

KIC 003228931

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})
003228931-01	OBS	No	372.052560	462.211414	2003.2	15.480	16.2	7.7	0.70	5280	3.67	0.41
003228931-02	OBS	No	330.850190	144.353721	1325.1	2.949	15.5	7.2	0.70	5280	2.58	0.48
003228931-03	OBS	No	473.507624	449.156916	988.3	4.714	12.9	6.2	0.70	5280	2.35	0.30
003228931-04	OBS	No	468.628876	421.791450	1075.4	5.855	12.2	6.4	0.70	5280	2.39	0.30
003228931-05	OBS	No	480.732856	576.725025	1273.3	3.719	11.5	7.8	0.70	5280	2.68	0.29
003228931-06	OBS	No	347.722462	134.574524	1282.5	12.628	10.9	6.2	0.70	5280	2.50	0.45
003228931-07	OBS	No	405.299663	521.778367	1074.8	3.500	9.9	-1.0	0.70	5280	2.26	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003228931-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003228931-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
003228931-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—HALO_GHOST
003228931-06	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

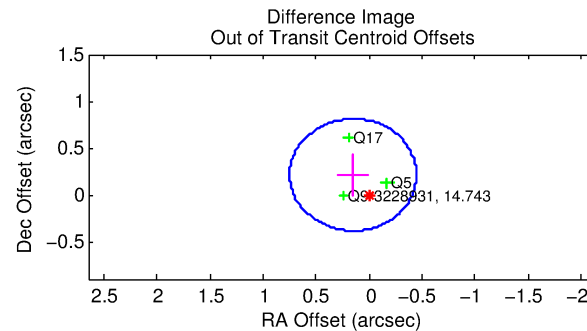
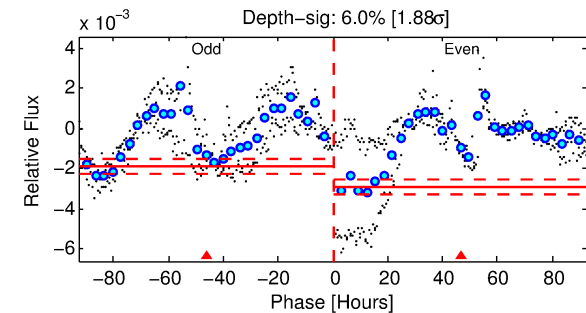
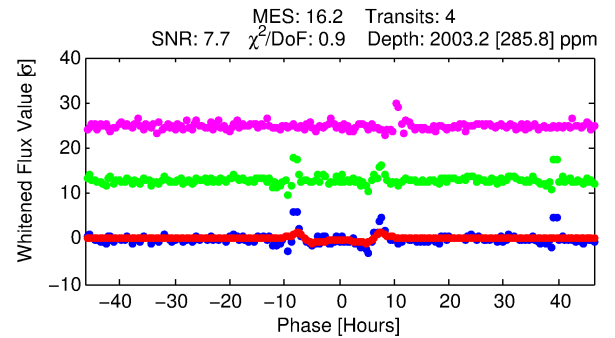
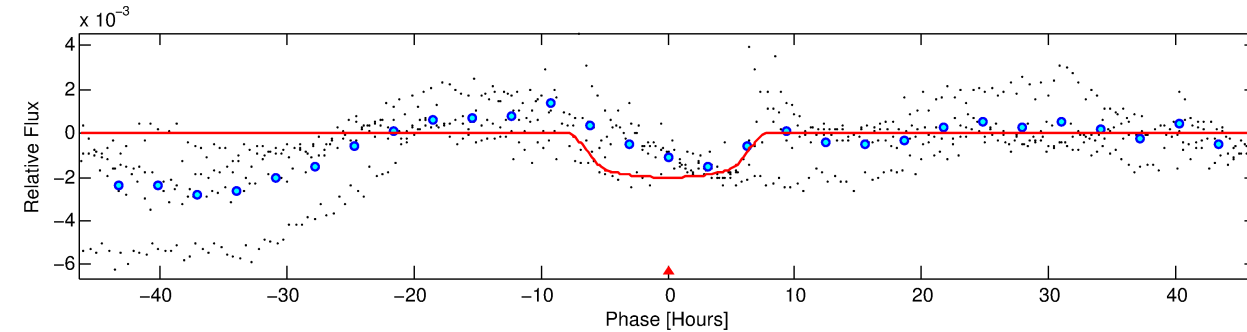
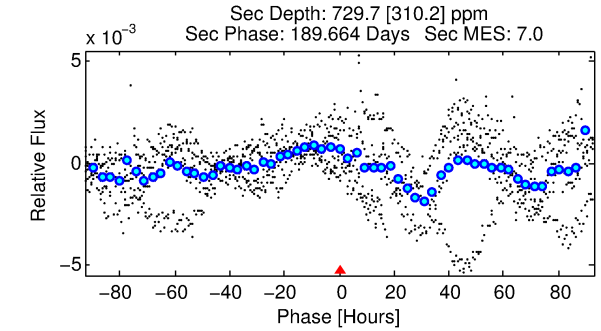
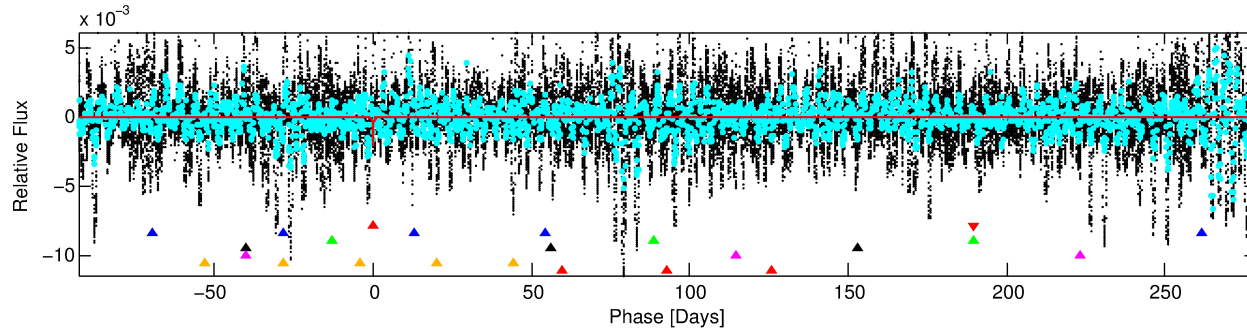
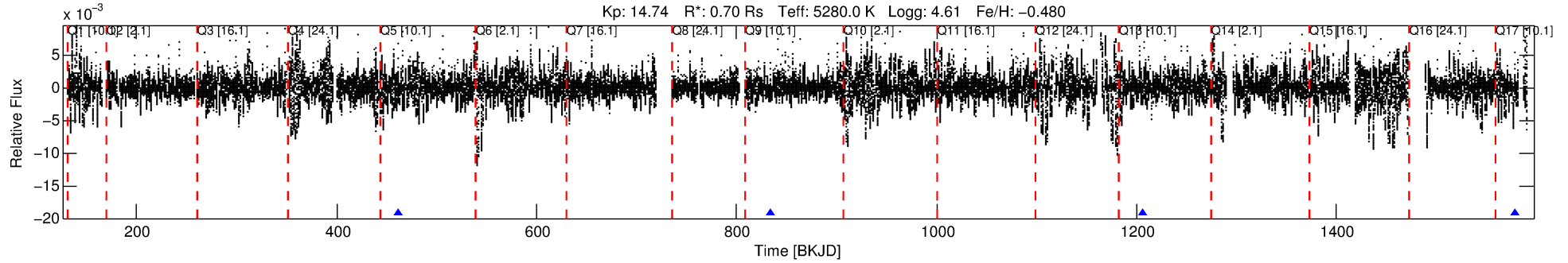
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003228931-01

No Significant Match Found

DV One-Page Summary

KIC: 3228931 Candidate: 1 of 7 Period: 372.053 d



DV Fit Results:

Period = 372.05256 [0.00638] d
Epoch = 462.2114 [0.0117] BKJD
Rp/R* = 0.0480 [0.0039]
a/R* = 105.93 [10.51]
b = 0.87 [0.03]
Seff = 0.41 [0.08]
Teq = 204 [10] K
Rp = 3.68 [0.60] Re
a = 0.9132 [0.1026] AU
Ag = 24782.65 [11881.61] [2.09 σ]
Teffp = 3959 [465] K [8.07 σ]

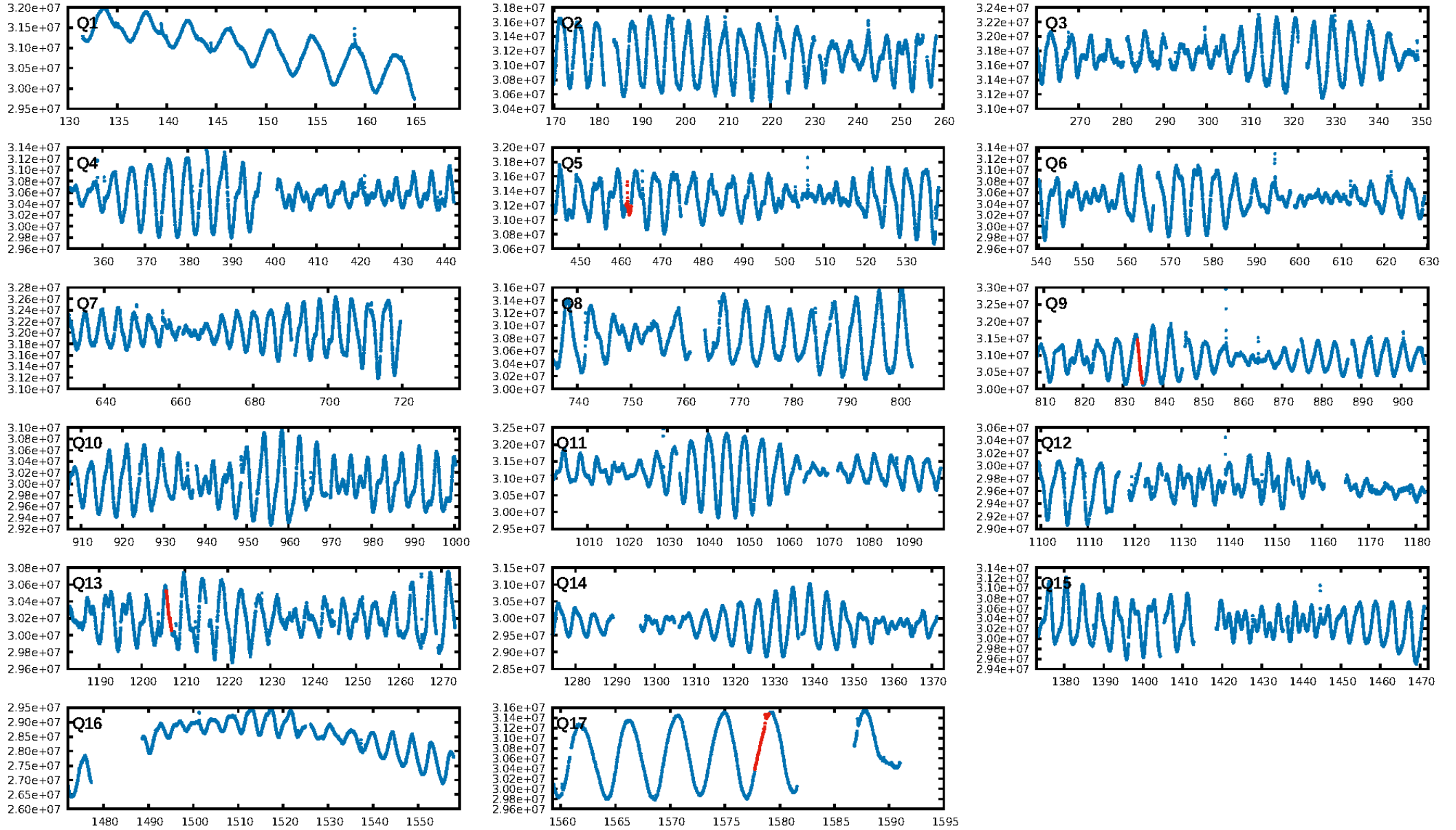
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [29.23 σ]
LongPeriod-sig: 100.0% [50.28 σ]
ModelChiSquare2-sig: 5.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -10.1
Centroid-sig: N/A
Centroid-so: 1.169 arcsec [3.51 σ]
OotOffset-rm: 0.261 arcsec [1.31 σ]
KicOffset-rm: 0.136 arcsec [0.98 σ]
OotOffset-st: 0/0/0/3 [3]
KicOffset-st: 0/0/0/3 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

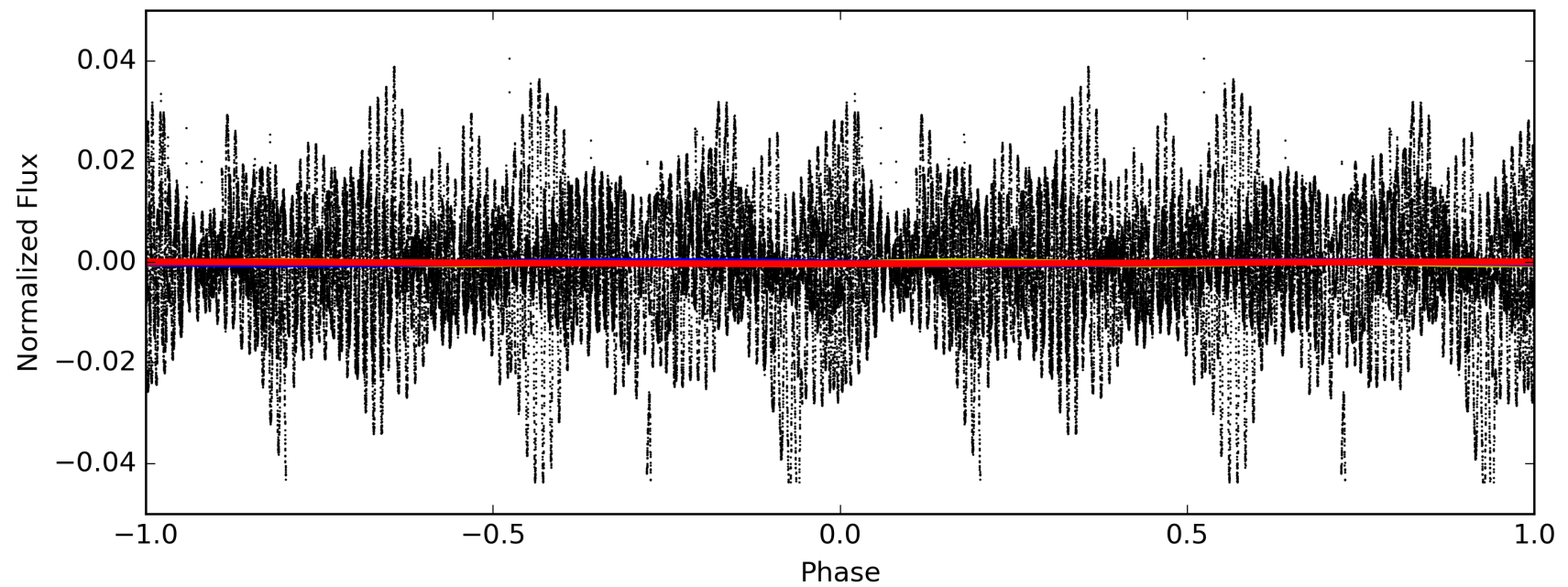
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:27:29 Z

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

TCE 003228931-01, PDC Light Curves

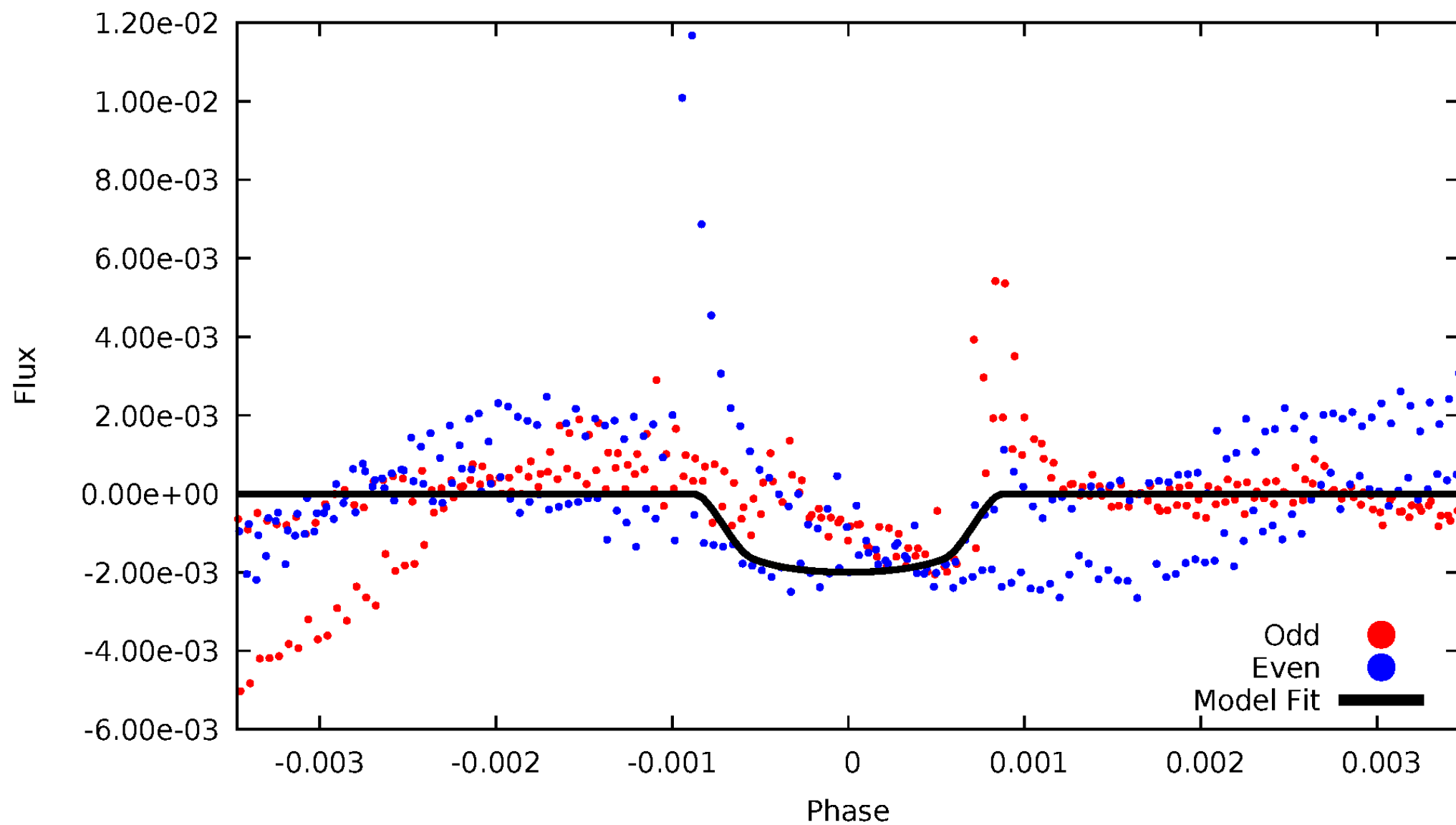


— P = 186.026 days — P = 372.053 days — P = 744.105 days



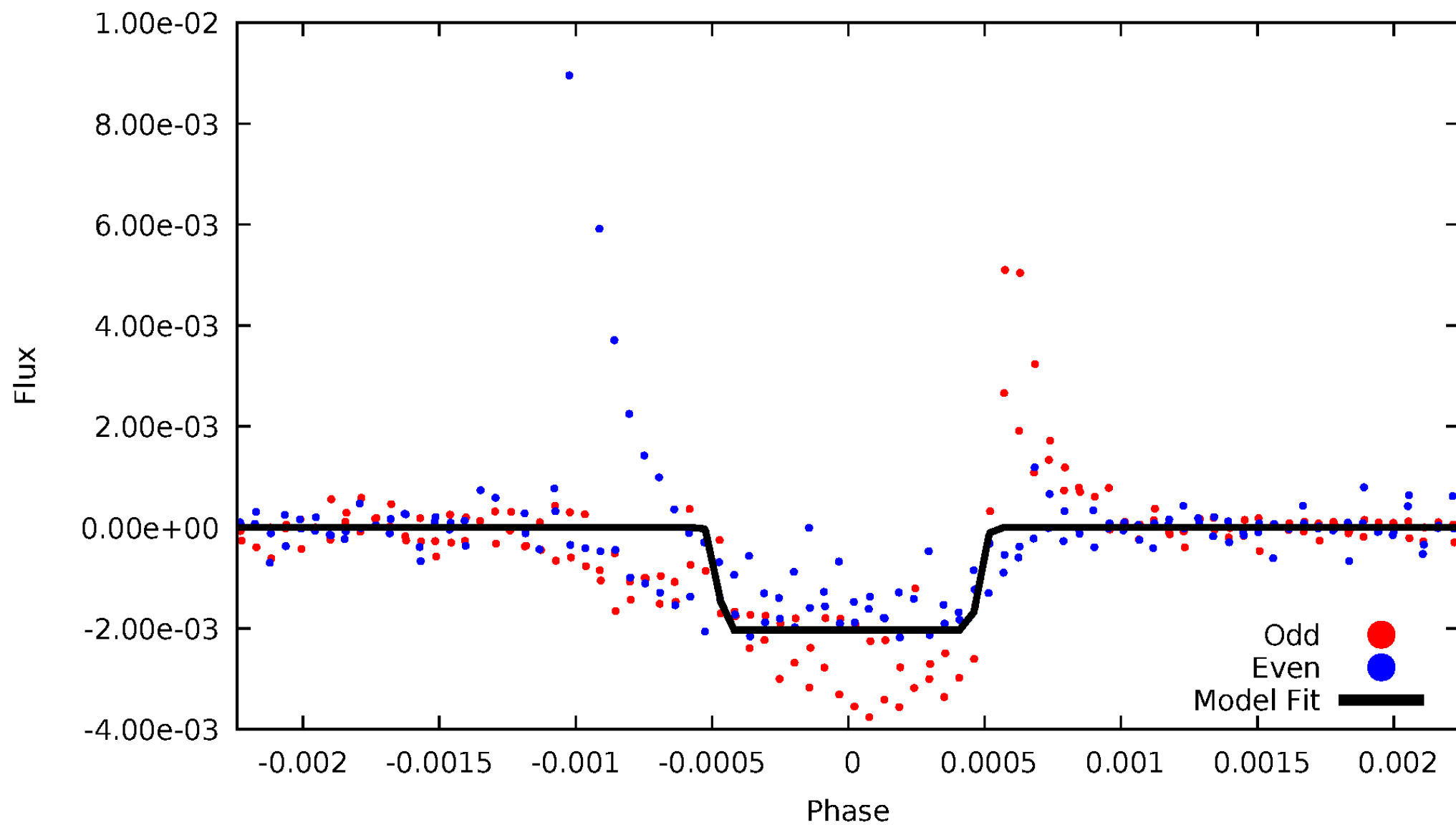
DV Odd/Even

TCE 003228931-01



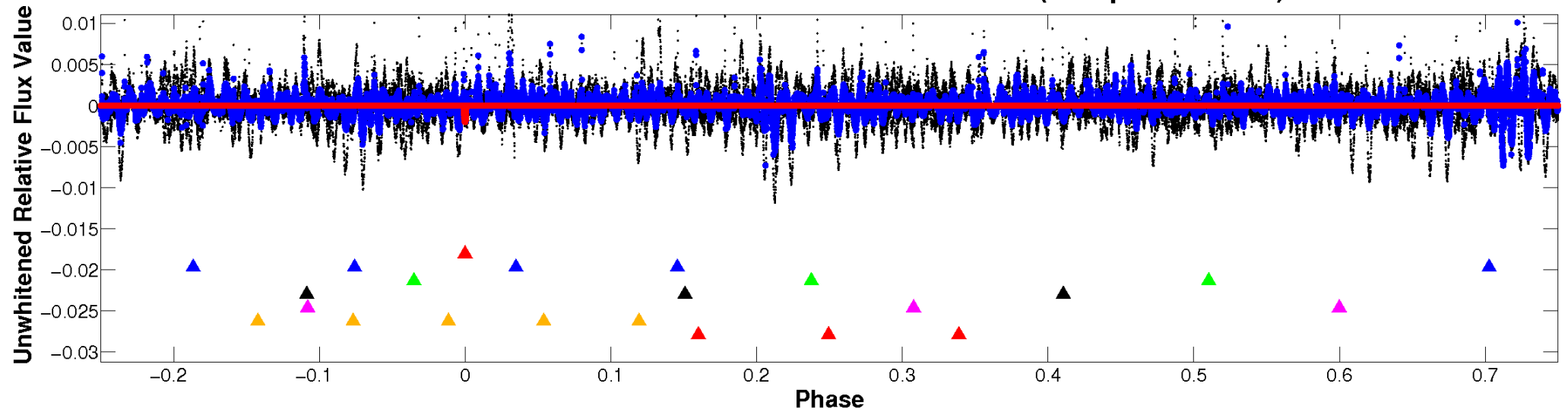
ALT Odd/Even

TCE 003228931-01

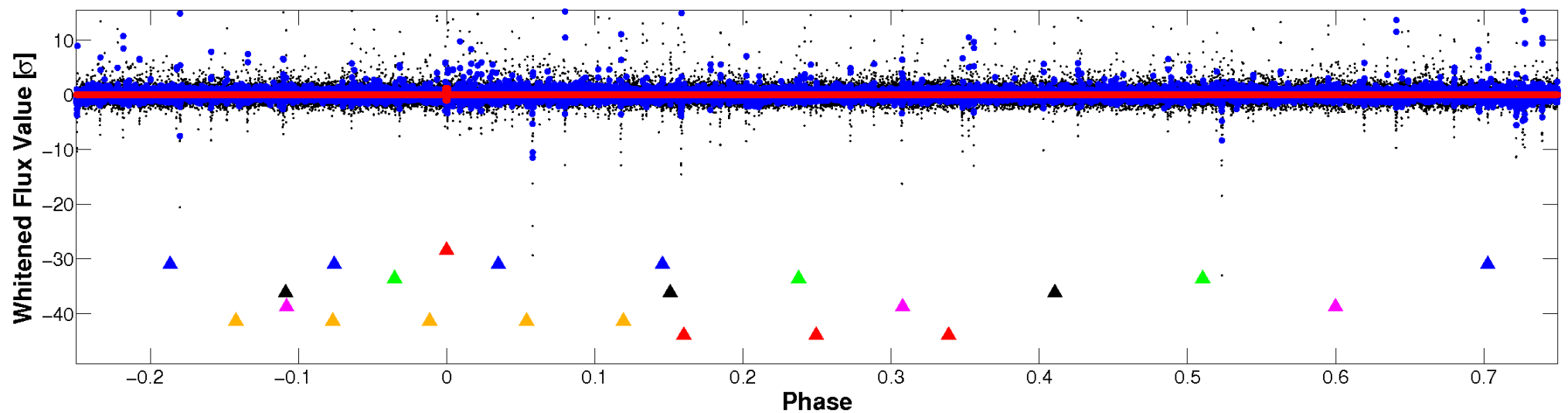


Non-Whitened Vs. Whitened Light Curve

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

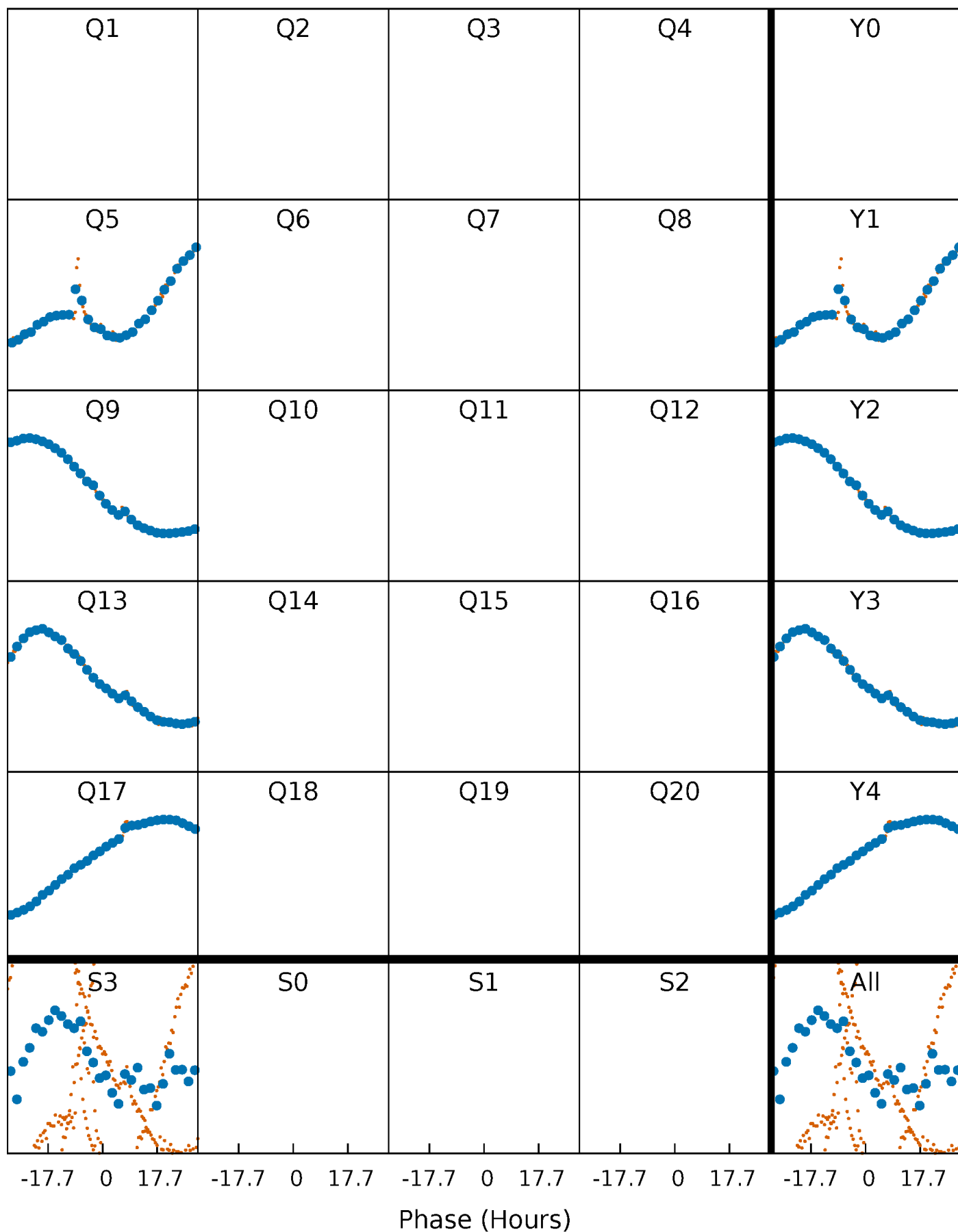


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



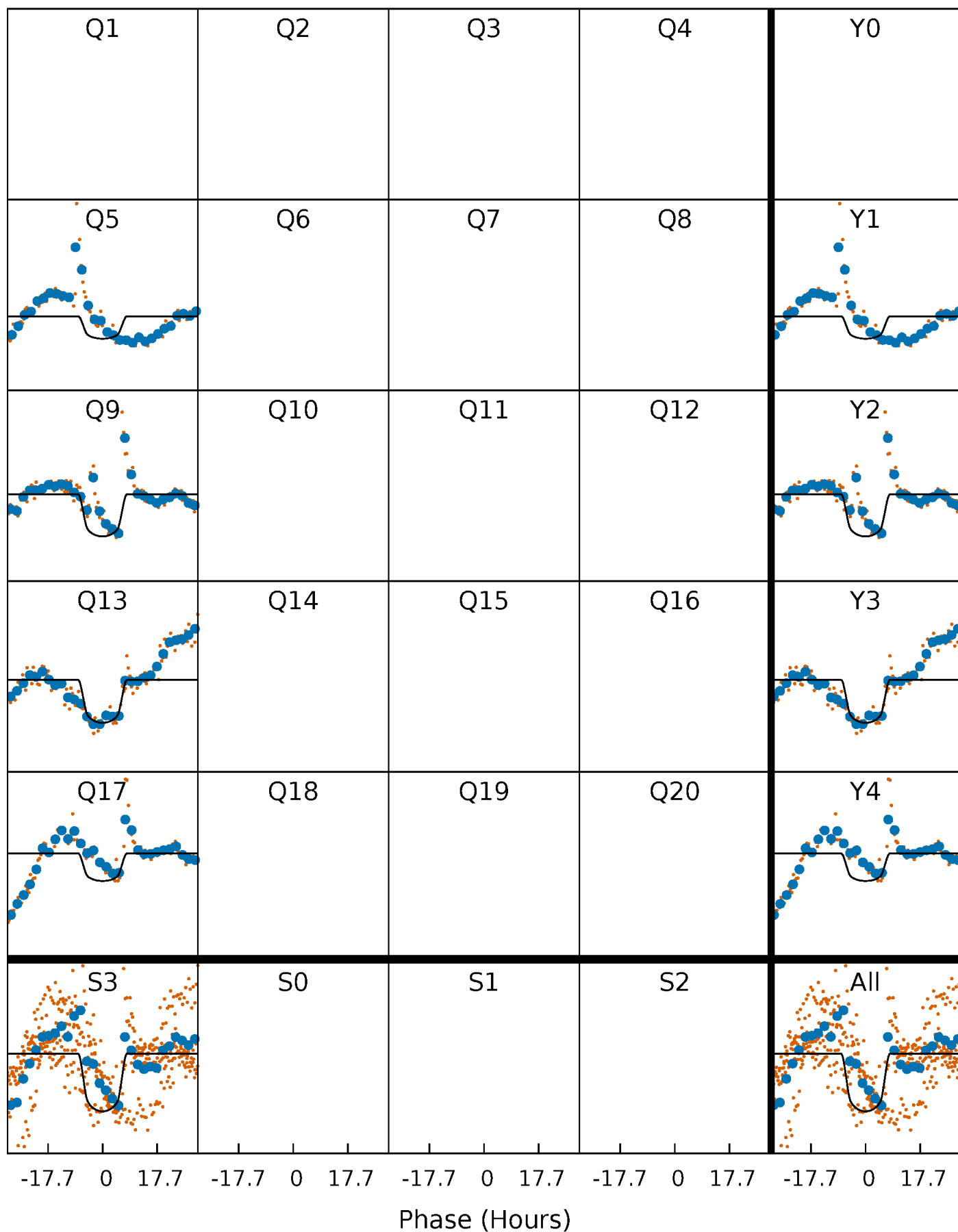
PDC Quarter-Phased Transit Curves

TCE 003228931-01 P=372.052560 Days $T_0=462.211414$ (BKJD)



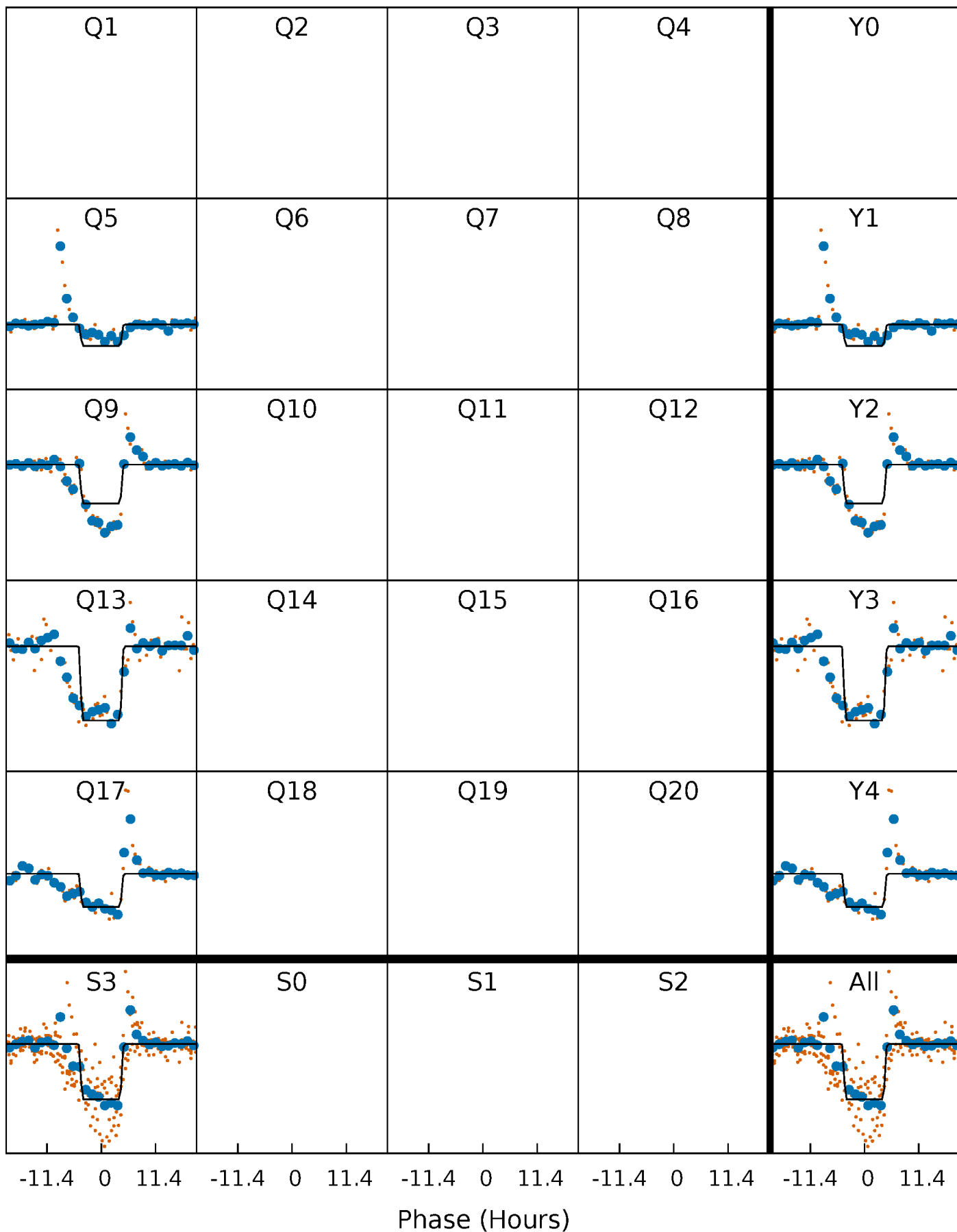
DV Quarter-Phased Transit Curves

TCE 003228931-01 P=372.052560 Days $T_0=462.211414$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

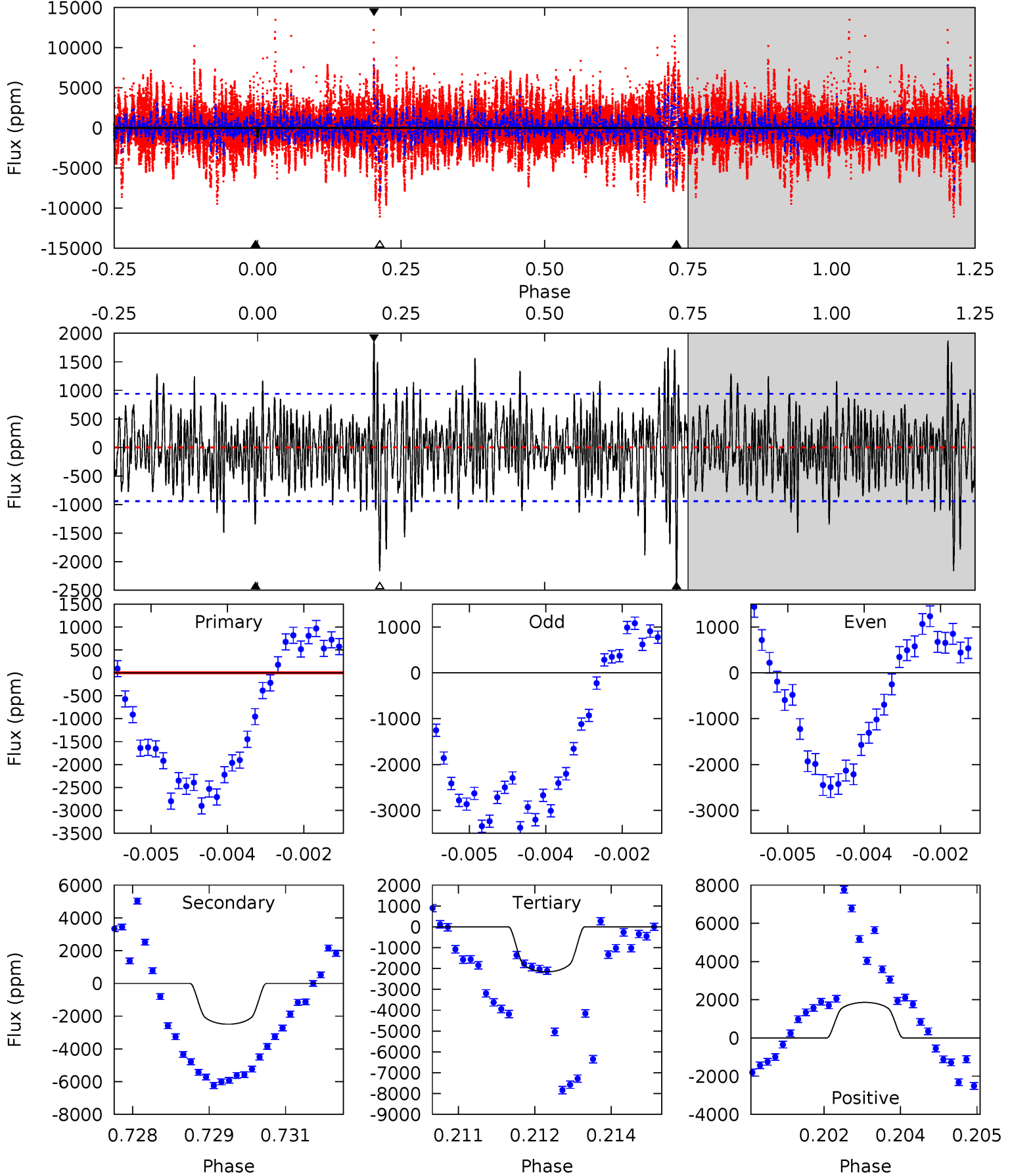
TCE 003228931-01 $P=372.074694$ Days $T_0=462.241513$ (BKJD)



DV Model-Shift Uniqueness Test

003228931-01, P = 372.052560 Days, E = 90.158854 Days

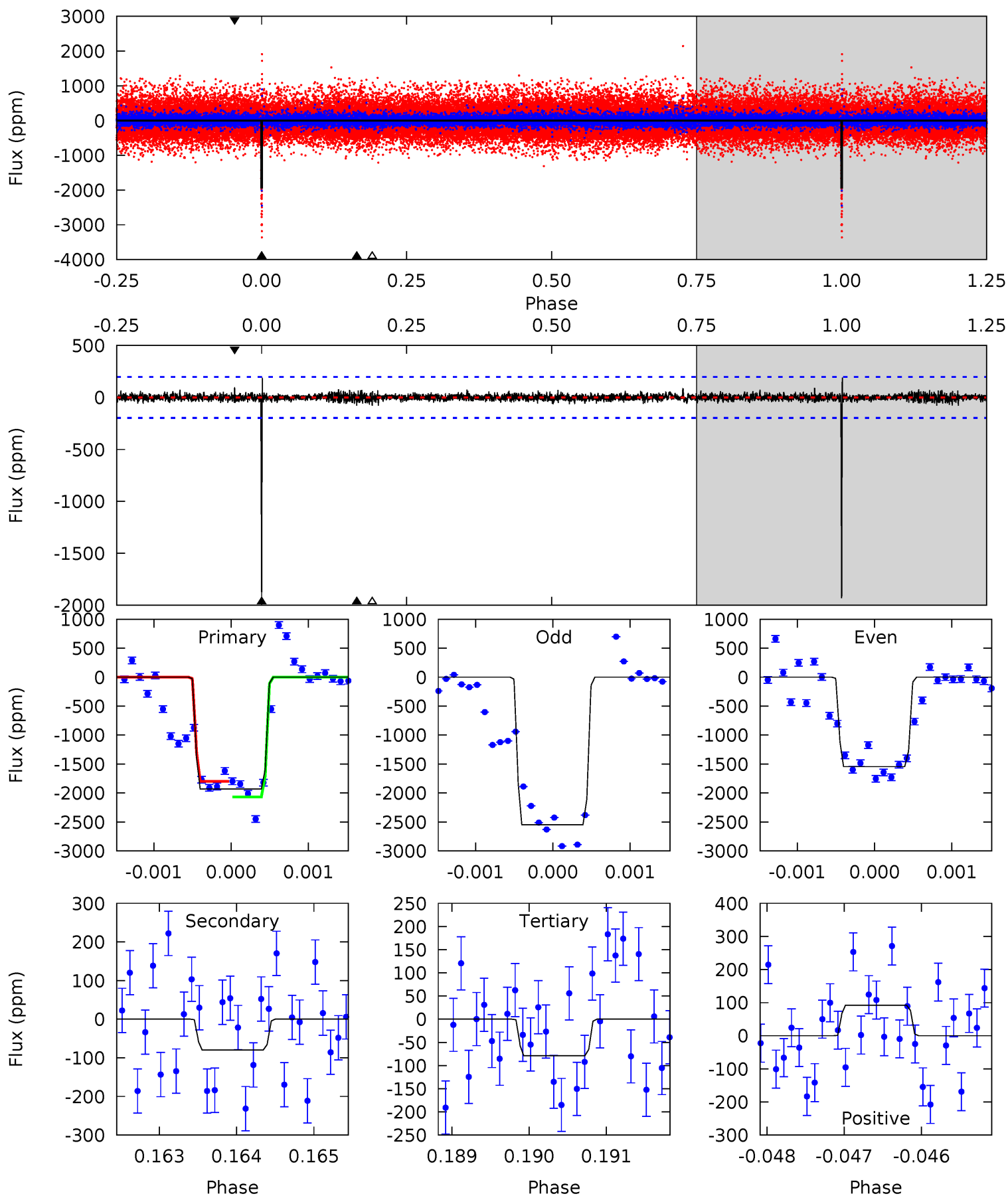
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.24	14.2	12.3	10.6	5.35	3.13	2.78	-6.06	-4.36	1.90	3.60	1.51	1.34	0.43	2.96



Alt Model-Shift Uniqueness Test

003228931-01, $P = 372.074694$ Days, $E = 90.166819$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
53.3	2.20	2.18	2.55	5.44	3.28	0.53	51.1	50.8	0.02	-0.35	14.4	1.02	0.09	3.74



Stellar Parameters For KIC 003228931

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5280^{+158}_{-142}	$4.612^{+0.042}_{-0.078}$	$-0.480^{+0.300}_{-0.300}$	$0.701^{+0.100}_{-0.054}$	$0.734^{+0.088}_{-0.059}$	$3.001^{+0.635}_{-0.749}$
	+3%/-3%	+1%/-2%	+62%/-62%	+14%/-8%	+12%/-8%	+21%/-25%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 003228931-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2494 ± 176	$3.73^{+0.40}_{-0.35}$	288^{+11}_{-11}	5367^{+289}_{-249}	81791^{+18597}_{-14625}
Alt.	-80 ± 36	$3.48^{+0.42}_{-0.33}$	287^{+11}_{-9}	2985^{+198}_{-234}	2902^{+1592}_{-1319}

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 $A_{obs} \gg 1.0$

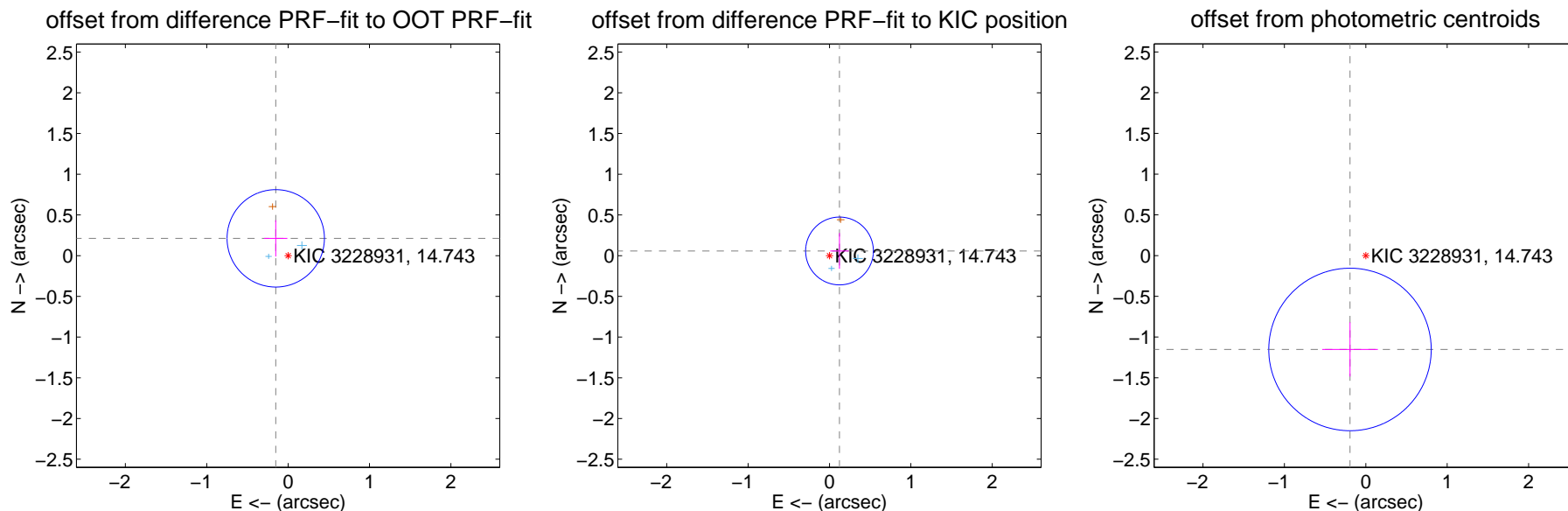
DV Centroid Data

Supplemental centroid analysis for 003228931-01. Kepler magnitude: 14.74. Transit SNR 7.72

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.261 ± 0.199	1.31	0.152 ± 0.143	0.213 ± 0.223
PRF-fit source offset from KIC position	0.136 ± 0.139	0.98	-0.123 ± 0.114	0.058 ± 0.219
photometric centroid source offset	1.17 ± 0.33	3.51	0.19 ± 0.34	-1.15 ± 0.33

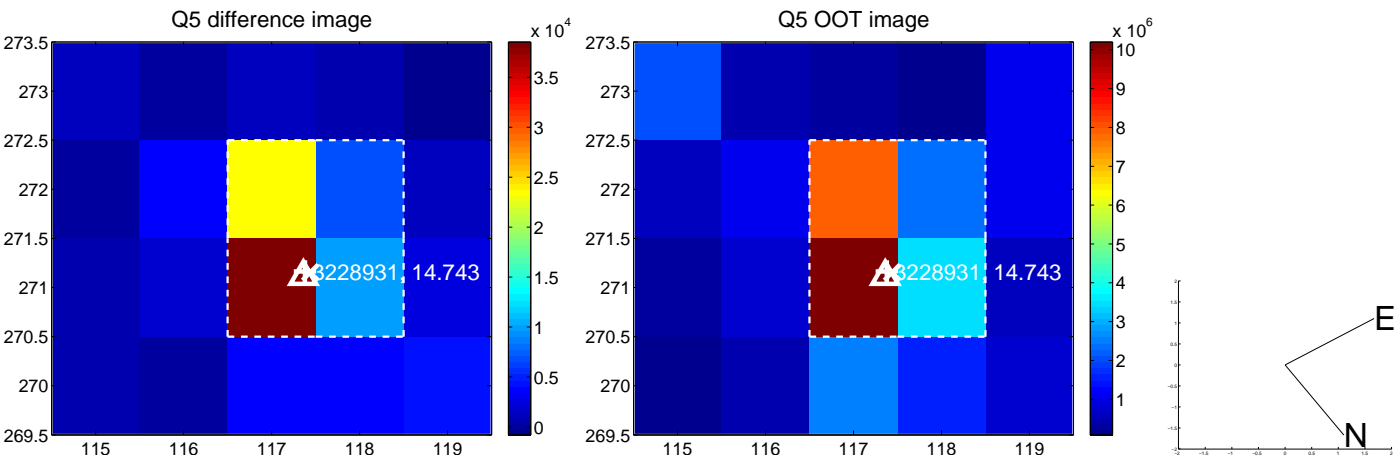


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

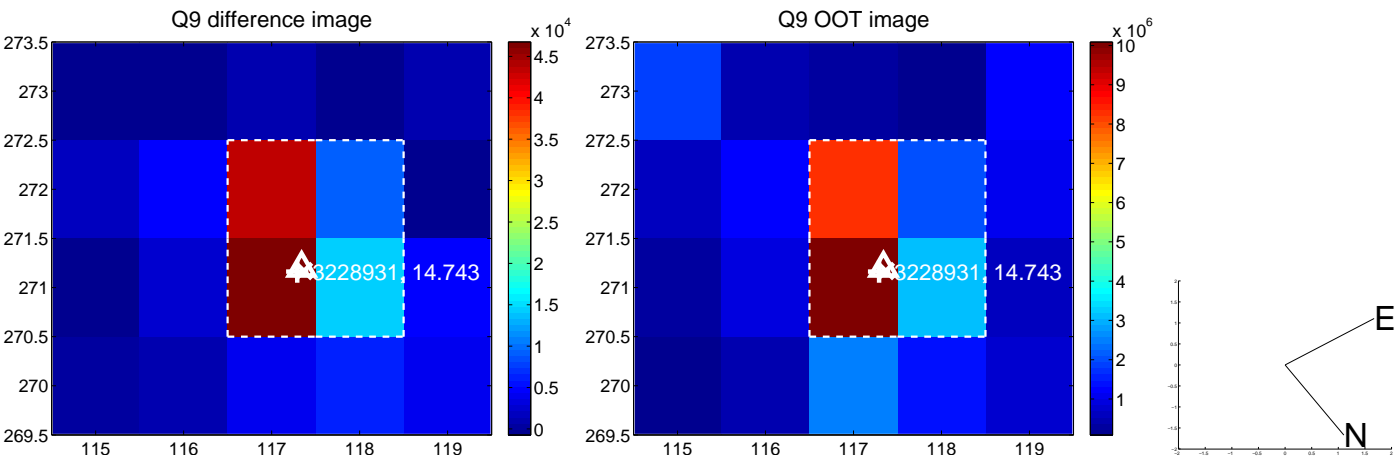
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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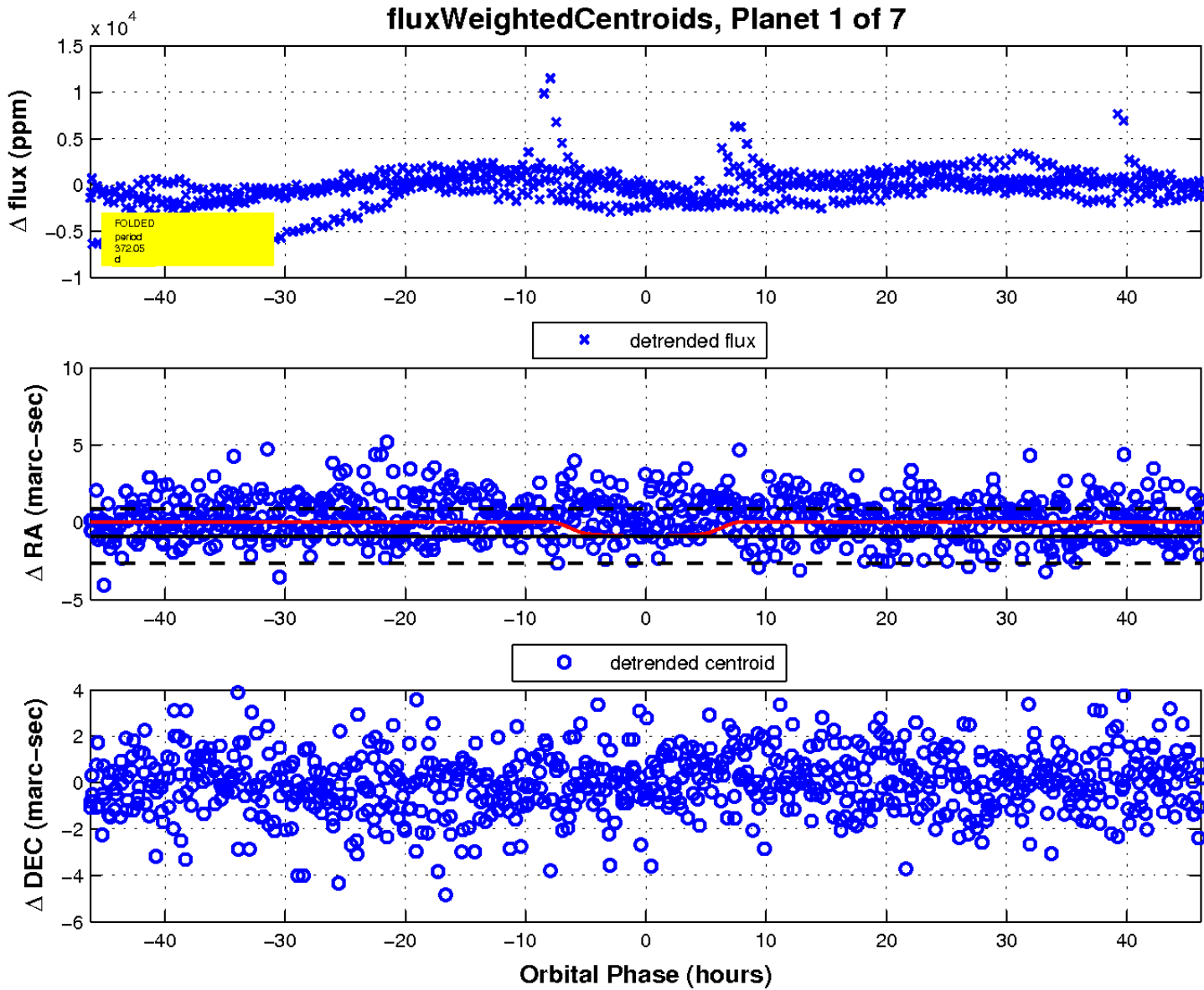
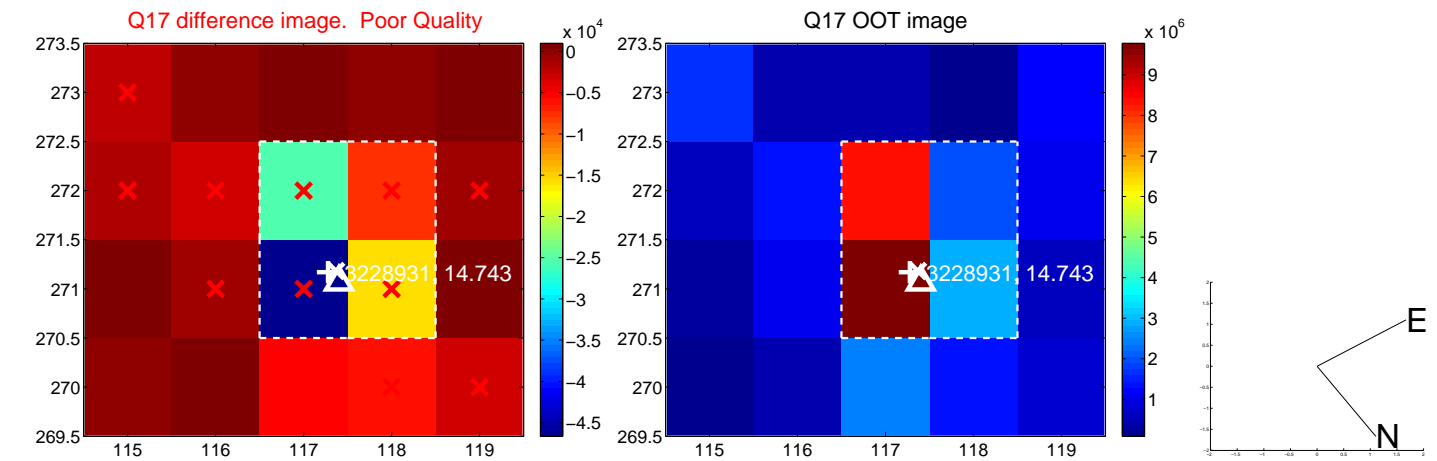
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

