

KIC 009760994

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})
009760994-01	OBS	No	2.262152	132.788922	24.3	4.308	9.2	7.8	1.73	7263	0.96	5115.14
009760994-02	OBS	No	2.261375	132.613490	22.1	7.356	9.6	7.6	1.73	7263	0.90	5117.48
009760994-03	OBS	No	84.409997	166.940371	118.5	5.458	7.6	5.8	1.73	7263	2.14	41.02
009760994-04	OBS	No	113.074935	154.939382	148.0	29.549	7.7	7.1	1.73	7263	2.34	27.78
009760994-05	OBS	No	572.219630	297.459789	224.7	39.688	7.3	5.8	1.73	7263	2.68	3.20

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009760994-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_POS_ALT
009760994-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
009760994-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
009760994-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV
009760994-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

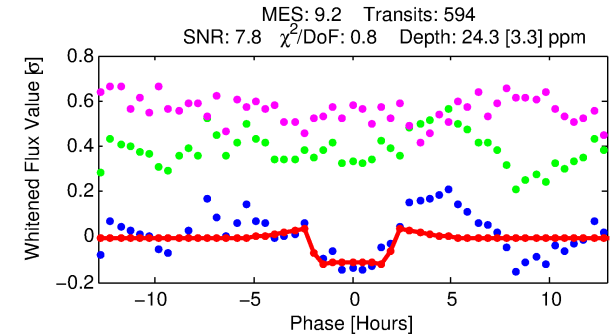
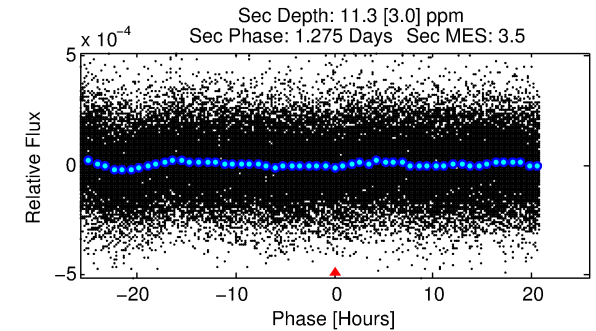
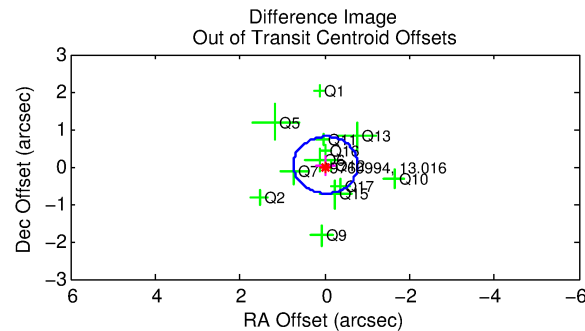
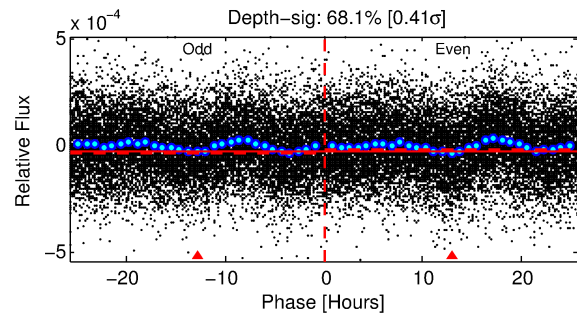
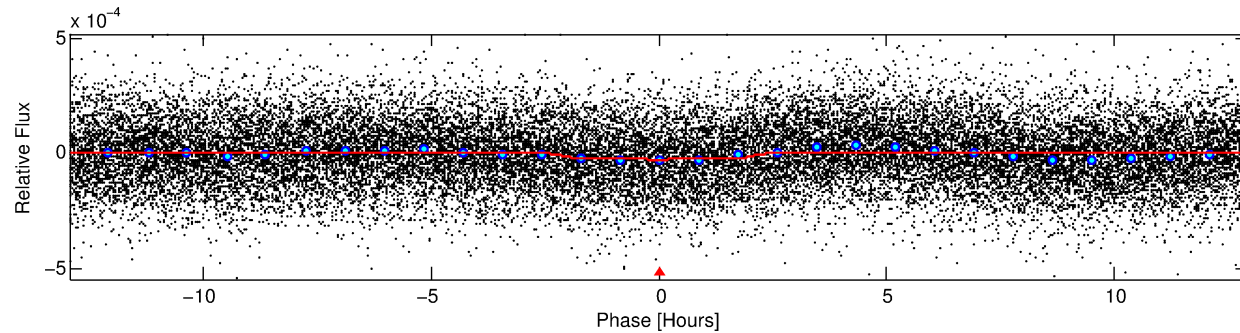
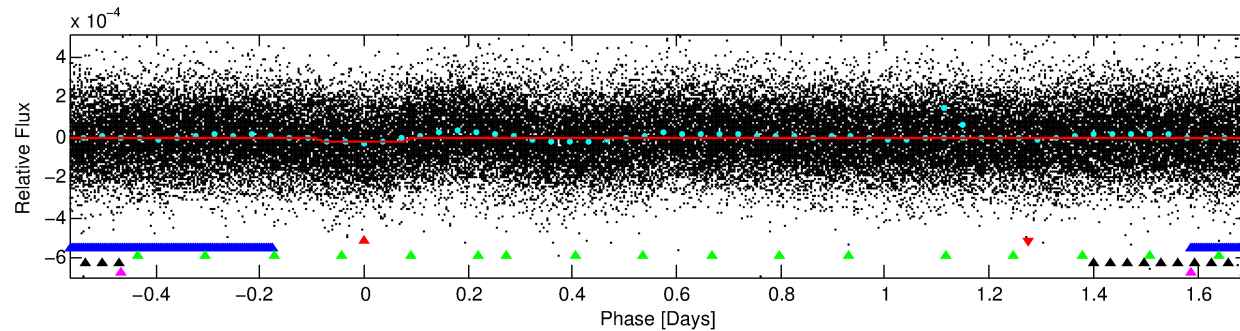
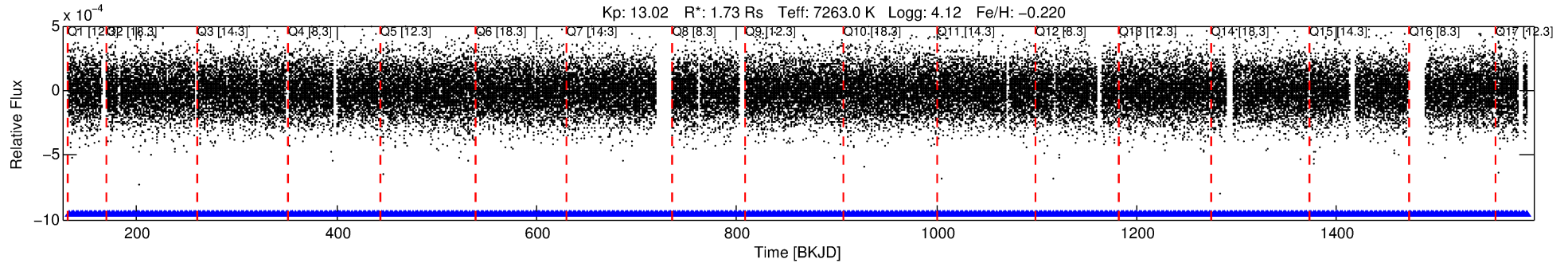
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009760994-01

No Significant Match Found

DV One-Page Summary

KIC: 9760994 Candidate: 1 of 5 Period: 2.262 d



DV Fit Results:

Period = 2.26215 [0.00002] d
Epoch = 132.7889 [0.0044] BKJD
Rp/R* = 0.0051 [0.0011]
a/R* = 2.29 [2.35]
b = 0.86 [0.39]
Seff = 5115.14 [1973.72]
Teq = 2156 [208] K
Rp = 0.96 [0.35] Re
a = 0.0381 [0.0093] AU
Ag = 9.78 [5.95] [1.48 σ]
Teffp = 5896 [775] K [4.66 σ]

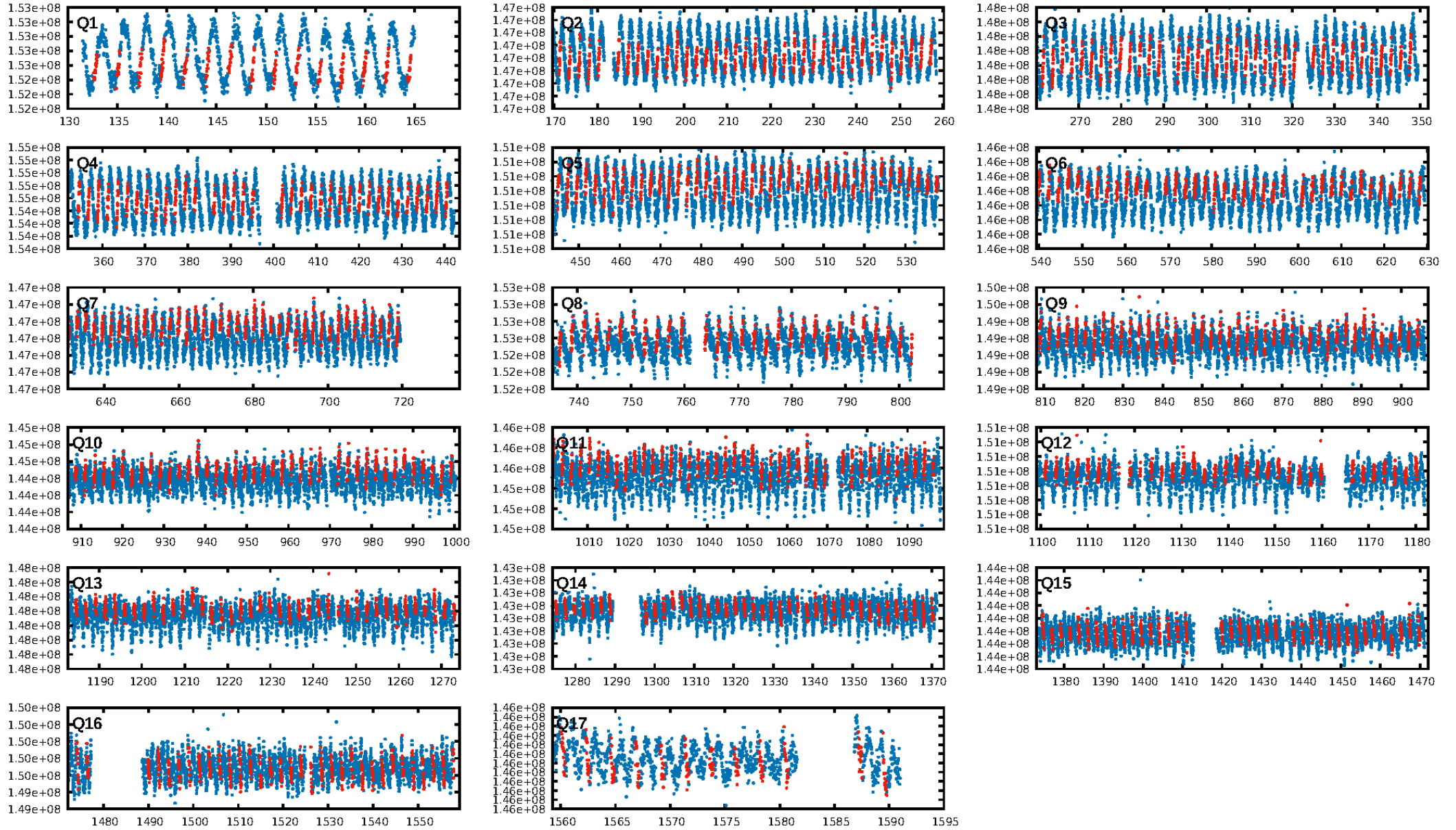
DV Diagnostic Results:

ShortPeriod-sig: 0.2% [0.00 σ]
LongPeriod-sig: 100.0% [283.53 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: 5.30e-14
RollingBand-fgt: 1.00 [567/567]
GhostDiagnostic-chr: 1.92
Centroid-sig: 18.3%
Centroid-so: 1.161 arcsec [1.34 σ]
OotOffset-rm: 0.052 arcsec [0.20 σ]
KicOffset-rm: 0.075 arcsec [0.26 σ]
OotOffset-st: 3/3/2/5 [13]
KicOffset-st: 3/3/2/5 [13]
DiffImageQuality-fgm: 0.38 [5/13]
DiffImageOverlap-fno: 0.29 [5/17]

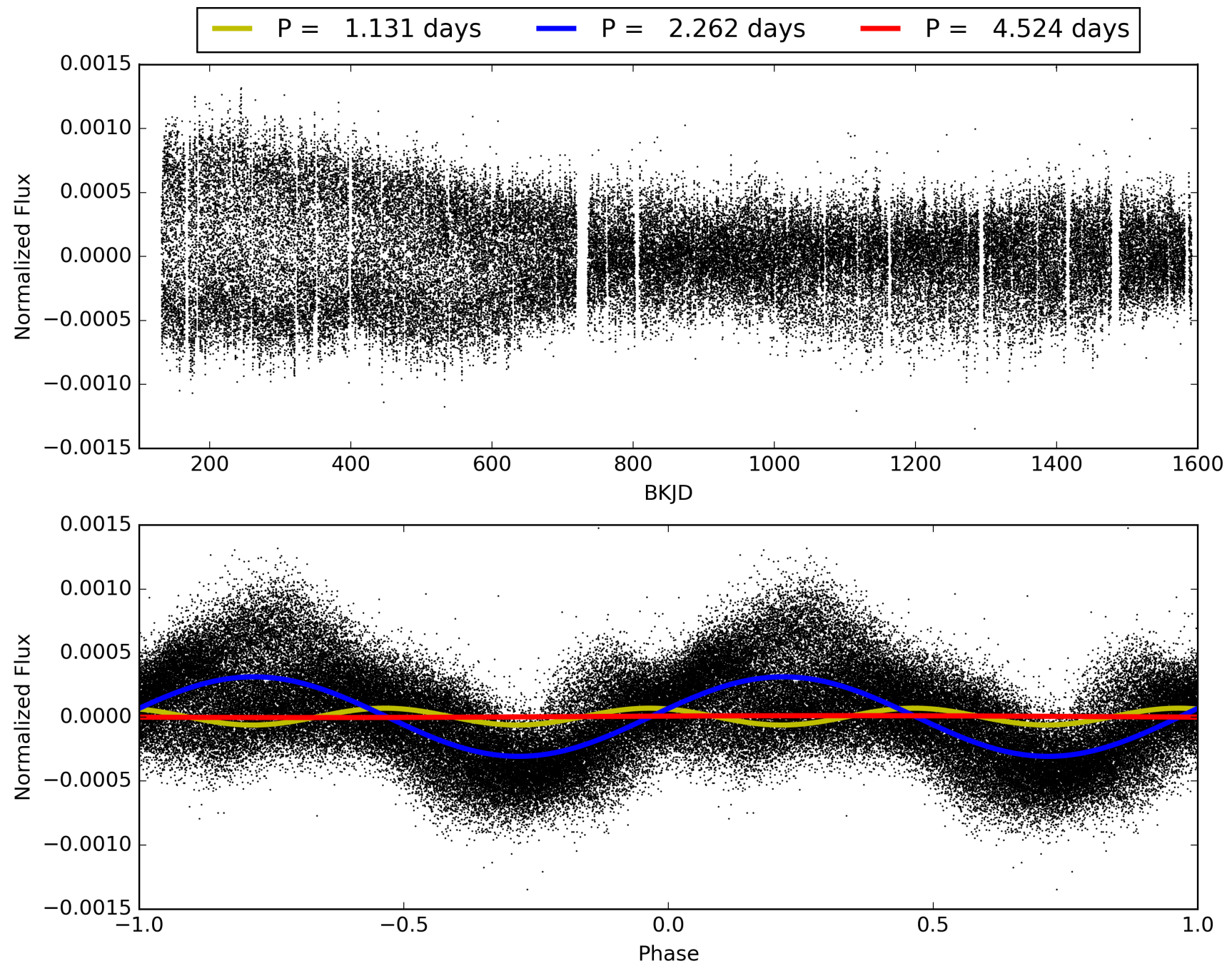
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009760994-01, PDC Light Curves

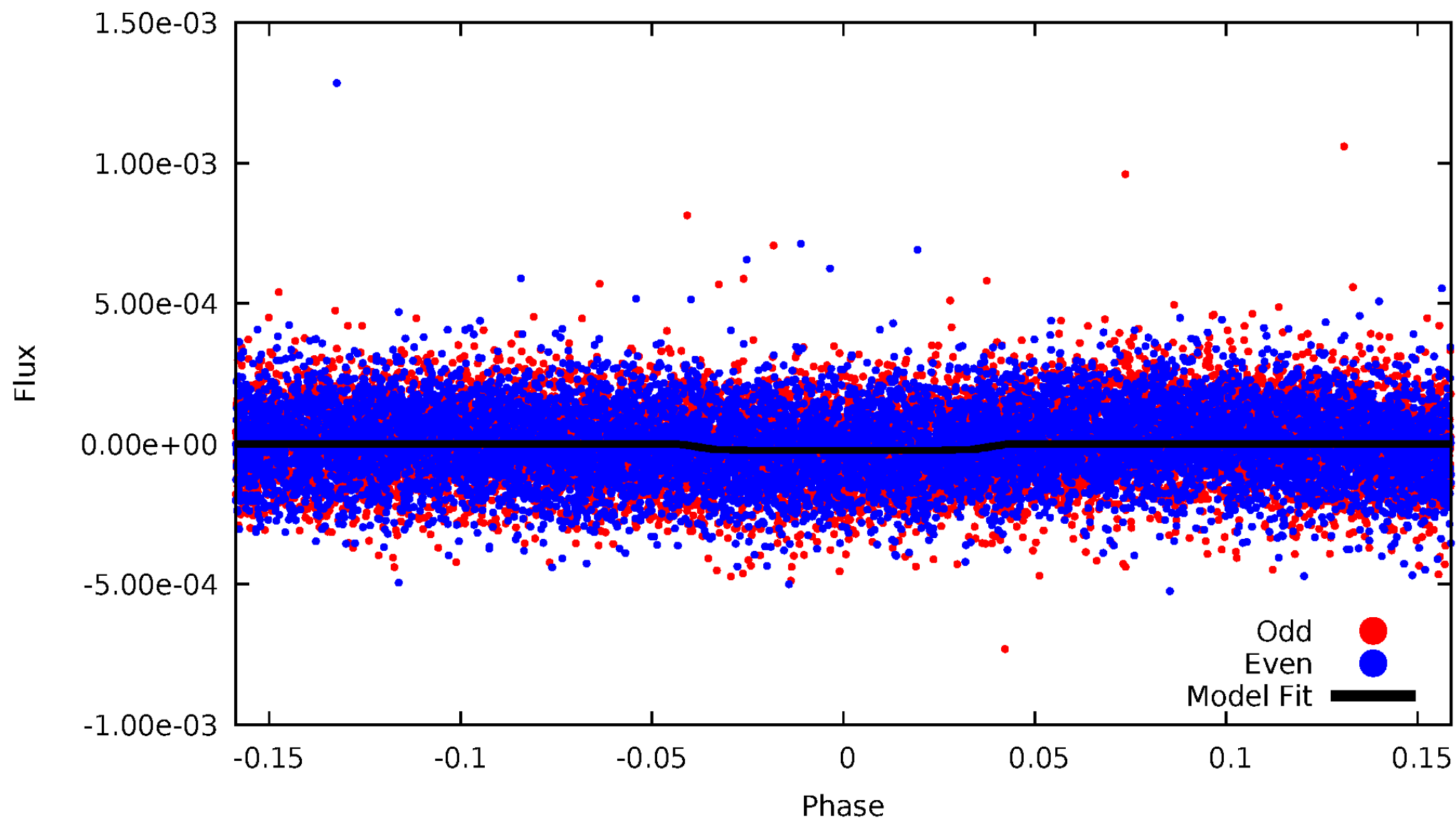


TCE 009760994-01



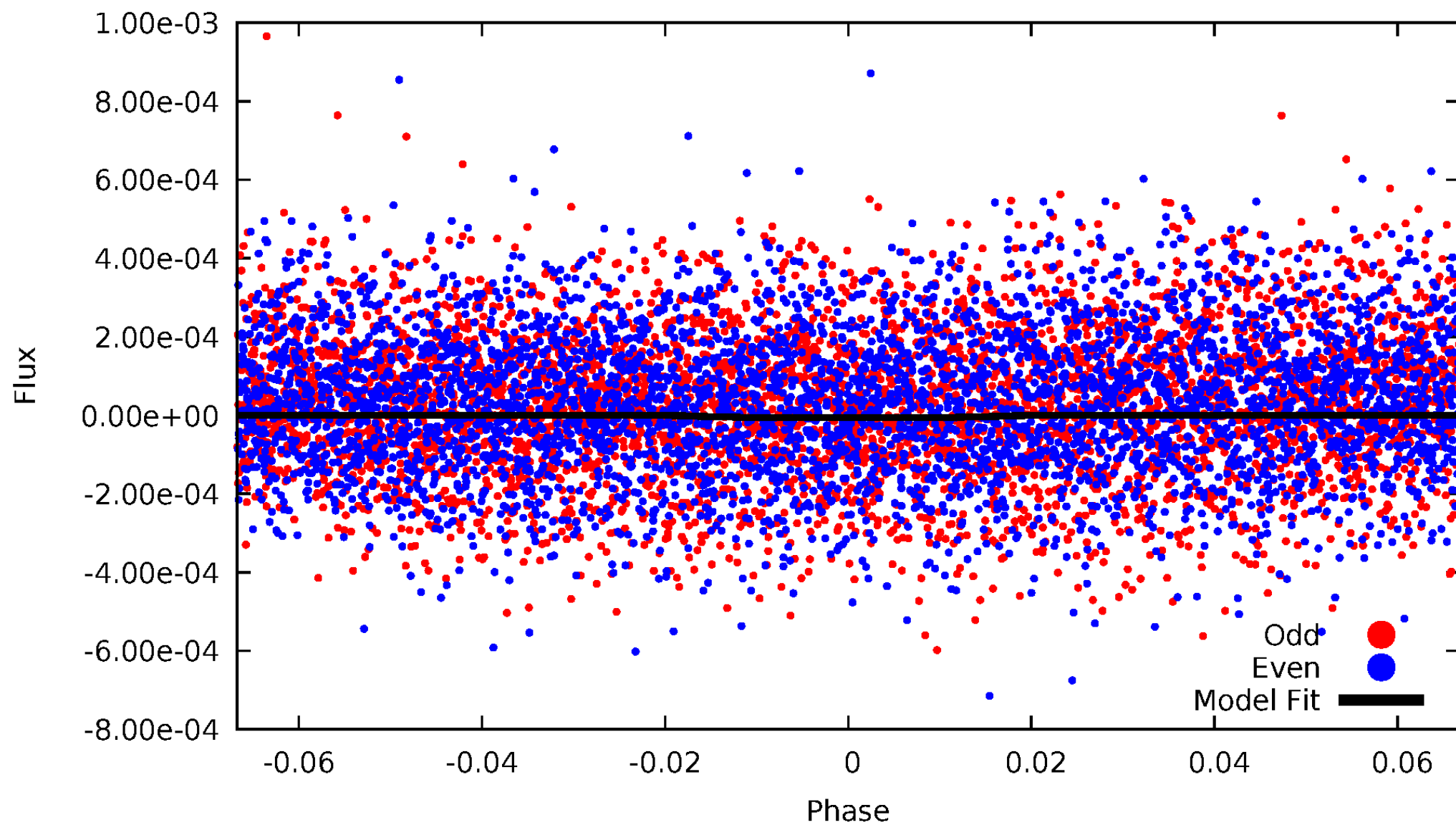
DV Odd/Even

TCE 009760994-01

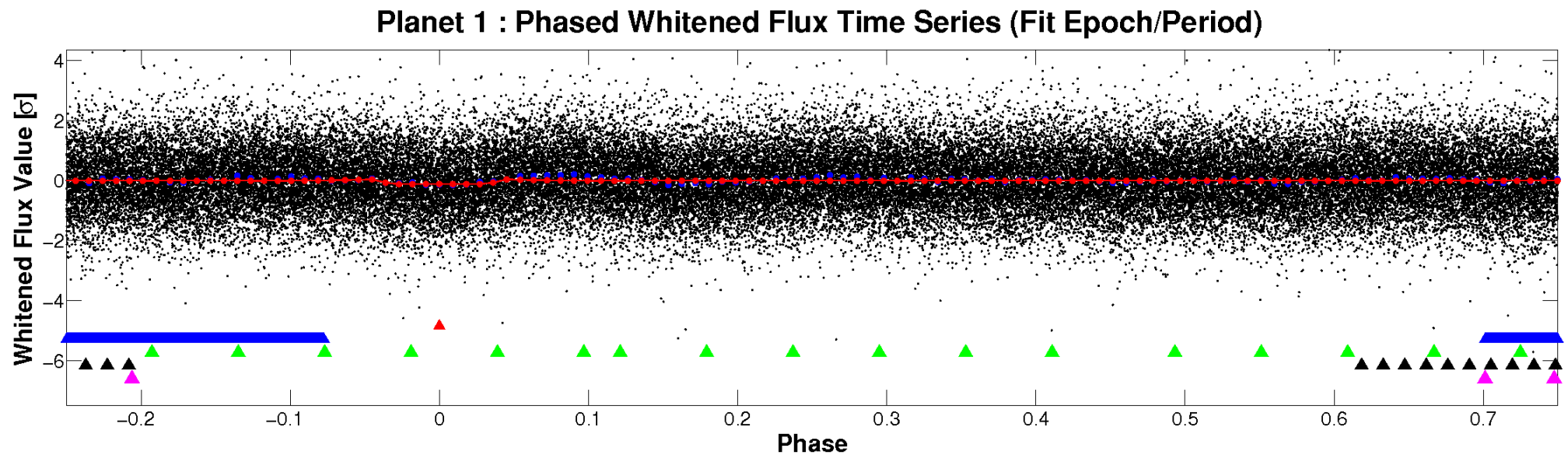
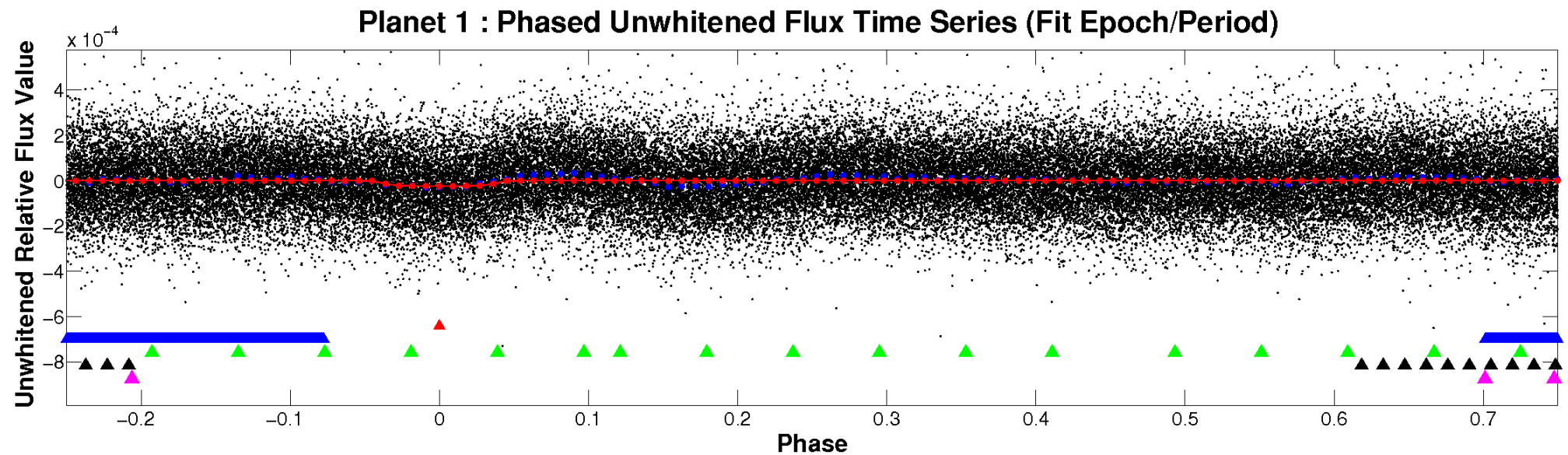


ALT Odd/Even

TCE 009760994-01

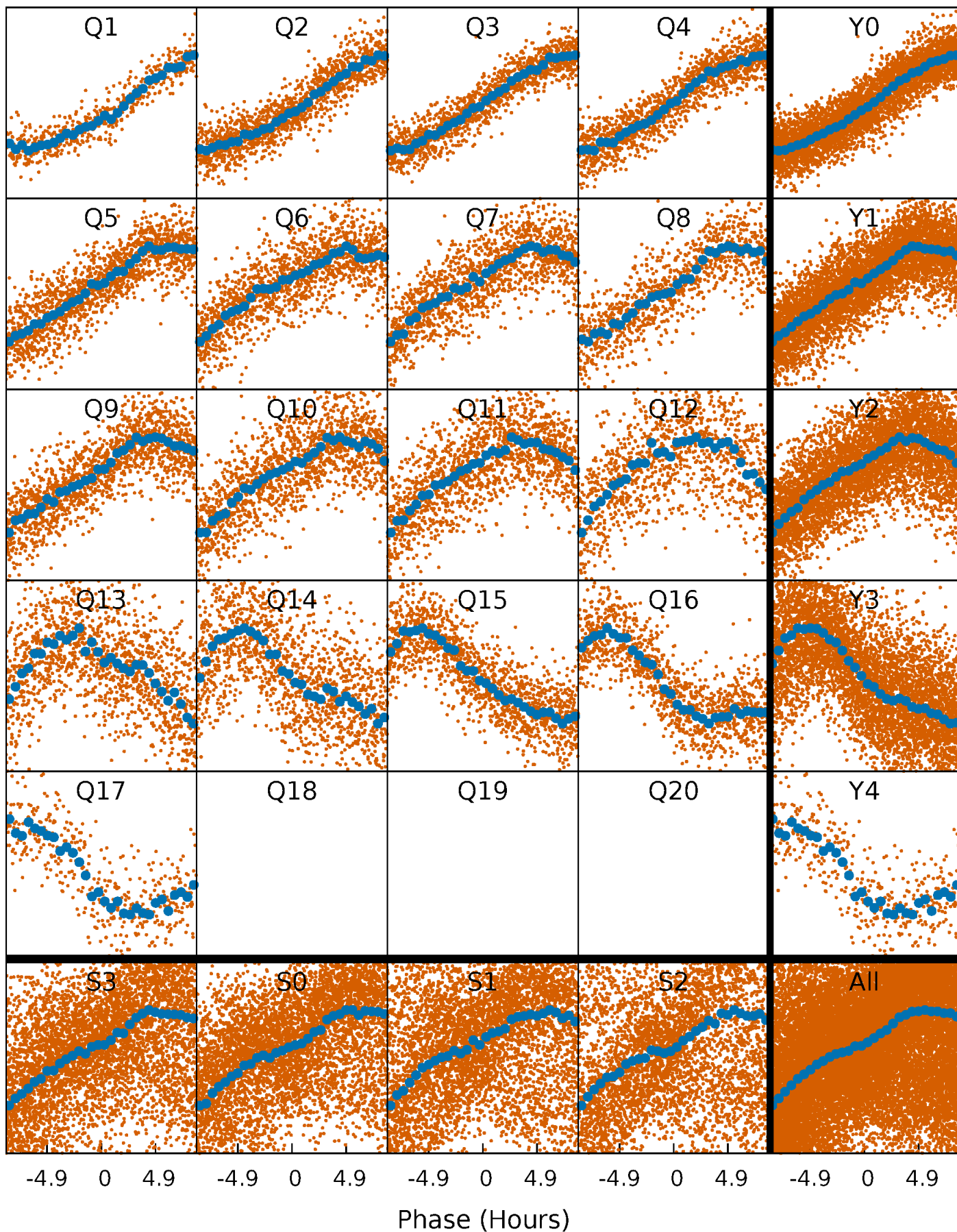


Non-Whitened Vs. Whitened Light Curve



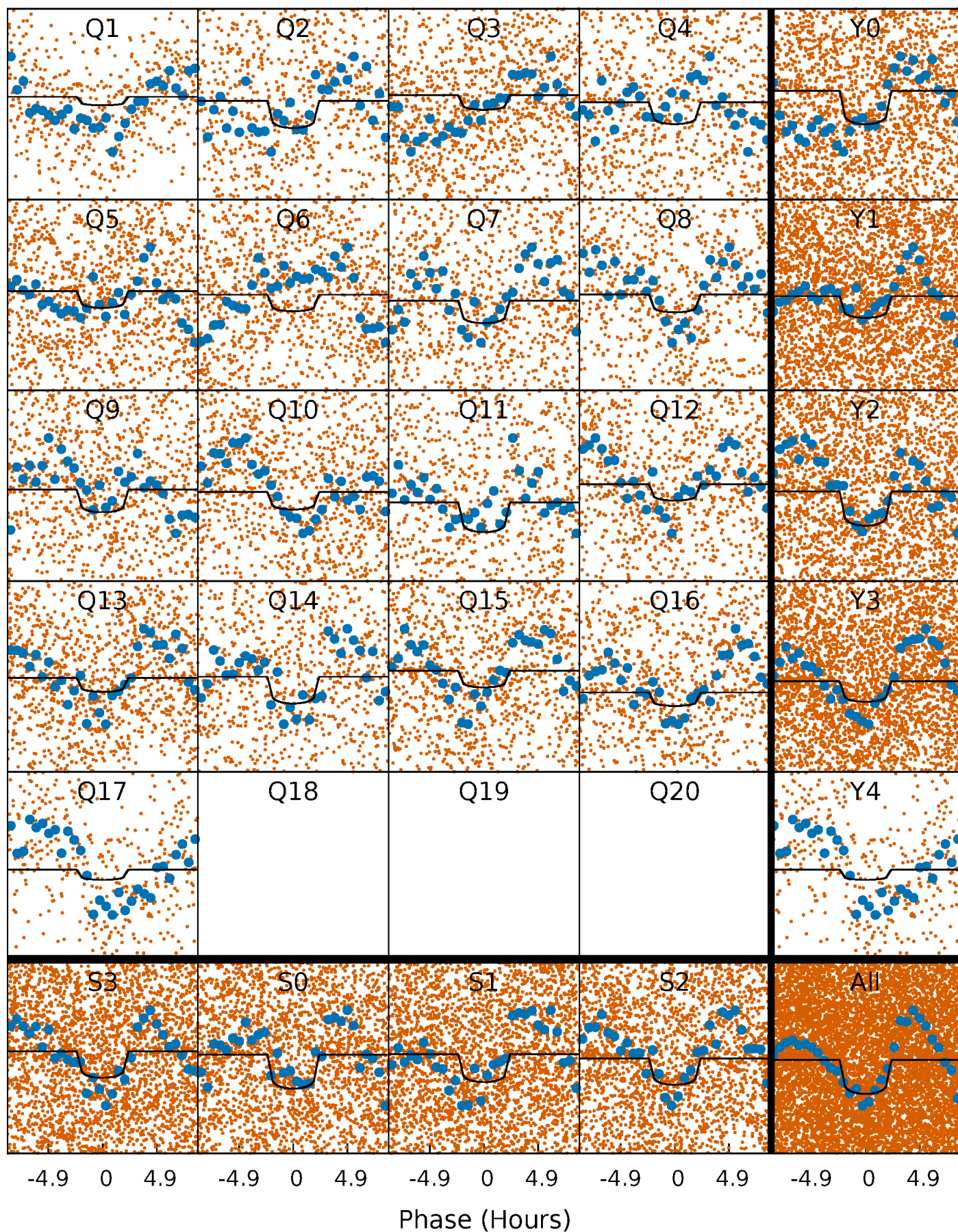
PDC Quarter-Phased Transit Curves

TCE 009760994-01 P= 2.262152 Days $T_0=132.788922$ (BKJD)



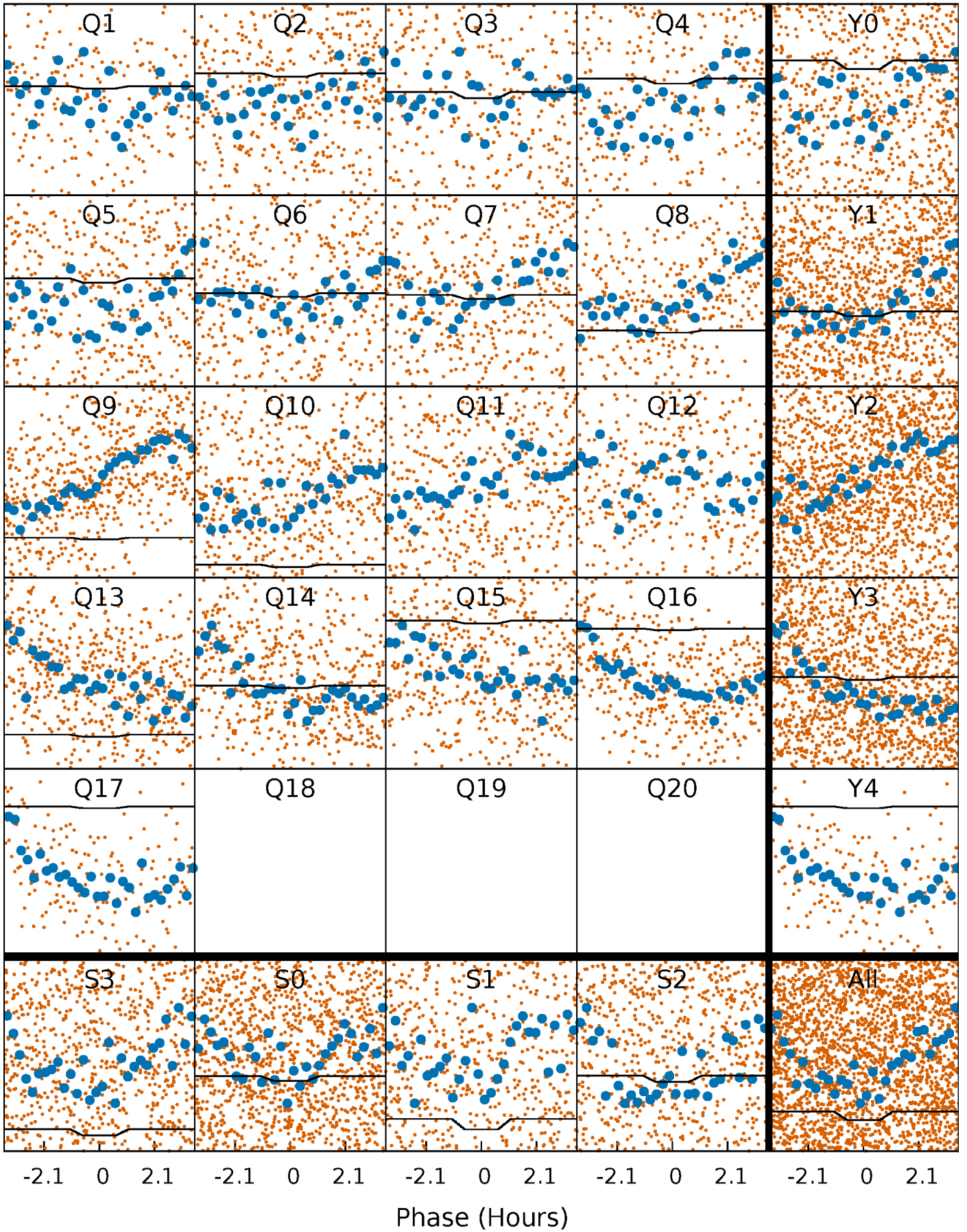
DV Quarter-Phased Transit Curves

TCE 009760994-01 P= 2.262152 Days $T_0=132.788922$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

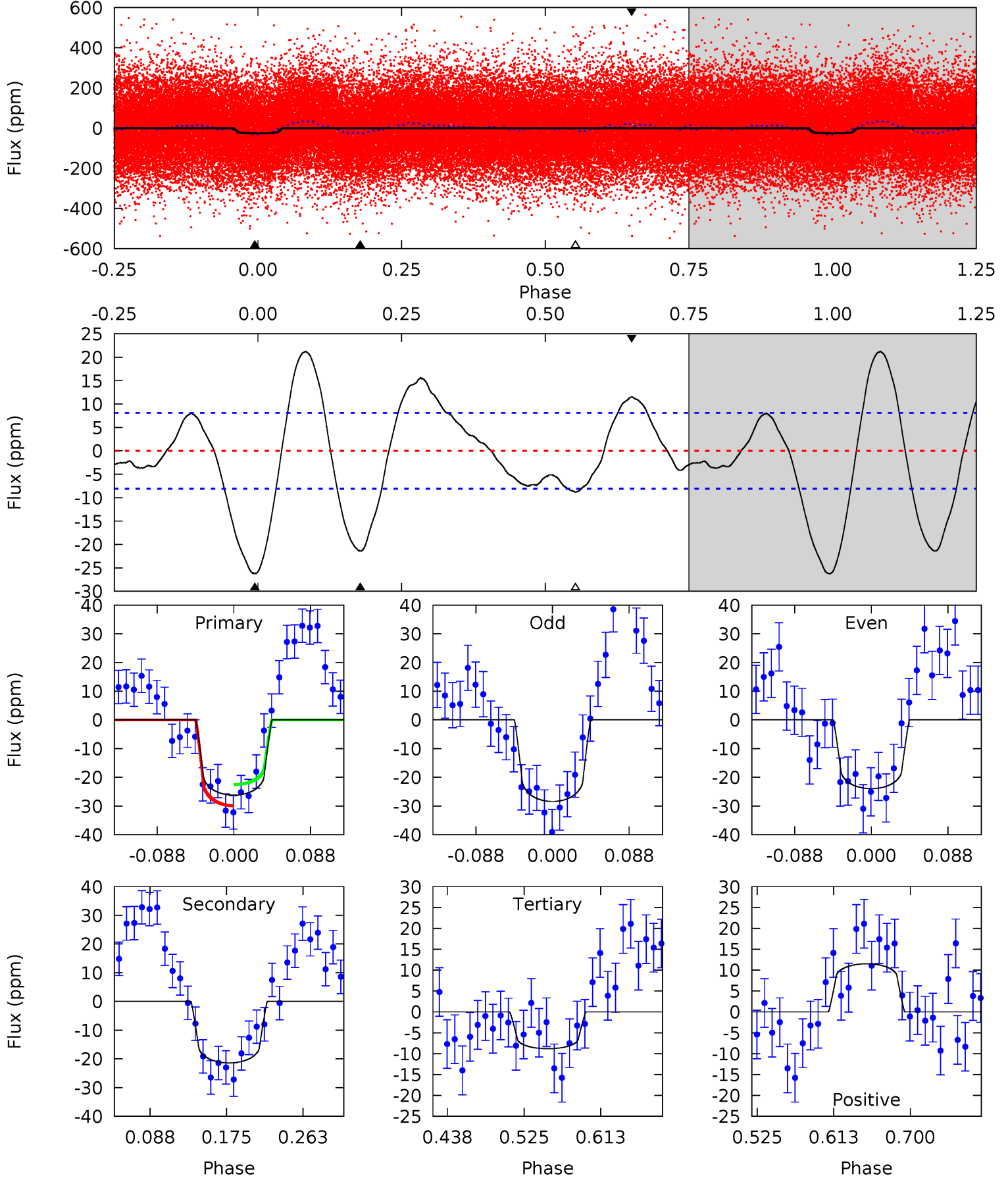
TCE 009760994-01 P= 2.262261 Days $T_0=132.793391$ (BKJD)



DV Model-Shift Uniqueness Test

009760994-01, P = 2.262152 Days, E = 130.526770 Days

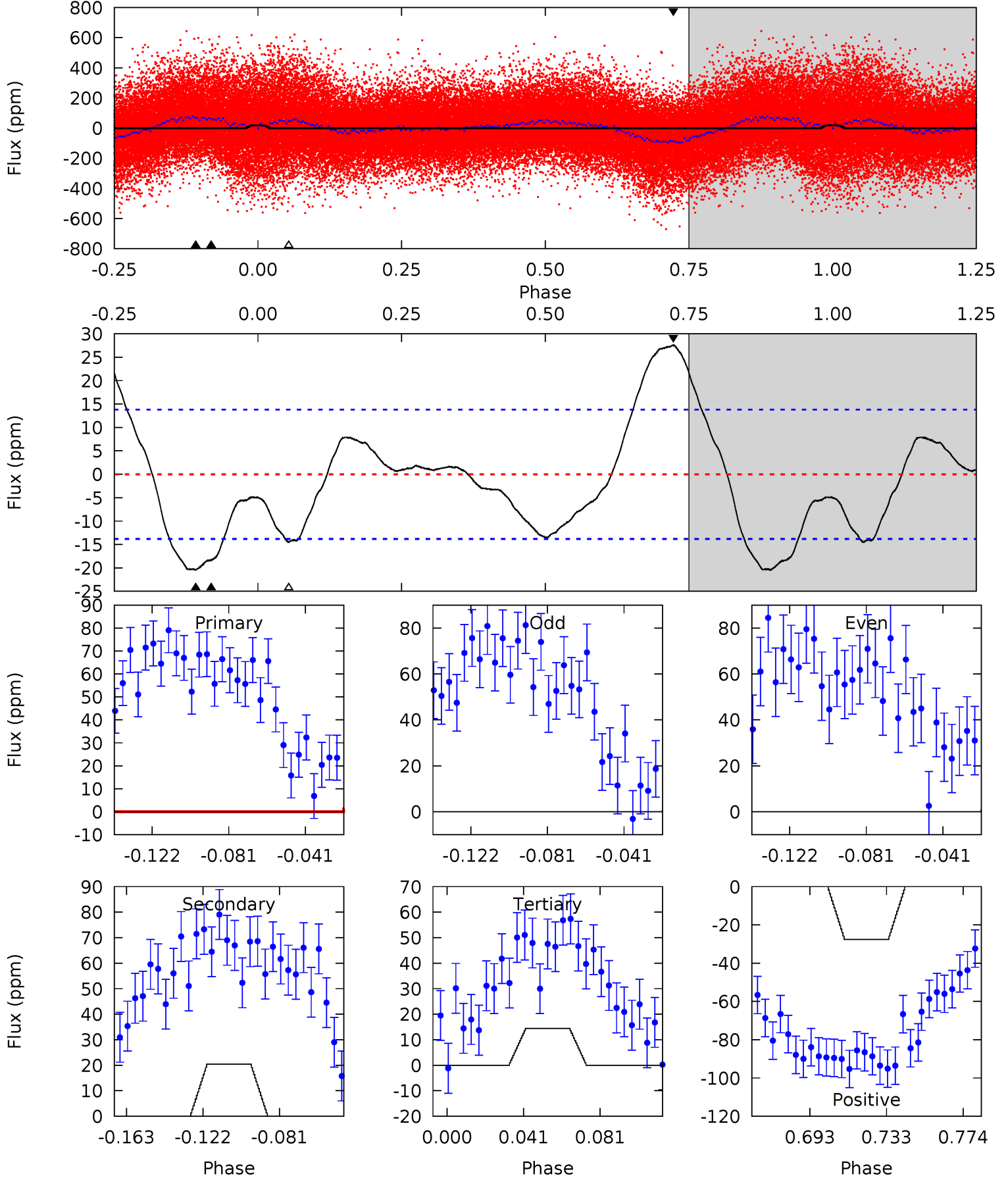
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.9	12.1	5.00	6.54	4.59	1.71	3.99	9.89	8.35	7.14	5.61	1.28	0.91	0.45	2.09



Alt Model-Shift Uniqueness Test

009760994-01, P = 2.262261 Days, E = 130.531130 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.31	7.02	4.98	9.50	4.75	2.05	3.74	1.34	-3.18	2.05	-2.47	1.72	0.93	0.57	0.34



Stellar Parameters For KIC 009760994

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7263^{+228}_{-304}	$4.123^{+0.153}_{-0.187}$	$-0.220^{+0.250}_{-0.350}$	$1.727^{+0.508}_{-0.416}$	$1.442^{+0.211}_{-0.234}$	$0.394^{+0.330}_{-0.195}$
	+3%/-4%	+4%/-5%	+114%/-159%	+29%/-24%	+15%/-16%	+84%/-49%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009760994-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-21 ± 2	$0.98^{+0.26}_{-0.23}$	3035^{+228}_{-218}	6804^{+1040}_{-728}	18^{+12}_{-7}
Alt.	-20 ± 3	$0.46^{+0.22}_{-0.22}$	3036^{+236}_{-217}	11194^{+8971}_{-2742}	77^{+210}_{-41}

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

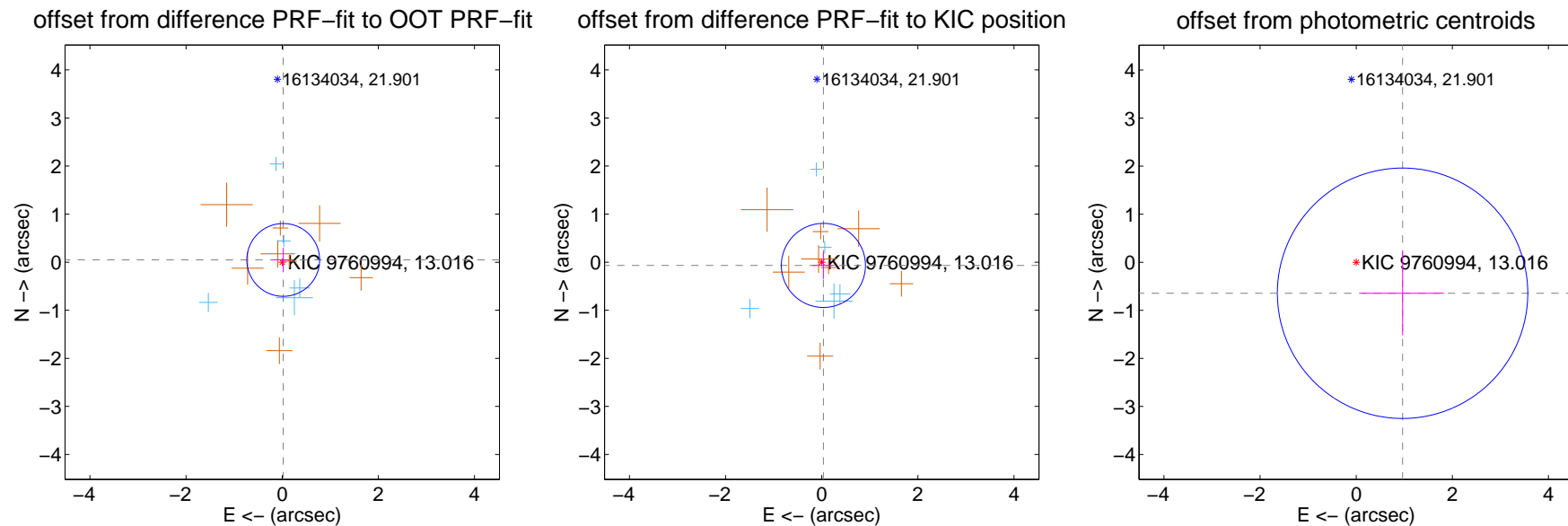
DV Centroid Data

Supplemental centroid analysis for 009760994-01. Kepler magnitude: 13.02. Transit SNR 7.80

