

KIC 003228986

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})
003228986-01	OBS	4031.01	0.730966	132.219395	63.7	2.981	18.9	18.6	1.19	6238	0.98	6758.04
003228986-02	OBS	No	432.043981	279.433266	4647.8	55.770	15.8	9.8	1.19	6238	10.69	1.36
003228986-03	OBS	No	247.279104	233.999456	546.5	9.531	8.8	6.3	1.19	6238	2.94	2.87
003228986-04	OBS	No	321.835502	226.050599	487.7	13.269	8.4	5.2	1.19	6238	2.82	2.02
003228986-05	OBS	No	246.915361	221.969229	521.9	1.475	9.4	4.2	1.19	6238	2.97	2.87
003228986-06	OBS	No	223.166868	221.784778	527.0	14.730	13.5	5.9	1.19	6238	5.24	3.29
003228986-07	OBS	No	449.559064	327.040113	797.9	9.586	8.4	7.4	1.19	6238	3.65	1.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003228986-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
003228986-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS
003228986-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
003228986-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—ALL_TRANS_CHASES—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.

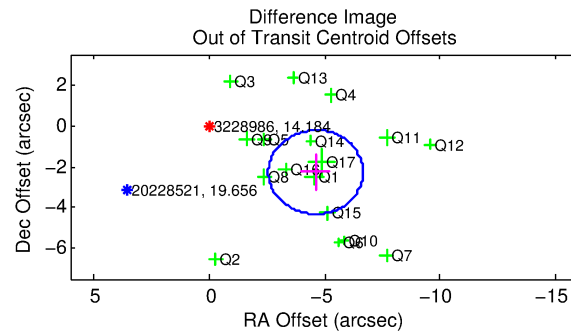
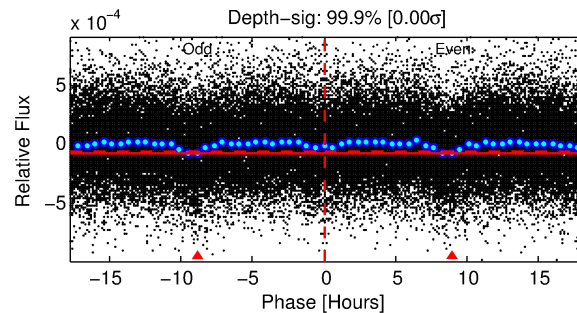
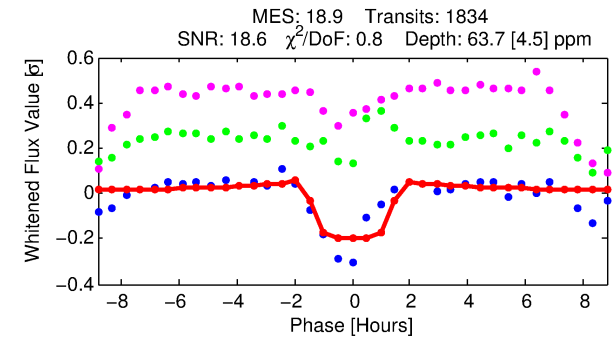
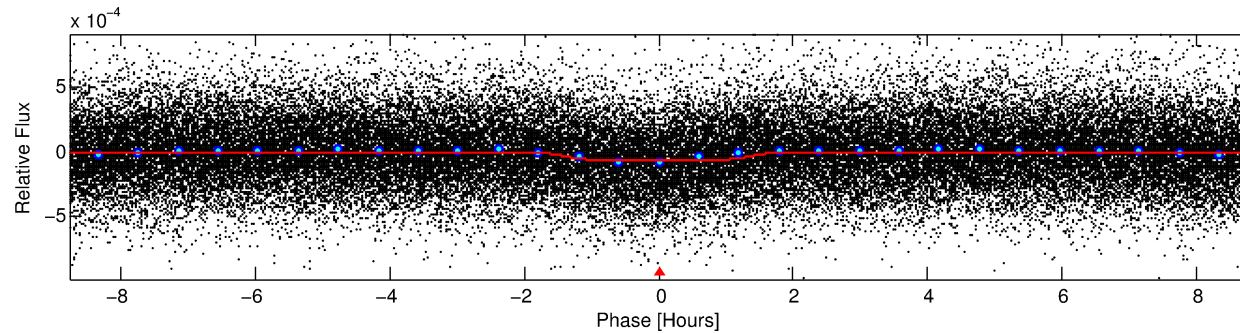
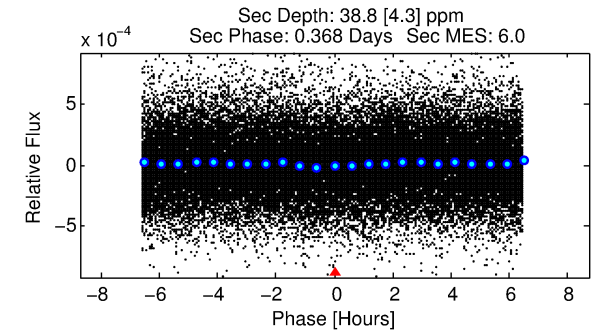
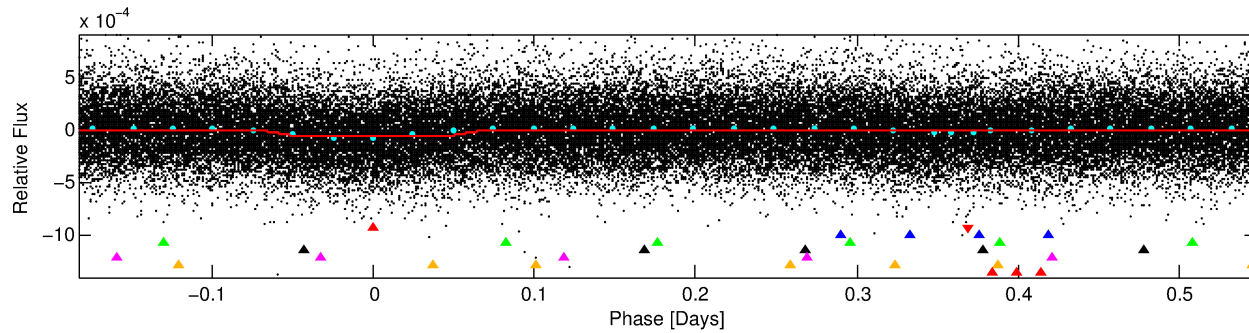
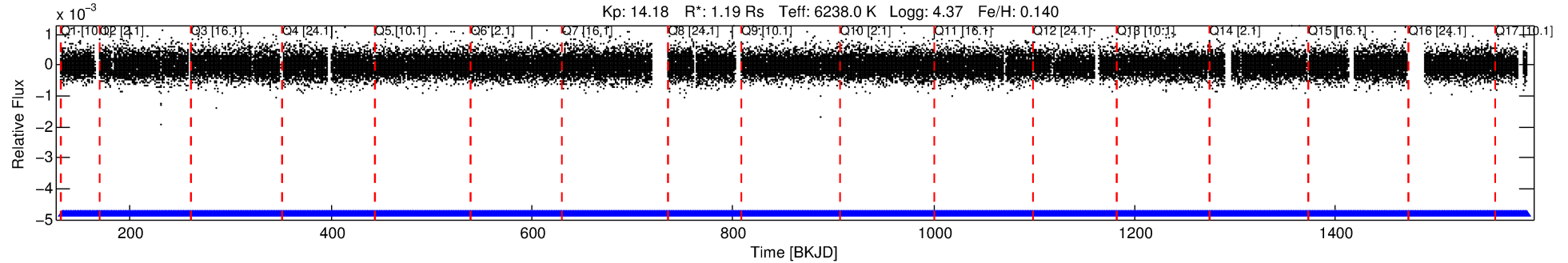
Ephemeris Match Information For 003228986-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
003228986-01	3228986	V404-Lyr-pri	3228863	1:1	80.4	11	17	11.82	14.19	8146.40	Direct-PRF	0	3.31	0.77

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 3228986 Candidate: 1 of 7 Period: 0.731 d
KOI: K04031.01 Corr: 0.884



DV Fit Results:

Period = 0.73097 [0.00001] d
Epoch = 132.2194 [0.0016] BKJD
Rp/R* = 0.0075 [0.0023]
a/R* = 1.79 [1.80]
b = 0.50 [2.21]
Seff = 6758.04 [1500.95]
Teq = 2312 [128] K
Rp = 0.98 [0.34] Re
a = 0.0169 [0.0024] AU
Ag = 6.36 [4.11] [1.30σ]
Teffp = 5677 [869] K [3.83σ]

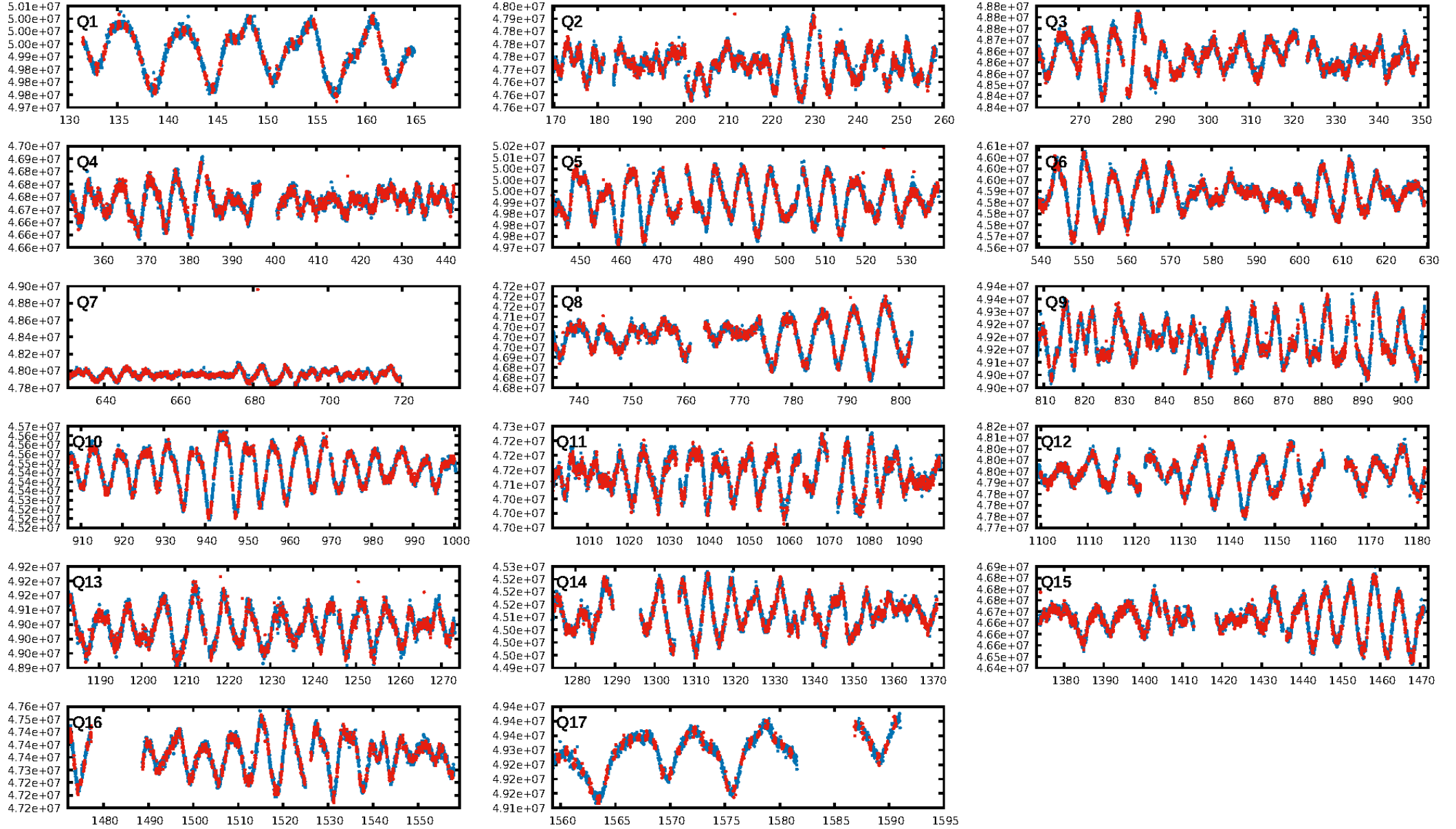
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [355.23σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.48e-71
RollingBand-fgt: 1.00 [1752/1752]
GhostDiagnostic-chr: -0.2059
Centroid-sig: 0.0%
Centroid-so: 2.316 arcsec [4.22σ]
OotOffset-rm: 5.142 arcsec [7.52σ]
KicOffset-rm: 5.058 arcsec [7.42σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 1.00 [17/17]

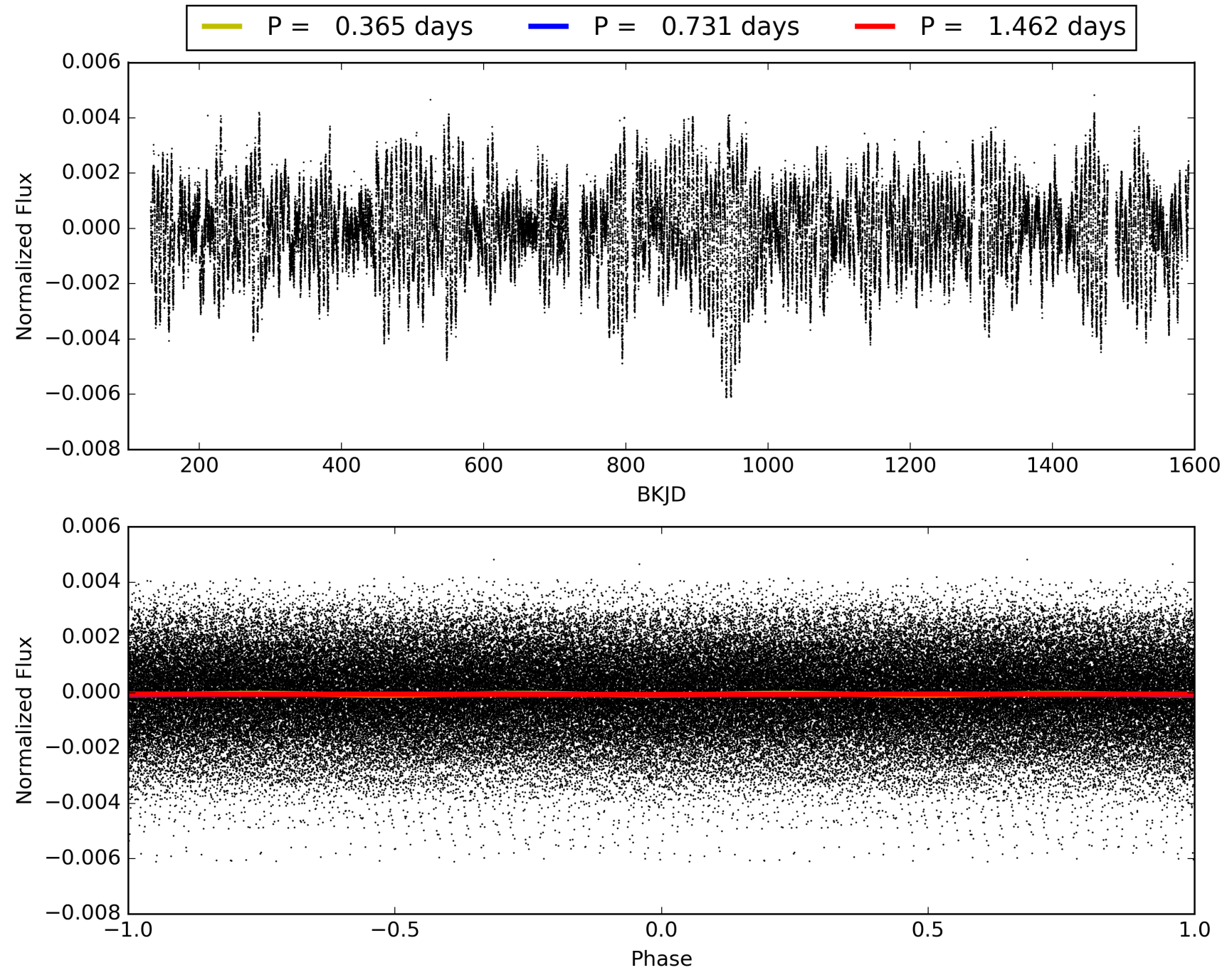
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:36:56 Z

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

TCE 003228986-01, PDC Light Curves

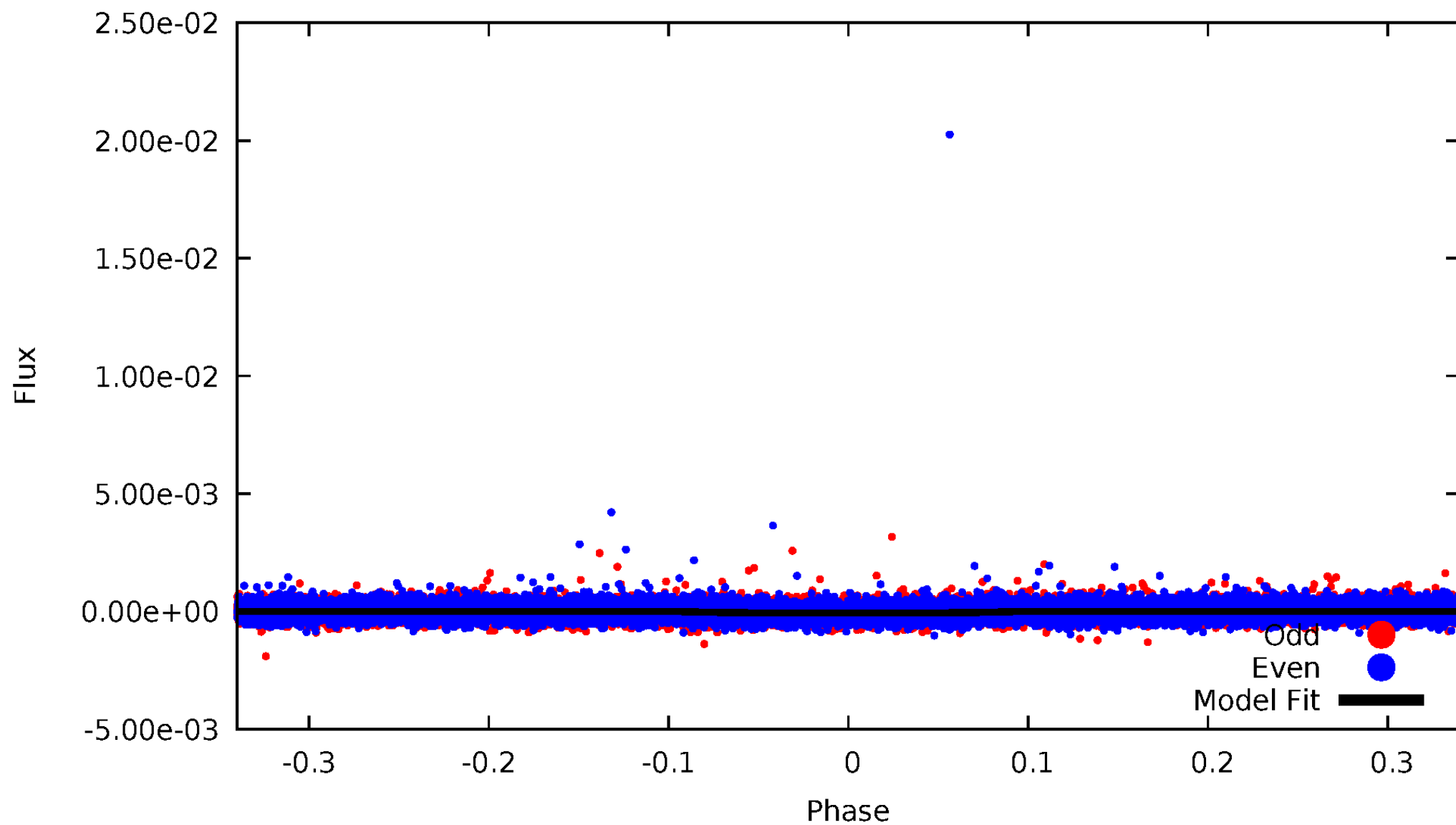


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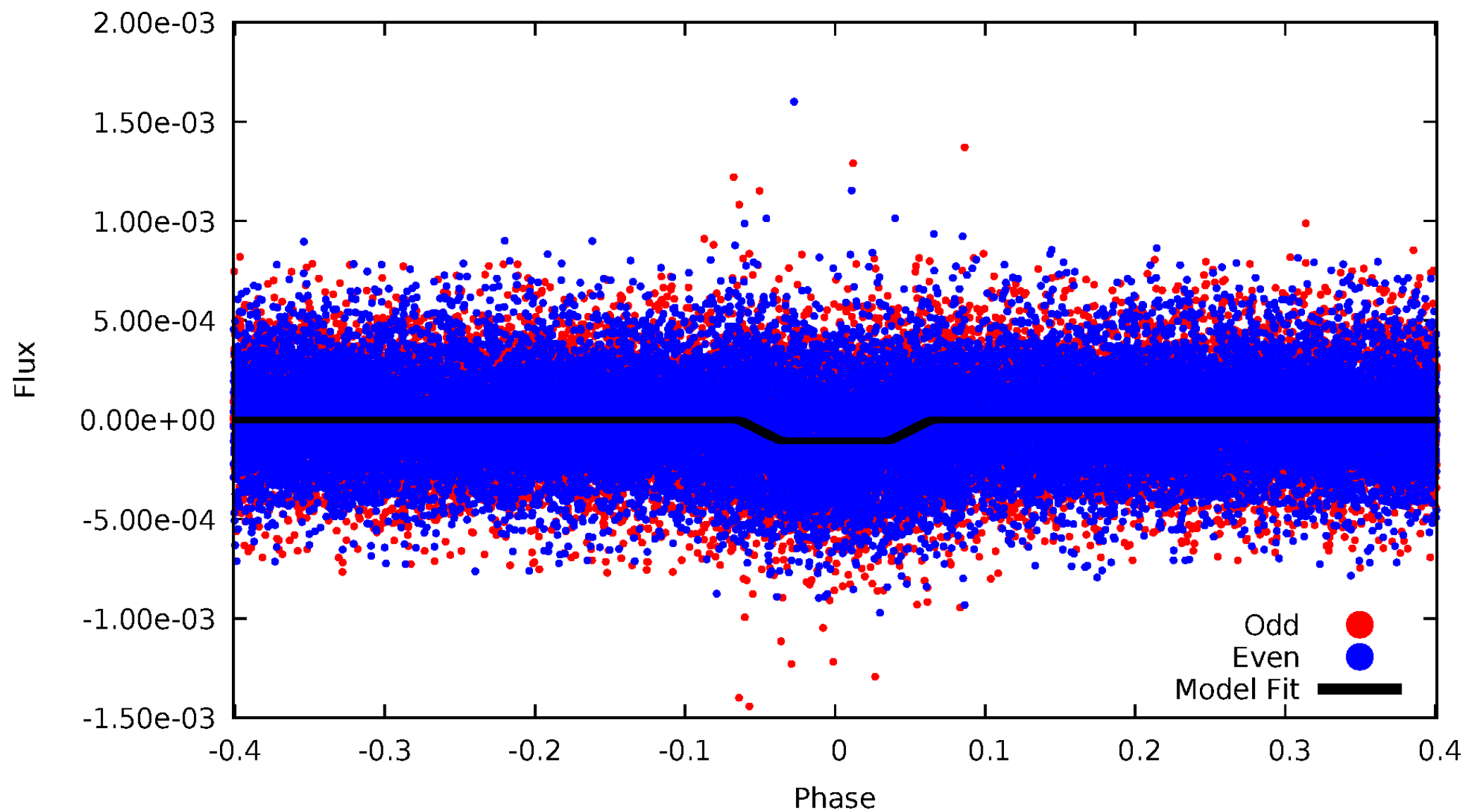
DV Odd/Even

TCE 003228986-01

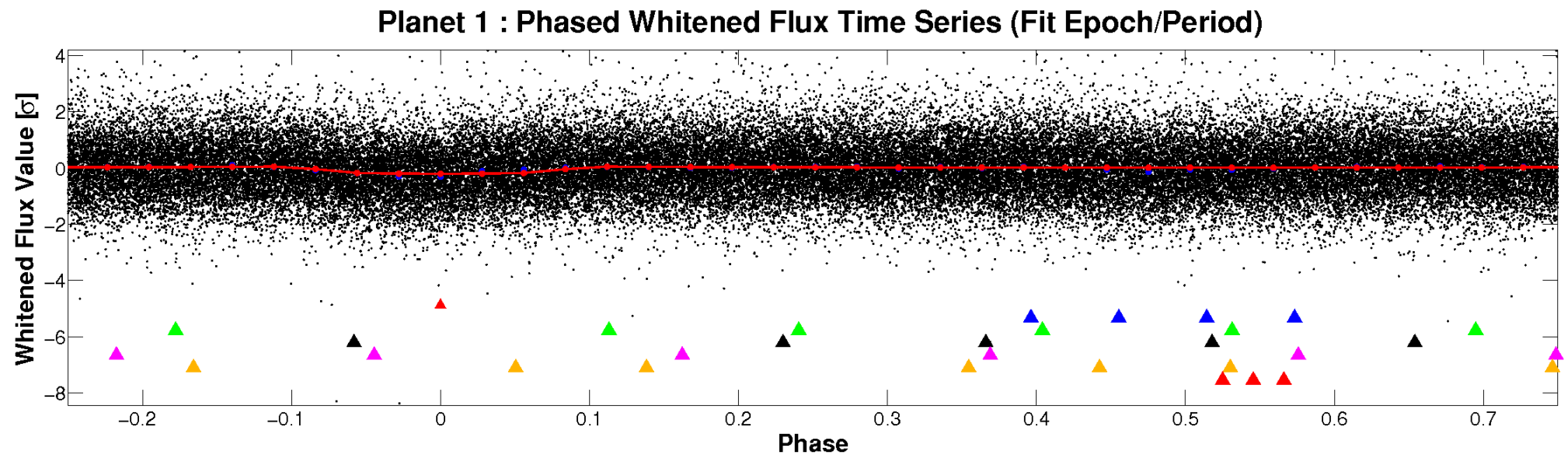
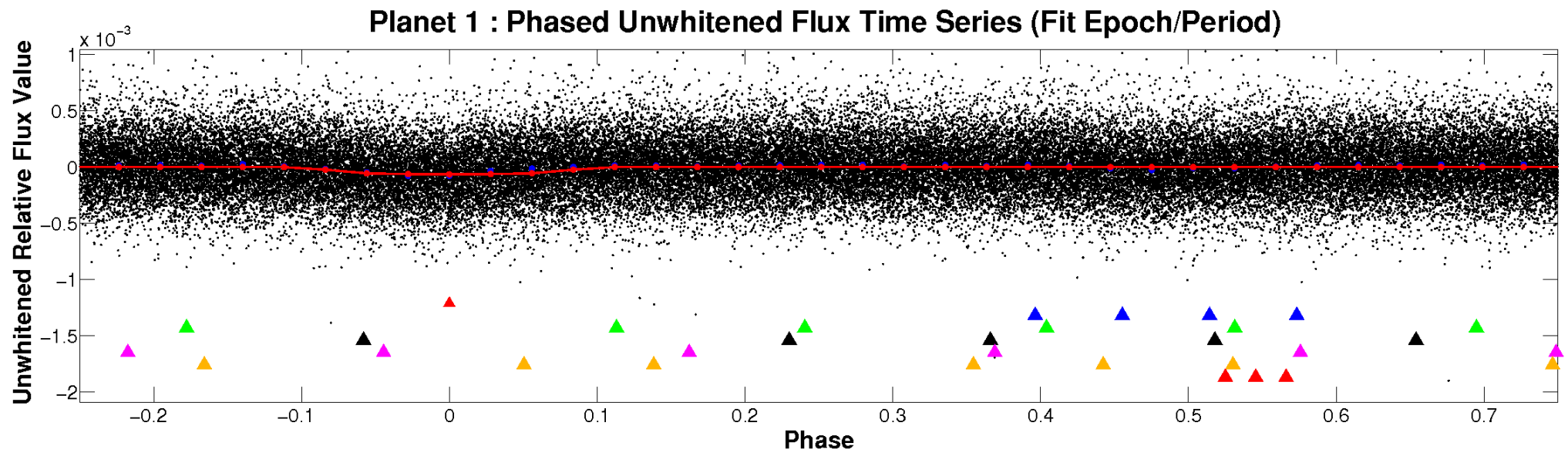


ALT Odd/Even

TCE 003228986-01

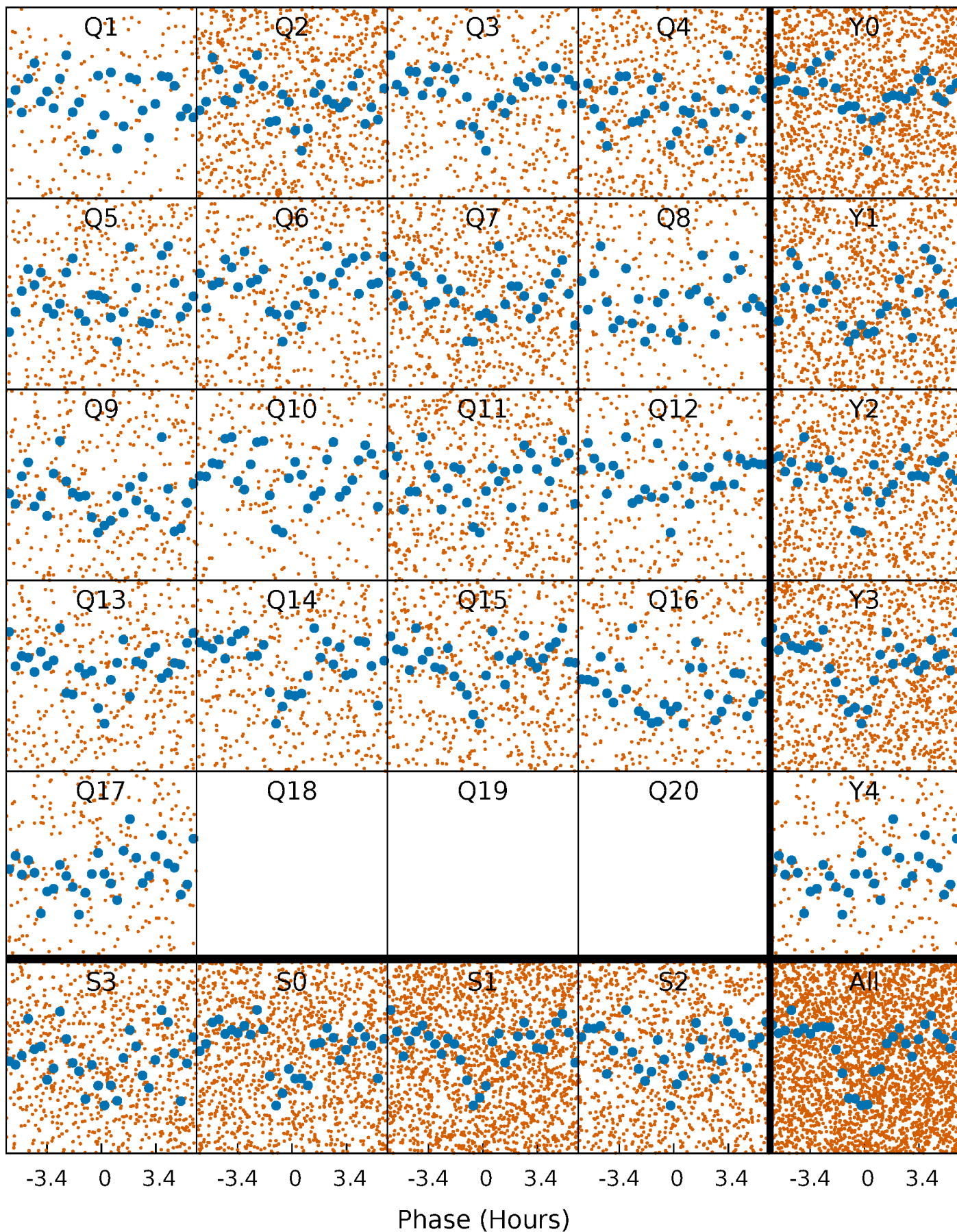


Non-Whitened Vs. Whitened Light Curve



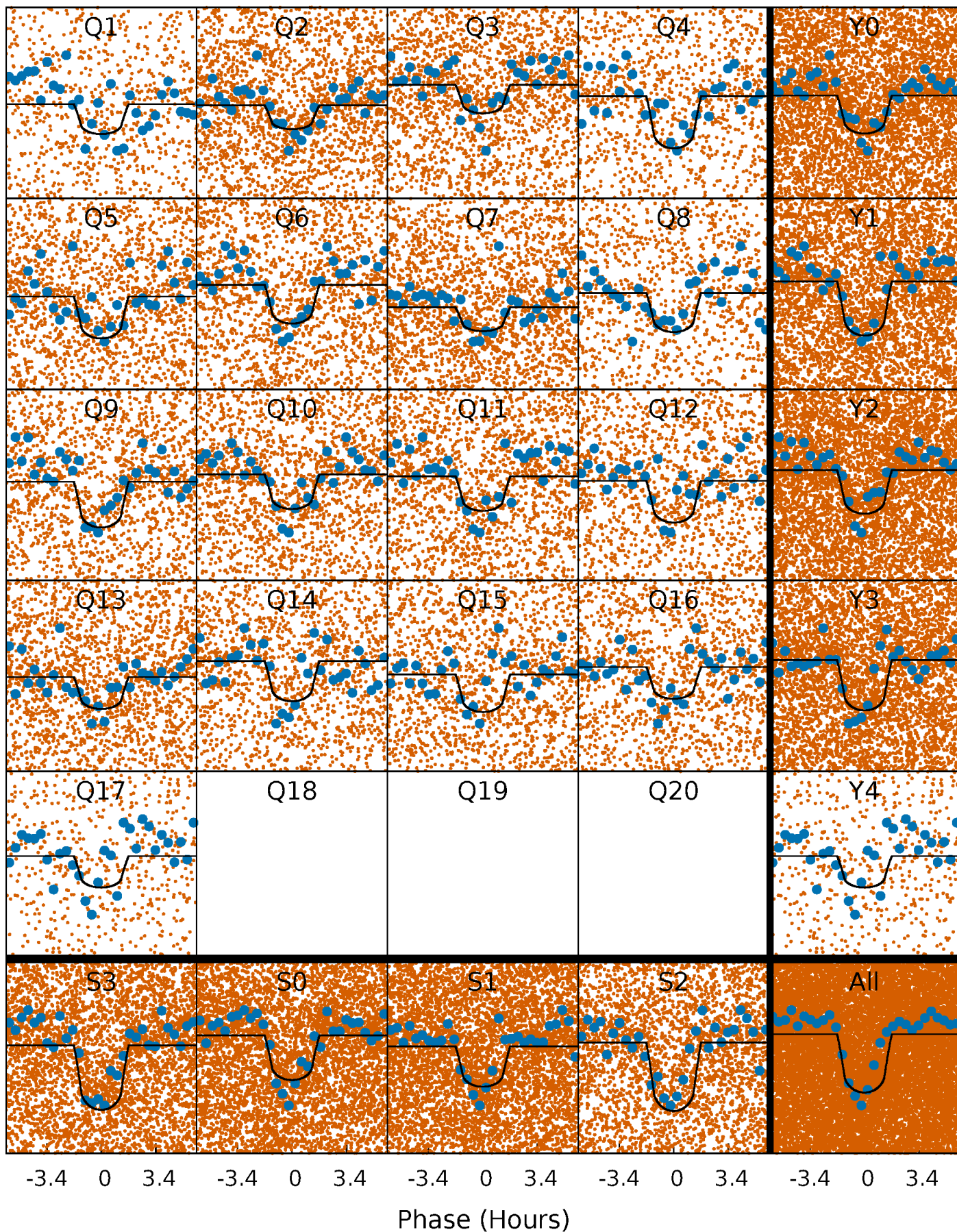
PDC Quarter-Phased Transit Curves

TCE 003228986-01 P= 0.730966 Days $T_0=132.219395$ (BKJD)



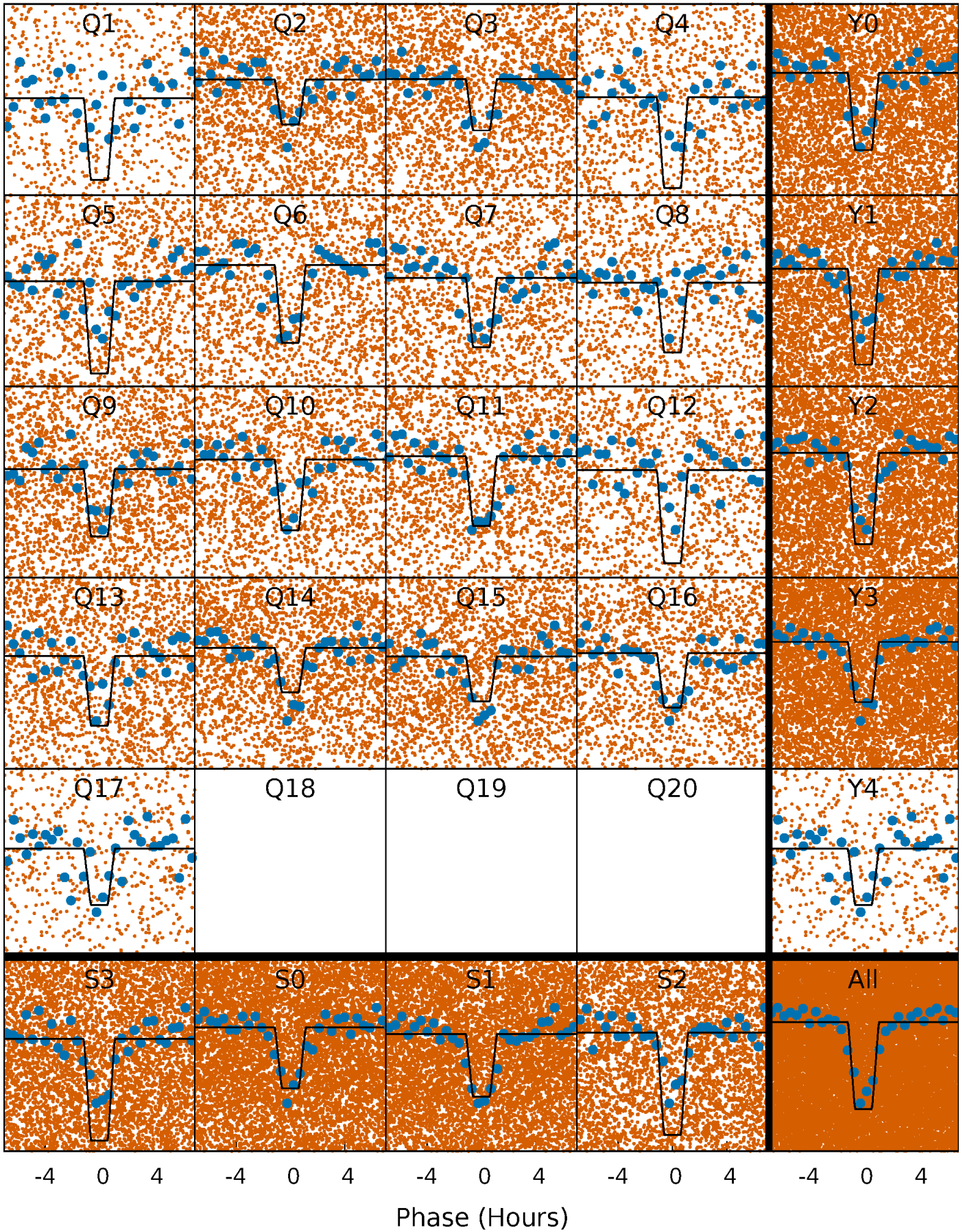
DV Quarter-Phased Transit Curves

TCE 003228986-01 P= 0.730966 Days $T_0=132.219395$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

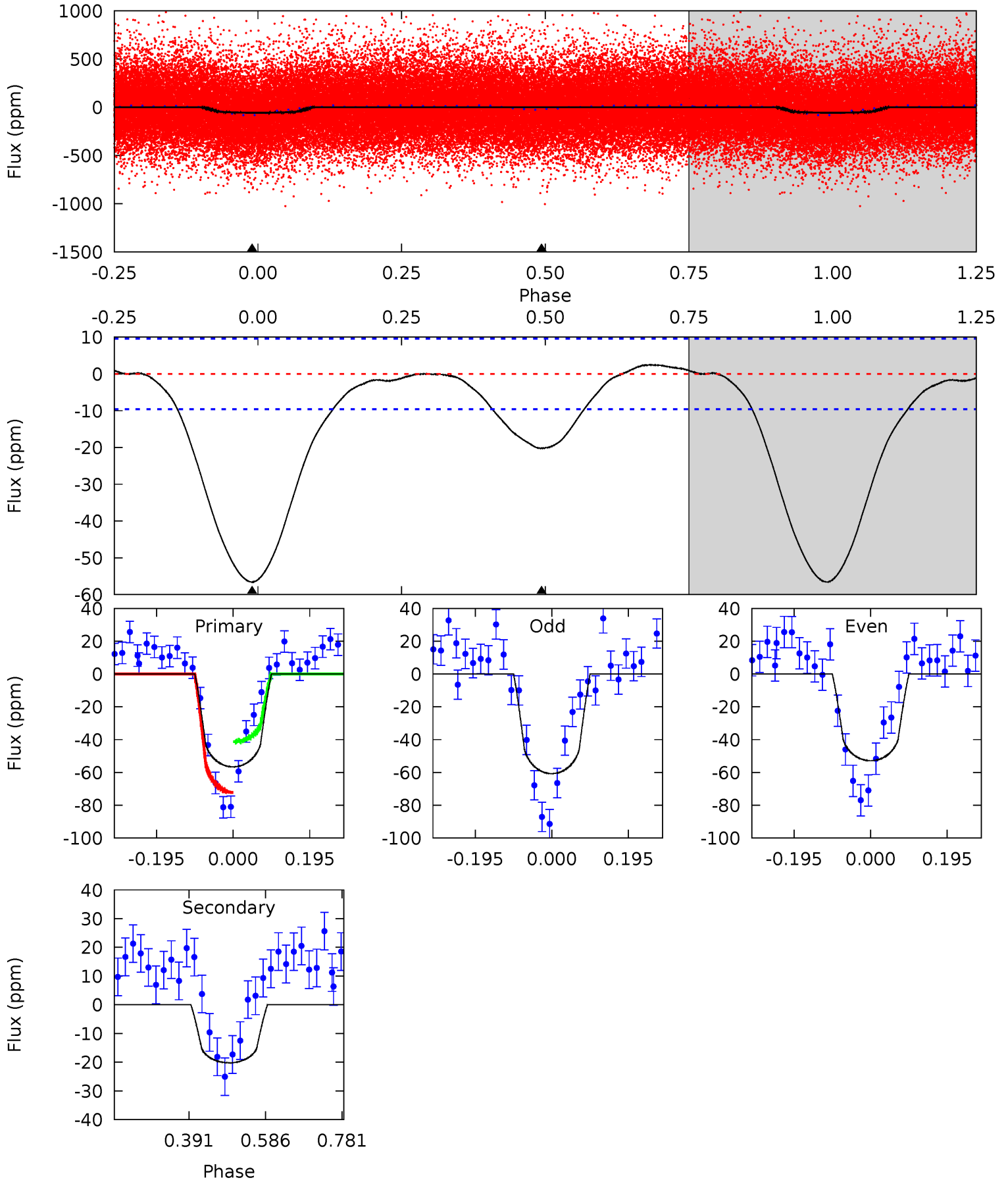
TCE 003228986-01 P= 0.730947 Days $T_0=132.227042$ (BKJD)



DV Model-Shift Uniqueness Test

003228986-01, P = 0.730966 Days, E = 131.488429 Days

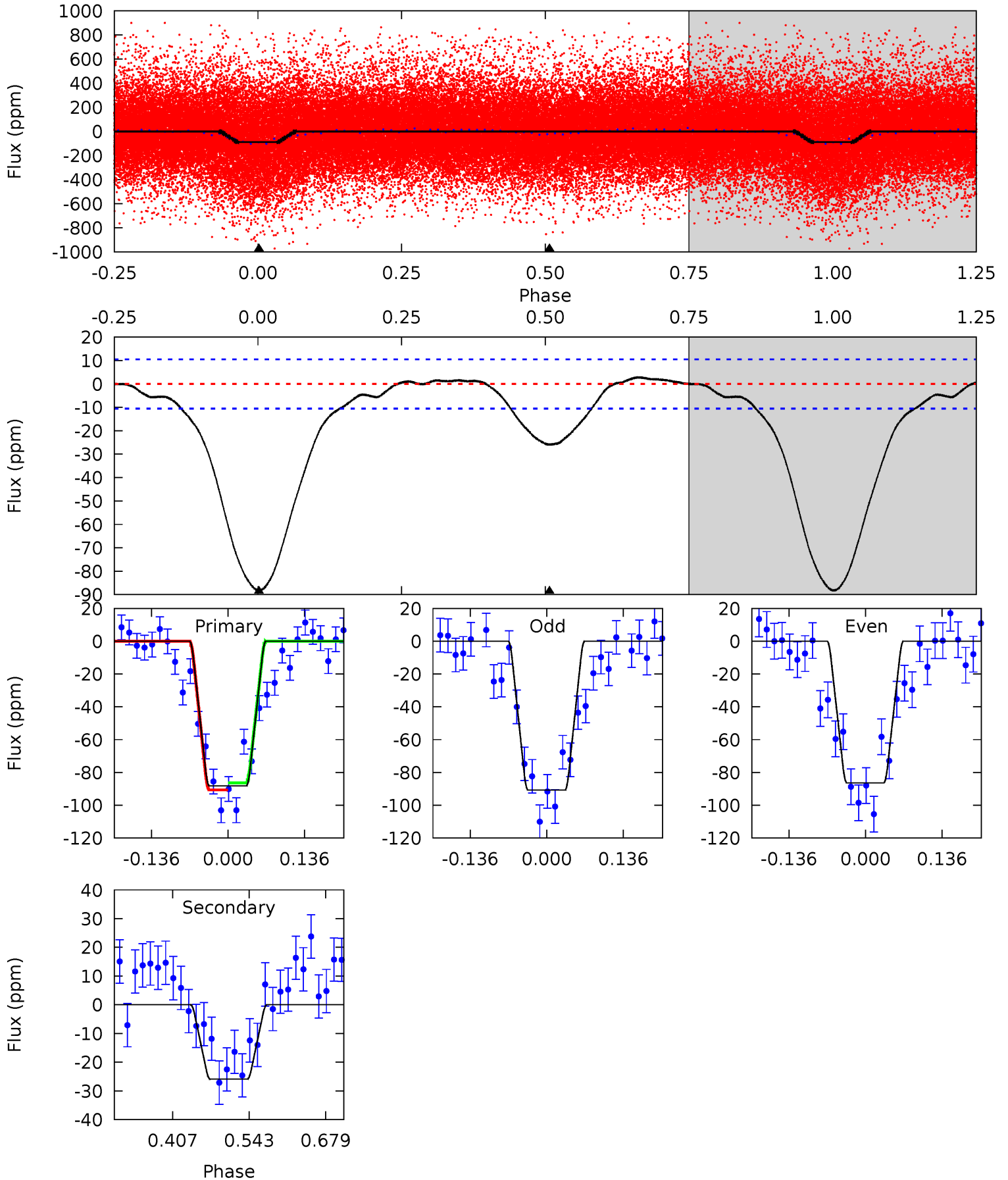
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.1	9.33	0	0	4.42	1.29	0.65	26.1	26.1	9.33	9.33	1.82	0.97	0.04	7.19



Alt Model-Shift Uniqueness Test

003228986-01, P = 0.730947 Days, E = 131.496095 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.8	11.1	0	0	4.50	1.49	1.55	37.8	37.8	11.1	11.1	0.95	1.03	0.03	0.92



Stellar Parameters For KIC 003228986

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	6238^{+68}_{-87}	$4.365^{+0.040}_{-0.120}$	$0.140^{+0.150}_{-0.200}$	$1.191^{+0.198}_{-0.085}$	$1.204^{+0.076}_{-0.093}$	$1.003^{+0.199}_{-0.347}$
	+1%/-1%	+1%/-3%	+107%/-143%	+17%/-7%	+6%/-8%	+20%/-35%
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 003228986-01 / KOI 4031.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-20 ± 2	$1.00^{+0.33}_{-0.30}$	3259^{+125}_{-83}	4826^{+881}_{-590}	$3.146^{+3.399}_{-1.402}$
Alt.	-26 ± 2	$1.35^{+0.31}_{-0.30}$	3248^{+125}_{-78}	4443^{+495}_{-392}	$2.191^{+1.381}_{-0.761}$

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 $A_{obs} \gg 1.0$

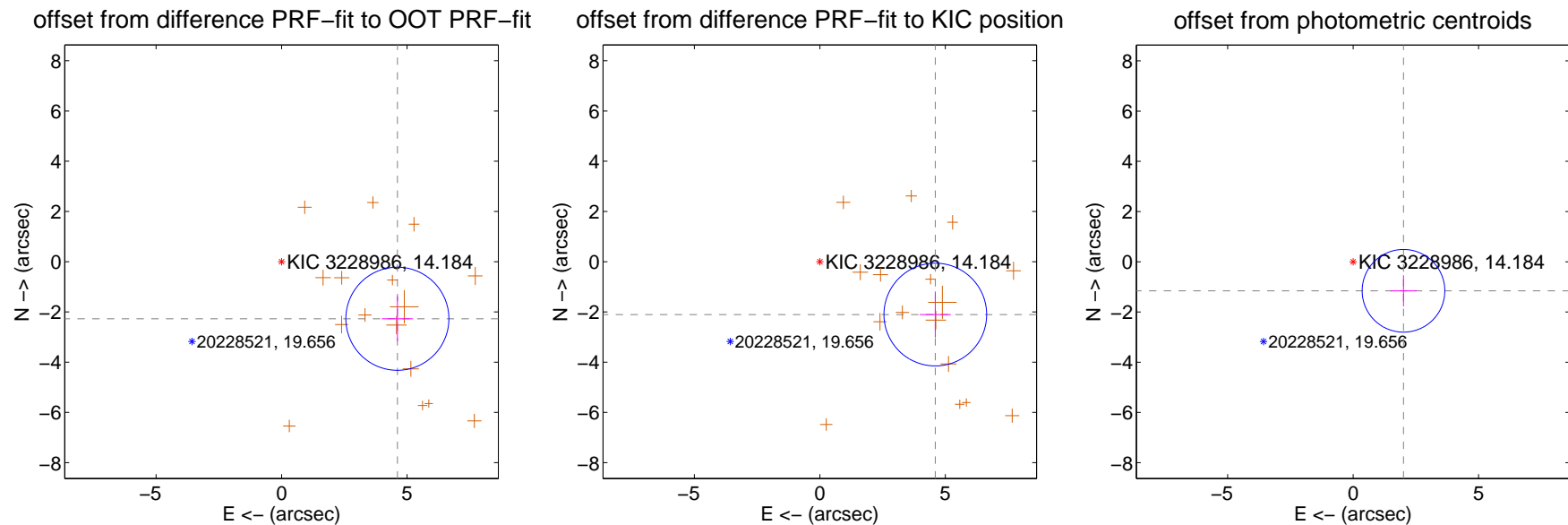
DV Centroid Data

Supplemental centroid analysis for 003228986-01. Kepler magnitude: 14.18. Transit SNR 18.56

There are 0 quarters with good PRF difference image offsets

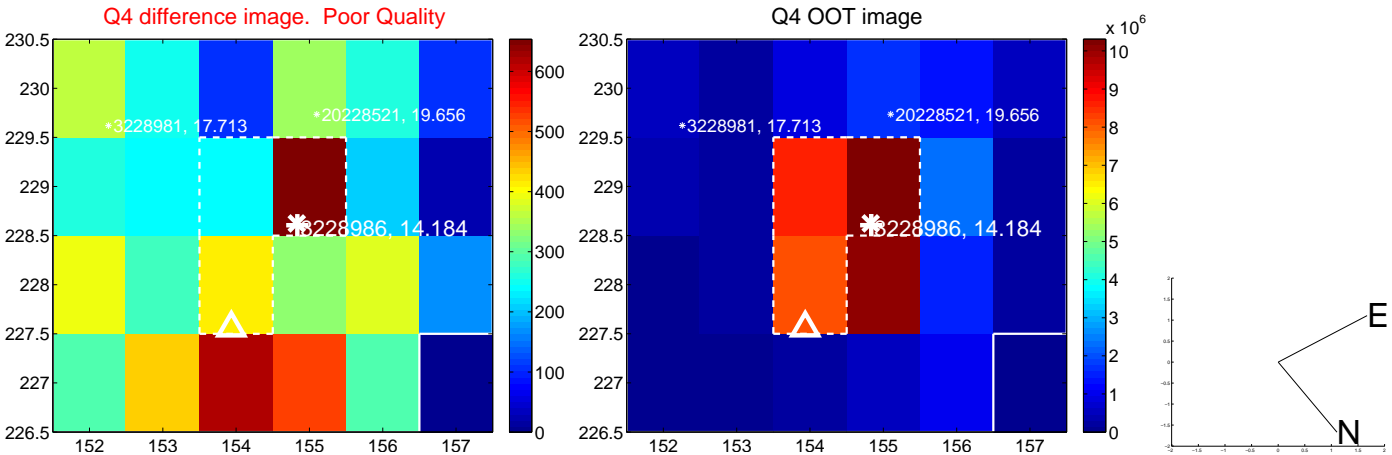
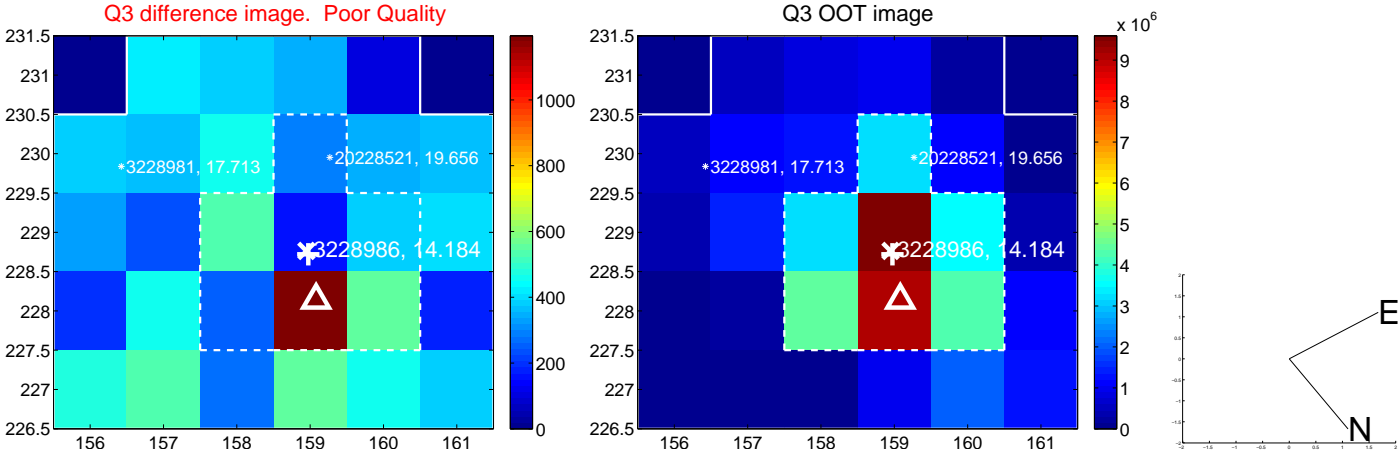
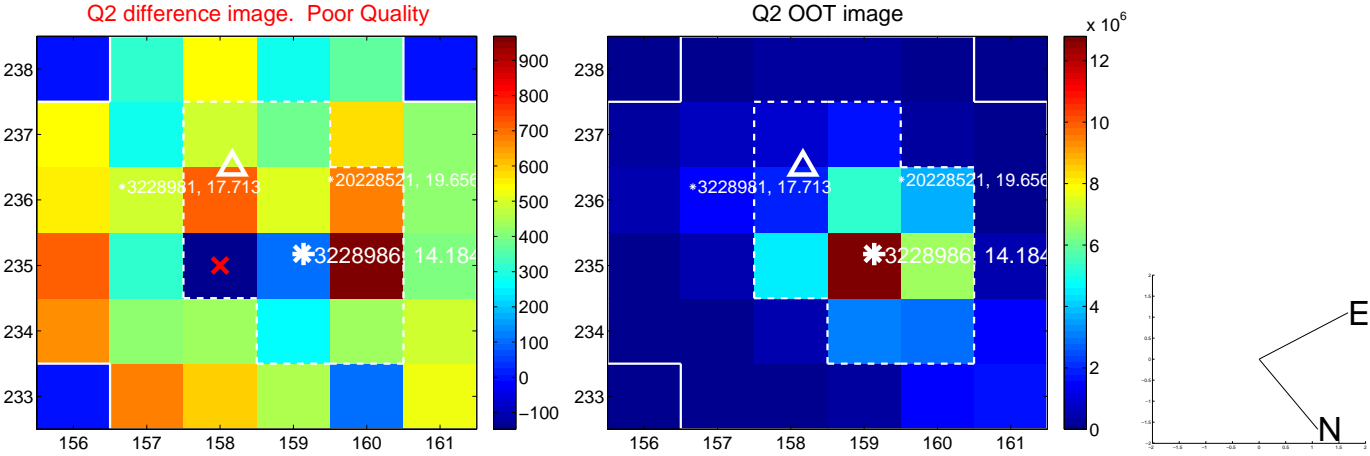
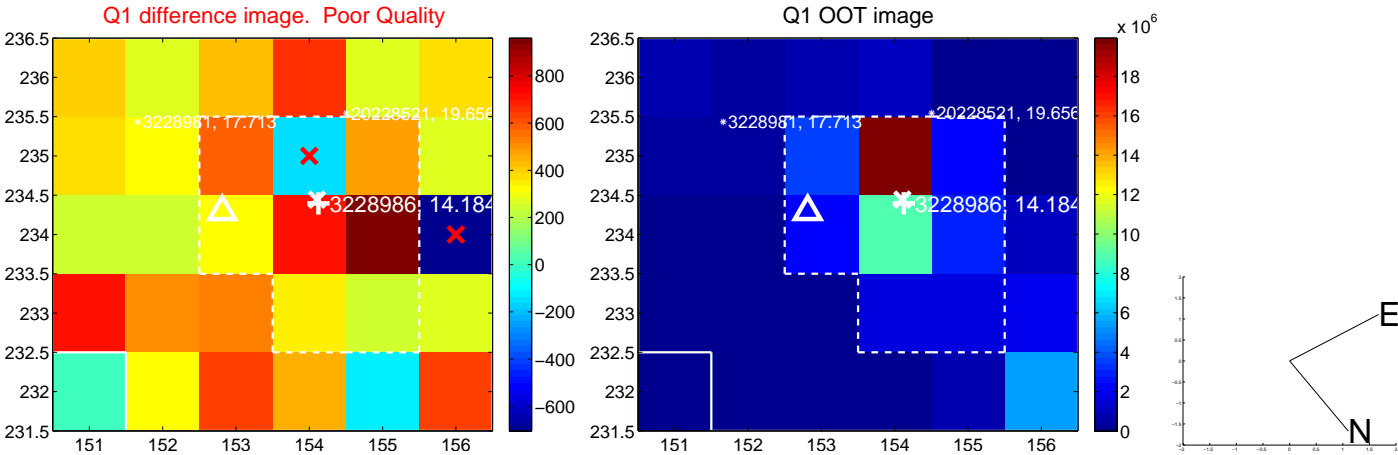
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.142 ± 0.684	7.52	-4.613 ± 0.621	-2.272 ± 0.898
PRF-fit source offset from KIC position	5.058 ± 0.682	7.42	-4.599 ± 0.621	-2.105 ± 0.918
photometric centroid source offset	2.32 ± 0.55	4.22	-2.01 ± 0.52	-1.16 ± 0.62

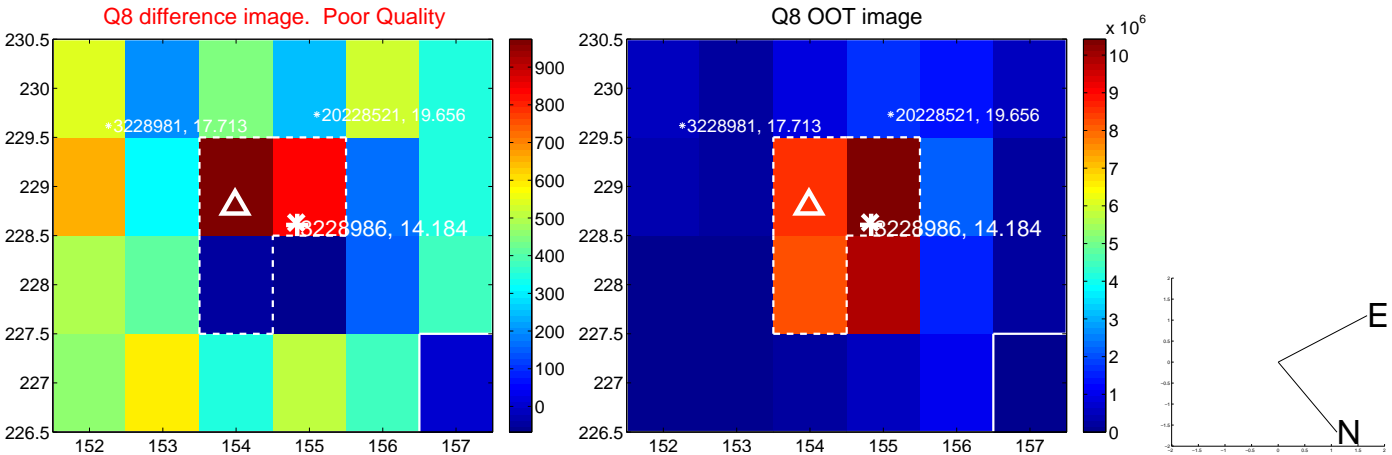
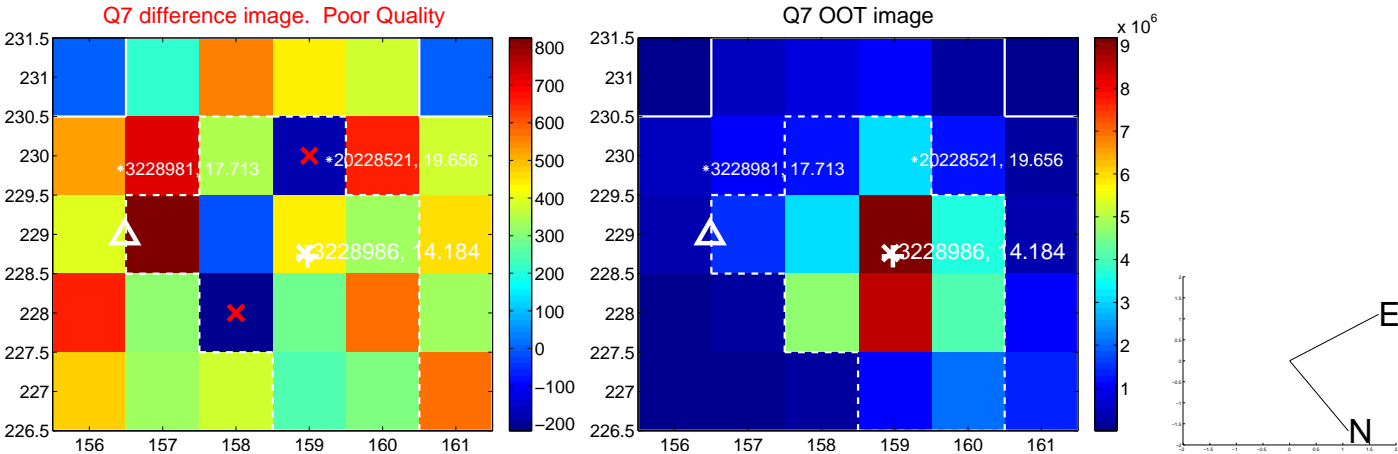
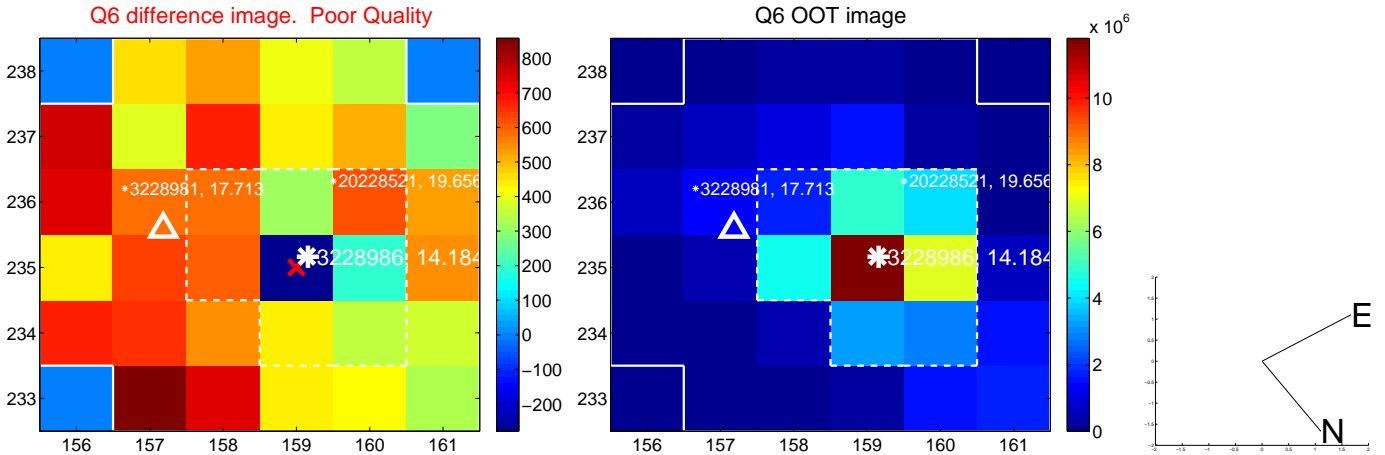
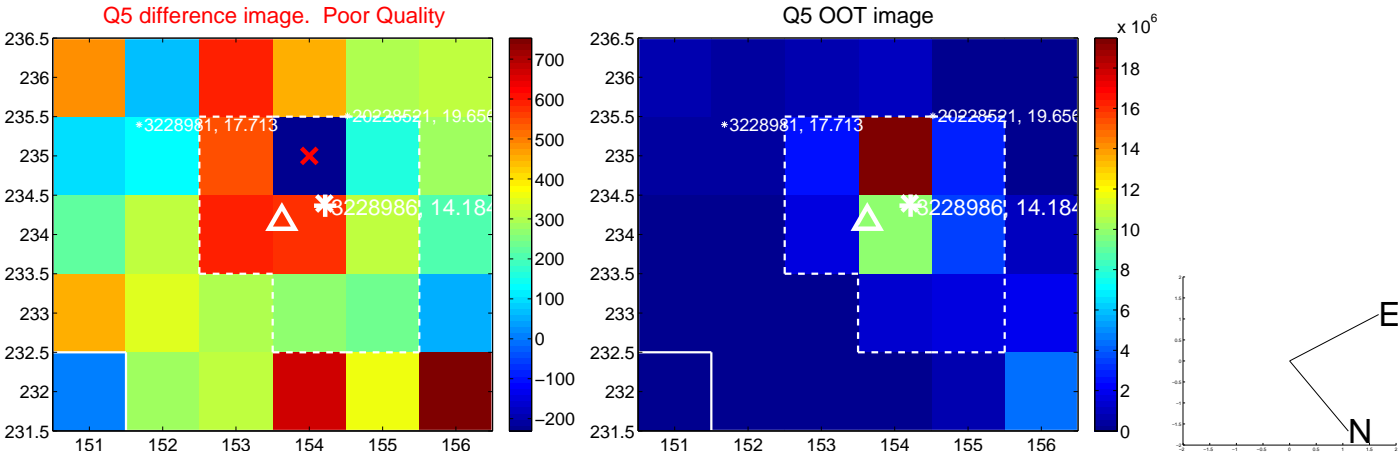


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

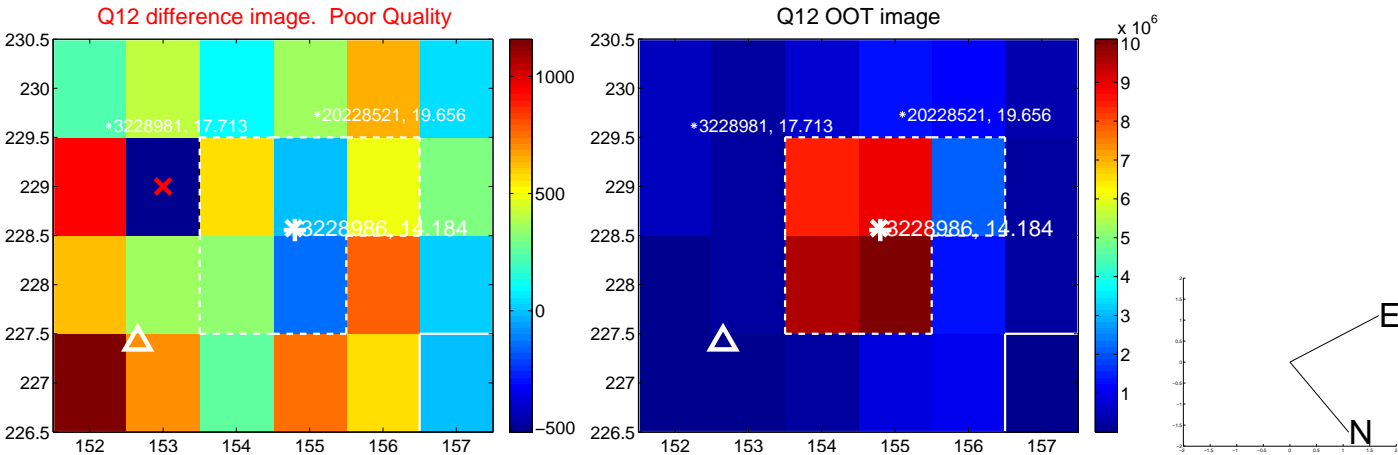
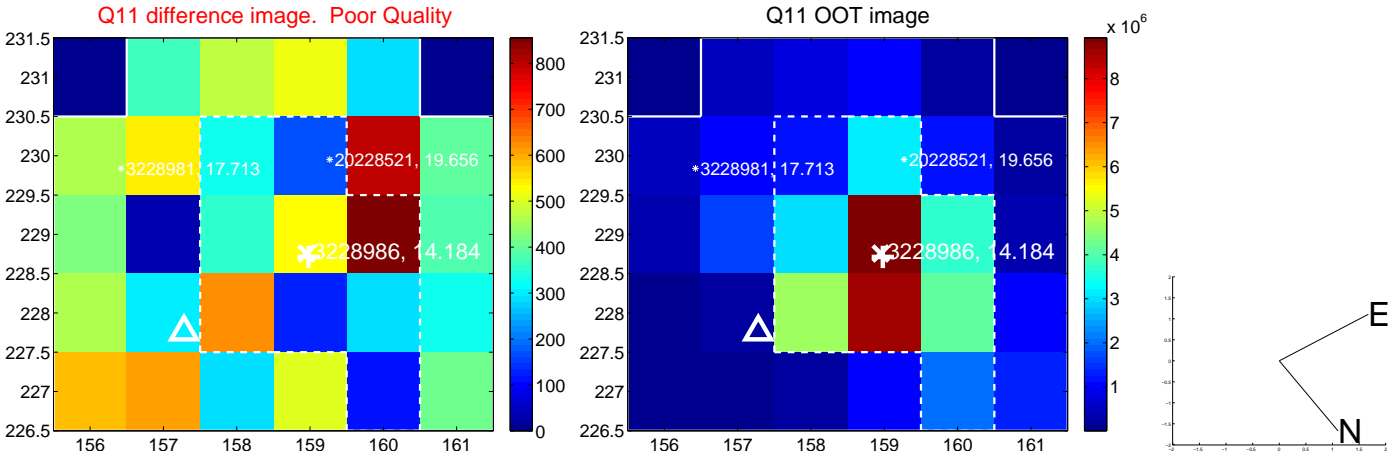
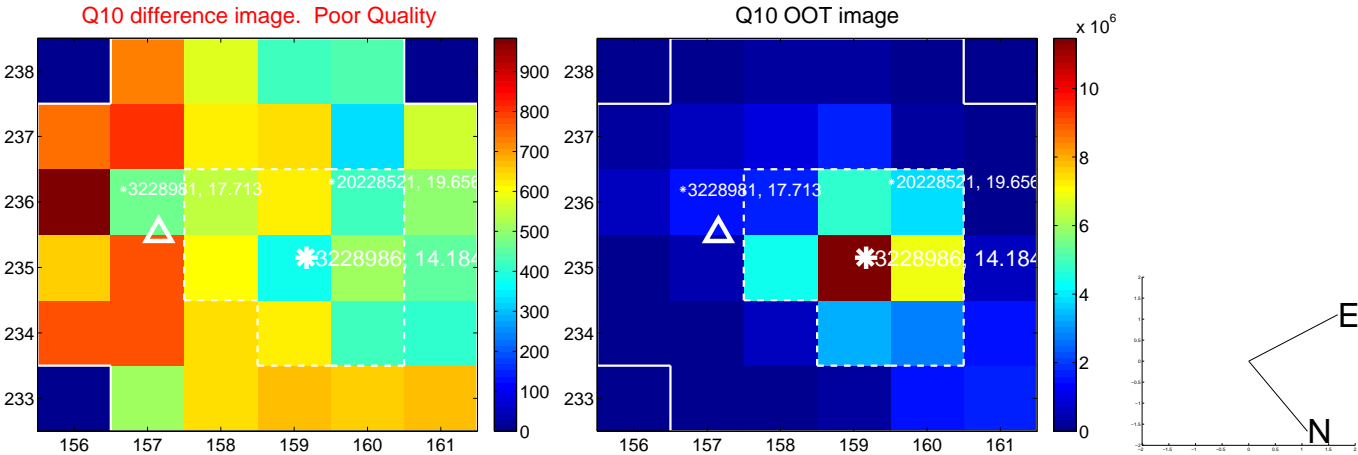
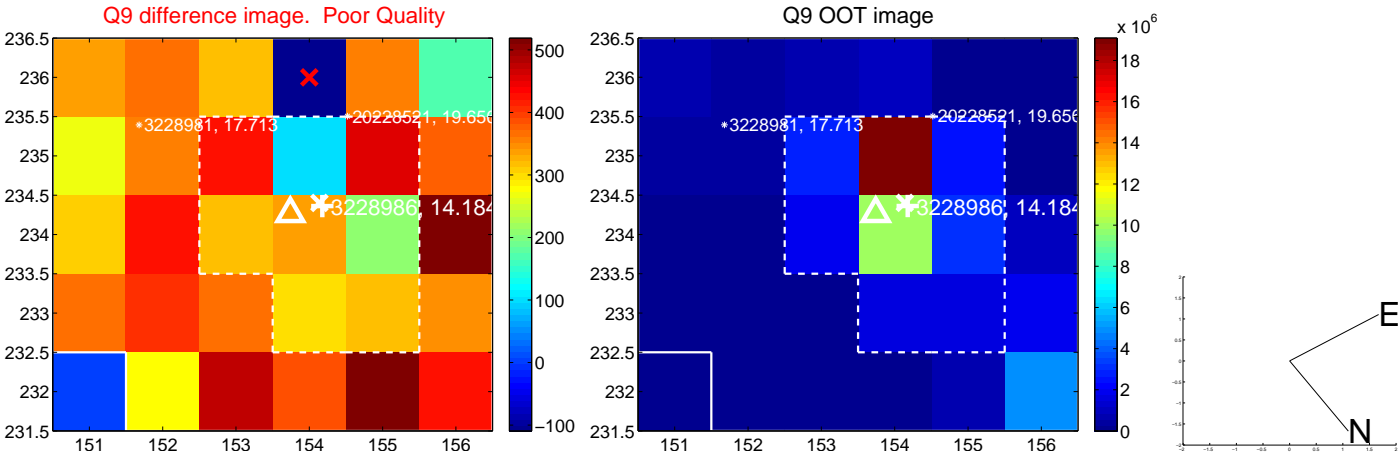
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



