

KIC 003222610

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})
003222610-02	OBS	No	449.457666	185.880463	810.2	6.620	8.2	5.8	0.67	4260	2.00	0.13
003222610-03	OBS	No	534.289527	217.800770	1681.8	4.662	9.7	8.3	0.67	4260	3.05	0.10
003222610-04	OBS	No	592.868061	154.902856	1224.0	3.600	9.7	7.6	0.67	4260	2.51	0.09
003222610-05	OBS	No	590.839150	330.598610	1172.5	16.069	12.5	6.9	0.67	4260	2.38	0.09
003222610-06	OBS	No	238.776505	160.222585	640.1	3.821	10.3	4.5	0.67	4260	2.05	0.31
003222610-07	OBS	No	658.015121	212.662877	620.9	6.000	9.0	-1.0	0.67	4260	1.59	0.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003222610-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV
003222610-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003222610-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
003222610-05	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003222610-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003222610-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

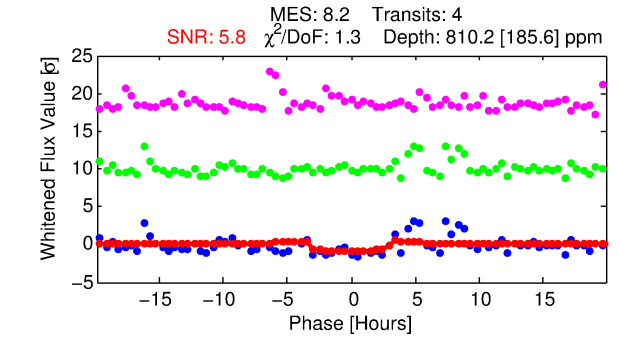
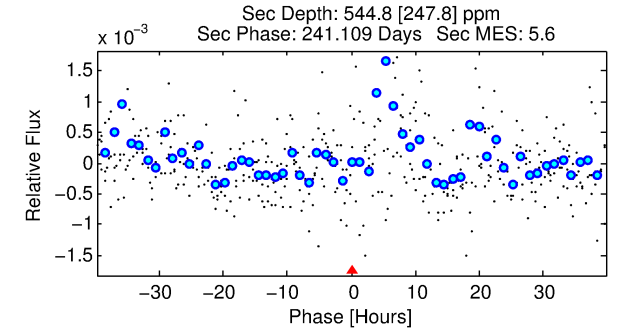
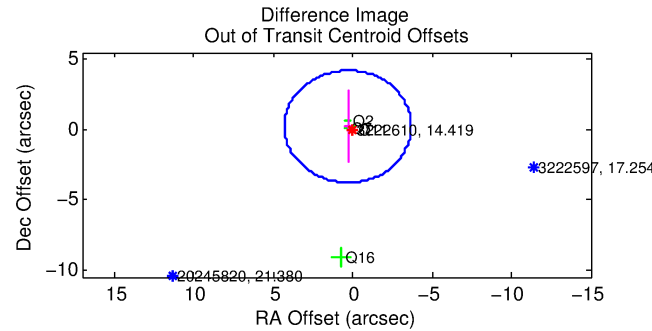
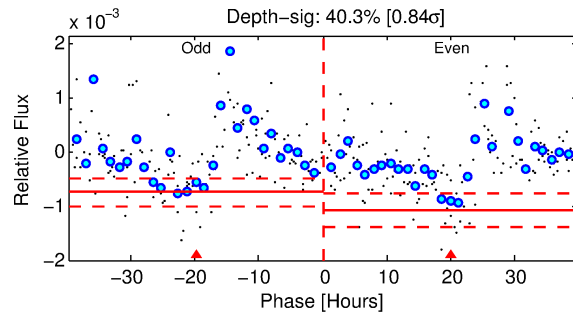
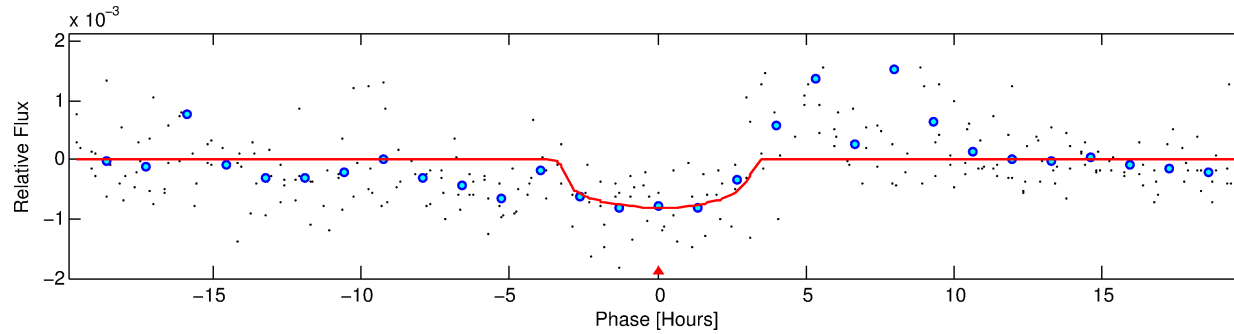
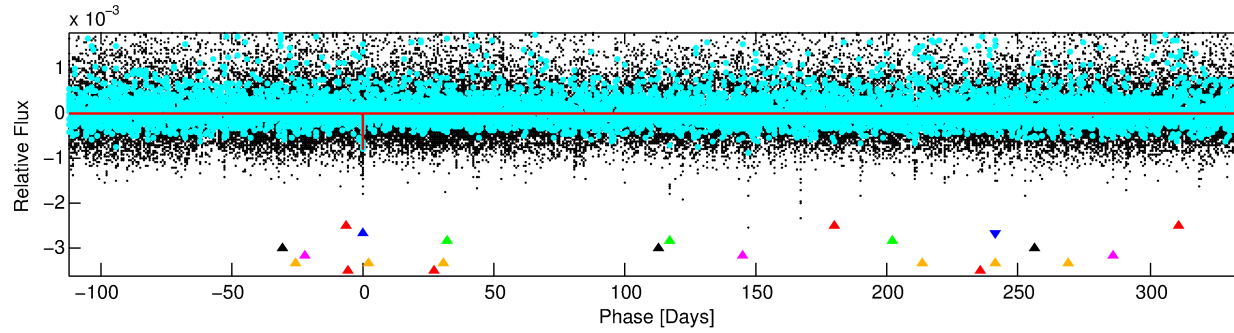
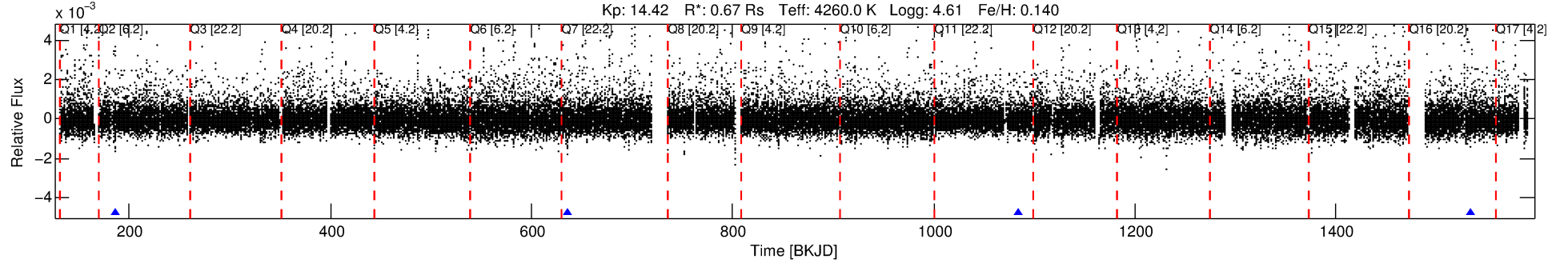
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003222610-02

