

KIC 009656994

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})
009656994-01	OBS	No	1.942974	131.779497	19.0	7.992	9.3	7.2	1.74	6765	0.81	4866.41
009656994-02	OBS	No	147.547217	278.488217	262.8	18.114	14.8	9.3	1.74	6765	3.05	15.13
009656994-03	OBS	No	112.204233	133.985962	164.0	14.927	7.6	6.3	1.74	6765	2.45	21.80
009656994-04	OBS	No	466.214420	458.876718	309.6	10.215	7.6	8.7	1.74	6765	3.90	3.26
009656994-05	OBS	No	233.699319	245.139898	251.2	5.609	7.5	6.9	1.74	6765	3.04	8.20
009656994-06	OBS	No	518.794639	338.953431	249.0	4.798	7.1	7.2	1.74	6765	3.03	2.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009656994-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
009656994-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009656994-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV
009656994-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009656994-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009656994-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

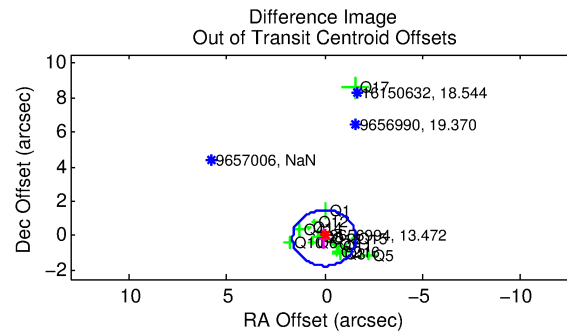
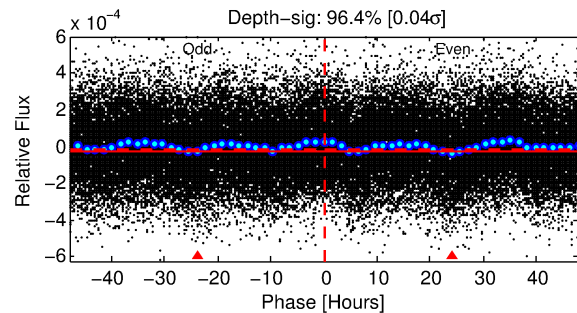
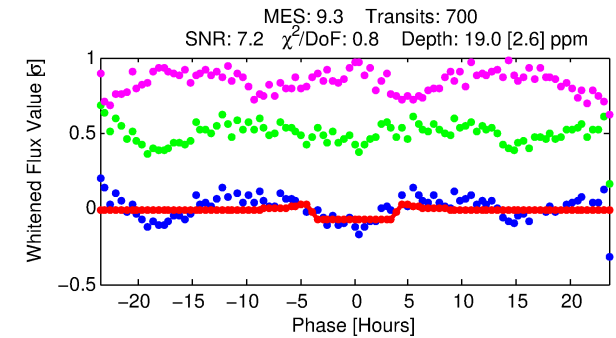
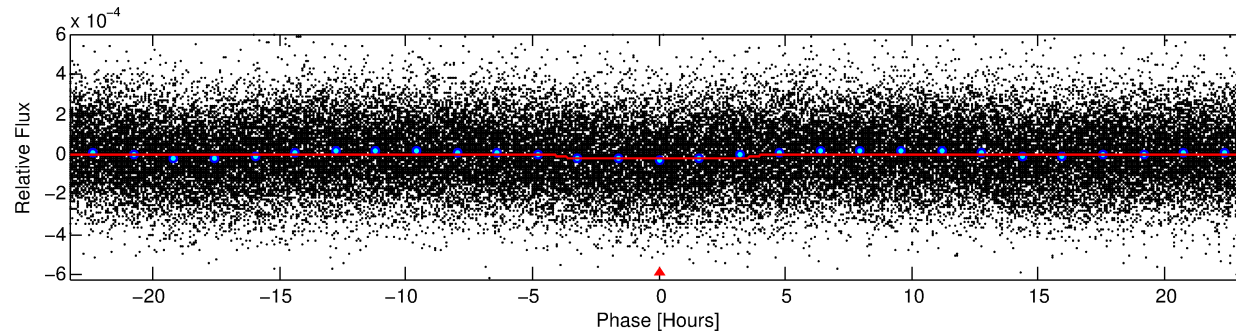
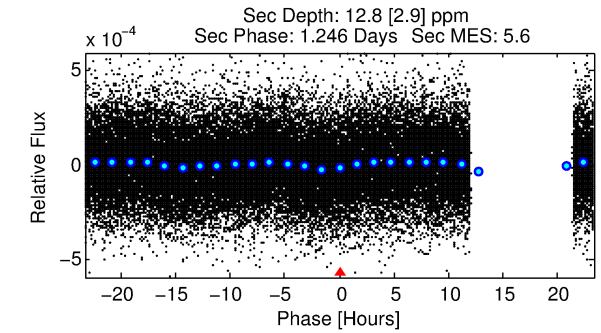
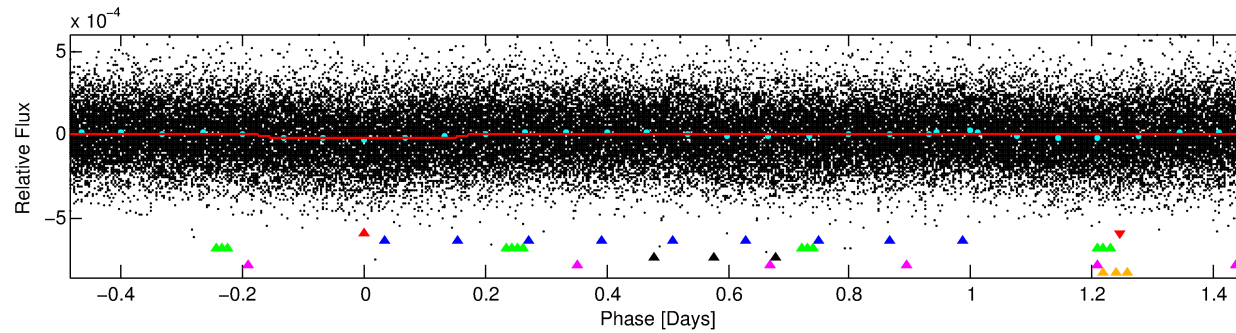
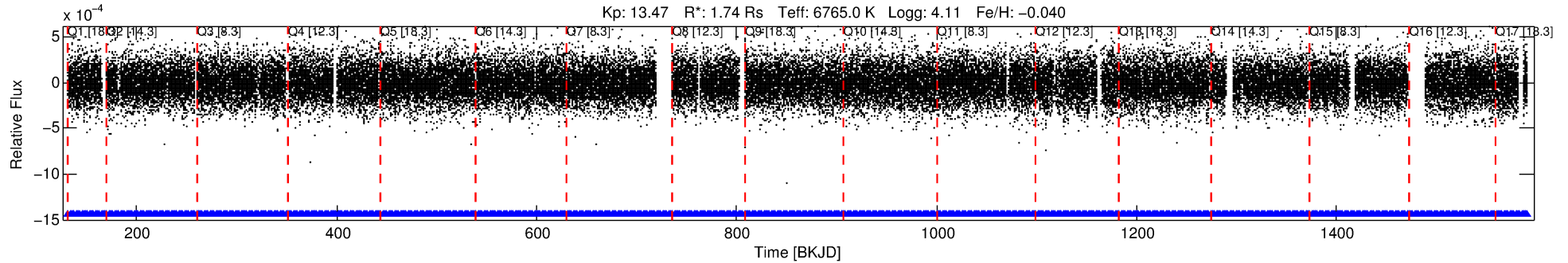
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009656994-01

No Significant Match Found

DV One-Page Summary

KIC: 9656994 Candidate: 1 of 6 Period: 1.943 d



DV Fit Results:

Period = 1.94297 [0.00003] d
Epoch = 131.7795 [0.0068] BKJD
Rp/R* = 0.0043 [0.0012]
a/R* = 1.60 [1.54]
b = 0.67 [1.28]
Seff = 4866.41 [1134.61]
Teq = 2130 [124] K
Rp = 0.81 [0.26] Re
a = 0.0342 [0.0050] AU
Ag = 12.64 [8.24] [1.41σ]
Teffp = 6209 [950] K [4.26σ]

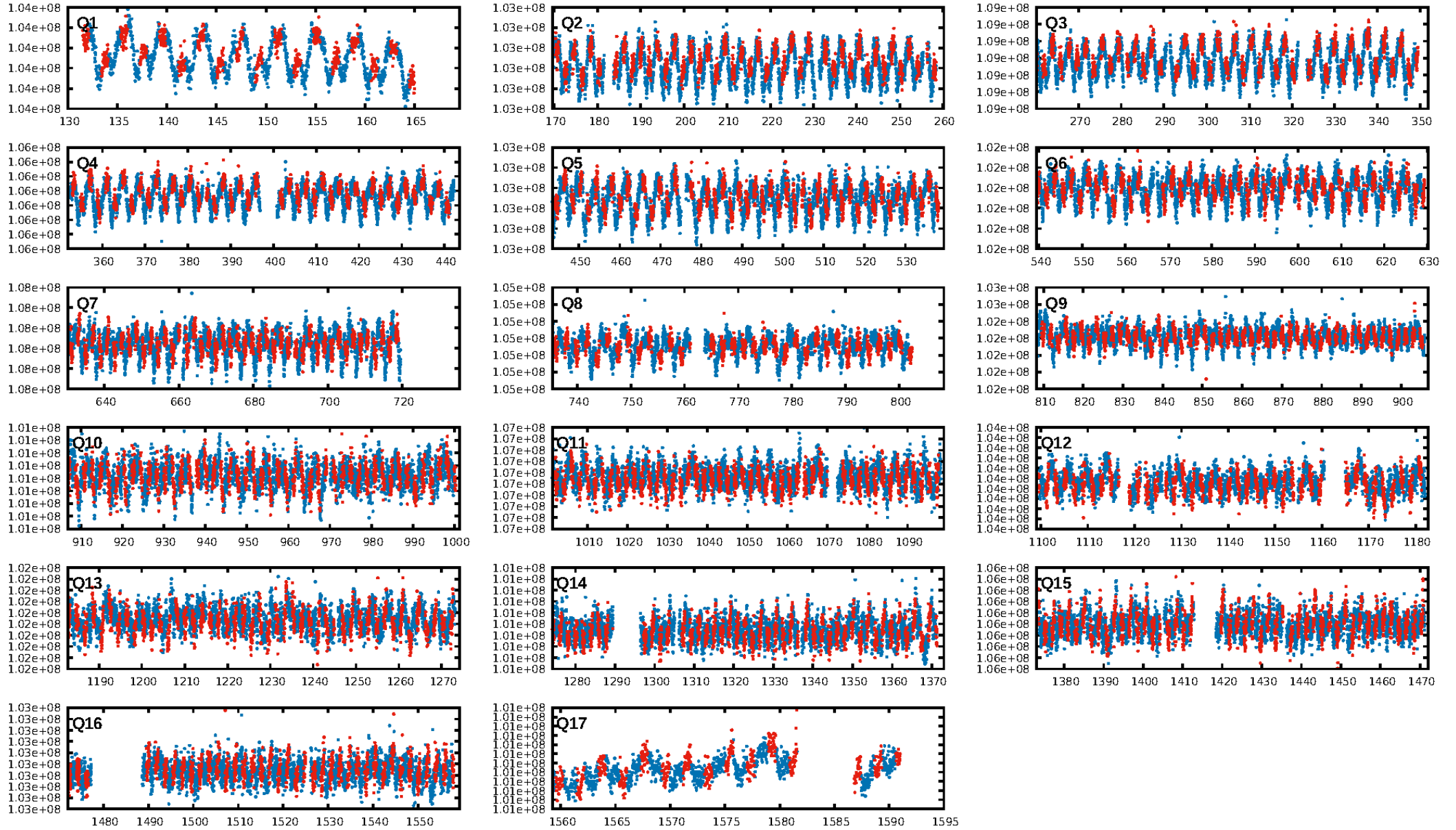
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [156.29σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.01e-13
RollingBand-fgt: 1.00 [667/667]
GhostDiagnostic-chr: 0.8923
Centroid-sig: 0.0%
Centroid-so: 2.986 arcsec [2.98σ]
OotOffset-rm: 0.132 arcsec [0.25σ]
KicOffset-rm: 0.252 arcsec [0.45σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.69 [11/16]
DiffImageOverlap-fno: 1.00 [17/17]

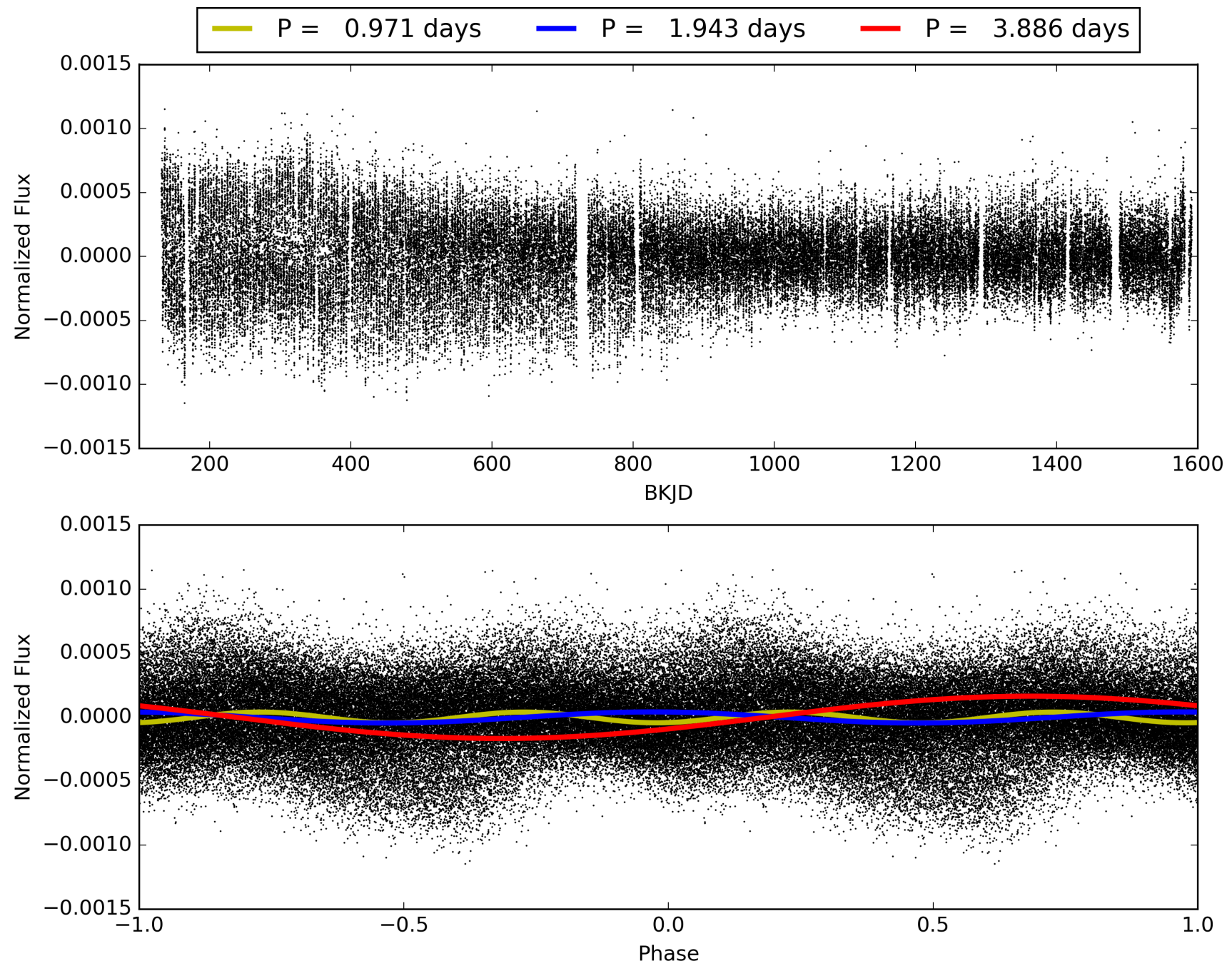
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:37:24 Z

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

TCE 009656994-01, PDC Light Curves

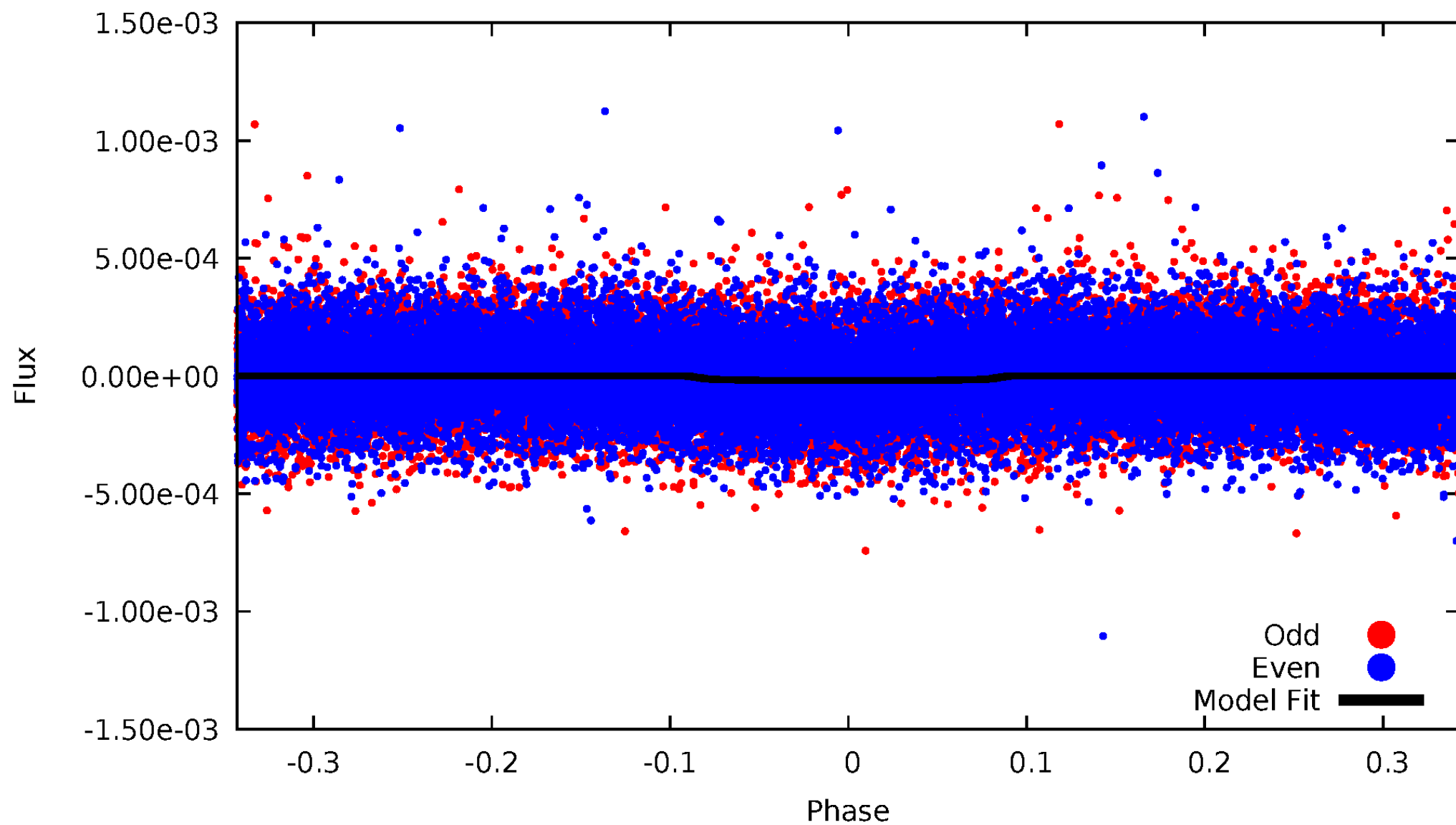


TCE 009656994-01



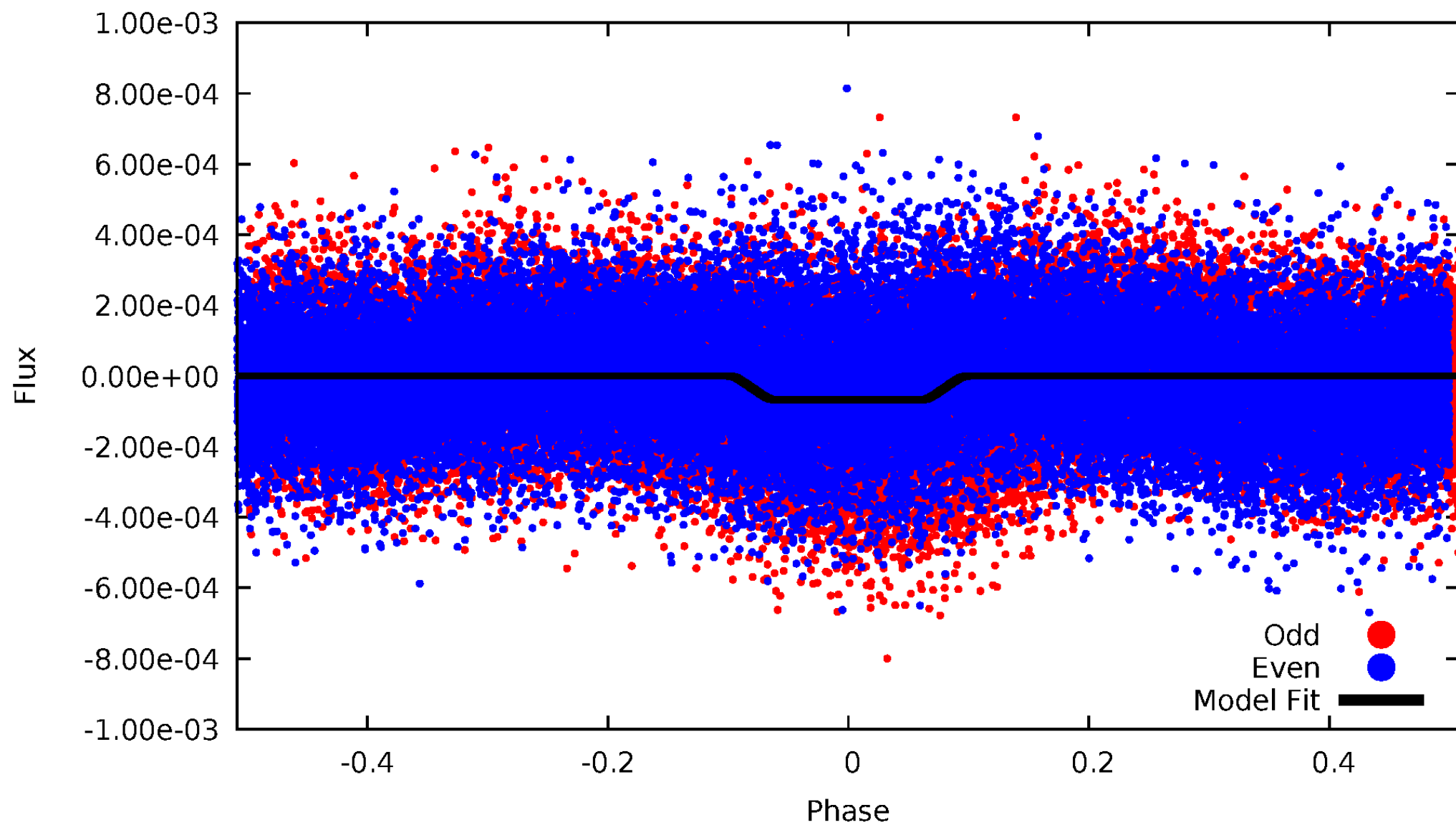
DV Odd/Even

TCE 009656994-01

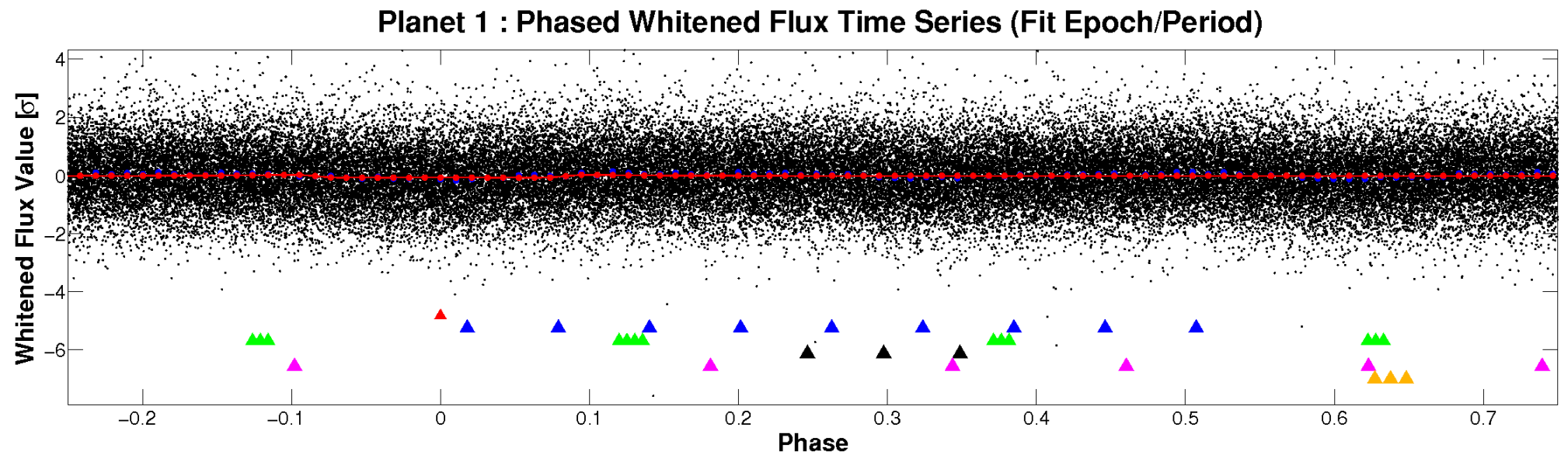
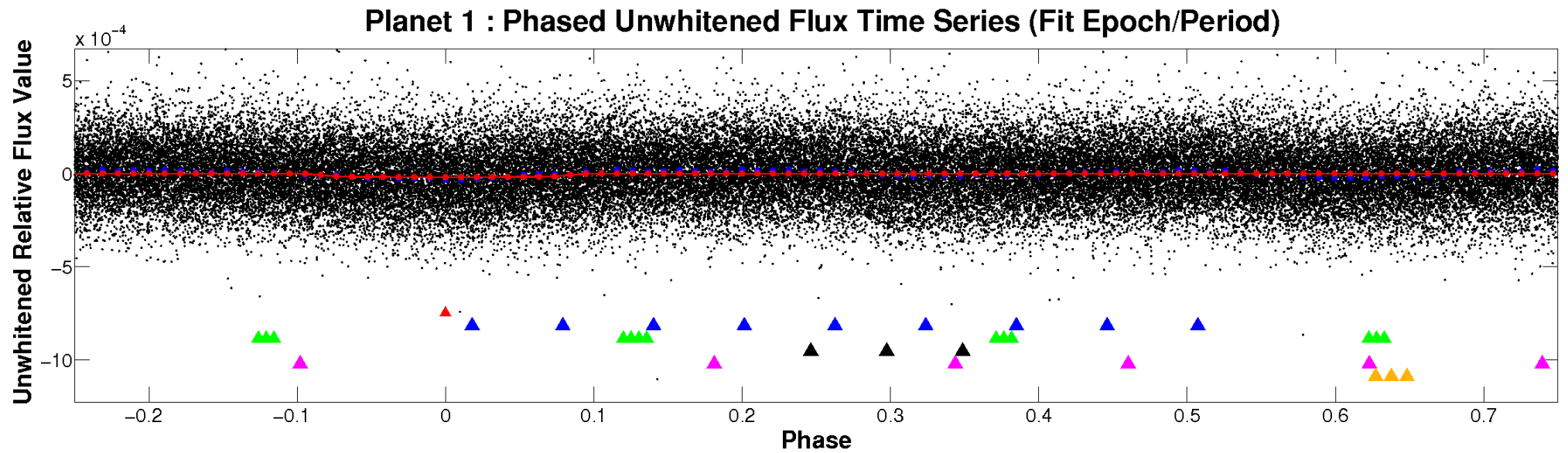


ALT Odd/Even

TCE 009656994-01

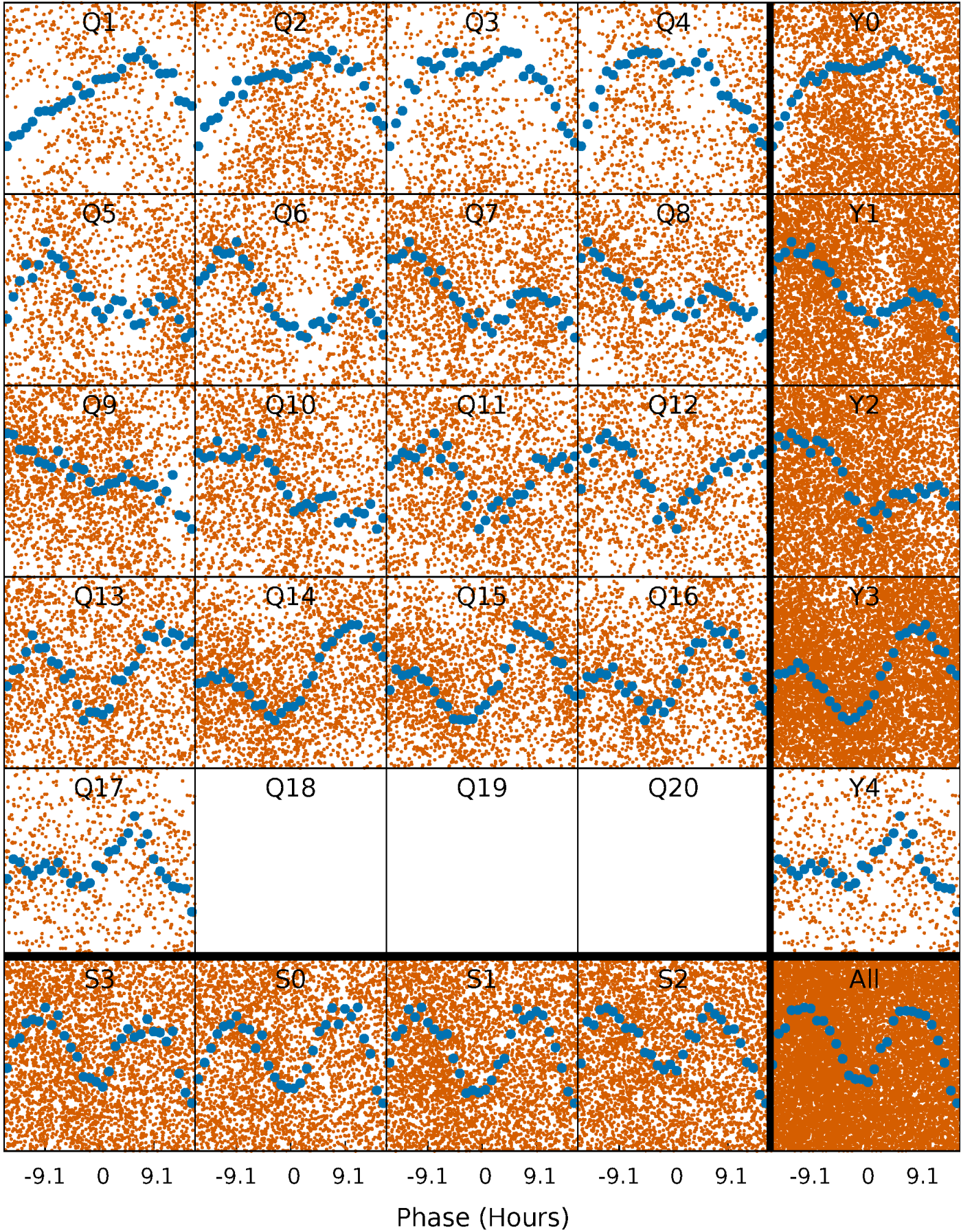


Non-Whitened Vs. Whitened Light Curve



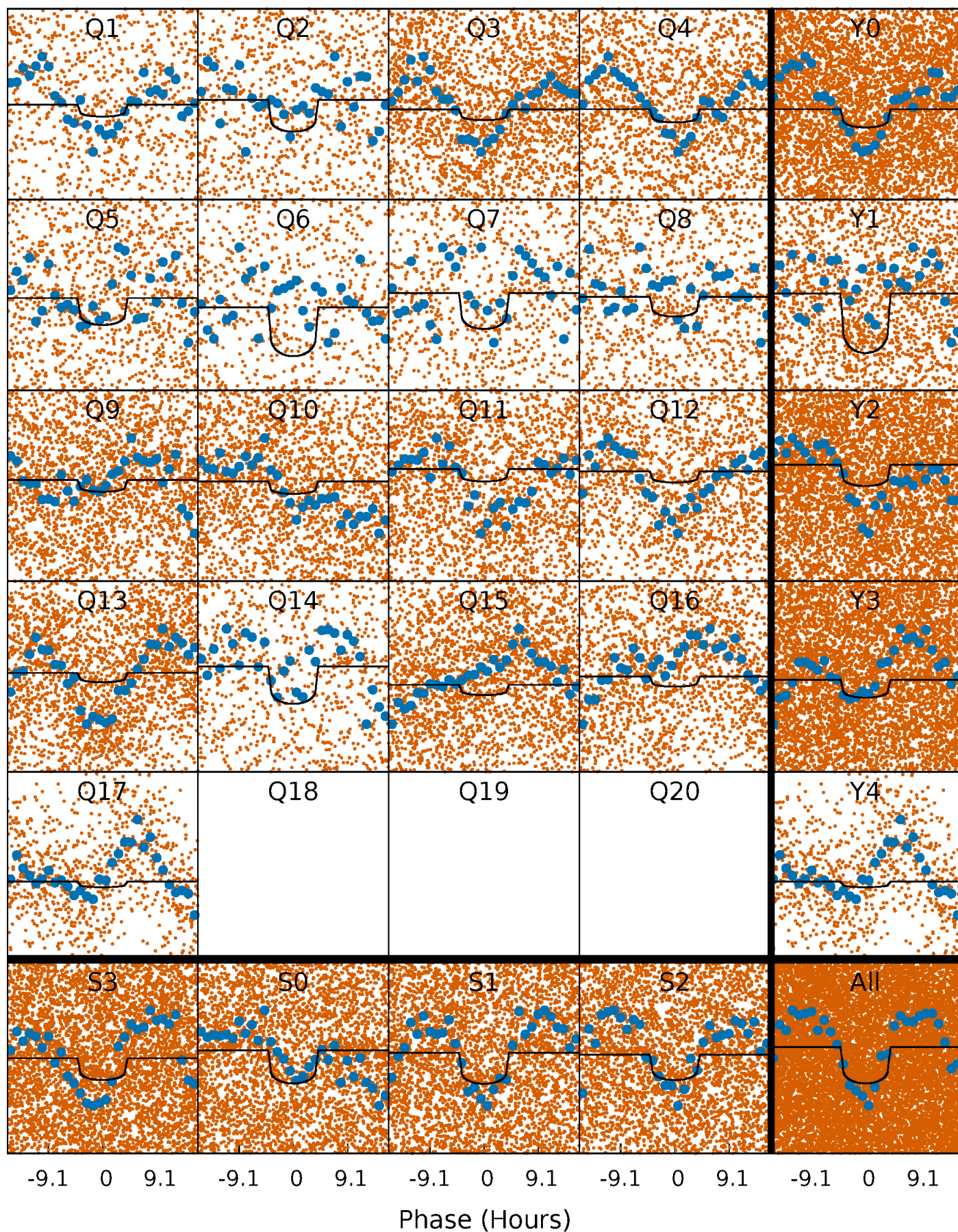
PDC Quarter-Phased Transit Curves

TCE 009656994-01 P= 1.942974 Days $T_0=131.779497$ (BKJD)



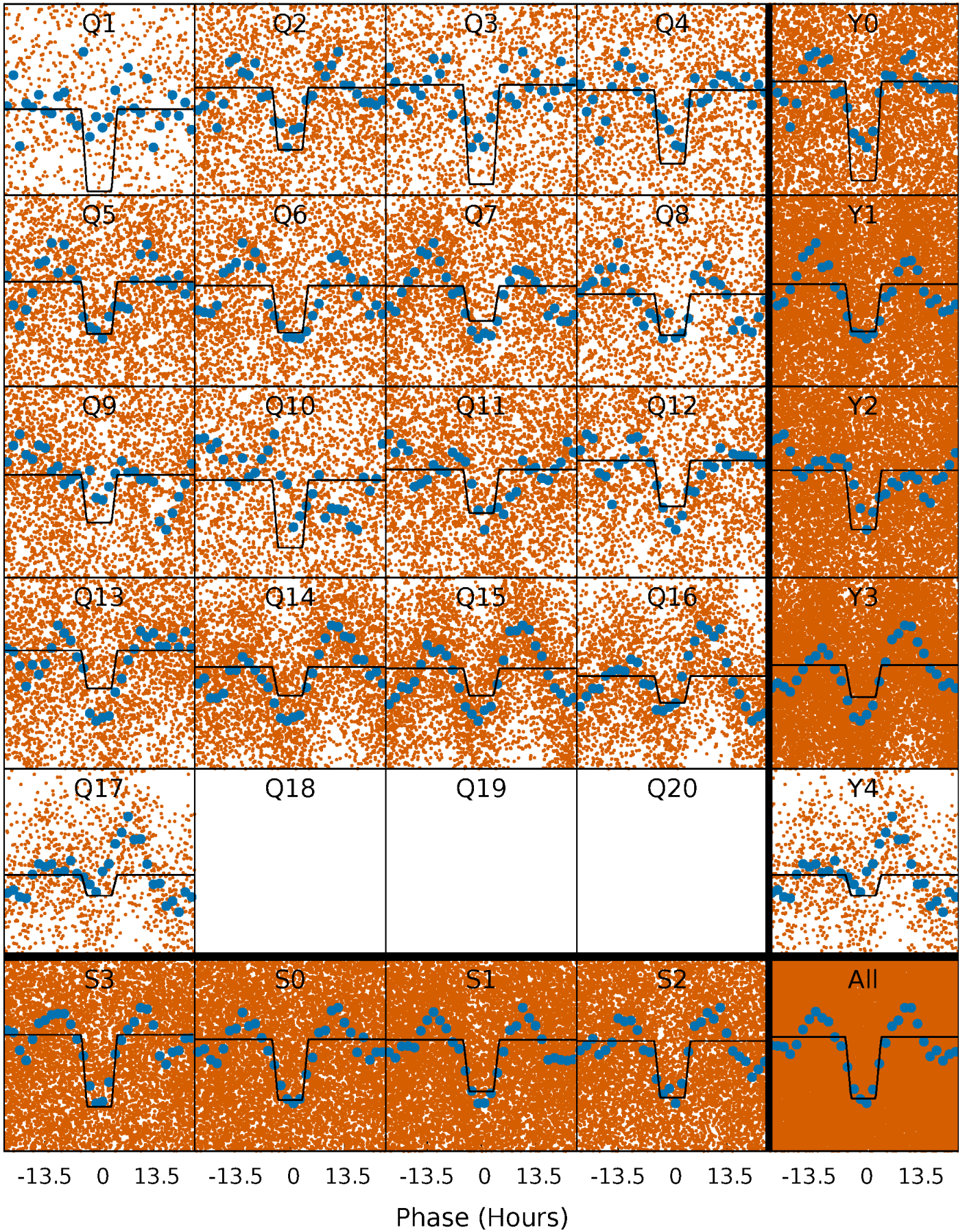
DV Quarter-Phased Transit Curves

TCE 009656994-01 P= 1.942974 Days $T_0=131.779497$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

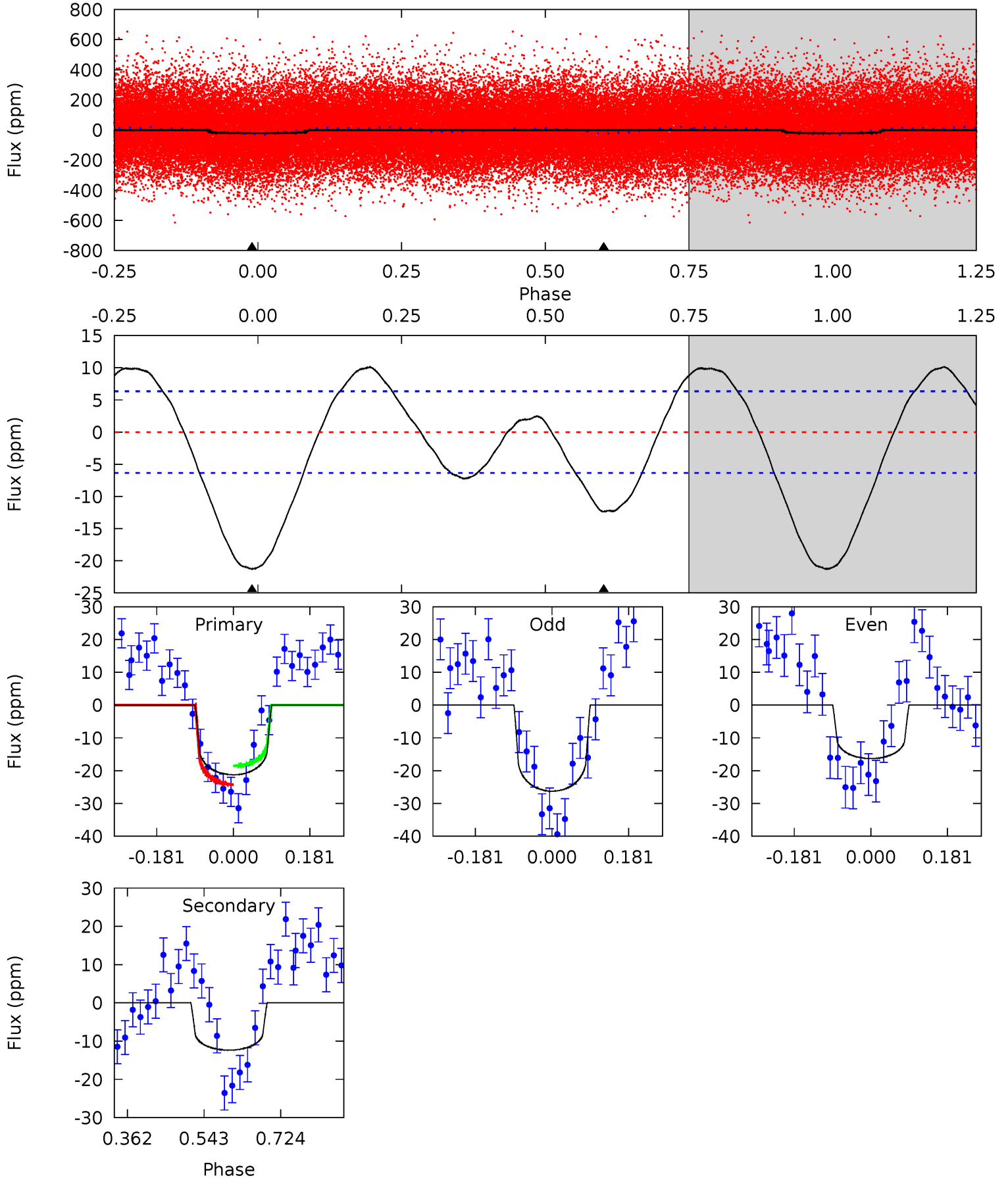
TCE 009656994-01 P= 1.942881 Days $T_0=131.782646$ (BKJD)



DV Model-Shift Uniqueness Test

009656994-01, P = 1.942974 Days, E = 129.836523 Days

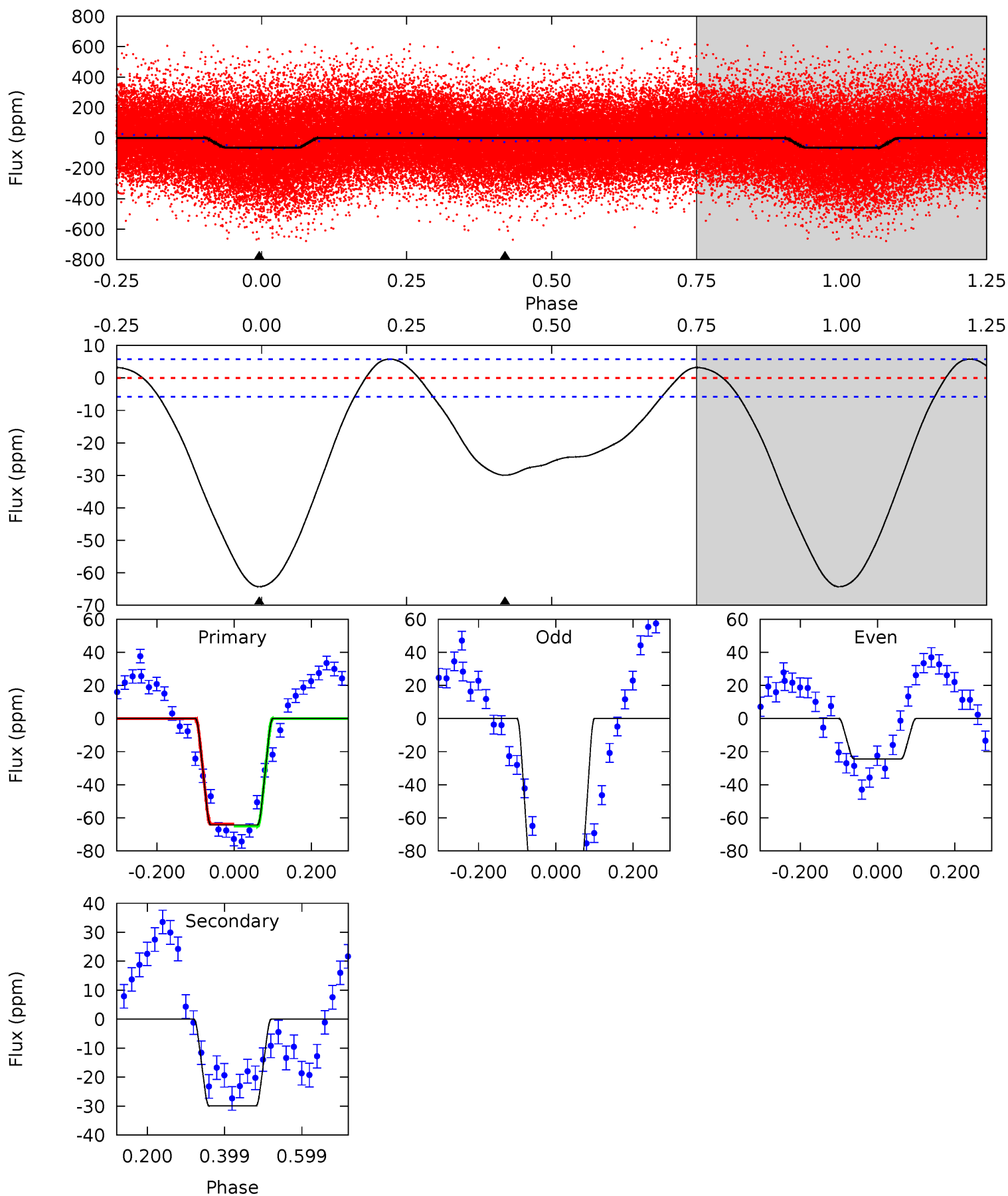
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.9	8.64	0	0	4.44	1.34	4.55	14.9	14.9	8.64	8.64	3.50	1.00	0.32	1.97



Alt Model-Shift Uniqueness Test

009656994-01, P = 1.942881 Days, E = 129.839765 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
49.3	23.0	0	0	4.42	1.28	5.93	49.3	49.3	23.0	23.0	28.6	0.92	0.08	0.46



Stellar Parameters For KIC 009656994

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	6765^{+81}_{-81}	$4.106^{+0.132}_{-0.108}$	$-0.040^{+0.150}_{-0.150}$	$1.741^{+0.274}_{-0.274}$	$1.416^{+0.098}_{-0.109}$	$0.378^{+0.230}_{-0.121}$
	+1%/-1%	+3%/-3%	+375%/-375%	+16%/-16%	+7%/-8%	+61%/-32%
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 009656994-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-12 ± 1	$0.81^{+0.26}_{-0.24}$	2974^{+128}_{-127}	6052^{+1293}_{-741}	12^{+13}_{-5}
Alt.	-30 ± 1	$1.55^{+0.29}_{-0.25}$	2979^{+127}_{-126}	5472^{+446}_{-328}	$7.973^{+3.397}_{-2.184}$

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

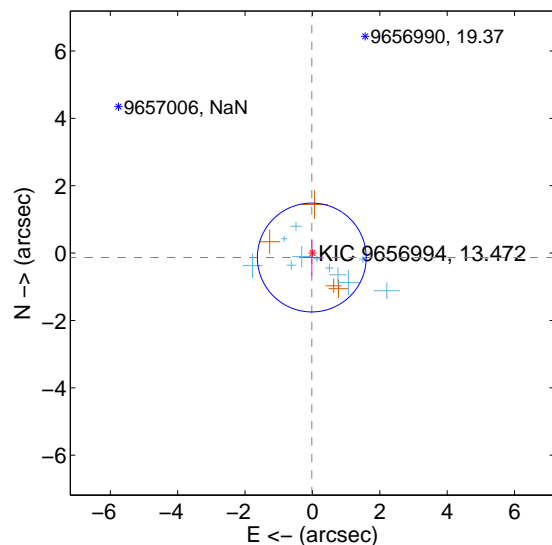
Supplemental centroid analysis for 009656994-01. Kepler magnitude: 13.47. Transit SNR 7.19

There are 11 quarters with good PRF difference image offsets

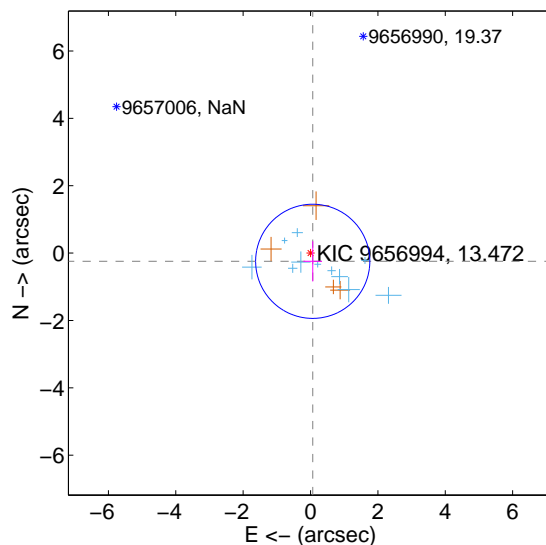
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.132 ± 0.539	0.25	0.019 ± 0.262	-0.131 ± 0.533
PRF-fit source offset from KIC position	0.252 ± 0.565	0.45	-0.065 ± 0.278	-0.244 ± 0.597
photometric centroid source offset	2.99 ± 1.00	2.98	-1.33 ± 0.90	2.67 ± 1.02

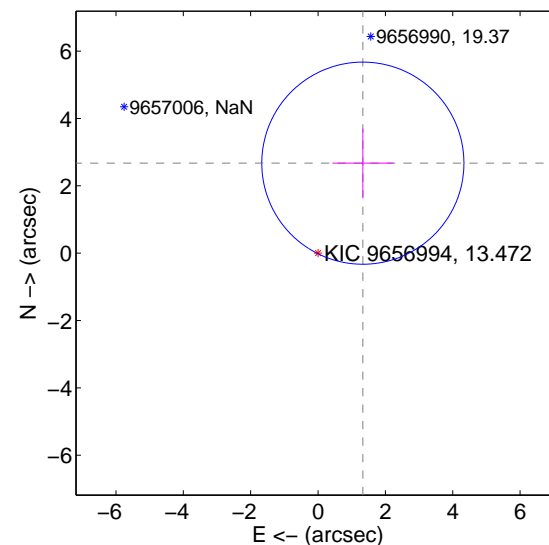
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