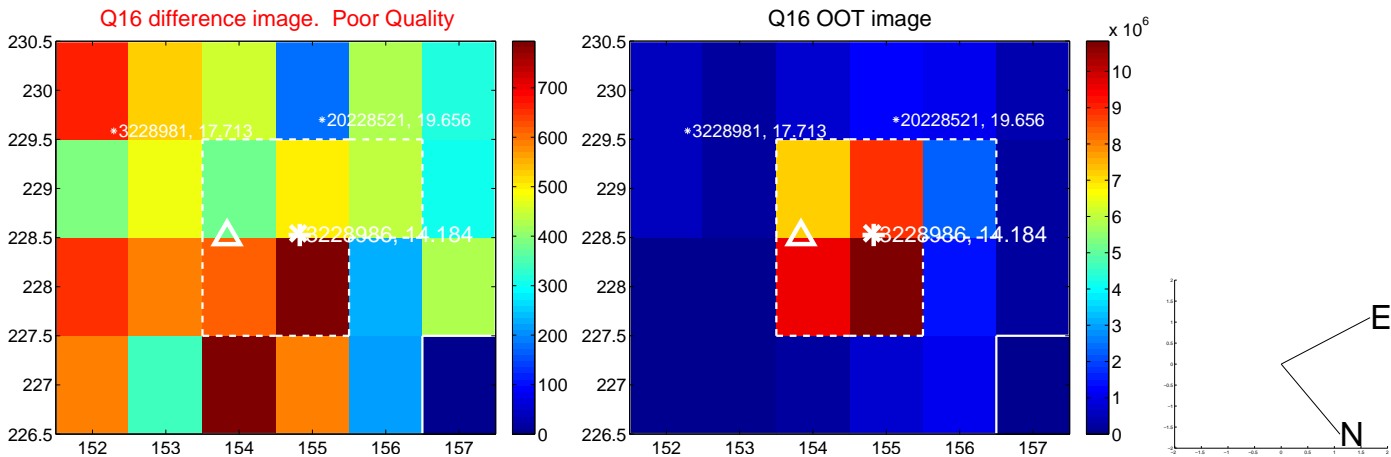
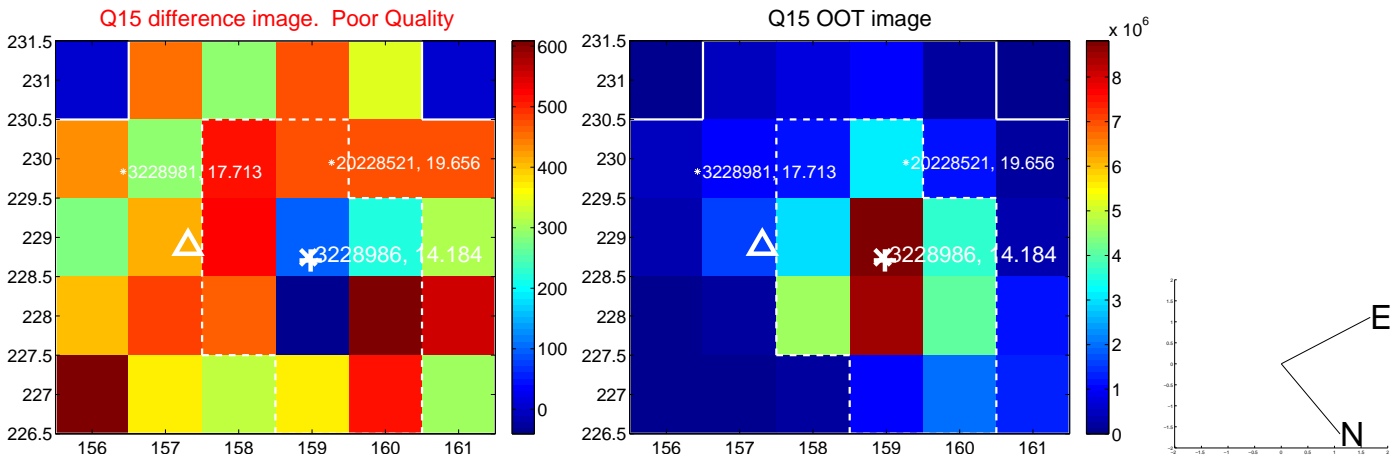
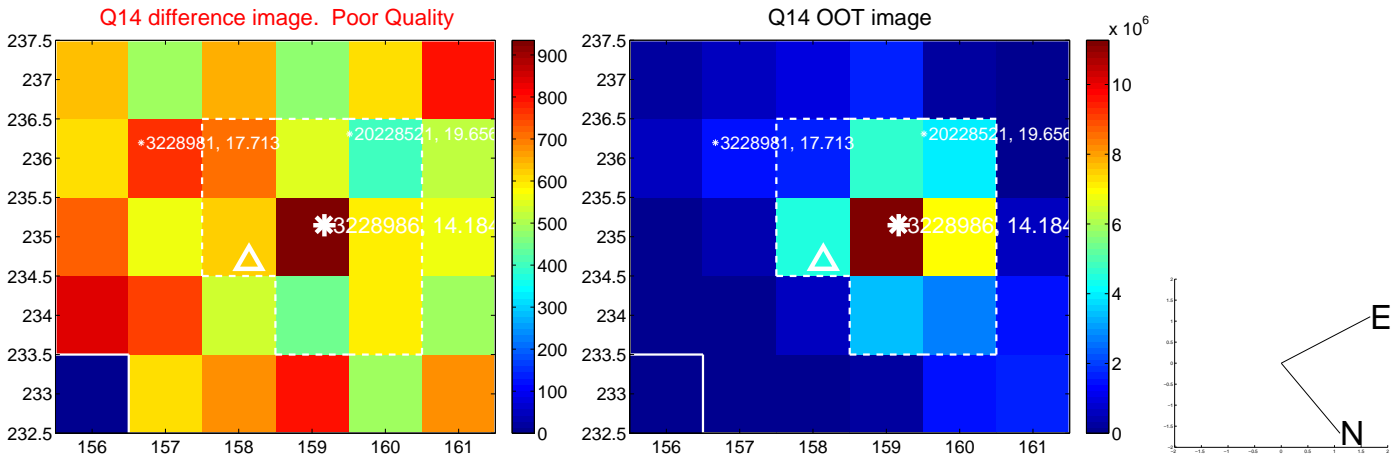
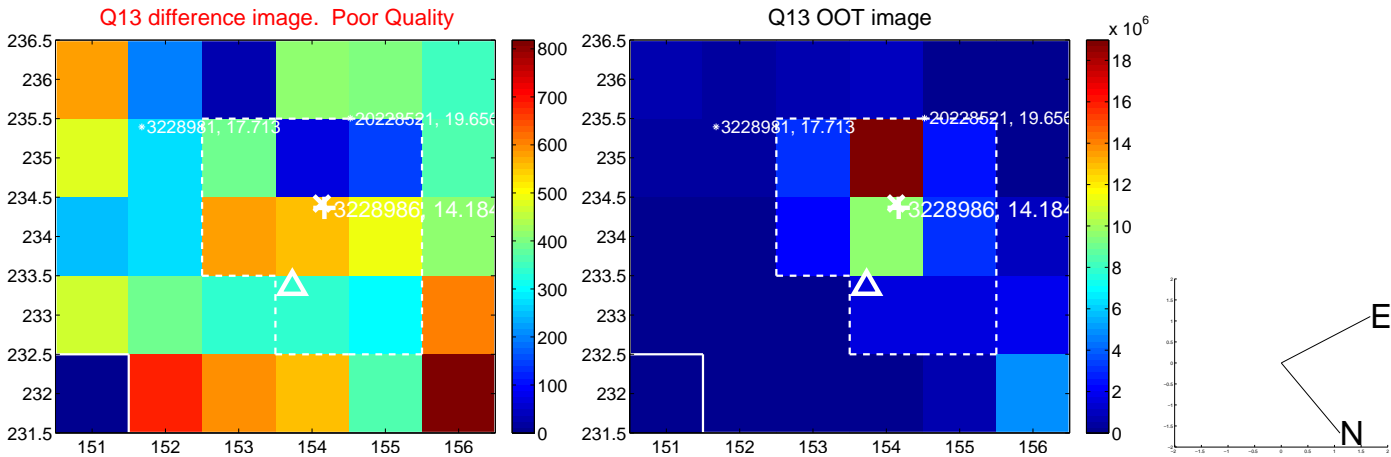
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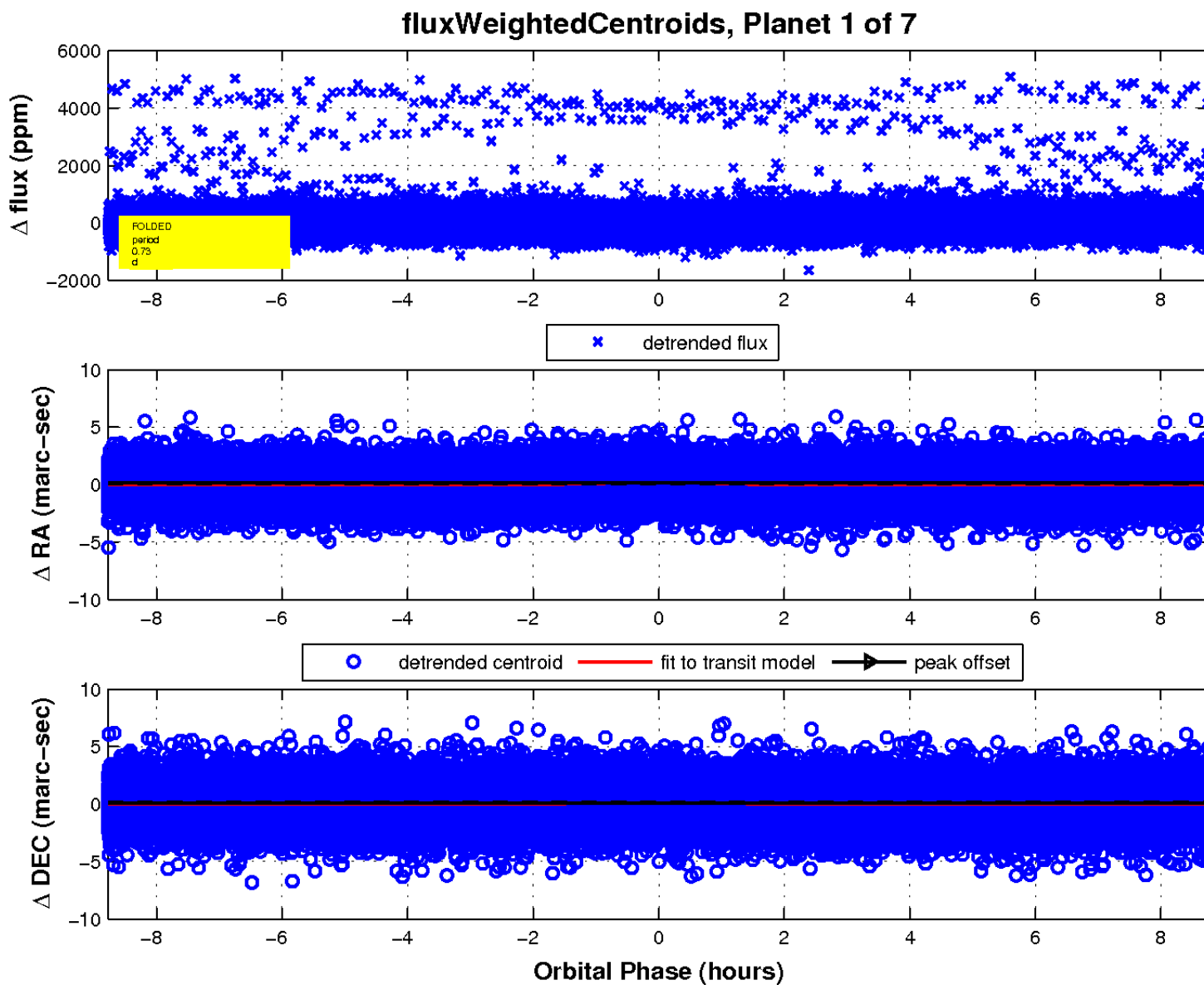
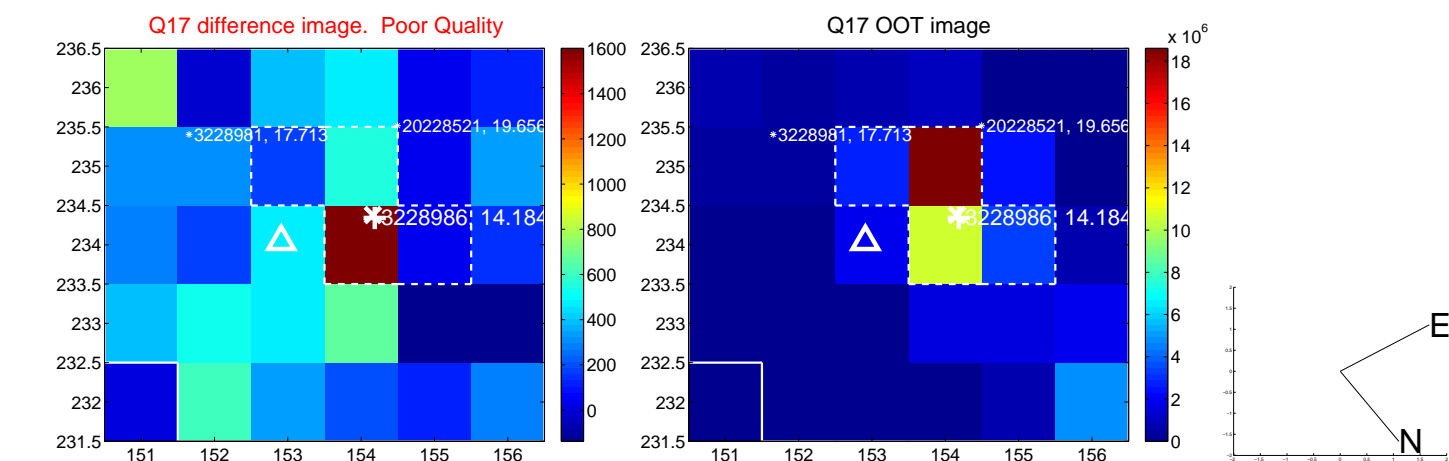
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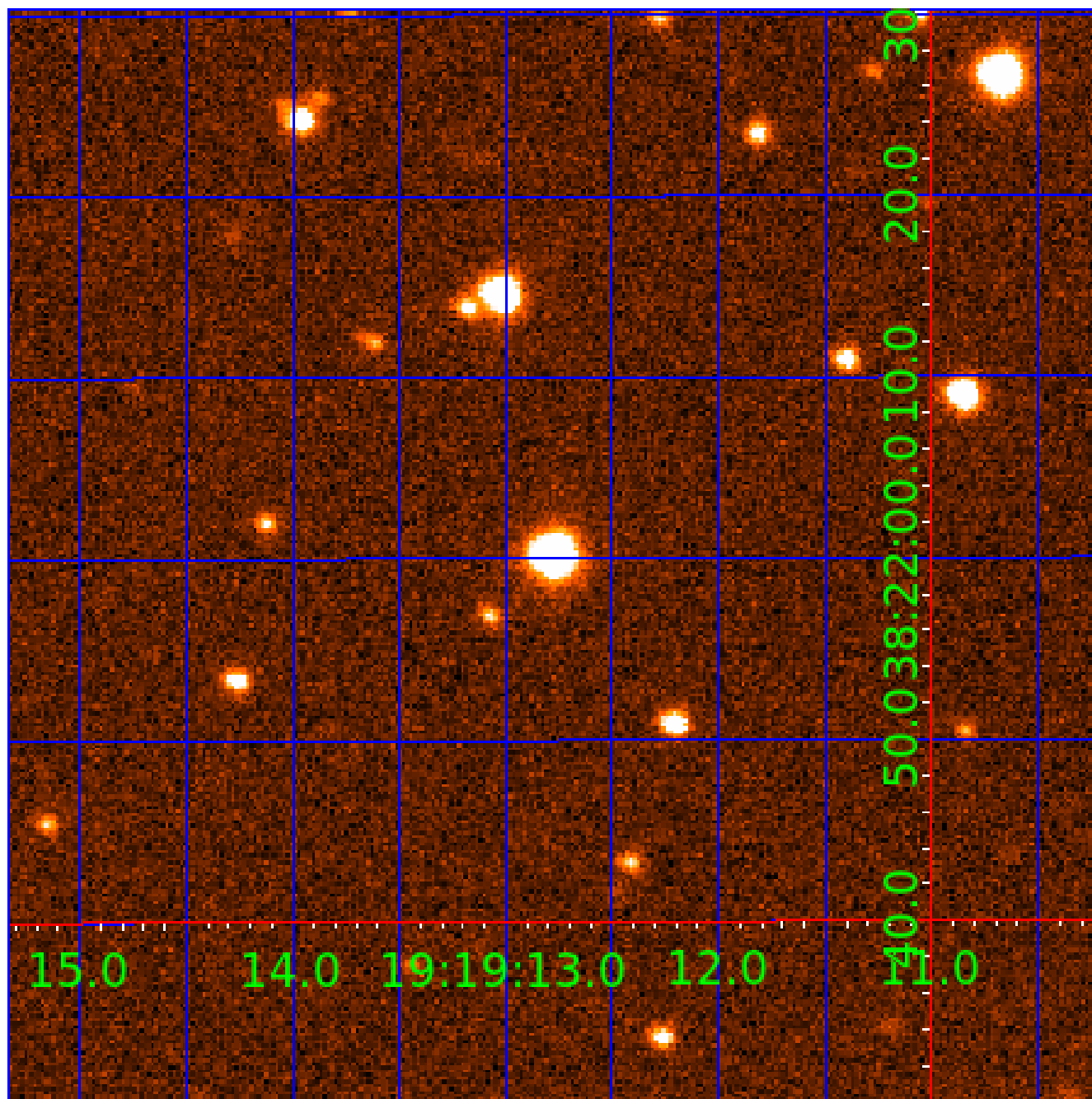


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UKIRT Image

Declination



KIC 003228986

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003228986-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS
003228986-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
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See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003228986-02

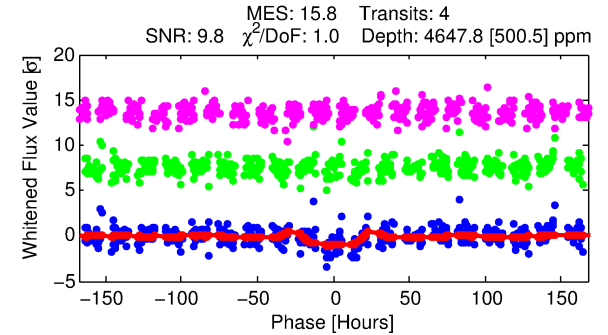
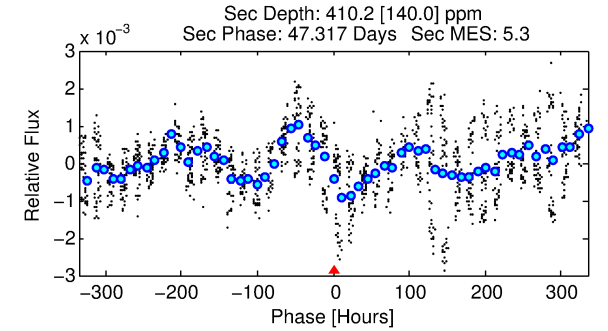
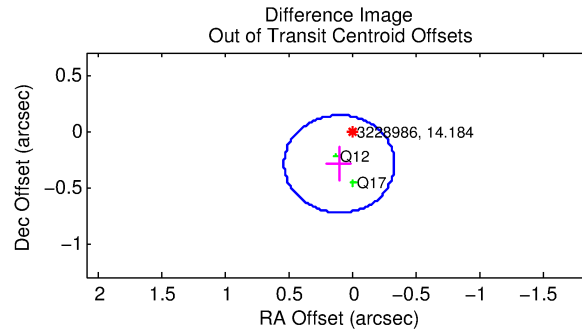
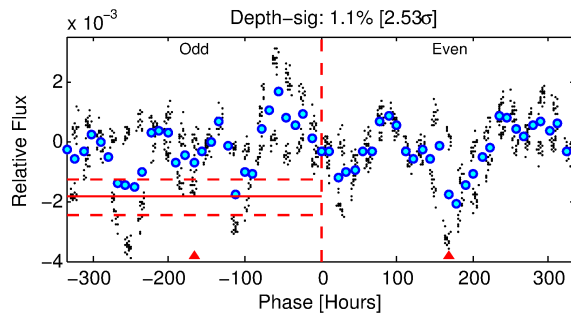
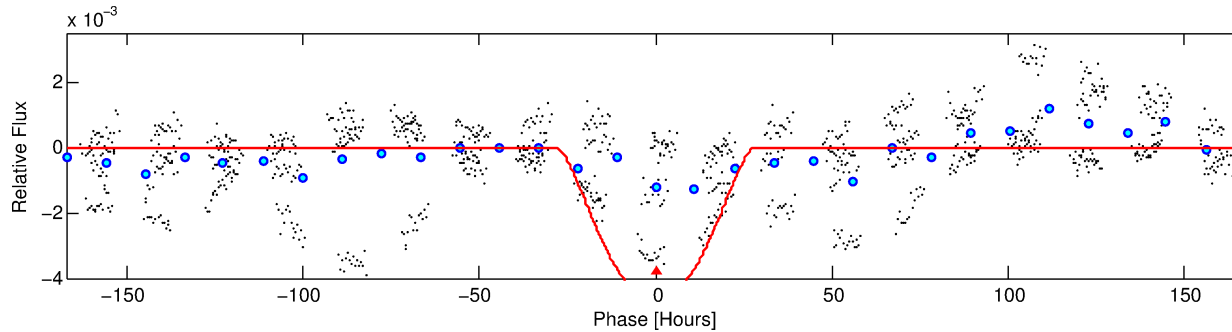
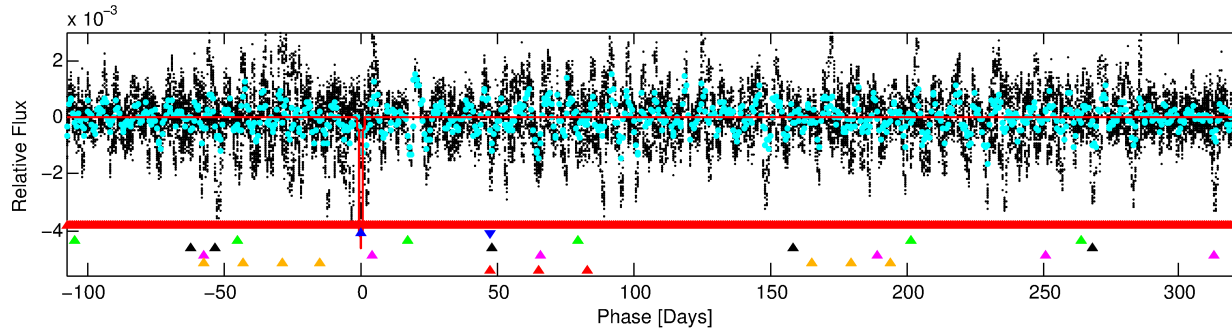
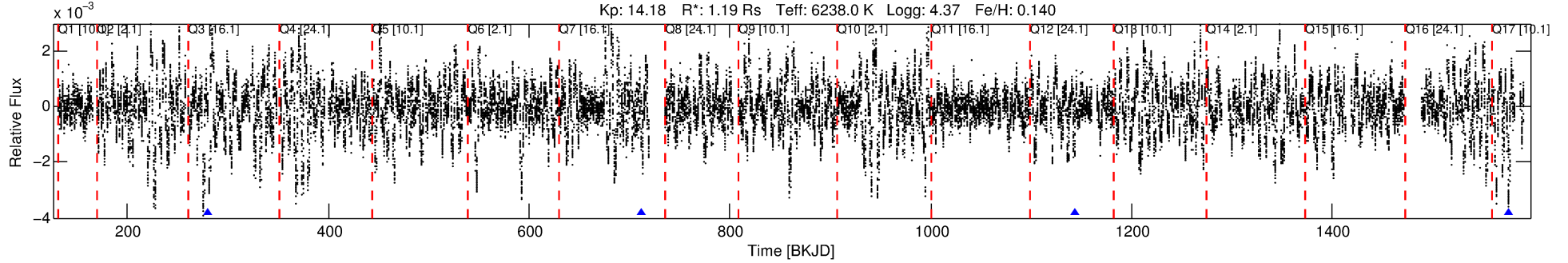
No Significant Match Found

DV One-Page Summary

KIC: 3228986 Candidate: 2 of 7 Period: 432.044 d

KOI: K04031 Corr: No Ephemeris Match

Kp: 14.18 R*: 1.19 Rs Teff: 6238.0 K Logg: 4.37 Fe/H: 0.140



DV Fit Results:

Period = 432.04398 [0.02617] d
Epoch = 279.4333 [0.0515] BKJD
Rp/R* = 0.0822 [0.0114]
a/R* = 31.32 [2.68]
b = 0.94 [0.03]
Seff = 1.36 [0.30]
Teq = 275 [15] K
Rp = 10.69 [2.31] Re
a = 1.1885 [0.1713] AU
Ag = 2791.89 [1366.75] [2.04σ]
Teffp = 3096 [343] K [8.21σ]

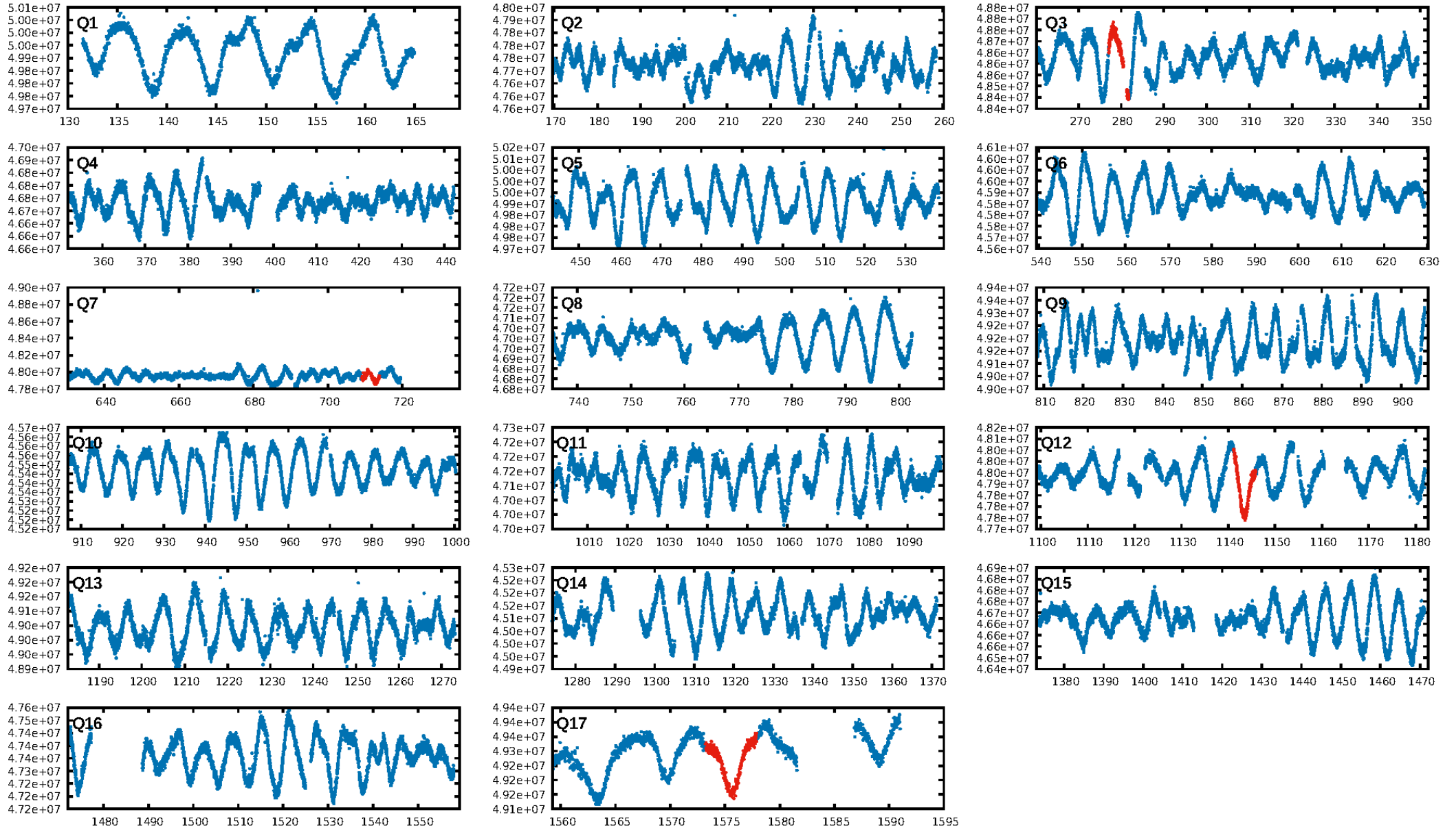
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [46.14σ]
LongPeriod-sig: 100.0% [7.43σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.03e-22
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.182
Centroid-sig: 5.7%
Centroid-so: 0.363 arcsec [5.93σ]
OotOffset-rm: 0.313 arcsec [2.17σ]
KicOffset-rm: 0.201 arcsec [1.81σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.00 [0/2]

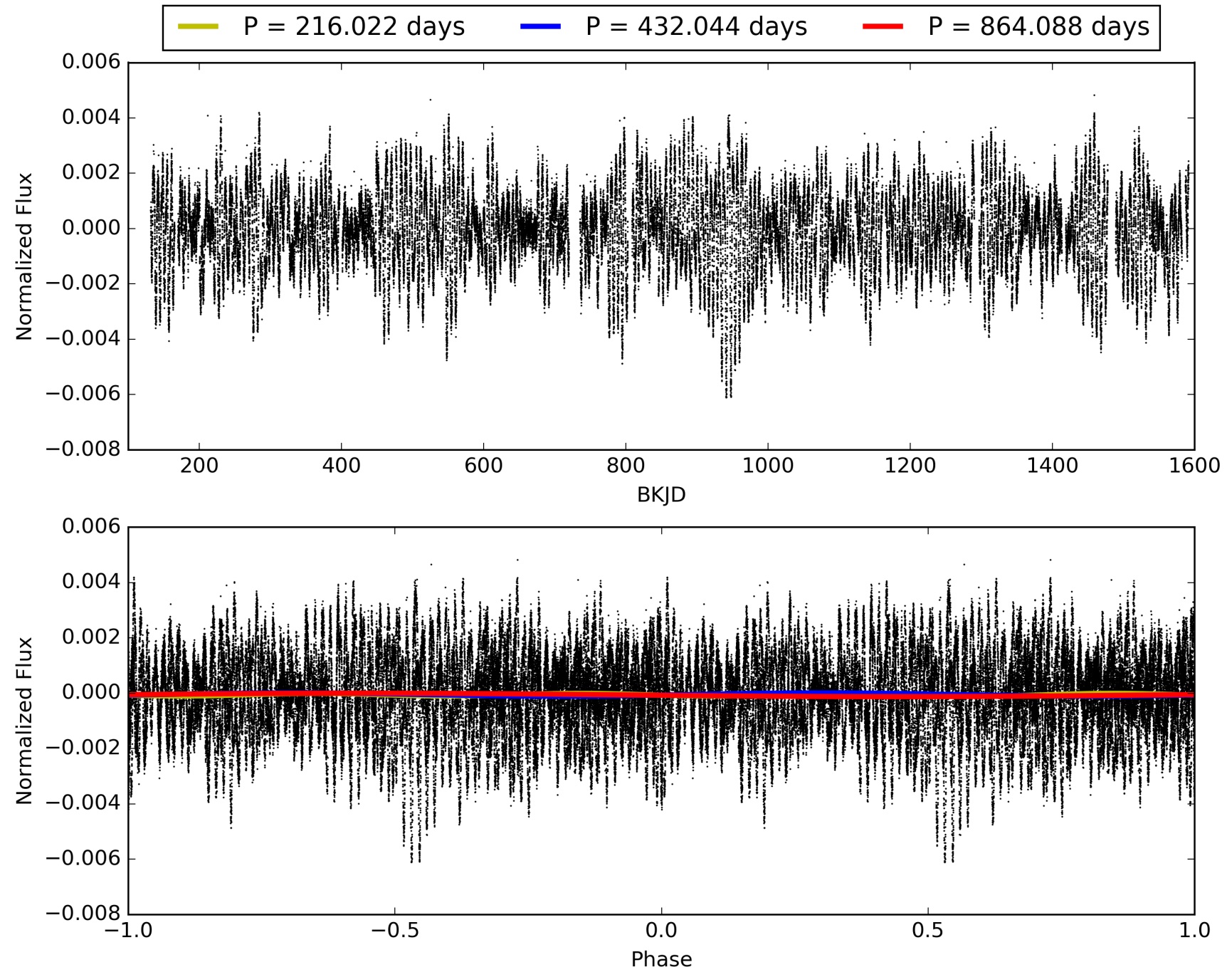
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:37:08 Z

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

TCE 003228986-02, PDC Light Curves

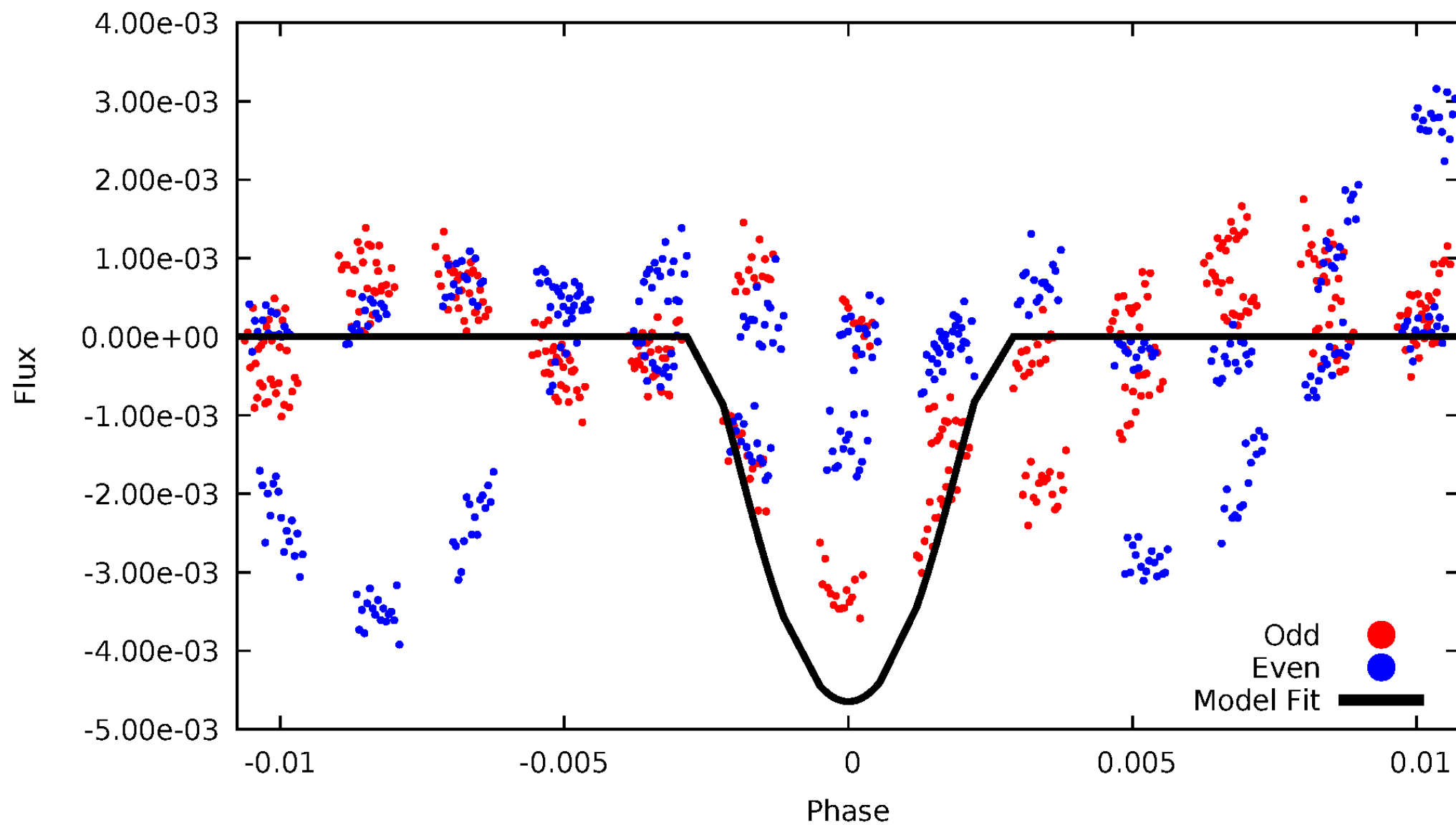


TCE 003228986-02



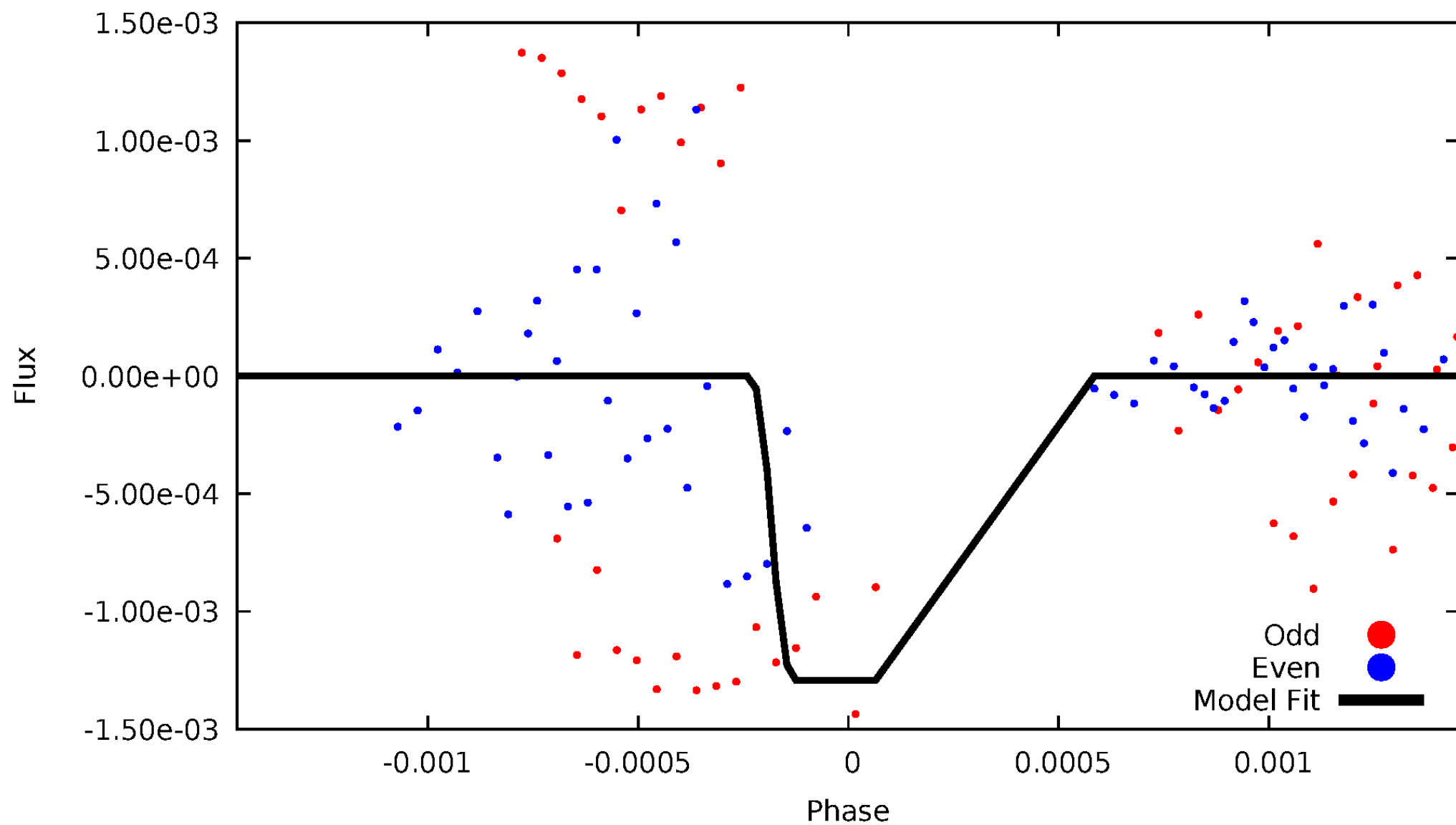
DV Odd/Even

TCE 003228986-02



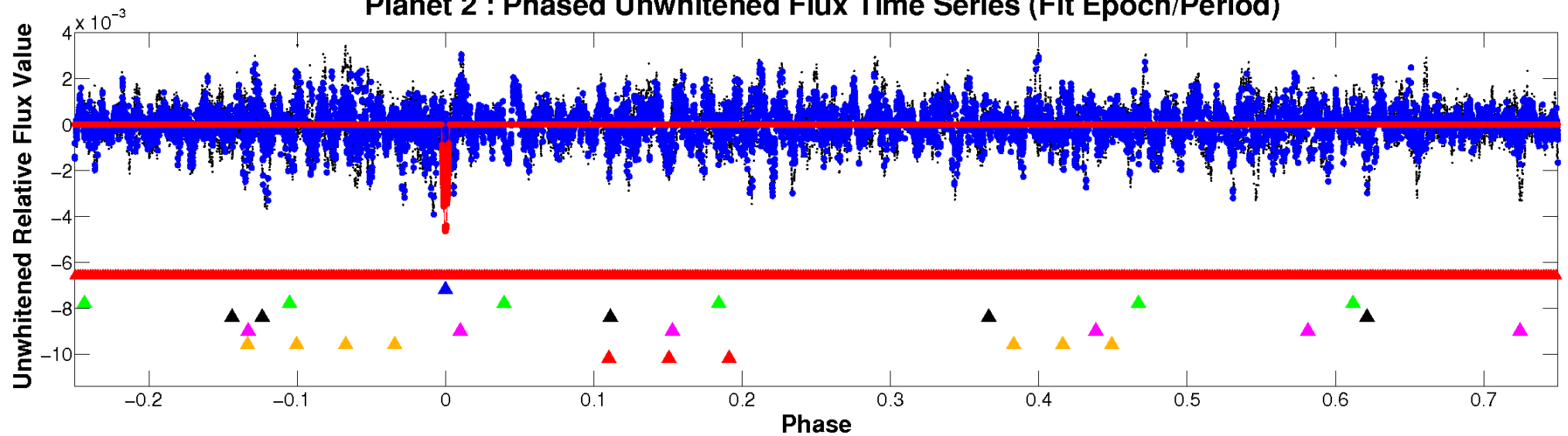
ALT Odd/Even

TCE 003228986-02

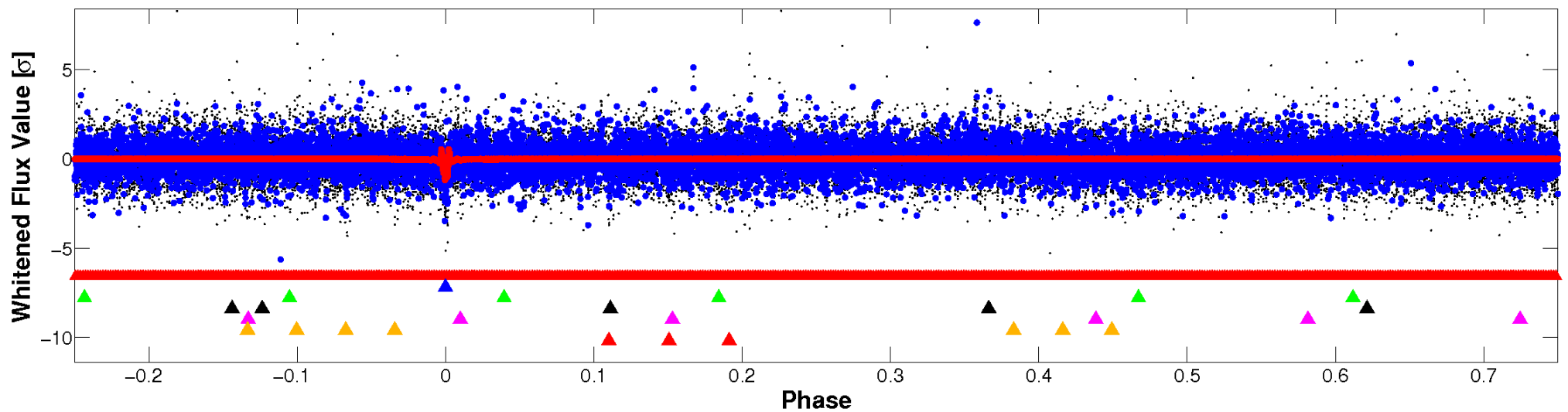


Non-Whitened Vs. Whitened Light Curve

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

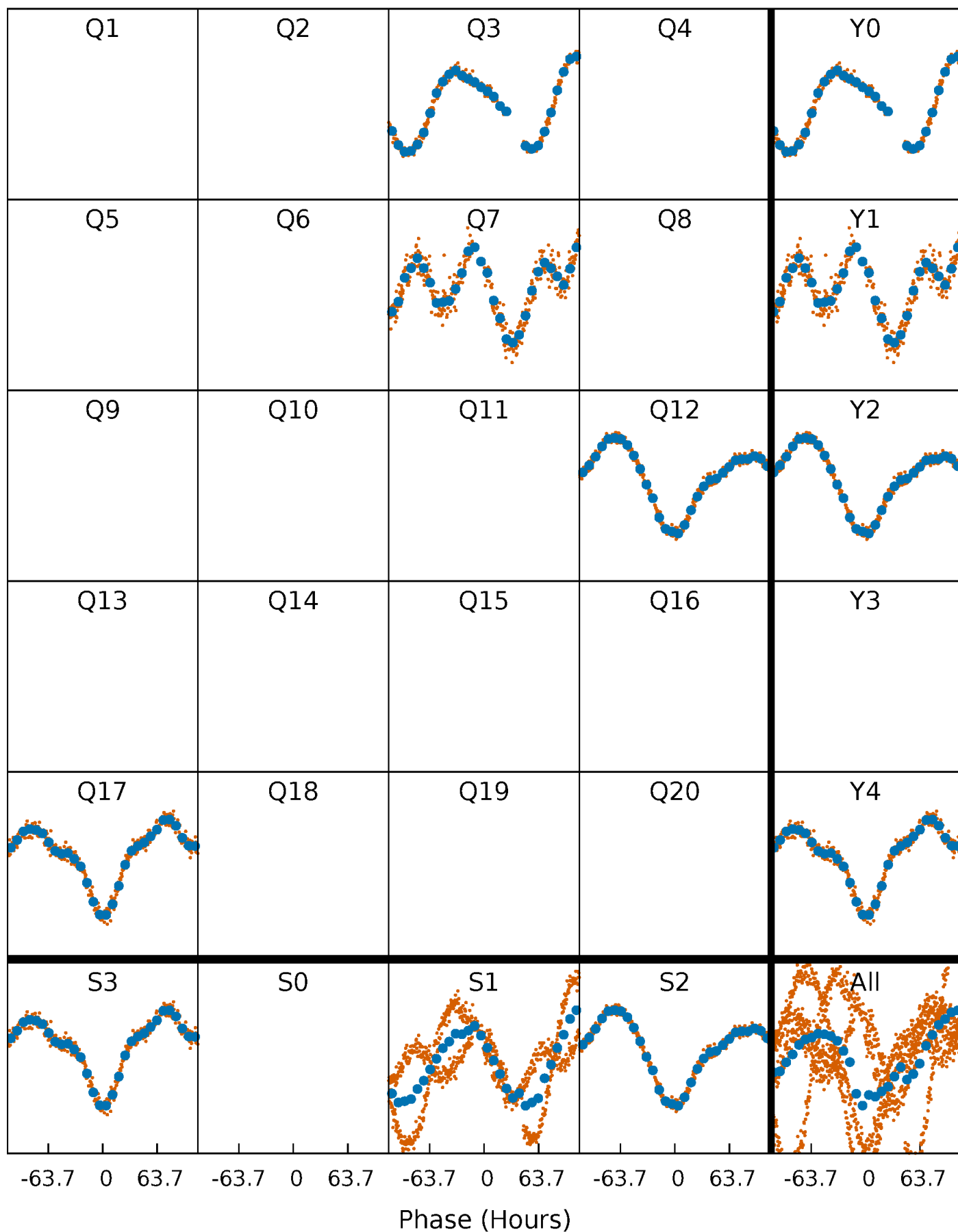


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



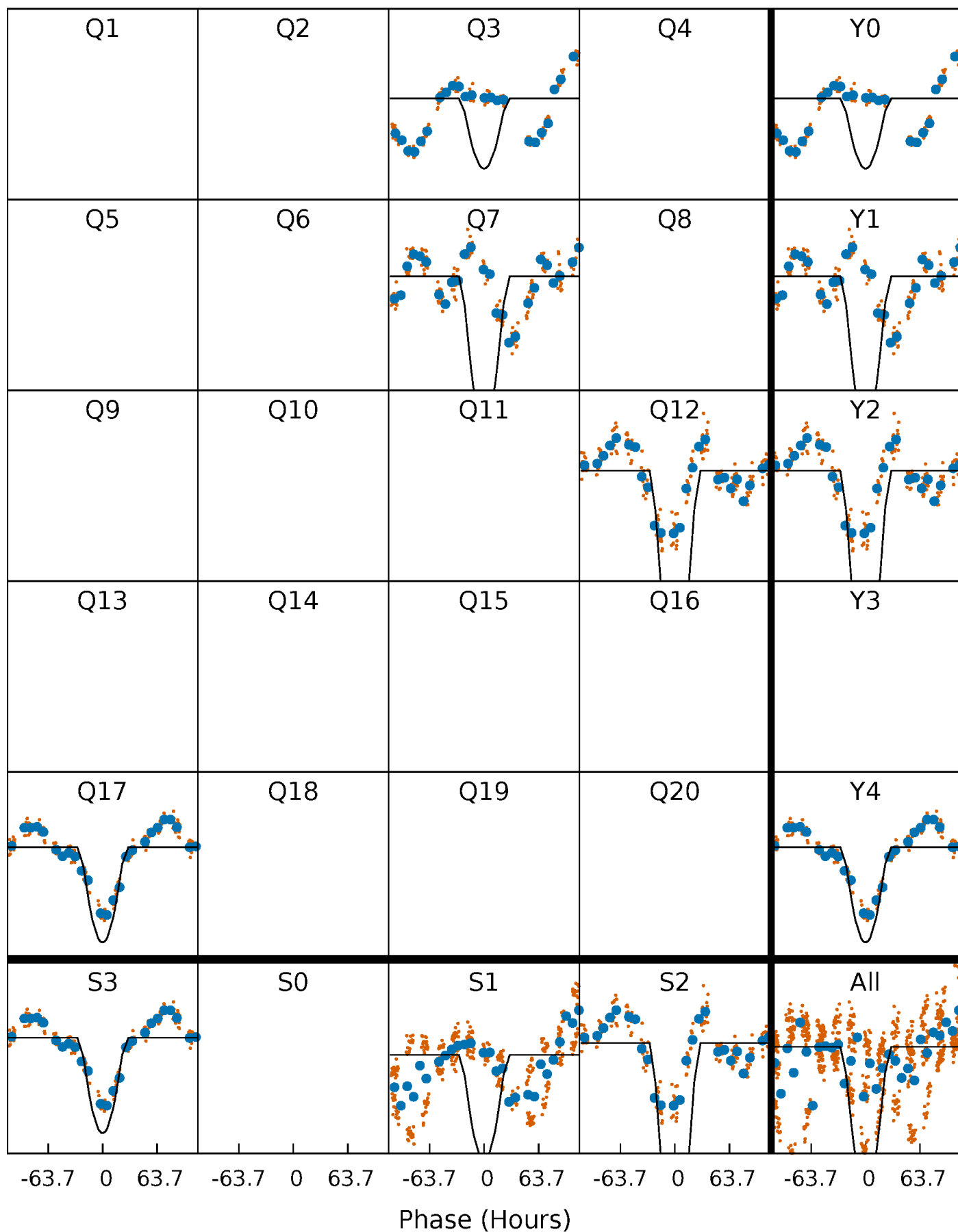
PDC Quarter-Phased Transit Curves

TCE 003228986-02 $P=432.043981$ Days $T_0=279.433266$ (BKJD)



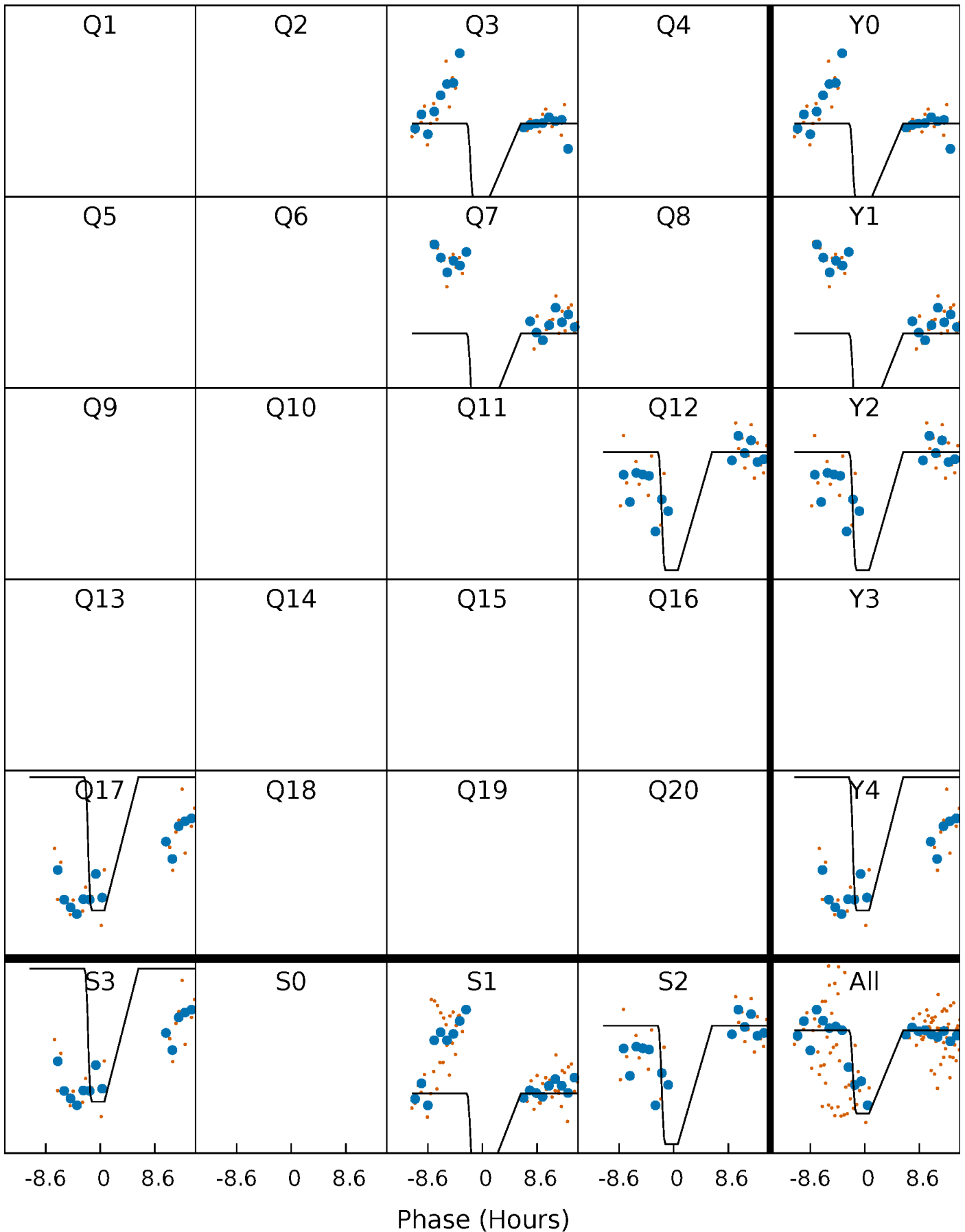
DV Quarter-Phased Transit Curves

TCE 003228986-02 $P=432.043981$ Days $T_0=279.433266$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

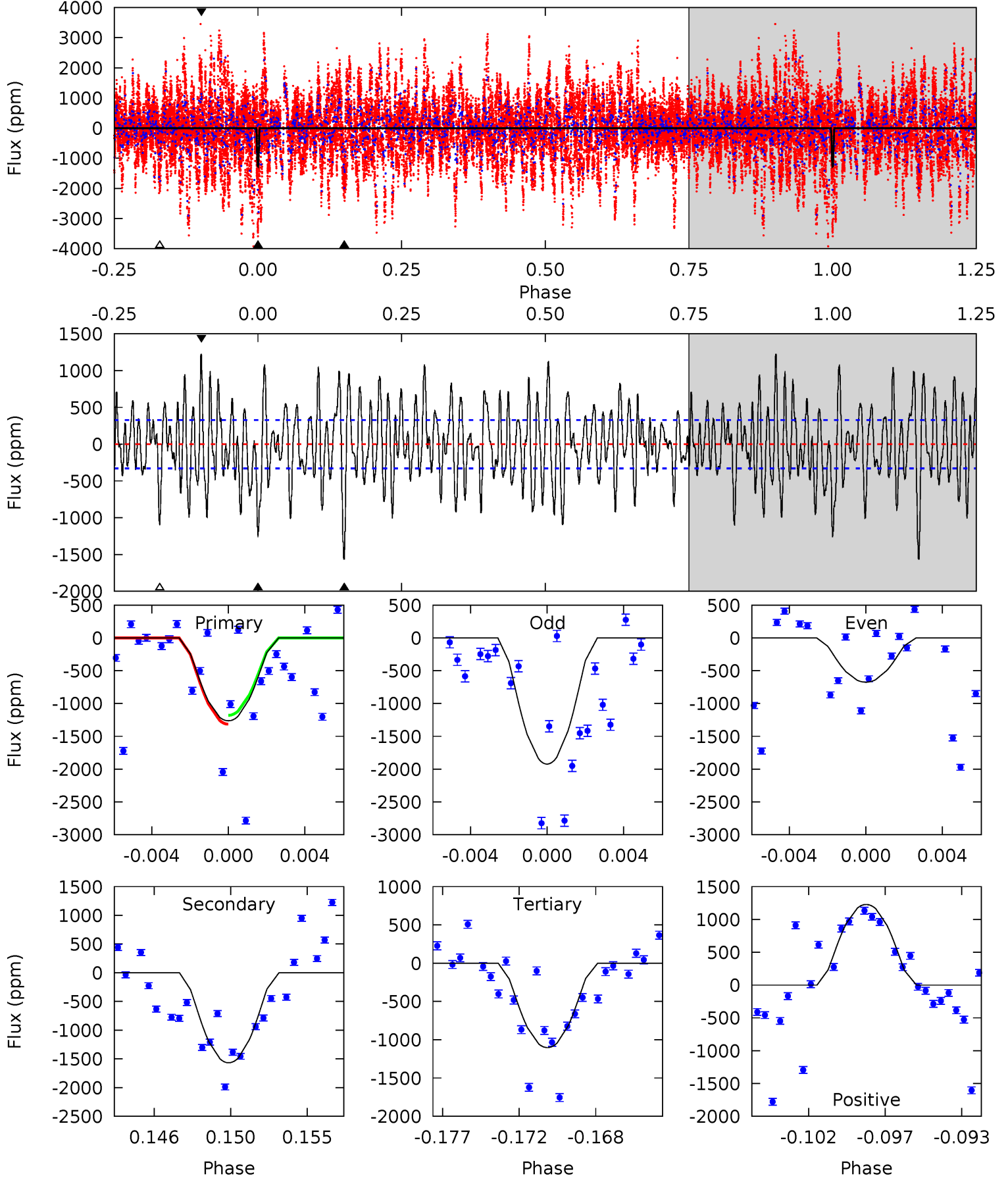
TCE 003228986-02 P=431.938214 Days $T_0=279.833014$ (BKJD)



DV Model-Shift Uniqueness Test

003228986-02, P = 432.043981 Days, E = 279.433266 Days

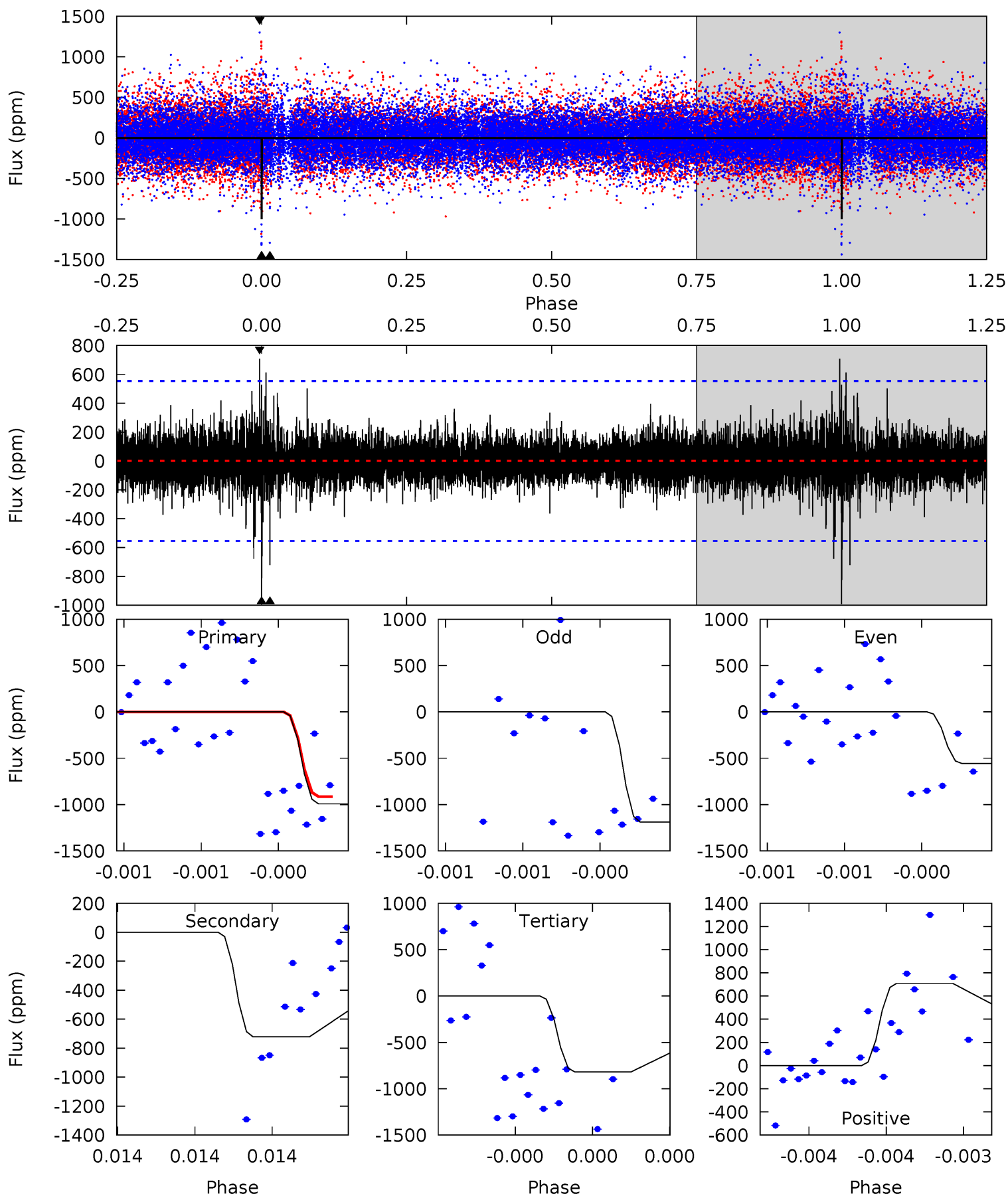
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.9	24.7	17.4	19.3	5.18	2.85	6.92	2.54	0.57	7.32	5.35	9.91	1.69	0.44	1.06



Alt Model-Shift Uniqueness Test

003228986-02, P = 431.938214 Days, E = 279.833014 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	7.40	8.39	7.26	5.69	3.65	0.99	1.79	2.91	-0.99	0.14	3.04	1.00	0.42	0.98



Stellar Parameters For KIC 003228986

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	6238^{+68}_{-87}	$4.365^{+0.040}_{-0.120}$	$0.140^{+0.150}_{-0.200}$	$1.191^{+0.198}_{-0.085}$	$1.204^{+0.076}_{-0.093}$	$1.003^{+0.199}_{-0.347}$
	+1%/-1%	+1%/-3%	+107%/-143%	+17%/-7%	+6%/-8%	+20%/-35%
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 003228986-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1568 ± 64	$10.88^{+1.79}_{-1.58}$	388^{+16}_{-10}	4518^{+284}_{-225}	10220^{+3719}_{-2660}
Alt.	-722 ± 97	$4.80^{+1.63}_{-1.58}$	389^{+16}_{-11}	5428^{+1189}_{-666}	24486^{+31150}_{-11442}

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 $A_{obs} \gg 1.0$

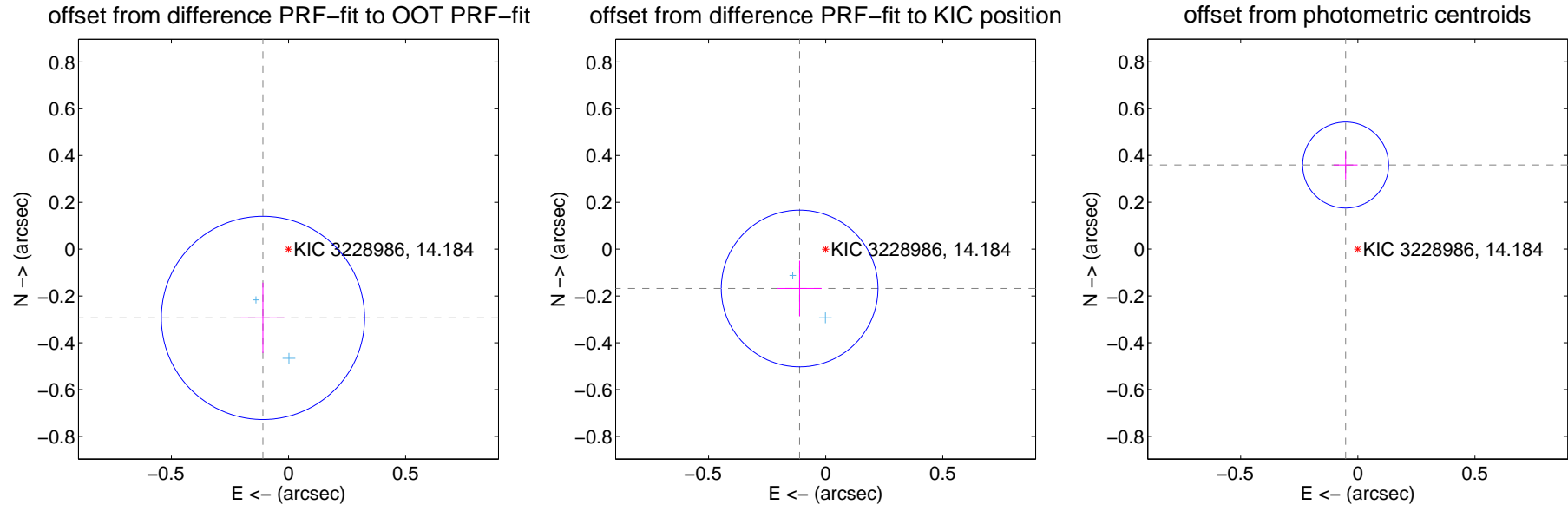
DV Centroid Data

Supplemental centroid analysis for 003228986-02. Kepler magnitude: 14.18. Transit SNR 9.80