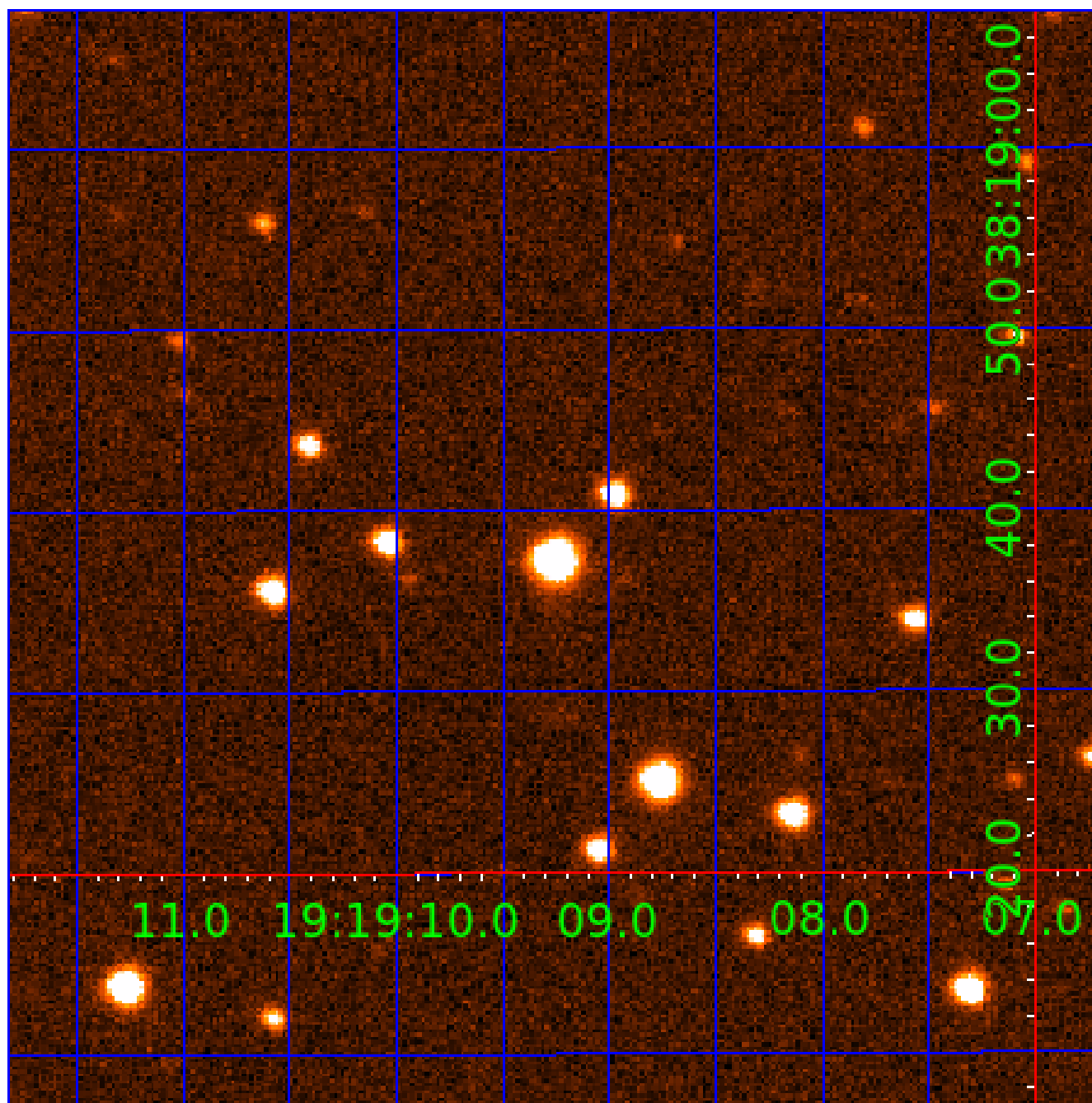


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003228931

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})
003228931-01	OBS	No	372.052560	462.211414	2003.2	15.480	16.2	7.7	0.70	5280	3.67	0.41
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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003228931-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003228931-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
003228931-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—HALO_GHOST
003228931-06	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

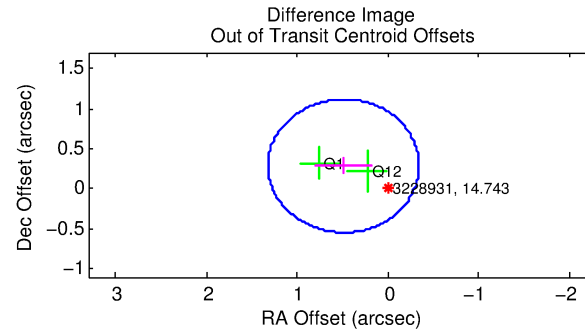
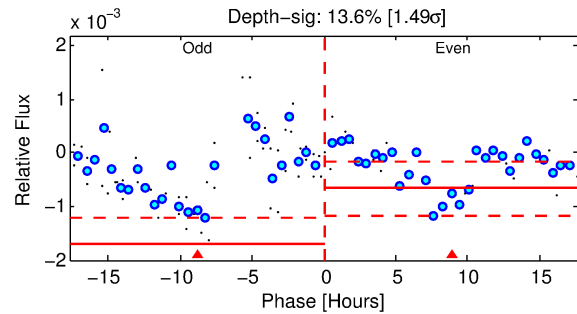
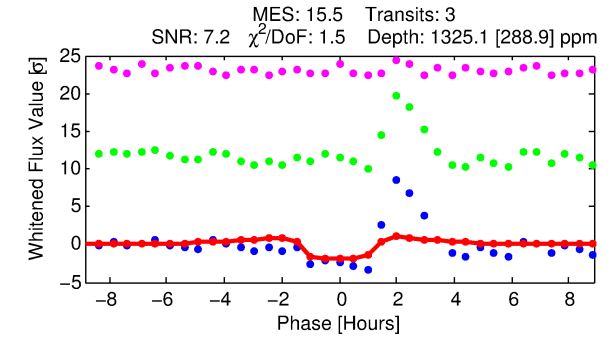
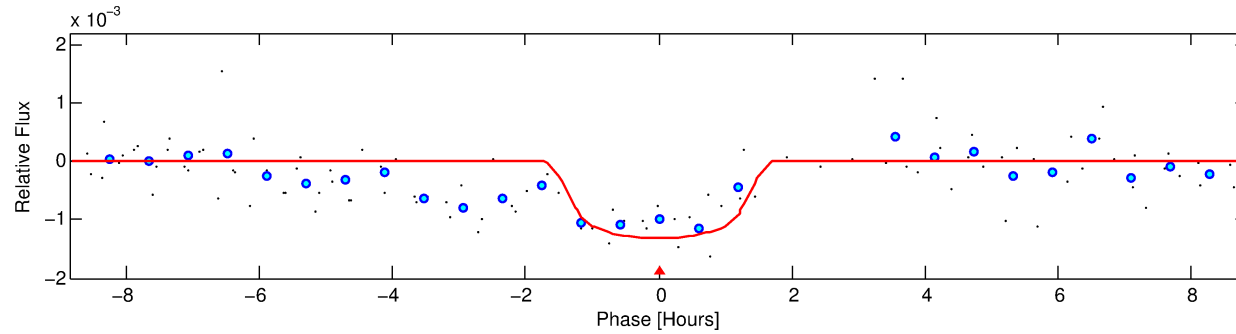
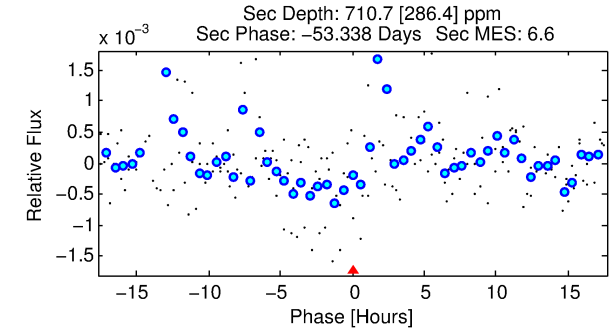
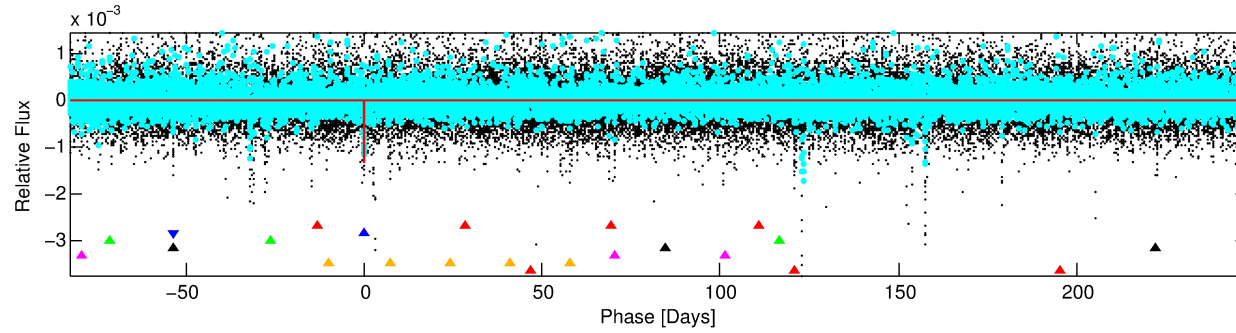
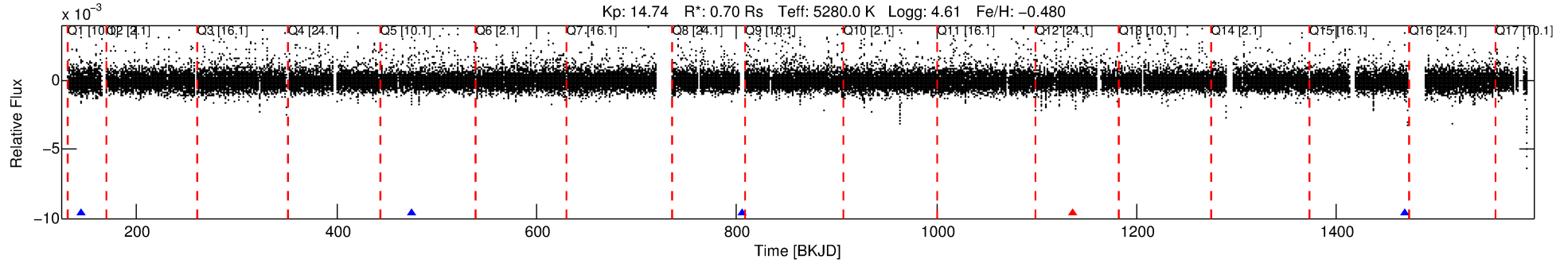
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003228931-02

No Significant Match Found

DV One-Page Summary

KIC: 3228931 Candidate: 2 of 7 Period: 330.850 d



DV Fit Results:

Period = 330.85019 [0.00261] d
Epoch = 144.3537 [0.0088] BKJD
Rp/R* = 0.0337 [0.1385]
a/R* = 801.67 [13186.09]
b = 0.44 [30.49]
Seff = 0.48 [0.09]
Teq = 212 [10] K
Rp = 2.58 [10.60] Re
a = 0.8445 [0.0949] AU
Ag = 42050.35 [346432.18] [0.12σ]
Teffp = 4699 [9677] K [0.46σ]

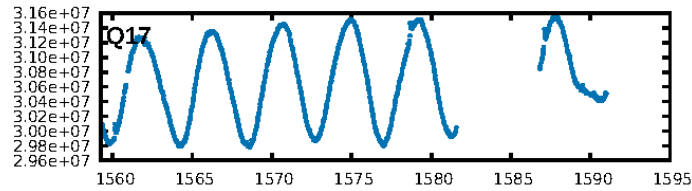
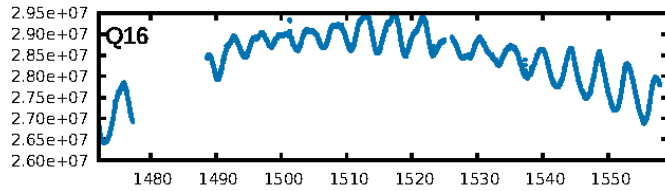
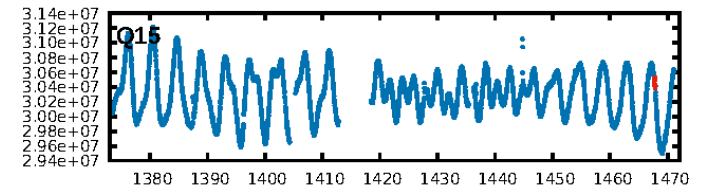
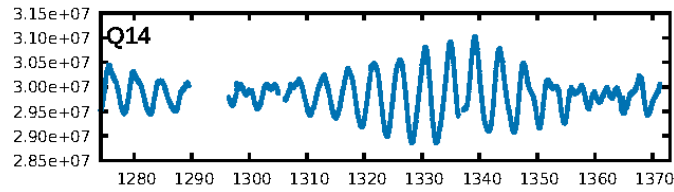
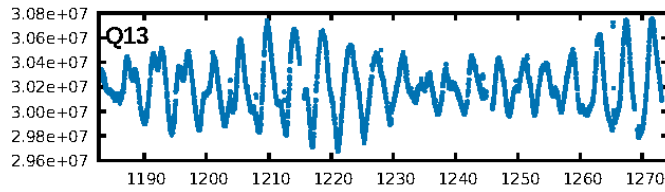
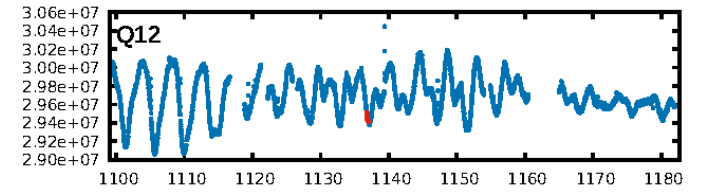
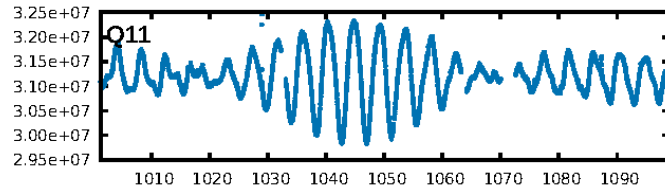
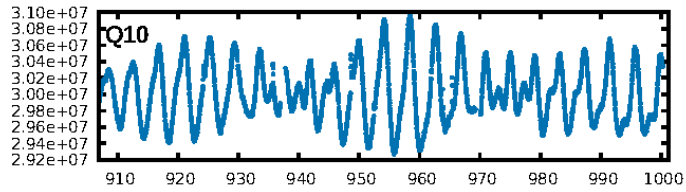
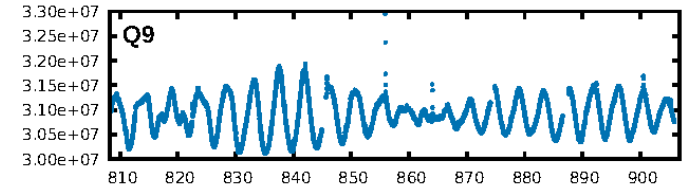
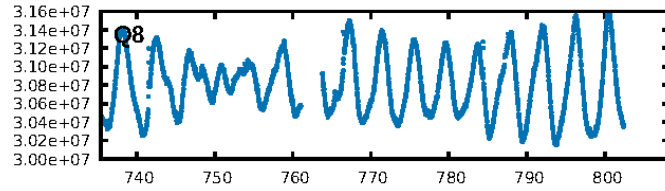
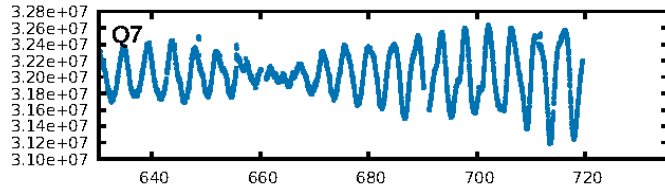
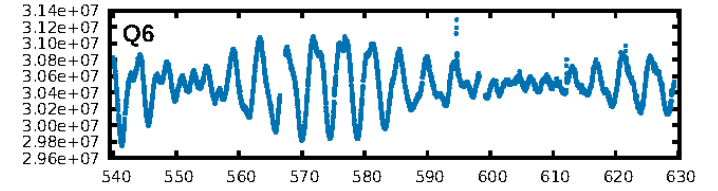
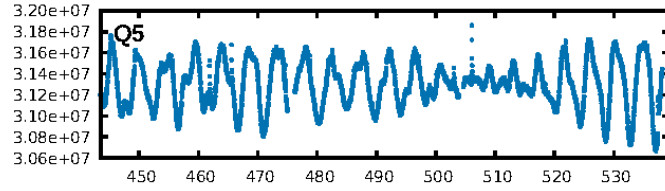
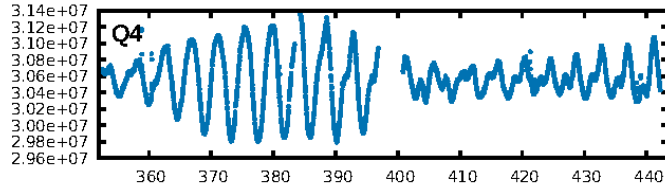
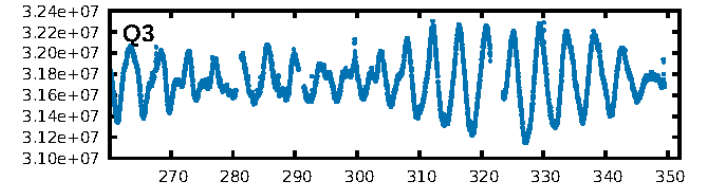
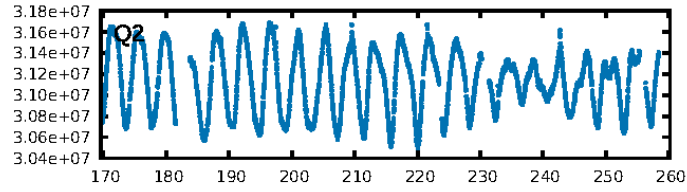
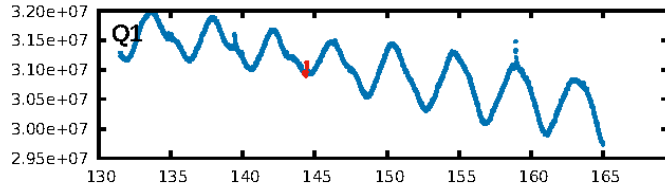
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [31.23σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 44.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.50 [1/2]
GhostDiagnostic-chr: 0.9463
Centroid-sig: N/A
Centroid-so: 1.044 arcsec [1.02σ]
OotOffset-rm: 0.567 arcsec [2.04σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-rm: 0.349 arcsec [2.06σ]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

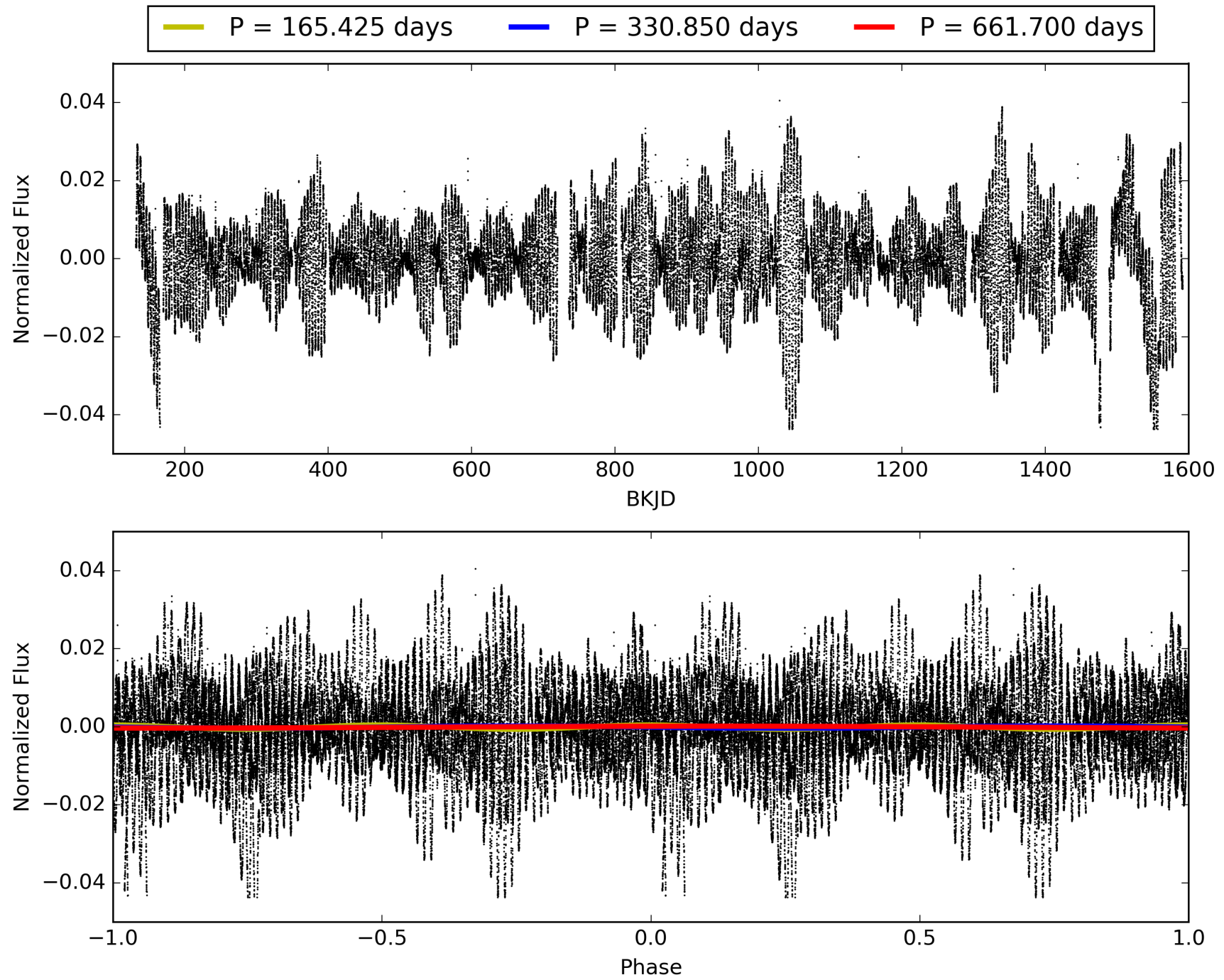
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:27:45 Z

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

TCE 003228931-02, PDC Light Curves

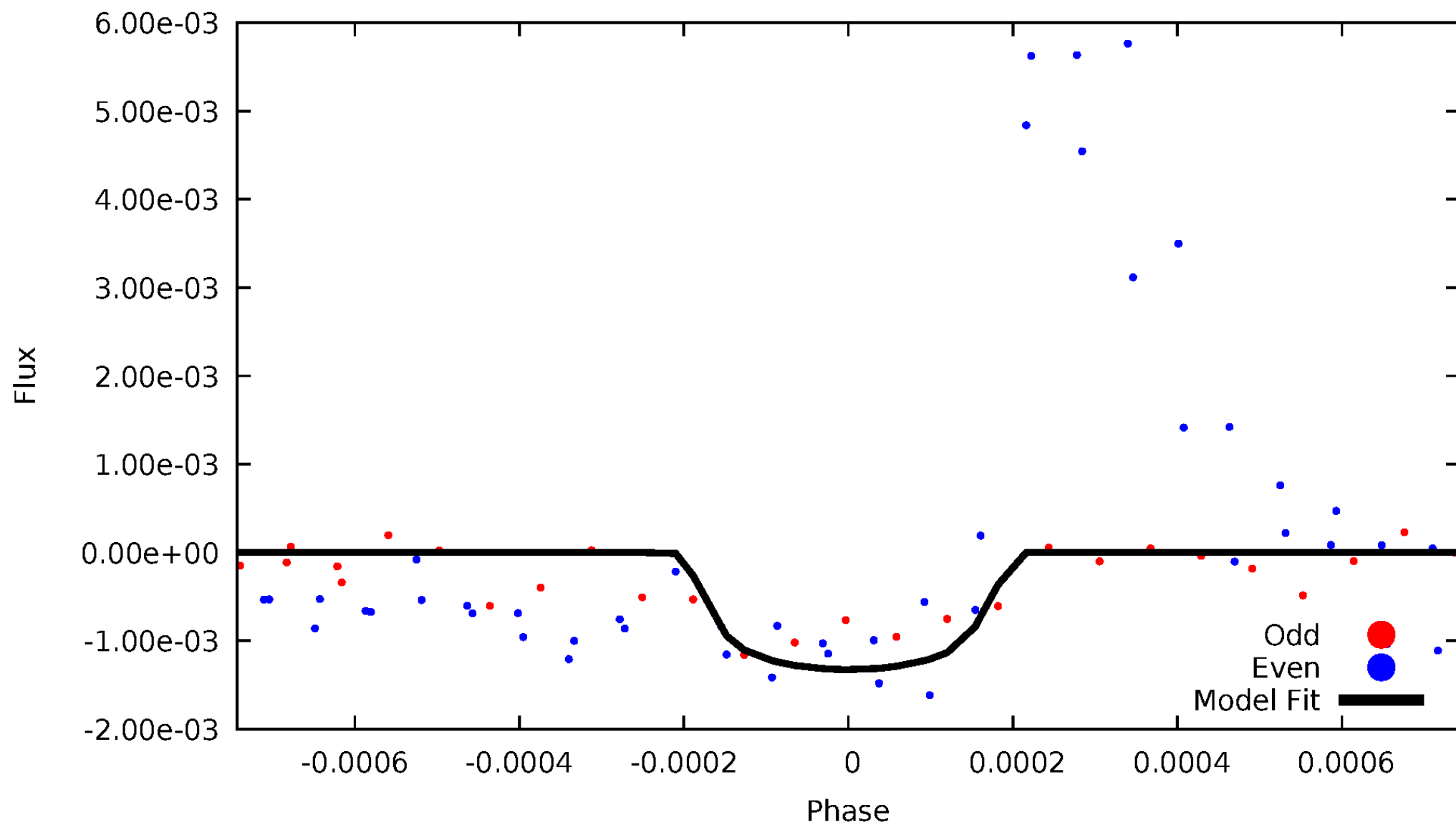


TCE 003228931-02



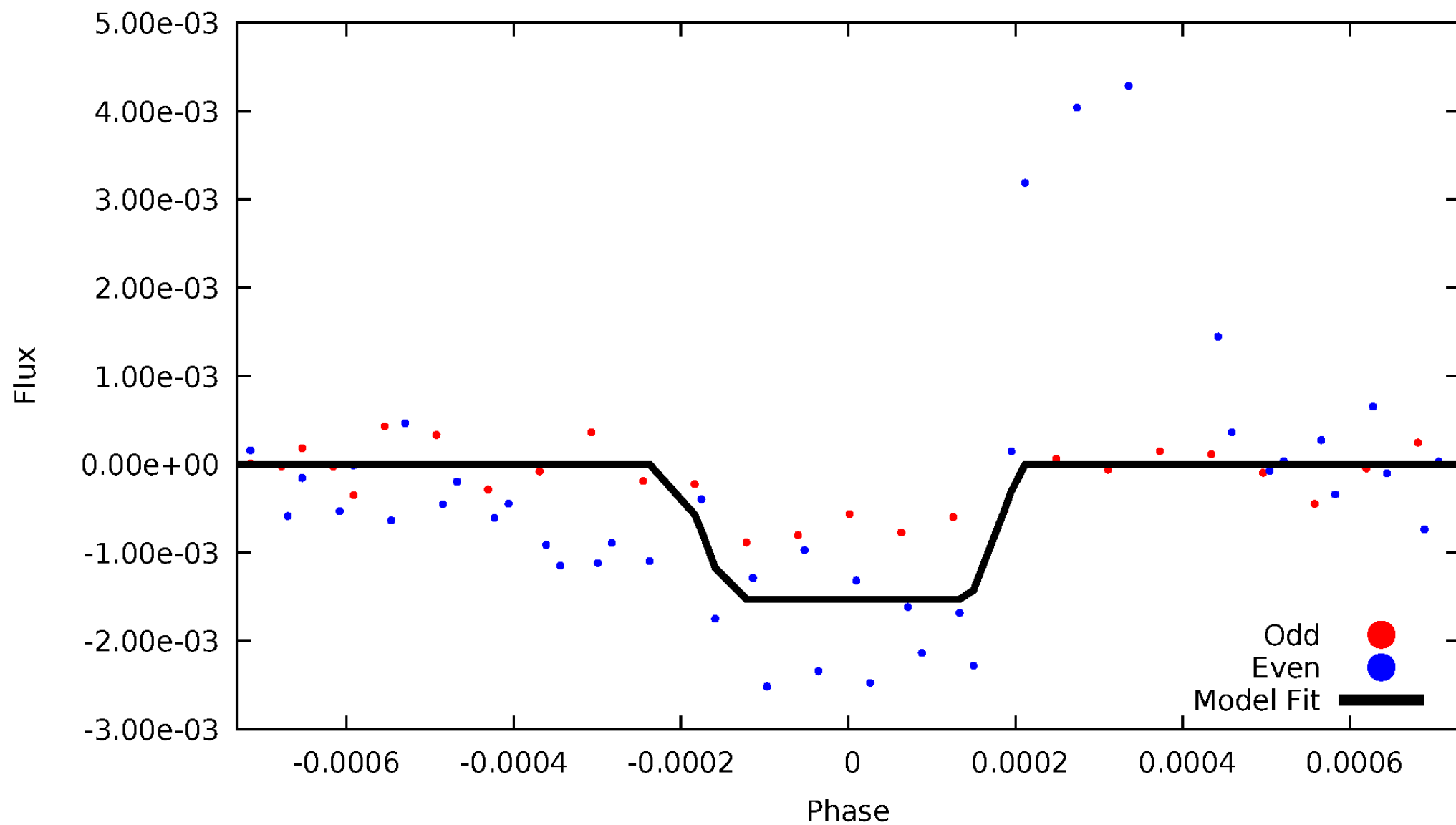
DV Odd/Even

TCE 003228931-02



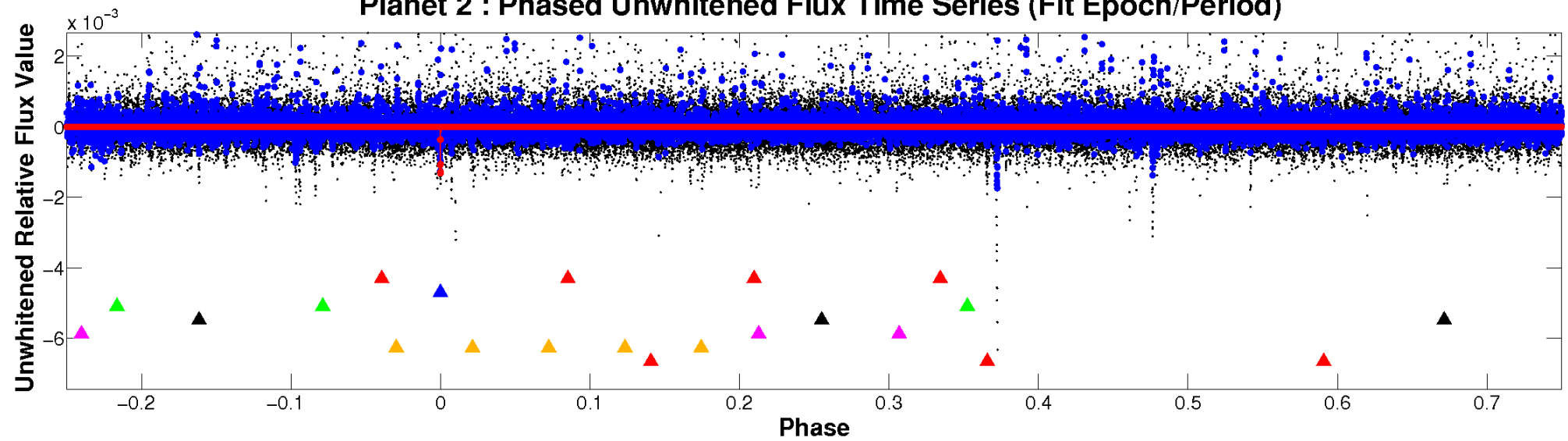
ALT Odd/Even

TCE 003228931-02

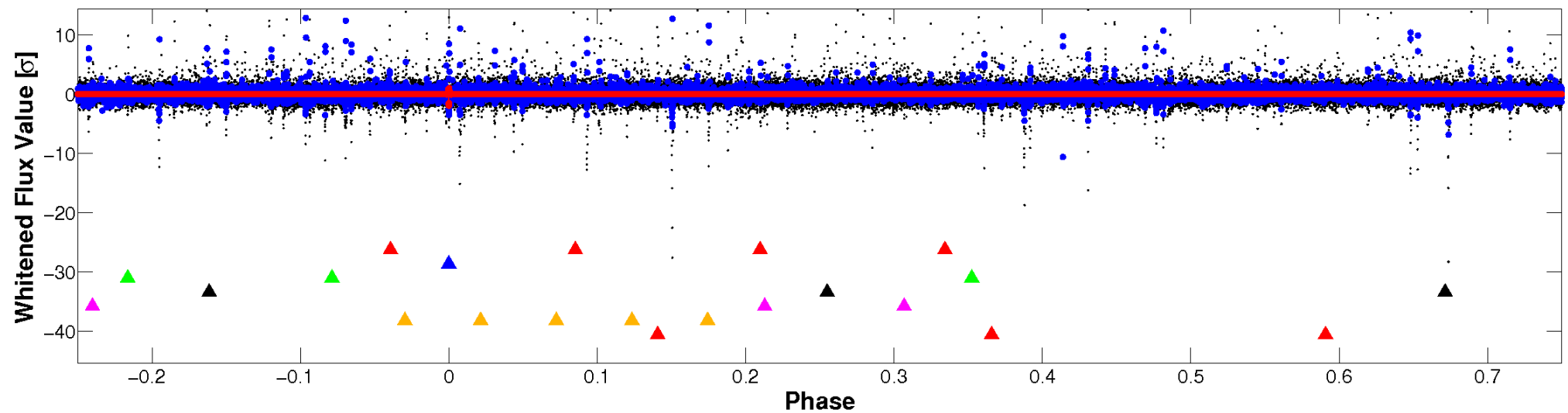


Non-Whitened Vs. Whitened Light Curve

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

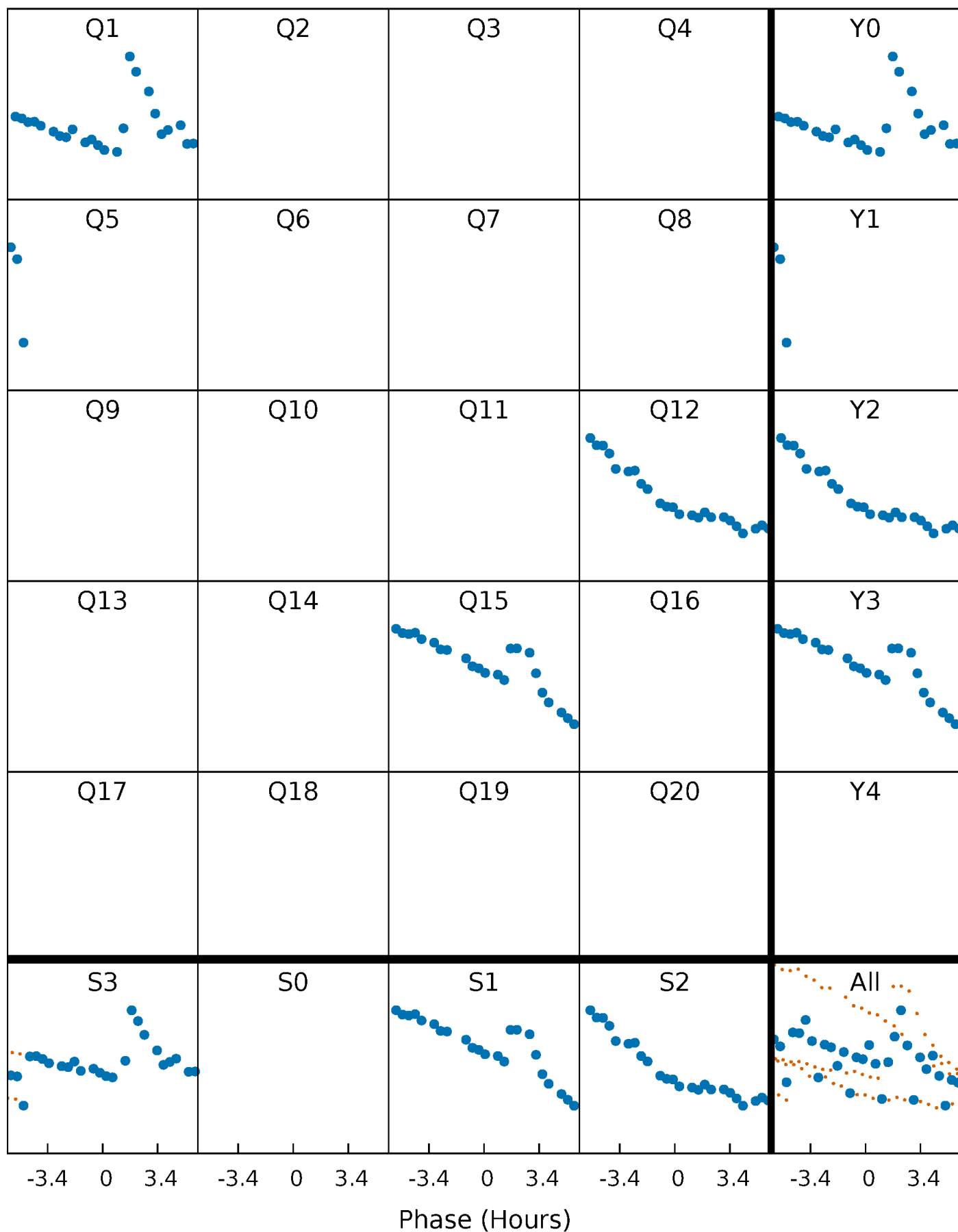


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



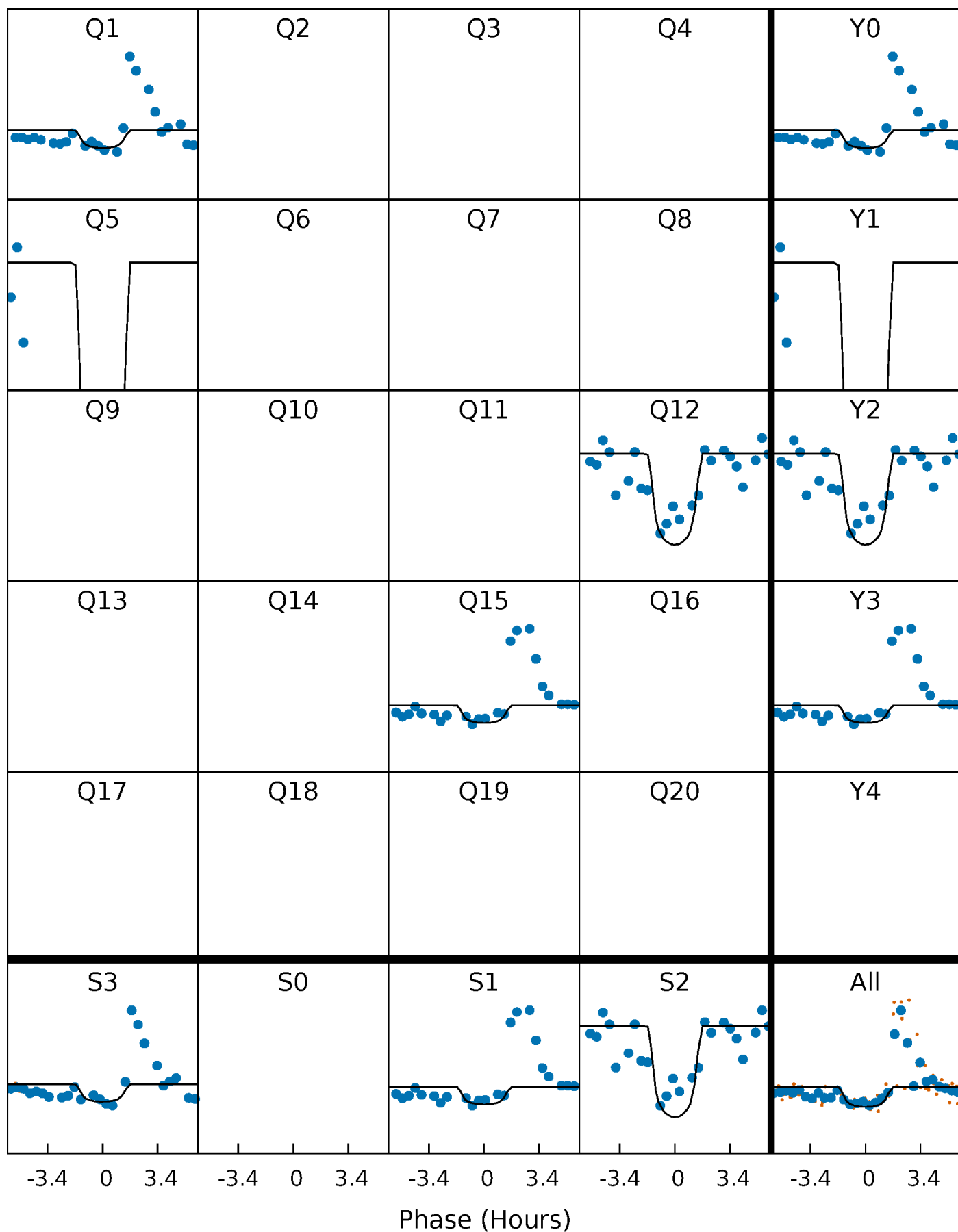
PDC Quarter-Phased Transit Curves

TCE 003228931-02 P=330.850190 Days $T_0=144.353721$ (BKJD)



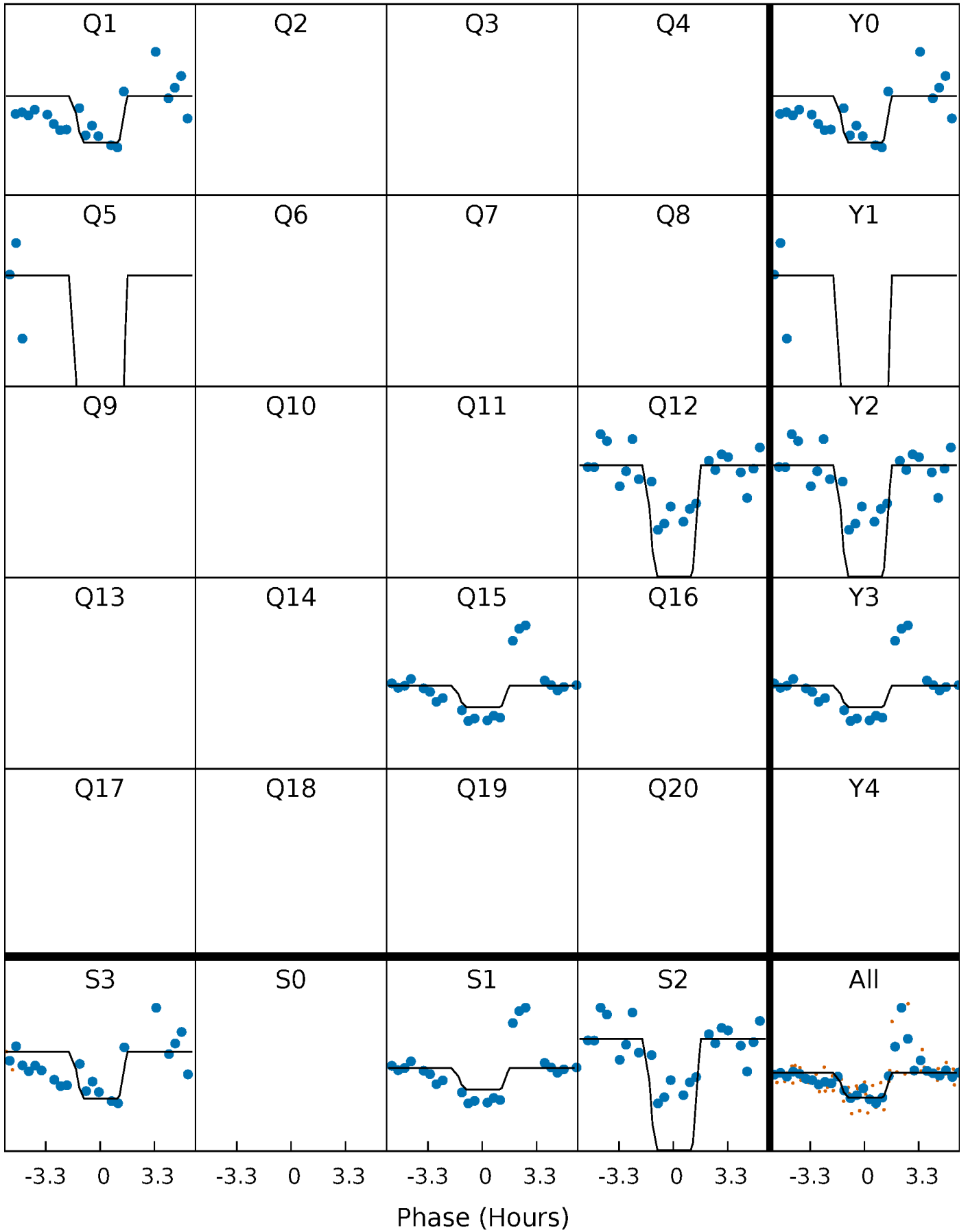
DV Quarter-Phased Transit Curves

TCE 003228931-02 P=330.850190 Days $T_0=144.353721$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

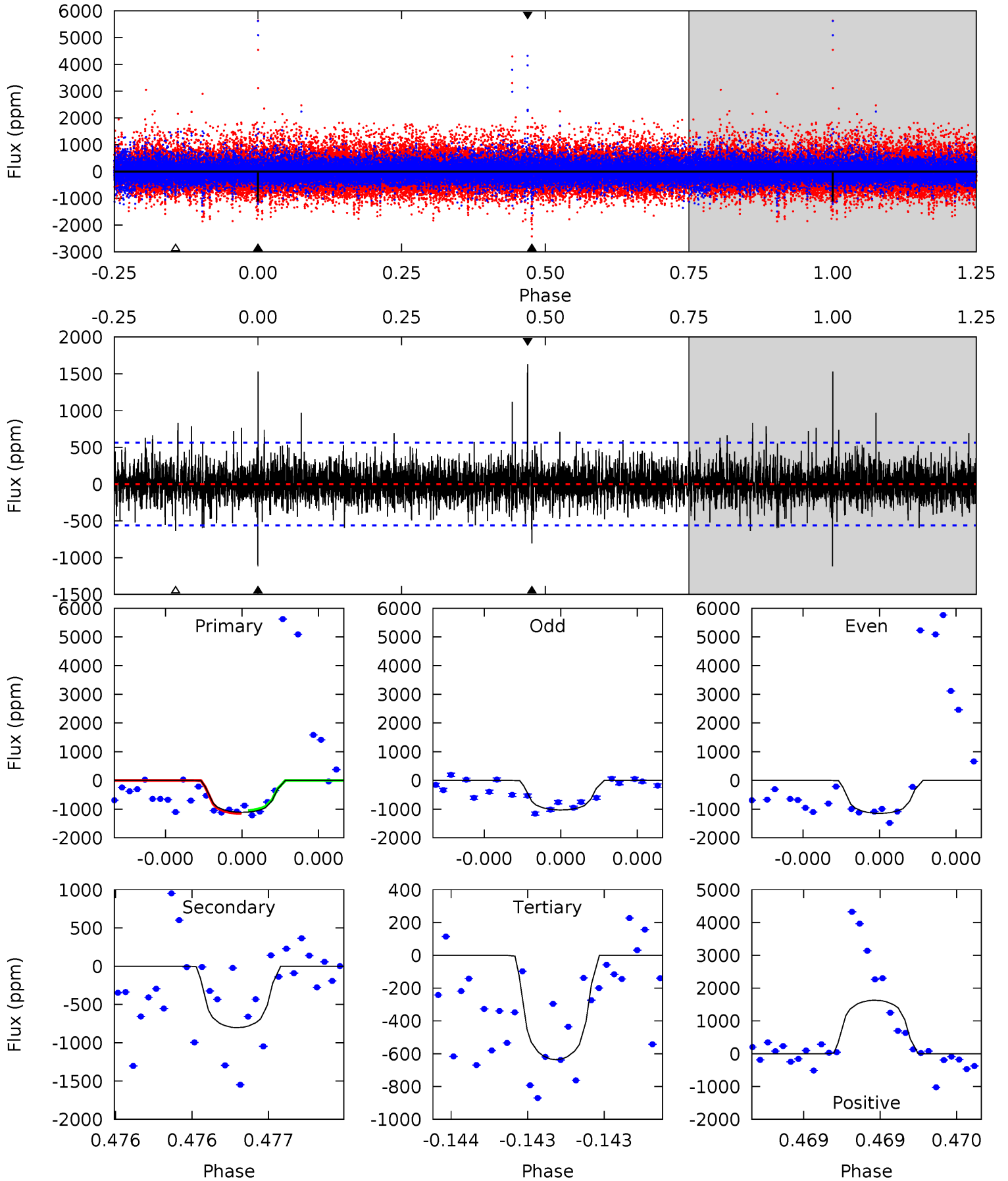
TCE 003228931-02 $P=330.853392$ Days $T_0=144.342462$ (BKJD)



DV Model-Shift Uniqueness Test

003228931-02, P = 330.850190 Days, E = 144.353721 Days

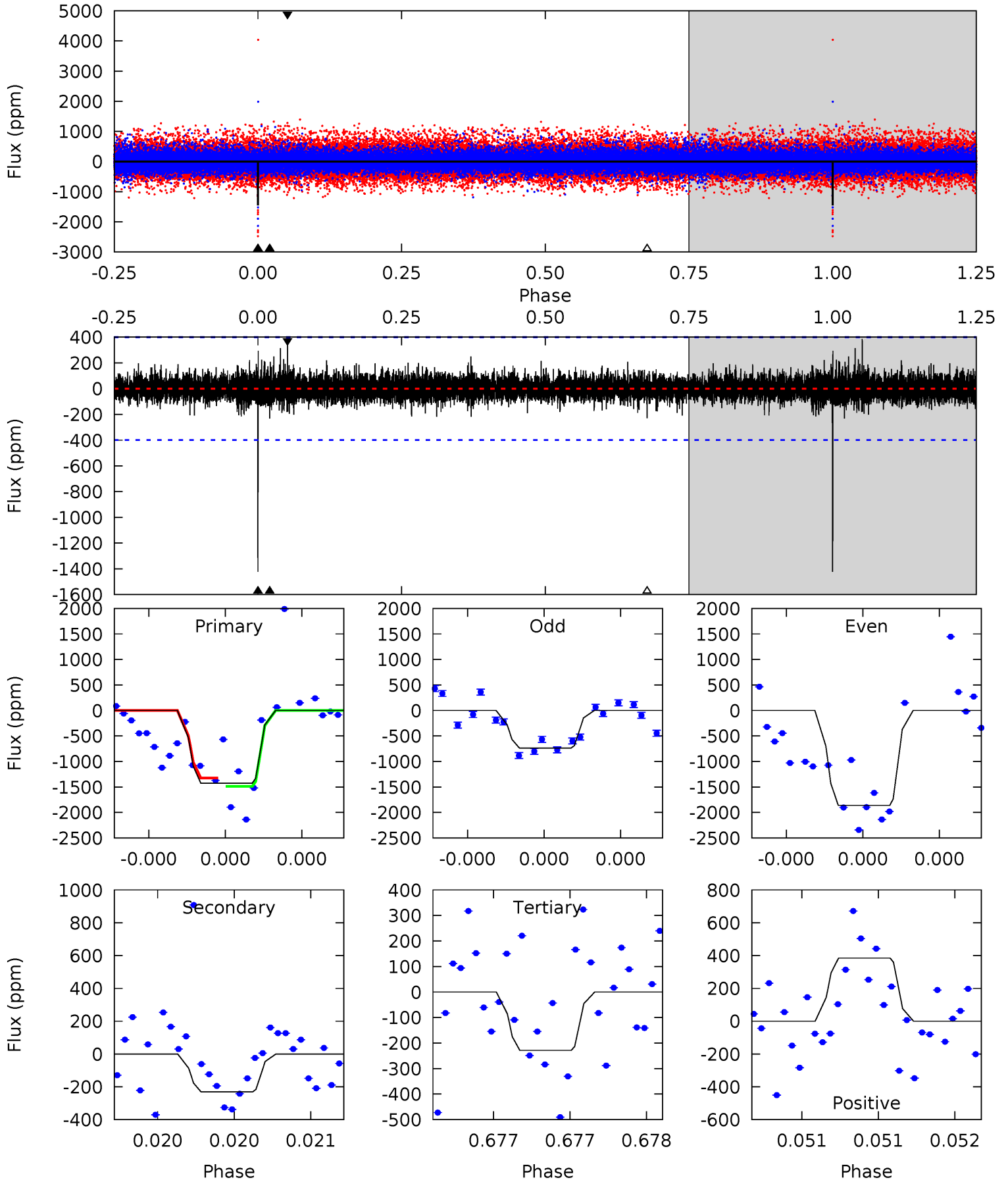
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	8.01	6.35	16.3	5.62	3.55	1.63	4.77	-5.17	1.66	-8.27	0.52	1.05	0.59	0.51



Alt Model-Shift Uniqueness Test

003228931-02, P = 330.853392 Days, E = 144.342462 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.0	3.25	3.22	5.42	5.62	3.55	0.75	16.8	14.6	0.04	-2.16	7.72	1.11	0.21	1.14



Stellar Parameters For KIC 003228931

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5280^{+158}_{-142}	$4.612^{+0.042}_{-0.078}$	$-0.480^{+0.300}_{-0.300}$	$0.701^{+0.100}_{-0.054}$	$0.734^{+0.088}_{-0.059}$	$3.001^{+0.635}_{-0.749}$
	+3%/-3%	+1%/-2%	+62%/-62%	+14%/-8%	+12%/-8%	+21%/-25%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 003228931-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-803 ± 100	$7.97^{+8.78}_{-5.34}$	300^{+10}_{-10}	3296^{+1597}_{-601}	4797^{+39665}_{-3654}
Alt.	-231 ± 71	$8.49^{+9.48}_{-6.04}$	299^{+13}_{-10}	2707^{+1199}_{-453}	1163^{+12368}_{-897}

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 $A_{obs} \gg 1.0$

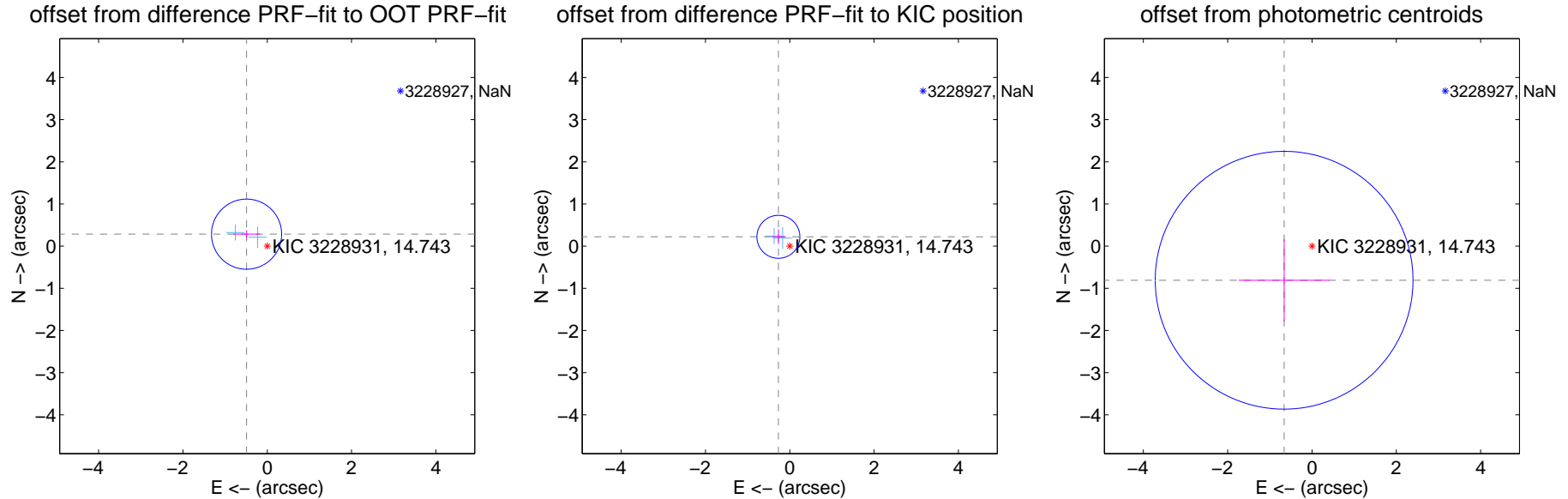
DV Centroid Data

Supplemental centroid analysis for 003228931-02. Kepler magnitude: 14.74. Transit SNR 7.19

There are 2 quarters with good PRF difference image offsets

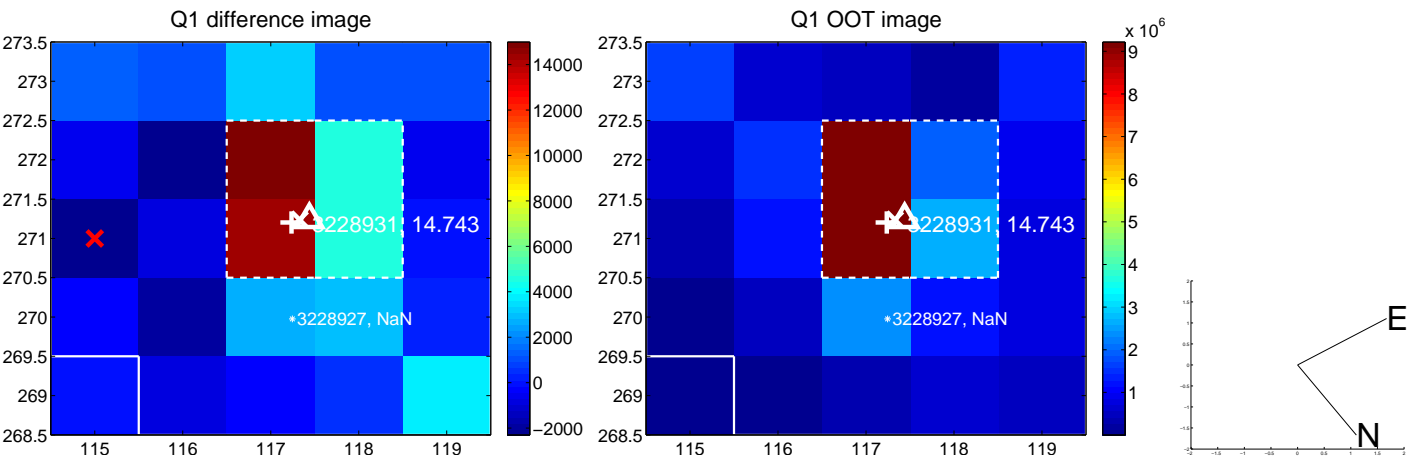
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.567 ± 0.277	2.04	0.490 ± 0.316	0.284 ± 0.091
PRF-fit source offset from KIC position	0.349 ± 0.170	2.06	0.270 ± 0.167	0.222 ± 0.173
photometric centroid source offset	1.04 ± 1.02	1.02	0.66 ± 1.08	-0.81 ± 0.98



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

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



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



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

Q9 no difference image



Q9 no OOT image



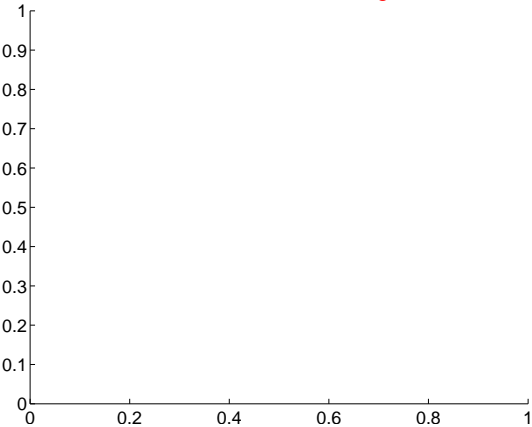
Q10 no difference image



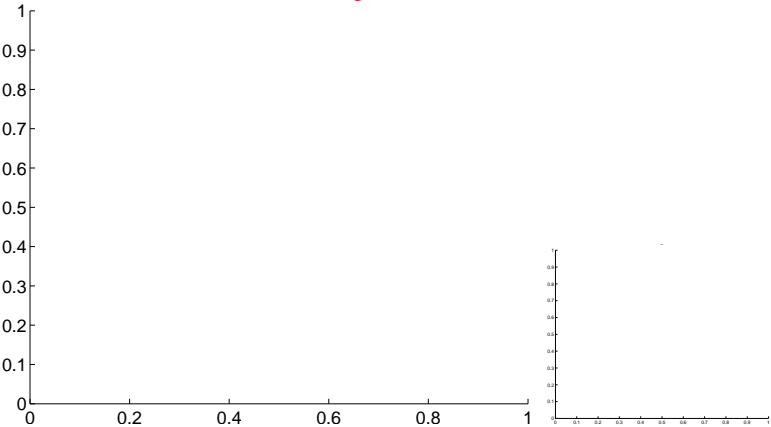
Q10 no OOT image



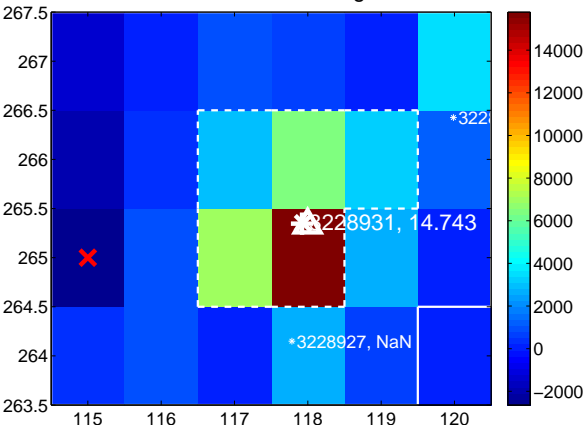
Q11 no difference image



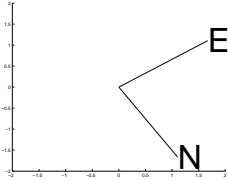
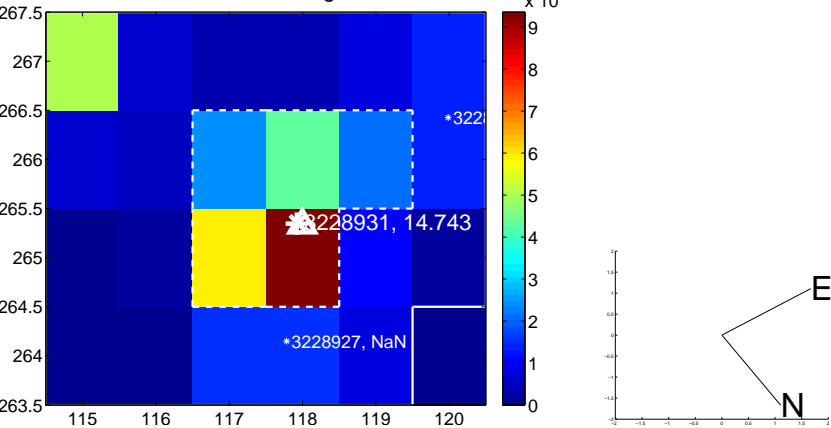
Q11 no OOT image