No Significant Match Found

DV One-Page Summary

KIC: 3222610 Candidate: 2 of 7 Period: 449.458 d



DV Fit Results:

Period = 449.45767 [0.00760] d
Epoch = 185.8805 [0.0146] BKJD
Rp/R* = 0.0273 [0.0297]
a/R* = 409.79 [1362.55]
b = 0.66 [2.93]
Seff = 0.13 [0.02]
Teq = 154 [6] K
Rp = 2.00 [2.18] Re
a = 1.0022 [0.0694] AU
Ag = 75117.02 [167049.24] [0.45 σ]
Teffp = 3936 [2190] K [1.73 σ]

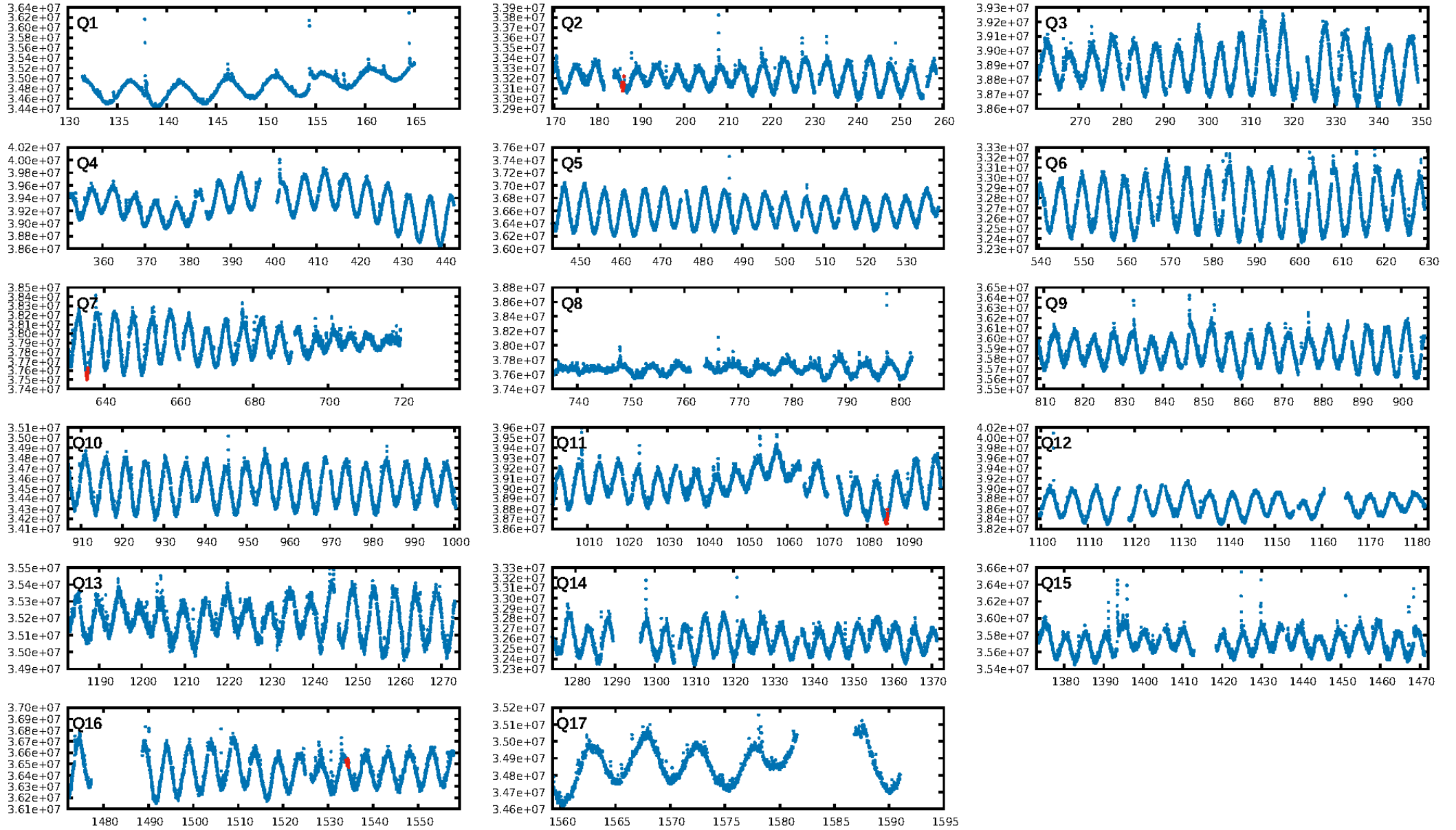
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [661.46 σ]
LongPeriod-sig: 100.0% [251.44 σ]
ModelChiSquare2-sig: 7.7%
ModelChiSquareGof-sig: 95.4%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.5621
Centroid-sig: 7.9%
Centroid-so: 1.222 arcsec [1.27 σ]
OotOffset-rm: 0.364 arcsec [0.27 σ]
KicOffset-rm: 0.702 arcsec [0.36 σ]
OotOffset-st: 1/2/1/0 [4]
KicOffset-st: 1/2/1/0 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 1.00 [4/4]

