

KIC 010678963

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})
010678963-01	OBS	No	0.876703	131.600549	36.7	3.265	8.0	10.0	1.66	7050	1.17	14400.56
010678963-02	OBS	No	35.873976	136.927565	144.6	4.037	8.0	6.5	1.66	7050	2.31	102.13
010678963-03	OBS	No	208.360231	268.698350	375.0	2.516	7.4	8.8	1.66	7050	3.68	9.78
010678963-04	OBS	No	51.293886	134.787280	278.4	4.618	7.3	7.9	1.66	7050	3.92	63.40
010678963-05	OBS	No	325.471818	266.316564	386.9	4.523	7.3	6.6	1.66	7050	3.61	5.40
010678963-06	OBS	No	195.941873	268.482435	449.8	2.851	7.2	7.4	1.66	7050	3.83	10.62

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010678963-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
010678963-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
010678963-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678963-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_ALT
010678963-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678963-06	OBS	FP	0.03	1	0	0	0	ALL_TRANS_CHASES—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.

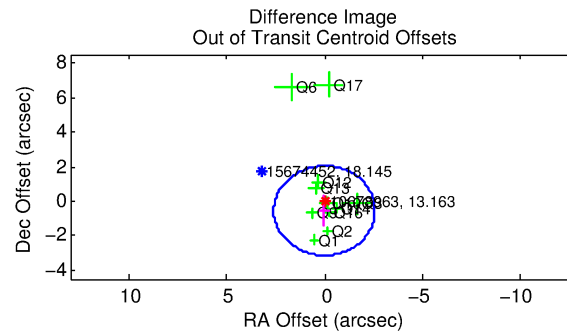
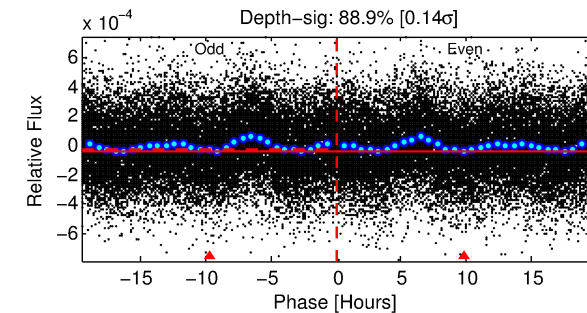
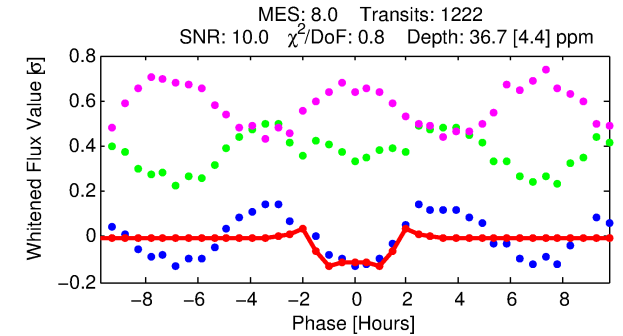
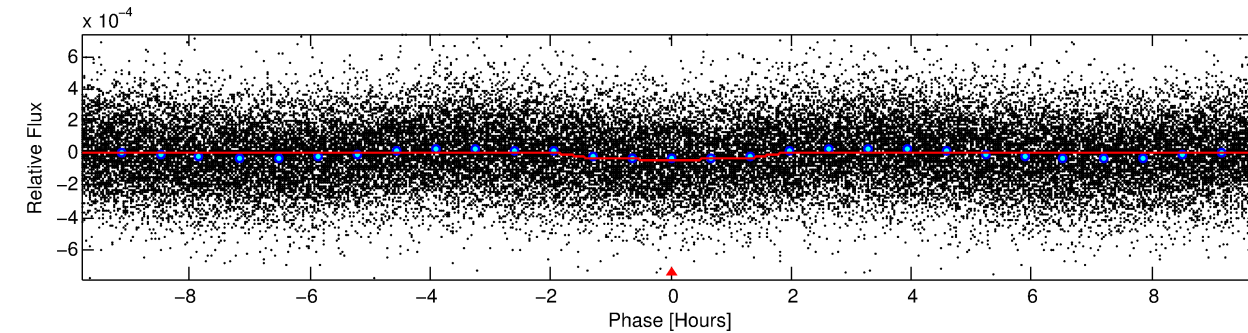
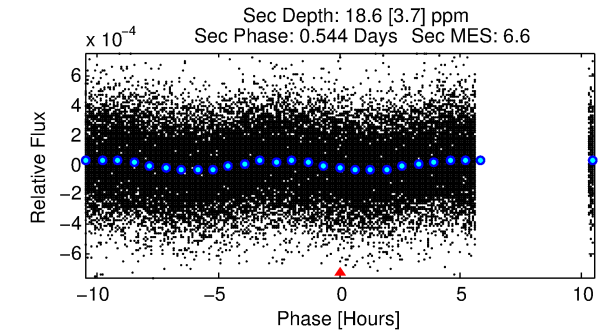
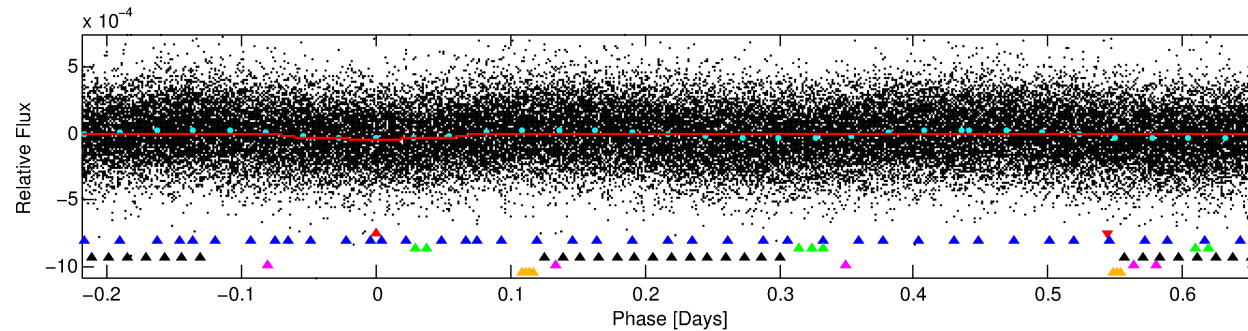
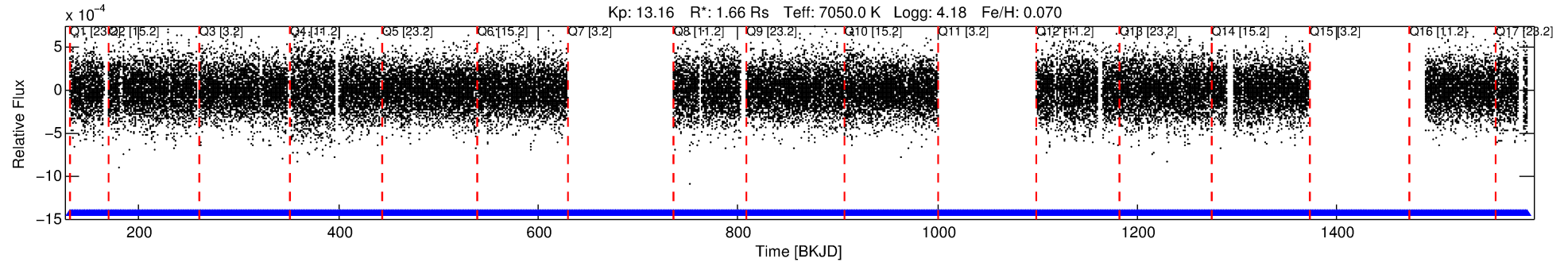
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678963-01

No Significant Match Found

DV One-Page Summary

KIC: 10678963 Candidate: 1 of 6 Period: 0.877 d



DV Fit Results:

Period = 0.87670 [0.00001] d
Epoch = 131.6005 [0.0024] BKJD
Rp/R* = 0.0065 [0.0019]
a/R* = 1.31 [0.97]
b = 0.90 [0.37]
Seff = 14400.56 [6083.60]
Teq = 2793 [295] K
Rp = 1.17 [0.51] Re
a = 0.0205 [0.0055] AU
Ag = 3.17 [2.27] [0.96σ]
Teffp = 5763 [917] K [3.08σ]

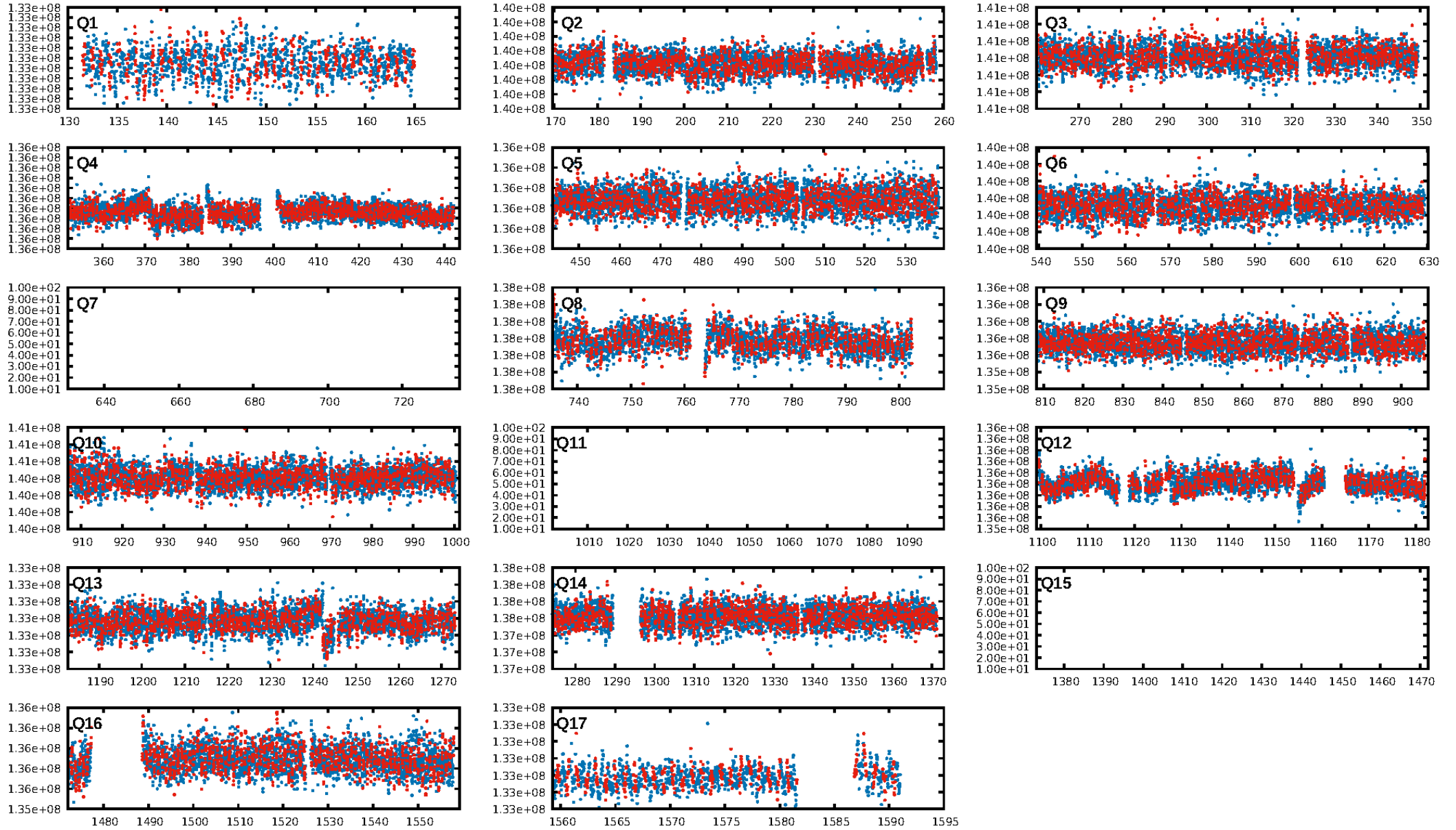
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [161.77σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.56e-10
RollingBand-fgt: 1.00 [1153/1153]
GhostDiagnostic-chr: -17.76
Centroid-sig: 0.0%
Centroid-so: 1.061 arcsec [2.28σ]
OotOffset-rm: 0.552 arcsec [0.64σ]
KicOffset-rm: 0.603 arcsec [0.71σ]
OotOffset-st: 4/1/2/4 [11]
KicOffset-st: 4/1/2/4 [11]
DiffImageQuality-fgm: 0.82 [9/11]
DiffImageOverlap-fno: 1.00 [14/14]

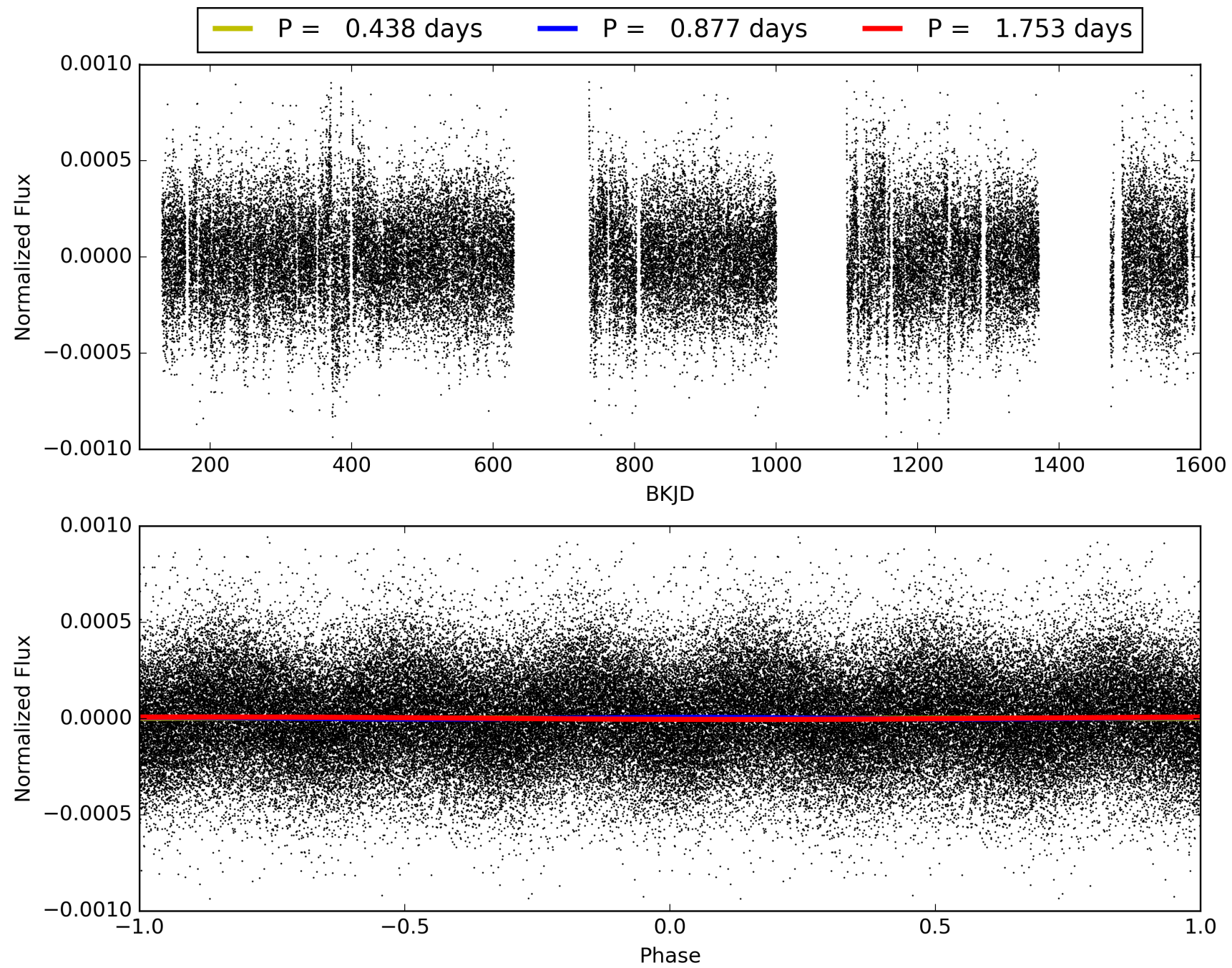
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010678963-01, PDC Light Curves

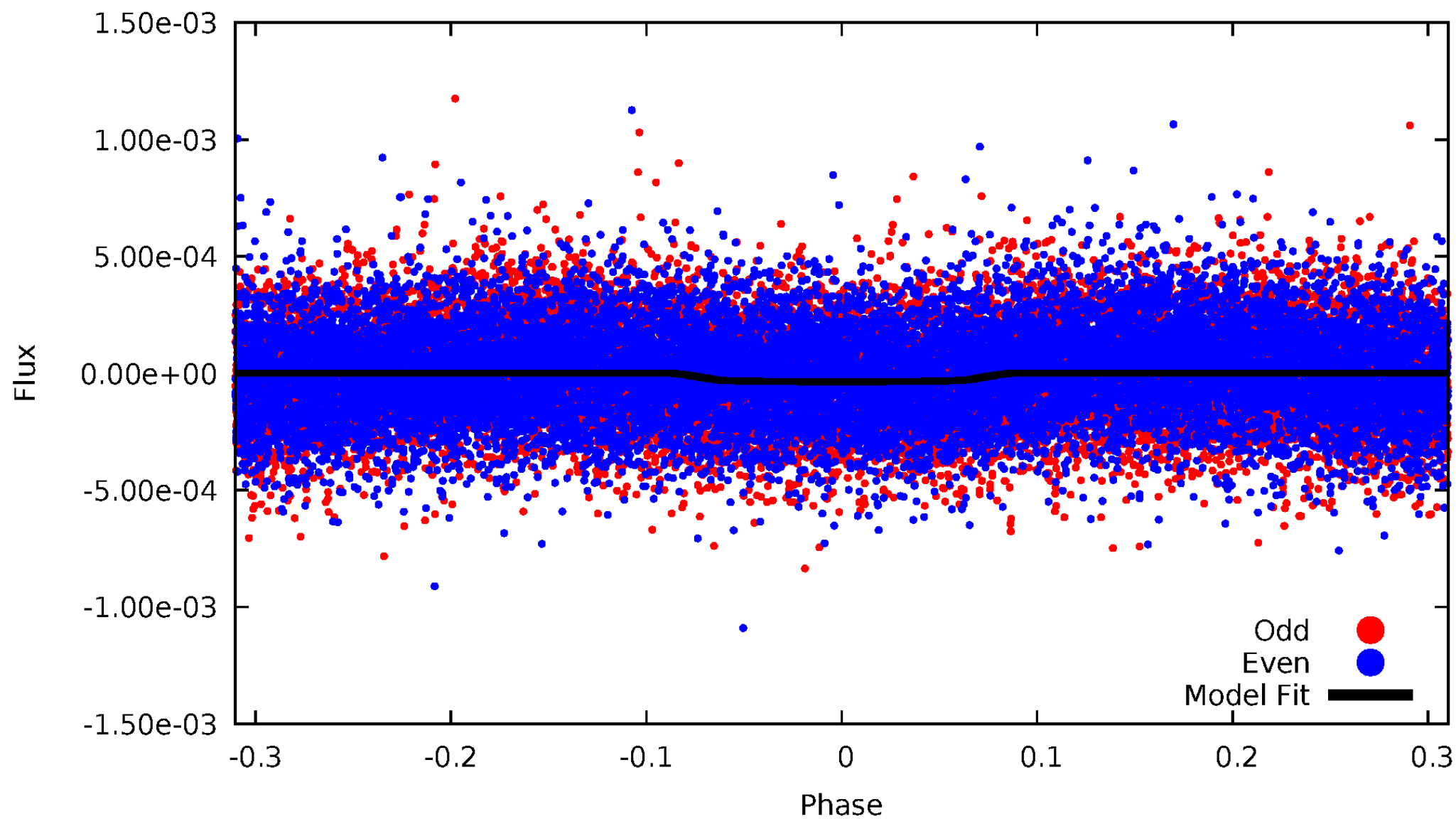


TCE 010678963-01



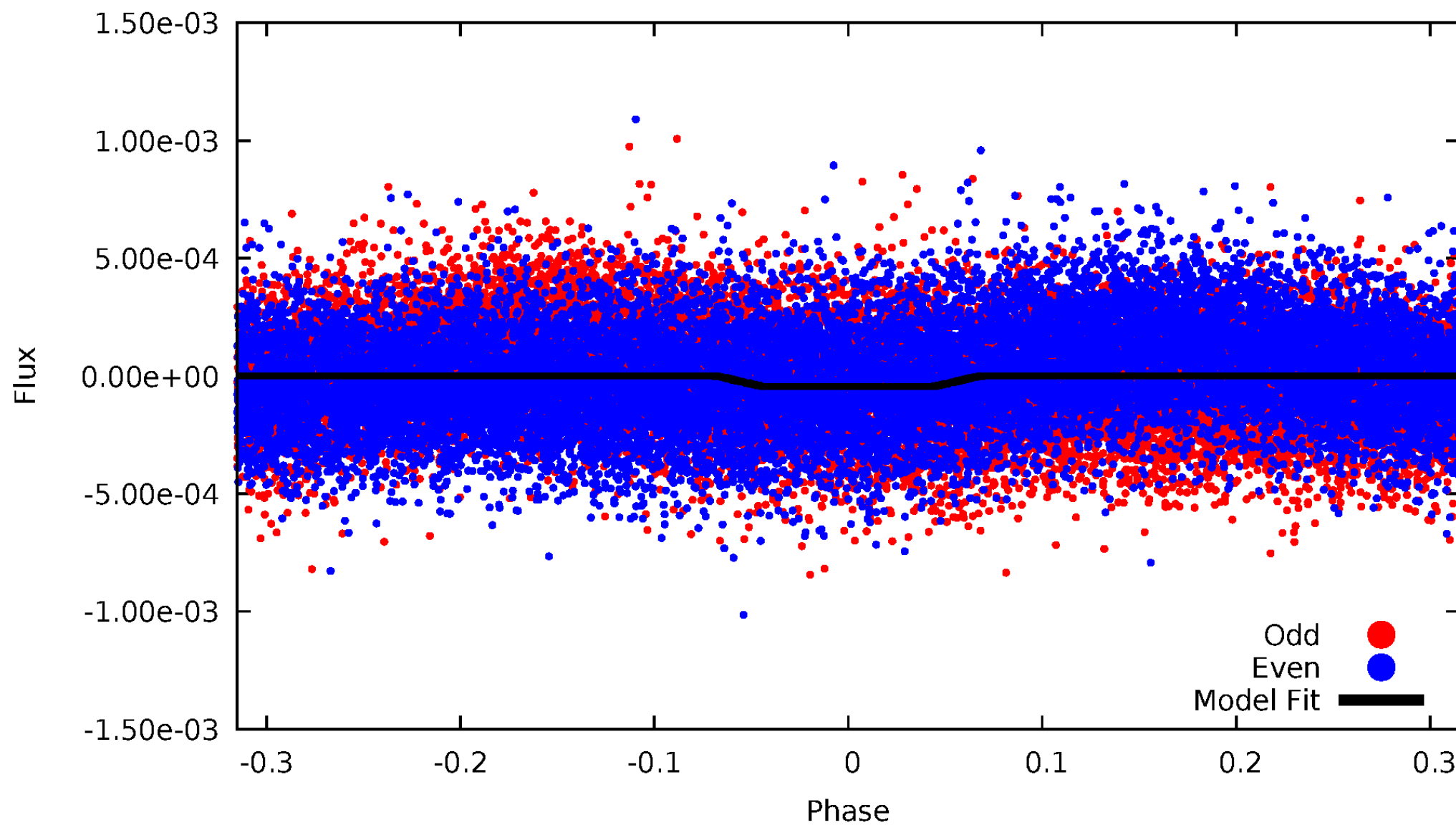
DV Odd/Even

TCE 010678963-01

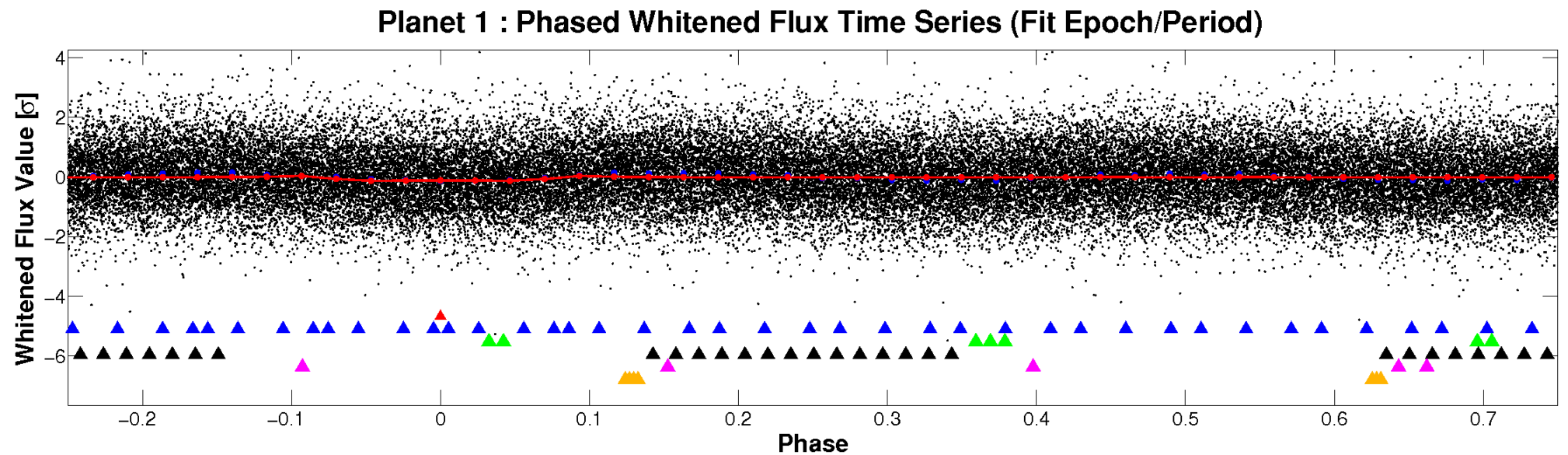
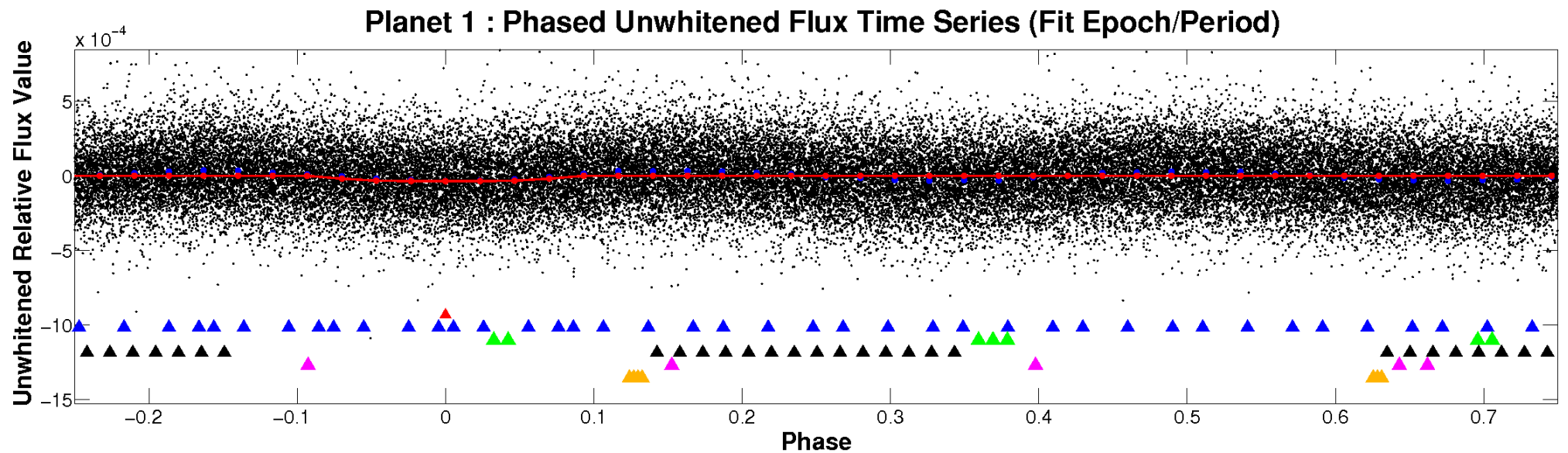


ALT Odd/Even

TCE 010678963-01

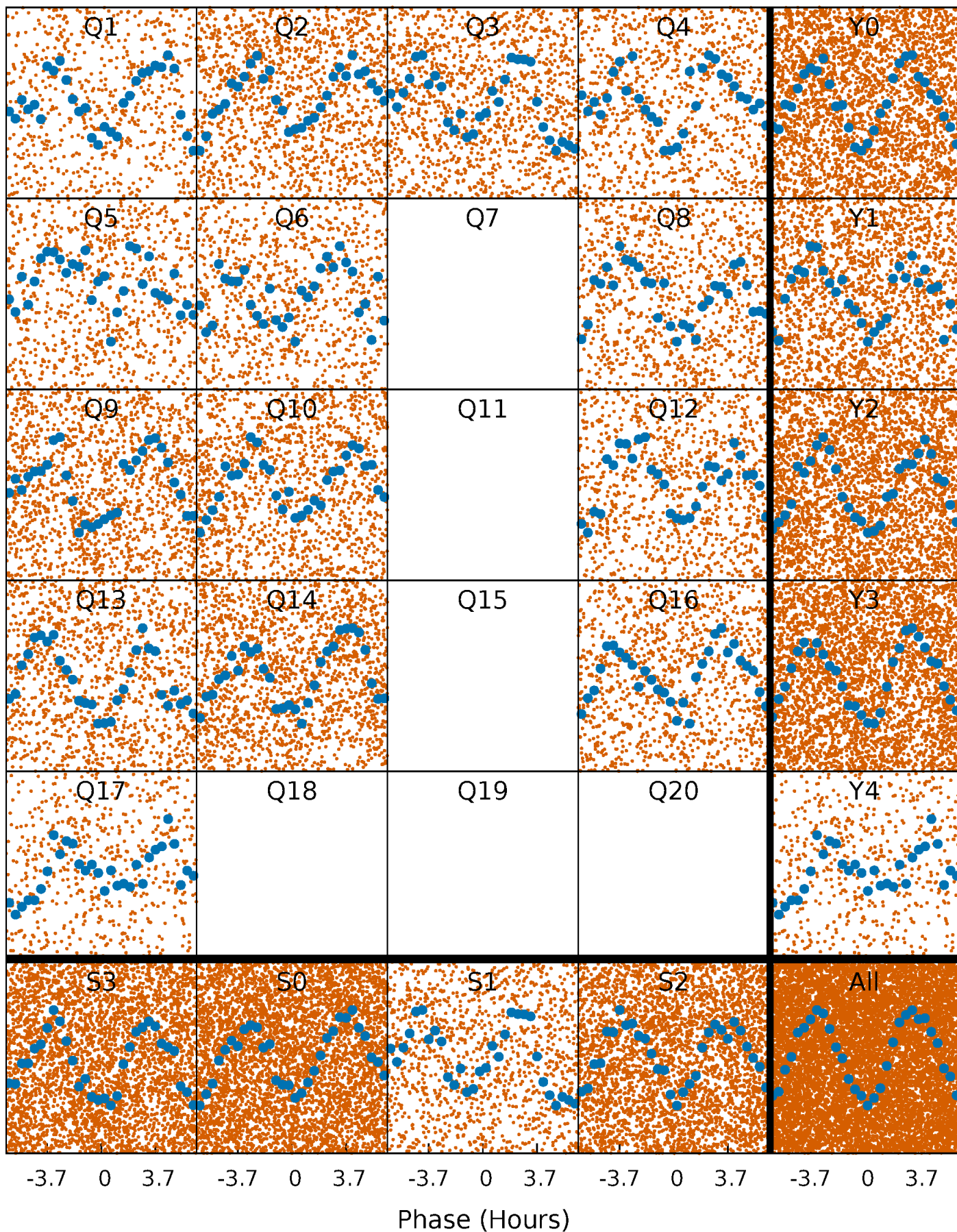


Non-Whitened Vs. Whitened Light Curve



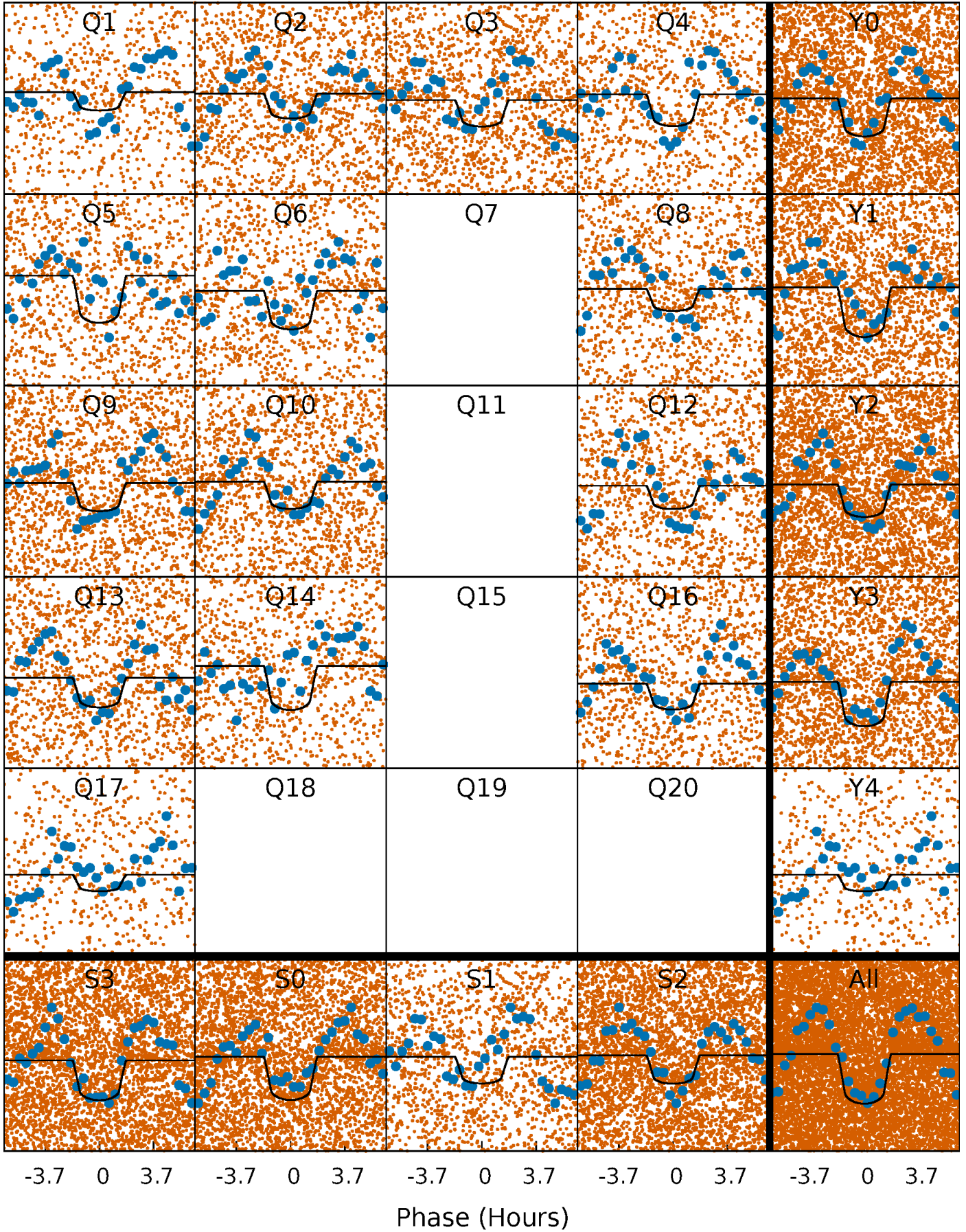
PDC Quarter-Phased Transit Curves

TCE 010678963-01 P= 0.876703 Days $T_0=131.600549$ (BKJD)



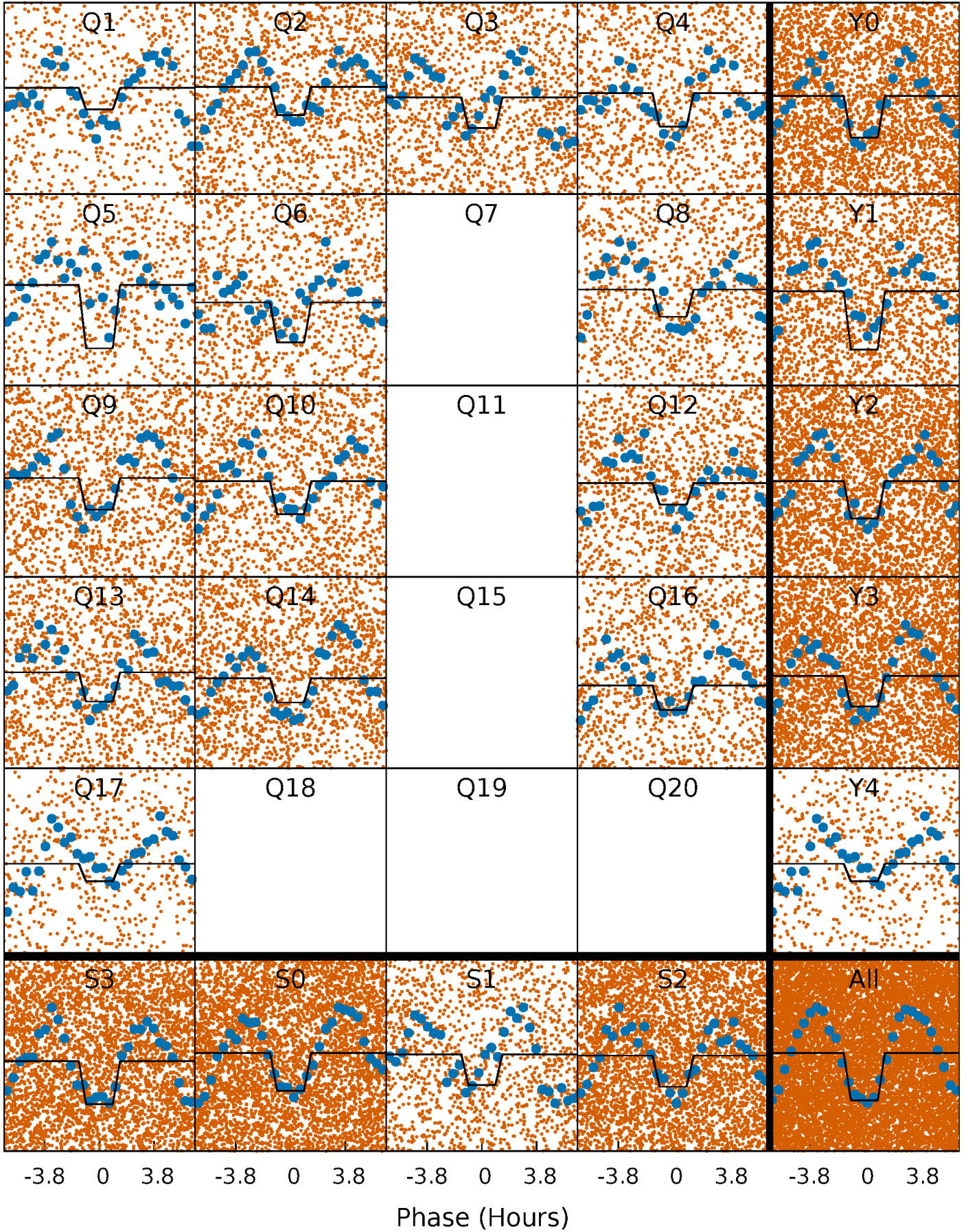
DV Quarter-Phased Transit Curves

TCE 010678963-01 P= 0.876703 Days $T_0=131.600549$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

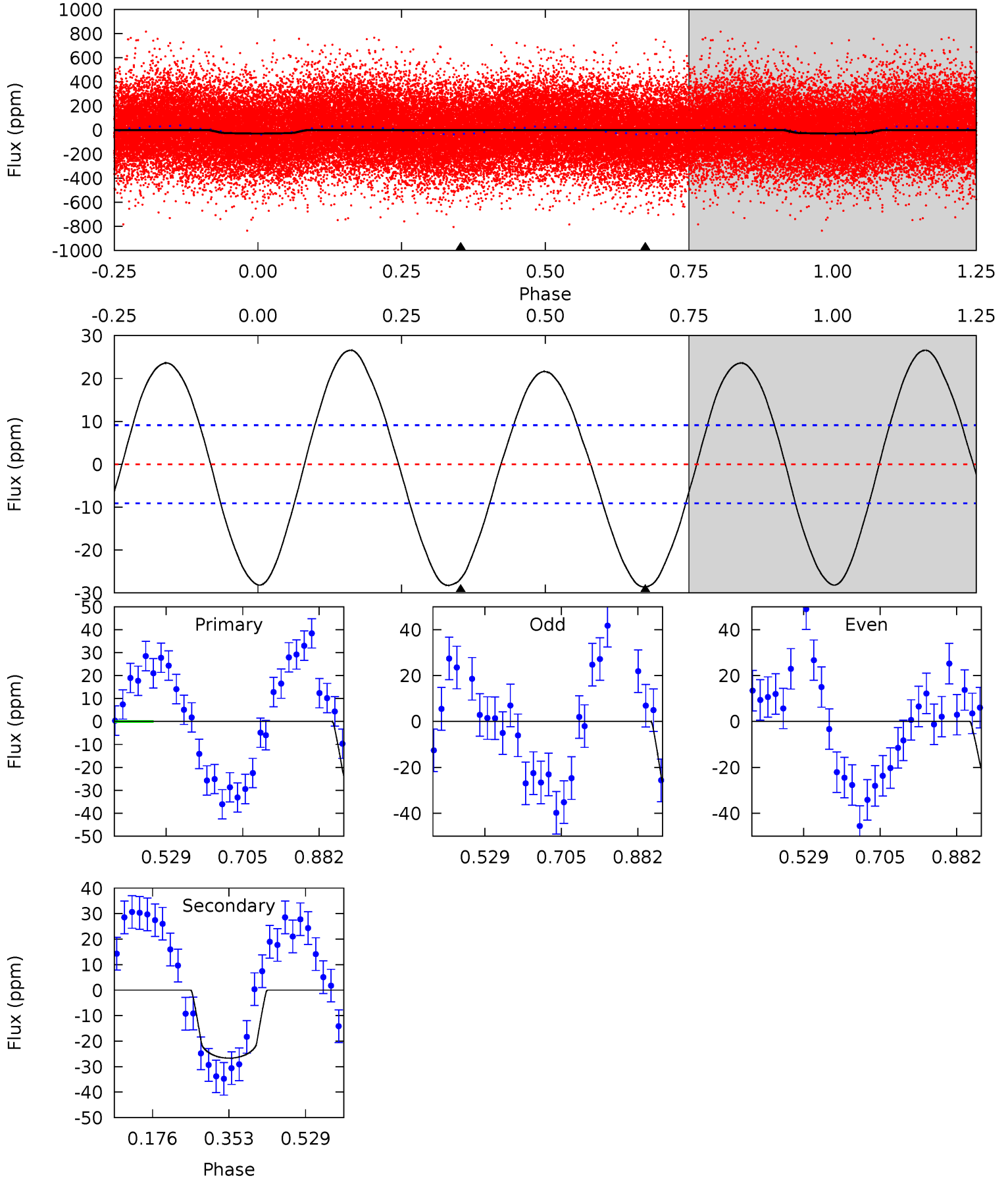
TCE 010678963-01 P= 0.876708 Days $T_0=131.599881$ (BKJD)



DV Model-Shift Uniqueness Test

010678963-01, P = 0.876703 Days, E = 130.723846 Days

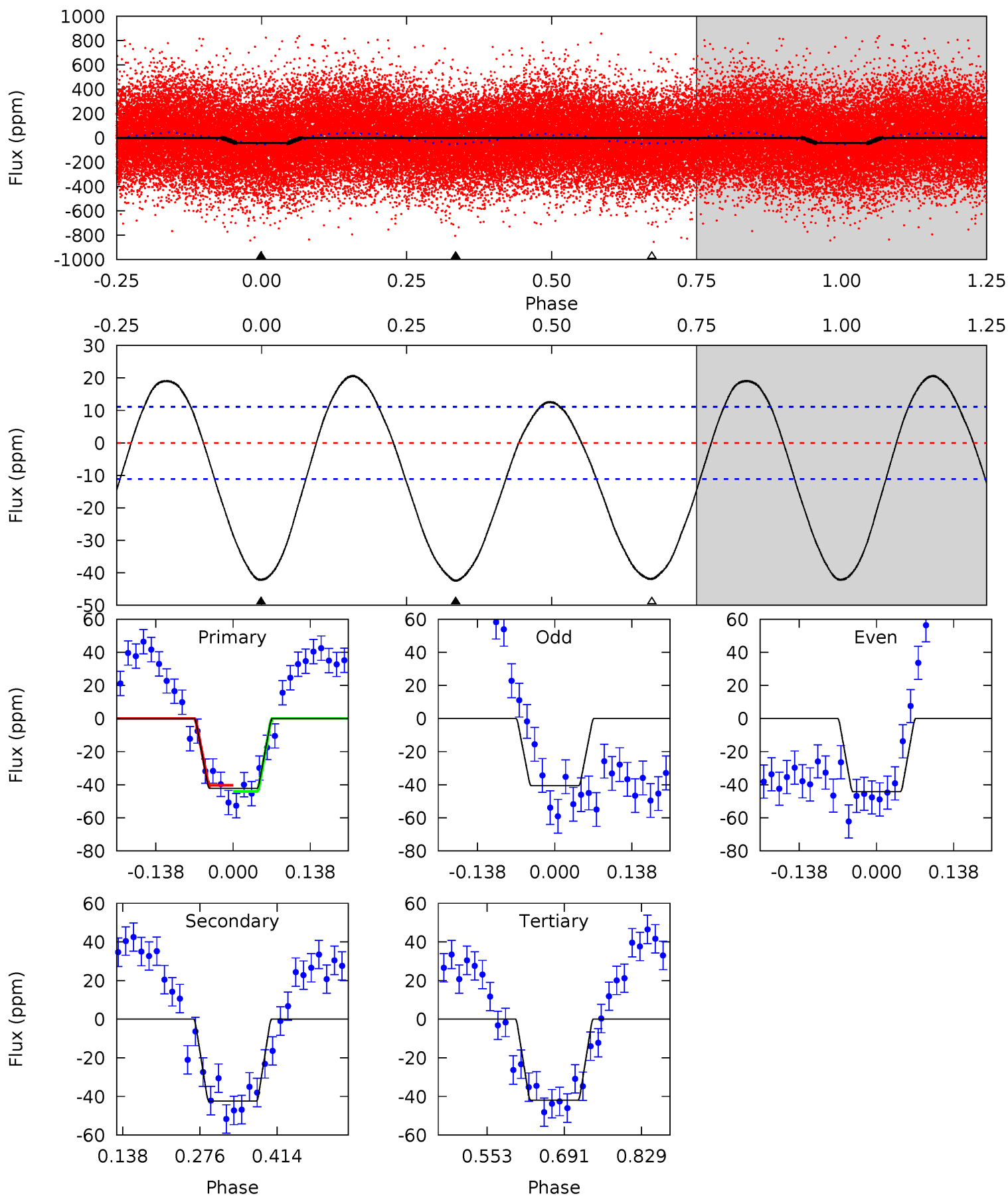
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.9	13.0	0	0	4.44	1.35	9.26	13.9	13.9	13.0	13.0	1.84	1.08	0.48	1.13



Alt Model-Shift Uniqueness Test

010678963-01, P = 0.876708 Days, E = 130.723173 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.1	17.2	16.9	0	4.50	1.48	8.92	0.11	17.1	0.21	17.2	0.71	1.24	0.33	0.73



Stellar Parameters For KIC 010678963

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7050^{+195}_{-335}	$4.176^{+0.108}_{-0.201}$	$0.070^{+0.200}_{-0.350}$	$1.655^{+0.539}_{-0.290}$	$1.497^{+0.214}_{-0.236}$	$0.465^{+0.278}_{-0.247}$
	+3%/-5%	+3%/-5%	+286%/-500%	+33%/-18%	+14%/-16%	+60%/-53%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 010678963-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-27 ± 2	$1.20^{+0.39}_{-0.34}$	3921^{+296}_{-247}	6048^{+1393}_{-763}	$4.214^{+4.052}_{-1.781}$
Alt.	-42 ± 2	$1.21^{+0.38}_{-0.34}$	3938^{+297}_{-234}	6887^{+1480}_{-925}	$6.649^{+5.656}_{-2.861}$

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 $A_{obs} \gg 1.0$

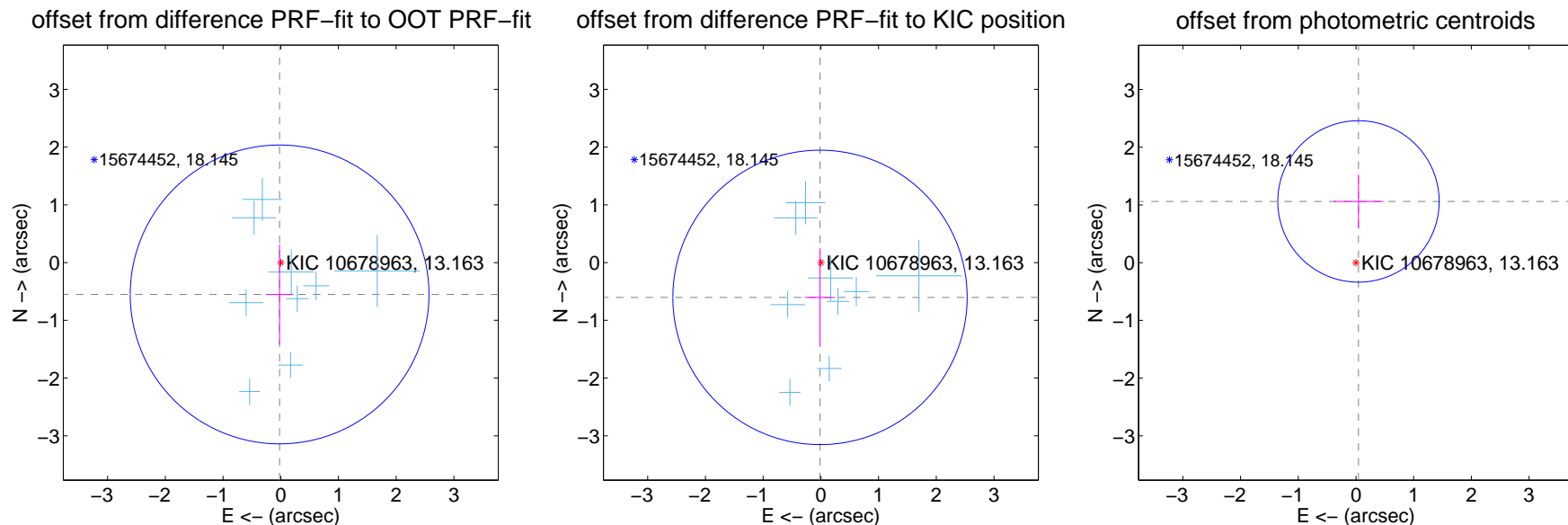
DV Centroid Data

Supplemental centroid analysis for 010678963-01. Kepler magnitude: 13.16. Transit SNR 10.04

There are 9 quarters with good PRF difference image offsets

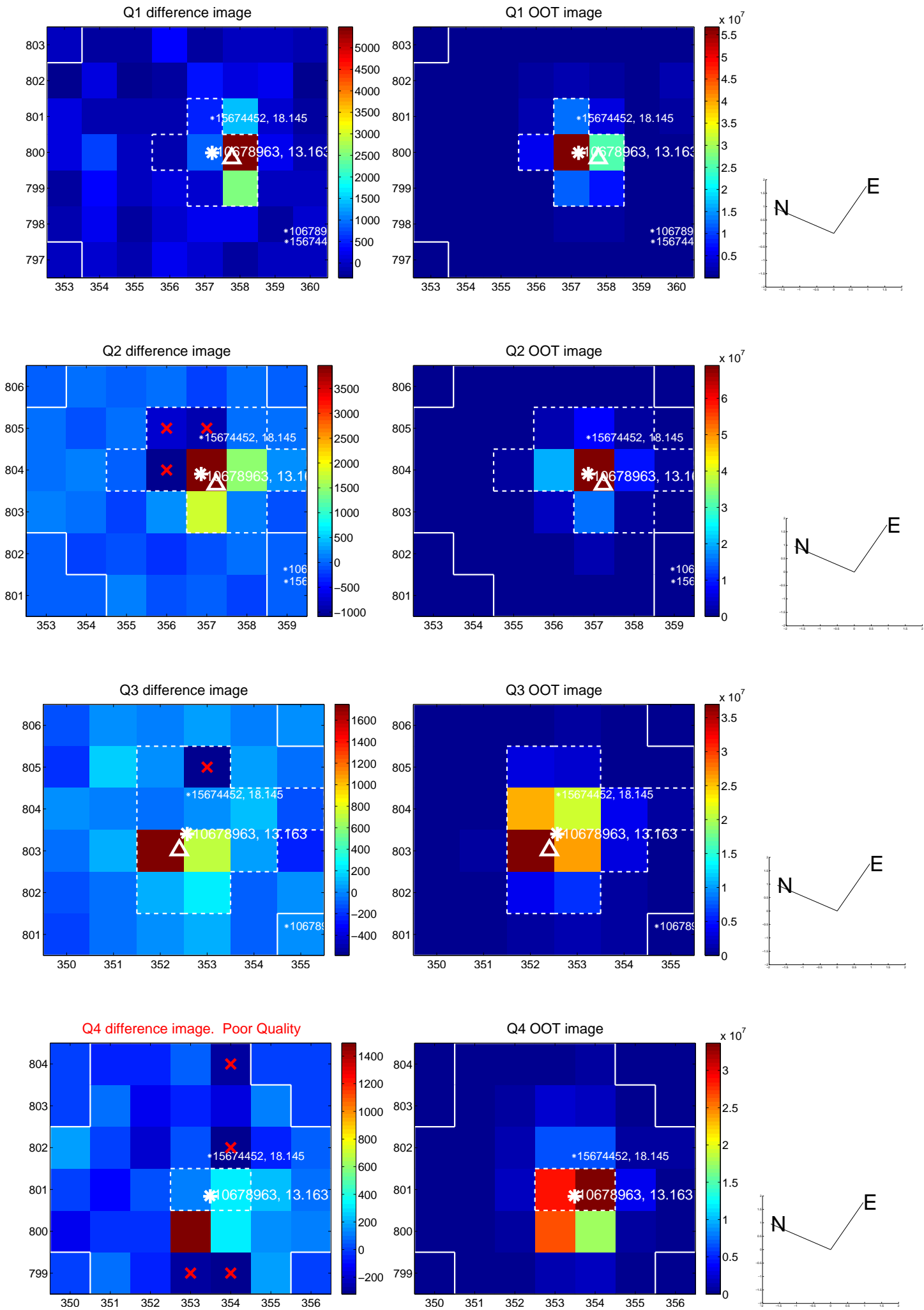
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.552 ± 0.862	0.64	0.020 ± 0.238	-0.551 ± 0.866
PRF-fit source offset from KIC position	0.603 ± 0.850	0.71	0.015 ± 0.262	-0.603 ± 0.852
photometric centroid source offset	1.06 ± 0.47	2.28	-0.04 ± 0.43	1.06 ± 0.47

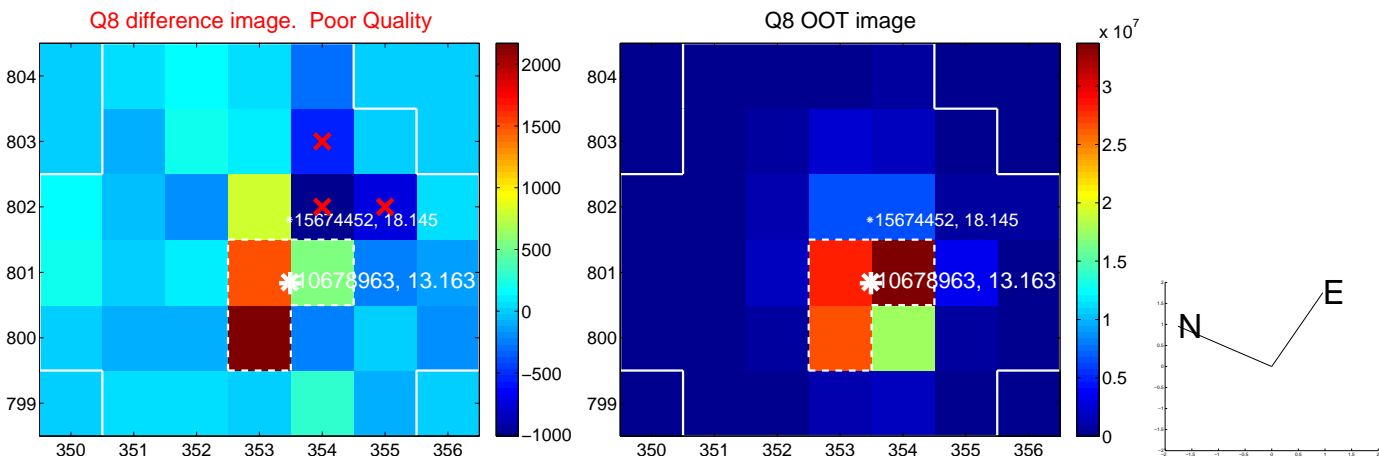
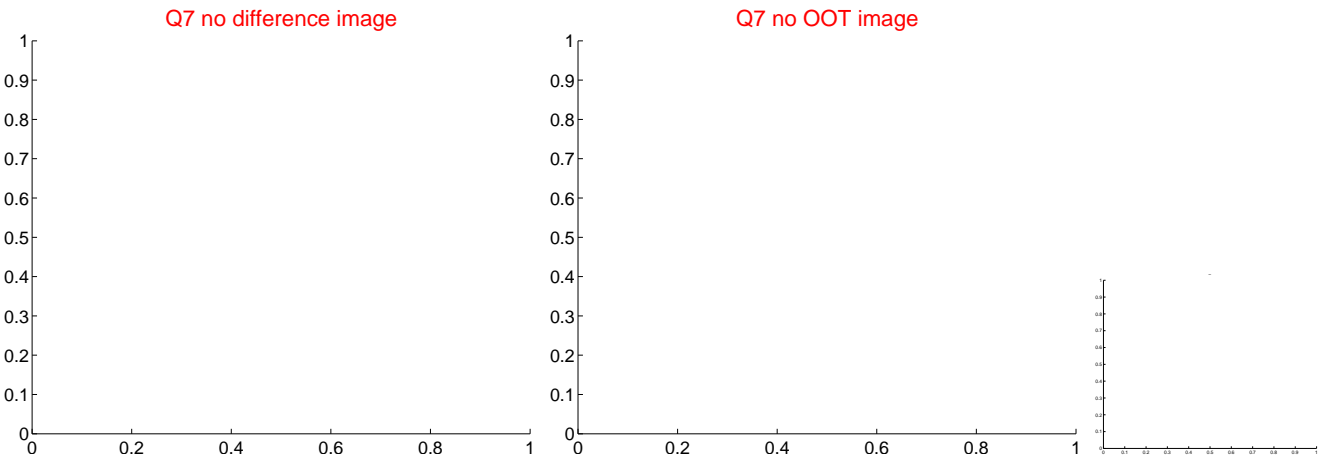
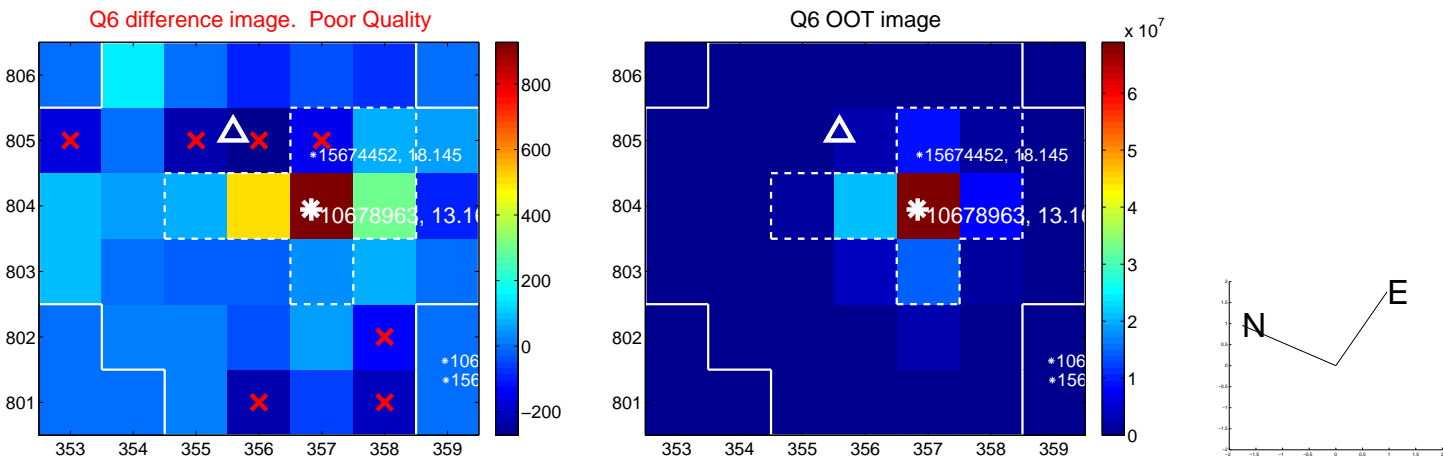
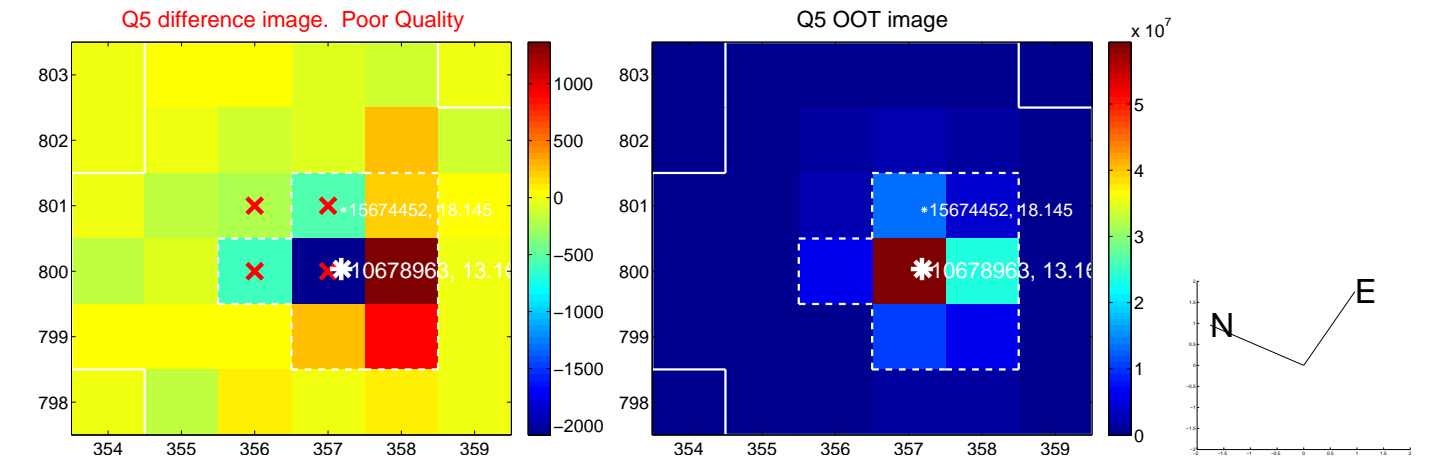


