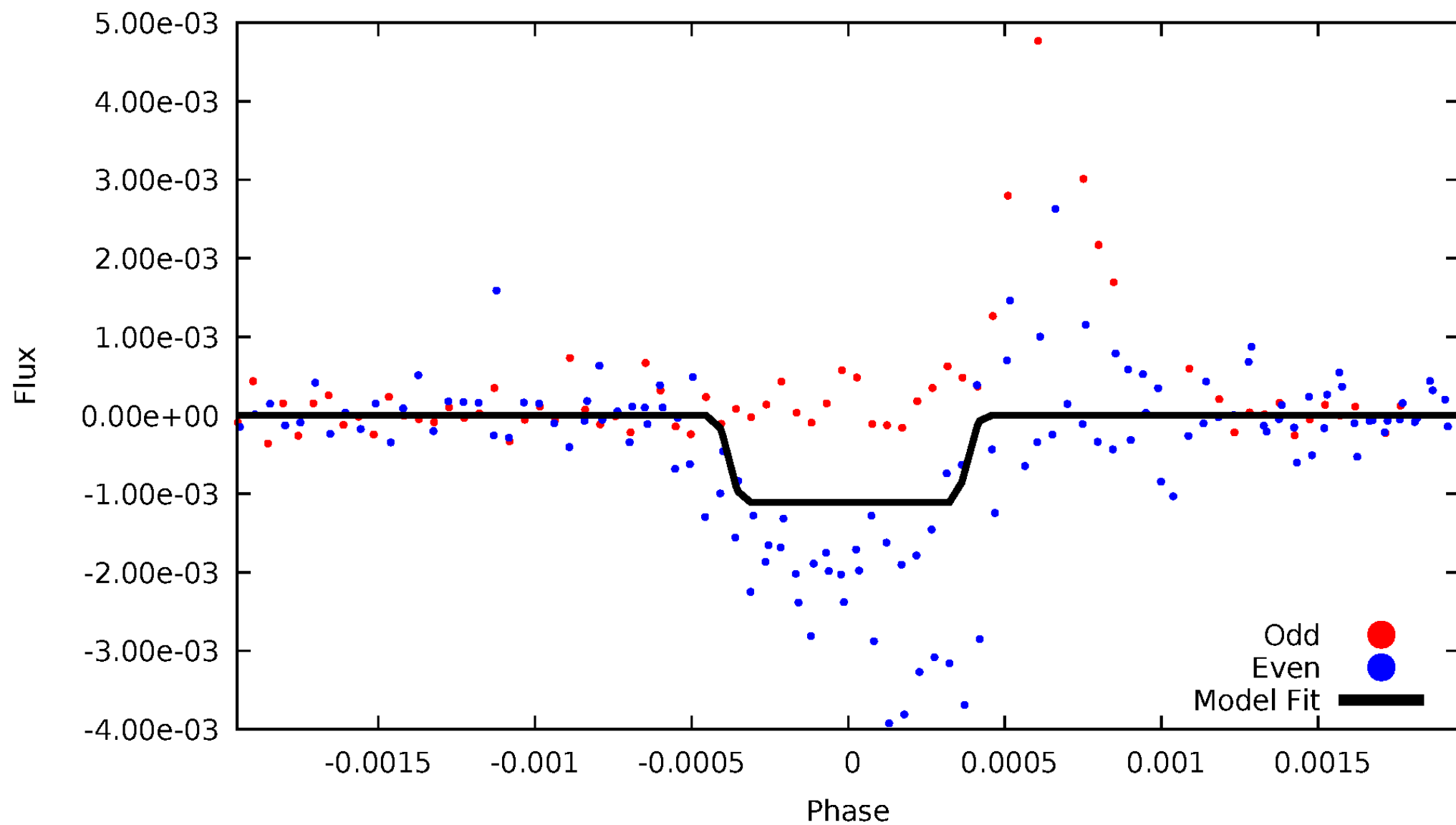
DV Odd/Even

TCE 006045059-07



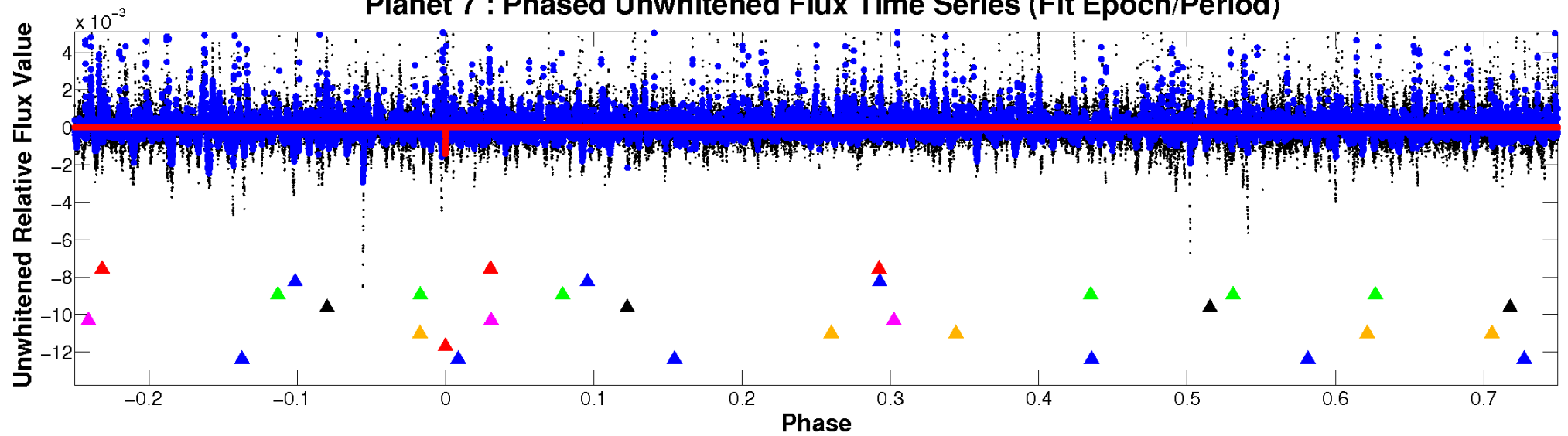
ALT Odd/Even

TCE 006045059-07

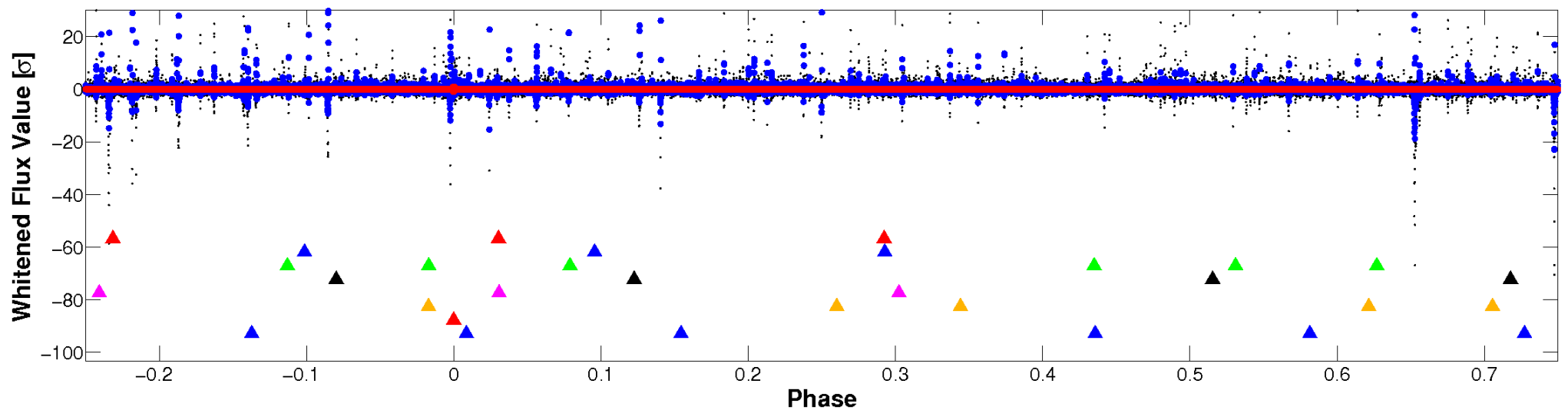


Non-Whitened Vs. Whitened Light Curve

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

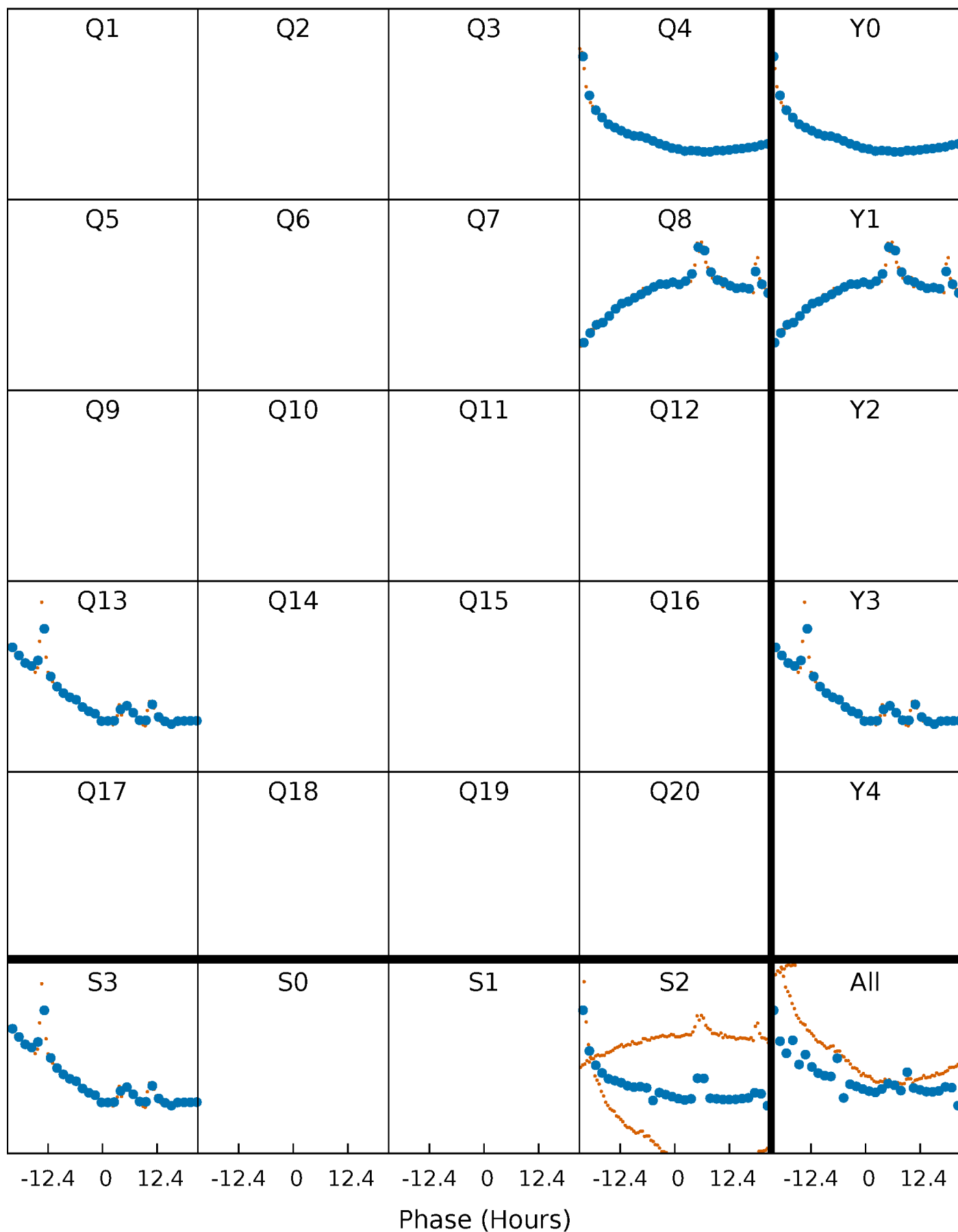


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



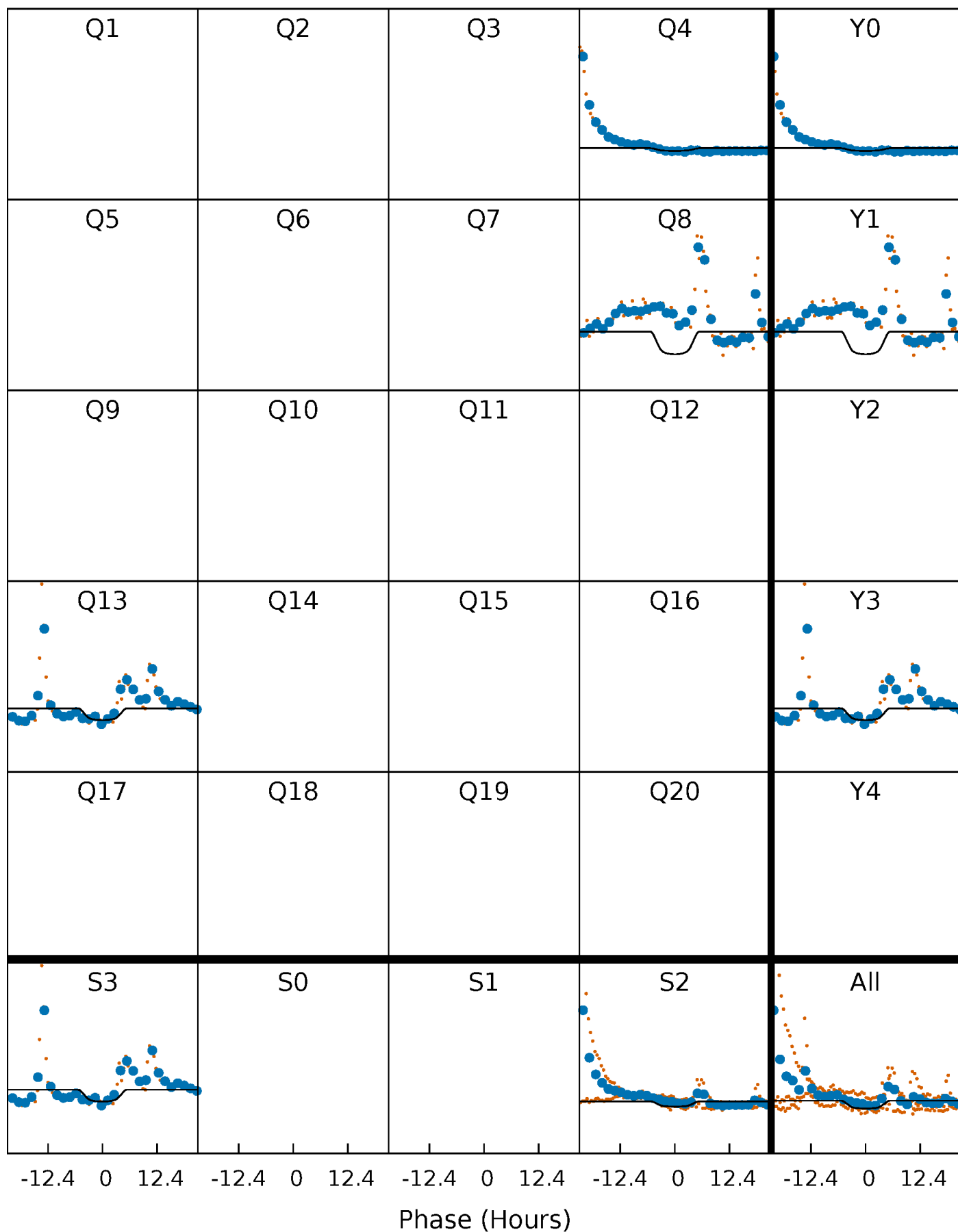
PDC Quarter-Phased Transit Curves

TCE 006045059-07 $P=423.989823$ Days $T_0=376.038716$ (BKJD)



