

KIC 010678547

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})
010678547-01	OBS	No	0.958852	131.740929	86.7	5.533	7.9	5.4	3.30	8089	3.13	66741.05
010678547-02	OBS	No	46.266327	132.134497	1965.9	2.176	10.4	9.8	3.30	8089	25.52	379.93
010678547-03	OBS	No	275.395986	189.662265	3463.5	3.956	10.2	11.3	3.30	8089	22.64	35.22
010678547-04	OBS	No	91.651982	201.270112	2210.0	6.815	9.8	9.5	3.30	8089	18.61	152.71
010678547-05	OBS	No	43.570469	137.129611	1396.6	5.119	8.9	8.8	3.30	8089	14.74	411.60
010678547-06	OBS	No	112.787169	188.429005	2289.5	5.538	9.3	8.1	3.30	8089	18.51	115.80
010678547-07	OBS	No	57.131981	133.364930	1676.4	4.872	9.1	9.0	3.30	8089	14.53	286.79
010678547-08	OBS	No	42.966194	155.444122	1288.5	5.702	10.0	9.0	3.30	8089	14.12	419.33
010678547-09	OBS	No	106.003102	153.375647	1335.3	13.839	8.3	8.1	3.30	8089	13.29	125.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010678547-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
010678547-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
010678547-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
010678547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
010678547-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

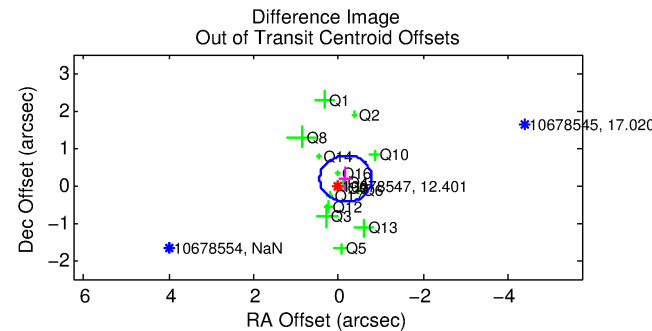
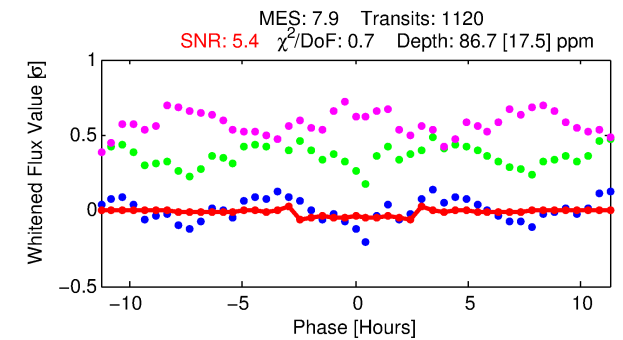
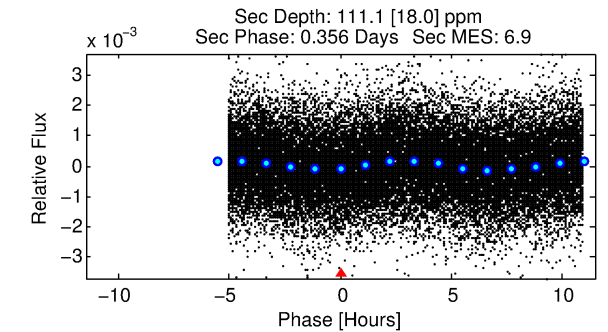
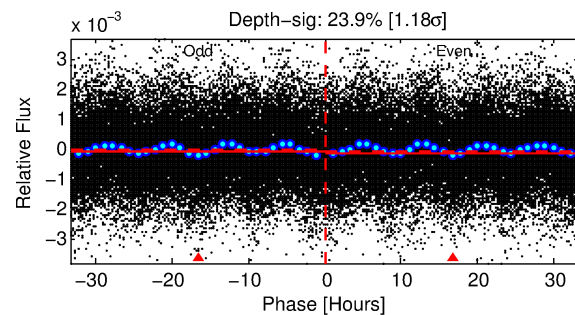
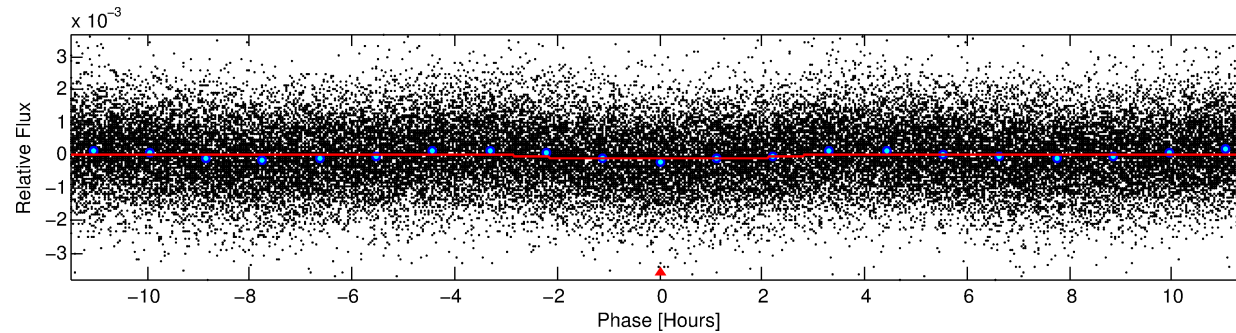
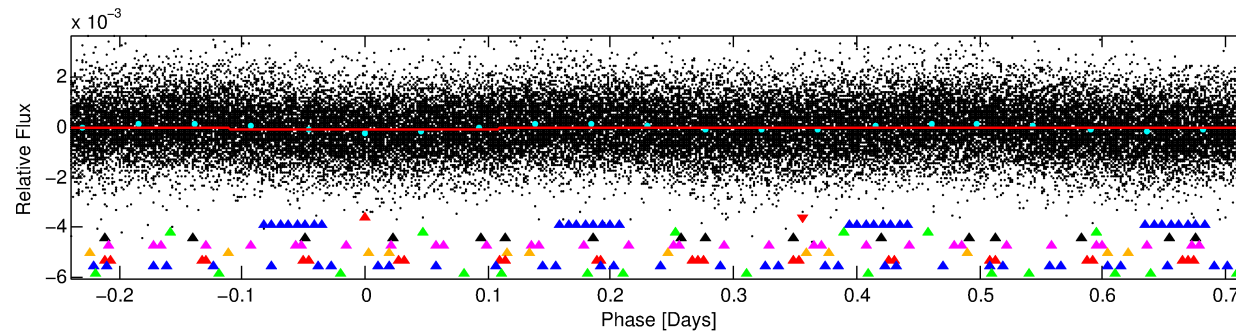
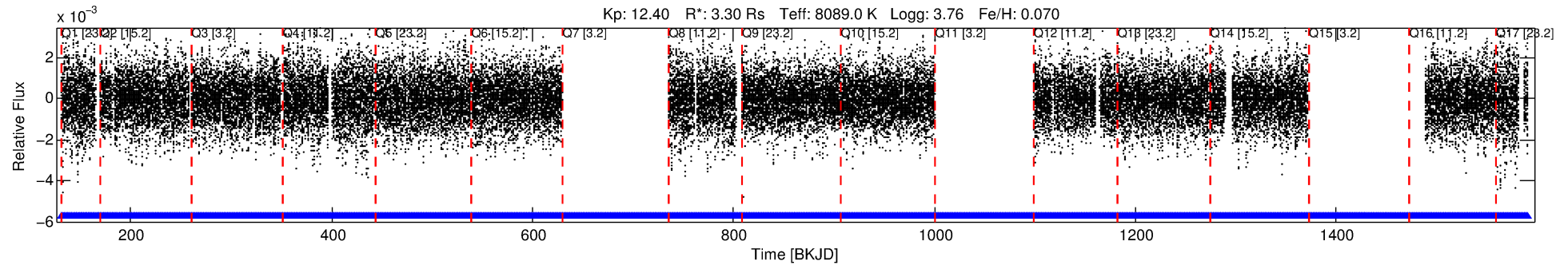
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678547-01

No Significant Match Found

DV One-Page Summary

KIC: 10678547 Candidate: 1 of 9 Period: 0.959 d



DV Fit Results:

Period = 0.95885 [0.00002] d
Epoch = 131.7409 [0.0030] BKJD
Rp/R* = 0.0087 [0.0066]
a/R* = 1.44 [3.31]
b = 0.28 [14.46]
Seff = 66741.05 [27007.29]
Teq = 4098 [415] K
Rp = 3.13 [2.56] Re
a = 0.0250 [0.0066] AU
Ag = 3.91 [6.19] [0.47 σ]
Teffp = 8911 [3413] K [1.40 σ]

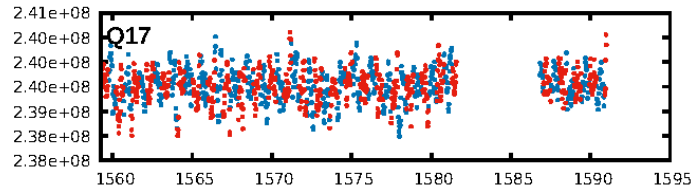
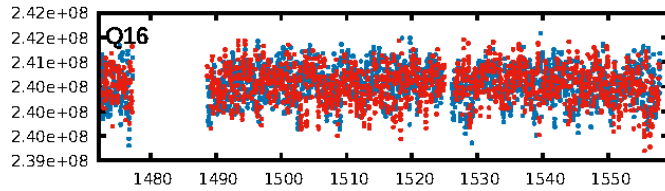
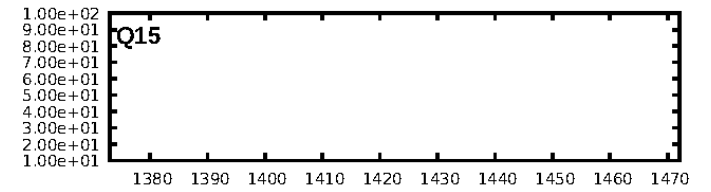
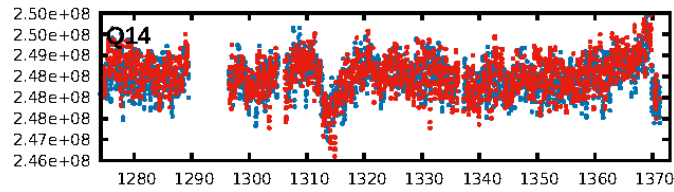
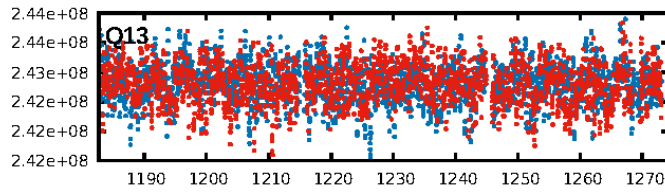
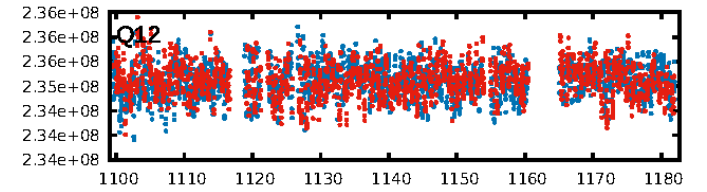
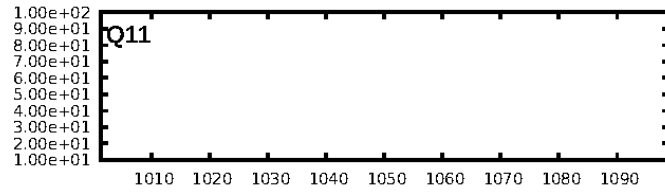
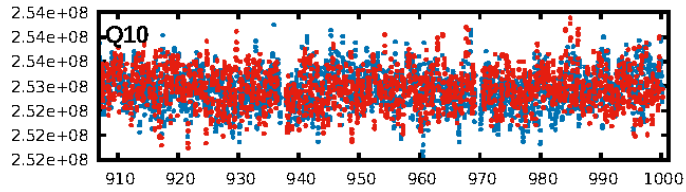
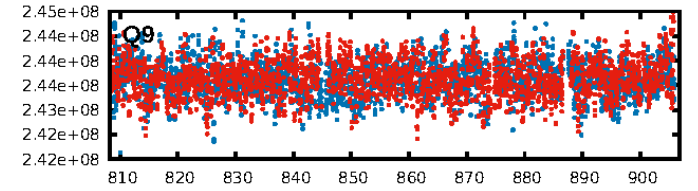
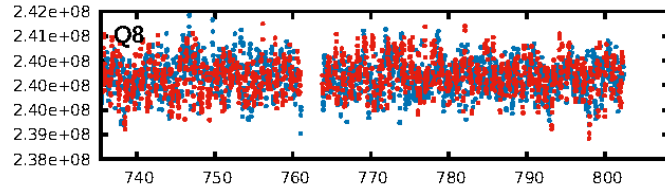
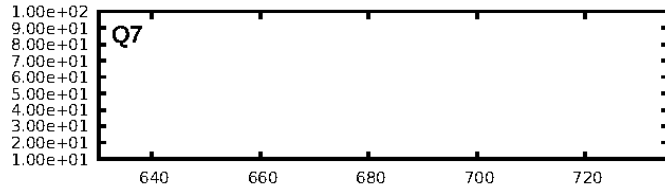
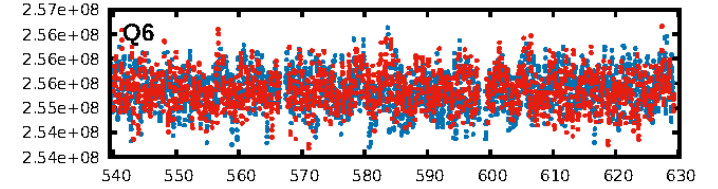
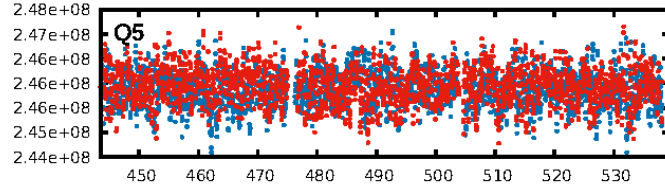
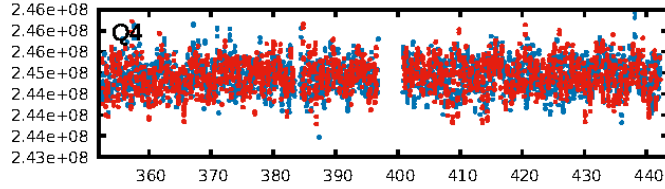
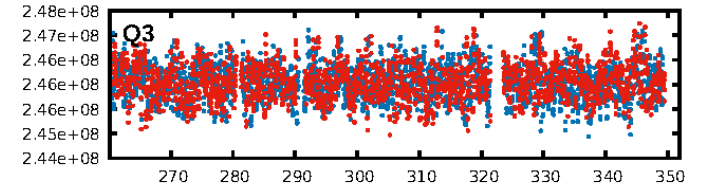
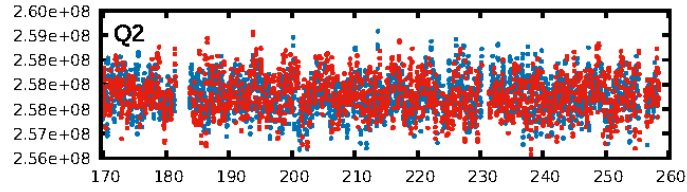
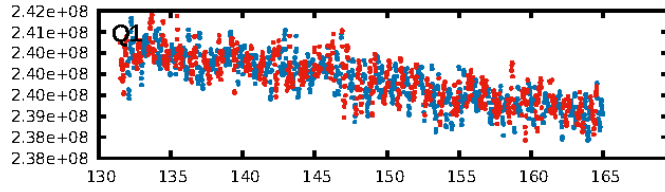
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [126.89 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1056/1056]
GhostDiagnostic-chr: 1.961
Centroid-sig: 0.0%
Centroid-so: 0.251 arcsec [1.97 σ]
OotOffset-rm: 0.256 arcsec [1.25 σ]
KicOffset-rm: 0.234 arcsec [1.72 σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 0.79 [11/14]
DiffImageOverlap-fno: 1.00 [14/14]

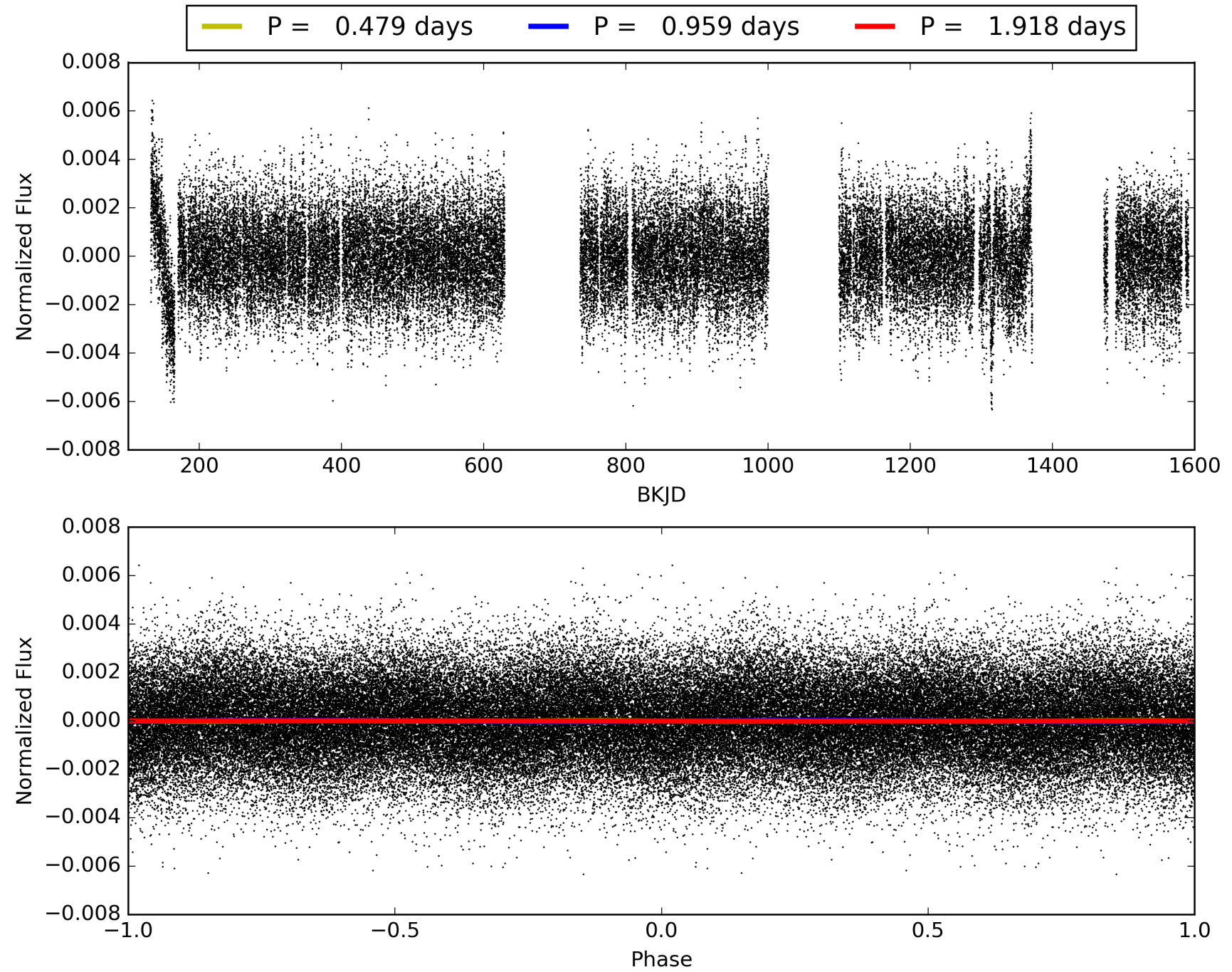
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:50:57 Z

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

TCE 010678547-01, PDC Light Curves

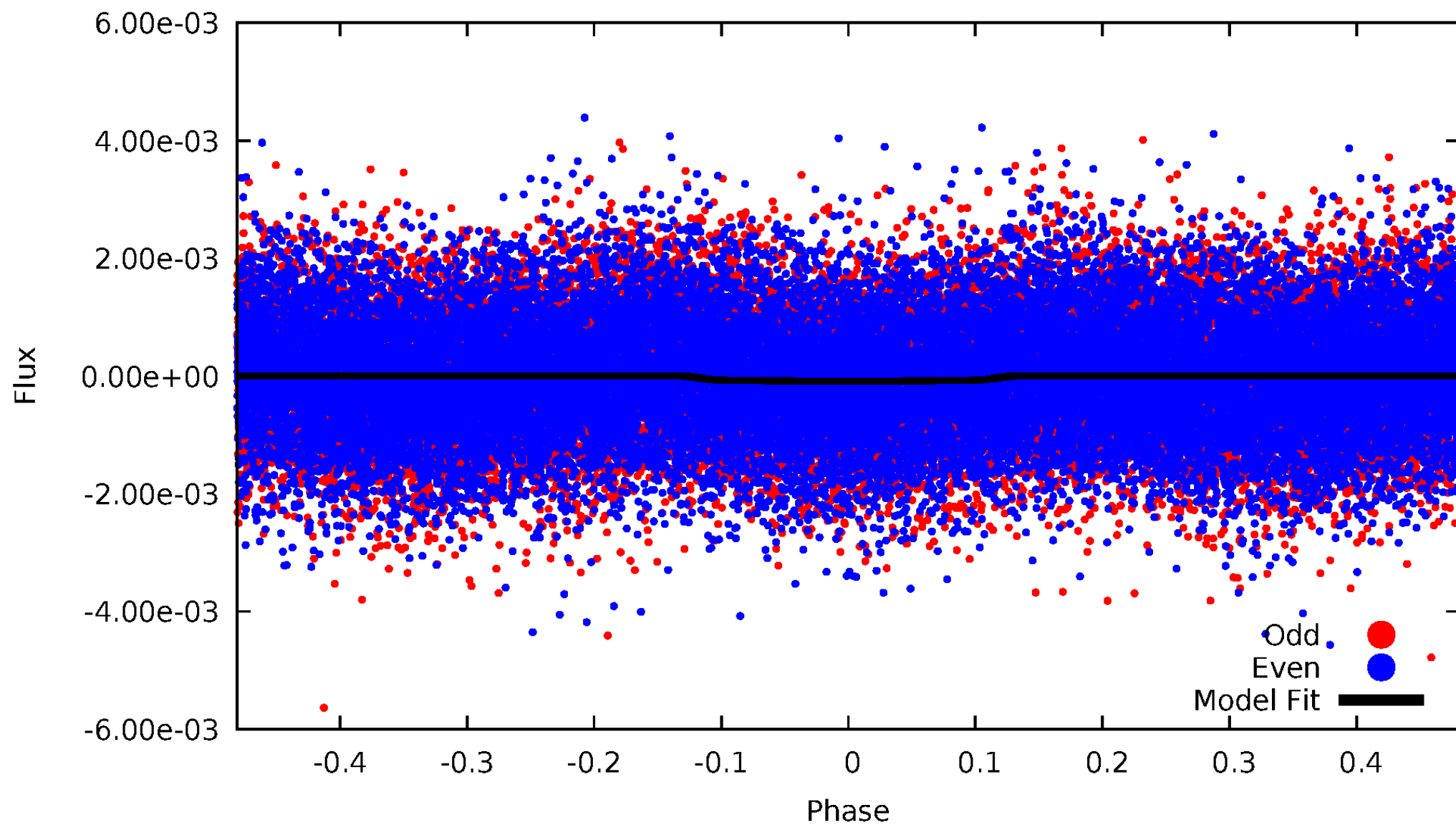


TCE 010678547-01



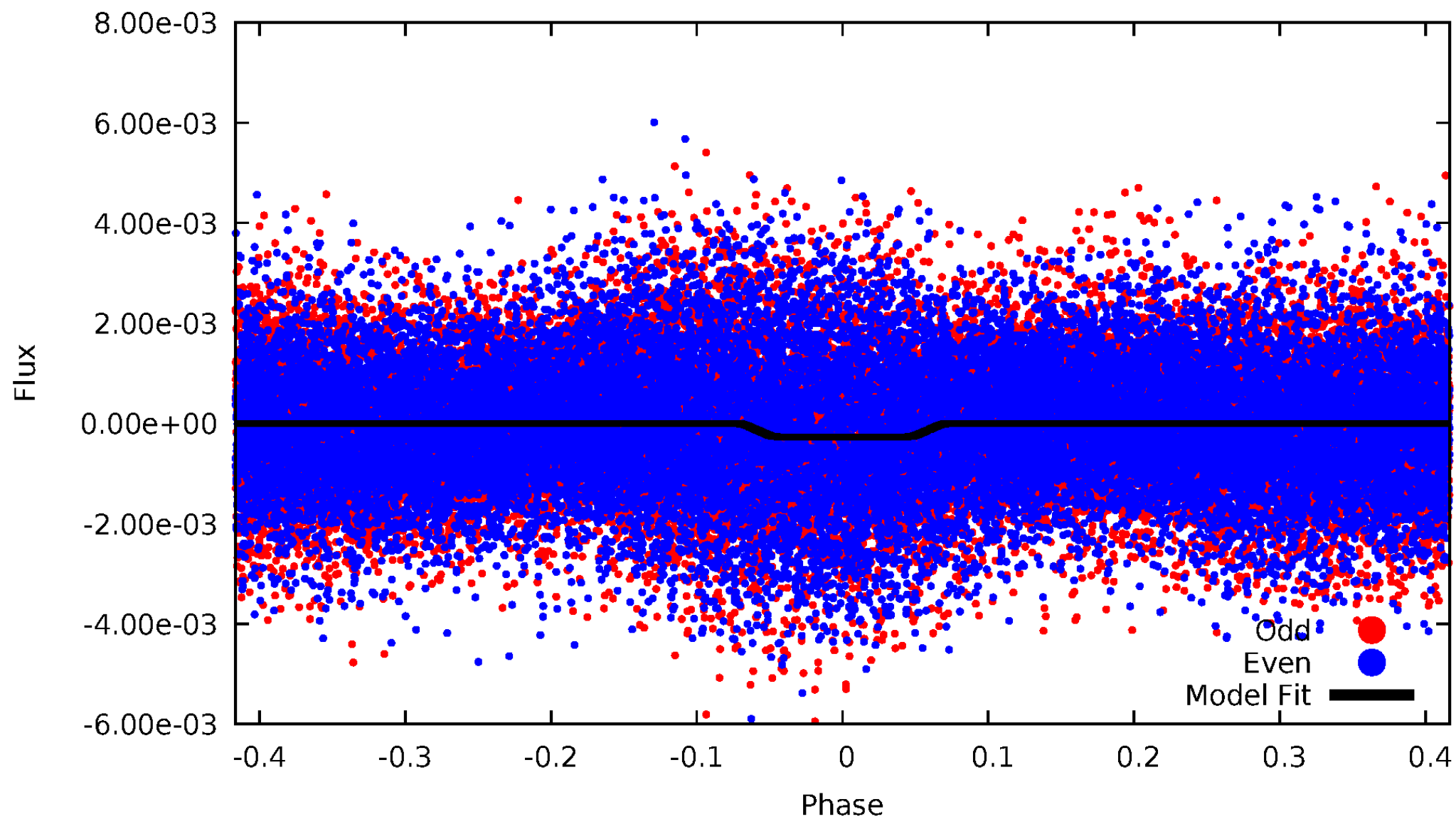
DV Odd/Even

TCE 010678547-01



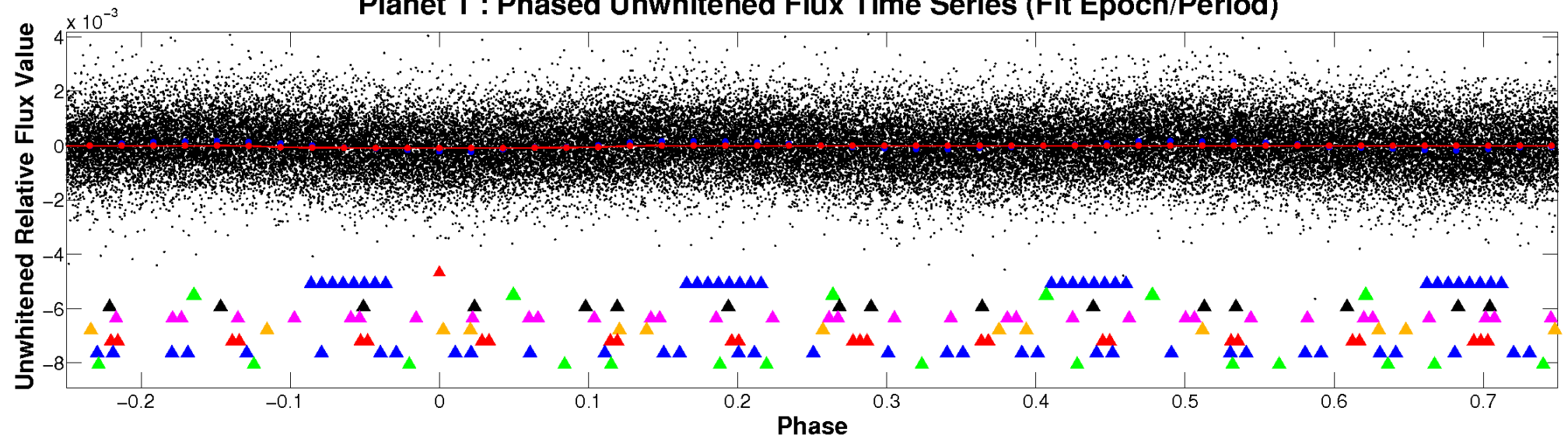
ALT Odd/Even

TCE 010678547-01

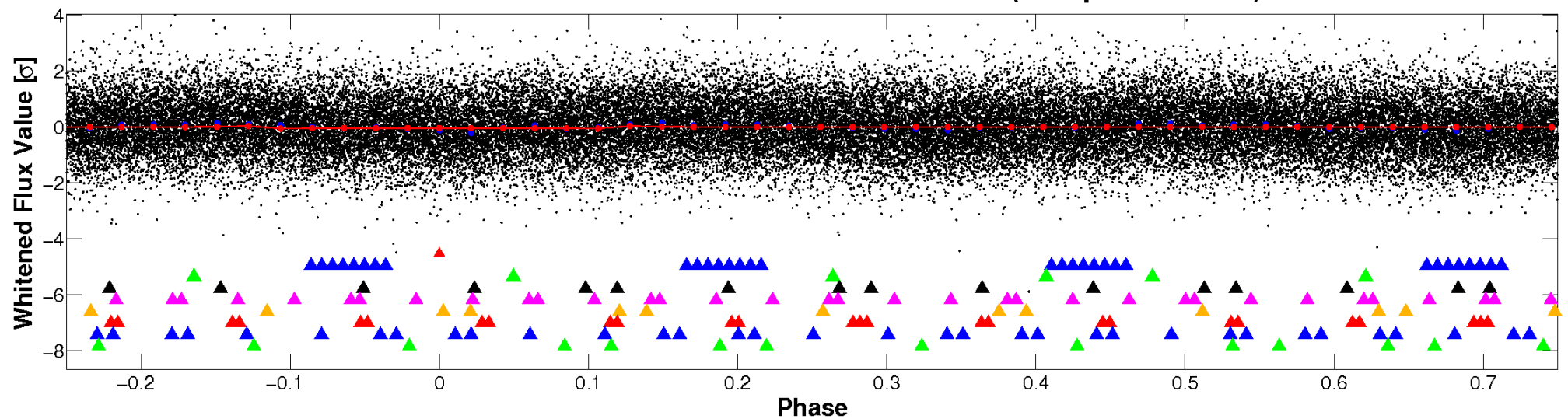


Non-Whitened Vs. Whitened Light Curve

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

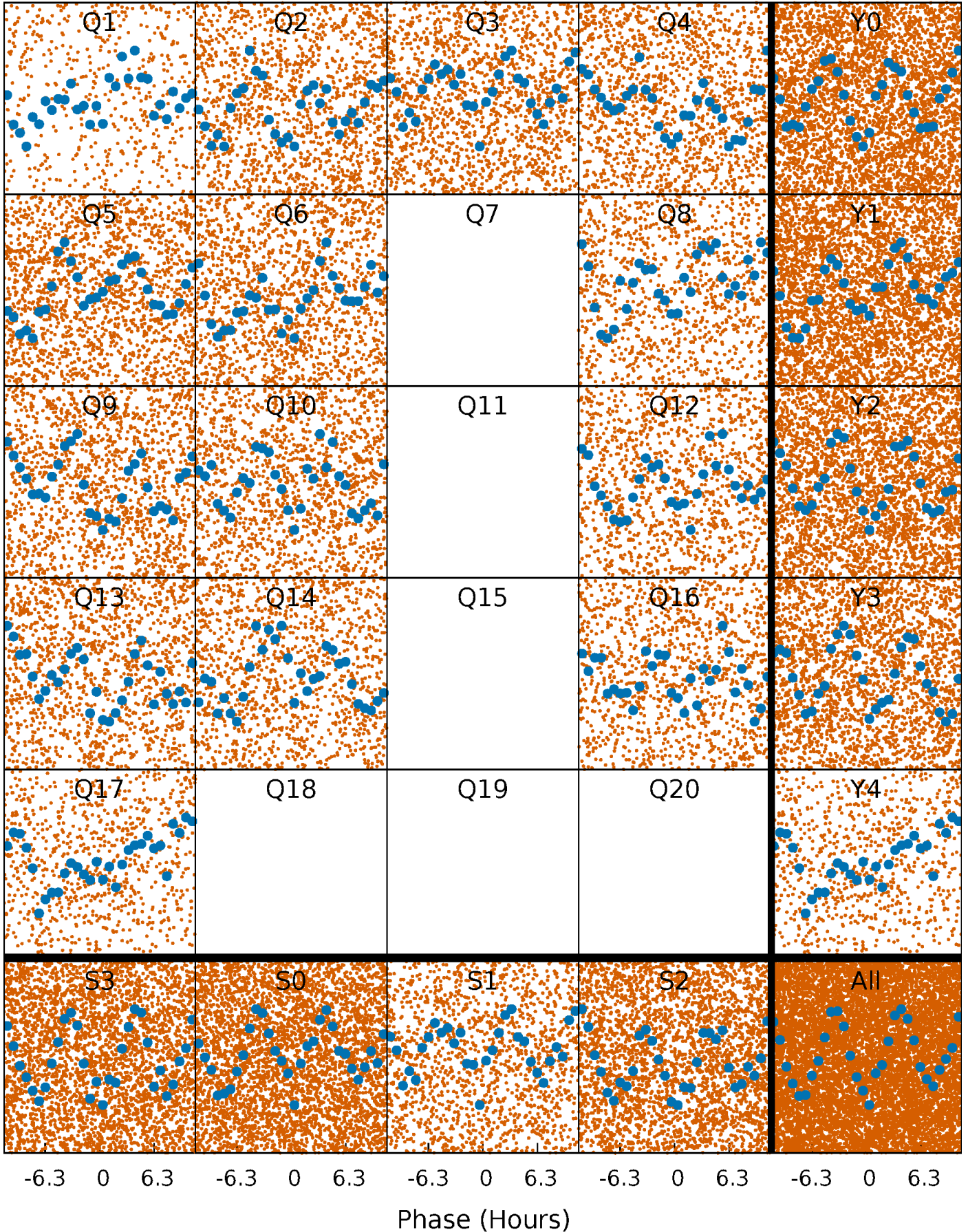


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



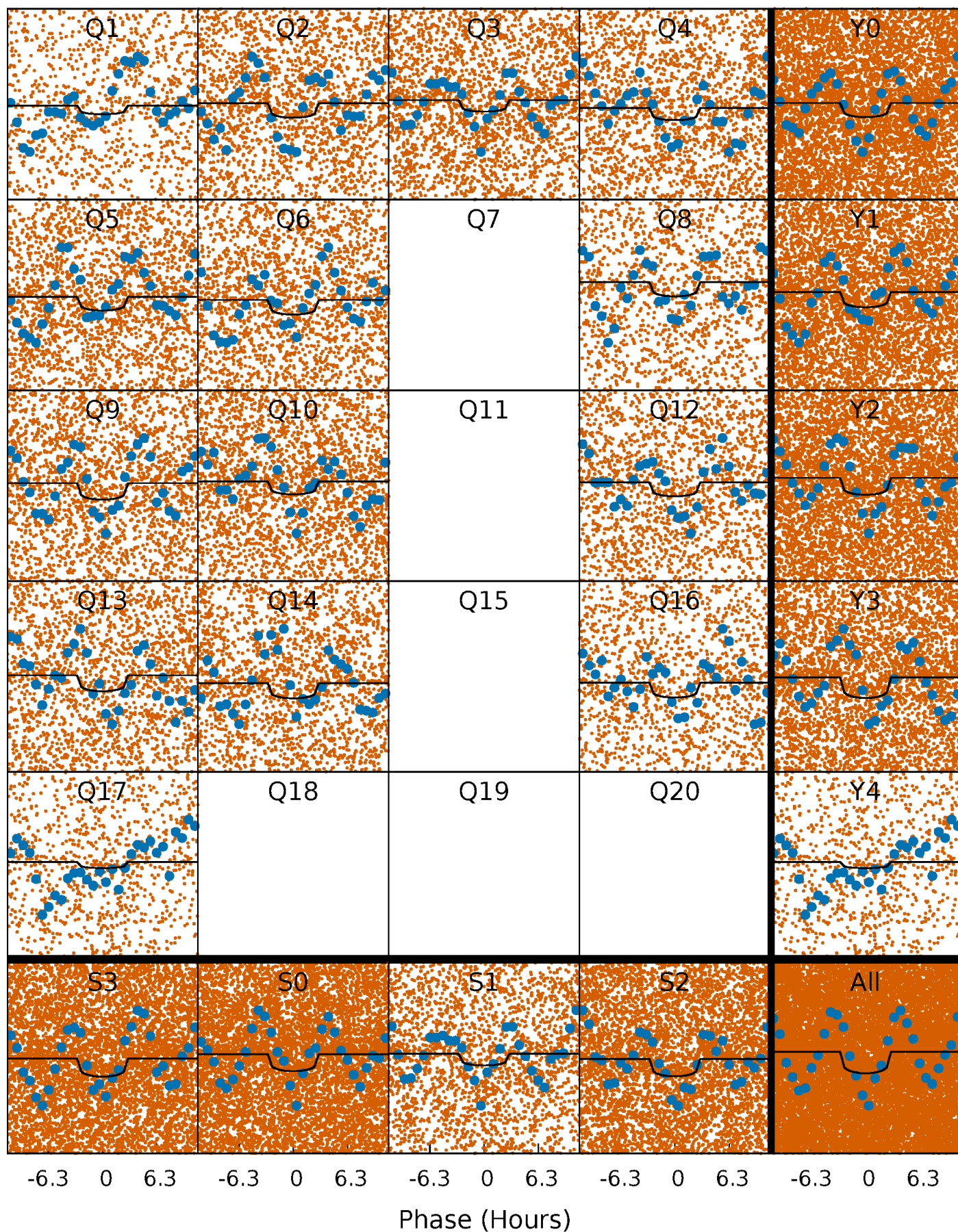
PDC Quarter-Phased Transit Curves

TCE 010678547-01 P= 0.958852 Days $T_0=131.740929$ (BKJD)



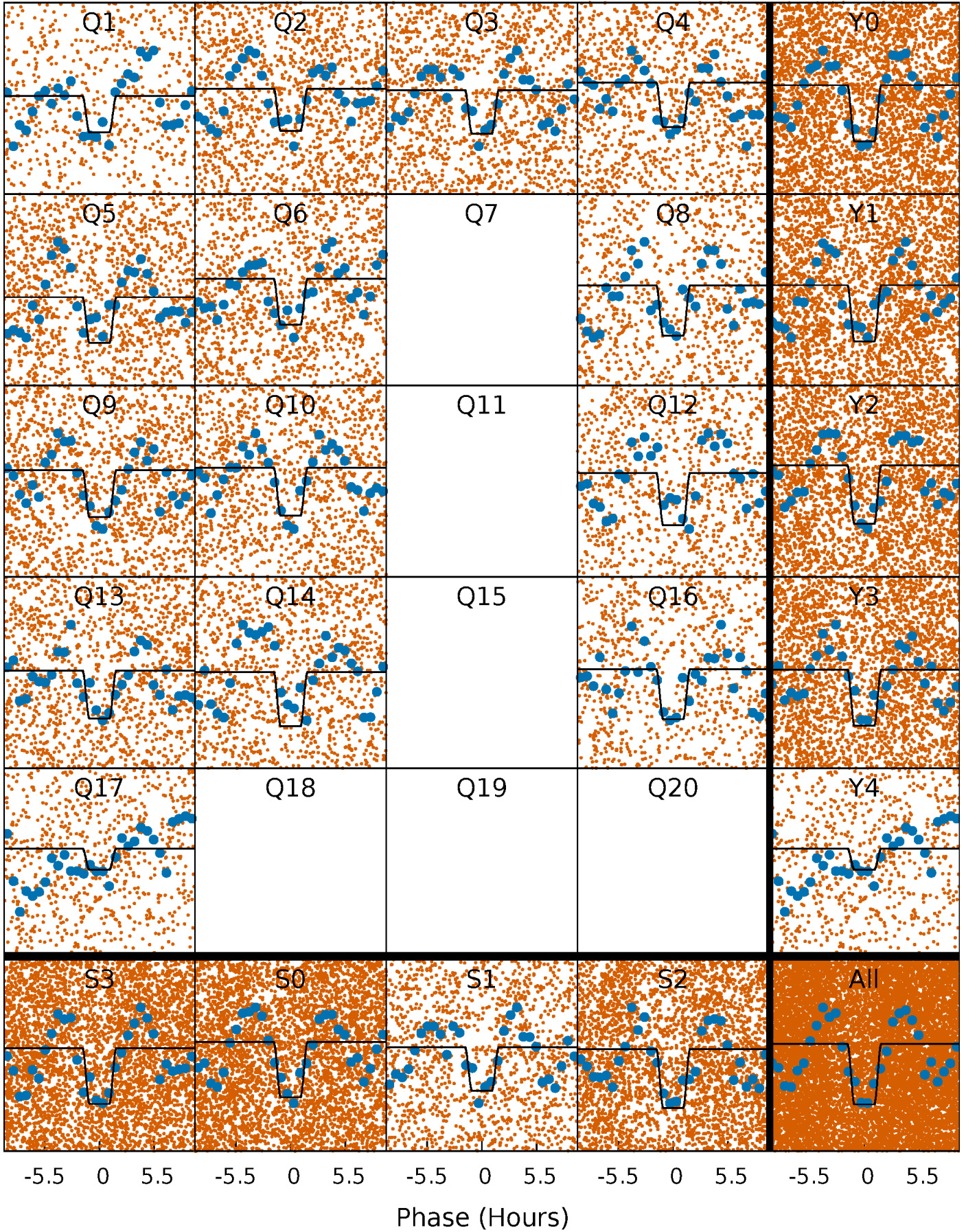
DV Quarter-Phased Transit Curves

TCE 010678547-01 P= 0.958852 Days $T_0=131.740929$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

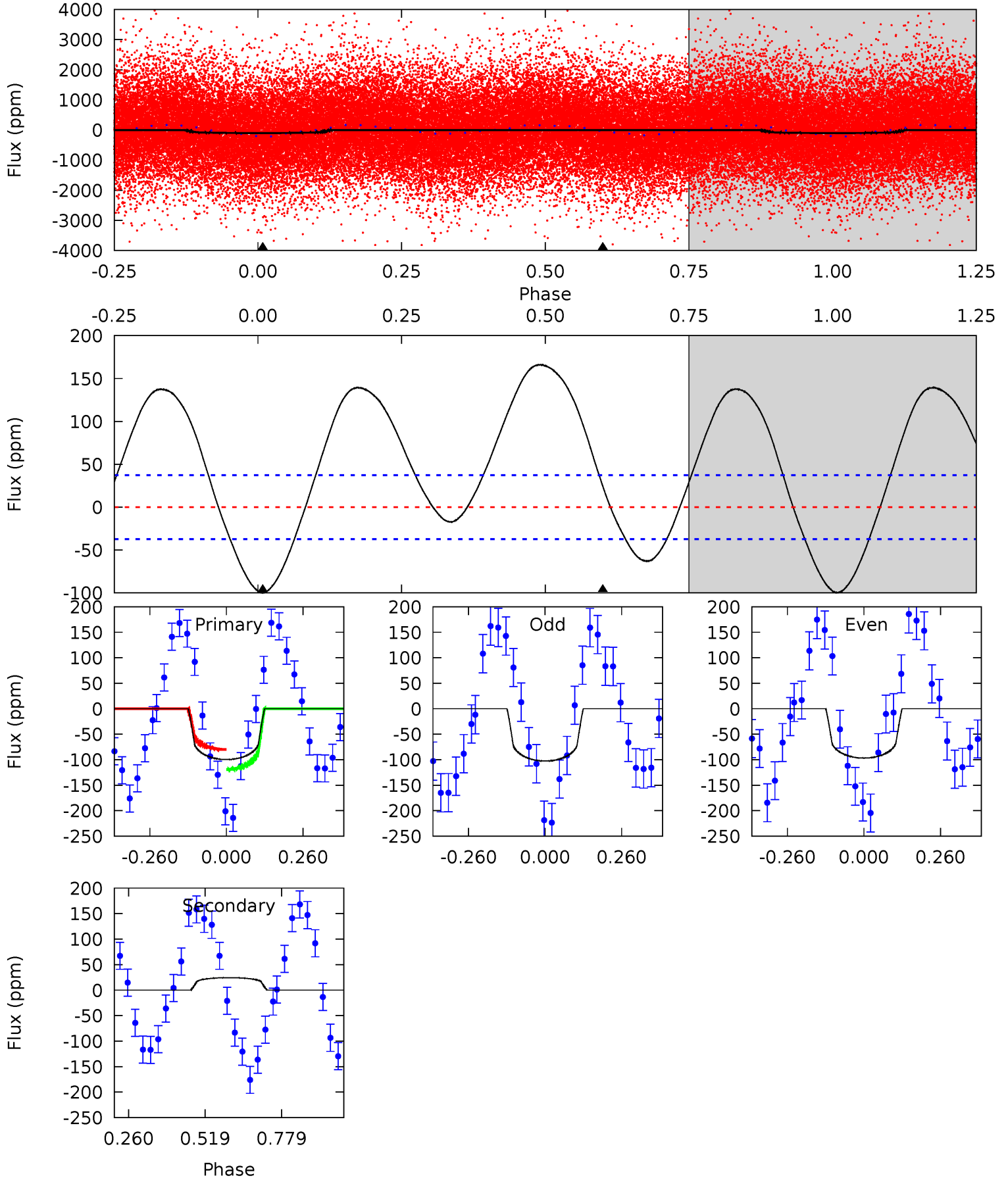
TCE 010678547-01 P= 0.958895 Days $T_0=131.718828$ (BKJD)



DV Model-Shift Uniqueness Test

010678547-01, P = 0.958852 Days, E = 130.782077 Days

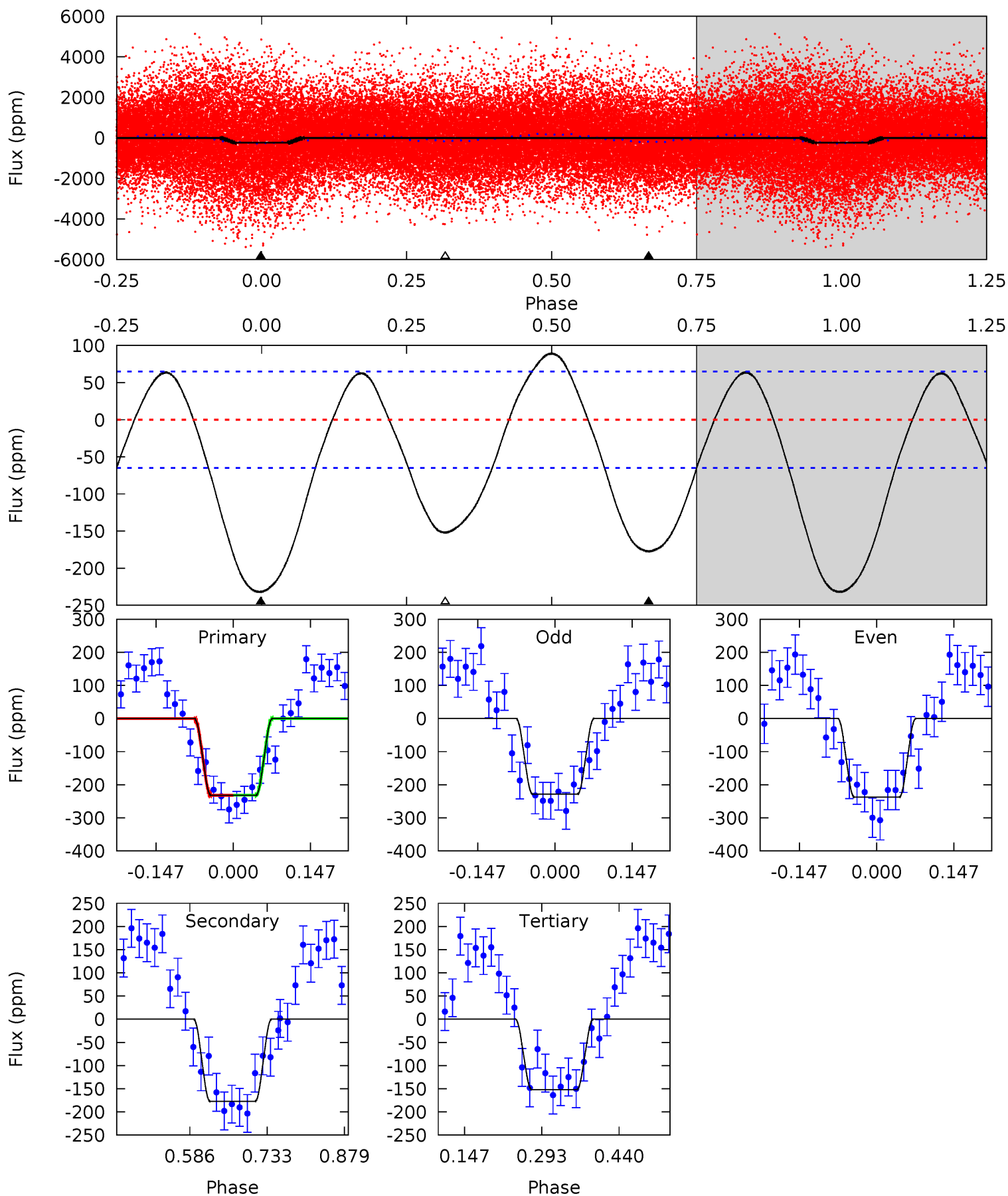
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	-2.86	0	0	4.36	1.13	3.02	11.7	11.7	-2.86	-2.86	0.34	1.35	0.62	2.38



Alt Model-Shift Uniqueness Test

010678547-01, P = 0.958895 Days, E = 130.759933 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.0	12.3	10.5	0	4.48	1.45	5.80	5.51	16.0	1.75	12.3	0.32	1.06	0.28	0.00



Stellar Parameters For KIC 010678547

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8089^{+64}_{-97}	$3.757^{+0.227}_{-0.122}$	$0.070^{+0.200}_{-0.250}$	$3.299^{+0.660}_{-0.990}$	$2.267^{+0.222}_{-0.413}$	$0.089^{+0.122}_{-0.033}$
	+1%/-1%	+6%/-3%	+286%/-357%	+20%/-30%	+10%/-18%	+137%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 010678547-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	24 ± 9	$3.37^{+2.19}_{-1.98}$	5666^{+306}_{-398}	-6126^{+853}_{-3193}	$-0.744^{+0.512}_{-3.329}$
Alt.	-177 ± 14	$5.77^{+2.44}_{-2.22}$	5682^{+325}_{-387}	6707^{+2525}_{-1246}	$1.802^{+2.861}_{-0.903}$

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 $A_{obs} \gg 1.0$

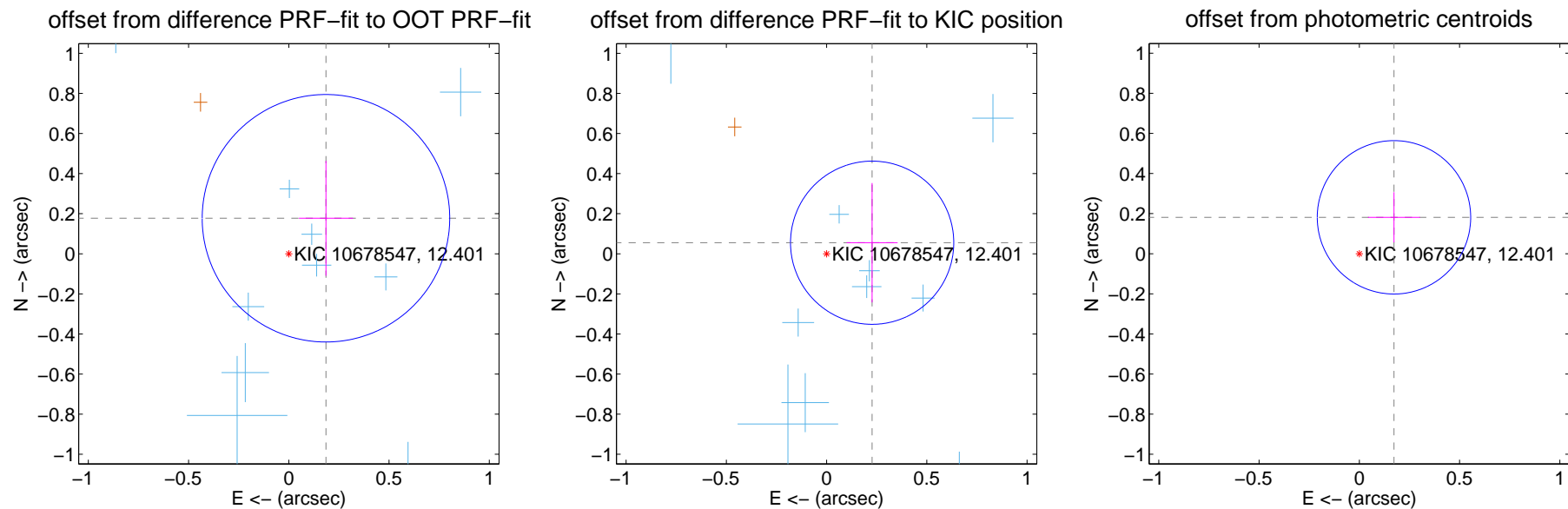
DV Centroid Data

Supplemental centroid analysis for 010678547-01. Kepler magnitude: 12.40. Transit SNR 5.44

There are 11 quarters with good PRF difference image offsets

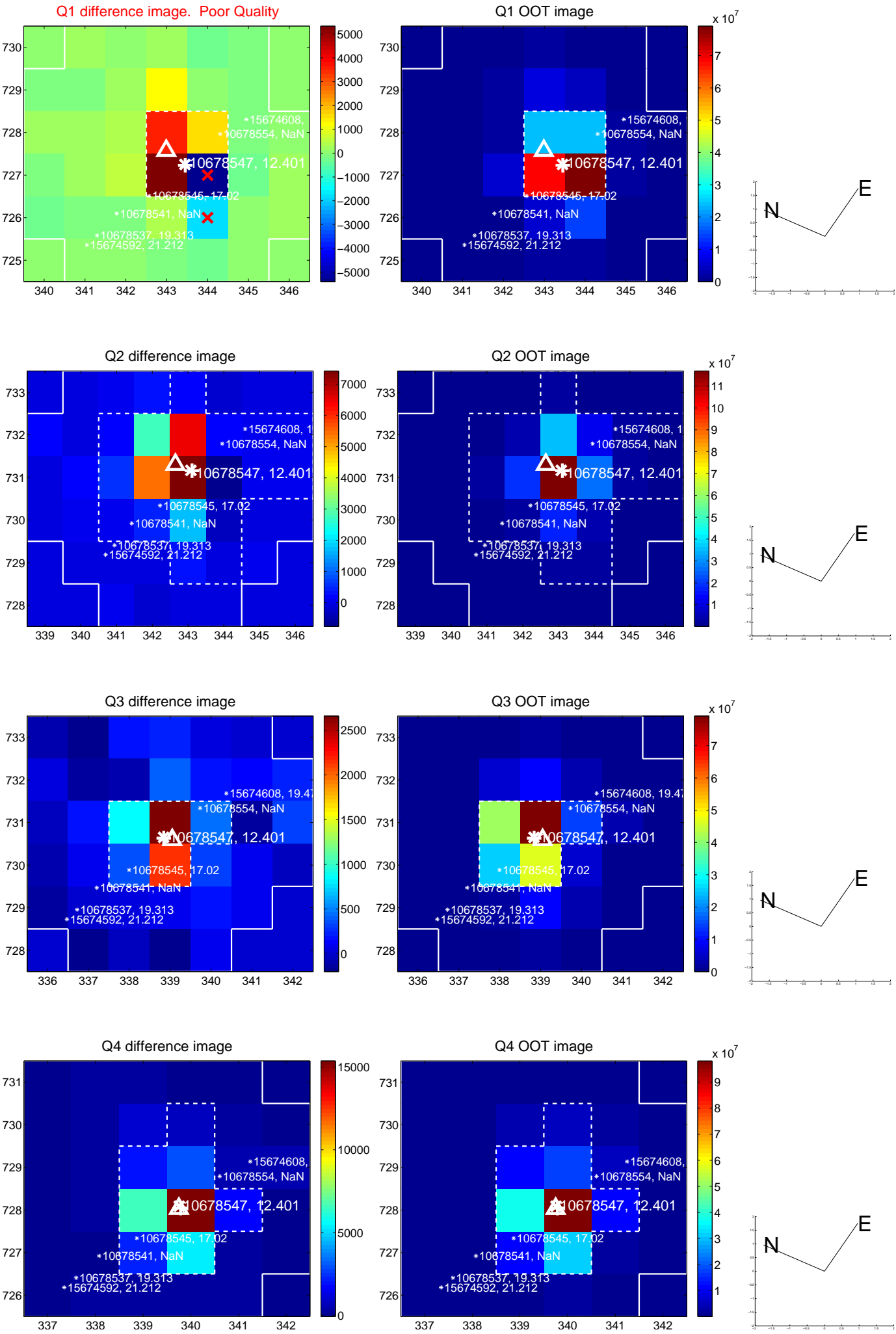
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.256 ± 0.206	1.25	-0.185 ± 0.135	0.177 ± 0.286
PRF-fit source offset from KIC position	0.234 ± 0.136	1.72	-0.227 ± 0.127	0.055 ± 0.298
photometric centroid source offset	0.25 ± 0.13	1.97	-0.17 ± 0.13	0.18 ± 0.13

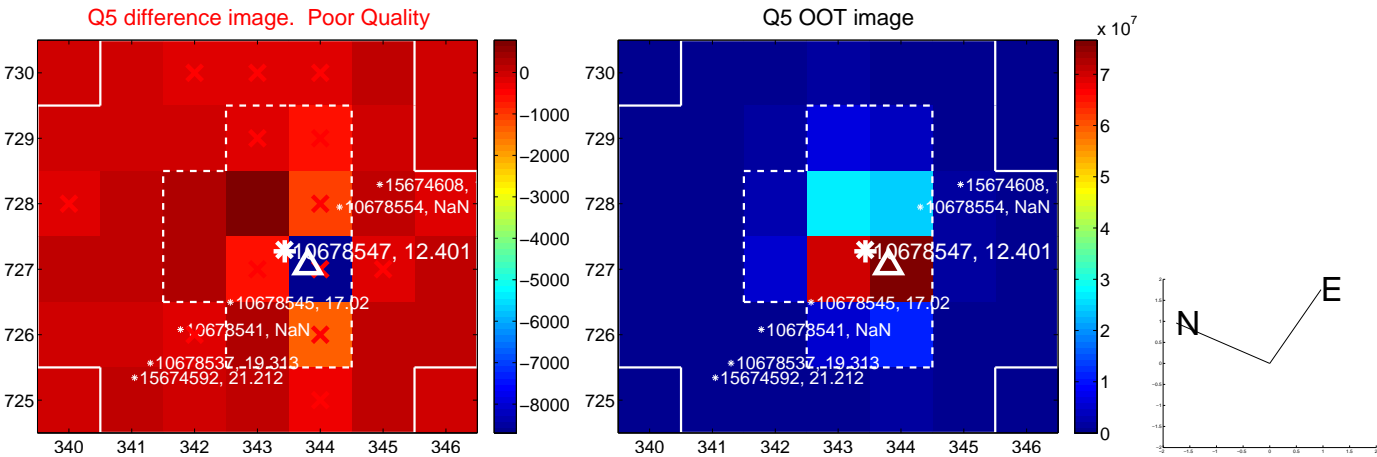


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

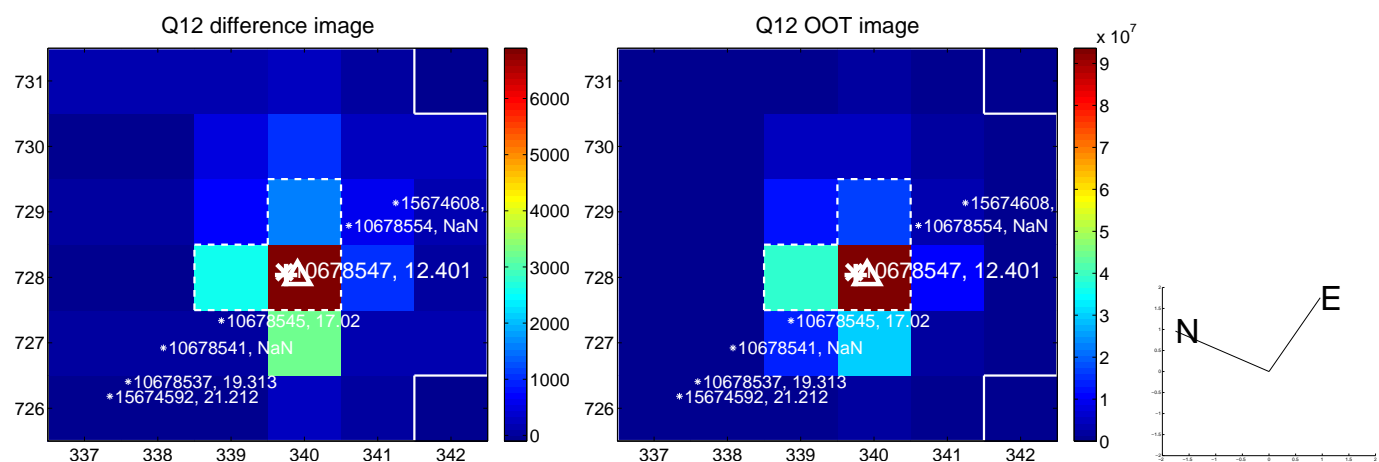
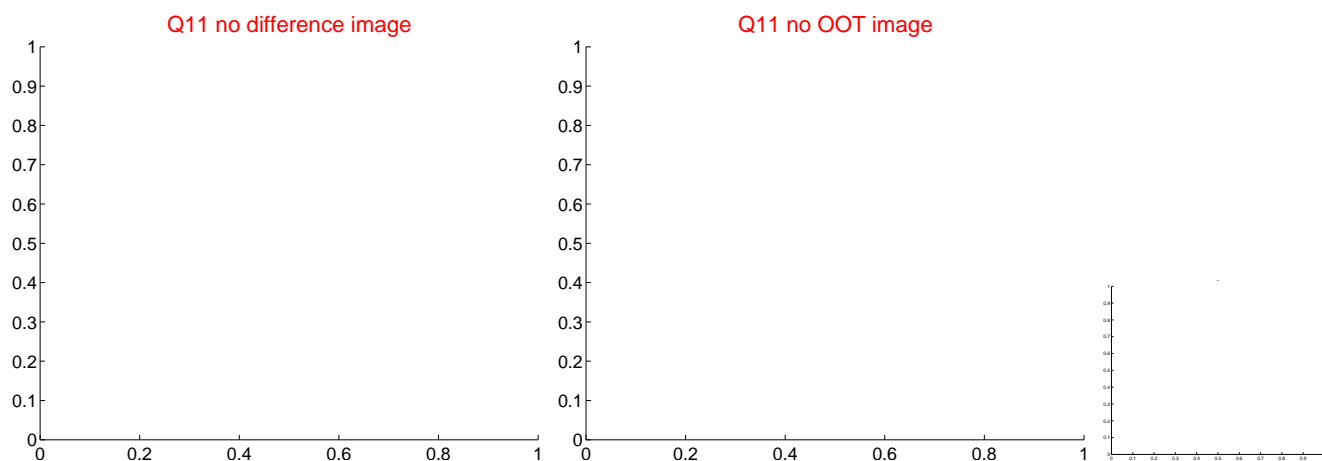
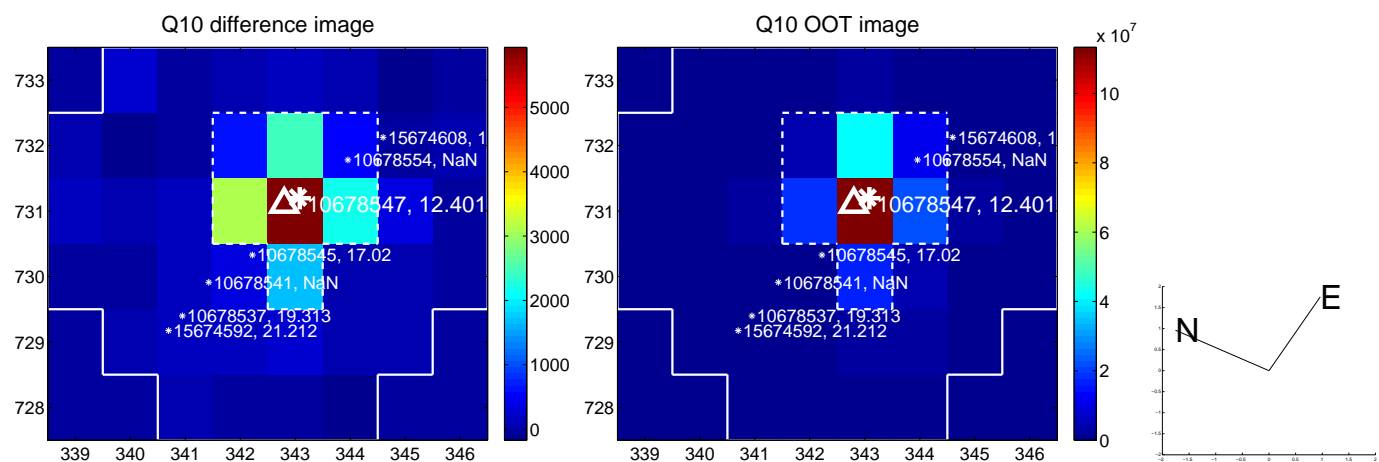
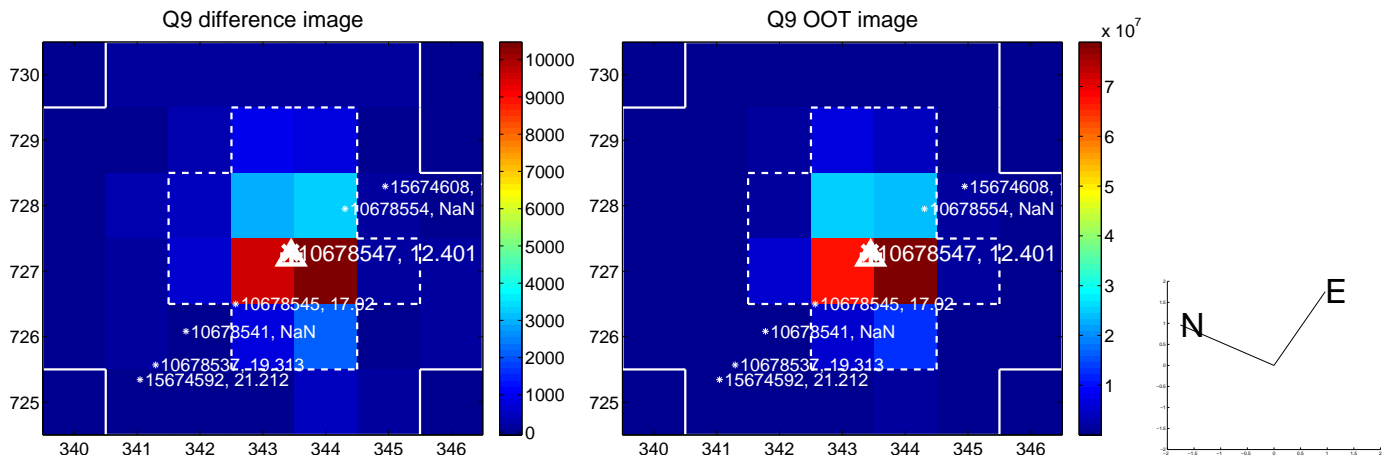
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



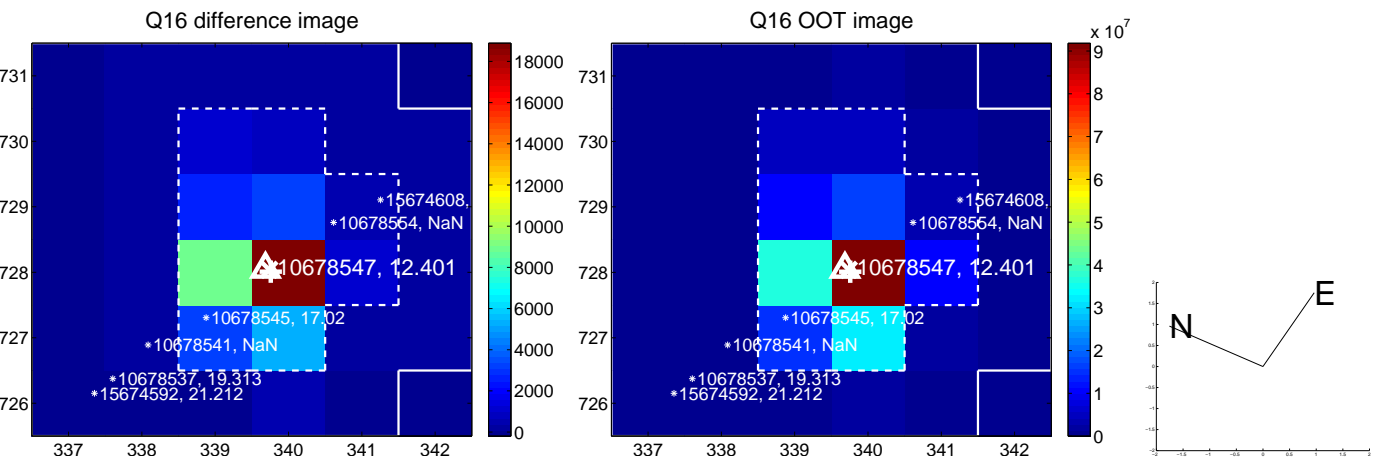
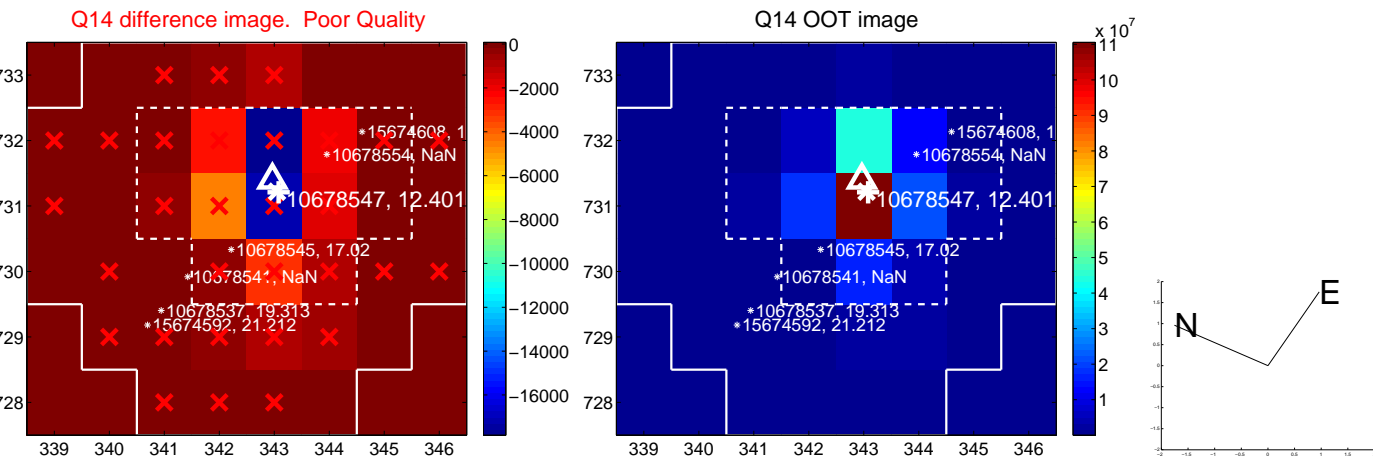
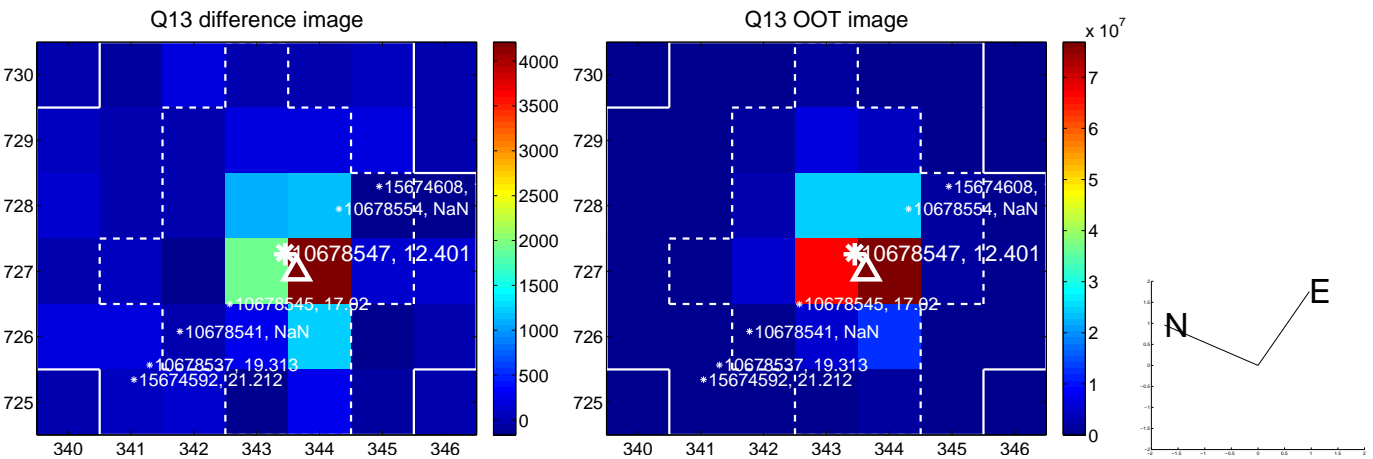
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



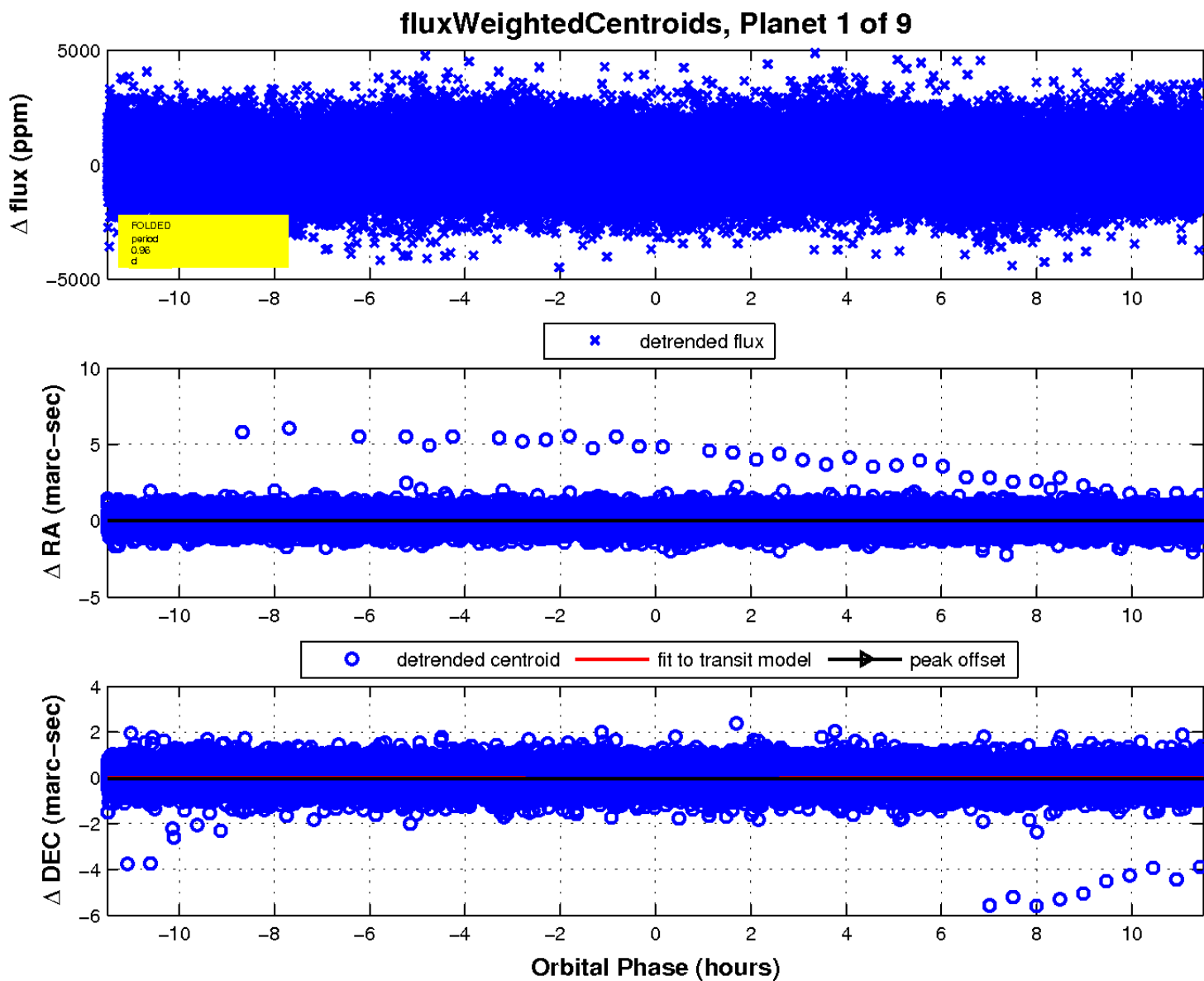
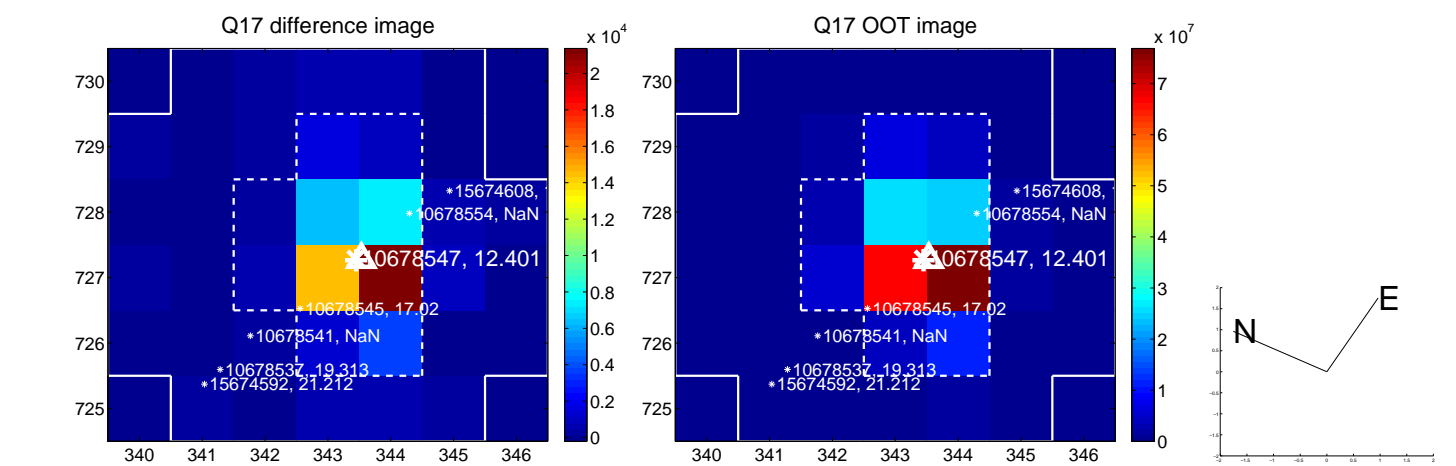
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

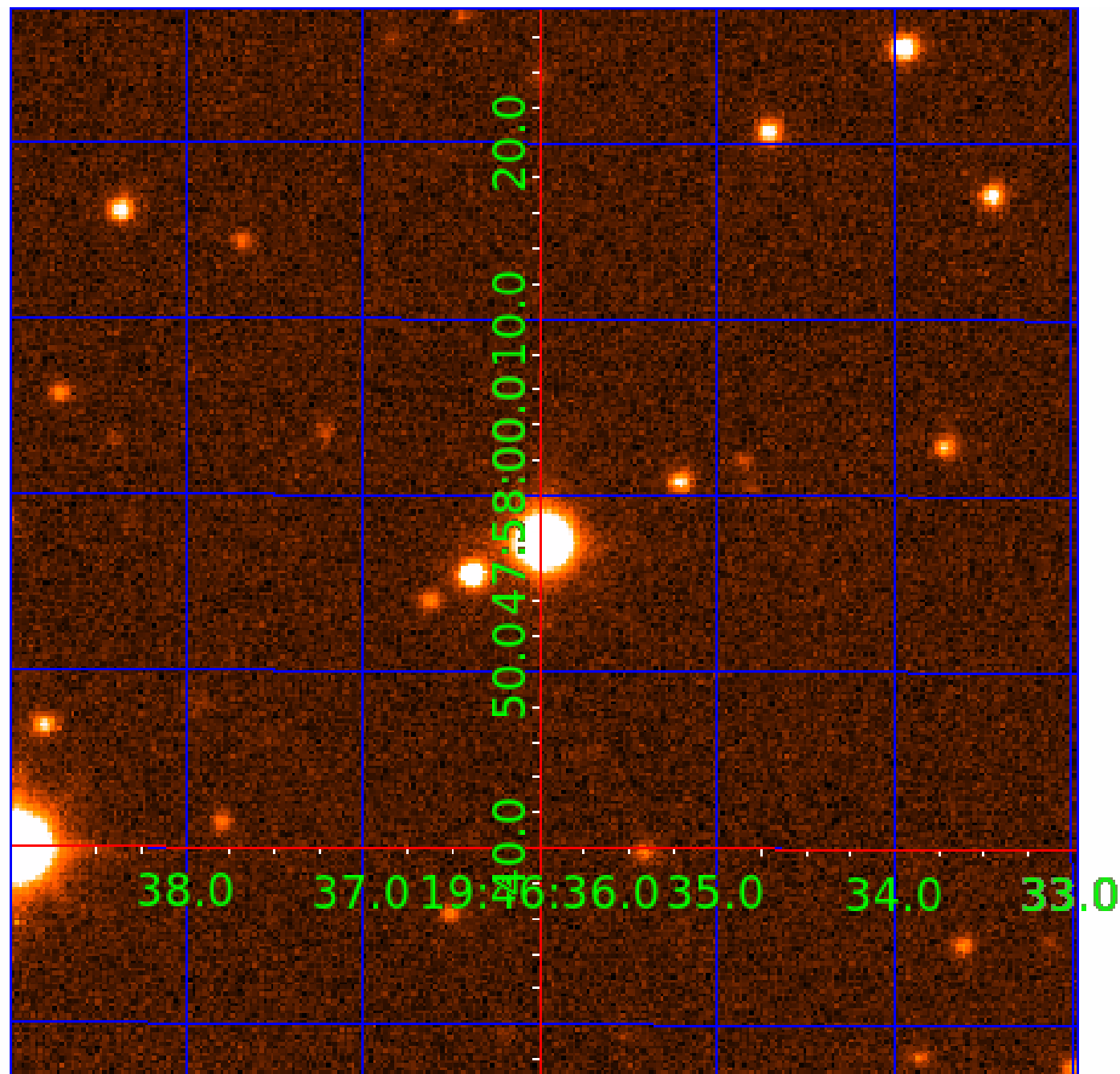


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010678547

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})
010678547-01	OBS	No	0.958852	131.740929	86.7	5.533	7.9	5.4	3.30	8089	3.13	66741.05
010678547-02	OBS	No	46.266327	132.134497	1965.9	2.176	10.4	9.8	3.30	8089	25.52	379.93
010678547-03	OBS	No	275.395986	189.662265	3463.5	3.956	10.2	11.3	3.30	8089	22.64	35.22
010678547-04	OBS	No	91.651982	201.270112	2210.0	6.815	9.8	9.5	3.30	8089	18.61	152.71
010678547-05	OBS	No	43.570469	137.129611	1396.6	5.119	8.9	8.8	3.30	8089	14.74	411.60
010678547-06	OBS	No	112.787169	188.429005	2289.5	5.538	9.3	8.1	3.30	8089	18.51	115.80
010678547-07	OBS	No	57.131981	133.364930	1676.4	4.872	9.1	9.0	3.30	8089	14.53	286.79
010678547-08	OBS	No	42.966194	155.444122	1288.5	5.702	10.0	9.0	3.30	8089	14.12	419.33
010678547-09	OBS	No	106.003102	153.375647	1335.3	13.839	8.3	8.1	3.30	8089	13.29	125.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010678547-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
010678547-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
010678547-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
010678547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
010678547-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

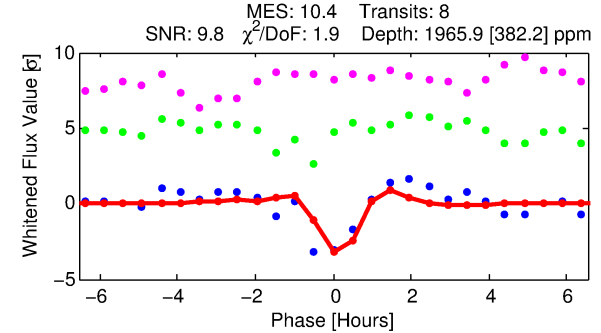
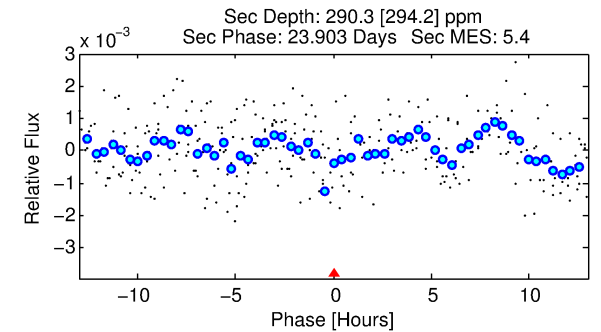
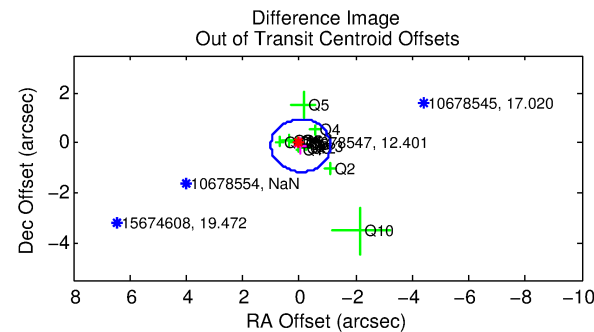
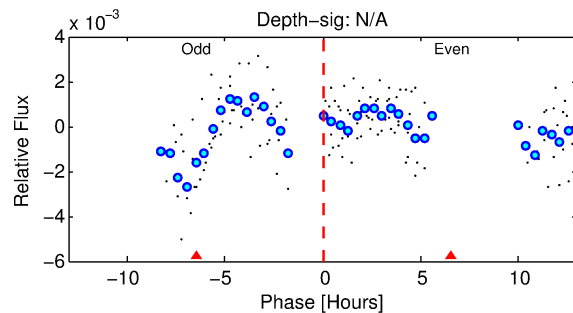
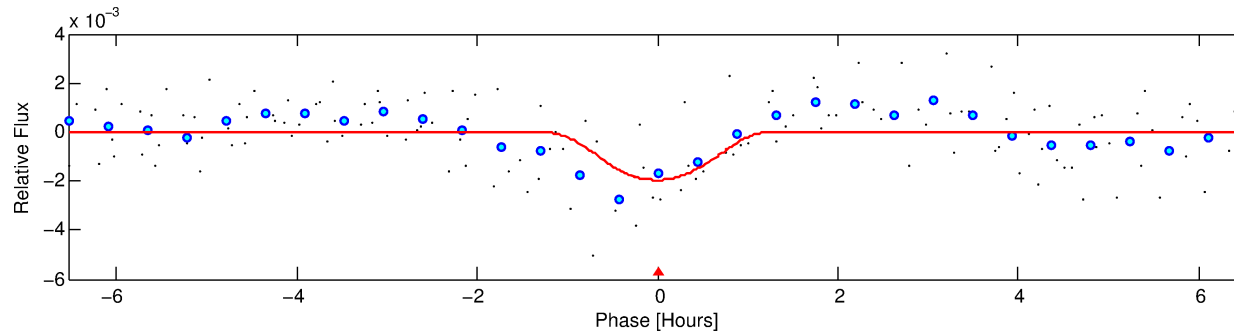
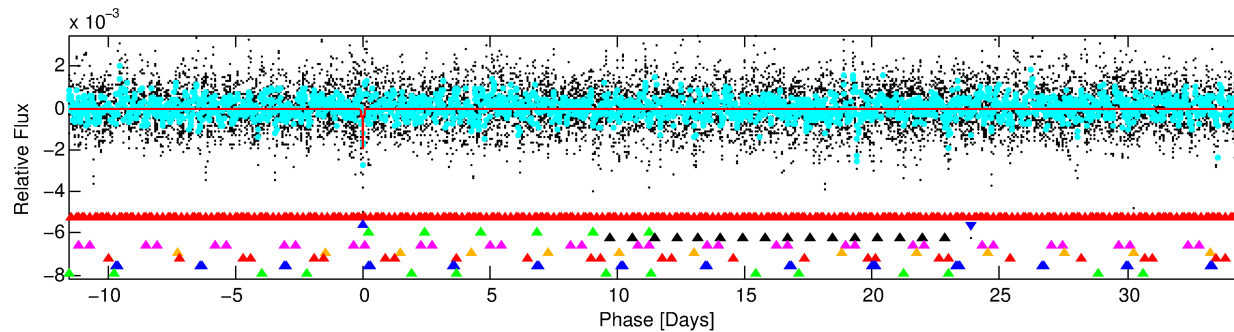
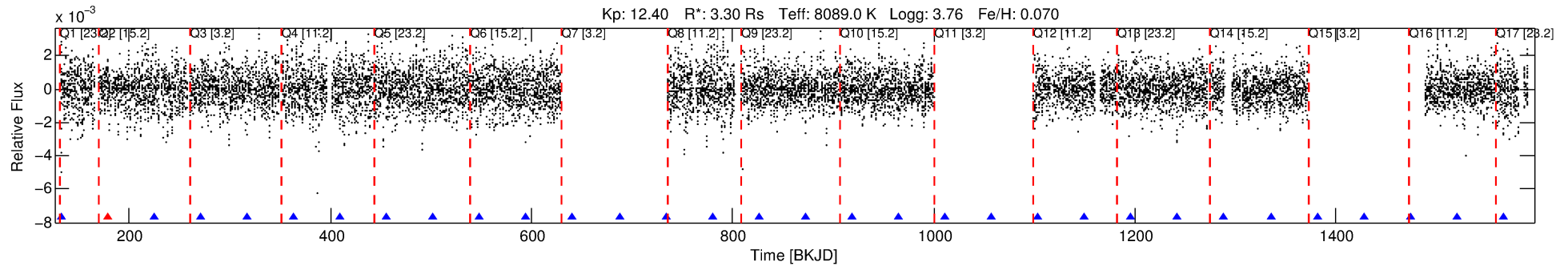
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678547-02

No Significant Match Found

DV One-Page Summary

KIC: 10678547 Candidate: 2 of 9 Period: 46.266 d



DV Fit Results:

Period = 46.26633 [0.00040] d
Epoch = 132.1345 [0.0048] BKJD
Rp/R* = 0.0709 [0.3664]
a/R* = 64.83 [83.60]
b = 0.99 [0.56]
Seff = 379.93 [153.74]
Teq = 1126 [114] K
Rp = 25.52 [132.14] Re
a = 0.3315 [0.0879] AU
Ag = 26.95 [280.13] [0.09σ]
Teffp = 3966 [10299] K [0.28σ]

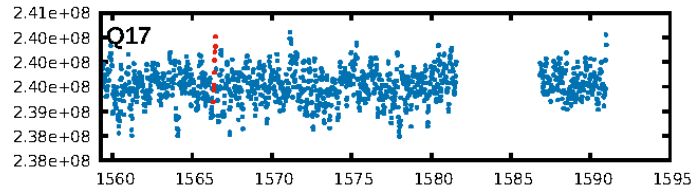
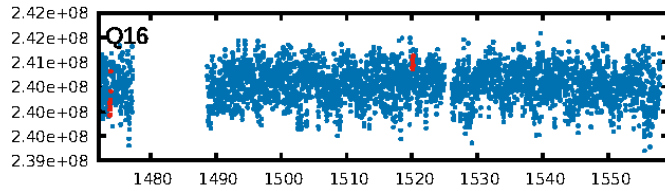
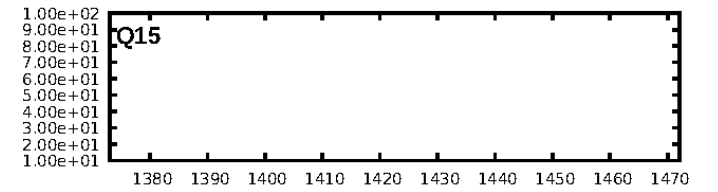
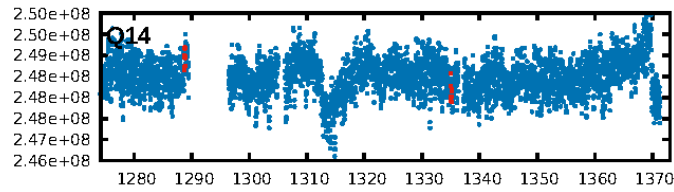
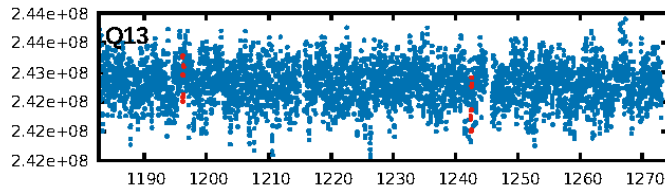
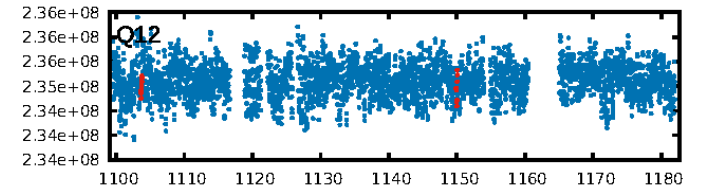
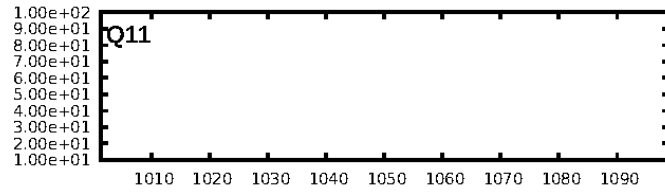
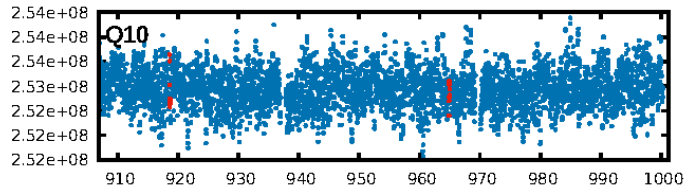
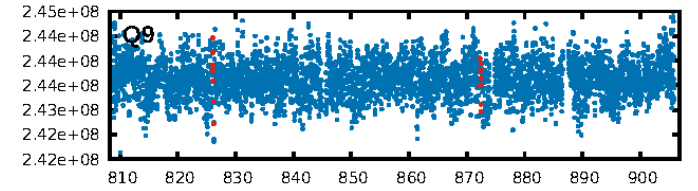
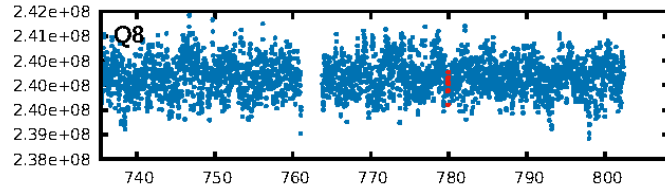
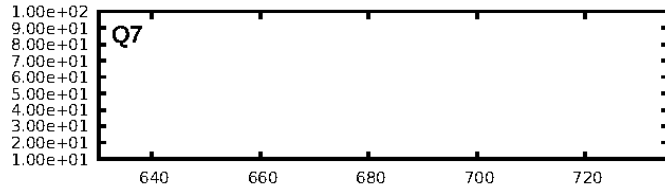
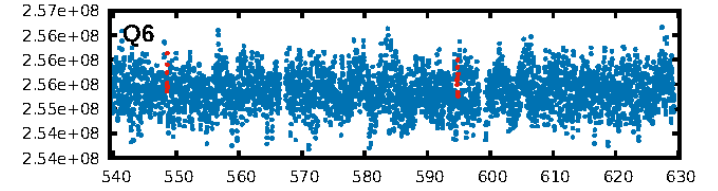
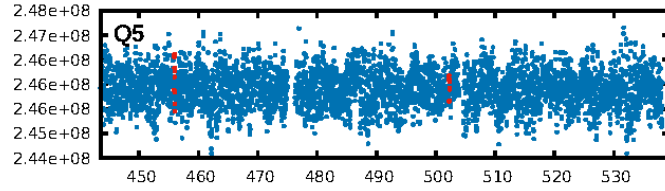
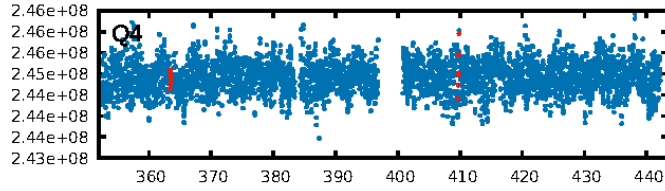
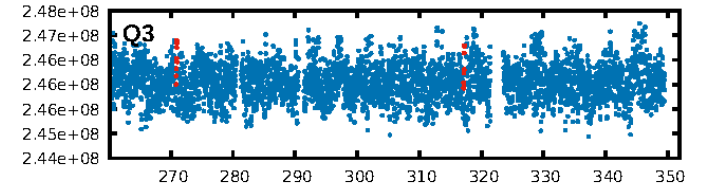
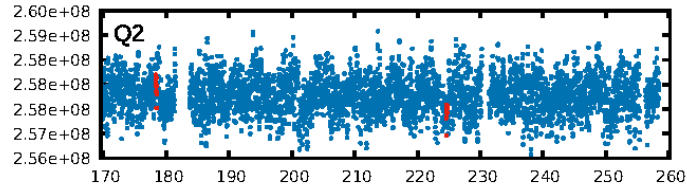
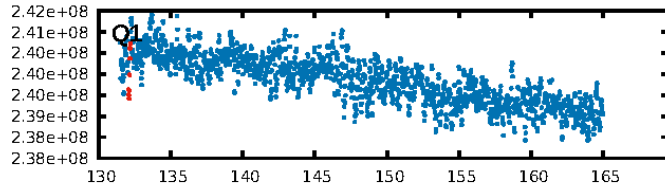
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [11.63σ]
LongPeriod-sig: 100.0% [48.87σ]
ModelChiSquare2-sig: 6.5%
ModelChiSquareGof-sig: 94.5%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.86 [6/7]
GhostDiagnostic-chr: -1.315
Centroid-sig: 41.8%
Centroid-so: 0.210 arcsec [2.85σ]
OotOffset-rm: 0.123 arcsec [0.35σ]
KicOffset-rm: 0.232 arcsec [0.71σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 0.57 [8/14]
DiffImageOverlap-fno: 0.36 [5/14]