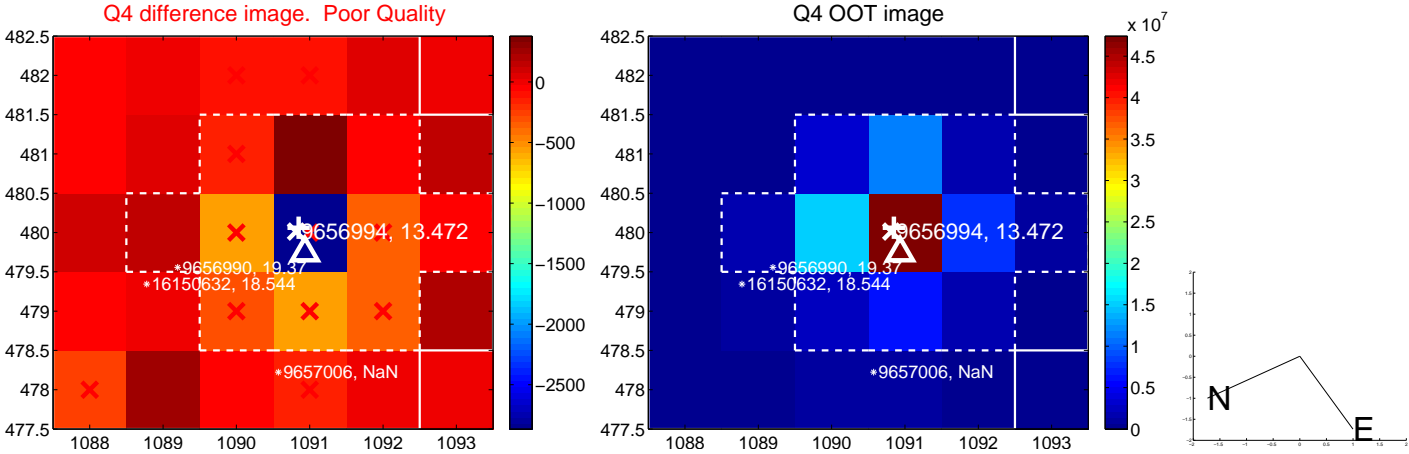
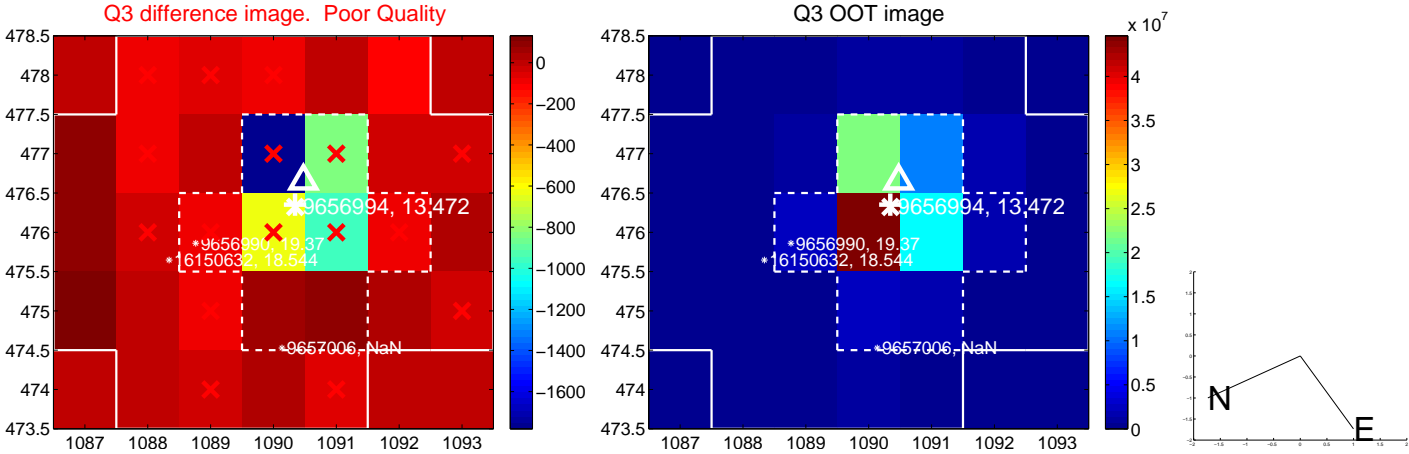
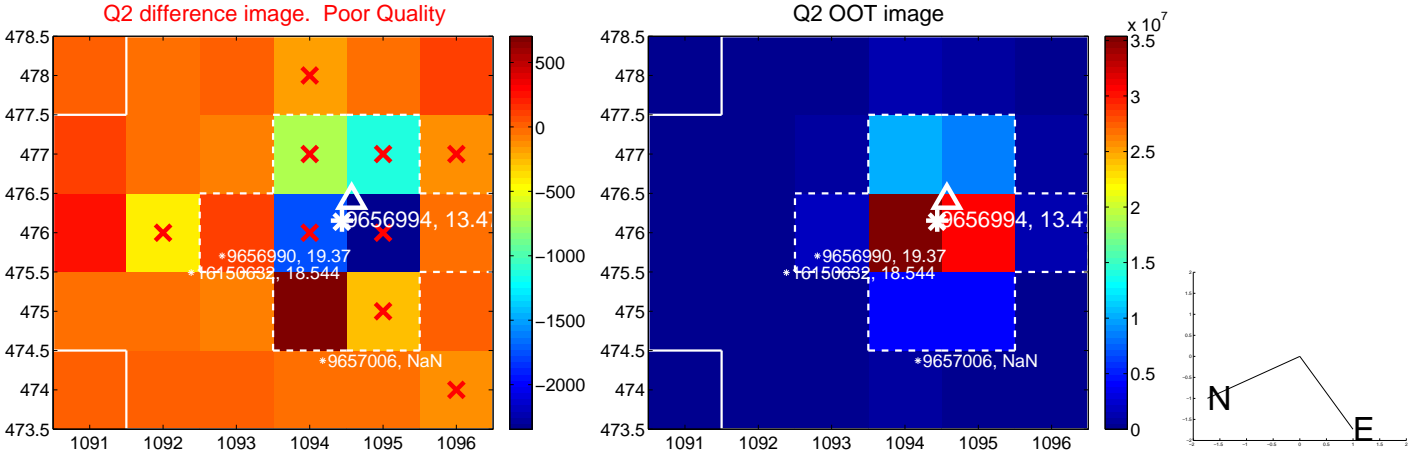
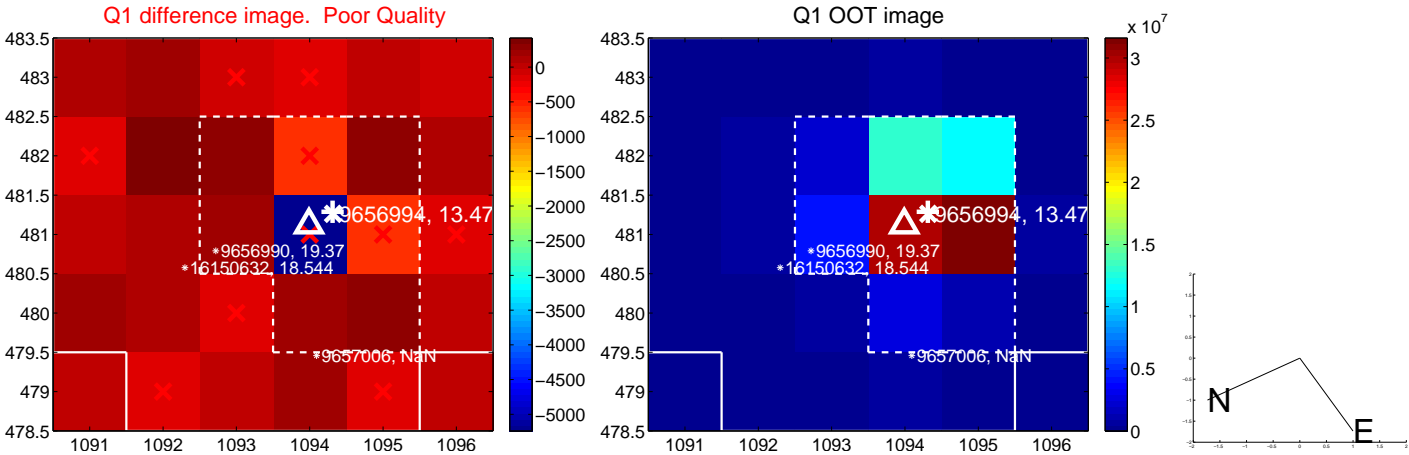


offset from photometric centroids

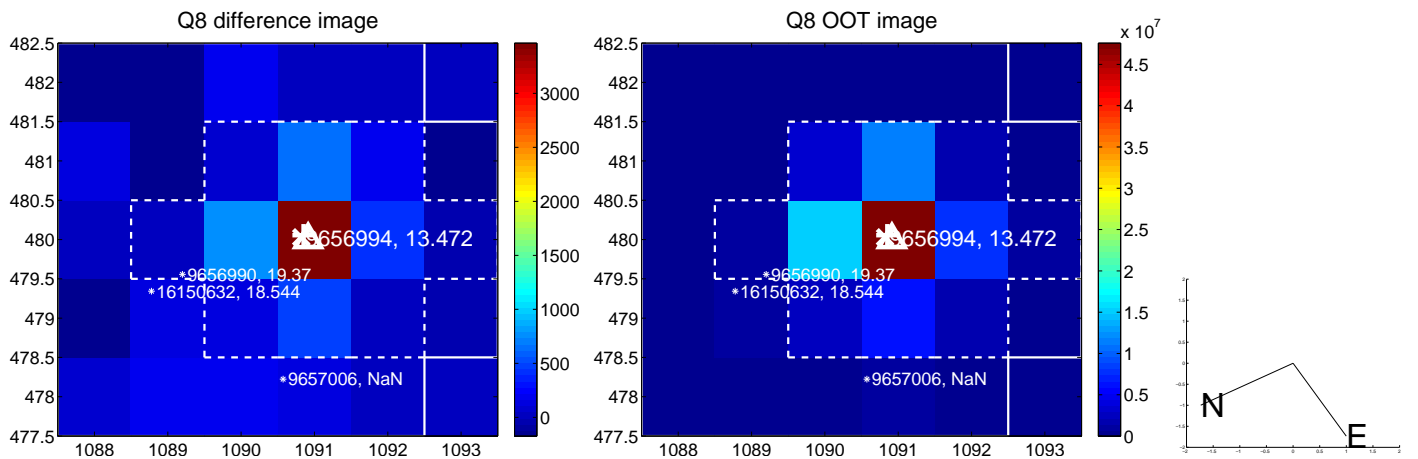
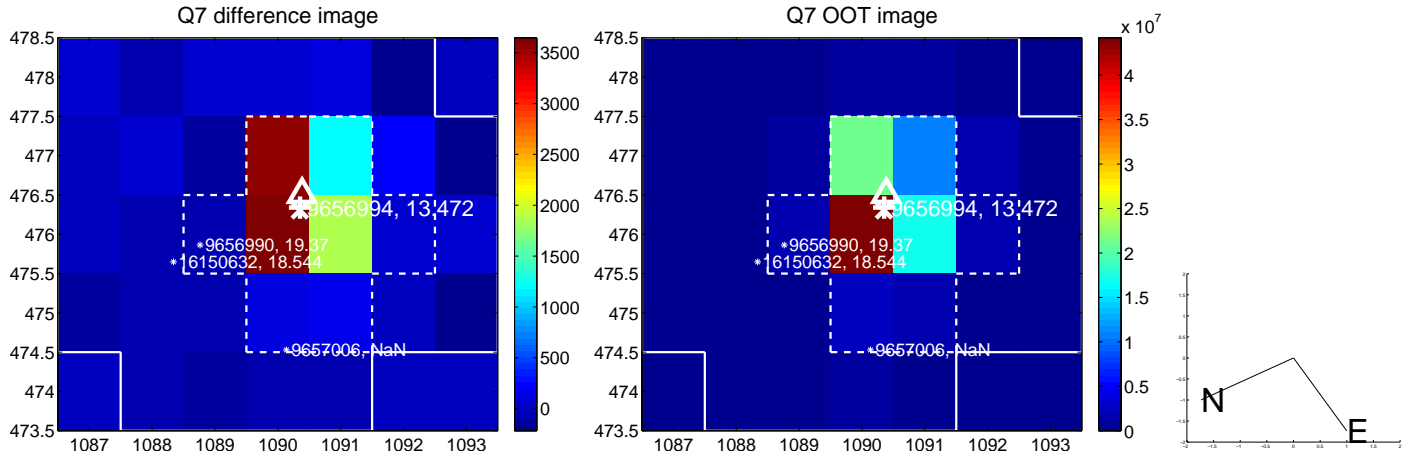
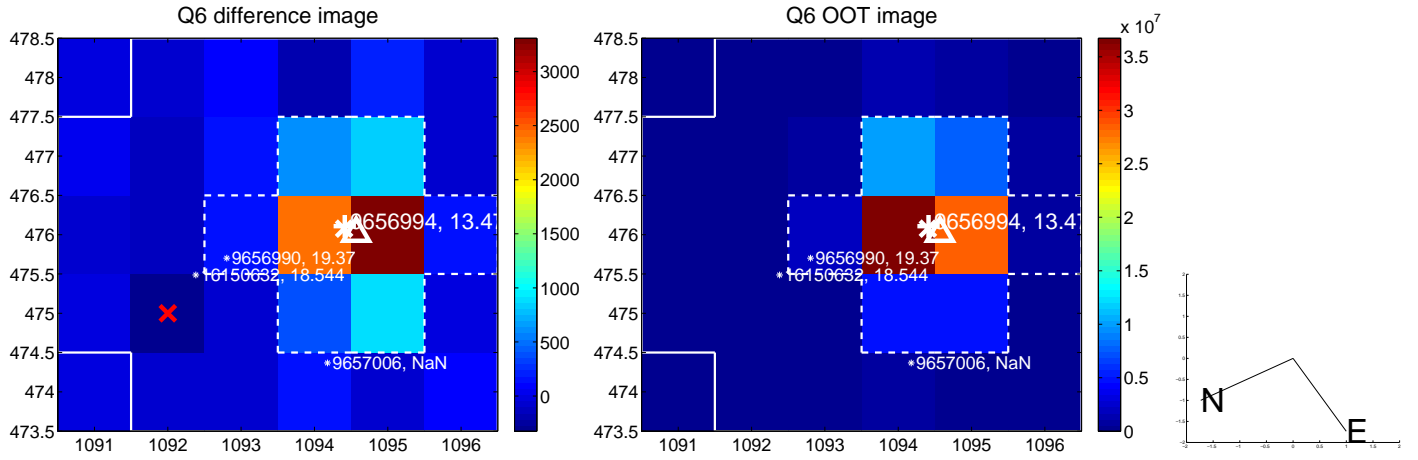
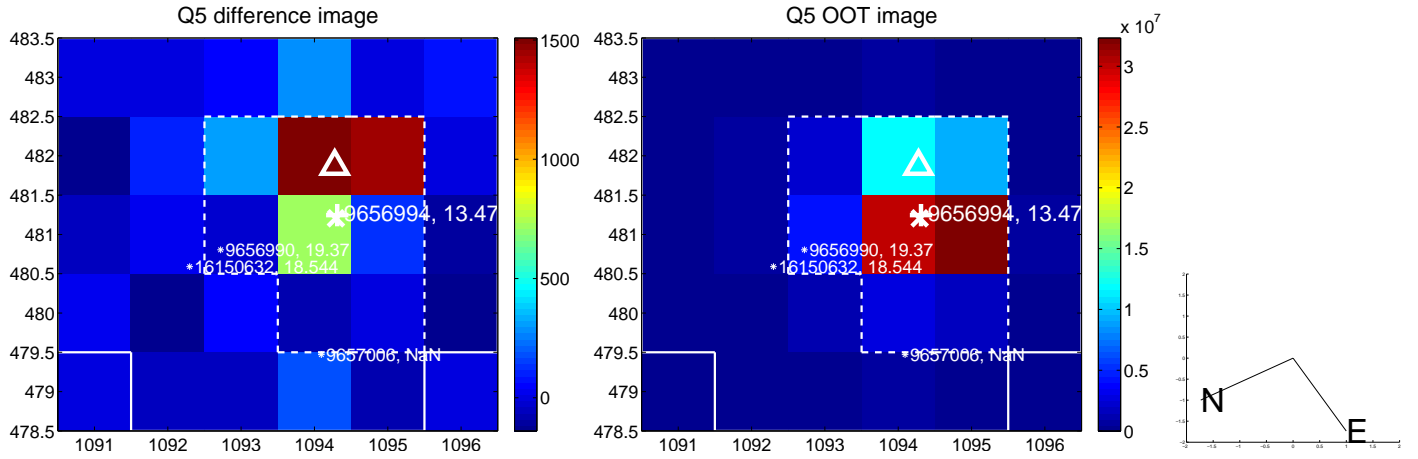


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

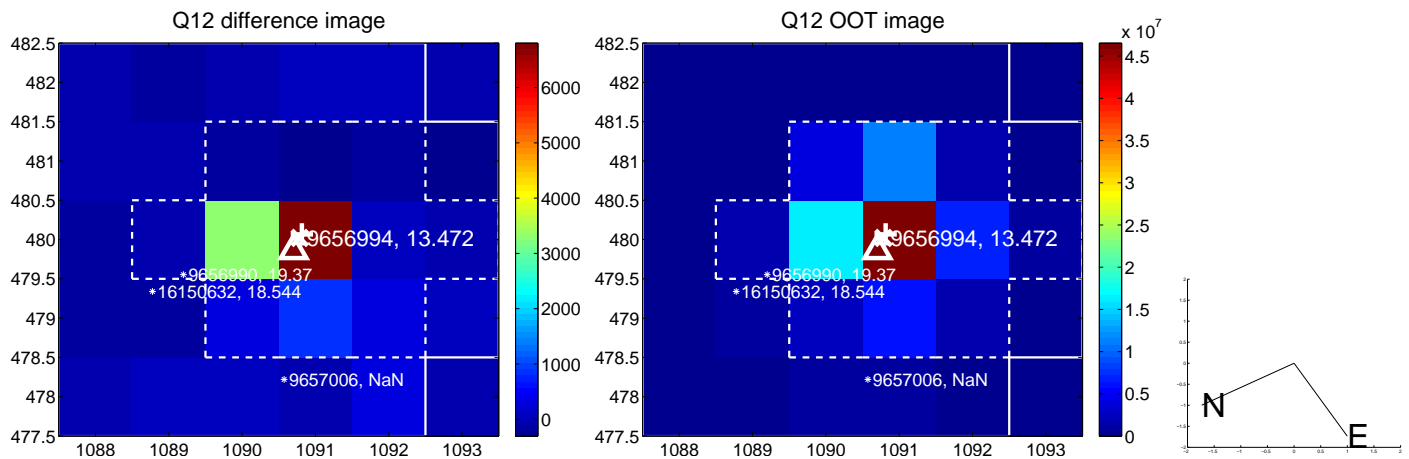
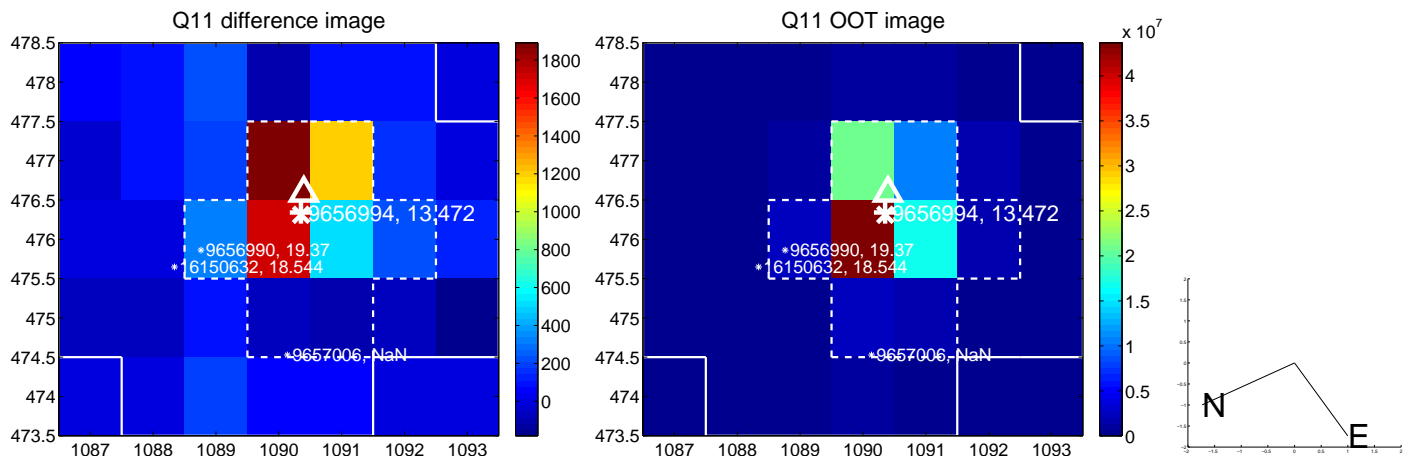
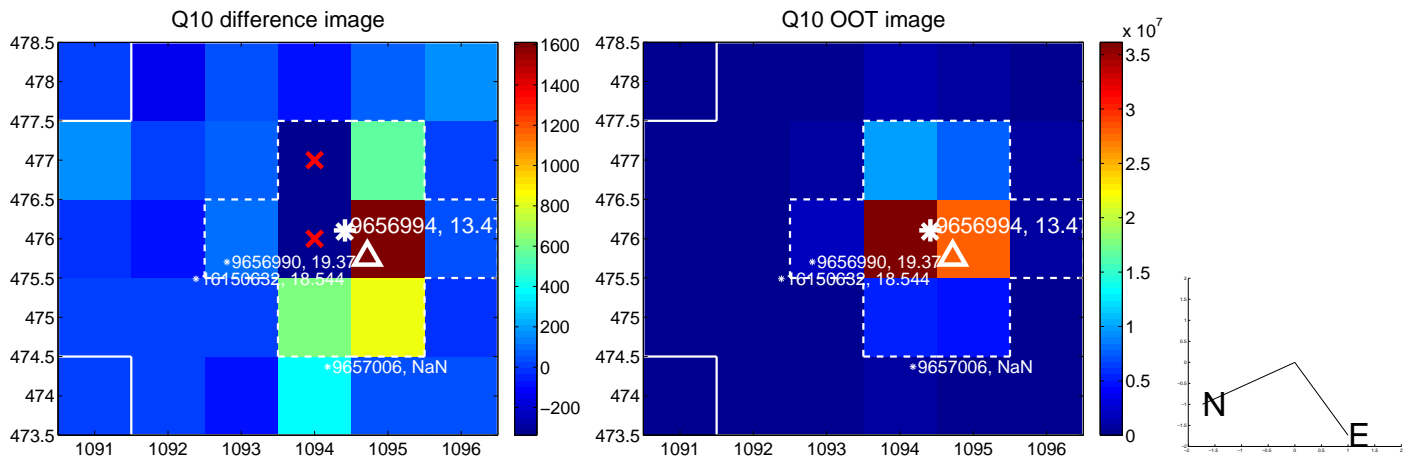
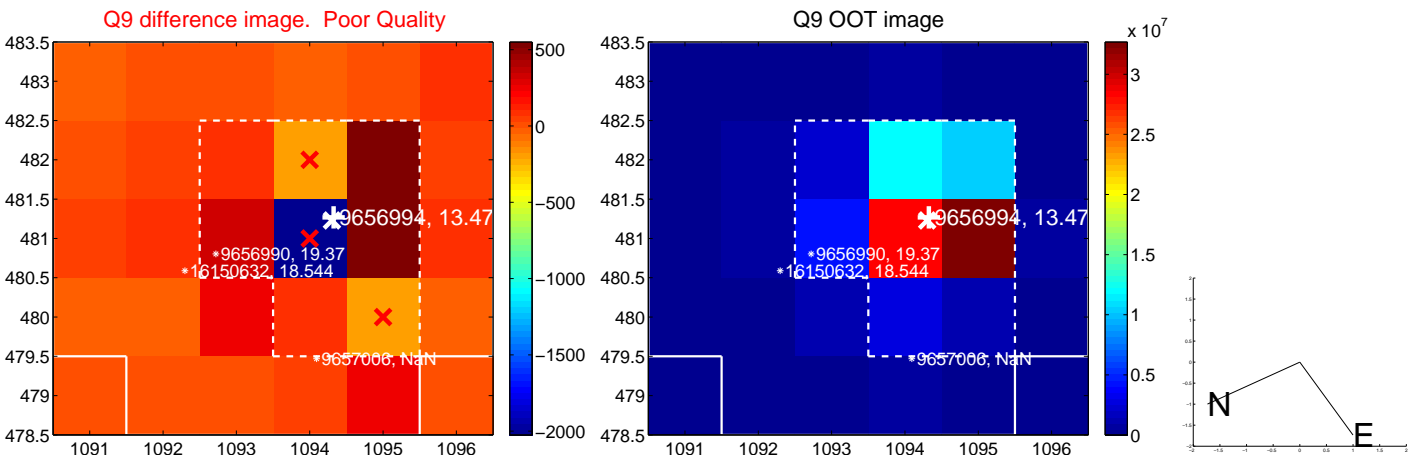
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



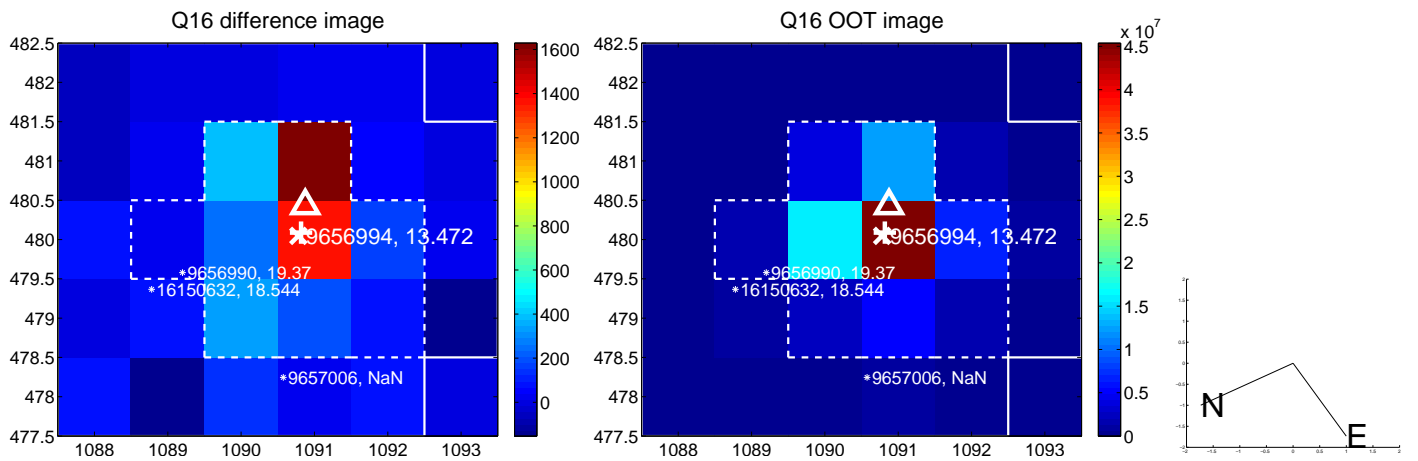
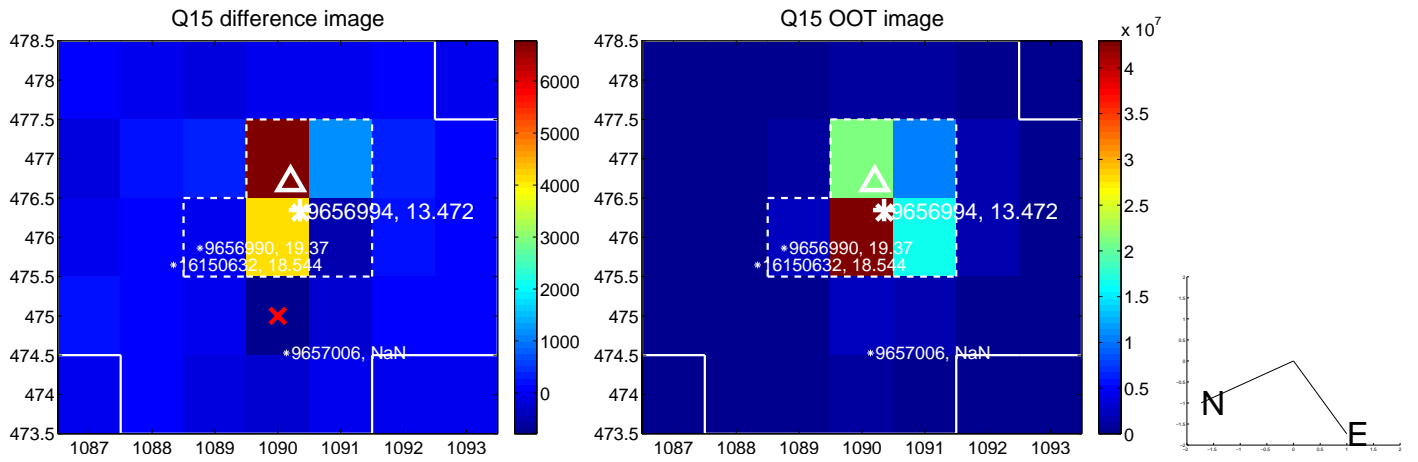
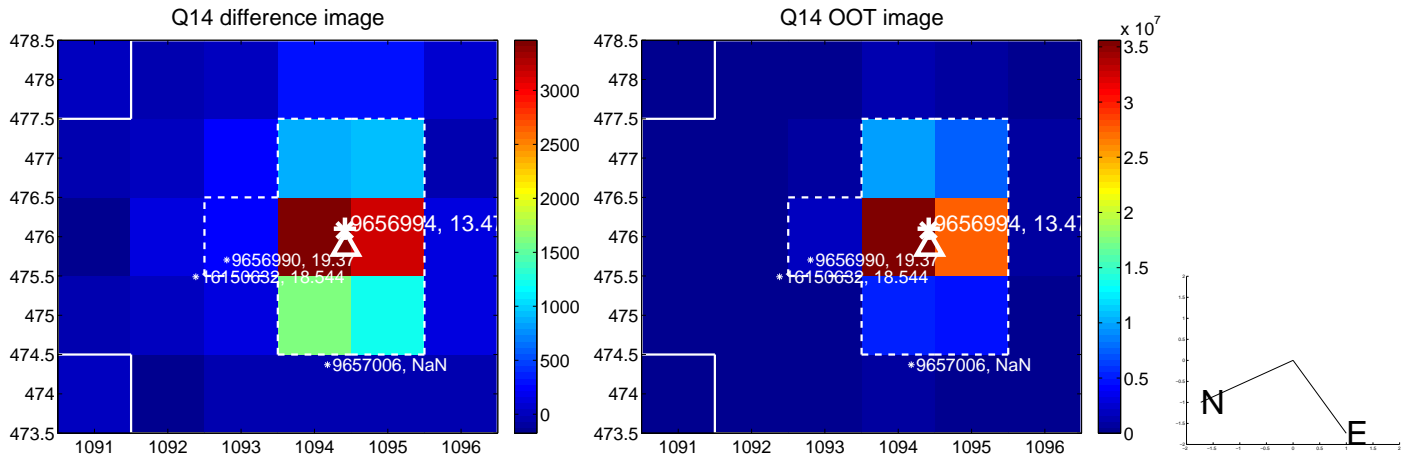
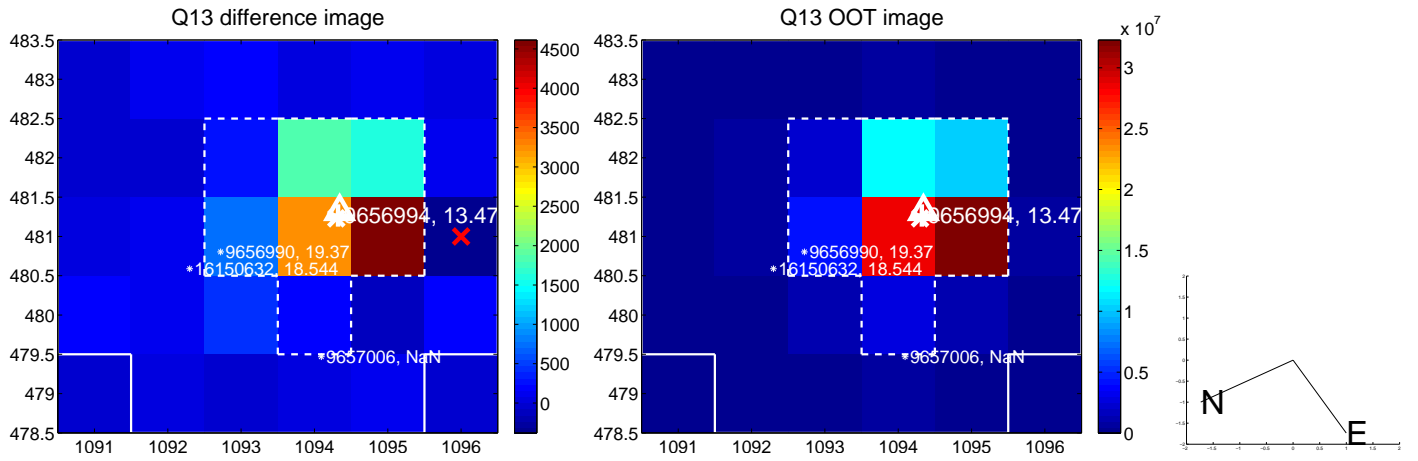
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



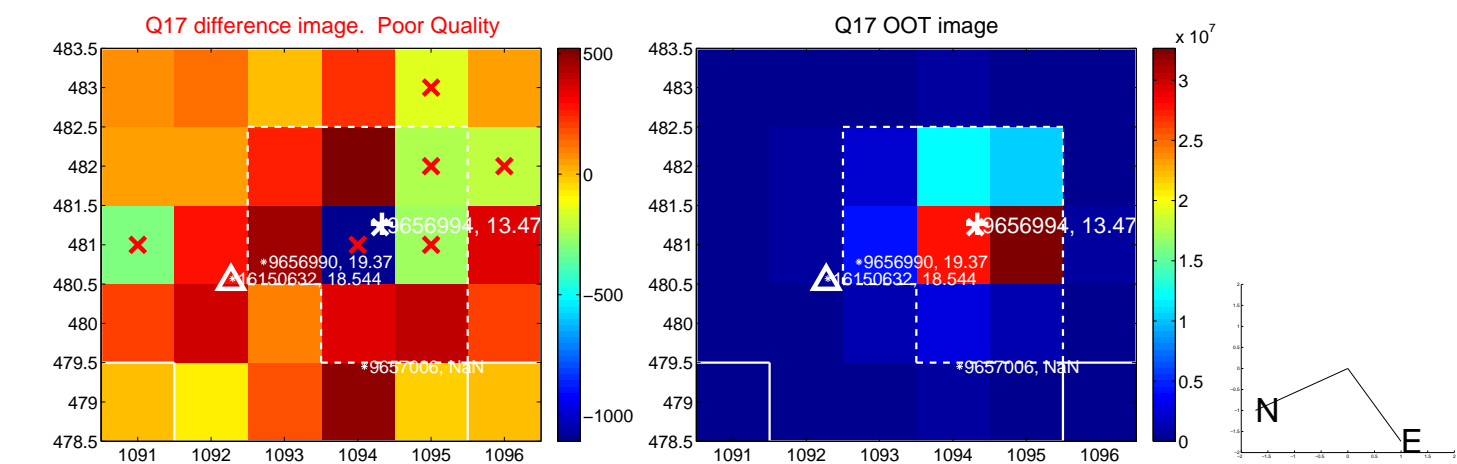
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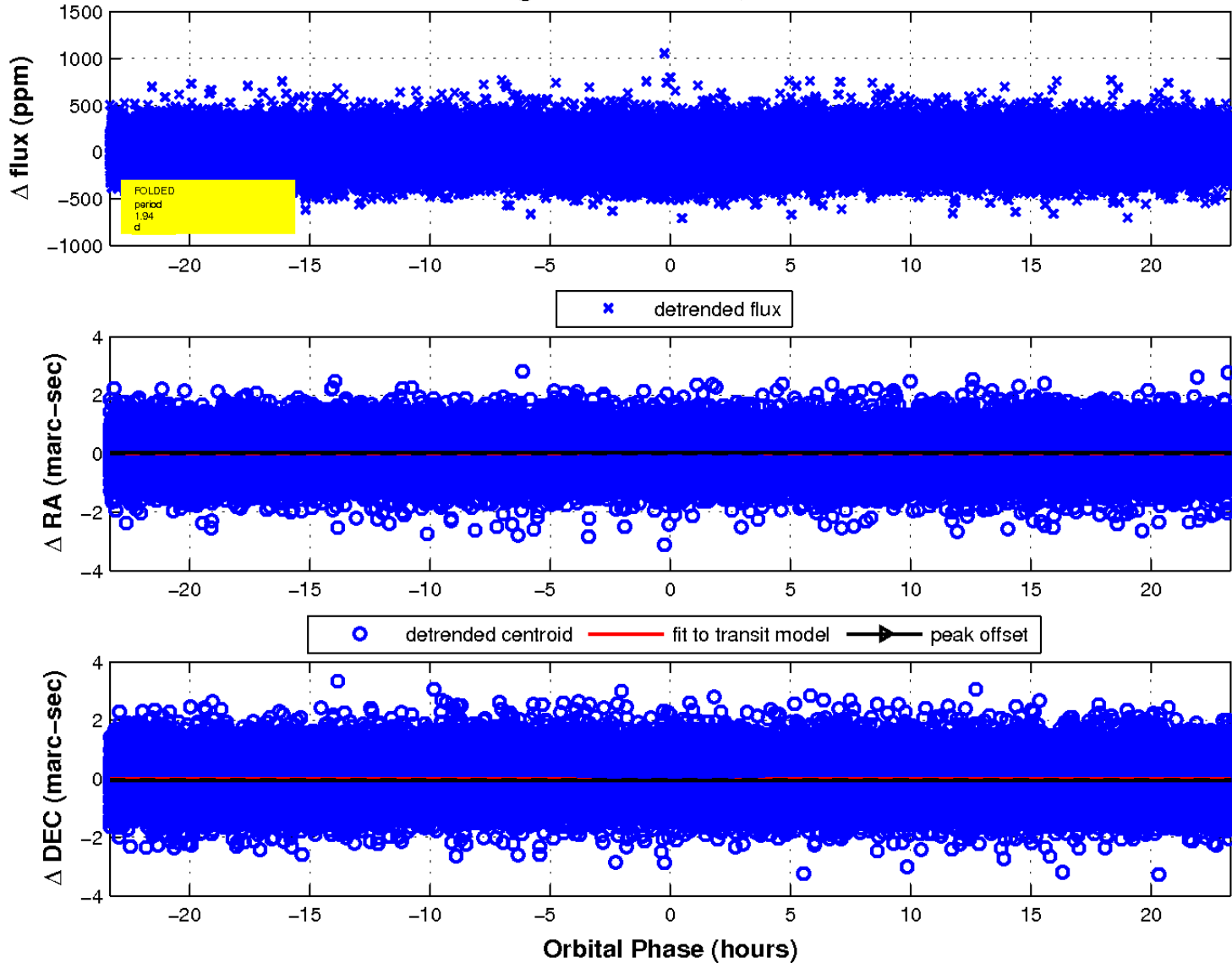
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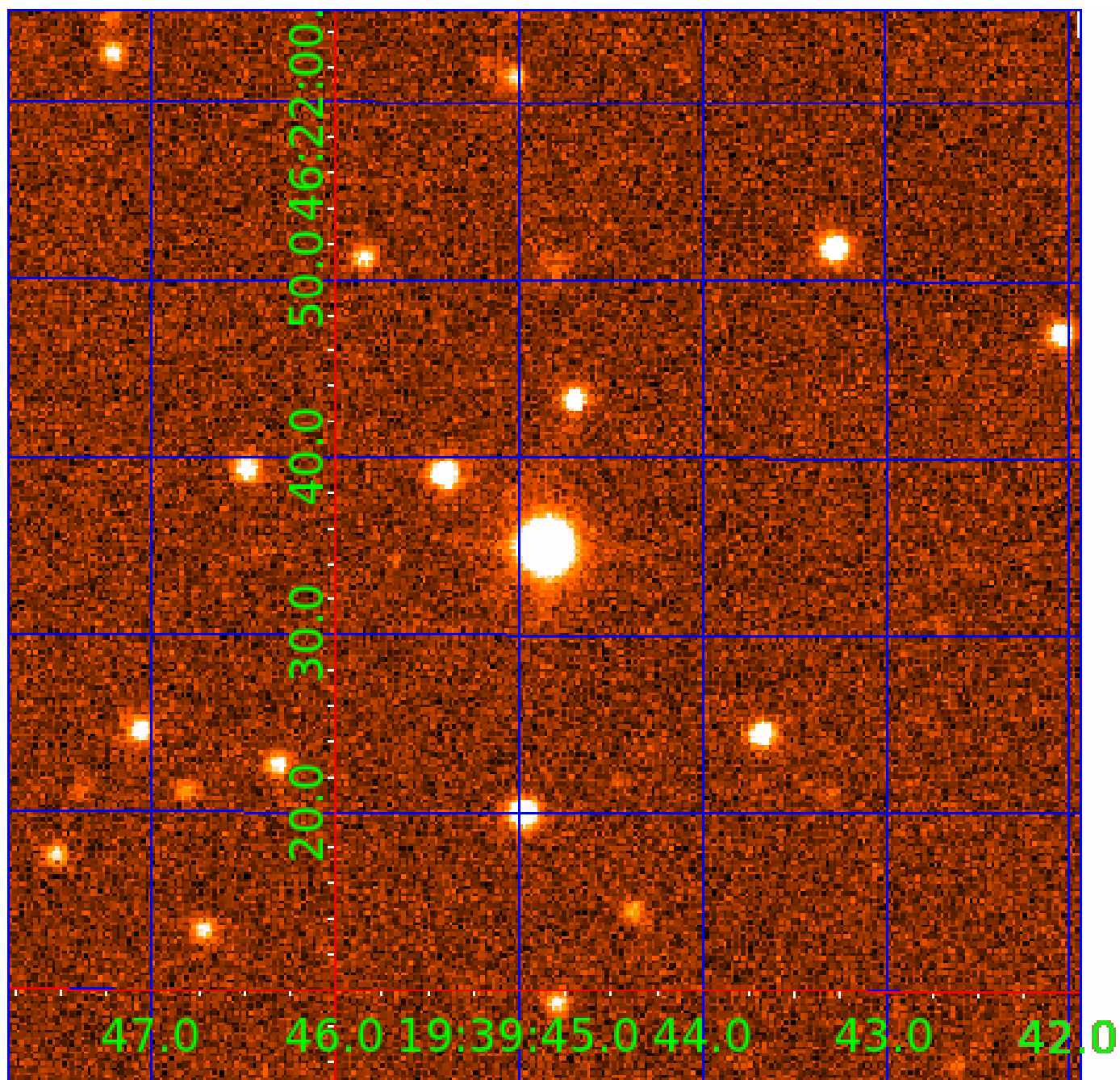


fluxWeightedCentroids, Planet 1 of 6



UKIRT Image

Declination



KIC 009656994

Q1-17 DR25 TCE Parameters

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009656994-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV
009656994-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009656994-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009656994-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

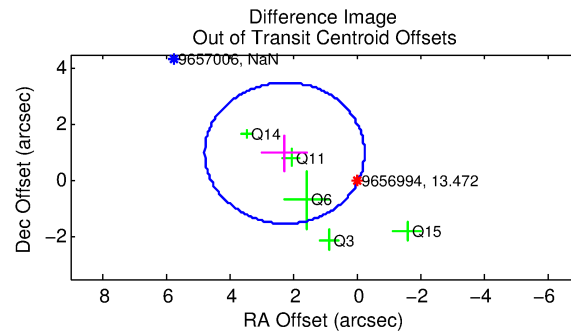
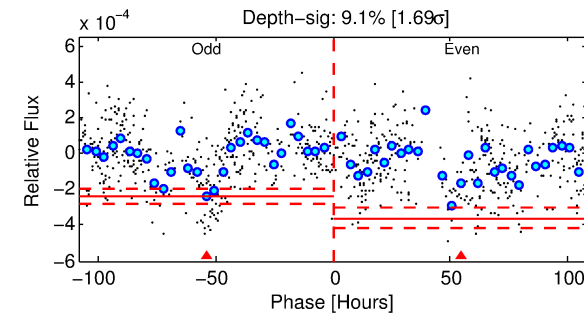
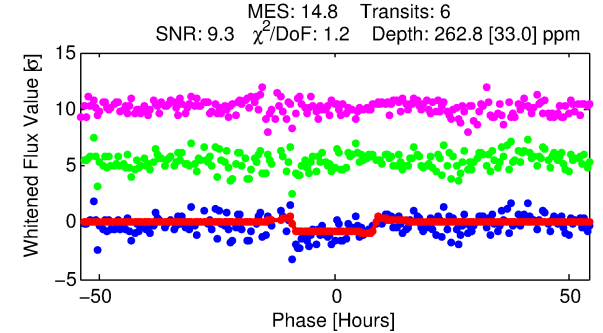
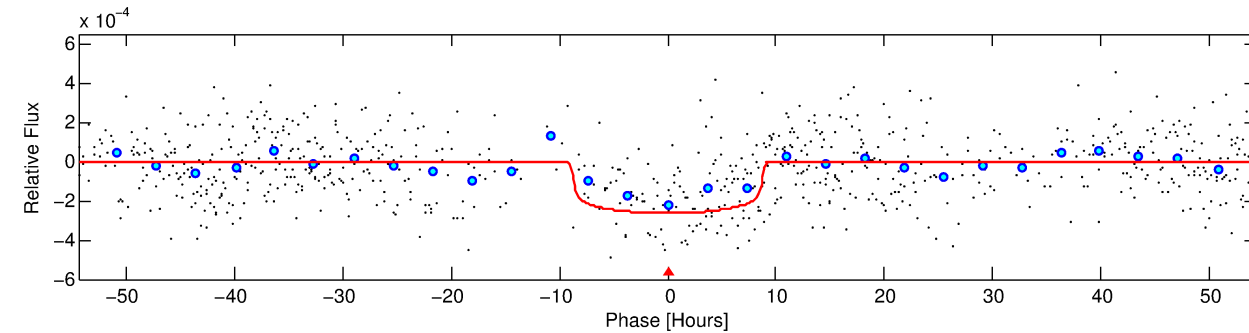
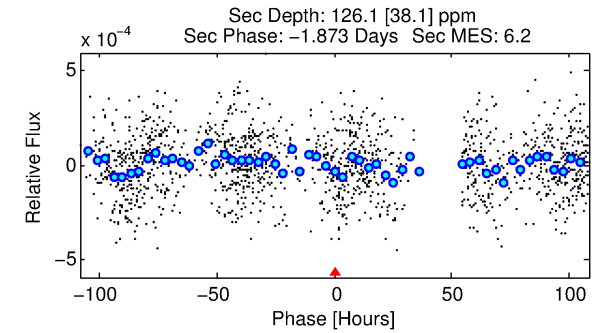
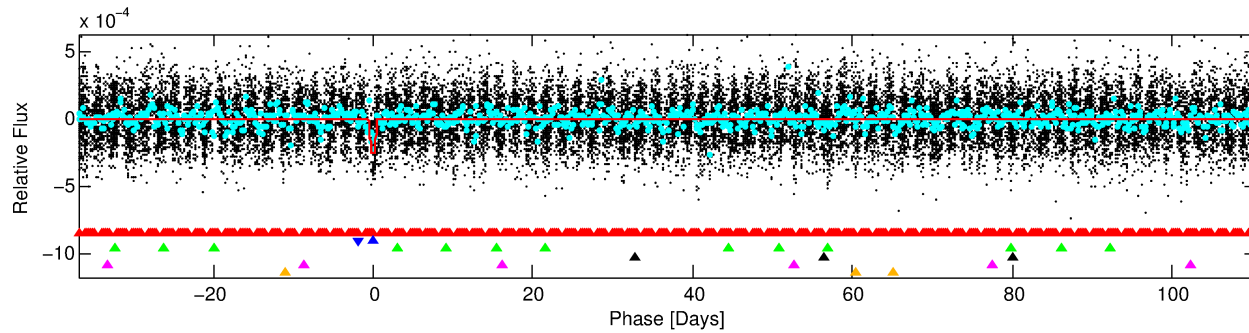
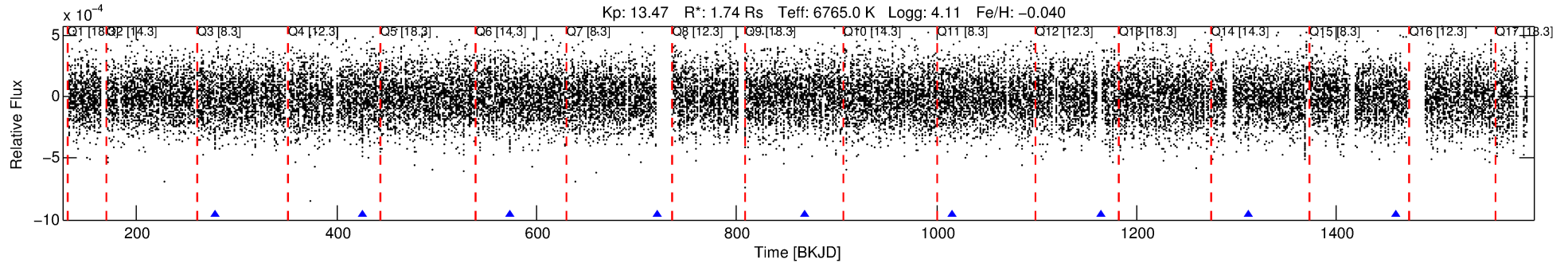
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009656994-02

No Significant Match Found

DV One-Page Summary

KIC: 9656994 Candidate: 2 of 6 Period: 147.547 d



DV Fit Results:

Period = 147.54722 [0.00436] d
Epoch = 278.4882 [0.0141] BKJD
Rp/R* = 0.0161 [0.0027]
a/R* = 43.45 [37.67]
b = 0.74 [0.54]
Seff = 15.13 [3.53]
Teq = 503 [29] K
Rp = 3.05 [0.71] Re
a = 0.6131 [0.0894] AU
Ag = 2799.98 [1424.68] [1.96σ]
Teffp = 5656 [647] K [7.96σ]

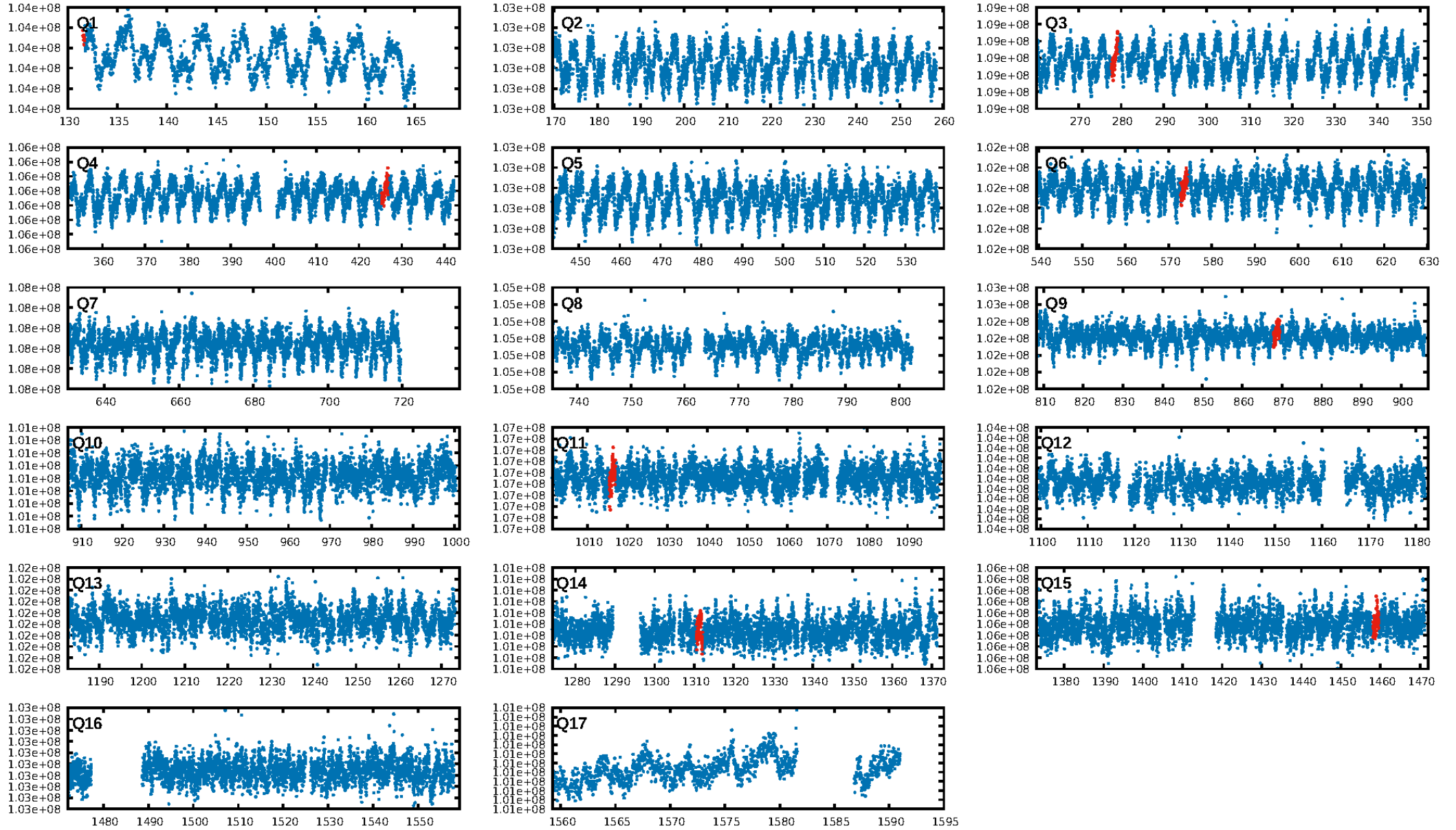
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [36.14σ]
LongPeriod-sig: 100.0% [109.04σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.37e-24
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -1.407
Centroid-sig: 23.9%
Centroid-so: 0.470 arcsec [1.06σ]
OotOffset-rm: 2.462 arcsec [2.94σ]
KicOffset-rm: 2.348 arcsec [2.44σ]
OotOffset-st: 2/3/0/0 [5]
KicOffset-st: 2/3/0/0 [5]
DiffImageQuality-fgm: 0.40 [2/5]
DiffImageOverlap-fno: 0.00 [0/7]

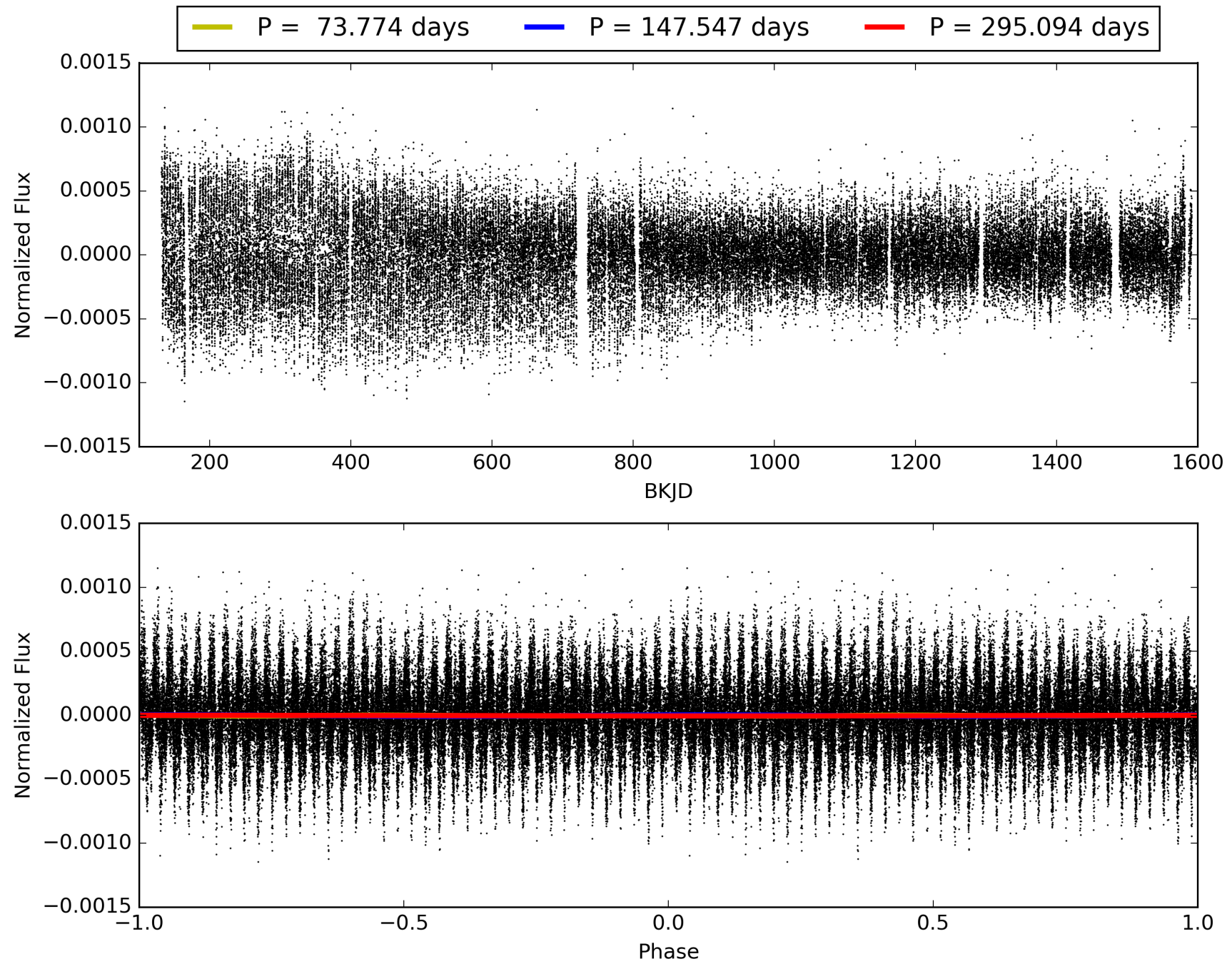
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:37:35 Z