Q12 difference image



Q12 OOT image



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

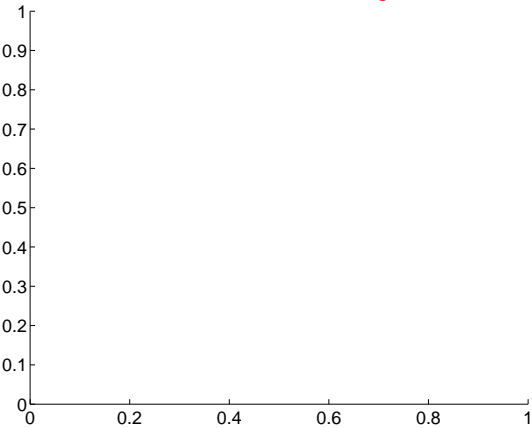
Q13 no difference image



Q13 no OOT image



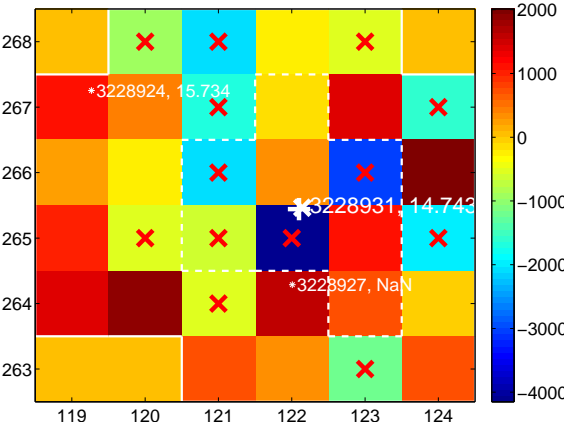
Q14 no difference image



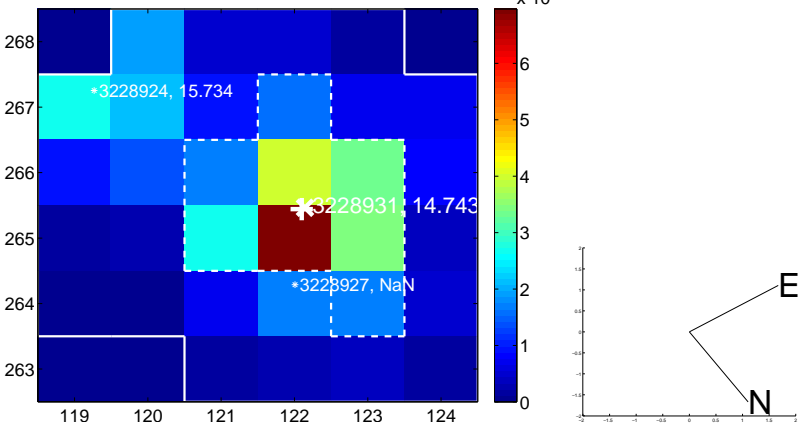
Q14 no OOT image



Q15 difference image. Poor Quality



Q15 OOT image



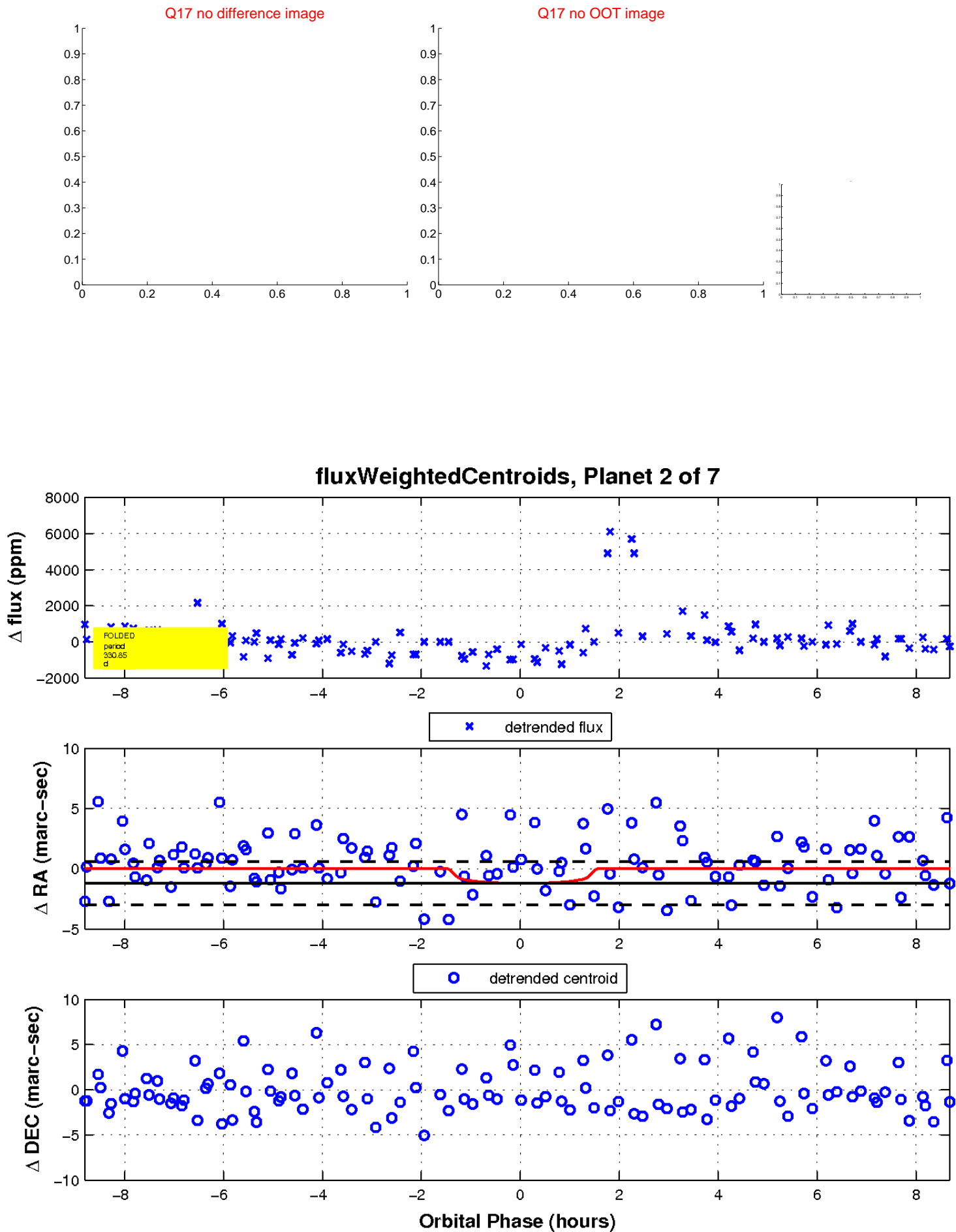
Q16 no difference image



Q16 no OOT image

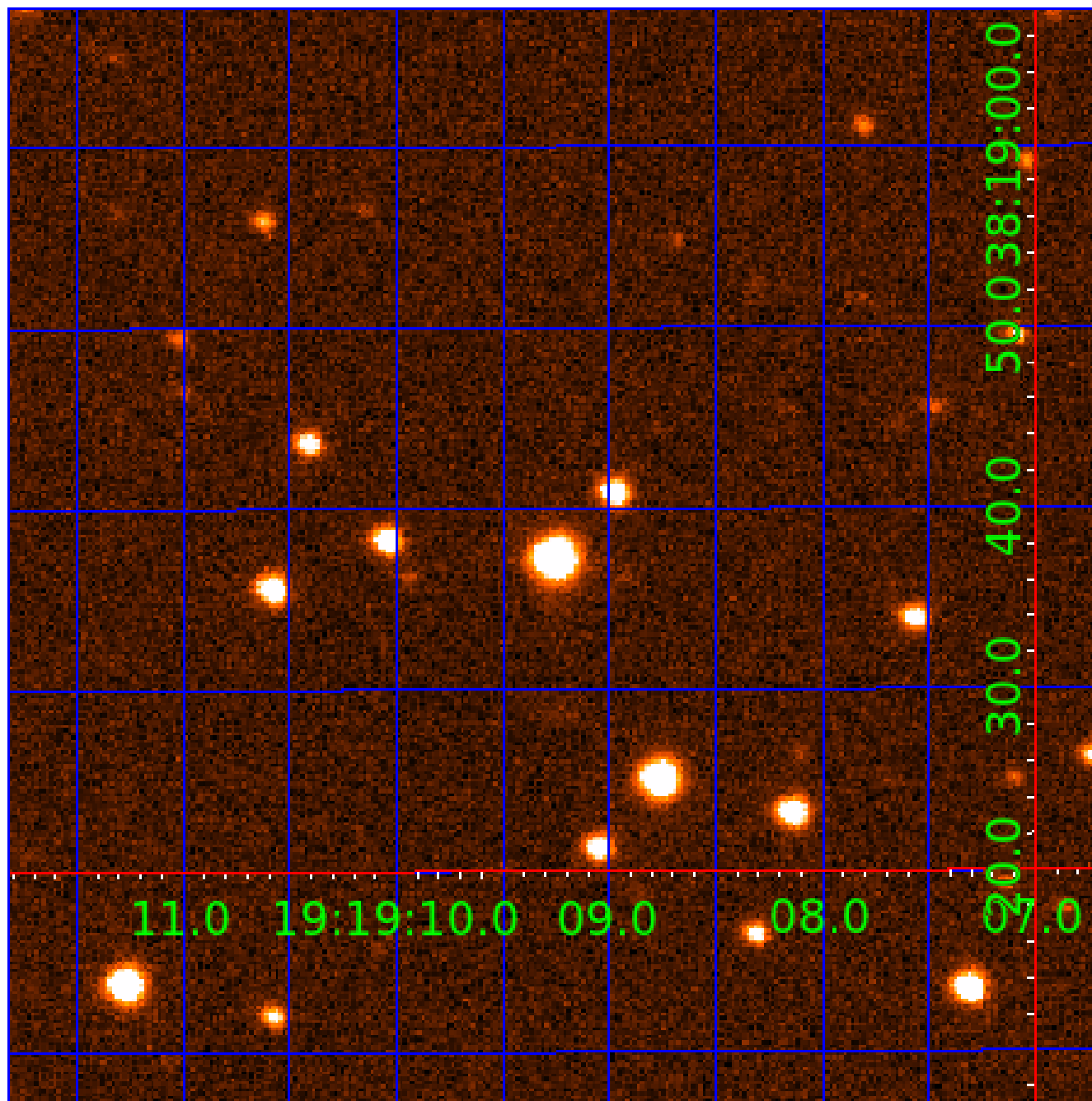


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003228931

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})
003228931-01	OBS	No	372.052560	462.211414	2003.2	15.480	16.2	7.7	0.70	5280	3.67	0.41
003228931-02	OBS	No	330.850190	144.353721	1325.1	2.949	15.5	7.2	0.70	5280	2.58	0.48
003228931-03	OBS	No	473.507624	449.156916	988.3	4.714	12.9	6.2	0.70	5280	2.35	0.30
003228931-04	OBS	No	468.628876	421.791450	1075.4	5.855	12.2	6.4	0.70	5280	2.39	0.30
003228931-05	OBS	No	480.732856	576.725025	1273.3	3.719	11.5	7.8	0.70	5280	2.68	0.29
003228931-06	OBS	No	347.722462	134.574524	1282.5	12.628	10.9	6.2	0.70	5280	2.50	0.45
003228931-07	OBS	No	405.299663	521.778367	1074.8	3.500	9.9	-1.0	0.70	5280	2.26	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003228931-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003228931-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
003228931-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—HALO_GHOST
003228931-06	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

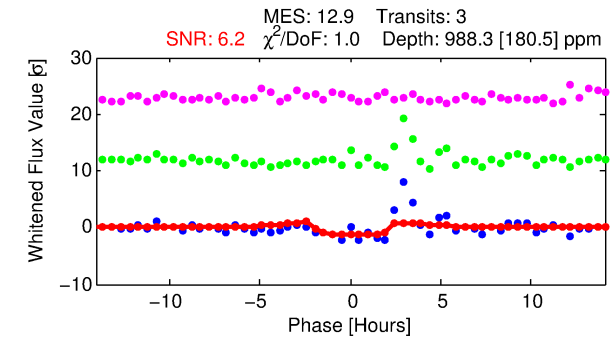
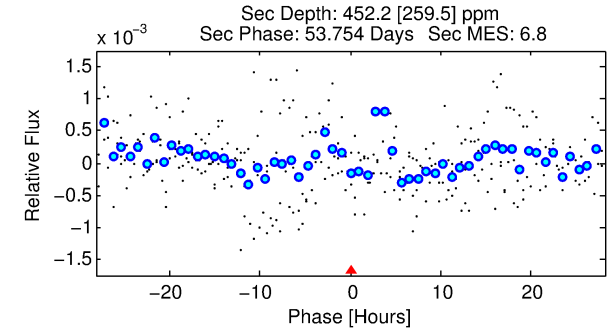
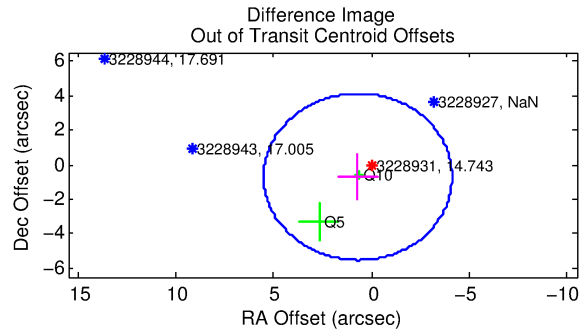
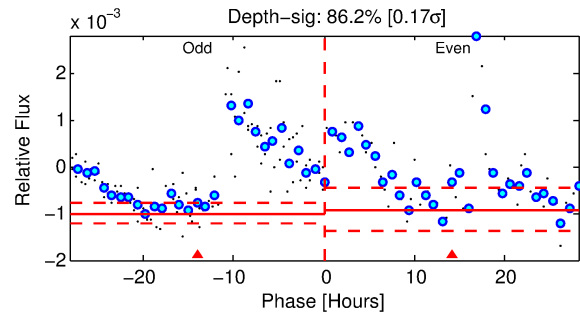
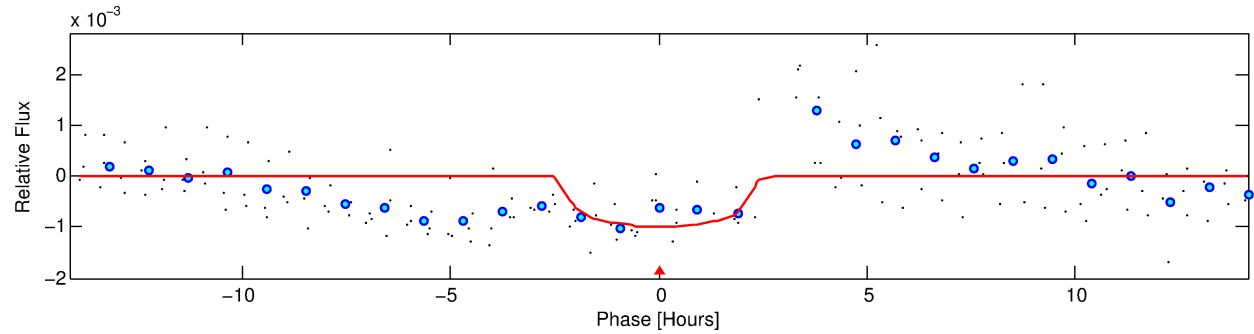
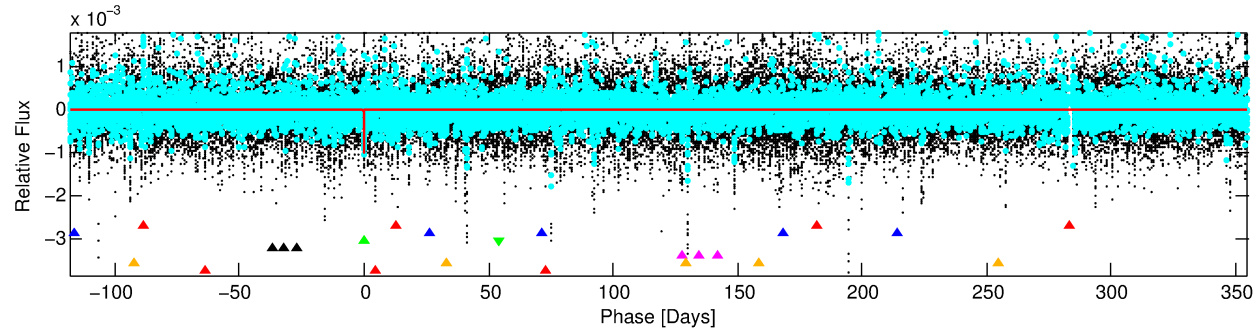
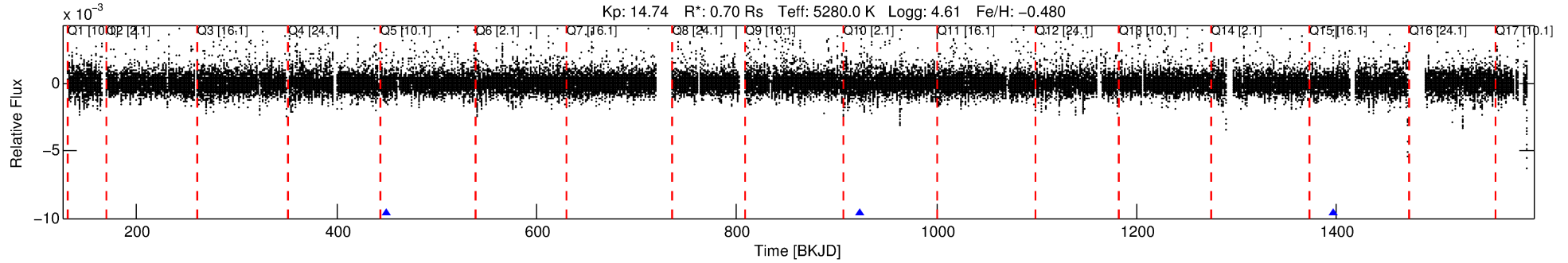
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003228931-03

No Significant Match Found

DV One-Page Summary

KIC: 3228931 Candidate: 3 of 7 Period: 473.508 d



DV Fit Results:

Period = 473.50762 [0.00627] d
Epoch = 449.1569 [0.0064] BKJD
Rp/R* = 0.0307 [0.0346]
a/R* = 585.07 [2623.64]
b = 0.69 [3.41]
Seff = 0.30 [0.06]
Teq = 188 [9] K
Rp = 2.35 [2.67] Re
a = 1.0725 [0.1205] AU
Ag = 51989.34 [121247.31] [0.43 σ]
Teffp = 4397 [2561] K [1.64 σ]

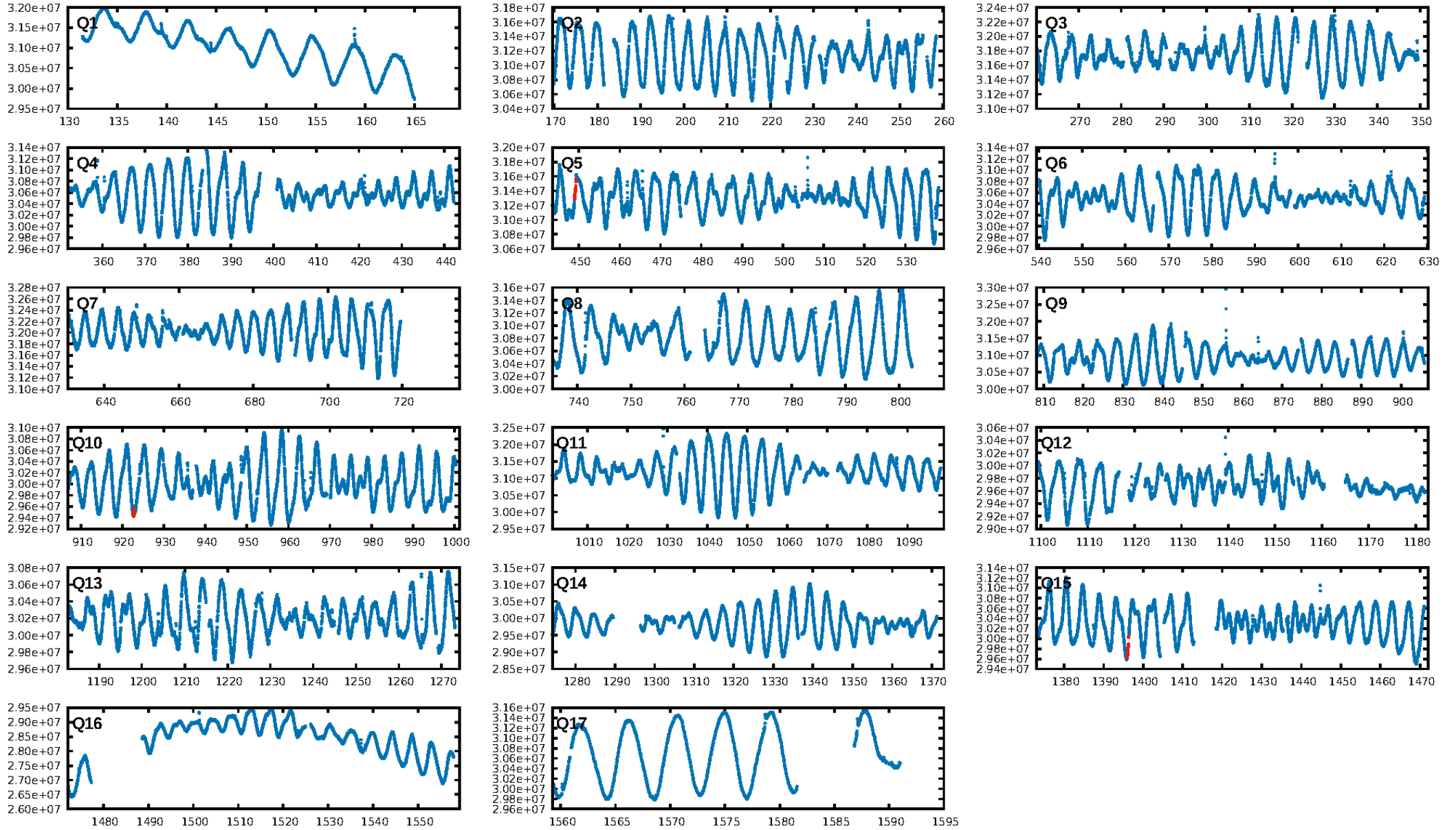
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [15.58 σ]
LongPeriod-sig: 100.0% [28.88 σ]
ModelChiSquare2-sig: 90.1%
ModelChiSquareGof-sig: 81.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.296
Centroid-sig: N/A
Centroid-so: 1.373 arcsec [1.04 σ]
OotOffset-rm: 0.994 arcsec [0.62 σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-rm: 0.699 arcsec [0.46 σ]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

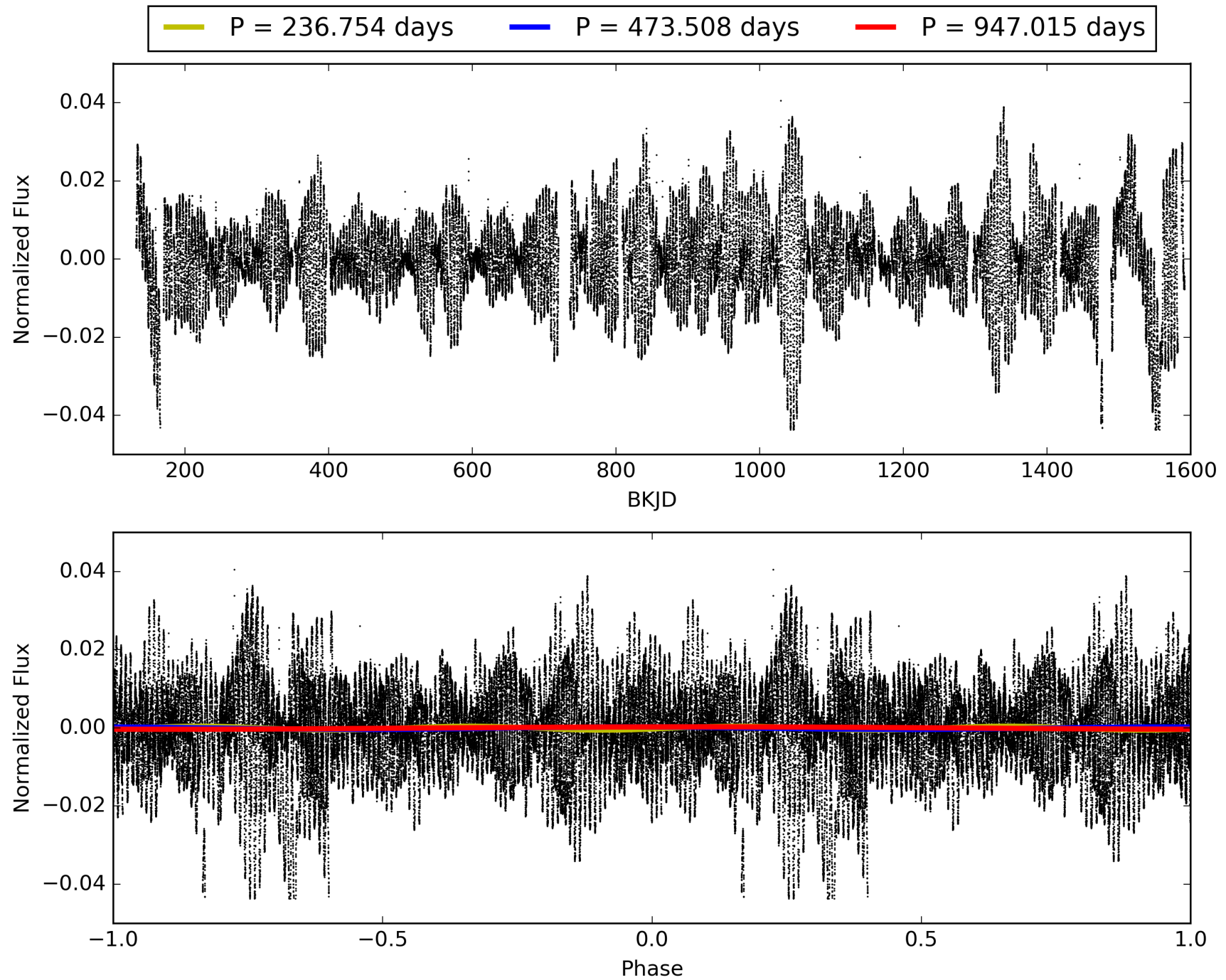
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:28:01 Z

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

TCE 003228931-03, PDC Light Curves

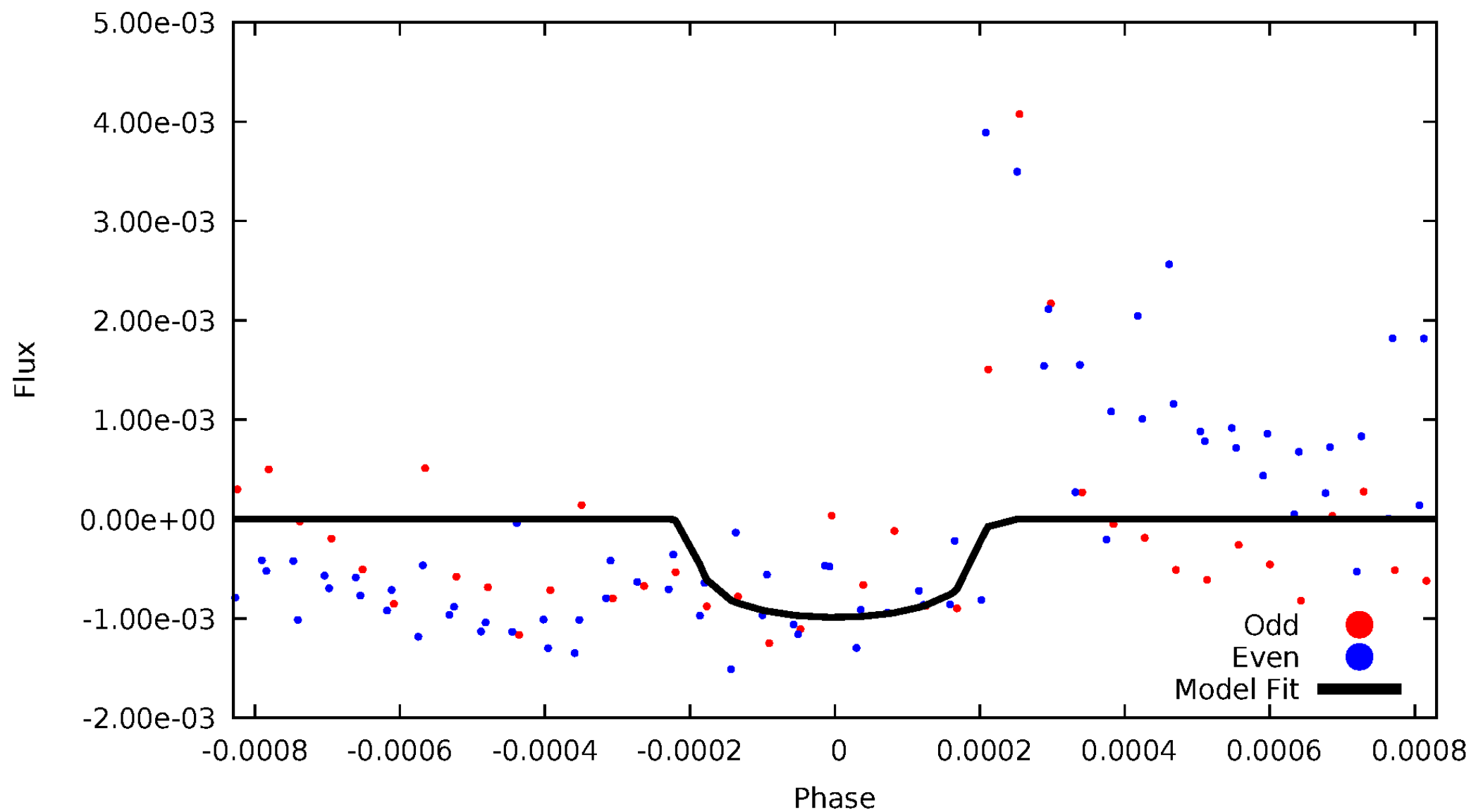


TCE 003228931-03



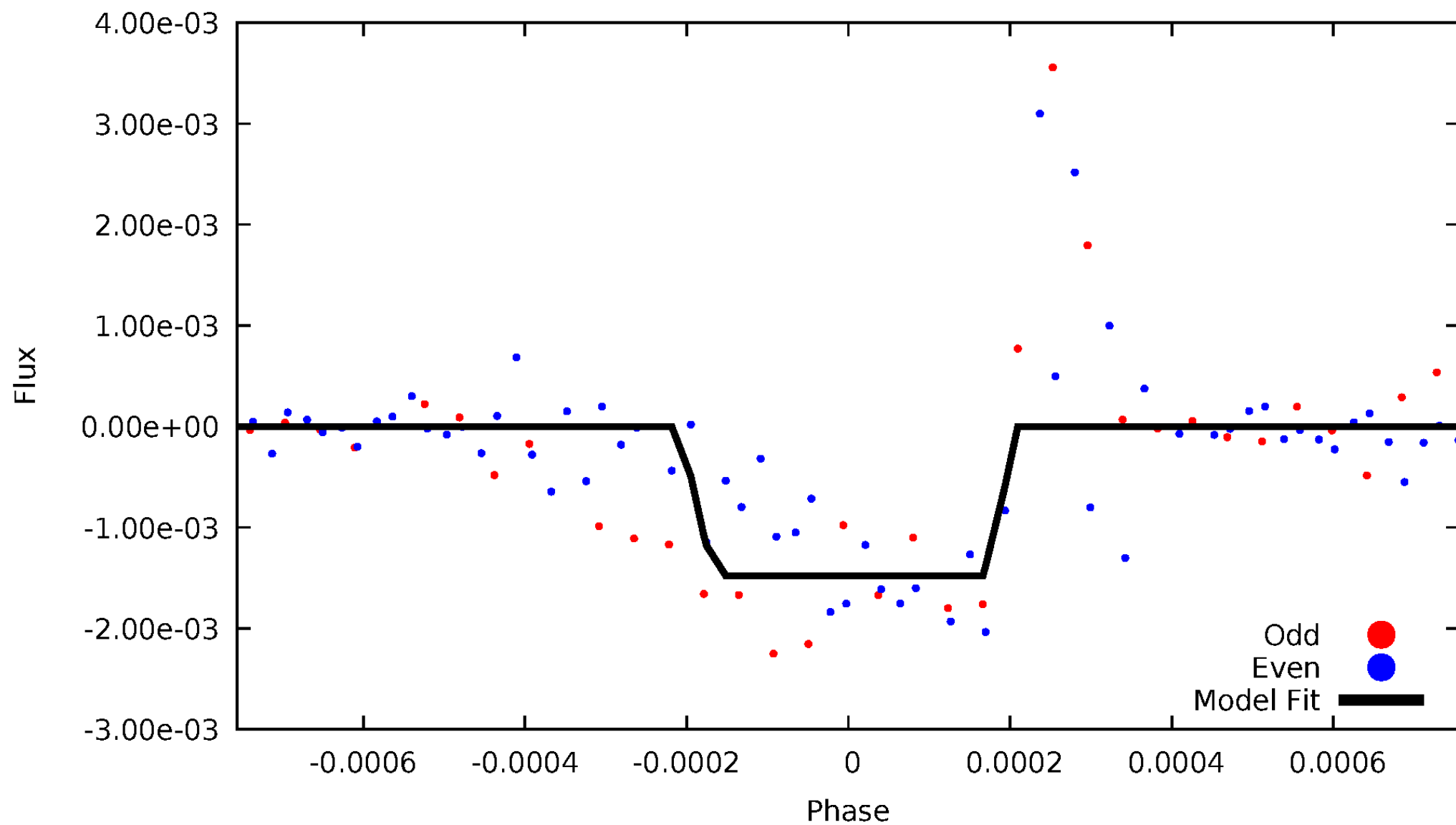
DV Odd/Even

TCE 003228931-03



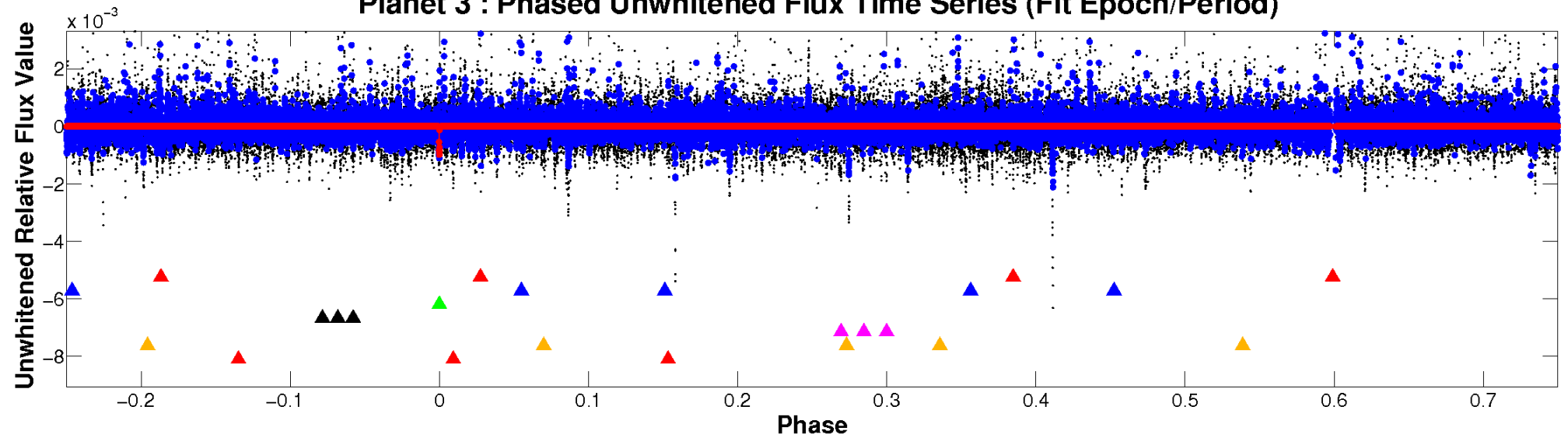
ALT Odd/Even

TCE 003228931-03

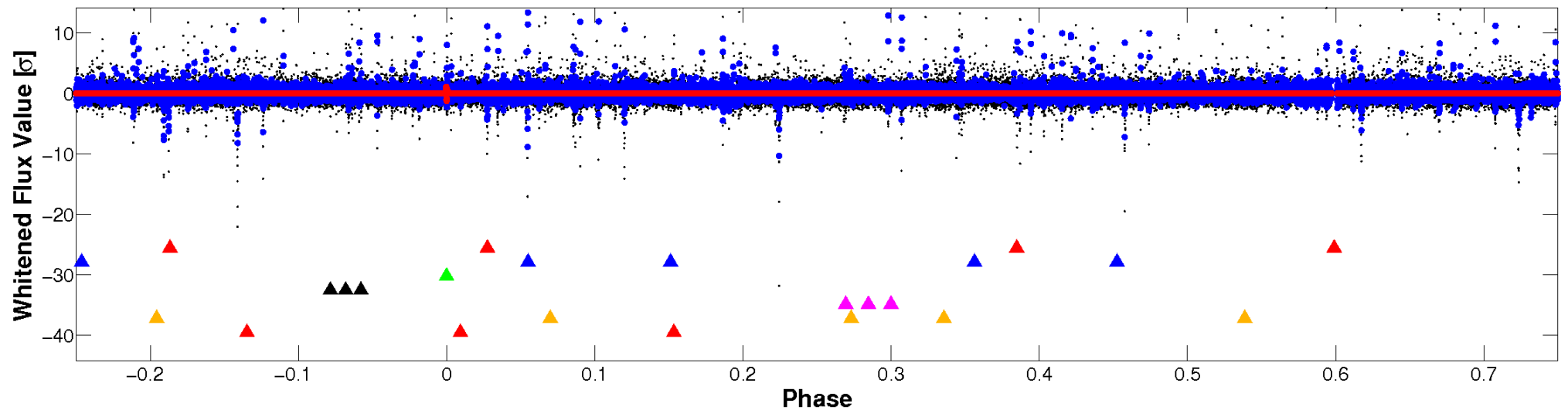


Non-Whitened Vs. Whitened Light Curve

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

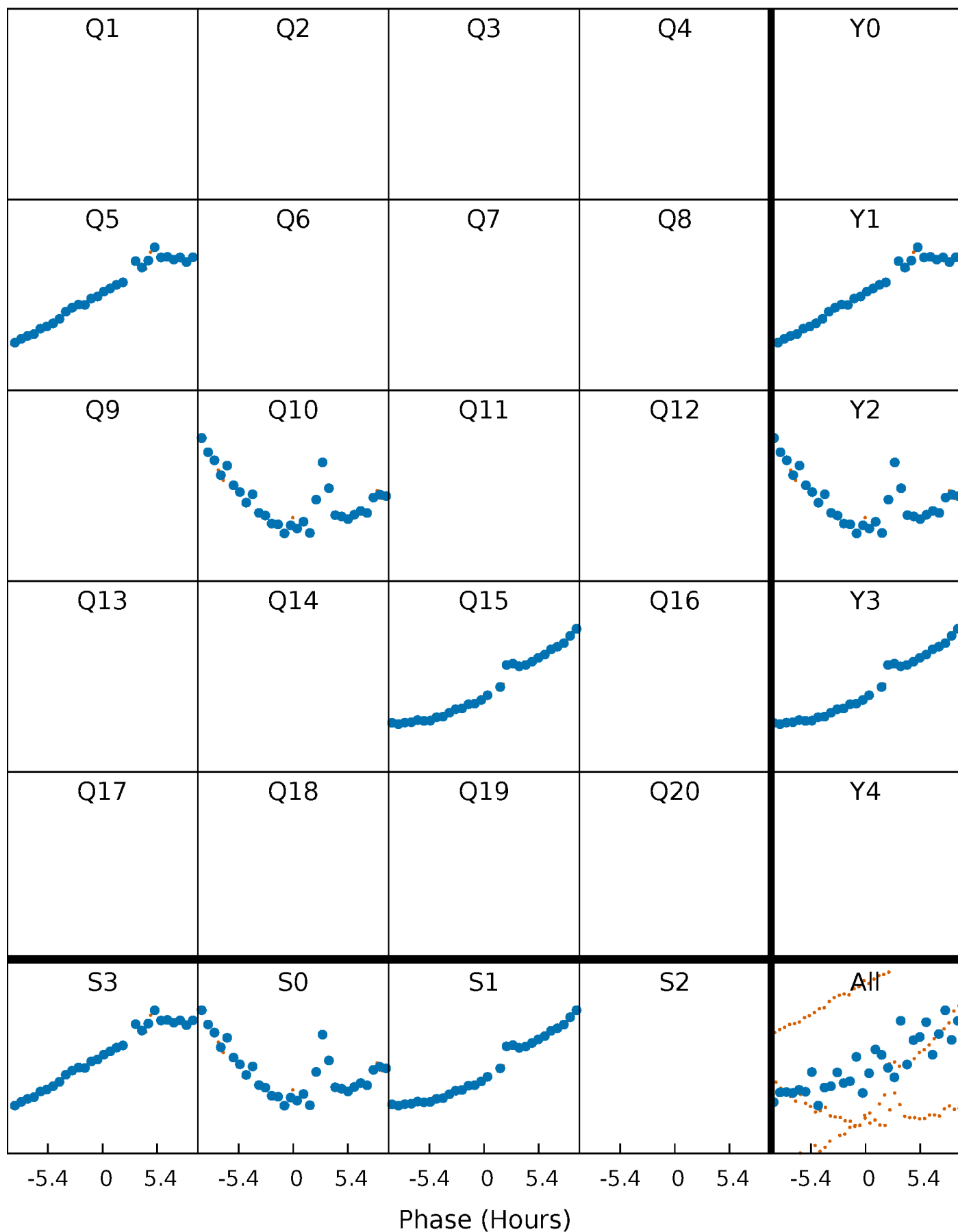


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



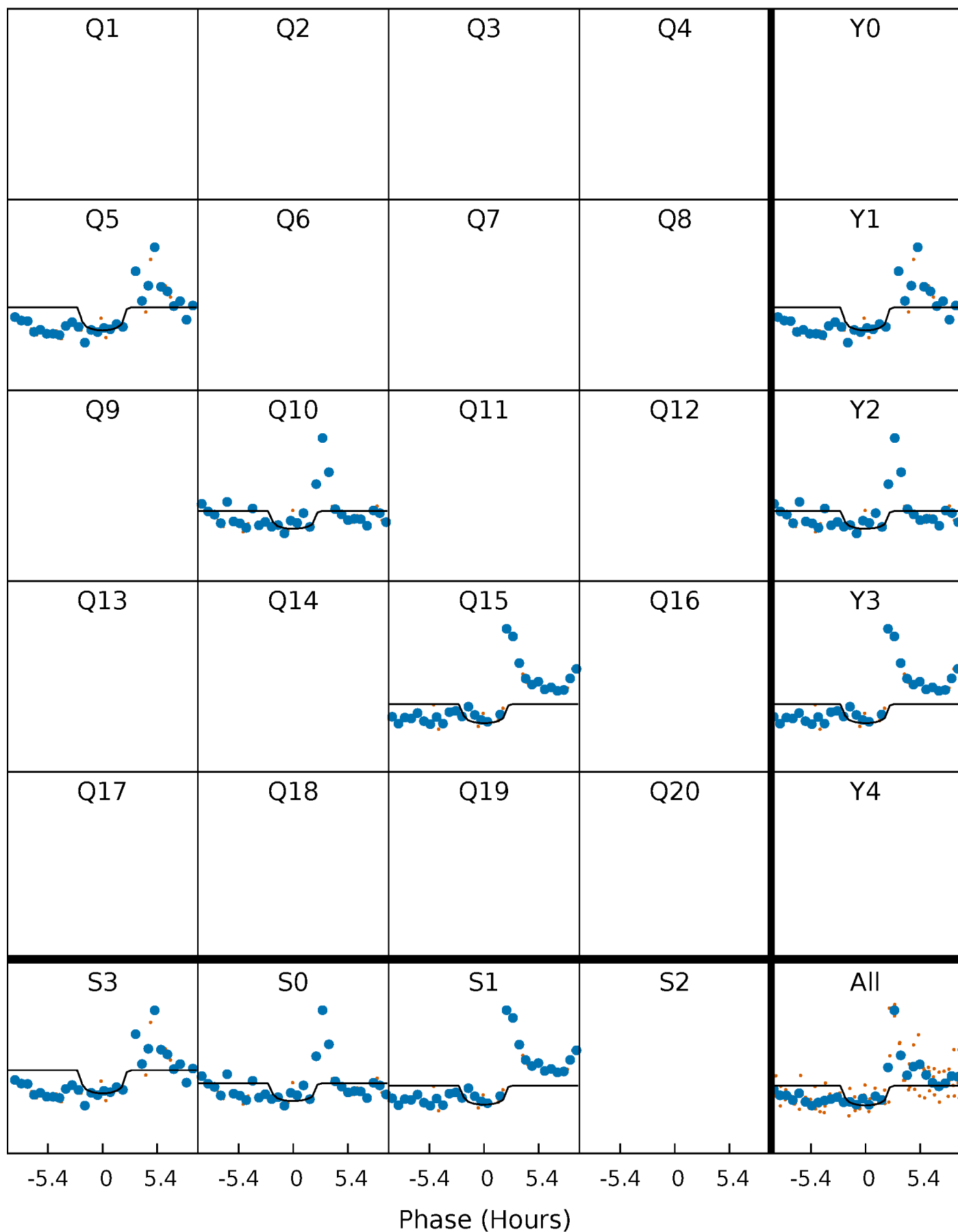
PDC Quarter-Phased Transit Curves

TCE 003228931-03 P=473.507624 Days $T_0=449.156916$ (BKJD)



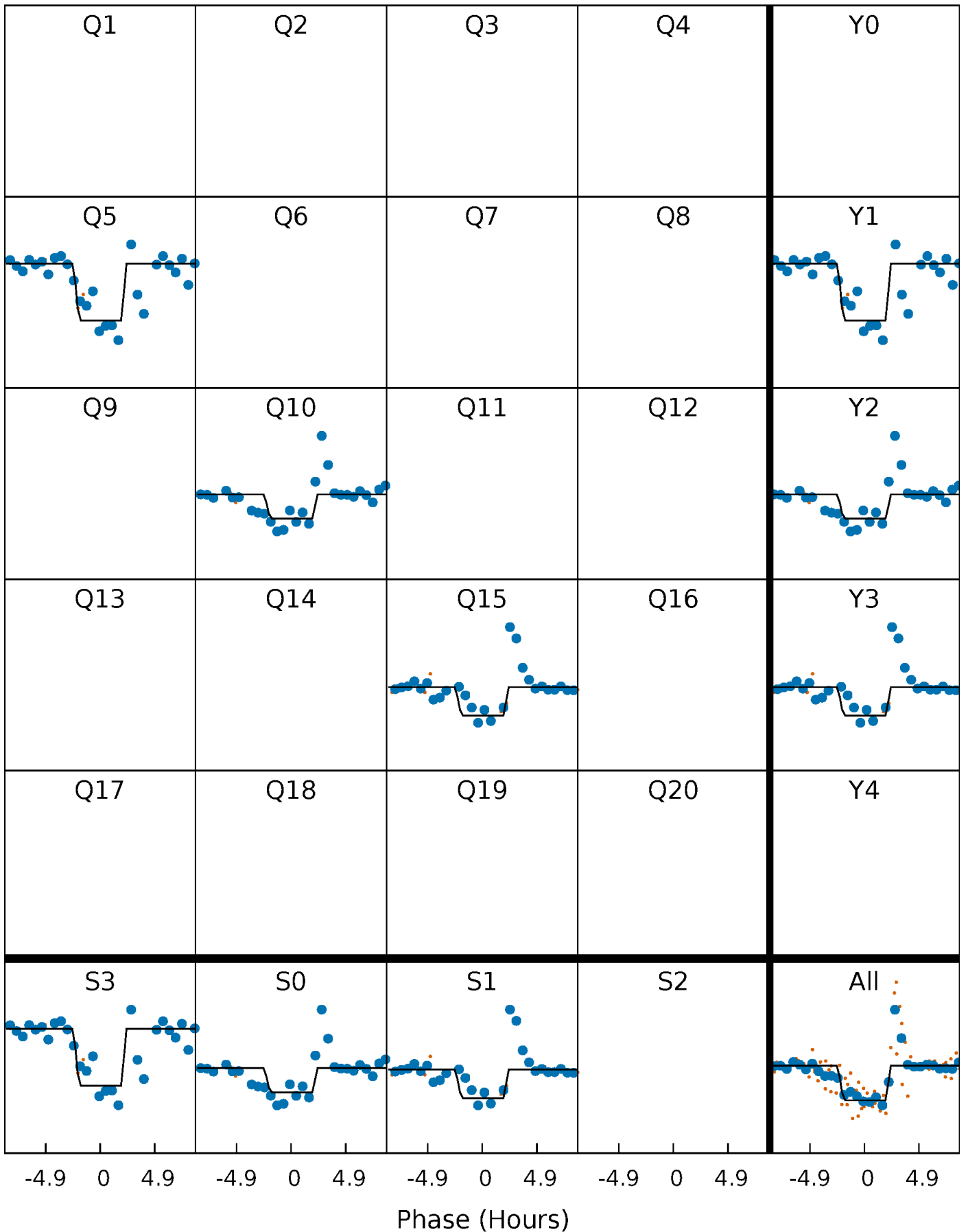
DV Quarter-Phased Transit Curves

TCE 003228931-03 $P=473.507624$ Days $T_0=449.156916$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

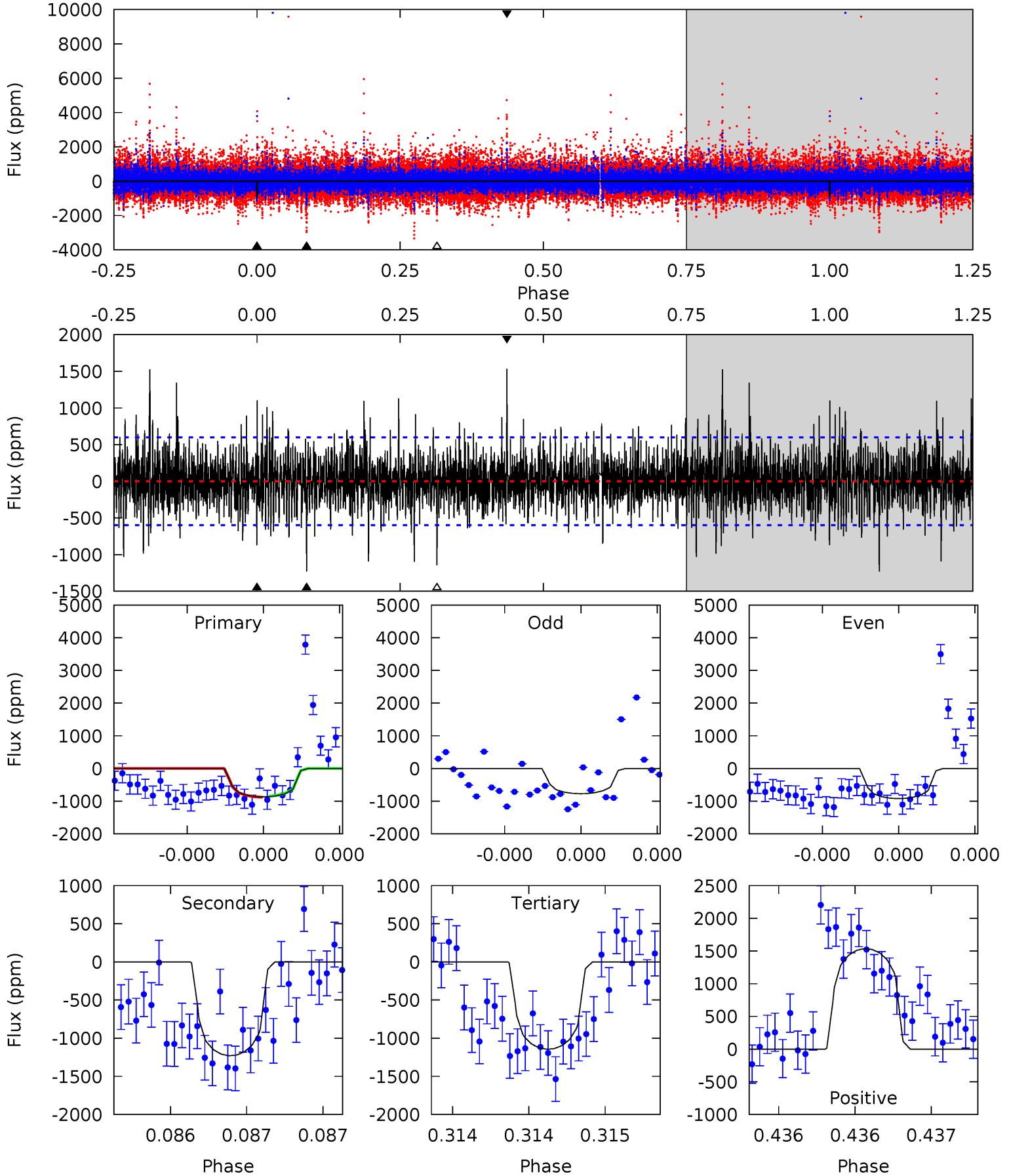
TCE 003228931-03 $P=473.493264$ Days $T_0=449.172206$ (BKJD)



DV Model-Shift Uniqueness Test

003228931-03, P = 473.507624 Days, E = 449.156916 Days

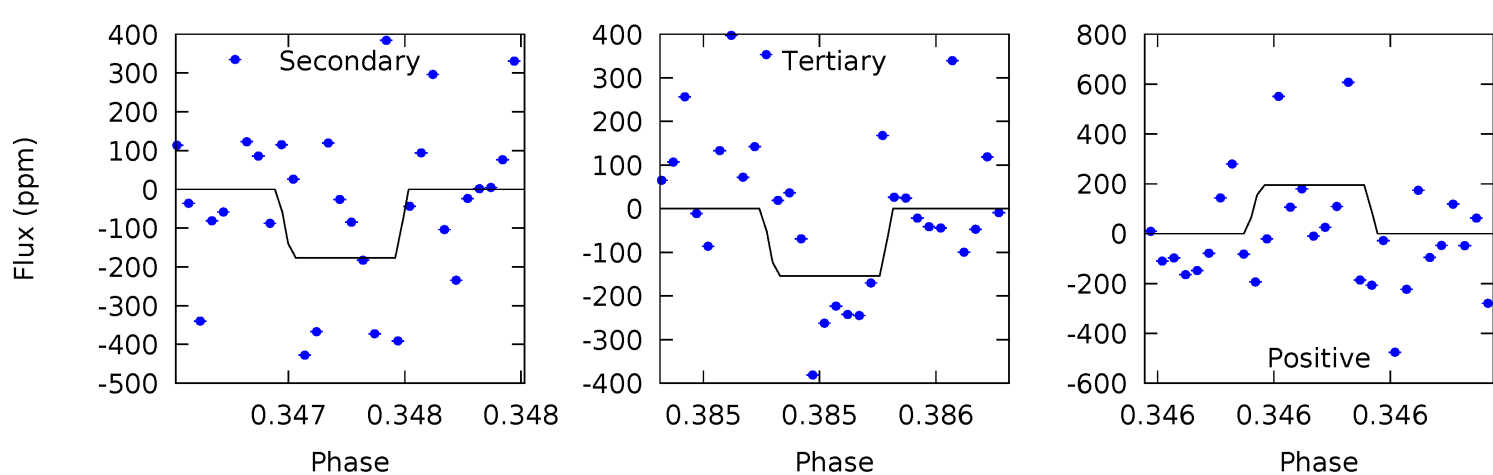
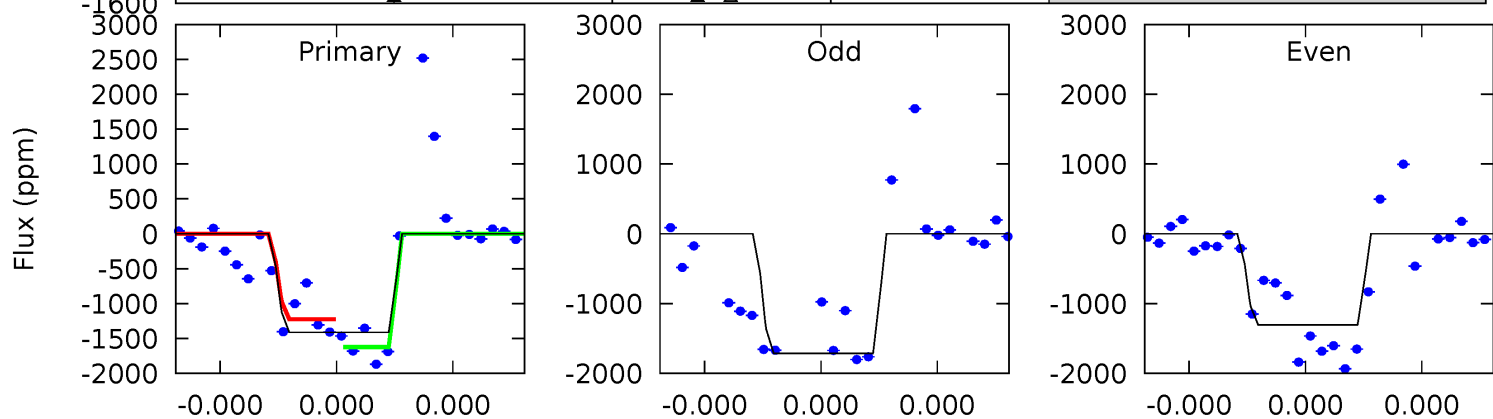
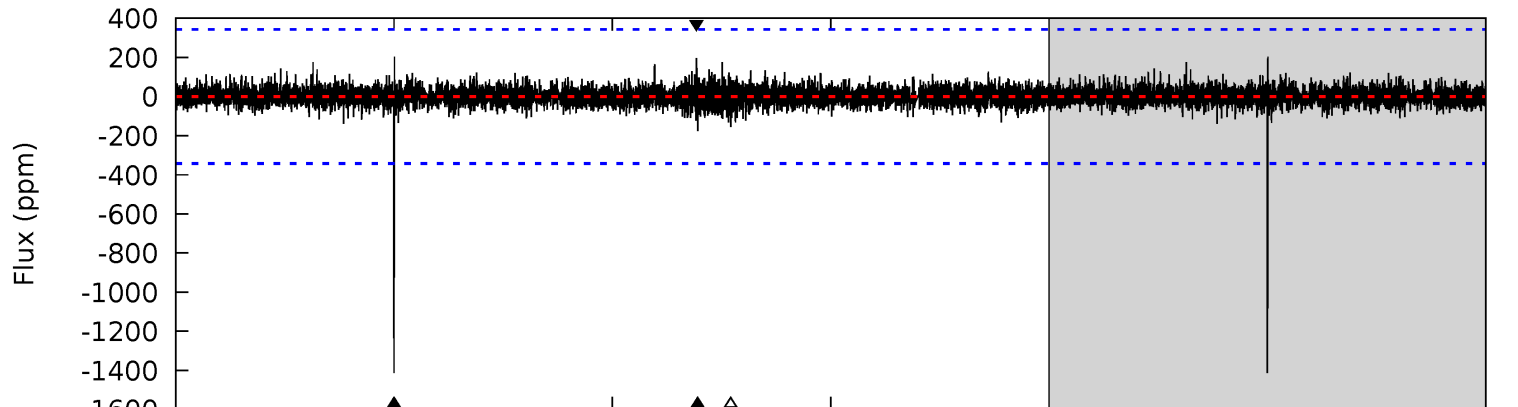
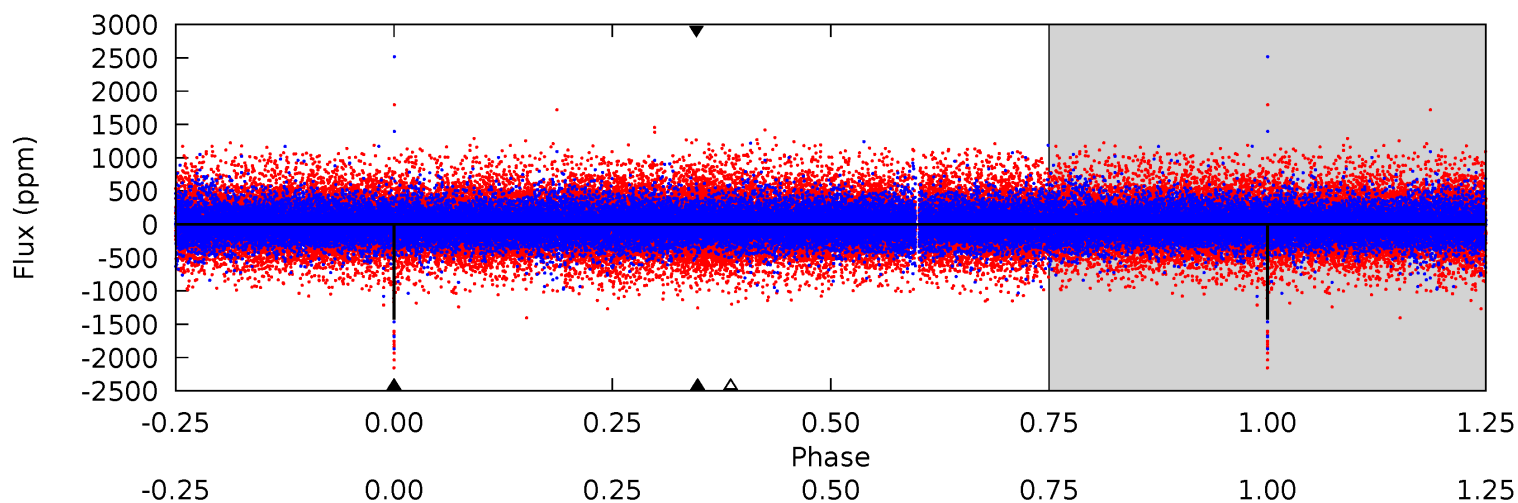
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.13	11.5	10.7	14.3	5.60	3.52	2.33	-2.57	-6.22	0.80	-2.86	0.49	1.09	0.56	0.13