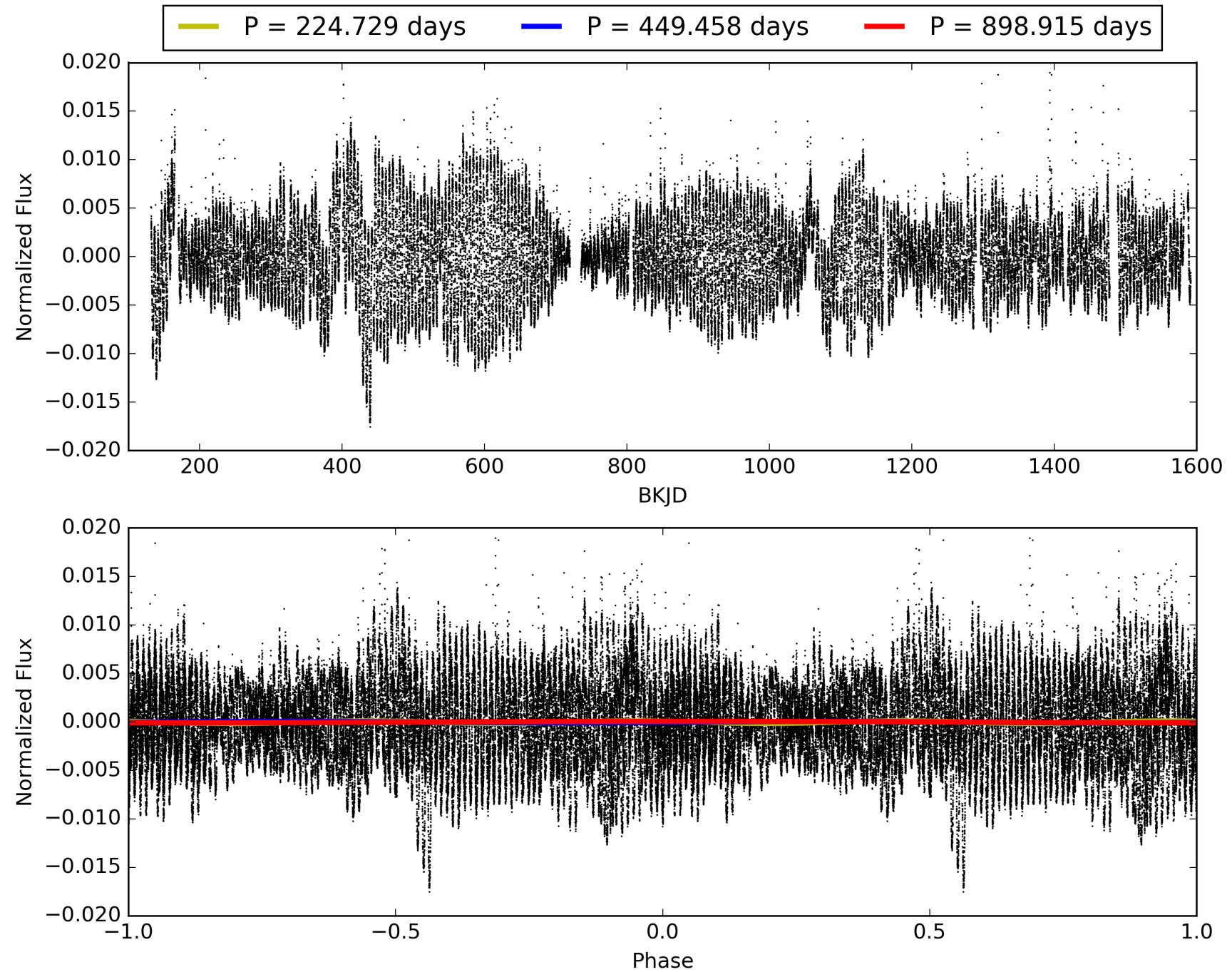
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:26:18 Z