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

TCE 009656994-02, PDC Light Curves

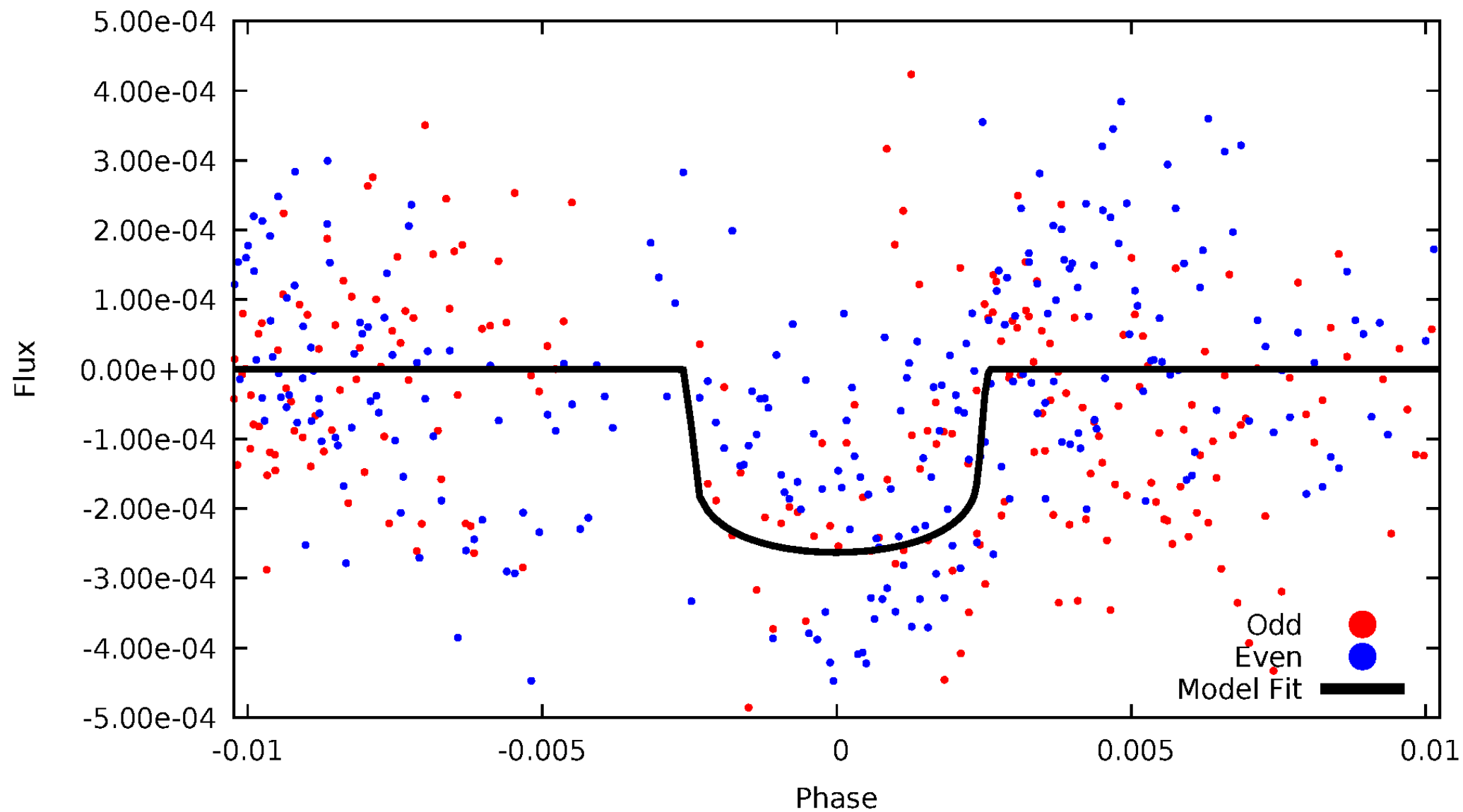


TCE 009656994-02



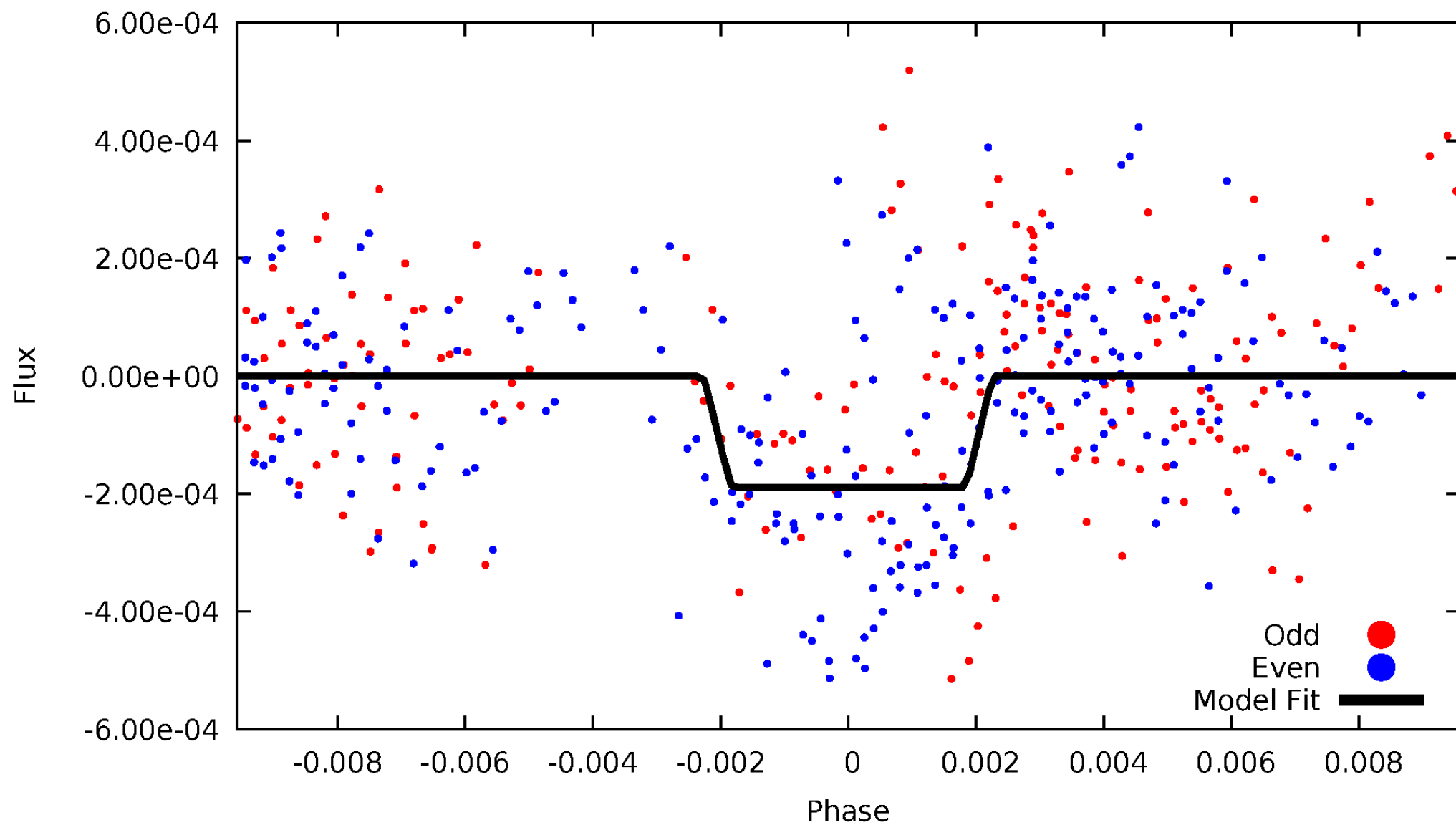
DV Odd/Even

TCE 009656994-02



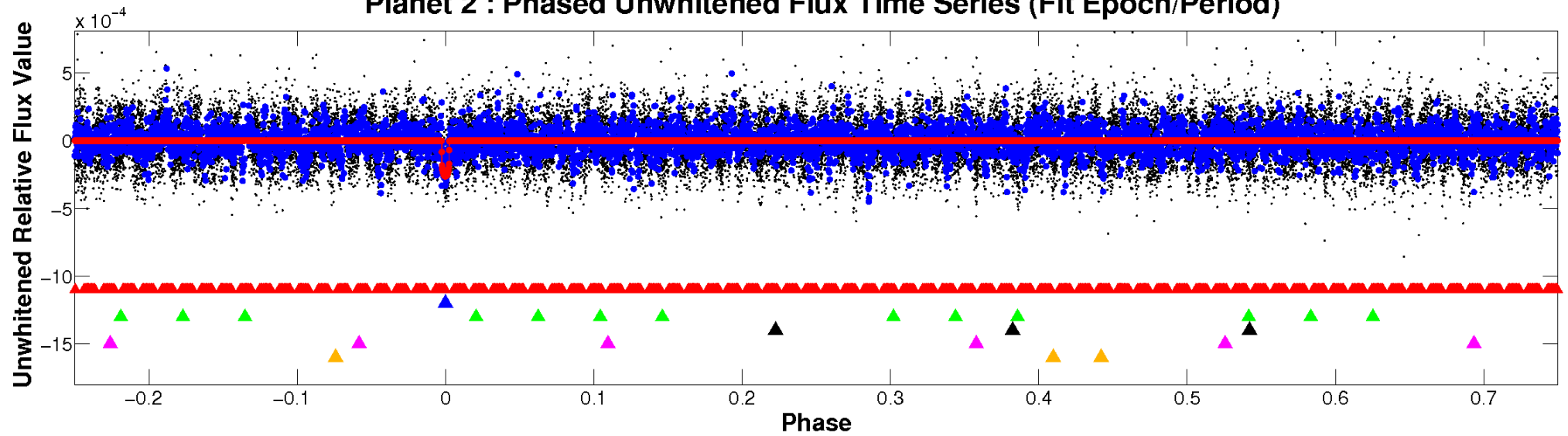
ALT Odd/Even

TCE 009656994-02

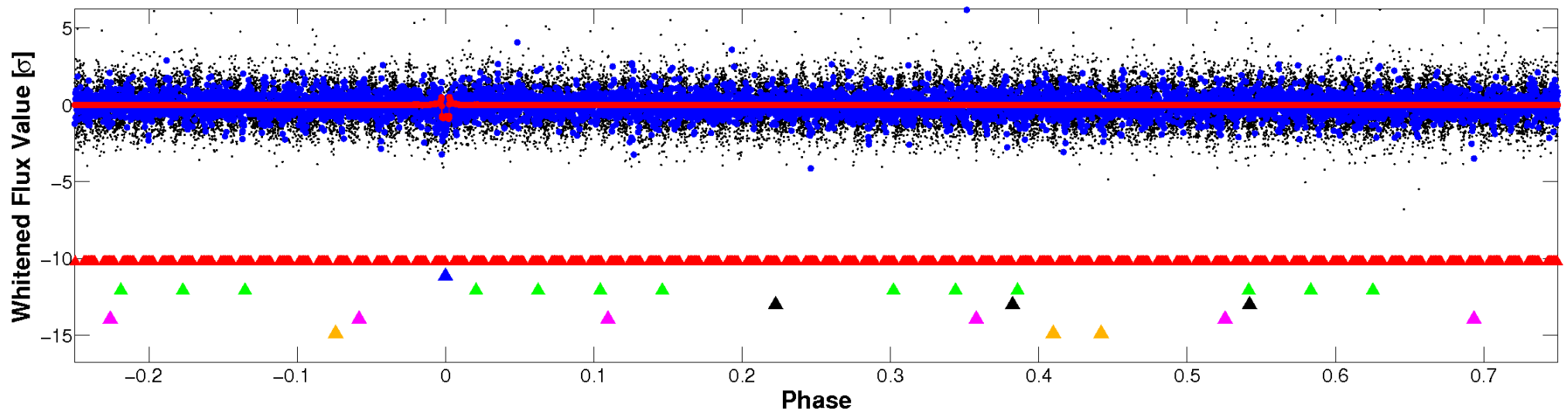


Non-Whitened Vs. Whitened Light Curve

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

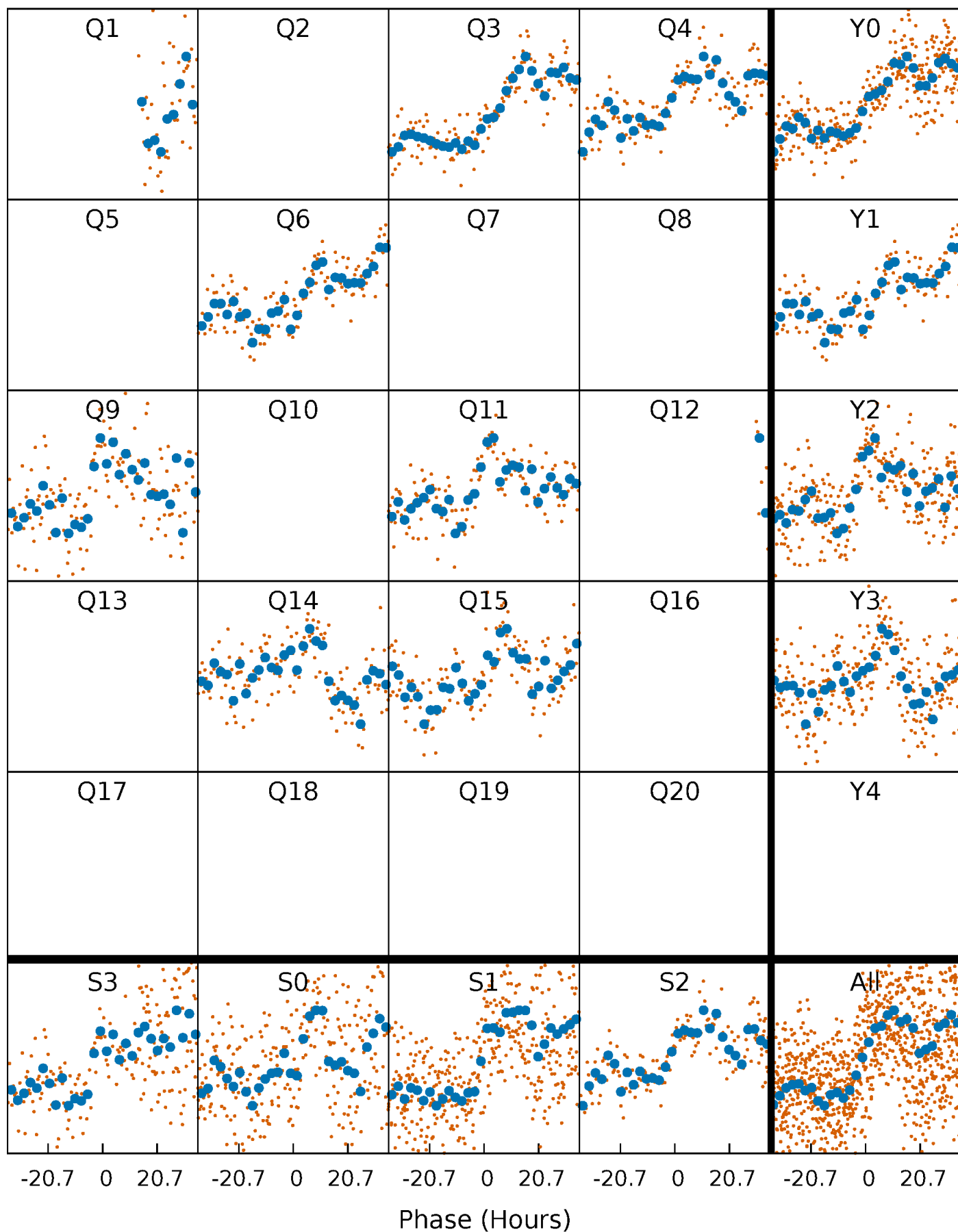


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



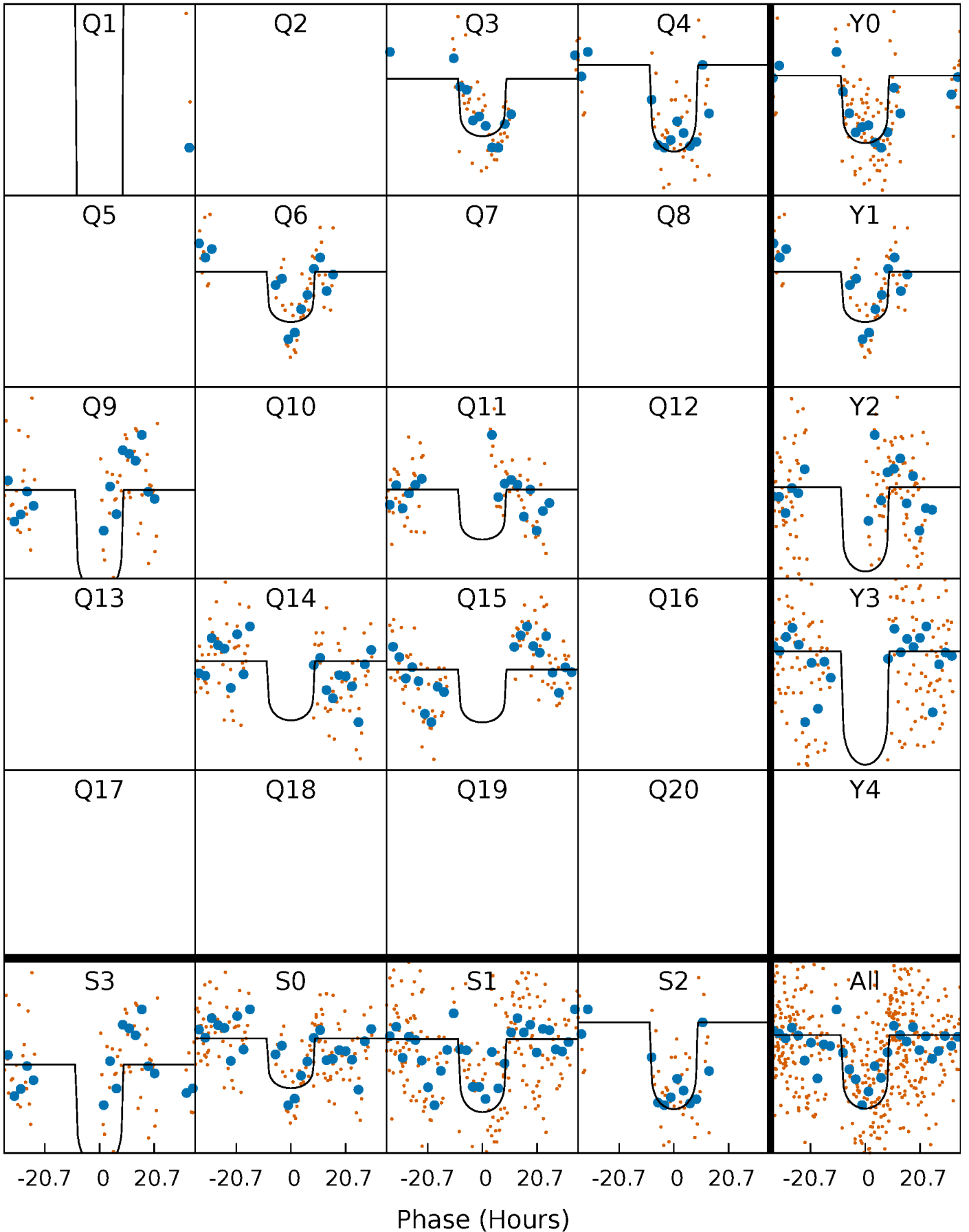
PDC Quarter-Phased Transit Curves

TCE 009656994-02 P=147.547217 Days $T_0=278.488217$ (BKJD)



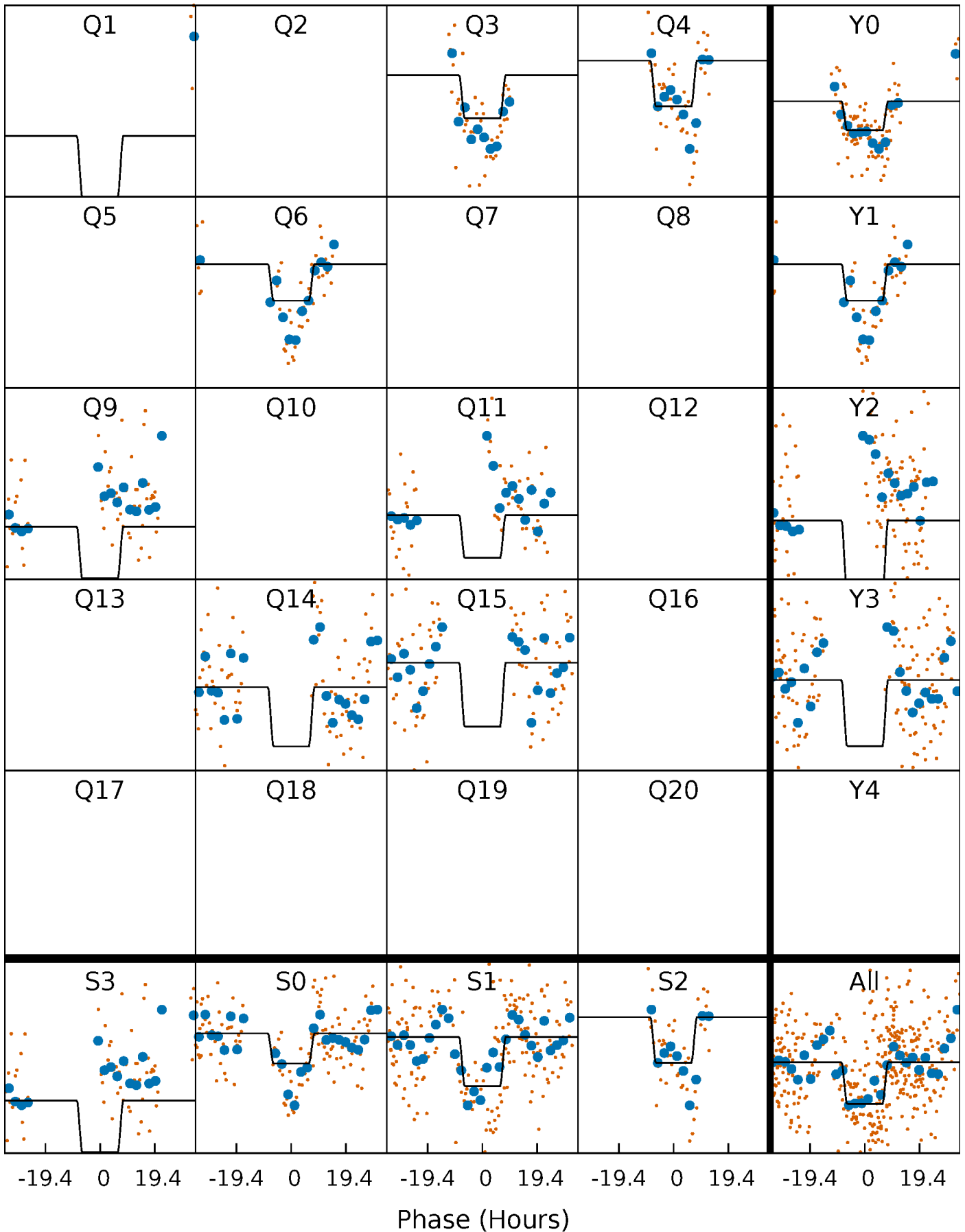
DV Quarter-Phased Transit Curves

TCE 009656994-02 P=147.547217 Days $T_0=278.488217$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

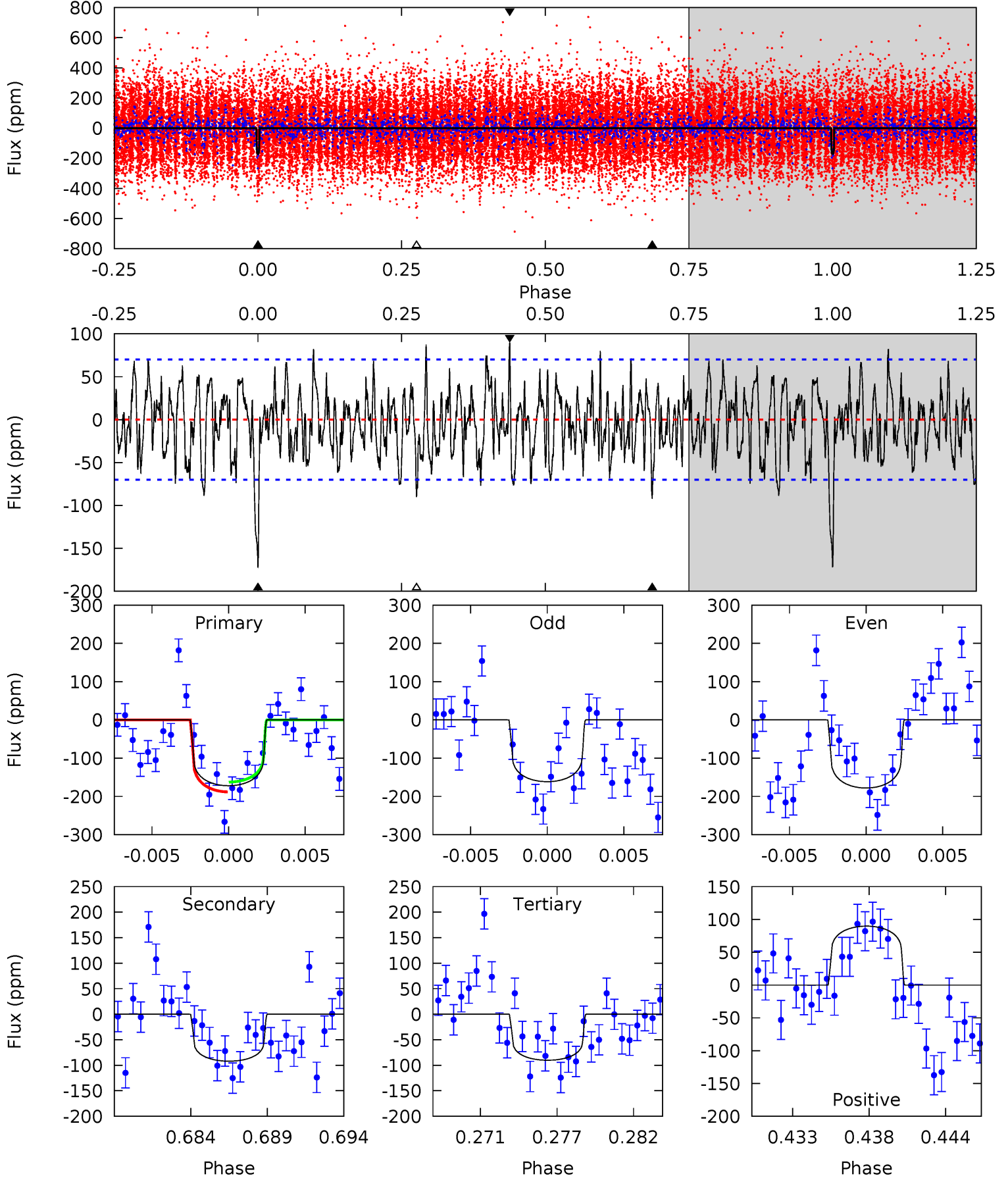
TCE 009656994-02 P=147.550737 Days $T_0=278.516250$ (BKJD)



DV Model-Shift Uniqueness Test

009656994-02, P = 147.547217 Days, E = 130.941000 Days

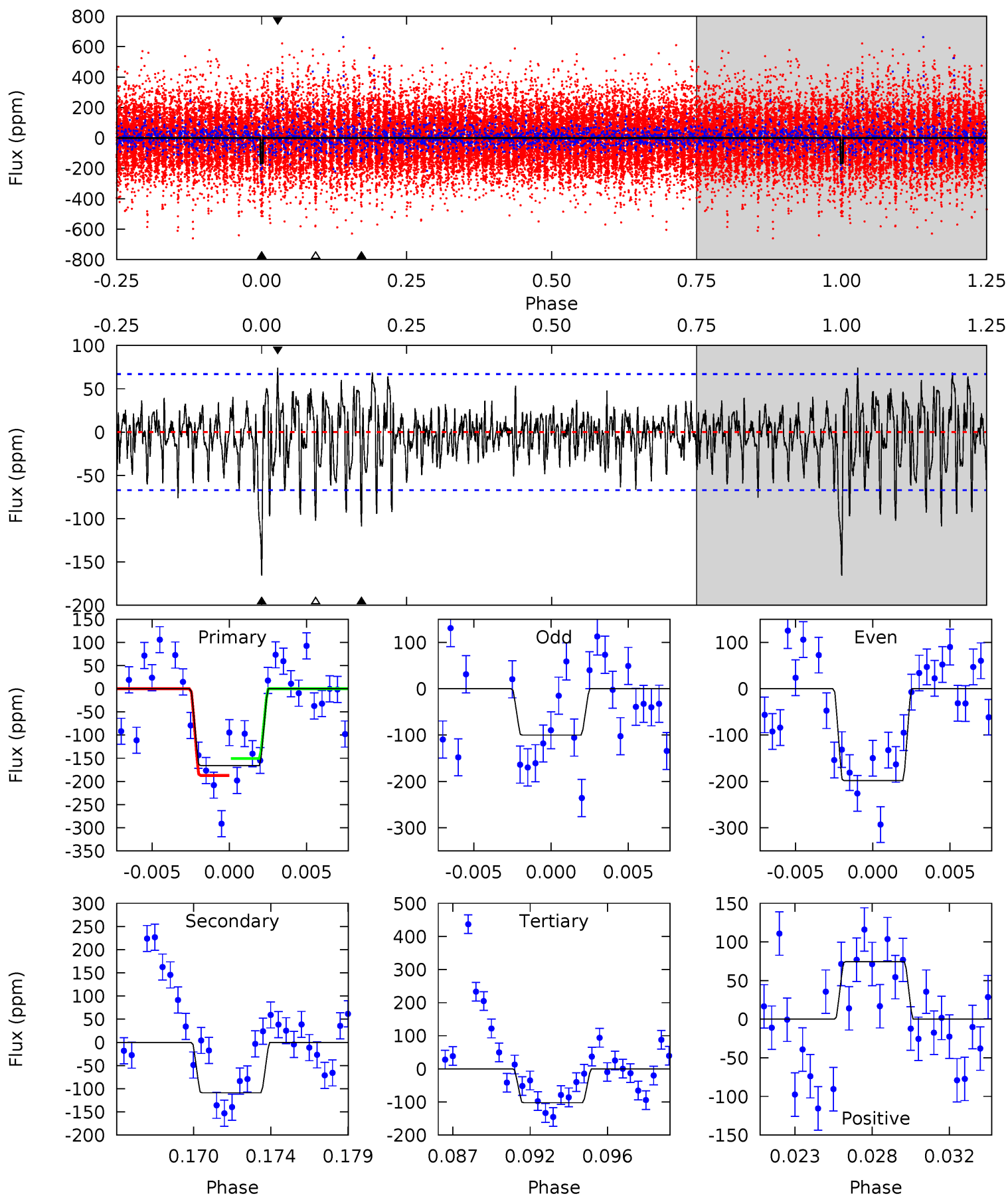
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	6.77	6.64	6.60	5.15	2.79	2.34	6.02	6.05	0.13	0.16	0.59	0.90	0.34	0.90



Alt Model-Shift Uniqueness Test

009656994-02, P = 147.550737 Days, E = 130.965513 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.8	8.39	7.88	5.73	5.17	2.83	1.94	4.91	7.05	0.52	2.66	3.69	1.04	0.31	1.38



Stellar Parameters For KIC 009656994

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6765^{+81}_{-81}	$4.106^{+0.132}_{-0.108}$	$-0.040^{+0.150}_{-0.150}$	$1.741^{+0.274}_{-0.274}$	$1.416^{+0.098}_{-0.109}$	$0.378^{+0.230}_{-0.121}$
	+1%/-1%	+3%/-3%	+375%/-375%	+16%/-16%	+7%/-8%	+61%/-32%
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 009656994-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-92 ± 14	$2.99^{+0.62}_{-0.54}$	702^{+31}_{-30}	5305^{+467}_{-417}	2125^{+1059}_{-746}
Alt.	-109 ± 13	$2.64^{+0.55}_{-0.64}$	701^{+31}_{-31}	5852^{+747}_{-496}	3301^{+2184}_{-1143}

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 $A_{obs} \gg 1.0$

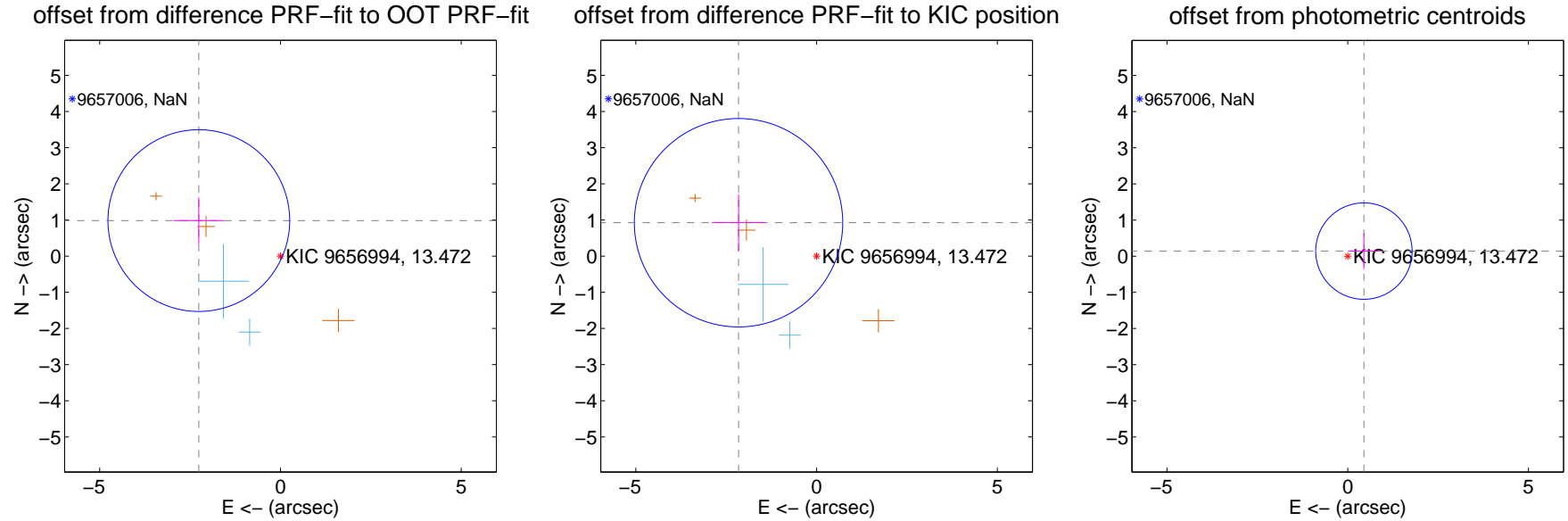
DV Centroid Data

Supplemental centroid analysis for 009656994-02. Kepler magnitude: 13.47. Transit SNR 9.33

There are 2 quarters with good PRF difference image offsets

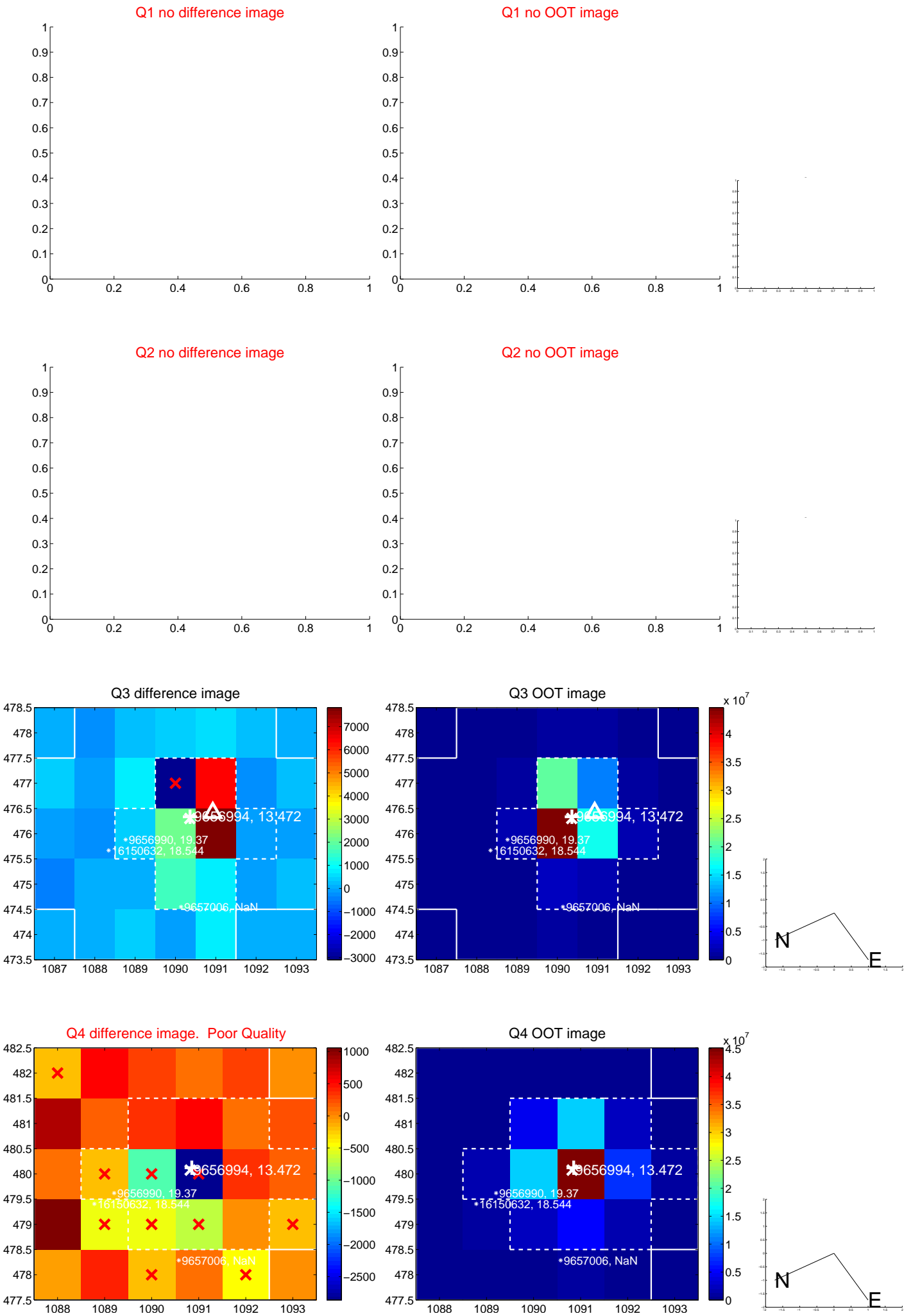
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.462 ± 0.838	2.94	2.257 ± 0.702	0.982 ± 0.643
PRF-fit source offset from KIC position	2.348 ± 0.961	2.44	2.158 ± 0.735	0.924 ± 0.786
photometric centroid source offset	0.47 ± 0.44	1.06	-0.45 ± 0.44	0.14 ± 0.50



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.

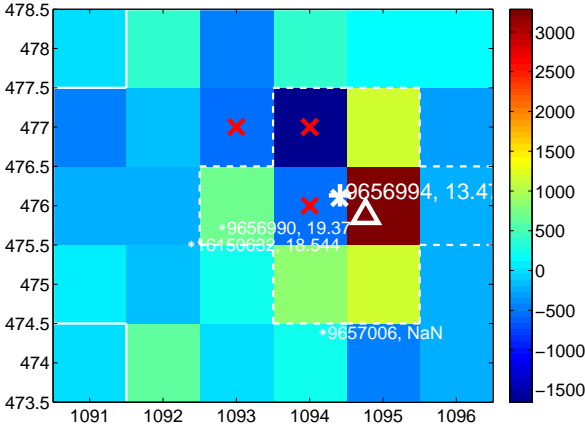
Q5 no difference image



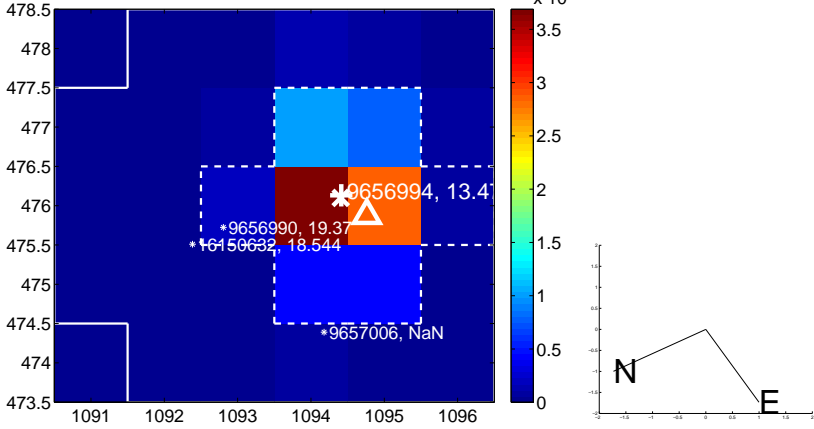
Q5 no OOT image



Q6 difference image



Q6 OOT image



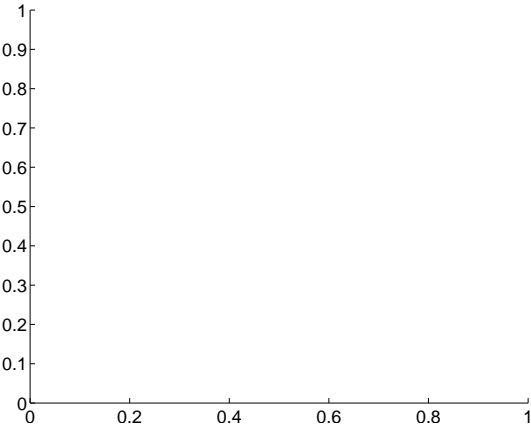
Q7 no difference image



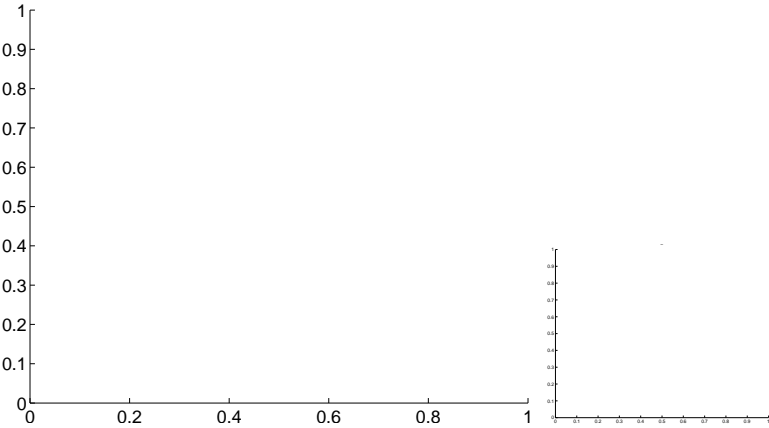
Q7 no OOT image



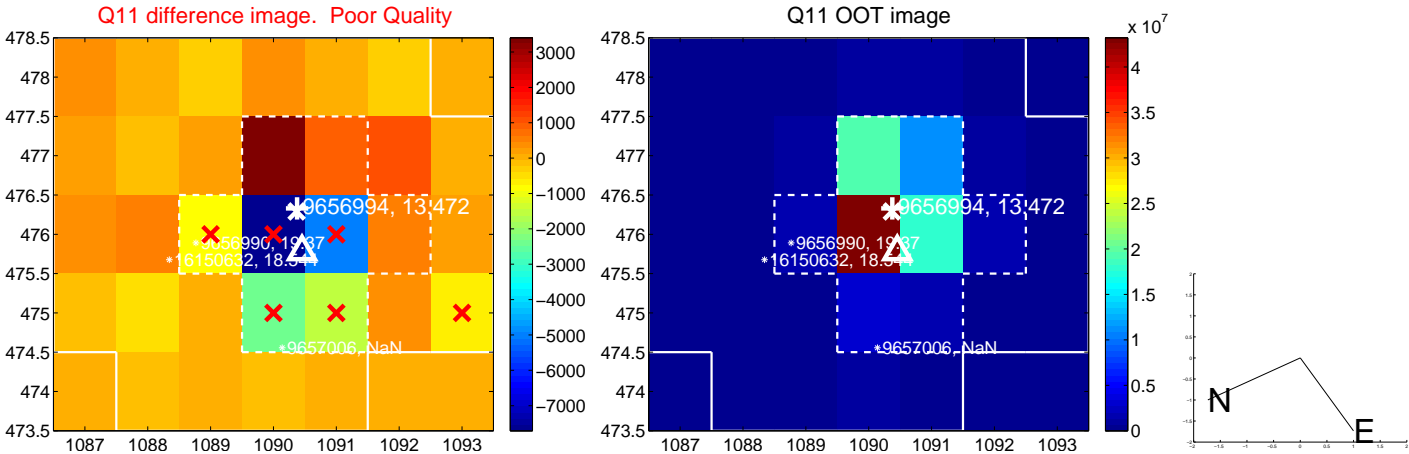
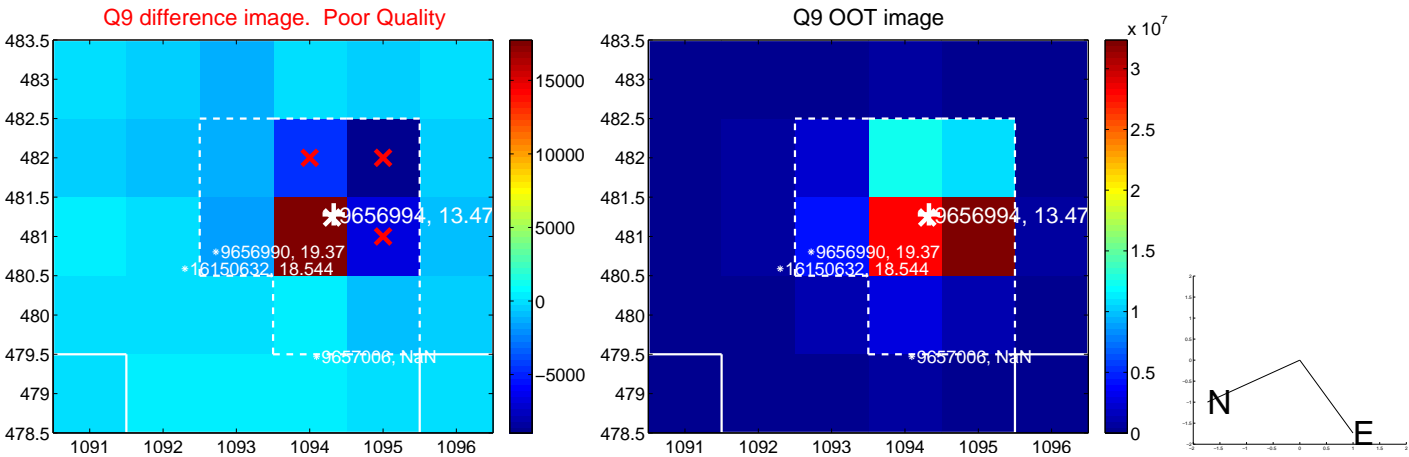
Q8 no difference image



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.

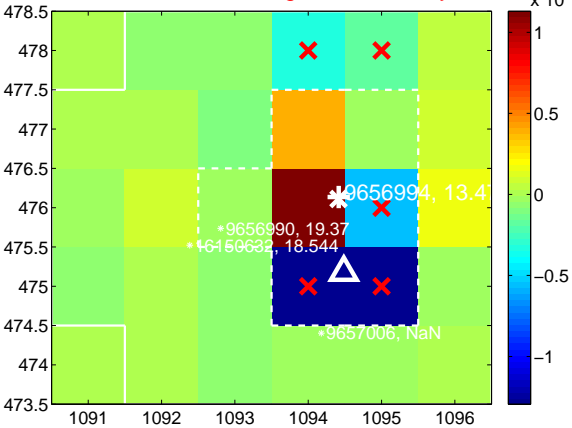
Q13 no difference image



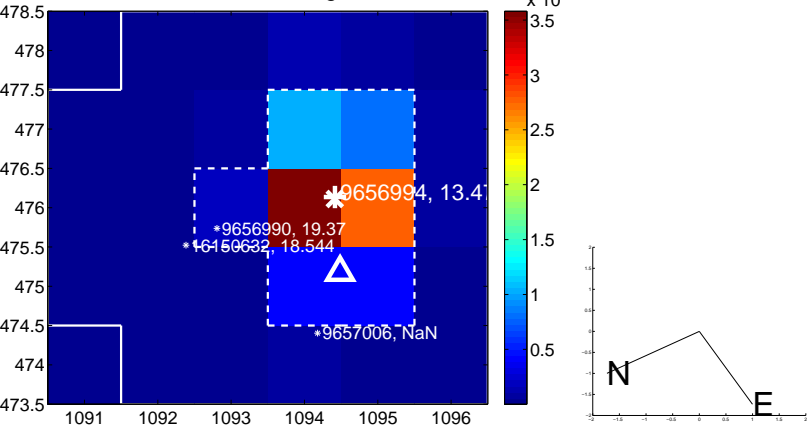
Q13 no OOT image



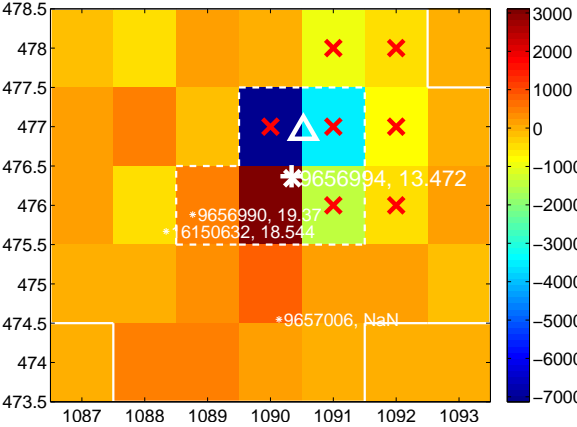
Q14 difference image. Poor Quality



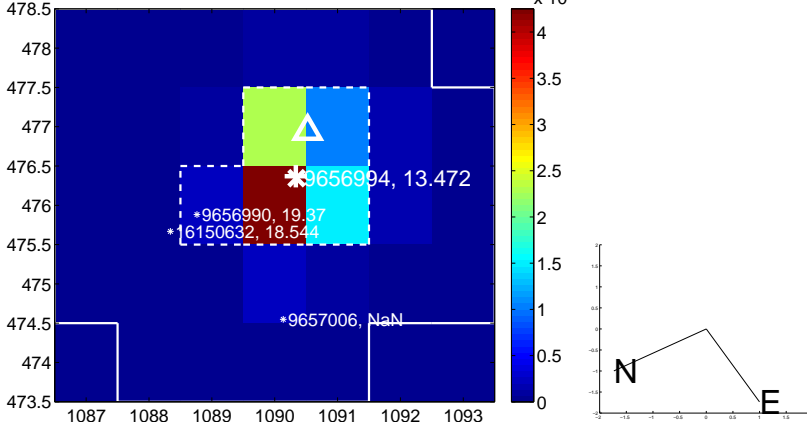
Q14 OOT image



Q15 difference image. Poor Quality



Q15 OOT image



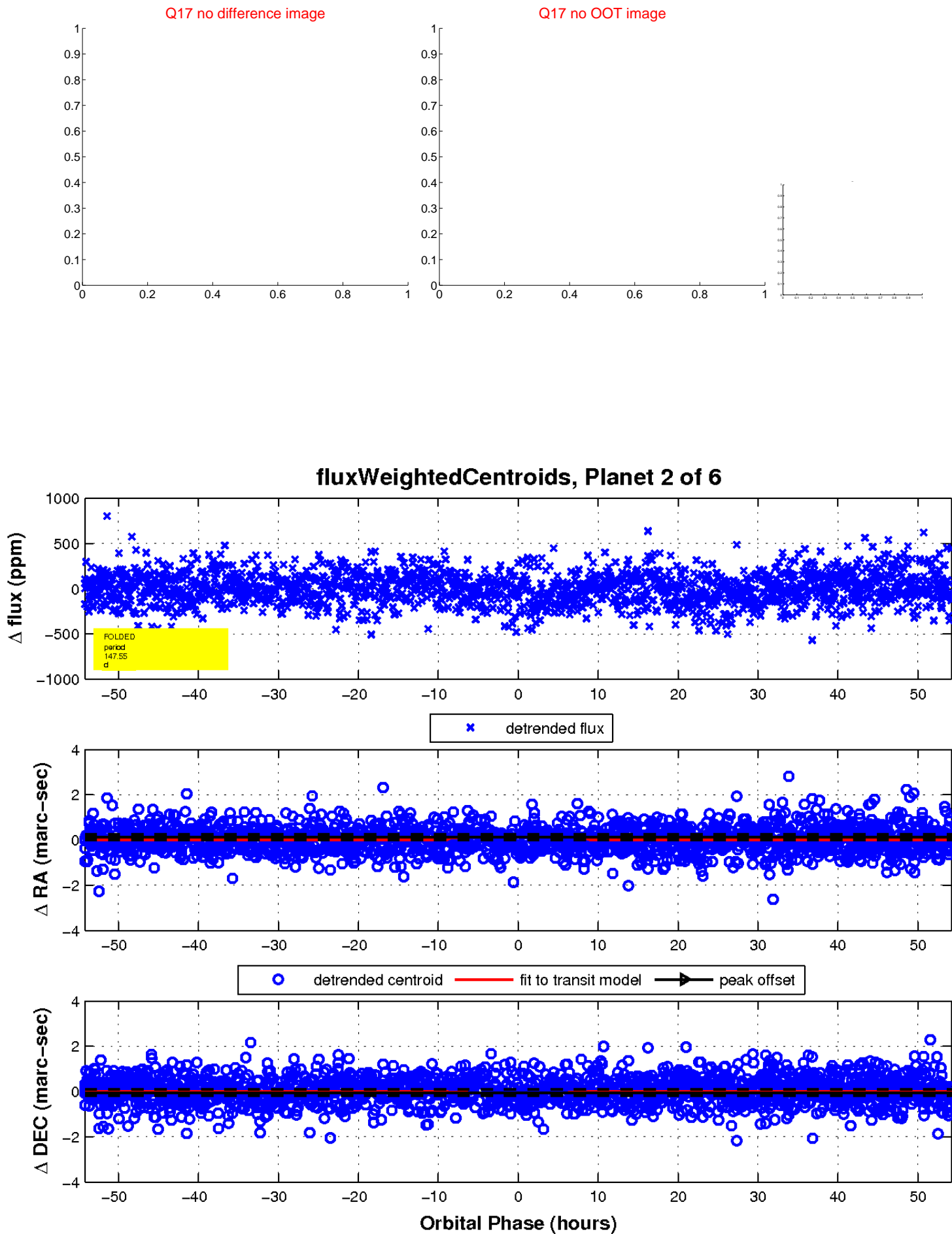
Q16 no difference image



Q16 no OOT image

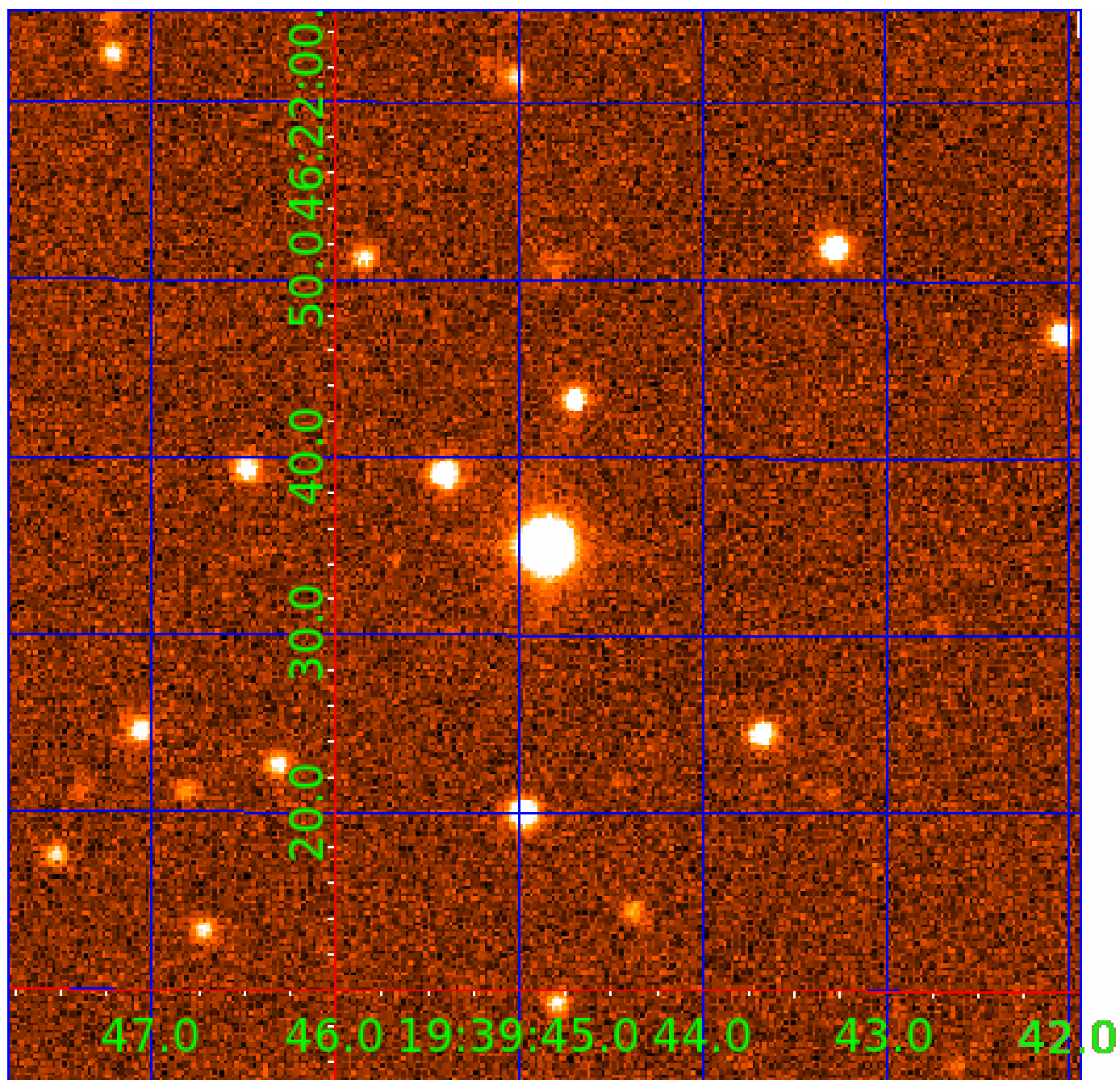


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009656994

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})
009656994-01	OBS	No	1.942974	131.779497	19.0	7.992	9.3	7.2	1.74	6765	0.81	4866.41
009656994-02	OBS	No	147.547217	278.488217	262.8	18.114	14.8	9.3	1.74	6765	3.05	15.13
009656994-03	OBS	No	112.204233	133.985962	164.0	14.927	7.6	6.3	1.74	6765	2.45	21.80
009656994-04	OBS	No	466.214420	458.876718	309.6	10.215	7.6	8.7	1.74	6765	3.90	3.26
009656994-05	OBS	No	233.699319	245.139898	251.2	5.609	7.5	6.9	1.74	6765	3.04	8.20
009656994-06	OBS	No	518.794639	338.953431	249.0	4.798	7.1	7.2	1.74	6765	3.03	2.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009656994-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
009656994-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009656994-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV
009656994-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009656994-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009656994-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

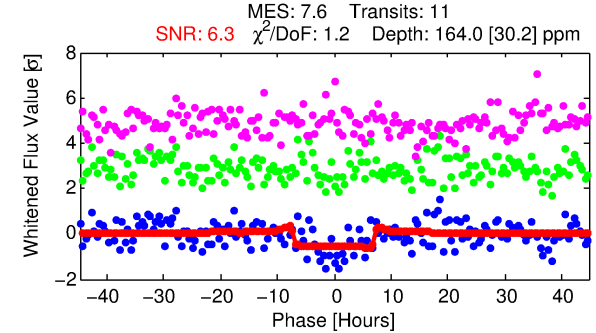
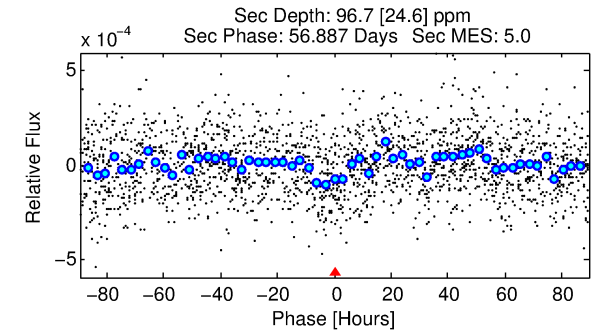
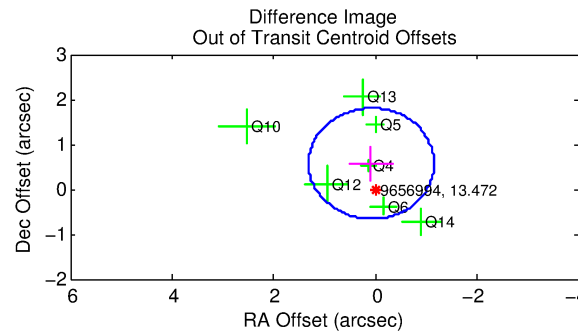
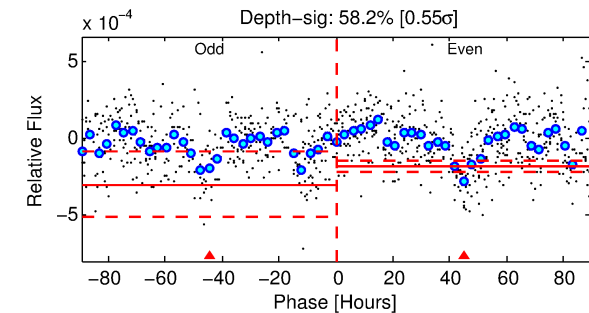
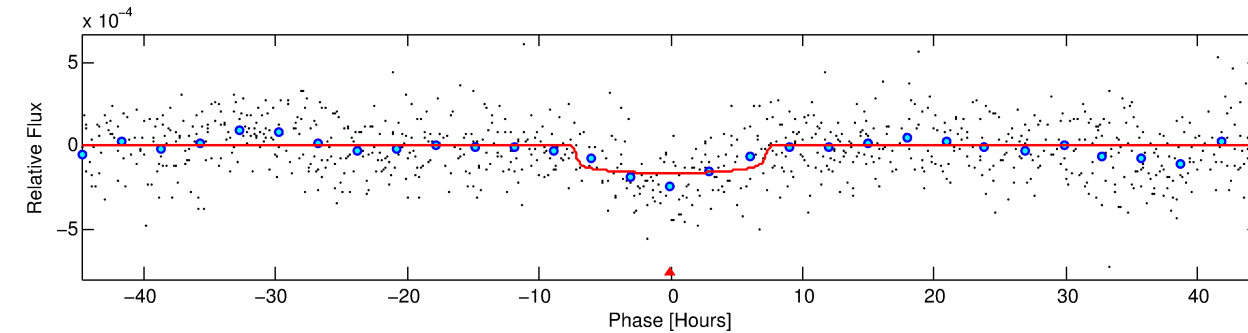
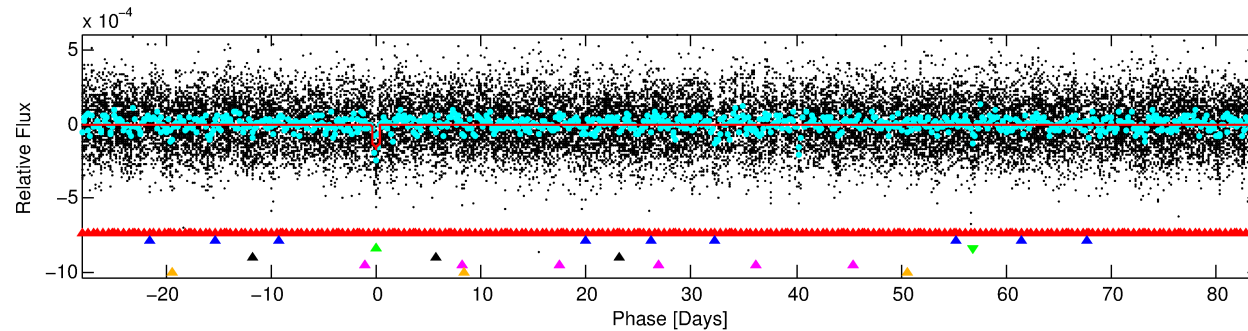
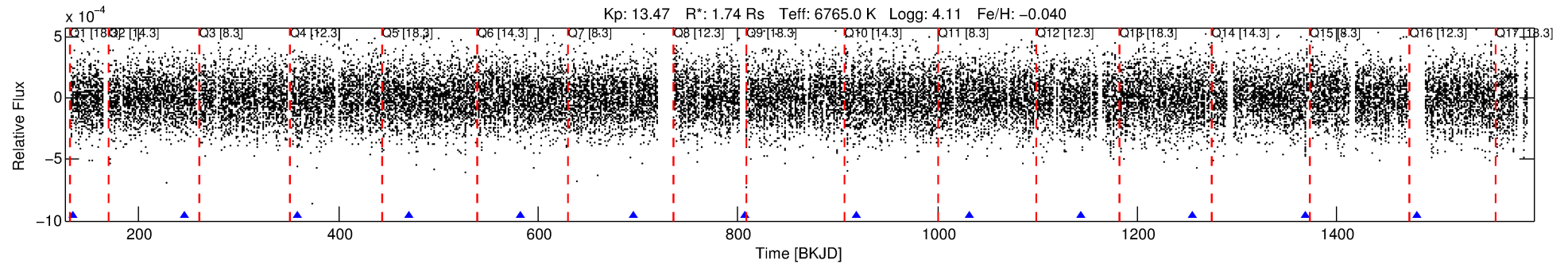
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009656994-03

No Significant Match Found

DV One-Page Summary

KIC: 9656994 Candidate: 3 of 6 Period: 112.204 d



DV Fit Results:

Period = 112.20423 [0.00279] d
Epoch = 133.9860 [0.0192] BKJD
Rp/R* = 0.0129 [0.0032]
a/R* = 36.70 [47.11]
b = 0.79 [0.63]
Seff = 21.80 [5.08]
Teq = 551 [32] K
Rp = 2.45 [0.72] Re
a = 0.5108 [0.0745] AU
Ag = 2316.20 [1398.83] [1.66 σ]
Teffp = 5910 [829] K [6.46 σ]