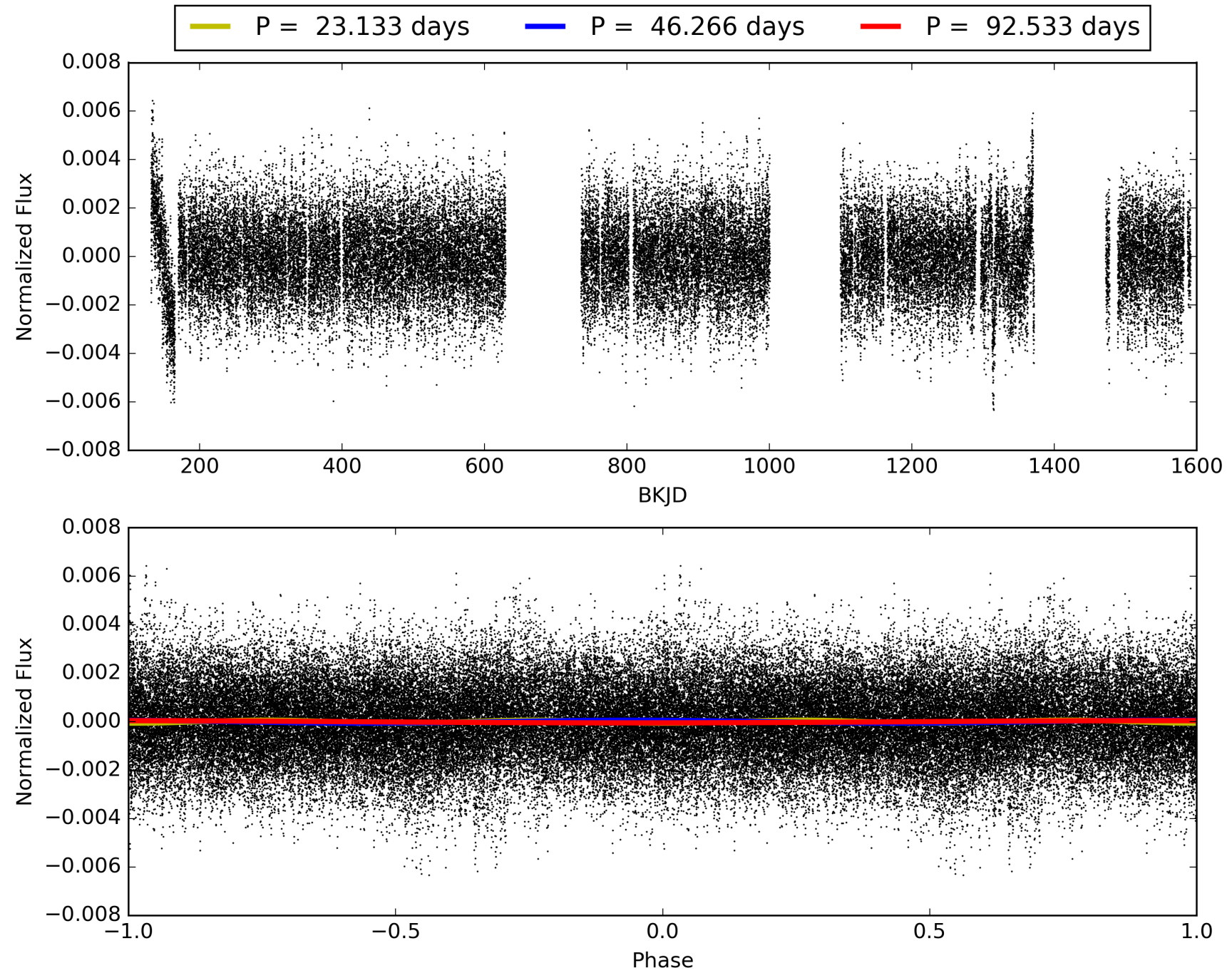
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:51:07 Z

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

TCE 010678547-02, PDC Light Curves

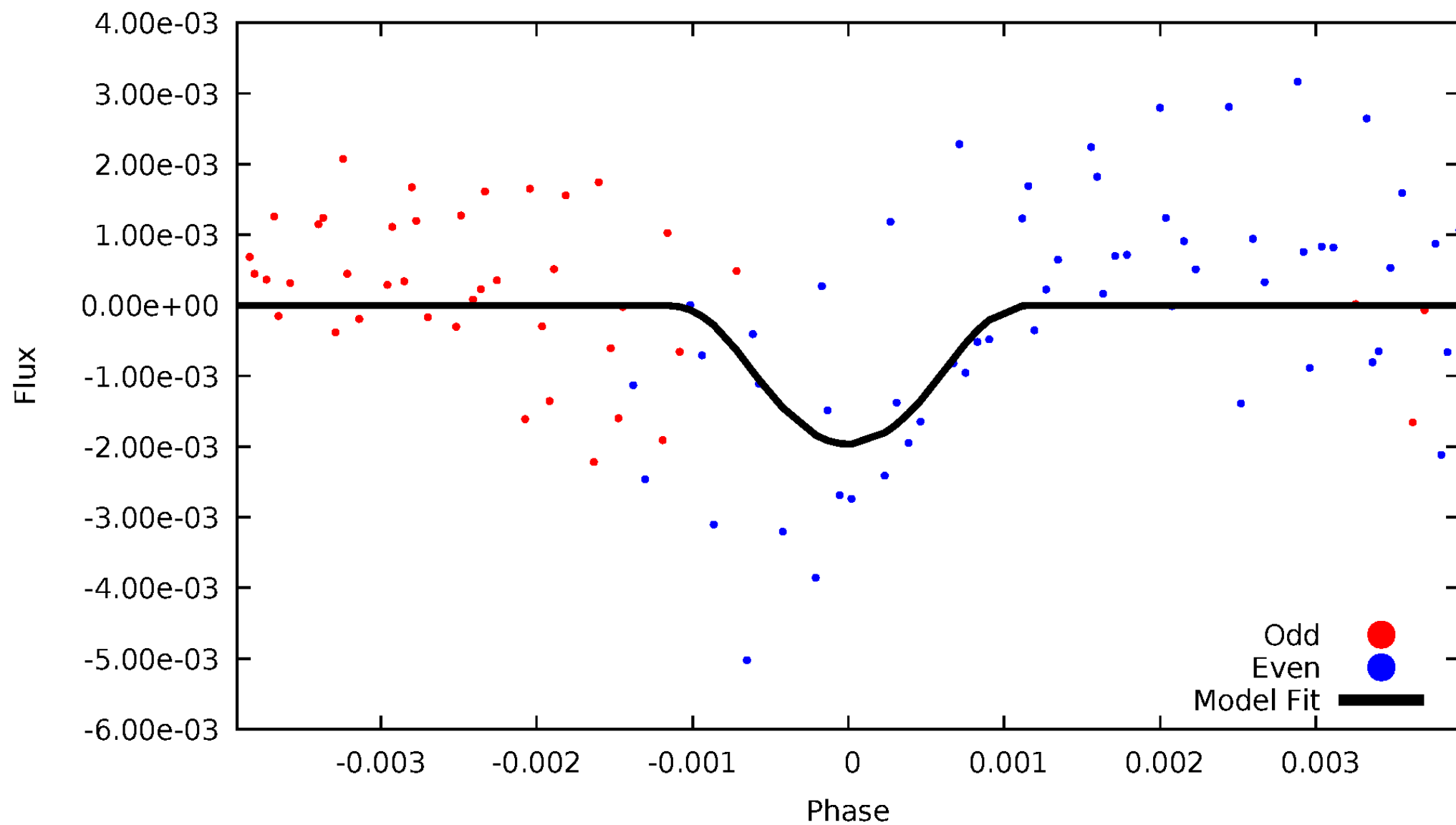


TCE 010678547-02



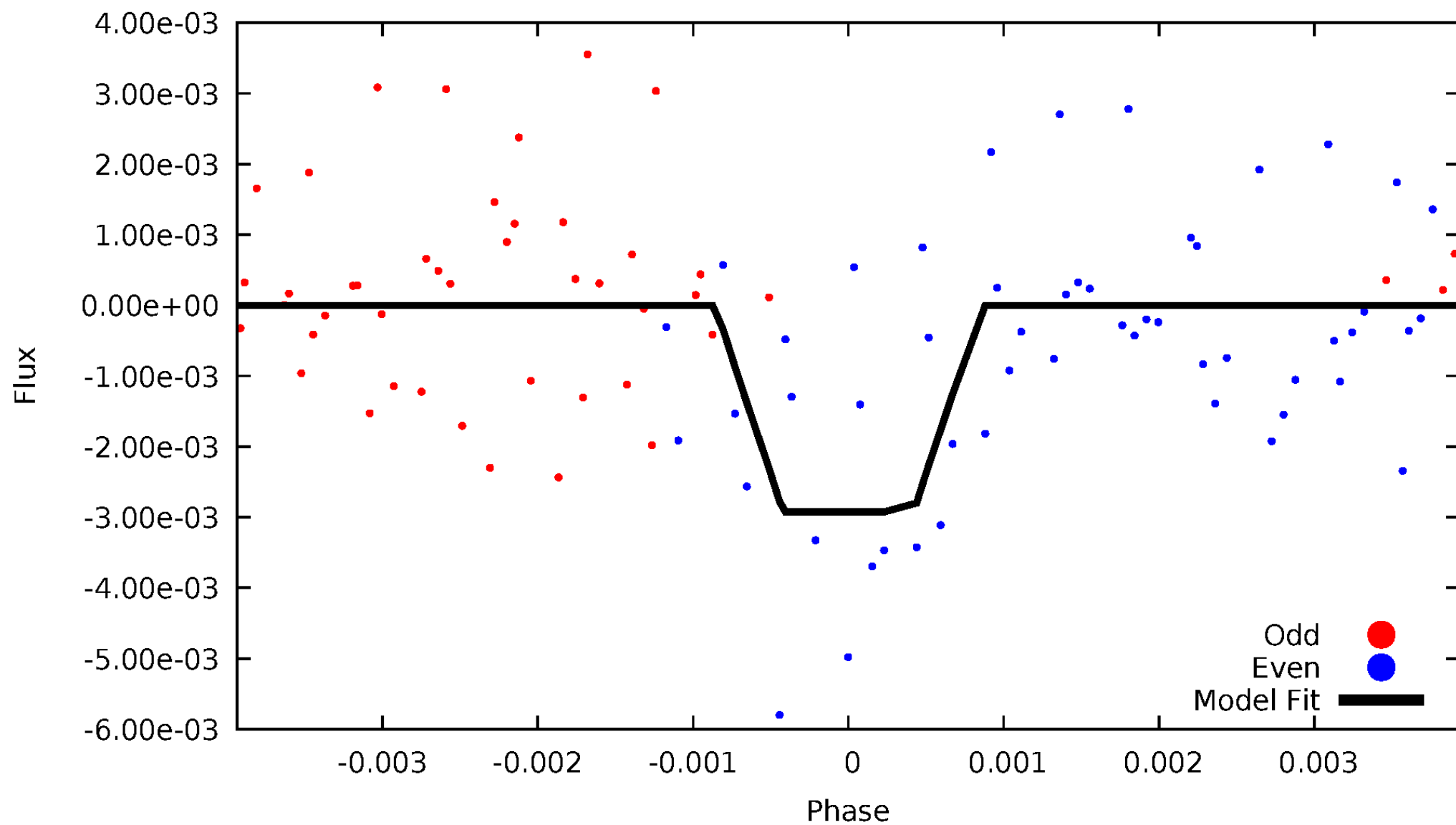
DV Odd/Even

TCE 010678547-02



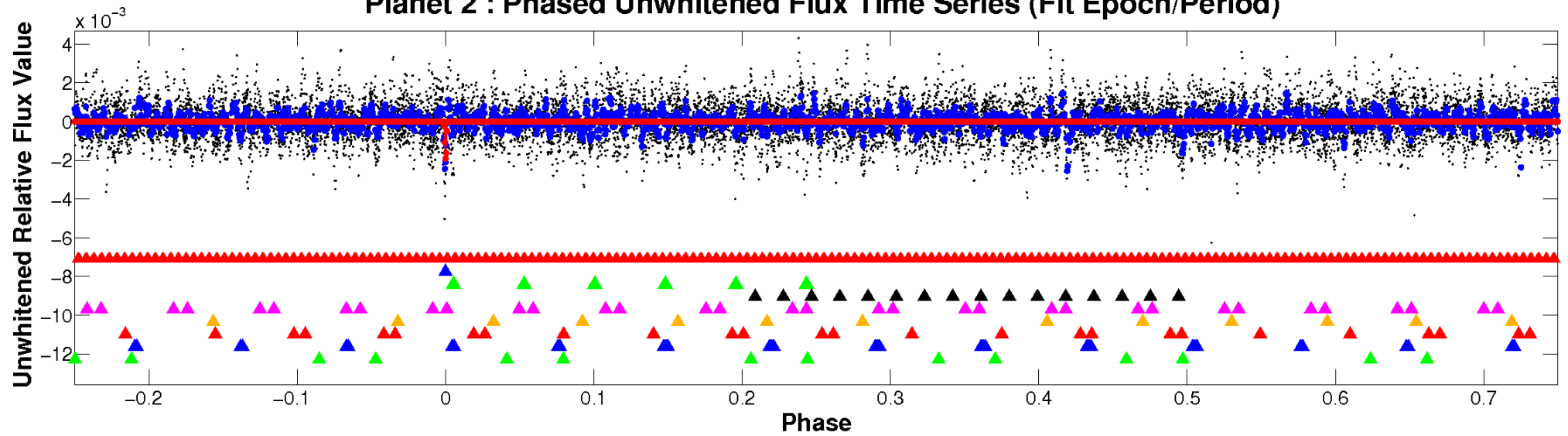
ALT Odd/Even

TCE 010678547-02

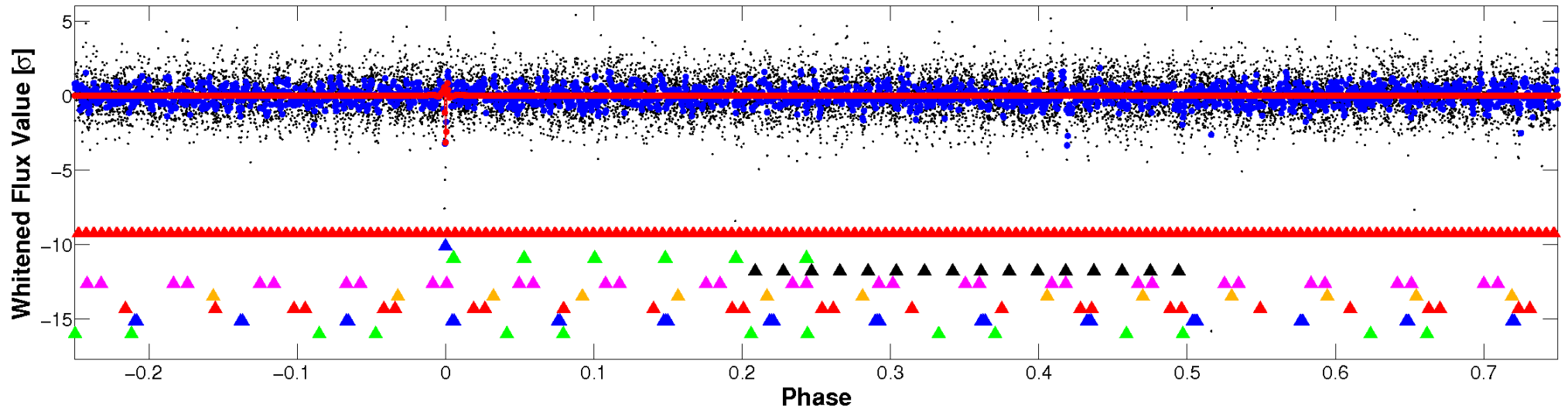


Non-Whitened Vs. Whitened Light Curve

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

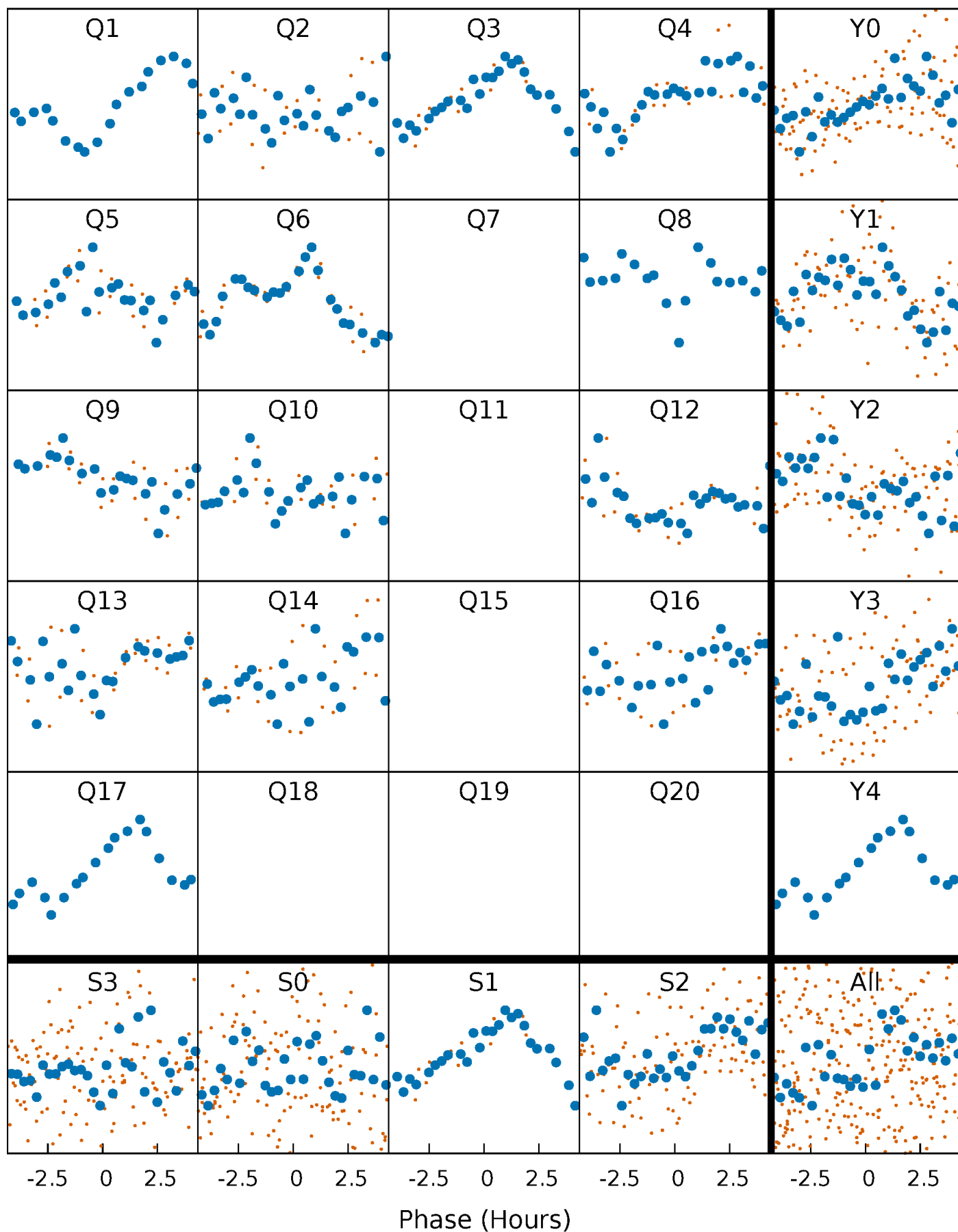


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



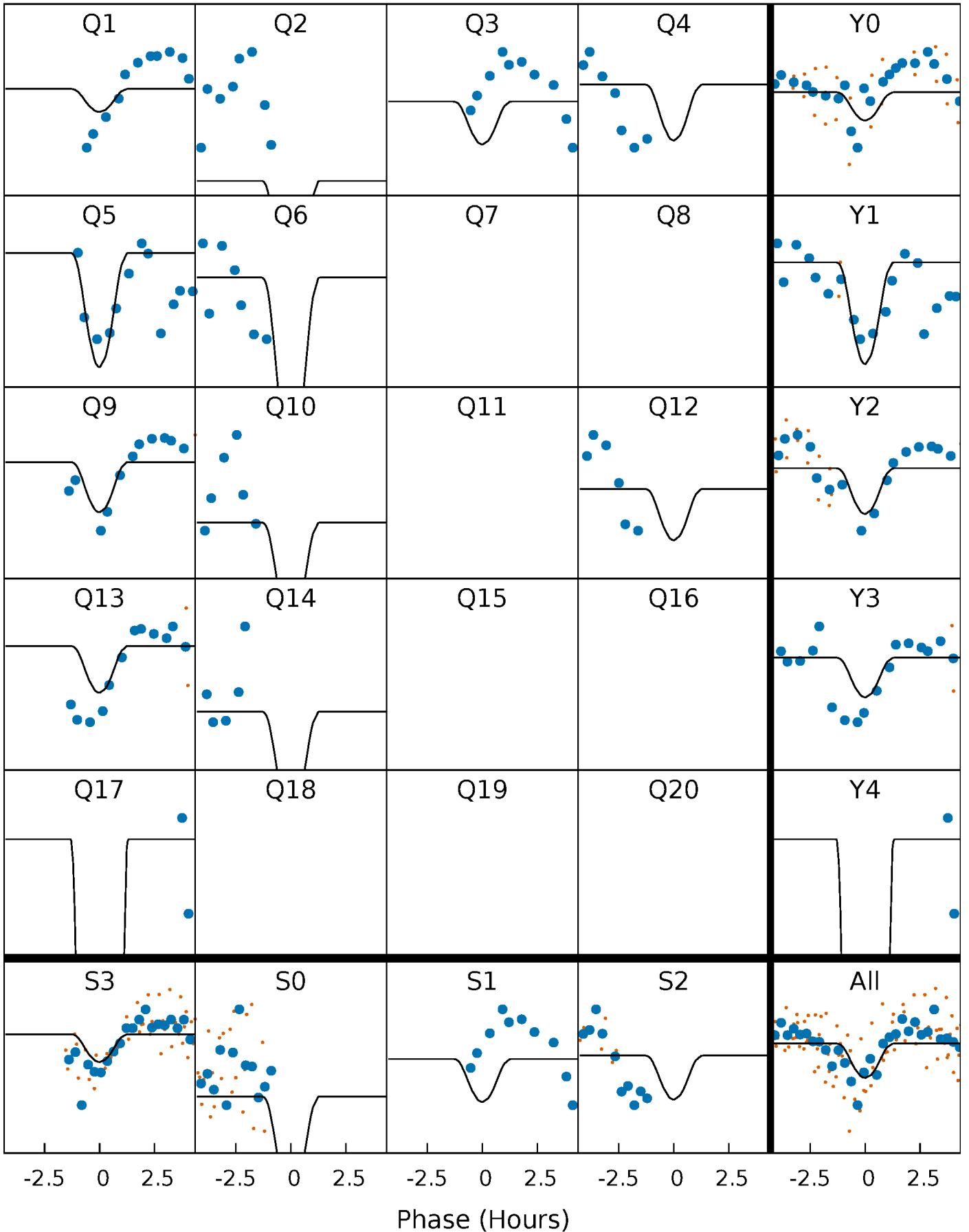
PDC Quarter-Phased Transit Curves

TCE 010678547-02 P= 46.266327 Days $T_0=132.134497$ (BKJD)



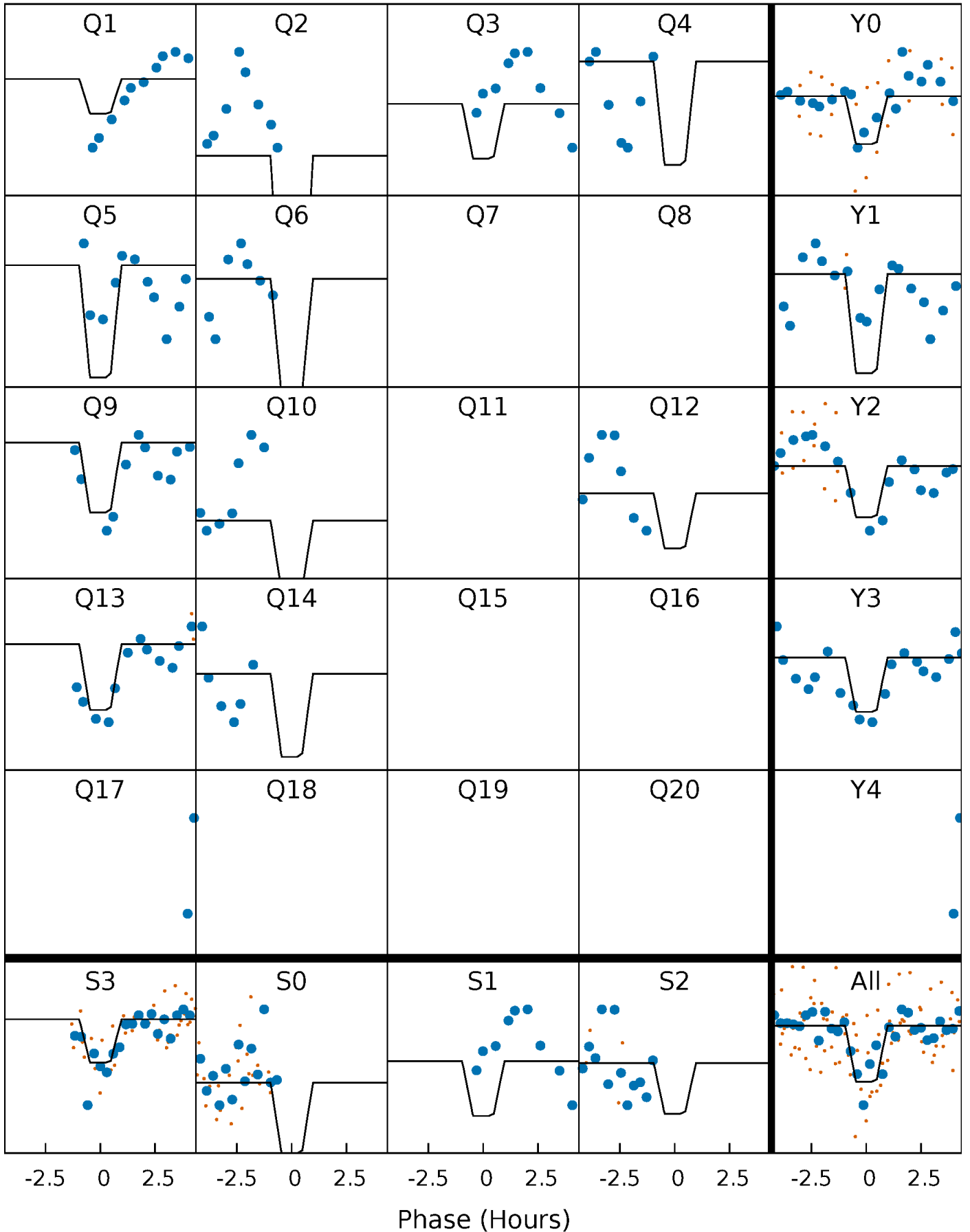
DV Quarter-Phased Transit Curves

TCE 010678547-02 P= 46.266327 Days $T_0=132.134497$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

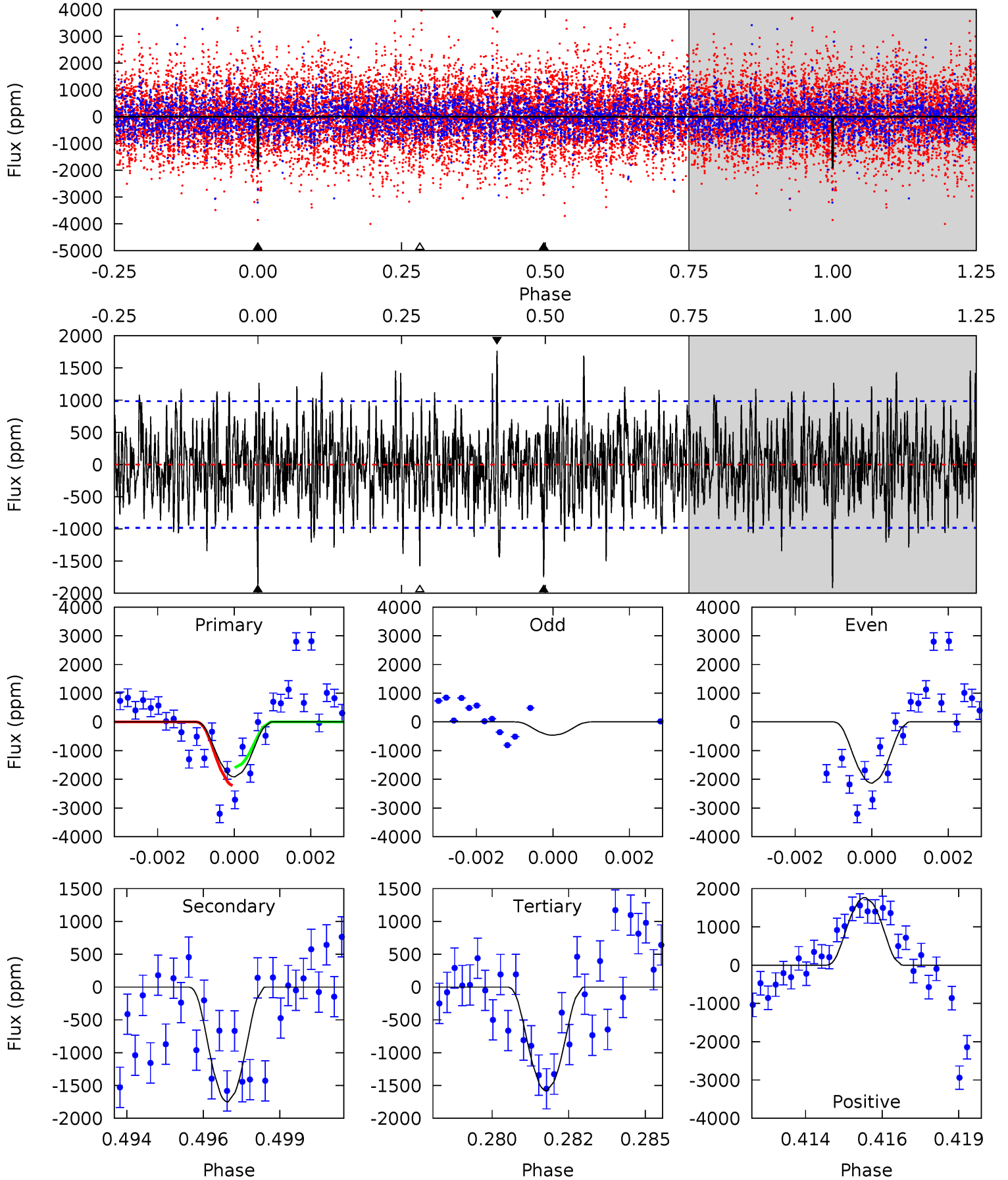
TCE 010678547-02 P= 46.266323 Days $T_0=132.124921$ (BKJD)



DV Model-Shift Uniqueness Test

010678547-02, P = 46.266327 Days, E = 85.868170 Days

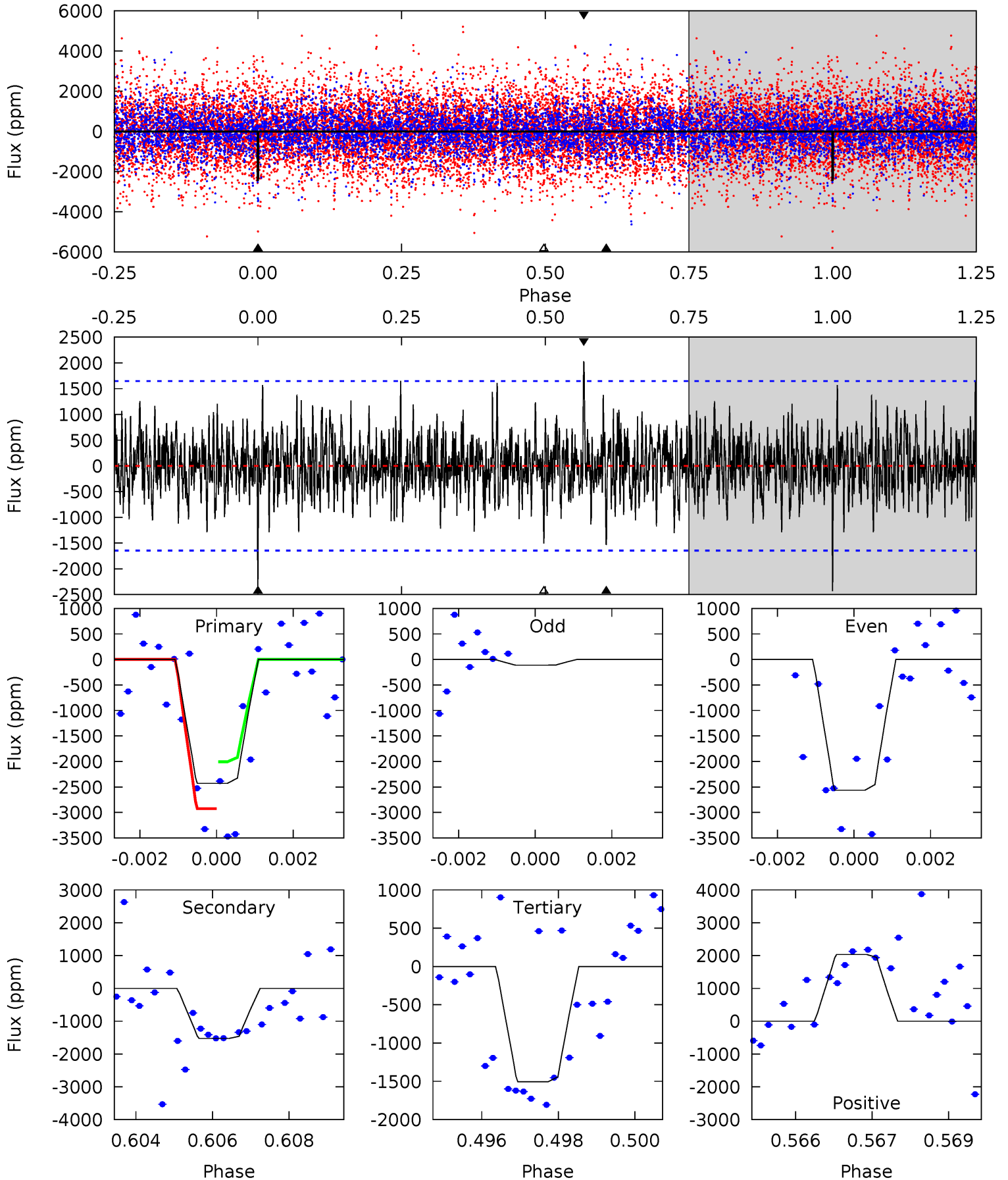
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	9.42	8.50	9.51	5.30	3.04	2.46	1.81	0.80	0.92	-0.09	2.47	0.71	0.48	1.68



Alt Model-Shift Uniqueness Test

010678547-02, P = 46.266323 Days, E = 85.858598 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.92	4.97	4.91	6.62	5.37	3.15	1.44	3.01	1.30	0.06	-1.65	1.92	0.74	0.46	1.48



Stellar Parameters For KIC 010678547

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8089^{+64}_{-97}	$3.757^{+0.227}_{-0.122}$	$0.070^{+0.200}_{-0.250}$	$3.299^{+0.660}_{-0.990}$	$2.267^{+0.222}_{-0.413}$	$0.089^{+0.122}_{-0.033}$
	+1%/-1%	+6%/-3%	+286%/-357%	+20%/-30%	+10%/-18%	+137%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 010678547-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1750 ± 186	$94.88^{+110.02}_{-64.56}$	1559^{+85}_{-111}	3548^{+2026}_{-767}	12^{+117}_{-9}
Alt.	-1525 ± 307	$92.10^{+100.84}_{-61.87}$	1564^{+85}_{-112}	3458^{+1829}_{-681}	11^{+91}_{-8}

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

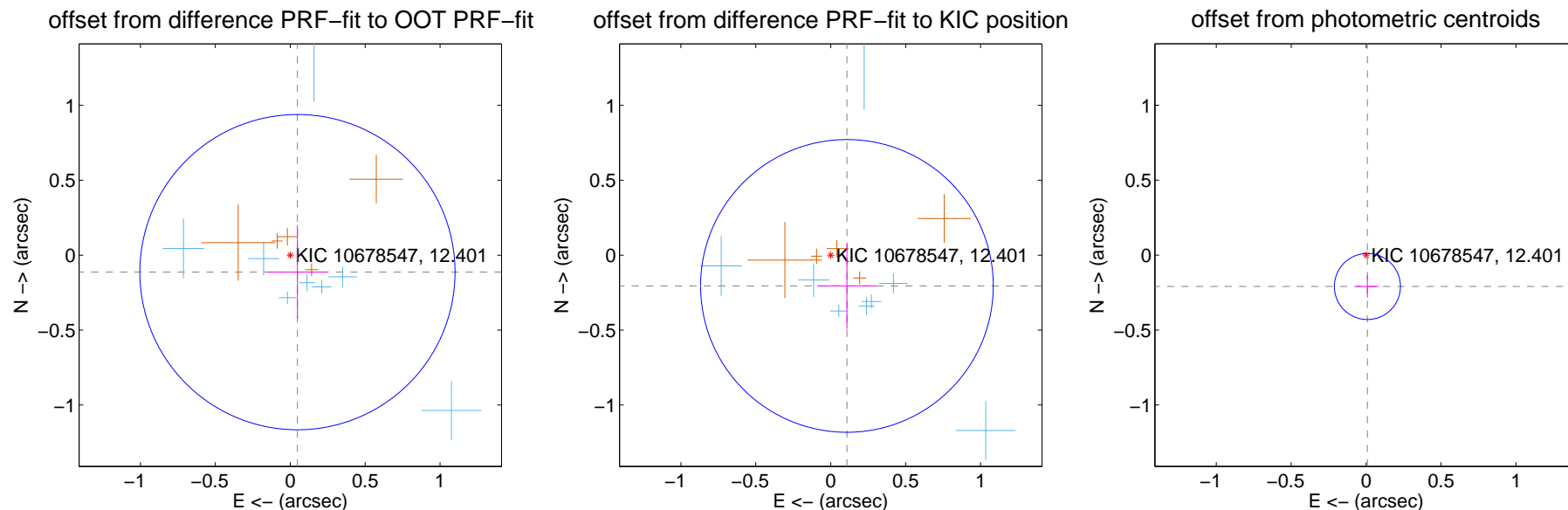
DV Centroid Data

Supplemental centroid analysis for 010678547-02. Kepler magnitude: 12.40. Transit SNR 9.80

There are 8 quarters with good PRF difference image offsets

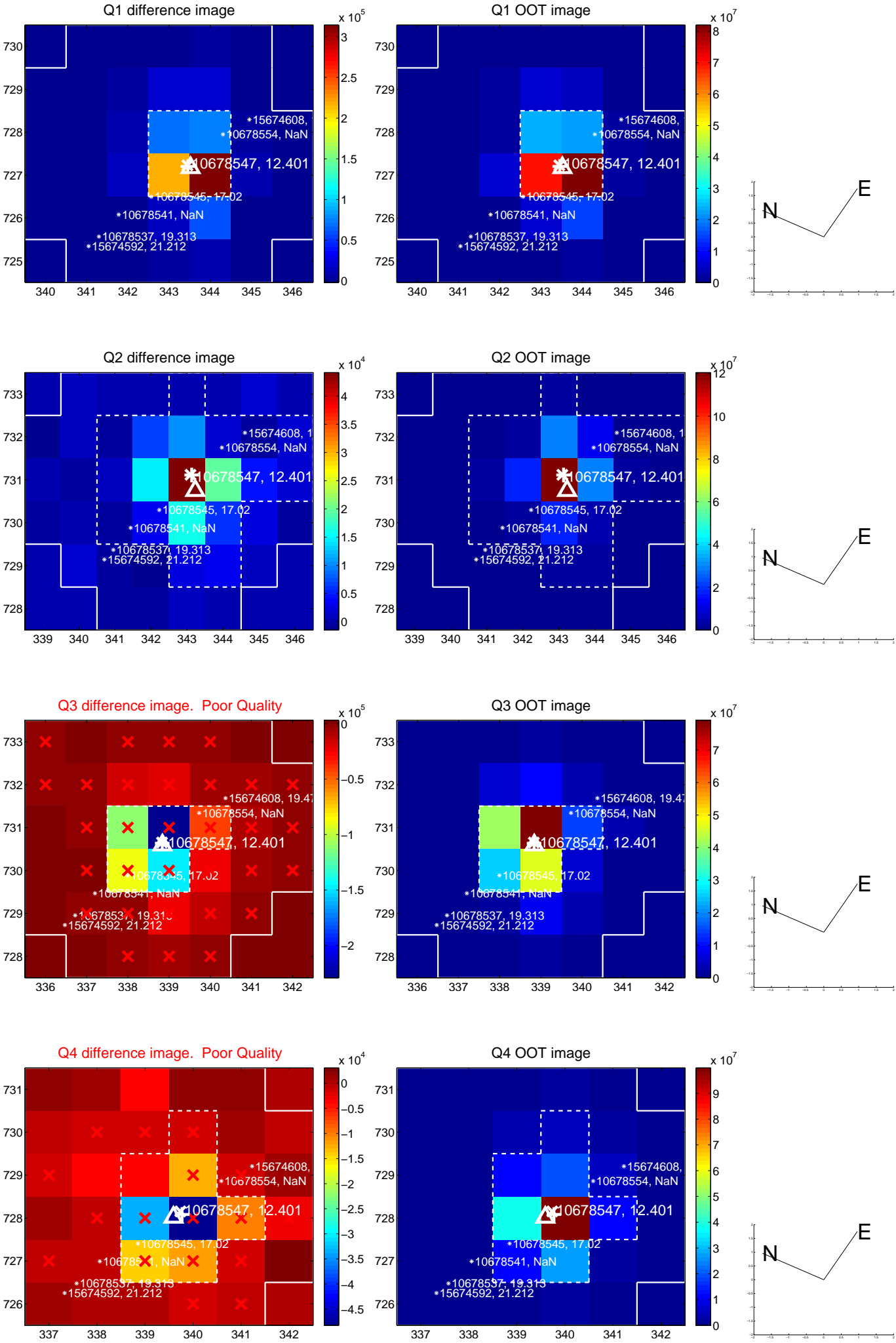
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.123 ± 0.351	0.35	-0.048 ± 0.199	-0.113 ± 0.313
PRF-fit source offset from KIC position	0.232 ± 0.326	0.71	-0.108 ± 0.199	-0.205 ± 0.287
photometric centroid source offset	0.21 ± 0.07	2.85	-0.01 ± 0.08	-0.21 ± 0.07

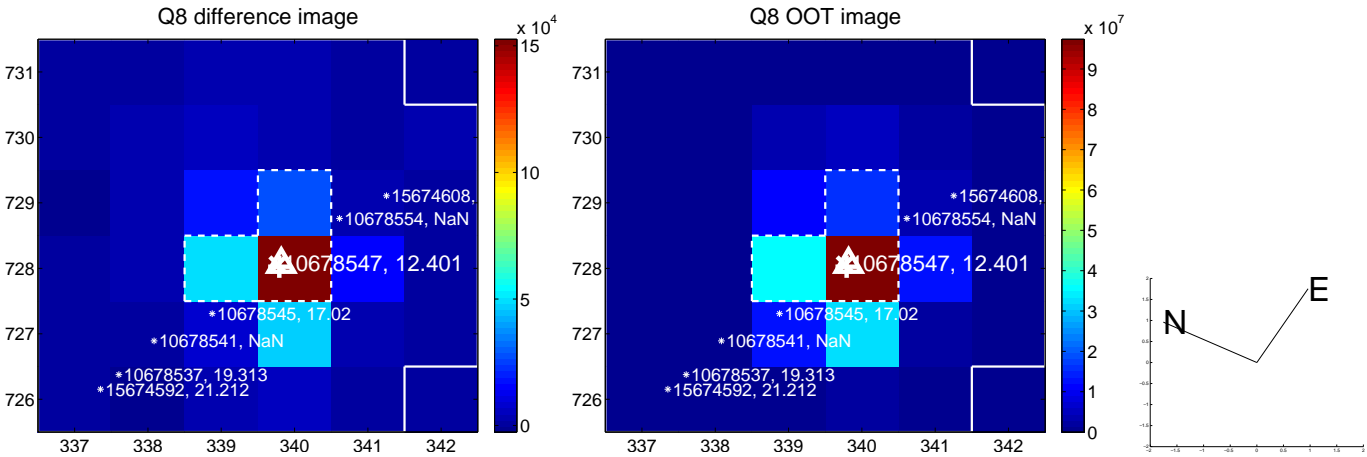
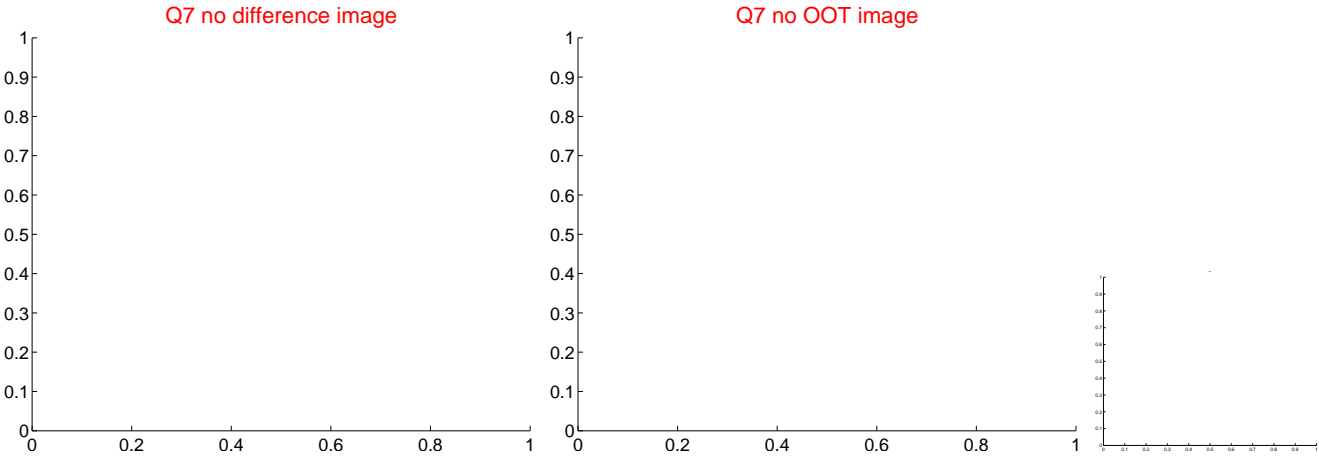
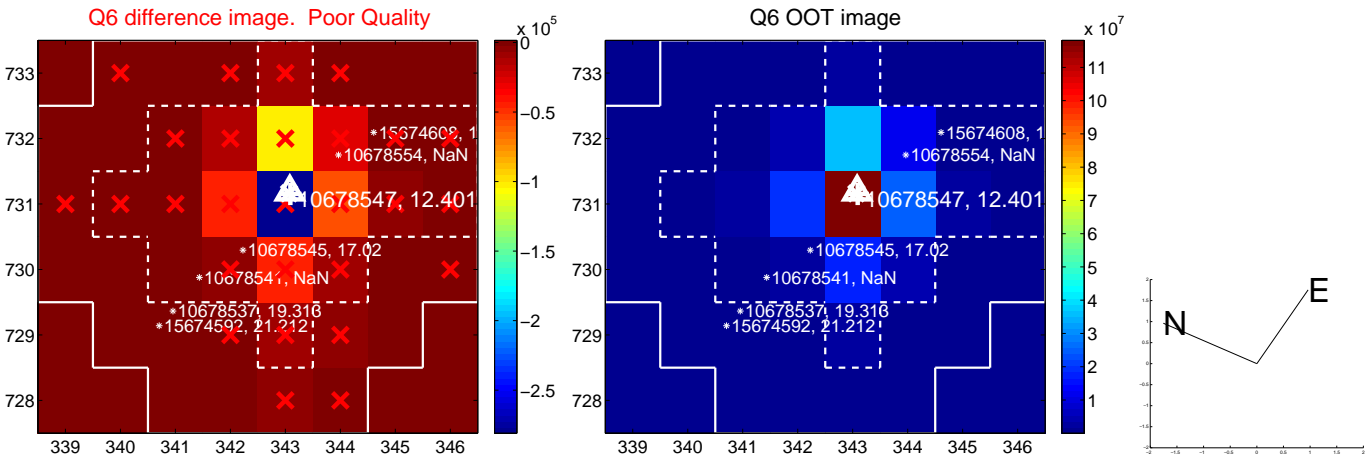
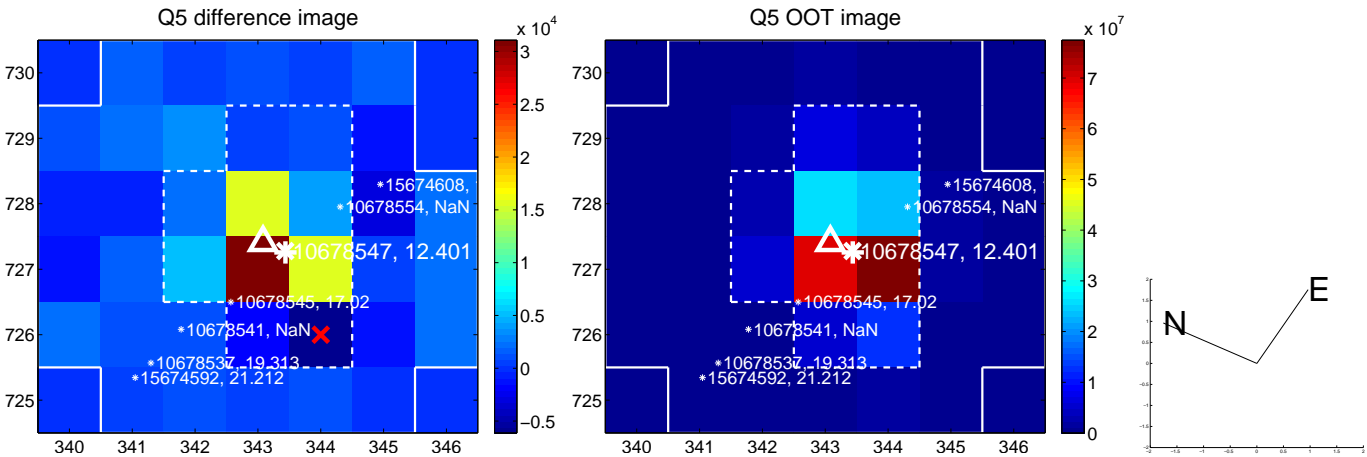


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

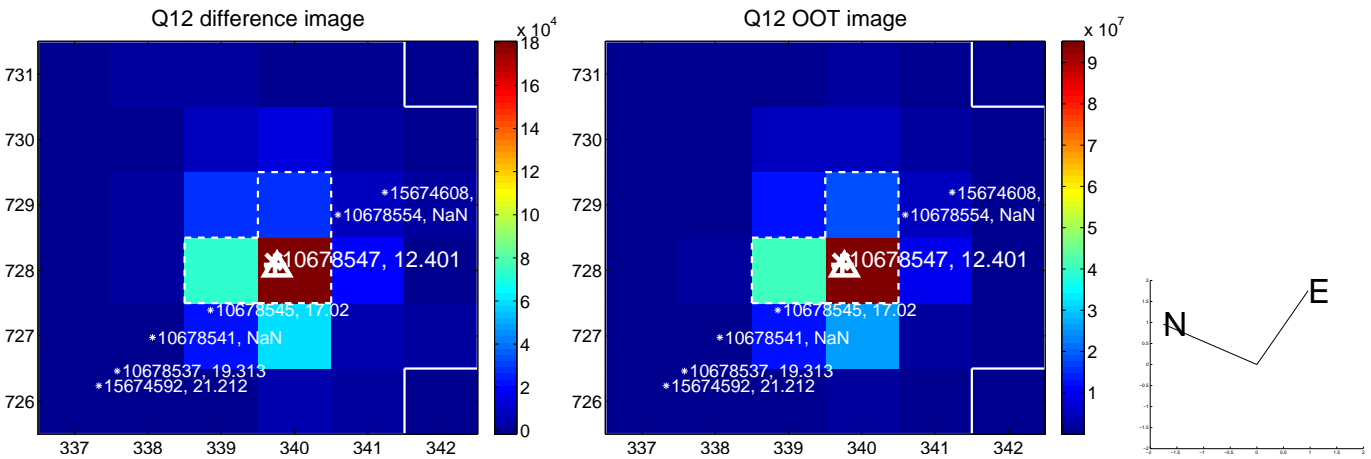
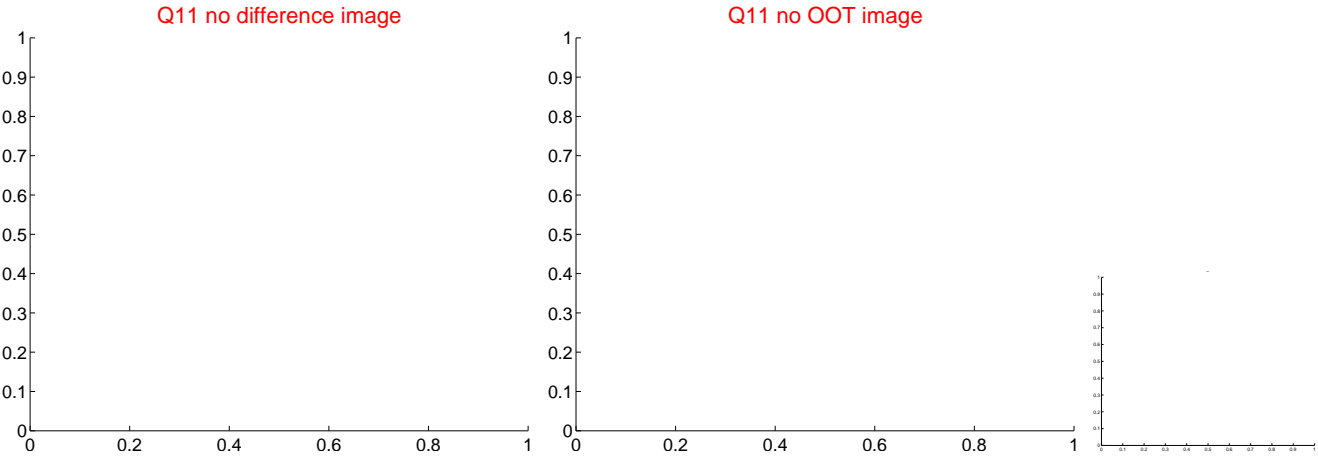
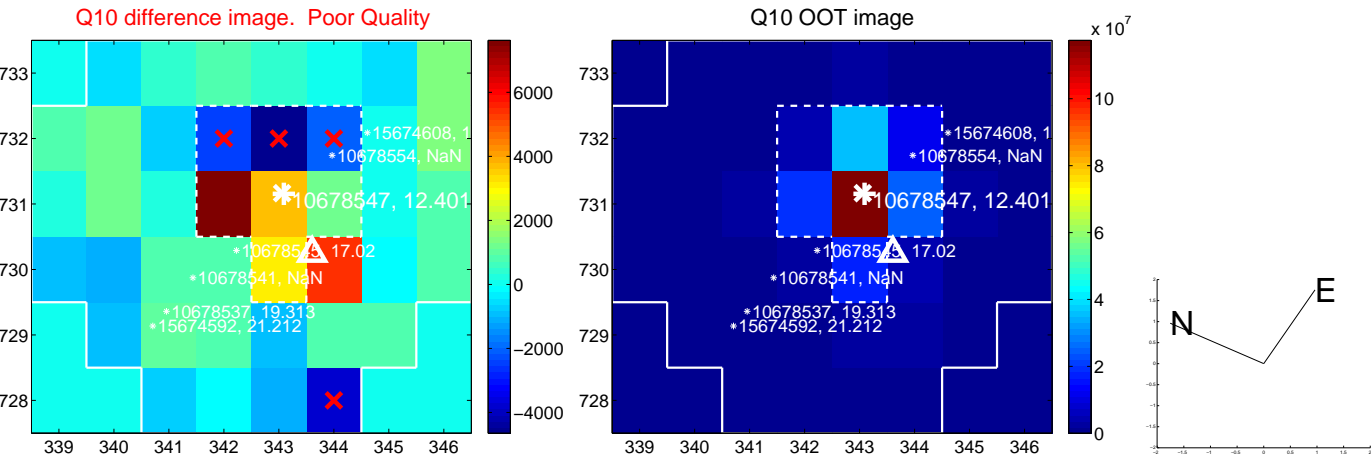
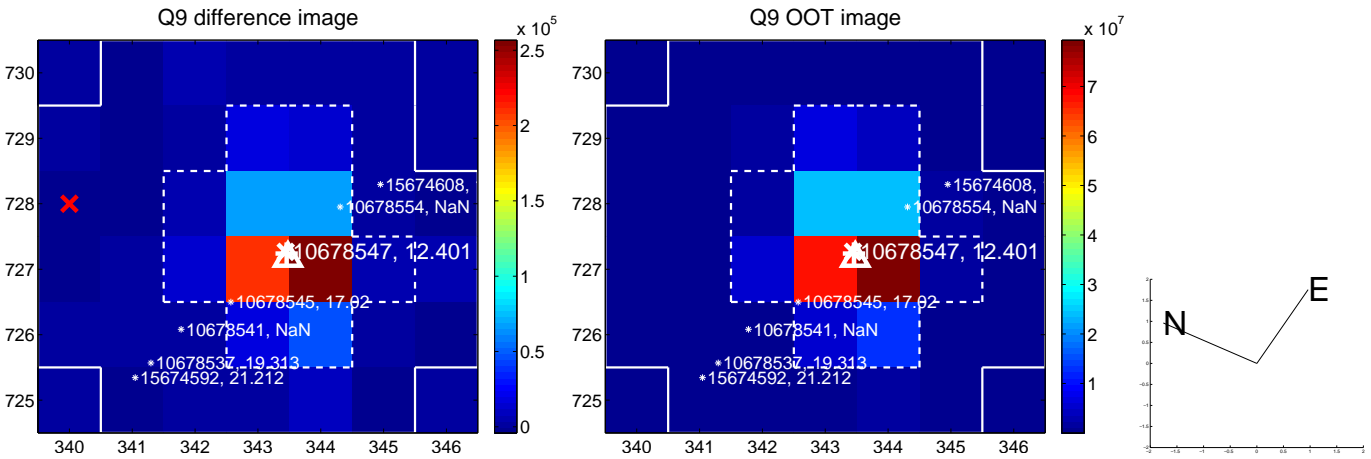
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



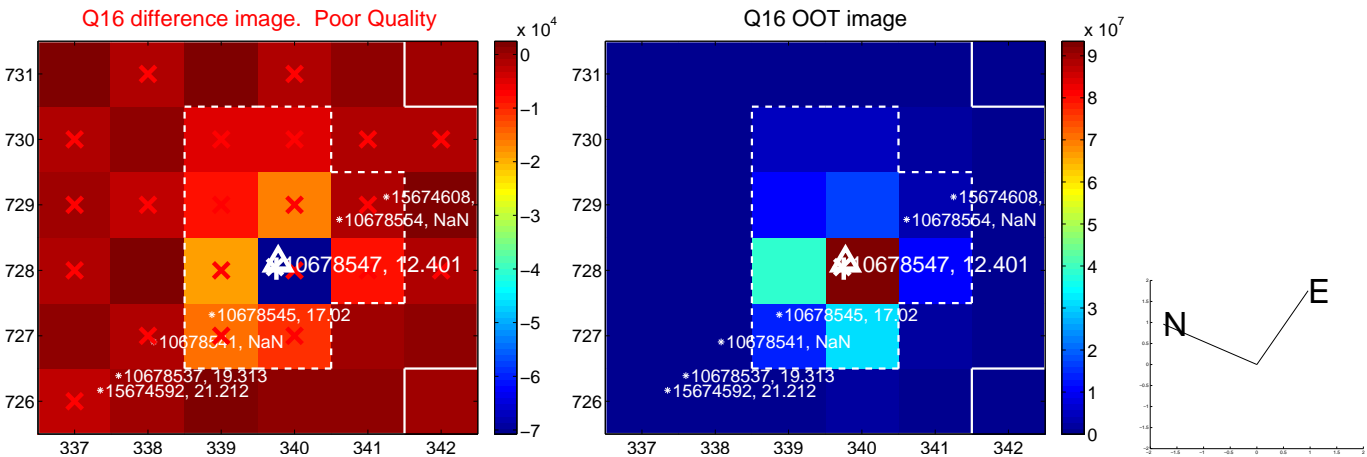
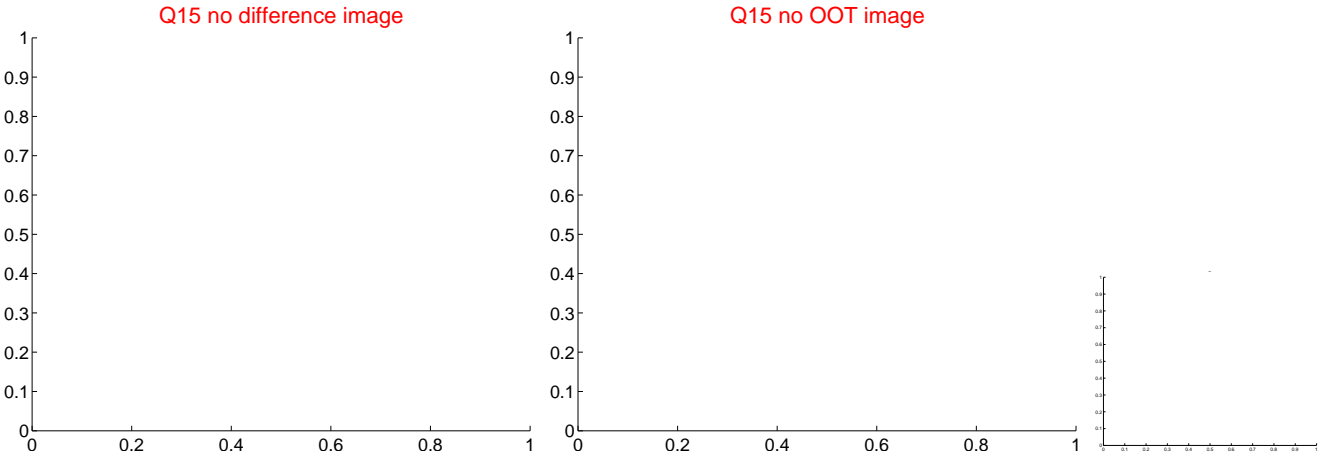
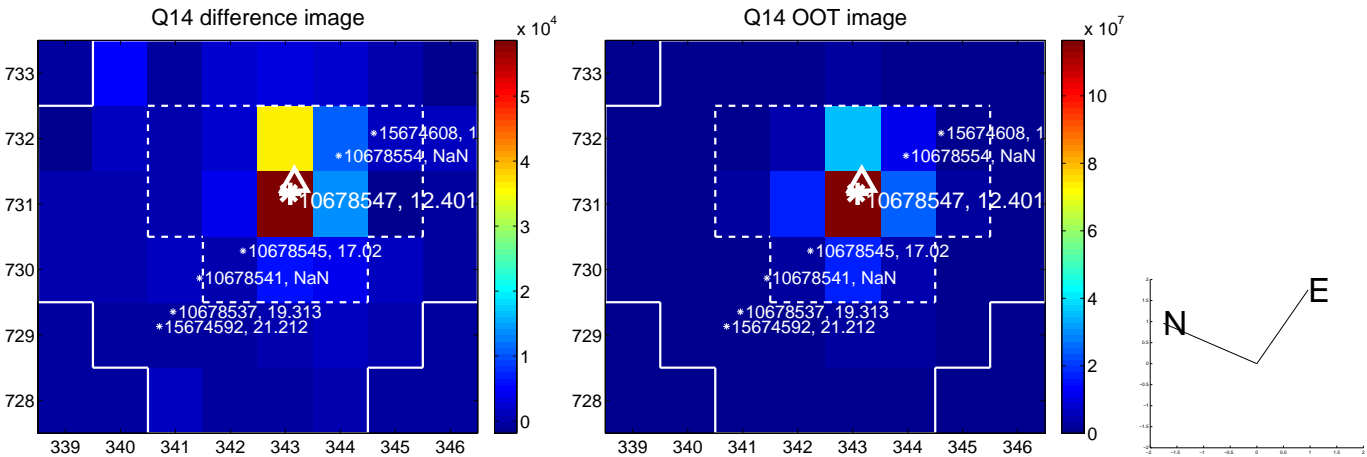
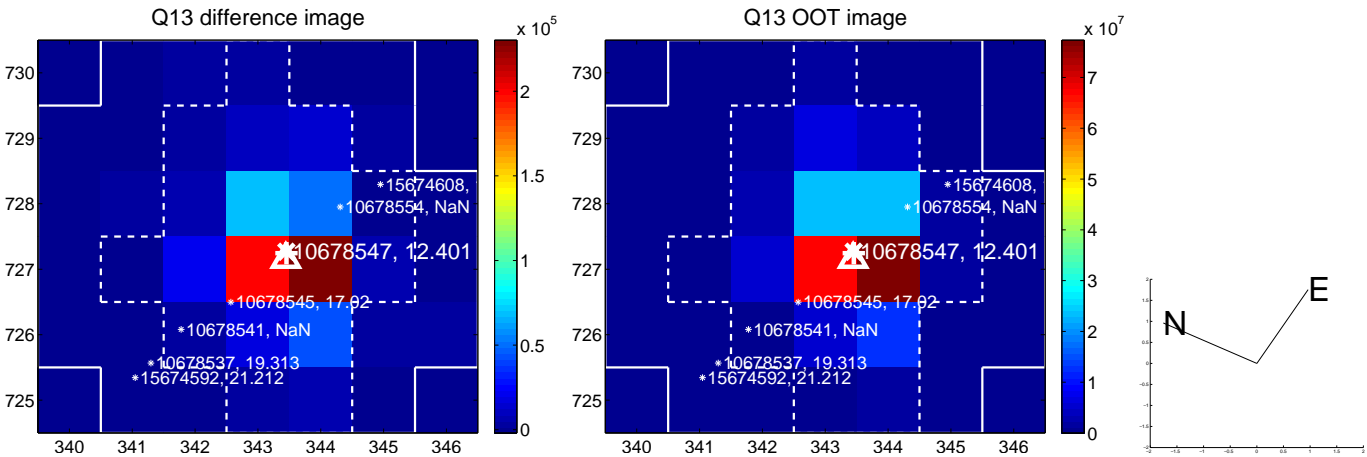
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



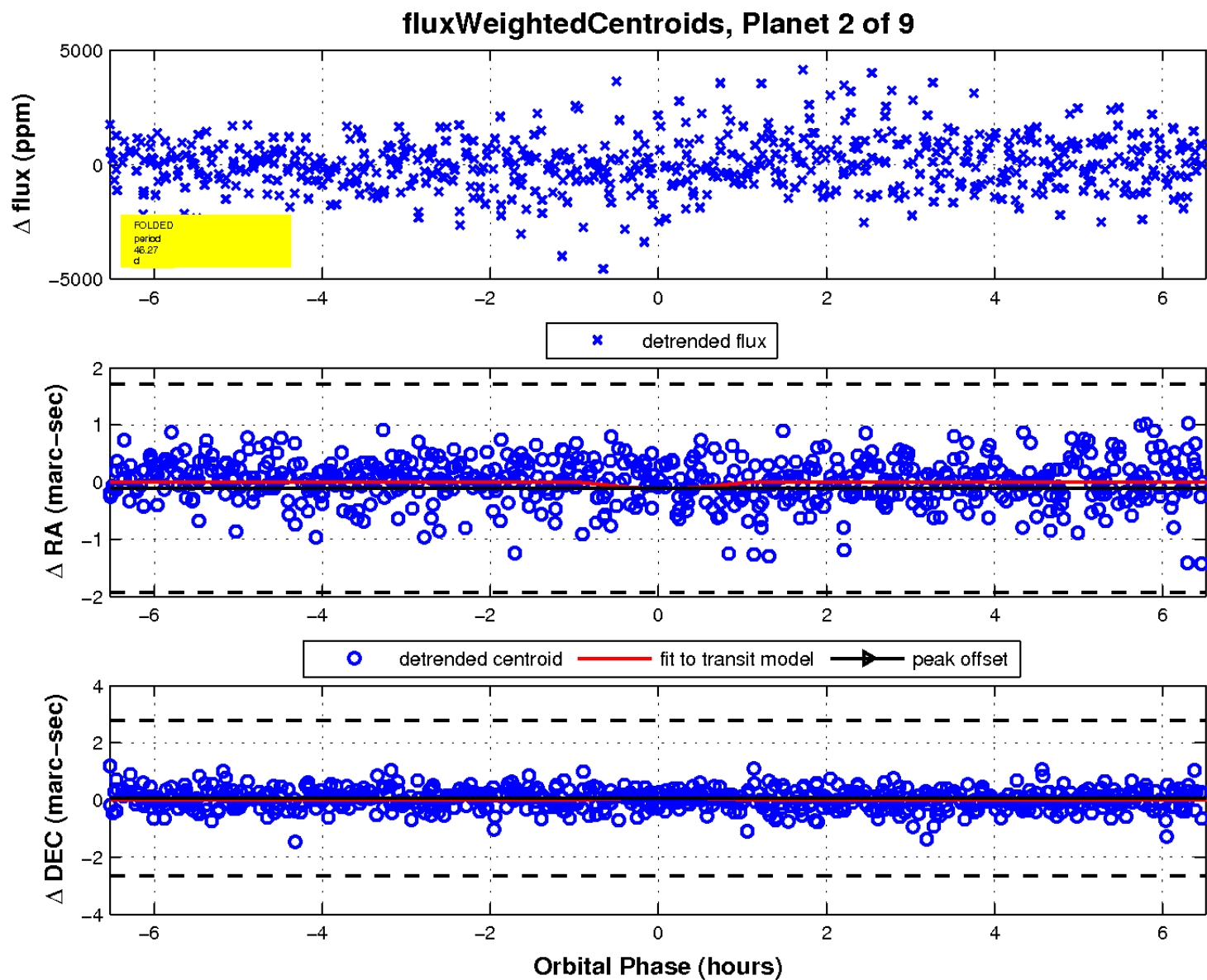
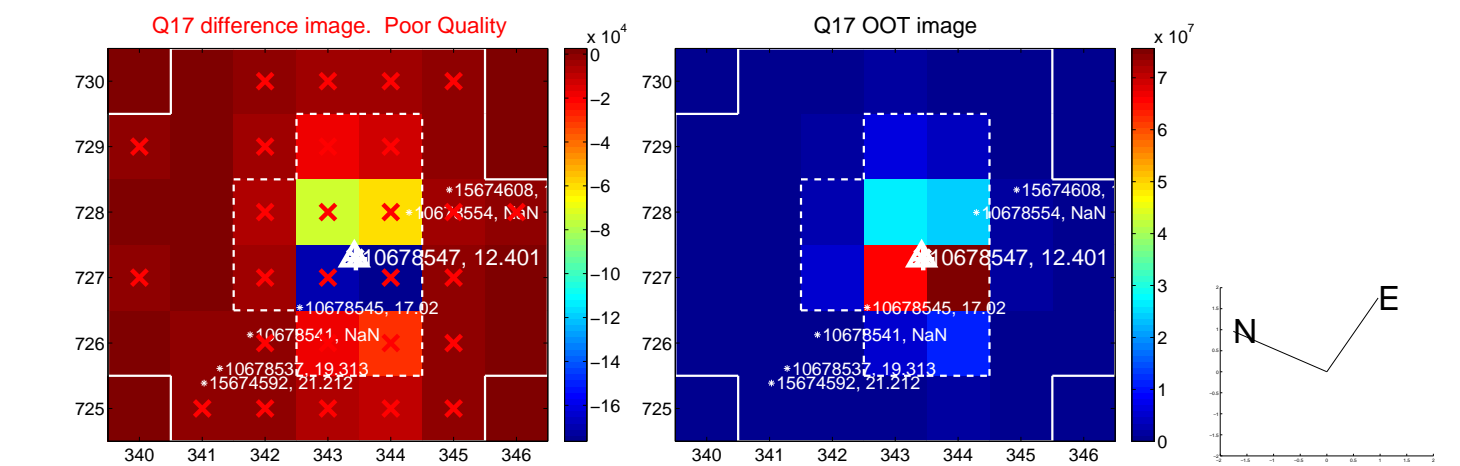
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

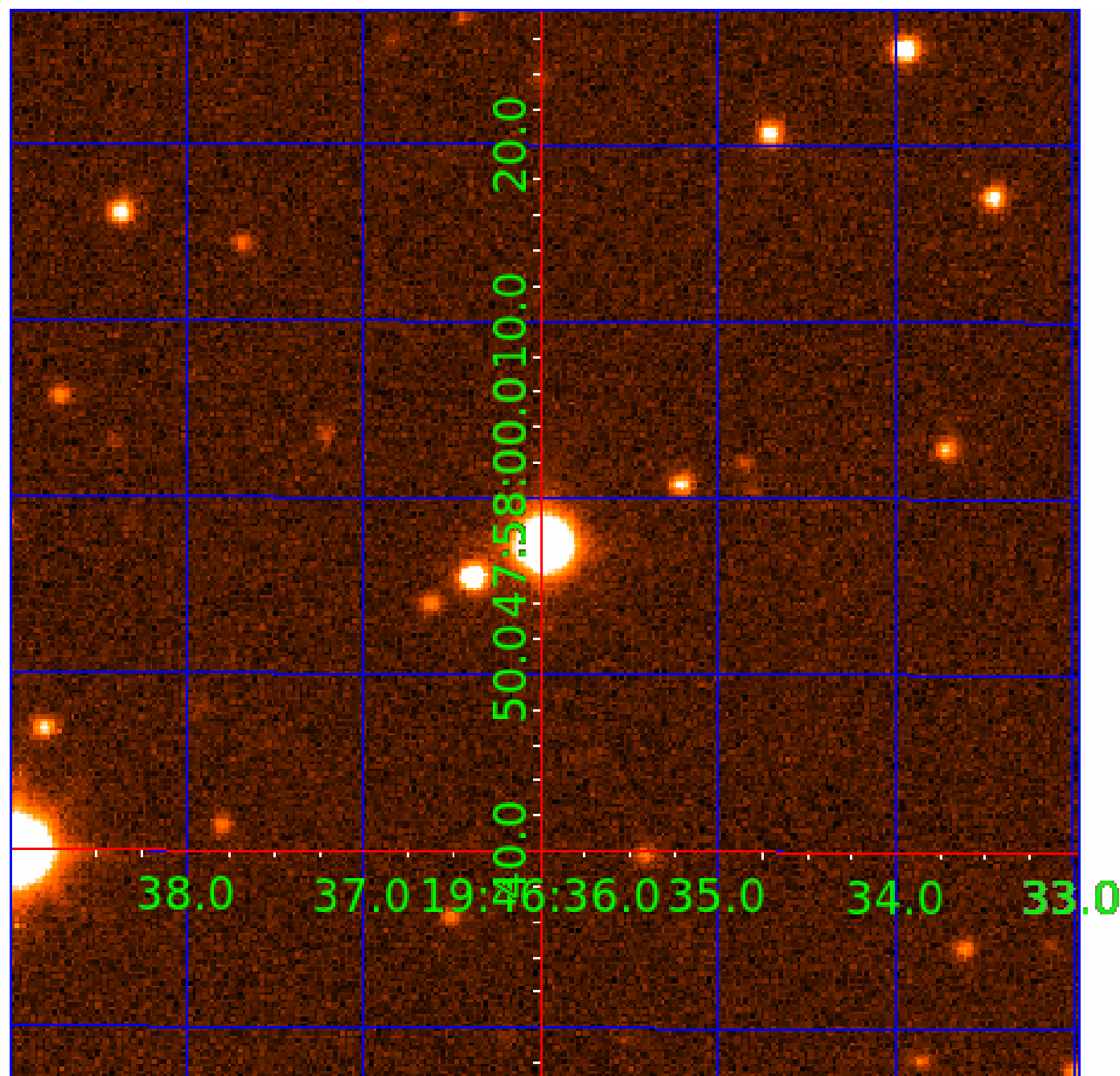


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010678547

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})
010678547-01	OBS	No	0.958852	131.740929	86.7	5.533	7.9	5.4	3.30	8089	3.13	66741.05
010678547-02	OBS	No	46.266327	132.134497	1965.9	2.176	10.4	9.8	3.30	8089	25.52	379.93
010678547-03	OBS	No	275.395986	189.662265	3463.5	3.956	10.2	11.3	3.30	8089	22.64	35.22
010678547-04	OBS	No	91.651982	201.270112	2210.0	6.815	9.8	9.5	3.30	8089	18.61	152.71
010678547-05	OBS	No	43.570469	137.129611	1396.6	5.119	8.9	8.8	3.30	8089	14.74	411.60
010678547-06	OBS	No	112.787169	188.429005	2289.5	5.538	9.3	8.1	3.30	8089	18.51	115.80
010678547-07	OBS	No	57.131981	133.364930	1676.4	4.872	9.1	9.0	3.30	8089	14.53	286.79
010678547-08	OBS	No	42.966194	155.444122	1288.5	5.702	10.0	9.0	3.30	8089	14.12	419.33
010678547-09	OBS	No	106.003102	153.375647	1335.3	13.839	8.3	8.1	3.30	8089	13.29	125.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010678547-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
010678547-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
010678547-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
010678547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
010678547-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

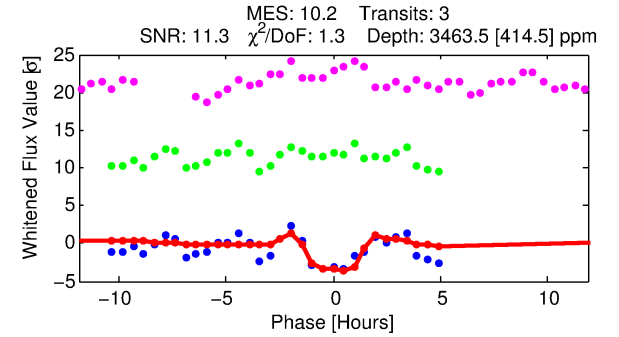
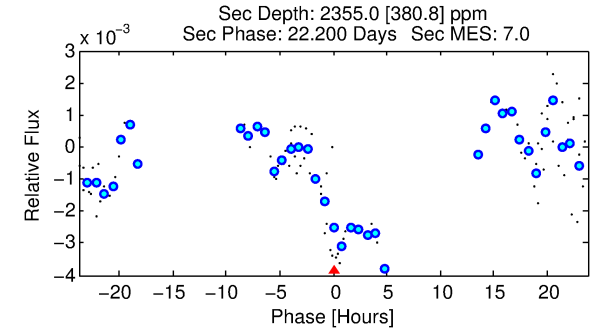
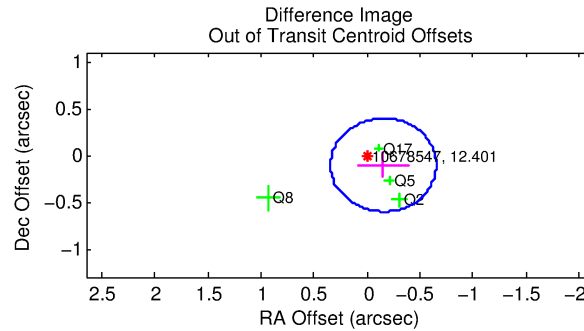
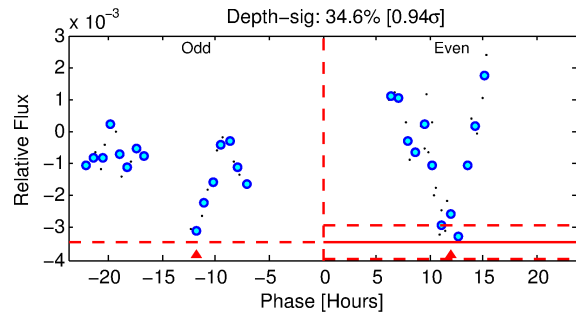
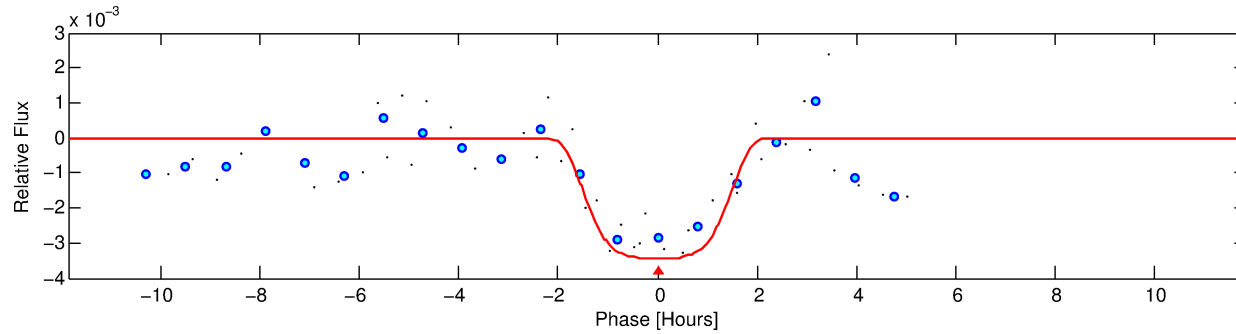
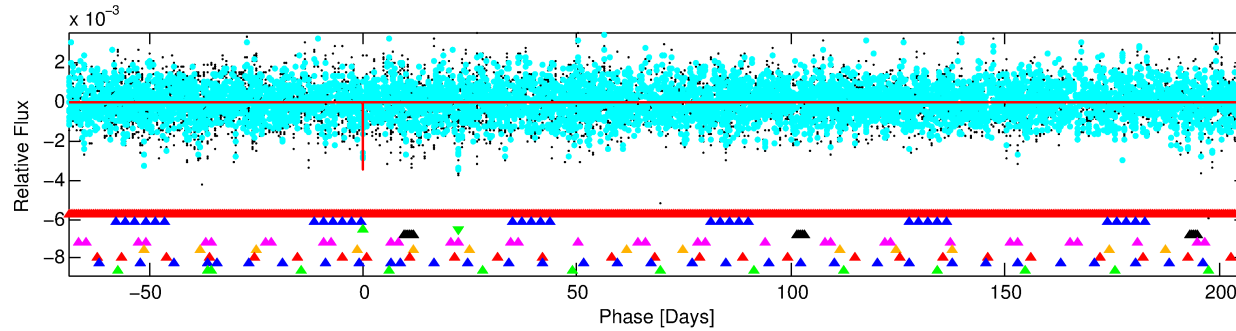
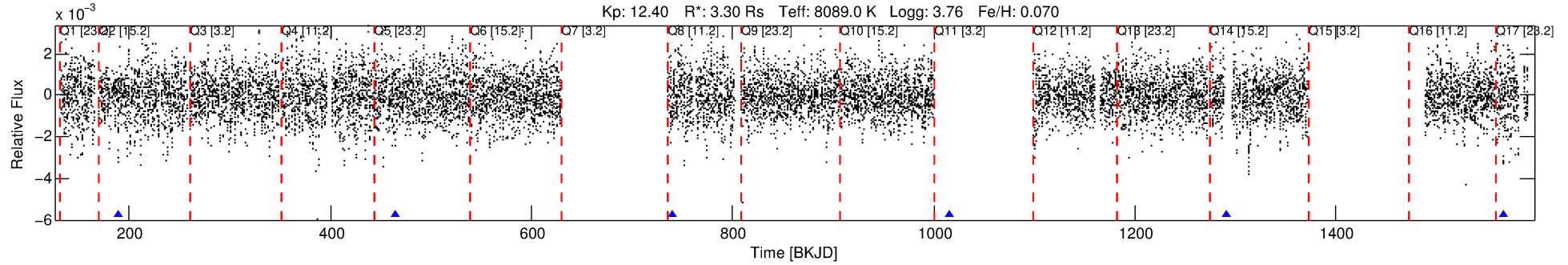
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678547-03

No Significant Match Found

DV One-Page Summary

KIC: 10678547 Candidate: 3 of 9 Period: 275.396 d



DV Fit Results:

Period = 275.39599 [0.00182] d
Epoch = 189.6623 [0.0062] BKJD
Rp/R* = 0.0629 [0.0050]
a/R* = 302.16 [67.53]
b = 0.90 [0.05]
Seff = 35.22 [14.25]
Teq = 621 [63] K
Rp = 22.64 [7.03] Re
a = 1.0887 [0.2888] AU
Ag = 2997.30 [1383.67] [2.17 σ]
Teffp = 7106 [413] K [15.53 σ]

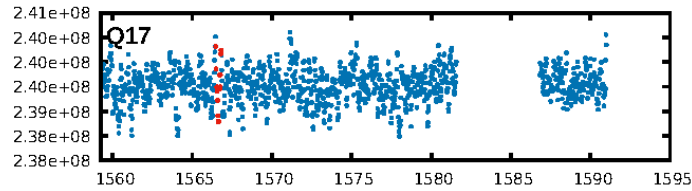
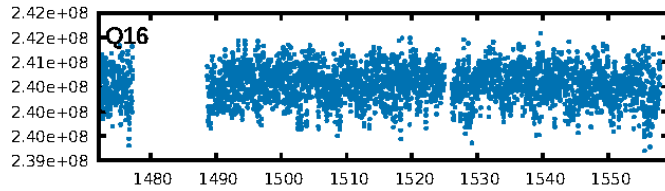
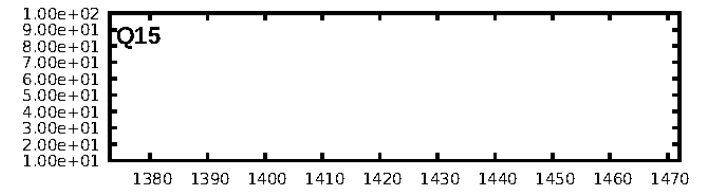
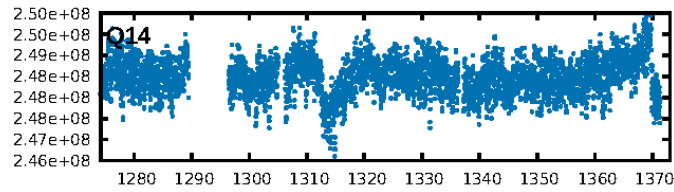
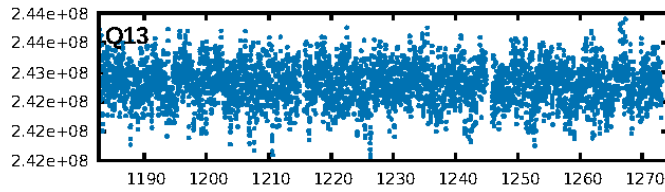
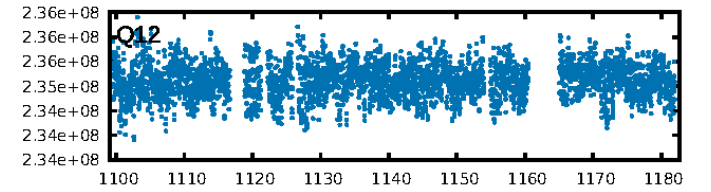
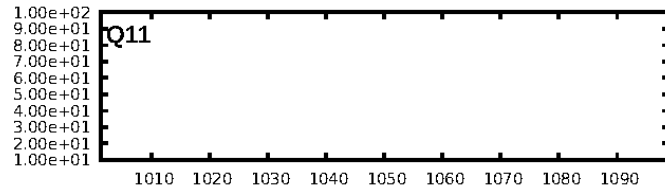
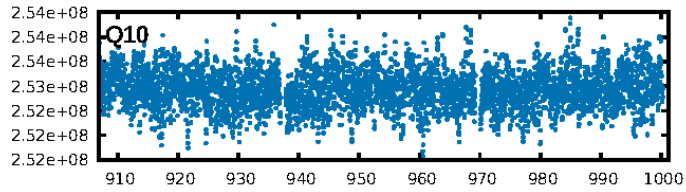
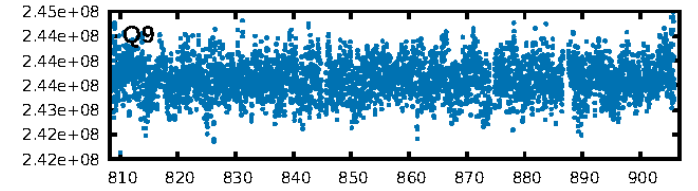
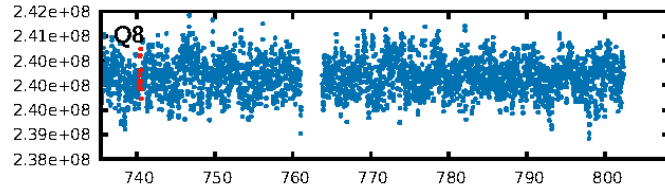
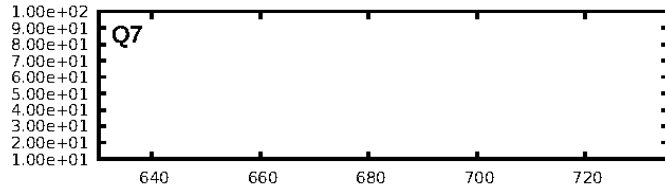
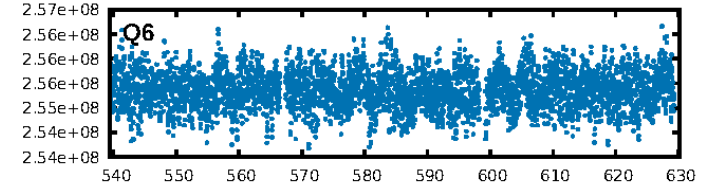
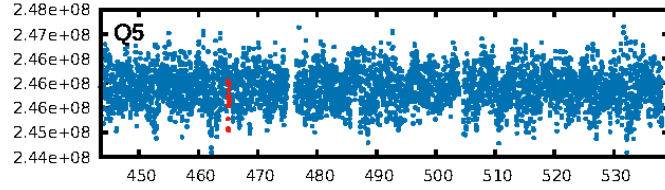
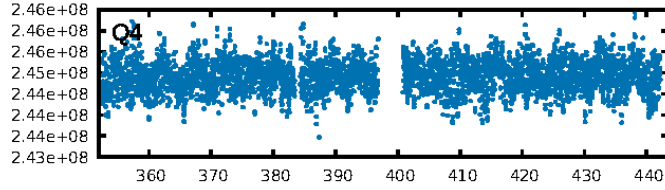
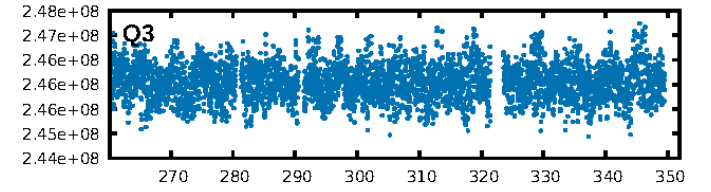
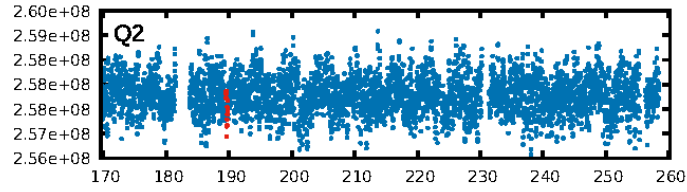
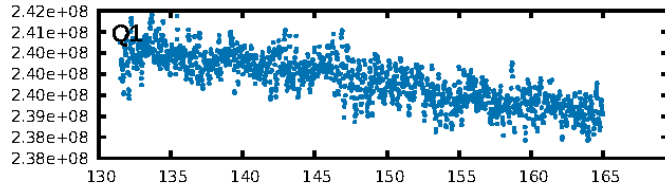
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [573.44 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 88.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.1998
Centroid-sig: 83.1%
Centroid-so: 0.198 arcsec [2.64 σ]
OotOffset-rm: 0.186 arcsec [1.12 σ]
OotOffset-st: 1/0/1/2 [4]
KicOffset-rm: 0.285 arcsec [1.58 σ]
KicOffset-st: 1/0/1/2 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 0.00 [0/4]

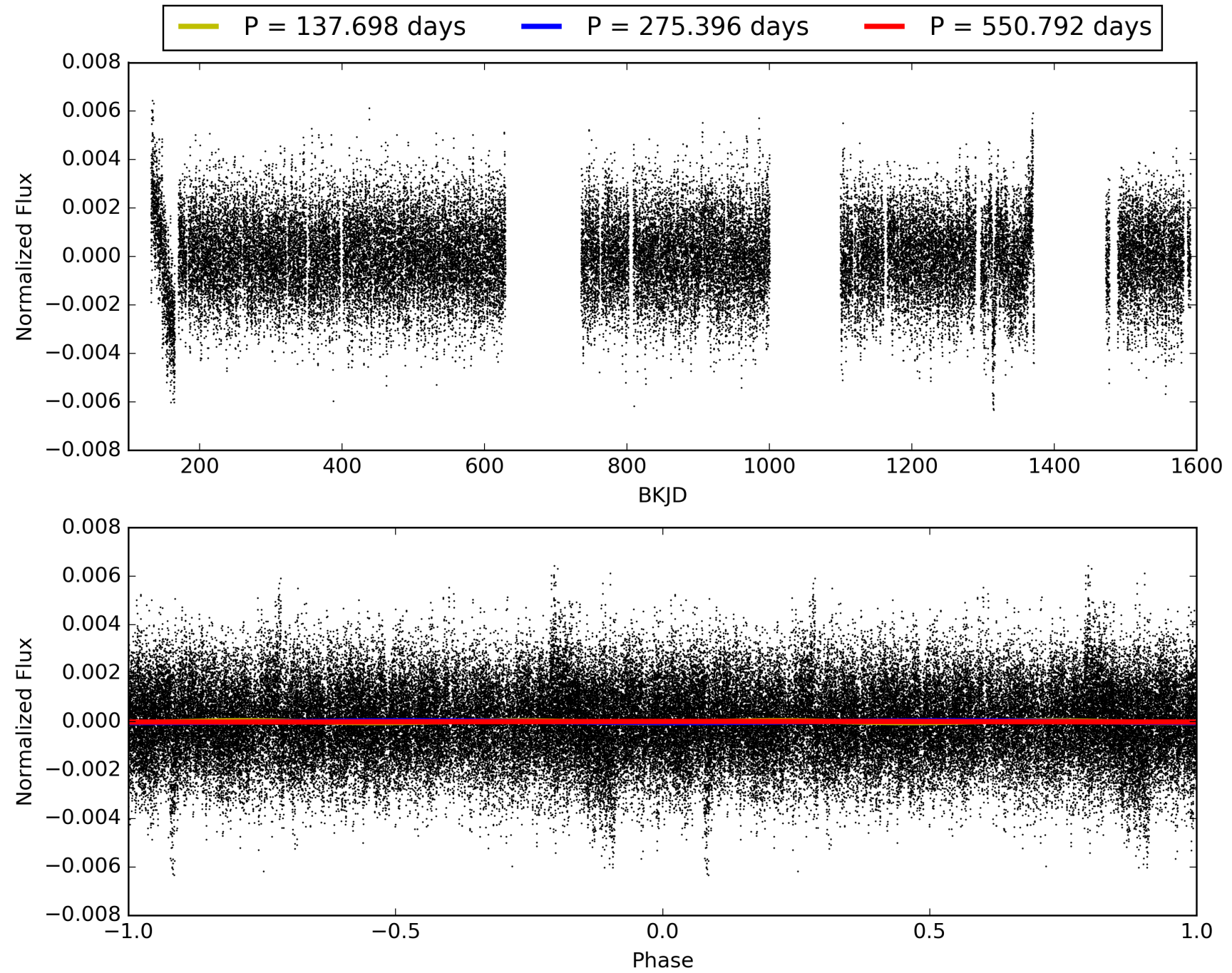
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:51:12 Z