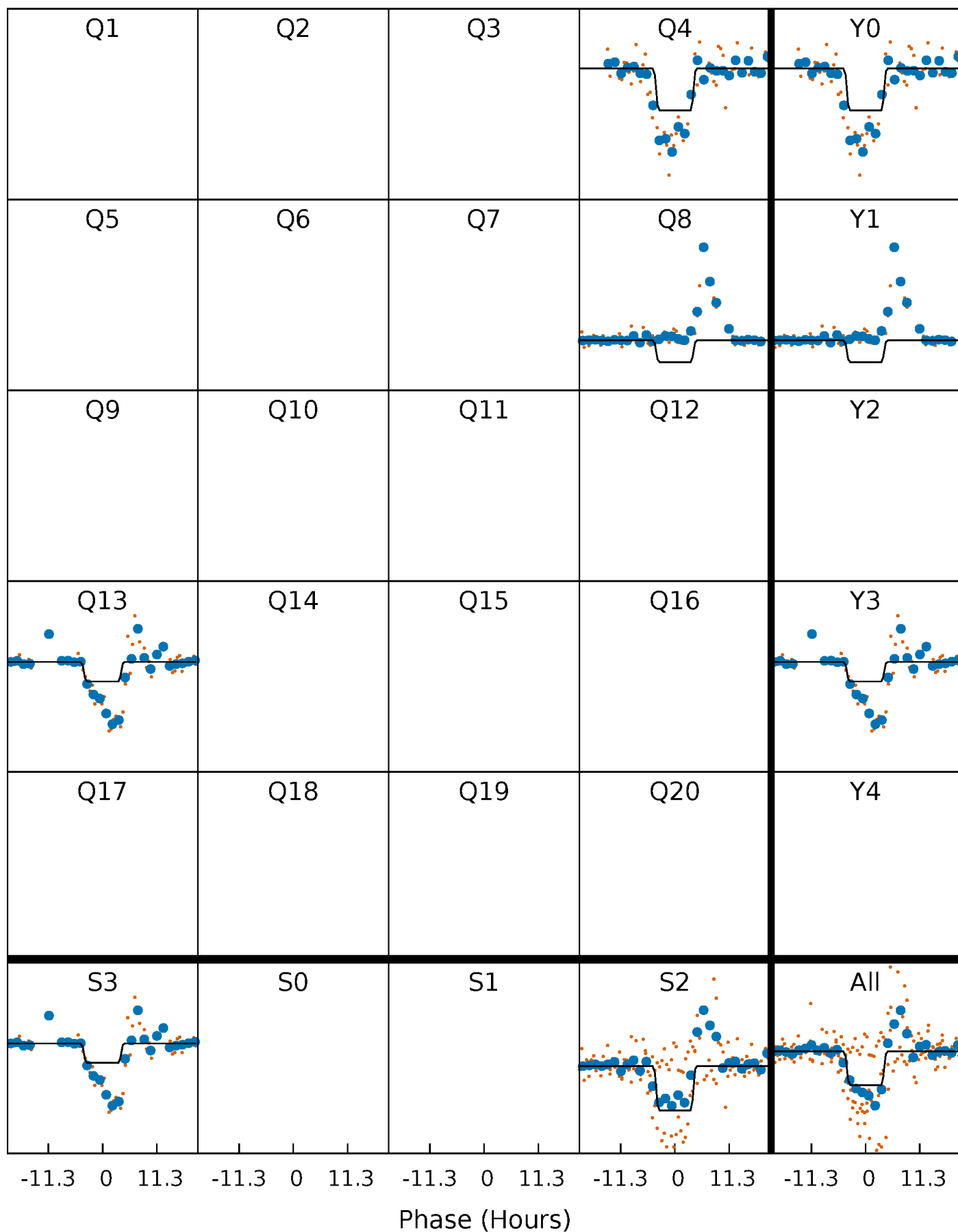
DV Quarter-Phased Transit Curves

TCE 006045059-07 $P=423.989823$ Days $T_0=376.038716$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

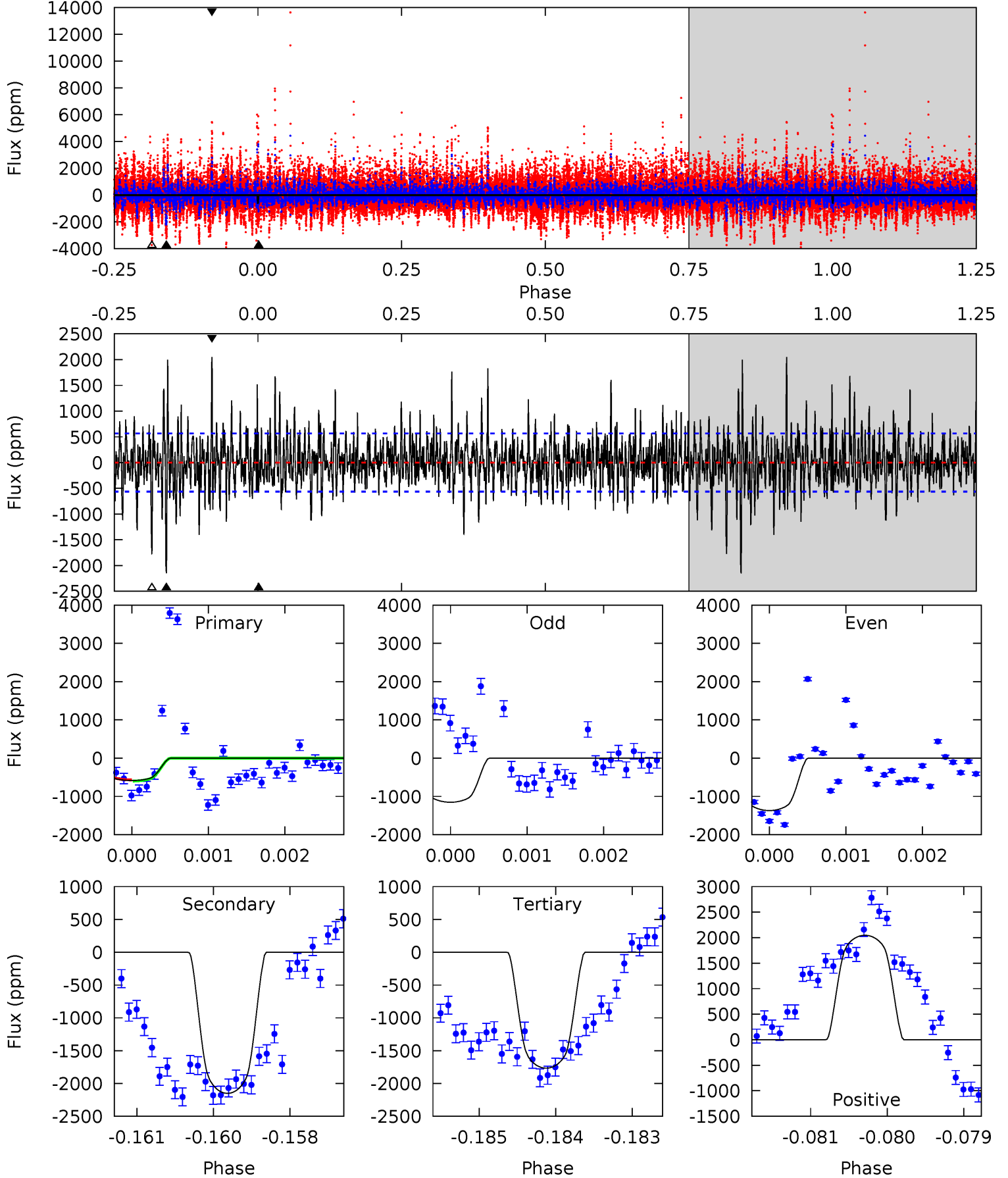
TCE 006045059-07 $P=423.955503$ Days $T_0=376.047928$ (BKJD)



DV Model-Shift Uniqueness Test

006045059-07, P = 423.989823 Days, E = 376.038716 Days

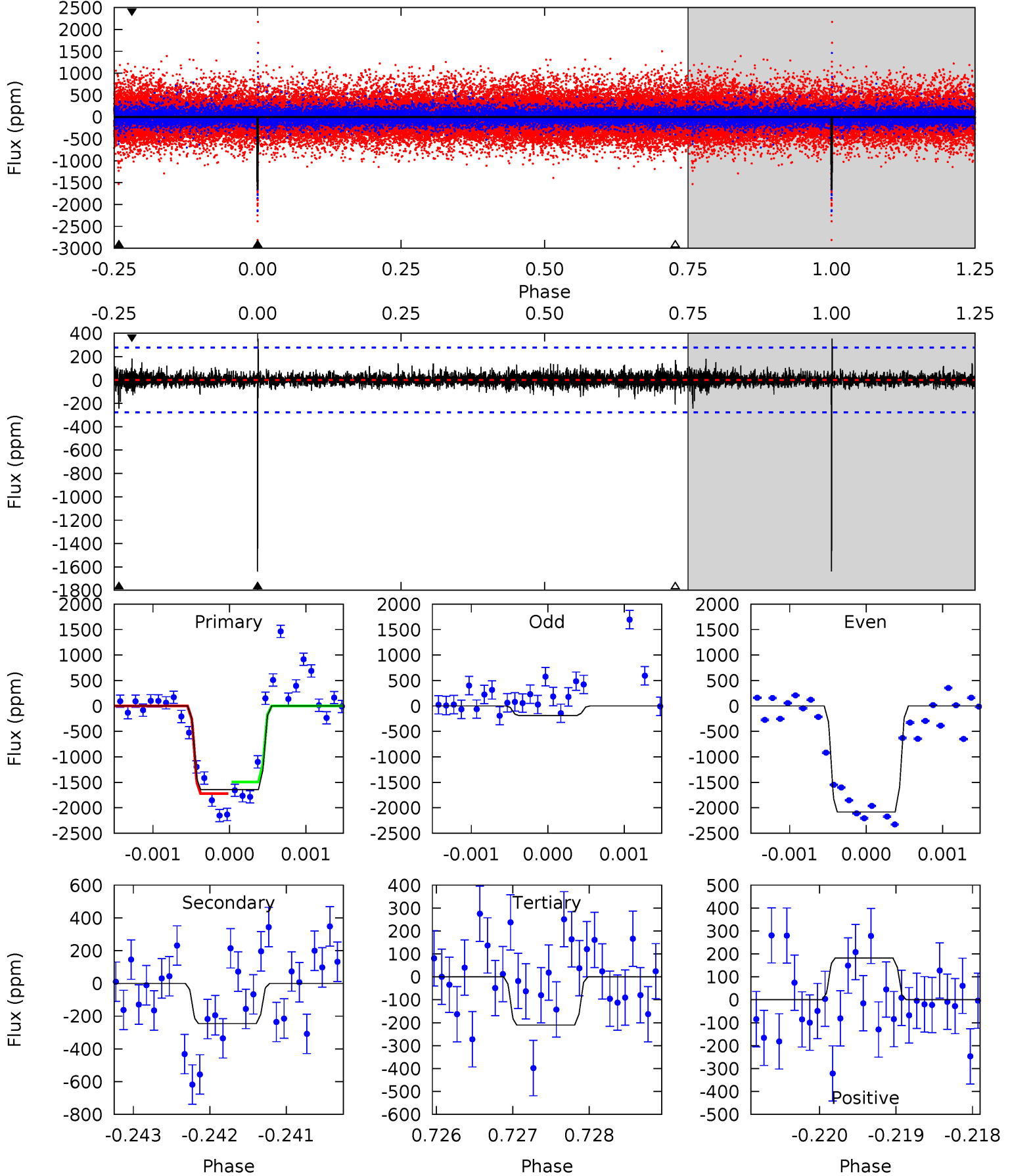
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.61	20.7	17.0	19.7	5.44	3.27	3.87	-11.4	-14.1	3.69	1.00	0.76	0.47	0.49	0.15



Alt Model-Shift Uniqueness Test

006045059-07, P = 423.955503 Days, E = 376.047928 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.5	4.85	4.16	3.60	5.48	3.34	0.64	28.3	28.9	0.69	1.25	22.4	0.78	0.18	2.16



Stellar Parameters For KIC 006045059

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5180^{+154}_{-154}	$4.544^{+0.090}_{-0.060}$	$-0.400^{+0.350}_{-0.300}$	$0.742^{+0.076}_{-0.084}$	$0.702^{+0.095}_{-0.044}$	$2.426^{+0.873}_{-0.487}$
	+3%/-3%	+2%/-1%	+87%/-75%	+10%/-11%	+14%/-6%	+36%/-20%
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 006045059-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2150 ± 104	$3.46^{+0.89}_{-0.91}$	276^{+12}_{-12}	5359^{+882}_{-501}	96999^{+81399}_{-35958}
Alt.	-245 ± 50	$2.70^{+0.88}_{-0.83}$	276^{+11}_{-11}	3862^{+564}_{-365}	18234^{+19758}_{-8438}

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

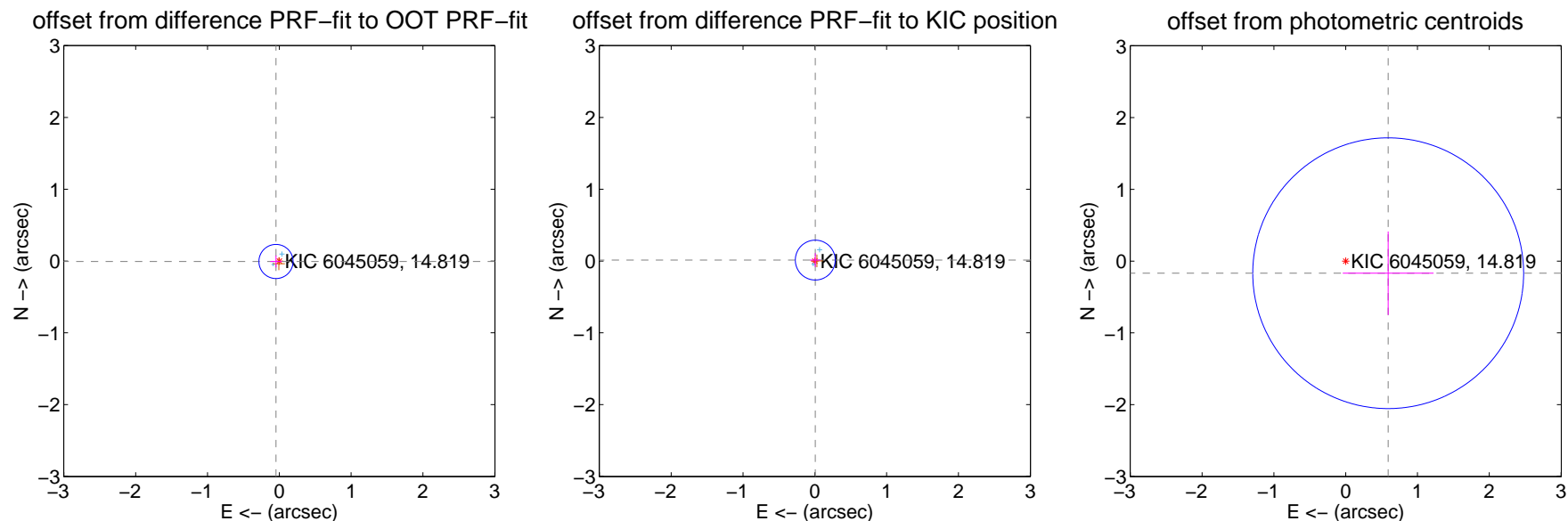
DV Centroid Data

Supplemental centroid analysis for 006045059-07. Kepler magnitude: 14.82. Transit SNR 6.80