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

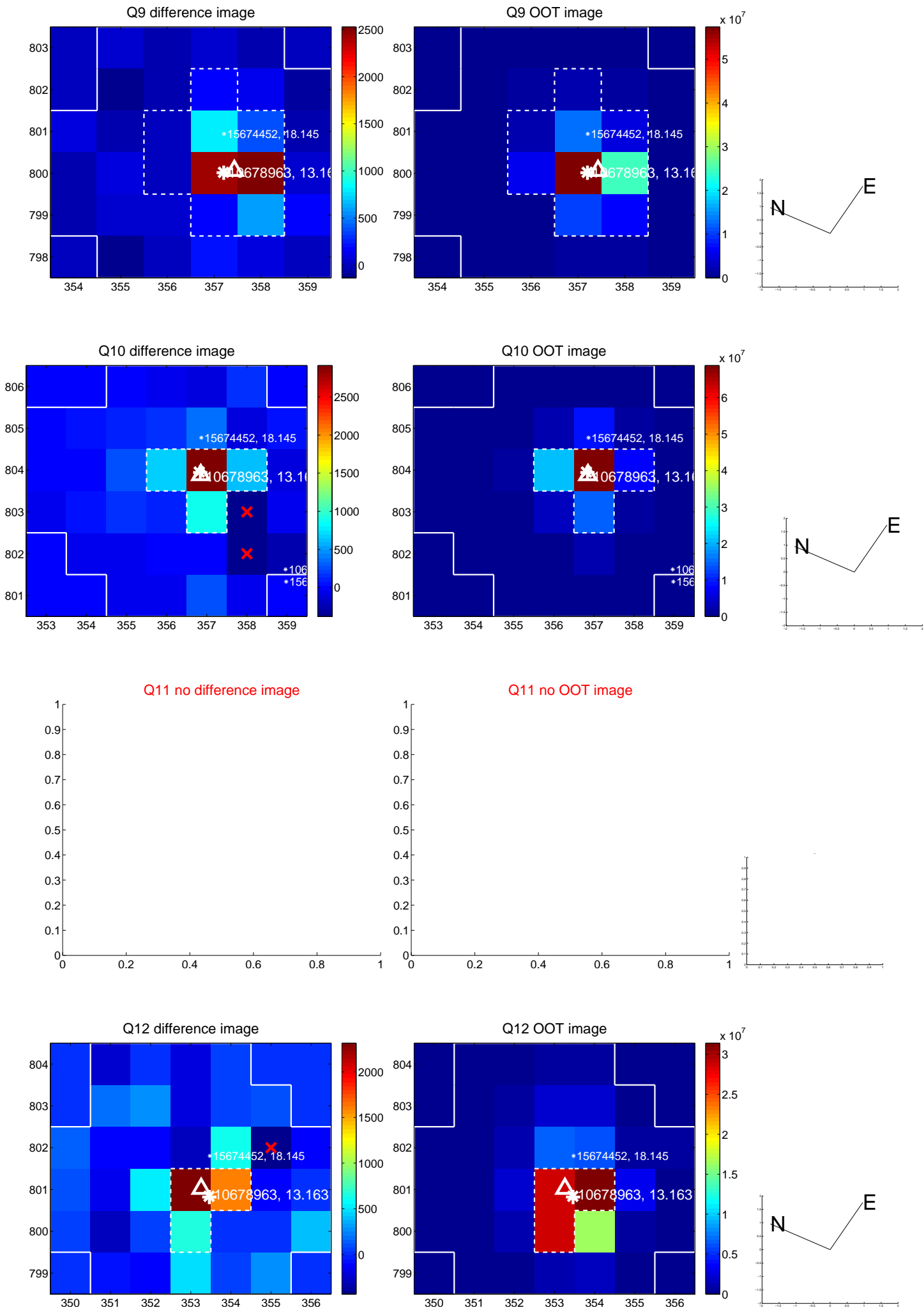
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



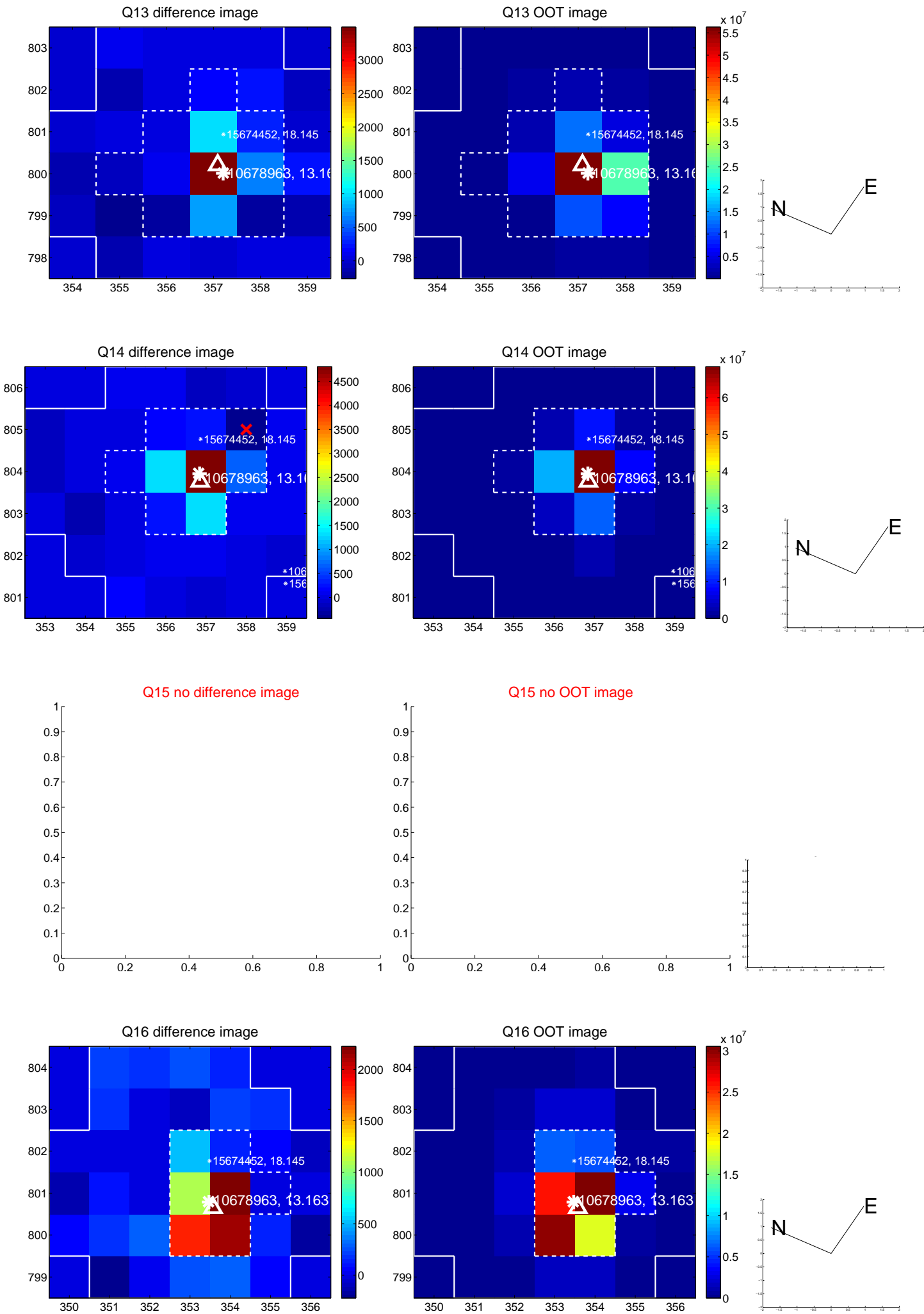
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



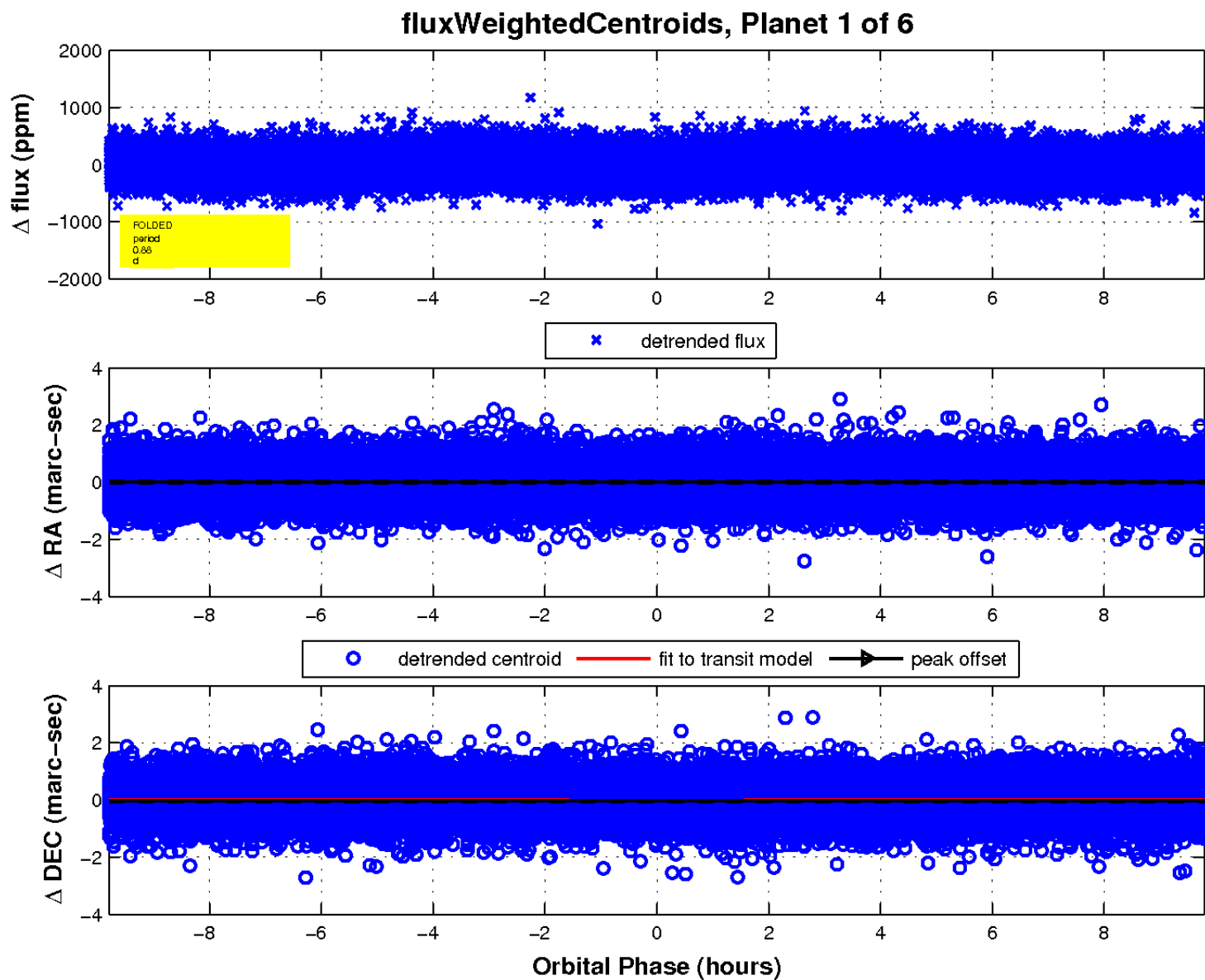
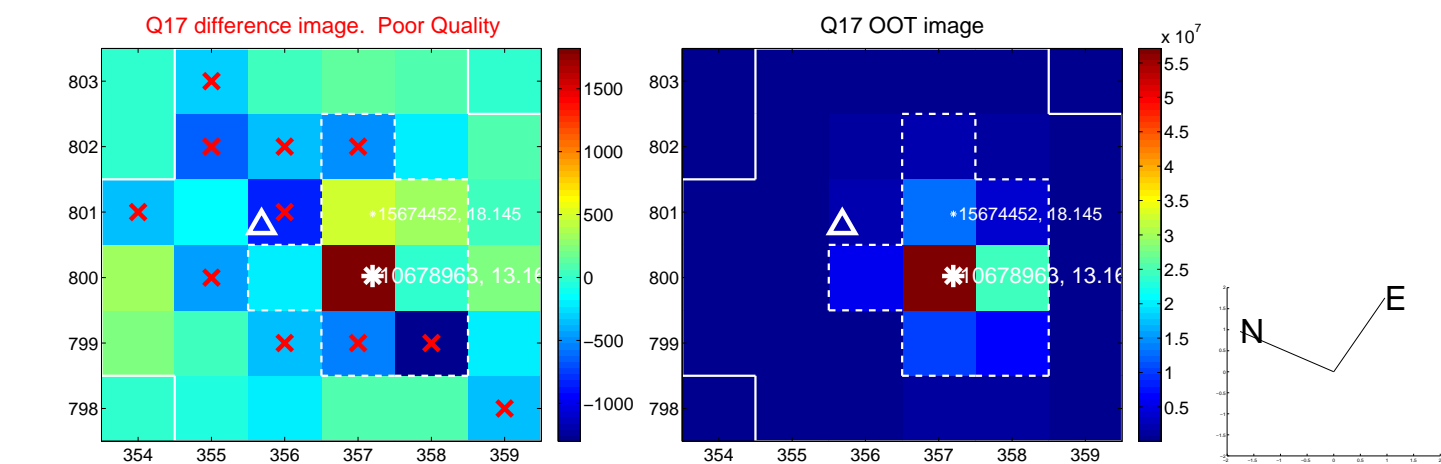
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

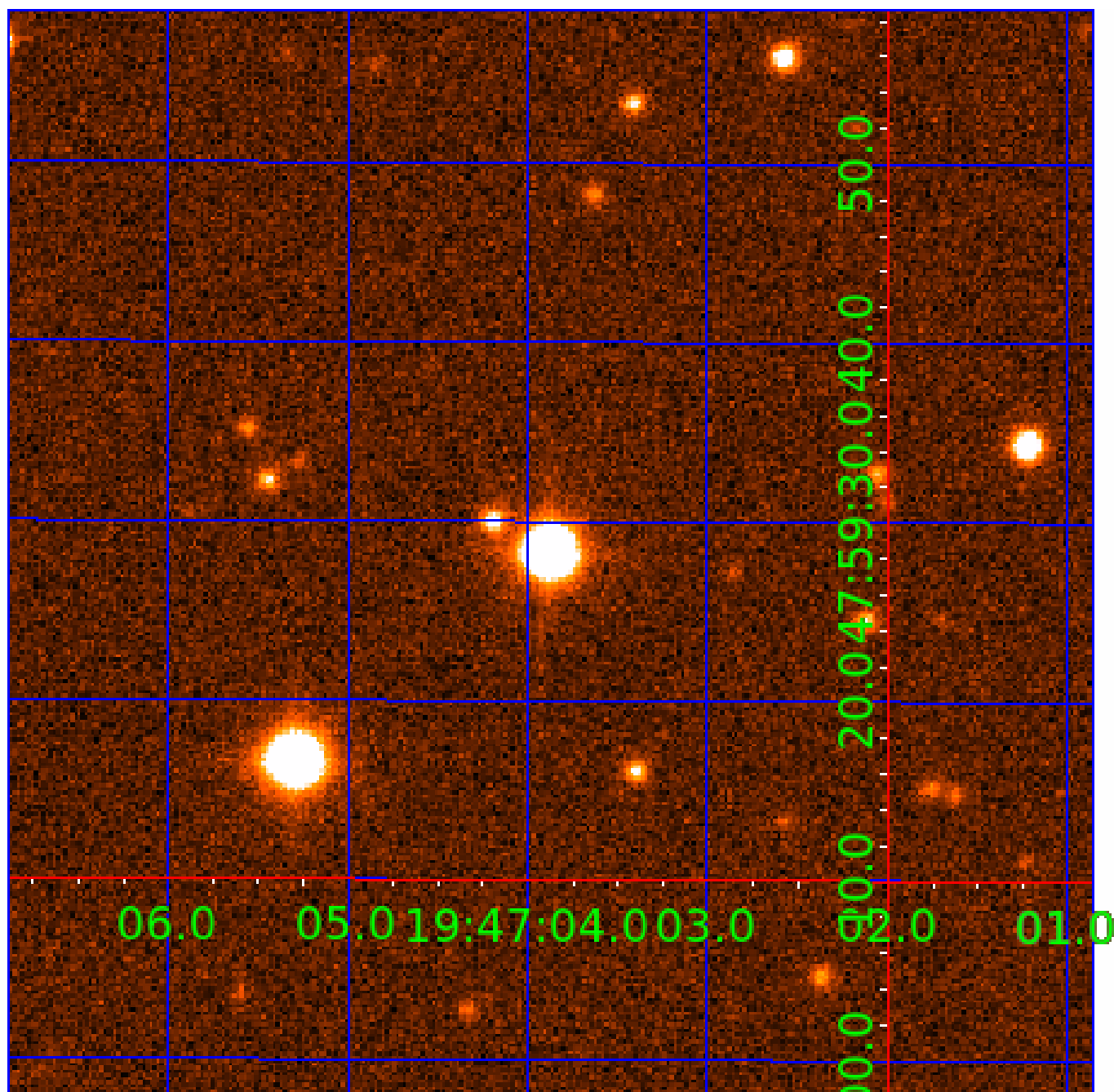


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010678963

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})
010678963-01	OBS	No	0.876703	131.600549	36.7	3.265	8.0	10.0	1.66	7050	1.17	14400.56
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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010678963-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
010678963-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678963-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_ALT
010678963-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678963-06	OBS	FP	0.03	1	0	0	0	ALL_TRANS_CHASES—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.

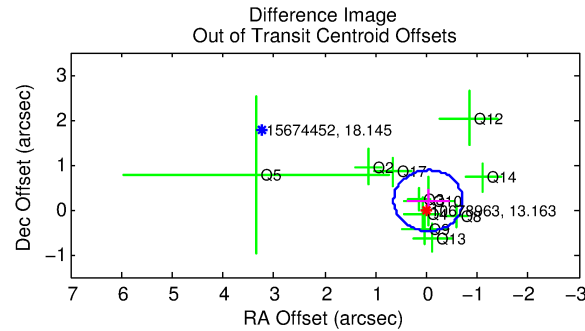
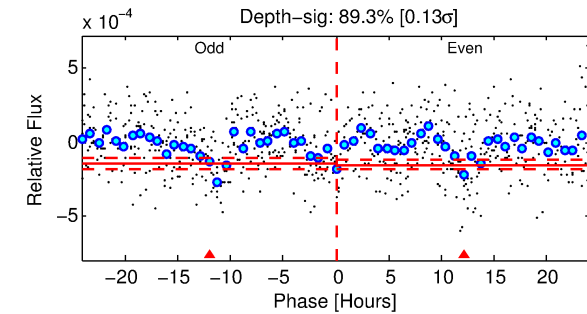
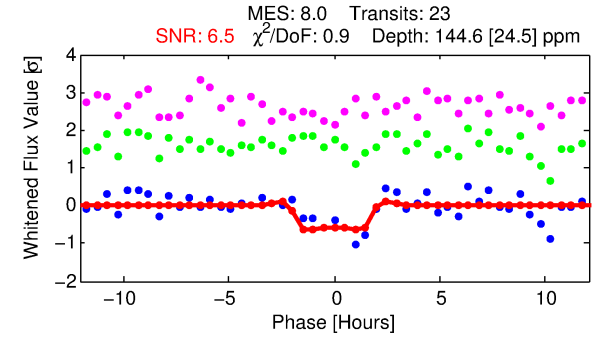
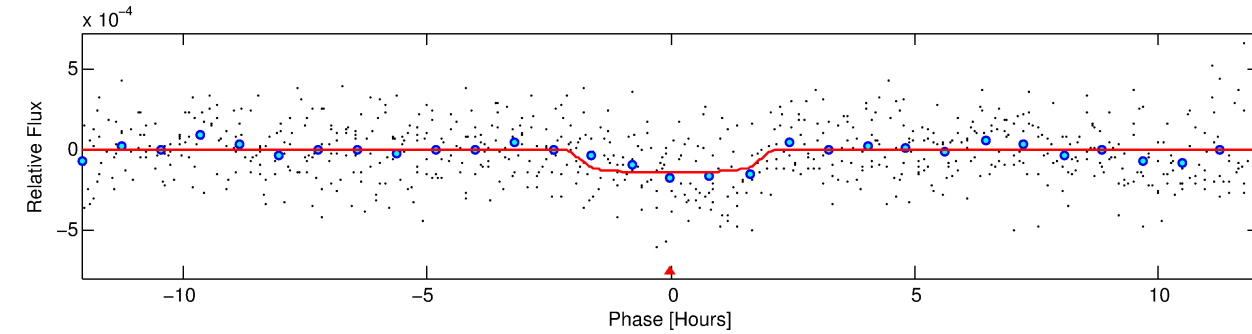
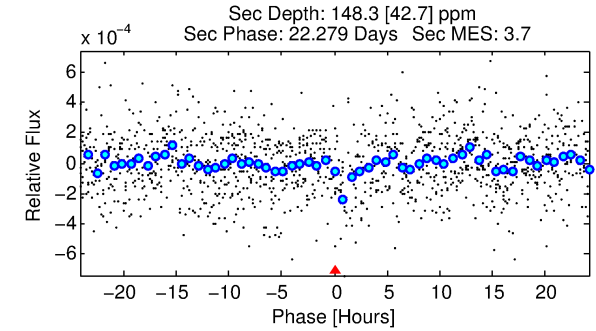
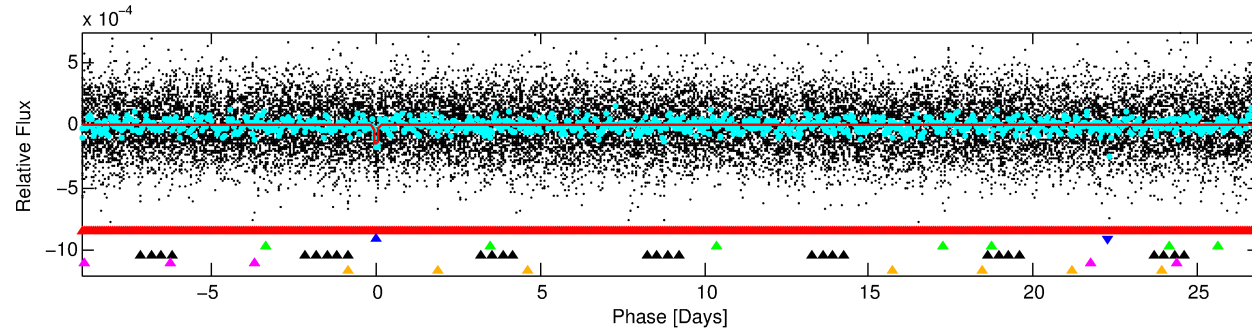
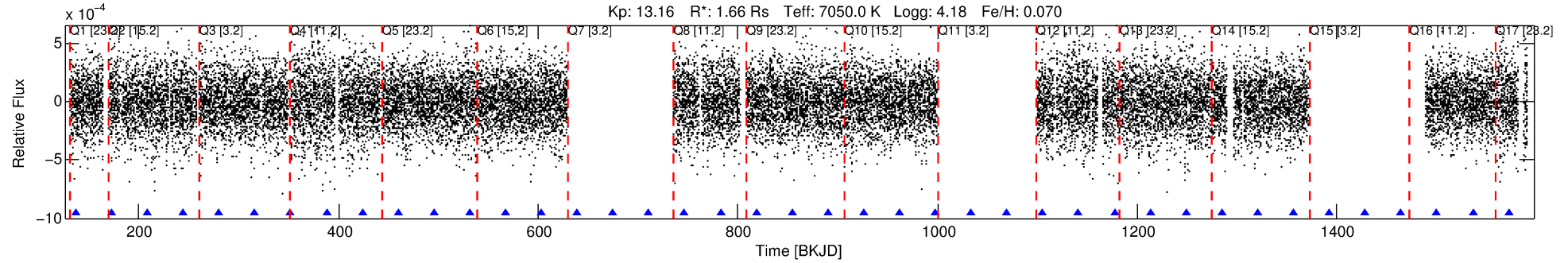
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678963-02

No Significant Match Found

DV One-Page Summary

KIC: 10678963 Candidate: 2 of 6 Period: 35.874 d



DV Fit Results:

Period = 35.87398 [0.00055] d
Epoch = 136.9276 [0.0125] BKJD
Rp/R* = 0.0128 [0.0050]
a/R* = 31.66 [72.50]
b = 0.90 [0.49]
Seff = 102.13 [43.14]
Teq = 811 [86] K
Rp = 2.31 [1.17] Re
a = 0.2436 [0.0649] AU
Ag = 907.36 [826.75] [1.10σ]
Teffp = 6879 [1463] K [4.14σ]

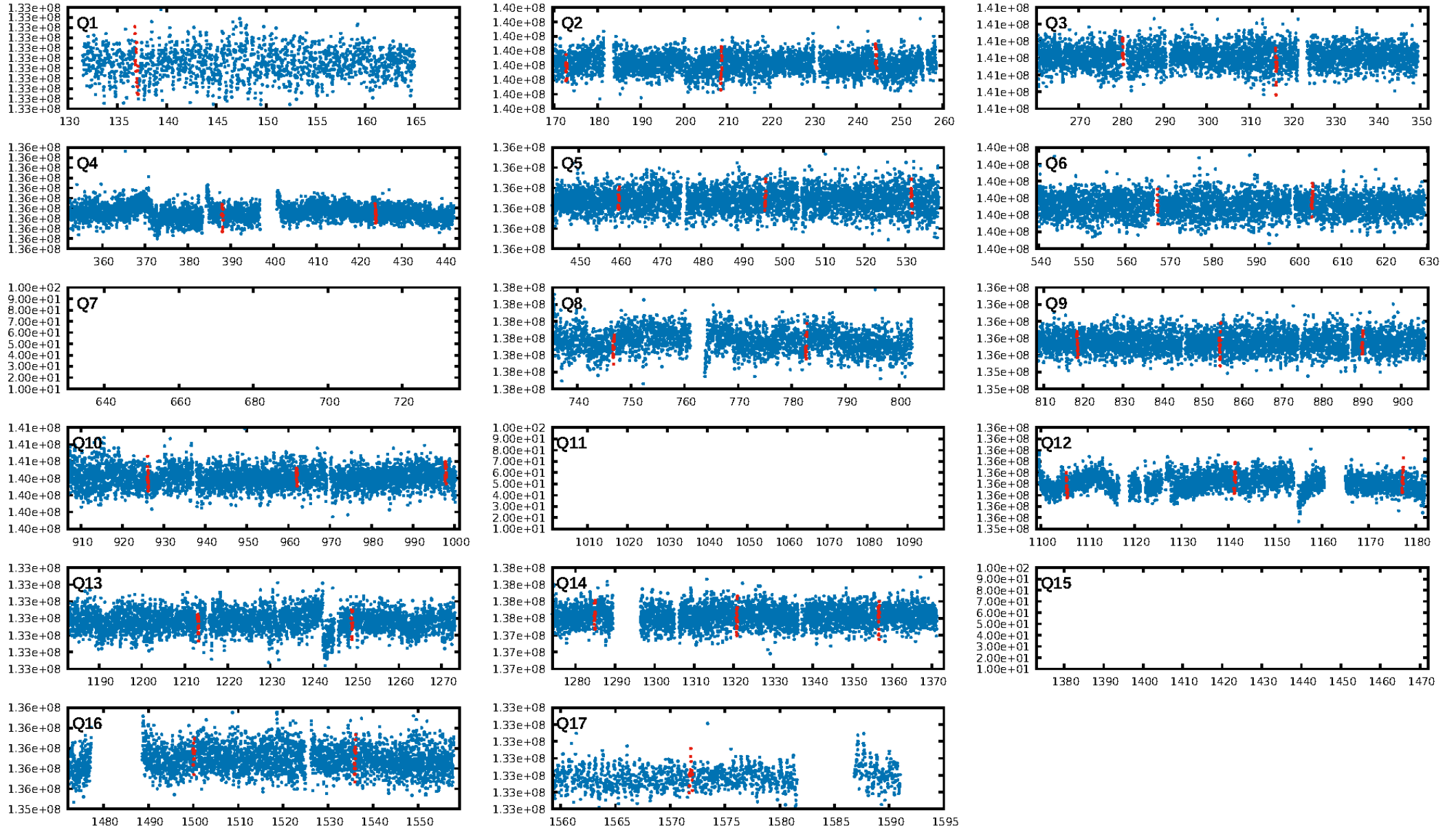
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [161.77σ]
LongPeriod-sig: 100.0% [60.34σ]
ModelChiSquare2-sig: 96.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.87e-11
RollingBand-fgt: 1.00 [22/22]
GhostDiagnostic-chr: -3.208
Centroid-sig: 7.1%
Centroid-so: 1.268 arcsec [1.98σ]
OotOffset-rm: 0.201 arcsec [0.89σ]
KicOffset-rm: 0.158 arcsec [0.68σ]
OotOffset-st: 3/1/3/4 [11]
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DiffImageOverlap-fno: 0.00 [0/14]

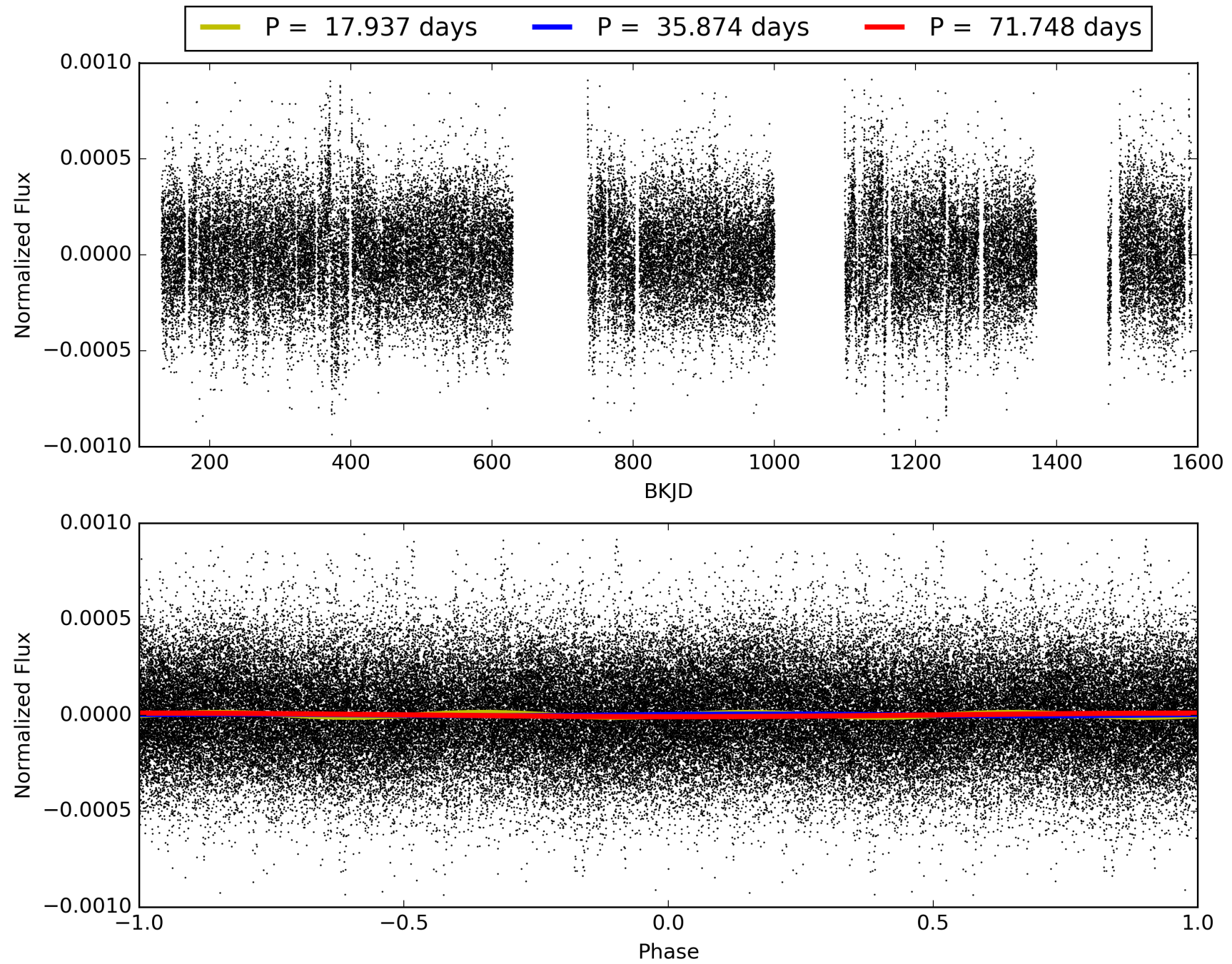
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010678963-02, PDC Light Curves

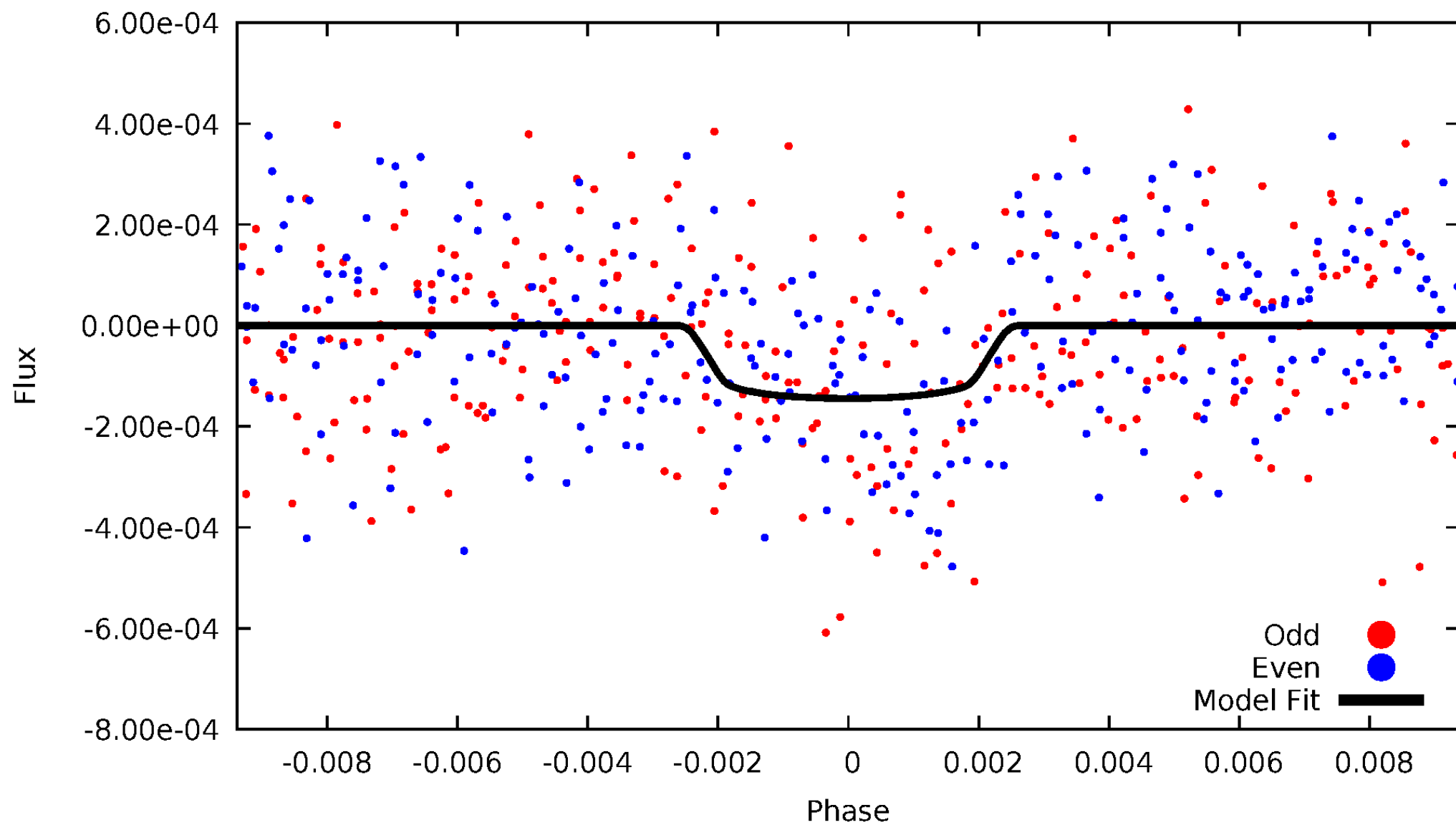


TCE 010678963-02



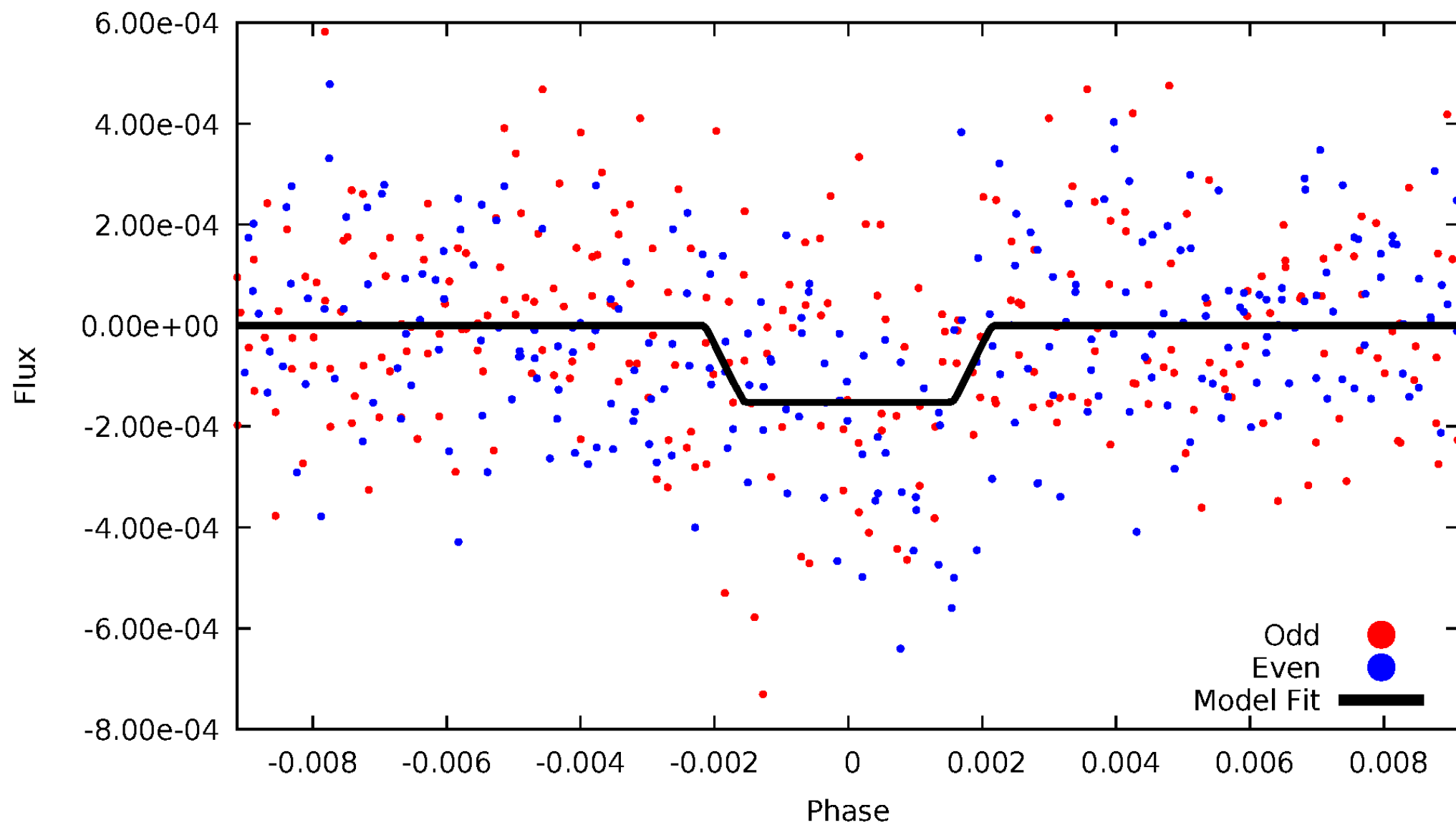
DV Odd/Even

TCE 010678963-02



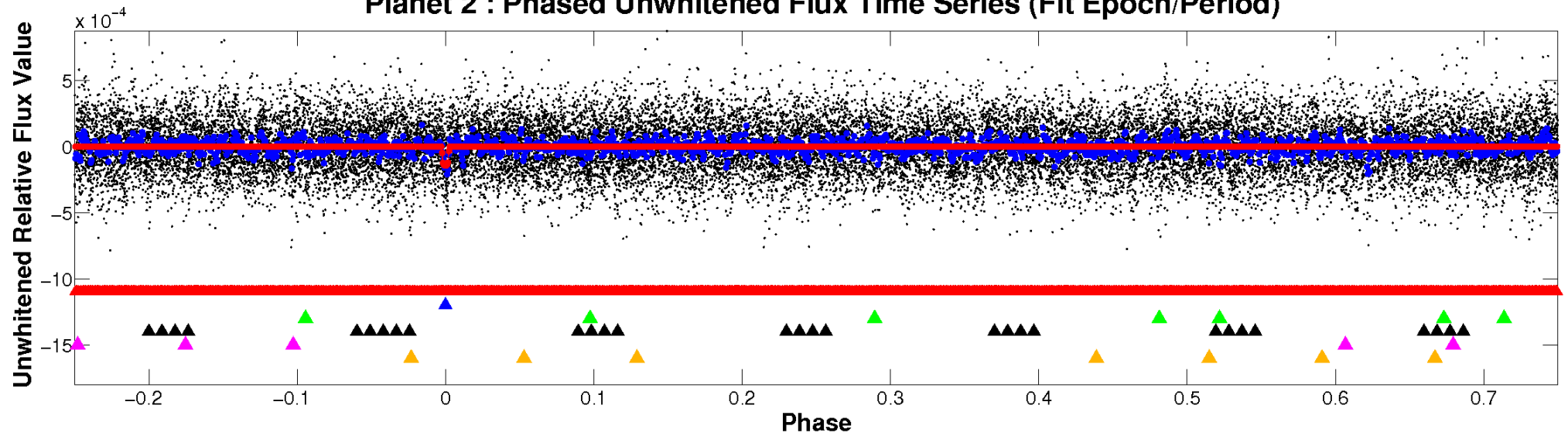
ALT Odd/Even

TCE 010678963-02

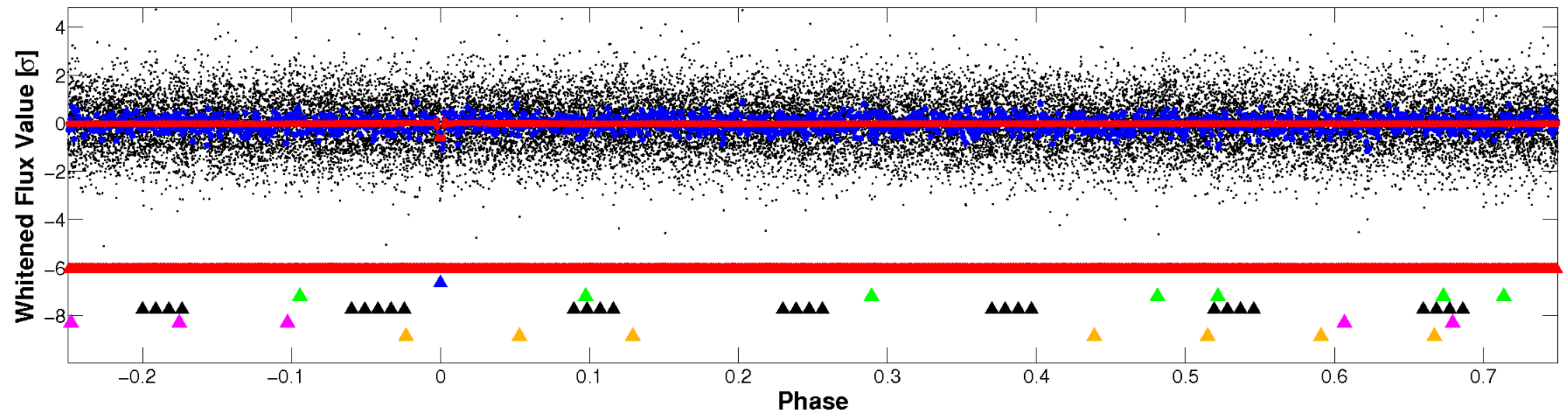


Non-Whitened Vs. Whitened Light Curve

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

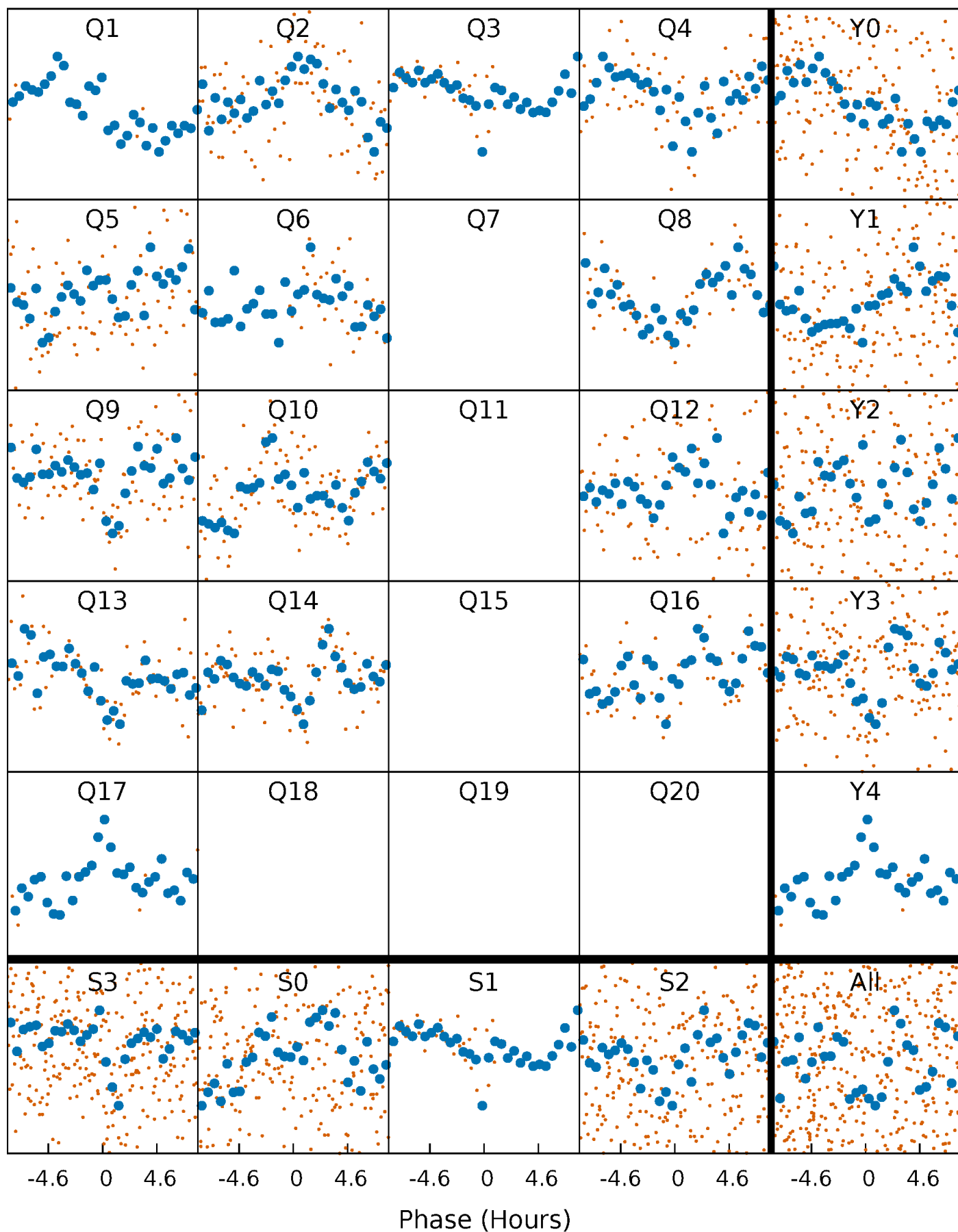


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



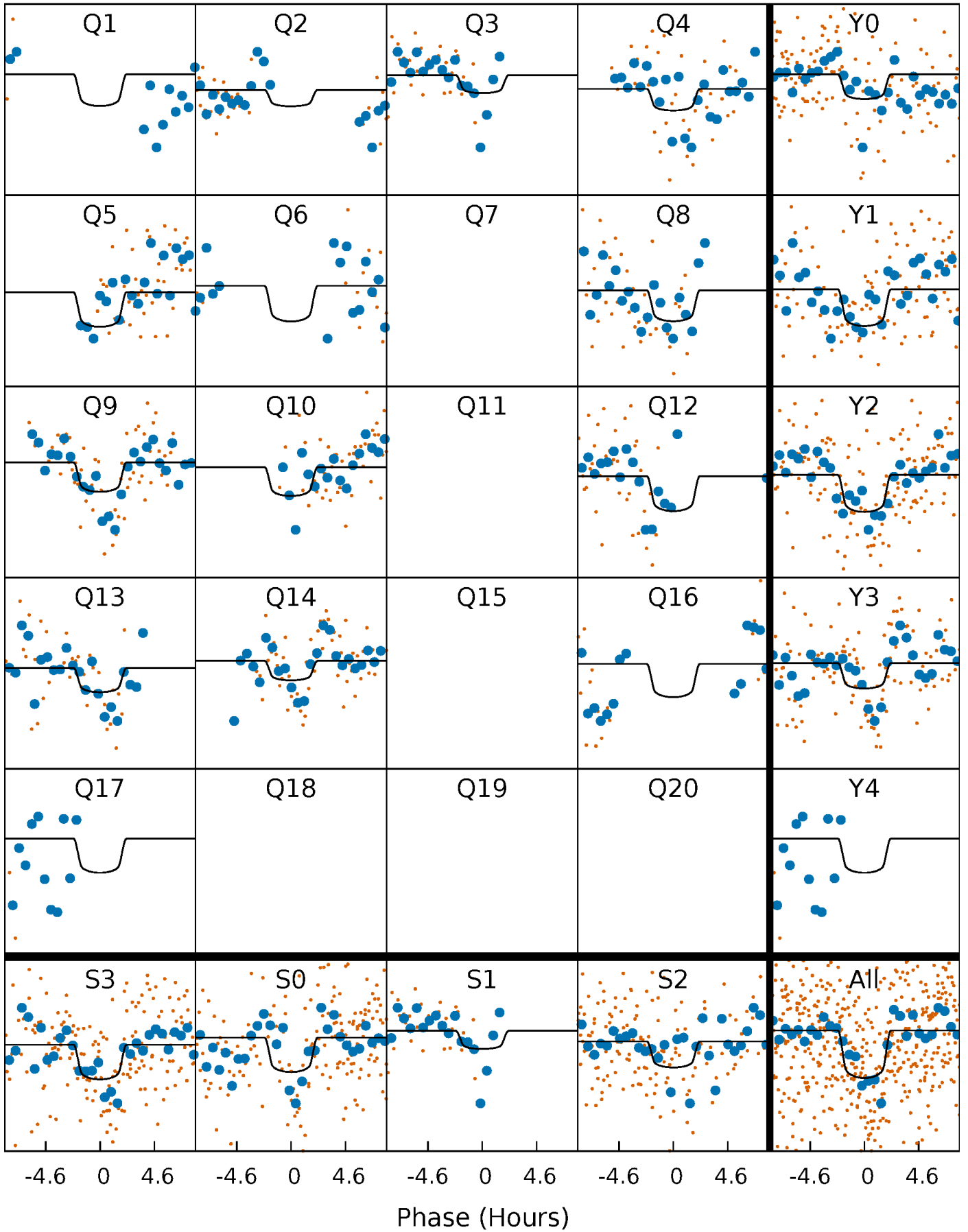
PDC Quarter-Phased Transit Curves

TCE 010678963-02 P= 35.873976 Days $T_0=136.927565$ (BKJD)



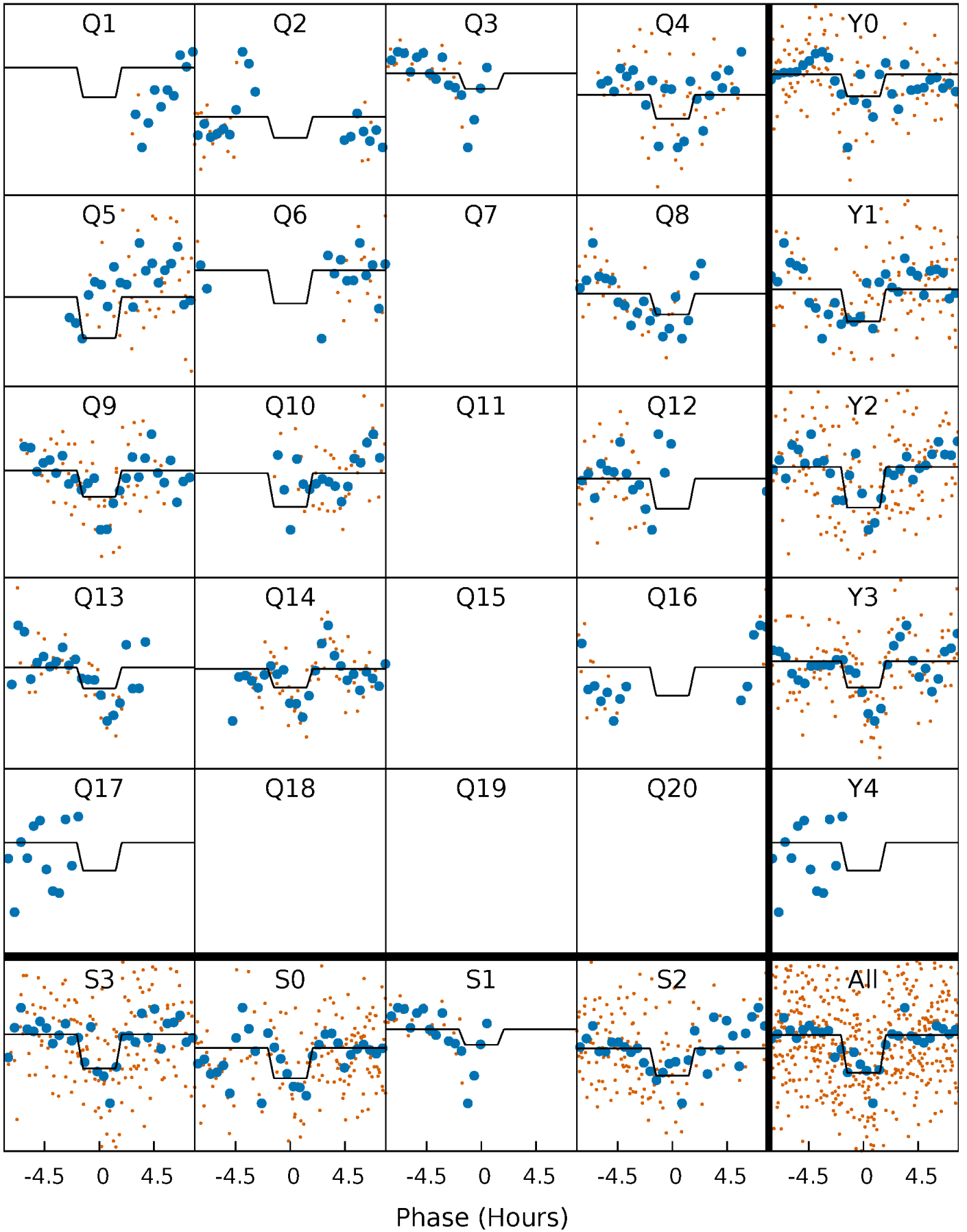
DV Quarter-Phased Transit Curves

TCE 010678963-02 P= 35.873976 Days $T_0=136.927565$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

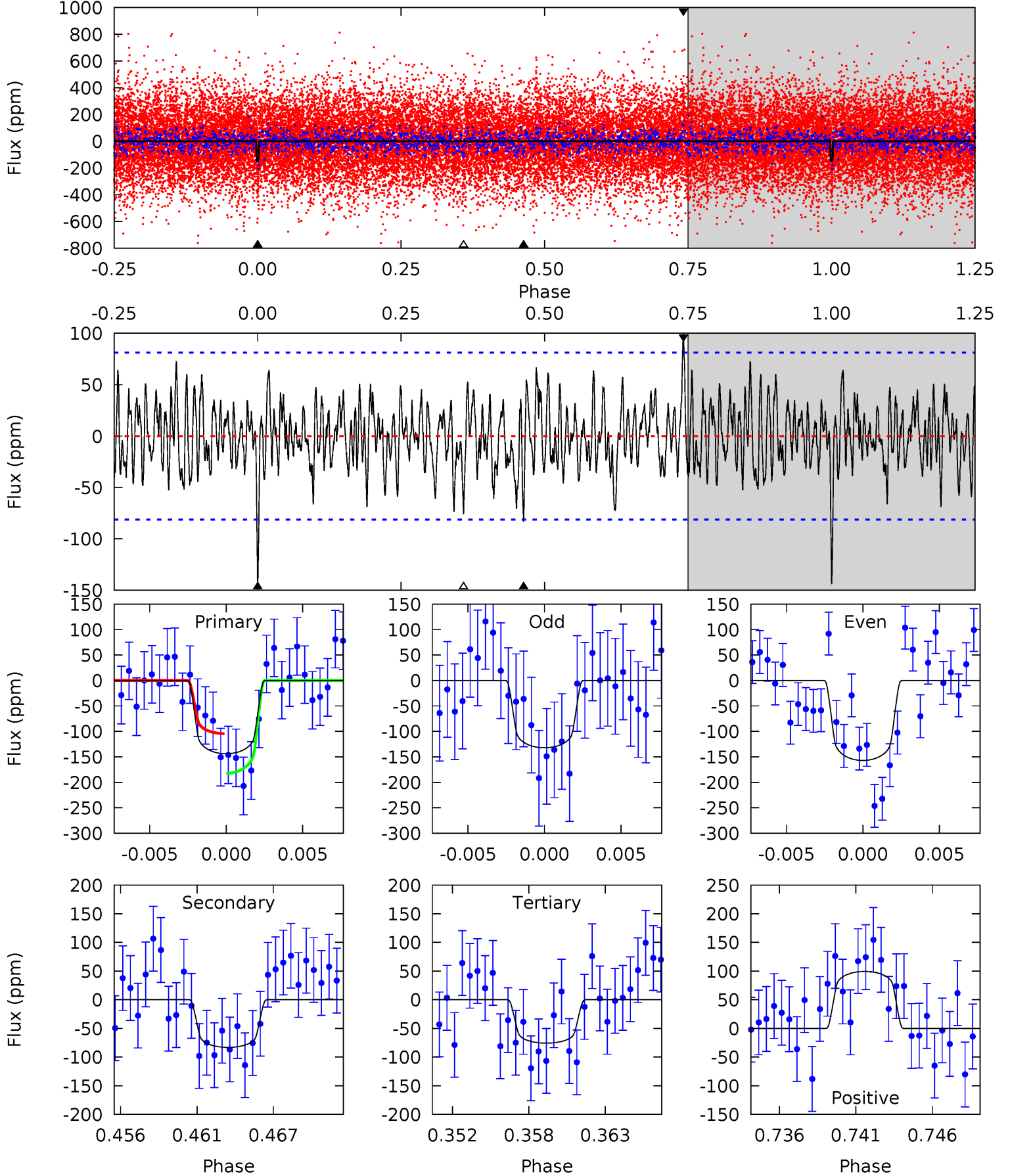
TCE 010678963-02 P= 35.872352 Days $T_0=136.976827$ (BKJD)