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

TCE 010678547-03, PDC Light Curves

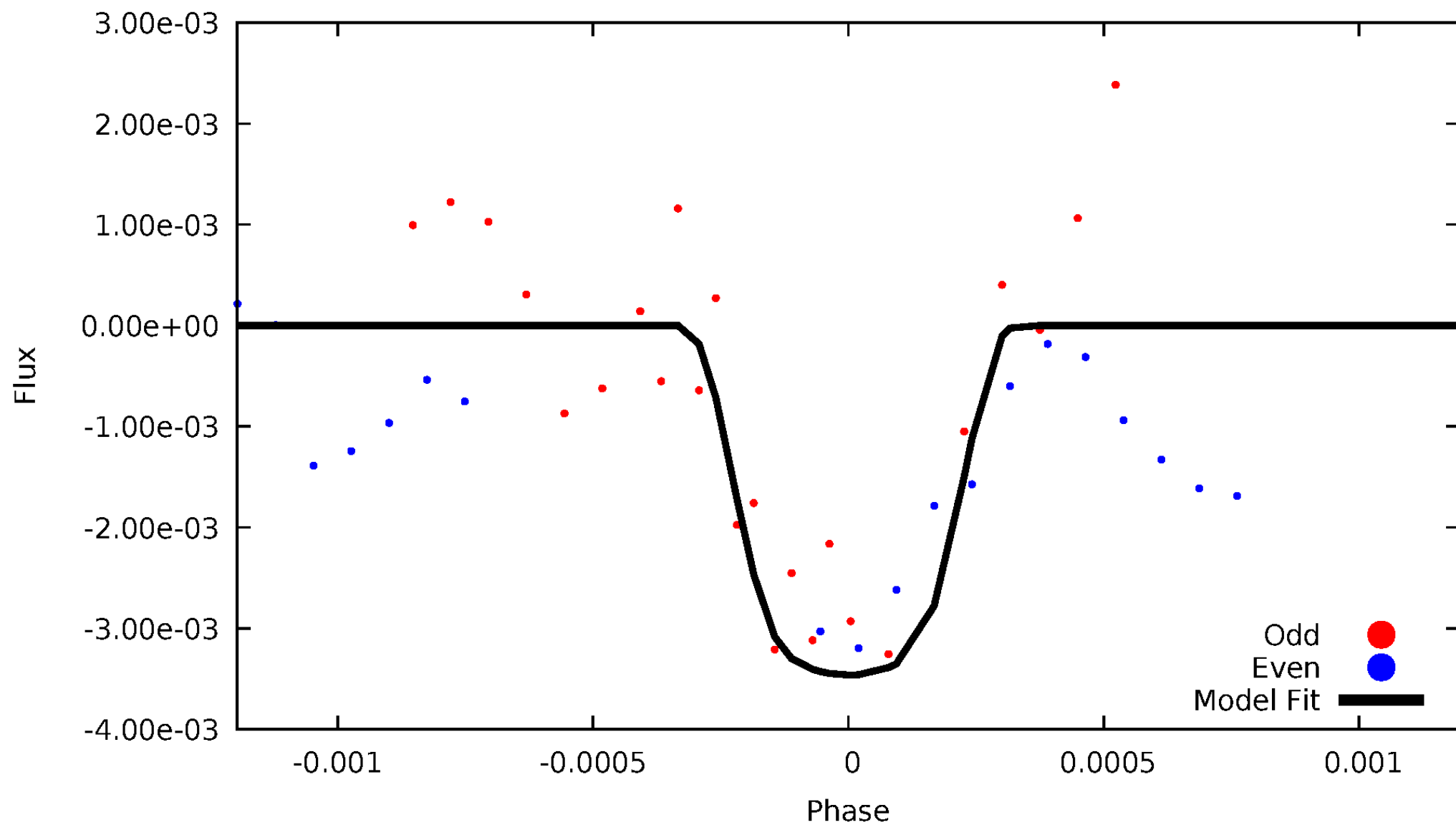


TCE 010678547-03



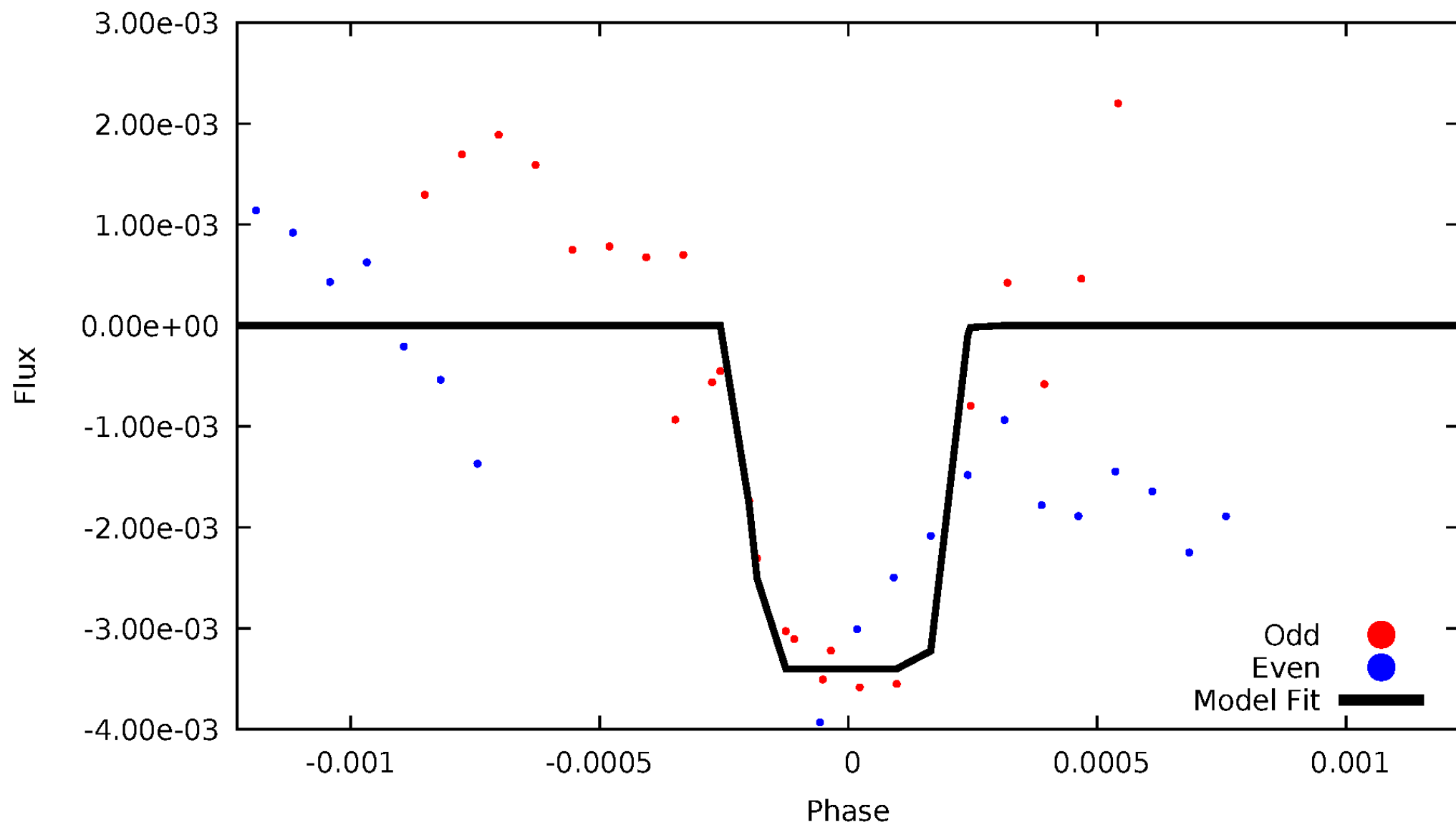
DV Odd/Even

TCE 010678547-03



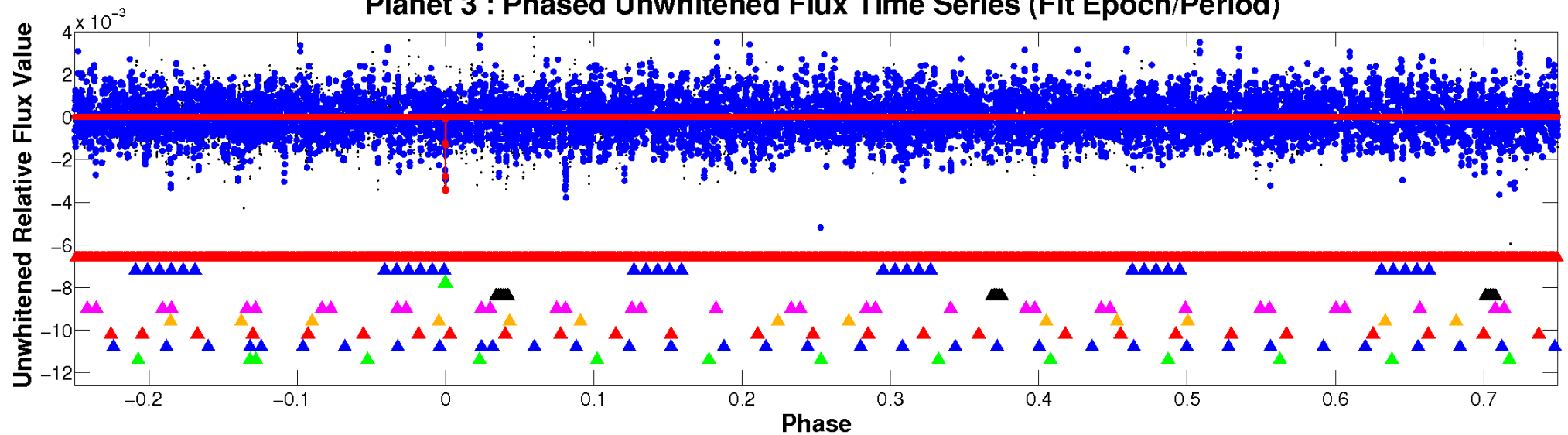
ALT Odd/Even

TCE 010678547-03

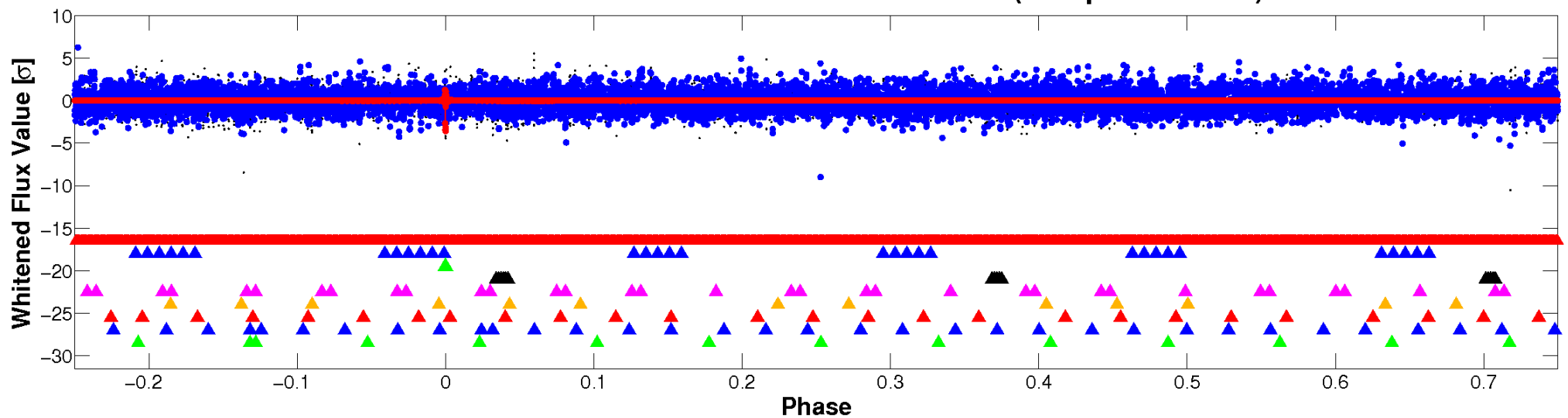


Non-Whitened Vs. Whitened Light Curve

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

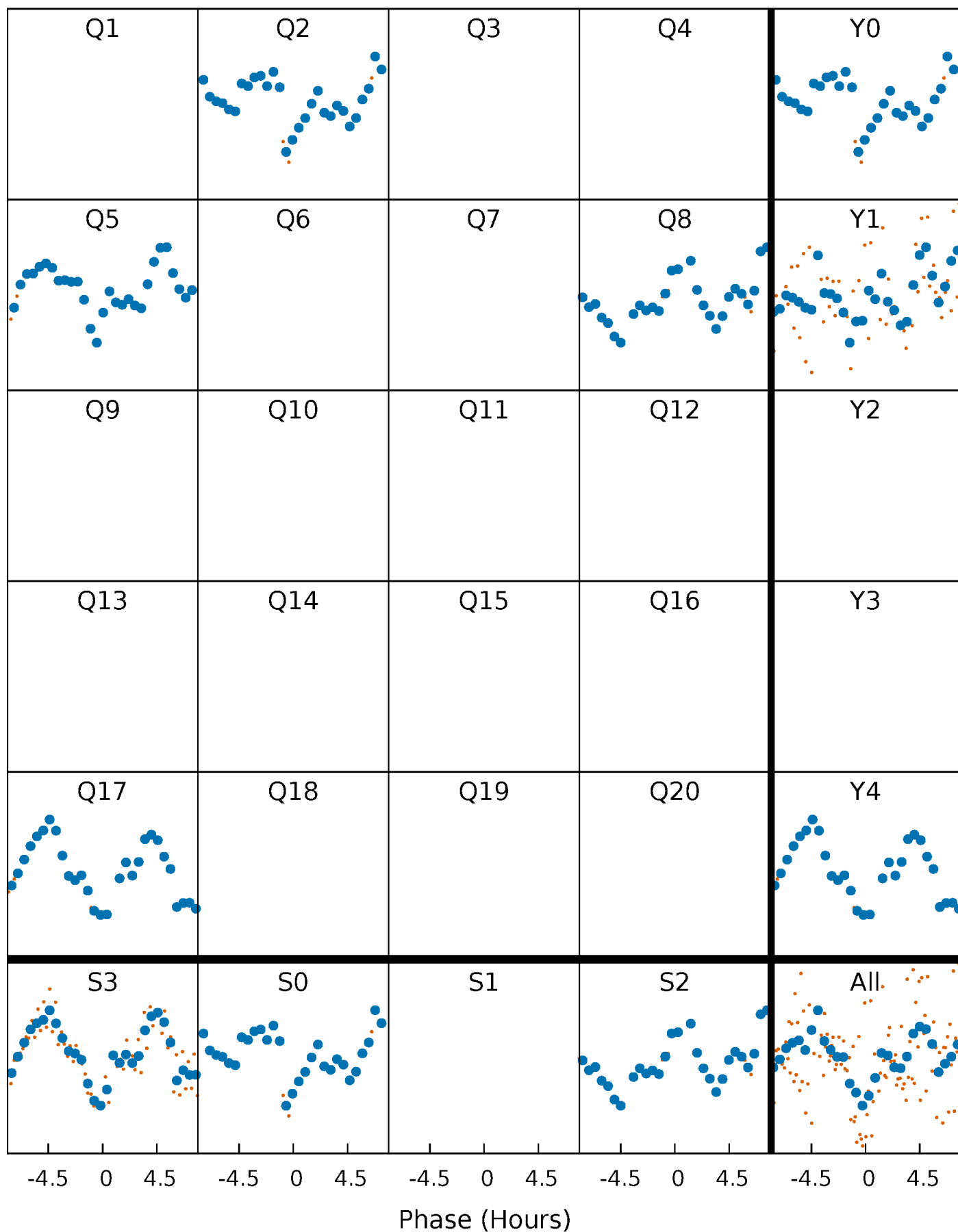


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



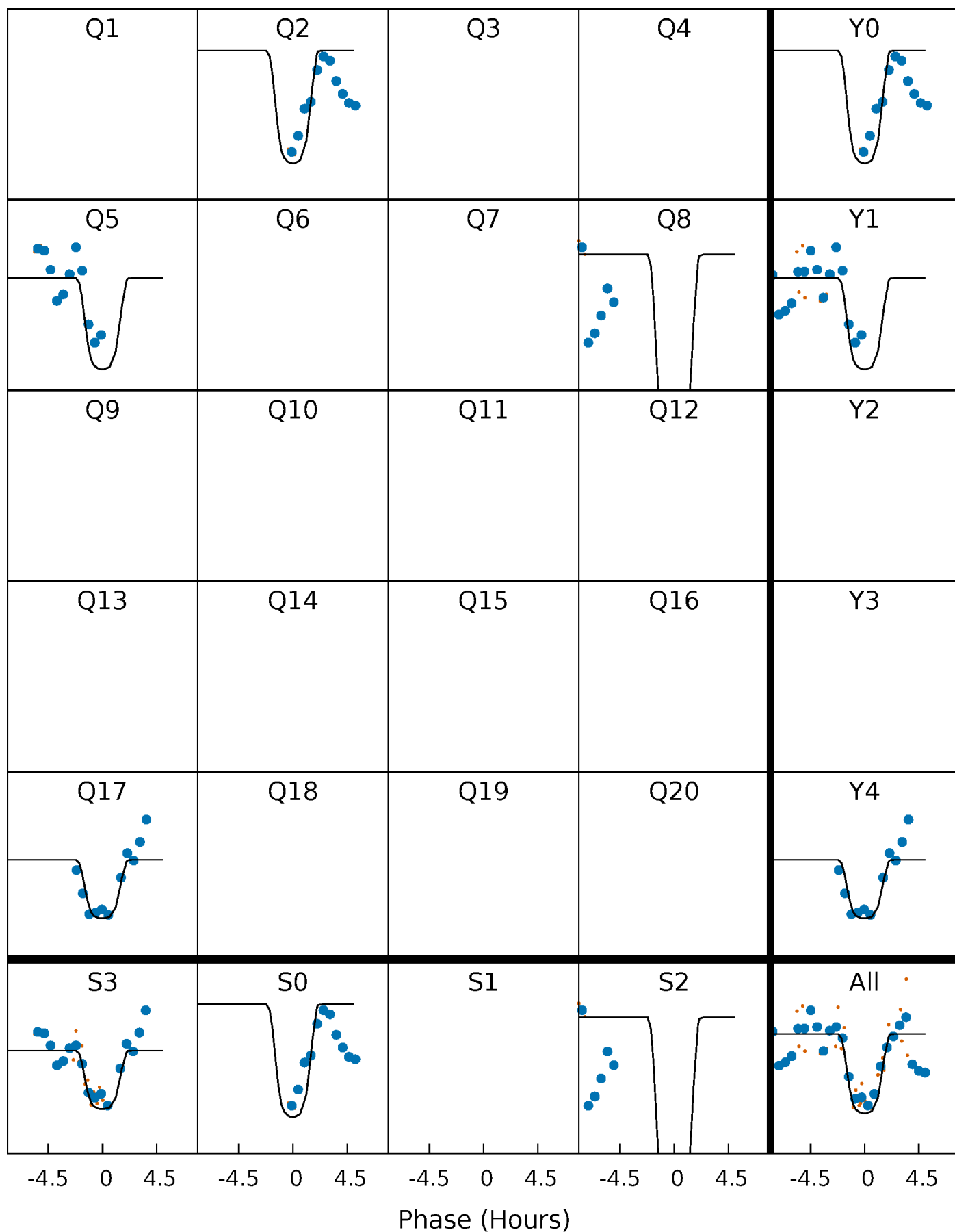
PDC Quarter-Phased Transit Curves

TCE 010678547-03 $P=275.395986$ Days $T_0=189.662265$ (BKJD)



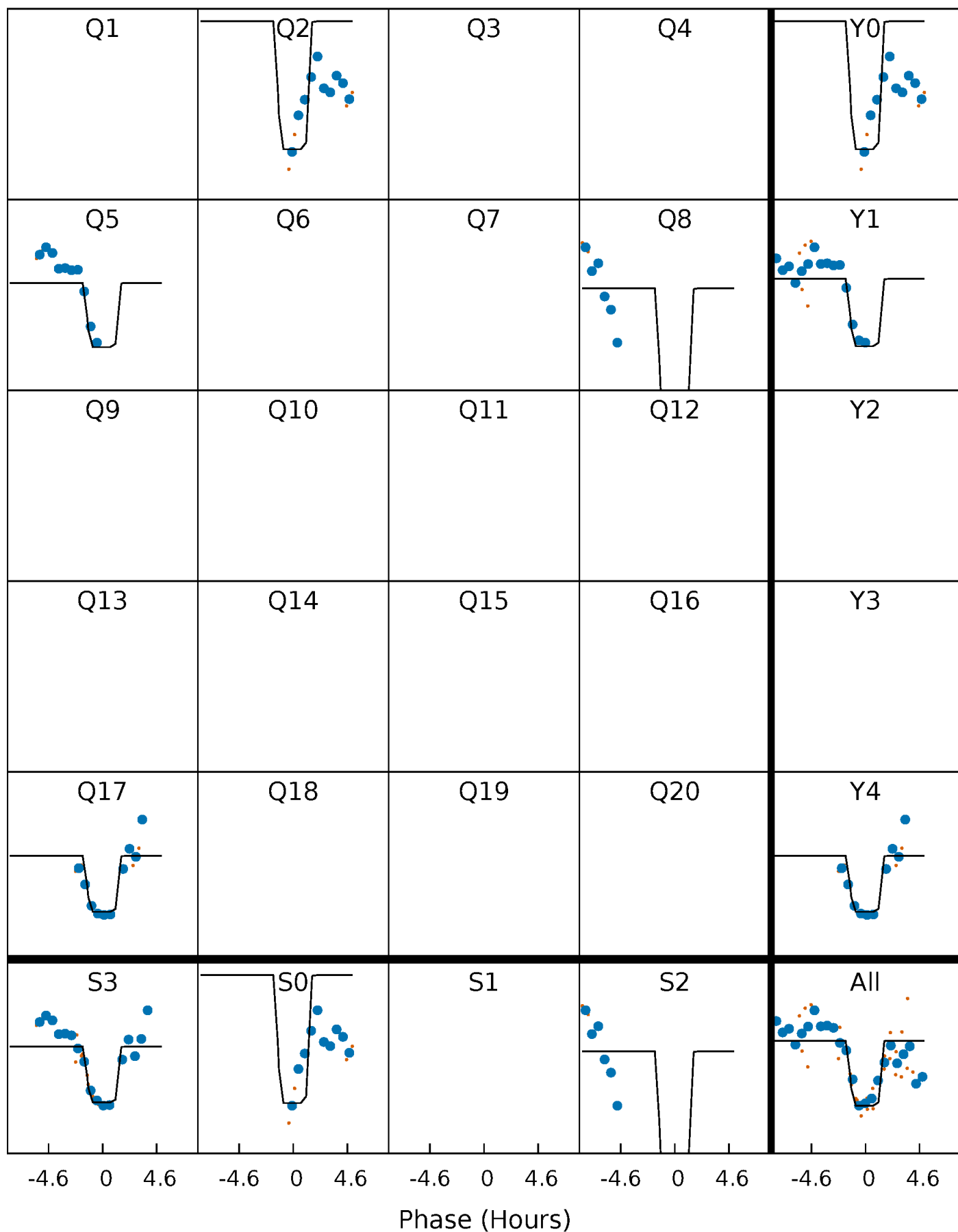
DV Quarter-Phased Transit Curves

TCE 010678547-03 P=275.395986 Days $T_0=189.662265$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

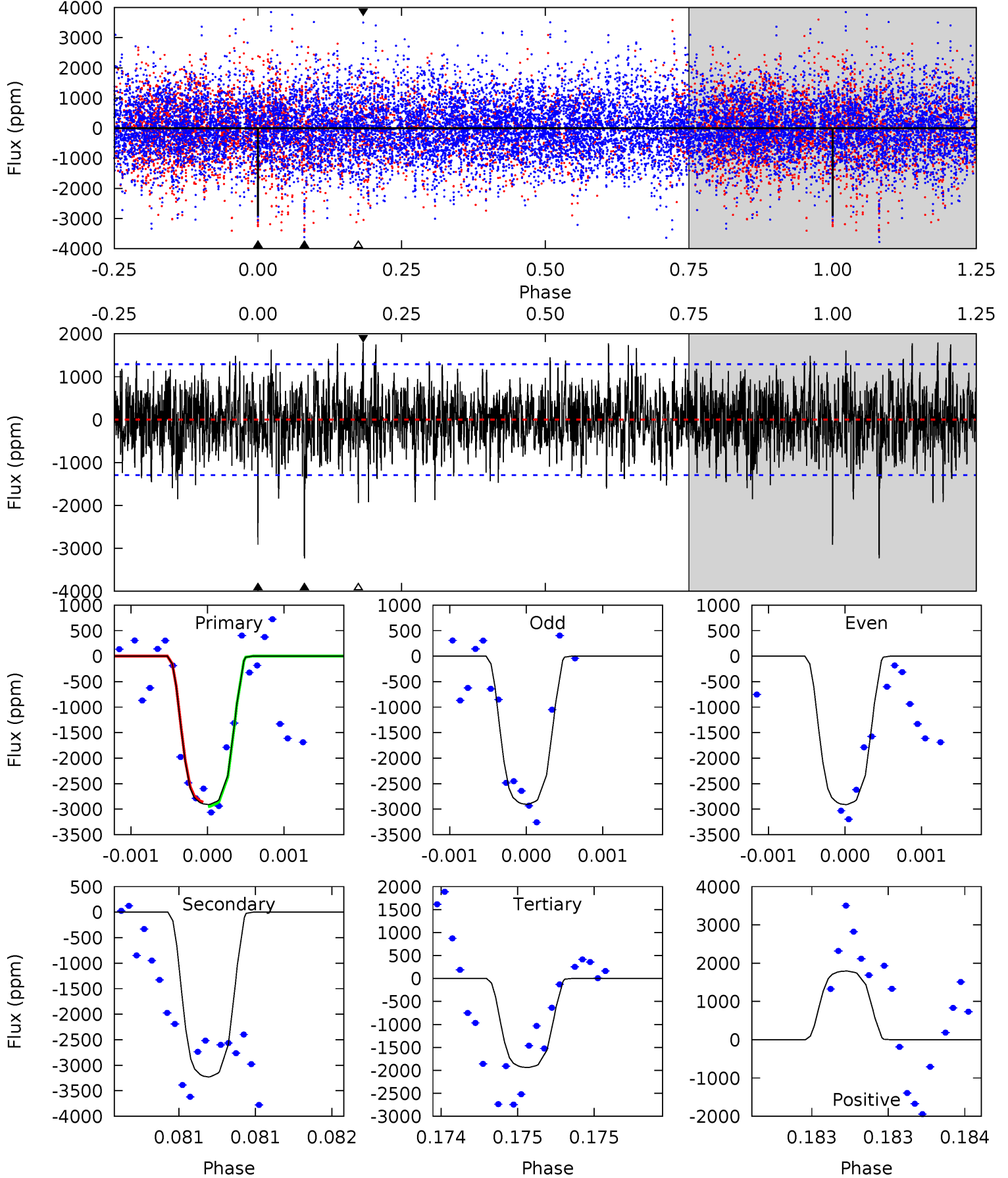
TCE 010678547-03 P=275.394832 Days $T_0=189.662900$ (BKJD)



DV Model-Shift Uniqueness Test

010678547-03, P = 275.395986 Days, E = 189.662265 Days

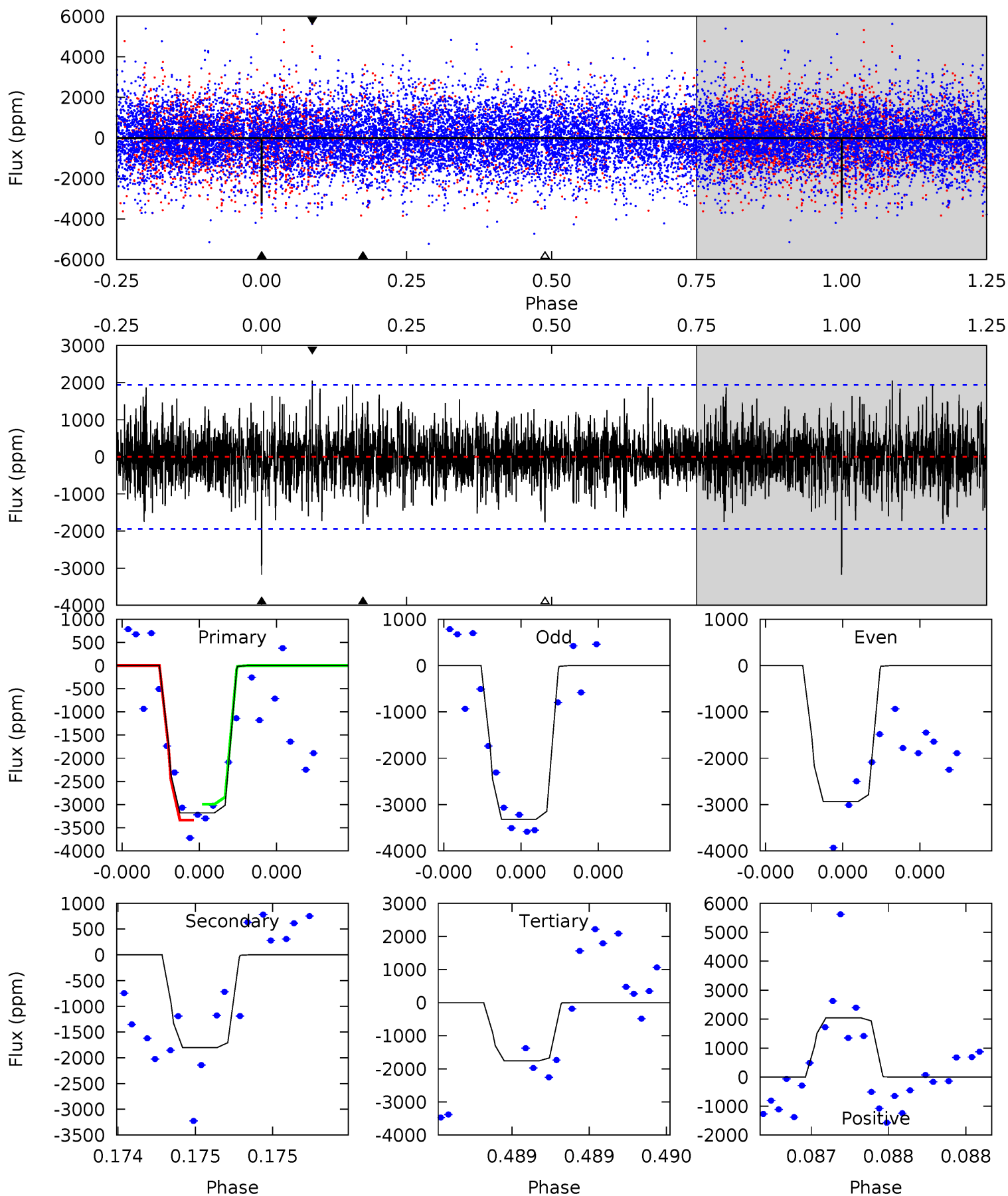
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	13.8	8.30	7.68	5.53	3.42	2.21	4.16	4.78	5.53	6.15	0.01	0.97	0.36	0.18



Alt Model-Shift Uniqueness Test

010678547-03, P = 275.394832 Days, E = 189.662900 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.13	5.17	5.05	5.88	5.57	3.48	1.47	4.08	3.25	0.12	-0.71	0.57	1.00	0.39	0.49



Stellar Parameters For KIC 010678547

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8089^{+64}_{-97}	$3.757^{+0.227}_{-0.122}$	$0.070^{+0.200}_{-0.250}$	$3.299^{+0.660}_{-0.990}$	$2.267^{+0.222}_{-0.413}$	$0.089^{+0.122}_{-0.033}$
	+1%/-1%	+6%/-3%	+286%/-357%	+20%/-30%	+10%/-18%	+137%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 010678547-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-3228 ± 233	$22.13^{+3.25}_{-3.60}$	863^{+47}_{-69}	7593^{+381}_{-359}	4254^{+1687}_{-1027}
Alt.	-1800 ± 348	$20.42^{+3.15}_{-3.41}$	862^{+46}_{-58}	6700^{+504}_{-456}	2756^{+1215}_{-821}

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

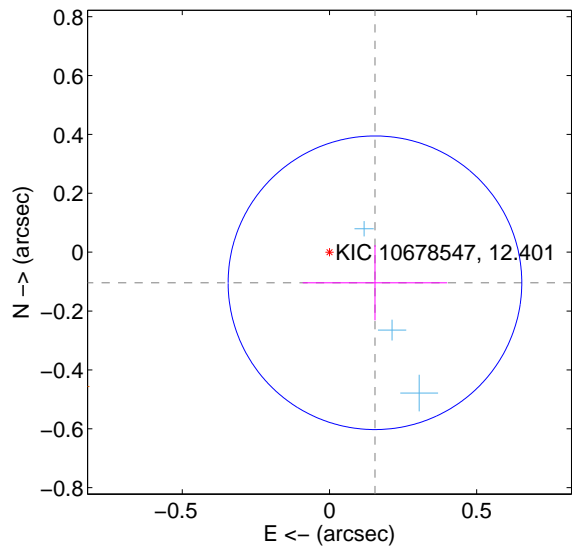
Supplemental centroid analysis for 010678547-03. Kepler magnitude: 12.40. Transit SNR 11.27

There are 3 quarters with good PRF difference image offsets

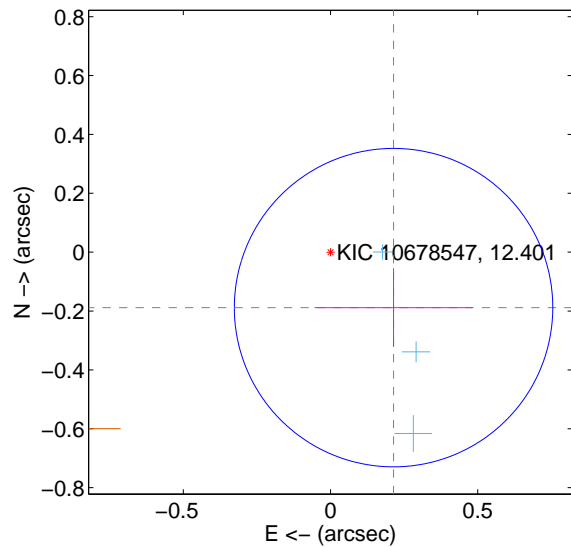
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.186 ± 0.166	1.12	-0.155 ± 0.245	-0.104 ± 0.128
PRF-fit source offset from KIC position	0.285 ± 0.180	1.58	-0.214 ± 0.268	-0.188 ± 0.134
photometric centroid source offset	0.20 ± 0.08	2.64	-0.11 ± 0.08	-0.16 ± 0.07

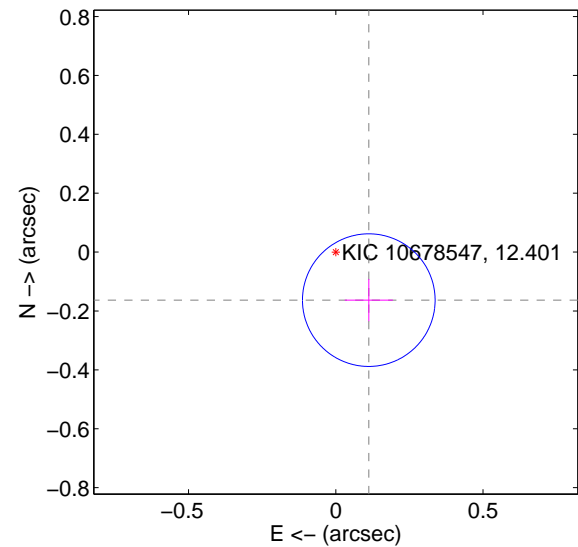
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

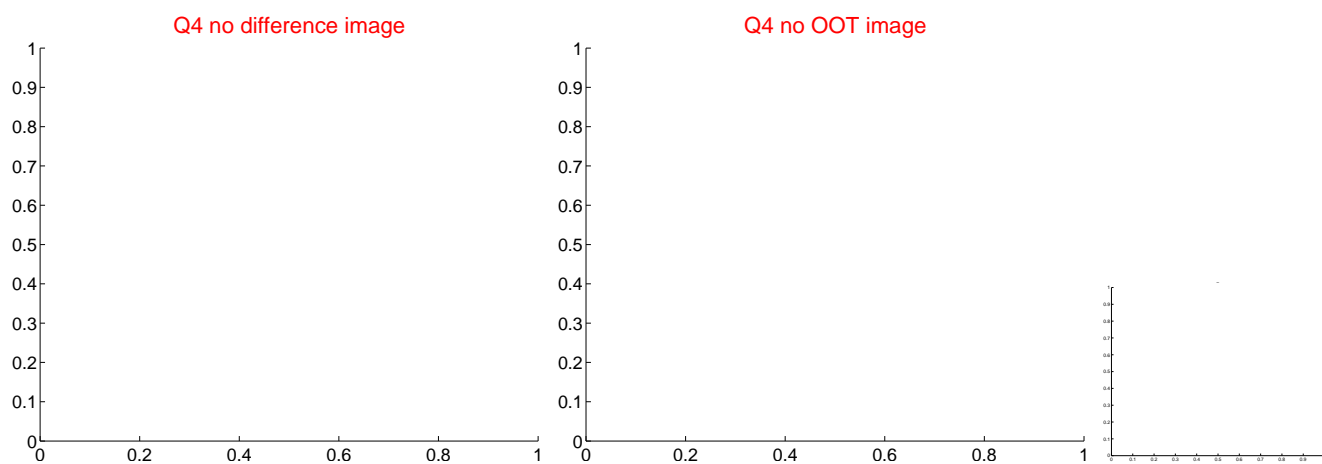
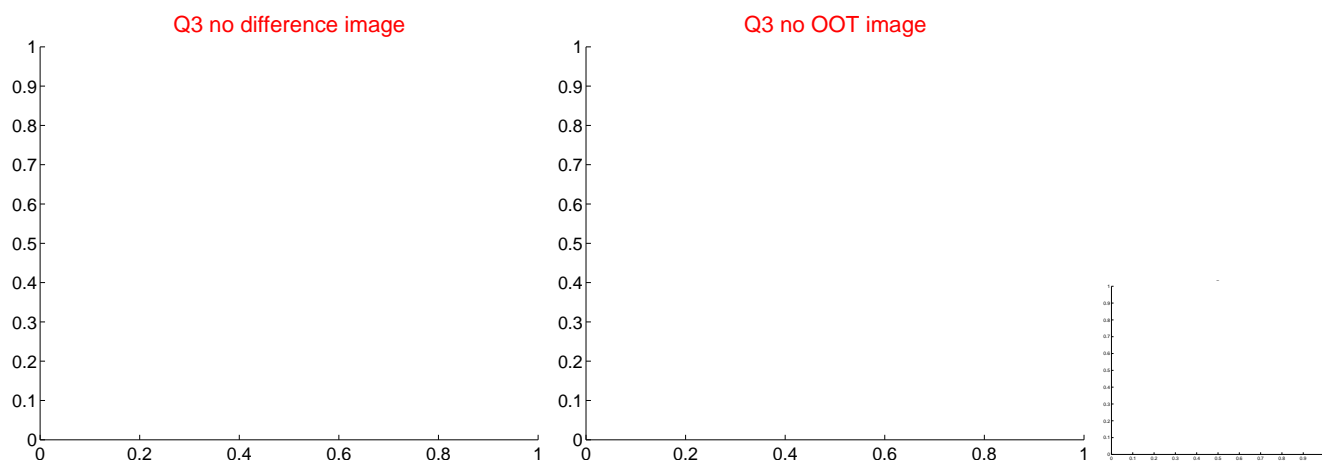
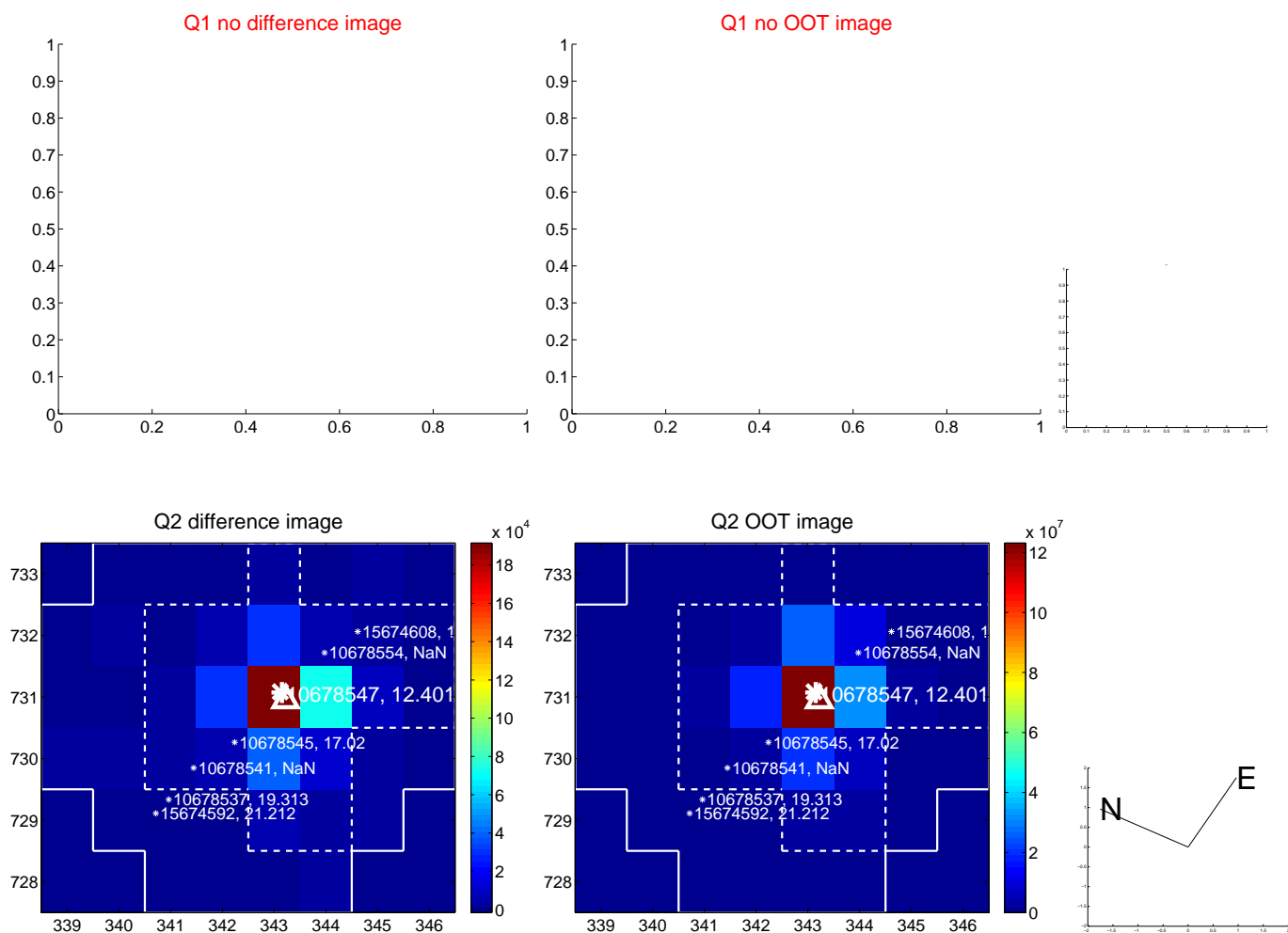


offset from photometric centroids

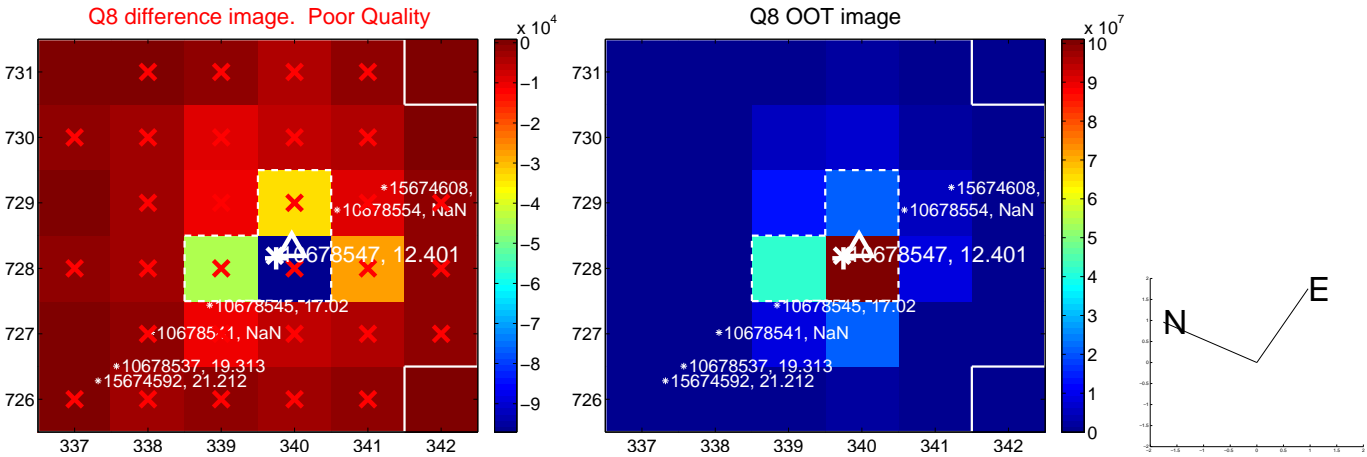
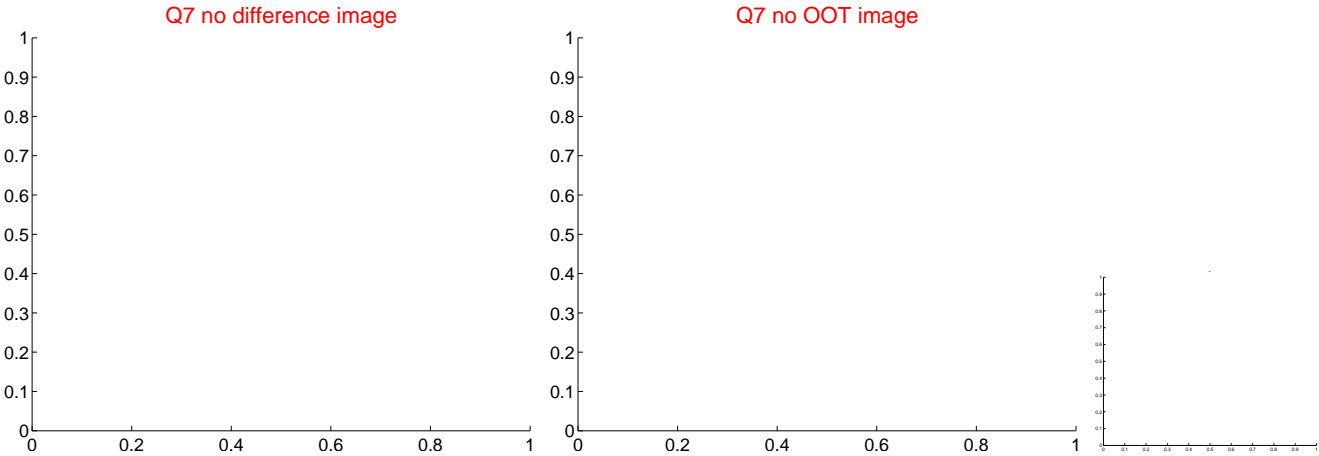
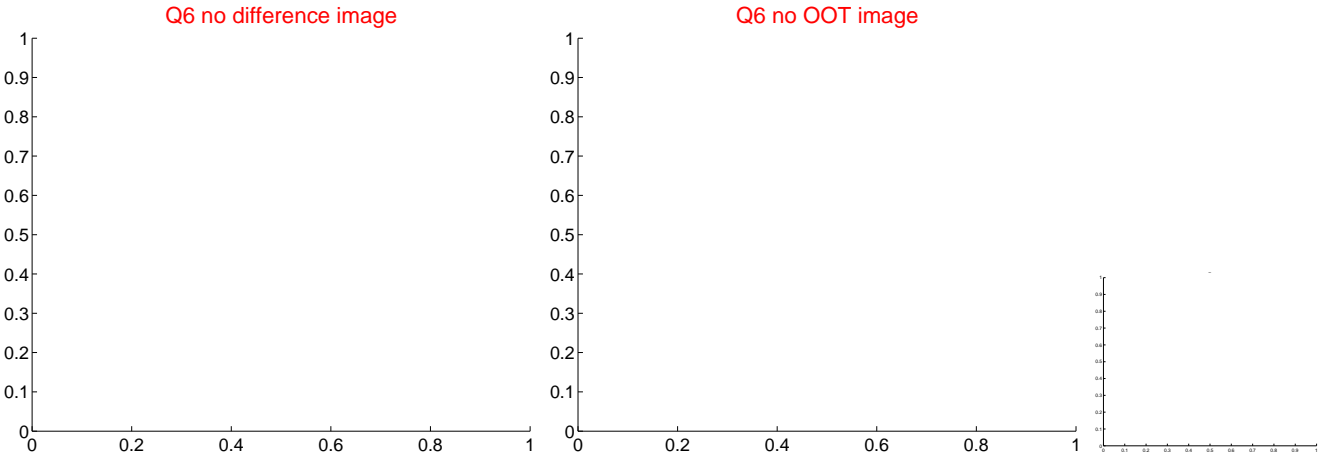
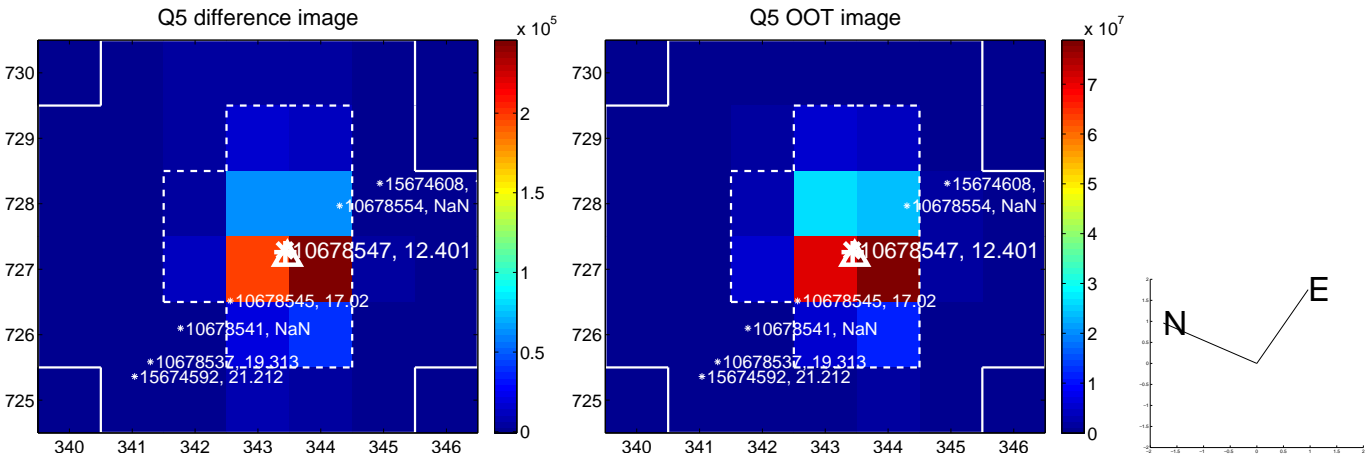


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

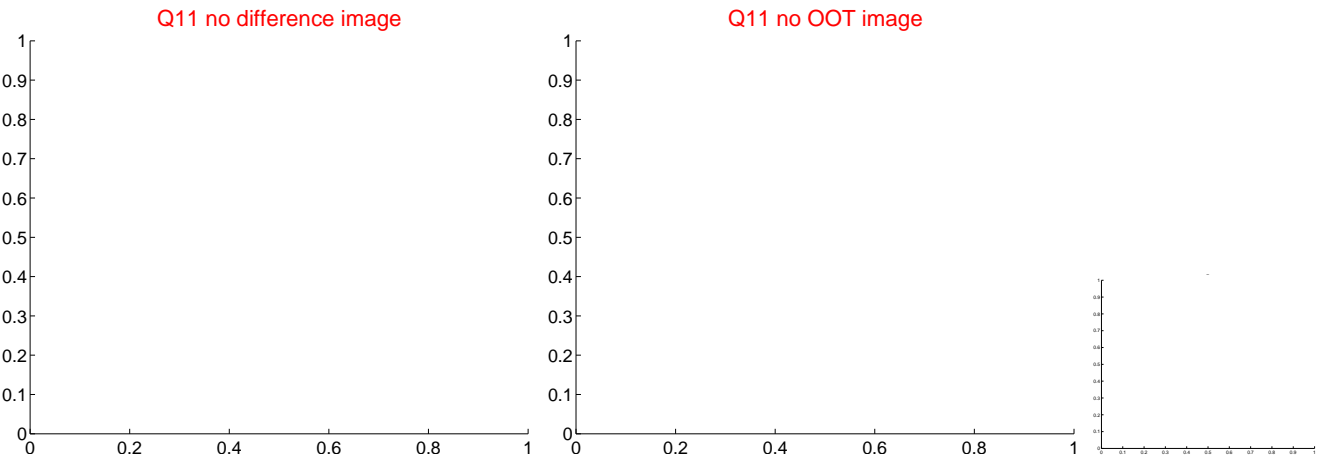
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



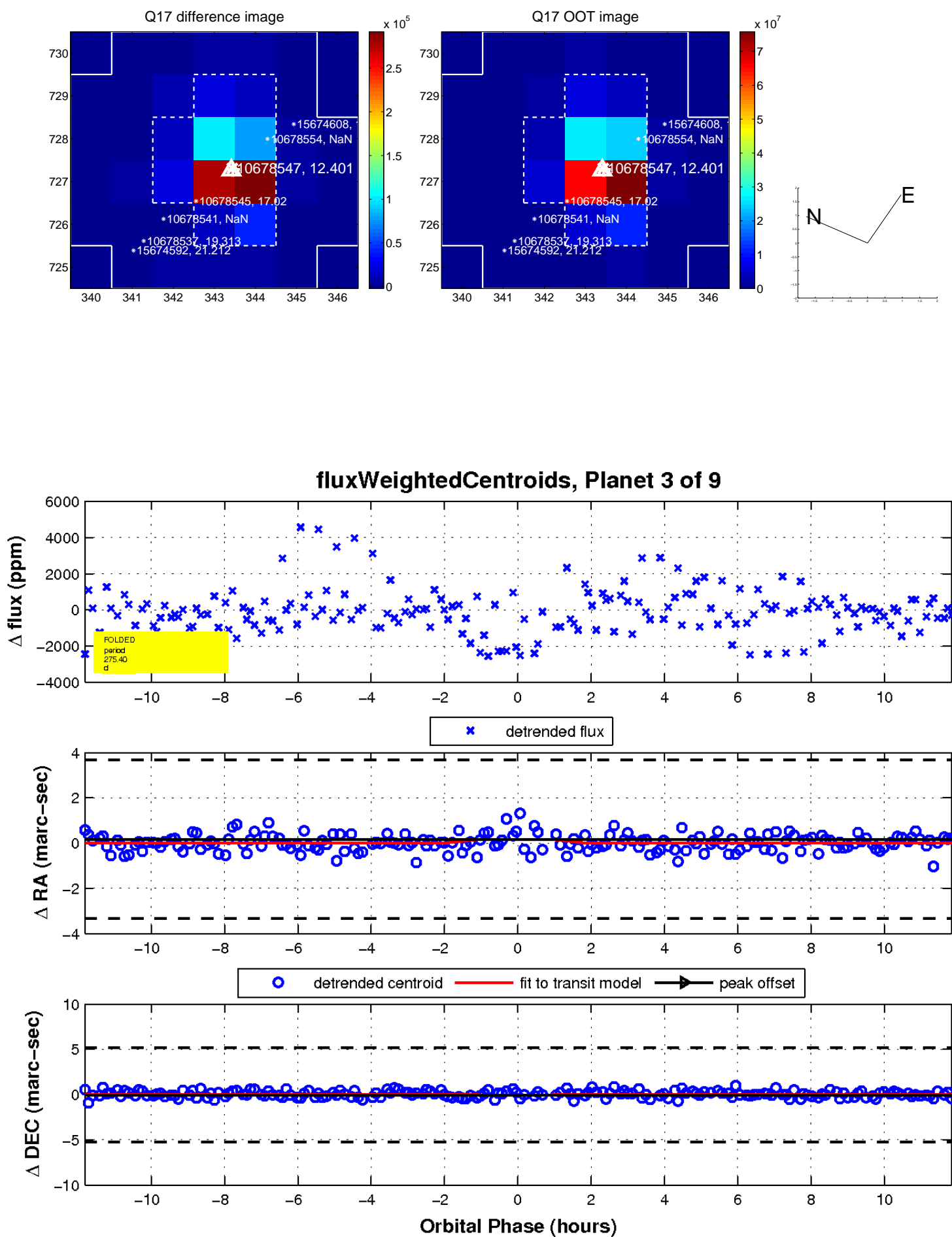
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

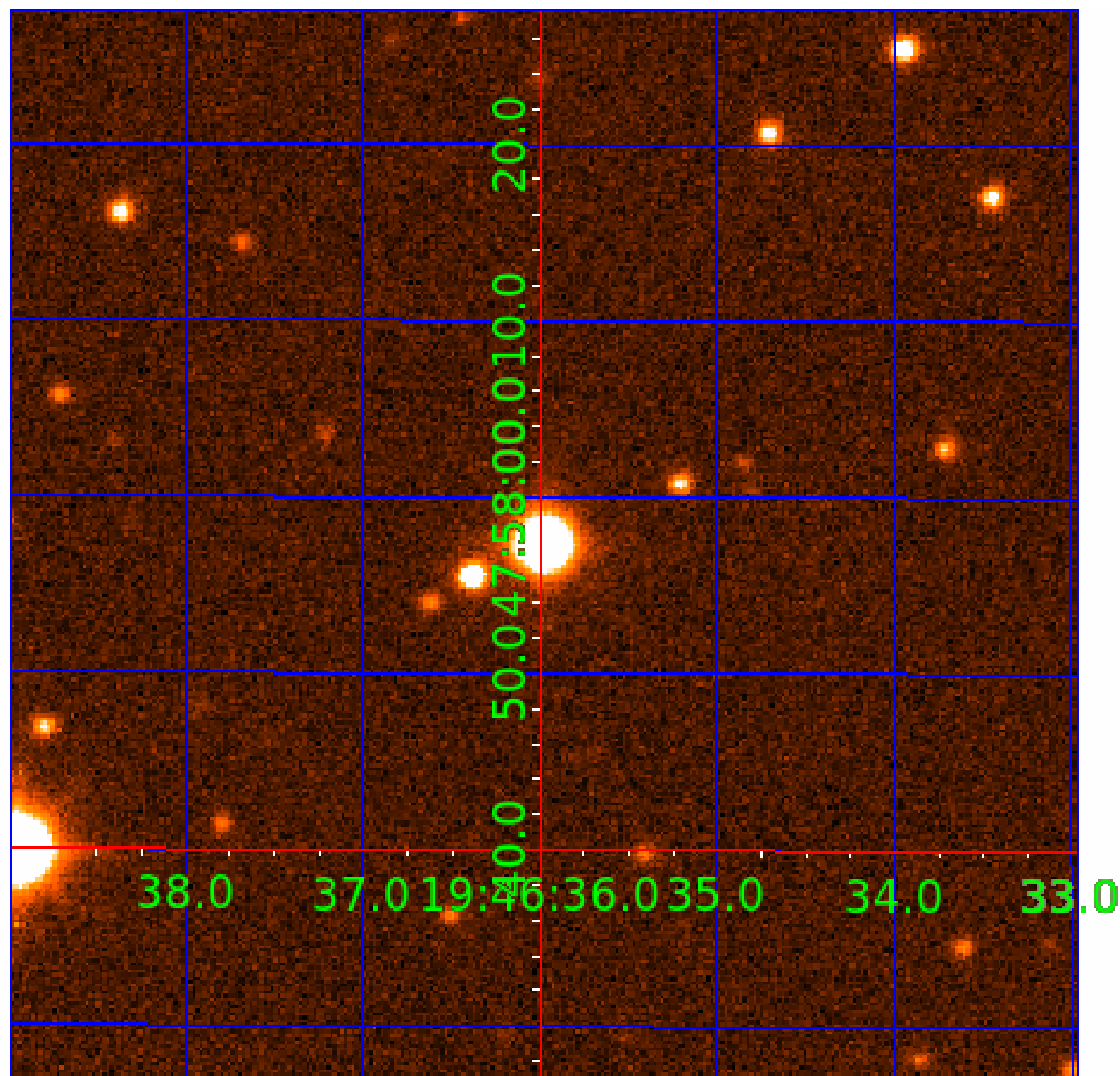


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010678547

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})
010678547-01	OBS	No	0.958852	131.740929	86.7	5.533	7.9	5.4	3.30	8089	3.13	66741.05
010678547-02	OBS	No	46.266327	132.134497	1965.9	2.176	10.4	9.8	3.30	8089	25.52	379.93
010678547-03	OBS	No	275.395986	189.662265	3463.5	3.956	10.2	11.3	3.30	8089	22.64	35.22
010678547-04	OBS	No	91.651982	201.270112	2210.0	6.815	9.8	9.5	3.30	8089	18.61	152.71
010678547-05	OBS	No	43.570469	137.129611	1396.6	5.119	8.9	8.8	3.30	8089	14.74	411.60
010678547-06	OBS	No	112.787169	188.429005	2289.5	5.538	9.3	8.1	3.30	8089	18.51	115.80
010678547-07	OBS	No	57.131981	133.364930	1676.4	4.872	9.1	9.0	3.30	8089	14.53	286.79
010678547-08	OBS	No	42.966194	155.444122	1288.5	5.702	10.0	9.0	3.30	8089	14.12	419.33
010678547-09	OBS	No	106.003102	153.375647	1335.3	13.839	8.3	8.1	3.30	8089	13.29	125.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010678547-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
010678547-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
010678547-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
010678547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
010678547-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

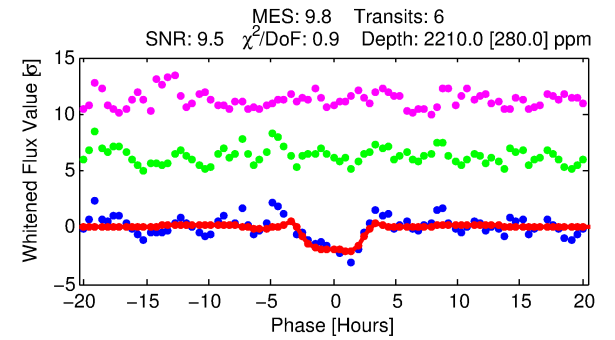
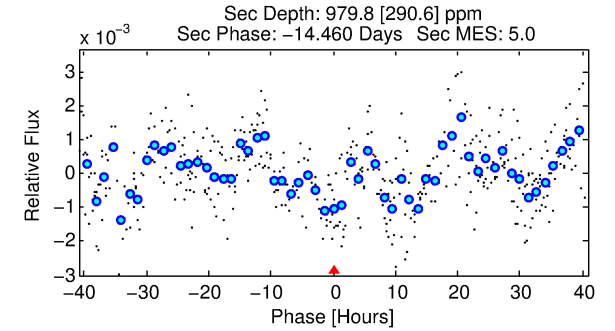
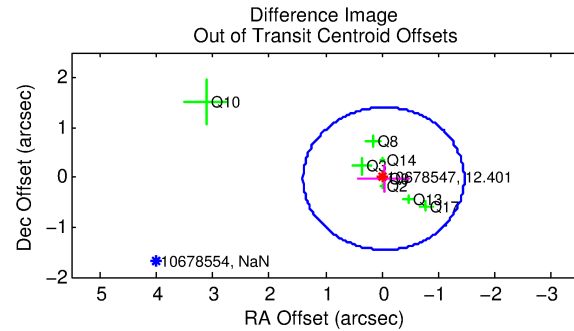
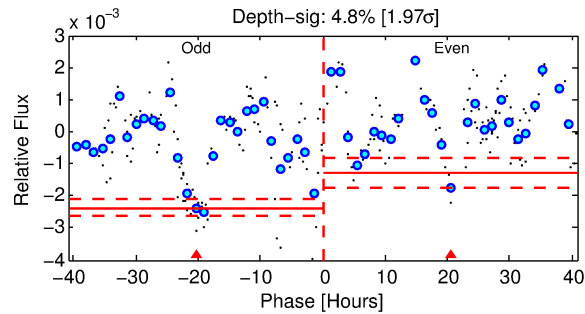
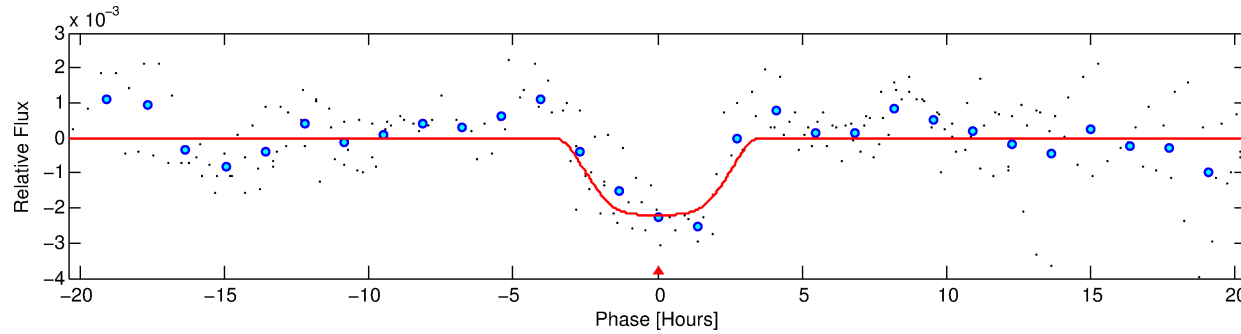
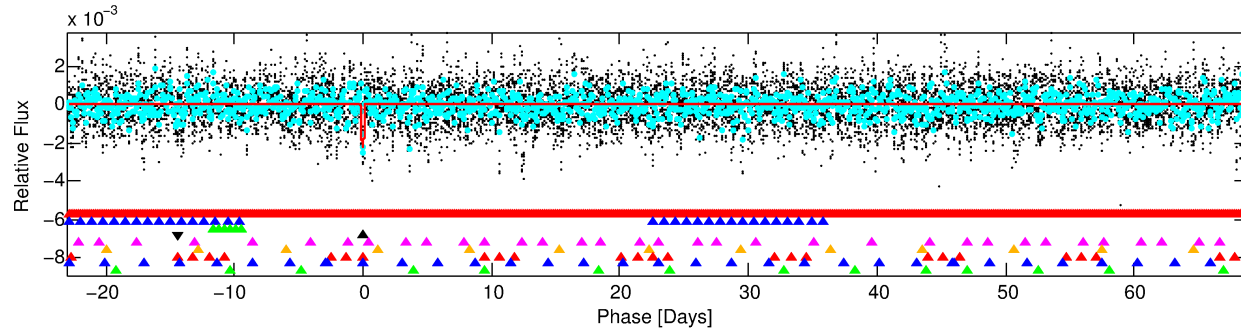
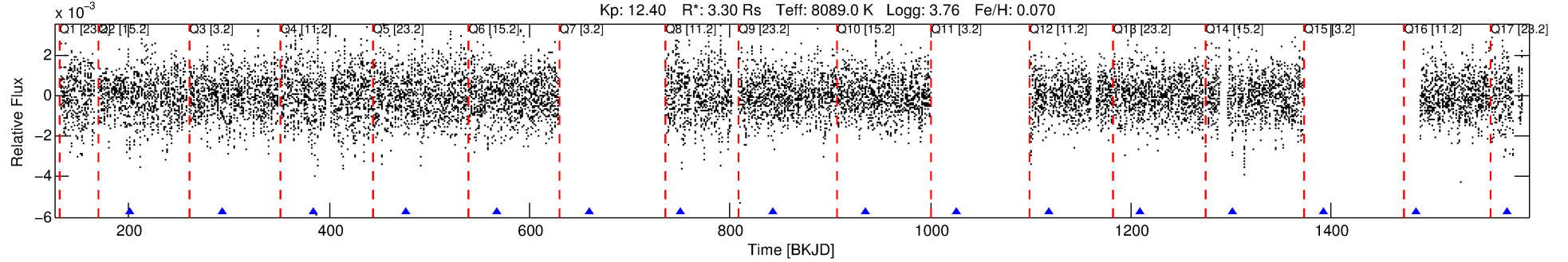
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678547-04

No Significant Match Found

DV One-Page Summary

KIC: 10678547 Candidate: 4 of 9 Period: 91.652 d



DV Fit Results:

Period = 91.65198 [0.00123] d
Epoch = 201.2701 [0.0100] BKJD
Rp/R* = 0.0517 [0.0040]
a/R* = 50.40 [7.33]
b = 0.93 [0.02]
Seff = 152.71 [61.80]
Teq = 896 [91] K
Rp = 18.61 [5.77] Re
a = 0.5229 [0.1387] AU
Ag = 425.47 [222.43] [1.91 σ]
Teffp = 6294 [532] K [10.01 σ]

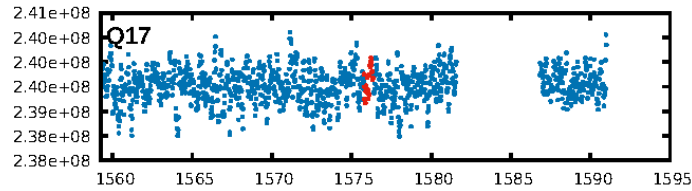
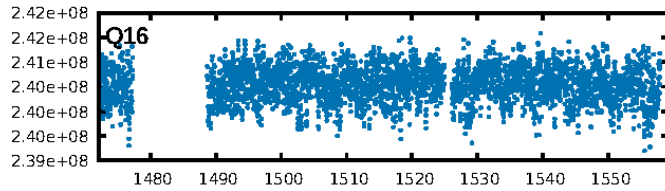
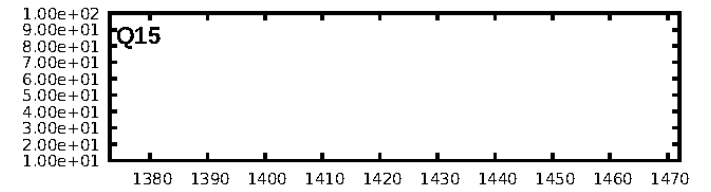
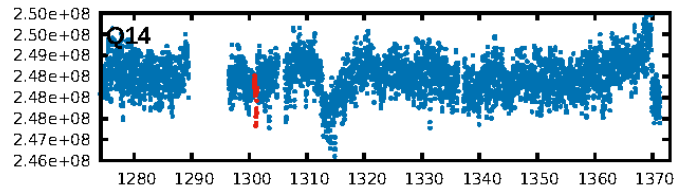
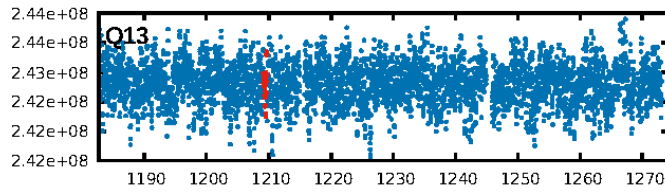
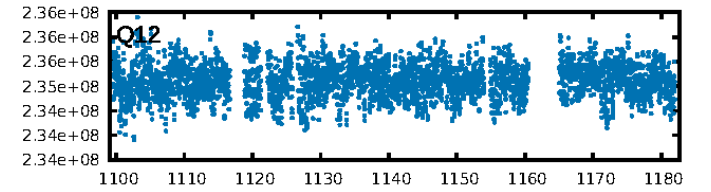
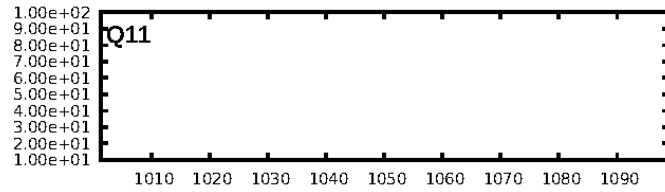
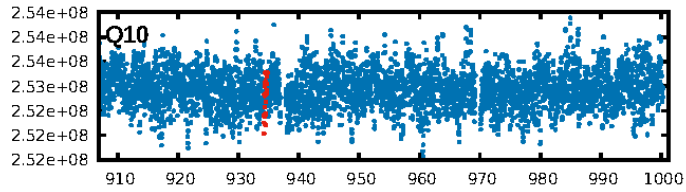
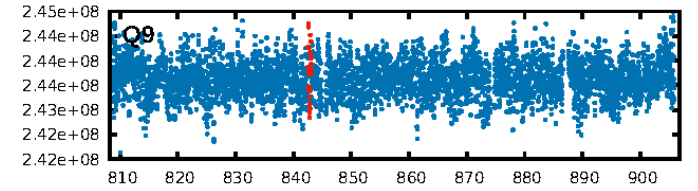
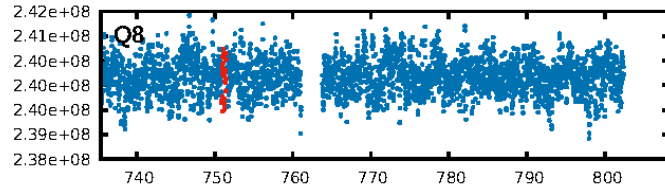
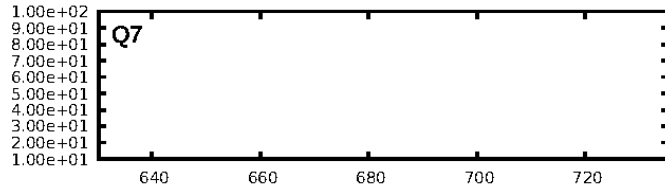
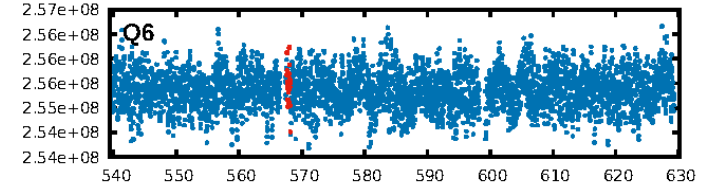
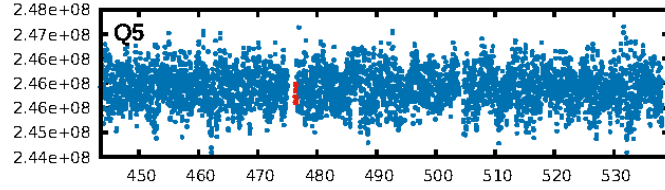
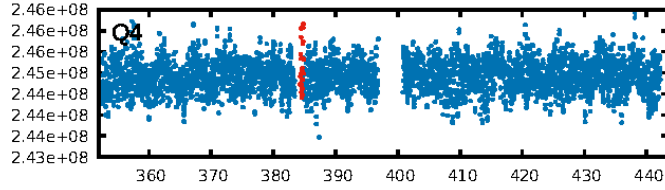
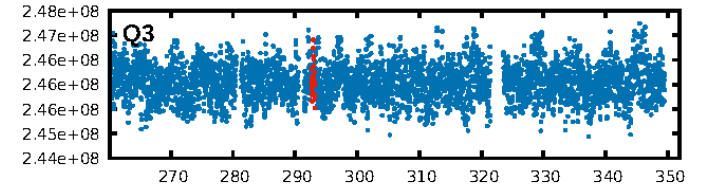
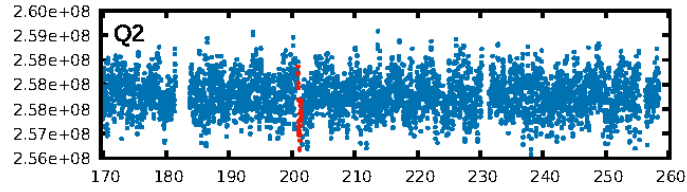
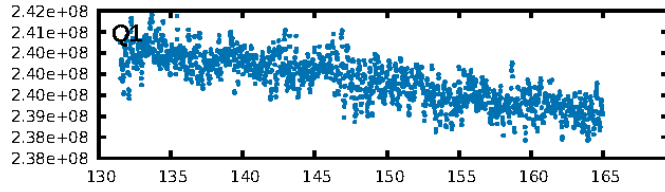
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [98.90 σ]
LongPeriod-sig: 100.0% [22.33 σ]
ModelChiSquare2-sig: 25.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 1.558
Centroid-sig: 2.2%
Centroid-so: 0.102 arcsec [1.77 σ]
OotOffset-rm: 0.041 arcsec [0.09 σ]
OotOffset-st: 3/1/1/3 [8]
KicOffset-rm: 0.159 arcsec [0.53 σ]
KicOffset-st: 3/1/1/3 [8]
DiffImageQuality-fgm: 0.88 [7/8]
DiffImageOverlap-fno: 0.00 [0/8]

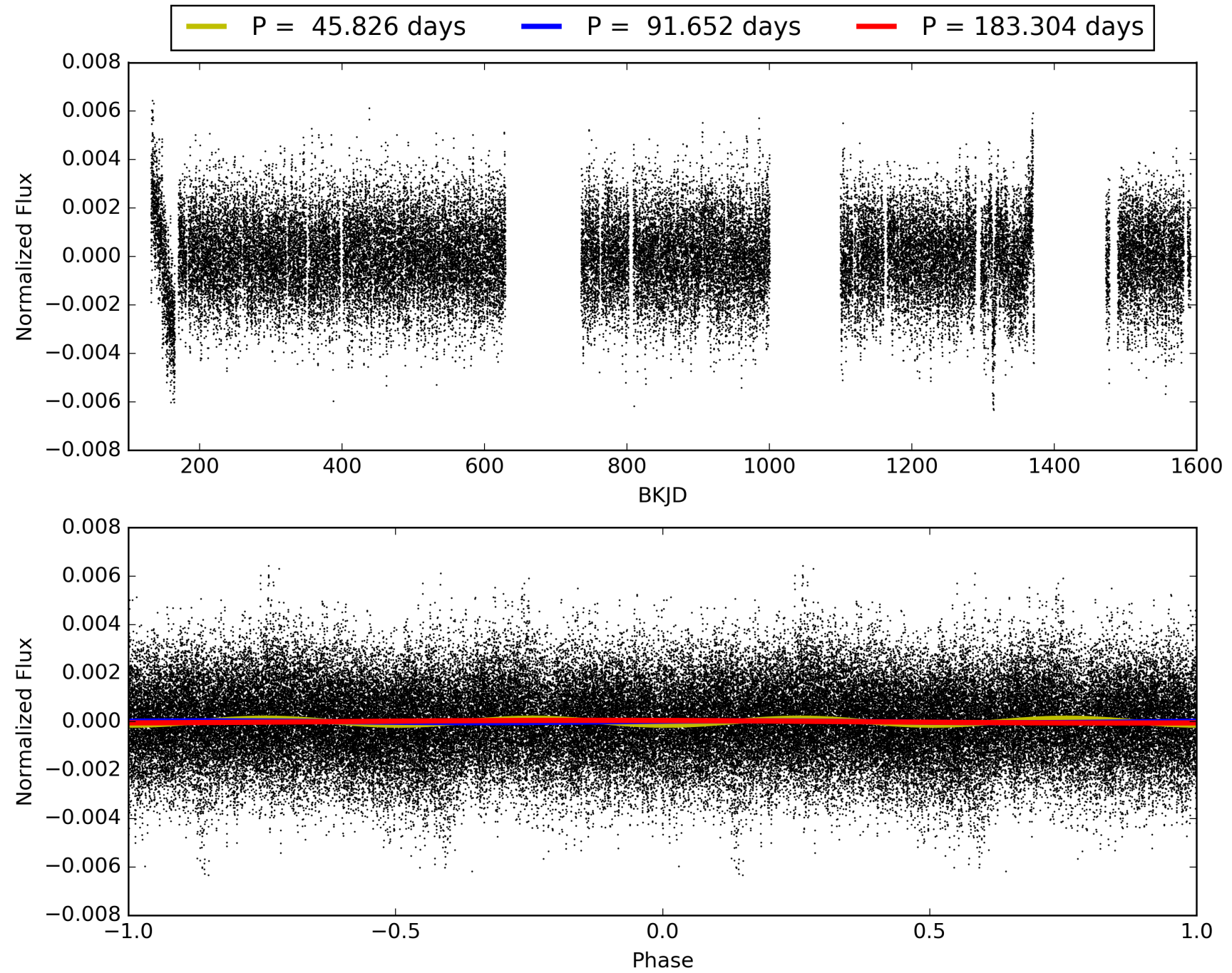
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:51:16 Z

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

TCE 010678547-04, PDC Light Curves

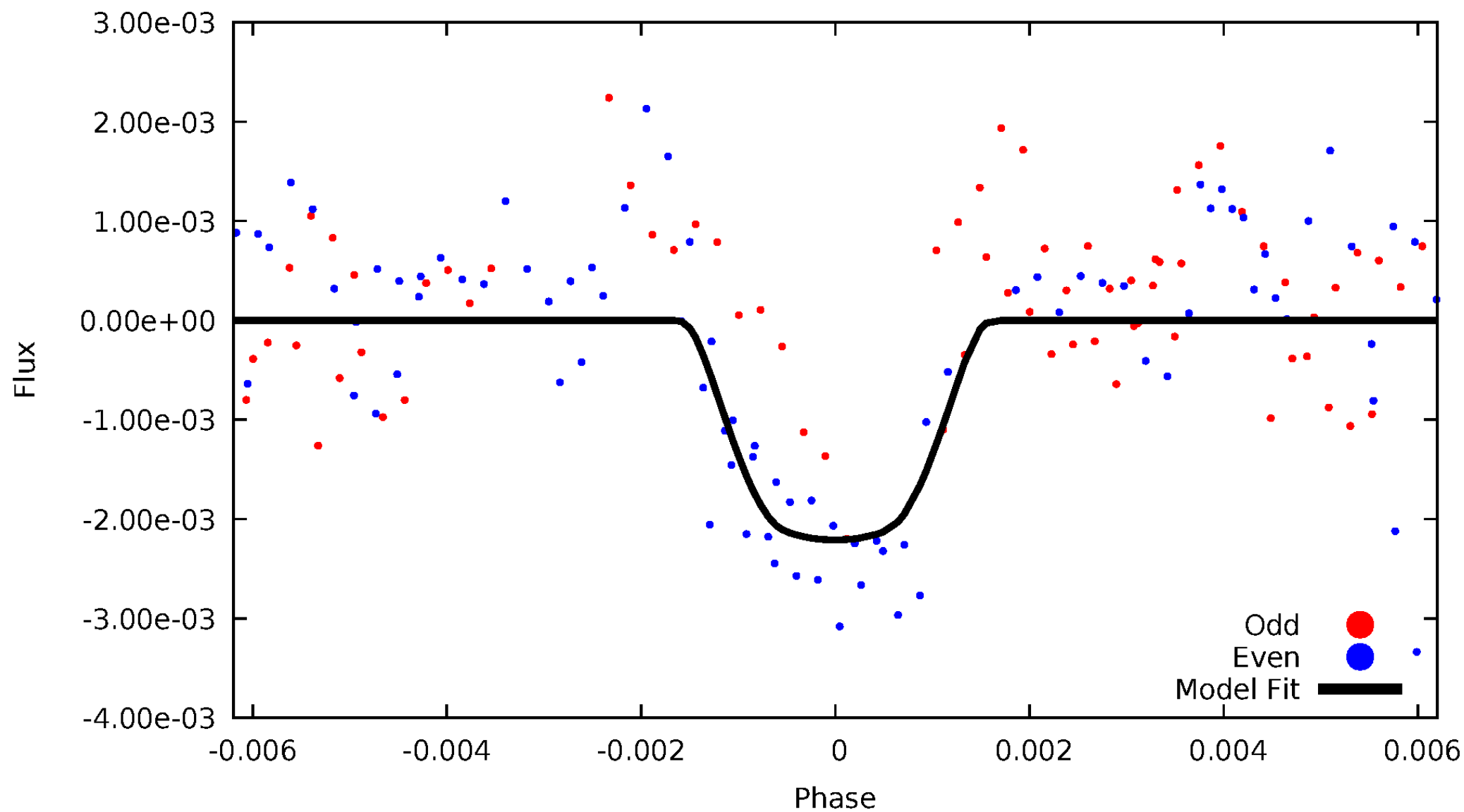


TCE 010678547-04



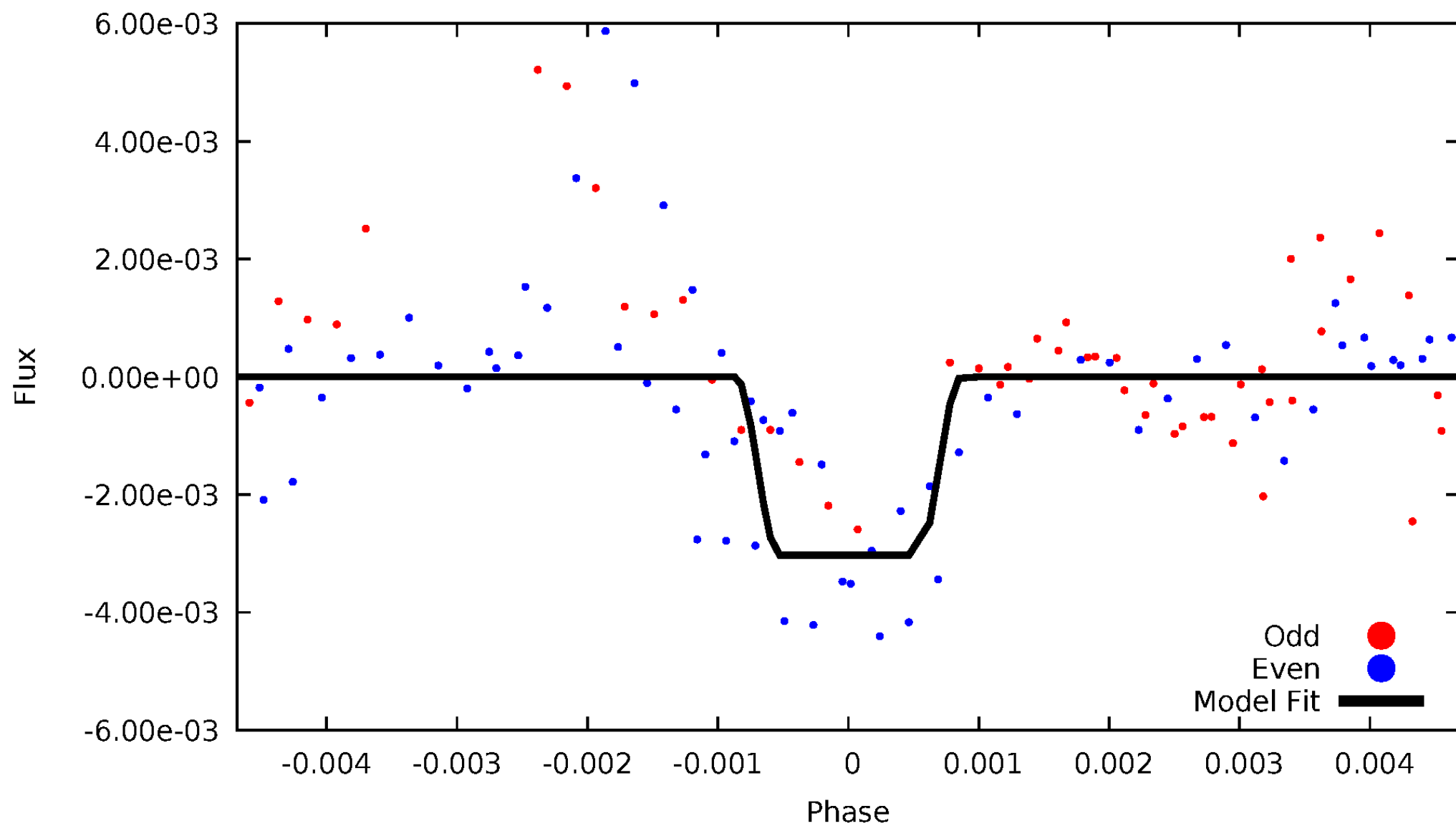
DV Odd/Even

TCE 010678547-04



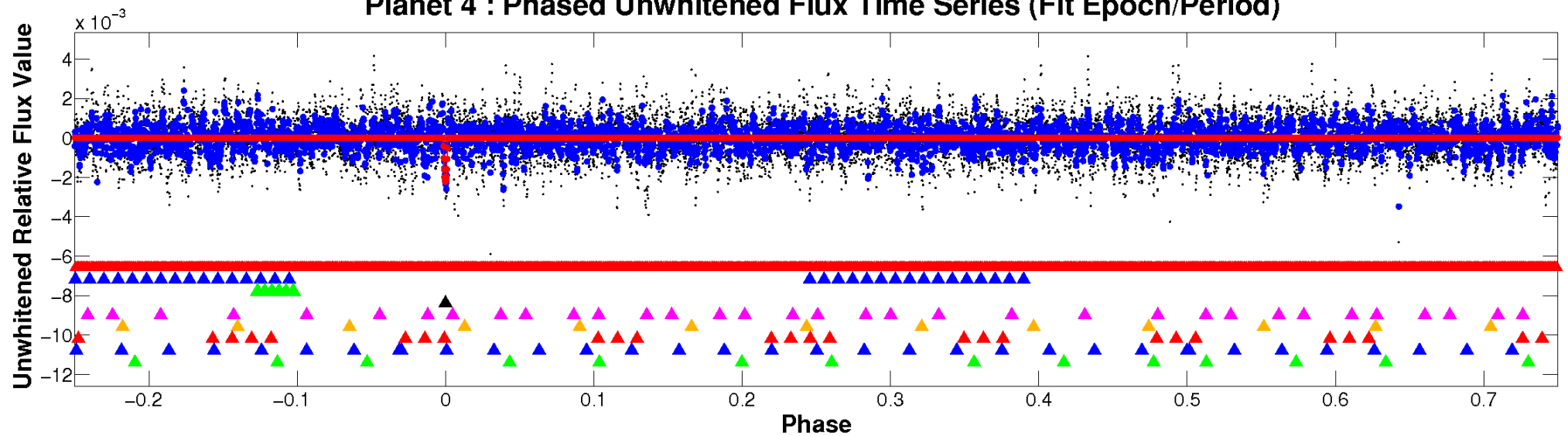
ALT Odd/Even

TCE 010678547-04

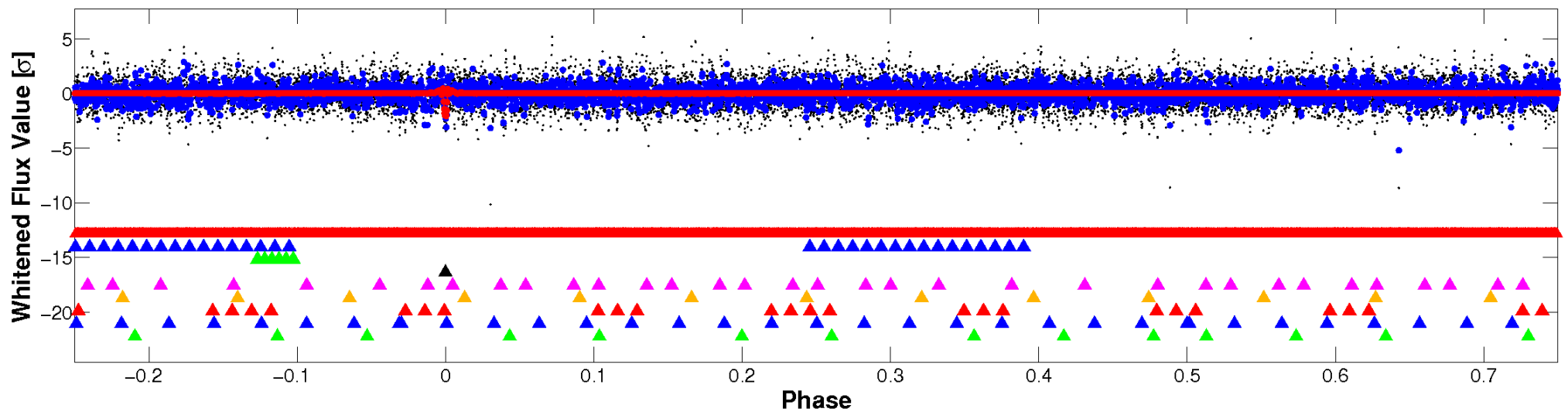


Non-Whitened Vs. Whitened Light Curve

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

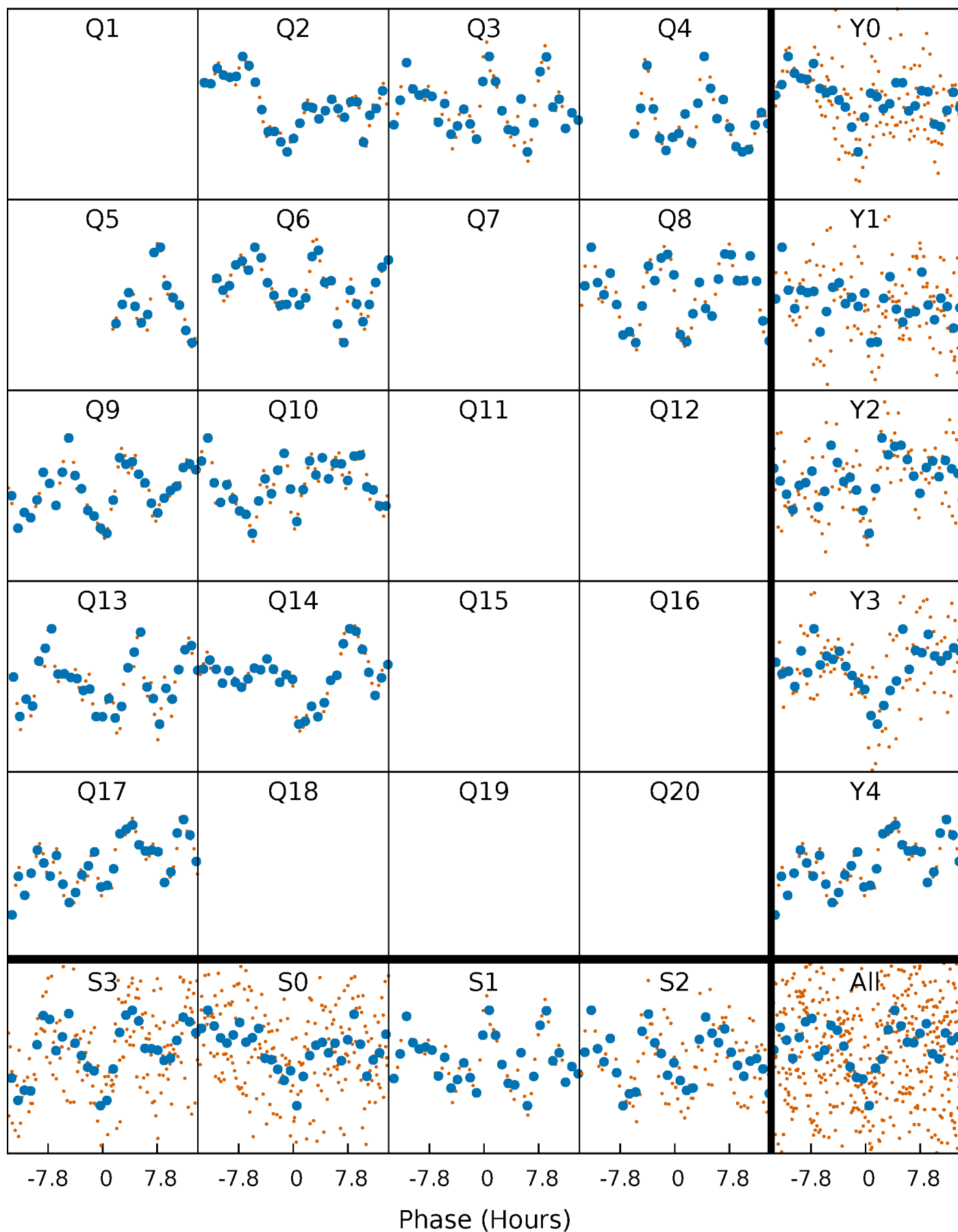


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



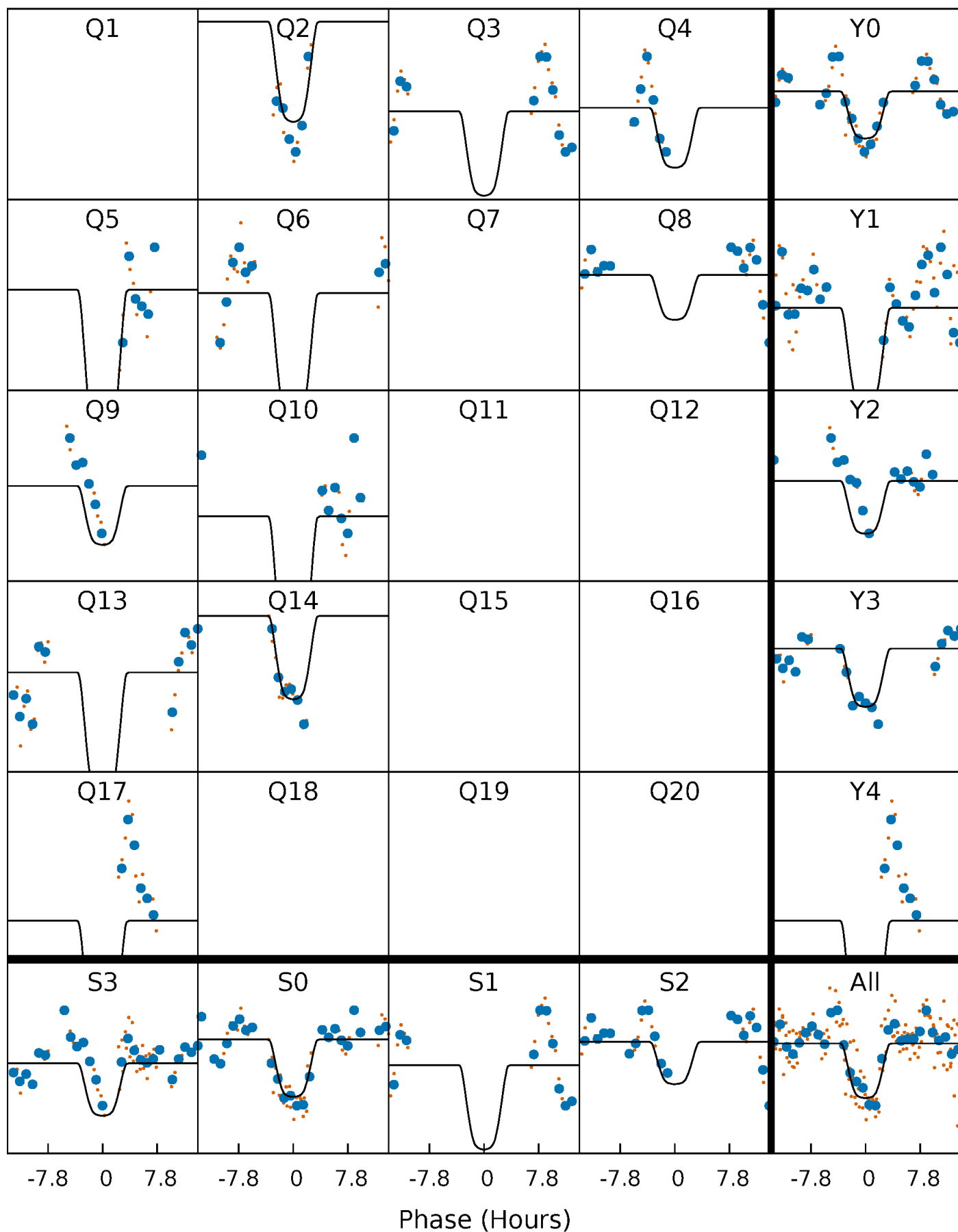
PDC Quarter-Phased Transit Curves

TCE 010678547-04 $P = 91.651982$ Days $T_0 = 201.270112$ (BKJD)