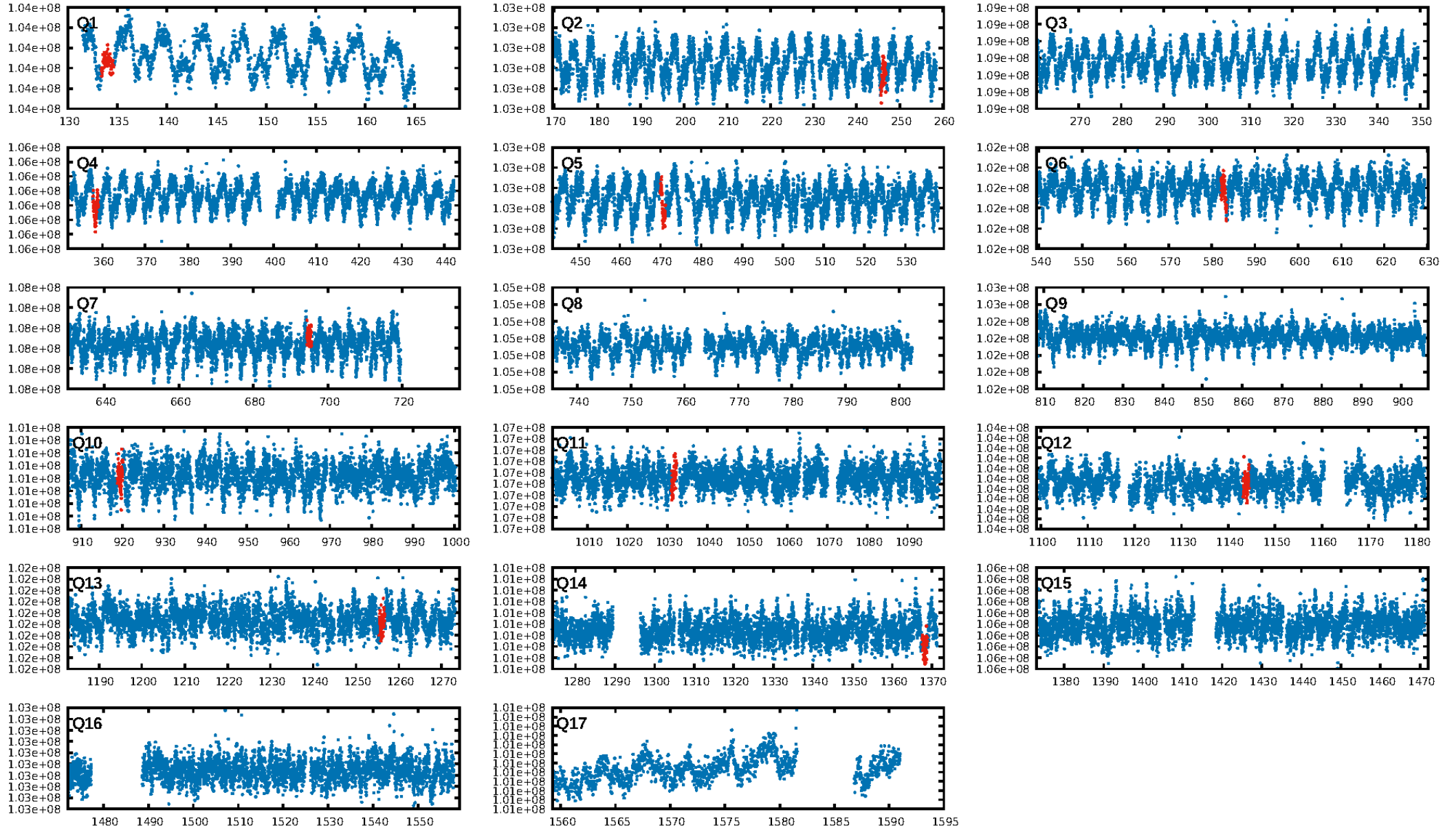
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [156.29 σ]
LongPeriod-sig: 100.0% [36.14 σ]
ModelChiSquare2-sig: 8.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.05e-08
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: -0.2925
Centroid-sig: 47.6%
Centroid-so: 0.611 arcsec [0.89 σ]
OotOffset-rm: 0.575 arcsec [1.40 σ]
KicOffset-rm: 0.406 arcsec [1.25 σ]
OotOffset-st: 3/0/2/2 [7]
KicOffset-st: 3/0/2/2 [7]
DiffImageQuality-fgm: 0.86 [6/7]
DiffImageOverlap-fno: 0.00 [0/9]

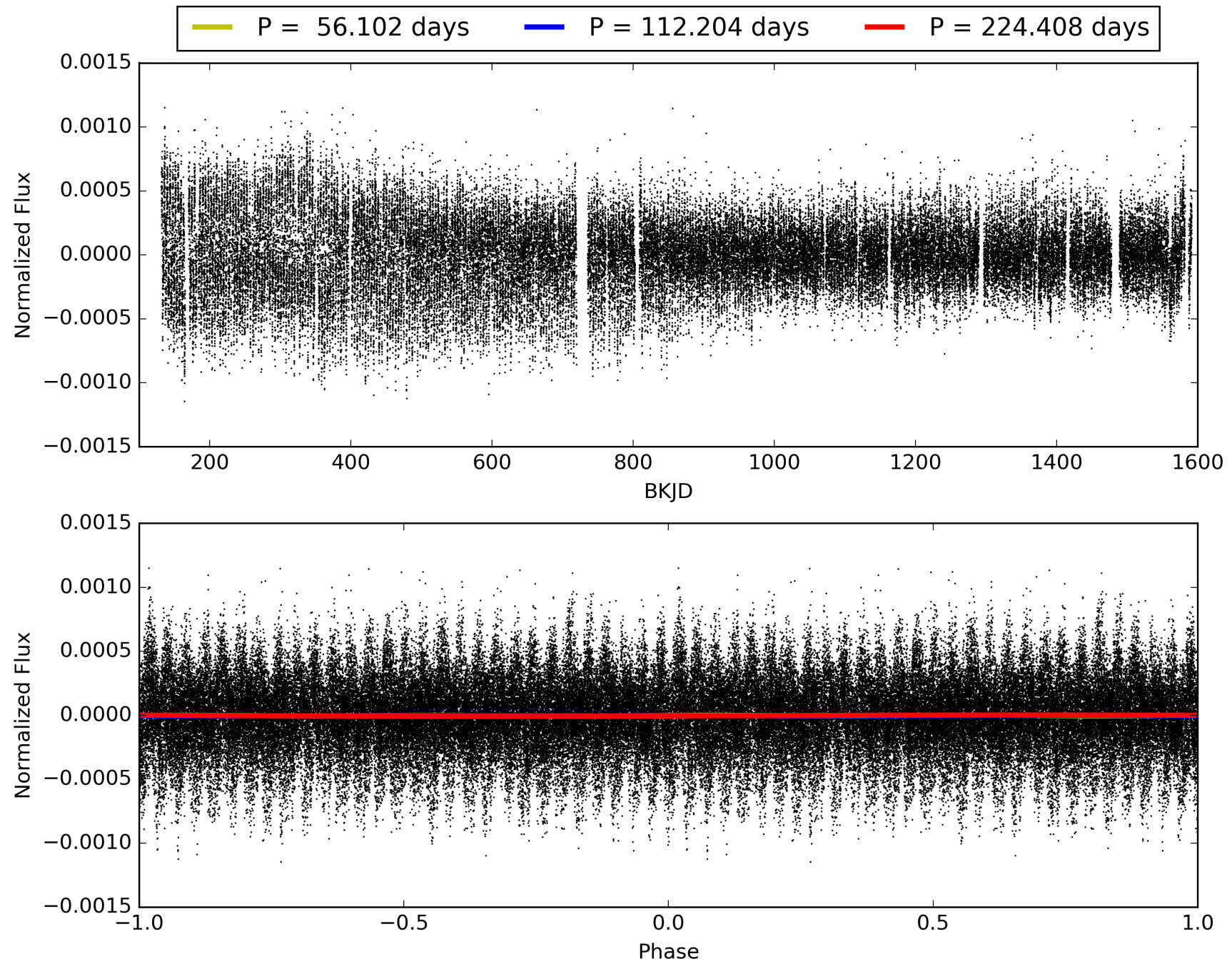
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:37:40 Z

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

TCE 009656994-03, PDC Light Curves

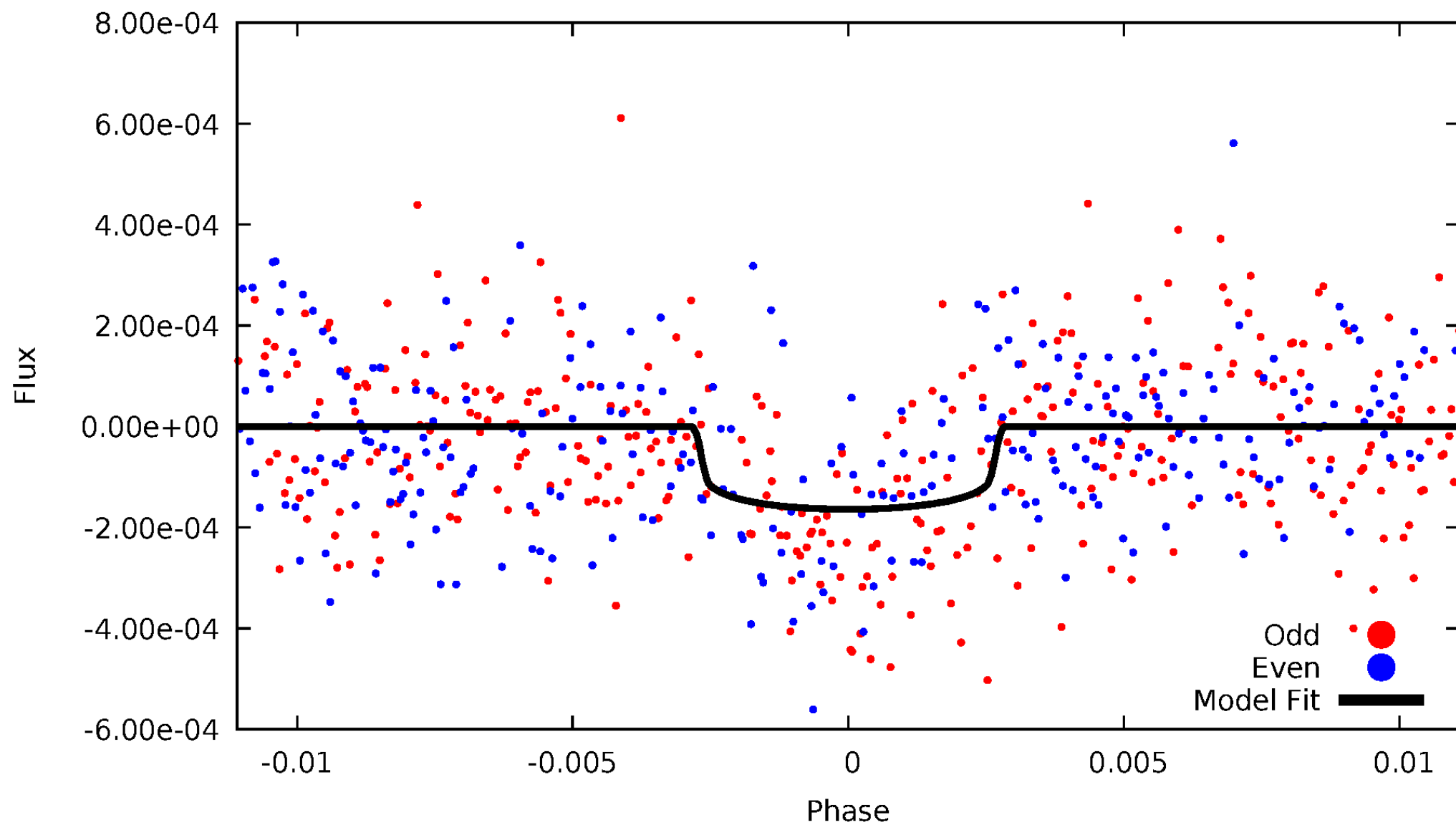


TCE 009656994-03



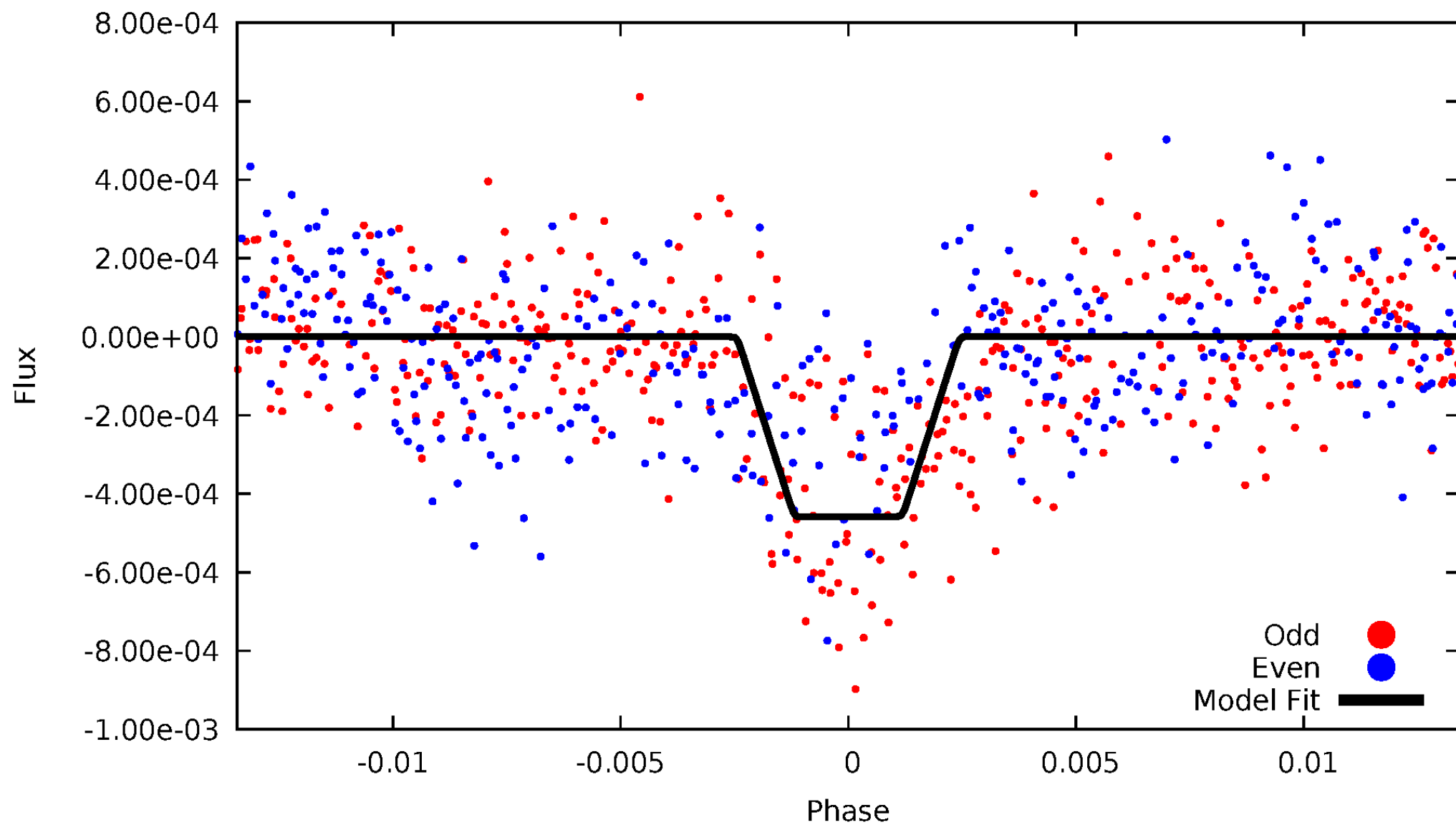
DV Odd/Even

TCE 009656994-03



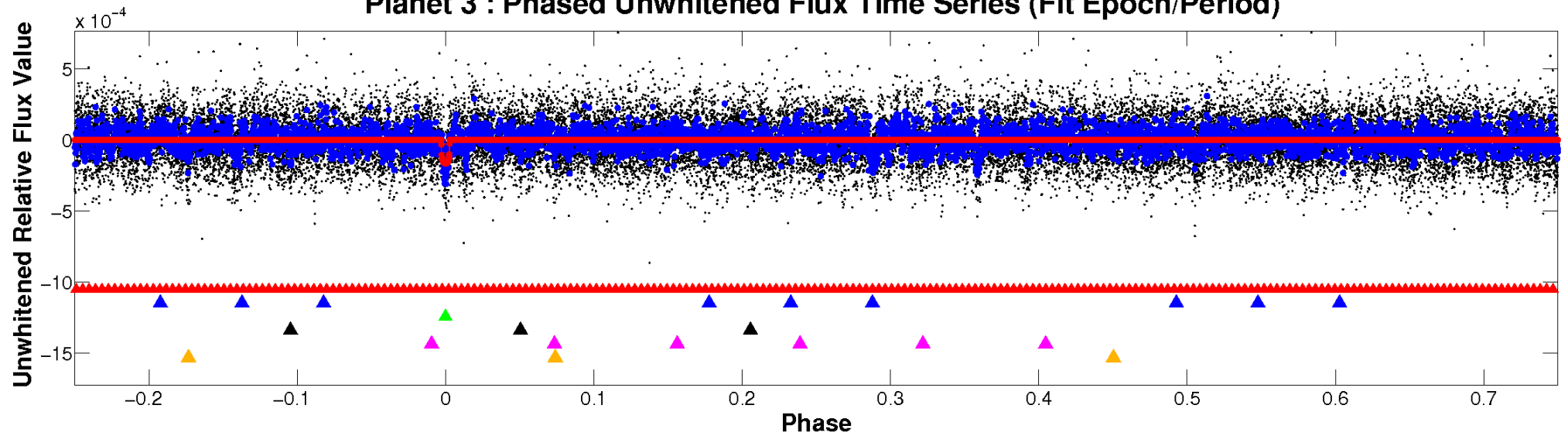
ALT Odd/Even

TCE 009656994-03

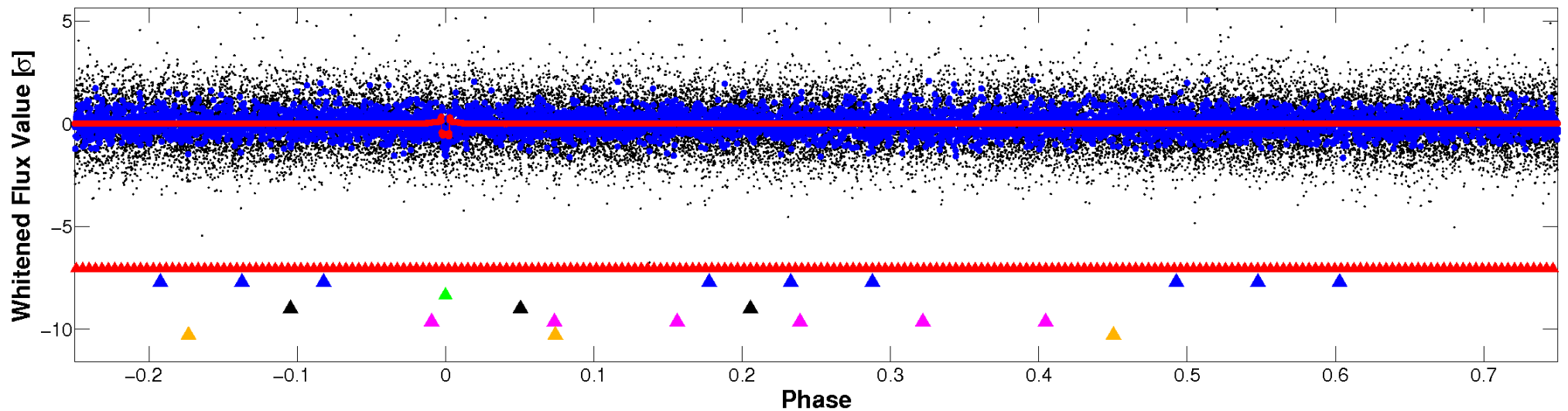


Non-Whitened Vs. Whitened Light Curve

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

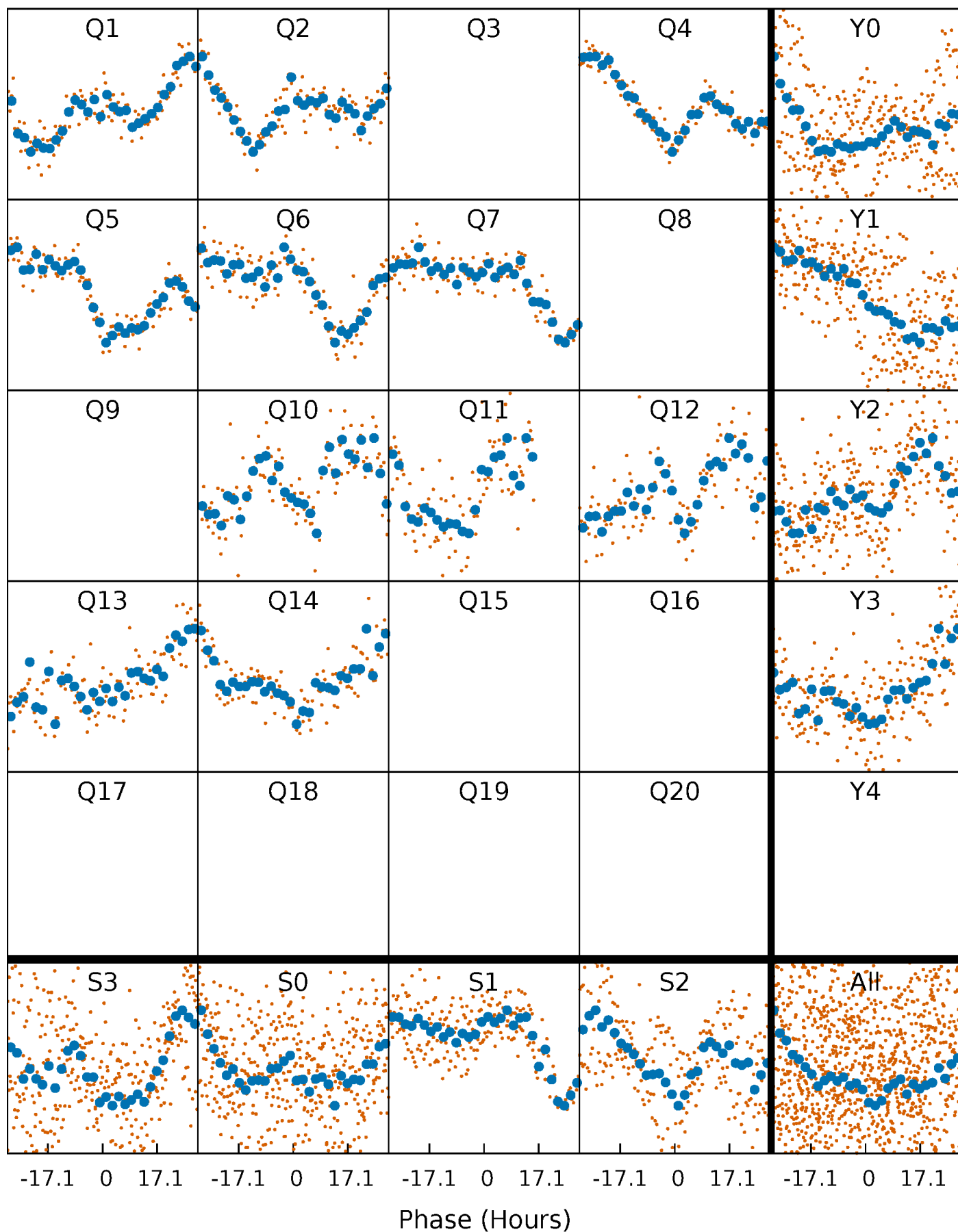


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



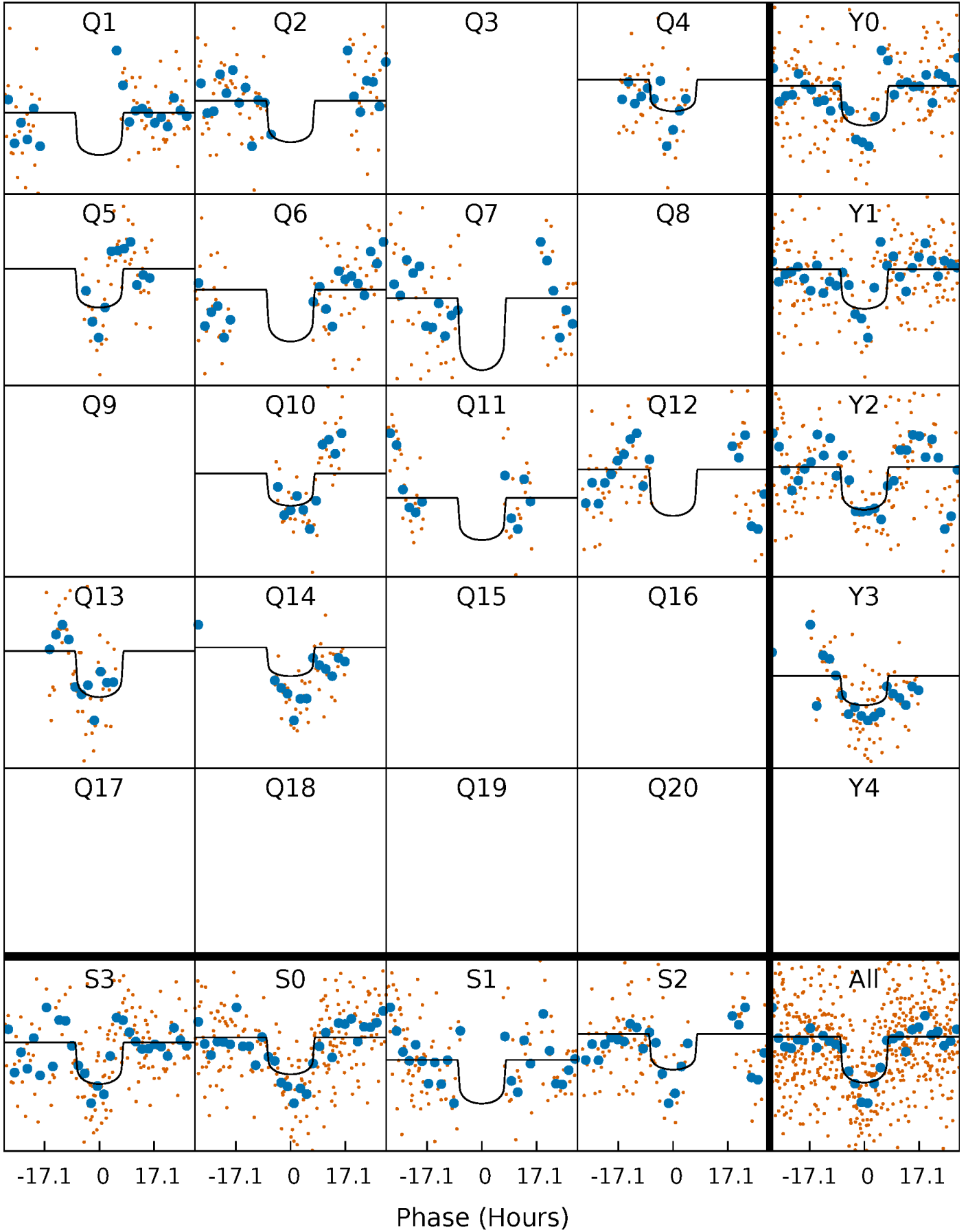
PDC Quarter-Phased Transit Curves

TCE 009656994-03 P=112.204233 Days $T_0=133.985962$ (BKJD)



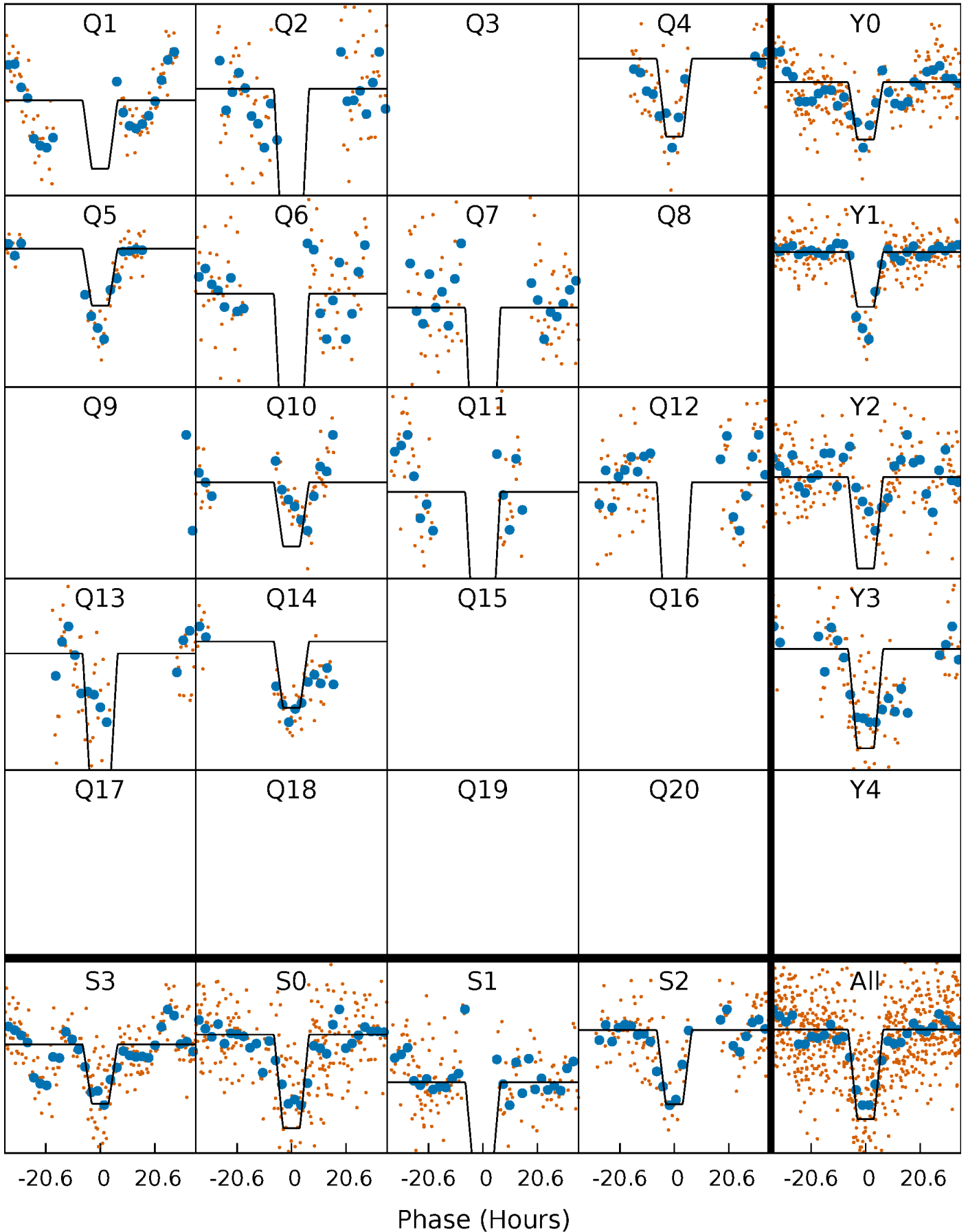
DV Quarter-Phased Transit Curves

TCE 009656994-03 $P=112.204233$ Days $T_0=133.985962$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

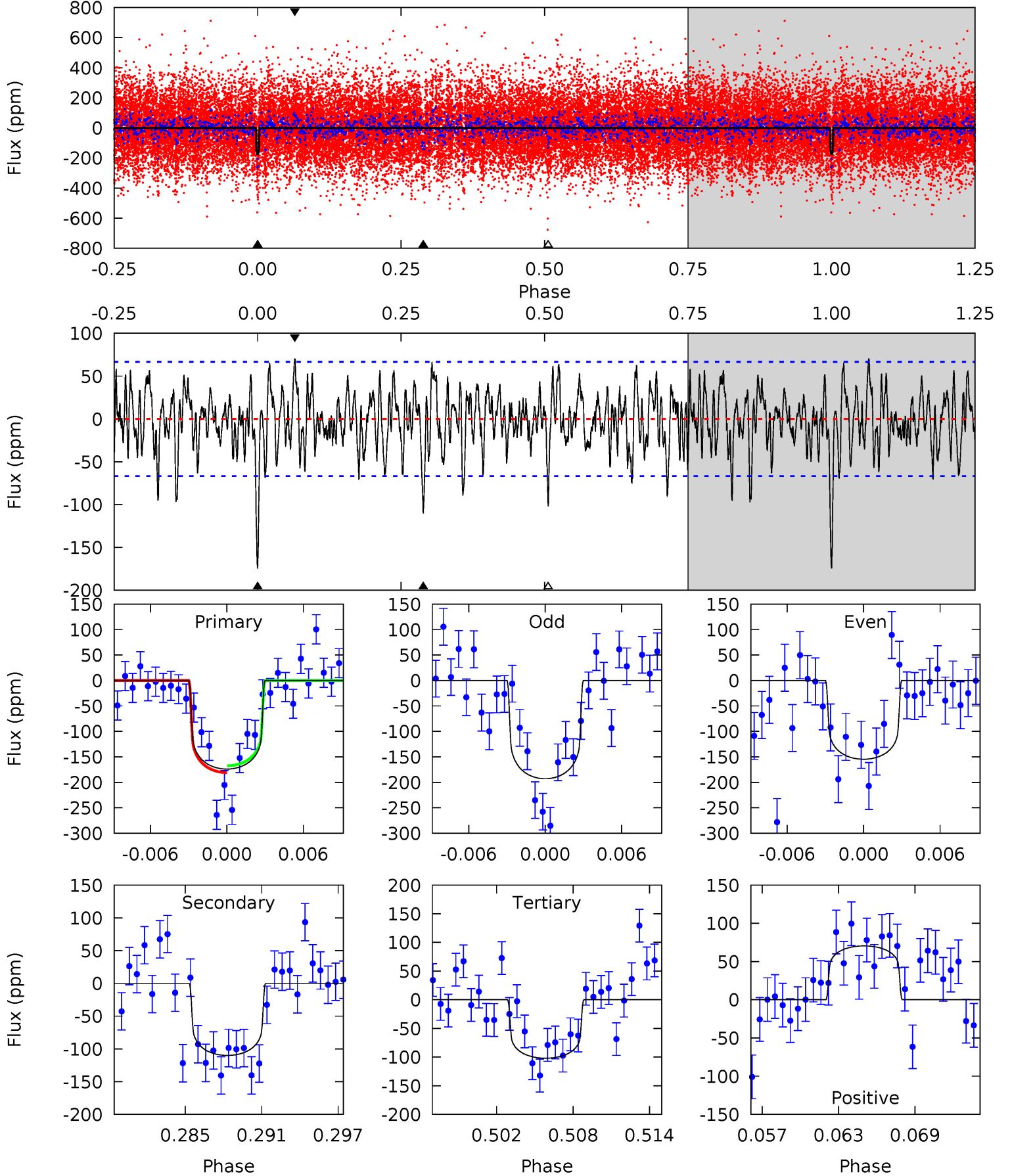
TCE 009656994-03 P=112.214300 Days $T_0=133.946023$ (BKJD)



DV Model-Shift Uniqueness Test

009656994-03, P = 112.204233 Days, E = 21.781729 Days

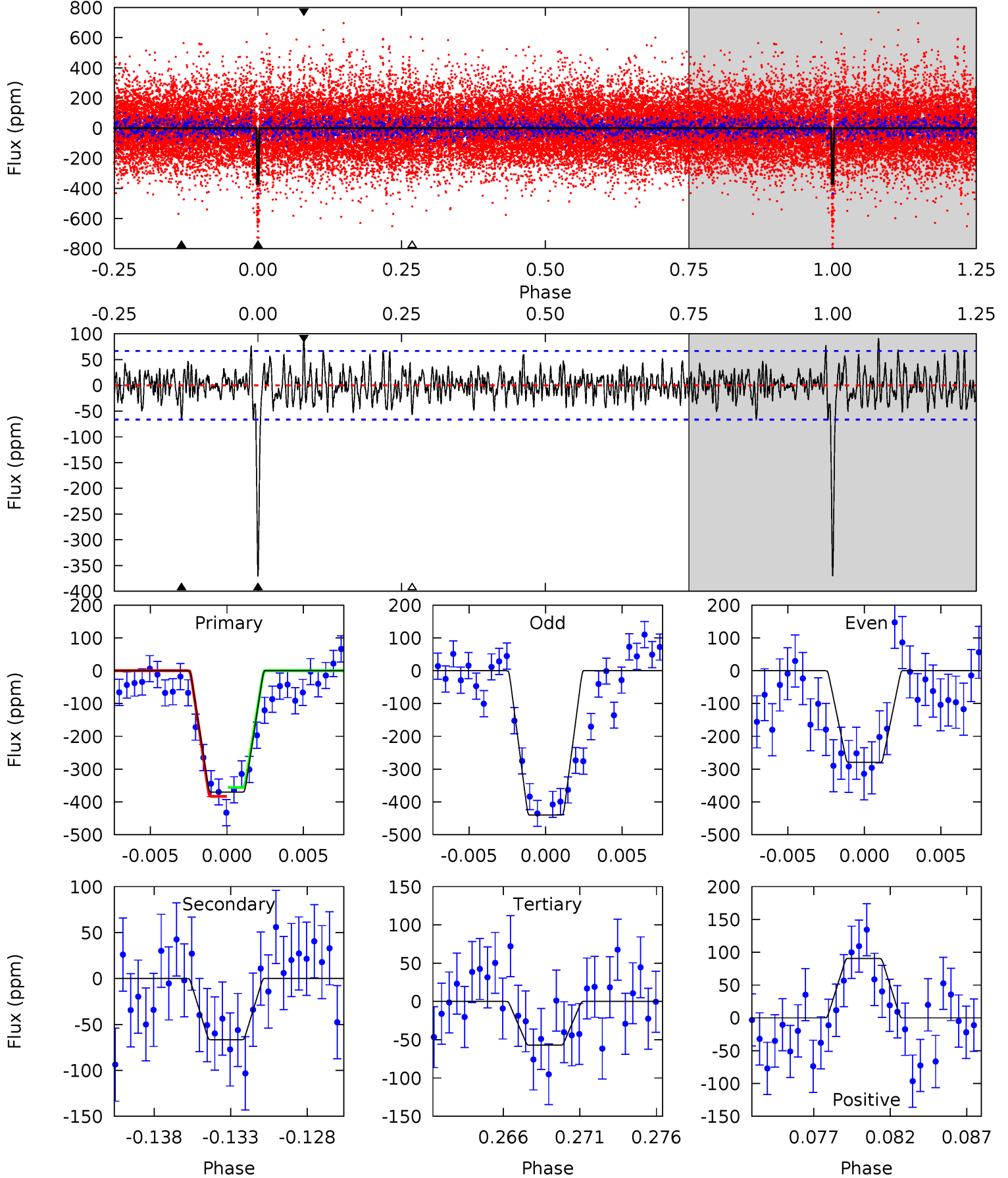
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.4	8.47	7.85	5.42	5.13	2.76	2.24	5.54	7.96	0.62	3.05	1.45	0.51	0.29	0.51



Alt Model-Shift Uniqueness Test

009656994-03, P = 112.214300 Days, E = 21.731723 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.7	5.16	4.42	7.01	5.15	2.80	1.69	24.3	21.7	0.74	-1.86	6.04	0.87	0.20	1.03



Stellar Parameters For KIC 009656994

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6765^{+81}_{-81}	$4.106^{+0.132}_{-0.108}$	$-0.040^{+0.150}_{-0.150}$	$1.741^{+0.274}_{-0.274}$	$1.416^{+0.098}_{-0.109}$	$0.378^{+0.230}_{-0.121}$
	+1%/-1%	+3%/-3%	+375%/-375%	+16%/-16%	+7%/-8%	+61%/-32%
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 009656994-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-110 ± 13	$2.47^{+0.58}_{-0.61}$	769^{+35}_{-33}	6001^{+988}_{-518}	2564^{+2032}_{-905}
Alt.	-67 ± 13	$4.03^{+0.72}_{-0.66}$	768^{+32}_{-34}	4366^{+357}_{-266}	574^{+321}_{-179}

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

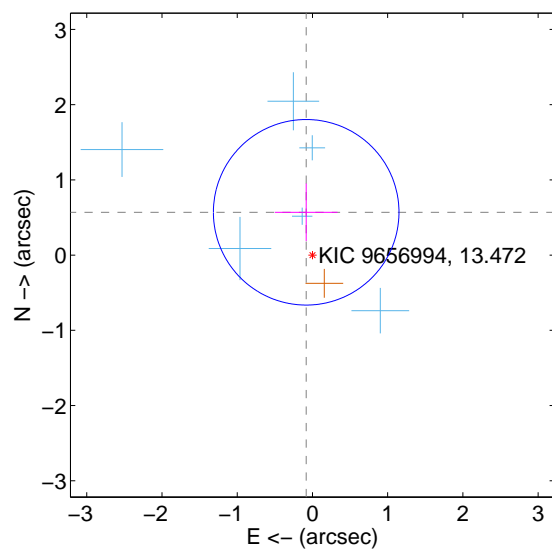
Supplemental centroid analysis for 009656994-03. Kepler magnitude: 13.47. Transit SNR 6.34

There are 6 quarters with good PRF difference image offsets

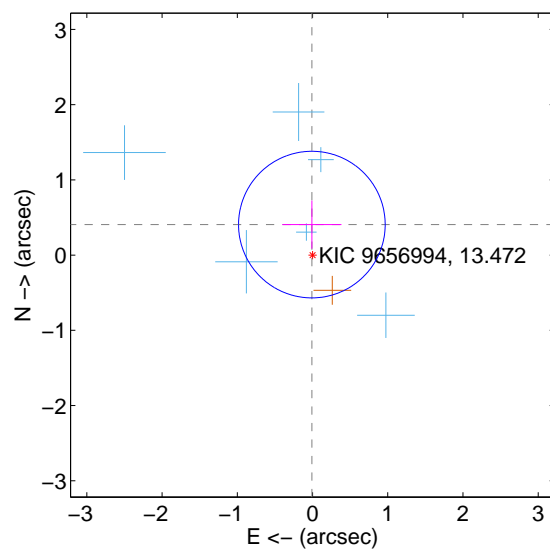
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.575 ± 0.411	1.40	0.083 ± 0.416	0.569 ± 0.383
PRF-fit source offset from KIC position	0.406 ± 0.325	1.25	0.009 ± 0.392	0.406 ± 0.320
photometric centroid source offset	0.61 ± 0.69	0.89	-0.61 ± 0.69	-0.05 ± 0.74

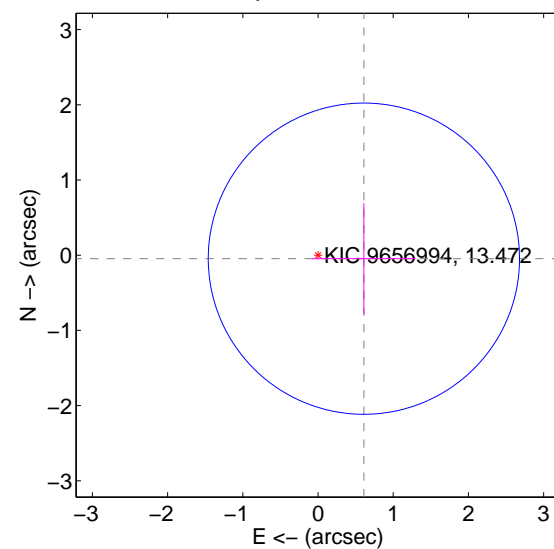
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

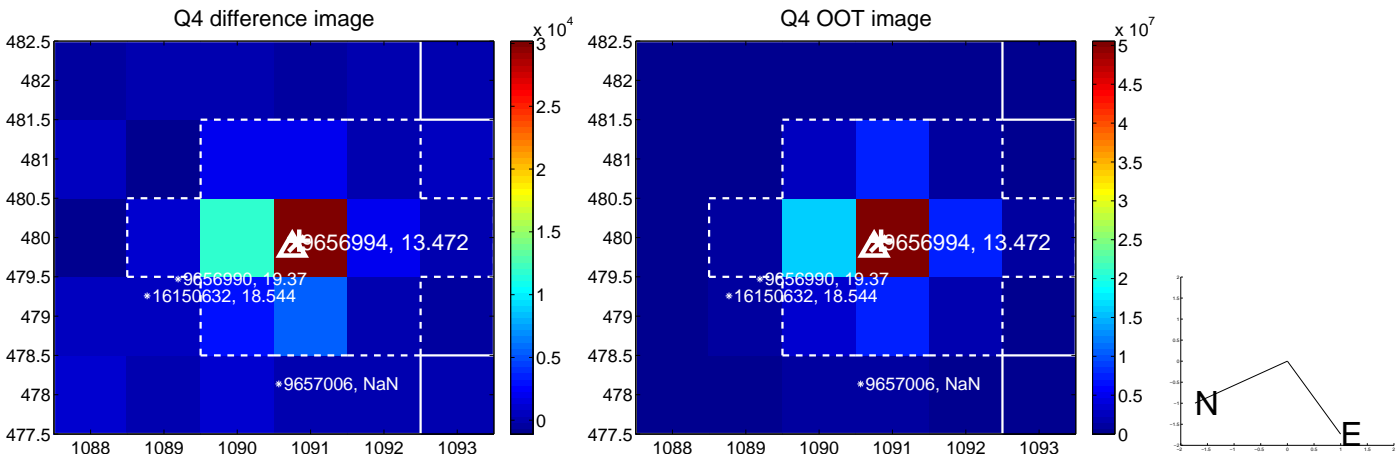
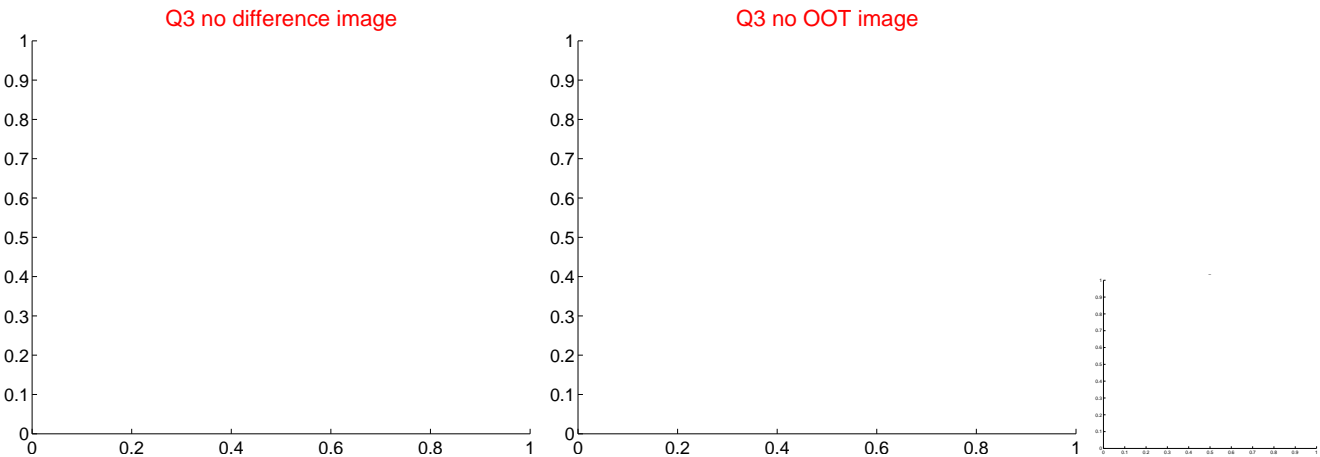
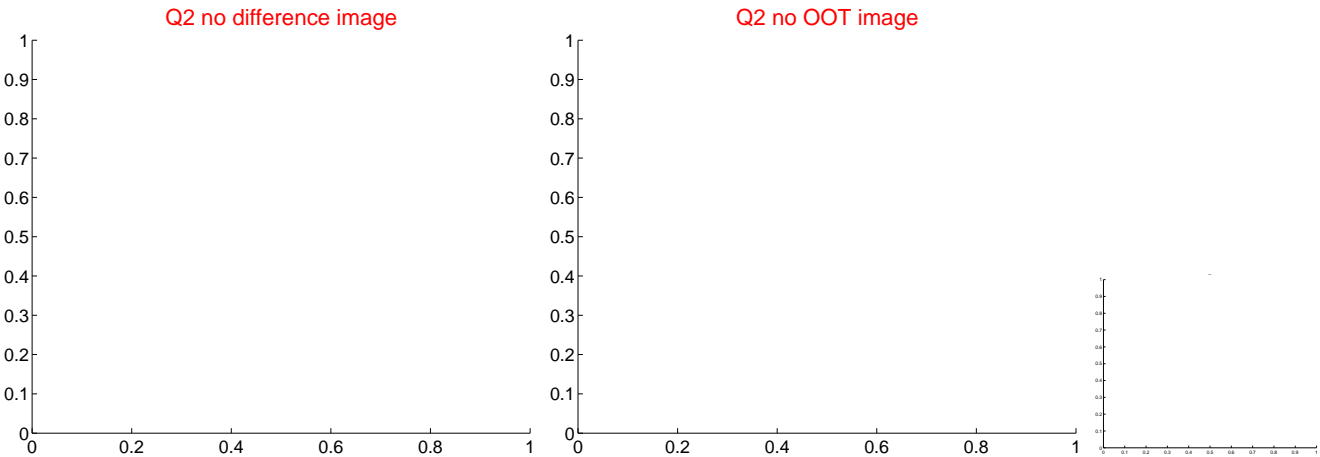
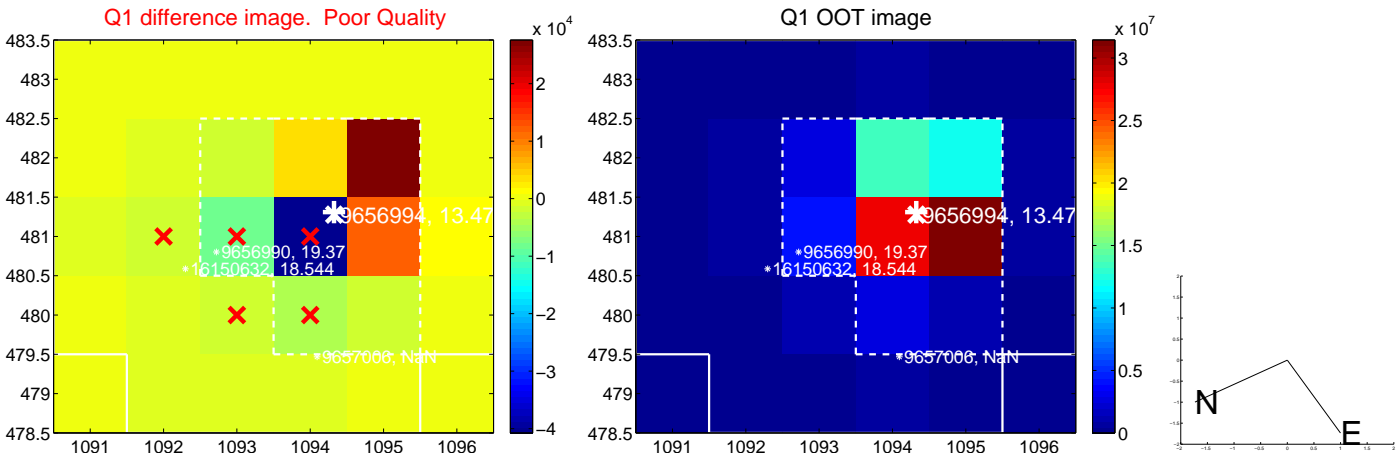


offset from photometric centroids

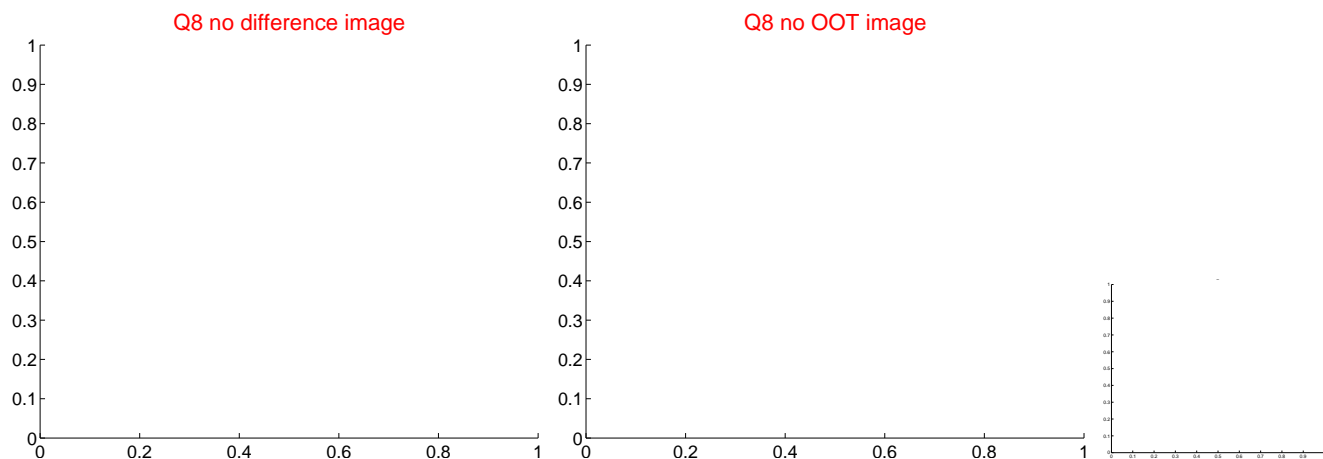
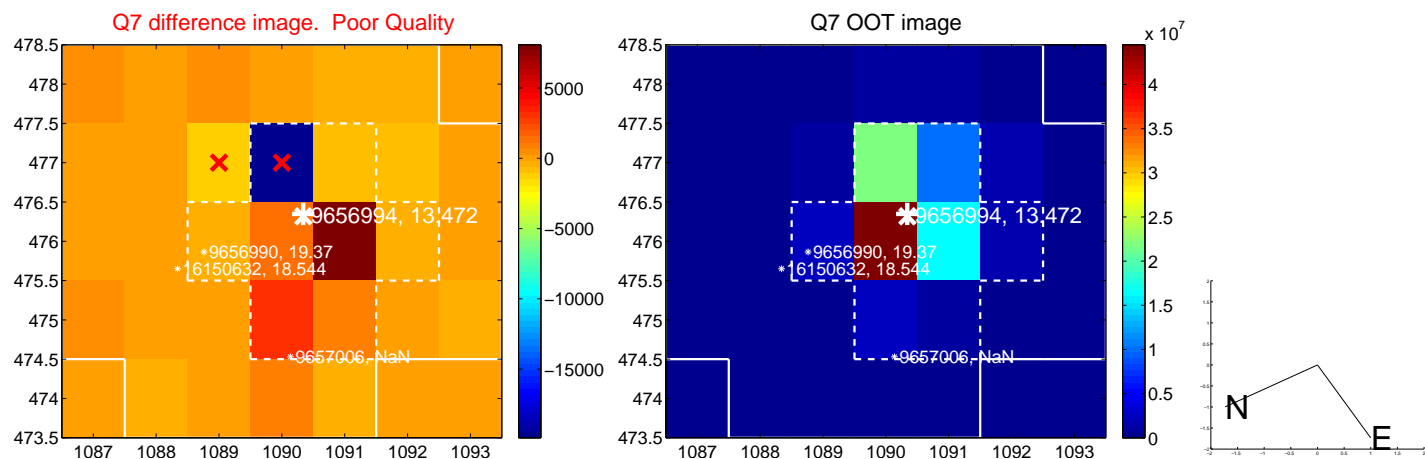
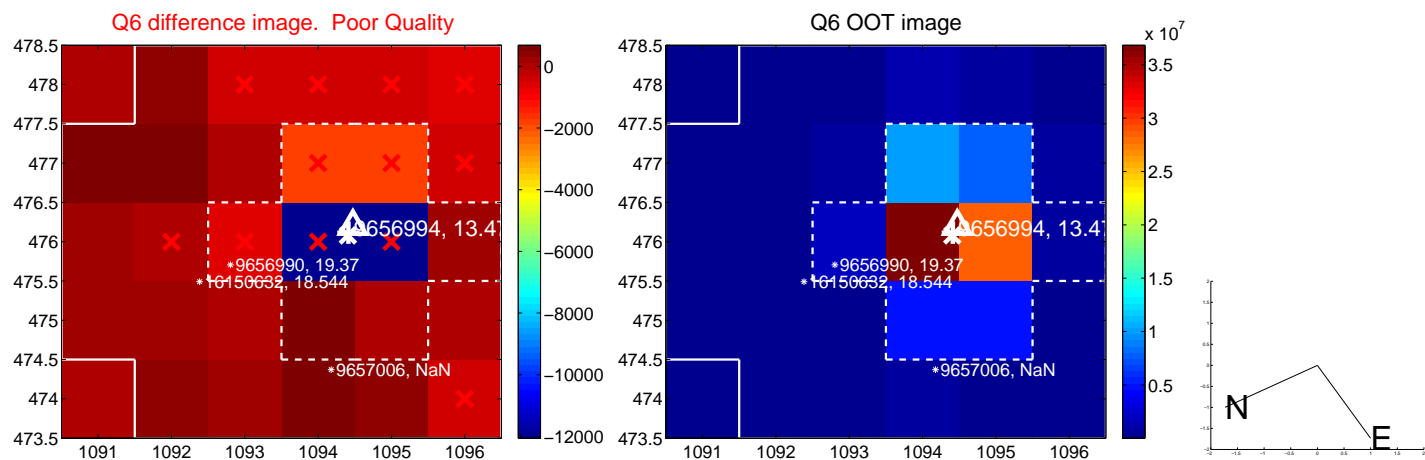
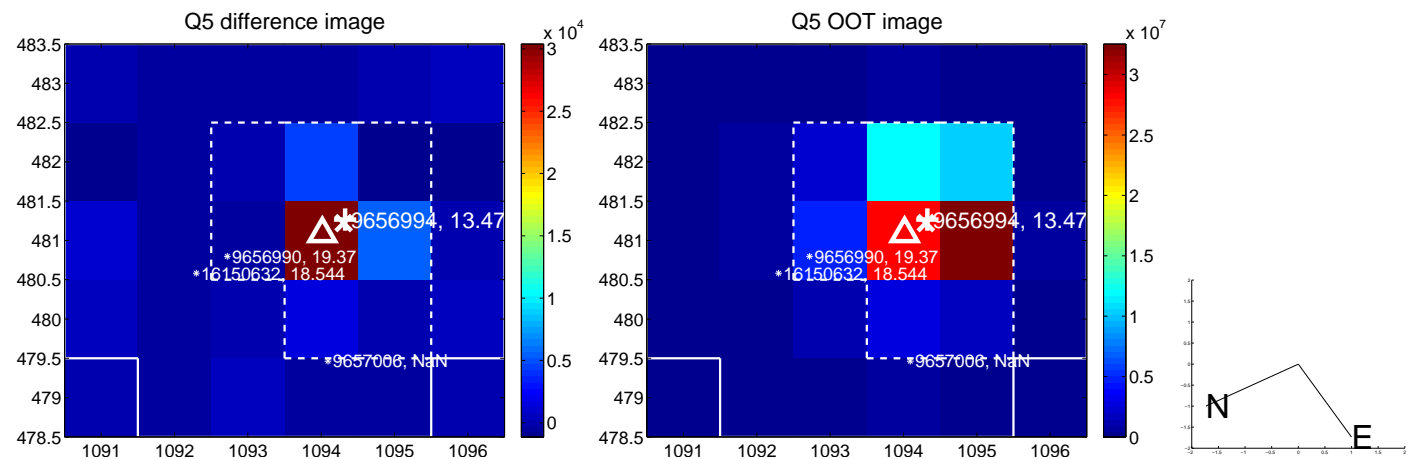