DV Model-Shift Uniqueness Test

010678963-02, $P = 35.873976$ Days, $E = 101.053589$ Days

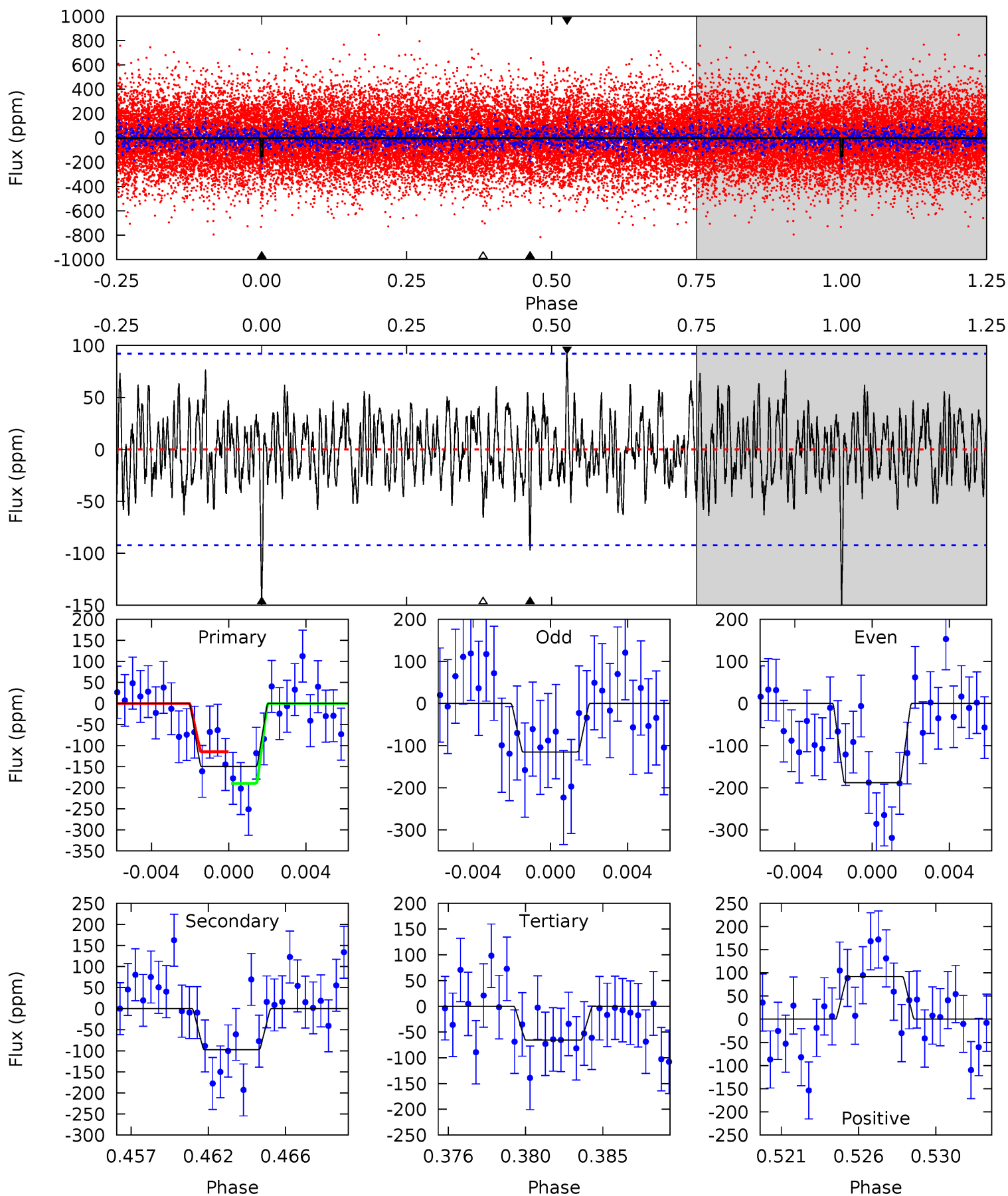
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.12	5.27	4.80	6.31	5.15	2.80	1.73	4.32	2.82	0.47	-1.03	0.79	0.88	0.41	2.47



Alt Model-Shift Uniqueness Test

010678963-02, P = 35.872352 Days, E = 101.104475 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.43	5.47	3.70	5.18	5.19	2.86	1.50	4.73	3.25	1.77	0.30	2.05	1.08	0.38	2.11



Stellar Parameters For KIC 010678963

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7050^{+195}_{-335}	$4.176^{+0.108}_{-0.201}$	$0.070^{+0.200}_{-0.350}$	$1.655^{+0.539}_{-0.290}$	$1.497^{+0.214}_{-0.236}$	$0.465^{+0.278}_{-0.247}$
	+3%/-5%	+3%/-5%	+286%/-500%	+33%/-18%	+14%/-16%	+60%/-53%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 010678963-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-83 ± 16	$2.34^{+1.03}_{-0.93}$	1141^{+89}_{-77}	5862^{+1941}_{-857}	482^{+832}_{-256}
Alt.	-97 ± 18	$2.27^{+1.01}_{-0.96}$	1144^{+81}_{-79}	6271^{+2239}_{-987}	598^{+1303}_{-313}

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 $A_{obs} \gg 1.0$

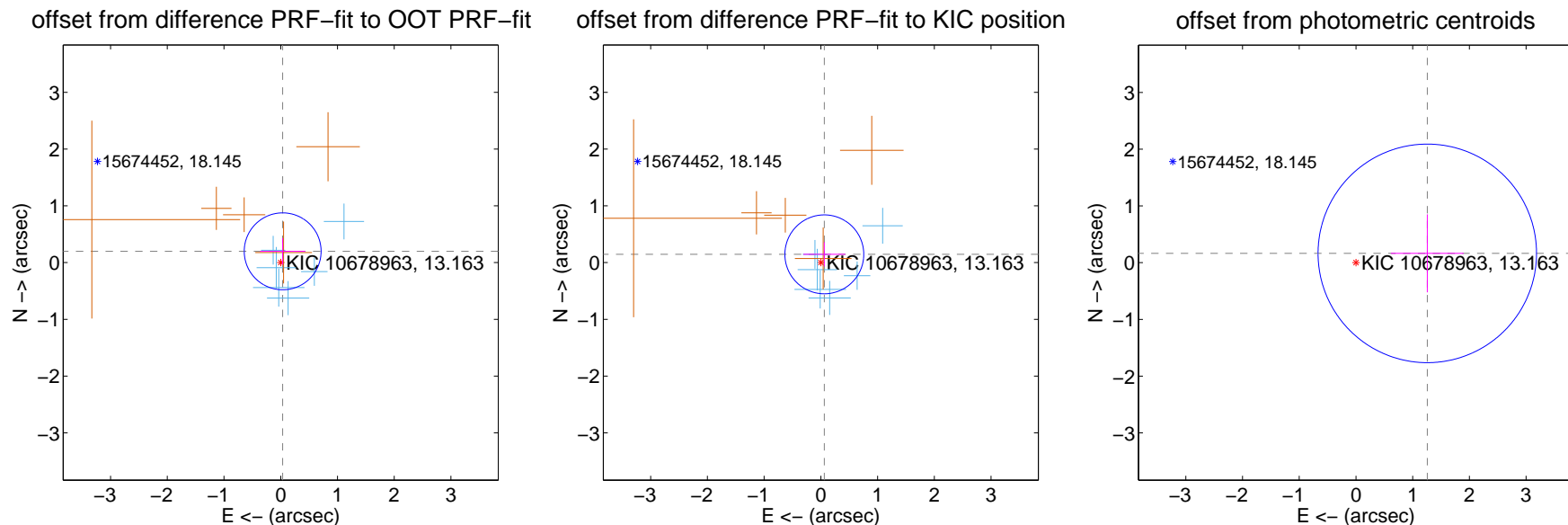
DV Centroid Data

Supplemental centroid analysis for 010678963-02. Kepler magnitude: 13.16. Transit SNR 6.48

There are 6 quarters with good PRF difference image offsets

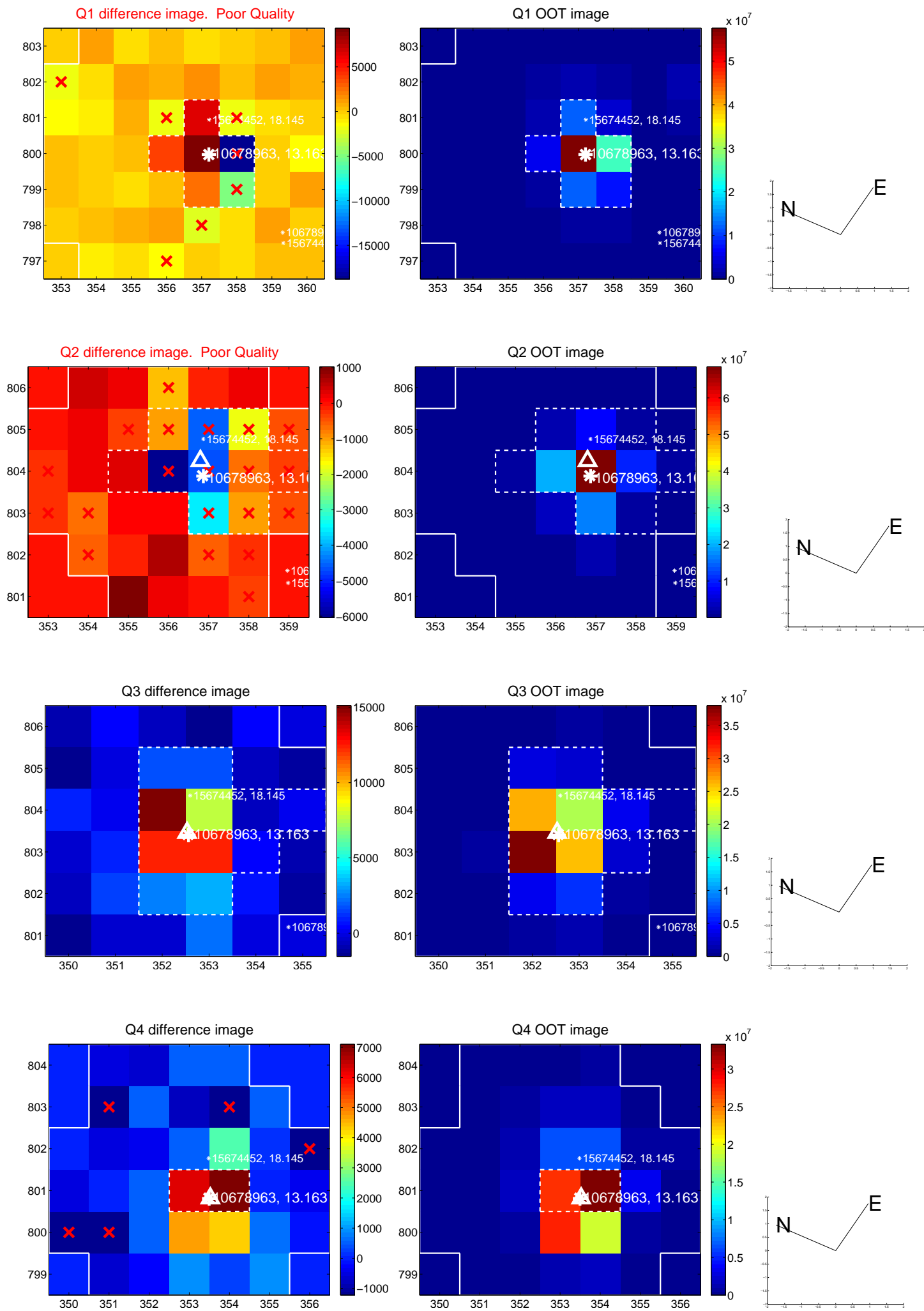
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.201 ± 0.226	0.89	-0.034 ± 0.399	0.199 ± 0.233
PRF-fit source offset from KIC position	0.158 ± 0.232	0.68	-0.061 ± 0.370	0.145 ± 0.213
photometric centroid source offset	1.27 ± 0.64	1.98	-1.26 ± 0.64	0.16 ± 0.69

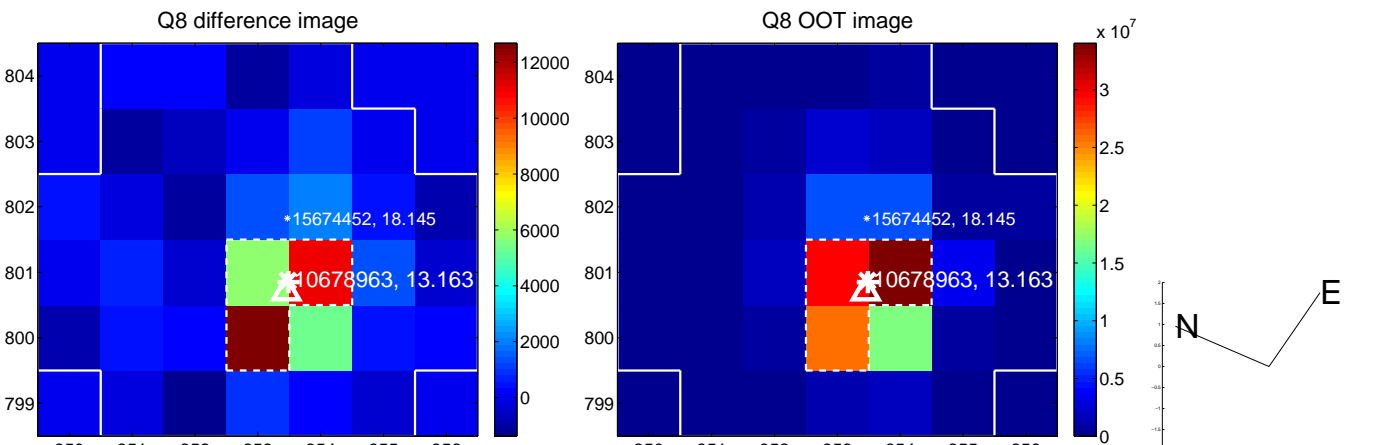
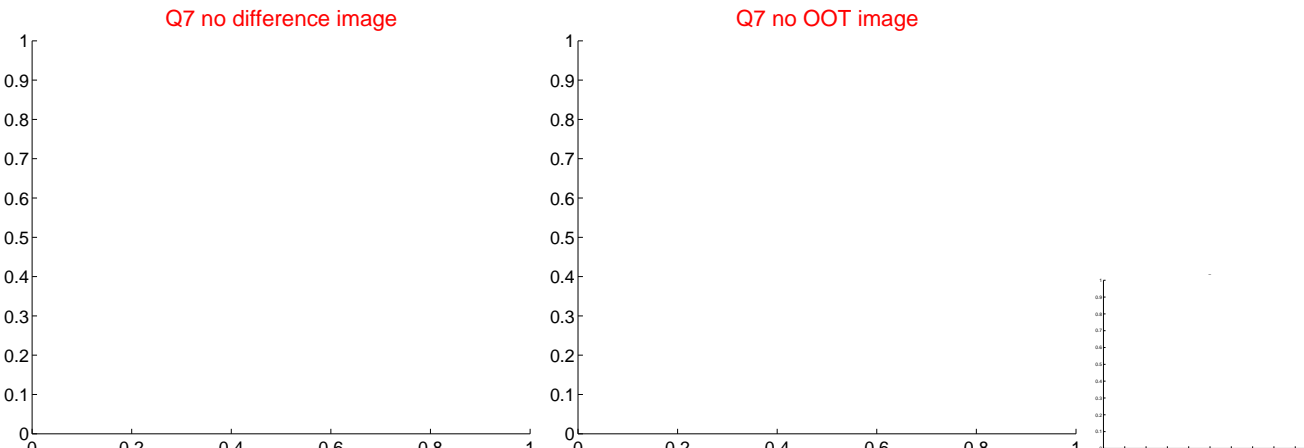
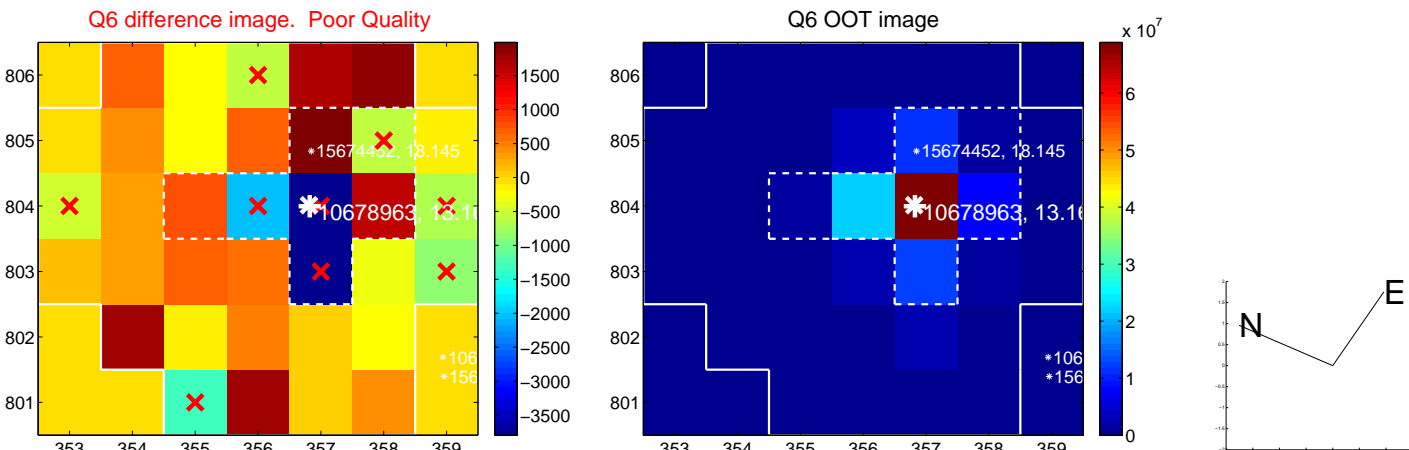
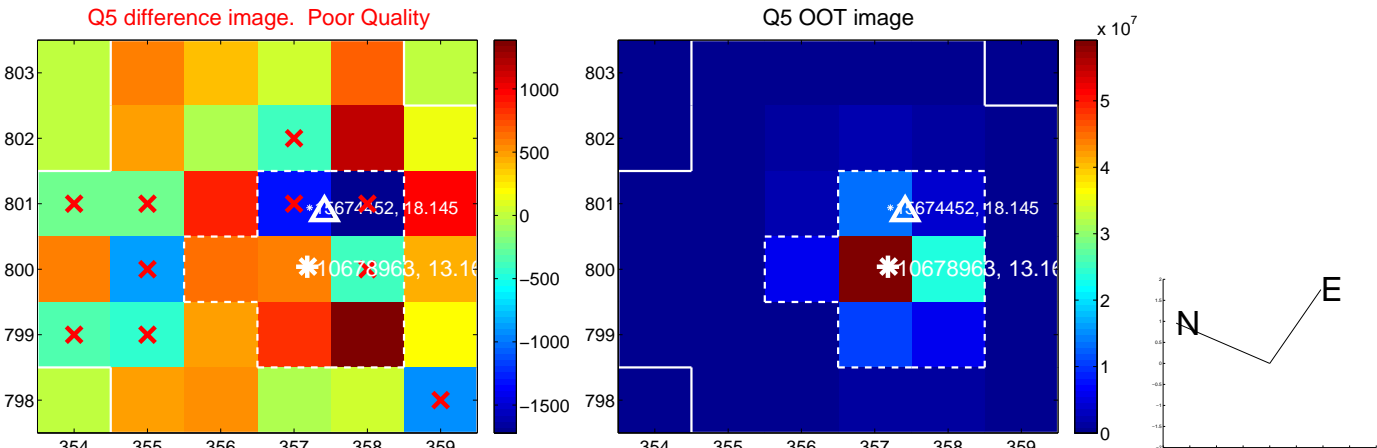


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

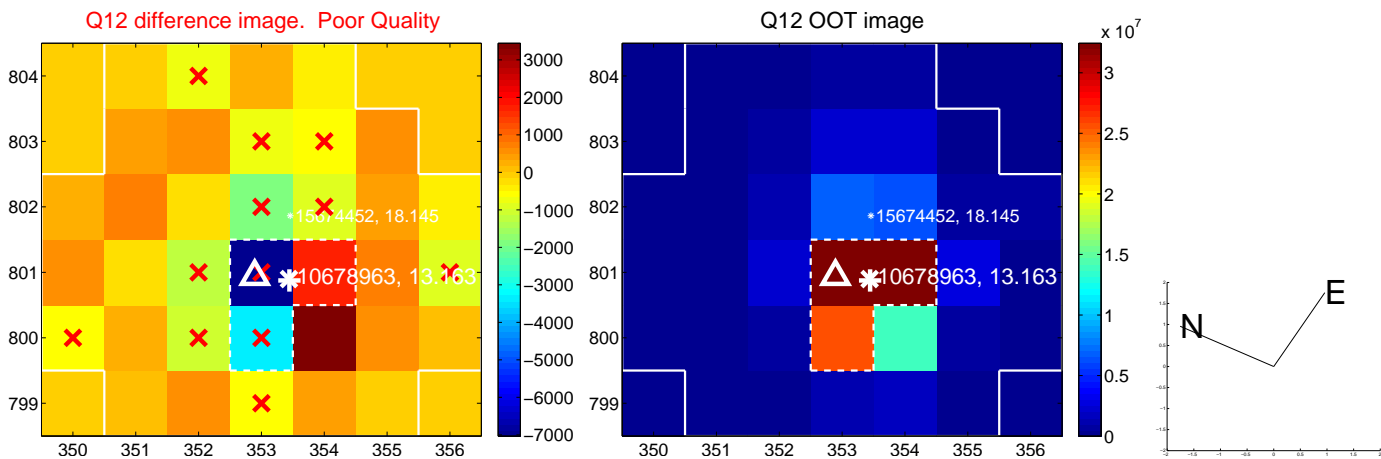
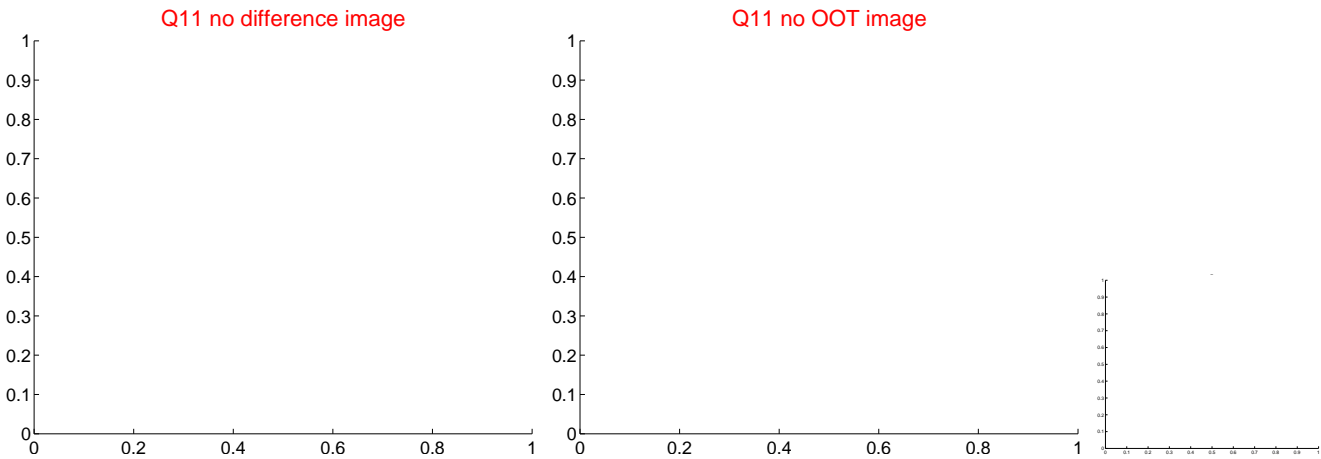
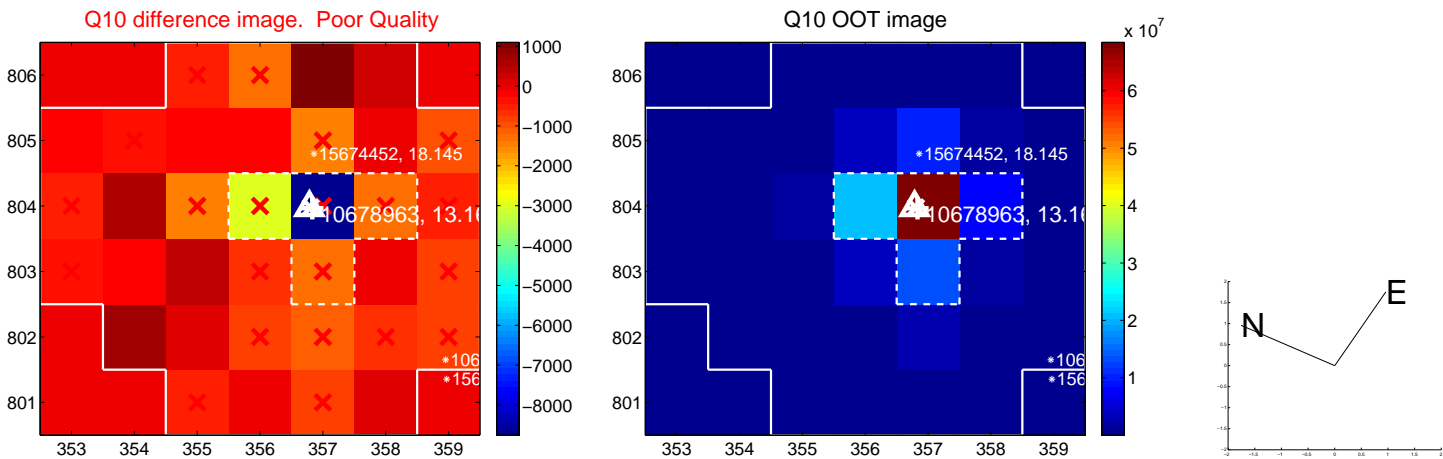
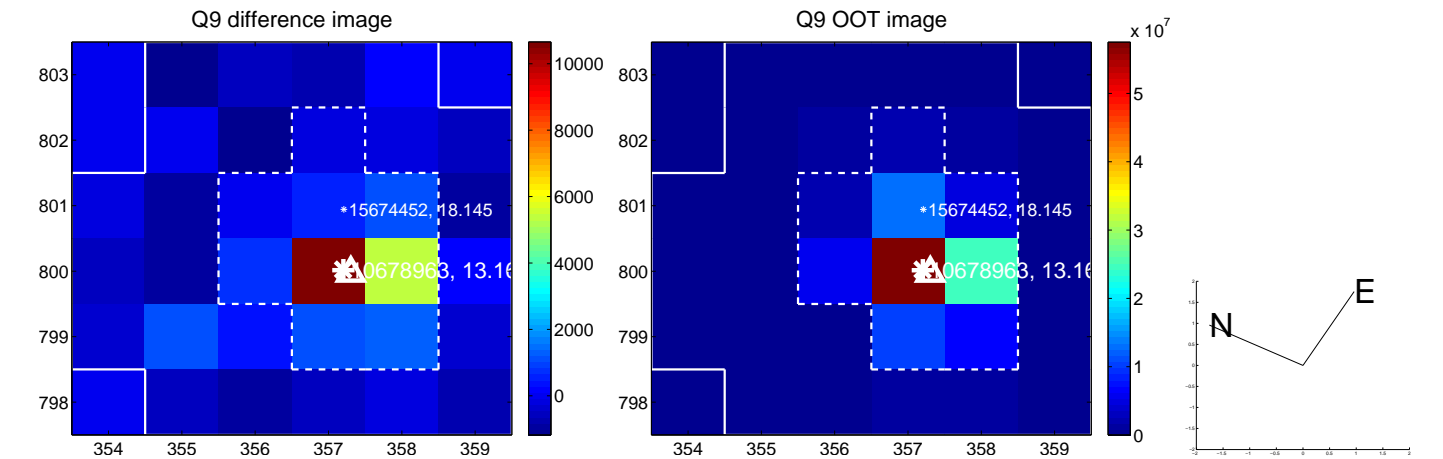
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



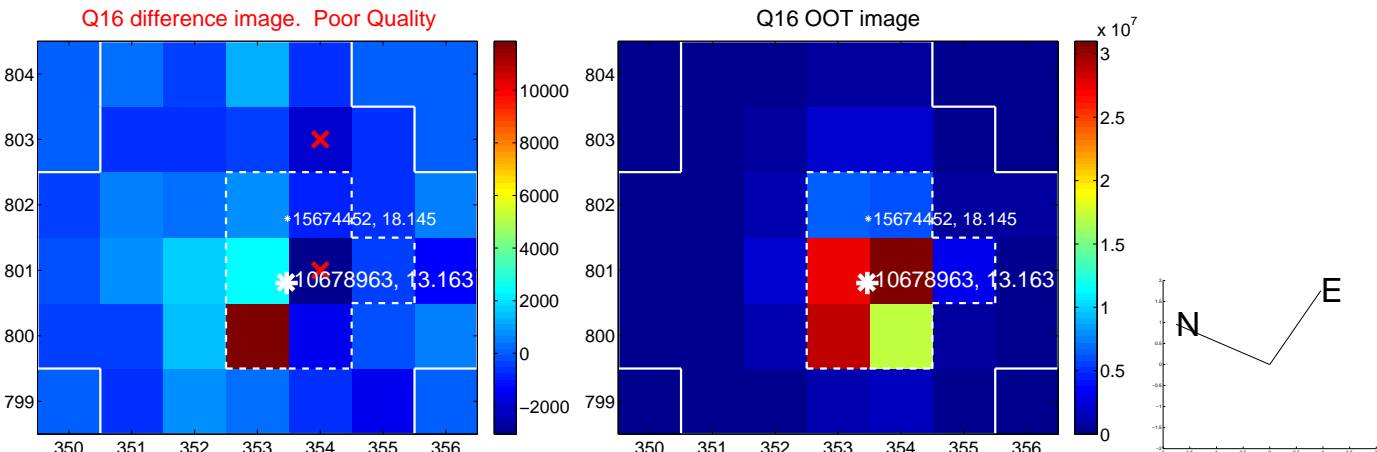
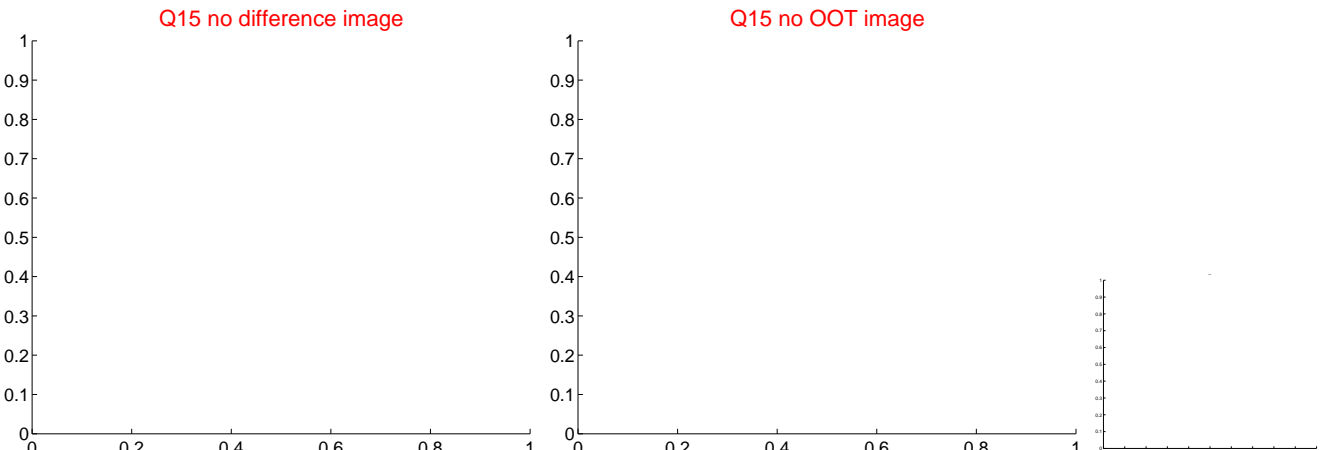
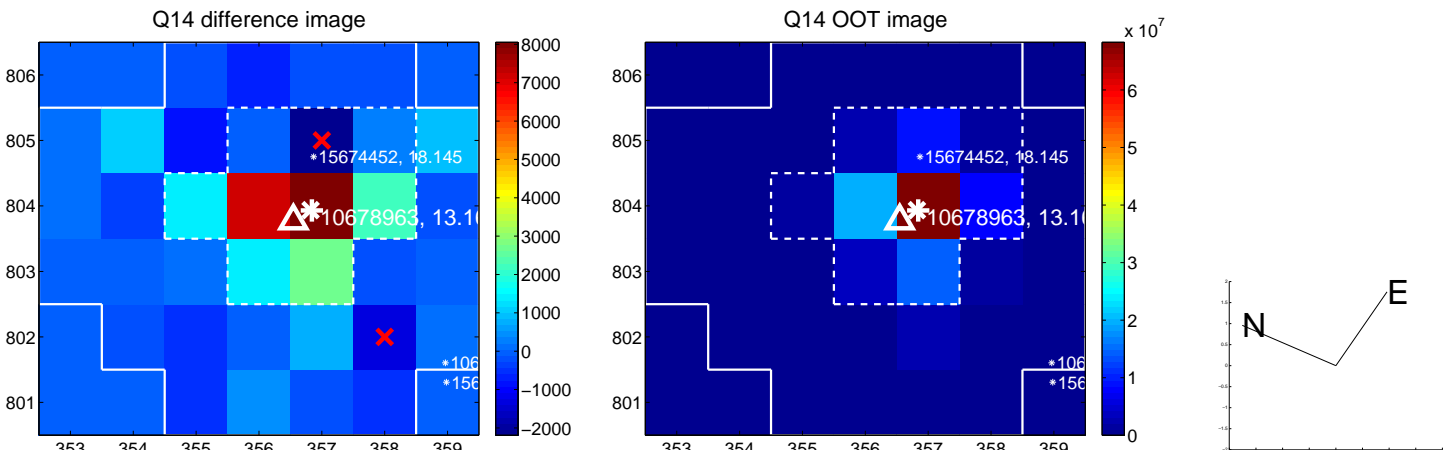
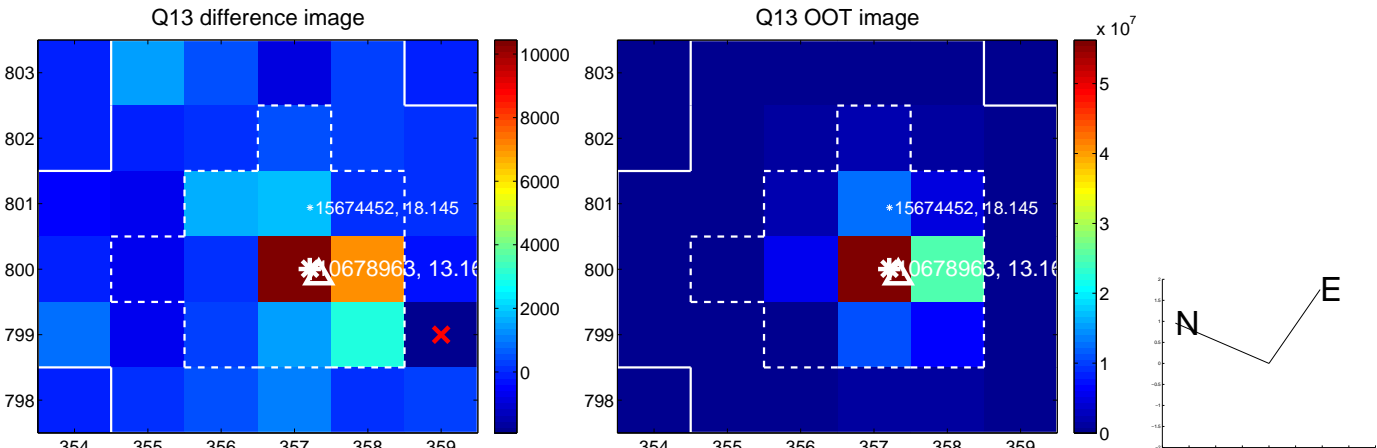
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



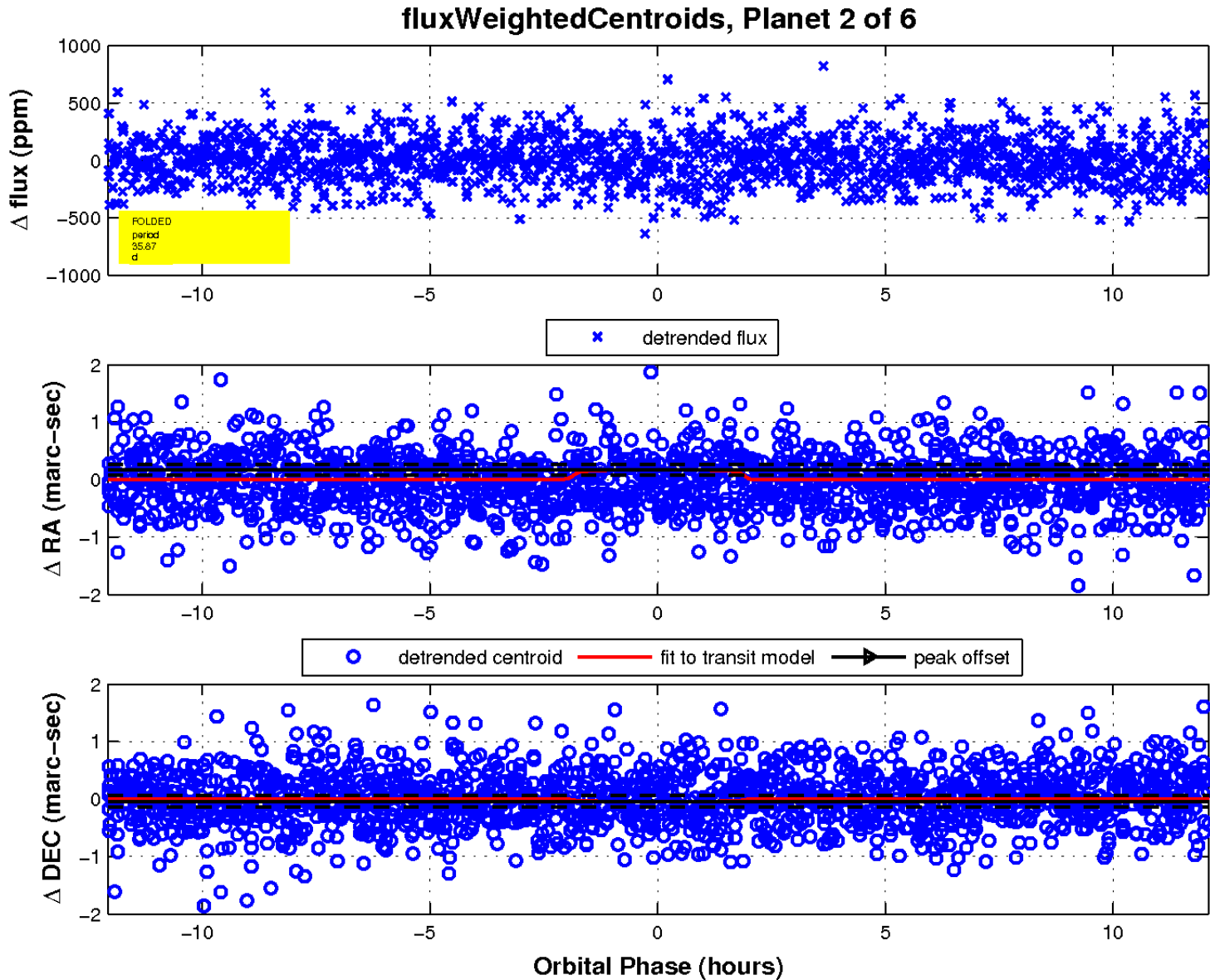
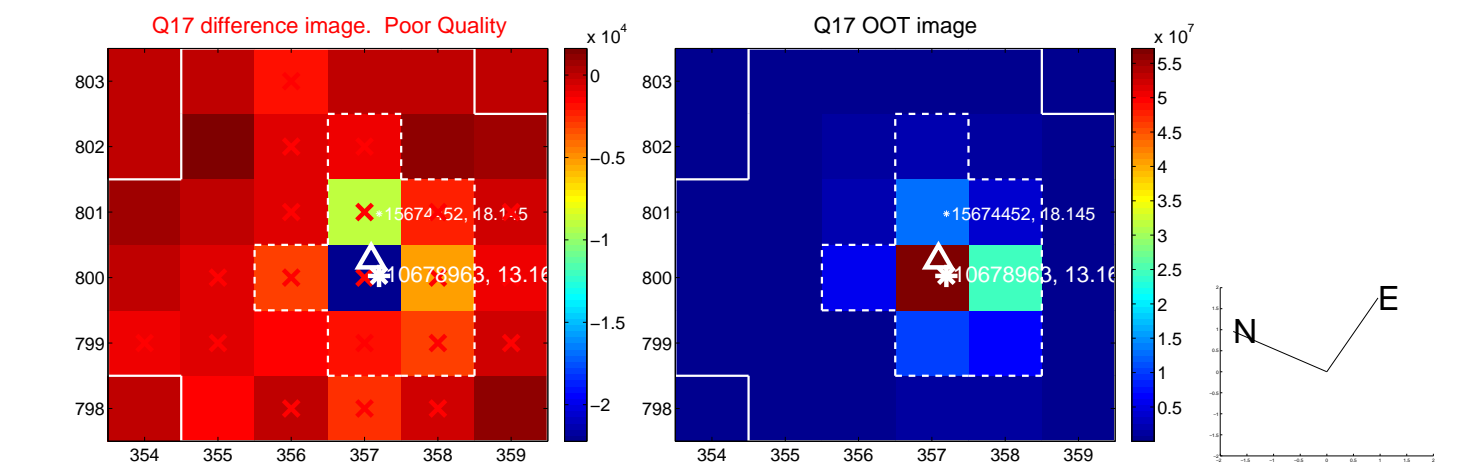
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

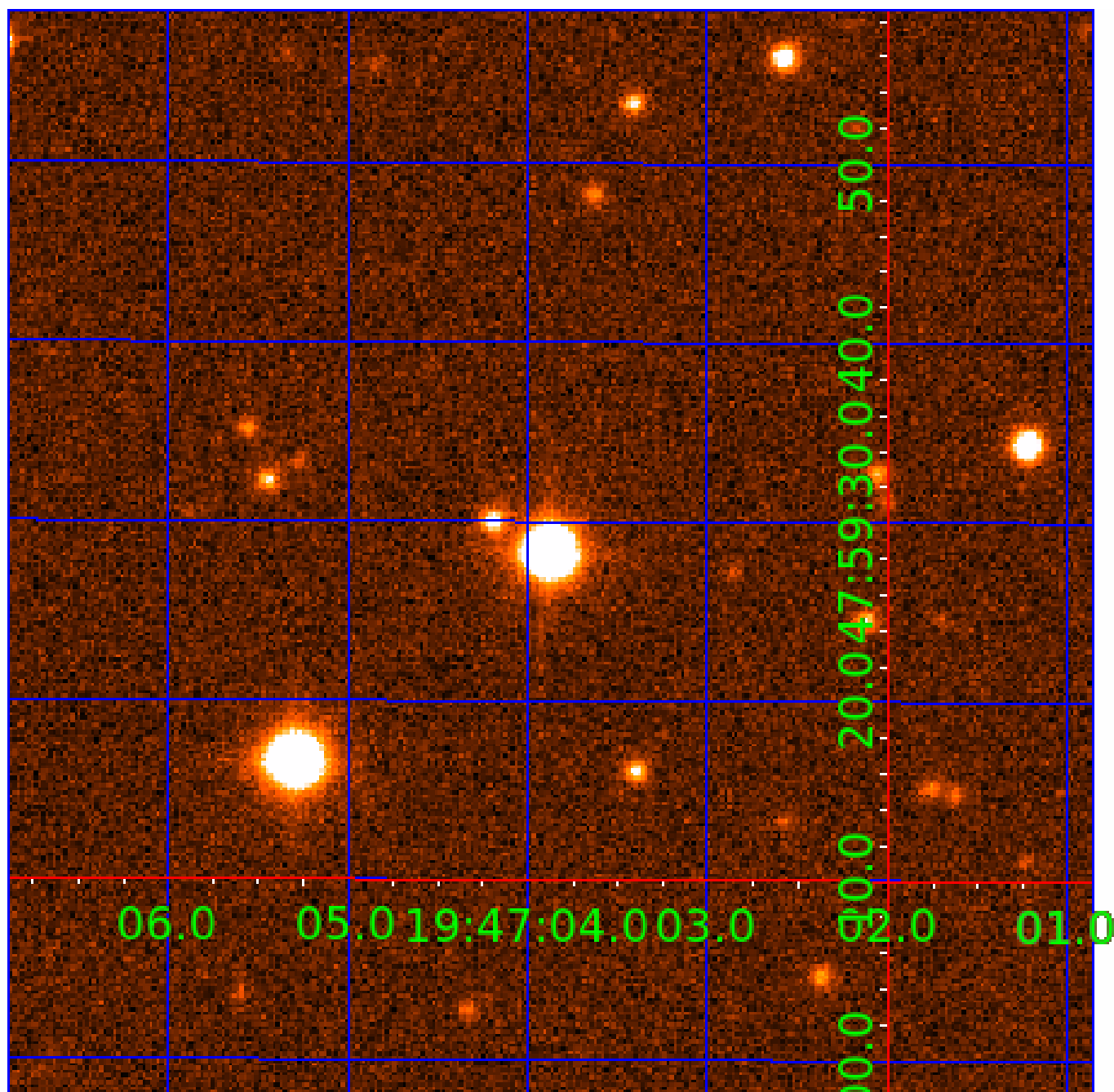


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010678963

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})
010678963-01	OBS	No	0.876703	131.600549	36.7	3.265	8.0	10.0	1.66	7050	1.17	14400.56
010678963-02	OBS	No	35.873976	136.927565	144.6	4.037	8.0	6.5	1.66	7050	2.31	102.13
010678963-03	OBS	No	208.360231	268.698350	375.0	2.516	7.4	8.8	1.66	7050	3.68	9.78
010678963-04	OBS	No	51.293886	134.787280	278.4	4.618	7.3	7.9	1.66	7050	3.92	63.40
010678963-05	OBS	No	325.471818	266.316564	386.9	4.523	7.3	6.6	1.66	7050	3.61	5.40
010678963-06	OBS	No	195.941873	268.482435	449.8	2.851	7.2	7.4	1.66	7050	3.83	10.62

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010678963-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
010678963-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
010678963-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678963-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_ALT
010678963-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678963-06	OBS	FP	0.03	1	0	0	0	ALL_TRANS_CHASES—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.

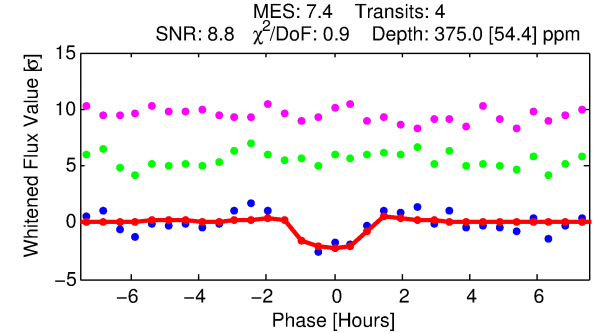
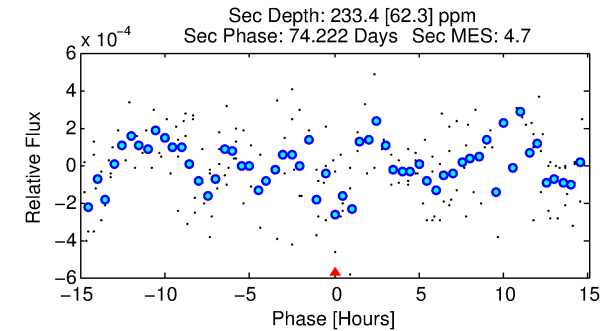
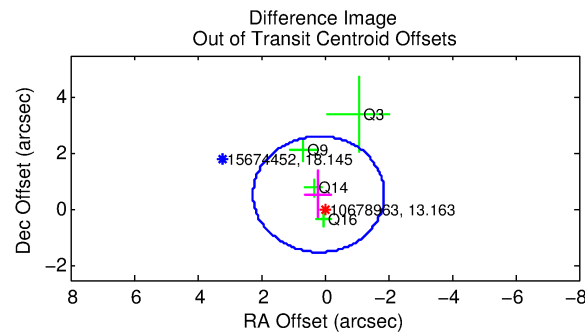
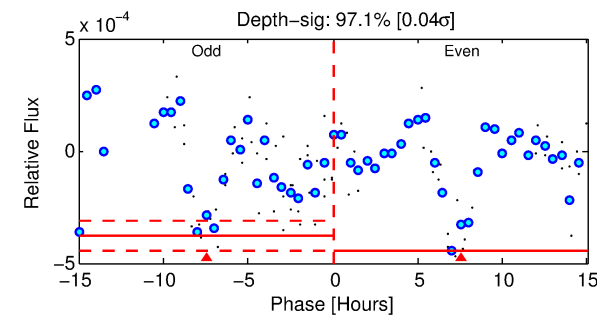
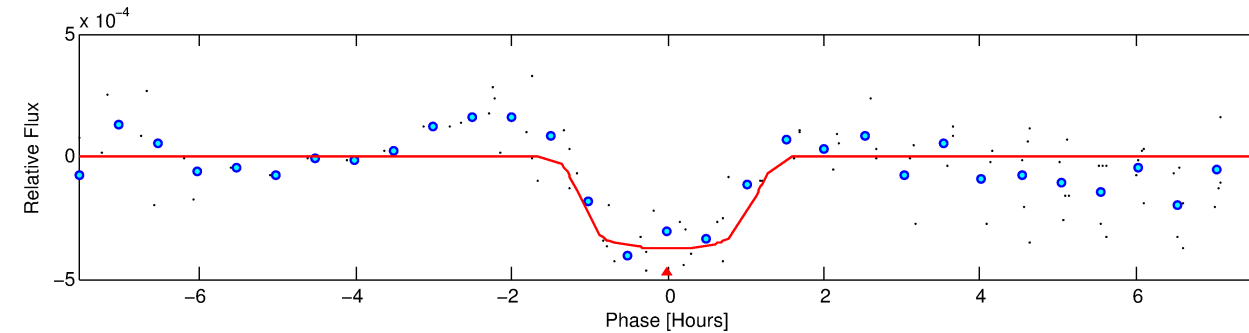
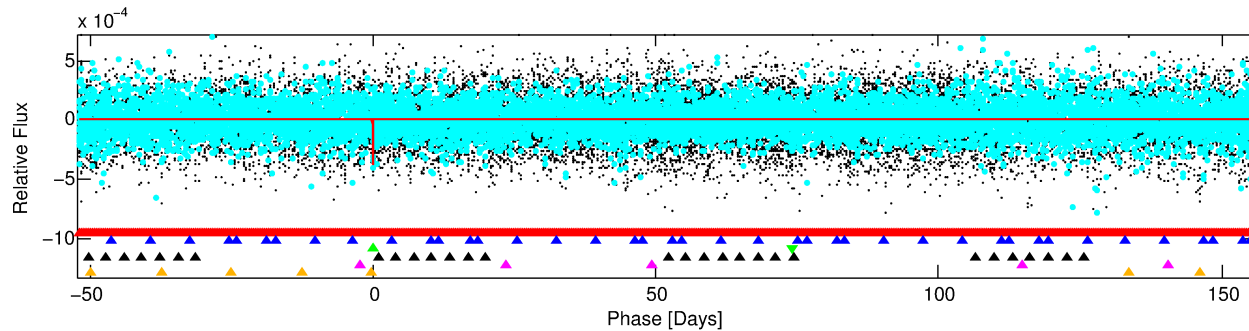
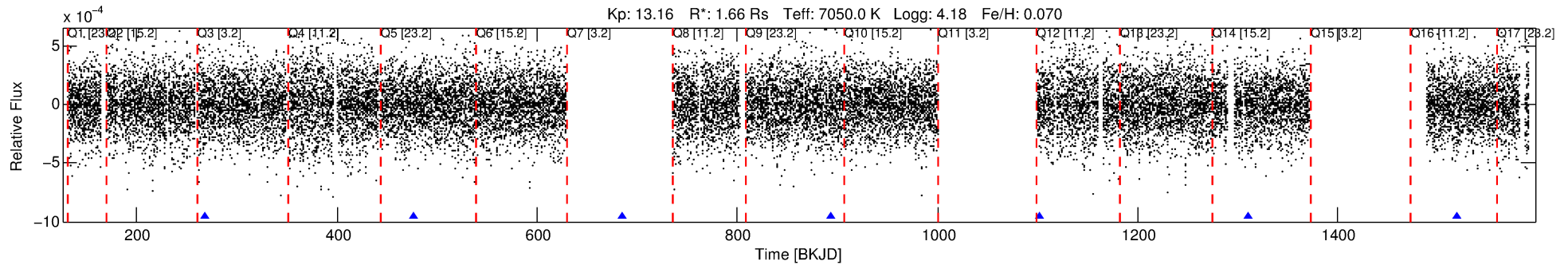
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678963-03

No Significant Match Found

DV One-Page Summary

KIC: 10678963 Candidate: 3 of 6 Period: 208.360 d



DV Fit Results:

Period = 208.36023 [0.00140] d
Epoch = 268.6984 [0.0049] BKJD
Rp/R* = 0.0204 [0.0220]
a/R* = 328.00 [2134.31]
b = 0.88 [1.71]
Seff = 9.78 [4.13]
Teq = 451 [48] K
Rp = 3.68 [4.15] Re
a = 0.7872 [0.2097] AU
Ag = 5887.30 [13022.17] [0.45σ]
Teffp = 6107 [3340] K [1.69σ]

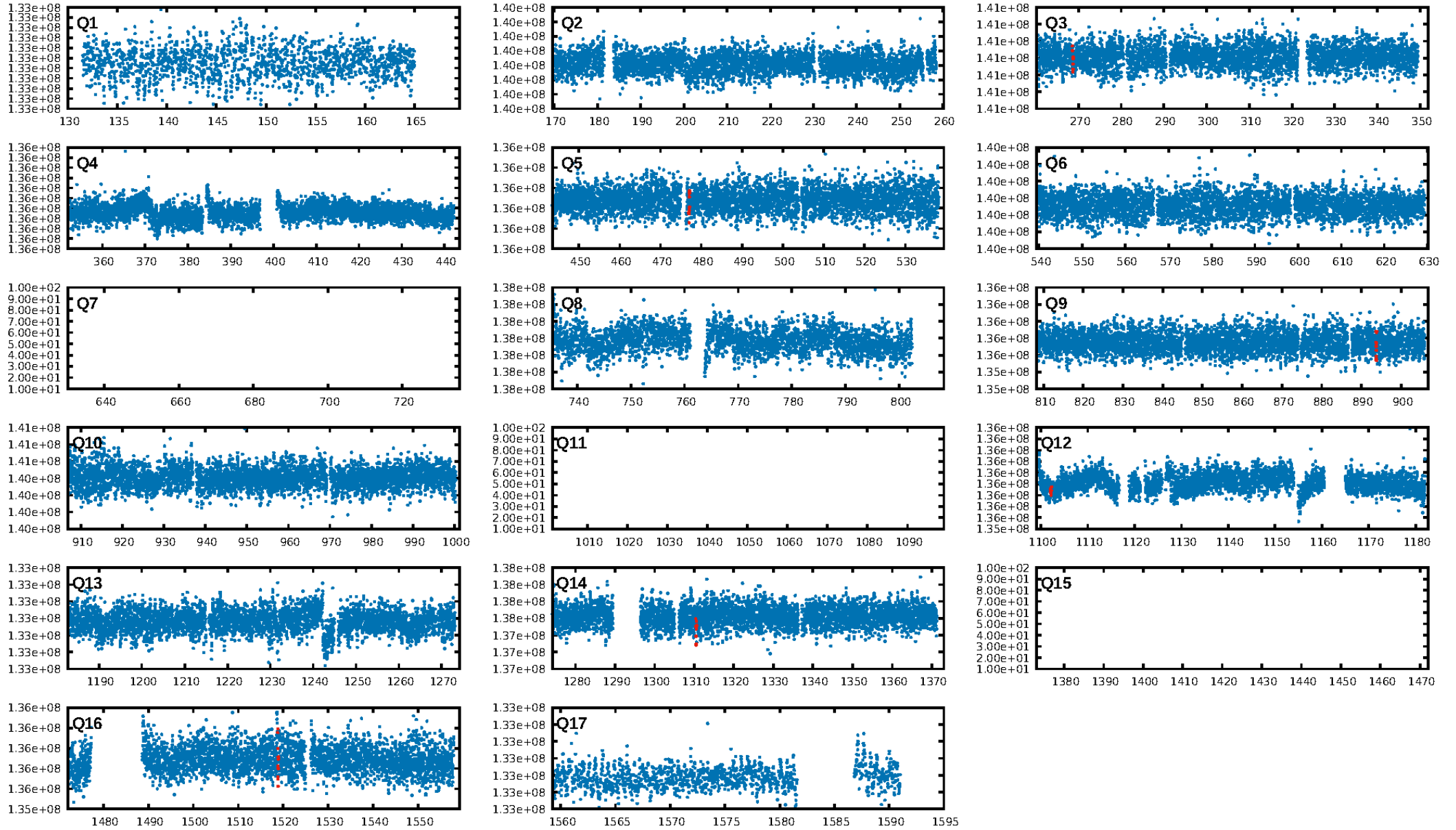
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [78.38σ]
LongPeriod-sig: 100.0% [543.07σ]
ModelChiSquare2-sig: 82.7%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 2.17e-09
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 35.62
Centroid-sig: 52.0%
Centroid-so: 0.698 arcsec [0.95σ]
OotOffset-rm: 0.583 arcsec [0.85σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-rm: 0.518 arcsec [0.84σ]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 0.00 [0/5]

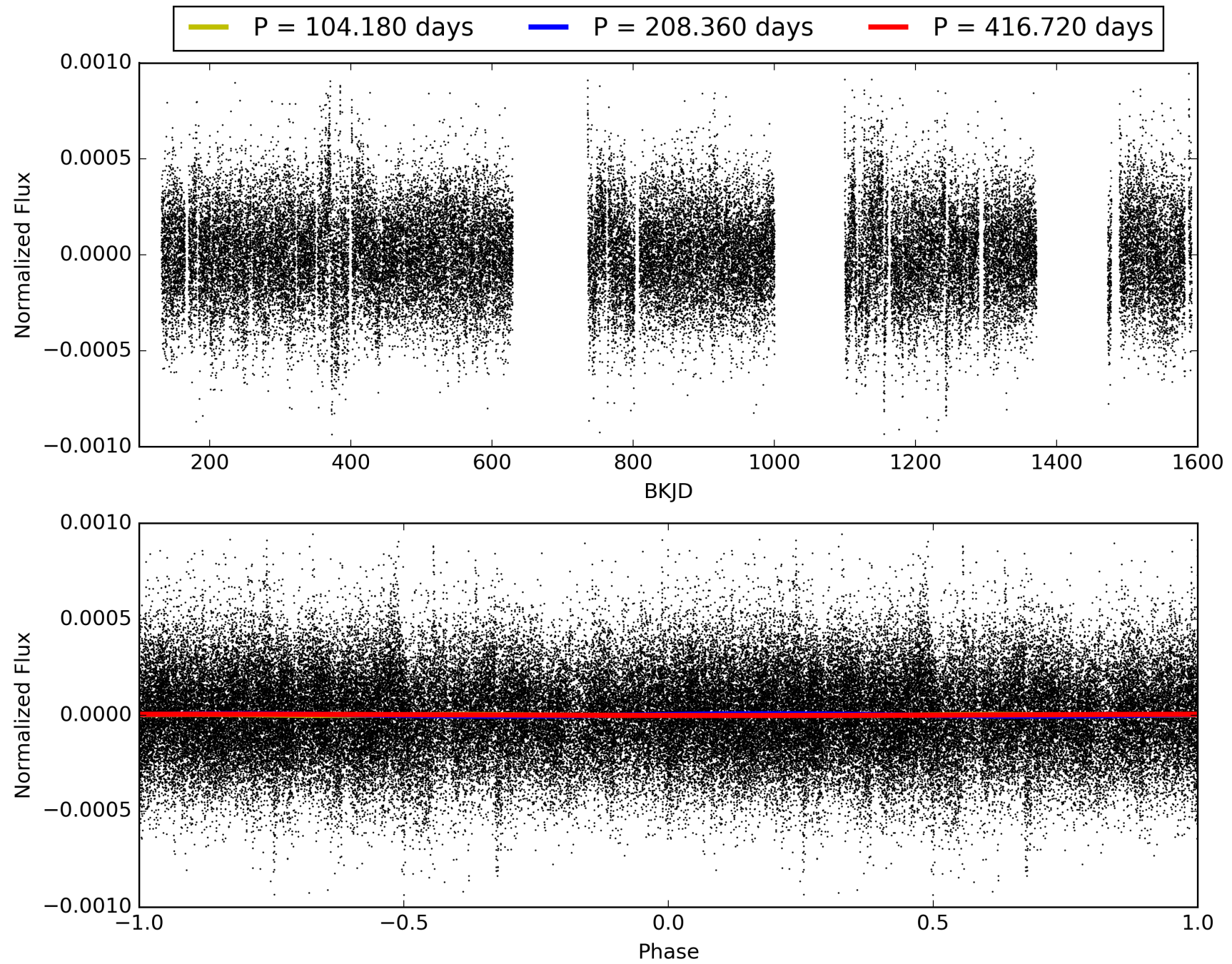
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:05:15 Z