There are 5 quarters with good PRF difference image offsets

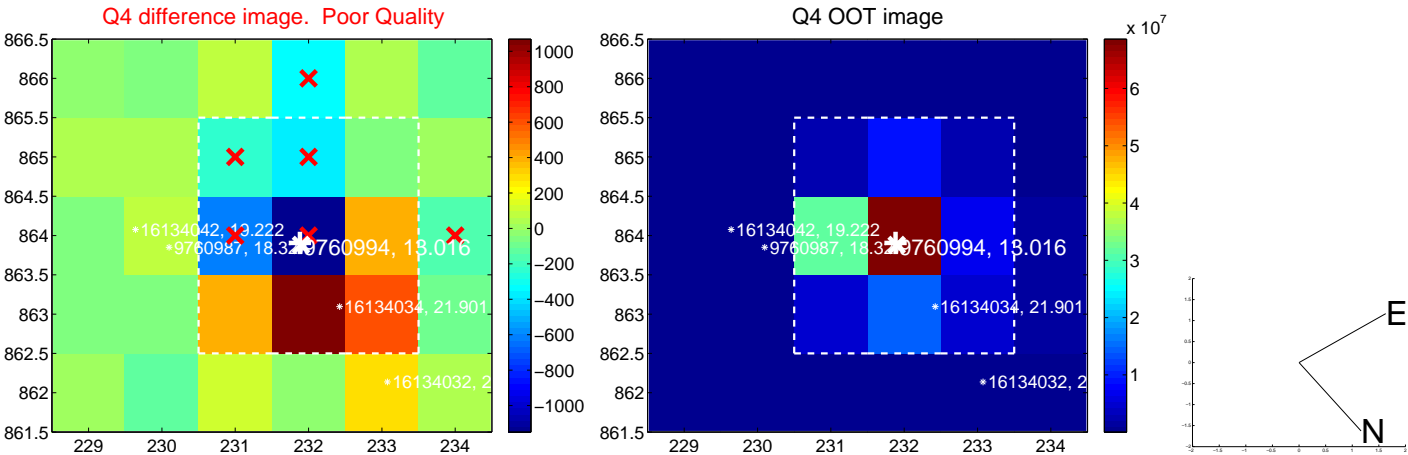
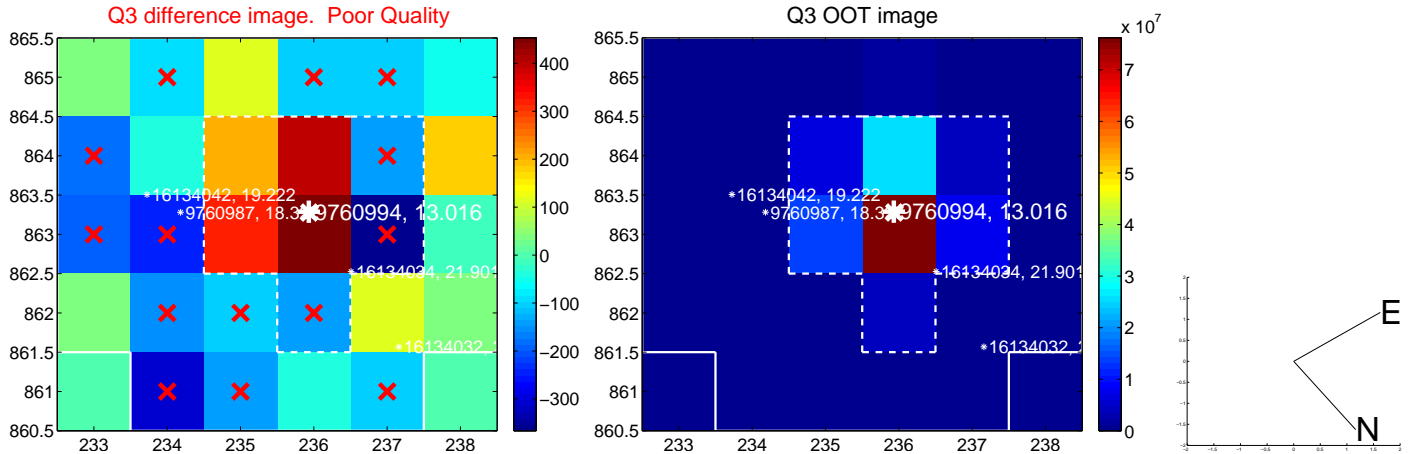
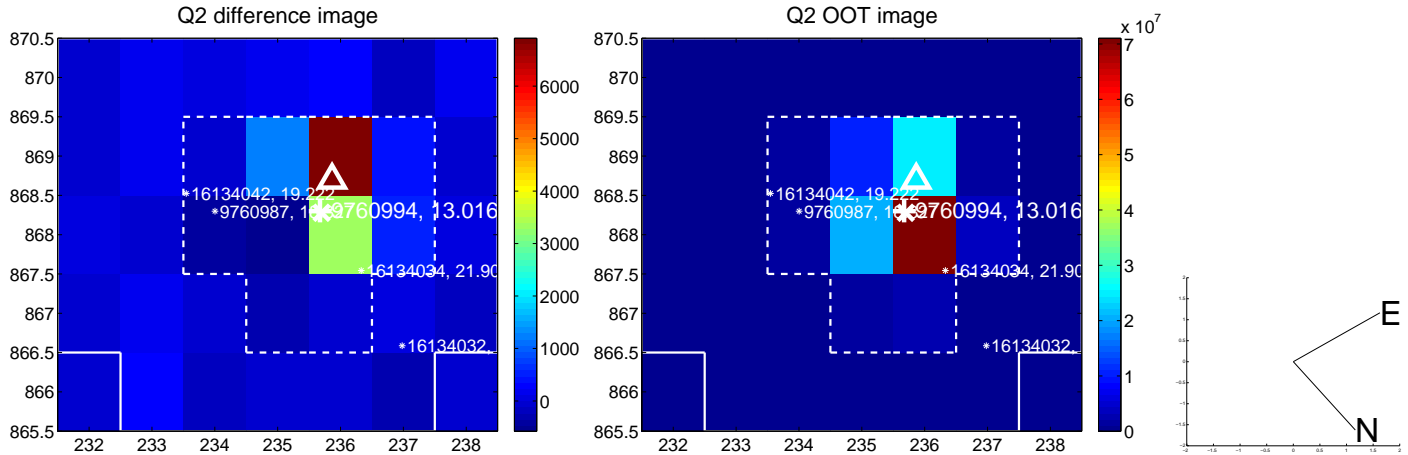
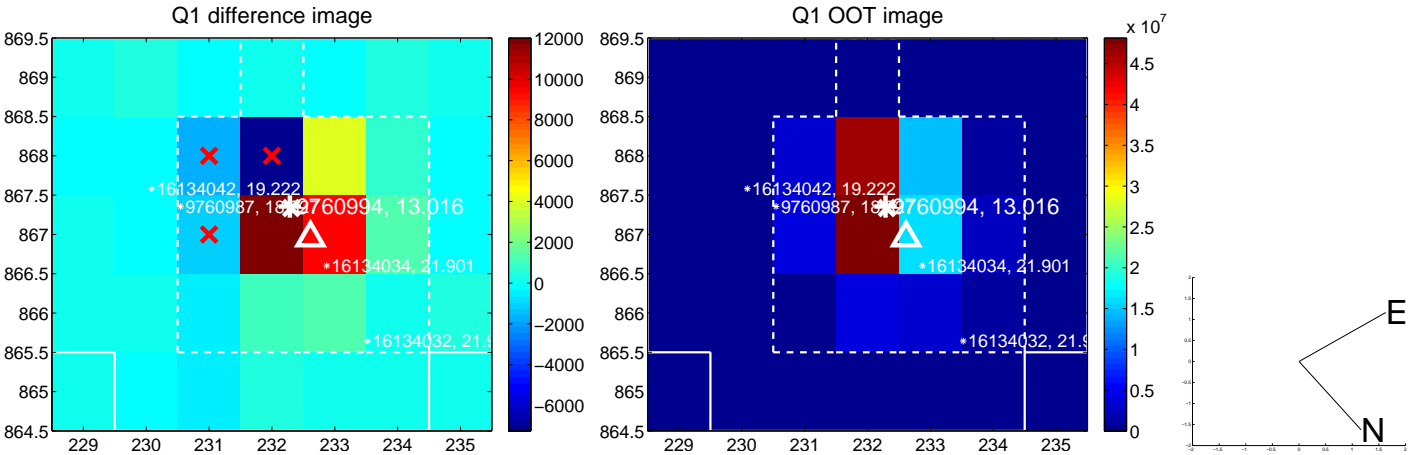
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.052 ± 0.252	0.20	-0.021 ± 0.227	0.047 ± 0.252
PRF-fit source offset from KIC position	0.075 ± 0.292	0.26	-0.035 ± 0.230	-0.067 ± 0.281
photometric centroid source offset	1.16 ± 0.87	1.34	-0.96 ± 0.87	-0.65 ± 0.87

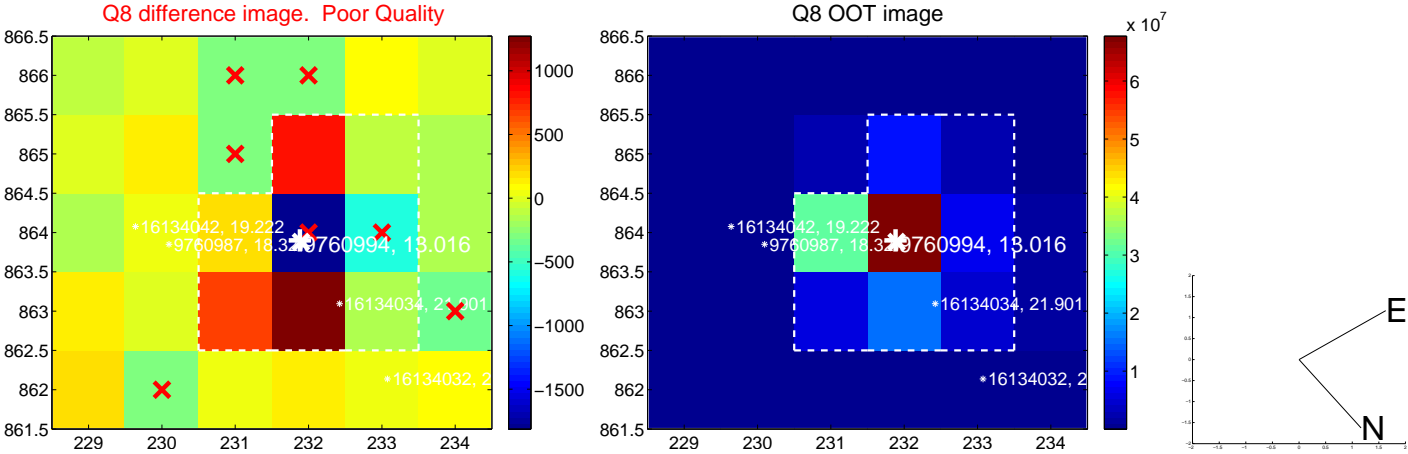
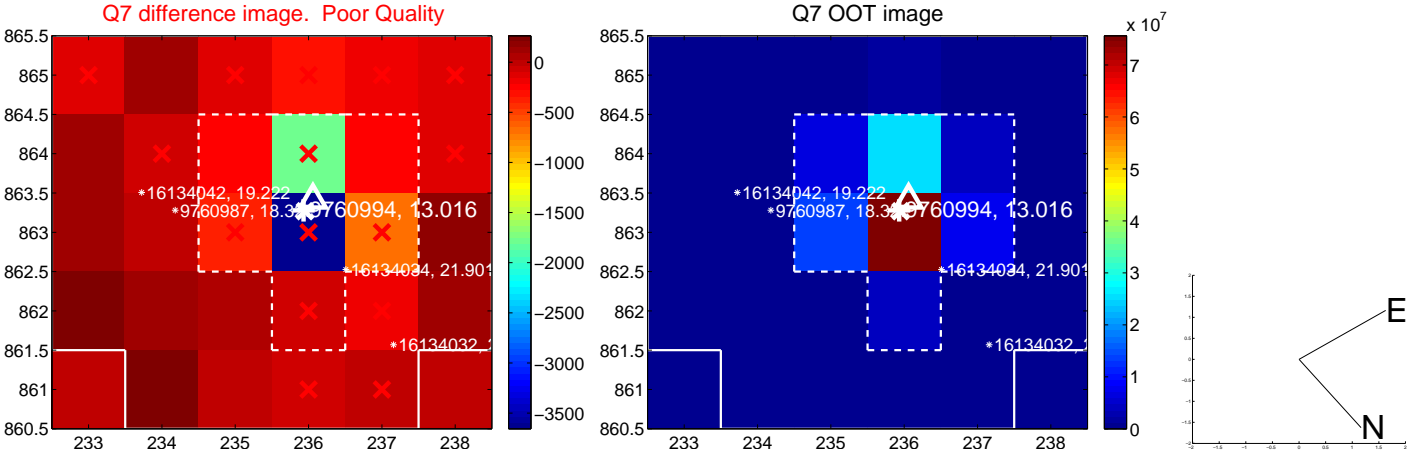
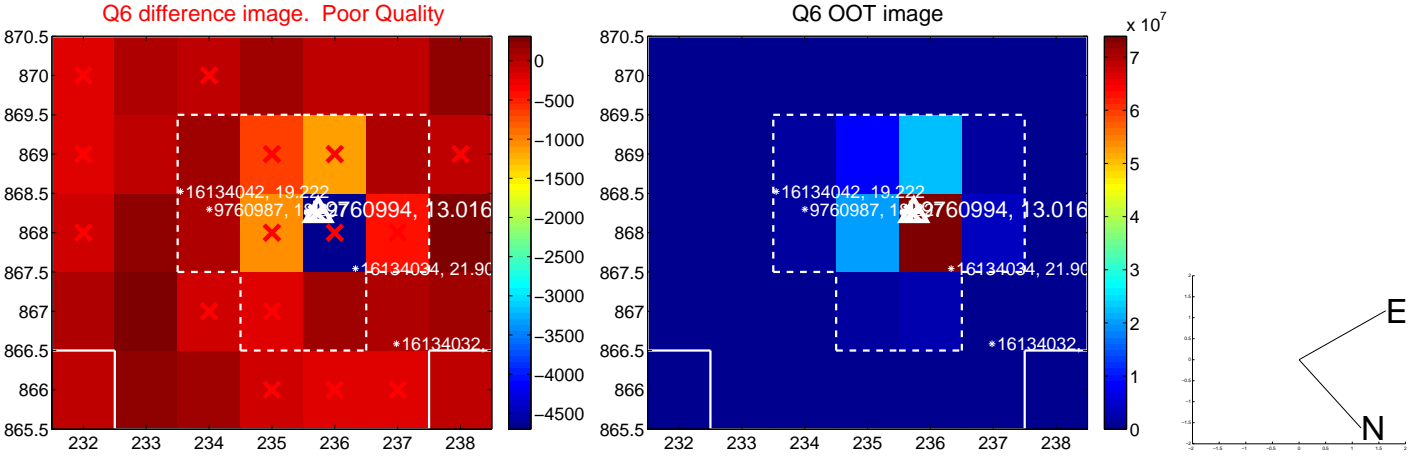
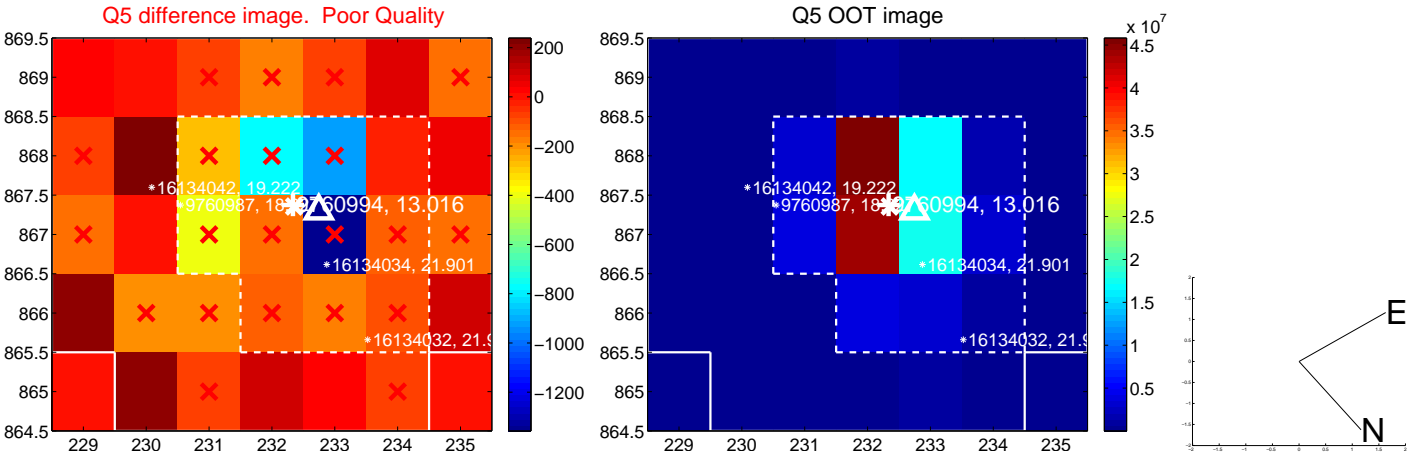


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

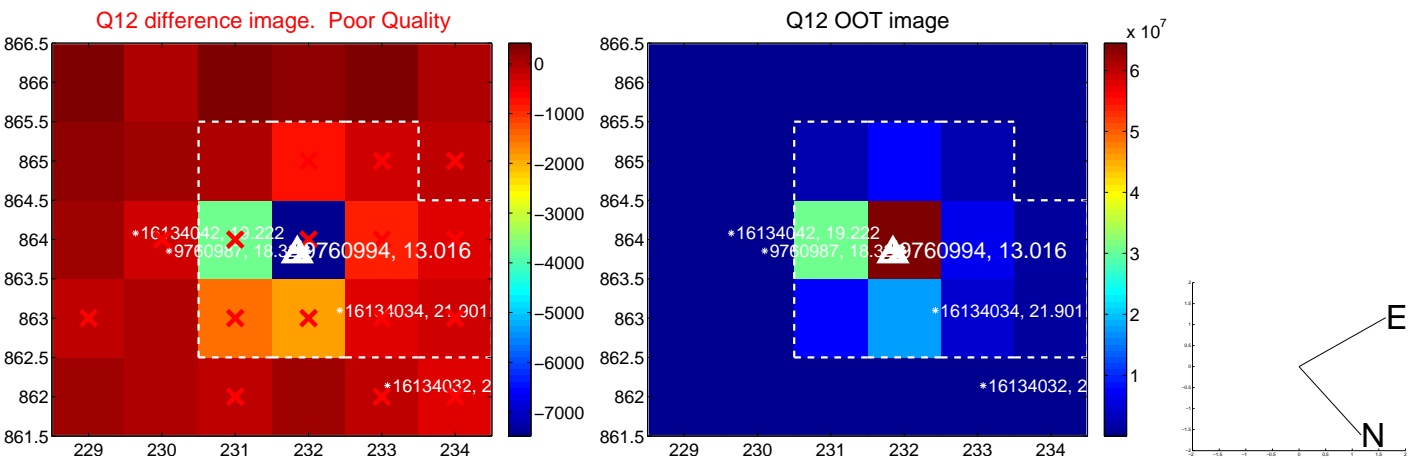
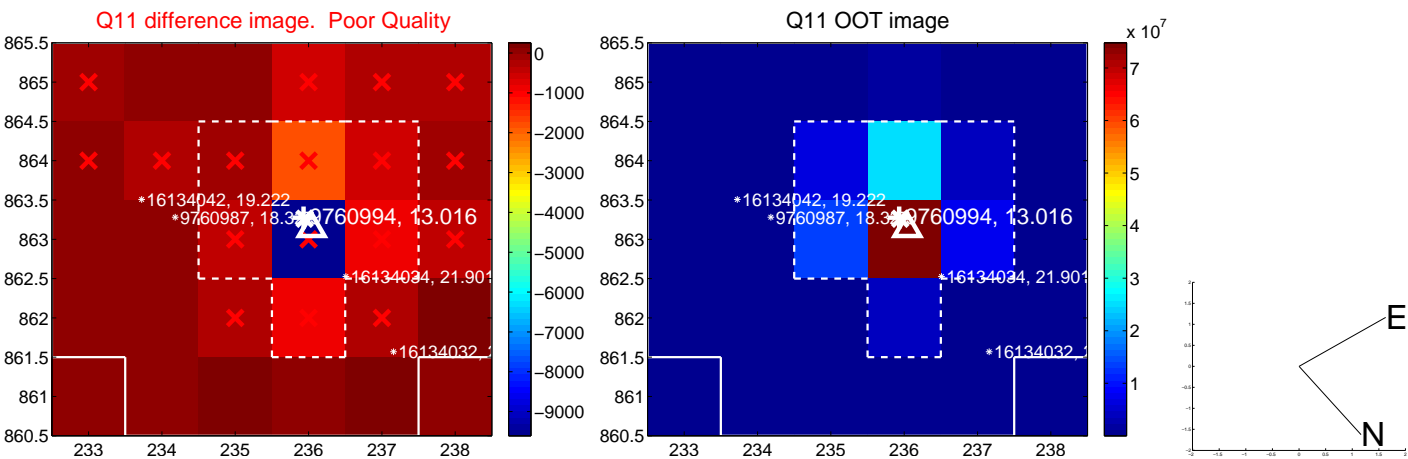
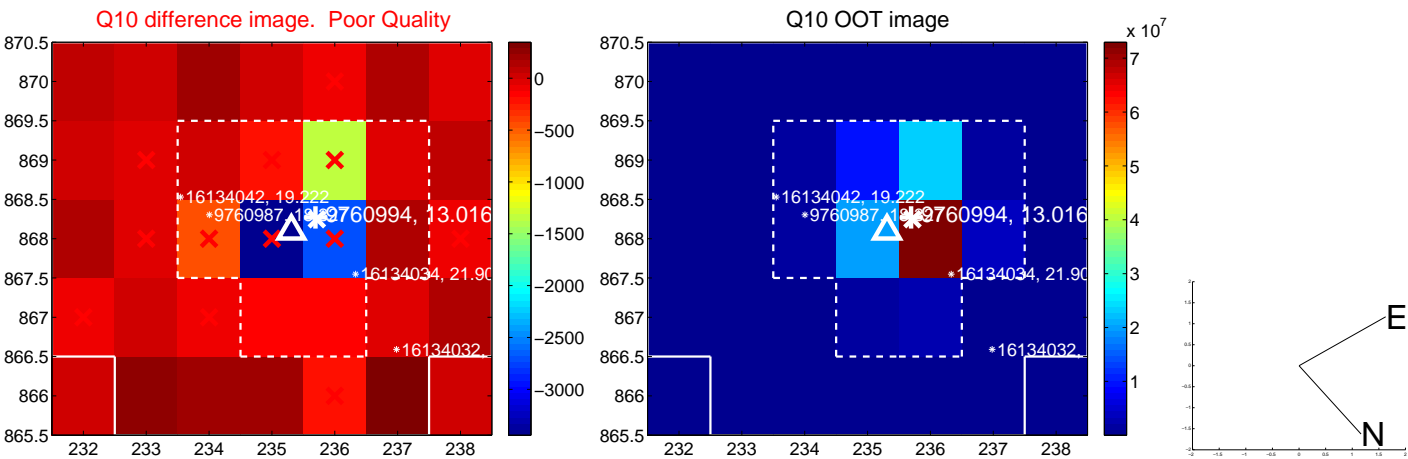
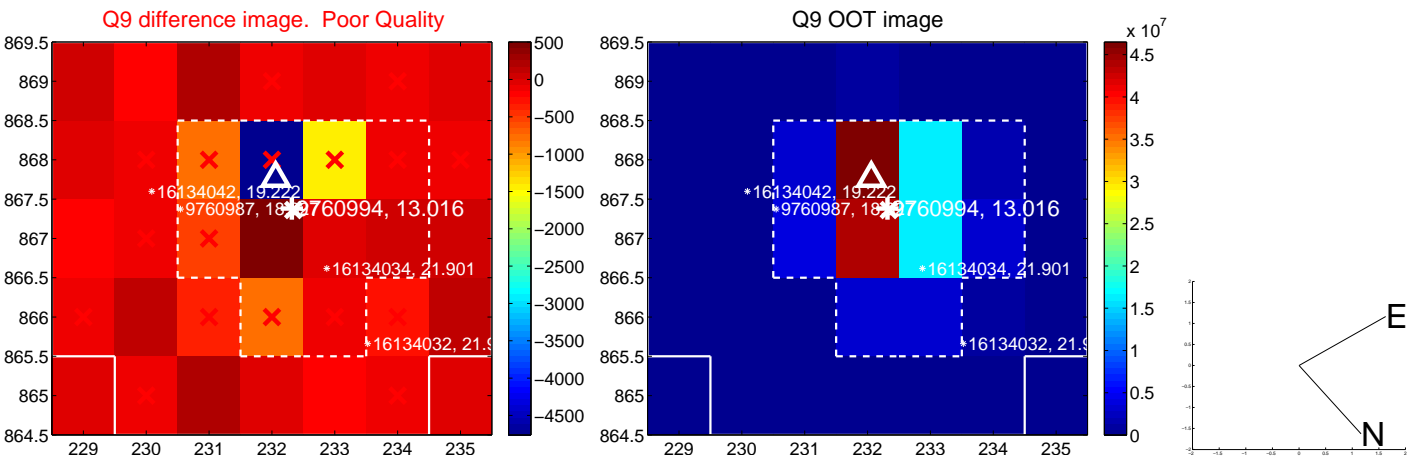
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



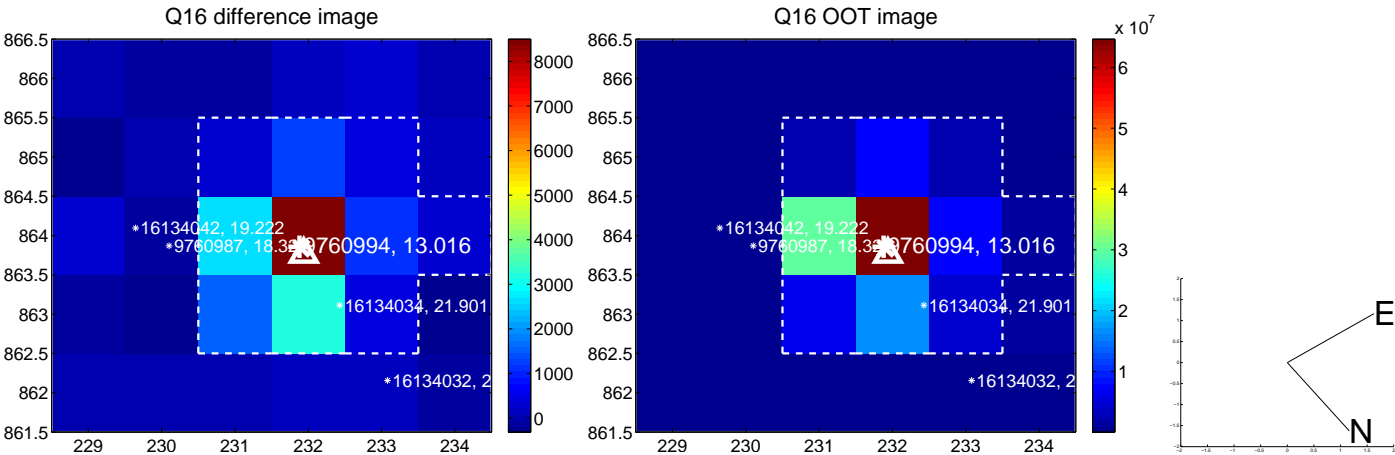
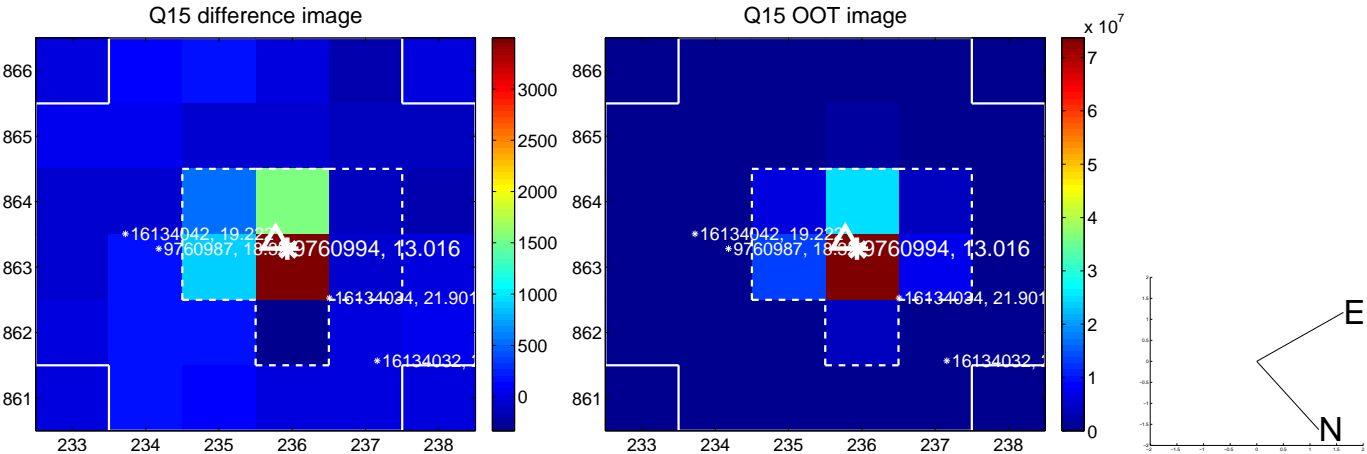
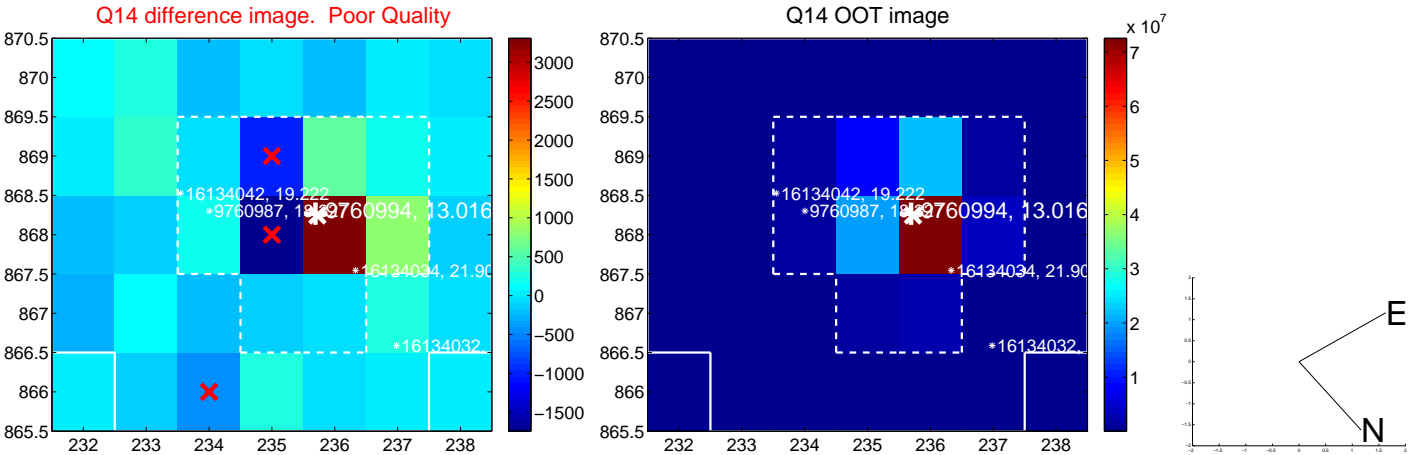
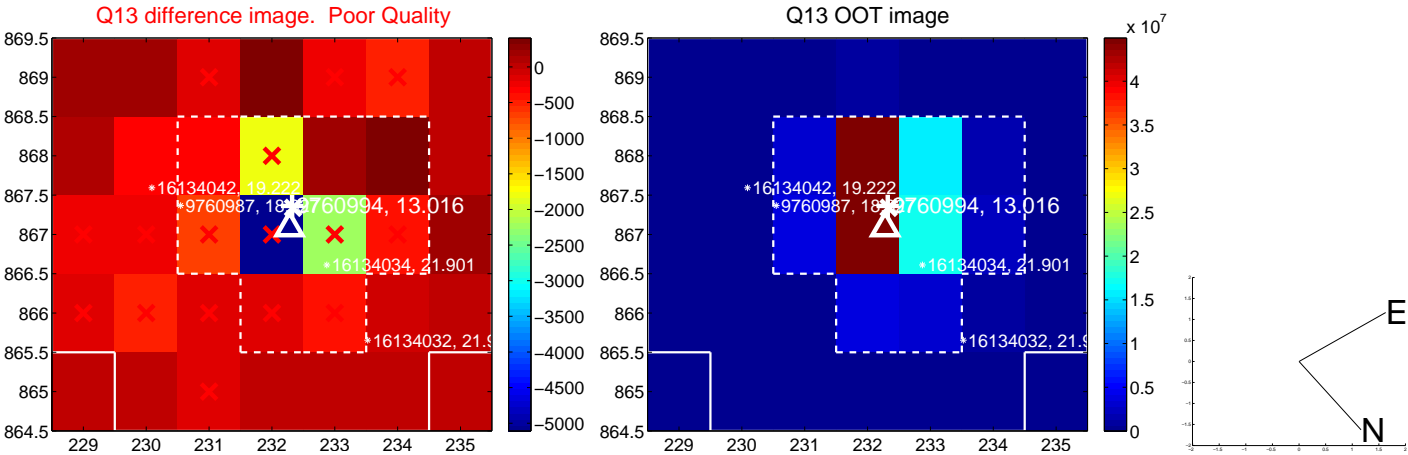
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

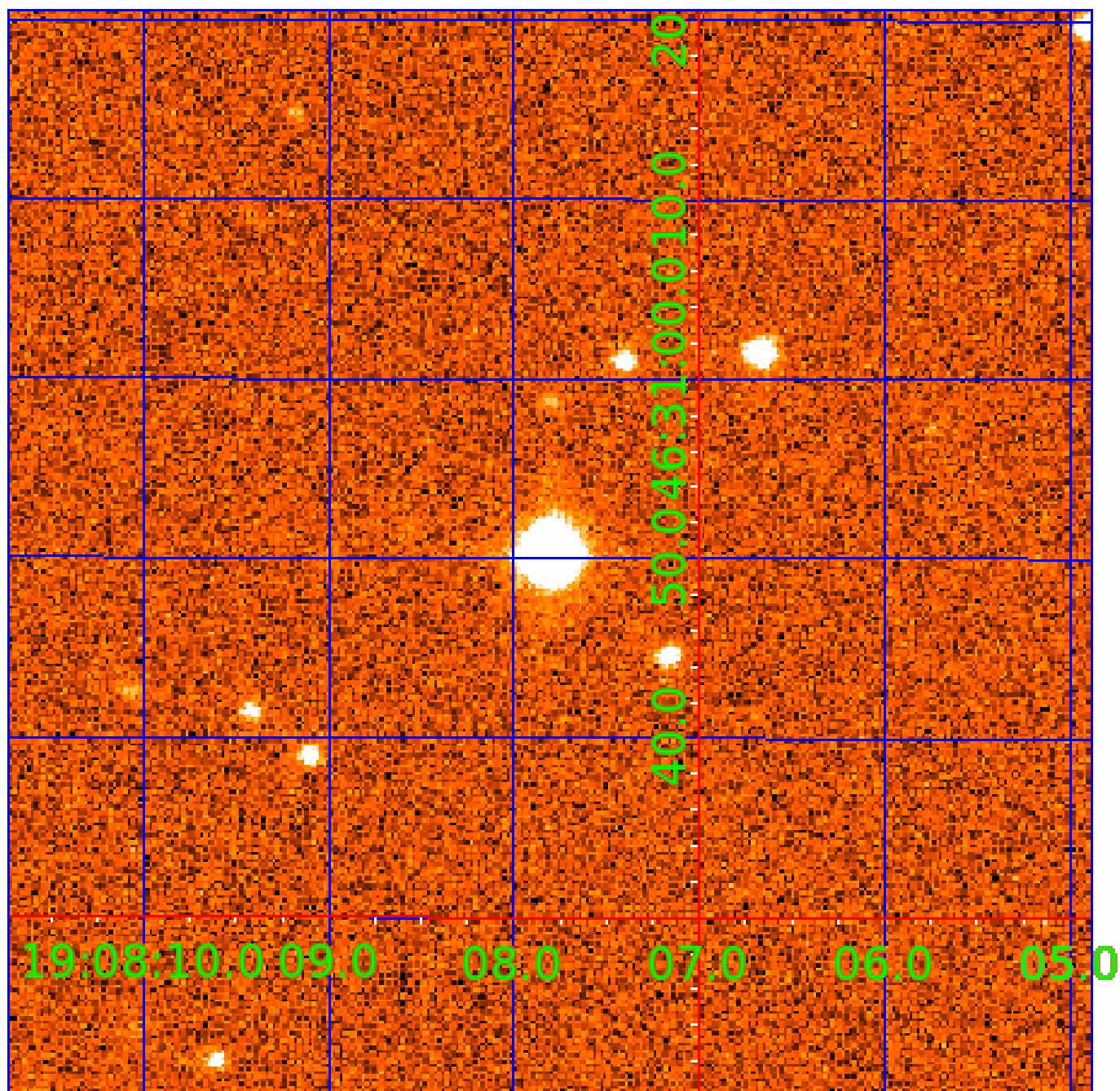


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009760994

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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009760994-02	OBS	No	2.261375	132.613490	22.1	7.356	9.6	7.6	1.73	7263	0.90	5117.48
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009760994-04	OBS	No	113.074935	154.939382	148.0	29.549	7.7	7.1	1.73	7263	2.34	27.78
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009760994-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
009760994-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
009760994-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV
009760994-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

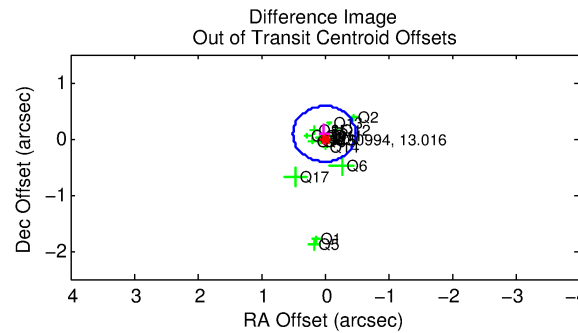
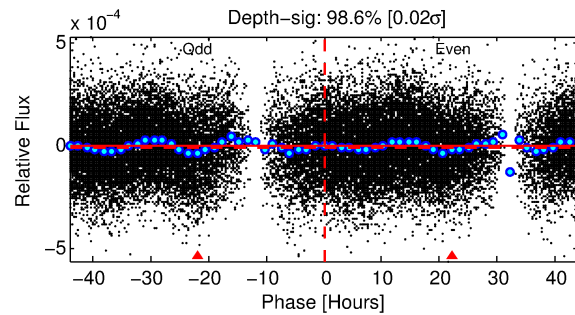
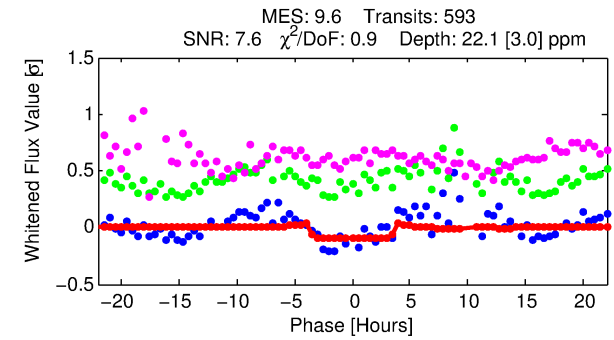
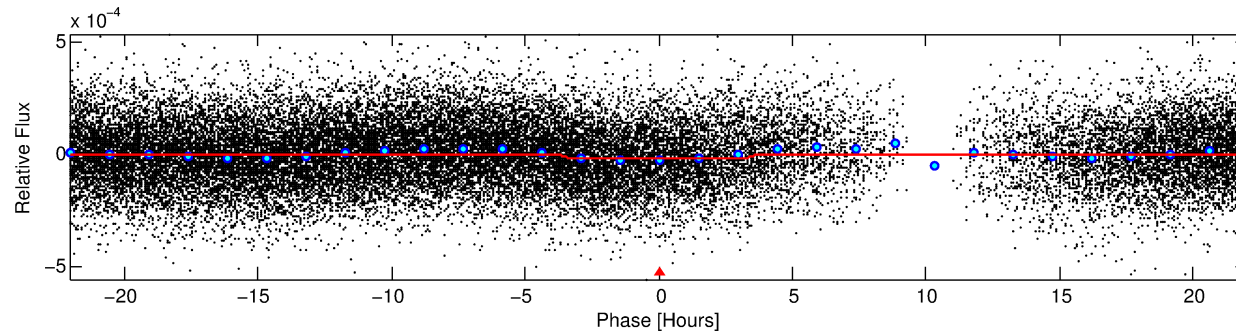
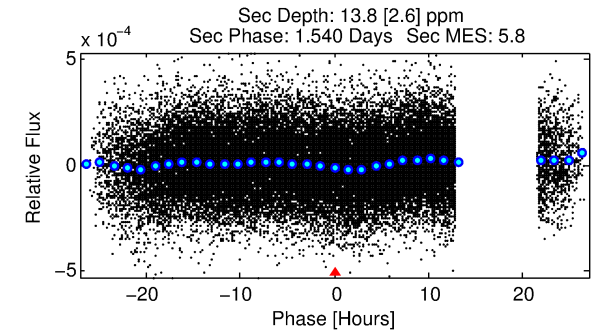
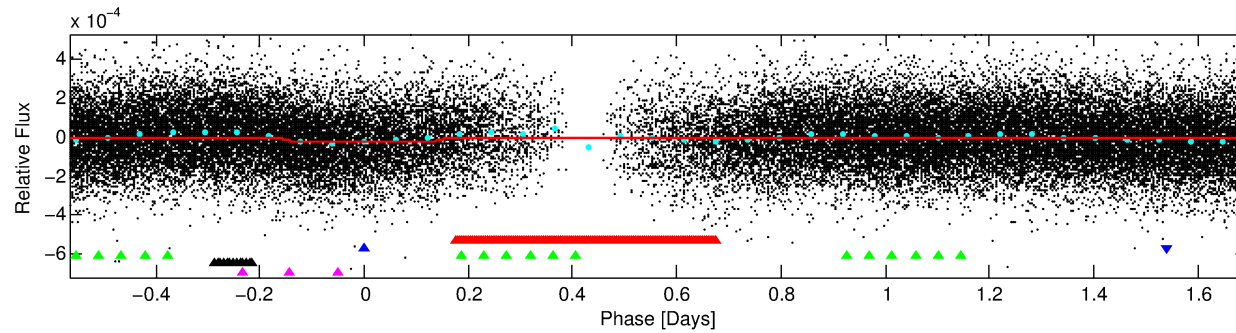
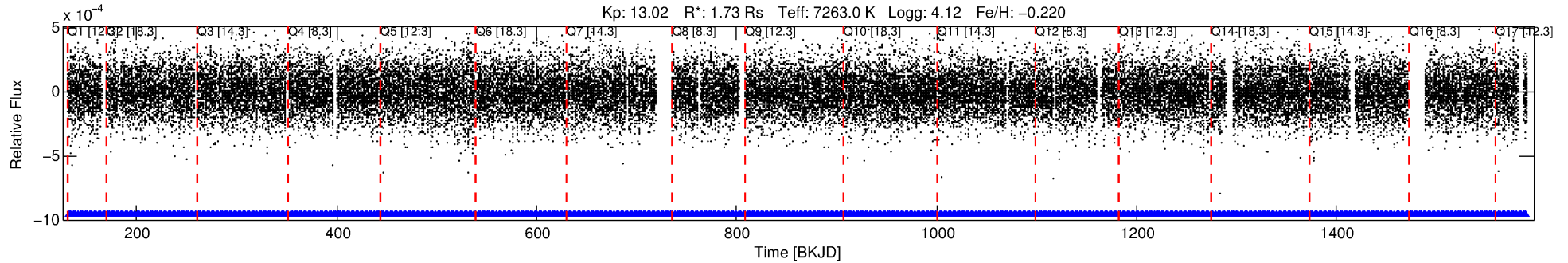
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009760994-02

No Significant Match Found

DV One-Page Summary

KIC: 9760994 Candidate: 2 of 5 Period: 2.261 d



DV Fit Results:

Period = 2.26138 [0.00003] d
Epoch = 132.6135 [0.0066] BKJD
Rp/R* = 0.0048 [0.0013]
a/R* = 1.66 [1.72]
b = 0.81 [0.71]
Seff = 5117.48 [1974.63]
Teq = 2157 [208] K
Rp = 0.90 [0.36] Re
a = 0.0381 [0.0093] AU
Ag = 13.68 [9.18] [1.38σ]
Teffp = 6413 [958] K [4.34σ]

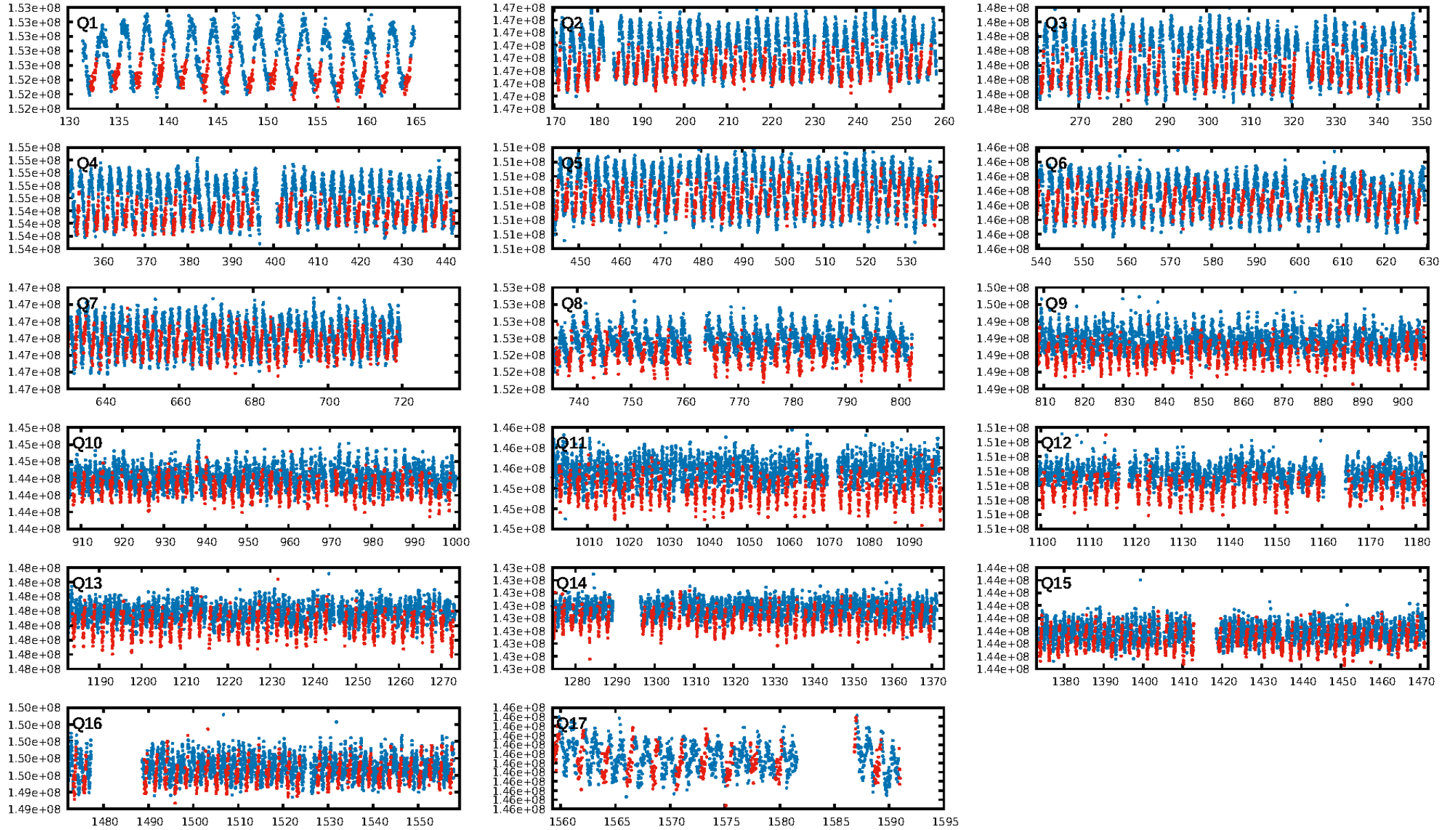
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.2% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.32e-14
RollingBand-fgt: 1.00 [566/566]
GhostDiagnostic-chr: 1.077
Centroid-sig: 17.3%
Centroid-so: 0.975 arcsec [1.30σ]
OotOffset-rm: 0.083 arcsec [0.50σ]
KicOffset-rm: 0.022 arcsec [0.13σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
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DiffImageOverlap-fno: 0.00 [0/17]

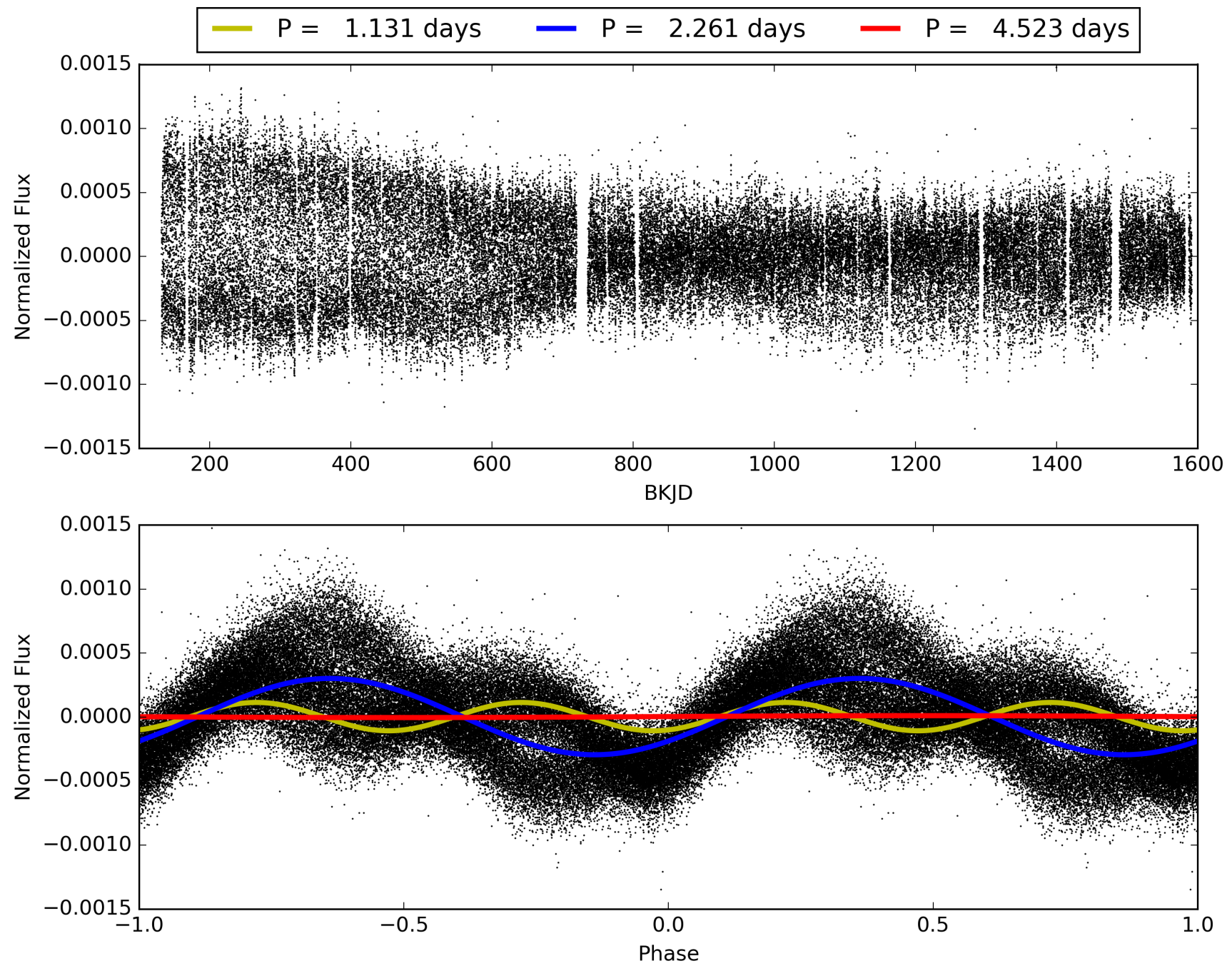
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:02:57 Z

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

TCE 009760994-02, PDC Light Curves

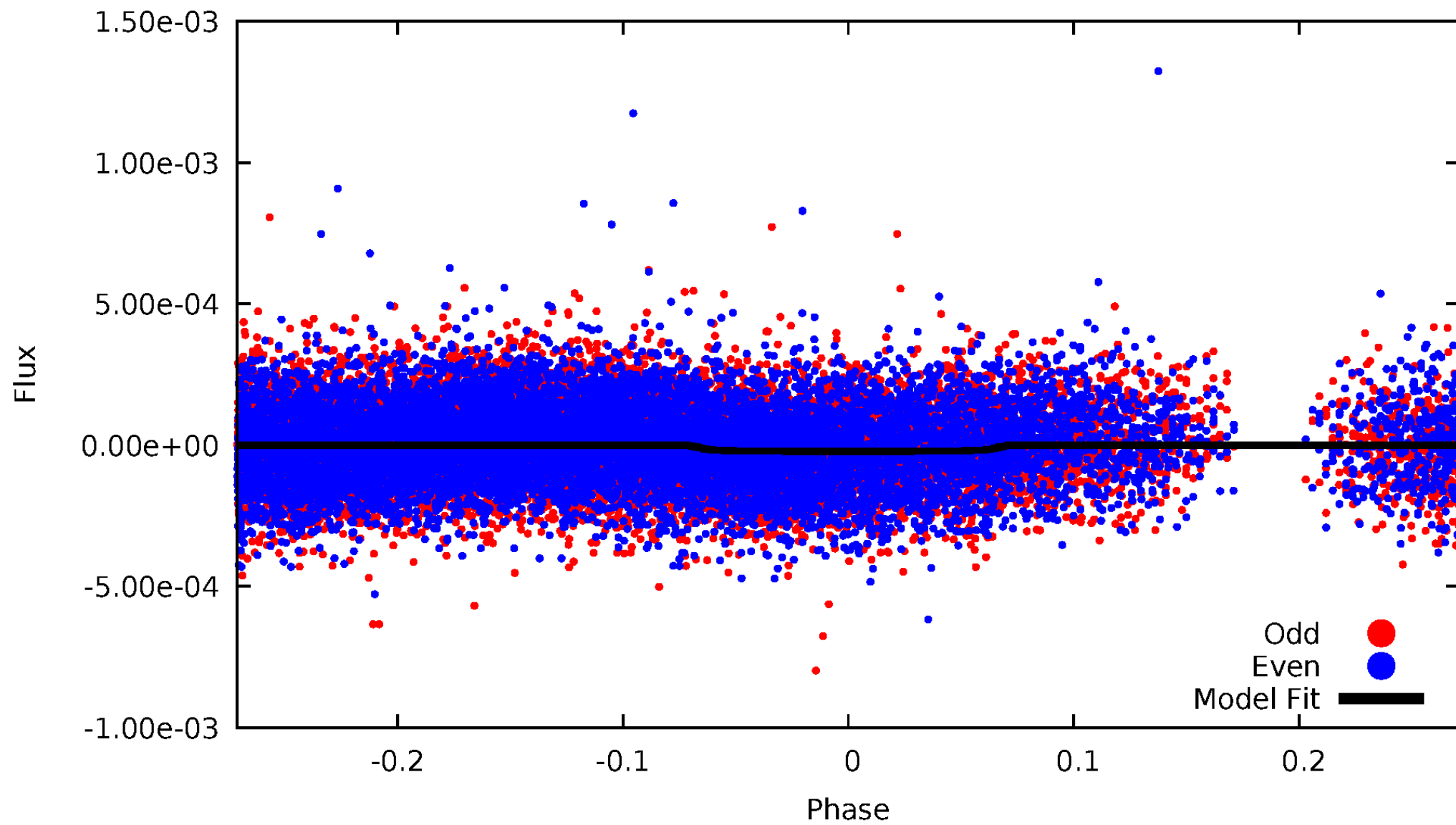


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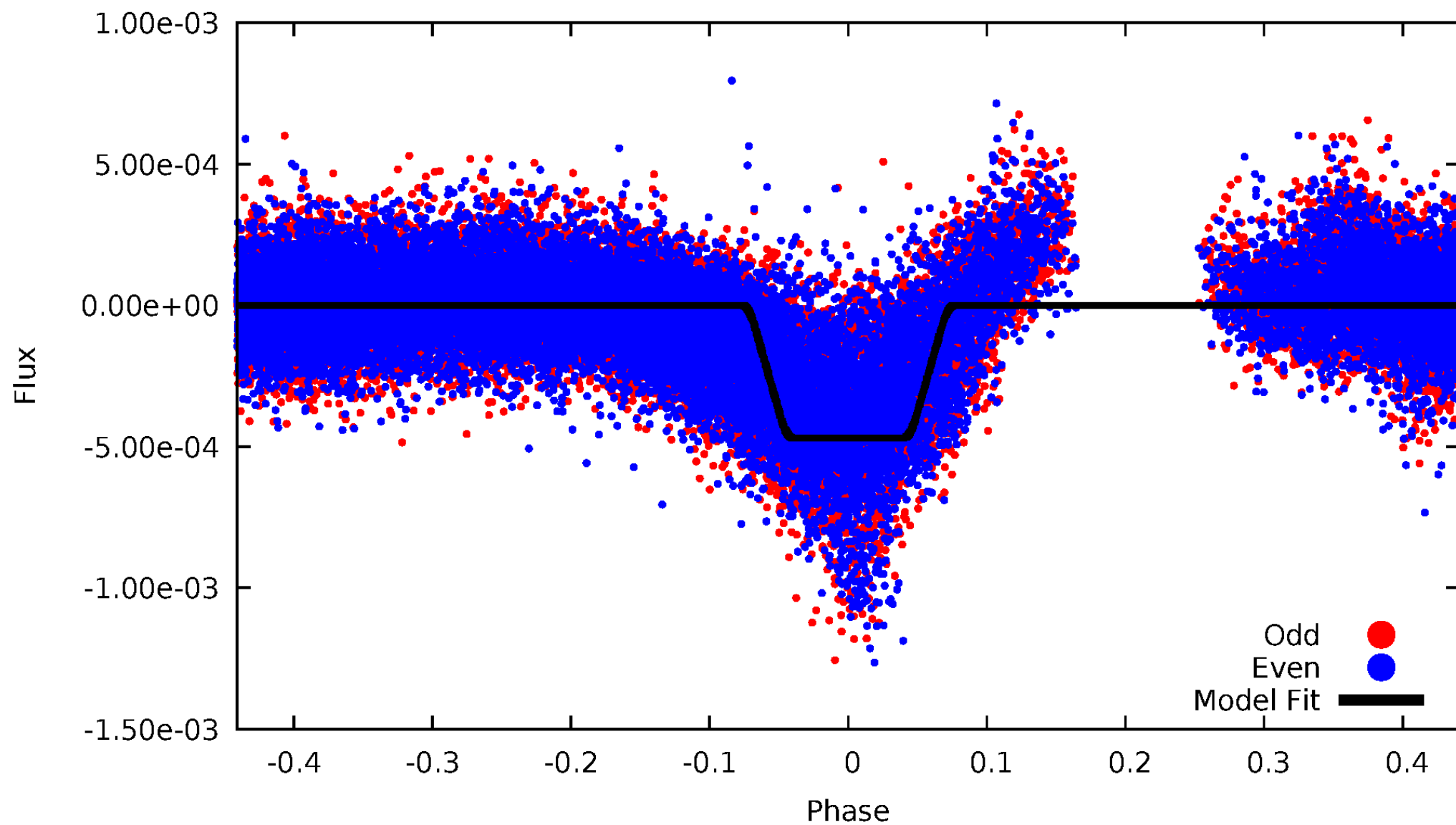
DV Odd/Even