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

TCE 003222610-02, PDC Light Curves

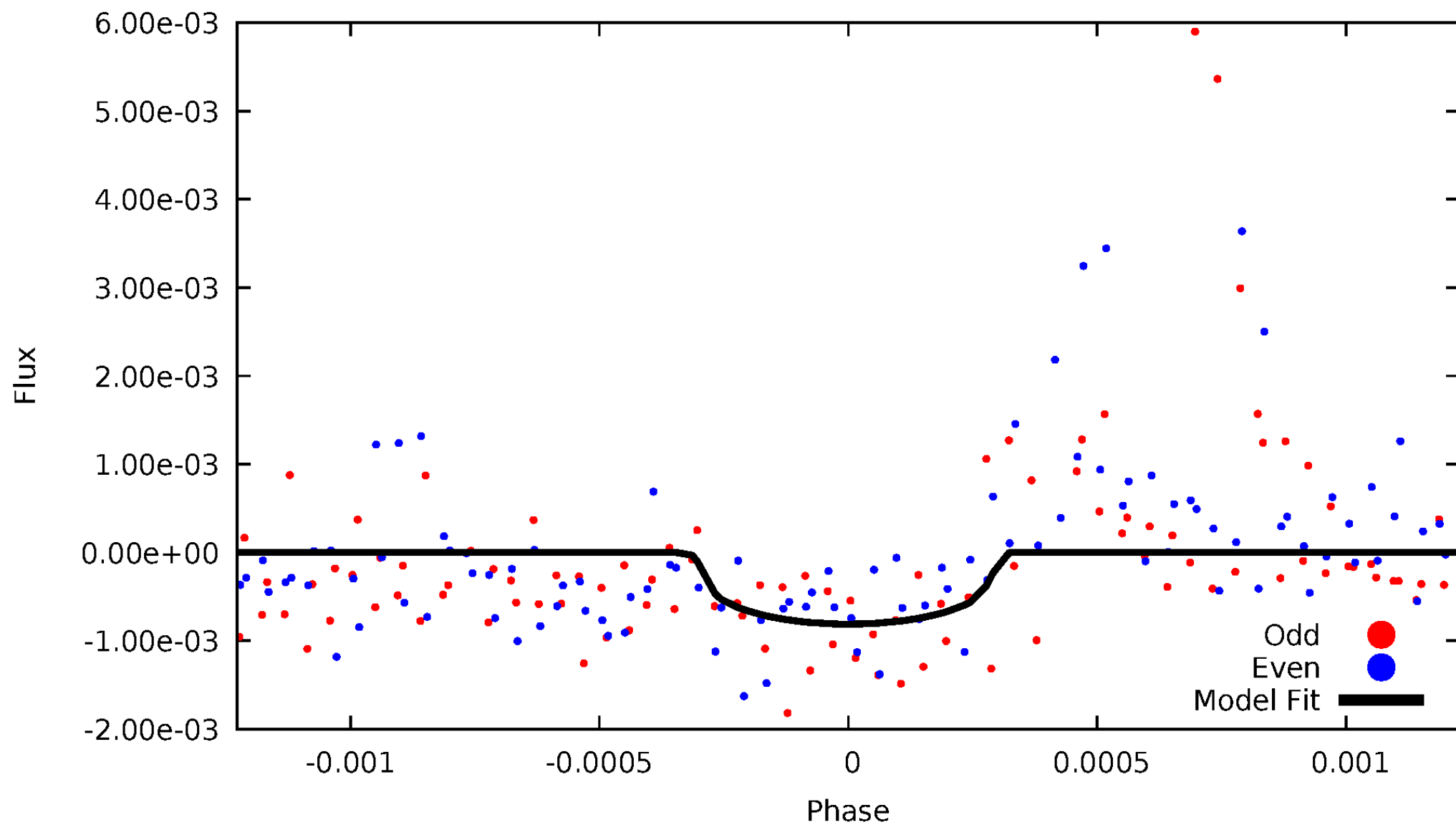


TCE 003222610-02



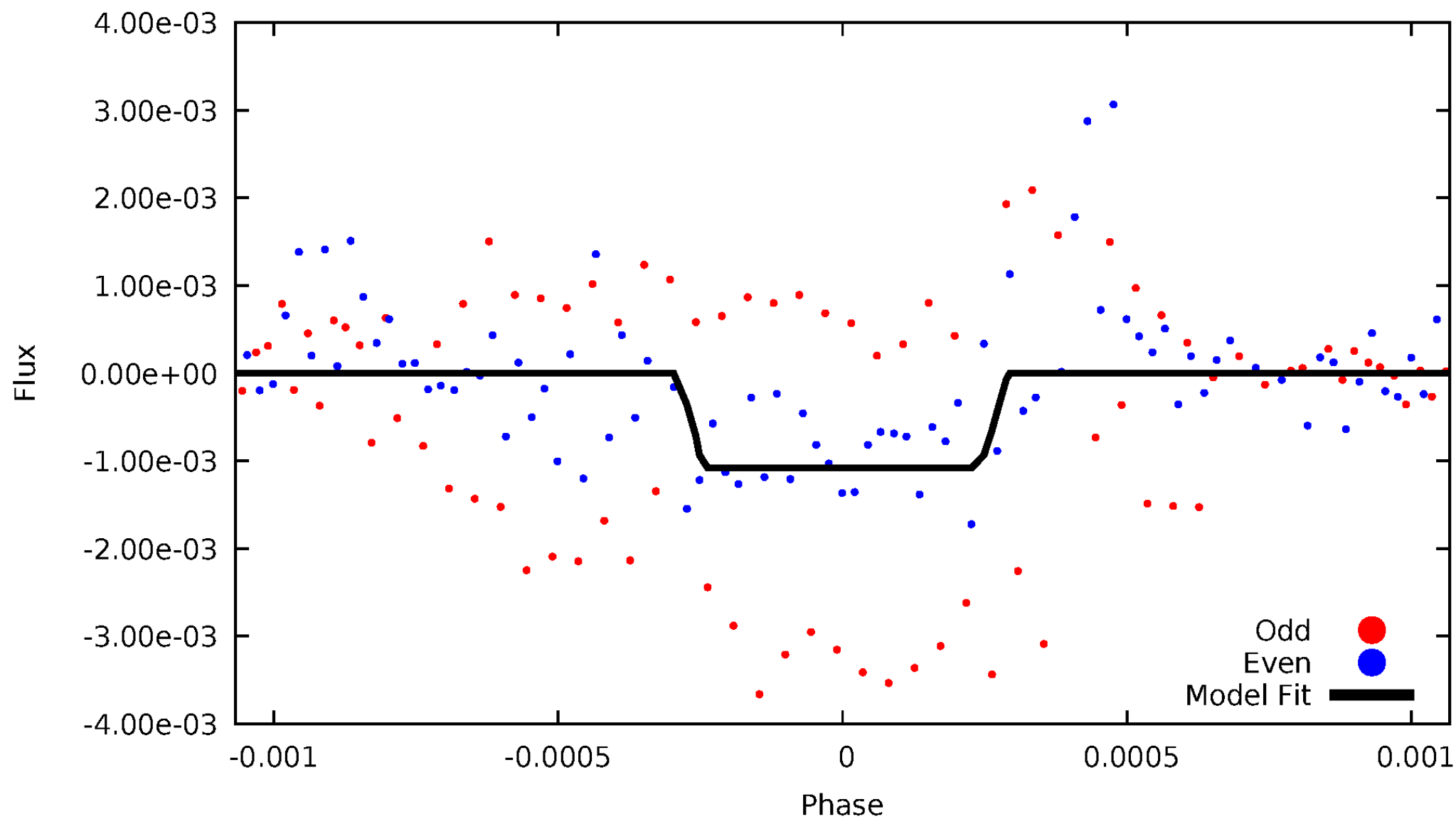
DV Odd/Even

TCE 003222610-02