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

TCE 010678963-03, PDC Light Curves

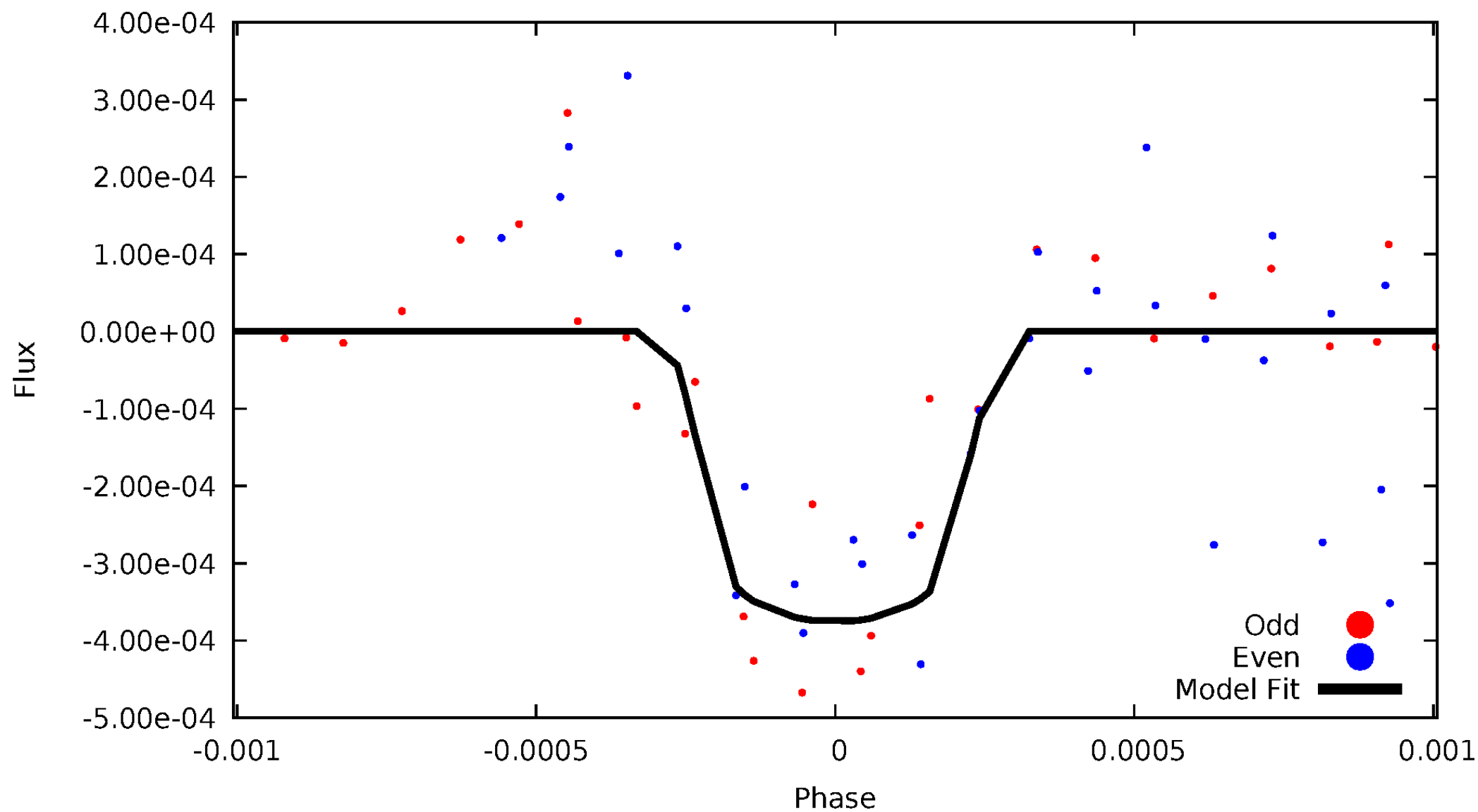


TCE 010678963-03



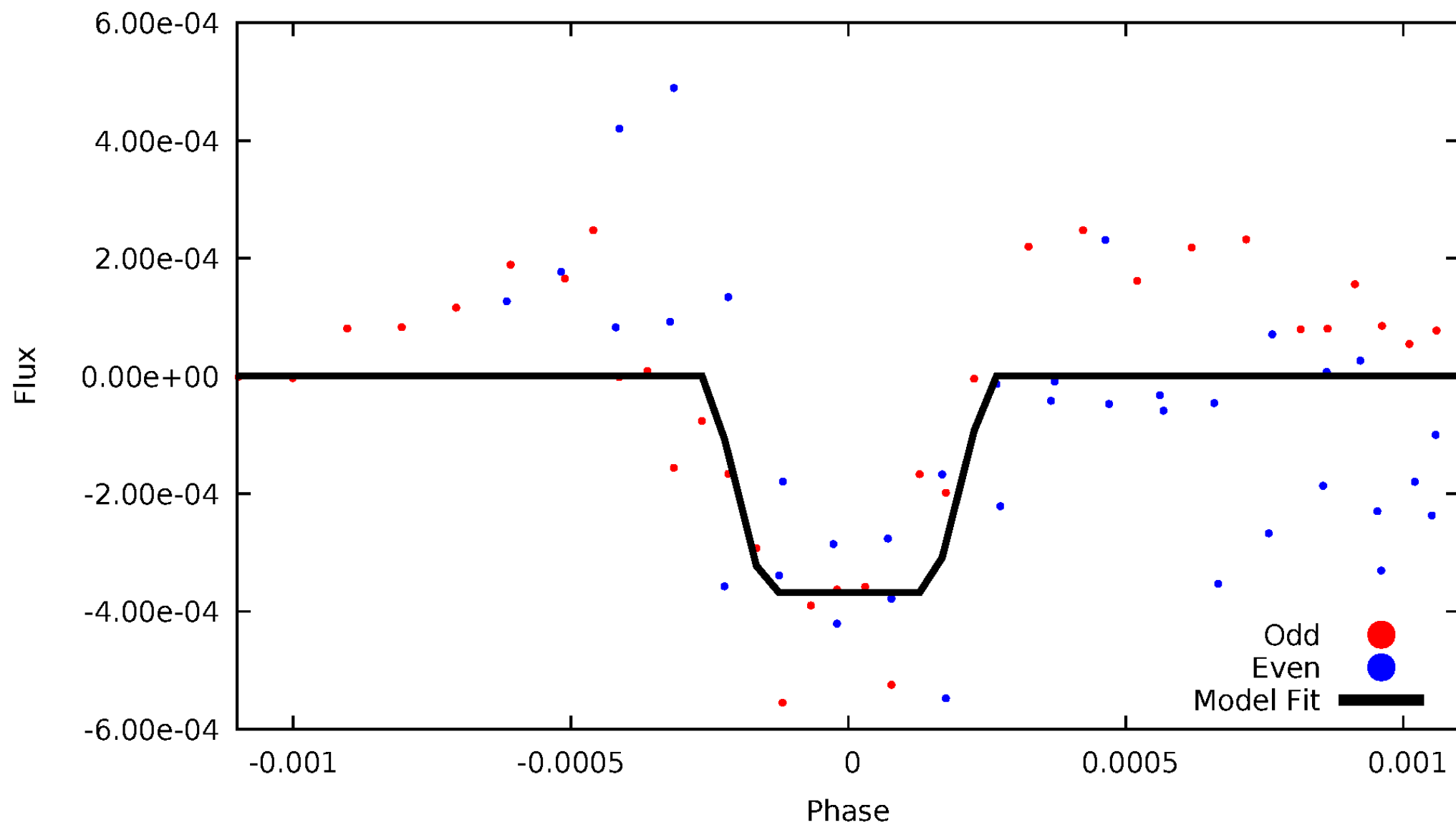
DV Odd/Even

TCE 010678963-03

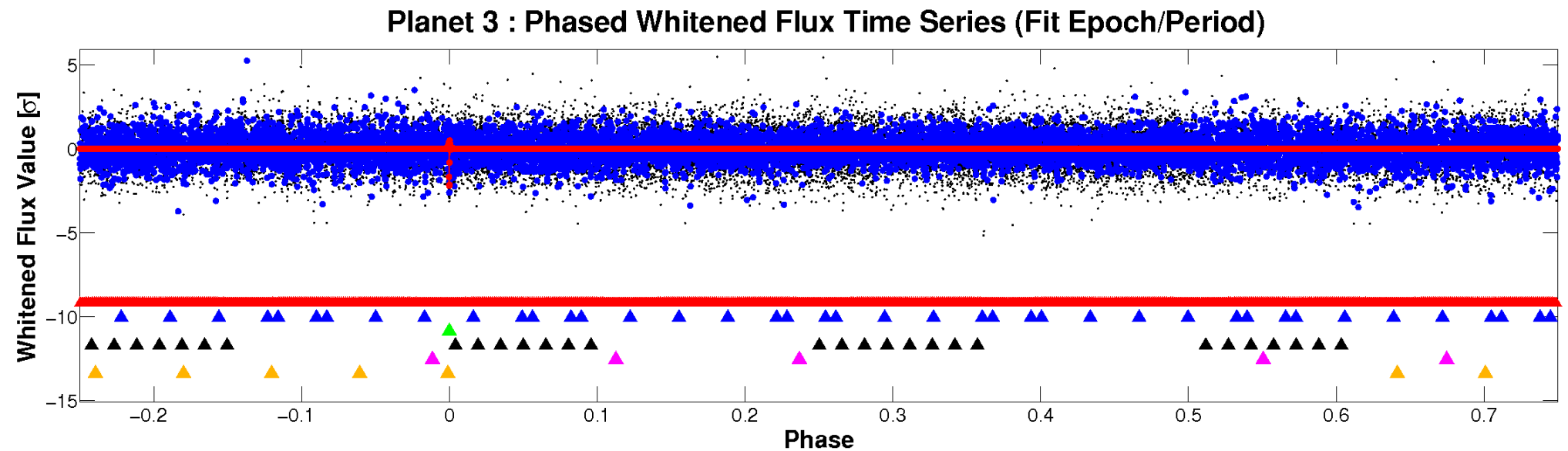
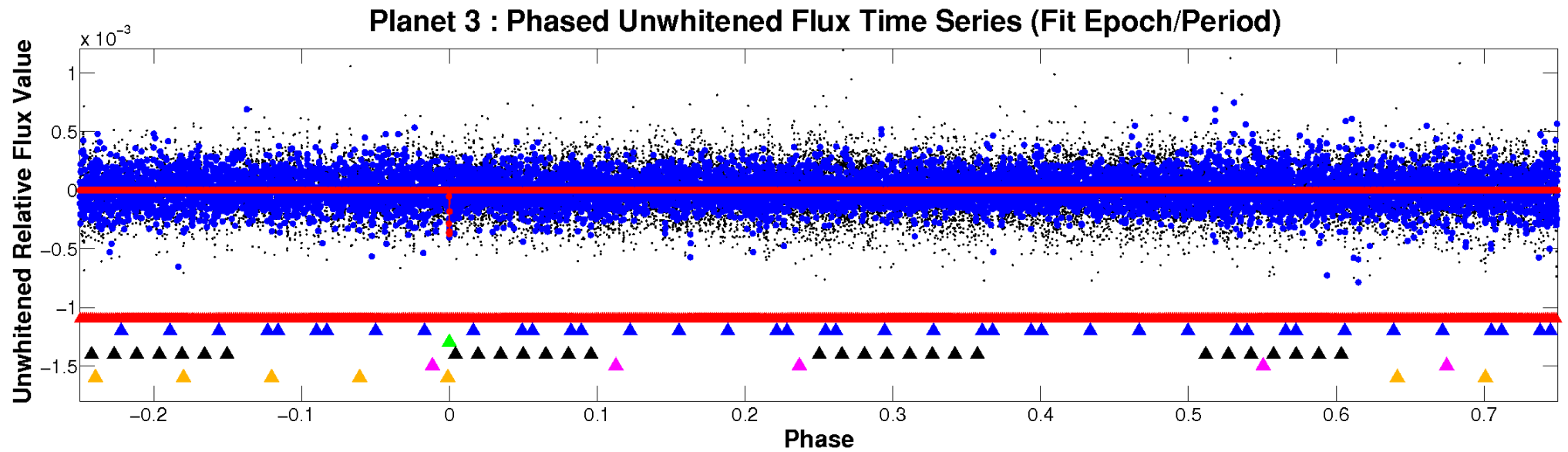


ALT Odd/Even

TCE 010678963-03

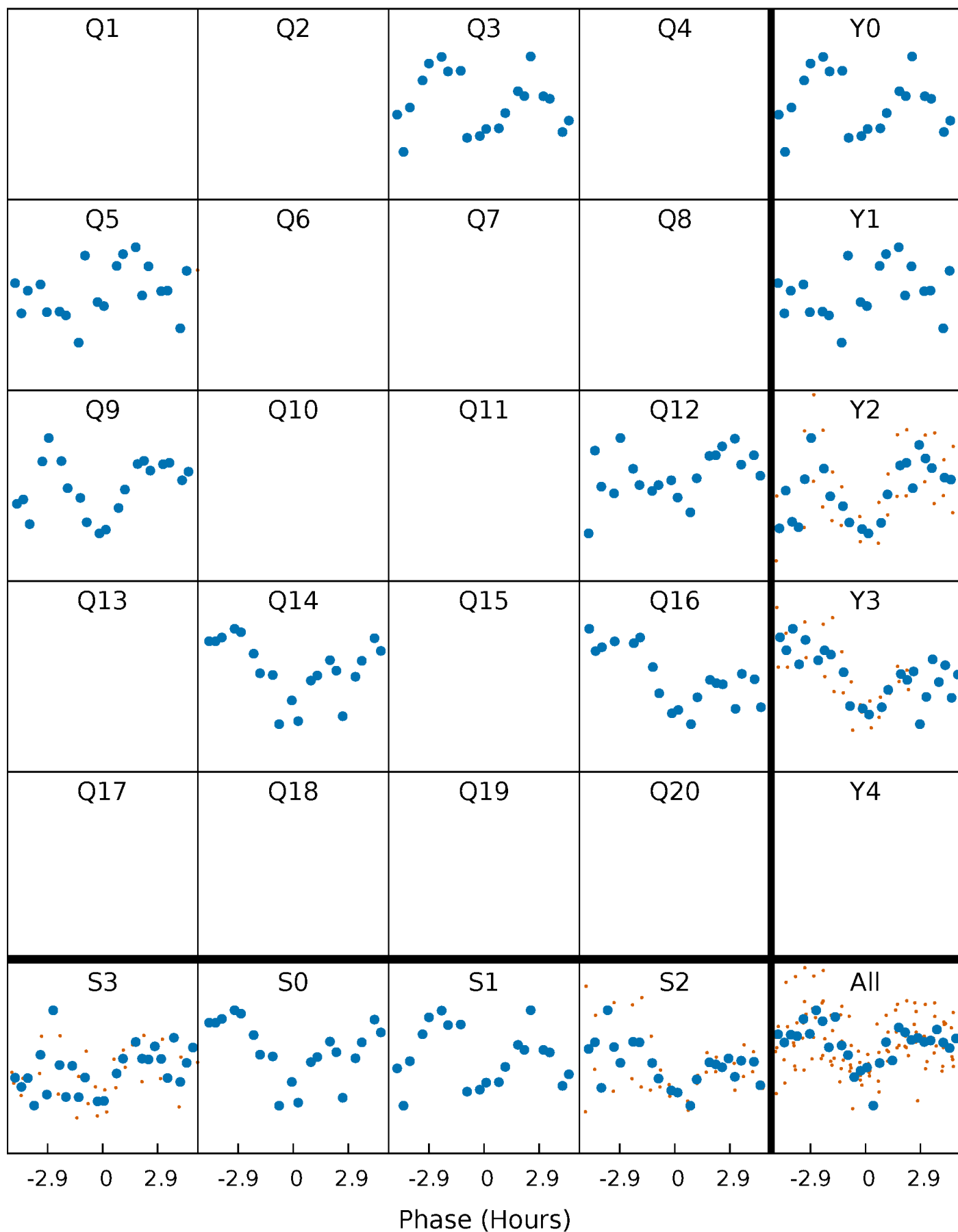


Non-Whitened Vs. Whitened Light Curve



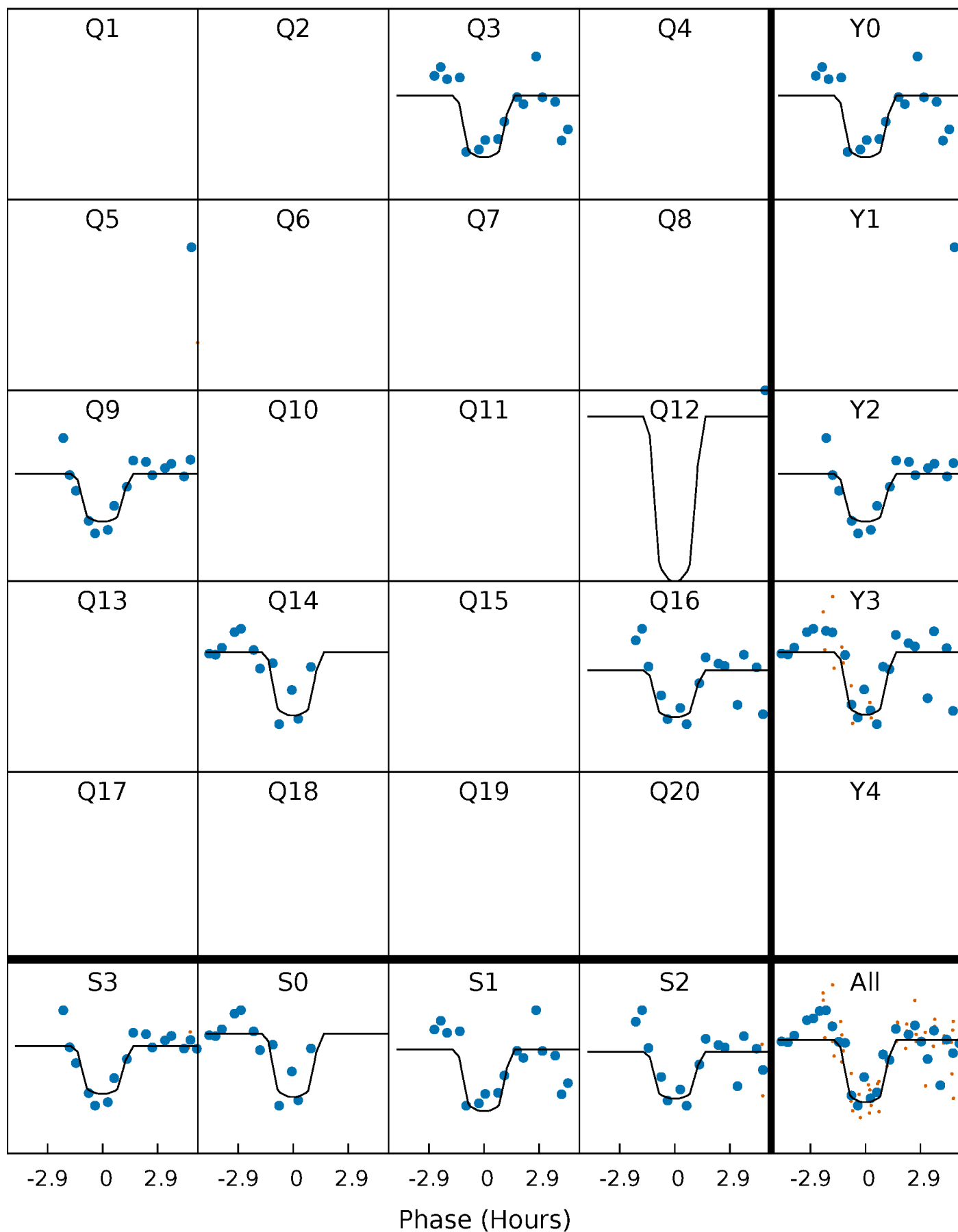
PDC Quarter-Phased Transit Curves

TCE 010678963-03 P=208.360231 Days $T_0=268.698350$ (BKJD)



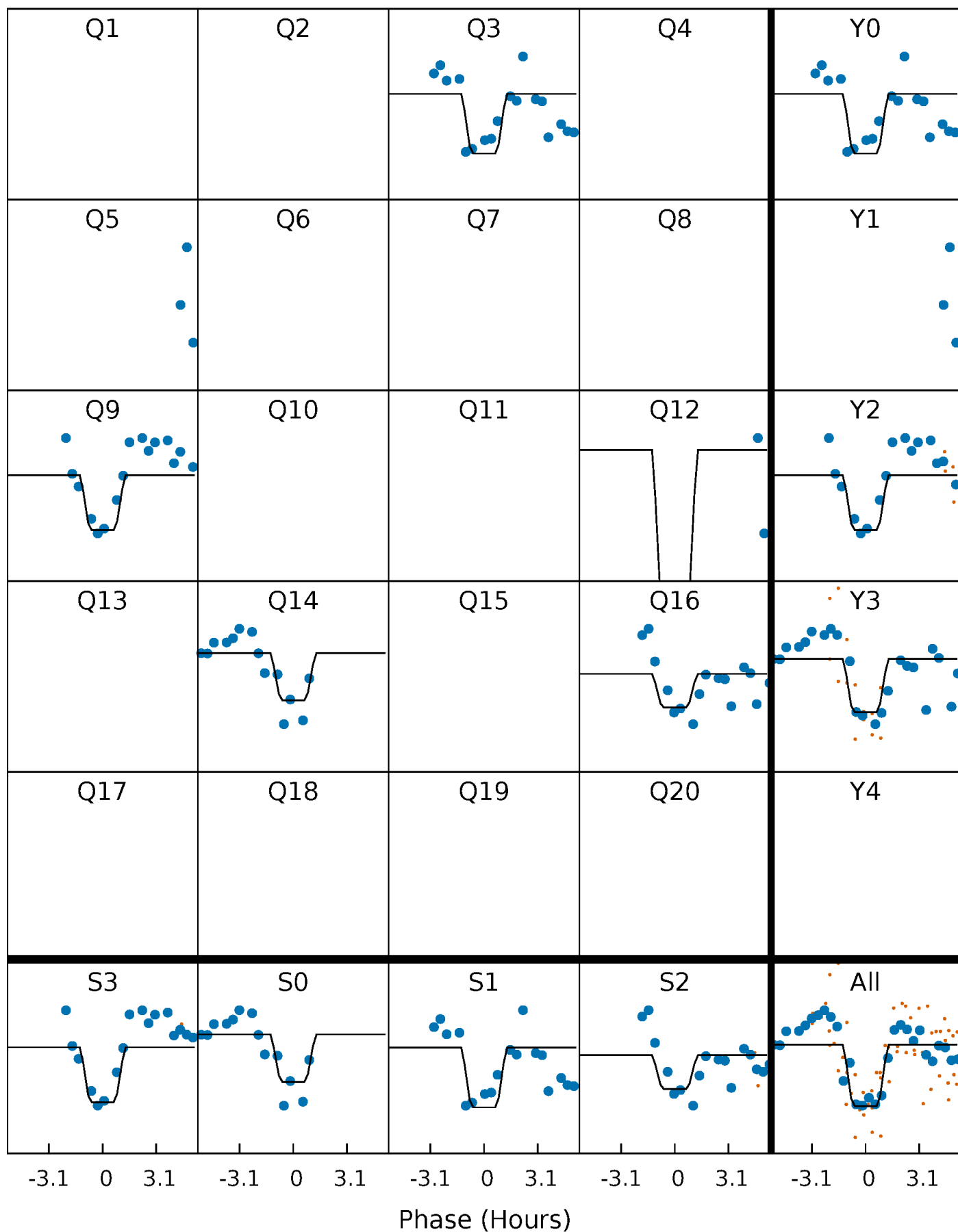
DV Quarter-Phased Transit Curves

TCE 010678963-03 P=208.360231 Days $T_0=268.698350$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

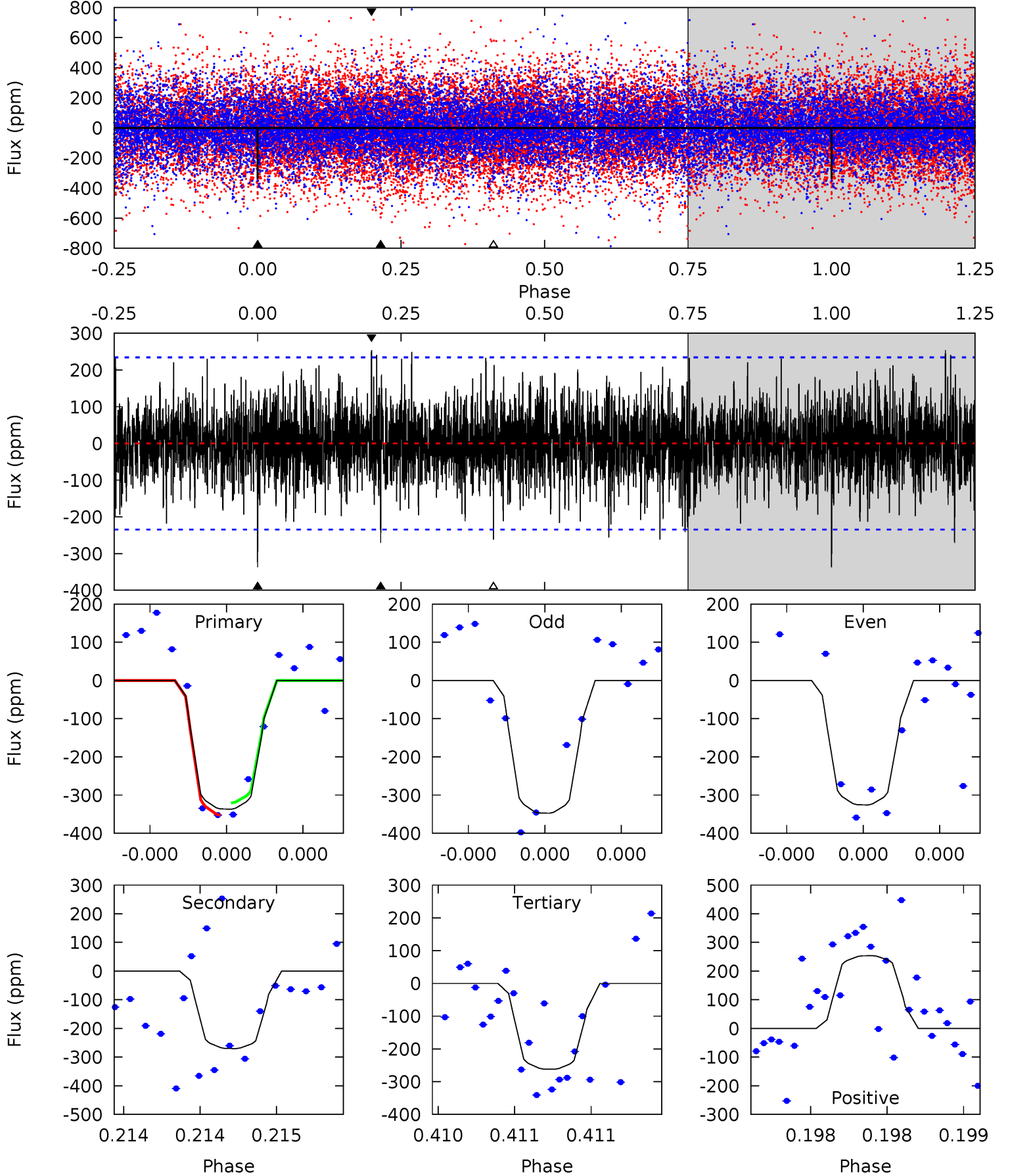
TCE 010678963-03 P=208.357098 Days $T_0=268.710304$ (BKJD)



DV Model-Shift Uniqueness Test

010678963-03, P = 208.360231 Days, E = 60.338119 Days

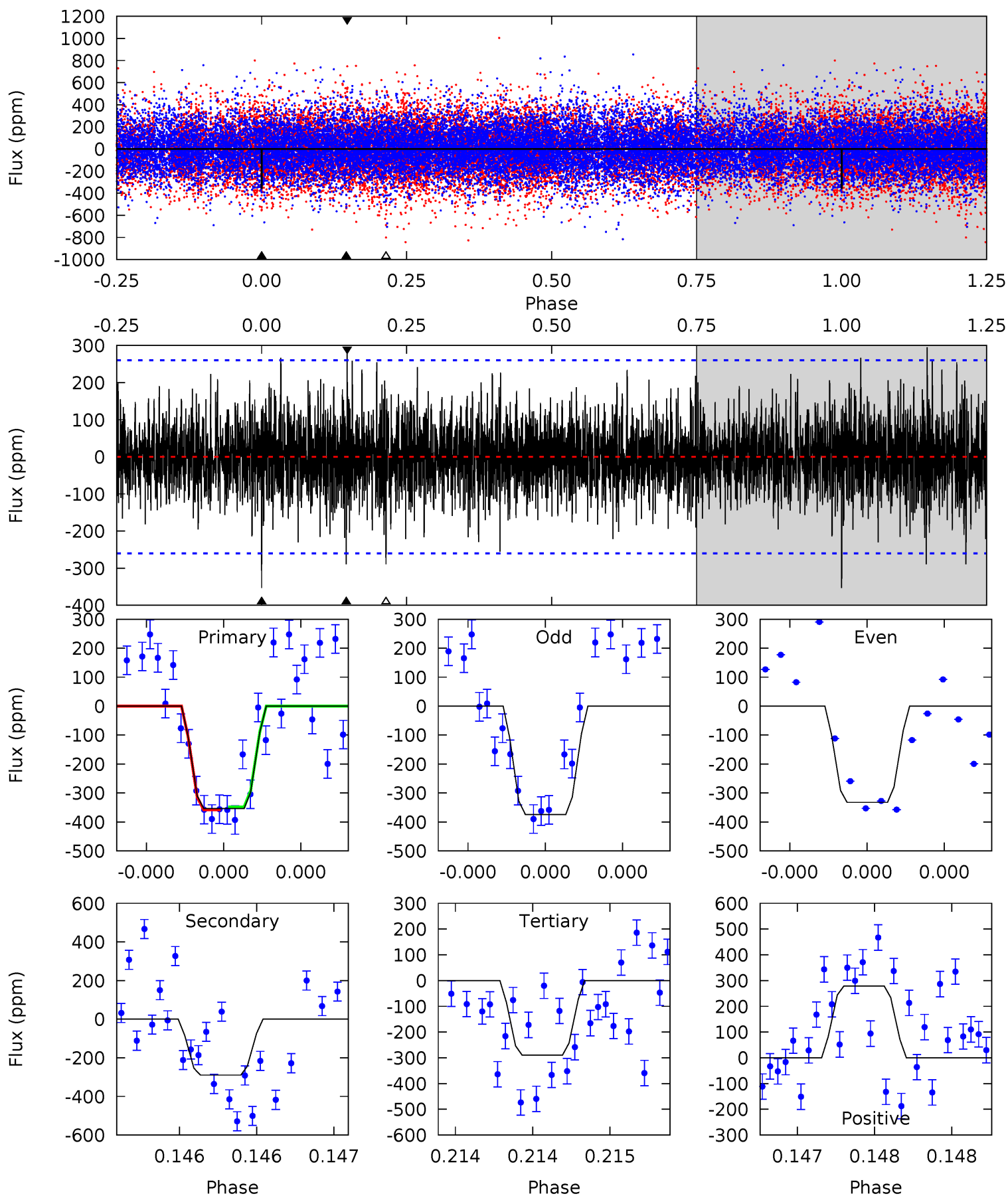
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.01	6.43	6.23	6.03	5.58	3.48	1.67	1.78	1.98	0.20	0.40	0.26	1.03	0.43	0.38



Alt Model-Shift Uniqueness Test

010678963-03, P = 208.357098 Days, E = 60.353206 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.58	6.21	6.20	5.97	5.58	3.49	1.56	1.37	1.61	0.01	0.24	0.45	1.06	0.46	0.11



Stellar Parameters For KIC 010678963

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7050^{+195}_{-335}	$4.176^{+0.108}_{-0.201}$	$0.070^{+0.200}_{-0.350}$	$1.655^{+0.539}_{-0.290}$	$1.497^{+0.214}_{-0.236}$	$0.465^{+0.278}_{-0.247}$
	+3%/-5%	+3%/-5%	+286%/-500%	+33%/-18%	+14%/-16%	+60%/-53%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 010678963-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-270 ± 42	$4.50^{+3.94}_{-2.79}$	635^{+47}_{-39}	5719^{+4373}_{-1328}	4536^{+26845}_{-3261}
Alt.	-289 ± 47	$4.61^{+3.93}_{-3.16}$	634^{+48}_{-41}	5774^{+5851}_{-1379}	4520^{+45154}_{-3224}

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 $A_{obs} \gg 1.0$

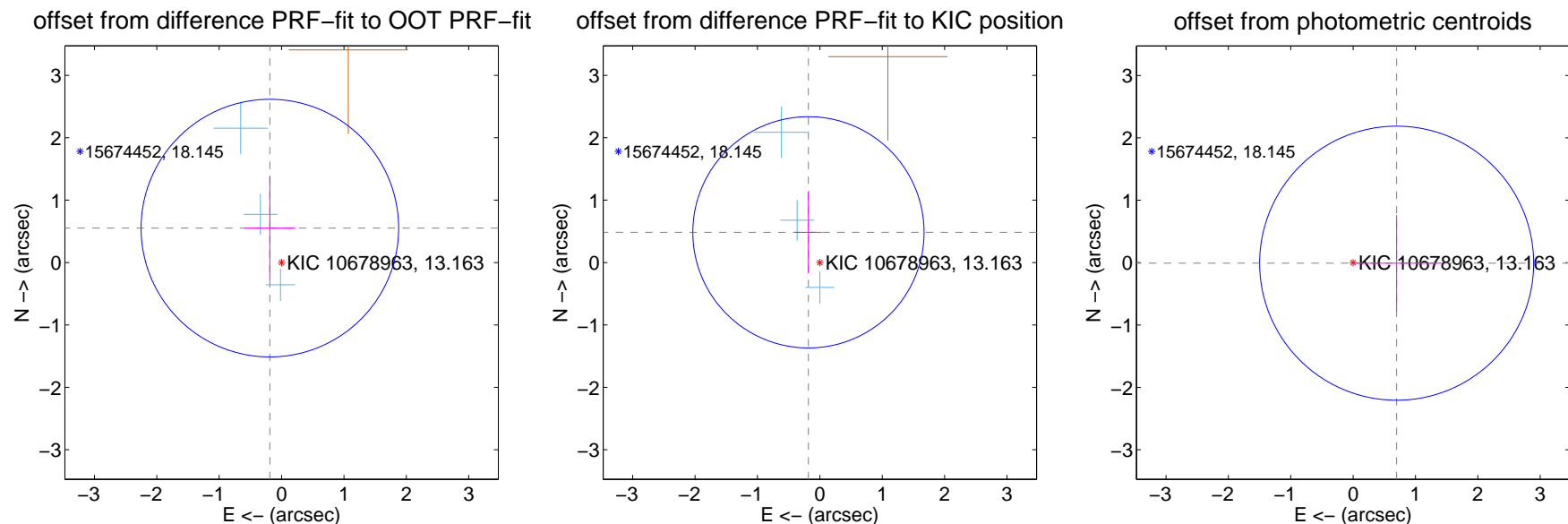
DV Centroid Data

Supplemental centroid analysis for 010678963-03. Kepler magnitude: 13.16. Transit SNR 8.76

There are 3 quarters with good PRF difference image offsets

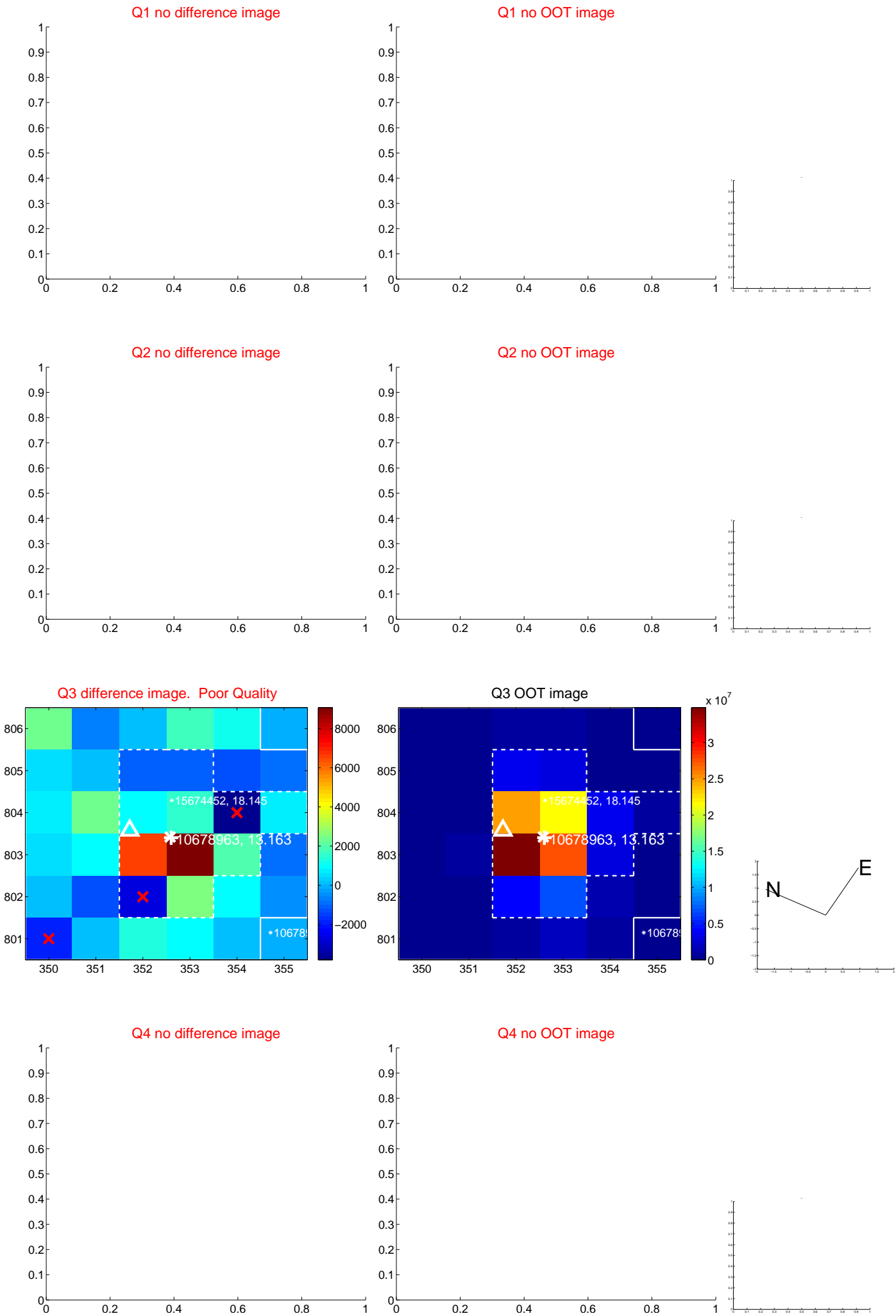
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.583 ± 0.688	0.85	0.188 ± 0.410	0.552 ± 0.837
PRF-fit source offset from KIC position	0.518 ± 0.618	0.84	0.183 ± 0.216	0.484 ± 0.655
photometric centroid source offset	0.70 ± 0.73	0.95	-0.70 ± 0.73	-0.01 ± 0.77



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

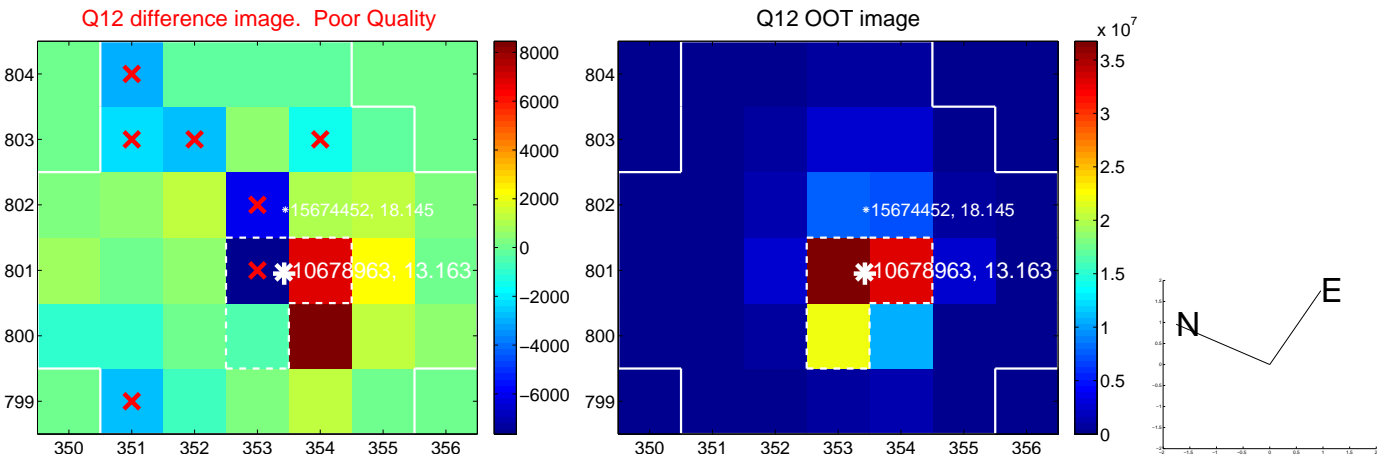
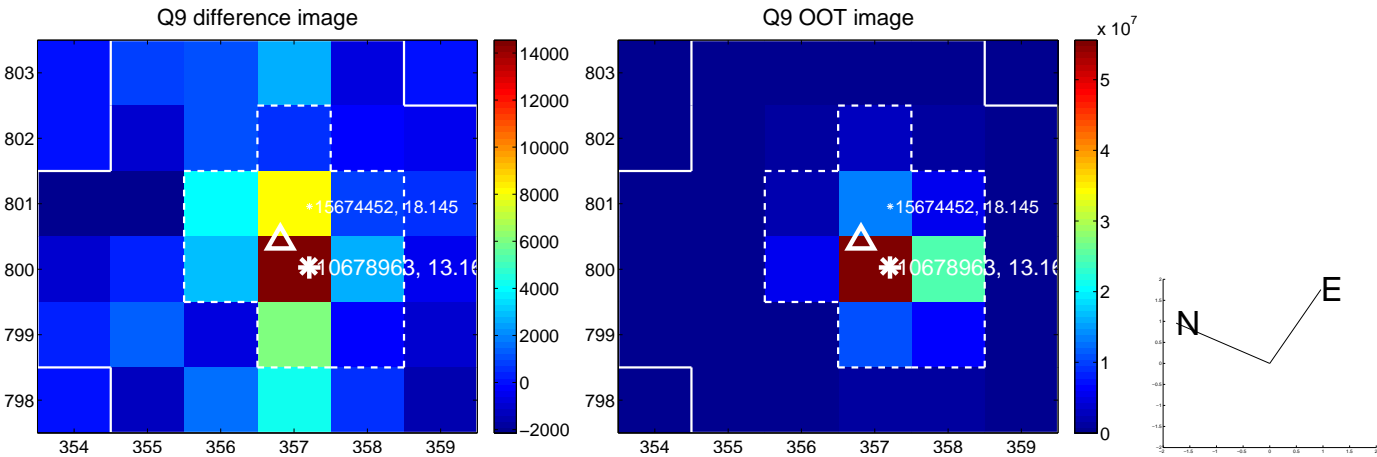
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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

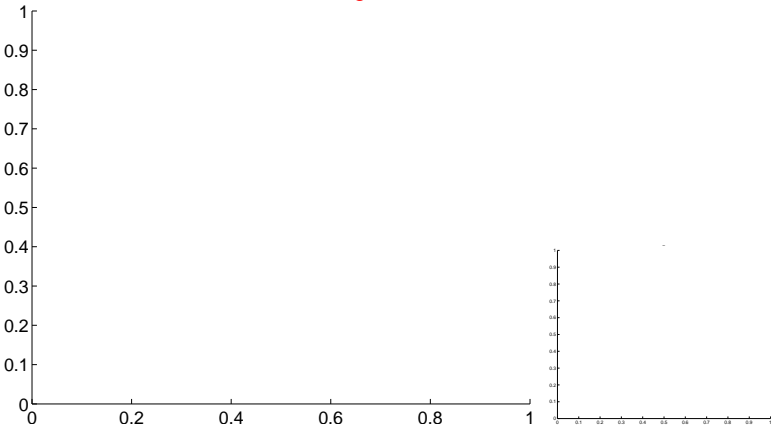


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

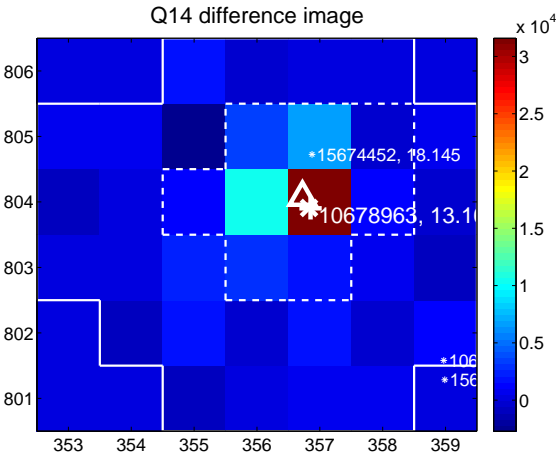
Q13 no difference image



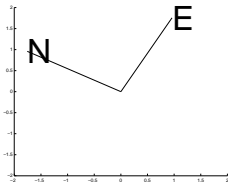
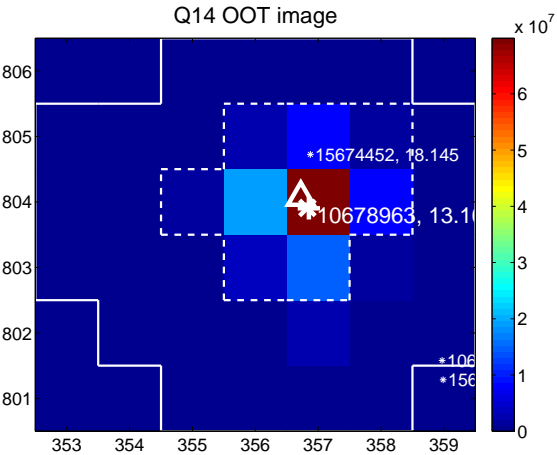
Q13 no OOT image



Q14 difference image



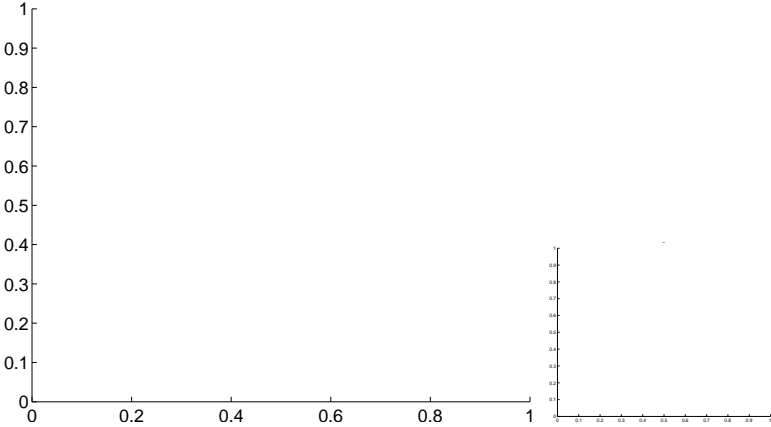
Q14 OOT image



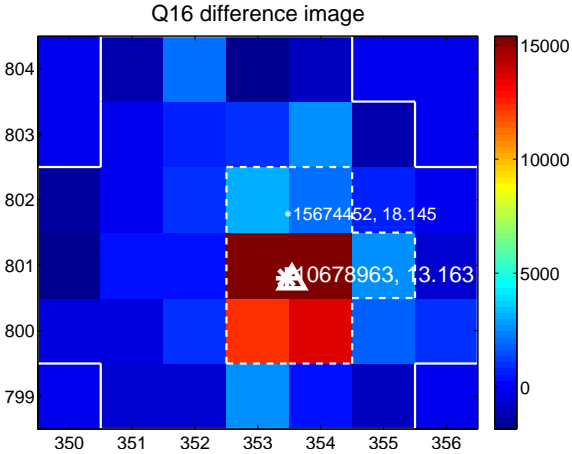
Q15 no difference image



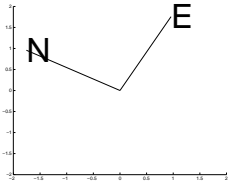
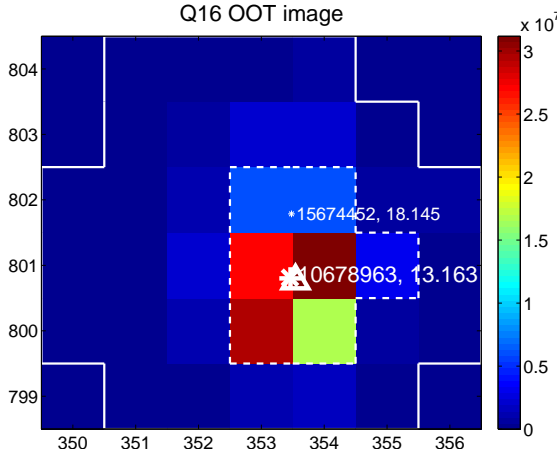
Q15 no OOT image



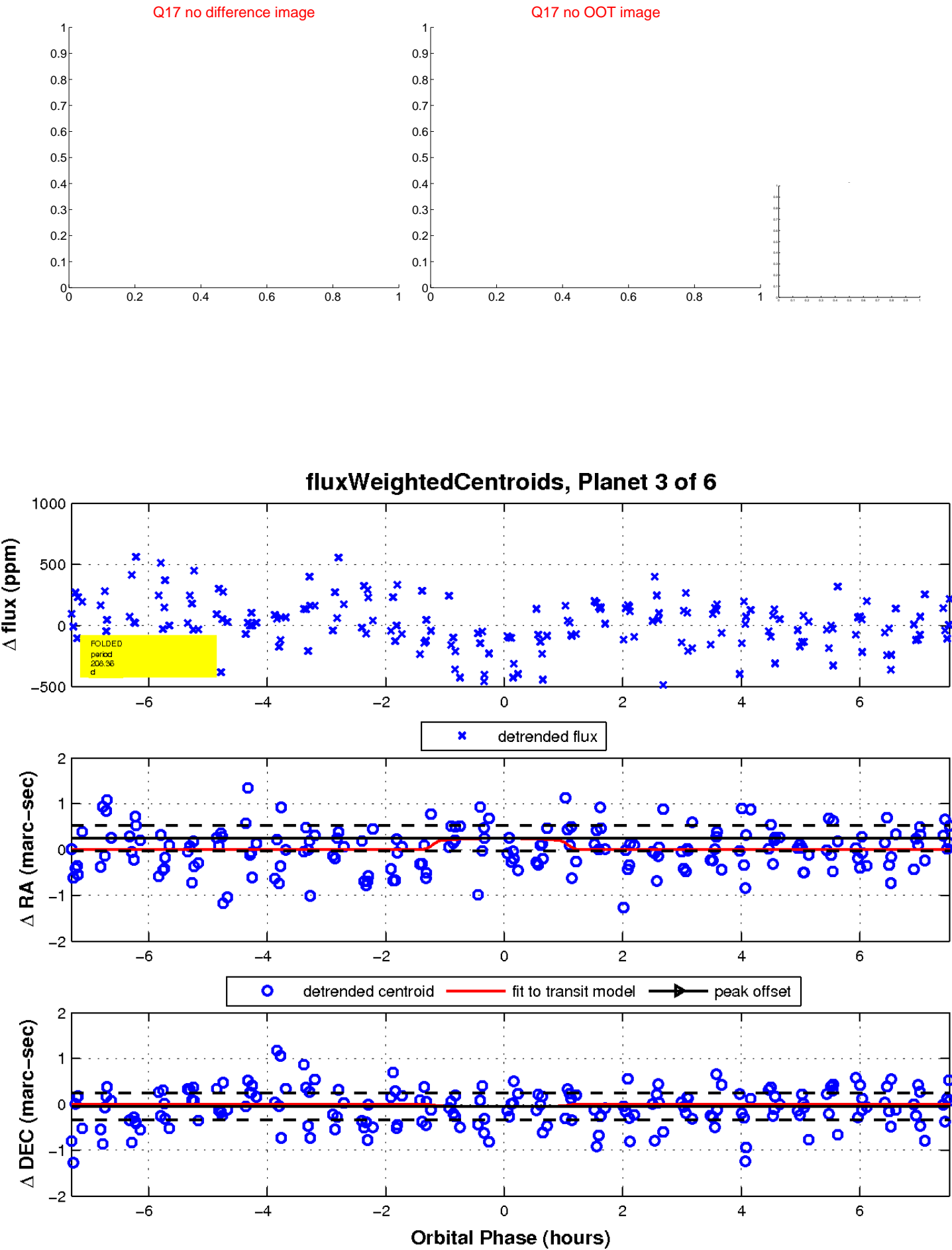
Q16 difference image



Q16 OOT image

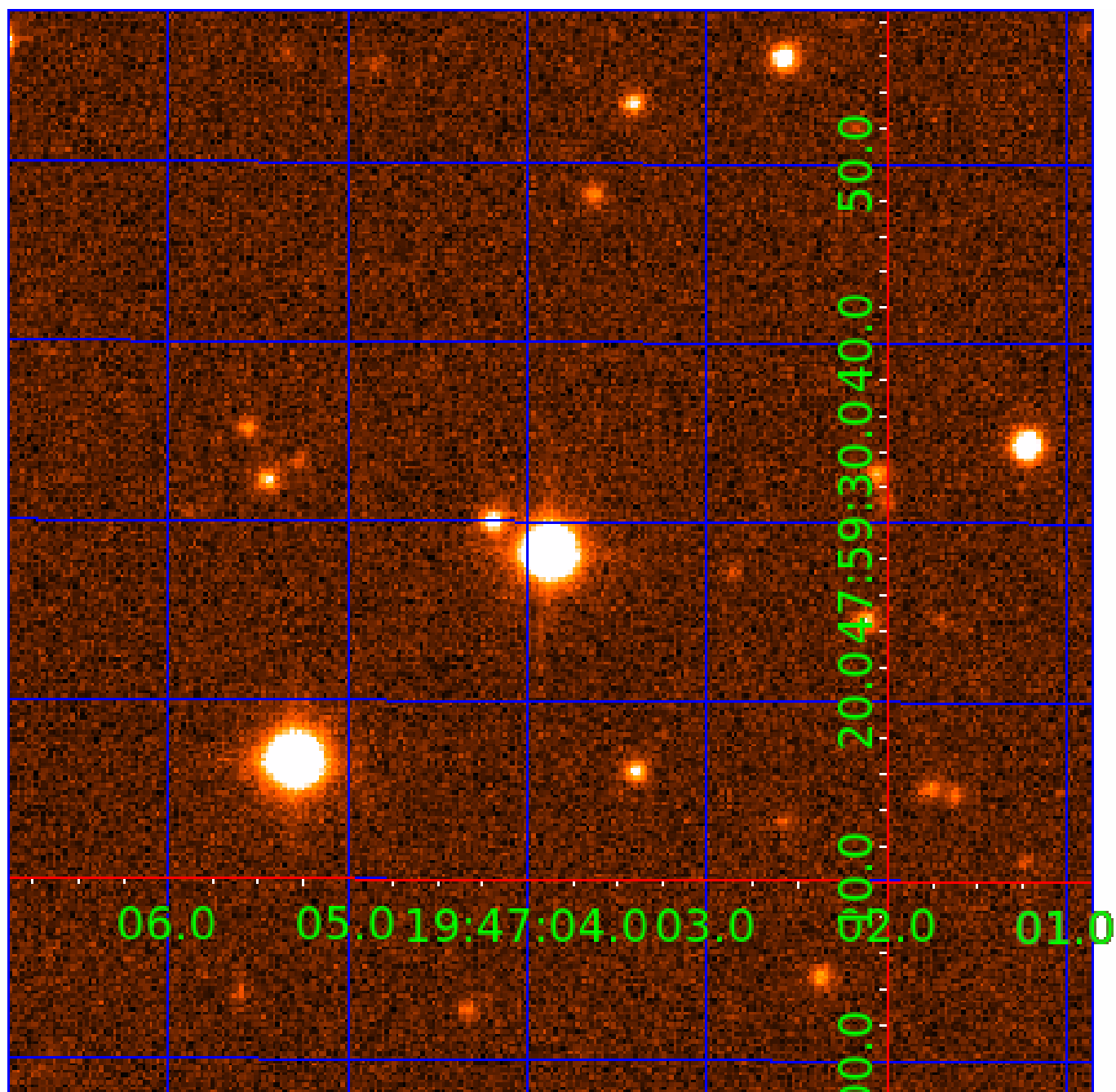


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010678963

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})
010678963-01	OBS	No	0.876703	131.600549	36.7	3.265	8.0	10.0	1.66	7050	1.17	14400.56
010678963-02	OBS	No	35.873976	136.927565	144.6	4.037	8.0	6.5	1.66	7050	2.31	102.13
010678963-03	OBS	No	208.360231	268.698350	375.0	2.516	7.4	8.8	1.66	7050	3.68	9.78
010678963-04	OBS	No	51.293886	134.787280	278.4	4.618	7.3	7.9	1.66	7050	3.92	63.40
010678963-05	OBS	No	325.471818	266.316564	386.9	4.523	7.3	6.6	1.66	7050	3.61	5.40
010678963-06	OBS	No	195.941873	268.482435	449.8	2.851	7.2	7.4	1.66	7050	3.83	10.62

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010678963-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
010678963-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
010678963-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678963-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_ALT
010678963-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678963-06	OBS	FP	0.03	1	0	0	0	ALL_TRANS_CHASES—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.