TCE 009760994-02



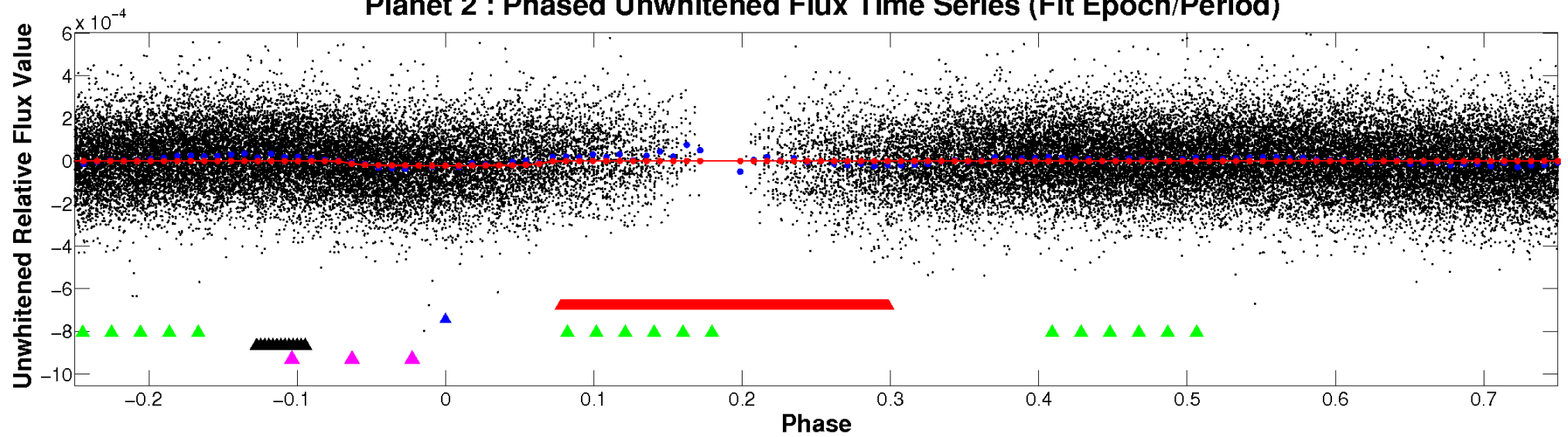
ALT Odd/Even

TCE 009760994-02

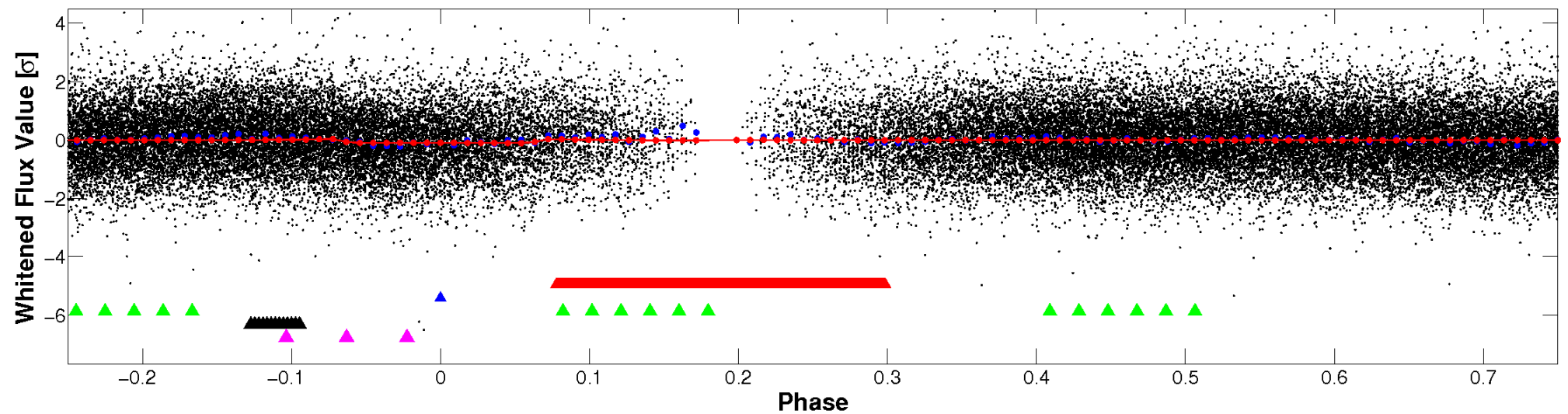


Non-Whitened Vs. Whitened Light Curve

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

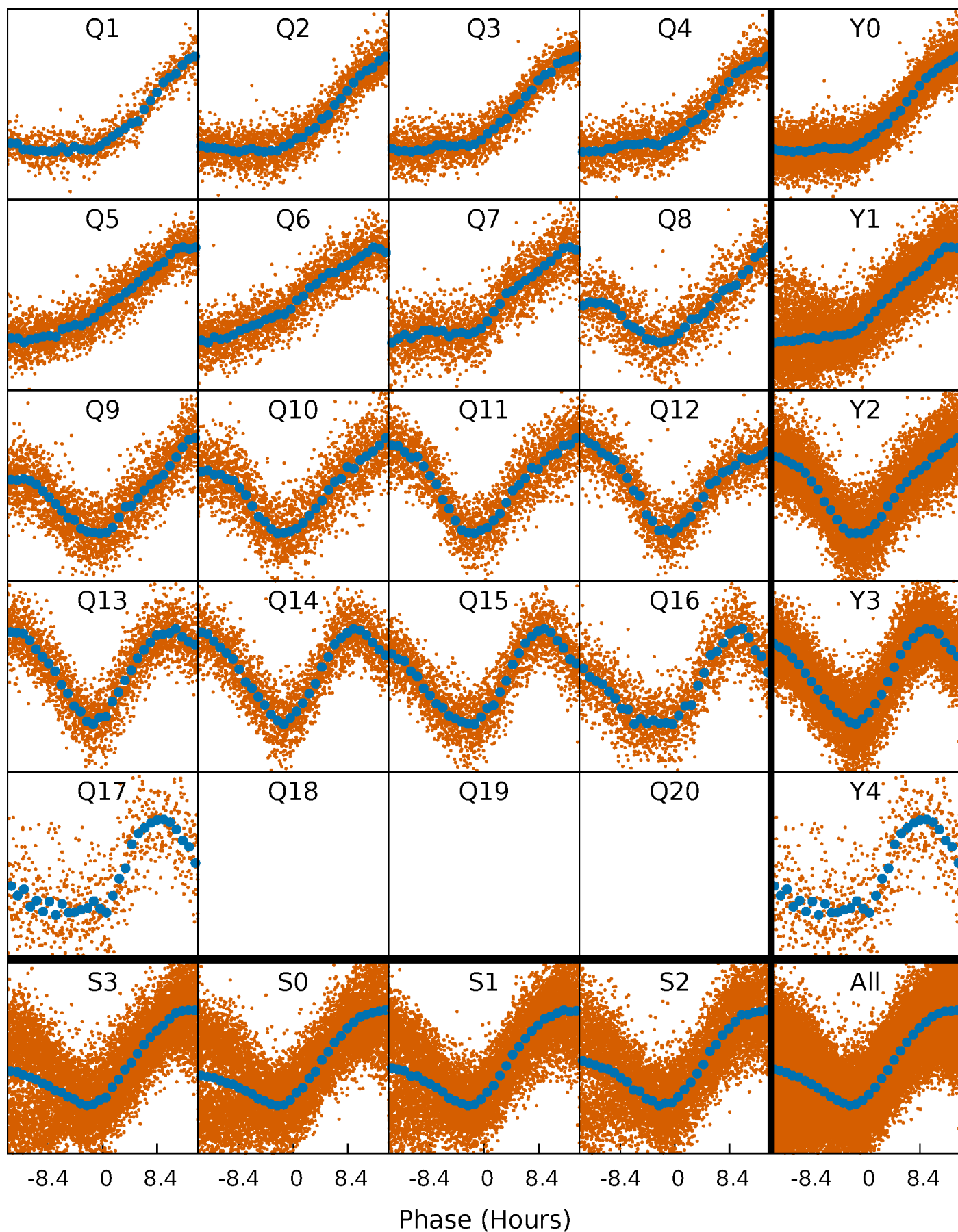


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



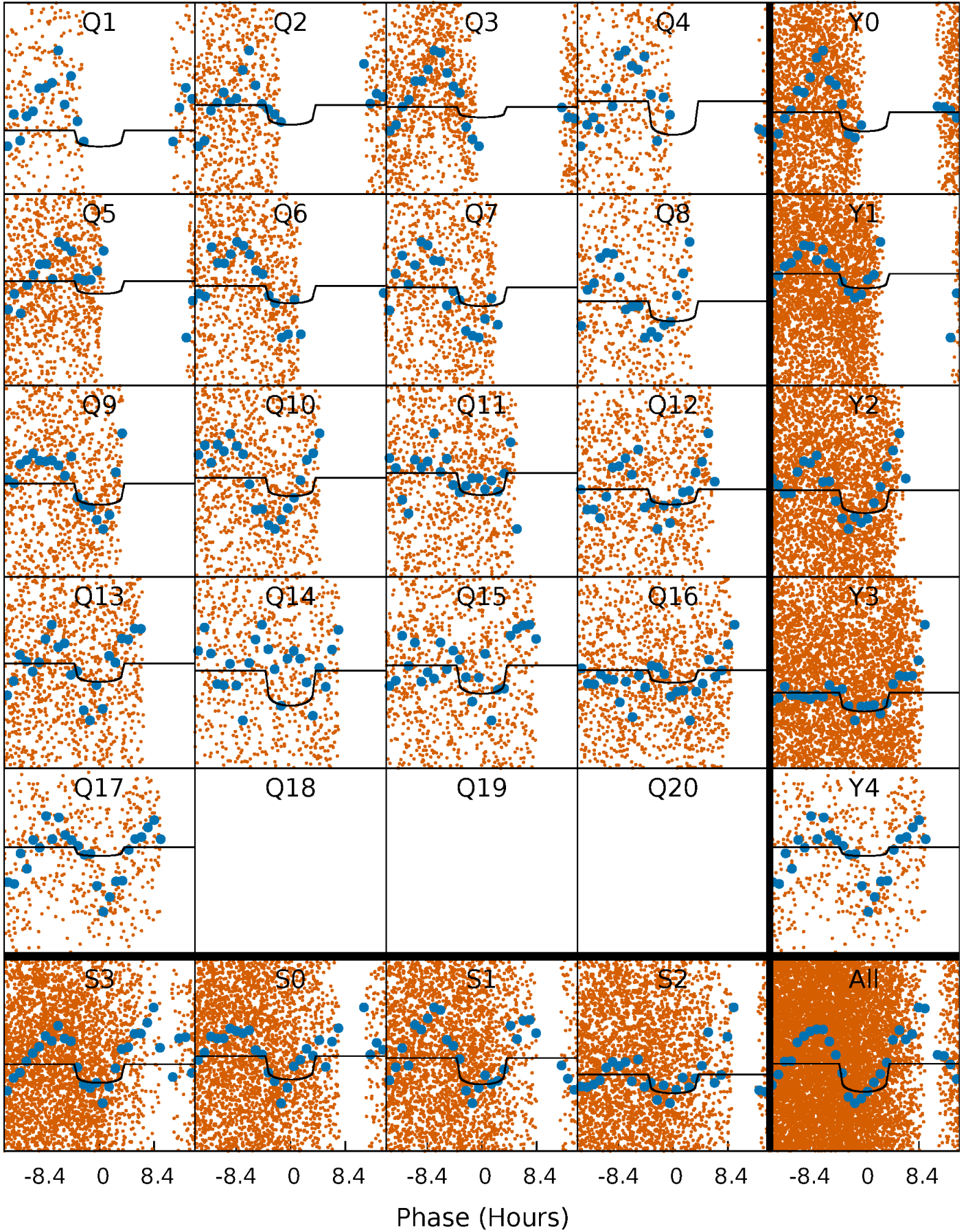
PDC Quarter-Phased Transit Curves

TCE 009760994-02 P= 2.261375 Days $T_0=132.613490$ (BKJD)



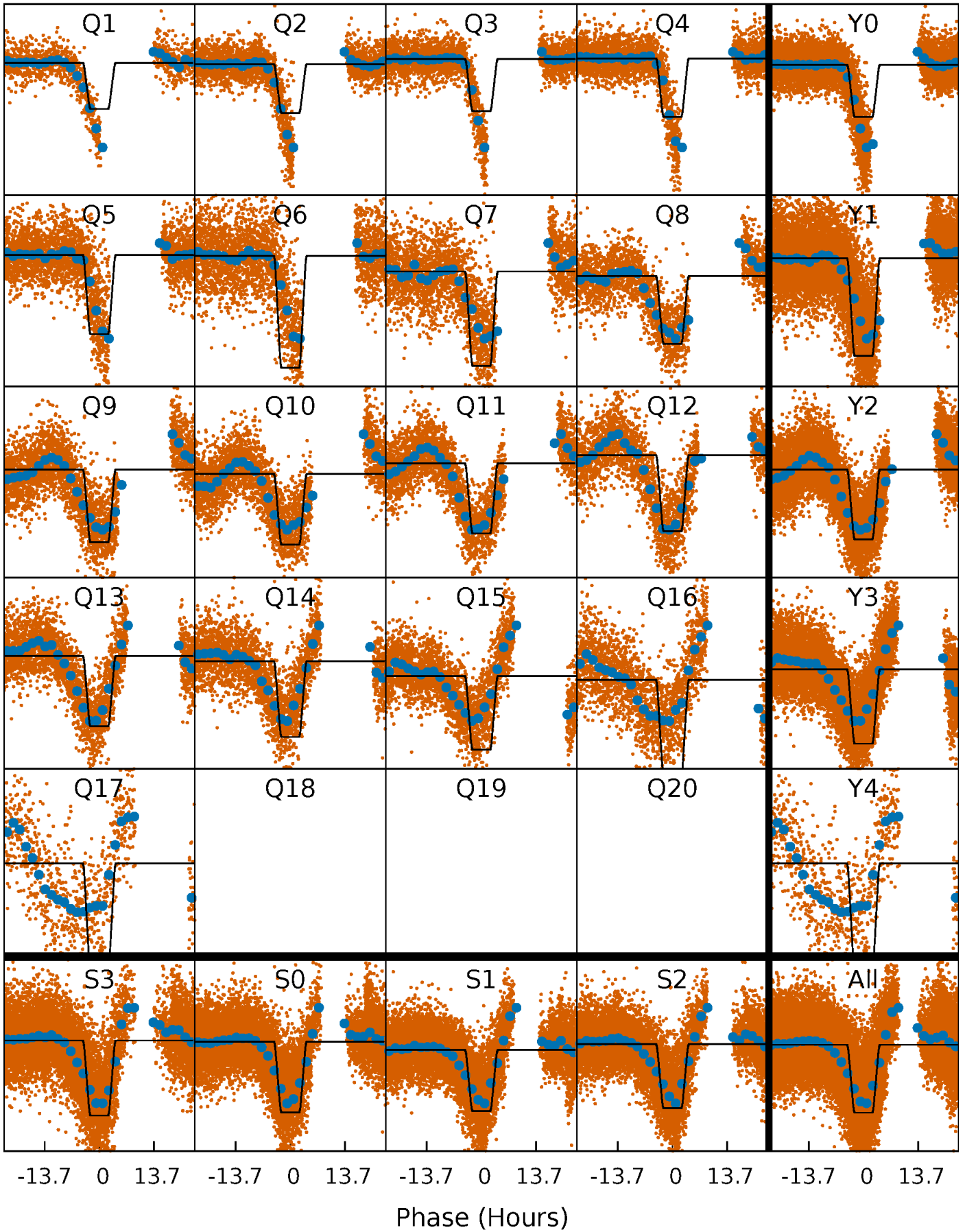
DV Quarter-Phased Transit Curves

TCE 009760994-02 P= 2.261375 Days $T_0=132.613490$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

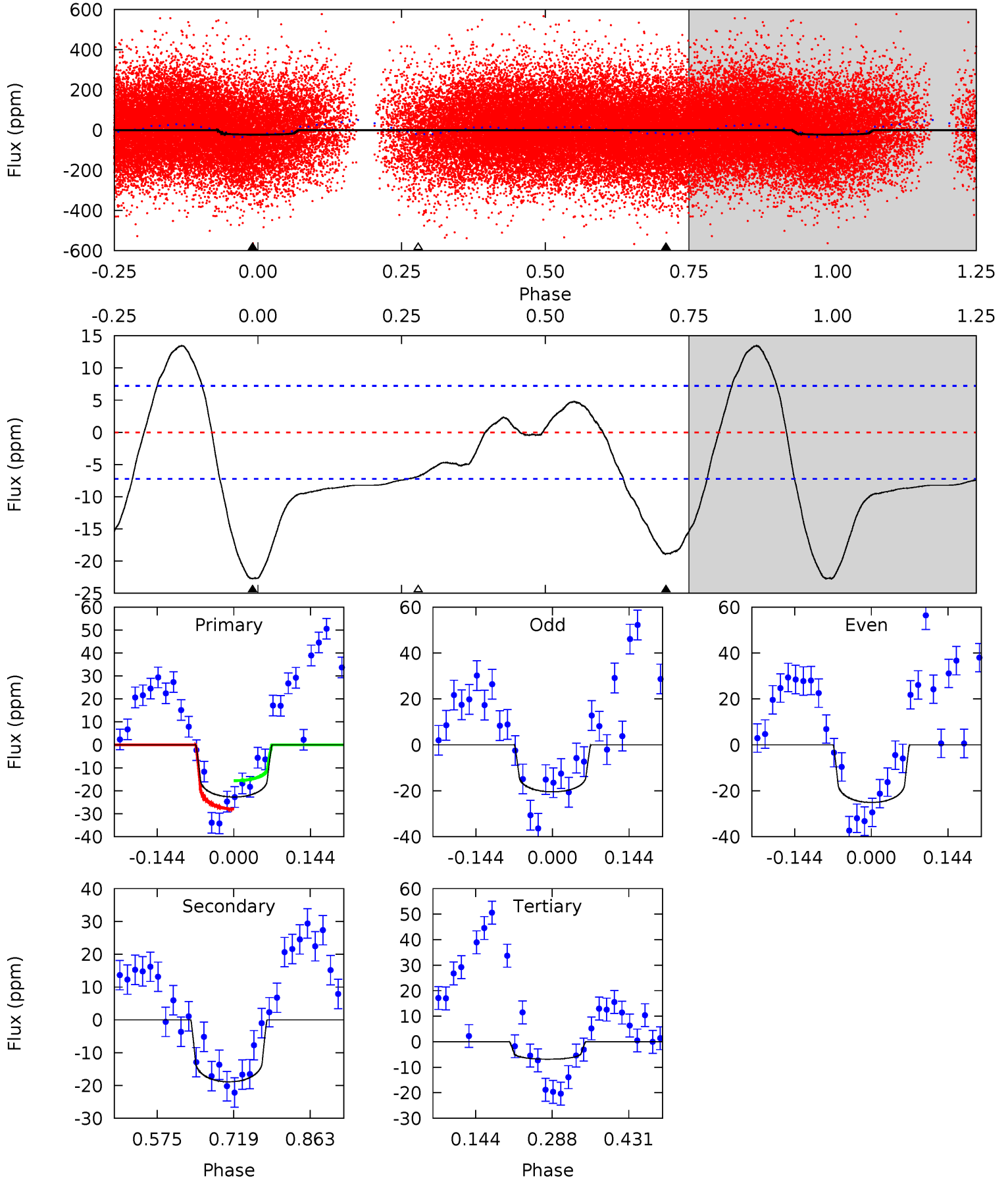
TCE 009760994-02 $P = 2.261579$ Days $T_0 = 132.499315$ (BKJD)



DV Model-Shift Uniqueness Test

009760994-02, P = 2.261375 Days, E = 130.352115 Days

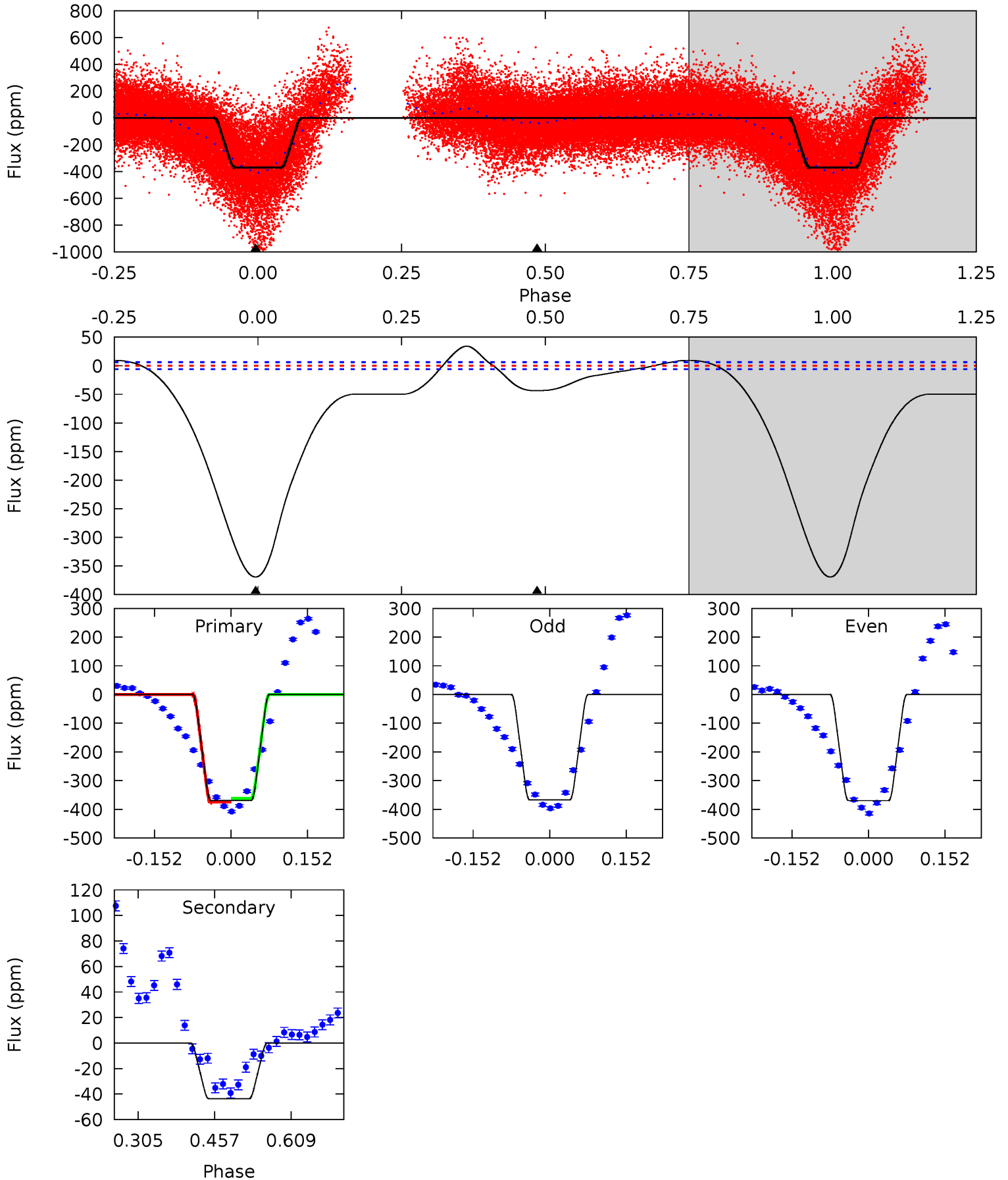
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.1	11.7	4.26	0	4.49	1.46	2.28	9.86	14.1	7.47	11.7	1.44	1.00	0.37	3.67



Alt Model-Shift Uniqueness Test

009760994-02, P = 2.261579 Days, E = 130.237736 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
272.6	32.2	0	0	4.48	1.43	9.42	272.6	272.6	32.2	32.2	0.98	1.01	0.08	4.38



Stellar Parameters For KIC 009760994

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7263^{+228}_{-304}	$4.123^{+0.153}_{-0.187}$	$-0.220^{+0.250}_{-0.350}$	$1.727^{+0.508}_{-0.416}$	$1.442^{+0.211}_{-0.234}$	$0.394^{+0.330}_{-0.195}$
	+3%/-4%	+4%/-5%	+114%/-159%	+29%/-24%	+15%/-16%	+84%/-49%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009760994-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-19 ± 2	$0.92^{+0.29}_{-0.27}$	3016^{+243}_{-214}	6794^{+1447}_{-830}	18^{+17}_{-8}
Alt.	-44 ± 1	$4.14^{+0.73}_{-0.60}$	3037^{+227}_{-221}	4089^{+139}_{-134}	$2.037^{+0.684}_{-0.534}$

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

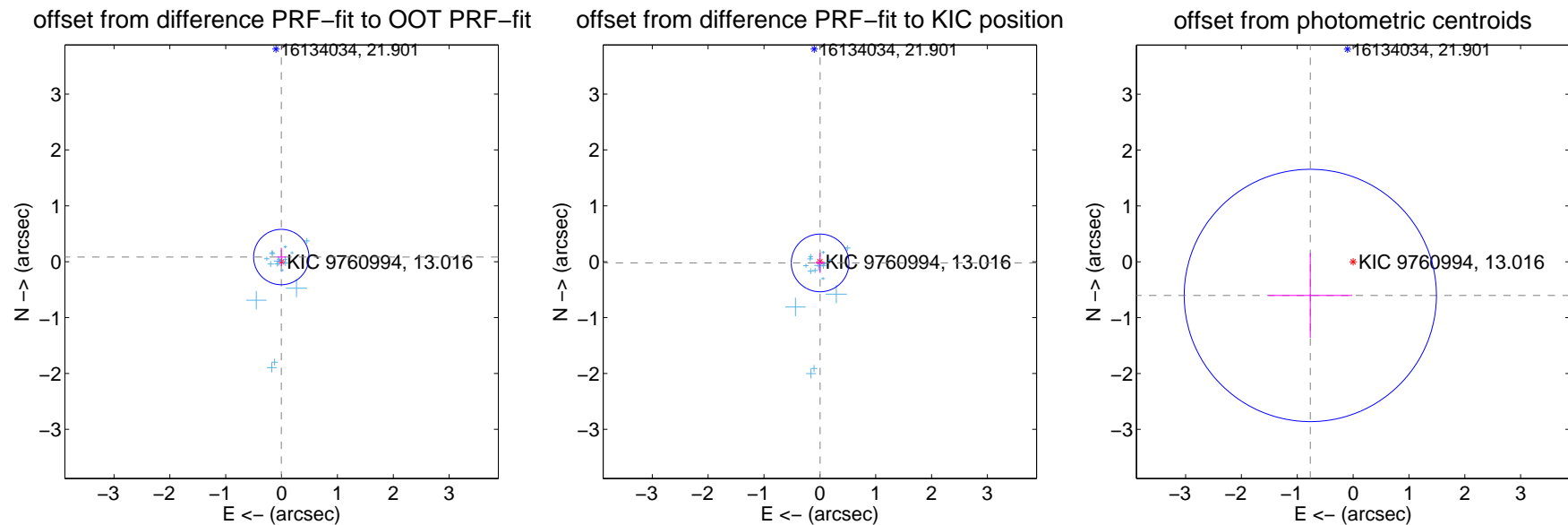
DV Centroid Data

Supplemental centroid analysis for 009760994-02. Kepler magnitude: 13.02. Transit SNR 7.58

There are 17 quarters with good PRF difference image offsets

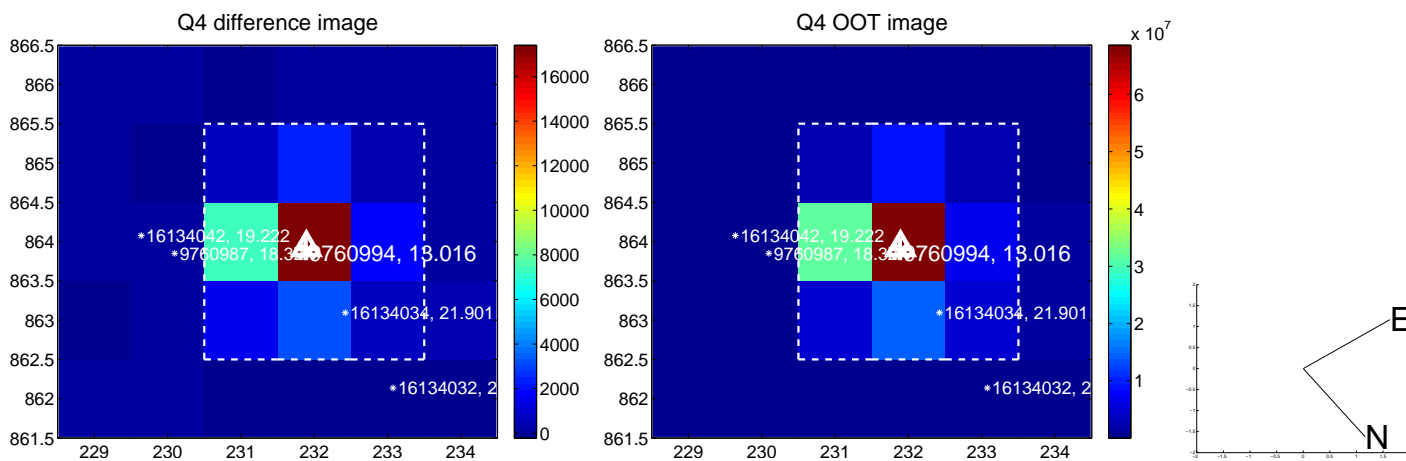
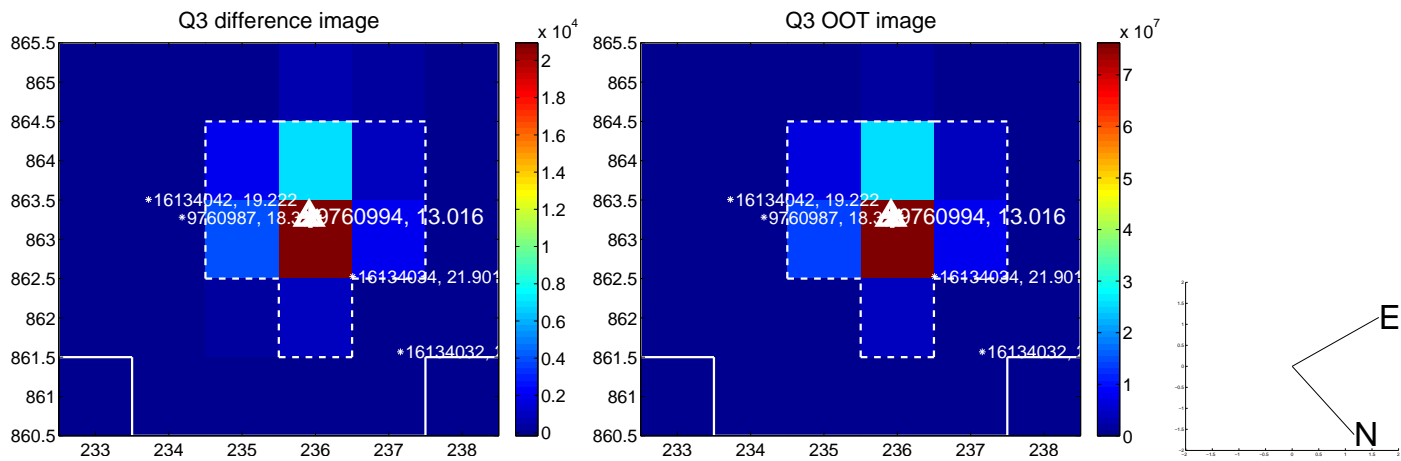
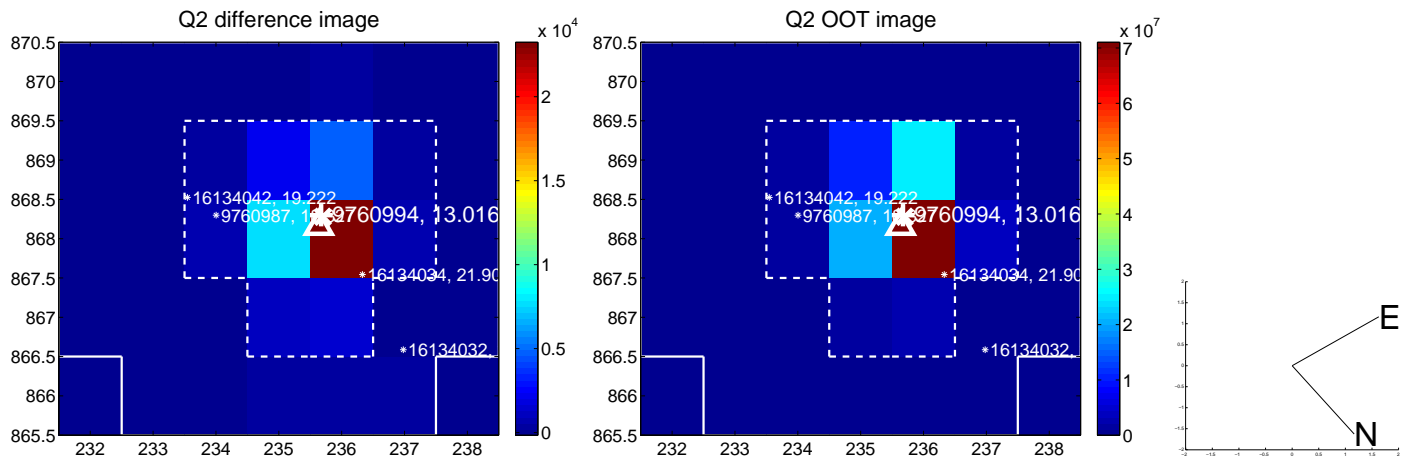
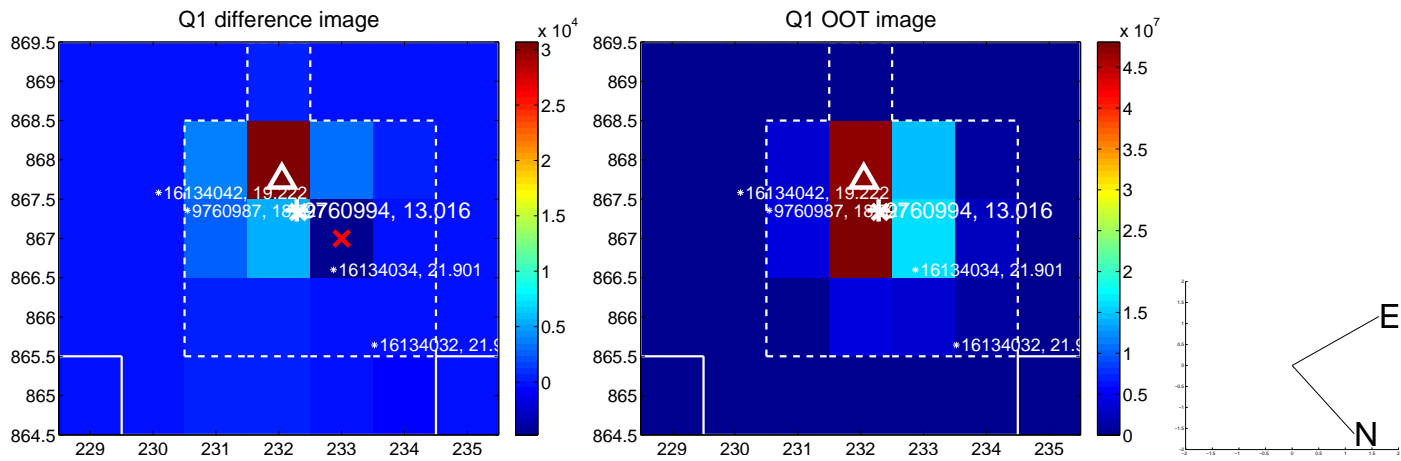
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.083 ± 0.165	0.50	0.005 ± 0.081	0.083 ± 0.166
PRF-fit source offset from KIC position	0.022 ± 0.172	0.13	-0.005 ± 0.082	-0.022 ± 0.178
photometric centroid source offset	0.97 ± 0.75	1.30	0.77 ± 0.75	-0.60 ± 0.76

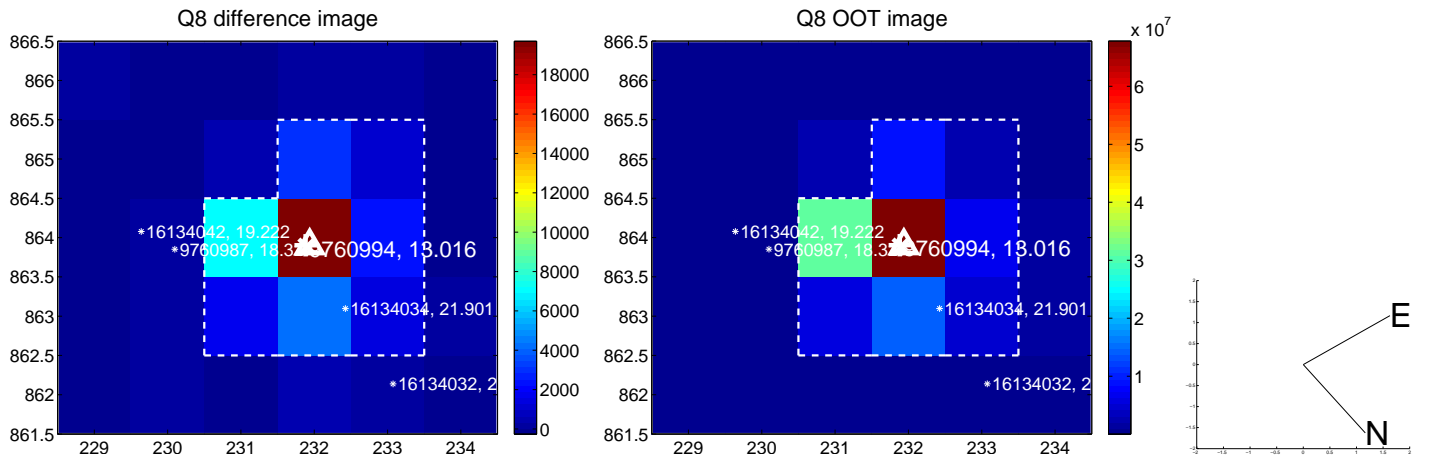
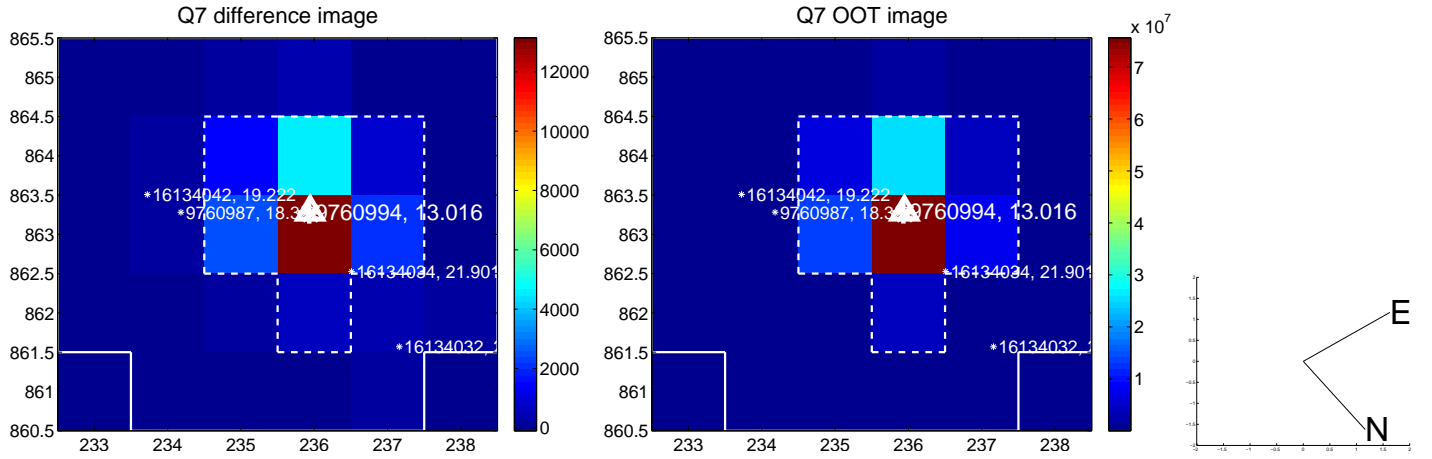
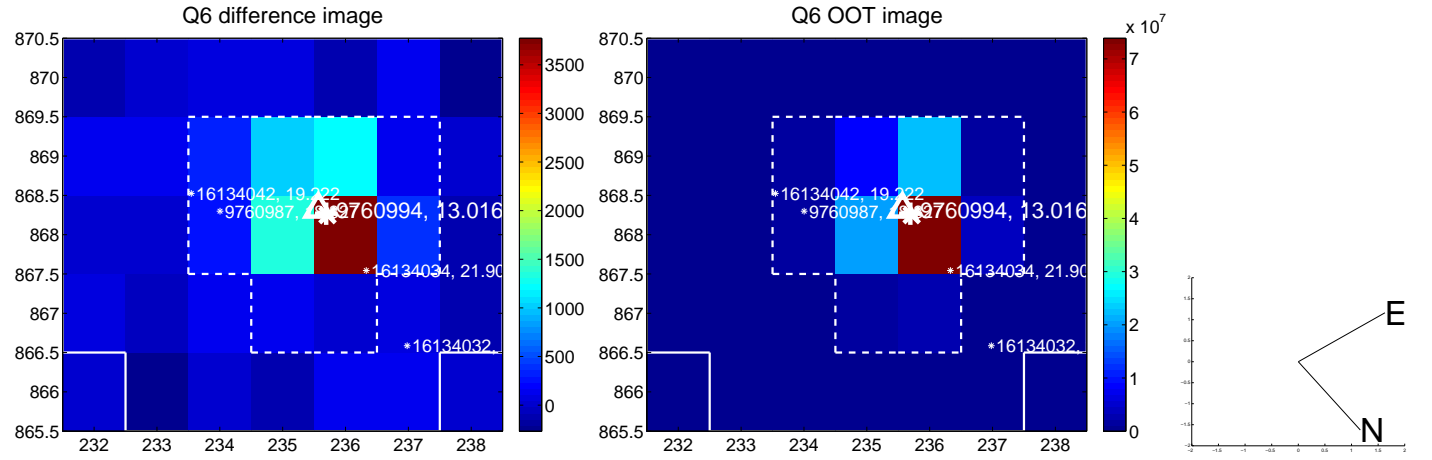
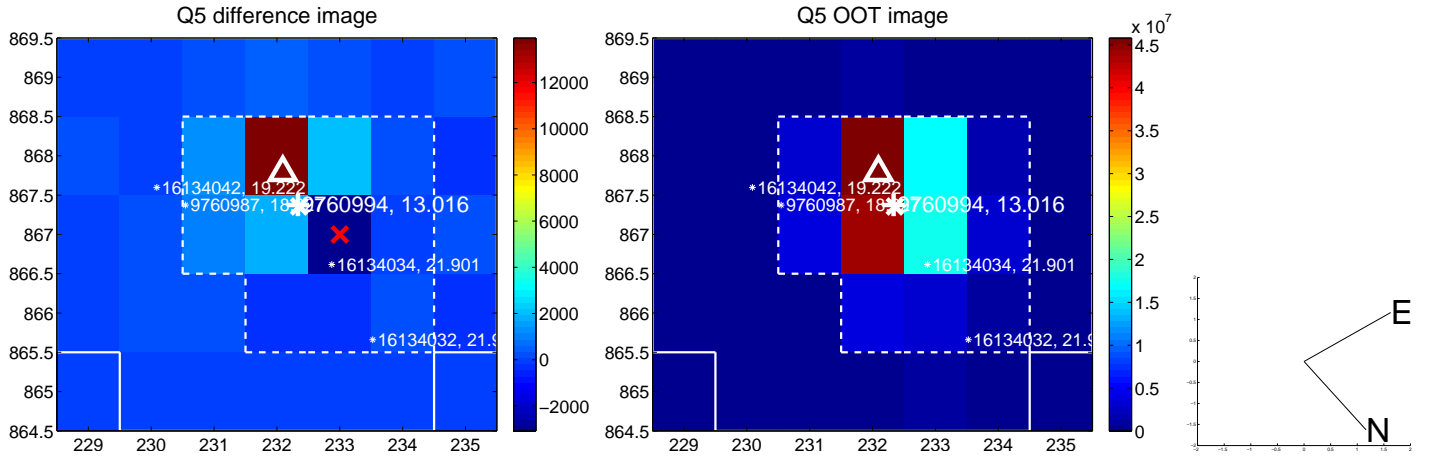


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

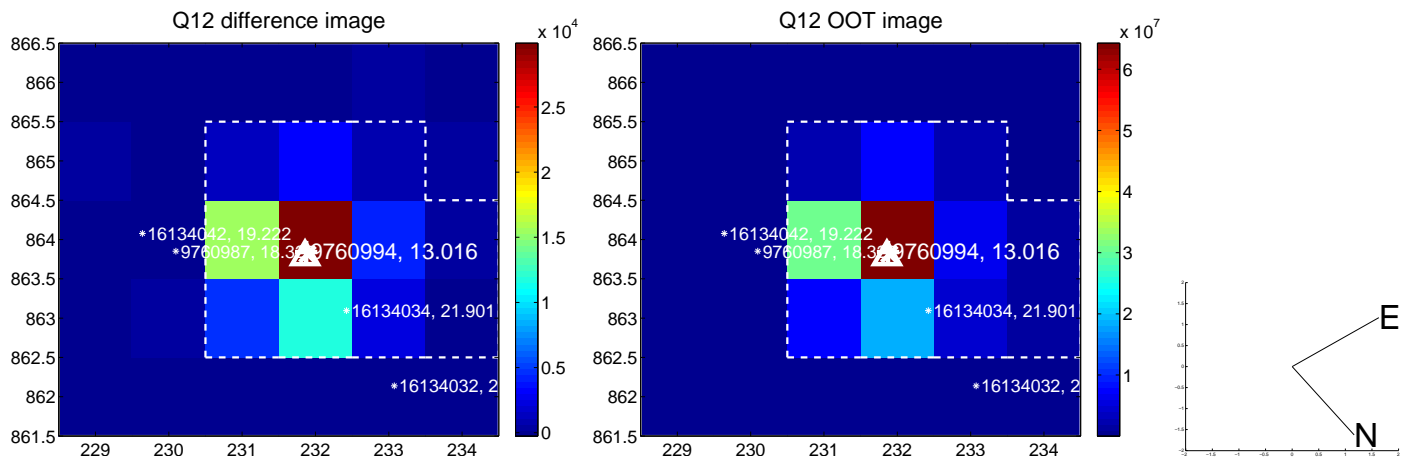
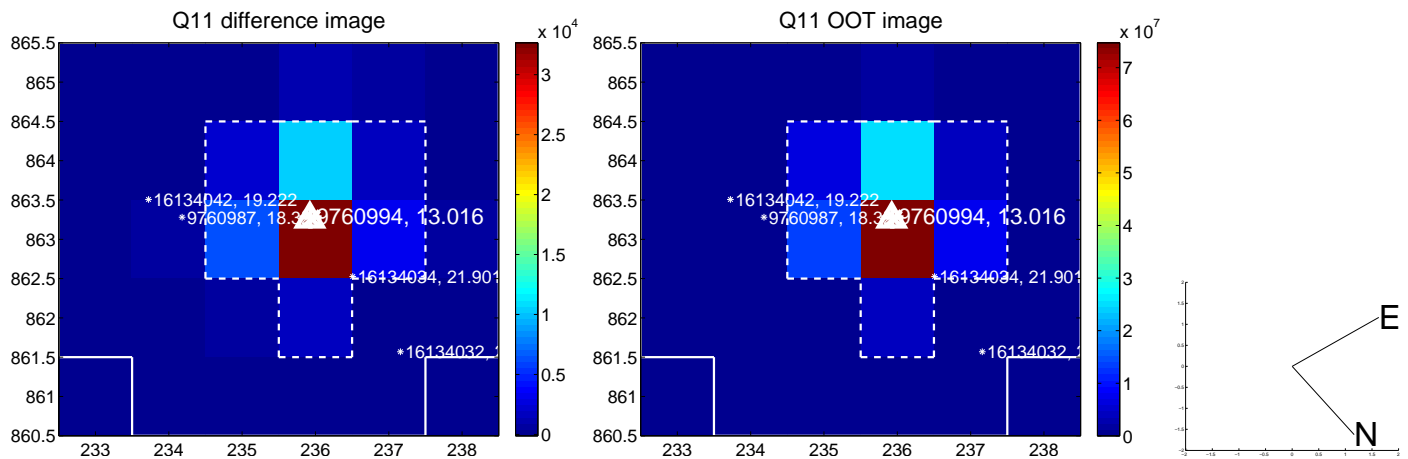
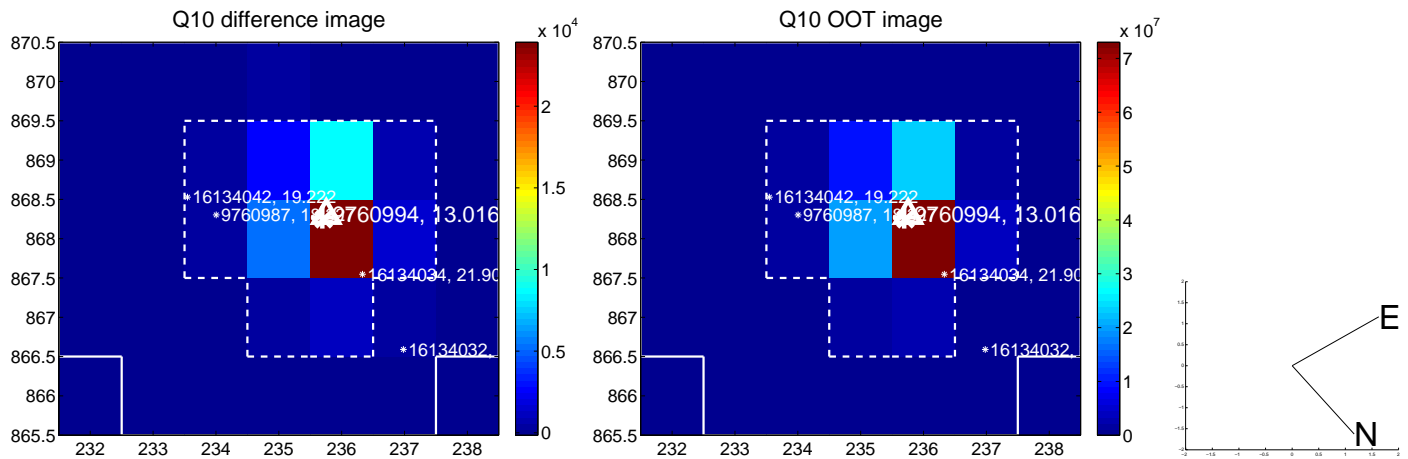
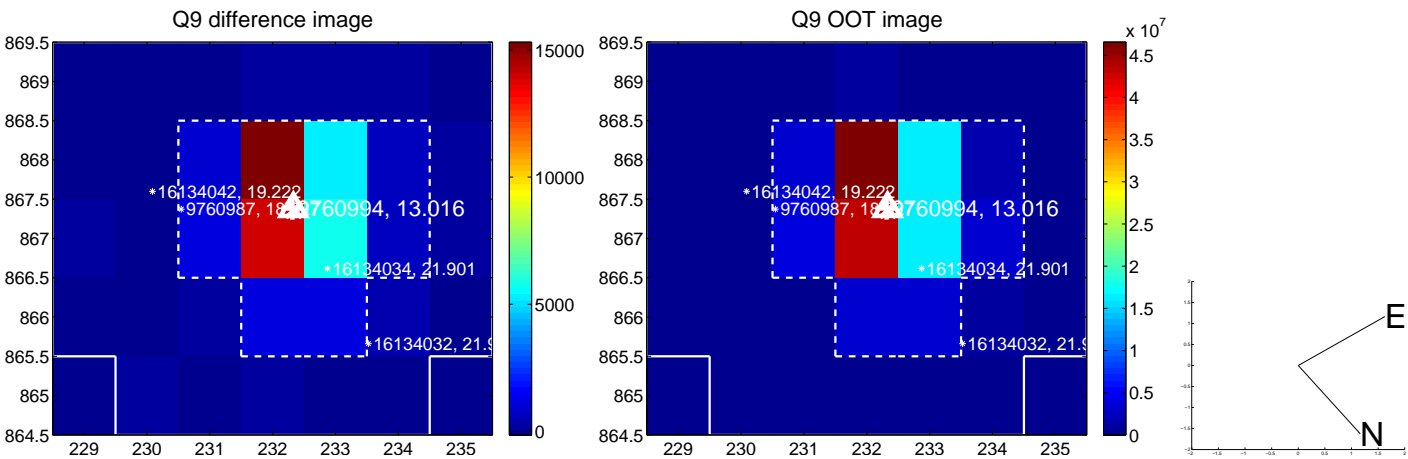
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