There are 2 quarters with good PRF difference image offsets

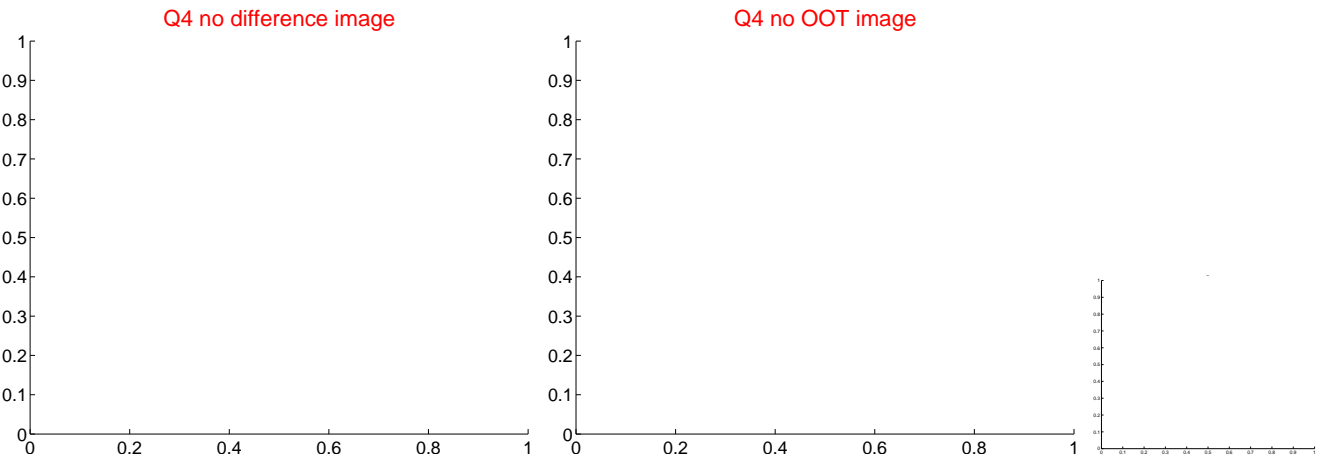
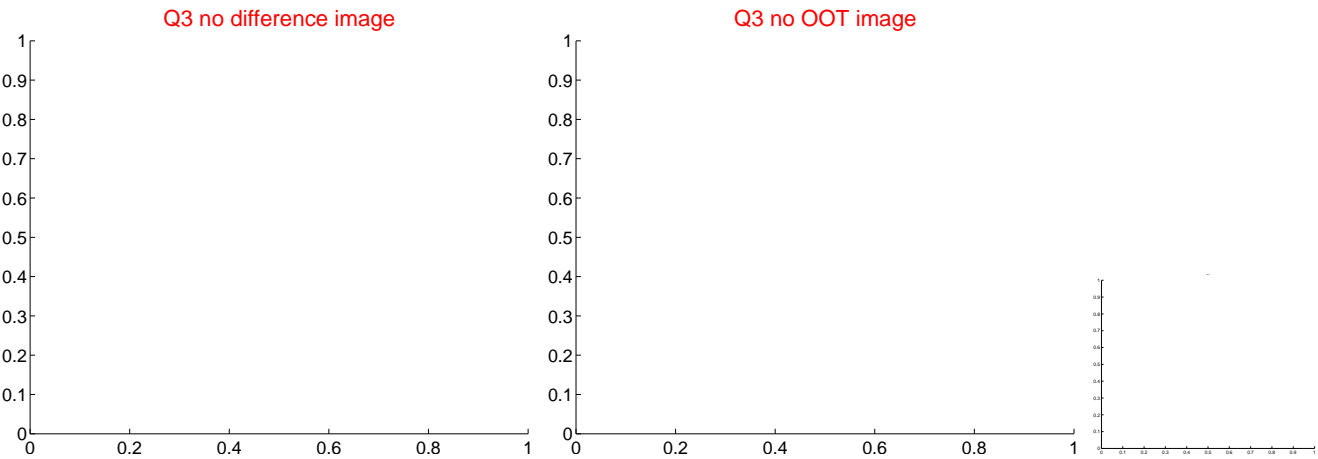
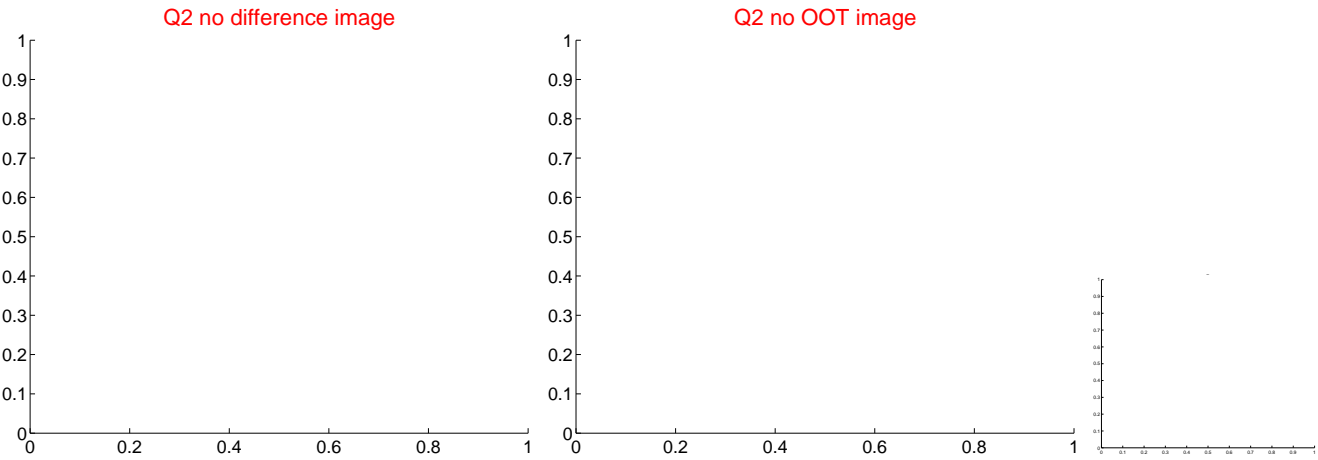
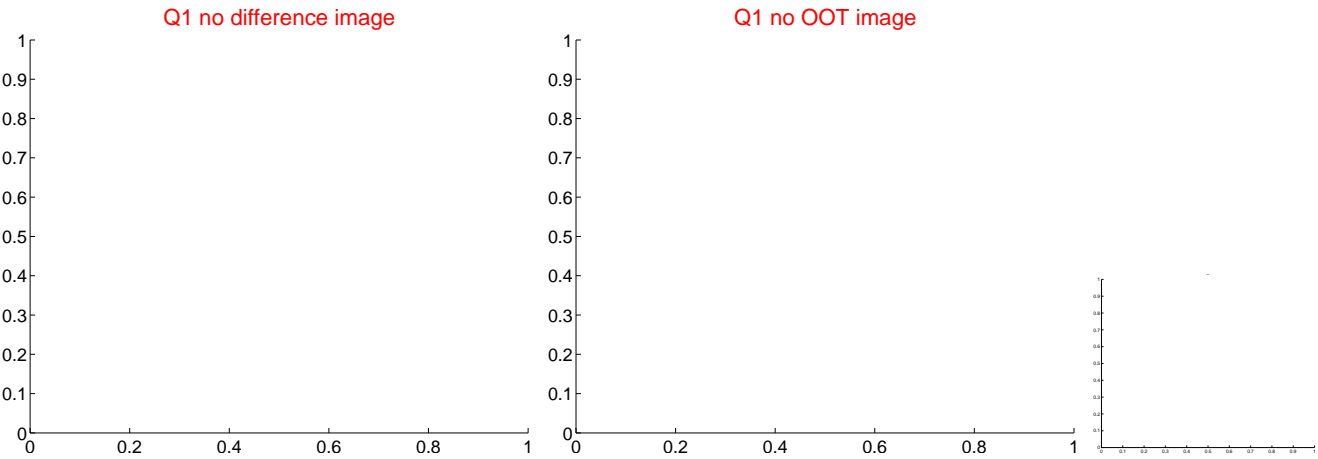
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.313 ± 0.145	2.17	0.109 ± 0.095	-0.294 ± 0.150
PRF-fit source offset from KIC position	0.201 ± 0.112	1.81	0.111 ± 0.094	-0.168 ± 0.118
photometric centroid source offset	0.36 ± 0.06	5.93	0.05 ± 0.05	0.36 ± 0.06

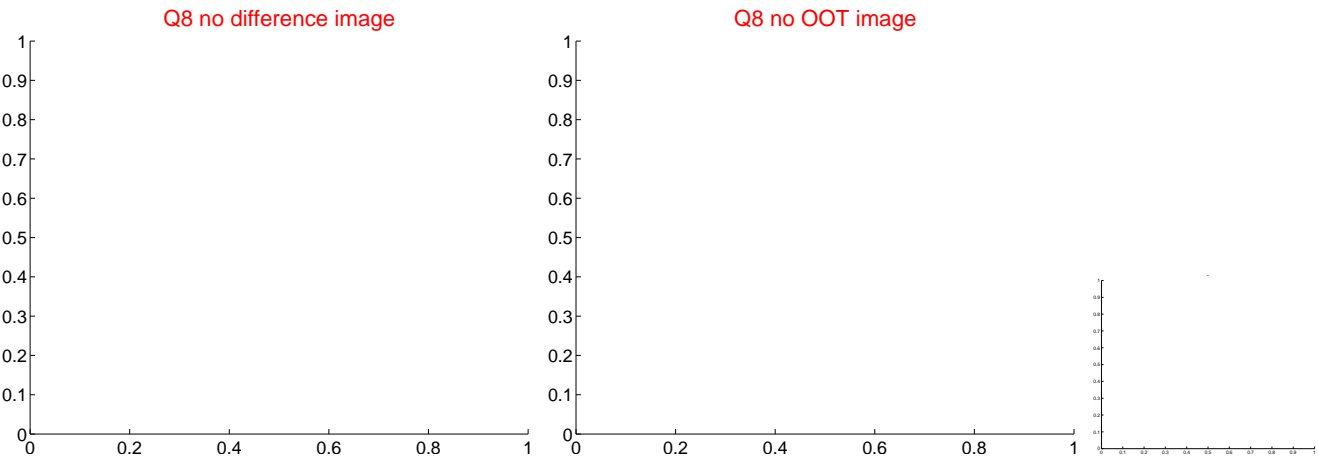
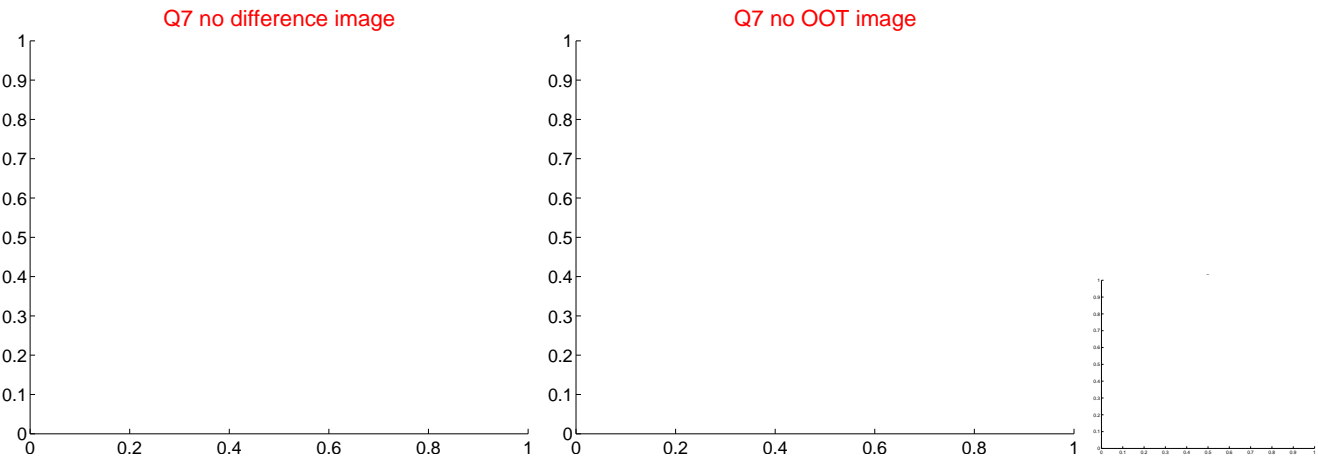
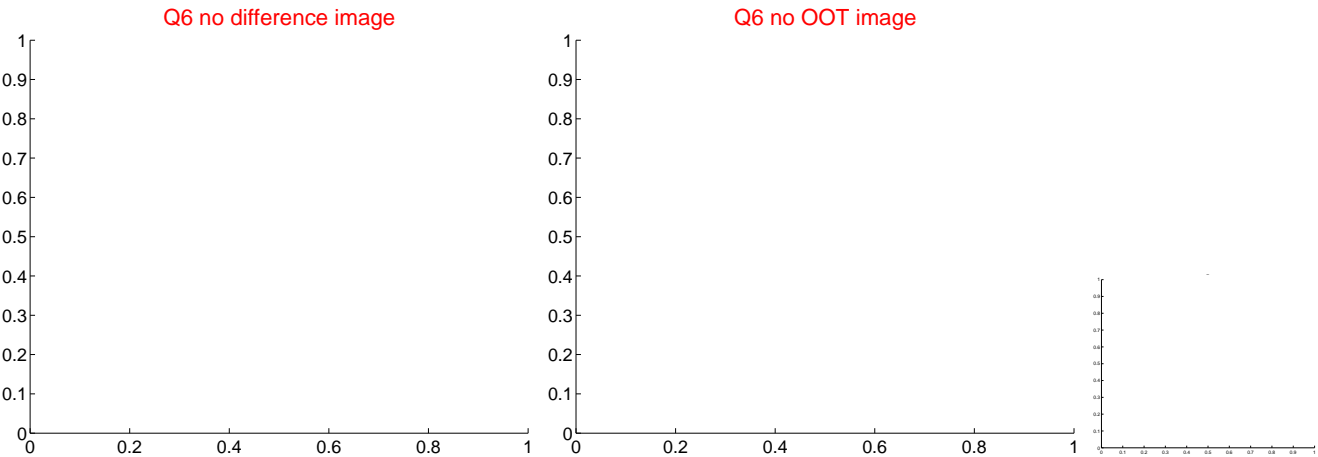
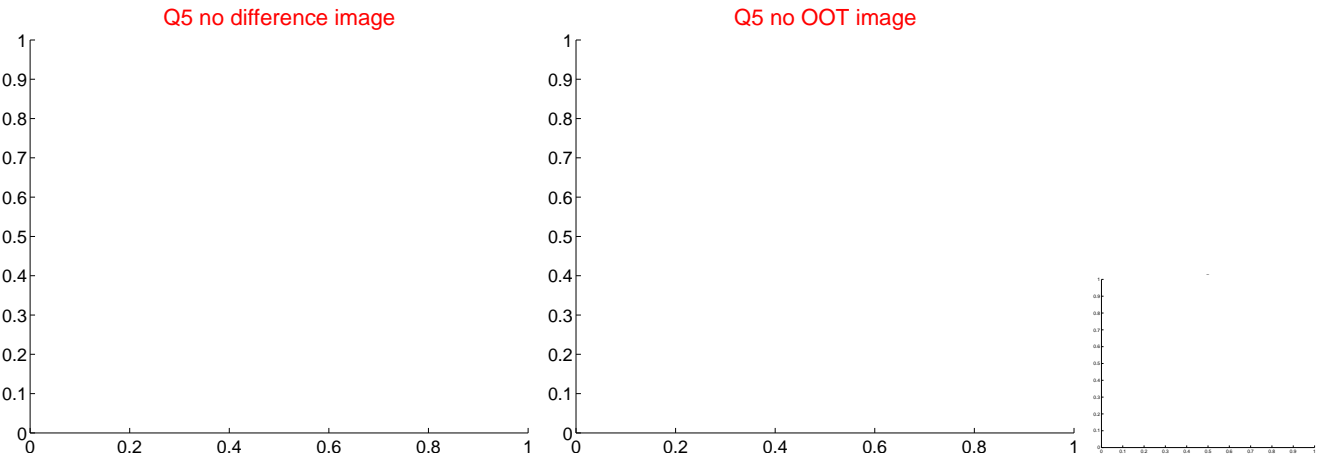


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

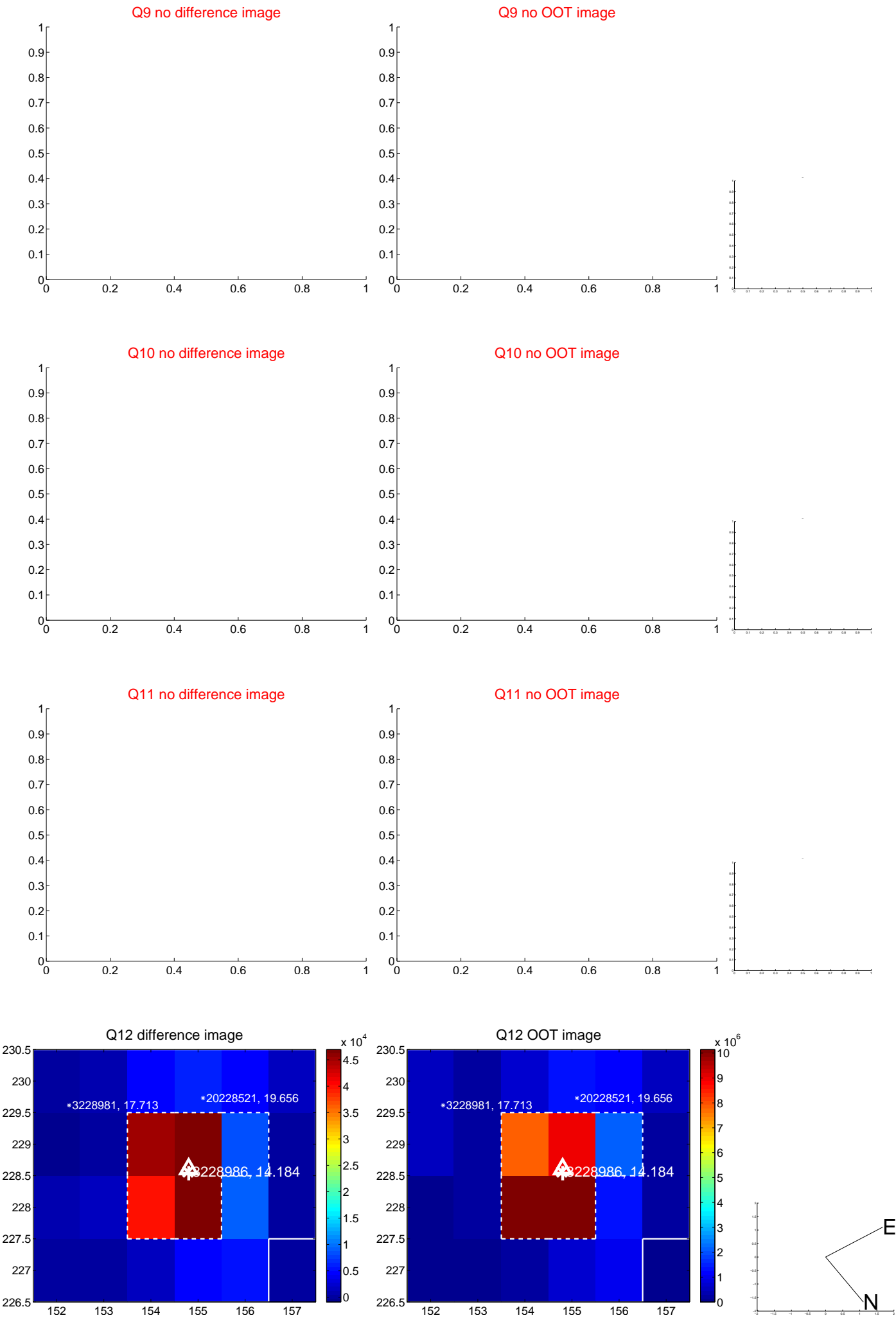
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



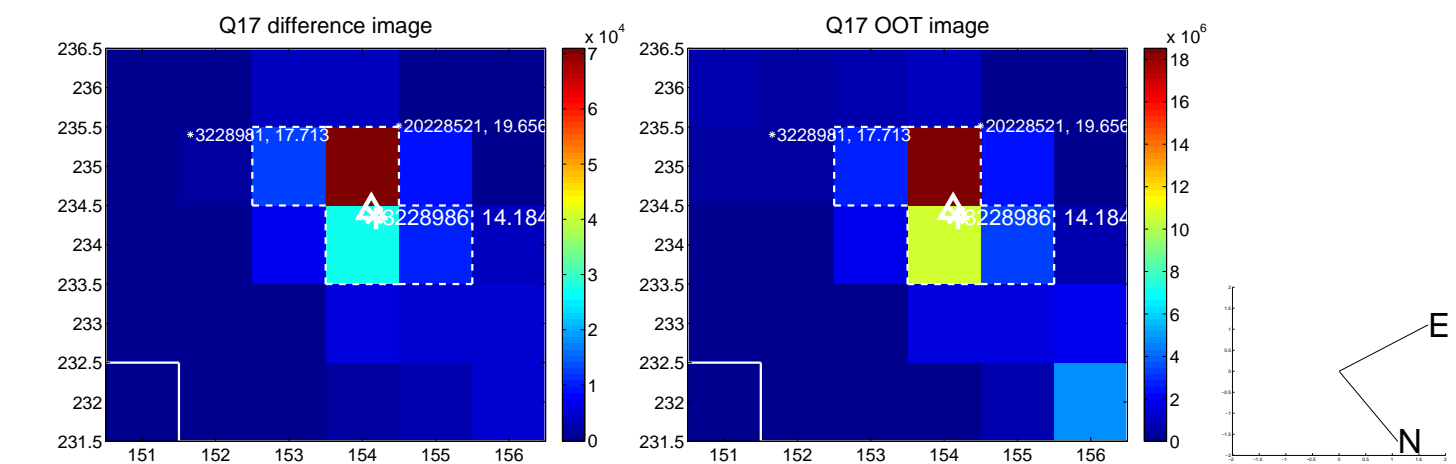
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



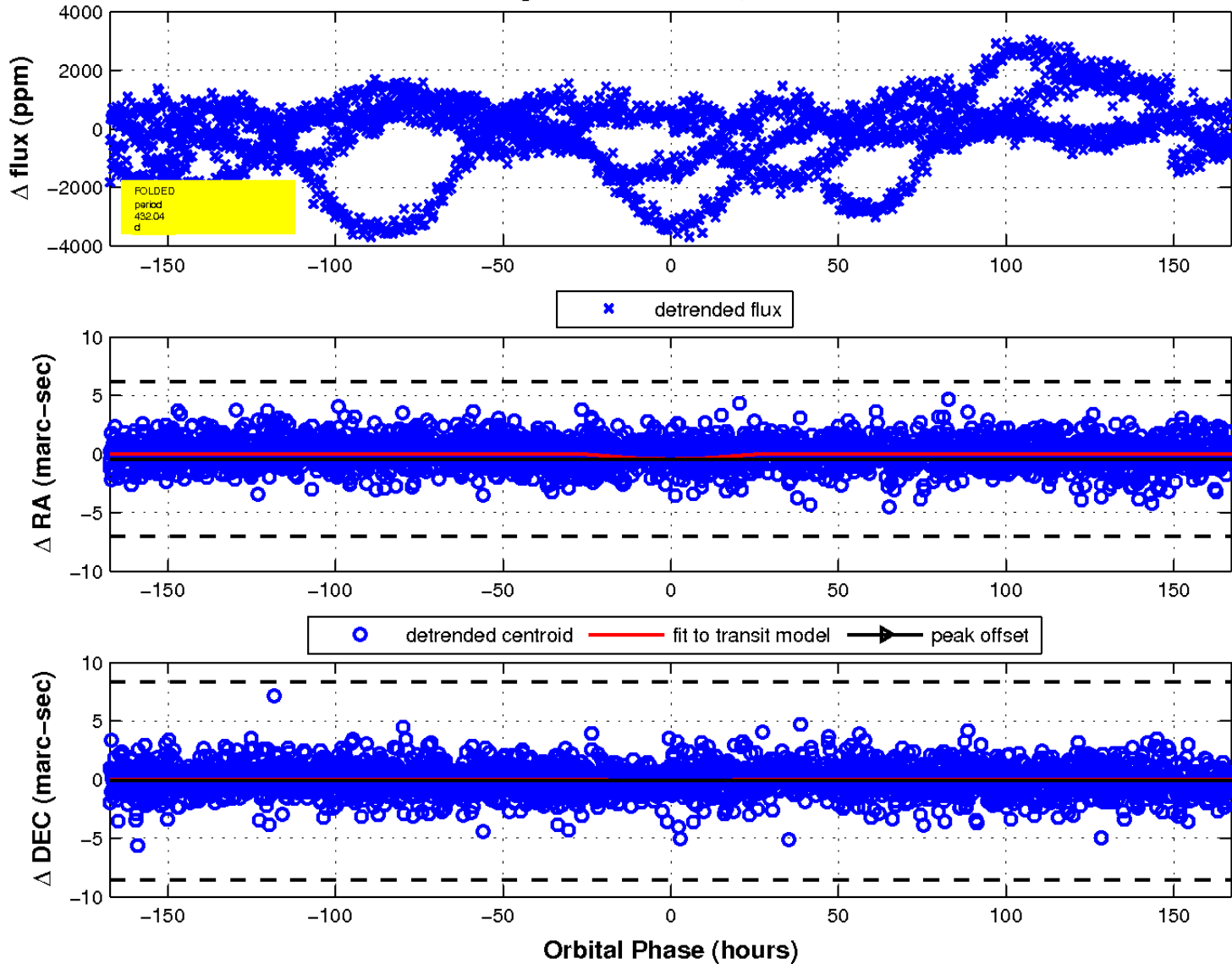
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

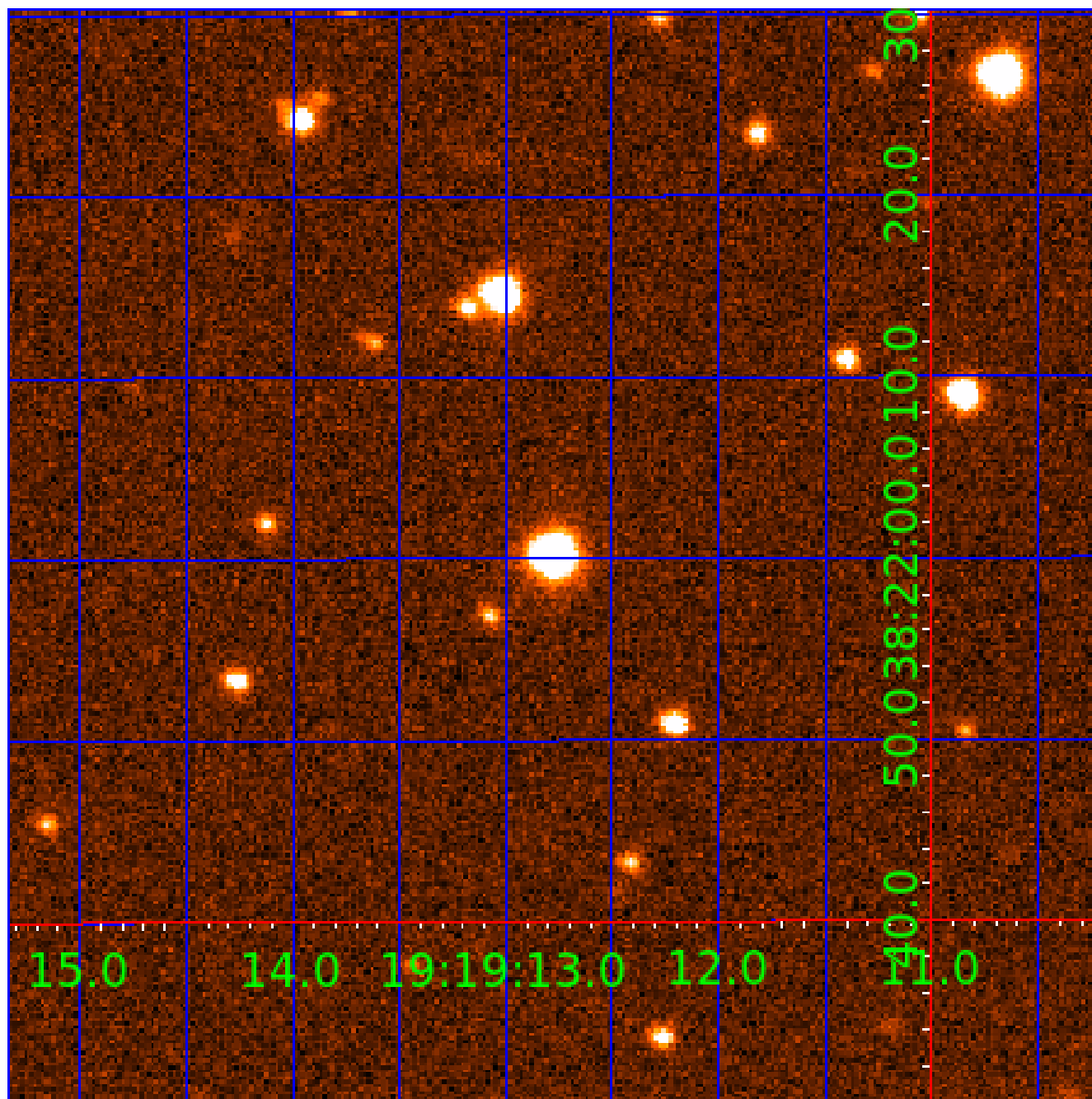


fluxWeightedCentroids, Planet 2 of 7



UKIRT Image

Declination



KIC 003228986

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})
003228986-01	OBS	4031.01	0.730966	132.219395	63.7	2.981	18.9	18.6	1.19	6238	0.98	6758.04
003228986-02	OBS	No	432.043981	279.433266	4647.8	55.770	15.8	9.8	1.19	6238	10.69	1.36
003228986-03	OBS	No	247.279104	233.999456	546.5	9.531	8.8	6.3	1.19	6238	2.94	2.87
003228986-04	OBS	No	321.835502	226.050599	487.7	13.269	8.4	5.2	1.19	6238	2.82	2.02
003228986-05	OBS	No	246.915361	221.969229	521.9	1.475	9.4	4.2	1.19	6238	2.97	2.87
003228986-06	OBS	No	223.166868	221.784778	527.0	14.730	13.5	5.9	1.19	6238	5.24	3.29
003228986-07	OBS	No	449.559064	327.040113	797.9	9.586	8.4	7.4	1.19	6238	3.65	1.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003228986-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
003228986-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS
003228986-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
003228986-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—ALL_TRANS_CHASES—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 003228986-03

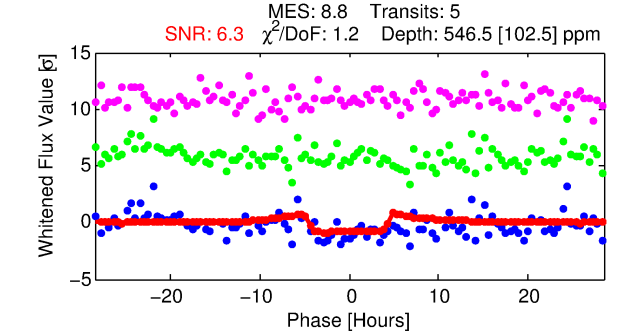
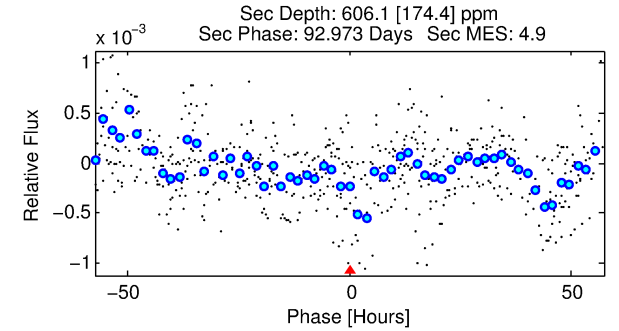
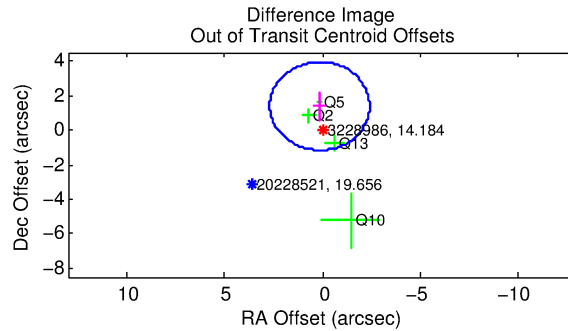
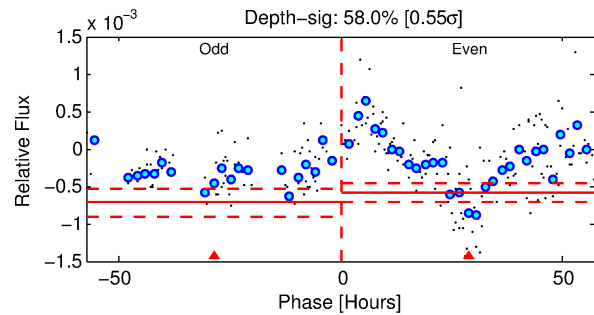
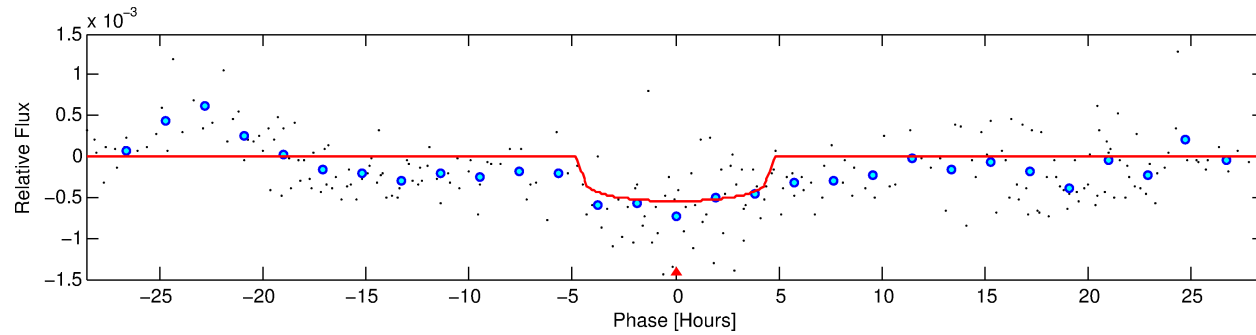
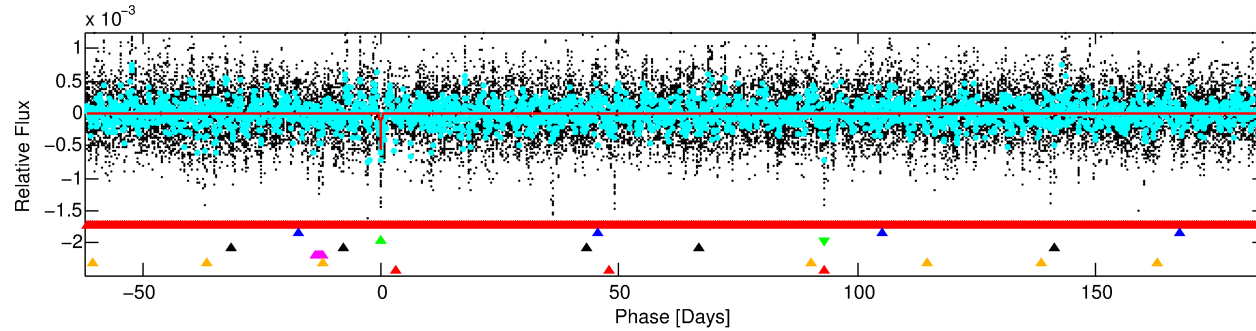
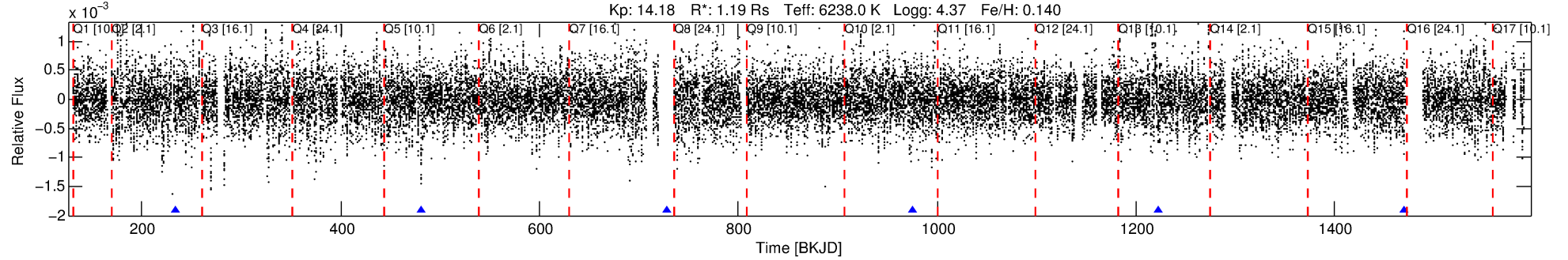
No Significant Match Found

DV One-Page Summary

KIC: 3228986 Candidate: 3 of 7 Period: 247.279 d

KOI: K04031 Corr: No Ephemeris Match

Kp: 14.18 R*: 1.19 Rs Teff: 6238.0 K Logg: 4.37 Fe/H: 0.140



DV Fit Results:

Period = 247.27910 [0.00458] d
Epoch = 233.9995 [0.0135] BKJD
Rp/R* = 0.0226 [0.0106]
a/R* = 156.65 [345.35]
b = 0.65 [1.98]
Seff = 2.87 [0.64]
Teq = 332 [18] K
Rp = 2.94 [1.47] Re
a = 0.8193 [0.1181] AU
Ag = 25934.07 [26122.49] [0.99σ]
Teff = 6510 [1604] K [3.85σ]

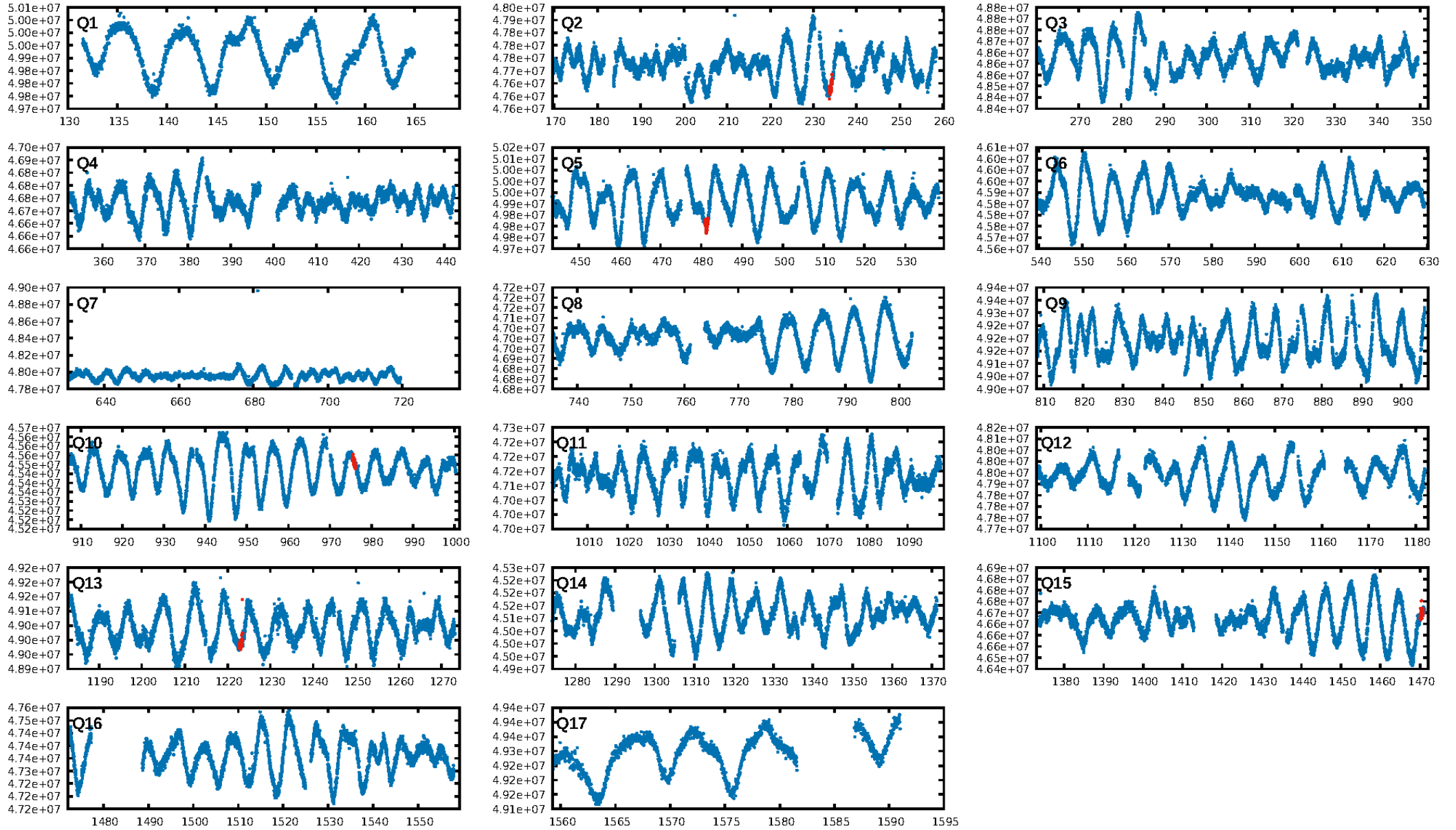
DV Diagnostic Results:

ShortPeriod-sig: 63.5% [0.91σ]
LongPeriod-sig: 100.0% [109.52σ]
ModelChiSquare2-sig: 2.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.47e-09
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.7648
Centroid-sig: 0.4%
Centroid-so: 1.765 arcsec [2.20σ]
OotOffset-rm: 1.394 arcsec [1.64σ]
KicOffset-rm: 1.490 arcsec [1.09σ]
OotOffset-st: 2/0/0/2 [4]
KicOffset-st: 2/0/0/2 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 0.00 [0/5]

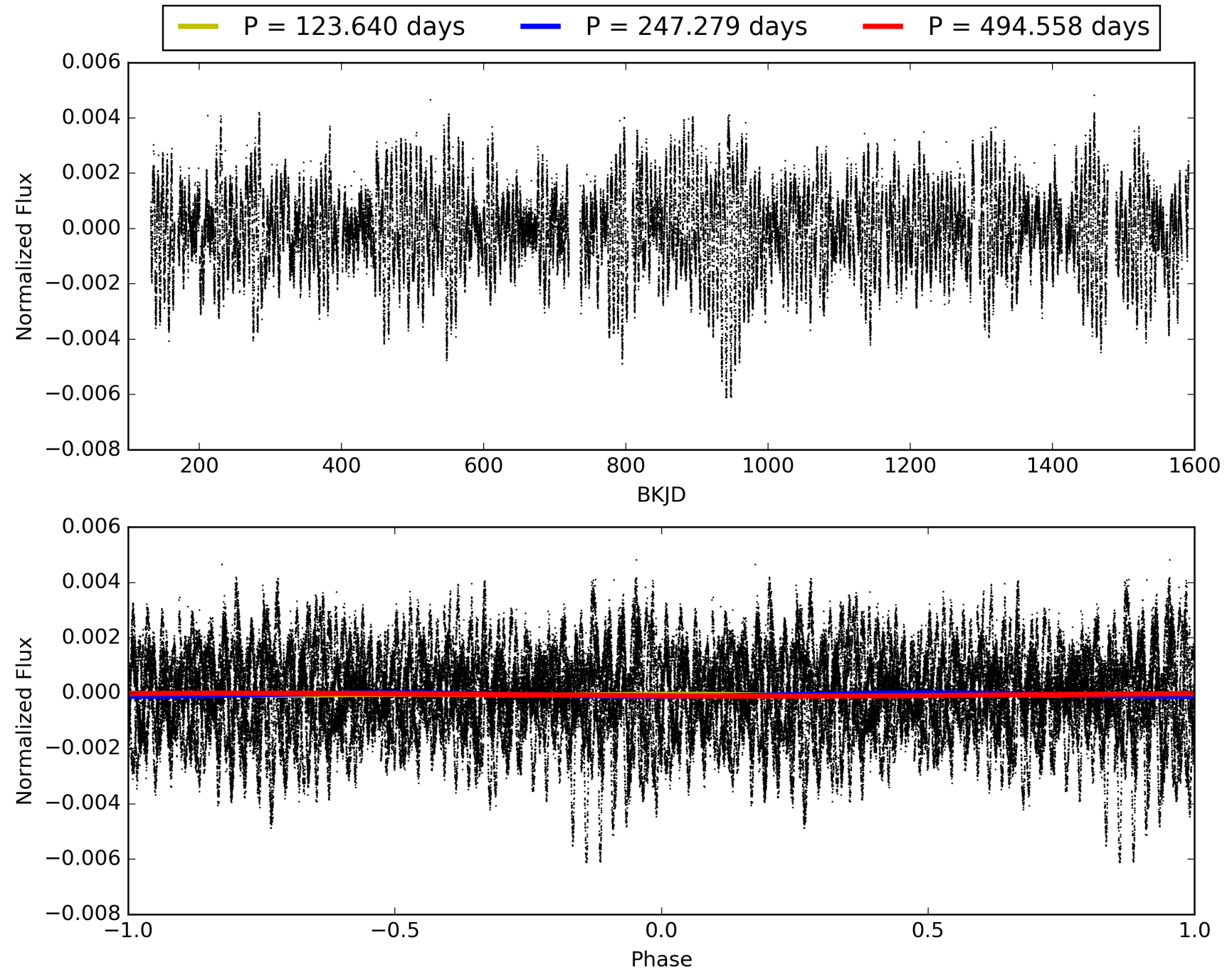
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:37:14 Z

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

TCE 003228986-03, PDC Light Curves

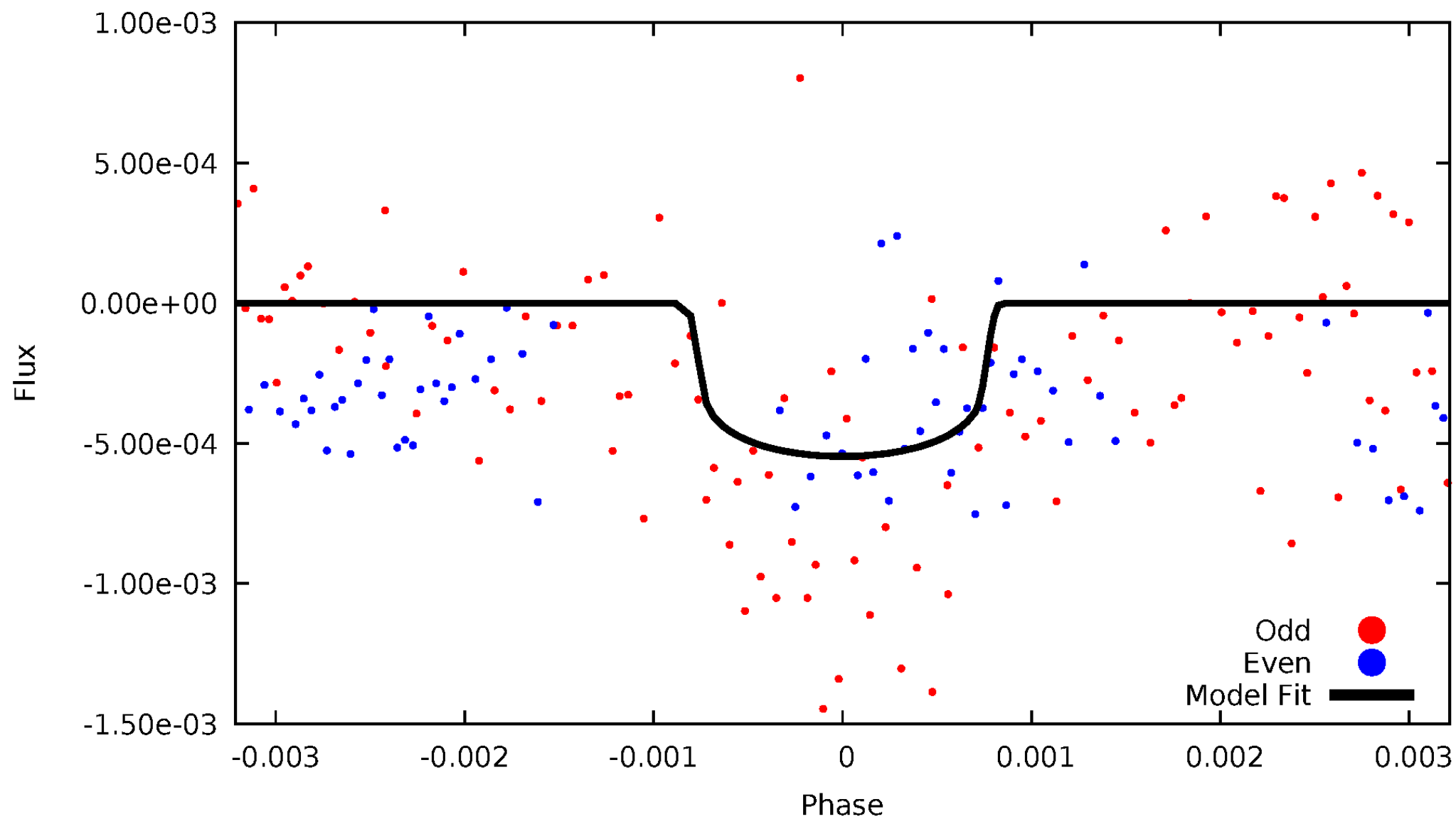


TCE 003228986-03



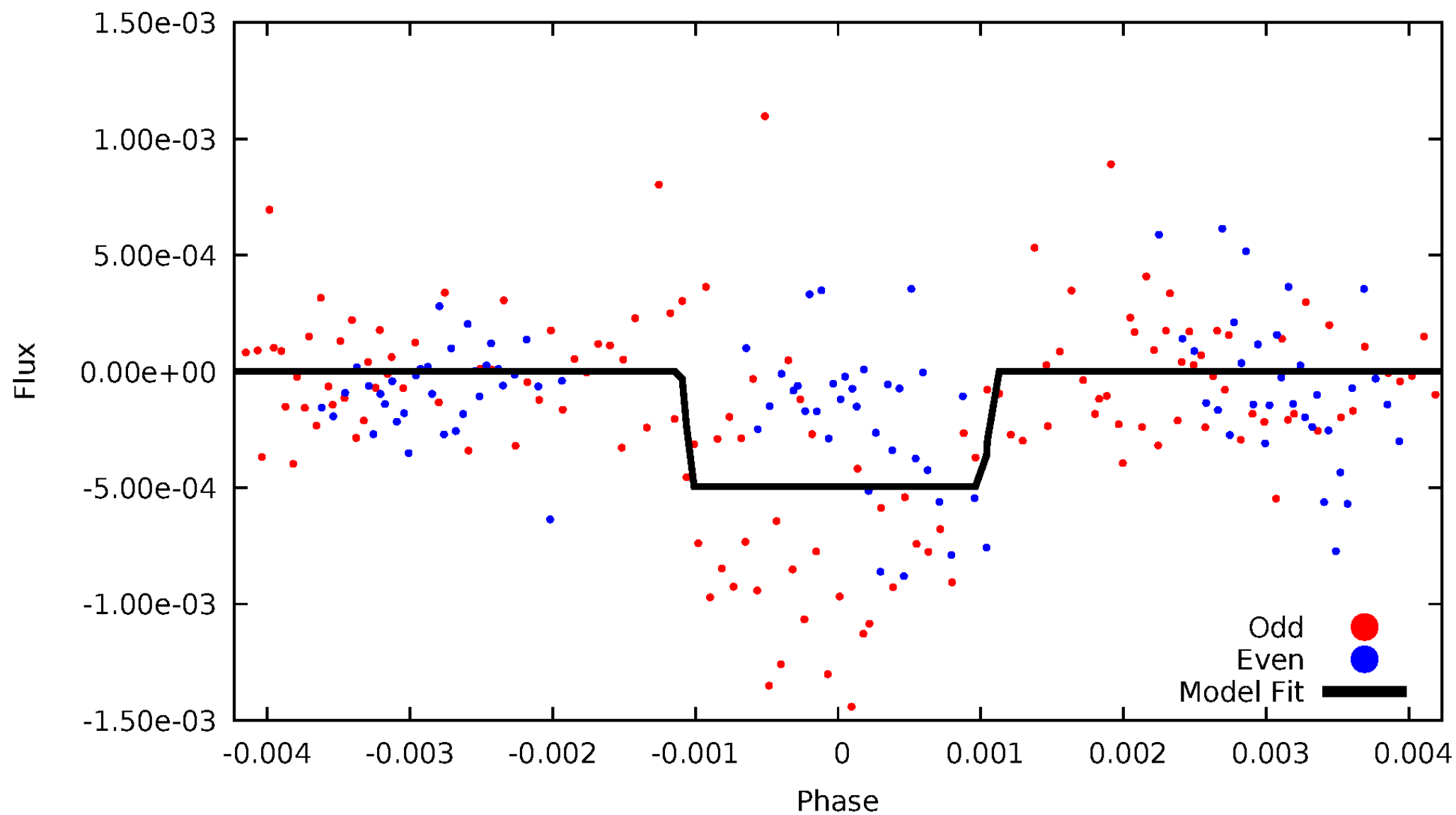
DV Odd/Even

TCE 003228986-03



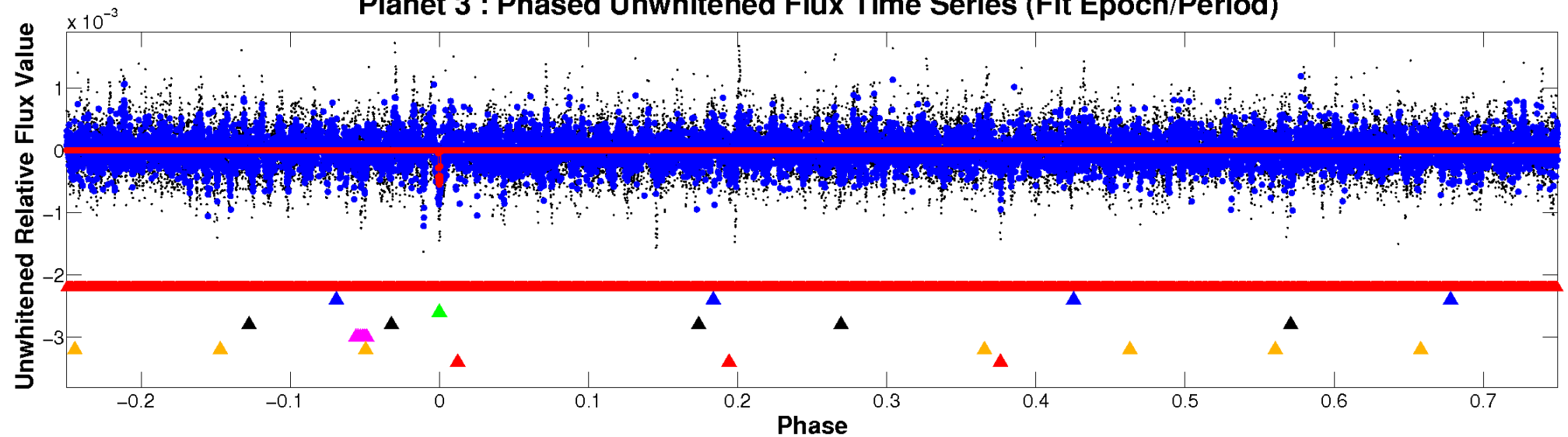
ALT Odd/Even

TCE 003228986-03

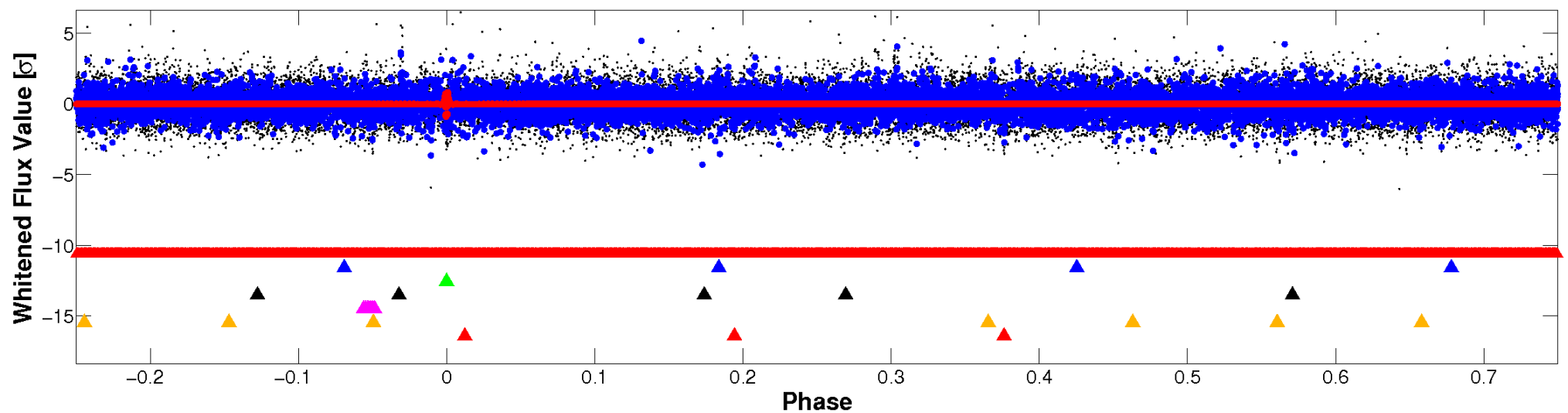


Non-Whitened Vs. Whitened Light Curve

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

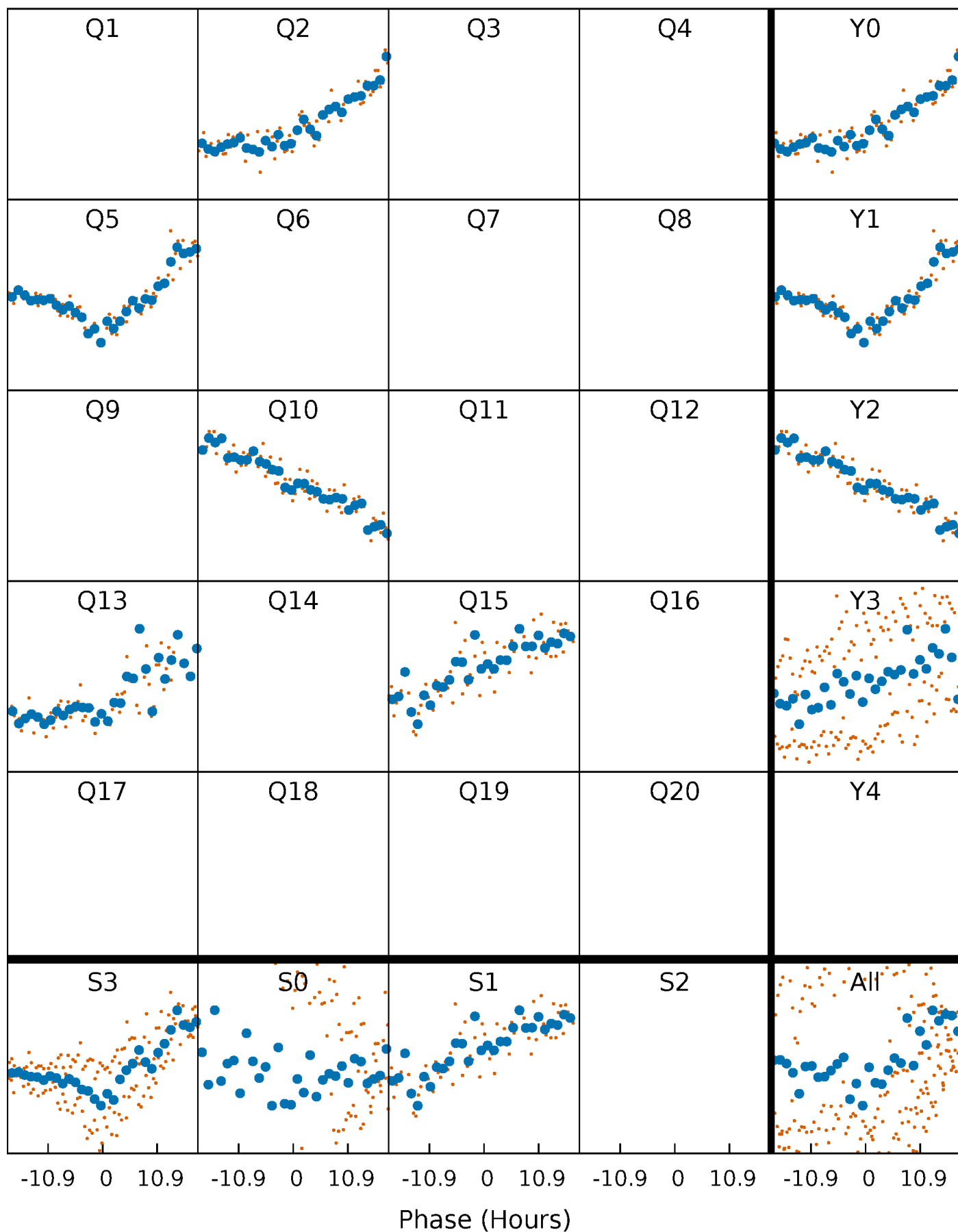


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



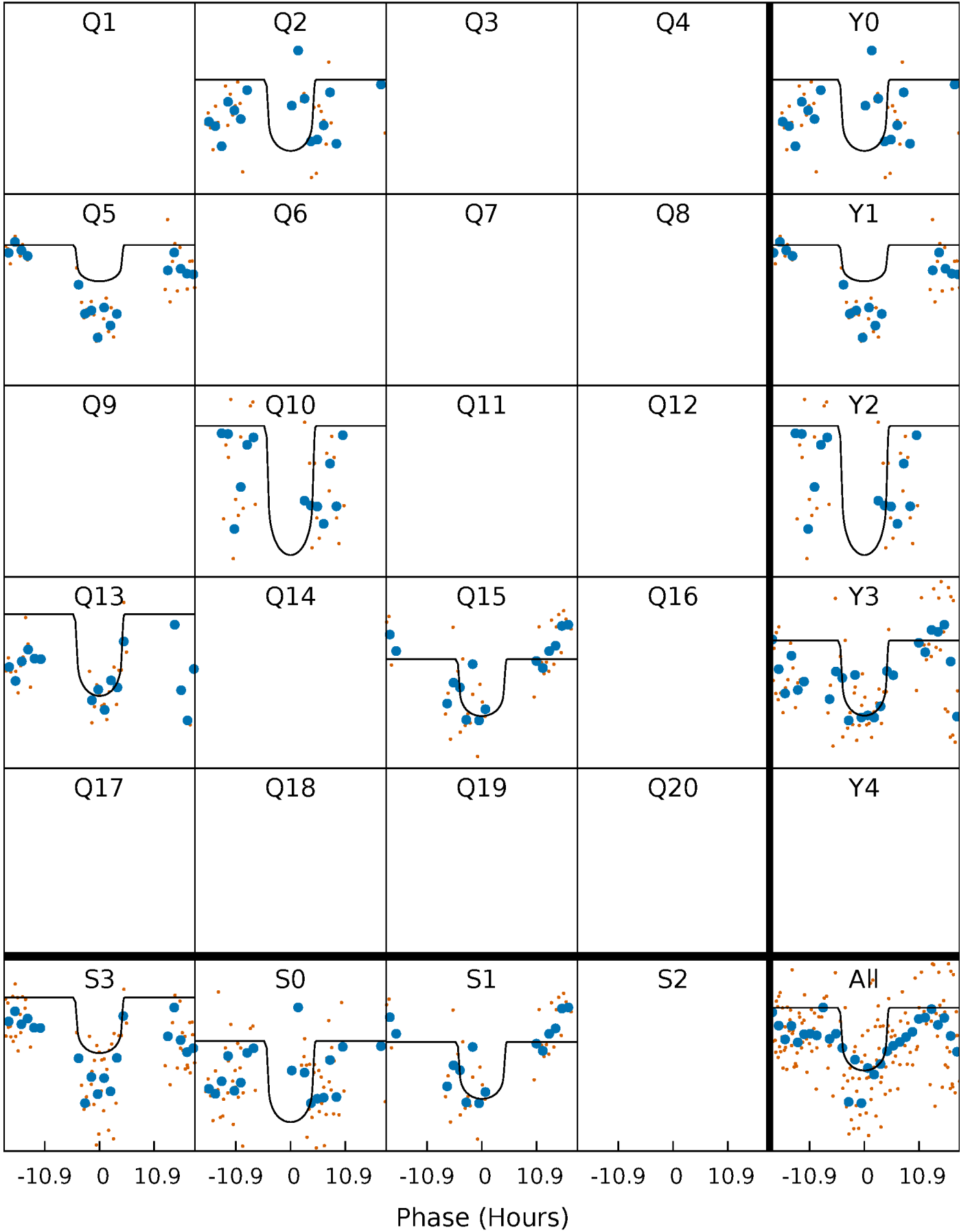
PDC Quarter-Phased Transit Curves

TCE 003228986-03 $P=247.279104$ Days $T_0=233.999456$ (BKJD)



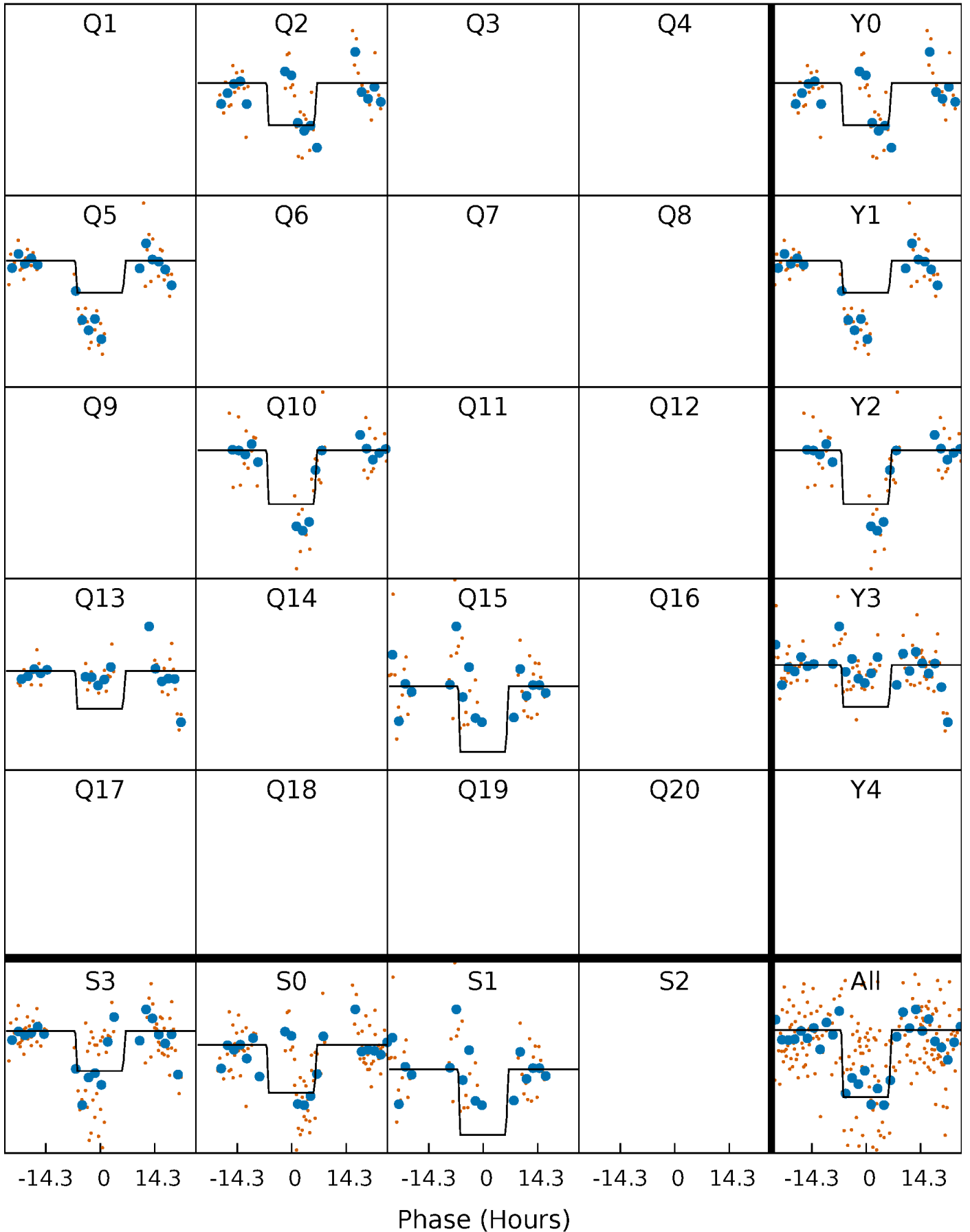
DV Quarter-Phased Transit Curves

TCE 003228986-03 $P=247.279104$ Days $T_0=233.999456$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

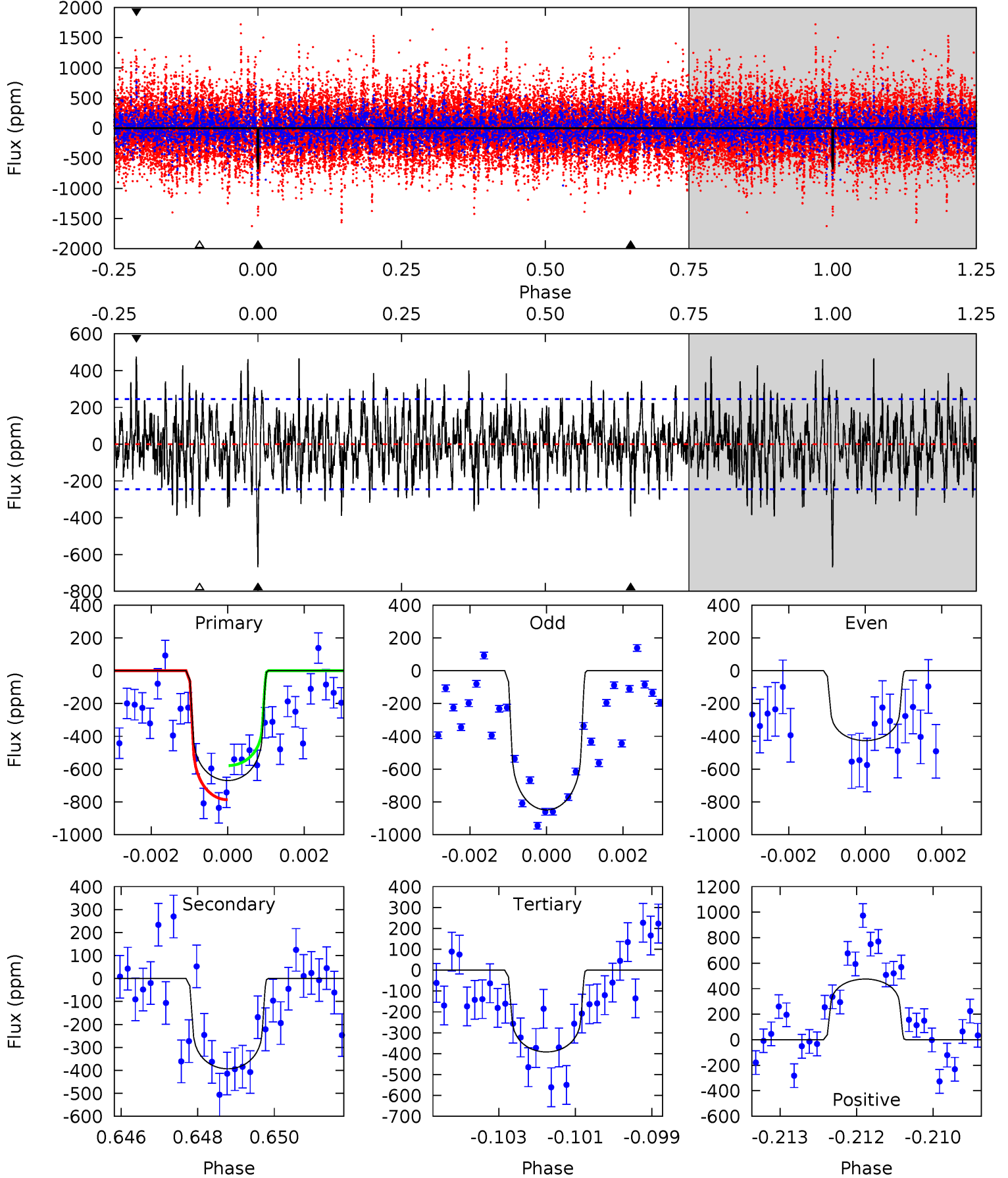
TCE 003228986-03 $P=247.273321$ Days $T_0=234.099505$ (BKJD)



DV Model-Shift Uniqueness Test

003228986-03, P = 247.279104 Days, E = 233.999456 Days

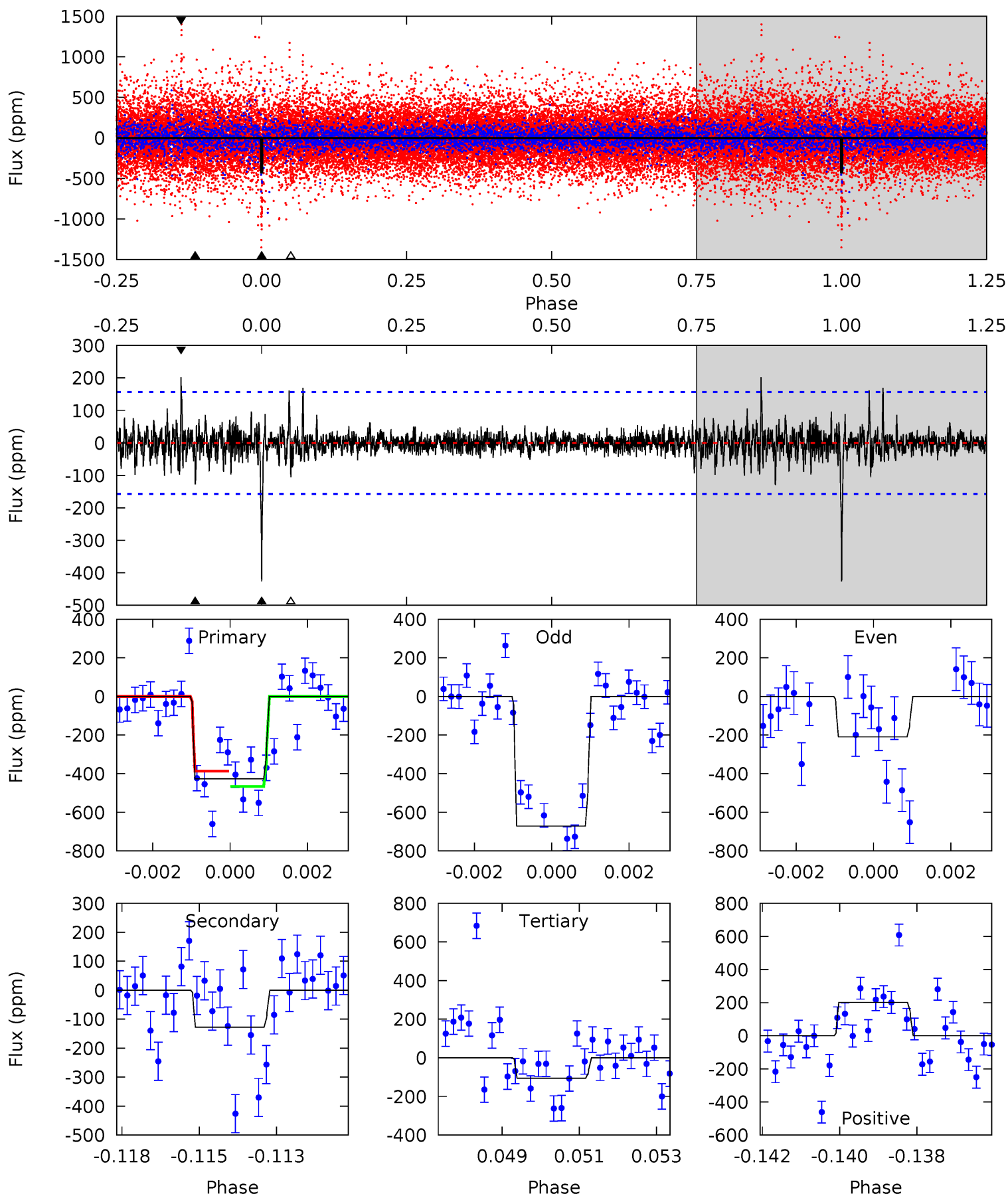
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.7	8.62	8.59	10.4	5.36	3.15	2.88	6.09	4.25	0.03	-1.81	4.55	1.33	0.42	2.25