There are 2 quarters with good PRF difference image offsets

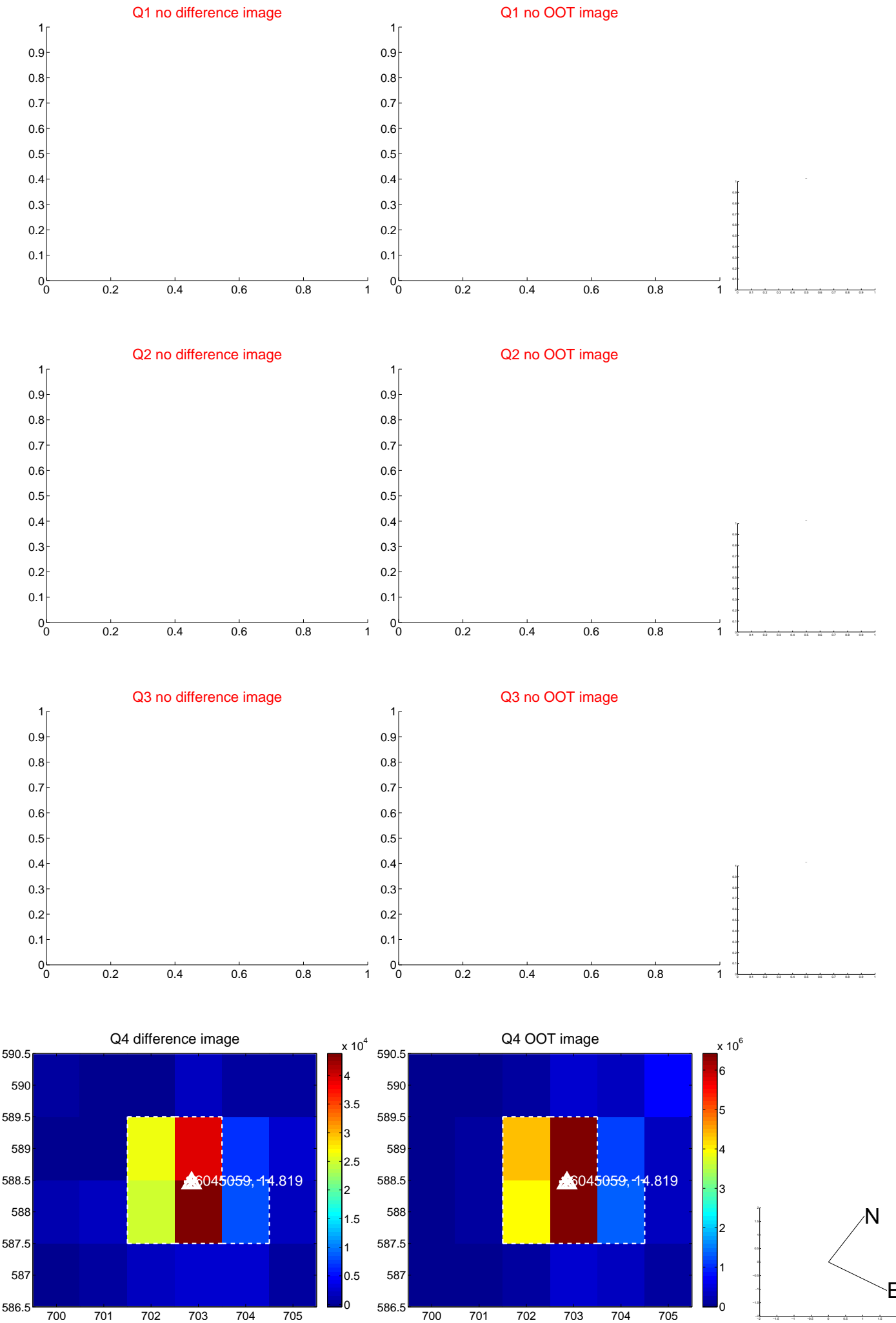
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.047 ± 0.079	0.59	0.046 ± 0.079	-0.006 ± 0.083
PRF-fit source offset from KIC position	0.015 ± 0.093	0.16	-0.006 ± 0.073	0.013 ± 0.096
photometric centroid source offset	0.62 ± 0.63	0.98	-0.59 ± 0.63	-0.17 ± 0.58



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

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



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

Q5 no difference image



Q5 no OOT image



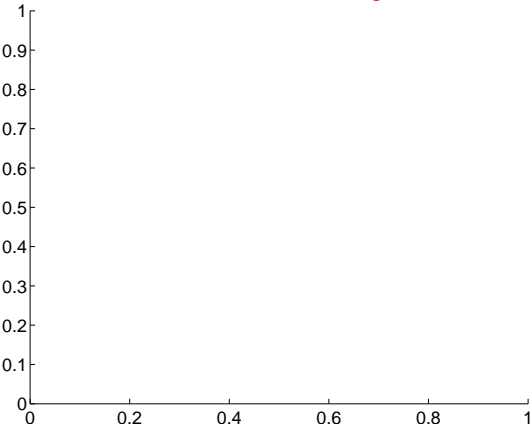
Q6 no difference image



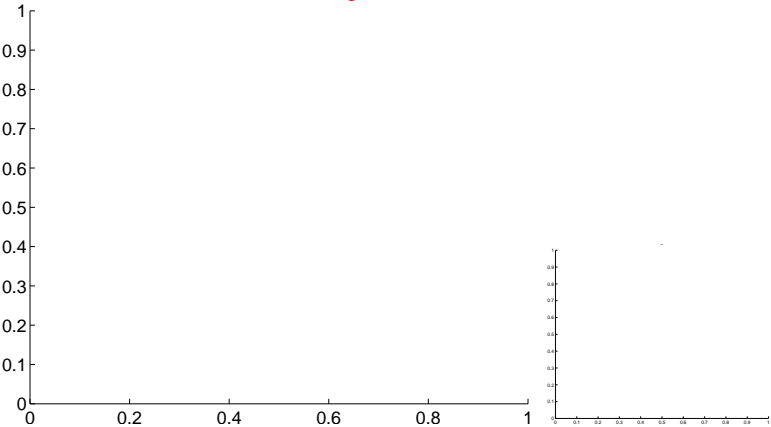
Q6 no OOT image



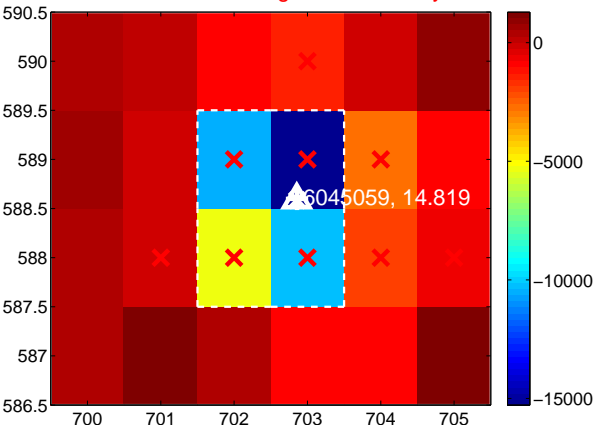
Q7 no difference image



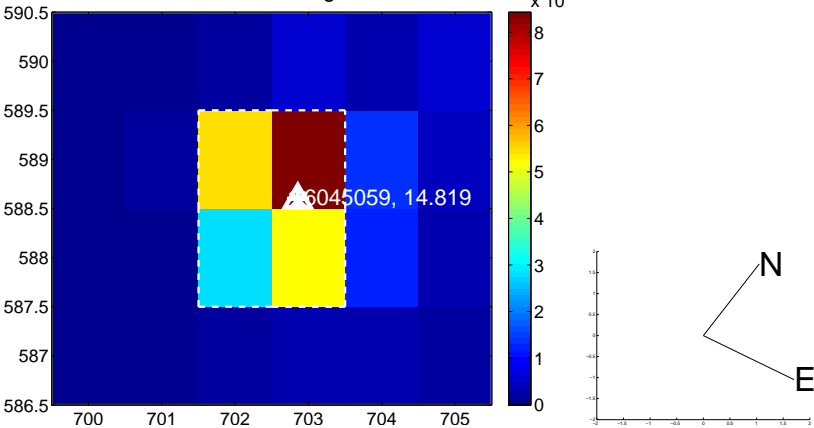
Q7 no OOT image



Q8 difference image. Poor Quality



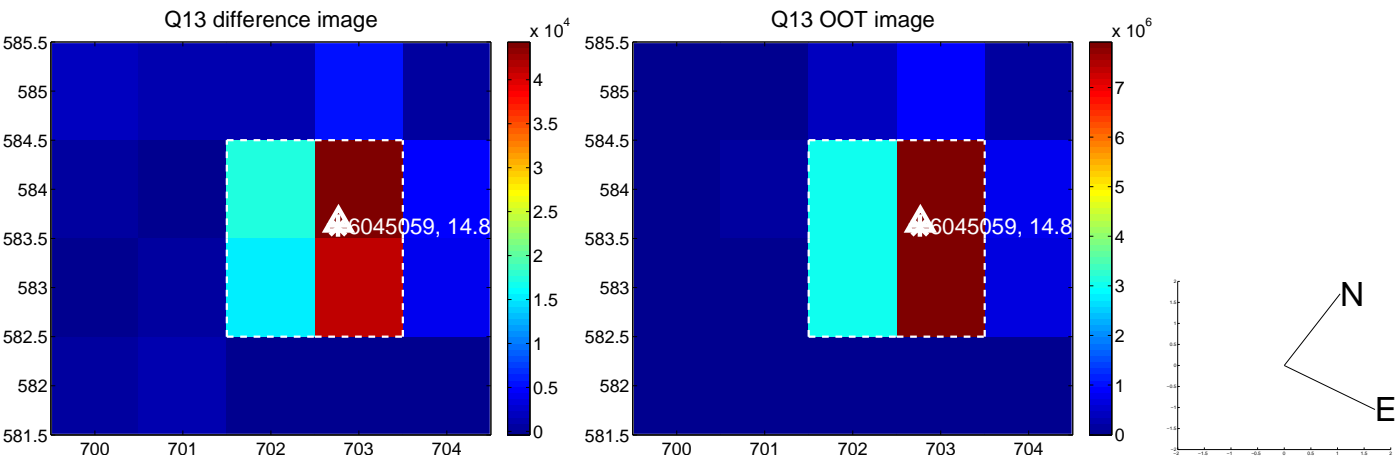
Q8 OOT image



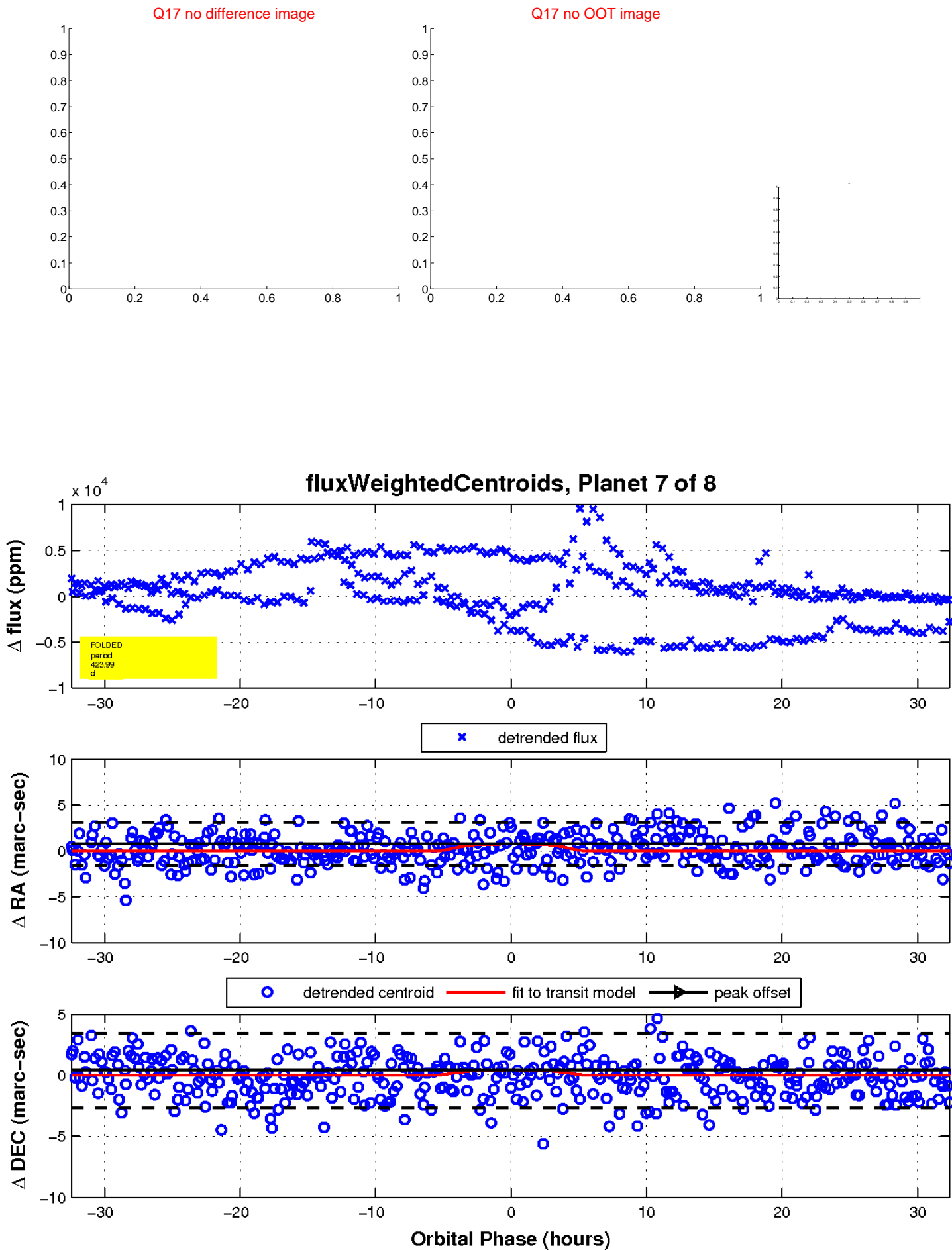
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