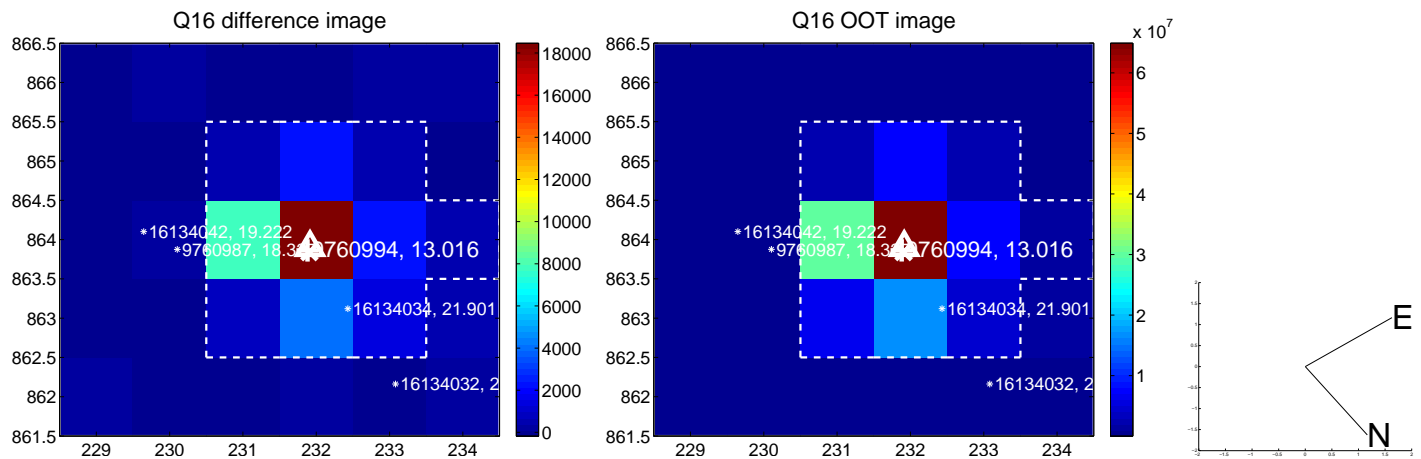
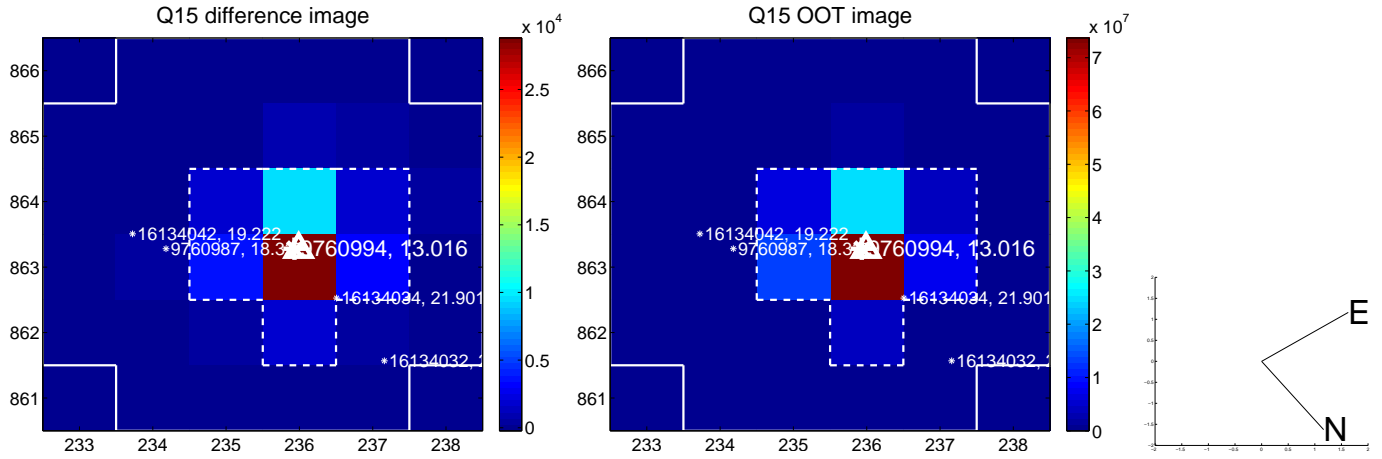
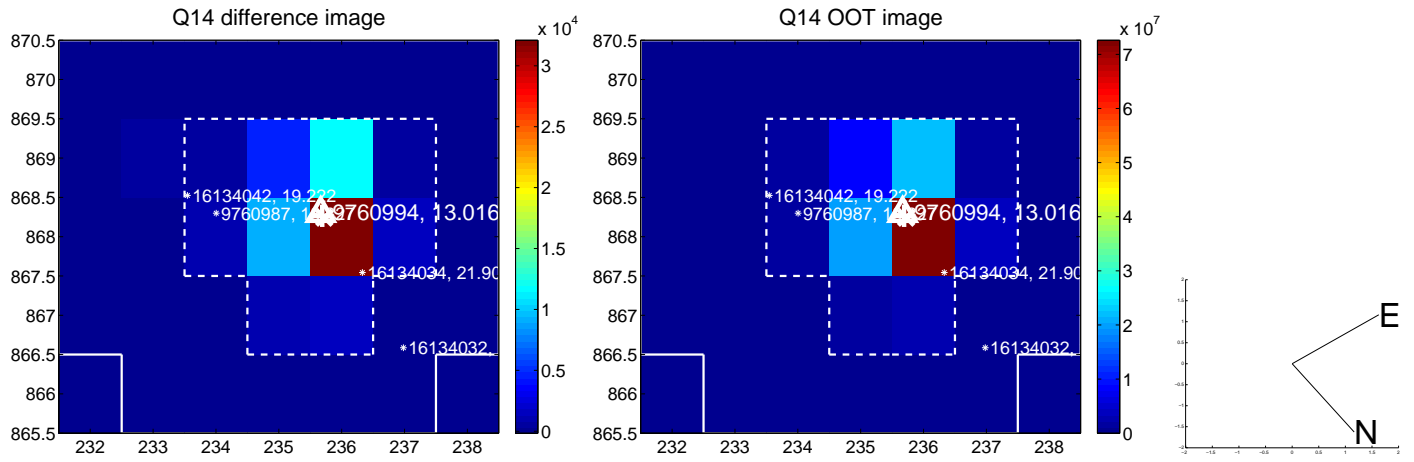
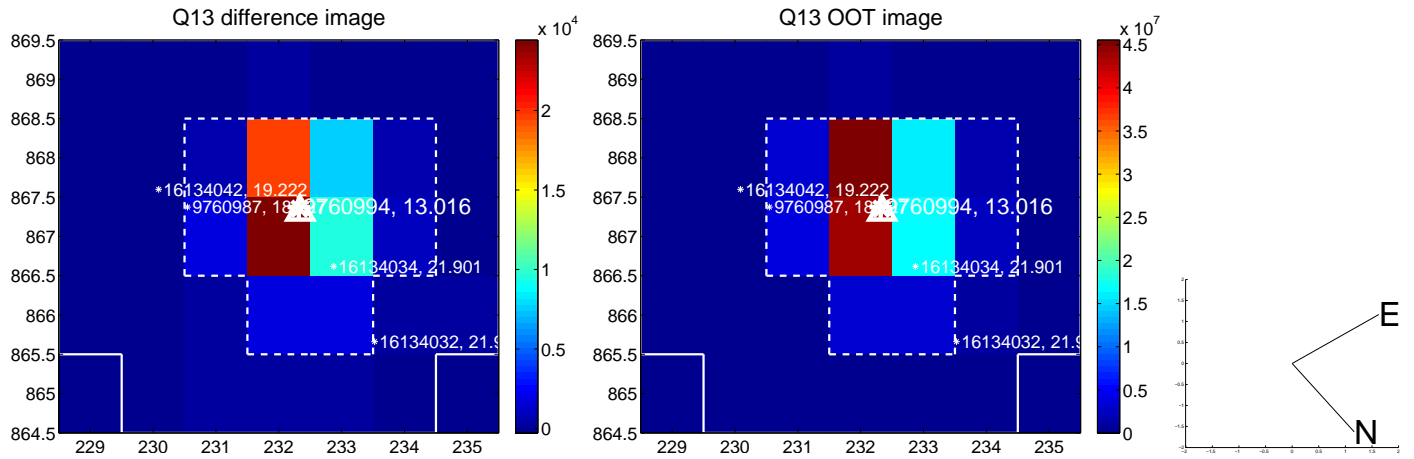
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



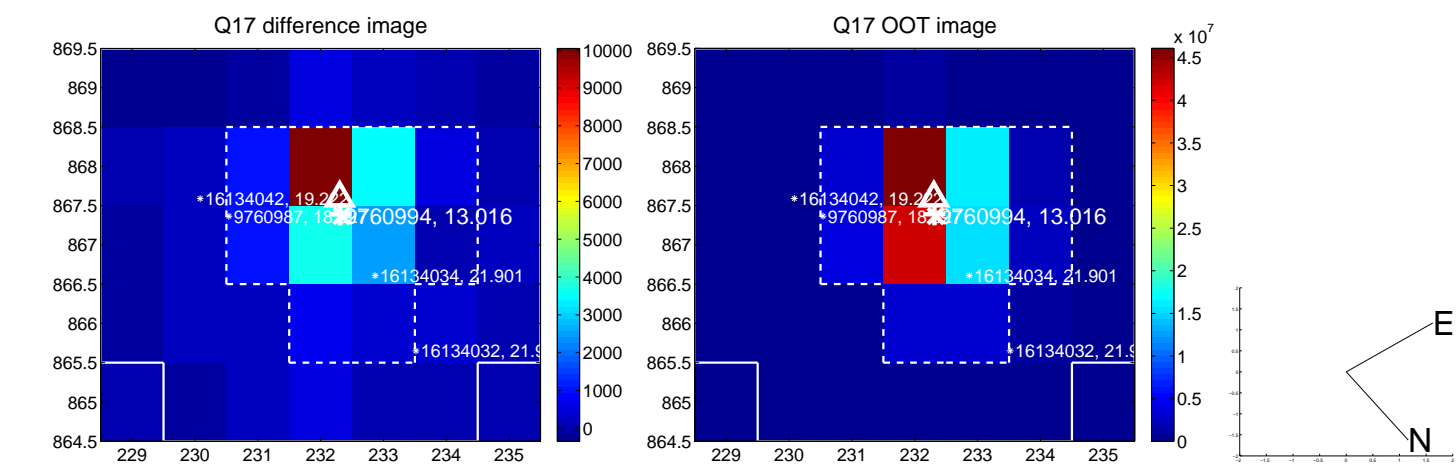
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



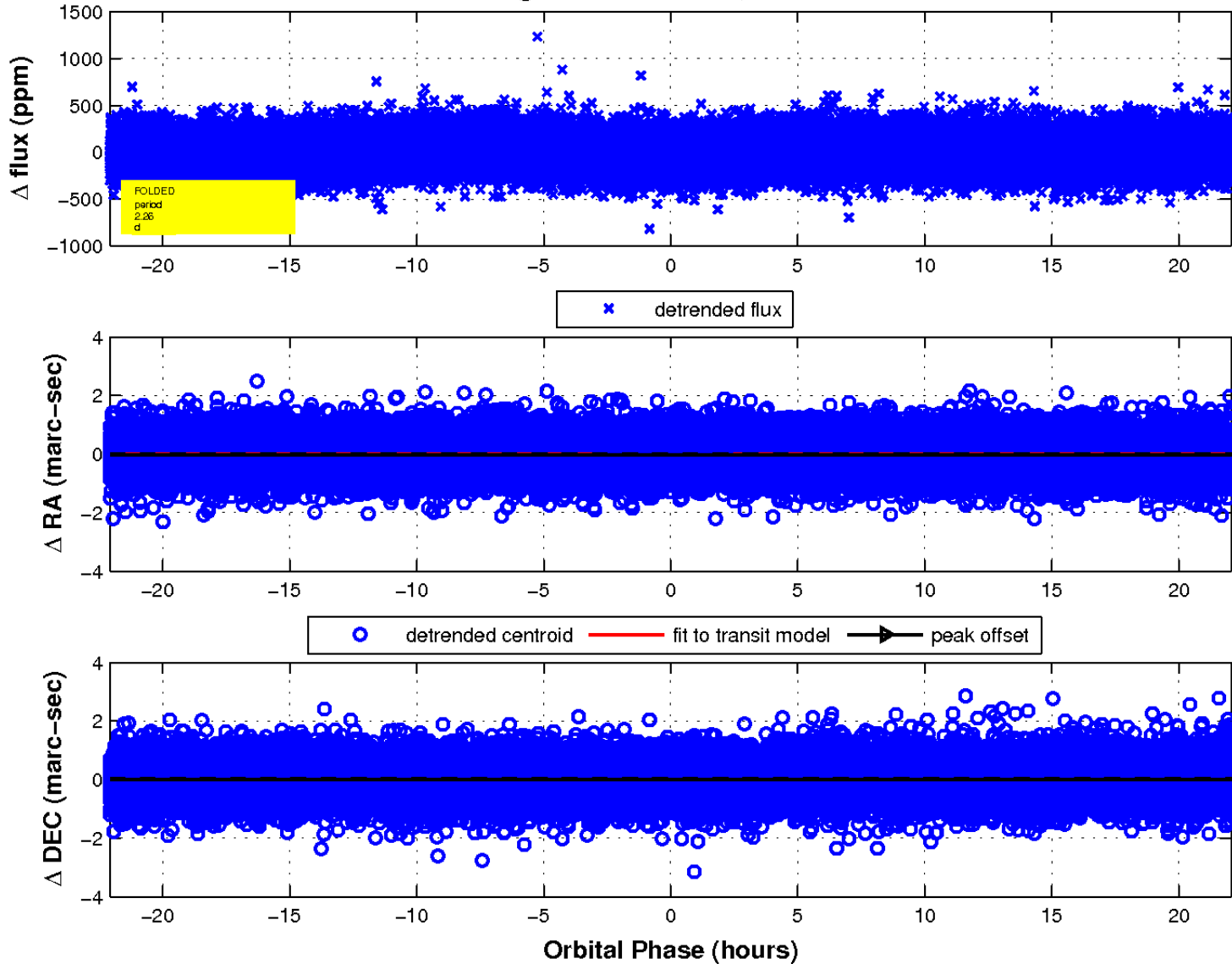
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

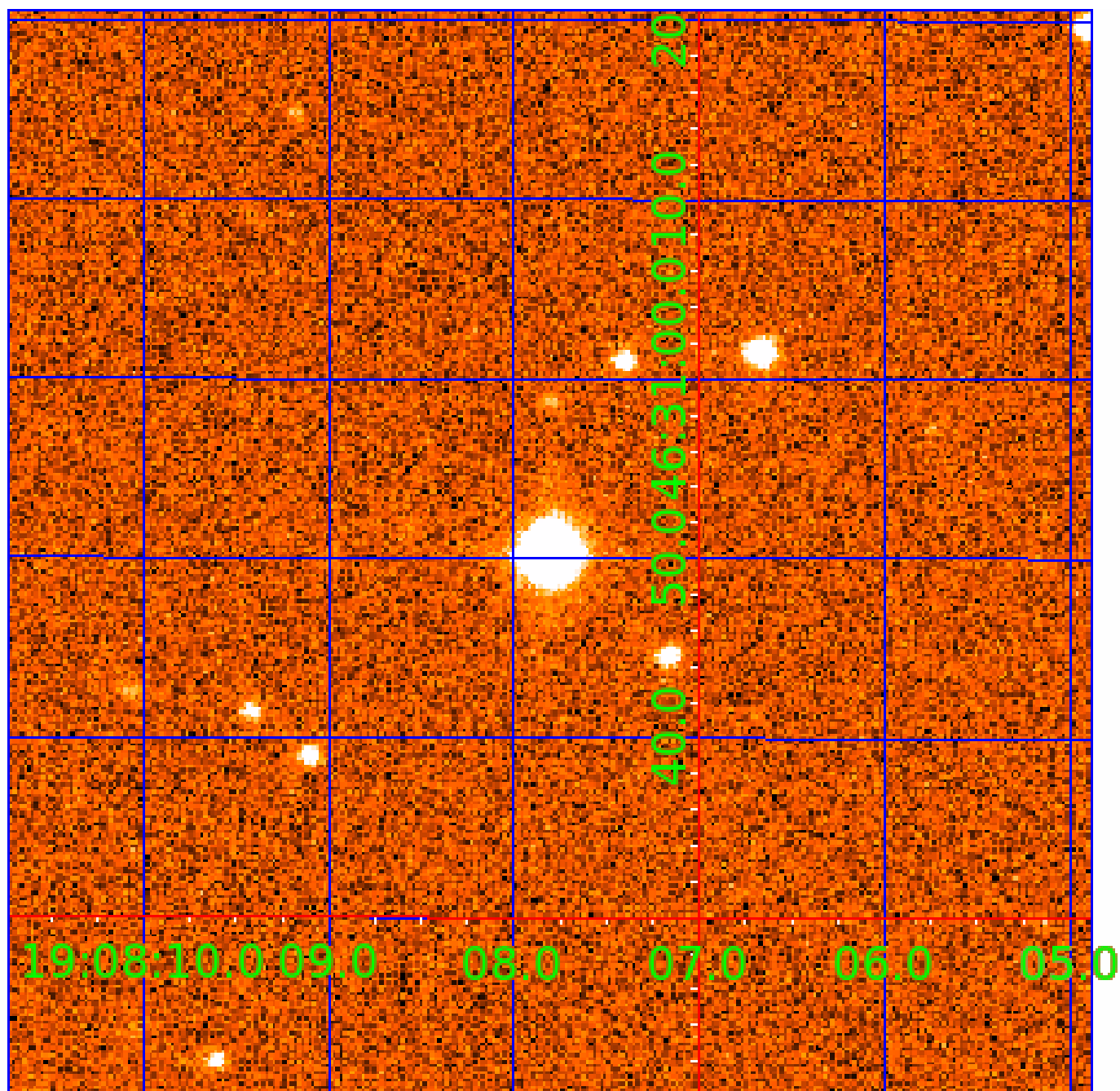


fluxWeightedCentroids, Planet 2 of 5



UKIRT Image

Declination



KIC 009760994

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})
009760994-01	OBS	No	2.262152	132.788922	24.3	4.308	9.2	7.8	1.73	7263	0.96	5115.14
009760994-02	OBS	No	2.261375	132.613490	22.1	7.356	9.6	7.6	1.73	7263	0.90	5117.48
009760994-03	OBS	No	84.409997	166.940371	118.5	5.458	7.6	5.8	1.73	7263	2.14	41.02
009760994-04	OBS	No	113.074935	154.939382	148.0	29.549	7.7	7.1	1.73	7263	2.34	27.78
009760994-05	OBS	No	572.219630	297.459789	224.7	39.688	7.3	5.8	1.73	7263	2.68	3.20

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009760994-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_POS_ALT
009760994-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
009760994-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
009760994-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV
009760994-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

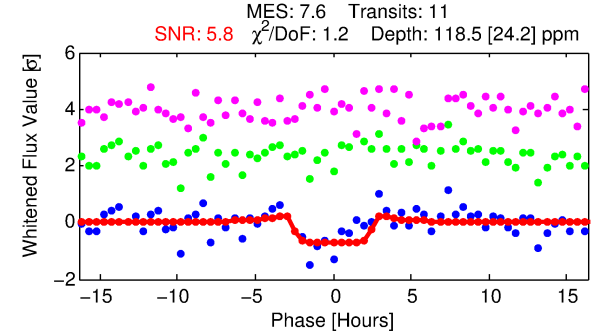
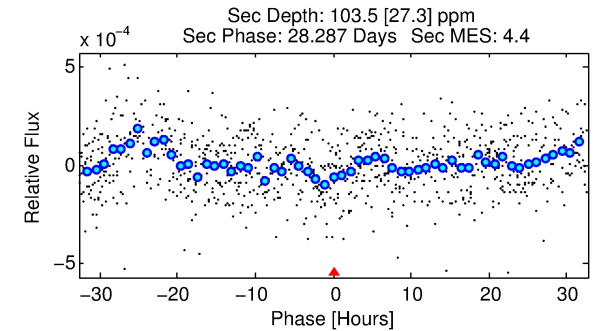
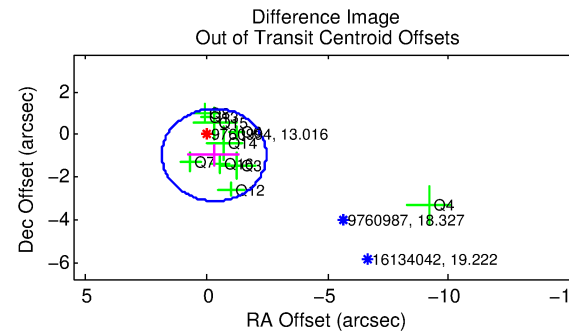
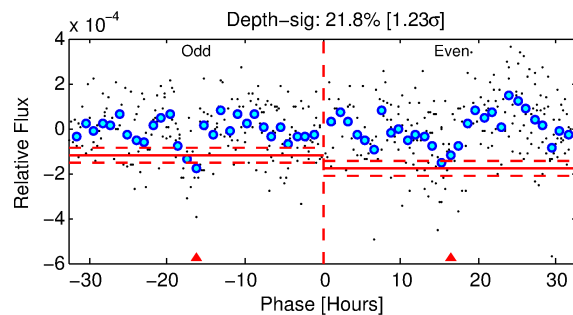
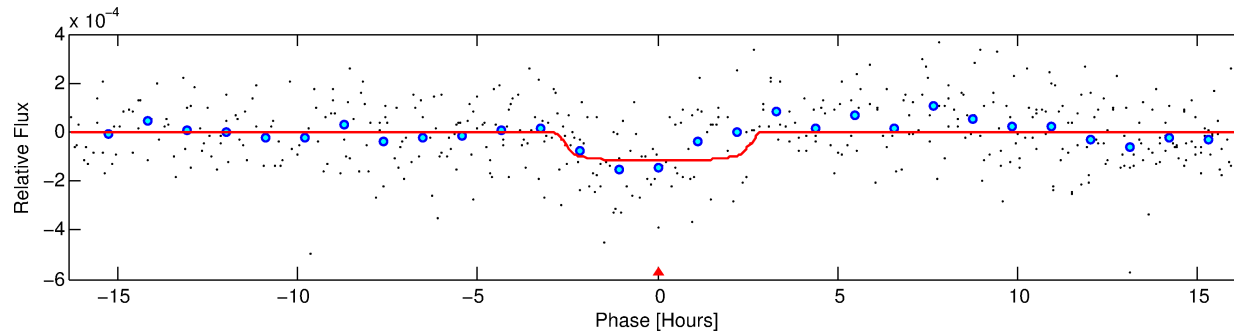
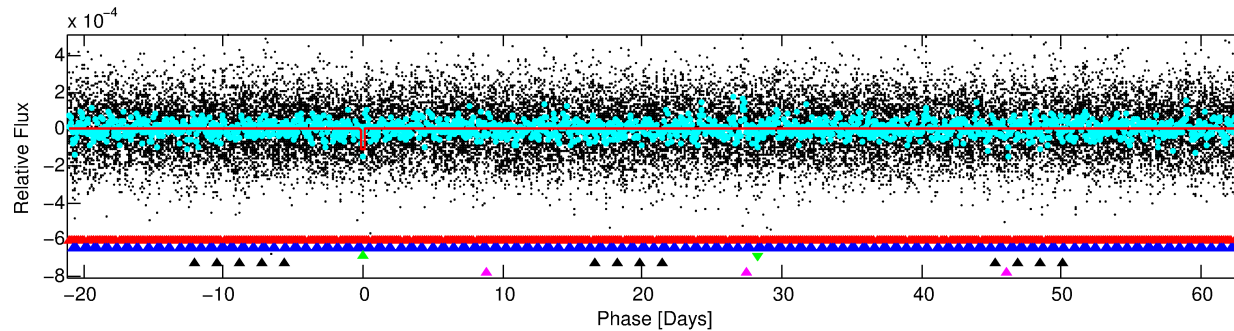
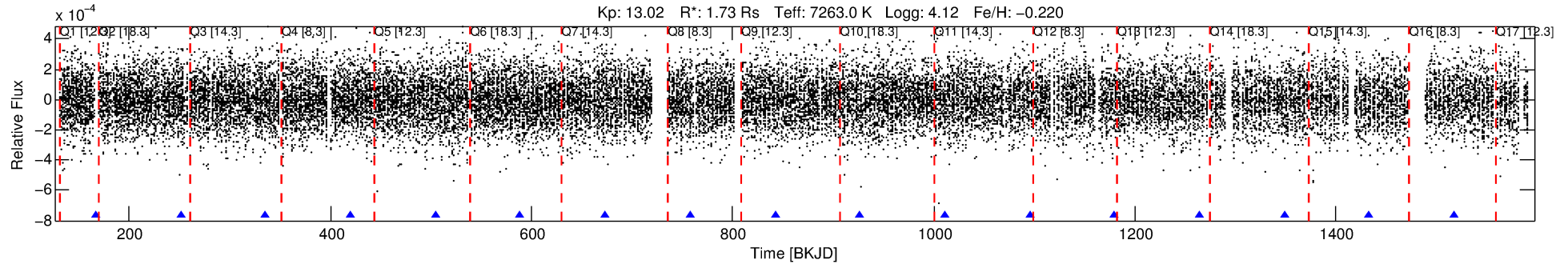
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009760994-03

No Significant Match Found

DV One-Page Summary

KIC: 9760994 Candidate: 3 of 5 Period: 84.410 d



DV Fit Results:

Period = 84.41000 [0.00178] d
Epoch = 166.9404 [0.0177] BKJD
Rp/R* = 0.0114 [0.0059]
a/R* = 60.63 [191.79]
b = 0.87 [0.88]
Seff = 41.02 [15.83]
Teq = 645 [62] K
Rp = 2.14 [1.28] Re
a = 0.4257 [0.1035] AU
Ag = 2255.75 [2541.45] [0.89 σ]
Teffp = 6876 [1865] K [3.34 σ]

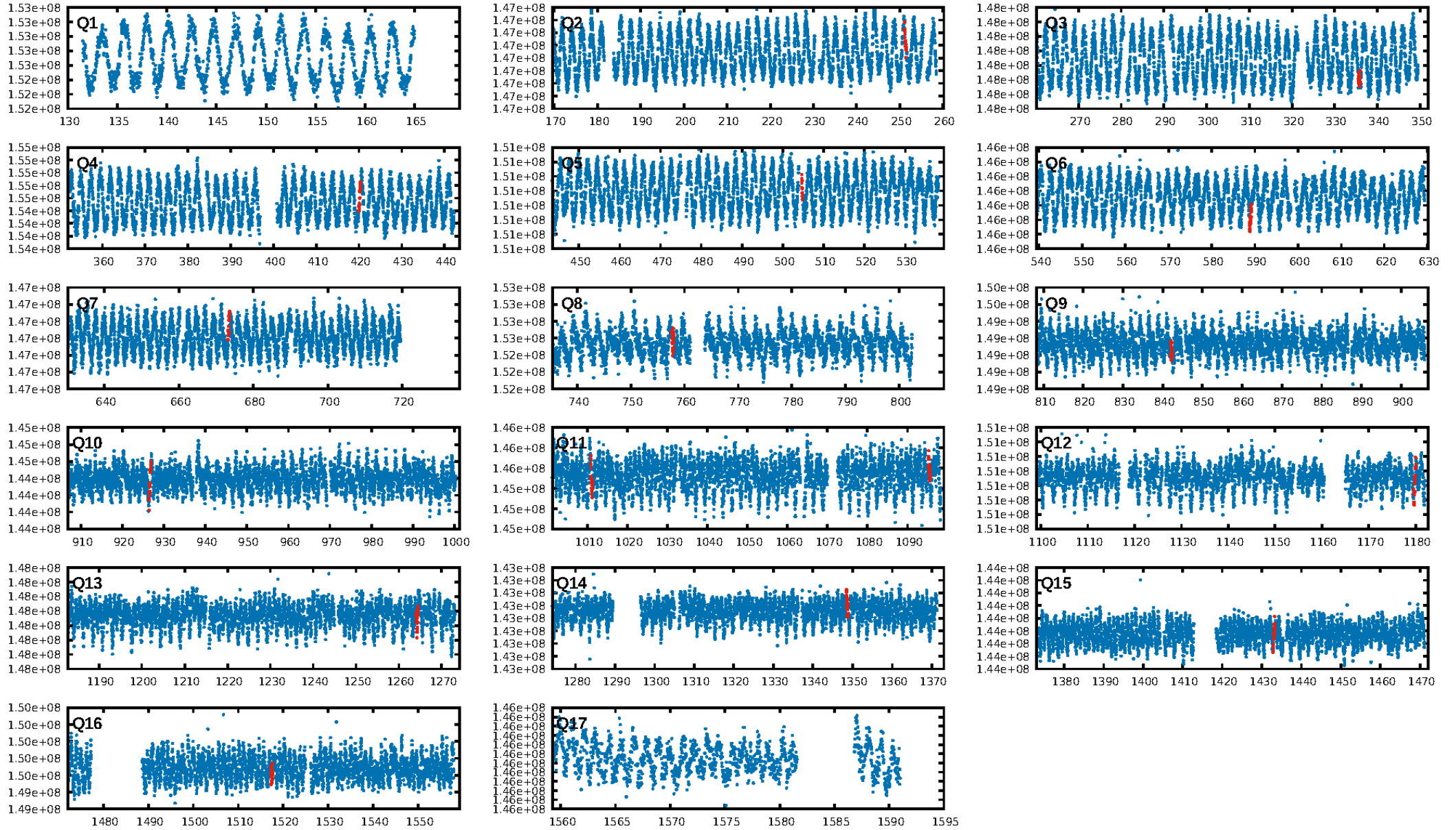
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [283.53 σ]
LongPeriod-sig: 100.0% [22.89 σ]
ModelChiSquare2-sig: 28.3%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 9.33e-10
RollingBand-fgt: 1.00 [11/11]
GhostDiagnostic-chr: 0.3548
Centroid-sig: 95.7%
Centroid-so: 0.088 arcsec [0.09 σ]
OotOffset-rm: 1.007 arcsec [1.40 σ]
KicOffset-rm: 0.557 arcsec [0.75 σ]
OotOffset-st: 2/3/4/1 [10]
KicOffset-st: 2/3/4/1 [10]
DiffImageQuality-fgm: 0.50 [5/10]
DiffImageOverlap-fno: 0.14 [2/14]

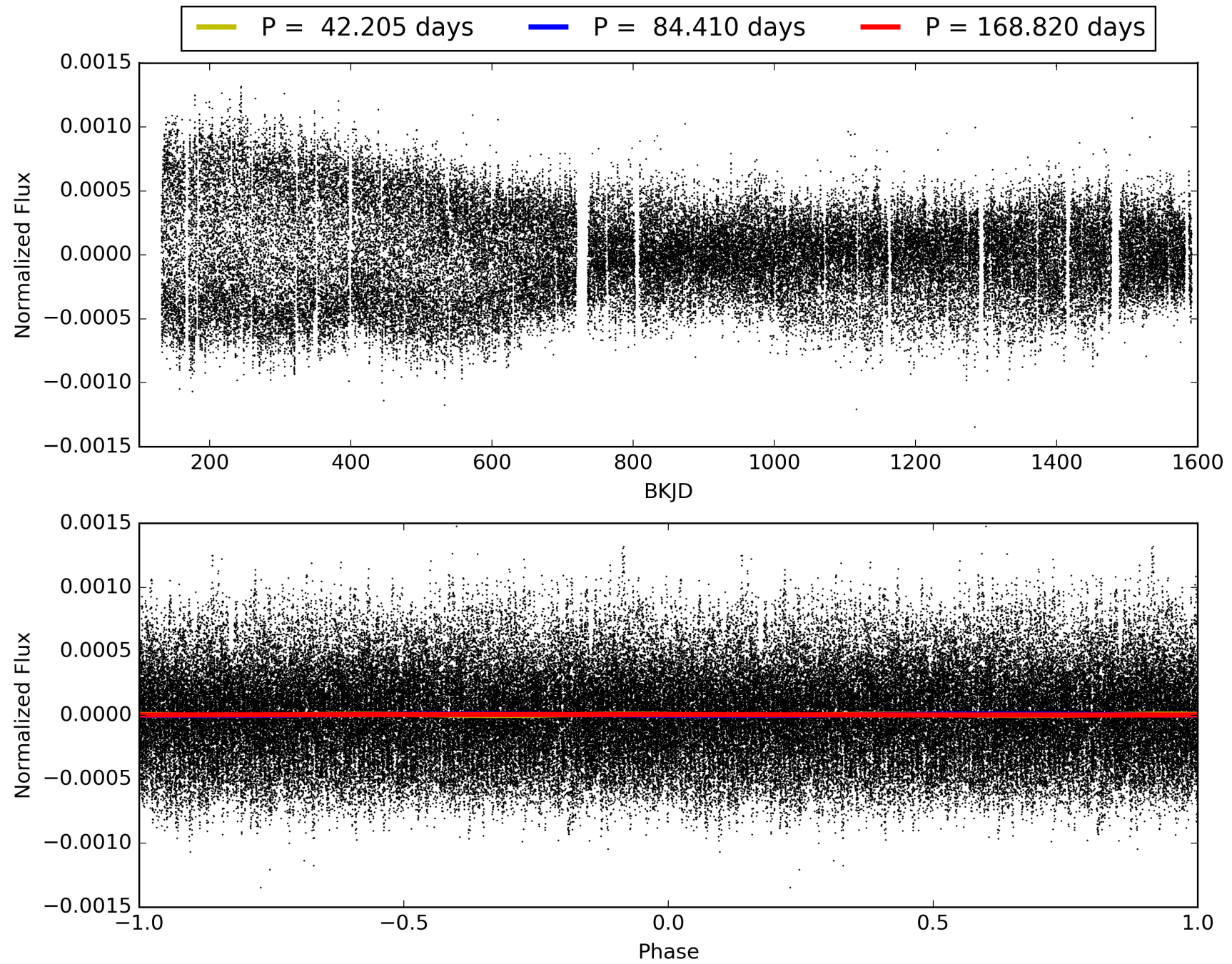
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:03:05 Z

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

TCE 009760994-03, PDC Light Curves

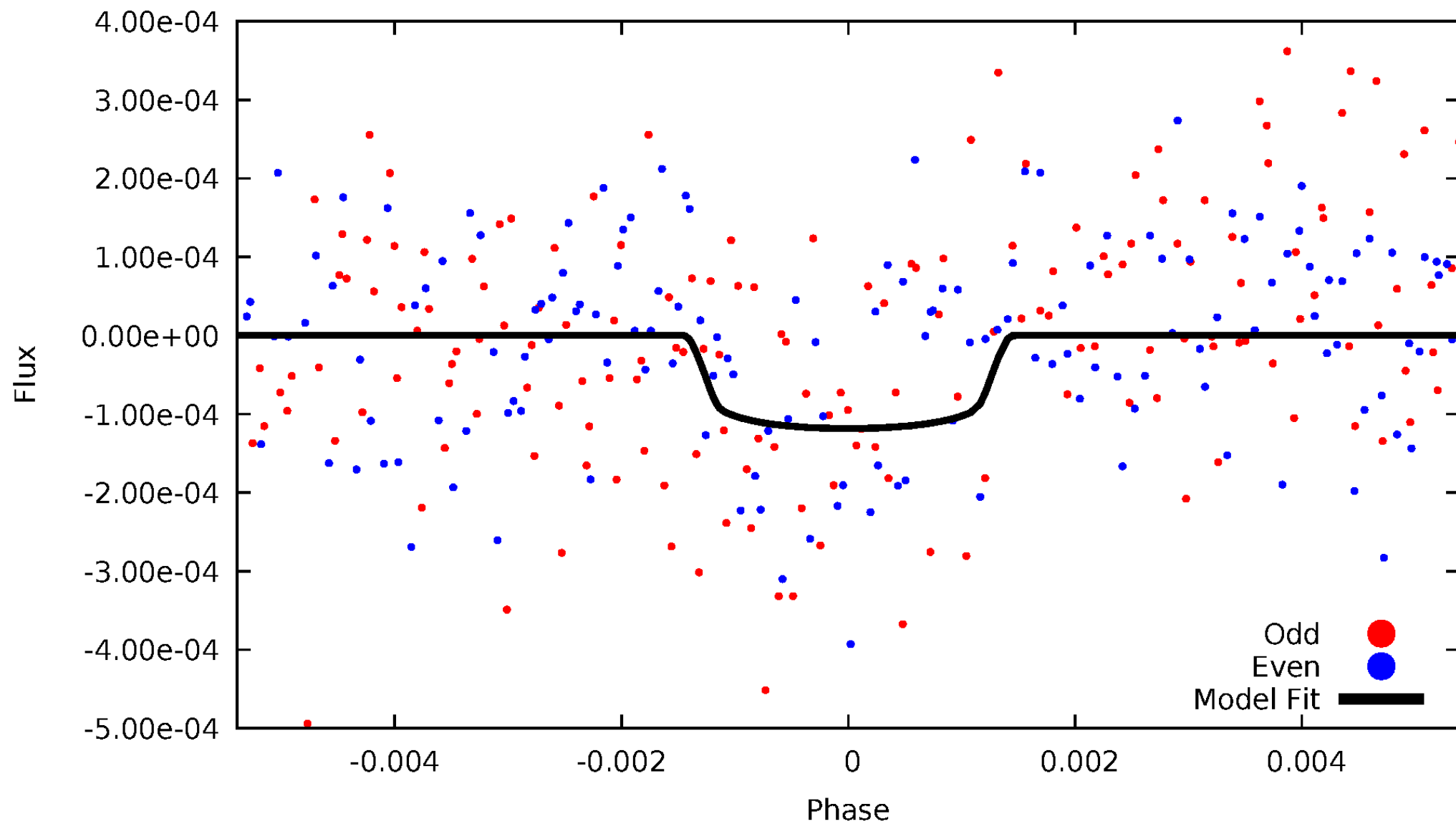


TCE 009760994-03



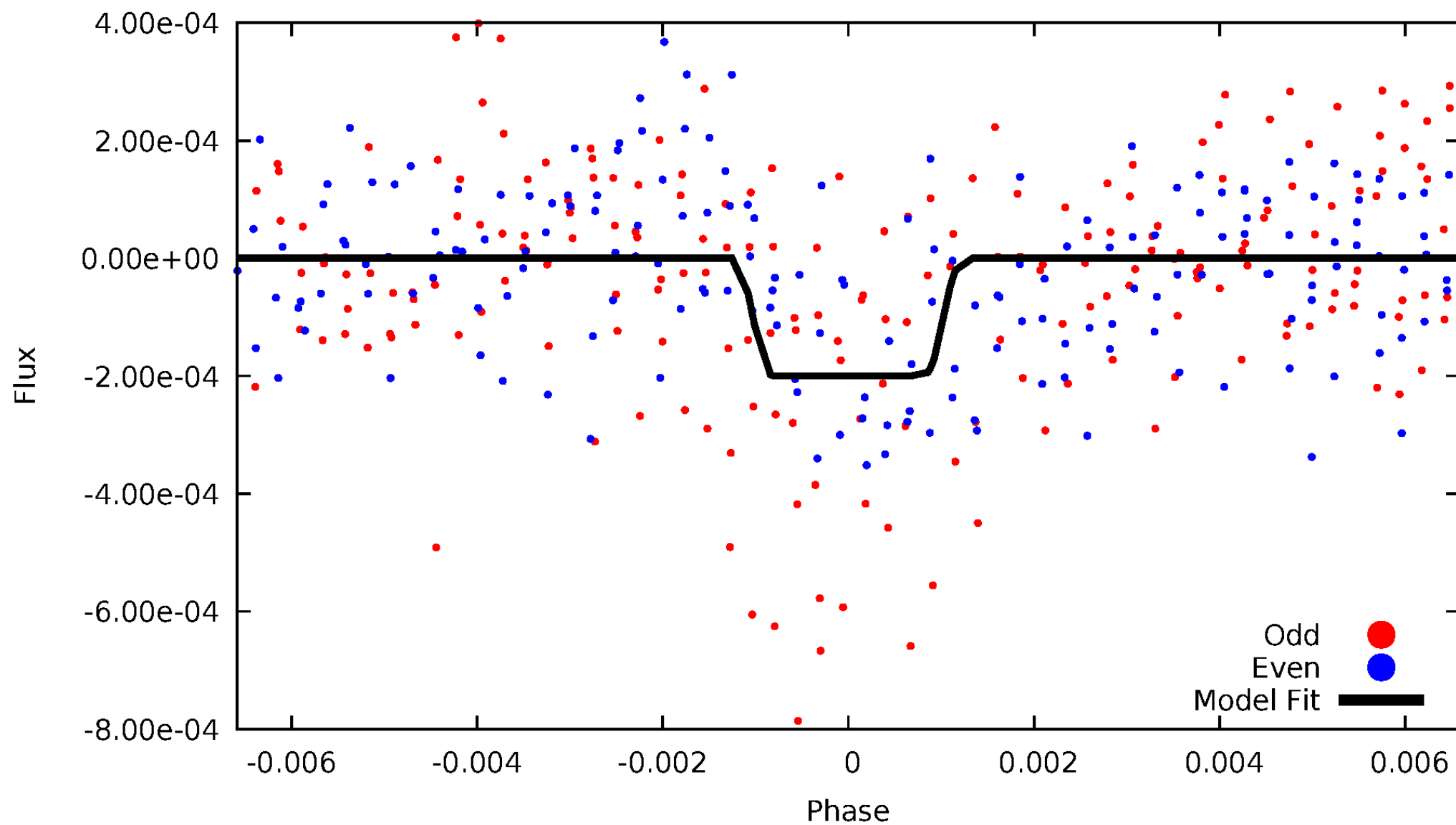
DV Odd/Even

TCE 009760994-03

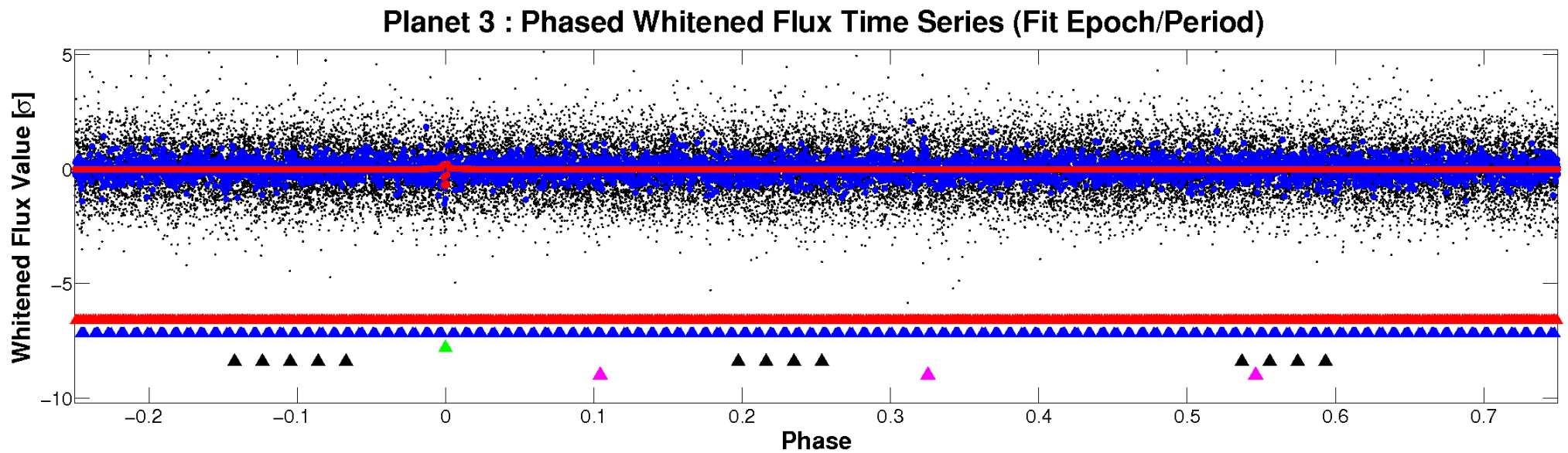
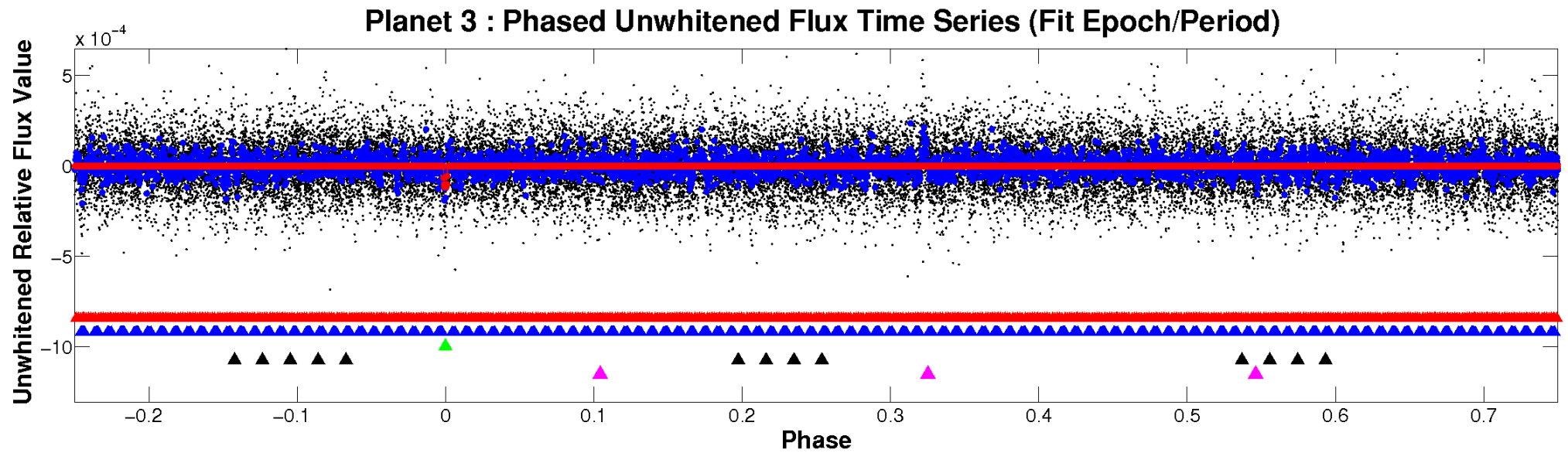


ALT Odd/Even

TCE 009760994-03

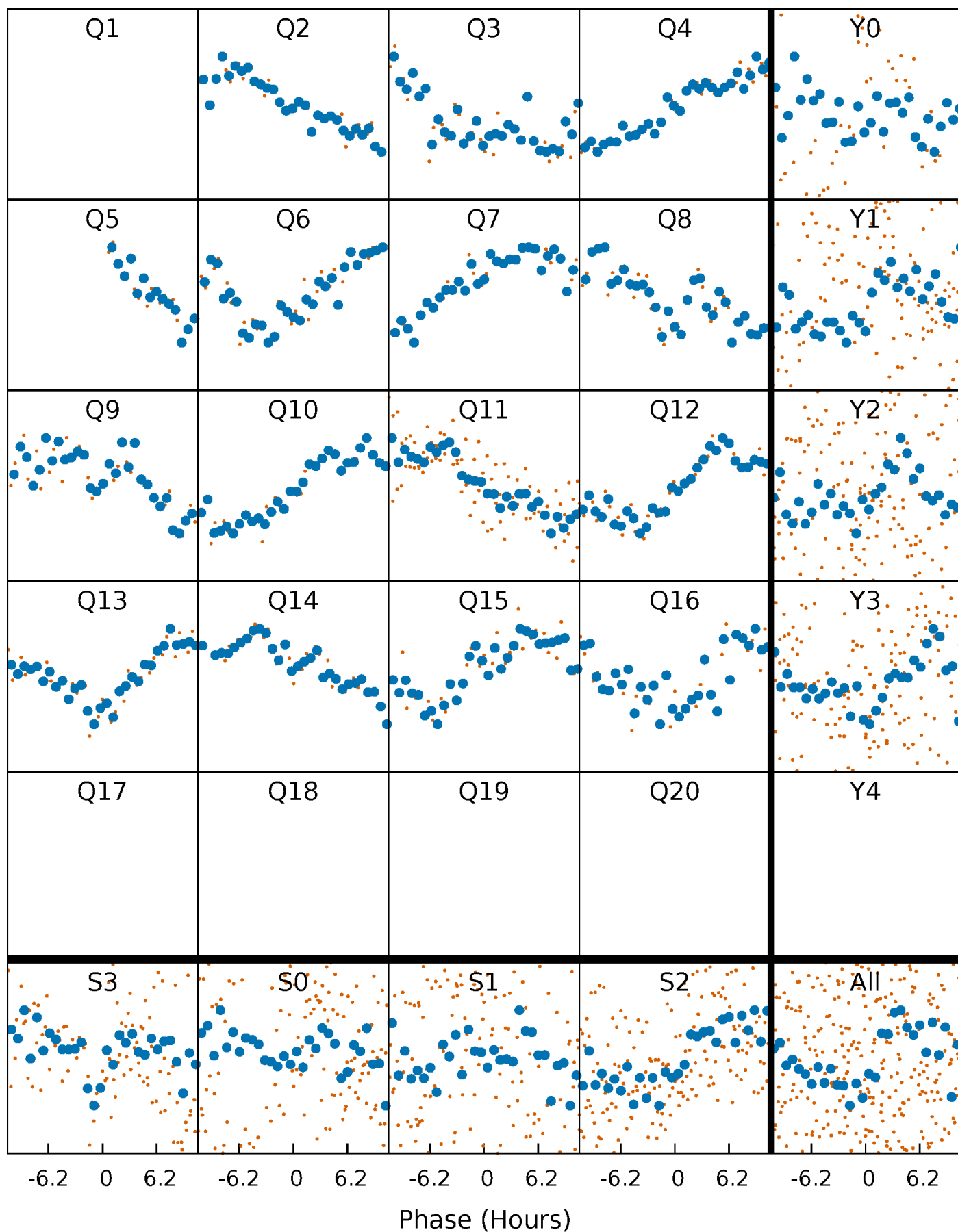


Non-Whitened Vs. Whitened Light Curve



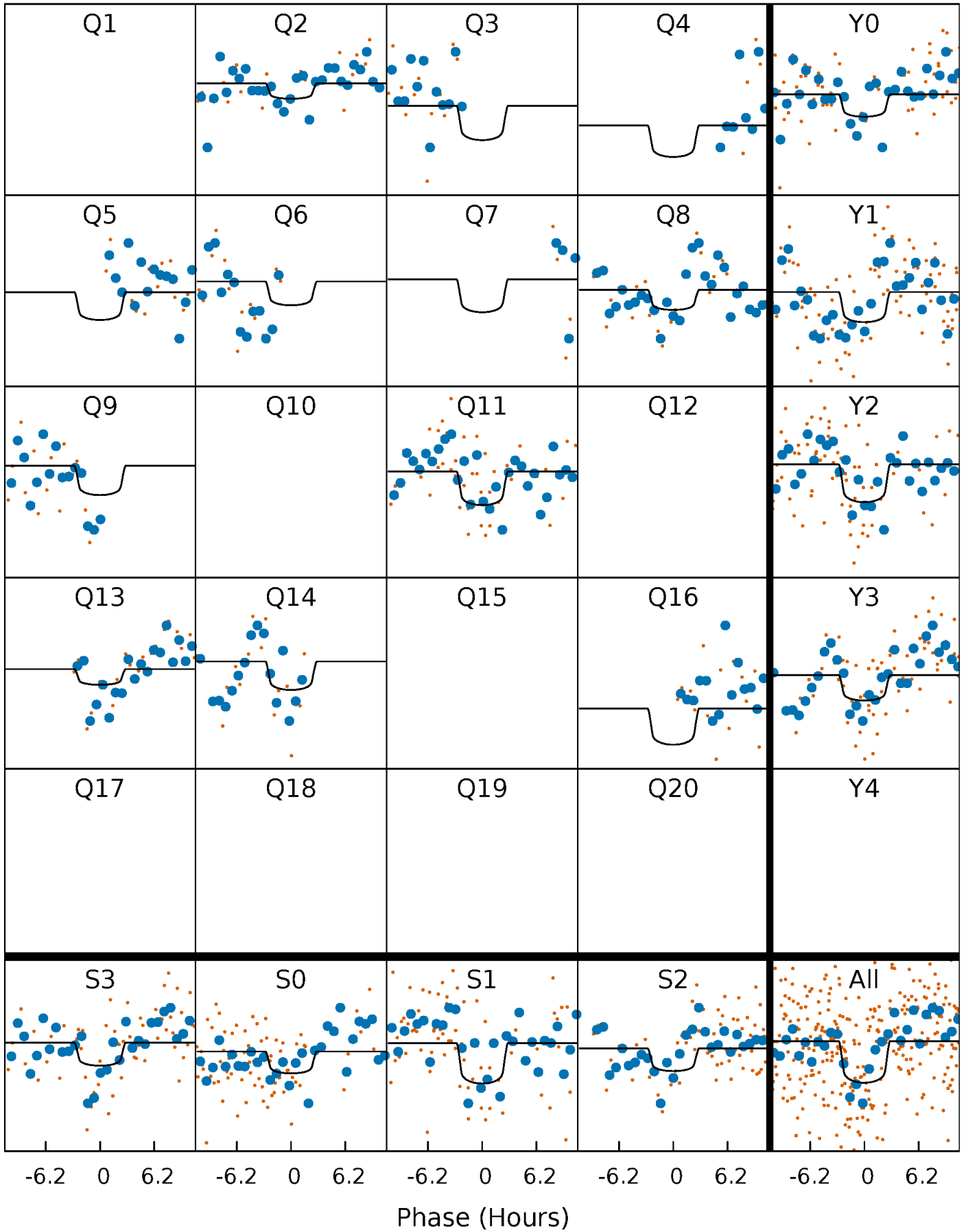
PDC Quarter-Phased Transit Curves

TCE 009760994-03 P= 84.409997 Days $T_0=166.940371$ (BKJD)