Alt Model-Shift Uniqueness Test

003228931-03, P = 473.493264 Days, E = 449.172206 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.2	2.89	2.53	3.20	5.62	3.56	0.53	20.6	20.0	0.36	-0.31	3.20	0.99	0.13	3.29



Stellar Parameters For KIC 003228931

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5280^{+158}_{-142}	$4.612^{+0.042}_{-0.078}$	$-0.480^{+0.300}_{-0.300}$	$0.701^{+0.100}_{-0.054}$	$0.734^{+0.088}_{-0.059}$	$3.001^{+0.635}_{-0.749}$
	+3%/-3%	+1%/-2%	+62%/-62%	+14%/-8%	+12%/-8%	+21%/-25%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 003228931-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1229 ± 107	$3.01^{+2.23}_{-1.89}$	265^{+10}_{-9}	5043^{+3591}_{-963}	$88124^{+561568}_{-59718}$
Alt.	-176 ± 61	$3.57^{+2.35}_{-2.26}$	265^{+11}_{-10}	3333^{+1362}_{-511}	8365^{+55986}_{-5739}

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

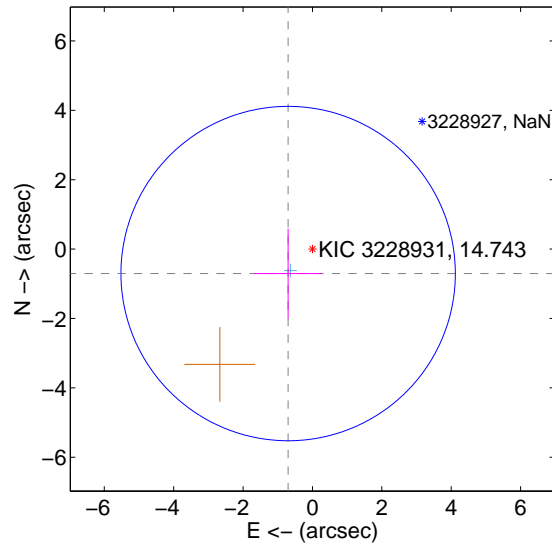
Supplemental centroid analysis for 003228931-03. Kepler magnitude: 14.74. Transit SNR 6.18

There are 1 quarters with good PRF difference image offsets

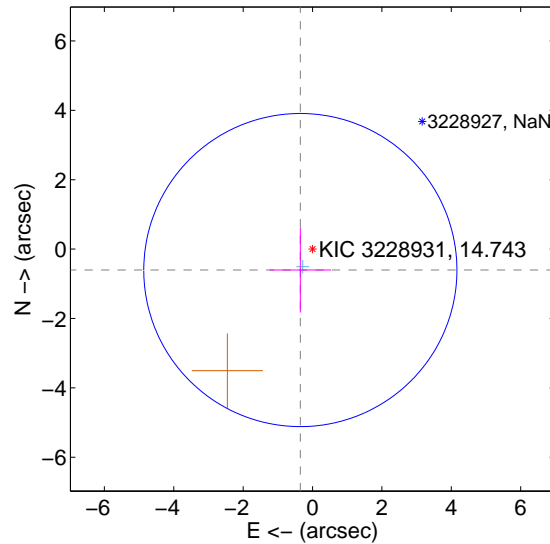
The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.994 ± 1.607	0.62	0.701 ± 0.976	-0.705 ± 1.297
PRF-fit source offset from KIC position	0.699 ± 1.505	0.46	0.351 ± 0.889	-0.604 ± 1.225
photometric centroid source offset	1.37 ± 1.32	1.04	0.35 ± 1.14	1.33 ± 1.33

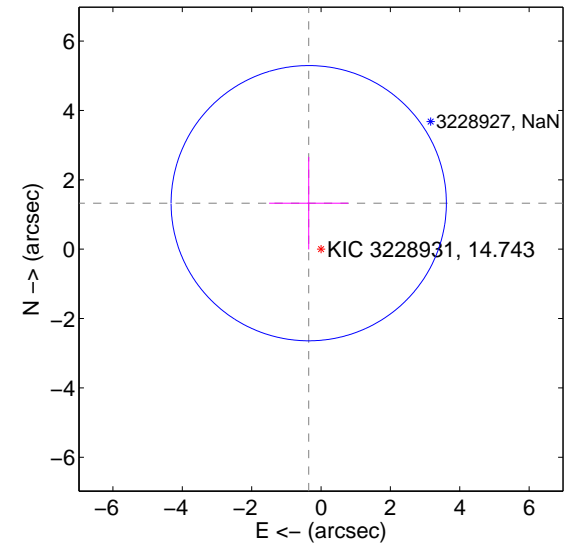
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

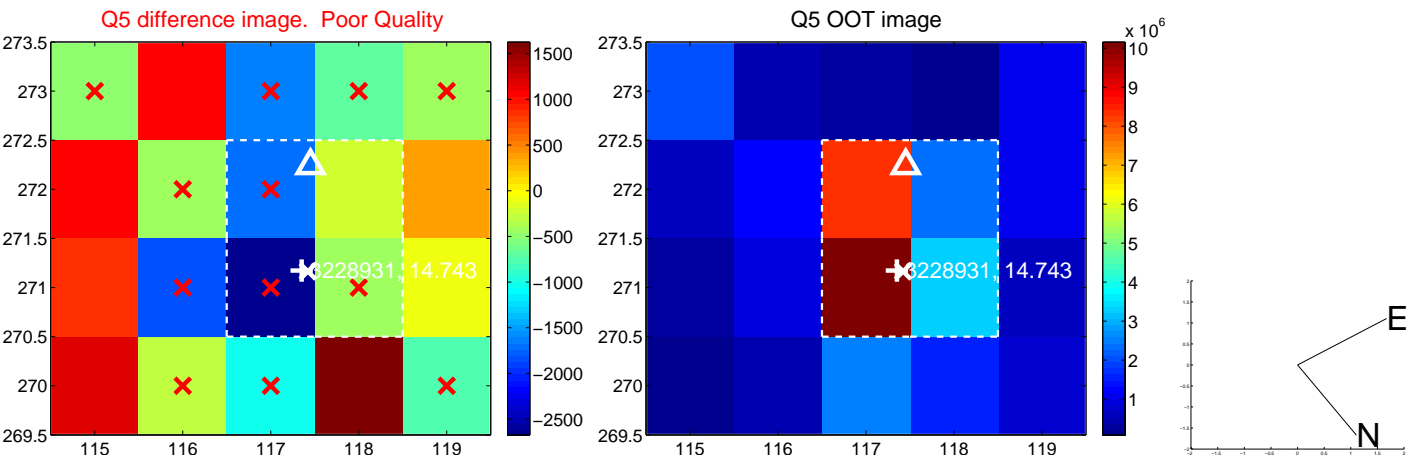


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

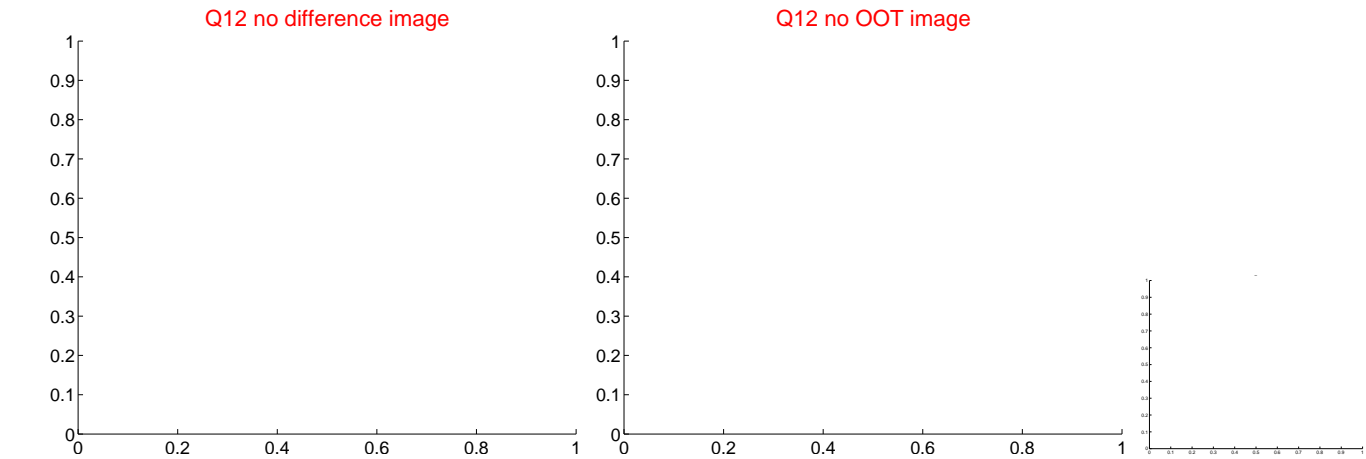
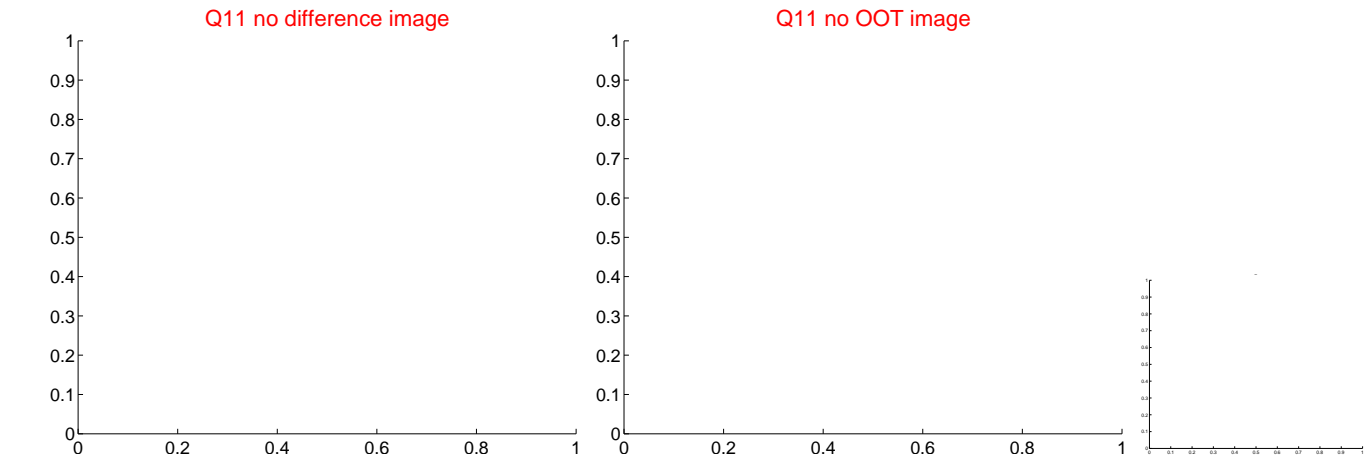
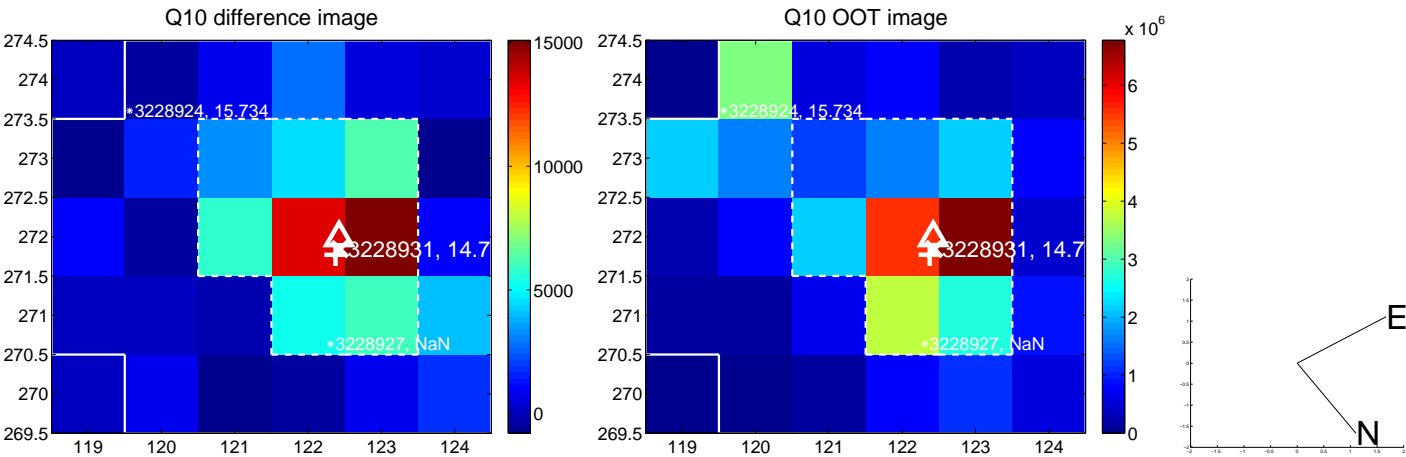
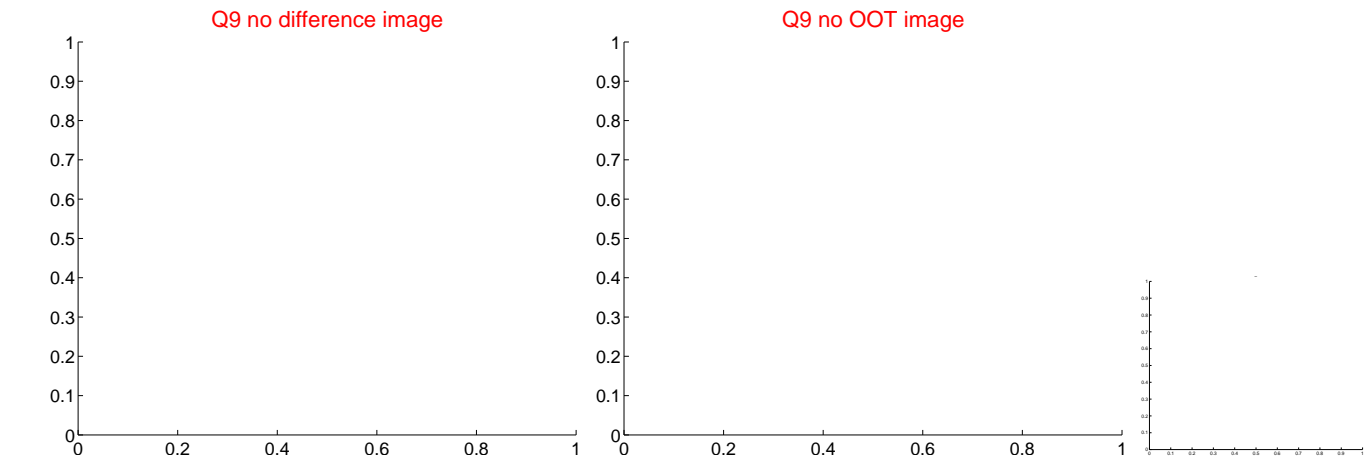
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



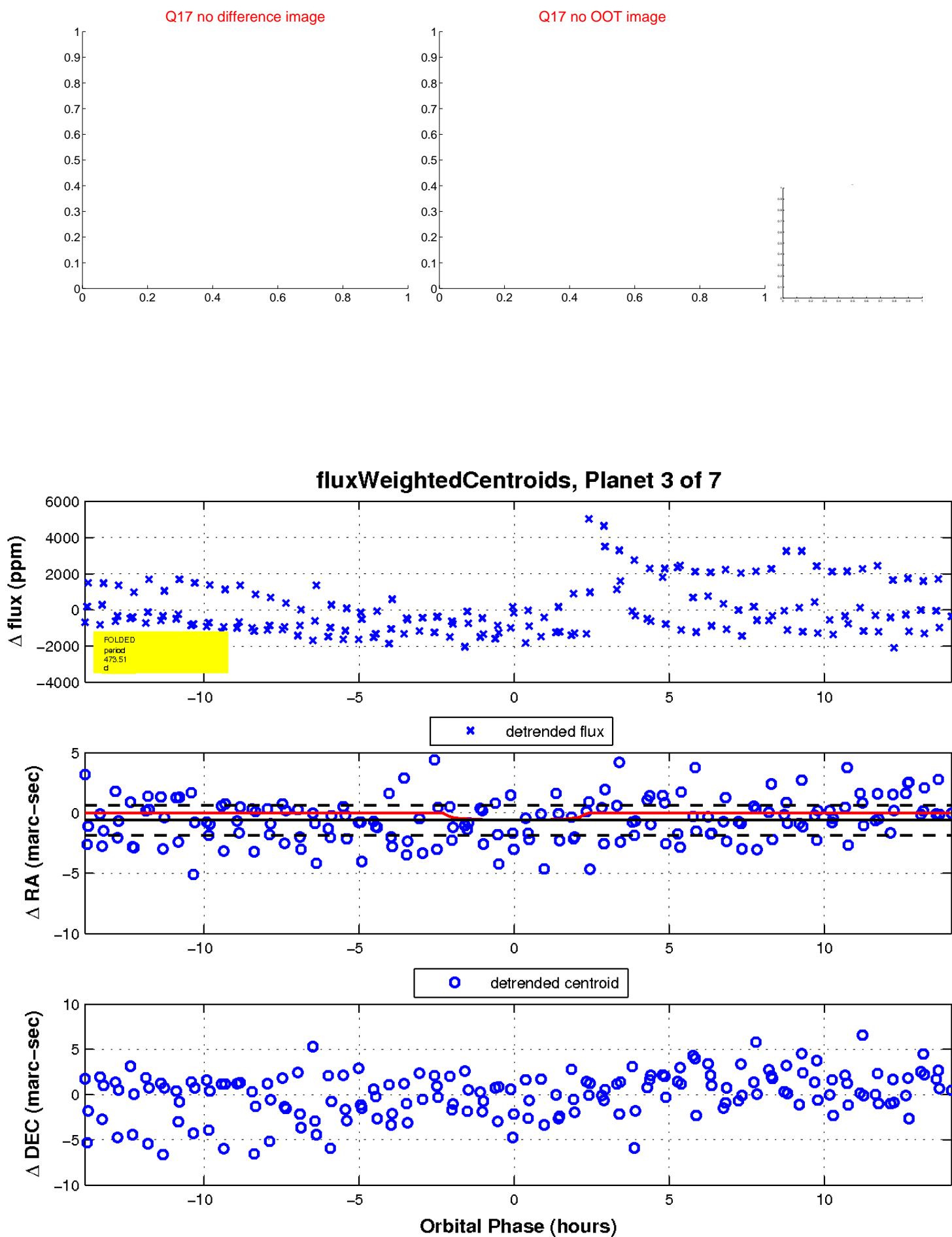
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

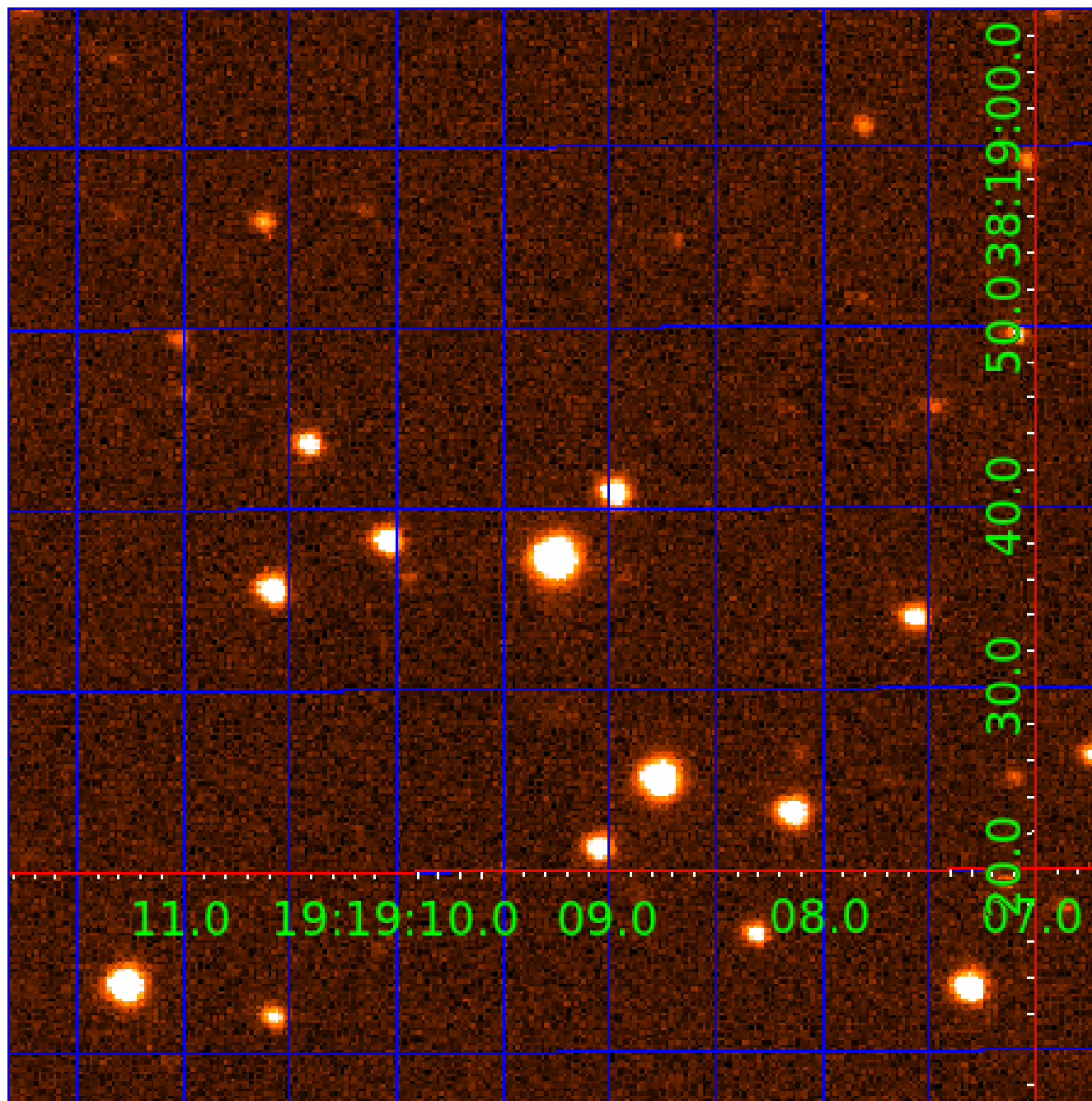


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003228931

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})
003228931-01	OBS	No	372.052560	462.211414	2003.2	15.480	16.2	7.7	0.70	5280	3.67	0.41
003228931-02	OBS	No	330.850190	144.353721	1325.1	2.949	15.5	7.2	0.70	5280	2.58	0.48
003228931-03	OBS	No	473.507624	449.156916	988.3	4.714	12.9	6.2	0.70	5280	2.35	0.30
003228931-04	OBS	No	468.628876	421.791450	1075.4	5.855	12.2	6.4	0.70	5280	2.39	0.30
003228931-05	OBS	No	480.732856	576.725025	1273.3	3.719	11.5	7.8	0.70	5280	2.68	0.29
003228931-06	OBS	No	347.722462	134.574524	1282.5	12.628	10.9	6.2	0.70	5280	2.50	0.45
003228931-07	OBS	No	405.299663	521.778367	1074.8	3.500	9.9	-1.0	0.70	5280	2.26	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003228931-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003228931-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
003228931-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—HALO_GHOST
003228931-06	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

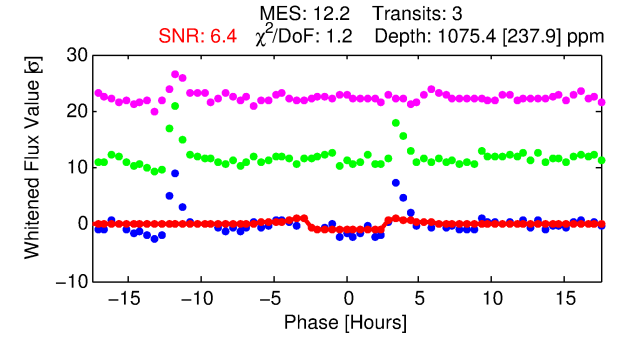
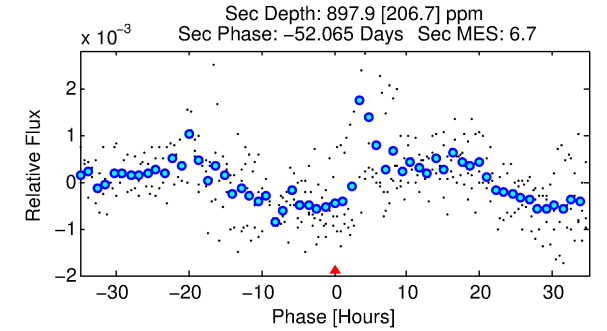
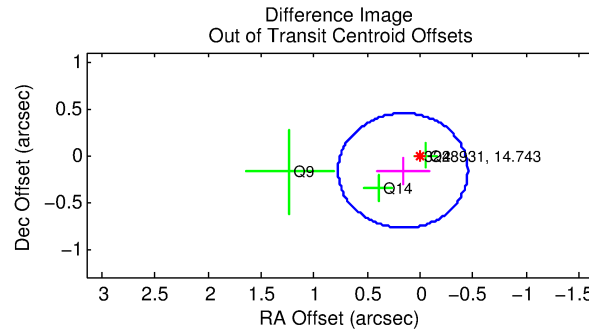
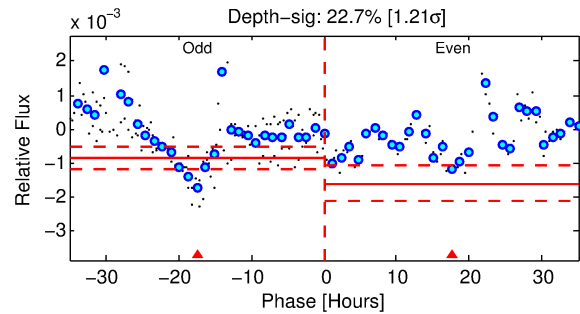
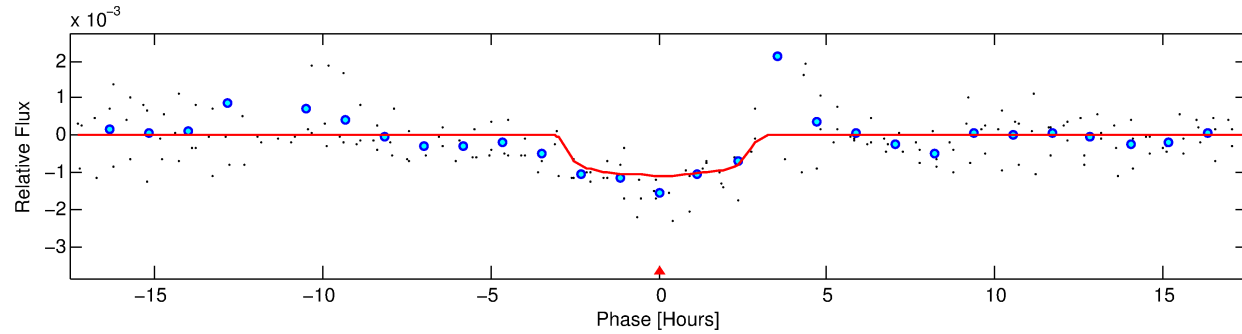
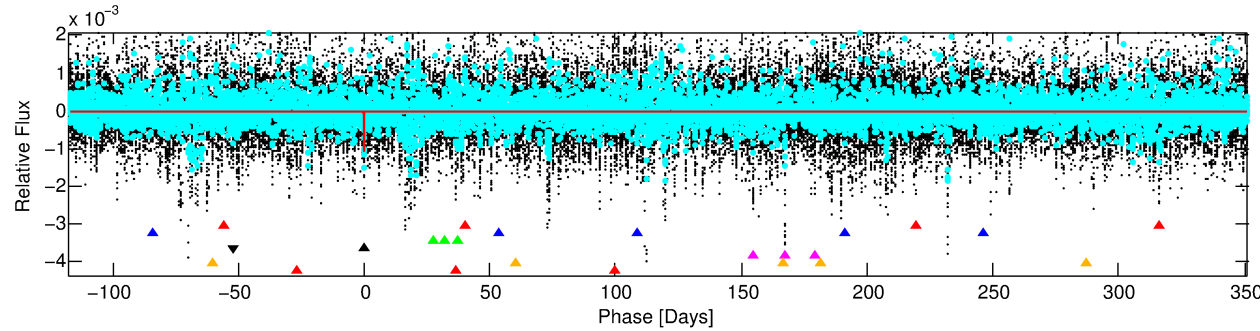
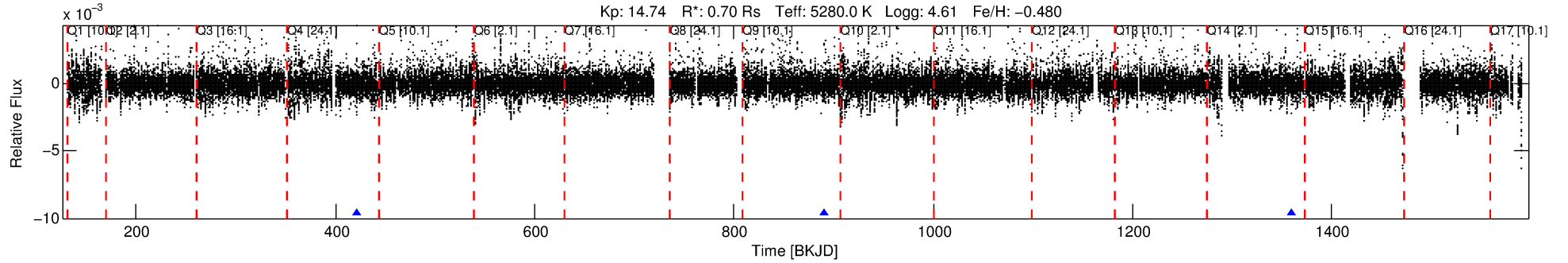
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003228931-04

No Significant Match Found

DV One-Page Summary

KIC: 3228931 Candidate: 4 of 7 Period: 468.629 d



DV Fit Results:

Period = 468.62888 [0.00832] d
Epoch = 421.7915 [0.0121] BKJD
Rp/R* = 0.0312 [0.0284]
a/R* = 508.87 [1805.67]
b = 0.61 [3.71]
Seff = 0.30 [0.06]
Teq = 189 [9] K
Rp = 2.39 [2.20] Re
a = 1.0651 [0.1197] AU
Ag = 98137.26 [180393.78] [0.54 σ]
Teffp = 5171 [2373] K [2.10 σ]

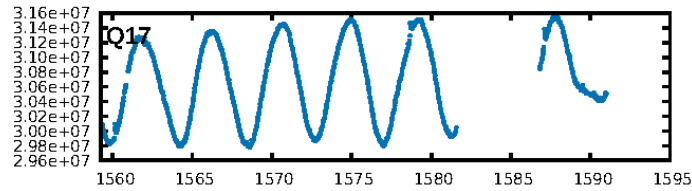
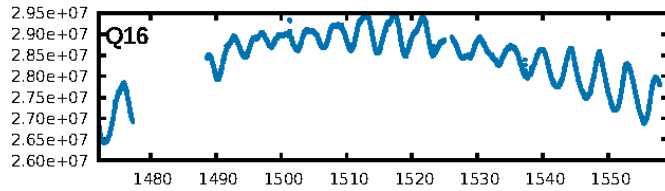
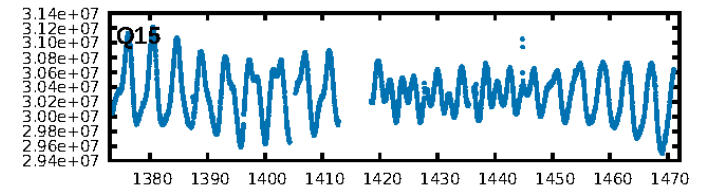
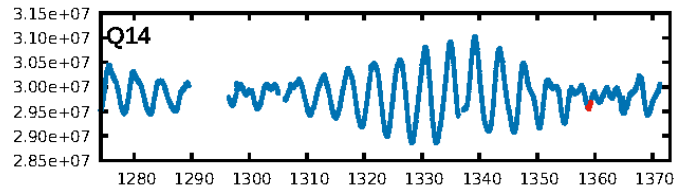
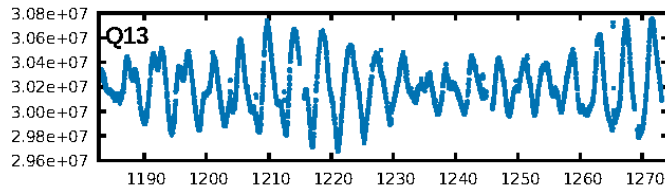
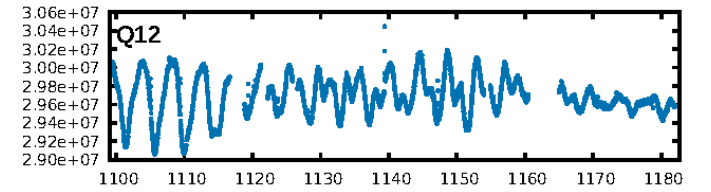
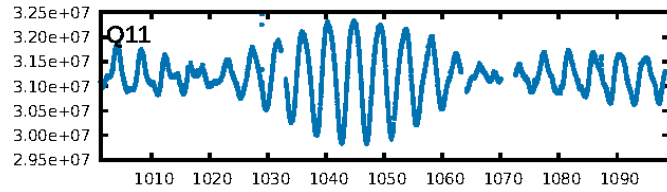
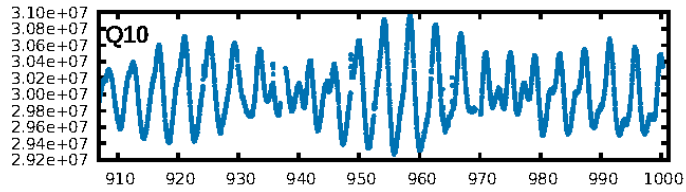
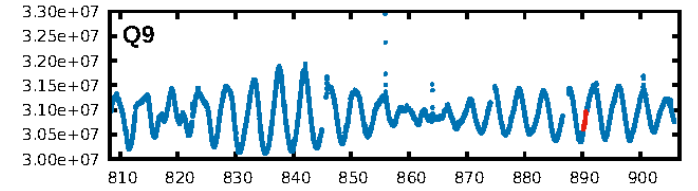
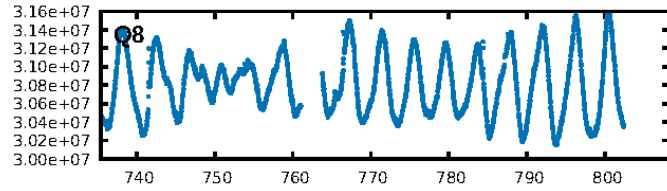
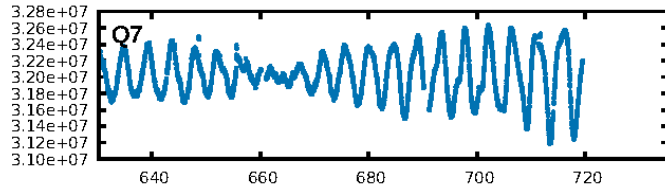
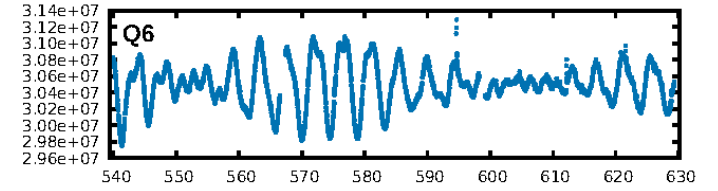
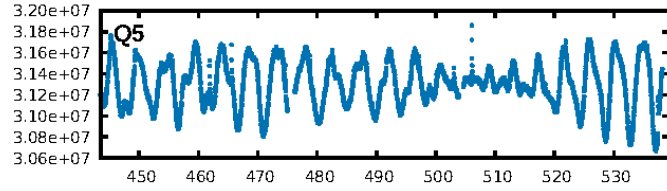
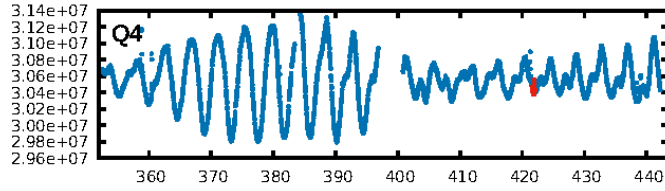
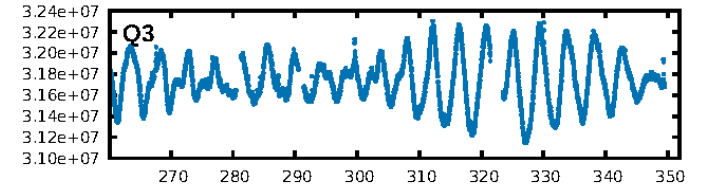
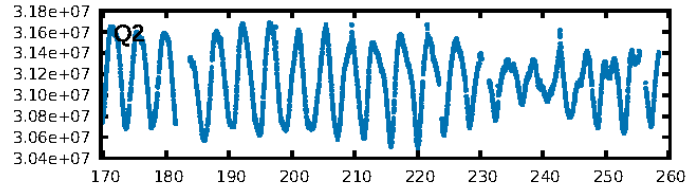
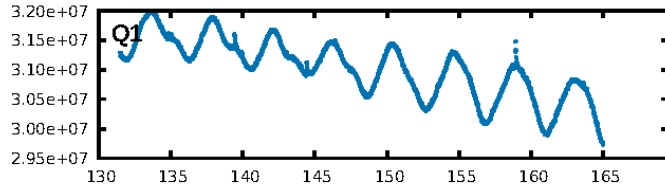
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [222.81 σ]
LongPeriod-sig: 100.0% [15.58 σ]
ModelChiSquare2-sig: 13.6%
ModelChiSquareGof-sig: 64.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.515
Centroid-sig: N/A
Centroid-so: 1.485 arcsec [1.45 σ]
OotOffset-rm: 0.230 arcsec [1.13 σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-rm: 0.150 arcsec [0.85 σ]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

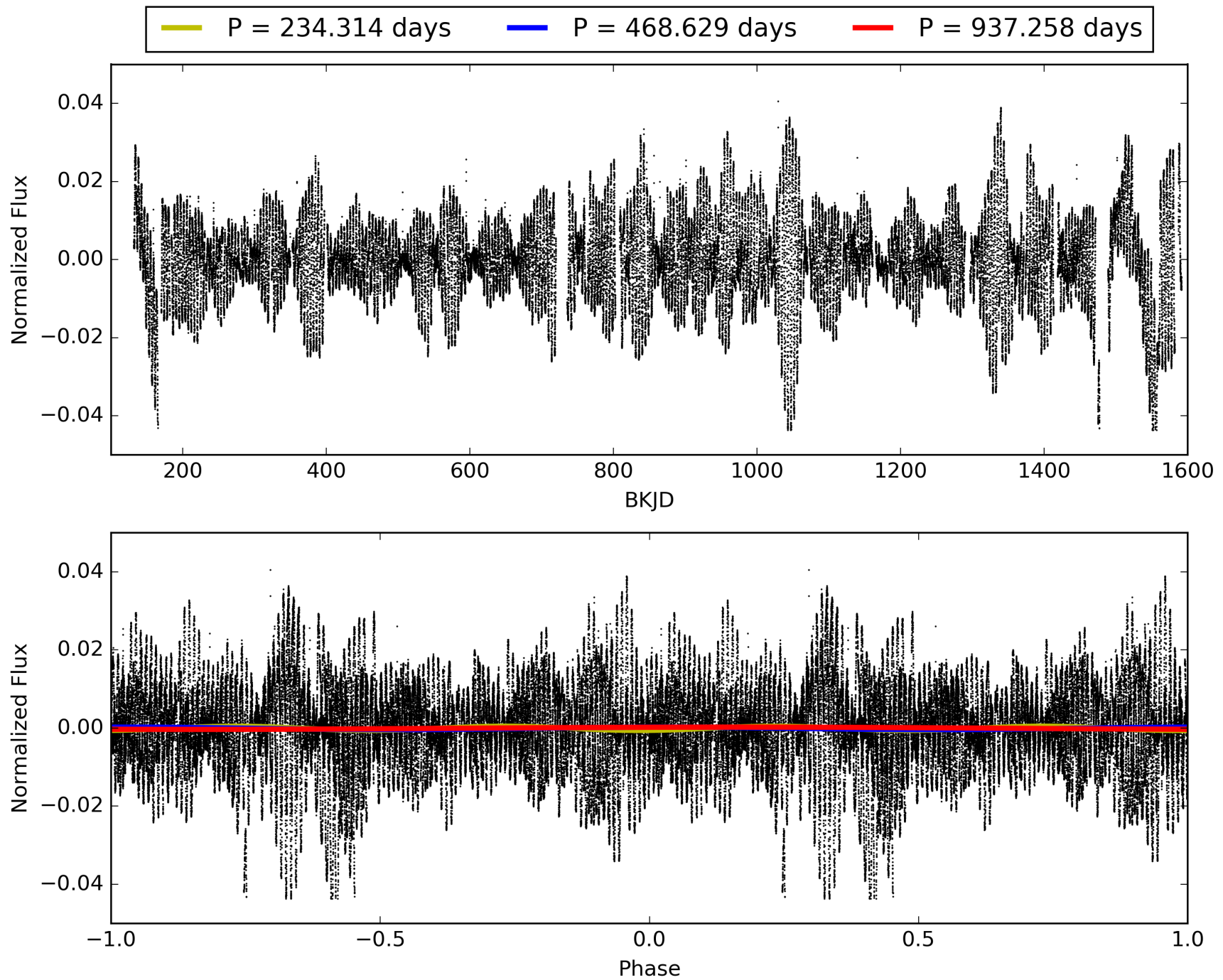
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:28:15 Z

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

TCE 003228931-04, PDC Light Curves

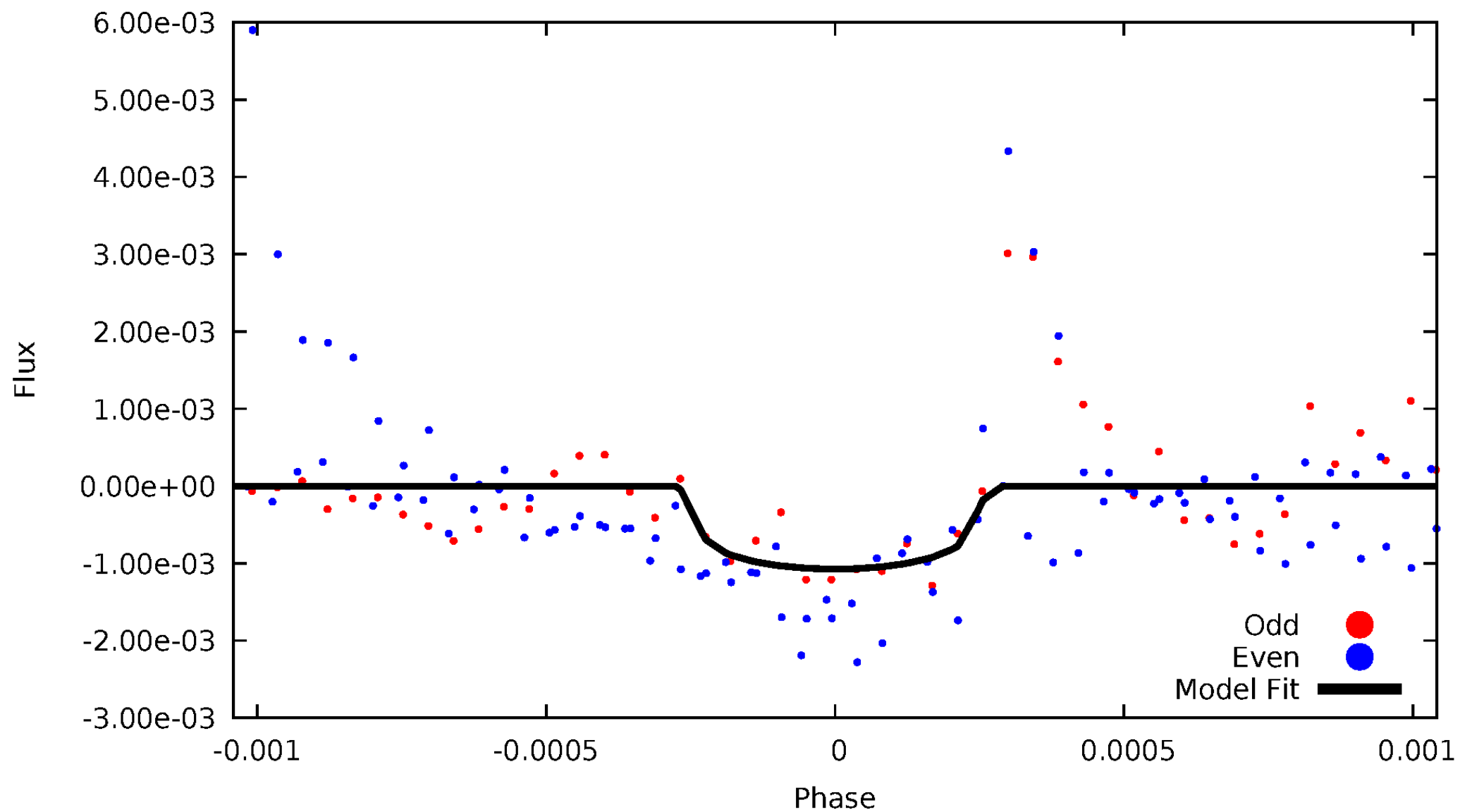


TCE 003228931-04



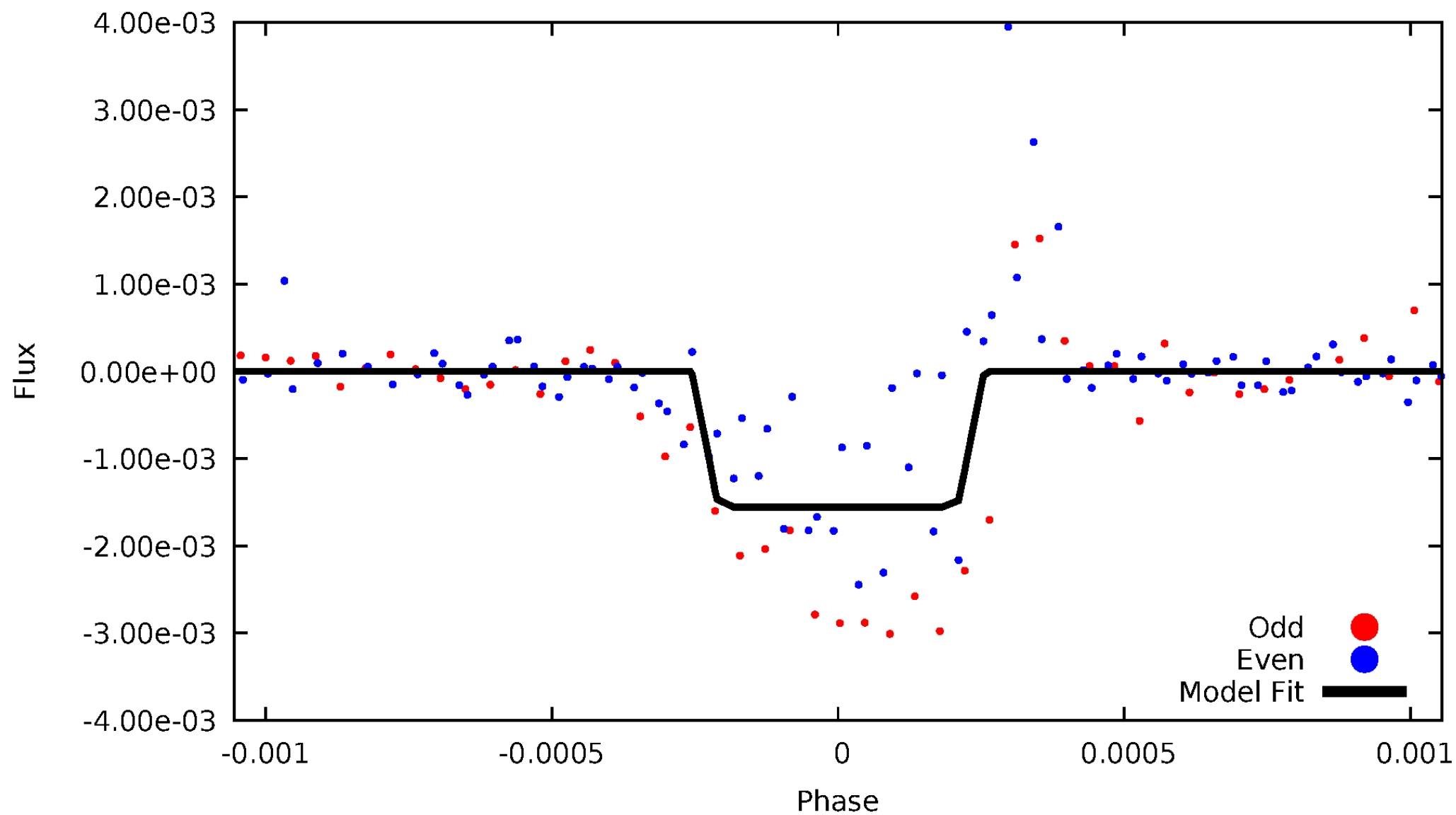
DV Odd/Even

TCE 003228931-04



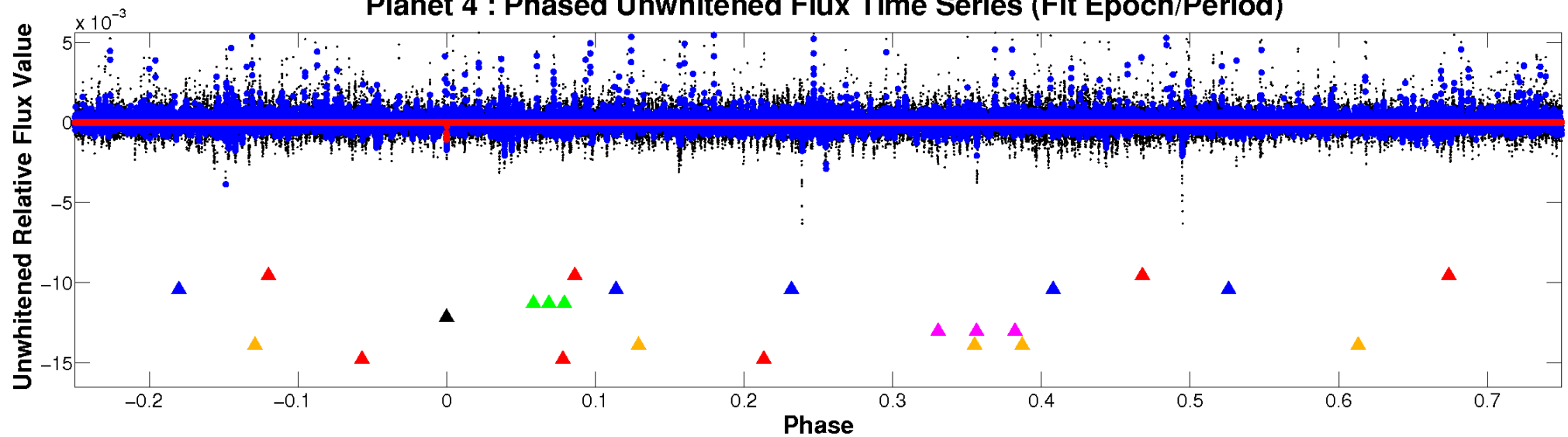
ALT Odd/Even

TCE 003228931-04

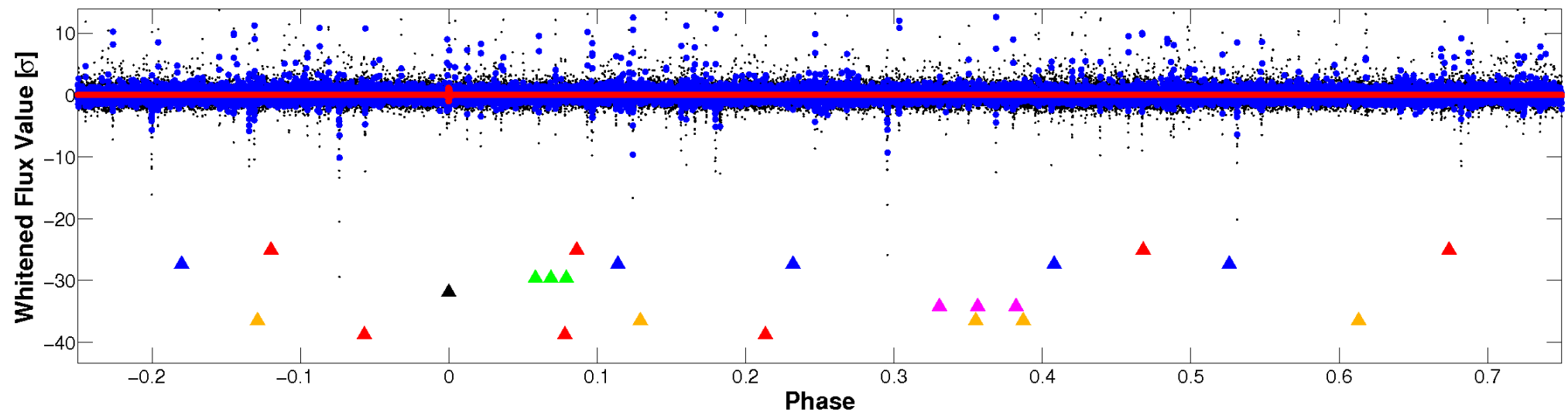


Non-Whitened Vs. Whitened Light Curve

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

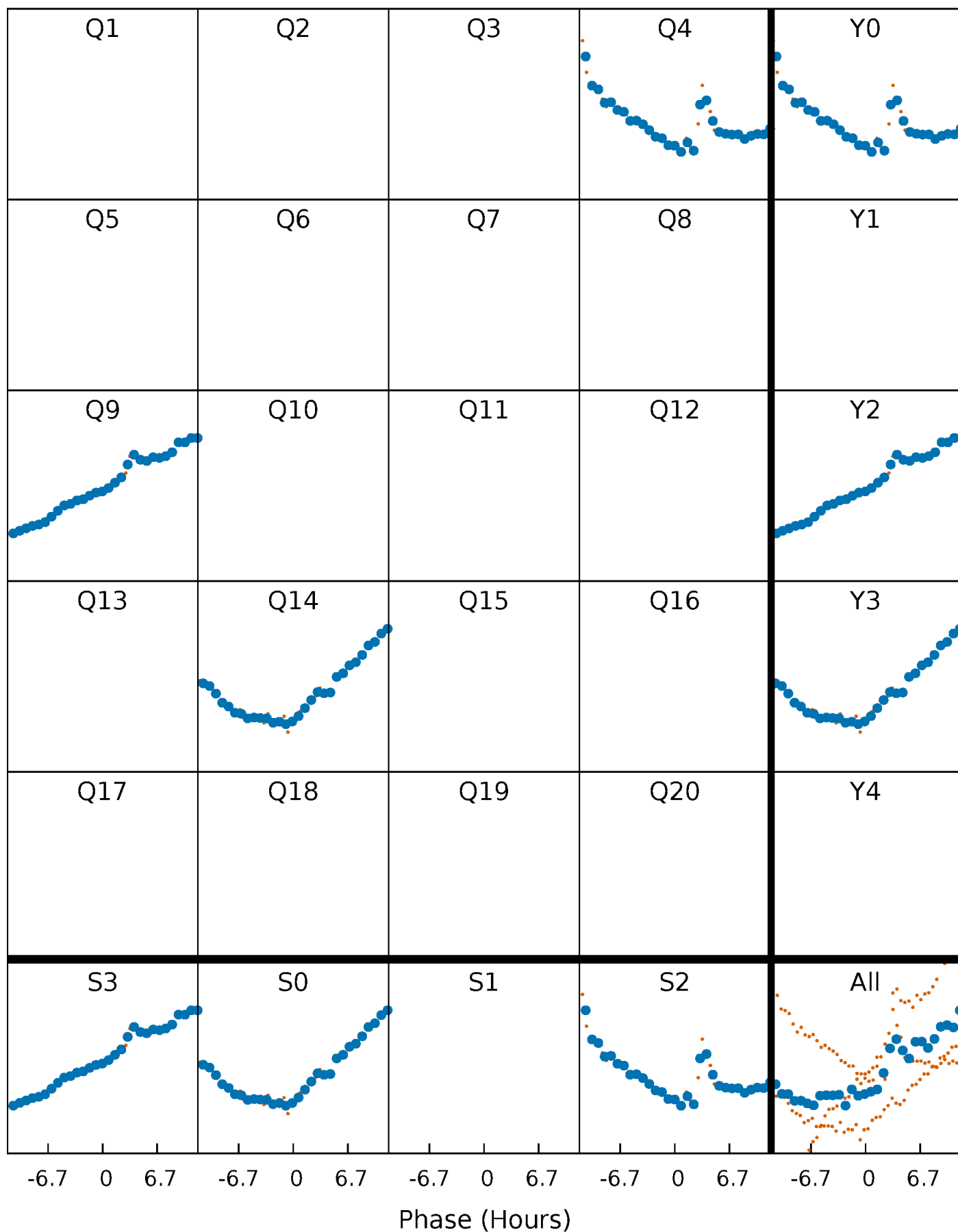


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 003228931-04 P=468.628876 Days $T_0=421.791450$ (BKJD)



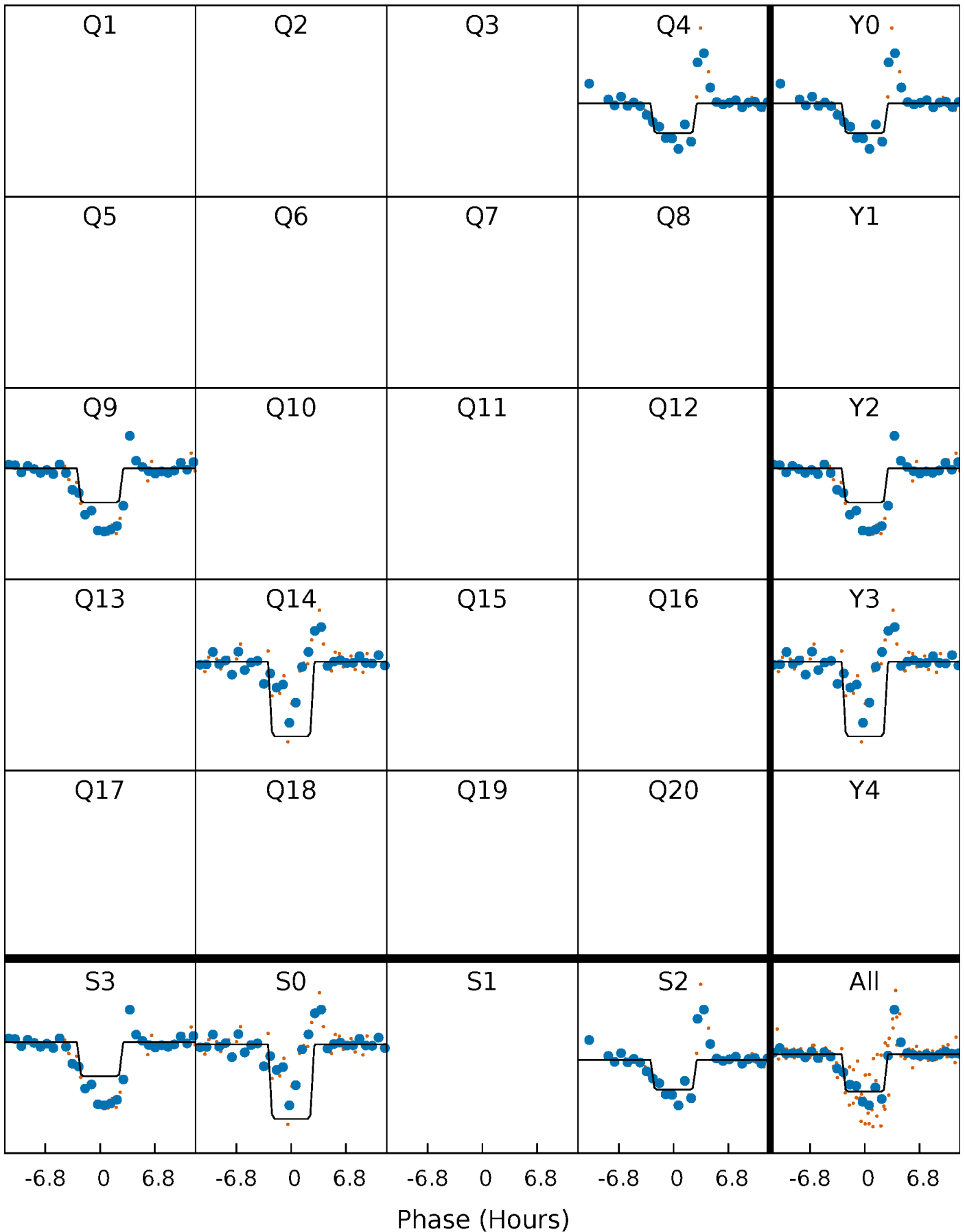
DV Quarter-Phased Transit Curves

TCE 003228931-04 $P=468.628876$ Days $T_0=421.791450$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