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

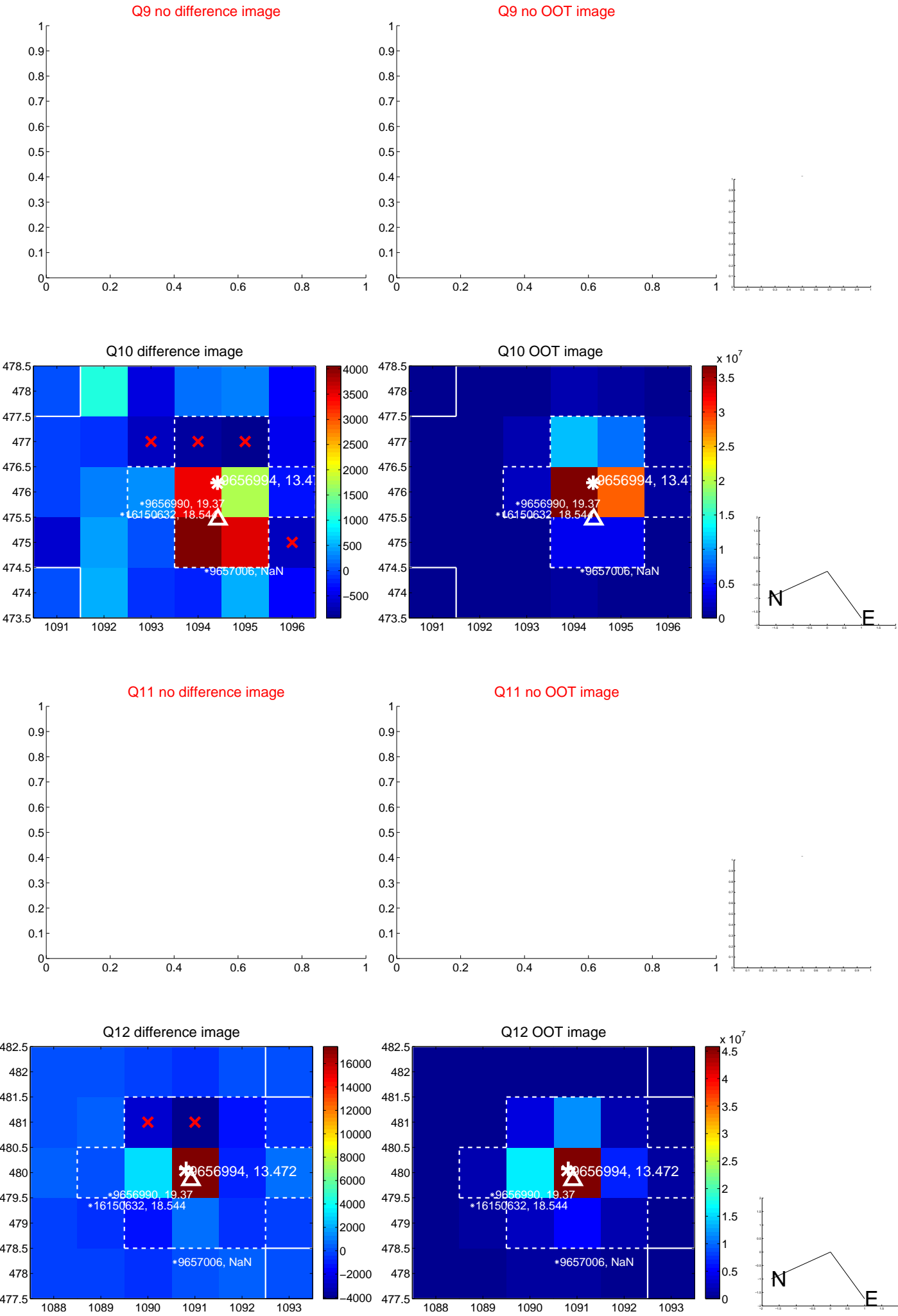
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



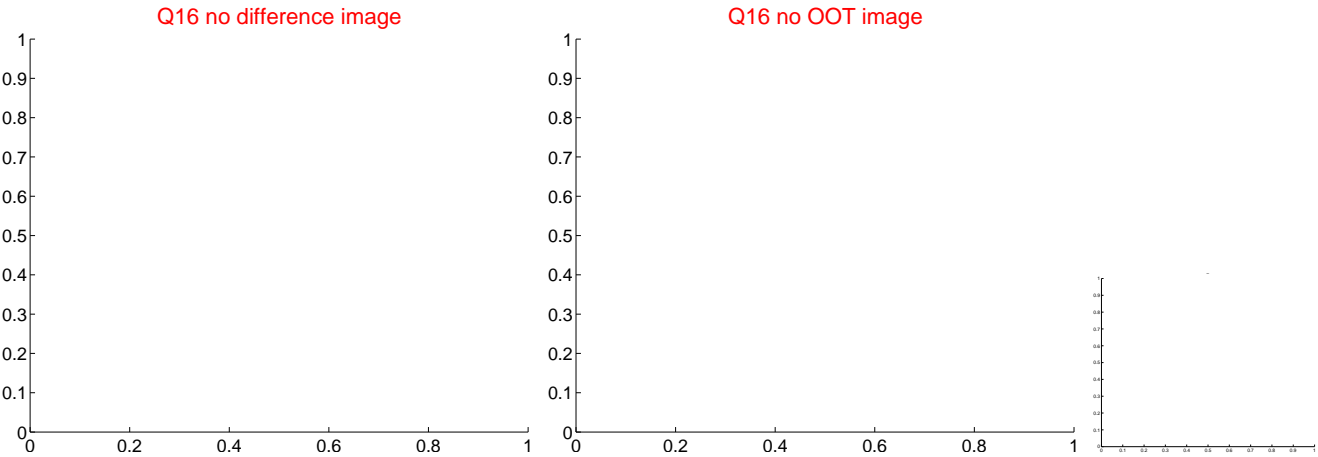
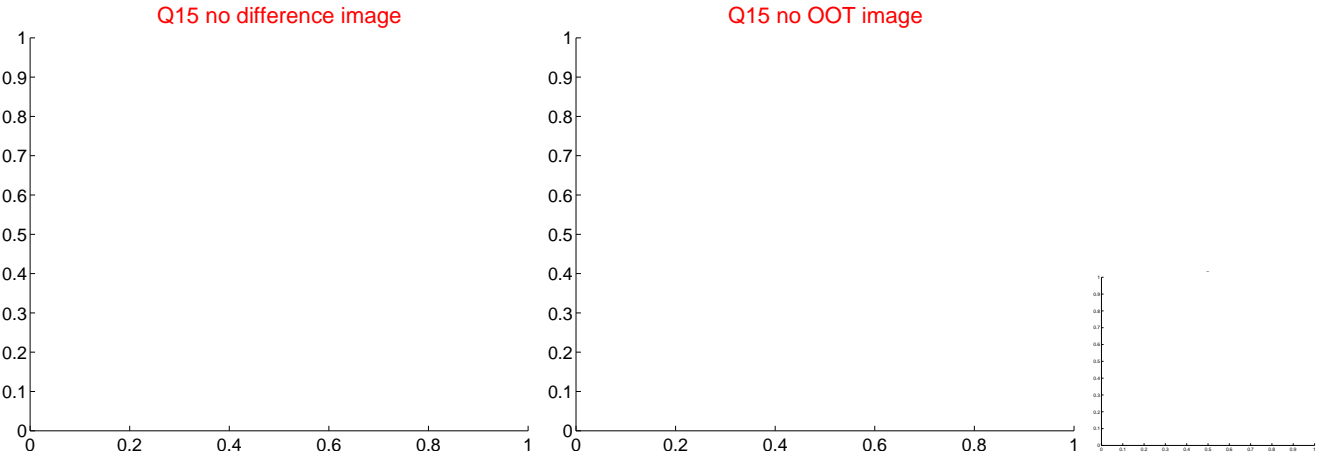
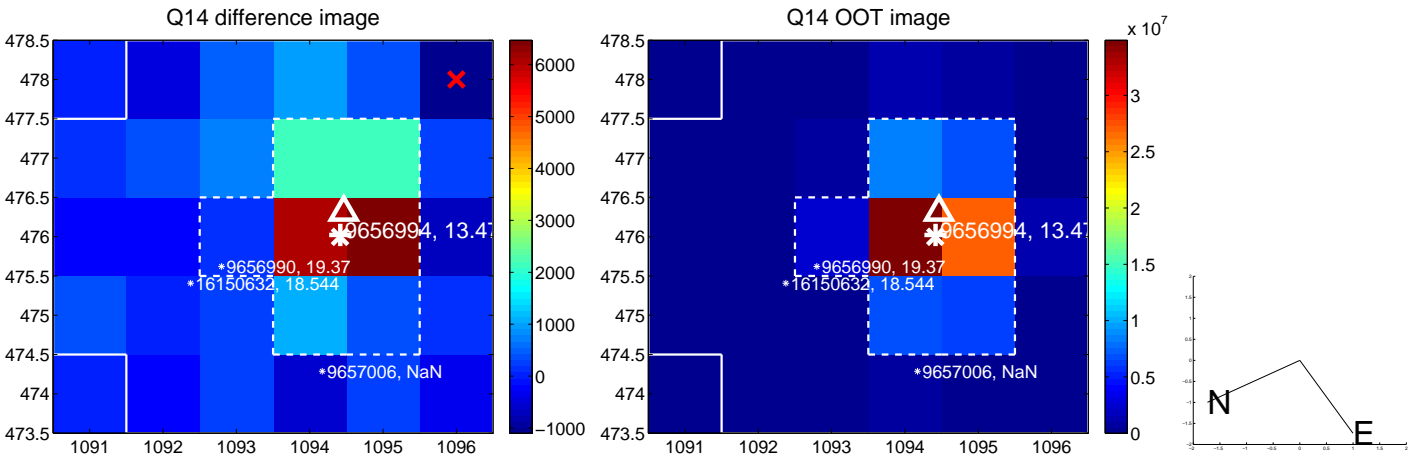
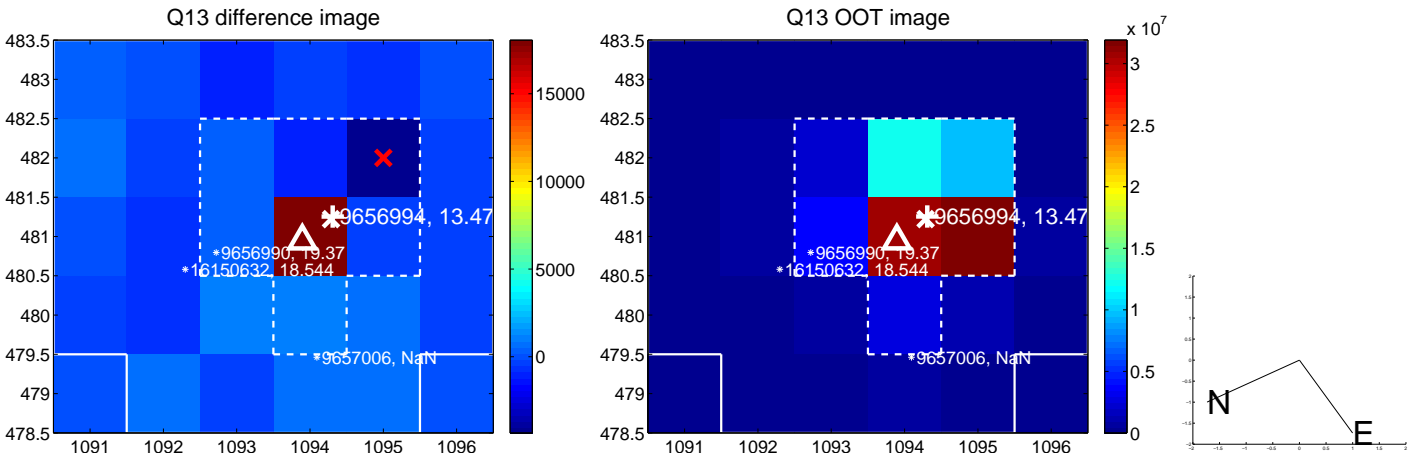
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



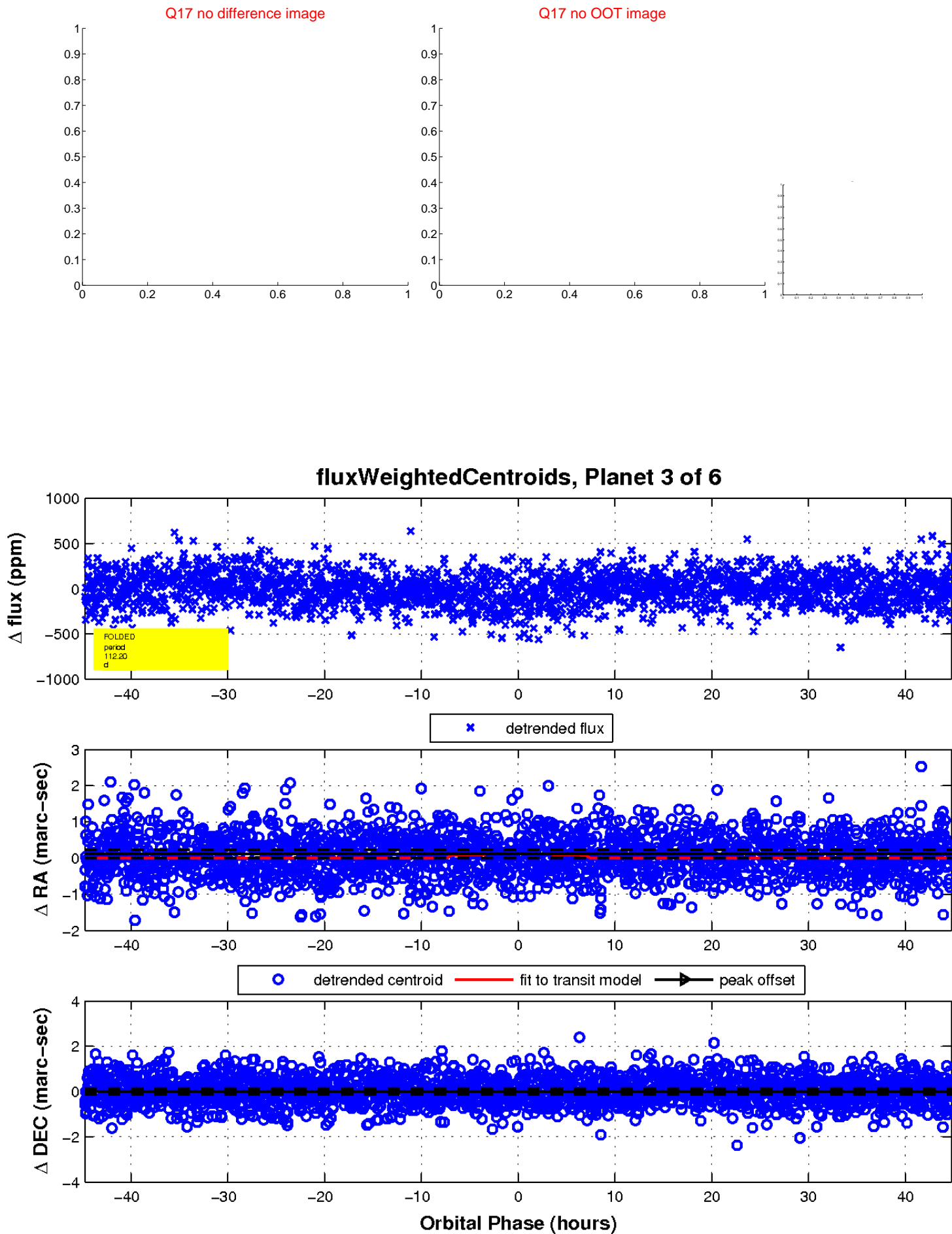
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

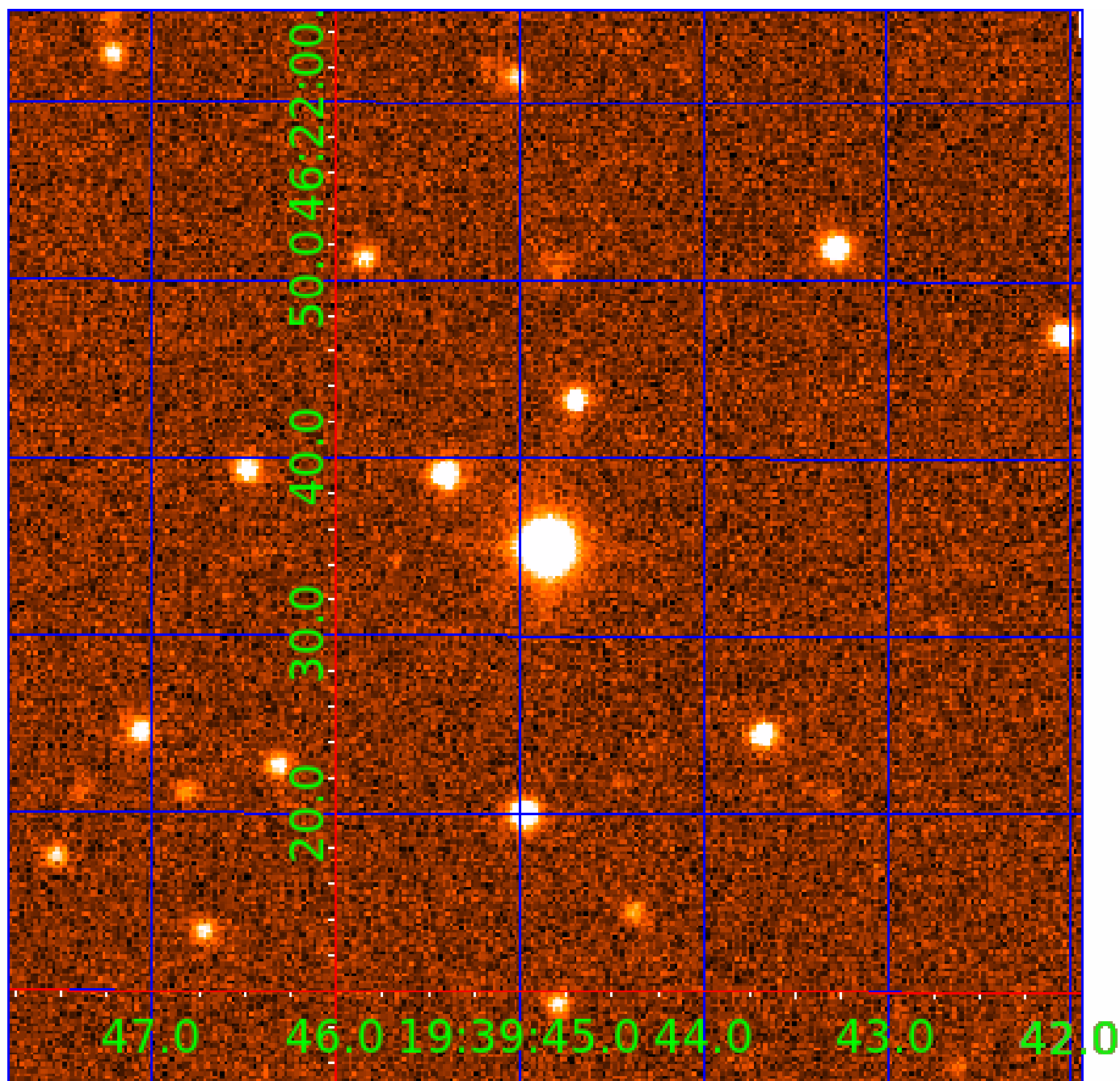


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009656994

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})
009656994-01	OBS	No	1.942974	131.779497	19.0	7.992	9.3	7.2	1.74	6765	0.81	4866.41
009656994-02	OBS	No	147.547217	278.488217	262.8	18.114	14.8	9.3	1.74	6765	3.05	15.13
009656994-03	OBS	No	112.204233	133.985962	164.0	14.927	7.6	6.3	1.74	6765	2.45	21.80
009656994-04	OBS	No	466.214420	458.876718	309.6	10.215	7.6	8.7	1.74	6765	3.90	3.26
009656994-05	OBS	No	233.699319	245.139898	251.2	5.609	7.5	6.9	1.74	6765	3.04	8.20
009656994-06	OBS	No	518.794639	338.953431	249.0	4.798	7.1	7.2	1.74	6765	3.03	2.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009656994-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
009656994-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009656994-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV
009656994-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009656994-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009656994-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

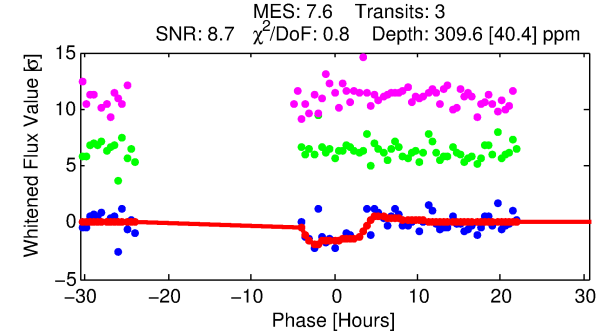
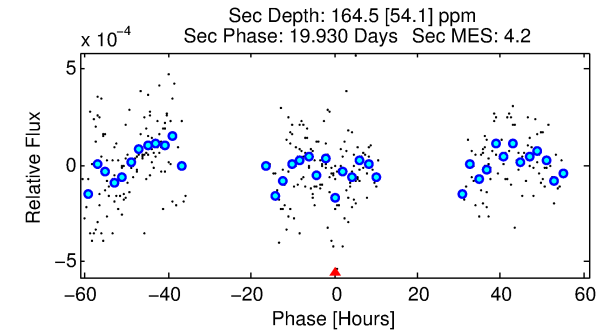
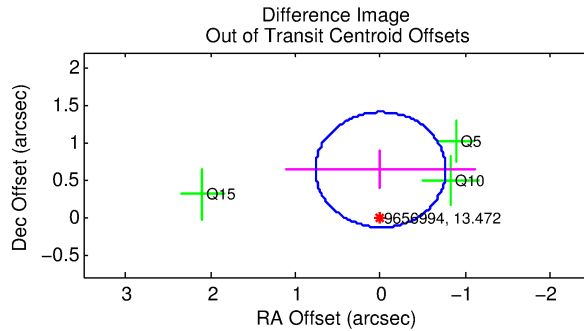
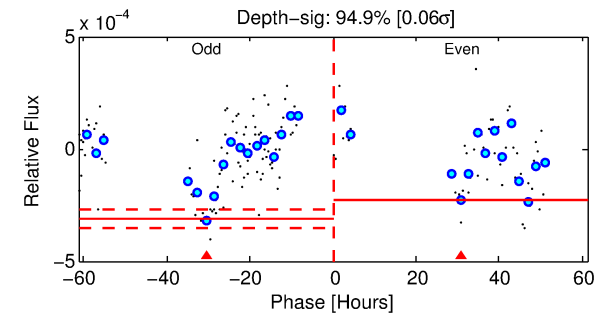
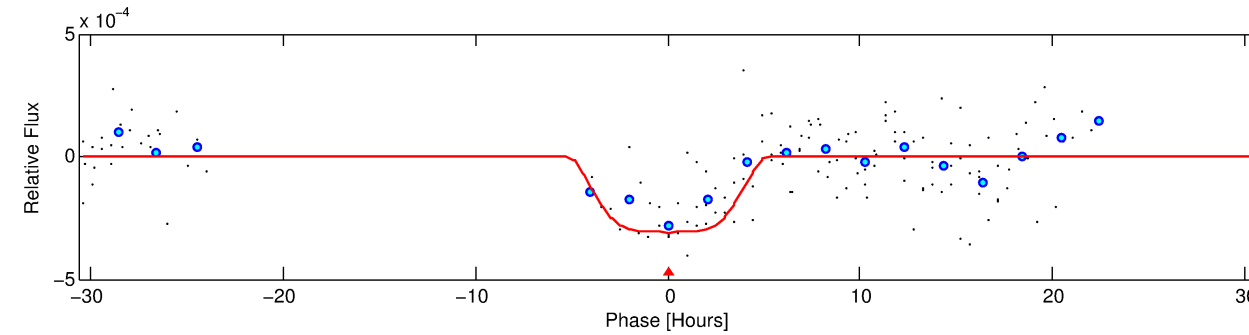
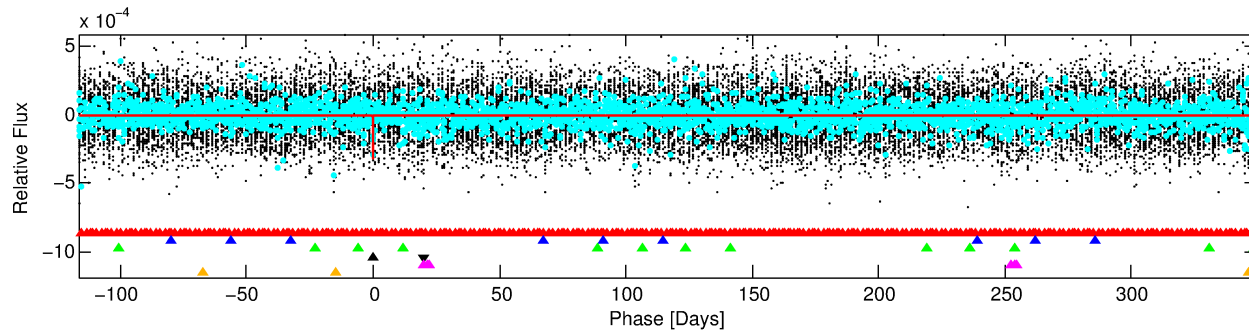
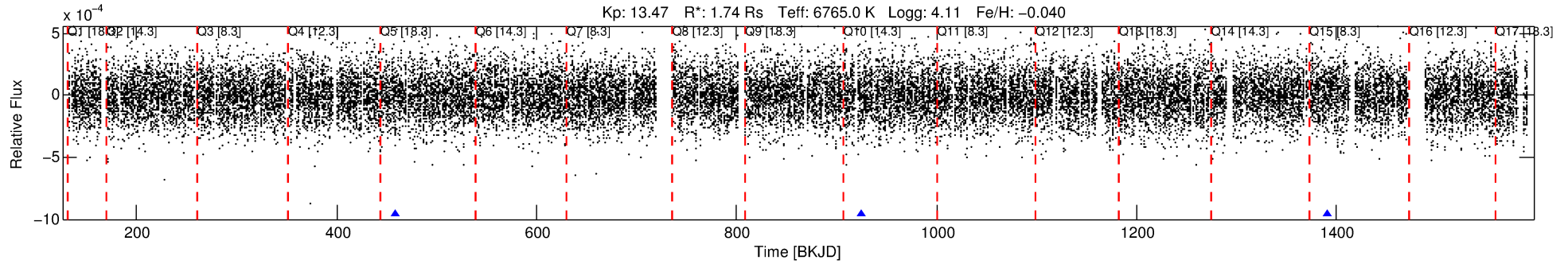
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009656994-04

No Significant Match Found

DV One-Page Summary

KIC: 9656994 Candidate: 4 of 6 Period: 466.214 d



DV Fit Results:

Period = 466.21442 [0.01537] d
Epoch = 458.8767 [0.0147] BKJD
Rp/R* = 0.0205 [0.0018]
a/R* = 113.08 [31.60]
b = 0.97 [0.02]
Seff = 3.26 [0.76]
Teff = 343 [20] K
Rp = 3.90 [0.70] Re
a = 1.3201 [0.1925] AU
Ag = 10377.96 [4535.71] [2.29σ]
Teffp = 5348 [503] K [9.95σ]

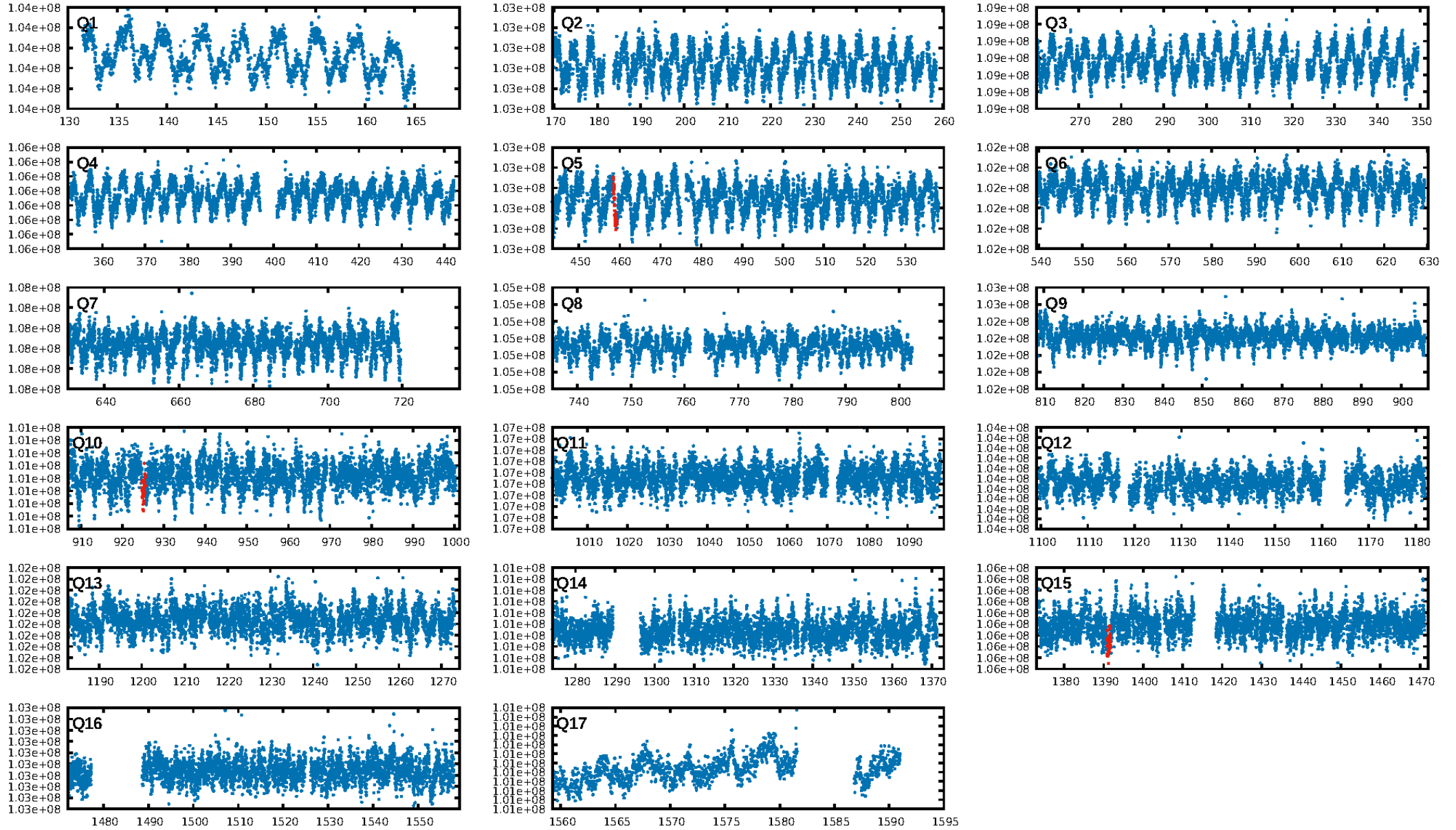
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [478.84σ]
LongPeriod-sig: 100.0% [111.81σ]
ModelChiSquare2-sig: 49.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.49e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 3.274
Centroid-sig: 99.0%
Centroid-so: 0.151 arcsec [0.19σ]
OotOffset-rm: 0.632 arcsec [2.46σ]
KicOffset-rm: 0.546 arcsec [1.80σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.00 [0/3]

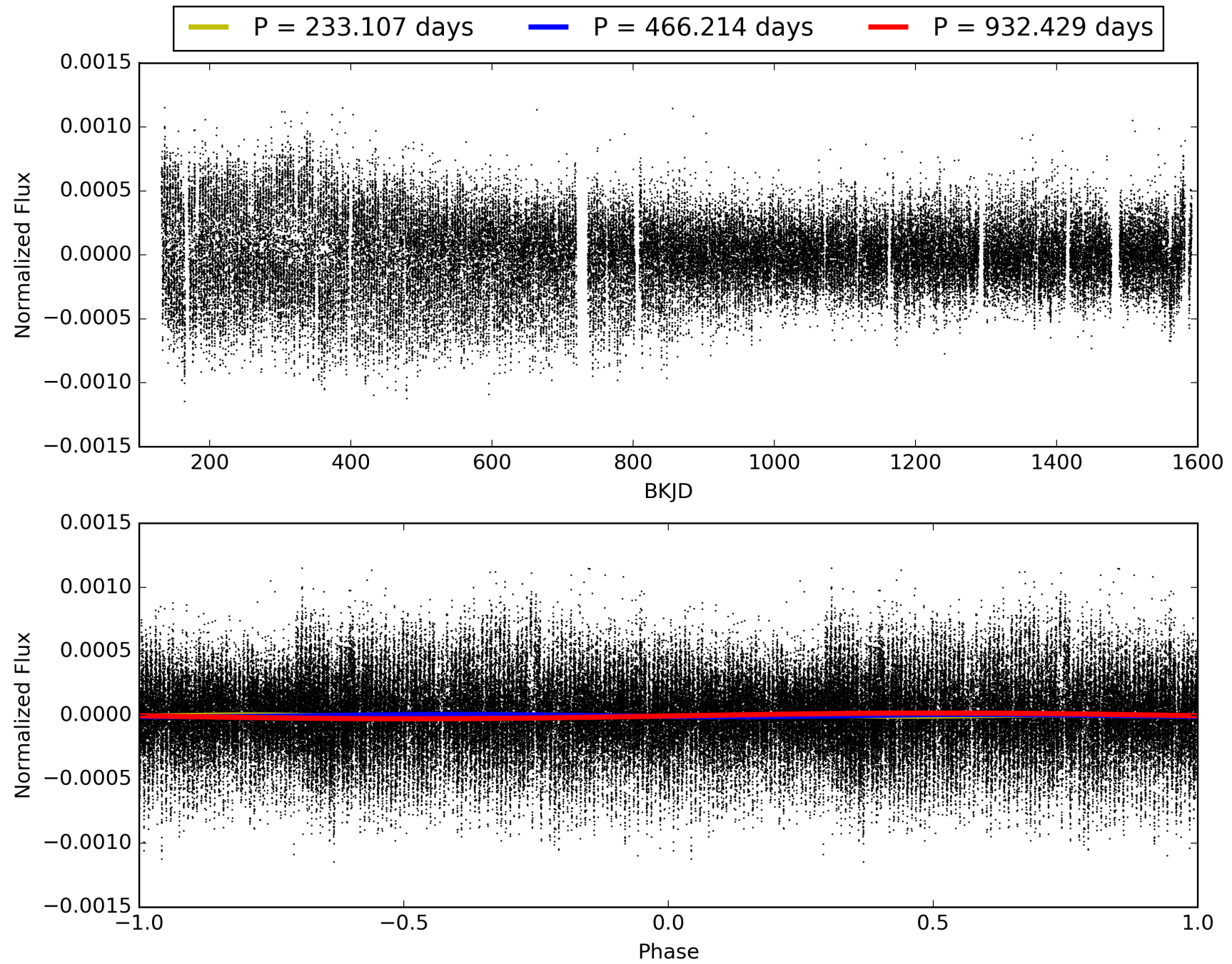
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:37:47 Z

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

TCE 009656994-04, PDC Light Curves

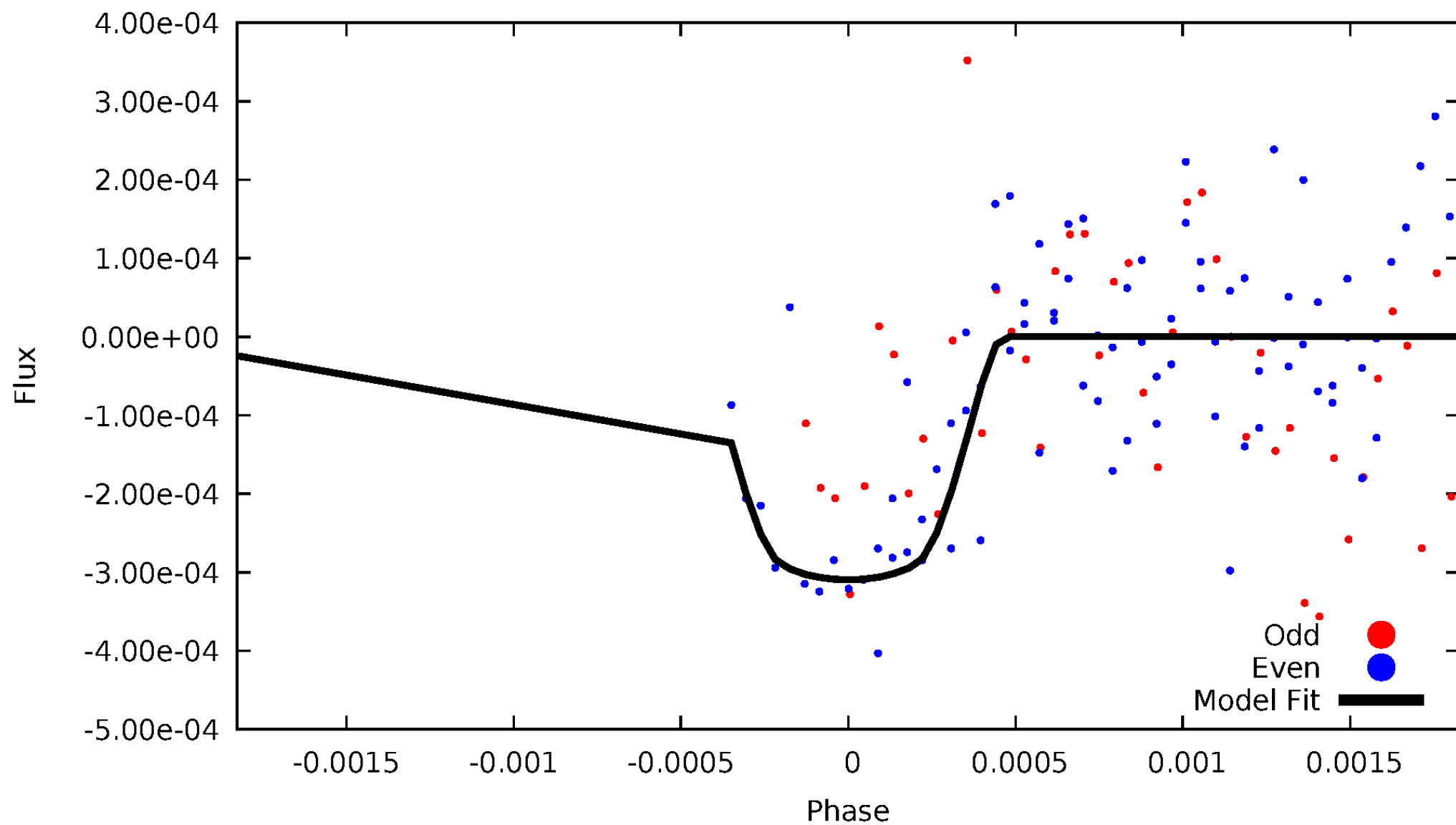


TCE 009656994-04



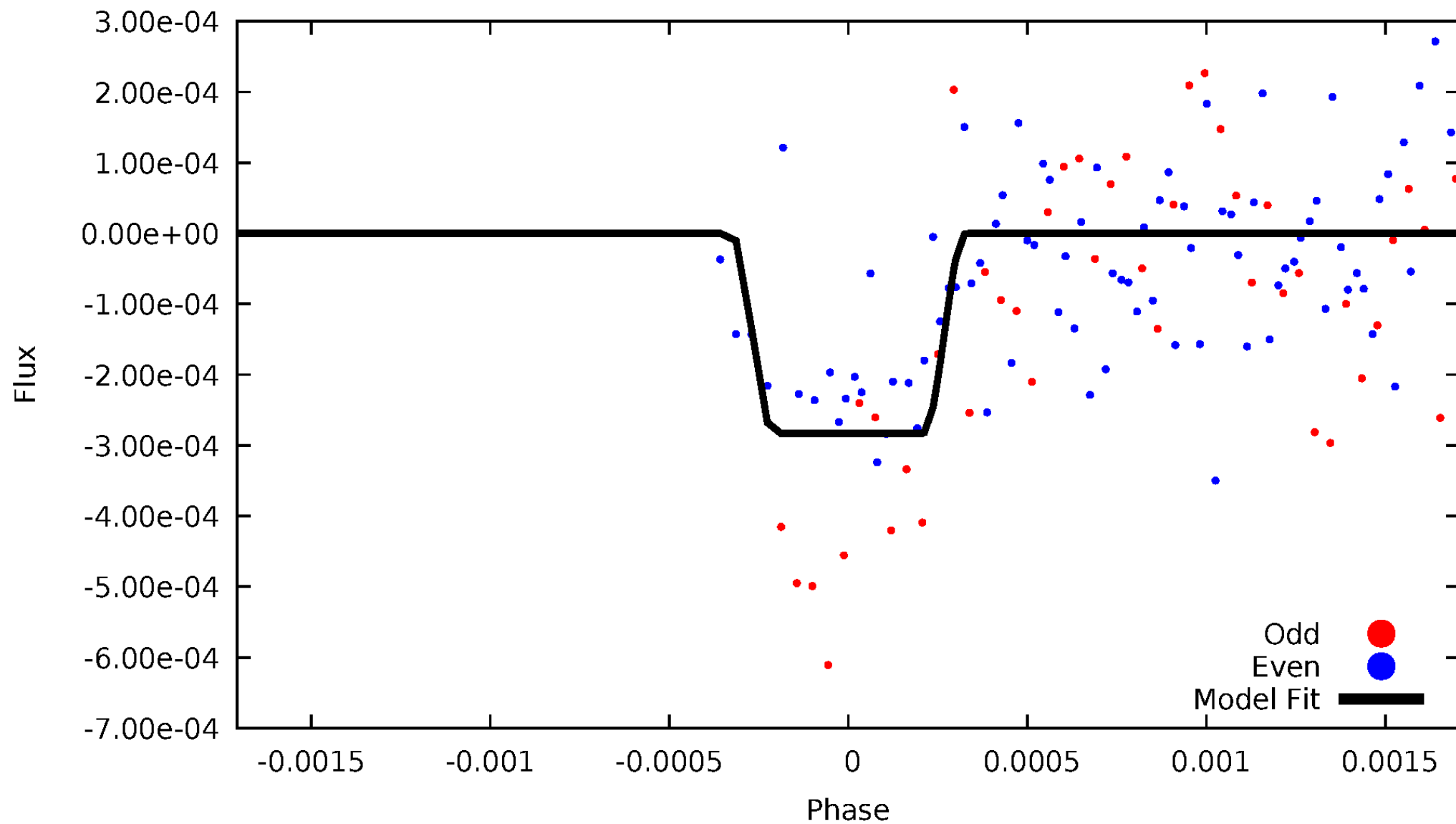
DV Odd/Even

TCE 009656994-04



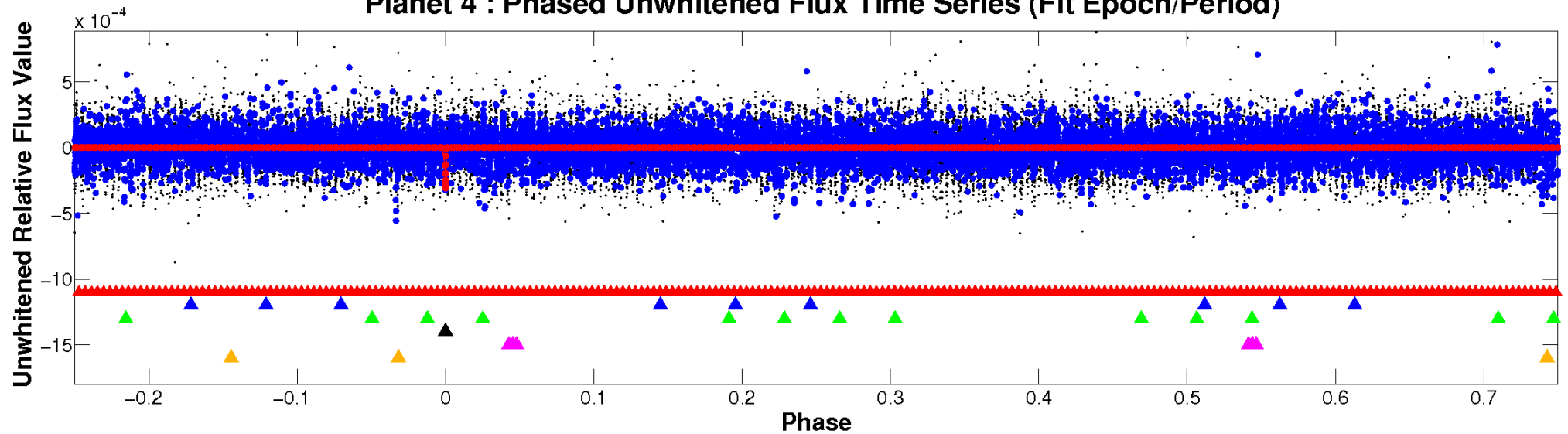
ALT Odd/Even

TCE 009656994-04

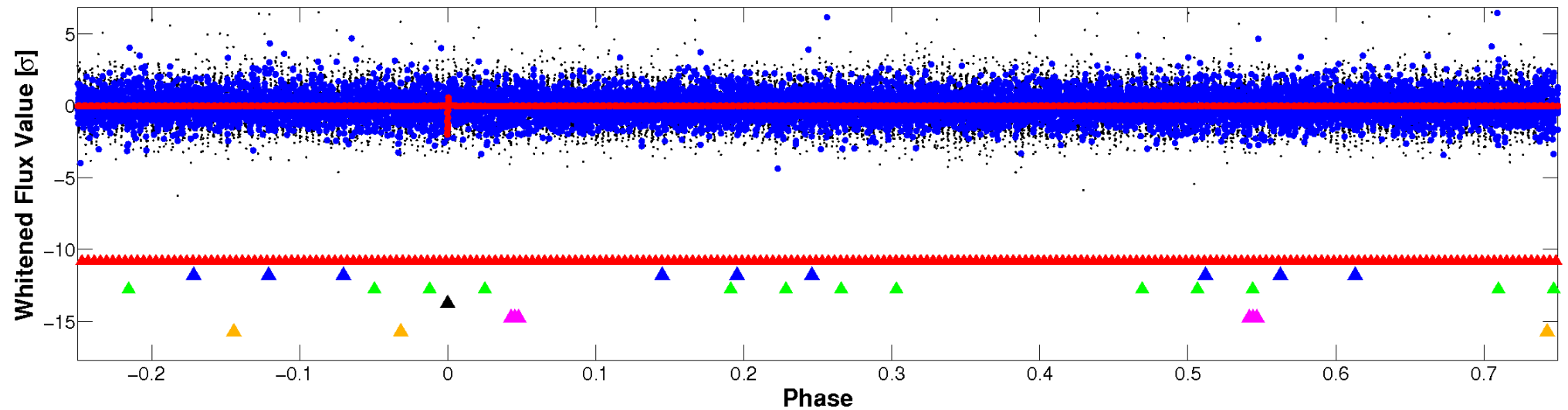


Non-Whitened Vs. Whitened Light Curve

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

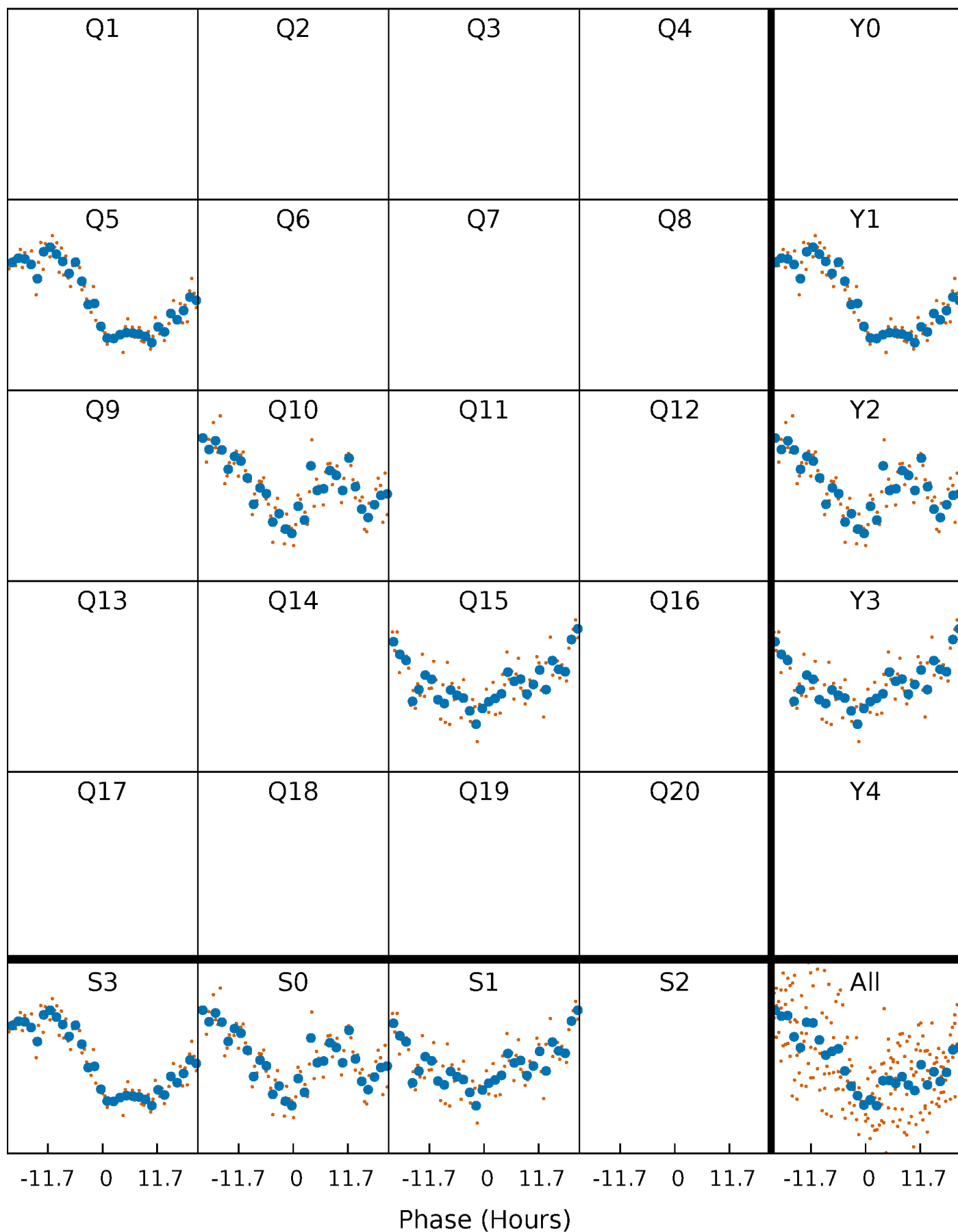


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



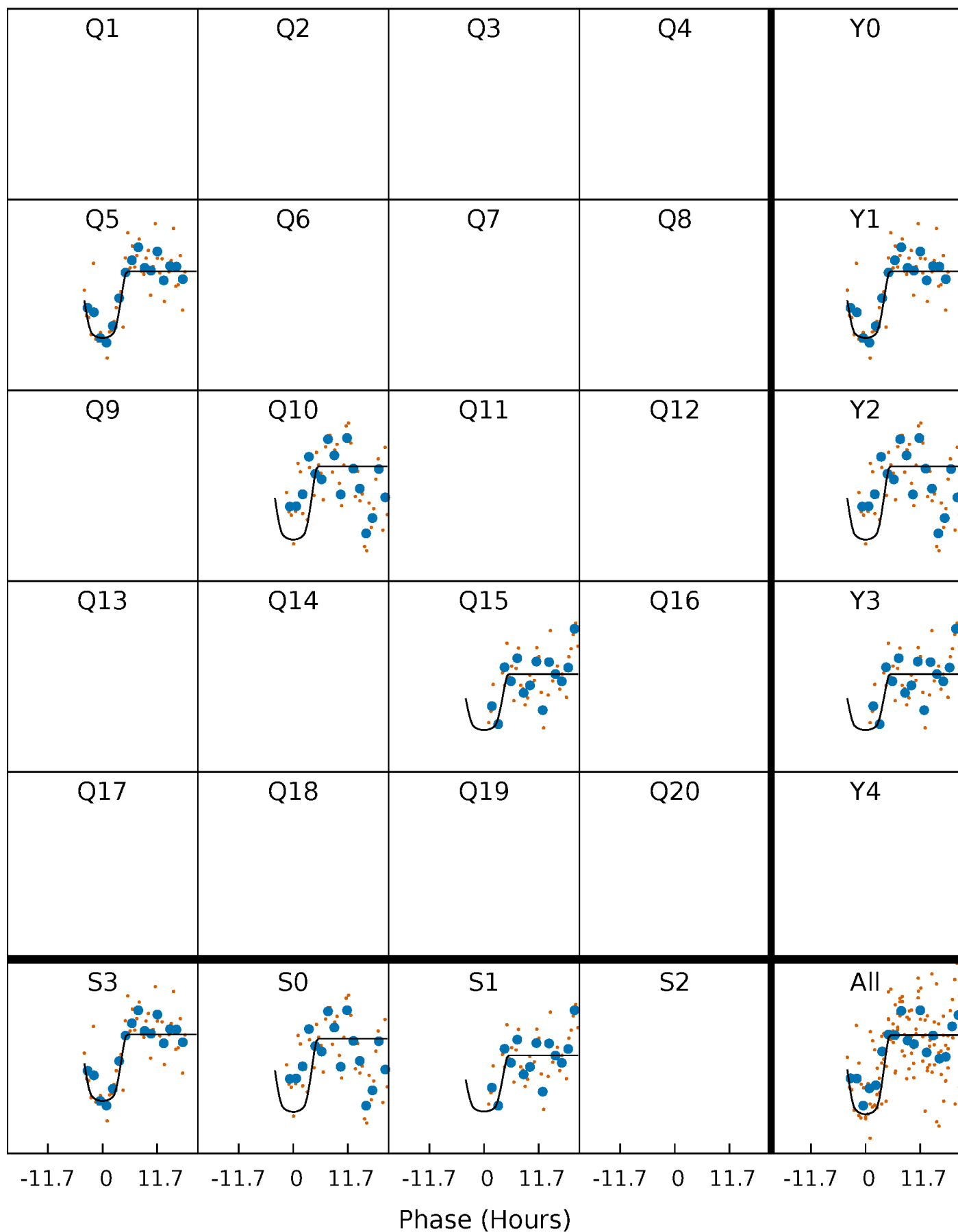
PDC Quarter-Phased Transit Curves

TCE 009656994-04 $P=466.214420$ Days $T_0=458.876718$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 009656994-04 $P=466.214420$ Days $T_0=458.876718$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

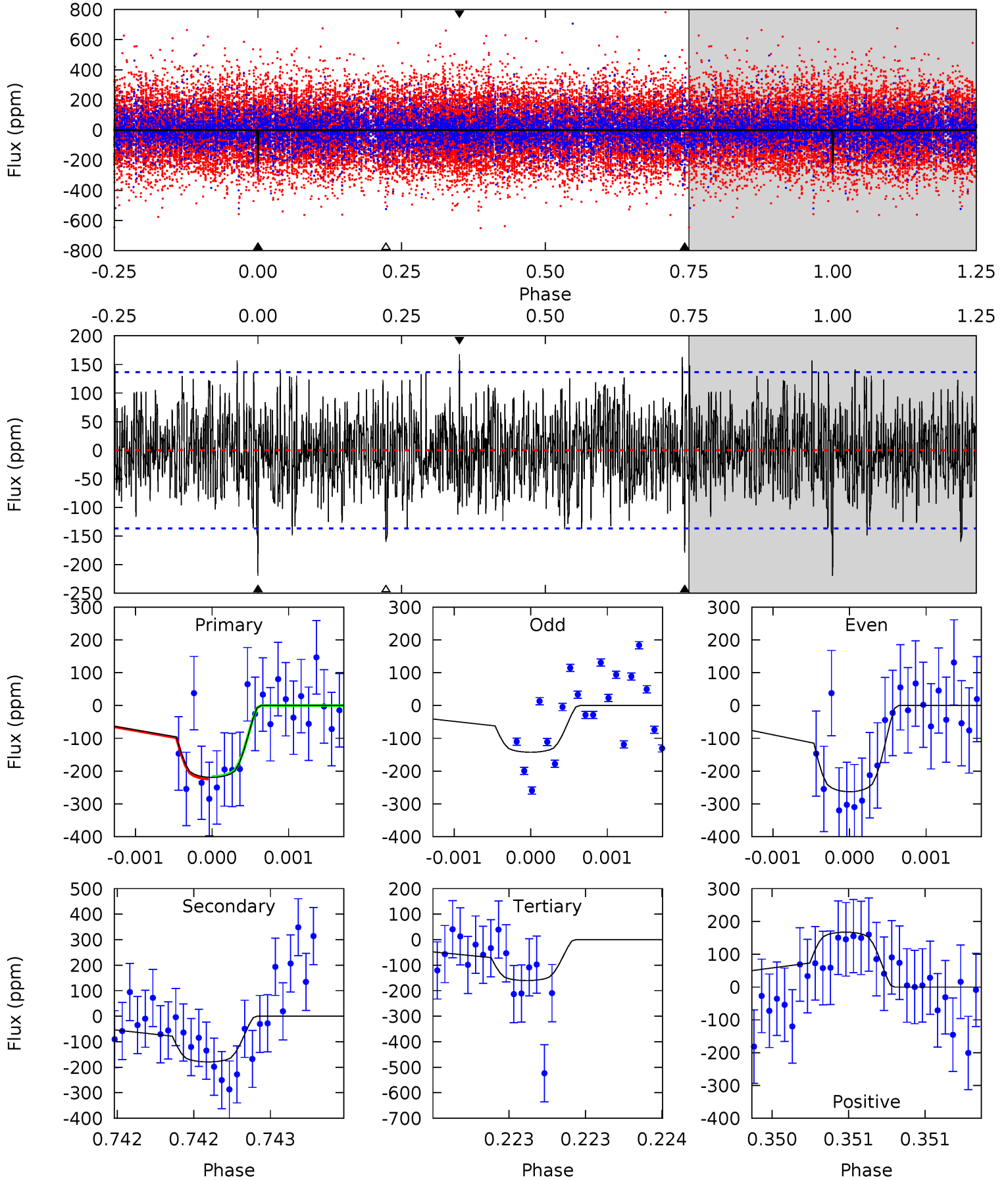
TCE 009656994-04 P=466.239350 Days $T_0=458.880301$ (BKJD)