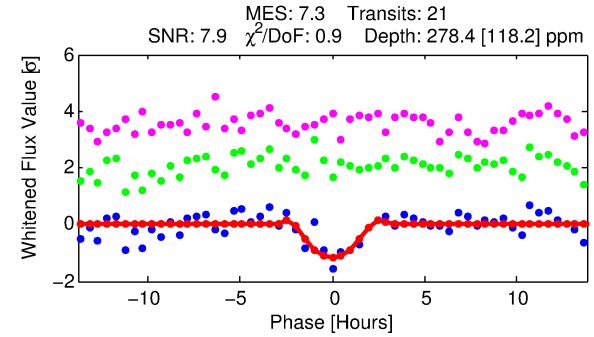
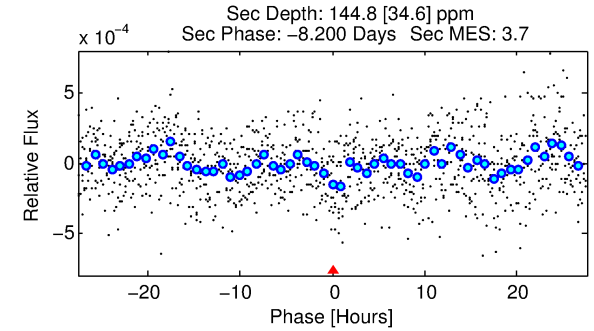
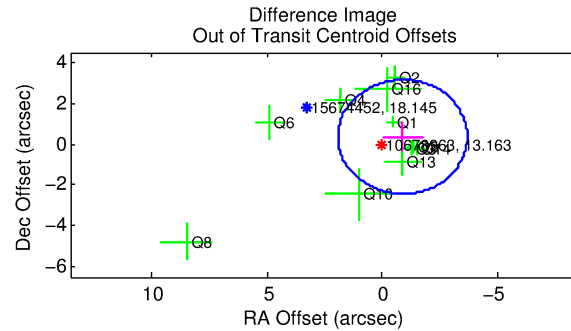
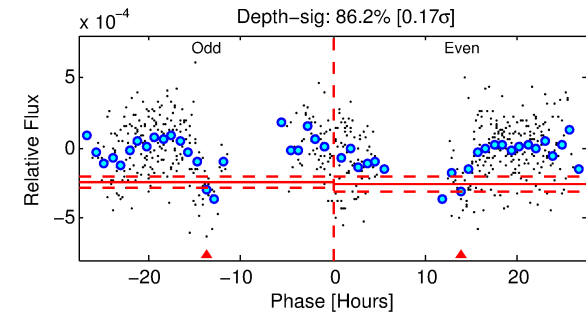
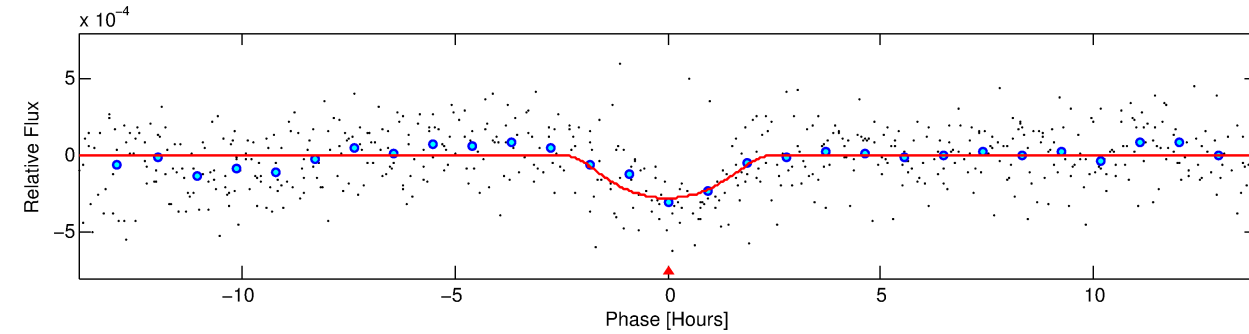
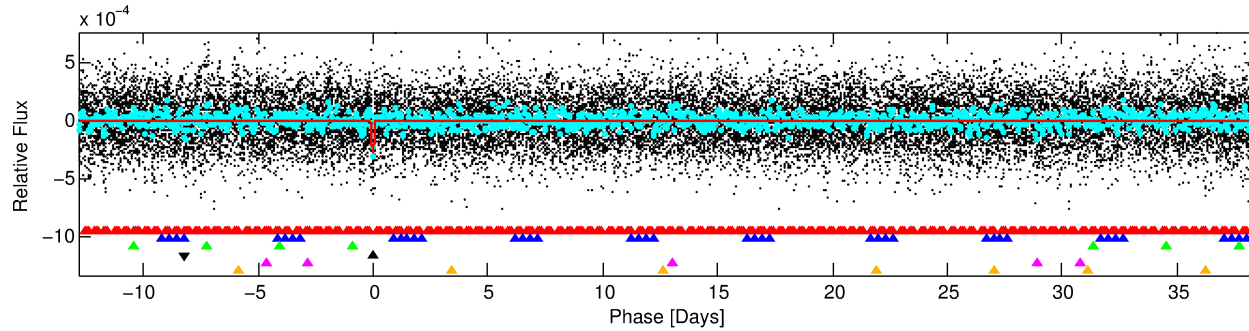
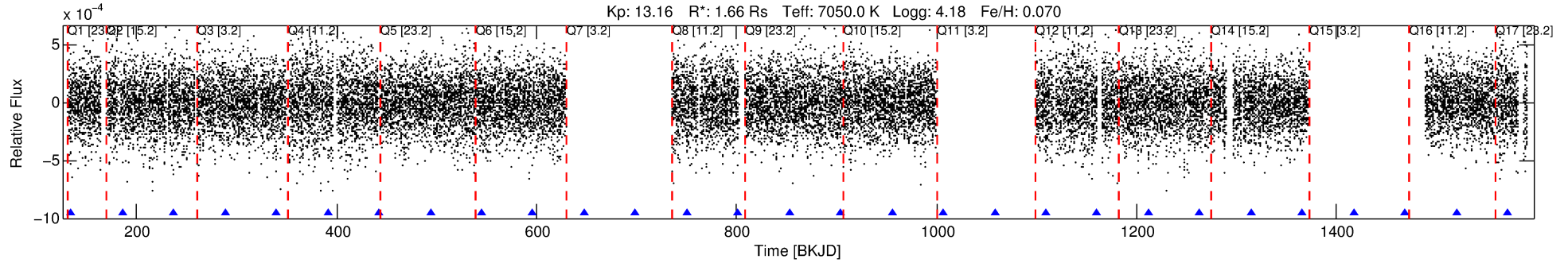
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678963-04

No Significant Match Found

DV One-Page Summary

KIC: 10678963 Candidate: 4 of 6 Period: 51.294 d



DV Fit Results:

Period = 51.29389 [0.00075] d
Epoch = 134.7873 [0.0114] BKJD
Rp/R* = 0.0217 [0.0136]
a/R* = 22.91 [8.21]
b = 0.99 [0.03]
Seff = 63.40 [26.78]
Teff = 720 [76] K
Rp = 3.92 [2.77] Re
a = 0.3092 [0.0824] AU
Ag = 496.02 [660.45] [0.75σ]
Teffp = 5250 [1694] K [2.67σ]

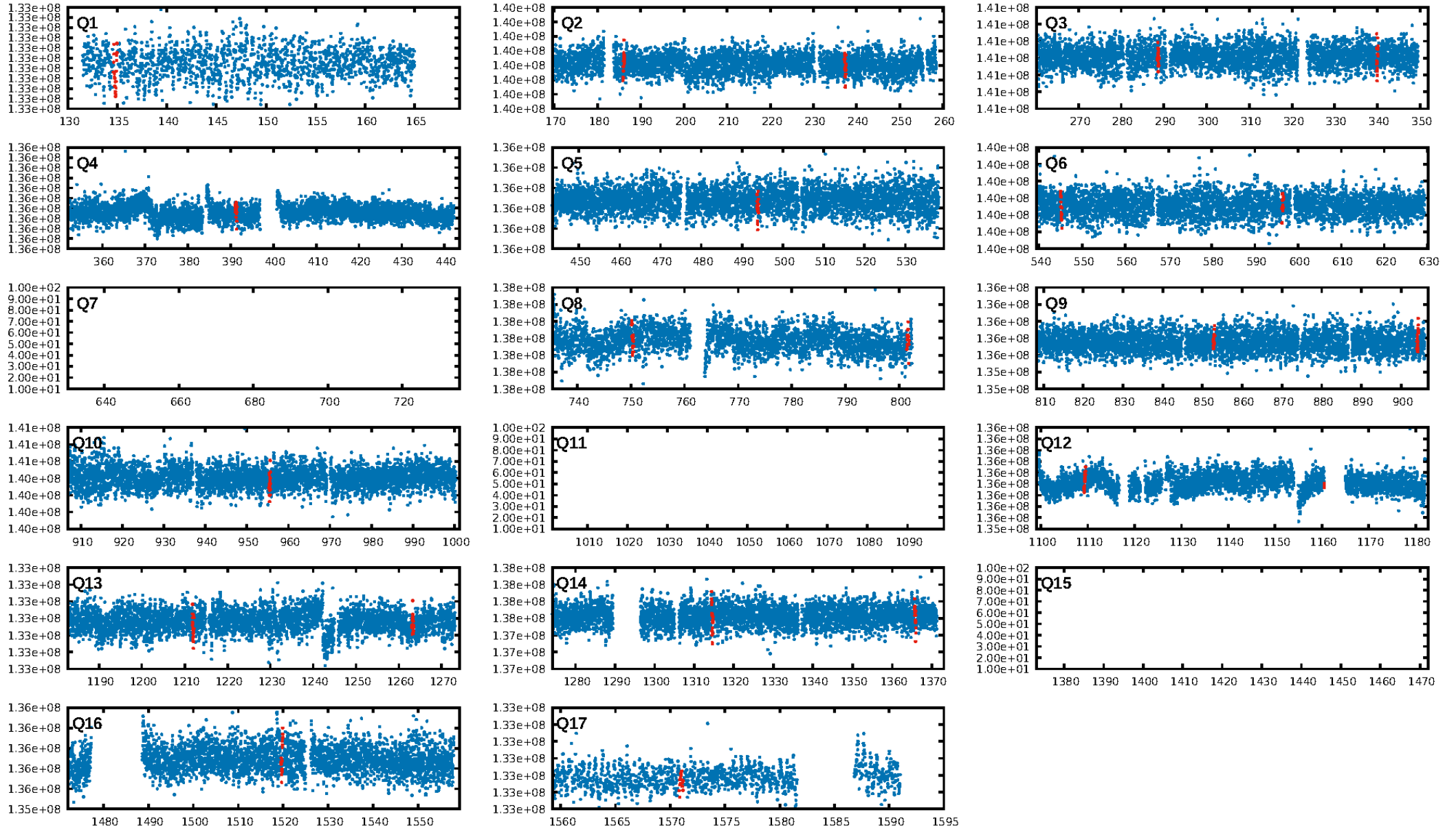
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [60.34σ]
LongPeriod-sig: 100.0% [639.68σ]
ModelChiSquare2-sig: 78.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.82e-09
RollingBand-fgt: 1.00 [19/19]
GhostDiagnostic-chr: 0.9491
Centroid-sig: 0.0%
Centroid-so: 2.009 arcsec [3.96σ]
OotOffset-rm: 0.939 arcsec [1.01σ]
KicOffset-rm: 0.926 arcsec [1.05σ]
OotOffset-st: 4/1/3/3 [11]
KicOffset-st: 4/1/3/3 [11]
DiffImageQuality-fgm: 0.45 [5/11]
DiffImageOverlap-fno: 0.00 [0/14]

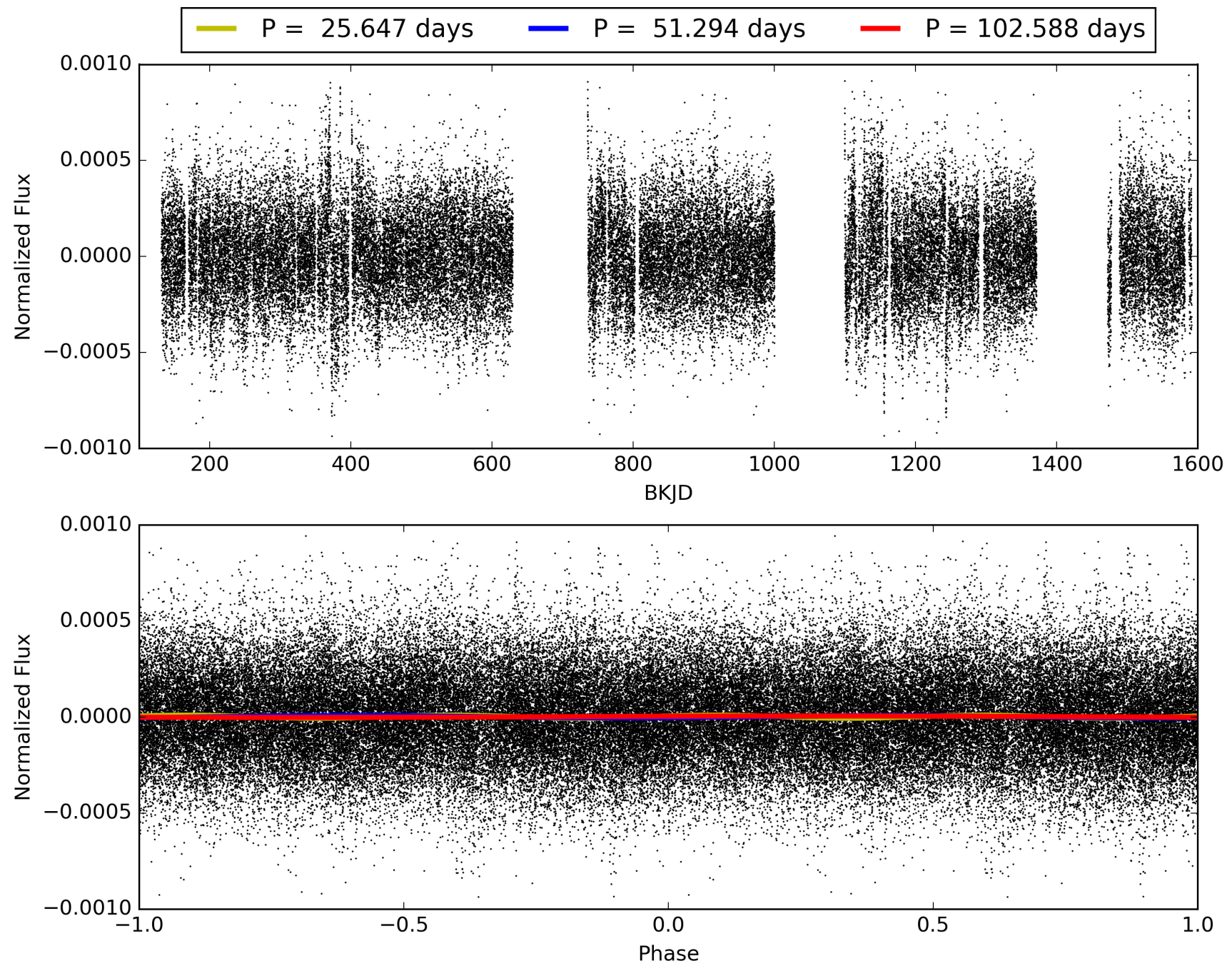
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:05:20 Z

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

TCE 010678963-04, PDC Light Curves

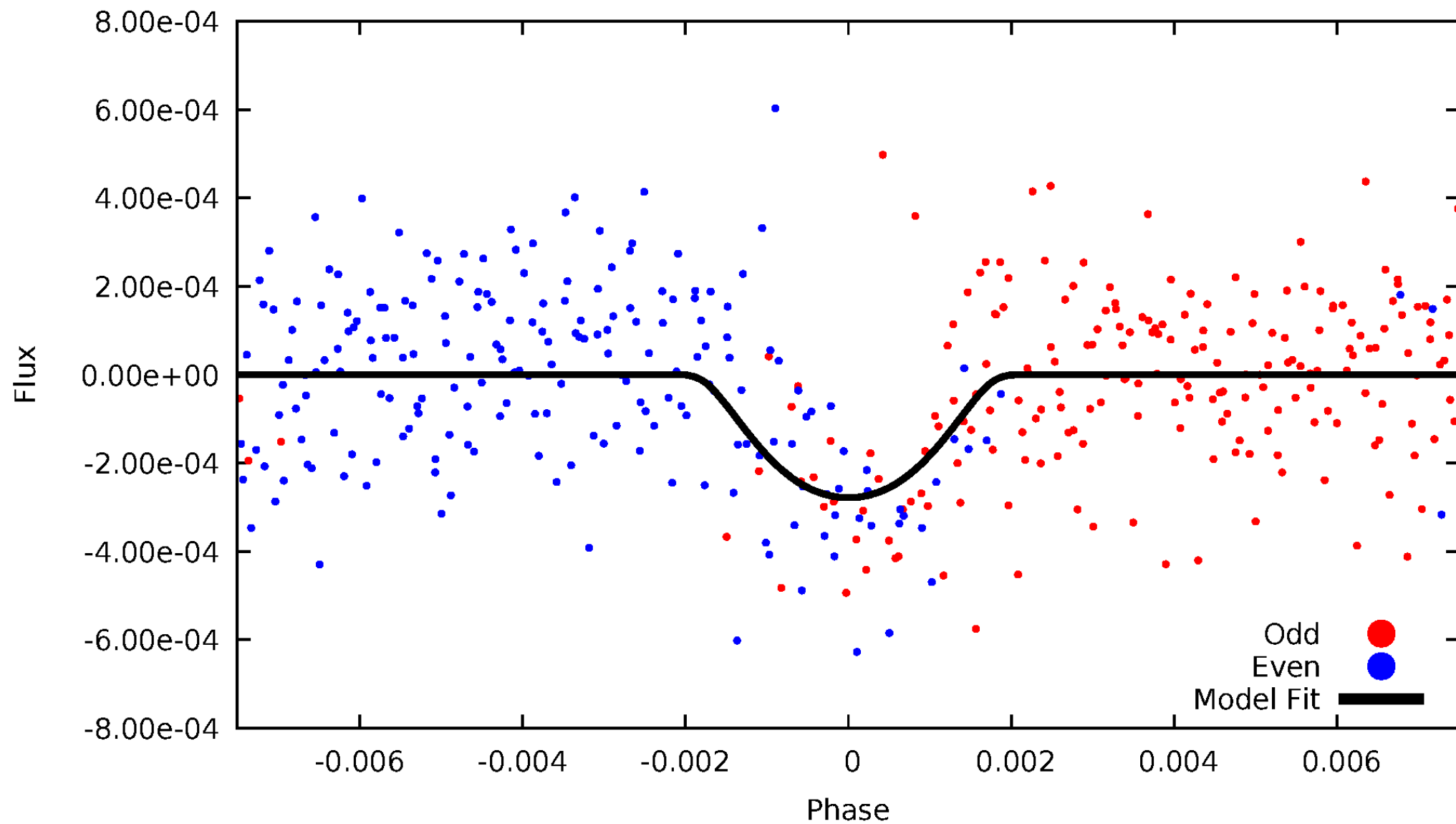


TCE 010678963-04



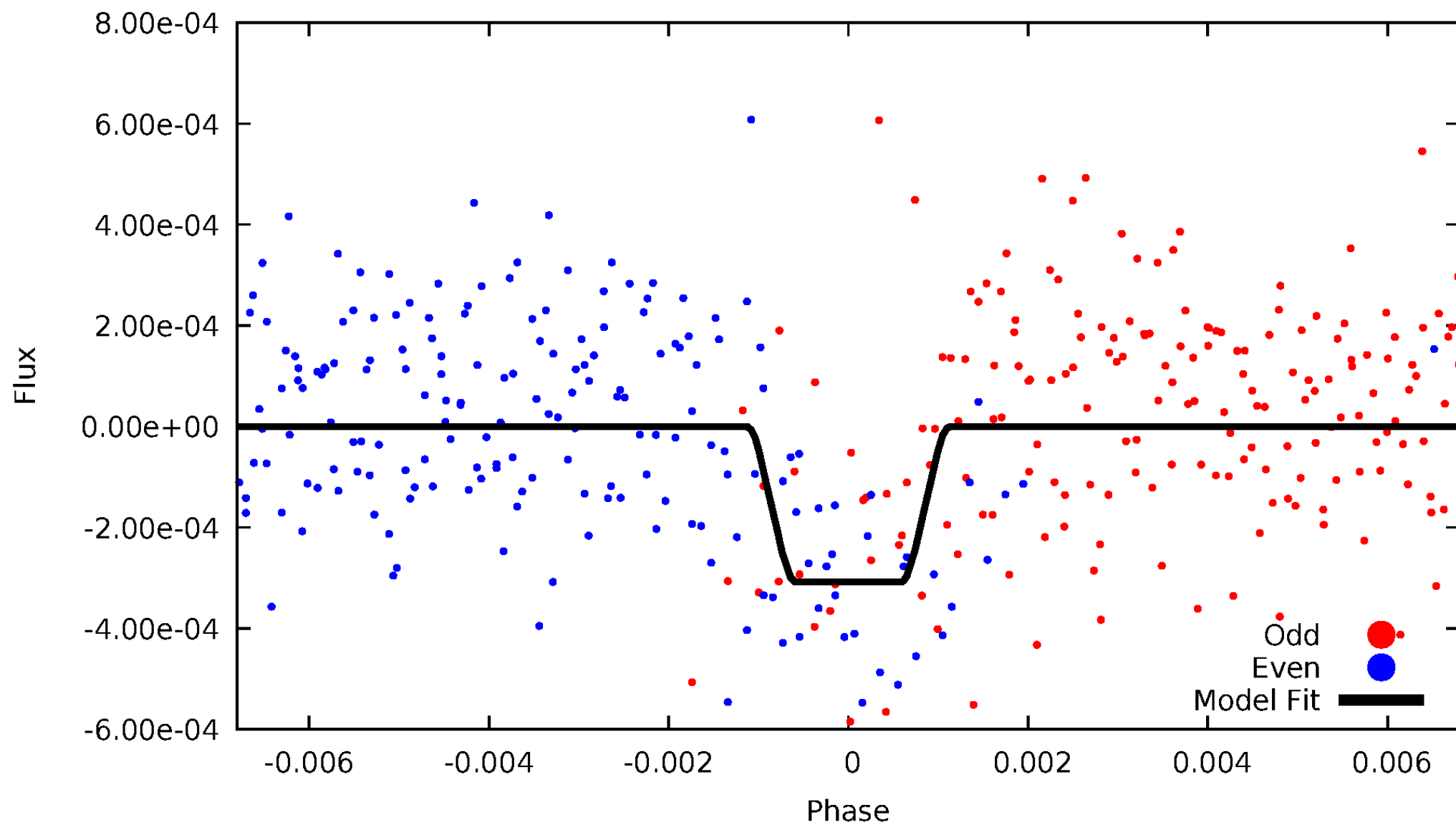
DV Odd/Even

TCE 010678963-04



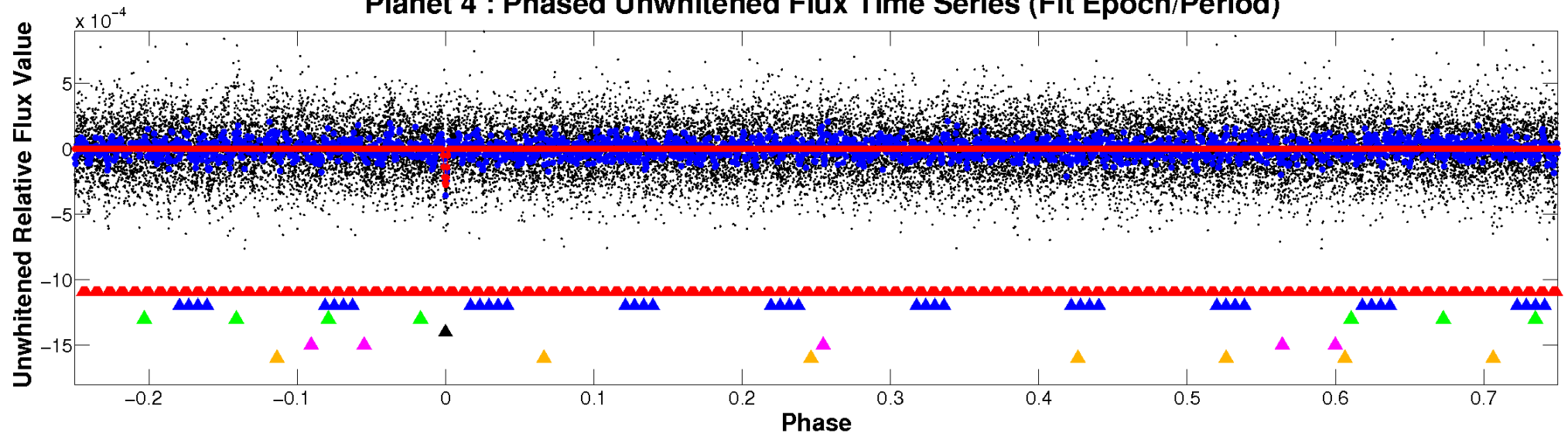
ALT Odd/Even

TCE 010678963-04

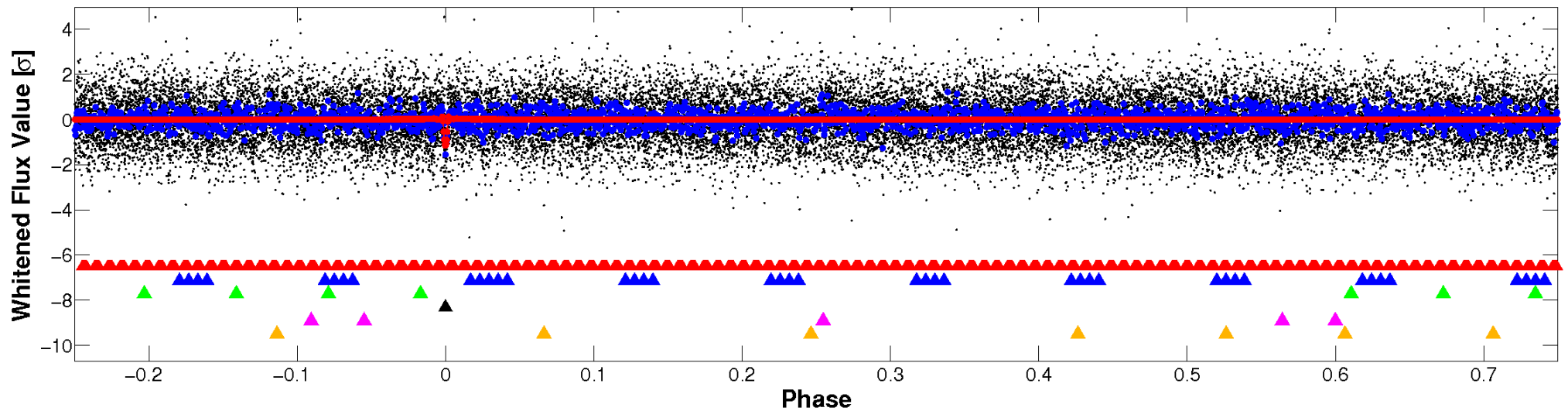


Non-Whitened Vs. Whitened Light Curve

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

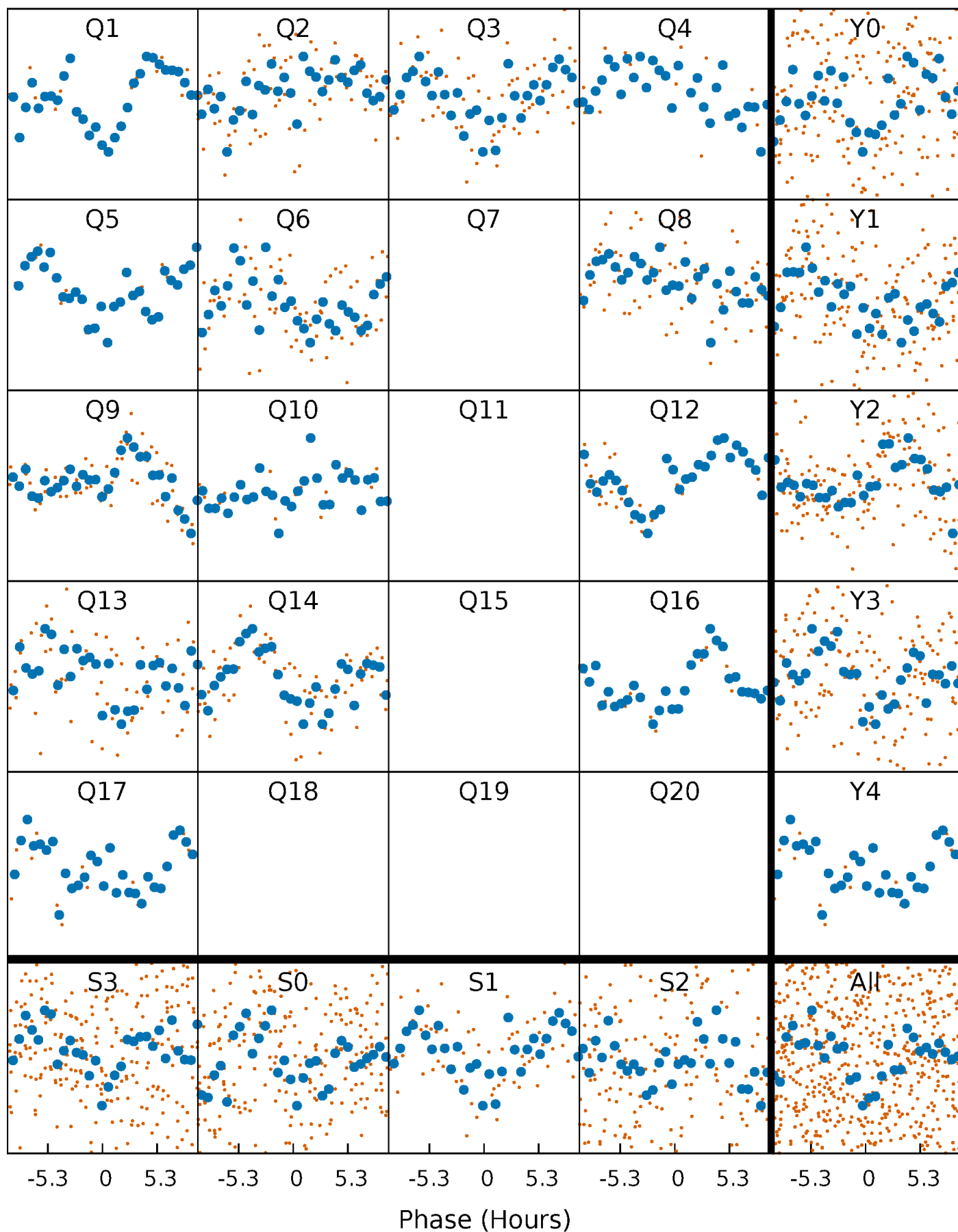


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



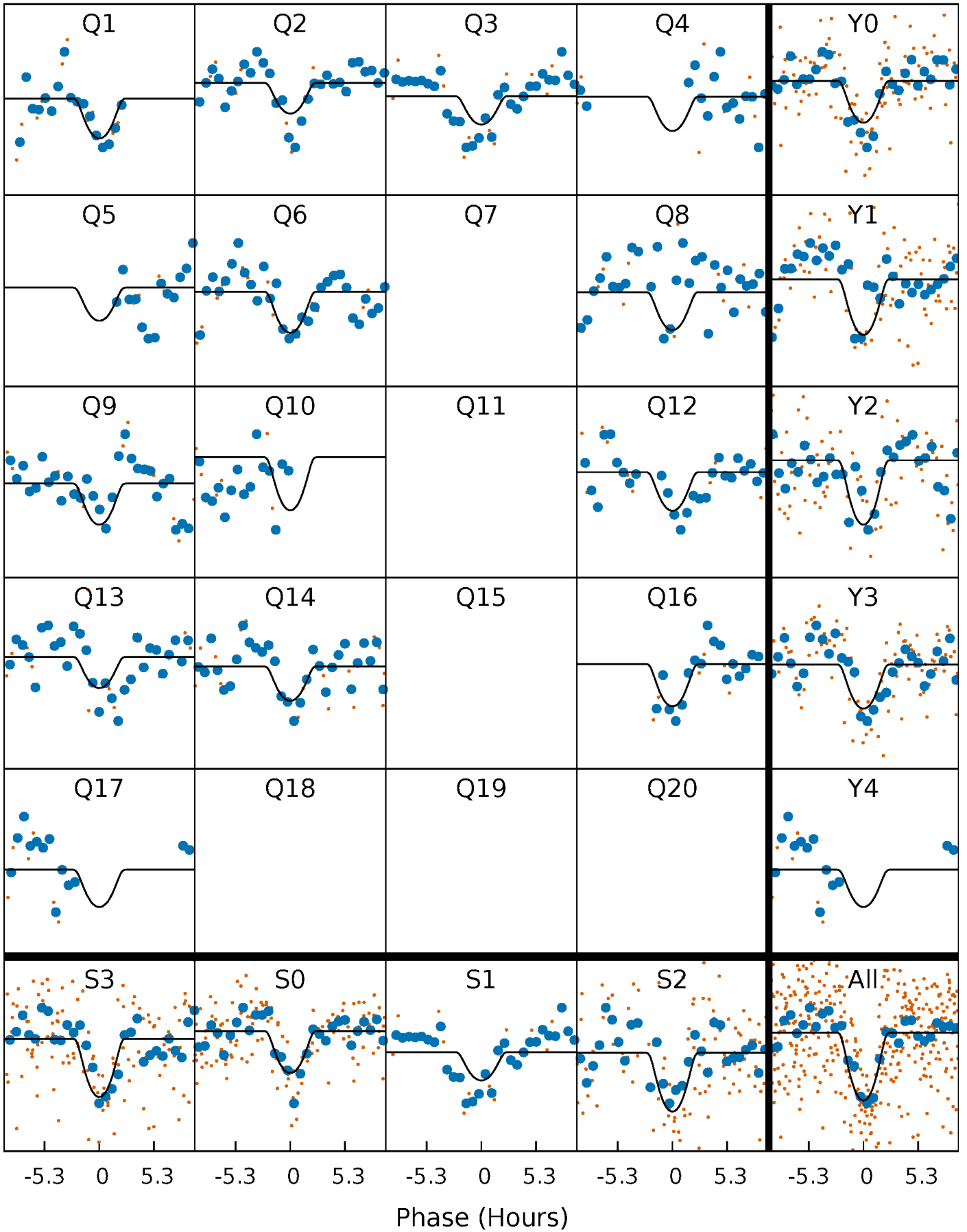
PDC Quarter-Phased Transit Curves

TCE 010678963-04 P= 51.293886 Days $T_0=134.787280$ (BKJD)



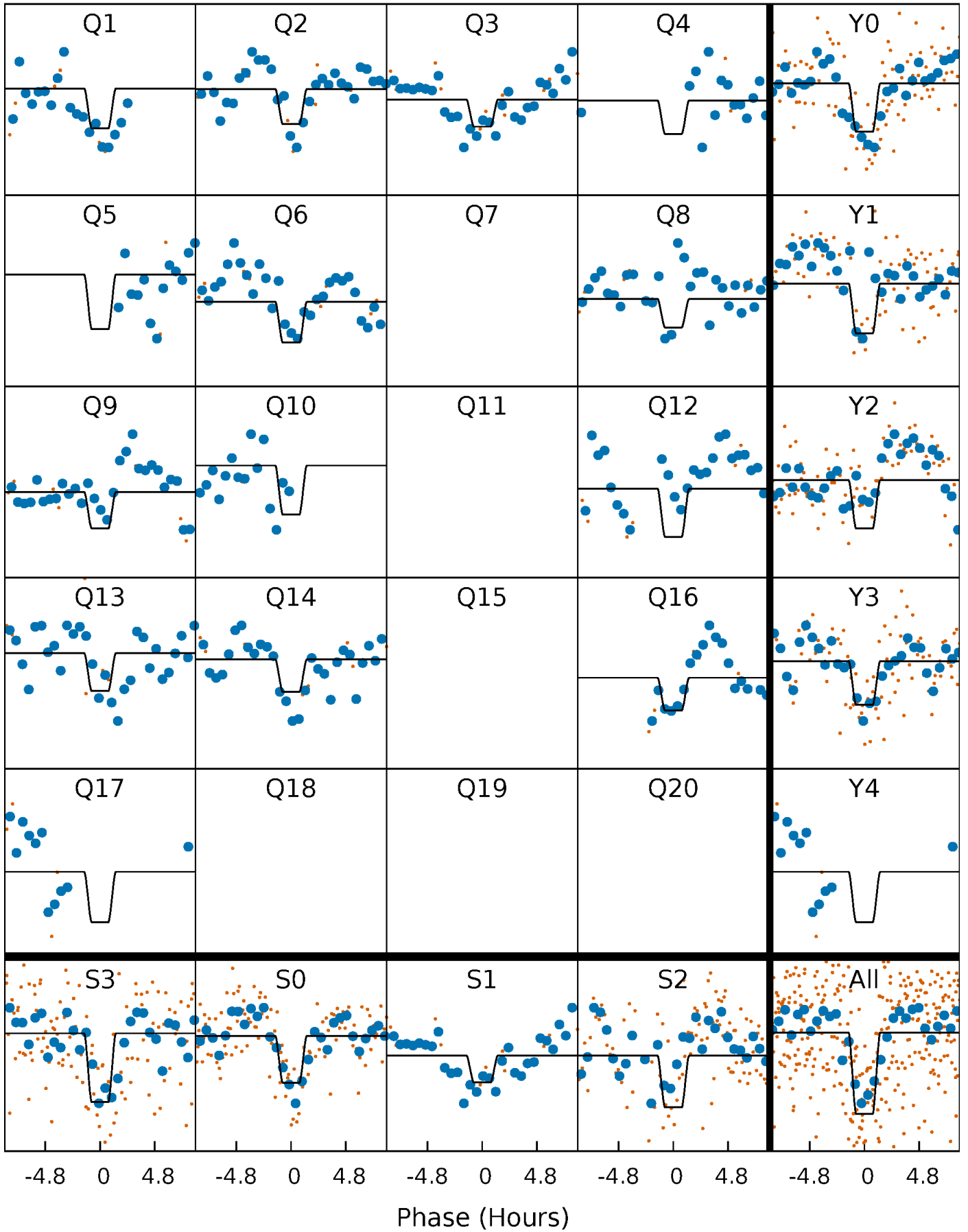
DV Quarter-Phased Transit Curves

TCE 010678963-04 P= 51.293886 Days $T_0=134.787280$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

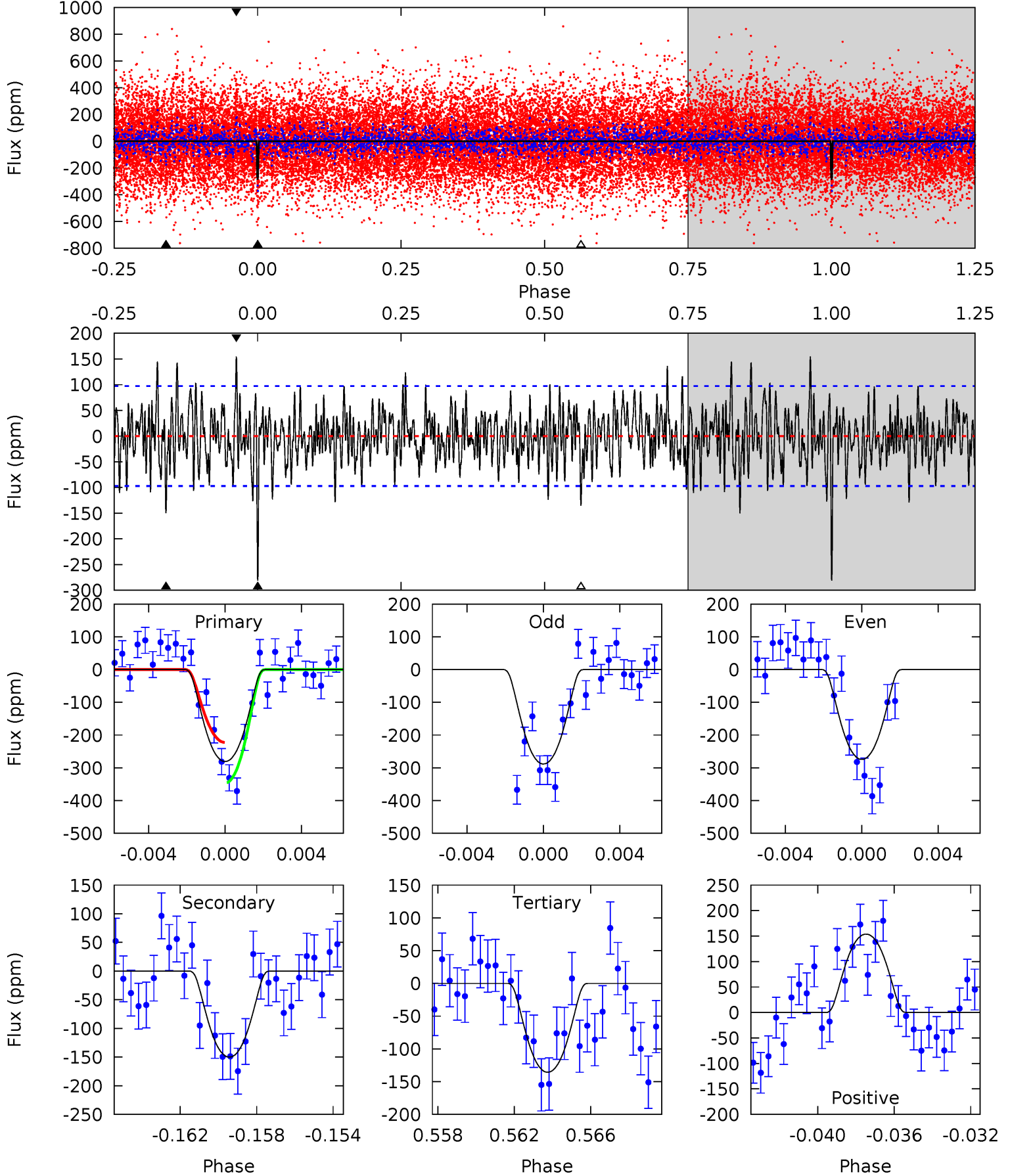
TCE 010678963-04 P= 51.294489 Days $T_0=134.783566$ (BKJD)



DV Model-Shift Uniqueness Test

010678963-04, P = 51.293886 Days, E = 83.493394 Days

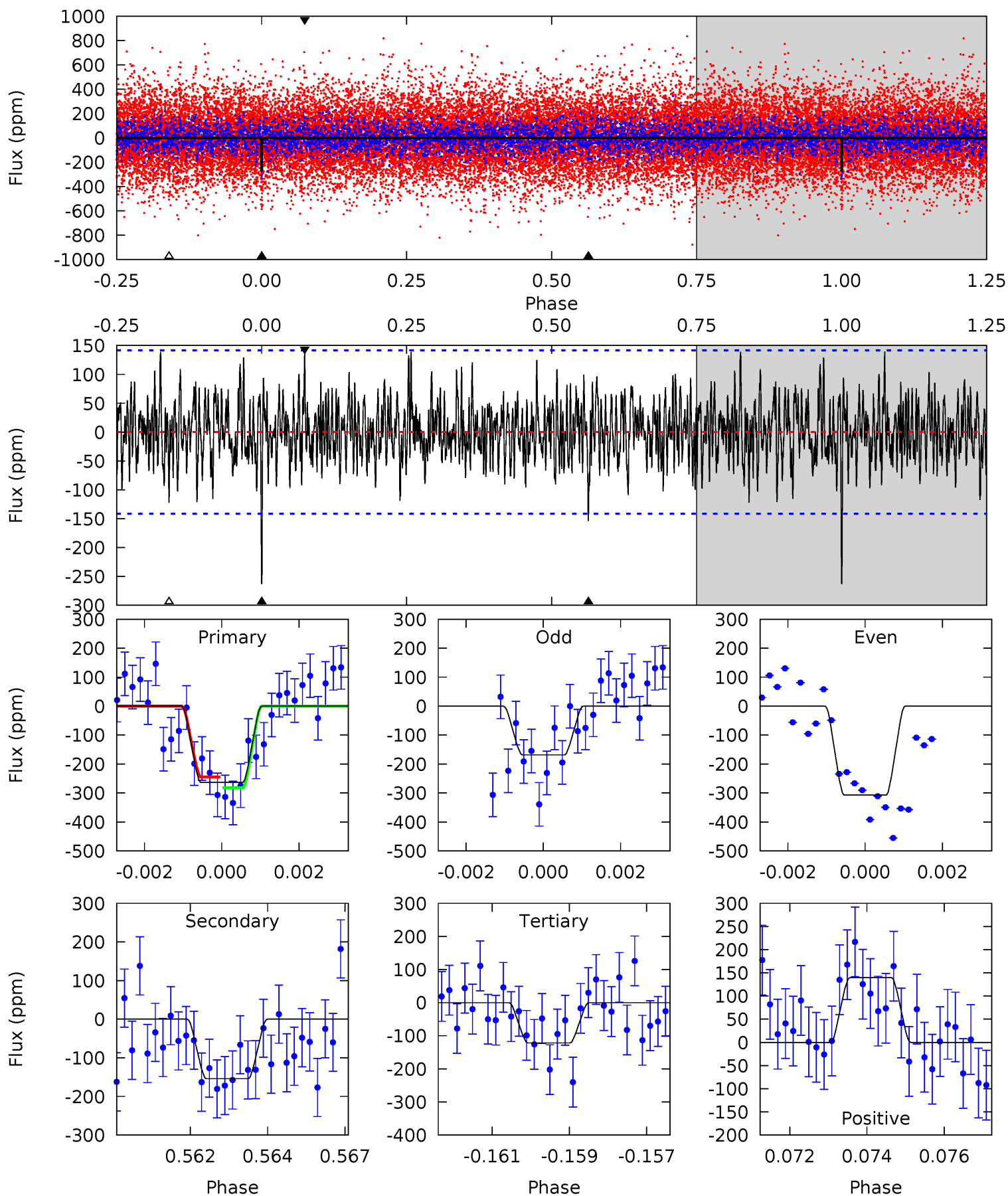
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.0	8.03	7.26	8.23	5.20	2.88	2.35	7.77	6.79	0.77	-0.20	0.38	0.44	0.35	3.28



Alt Model-Shift Uniqueness Test

010678963-04, P = 51.294489 Days, E = 83.489077 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.88	5.79	4.58	5.23	5.31	3.06	1.63	5.30	4.65	1.21	0.55	2.64	0.86	0.35	0.71



Stellar Parameters For KIC 010678963

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7050^{+195}_{-335}	$4.176^{+0.108}_{-0.201}$	$0.070^{+0.200}_{-0.350}$	$1.655^{+0.539}_{-0.290}$	$1.497^{+0.214}_{-0.236}$	$0.465^{+0.278}_{-0.247}$
	+3%/-5%	+3%/-5%	+286%/-500%	+33%/-18%	+14%/-16%	+60%/-53%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 010678963-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-150 ± 19	$4.02^{+2.60}_{-2.38}$	1010^{+82}_{-65}	5232^{+2943}_{-899}	475^{+2165}_{-297}
Alt.	-154 ± 27	$3.57^{+2.40}_{-2.16}$	1013^{+78}_{-62}	5593^{+3834}_{-1083}	622^{+3356}_{-408}

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

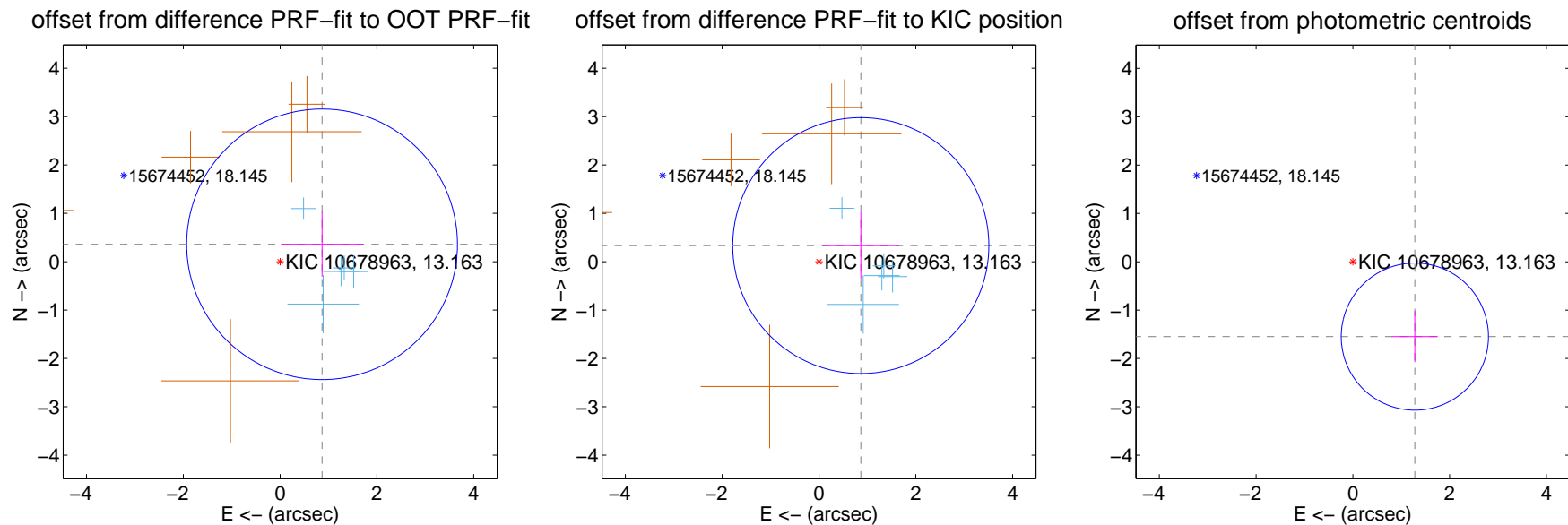
DV Centroid Data

Supplemental centroid analysis for 010678963-04. Kepler magnitude: 13.16. Transit SNR 7.86

There are 5 quarters with good PRF difference image offsets

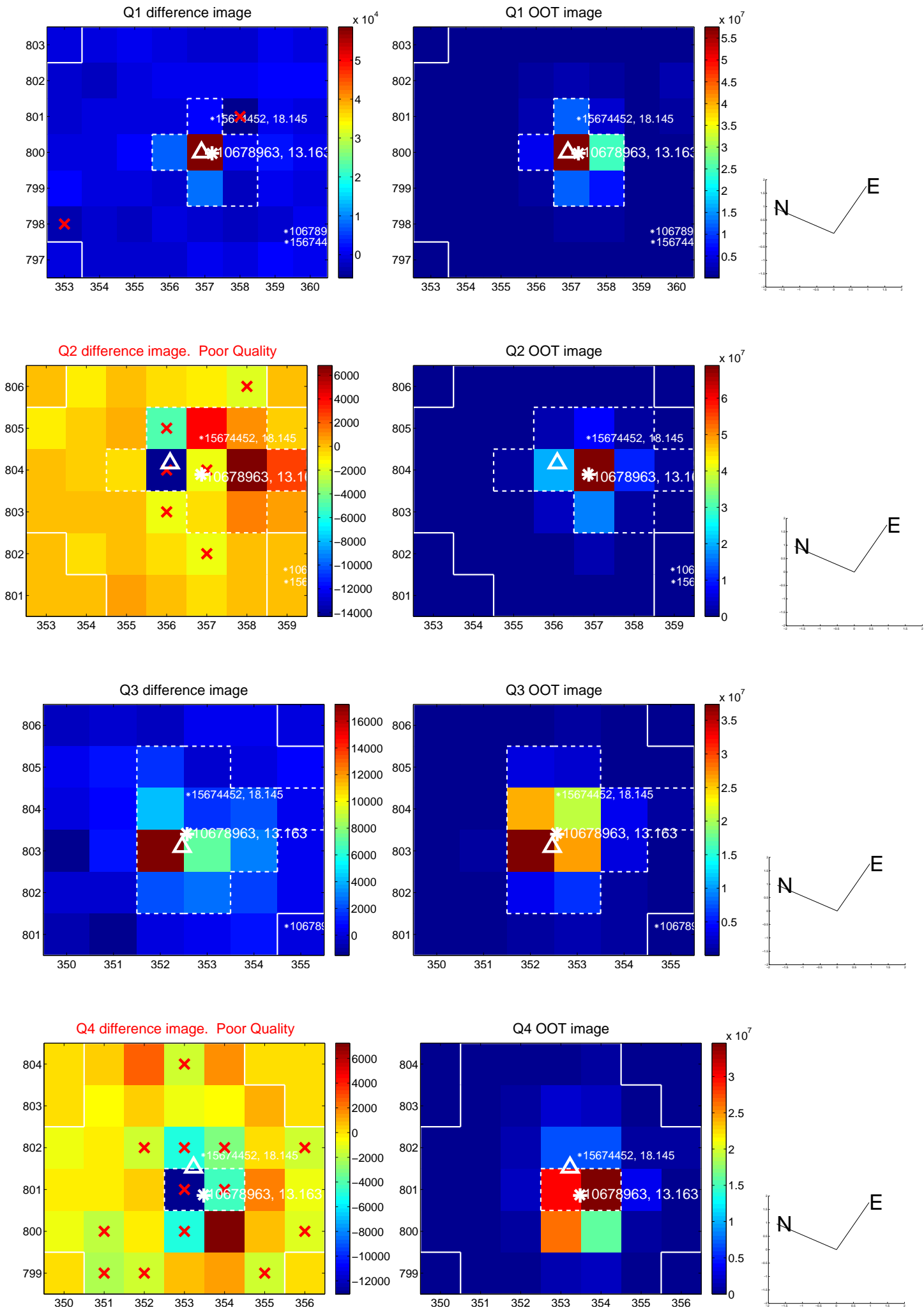
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.939 ± 0.932	1.01	-0.867 ± 0.851	0.360 ± 0.671
PRF-fit source offset from KIC position	0.926 ± 0.882	1.05	-0.864 ± 0.794	0.333 ± 0.689
photometric centroid source offset	2.01 ± 0.51	3.96	-1.28 ± 0.47	-1.55 ± 0.53

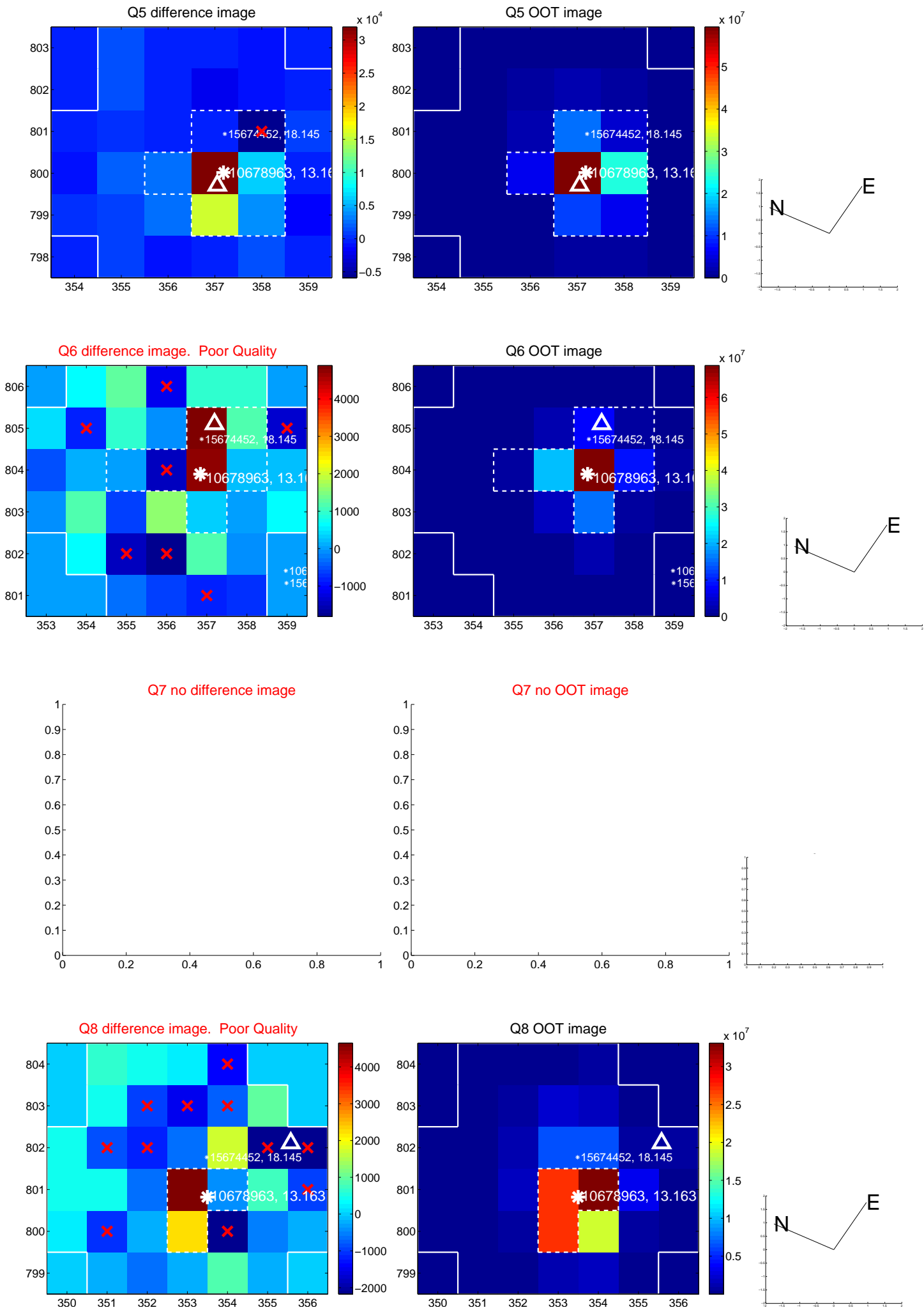


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

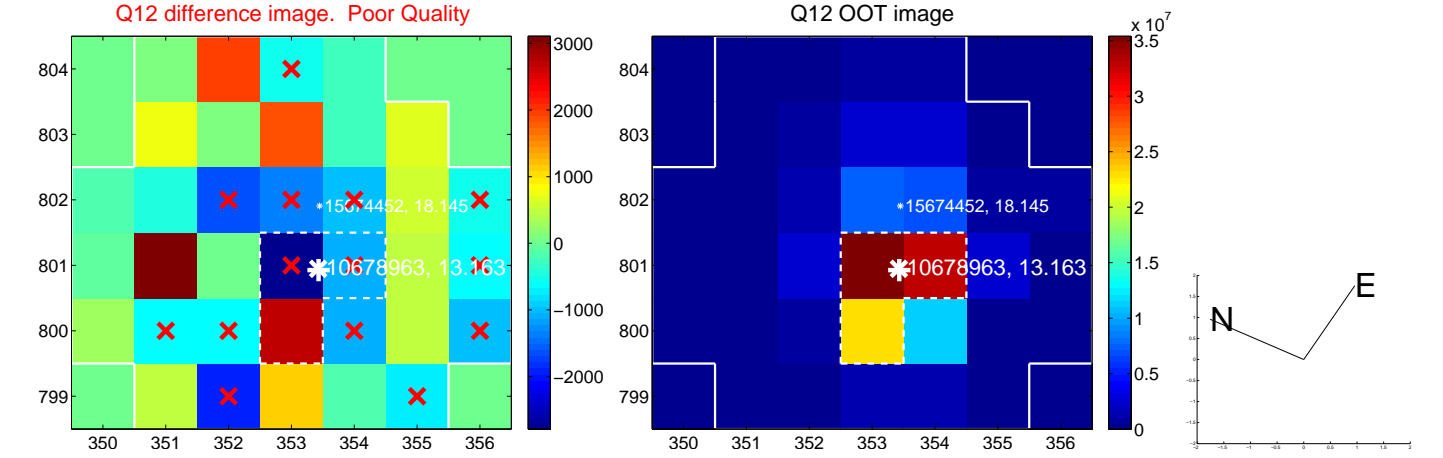
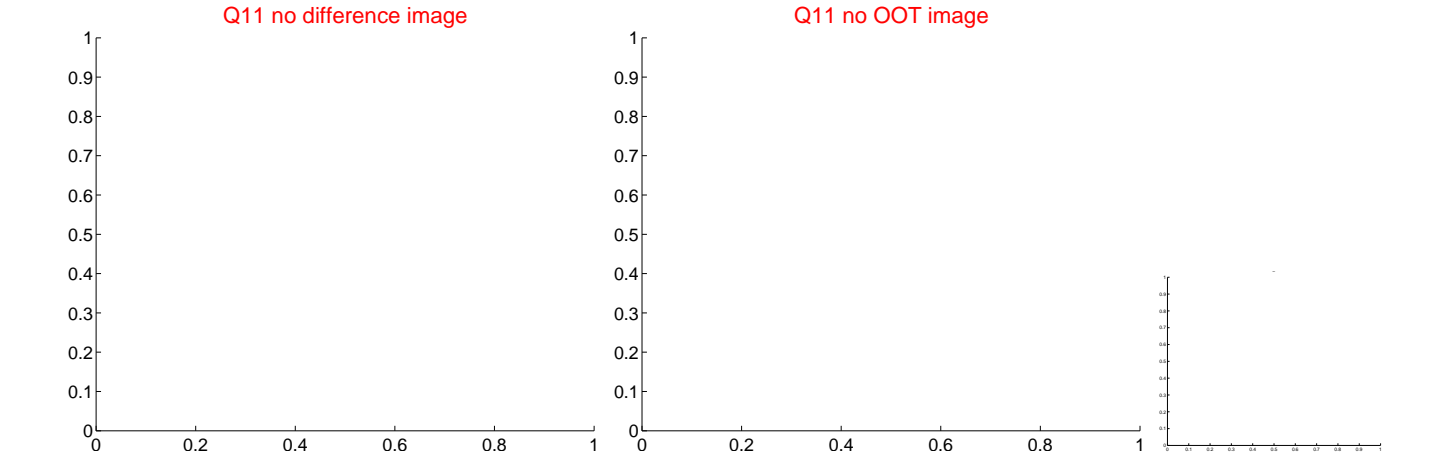
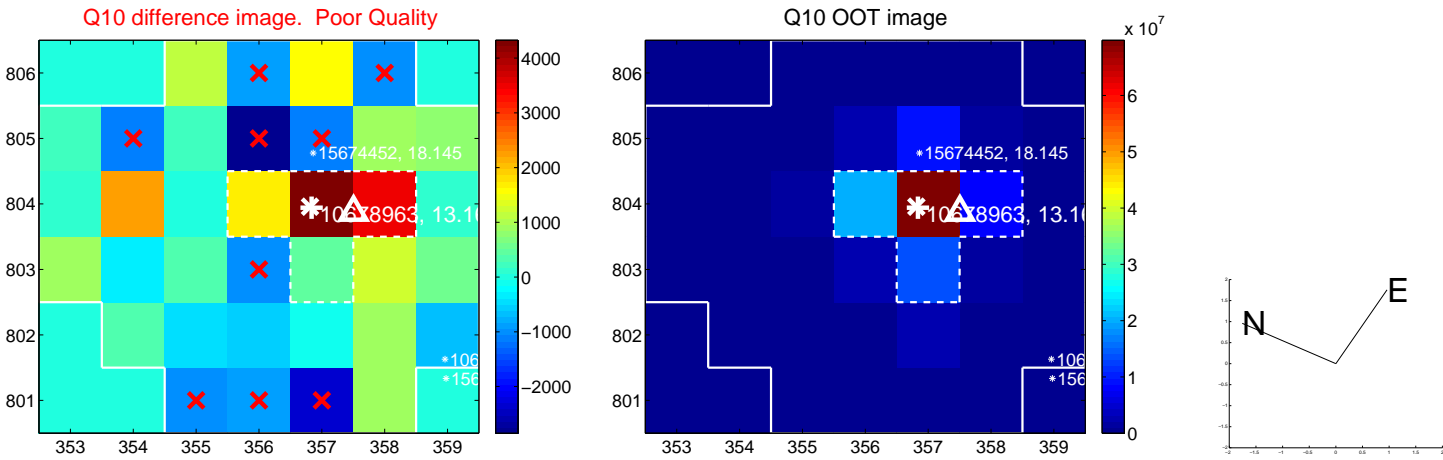
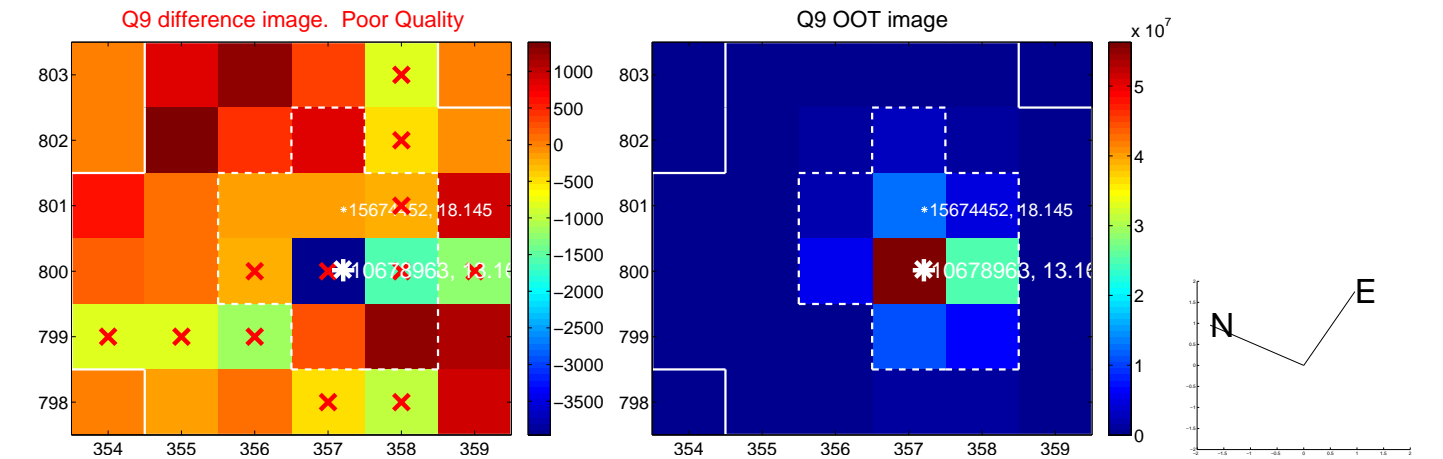
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