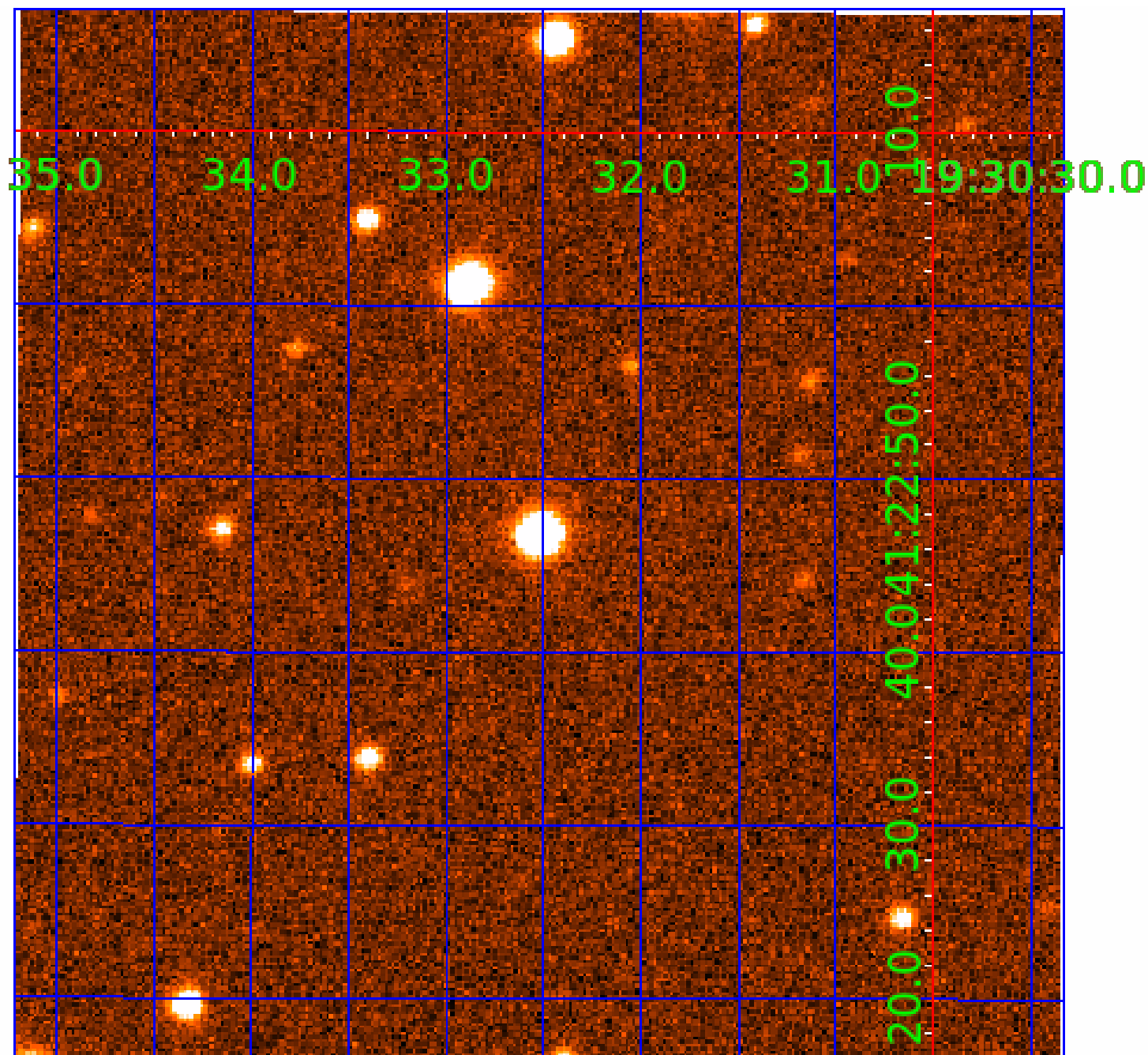


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006045059

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})
006045059-01	OBS	No	535.041533	277.884635	732.6	1.192	24.8	3.4	0.74	5180	2.14	0.27
006045059-02	OBS	No	507.533740	333.080100	2343.1	3.129	19.0	11.4	0.74	5180	3.56	0.29
006045059-03	OBS	No	232.341369	328.144983	916.3	8.703	13.8	7.0	0.74	5180	2.29	0.82
006045059-04	OBS	No	338.187712	428.001094	1201.5	5.861	13.1	7.1	0.74	5180	2.69	0.50
006045059-05	OBS	No	539.137994	273.954258	3665.6	9.437	18.1	13.0	0.74	5180	8.55	0.27
006045059-06	OBS	No	270.783200	251.192622	998.1	6.303	15.5	4.3	0.74	5180	2.33	0.67
006045059-07	OBS	No	423.989823	376.038716	1410.9	10.834	13.9	6.8	0.74	5180	3.46	0.37
006045059-08	OBS	No	242.906579	317.858250	1133.3	4.500	12.7	-1.0	0.74	5180	2.45	0.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006045059-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-03	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV
006045059-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
006045059-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006045059-06	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS
006045059-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
006045059-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

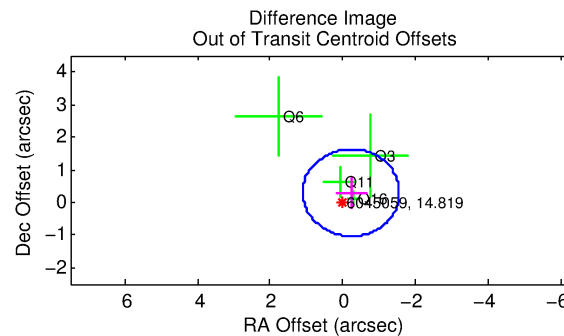
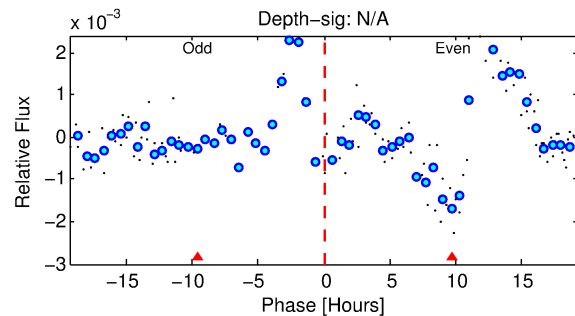
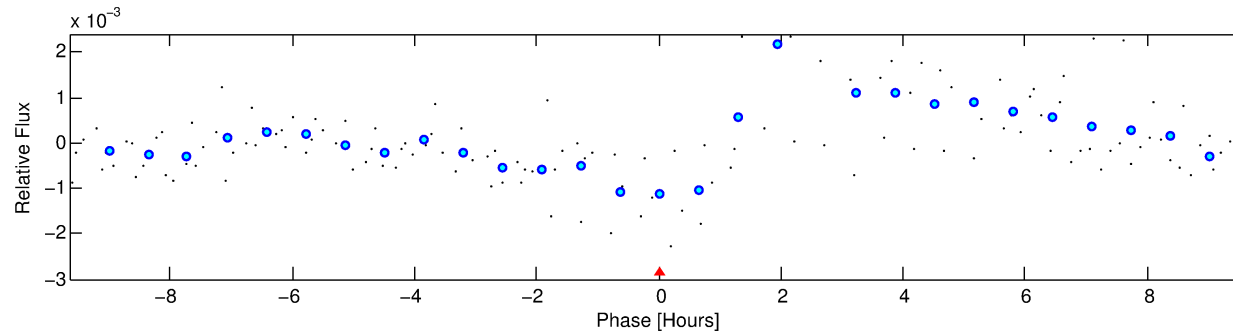
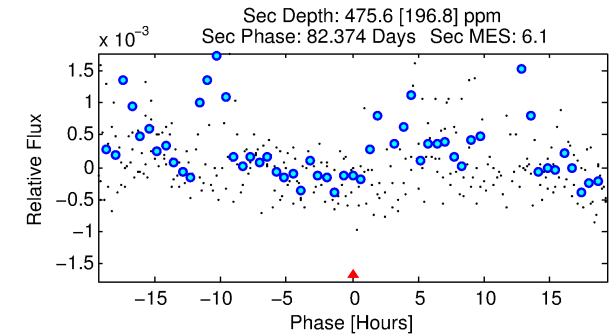
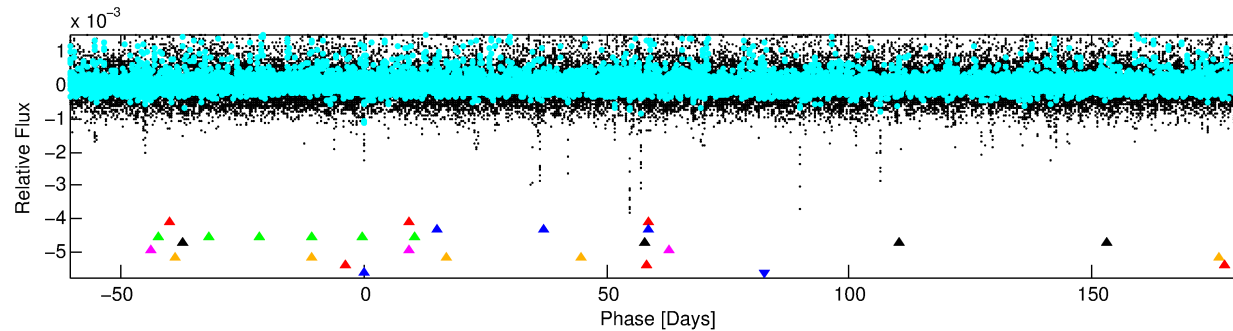
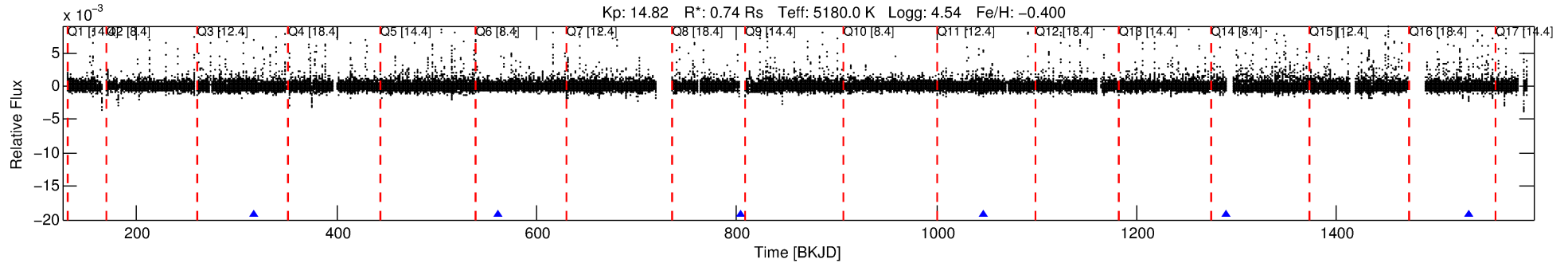
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006045059-08

No Significant Match Found

DV One-Page Summary

KIC: 6045059 Candidate: 8 of 8 Period: 242.907 d



TPS TCE Results:

Period = 242.90658 d
Epoch = 317.8582 BKJD

DV fit results are unavailable

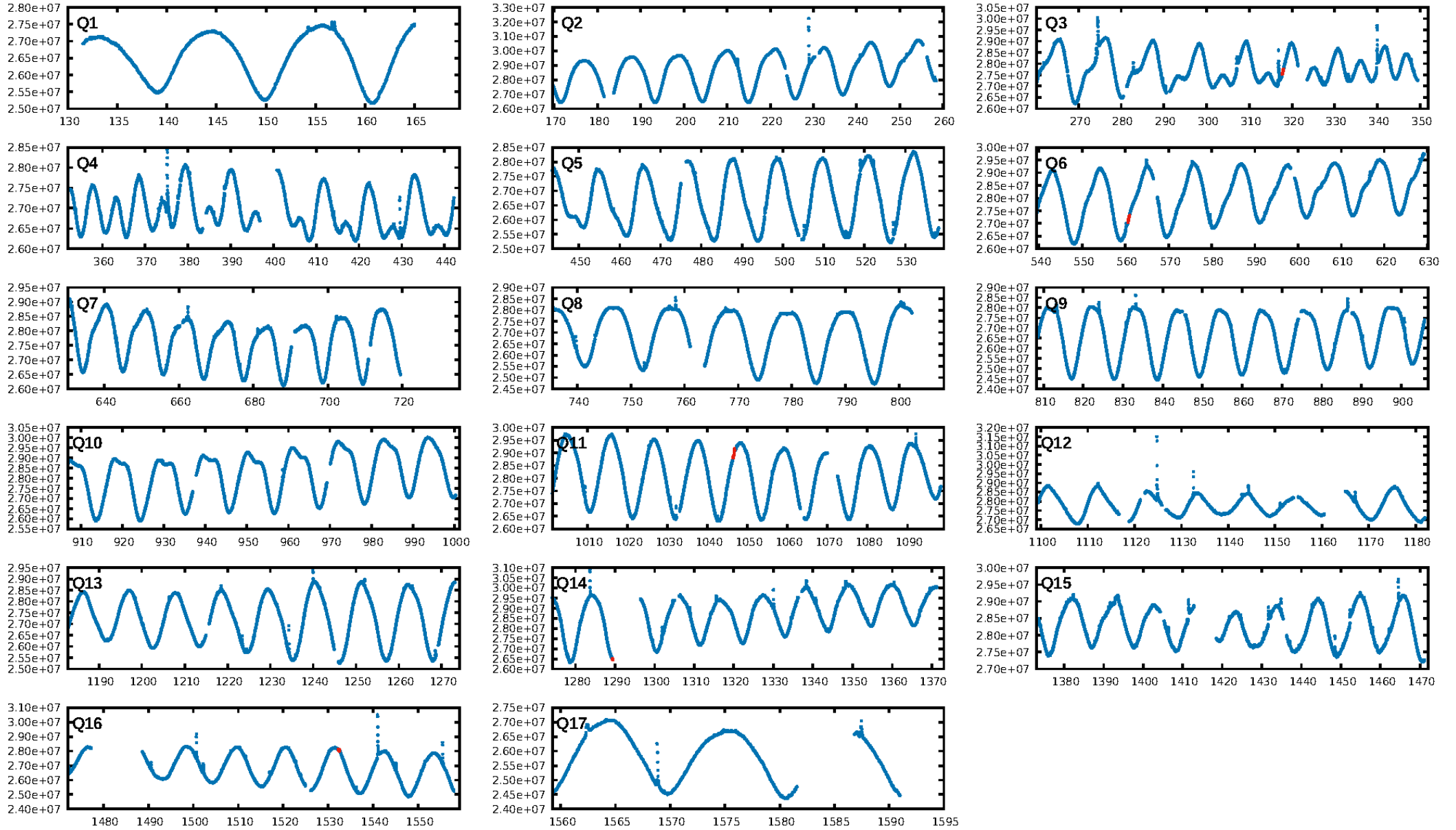
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [25.88 σ]
LongPeriod-sig: 100.0% [86.39 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.3432
Centroid-sig: 12.4%
Centroid-so: 0.644 arcsec [1.47 σ]
OotOffset-rm: 0.371 arcsec [0.84 σ]
KicOffset-rm: 0.435 arcsec [0.99 σ]
OotOffset-st: 1/2/1/0 [4]
KicOffset-st: 1/2/1/0 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 0.75 [3/4]