DV Model-Shift Uniqueness Test

009656994-04, P = 466.214420 Days, E = 458.876718 Days

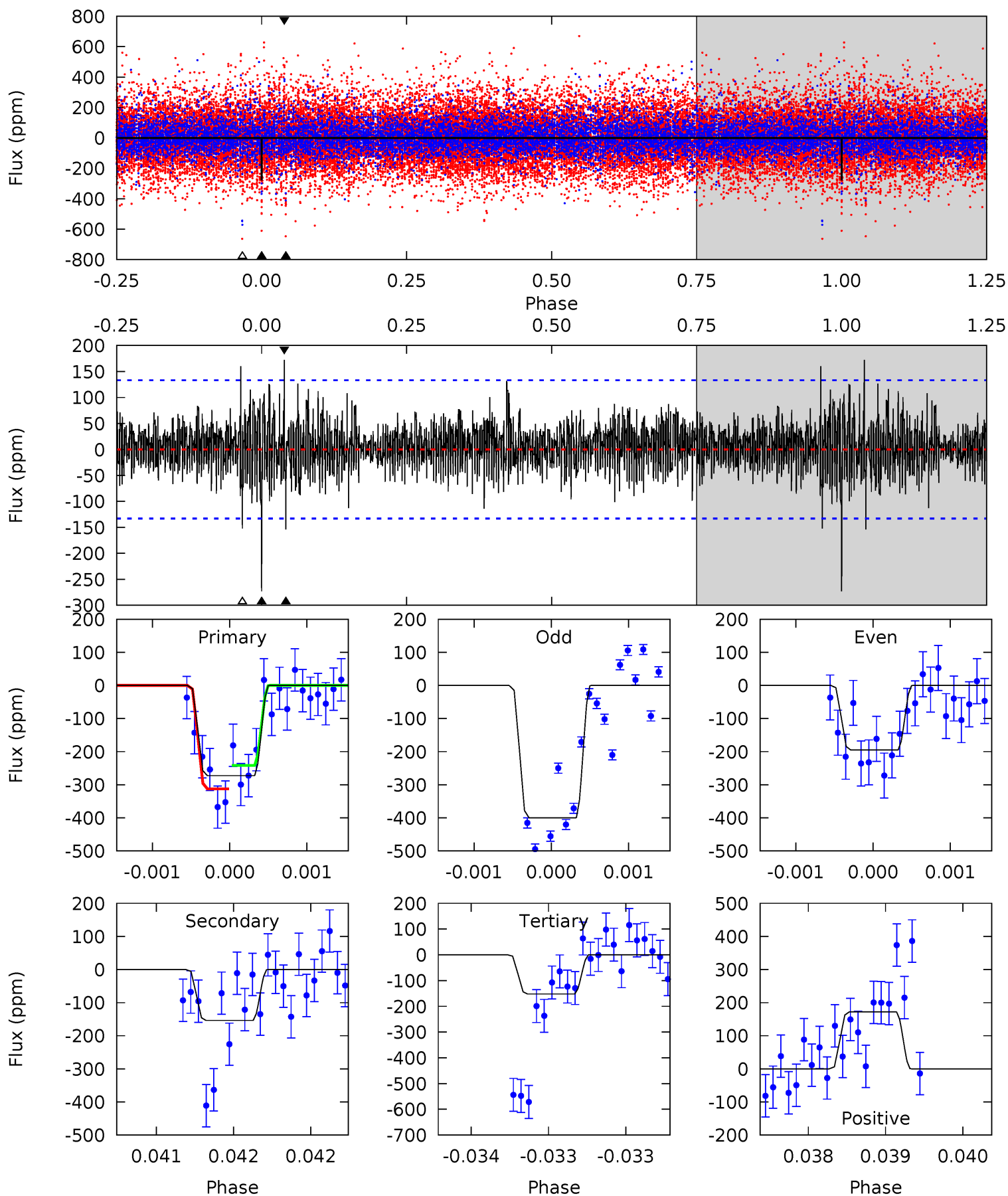
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.84	7.22	6.46	6.75	5.50	3.37	1.93	2.38	2.09	0.76	0.47	2.31	0.96	0.43	0.13



Alt Model-Shift Uniqueness Test

009656994-04, P = 466.239350 Days, E = 458.880301 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	6.38	6.31	7.14	5.53	3.41	1.35	5.01	4.18	0.07	-0.75	4.08	1.33	0.39	1.43



Stellar Parameters For KIC 009656994

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6765^{+81}_{-81}	$4.106^{+0.132}_{-0.108}$	$-0.040^{+0.150}_{-0.150}$	$1.741^{+0.274}_{-0.274}$	$1.416^{+0.098}_{-0.109}$	$0.378^{+0.230}_{-0.121}$
	+1%/-1%	+3%/-3%	+375%/-375%	+16%/-16%	+7%/-8%	+61%/-32%
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 009656994-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-179 ± 25	$3.89^{+0.55}_{-0.48}$	480^{+20}_{-22}	5459^{+315}_{-286}	11255^{+3722}_{-2847}
Alt.	-154 ± 24	$3.20^{+0.46}_{-0.45}$	478^{+20}_{-20}	5773^{+400}_{-339}	14246^{+5852}_{-3650}

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

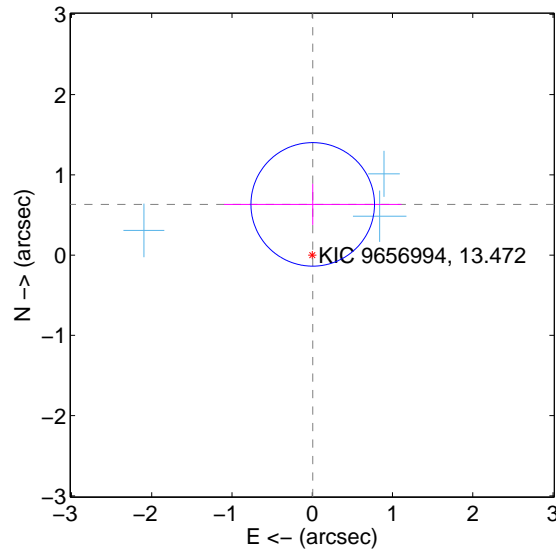
Supplemental centroid analysis for 009656994-04. Kepler magnitude: 13.47. Transit SNR 8.73

There are 3 quarters with good PRF difference image offsets

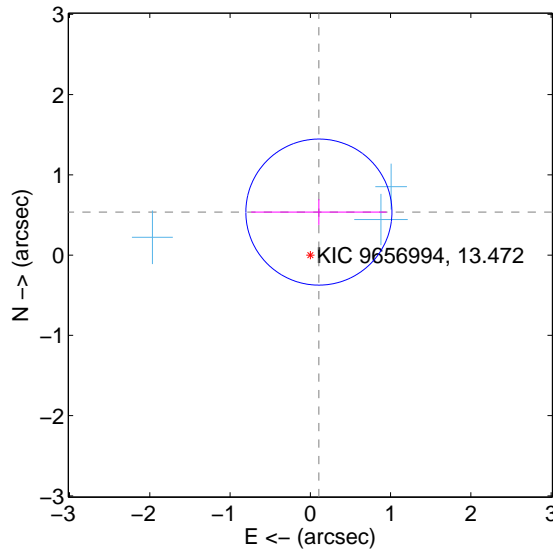
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.632 ± 0.256	2.46	-0.006 ± 1.106	0.632 ± 0.256
PRF-fit source offset from KIC position	0.546 ± 0.303	1.80	-0.107 ± 0.843	0.536 ± 0.160
photometric centroid source offset	0.15 ± 0.79	0.19	0.14 ± 0.77	-0.04 ± 0.95

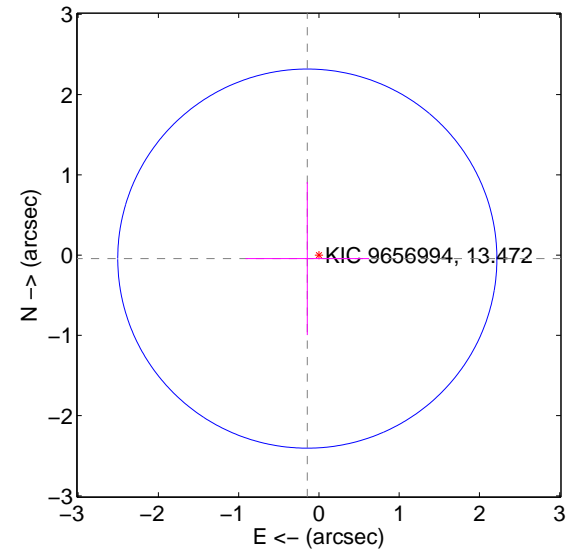
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

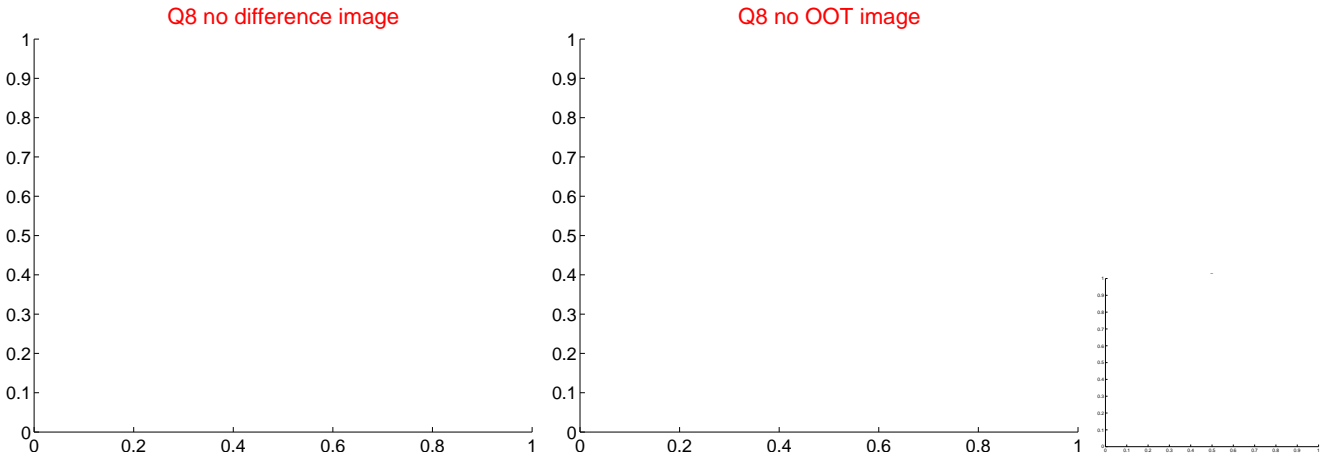
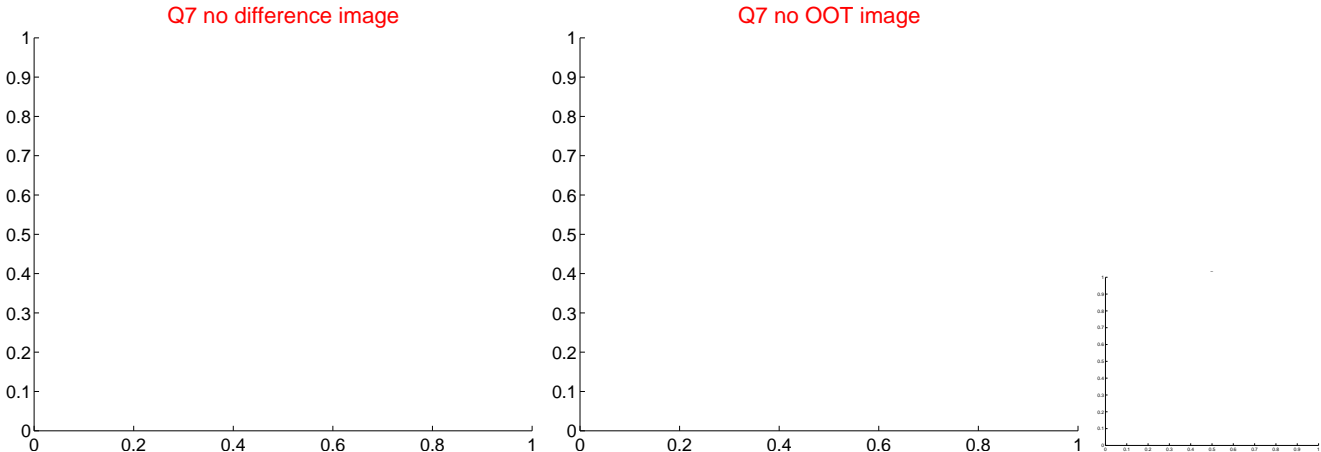
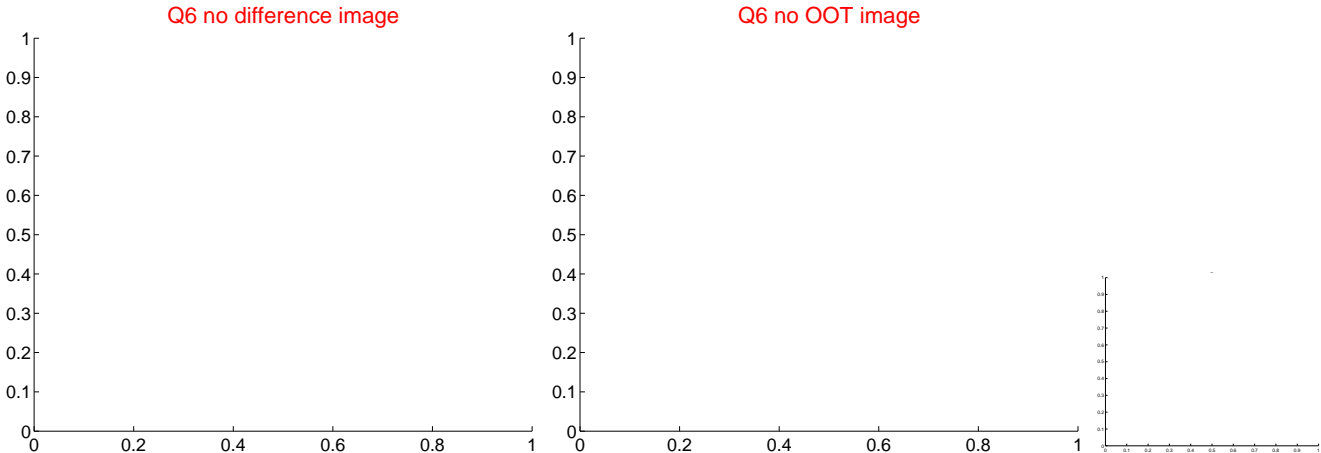
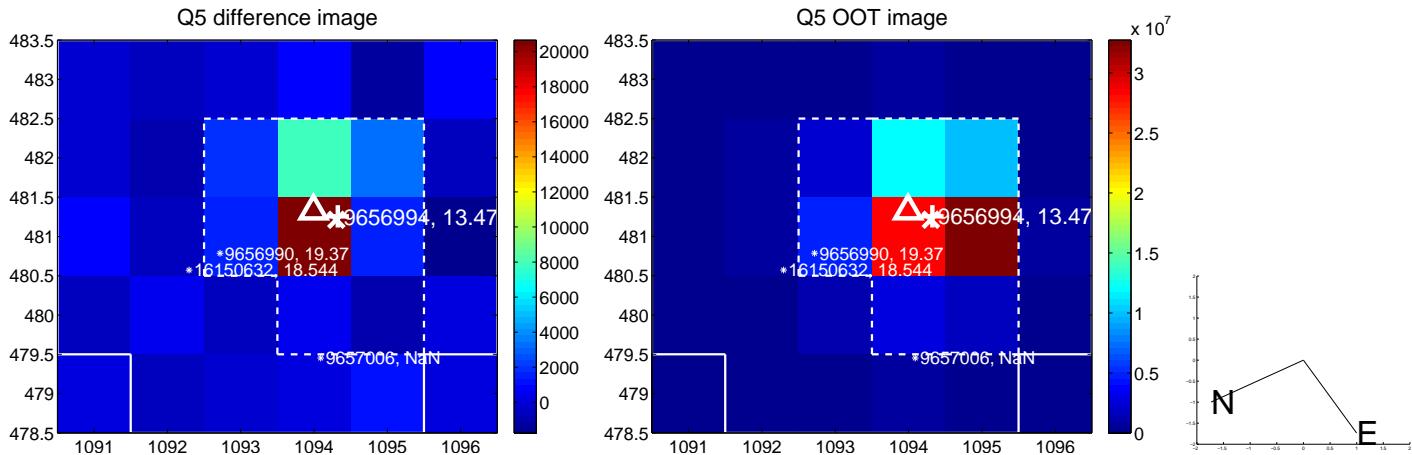


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

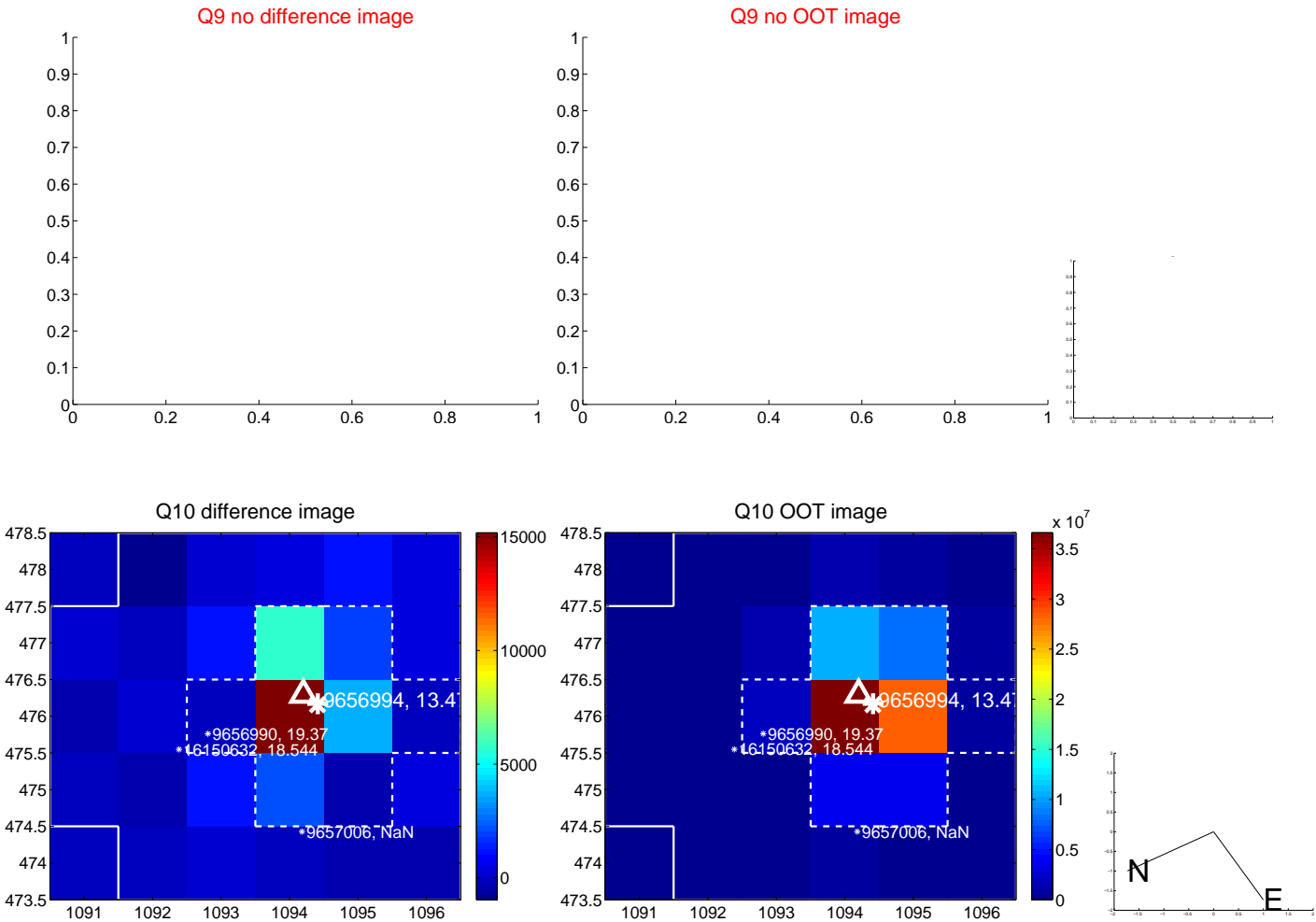
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



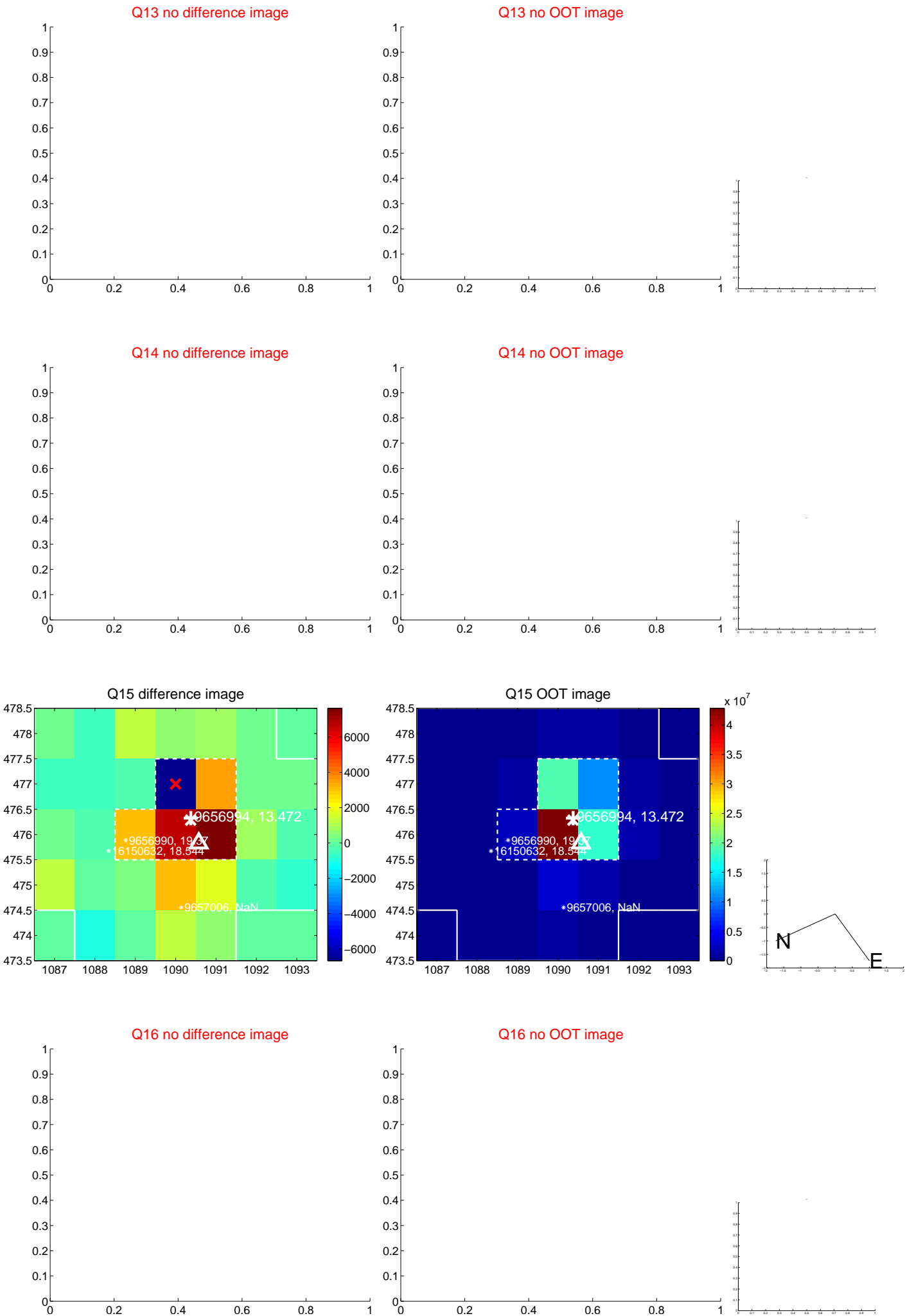
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



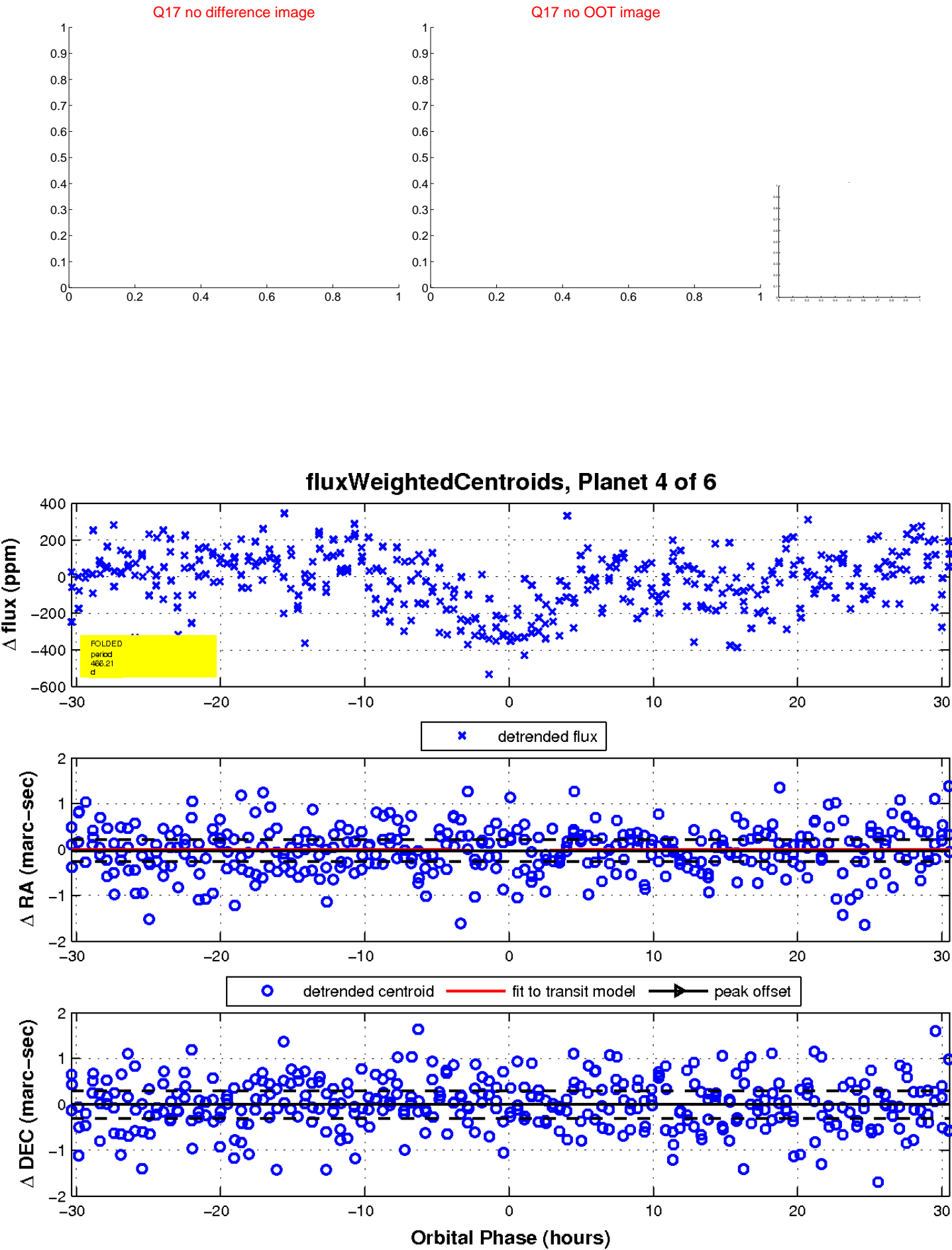
white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



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

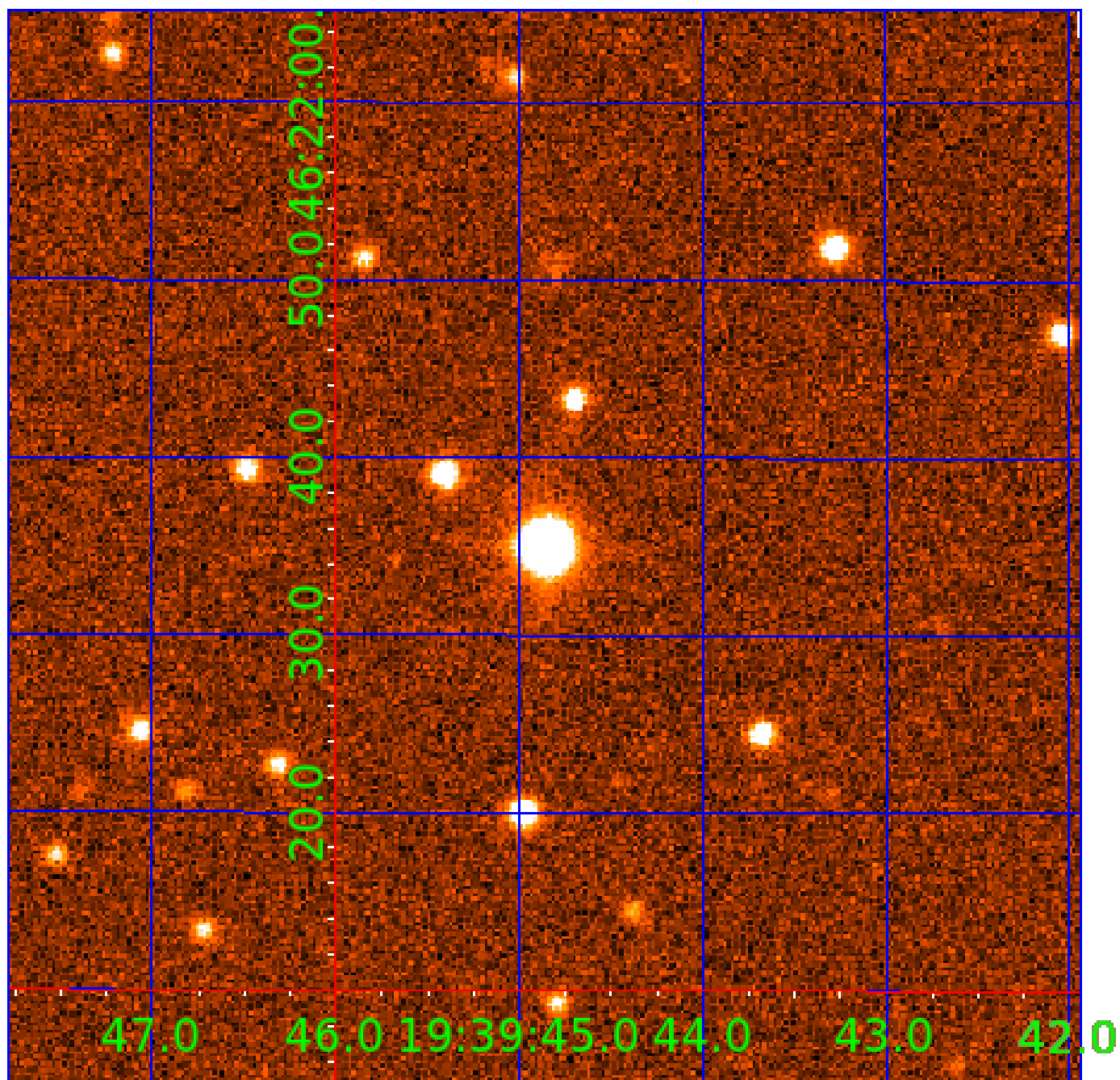


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009656994

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})
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009656994-06	OBS	No	518.794639	338.953431	249.0	4.798	7.1	7.2	1.74	6765	3.03	2.83

Robovetter Results

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009656994-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009656994-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV
009656994-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009656994-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009656994-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

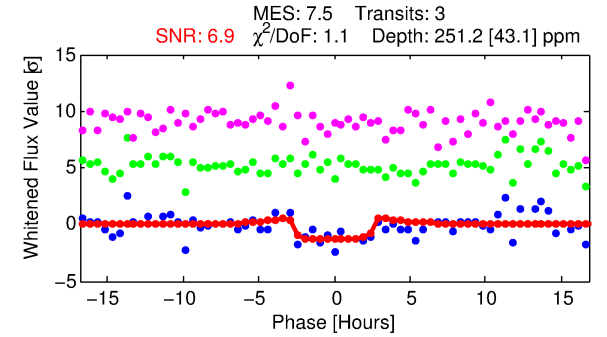
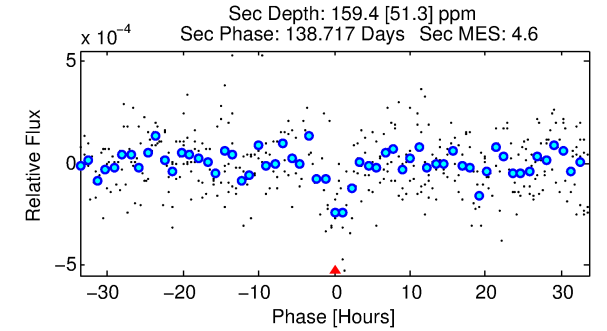
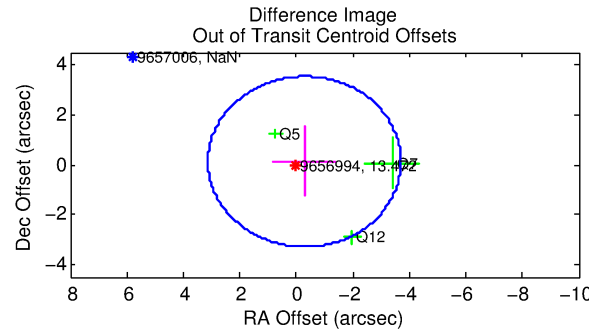
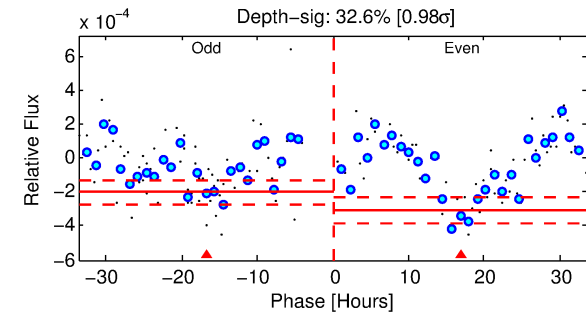
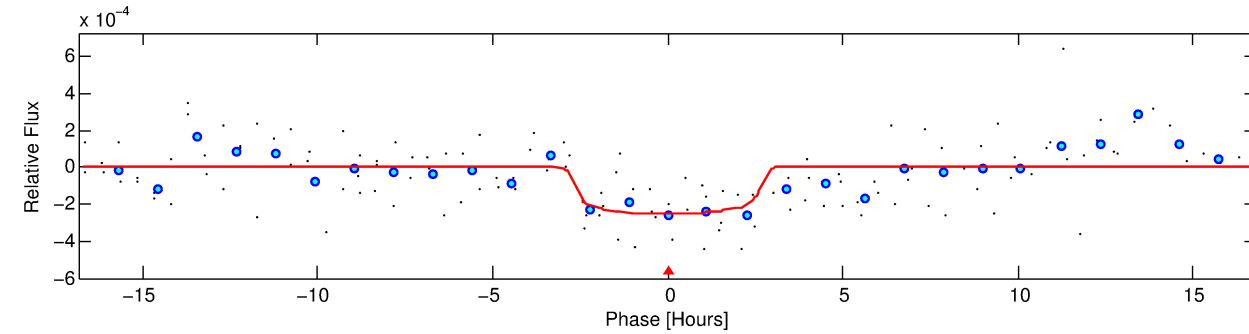
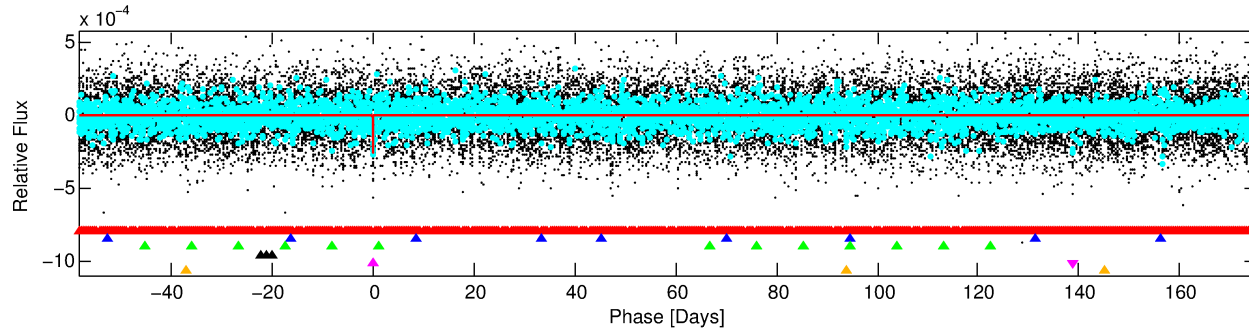
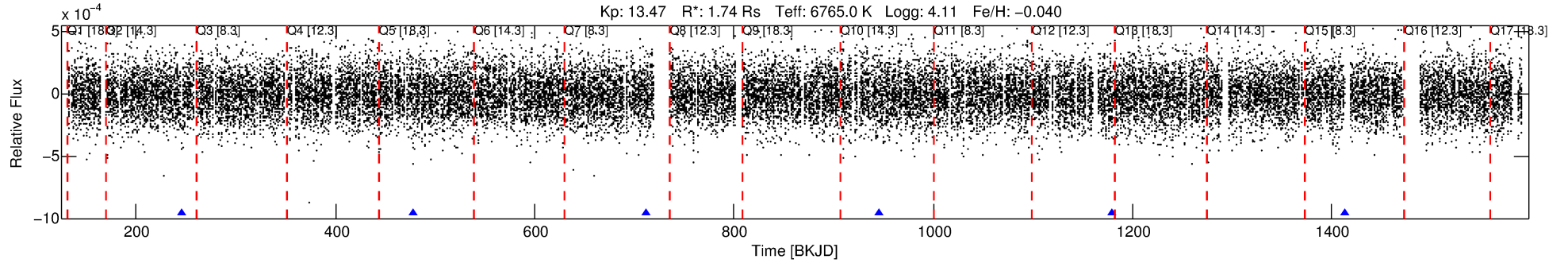
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009656994-05

No Significant Match Found

DV One-Page Summary

KIC: 9656994 Candidate: 5 of 6 Period: 233.699 d



DV Fit Results:

Period = 233.69932 [0.00553] d
Epoch = 245.1399 [0.0130] BKJD
Rp/R* = 0.0160 [0.0078]
a/R* = 199.84 [536.02]
b = 0.80 [1.22]
Seff = 8.20 [1.91]
Teq = 431 [25] K
Rp = 3.04 [1.55] Re
a = 0.8330 [0.1215] AU
Ag = 6568.41 [6887.98] [0.95 σ]
Teffp = 6005 [1538] K [3.62 σ]

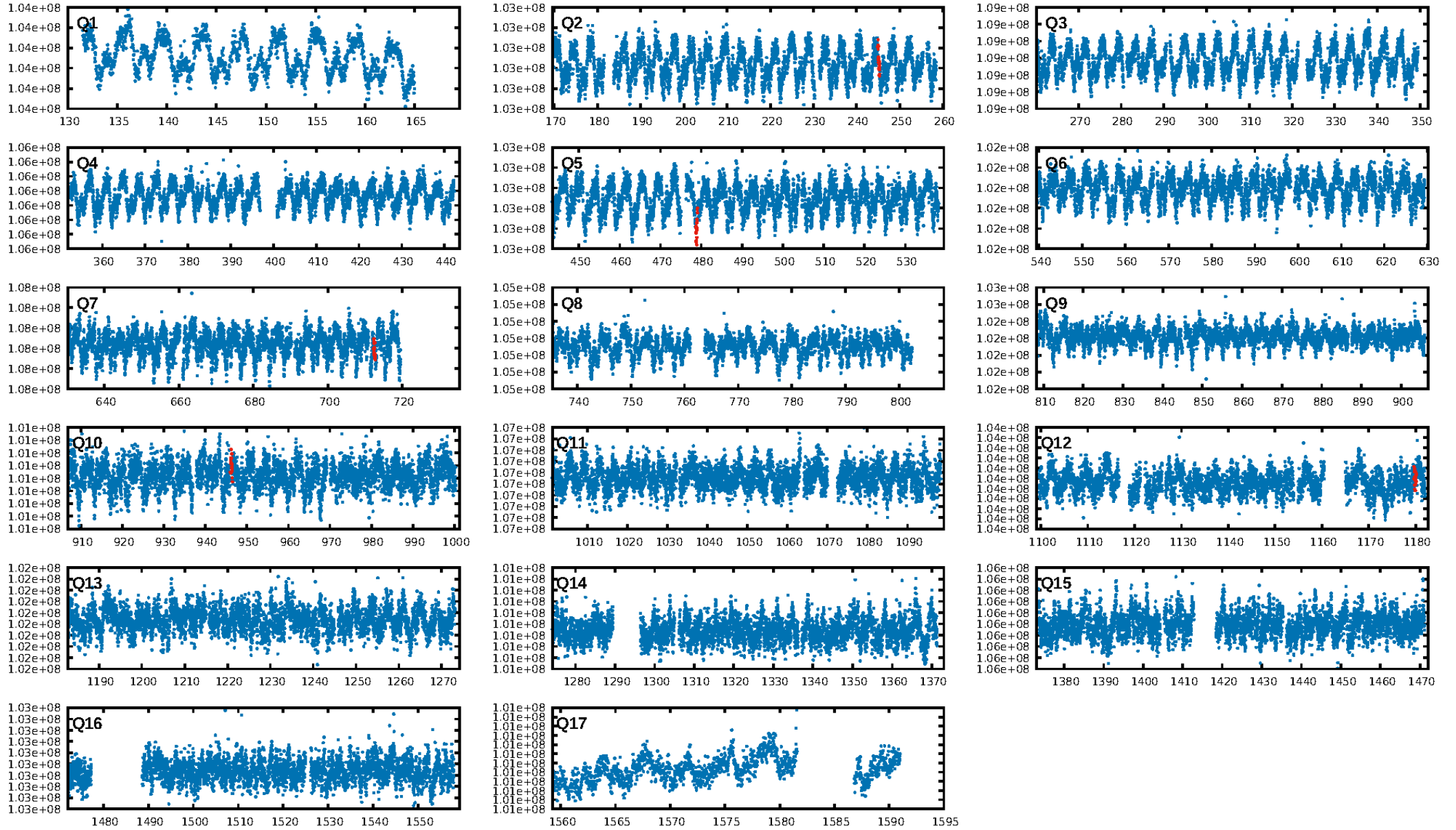
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [109.04 σ]
LongPeriod-sig: 100.0% [478.84 σ]
ModelChiSquare2-sig: 25.4%
ModelChiSquareGof-sig: 86.7%
Bootstrap-pfa: 2.07e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 6.63
Centroid-sig: 21.9%
Centroid-so: 1.063 arcsec [0.95 σ]
OotOffset-rm: 0.311 arcsec [0.27 σ]
KicOffset-rm: 0.398 arcsec [0.37 σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.60 [3/5]

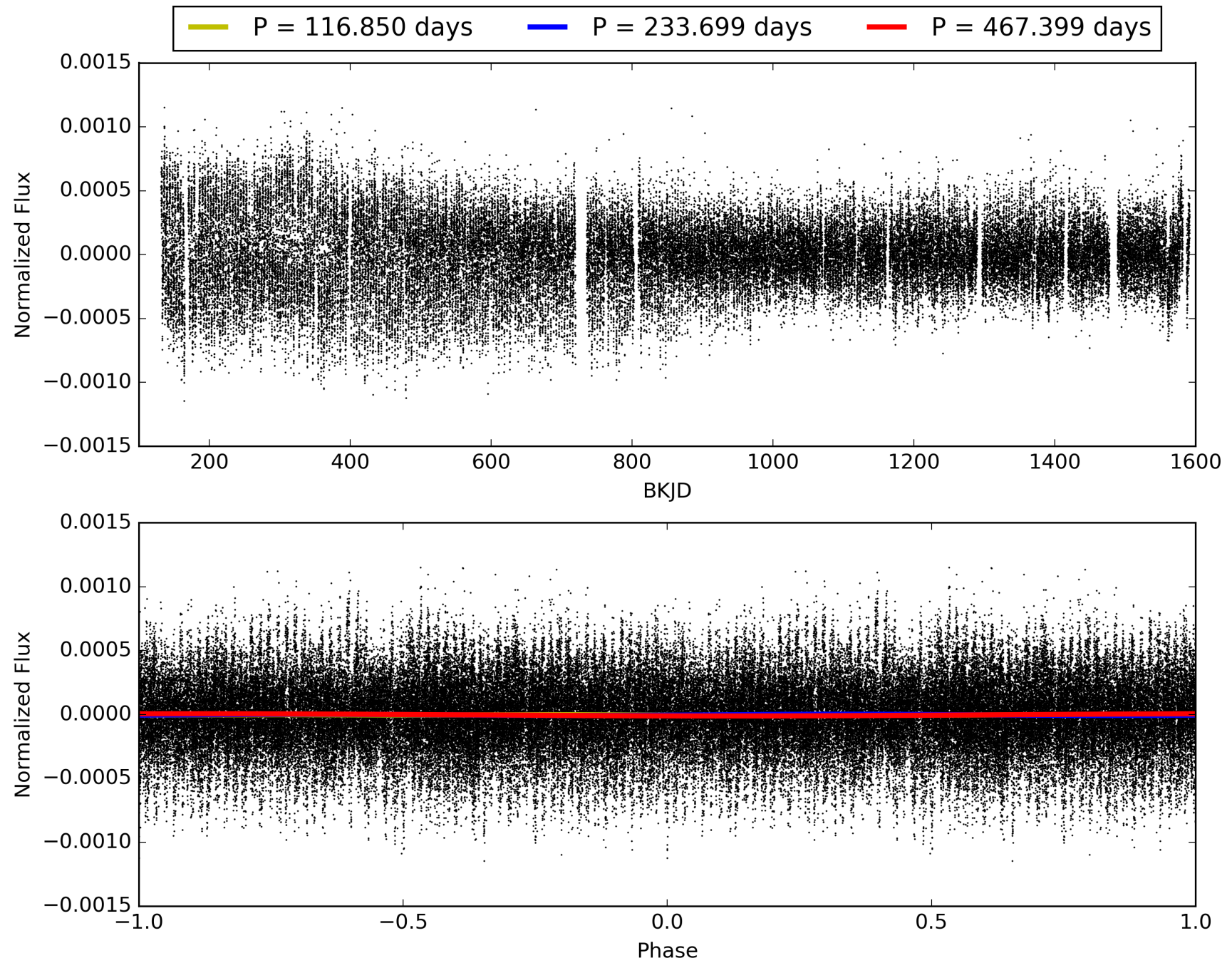
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:37:54 Z

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

TCE 009656994-05, PDC Light Curves

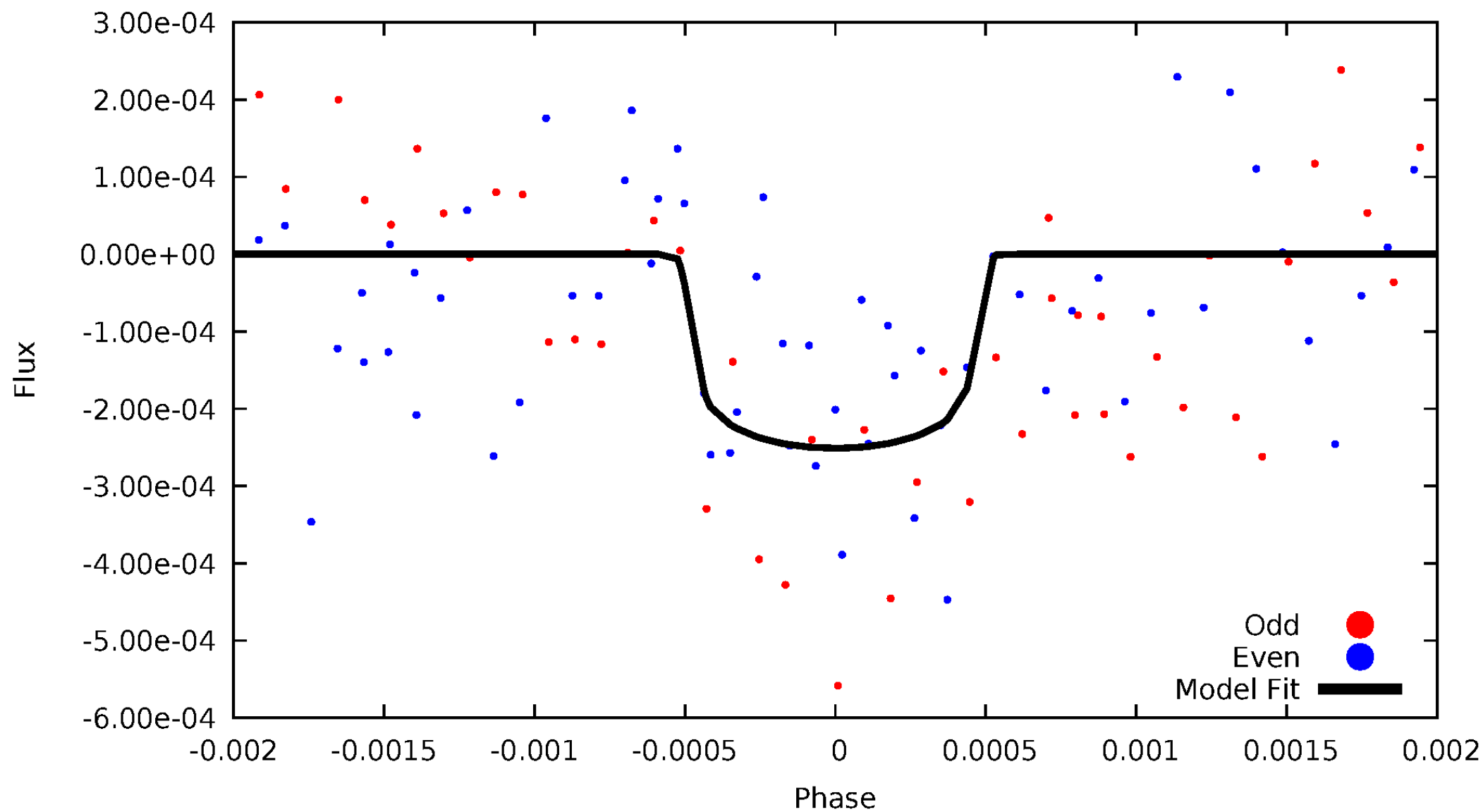


TCE 009656994-05



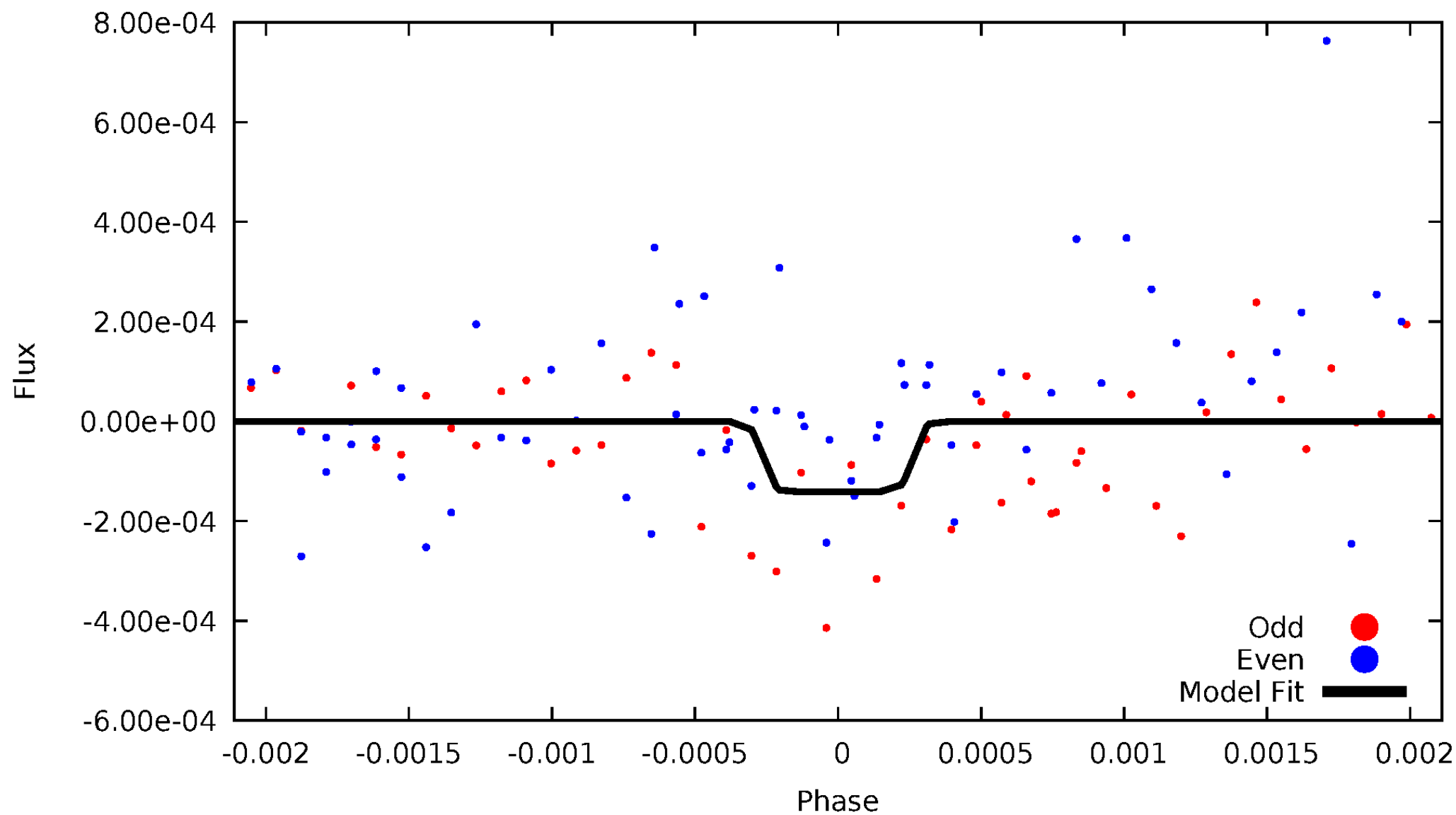
DV Odd/Even

TCE 009656994-05



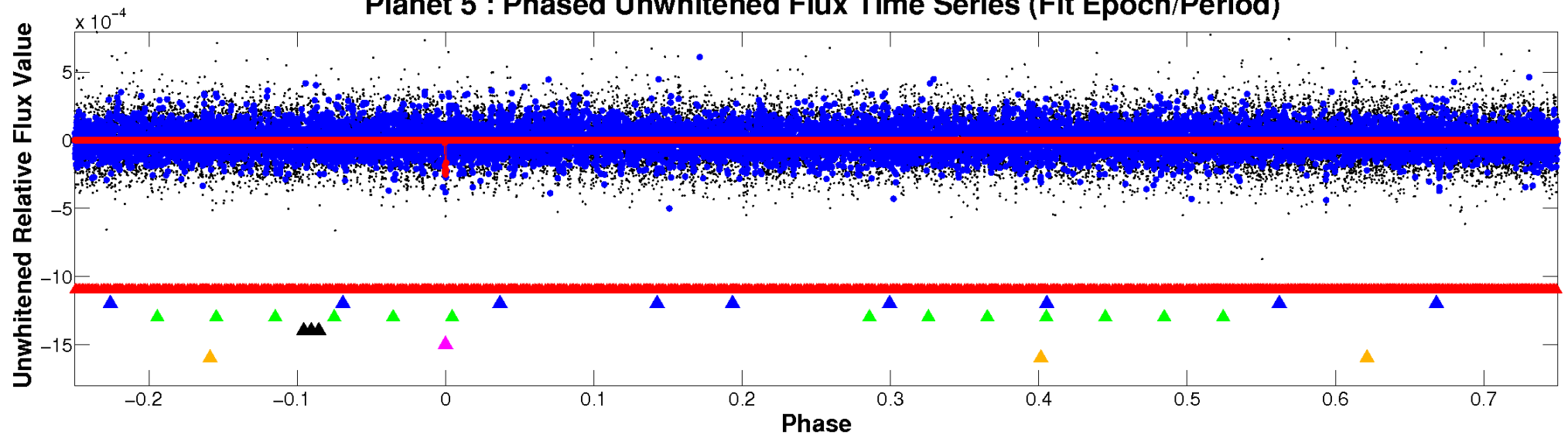
ALT Odd/Even

TCE 009656994-05

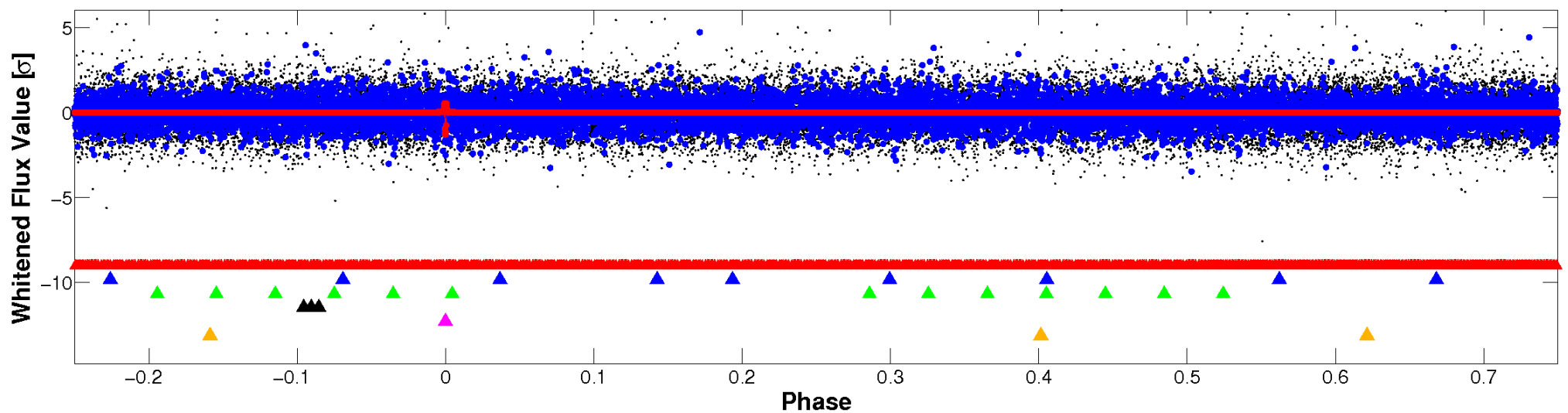


Non-Whitened Vs. Whitened Light Curve

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

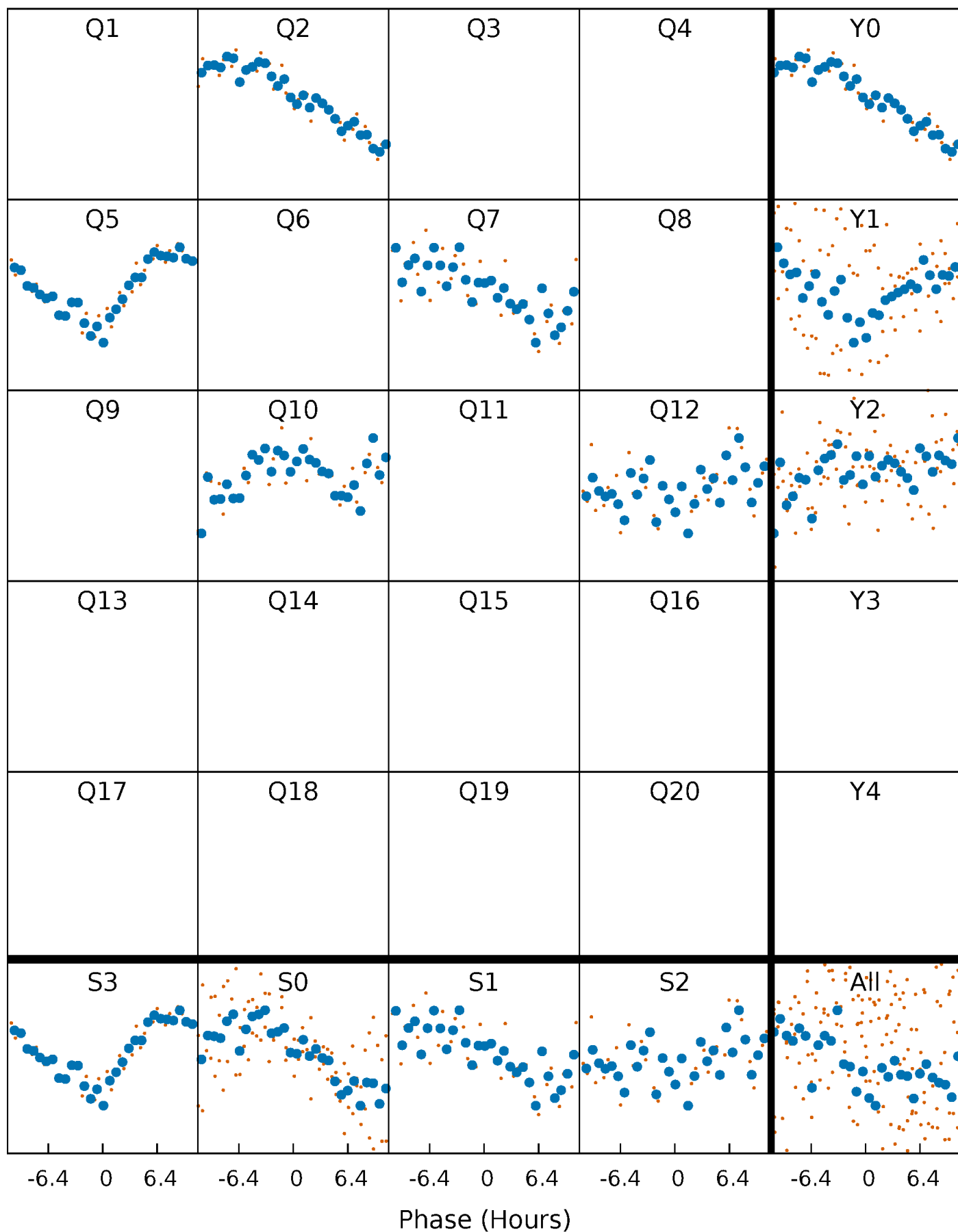


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



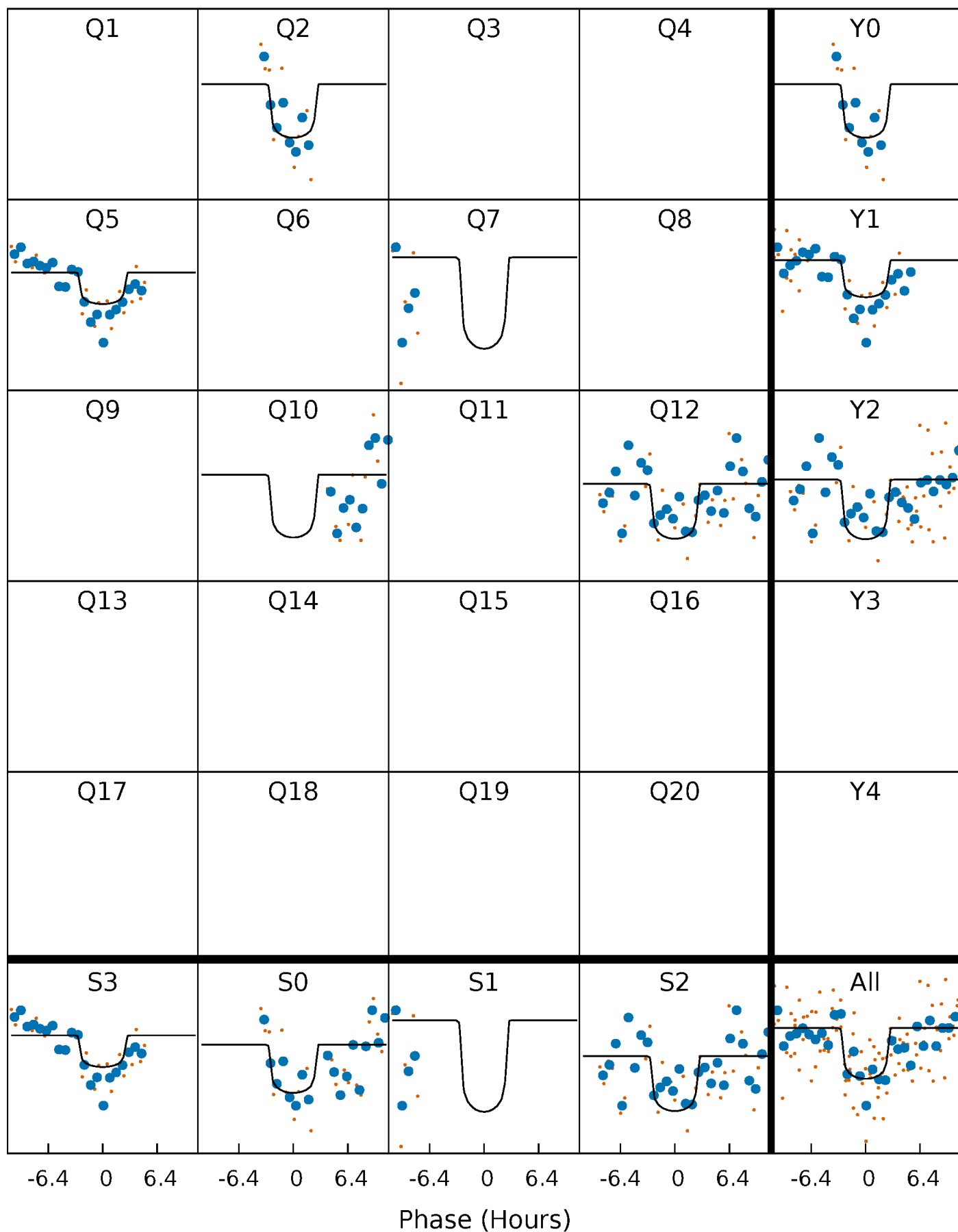
PDC Quarter-Phased Transit Curves

TCE 009656994-05 $P=233.699319$ Days $T_0=245.139897$ (BKJD)