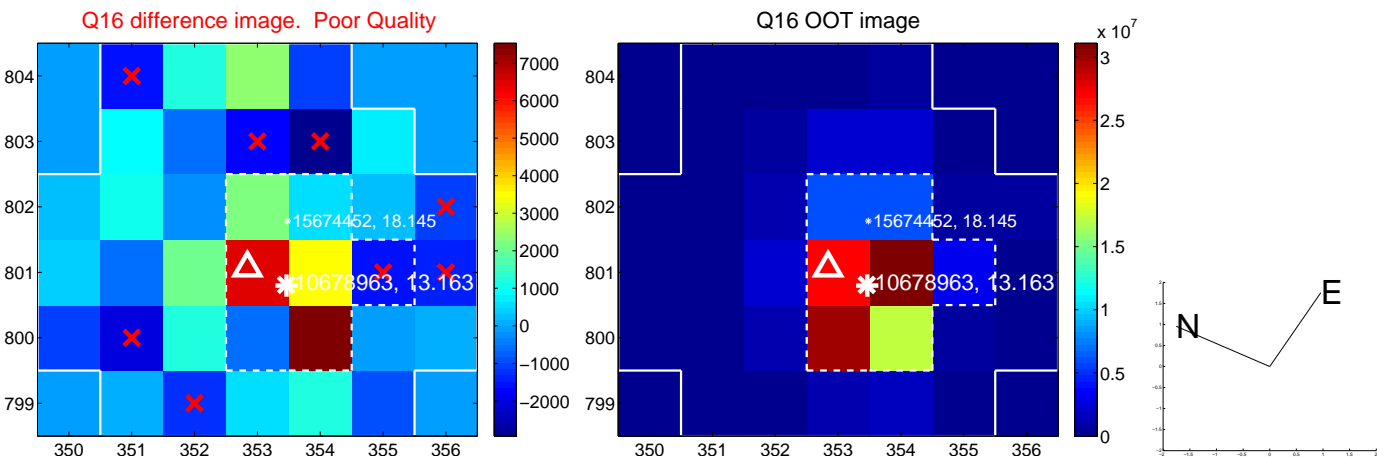
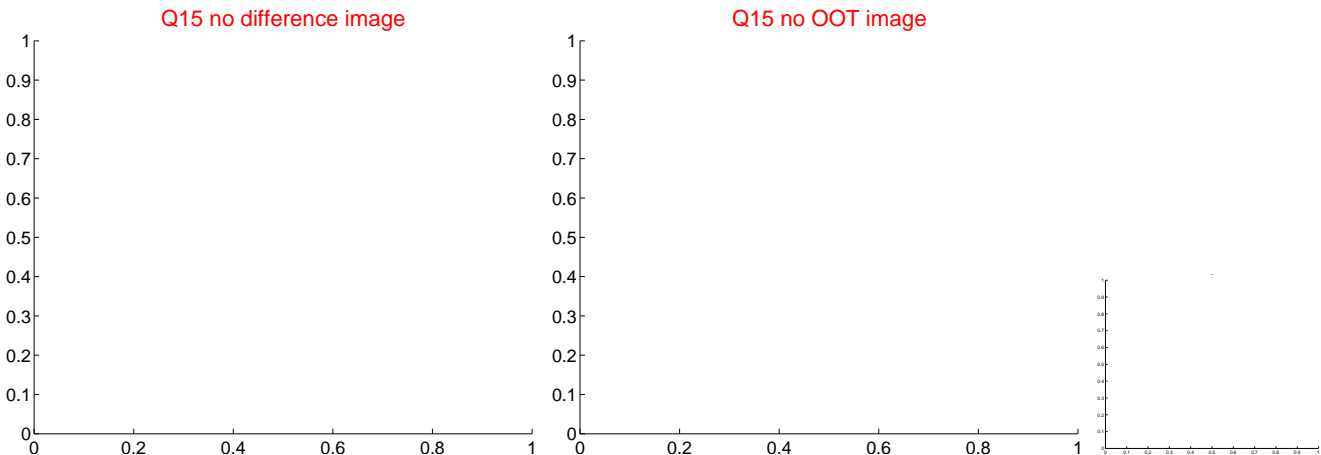
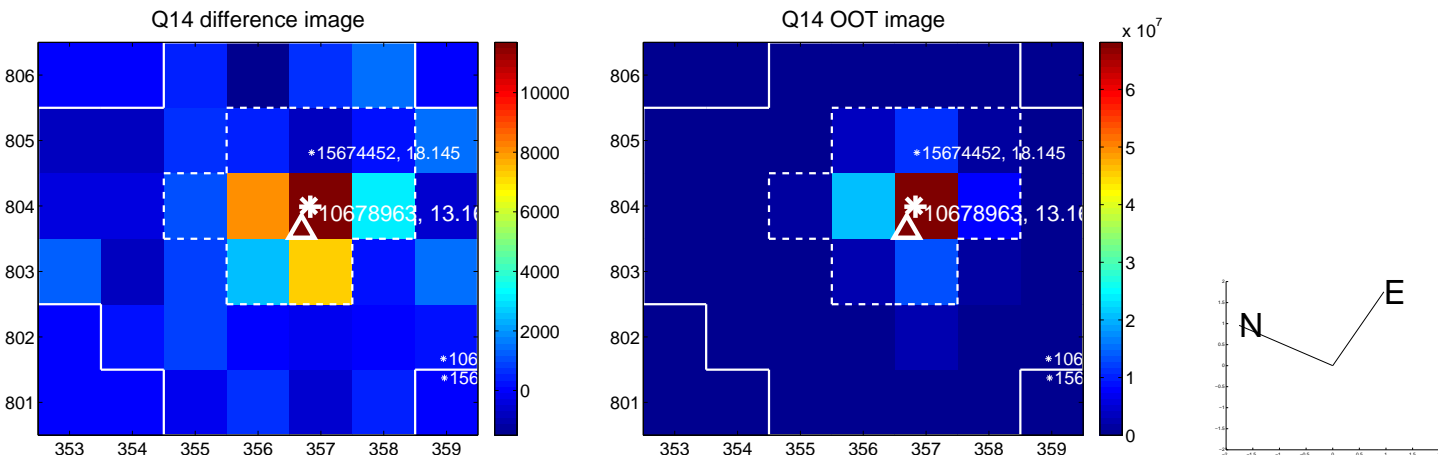
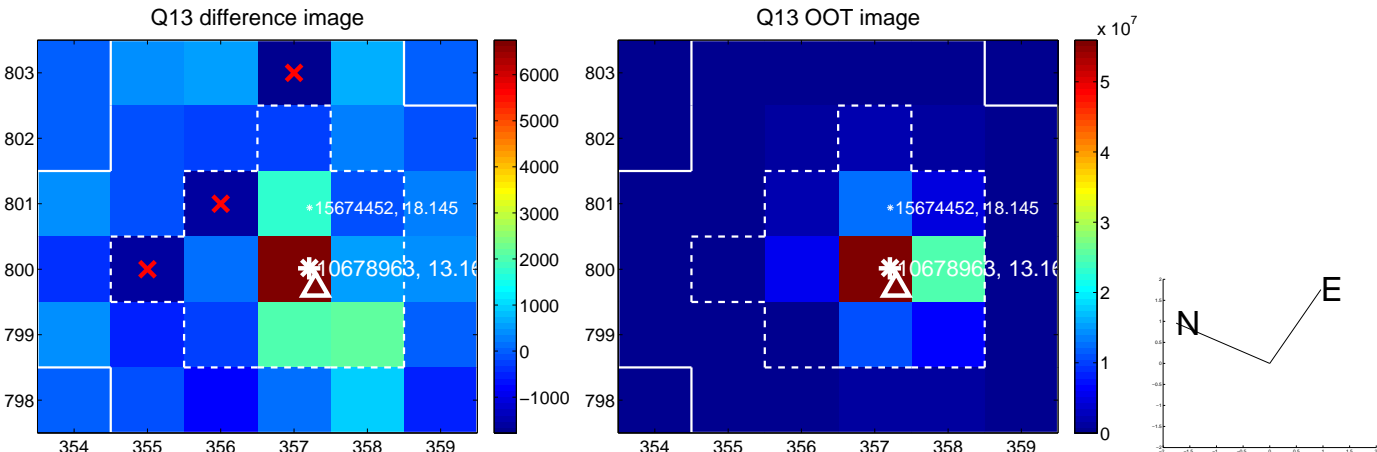
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



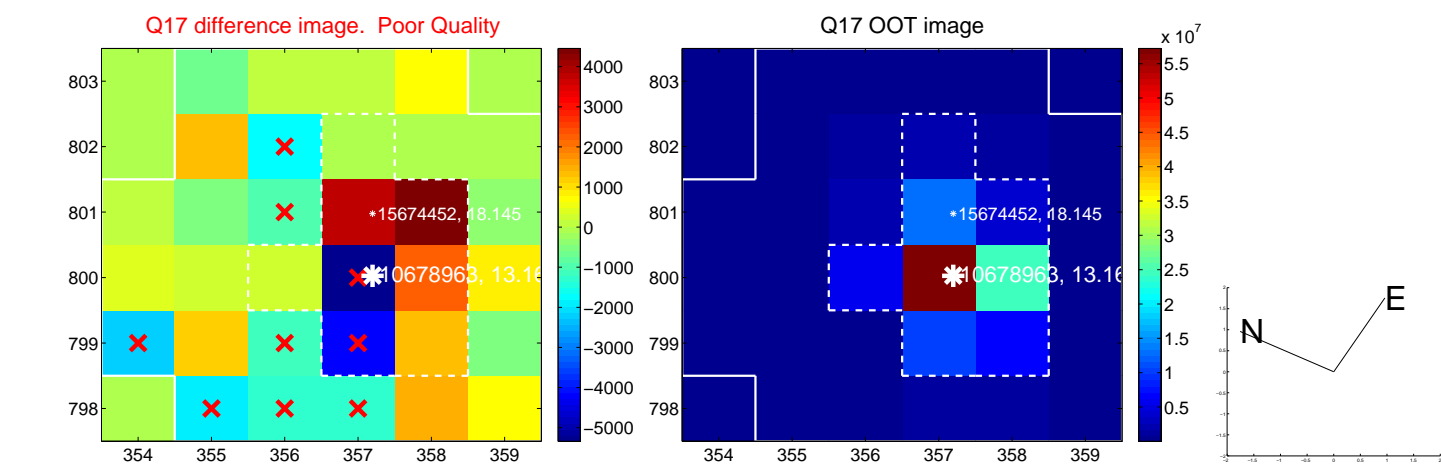
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



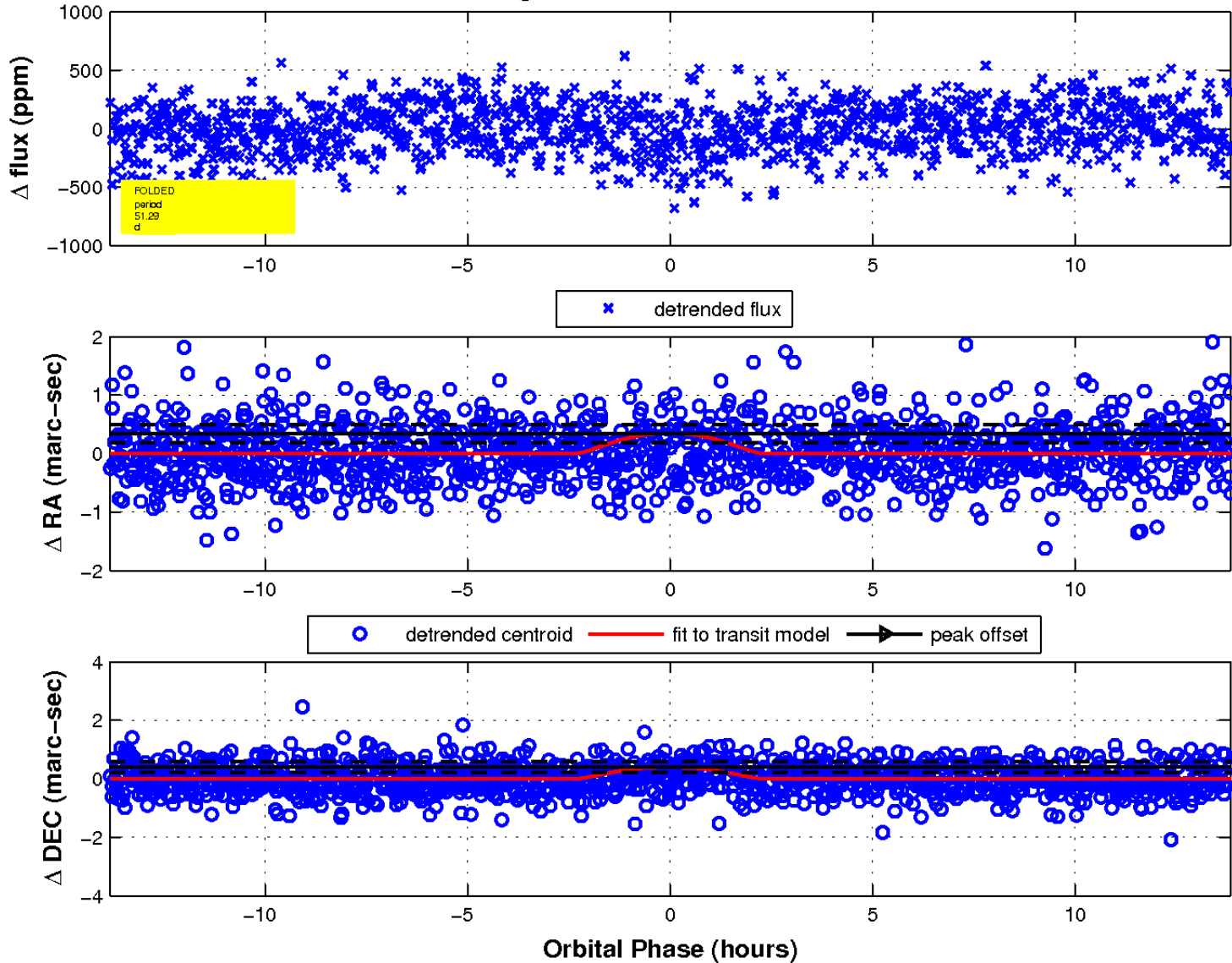
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

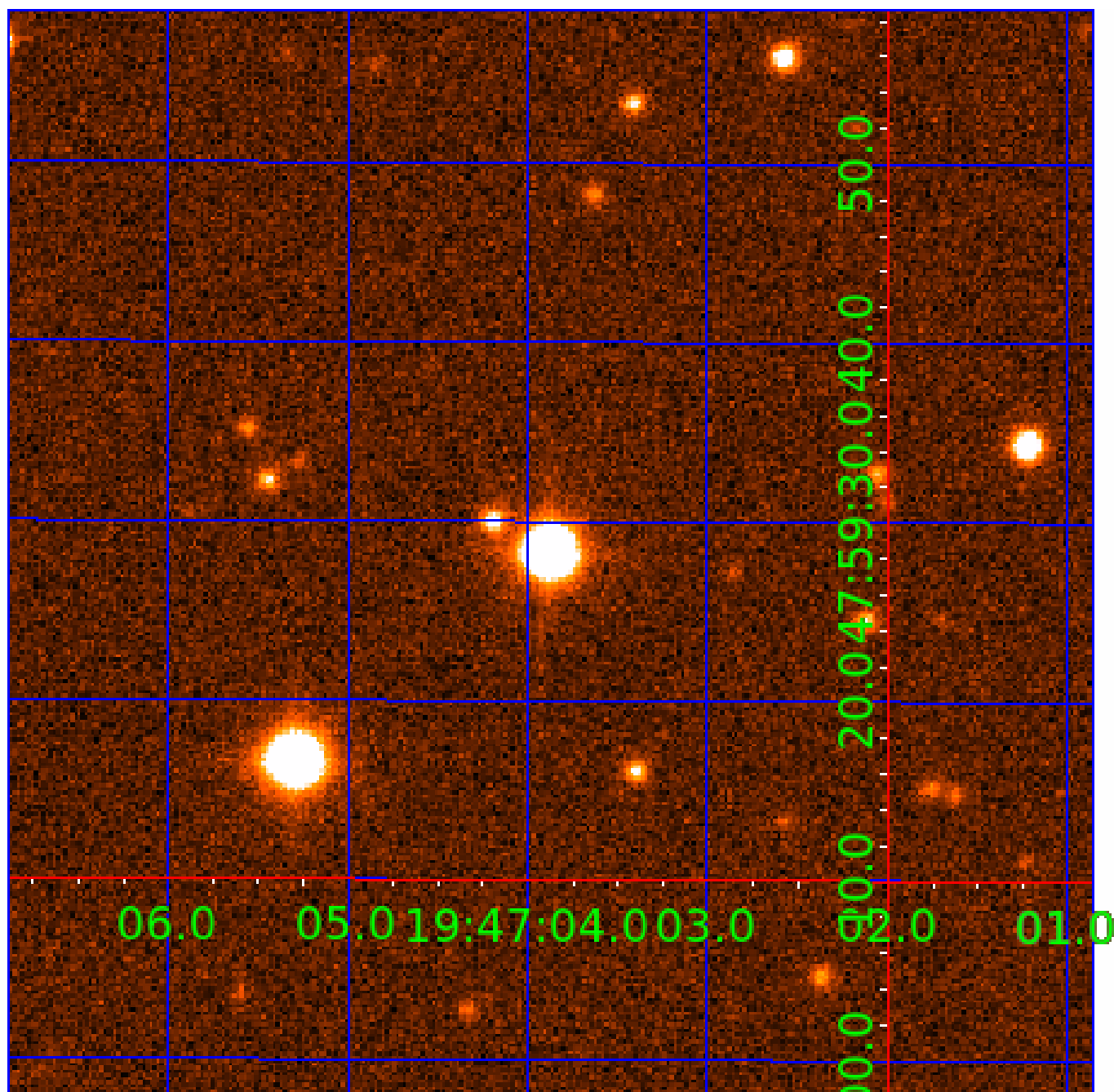


fluxWeightedCentroids, Planet 4 of 6



UKIRT Image

Declination



KIC 010678963

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})
010678963-01	OBS	No	0.876703	131.600549	36.7	3.265	8.0	10.0	1.66	7050	1.17	14400.56
010678963-02	OBS	No	35.873976	136.927565	144.6	4.037	8.0	6.5	1.66	7050	2.31	102.13
010678963-03	OBS	No	208.360231	268.698350	375.0	2.516	7.4	8.8	1.66	7050	3.68	9.78
010678963-04	OBS	No	51.293886	134.787280	278.4	4.618	7.3	7.9	1.66	7050	3.92	63.40
010678963-05	OBS	No	325.471818	266.316564	386.9	4.523	7.3	6.6	1.66	7050	3.61	5.40
010678963-06	OBS	No	195.941873	268.482435	449.8	2.851	7.2	7.4	1.66	7050	3.83	10.62

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010678963-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
010678963-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
010678963-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678963-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_ALT
010678963-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678963-06	OBS	FP	0.03	1	0	0	0	ALL_TRANS_CHASES—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.

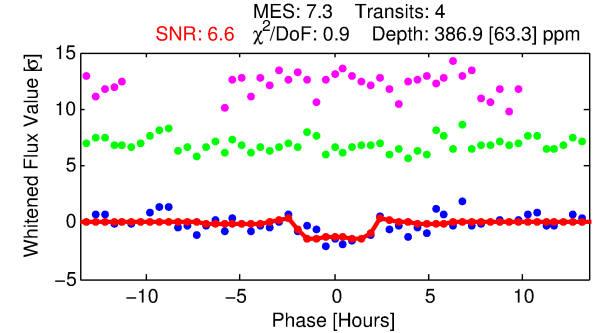
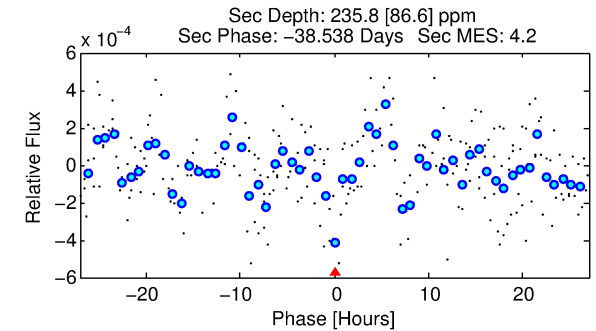
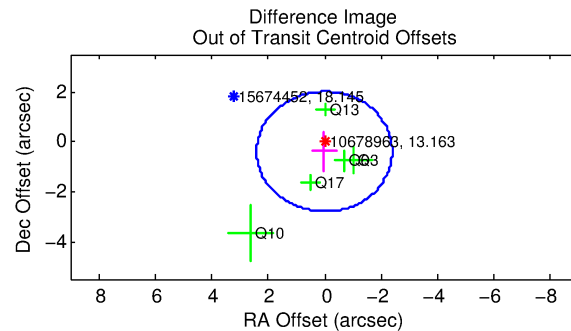
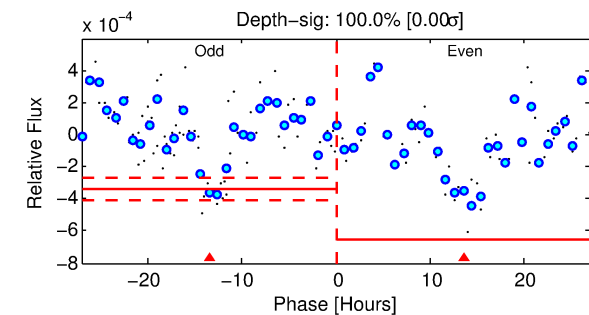
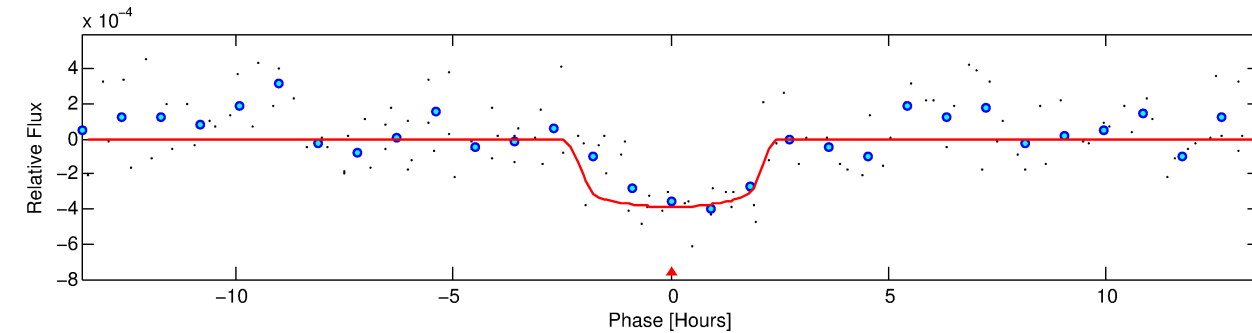
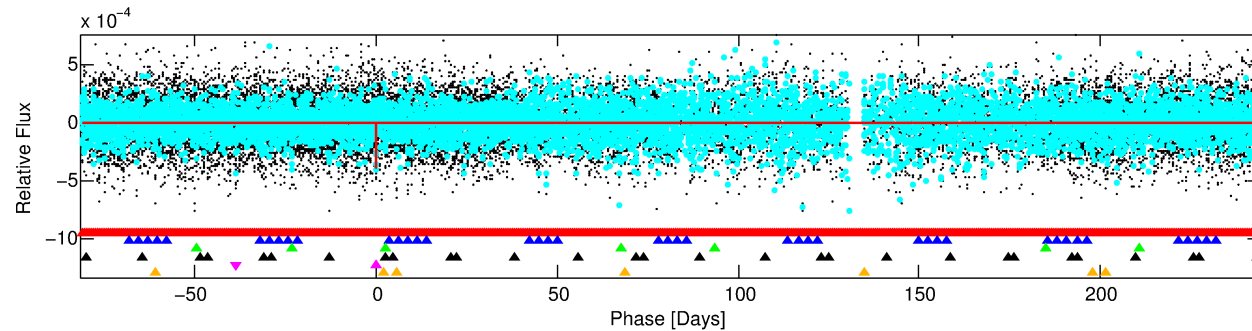
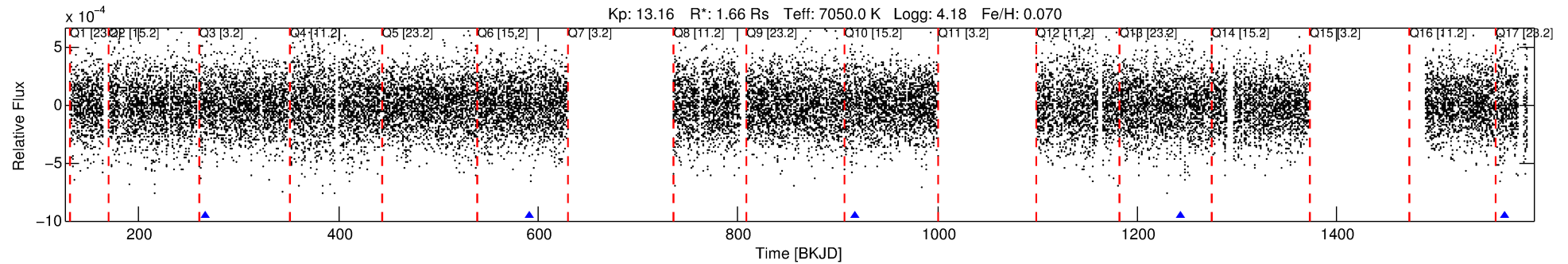
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678963-05

No Significant Match Found

DV One-Page Summary

KIC: 10678963 Candidate: 5 of 6 Period: 325.472 d



DV Fit Results:

Period = 325.47182 [0.00328] d
Epoch = 266.3166 [0.0090] BKJD
Rp/R* = 0.0200 [0.0136]
a/R* = 337.97 [1357.57]
b = 0.81 [1.67]
Seff = 5.40 [2.28]
Teq = 389 [41] K
Rp = 3.61 [2.73] Re
a = 1.0598 [0.2823] AU
Ag = 11181.68 [16364.30] [0.68σ]
Teffp = 6179 [2204] K [2.63σ]

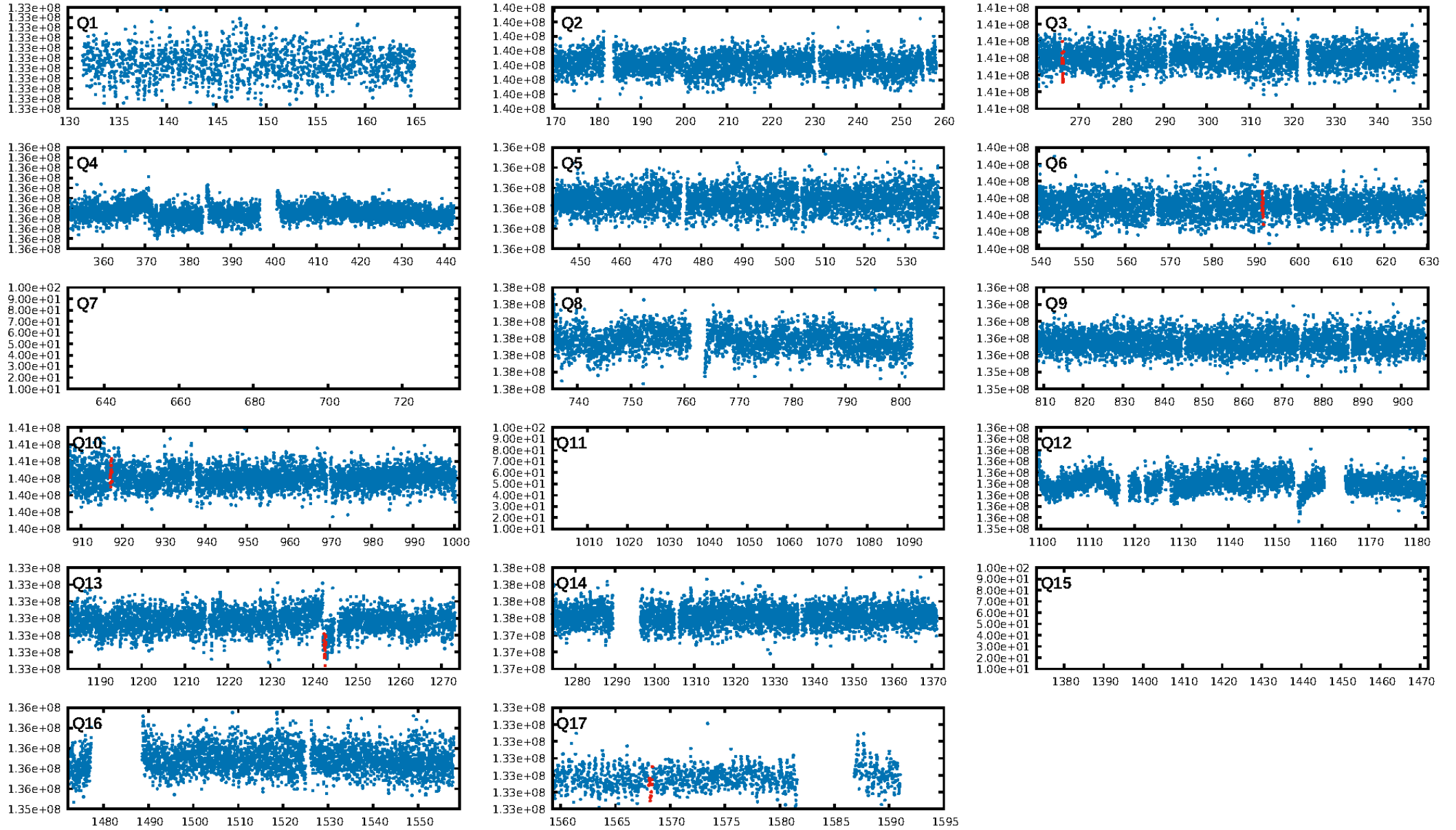
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [543.07σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 18.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.49e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.464
Centroid-sig: 5.2%
Centroid-so: 1.247 arcsec [2.04σ]
OotOffset-rm: 0.394 arcsec [0.49σ]
KicOffset-rm: 0.432 arcsec [0.54σ]
OotOffset-st: 2/1/0/2 [5]
KicOffset-st: 2/1/0/2 [5]
DiffImageQuality-fgm: 0.60 [3/5]
DiffImageOverlap-fno: 0.00 [0/5]

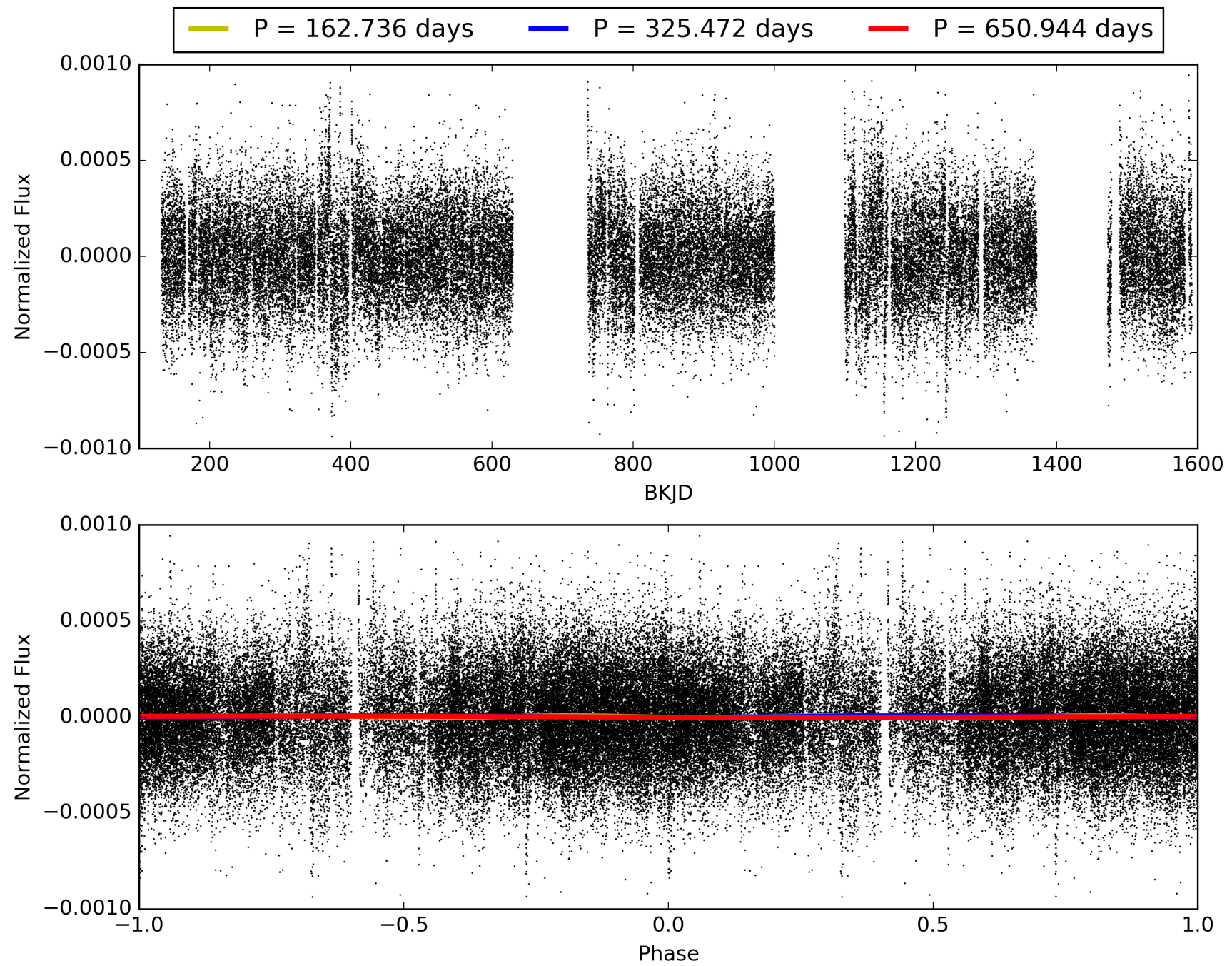
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:05:27 Z

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

TCE 010678963-05, PDC Light Curves

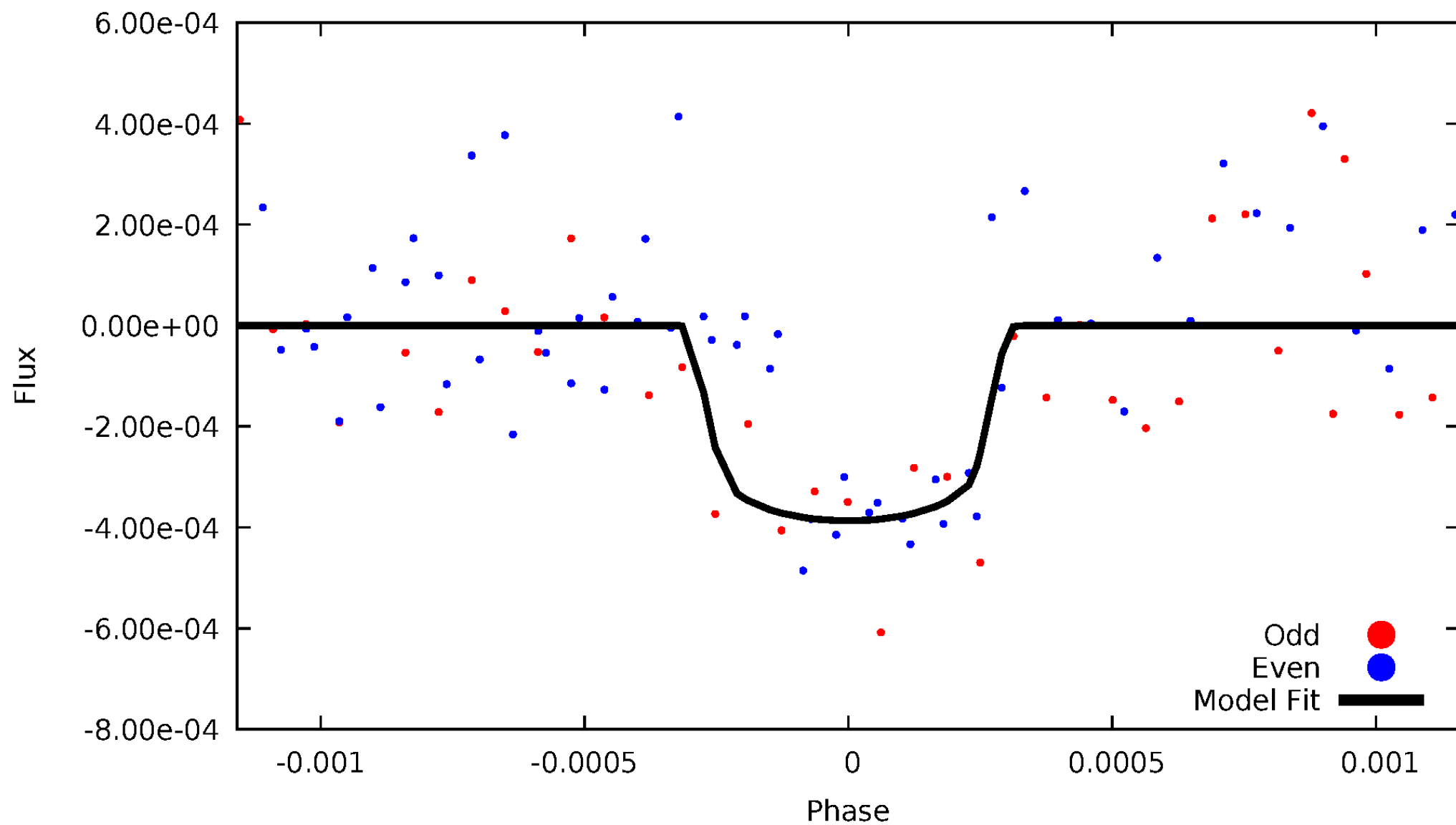


TCE 010678963-05



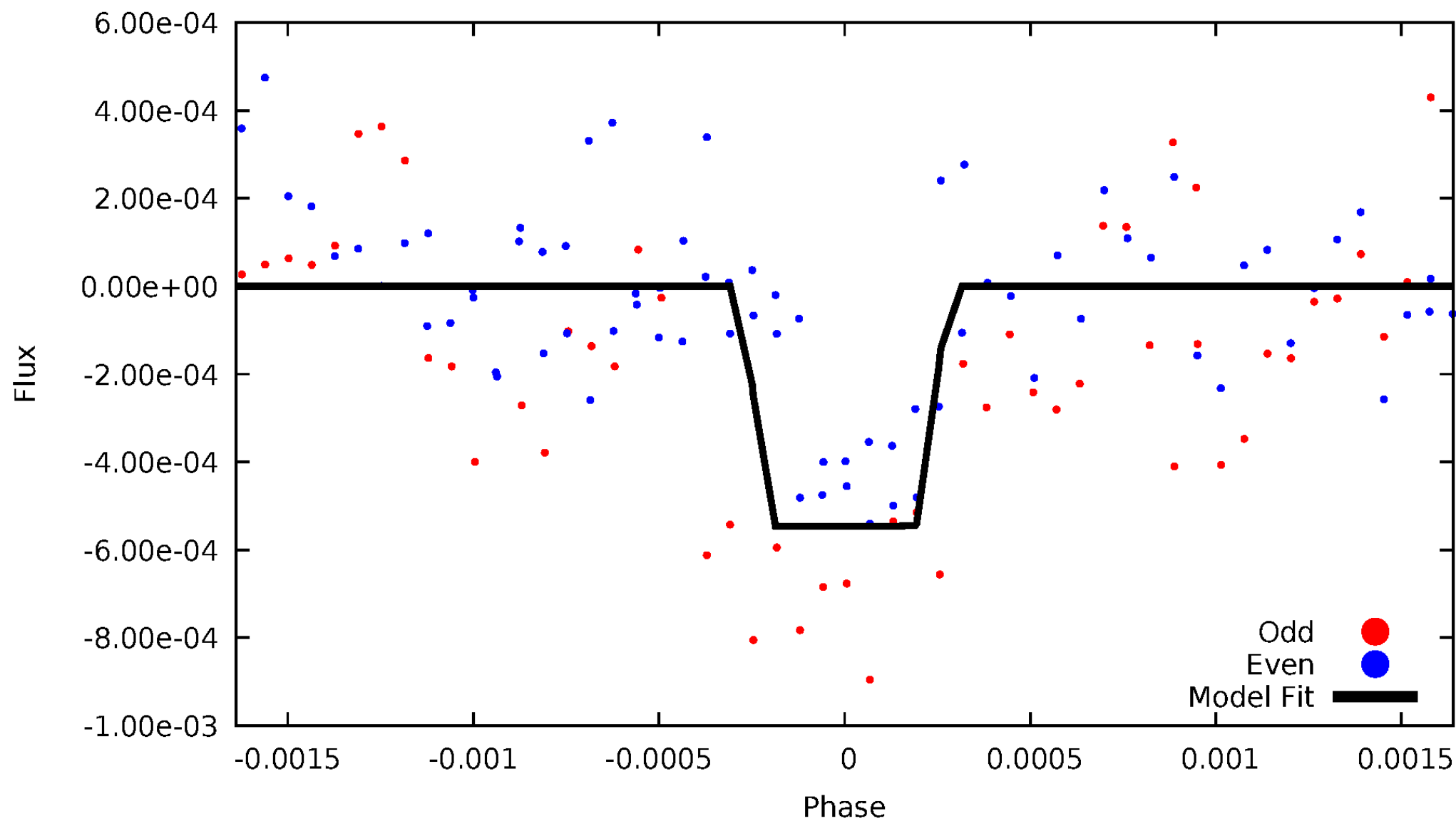
DV Odd/Even

TCE 010678963-05

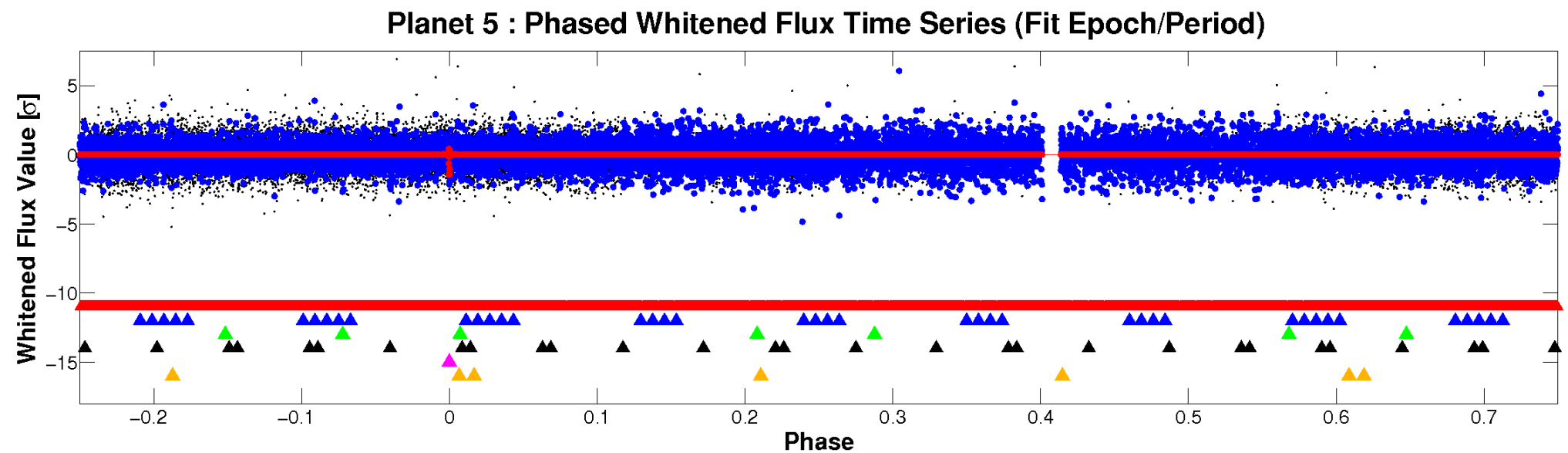
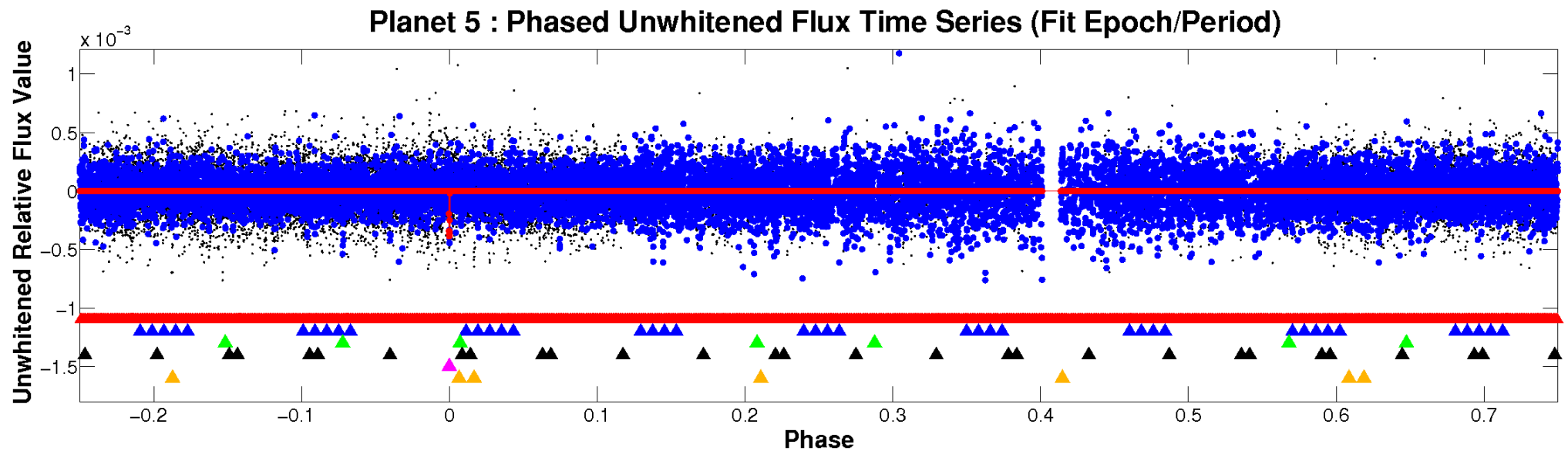


ALT Odd/Even

TCE 010678963-05

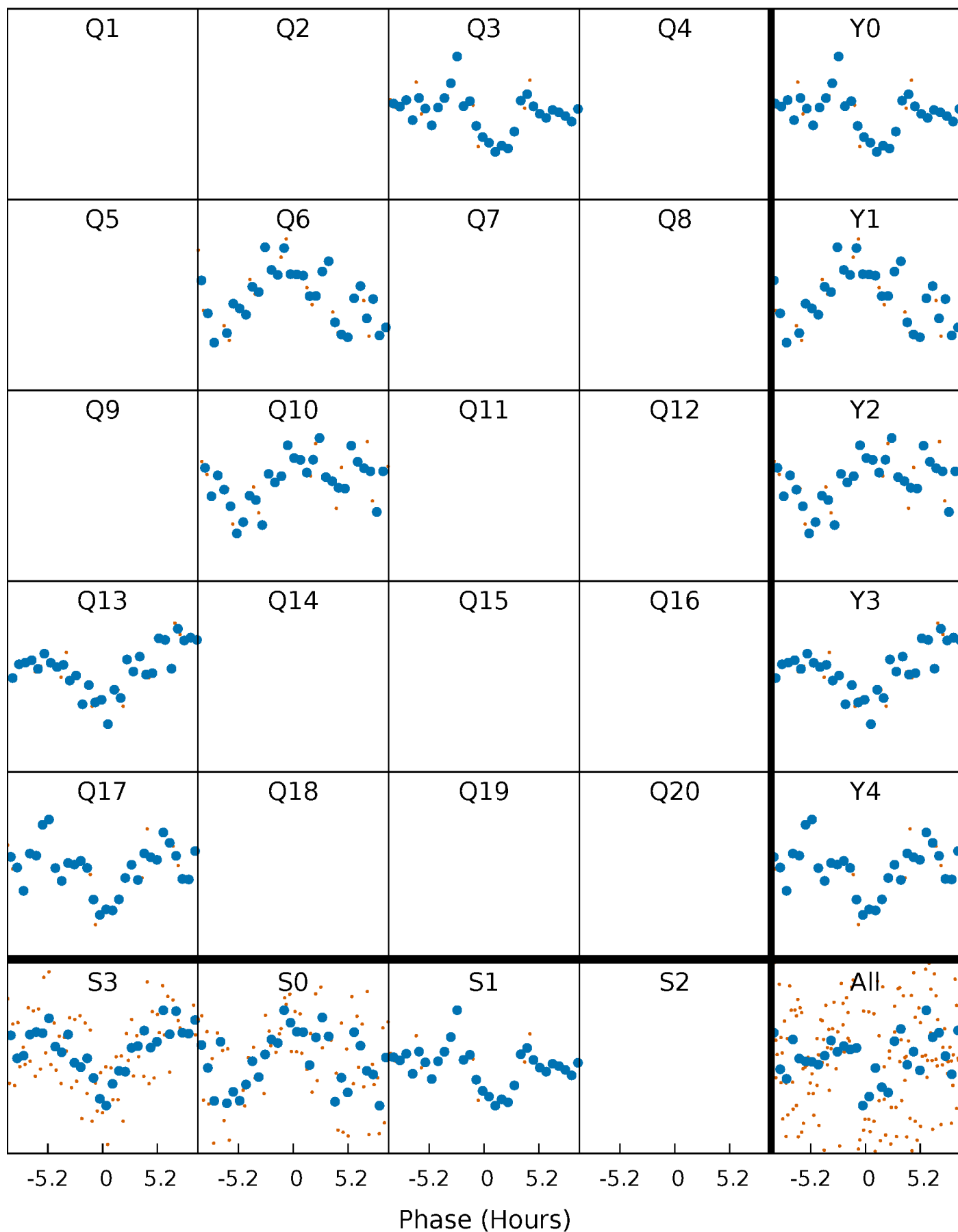


Non-Whitened Vs. Whitened Light Curve



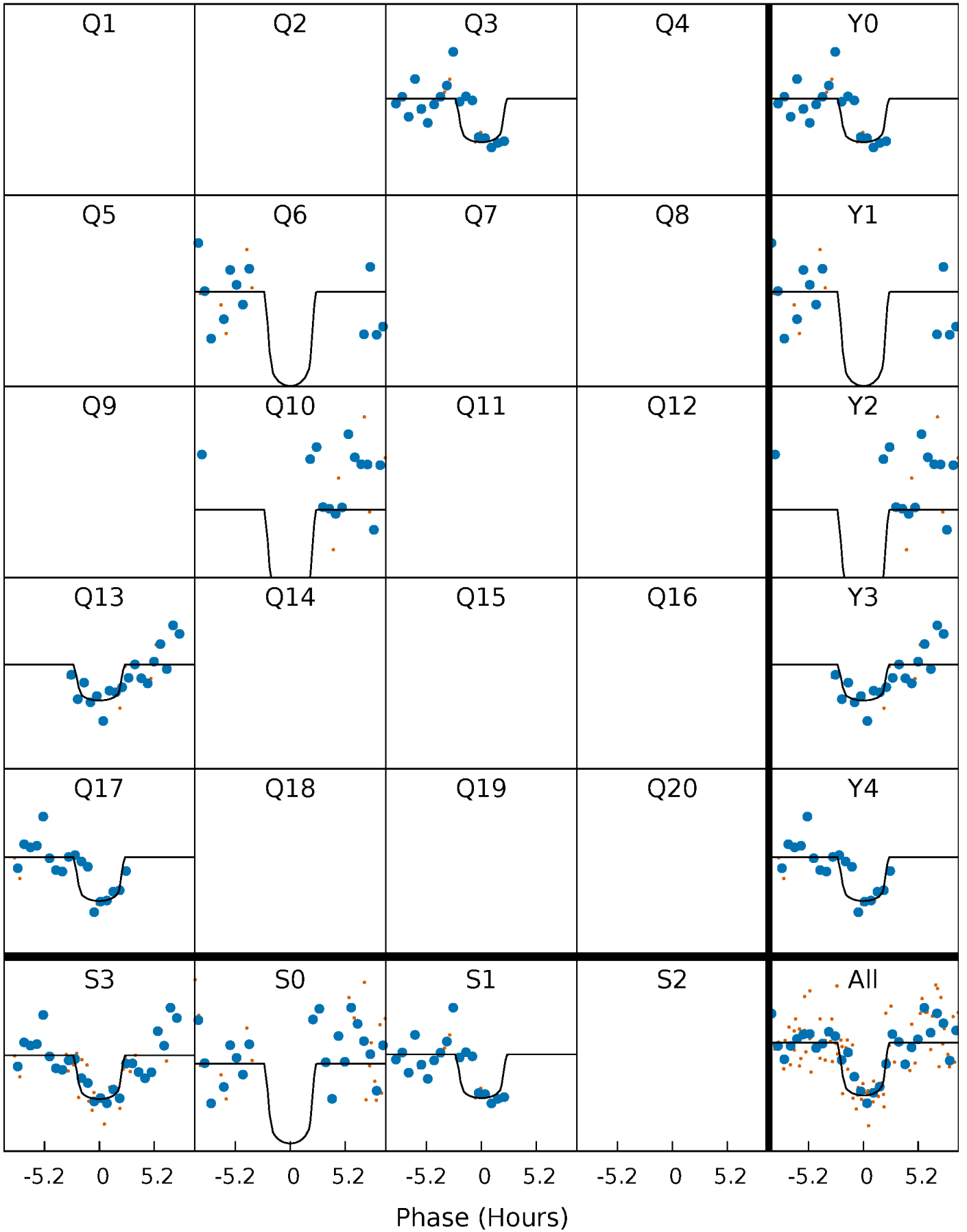
PDC Quarter-Phased Transit Curves

TCE 010678963-05 $P=325.471818$ Days $T_0=266.316564$ (BKJD)



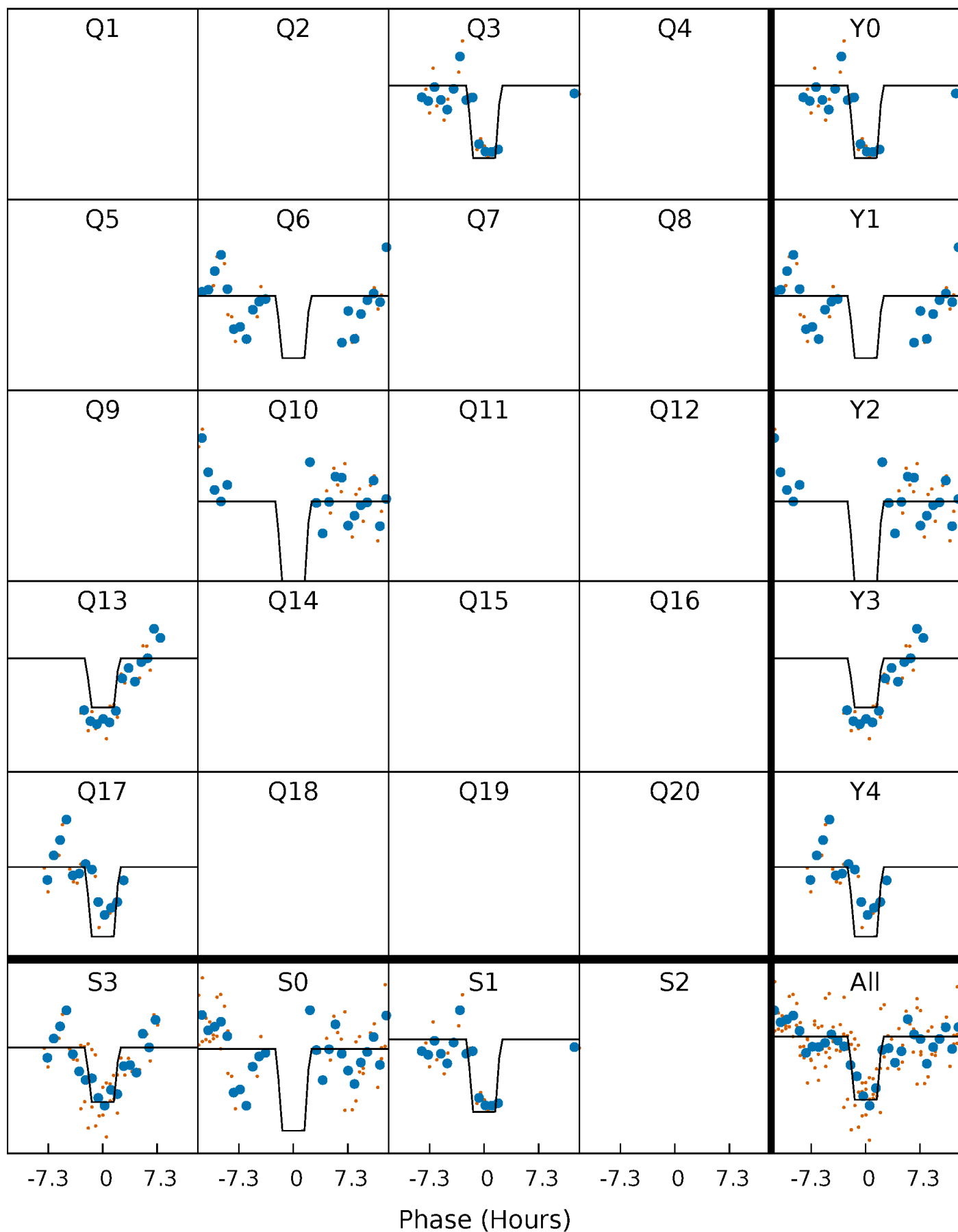
DV Quarter-Phased Transit Curves

TCE 010678963-05 $P=325.471818$ Days $T_0=266.316564$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