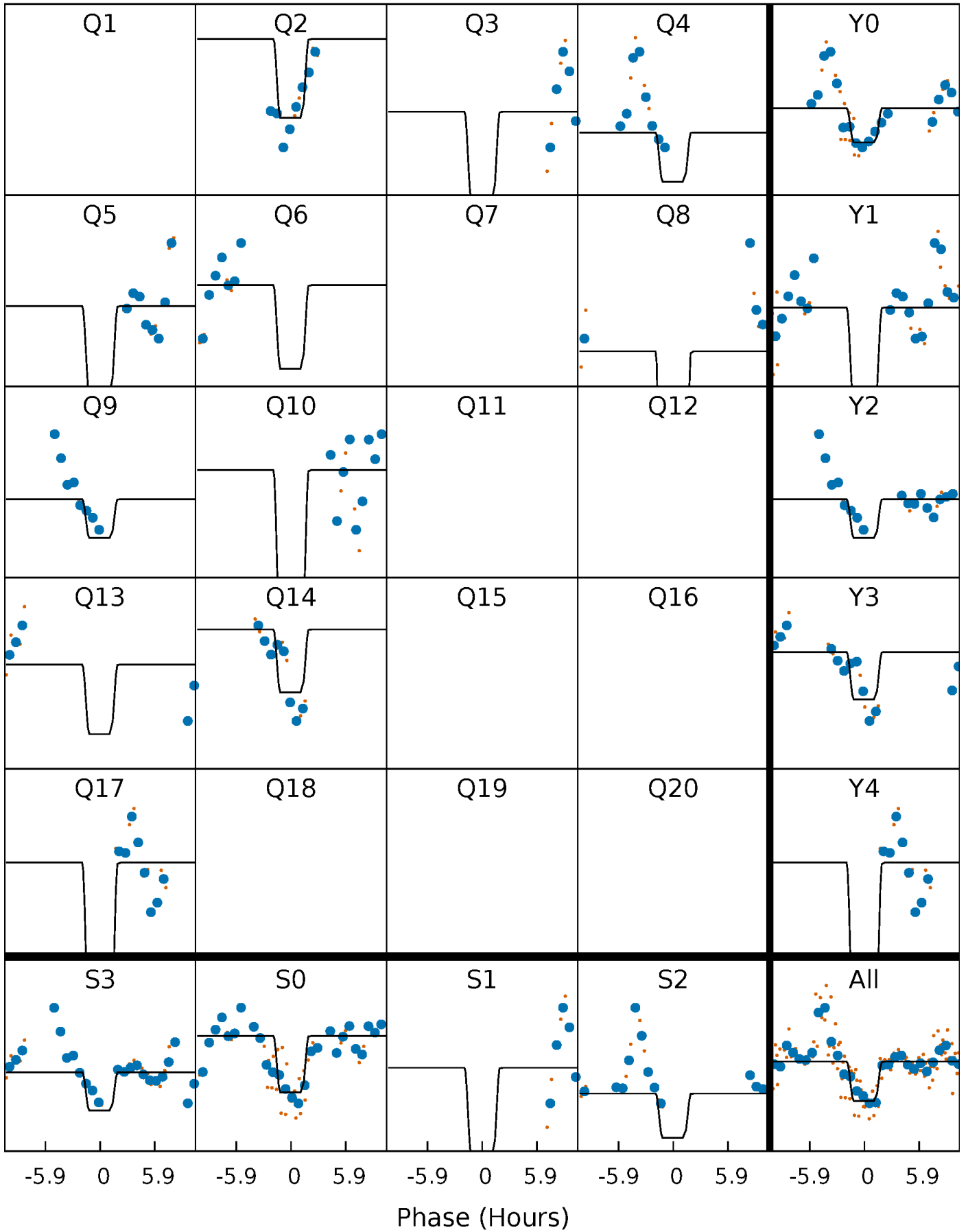
DV Quarter-Phased Transit Curves

TCE 010678547-04 P= 91.651982 Days $T_0=201.270112$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

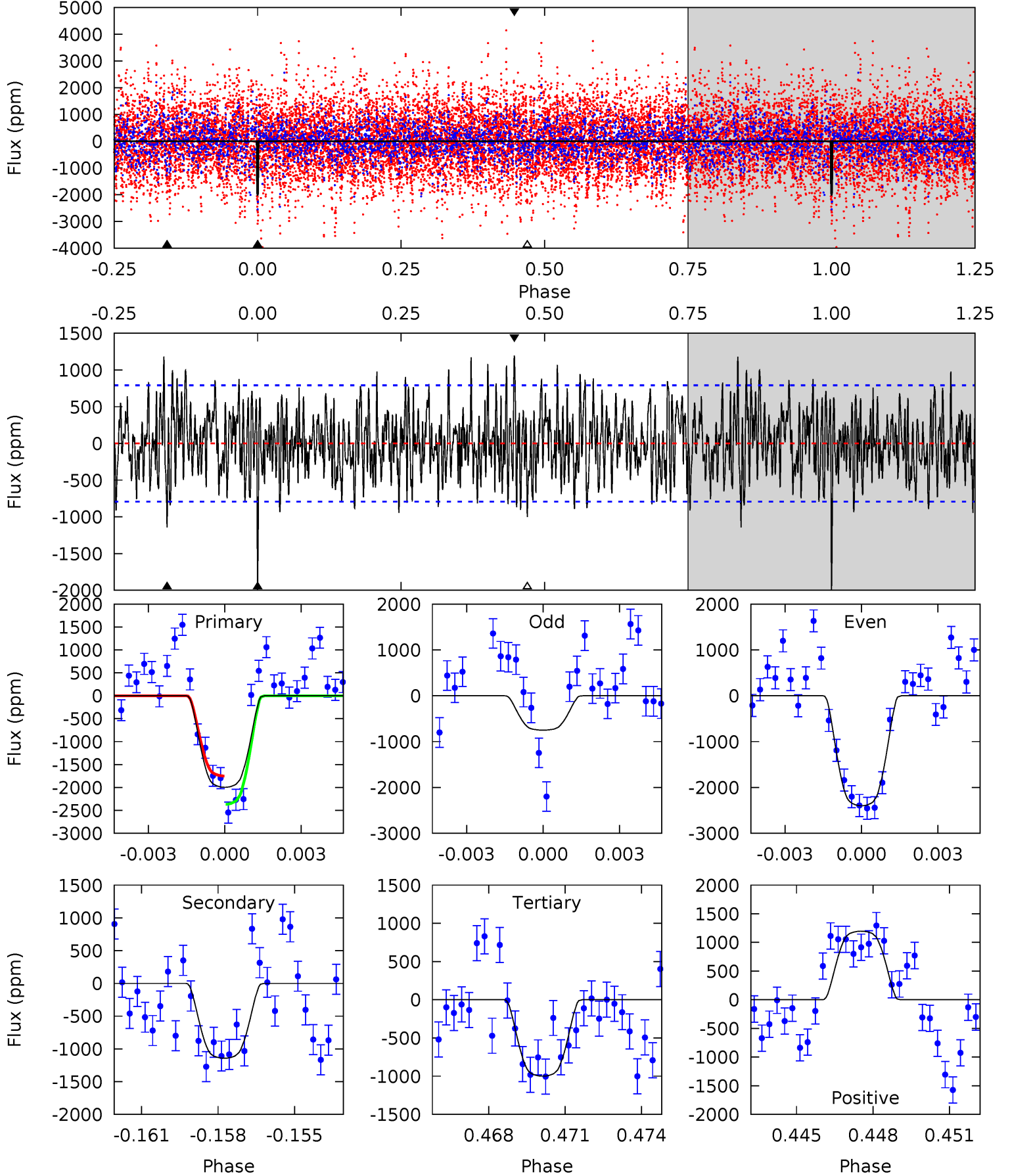
TCE 010678547-04 P= 91.654408 Days $T_0=201.257799$ (BKJD)



DV Model-Shift Uniqueness Test

010678547-04, P = 91.651982 Days, E = 109.618130 Days

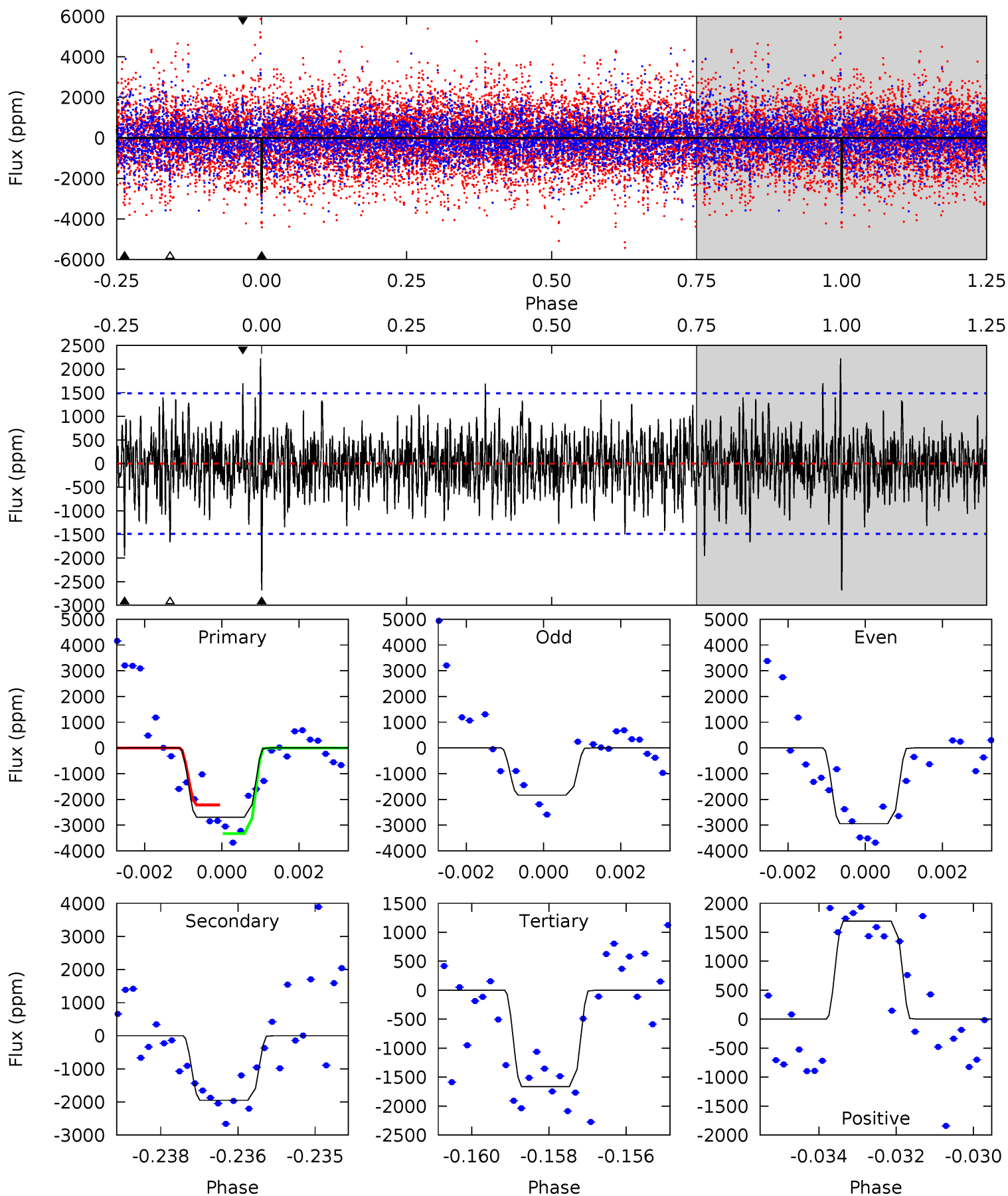
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	7.55	6.60	7.90	5.24	2.94	2.56	6.59	5.30	0.94	-0.36	5.21	0.68	0.37	2.01



Alt Model-Shift Uniqueness Test

010678547-04, P = 91.654408 Days, E = 109.603391 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.70	7.03	6.01	6.11	5.37	3.16	1.70	3.69	3.58	1.03	0.92	1.76	0.96	0.45	2.01



Stellar Parameters For KIC 010678547

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8089^{+64}_{-97}	$3.757^{+0.227}_{-0.122}$	$0.070^{+0.200}_{-0.250}$	$3.299^{+0.660}_{-0.990}$	$2.267^{+0.222}_{-0.413}$	$0.089^{+0.122}_{-0.033}$
	+1%/-1%	+6%/-3%	+286%/-357%	+20%/-30%	+10%/-18%	+137%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 010678547-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1142 ± 151	$18.24^{+2.50}_{-2.94}$	1244^{+63}_{-87}	6364^{+339}_{-339}	515^{+224}_{-129}
Alt.	-1948 ± 277	$19.64^{+2.79}_{-3.36}$	1249^{+70}_{-97}	7091^{+406}_{-414}	748^{+372}_{-189}

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 $A_{obs} \gg 1.0$

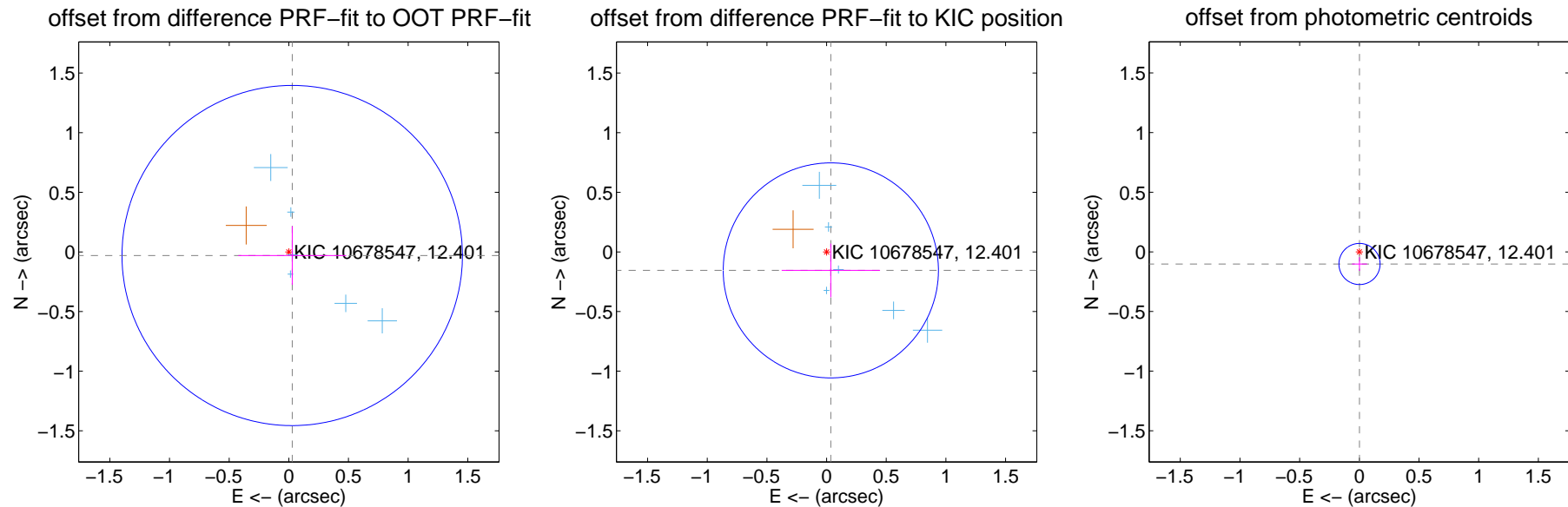
DV Centroid Data

Supplemental centroid analysis for 010678547-04. Kepler magnitude: 12.40. Transit SNR 9.50

There are 7 quarters with good PRF difference image offsets

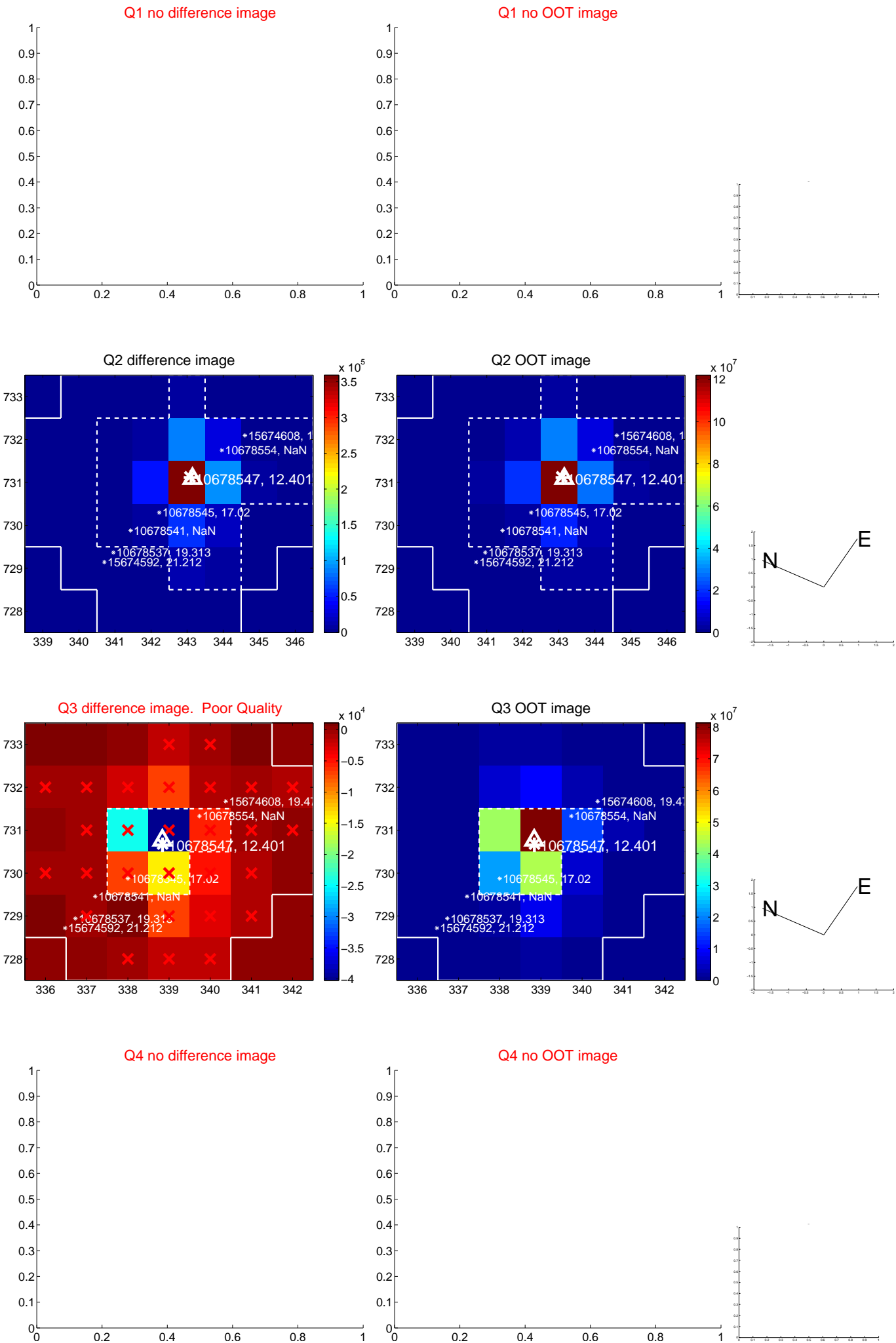
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.041 ± 0.475	0.09	-0.028 ± 0.452	-0.030 ± 0.245
PRF-fit source offset from KIC position	0.159 ± 0.300	0.53	-0.036 ± 0.412	-0.155 ± 0.224
photometric centroid source offset	0.10 ± 0.06	1.77	-0.00 ± 0.06	-0.10 ± 0.06

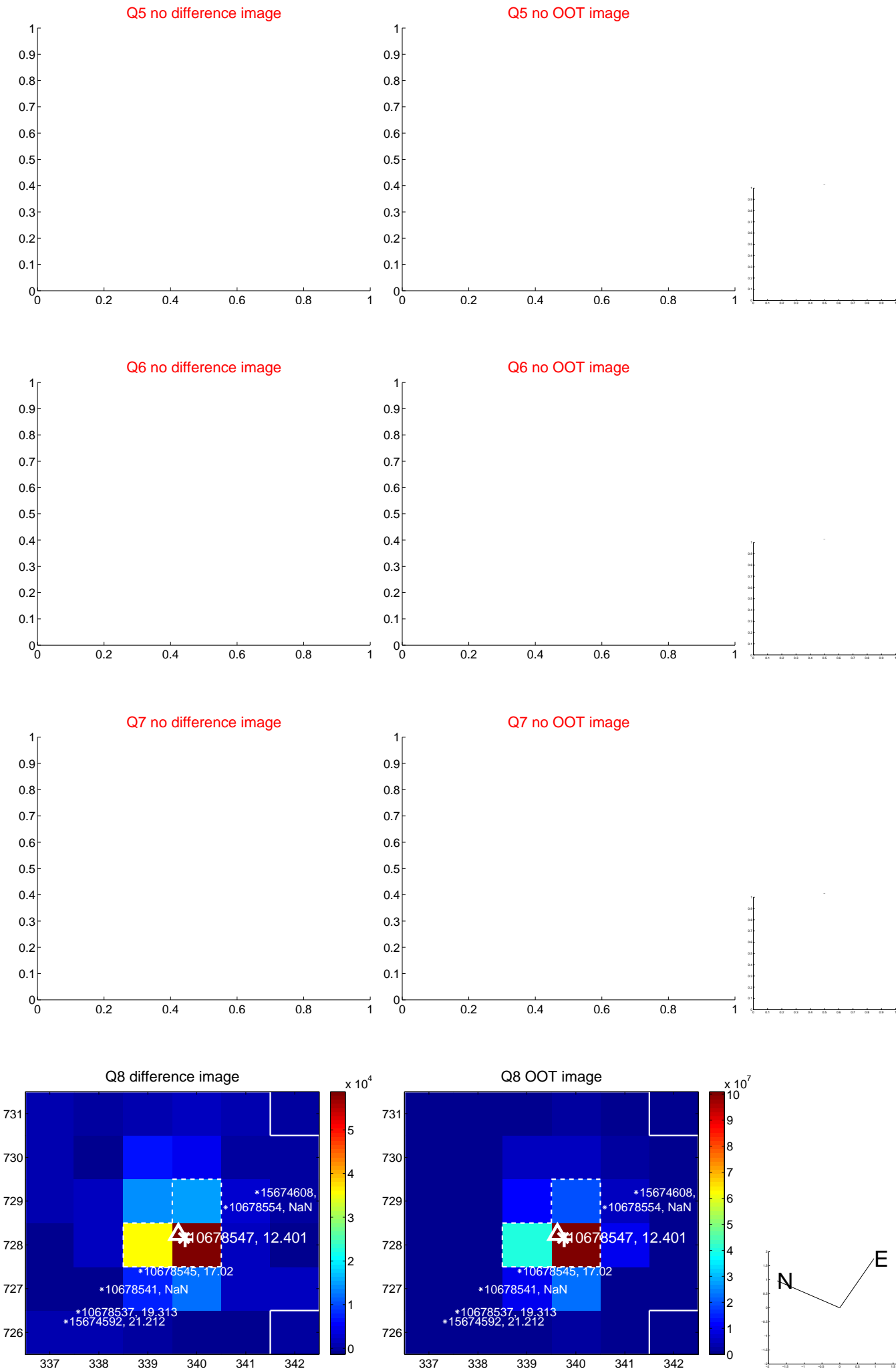


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

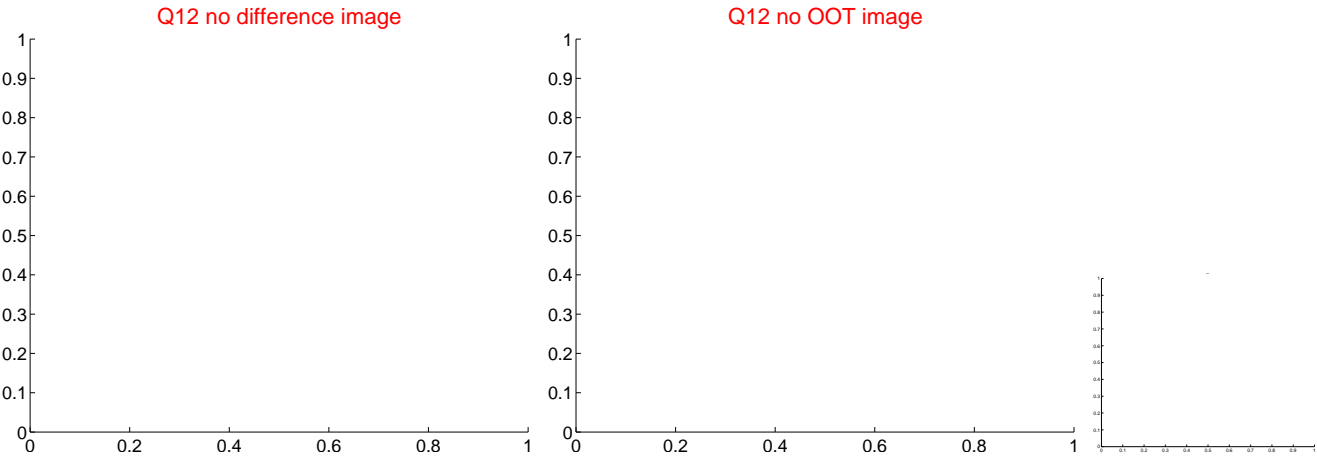
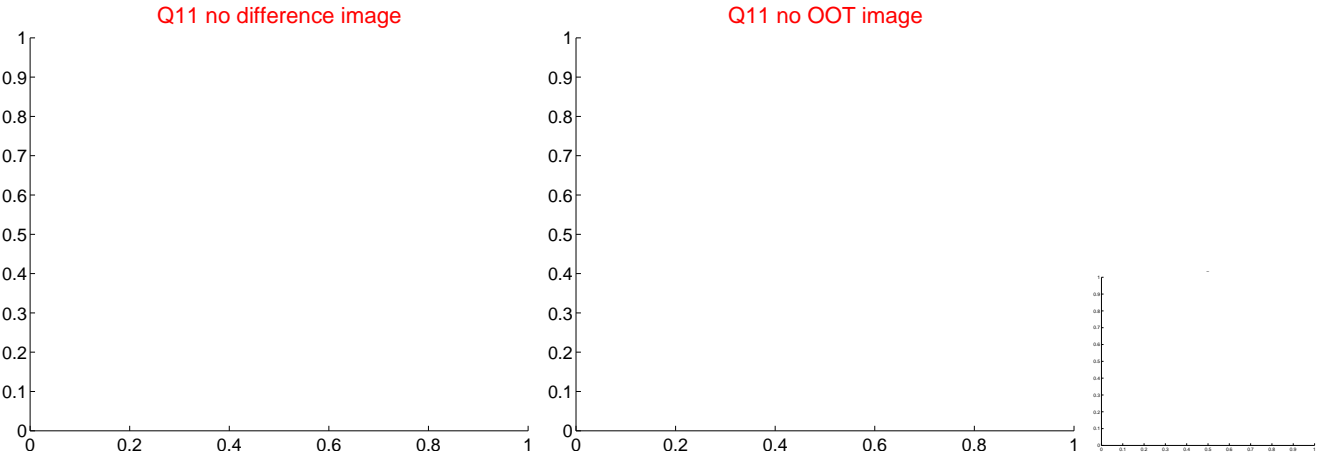
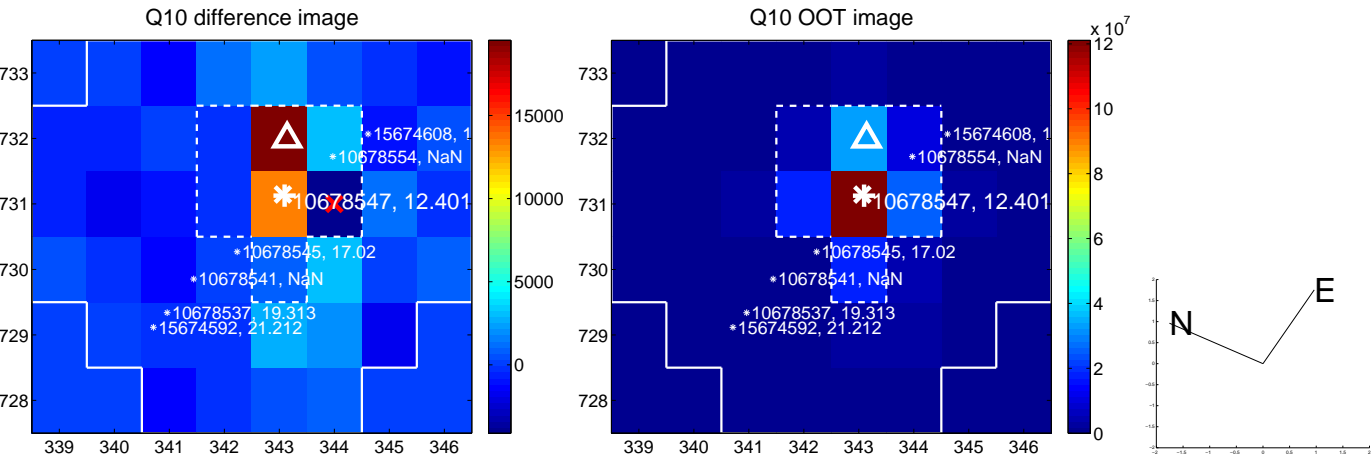
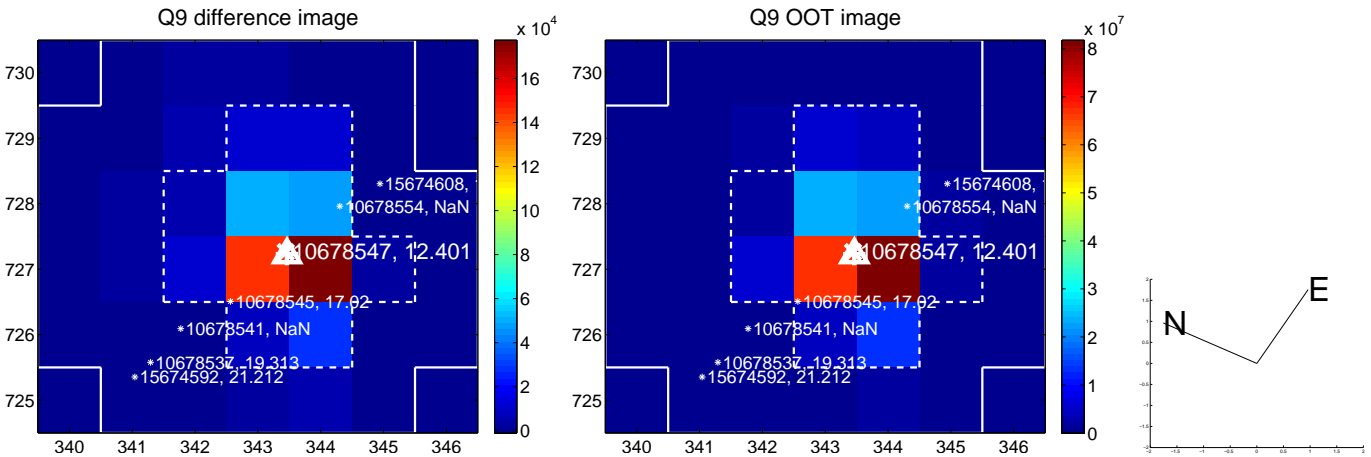
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



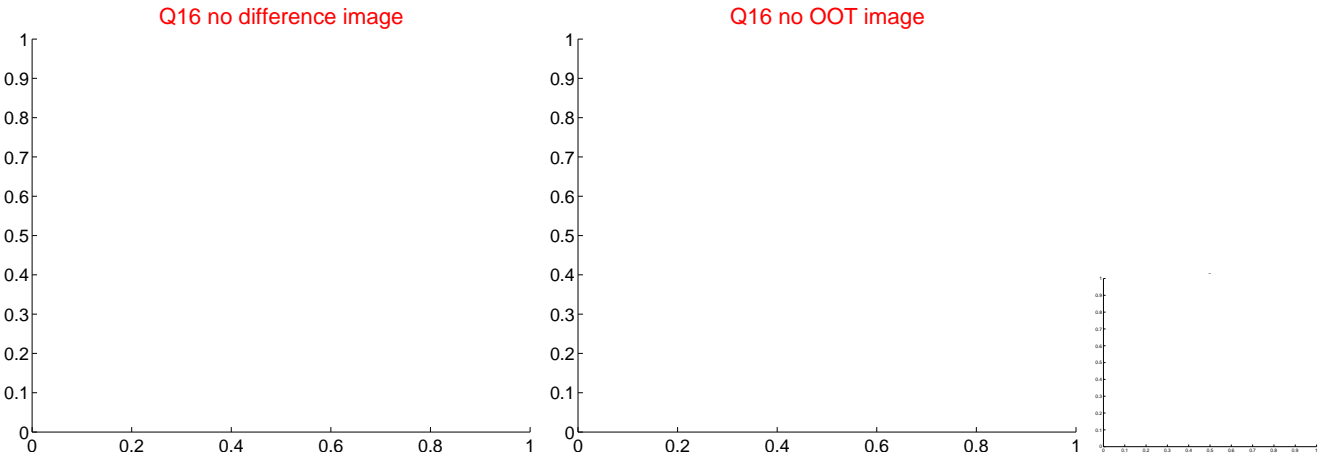
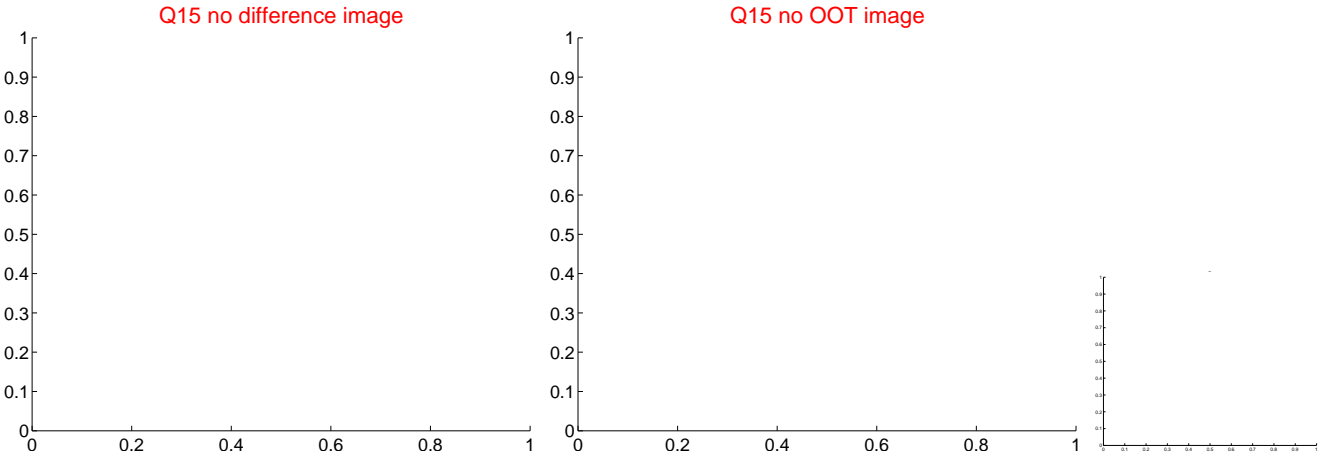
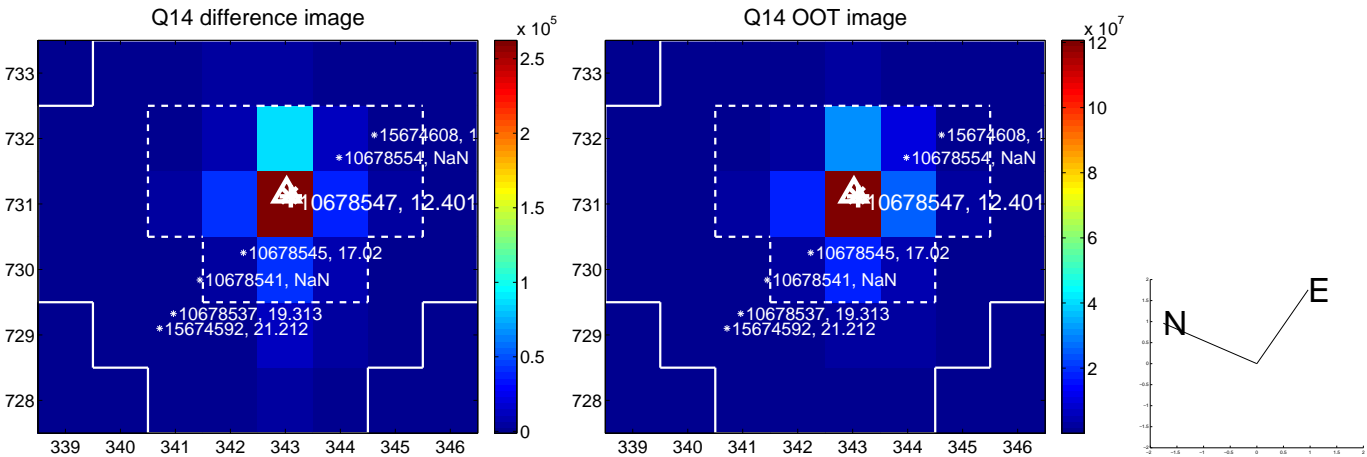
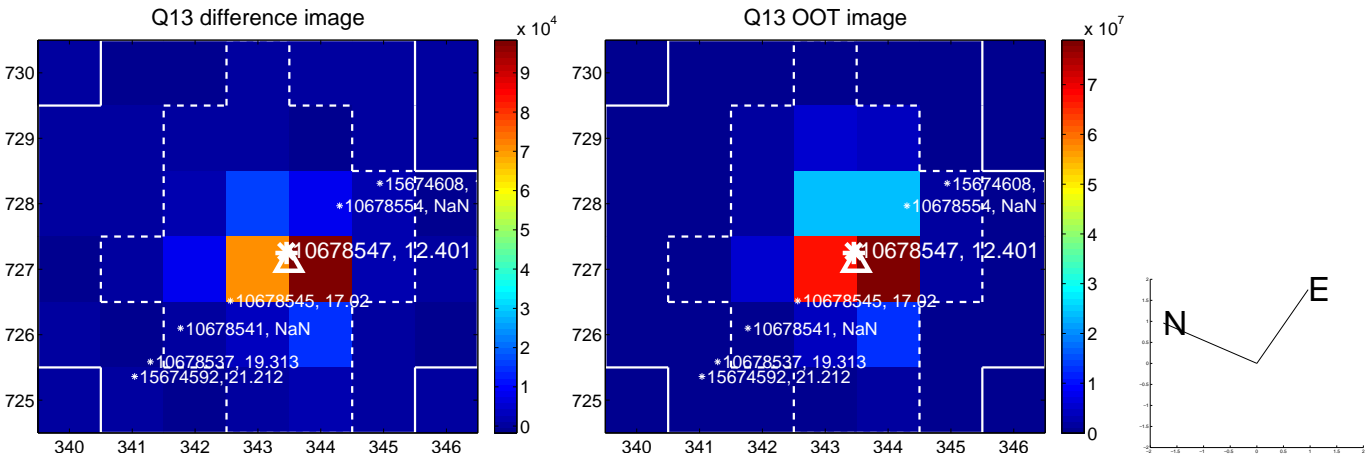
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



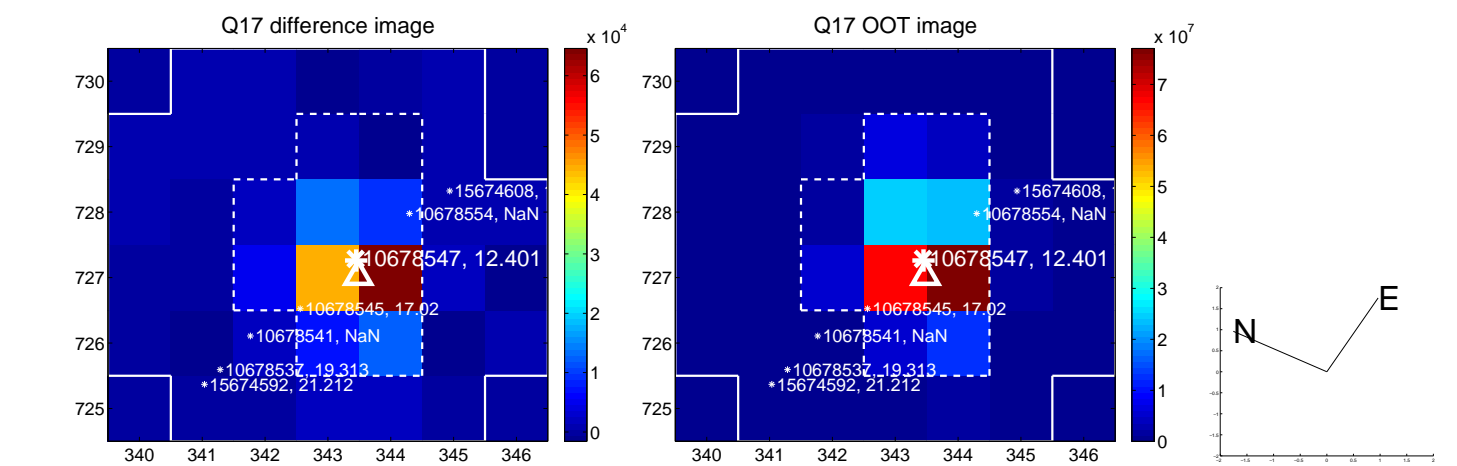
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



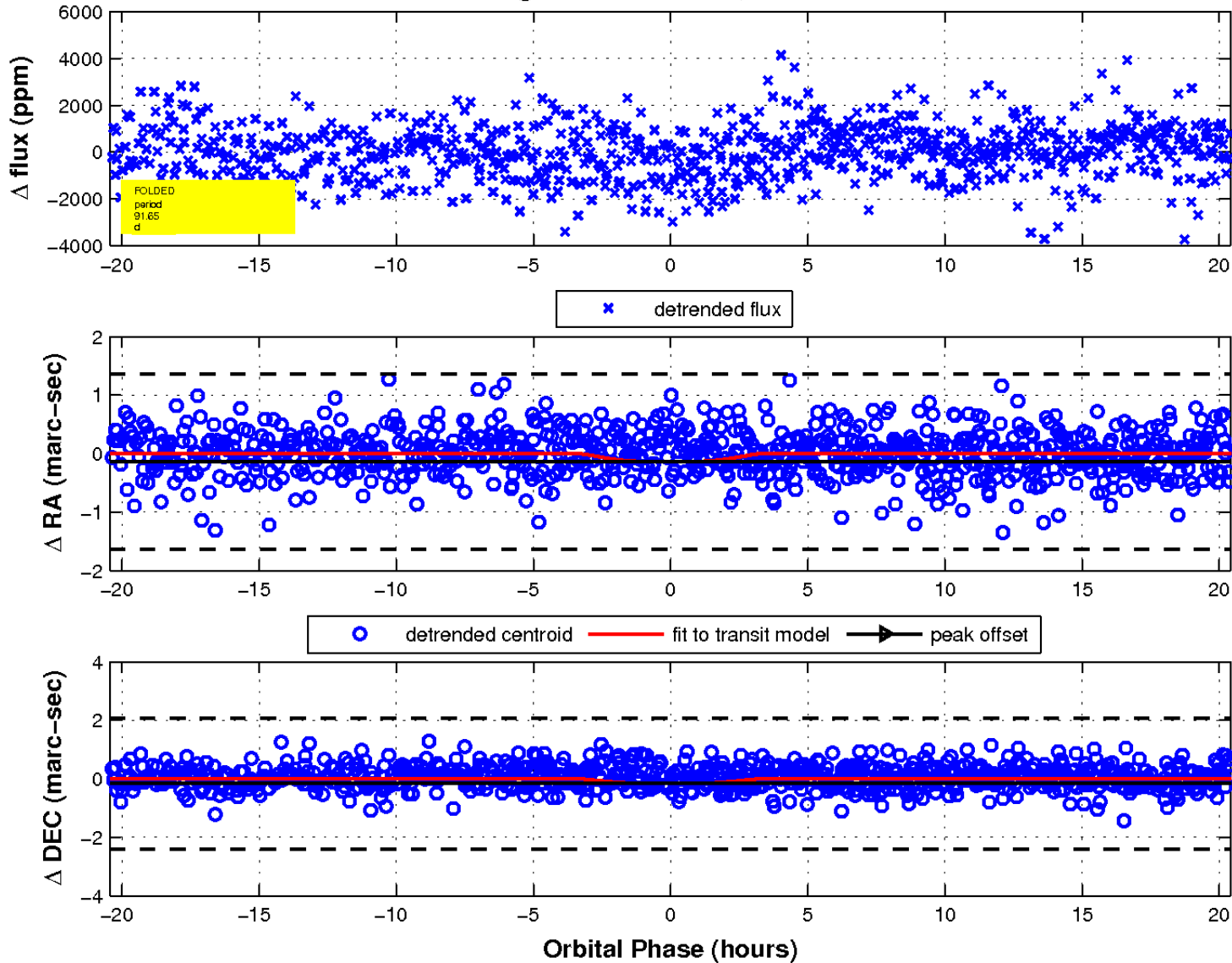
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

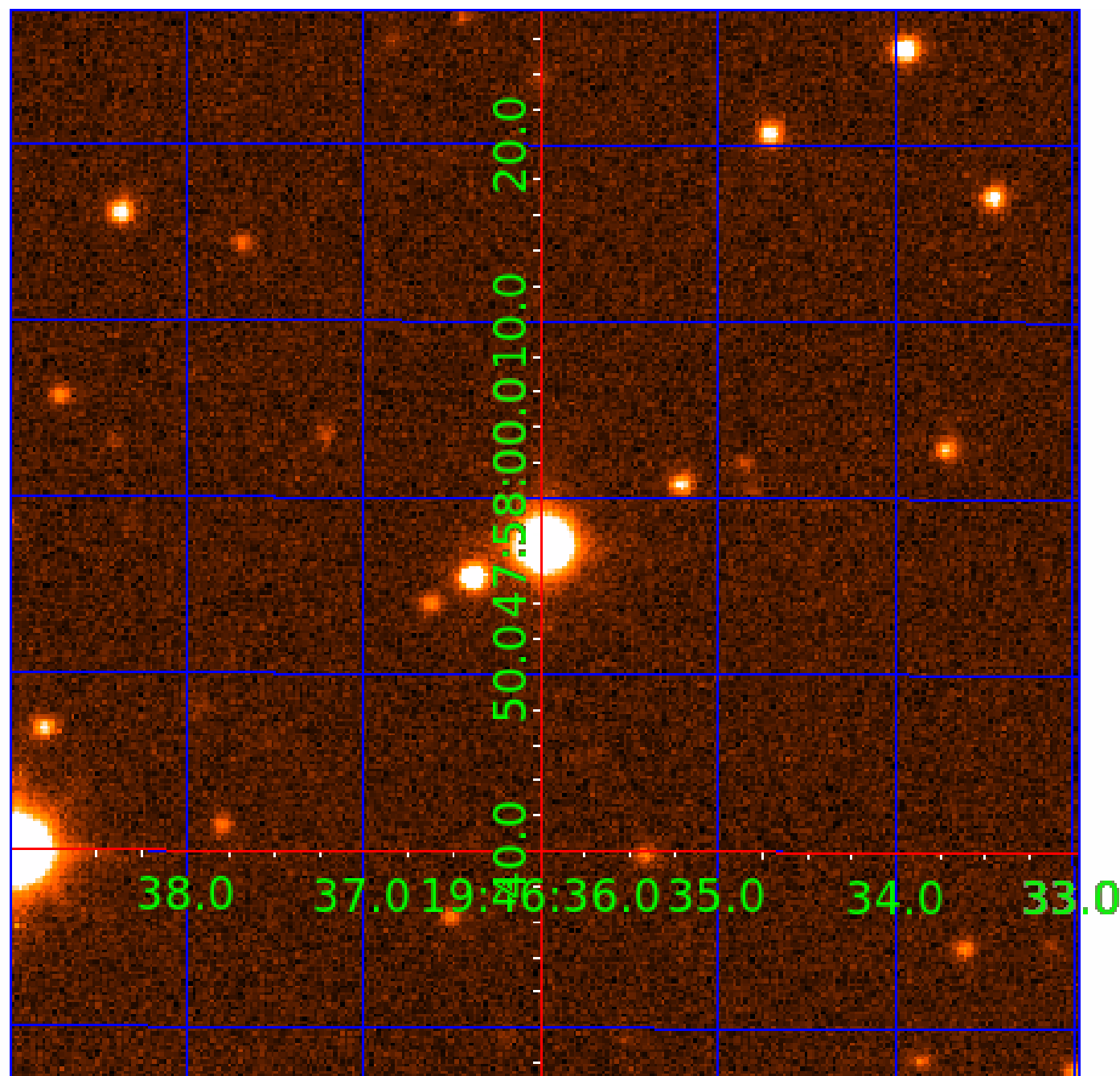


fluxWeightedCentroids, Planet 4 of 9



UKIRT Image

Declination



KIC 010678547

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})
010678547-01	OBS	No	0.958852	131.740929	86.7	5.533	7.9	5.4	3.30	8089	3.13	66741.05
010678547-02	OBS	No	46.266327	132.134497	1965.9	2.176	10.4	9.8	3.30	8089	25.52	379.93
010678547-03	OBS	No	275.395986	189.662265	3463.5	3.956	10.2	11.3	3.30	8089	22.64	35.22
010678547-04	OBS	No	91.651982	201.270112	2210.0	6.815	9.8	9.5	3.30	8089	18.61	152.71
010678547-05	OBS	No	43.570469	137.129611	1396.6	5.119	8.9	8.8	3.30	8089	14.74	411.60
010678547-06	OBS	No	112.787169	188.429005	2289.5	5.538	9.3	8.1	3.30	8089	18.51	115.80
010678547-07	OBS	No	57.131981	133.364930	1676.4	4.872	9.1	9.0	3.30	8089	14.53	286.79
010678547-08	OBS	No	42.966194	155.444122	1288.5	5.702	10.0	9.0	3.30	8089	14.12	419.33
010678547-09	OBS	No	106.003102	153.375647	1335.3	13.839	8.3	8.1	3.30	8089	13.29	125.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010678547-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
010678547-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
010678547-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
010678547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
010678547-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

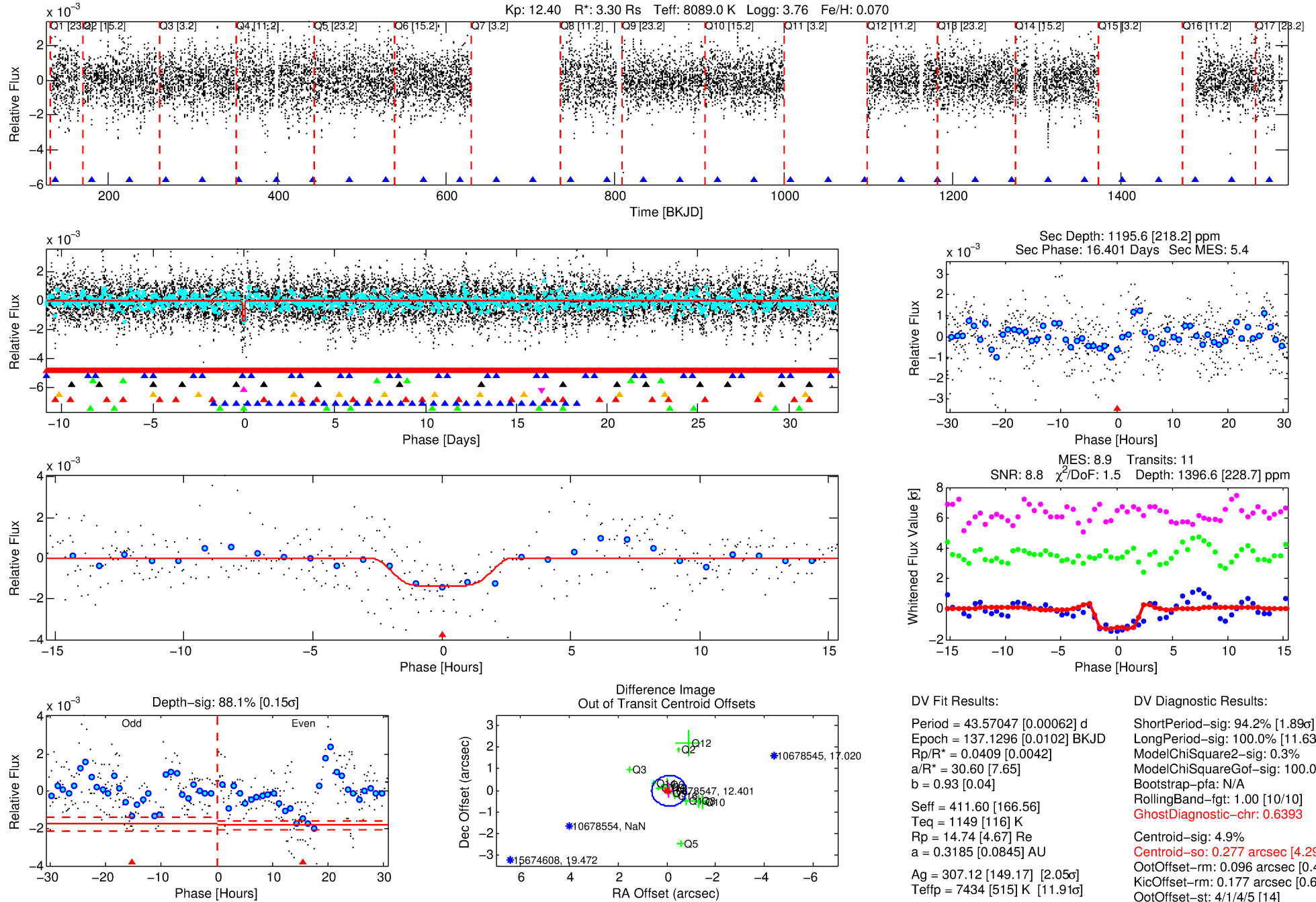
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678547-05

No Significant Match Found

DV One-Page Summary

KIC: 10678547 Candidate: 5 of 9 Period: 43.570 d



DV Fit Results:

Period = 43.57047 [0.00062] d
Epoch = 137.1296 [0.0102] BKJD
Rp/R* = 0.0409 [0.0042]
a/R* = 30.60 [7.65]
b = 0.93 [0.04]
Seff = 411.60 [166.56]
Teq = 1149 [116] K
Rp = 14.74 [4.67] Re
a = 0.3185 [0.0845] AU
Ag = 307.12 [149.17] [2.05σ]
Teffp = 7434 [515] K [11.91σ]

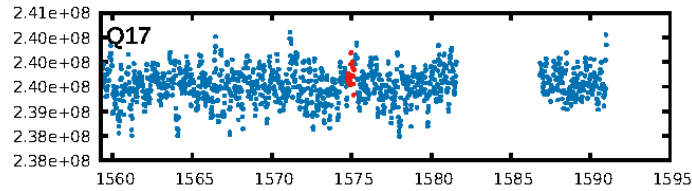
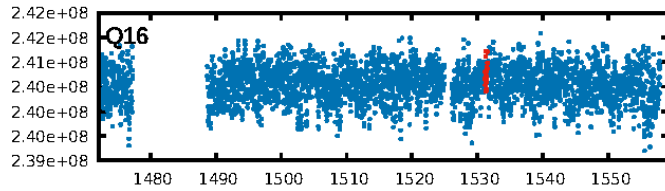
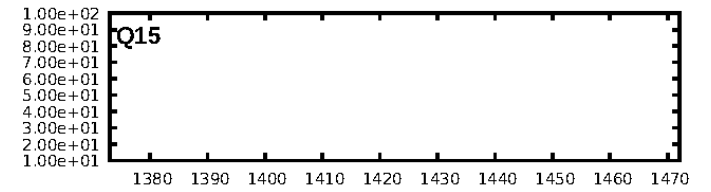
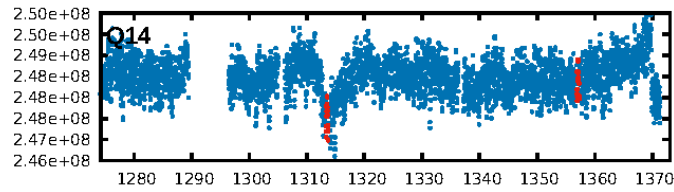
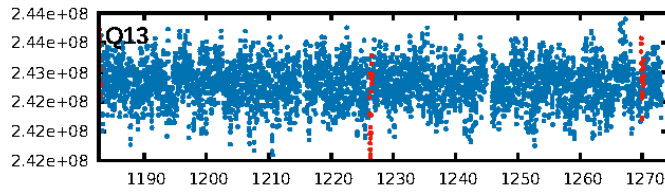
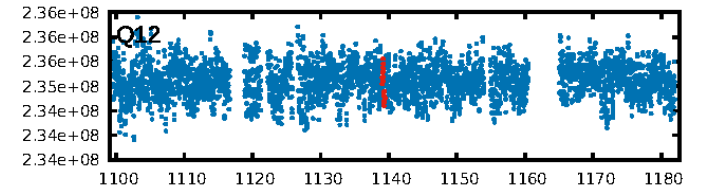
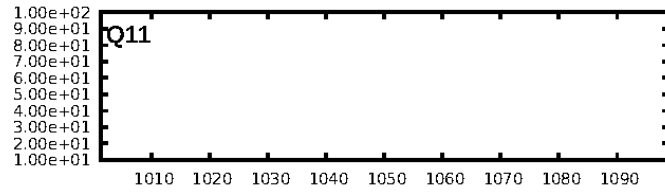
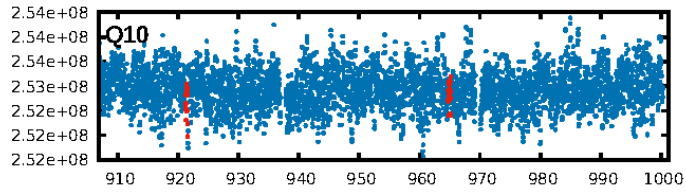
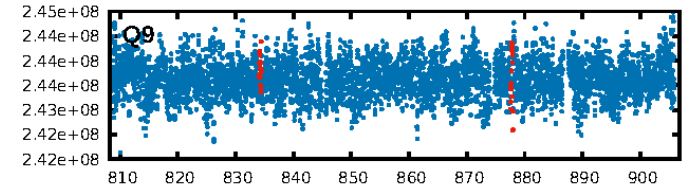
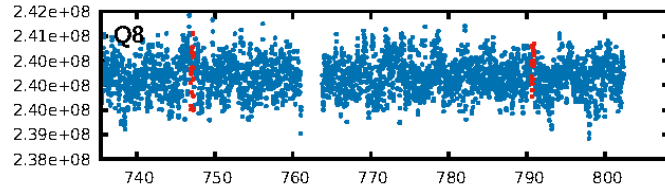
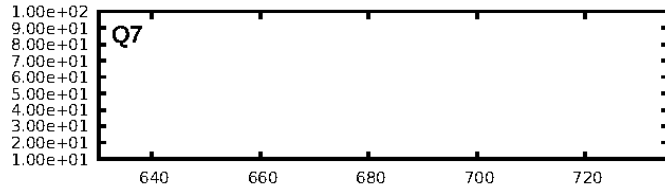
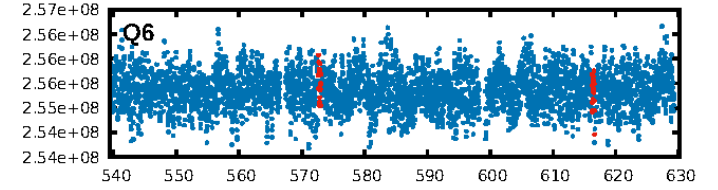
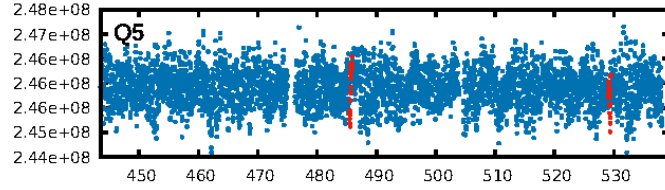
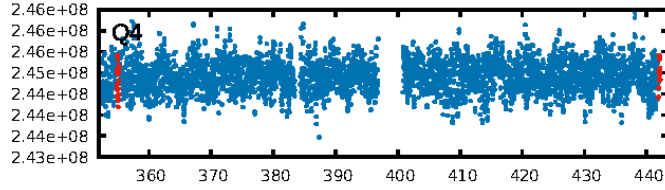
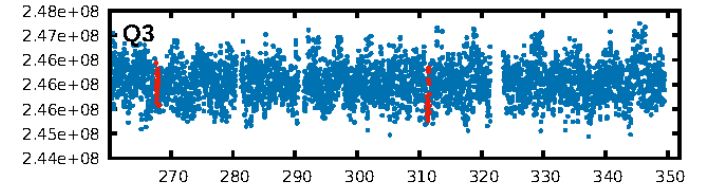
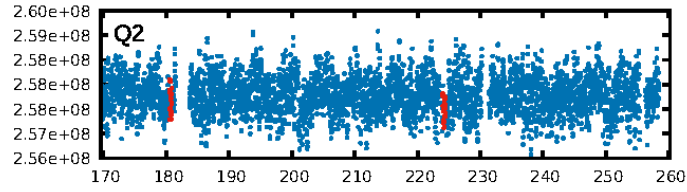
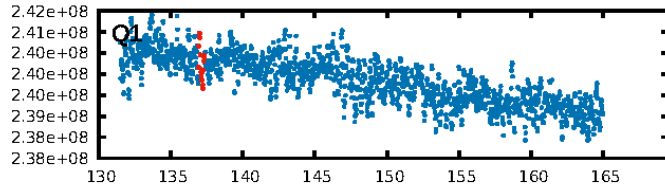
DV Diagnostic Results:

ShortPeriod-sig: 94.2% [1.89σ]
LongPeriod-sig: 100.0% [11.63σ]
ModelChiSquare2-sig: 0.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 0.6393
Centroid-sig: 4.9%
Centroid-so: 0.277 arcsec [4.29σ]
OotOffset-rm: 0.096 arcsec [0.40σ]
KicOffset-rm: 0.177 arcsec [0.61σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 0.64 [9/14]
DiffImageOverlap-fno: 0.00 [0/14]

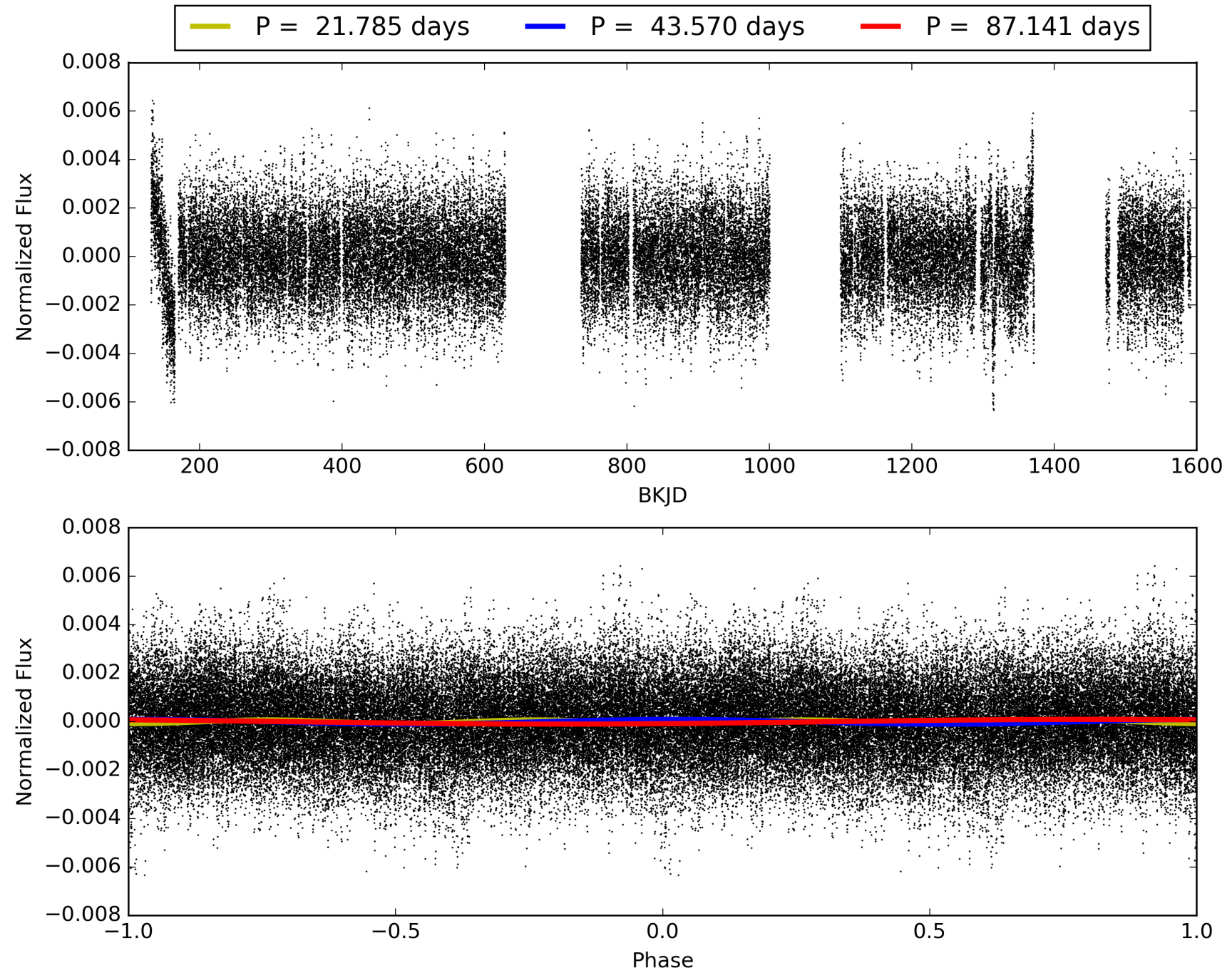
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:51:20 Z

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

TCE 010678547-05, PDC Light Curves

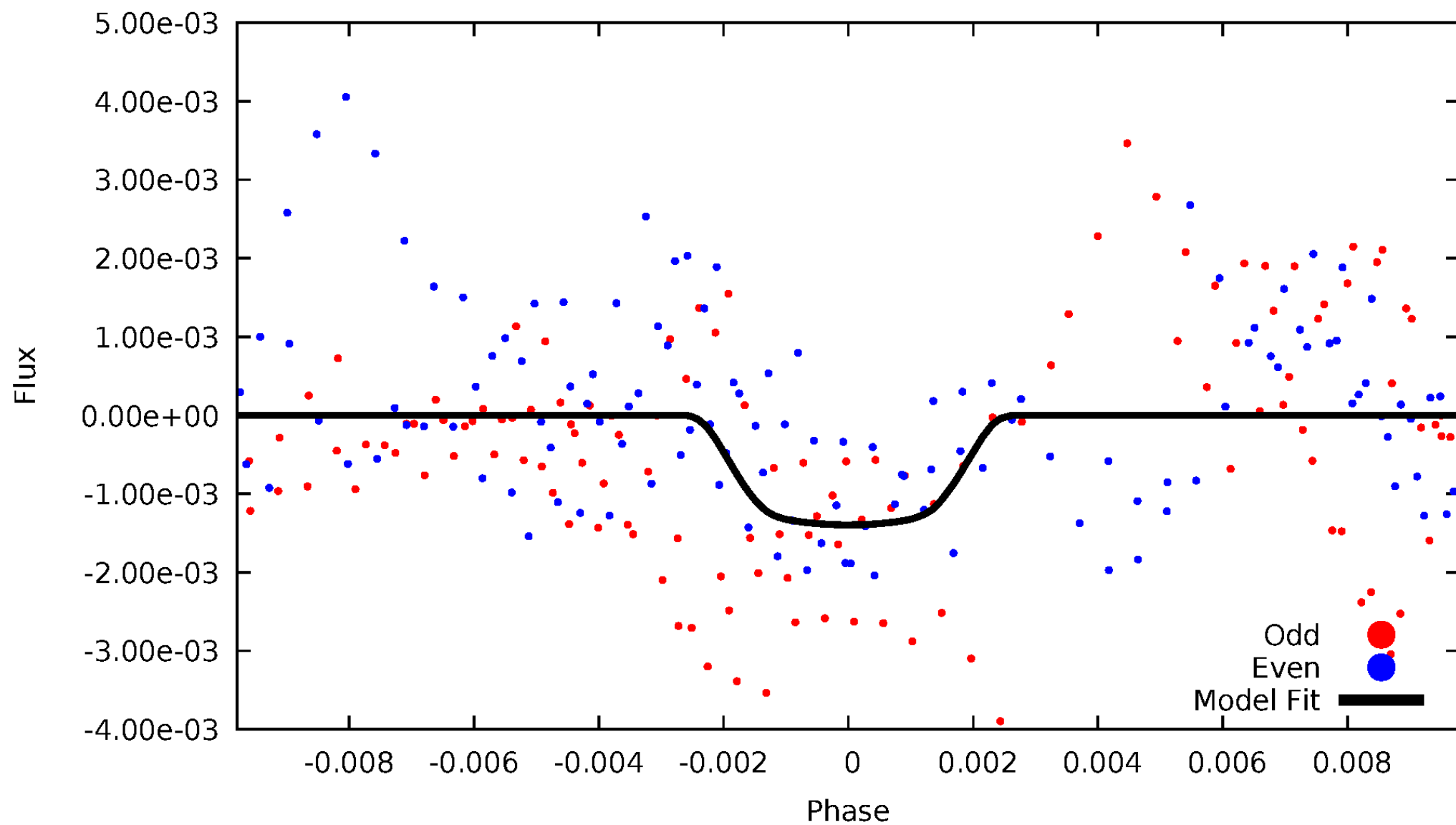


TCE 010678547-05



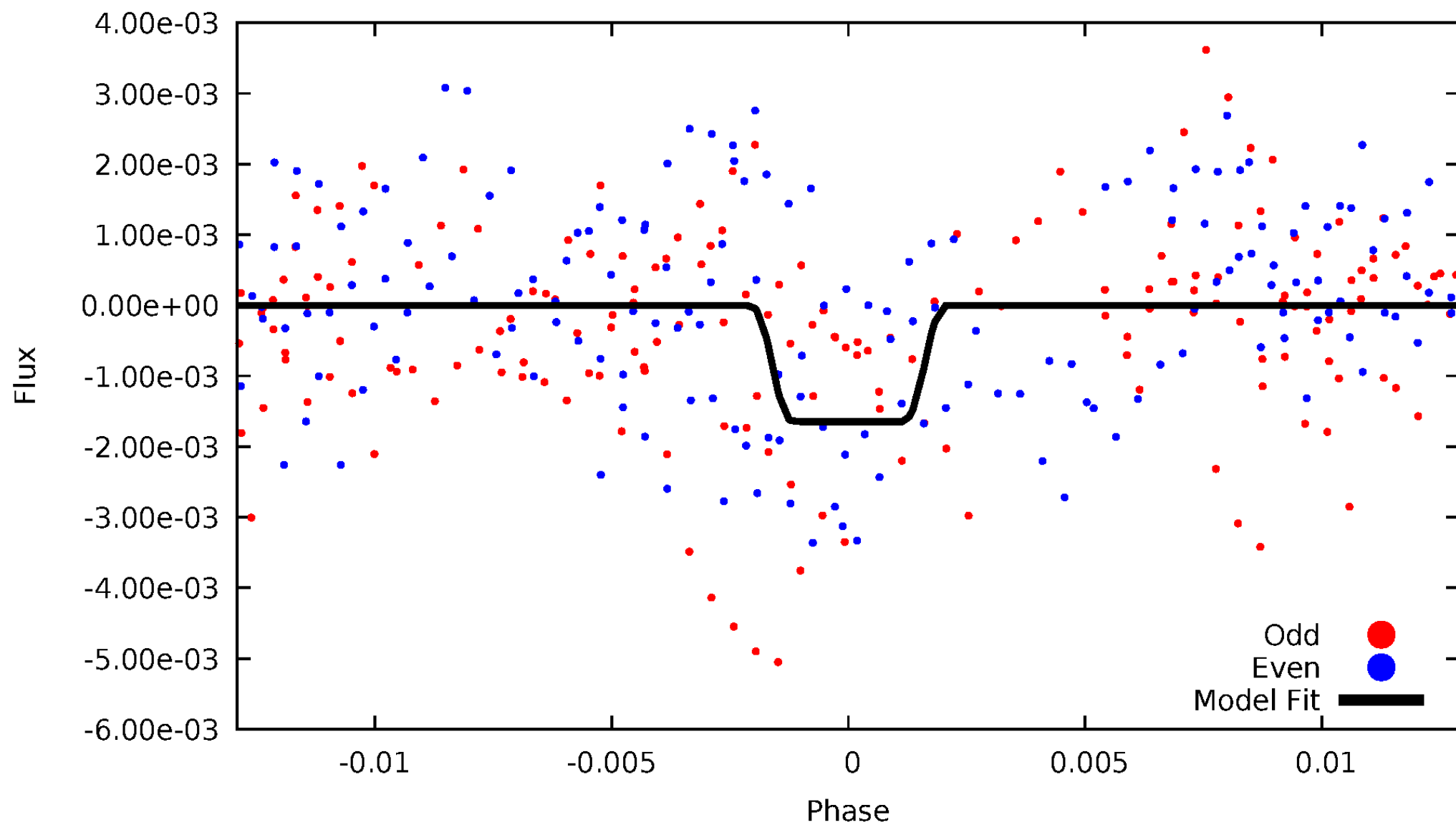
DV Odd/Even

TCE 010678547-05



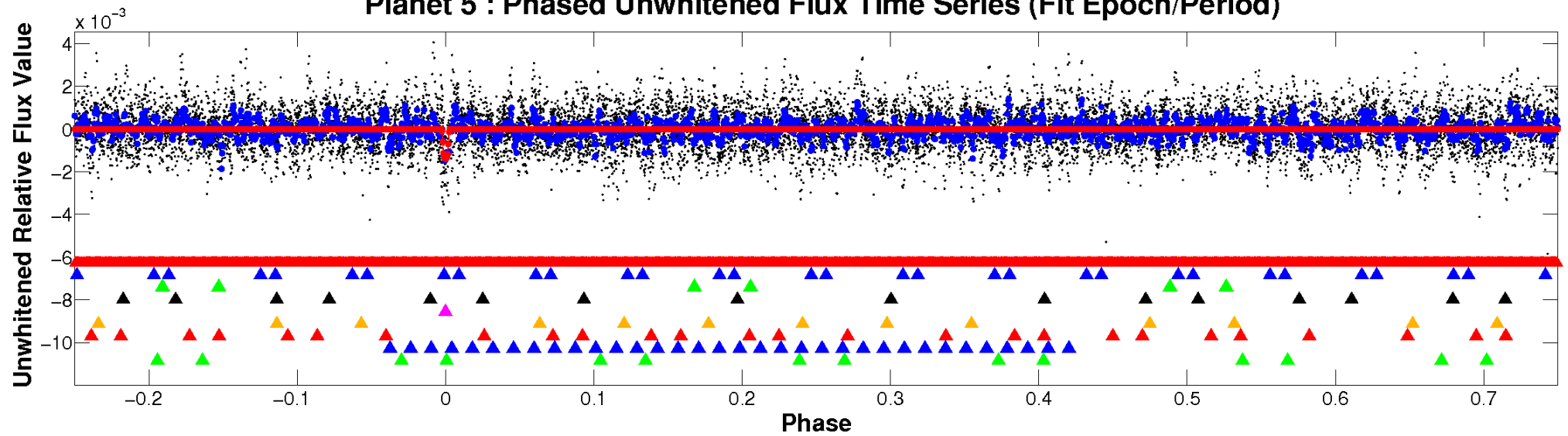
ALT Odd/Even

TCE 010678547-05

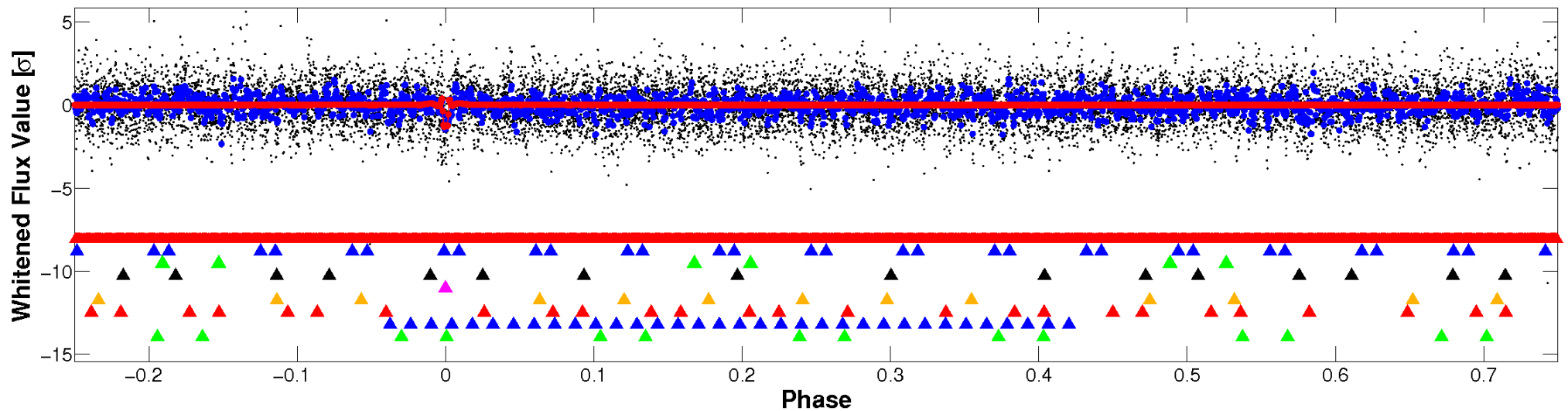


Non-Whitened Vs. Whitened Light Curve

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

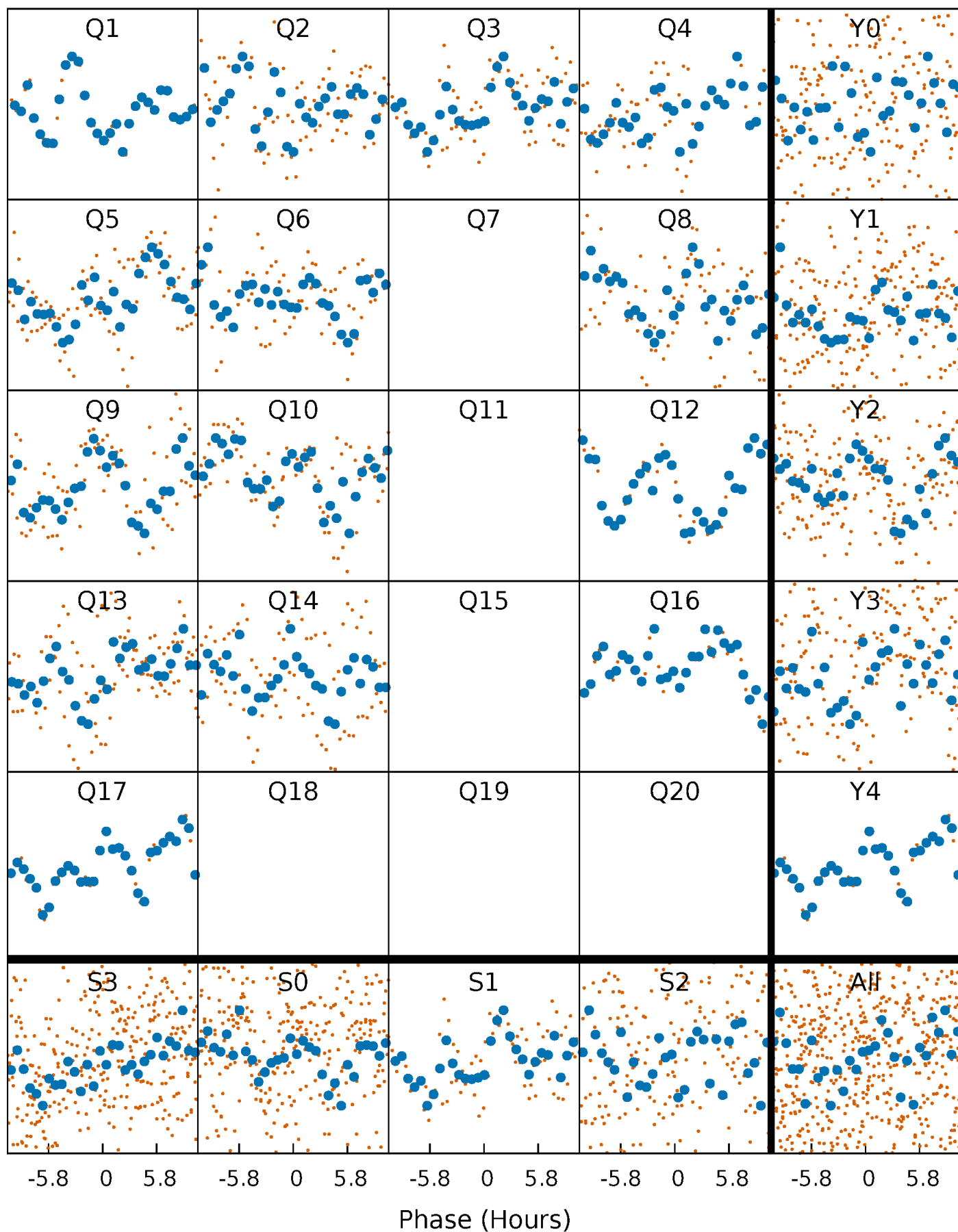


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



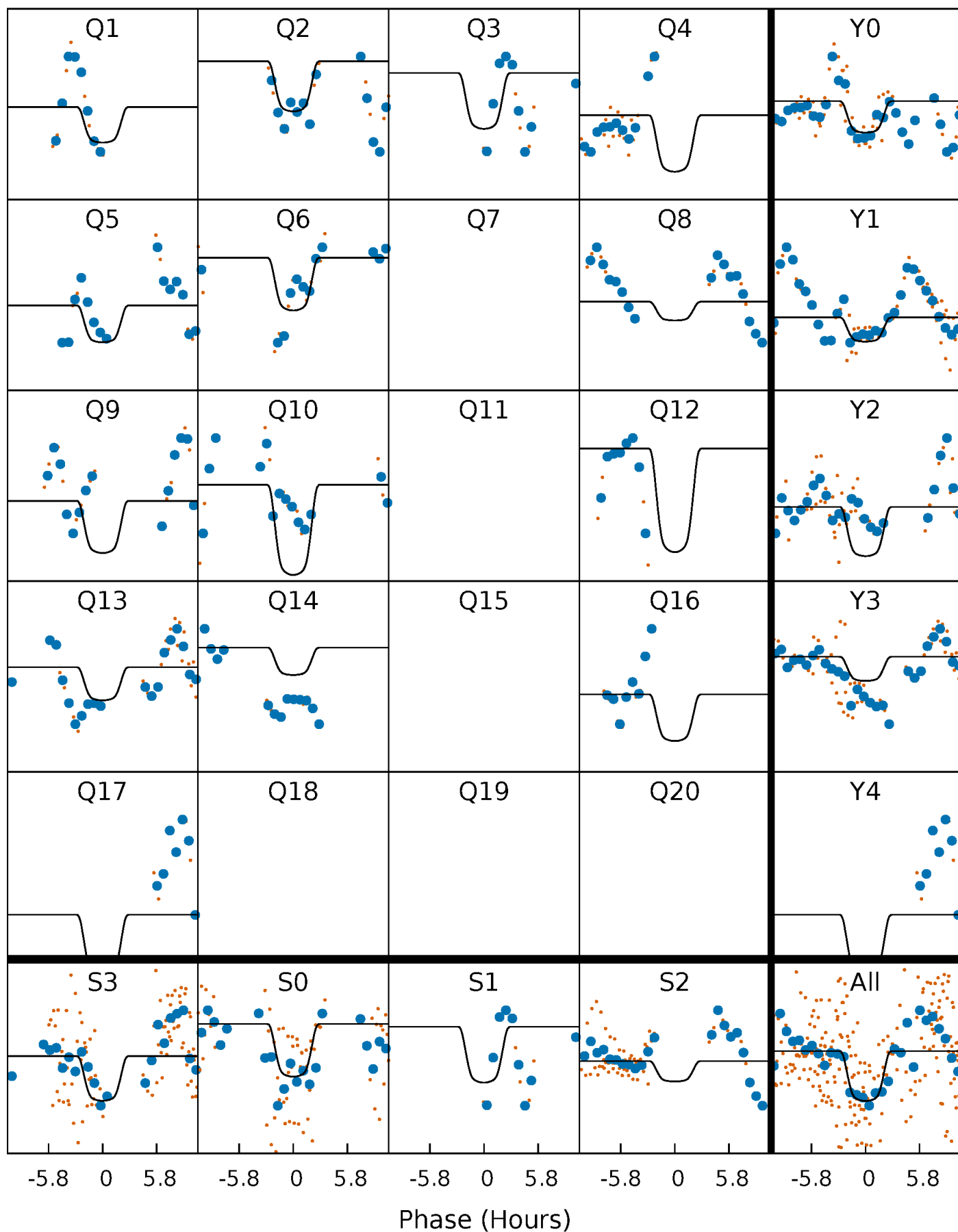
PDC Quarter-Phased Transit Curves

TCE 010678547-05 $P = 43.570469$ Days $T_0 = 137.129611$ (BKJD)



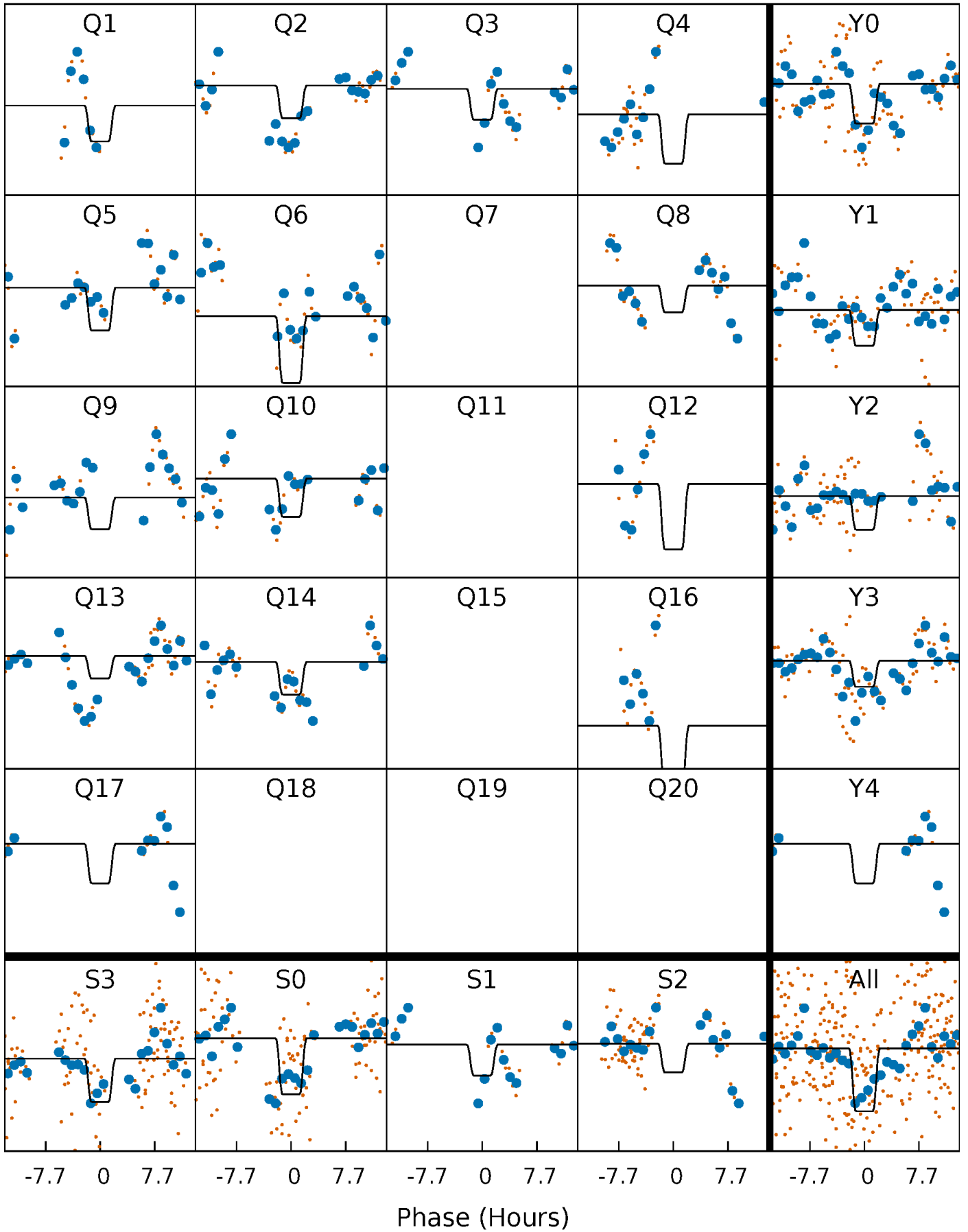
DV Quarter-Phased Transit Curves

TCE 010678547-05 P= 43.570469 Days $T_0=137.129611$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

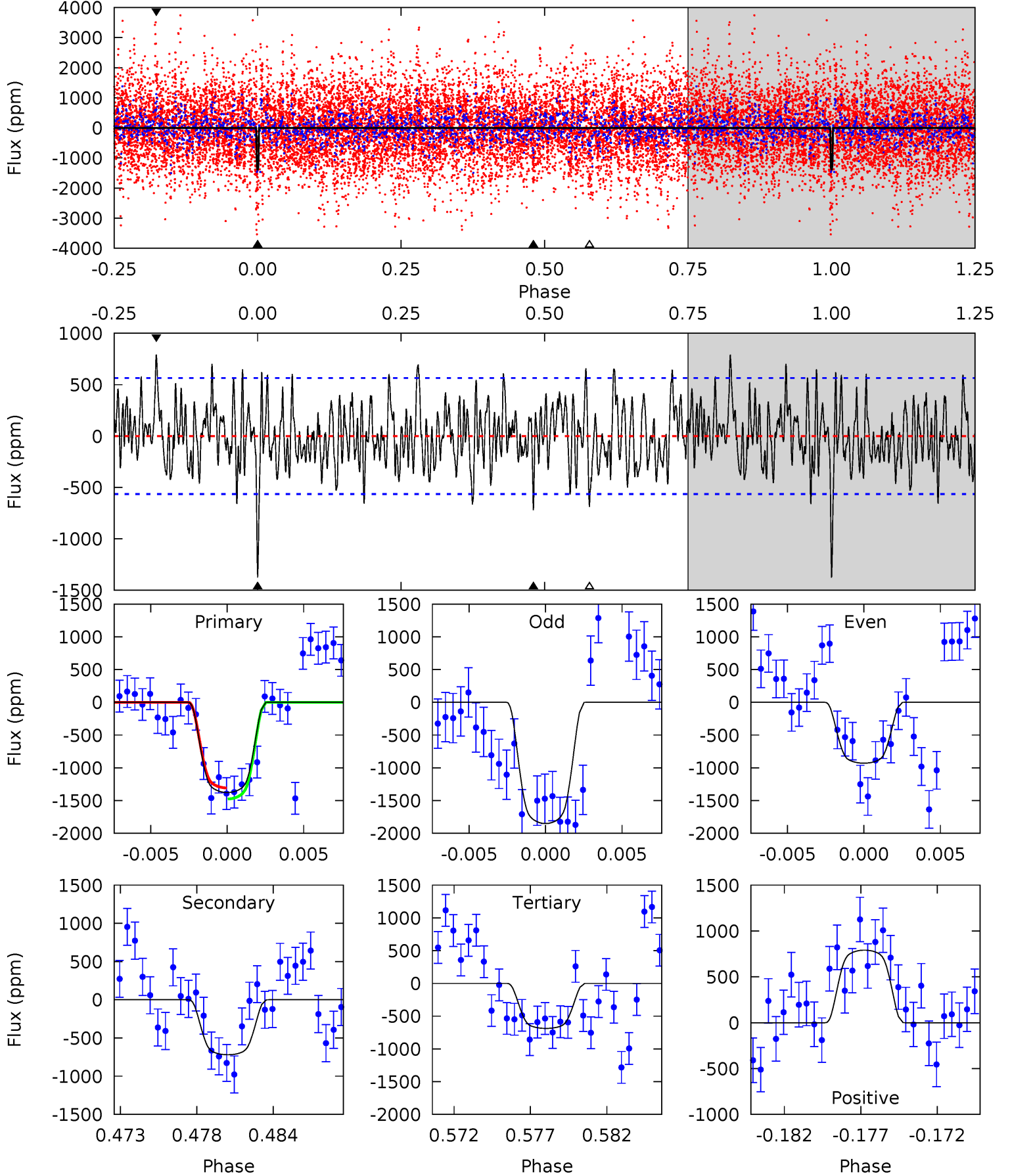
TCE 010678547-05 $P = 43.570129$ Days $T_0 = 137.134224$ (BKJD)



DV Model-Shift Uniqueness Test

010678547-05, P = 43.570469 Days, E = 93.559142 Days

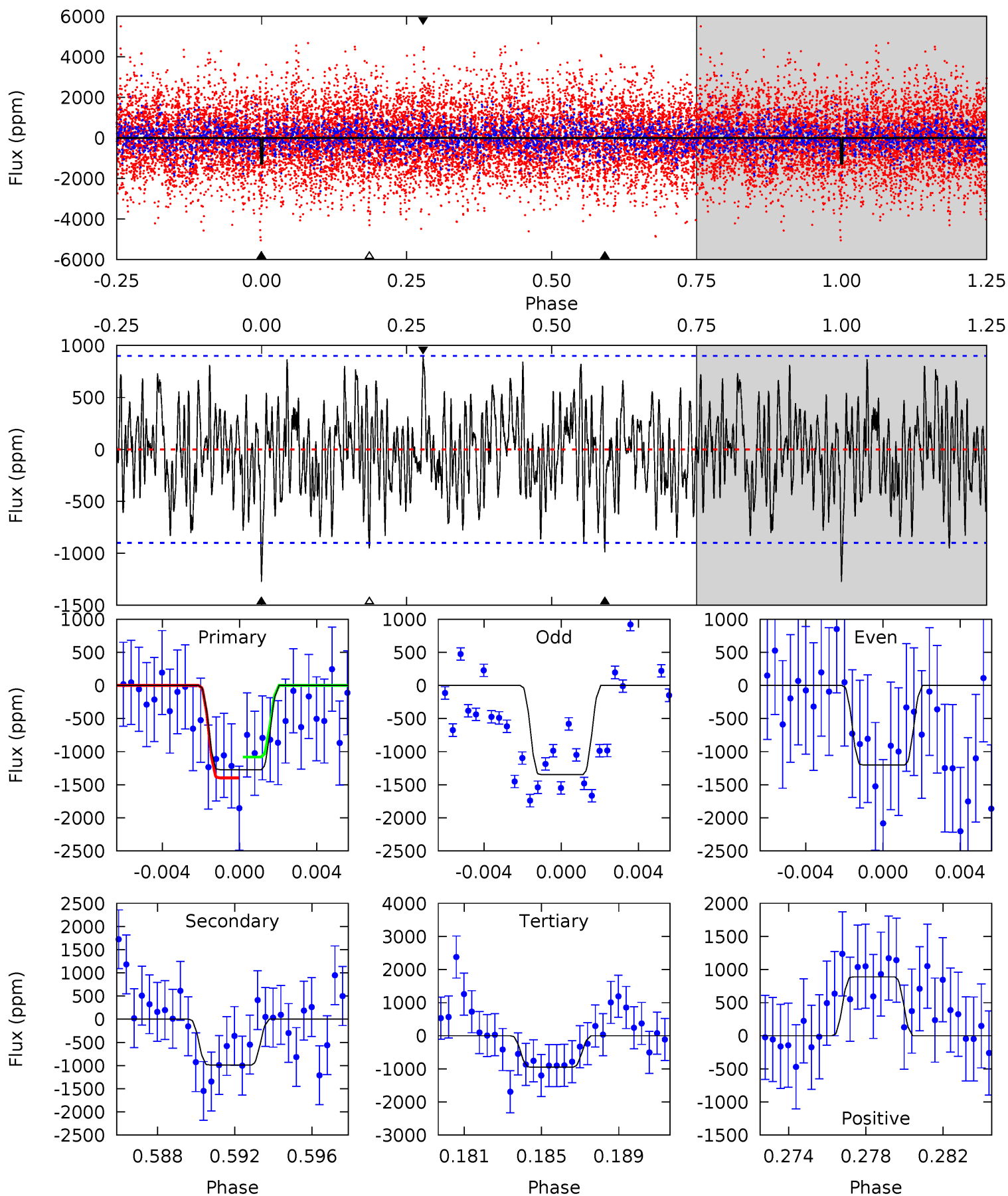
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	6.56	6.27	7.21	5.15	2.79	2.33	6.29	5.34	0.29	-0.65	4.23	-0.09	0.36	0.74