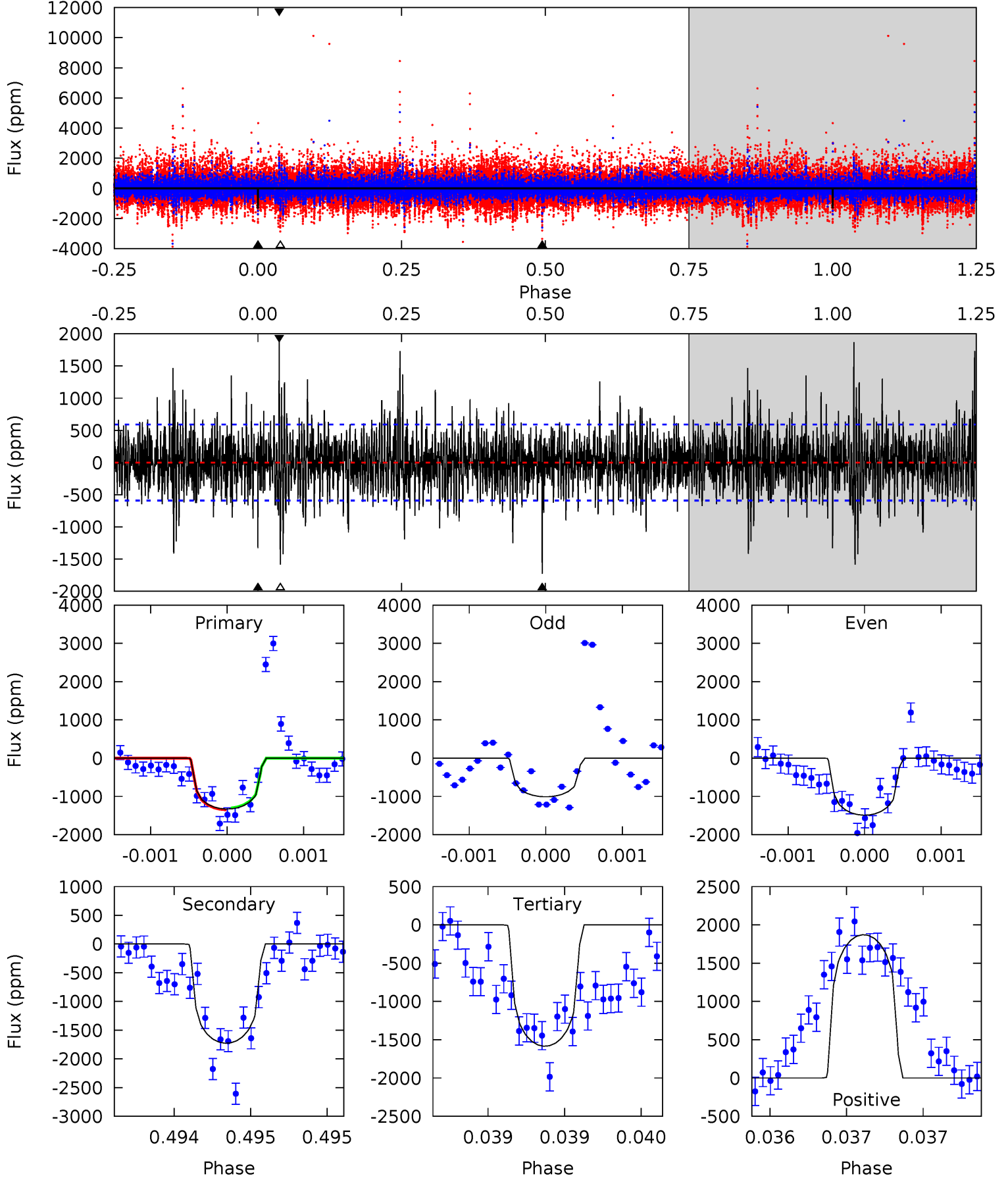
TCE 003228931-04 $P=468.623265$ Days $T_0=421.792500$ (BKJD)



DV Model-Shift Uniqueness Test

003228931-04, P = 468.628876 Days, E = 421.791450 Days

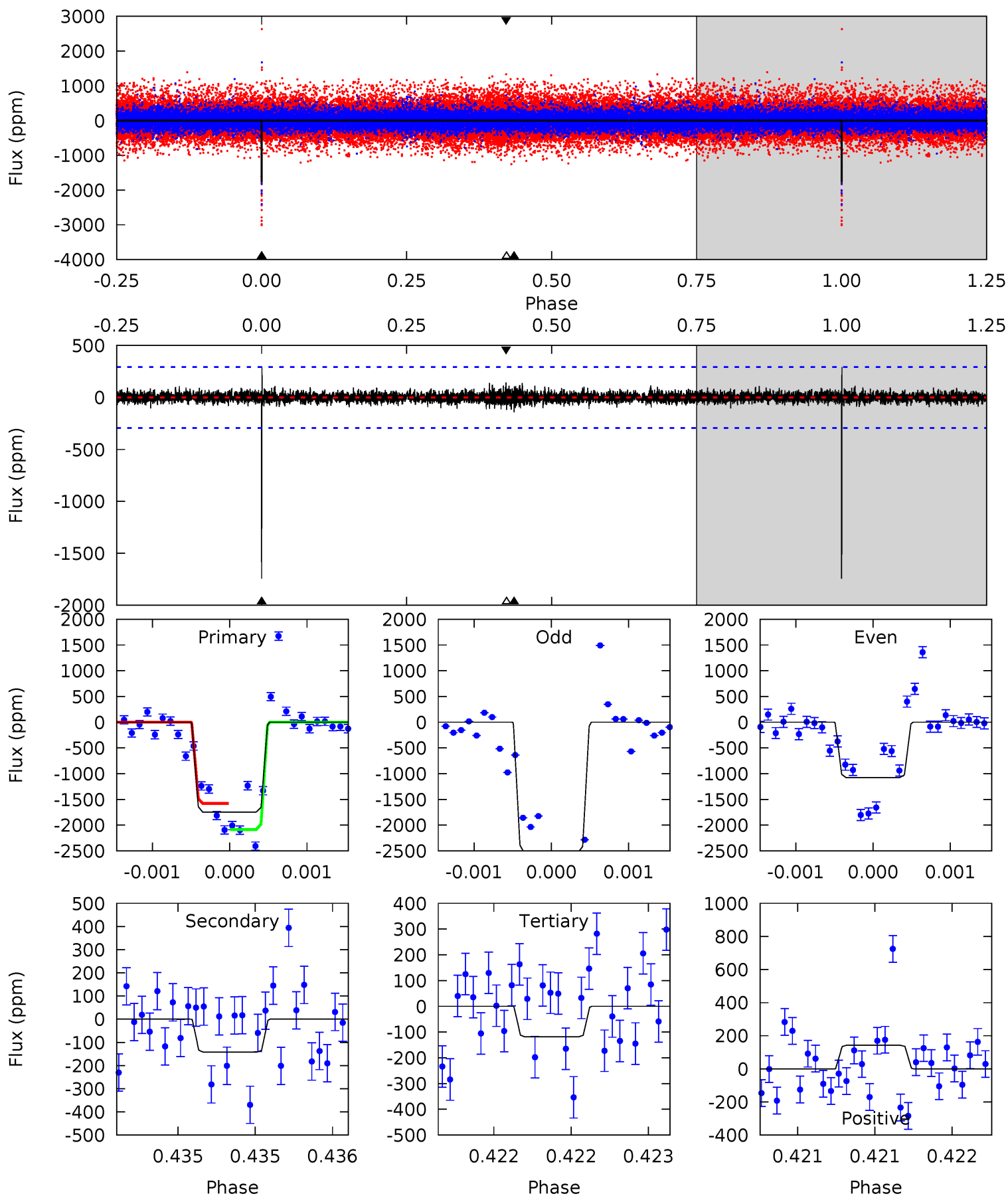
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	16.2	14.9	17.6	5.55	3.45	3.09	-2.39	-5.09	1.34	-1.36	1.71	1.03	0.52	0.22



Alt Model-Shift Uniqueness Test

003228931-04, P = 468.623265 Days, E = 421.792500 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.1	2.70	2.25	2.72	5.57	3.47	0.52	30.9	30.4	0.44	-0.02	12.5	0.91	0.14	4.68



Stellar Parameters For KIC 003228931

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5280^{+158}_{-142}	$4.612^{+0.042}_{-0.078}$	$-0.480^{+0.300}_{-0.300}$	$0.701^{+0.100}_{-0.054}$	$0.734^{+0.088}_{-0.059}$	$3.001^{+0.635}_{-0.749}$
	+3%/-3%	+1%/-2%	+62%/-62%	+14%/-8%	+12%/-8%	+21%/-25%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 003228931-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1727 ± 106	$2.76^{+2.26}_{-1.63}$	266^{+10}_{-9}	5645^{+3916}_{-1268}	$143708^{+682111}_{-102548}$
Alt.	-142 ± 53	$3.34^{+2.12}_{-1.88}$	266^{+11}_{-9}	3265^{+1133}_{-443}	7362^{+32984}_{-4729}

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

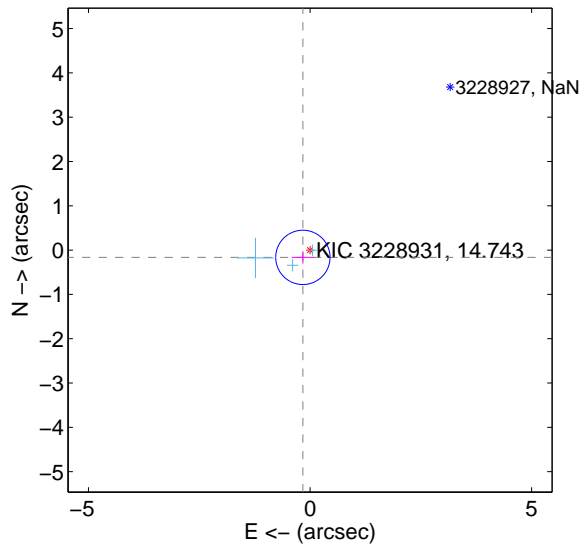
Supplemental centroid analysis for 003228931-04. Kepler magnitude: 14.74. Transit SNR 6.40

There are 3 quarters with good PRF difference image offsets

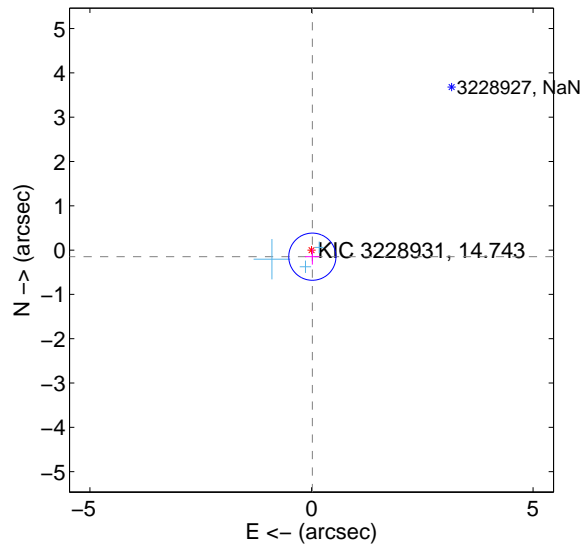
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.230 ± 0.204	1.13	0.162 ± 0.253	-0.164 ± 0.142
PRF-fit source offset from KIC position	0.150 ± 0.177	0.85	-0.019 ± 0.162	-0.149 ± 0.178
photometric centroid source offset	1.49 ± 1.02	1.45	-0.21 ± 1.04	-1.47 ± 1.02

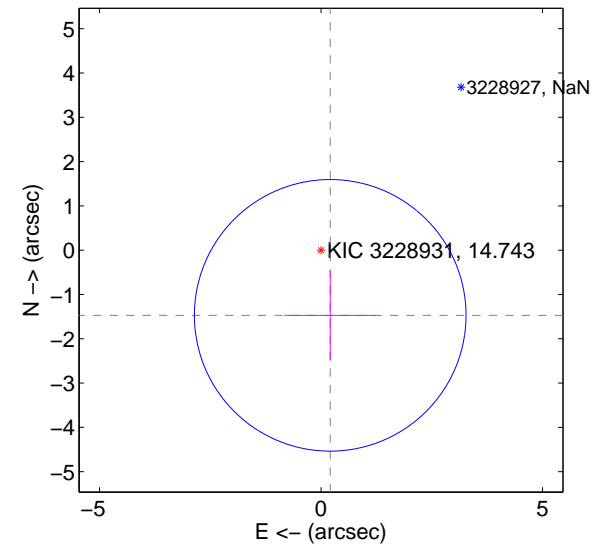
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

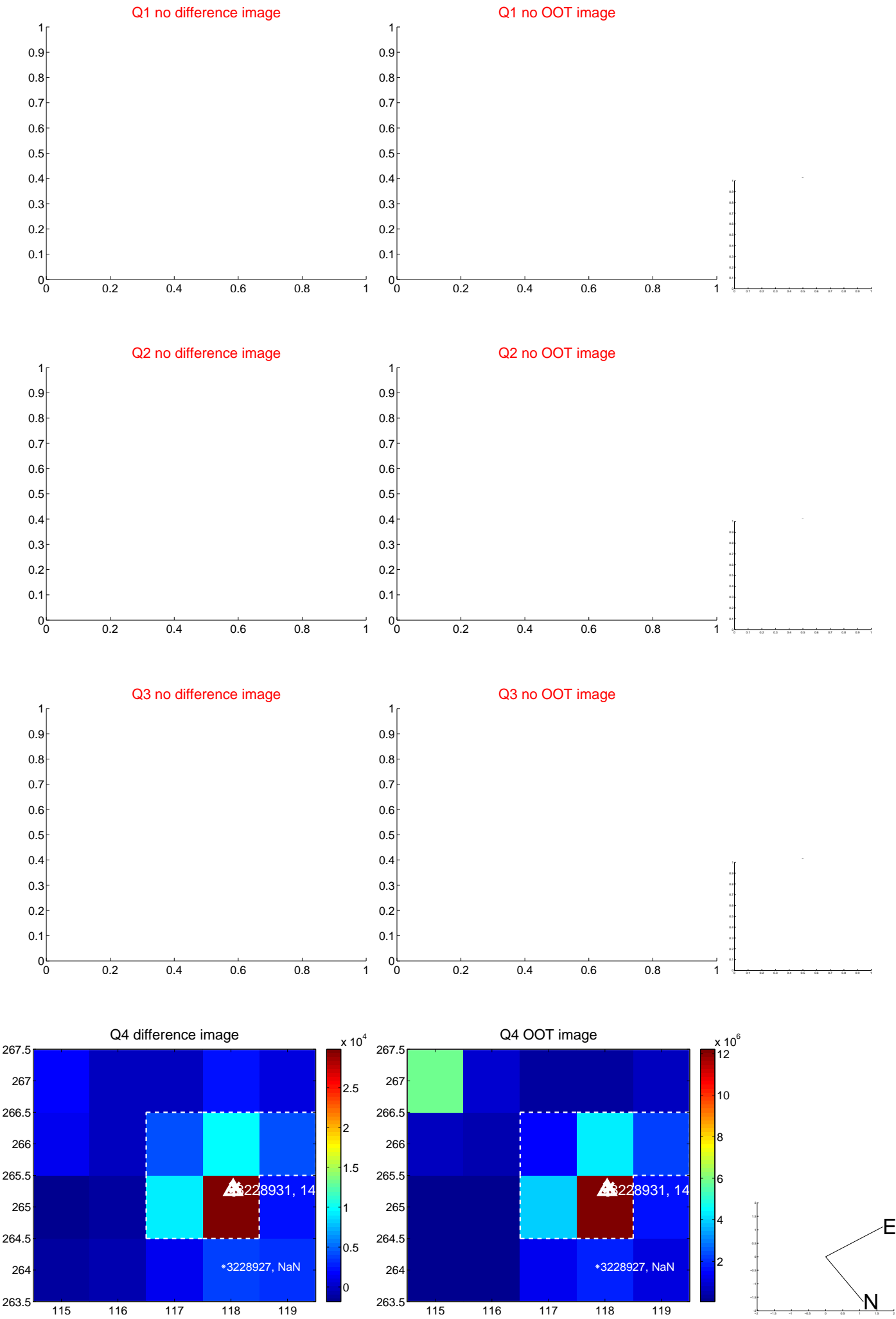


offset from photometric centroids



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

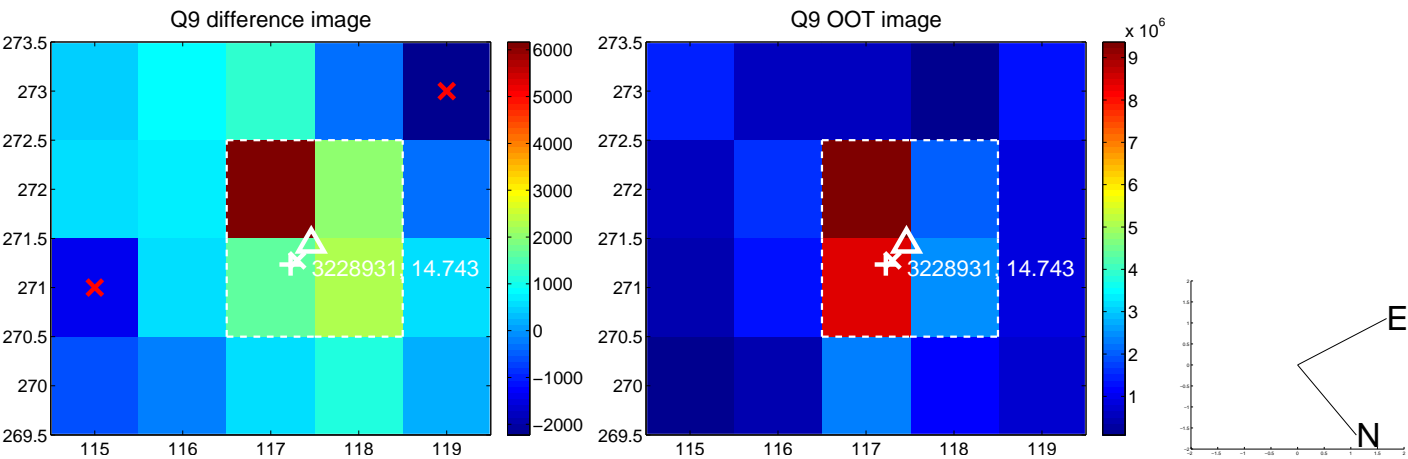
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



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



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

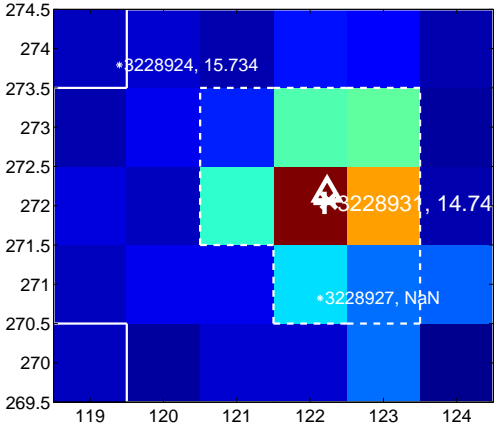
Q13 no difference image



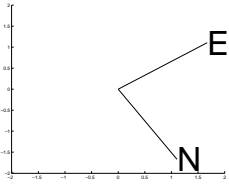
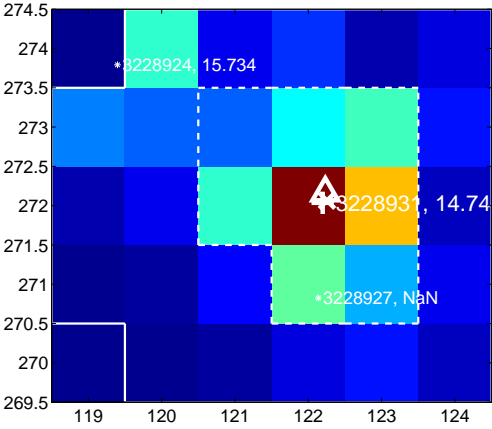
Q13 no OOT image



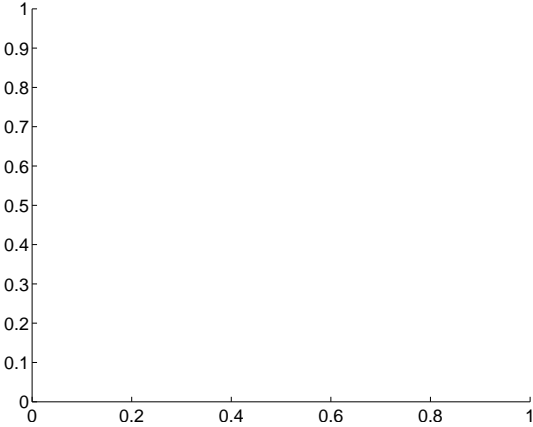
Q14 difference image



Q14 OOT image



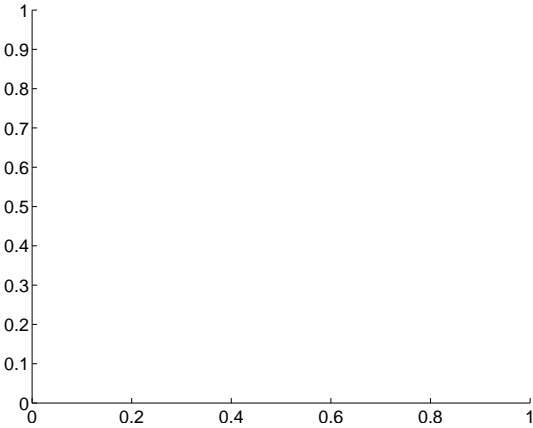
Q15 no difference image



Q15 no OOT image



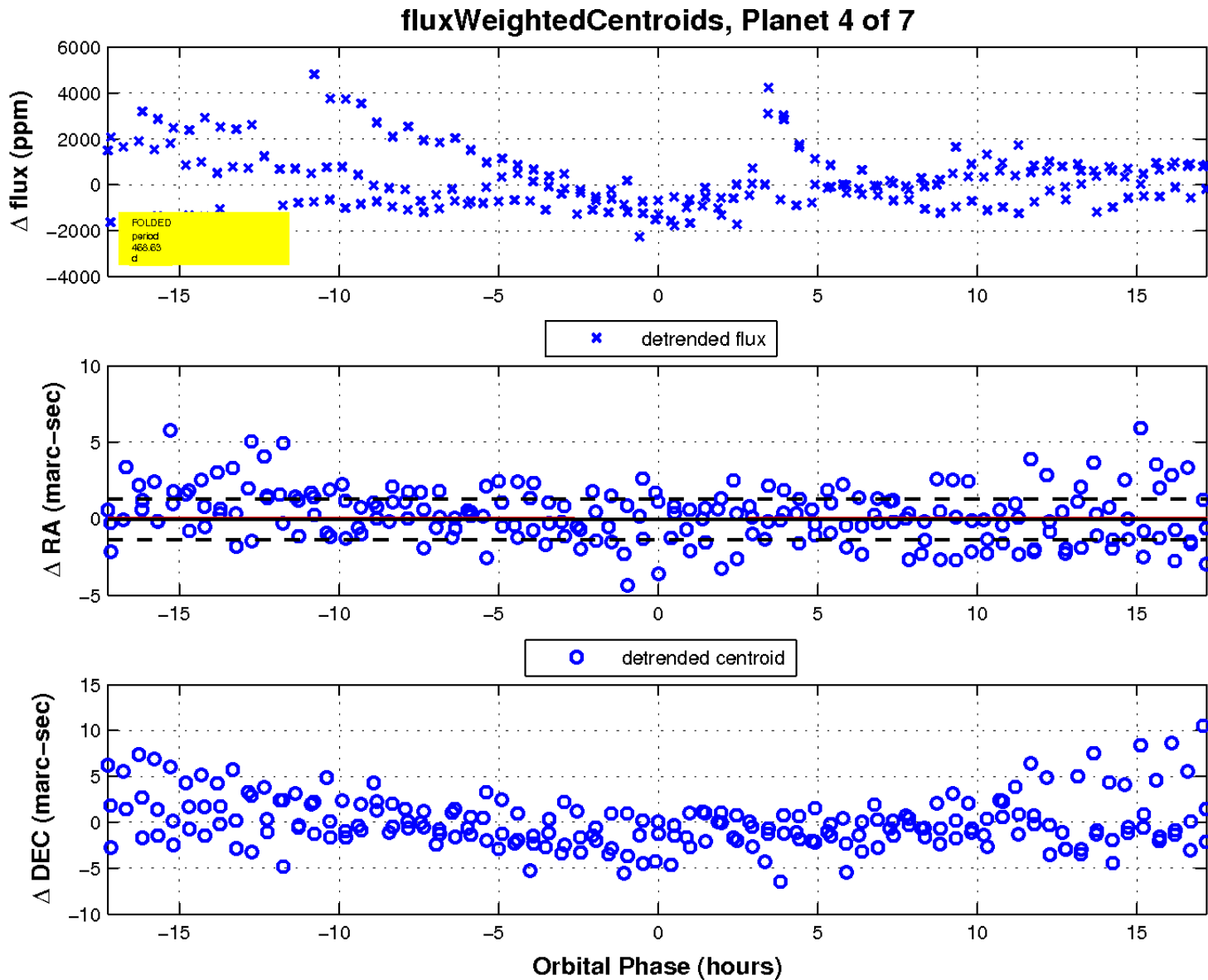
Q16 no difference image



Q16 no OOT image

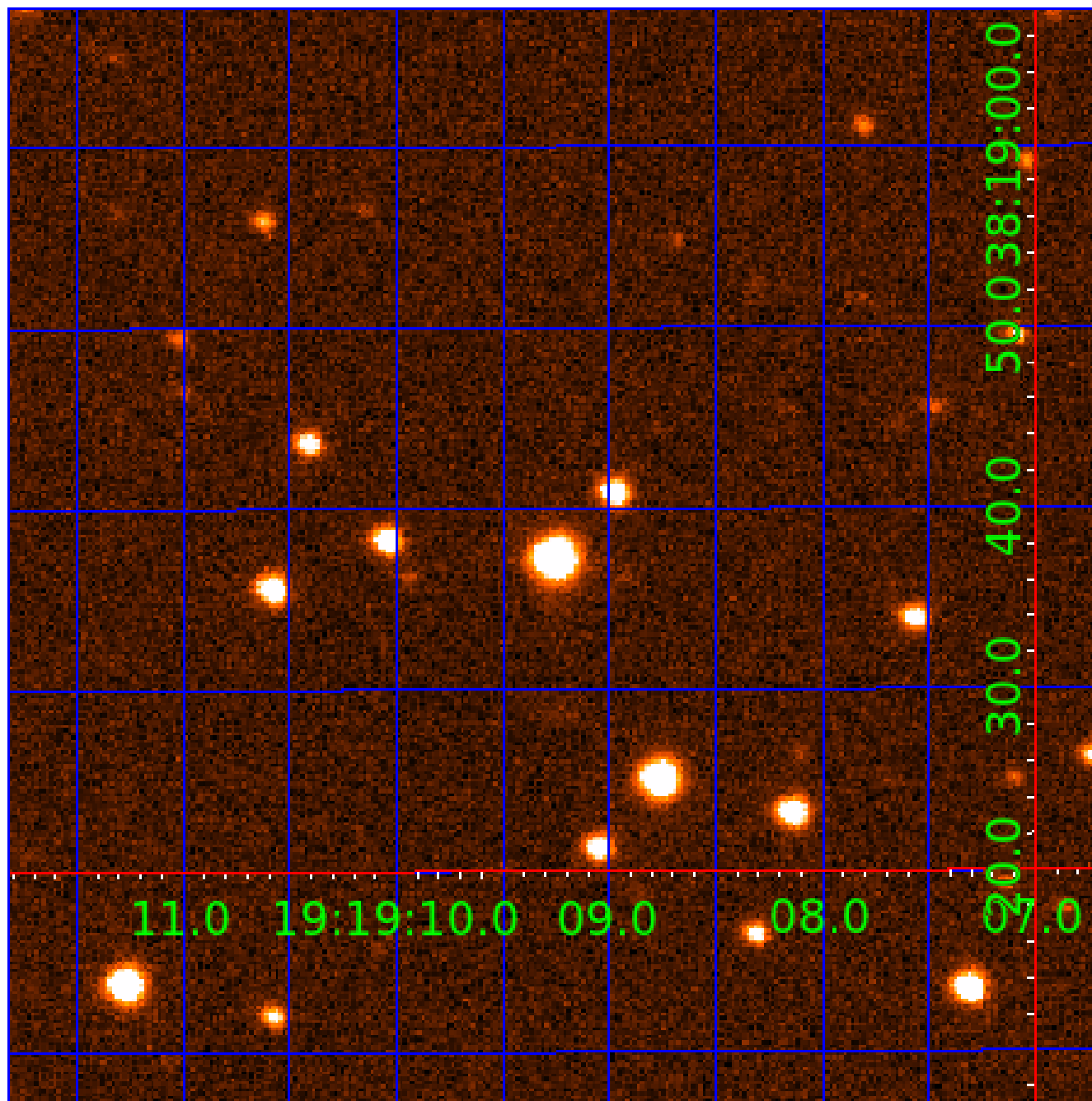


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003228931

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})
003228931-01	OBS	No	372.052560	462.211414	2003.2	15.480	16.2	7.7	0.70	5280	3.67	0.41
003228931-02	OBS	No	330.850190	144.353721	1325.1	2.949	15.5	7.2	0.70	5280	2.58	0.48
003228931-03	OBS	No	473.507624	449.156916	988.3	4.714	12.9	6.2	0.70	5280	2.35	0.30
003228931-04	OBS	No	468.628876	421.791450	1075.4	5.855	12.2	6.4	0.70	5280	2.39	0.30
003228931-05	OBS	No	480.732856	576.725025	1273.3	3.719	11.5	7.8	0.70	5280	2.68	0.29
003228931-06	OBS	No	347.722462	134.574524	1282.5	12.628	10.9	6.2	0.70	5280	2.50	0.45
003228931-07	OBS	No	405.299663	521.778367	1074.8	3.500	9.9	-1.0	0.70	5280	2.26	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003228931-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003228931-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
003228931-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—HALO_GHOST
003228931-06	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

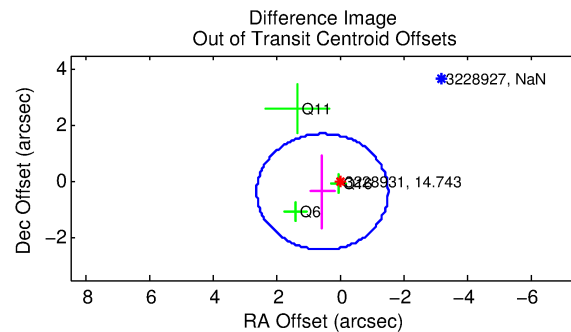
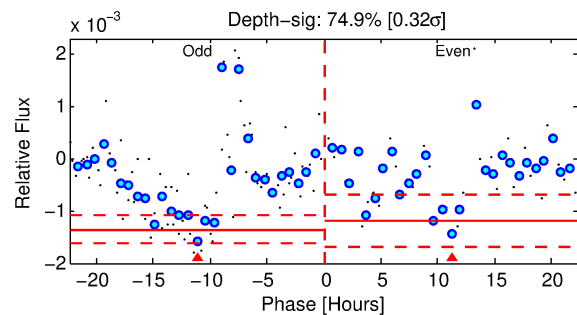
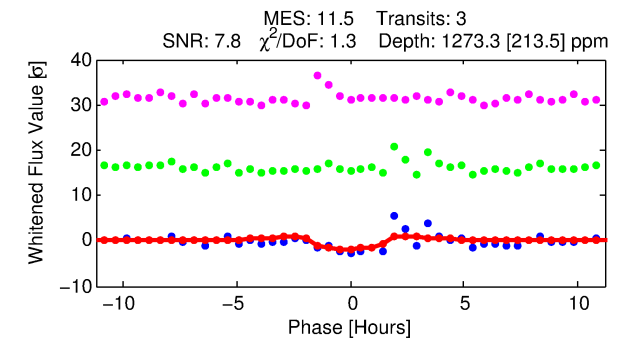
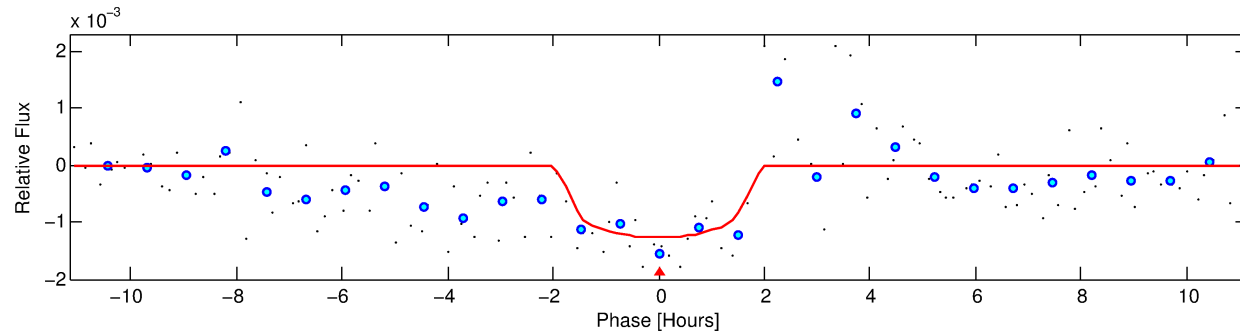
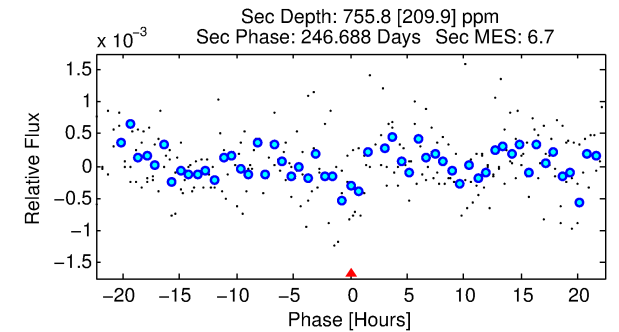
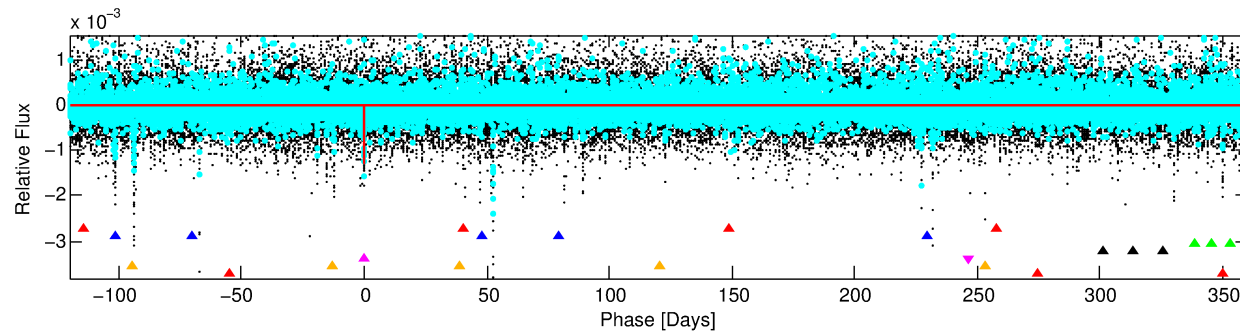
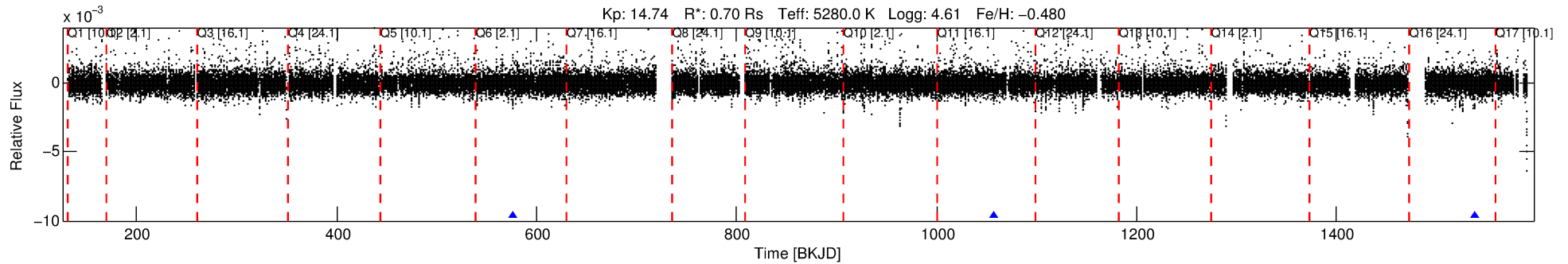
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003228931-05

No Significant Match Found

DV One-Page Summary

KIC: 3228931 Candidate: 5 of 7 Period: 480.733 d



DV Fit Results:

Period = 480.73286 [0.00622] d
Epoch = 576.7250 [0.0091] BKJD
Rp/R* = 0.0350 [0.0411]
a/R* = 744.78 [3453.45]
b = 0.71 [3.32]
Seff = 0.29 [0.06]
Teq = 187 [9] K
Rp = 2.68 [3.16] Re
a = 1.0834 [0.1217] AU
Ag = 68050.22 [161075.96] [0.42 σ]
Teffp = 4679 [2767] K [1.62 σ]

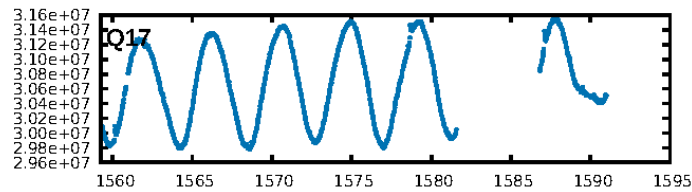
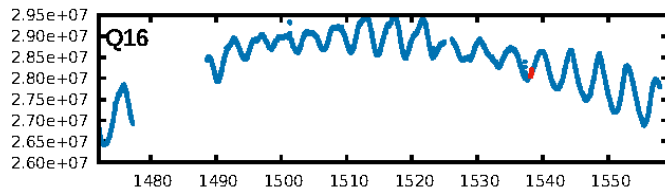
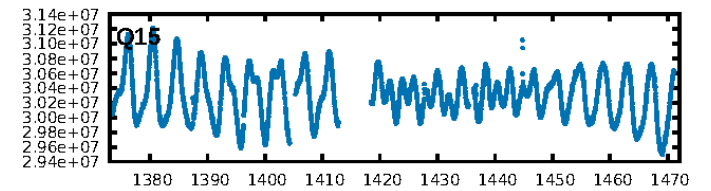
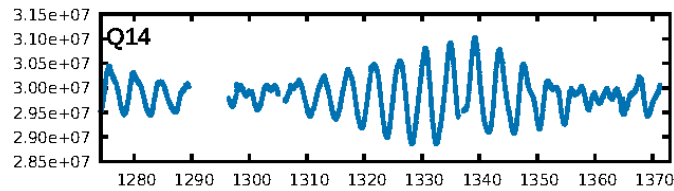
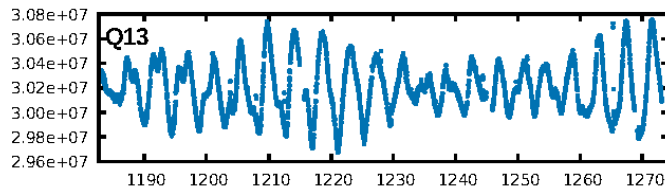
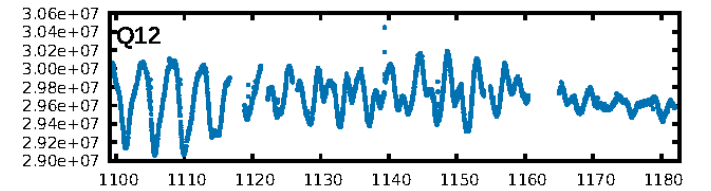
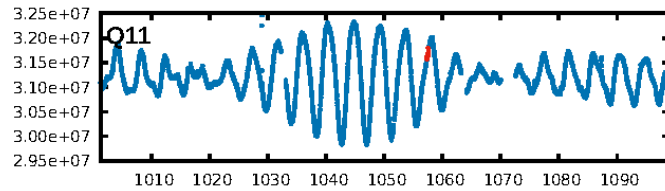
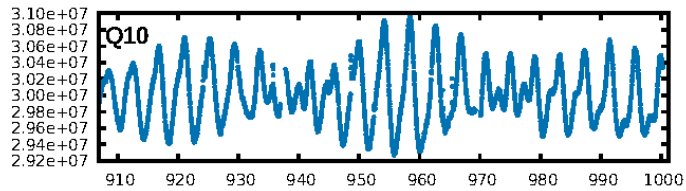
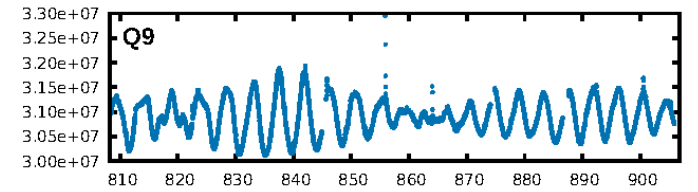
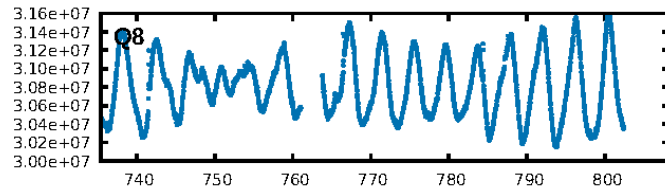
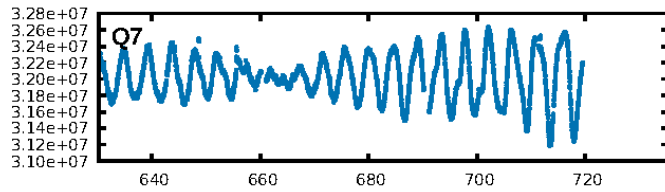
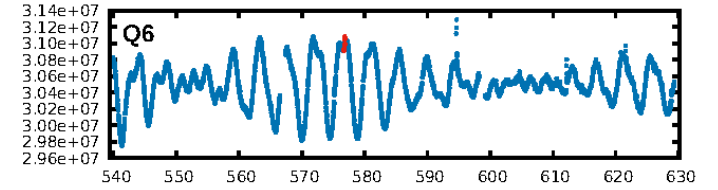
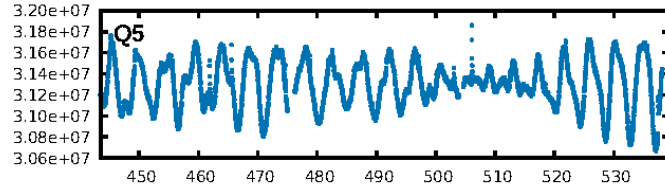
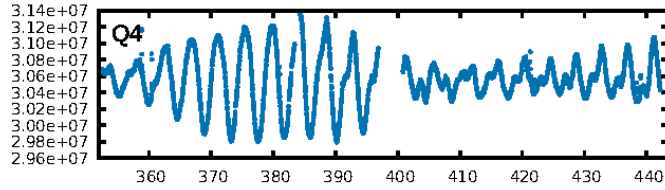
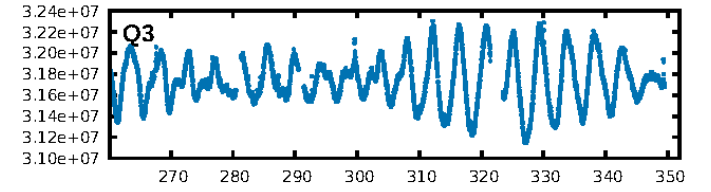
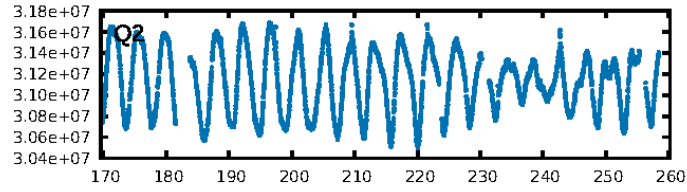
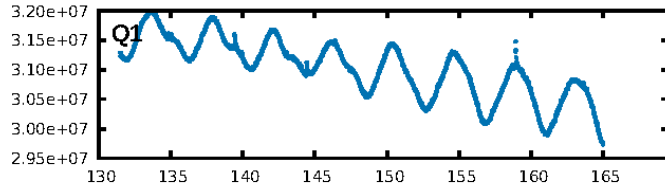
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [28.8 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 54.4%
ModelChiSquareGof-sig: 90.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.1216
Centroid-sig: N/A
Centroid-so: 1.175 arcsec [1.08 σ]
OotOffset-rm: 0.673 arcsec [0.98 σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-rm: 0.451 arcsec [0.88 σ]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

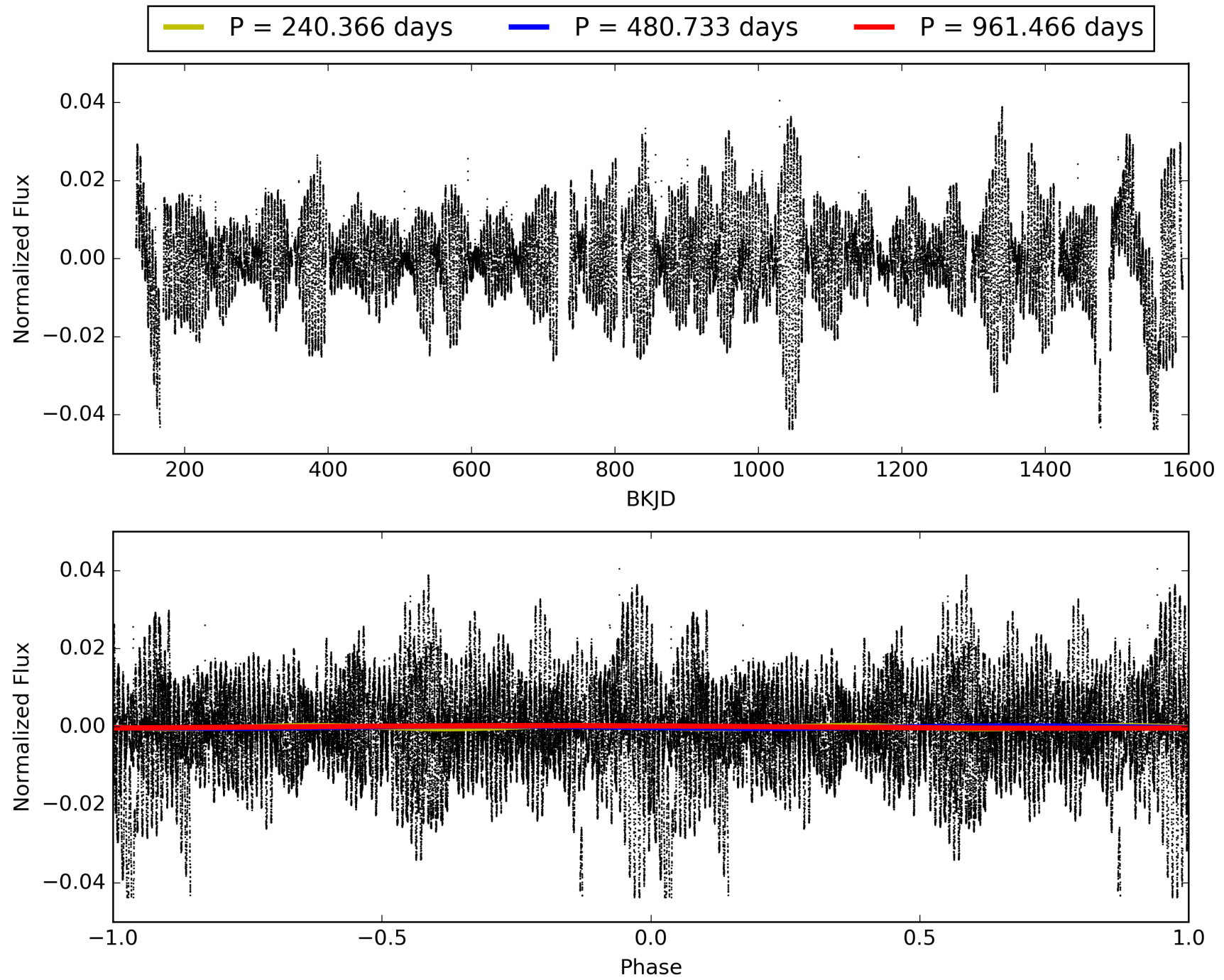
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:28:35 Z

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

TCE 003228931-05, PDC Light Curves

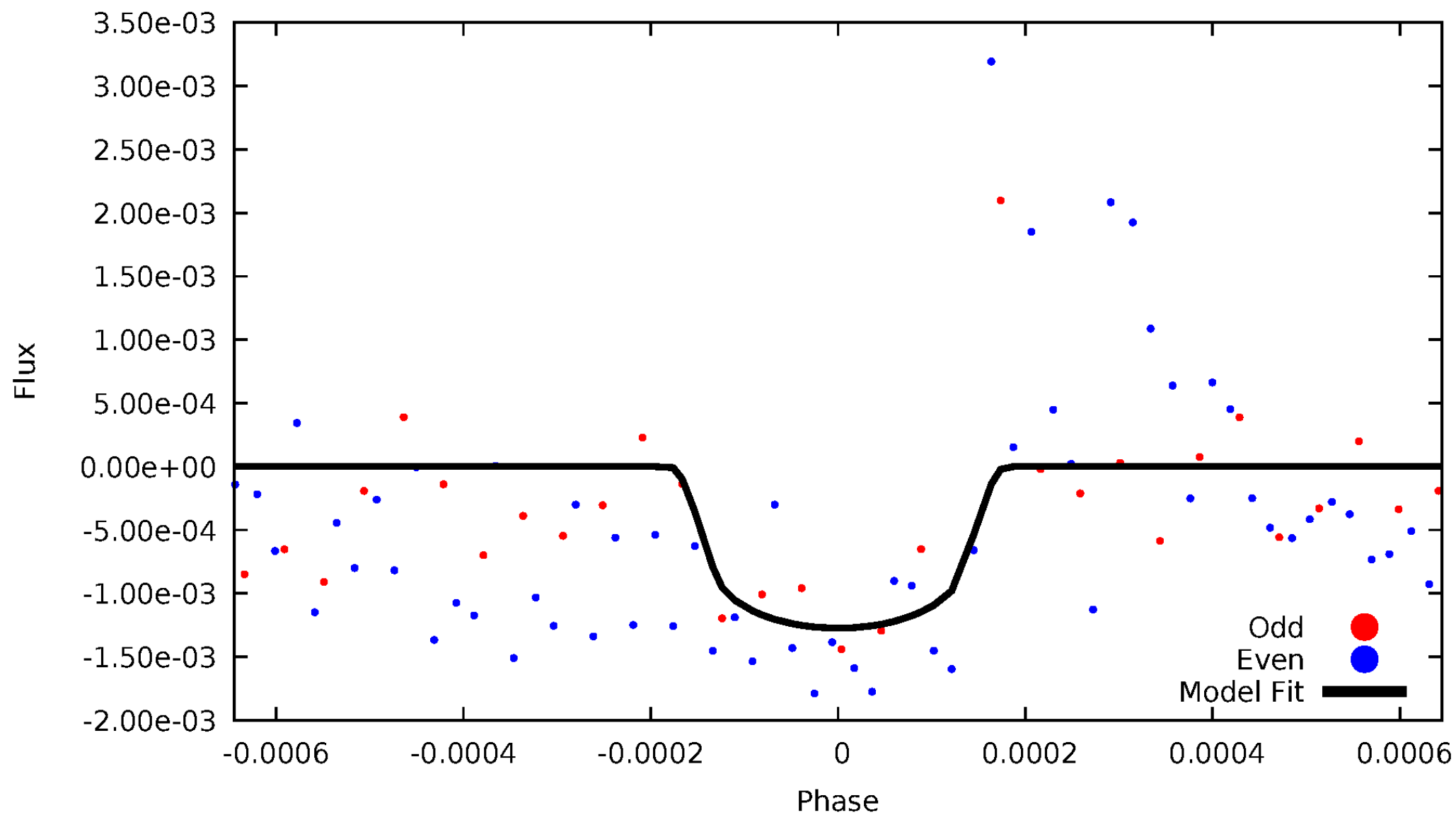


TCE 003228931-05



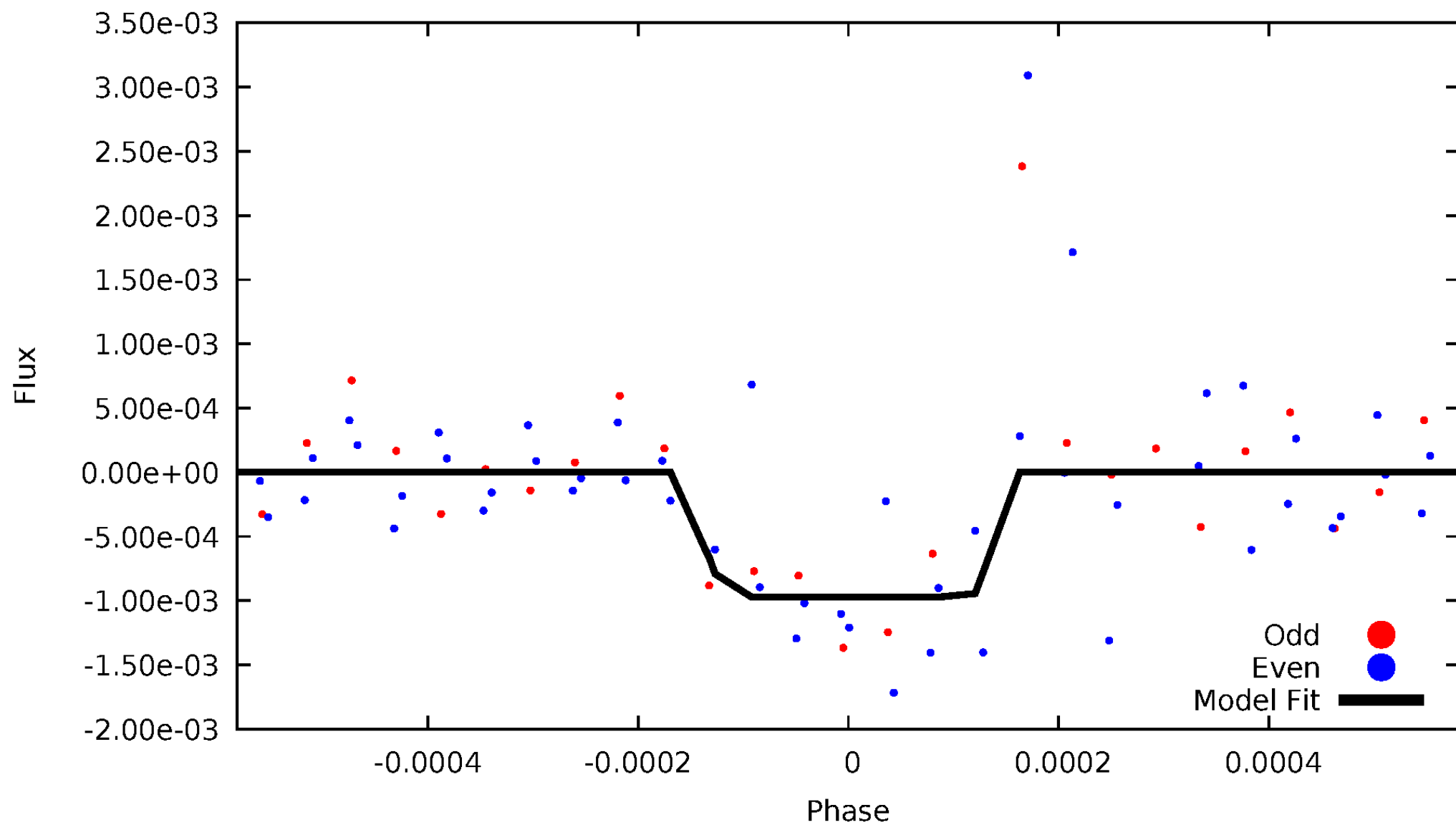
DV Odd/Even

TCE 003228931-05



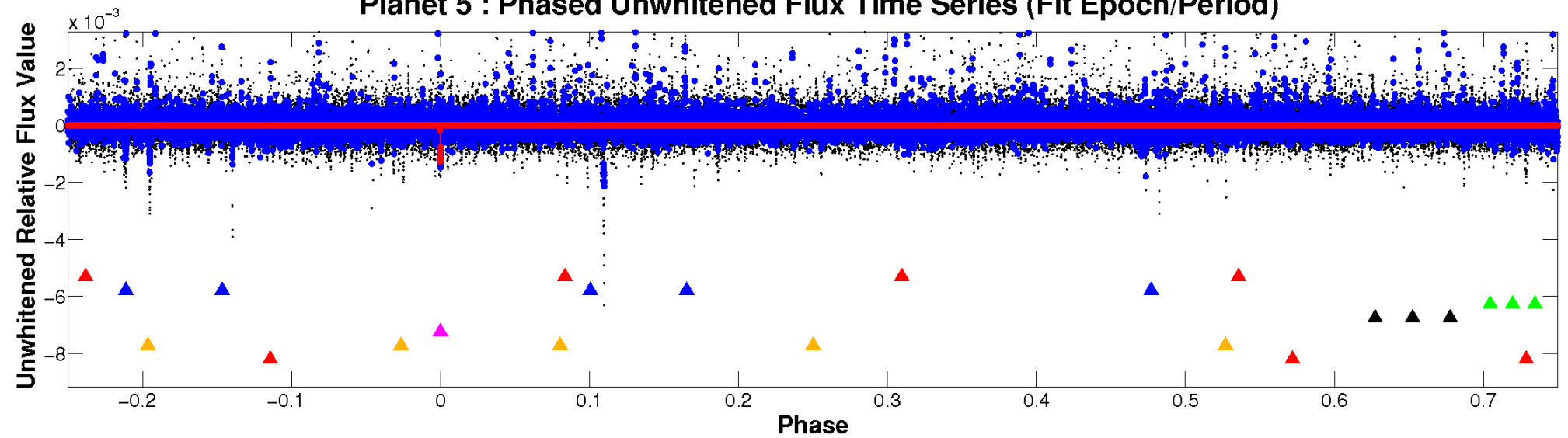
ALT Odd/Even

TCE 003228931-05

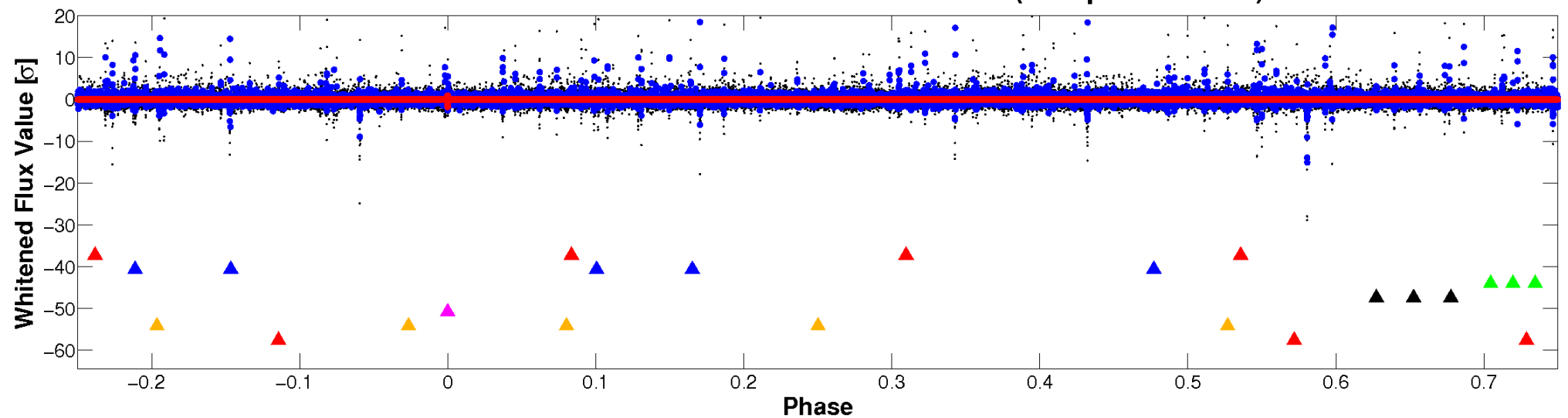


Non-Whitened Vs. Whitened Light Curve

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

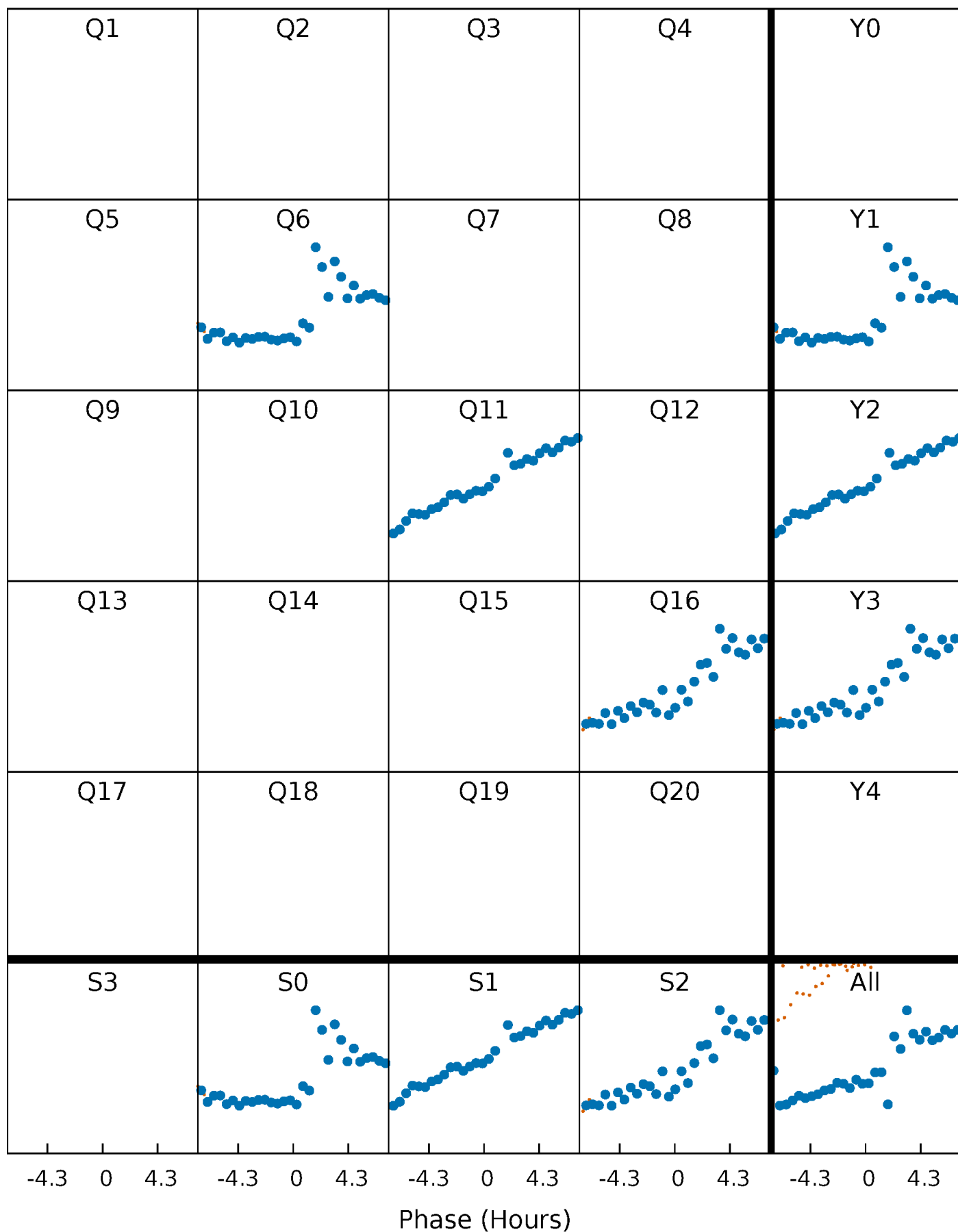


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



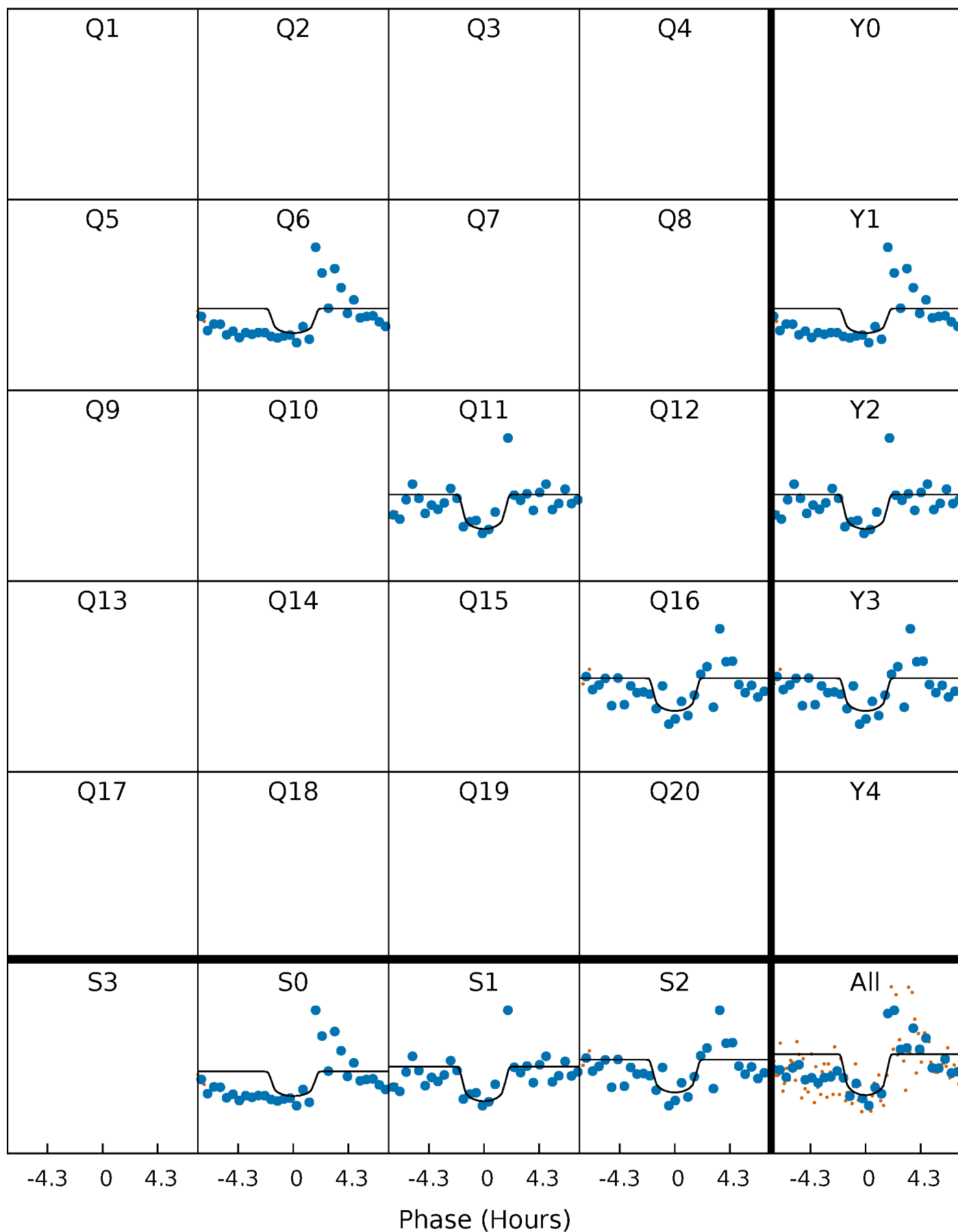
PDC Quarter-Phased Transit Curves

TCE 003228931-05 $P=480.732856$ Days $T_0=576.725025$ (BKJD)