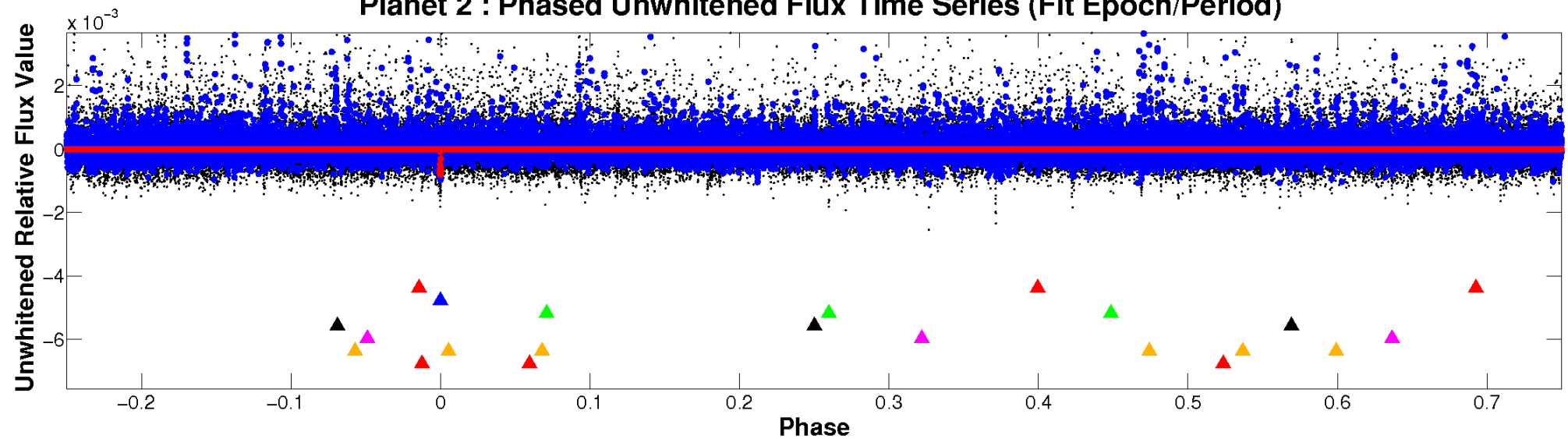
ALT Odd/Even

TCE 003222610-02

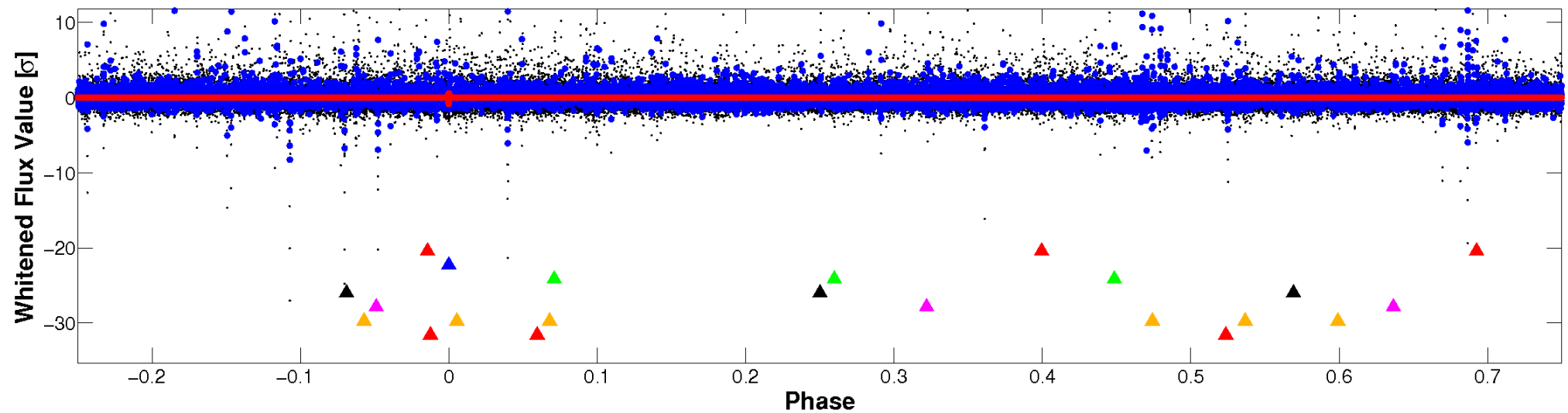


Non-Whitened Vs. Whitened Light Curve

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