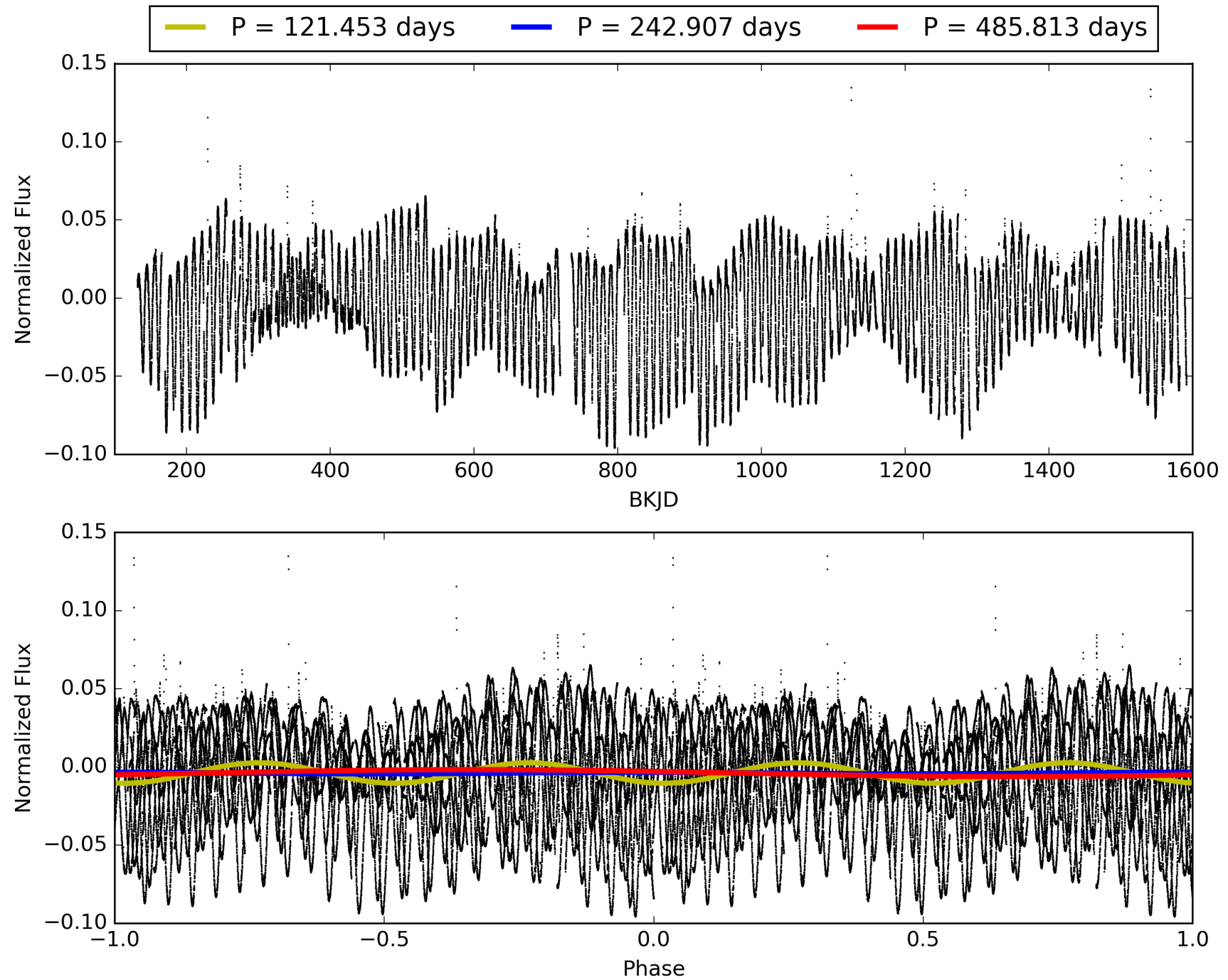
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:20:08 Z