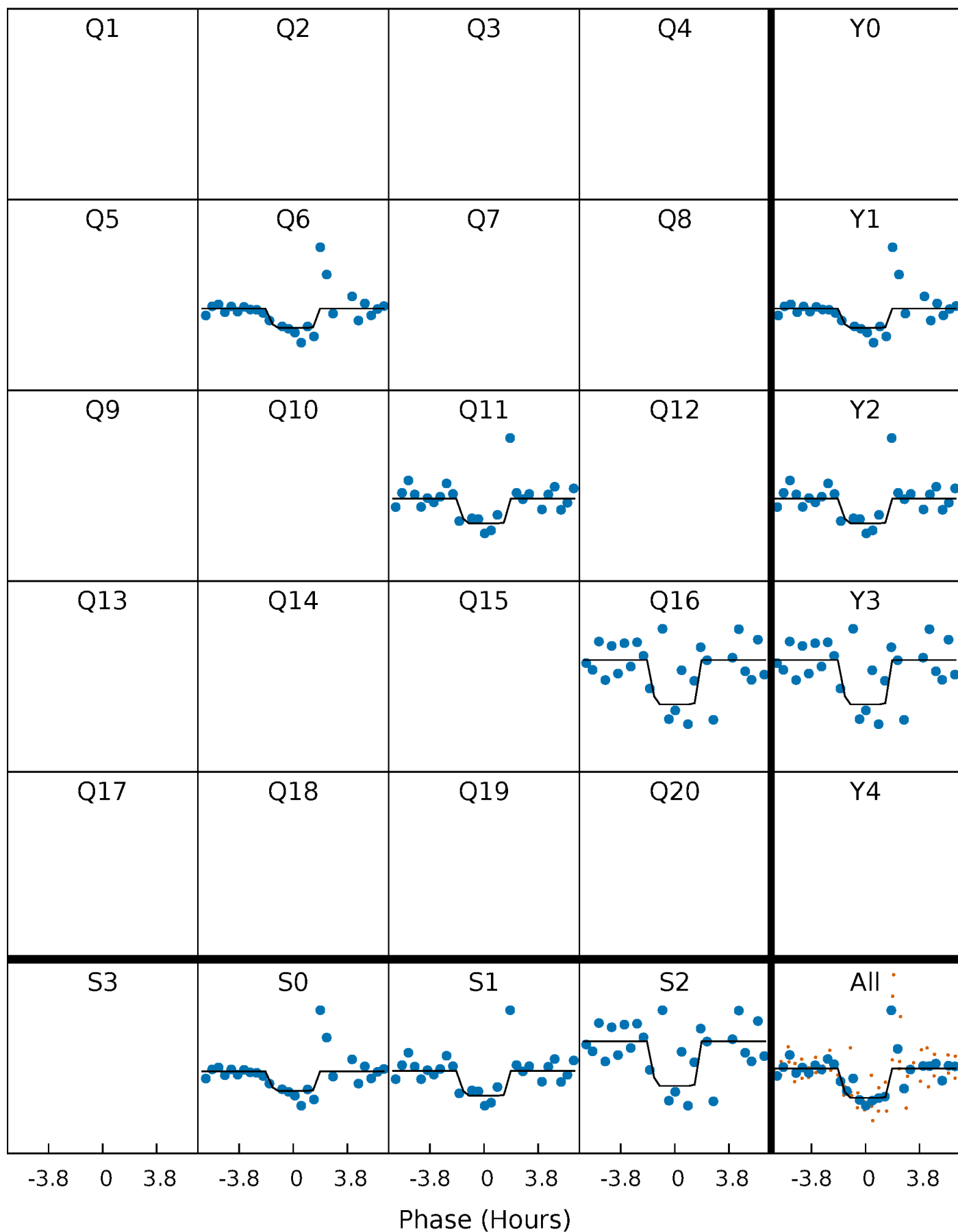
DV Quarter-Phased Transit Curves

TCE 003228931-05 $P=480.732856$ Days $T_0=576.725025$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

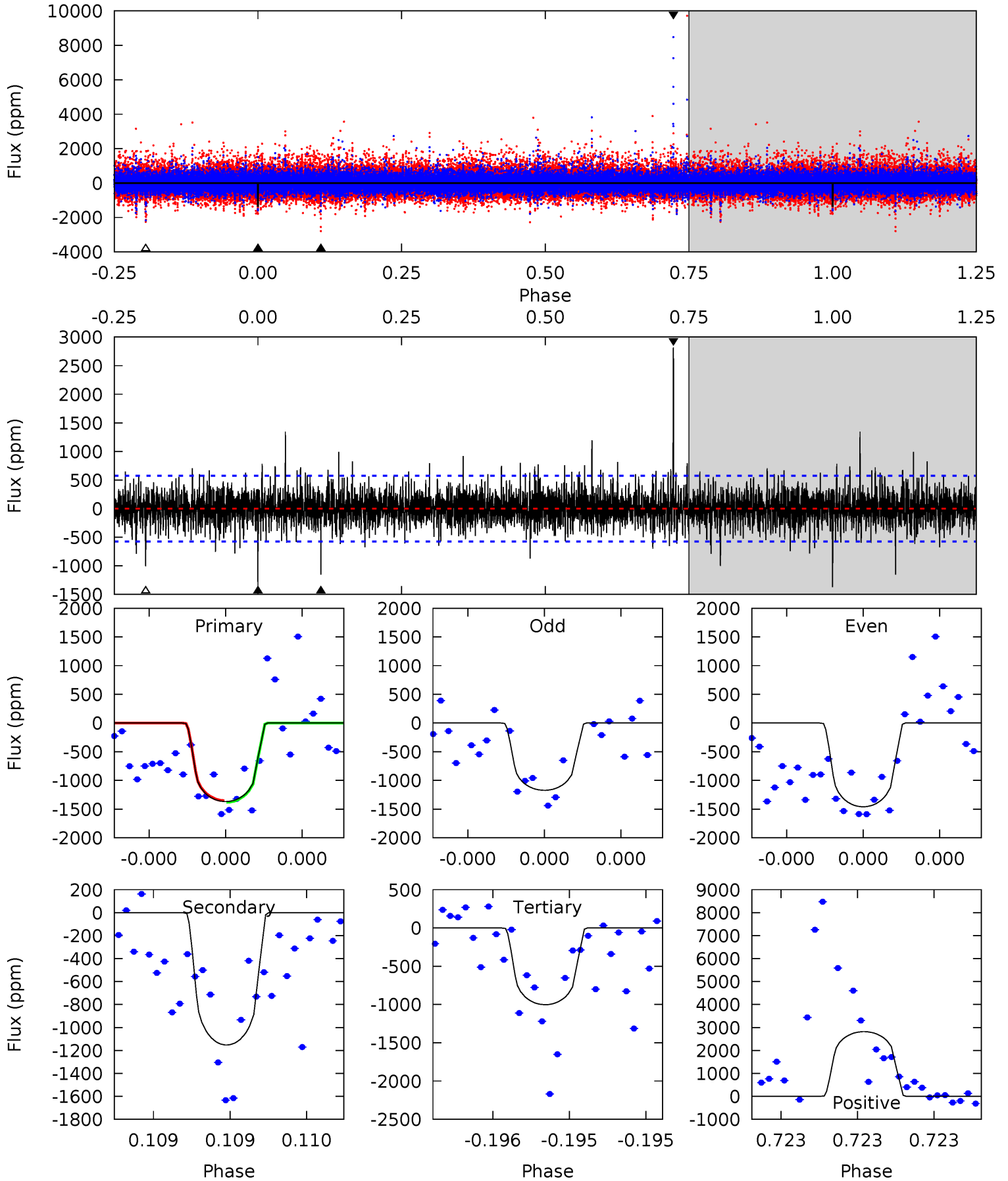
TCE 003228931-05 P=480.740366 Days $T_0=576.721659$ (BKJD)



DV Model-Shift Uniqueness Test

003228931-05, P = 480.732856 Days, E = 95.992169 Days

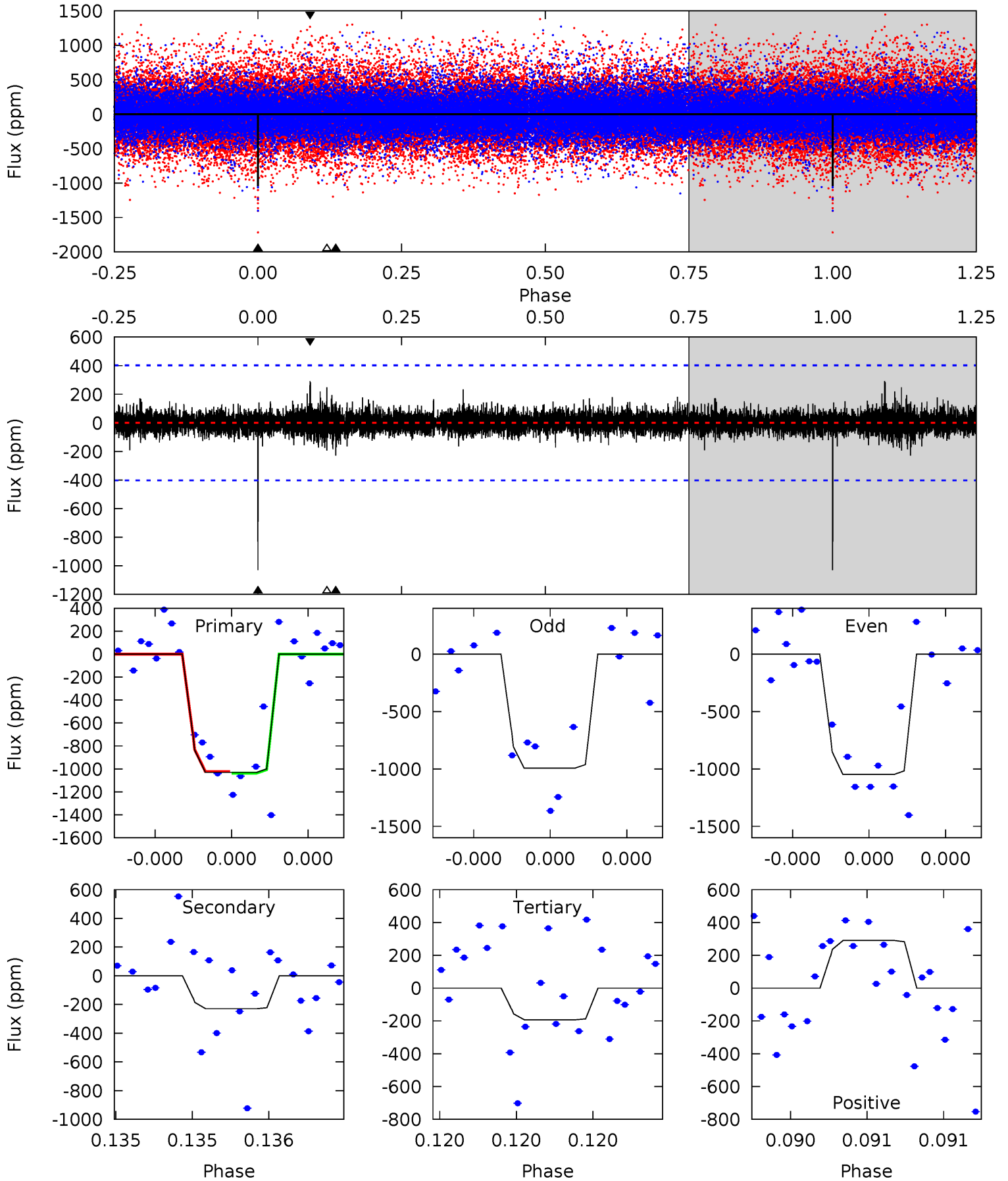
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.4	11.3	9.85	27.7	5.64	3.58	2.02	3.59	-14.2	1.47	-16.4	0.94	1.02	0.67	0.13



Alt Model-Shift Uniqueness Test

003228931-05, P = 480.740366 Days, E = 95.981293 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.6	3.24	2.73	4.11	5.68	3.65	0.58	11.8	10.5	0.51	-0.87	0.37	0.95	0.22	0.10



Stellar Parameters For KIC 003228931

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5280^{+158}_{-142}	$4.612^{+0.042}_{-0.078}$	$-0.480^{+0.300}_{-0.300}$	$0.701^{+0.100}_{-0.054}$	$0.734^{+0.088}_{-0.059}$	$3.001^{+0.635}_{-0.749}$
	+3%/-3%	+1%/-2%	+62%/-62%	+14%/-8%	+12%/-8%	+21%/-25%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 003228931-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1153 ± 102	$3.61^{+2.74}_{-2.27}$	263^{+11}_{-9}	4625^{+2815}_{-868}	$57699^{+352084}_{-39825}$
Alt.	-229 ± 71	$3.36^{+2.78}_{-2.14}$	265^{+10}_{-10}	3558^{+1601}_{-623}	12619^{+86059}_{-9076}

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

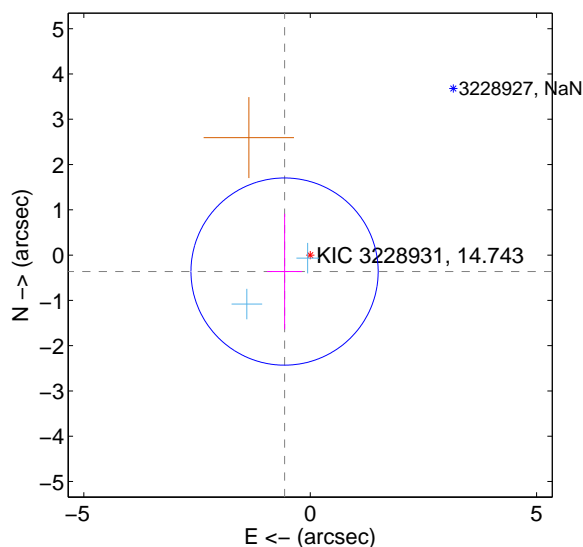
Supplemental centroid analysis for 003228931-05. Kepler magnitude: 14.74. Transit SNR 7.83

There are 2 quarters with good PRF difference image offsets

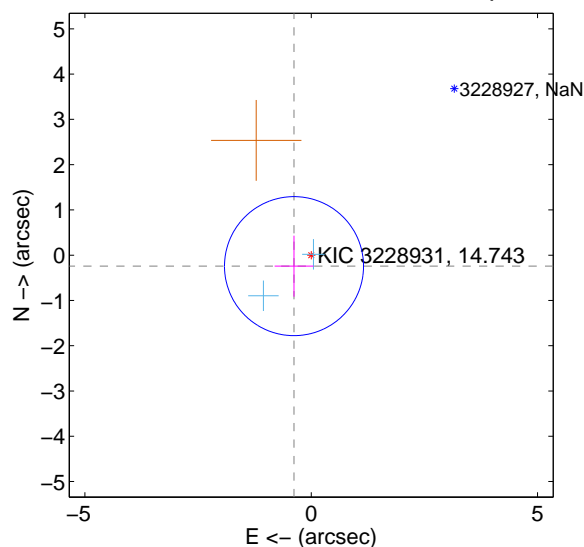
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.673 ± 0.689	0.98	0.566 ± 0.386	-0.364 ± 1.276
PRF-fit source offset from KIC position	0.451 ± 0.512	0.88	0.380 ± 0.429	-0.242 ± 0.674
photometric centroid source offset	1.18 ± 1.09	1.08	1.00 ± 1.10	0.62 ± 1.09

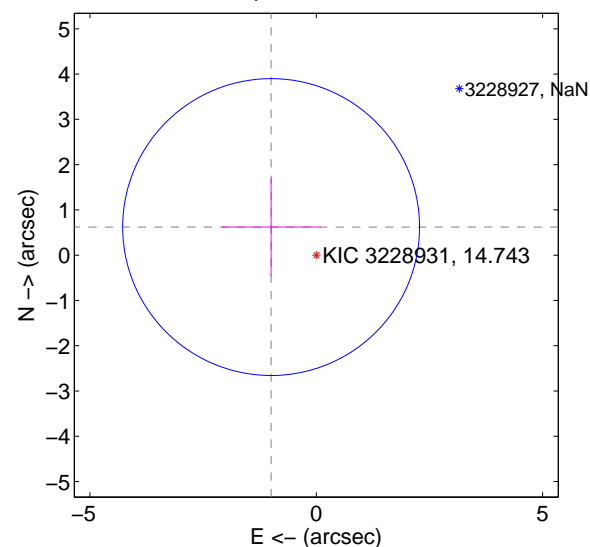
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



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

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

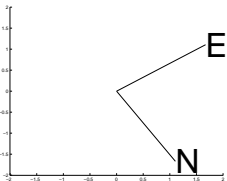
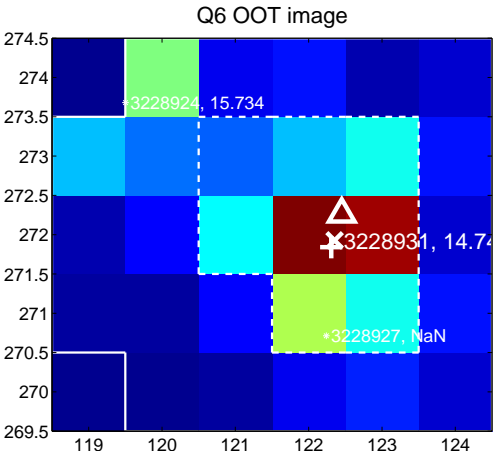
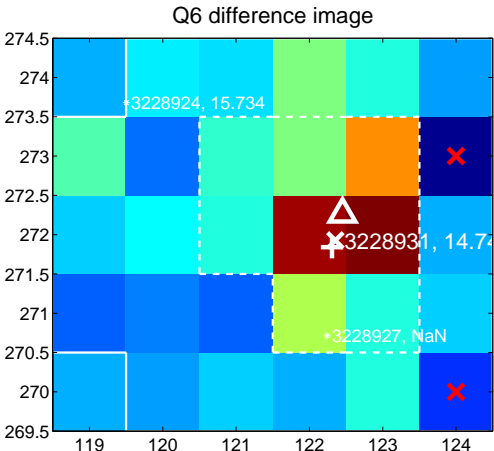


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

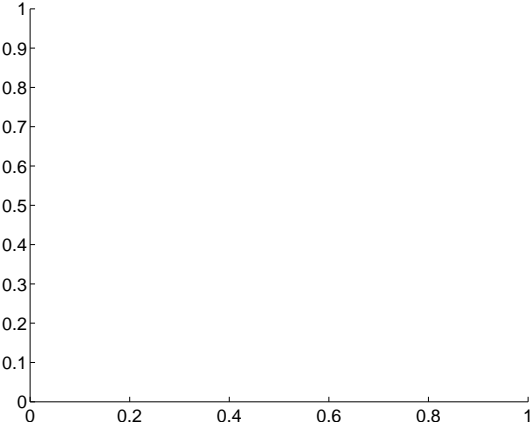
Q5 no difference image



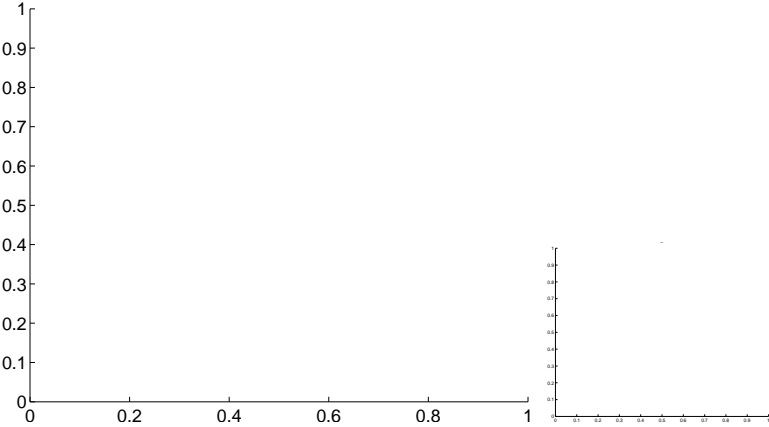
Q5 no OOT image



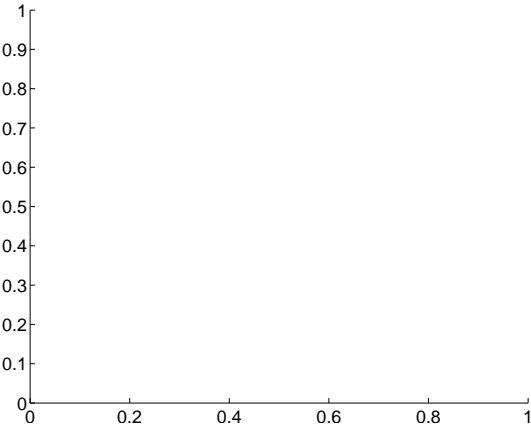
Q7 no difference image



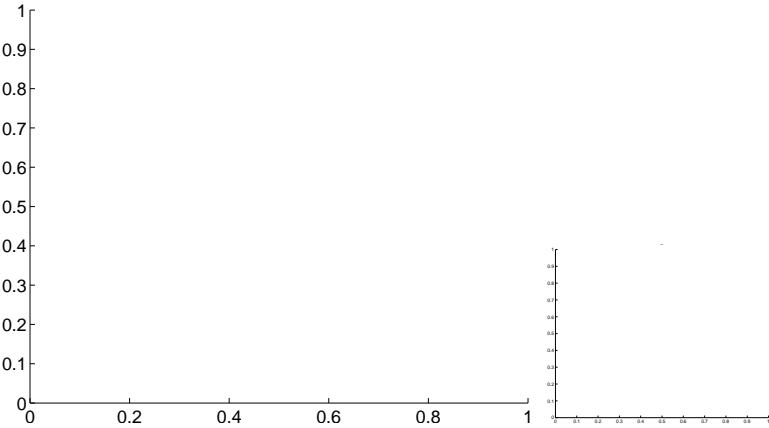
Q7 no OOT image



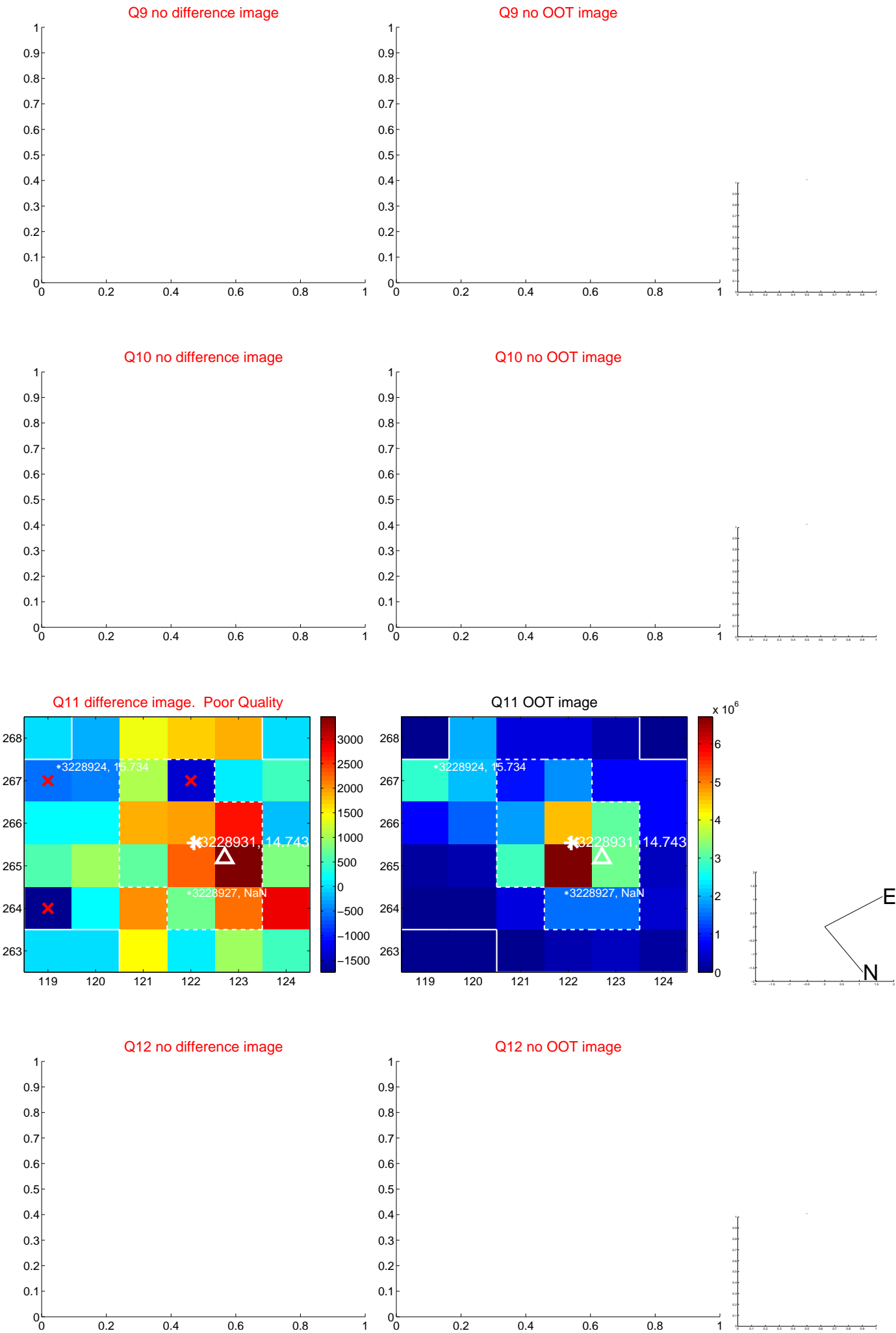
Q8 no difference image



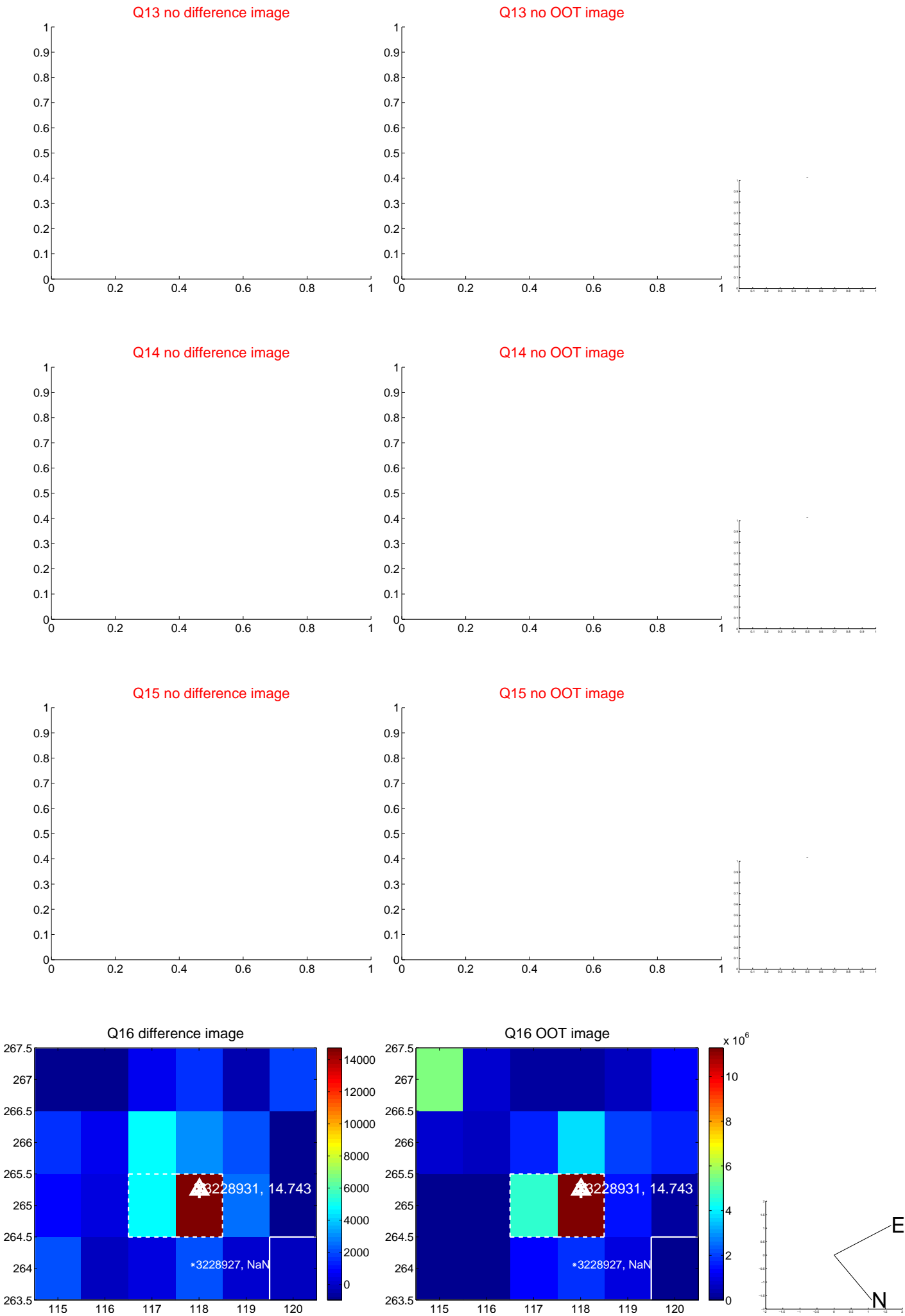
Q8 no OOT image



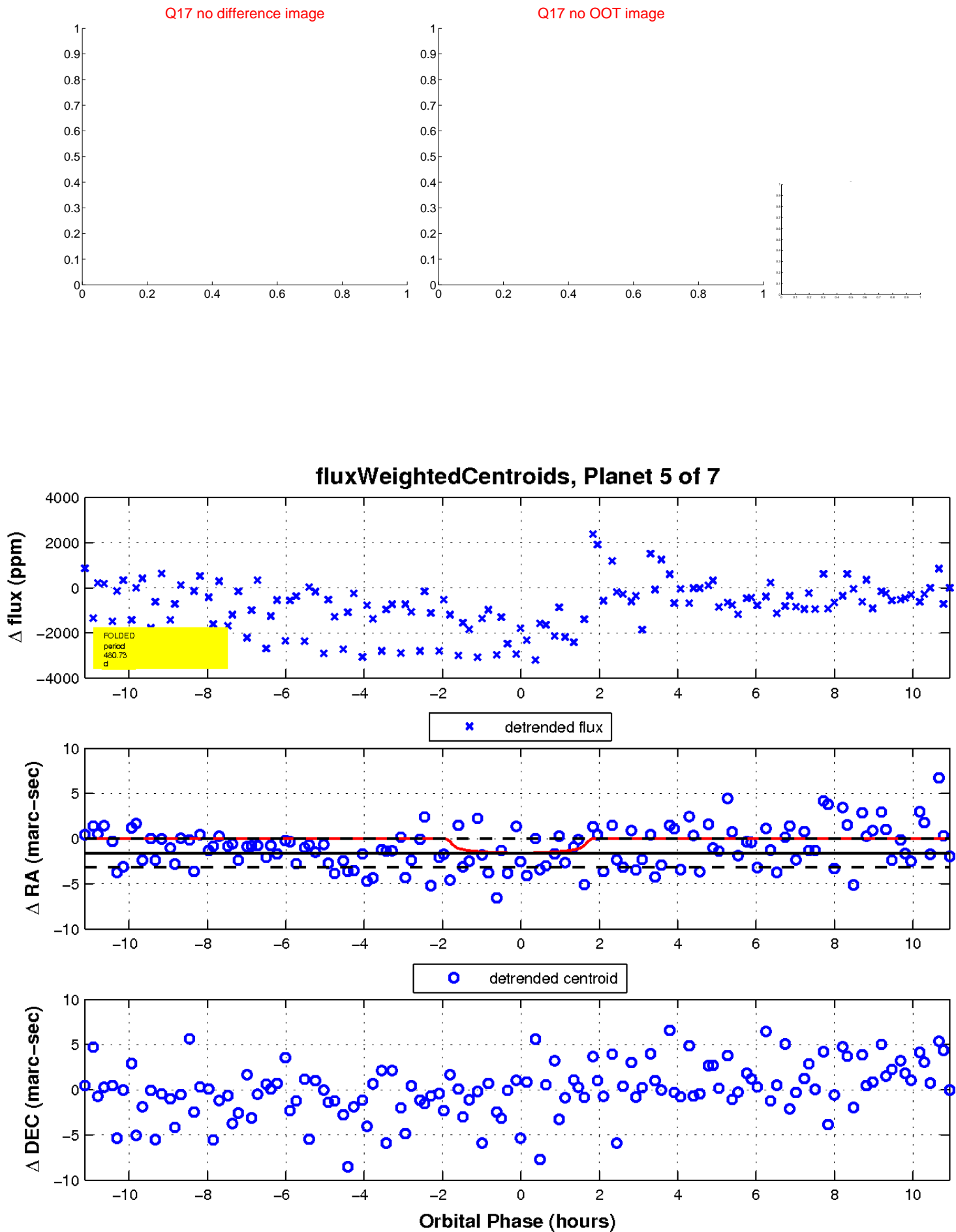
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

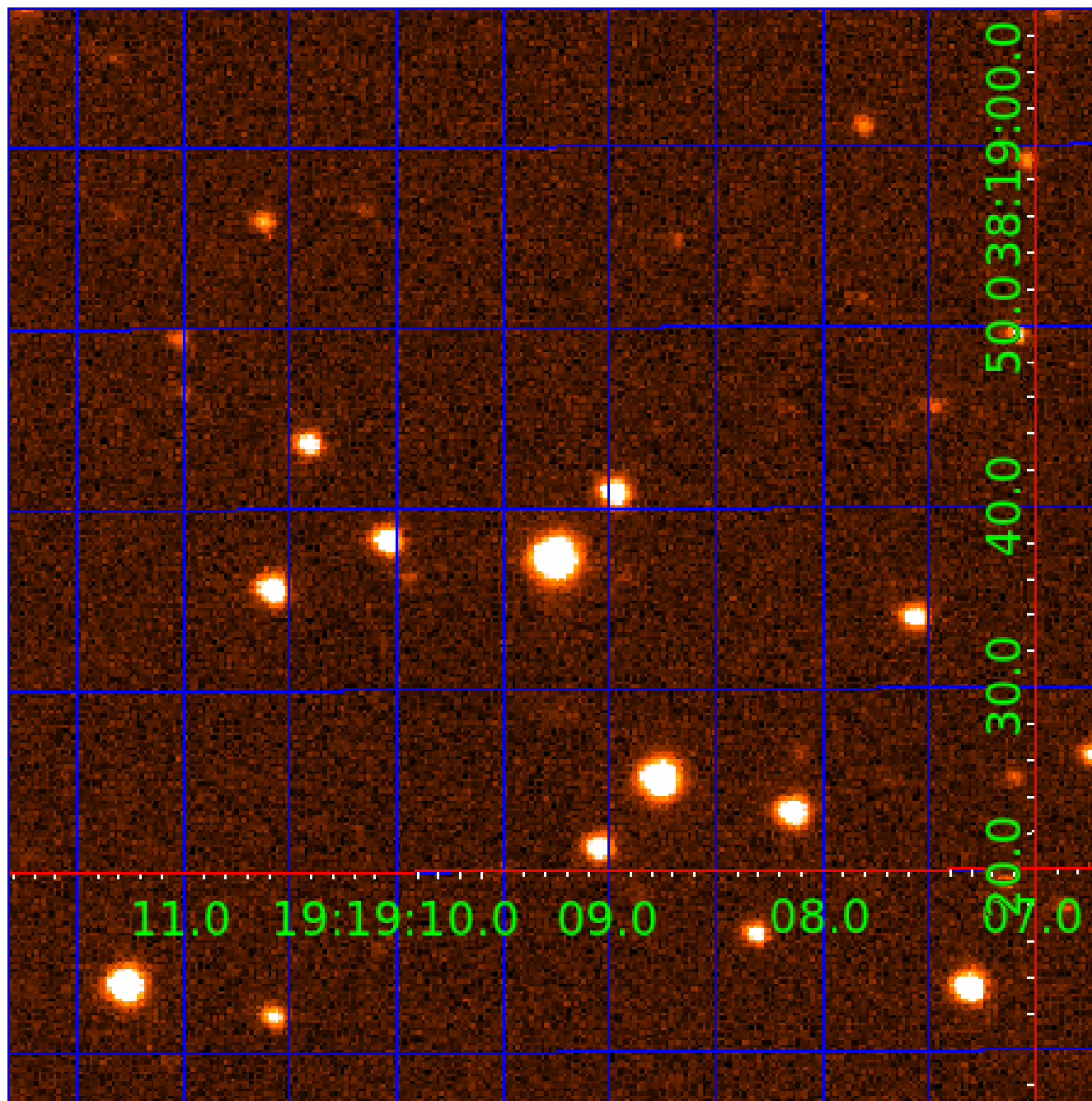


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003228931

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})
003228931-01	OBS	No	372.052560	462.211414	2003.2	15.480	16.2	7.7	0.70	5280	3.67	0.41
003228931-02	OBS	No	330.850190	144.353721	1325.1	2.949	15.5	7.2	0.70	5280	2.58	0.48
003228931-03	OBS	No	473.507624	449.156916	988.3	4.714	12.9	6.2	0.70	5280	2.35	0.30
003228931-04	OBS	No	468.628876	421.791450	1075.4	5.855	12.2	6.4	0.70	5280	2.39	0.30
003228931-05	OBS	No	480.732856	576.725025	1273.3	3.719	11.5	7.8	0.70	5280	2.68	0.29
003228931-06	OBS	No	347.722462	134.574524	1282.5	12.628	10.9	6.2	0.70	5280	2.50	0.45
003228931-07	OBS	No	405.299663	521.778367	1074.8	3.500	9.9	-1.0	0.70	5280	2.26	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003228931-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003228931-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
003228931-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—HALO_GHOST
003228931-06	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

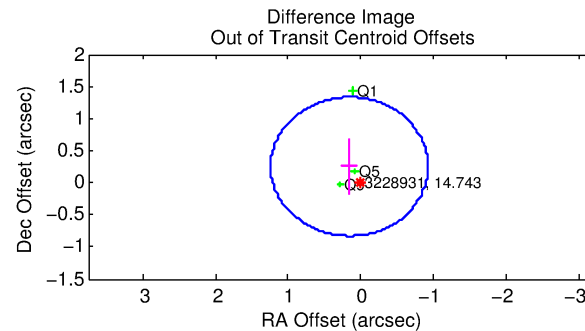
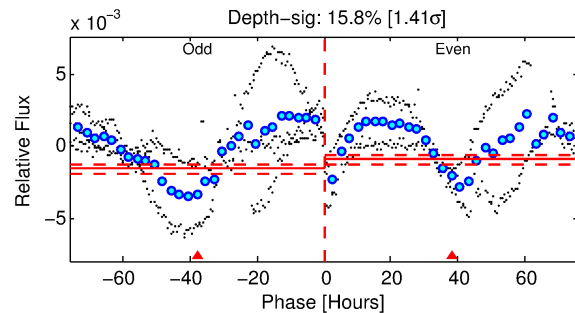
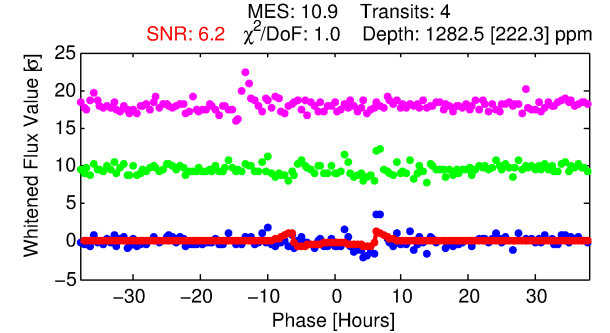
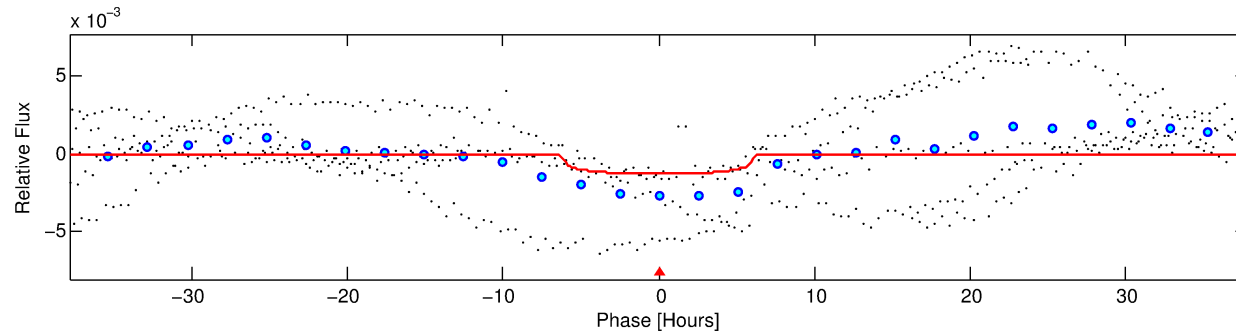
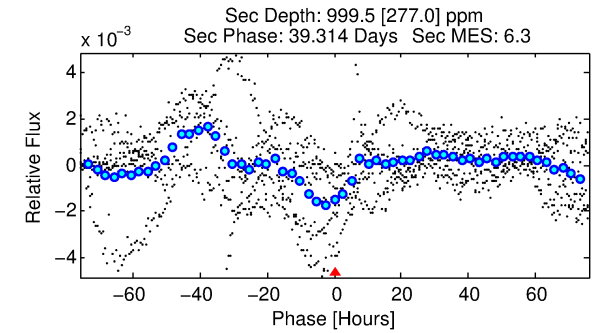
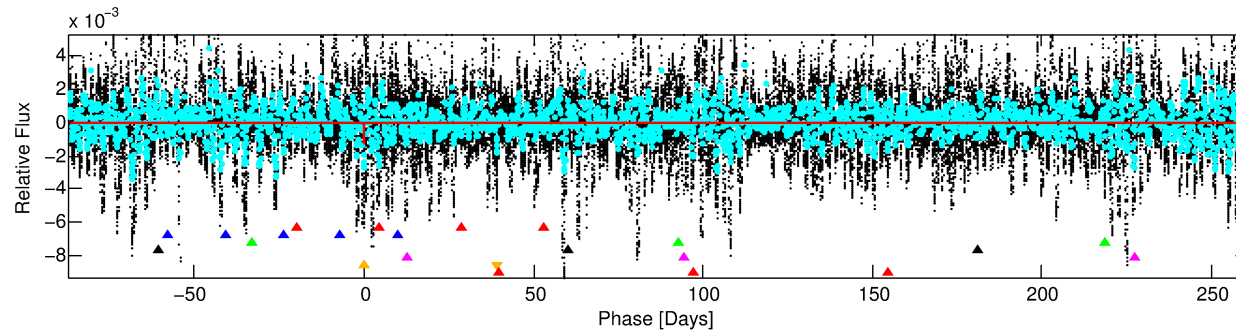
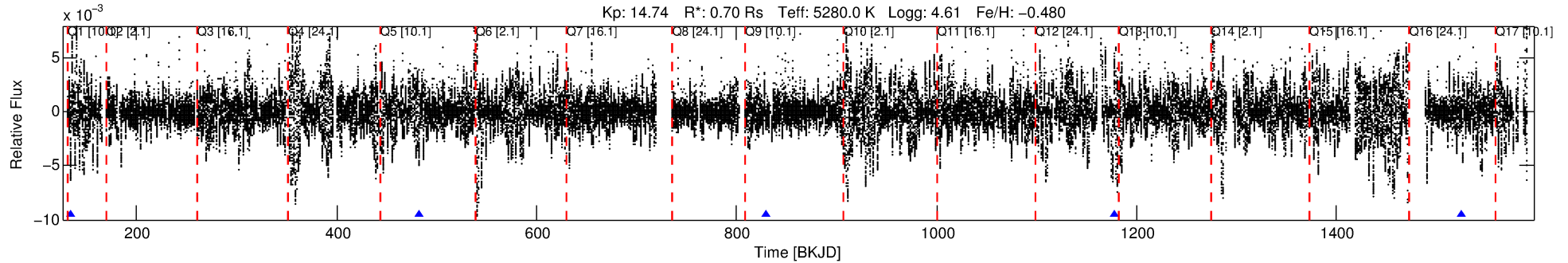
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003228931-06

No Significant Match Found

DV One-Page Summary

KIC: 3228931 Candidate: 6 of 7 Period: 347.722 d



DV Fit Results:

Period = 347.72246 [0.00414] d
Epoch = 134.5745 [0.0082] BKJD
Rp/R* = 0.0327 [0.0100]
a/R* = 204.26 [225.53]
b = 0.35 [2.77]
Seff = 0.45 [0.09]
Teq = 209 [10] K
Rp = 2.50 [0.84] Re
a = 0.8730 [0.0981] AU
Ag = 66791.02 [45963.09] [1.45σ]
Teffp = 5188 [884] K [5.63σ]

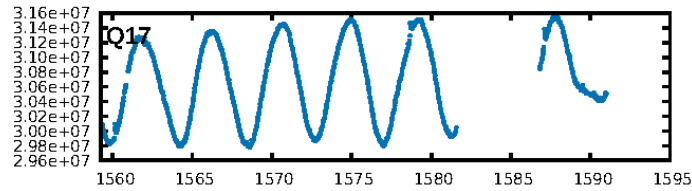
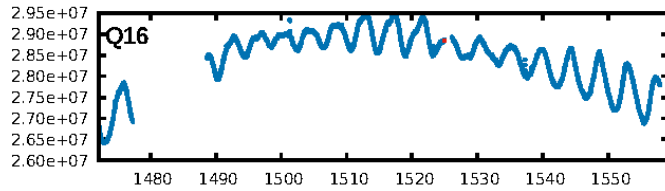
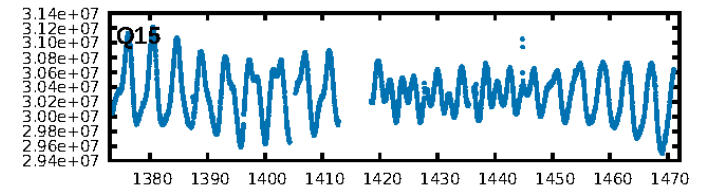
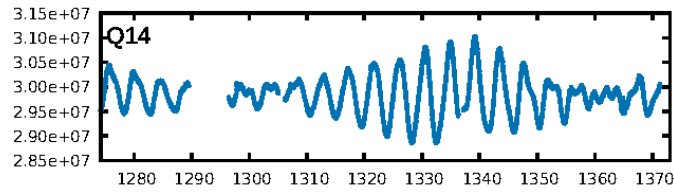
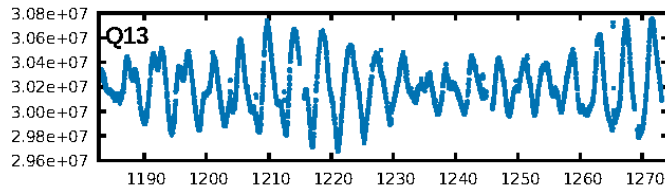
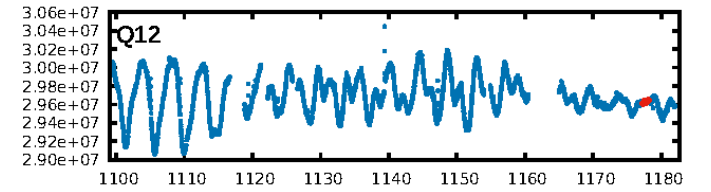
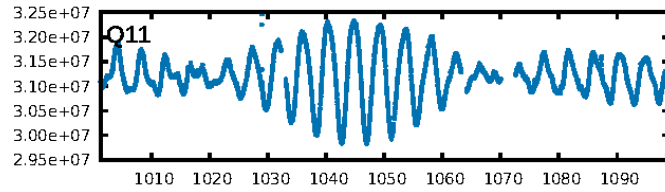
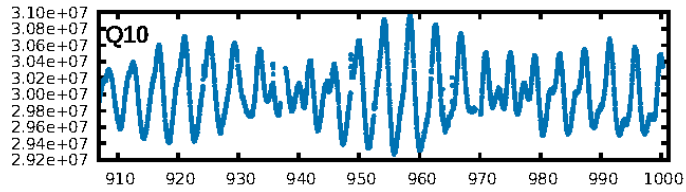
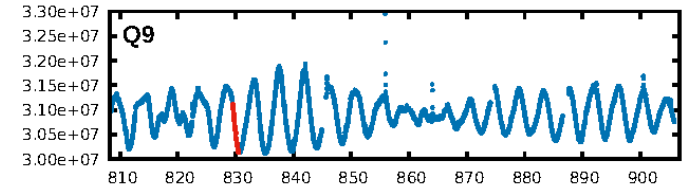
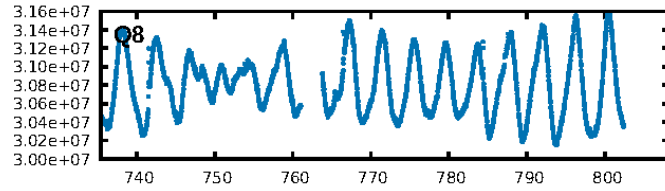
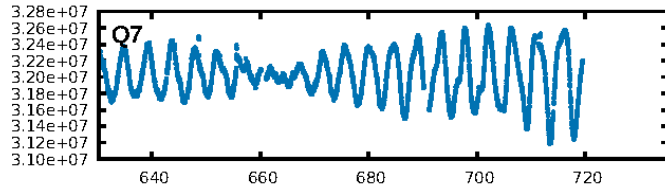
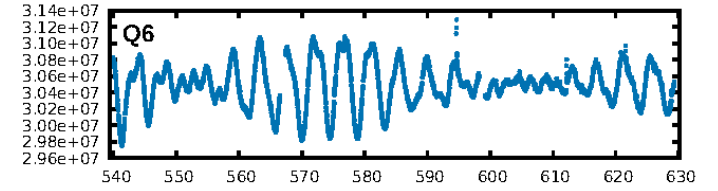
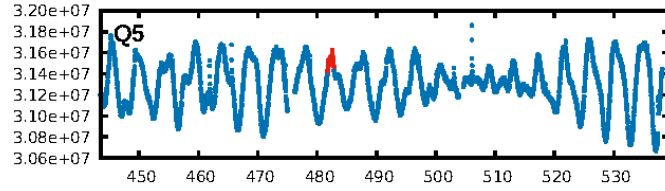
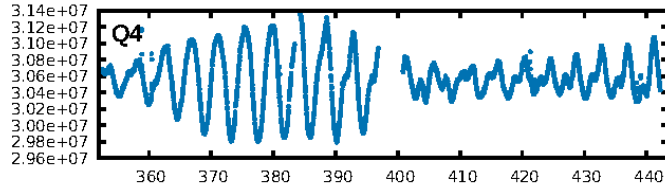
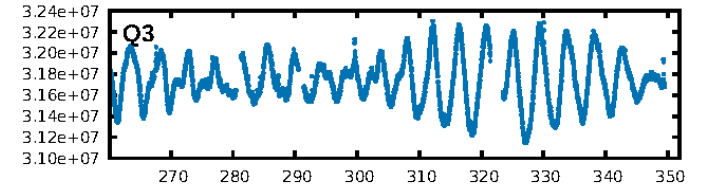
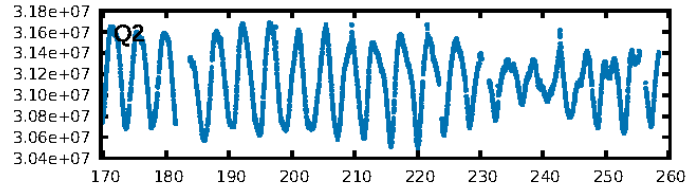
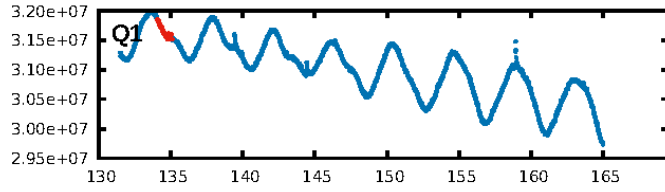
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [31.23σ]
LongPeriod-sig: 100.0% [29.23σ]
ModelChiSquare2-sig: 48.9%
ModelChiSquareGof-sig: 98.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 4.302
Centroid-sig: N/A
Centroid-so: 1.069 arcsec [2.26σ]
OotOffset-rm: 0.297 arcsec [0.82σ]
OotOffset-st: 0/0/0/3 [3]
KicOffset-rm: 0.142 arcsec [0.33σ]
KicOffset-st: 0/0/0/3 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

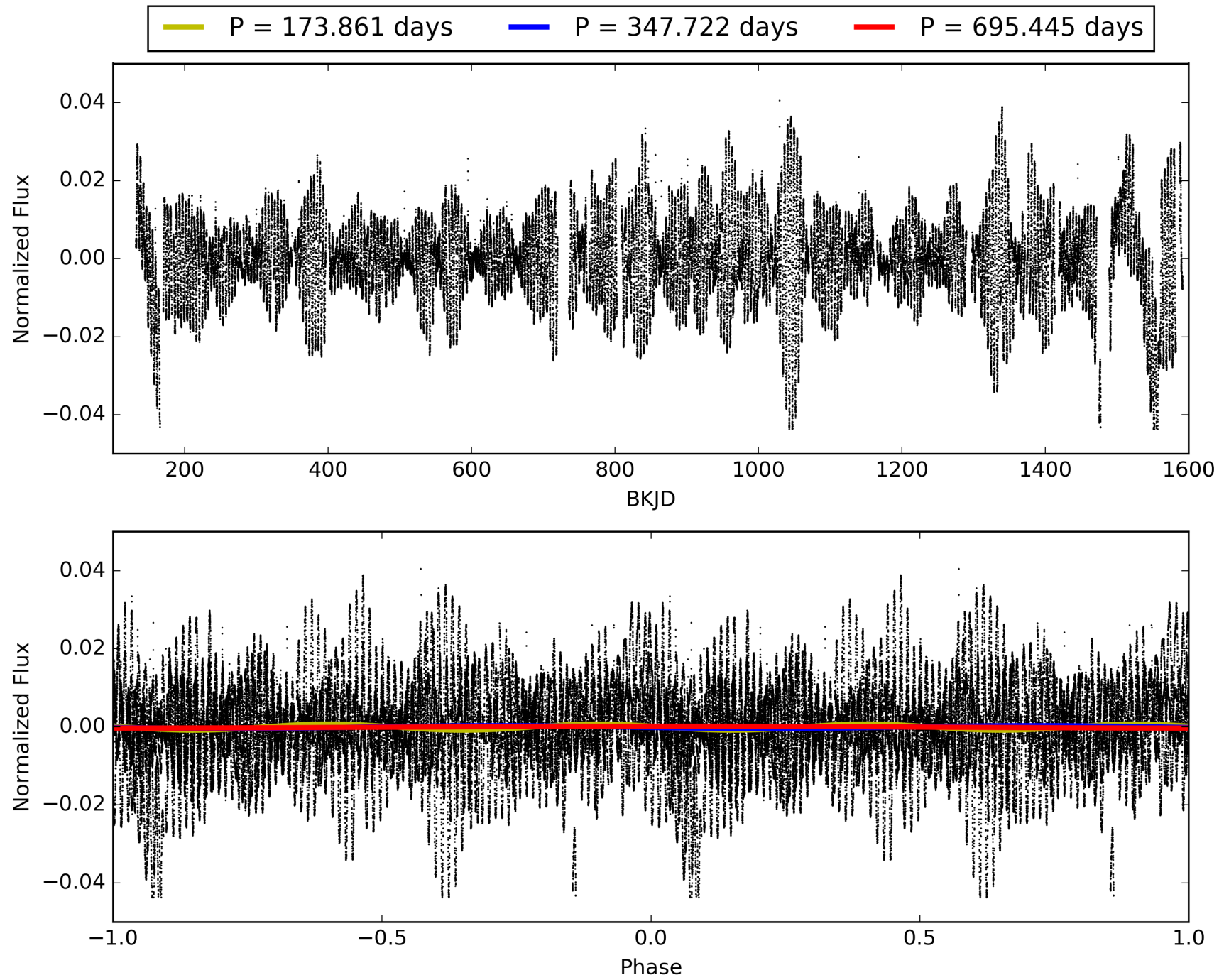
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:28:44 Z