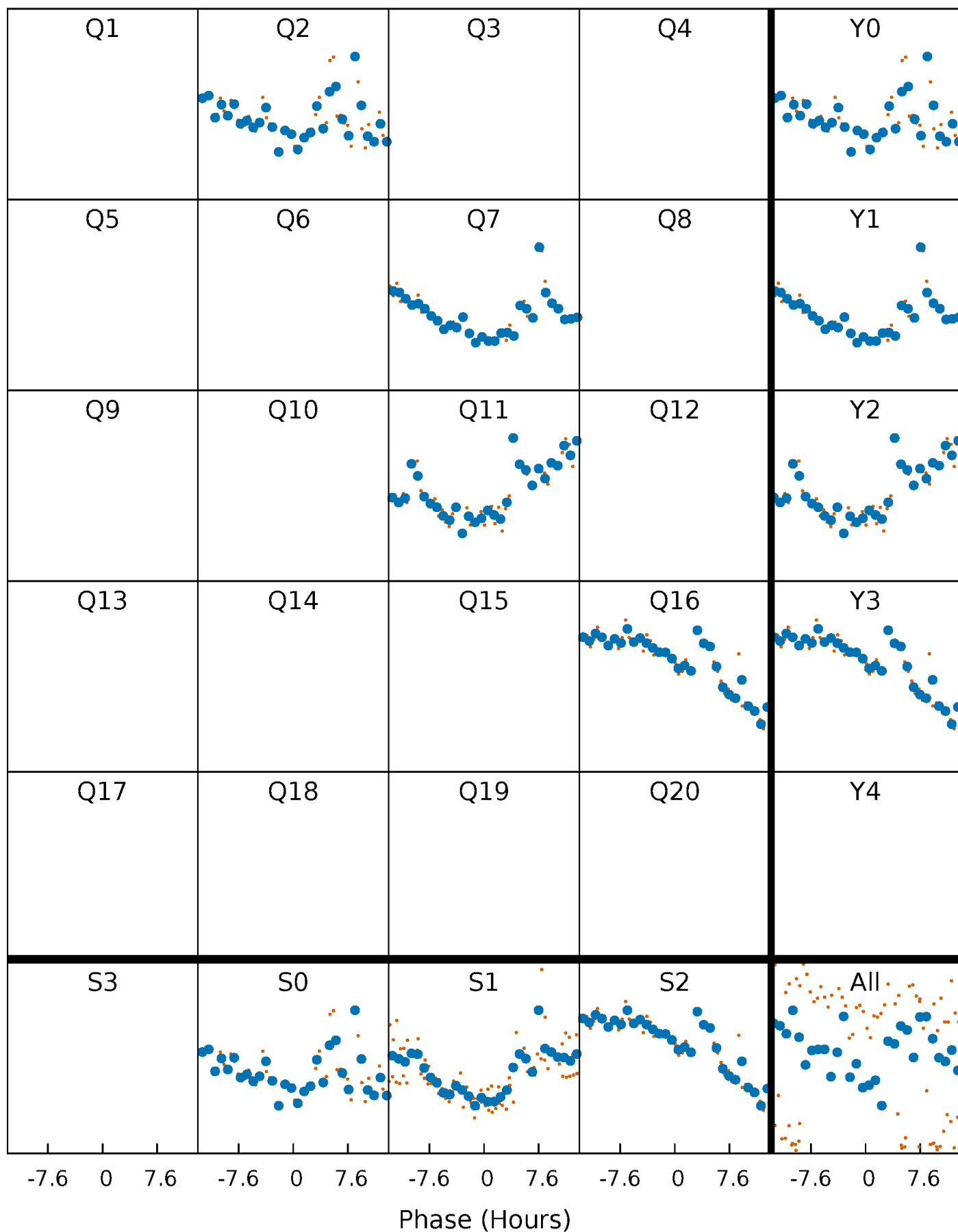


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



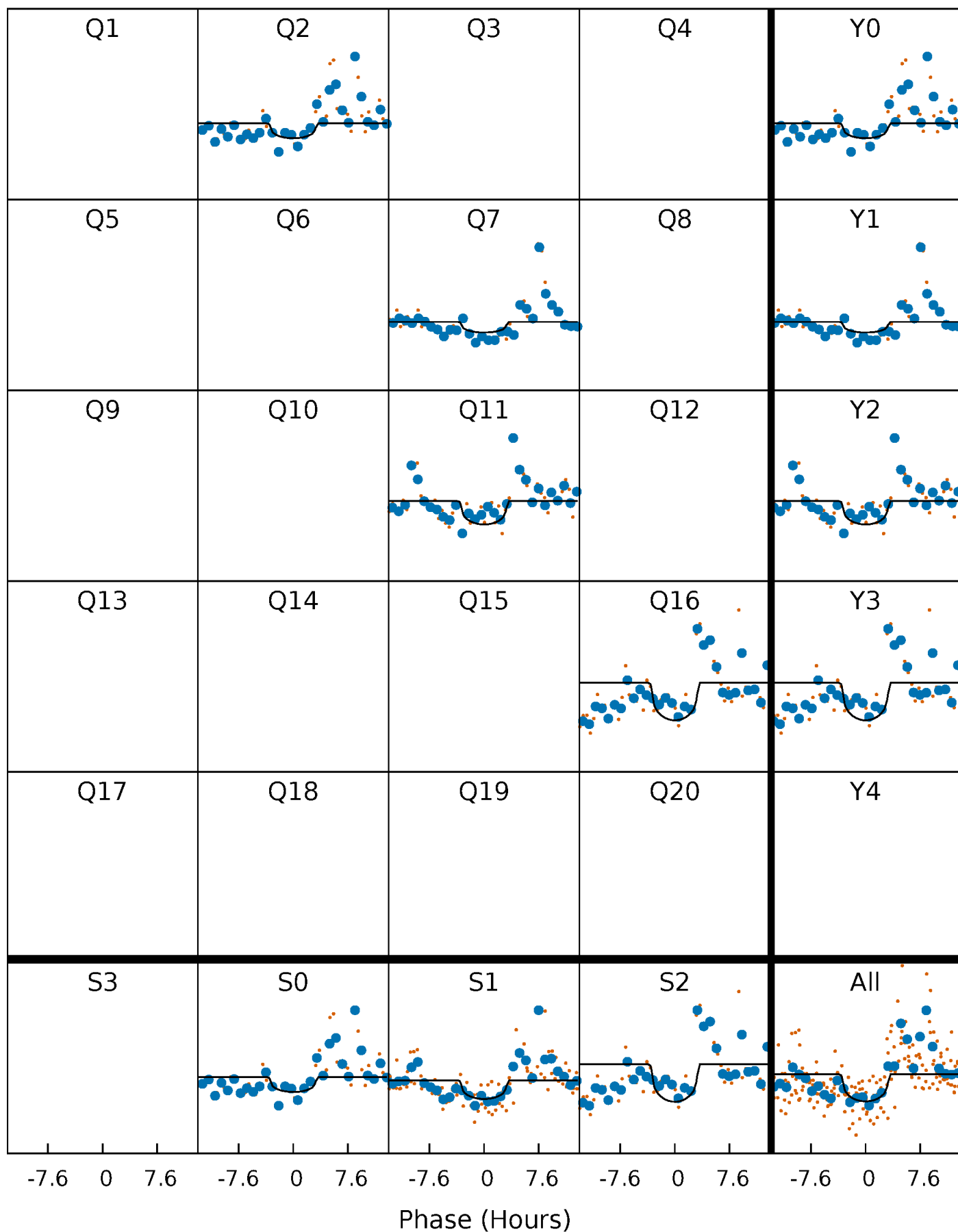
PDC Quarter-Phased Transit Curves

TCE 003222610-02 P=449.457666 Days $T_0=185.880463$ (BKJD)