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

TCE 006045059-08, PDC Light Curves

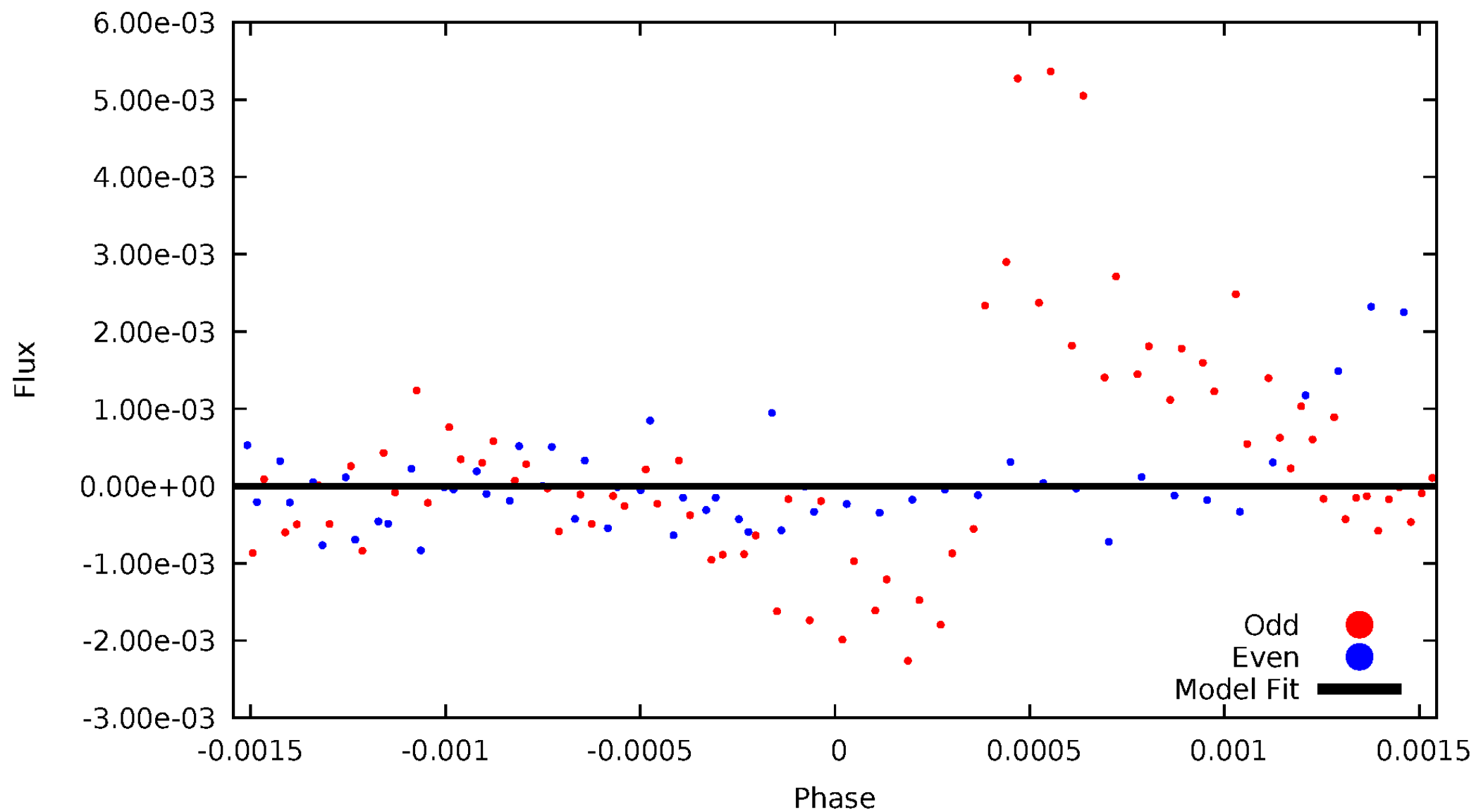


TCE 006045059-08



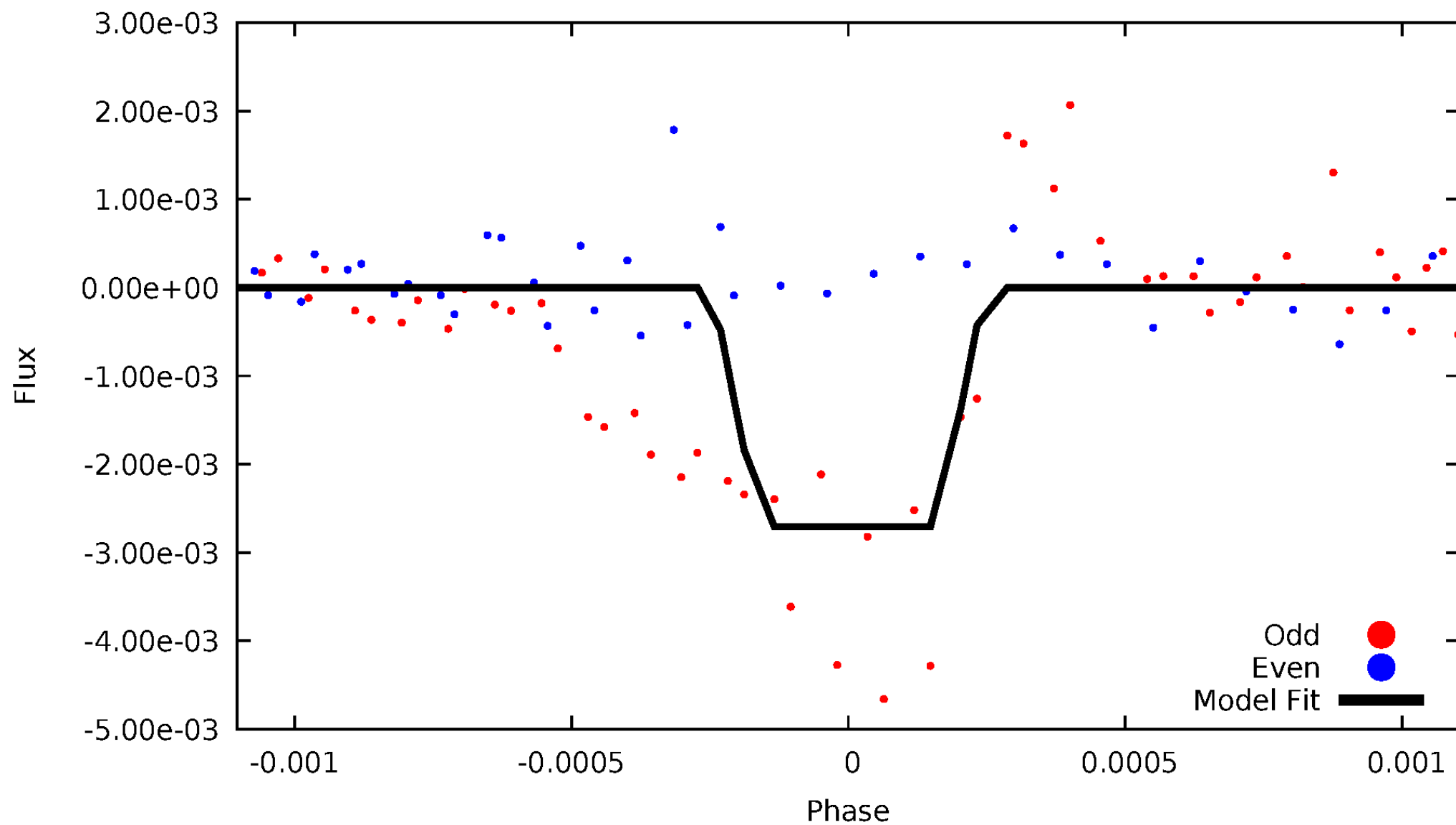
DV Odd/Even

TCE 006045059-08



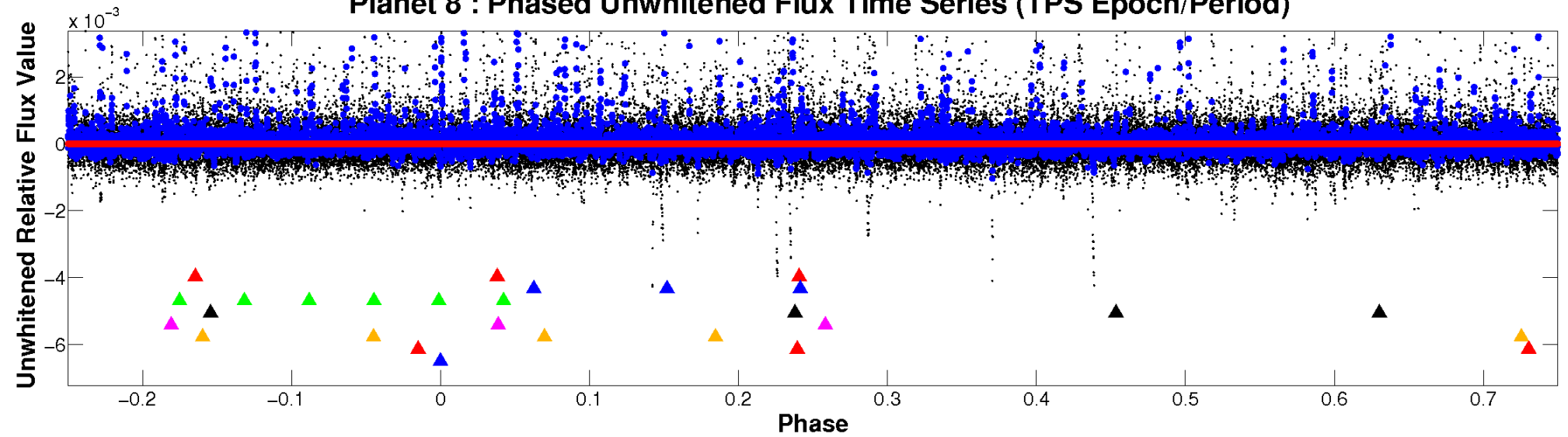
ALT Odd/Even

TCE 006045059-08

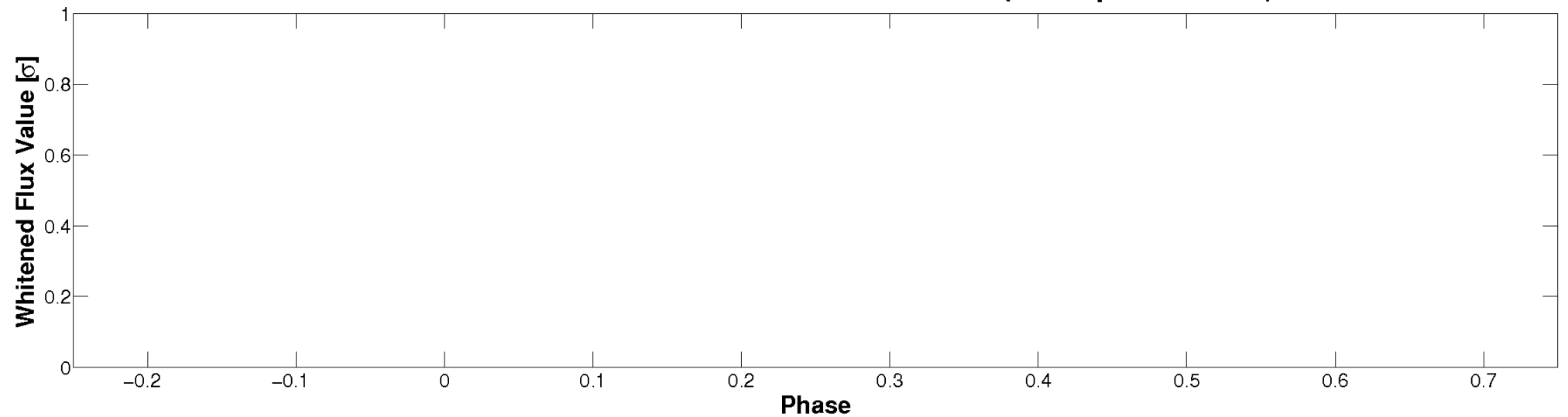


Non-Whitened Vs. Whitened Light Curve

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

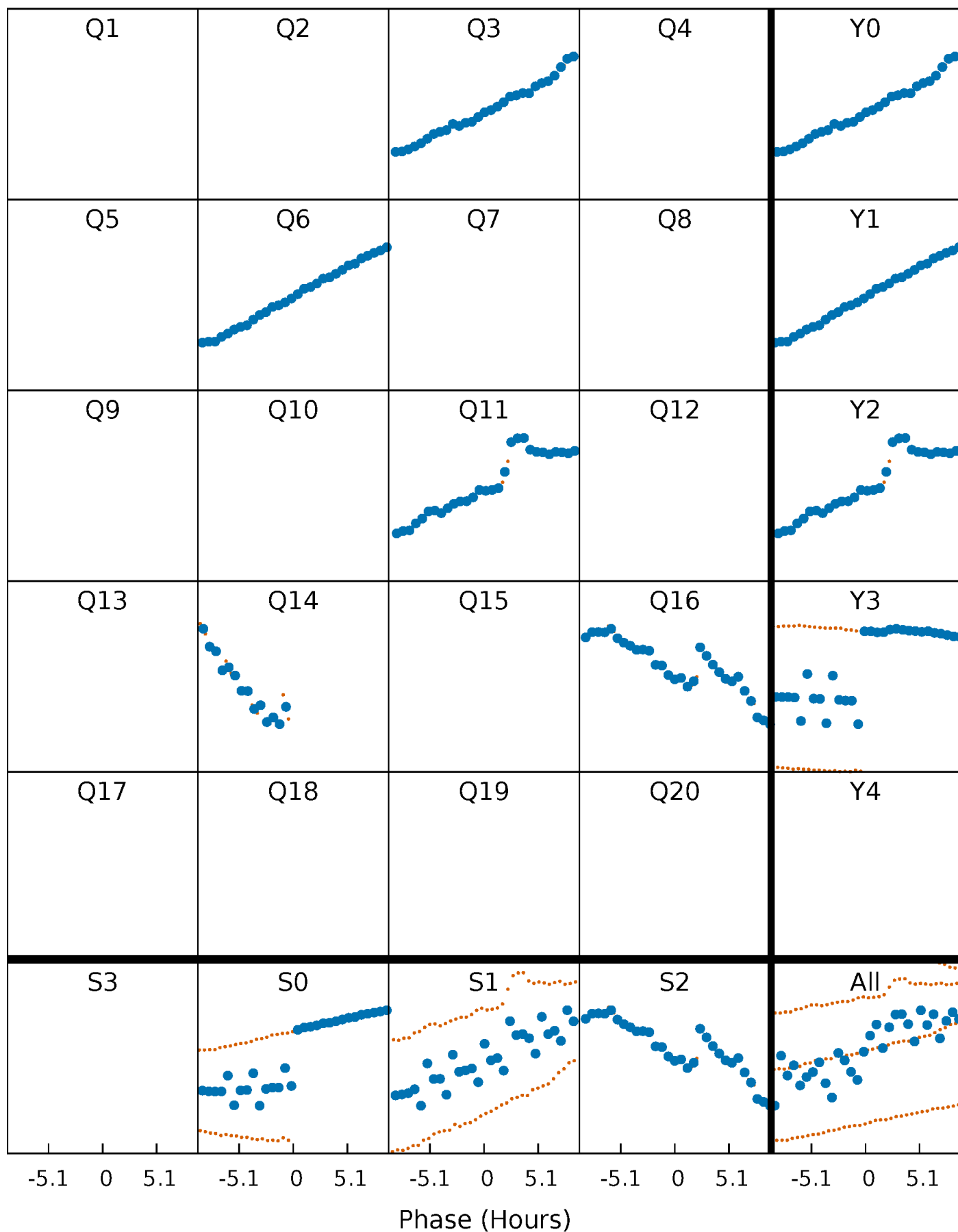


Planet 8 : Phased Whitened Flux Time Series (TPS Epoch/Period)



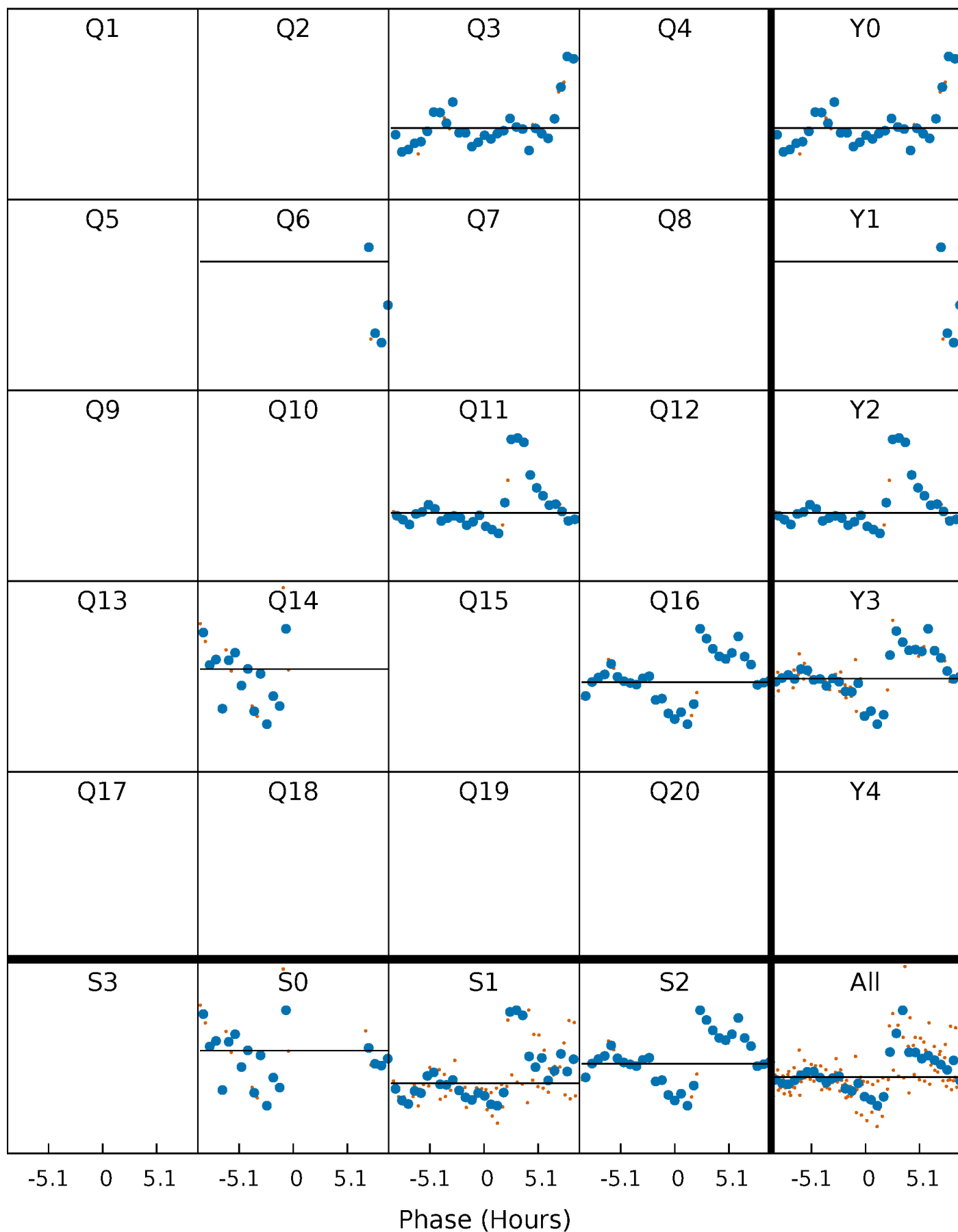
PDC Quarter-Phased Transit Curves

TCE 006045059-08 P=242.906579 Days $T_0=317.858250$ (BKJD)



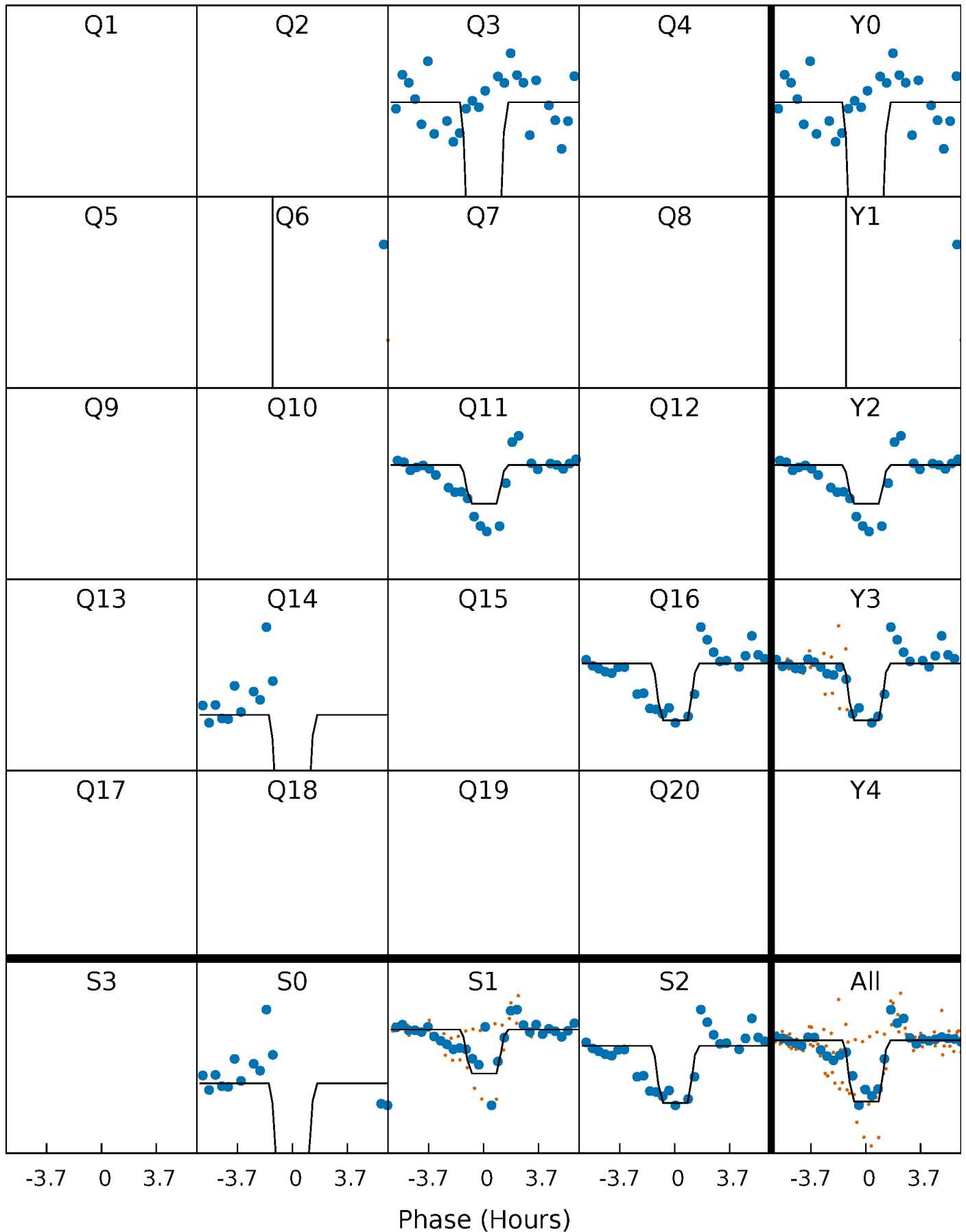
DV Quarter-Phased Transit Curves

TCE 006045059-08 $P=242.906579$ Days $T_0=317.858250$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