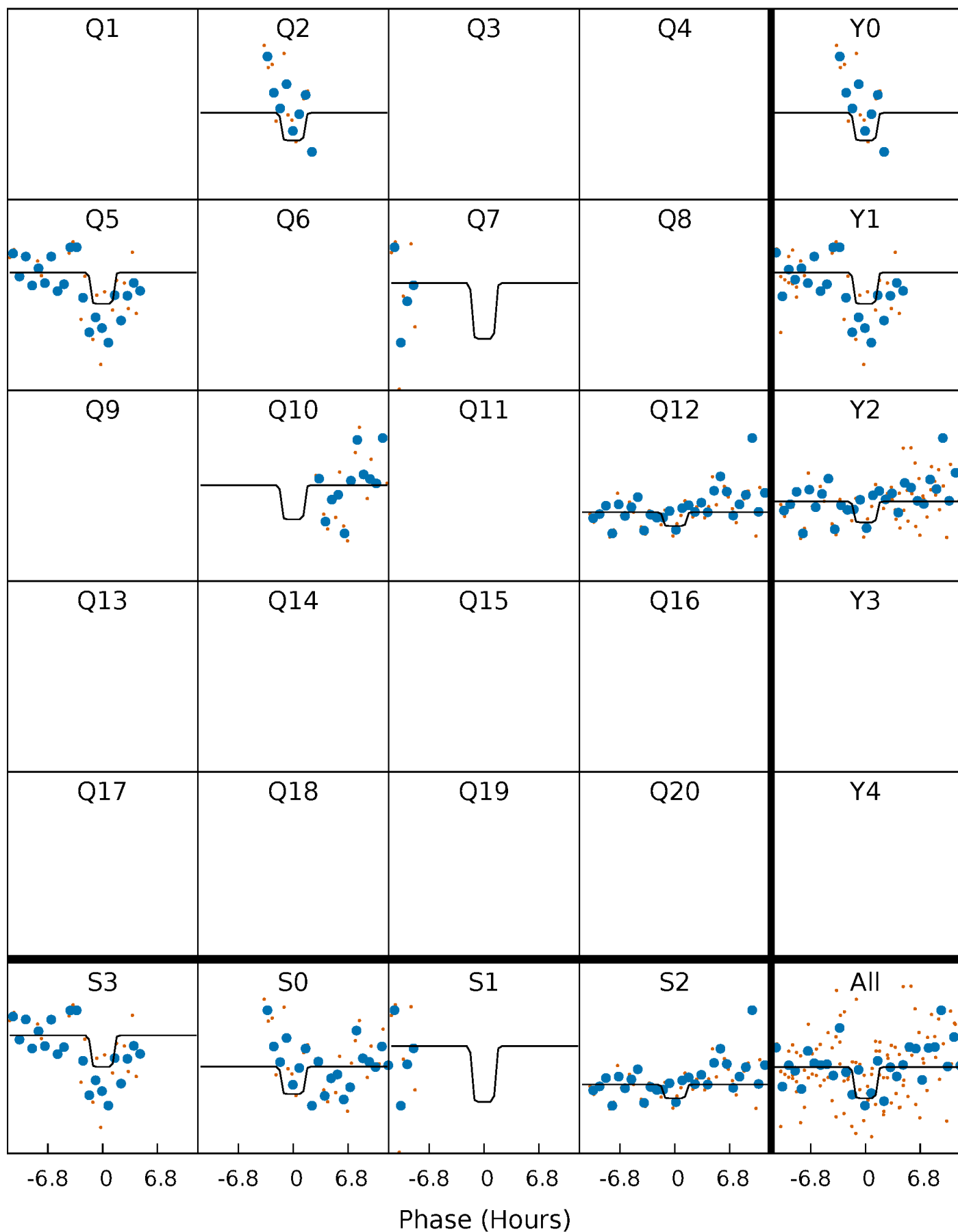
DV Quarter-Phased Transit Curves

TCE 009656994-05 $P=233.699319$ Days $T_0=245.139897$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

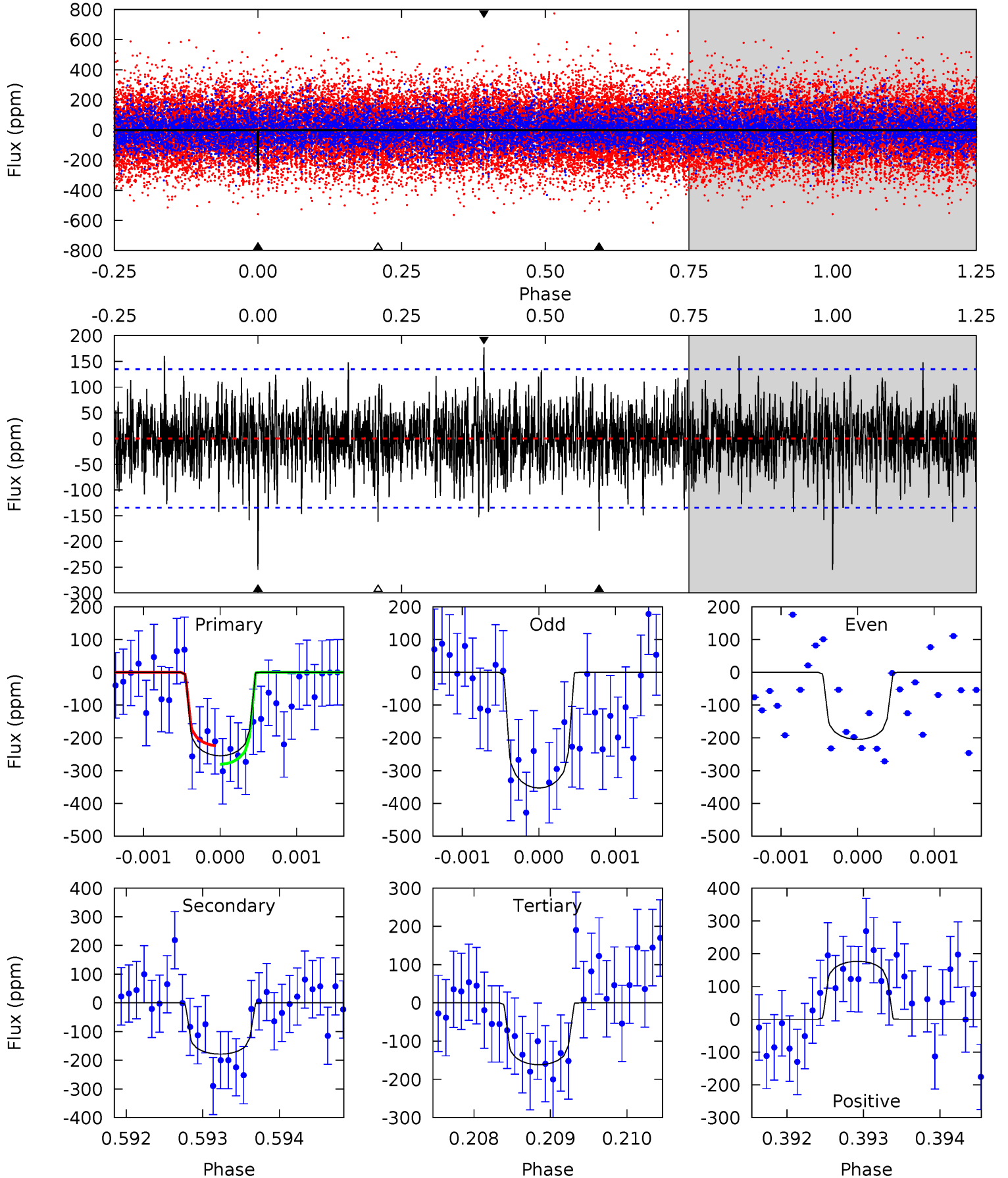
TCE 009656994-05 $P=233.719059$ Days $T_0=245.131852$ (BKJD)



DV Model-Shift Uniqueness Test

009656994-05, $P = 233.699319$ Days, $E = 11.440578$ Days

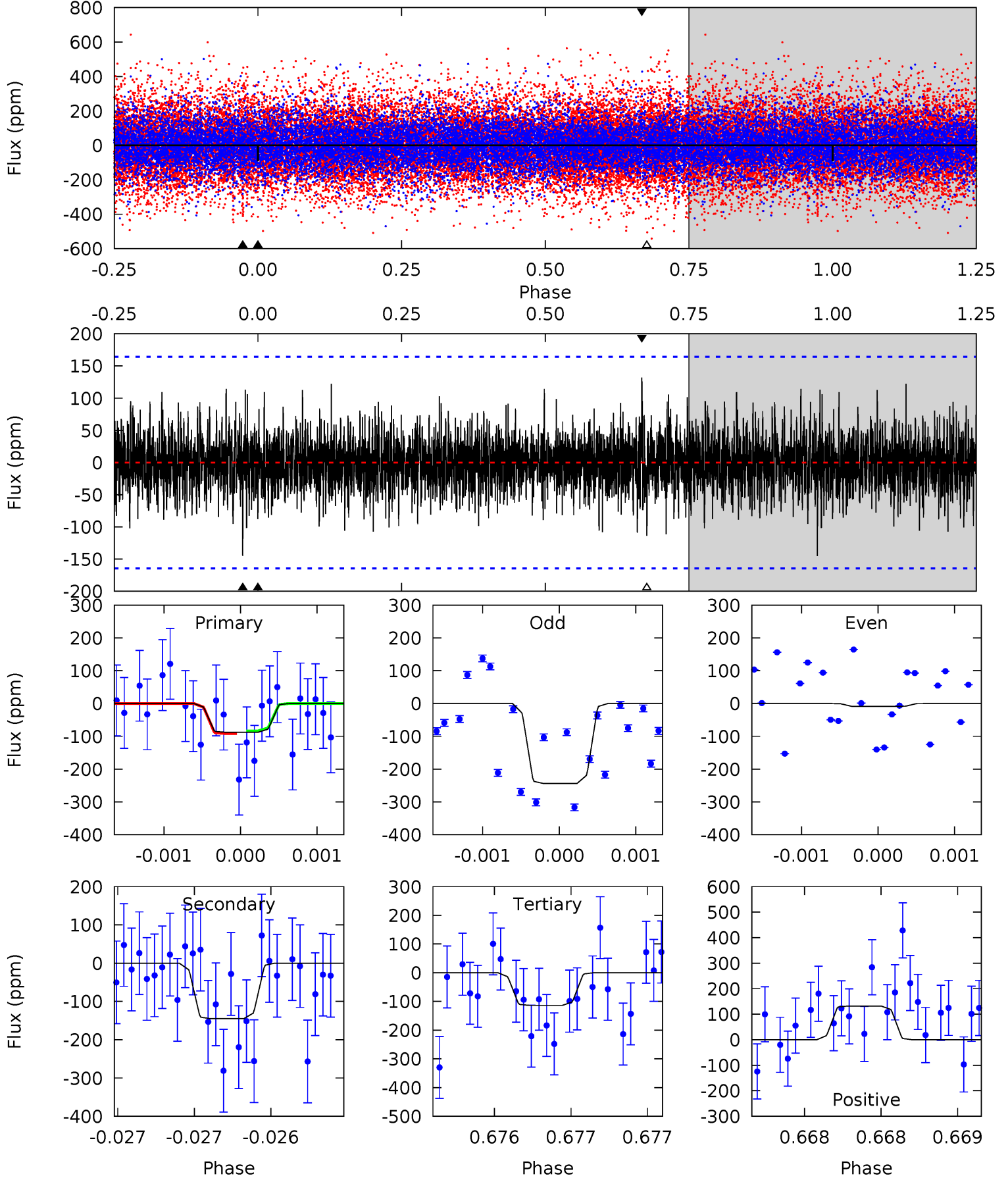
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	7.21	6.52	7.13	5.43	3.25	1.83	3.76	3.14	0.69	0.07	2.87	1.07	0.41	1.13



Alt Model-Shift Uniqueness Test

009656994-05, P = 233.719059 Days, E = 11.412793 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.95	4.88	3.82	4.44	5.53	3.42	1.08	-0.88	-1.50	1.06	0.44	3.83	1.86	0.48	0.14



Stellar Parameters For KIC 009656994

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6765^{+81}_{-81}	$4.106^{+0.132}_{-0.108}$	$-0.040^{+0.150}_{-0.150}$	$1.741^{+0.274}_{-0.274}$	$1.416^{+0.098}_{-0.109}$	$0.378^{+0.230}_{-0.121}$
	+1%/-1%	+3%/-3%	+375%/-375%	+16%/-16%	+7%/-8%	+61%/-32%
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 009656994-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-179 ± 25	$2.97^{+1.59}_{-1.30}$	601^{+26}_{-25}	6195^{+2462}_{-1127}	7538^{+15844}_{-4391}
Alt.	-145 ± 30	$2.41^{+1.40}_{-1.24}$	603^{+25}_{-26}	6544^{+3770}_{-1327}	9440^{+30581}_{-5817}

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

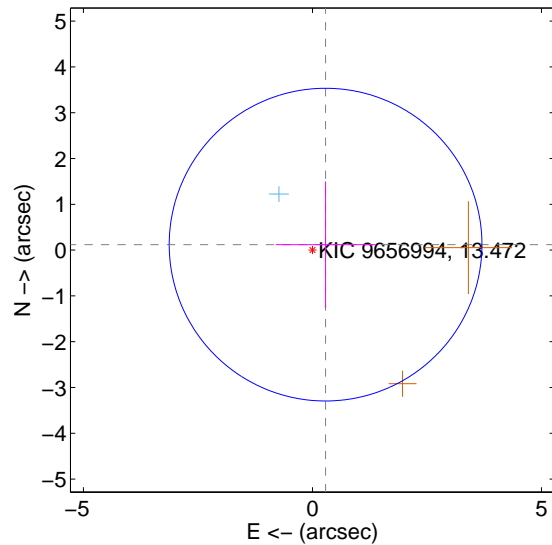
Supplemental centroid analysis for 009656994-05. Kepler magnitude: 13.47. Transit SNR 6.91

There are 1 quarters with good PRF difference image offsets

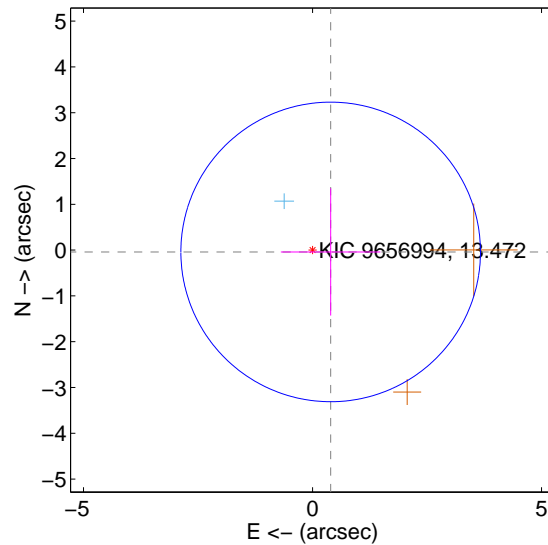
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.311 ± 1.138	0.27	-0.287 ± 1.090	0.119 ± 1.381
PRF-fit source offset from KIC position	0.398 ± 1.090	0.37	-0.396 ± 1.087	-0.040 ± 1.390
photometric centroid source offset	1.06 ± 1.11	0.95	-0.31 ± 1.04	-1.02 ± 1.12

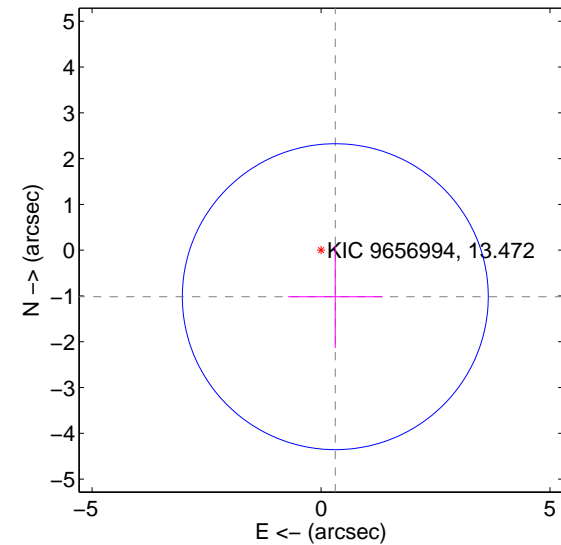
offset from difference PRF-fit to OOT PRF-fit



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.

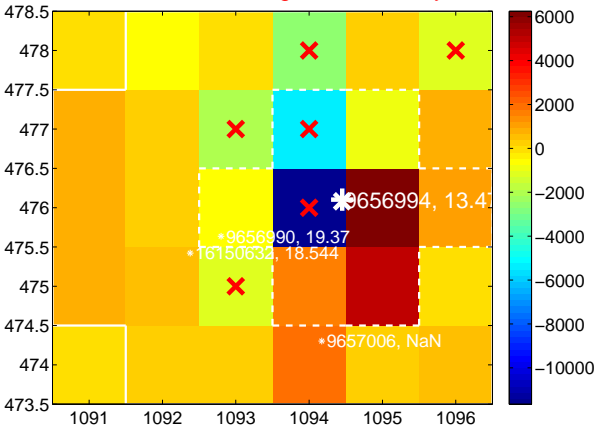
Q1 no difference image



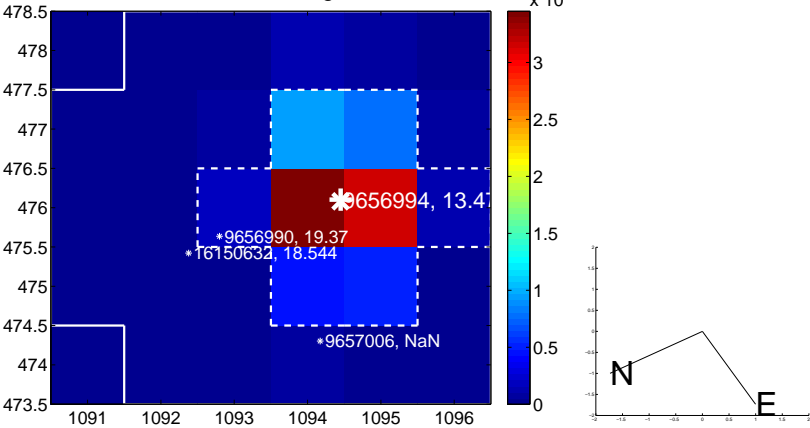
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



Q3 no difference image



Q3 no OOT image



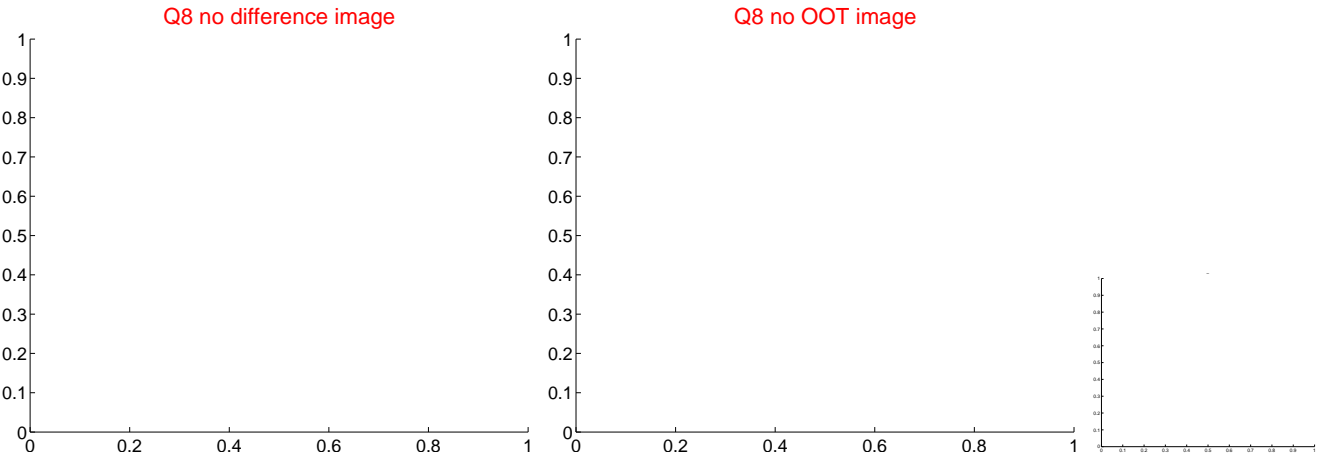
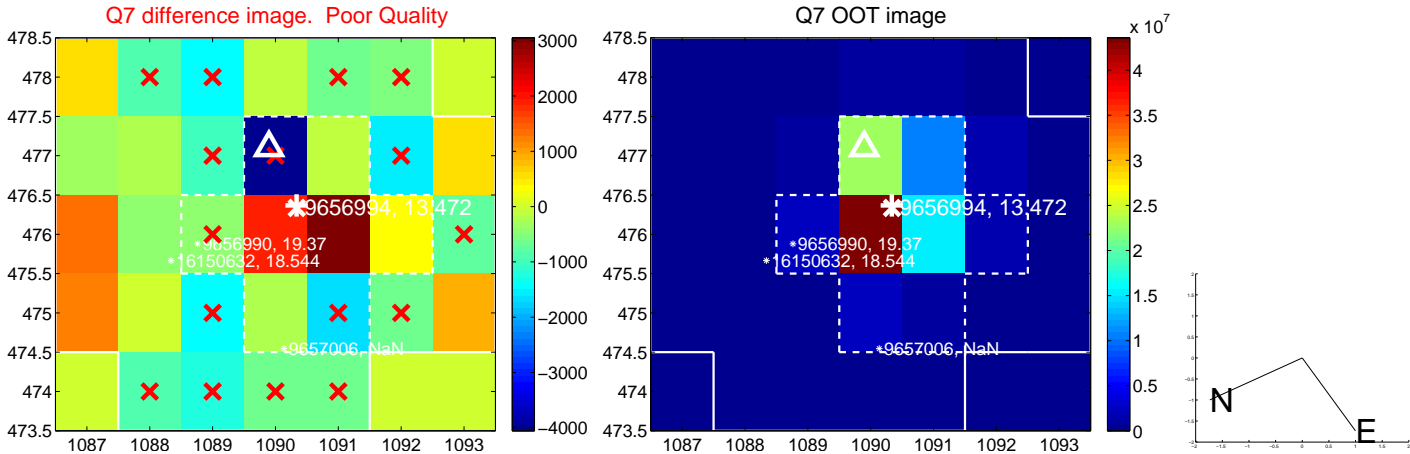
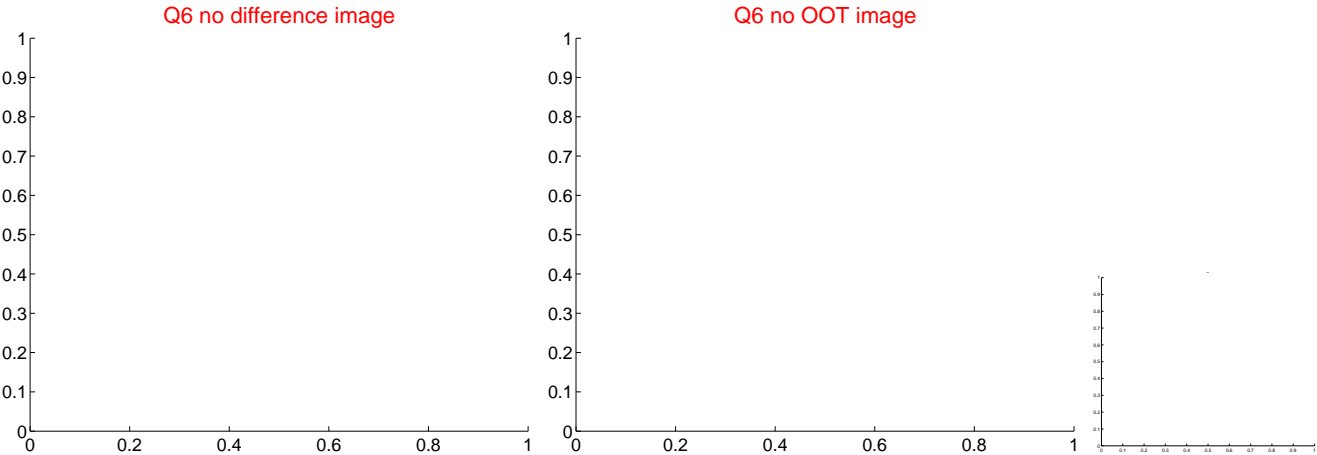
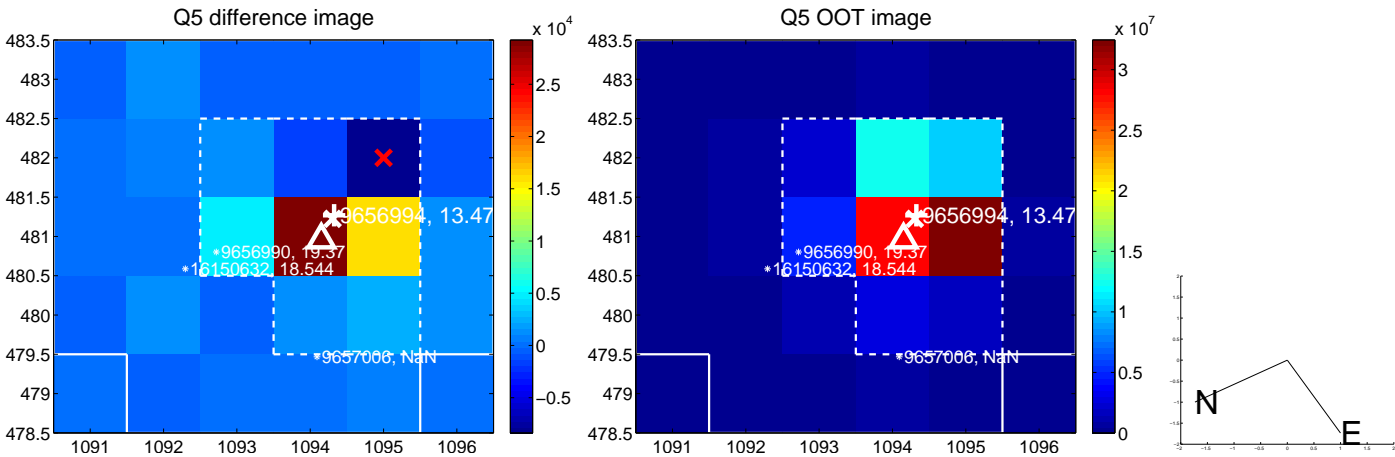
Q4 no difference image



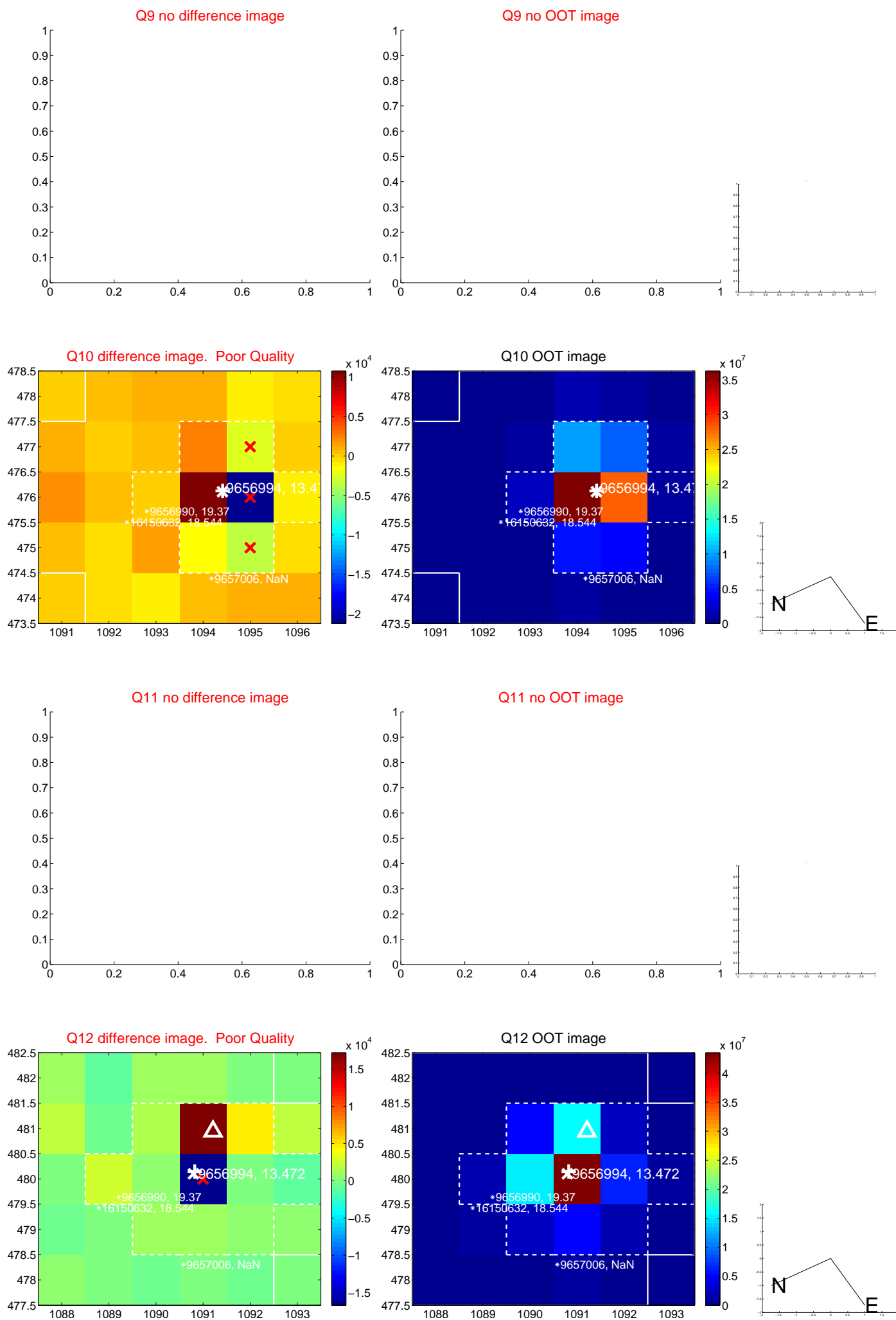
Q4 no OOT image



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



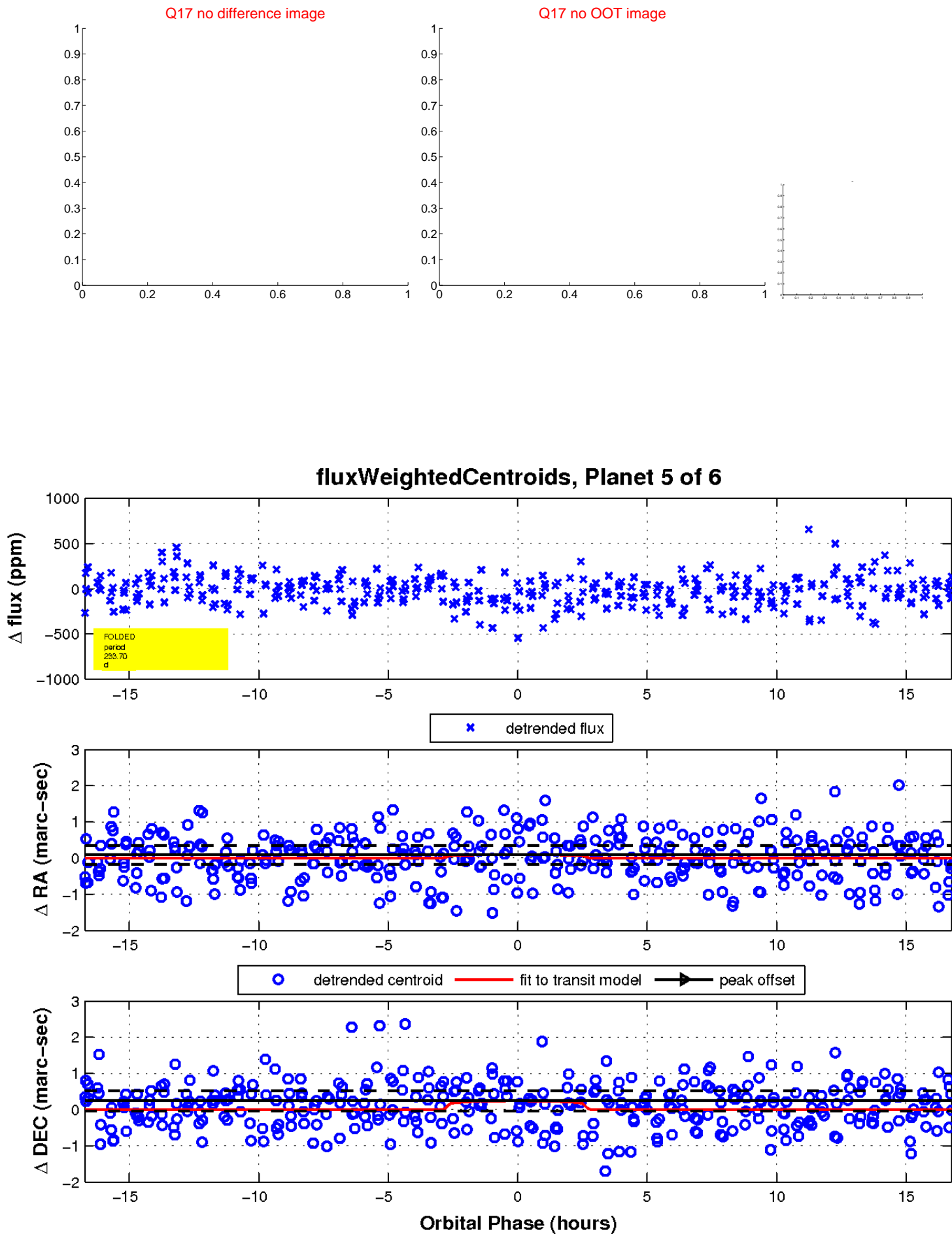
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

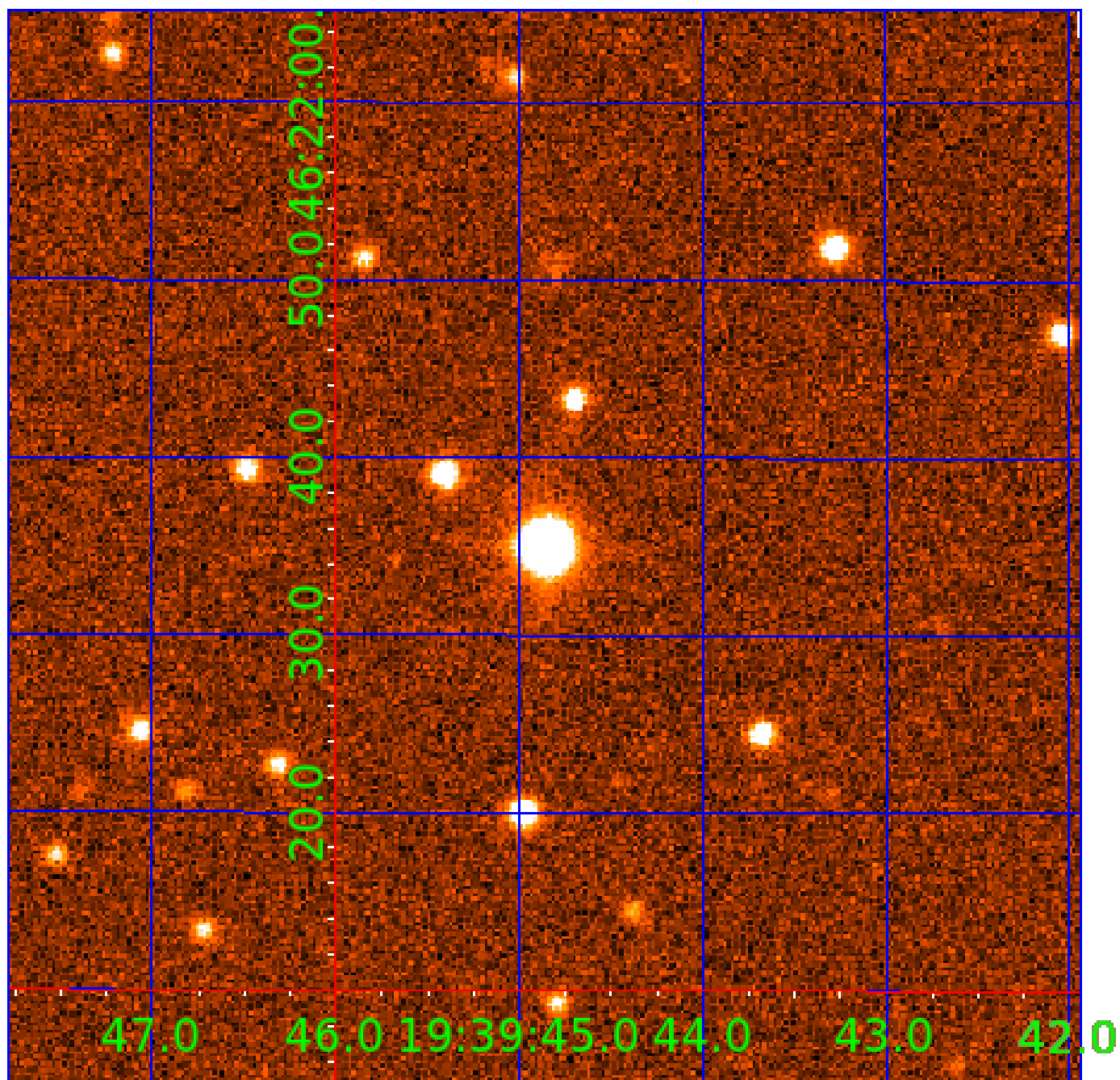


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009656994

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})
009656994-01	OBS	No	1.942974	131.779497	19.0	7.992	9.3	7.2	1.74	6765	0.81	4866.41
009656994-02	OBS	No	147.547217	278.488217	262.8	18.114	14.8	9.3	1.74	6765	3.05	15.13
009656994-03	OBS	No	112.204233	133.985962	164.0	14.927	7.6	6.3	1.74	6765	2.45	21.80
009656994-04	OBS	No	466.214420	458.876718	309.6	10.215	7.6	8.7	1.74	6765	3.90	3.26
009656994-05	OBS	No	233.699319	245.139898	251.2	5.609	7.5	6.9	1.74	6765	3.04	8.20
009656994-06	OBS	No	518.794639	338.953431	249.0	4.798	7.1	7.2	1.74	6765	3.03	2.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009656994-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
009656994-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009656994-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV
009656994-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009656994-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009656994-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

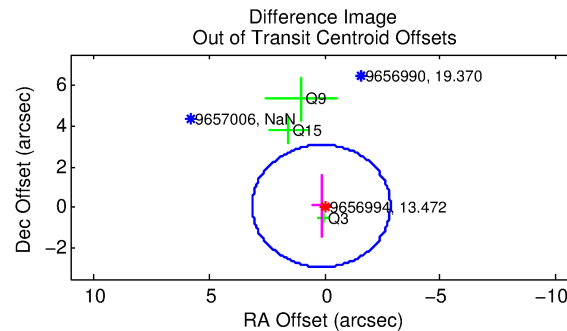
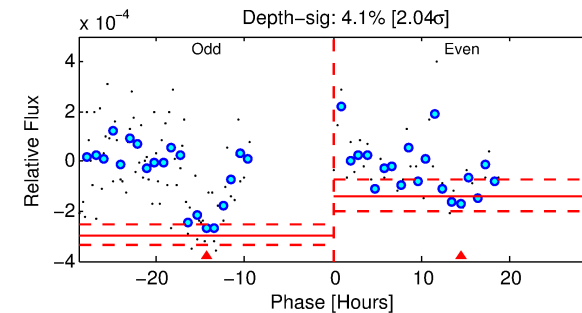
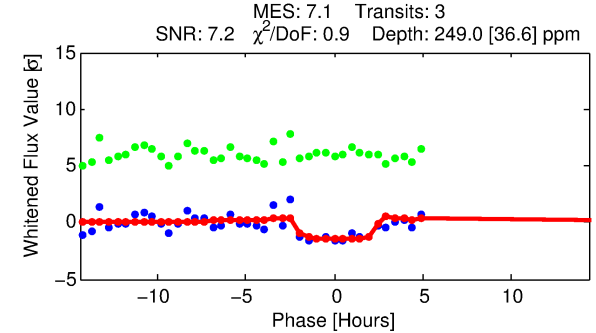
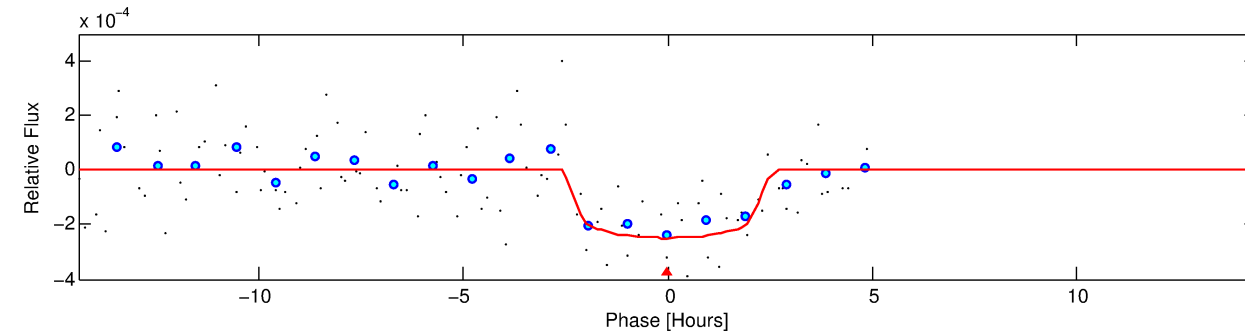
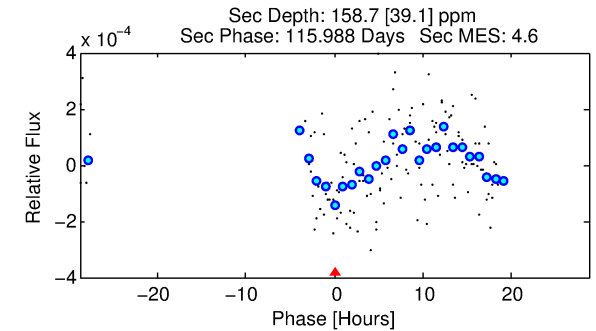
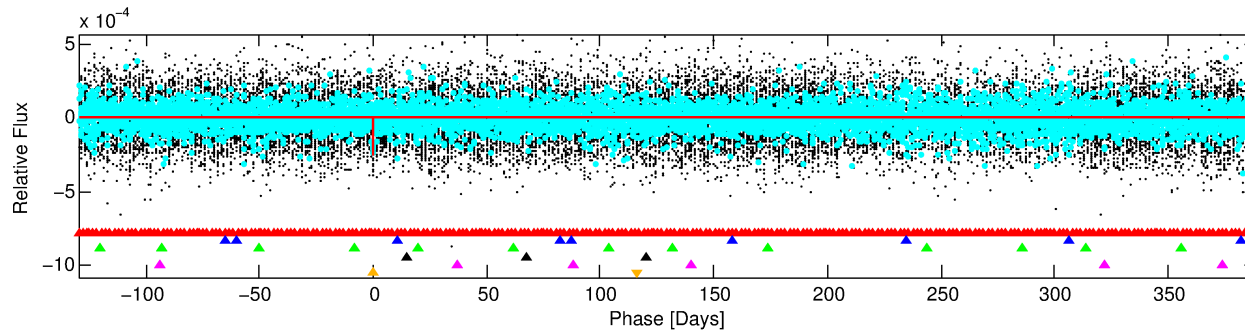
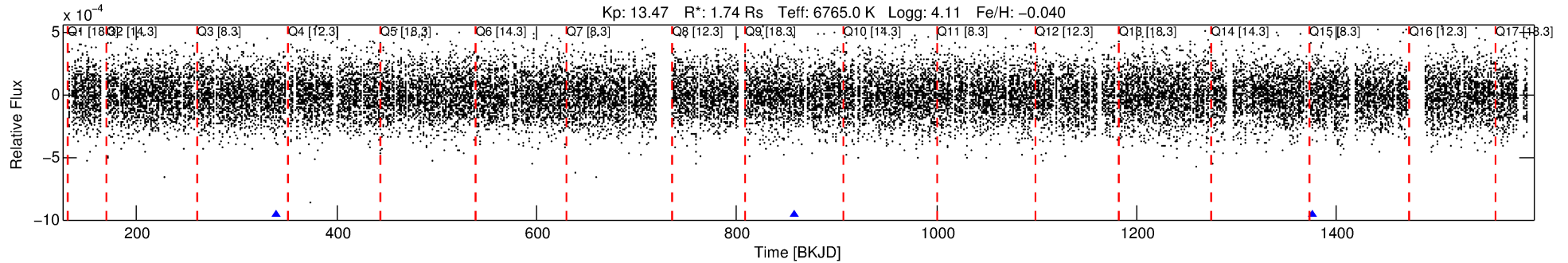
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009656994-06

No Significant Match Found

DV One-Page Summary

KIC: 9656994 Candidate: 6 of 6 Period: 518.795 d



DV Fit Results:

Period = 518.79464 [0.00693] d
Epoch = 338.9534 [0.0096] BKJD
Rp/R* = 0.0160 [0.0143]
a/R* = 517.83 [2671.48]
b = 0.80 [2.35]
Seff = 2.83 [0.66]
Teq = 331 [19] K
Rp = 3.03 [2.76] Re
a = 1.4176 [0.2068] AU
Ag = 19079.15 [34851.53] [0.55σ]
Teffp = 6010 [2724] K [2.08σ]

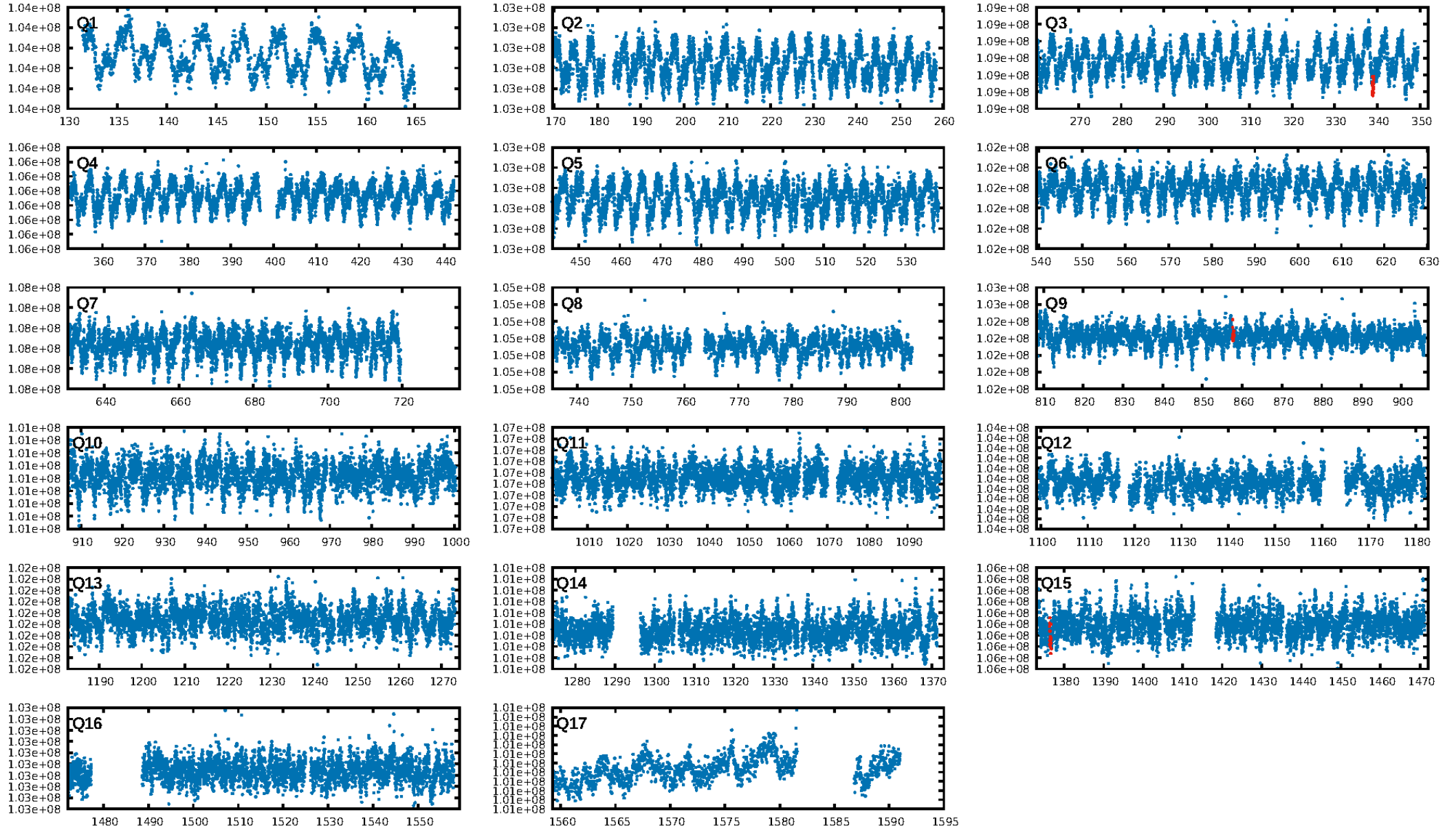
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [111.81σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 8.3%
ModelChiSquareGof-sig: 99.2%
Bootstrap-pfa: 1.74e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.613
Centroid-sig: 28.2%
Centroid-so: 1.550 arcsec [1.34σ]
OotOffset-rm: 0.166 arcsec [0.17σ]
KicOffset-rm: 0.065 arcsec [0.04σ]
OotOffset-st: 0/2/0/1 [3]
KicOffset-st: 0/2/0/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