Alt Model-Shift Uniqueness Test

003228986-03, P = 247.273321 Days, E = 234.099505 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.4	4.31	3.57	6.82	5.31	3.06	0.89	10.9	7.63	0.75	-2.50	7.87	1.27	0.32	1.34



Stellar Parameters For KIC 003228986

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	6238^{+68}_{-87}	$4.365^{+0.040}_{-0.120}$	$0.140^{+0.150}_{-0.200}$	$1.191^{+0.198}_{-0.085}$	$1.204^{+0.076}_{-0.093}$	$1.003^{+0.199}_{-0.347}$
	+1%/-1%	+1%/-3%	+107%/-143%	+17%/-7%	+6%/-8%	+20%/-35%
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 003228986-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-393 ± 46	$3.01^{+1.50}_{-1.23}$	467^{+20}_{-11}	5848^{+1976}_{-955}	15813^{+30499}_{-8685}
Alt.	-127 ± 30	$2.97^{+1.50}_{-1.32}$	469^{+19}_{-13}	4557^{+1439}_{-623}	4996^{+12571}_{-2721}

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 $A_{obs} \gg 1.0$

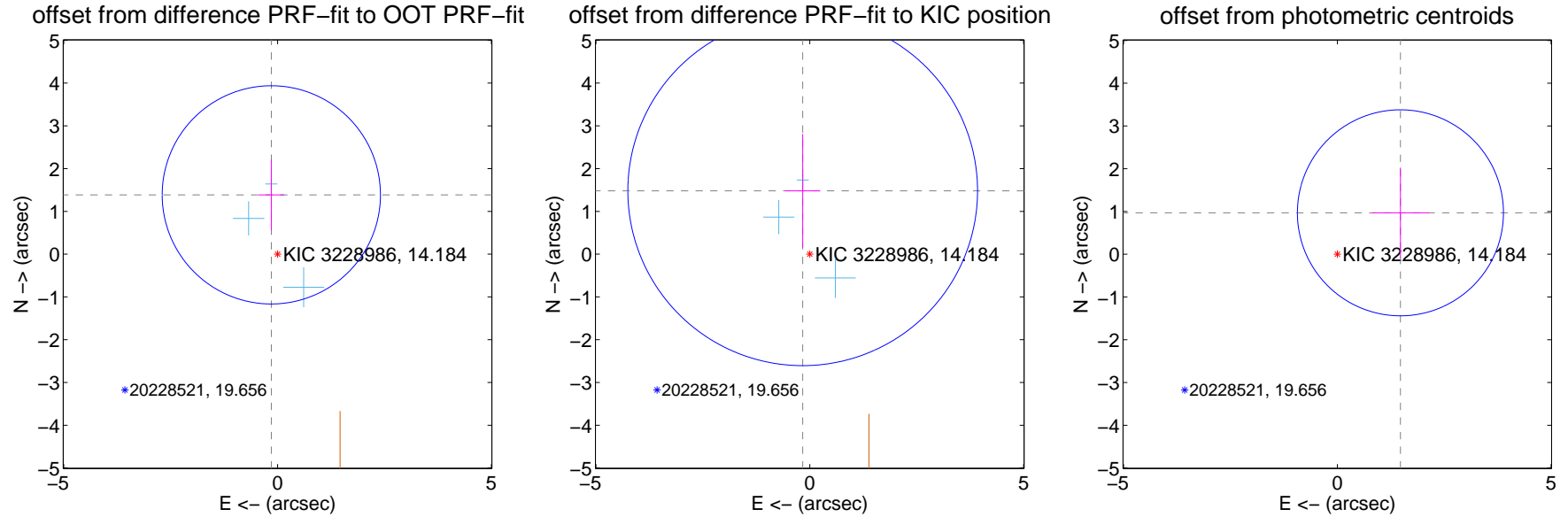
DV Centroid Data

Supplemental centroid analysis for 003228986-03. Kepler magnitude: 14.18. Transit SNR 6.32

There are 3 quarters with good PRF difference image offsets

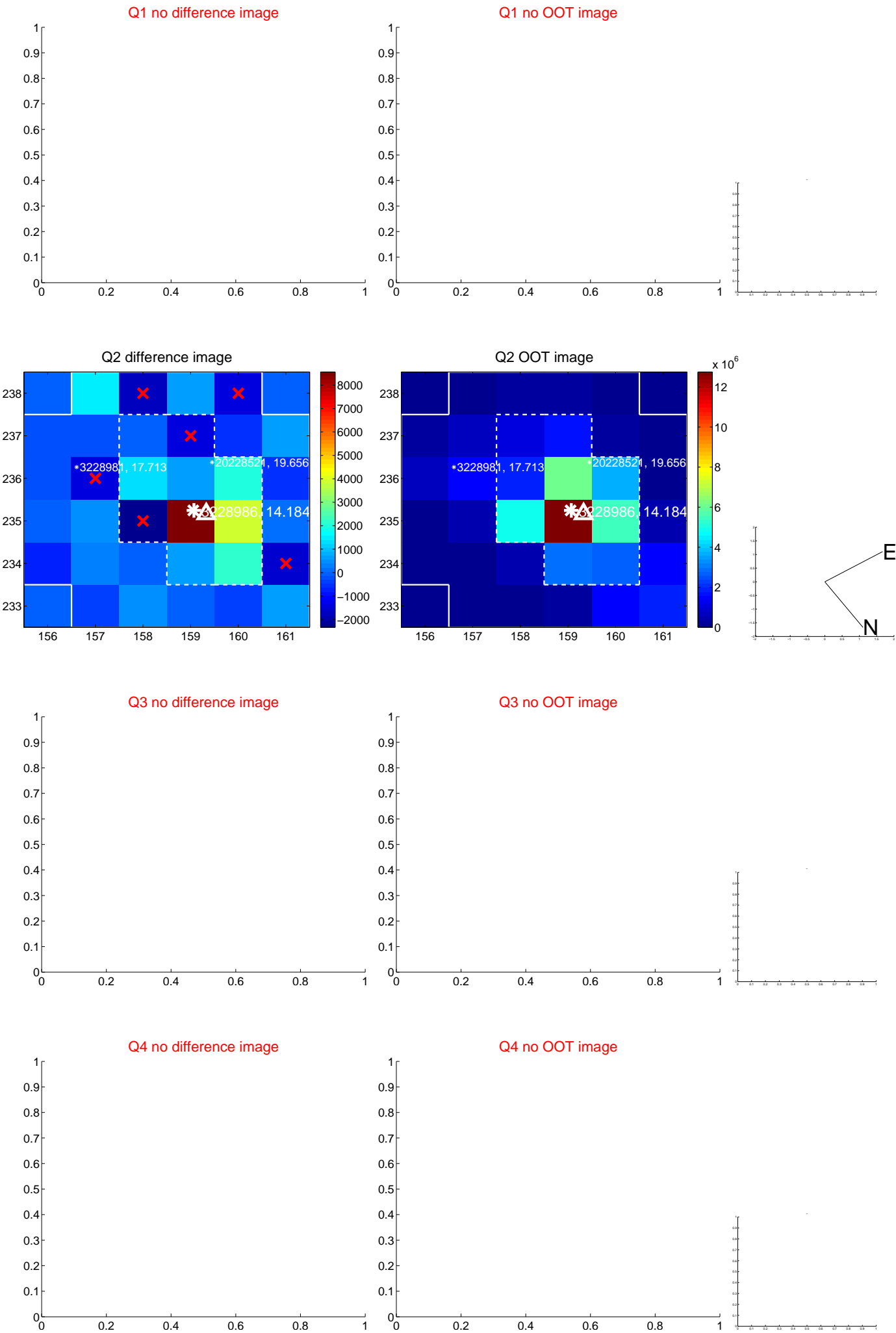
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.394 ± 0.850	1.64	0.146 ± 0.298	1.387 ± 0.827
PRF-fit source offset from KIC position	1.490 ± 1.363	1.09	0.165 ± 0.411	1.481 ± 1.330
photometric centroid source offset	1.77 ± 0.80	2.20	-1.48 ± 0.66	0.97 ± 1.06

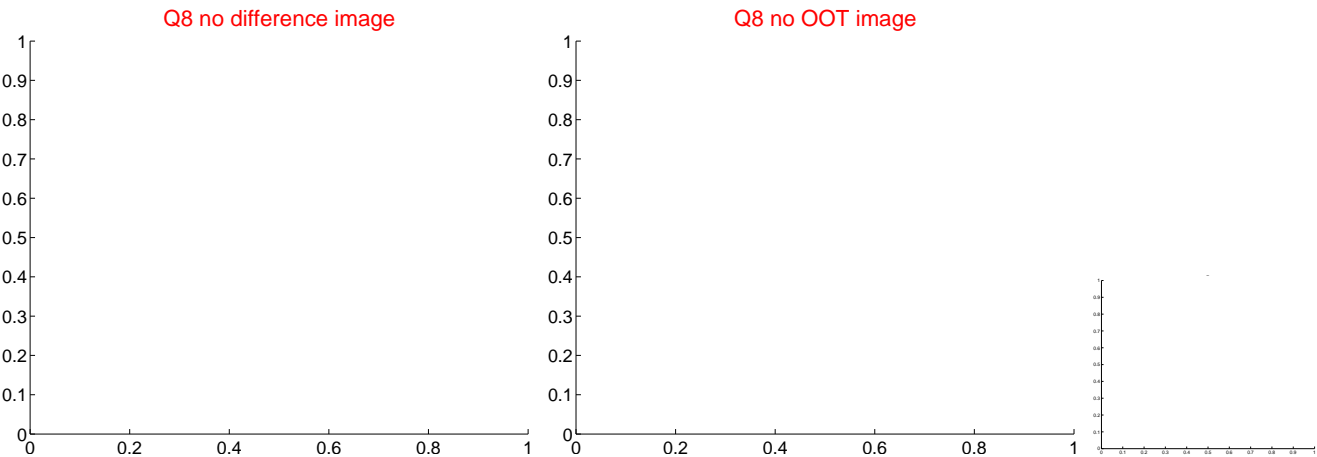
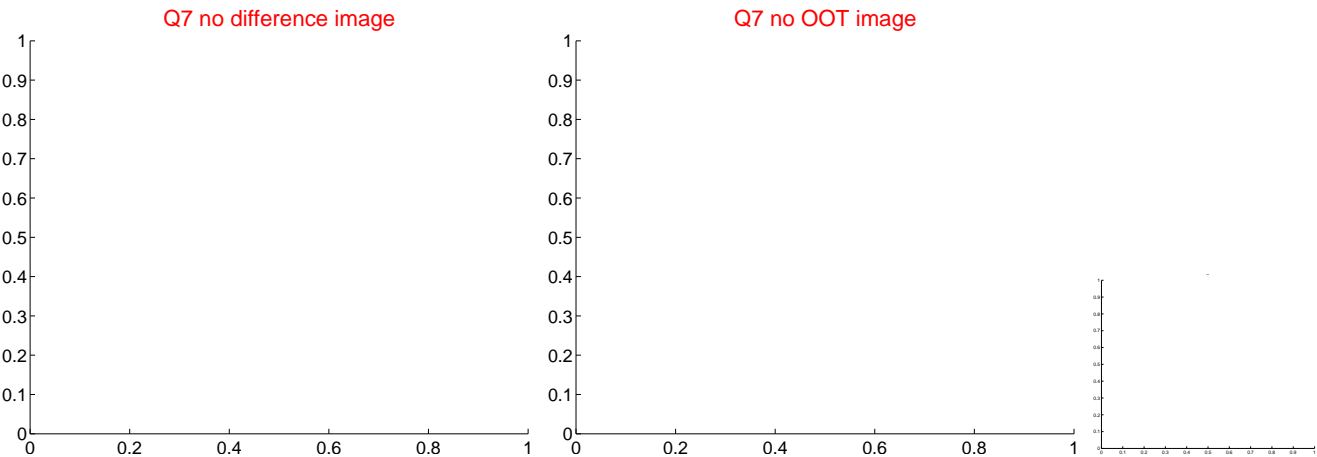
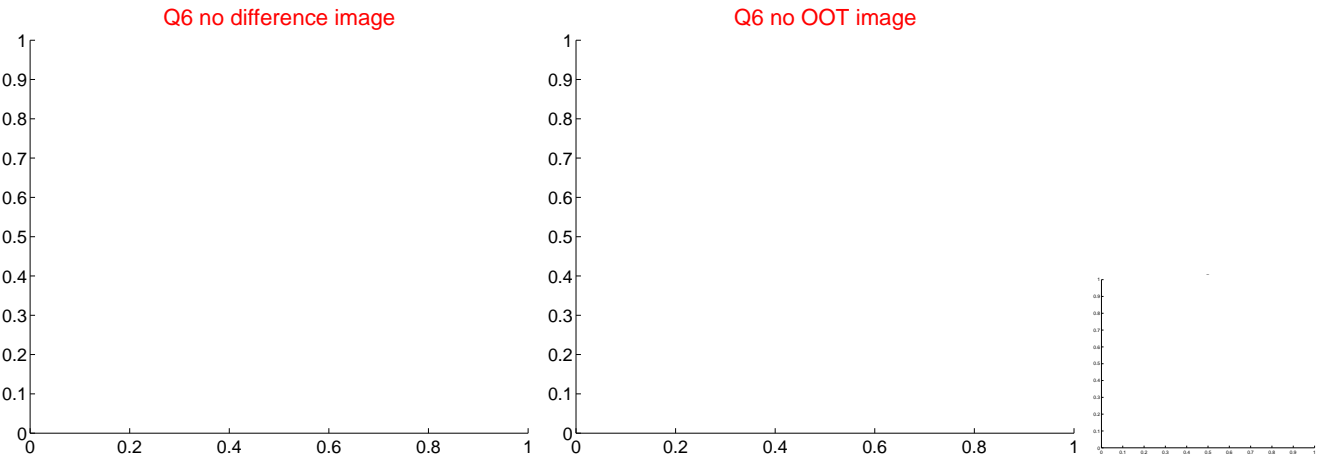
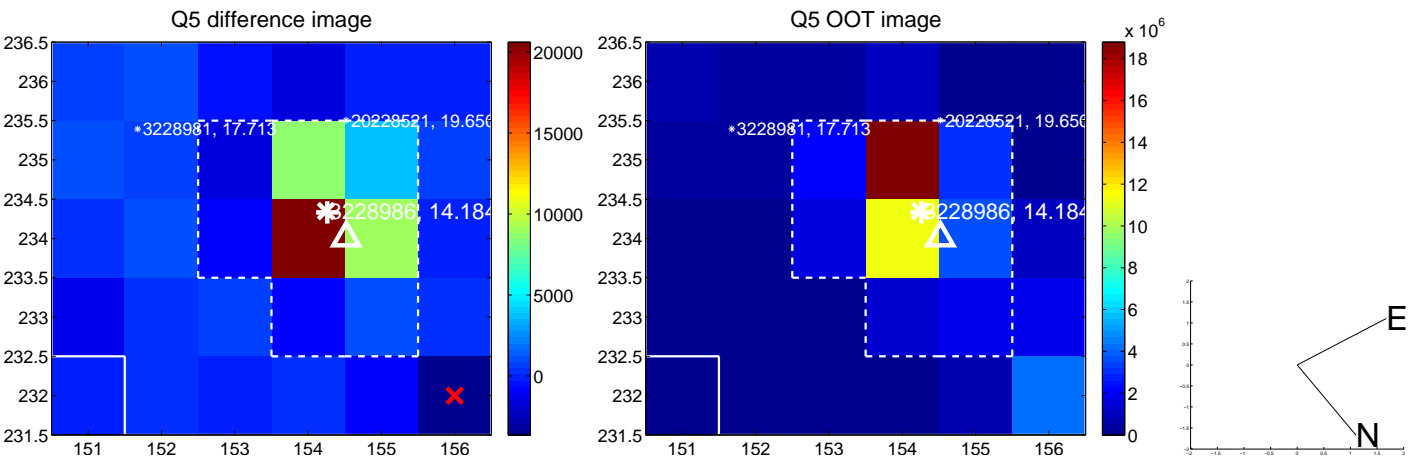


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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

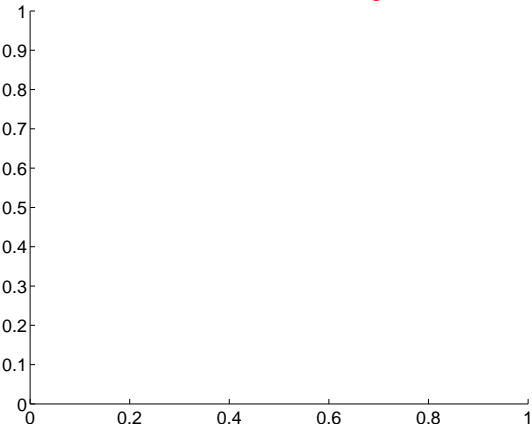


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

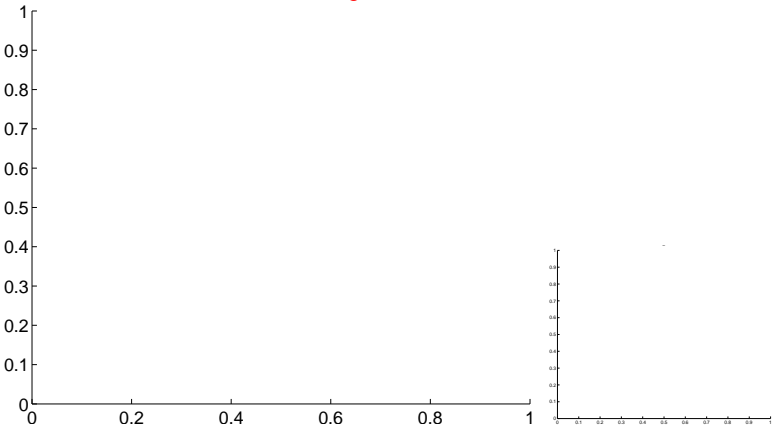


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

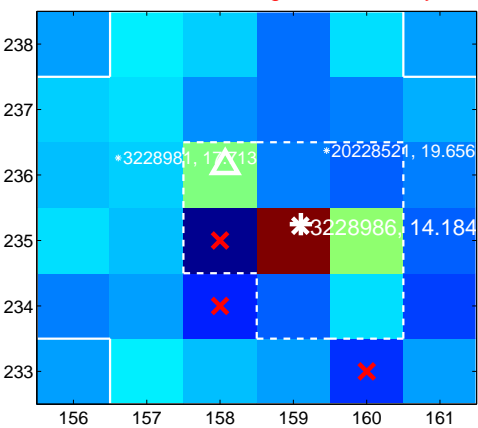
Q9 no difference image



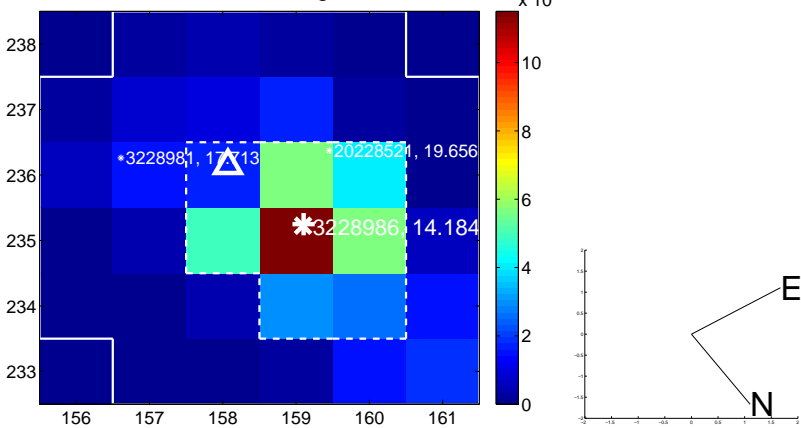
Q9 no OOT image



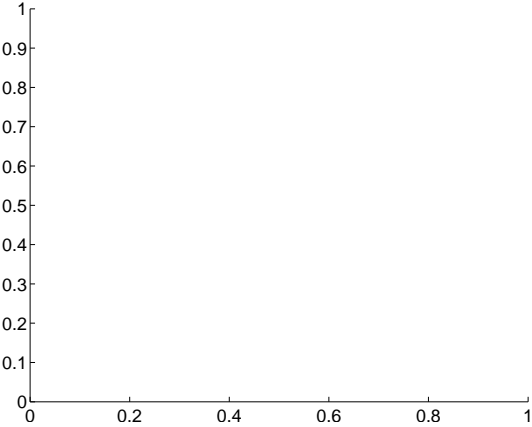
Q10 difference image. Poor Quality



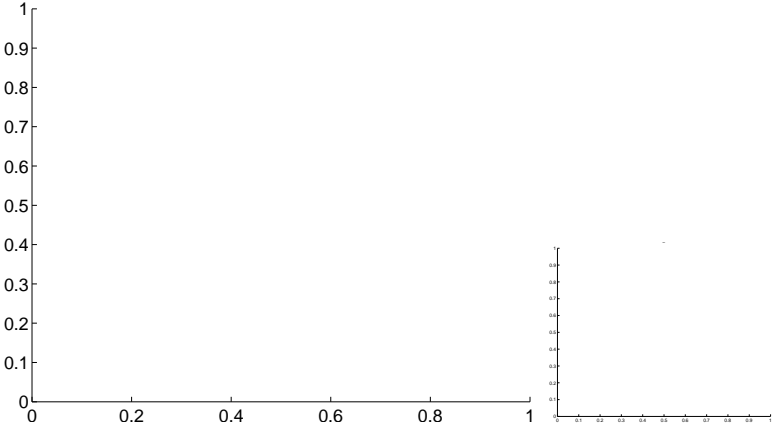
Q10 OOT image



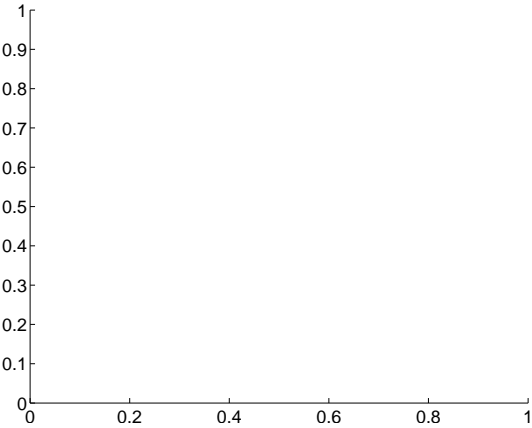
Q11 no difference image



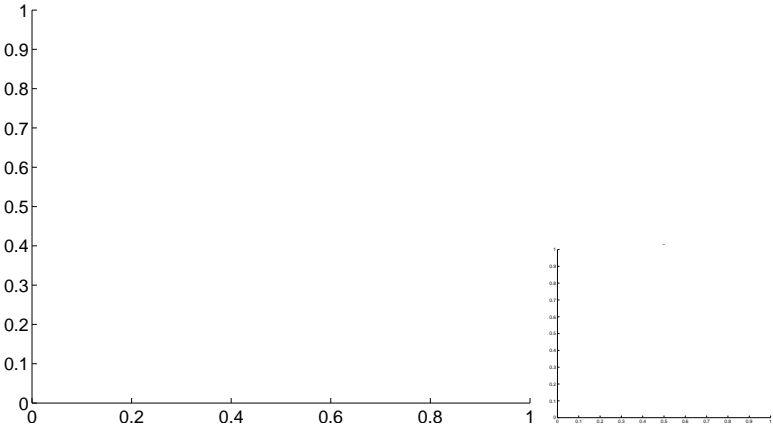
Q11 no OOT image



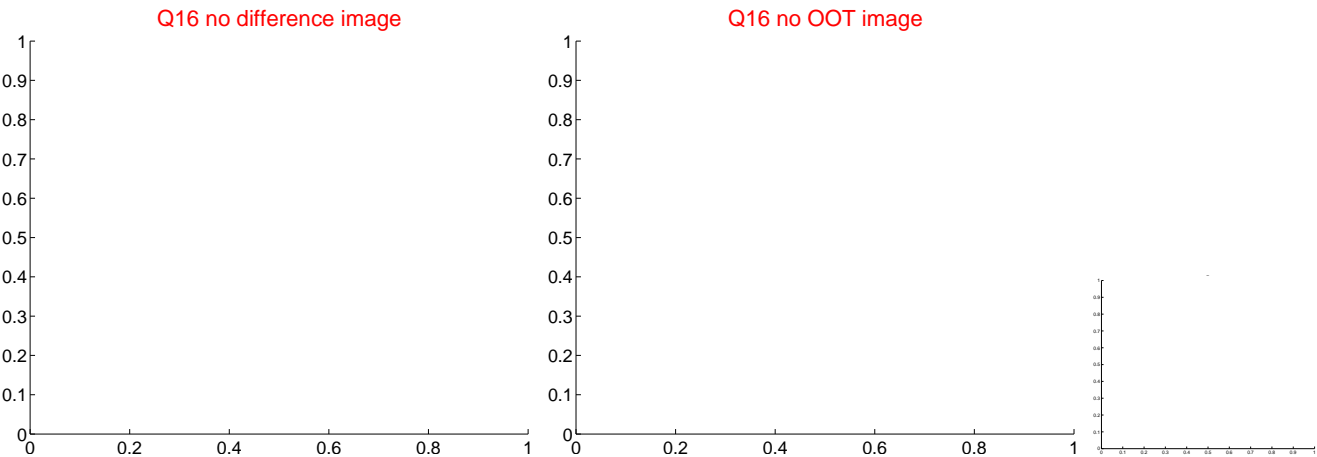
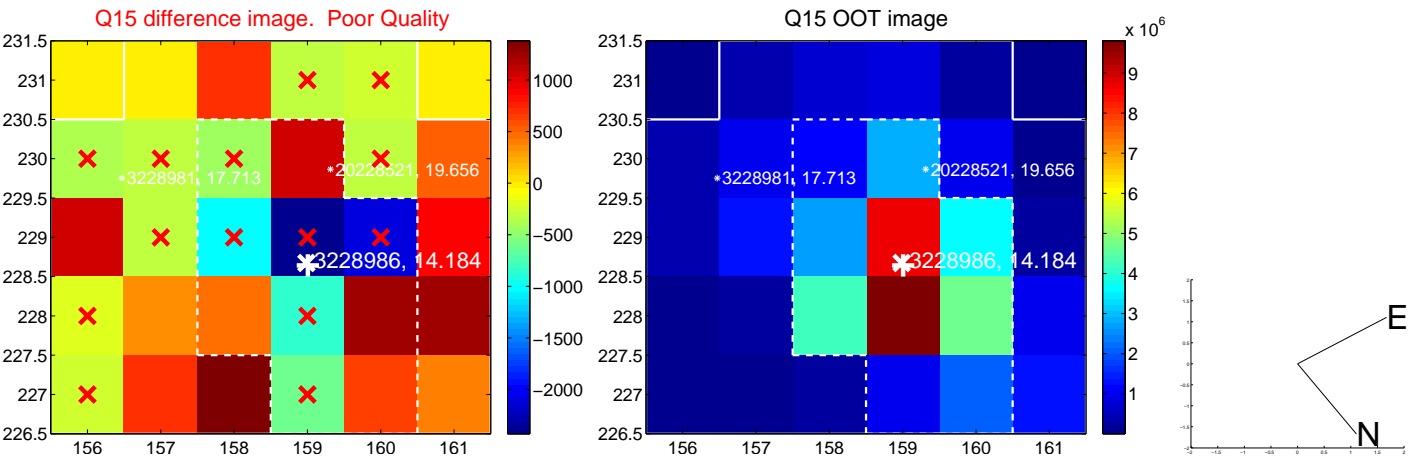
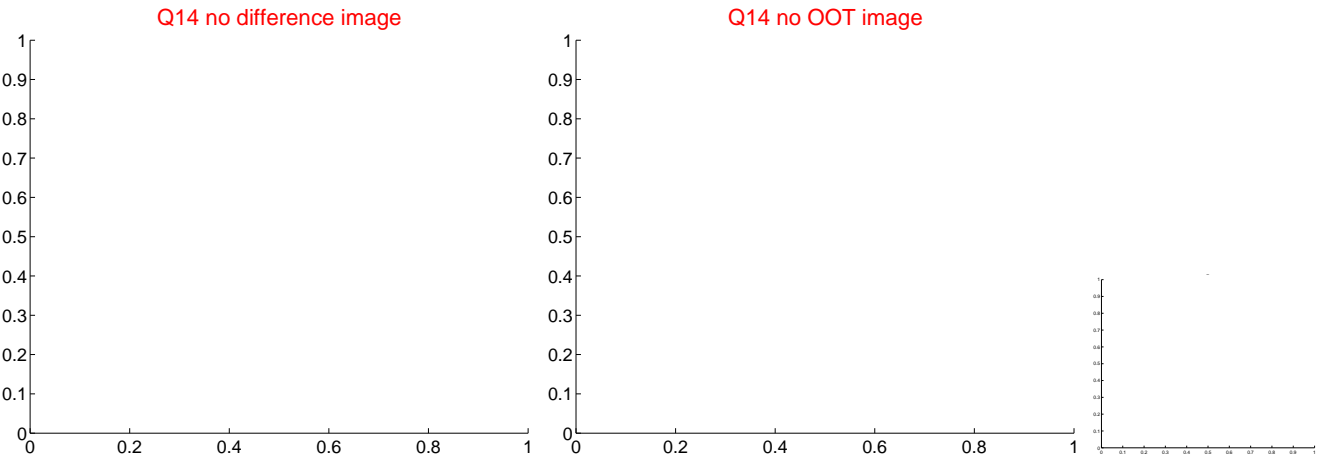
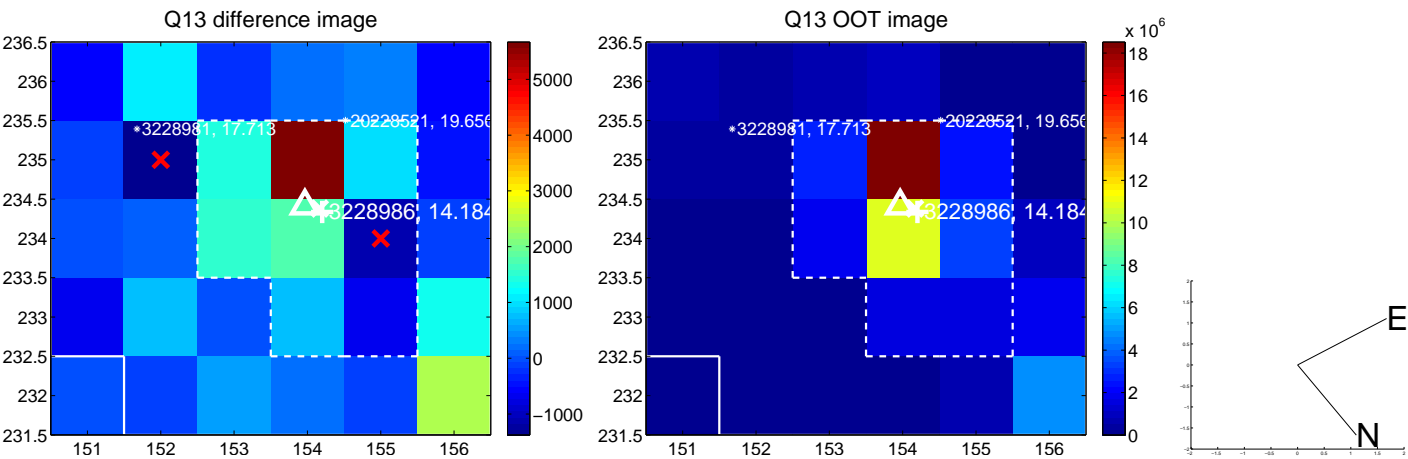
Q12 no difference image



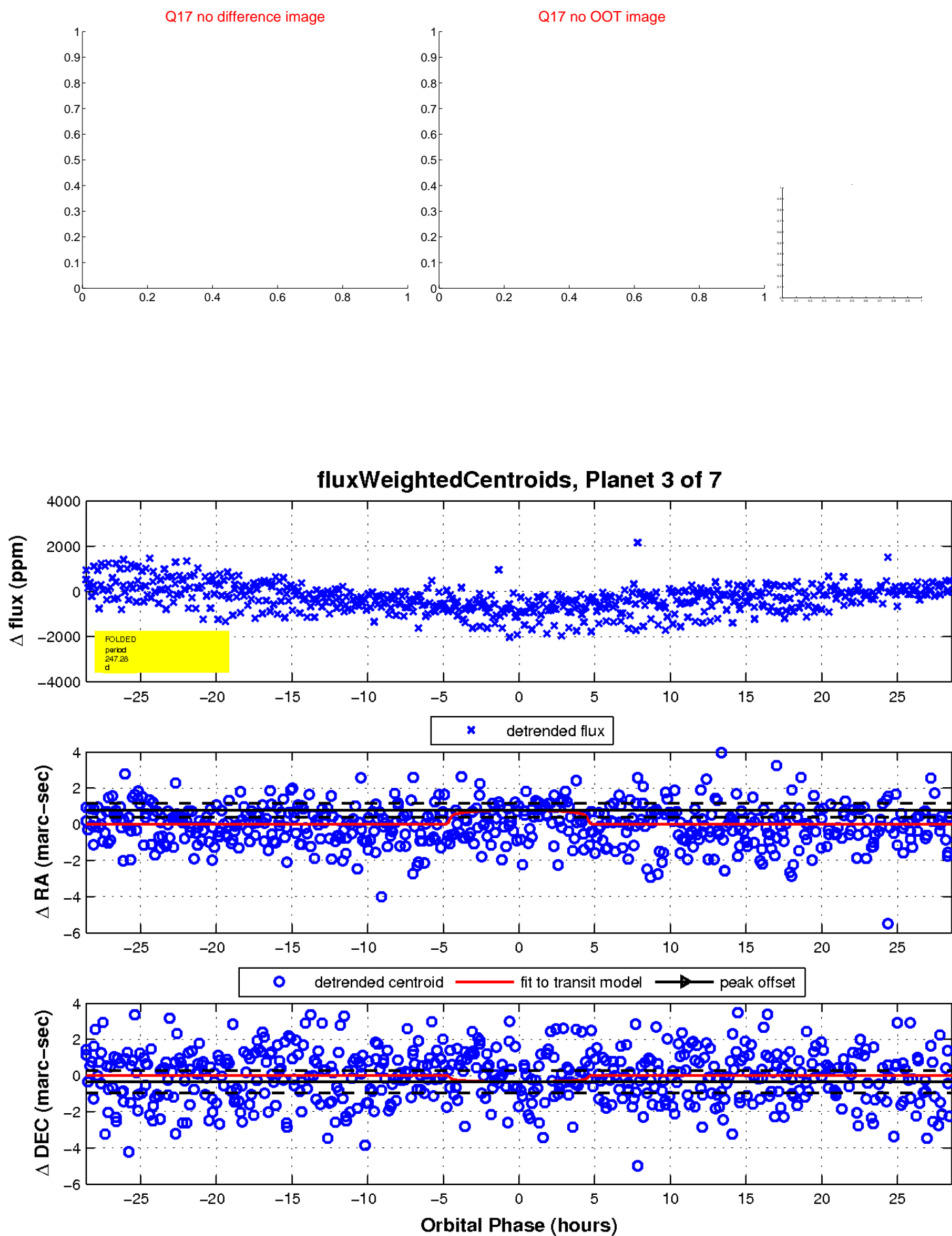
Q12 no OOT image



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

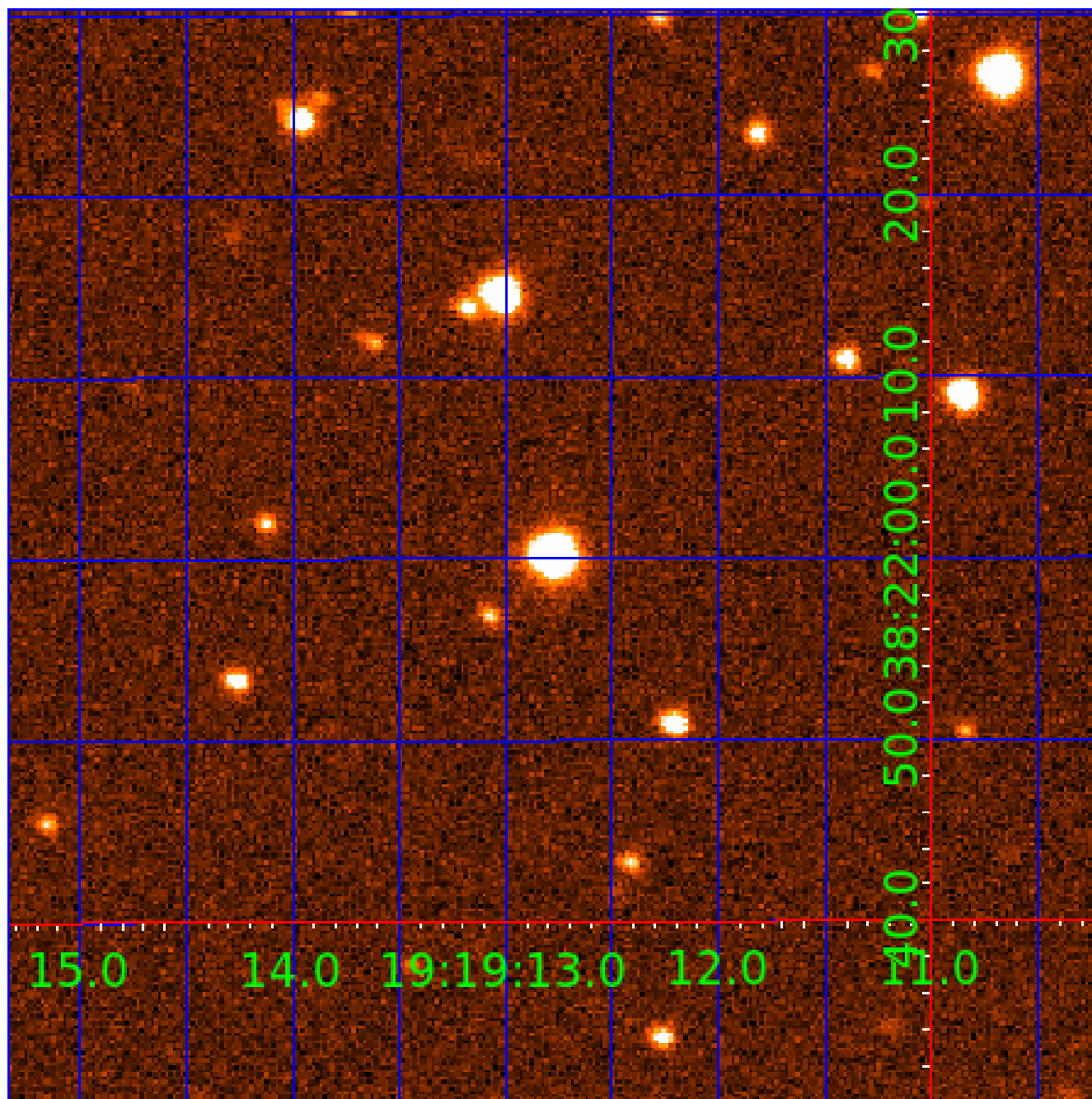


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003228986

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})
003228986-01	OBS	4031.01	0.730966	132.219395	63.7	2.981	18.9	18.6	1.19	6238	0.98	6758.04
003228986-02	OBS	No	432.043981	279.433266	4647.8	55.770	15.8	9.8	1.19	6238	10.69	1.36
003228986-03	OBS	No	247.279104	233.999456	546.5	9.531	8.8	6.3	1.19	6238	2.94	2.87
003228986-04	OBS	No	321.835502	226.050599	487.7	13.269	8.4	5.2	1.19	6238	2.82	2.02
003228986-05	OBS	No	246.915361	221.969229	521.9	1.475	9.4	4.2	1.19	6238	2.97	2.87
003228986-06	OBS	No	223.166868	221.784778	527.0	14.730	13.5	5.9	1.19	6238	5.24	3.29
003228986-07	OBS	No	449.559064	327.040113	797.9	9.586	8.4	7.4	1.19	6238	3.65	1.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003228986-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
003228986-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS
003228986-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
003228986-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—ALL_TRANS_CHASES—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.

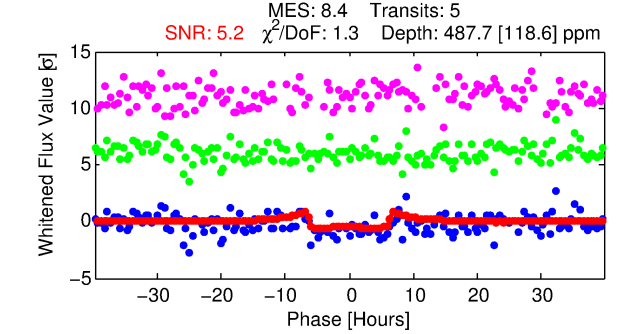
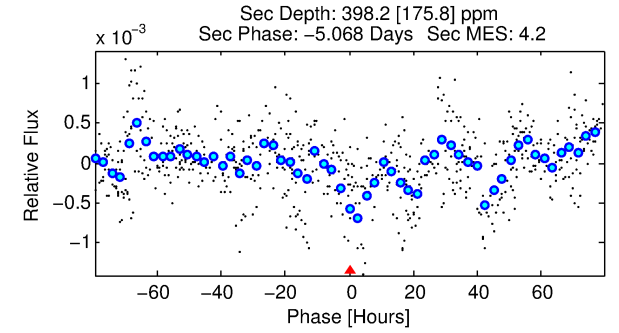
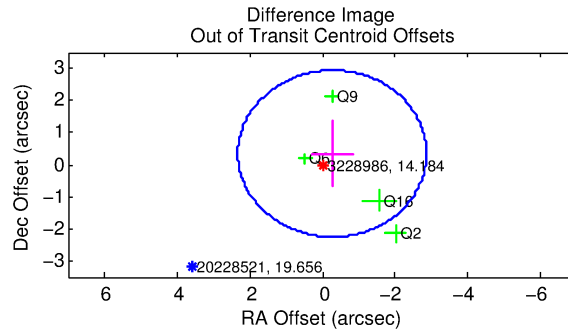
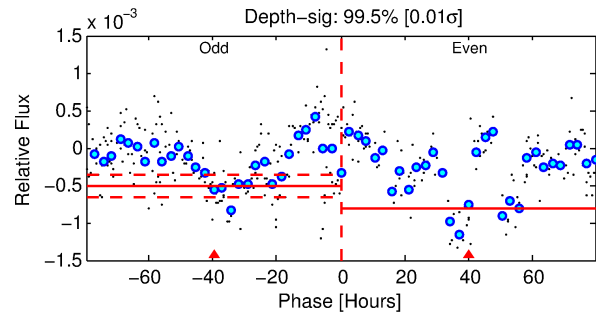
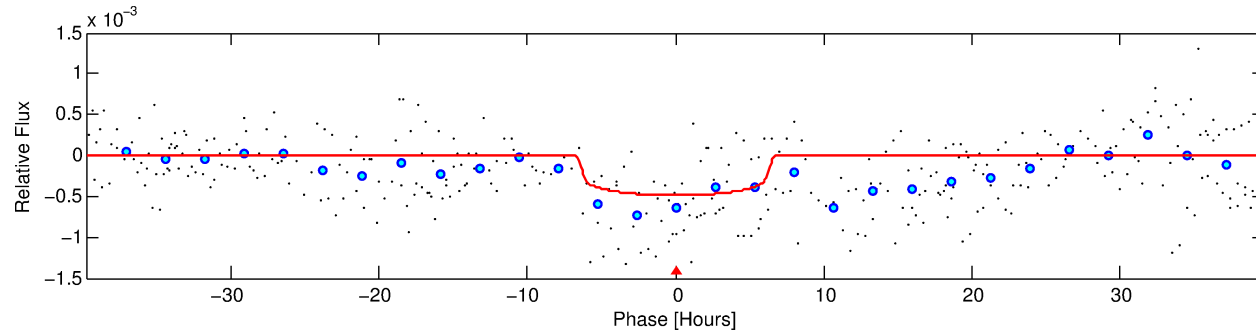
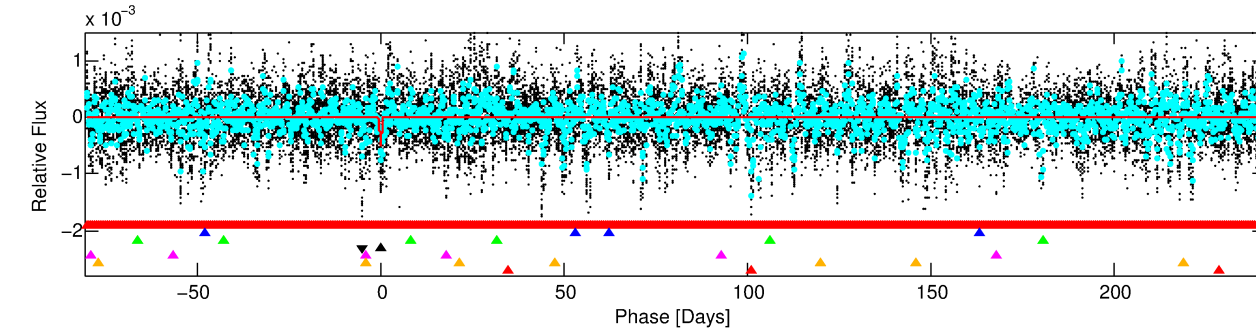
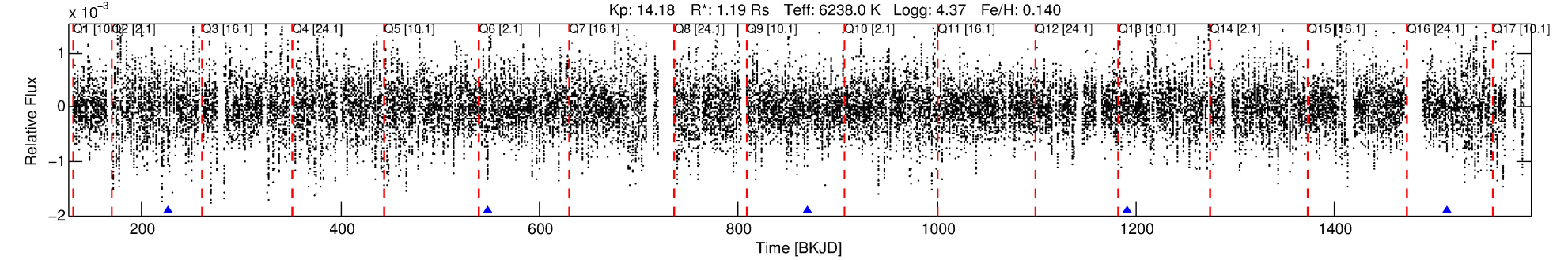
Ephemeris Match Information For 003228986-04

No Significant Match Found

DV One-Page Summary

KIC: 3228986 Candidate: 4 of 7 Period: 321.836 d
KOI: K04031 Corr: No Ephemeris Match

Kp: 14.18 R*: 1.19 Rs Teff: 6238.0 K Logg: 4.37 Fe/H: 0.140



DV Fit Results:

Period = 321.83550 [0.01276] d
Epoch = 226.0506 [0.0260] BKJD
Rp/R* = 0.0217 [0.0064]
a/R* = 136.68 [172.07]
b = 0.71 [0.89]
Seff = 2.02 [0.45]
Teq = 304 [17] K
Rp = 2.82 [0.96] Re
a = 0.9766 [0.1407] AU
Ag = 26348.44 [20290.54] [1.30σ]
Teffp = 5986 [1110] K [5.12σ]

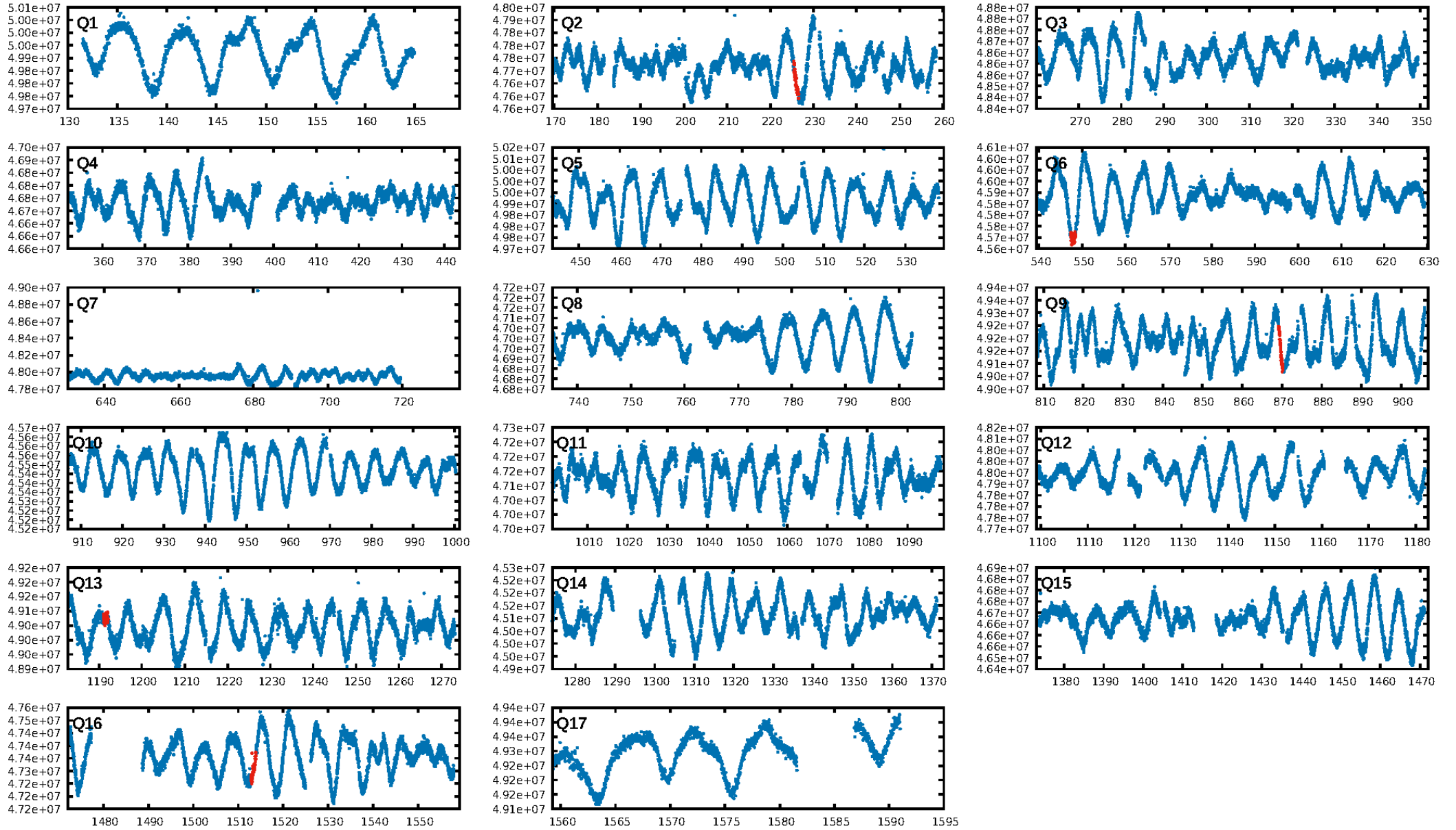
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [109.52σ]
LongPeriod-sig: 100.0% [46.14σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.20e-08
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -2.523
Centroid-sig: 1.0%
Centroid-so: 1.363 arcsec [1.55σ]
OotOffset-rm: 0.435 arcsec [0.50σ]
KicOffset-rm: 0.568 arcsec [0.59σ]
OotOffset-st: 2/0/1/1 [4]
KicOffset-st: 2/0/1/1 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 0.00 [0/5]

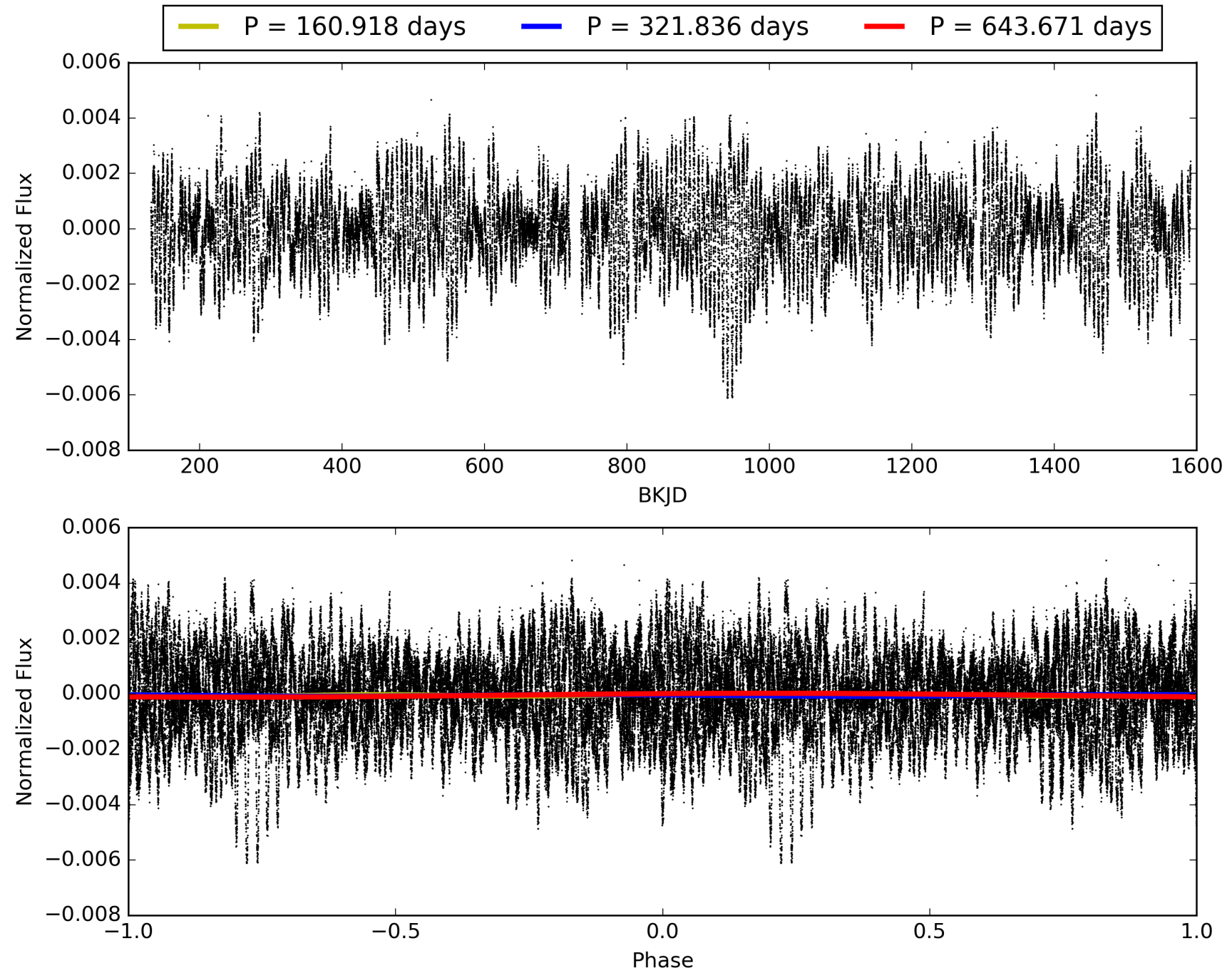
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:37:20 Z

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

TCE 003228986-04, PDC Light Curves

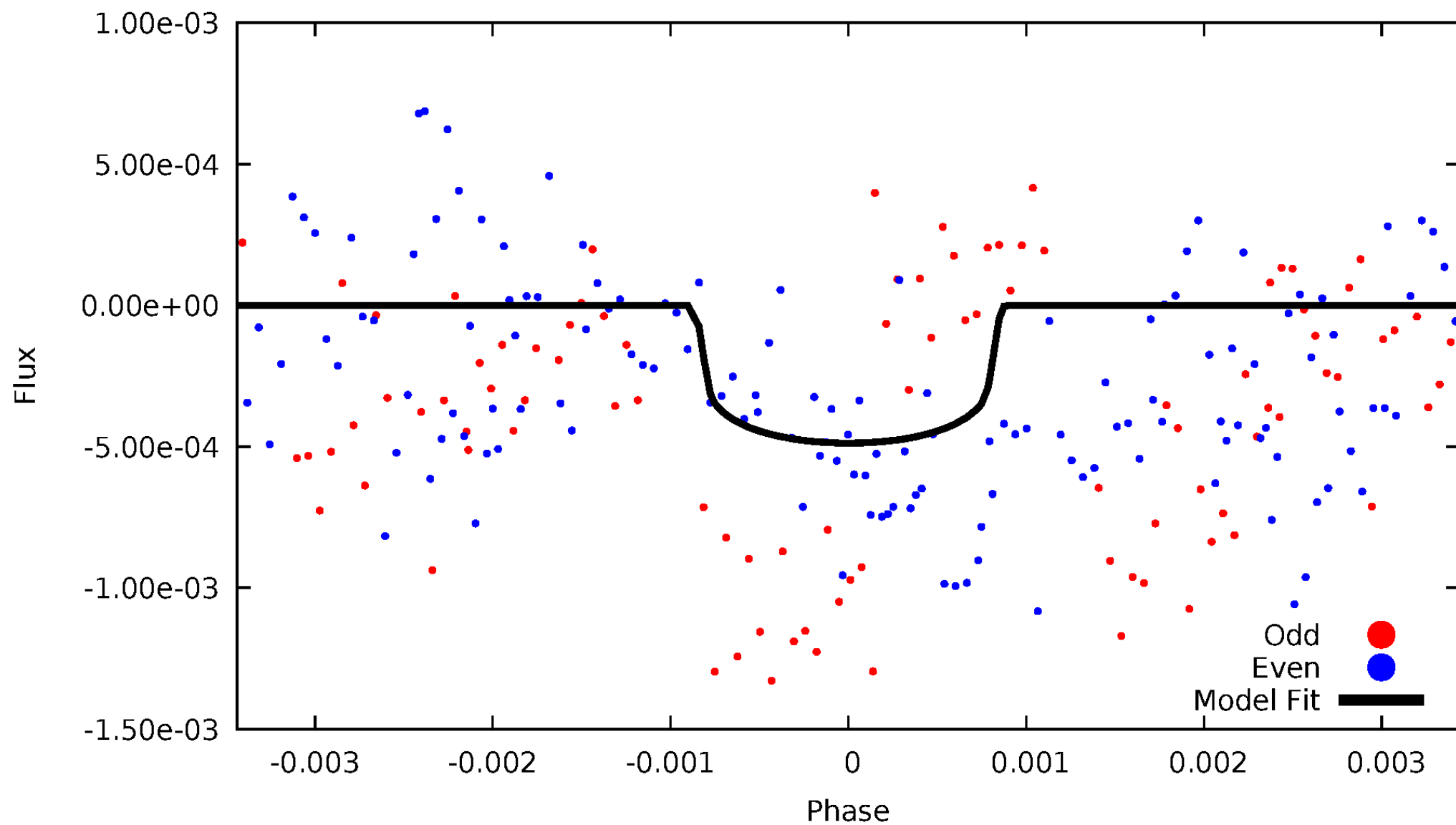


TCE 003228986-04



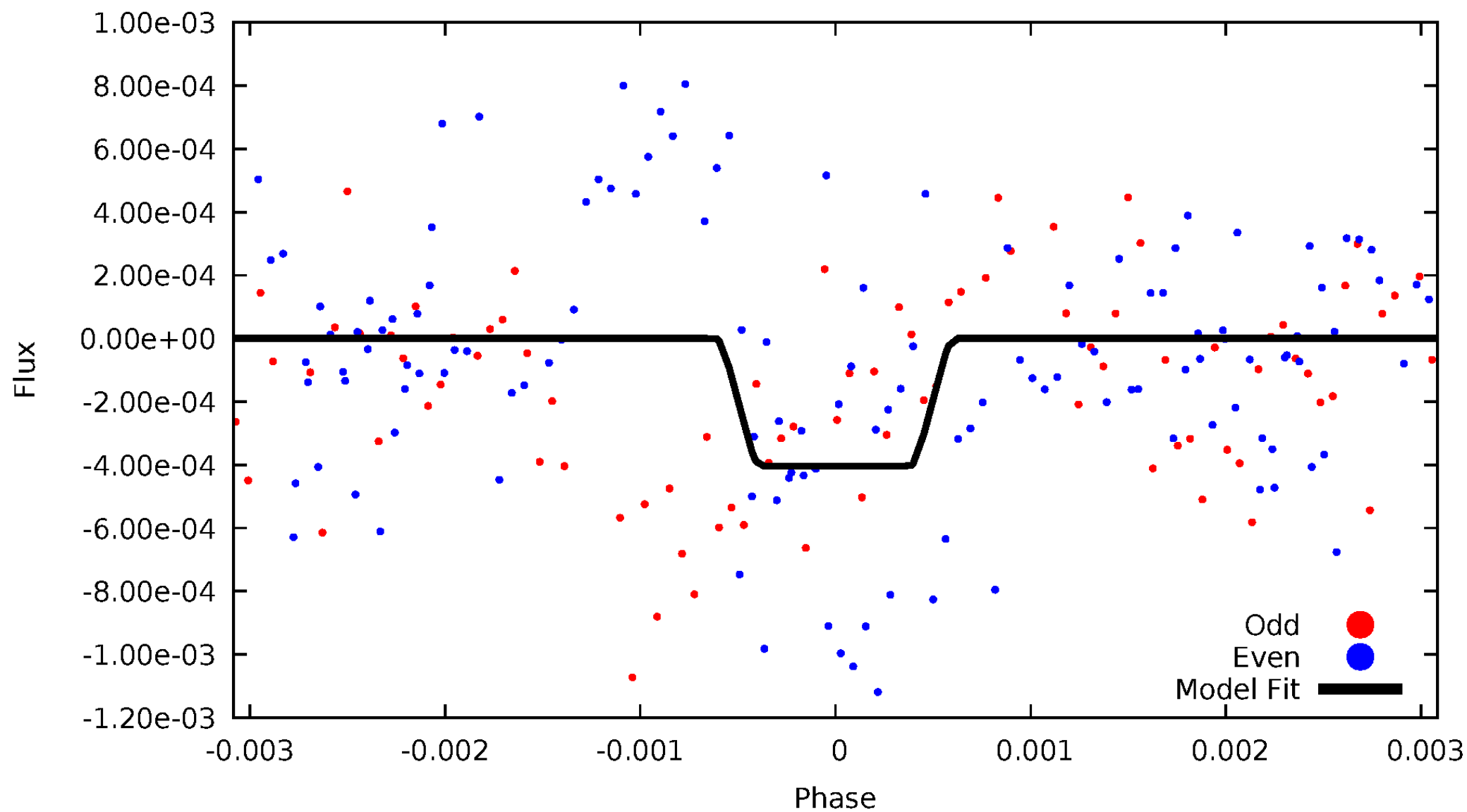
DV Odd/Even

TCE 003228986-04



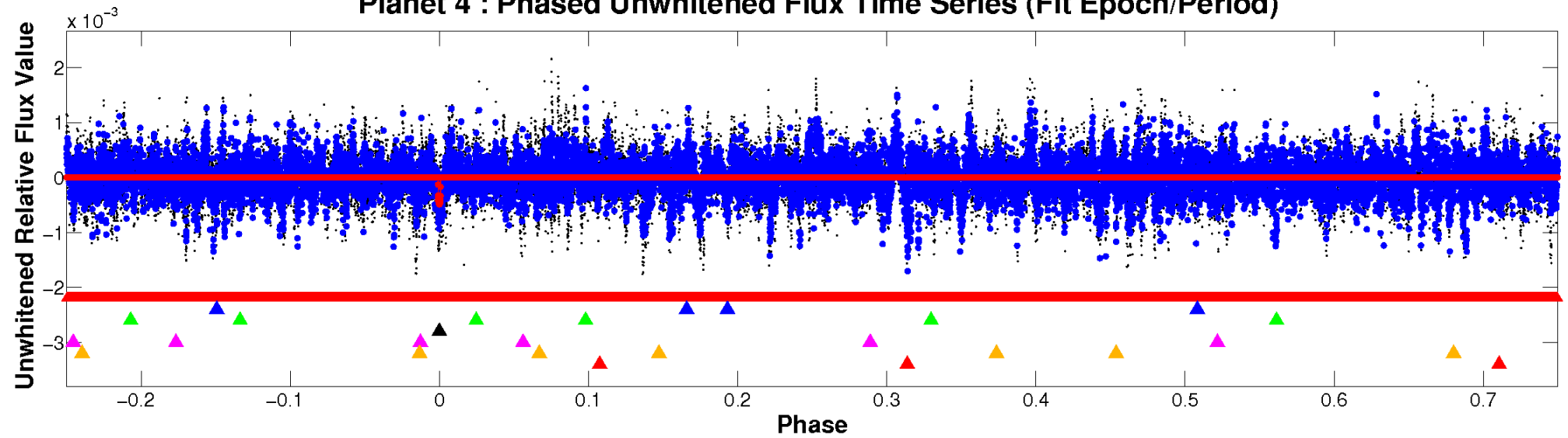
ALT Odd/Even

TCE 003228986-04

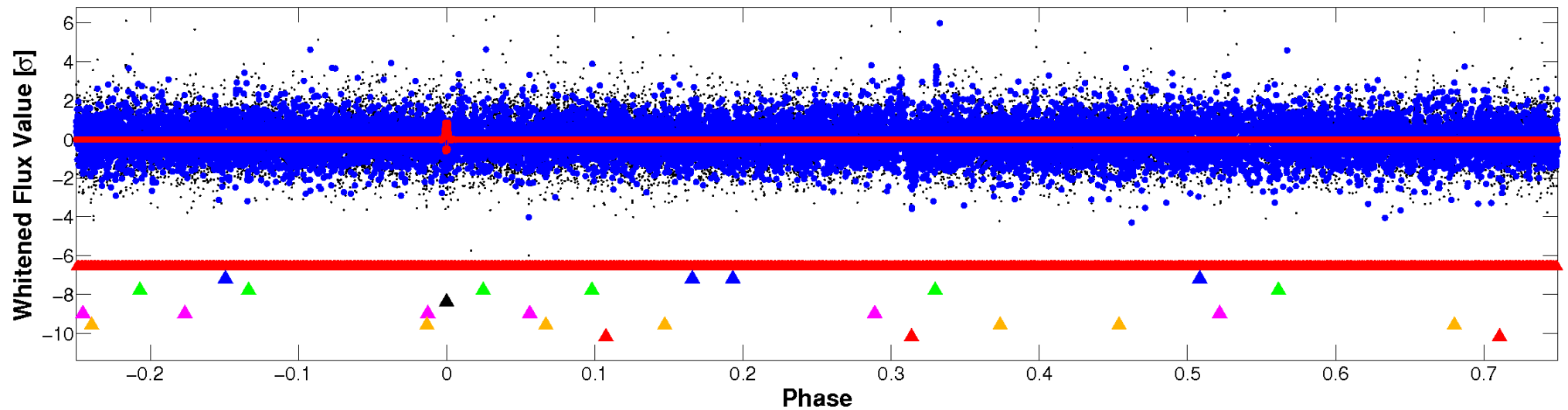


Non-Whitened Vs. Whitened Light Curve

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

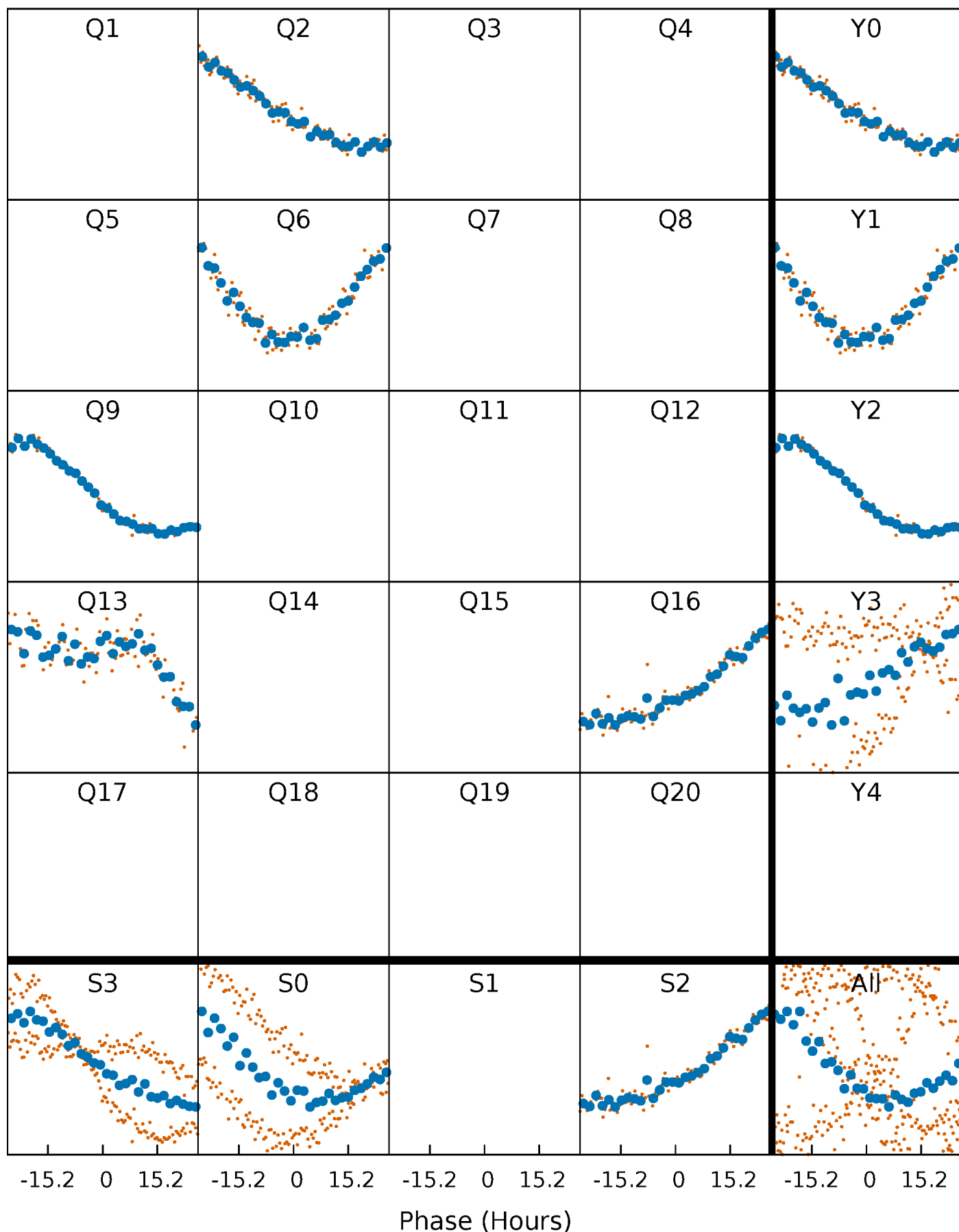


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



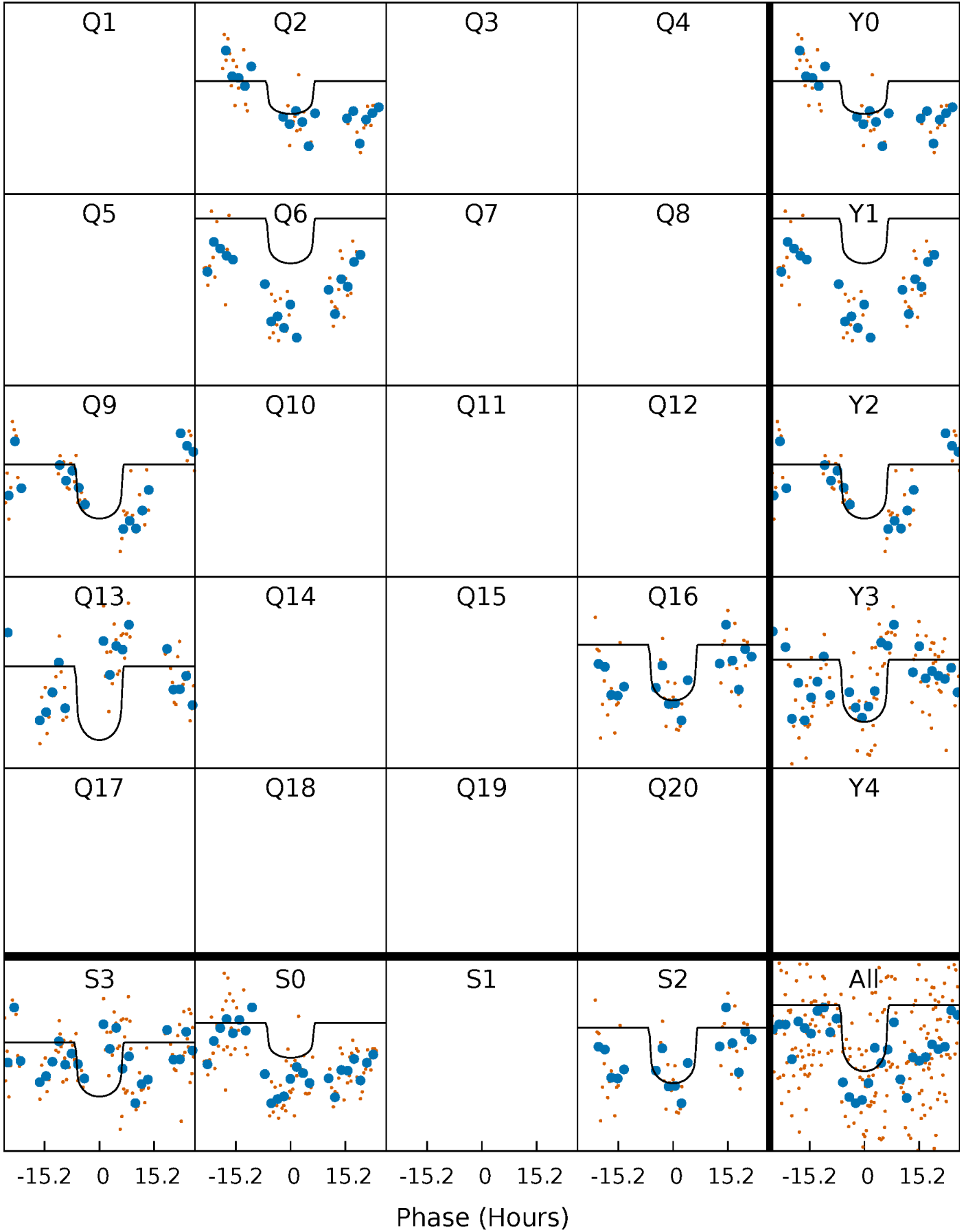
PDC Quarter-Phased Transit Curves

TCE 003228986-04 P=321.835502 Days $T_0=226.050599$ (BKJD)