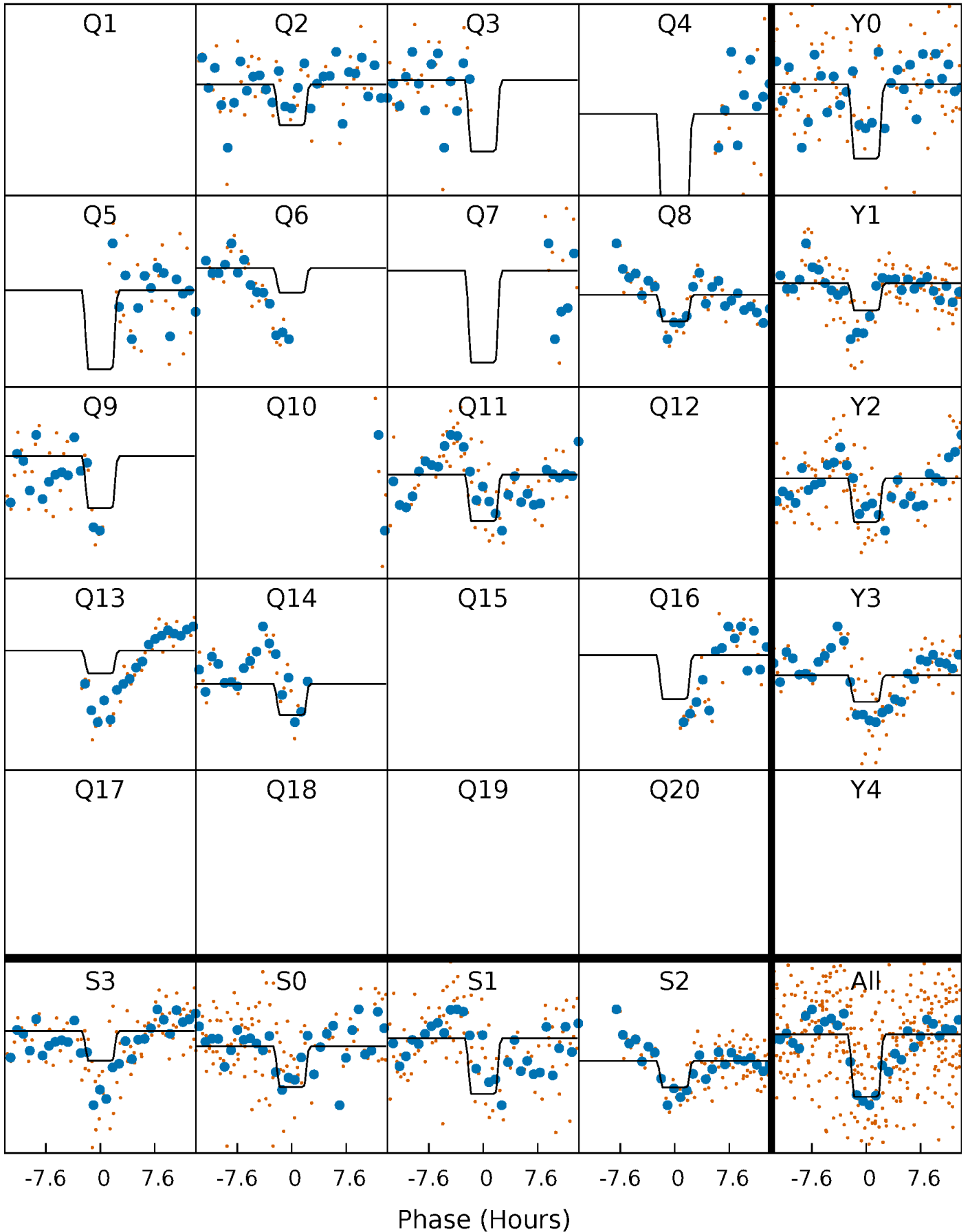
DV Quarter-Phased Transit Curves

TCE 009760994-03 P= 84.409997 Days $T_0=166.940371$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

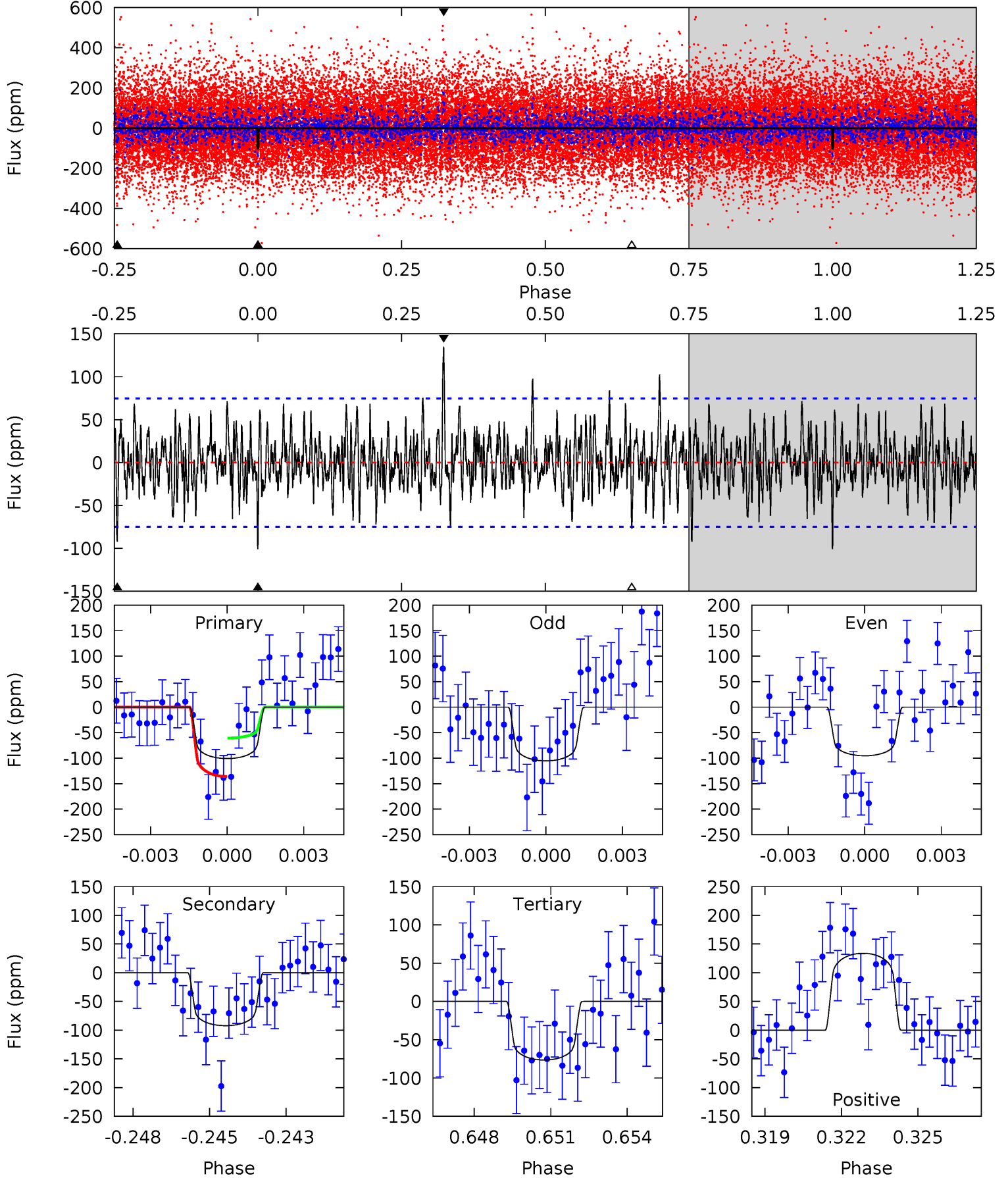
TCE 009760994-03 $P = 84.410979$ Days $T_0 = 166.911628$ (BKJD)



DV Model-Shift Uniqueness Test

009760994-03, P = 84.409997 Days, E = 82.530374 Days

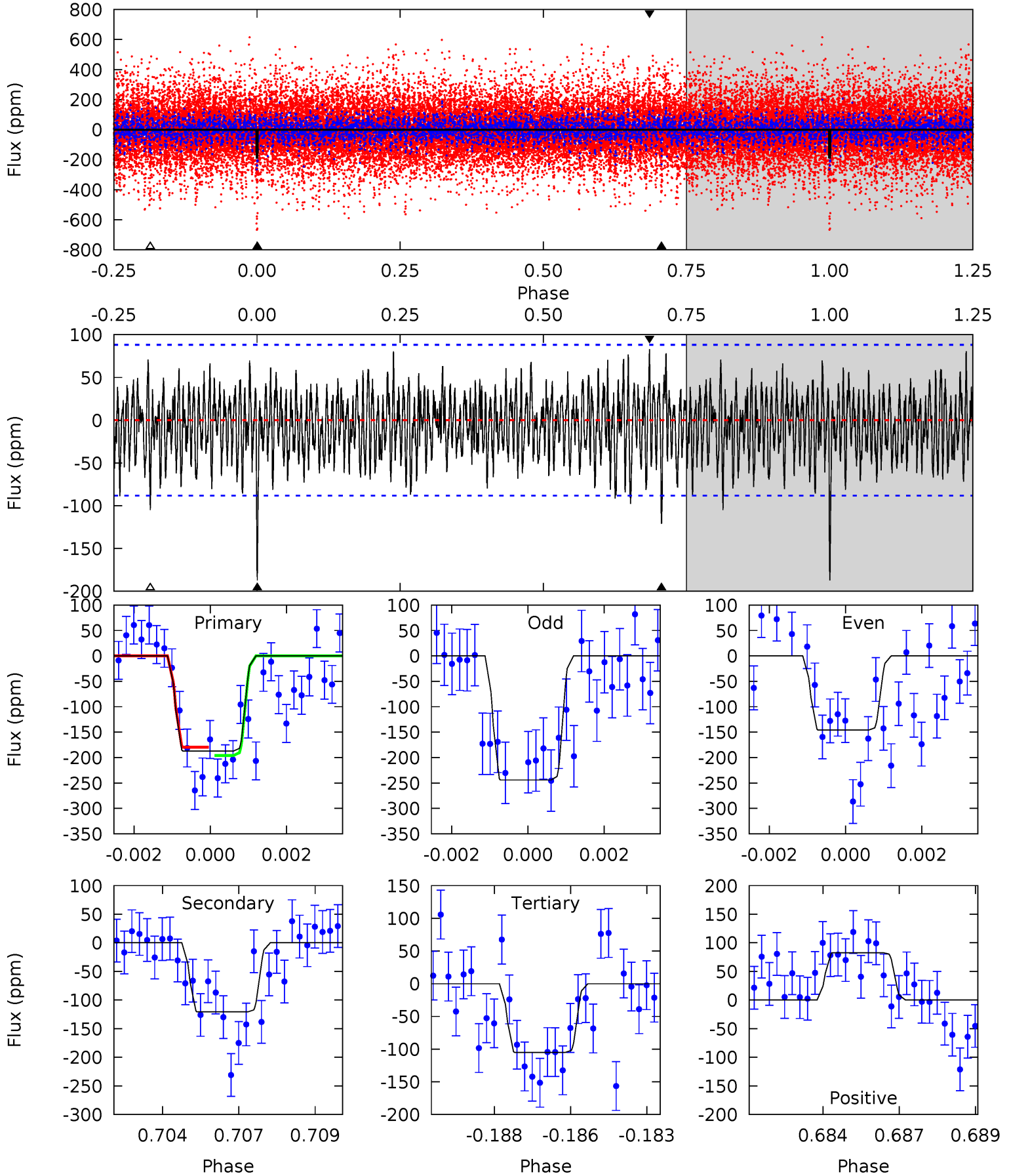
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.09	6.48	5.38	9.41	5.26	2.97	1.91	1.71	-2.33	1.10	-2.93	0.35	0.86	0.57	2.65



Alt Model-Shift Uniqueness Test

009760994-03, P = 84.410979 Days, E = 82.500649 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	7.26	6.32	4.98	5.31	3.06	1.87	4.93	6.27	0.95	2.29	2.97	1.17	0.31	0.49



Stellar Parameters For KIC 009760994

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7263^{+228}_{-304}	$4.123^{+0.153}_{-0.187}$	$-0.220^{+0.250}_{-0.350}$	$1.727^{+0.508}_{-0.416}$	$1.442^{+0.211}_{-0.234}$	$0.394^{+0.330}_{-0.195}$
	+3%/-4%	+4%/-5%	+114%/-159%	+29%/-24%	+15%/-16%	+84%/-49%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009760994-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-92±14	$2.16^{+1.21}_{-1.03}$	904^{+75}_{-63}	6584^{+3155}_{-1250}	1959^{+5406}_{-1160}
Alt.	-121±17	$2.67^{+1.31}_{-1.10}$	903^{+72}_{-63}	6313^{+2119}_{-985}	1659^{+3403}_{-902}

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

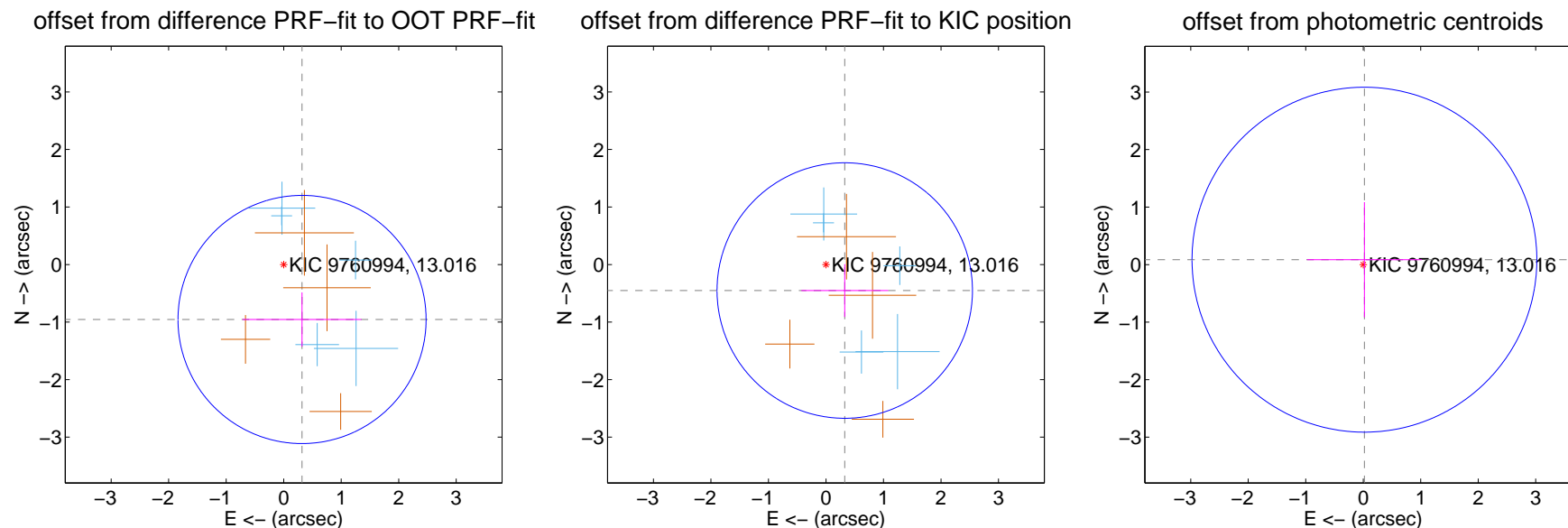
DV Centroid Data

Supplemental centroid analysis for 009760994-03. Kepler magnitude: 13.02. Transit SNR 5.82

There are 5 quarters with good PRF difference image offsets

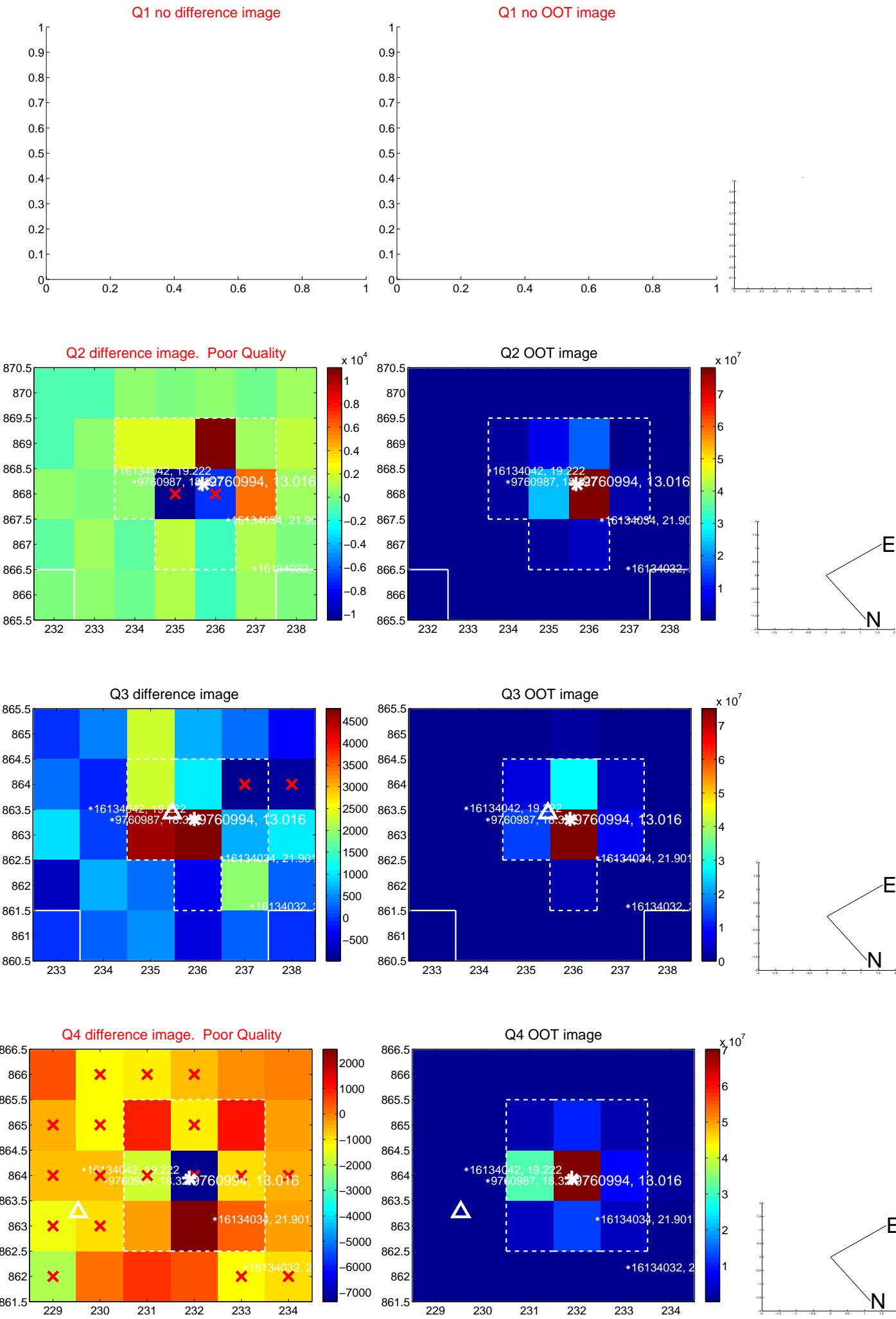
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.007 ± 0.719	1.40	-0.319 ± 1.033	-0.955 ± 0.470
PRF-fit source offset from KIC position	0.557 ± 0.740	0.75	-0.326 ± 0.756	-0.452 ± 0.457
photometric centroid source offset	0.09 ± 1.00	0.09	-0.02 ± 1.00	0.09 ± 1.00

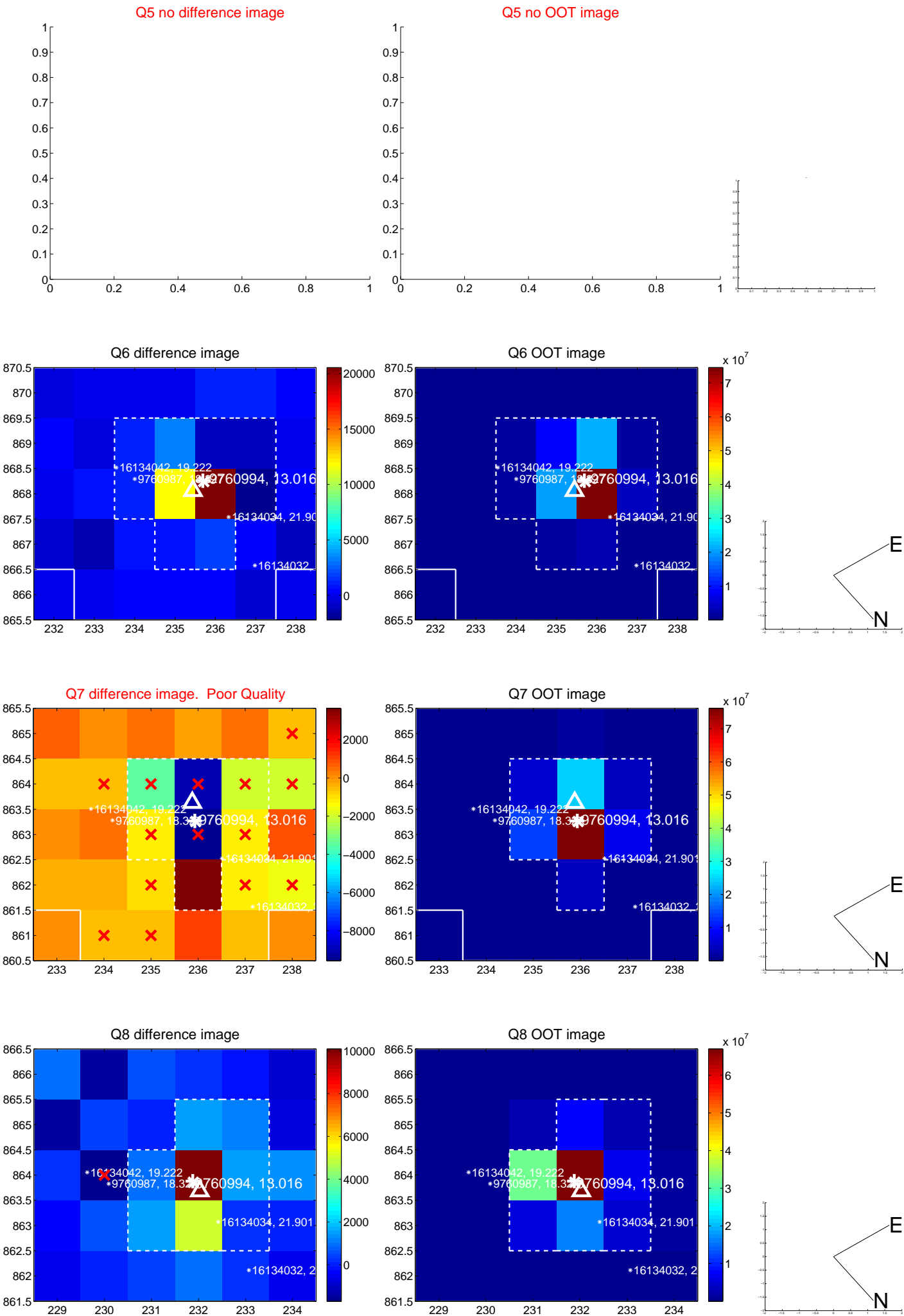


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

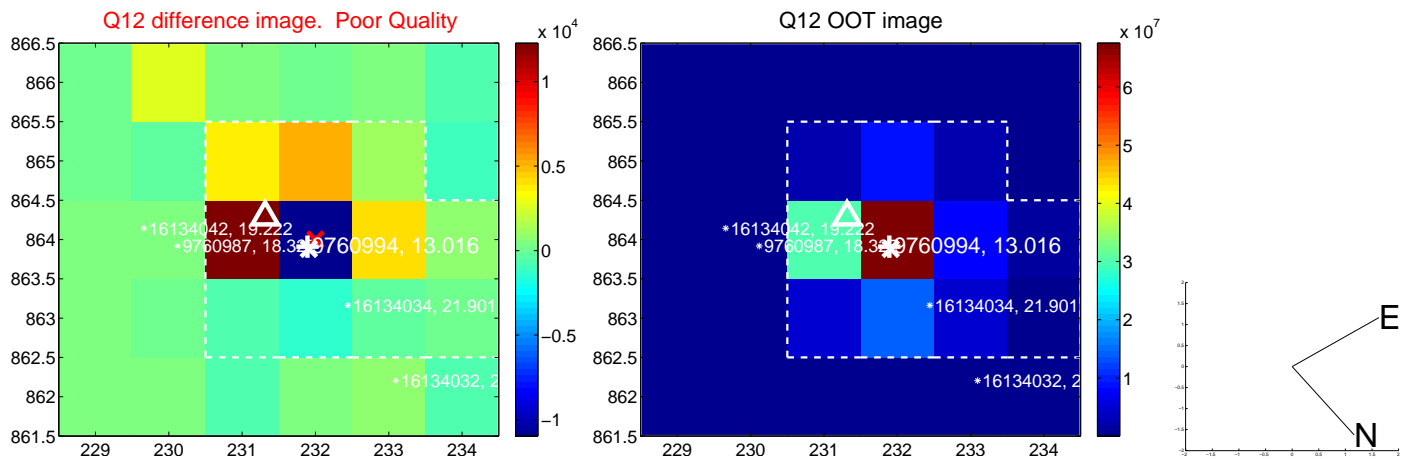
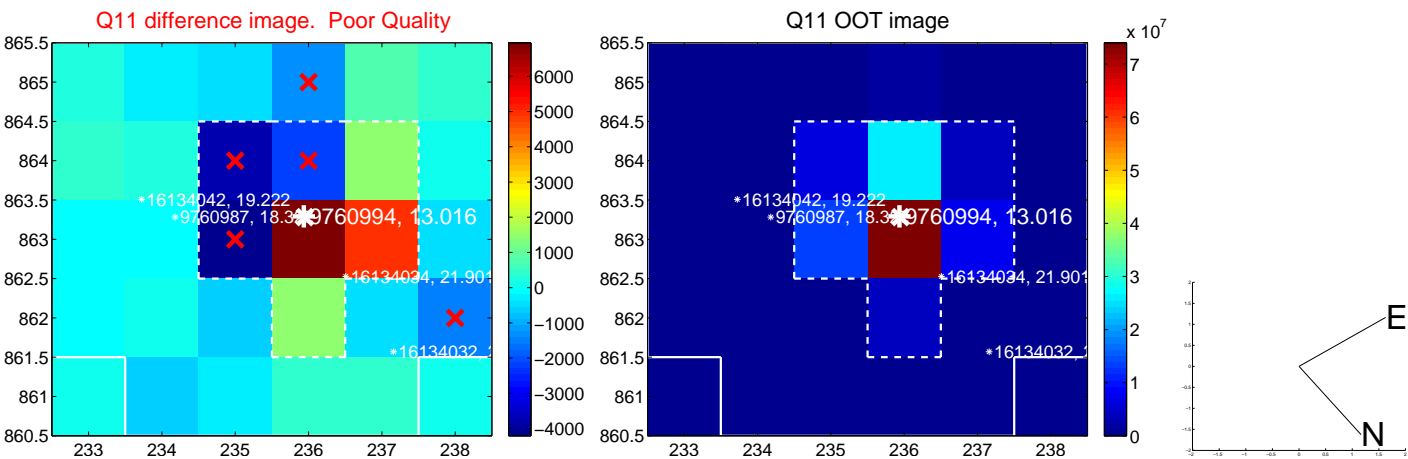
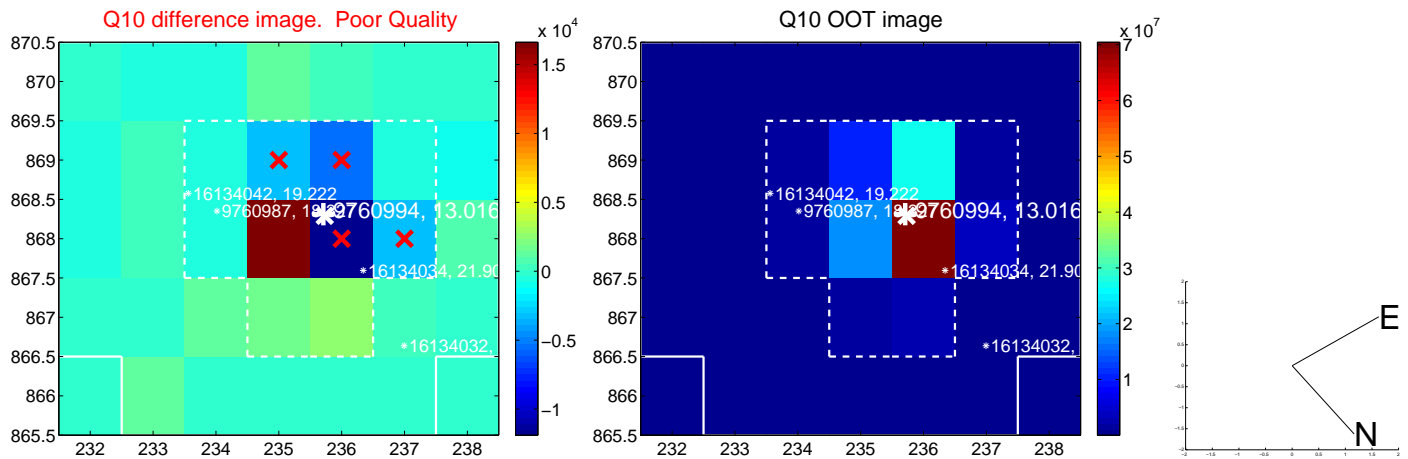
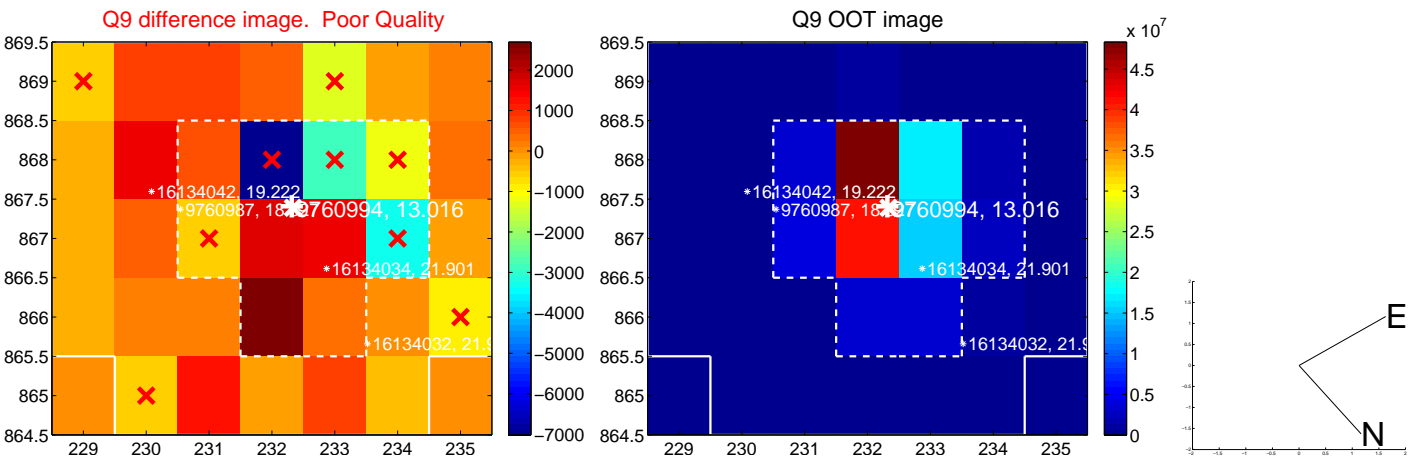
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



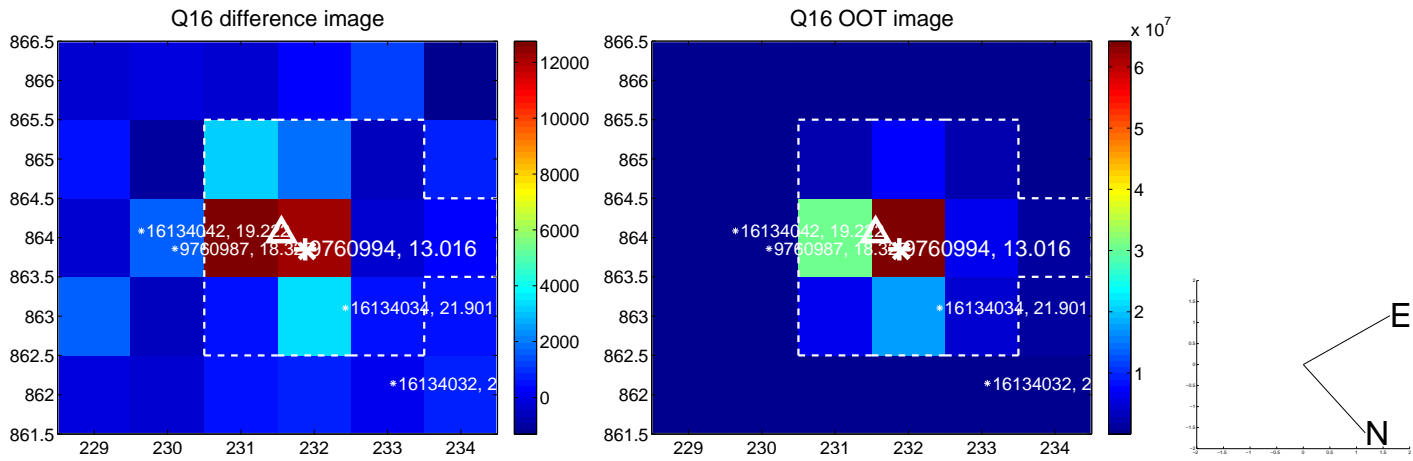
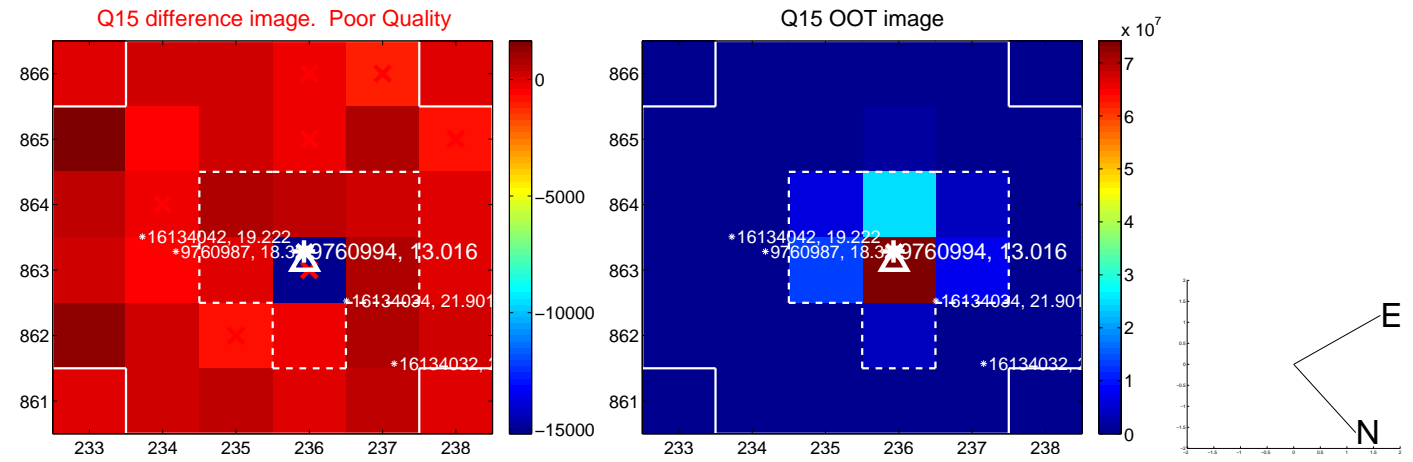
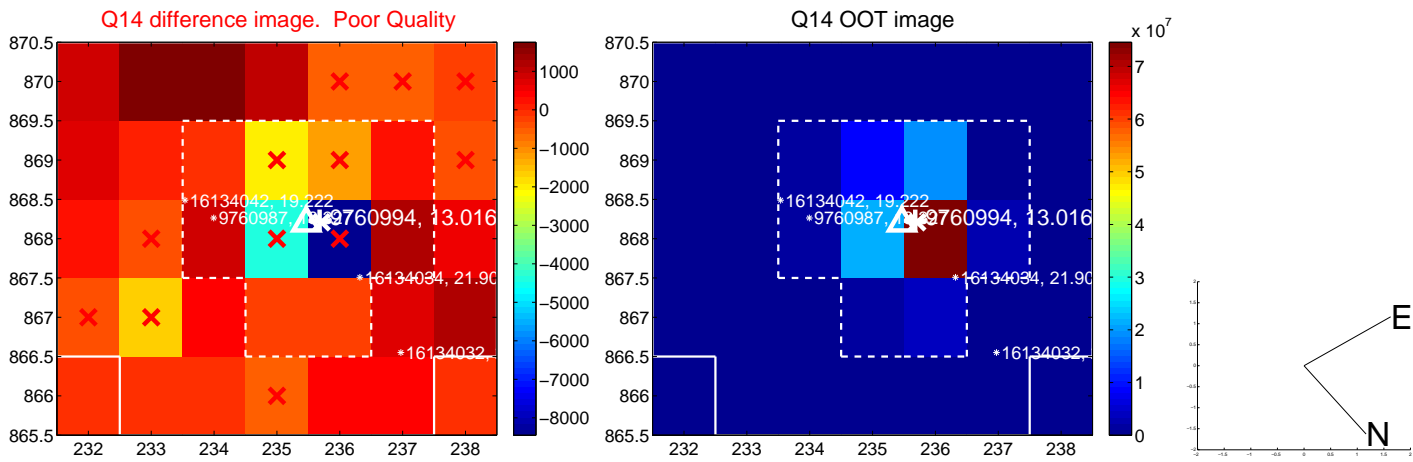
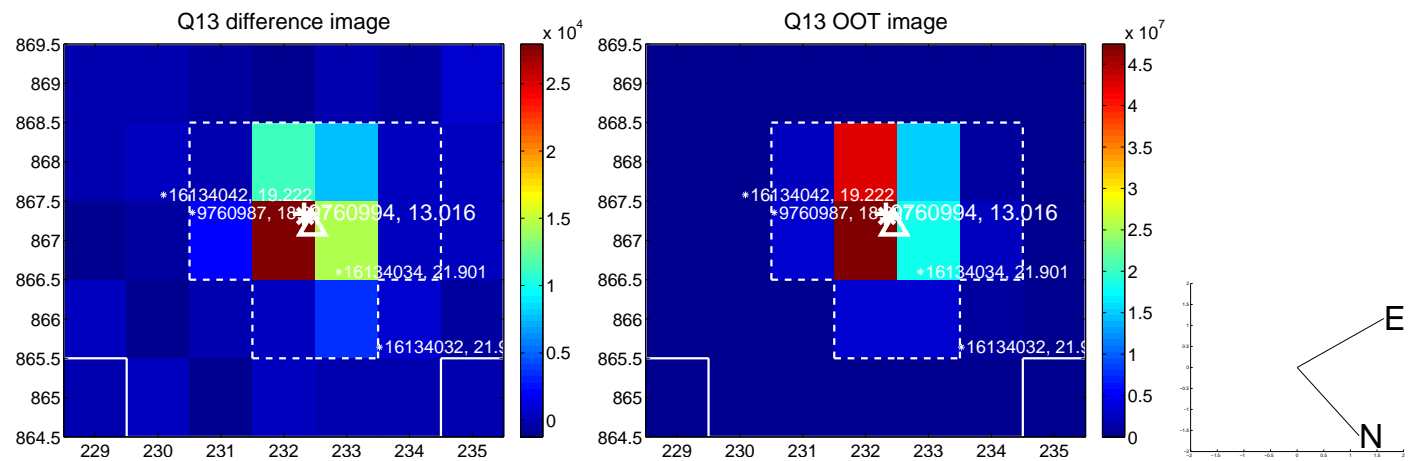
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



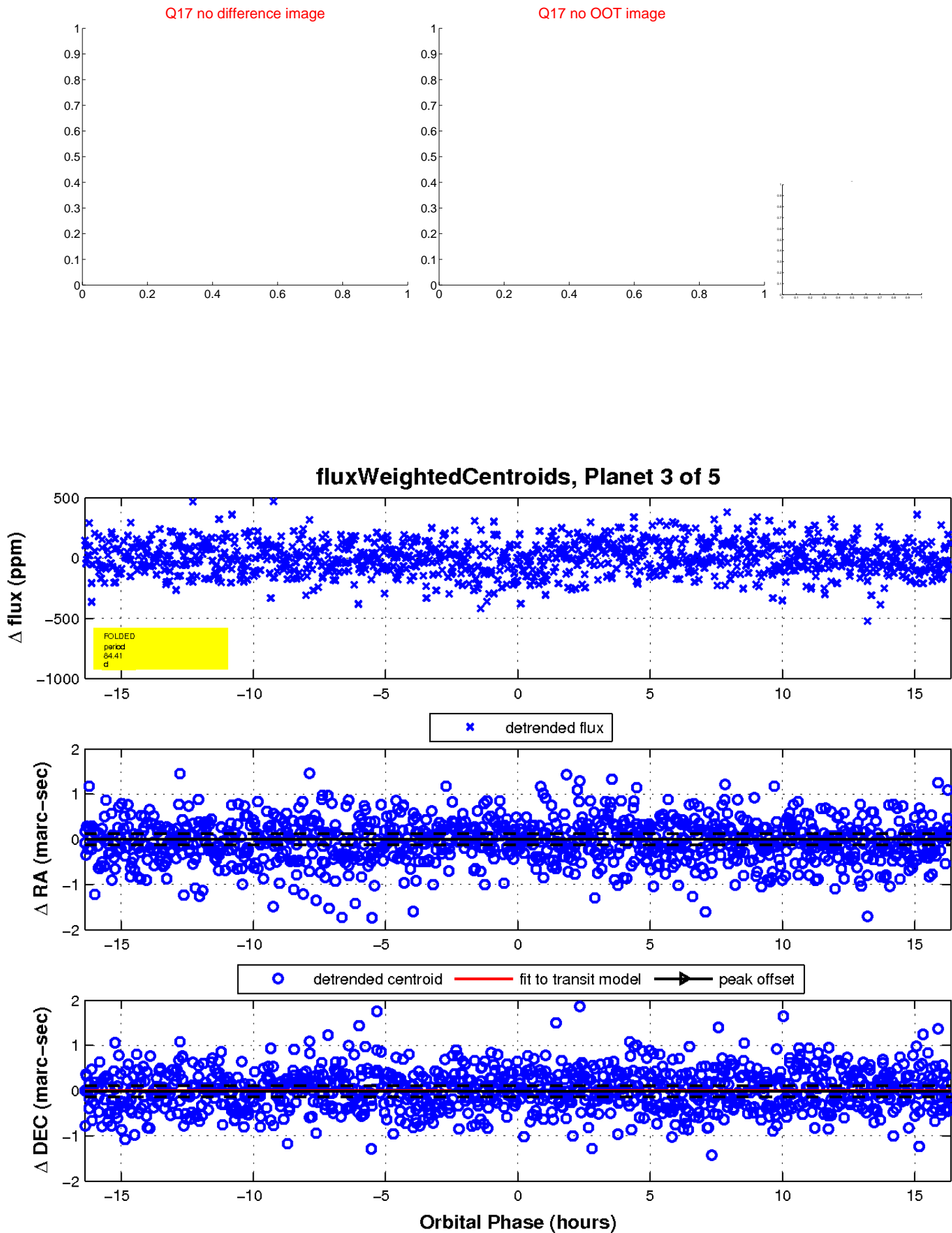
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

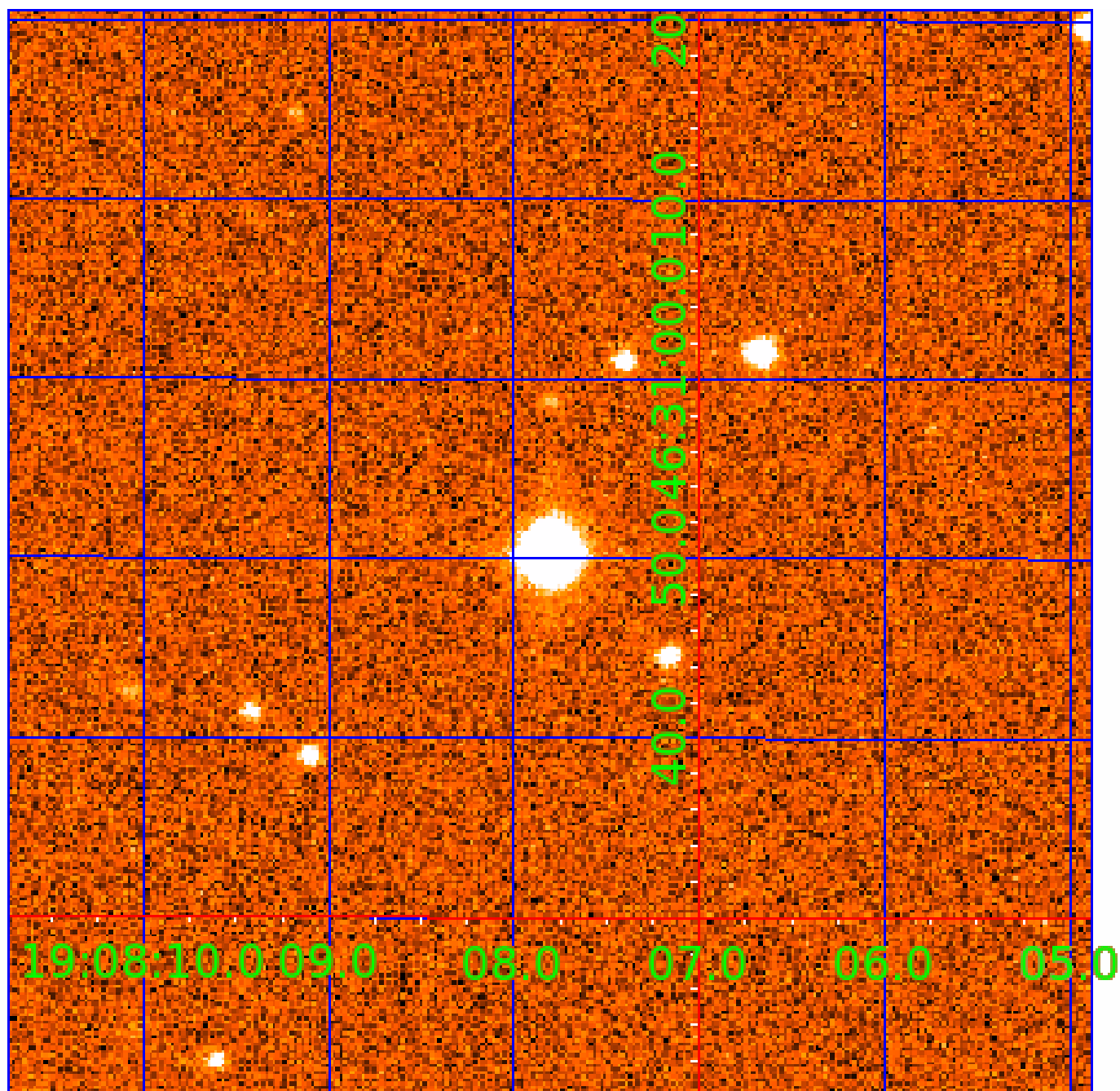


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009760994

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})
009760994-01	OBS	No	2.262152	132.788922	24.3	4.308	9.2	7.8	1.73	7263	0.96	5115.14
009760994-02	OBS	No	2.261375	132.613490	22.1	7.356	9.6	7.6	1.73	7263	0.90	5117.48
009760994-03	OBS	No	84.409997	166.940371	118.5	5.458	7.6	5.8	1.73	7263	2.14	41.02
009760994-04	OBS	No	113.074935	154.939382	148.0	29.549	7.7	7.1	1.73	7263	2.34	27.78
009760994-05	OBS	No	572.219630	297.459789	224.7	39.688	7.3	5.8	1.73	7263	2.68	3.20

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009760994-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_POS_ALT
009760994-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
009760994-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
009760994-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV
009760994-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

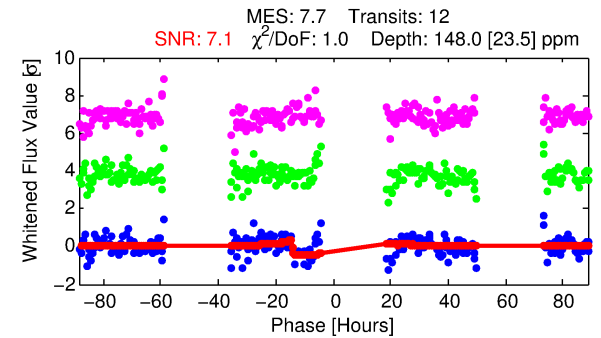
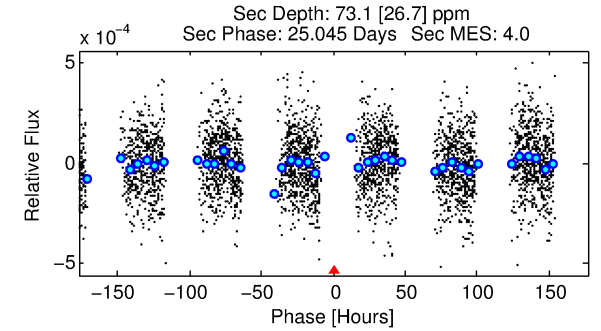
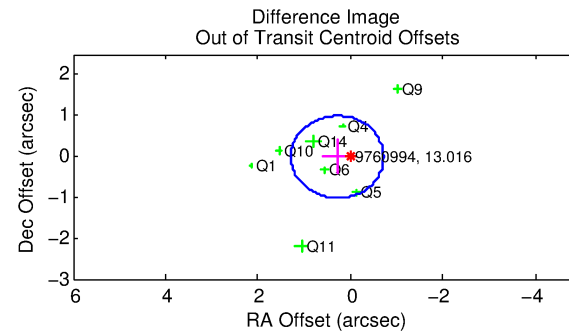
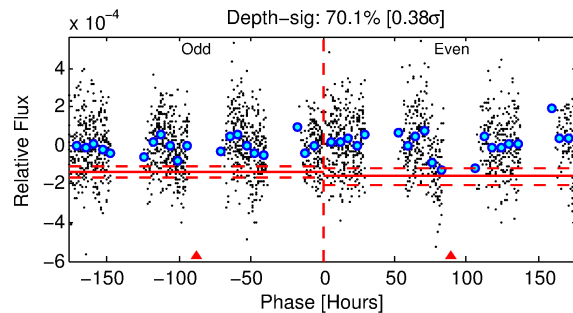
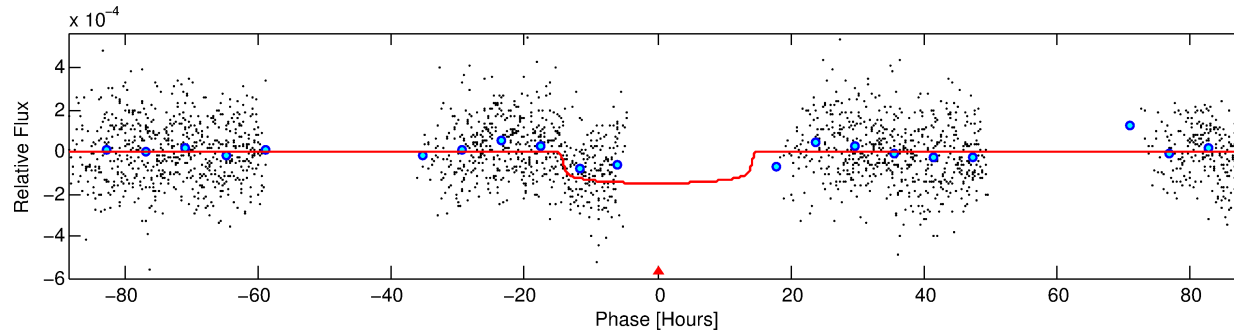
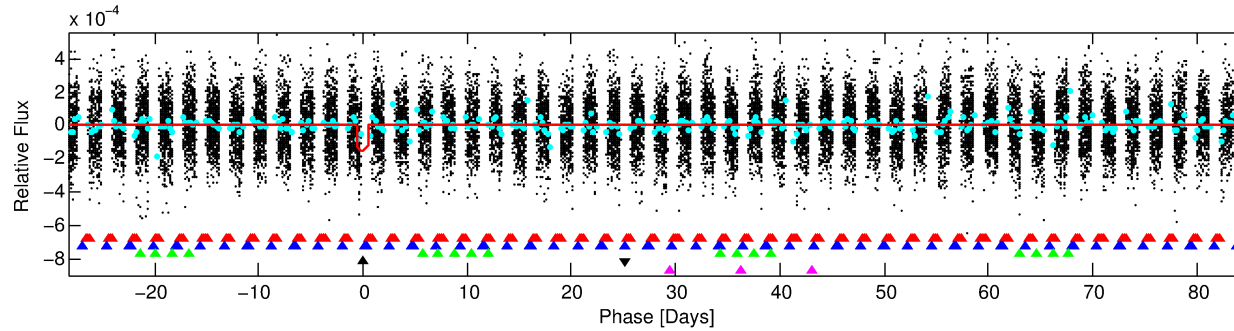
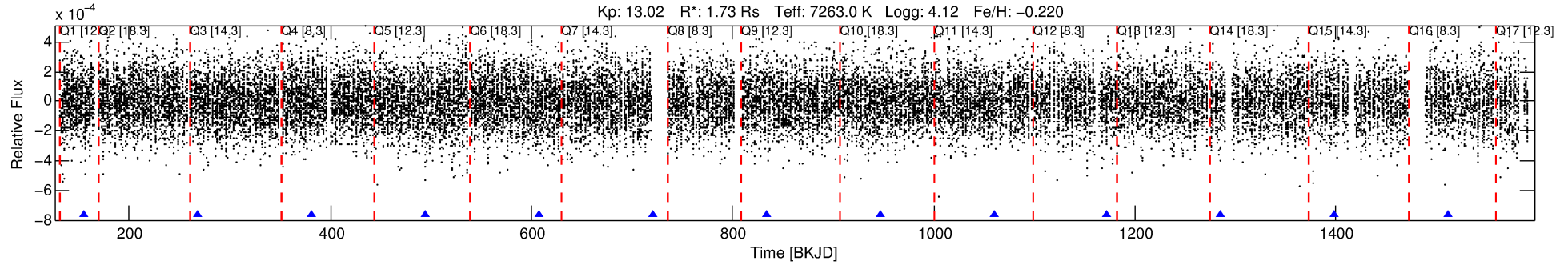
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009760994-04