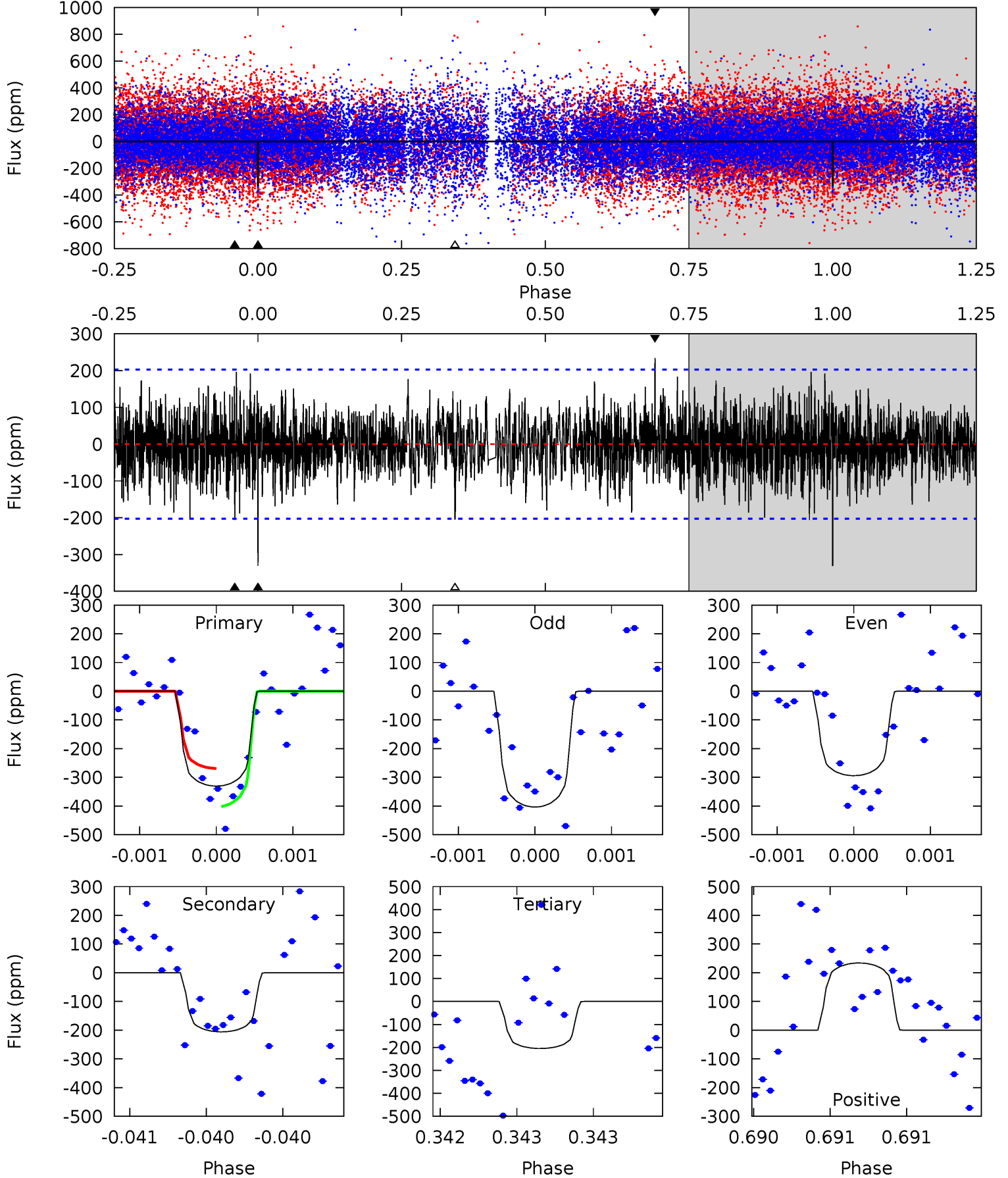
TCE 010678963-05 $P=325.465744$ Days $T_0=266.332623$ (BKJD)



DV Model-Shift Uniqueness Test

010678963-05, P = 325.471818 Days, E = 266.316564 Days

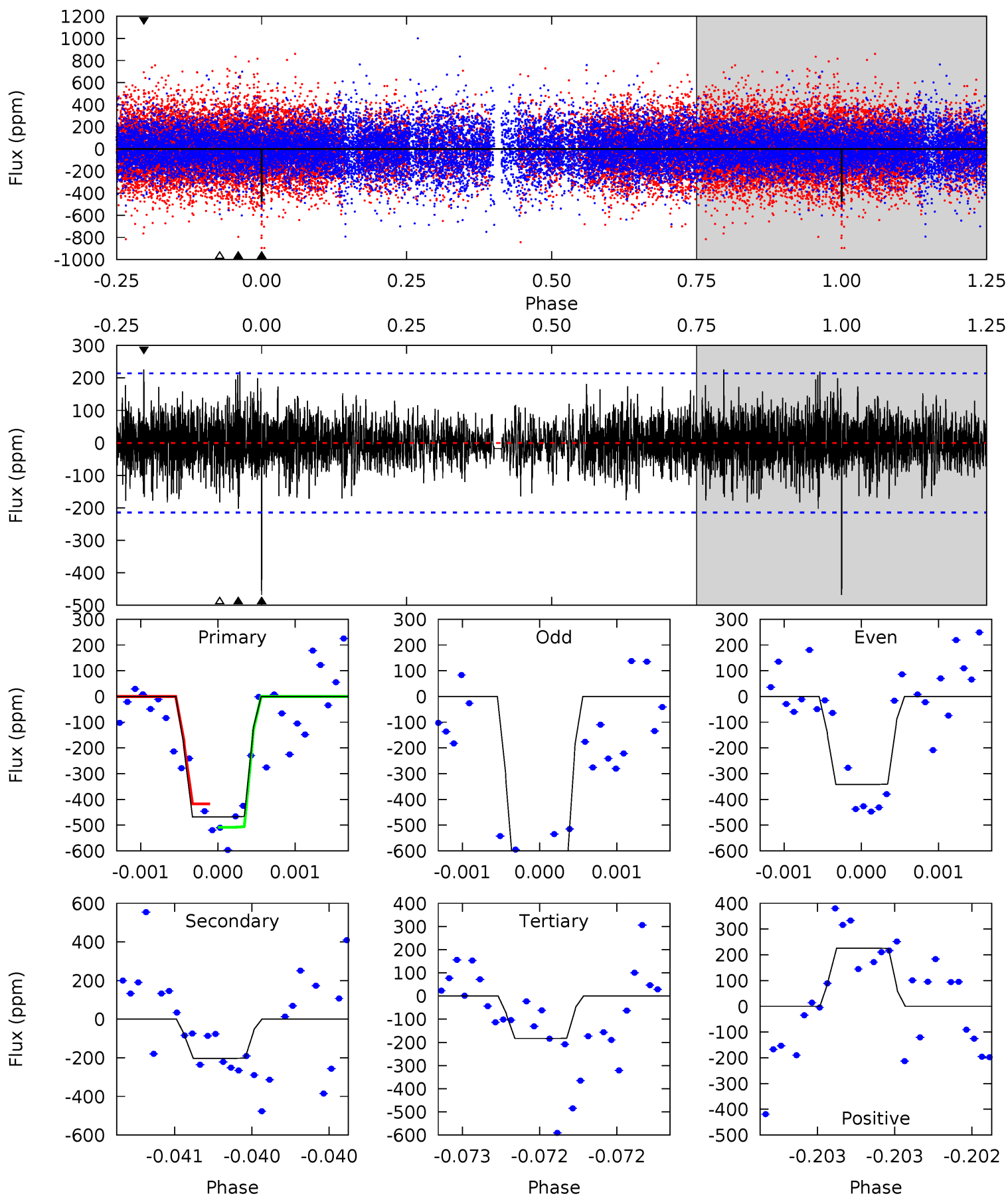
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.04	5.63	5.60	6.40	5.55	3.44	1.59	3.44	2.64	0.03	-0.77	1.40	1.06	0.41	1.81



Alt Model-Shift Uniqueness Test

010678963-05, P = 325.465744 Days, E = 266.332623 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	5.24	4.74	5.84	5.55	3.45	1.43	7.37	6.28	0.50	-0.60	4.72	1.14	0.33	1.16



Stellar Parameters For KIC 010678963

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7050^{+195}_{-335}	$4.176^{+0.108}_{-0.201}$	$0.070^{+0.200}_{-0.350}$	$1.655^{+0.539}_{-0.290}$	$1.497^{+0.214}_{-0.236}$	$0.465^{+0.278}_{-0.247}$
	+3%/-5%	+3%/-5%	+286%/-500%	+33%/-18%	+14%/-16%	+60%/-53%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 010678963-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-206 ± 37	$4.21^{+2.38}_{-2.27}$	548^{+42}_{-36}	5544^{+2899}_{-983}	7030^{+26219}_{-4164}
Alt.	-202 ± 39	$4.50^{+2.58}_{-2.27}$	548^{+44}_{-36}	5397^{+2433}_{-961}	6208^{+17487}_{-3772}

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

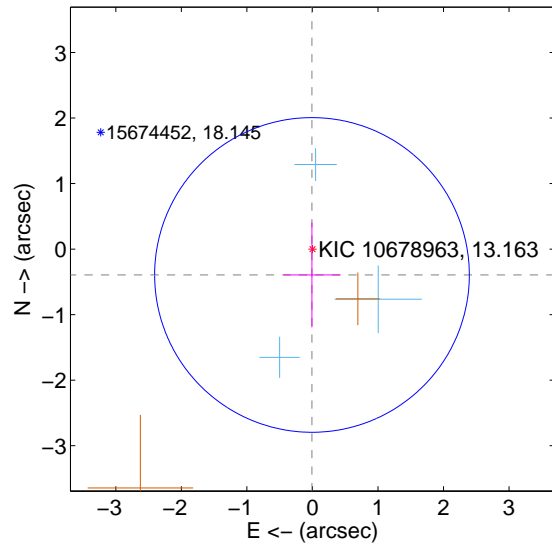
Supplemental centroid analysis for 010678963-05. Kepler magnitude: 13.16. Transit SNR 6.65

There are 3 quarters with good PRF difference image offsets

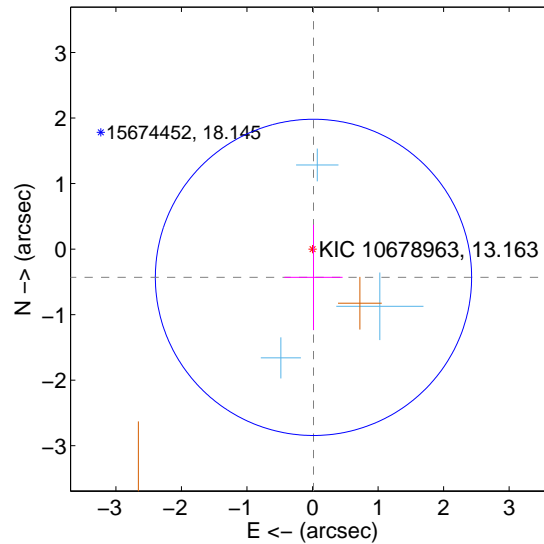
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.394 ± 0.800	0.49	0.007 ± 0.437	-0.394 ± 0.800
PRF-fit source offset from KIC position	0.432 ± 0.804	0.54	-0.015 ± 0.443	-0.431 ± 0.805
photometric centroid source offset	1.25 ± 0.61	2.04	-1.25 ± 0.61	-0.03 ± 0.71

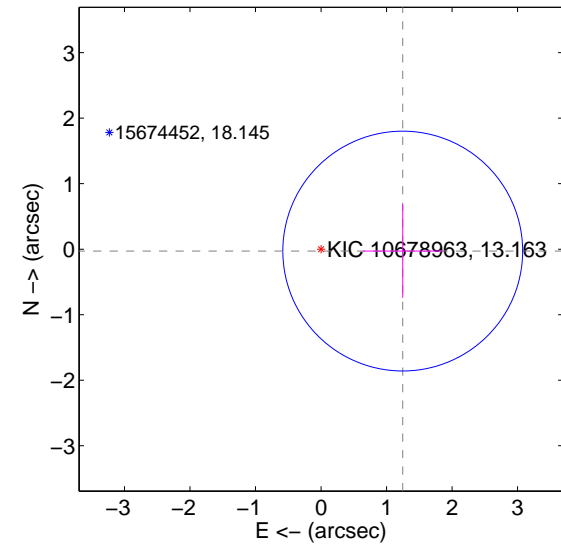
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

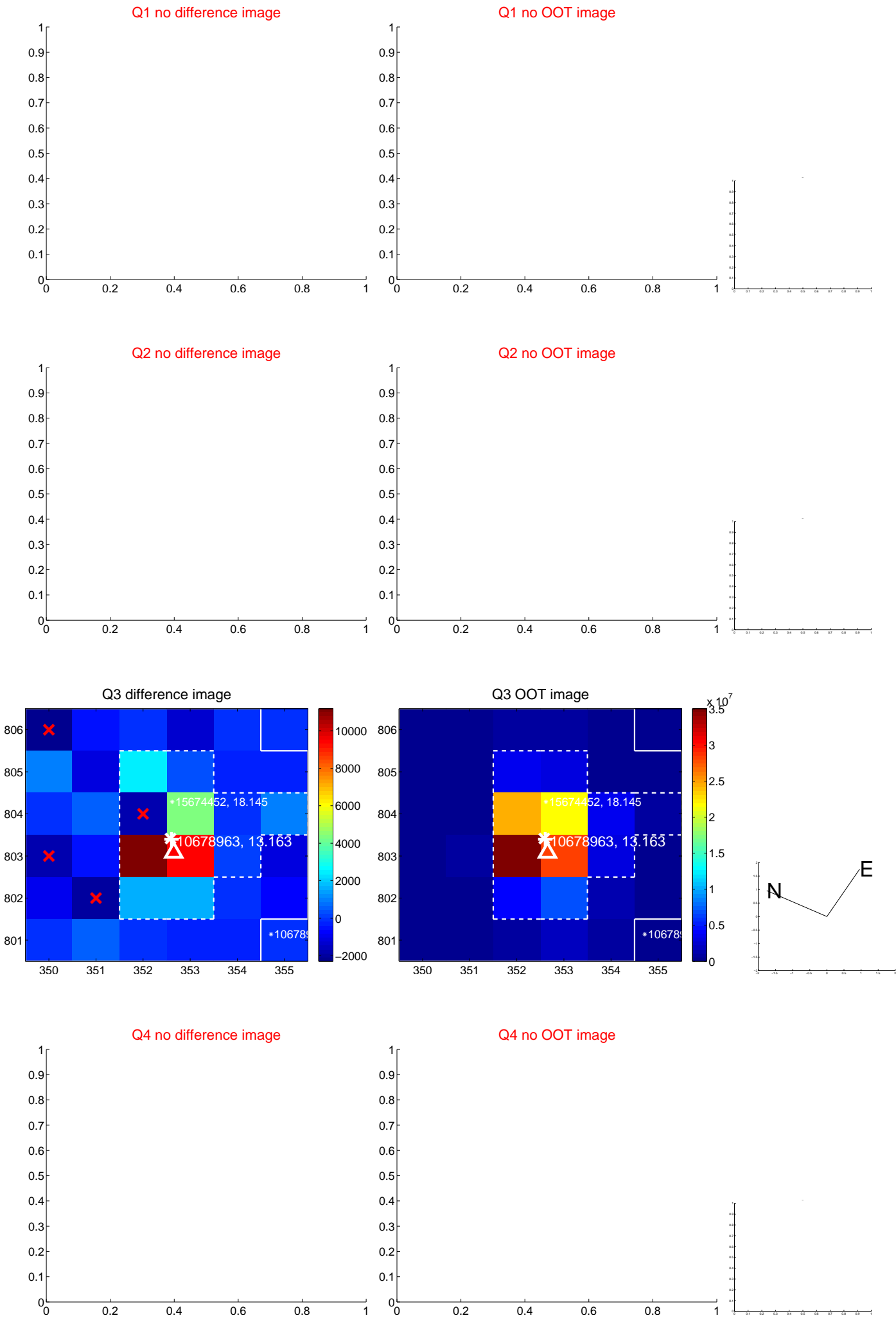


offset from photometric centroids



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.

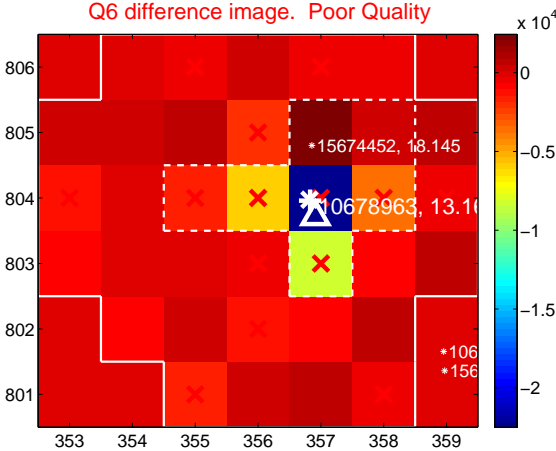
Q5 no difference image



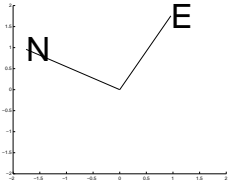
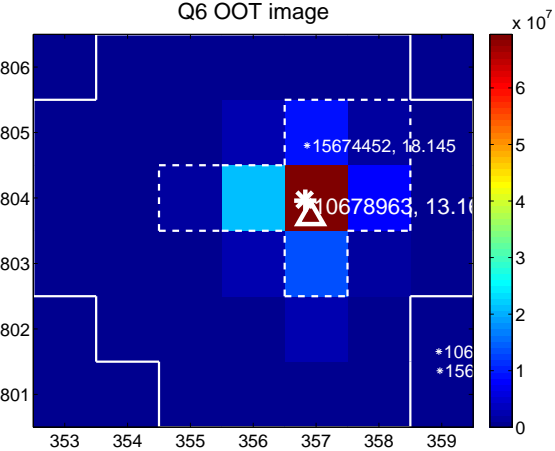
Q5 no OOT image



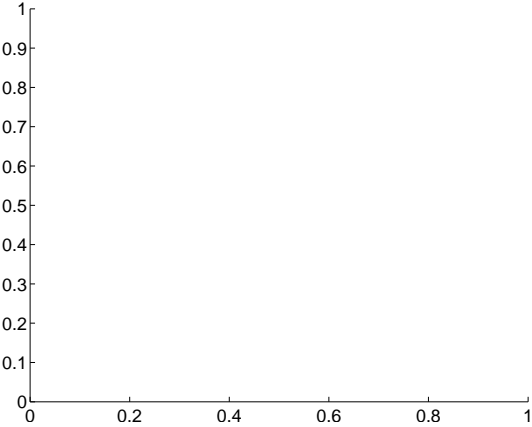
Q6 difference image. Poor Quality



Q6 OOT image



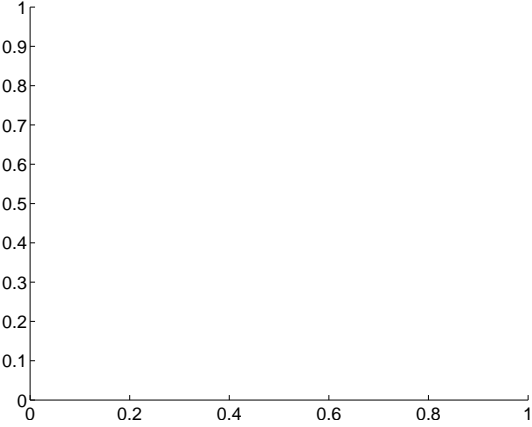
Q7 no difference image



Q7 no OOT image



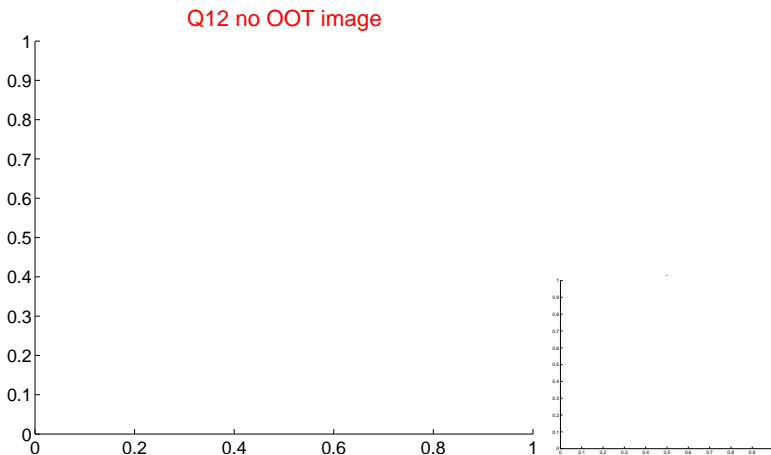
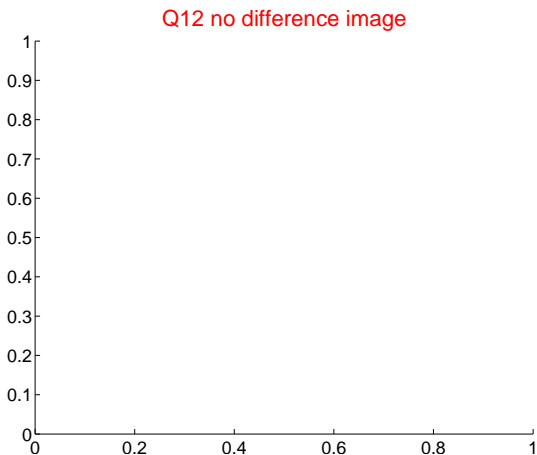
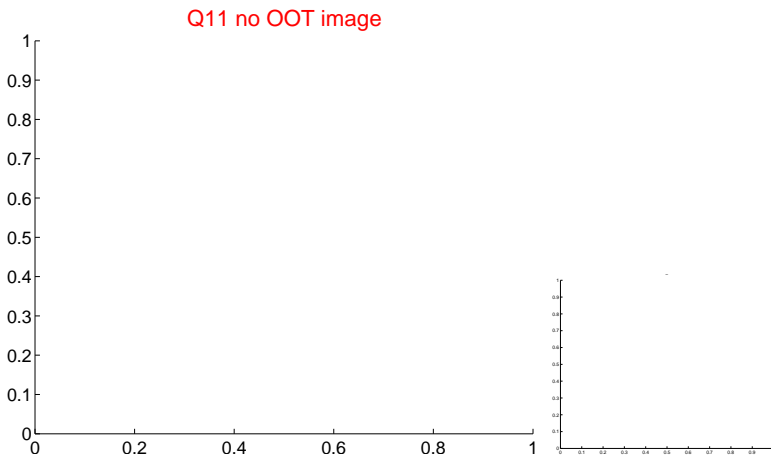
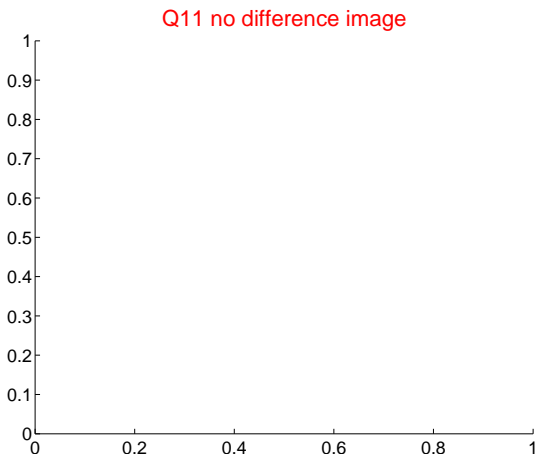
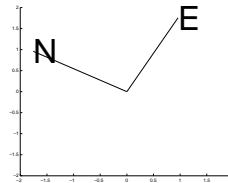
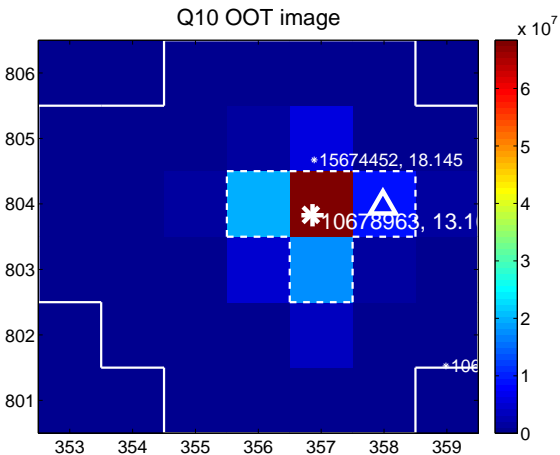
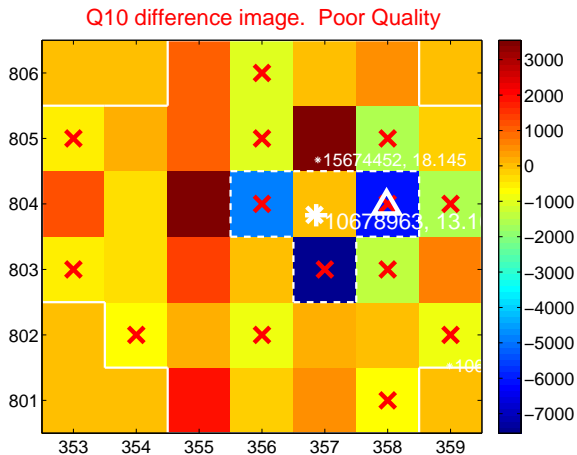
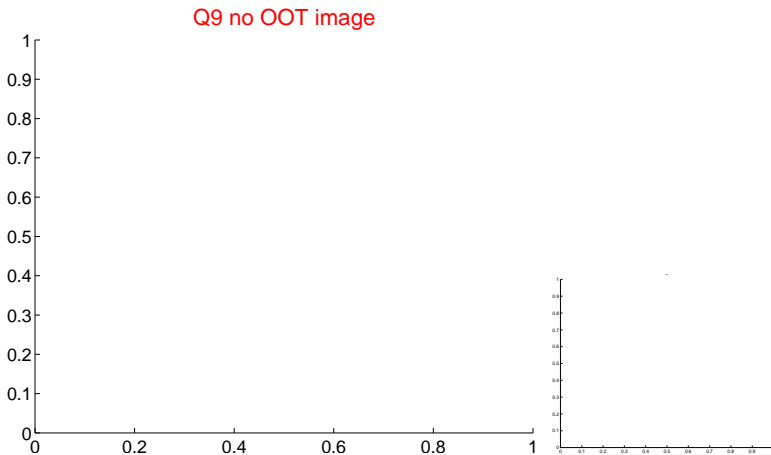
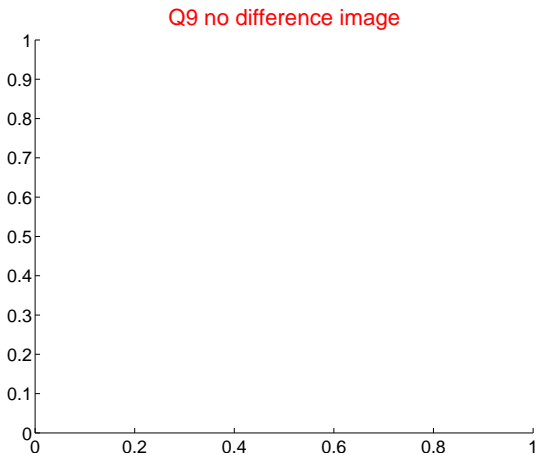
Q8 no difference image



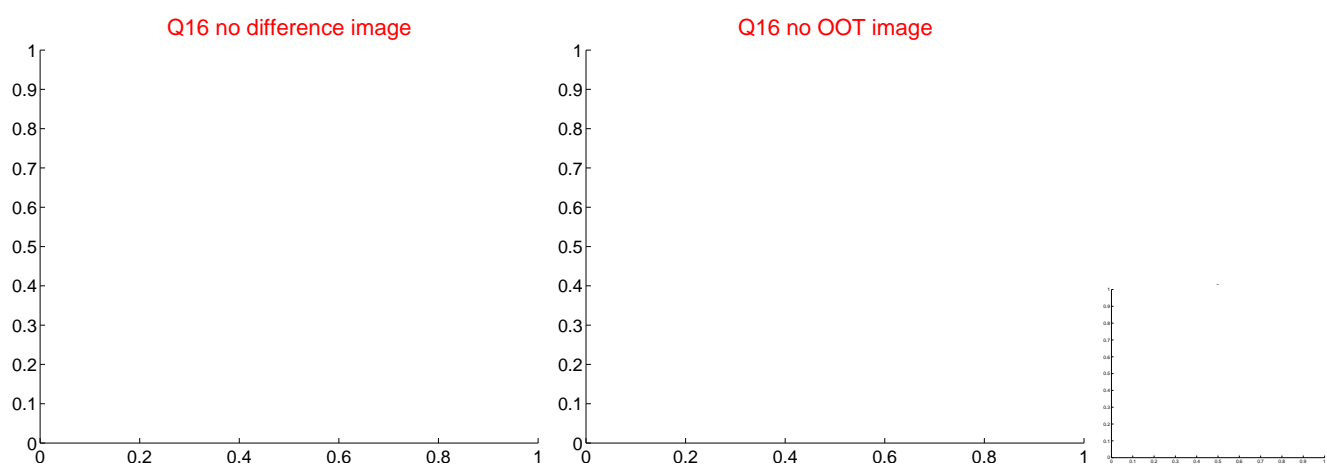
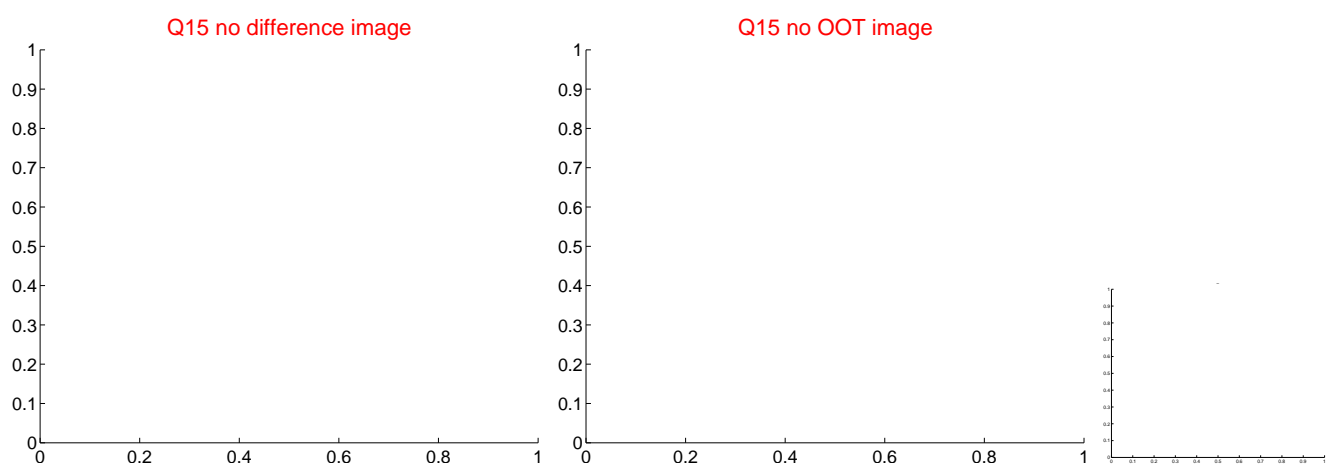
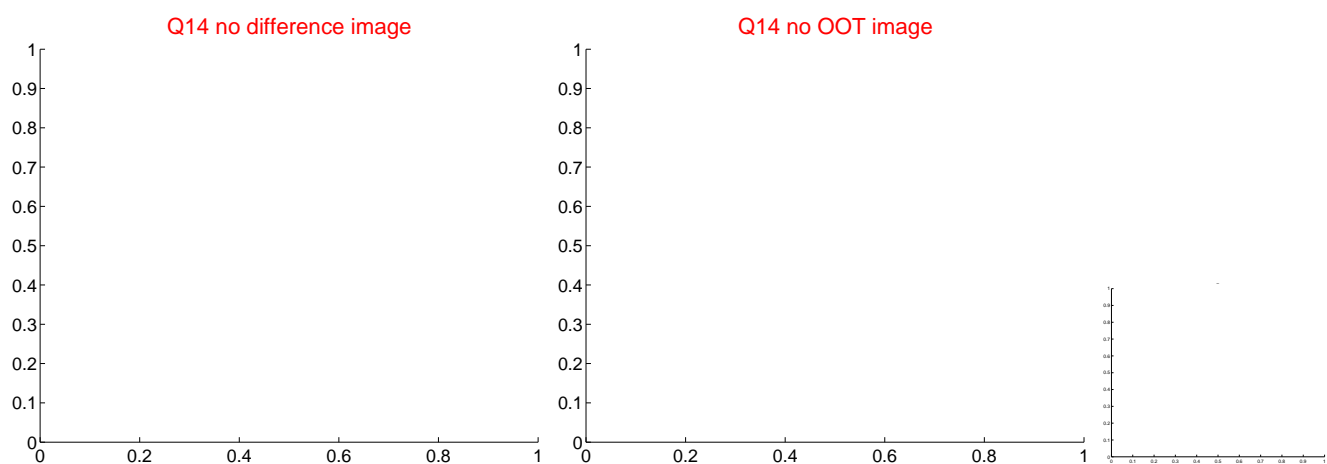
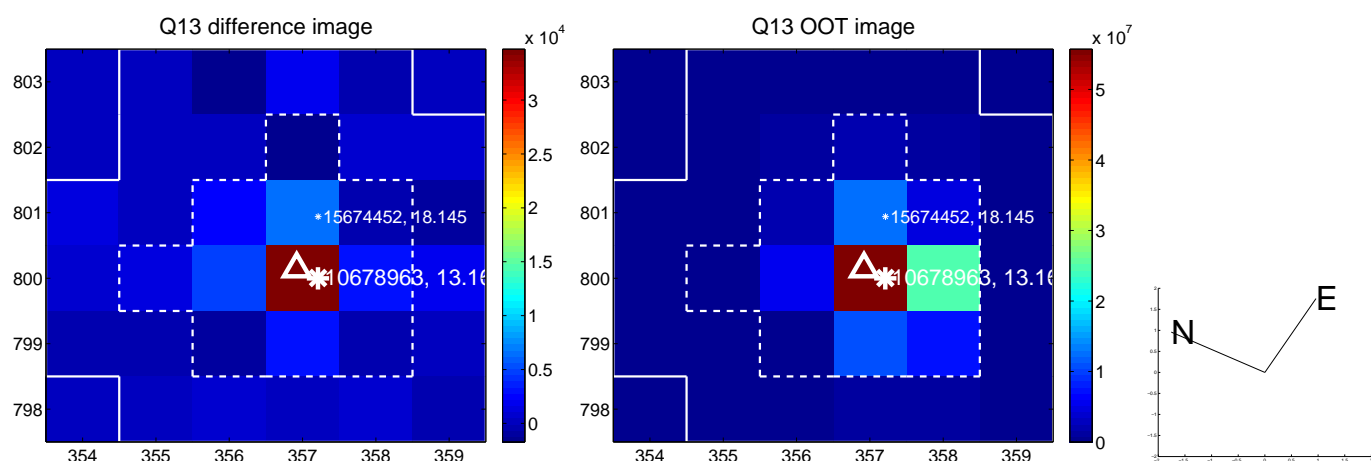
Q8 no OOT image



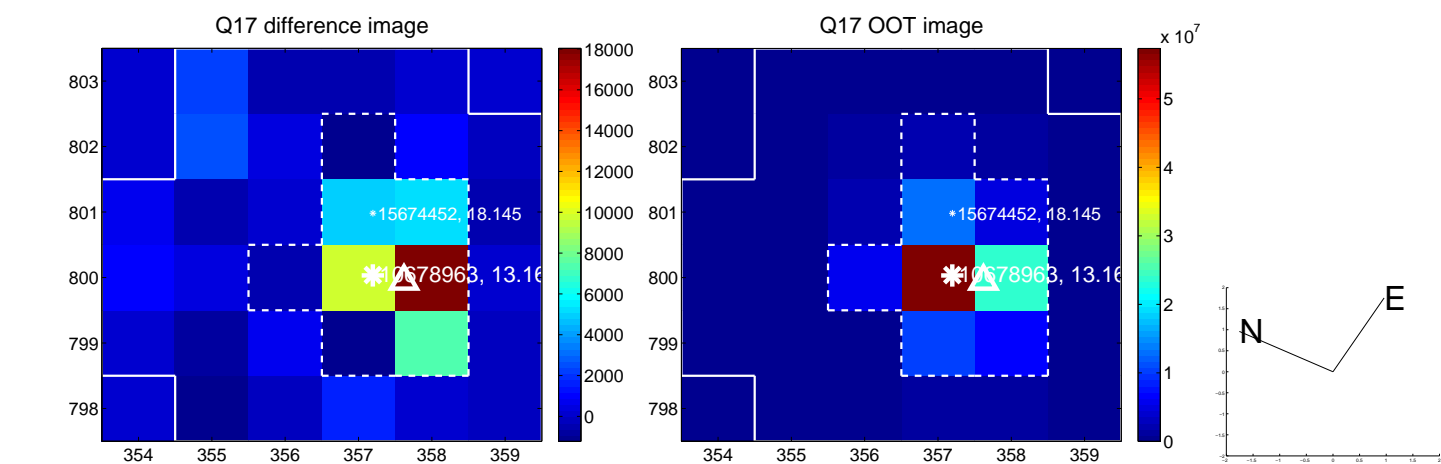
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



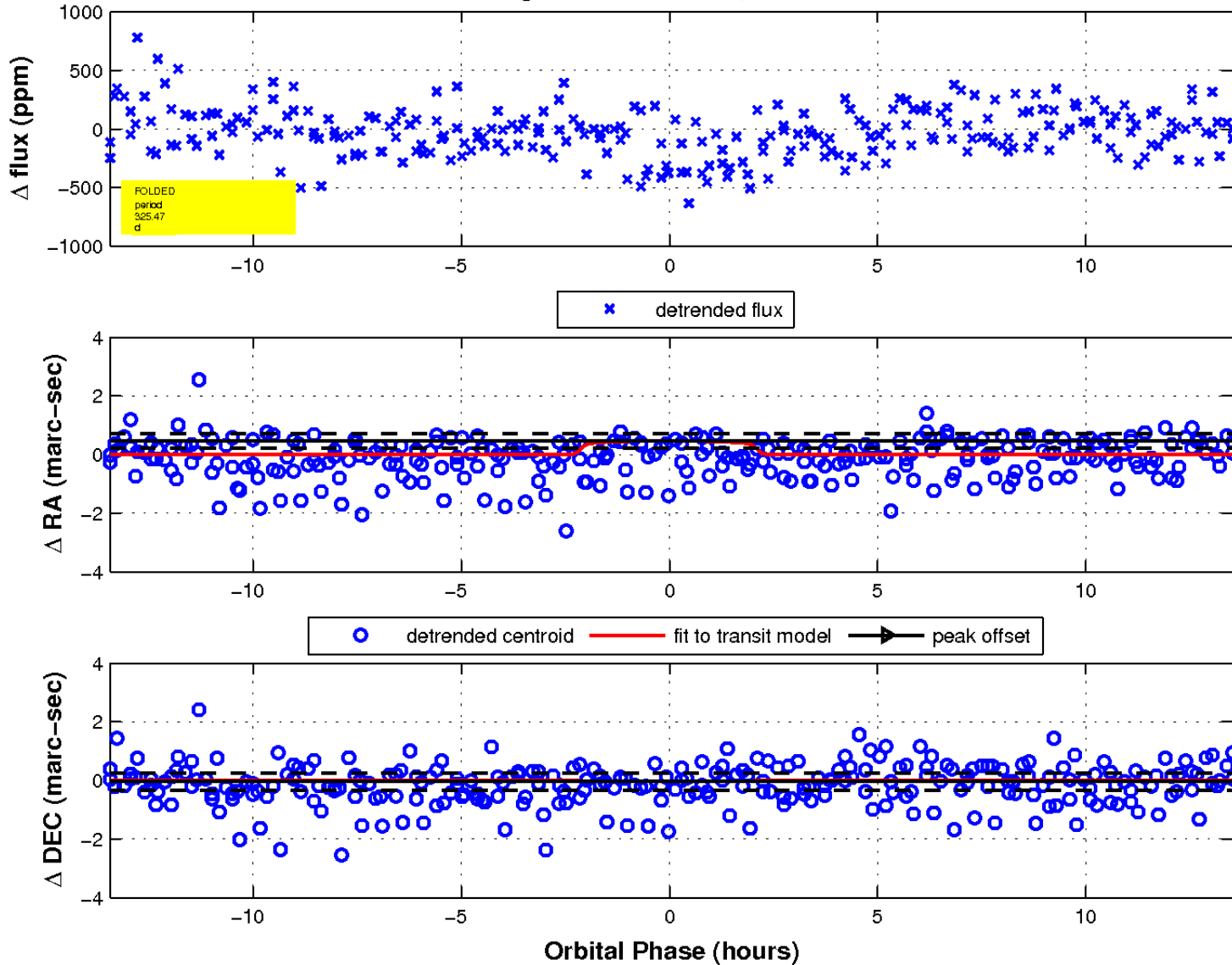
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

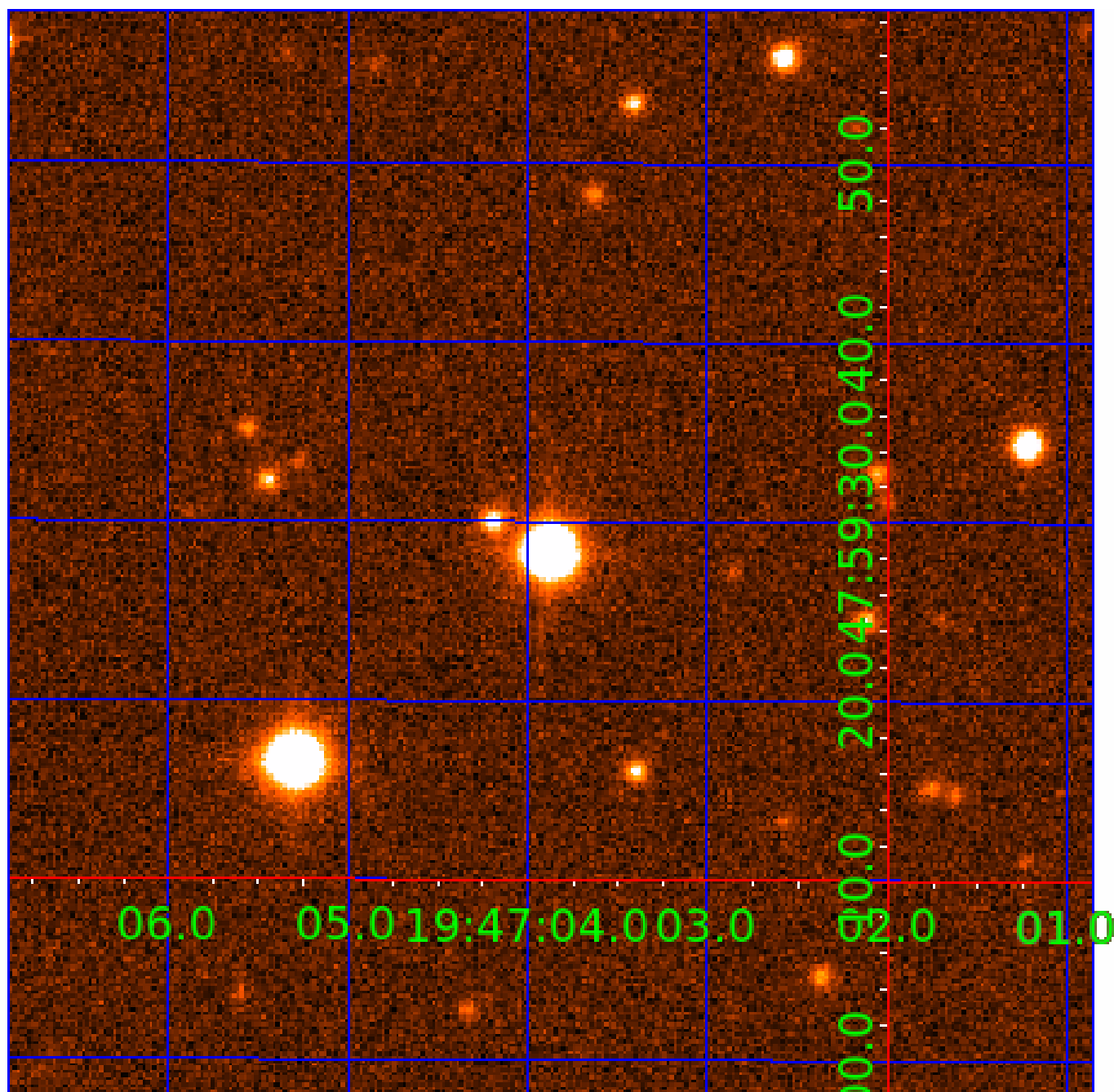


fluxWeightedCentroids, Planet 5 of 6



UKIRT Image

Declination



KIC 010678963

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})
010678963-01	OBS	No	0.876703	131.600549	36.7	3.265	8.0	10.0	1.66	7050	1.17	14400.56
010678963-02	OBS	No	35.873976	136.927565	144.6	4.037	8.0	6.5	1.66	7050	2.31	102.13
010678963-03	OBS	No	208.360231	268.698350	375.0	2.516	7.4	8.8	1.66	7050	3.68	9.78
010678963-04	OBS	No	51.293886	134.787280	278.4	4.618	7.3	7.9	1.66	7050	3.92	63.40
010678963-05	OBS	No	325.471818	266.316564	386.9	4.523	7.3	6.6	1.66	7050	3.61	5.40
010678963-06	OBS	No	195.941873	268.482435	449.8	2.851	7.2	7.4	1.66	7050	3.83	10.62

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010678963-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
010678963-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
010678963-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010678963-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_ALT
010678963-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010678963-06	OBS	FP	0.03	1	0	0	0	ALL_TRANS_CHASES—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.

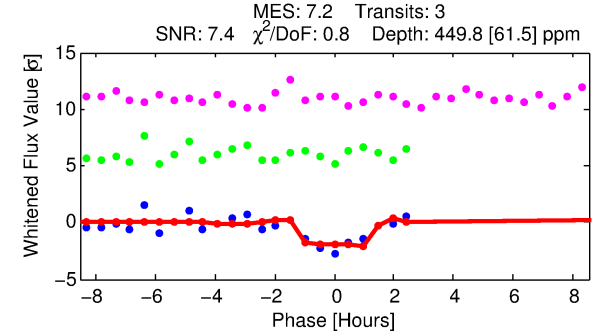
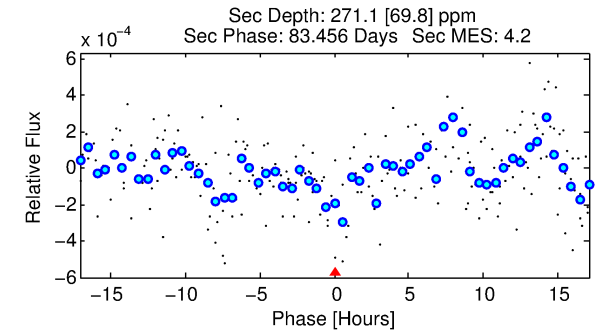
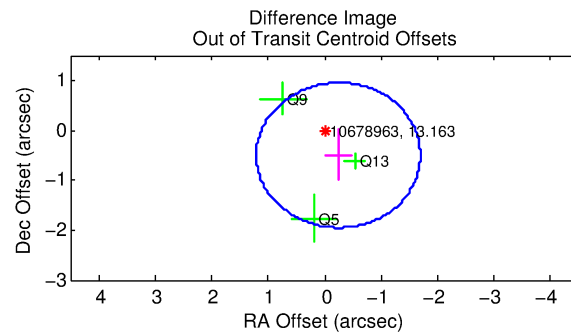
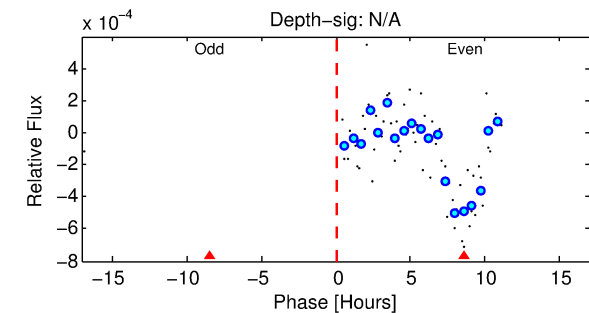
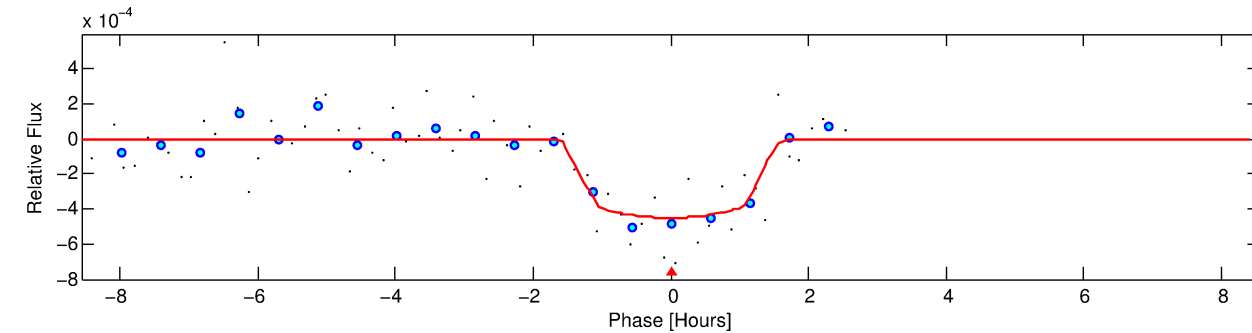
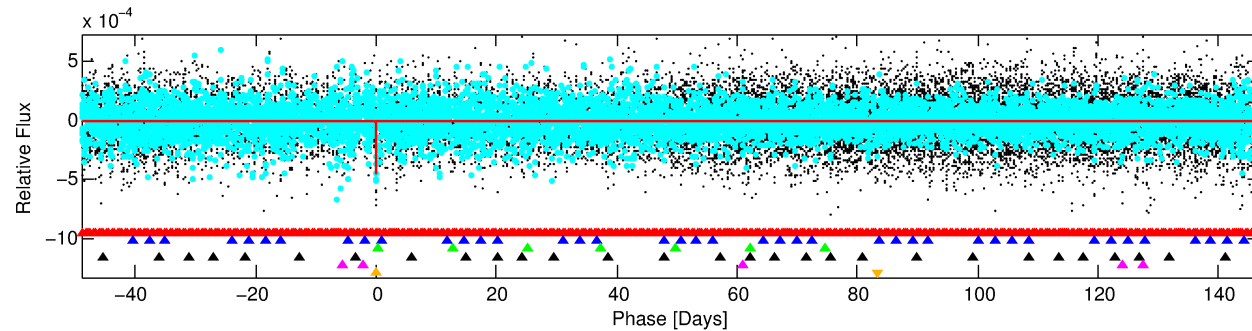
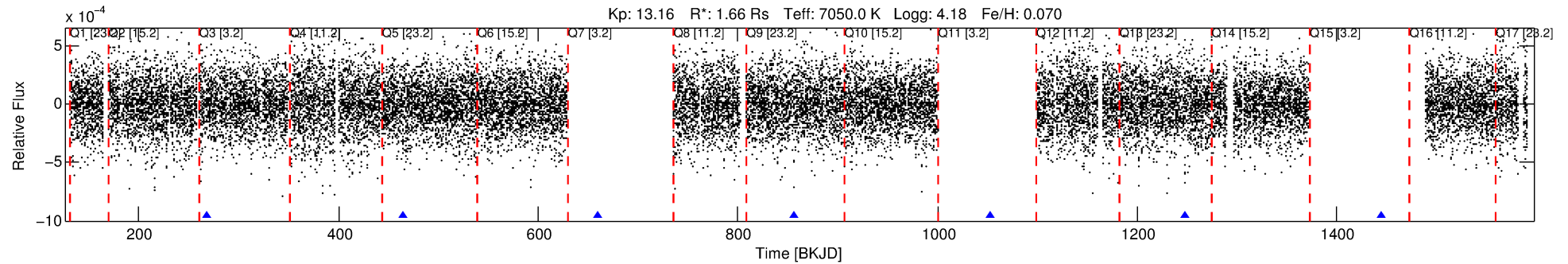
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678963-06

No Significant Match Found

DV One-Page Summary

KIC: 10678963 Candidate: 6 of 6 Period: 195.942 d



DV Fit Results:

Period = 195.94187 [0.00233] d
Epoch = 268.4824 [0.0091] BKJD
Rp/R* = 0.0212 [0.0264]
a/R* = 354.73 [2596.39]
b = 0.77 [4.00]
Seff = 10.62 [4.49]
Teq = 460 [49] K
Rp = 3.83 [4.92] Re
a = 0.7556 [0.2013] AU
Ag = 5808.82 [14686.49] [0.40] σ
Teffp = 6213 [3894] K [1.48] σ

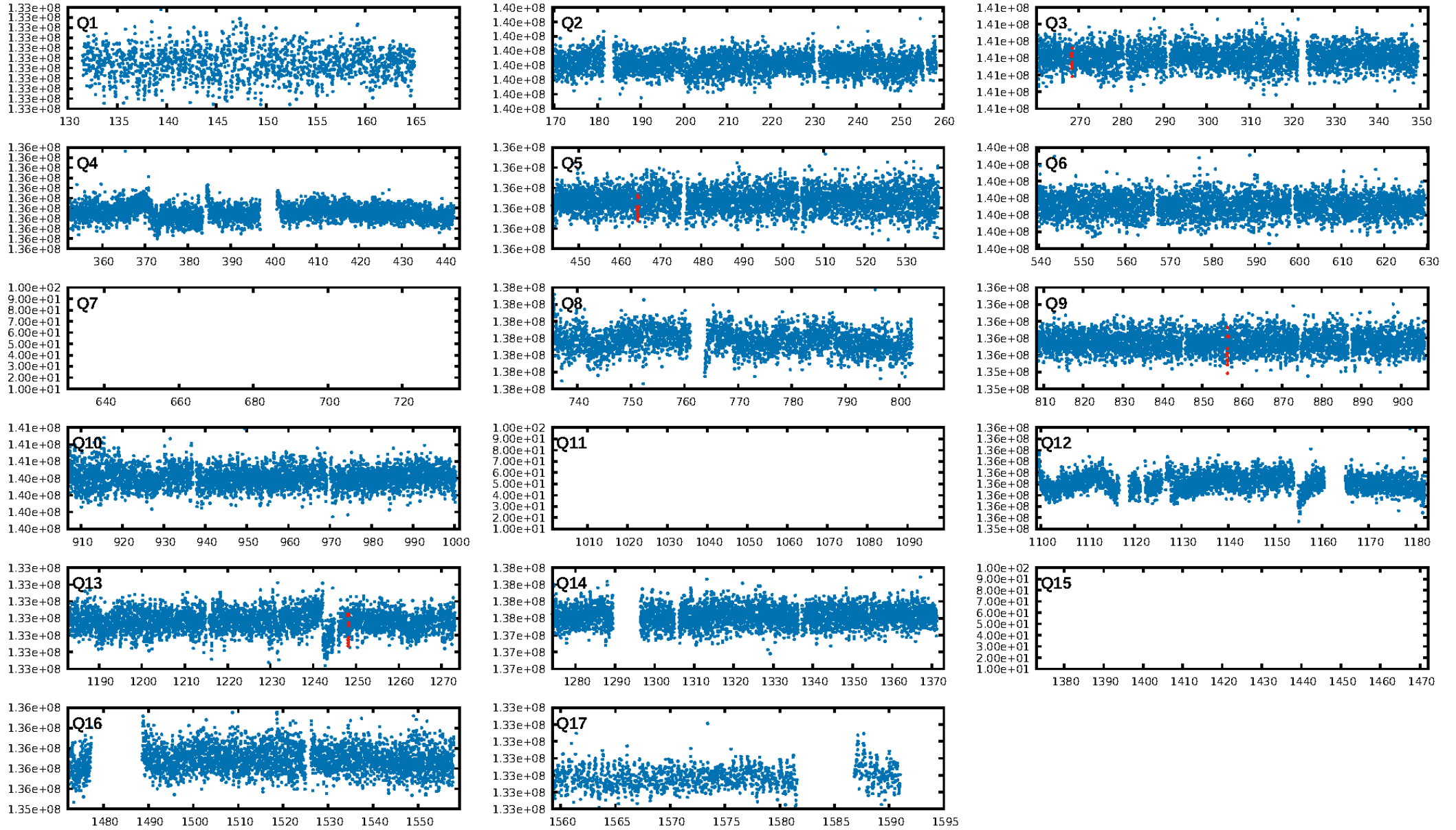
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [639.68] σ
LongPeriod-sig: 100.0% [78.38] σ
ModelChiSquare2-sig: 37.5%
ModelChiSquareGof-sig: 97.2%
Bootstrap-pfa: 3.61e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.132
Centroid-sig: 60.8%
Centroid-so: 0.580 arcsec [0.74] σ
OotOffset-rm: 0.556 arcsec [1.15] σ
OotOffset-st: 0/0/0/3 [3]
KicOffset-rm: 0.576 arcsec [0.88] σ
KicOffset-st: 0/0/0/3 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.00 [0/4]

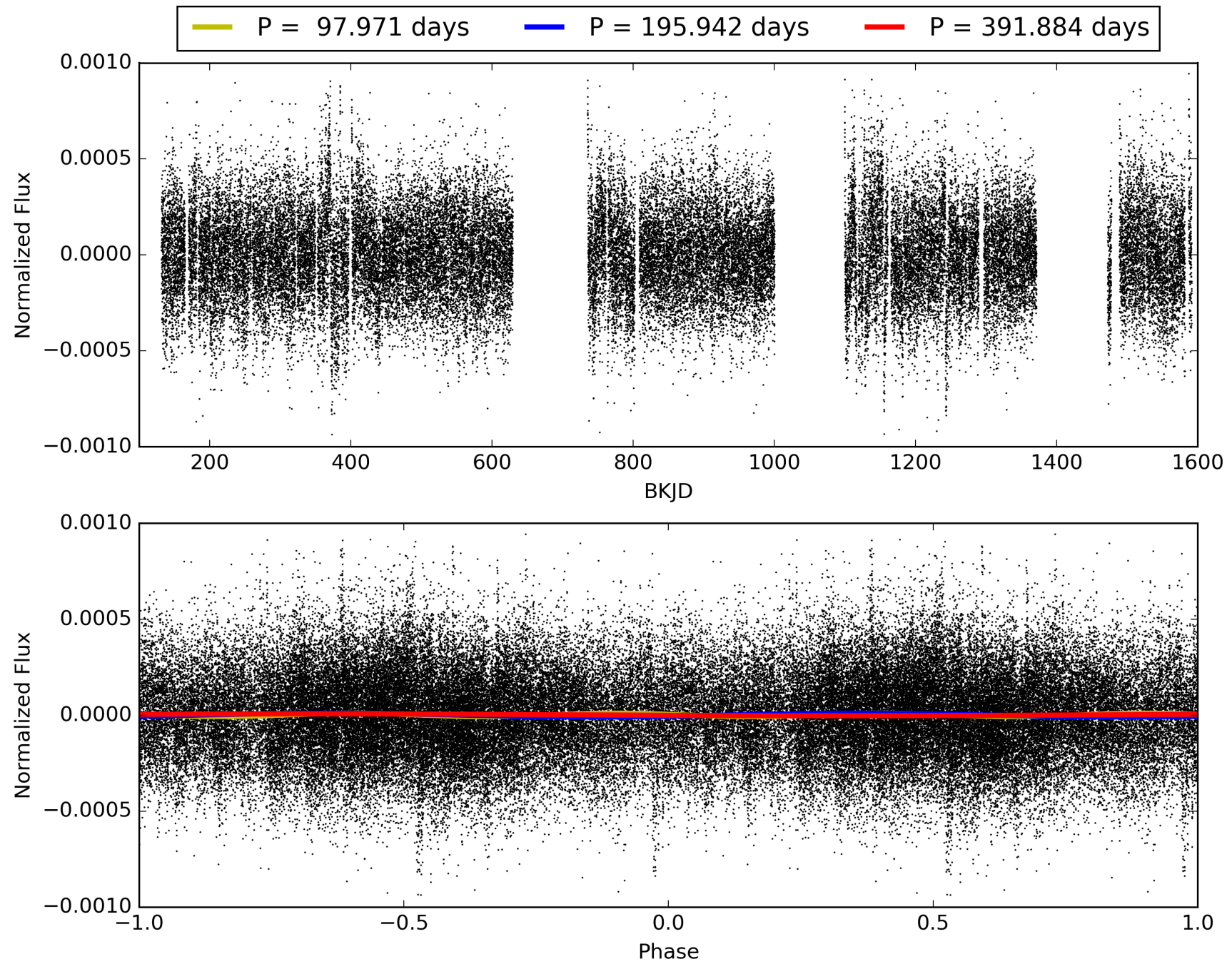
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:05:34 Z