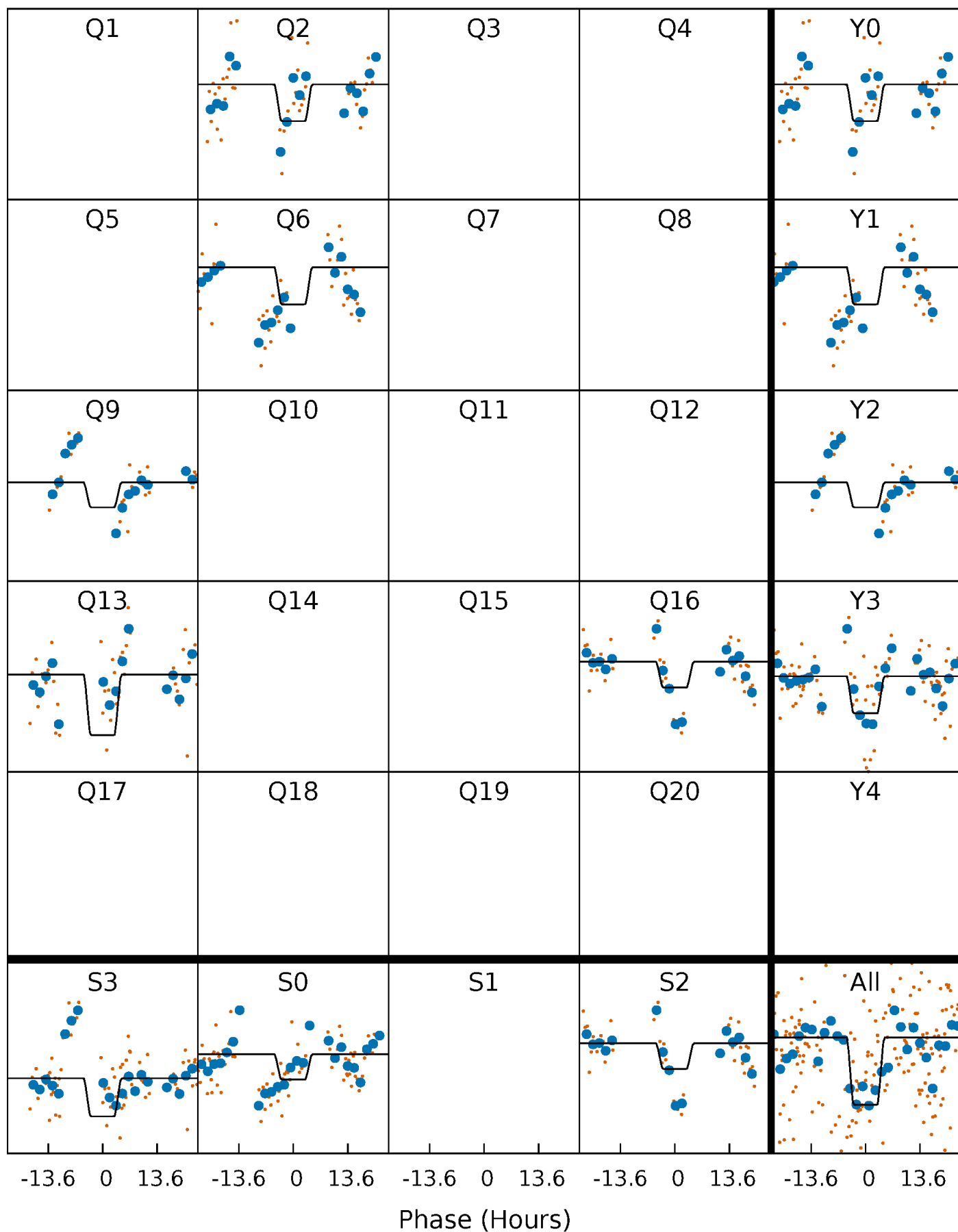
DV Quarter-Phased Transit Curves

TCE 003228986-04 $P=321.835502$ Days $T_0=226.050599$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

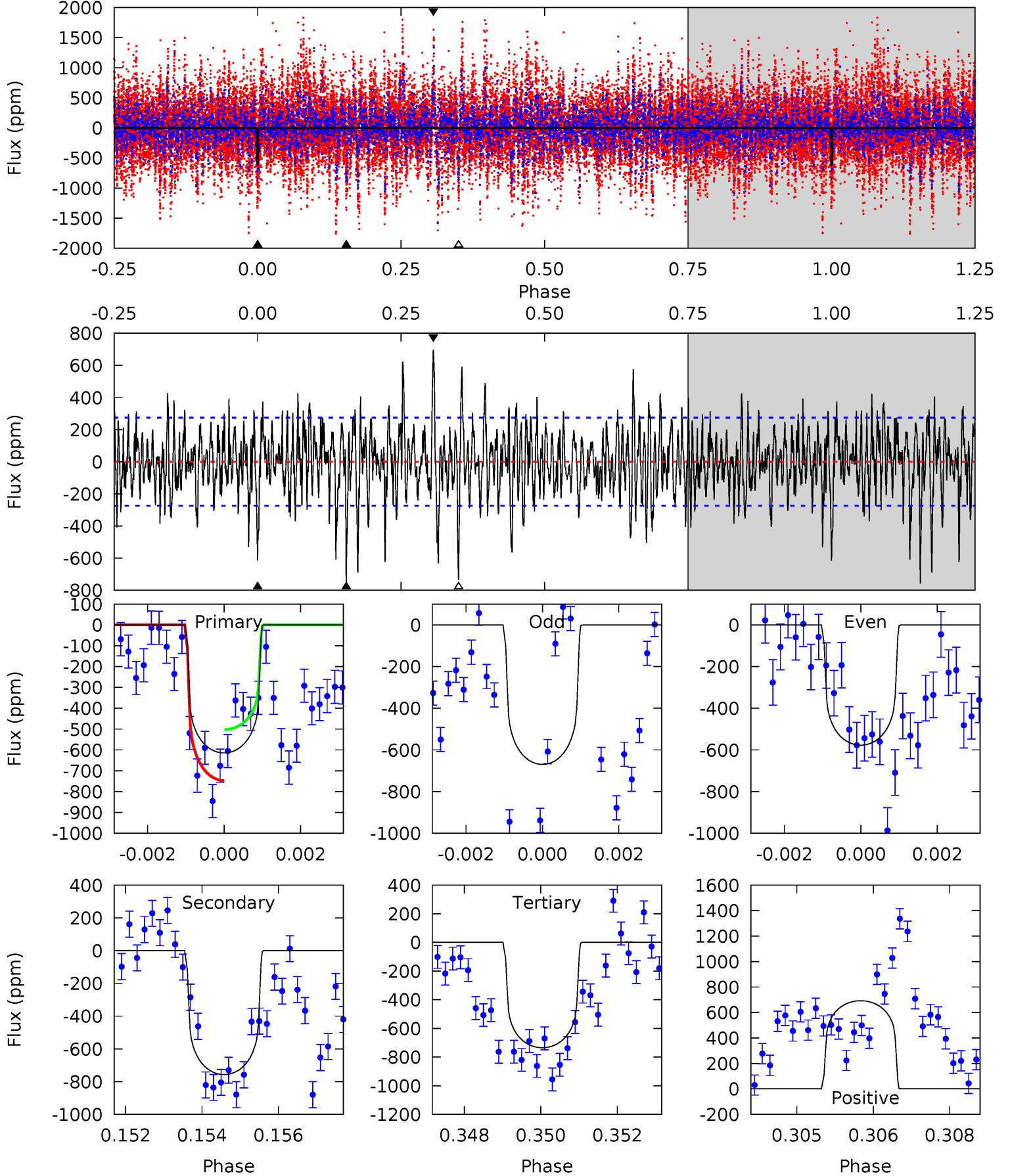
TCE 003228986-04 $P=321.821759$ Days $T_0=226.157666$ (BKJD)



DV Model-Shift Uniqueness Test

003228986-04, P = 321.835502 Days, E = 226.050599 Days

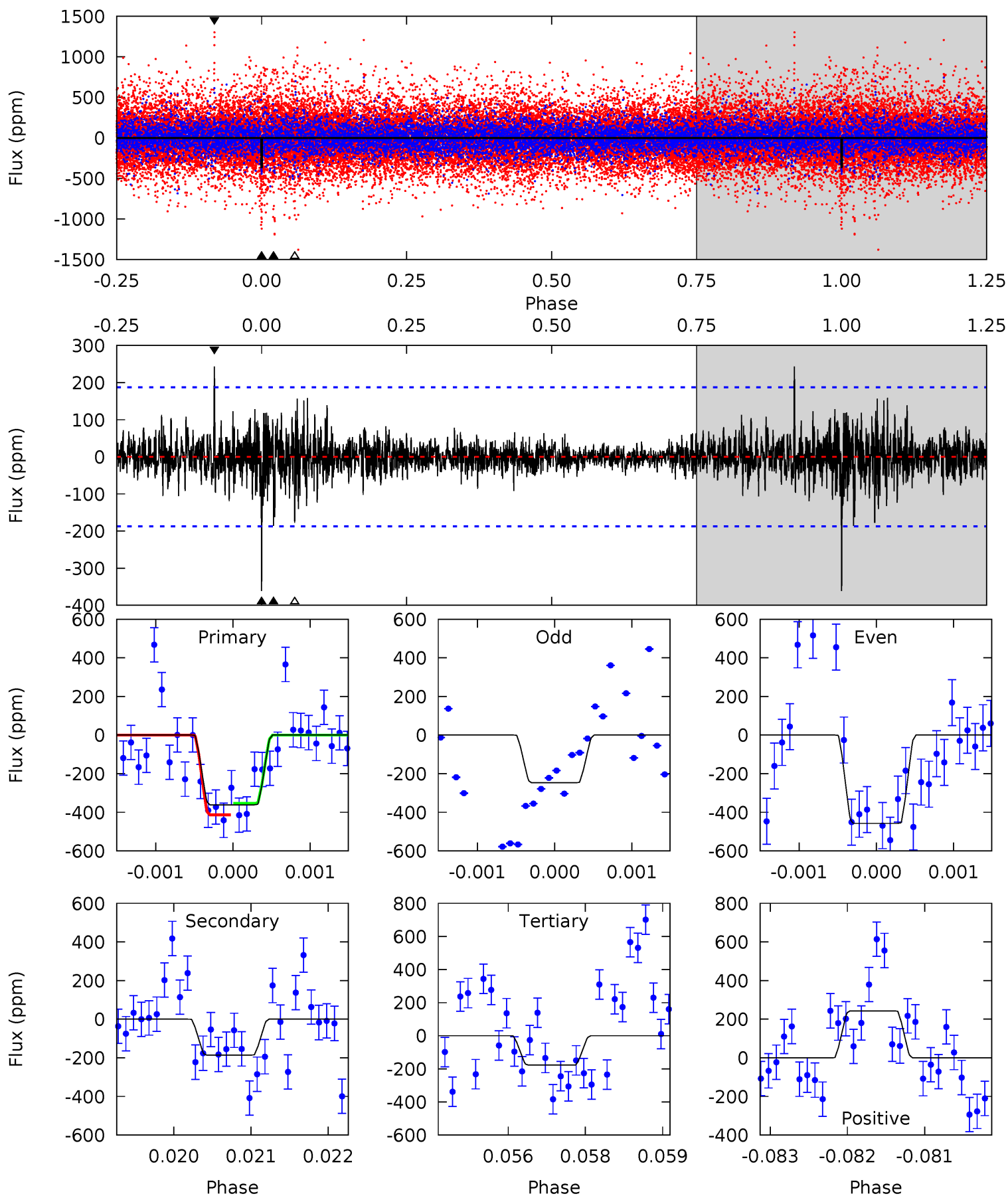
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.0	14.8	14.4	13.5	5.35	3.13	3.54	-2.35	-1.52	0.43	1.26	0.90	1.04	0.48	2.40



Alt Model-Shift Uniqueness Test

003228986-04, P = 321.821759 Days, E = 226.157666 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	5.37	5.12	7.02	5.42	3.23	1.00	5.32	3.42	0.25	-1.65	2.91	1.56	0.40	0.85



Stellar Parameters For KIC 003228986

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	6238^{+68}_{-87}	$4.365^{+0.040}_{-0.120}$	$0.140^{+0.150}_{-0.200}$	$1.191^{+0.198}_{-0.085}$	$1.204^{+0.076}_{-0.093}$	$1.003^{+0.199}_{-0.347}$
	+1%/-1%	+1%/-3%	+107%/-143%	+17%/-7%	+6%/-8%	+20%/-35%
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 003228986-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-757 ± 51	$2.90^{+0.93}_{-0.87}$	429^{+18}_{-11}	7058^{+1613}_{-937}	46939^{+49011}_{-19984}
Alt.	-186 ± 35	$2.67^{+0.91}_{-0.86}$	428^{+16}_{-11}	5173^{+1081}_{-576}	13522^{+15669}_{-6193}

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

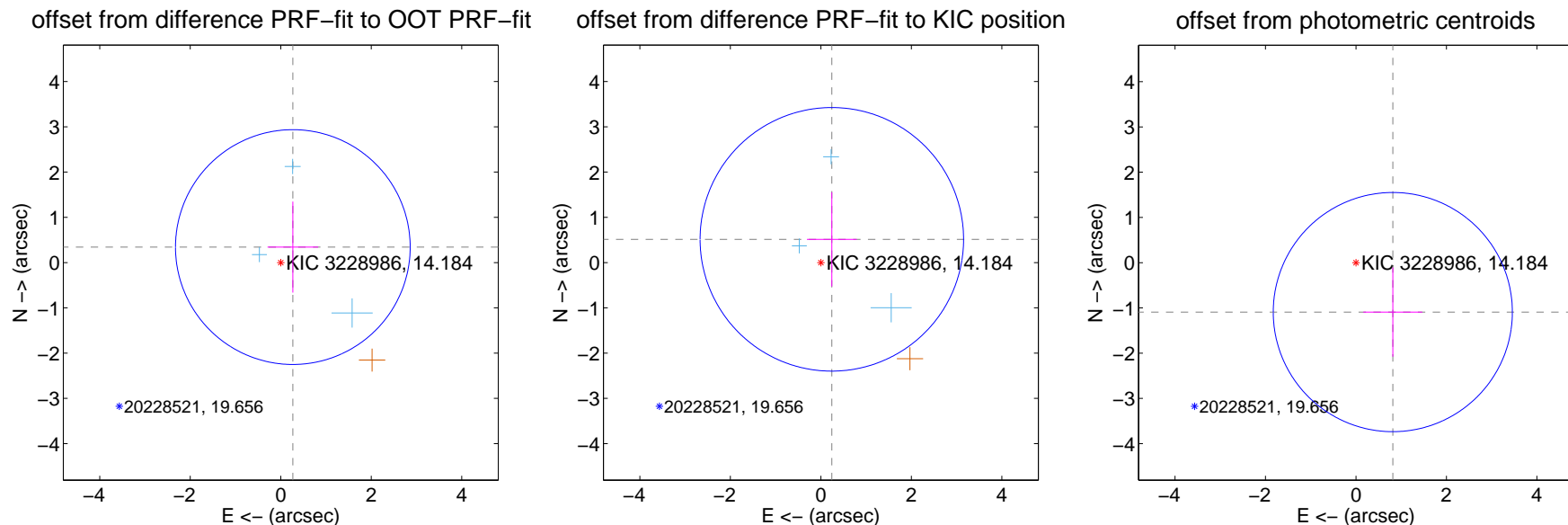
DV Centroid Data

Supplemental centroid analysis for 003228986-04. Kepler magnitude: 14.18. Transit SNR 5.18

There are 3 quarters with good PRF difference image offsets

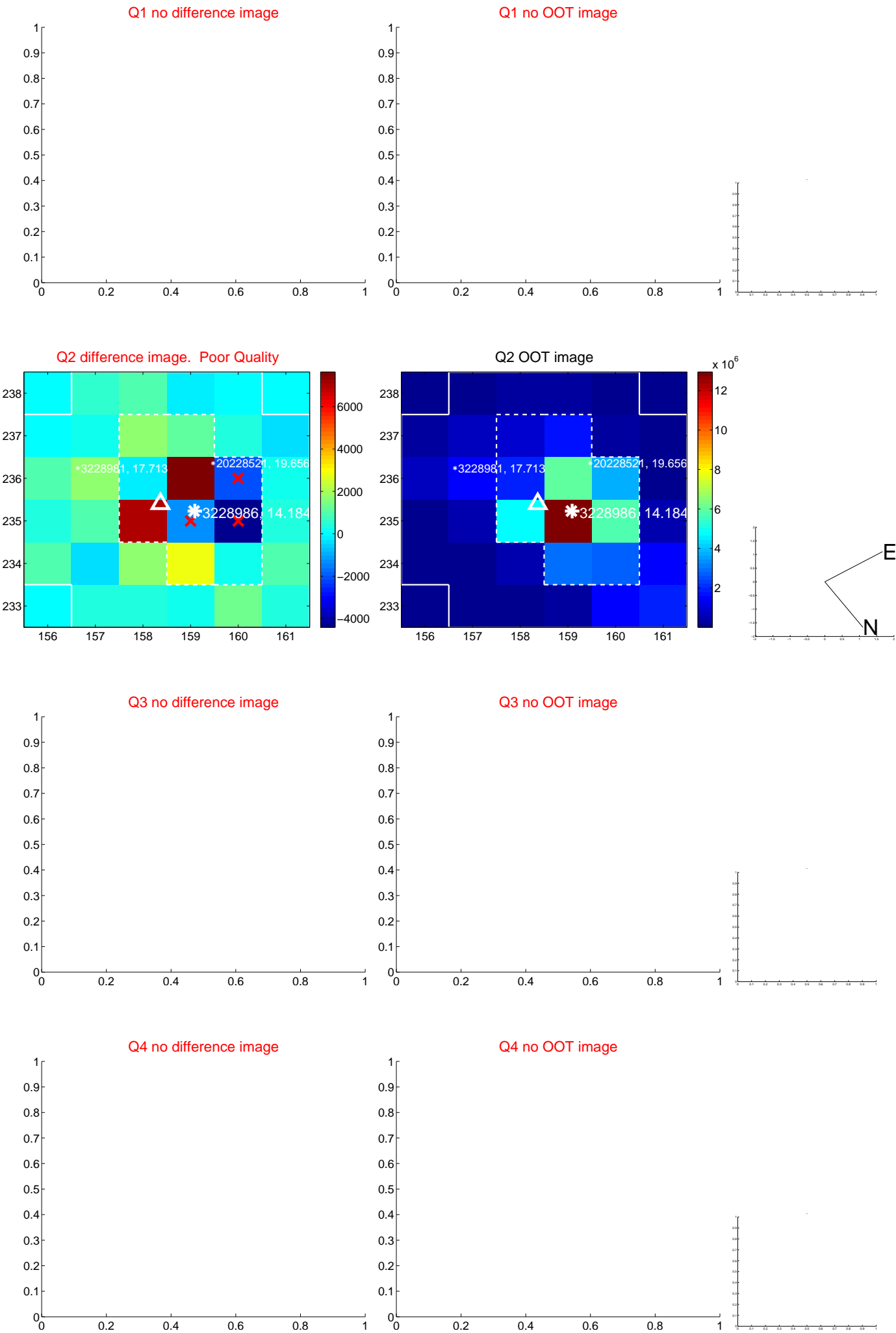
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.435 ± 0.865	0.50	-0.267 ± 0.559	0.343 ± 1.006
PRF-fit source offset from KIC position	0.568 ± 0.971	0.59	-0.242 ± 0.550	0.514 ± 1.041
photometric centroid source offset	1.36 ± 0.88	1.55	-0.81 ± 0.65	-1.09 ± 0.99

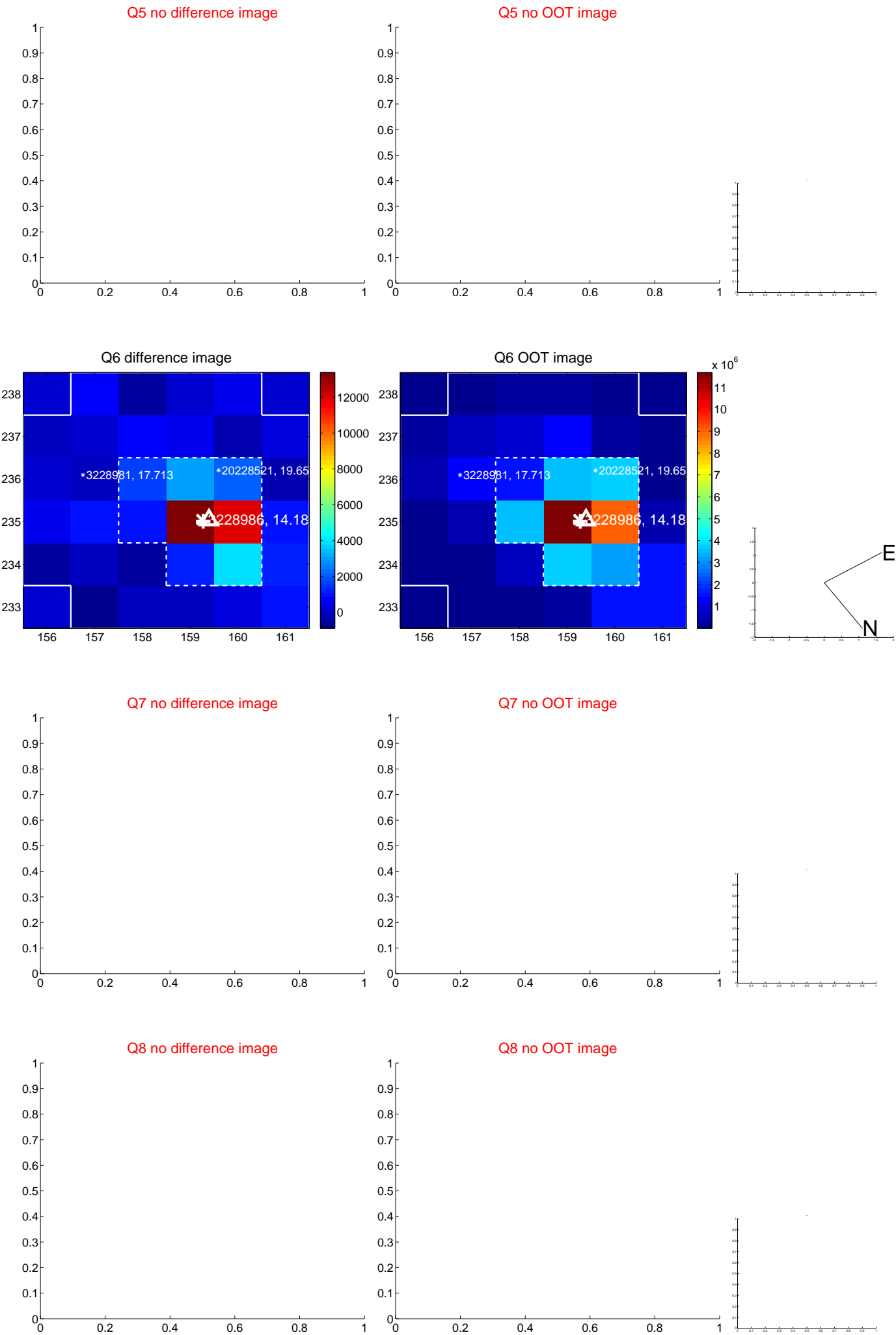


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

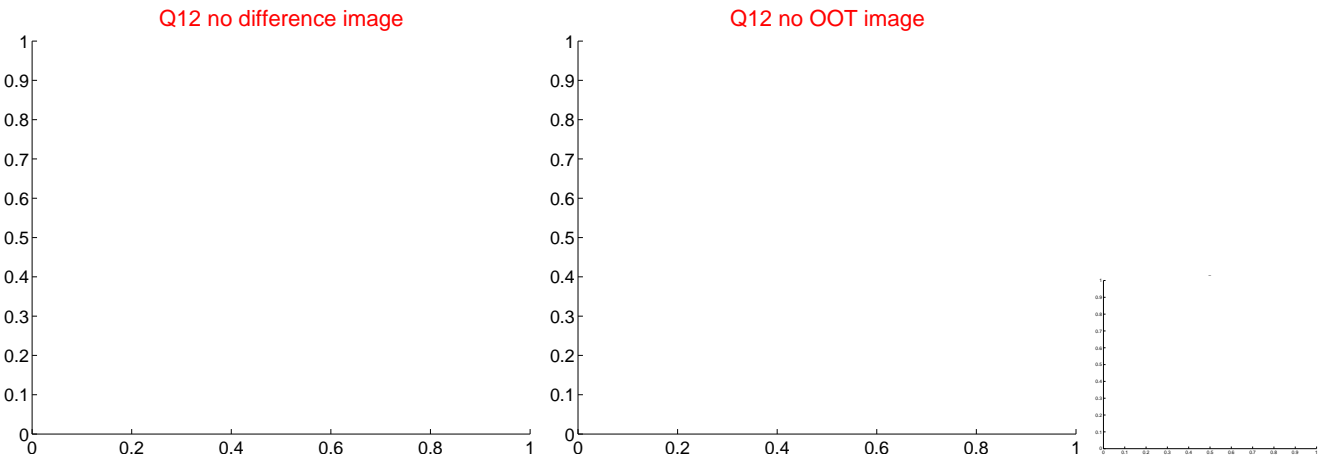
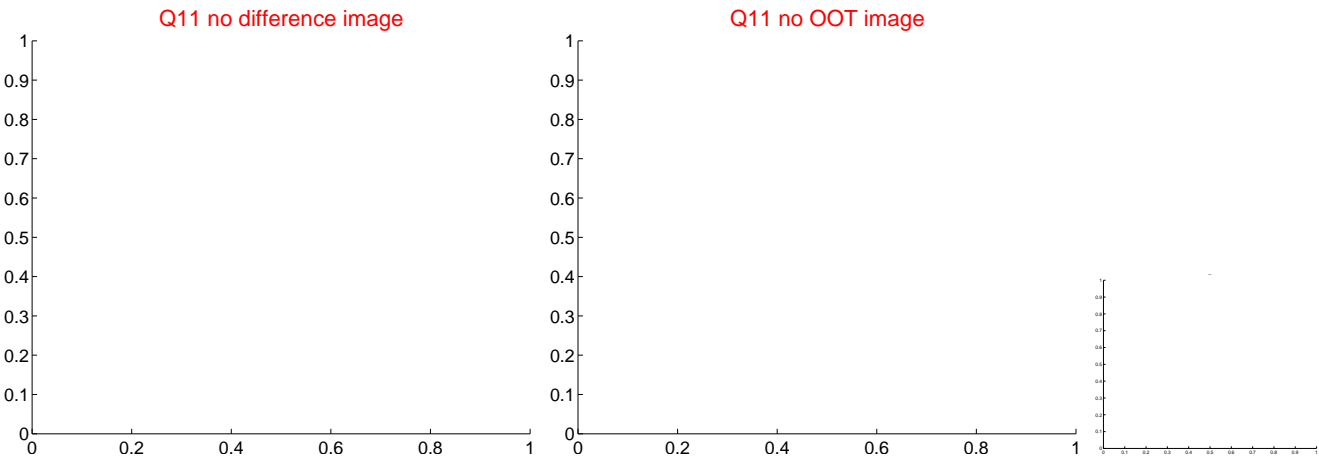
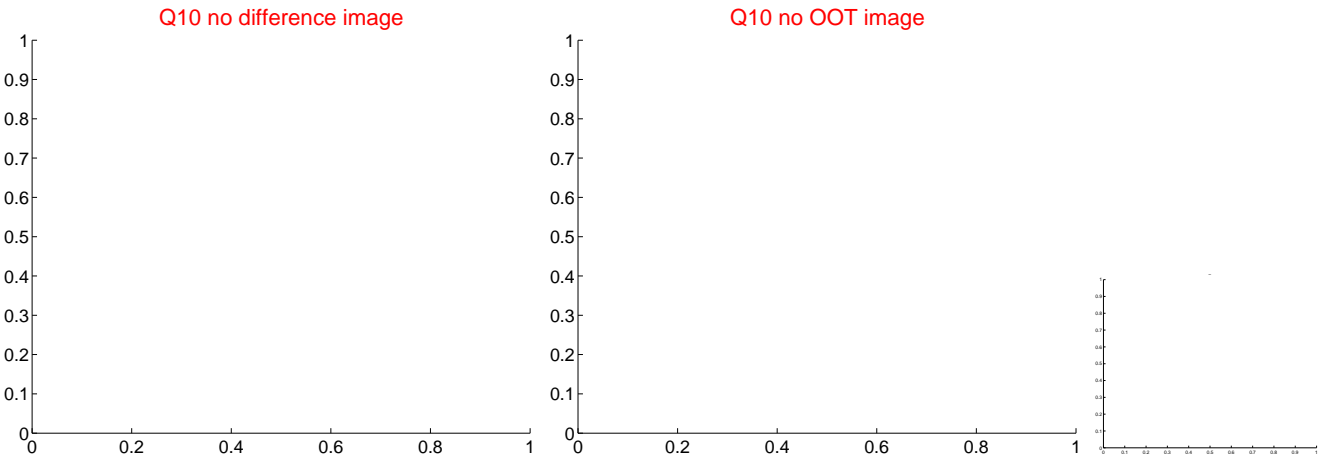
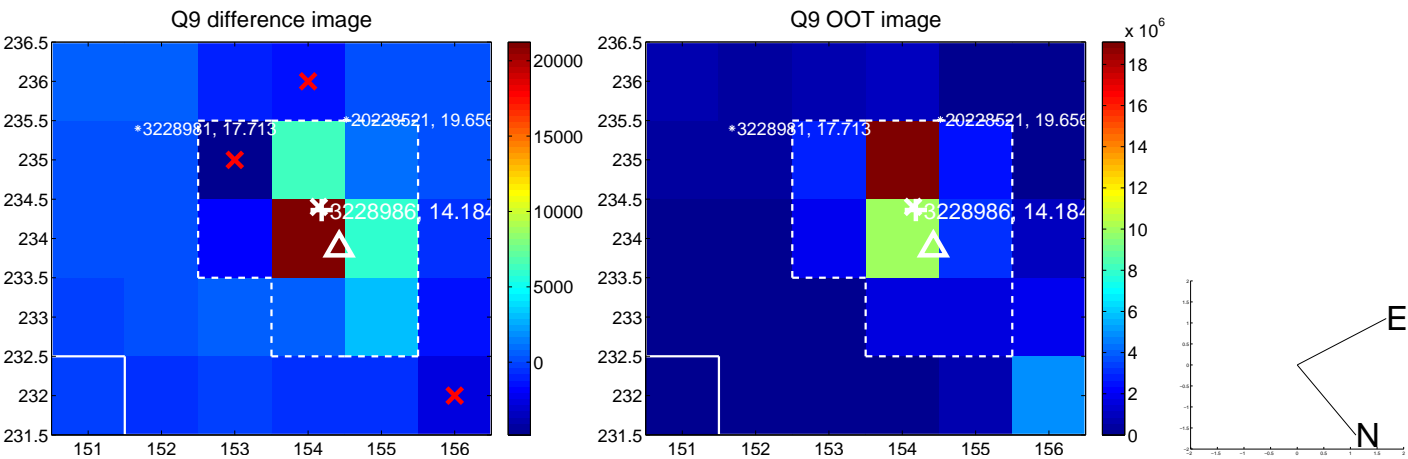
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



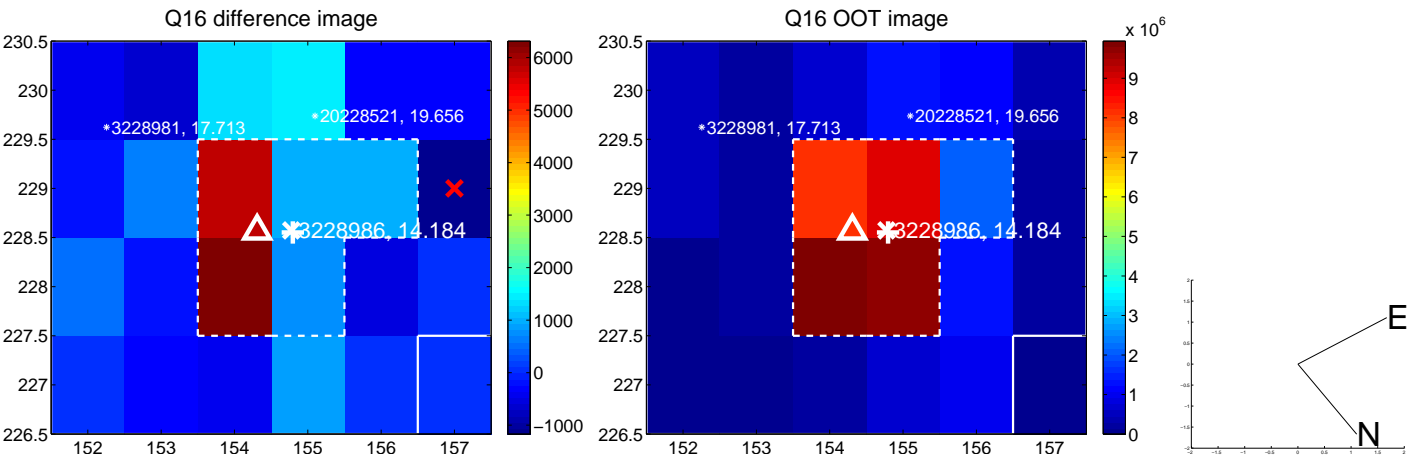
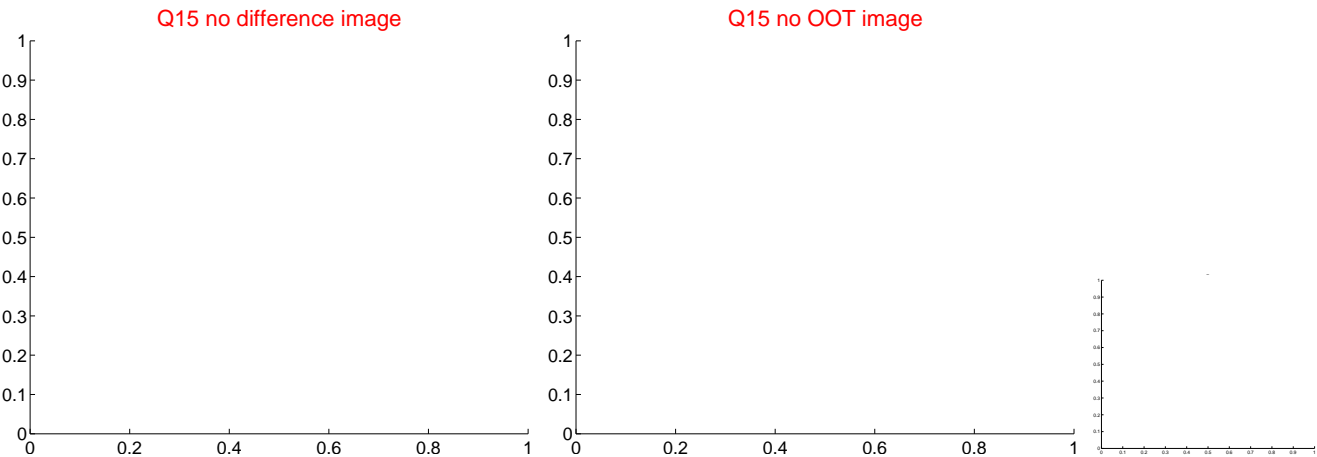
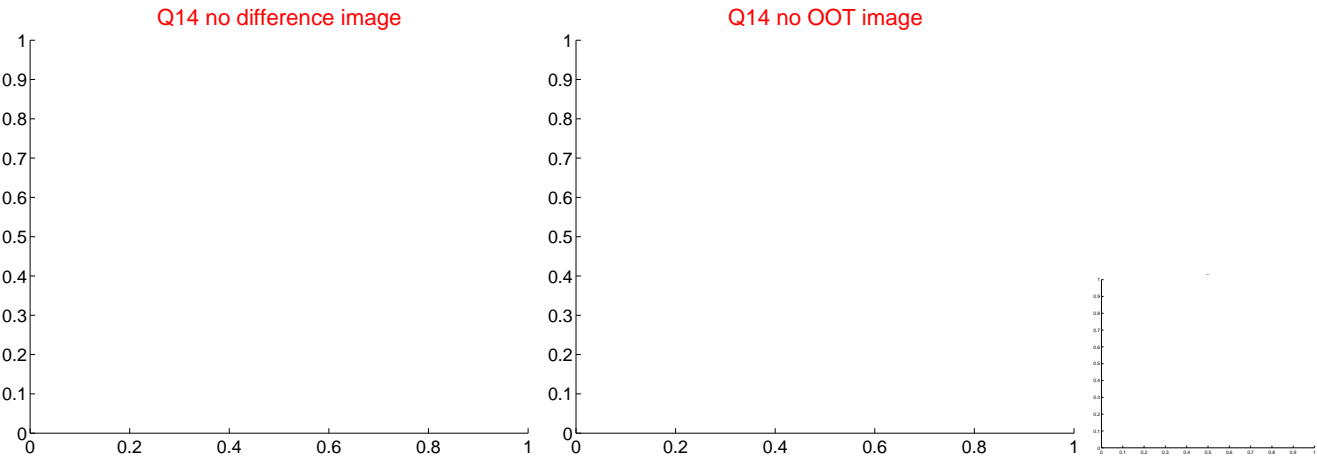
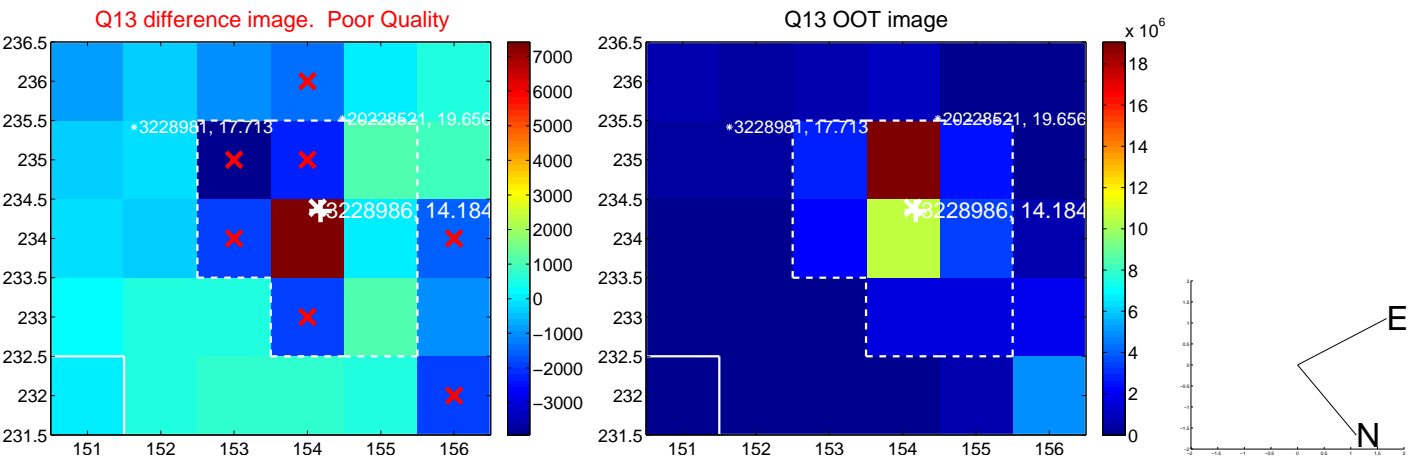
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



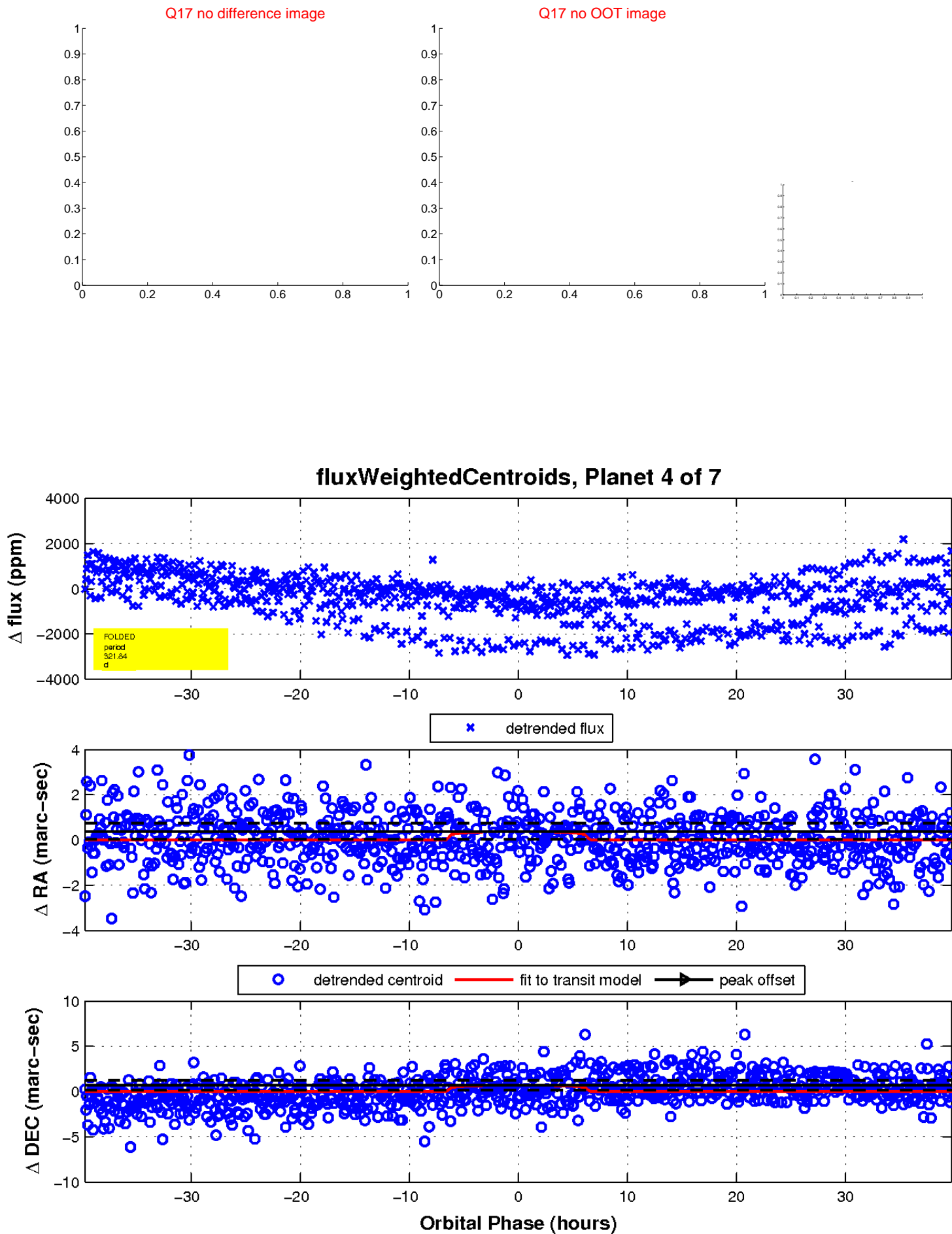
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

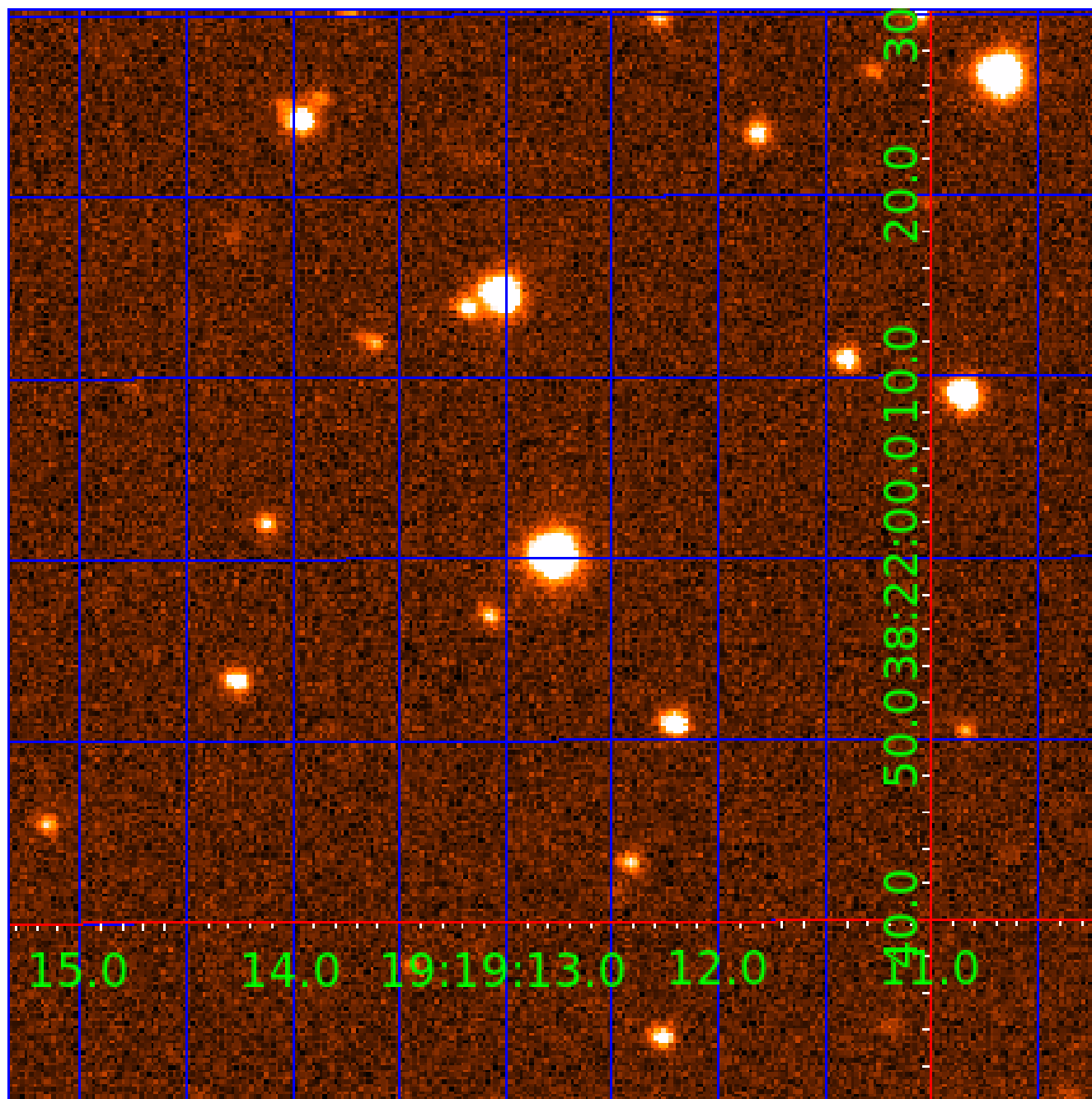


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003228986

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})
003228986-01	OBS	4031.01	0.730966	132.219395	63.7	2.981	18.9	18.6	1.19	6238	0.98	6758.04
003228986-02	OBS	No	432.043981	279.433266	4647.8	55.770	15.8	9.8	1.19	6238	10.69	1.36
003228986-03	OBS	No	247.279104	233.999456	546.5	9.531	8.8	6.3	1.19	6238	2.94	2.87
003228986-04	OBS	No	321.835502	226.050599	487.7	13.269	8.4	5.2	1.19	6238	2.82	2.02
003228986-05	OBS	No	246.915361	221.969229	521.9	1.475	9.4	4.2	1.19	6238	2.97	2.87
003228986-06	OBS	No	223.166868	221.784778	527.0	14.730	13.5	5.9	1.19	6238	5.24	3.29
003228986-07	OBS	No	449.559064	327.040113	797.9	9.586	8.4	7.4	1.19	6238	3.65	1.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003228986-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
003228986-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS
003228986-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
003228986-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—ALL_TRANS_CHASES—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 003228986-05

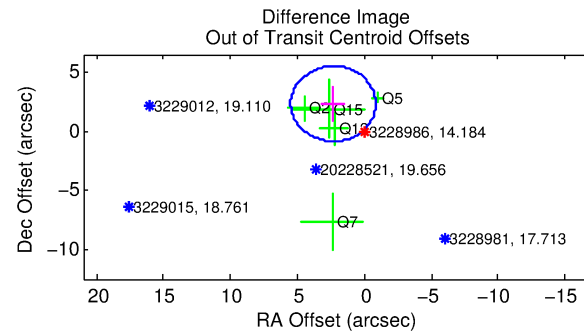
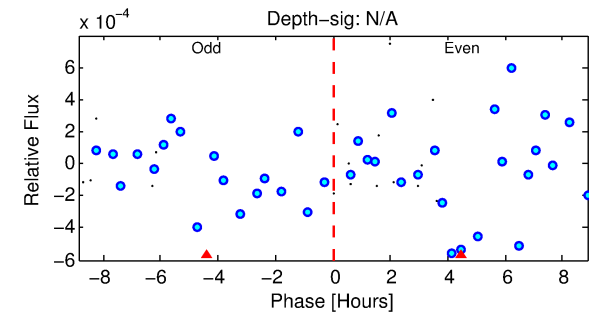
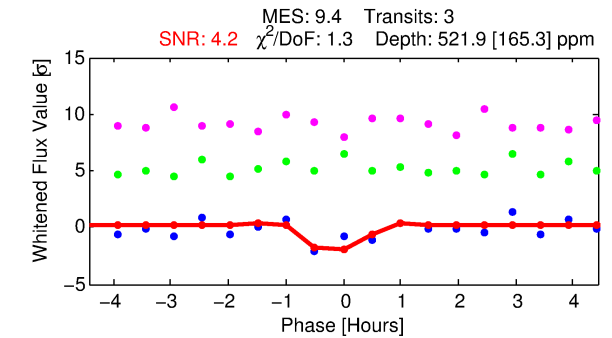
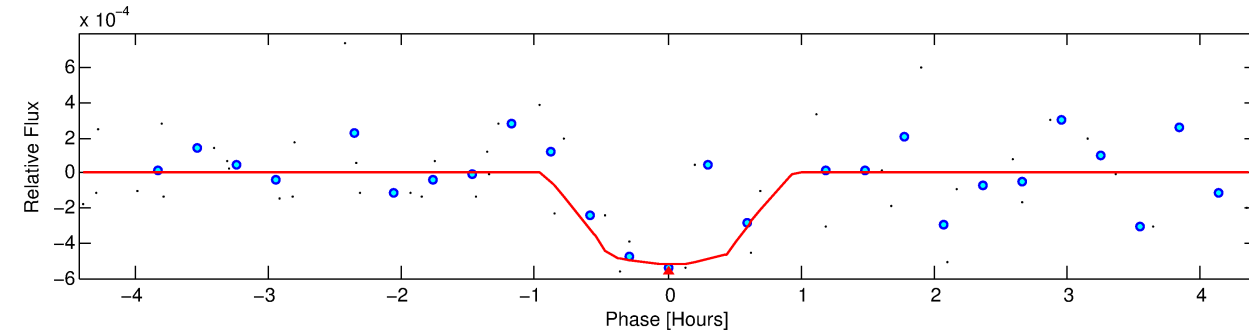
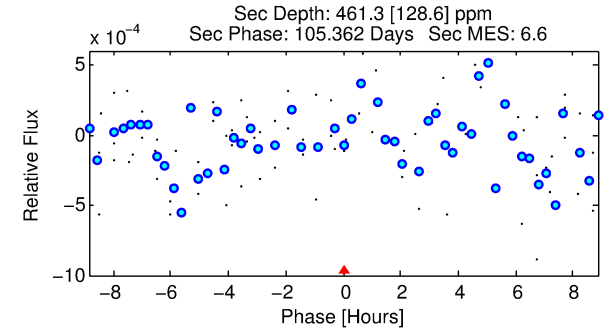
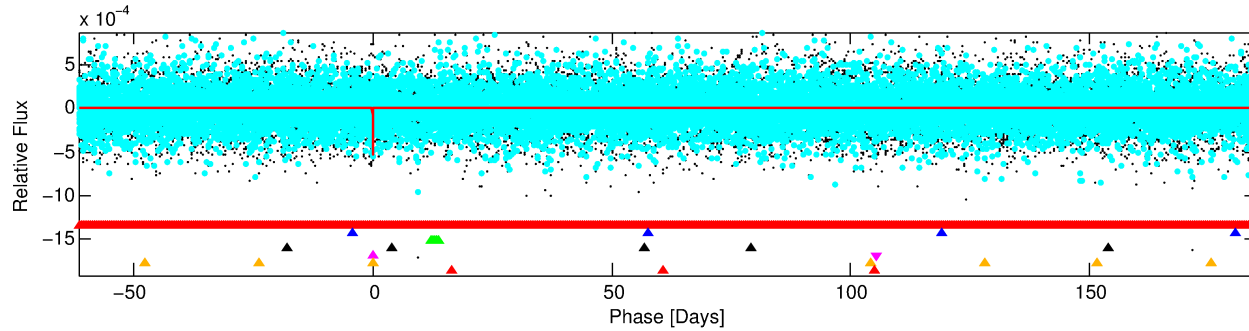
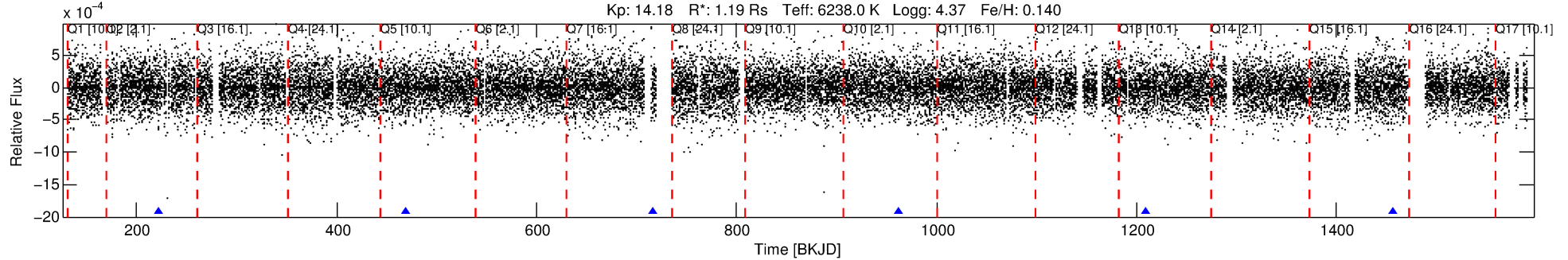
No Significant Match Found

DV One-Page Summary

KIC: 3228986 Candidate: 5 of 7 Period: 246.915 d

KOI: K04031 Corr: No Ephemeris Match

Kp: 14.18 R*: 1.19 Rs Teff: 6238.0 K Logg: 4.37 Fe/H: 0.140



DV Fit Results:

Period = 246.91536 [0.00508] d
Epoch = 221.9692 [0.0118] BKJD
Rp/R* = 0.0228 [0.0606]
a/R* = 886.20 [11624.39]
b = 0.75 [7.66]
Seff = 2.87 [0.64]
Teq = 332 [18] K
Rp = 2.97 [7.90] Re
a = 0.8185 [0.1179] AU
Ag = 19305.01 [102776.05] [0.19σ]
Teffp = 6050 [8046] K [0.71σ]

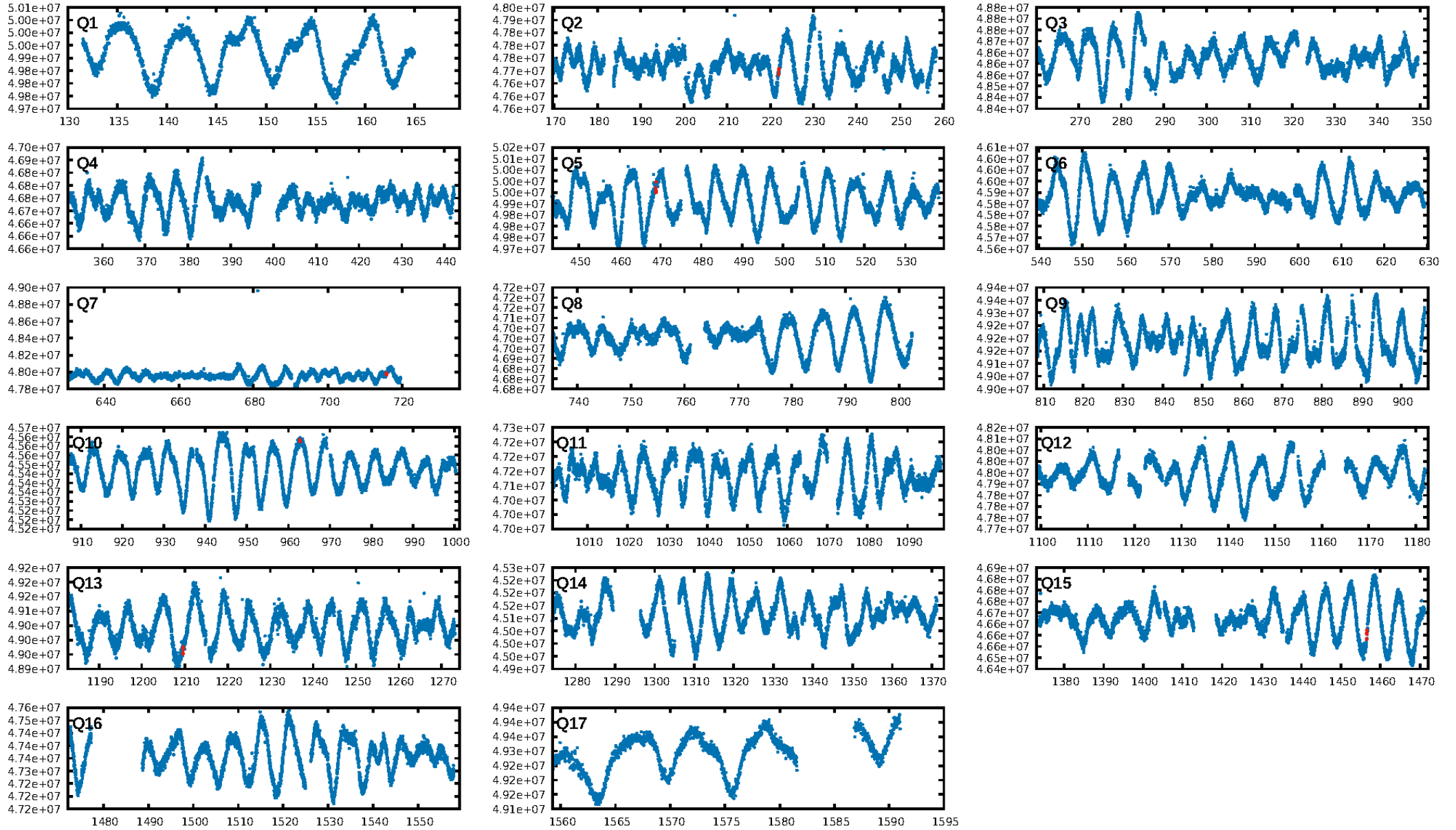
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [38.50σ]
LongPeriod-sig: 63.5% [0.91σ]
ModelChiSquare2-sig: 27.8%
ModelChiSquareGof-sig: 89.5%
Bootstrap-pfa: 8.93e-12
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -4.75
Centroid-sig: 97.6%
Centroid-so: 0.516 arcsec [0.26σ]
OotOffset-rm: 3.290 arcsec [3.11σ]
KicOffset-rm: 3.368 arcsec [2.83σ]
OotOffset-st: 1/2/0/2 [5]
KicOffset-st: 1/2/0/2 [5]
DiffImageQuality-fgm: 0.20 [1/5]
DiffImageOverlap-fno: 0.17 [1/6]

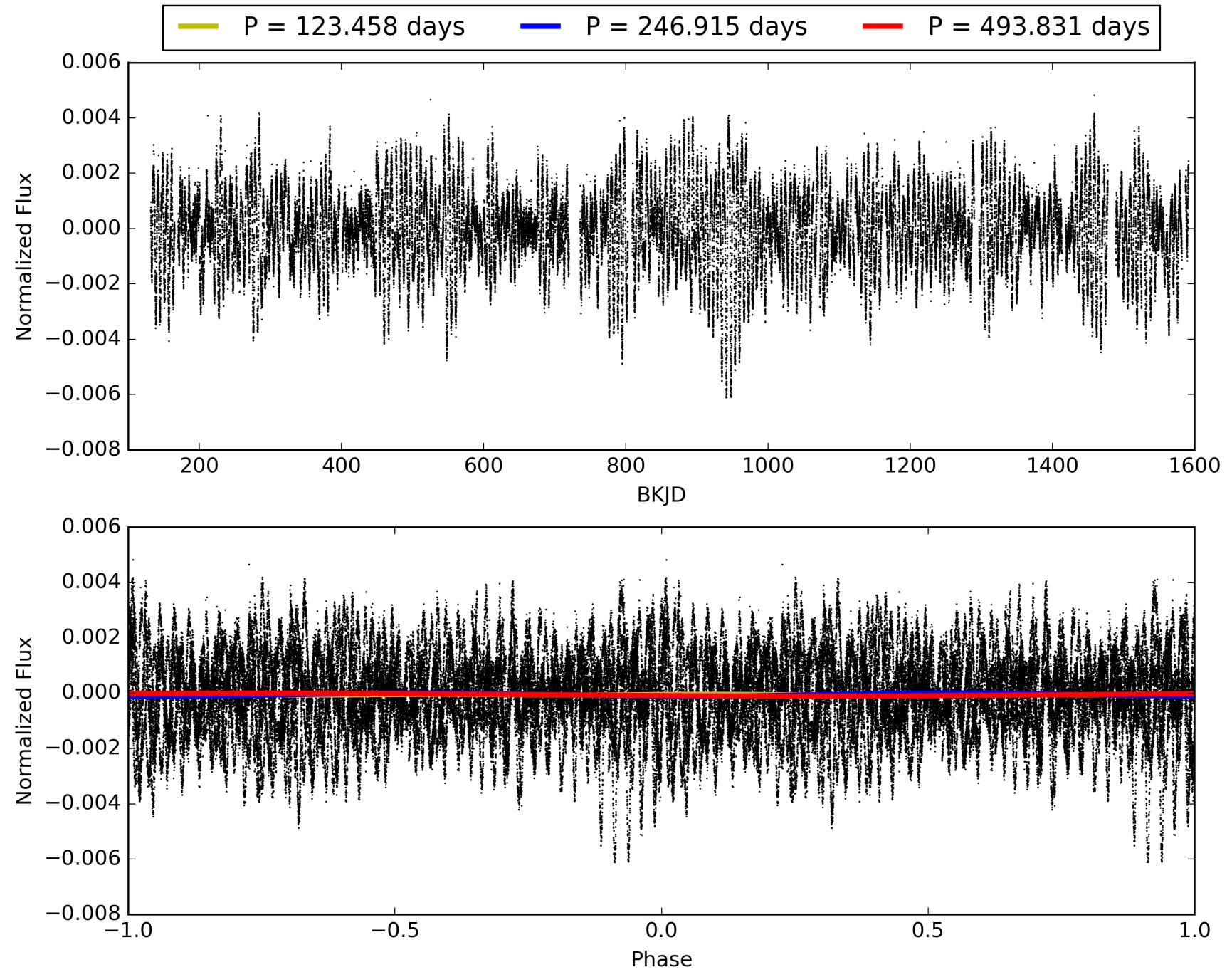
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:37:32 Z