No Significant Match Found

DV One-Page Summary

KIC: 9760994 Candidate: 4 of 5 Period: 113.075 d



DV Fit Results:

Period = 113.07493 [0.00338] d
Epoch = 154.9394 [0.1277] BKJD
Rp/R* = 0.0124 [0.0015]
a/R* = 17.15 [8.63]
b = 0.83 [0.25]
Seff = 27.78 [10.72]
Teq = 585 [56] K
Rp = 2.34 [0.74] Re
a = 0.5174 [0.1257] AU
Ag = 1971.21 [1101.58] [1.79 σ]
Teffp = 6031 [706] K [7.68 σ]

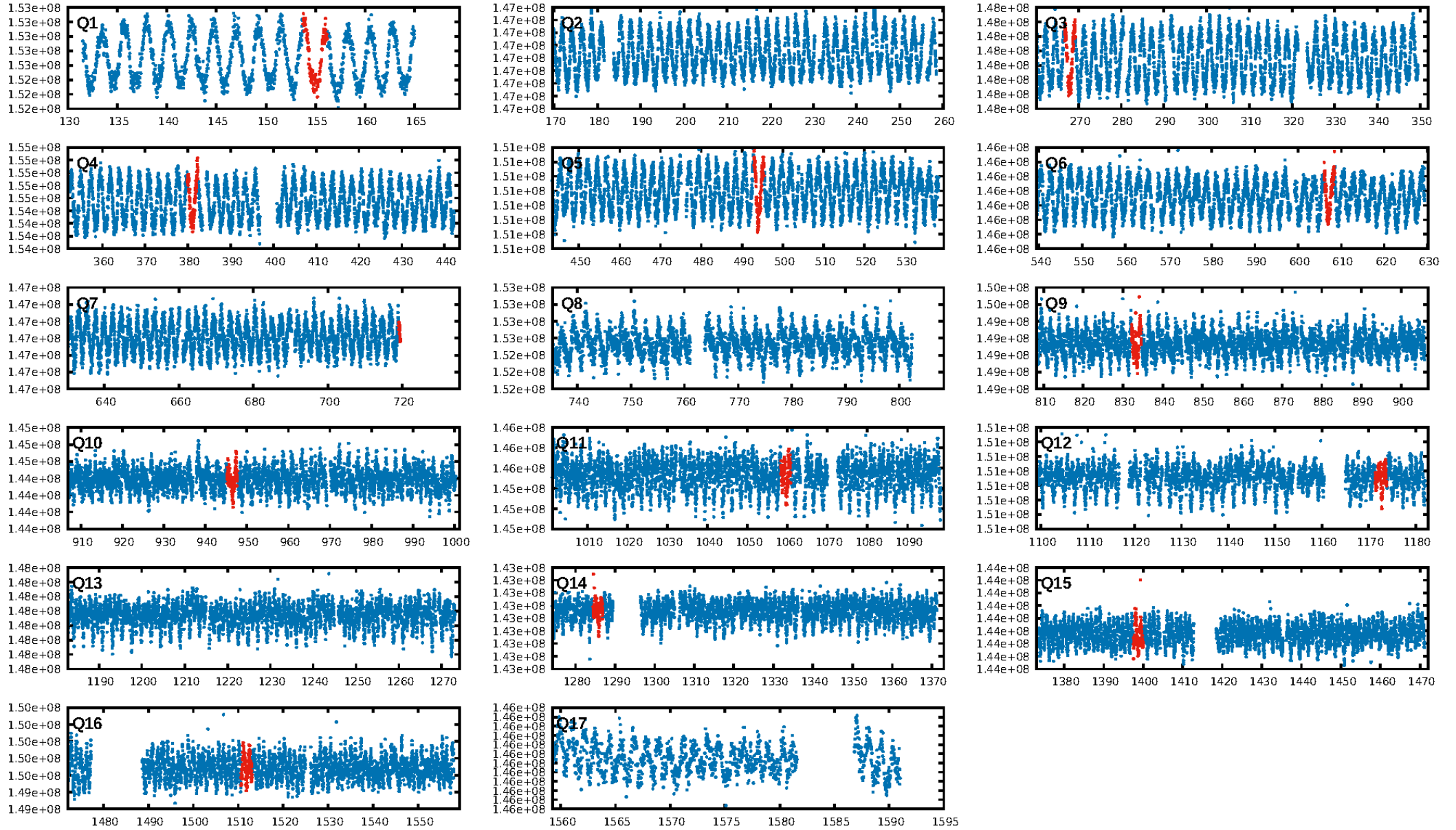
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [22.89 σ]
LongPeriod-sig: 100.0% [222.71 σ]
ModelChiSquare2-sig: 86.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.10e-09
RollingBand-fgt: 1.00 [11/11]
GhostDiagnostic-chr: -2.517
Centroid-sig: 2.7%
Centroid-so: 0.978 arcsec [2.13 σ]
OotOffset-rm: 0.290 arcsec [0.86 σ]
KicOffset-rm: 0.313 arcsec [0.90 σ]
OotOffset-st: 3/1/1/3 [8]
KicOffset-st: 3/1/1/3 [8]
DiffImageQuality-fgm: 1.00 [8/8]
DiffImageOverlap-fno: 0.00 [0/8]

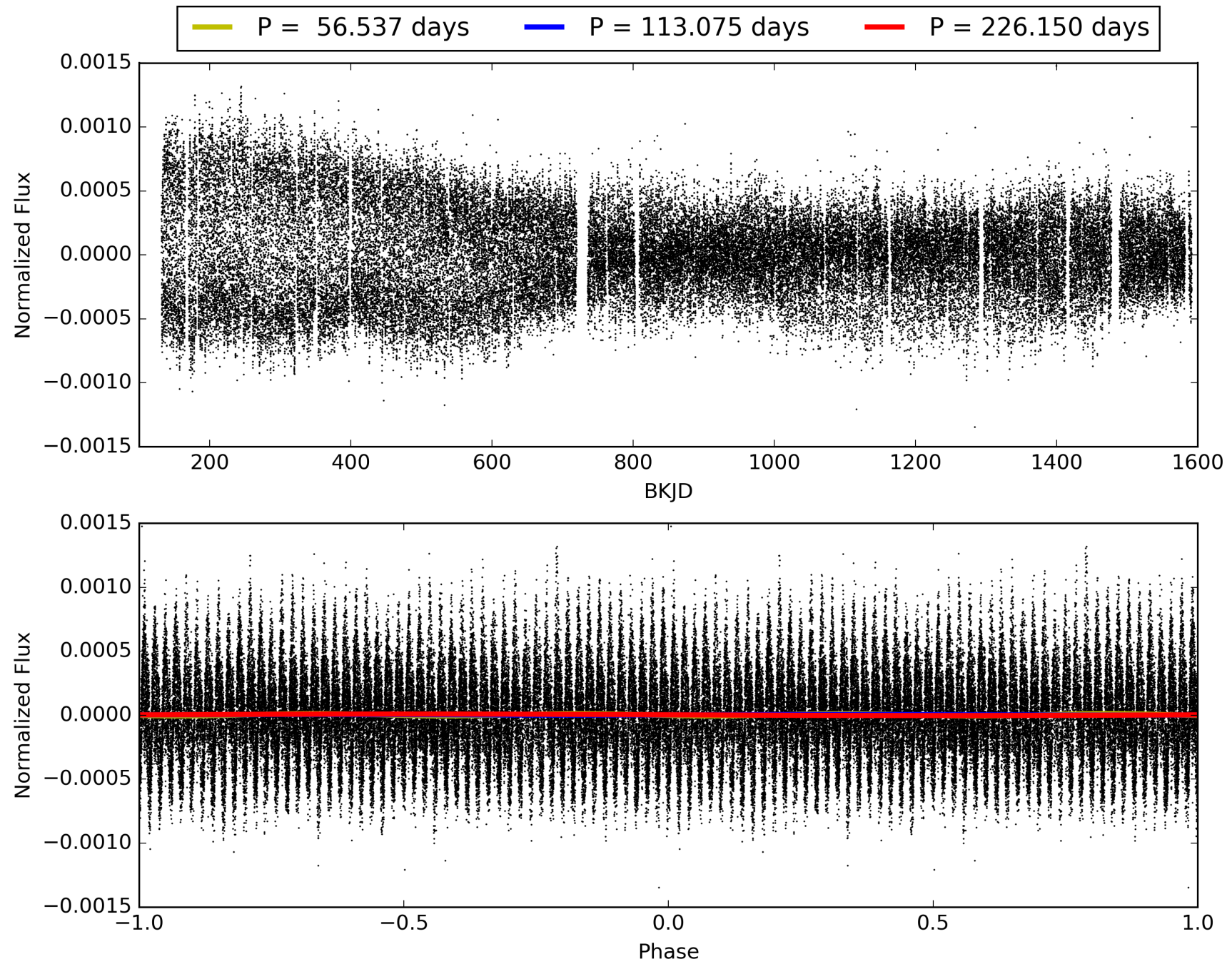
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:03:11 Z

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

TCE 009760994-04, PDC Light Curves

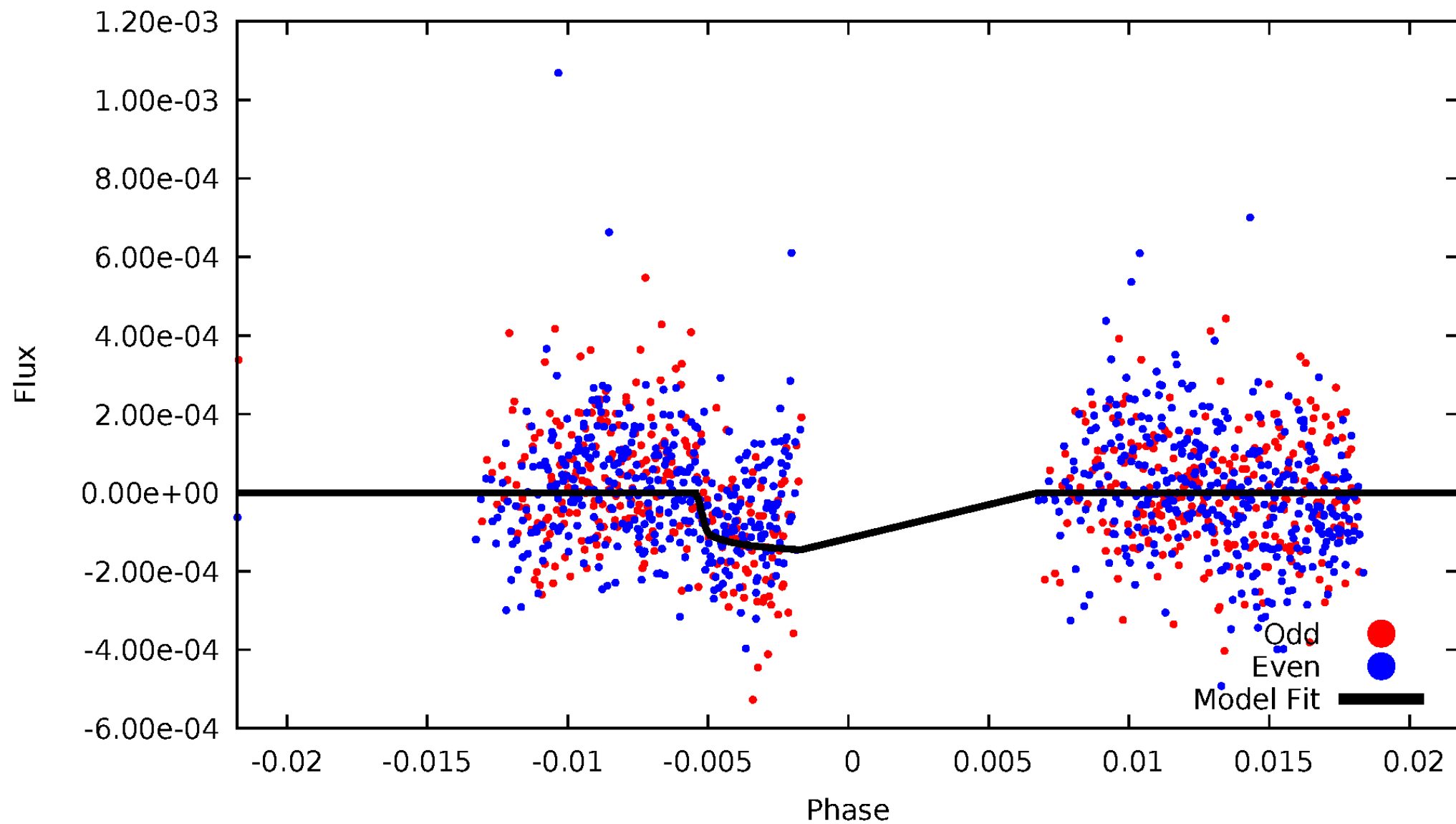


TCE 009760994-04



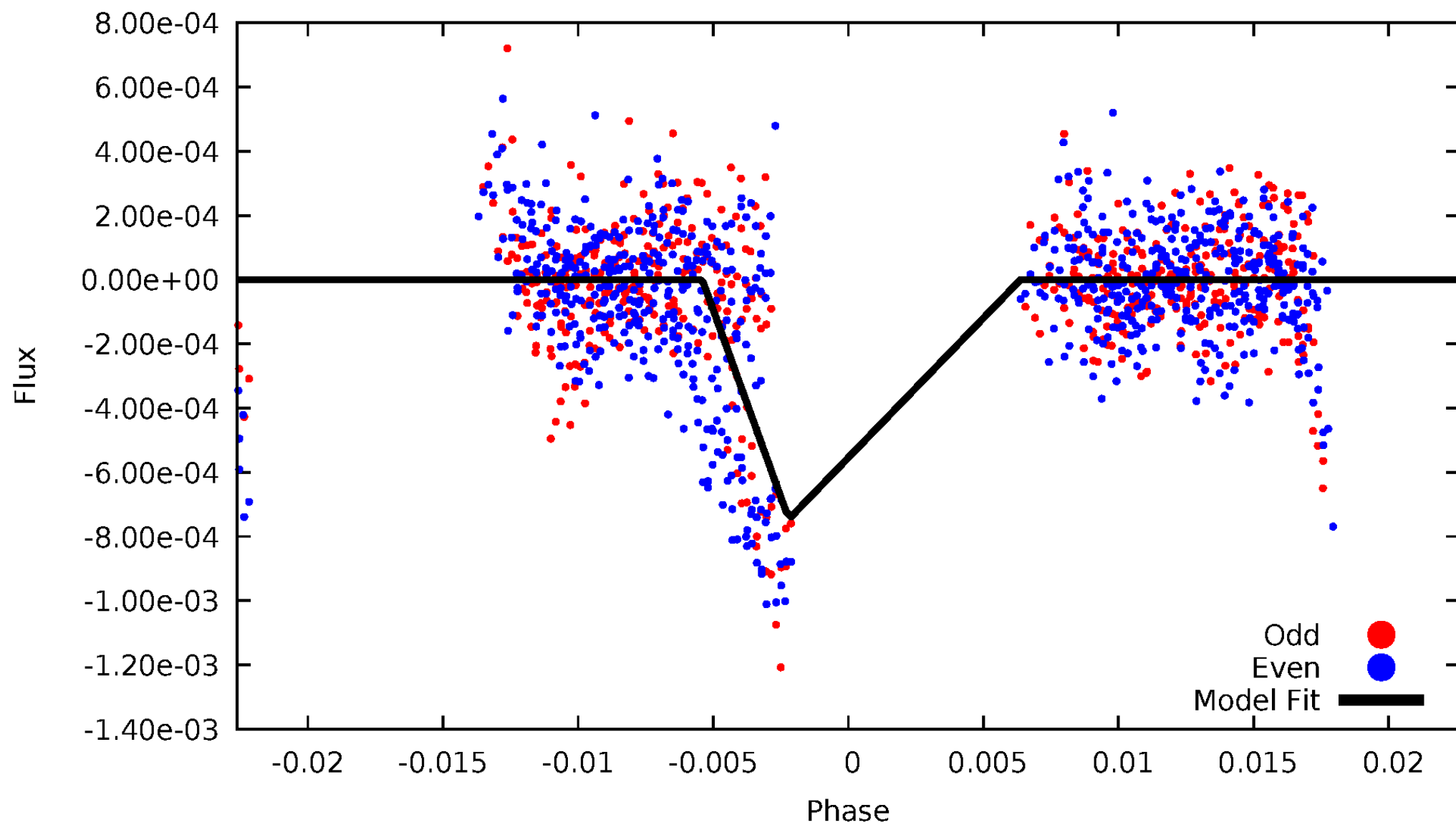
DV Odd/Even

TCE 009760994-04



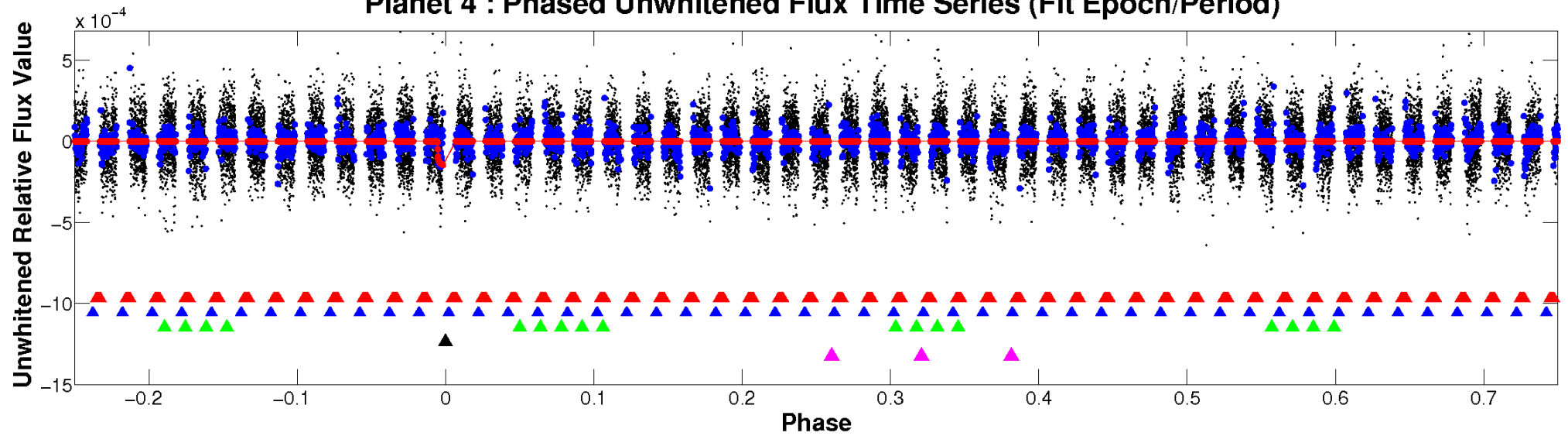
ALT Odd/Even

TCE 009760994-04

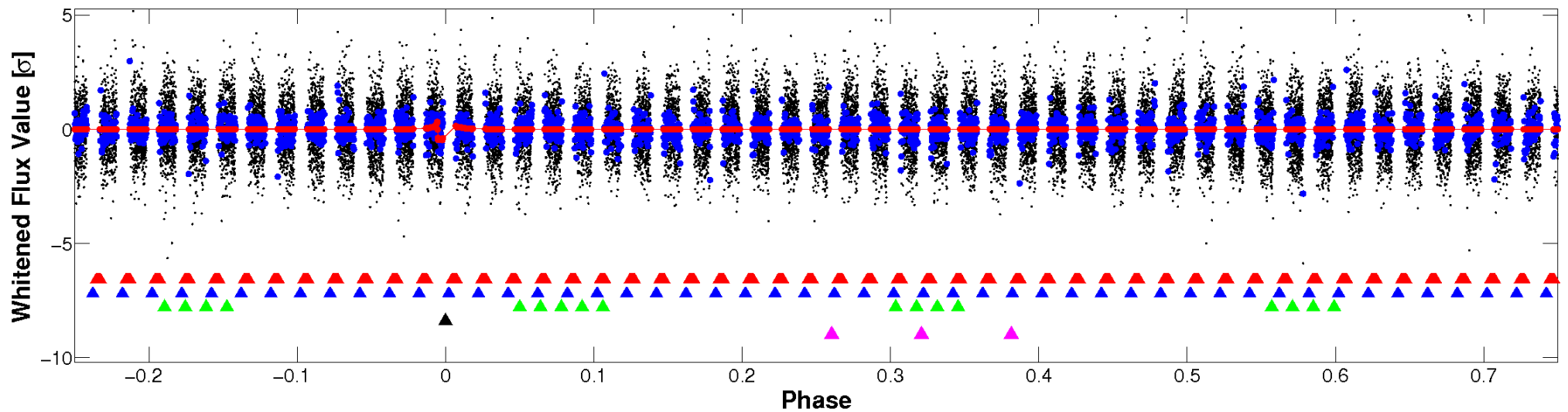


Non-Whitened Vs. Whitened Light Curve

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

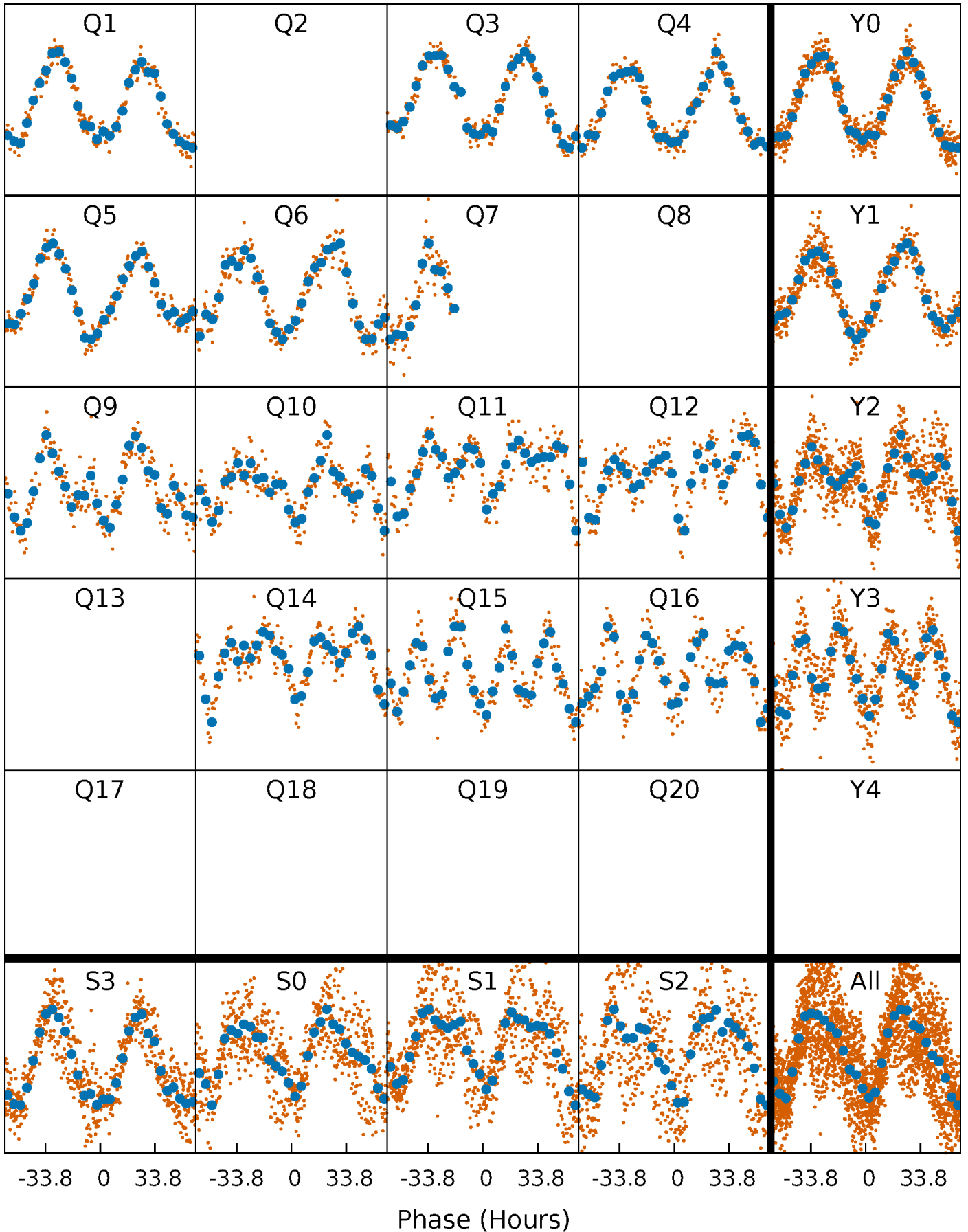


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



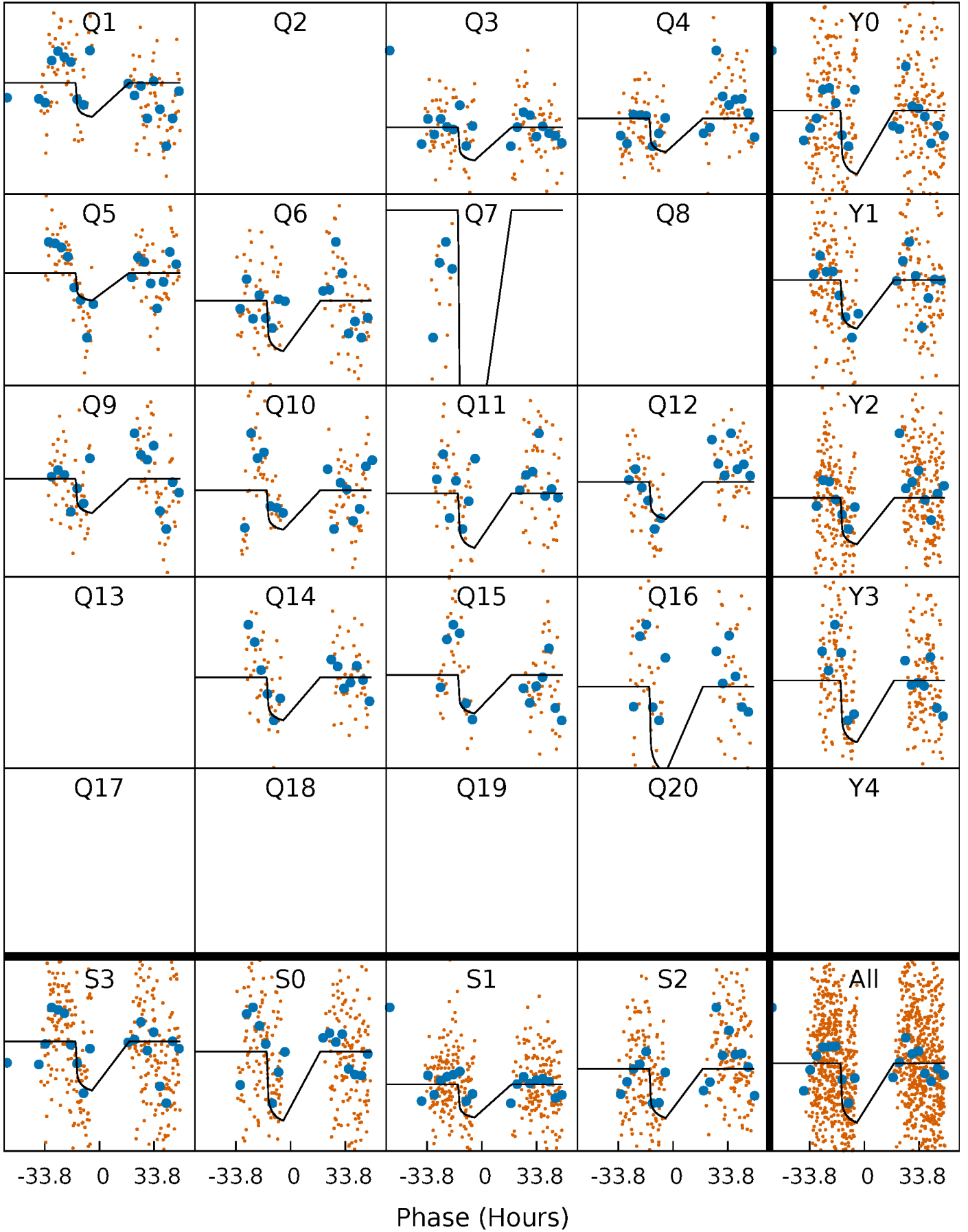
PDC Quarter-Phased Transit Curves

TCE 009760994-04 $P=113.074935$ Days $T_0=154.939382$ (BKJD)



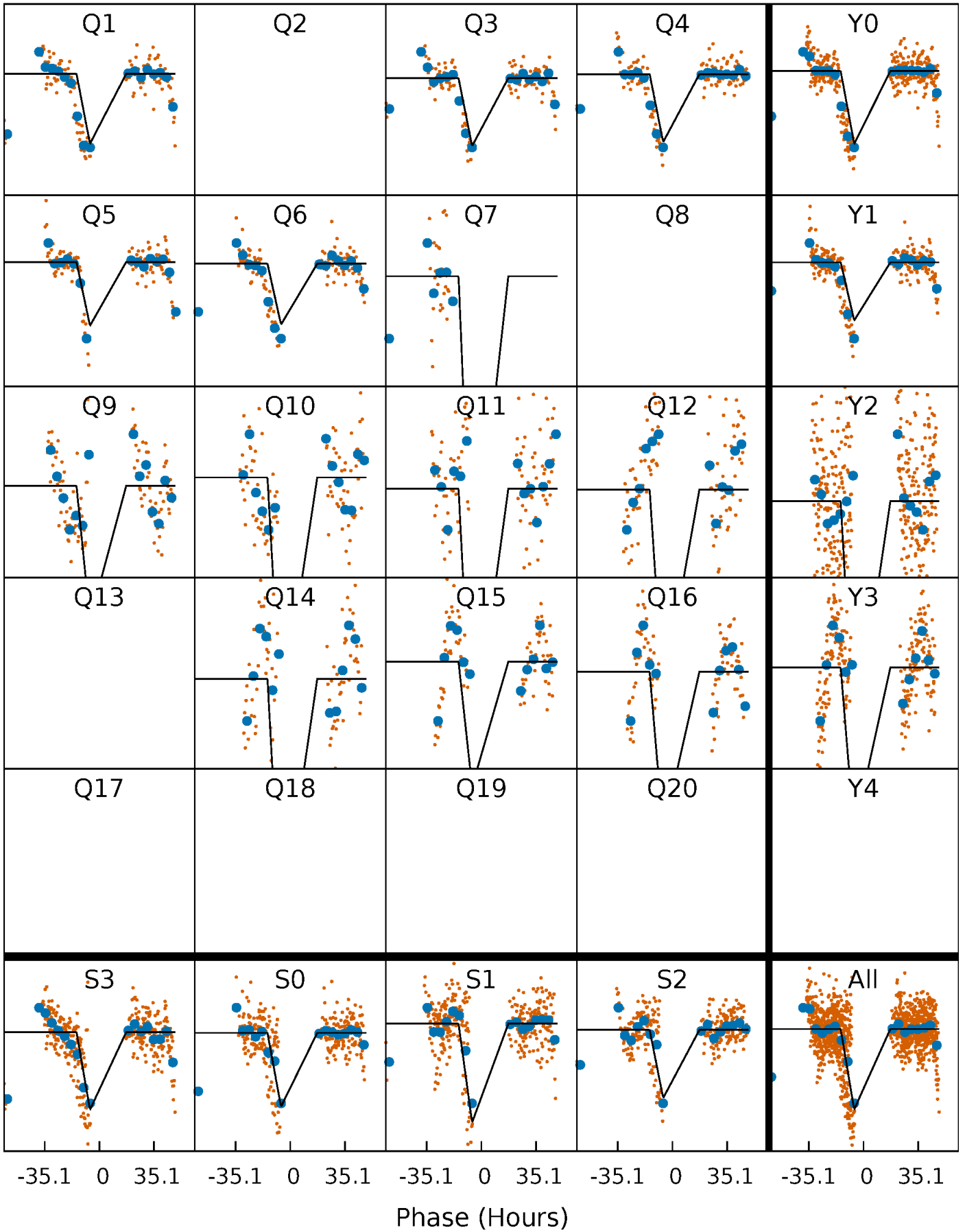
DV Quarter-Phased Transit Curves

TCE 009760994-04 $P=113.074935$ Days $T_0=154.939382$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

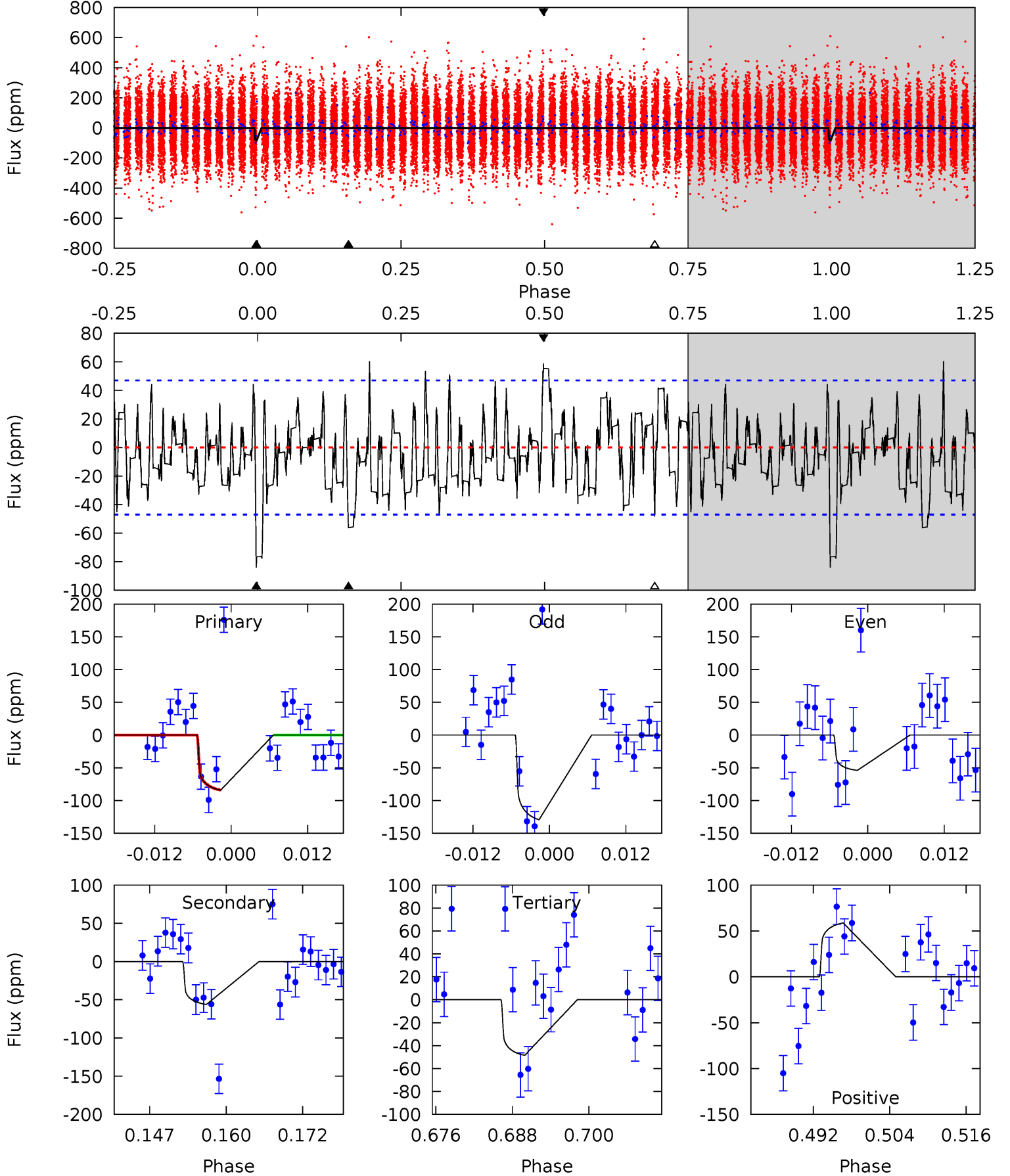
TCE 009760994-04 P=113.079857 Days $T_0=154.985751$ (BKJD)



DV Model-Shift Uniqueness Test

009760994-04, P = 113.074935 Days, E = 41.864447 Days

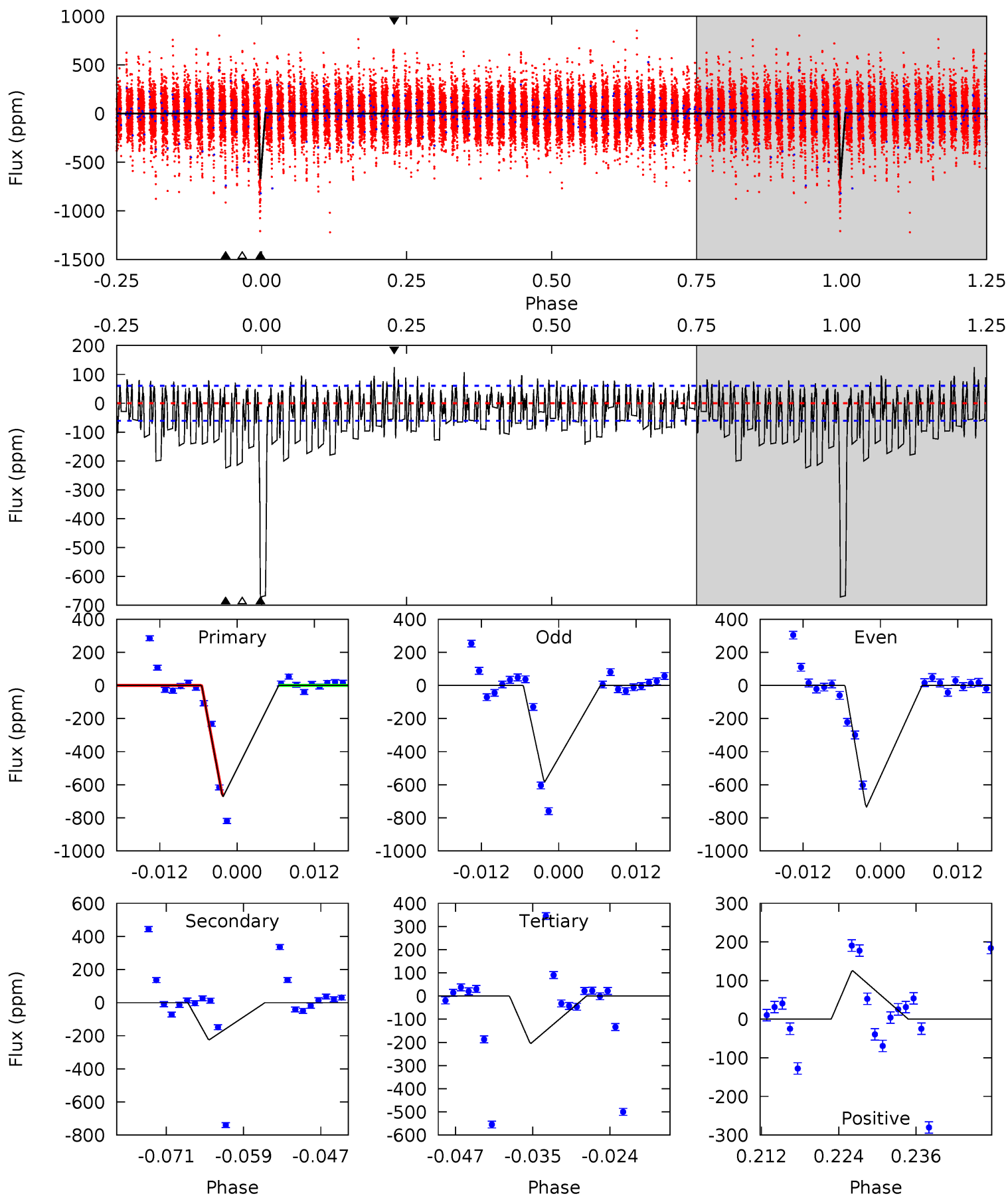
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.92	5.96	5.14	6.23	4.99	2.50	2.05	3.78	2.69	0.82	-0.28	3.91	0	0.42	0



Alt Model-Shift Uniqueness Test

009760994-04, P = 113.079857 Days, E = 41.905894 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
55.2	18.4	16.8	10.3	4.99	2.52	3.61	38.4	44.9	1.64	8.13	6.28	0	0.16	0



Stellar Parameters For KIC 009760994

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7263^{+228}_{-304}	$4.123^{+0.153}_{-0.187}$	$-0.220^{+0.250}_{-0.350}$	$1.727^{+0.508}_{-0.416}$	$1.442^{+0.211}_{-0.234}$	$0.394^{+0.330}_{-0.195}$
	+3%/-4%	+4%/-5%	+114%/-159%	+29%/-24%	+15%/-16%	+84%/-49%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009760994-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-56 ± 9	$2.36^{+0.46}_{-0.39}$	824^{+64}_{-56}	5616^{+423}_{-434}	1438^{+699}_{-433}
Alt.	-224 ± 12	$5.15^{+0.96}_{-0.71}$	820^{+65}_{-58}	5354^{+213}_{-202}	1231^{+393}_{-337}

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 $A_{obs} \gg 1.0$

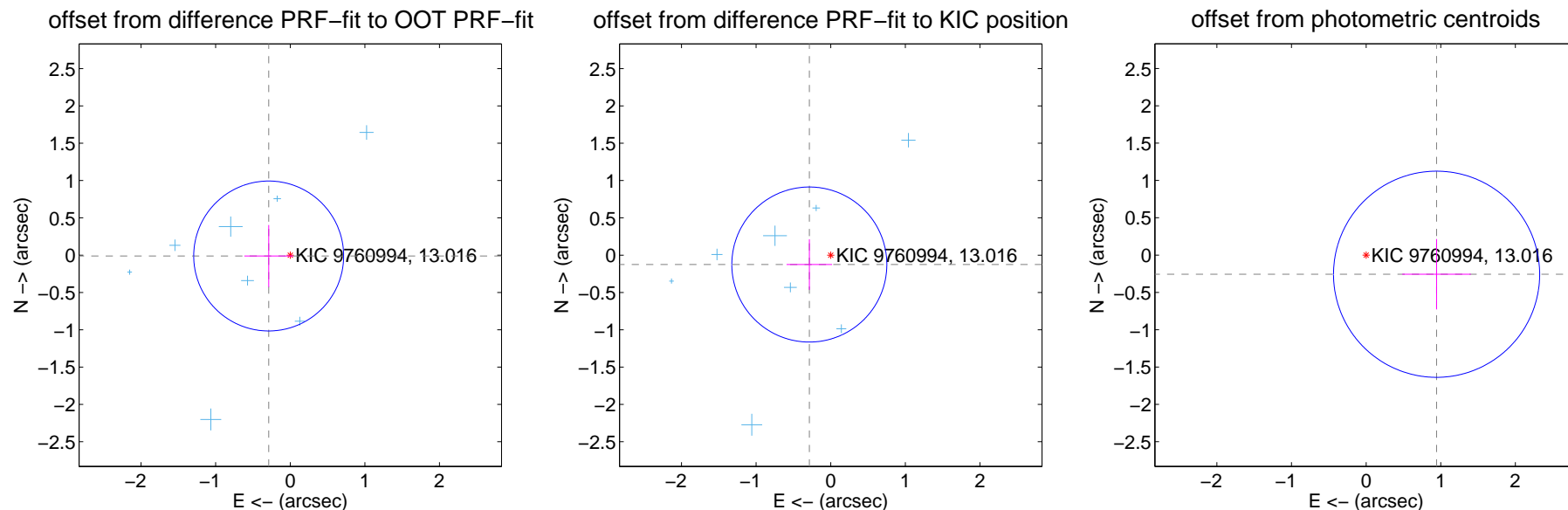
DV Centroid Data

Supplemental centroid analysis for 009760994-04. Kepler magnitude: 13.02. Transit SNR 7.05

There are 8 quarters with good PRF difference image offsets

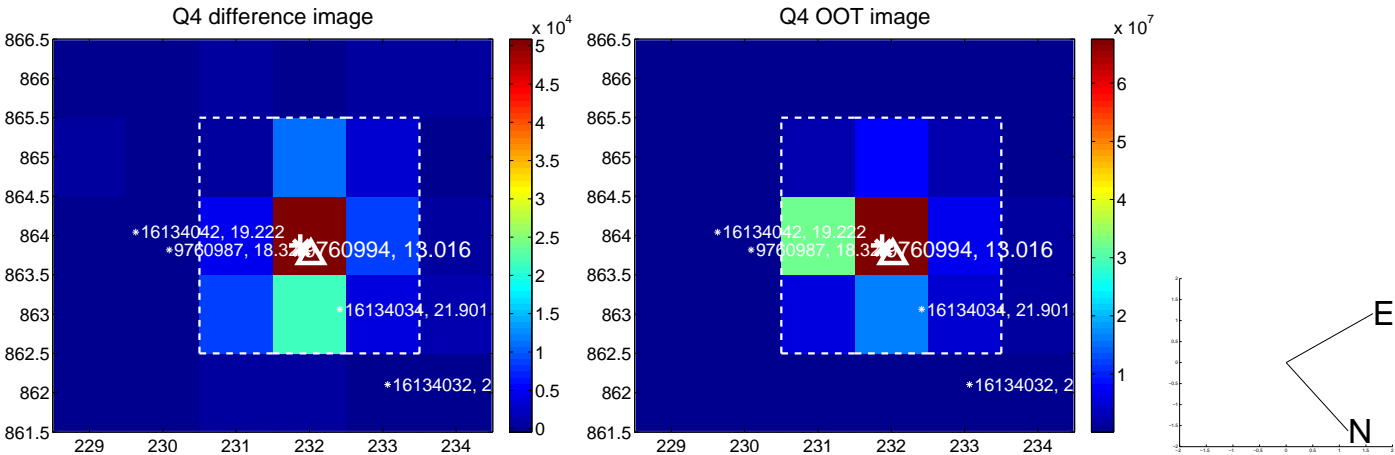
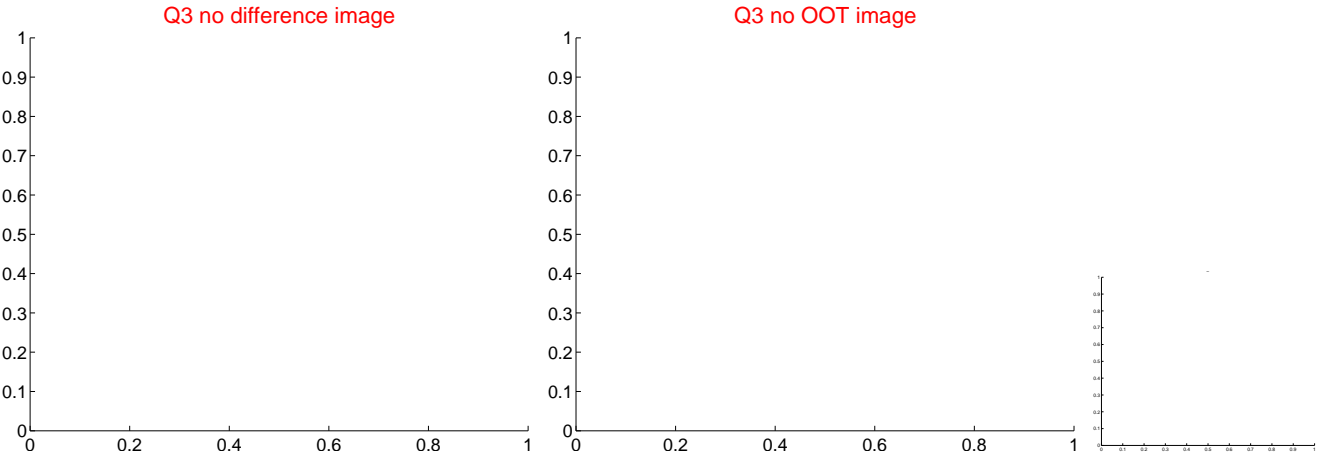
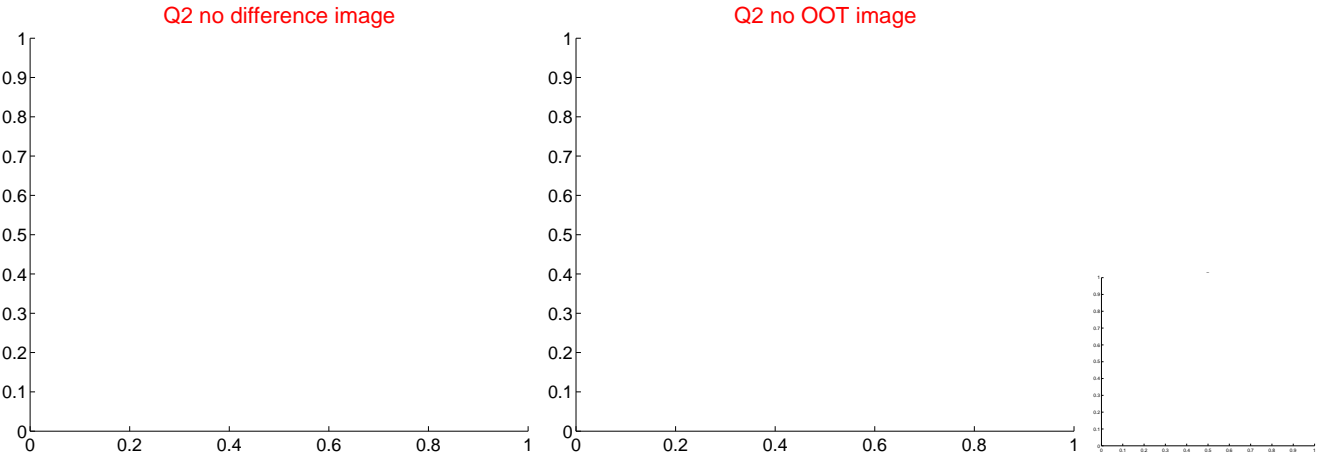
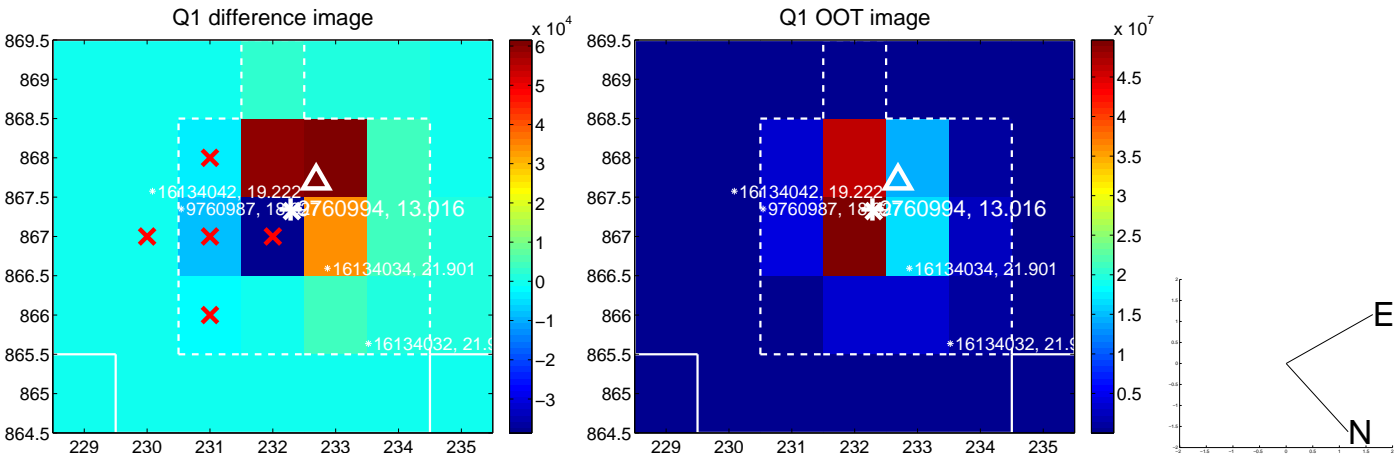
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.290 ± 0.335	0.86	0.289 ± 0.326	-0.011 ± 0.416
PRF-fit source offset from KIC position	0.313 ± 0.346	0.90	0.287 ± 0.305	-0.126 ± 0.339
photometric centroid source offset	0.98 ± 0.46	2.13	-0.94 ± 0.46	-0.26 ± 0.47