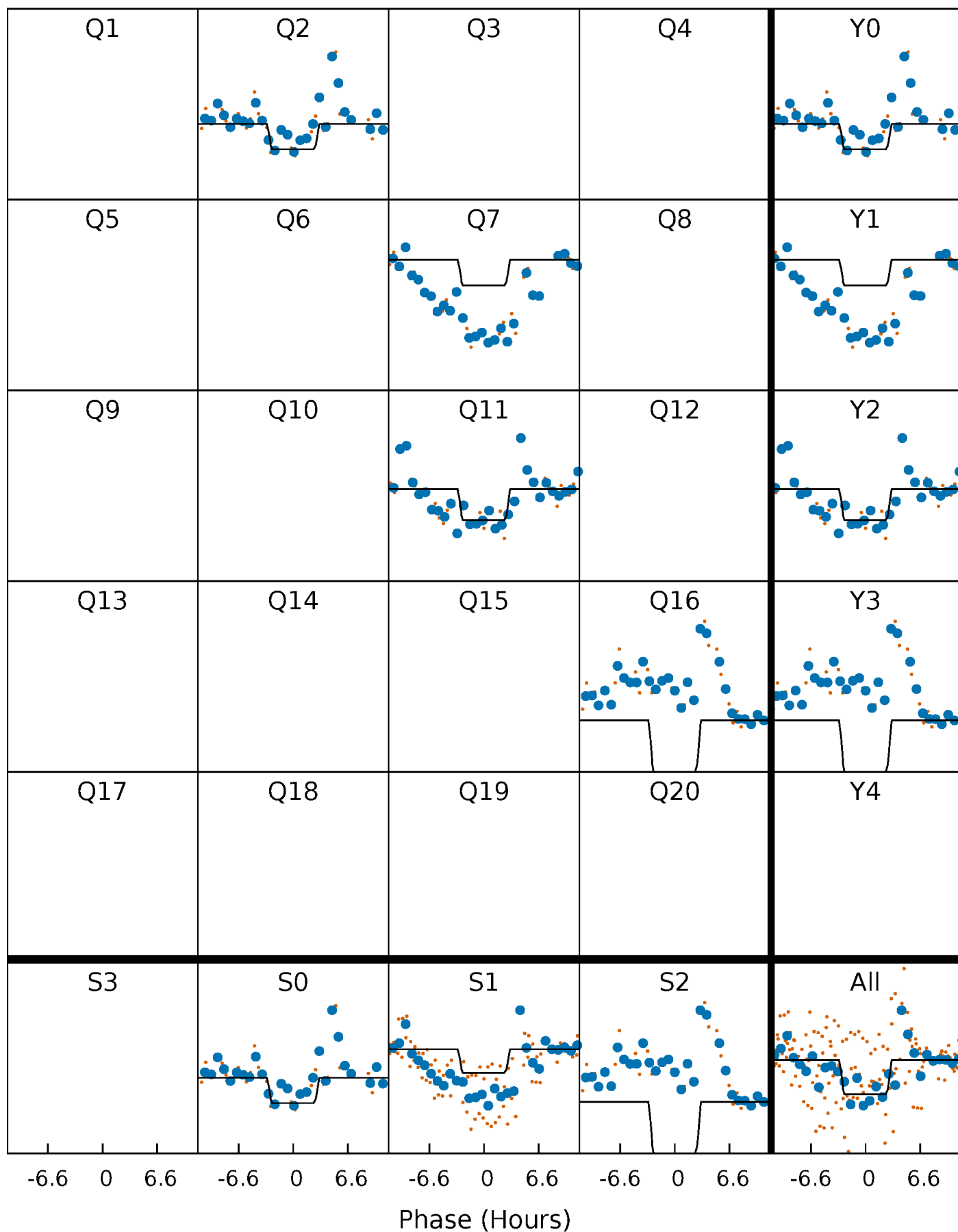
DV Quarter-Phased Transit Curves

TCE 003222610-02 $P=449.457666$ Days $T_0=185.880463$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

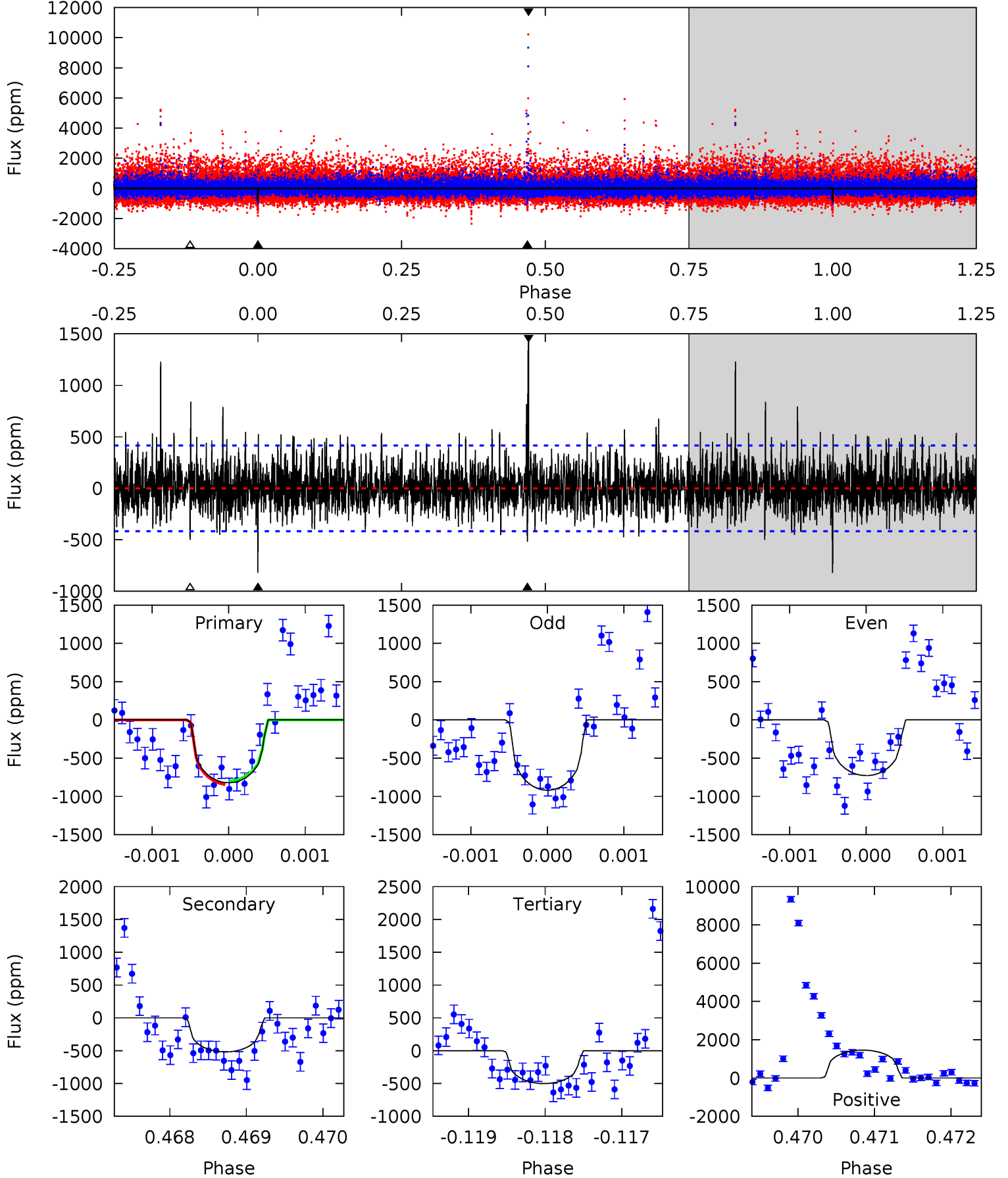
TCE 003222610-02 P=449.449775 Days $T_0=185.899271$ (BKJD)