Alt Model-Shift Uniqueness Test

010678547-05, P = 43.570129 Days, E = 93.564095 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.36	5.71	5.49	5.13	5.20	2.88	1.96	1.87	2.23	0.22	0.57	0.43	1.10	0.41	0.89



Stellar Parameters For KIC 010678547

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8089^{+64}_{-97}	$3.757^{+0.227}_{-0.122}$	$0.070^{+0.200}_{-0.250}$	$3.299^{+0.660}_{-0.990}$	$2.267^{+0.222}_{-0.413}$	$0.089^{+0.122}_{-0.033}$
	+1%/-1%	+6%/-3%	+286%/-357%	+20%/-30%	+10%/-18%	+137%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 010678547-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-720 ± 110	$14.21^{+2.57}_{-2.60}$	1590^{+94}_{-121}	6396^{+441}_{-416}	197^{+103}_{-58}
Alt.	-987 ± 173	$14.28^{+2.27}_{-2.48}$	1593^{+83}_{-115}	6946^{+544}_{-486}	273^{+120}_{-80}

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

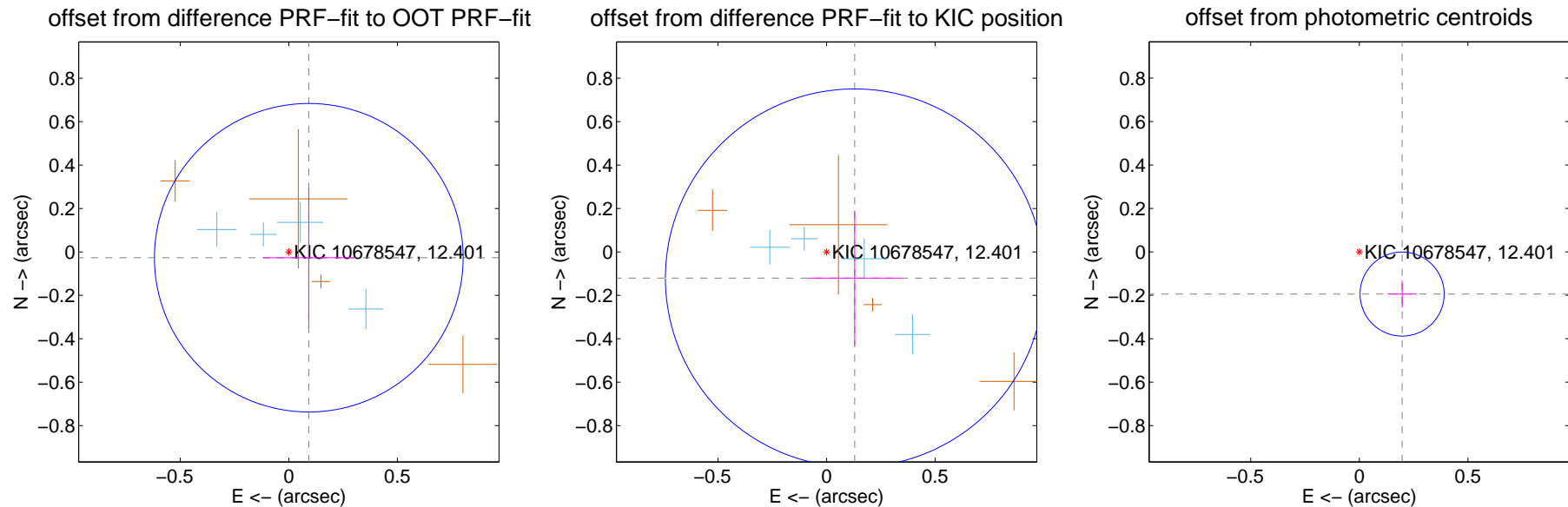
DV Centroid Data

Supplemental centroid analysis for 010678547-05. Kepler magnitude: 12.40. Transit SNR 8.80

There are 9 quarters with good PRF difference image offsets

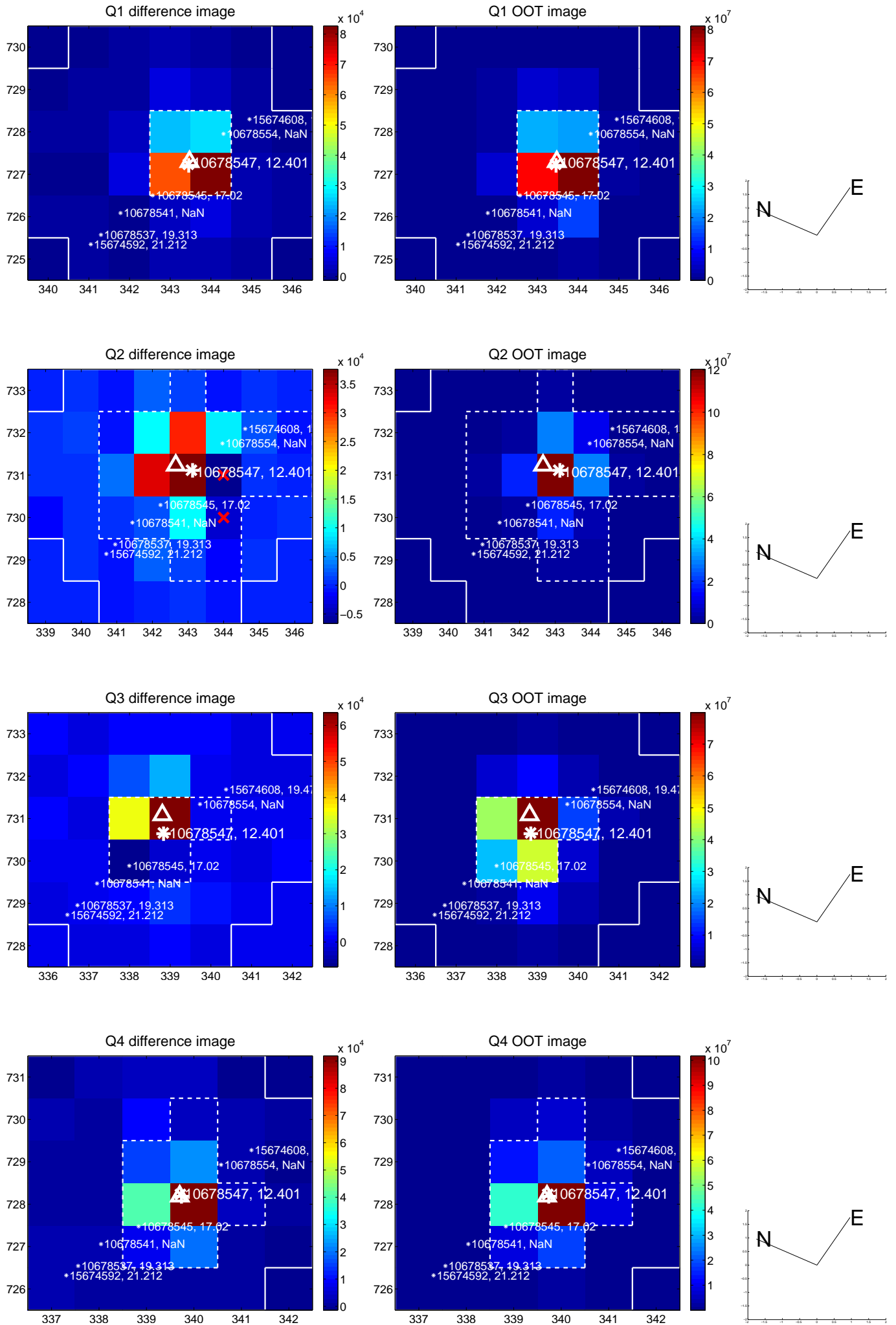
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.096 ± 0.237	0.40	-0.092 ± 0.211	-0.027 ± 0.323
PRF-fit source offset from KIC position	0.177 ± 0.290	0.61	-0.129 ± 0.214	-0.120 ± 0.311
photometric centroid source offset	0.28 ± 0.06	4.29	-0.20 ± 0.07	-0.19 ± 0.06

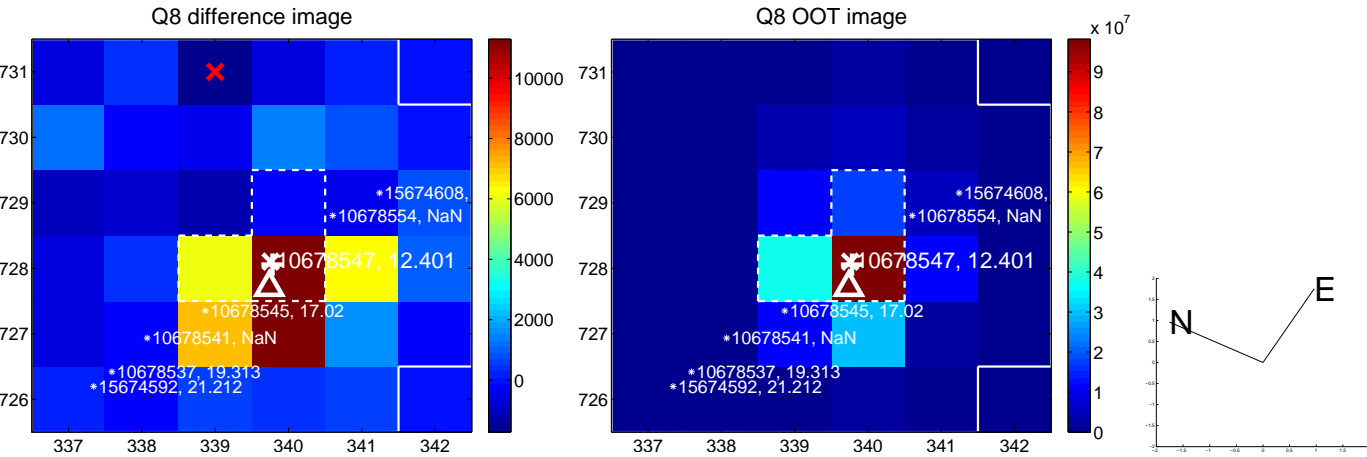
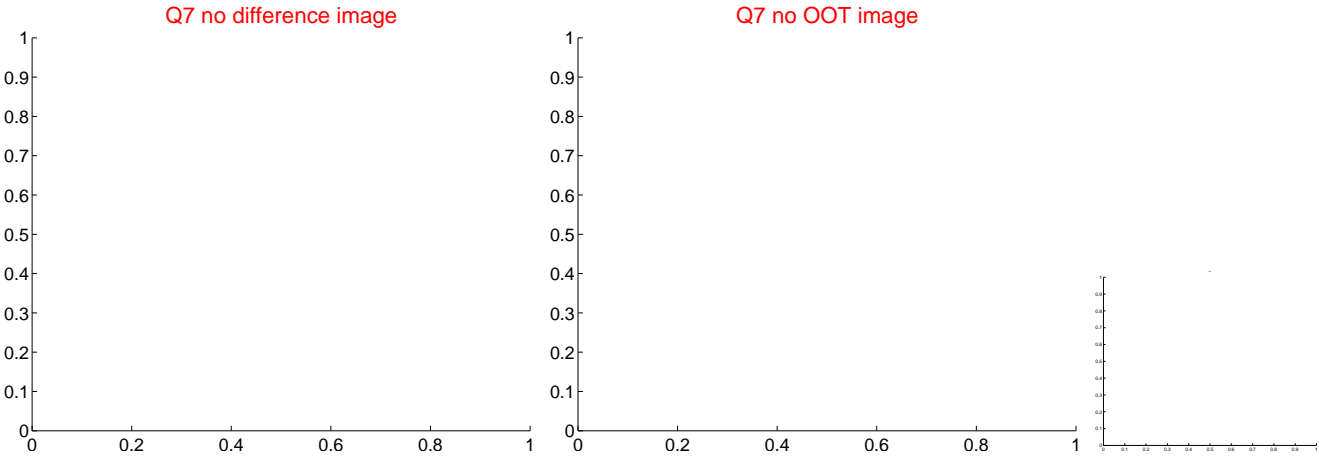
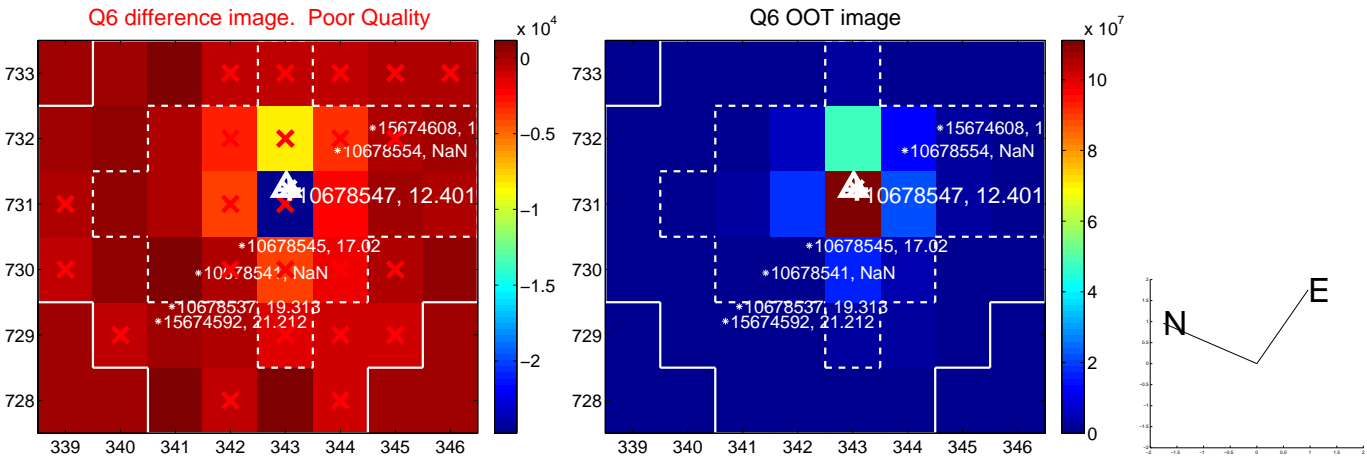
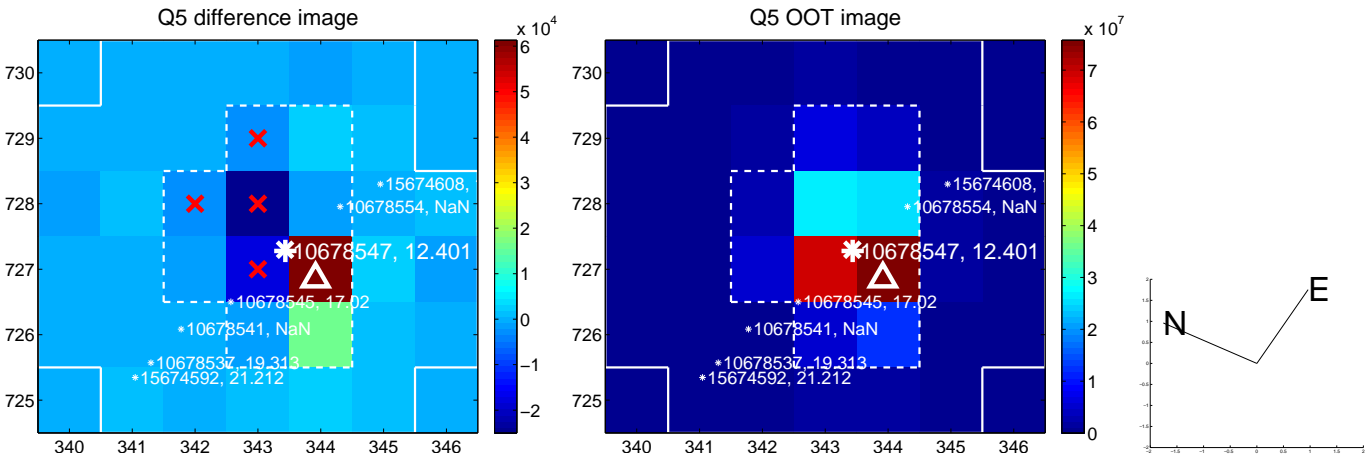


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

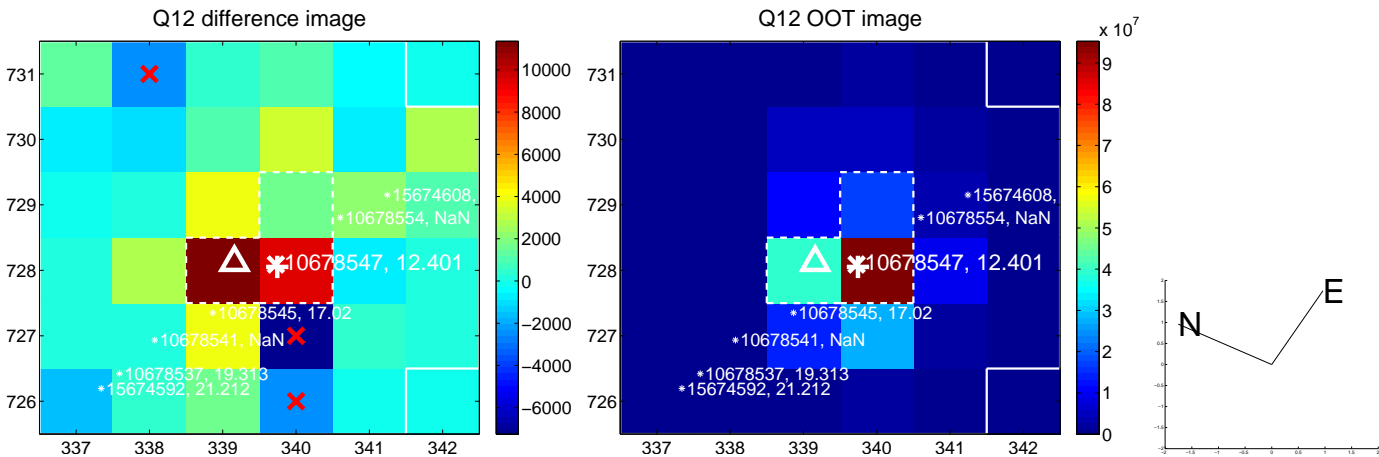
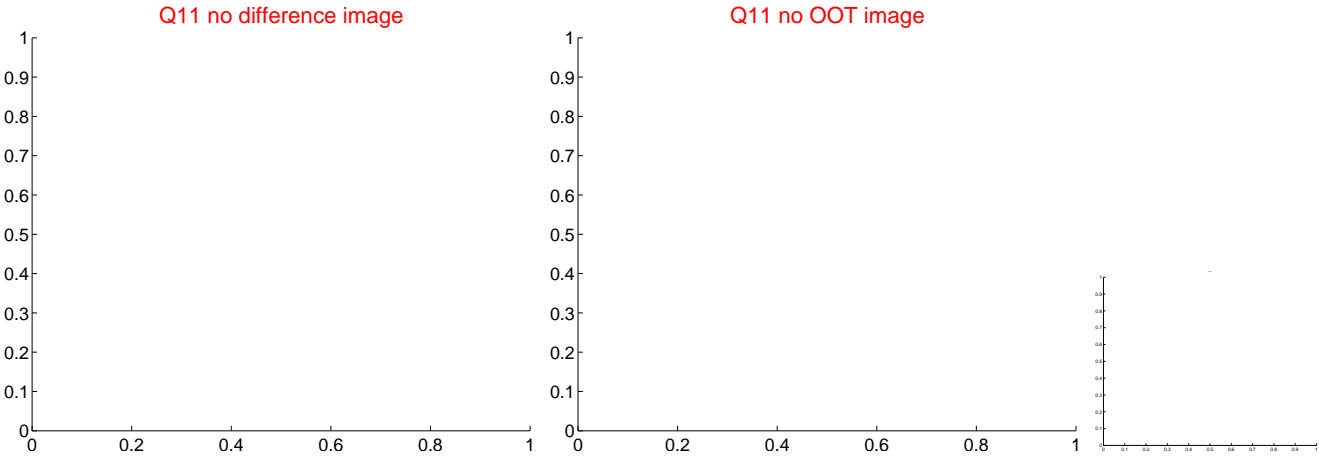
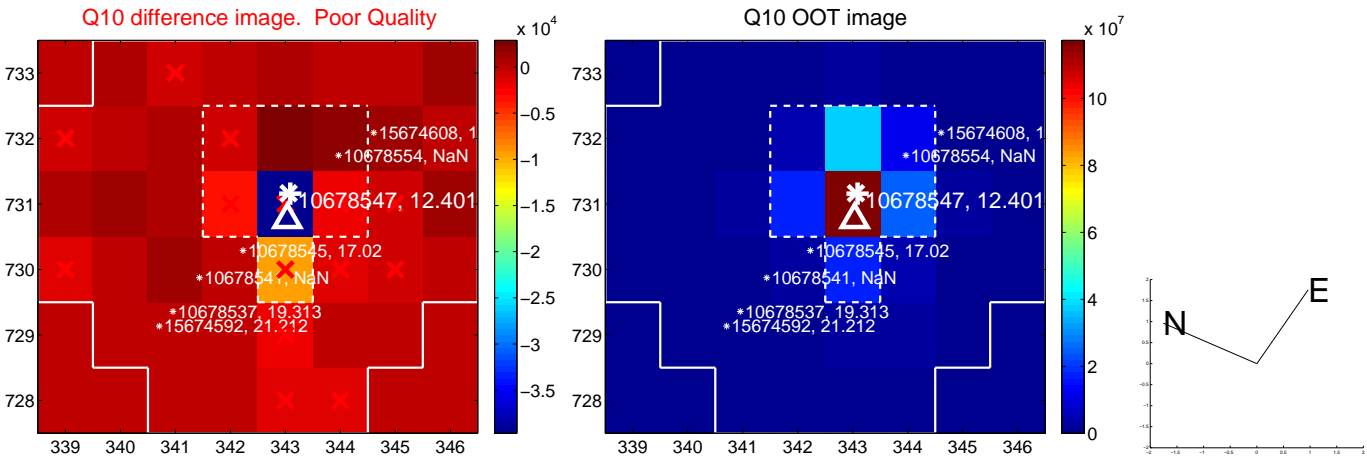
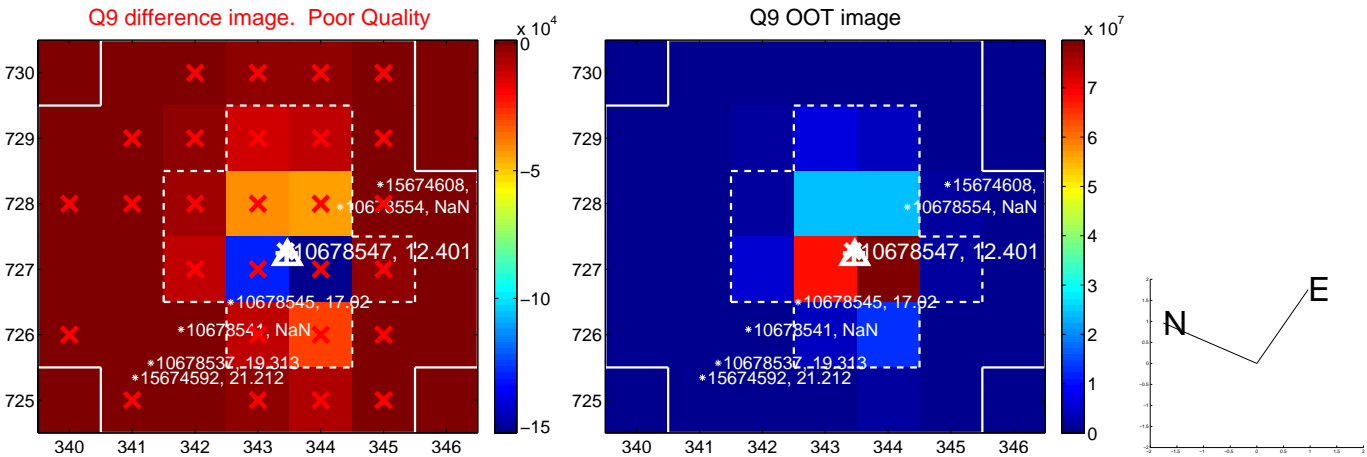
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



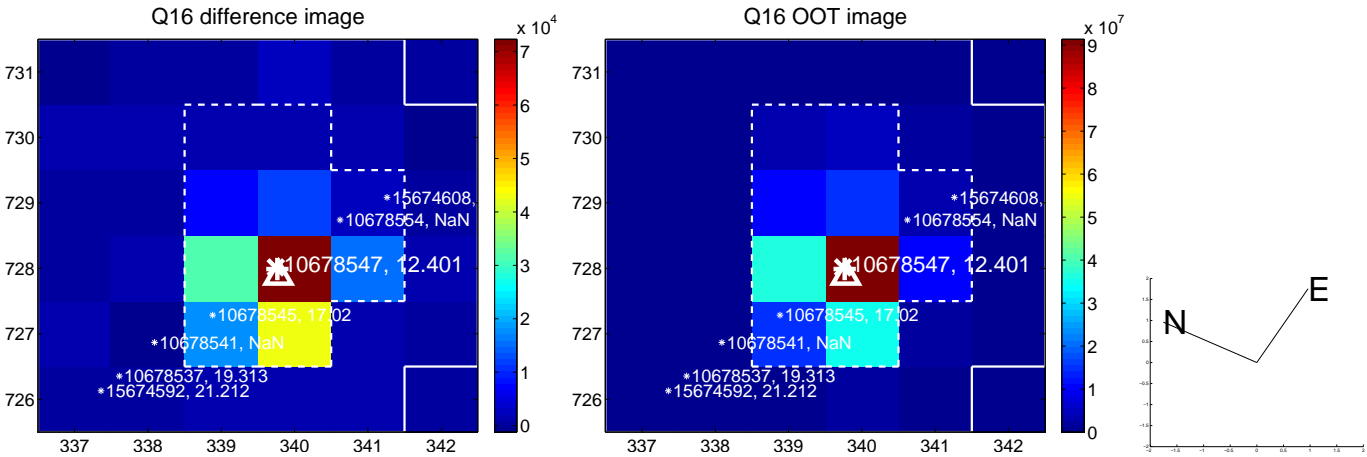
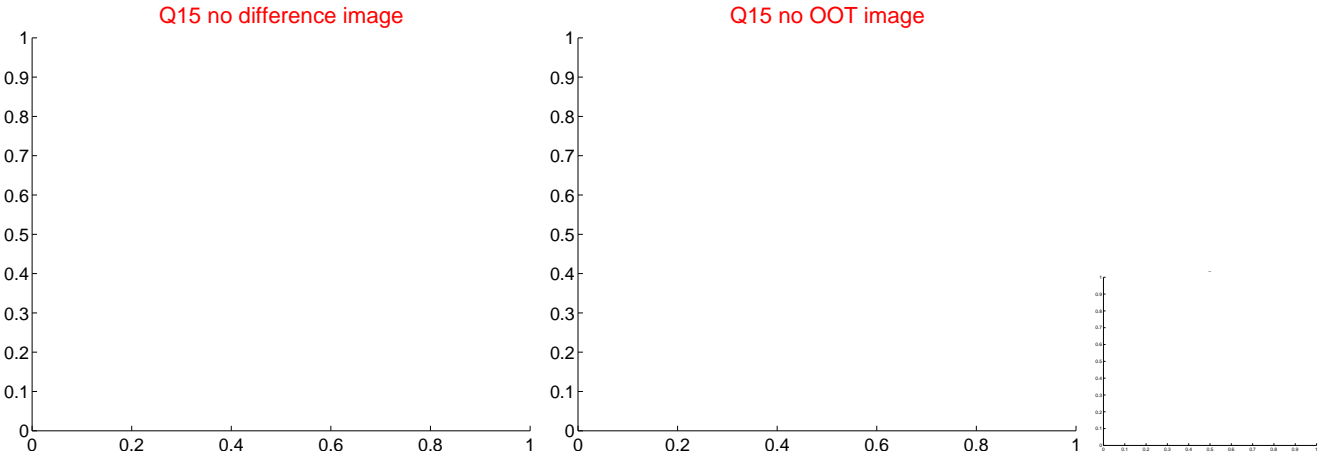
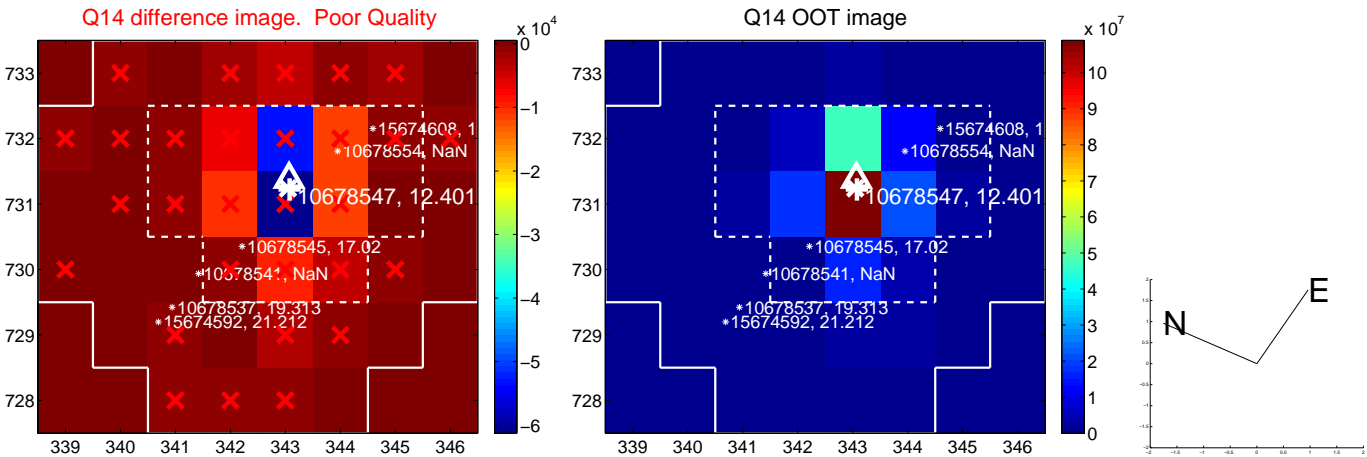
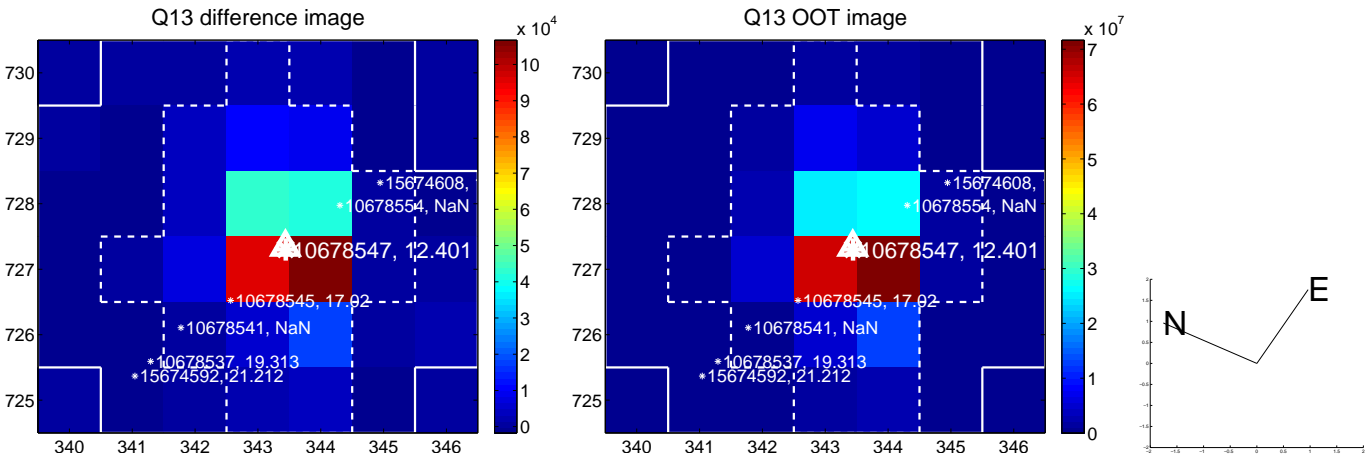
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



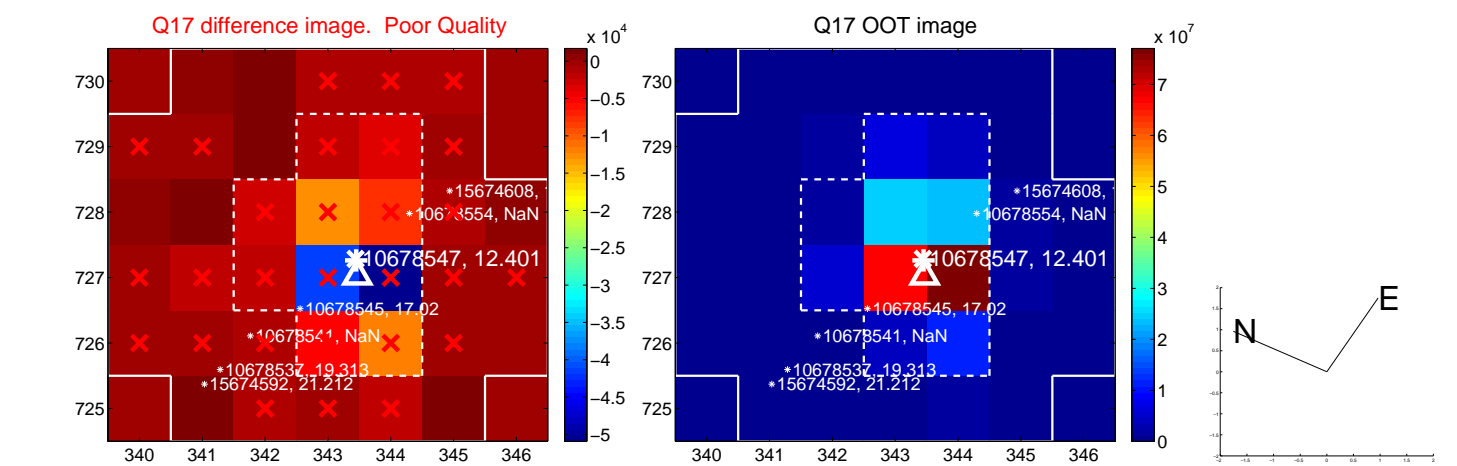
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



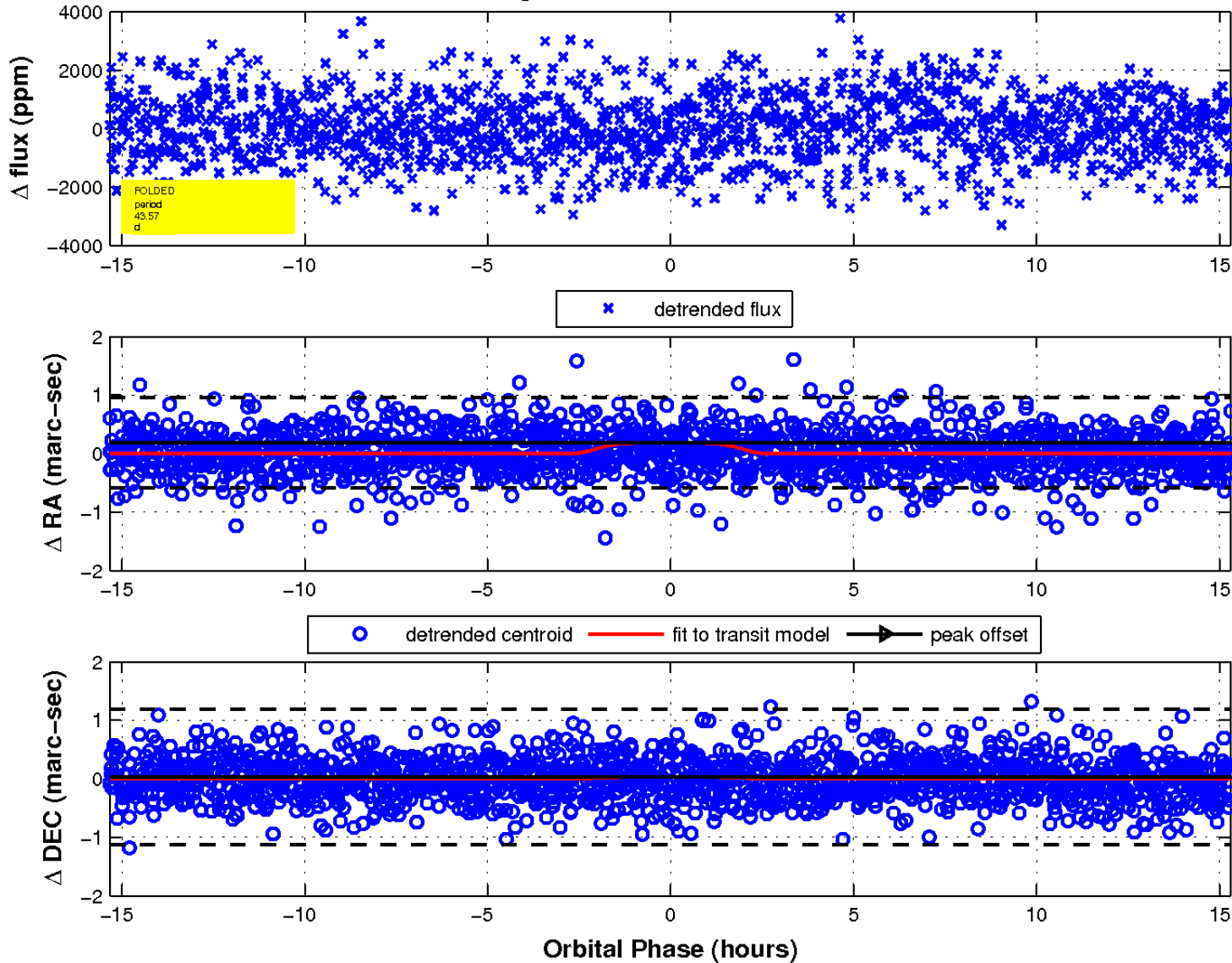
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

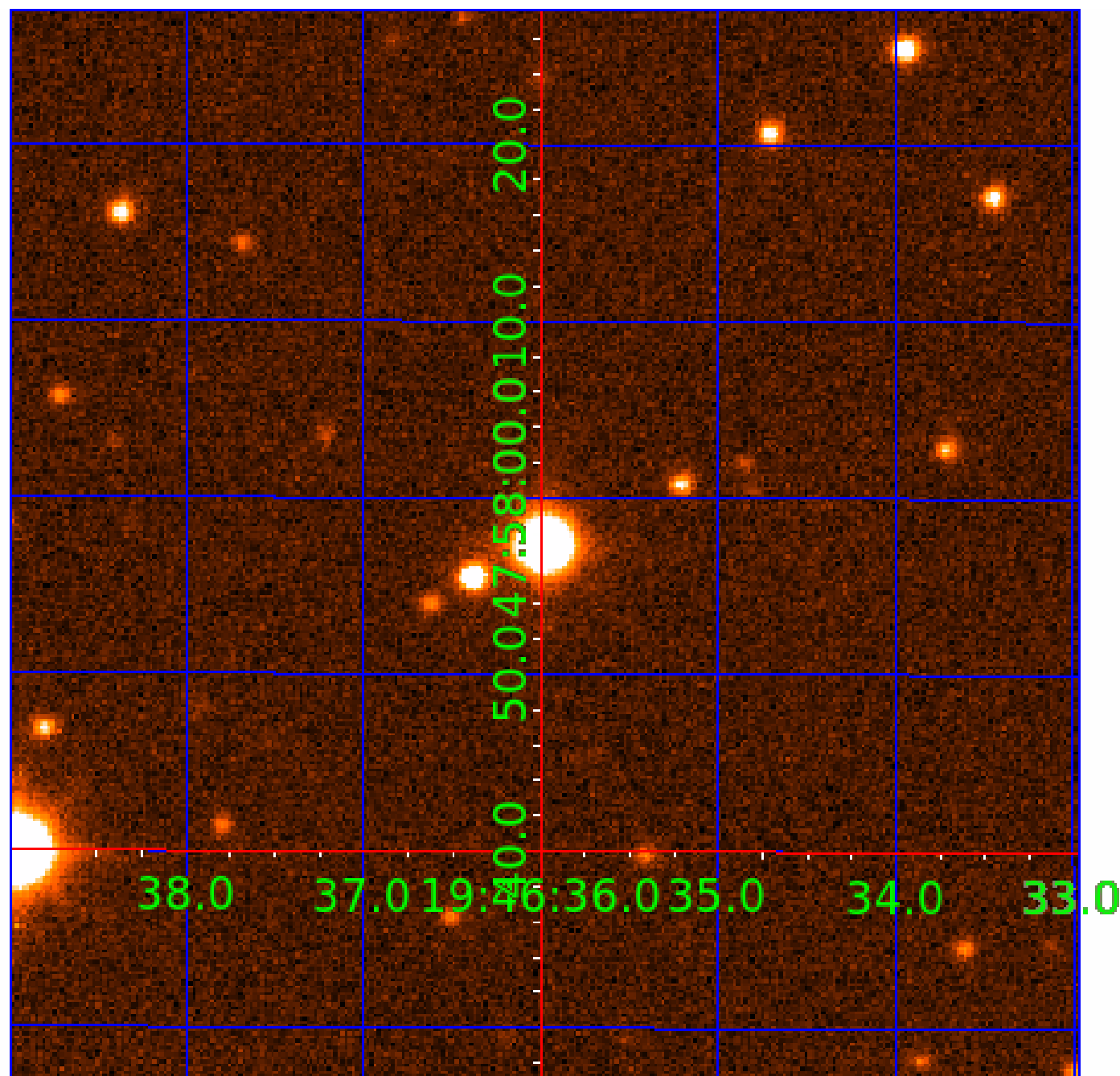


fluxWeightedCentroids, Planet 5 of 9



UKIRT Image

Declination



KIC 010678547

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})
010678547-01	OBS	No	0.958852	131.740929	86.7	5.533	7.9	5.4	3.30	8089	3.13	66741.05
010678547-02	OBS	No	46.266327	132.134497	1965.9	2.176	10.4	9.8	3.30	8089	25.52	379.93
010678547-03	OBS	No	275.395986	189.662265	3463.5	3.956	10.2	11.3	3.30	8089	22.64	35.22
010678547-04	OBS	No	91.651982	201.270112	2210.0	6.815	9.8	9.5	3.30	8089	18.61	152.71
010678547-05	OBS	No	43.570469	137.129611	1396.6	5.119	8.9	8.8	3.30	8089	14.74	411.60
010678547-06	OBS	No	112.787169	188.429005	2289.5	5.538	9.3	8.1	3.30	8089	18.51	115.80
010678547-07	OBS	No	57.131981	133.364930	1676.4	4.872	9.1	9.0	3.30	8089	14.53	286.79
010678547-08	OBS	No	42.966194	155.444122	1288.5	5.702	10.0	9.0	3.30	8089	14.12	419.33
010678547-09	OBS	No	106.003102	153.375647	1335.3	13.839	8.3	8.1	3.30	8089	13.29	125.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010678547-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
010678547-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
010678547-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
010678547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
010678547-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

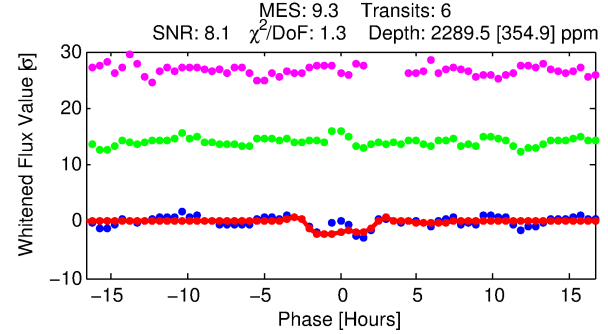
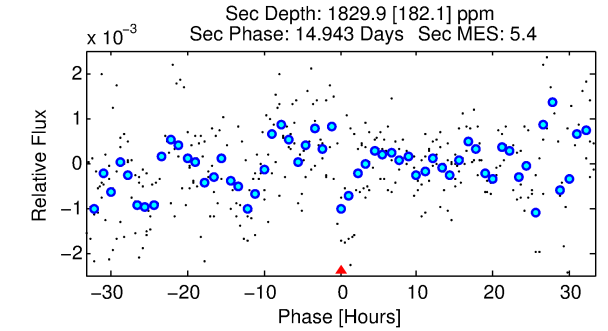
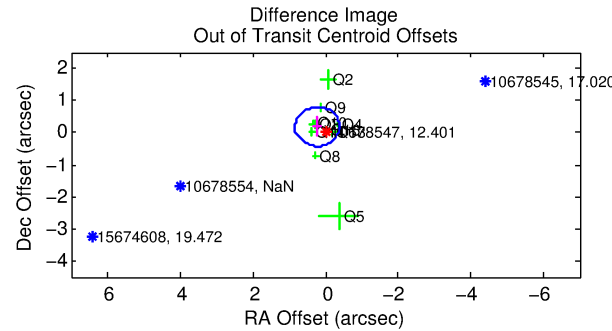
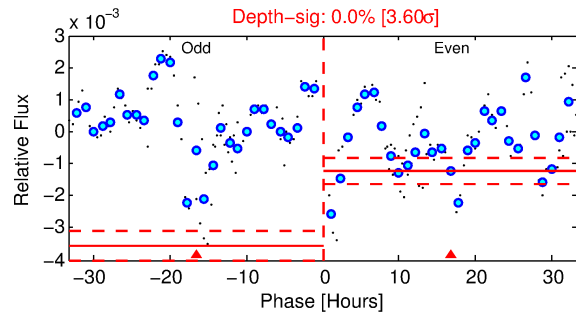
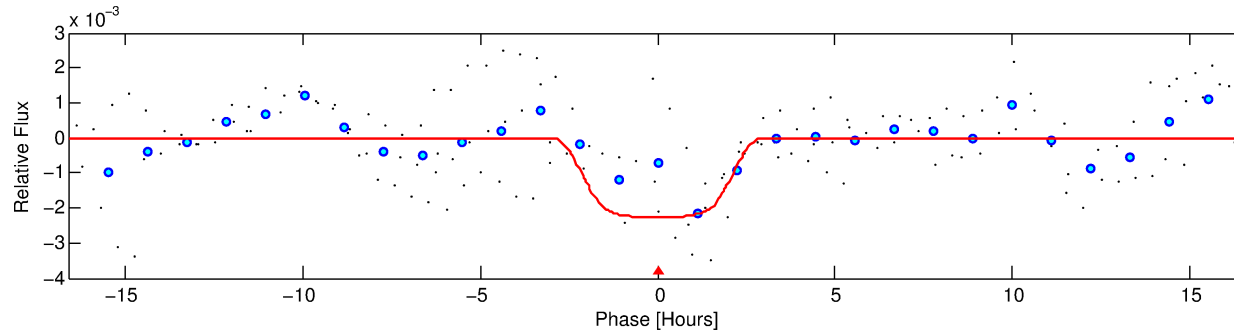
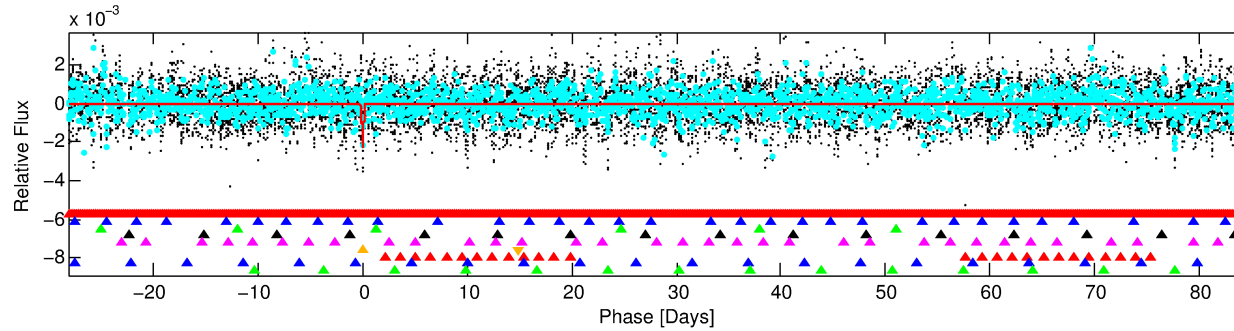
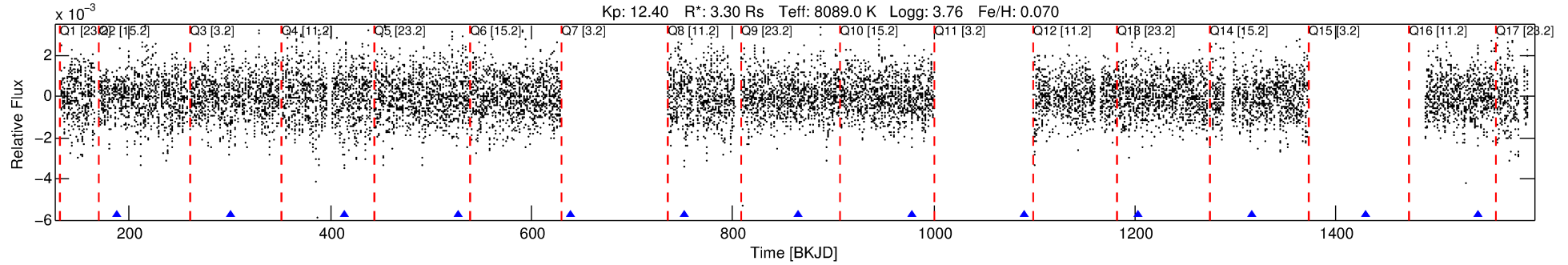
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678547-06

No Significant Match Found

DV One-Page Summary

KIC: 10678547 Candidate: 6 of 9 Period: 112.787 d



DV Fit Results:

Period = 112.78717 [0.00178] d
Epoch = 188.4290 [0.0151] BKJD
Rp/R* = 0.0514 [0.0046]
a/R* = 82.69 [14.64]
b = 0.91 [0.04]
Seff = 115.80 [46.86]
Teq = 836 [85] K
Rp = 18.51 [5.80] Re
a = 0.6004 [0.1593] AU
Ag = 1059.58 [477.76] [2.22 σ]
Teffp = 7379 [388] K [16.49 σ]

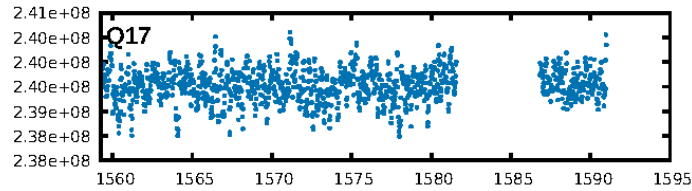
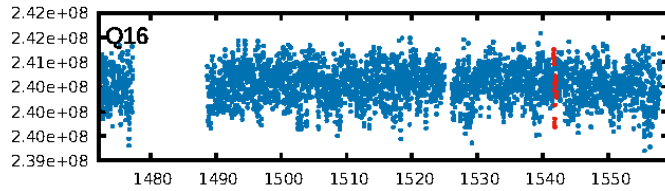
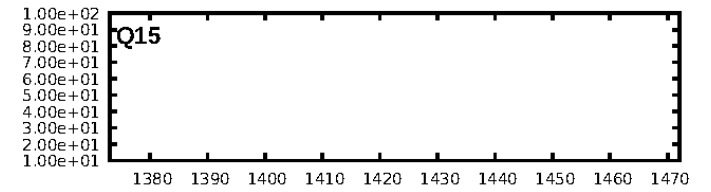
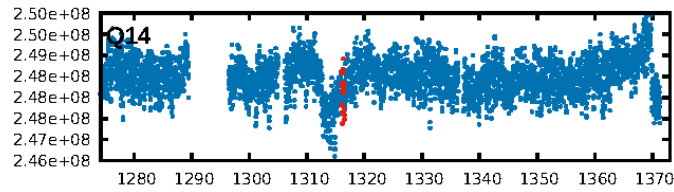
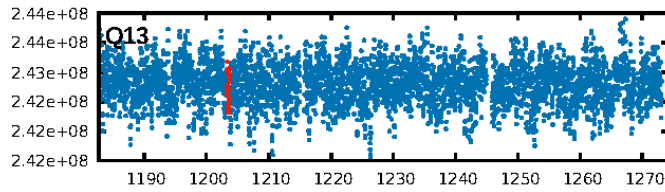
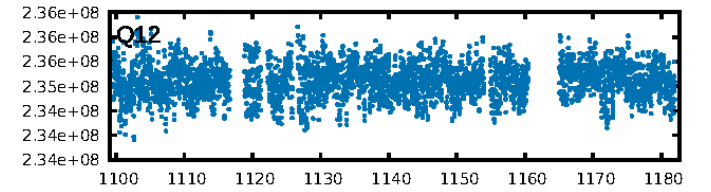
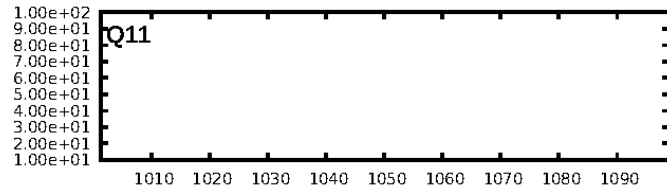
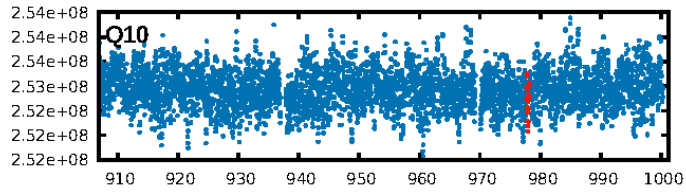
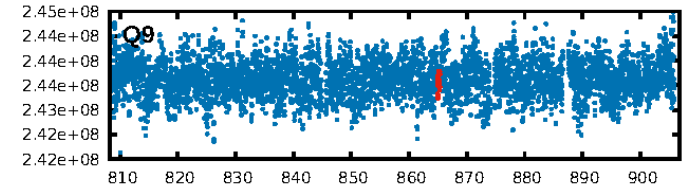
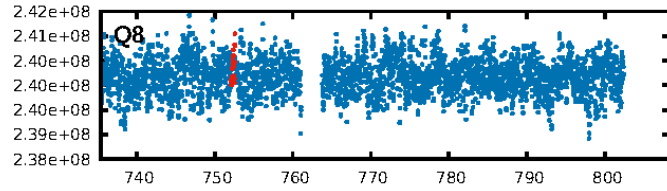
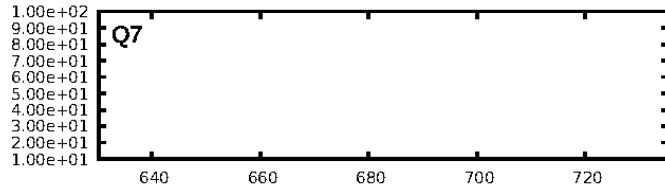
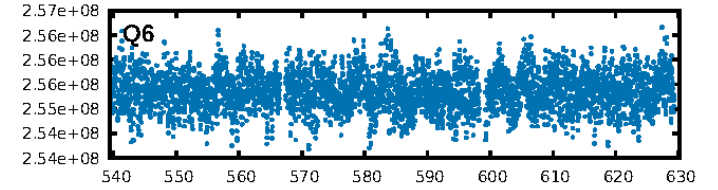
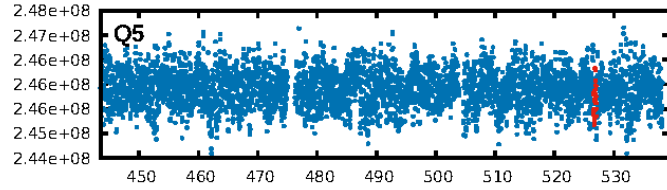
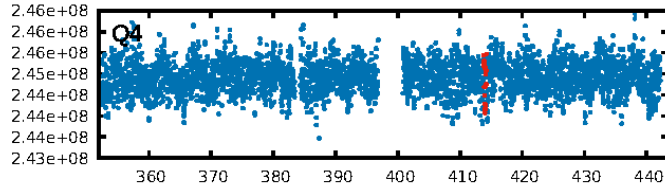
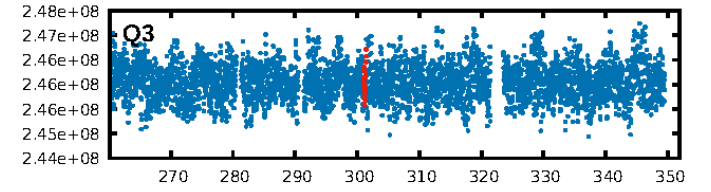
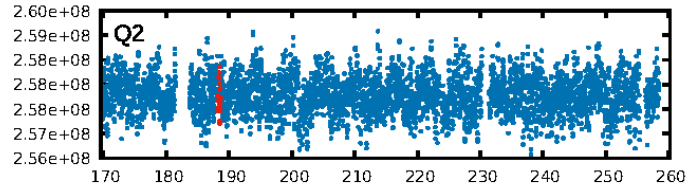
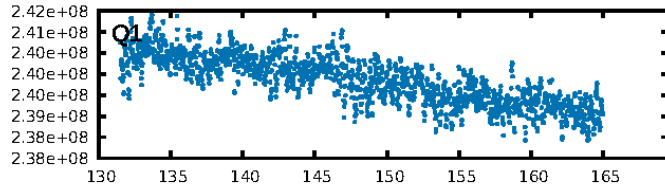
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.92 σ]
LongPeriod-sig: 100.0% [573.44 σ]
ModelChiSquare2-sig: 1.2%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -1.275
Centroid-sig: 3.8%
Centroid-so: 0.283 arcsec [4.68 σ]
OotOffset-rm: 0.294 arcsec [1.45 σ]
KicOffset-rm: 0.198 arcsec [1.25 σ]
OotOffset-st: 3/1/3/3 [10]
KicOffset-st: 3/1/3/3 [10]
DiffImageQuality-fgm: 0.70 [7/10]
DiffImageOverlap-fno: 0.00 [0/10]

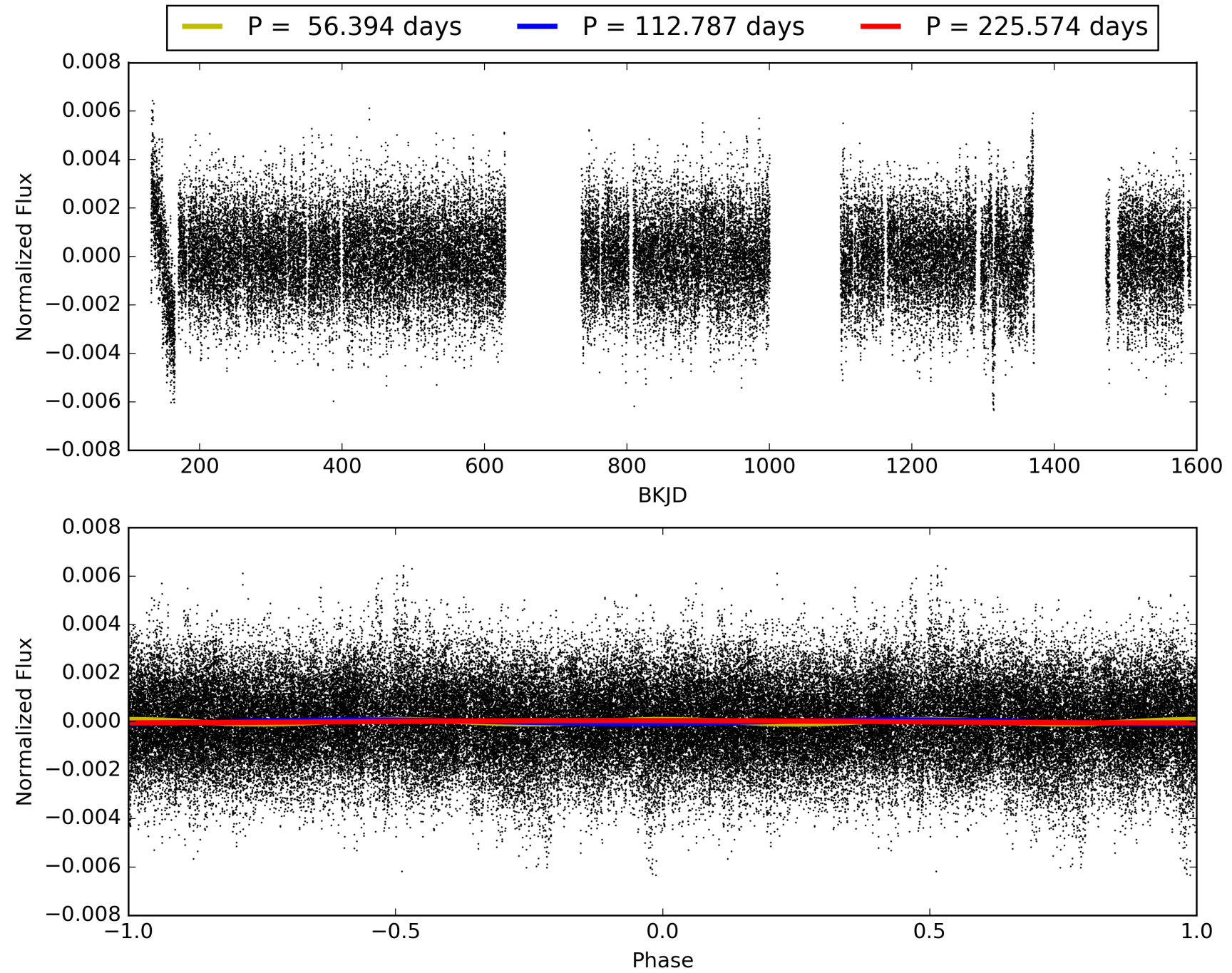
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:51:24 Z

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

TCE 010678547-06, PDC Light Curves

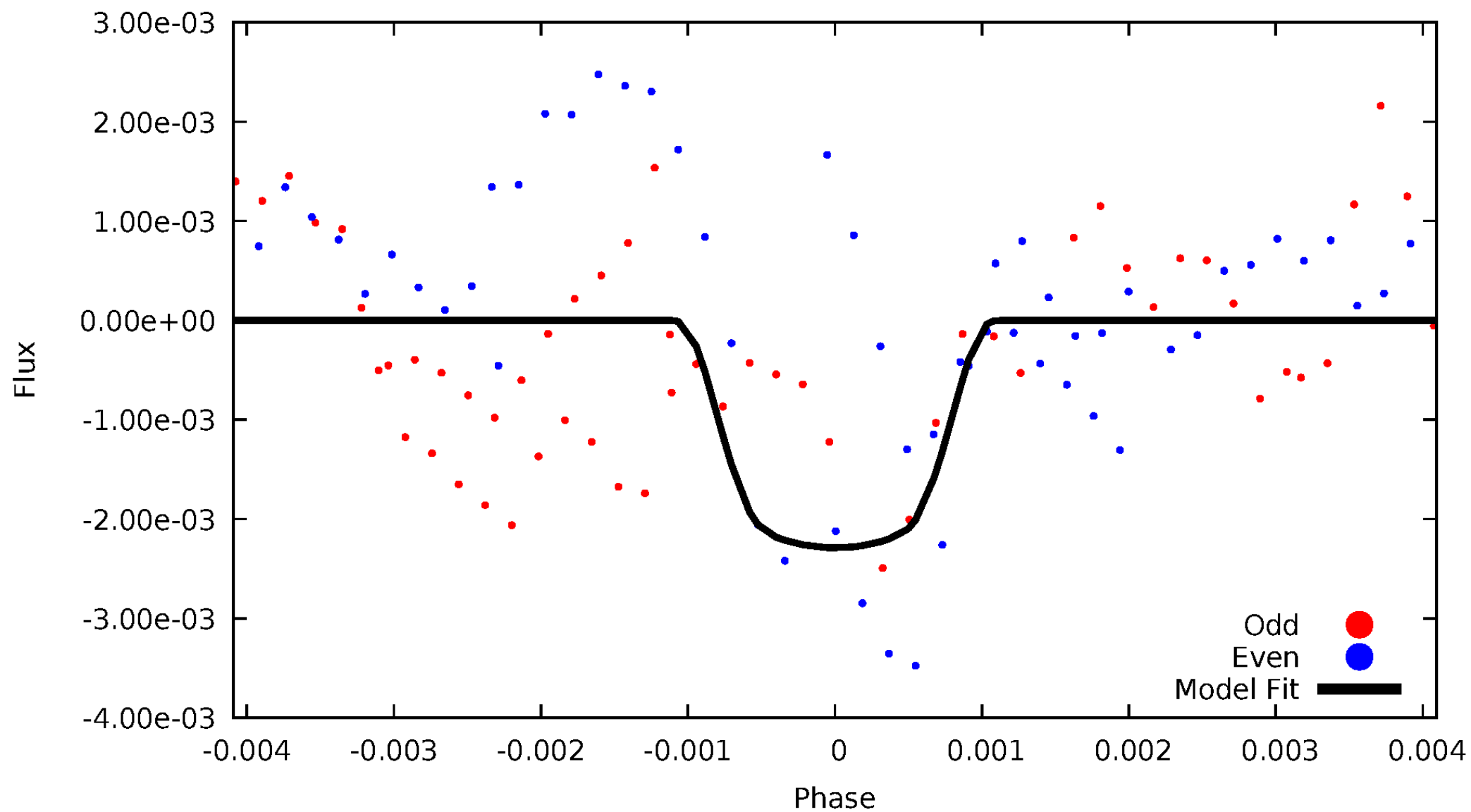


TCE 010678547-06



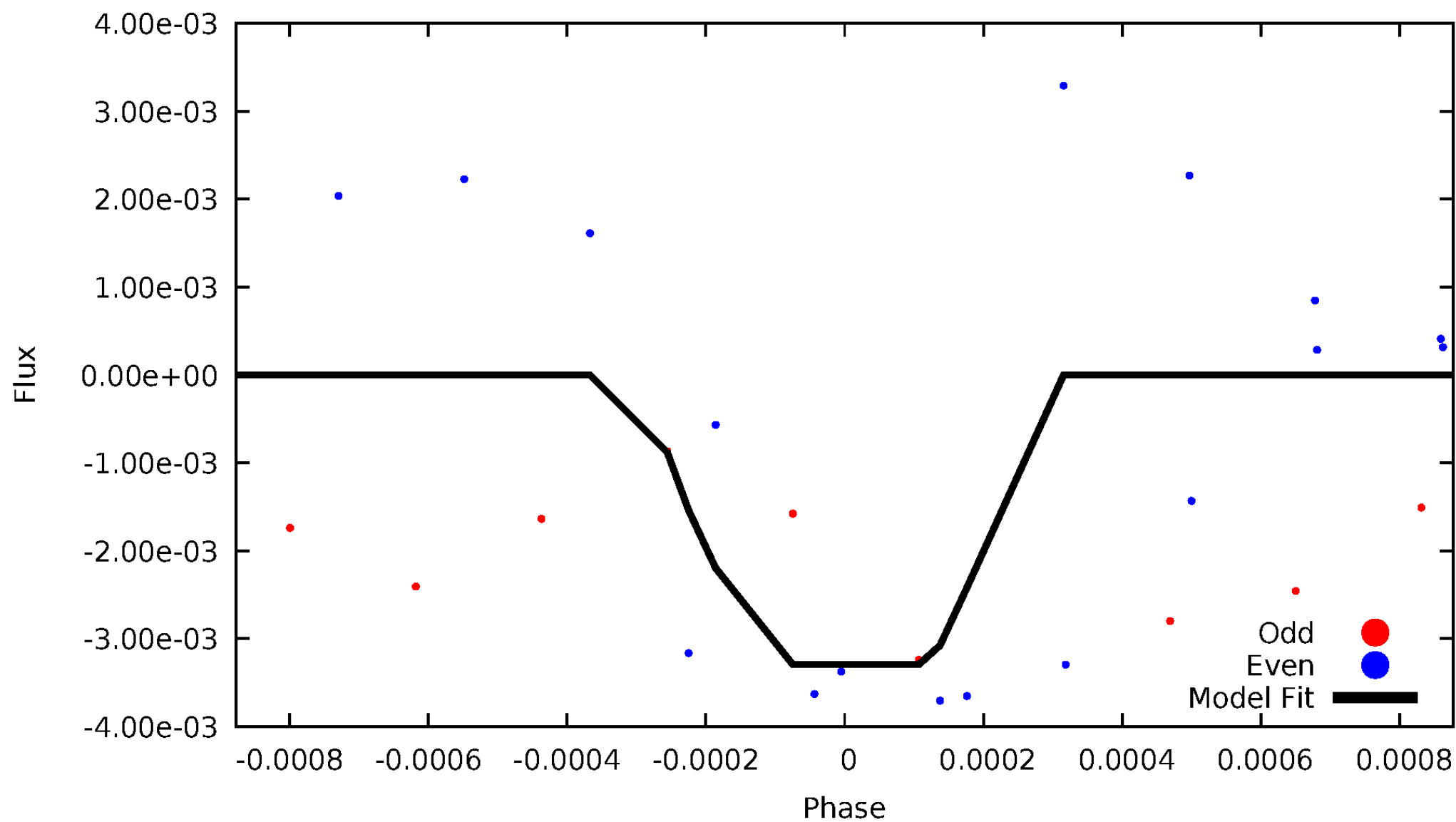
DV Odd/Even

TCE 010678547-06



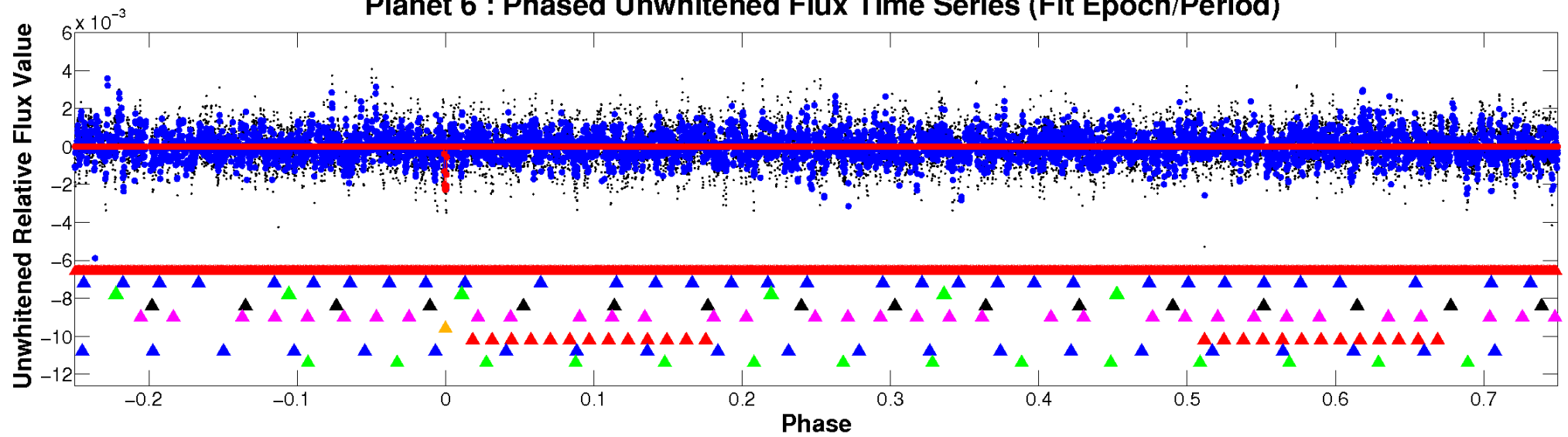
ALT Odd/Even

TCE 010678547-06

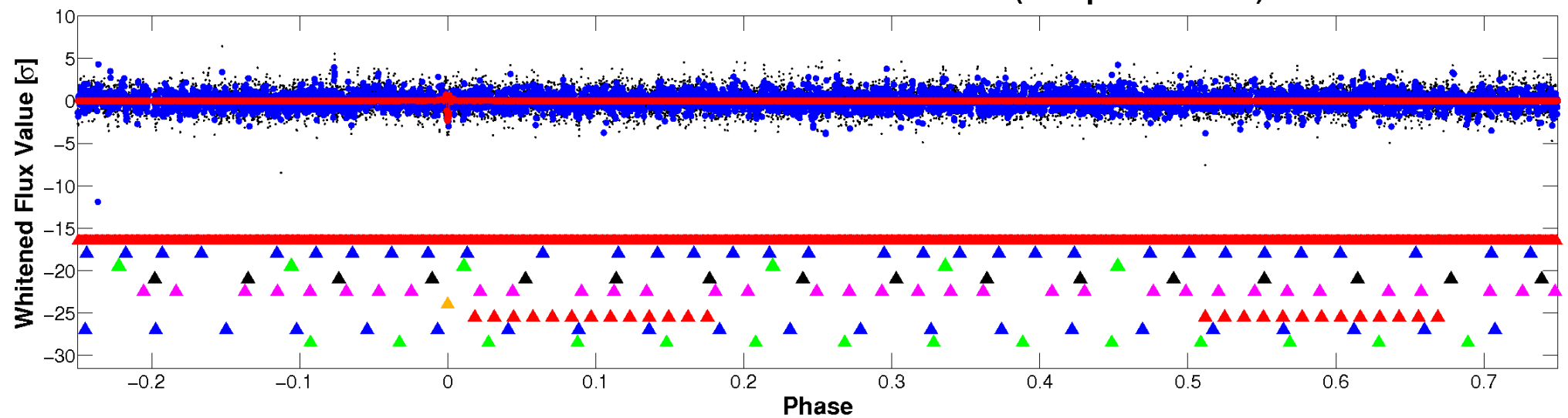


Non-Whitened Vs. Whitened Light Curve

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

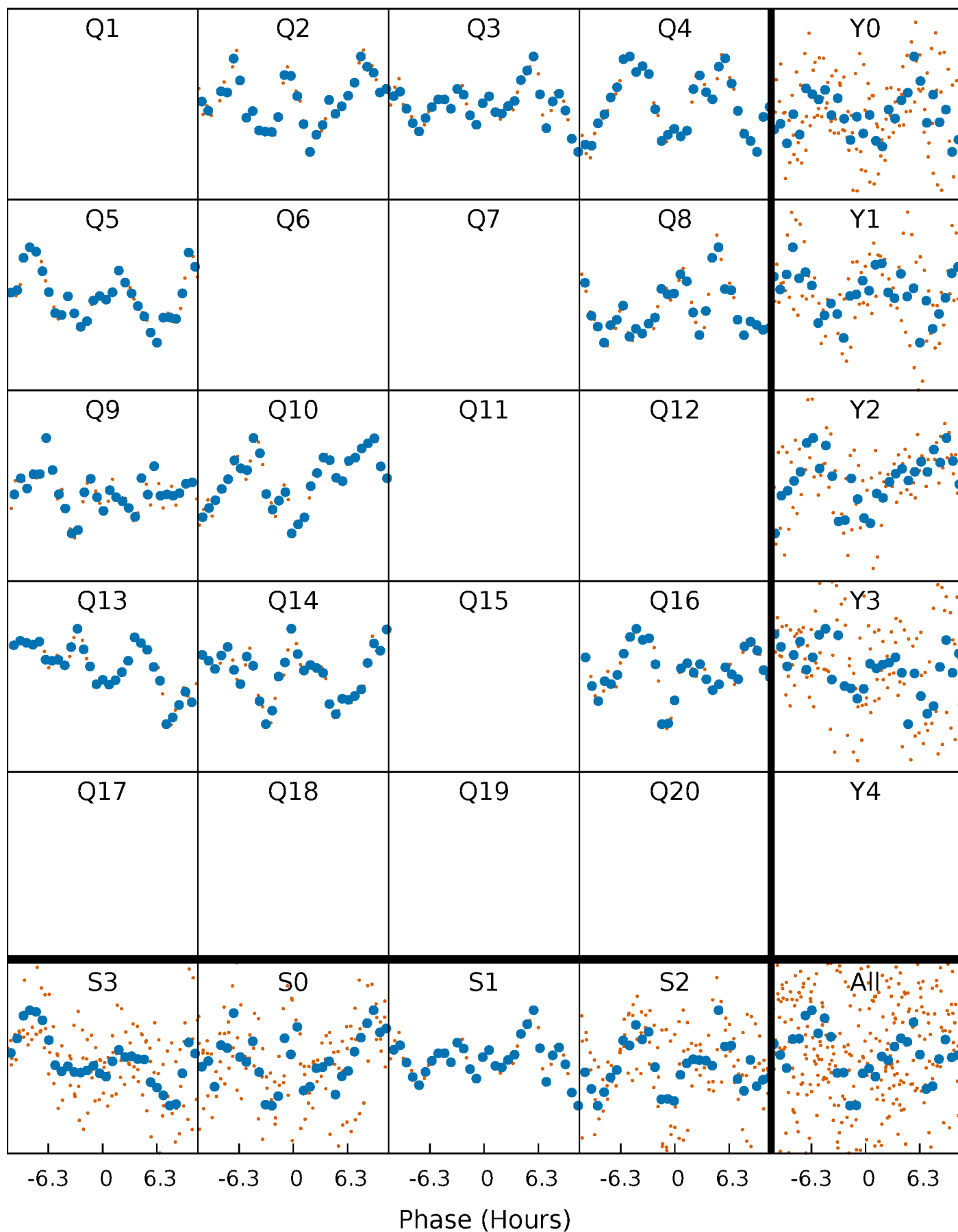


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



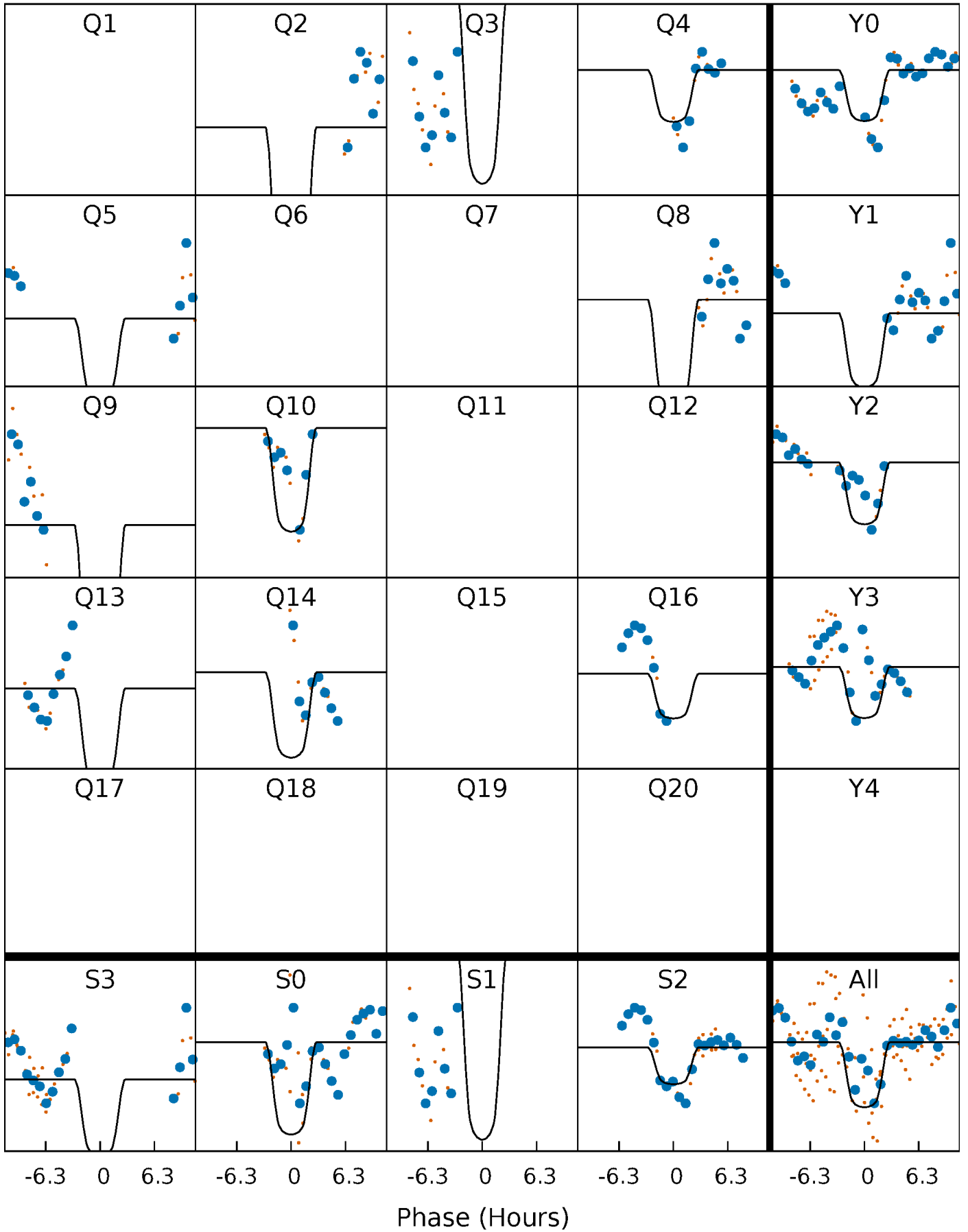
PDC Quarter-Phased Transit Curves

TCE 010678547-06 P=112.787169 Days $T_0=188.429005$ (BKJD)



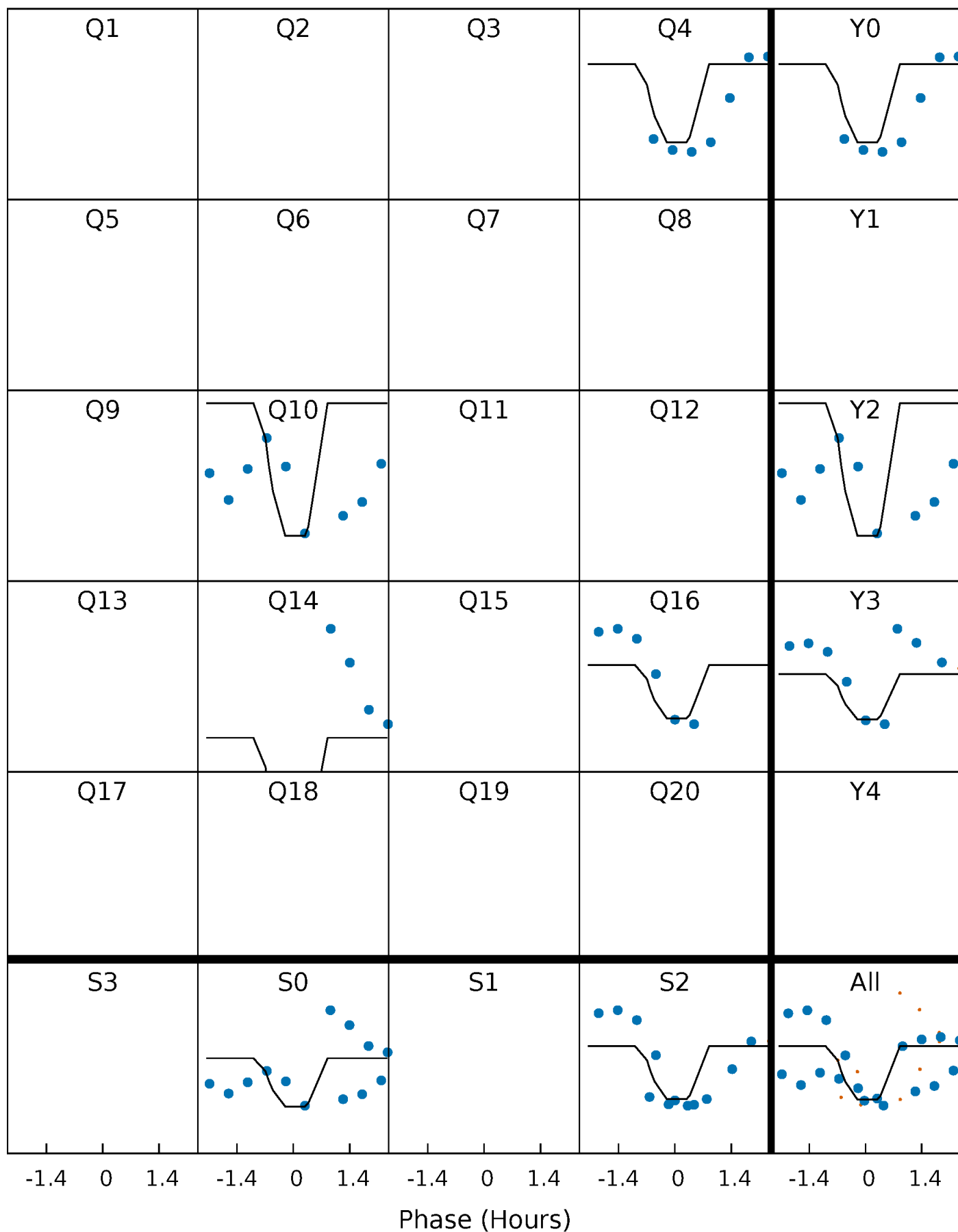
DV Quarter-Phased Transit Curves

TCE 010678547-06 P=112.787169 Days $T_0=188.429005$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

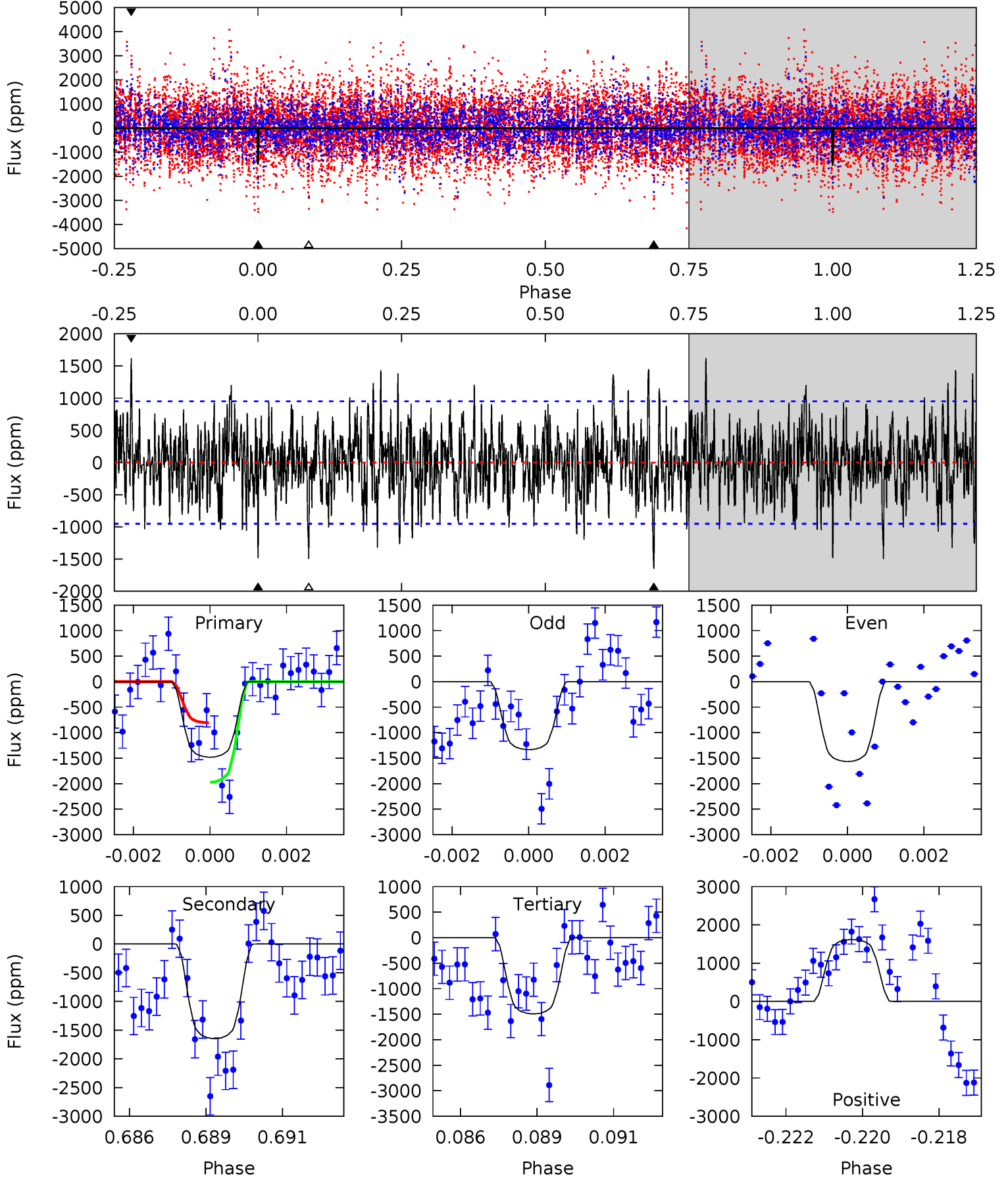
TCE 010678547-06 P=112.778731 Days $T_0=188.471863$ (BKJD)



DV Model-Shift Uniqueness Test

010678547-06, $P = 112.787169$ Days, $E = 75.641836$ Days

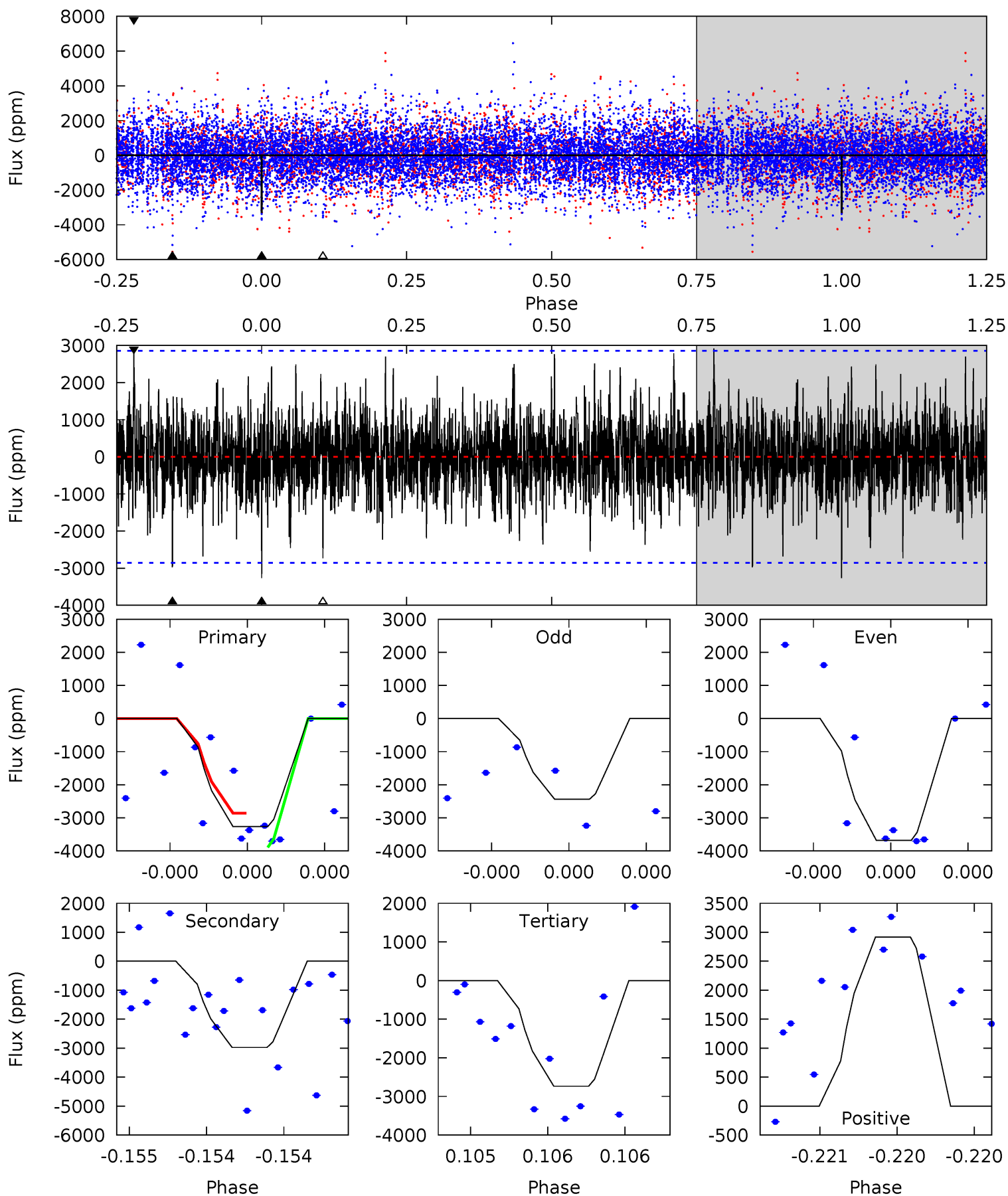
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.27	9.20	8.34	9.03	5.31	3.07	2.36	-0.08	-0.77	0.86	0.17	0.63	0.98	0.50	3.13



Alt Model-Shift Uniqueness Test

010678547-06, P = 112.778731 Days, E = 75.693132 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.41	5.84	5.37	5.73	5.61	3.54	1.43	1.04	0.68	0.47	0.11	1.16	1.00	0.47	0.96



Stellar Parameters For KIC 010678547

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8089^{+64}_{-97}	$3.757^{+0.227}_{-0.122}$	$0.070^{+0.200}_{-0.250}$	$3.299^{+0.660}_{-0.990}$	$2.267^{+0.222}_{-0.413}$	$0.089^{+0.122}_{-0.033}$
	+1%/-1%	+6%/-3%	+286%/-357%	+20%/-30%	+10%/-18%	+137%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 010678547-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1649 ± 179	$18.14^{+2.89}_{-3.02}$	1162^{+63}_{-84}	7032^{+438}_{-389}	985^{+418}_{-263}
Alt.	-2975 ± 509	$20.25^{+2.99}_{-3.41}$	1162^{+61}_{-80}	7796^{+573}_{-531}	1413^{+622}_{-398}

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

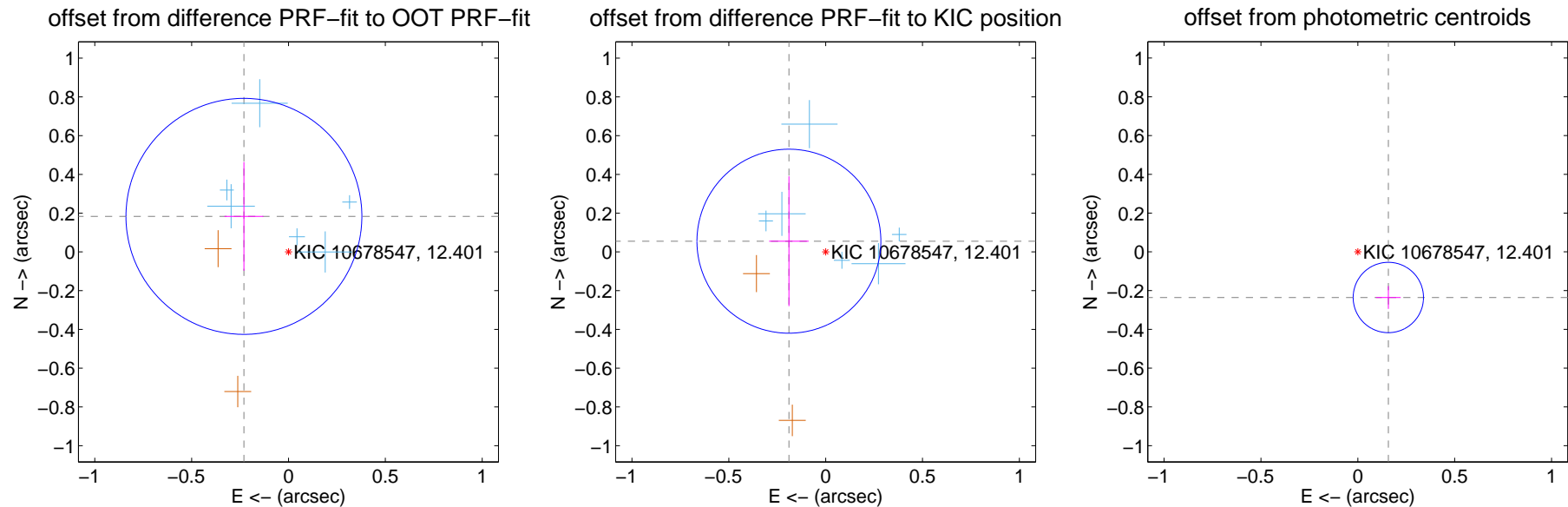
DV Centroid Data

Supplemental centroid analysis for 010678547-06. Kepler magnitude: 12.40. Transit SNR 8.14