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

TCE 003228986-05, PDC Light Curves

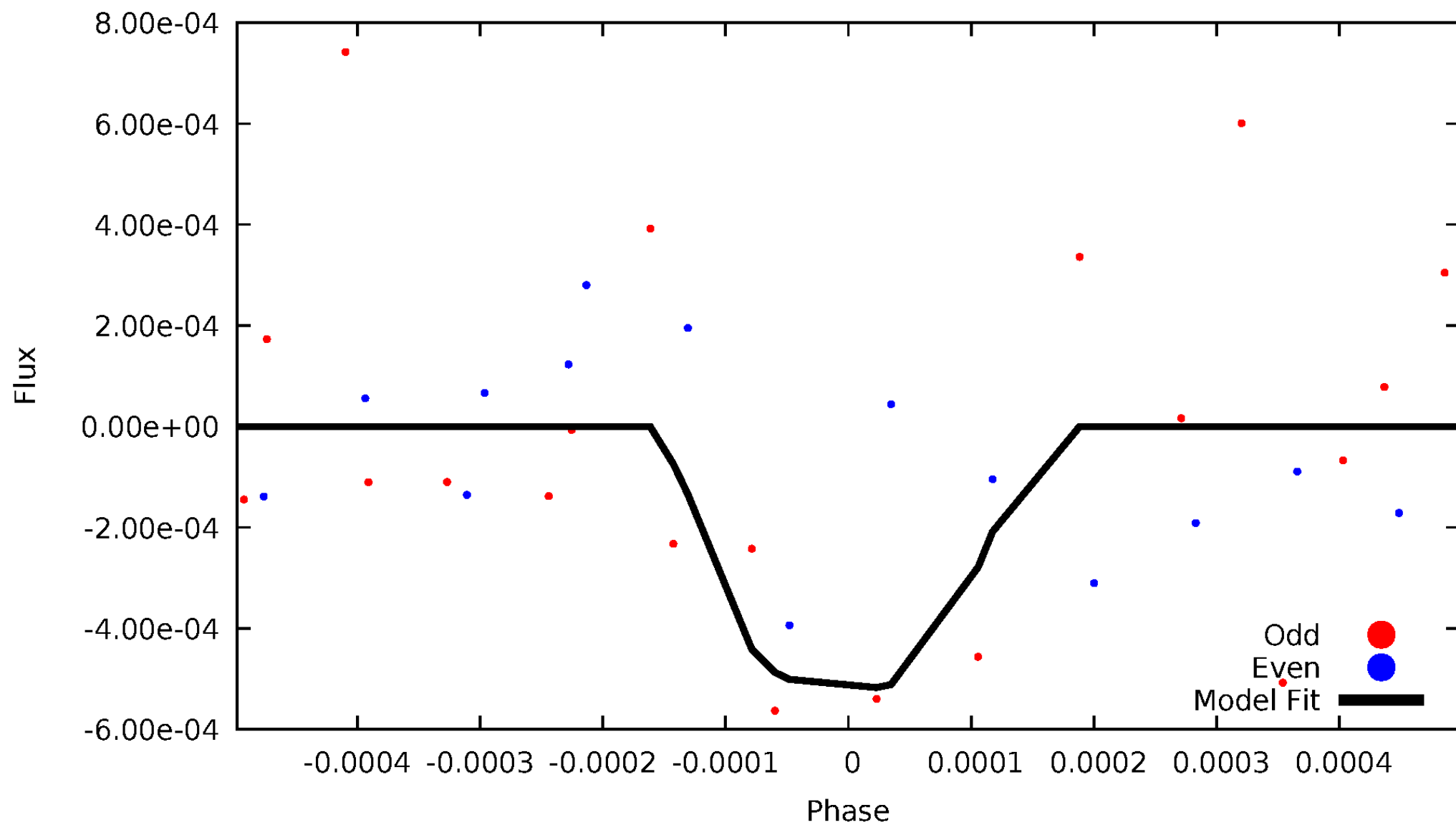


TCE 003228986-05



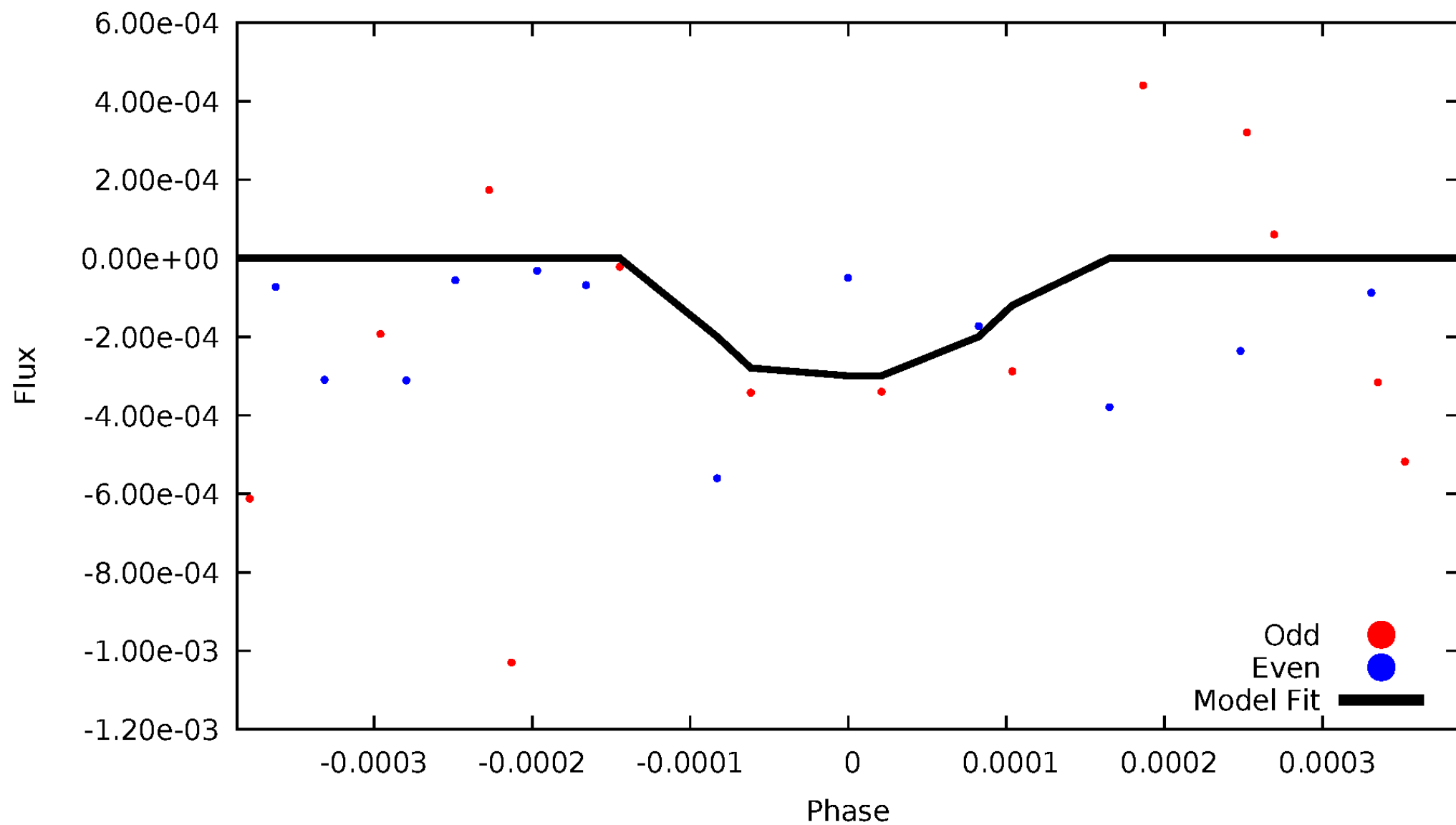
DV Odd/Even

TCE 003228986-05



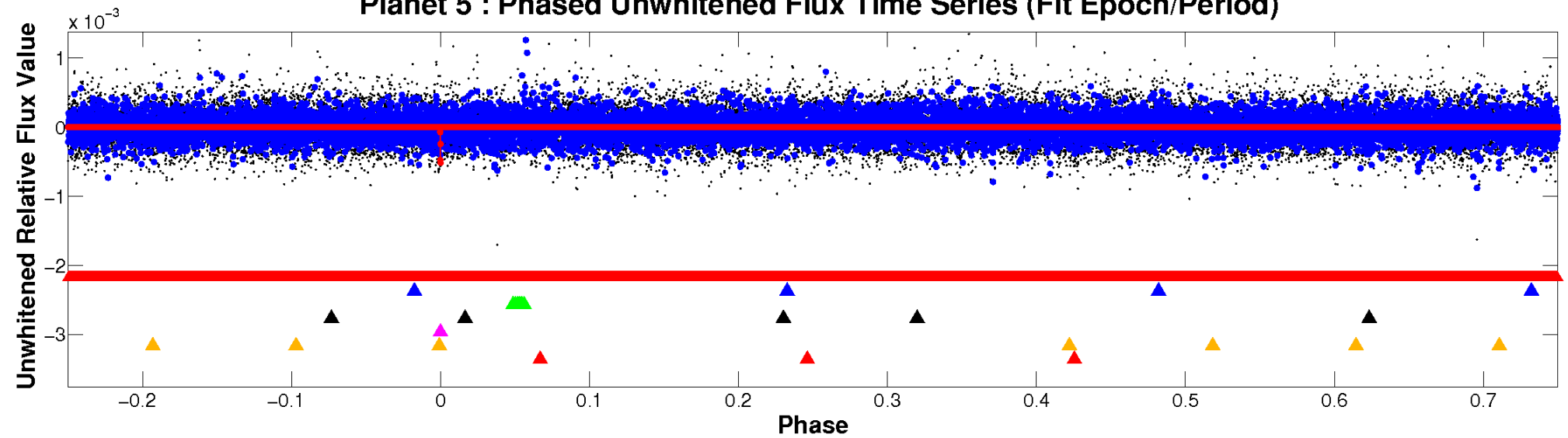
ALT Odd/Even

TCE 003228986-05

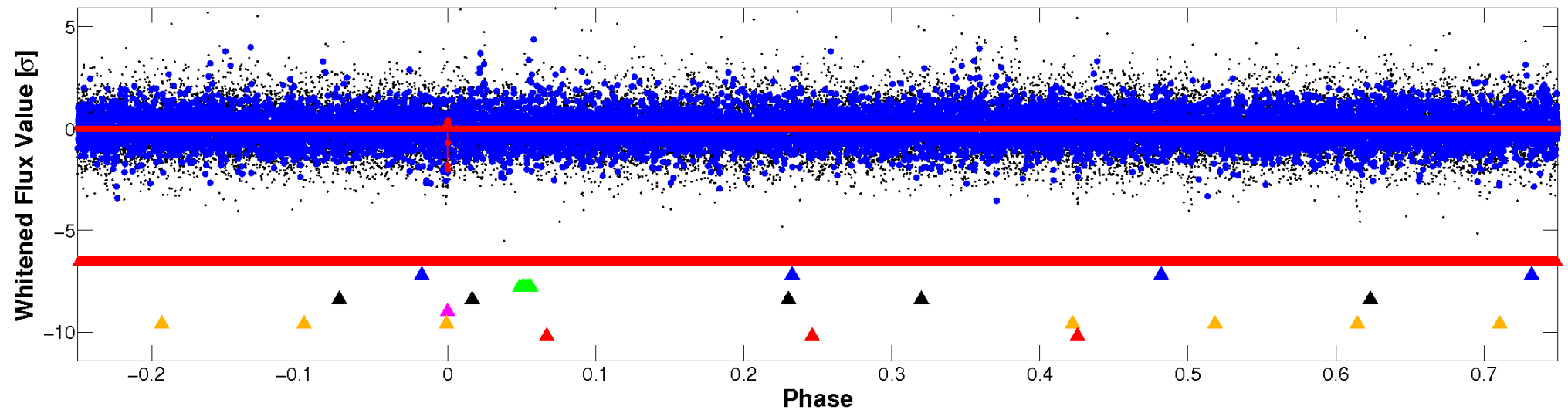


Non-Whitened Vs. Whitened Light Curve

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

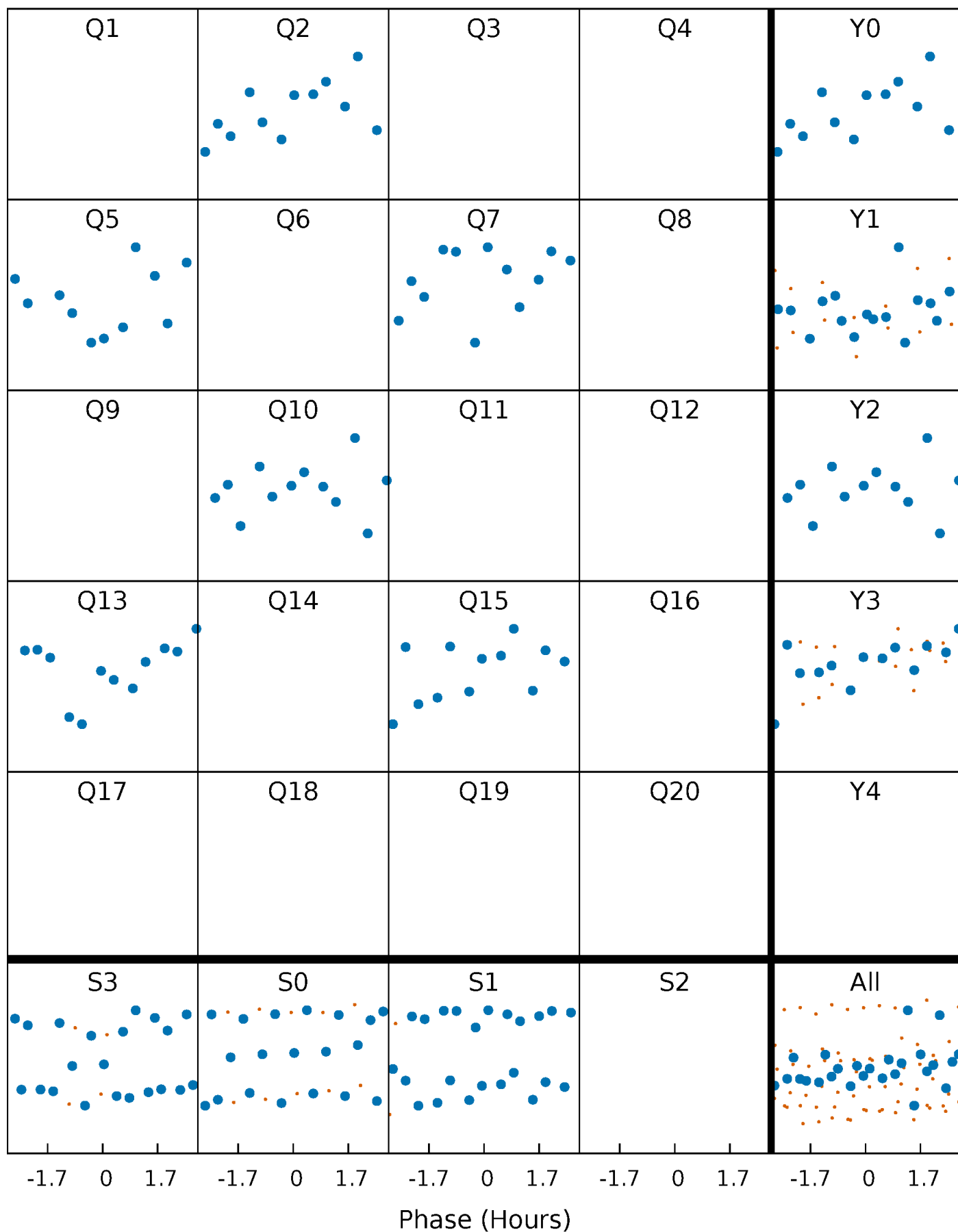


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



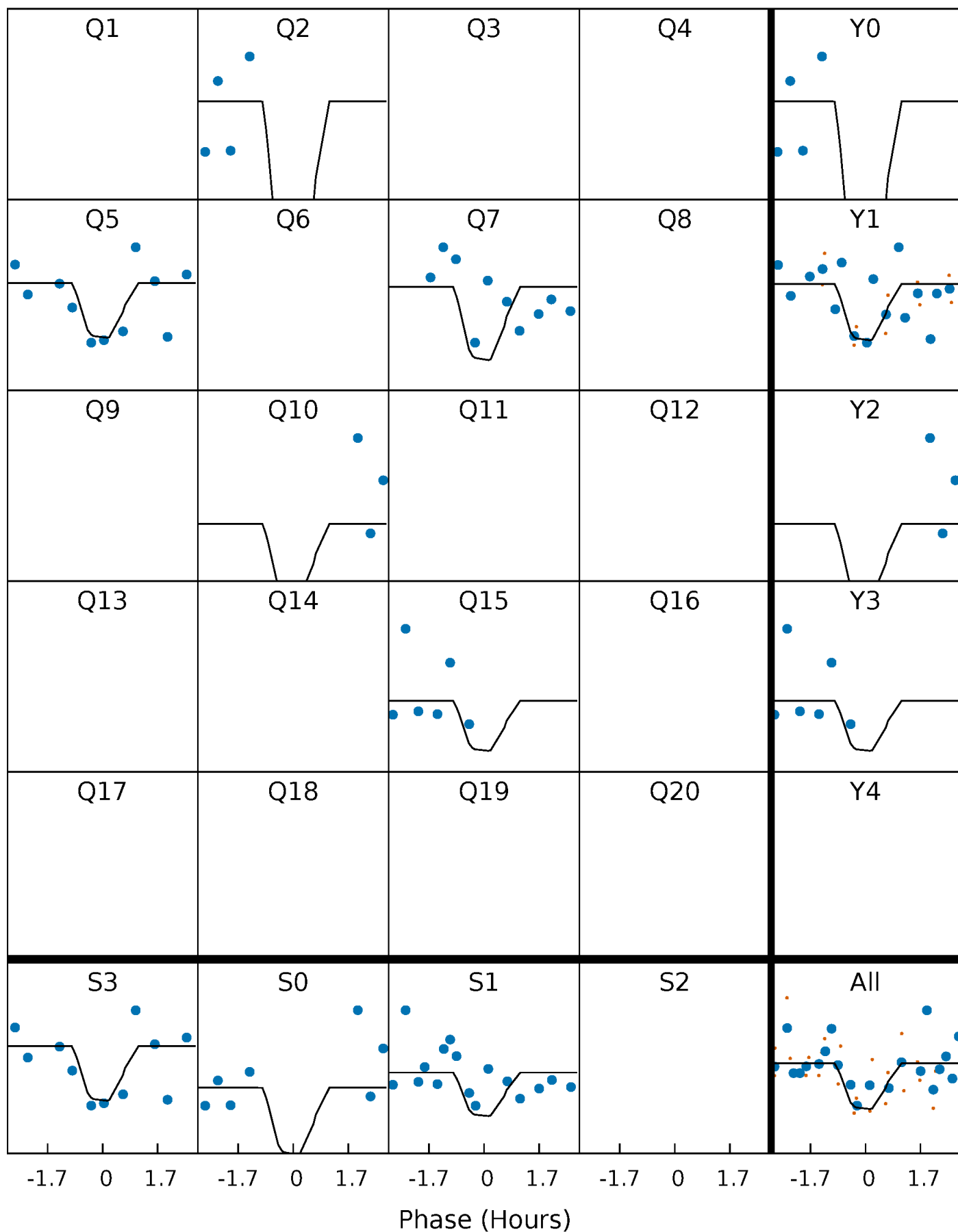
PDC Quarter-Phased Transit Curves

TCE 003228986-05 $P=246.915361$ Days $T_0=221.969230$ (BKJD)



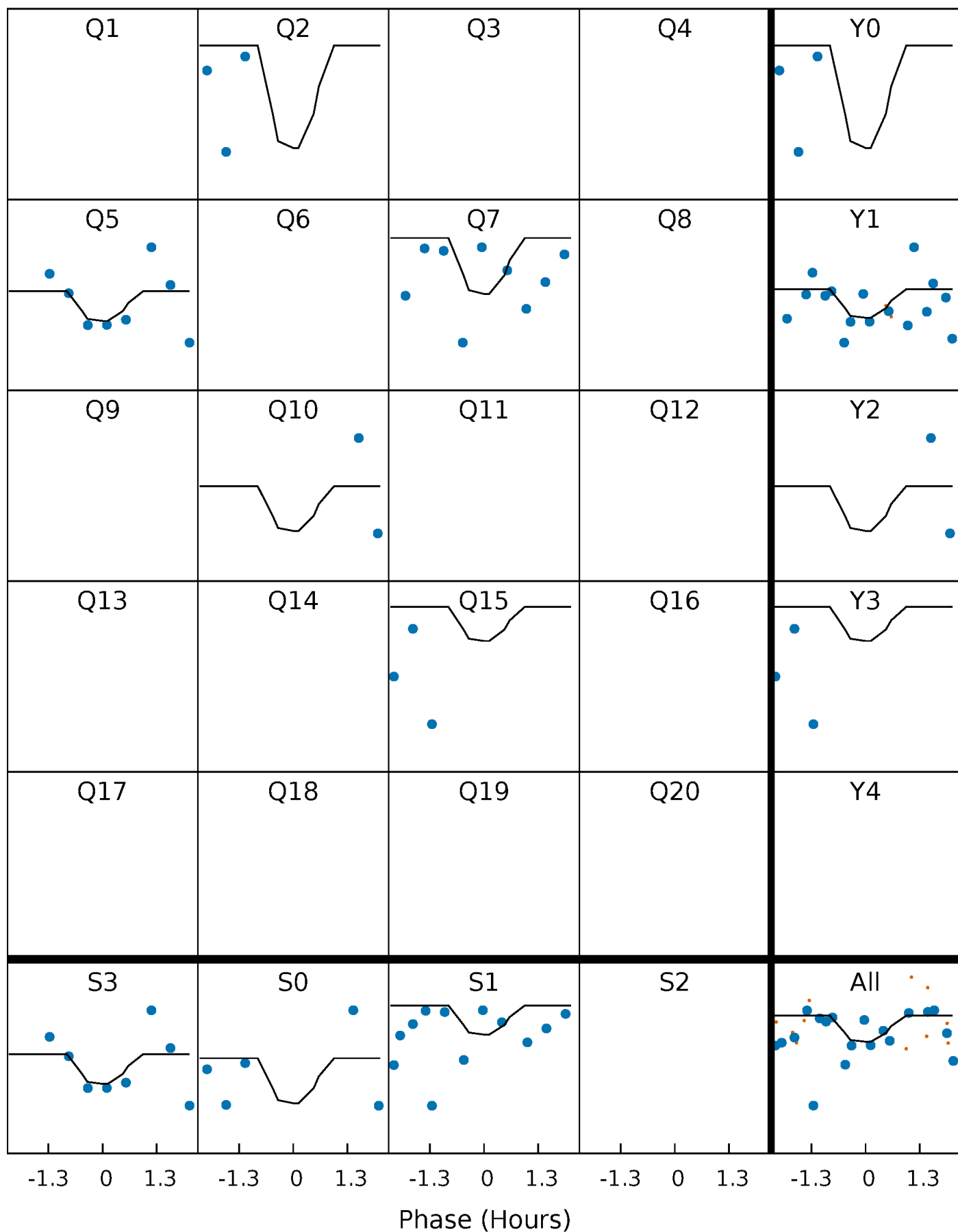
DV Quarter-Phased Transit Curves

TCE 003228986-05 $P=246.915361$ Days $T_0=221.969230$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

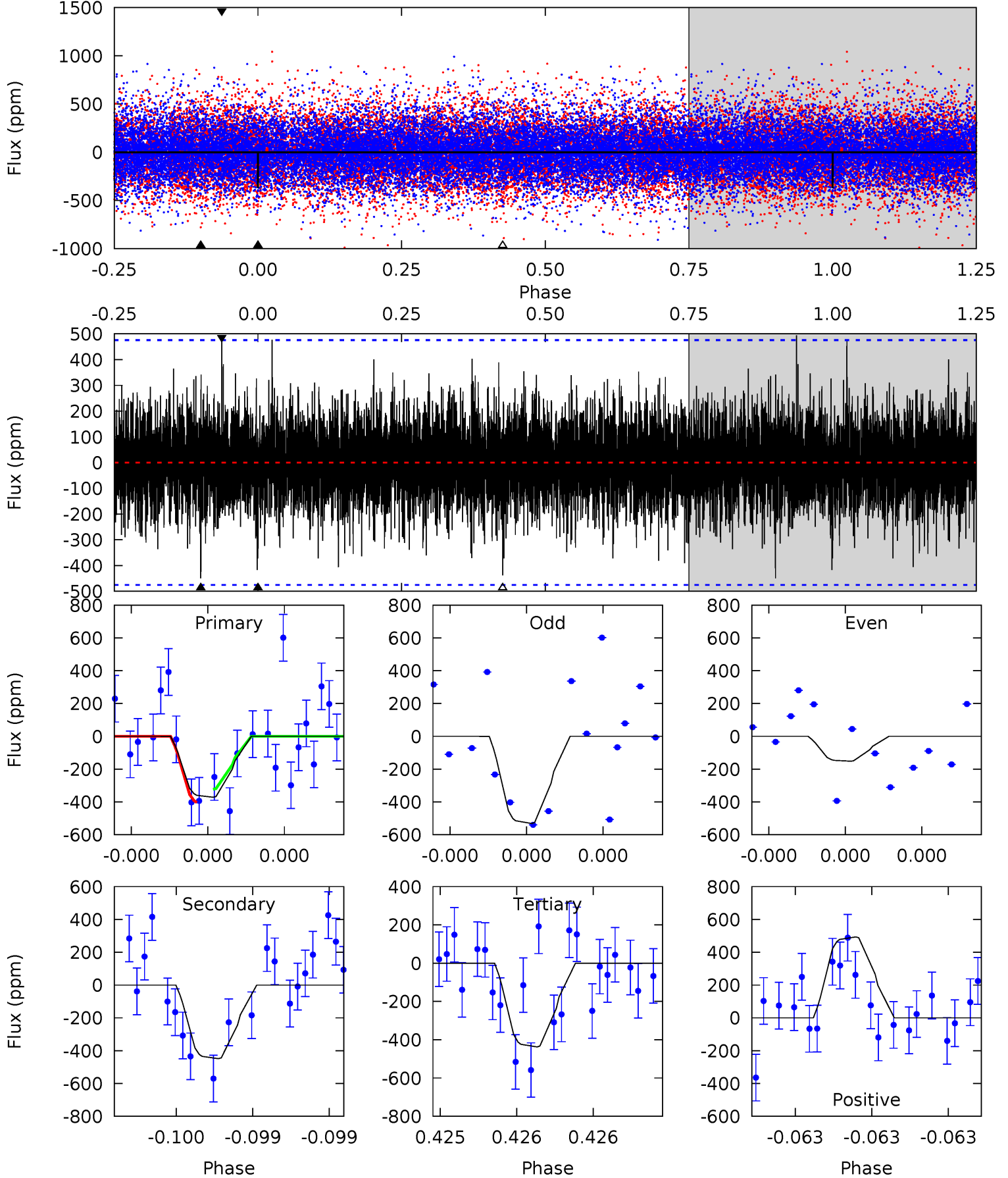
TCE 003228986-05 P=246.923545 Days $T_0=221.961522$ (BKJD)



DV Model-Shift Uniqueness Test

003228986-05, P = 246.915361 Days, E = 221.969230 Days

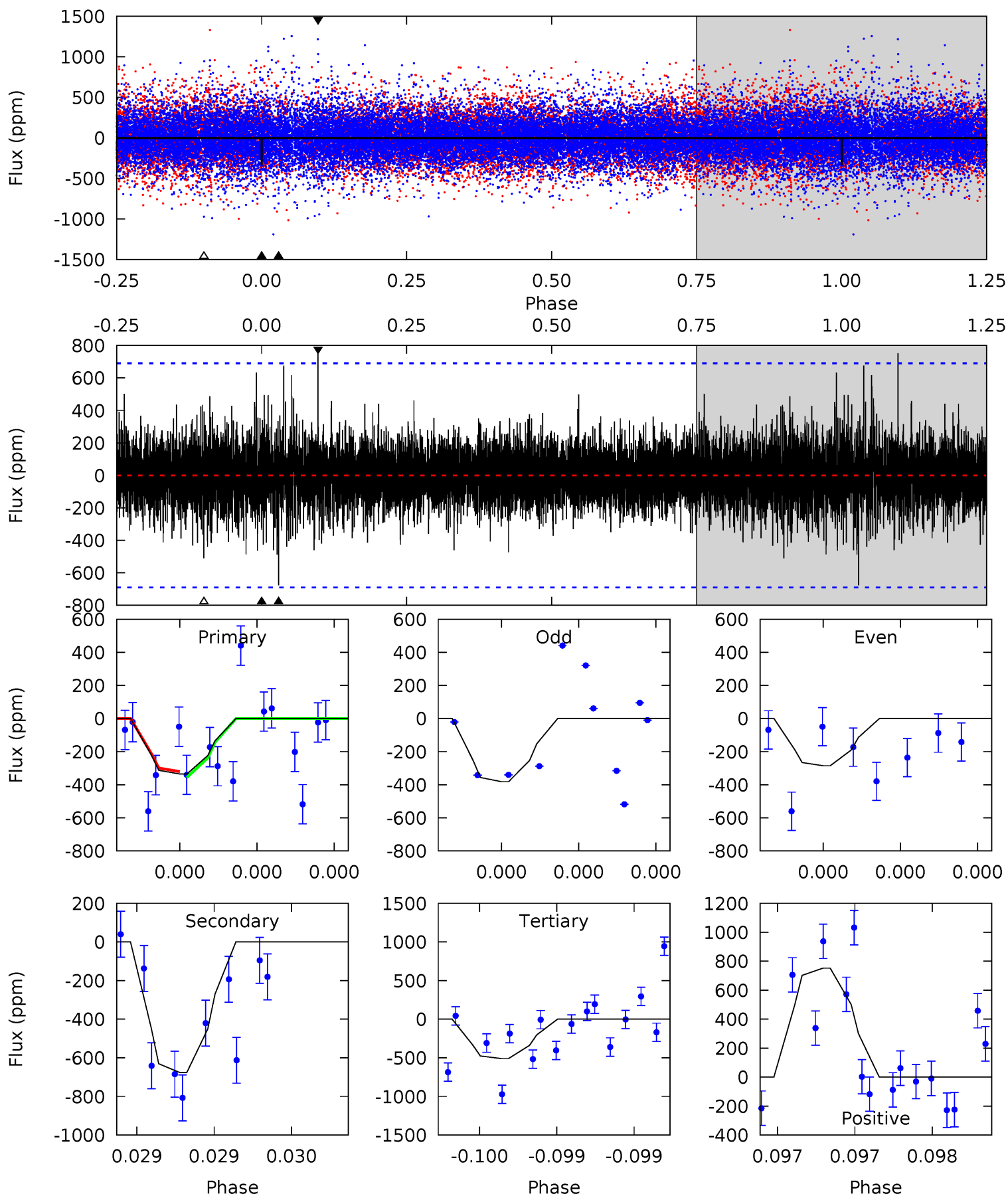
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.41	5.33	5.20	5.86	5.64	3.59	1.26	-0.78	-1.45	0.13	-0.53	2.26	1.24	0.52	0.48



Alt Model-Shift Uniqueness Test

003228986-05, P = 246.923545 Days, E = 221.961522 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.77	5.59	4.22	6.22	5.71	3.69	1.02	-1.45	-3.45	1.37	-0.63	0.39	1.00	0.53	0.13



Stellar Parameters For KIC 003228986

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	6238^{+68}_{-87}	$4.365^{+0.040}_{-0.120}$	$0.140^{+0.150}_{-0.200}$	$1.191^{+0.198}_{-0.085}$	$1.204^{+0.076}_{-0.093}$	$1.003^{+0.199}_{-0.347}$
	+1%/-1%	+1%/-3%	+107%/-143%	+17%/-7%	+6%/-8%	+20%/-35%
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 003228986-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-449 ± 84	$6.74^{+6.69}_{-4.62}$	468^{+18}_{-12}	4252^{+3006}_{-882}	3650^{+34557}_{-2782}
Alt.	-676 ± 121	$6.63^{+6.31}_{-4.47}$	468^{+19}_{-11}	4619^{+3541}_{-975}	5392^{+46806}_{-3895}

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

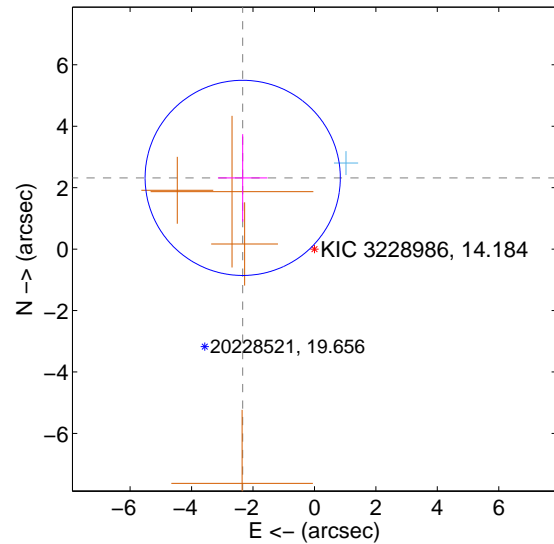
Supplemental centroid analysis for 003228986-05. Kepler magnitude: 14.18. Transit SNR 4.23

There are 1 quarters with good PRF difference image offsets

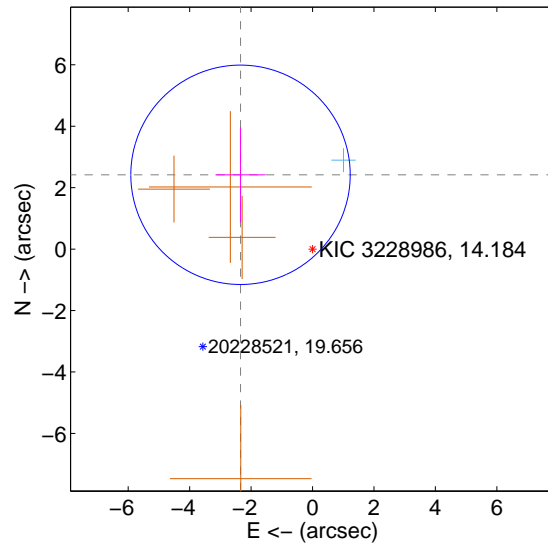
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.290 ± 1.059	3.11	2.335 ± 0.804	2.318 ± 1.425
PRF-fit source offset from KIC position	3.368 ± 1.190	2.83	2.344 ± 0.816	2.419 ± 1.547
photometric centroid source offset	0.52 ± 2.02	0.26	-0.27 ± 1.63	0.44 ± 2.15

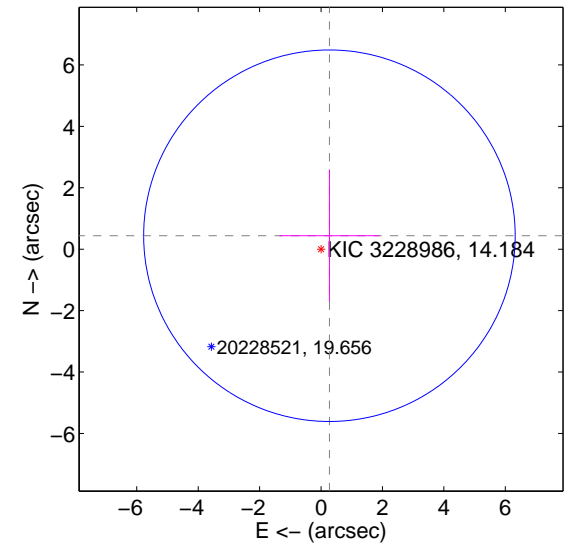
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



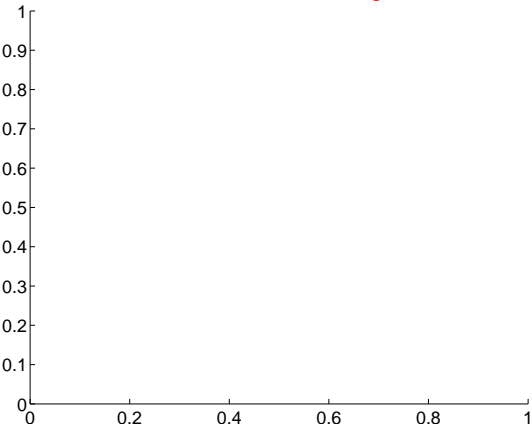
offset from photometric centroids



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.

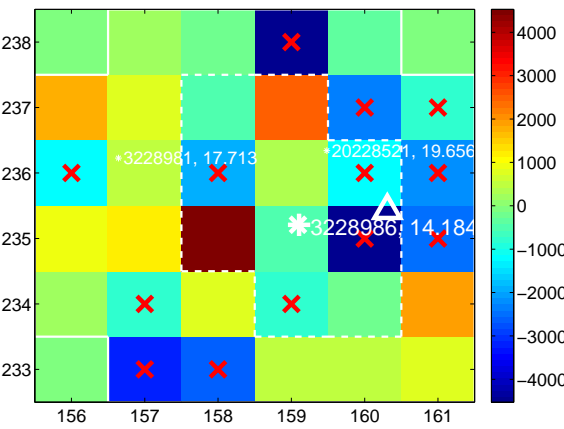
Q1 no difference image



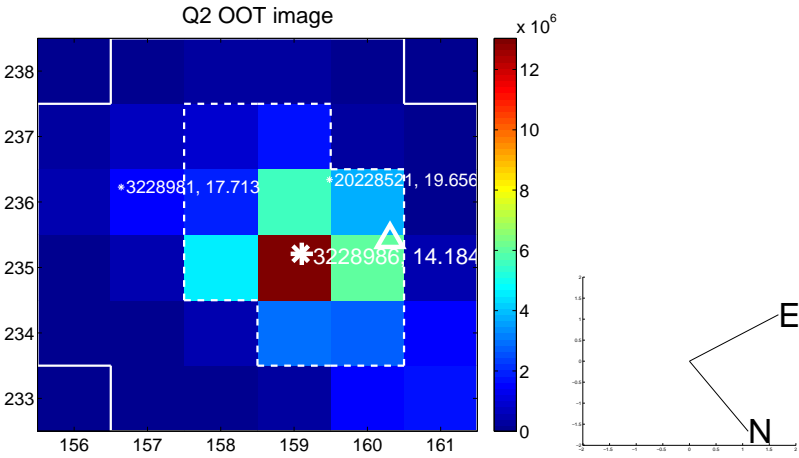
Q1 no OOT image



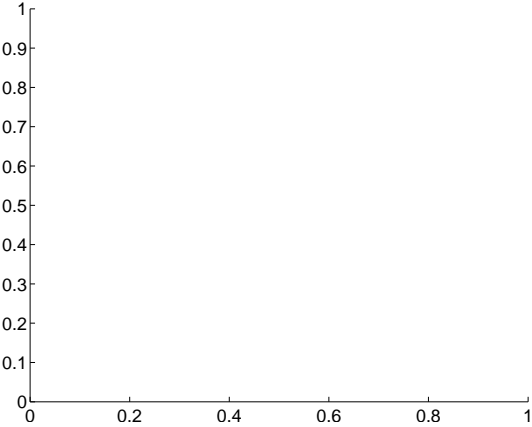
Q2 difference image. Poor Quality



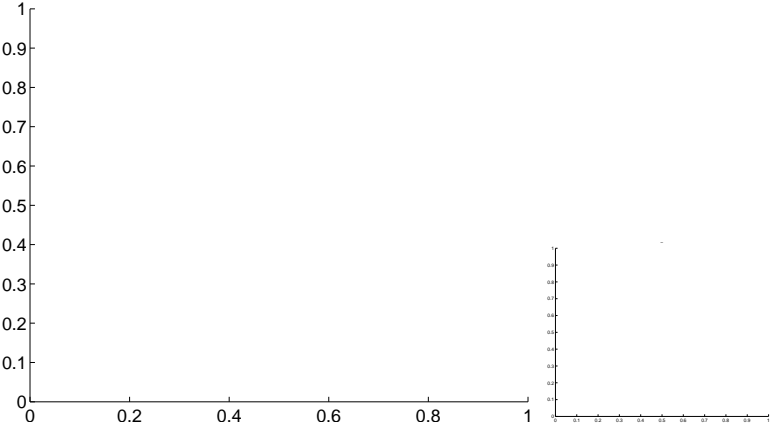
Q2 OOT image



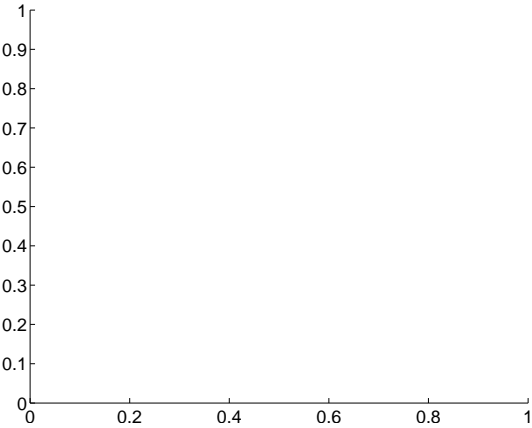
Q3 no difference image



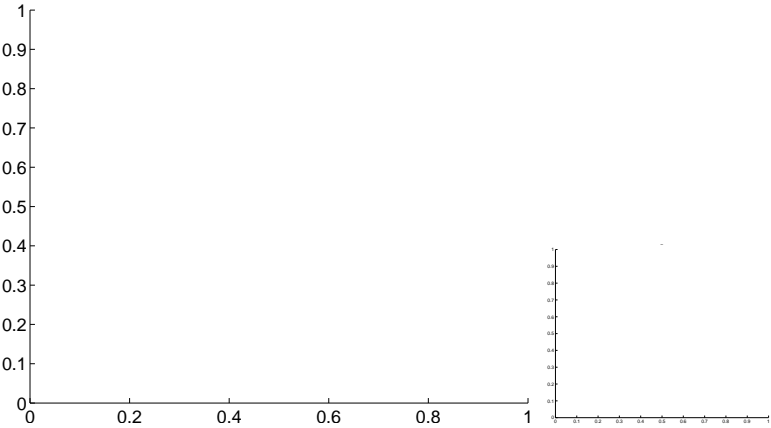
Q3 no OOT image



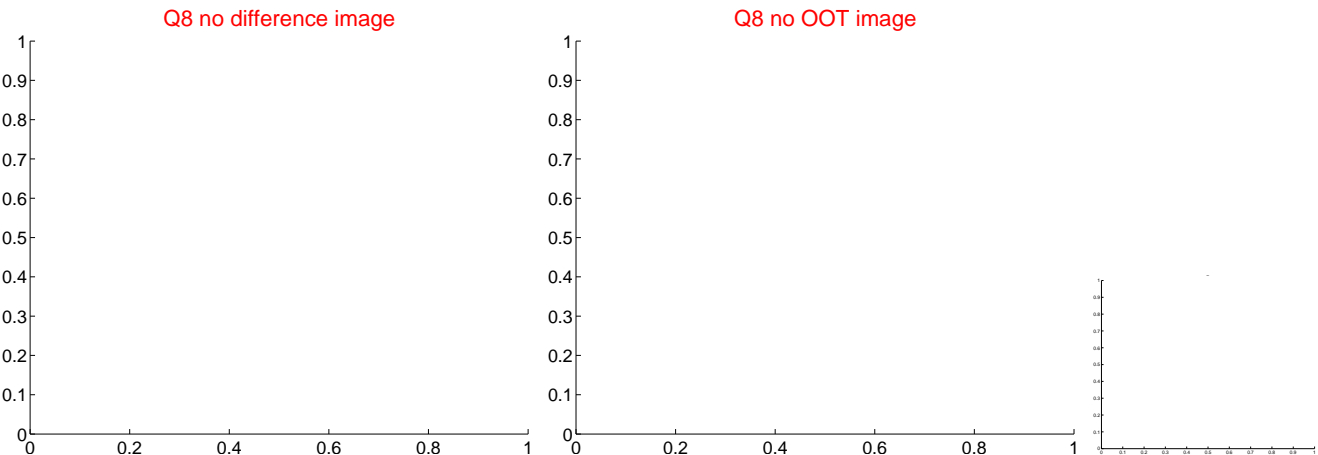
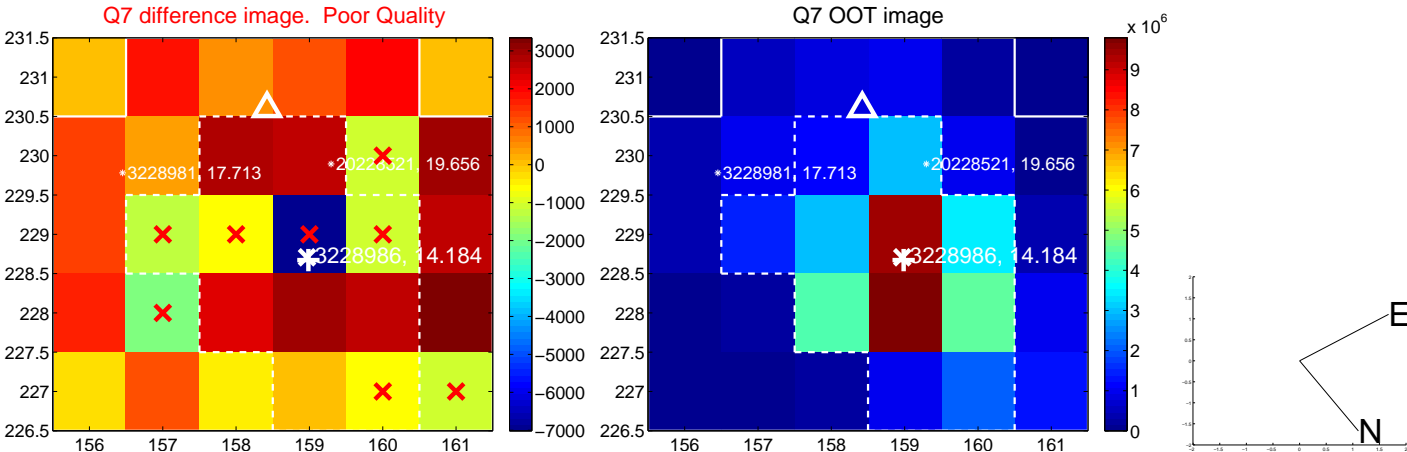
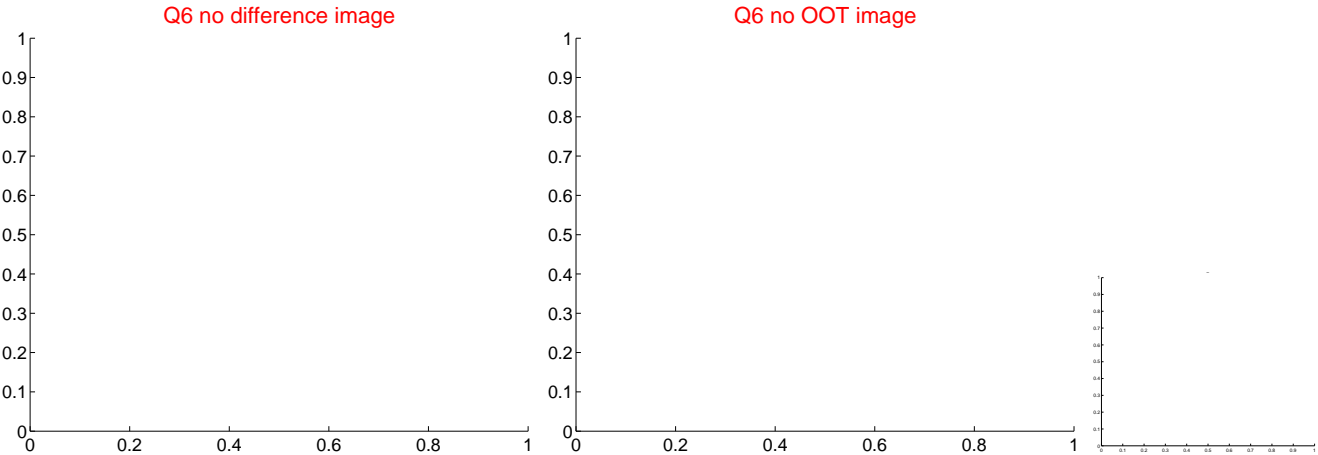
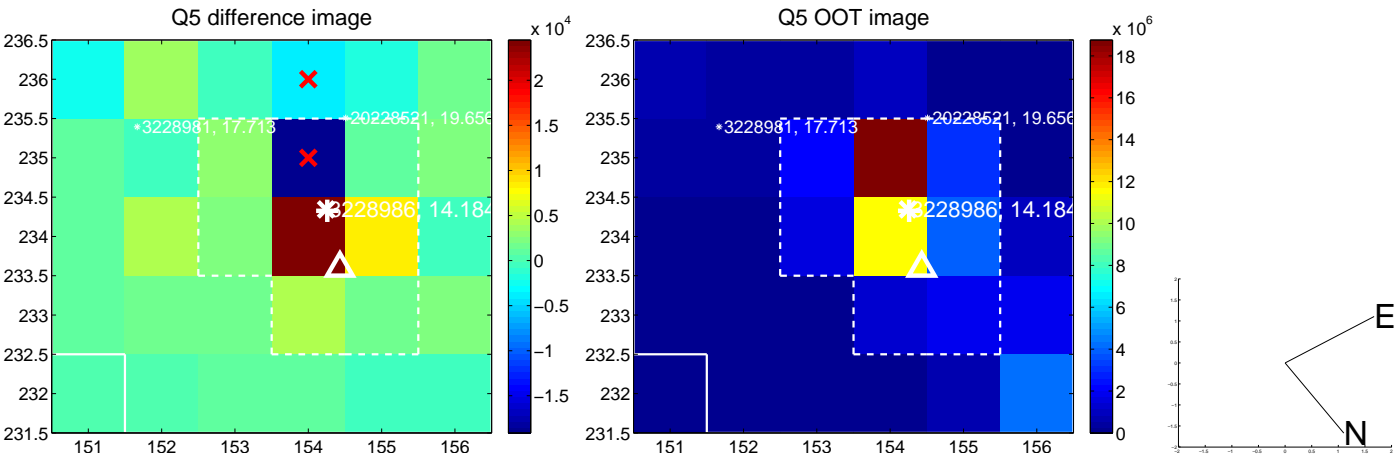
Q4 no difference image



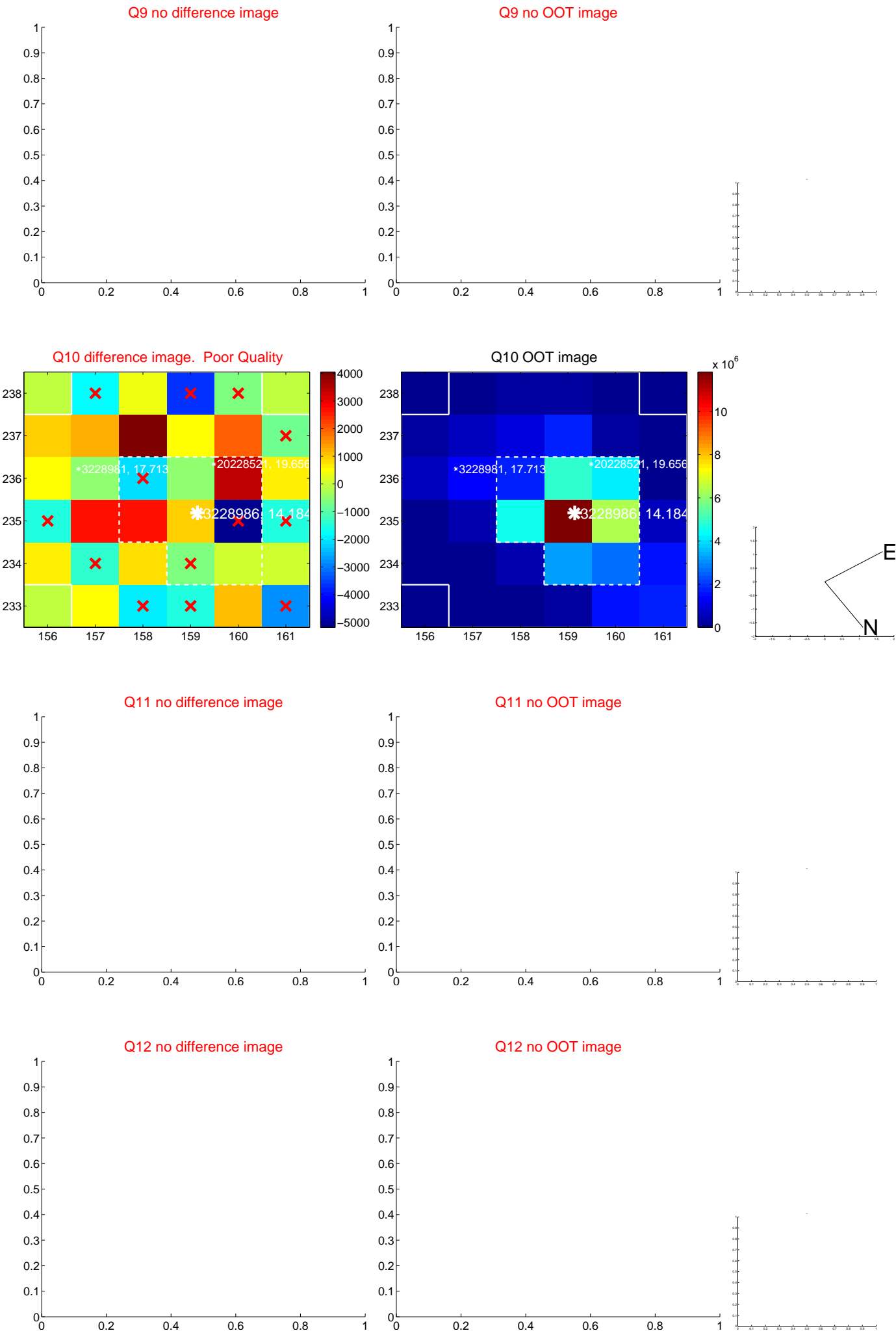
Q4 no OOT image



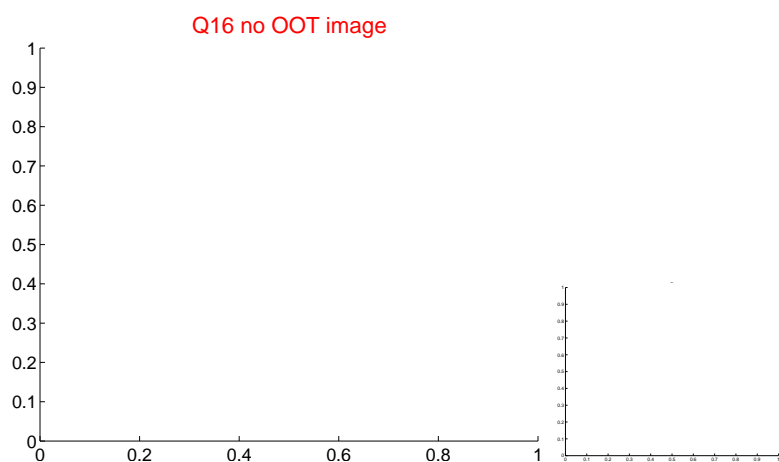
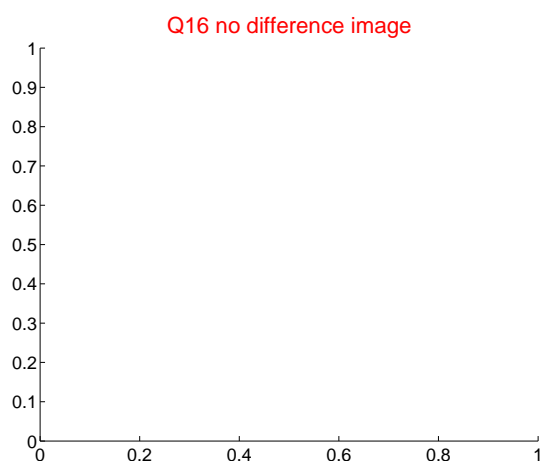
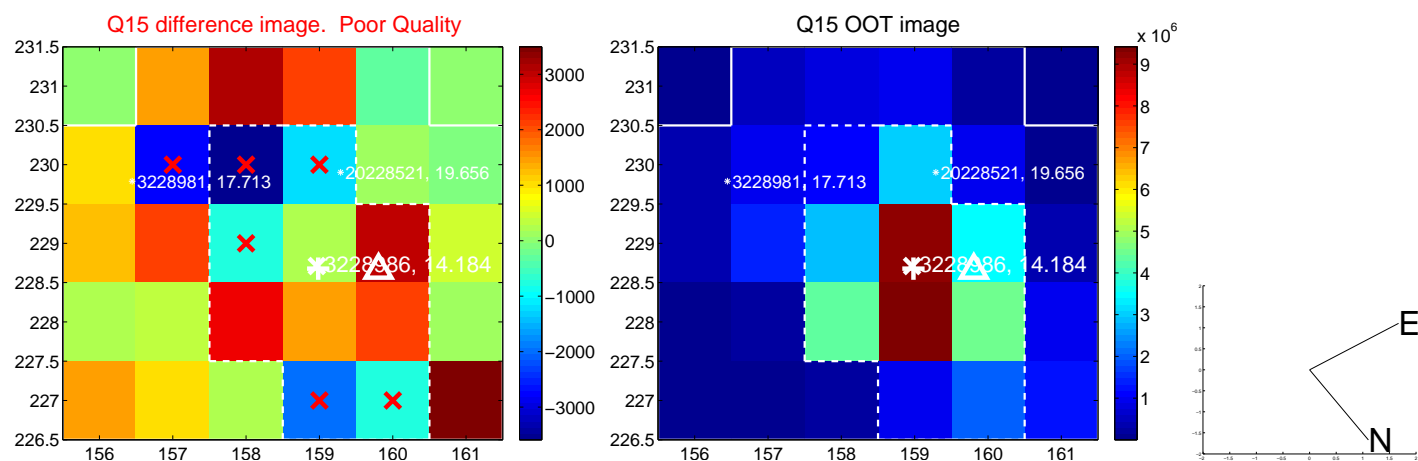
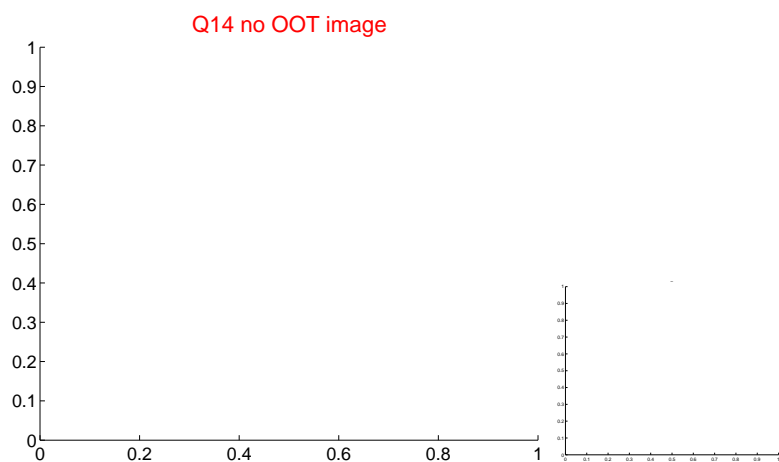
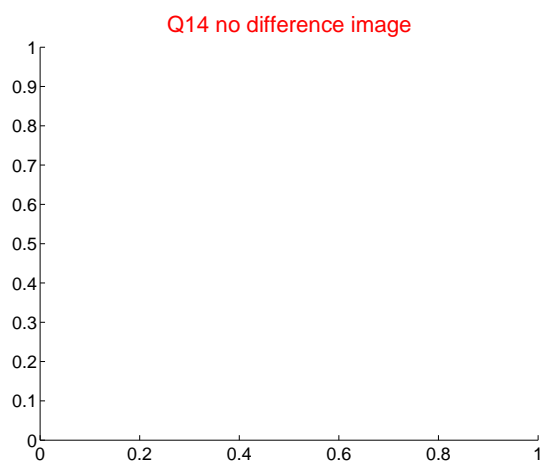
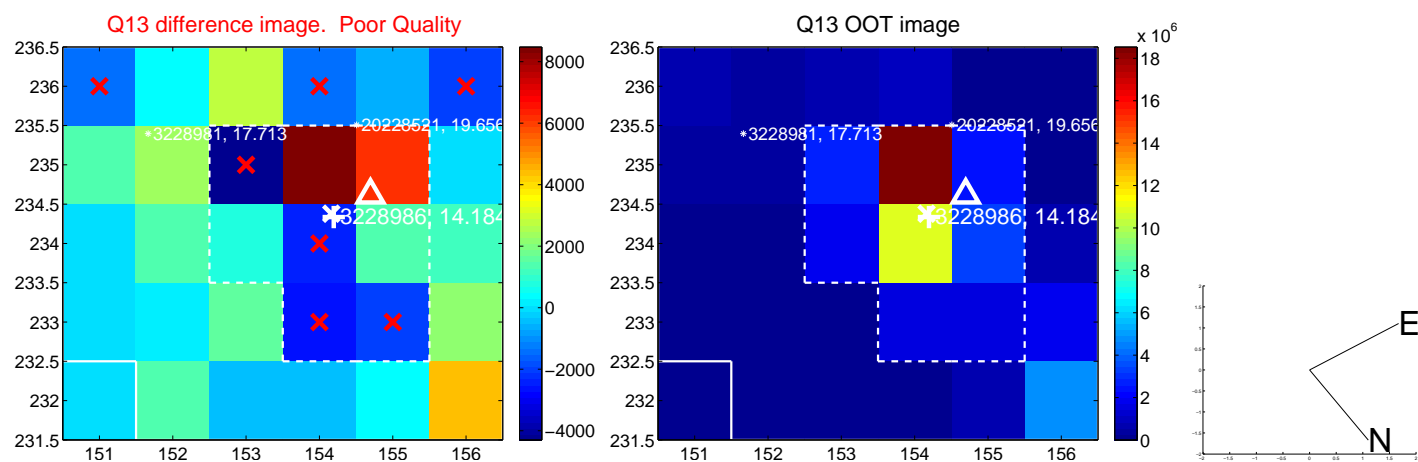
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



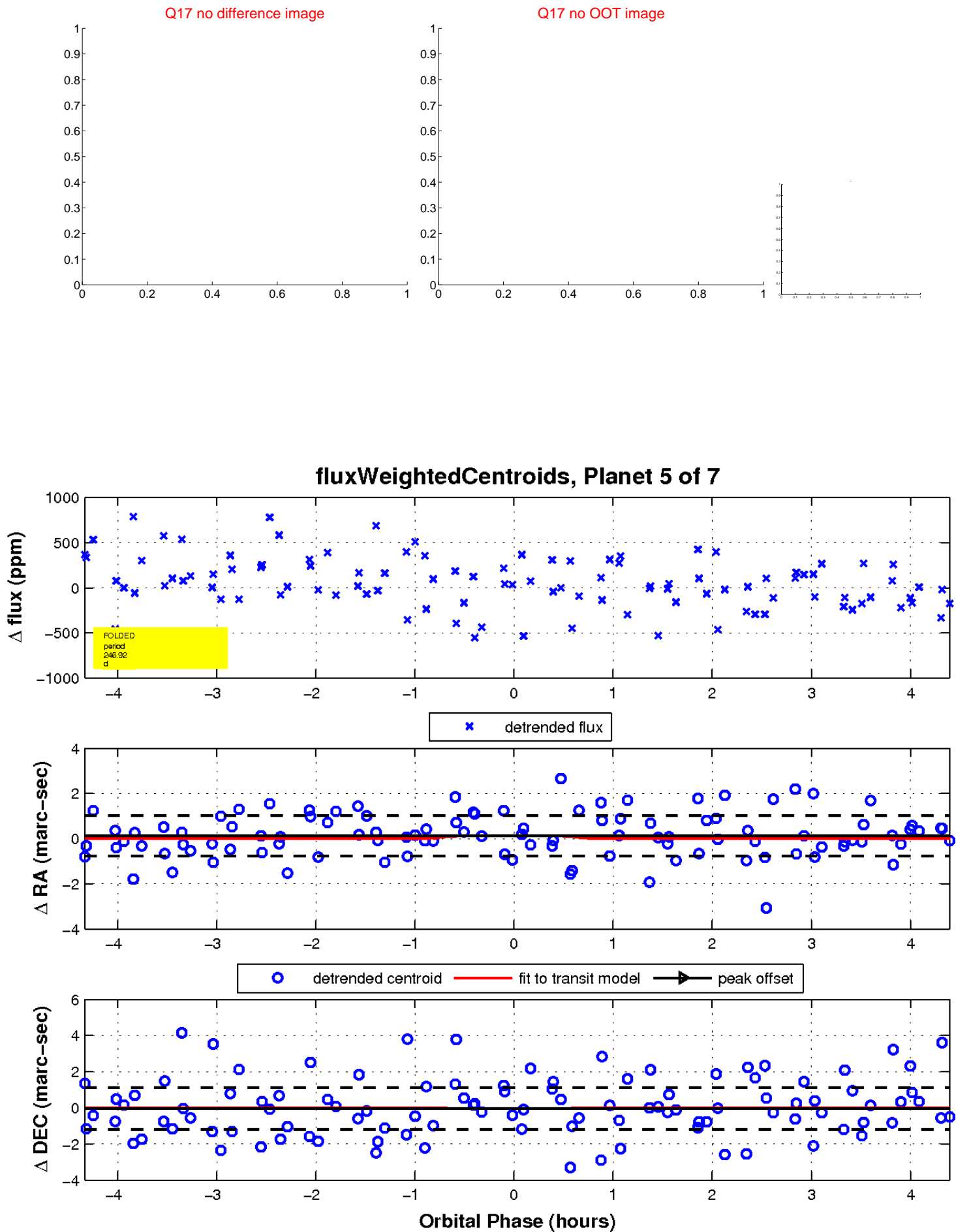
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

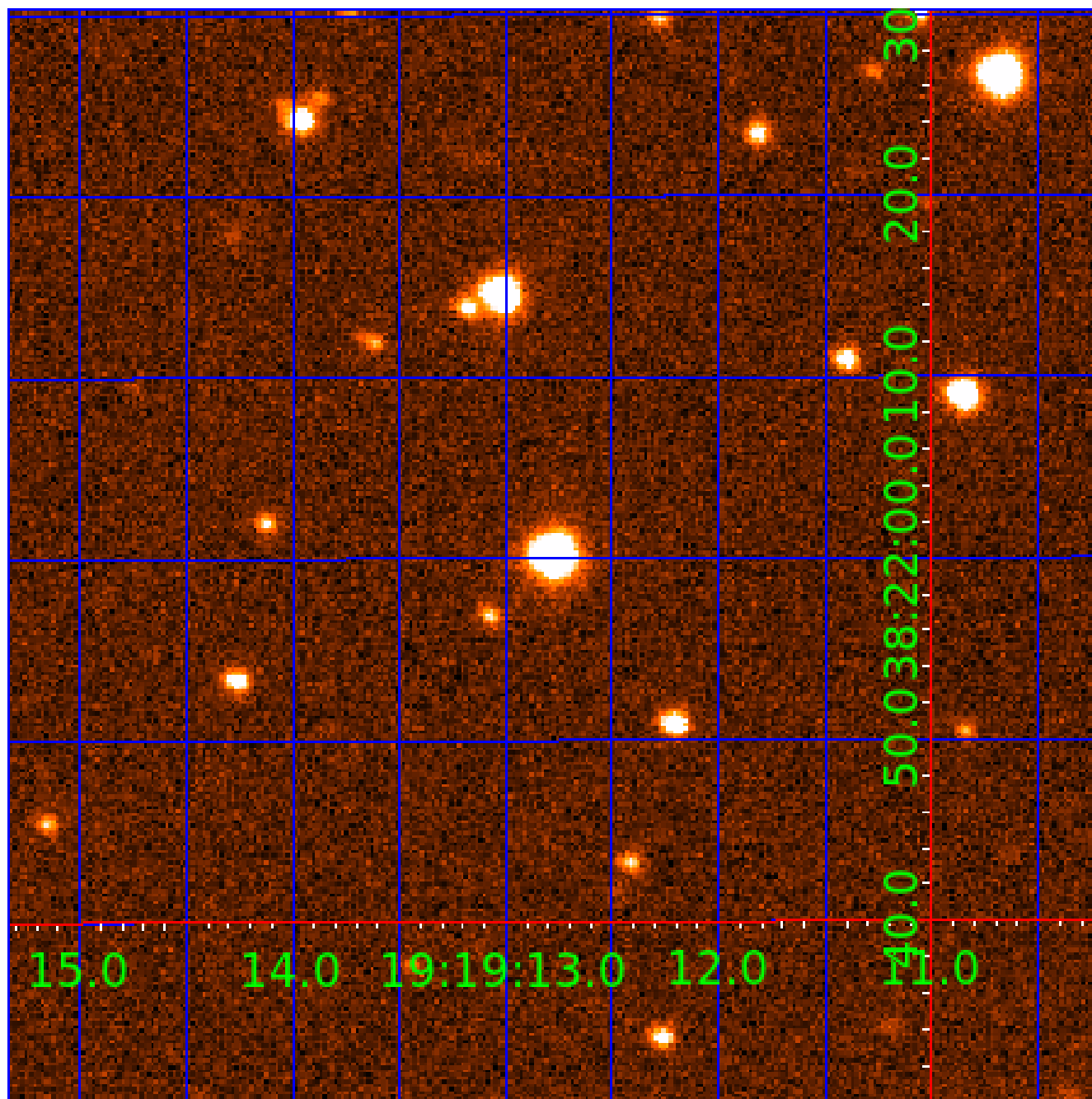


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003228986

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})
003228986-01	OBS	4031.01	0.730966	132.219395	63.7	2.981	18.9	18.6	1.19	6238	0.98	6758.04
003228986-02	OBS	No	432.043981	279.433266	4647.8	55.770	15.8	9.8	1.19	6238	10.69	1.36
003228986-03	OBS	No	247.279104	233.999456	546.5	9.531	8.8	6.3	1.19	6238	2.94	2.87
003228986-04	OBS	No	321.835502	226.050599	487.7	13.269	8.4	5.2	1.19	6238	2.82	2.02
003228986-05	OBS	No	246.915361	221.969229	521.9	1.475	9.4	4.2	1.19	6238	2.97	2.87
003228986-06	OBS	No	223.166868	221.784778	527.0	14.730	13.5	5.9	1.19	6238	5.24	3.29
003228986-07	OBS	No	449.559064	327.040113	797.9	9.586	8.4	7.4	1.19	6238	3.65	1.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003228986-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
003228986-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS
003228986-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
003228986-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—ALL_TRANS_CHASES—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.