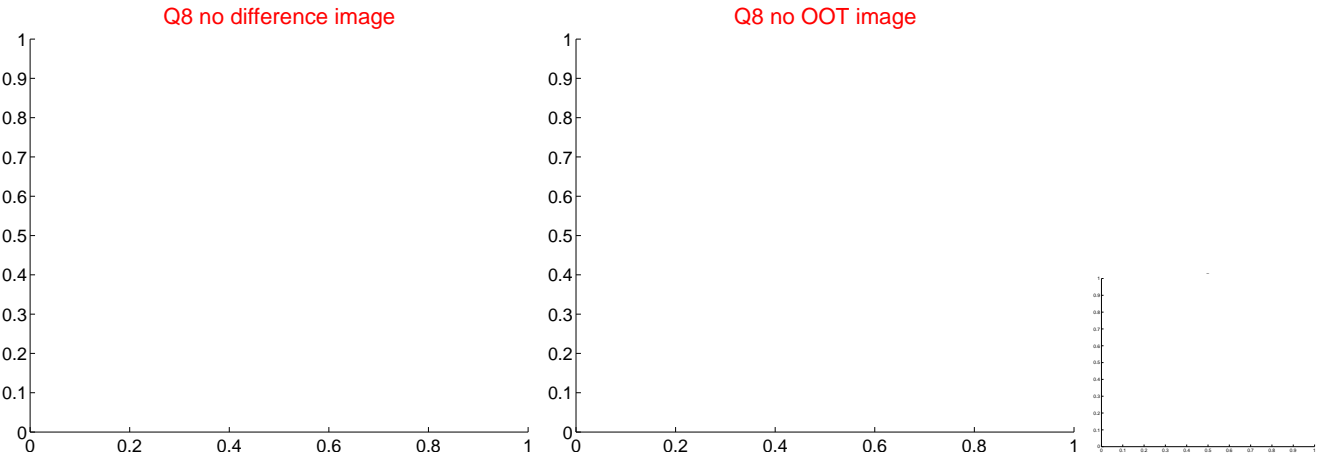
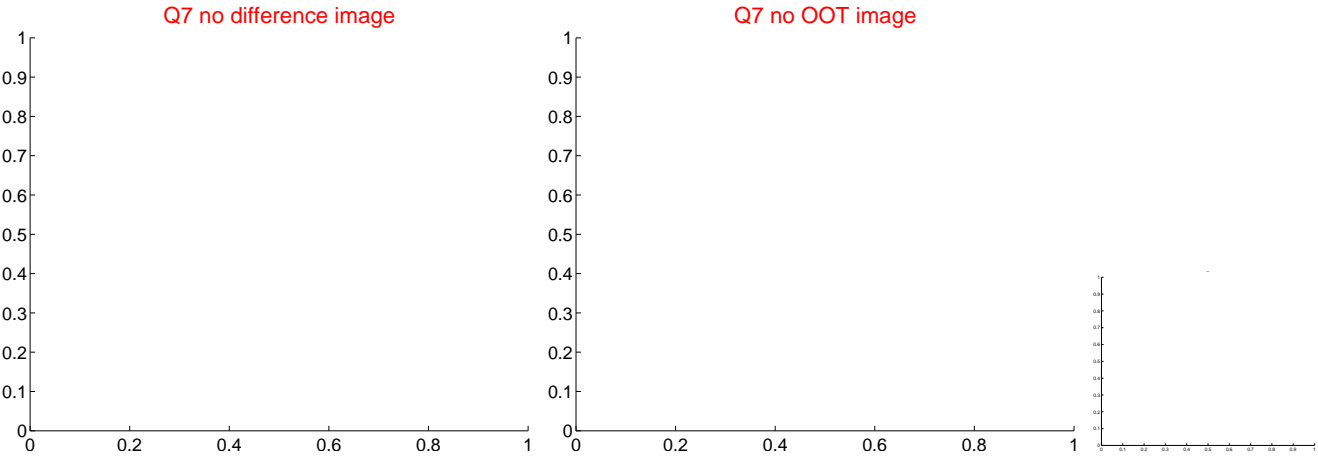
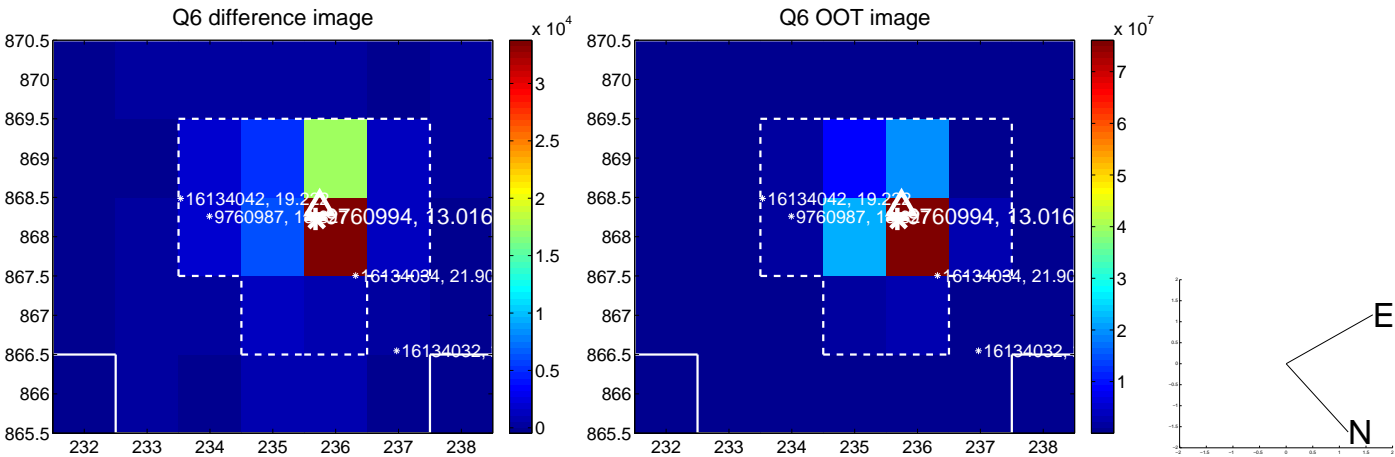
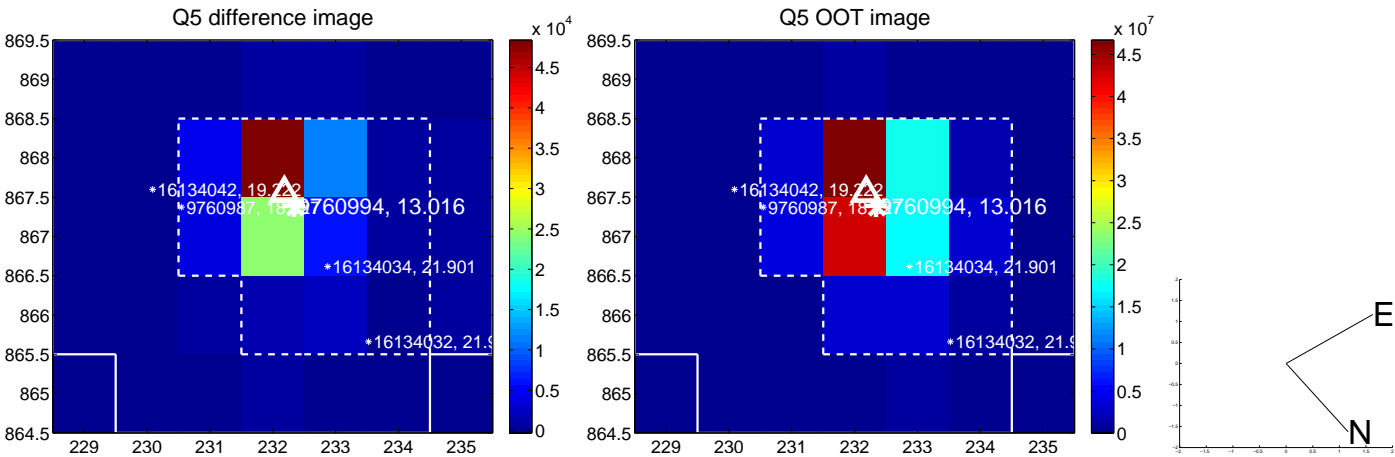


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

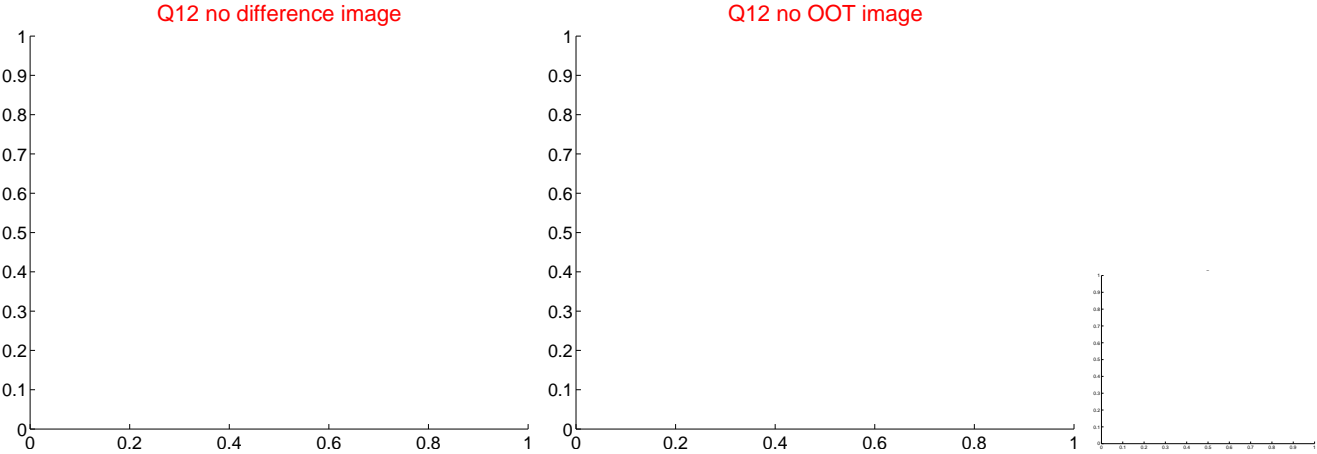
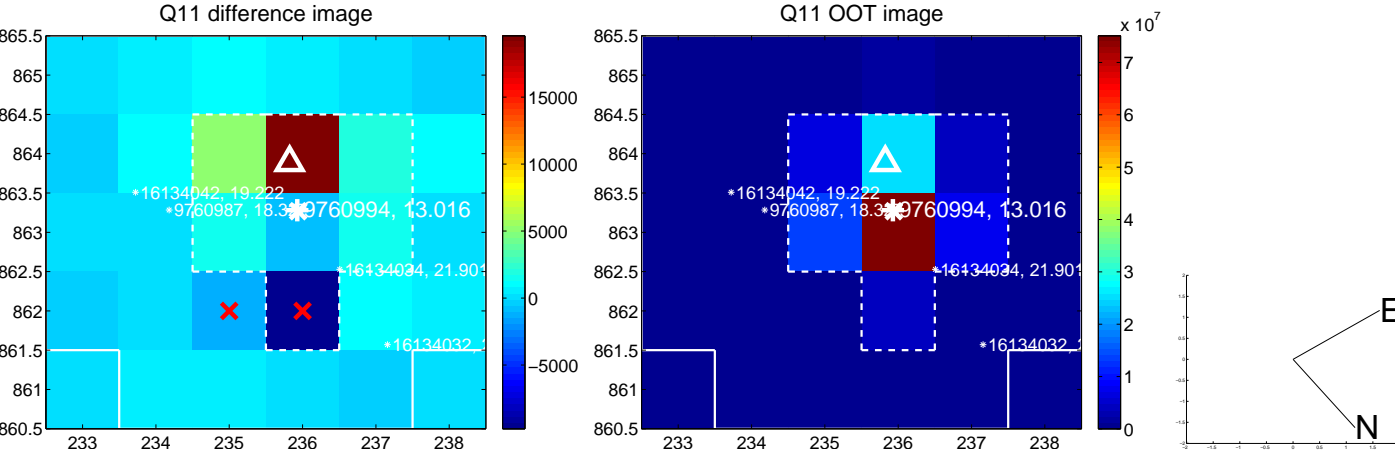
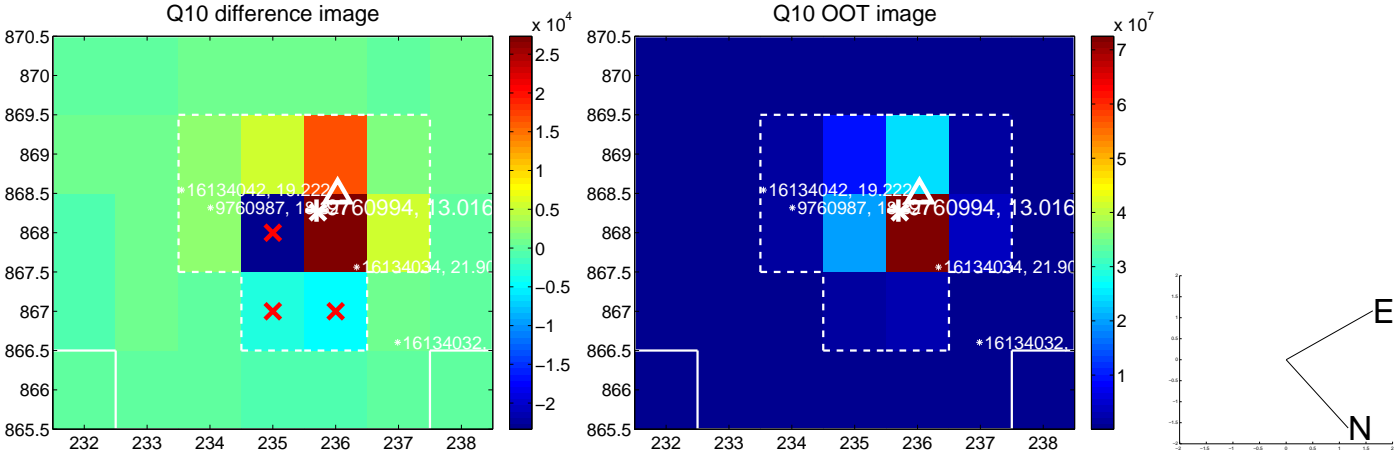
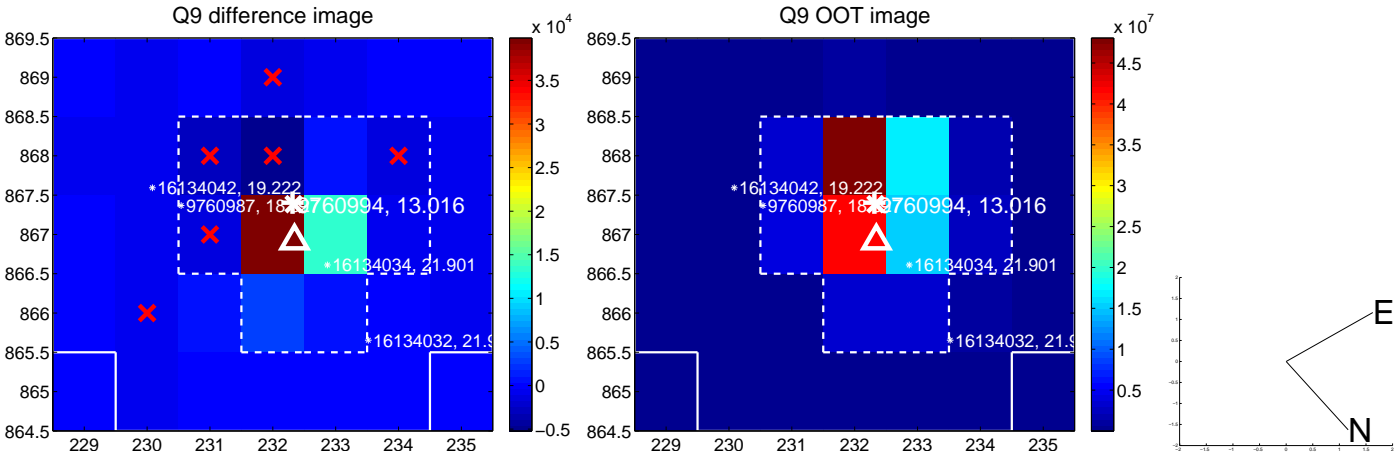
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



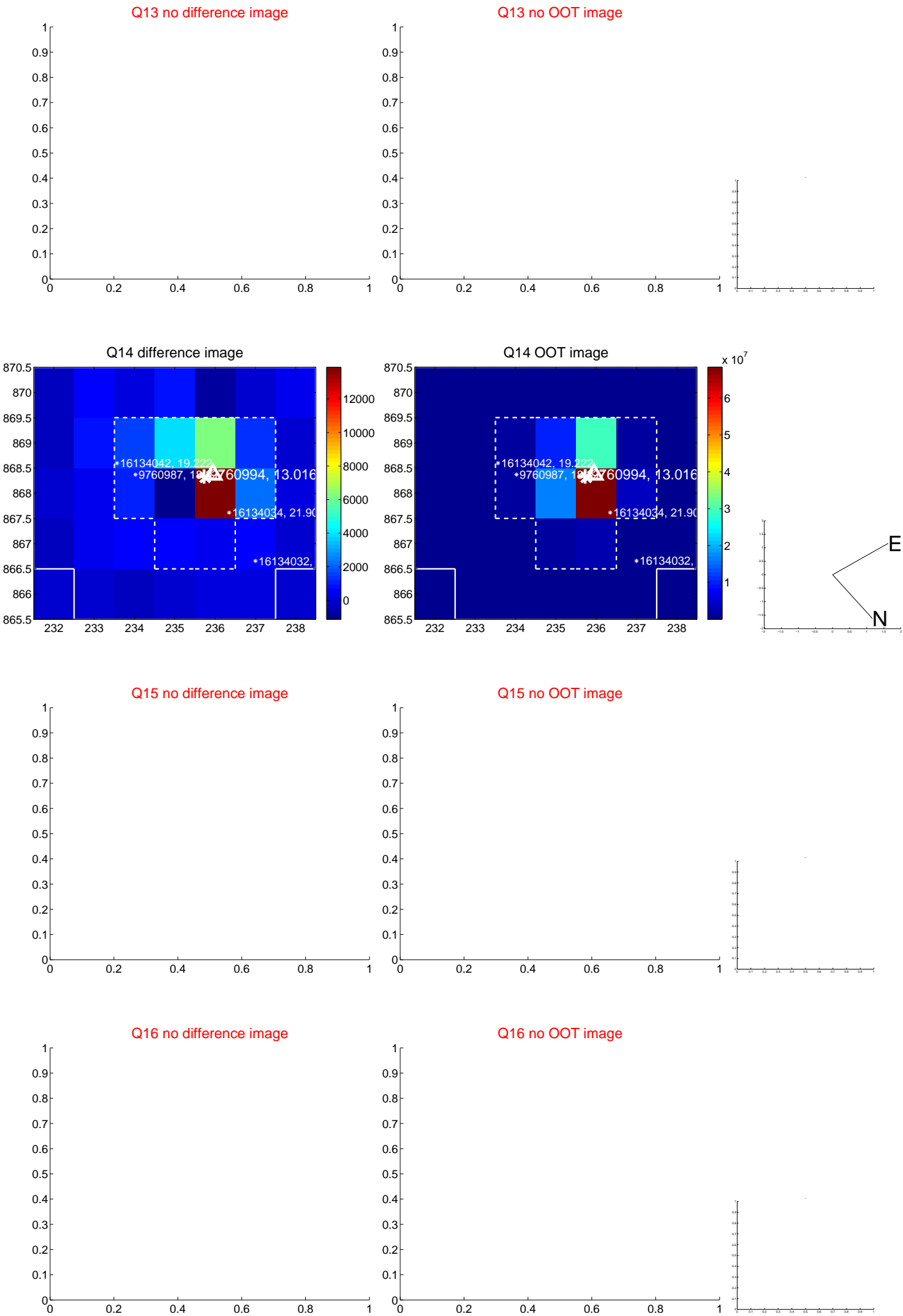
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



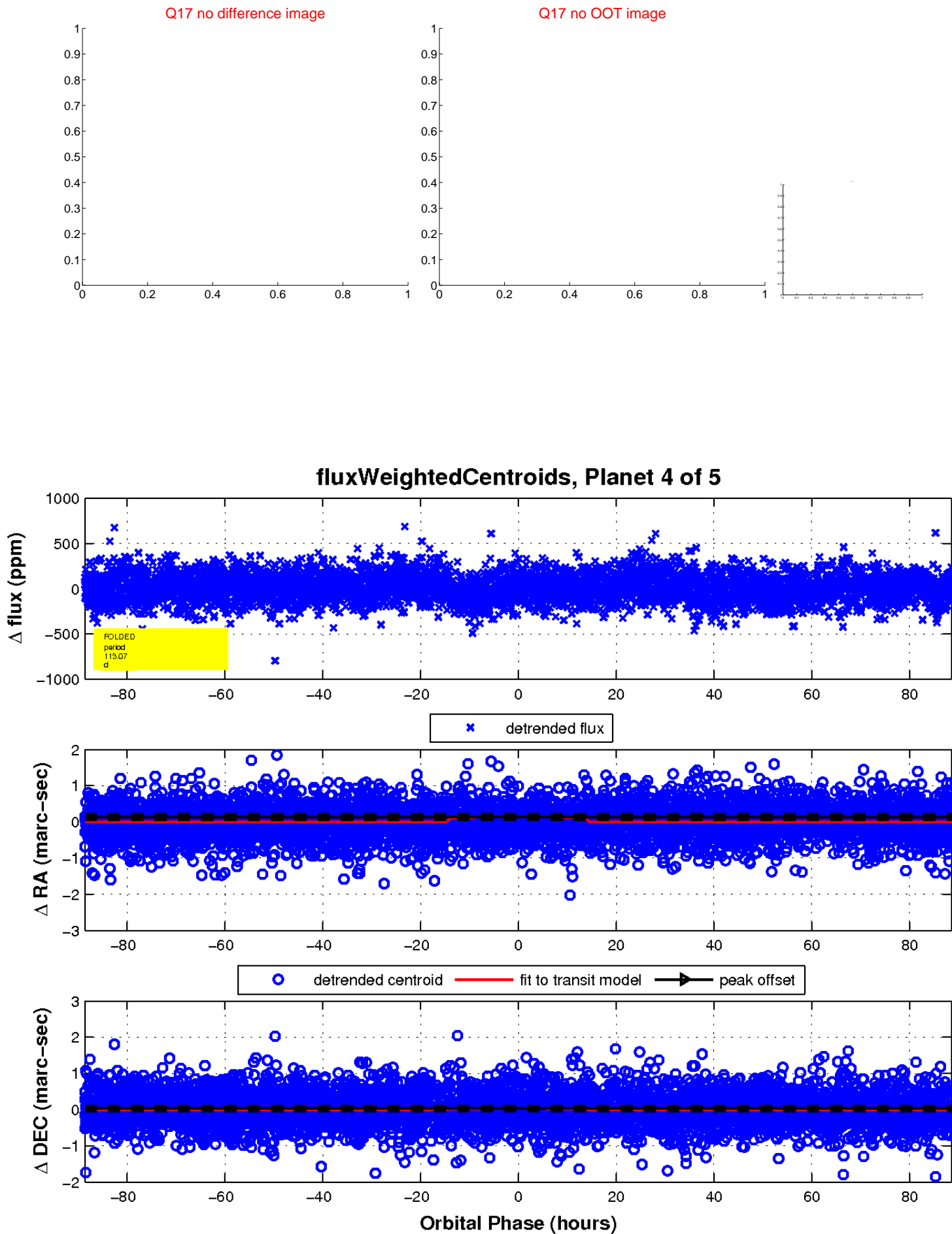
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

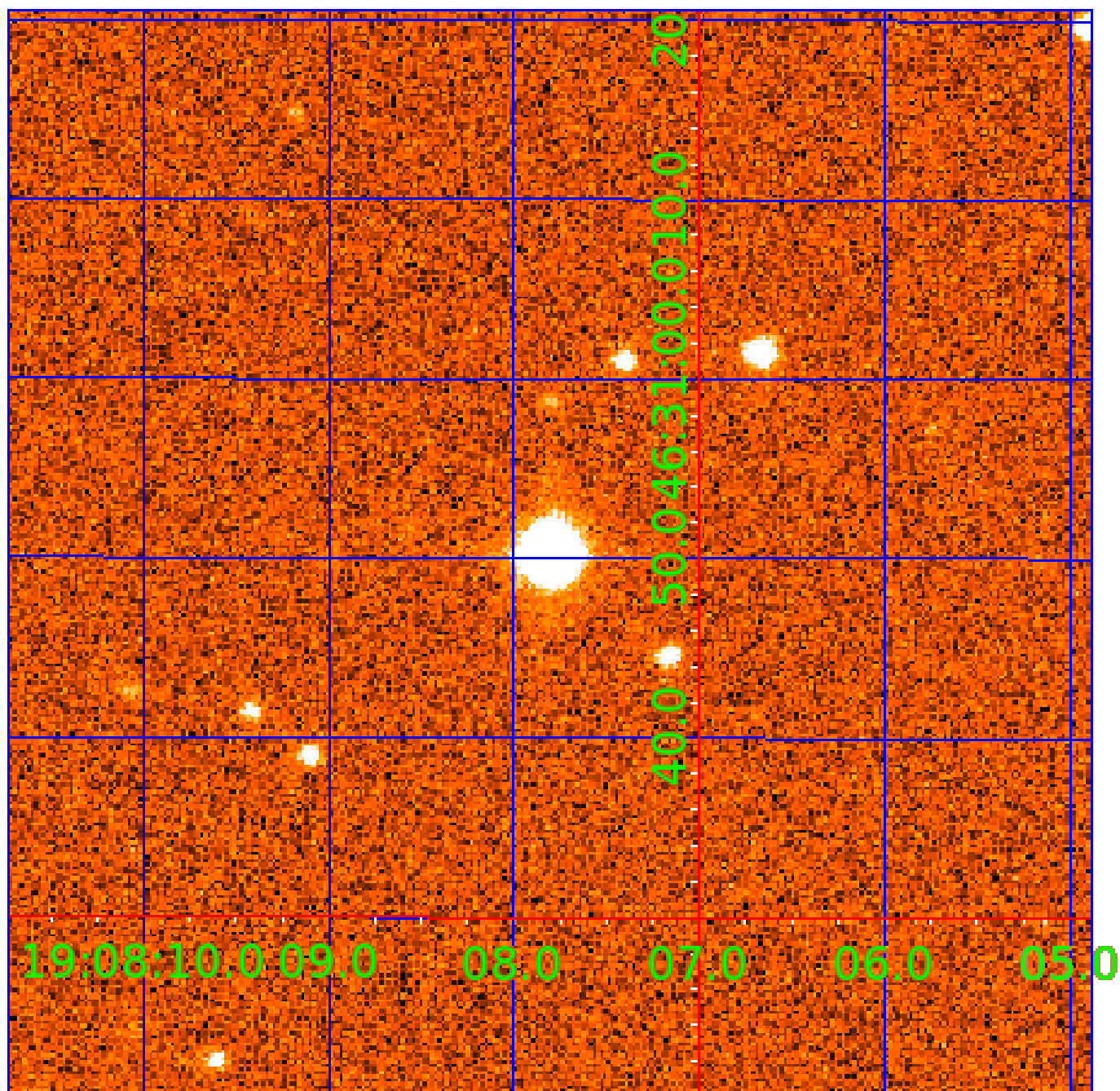


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009760994

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})
009760994-01	OBS	No	2.262152	132.788922	24.3	4.308	9.2	7.8	1.73	7263	0.96	5115.14
009760994-02	OBS	No	2.261375	132.613490	22.1	7.356	9.6	7.6	1.73	7263	0.90	5117.48
009760994-03	OBS	No	84.409997	166.940371	118.5	5.458	7.6	5.8	1.73	7263	2.14	41.02
009760994-04	OBS	No	113.074935	154.939382	148.0	29.549	7.7	7.1	1.73	7263	2.34	27.78
009760994-05	OBS	No	572.219630	297.459789	224.7	39.688	7.3	5.8	1.73	7263	2.68	3.20

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009760994-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_POS_ALT
009760994-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
009760994-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
009760994-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV
009760994-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

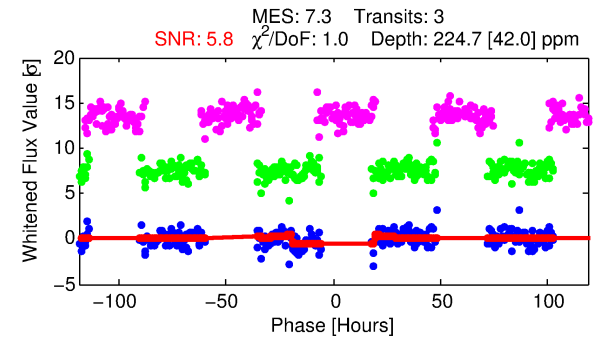
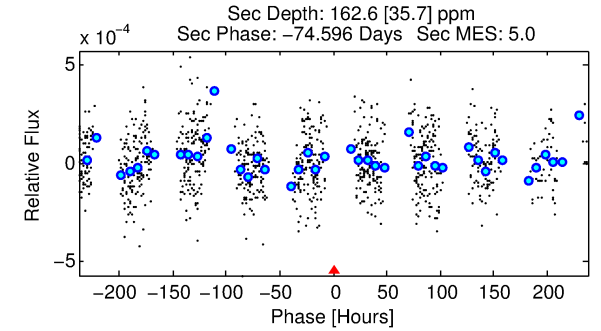
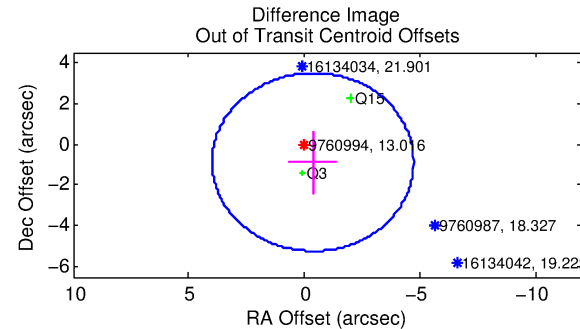
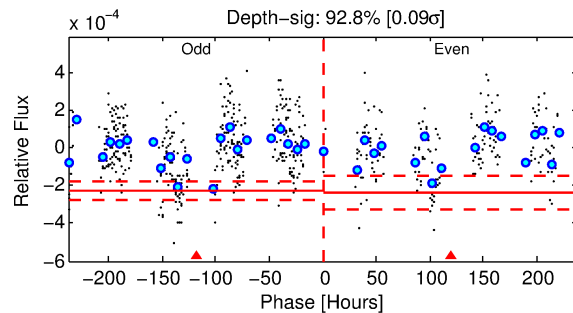
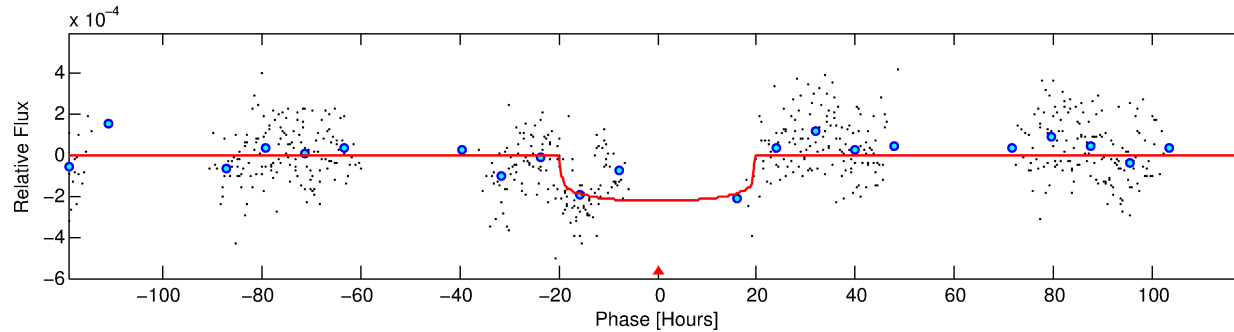
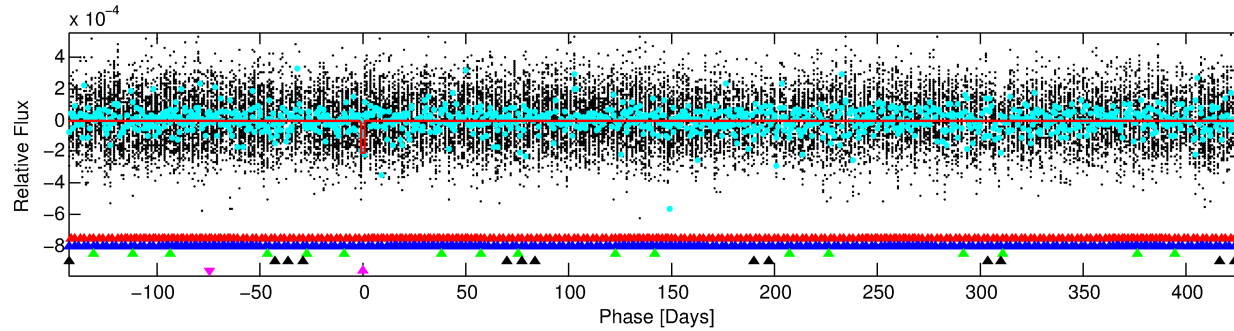
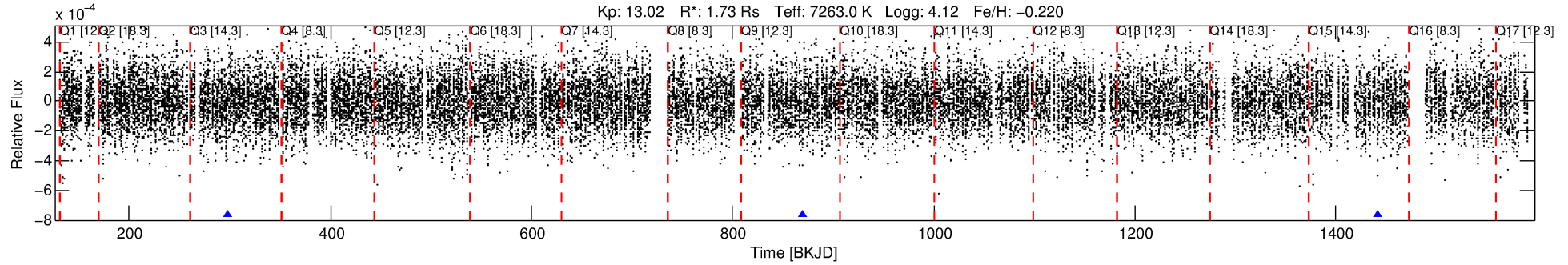
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009760994-05

No Significant Match Found

DV One-Page Summary

KIC: 9760994 Candidate: 5 of 5 Period: 572.220 d



DV Fit Results:

Period = 572.21963 [0.01868] d
Epoch = 297.4598 [0.0179] BKJD
Rp/R* = 0.0142 [0.0023]
a/R* = 98.08 [73.10]
b = 0.49 [1.17]
Seff = 3.20 [1.23]
Teq = 341 [33] K
Rp = 2.68 [0.90] Re
a = 1.5250 [0.3706] AU
Ag = 28908.65 [15097.99] [1.91 σ]
Teffp = 6874 [729] K [8.95 σ]

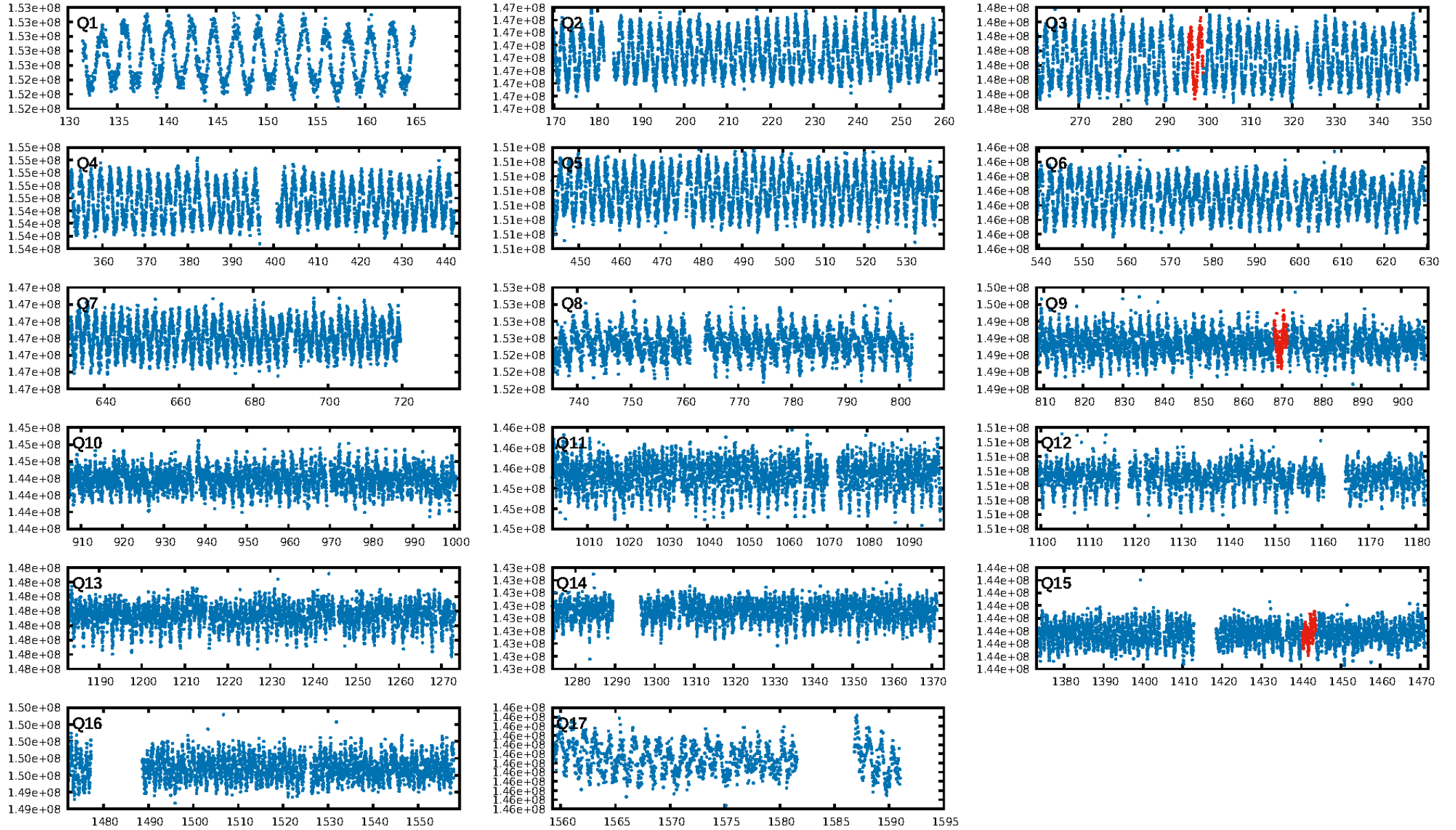
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [222.71 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 89.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.34e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 6.171
Centroid-sig: 2.7%
Centroid-so: 1.089 arcsec [2.09 σ]
OotOffset-rm: 0.949 arcsec [0.65 σ]
OotOffset-st: 0/2/0/0 [2]
KicOffset-rm: 0.998 arcsec [0.68 σ]
KicOffset-st: 0/2/0/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.00 [0/3]

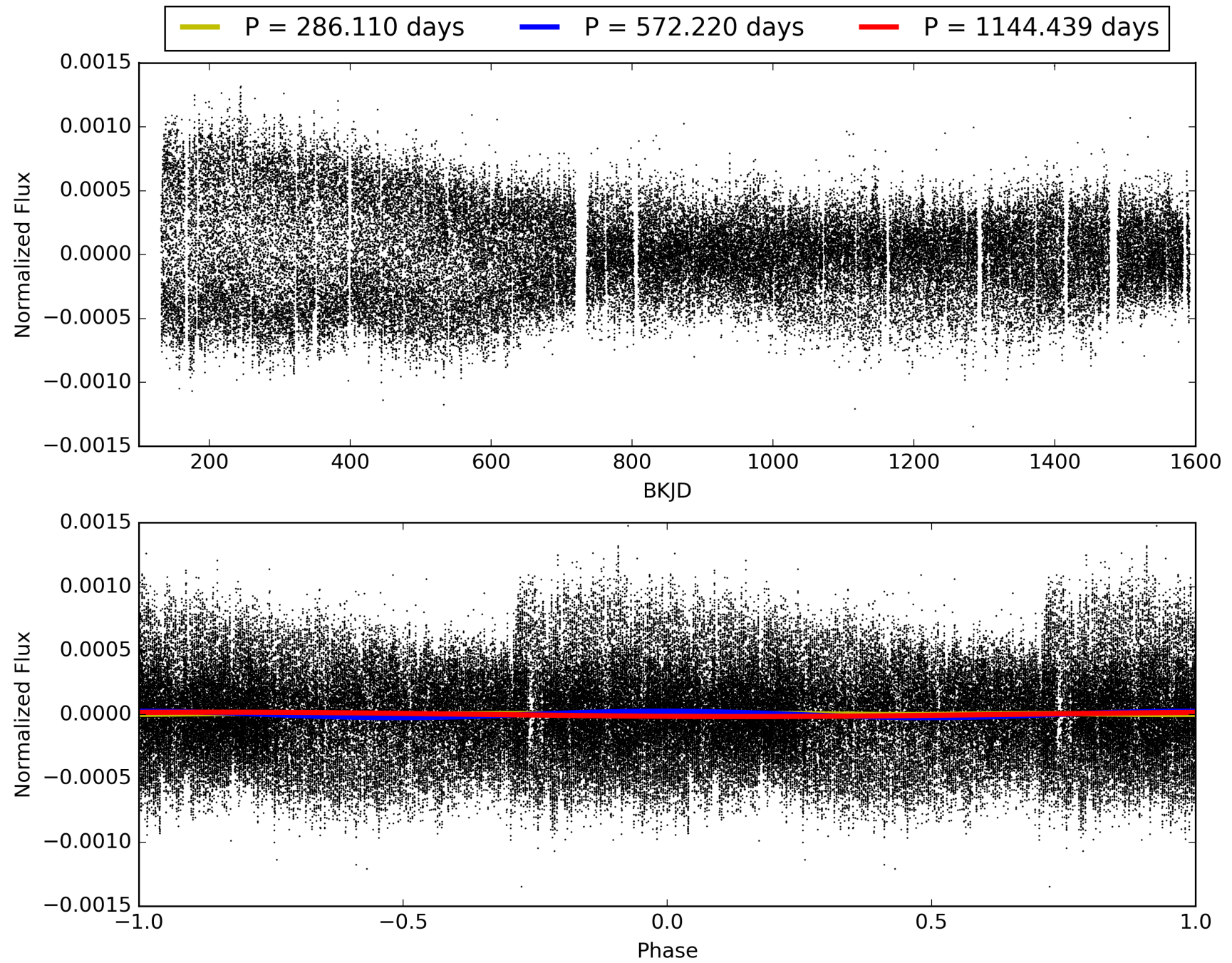
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:03:17 Z

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

TCE 009760994-05, PDC Light Curves

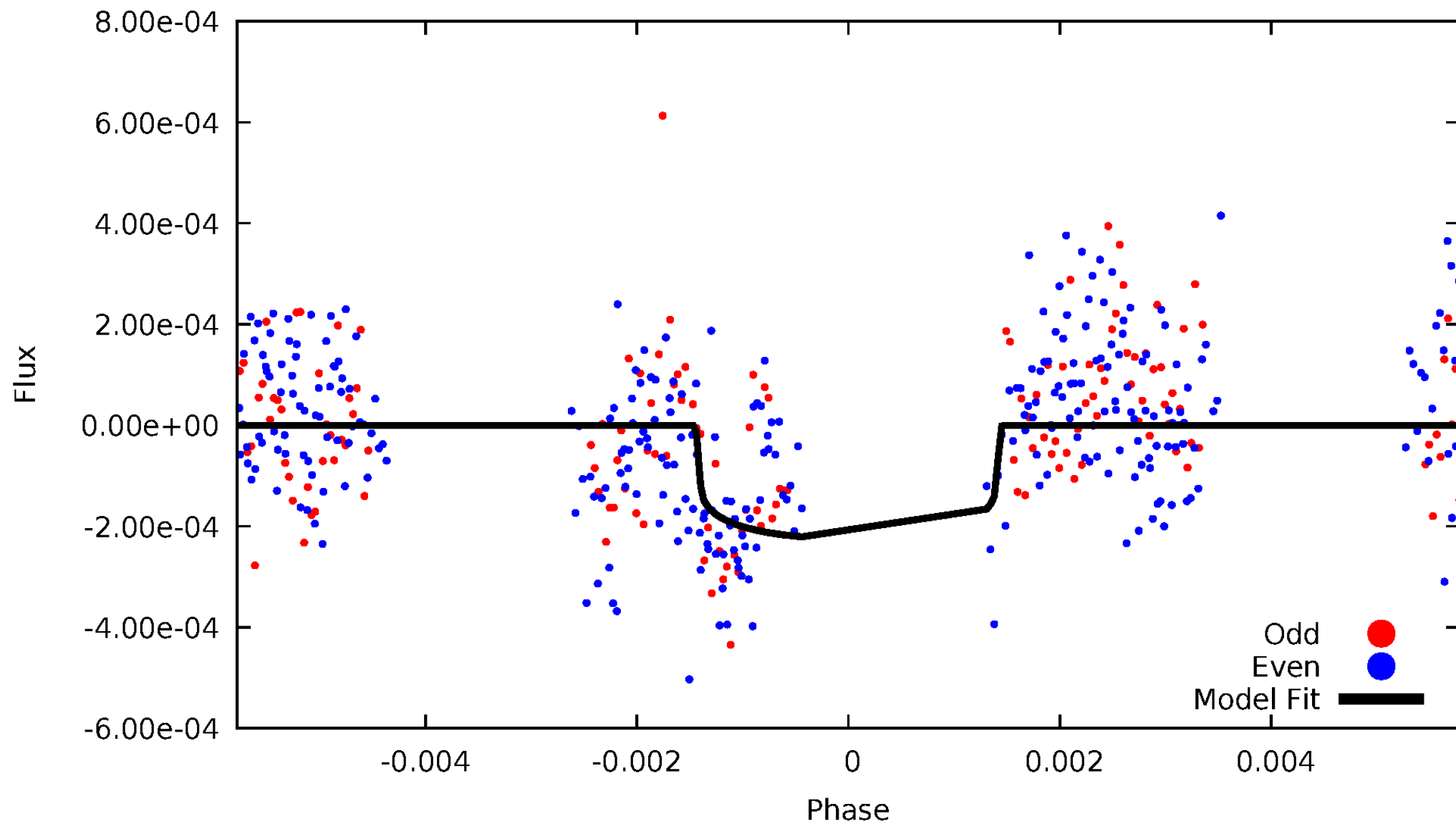


TCE 009760994-05



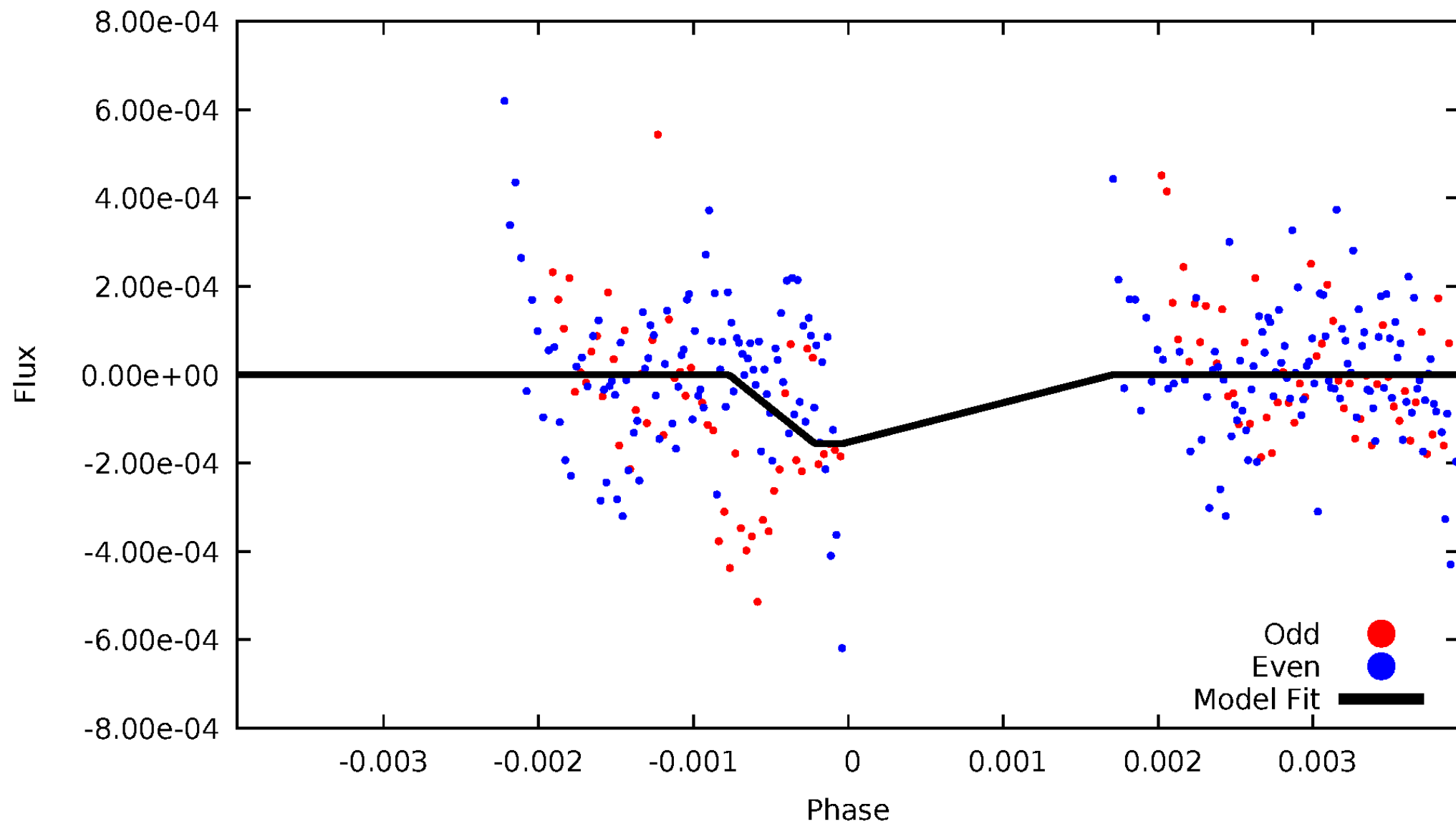
DV Odd/Even

TCE 009760994-05



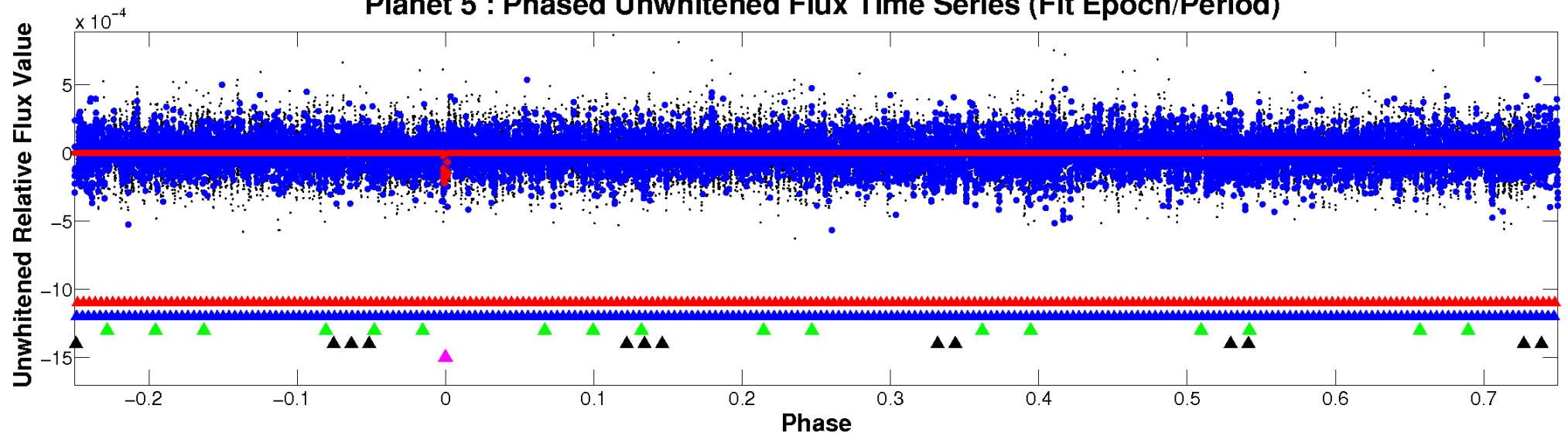
ALT Odd/Even

TCE 009760994-05

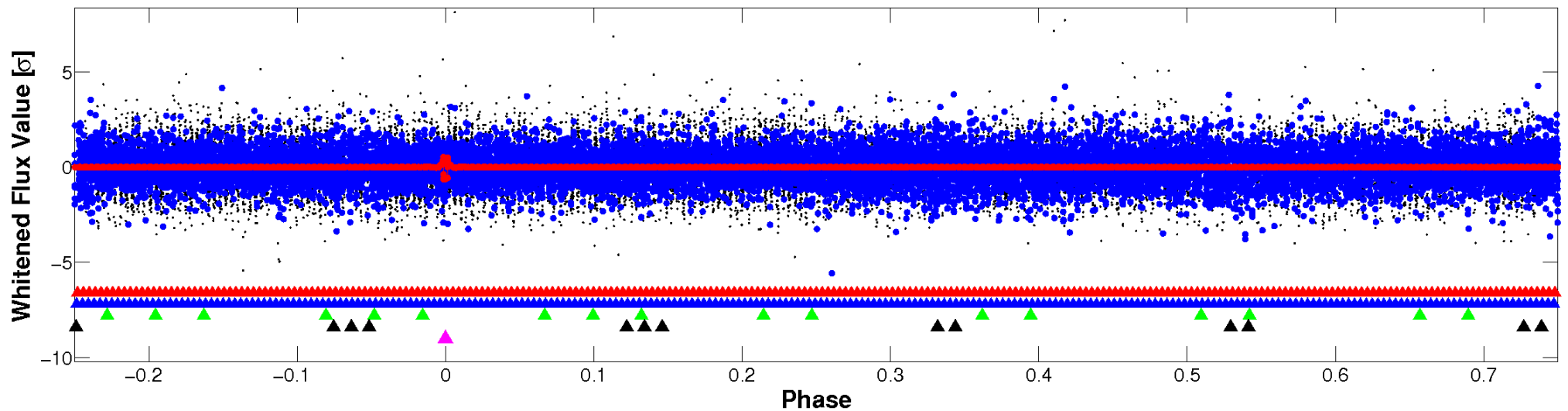


Non-Whitened Vs. Whitened Light Curve

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

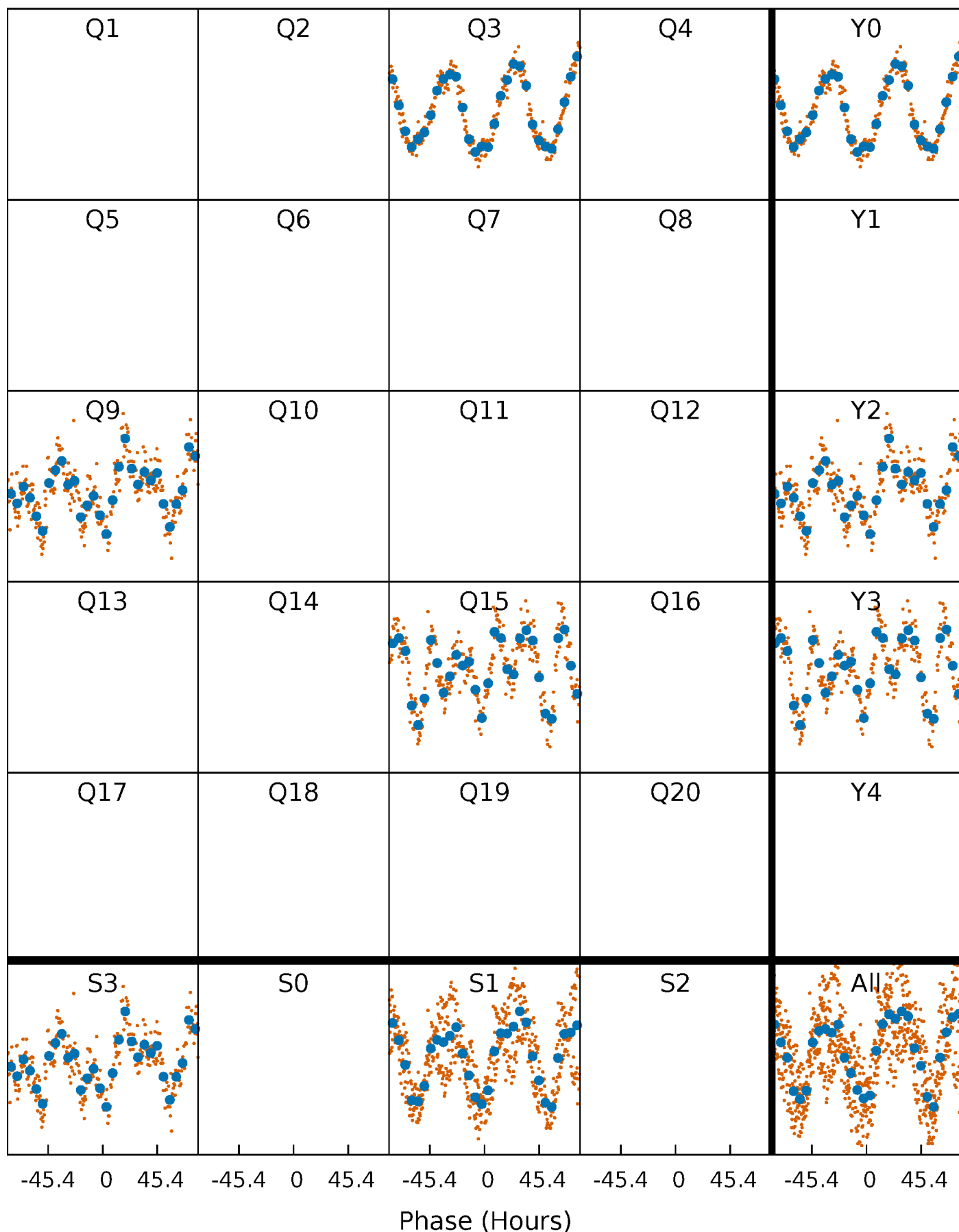


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



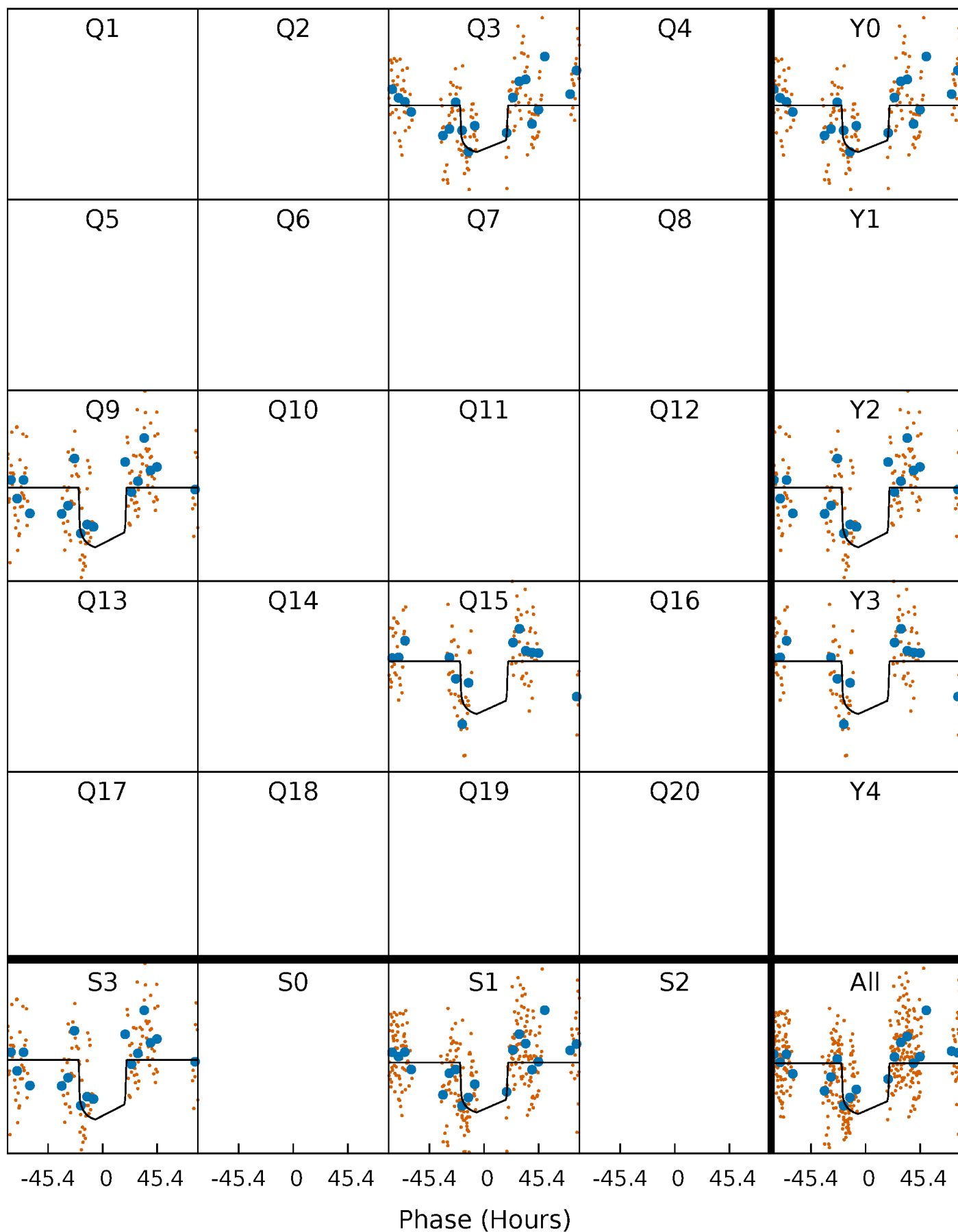
PDC Quarter-Phased Transit Curves

TCE 009760994-05 $P=572.219630$ Days $T_0=297.459789$ (BKJD)