There are 7 quarters with good PRF difference image offsets

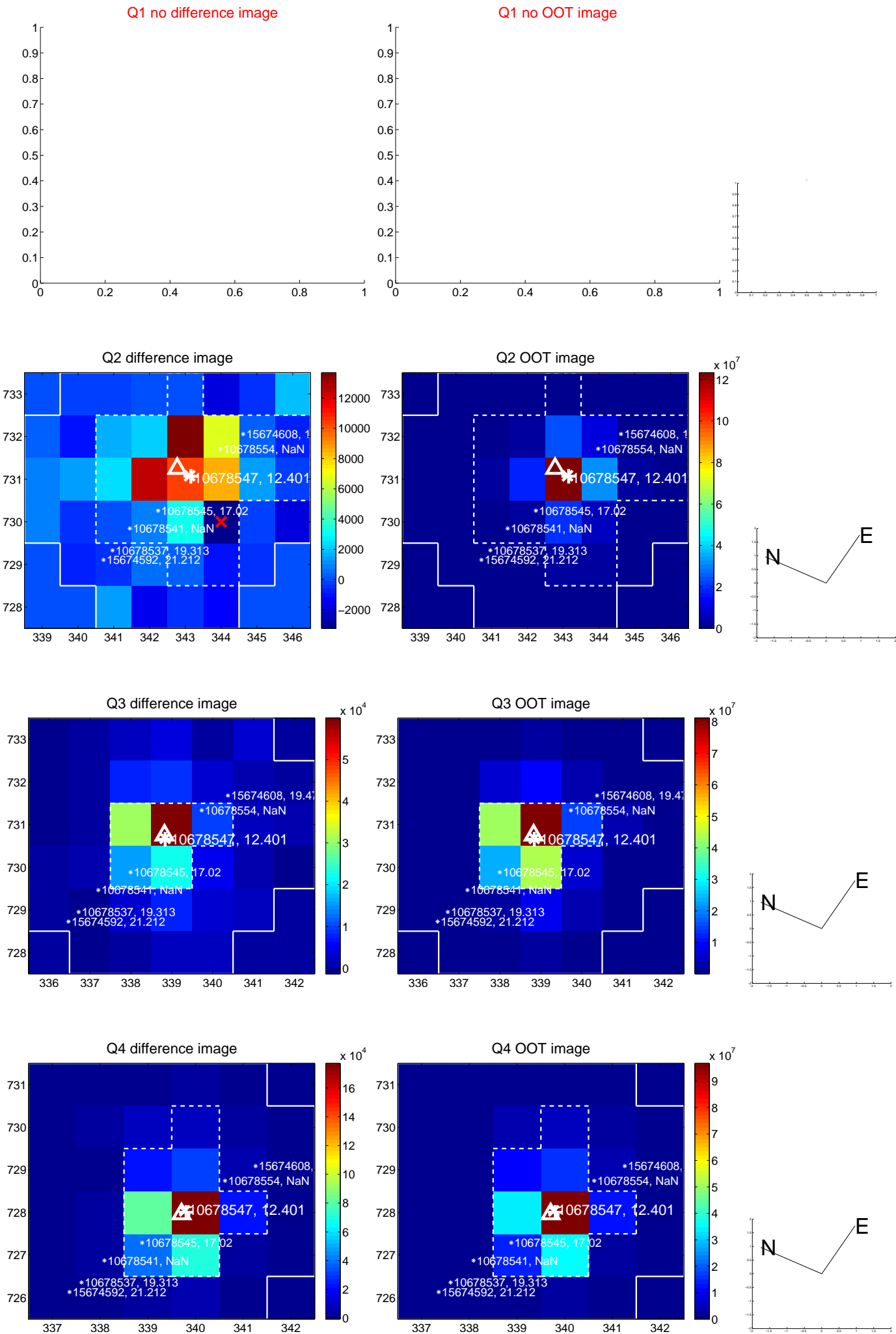
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.294 ± 0.203	1.45	0.230 ± 0.100	0.183 ± 0.281
PRF-fit source offset from KIC position	0.198 ± 0.158	1.25	0.190 ± 0.102	0.055 ± 0.335
photometric centroid source offset	0.28 ± 0.06	4.68	-0.16 ± 0.06	-0.24 ± 0.06

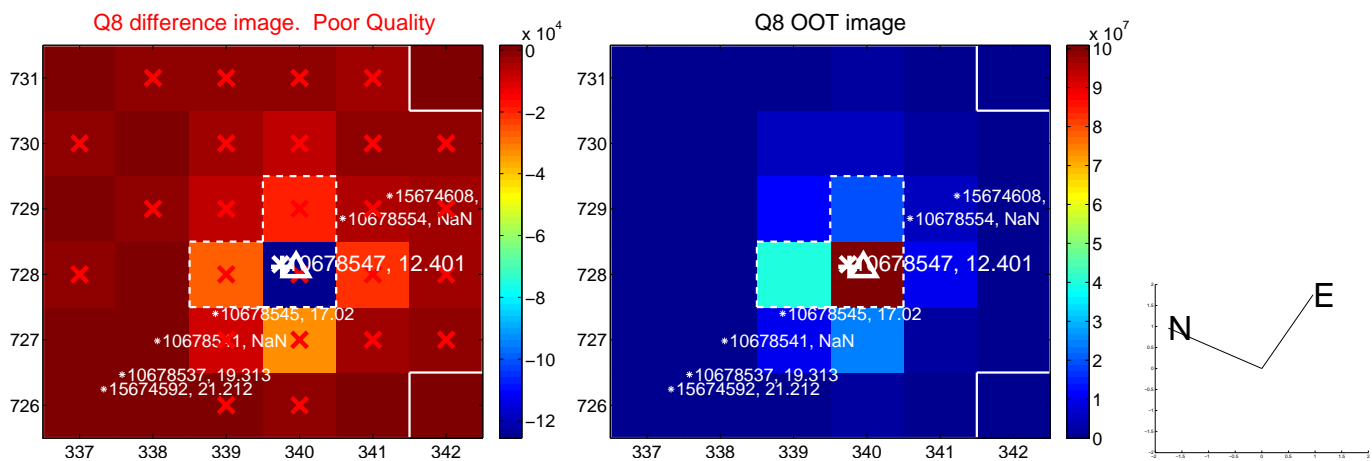
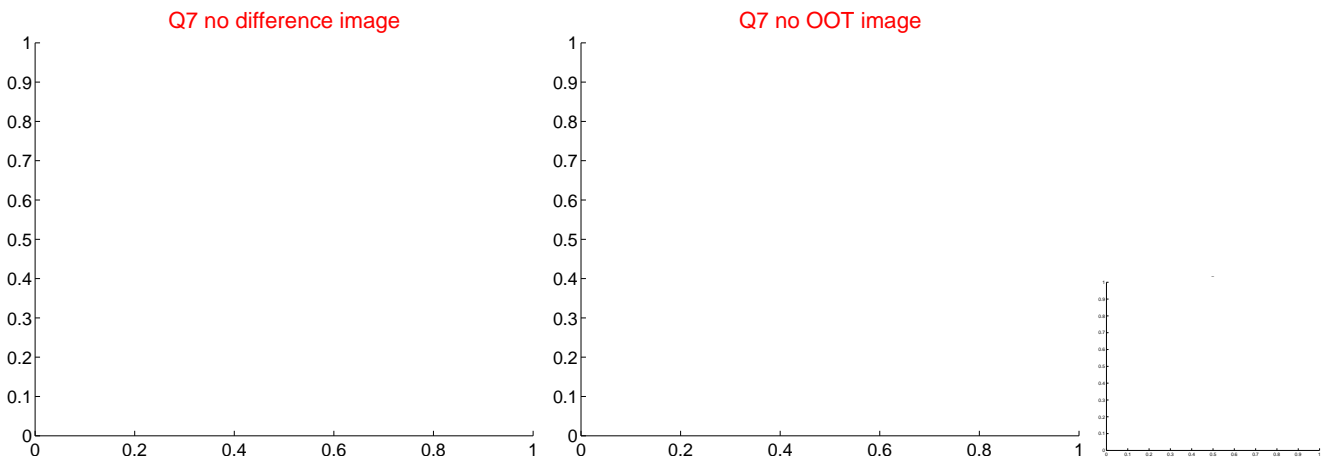
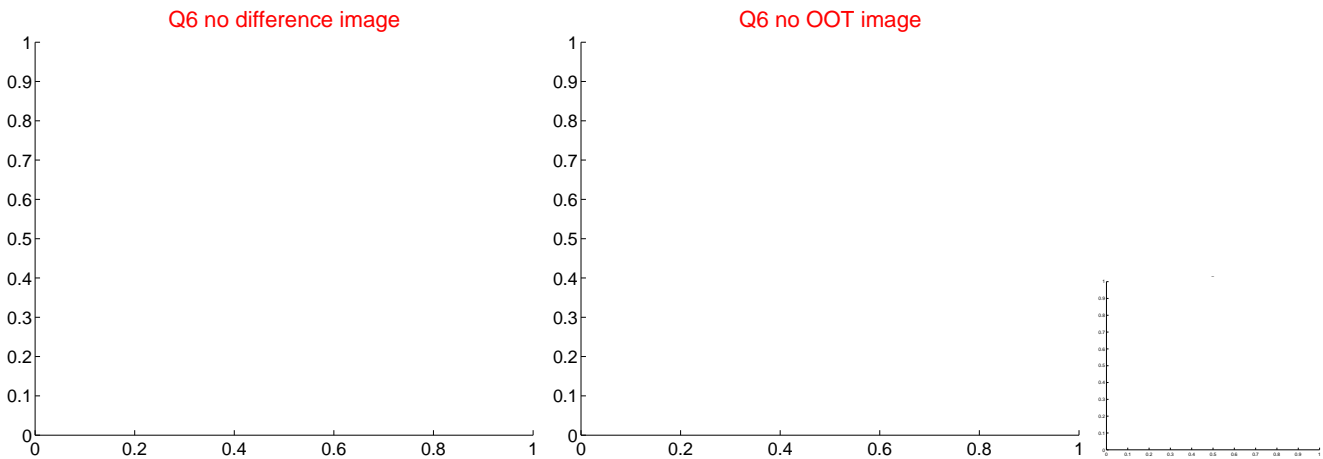
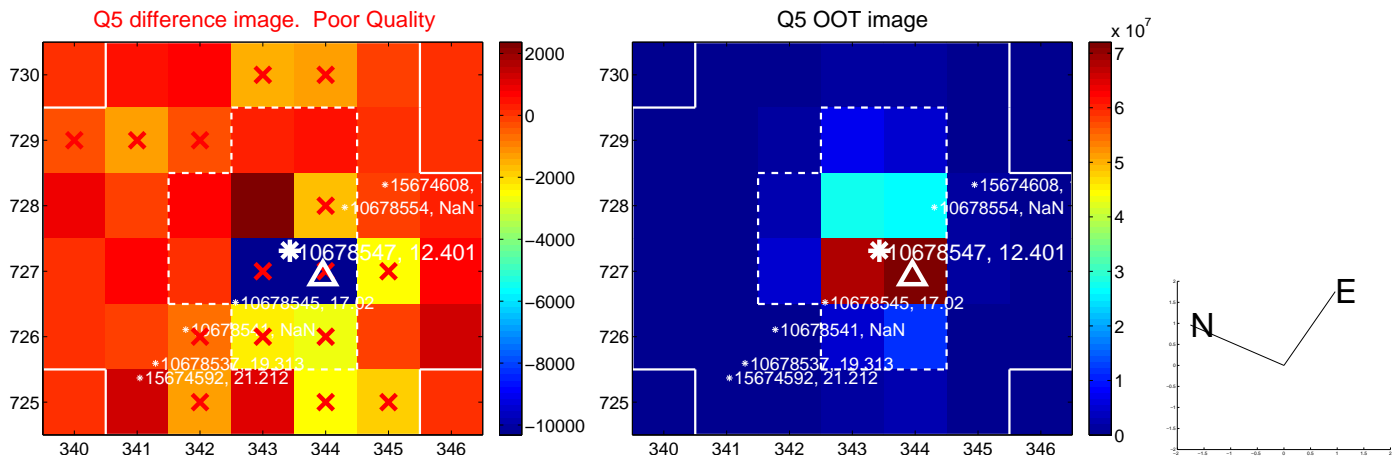


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

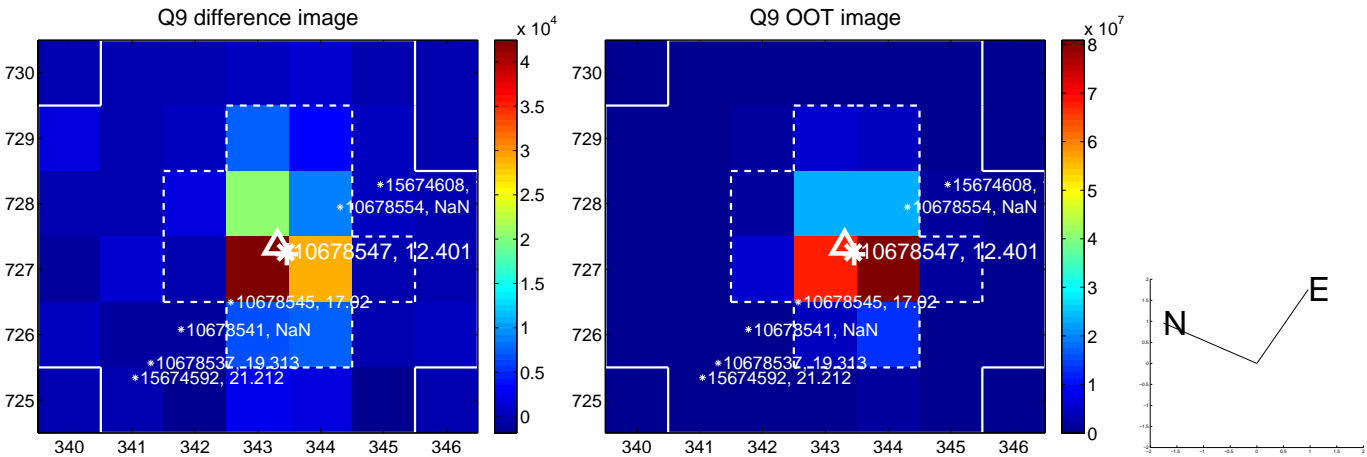
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



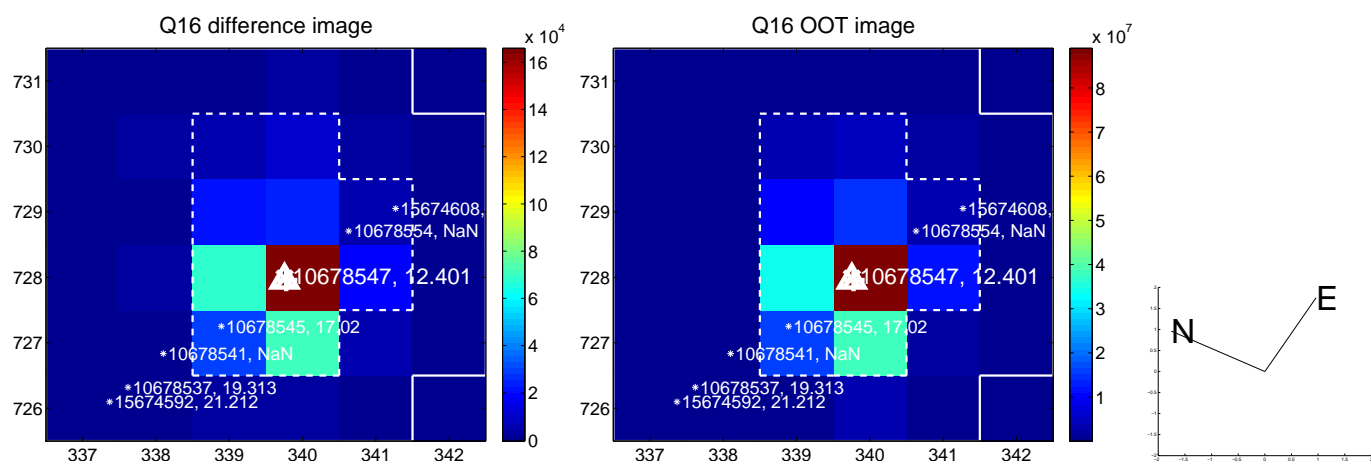
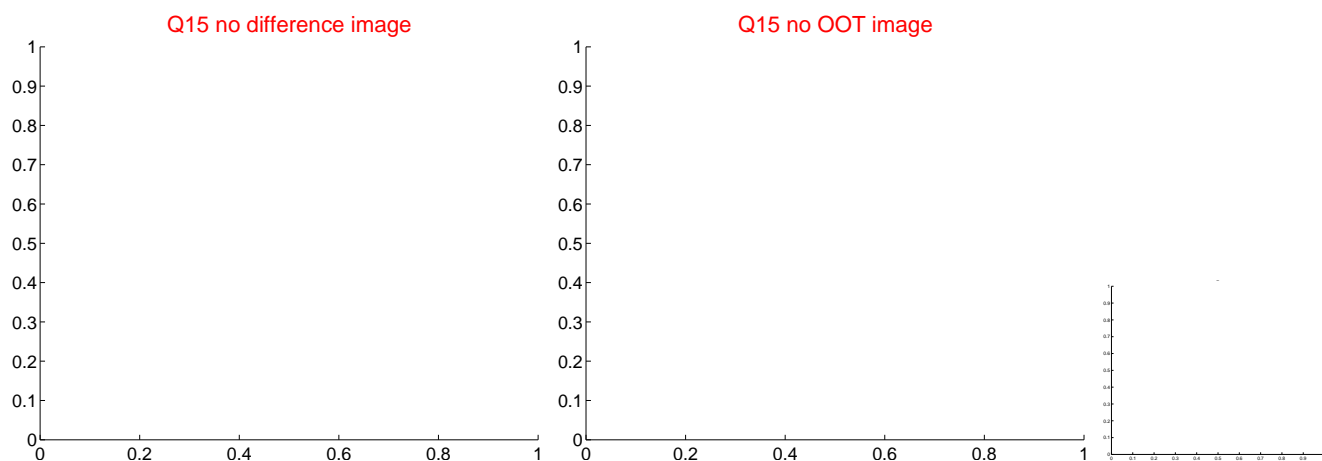
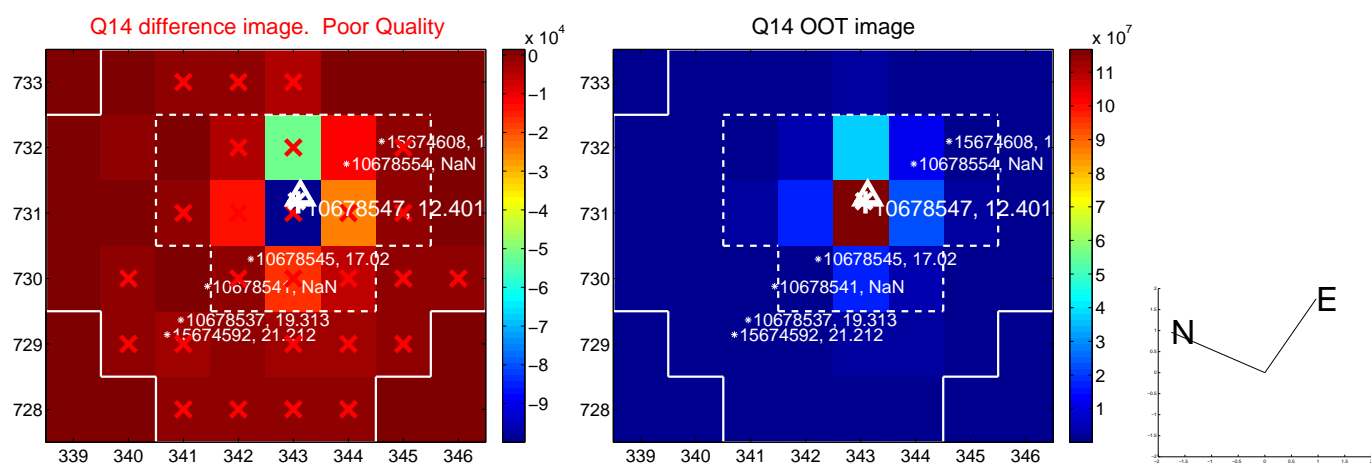
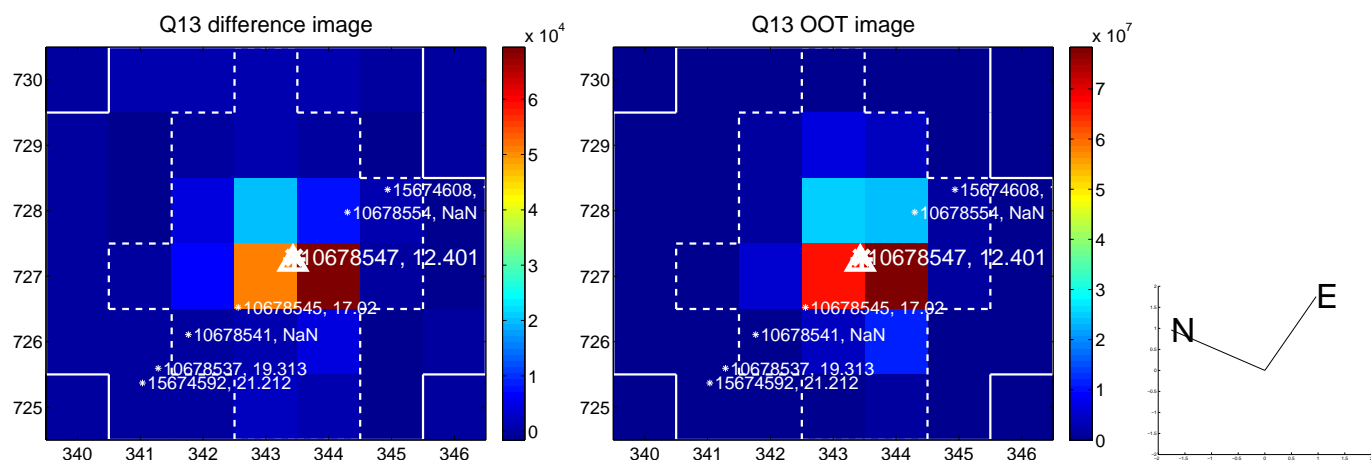
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



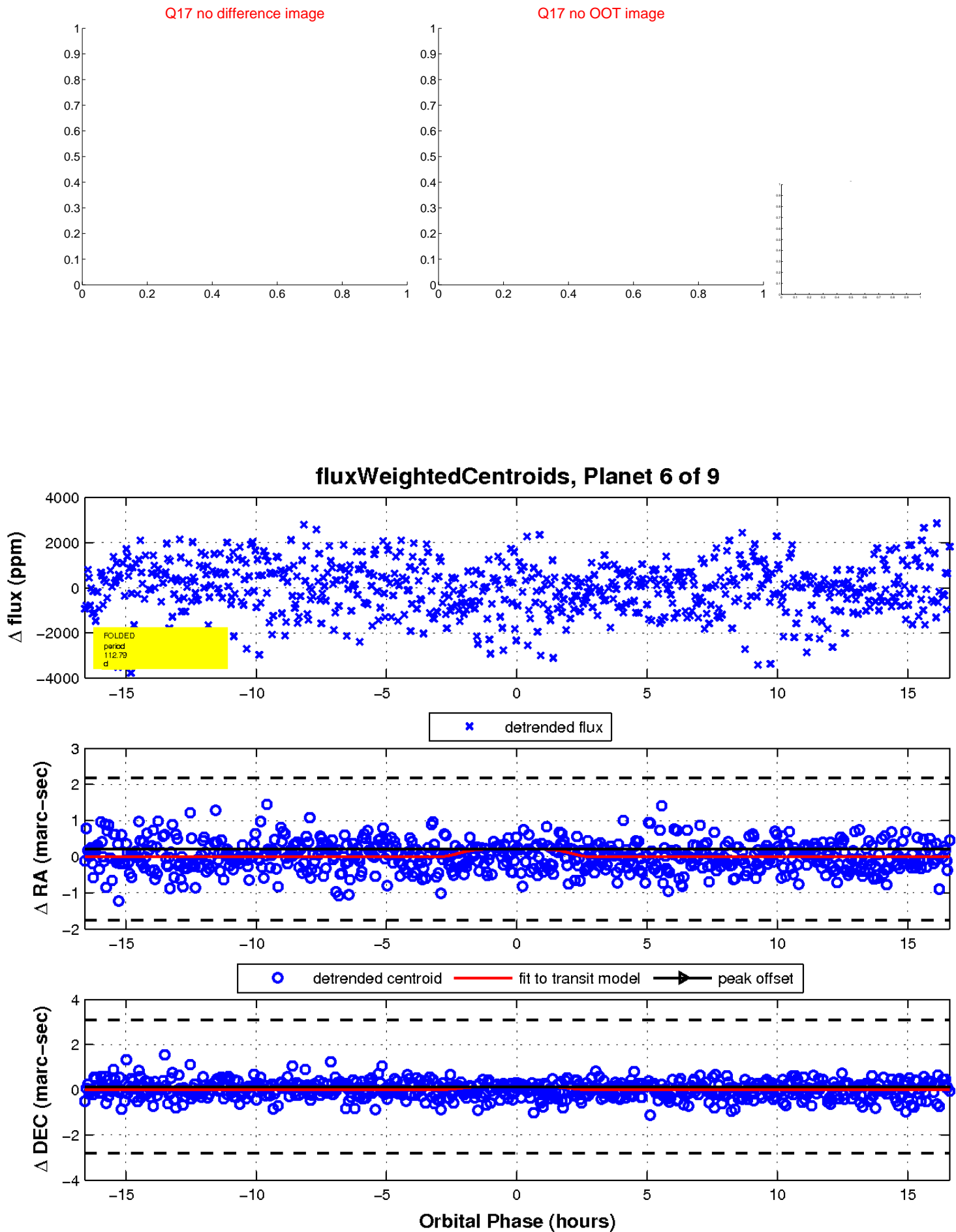
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

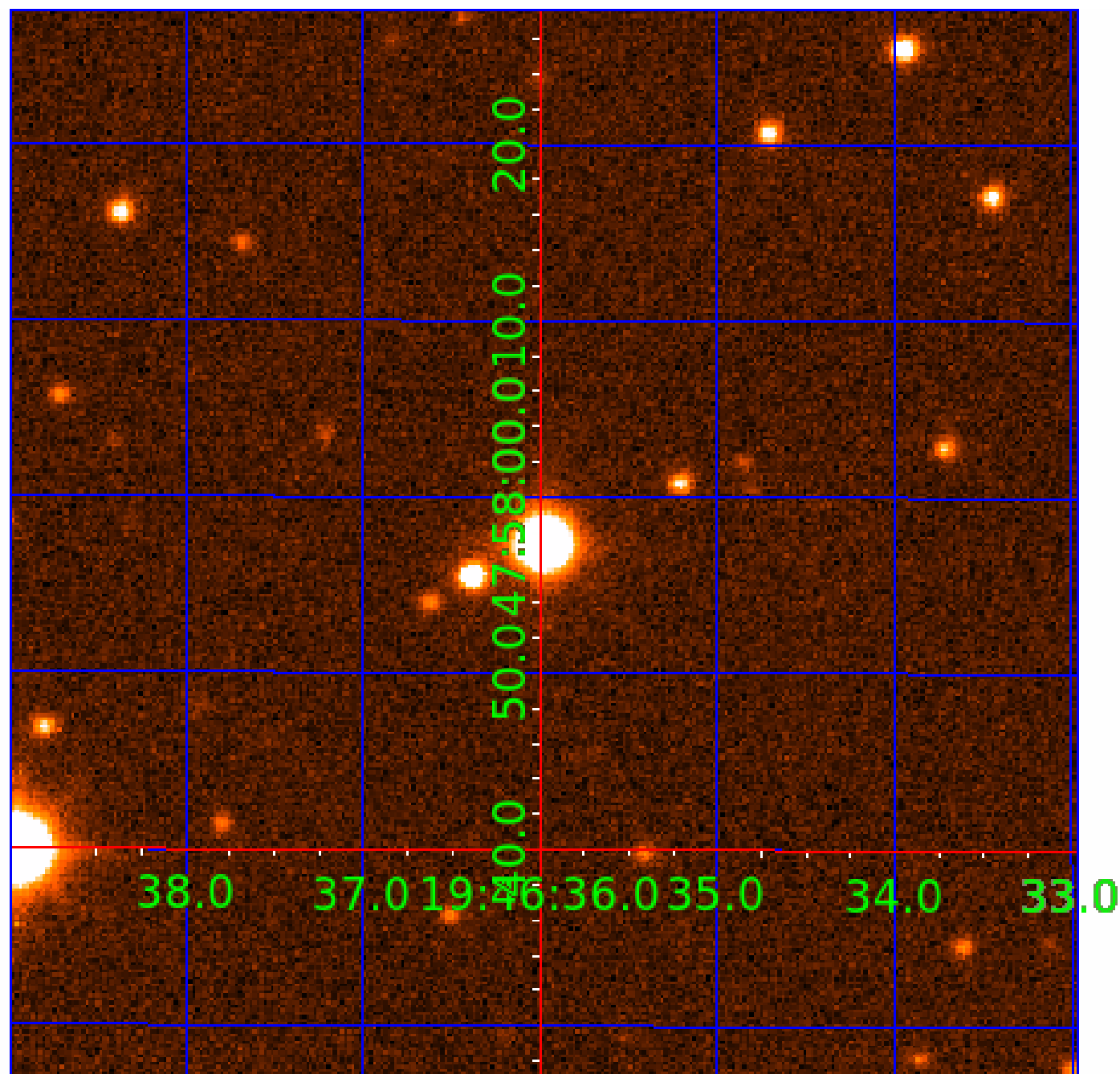


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010678547

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})
010678547-01	OBS	No	0.958852	131.740929	86.7	5.533	7.9	5.4	3.30	8089	3.13	66741.05
010678547-02	OBS	No	46.266327	132.134497	1965.9	2.176	10.4	9.8	3.30	8089	25.52	379.93
010678547-03	OBS	No	275.395986	189.662265	3463.5	3.956	10.2	11.3	3.30	8089	22.64	35.22
010678547-04	OBS	No	91.651982	201.270112	2210.0	6.815	9.8	9.5	3.30	8089	18.61	152.71
010678547-05	OBS	No	43.570469	137.129611	1396.6	5.119	8.9	8.8	3.30	8089	14.74	411.60
010678547-06	OBS	No	112.787169	188.429005	2289.5	5.538	9.3	8.1	3.30	8089	18.51	115.80
010678547-07	OBS	No	57.131981	133.364930	1676.4	4.872	9.1	9.0	3.30	8089	14.53	286.79
010678547-08	OBS	No	42.966194	155.444122	1288.5	5.702	10.0	9.0	3.30	8089	14.12	419.33
010678547-09	OBS	No	106.003102	153.375647	1335.3	13.839	8.3	8.1	3.30	8089	13.29	125.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010678547-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
010678547-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
010678547-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
010678547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
010678547-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

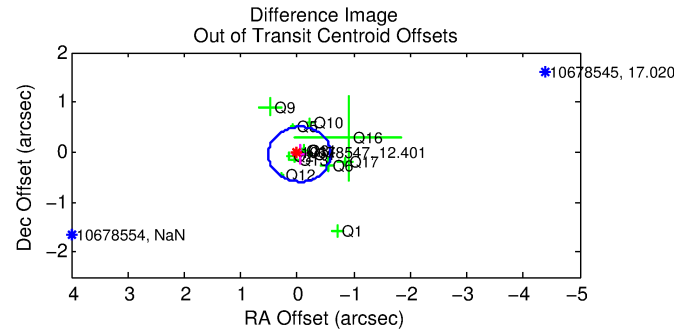
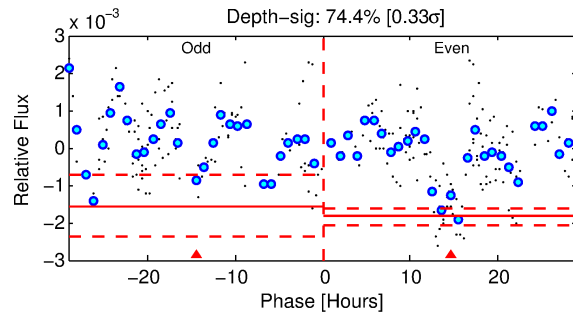
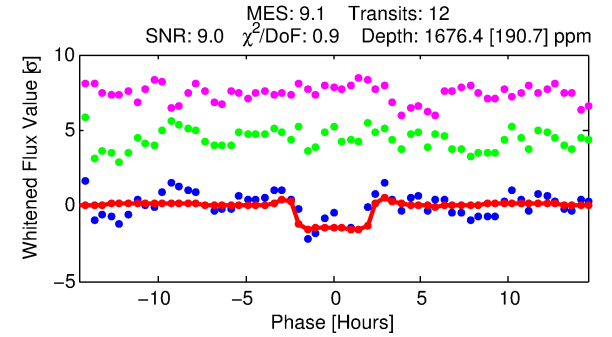
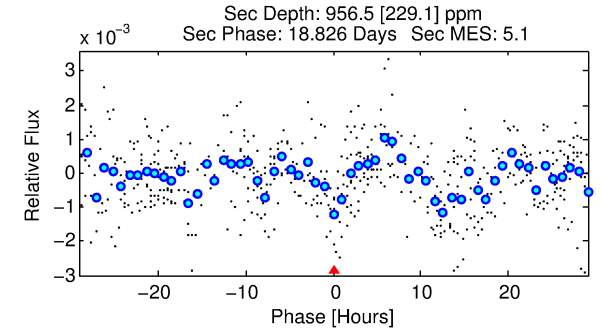
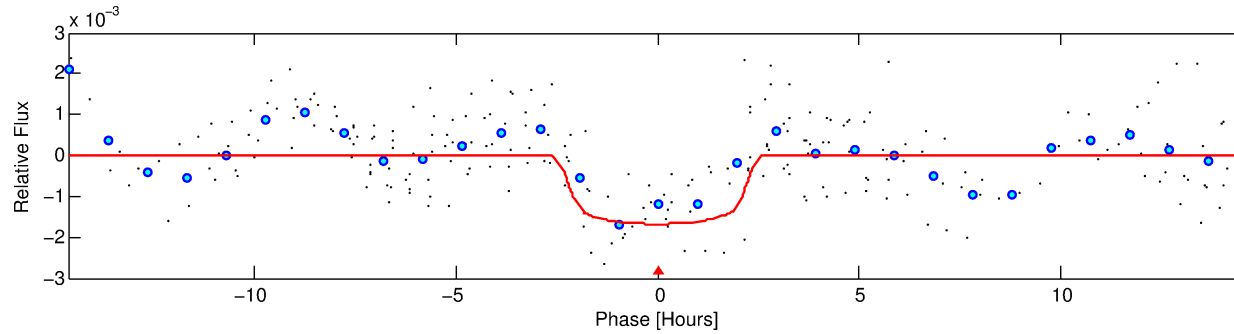
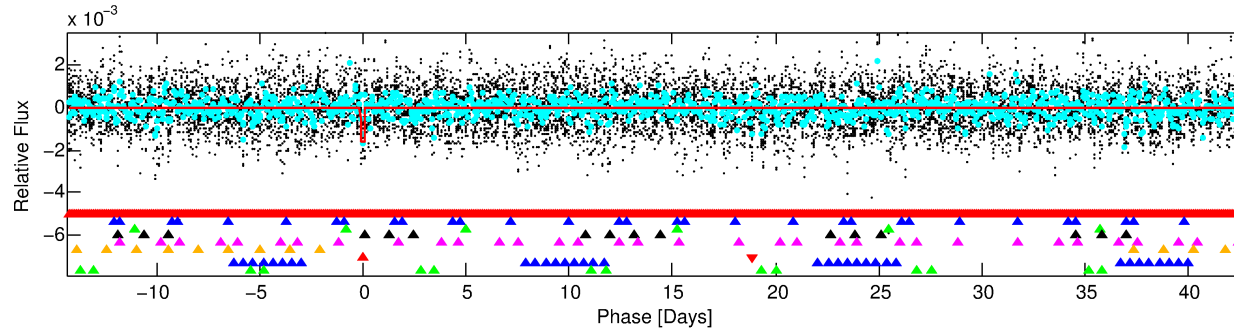
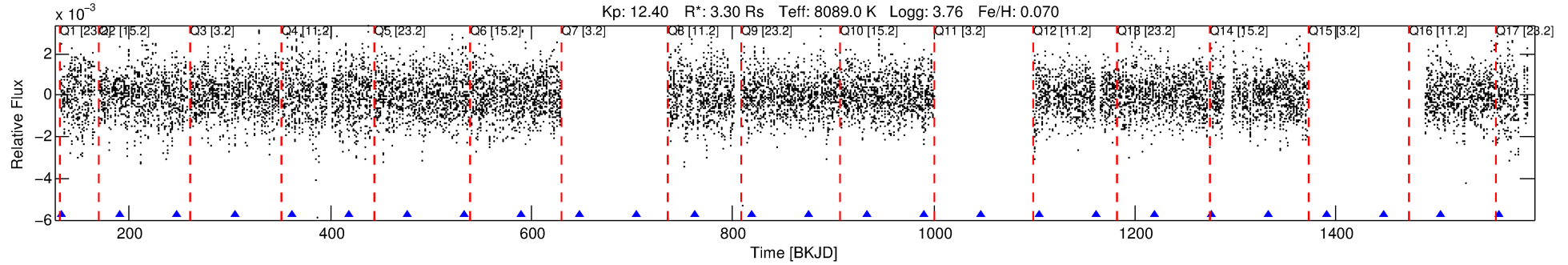
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678547-07

No Significant Match Found

DV One-Page Summary

KIC: 10678547 Candidate: 7 of 9 Period: 57.132 d



DV Fit Results:

Period = 57.13198 [0.00036] d
Epoch = 133.3649 [0.0051] BKJD
Rp/R* = 0.0403 [0.0369]
a/R* = 67.86 [358.24]
b = 0.71 [3.67]
Seff = 286.78 [116.05]
Teq = 1049 [106] K
Rp = 14.52 [14.00] Re
a = 0.3815 [0.1012] AU
Ag = 363.09 [686.37] [0.53σ]
Teffp = 7082 [3272] K [1.84σ]

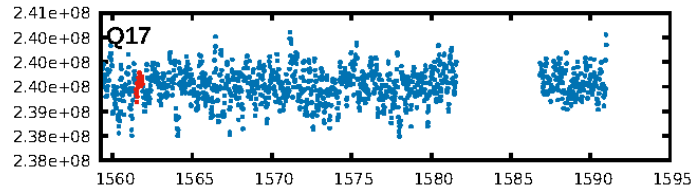
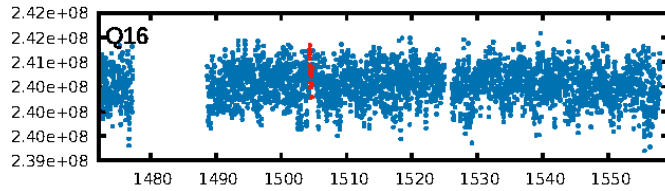
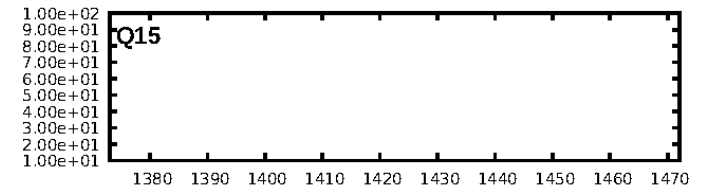
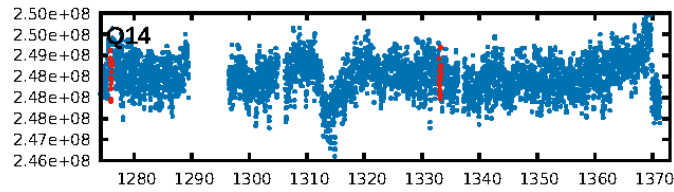
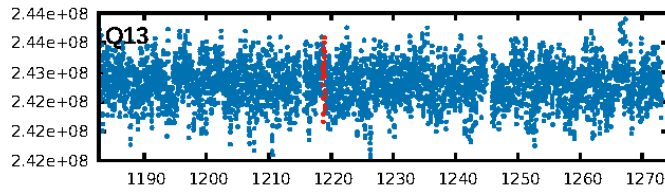
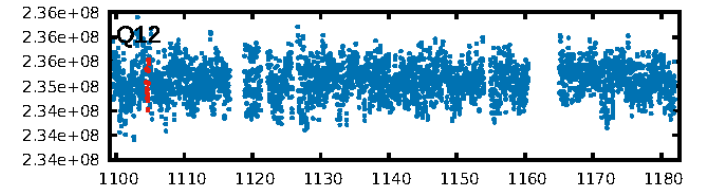
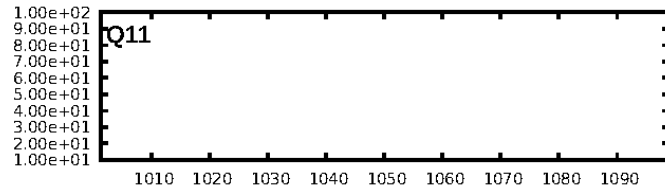
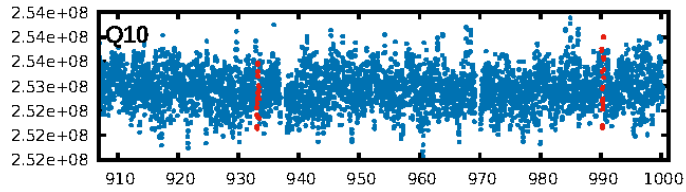
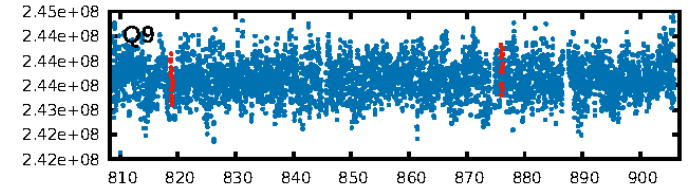
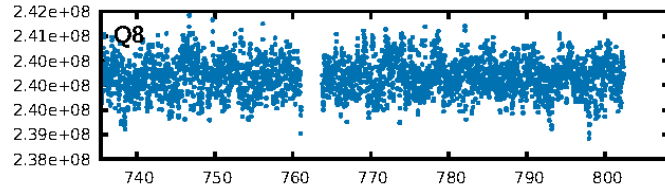
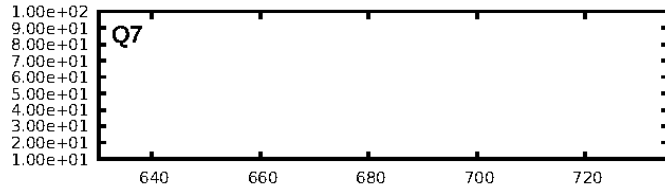
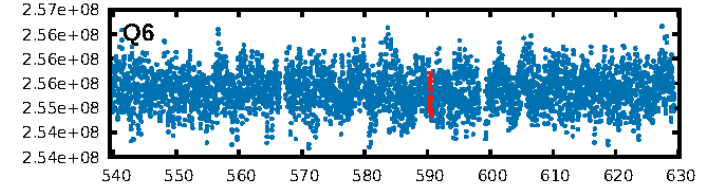
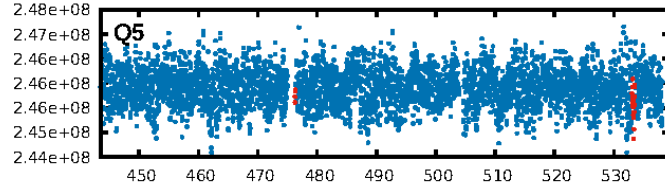
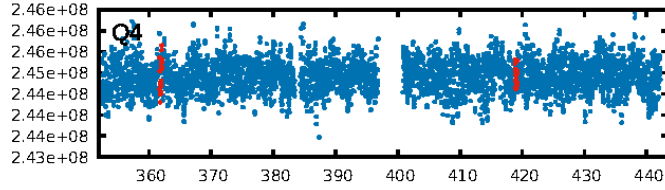
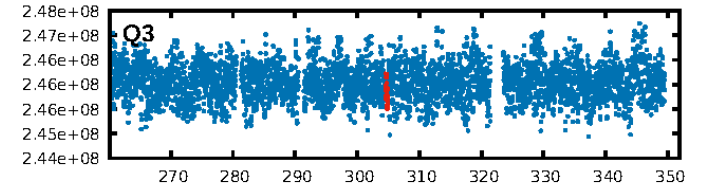
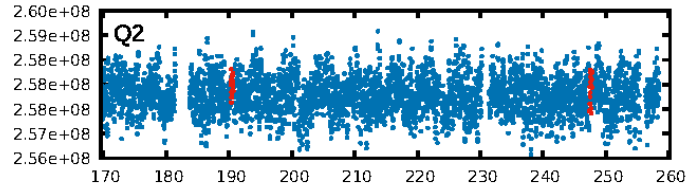
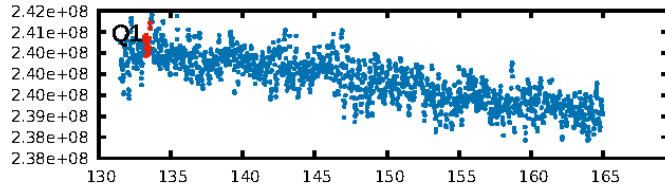
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [48.87σ]
LongPeriod-sig: 100.0% [98.90σ]
ModelChiSquare2-sig: 44.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 0.7883
Centroid-sig: 3.0%
Centroid-so: 0.286 arcsec [4.80σ]
OotOffset-rm: 0.058 arcsec [0.32σ]
KicOffset-rm: 0.172 arcsec [0.97σ]
OotOffset-st: 4/1/3/5 [13]
KicOffset-st: 4/1/3/5 [13]
DiffImageQuality-fgm: 0.62 [8/13]
DiffImageOverlap-fno: 0.00 [0/13]

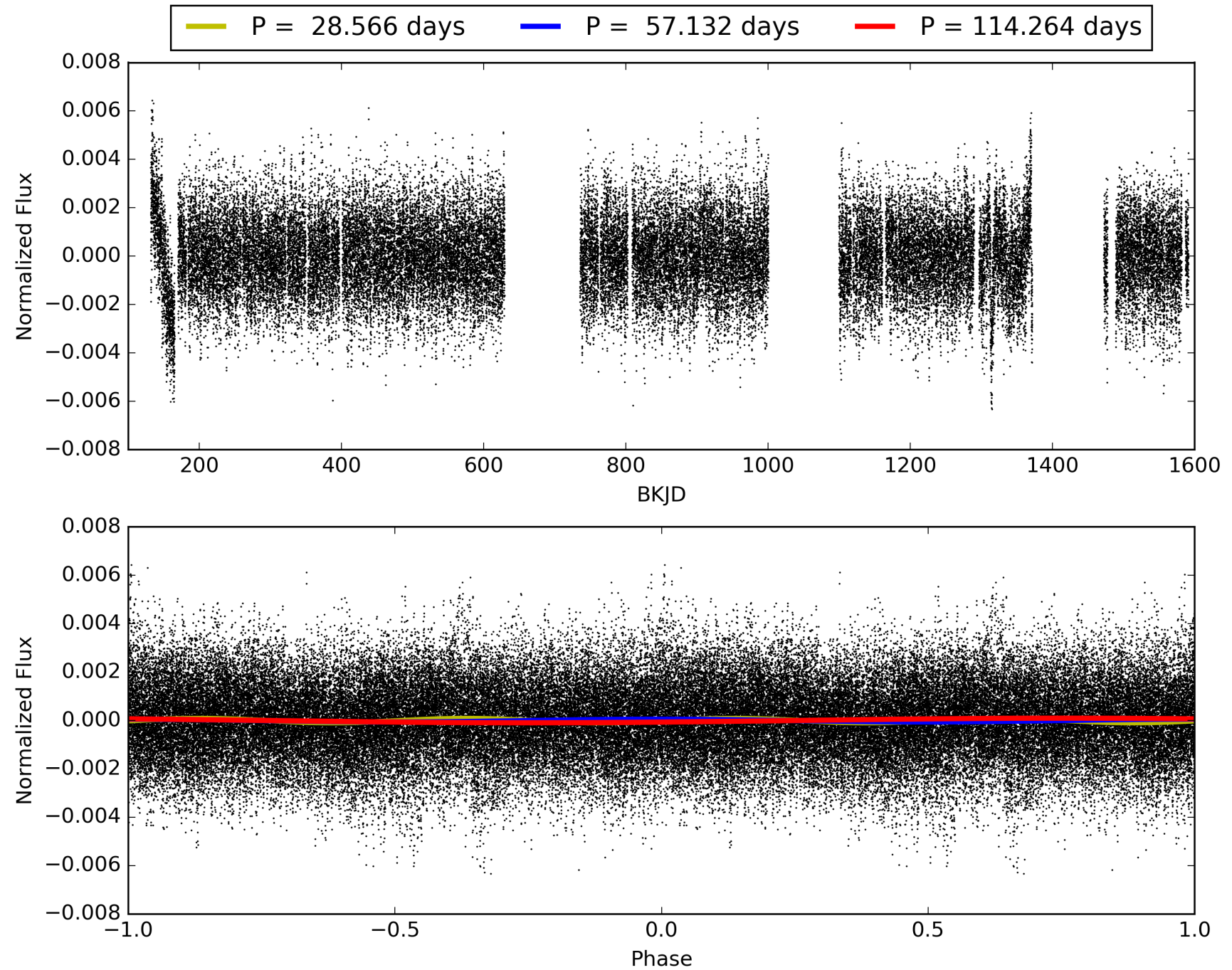
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:51:27 Z

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

TCE 010678547-07, PDC Light Curves

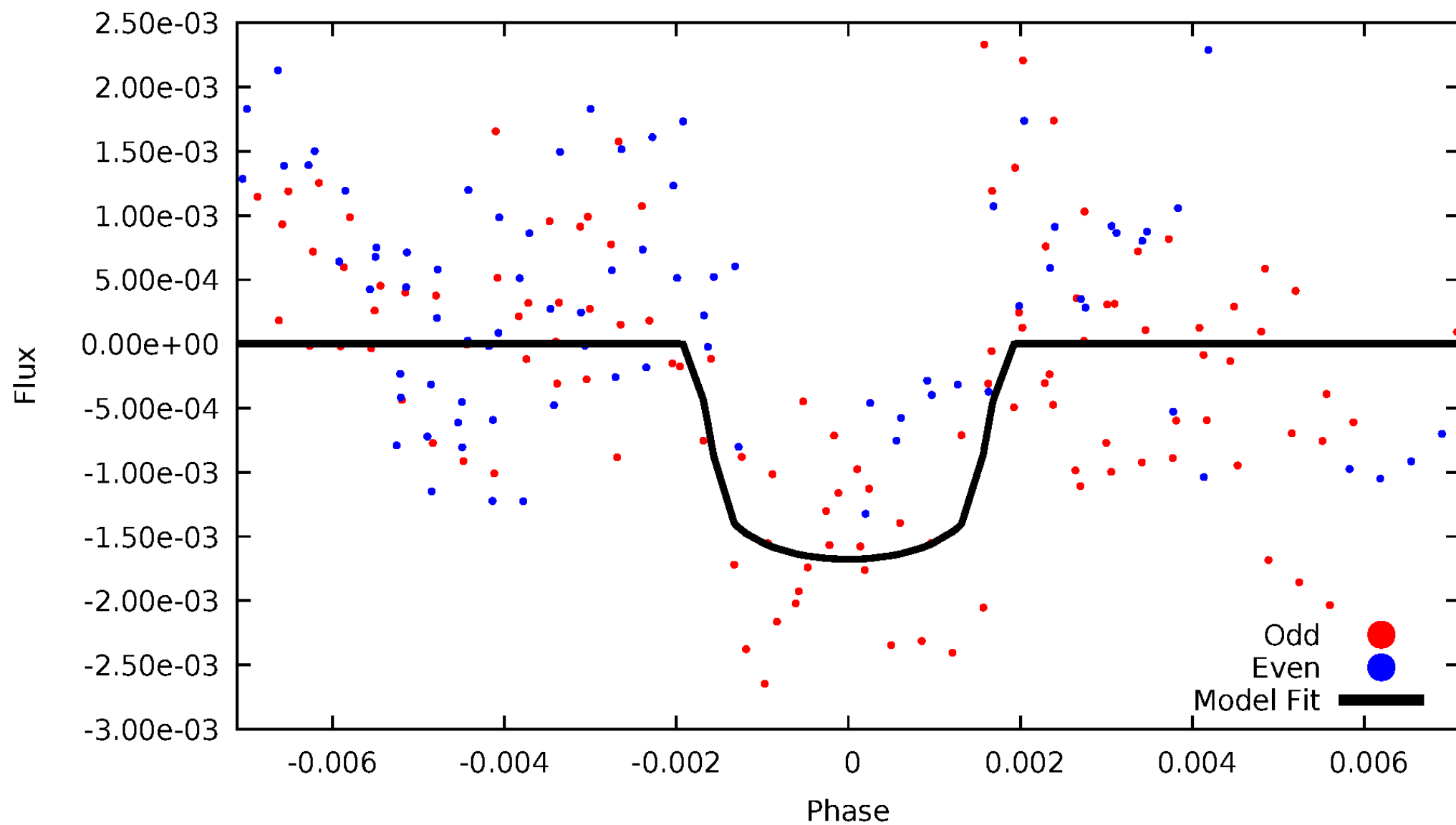


TCE 010678547-07



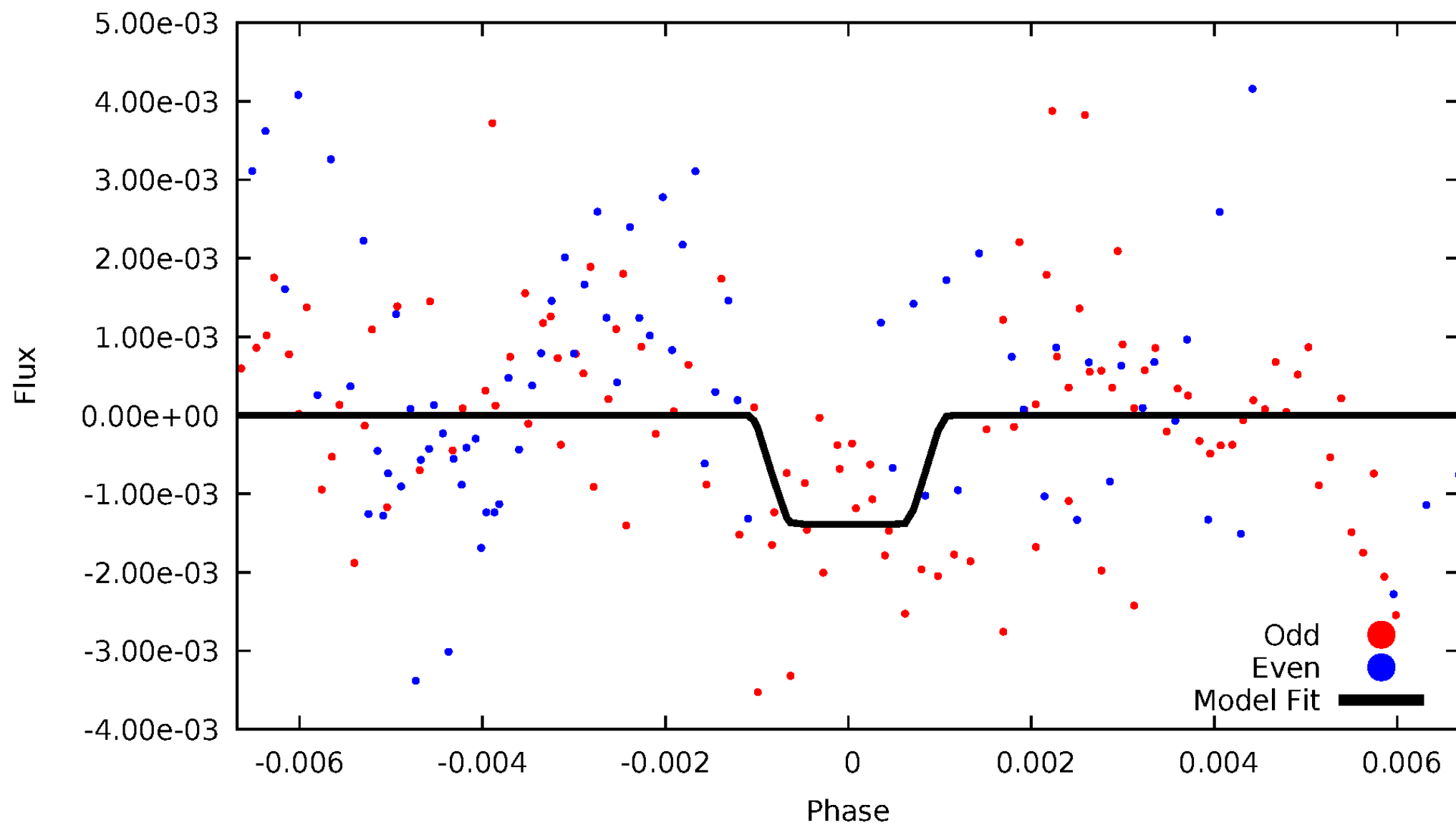
DV Odd/Even

TCE 010678547-07

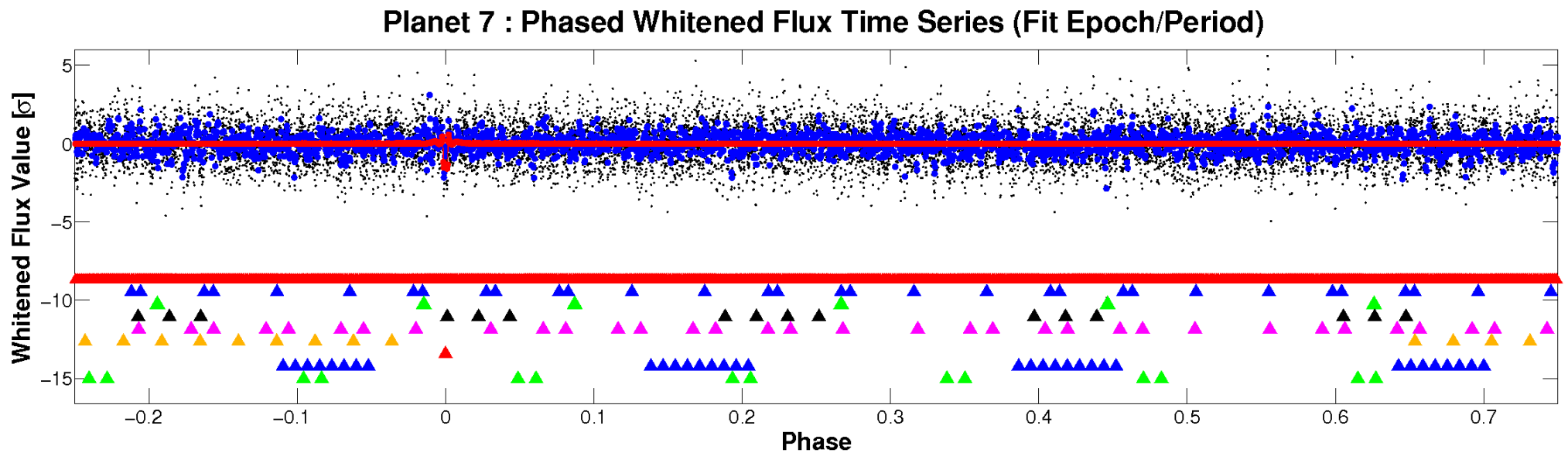
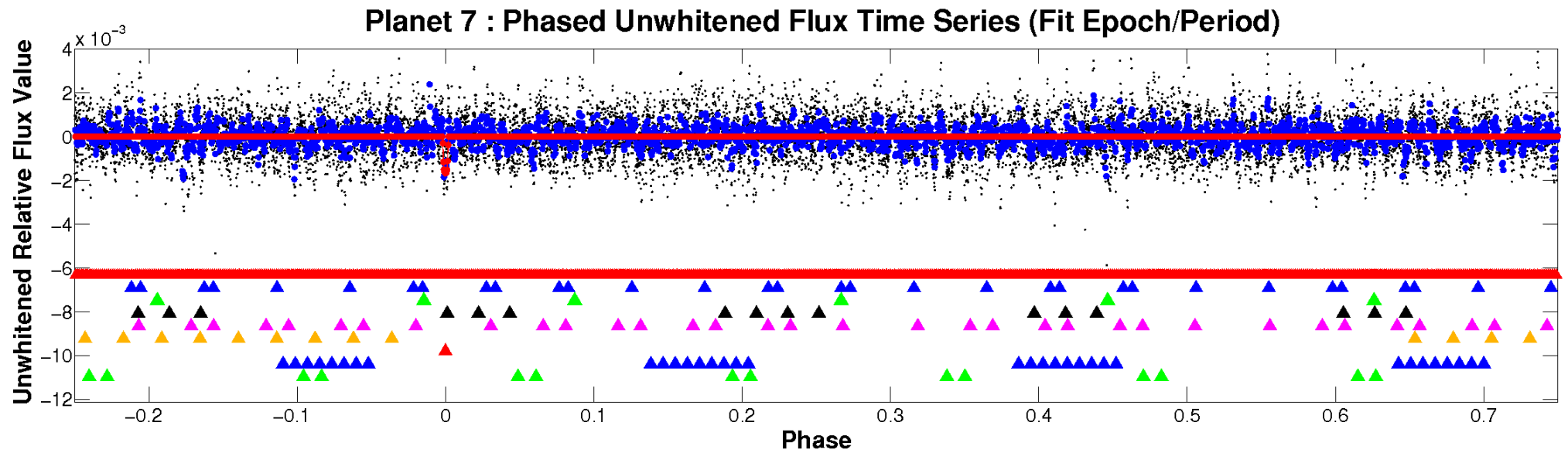


ALT Odd/Even

TCE 010678547-07

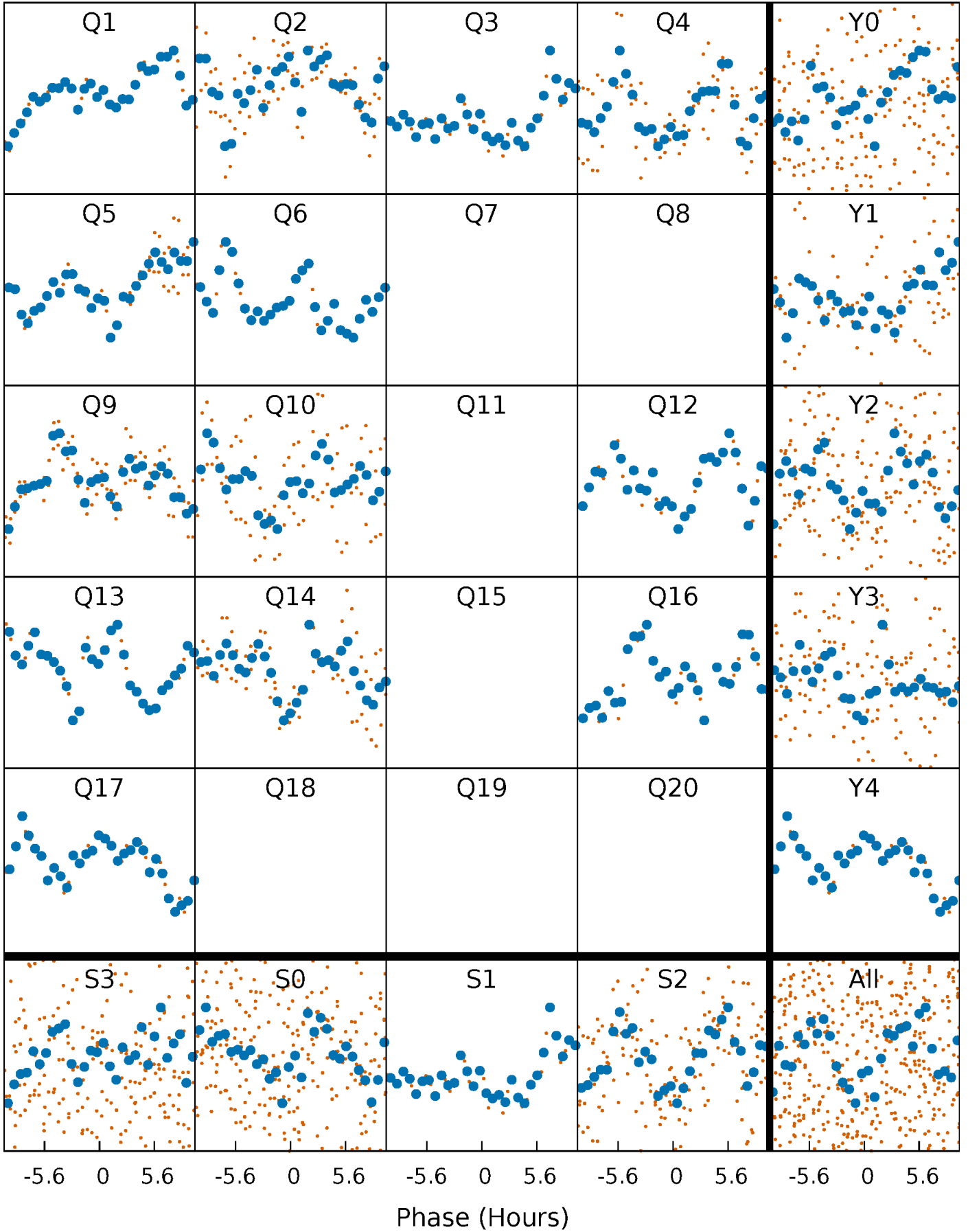


Non-Whitened Vs. Whitened Light Curve



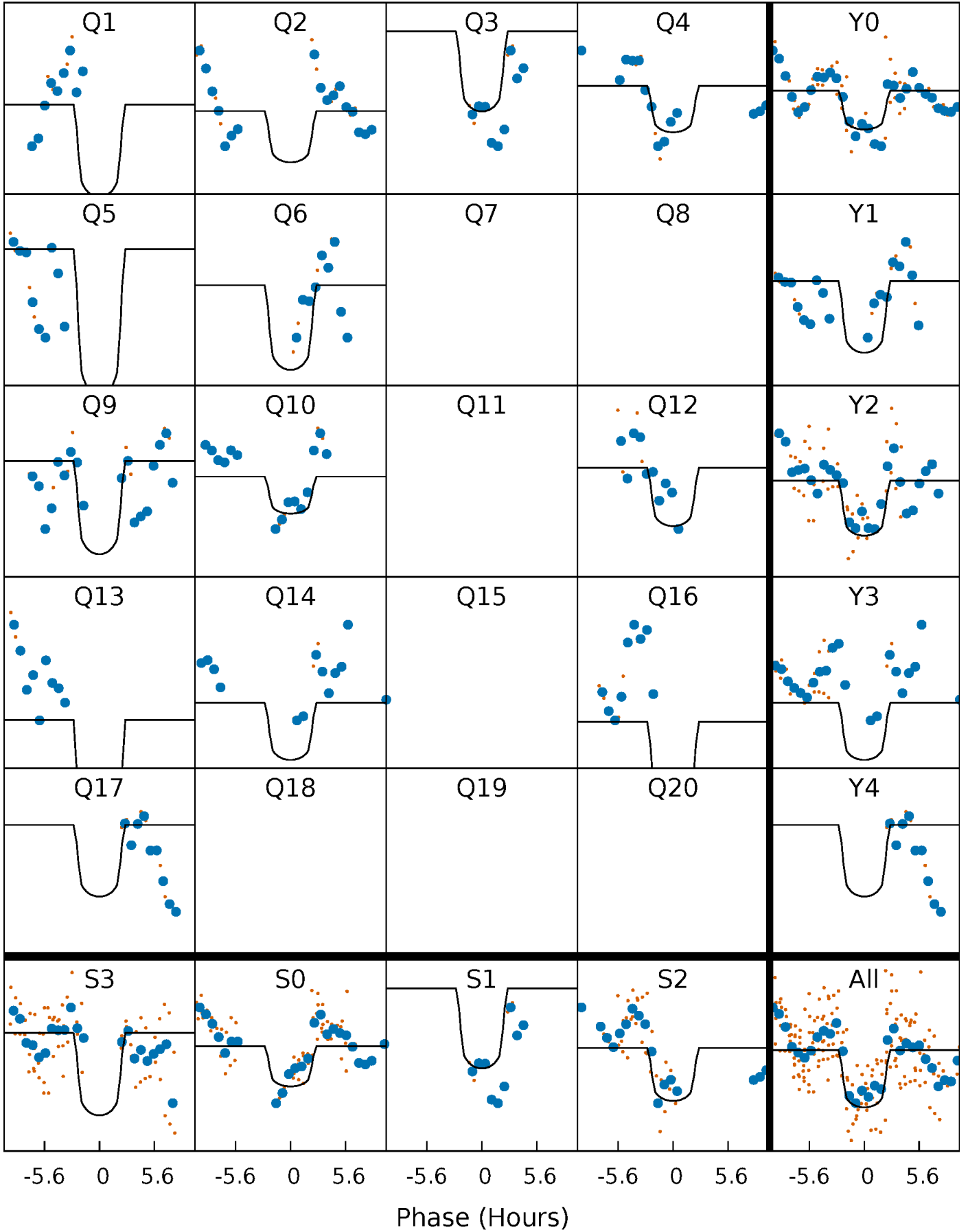
PDC Quarter-Phased Transit Curves

TCE 010678547-07 P= 57.131981 Days $T_0=133.364930$ (BKJD)



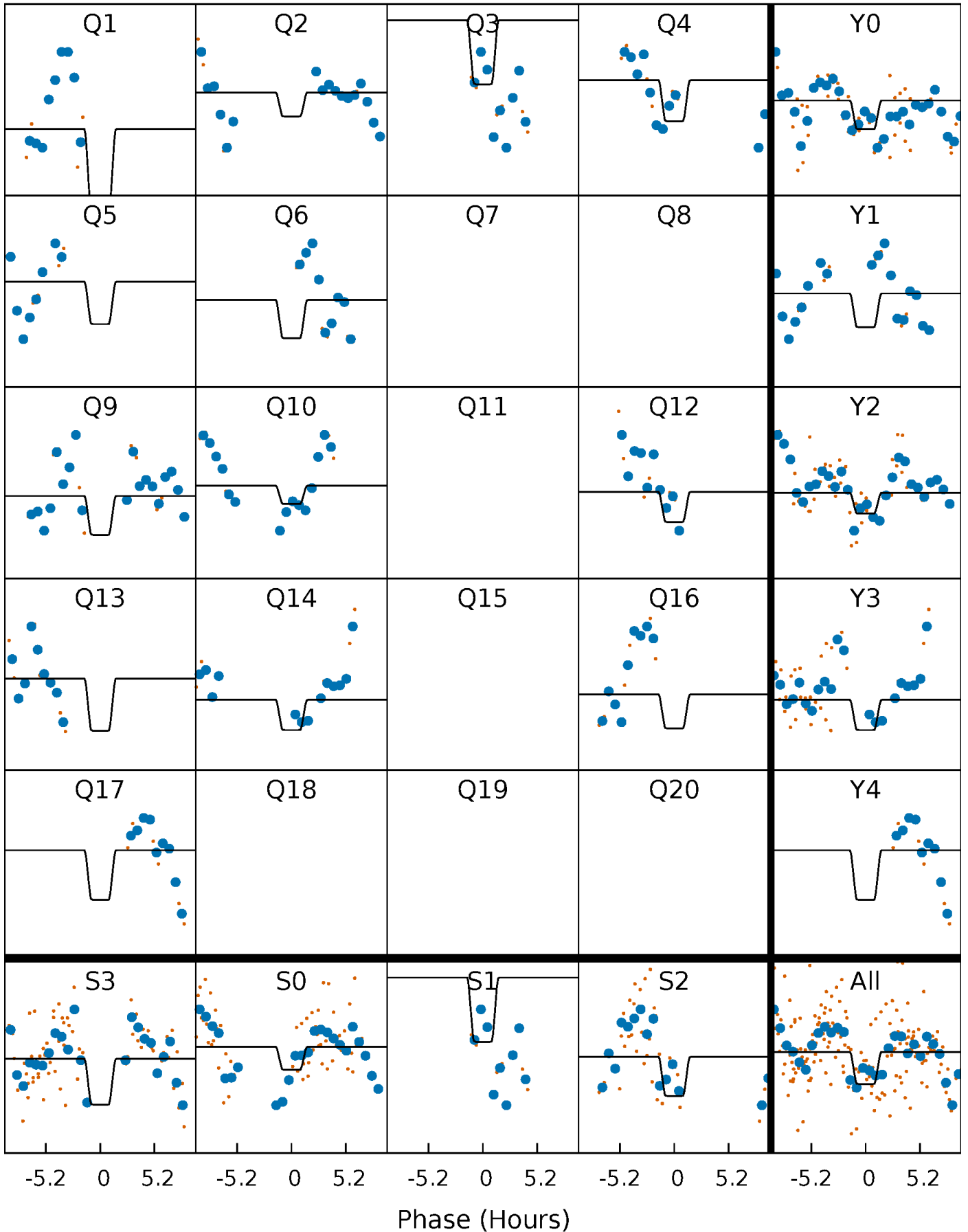
DV Quarter-Phased Transit Curves

TCE 010678547-07 P= 57.131981 Days $T_0=133.364930$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

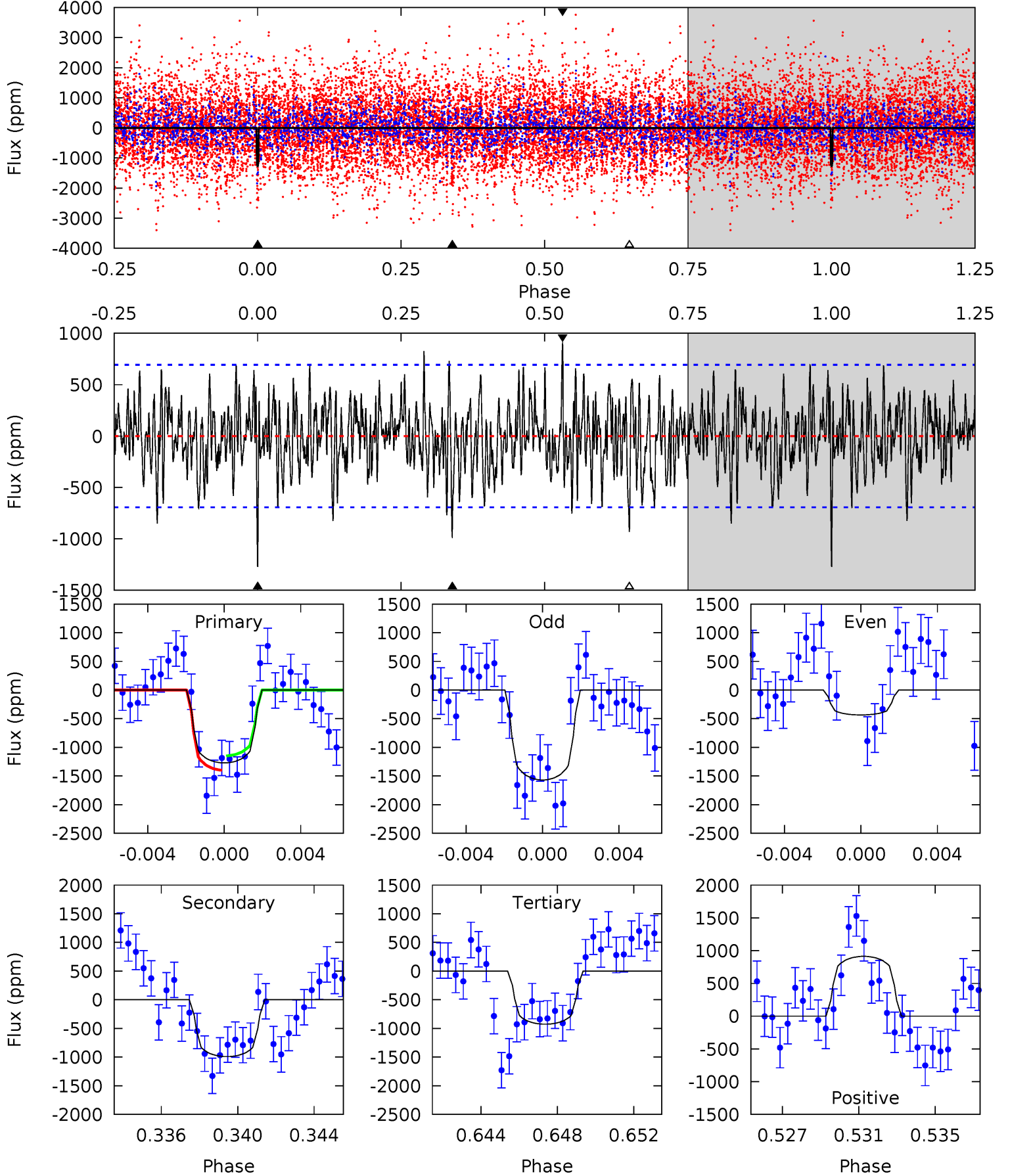
TCE 010678547-07 $P = 57.131634$ Days $T_0 = 133.358846$ (BKJD)



DV Model-Shift Uniqueness Test

010678547-07, P = 57.131981 Days, E = 76.232949 Days

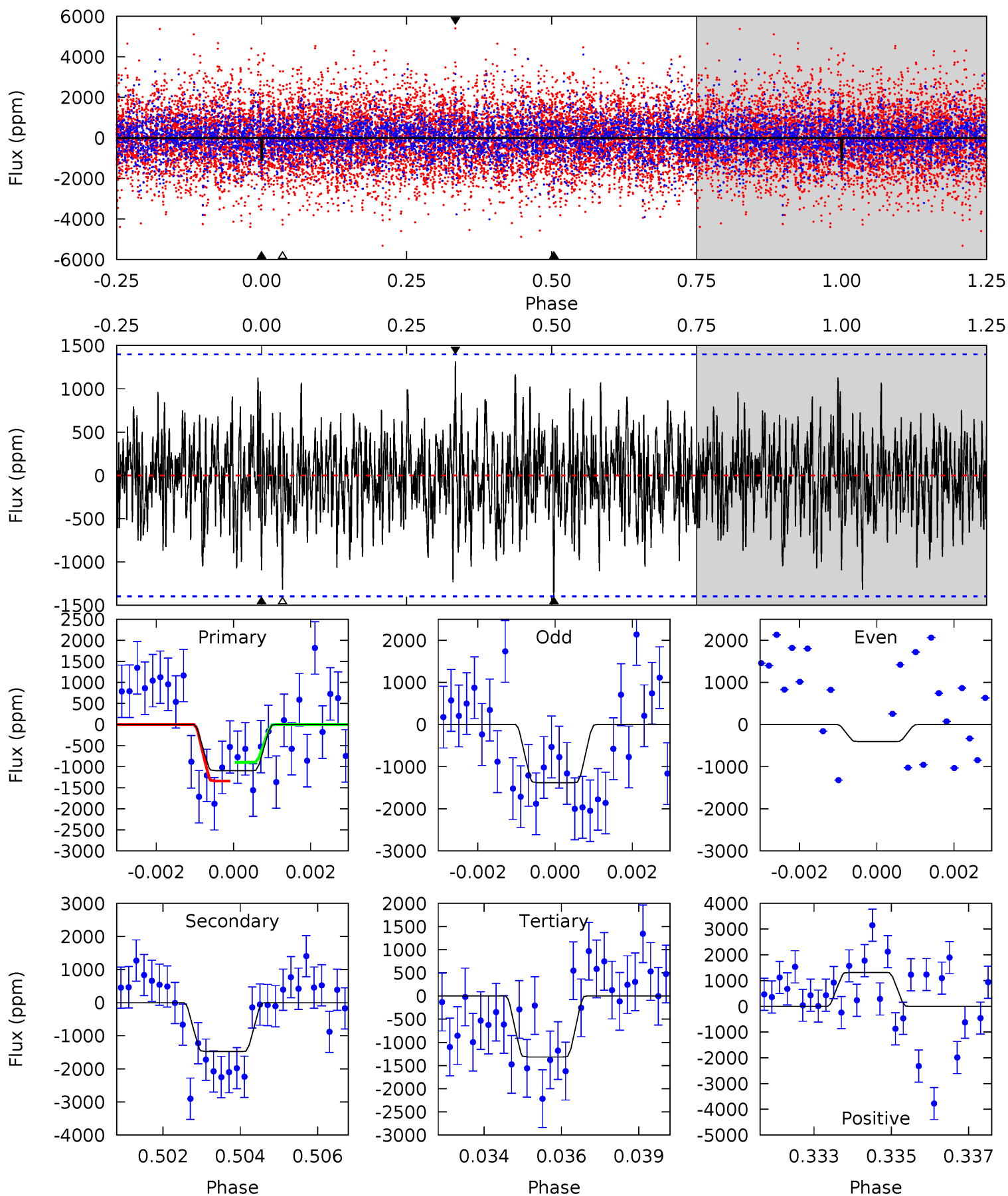
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.55	7.45	6.96	6.85	5.20	2.89	2.11	2.59	2.70	0.49	0.59	3.88	0.24	0.42	0.94



Alt Model-Shift Uniqueness Test

010678547-07, P = 57.131634 Days, E = 76.227212 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.17	5.62	5.01	5.01	5.31	3.07	1.44	-0.84	-0.83	0.61	0.62	1.50	0.91	0.47	0.84



Stellar Parameters For KIC 010678547

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8089^{+64}_{-97}	$3.757^{+0.227}_{-0.122}$	$0.070^{+0.200}_{-0.250}$	$3.299^{+0.660}_{-0.990}$	$2.267^{+0.222}_{-0.413}$	$0.089^{+0.122}_{-0.033}$
	+1%/-1%	+6%/-3%	+286%/-357%	+20%/-30%	+10%/-18%	+137%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 010678547-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-991 ± 133	$16.48^{+12.26}_{-9.99}$	1459^{+75}_{-97}	6411^{+5153}_{-1460}	285^{+1598}_{-191}
Alt.	-1478 ± 263	$15.78^{+11.21}_{-10.04}$	1456^{+77}_{-102}	7328^{+7492}_{-1845}	474^{+2860}_{-322}

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

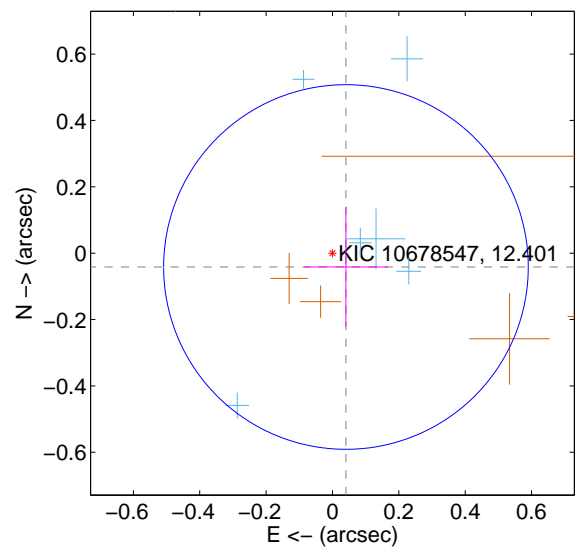
Supplemental centroid analysis for 010678547-07. Kepler magnitude: 12.40. Transit SNR 9.01

There are 8 quarters with good PRF difference image offsets

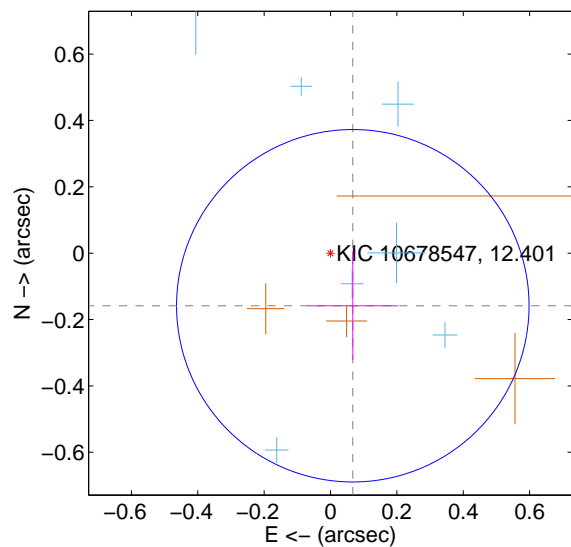
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.058 ± 0.183	0.32	-0.041 ± 0.126	-0.042 ± 0.181
PRF-fit source offset from KIC position	0.172 ± 0.177	0.97	-0.067 ± 0.136	-0.158 ± 0.163
photometric centroid source offset	0.29 ± 0.06	4.80	-0.14 ± 0.06	-0.25 ± 0.06

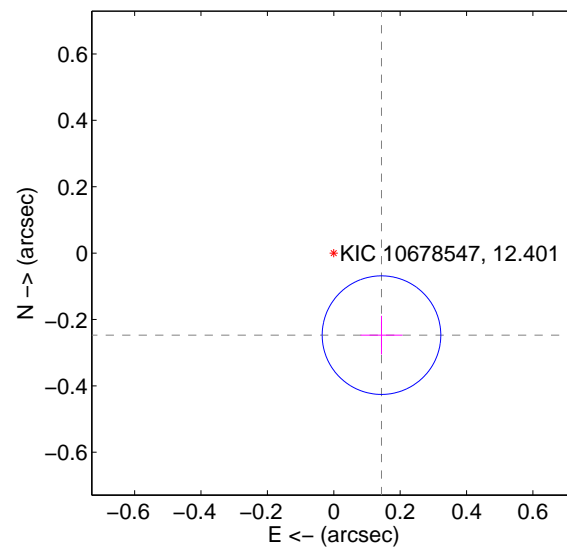
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

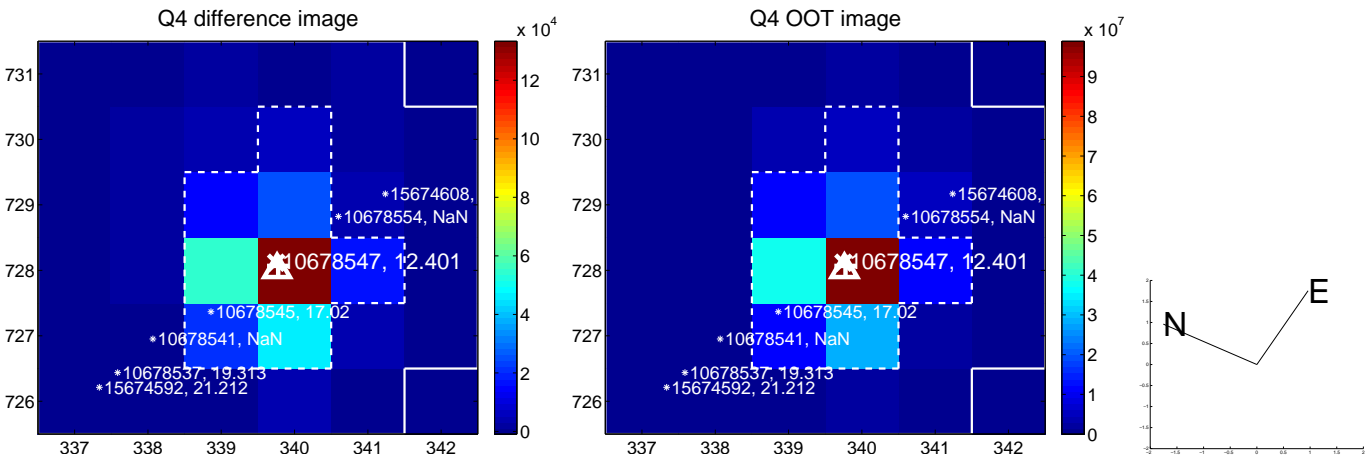
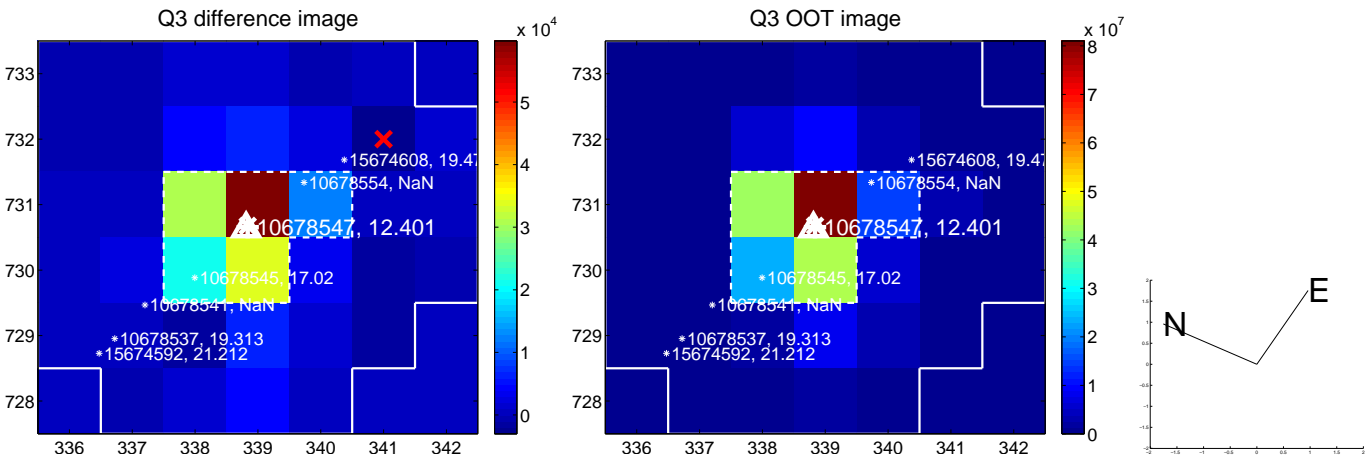
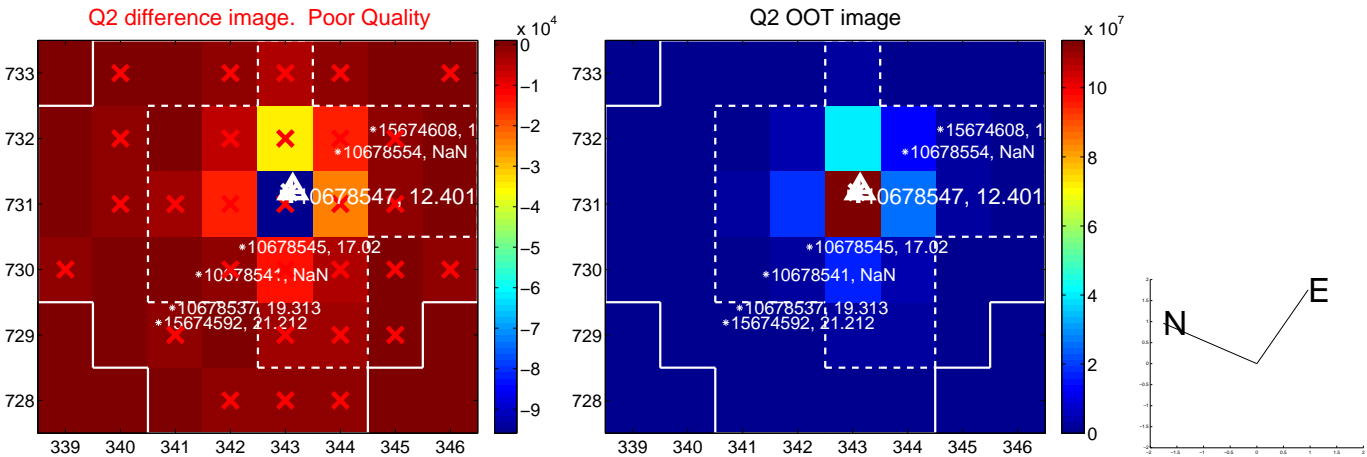
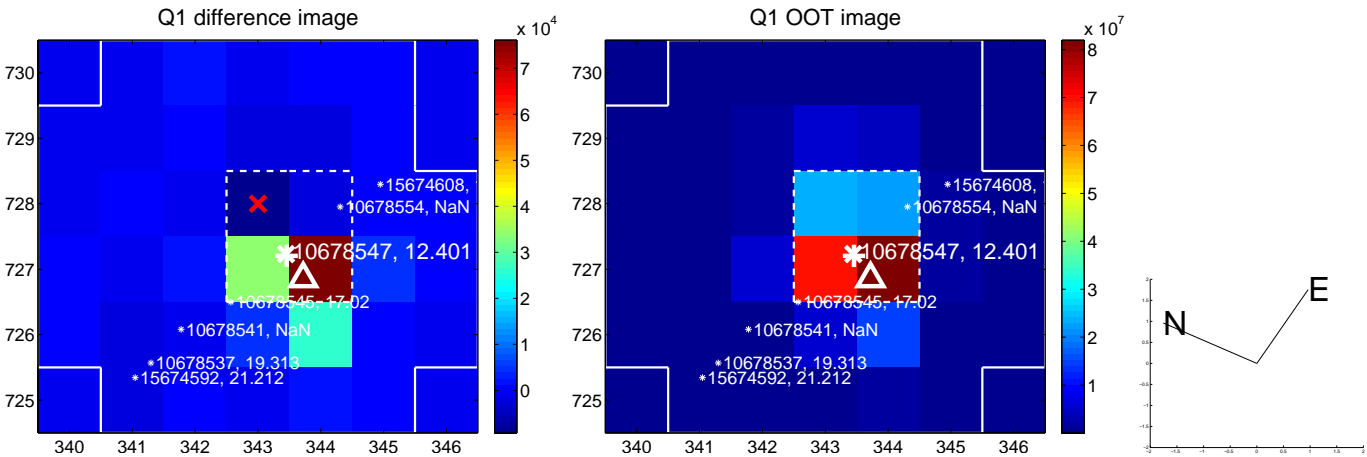


offset from photometric centroids

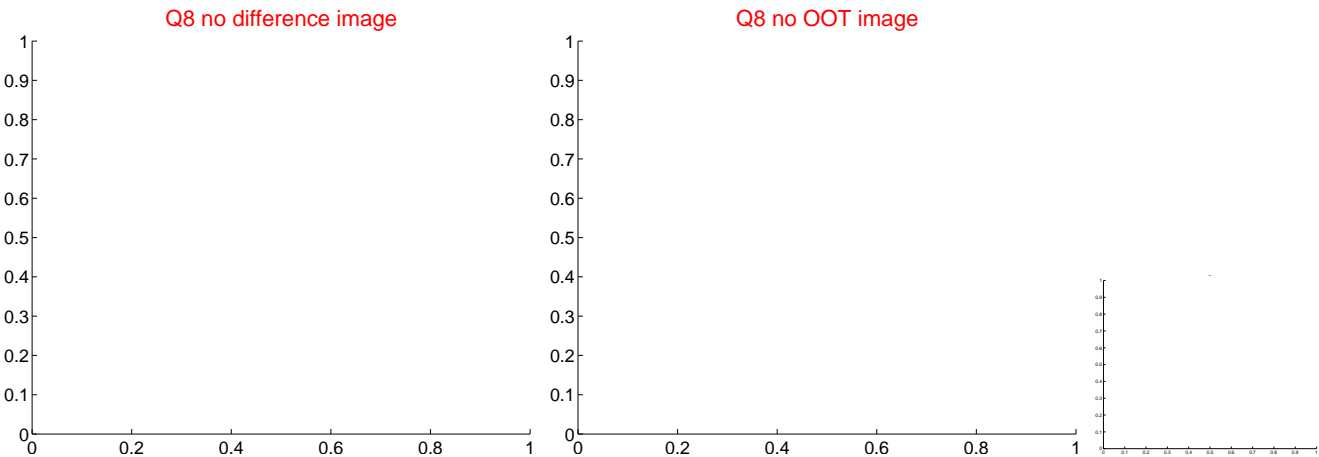
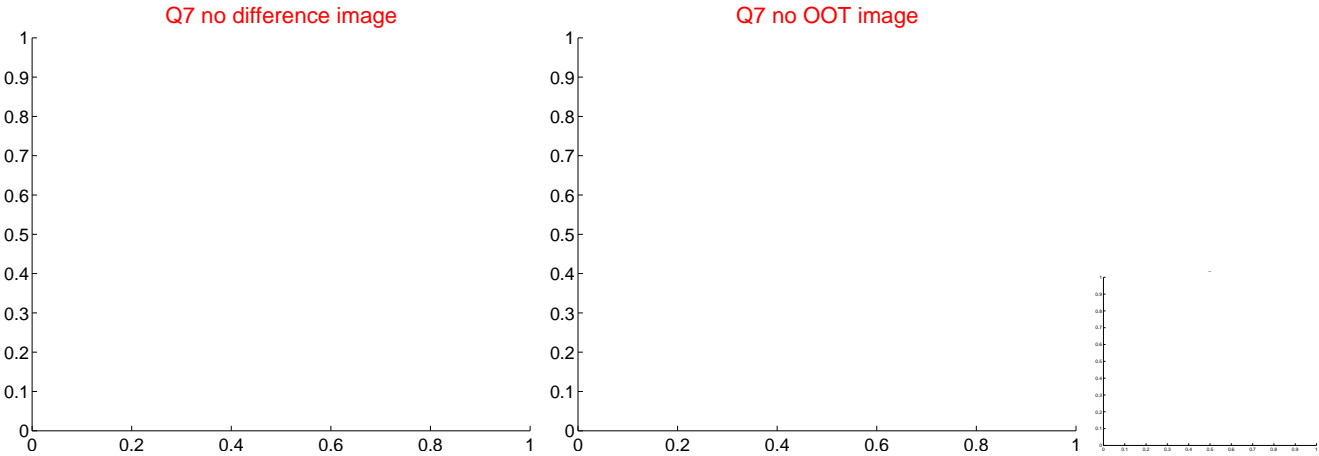
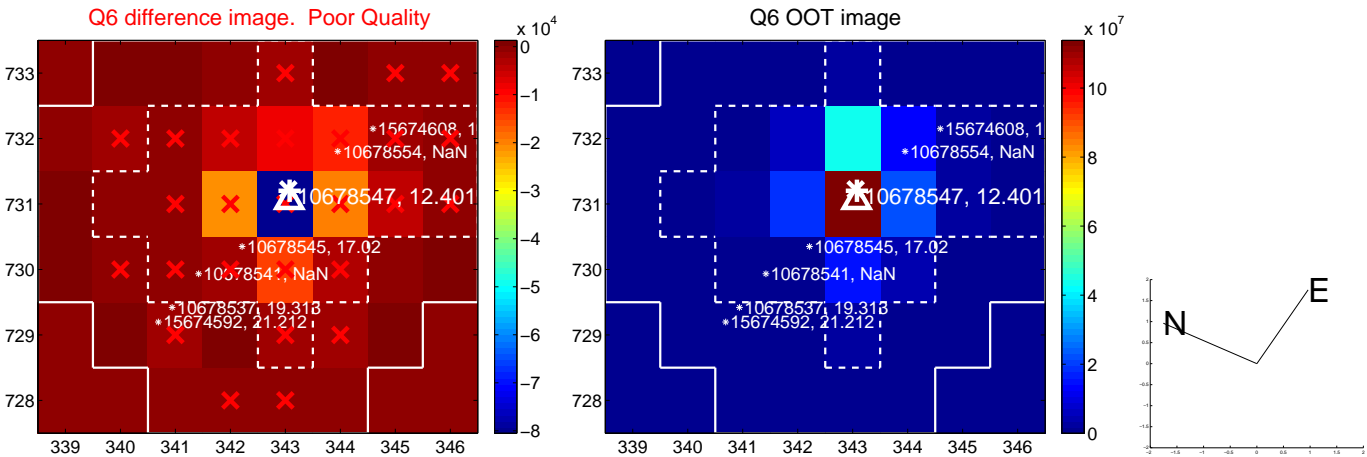
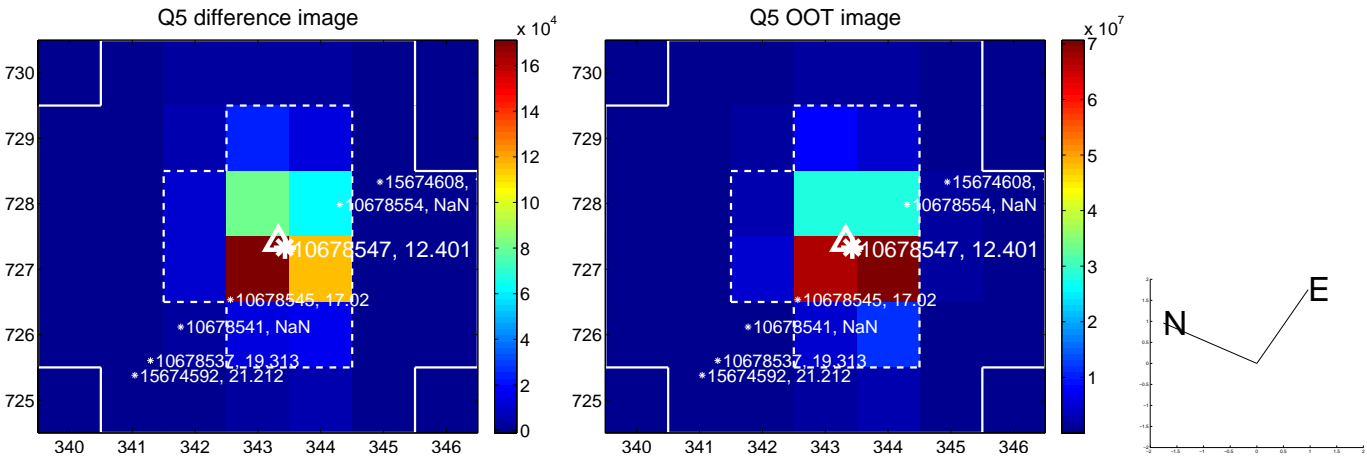