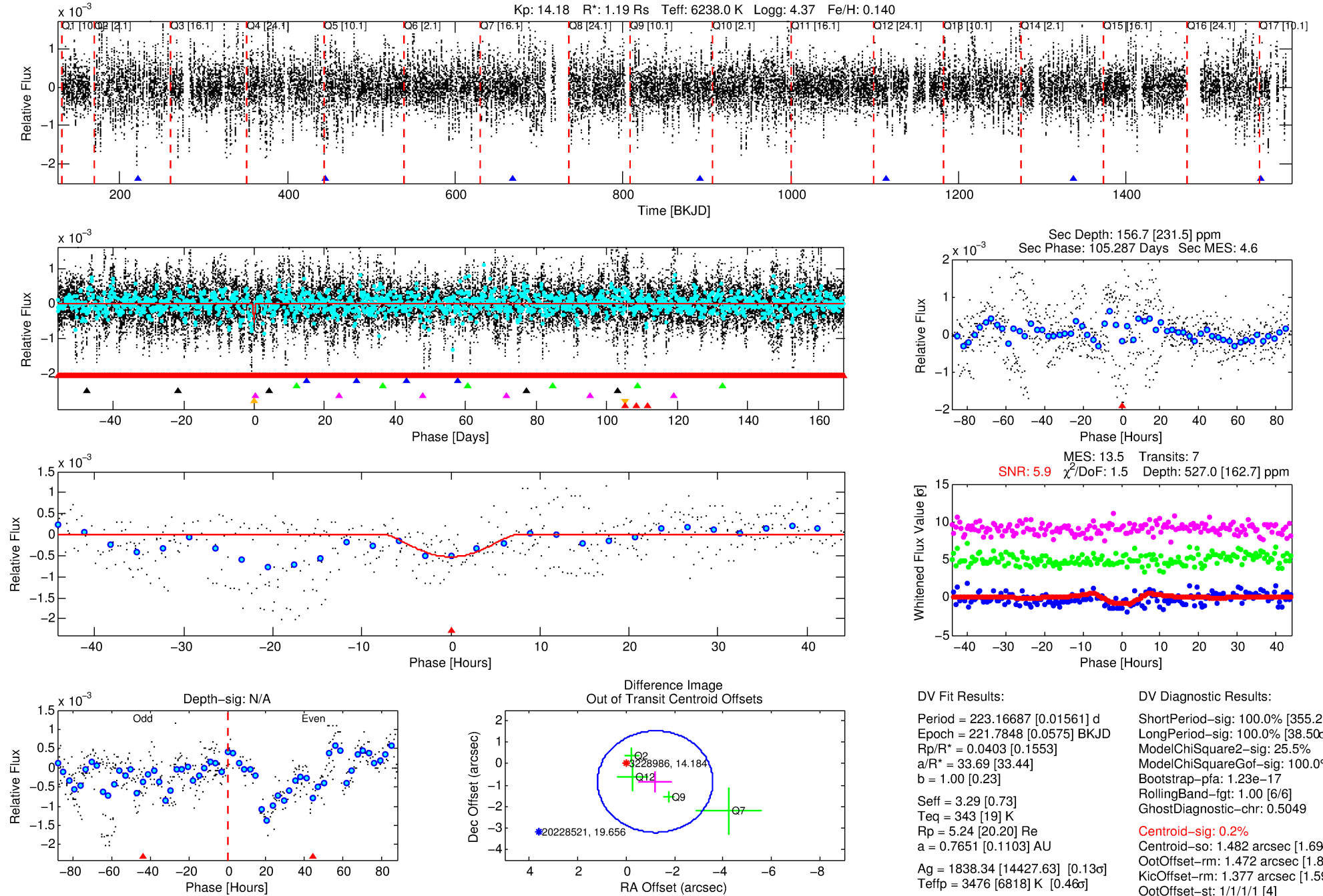
Ephemeris Match Information For 003228986-06

No Significant Match Found

DV One-Page Summary

KIC: 3228986 Candidate: 6 of 7 Period: 223.167 d
KOI: K04031 Corr: No Ephemeris Match

Kp: 14.18 R*: 1.19 Rs Teff: 6238.0 K Logg: 4.37 Fe/H: 0.140



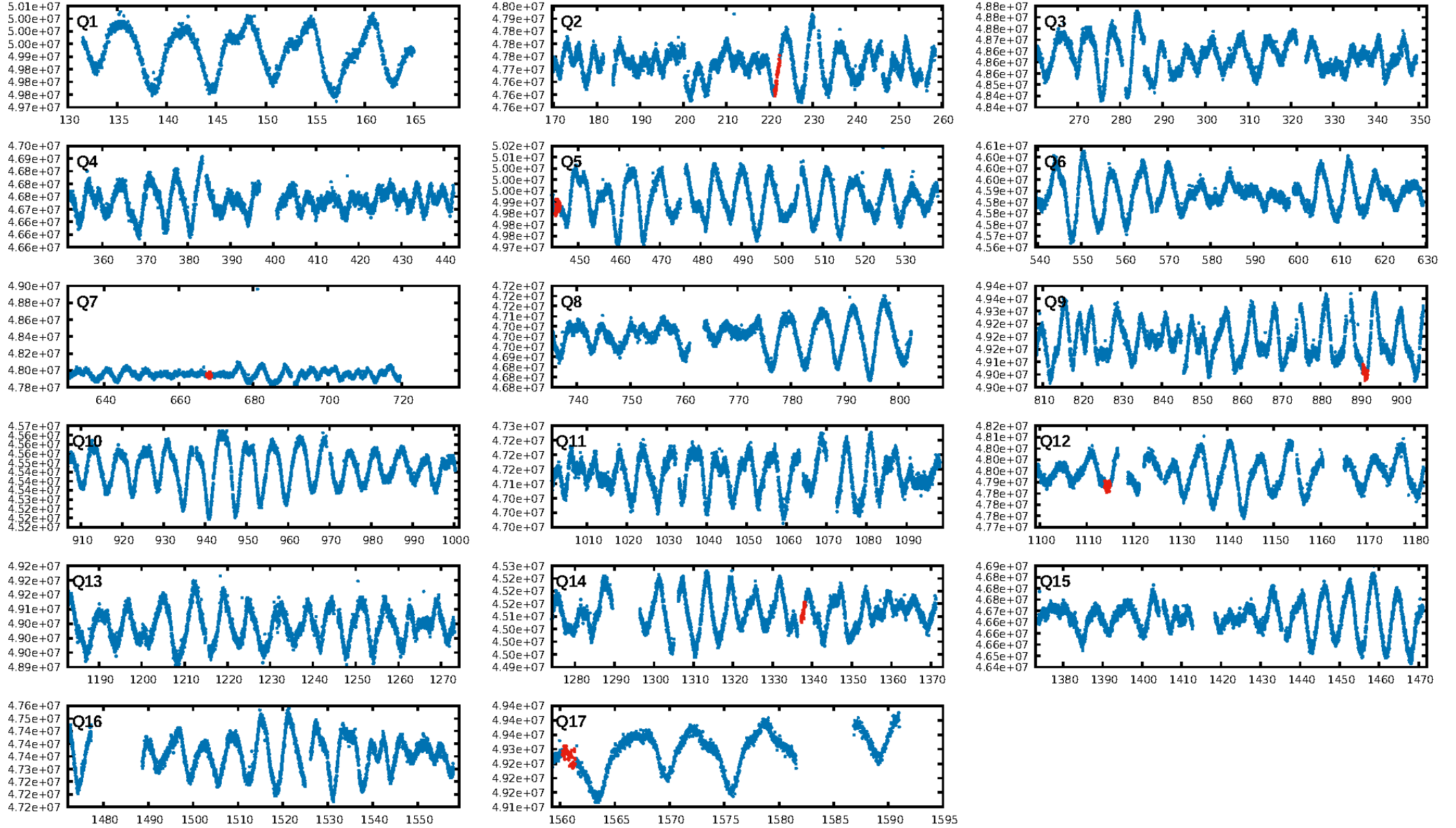
DV Fit Results:

Period = 223.16687 [0.01561] d
Epoch = 221.7848 [0.0575] BKJD
Rp/R* = 0.0403 [0.1553]
a/R* = 33.69 [33.44]
b = 1.00 [0.23]
Seff = 3.29 [0.73]
Teq = 343 [19] K
Rp = 5.24 [20.20] Re
a = 0.7651 [0.1103] AU
Ag = 1838.34 [14427.63] [0.13σ]
Teff = 3476 [6818] K [0.46σ]

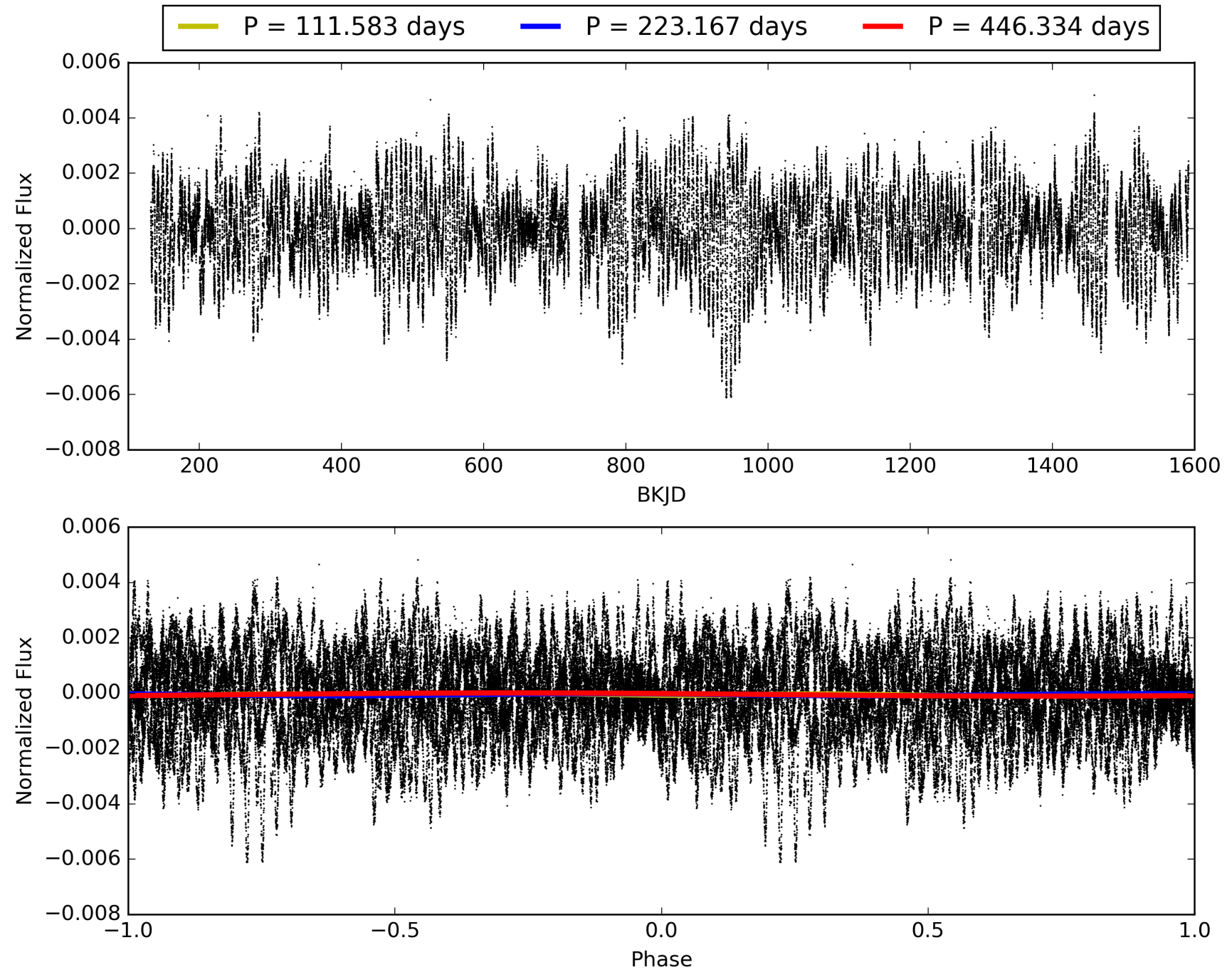
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [355.23σ]
LongPeriod-sig: 100.0% [38.50σ]
ModelChiSquare2-sig: 25.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.23e-17
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 0.5049
Centroid-sig: 0.2%
Centroid-so: 1.482 arcsec [1.69σ]
OotOffset-rm: 1.472 arcsec [1.86σ]
KicOffset-rm: 1.377 arcsec [1.59σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 0.00 [0/4]

TCE 003228986-06, PDC Light Curves

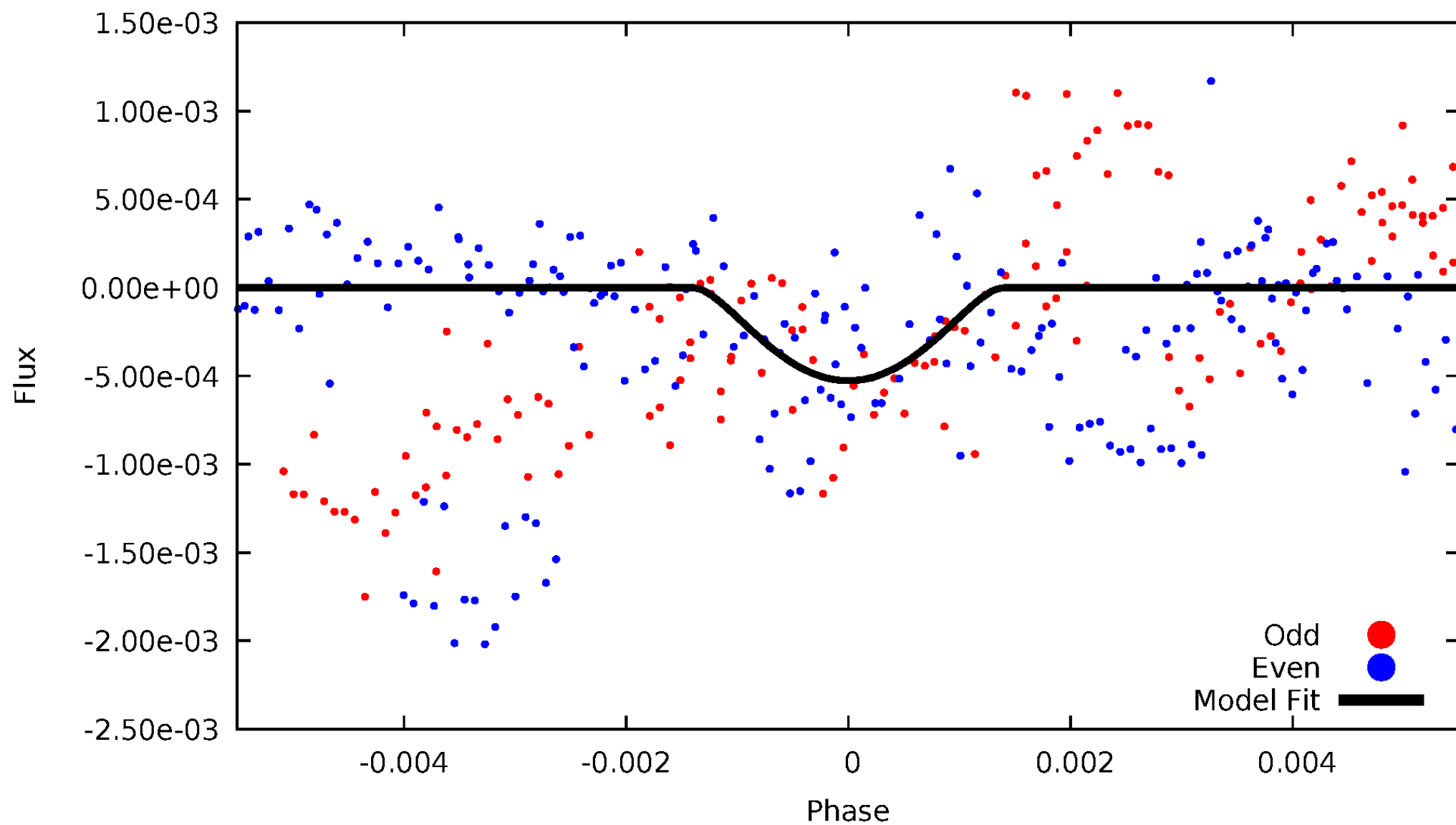


TCE 003228986-06



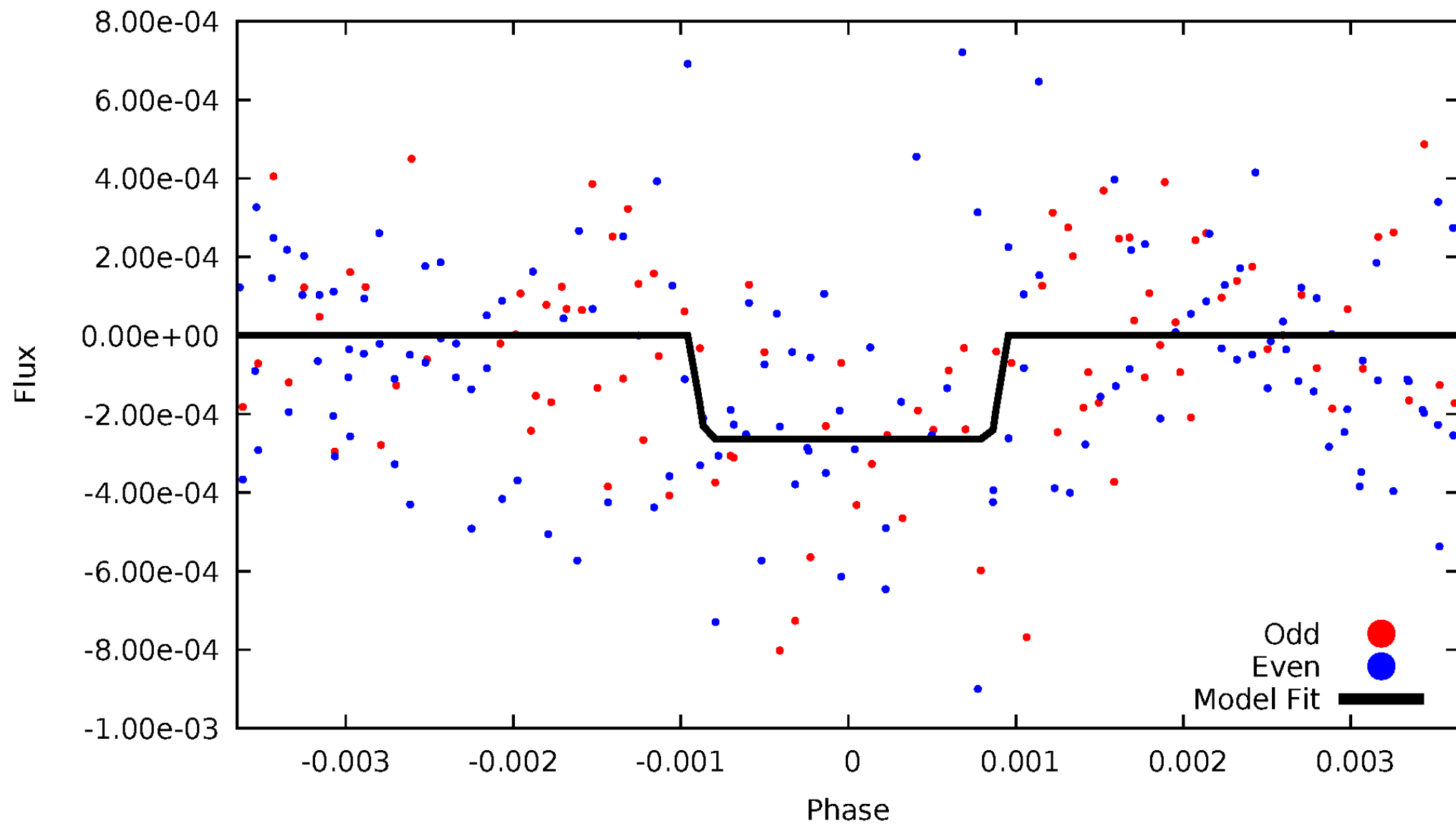
DV Odd/Even

TCE 003228986-06



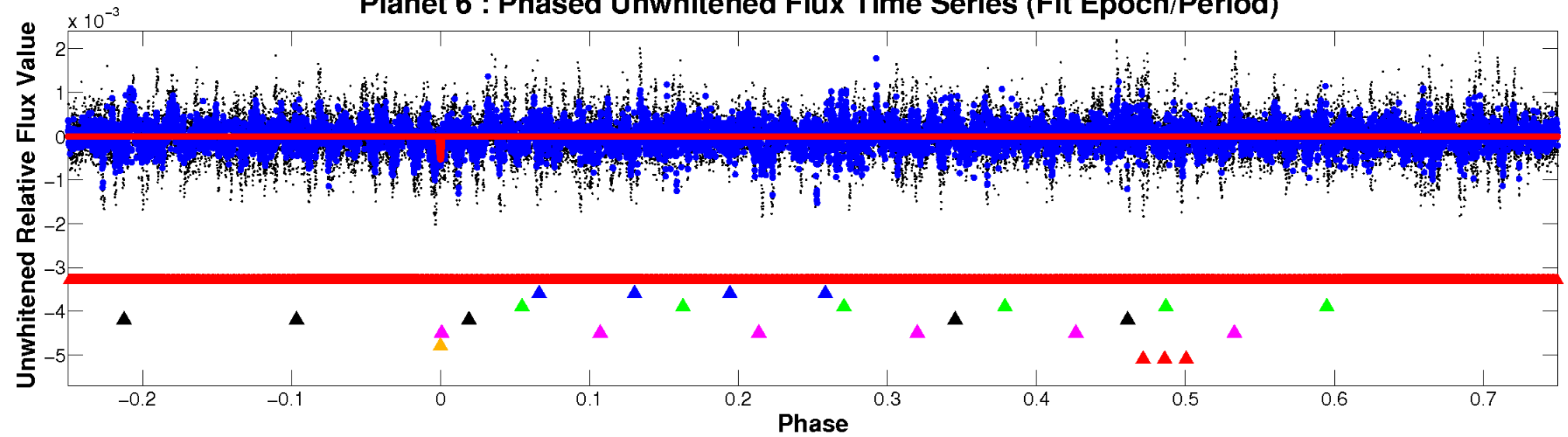
ALT Odd/Even

TCE 003228986-06

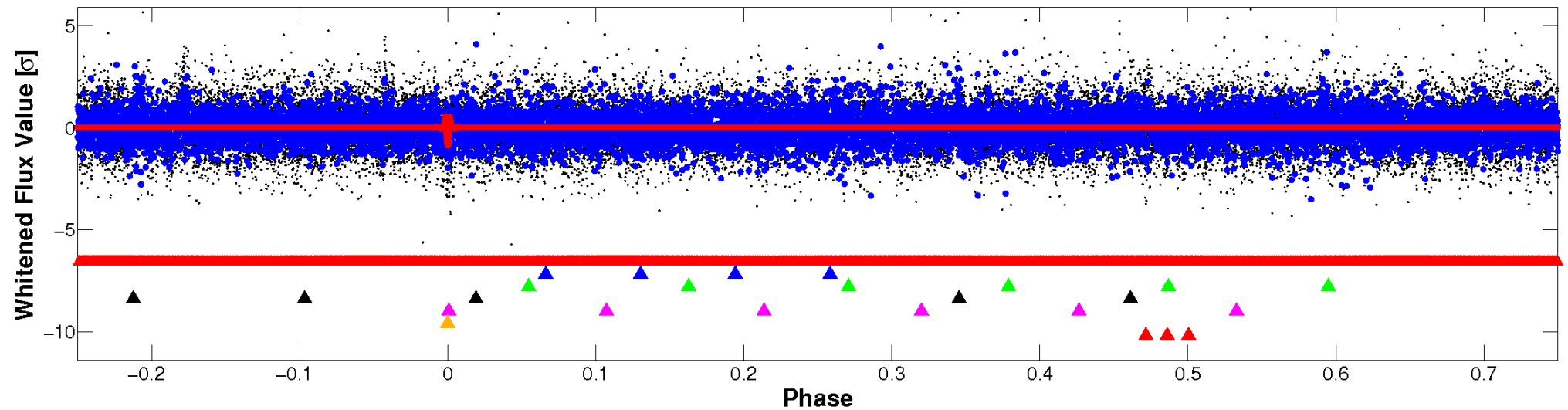


Non-Whitened Vs. Whitened Light Curve

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

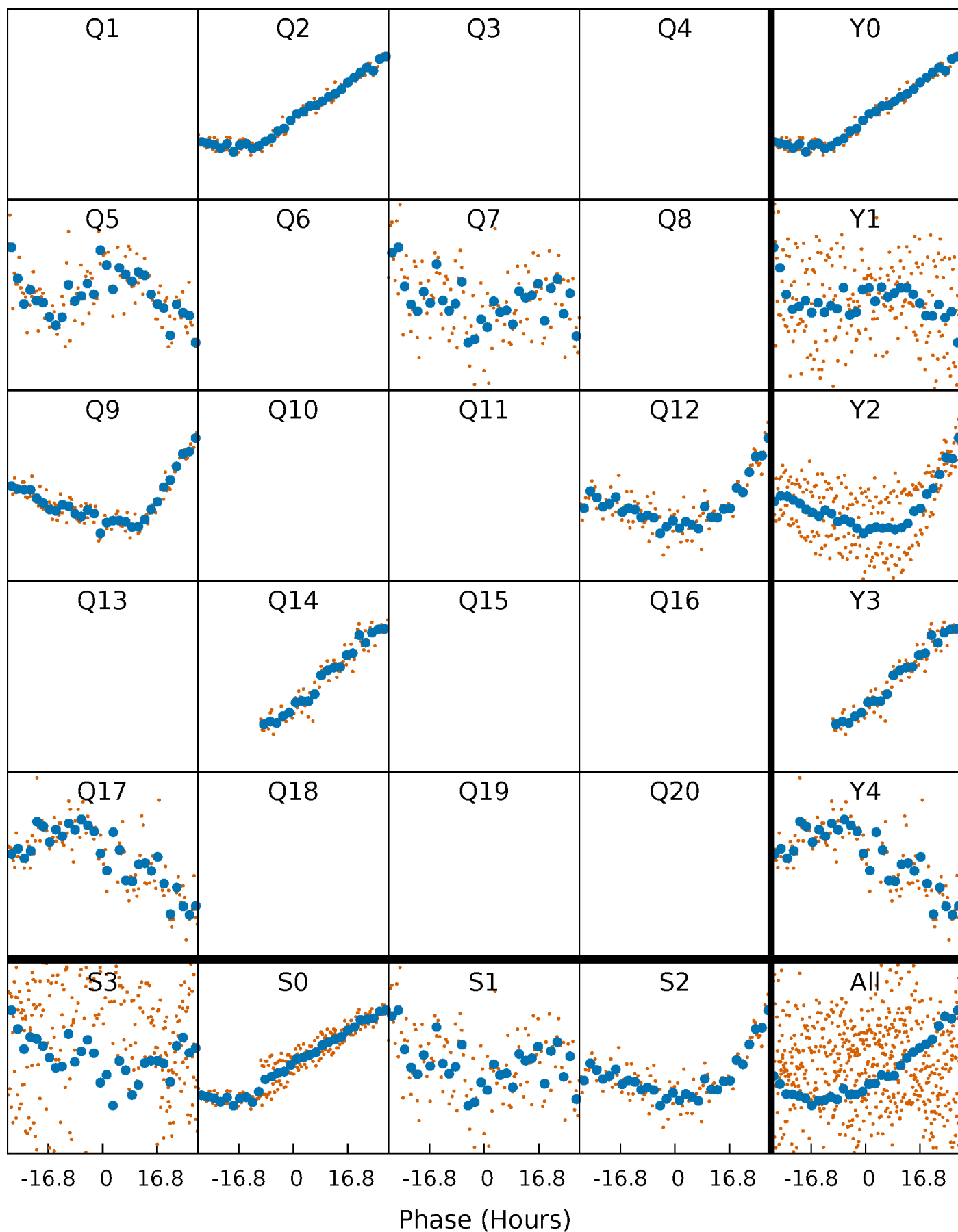


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



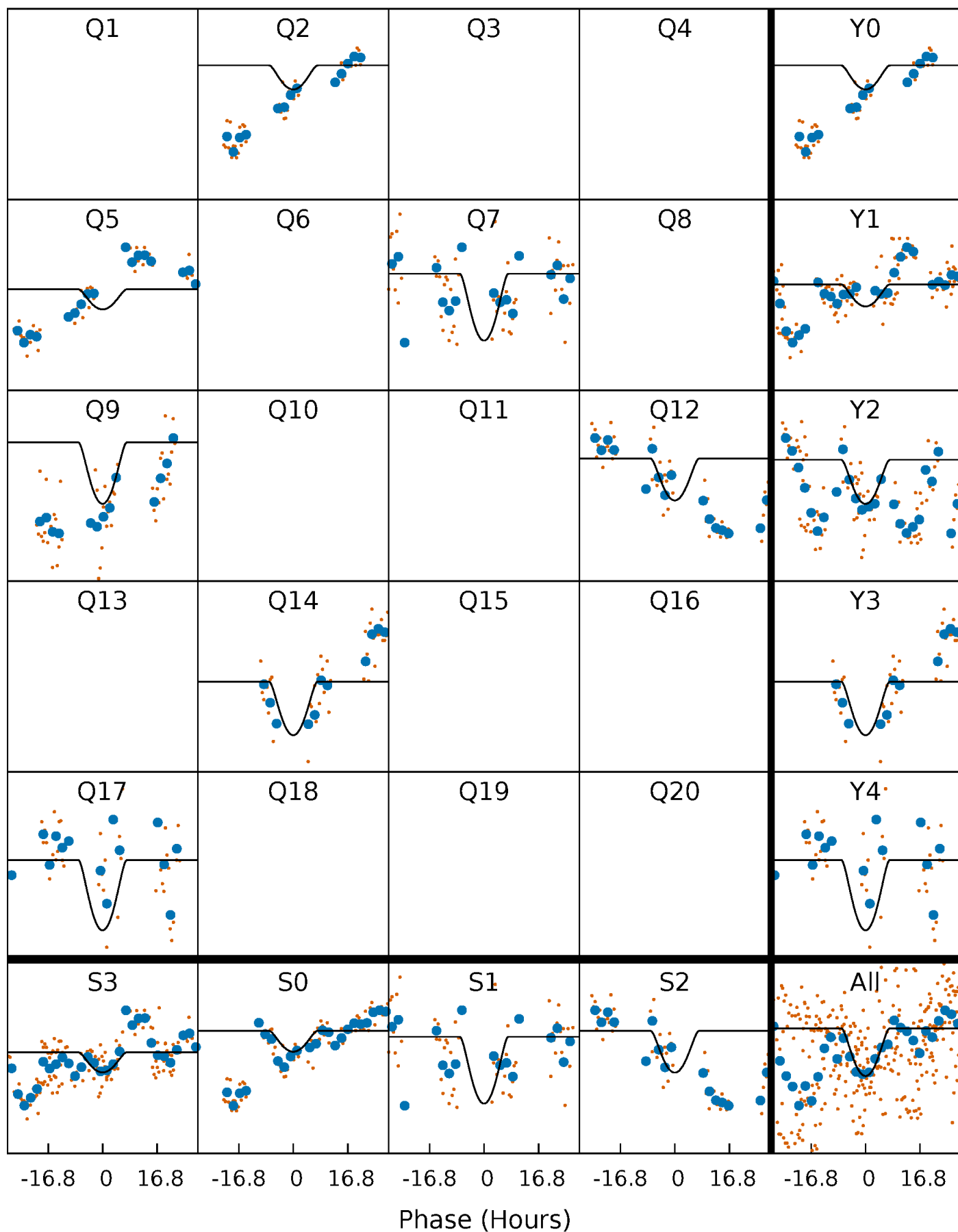
PDC Quarter-Phased Transit Curves

TCE 003228986-06 $P=223.166868$ Days $T_0=221.784778$ (BKJD)



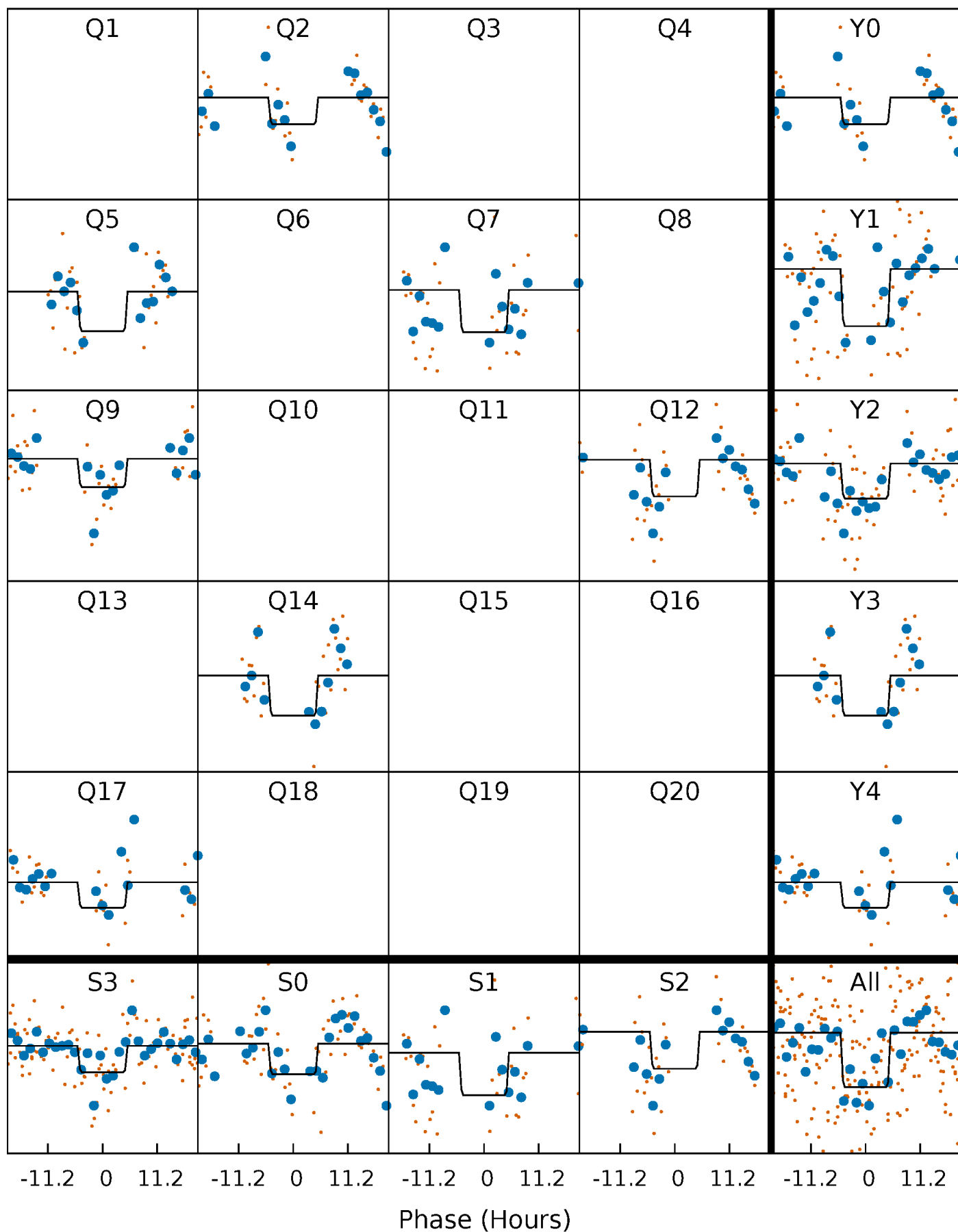
DV Quarter-Phased Transit Curves

TCE 003228986-06 $P=223.166868$ Days $T_0=221.784778$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

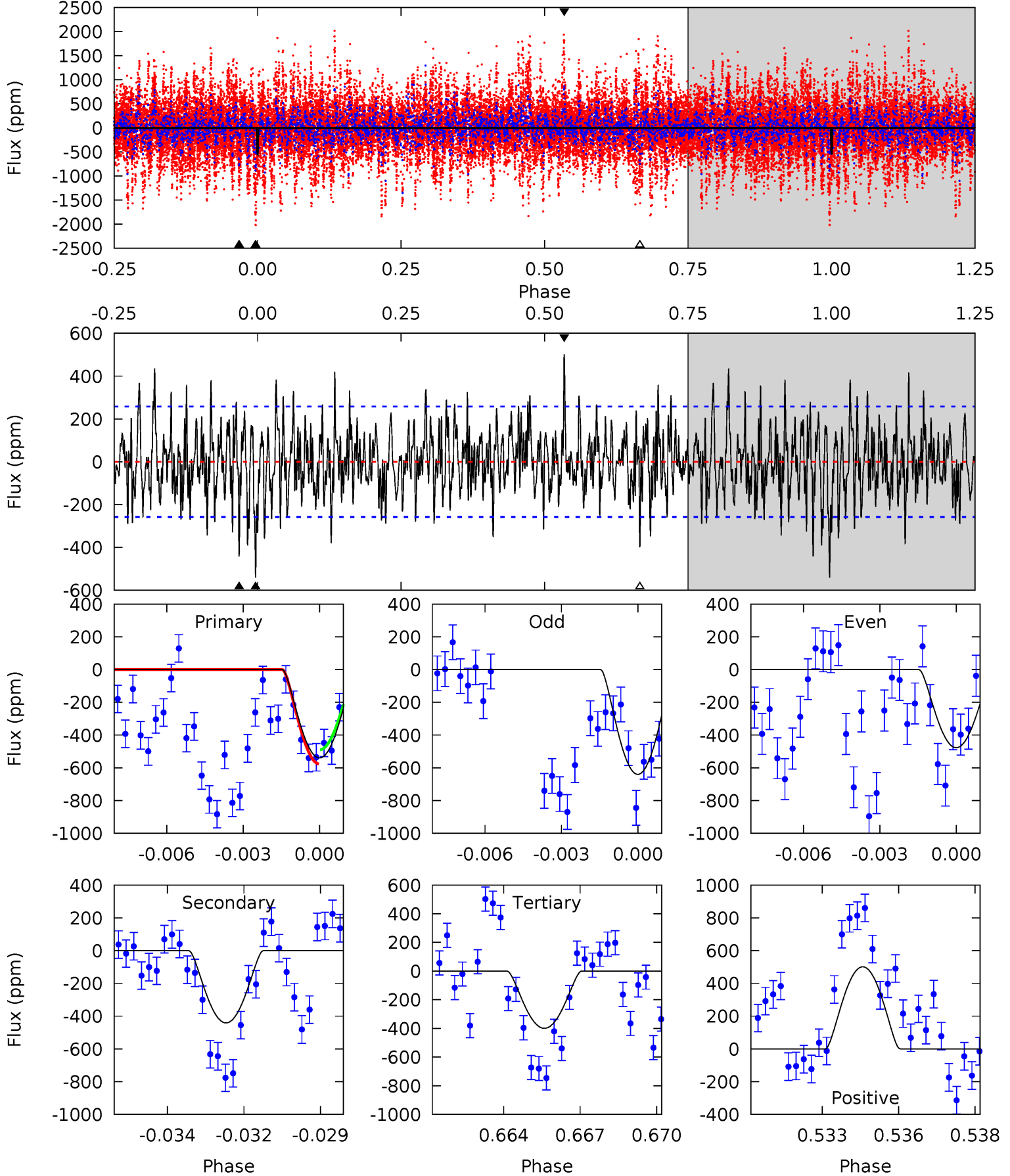
TCE 003228986-06 P=223.154909 Days $T_0=221.861235$ (BKJD)



DV Model-Shift Uniqueness Test

003228986-06, P = 223.166868 Days, E = 221.784778 Days

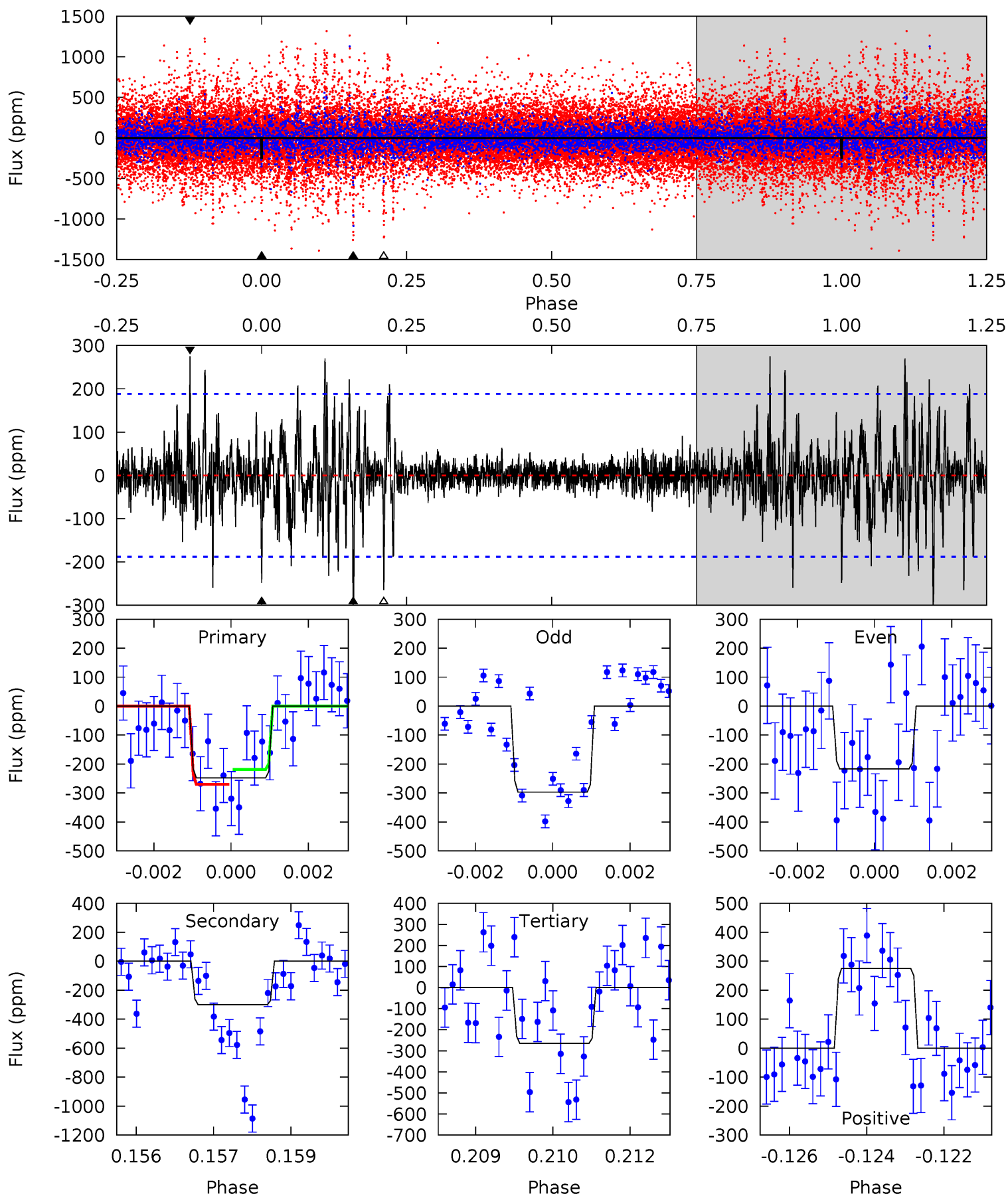
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	9.00	8.14	10.2	5.26	2.98	2.65	2.87	0.79	0.86	-1.22	1.64	1.40	0.48	0.88



Alt Model-Shift Uniqueness Test

003228986-06, P = 223.154909 Days, E = 221.861235 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.07	8.54	7.54	7.84	5.35	3.13	1.41	-0.48	-0.77	0.99	0.70	1.11	0.89	0.48	0.72



Stellar Parameters For KIC 003228986

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	6238^{+68}_{-87}	$4.365^{+0.040}_{-0.120}$	$0.140^{+0.150}_{-0.200}$	$1.191^{+0.198}_{-0.085}$	$1.204^{+0.076}_{-0.093}$	$1.003^{+0.199}_{-0.347}$
	+1%/-1%	+1%/-3%	+107%/-143%	+17%/-7%	+6%/-8%	+20%/-35%
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 003228986-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-441 ± 49	$16.06^{+17.19}_{-11.21}$	484^{+20}_{-14}	3227^{+1611}_{-600}	555^{+5535}_{-428}
Alt.	-300 ± 35	$15.10^{+15.12}_{-10.78}$	484^{+20}_{-11}	3084^{+1527}_{-526}	426^{+4474}_{-321}

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 $A_{obs} \gg 1.0$

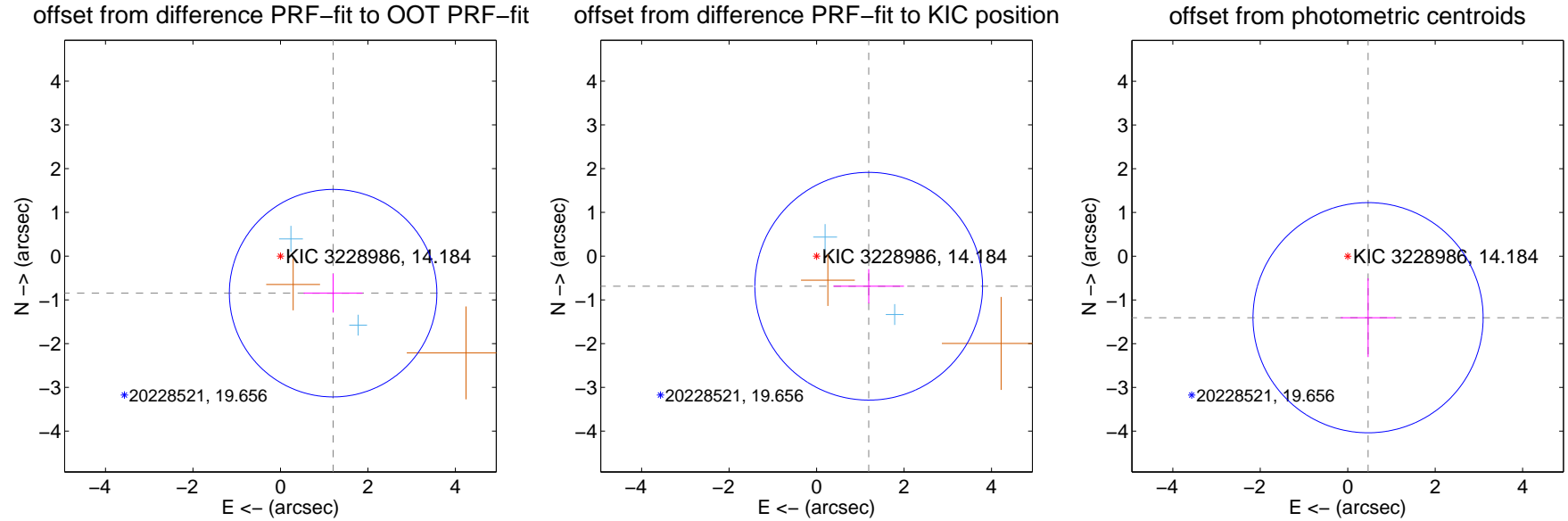
DV Centroid Data

Supplemental centroid analysis for 003228986-06. Kepler magnitude: 14.18. Transit SNR 5.88

There are 2 quarters with good PRF difference image offsets

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

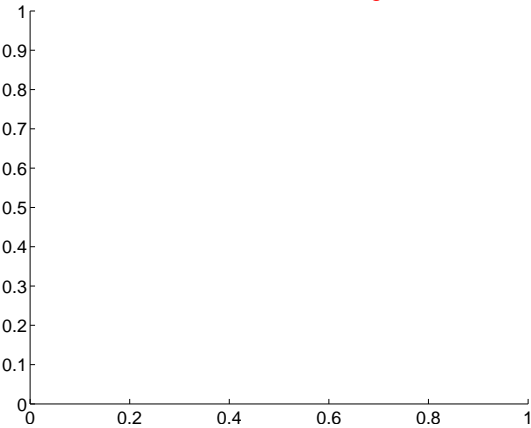
	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.472 ± 0.791	1.86	-1.204 ± 0.674	-0.847 ± 0.445
PRF-fit source offset from KIC position	1.377 ± 0.868	1.59	-1.192 ± 0.807	-0.688 ± 0.391
photometric centroid source offset	1.48 ± 0.88	1.69	-0.47 ± 0.63	-1.41 ± 0.90



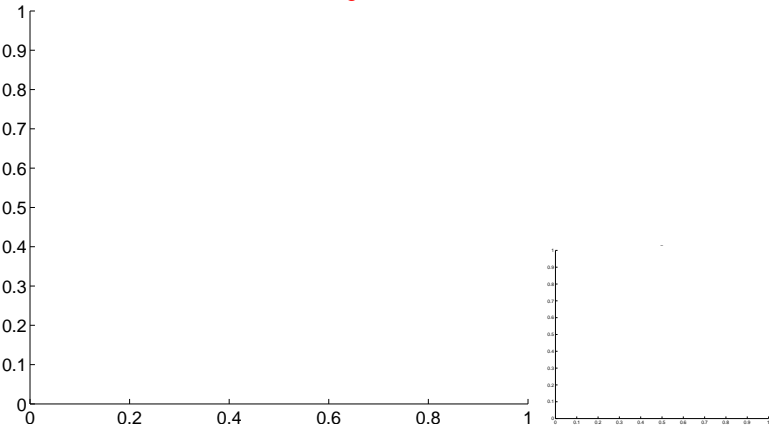
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

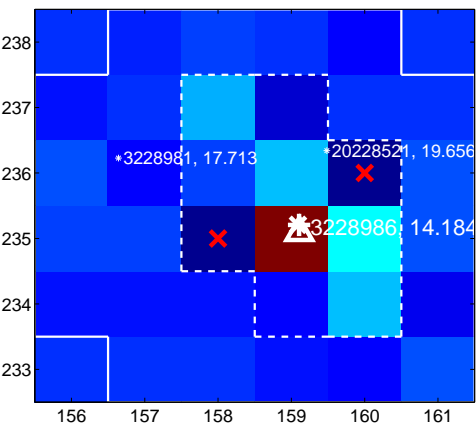
Q1 no difference image



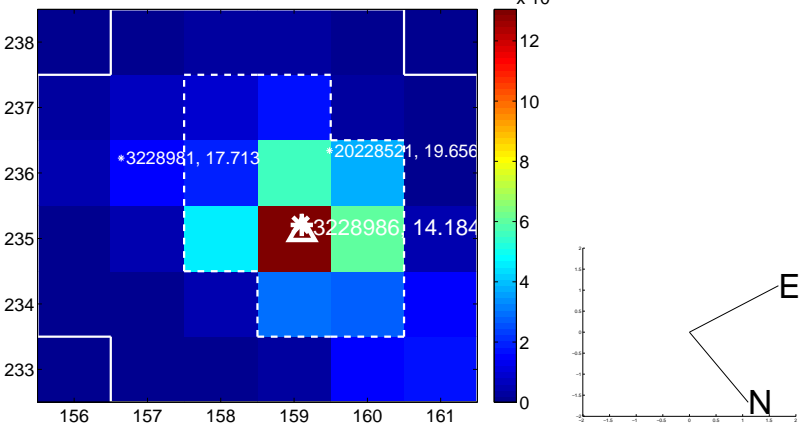
Q1 no OOT image



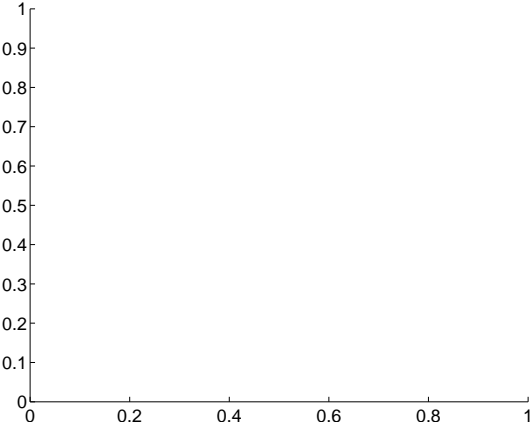
Q2 difference image



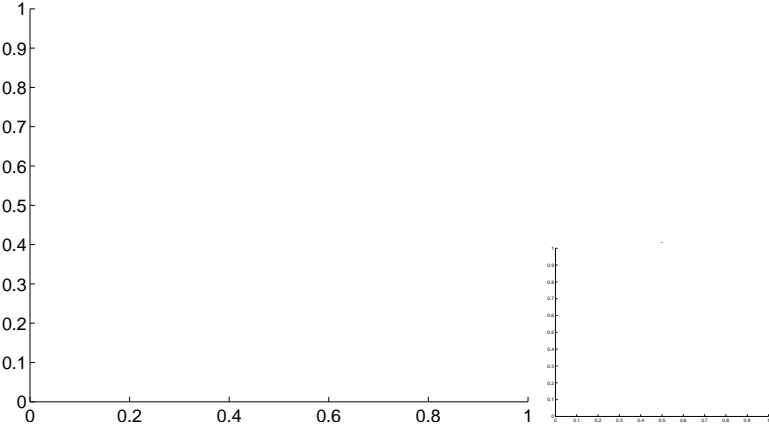
Q2 OOT image



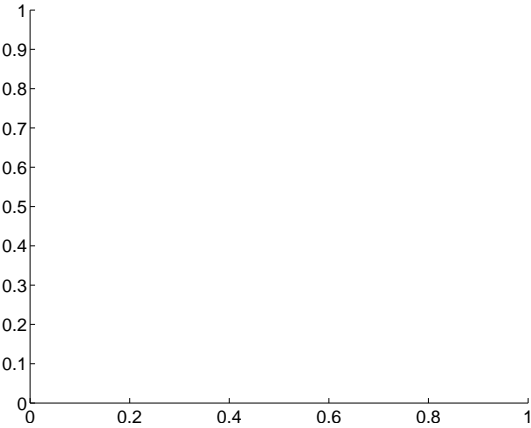
Q3 no difference image



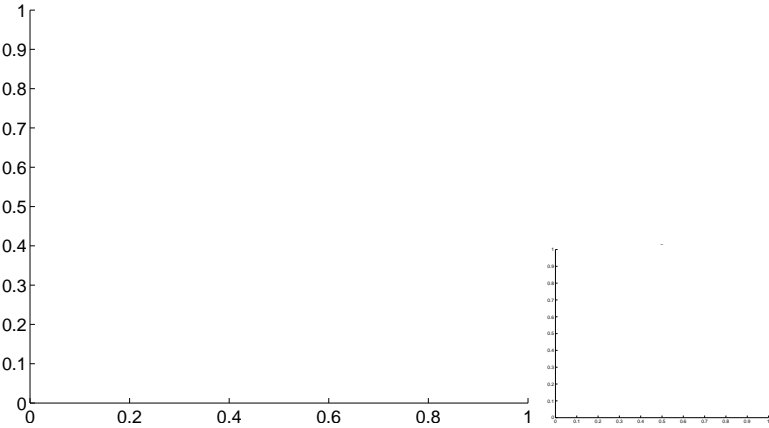
Q3 no OOT image



Q4 no difference image

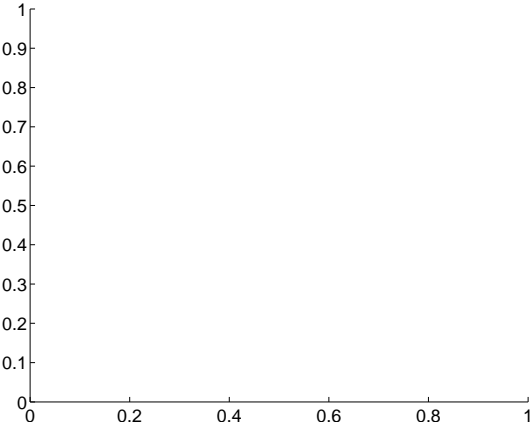


Q4 no OOT image

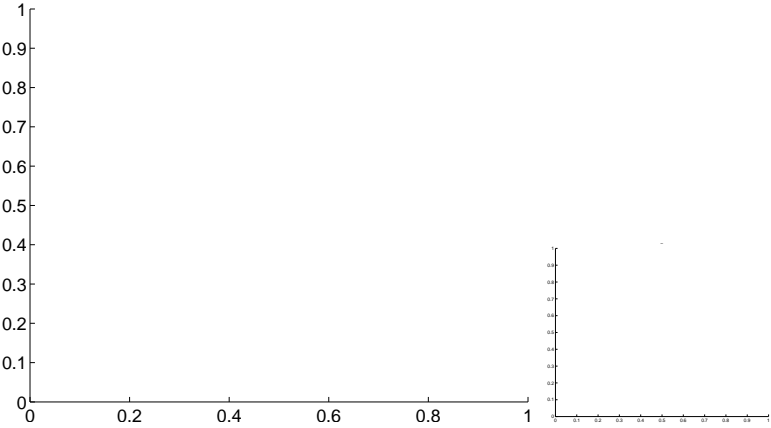


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

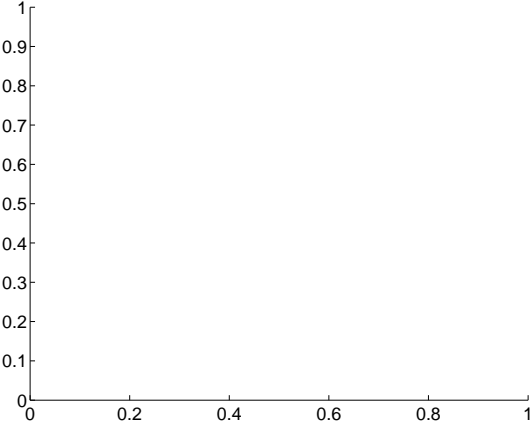
Q5 no difference image



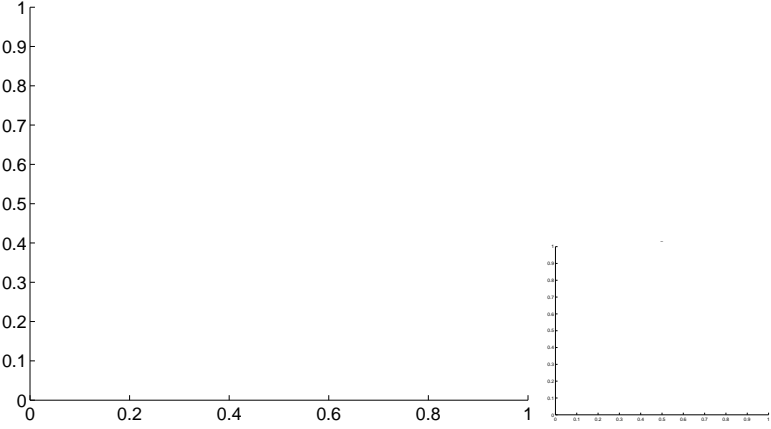
Q5 no OOT image



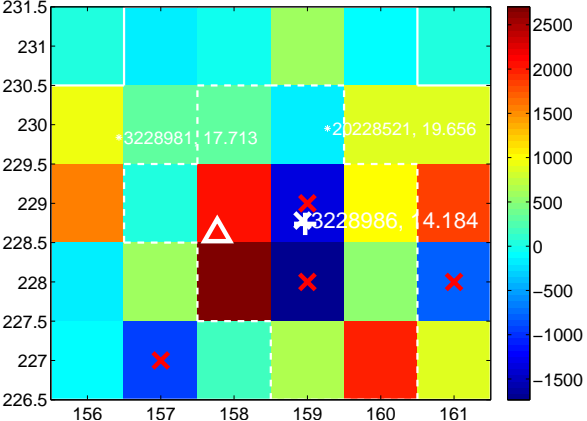
Q6 no difference image



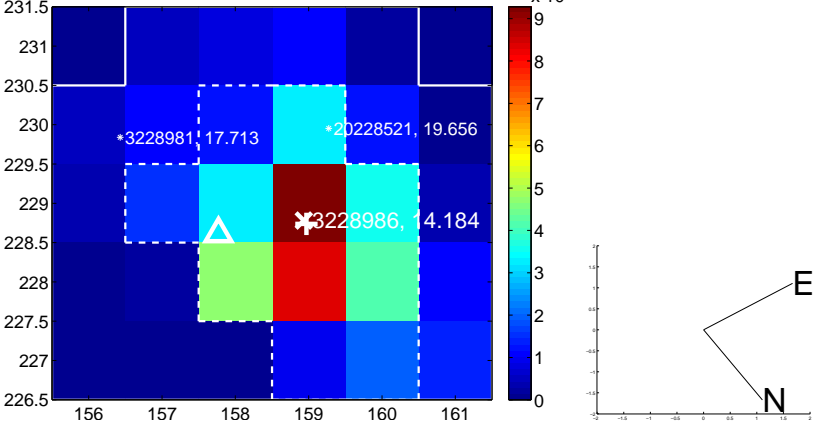
Q6 no OOT image



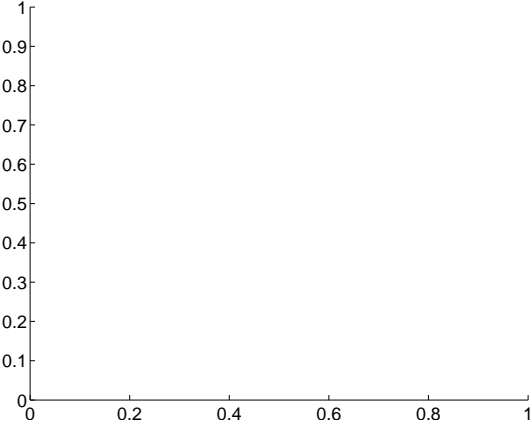
Q7 difference image. Poor Quality



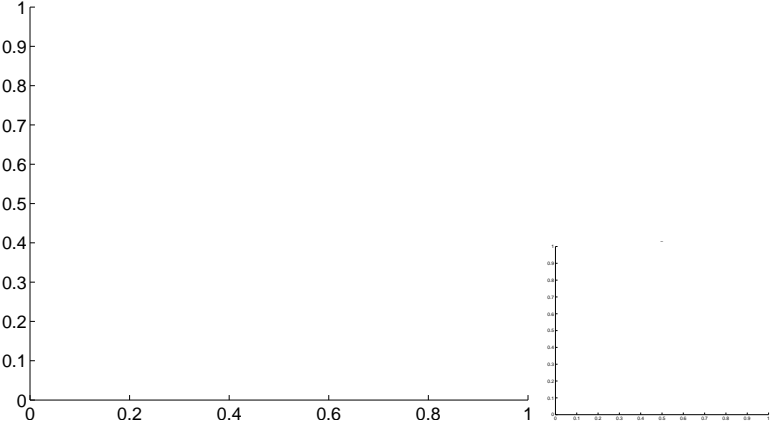
Q7 OOT image



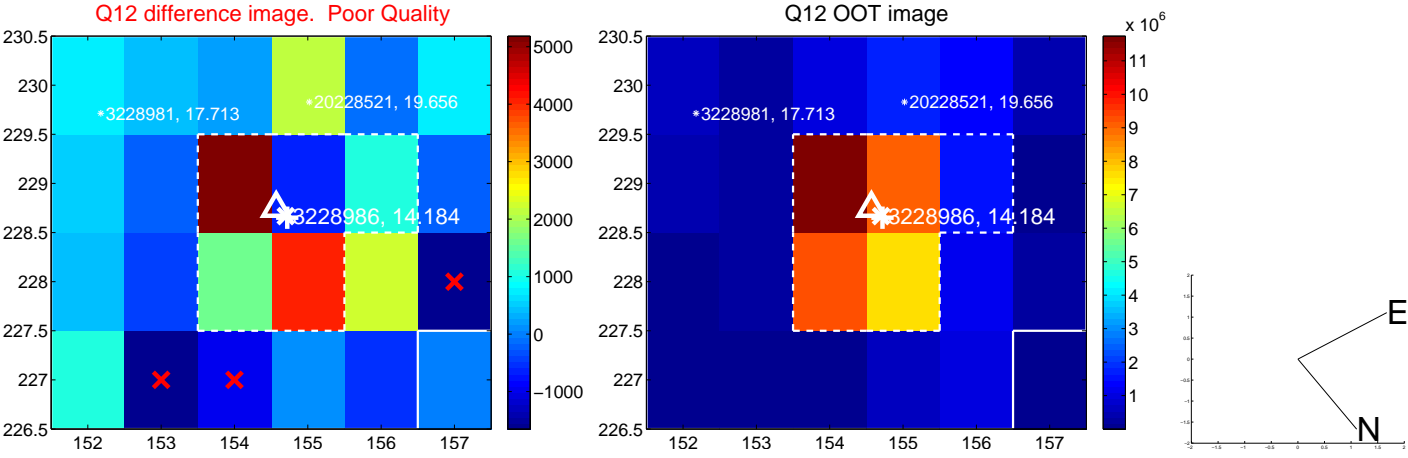
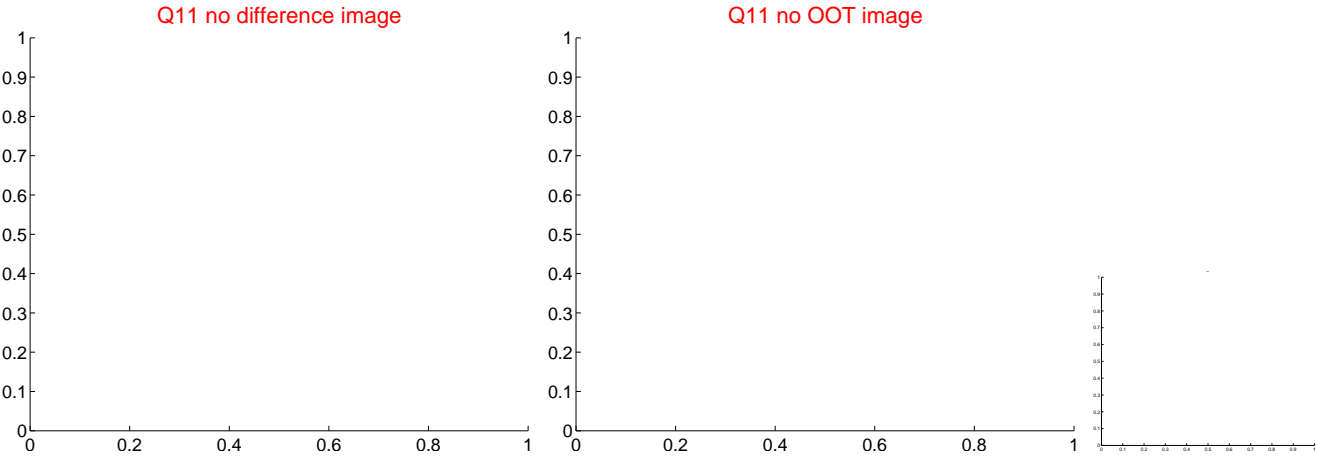
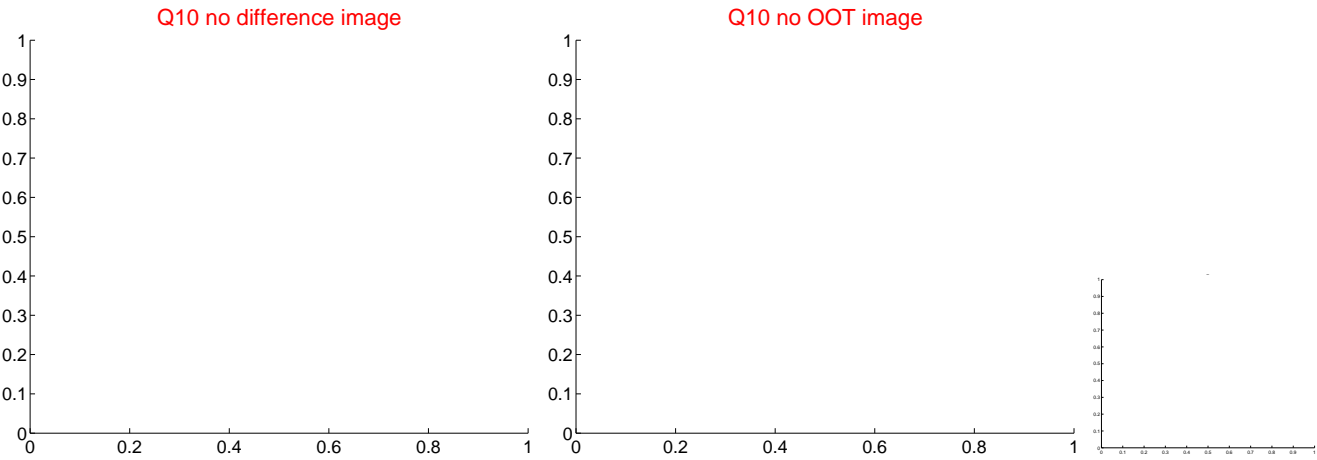
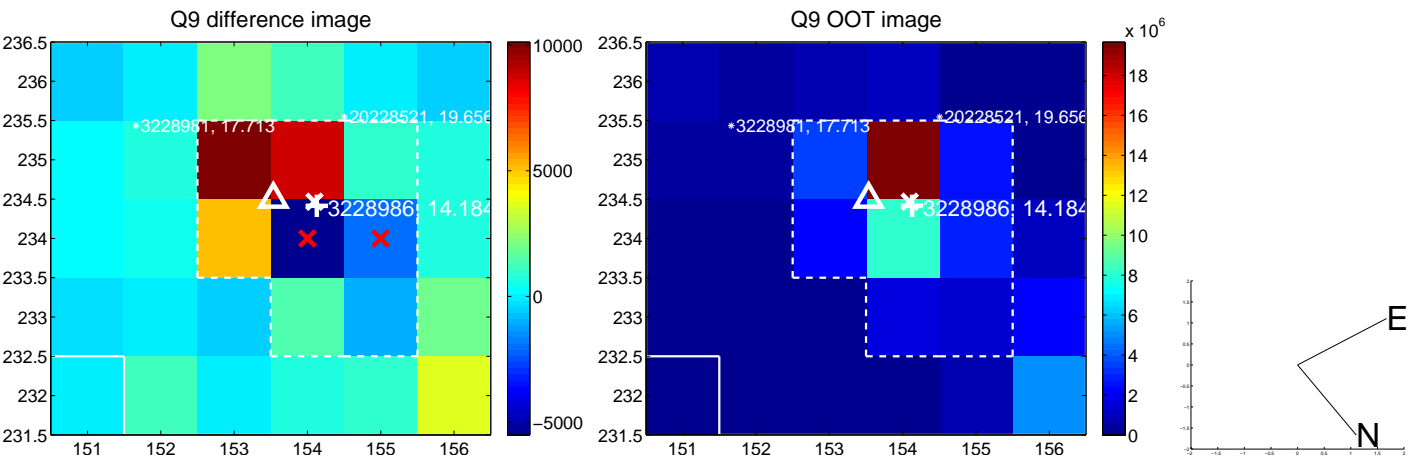
Q8 no difference image



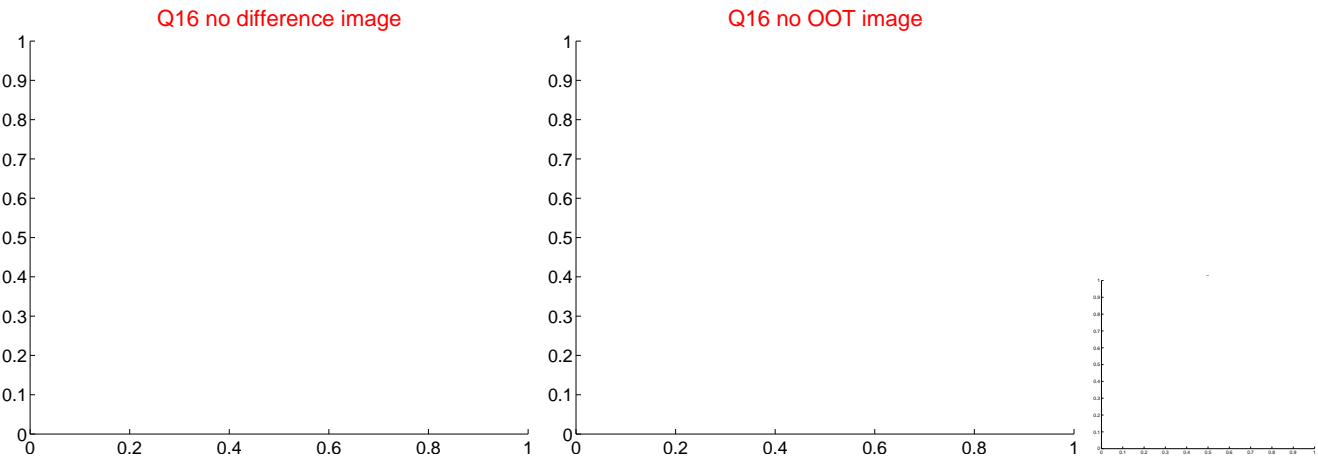
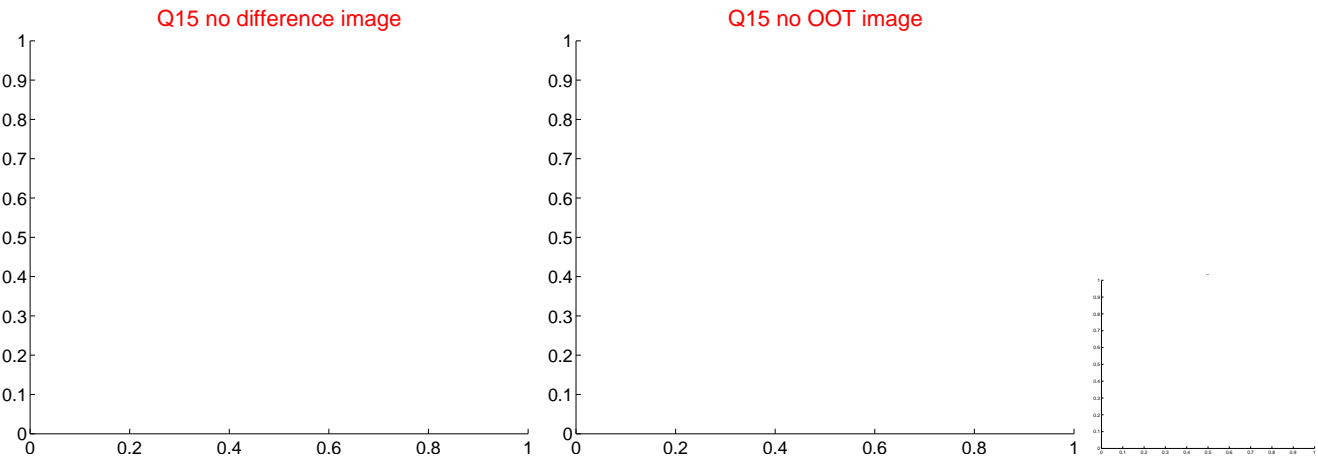
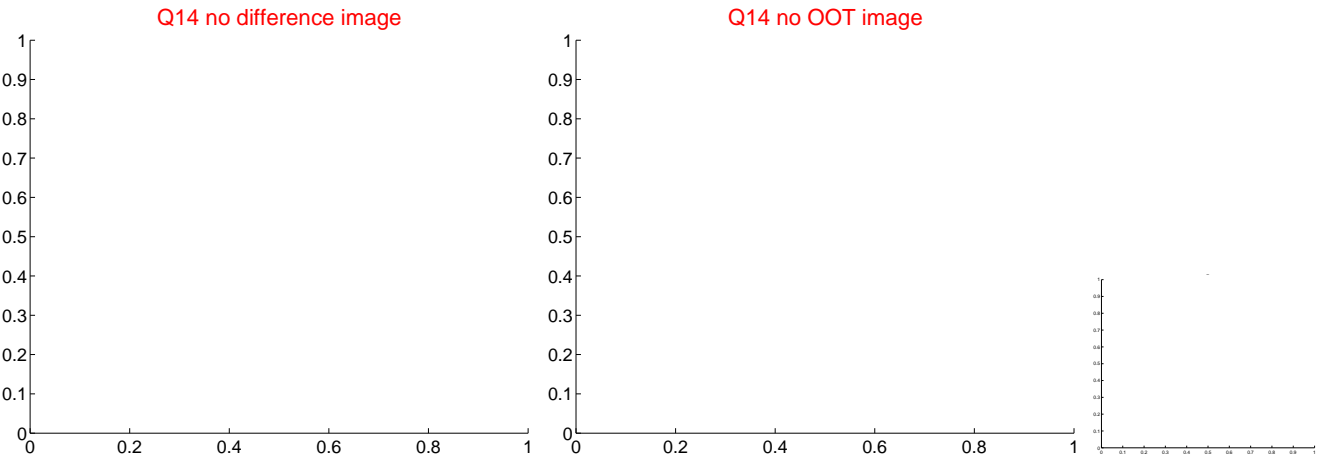
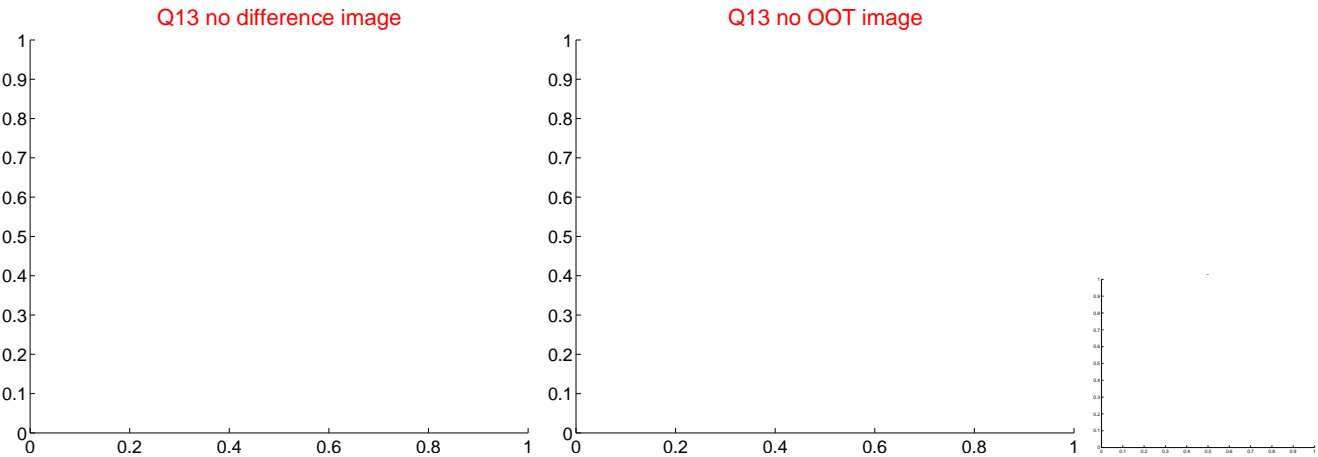
Q8 no OOT image



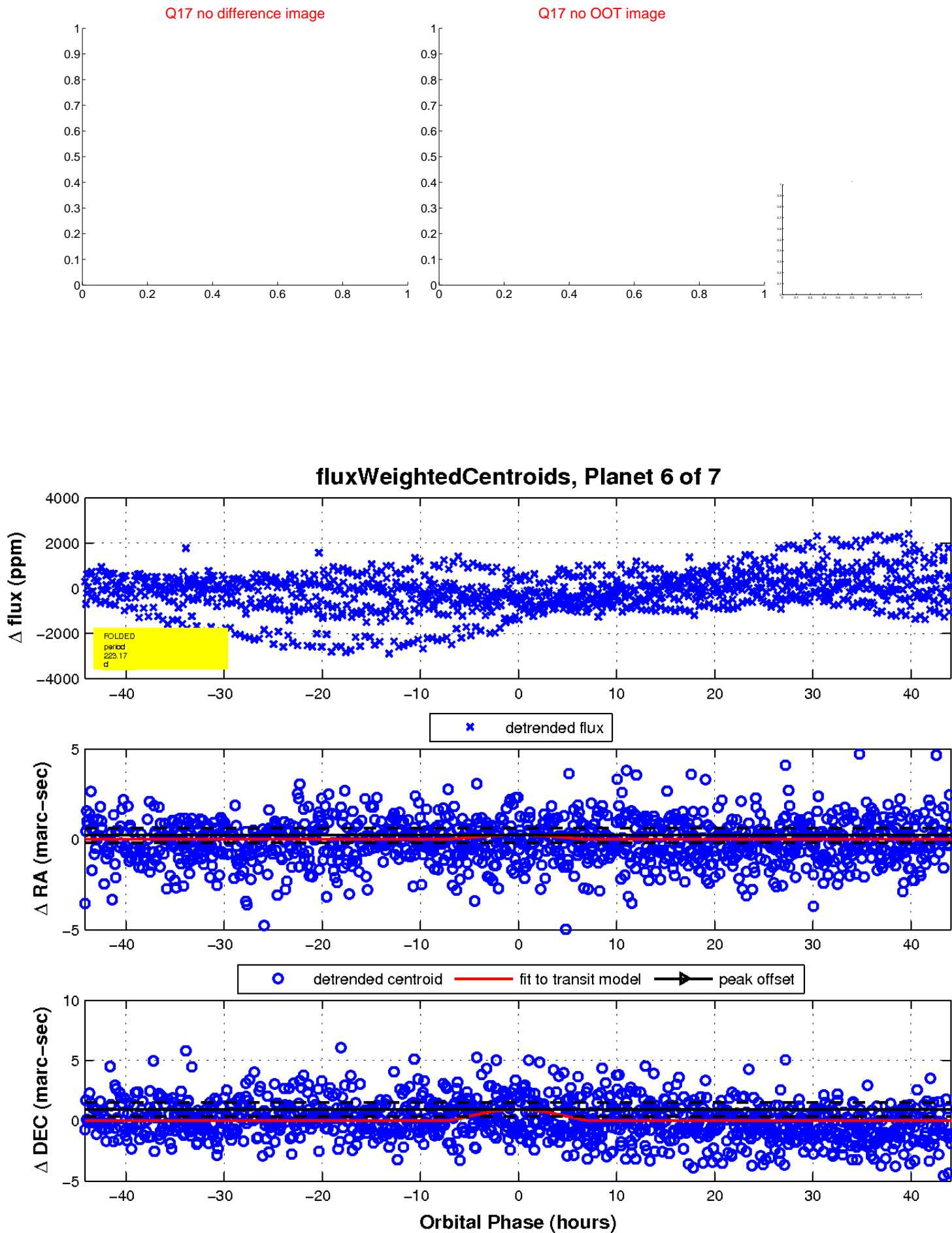
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

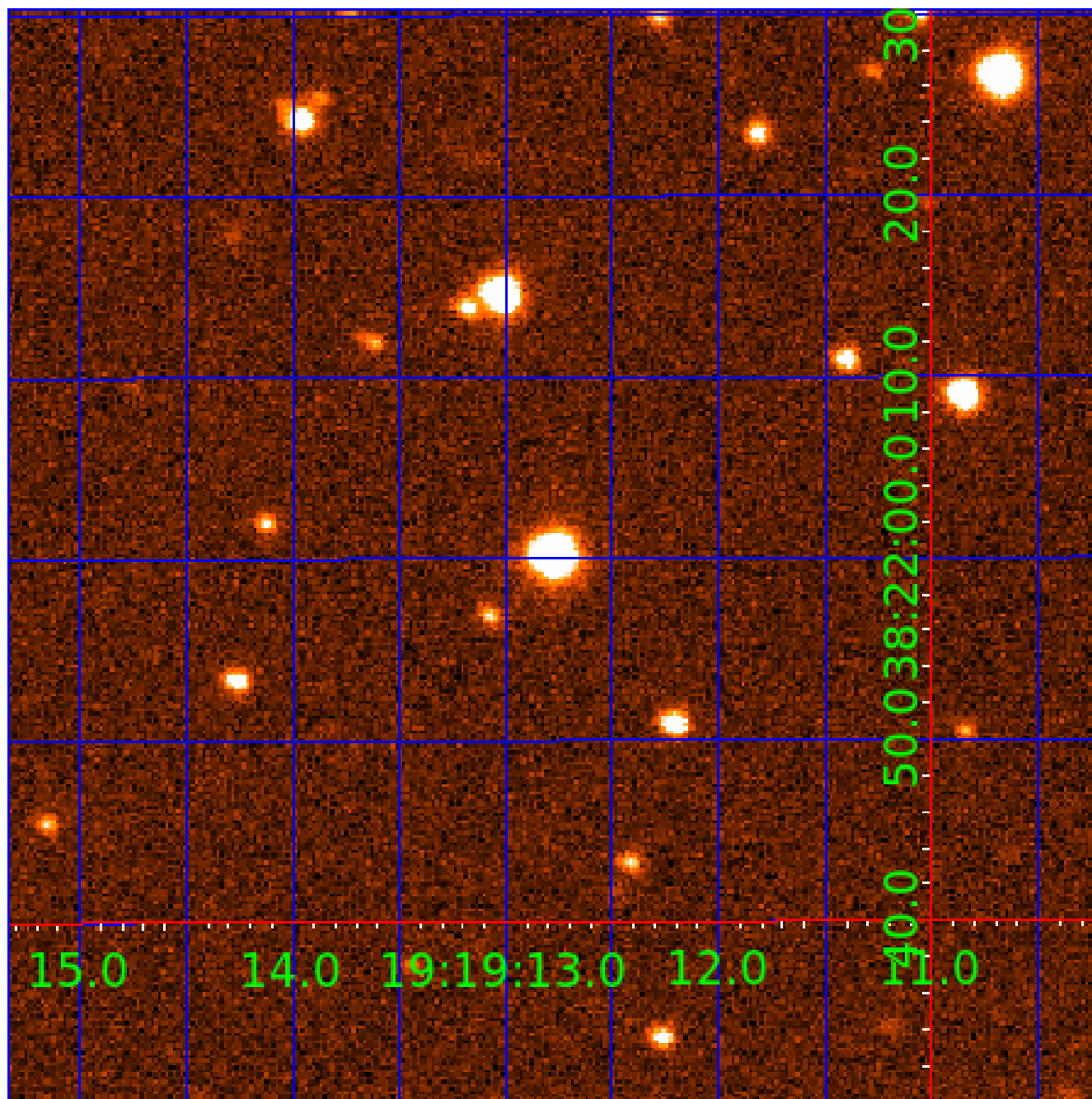


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003228986

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})
003228986-01	OBS	4031.01	0.730966	132.219395	63.7	2.981	18.9	18.6	1.19	6238	0.98	6758.04
003228986-02	OBS	No	432.043981	279.433266	4647.8	55.770	15.8	9.8	1.19	6238	10.69	1.36
003228986-03	OBS	No	247.279104	233.999456	546.5	9.531	8.8	6.3	1.19	6238	2.94	2.87
003228986-04	OBS	No	321.835502	226.050599	487.7	13.269	8.4	5.2	1.19	6238	2.82	2.02
003228986-05	OBS	No	246.915361	221.969229	521.9	1.475	9.4	4.2	1.19	6238	2.97	2.87
003228986-06	OBS	No	223.166868	221.784778	527.0	14.730	13.5	5.9	1.19	6238	5.24	3.29
003228986-07	OBS	No	449.559064	327.040113	797.9	9.586	8.4	7.4	1.19	6238	3.65	1.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003228986-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
003228986-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS
003228986-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
003228986-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228986-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—ALL_TRANS_CHASES—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.