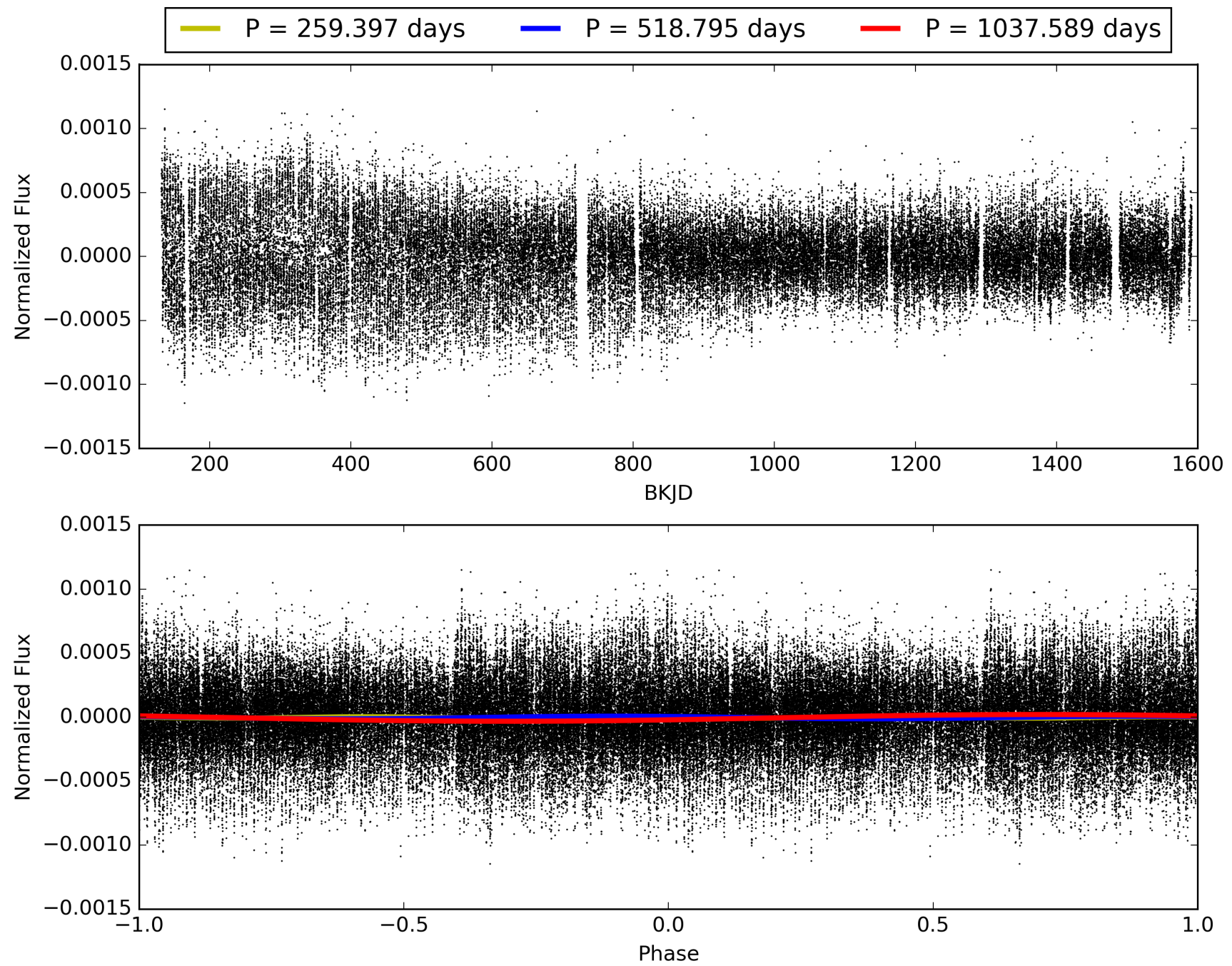
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:38:03 Z

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

TCE 009656994-06, PDC Light Curves

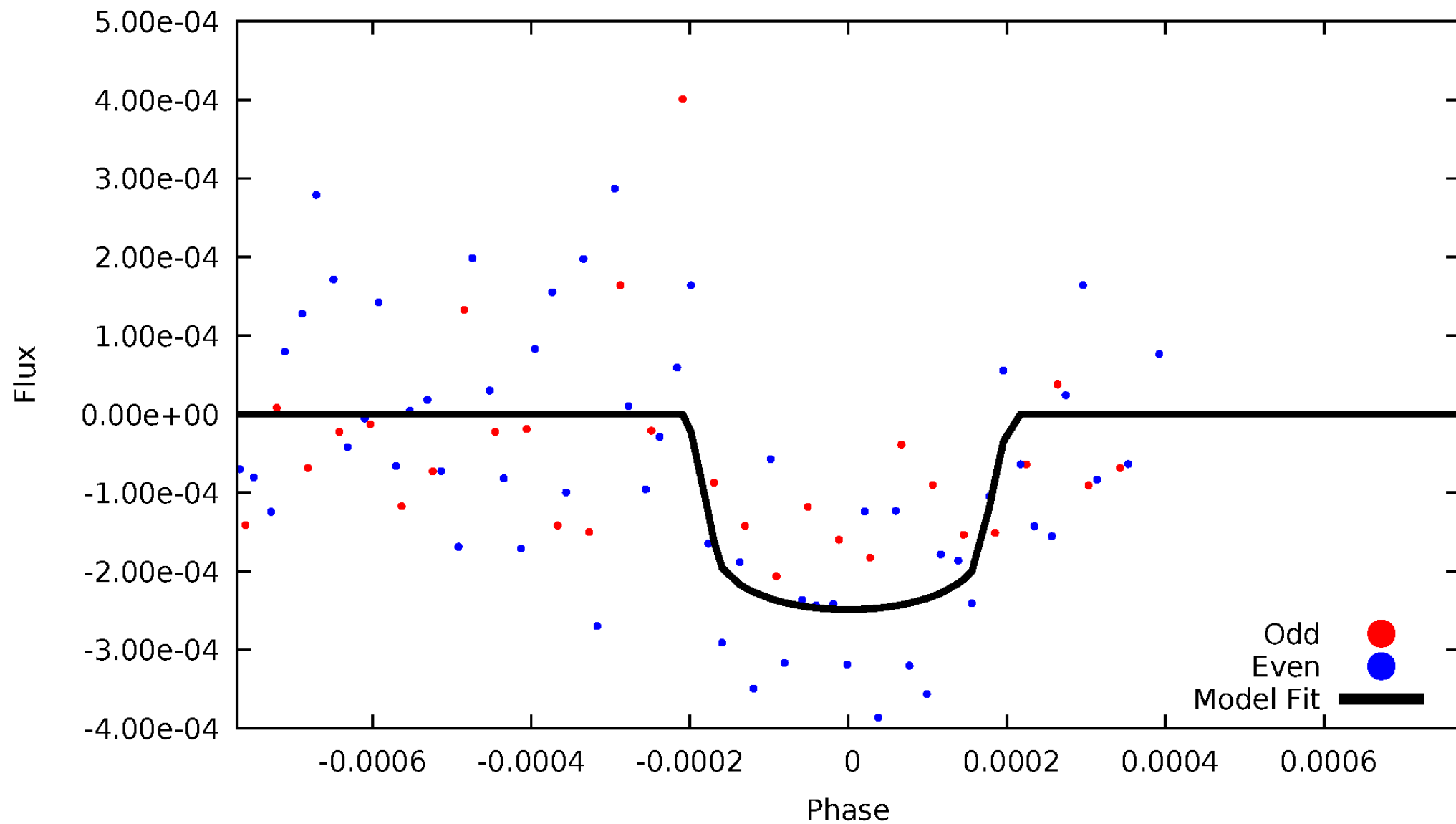


TCE 009656994-06



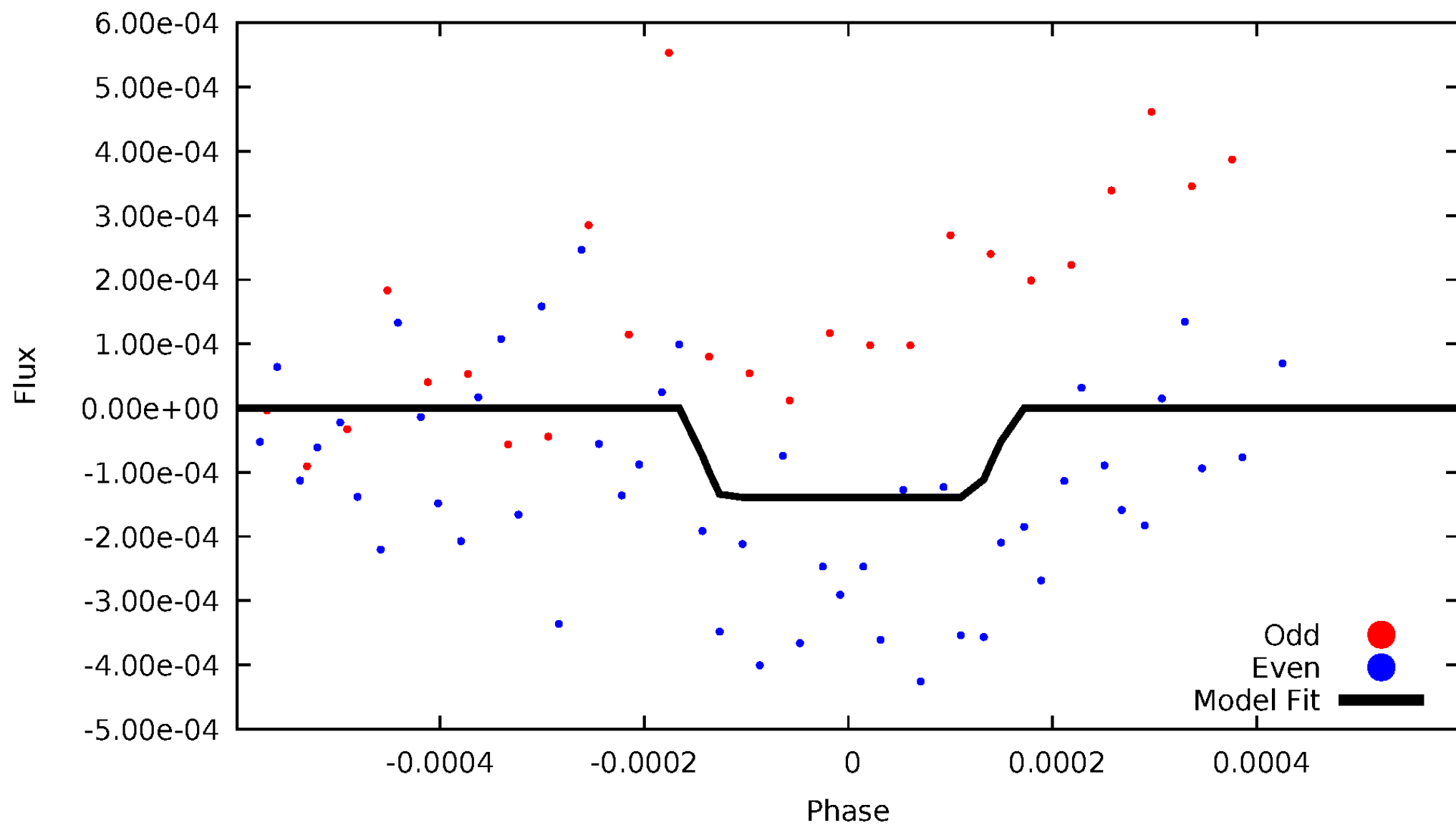
DV Odd/Even

TCE 009656994-06



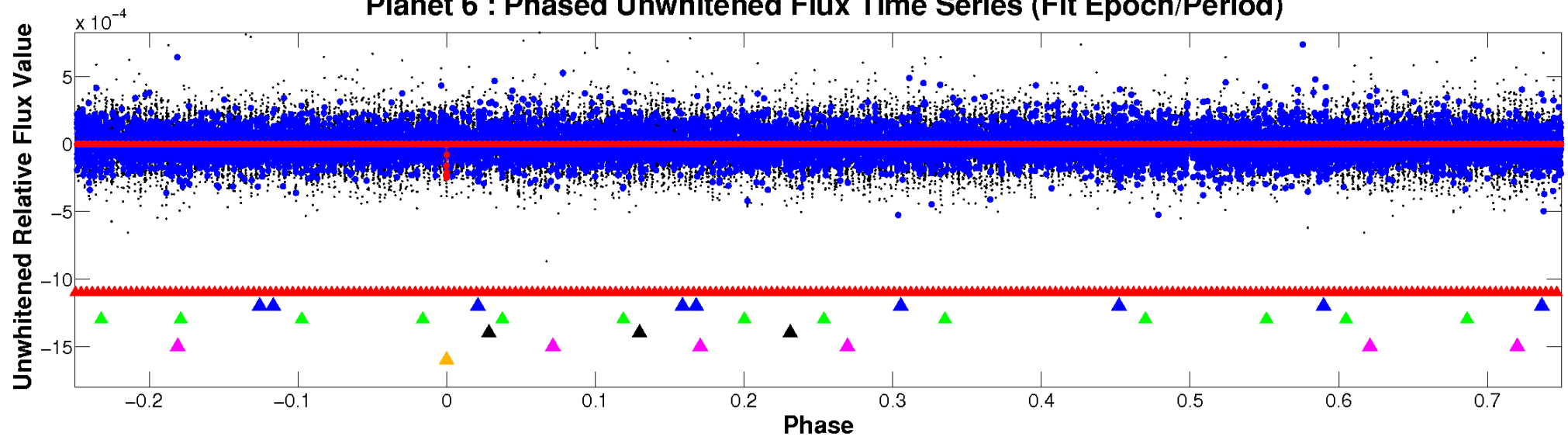
ALT Odd/Even

TCE 009656994-06

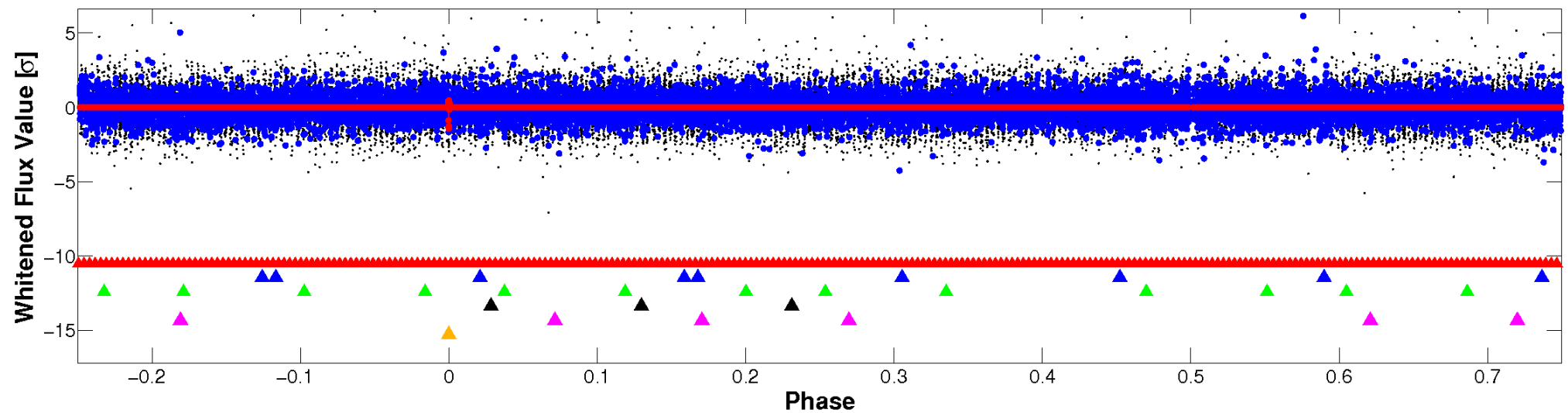


Non-Whitened Vs. Whitened Light Curve

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

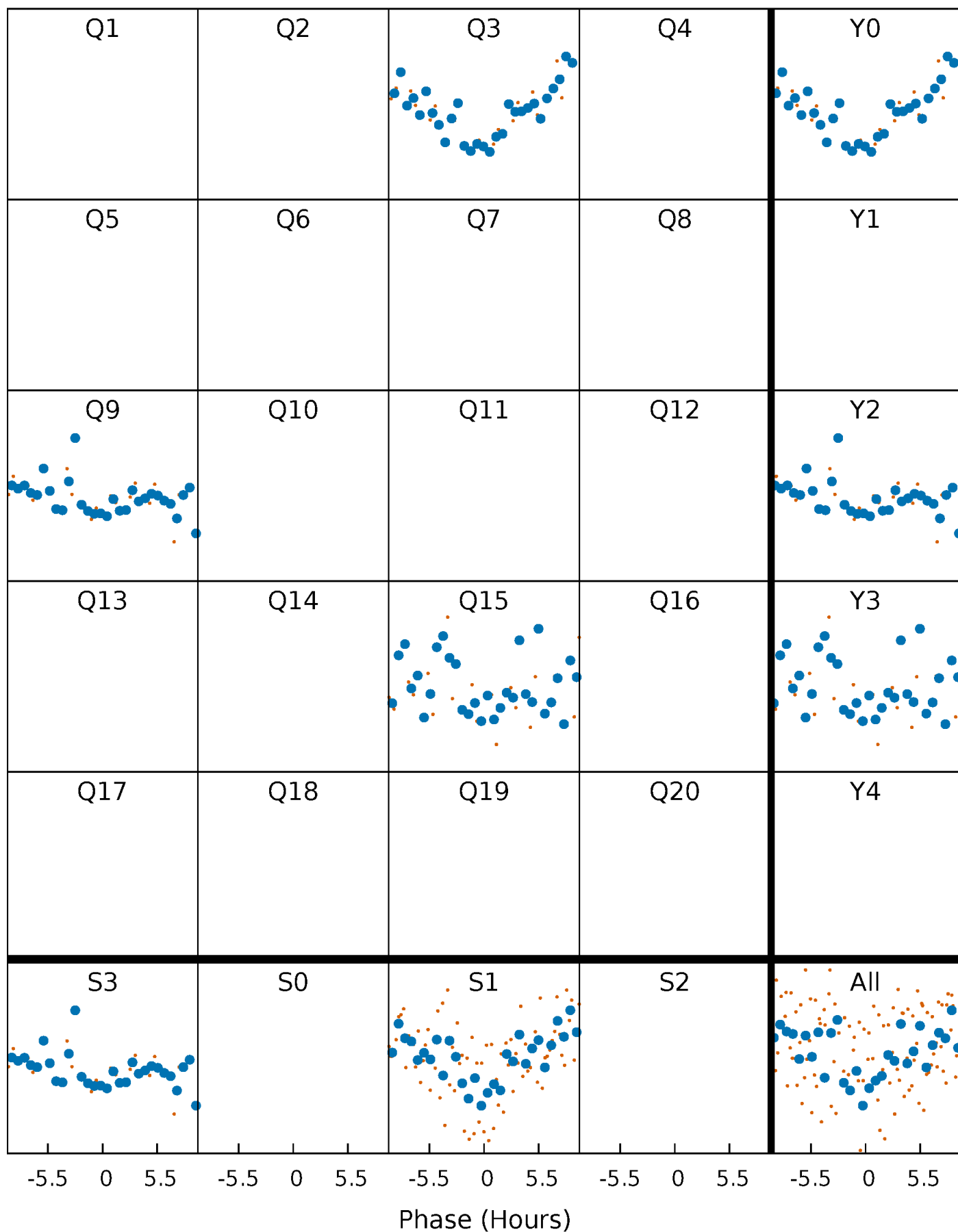


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



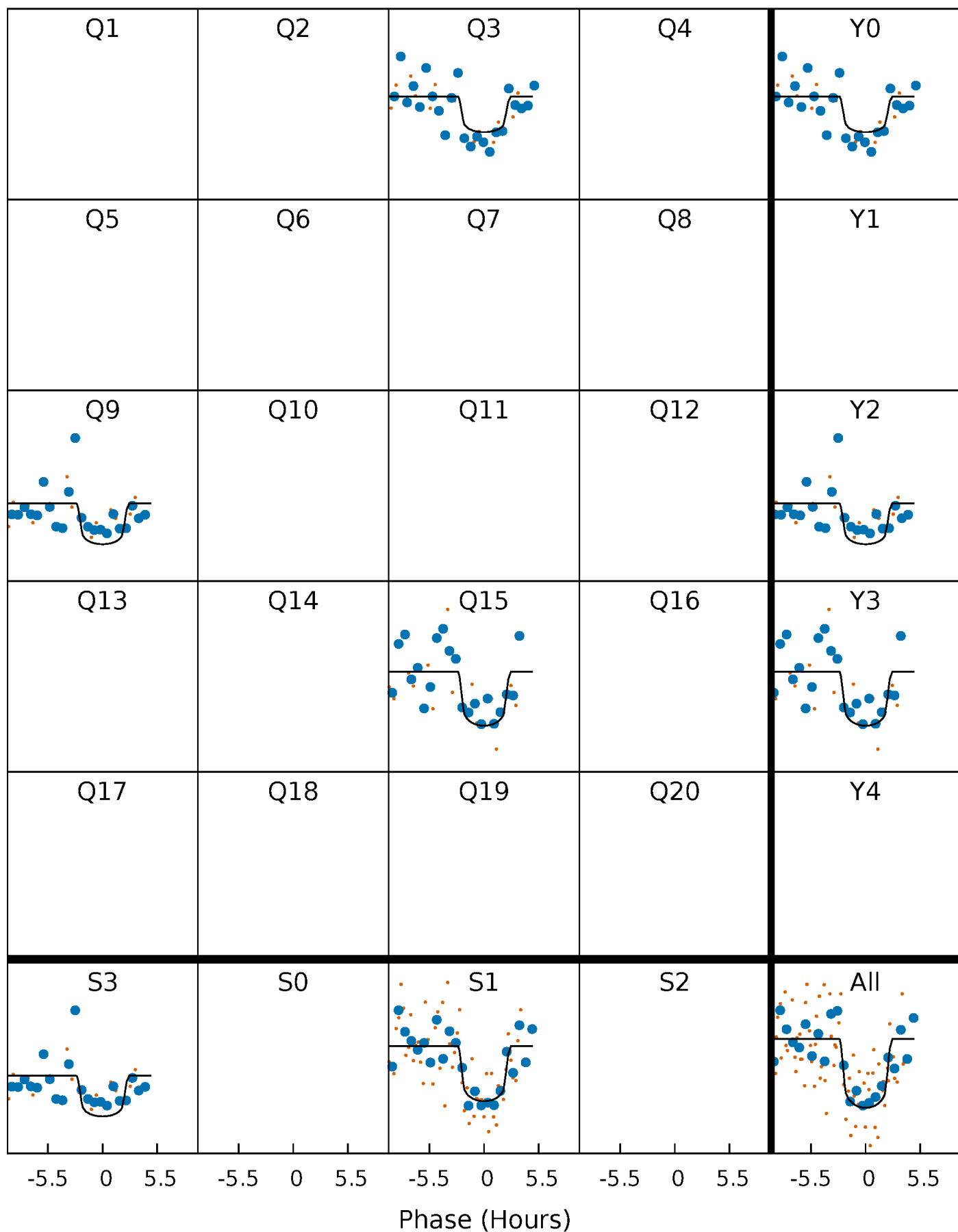
PDC Quarter-Phased Transit Curves

TCE 009656994-06 P=518.794640 Days $T_0=338.953431$ (BKJD)



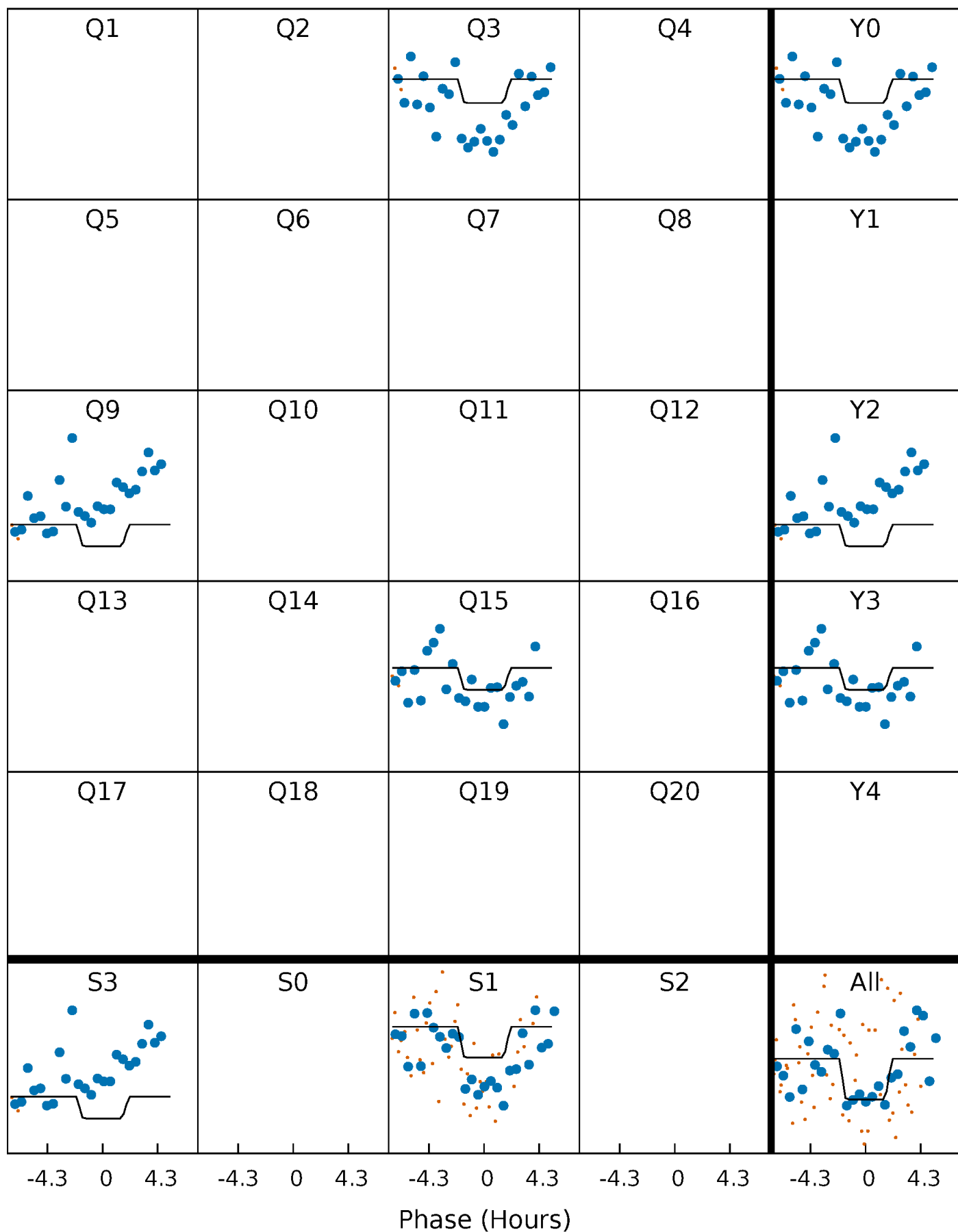
DV Quarter-Phased Transit Curves

TCE 009656994-06 P=518.794640 Days $T_0=338.953431$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

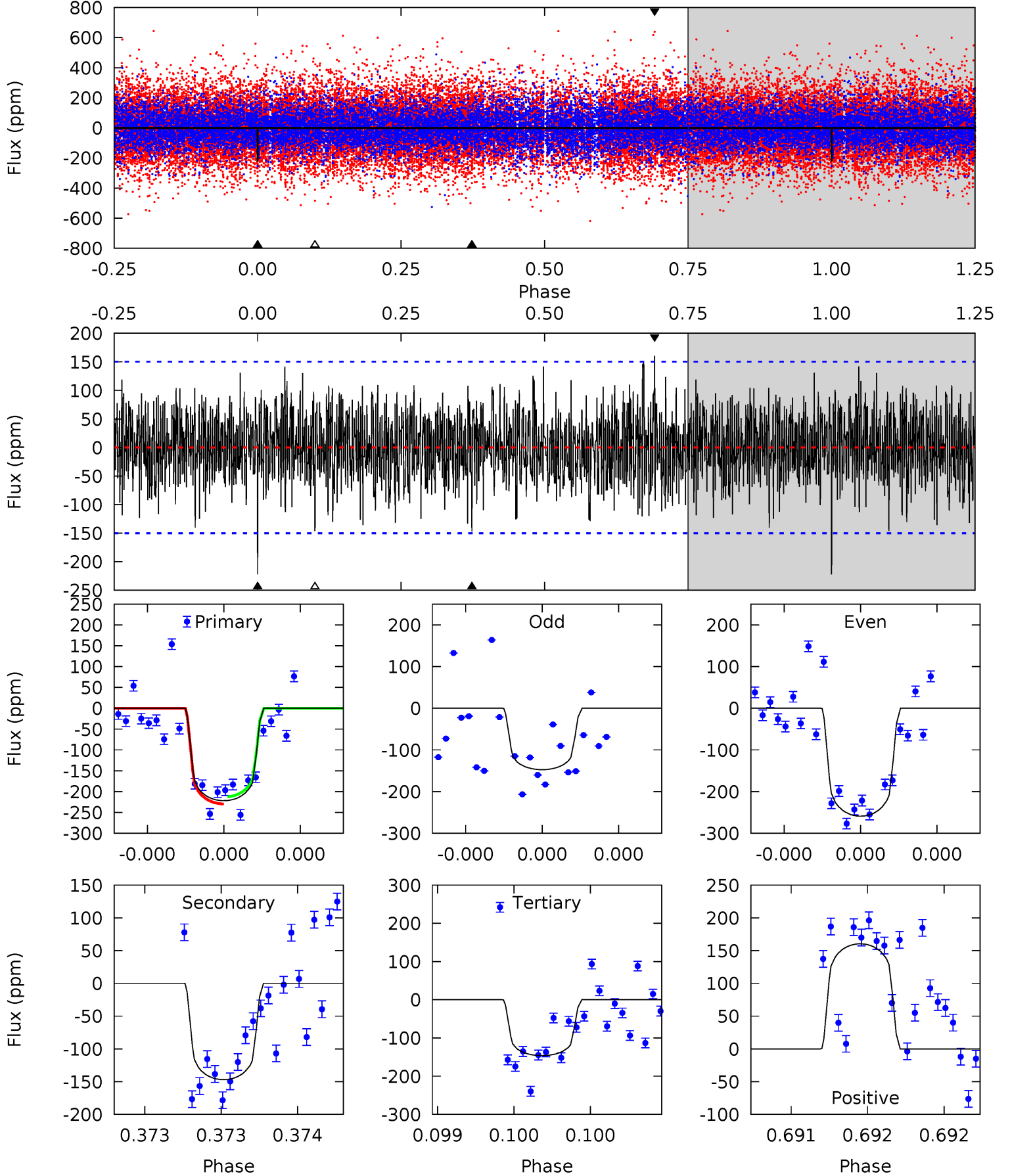
TCE 009656994-06 P=518.794466 Days $T_0=338.936358$ (BKJD)



DV Model-Shift Uniqueness Test

009656994-06, P = 518.794640 Days, E = 338.953431 Days

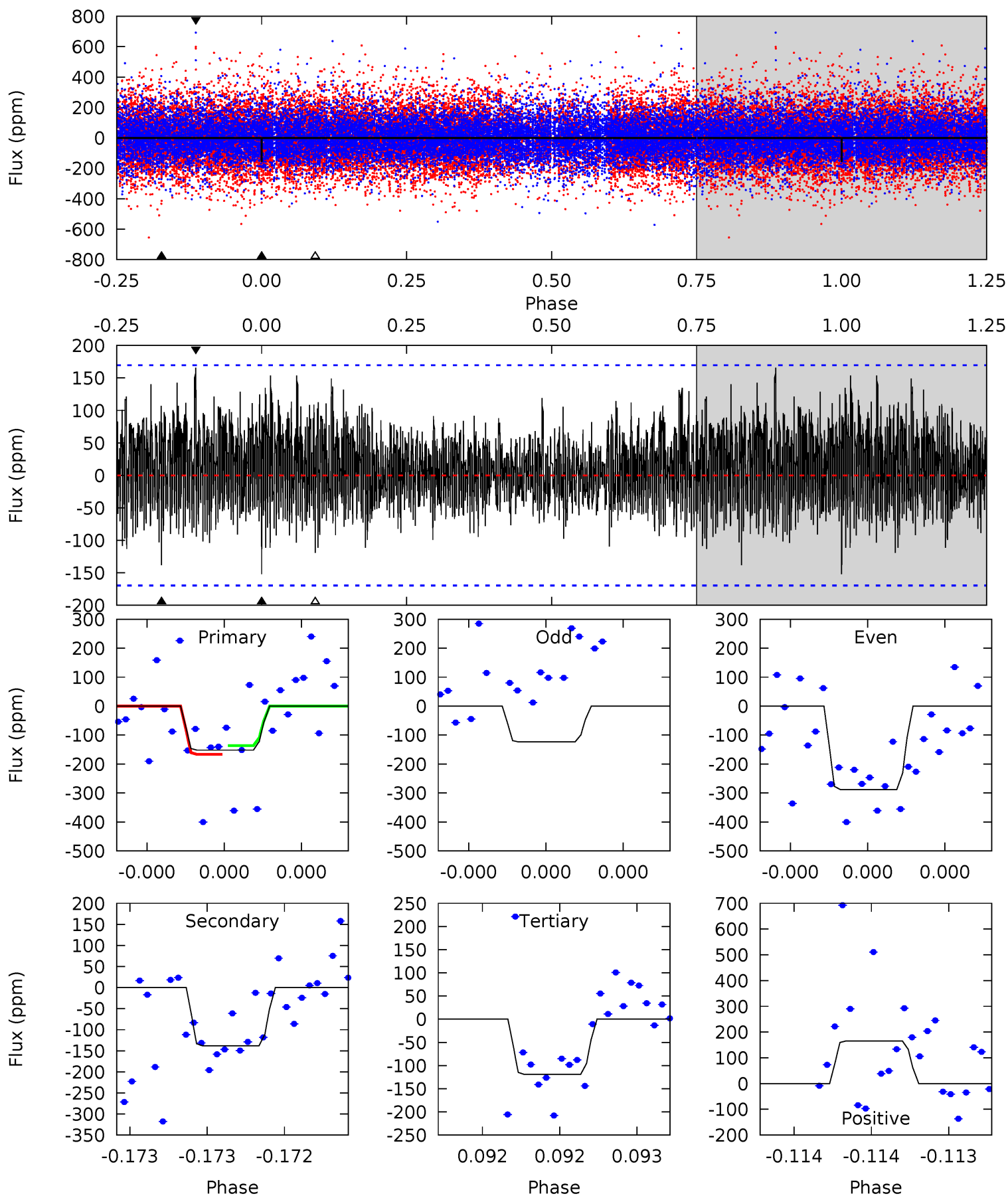
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.28	5.49	5.46	5.99	5.61	3.53	1.65	2.82	2.29	0.03	-0.50	1.98	1.09	0.42	0.32



Alt Model-Shift Uniqueness Test

009656994-06, P = 518.794466 Days, E = 338.936358 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.08	4.62	3.98	5.53	5.67	3.62	1.30	1.10	-0.45	0.64	-0.91	2.70	0.73	0.52	0.51



Stellar Parameters For KIC 009656994

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6765^{+81}_{-81}	$4.106^{+0.132}_{-0.108}$	$-0.040^{+0.150}_{-0.150}$	$1.741^{+0.274}_{-0.274}$	$1.416^{+0.098}_{-0.109}$	$0.378^{+0.230}_{-0.121}$
	+1%/-1%	+3%/-3%	+375%/-375%	+16%/-16%	+7%/-8%	+61%/-32%
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 009656994-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-147 ± 27	$3.43^{+2.67}_{-2.10}$	461^{+20}_{-19}	5538^{+3471}_{-1214}	14116^{+72699}_{-9957}
Alt.	-138 ± 30	$2.94^{+2.49}_{-1.81}$	460^{+20}_{-20}	5899^{+4422}_{-1440}	$18729^{+105345}_{-13874}$

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 $A_{obs} \gg 1.0$

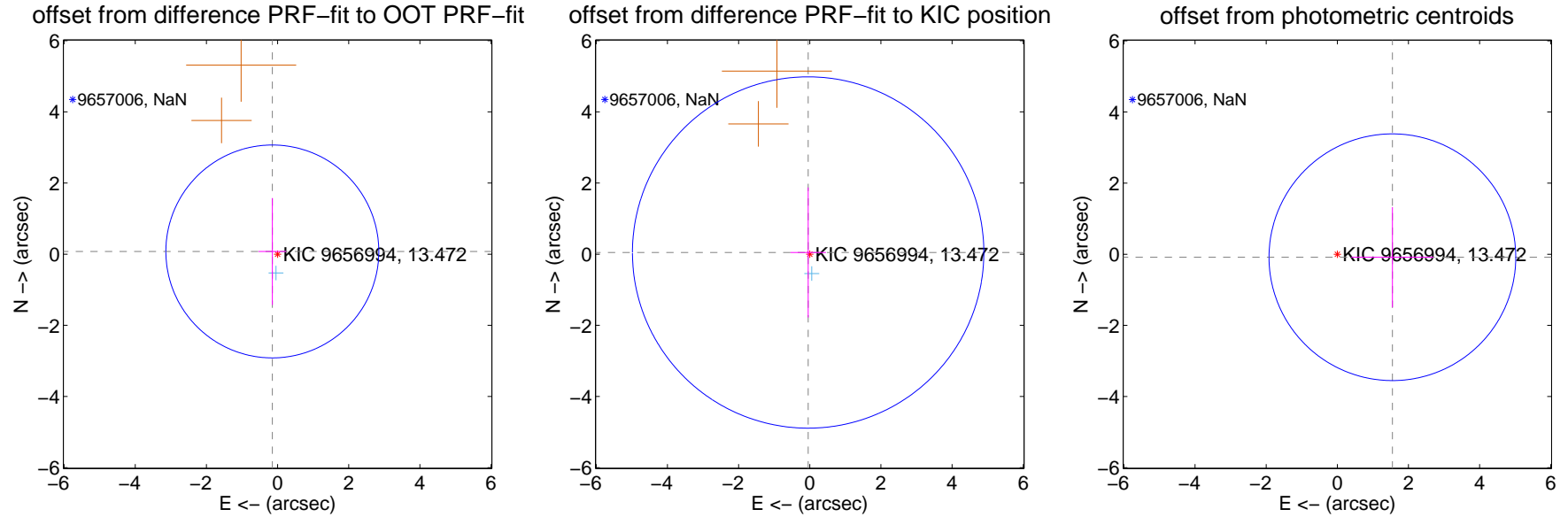
DV Centroid Data

Supplemental centroid analysis for 009656994-06. Kepler magnitude: 13.47. Transit SNR 7.16

There are 1 quarters with good PRF difference image offsets

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

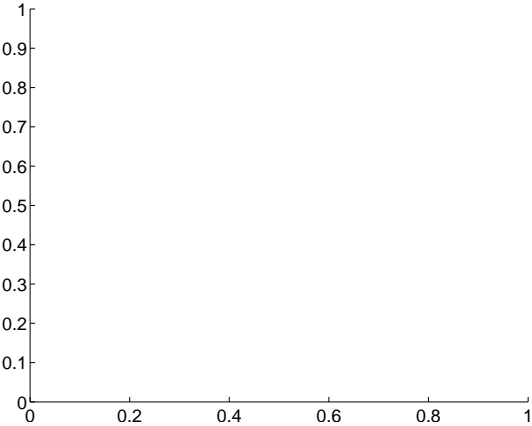
	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.166 ± 0.997	0.17	0.147 ± 0.387	0.076 ± 1.502
PRF-fit source offset from KIC position	0.065 ± 1.646	0.04	0.045 ± 0.498	0.047 ± 1.827
photometric centroid source offset	1.55 ± 1.16	1.34	-1.55 ± 1.16	-0.08 ± 1.41



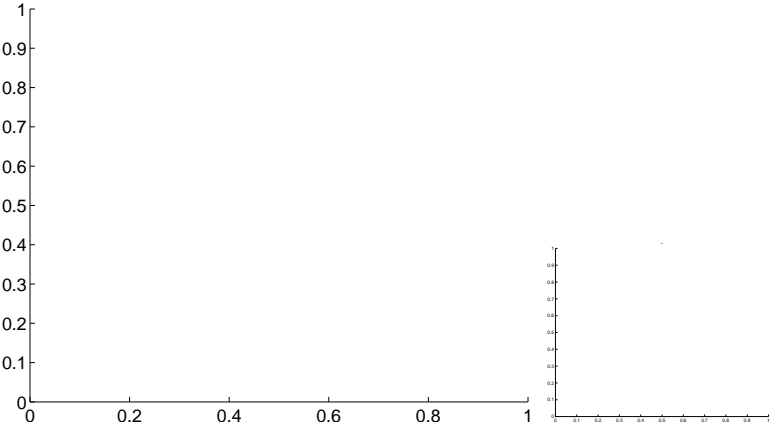
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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

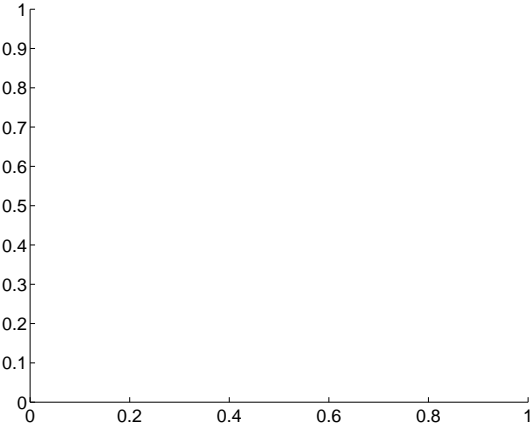
Q1 no difference image



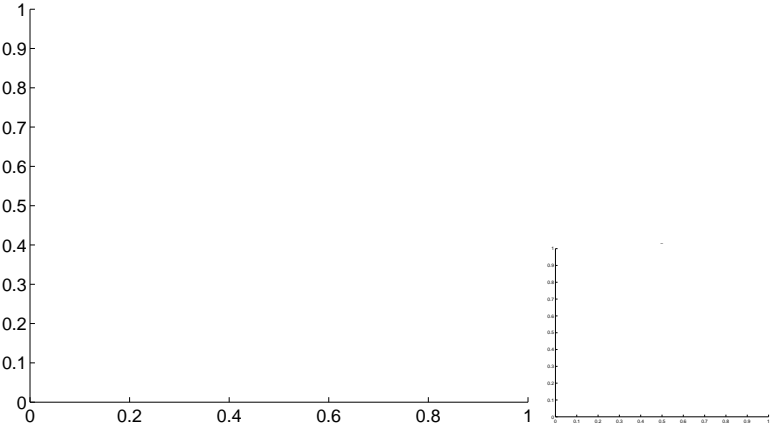
Q1 no OOT image



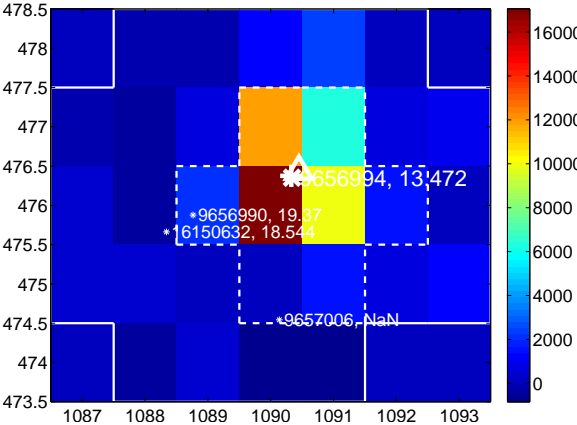
Q2 no difference image



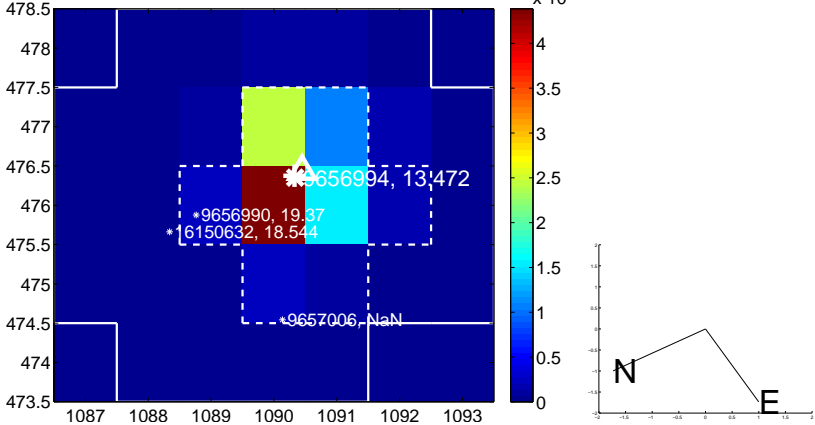
Q2 no OOT image



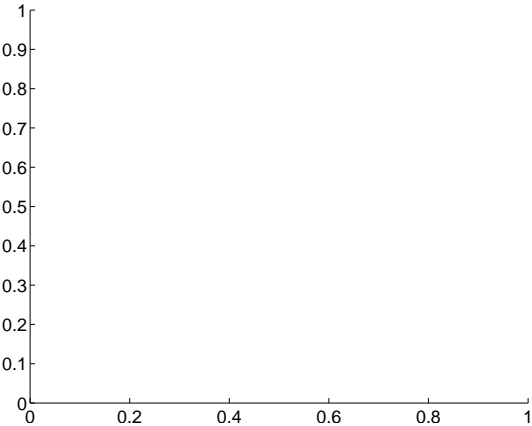
Q3 difference image



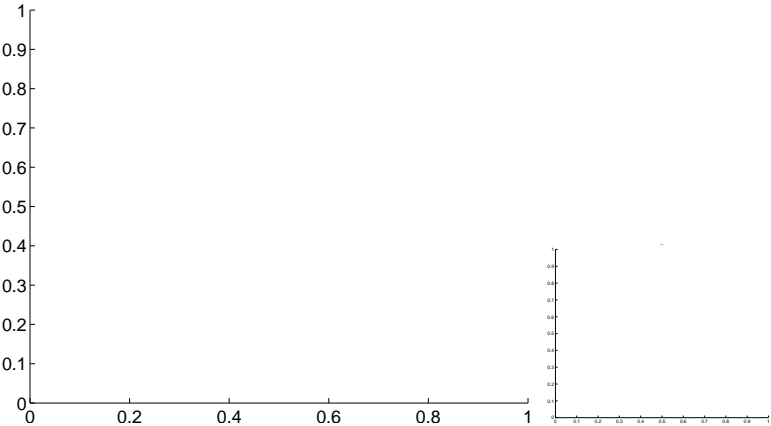
Q3 OOT image



Q4 no difference image



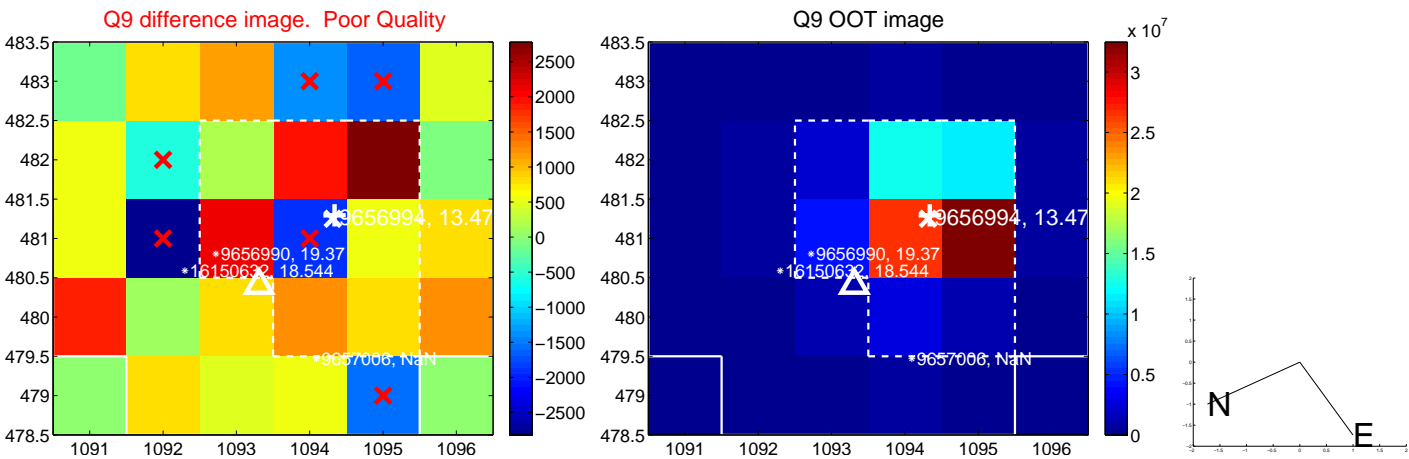
Q4 no OOT image



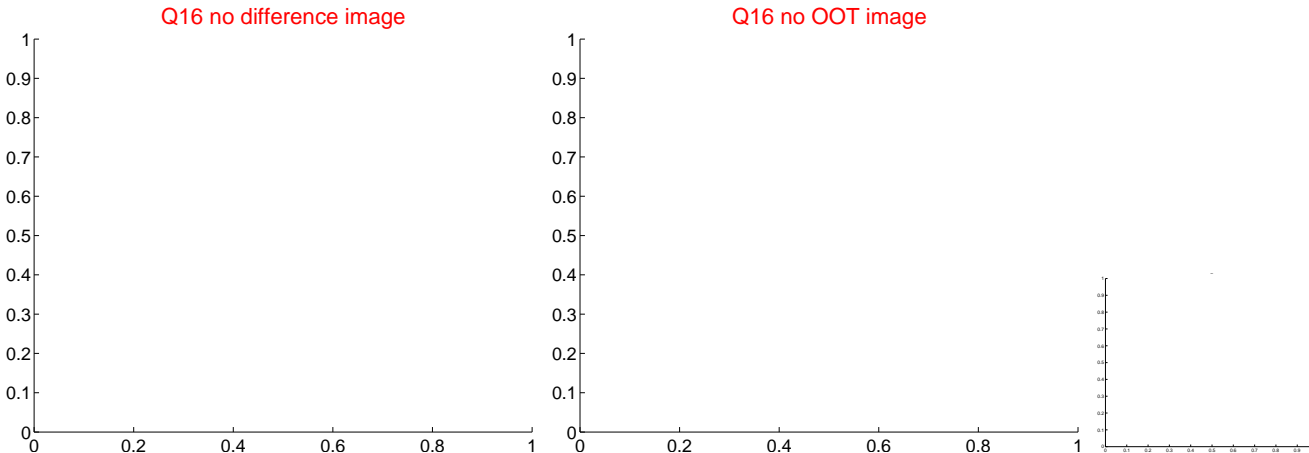
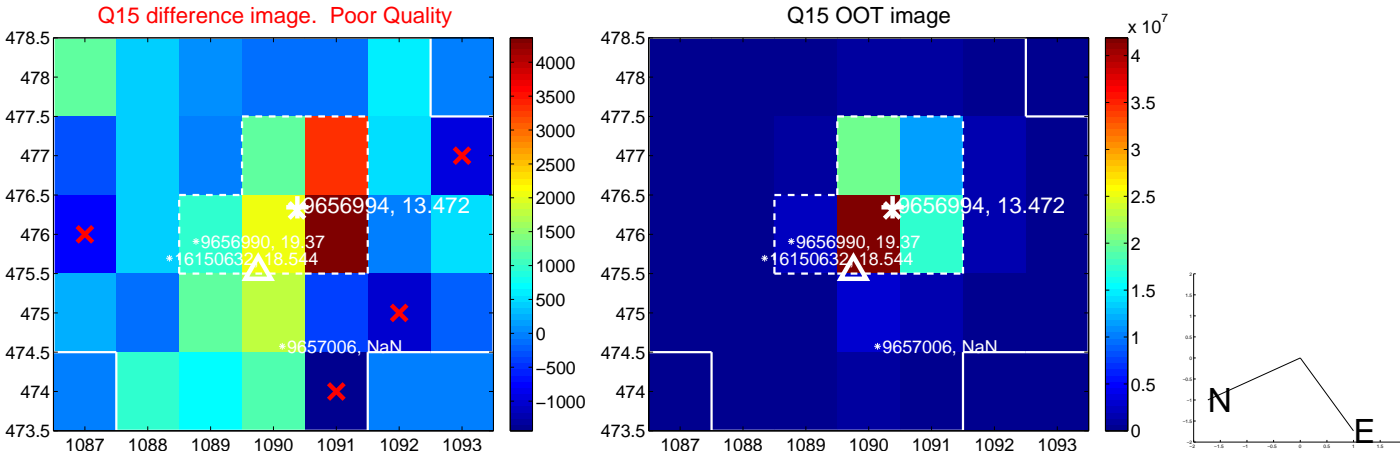
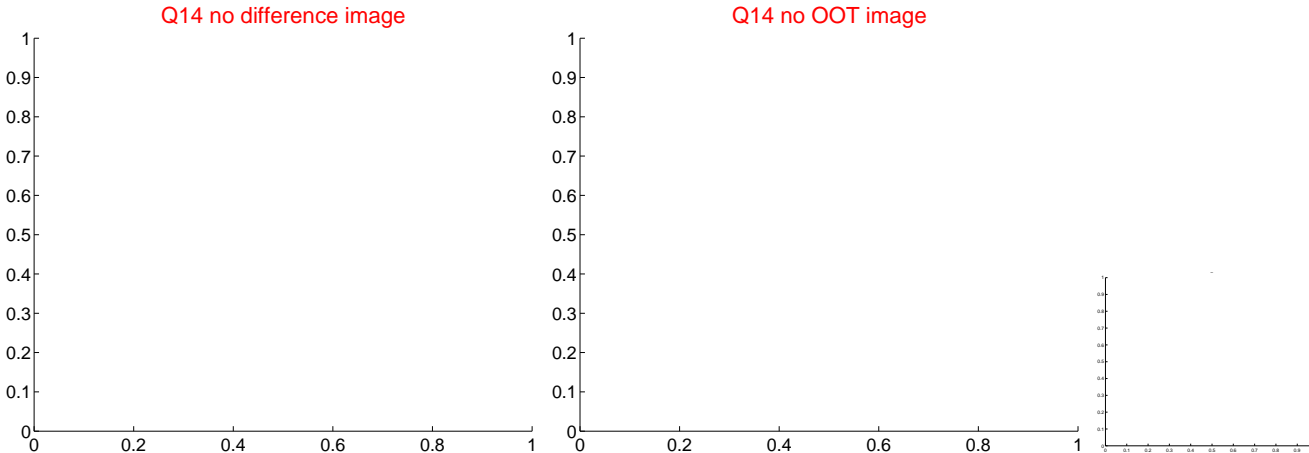
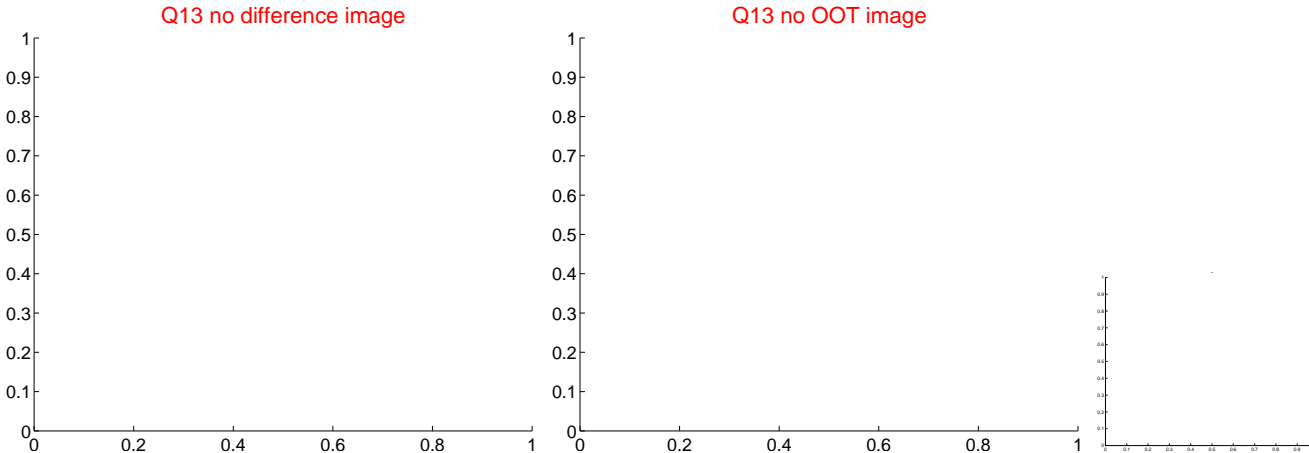
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



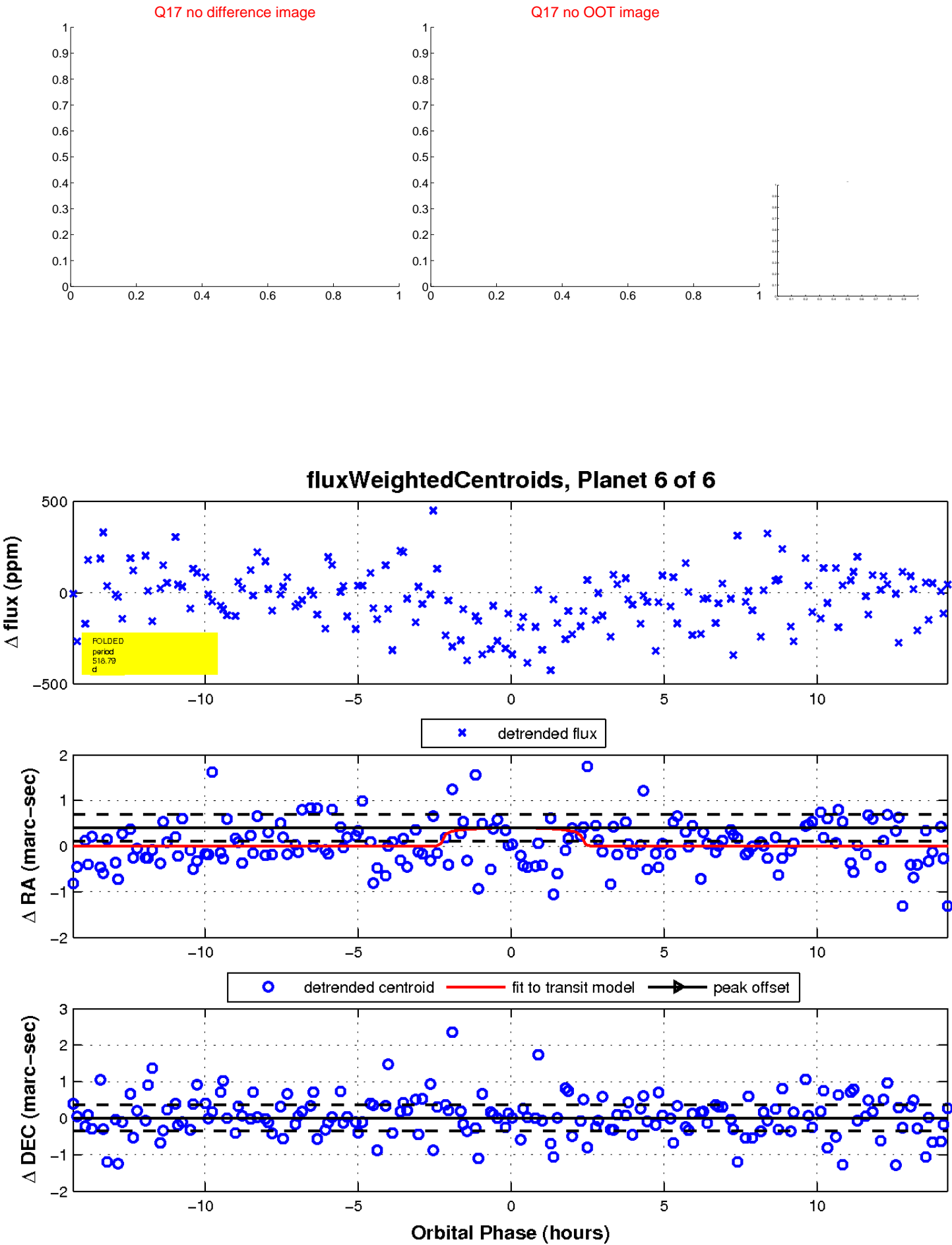
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