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

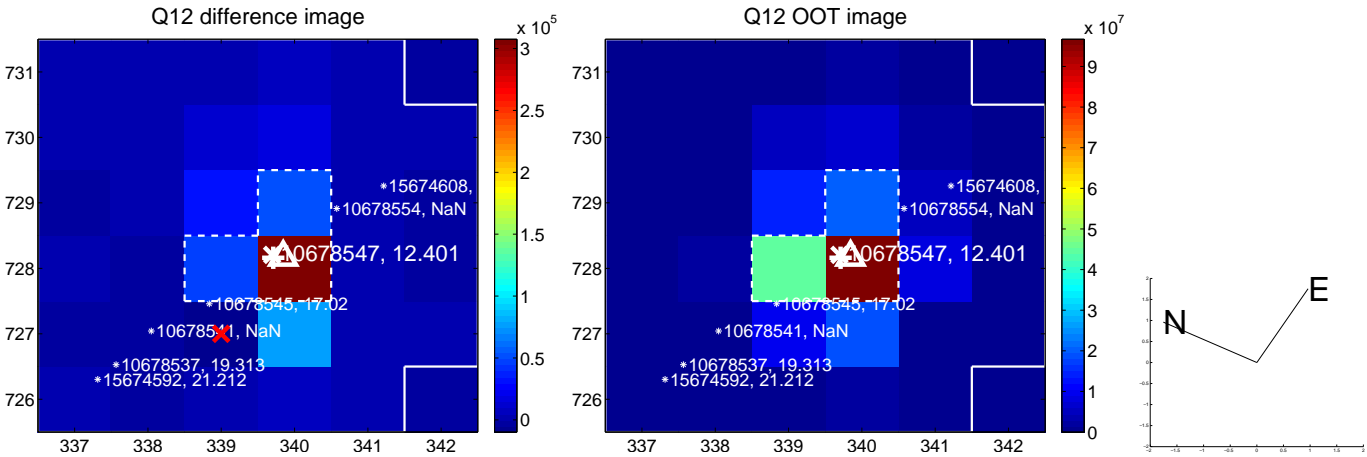
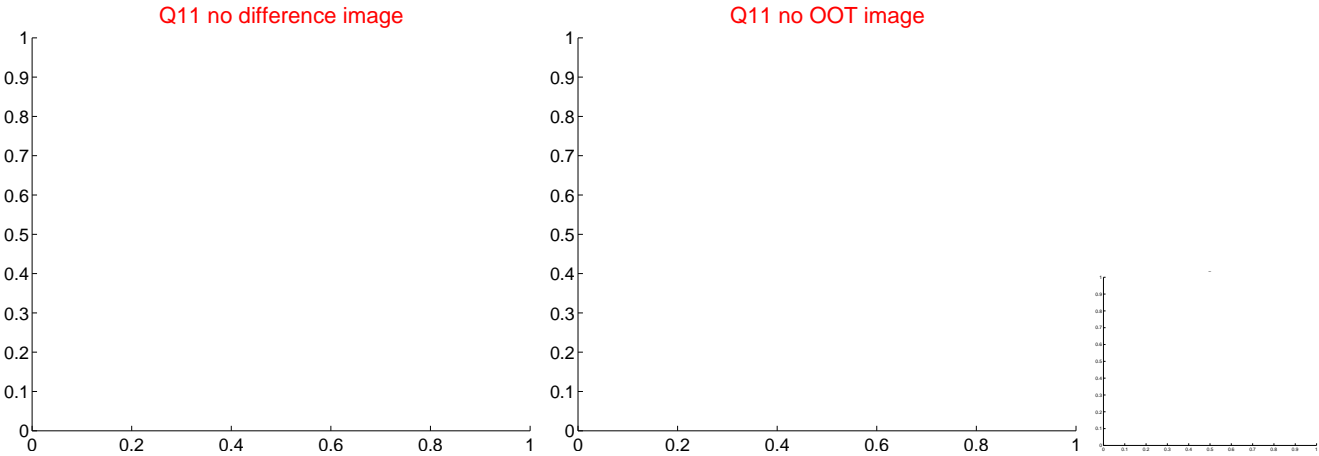
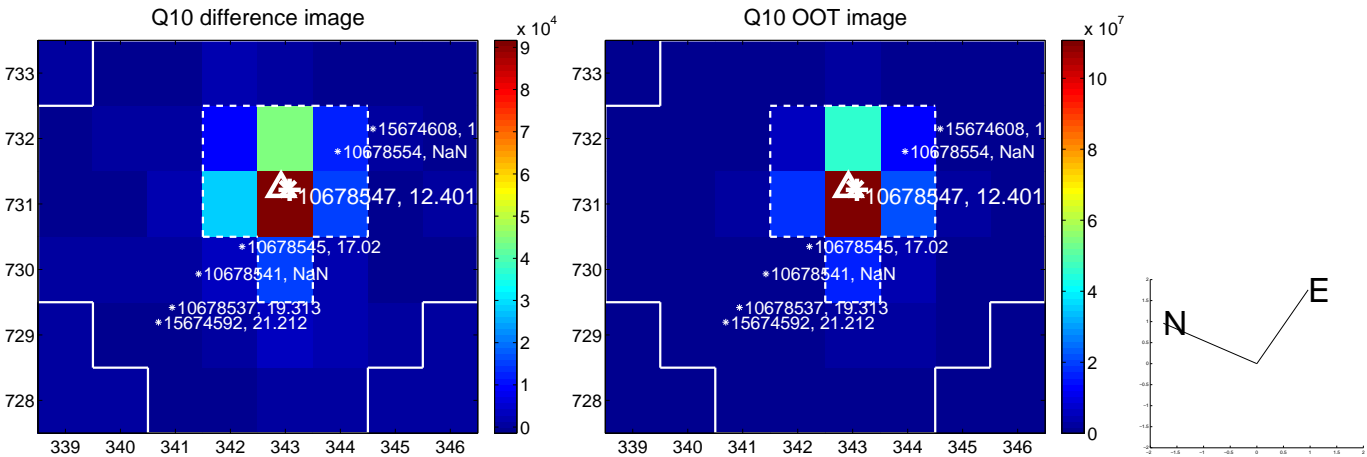
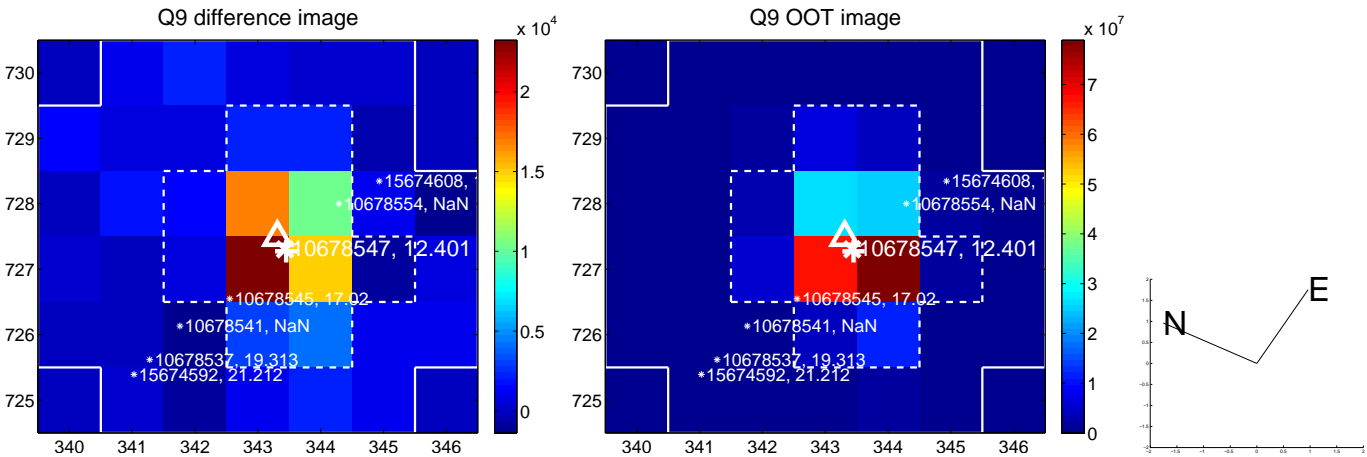
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



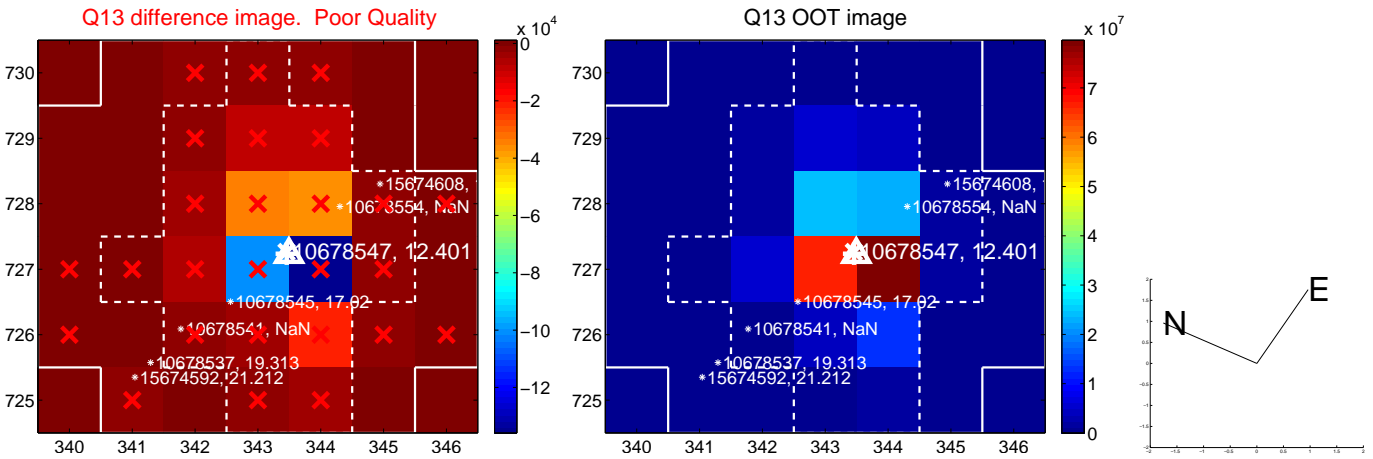
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



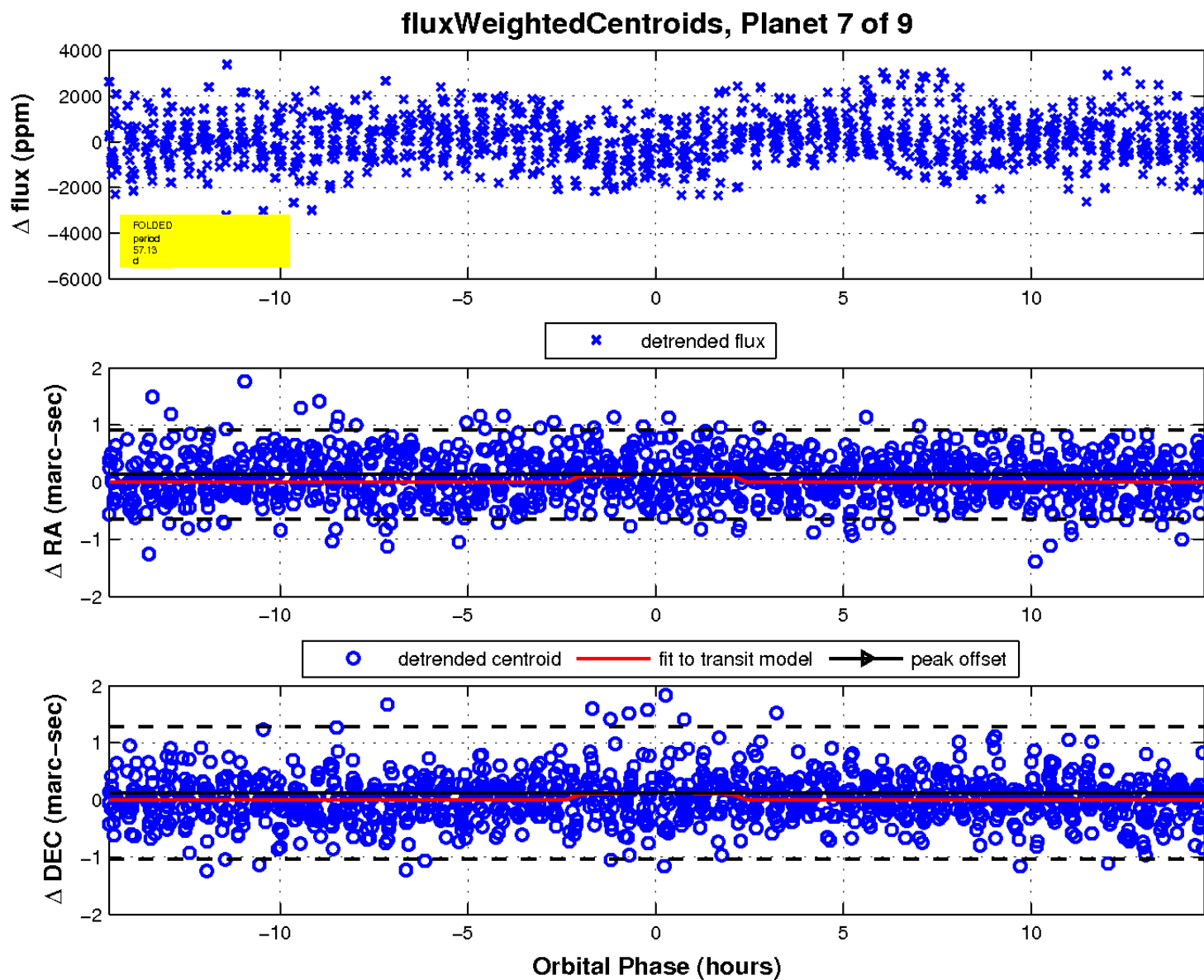
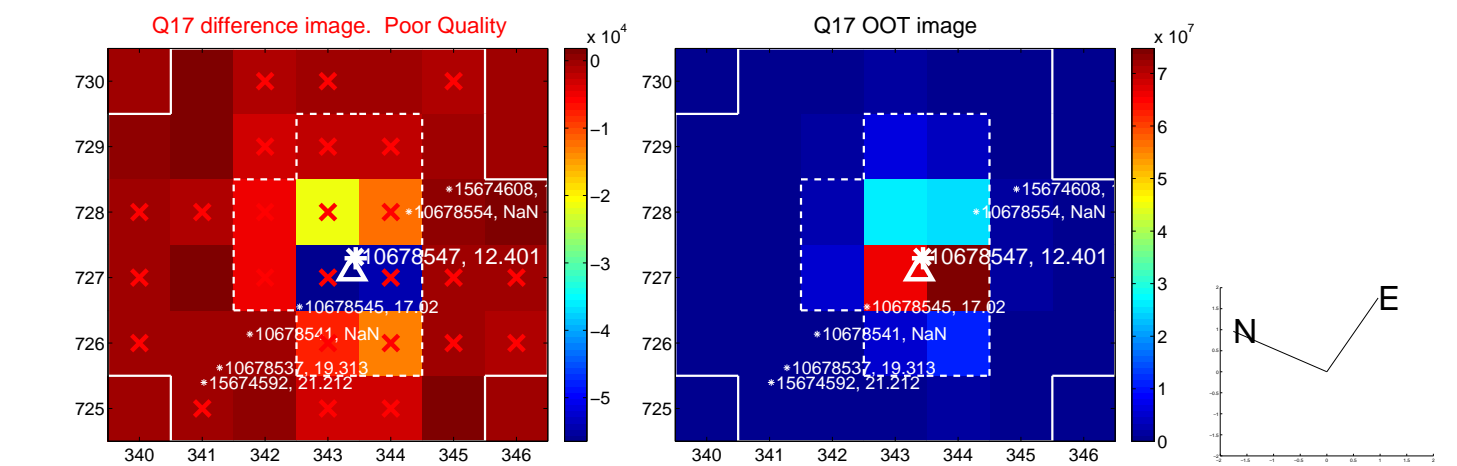
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

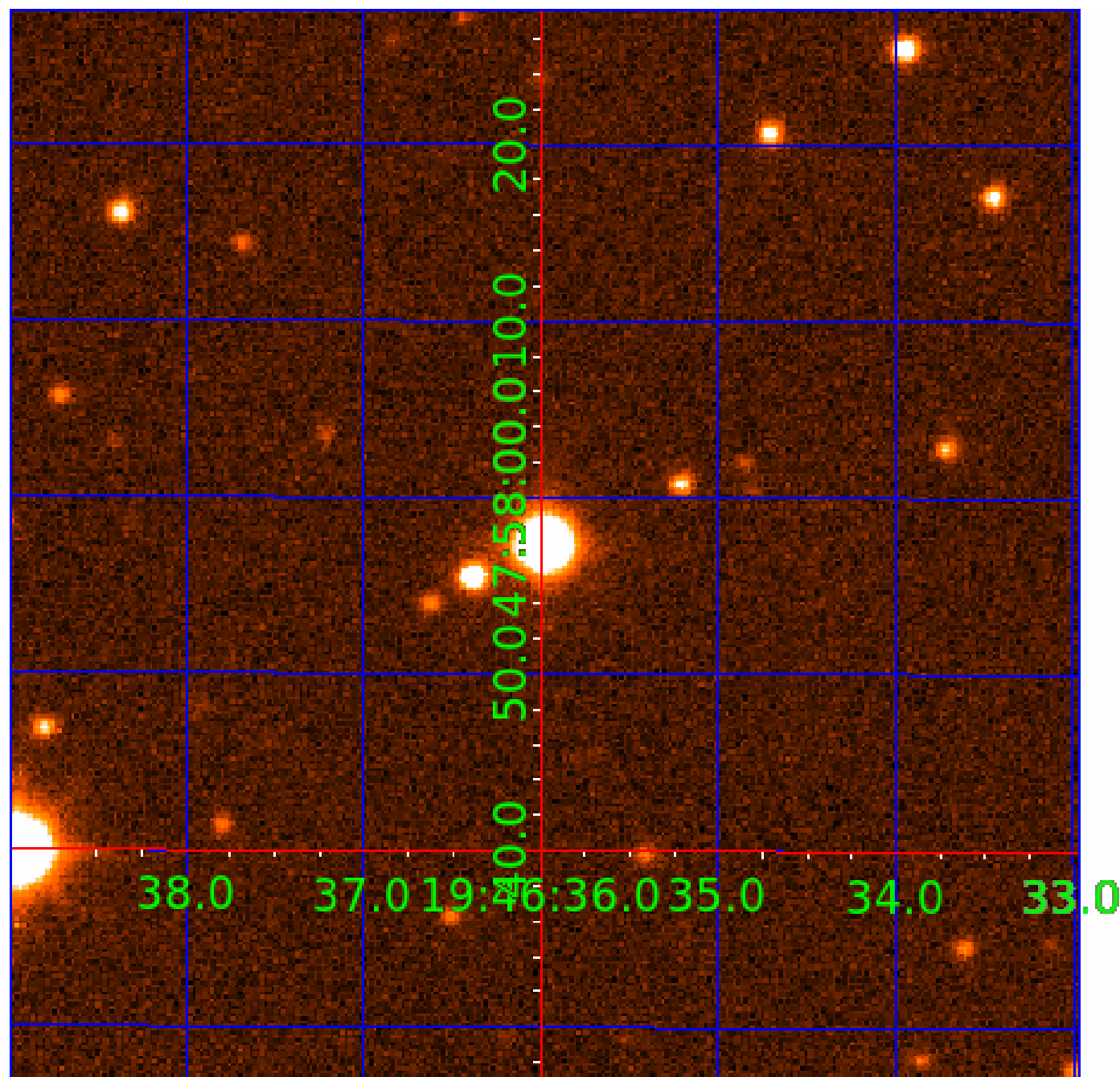


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010678547

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})
010678547-01	OBS	No	0.958852	131.740929	86.7	5.533	7.9	5.4	3.30	8089	3.13	66741.05
010678547-02	OBS	No	46.266327	132.134497	1965.9	2.176	10.4	9.8	3.30	8089	25.52	379.93
010678547-03	OBS	No	275.395986	189.662265	3463.5	3.956	10.2	11.3	3.30	8089	22.64	35.22
010678547-04	OBS	No	91.651982	201.270112	2210.0	6.815	9.8	9.5	3.30	8089	18.61	152.71
010678547-05	OBS	No	43.570469	137.129611	1396.6	5.119	8.9	8.8	3.30	8089	14.74	411.60
010678547-06	OBS	No	112.787169	188.429005	2289.5	5.538	9.3	8.1	3.30	8089	18.51	115.80
010678547-07	OBS	No	57.131981	133.364930	1676.4	4.872	9.1	9.0	3.30	8089	14.53	286.79
010678547-08	OBS	No	42.966194	155.444122	1288.5	5.702	10.0	9.0	3.30	8089	14.12	419.33
010678547-09	OBS	No	106.003102	153.375647	1335.3	13.839	8.3	8.1	3.30	8089	13.29	125.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010678547-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
010678547-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
010678547-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
010678547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
010678547-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

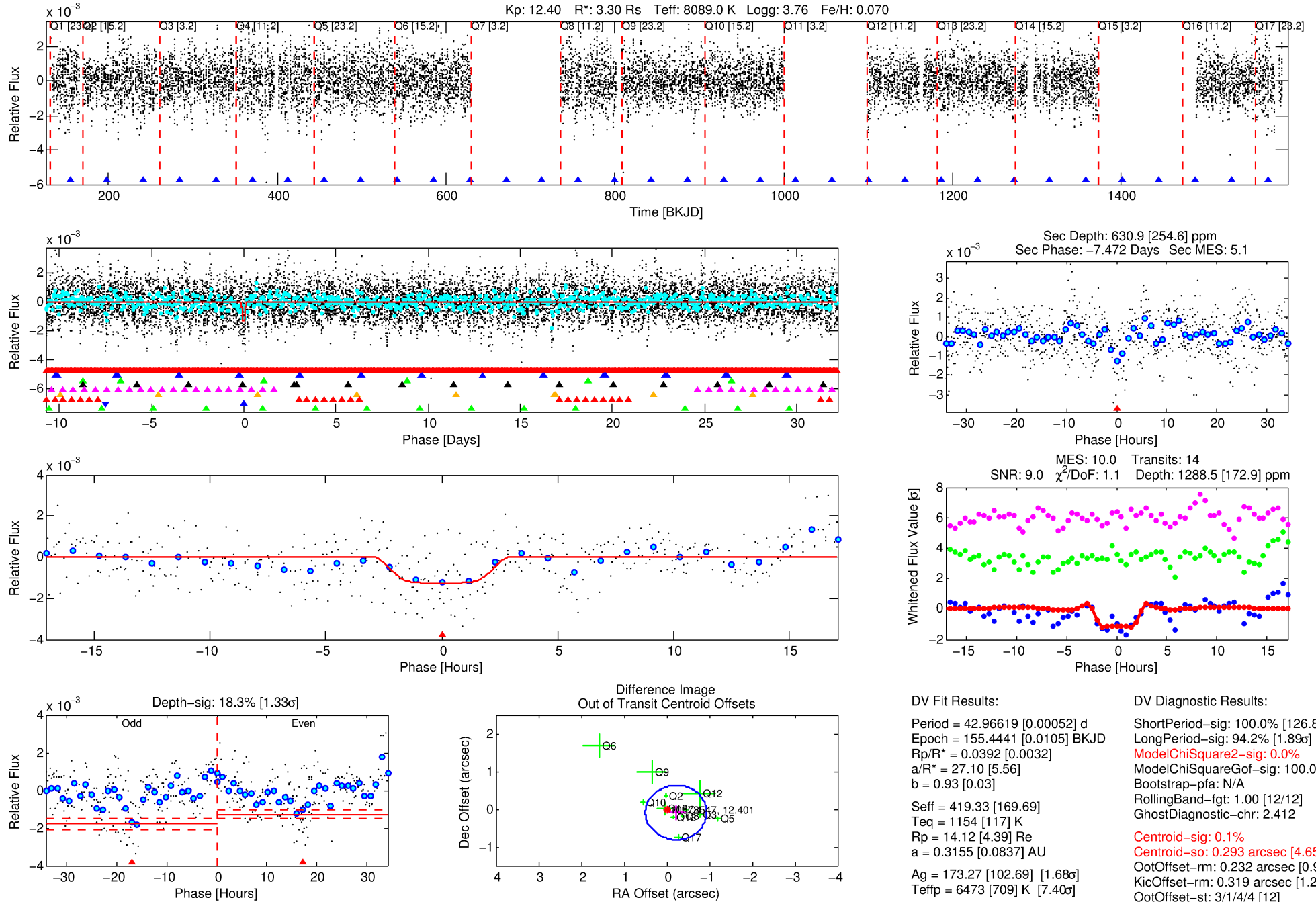
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678547-08

No Significant Match Found

DV One-Page Summary

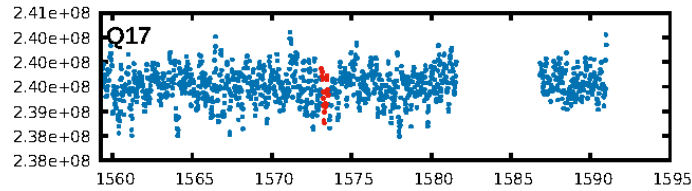
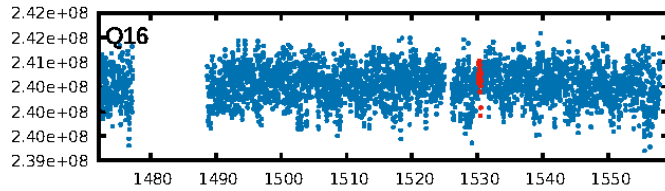
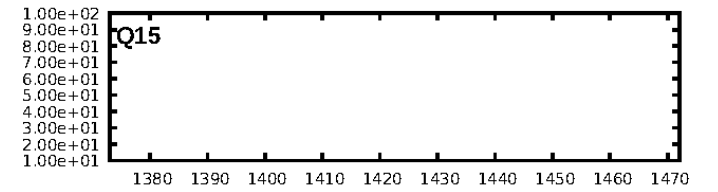
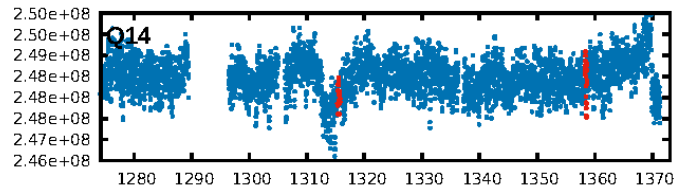
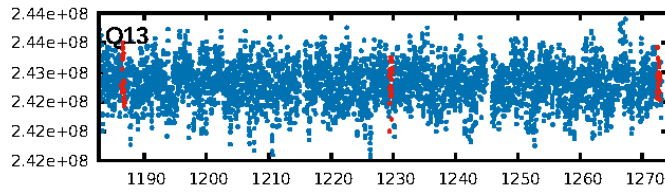
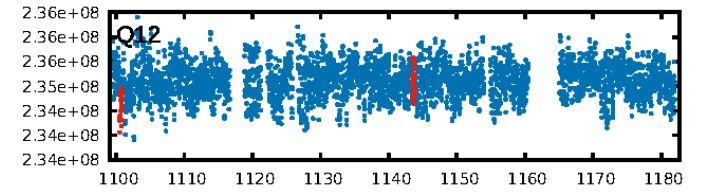
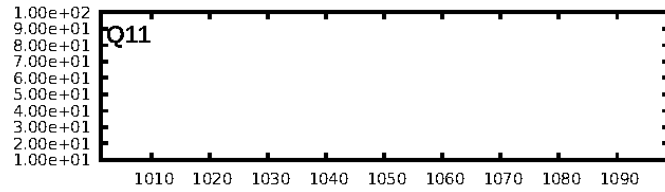
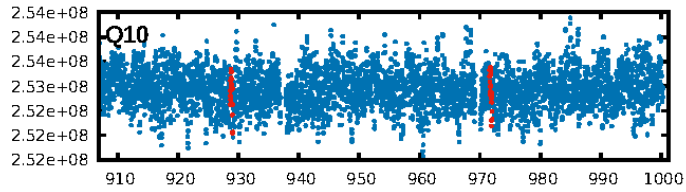
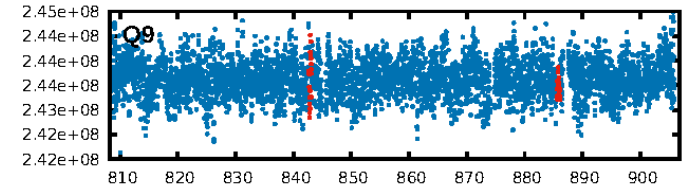
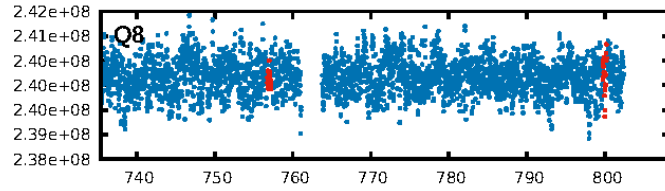
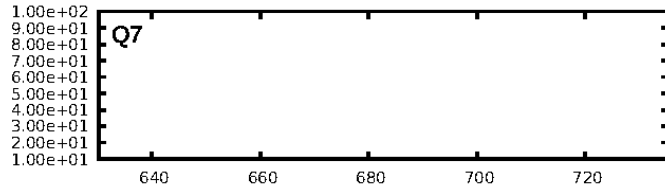
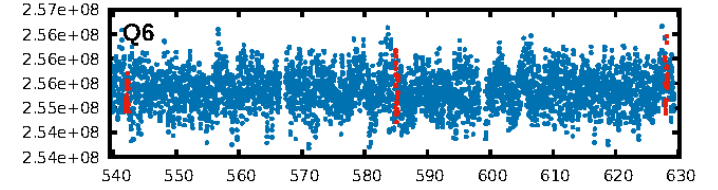
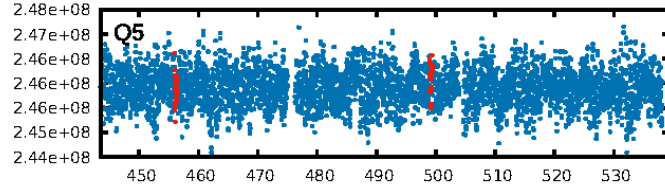
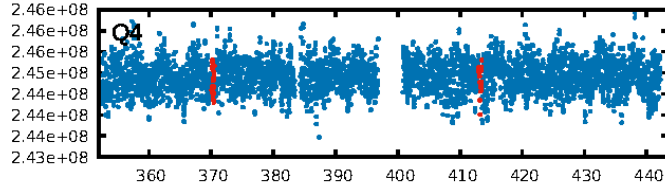
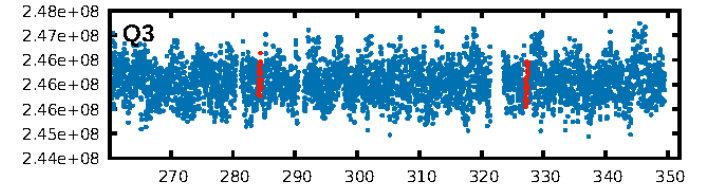
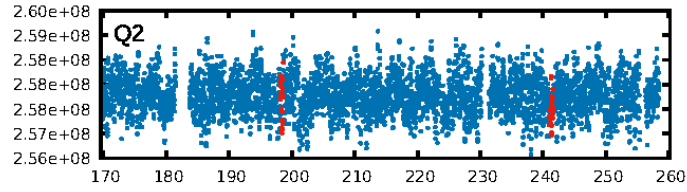
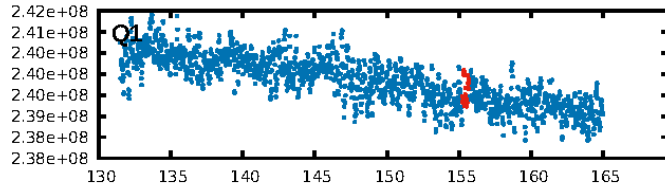
KIC: 10678547 Candidate: 8 of 9 Period: 42.966 d



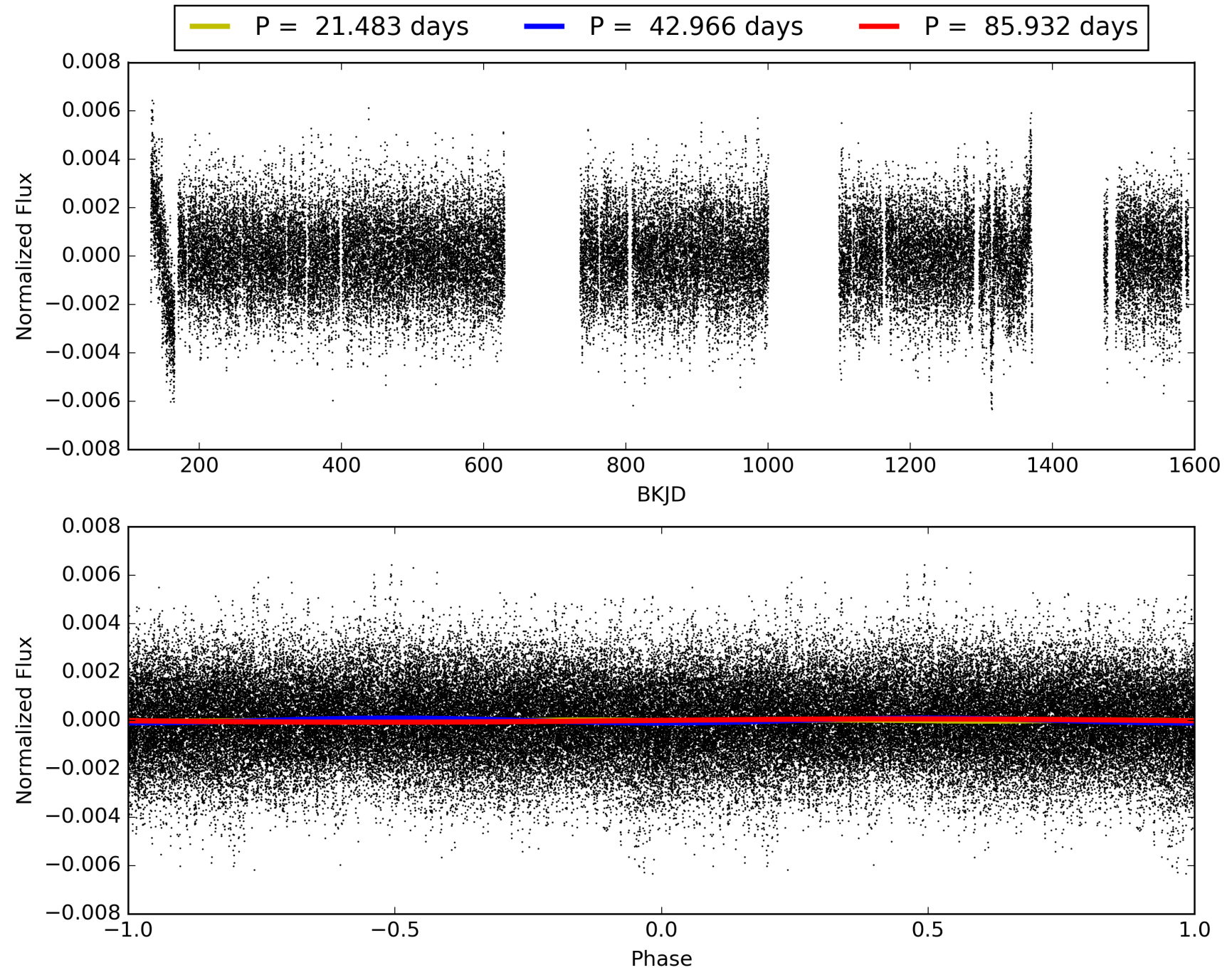
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:51:31 Z

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

TCE 010678547-08, PDC Light Curves

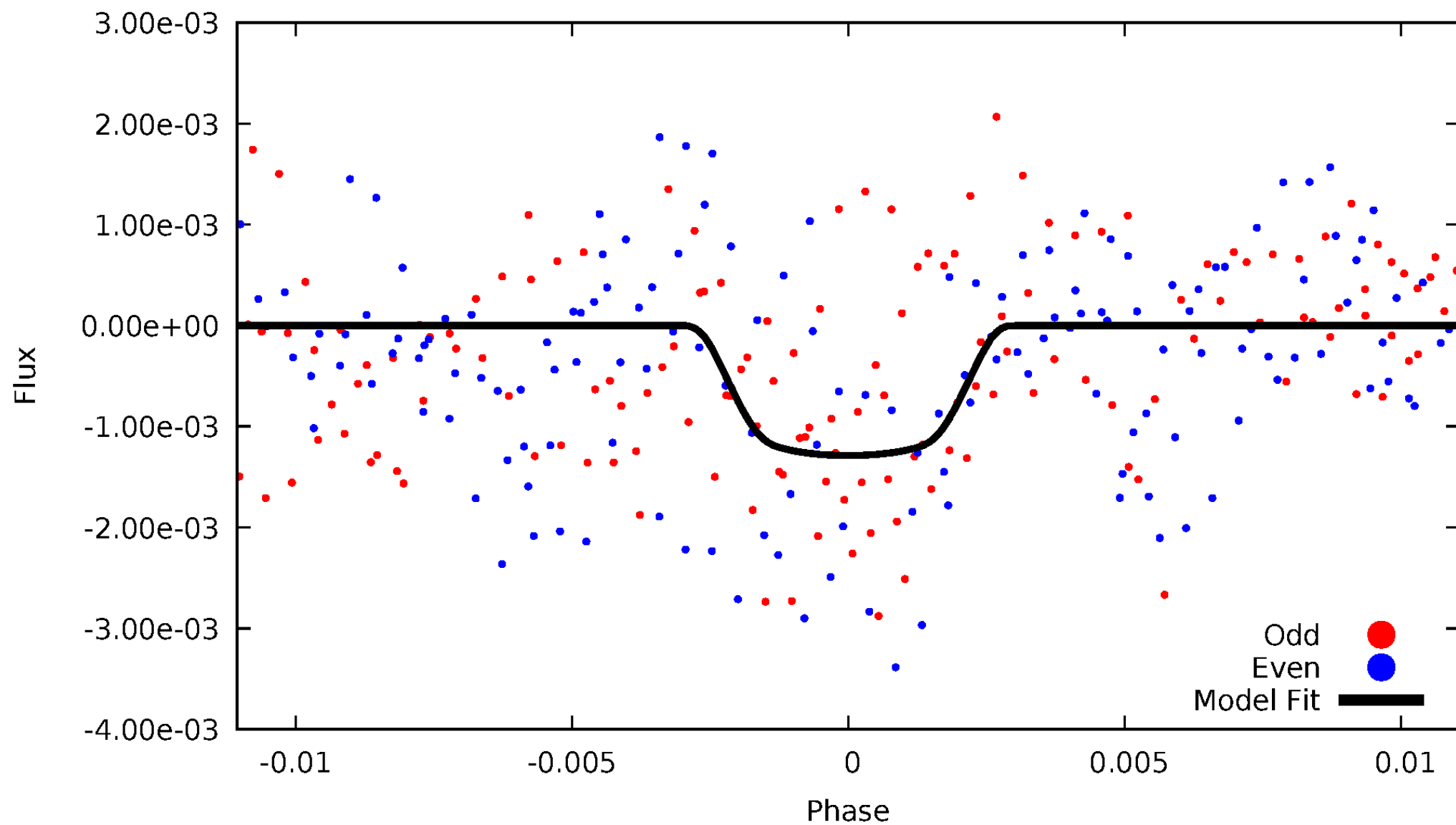


TCE 010678547-08



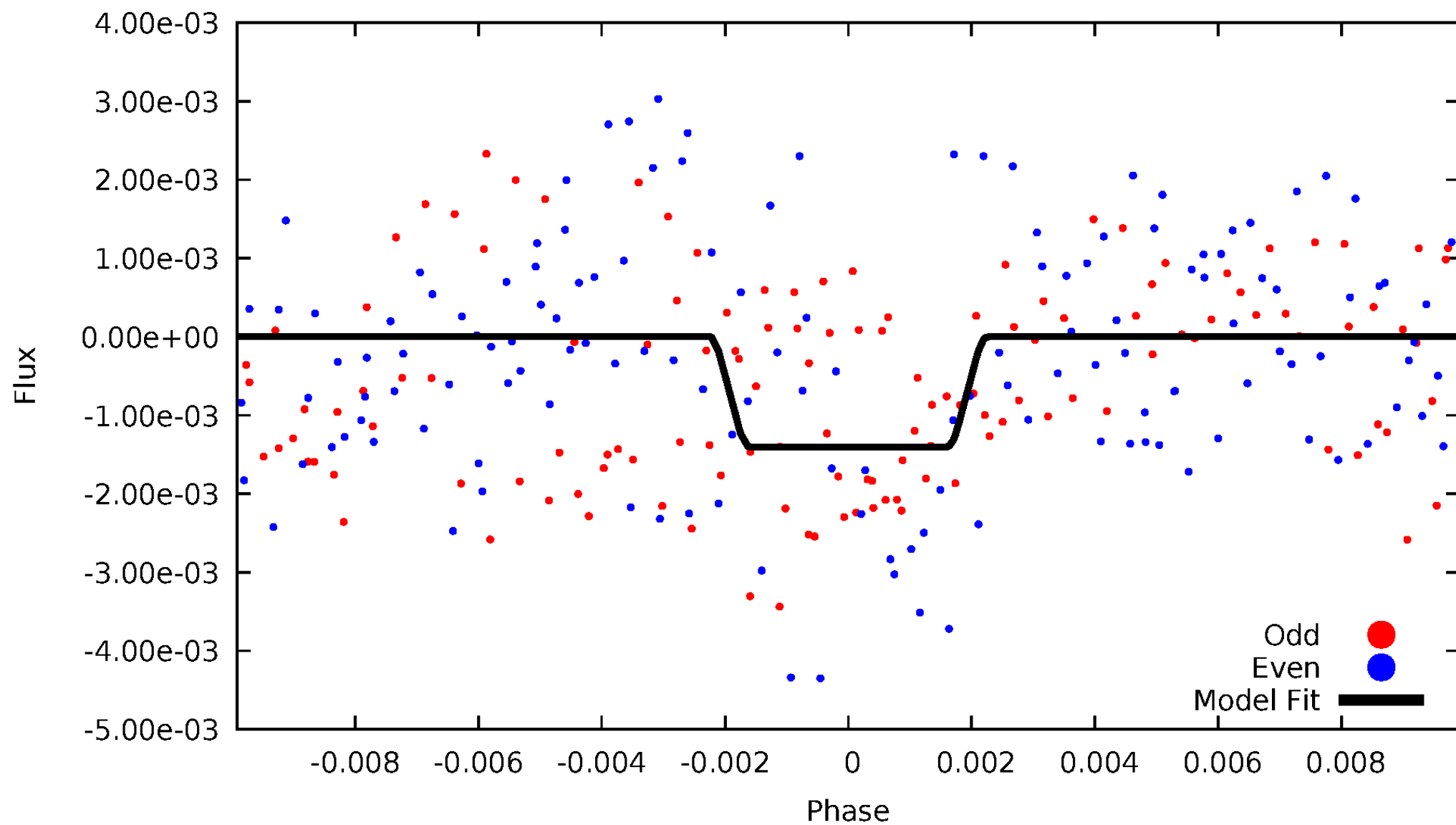
DV Odd/Even

TCE 010678547-08



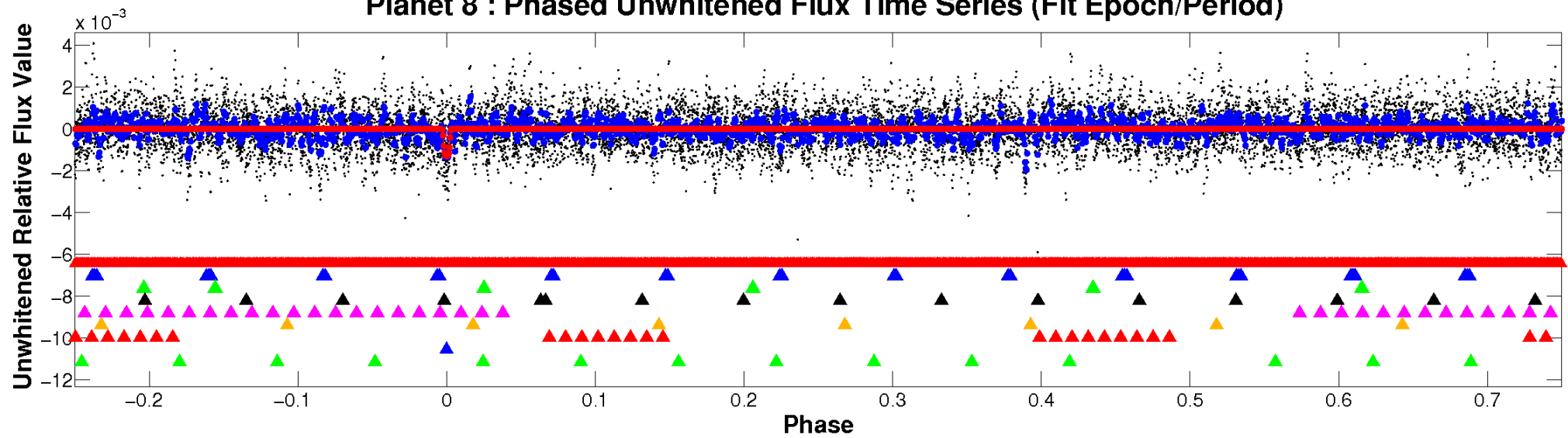
ALT Odd/Even

TCE 010678547-08

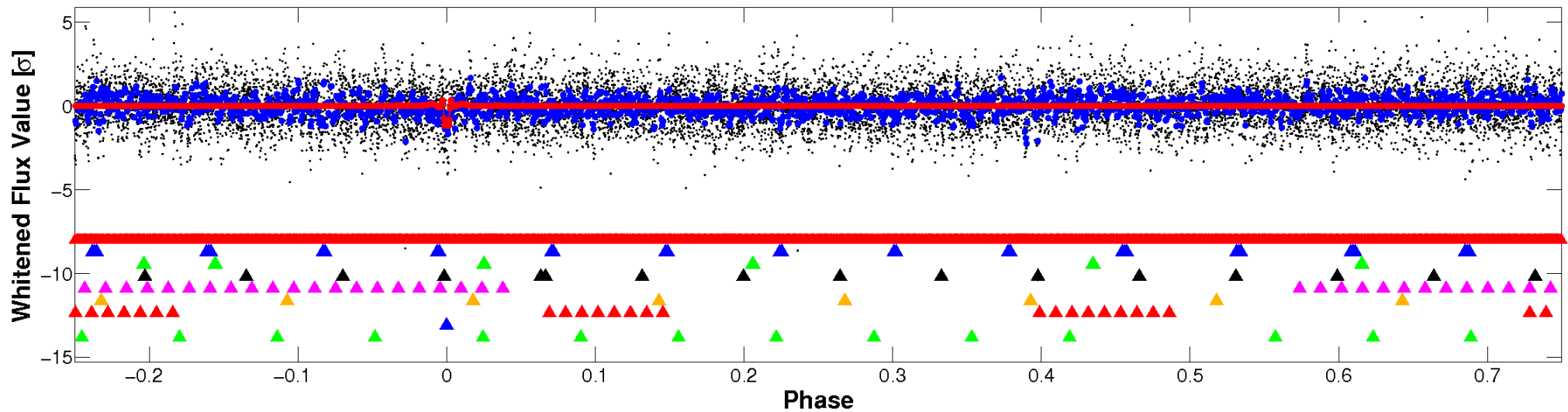


Non-Whitened Vs. Whitened Light Curve

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

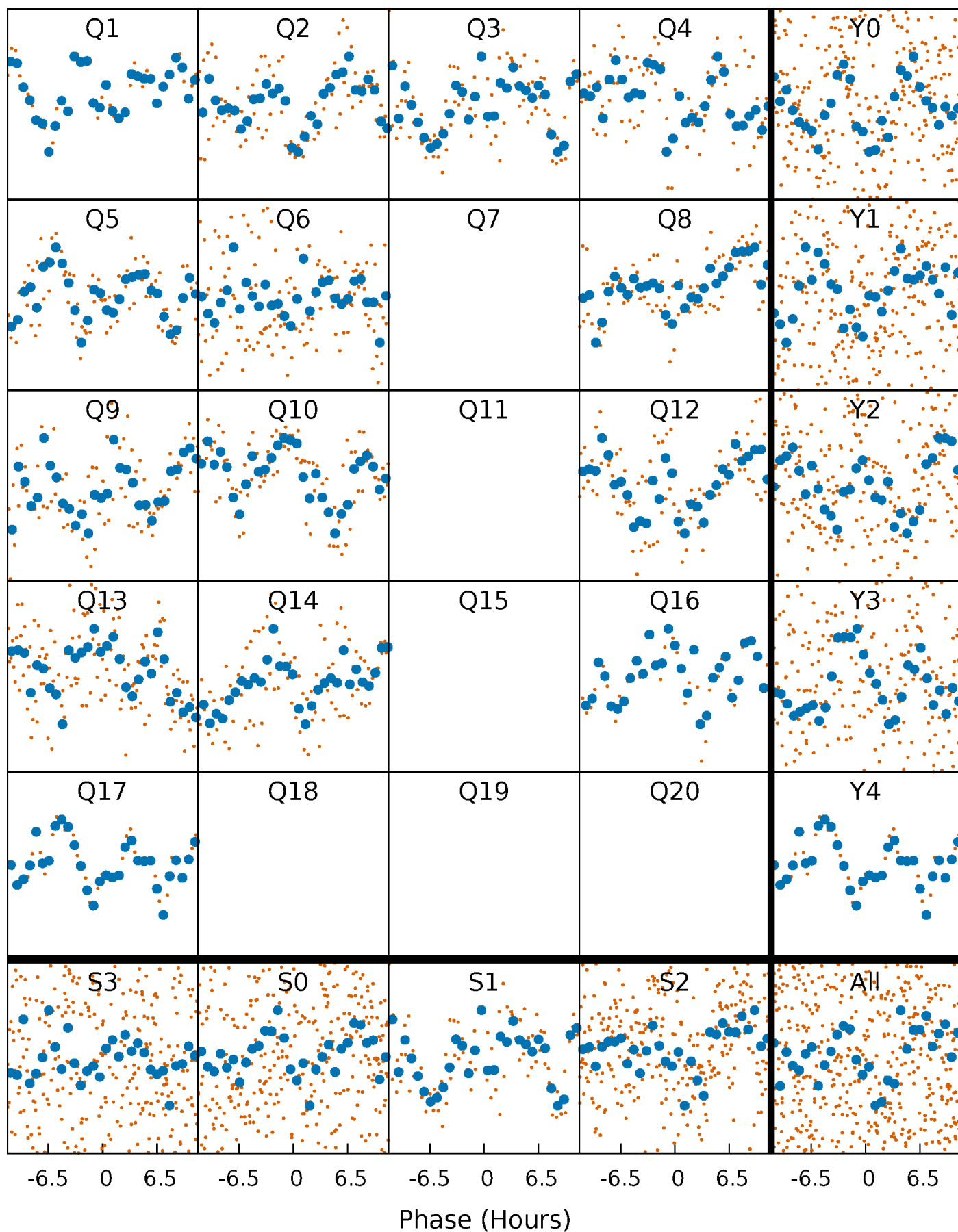


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



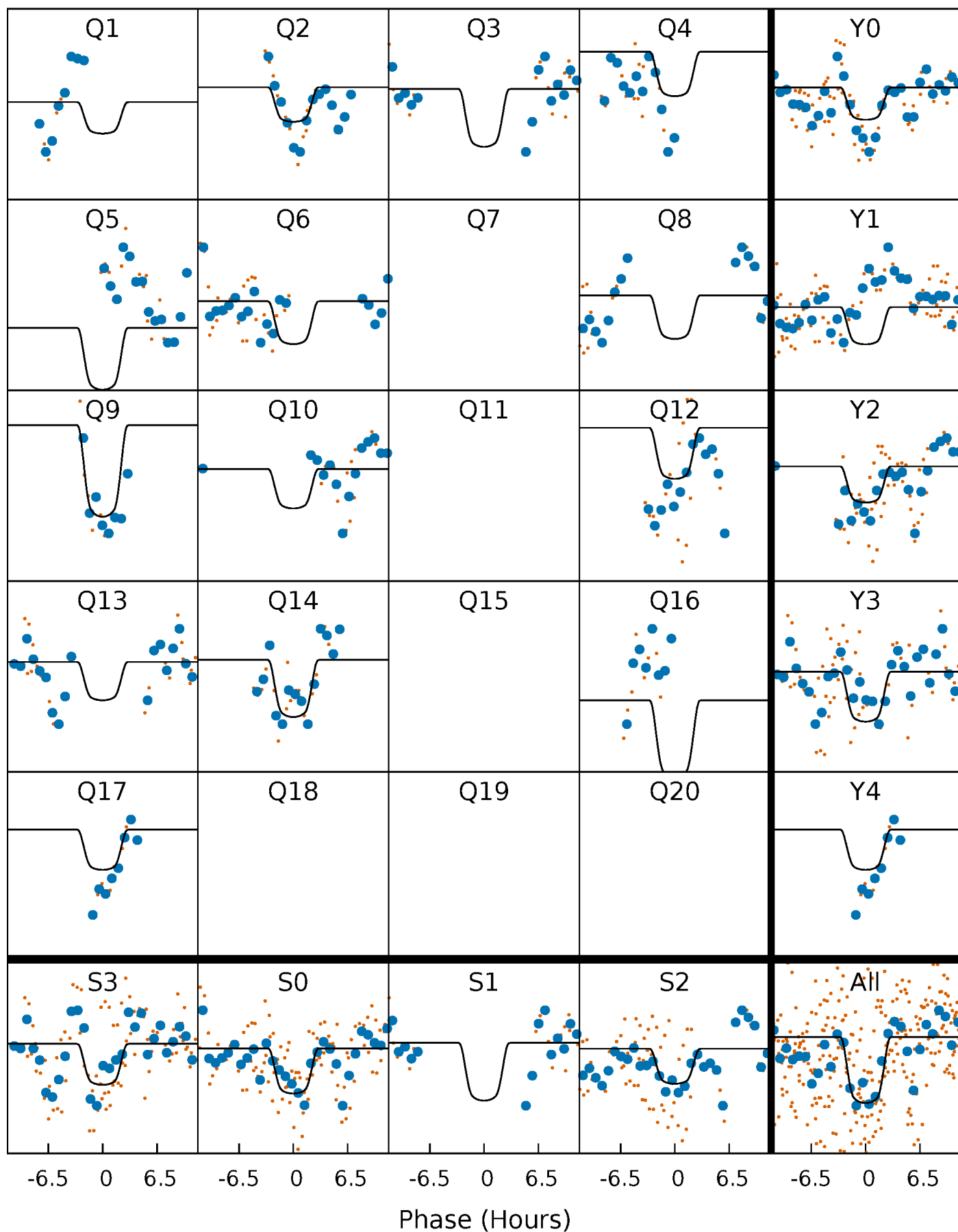
PDC Quarter-Phased Transit Curves

TCE 010678547-08 P= 42.966194 Days $T_0=155.444122$ (BKJD)



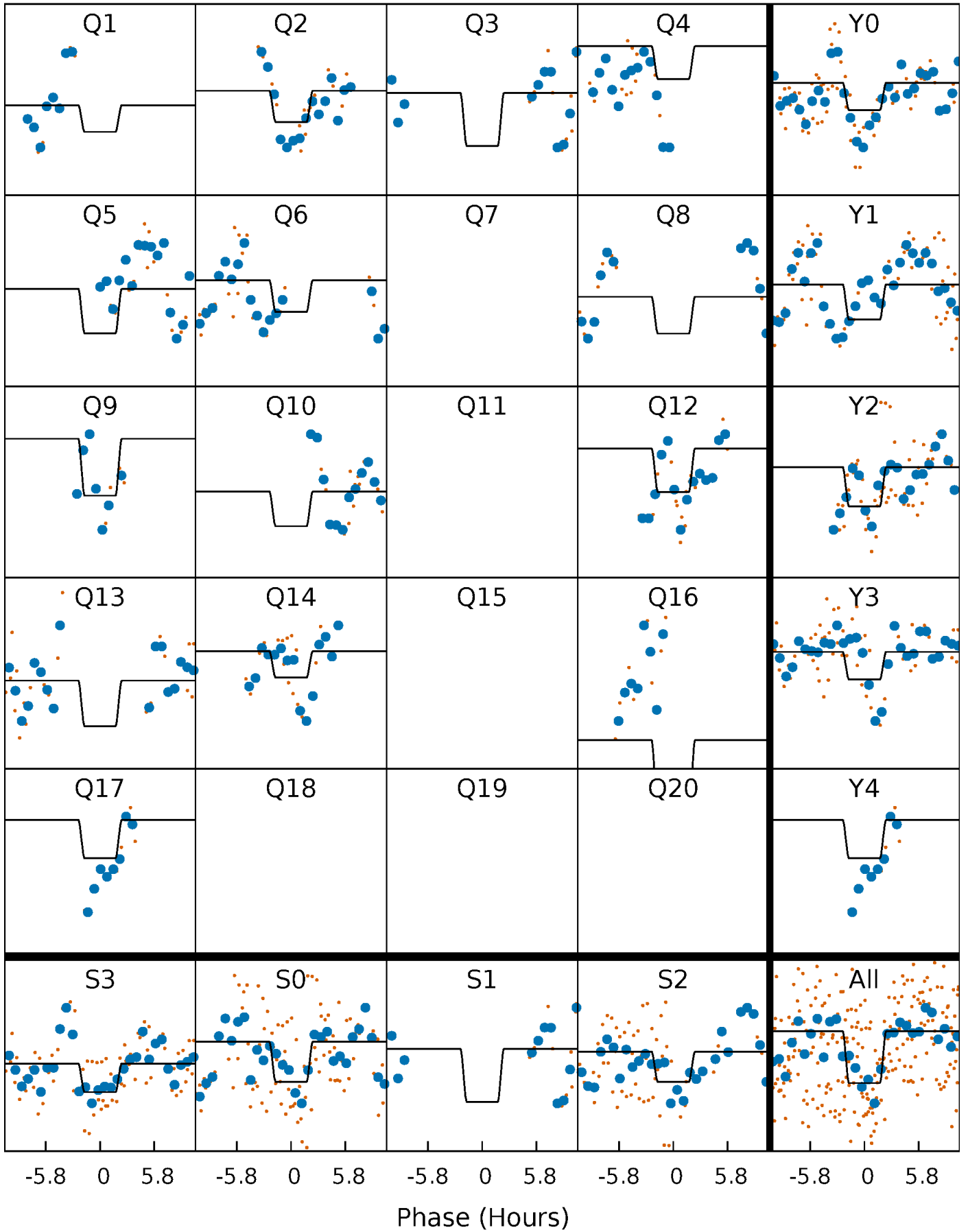
DV Quarter-Phased Transit Curves

TCE 010678547-08 $P = 42.966194$ Days $T_0 = 155.444122$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

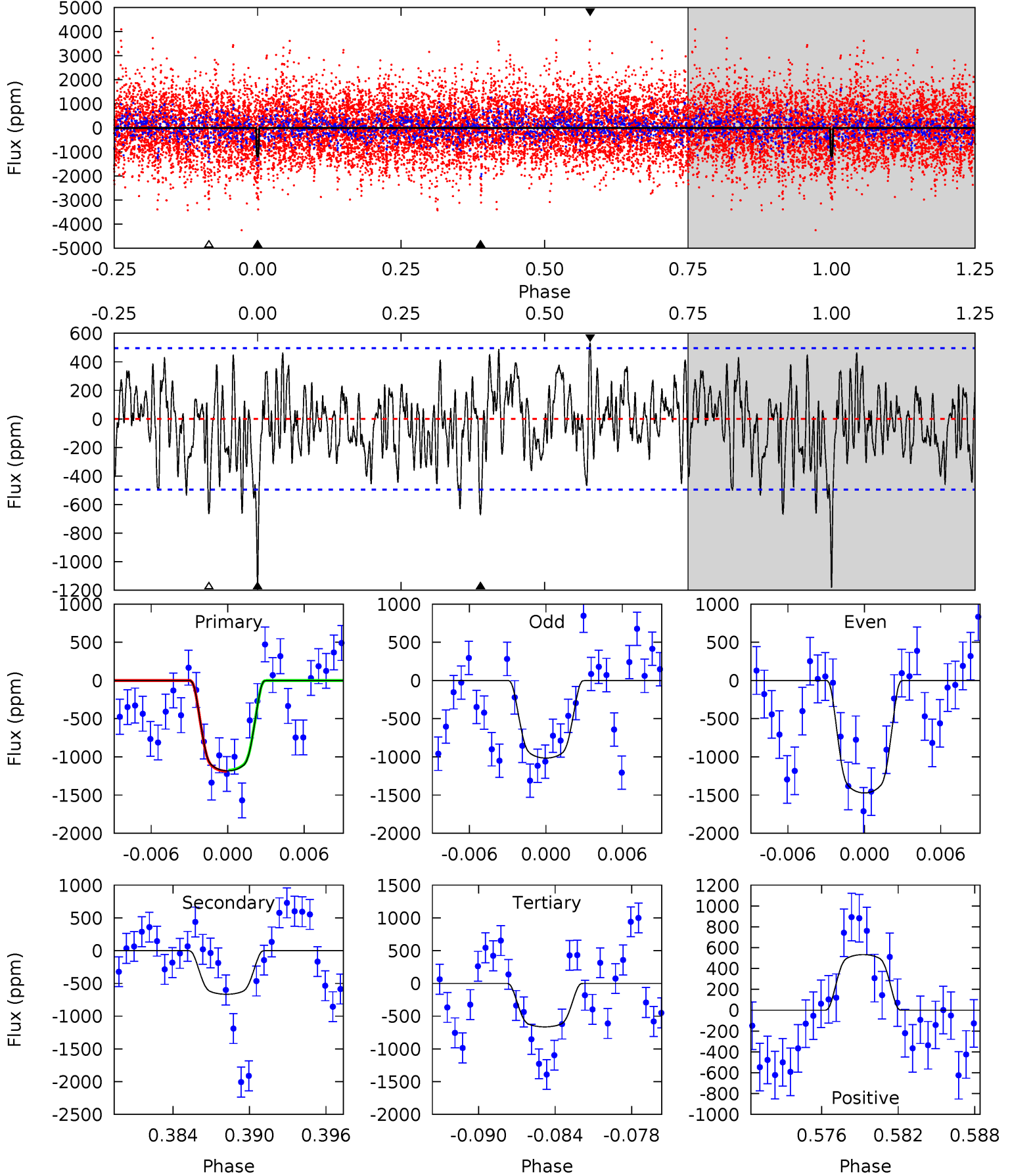
TCE 010678547-08 P= 42.966126 Days $T_0=155.450291$ (BKJD)



DV Model-Shift Uniqueness Test

010678547-08, P = 42.966194 Days, E = 112.477928 Days

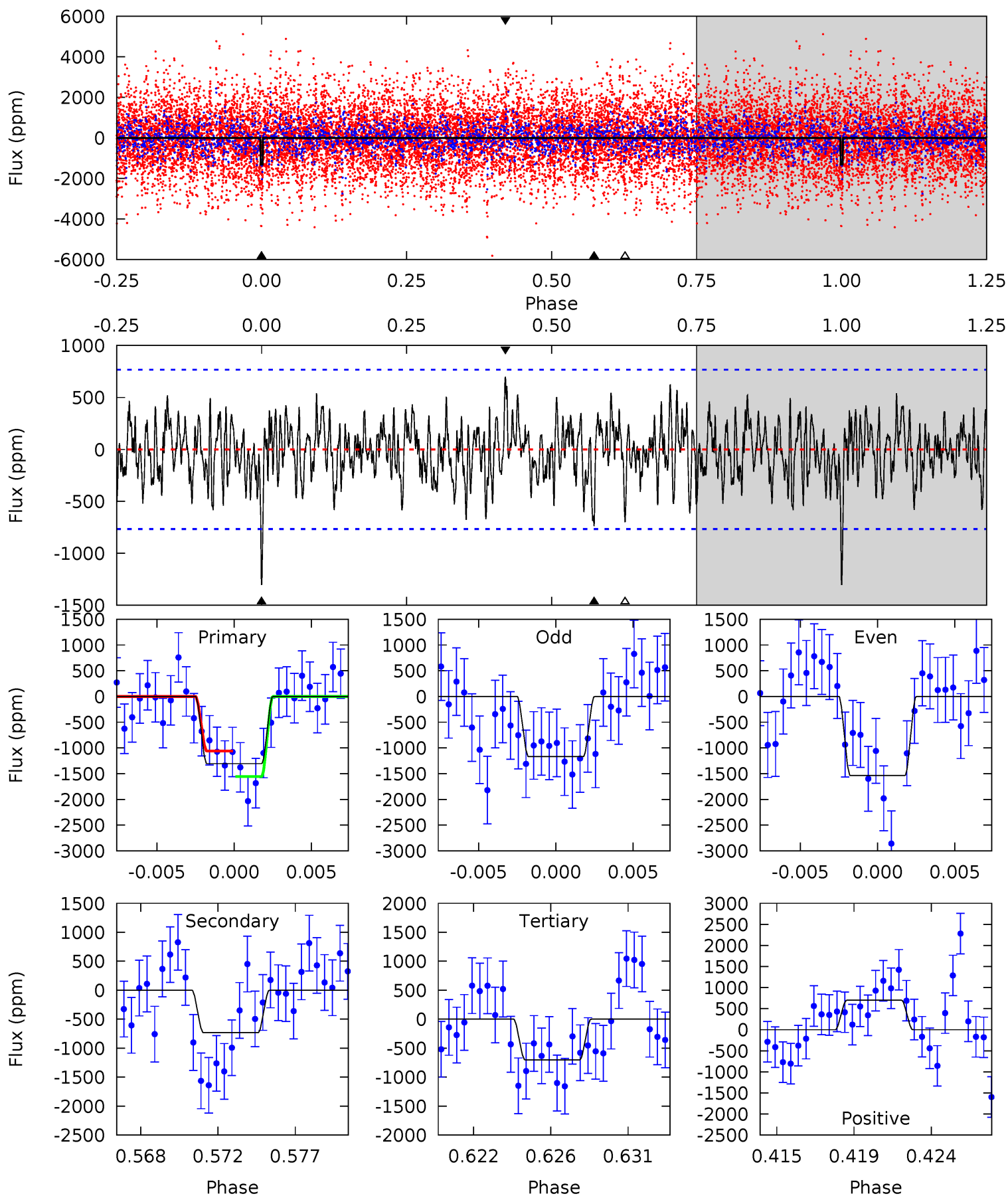
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	6.89	6.87	5.51	5.12	2.75	2.15	5.36	6.72	0.02	1.38	2.32	0.11	0.31	0.07



Alt Model-Shift Uniqueness Test

010678547-08, P = 42.966126 Days, E = 112.484165 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.81	4.94	4.73	4.72	5.18	2.84	1.60	4.08	4.09	0.22	0.23	1.20	0.82	0.35	1.68



Stellar Parameters For KIC 010678547

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8089^{+64}_{-97}	$3.757^{+0.227}_{-0.122}$	$0.070^{+0.200}_{-0.250}$	$3.299^{+0.660}_{-0.990}$	$2.267^{+0.222}_{-0.413}$	$0.089^{+0.122}_{-0.033}$
	+1%/-1%	+6%/-3%	+286%/-357%	+20%/-30%	+10%/-18%	+137%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 010678547-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-666 ± 97	$13.68^{+2.20}_{-2.25}$	1595^{+87}_{-114}	6361^{+400}_{-341}	190^{+85}_{-53}
Alt.	-733 ± 148	$13.08^{+2.16}_{-1.98}$	1602^{+88}_{-118}	6704^{+478}_{-479}	231^{+102}_{-71}

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 $A_{obs} \gg 1.0$

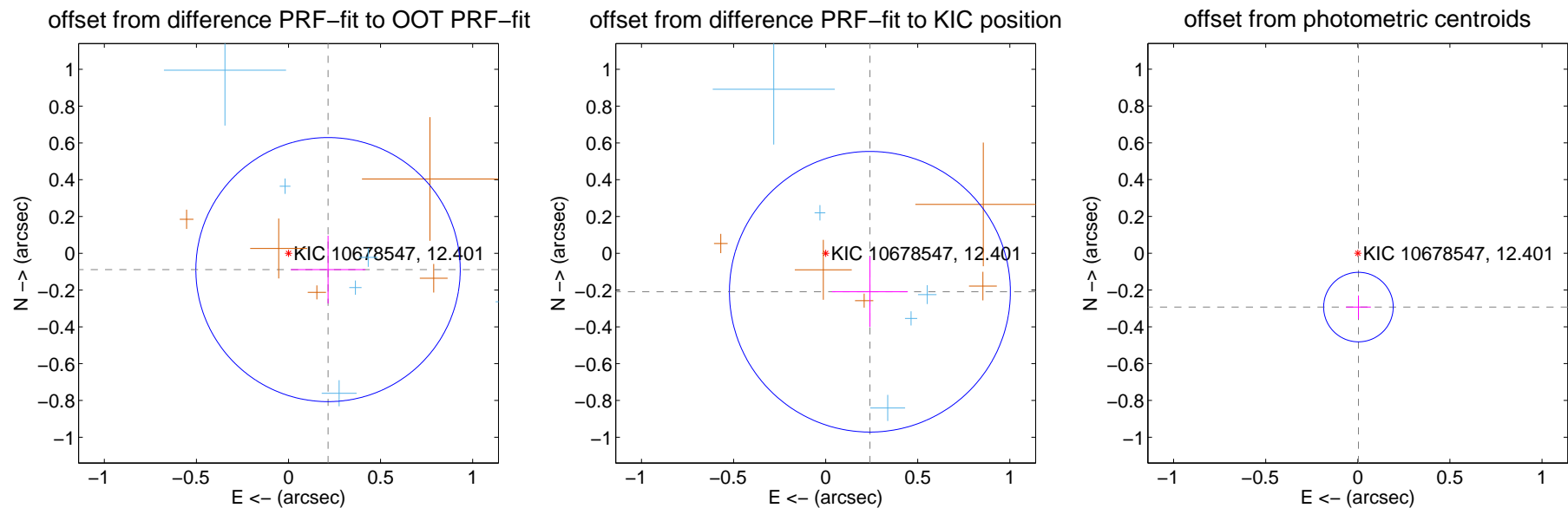
DV Centroid Data

Supplemental centroid analysis for 010678547-08. Kepler magnitude: 12.40. Transit SNR 9.03

There are 7 quarters with good PRF difference image offsets

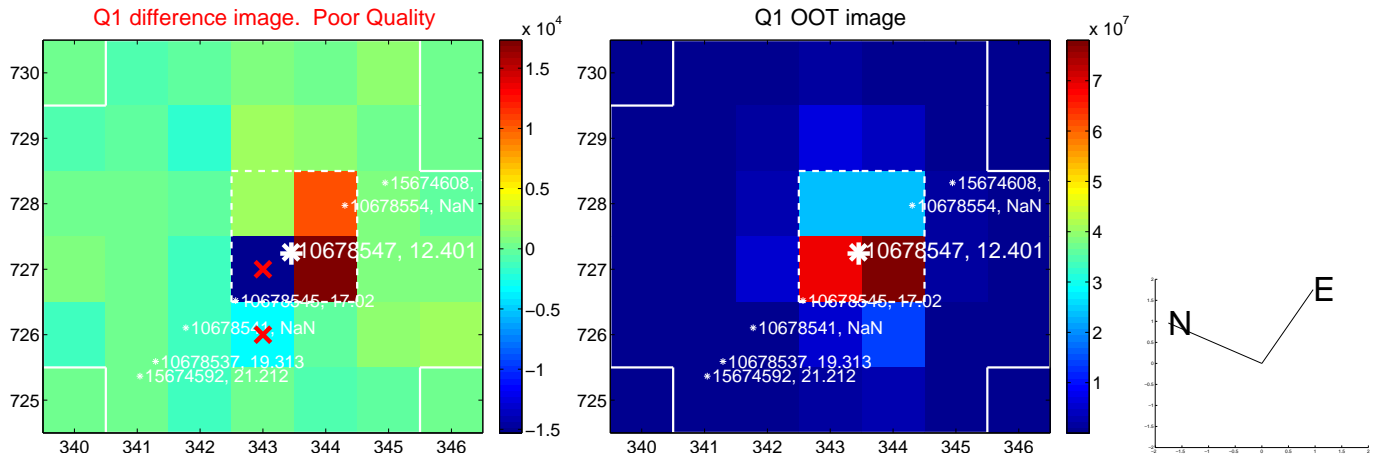
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.232 ± 0.239	0.97	-0.215 ± 0.203	-0.089 ± 0.184
PRF-fit source offset from KIC position	0.319 ± 0.254	1.25	-0.240 ± 0.206	-0.209 ± 0.191
photometric centroid source offset	0.29 ± 0.06	4.65	-0.00 ± 0.07	-0.29 ± 0.06

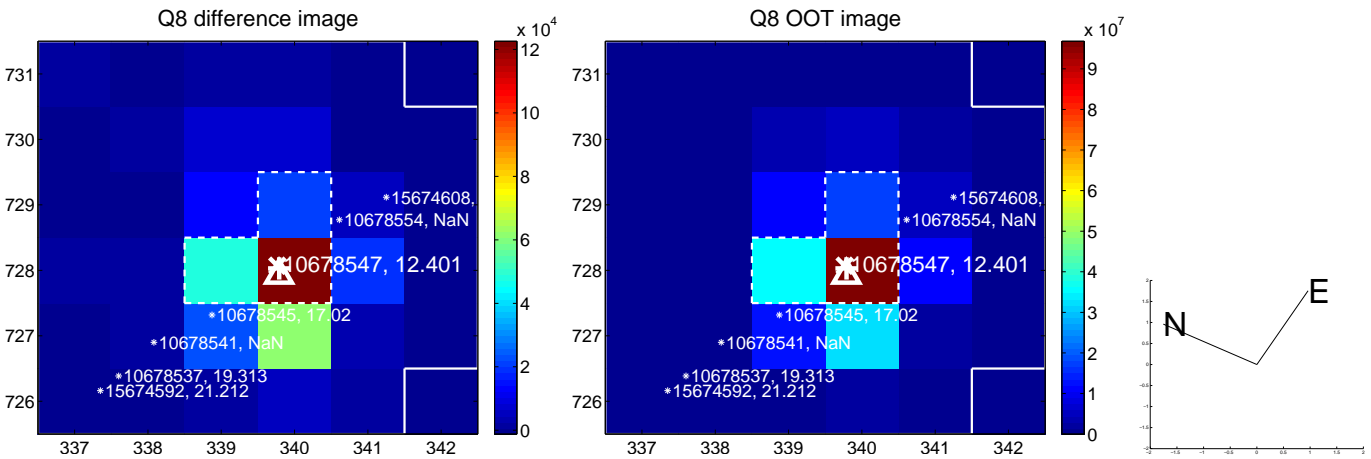
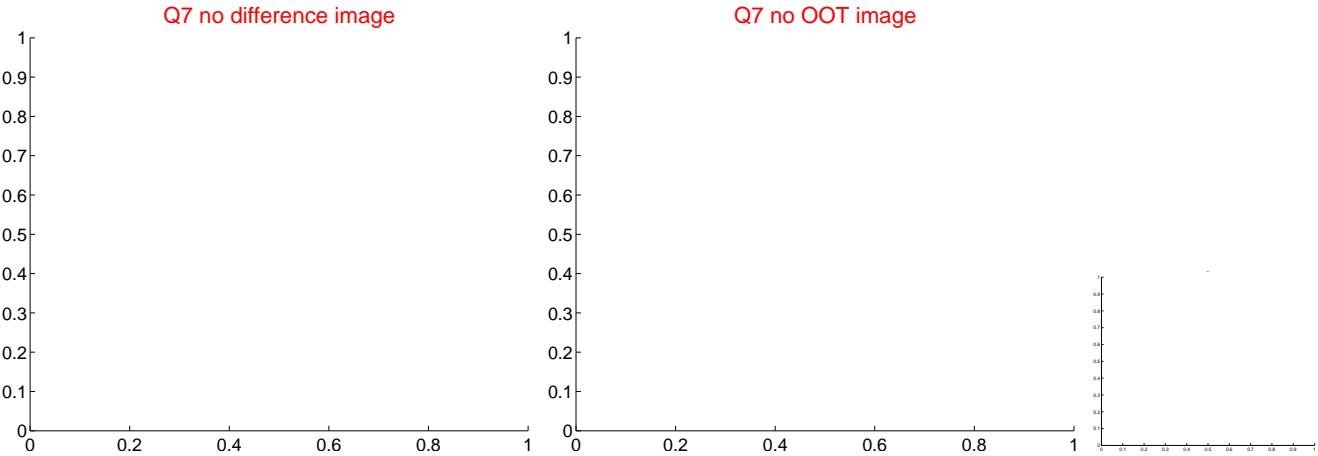
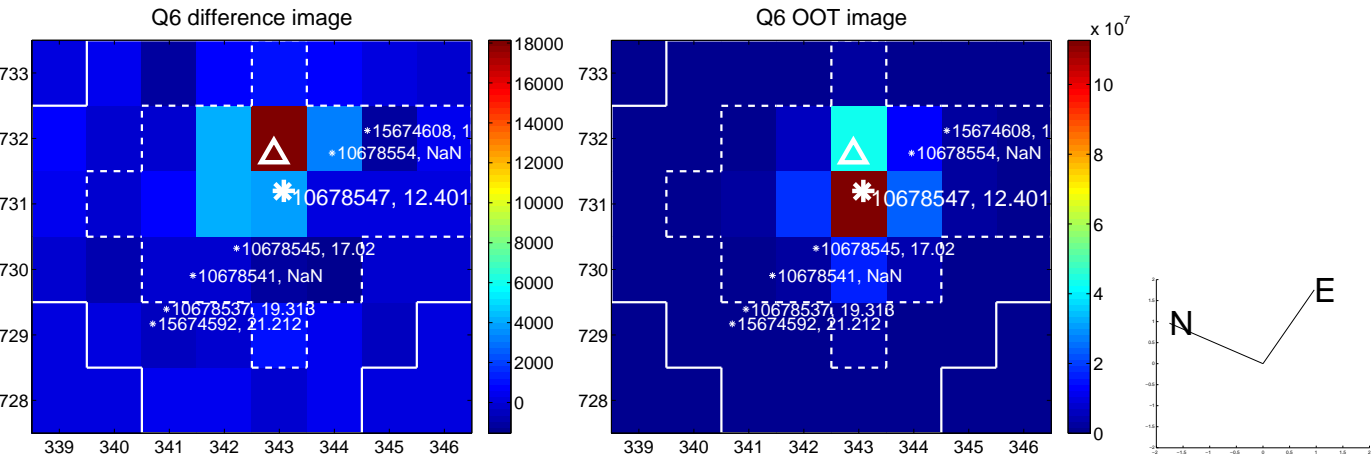
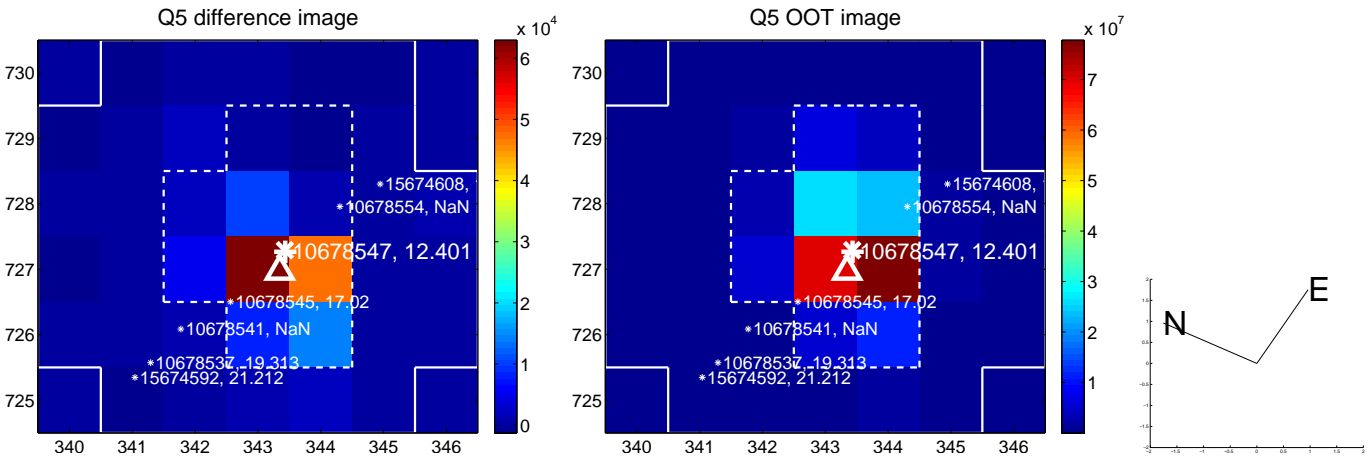


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

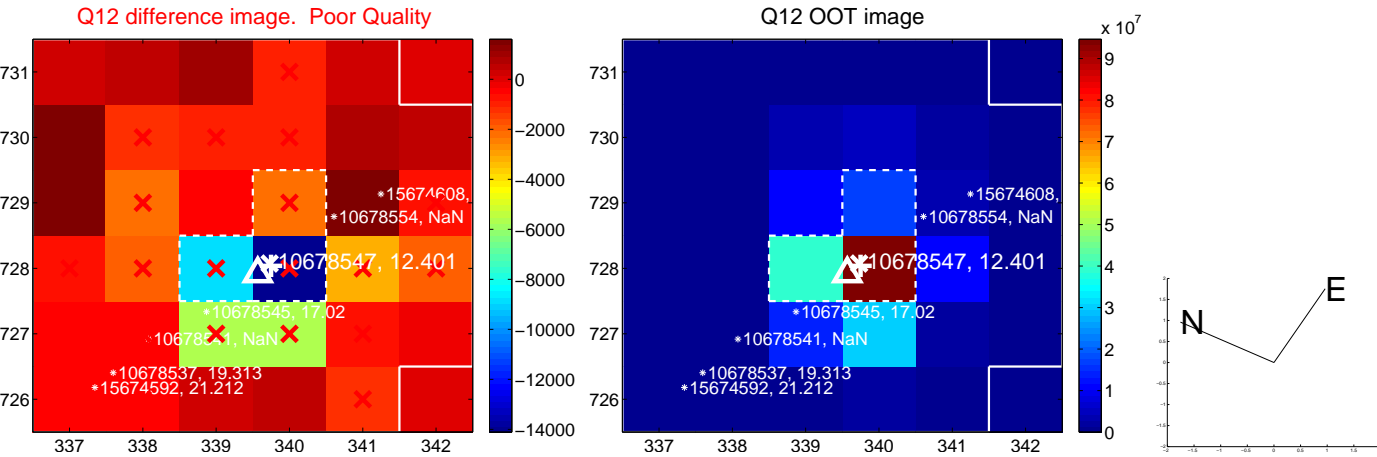
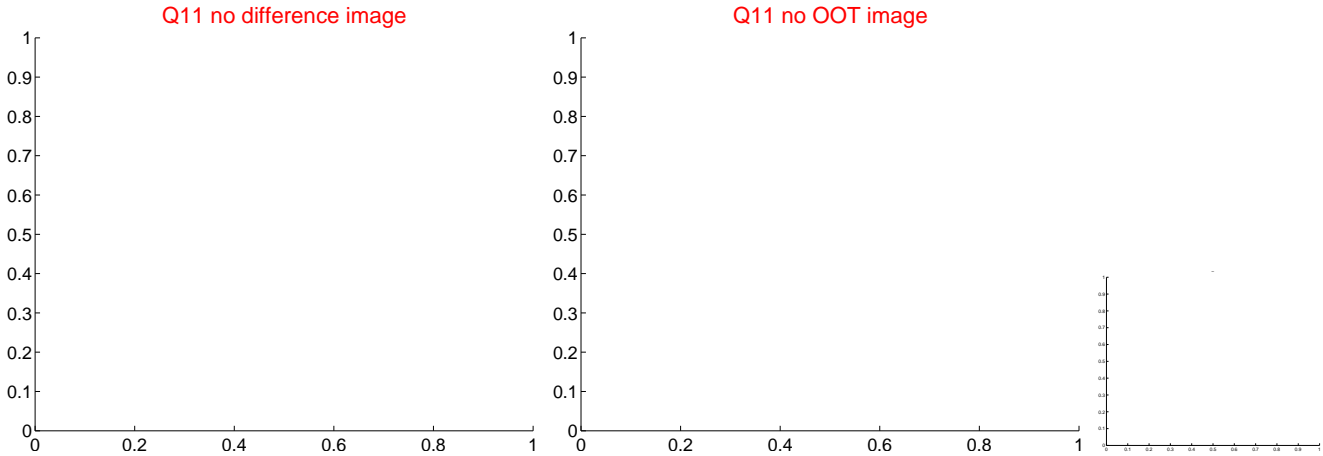
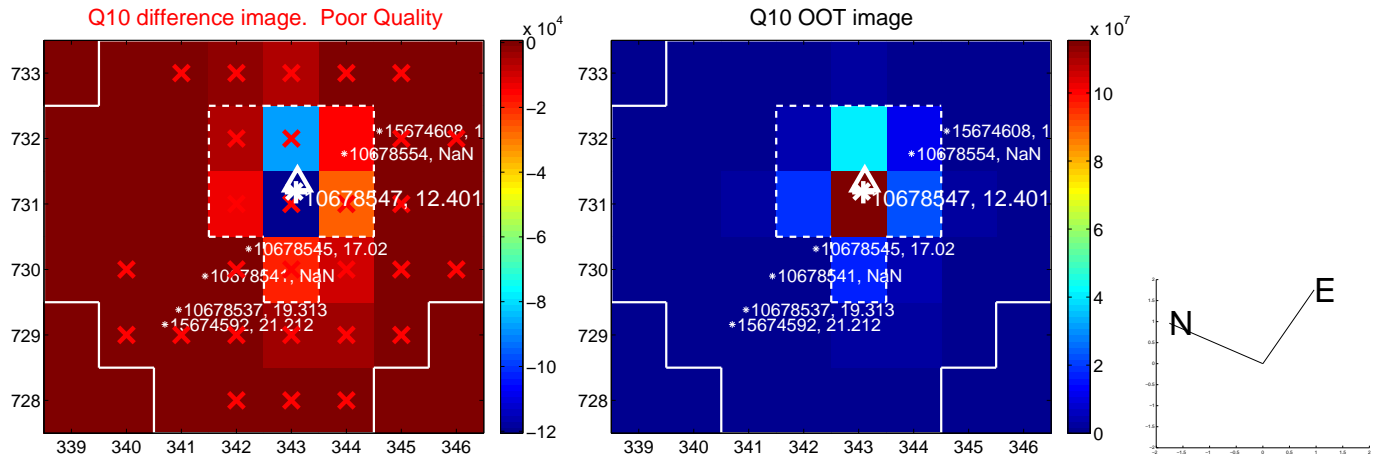
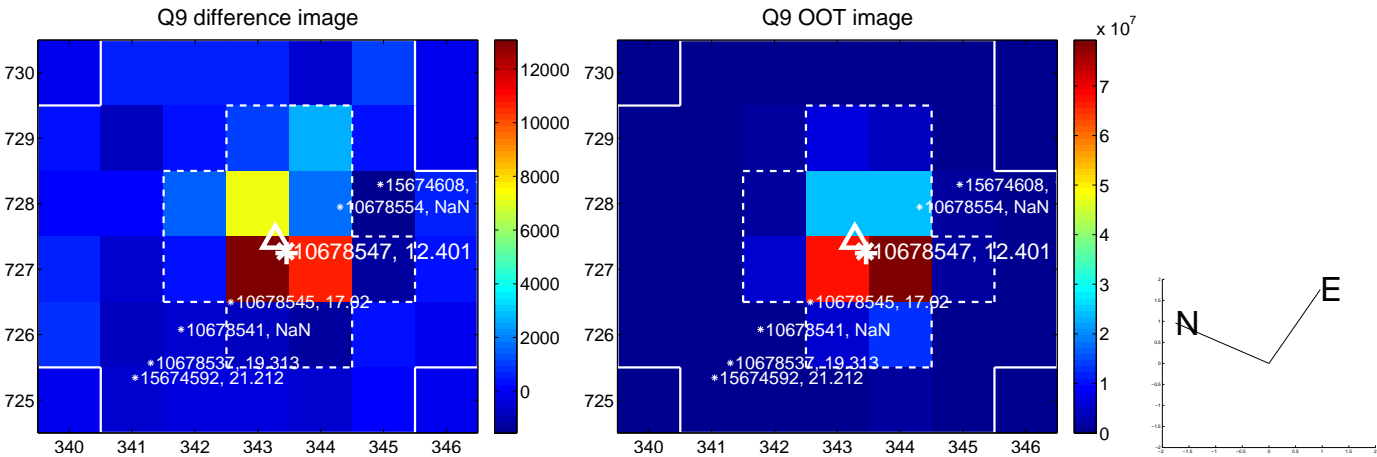
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



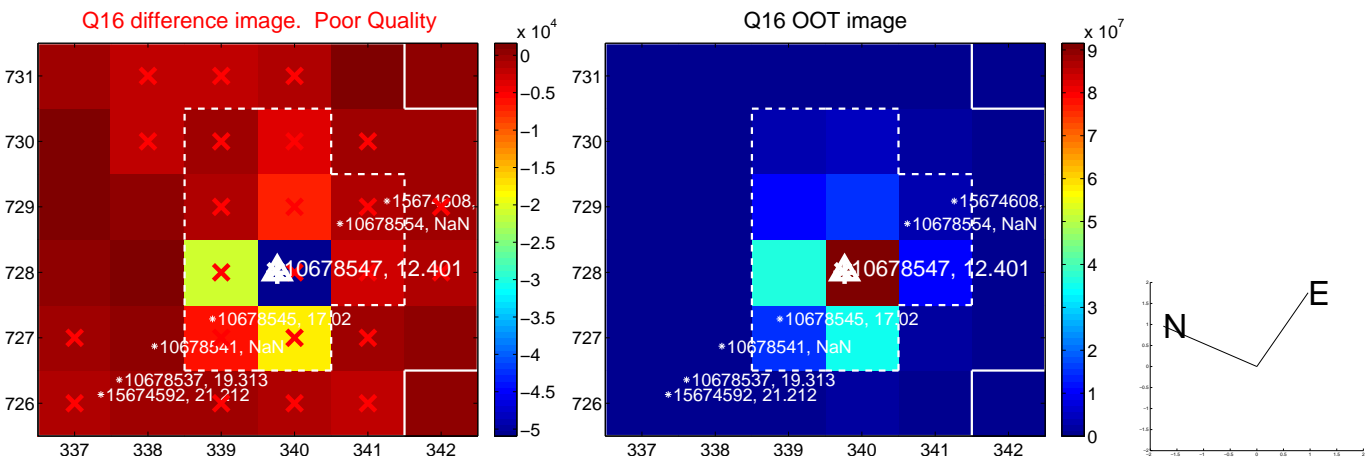
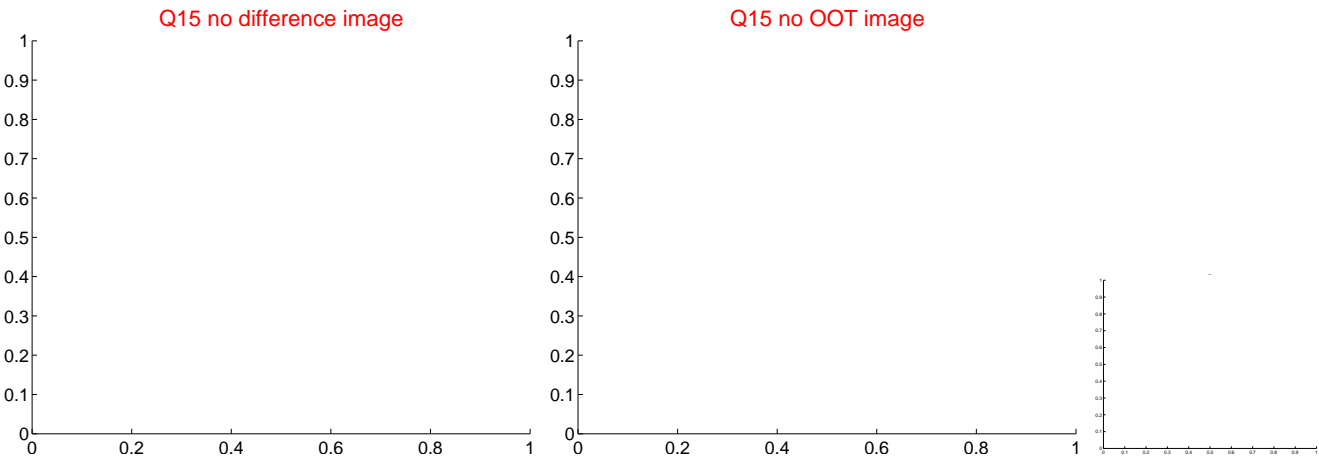
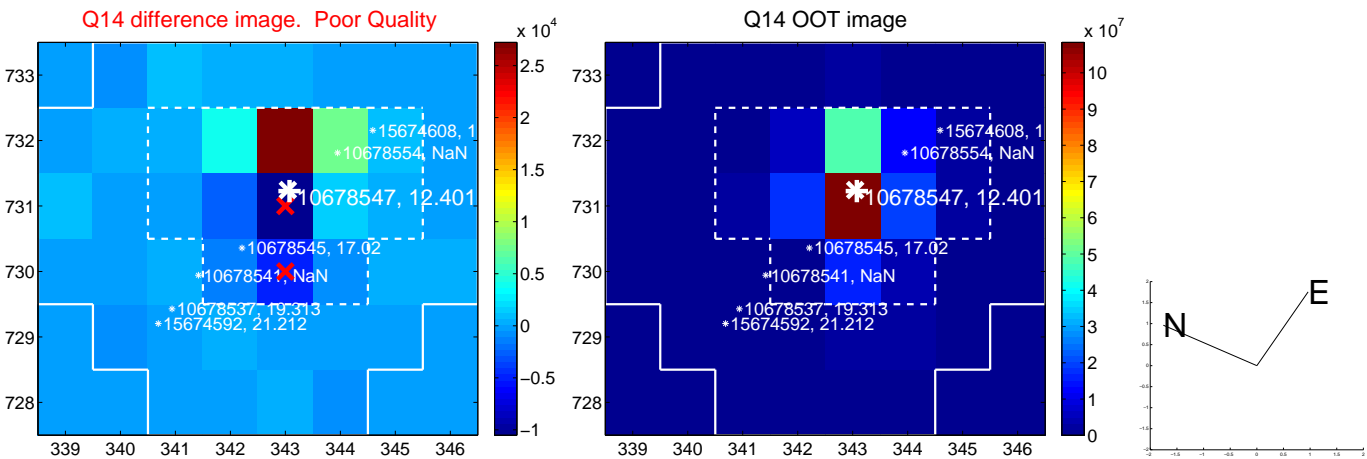
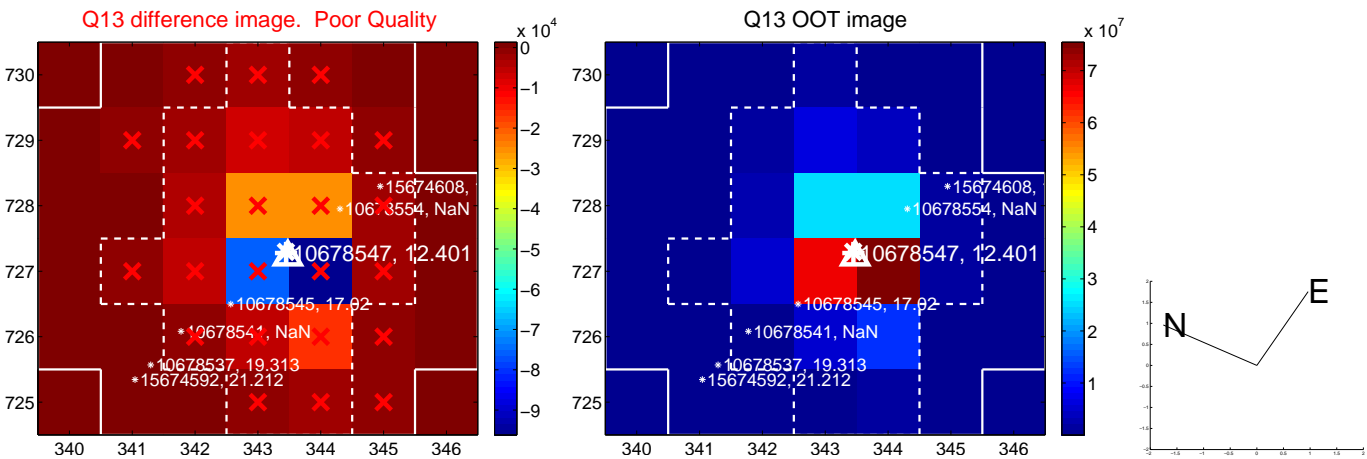
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