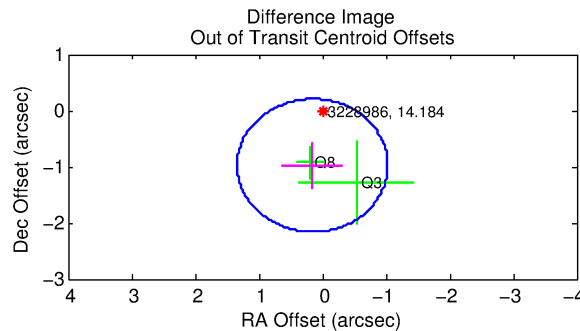
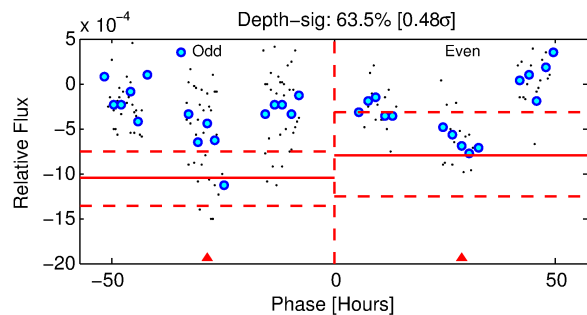
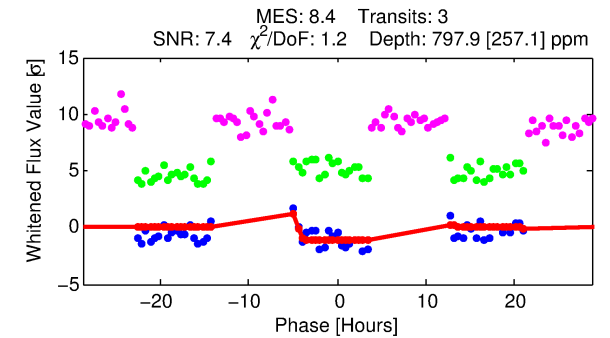
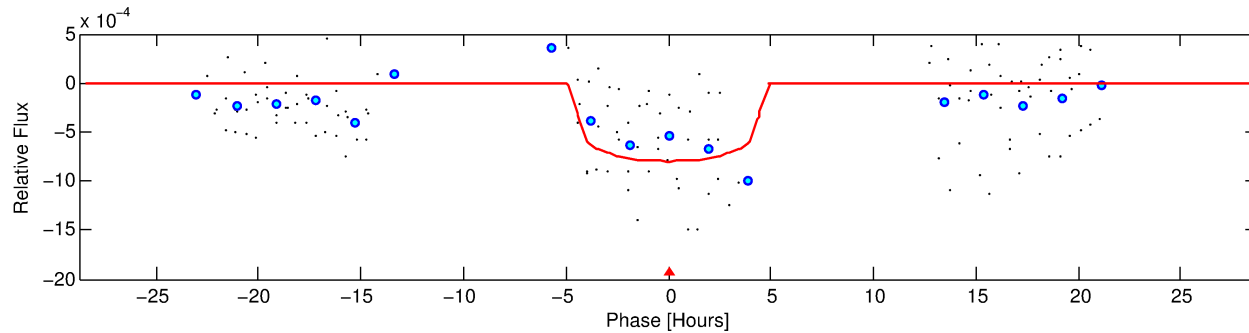
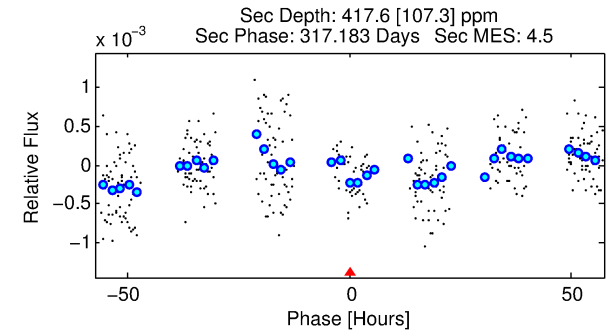
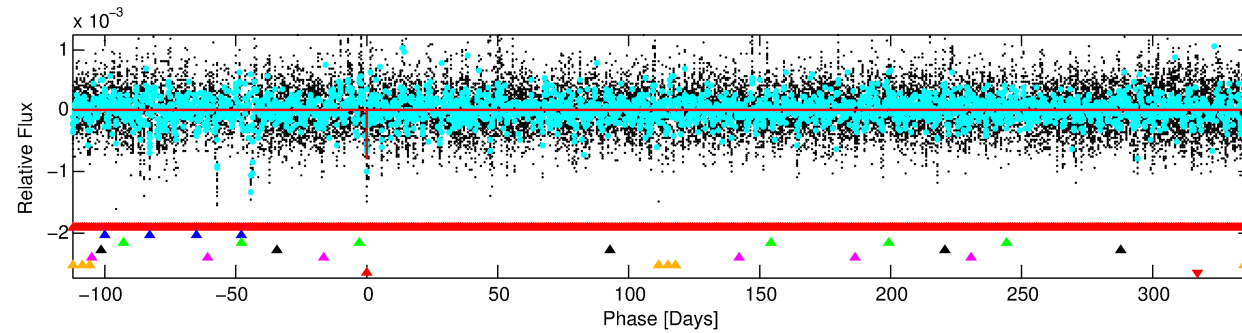
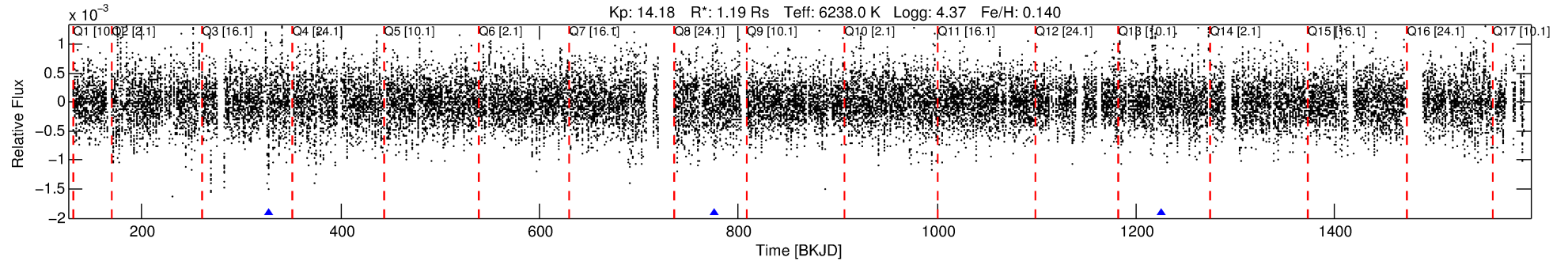
Ephemeris Match Information For 003228986-07

No Significant Match Found

DV One-Page Summary

KIC: 3228986 Candidate: 7 of 7 Period: 449.559 d
KOI: K04031 Corr: No Ephemeris Match

Kp: 14.18 R*: 1.19 Rs Teff: 6238.0 K Logg: 4.37 Fe/H: 0.140



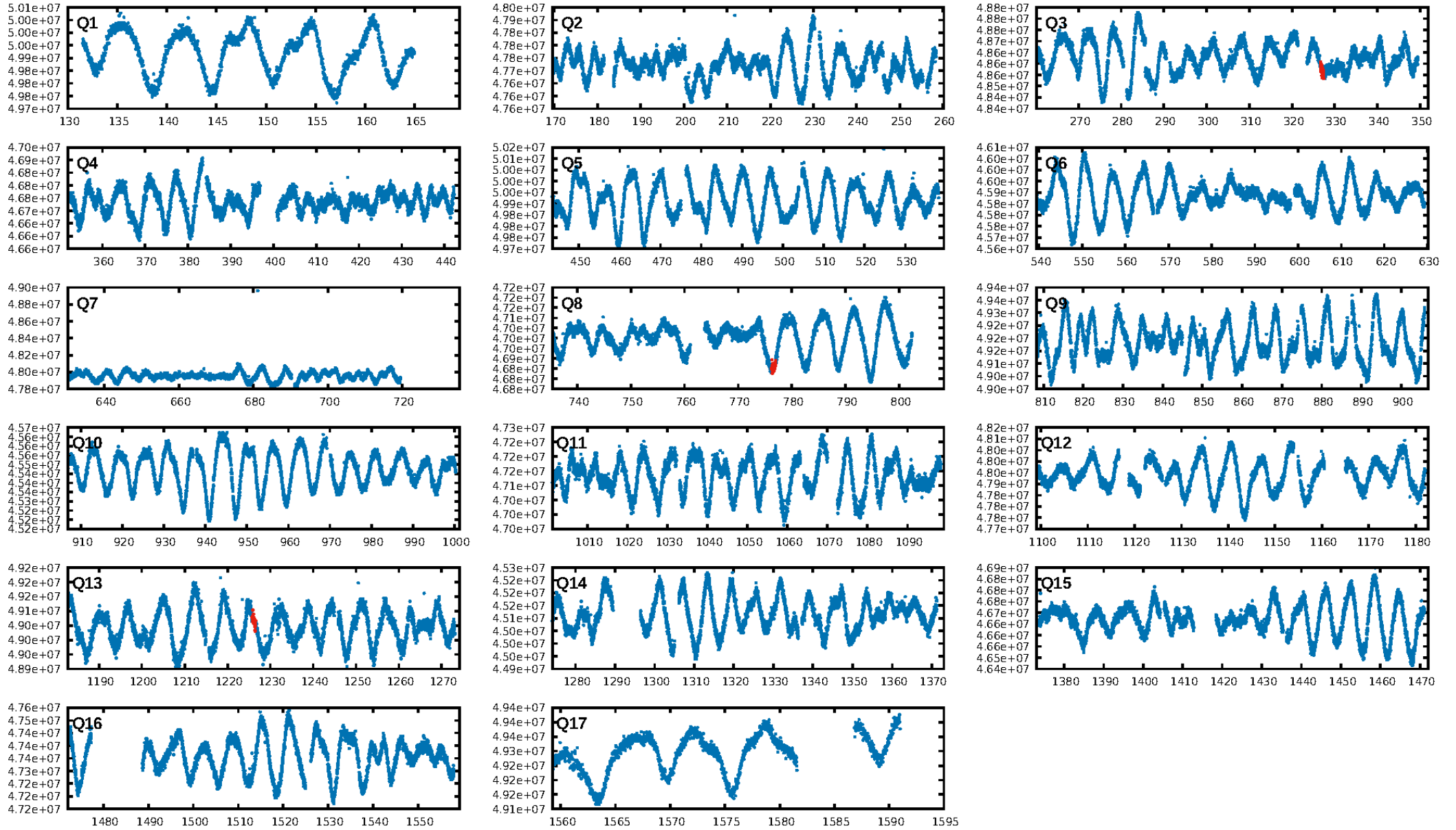
DV Fit Results:

Period = 449.55906 [0.01040] d
Epoch = 327.0401 [0.0675] BKJD
Rp/R* = 0.0281 [0.0129]
a/R* = 253.27 [572.90]
b = 0.75 [1.42]
Seff = 1.29 [0.29]
Teff = 272 [15] K
Rp = 3.65 [1.78] Re
a = 1.2204 [0.1759] AU
Ag = 25724.12 [25138.52] [1.02 σ]
Teffp = 5323 [1271] K [3.97 σ]

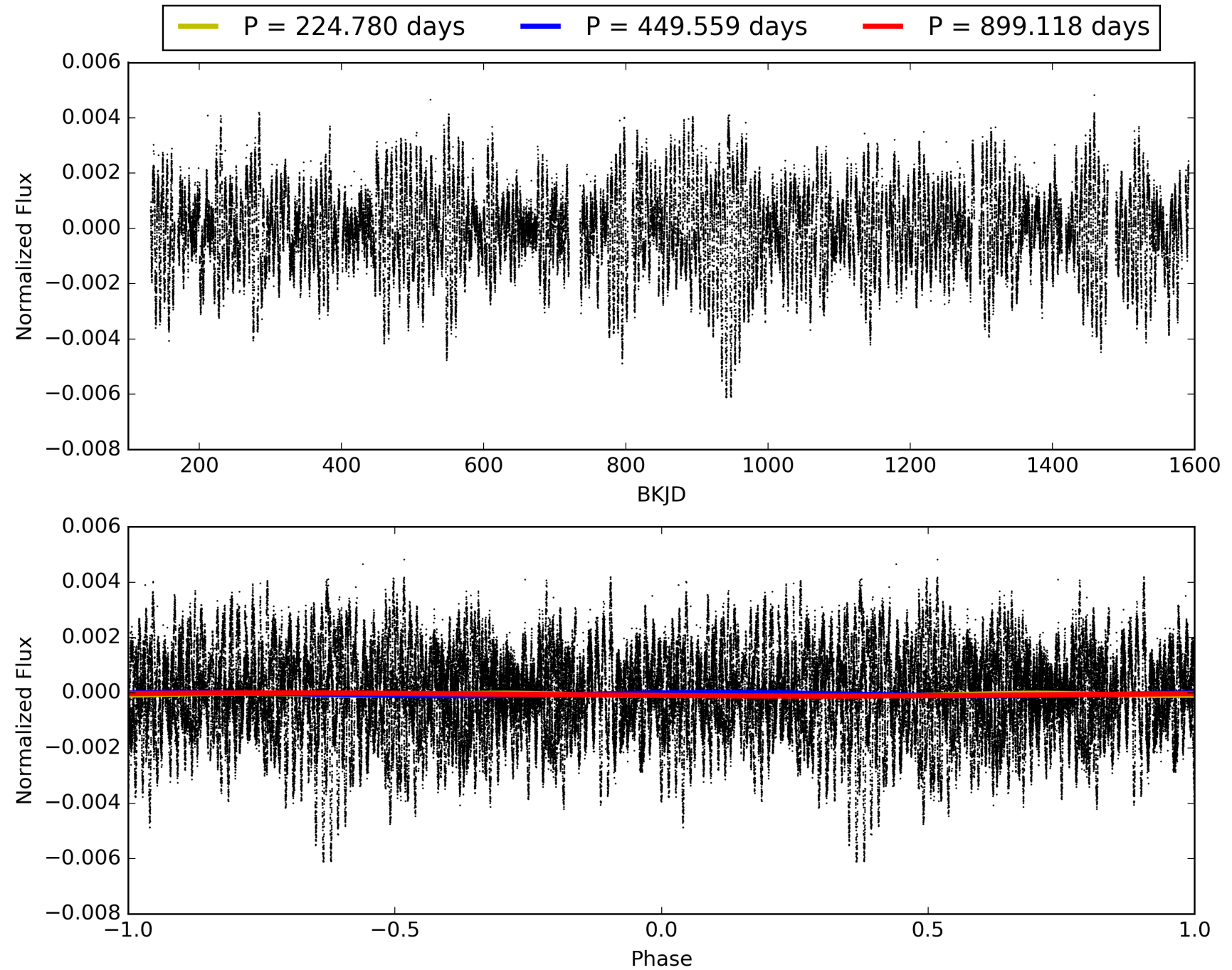
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.43 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 98.8%
Bootstrap-pfa: 6.81e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -3.874
Centroid-sig: 9.9%
Centroid-so: 0.560 arcsec [0.80 σ]
OotOffset-rm: 0.991 arcsec [2.51 σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-rm: 0.868 arcsec [2.20 σ]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.00 [0/2]

TCE 003228986-07, PDC Light Curves

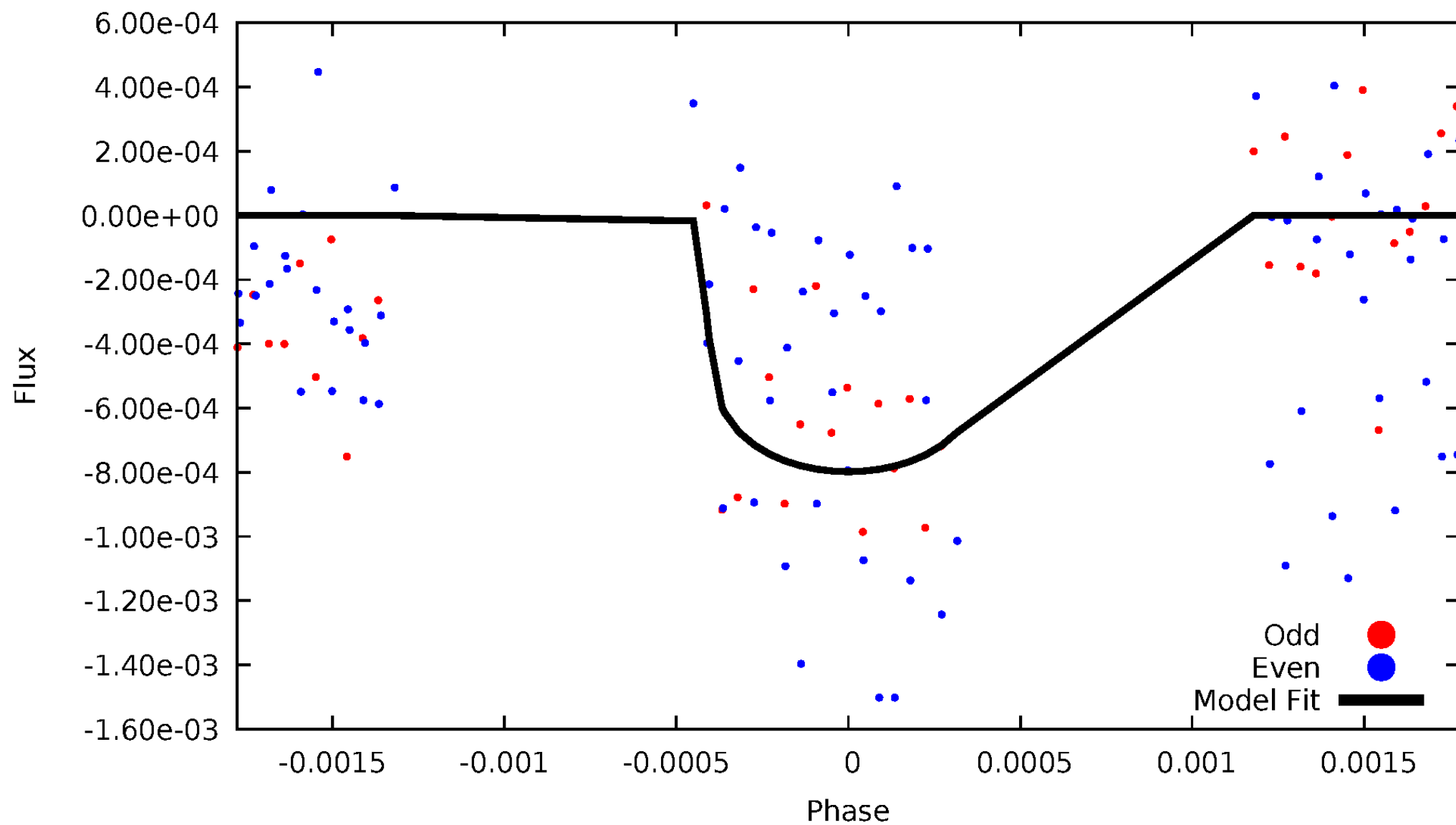


TCE 003228986-07



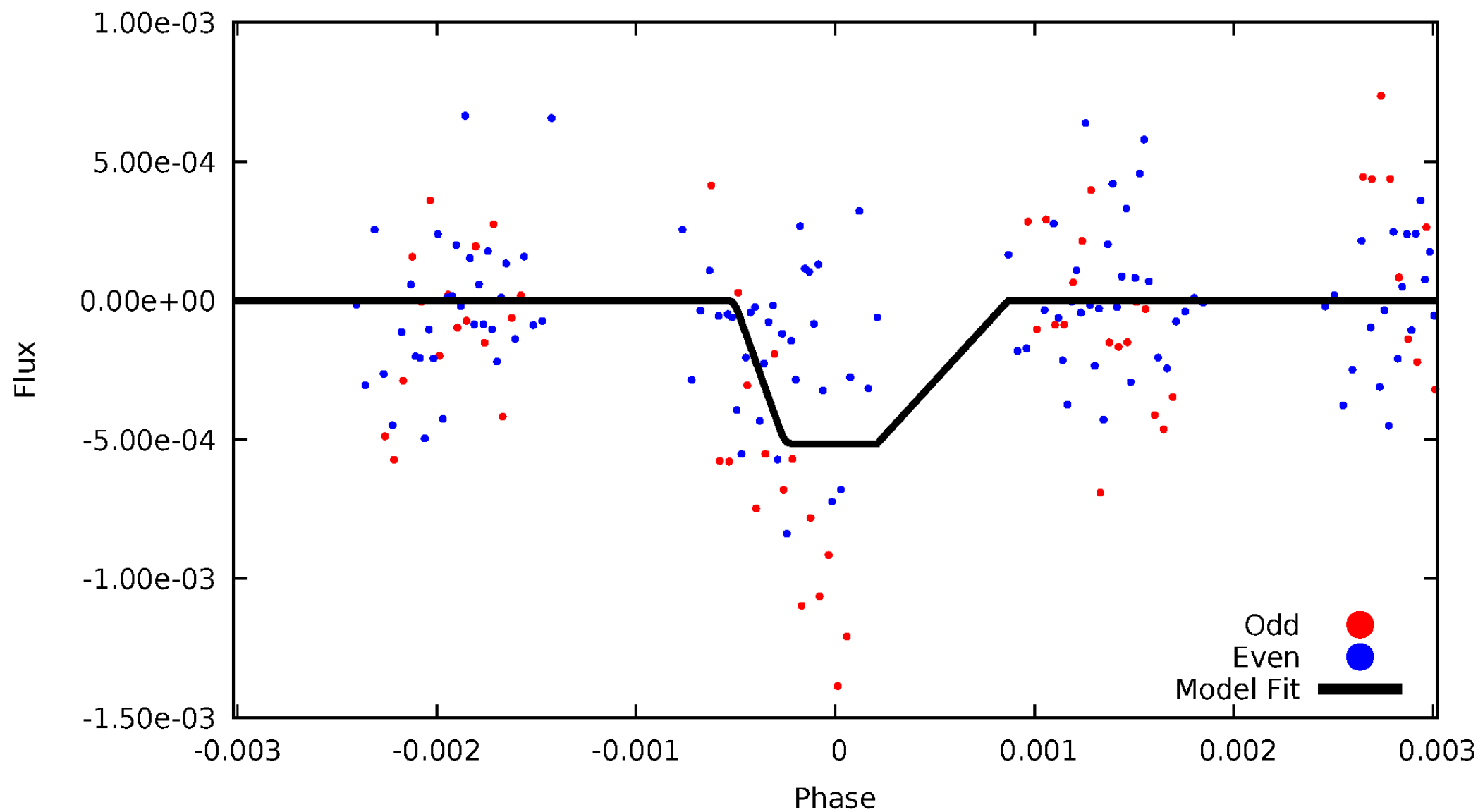
DV Odd/Even

TCE 003228986-07



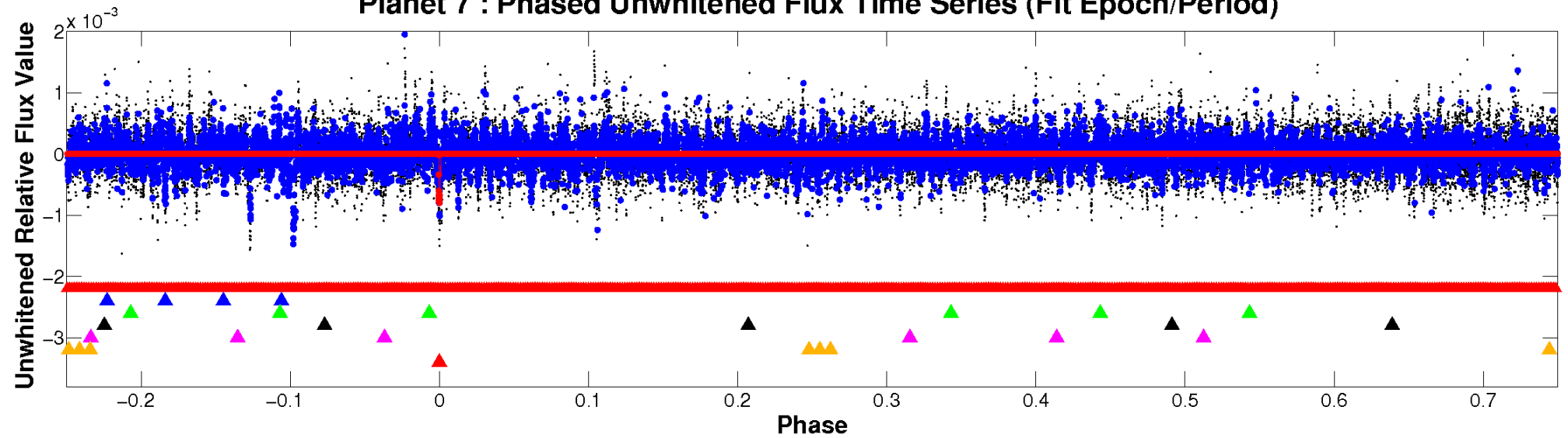
ALT Odd/Even

TCE 003228986-07

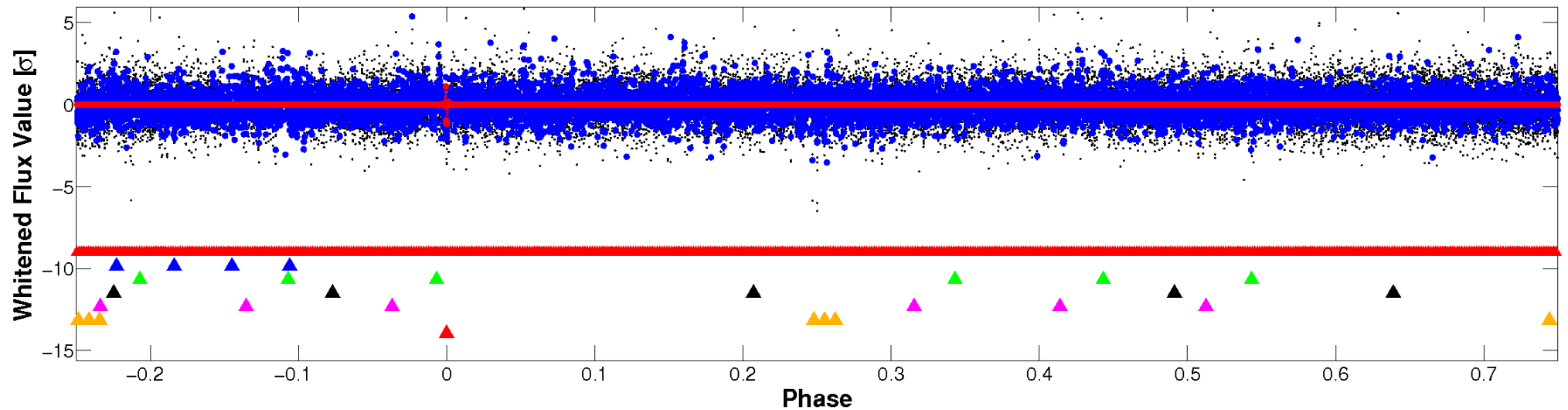


Non-Whitened Vs. Whitened Light Curve

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

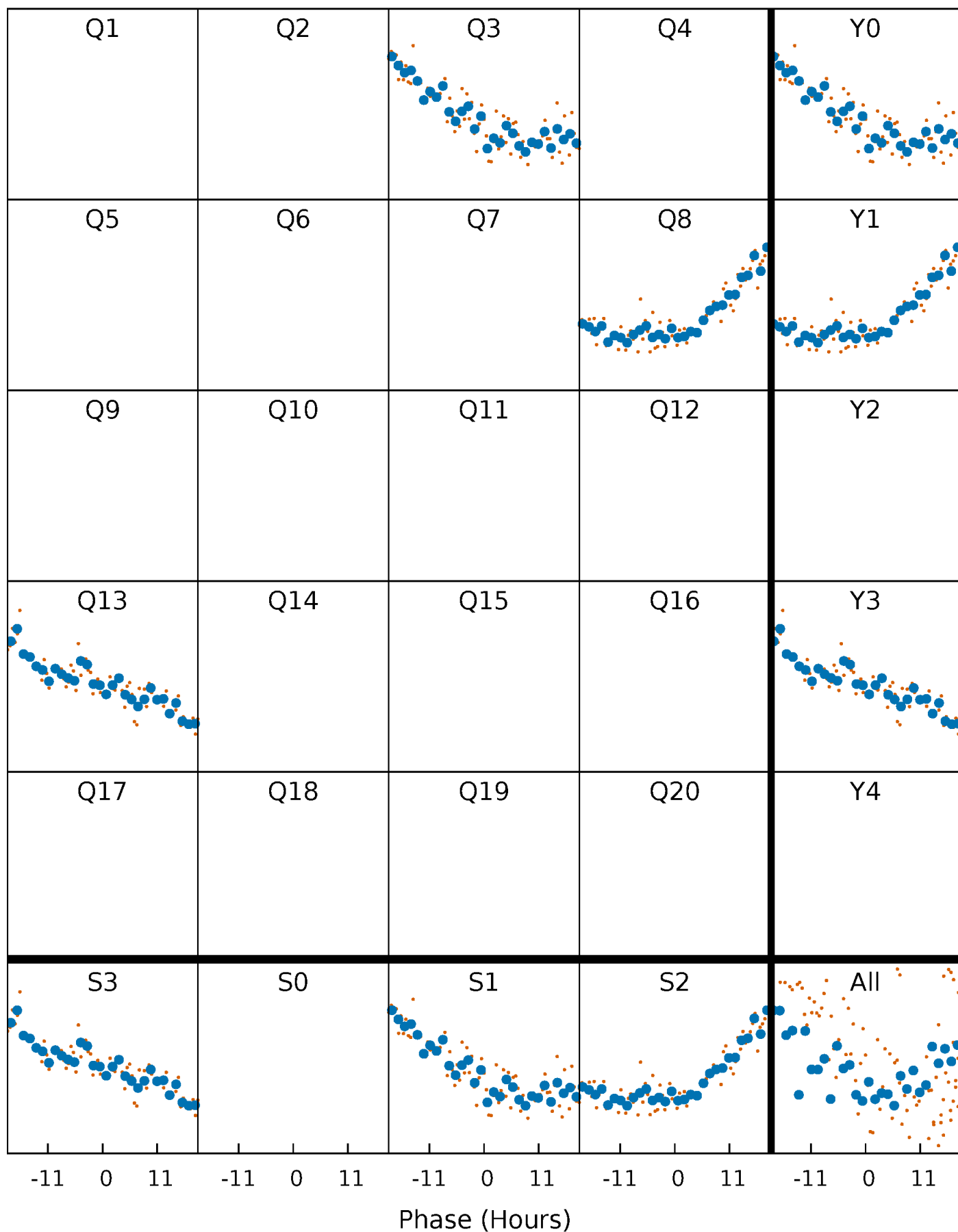


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



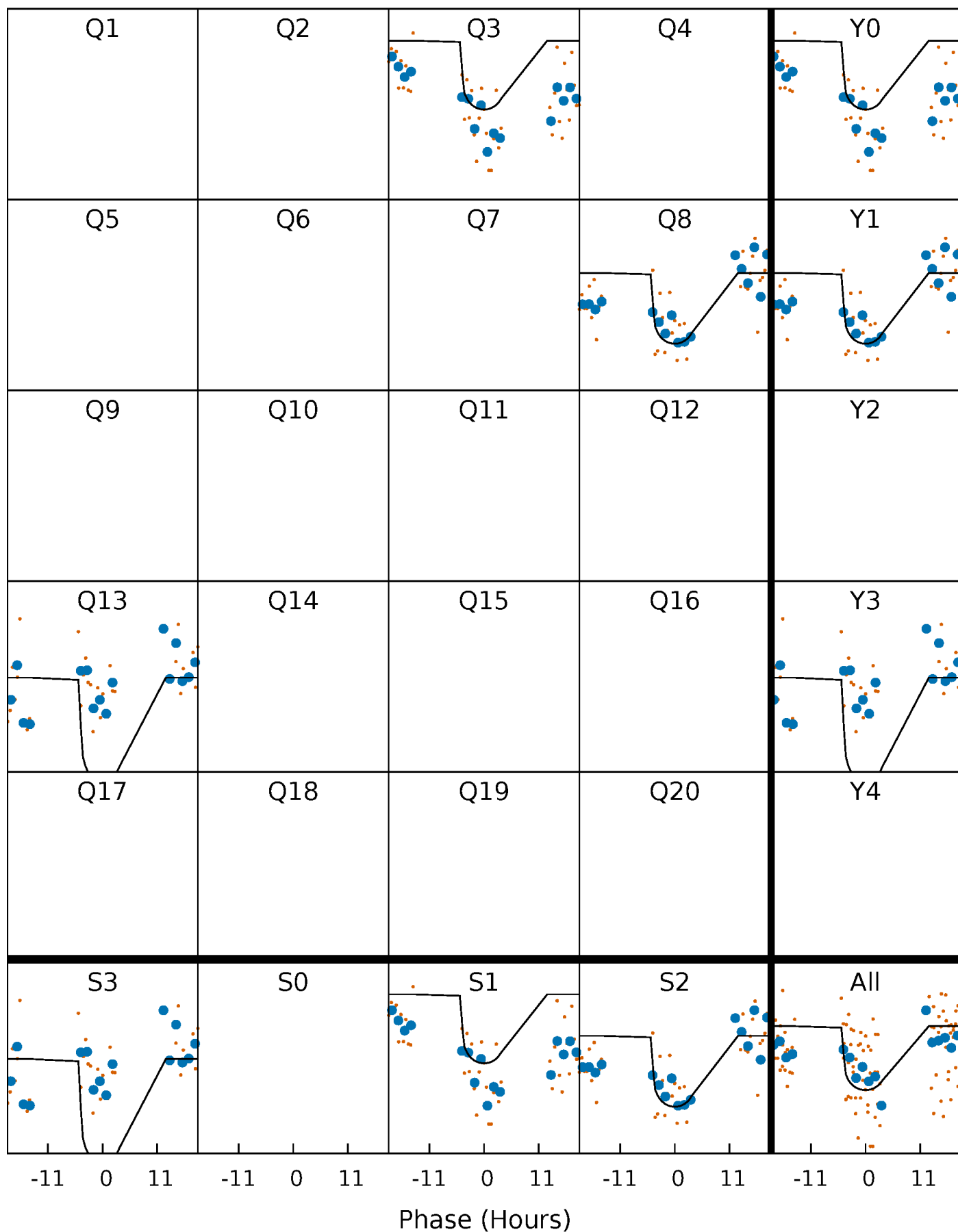
PDC Quarter-Phased Transit Curves

TCE 003228986-07 $P=449.559063$ Days $T_0=327.040113$ (BKJD)



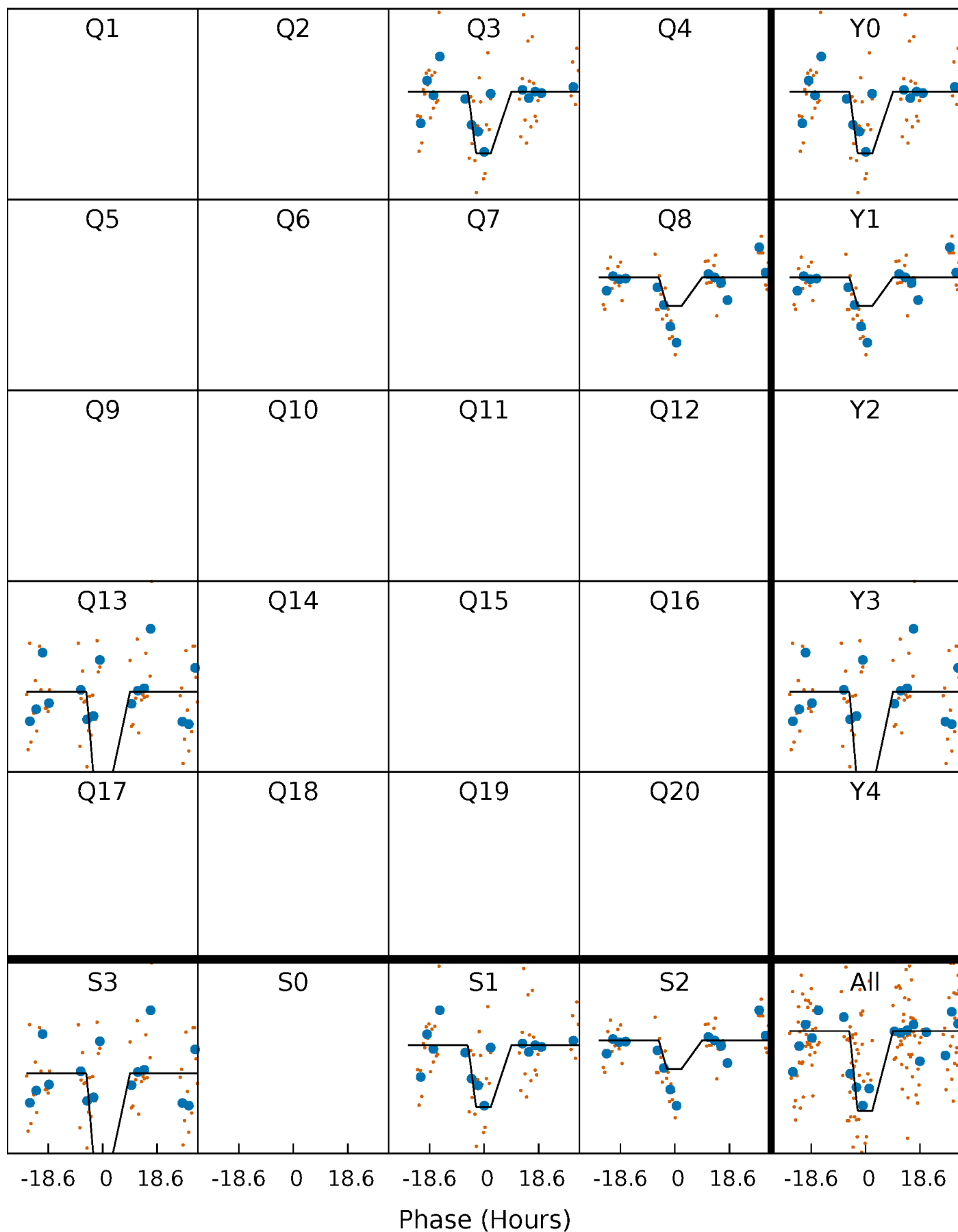
DV Quarter-Phased Transit Curves

TCE 003228986-07 $P=449.559063$ Days $T_0=327.040113$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

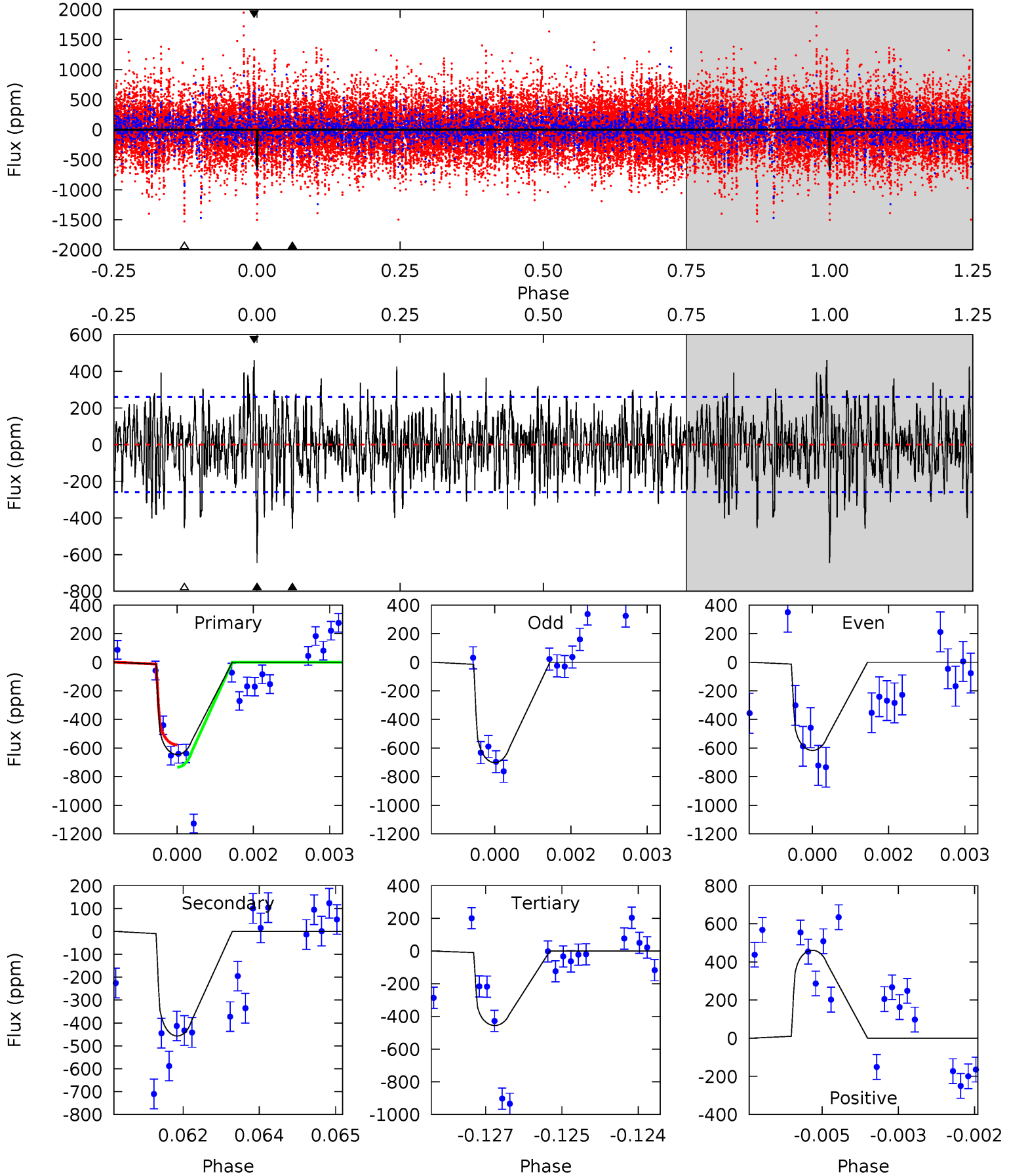
TCE 003228986-07 P=449.606432 Days $T_0=327.087770$ (BKJD)



DV Model-Shift Uniqueness Test

003228986-07, P = 449.559063 Days, E = 327.040113 Days

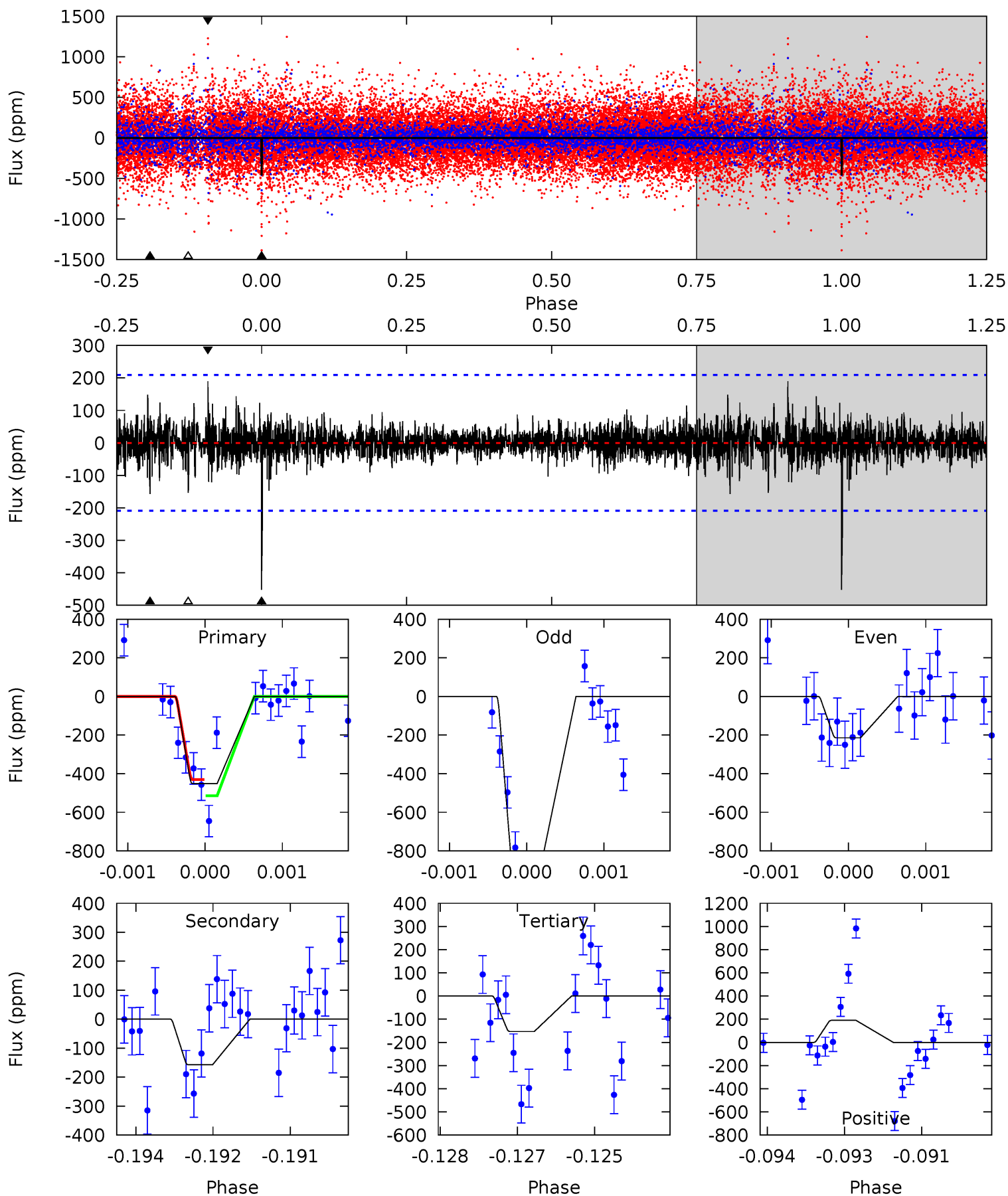
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	9.45	9.42	9.53	5.36	3.15	2.69	3.92	3.81	0.03	-0.08	0.84	0.90	0.42	1.58



Alt Model-Shift Uniqueness Test

003228986-07, P = 449.606432 Days, E = 327.087770 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	4.06	3.96	4.90	5.40	3.20	0.79	7.70	6.76	0.10	-0.84	8.86	1.31	0.30	0.87



Stellar Parameters For KIC 003228986

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	6238^{+68}_{-87}	$4.365^{+0.040}_{-0.120}$	$0.140^{+0.150}_{-0.200}$	$1.191^{+0.198}_{-0.085}$	$1.204^{+0.076}_{-0.093}$	$1.003^{+0.199}_{-0.347}$
	+1%/-1%	+1%/-3%	+107%/-143%	+17%/-7%	+6%/-8%	+20%/-35%
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 003228986-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-457 ± 48	$3.86^{+1.65}_{-1.69}$	383^{+17}_{-10}	5408^{+1771}_{-744}	25382^{+53517}_{-13327}
Alt.	-157 ± 39	$3.21^{+1.79}_{-1.60}$	383^{+16}_{-10}	4652^{+1742}_{-753}	12358^{+38720}_{-7685}

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

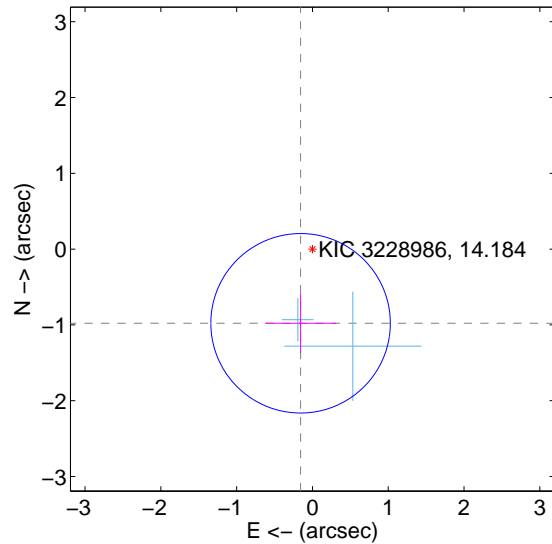
Supplemental centroid analysis for 003228986-07. Kepler magnitude: 14.18. Transit SNR 7.42

There are 2 quarters with good PRF difference image offsets

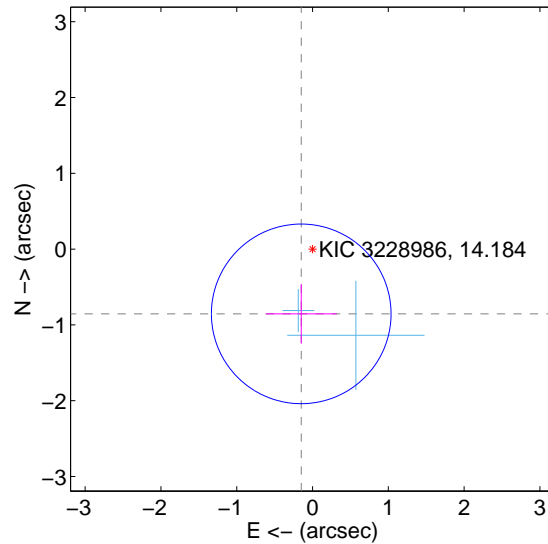
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.991 ± 0.395	2.51	0.156 ± 0.469	-0.979 ± 0.393
PRF-fit source offset from KIC position	0.868 ± 0.395	2.20	0.149 ± 0.469	-0.855 ± 0.393
photometric centroid source offset	0.56 ± 0.70	0.80	-0.15 ± 0.60	-0.54 ± 0.71

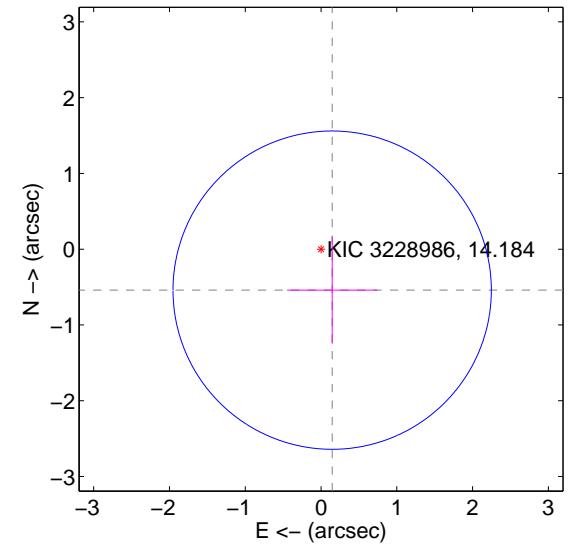
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



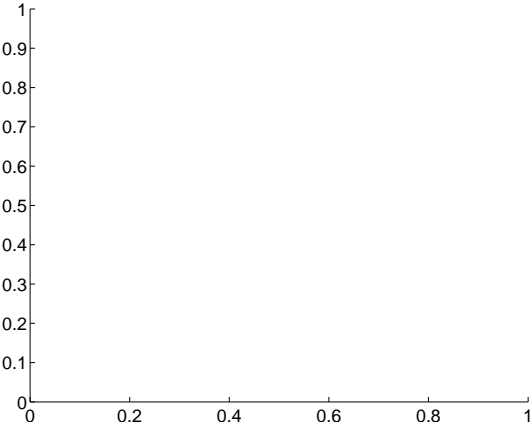
offset from photometric centroids



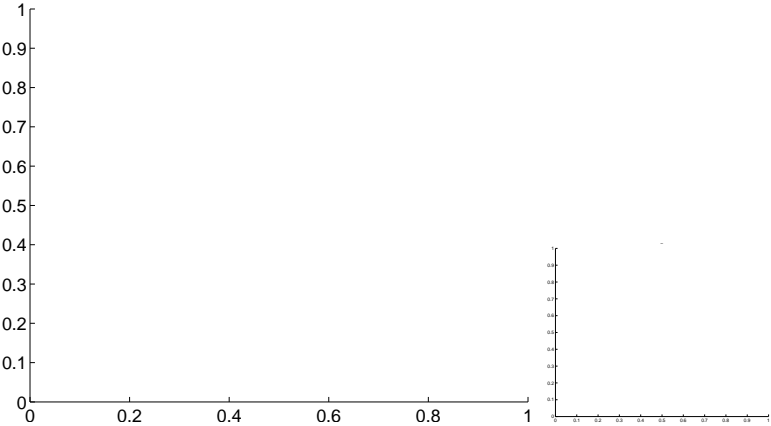
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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

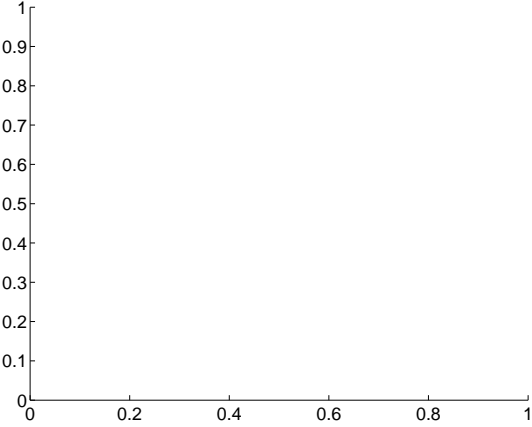
Q1 no difference image



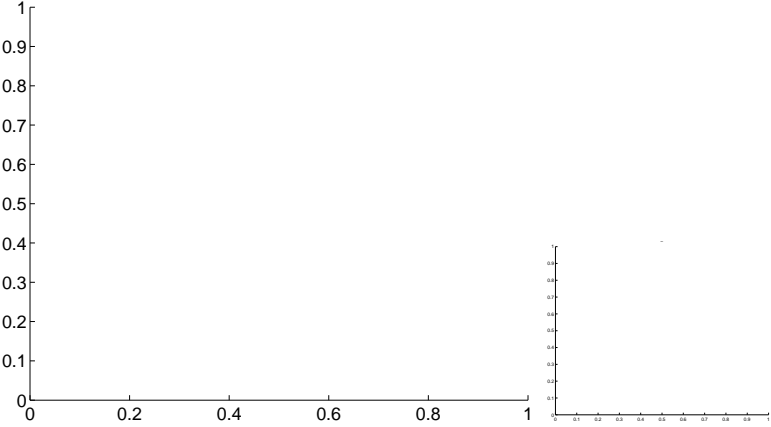
Q1 no OOT image



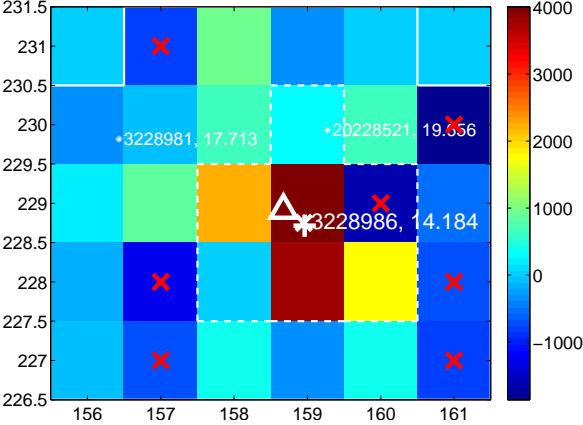
Q2 no difference image



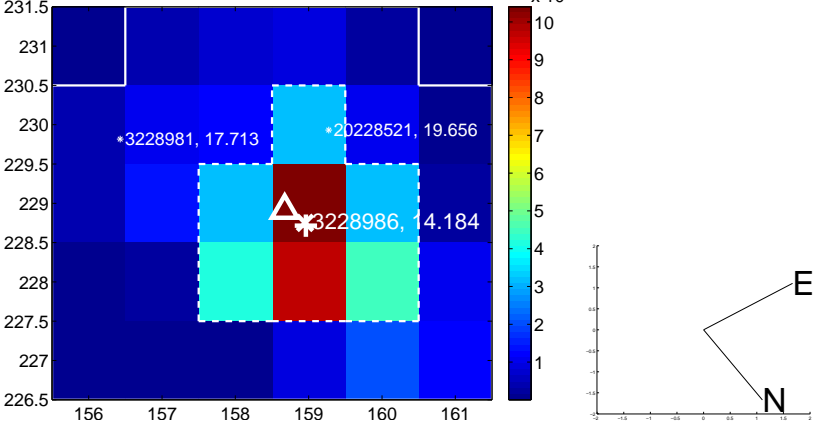
Q2 no OOT image



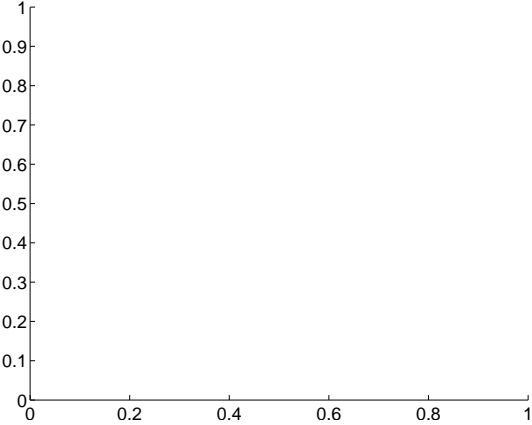
Q3 difference image



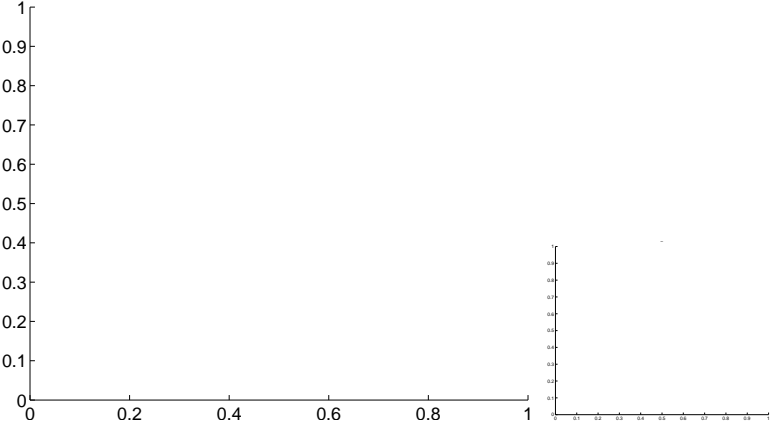
Q3 OOT image



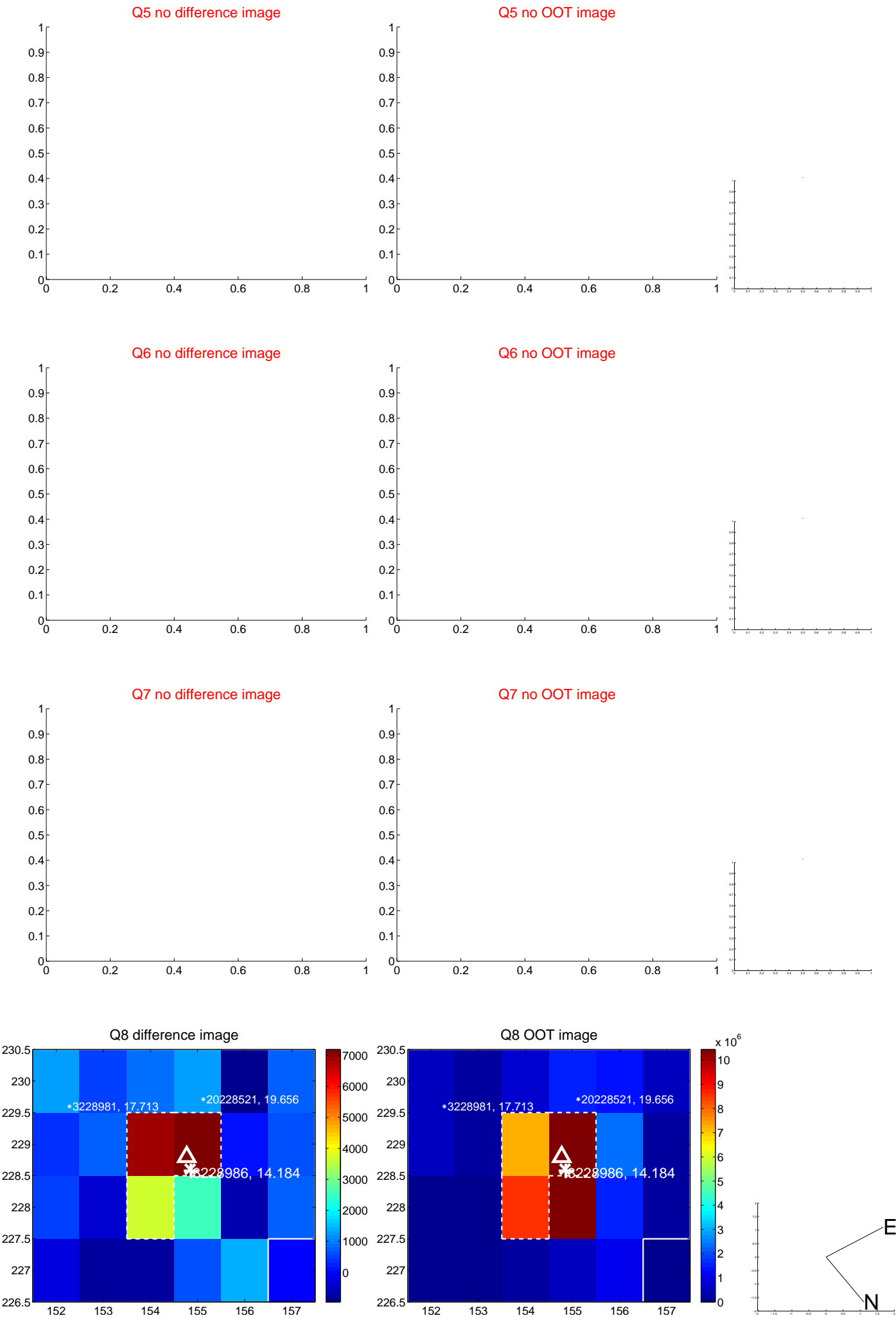
Q4 no difference image



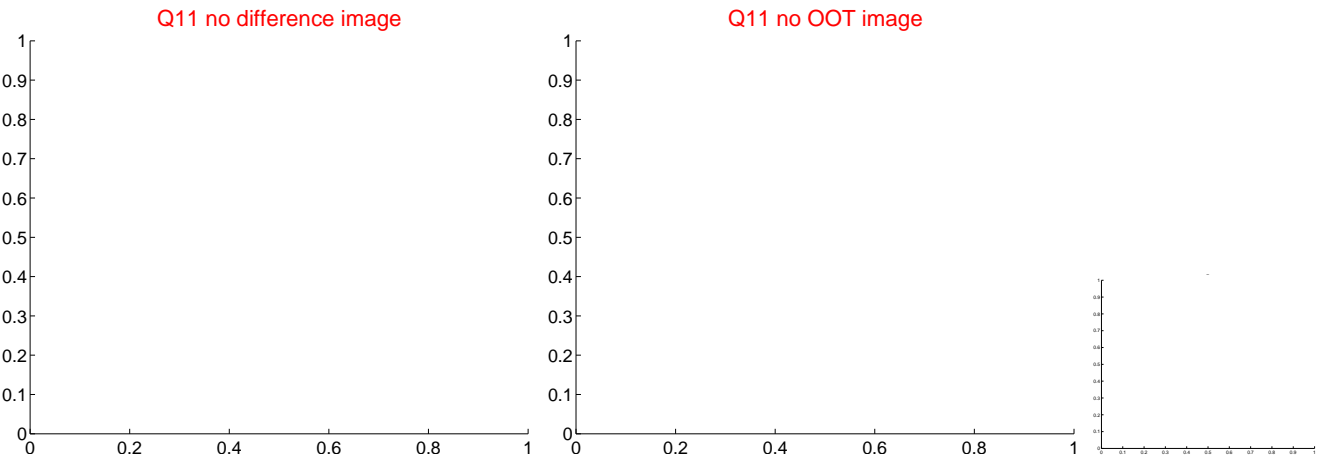
Q4 no OOT image



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



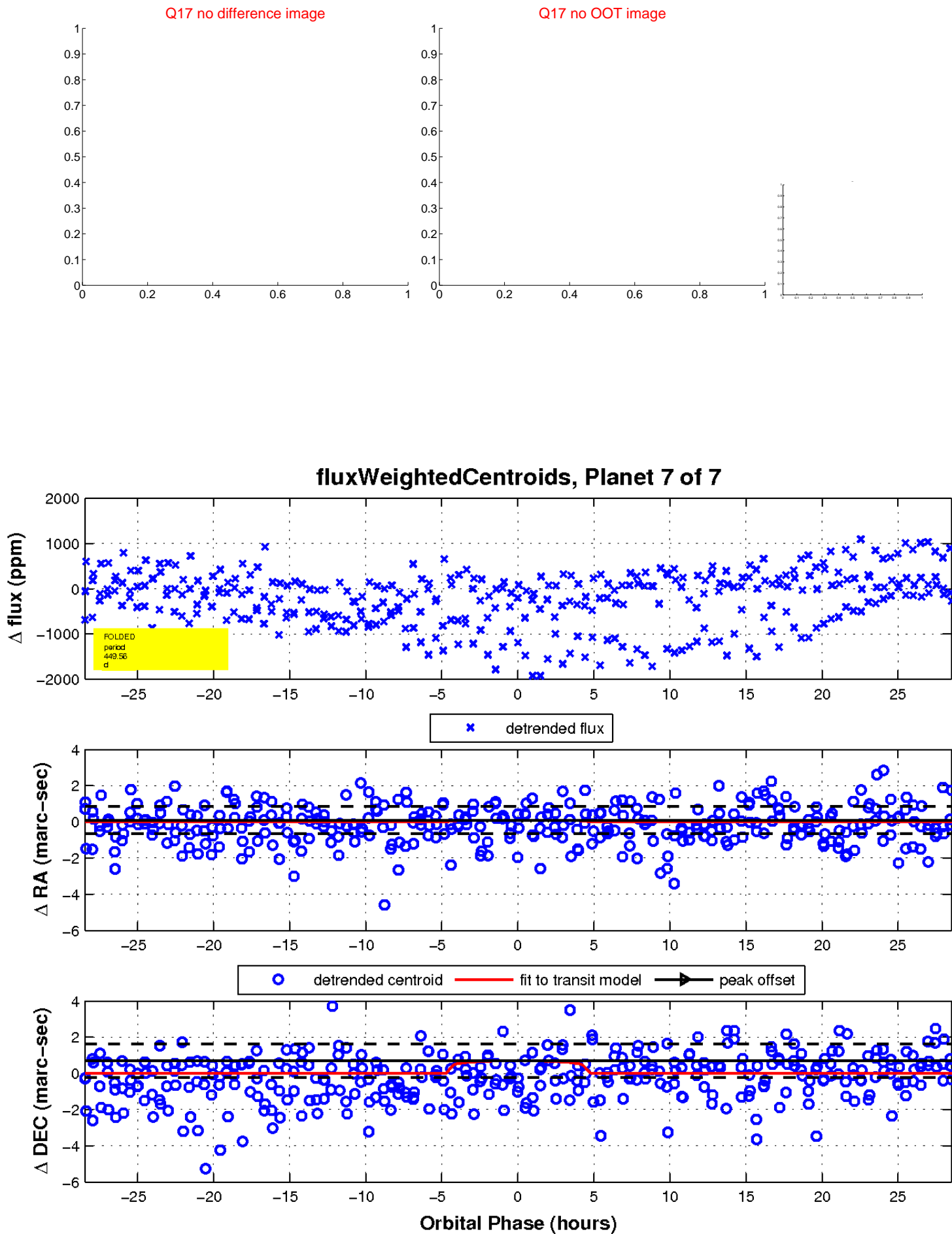
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