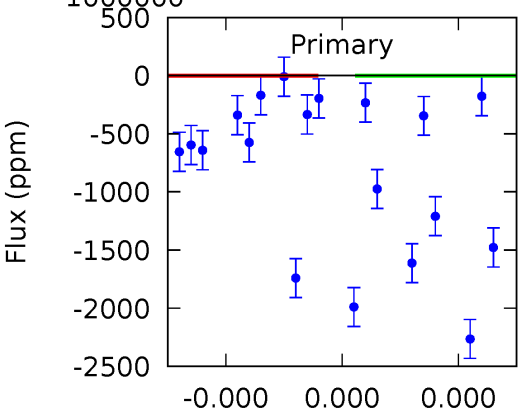
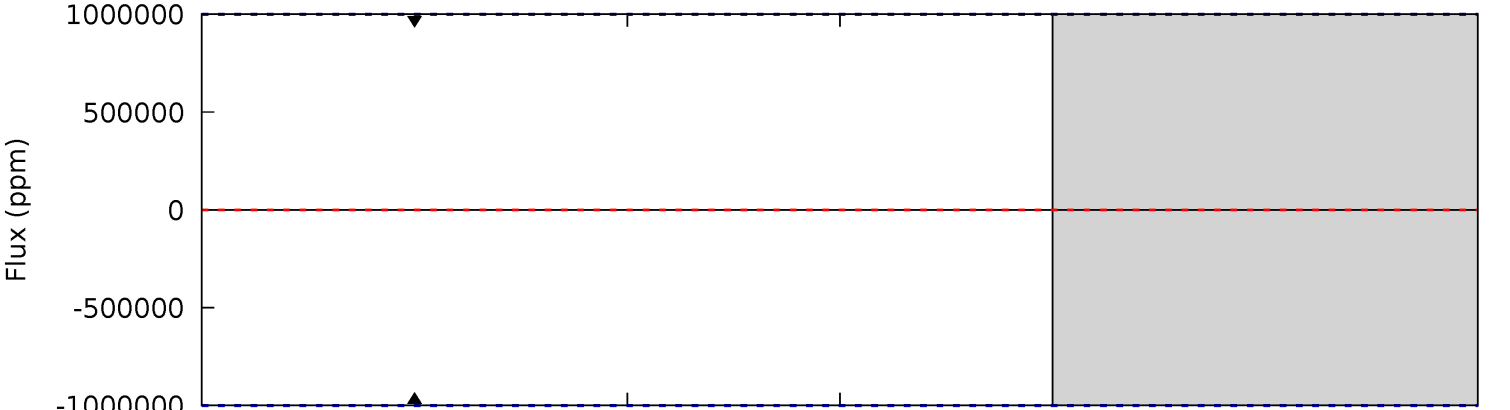
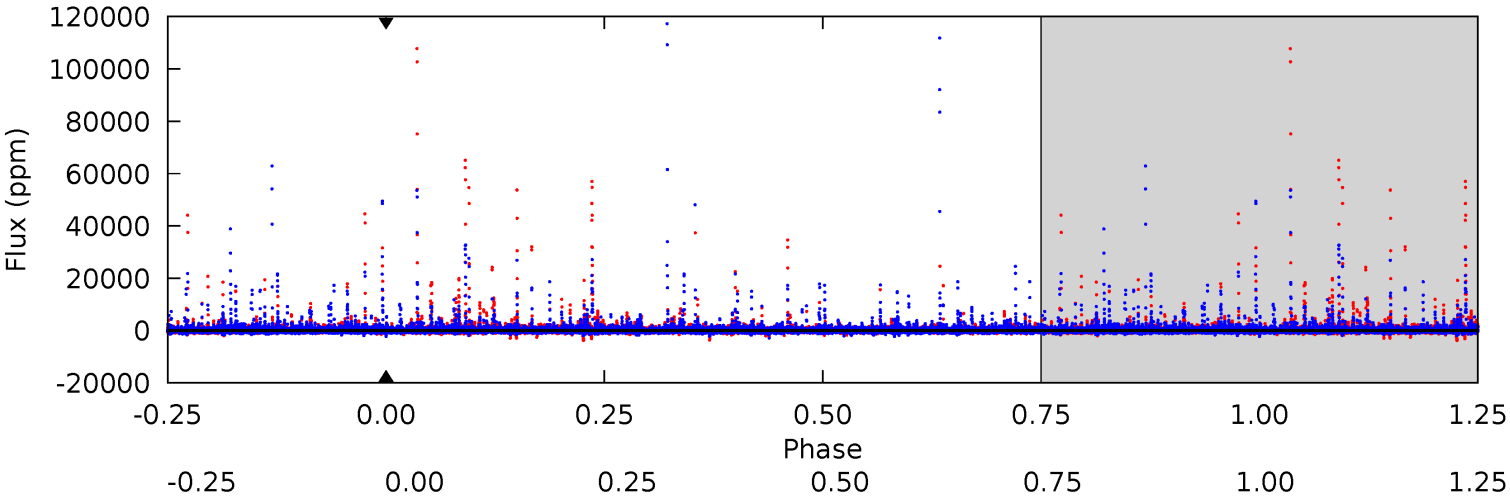
TCE 006045059-08 P=242.906579 Days $T_0=317.895380$ (BKJD)



DV Model-Shift Uniqueness Test

006045059-08, P = 242.906579 Days, E = 74.951671 Days

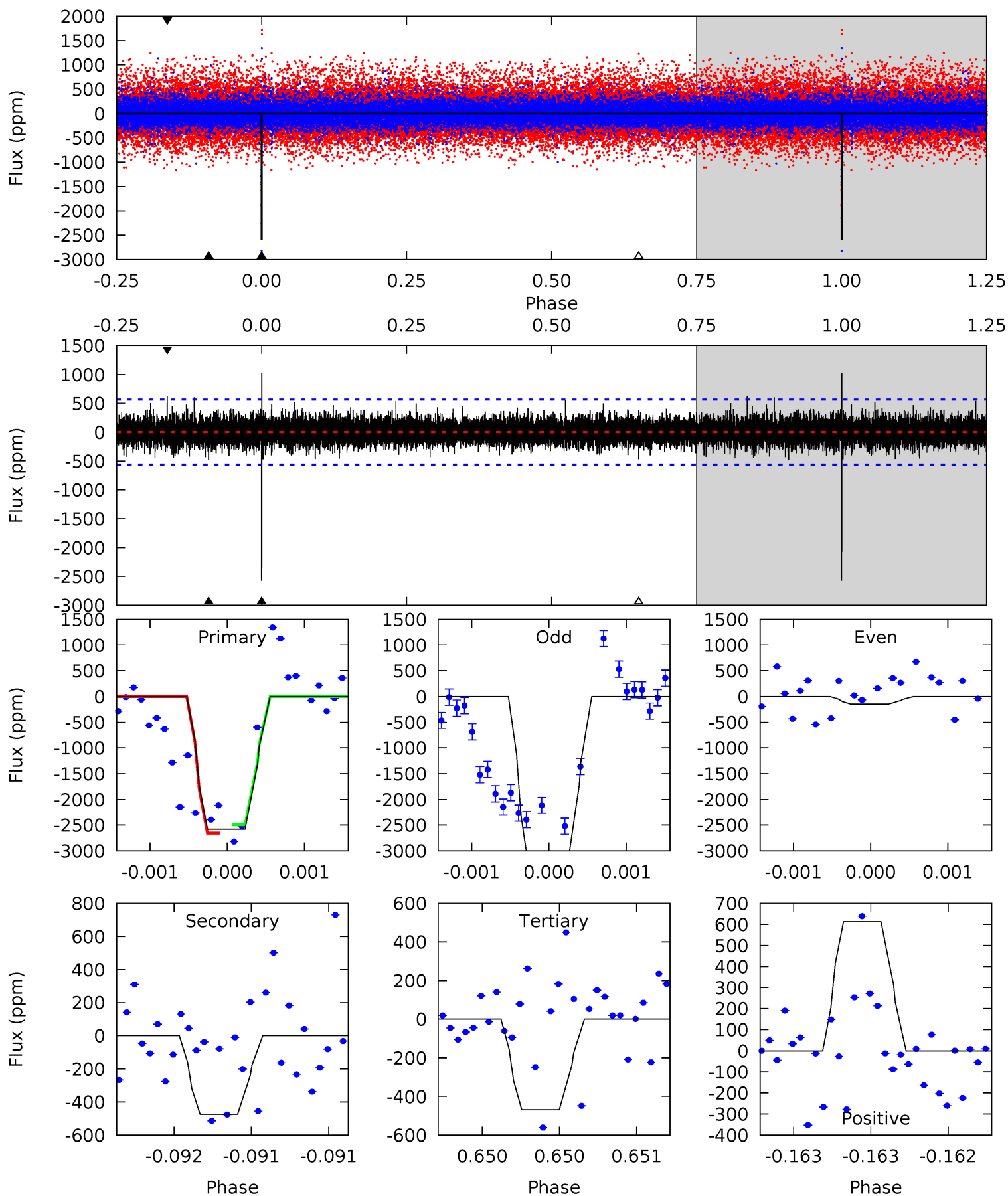
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

006045059-08, P = 242.906579 Days, E = 74.988801 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.5	4.70	4.65	6.07	5.57	3.47	1.17	20.9	19.5	0.05	-1.37	22.6	0.85	0.28	0



Stellar Parameters For KIC 006045059

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5180^{+154}_{-154}	$4.544^{+0.090}_{-0.060}$	$-0.400^{+0.350}_{-0.300}$	$0.742^{+0.076}_{-0.084}$	$0.702^{+0.095}_{-0.044}$	$2.426^{+0.873}_{-0.487}$
	+3%/-3%	+2%/-1%	+87%/-75%	+10%/-11%	+14%/-6%	+36%/-20%
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 006045059-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$6.34^{+6.27}_{-4.16}$	332^{+13}_{-13}	-3623^{+17544}_{-11312}	$-4477.338^{+925235.844}_{-1109876.689}$
Alt.	-474 ± 101	$7.34^{+6.79}_{-4.99}$	332^{+13}_{-13}	3133^{+1437}_{-520}	2233^{+18496}_{-1598}

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

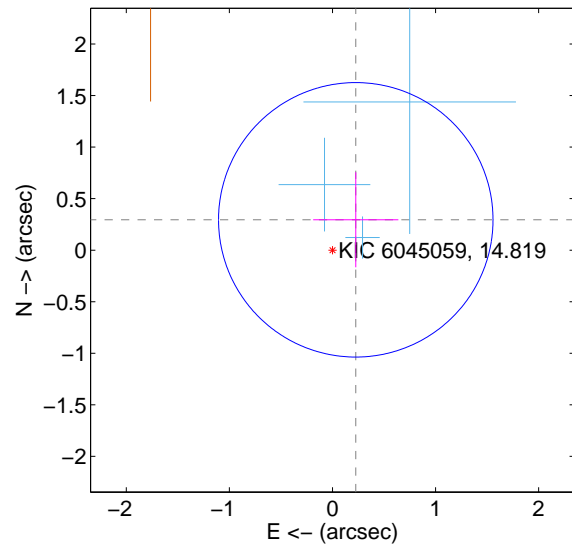
Supplemental centroid analysis for 006045059-08. Kepler magnitude: 14.82. Transit SNR -1.00

There are 3 quarters with good PRF difference image offsets

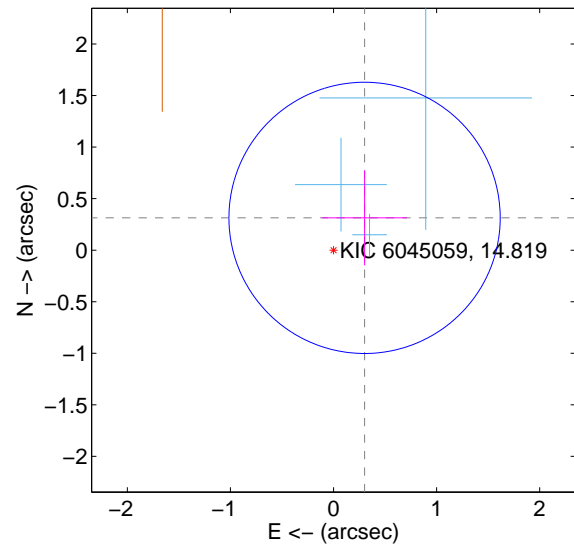
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.371 ± 0.444	0.84	-0.226 ± 0.413	0.294 ± 0.461
PRF-fit source offset from KIC position	0.435 ± 0.439	0.99	-0.301 ± 0.413	0.313 ± 0.461
photometric centroid source offset	0.64 ± 0.44	1.47	-0.49 ± 0.42	0.41 ± 0.46

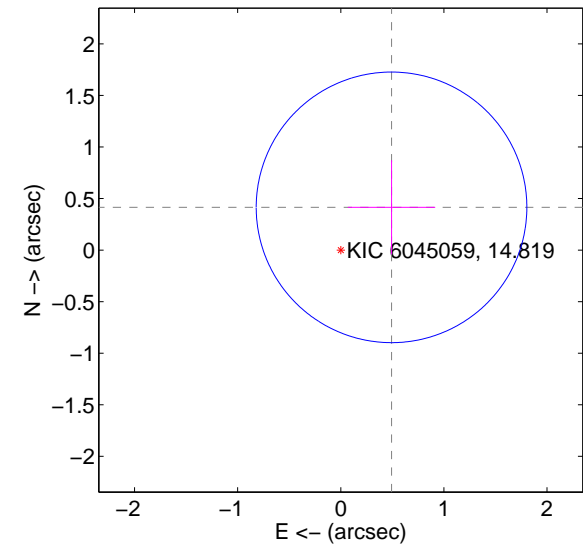
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