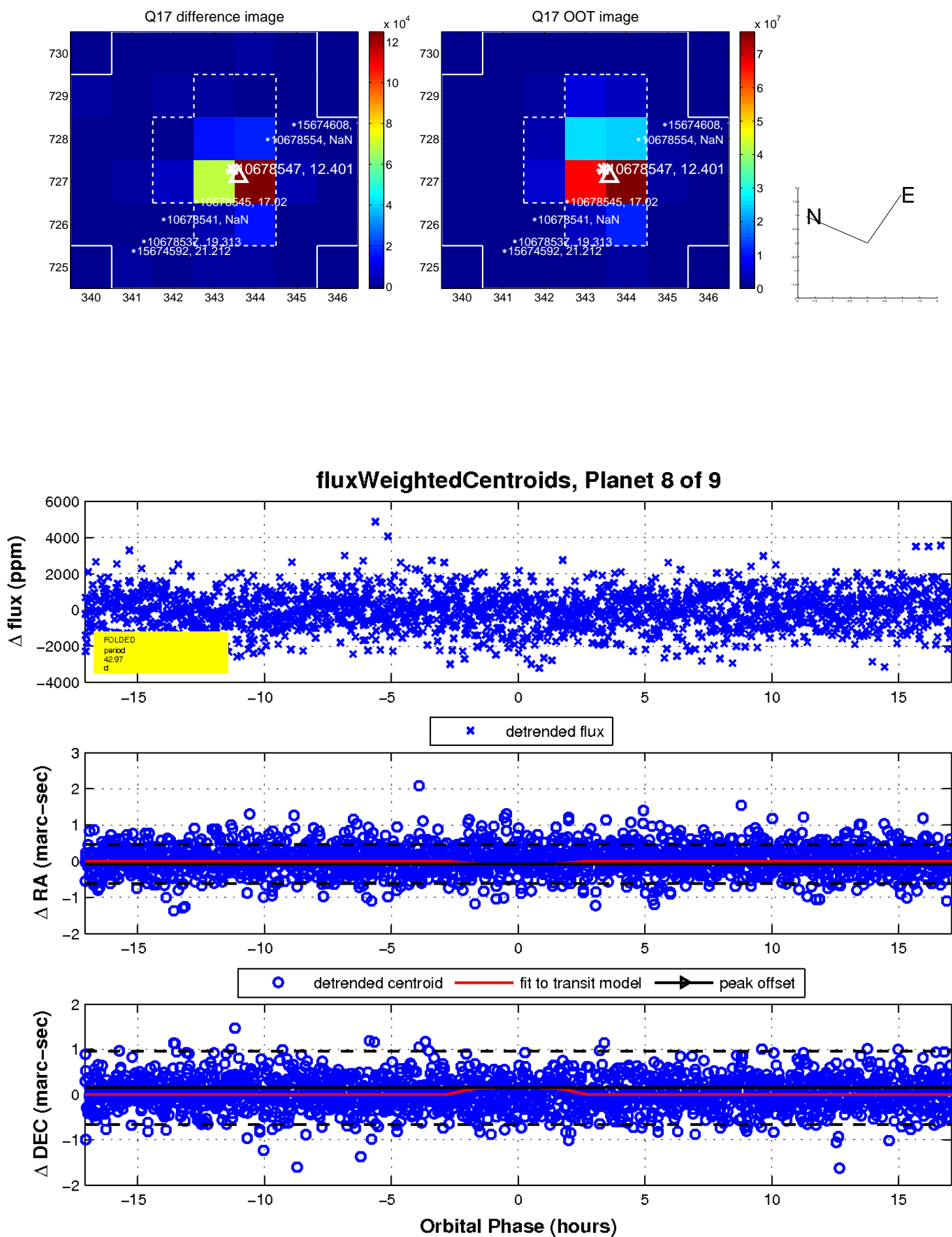
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

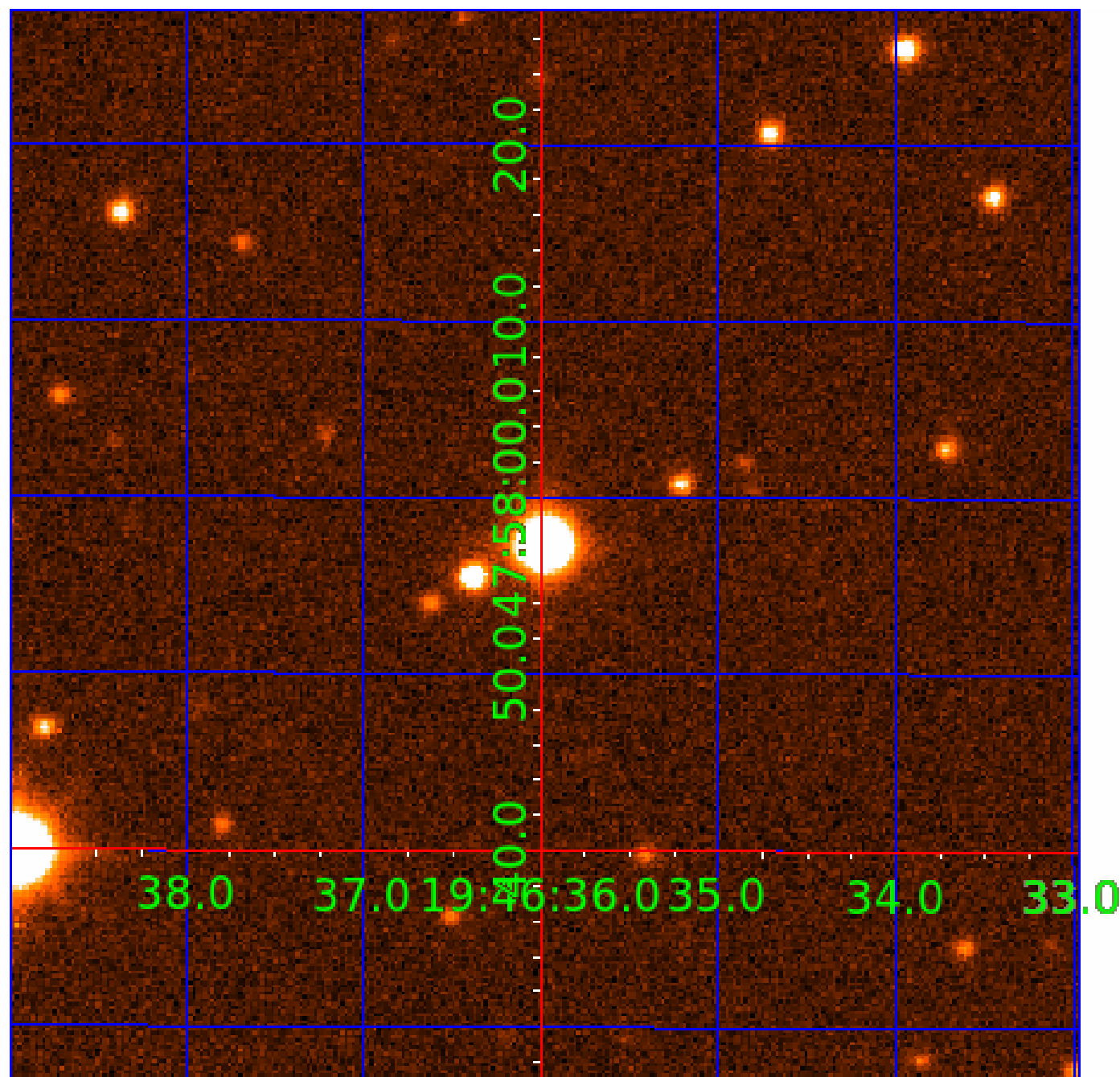


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010678547

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})
010678547-01	OBS	No	0.958852	131.740929	86.7	5.533	7.9	5.4	3.30	8089	3.13	66741.05
010678547-02	OBS	No	46.266327	132.134497	1965.9	2.176	10.4	9.8	3.30	8089	25.52	379.93
010678547-03	OBS	No	275.395986	189.662265	3463.5	3.956	10.2	11.3	3.30	8089	22.64	35.22
010678547-04	OBS	No	91.651982	201.270112	2210.0	6.815	9.8	9.5	3.30	8089	18.61	152.71
010678547-05	OBS	No	43.570469	137.129611	1396.6	5.119	8.9	8.8	3.30	8089	14.74	411.60
010678547-06	OBS	No	112.787169	188.429005	2289.5	5.538	9.3	8.1	3.30	8089	18.51	115.80
010678547-07	OBS	No	57.131981	133.364930	1676.4	4.872	9.1	9.0	3.30	8089	14.53	286.79
010678547-08	OBS	No	42.966194	155.444122	1288.5	5.702	10.0	9.0	3.30	8089	14.12	419.33
010678547-09	OBS	No	106.003102	153.375647	1335.3	13.839	8.3	8.1	3.30	8089	13.29	125.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010678547-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
010678547-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
010678547-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
010678547-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
010678547-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678547-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678547-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

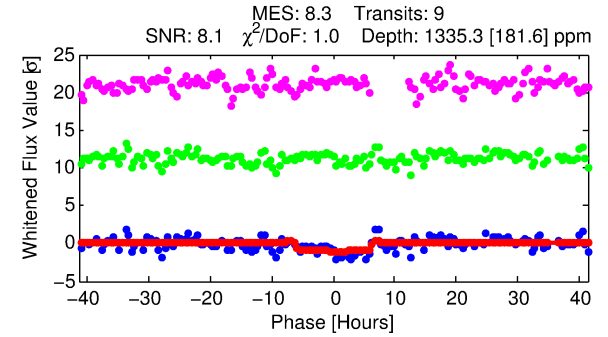
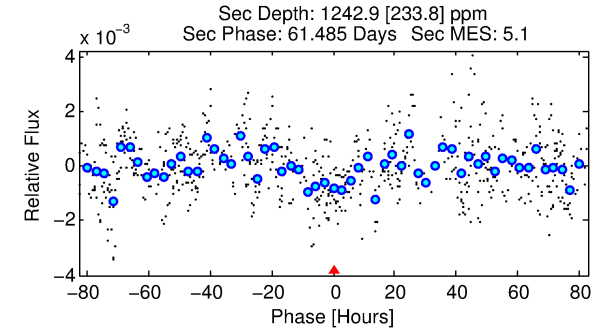
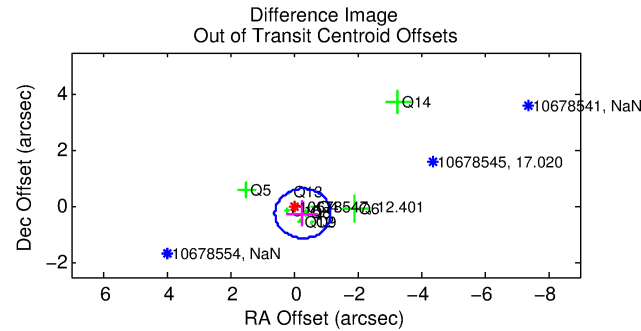
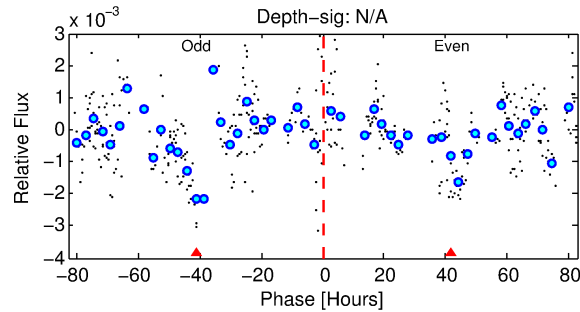
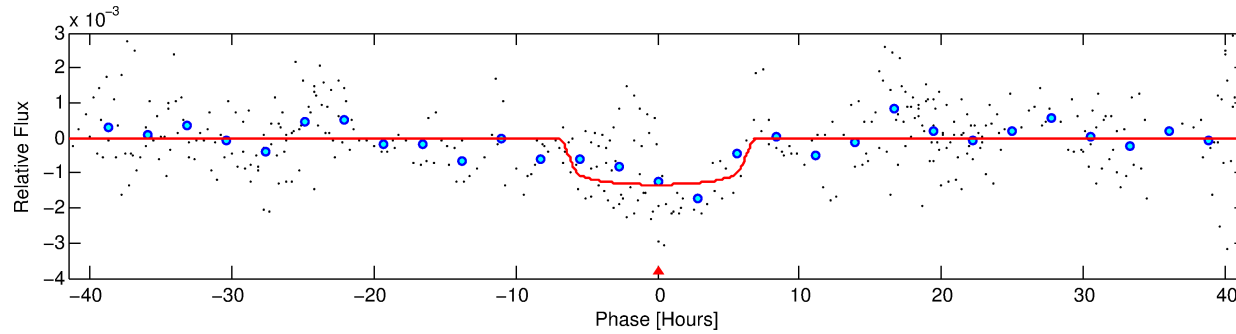
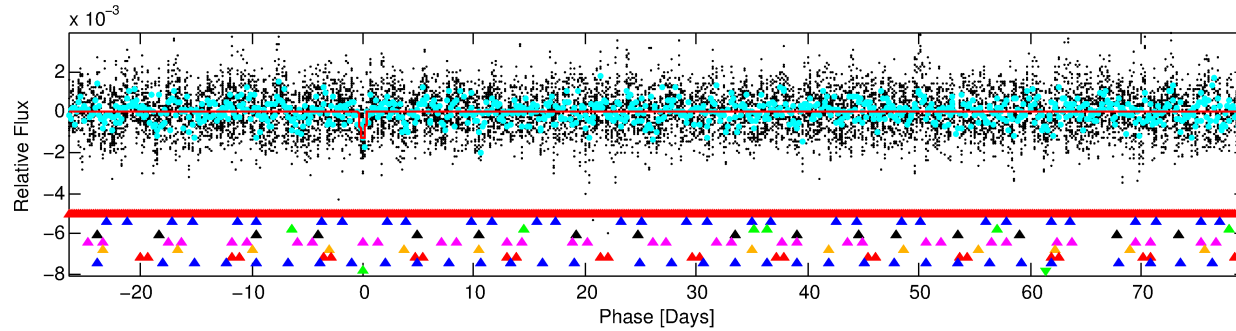
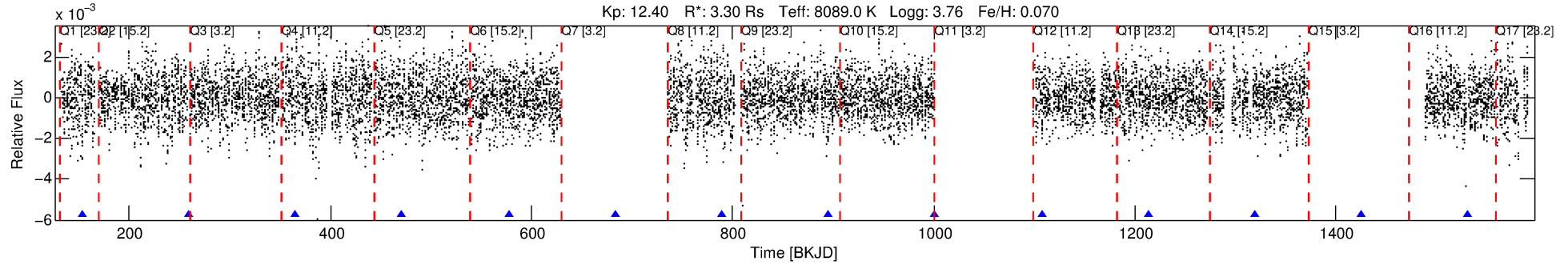
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678547-09

No Significant Match Found

DV One-Page Summary

KIC: 10678547 Candidate: 9 of 9 Period: 106.003 d



DV Fit Results:

Period = 106.00310 [0.00834] d
Epoch = 153.3756 [0.0345] BKJD
Rp/R* = 0.0369 [0.0039]
a/R* = 38.87 [17.06]
b = 0.80 [0.20]
Seff = 125.79 [50.90]
Teq = 854 [86] K
Rp = 13.29 [4.22] Re
a = 0.5761 [0.1528] AU
Ag = 1285.48 [631.10] [2.04σ]
Teffp = 7906 [566] K [12.33σ]

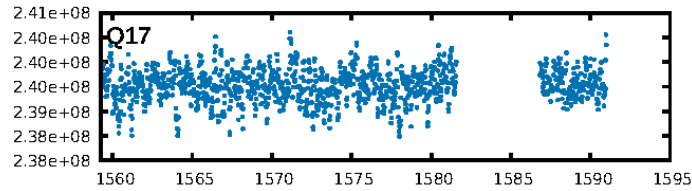
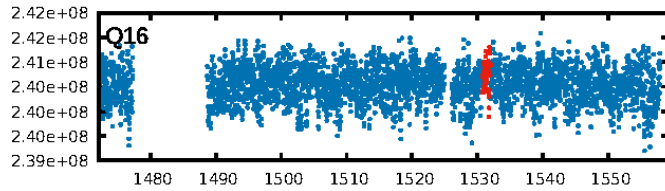
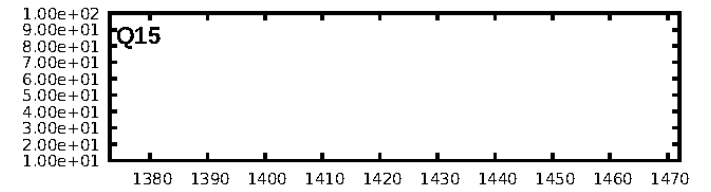
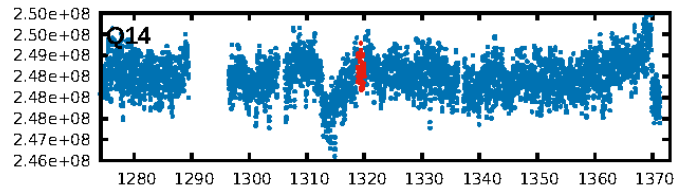
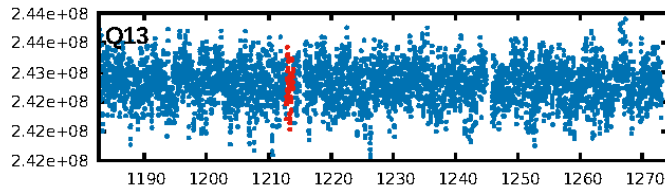
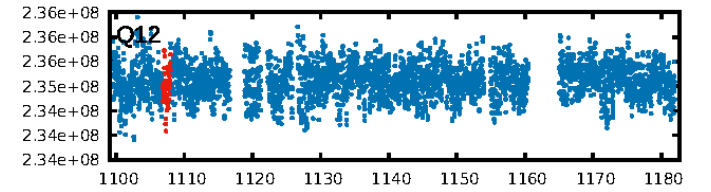
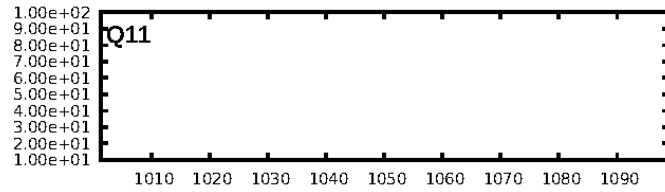
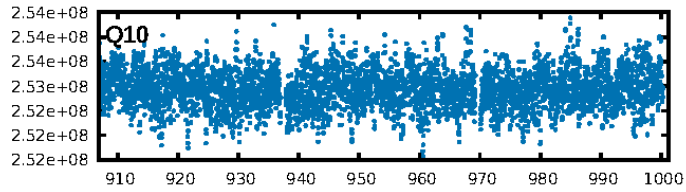
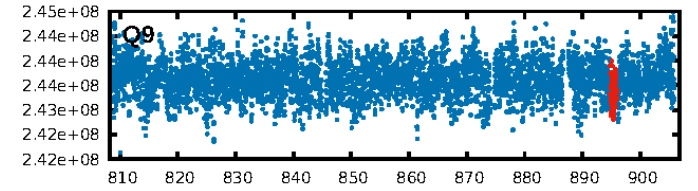
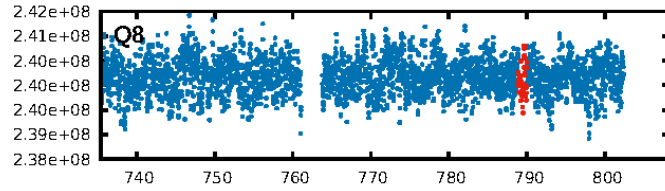
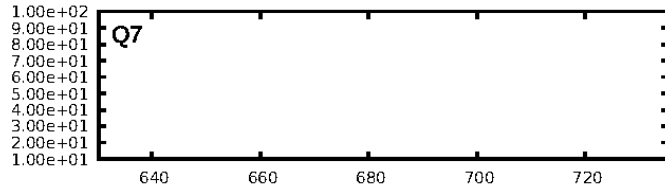
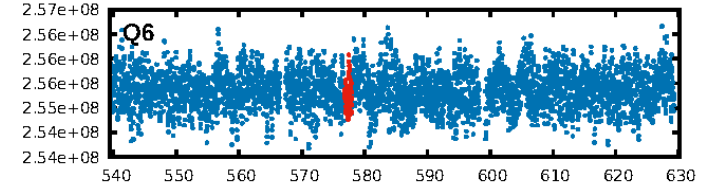
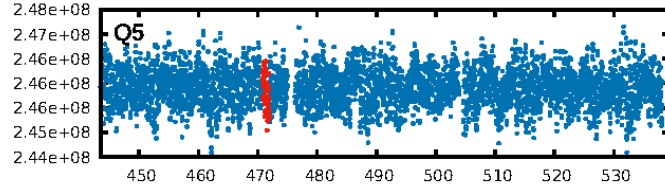
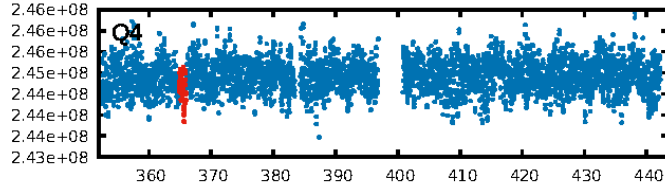
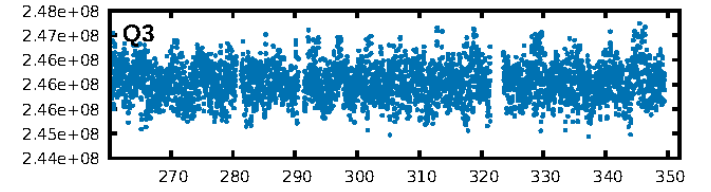
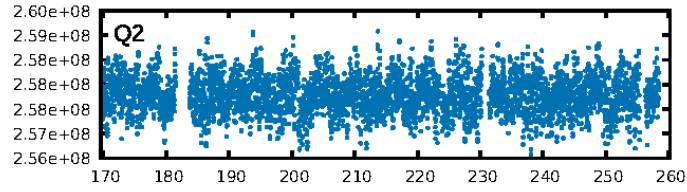
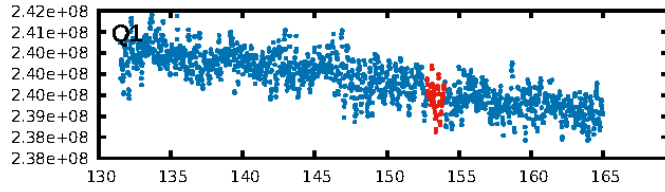
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [22.33σ]
LongPeriod-sig: 100.0% [10.92σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 1.399
Centroid-sig: 18.3%
Centroid-so: 0.258 arcsec [3.87σ]
OotOffset-rm: 0.372 arcsec [1.27σ]
KicOffset-rm: 0.548 arcsec [1.83σ]
OotOffset-st: 2/0/4/3 [9]
KicOffset-st: 2/0/4/3 [9]
DiffImageQuality-fgm: 0.78 [7/9]
DiffImageOverlap-fno: 0.00 [0/10]

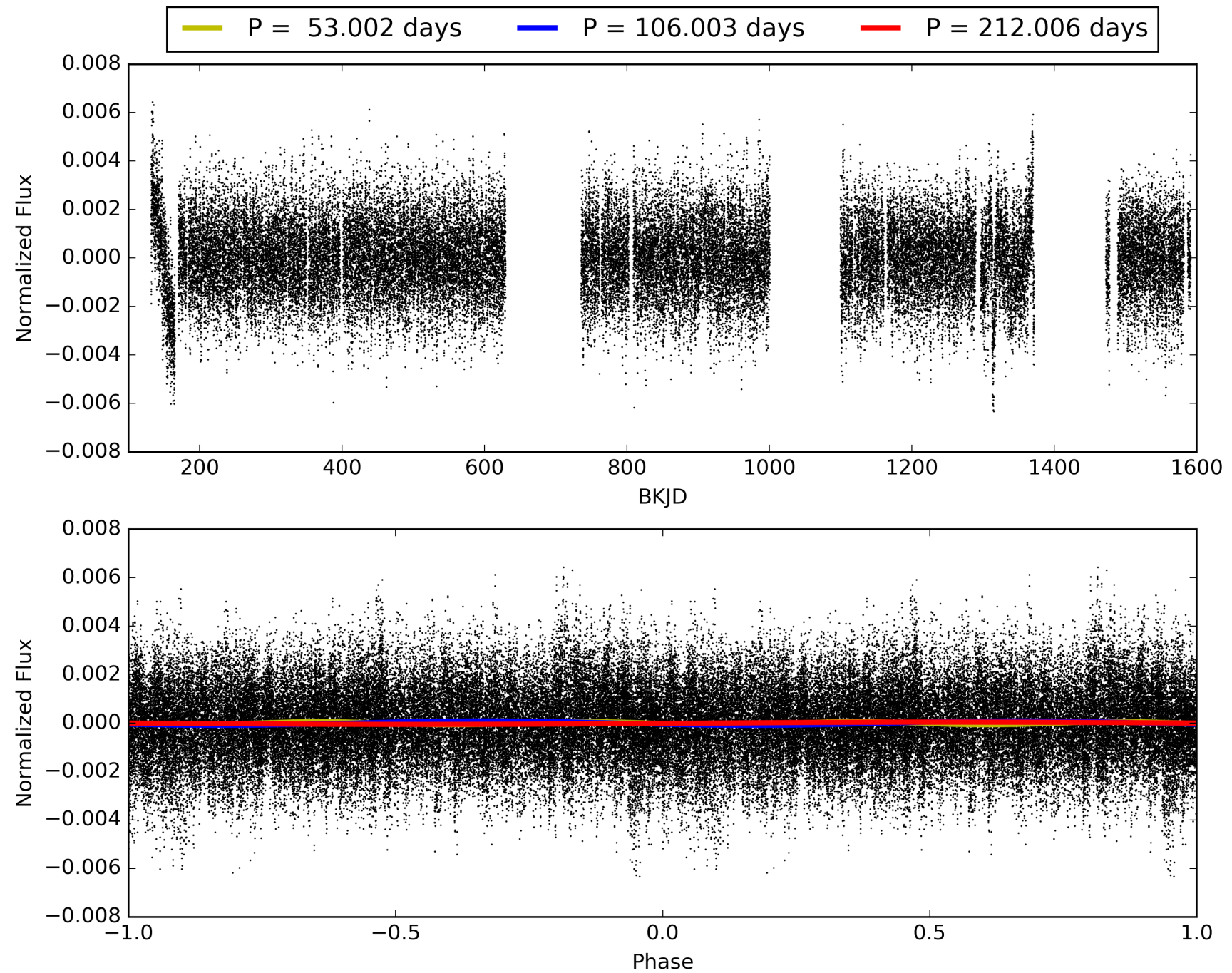
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:51:35 Z

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

TCE 010678547-09, PDC Light Curves

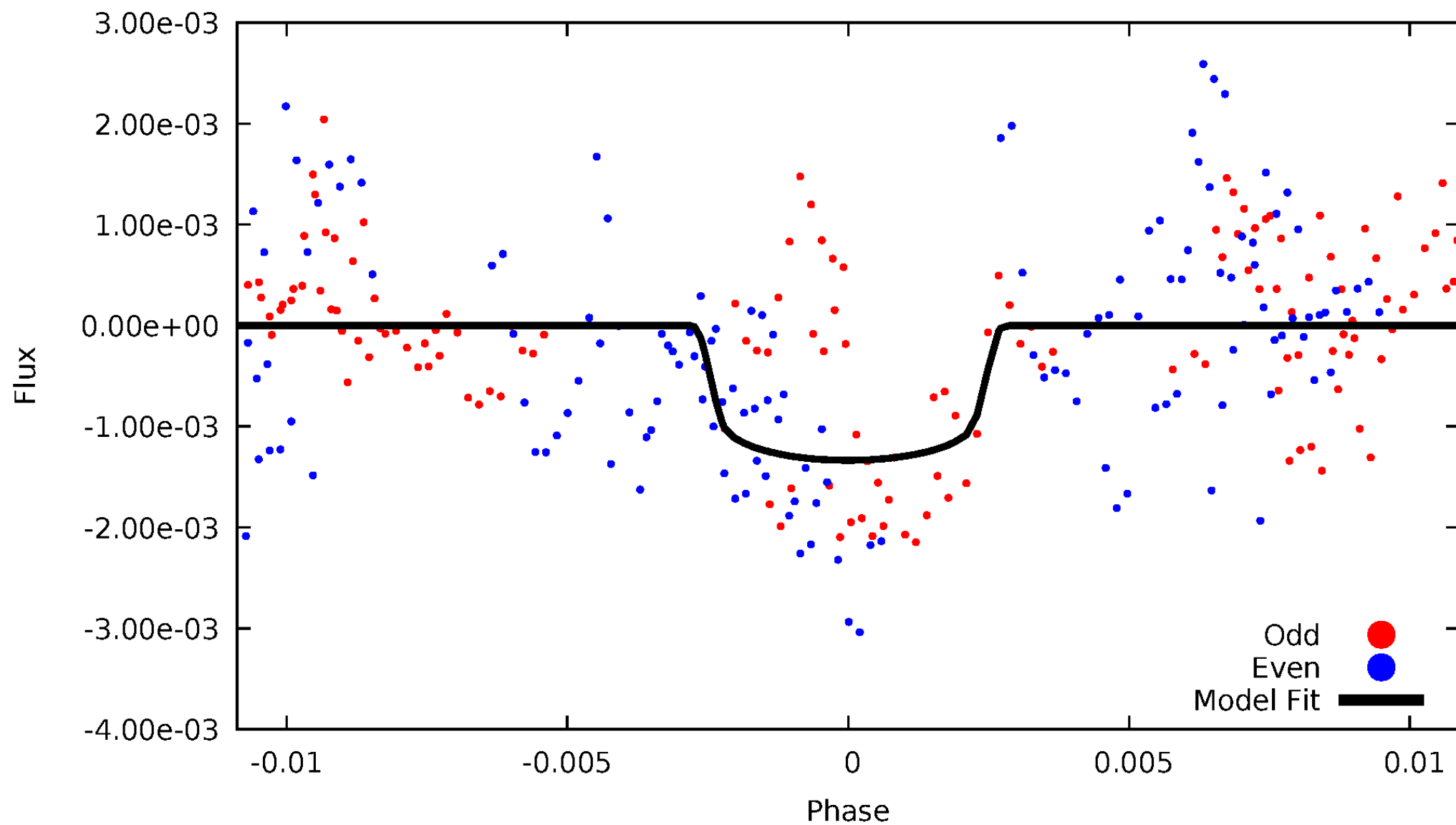


TCE 010678547-09



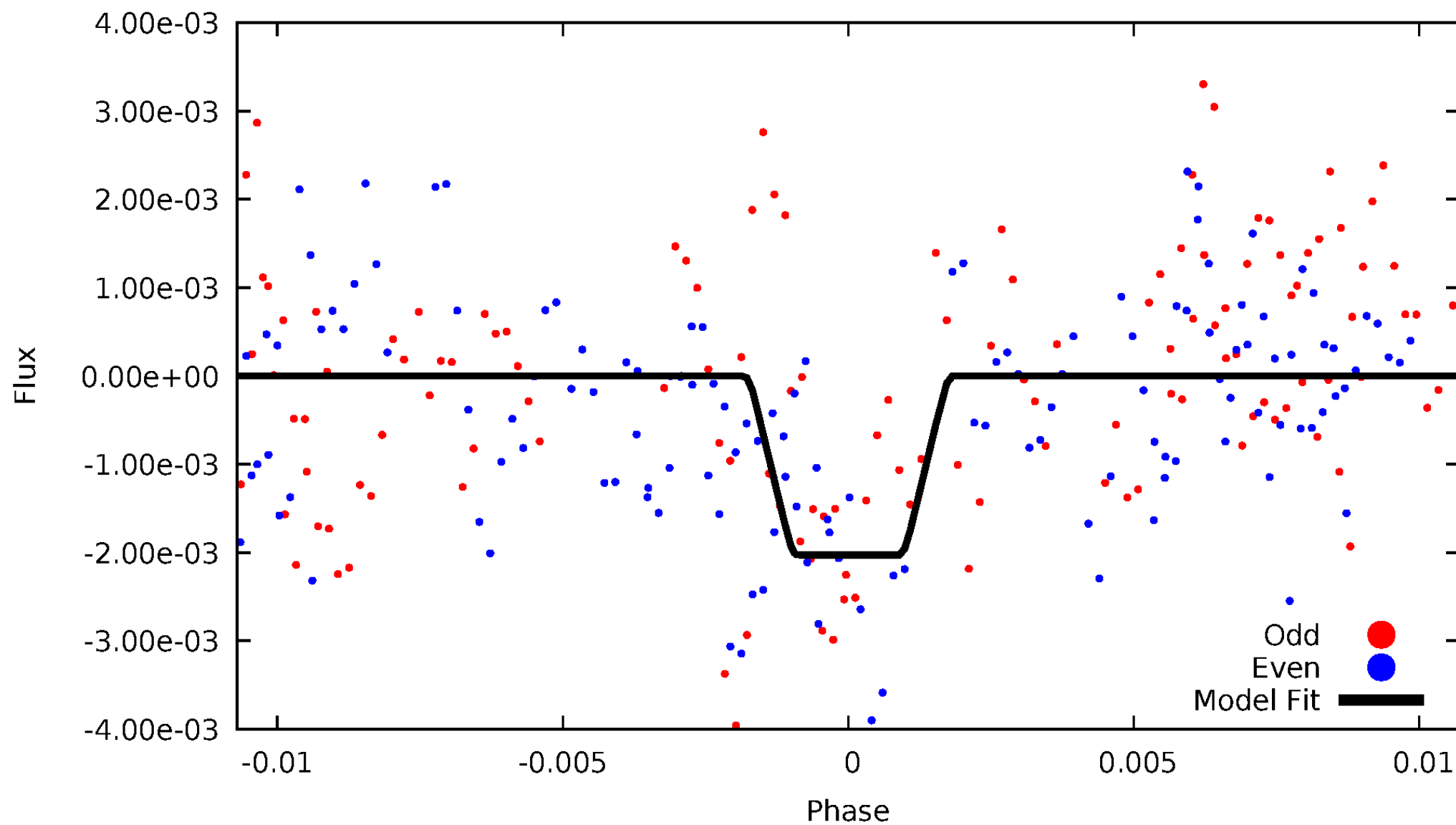
DV Odd/Even

TCE 010678547-09



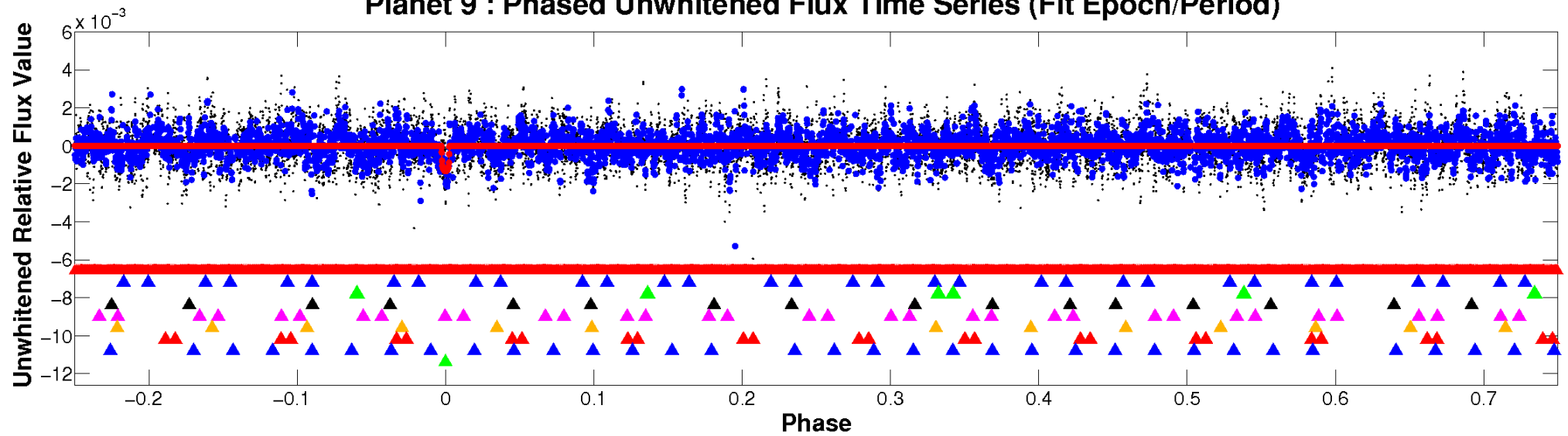
ALT Odd/Even

TCE 010678547-09

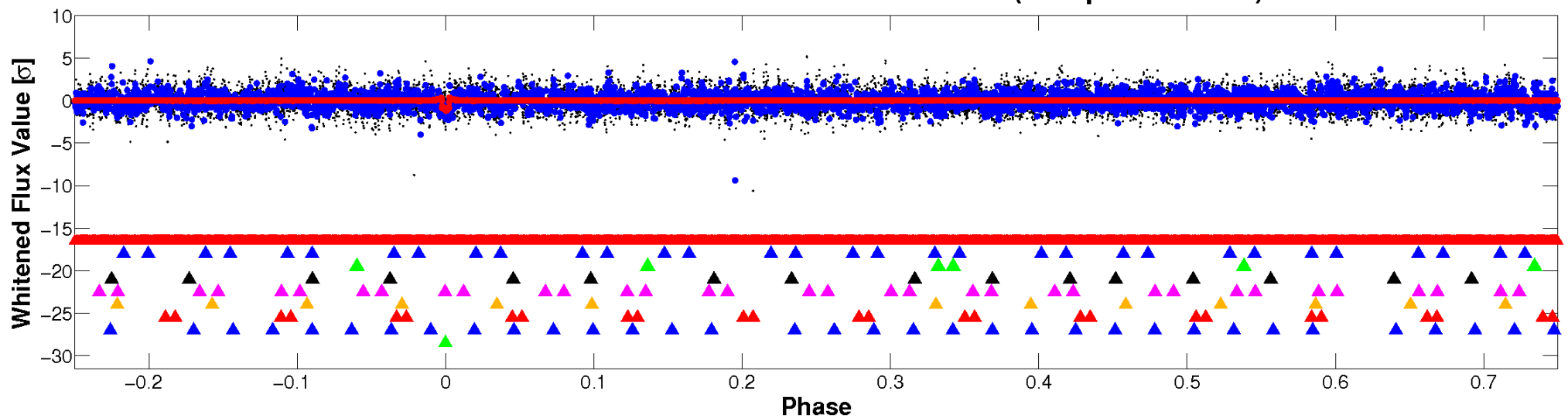


Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

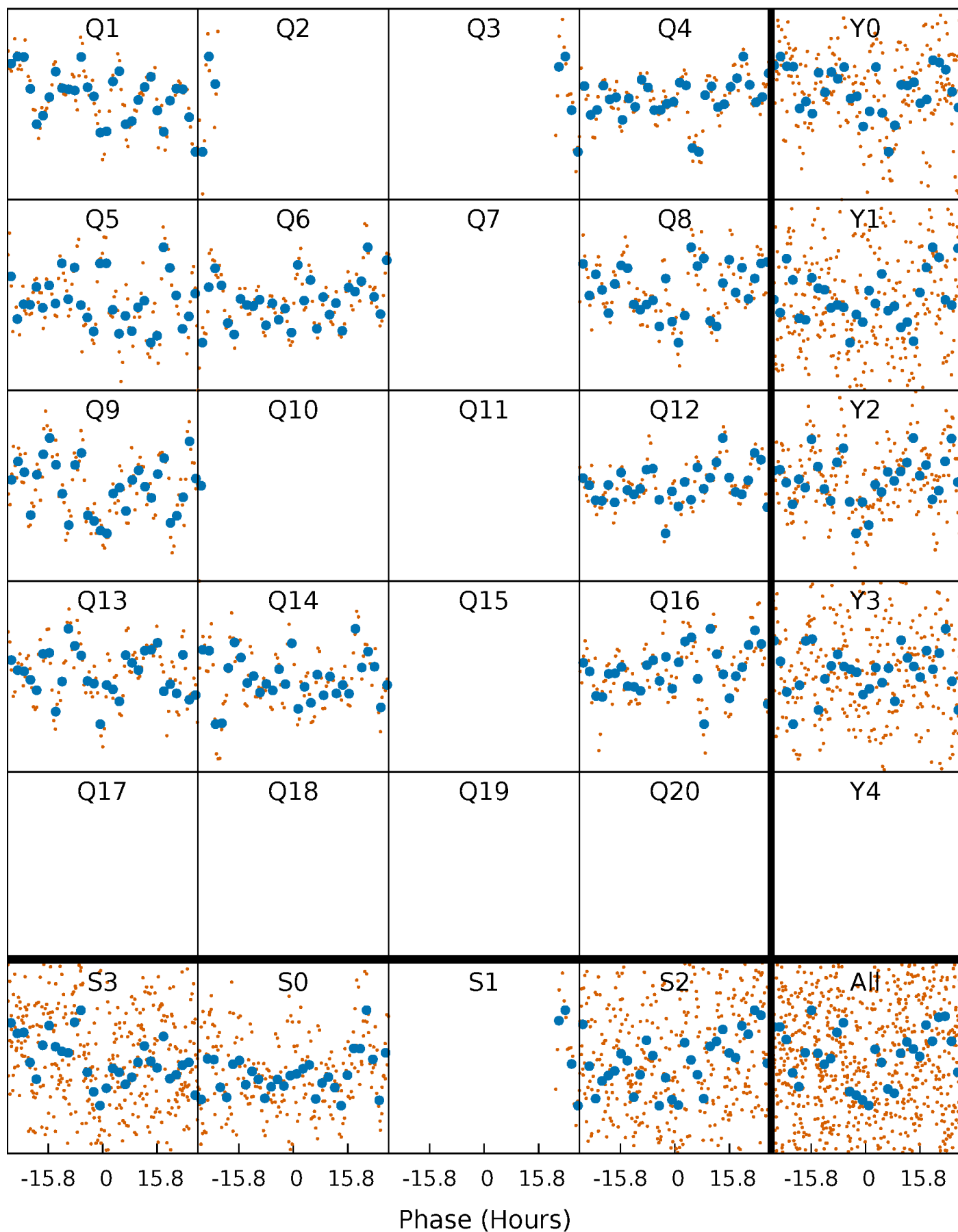


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



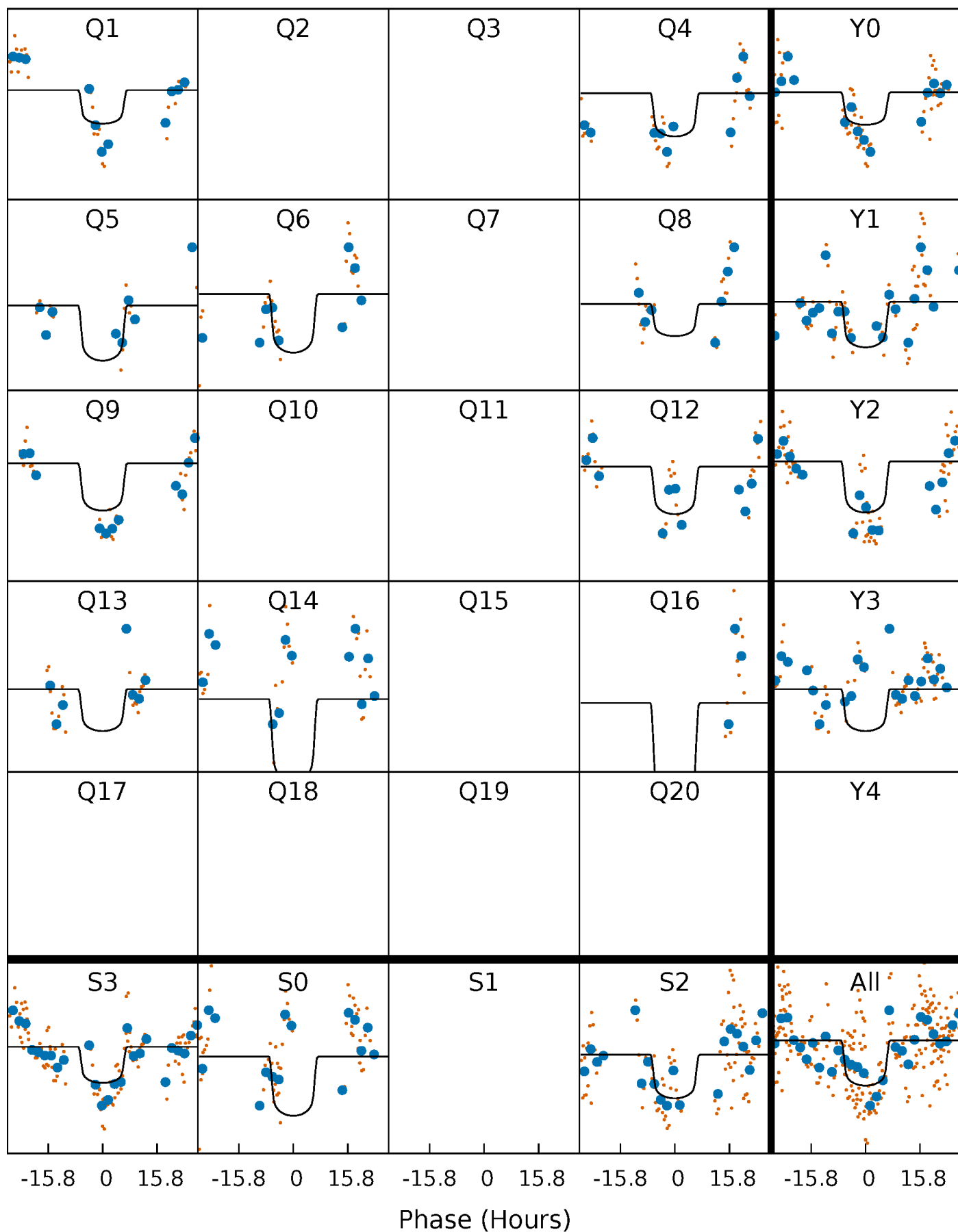
PDC Quarter-Phased Transit Curves

TCE 010678547-09 P=106.003102 Days $T_0=153.375647$ (BKJD)



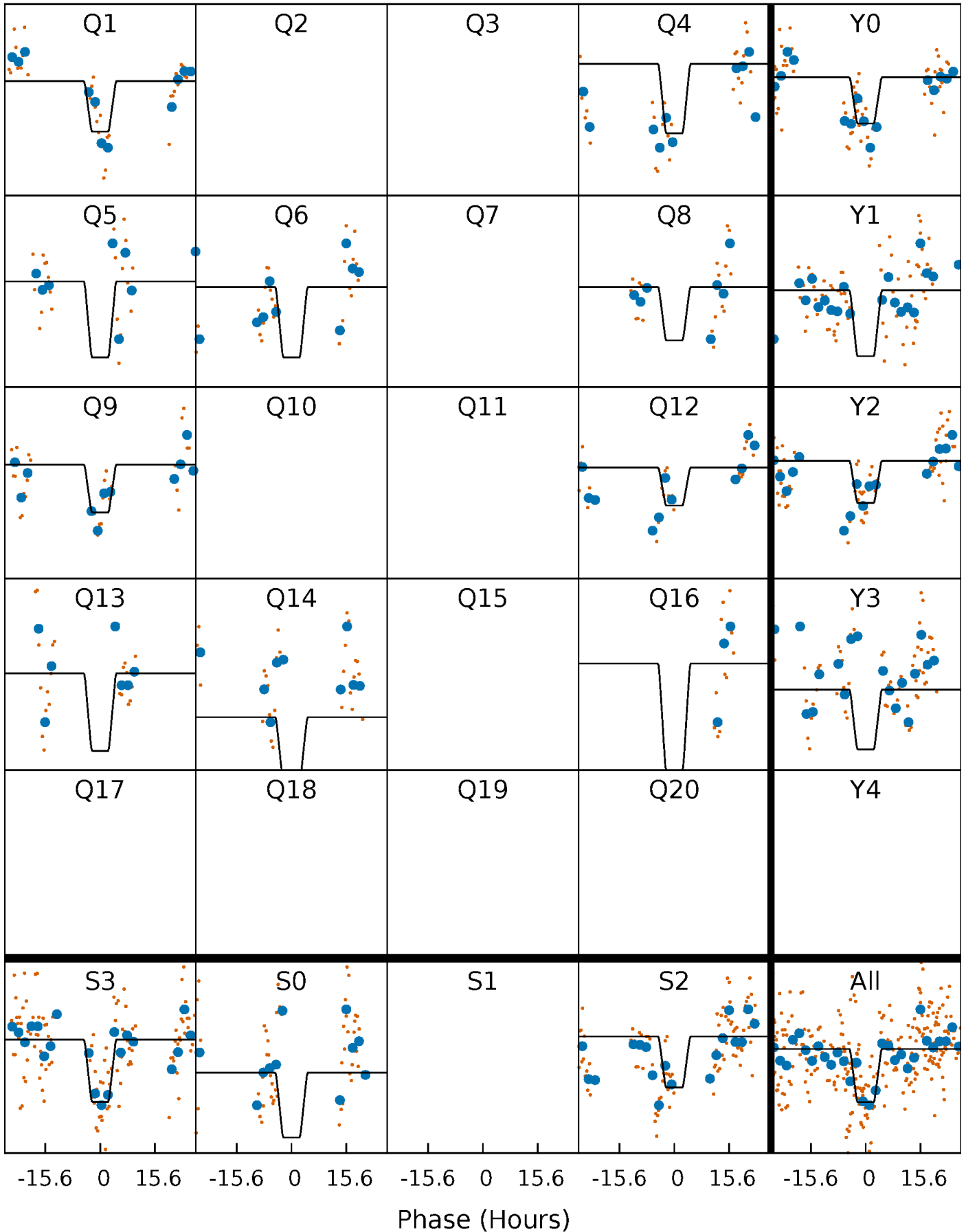
DV Quarter-Phased Transit Curves

TCE 010678547-09 P=106.003102 Days $T_0=153.375647$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

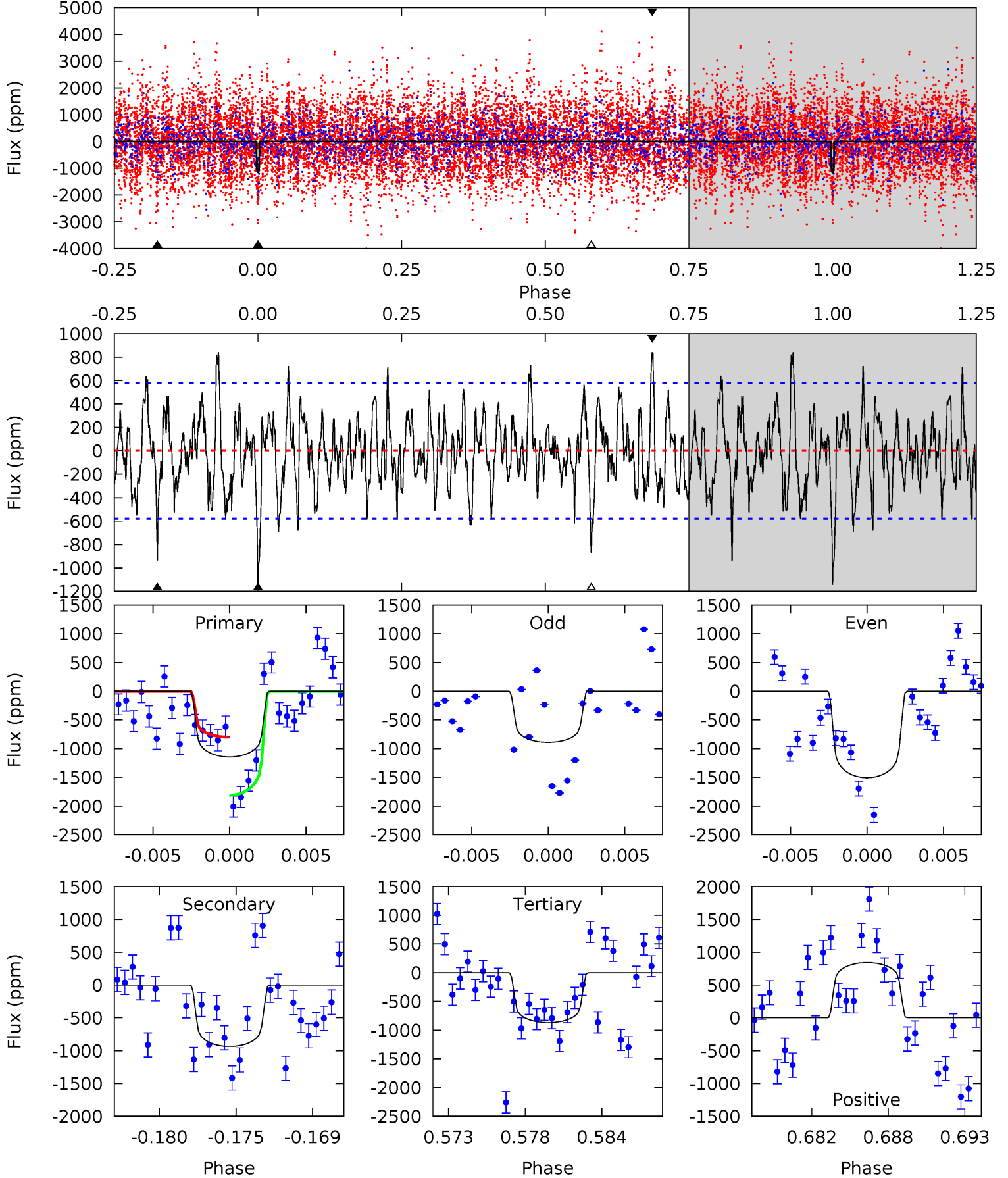
TCE 010678547-09 P=106.016781 Days $T_0=153.333368$ (BKJD)



DV Model-Shift Uniqueness Test

010678547-09, P = 106.003102 Days, E = 47.372545 Days

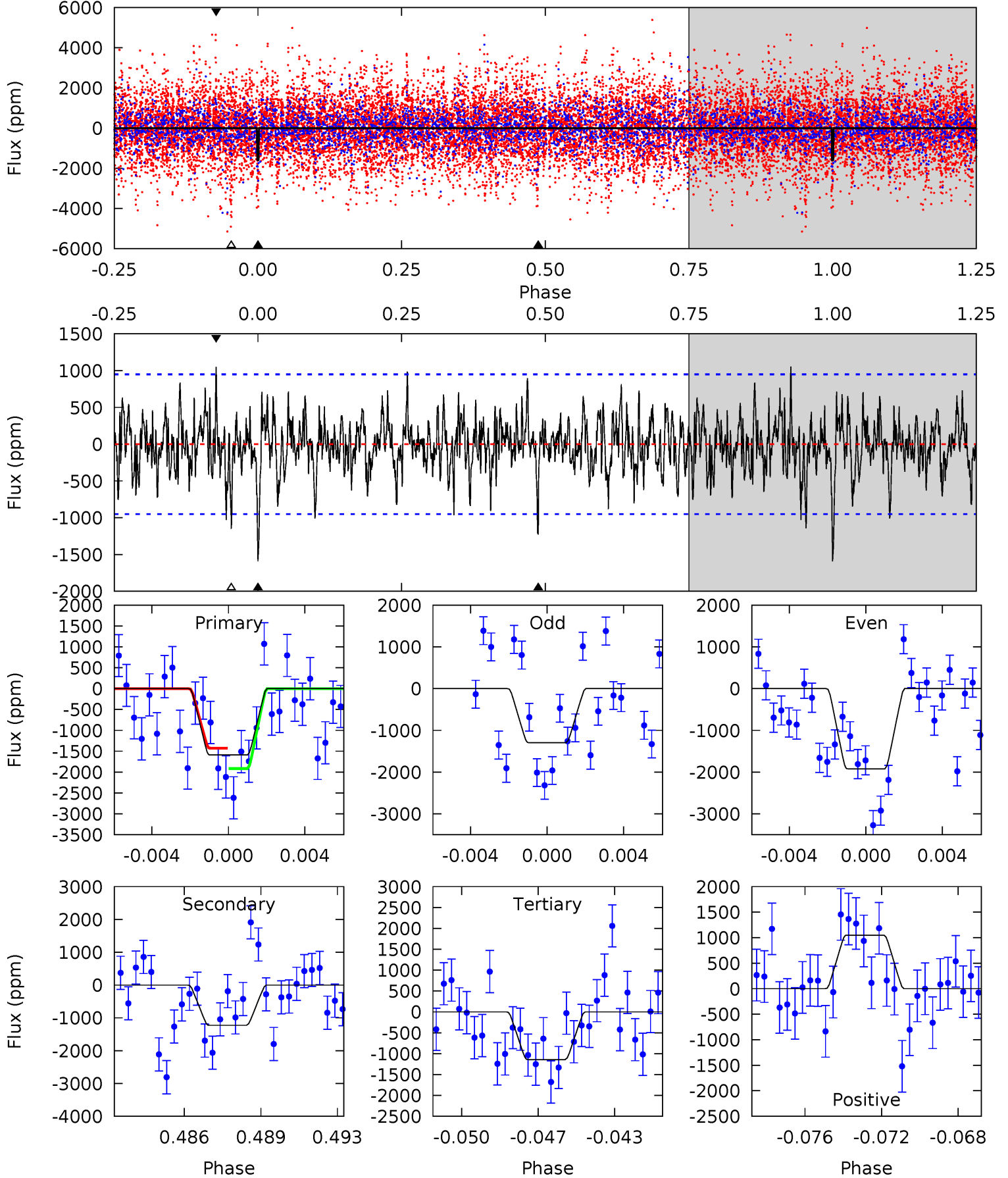
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	8.29	7.69	7.46	5.14	2.78	2.43	2.45	2.69	0.60	0.83	2.73	0.95	0.42	4.24



Alt Model-Shift Uniqueness Test

010678547-09, P = 106.016781 Days, E = 47.316587 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.74	6.74	6.27	5.76	5.22	2.91	1.67	2.47	2.98	0.47	0.98	1.71	0.18	0.40	1.26



Stellar Parameters For KIC 010678547

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8089^{+64}_{-97}	$3.757^{+0.227}_{-0.122}$	$0.070^{+0.200}_{-0.250}$	$3.299^{+0.660}_{-0.990}$	$2.267^{+0.222}_{-0.413}$	$0.089^{+0.122}_{-0.033}$
	+1%/-1%	+6%/-3%	+286%/-357%	+20%/-30%	+10%/-18%	+137%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 010678547-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-936 ± 113	$12.90^{+2.21}_{-2.31}$	1185^{+63}_{-92}	7230^{+585}_{-463}	1004^{+500}_{-271}
Alt.	-1227 ± 182	$15.68^{+2.55}_{-2.80}$	1183^{+65}_{-91}	6988^{+461}_{-397}	907^{+406}_{-252}

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 $A_{obs} \gg 1.0$

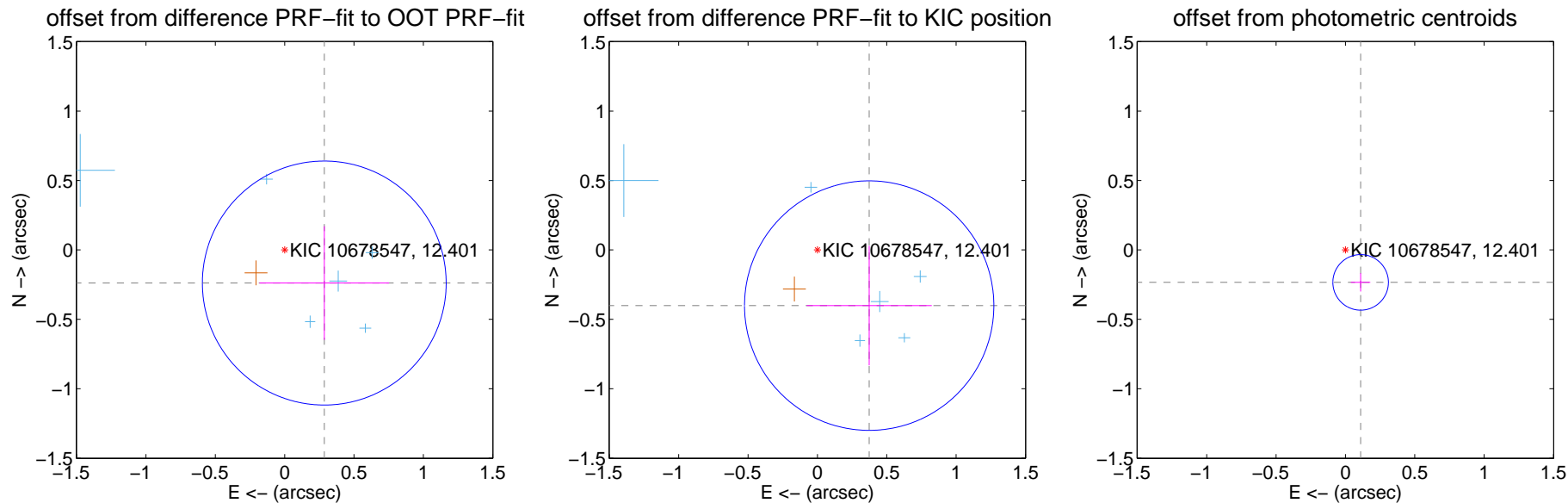
DV Centroid Data

Supplemental centroid analysis for 010678547-09. Kepler magnitude: 12.40. Transit SNR 8.05

There are 7 quarters with good PRF difference image offsets

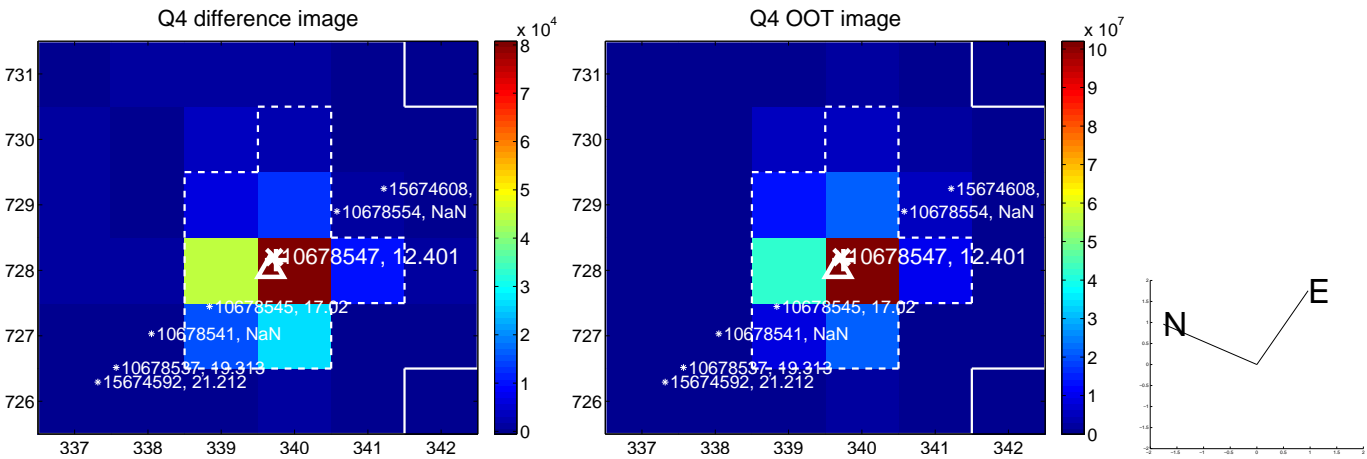
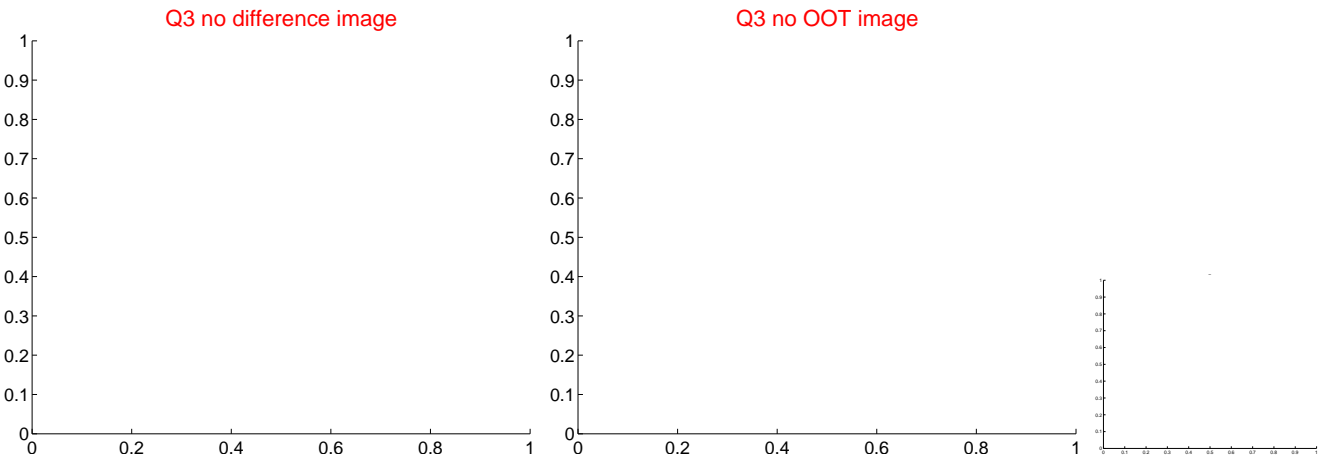
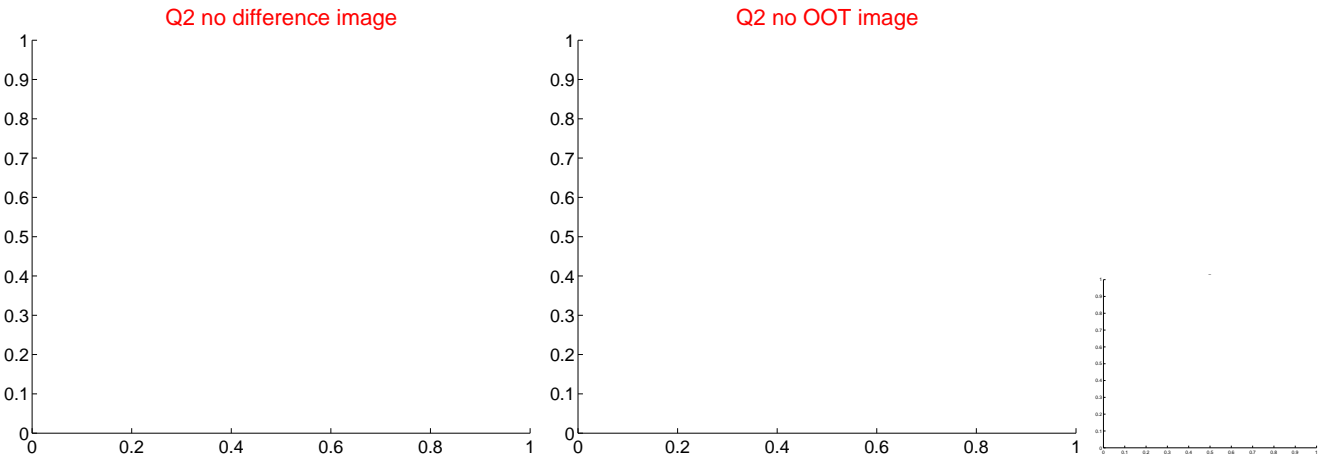
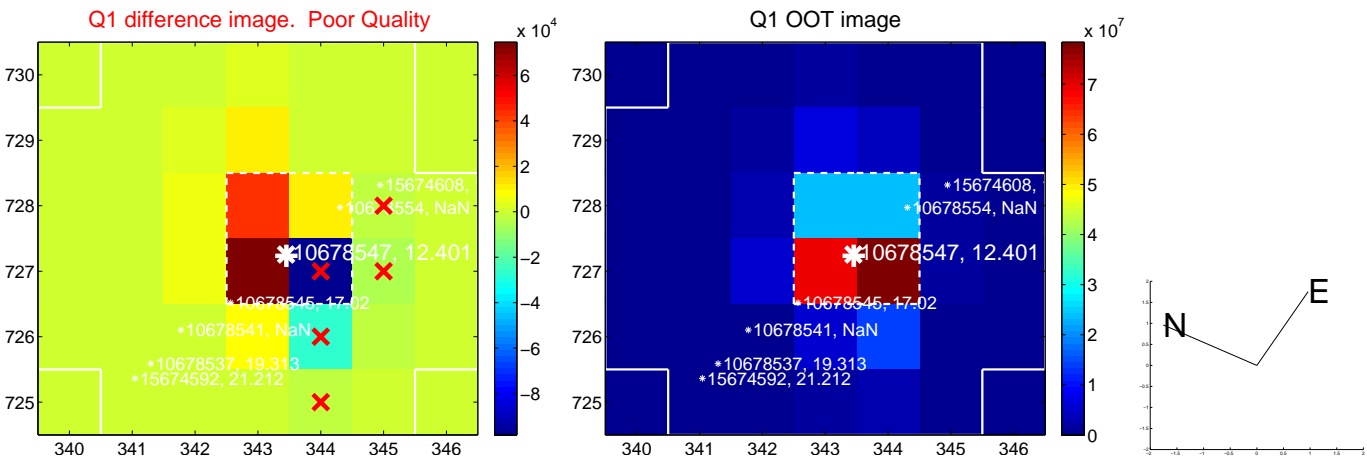
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.372 ± 0.293	1.27	-0.286 ± 0.467	-0.239 ± 0.409
PRF-fit source offset from KIC position	0.548 ± 0.300	1.83	-0.373 ± 0.451	-0.401 ± 0.430
photometric centroid source offset	0.26 ± 0.07	3.87	-0.11 ± 0.07	-0.23 ± 0.07

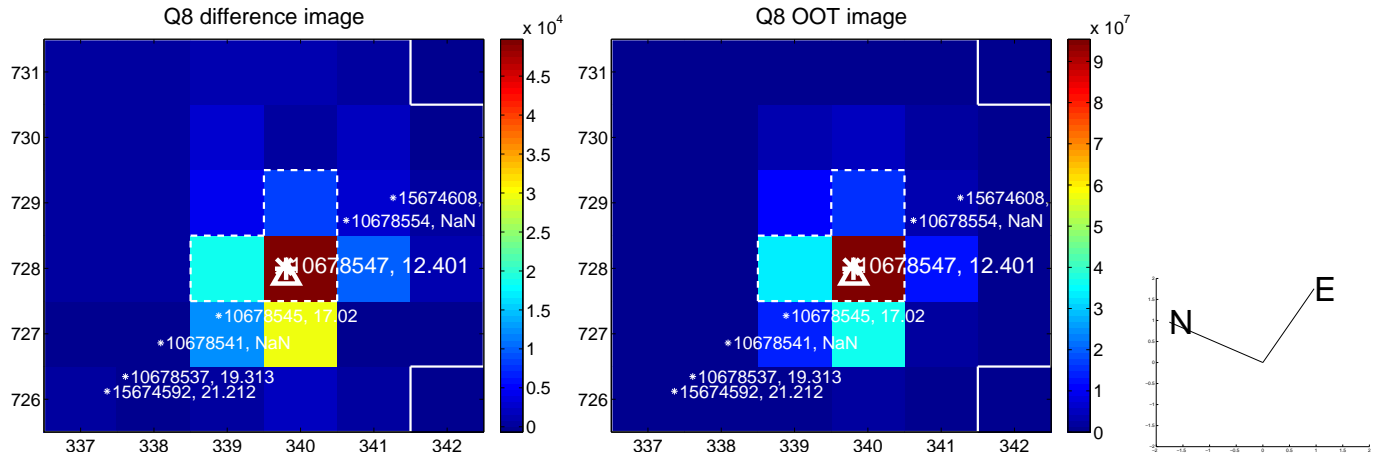
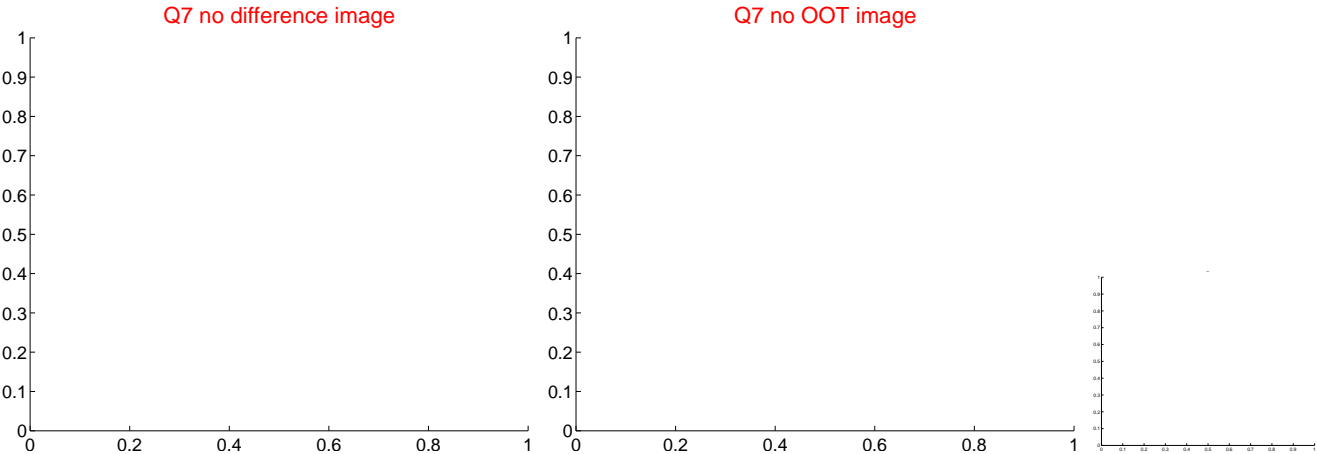
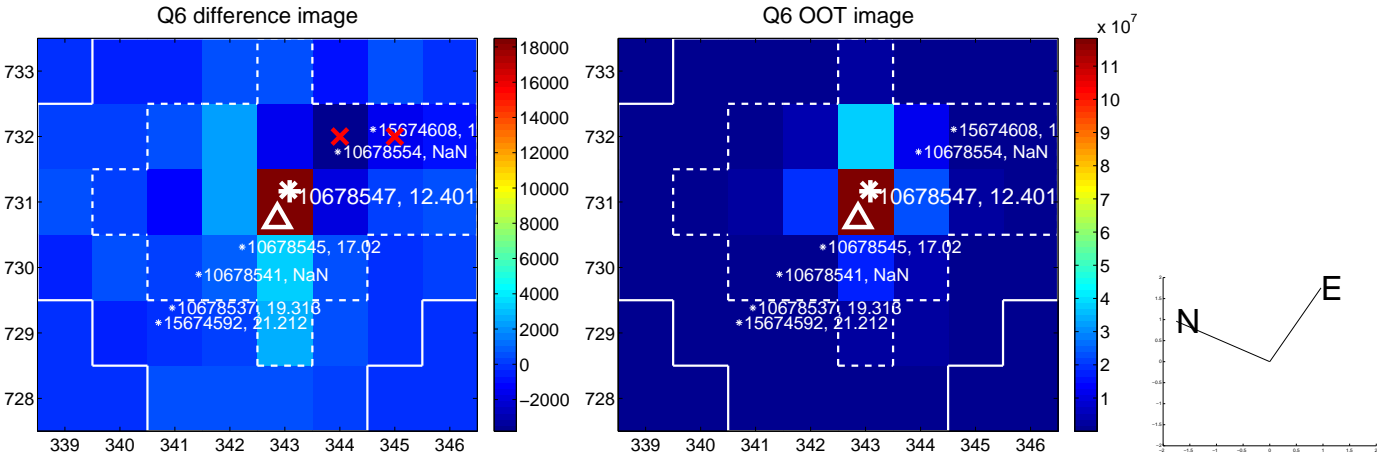
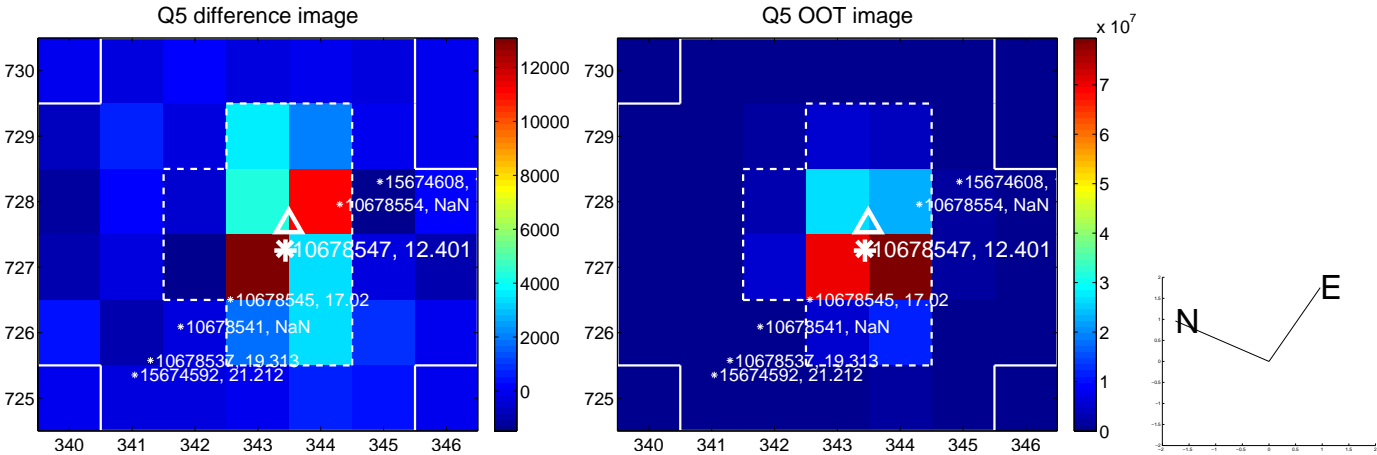


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

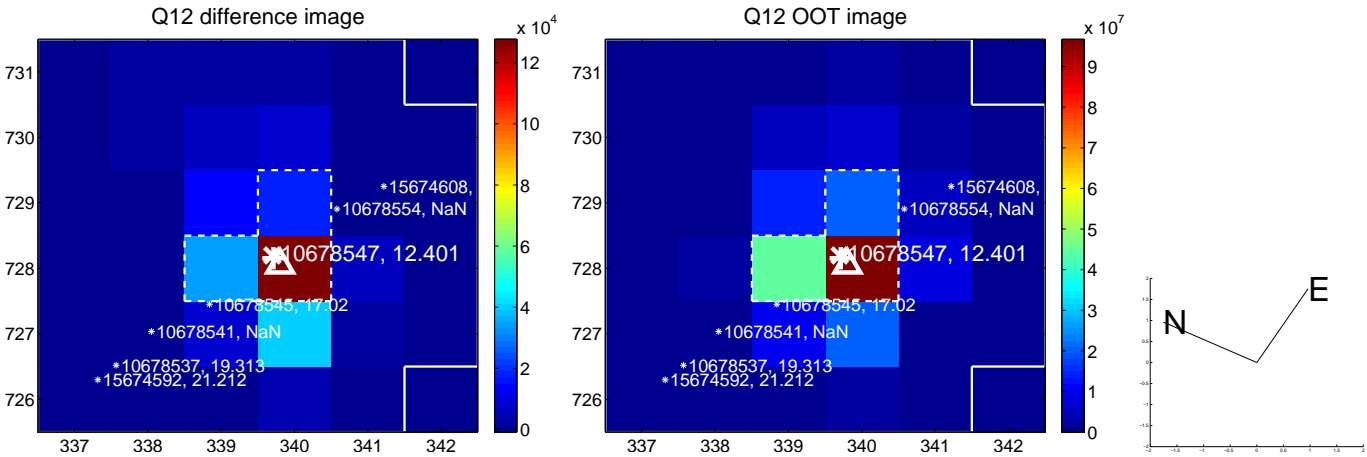
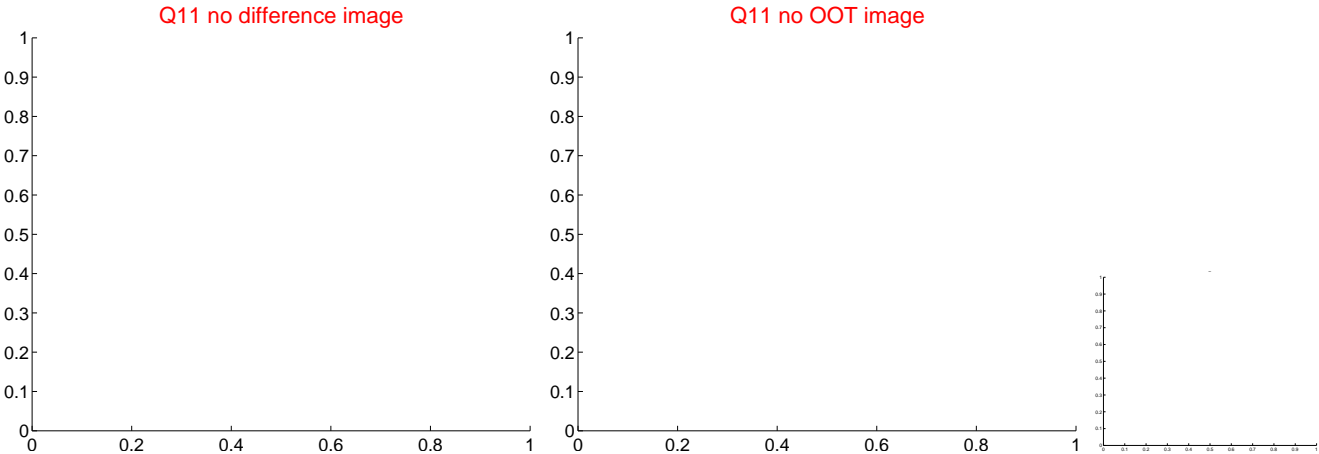
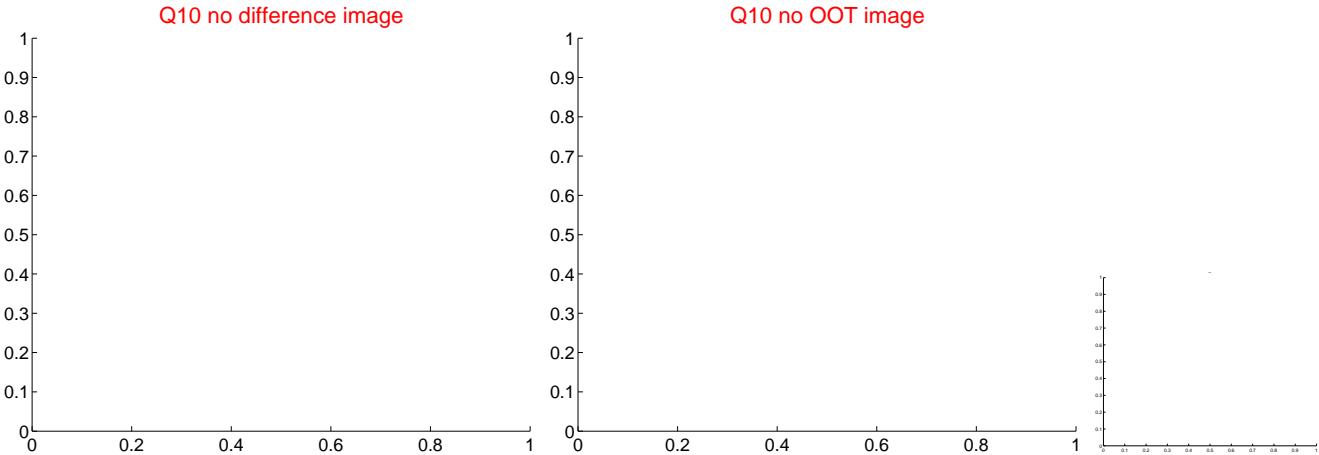
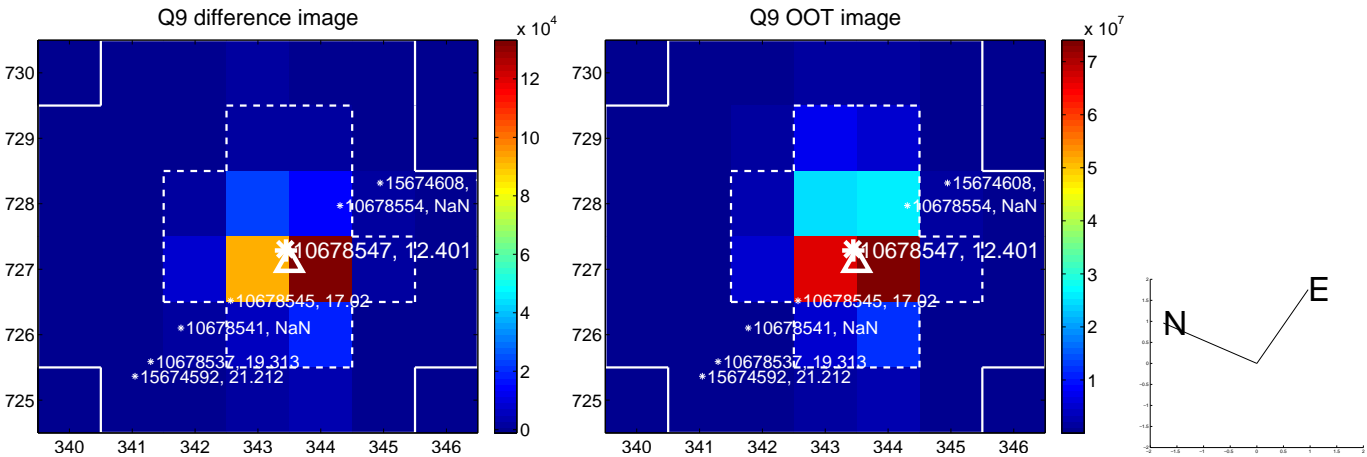
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



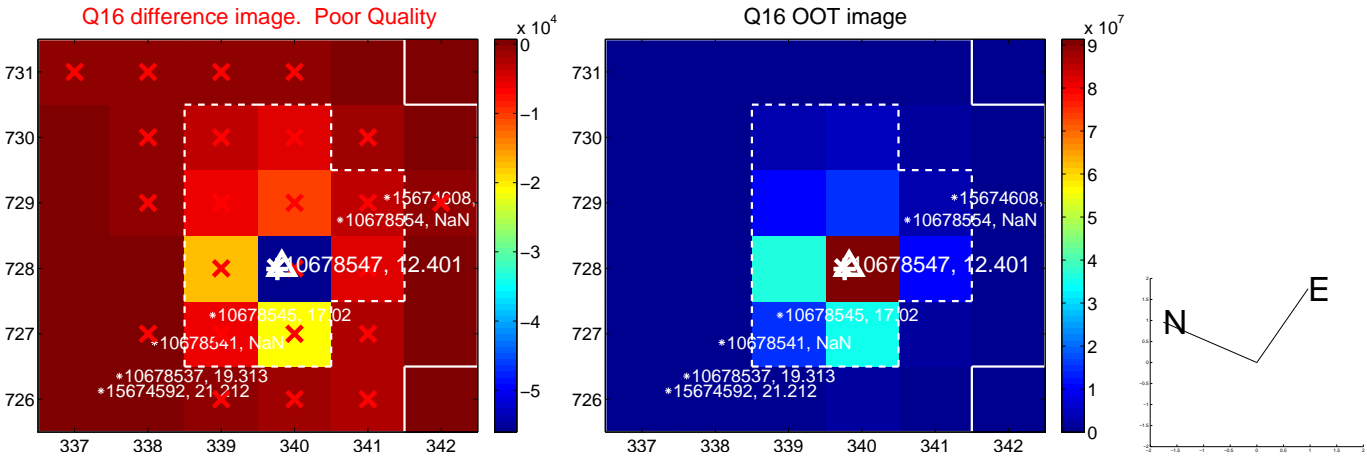
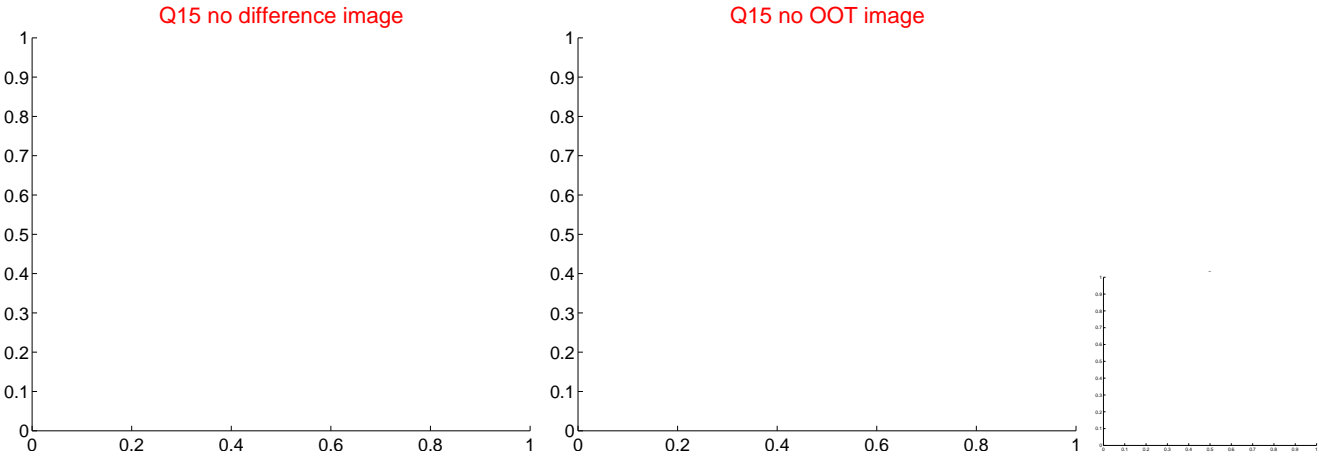
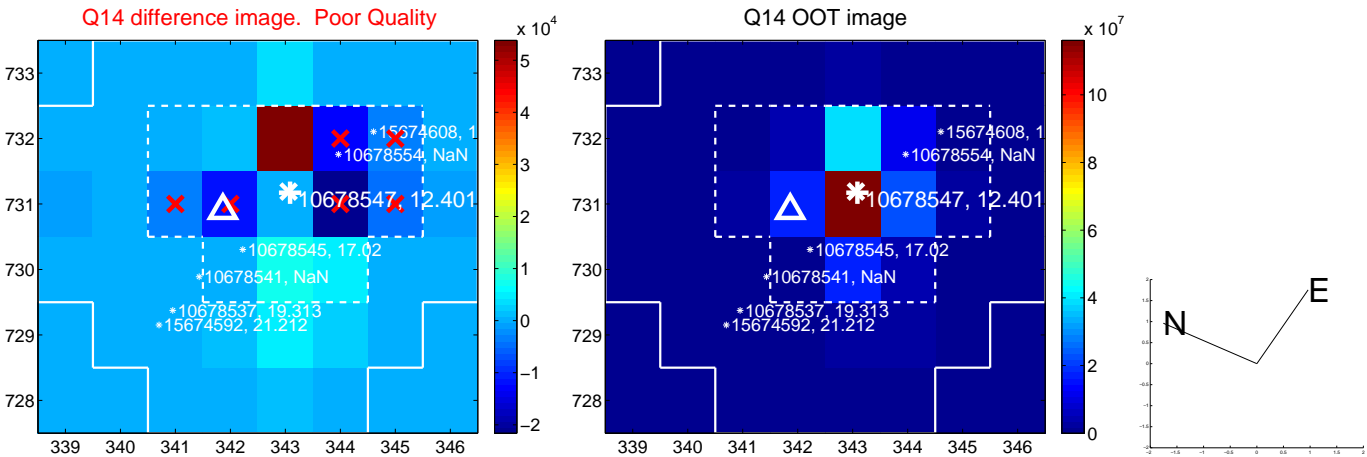
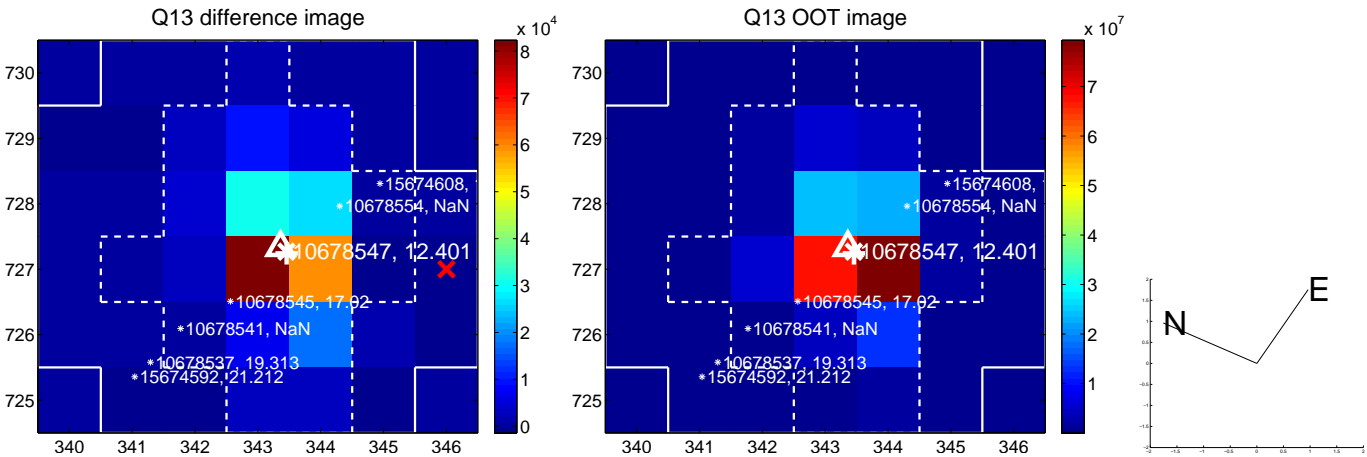
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



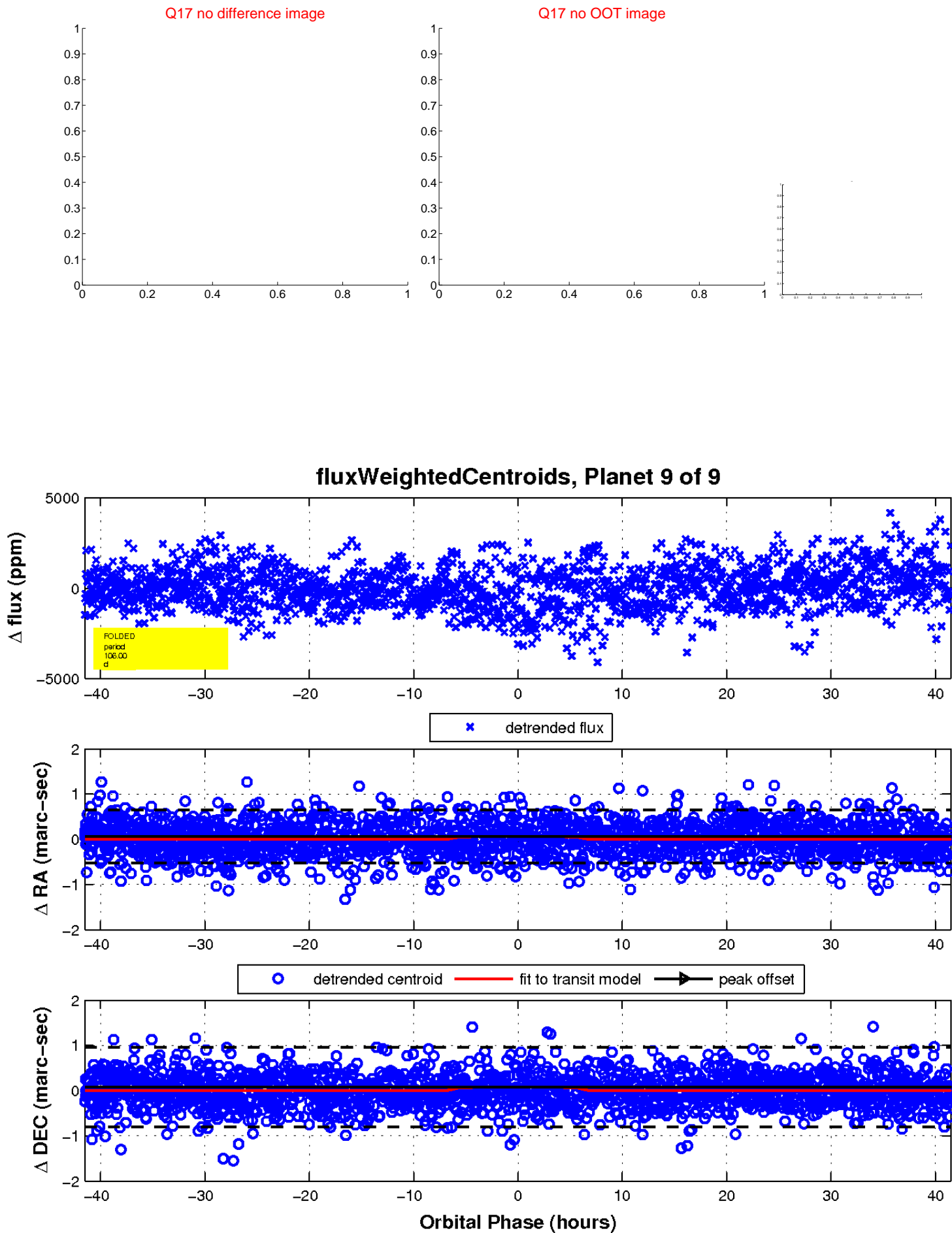
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