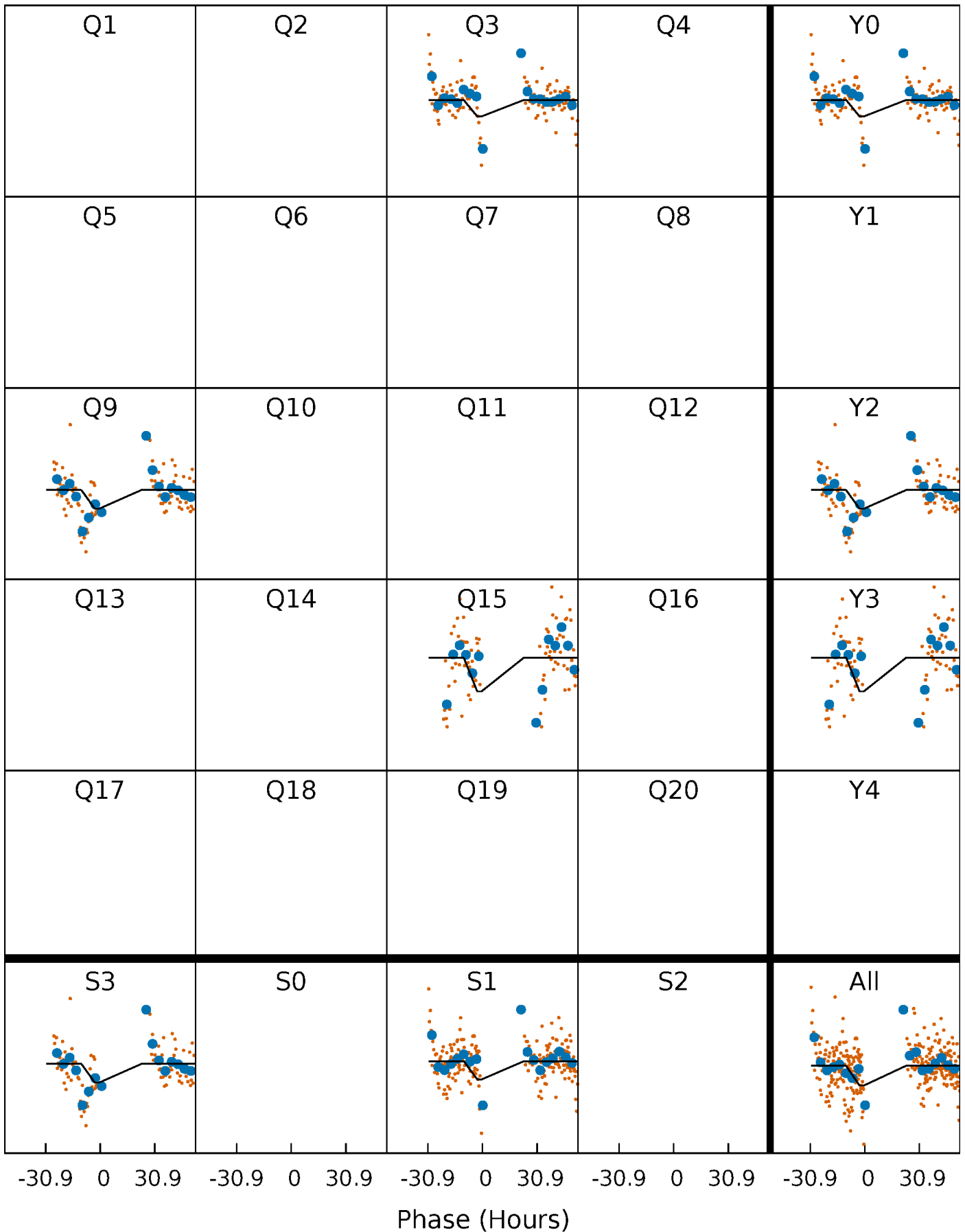
DV Quarter-Phased Transit Curves

TCE 009760994-05 $P=572.219630$ Days $T_0=297.459789$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

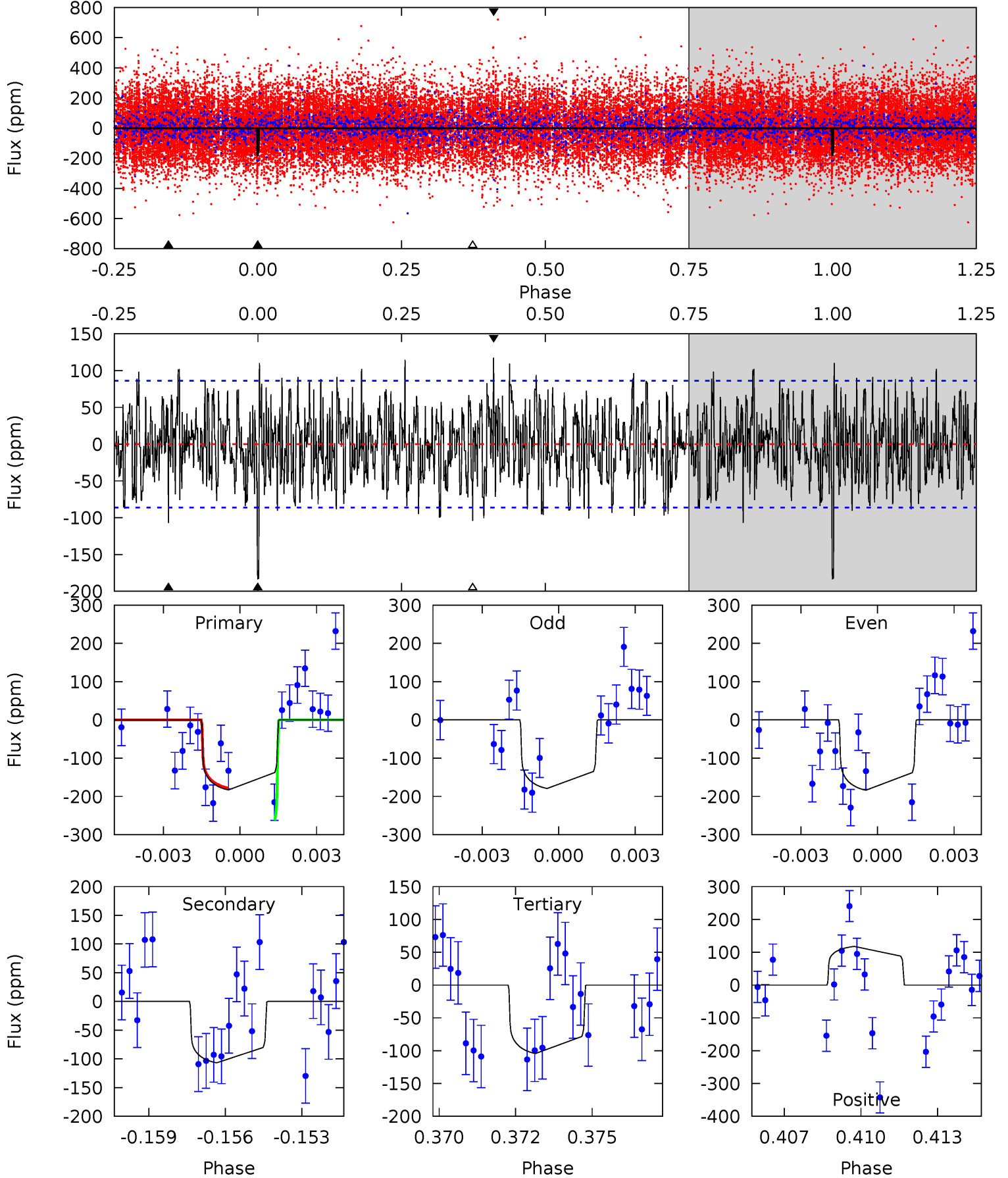
TCE 009760994-05 P=572.146491 Days $T_0=297.231495$ (BKJD)



DV Model-Shift Uniqueness Test

009760994-05, P = 572.219630 Days, E = 297.459789 Days

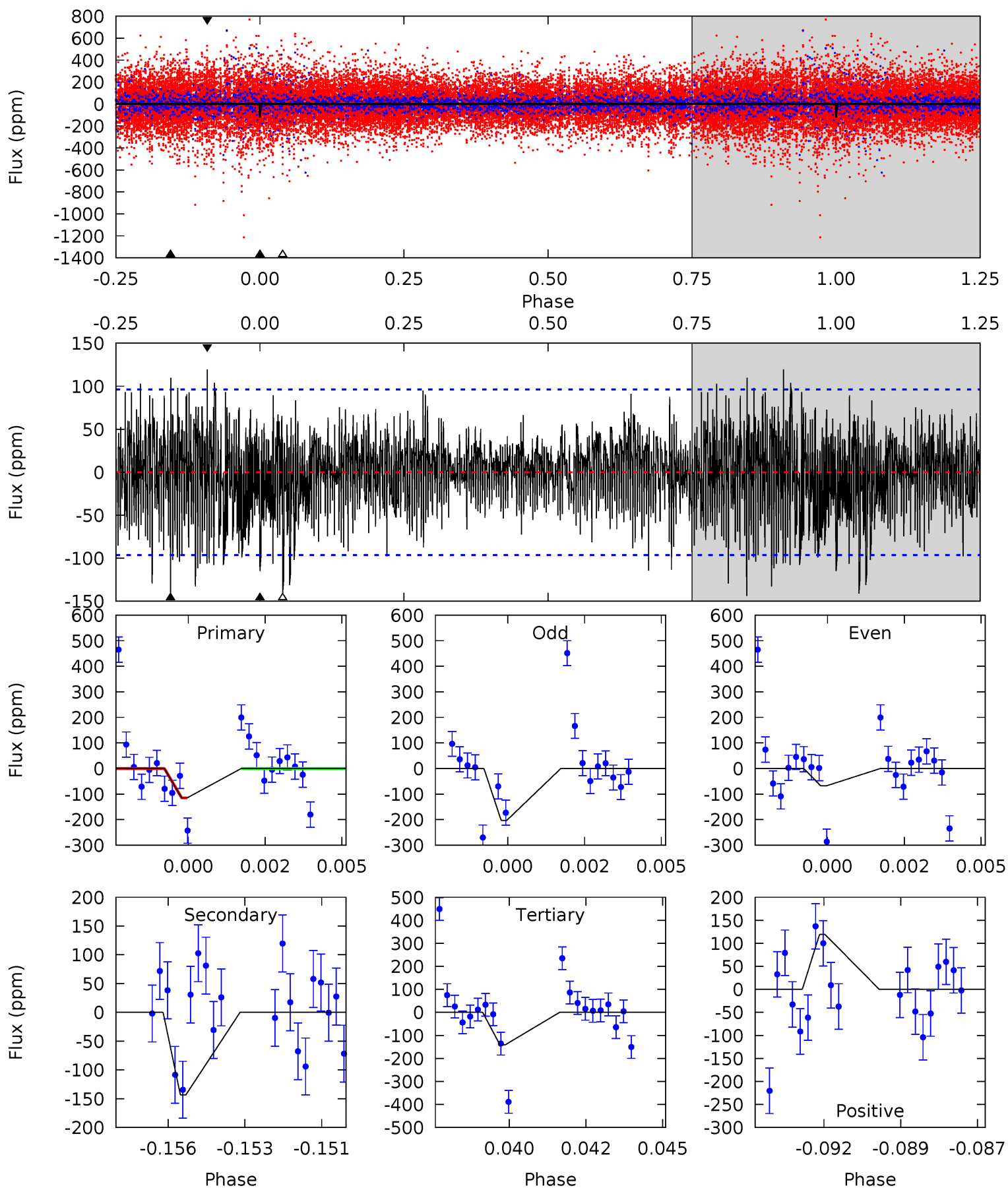
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	6.52	6.37	7.19	5.26	2.98	2.36	4.81	3.99	0.15	-0.66	0.13	1.00	0.39	1.14



Alt Model-Shift Uniqueness Test

009760994-05, P = 572.146491 Days, E = 297.231495 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.31	7.89	7.74	6.56	5.29	3.03	1.84	-1.43	-0.25	0.15	1.33	3.58	0	0.45	0



Stellar Parameters For KIC 009760994

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7263^{+228}_{-304}	$4.123^{+0.153}_{-0.187}$	$-0.220^{+0.250}_{-0.350}$	$1.727^{+0.508}_{-0.416}$	$1.442^{+0.211}_{-0.234}$	$0.394^{+0.330}_{-0.195}$
	+3%/-4%	+4%/-5%	+114%/-159%	+29%/-24%	+15%/-16%	+84%/-49%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009760994-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-107 ± 16	$2.71^{+0.64}_{-0.52}$	480^{+38}_{-34}	6095^{+620}_{-527}	18101^{+9828}_{-6244}
Alt.	-144 ± 18	$2.36^{+0.61}_{-0.50}$	479^{+37}_{-34}	7075^{+942}_{-704}	33193^{+19491}_{-12358}

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

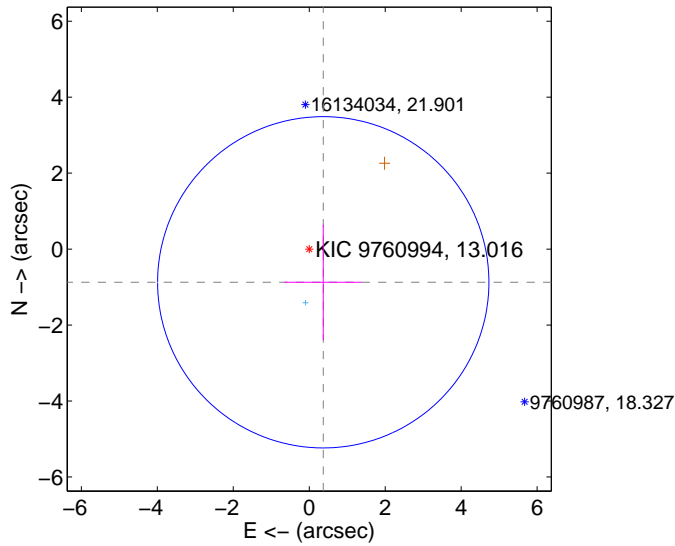
Supplemental centroid analysis for 009760994-05. Kepler magnitude: 13.02. Transit SNR 5.83

There are 1 quarters with good PRF difference image offsets

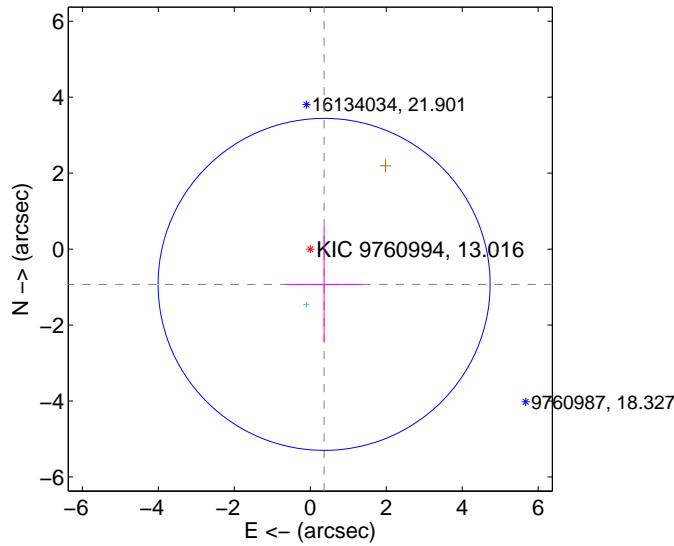
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.949 ± 1.454	0.65	-0.369 ± 1.018	-0.874 ± 1.519
PRF-fit source offset from KIC position	0.998 ± 1.457	0.68	-0.364 ± 1.019	-0.929 ± 1.513
photometric centroid source offset	1.09 ± 0.52	2.09	-1.00 ± 0.52	-0.42 ± 0.51

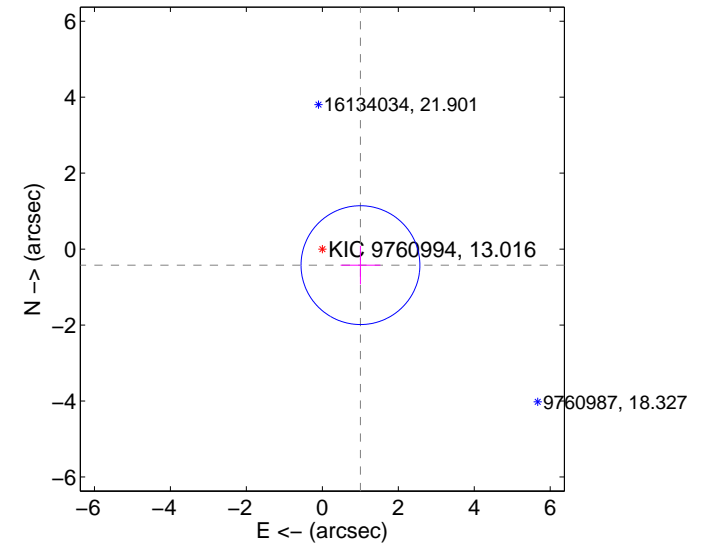
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

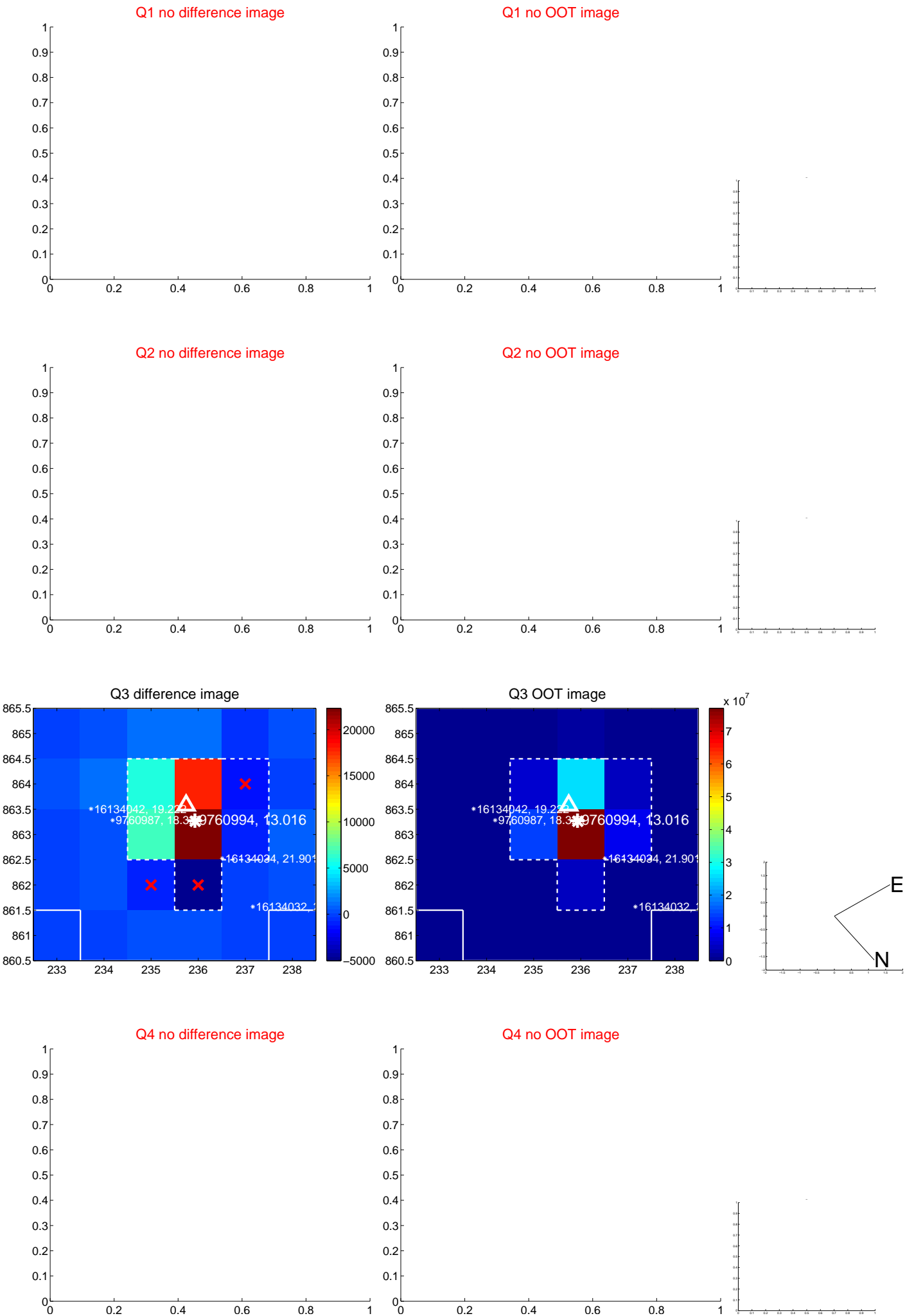


offset from photometric centroids

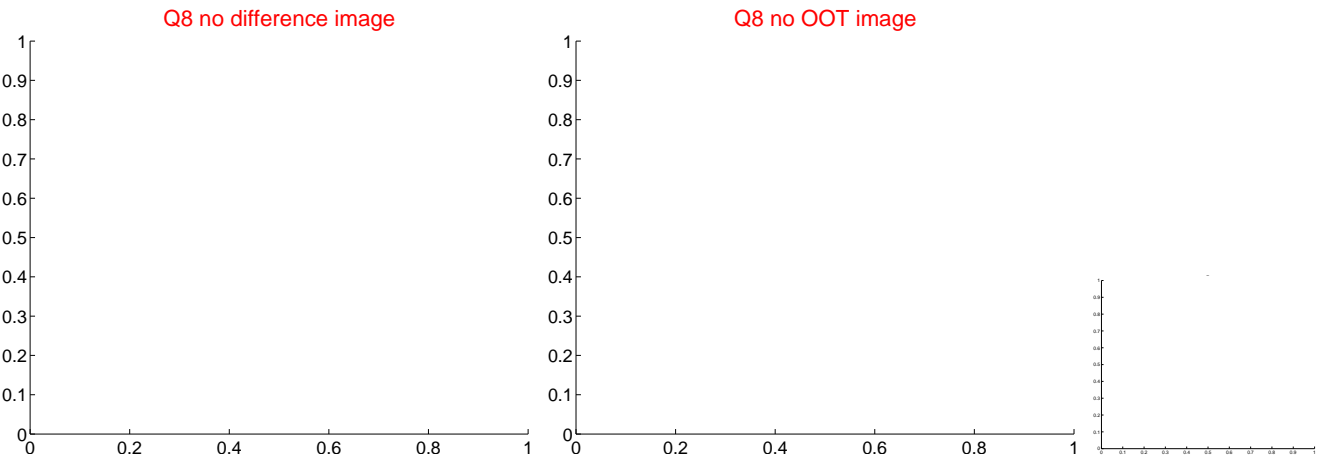
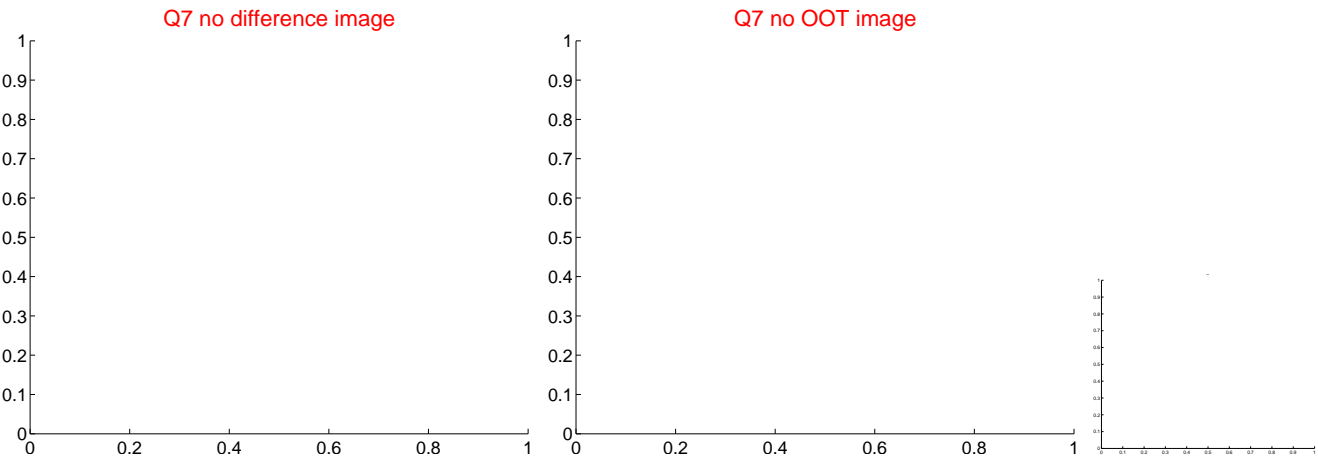
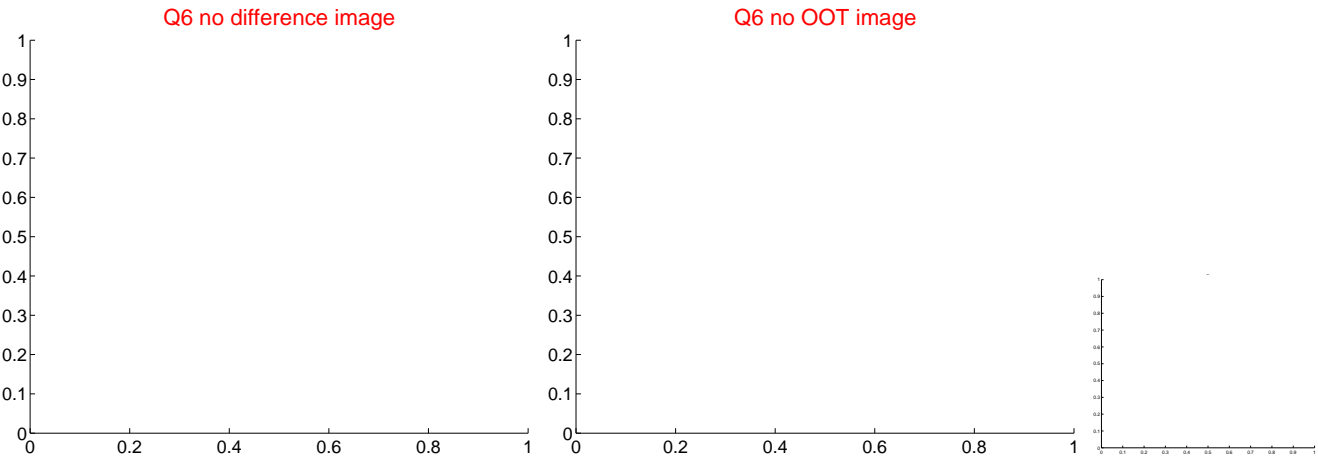
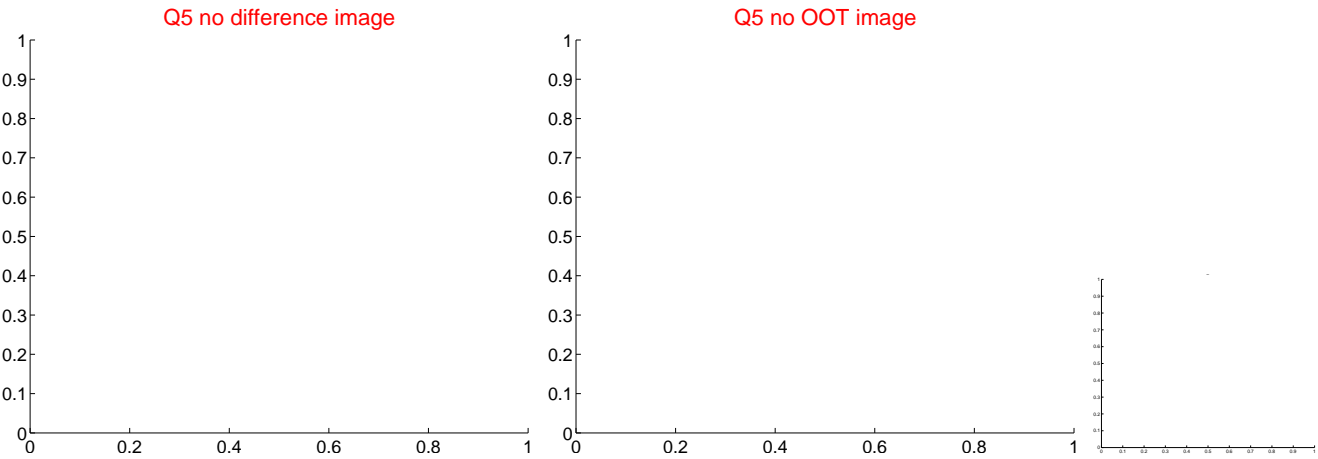


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

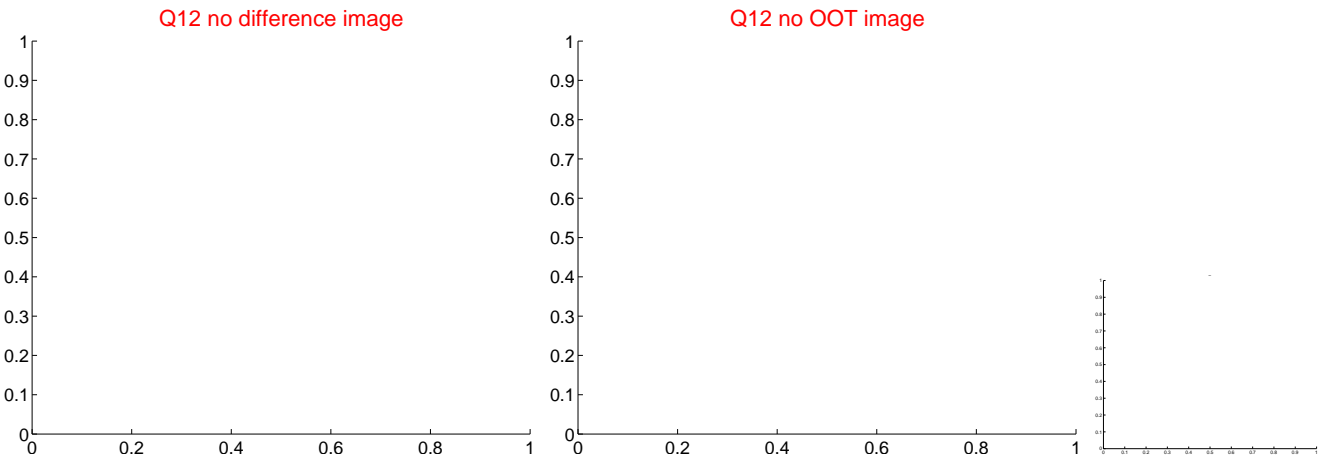
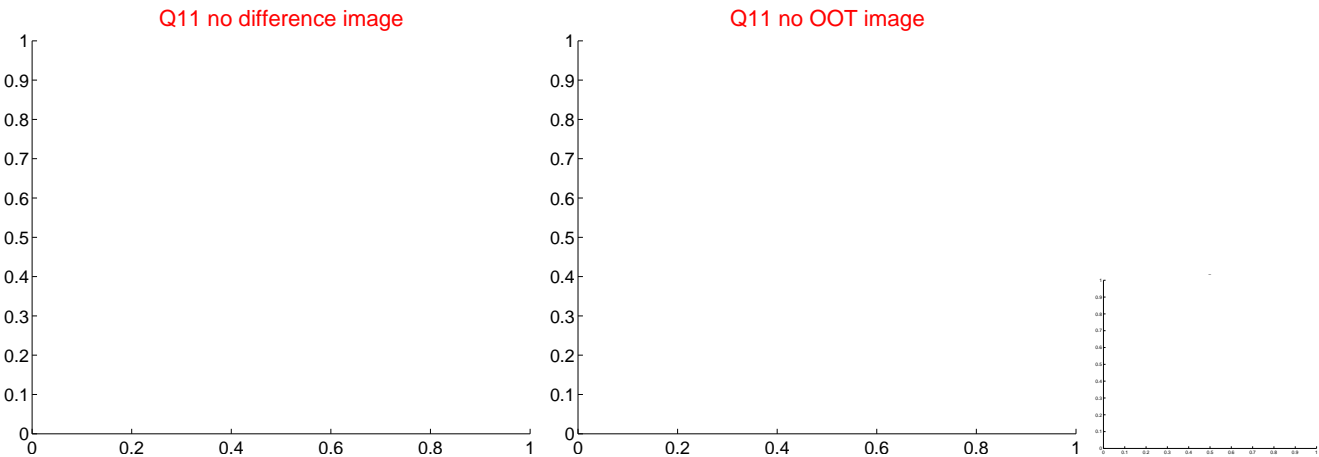
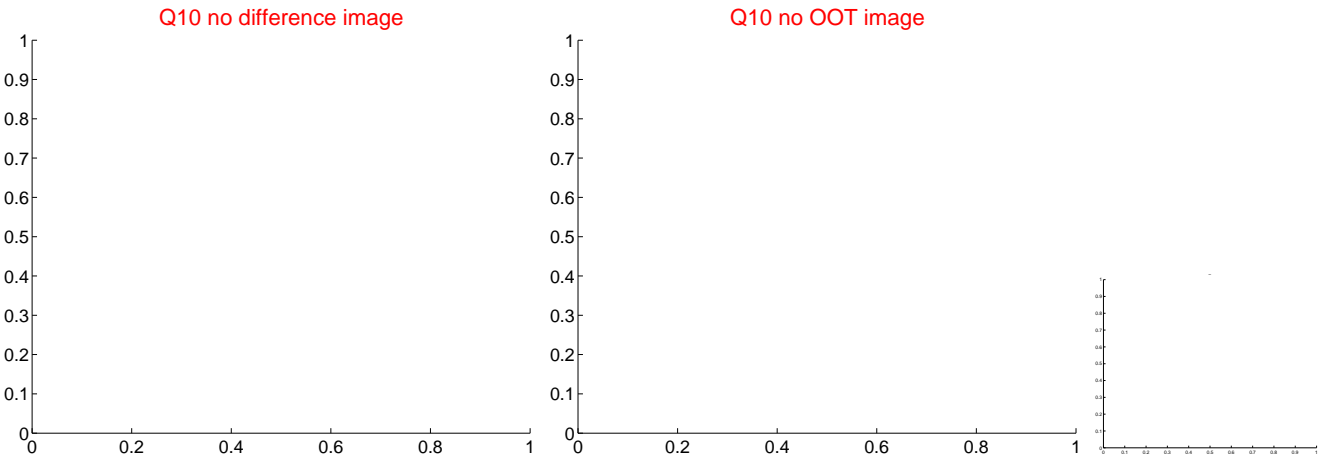
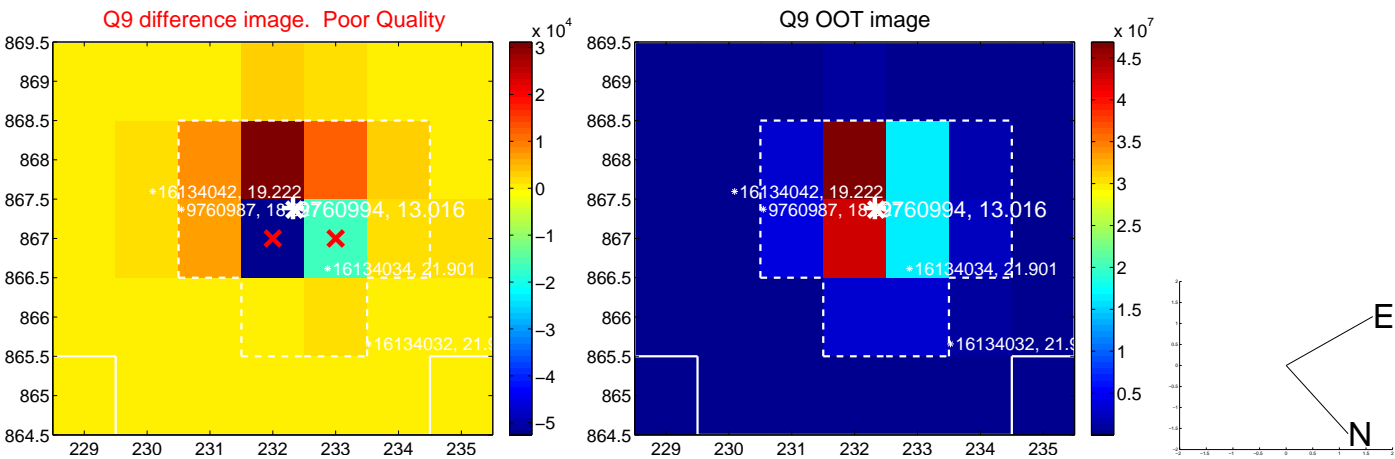
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



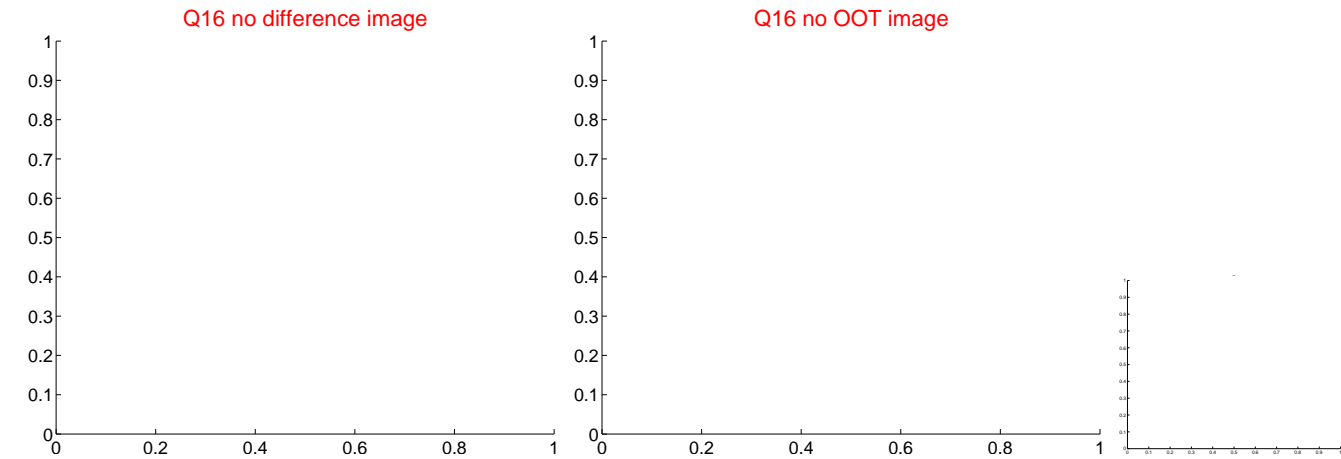
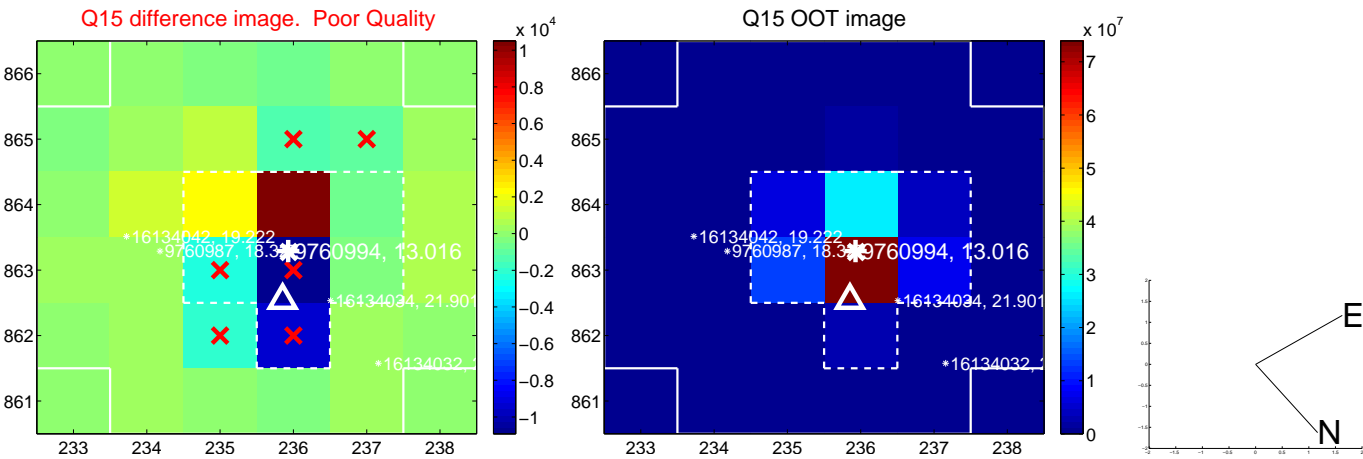
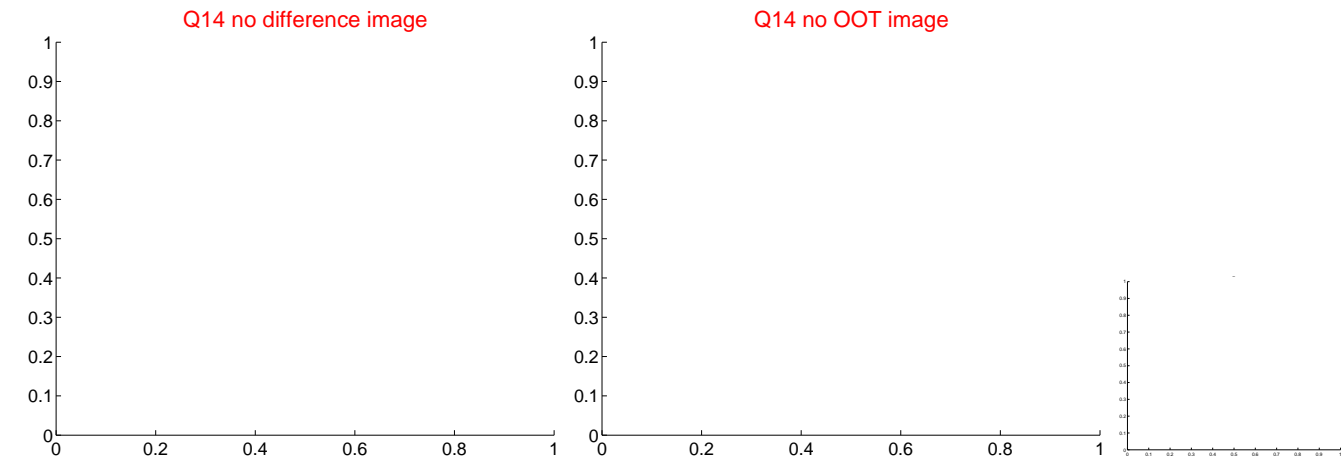
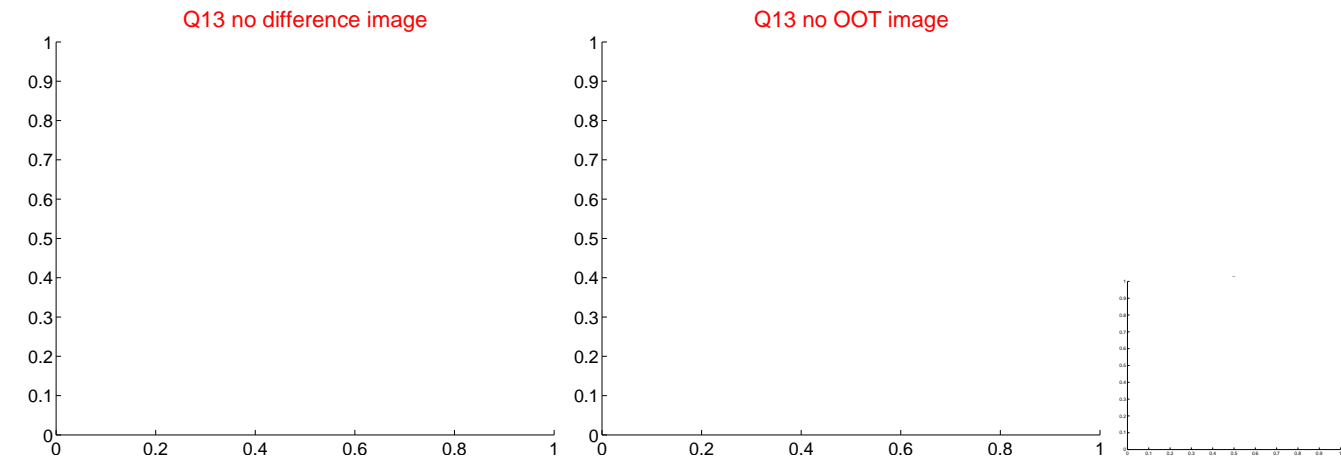
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



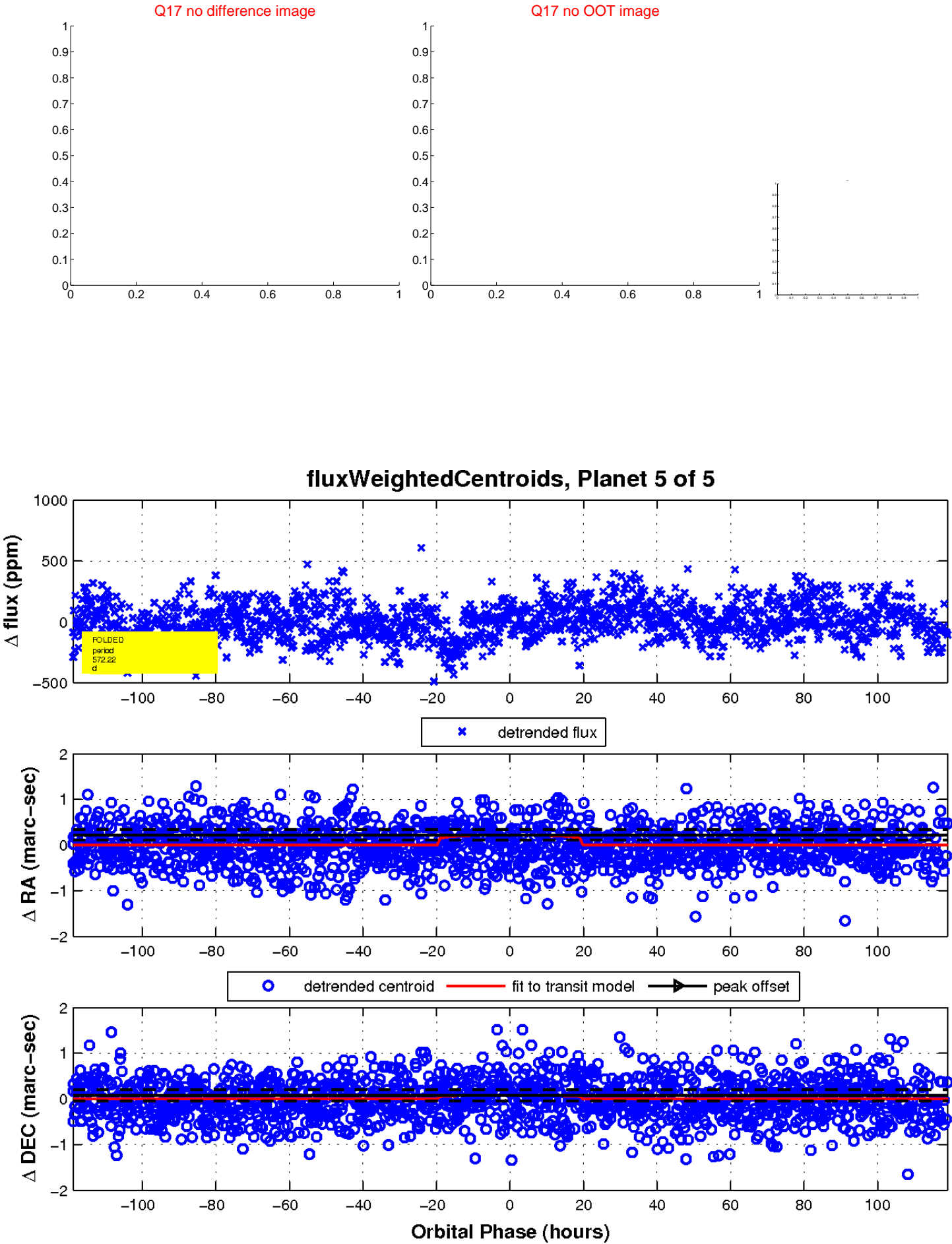
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



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



UKIRT Image

Declination