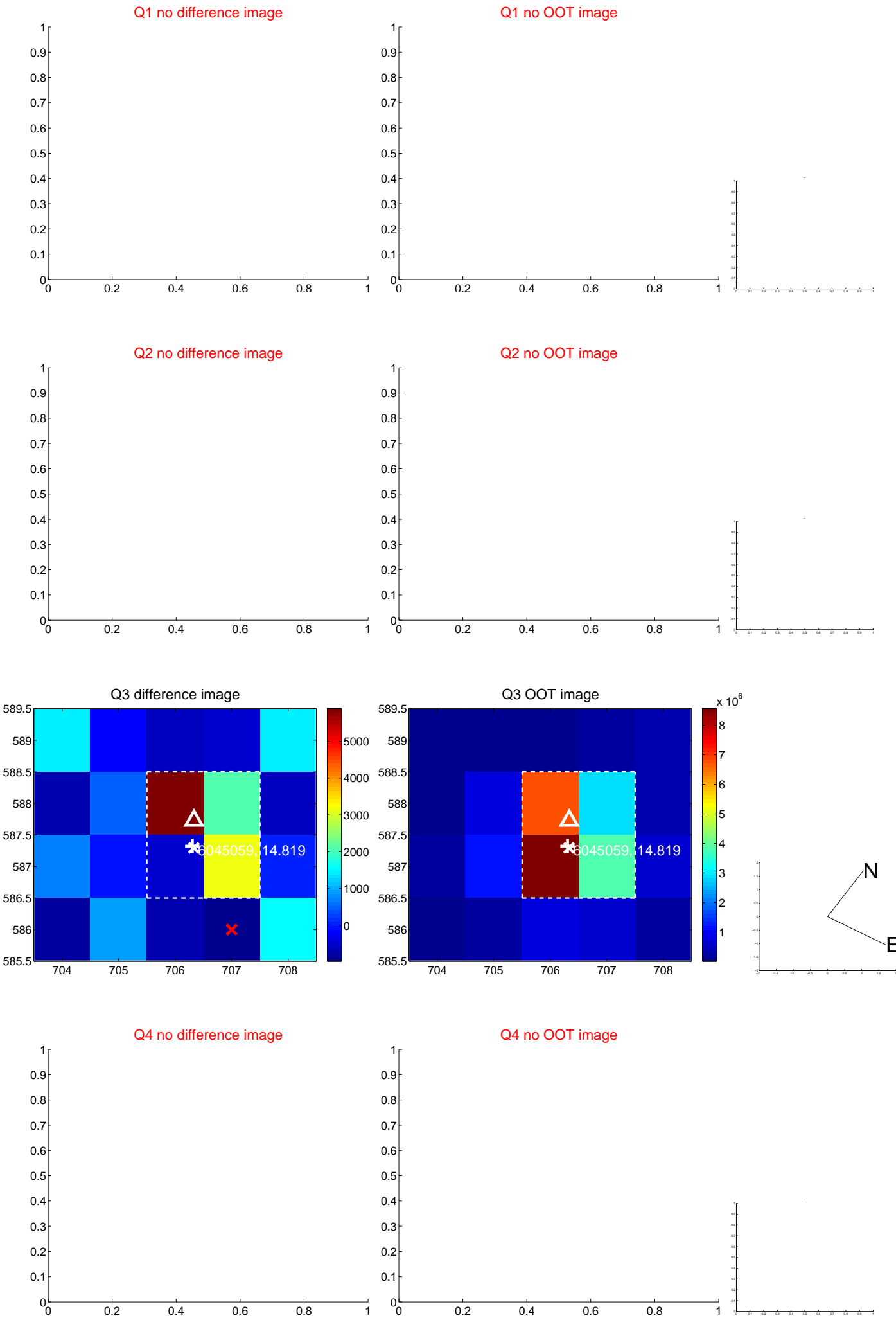


offset from photometric centroids

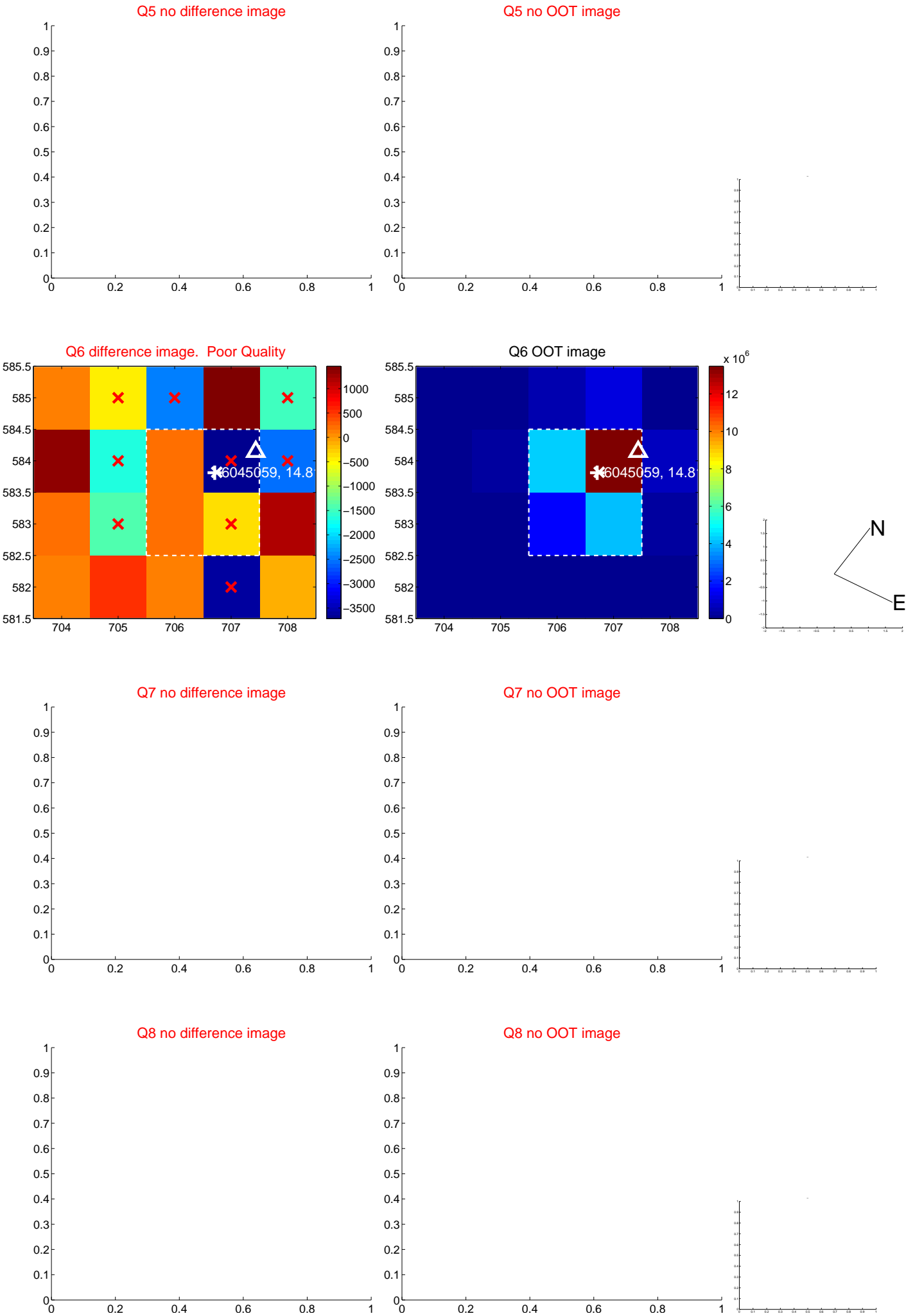


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

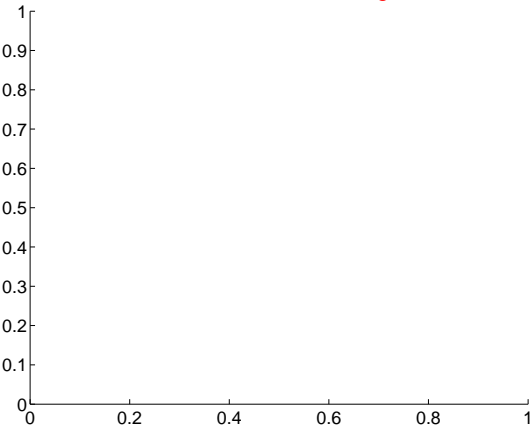
Q9 no difference image



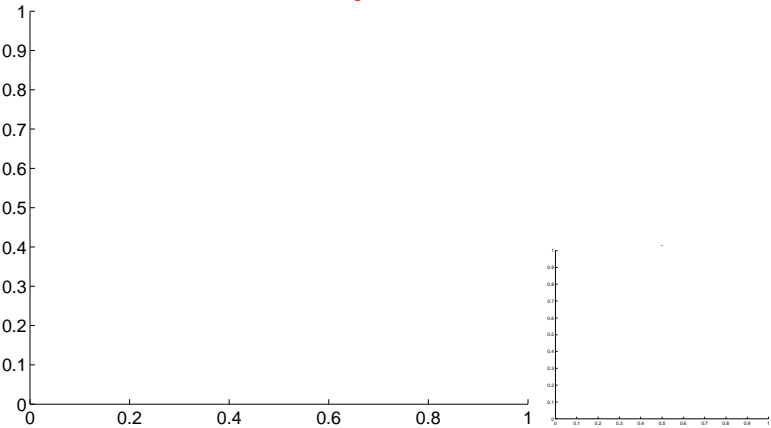
Q9 no OOT image



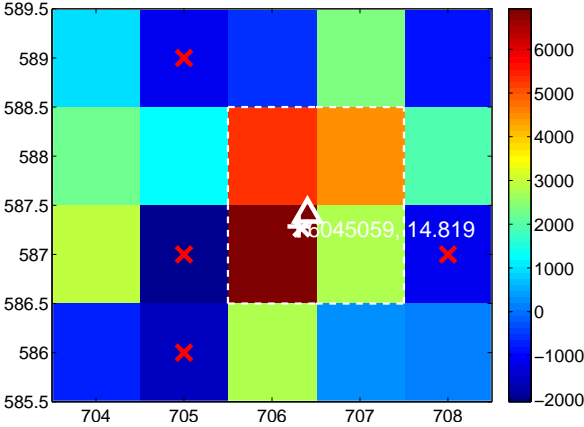
Q10 no difference image



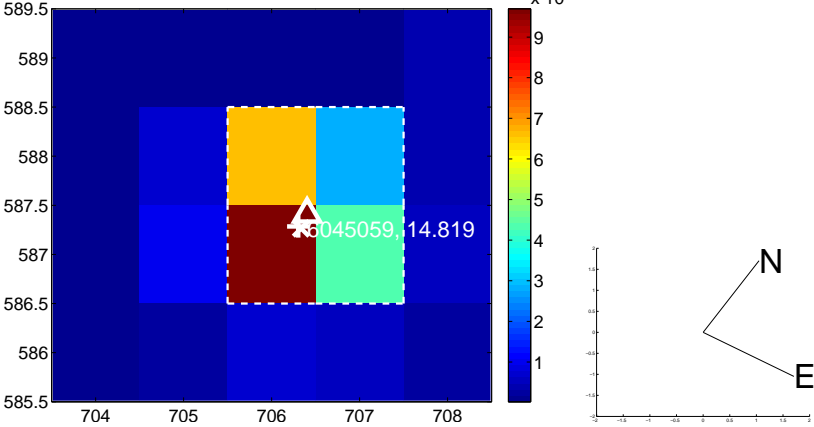
Q10 no OOT image



Q11 difference image



Q11 OOT image



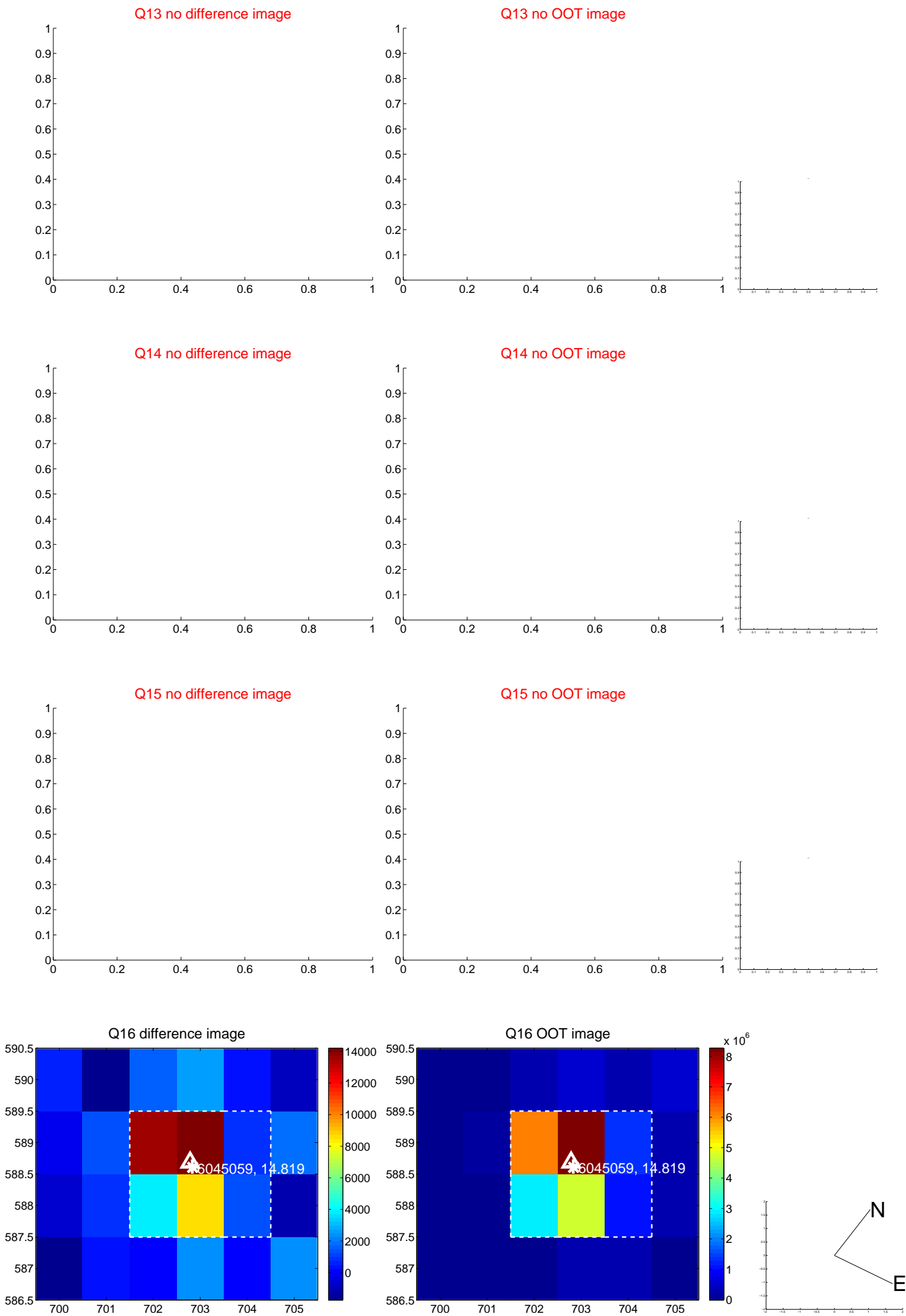
Q12 no difference image



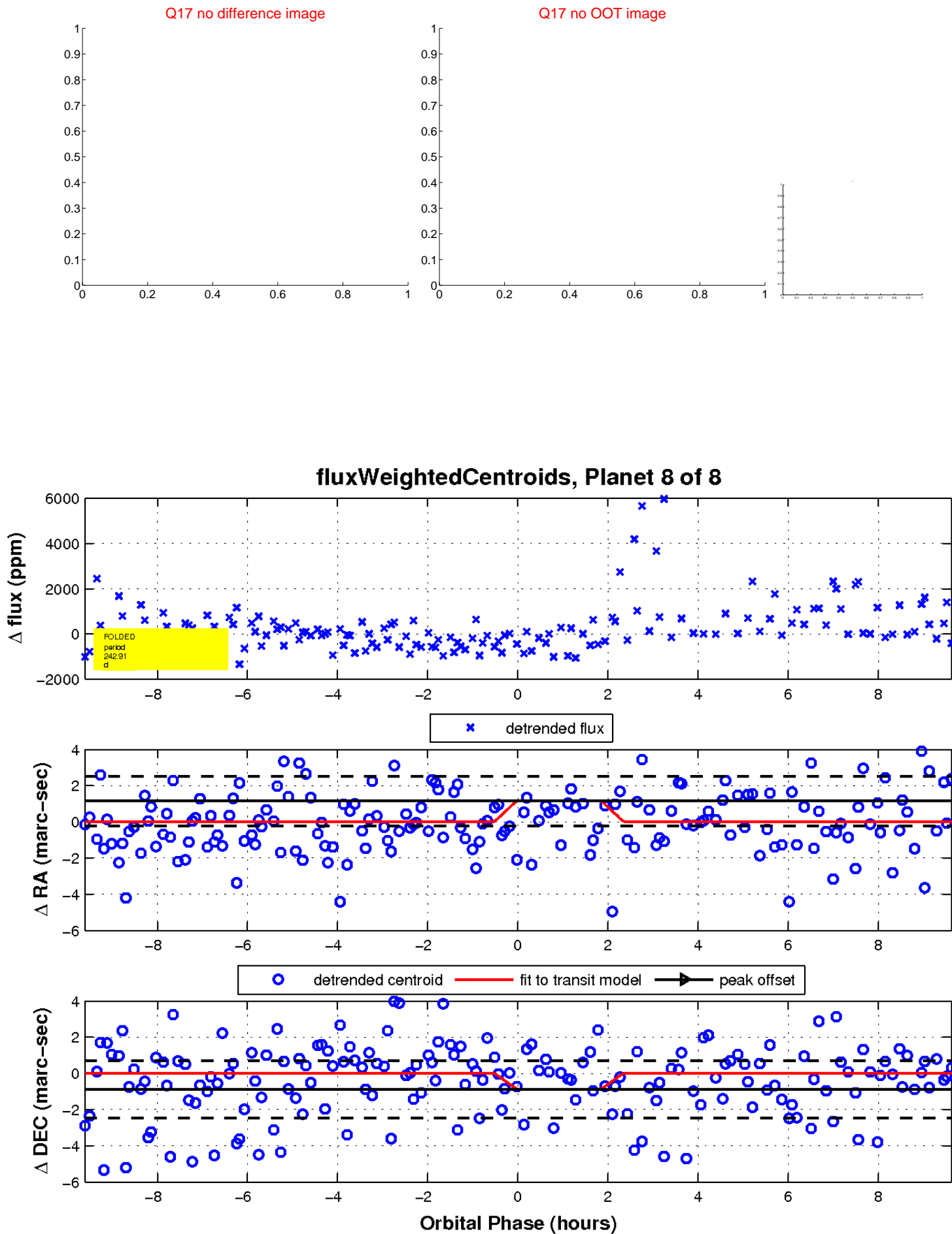
Q12 no OOT image



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