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

TCE 010678963-06, PDC Light Curves

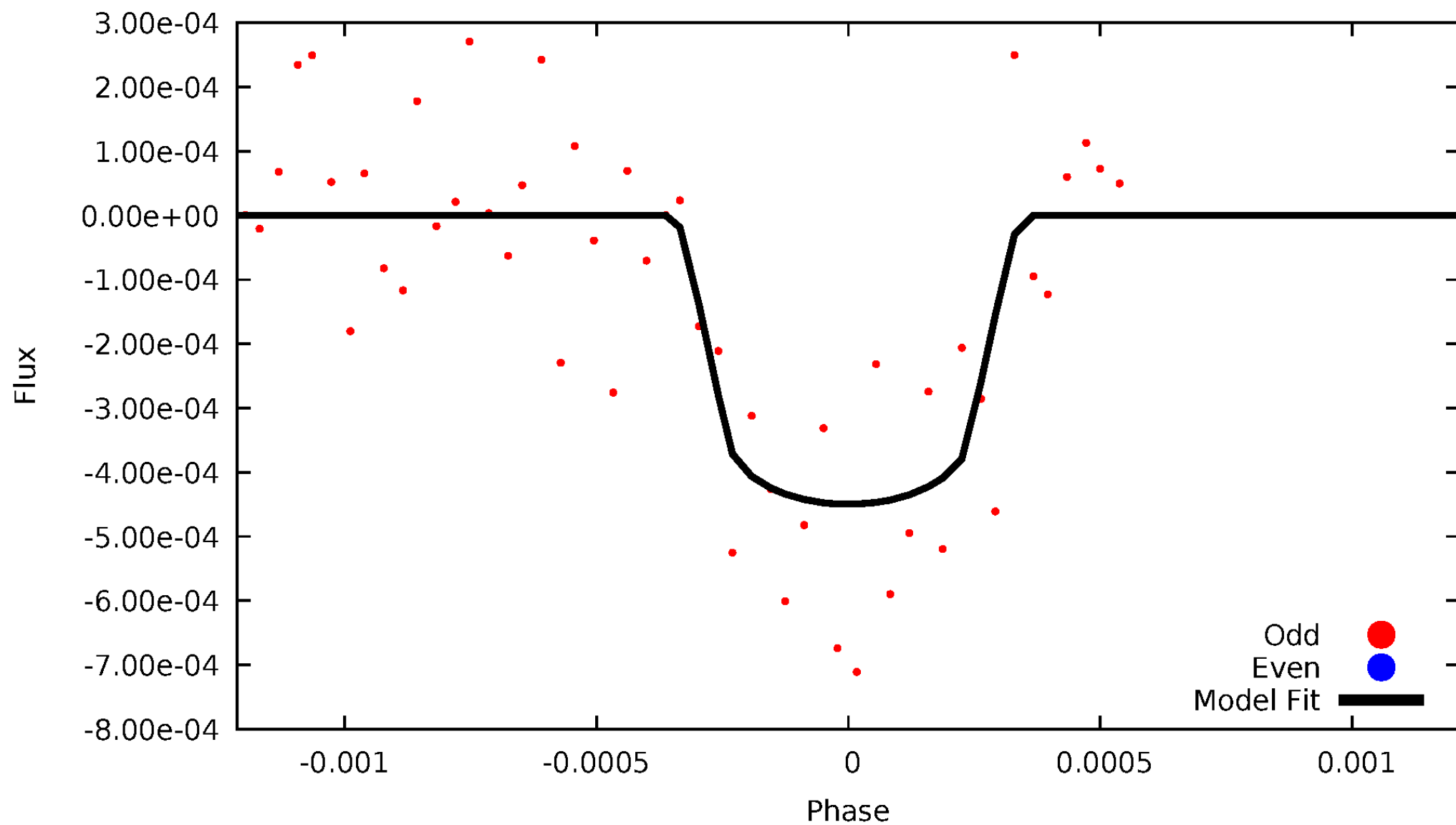


TCE 010678963-06



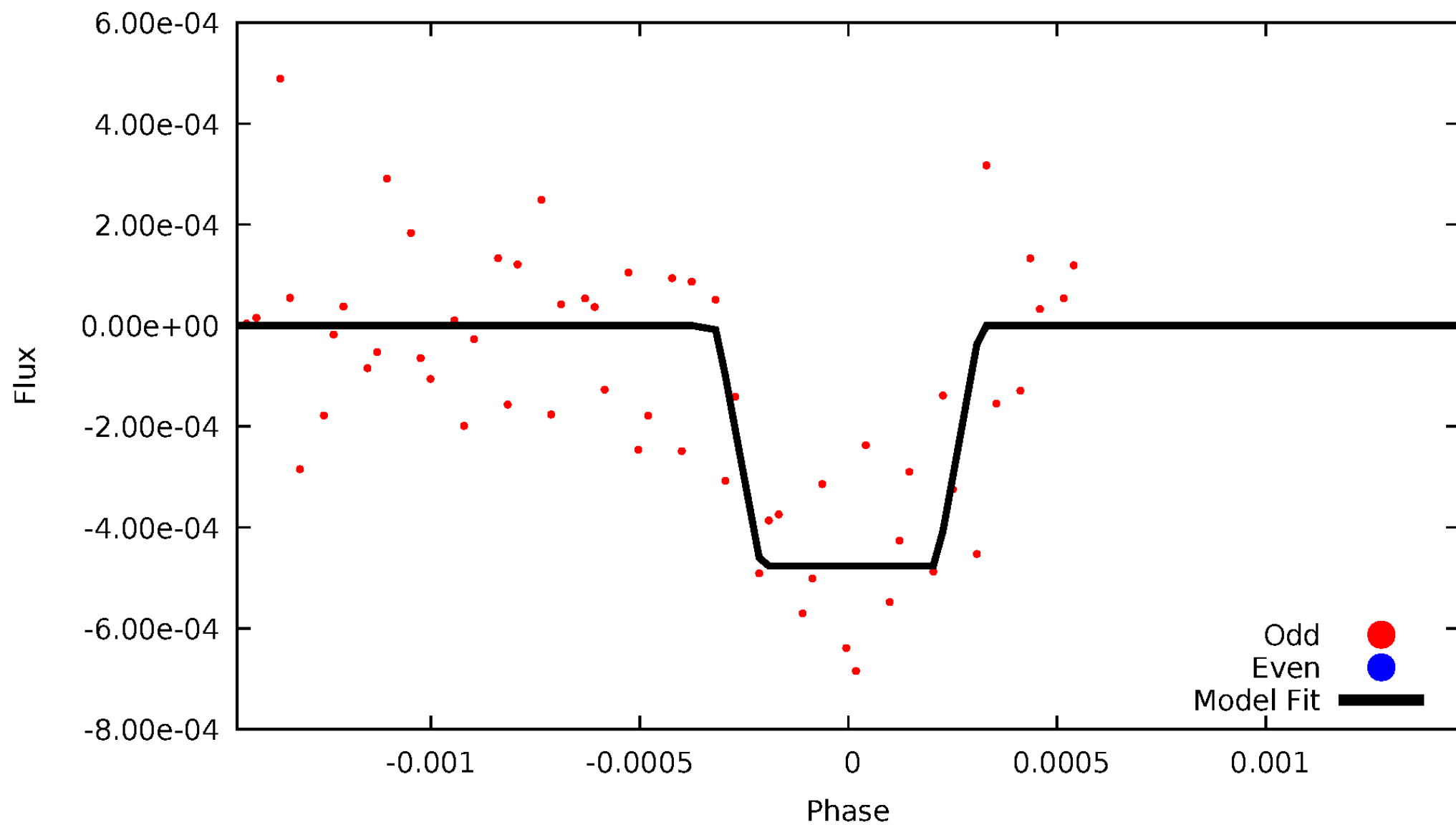
DV Odd/Even

TCE 010678963-06



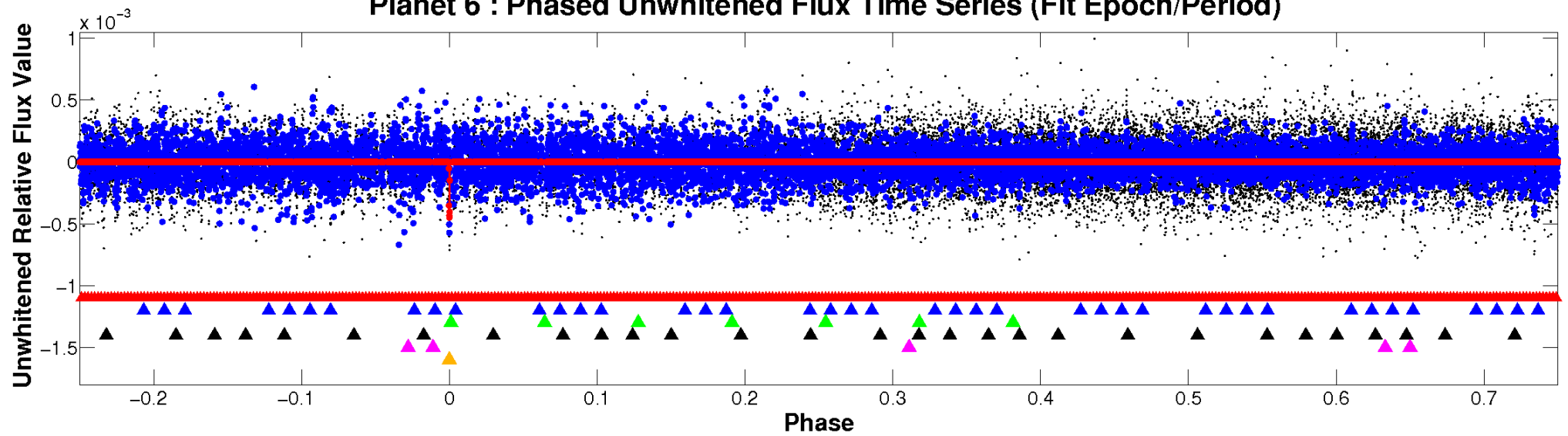
ALT Odd/Even

TCE 010678963-06

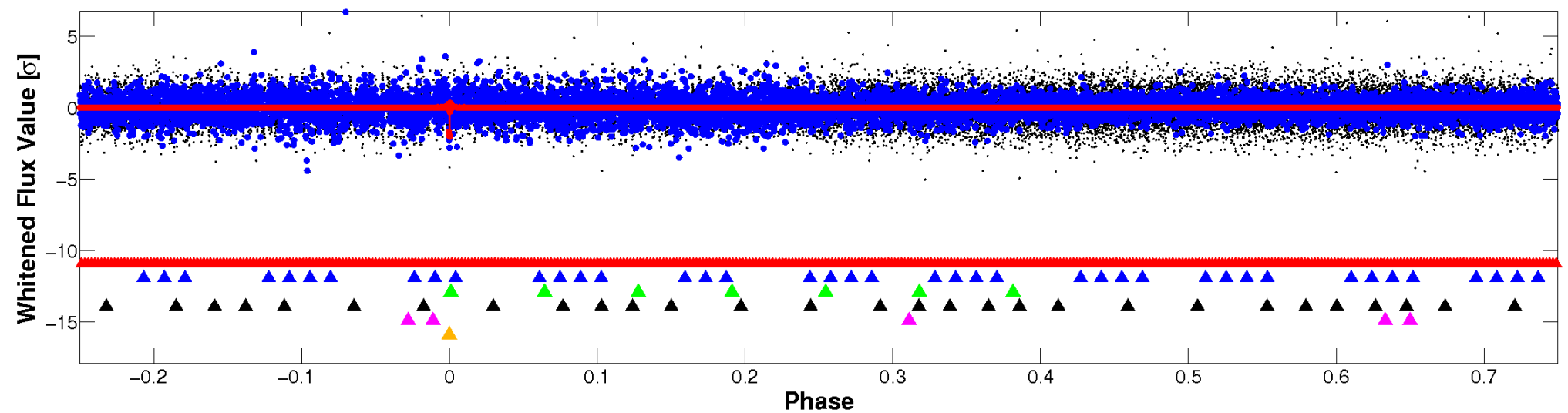


Non-Whitened Vs. Whitened Light Curve

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

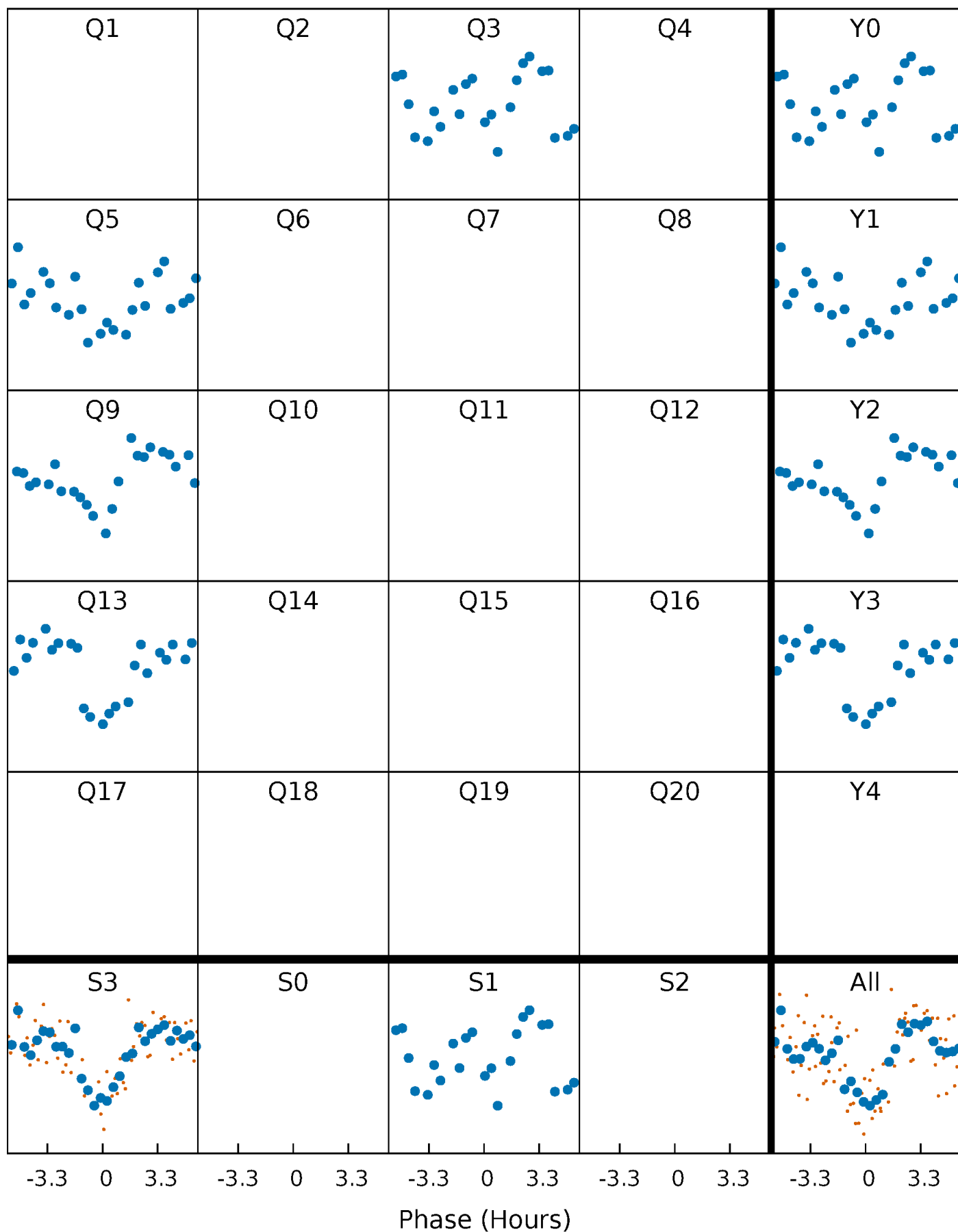


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



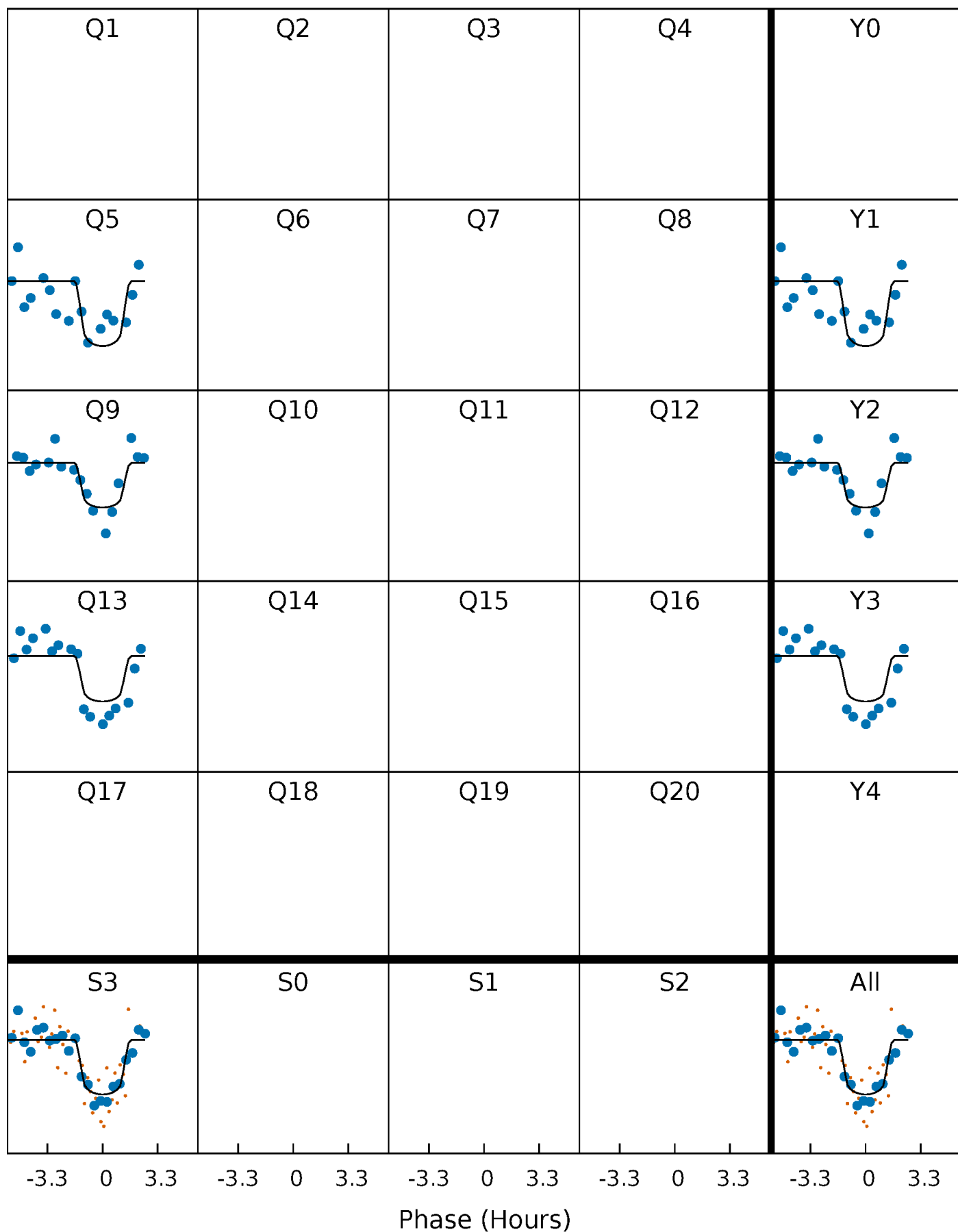
PDC Quarter-Phased Transit Curves

TCE 010678963-06 P=195.941873 Days $T_0=268.482435$ (BKJD)



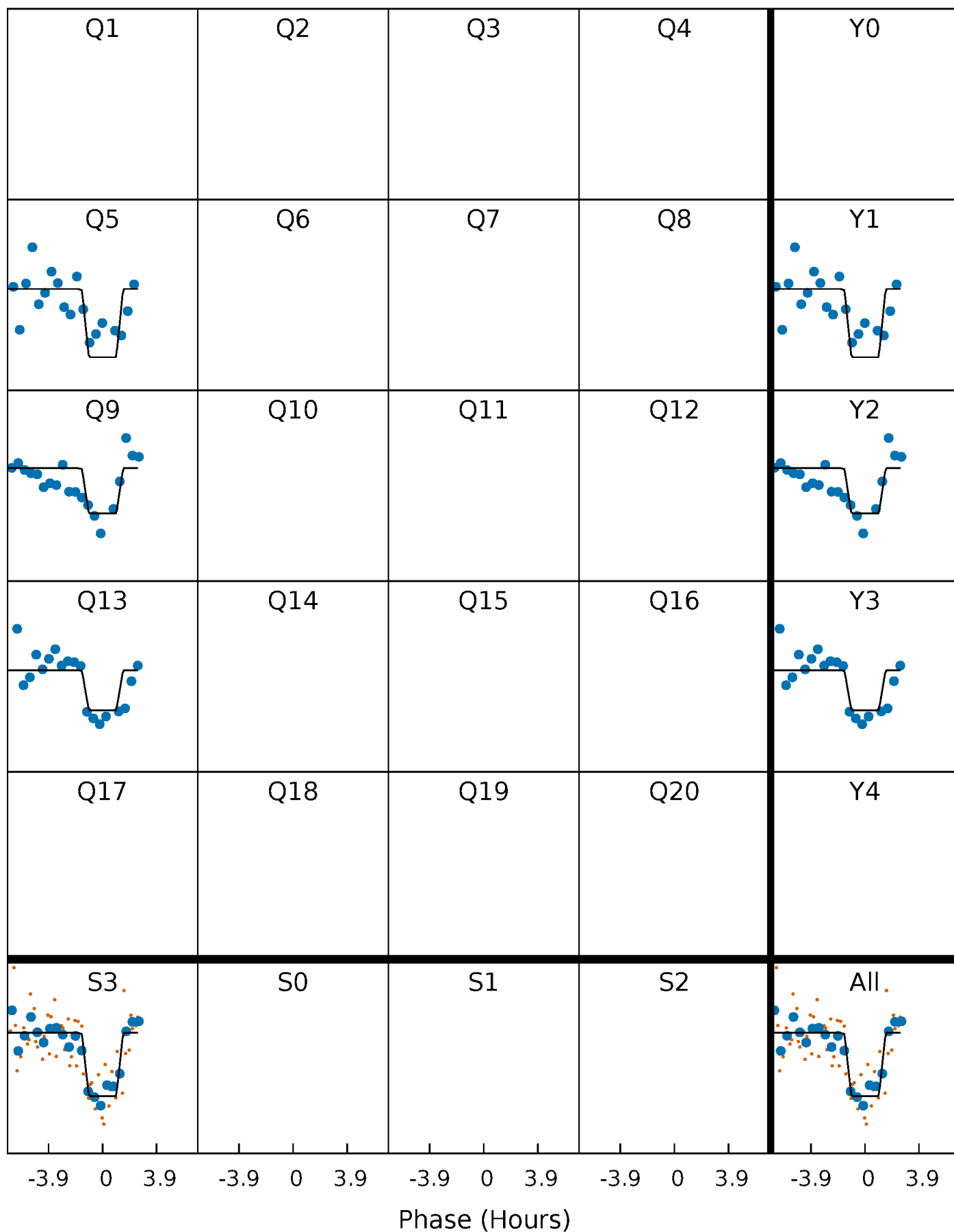
DV Quarter-Phased Transit Curves

TCE 010678963-06 $P=195.941873$ Days $T_0=268.482435$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

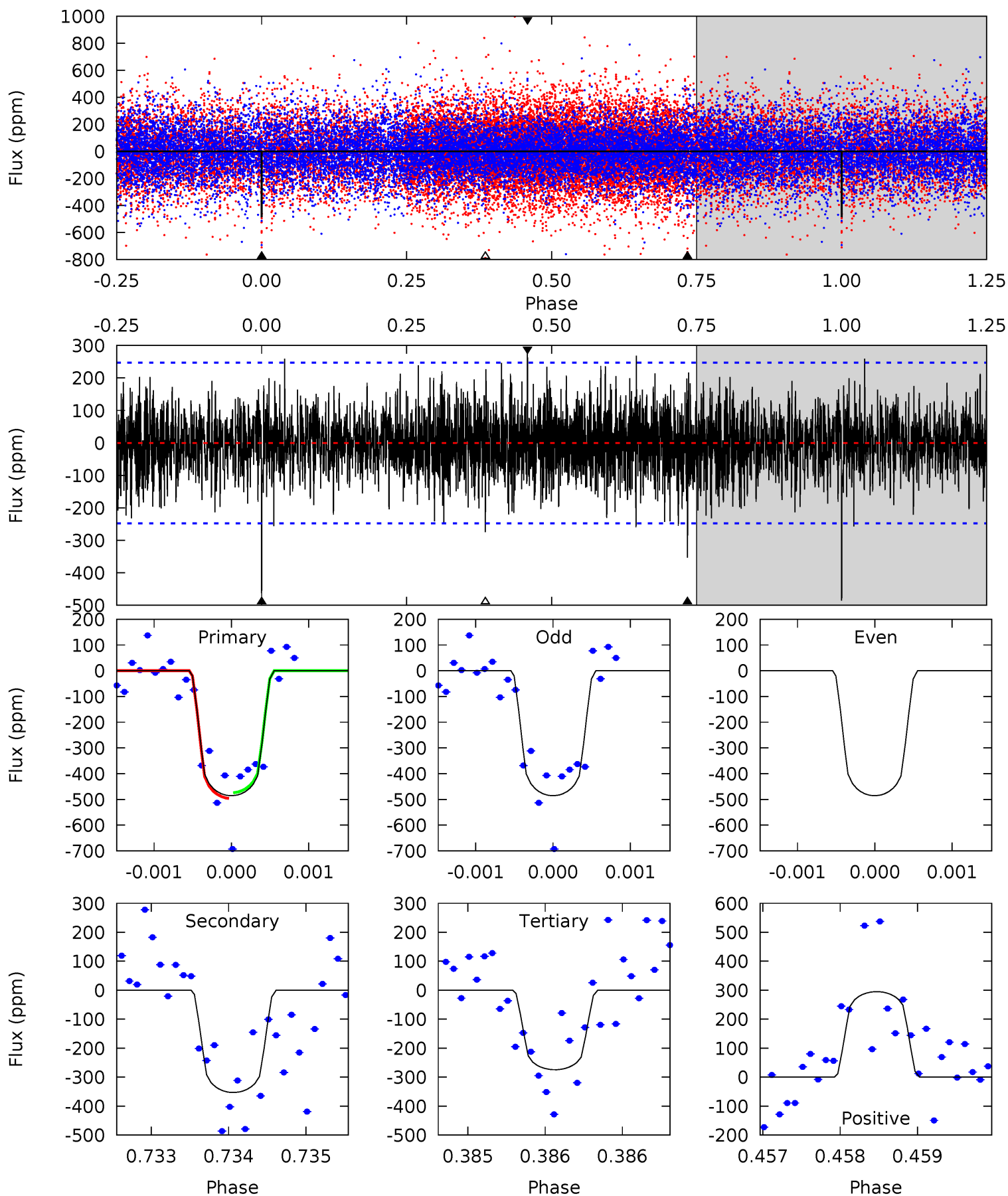
TCE 010678963-06 P=195.940428 Days $T_0=268.486435$ (BKJD)



DV Model-Shift Uniqueness Test

010678963-06, P = 195.941873 Days, E = 72.540562 Days

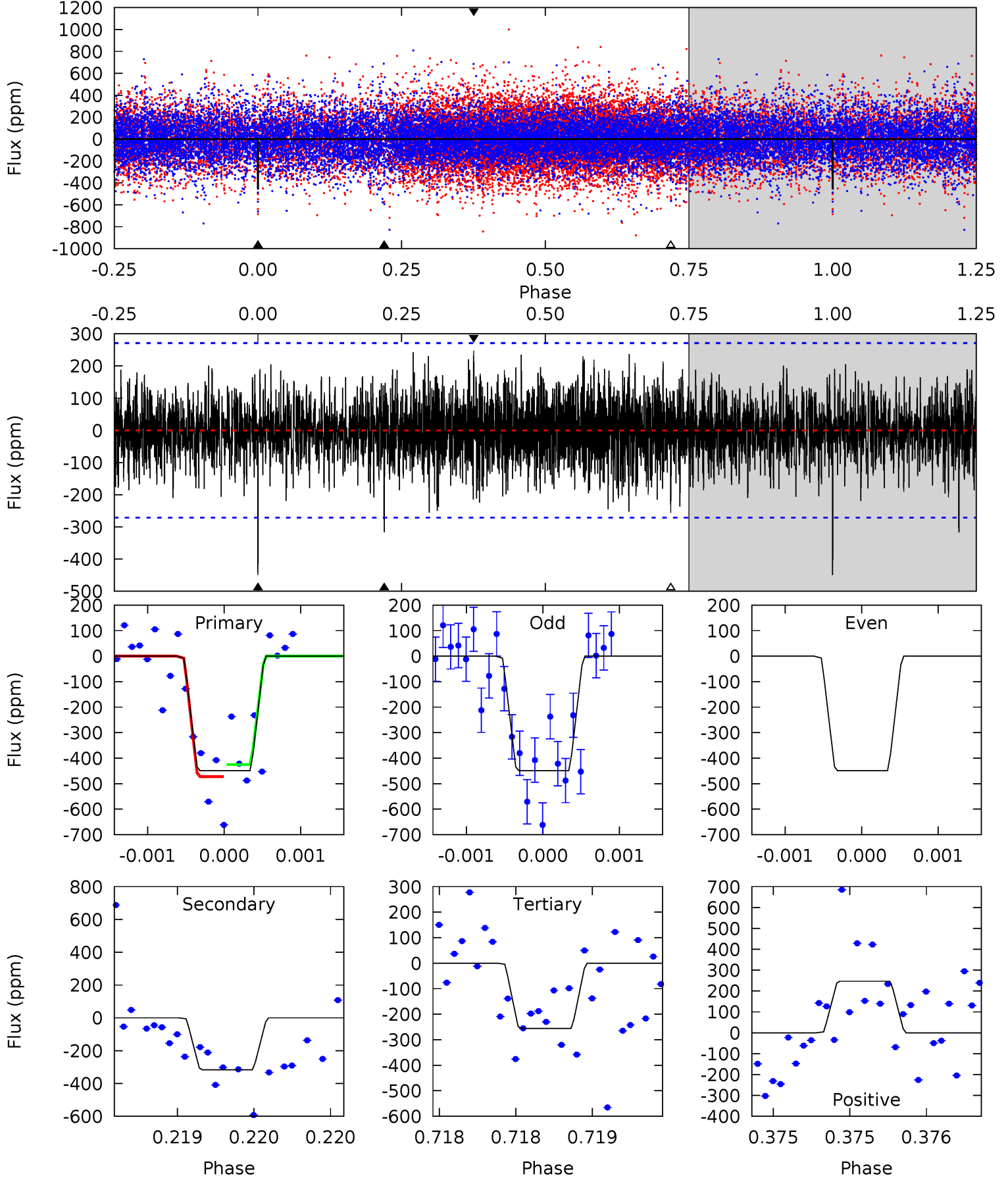
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	7.88	6.13	6.58	5.52	3.40	1.72	4.71	4.25	1.75	1.29	0	1.02	0.38	0.25



Alt Model-Shift Uniqueness Test

010678963-06, P = 195.940428 Days, E = 72.546007 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.18	6.47	5.23	5.04	5.54	3.43	1.52	3.95	4.13	1.24	1.43	0	0.98	0.35	0.48



Stellar Parameters For KIC 010678963

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7050^{+195}_{-335}	$4.176^{+0.108}_{-0.201}$	$0.070^{+0.200}_{-0.350}$	$1.655^{+0.539}_{-0.290}$	$1.497^{+0.214}_{-0.236}$	$0.465^{+0.278}_{-0.247}$
	+3%/-5%	+3%/-5%	+286%/-500%	+33%/-18%	+14%/-16%	+60%/-53%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 010678963-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-353 ± 45	$5.10^{+4.46}_{-3.29}$	647^{+54}_{-43}	5792^{+4702}_{-1386}	4114^{+28534}_{-2869}
Alt.	-316 ± 49	$5.52^{+4.76}_{-3.40}$	652^{+51}_{-45}	5465^{+3422}_{-1214}	3208^{+17629}_{-2279}

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 $A_{obs} \gg 1.0$

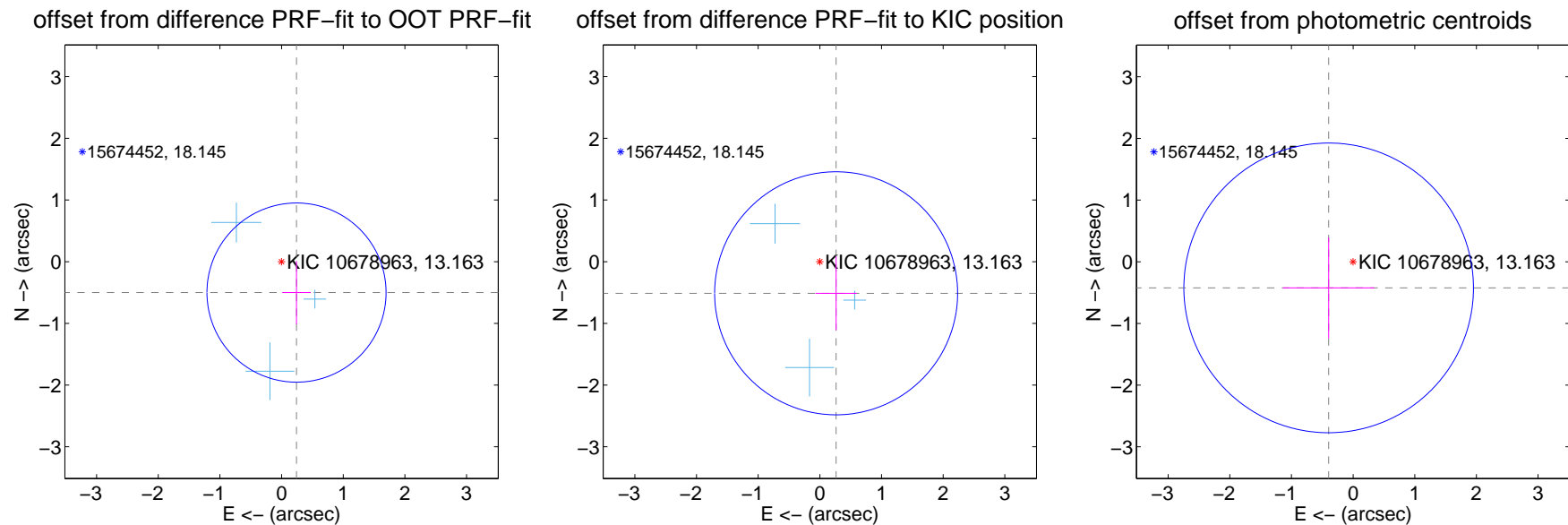
DV Centroid Data

Supplemental centroid analysis for 010678963-06. Kepler magnitude: 13.16. Transit SNR 7.39

There are 3 quarters with good PRF difference image offsets

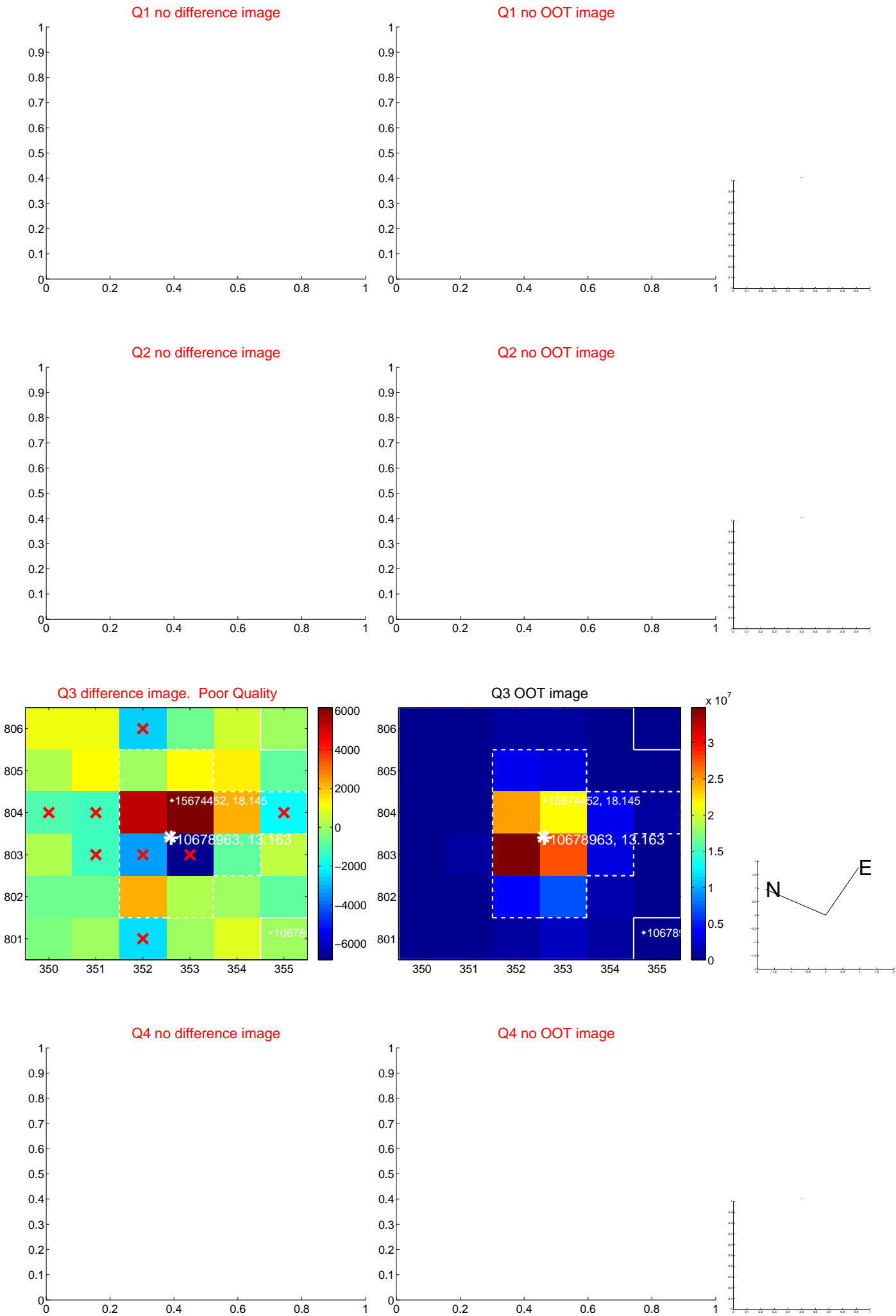
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.556 ± 0.484	1.15	-0.242 ± 0.231	-0.501 ± 0.511
PRF-fit source offset from KIC position	0.576 ± 0.657	0.88	-0.264 ± 0.335	-0.512 ± 0.598
photometric centroid source offset	0.58 ± 0.78	0.74	0.40 ± 0.74	-0.42 ± 0.82

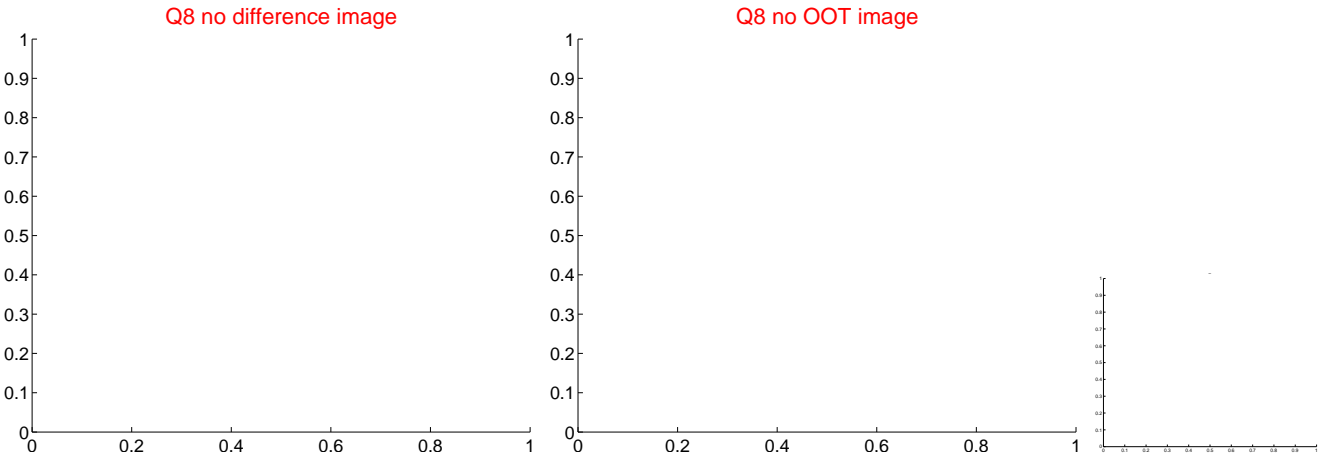
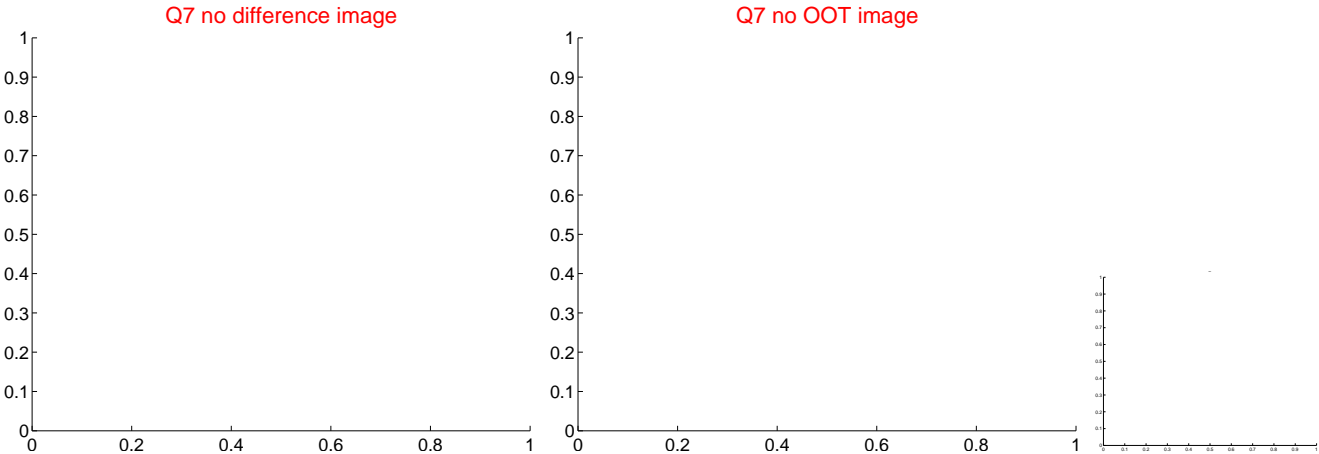
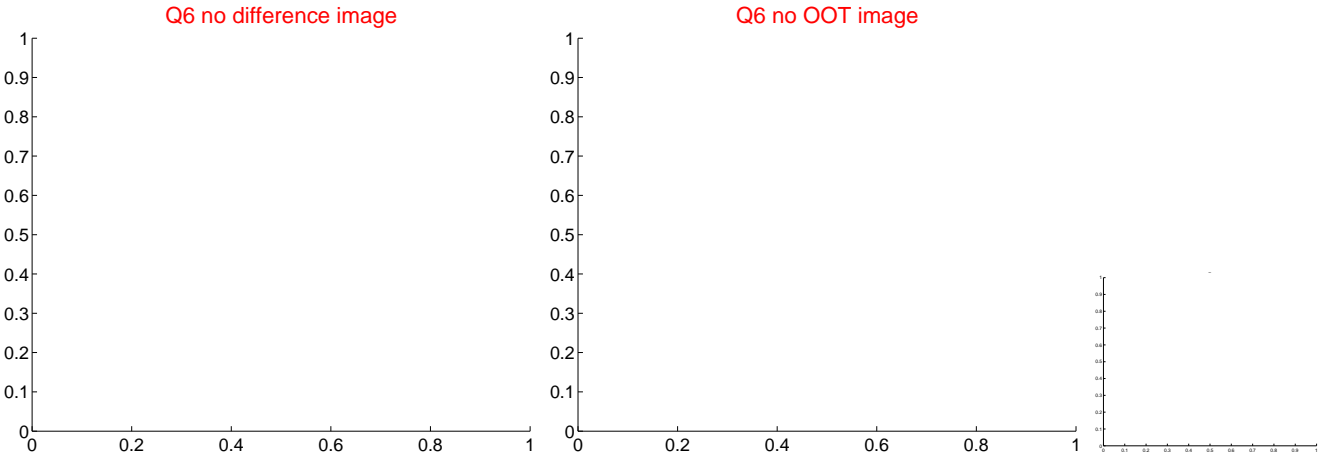
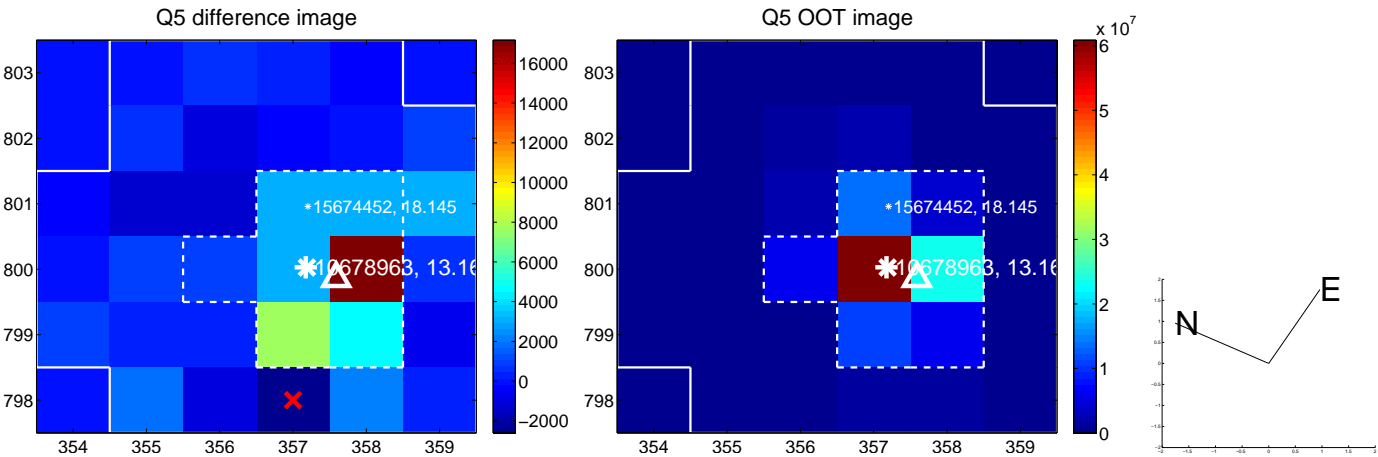


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

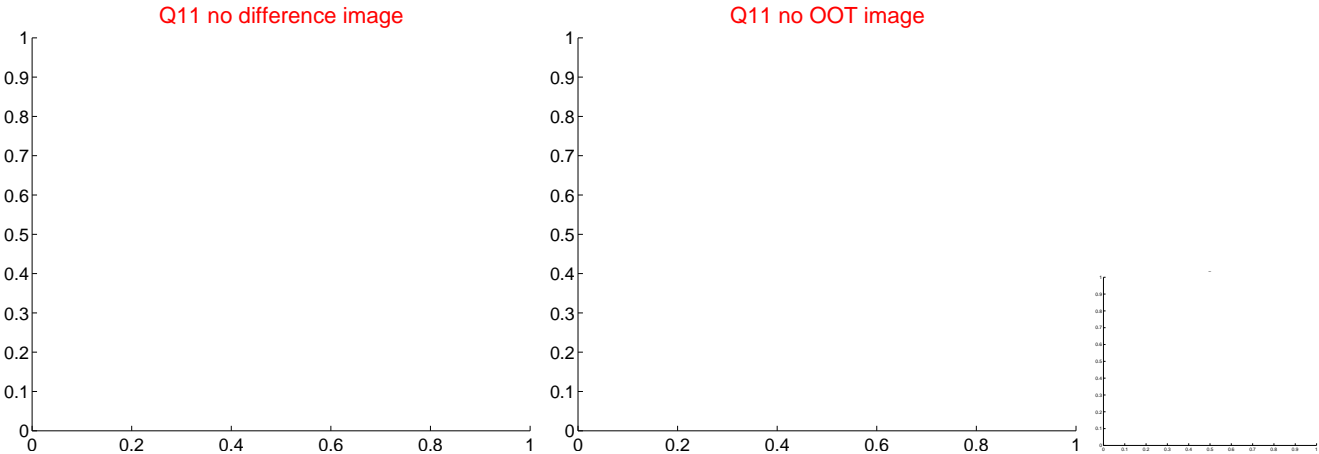
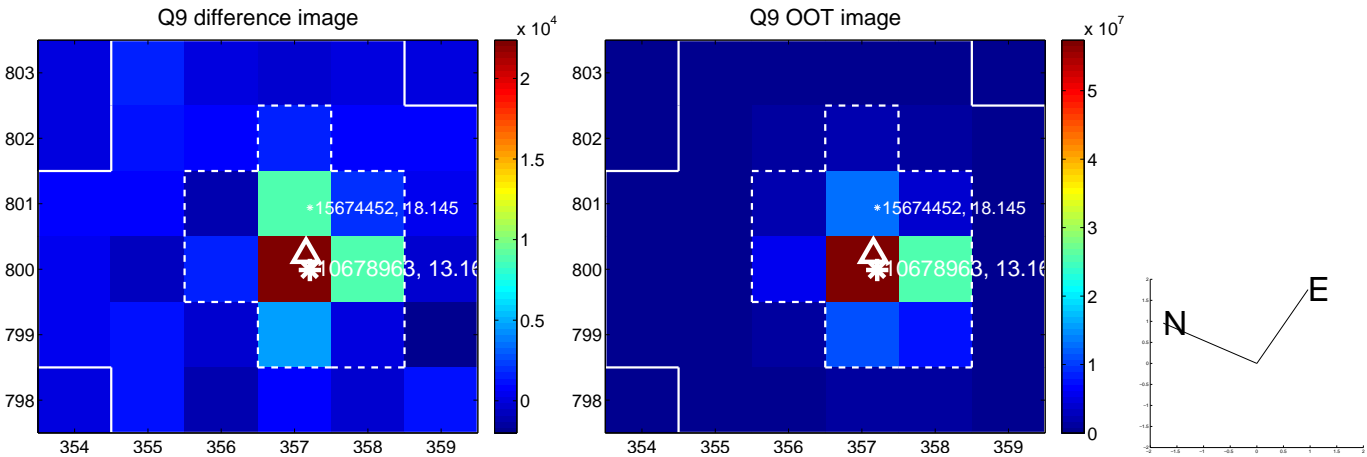
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



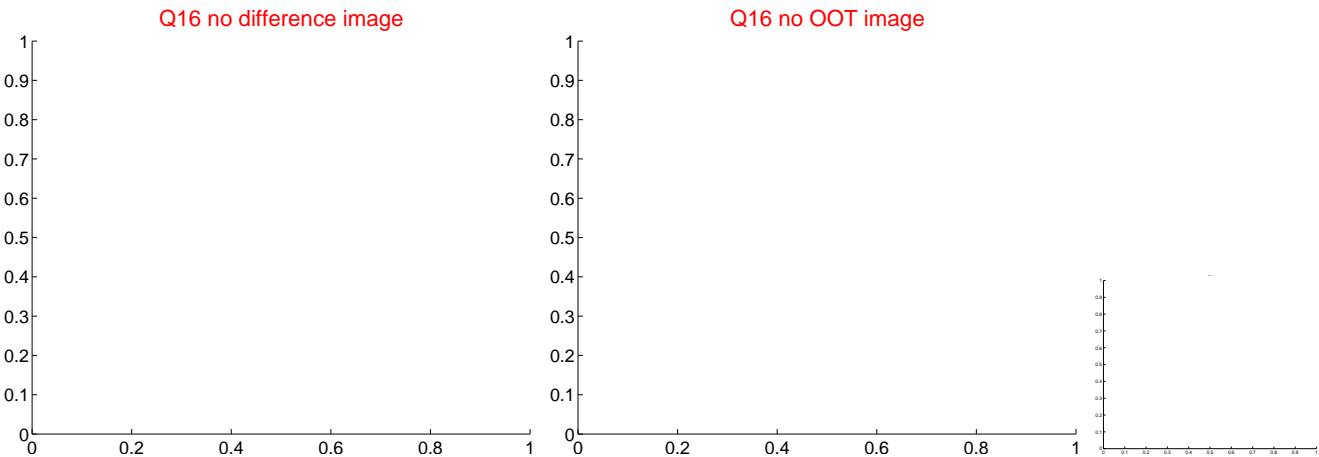
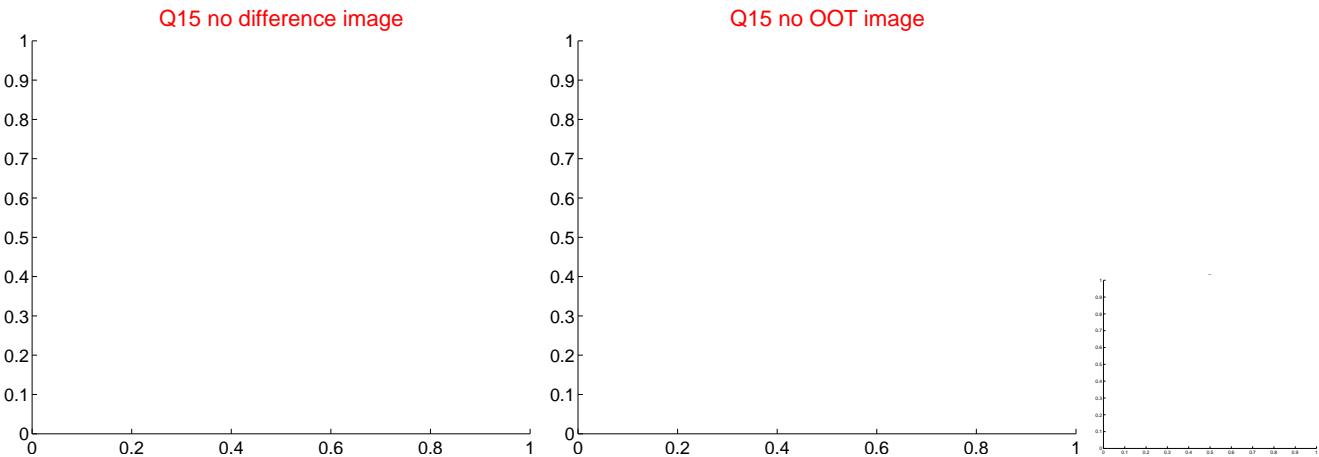
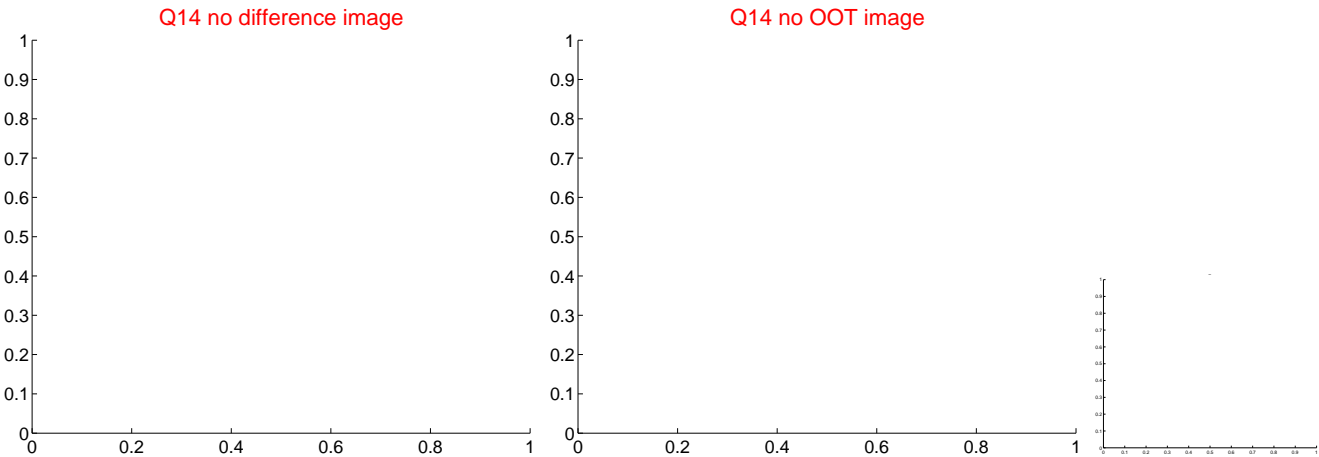
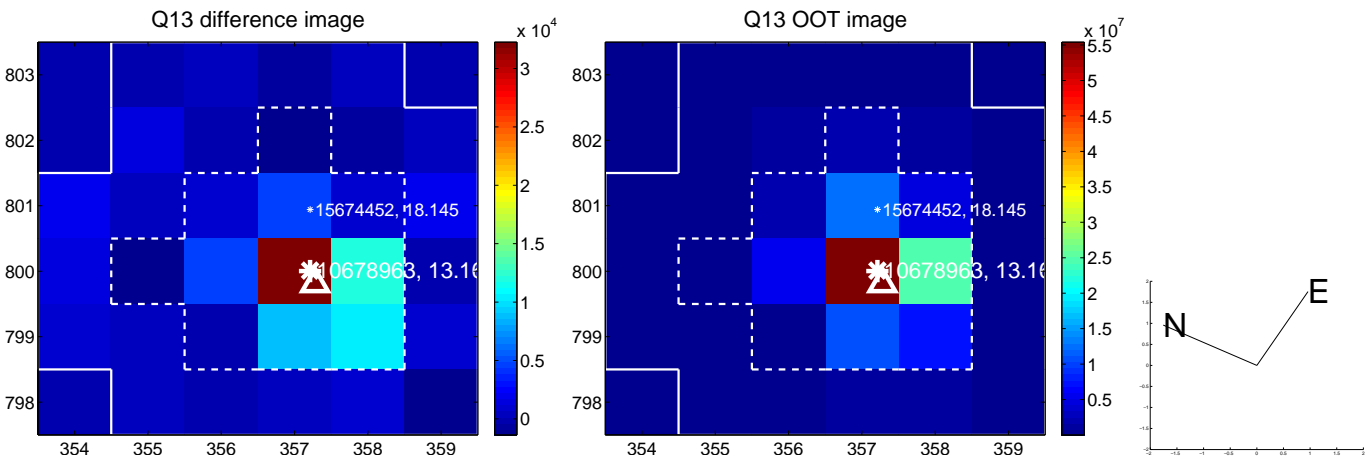
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



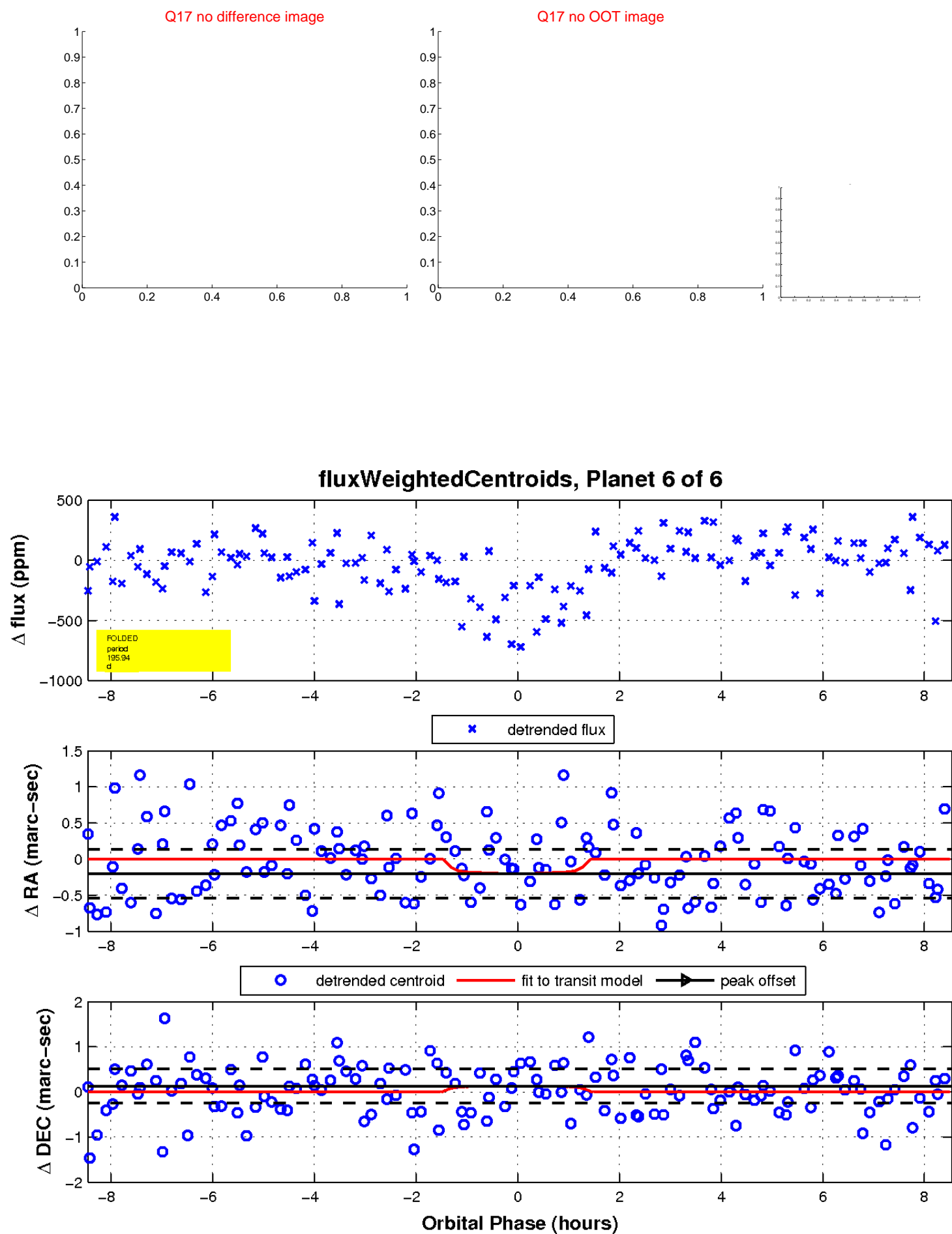
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