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

TCE 003228931-06, PDC Light Curves

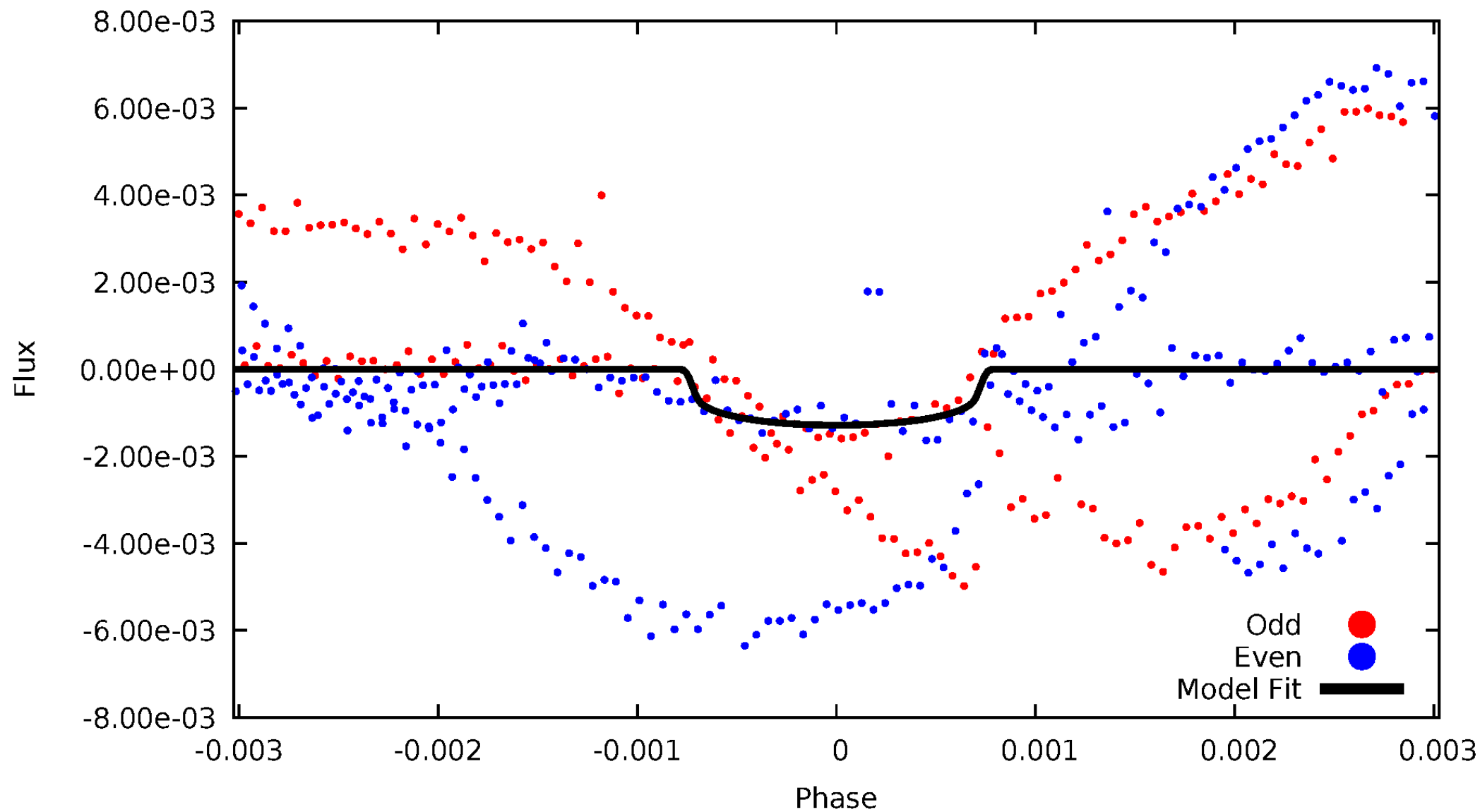


TCE 003228931-06



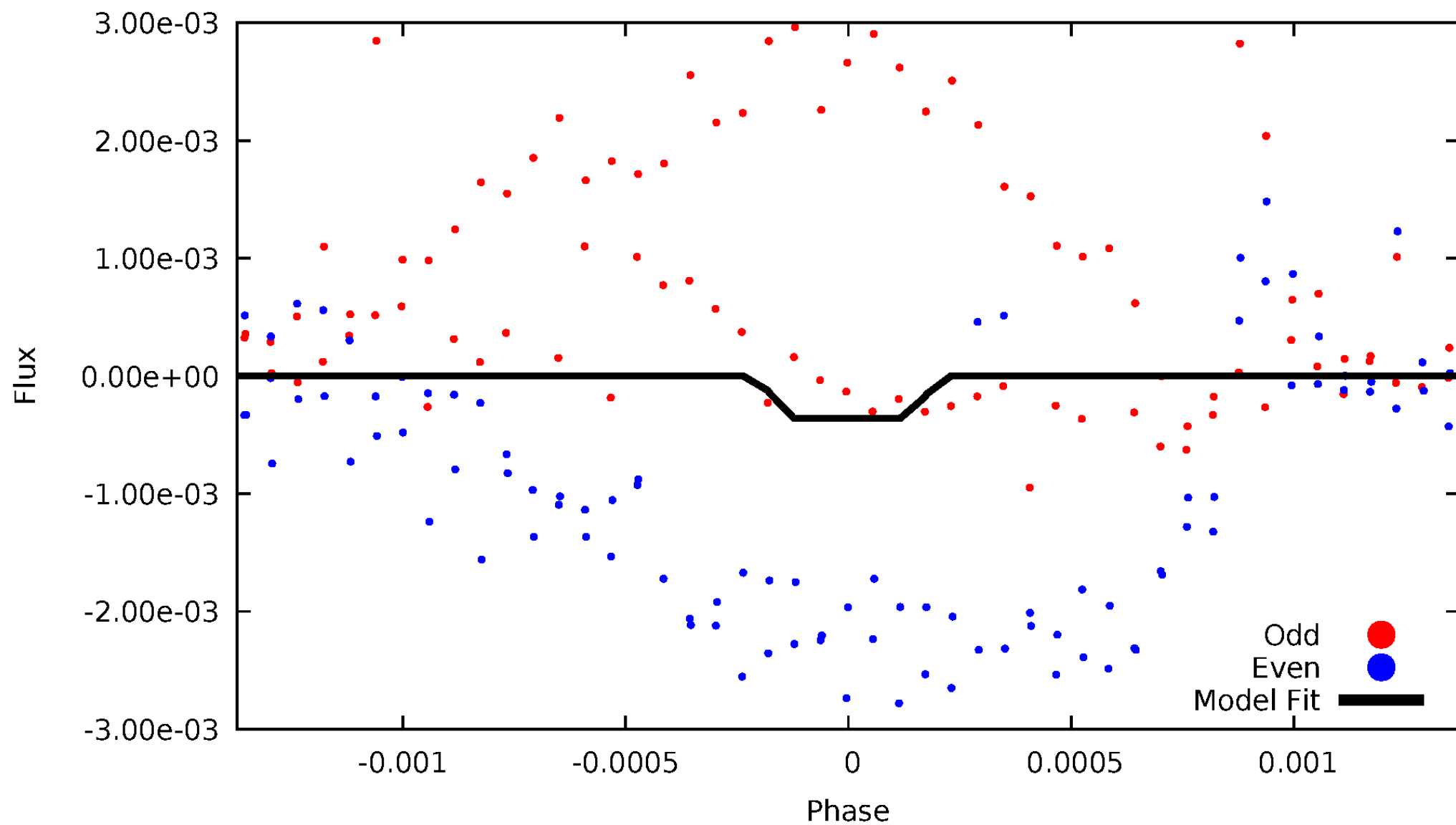
DV Odd/Even

TCE 003228931-06



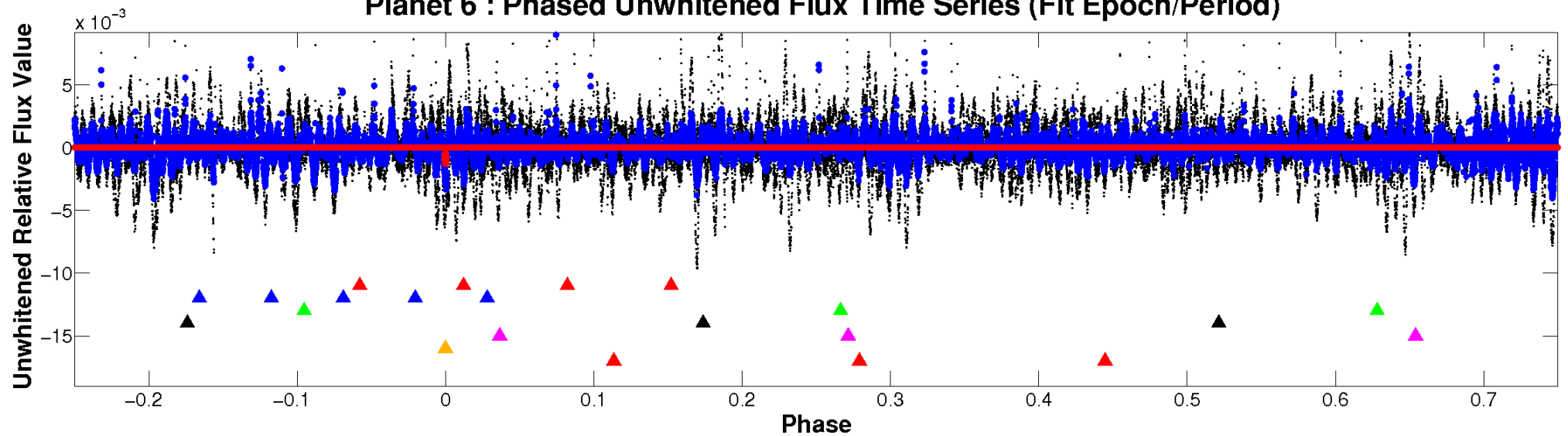
ALT Odd/Even

TCE 003228931-06

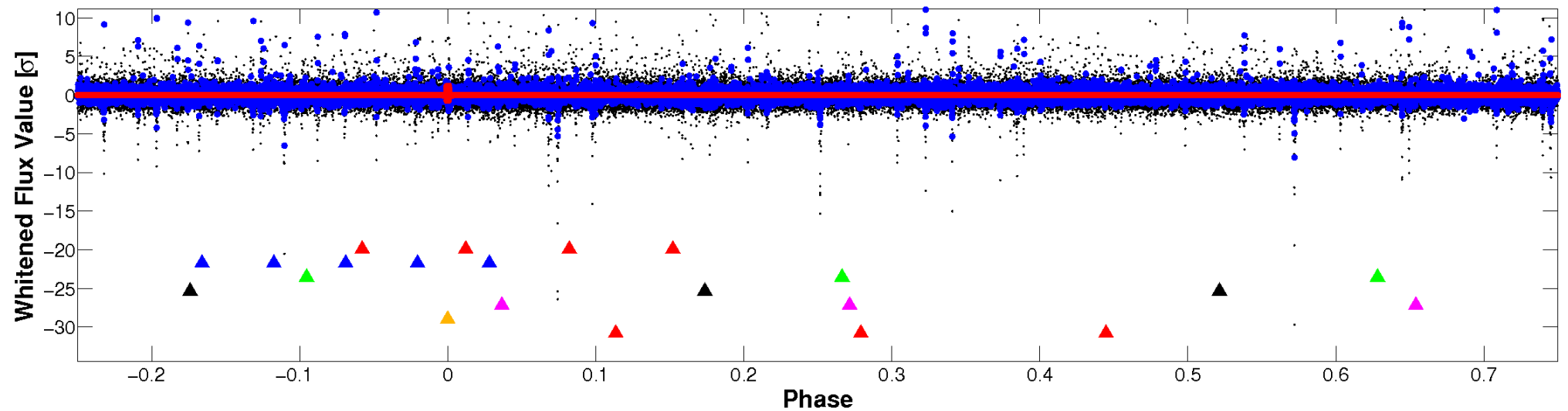


Non-Whitened Vs. Whitened Light Curve

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

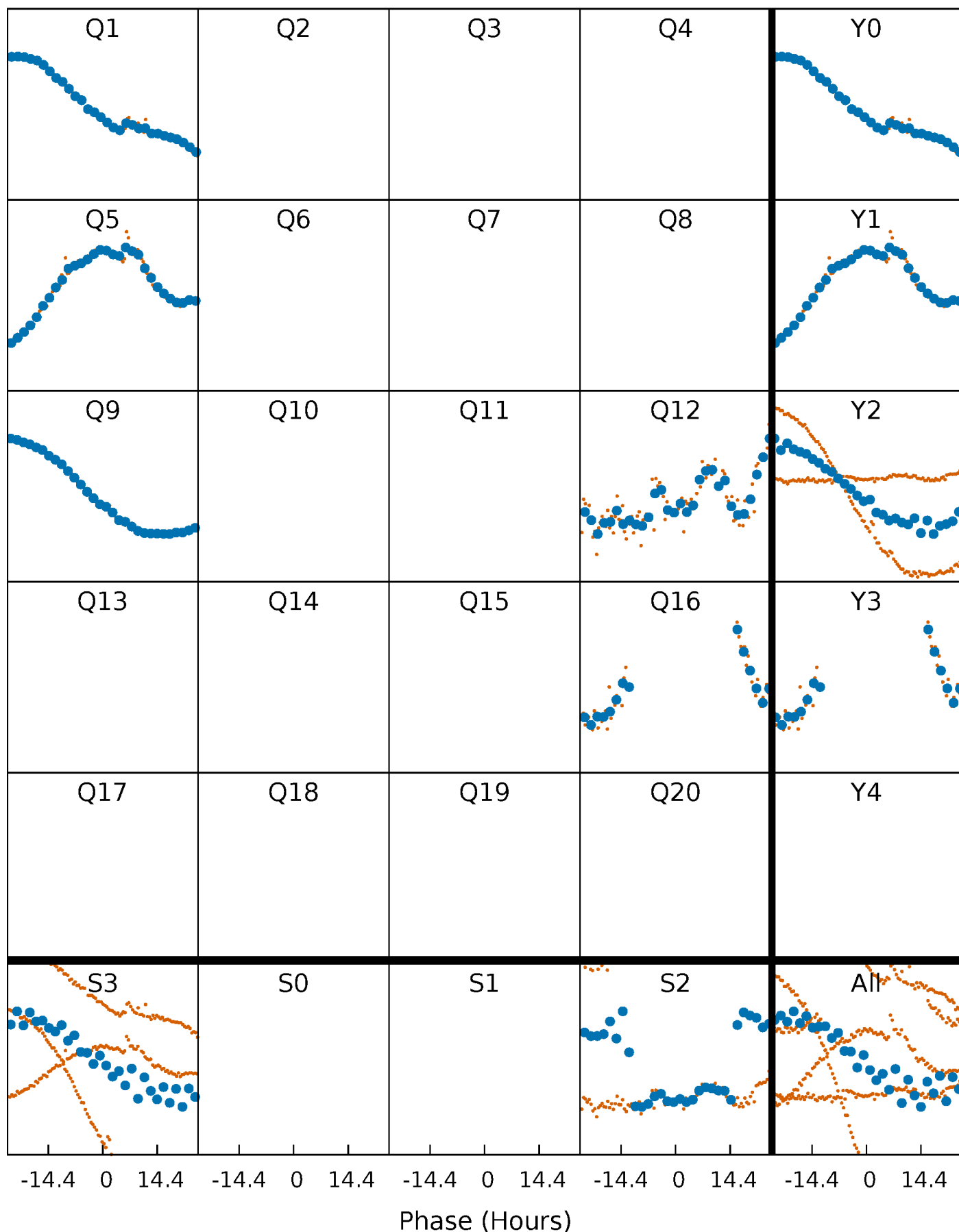


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



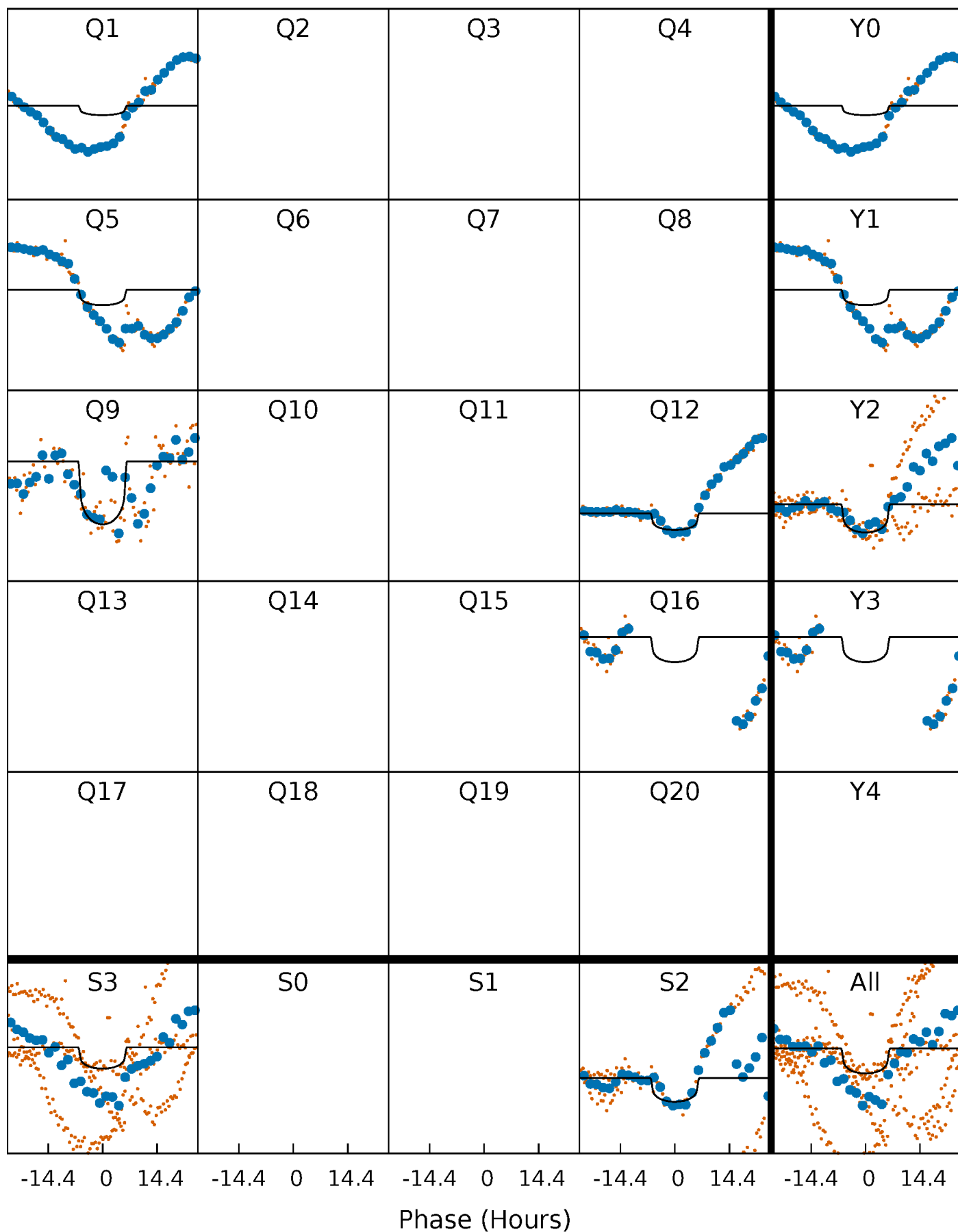
PDC Quarter-Phased Transit Curves

TCE 003228931-06 P=347.722462 Days $T_0=134.574524$ (BKJD)



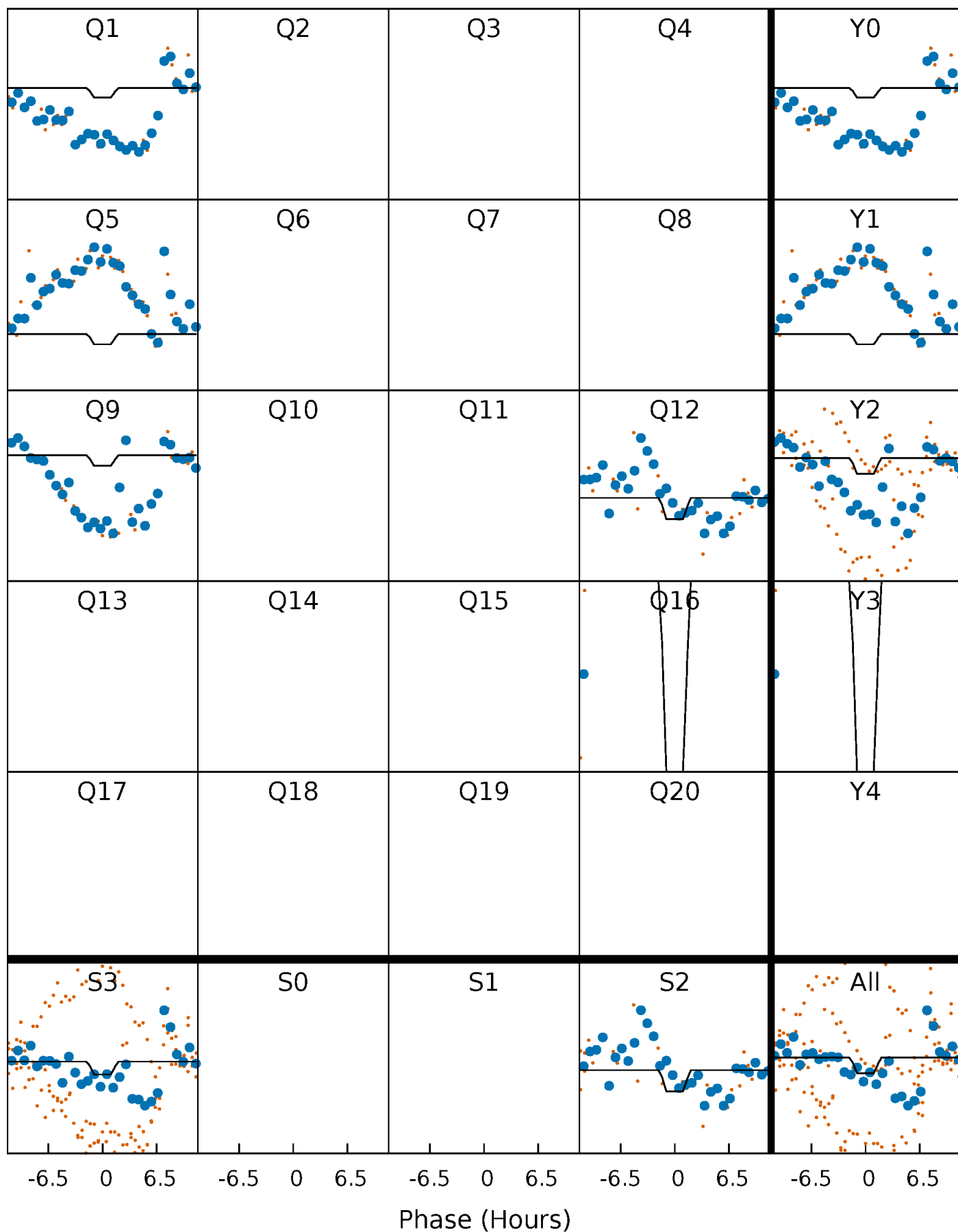
DV Quarter-Phased Transit Curves

TCE 003228931-06 P=347.722462 Days $T_0=134.574524$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

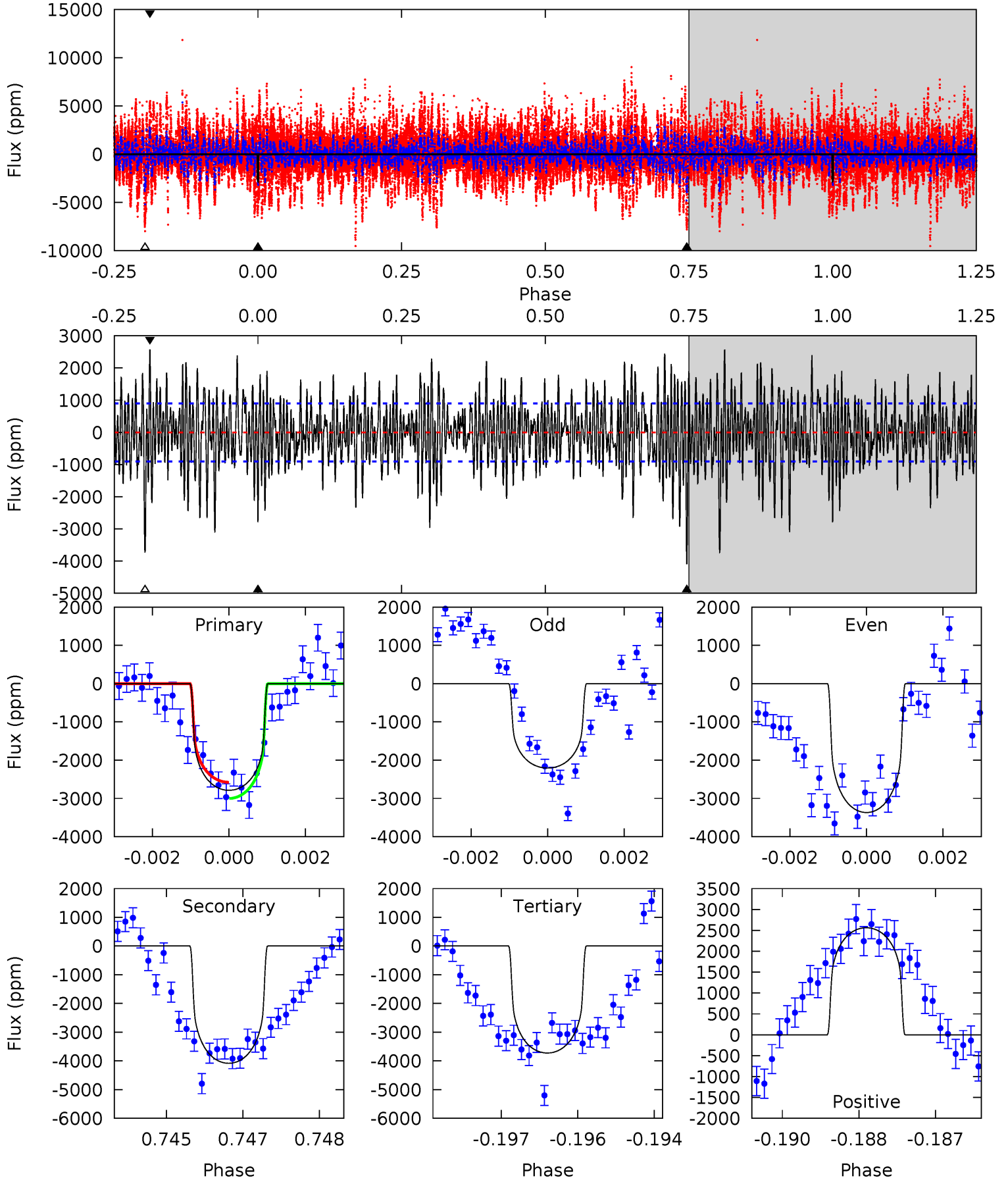
TCE 003228931-06 P=347.717891 Days $T_0=134.537352$ (BKJD)



DV Model-Shift Uniqueness Test

003228931-06, $P = 347.722462$ Days, $E = 134.574524$ Days

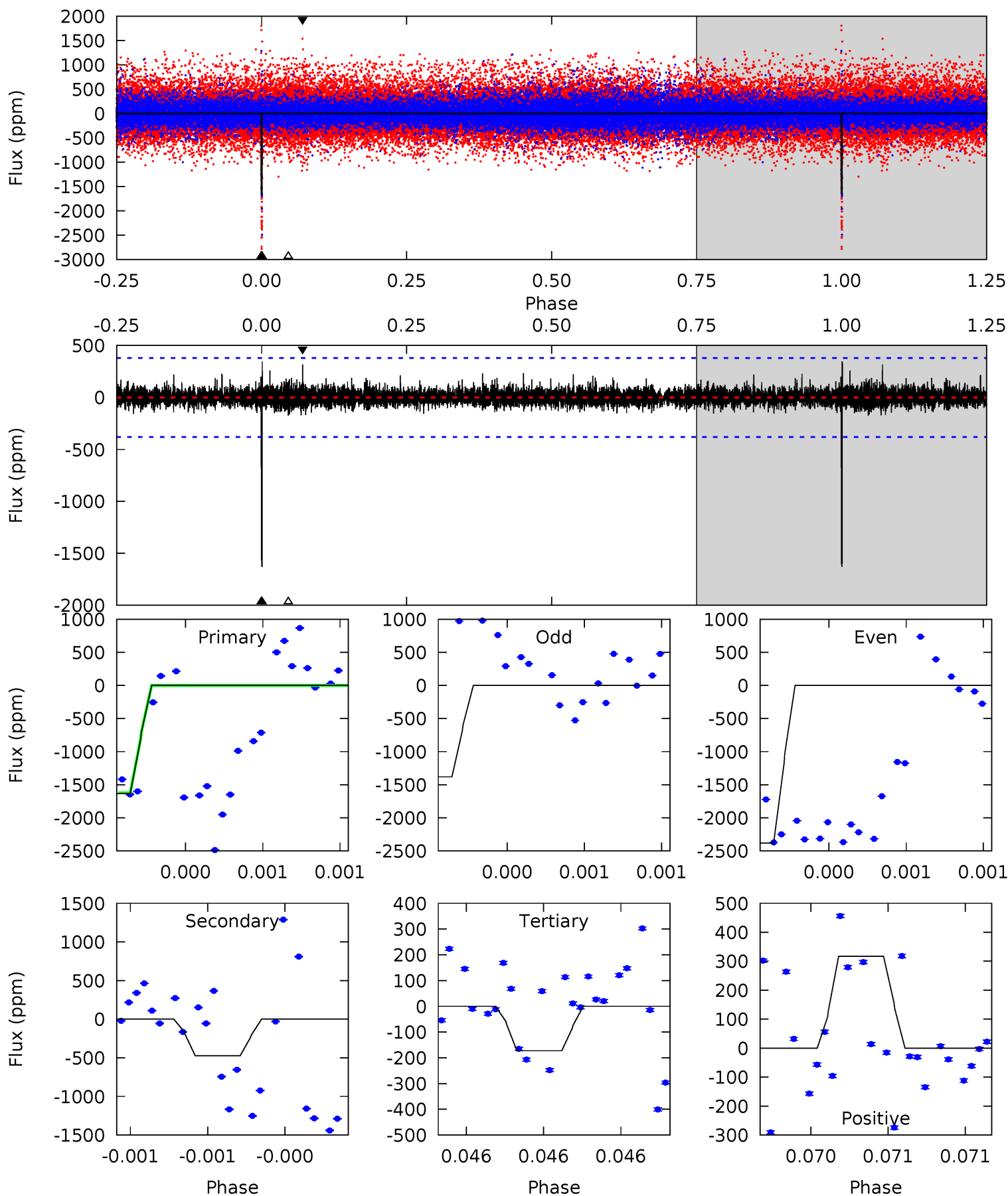
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.6	24.3	22.2	15.3	5.37	3.17	5.37	-5.59	1.34	2.13	9.07	3.34	1.28	0.39	1.27



Alt Model-Shift Uniqueness Test

003228931-06, P = 347.717891 Days, E = 134.537352 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.1	6.99	2.55	4.68	5.61	3.53	0.78	21.5	19.4	4.44	2.31	8.57	0.45	0.17	0.34



Stellar Parameters For KIC 003228931

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5280^{+158}_{-142}	$4.612^{+0.042}_{-0.078}$	$-0.480^{+0.300}_{-0.300}$	$0.701^{+0.100}_{-0.054}$	$0.734^{+0.088}_{-0.059}$	$3.001^{+0.635}_{-0.749}$
	+3%/-3%	+1%/-2%	+62%/-62%	+14%/-8%	+12%/-8%	+21%/-25%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 003228931-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-4084 ± 168	$2.53^{+0.82}_{-0.74}$	294^{+11}_{-10}	7420^{+1898}_{-1029}	$269946^{+265447}_{-116574}$
Alt.	-474 ± 68	$1.48^{+0.78}_{-0.66}$	294^{+11}_{-11}	5617^{+1997}_{-983}	$90148^{+202680}_{-52351}$

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

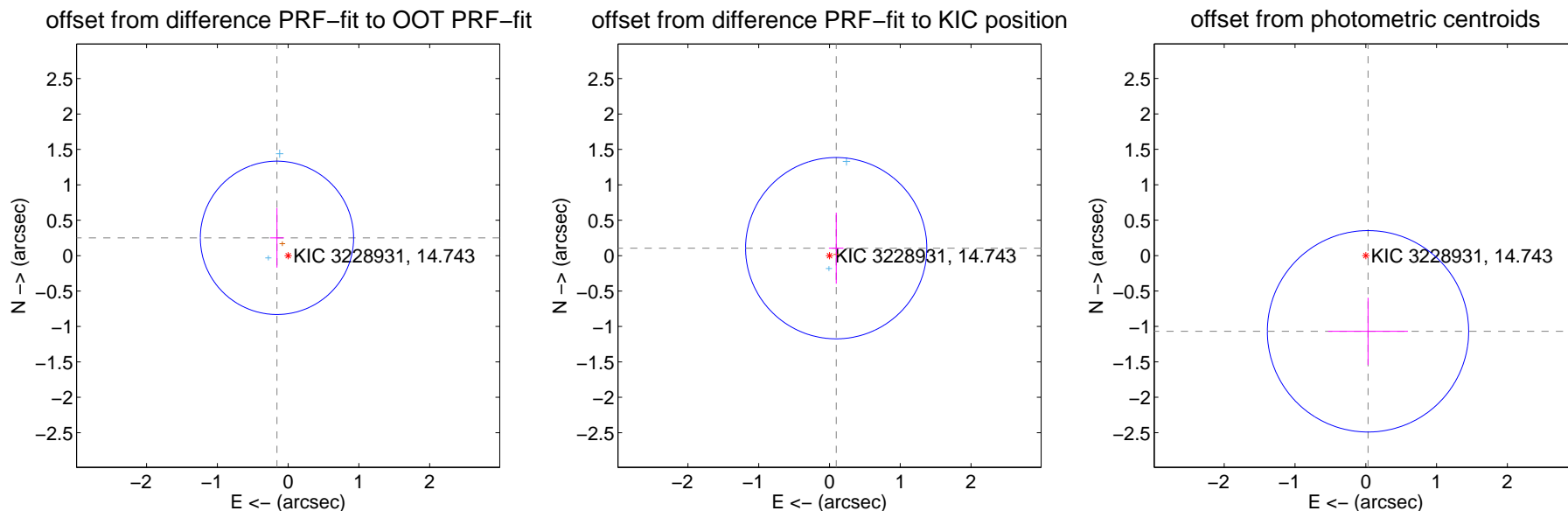
DV Centroid Data

Supplemental centroid analysis for 003228931-06. Kepler magnitude: 14.74. Transit SNR 6.24

There are 2 quarters with good PRF difference image offsets

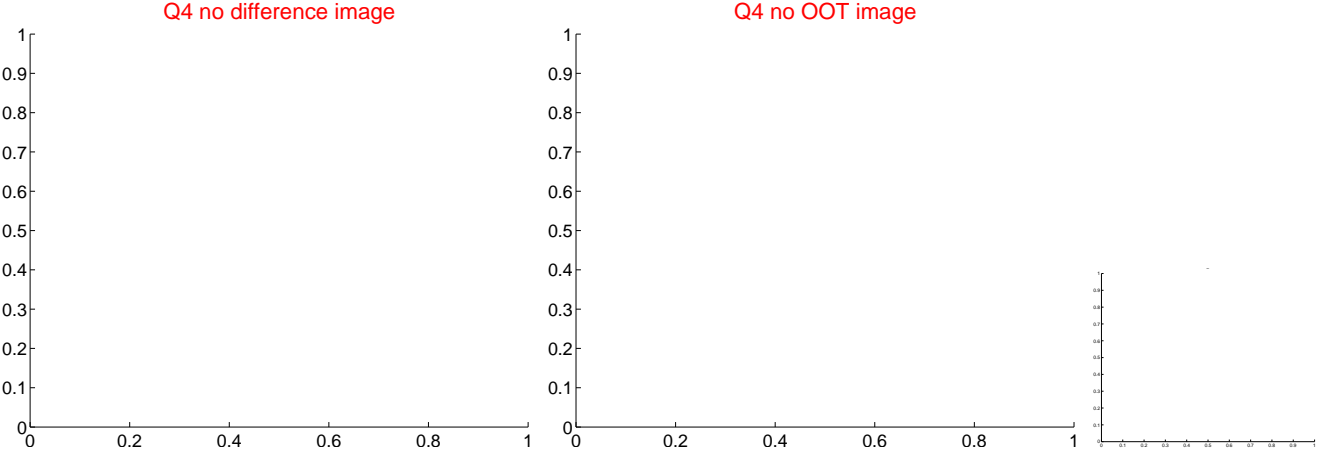
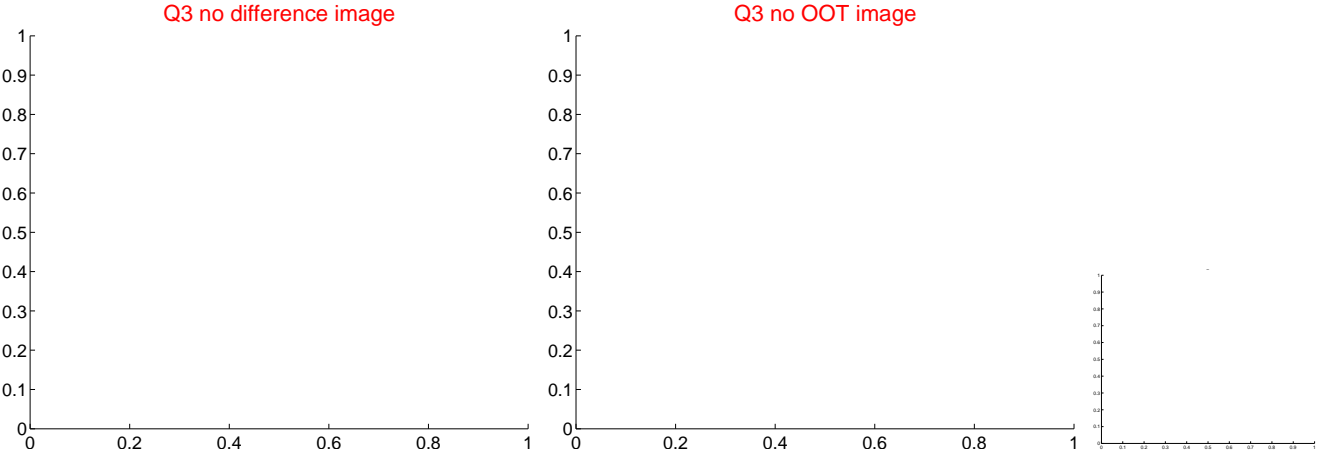
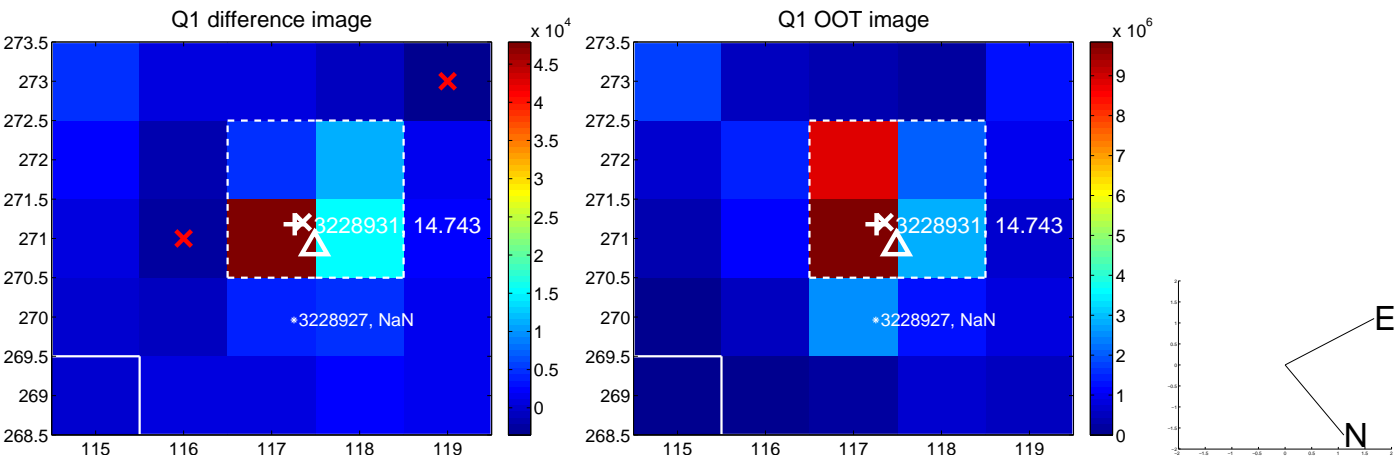
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.297 ± 0.361	0.82	0.157 ± 0.097	0.252 ± 0.421
PRF-fit source offset from KIC position	0.142 ± 0.427	0.33	-0.095 ± 0.103	0.106 ± 0.502
photometric centroid source offset	1.07 ± 0.47	2.26	-0.03 ± 0.56	-1.07 ± 0.47

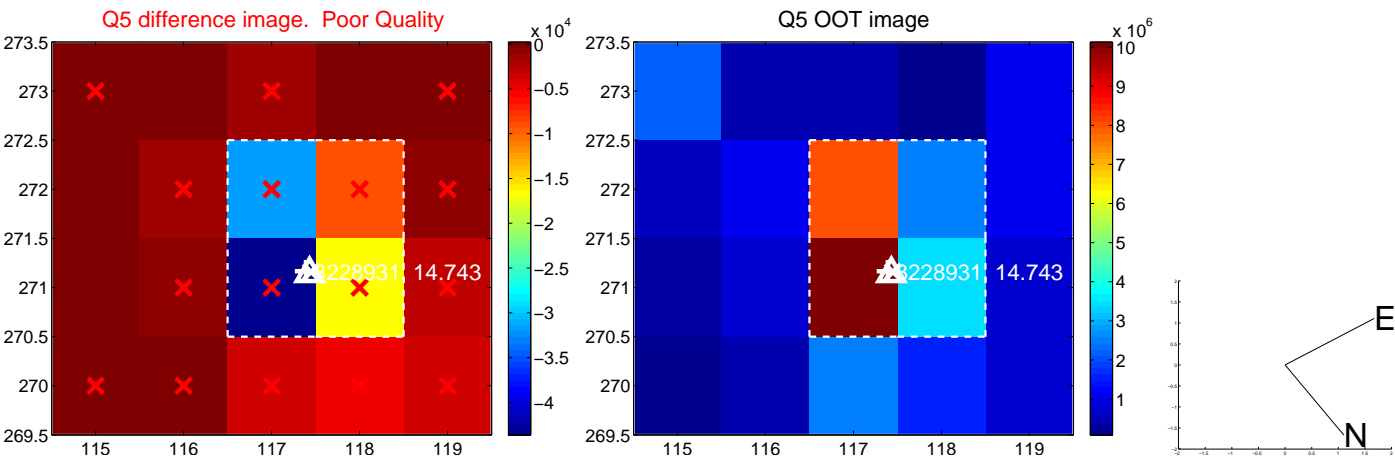


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

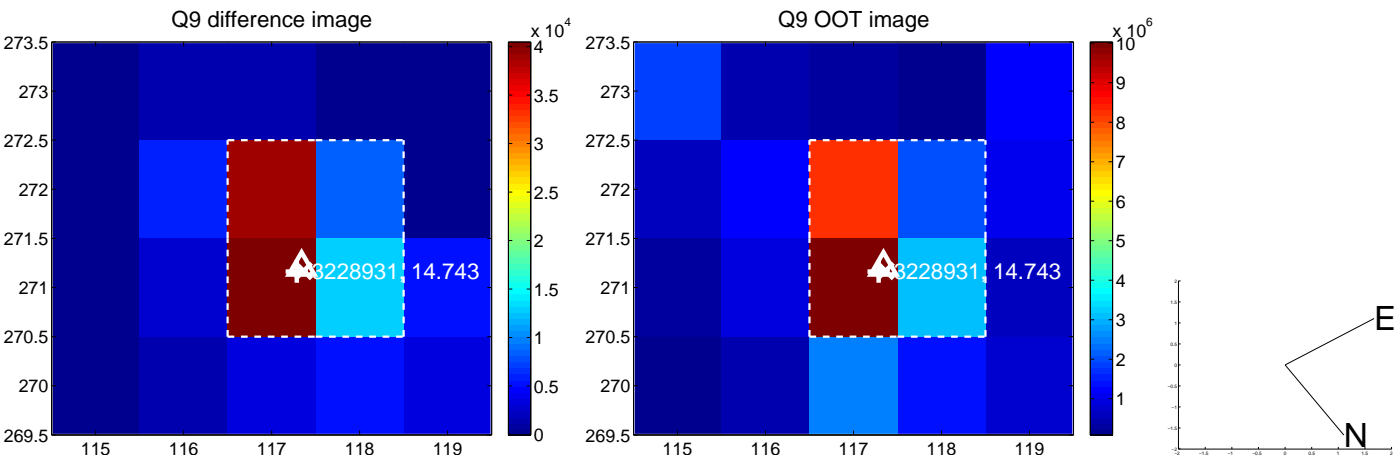
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



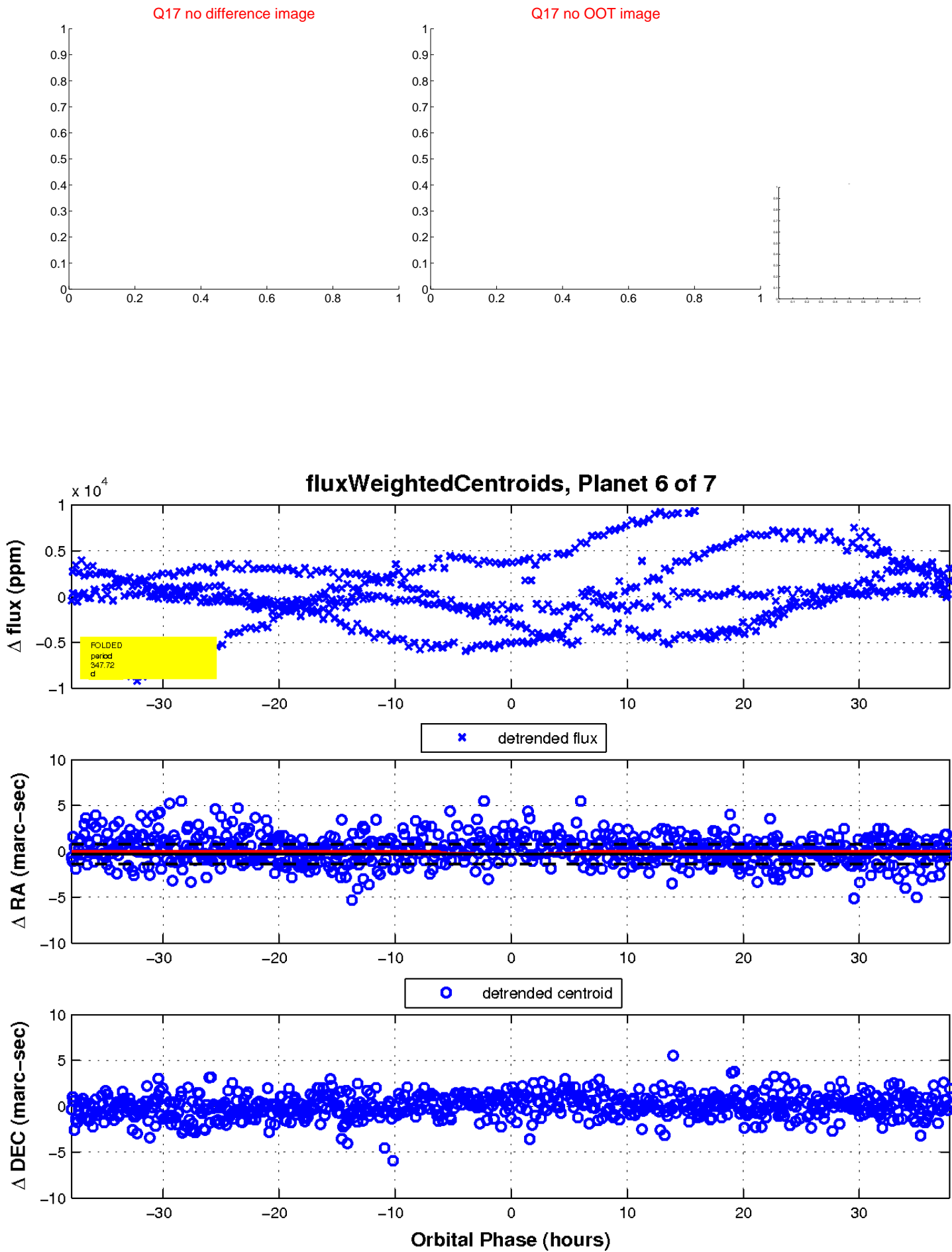
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

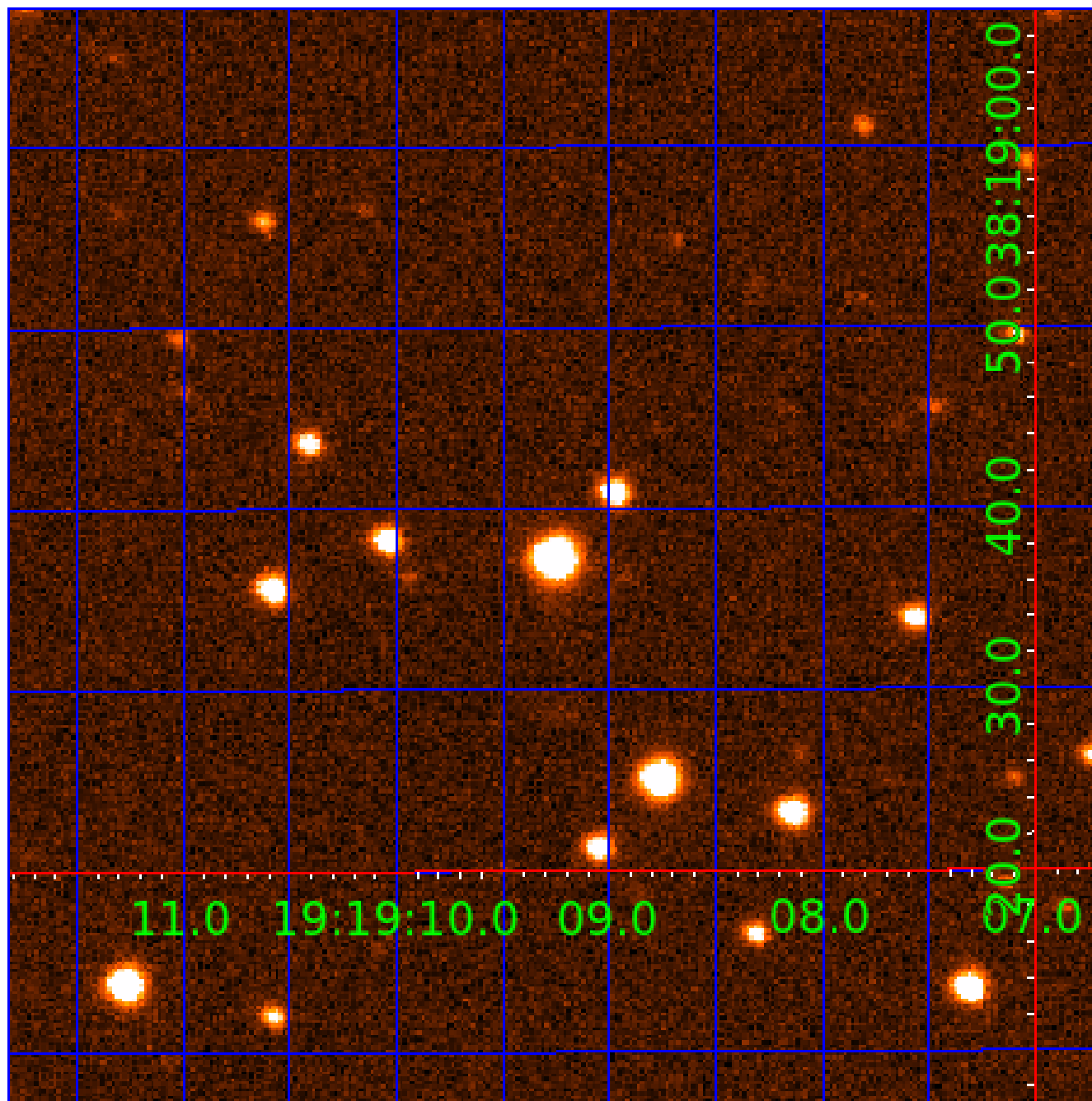


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003228931

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})
003228931-01	OBS	No	372.052560	462.211414	2003.2	15.480	16.2	7.7	0.70	5280	3.67	0.41
003228931-02	OBS	No	330.850190	144.353721	1325.1	2.949	15.5	7.2	0.70	5280	2.58	0.48
003228931-03	OBS	No	473.507624	449.156916	988.3	4.714	12.9	6.2	0.70	5280	2.35	0.30
003228931-04	OBS	No	468.628876	421.791450	1075.4	5.855	12.2	6.4	0.70	5280	2.39	0.30
003228931-05	OBS	No	480.732856	576.725025	1273.3	3.719	11.5	7.8	0.70	5280	2.68	0.29
003228931-06	OBS	No	347.722462	134.574524	1282.5	12.628	10.9	6.2	0.70	5280	2.50	0.45
003228931-07	OBS	No	405.299663	521.778367	1074.8	3.500	9.9	-1.0	0.70	5280	2.26	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003228931-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003228931-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
003228931-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—HALO_GHOST
003228931-06	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003228931-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

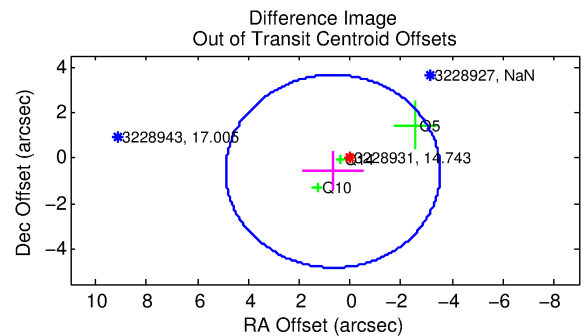
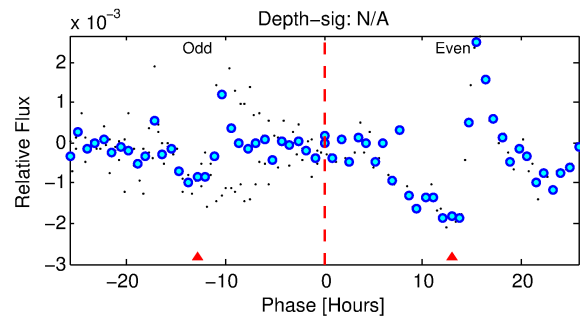
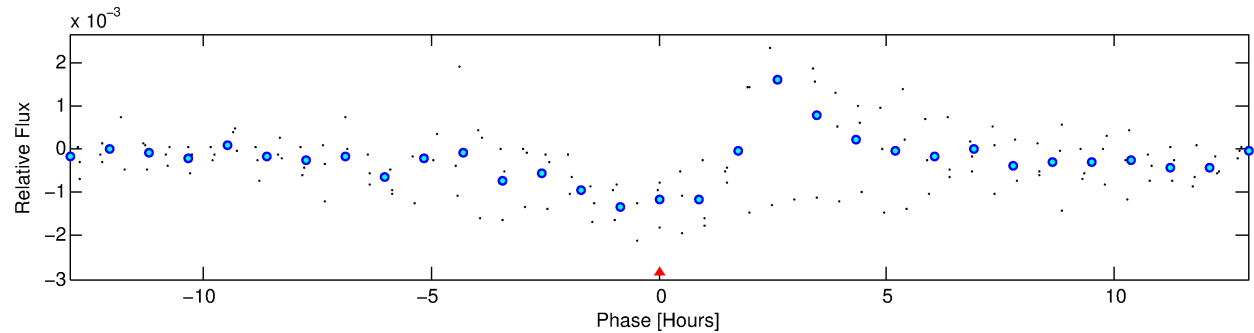
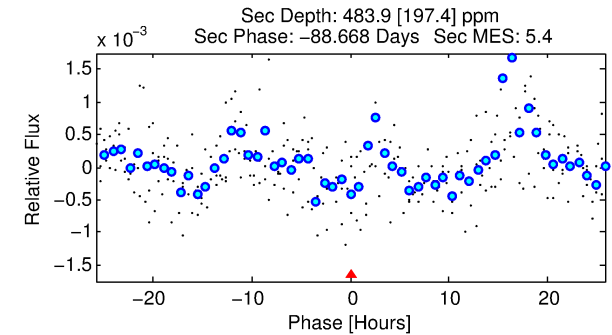
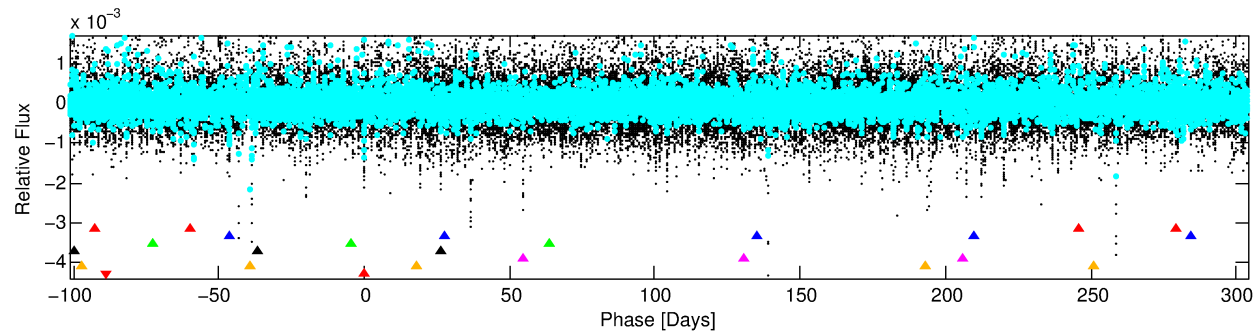
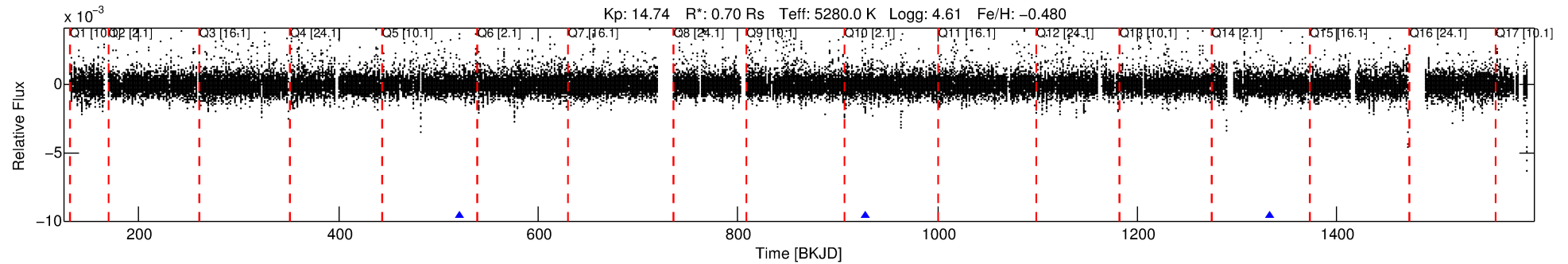
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003228931-07

No Significant Match Found

DV One-Page Summary

KIC: 3228931 Candidate: 7 of 7 Period: 405.300 d



TPS TCE Results:

Period = 405.29966 d
Epoch = 521.7784 BKJD

DV fit results are unavailable

DV Diagnostic Results:

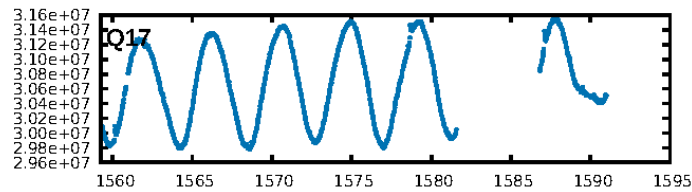
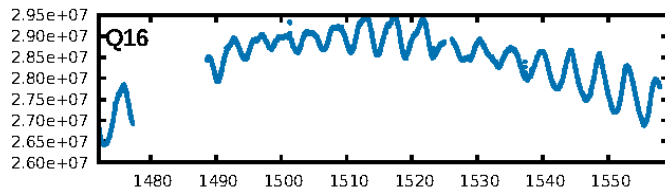
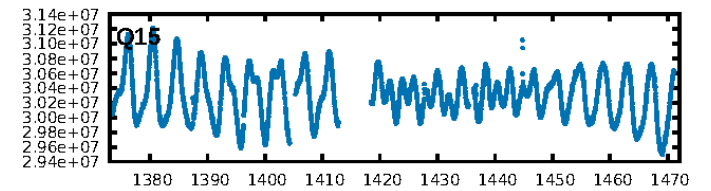
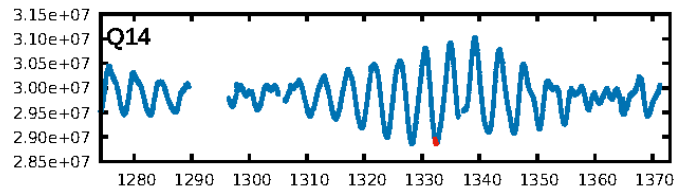
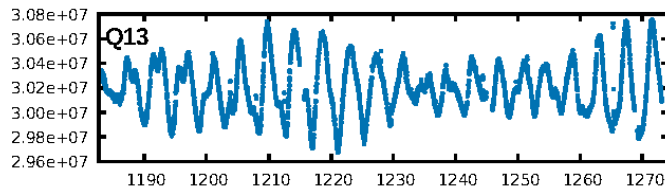
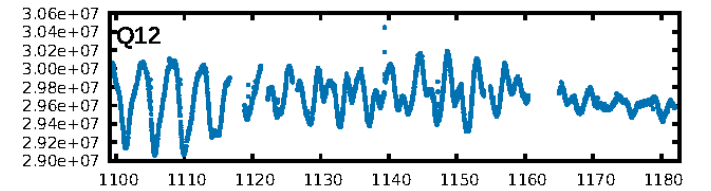
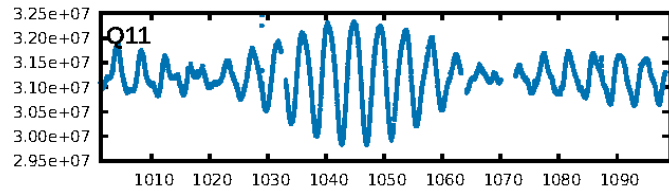
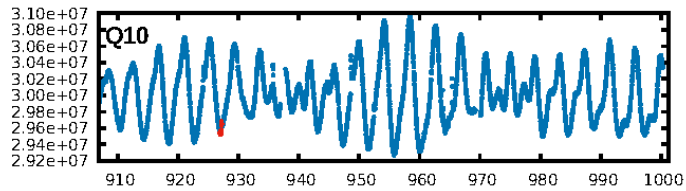
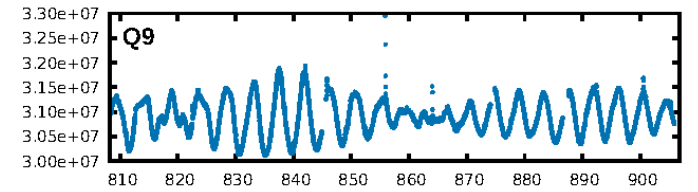
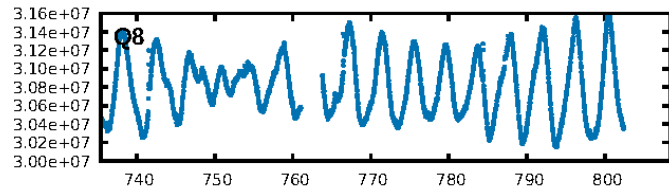
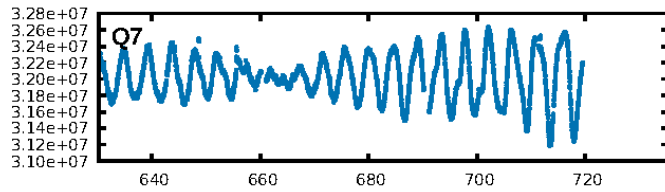
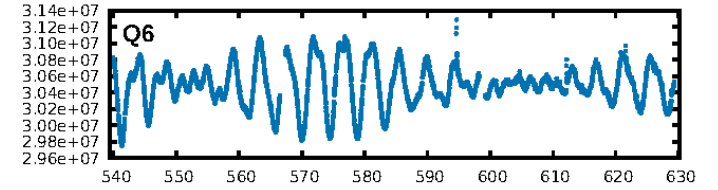
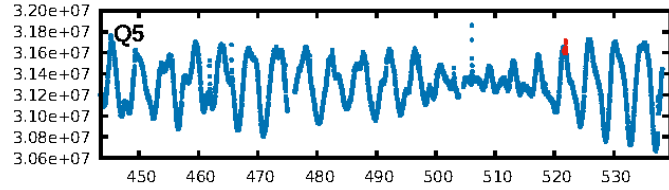
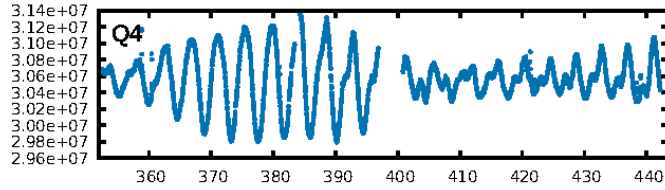
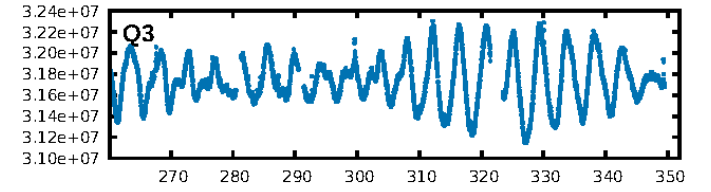
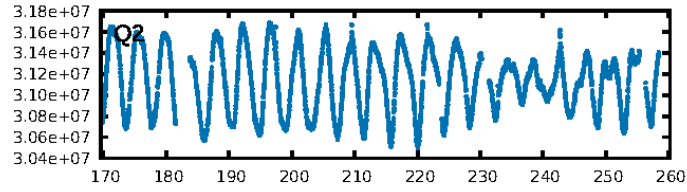
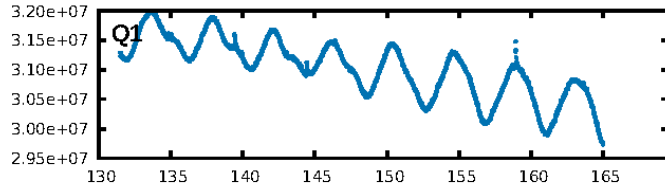
ShortPeriod-sig: 100.0% [50.28 σ]
LongPeriod-sig: 100.0% [222.81 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.7358

Centroid-sig: N/A
Centroid-so: 0.653 arcsec [0.81 σ]
OotOffset-rm: 0.878 arcsec [0.62 σ]
KicOffset-rm: 0.500 arcsec [0.45 σ]
OotOffset-st: 2/0/0/1 [3]
KicOffset-st: 2/0/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

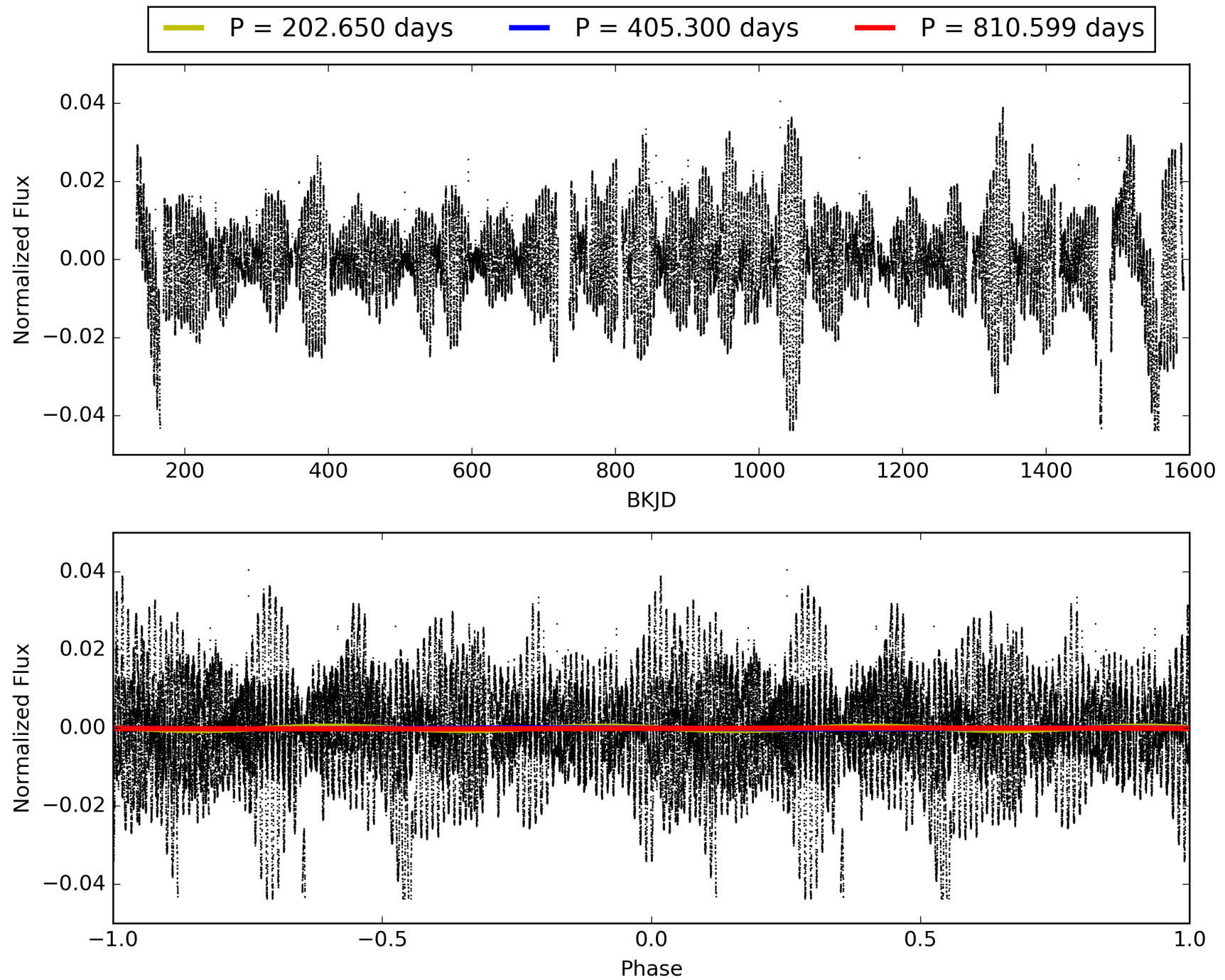
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:28:58 Z

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

TCE 003228931-07, PDC Light Curves

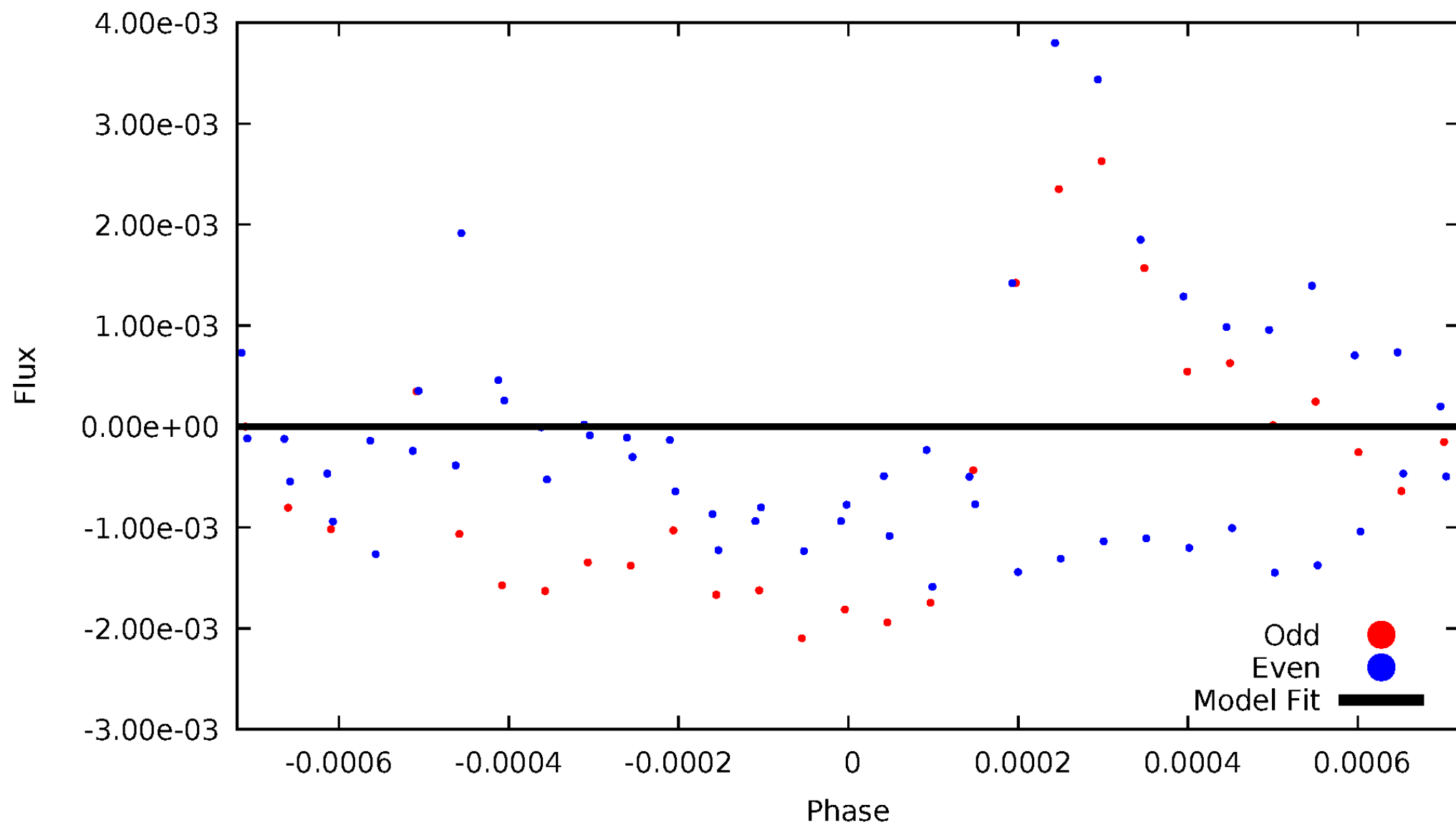


TCE 003228931-07



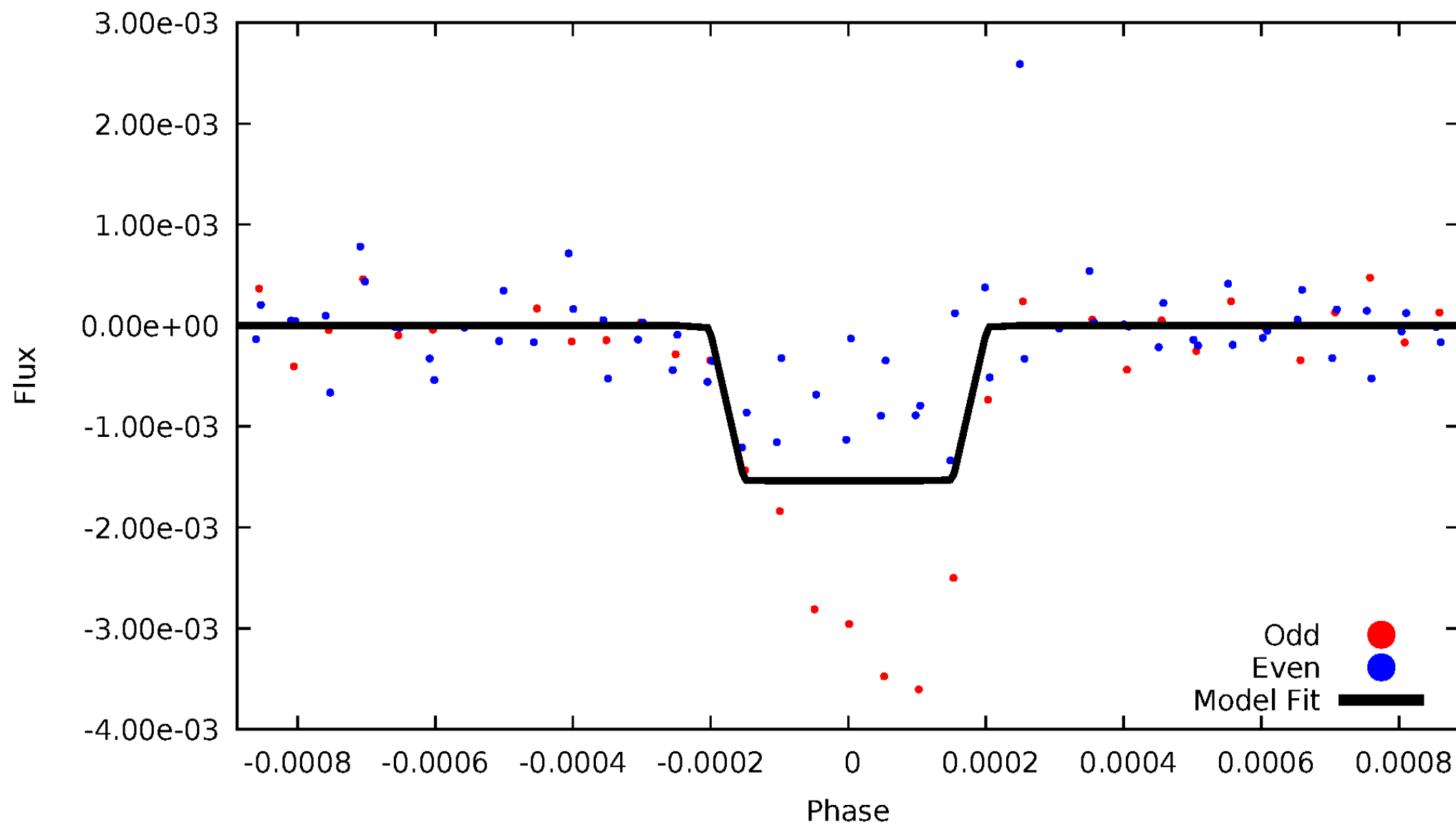
DV Odd/Even

TCE 003228931-07

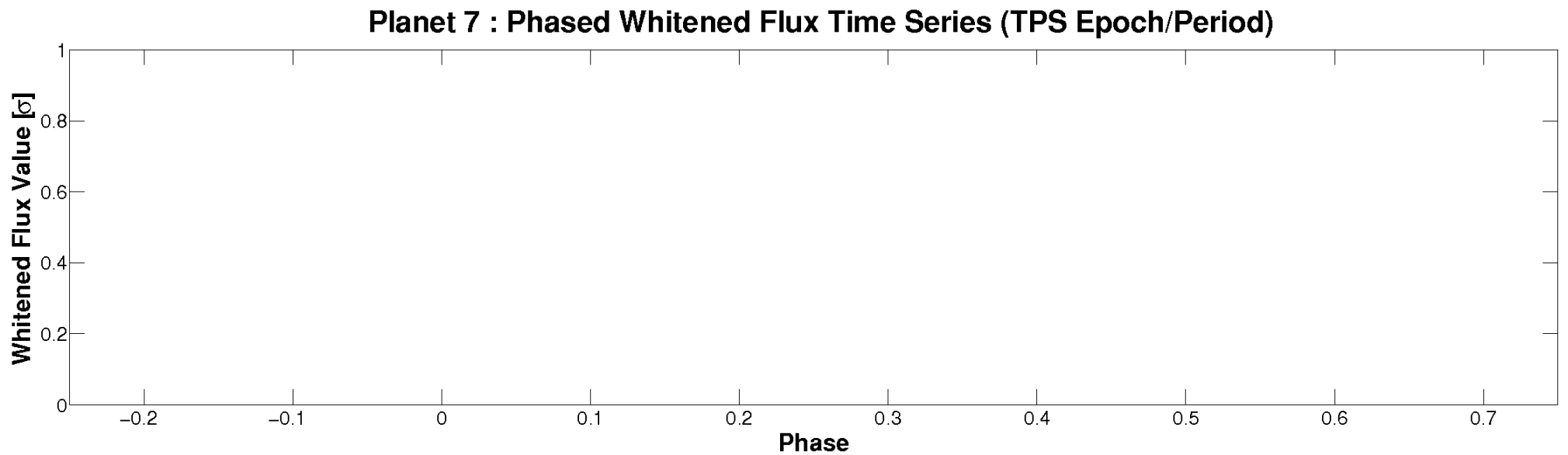
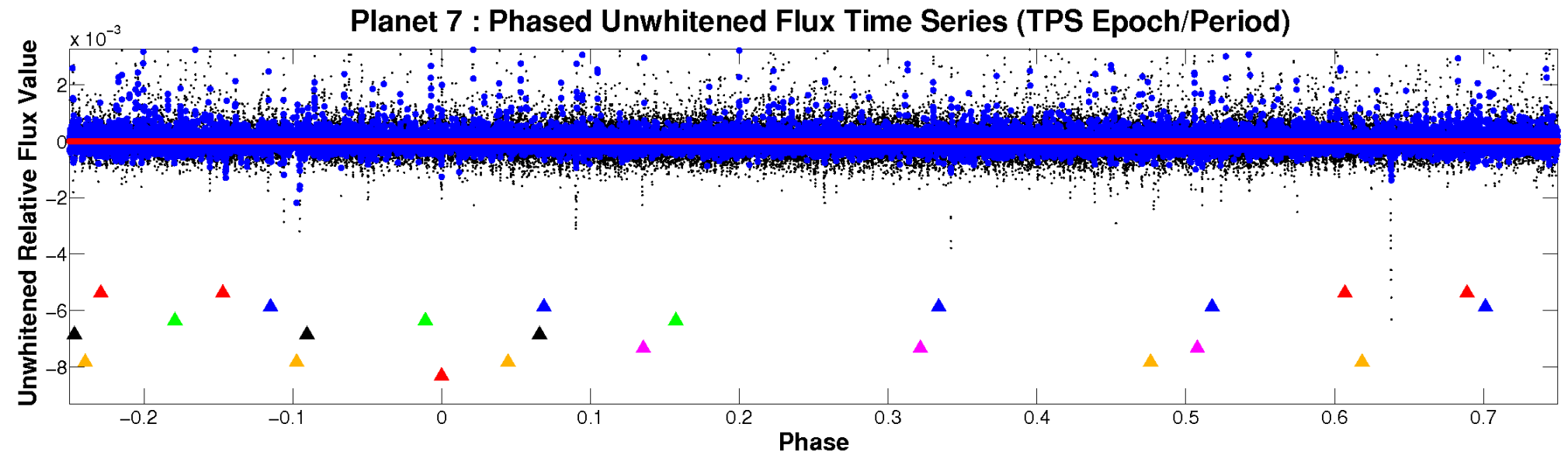


ALT Odd/Even

TCE 003228931-07

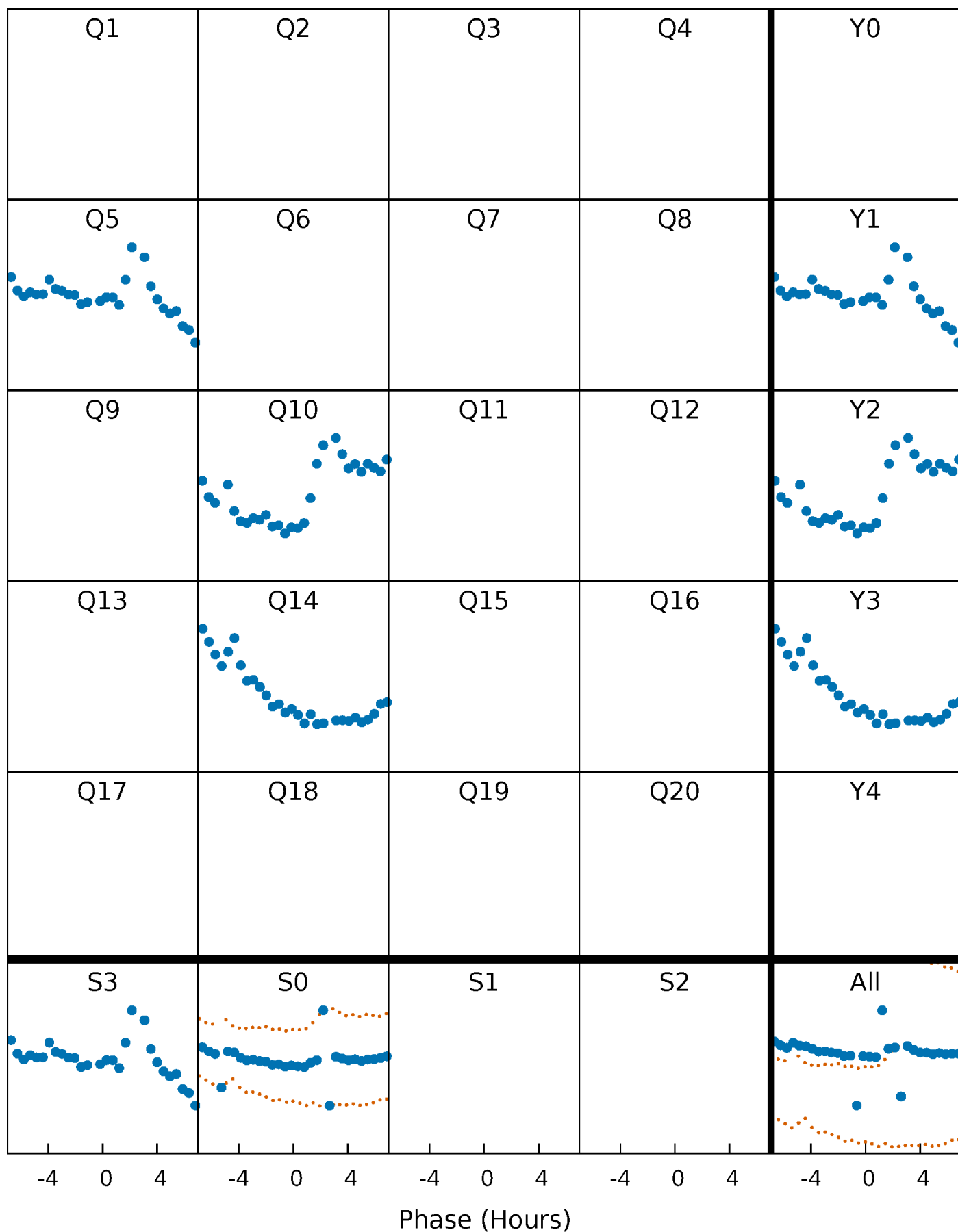


Non-Whitened Vs. Whitened Light Curve



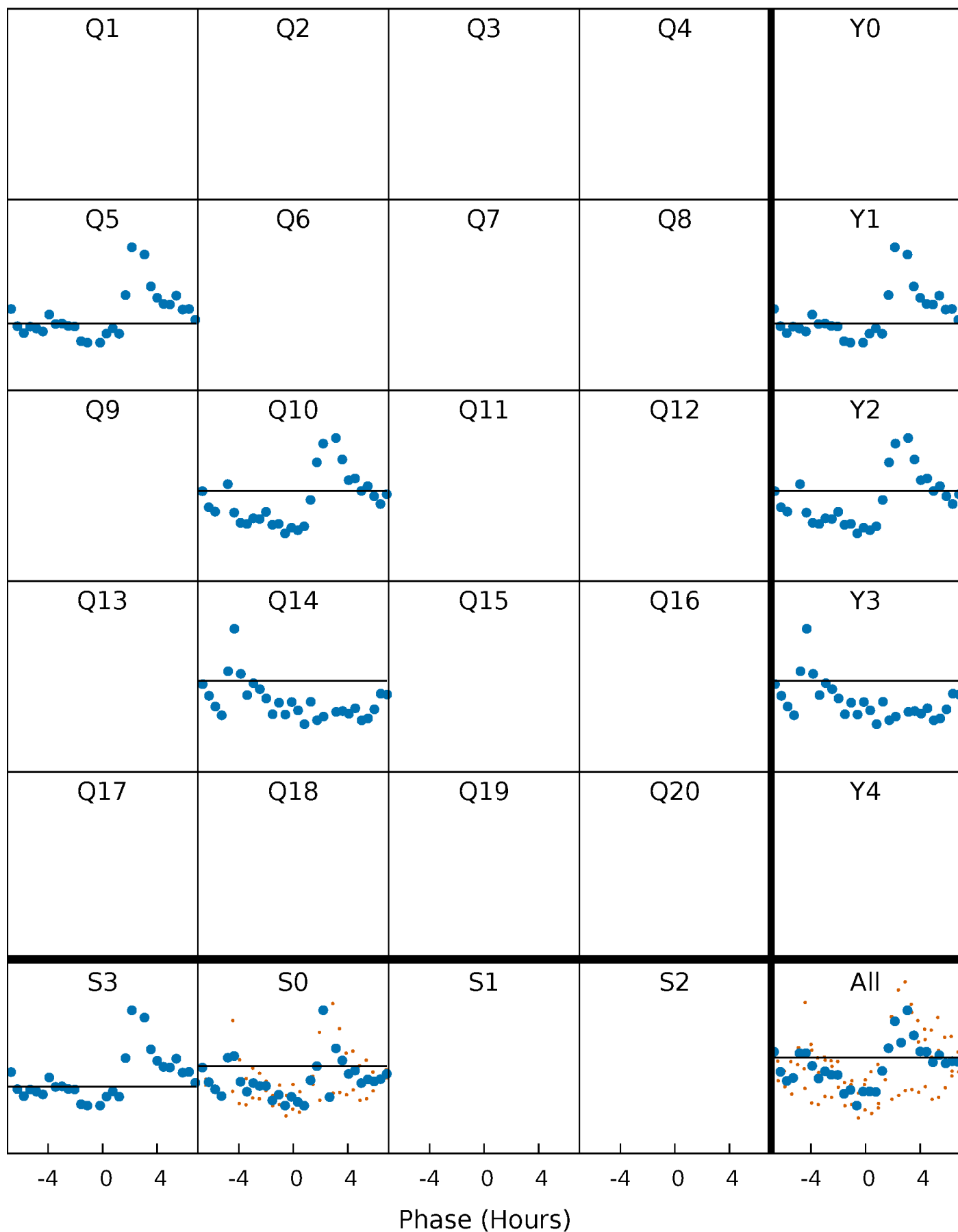
PDC Quarter-Phased Transit Curves

TCE 003228931-07 $P=405.299663$ Days $T_0=521.778367$ (BKJD)



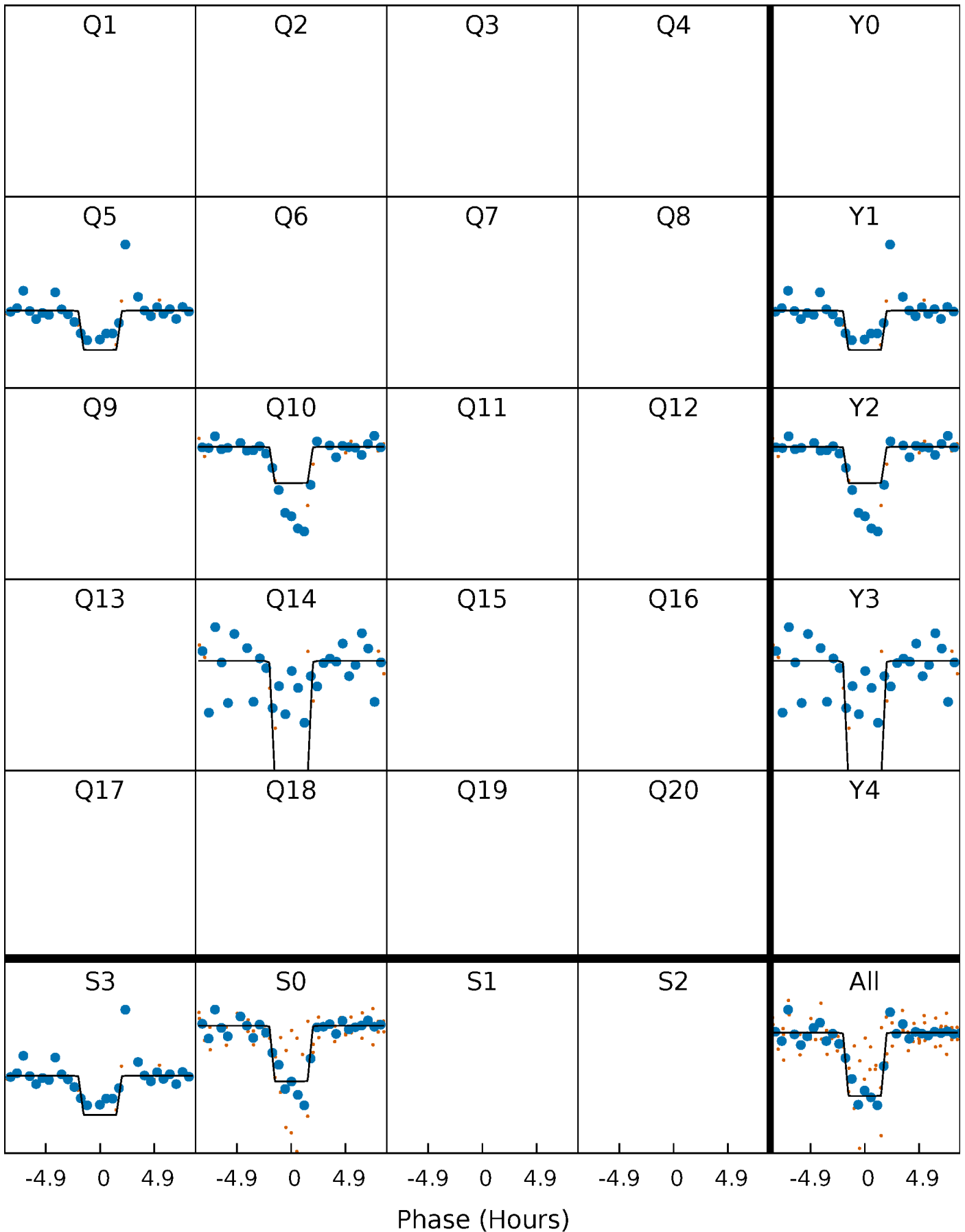
DV Quarter-Phased Transit Curves

TCE 003228931-07 $P=405.299663$ Days $T_0=521.778367$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

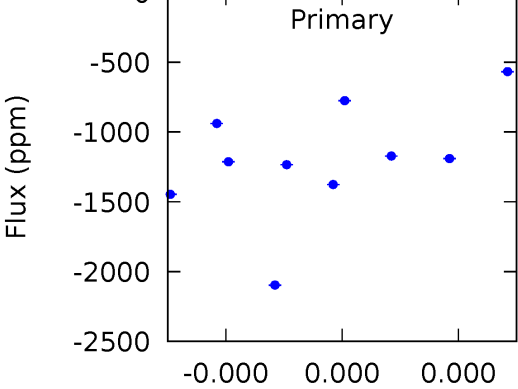
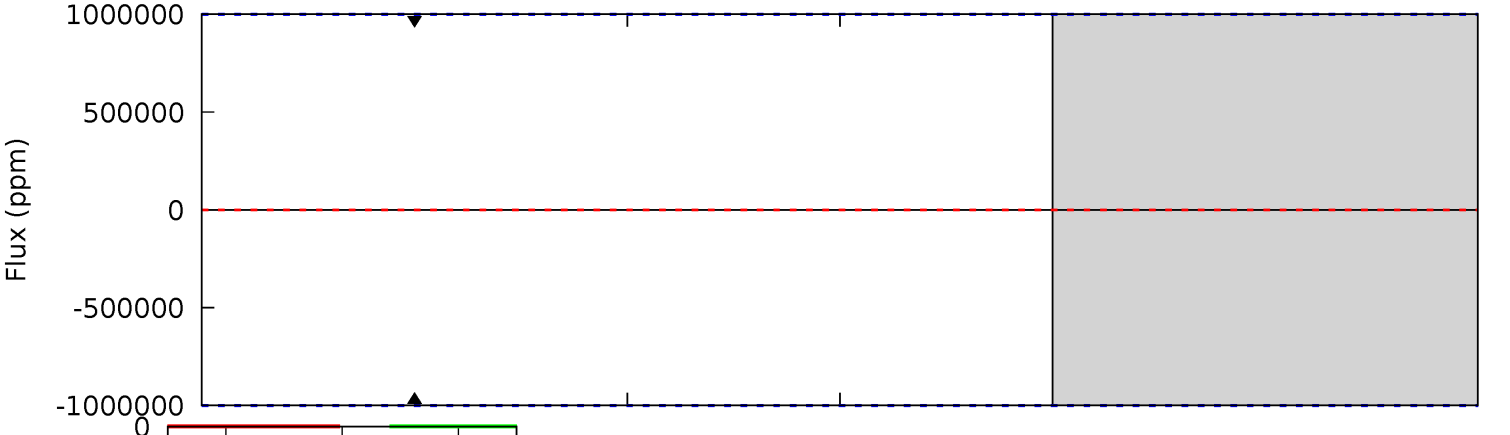
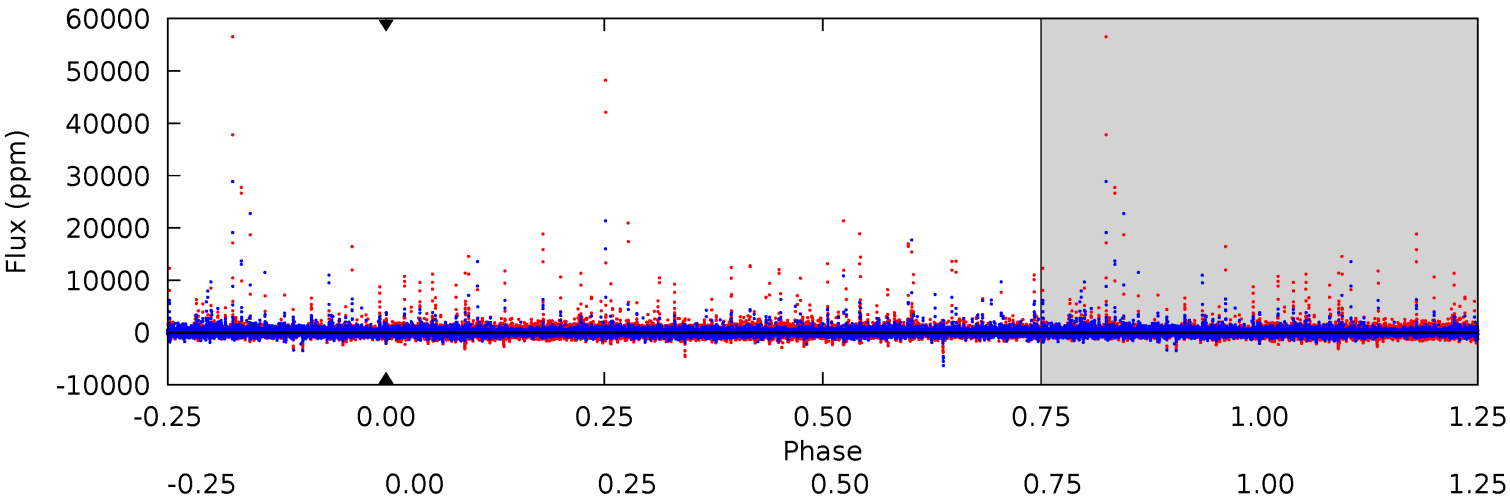
TCE 003228931-07 $P=405.299663$ Days $T_0=521.776092$ (BKJD)



DV Model-Shift Uniqueness Test

003228931-07, P = 405.299663 Days, E = 116.478704 Days

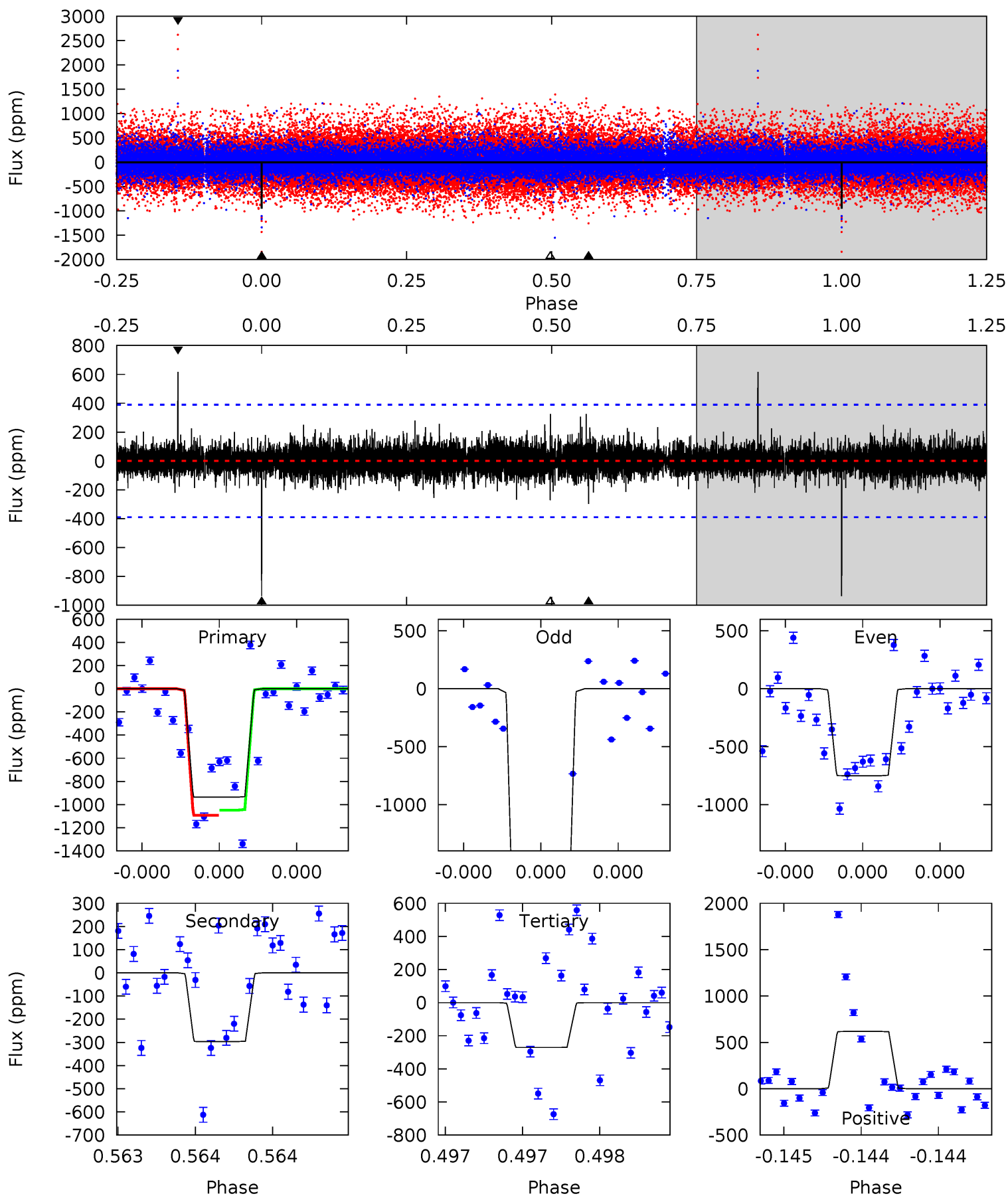
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

003228931-07, P = 405.299663 Days, E = 116.476429 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.4	4.26	3.89	8.86	5.59	3.51	0.80	9.55	4.58	0.37	-4.60	15.0	1.28	0.40	0.33



Stellar Parameters For KIC 003228931

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5280^{+158}_{-142}	$4.612^{+0.042}_{-0.078}$	$-0.480^{+0.300}_{-0.300}$	$0.701^{+0.100}_{-0.054}$	$0.734^{+0.088}_{-0.059}$	$3.001^{+0.635}_{-0.749}$
	+3%/-3%	+1%/-2%	+62%/-62%	+14%/-8%	+12%/-8%	+21%/-25%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 003228931-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$5.90^{+6.40}_{-4.04}$	279^{+11}_{-10}	-3783^{+20567}_{-12662}	$-14694.440^{+2526979.771}_{-2717367.885}$
Alt.	-297 ± 70	$6.83^{+6.35}_{-4.96}$	279^{+11}_{-9}	2989^{+1673}_{-490}	3344^{+41384}_{-2504}

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

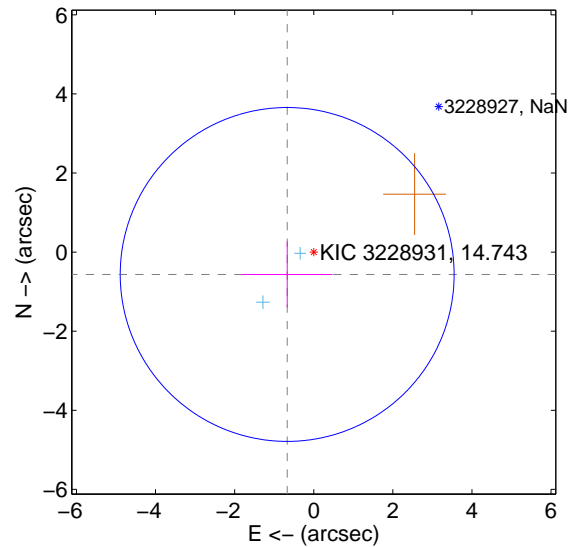
Supplemental centroid analysis for 003228931-07. Kepler magnitude: 14.74. Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

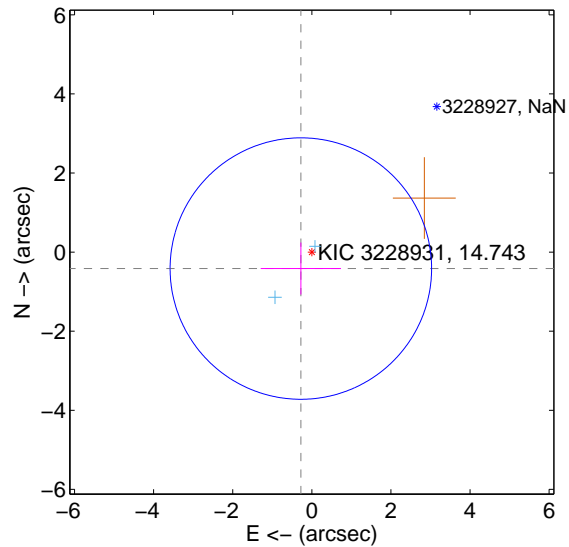
The direct PRF centroid is offset from the target star catalog position by about 0.46 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.878 ± 1.407	0.62	0.672 ± 1.143	-0.565 ± 0.833
PRF-fit source offset from KIC position	0.500 ± 1.102	0.45	0.278 ± 1.015	-0.416 ± 0.657
photometric centroid source offset	0.65 ± 0.81	0.81	-0.60 ± 0.78	-0.26 ± 0.95

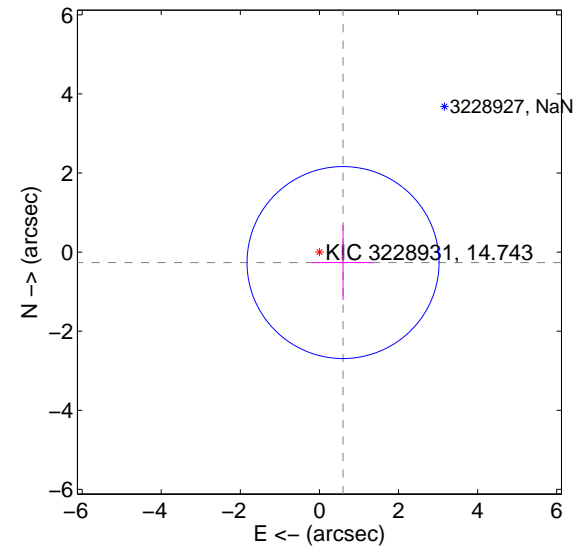
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

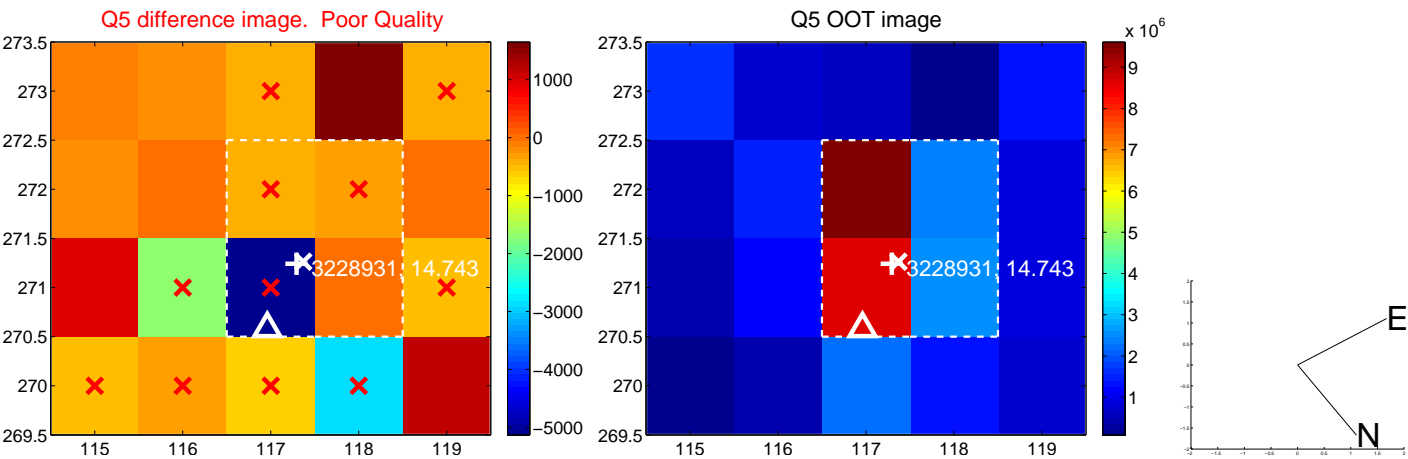


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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



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

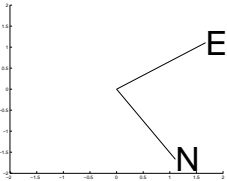
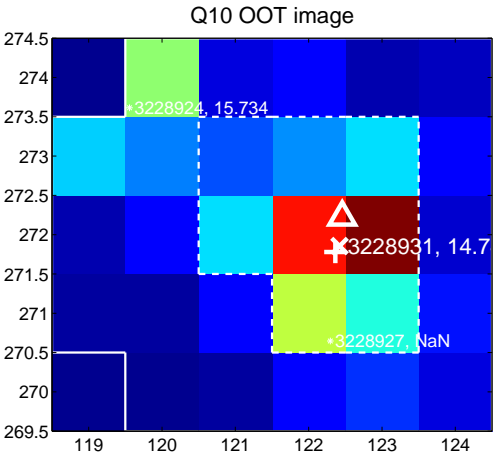
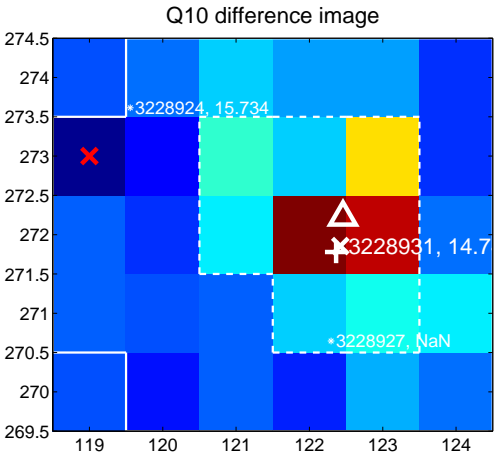


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

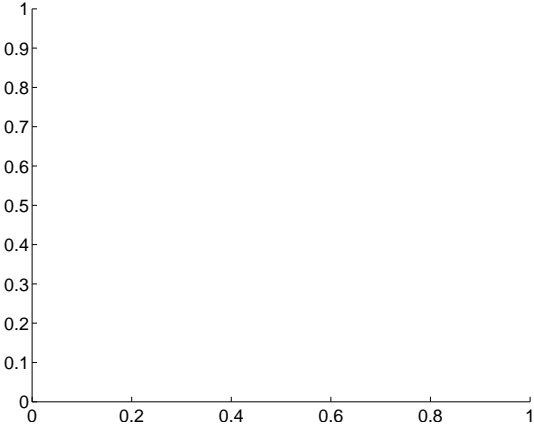
Q9 no difference image



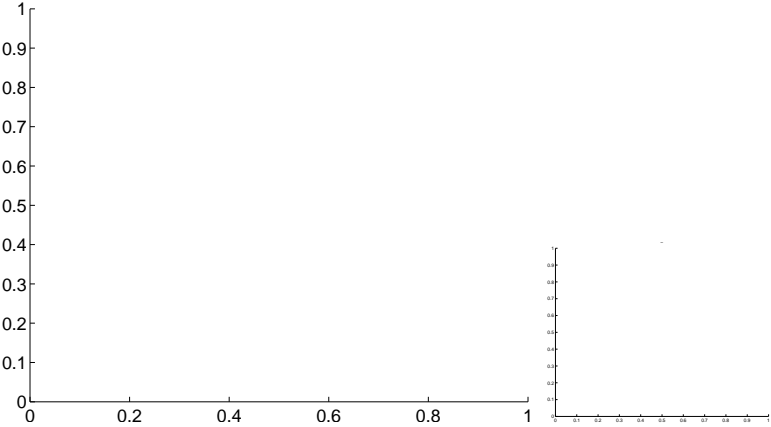
Q9 no OOT image



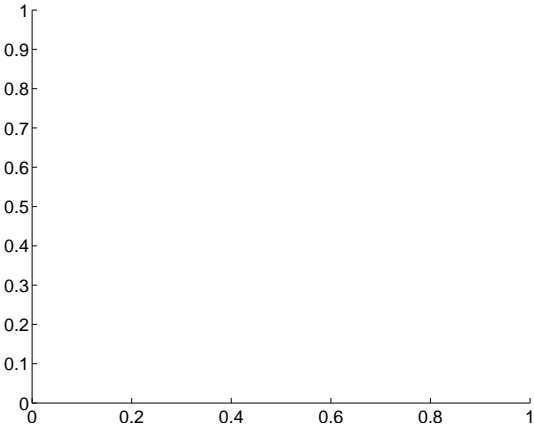
Q11 no difference image



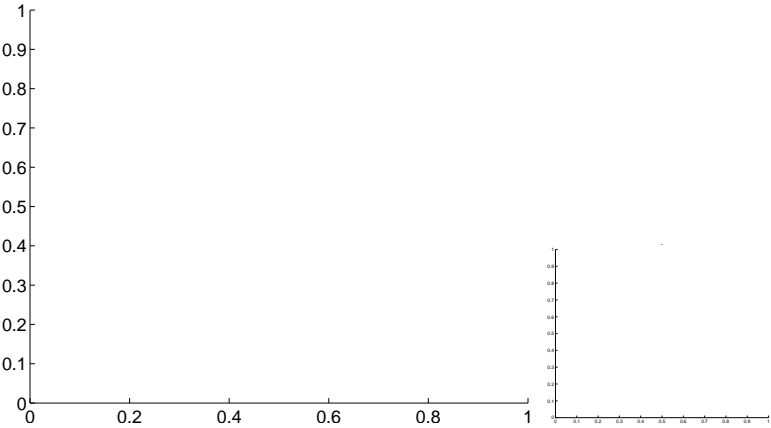
Q11 no OOT image



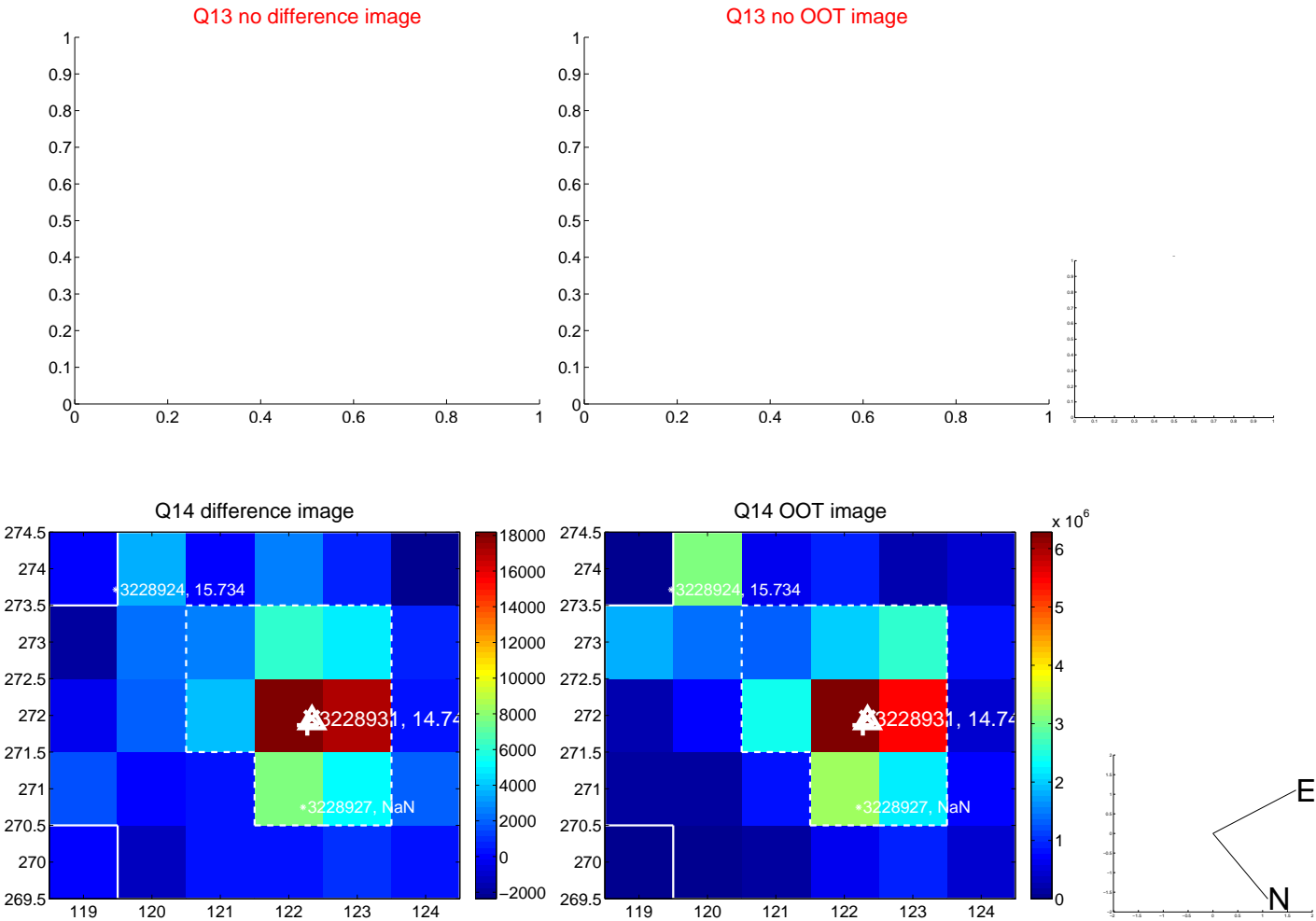
Q12 no difference image



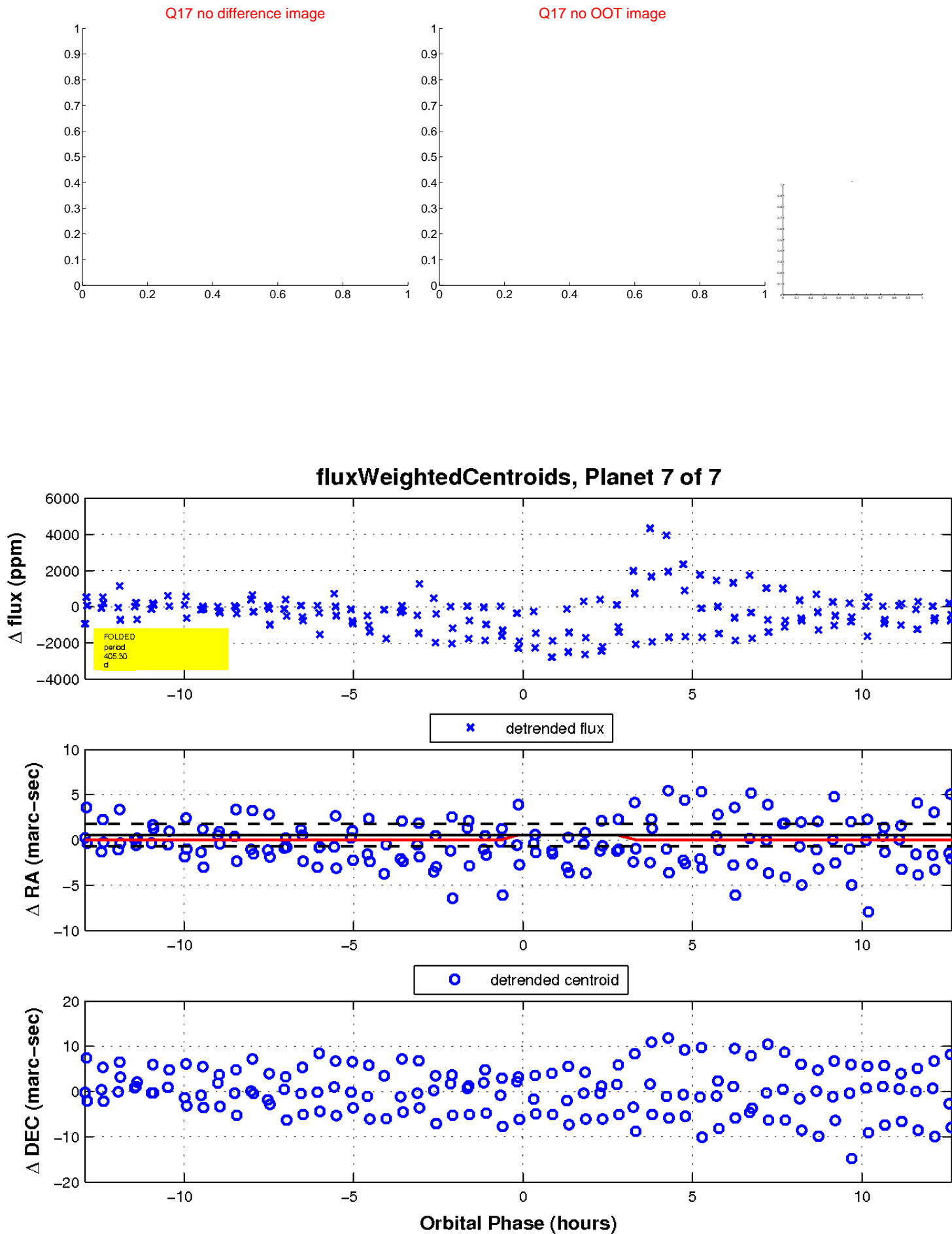
Q12 no OOT image



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



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



UKIRT Image

Declination