DV Model-Shift Uniqueness Test

003222610-02, P = 449.457666 Days, E = 185.880463 Days

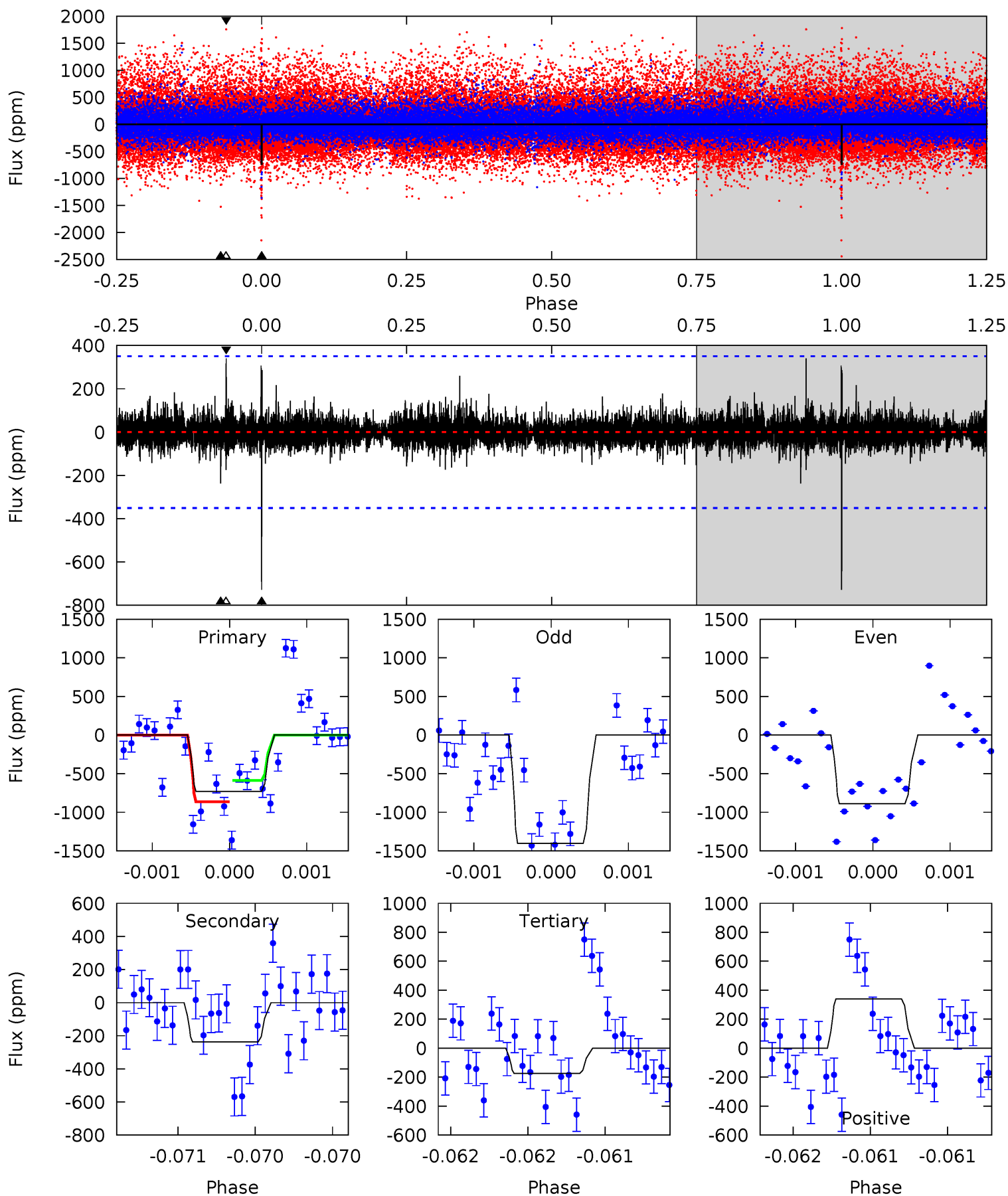
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	6.90	6.67	19.3	5.53	3.42	2.20	4.25	-8.43	0.24	-12.4	1.09	1.13	0.64	0.31



Alt Model-Shift Uniqueness Test

003222610-02, P = 449.449775 Days, E = 185.899271 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	3.75	2.77	5.38	5.56	3.46	0.67	8.77	6.16	0.98	-1.62	4.88	1.22	0.32	2.19



Stellar Parameters For KIC 003222610

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4260^{+142}_{-142}	$4.607^{+0.052}_{-0.017}$	$0.140^{+0.200}_{-0.300}$	$0.671^{+0.032}_{-0.057}$	$0.664^{+0.052}_{-0.052}$	$3.101^{+0.665}_{-0.248}$
	+3%/-3%	+1%/-0%	+143%/-214%	+5%/-8%	+8%/-8%	+21%/-8%
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 003222610-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-519 ± 75	$2.37^{+2.11}_{-1.55}$	213^{+8}_{-7}	3751^{+1987}_{-677}	$52056^{+367993}_{-37304}$
Alt.	-237 ± 63	$2.81^{+2.00}_{-1.79}$	214^{+7}_{-8}	3138^{+1275}_{-446}	$15989^{+109798}_{-10676}$

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 $A_{obs} \gg 1.0$

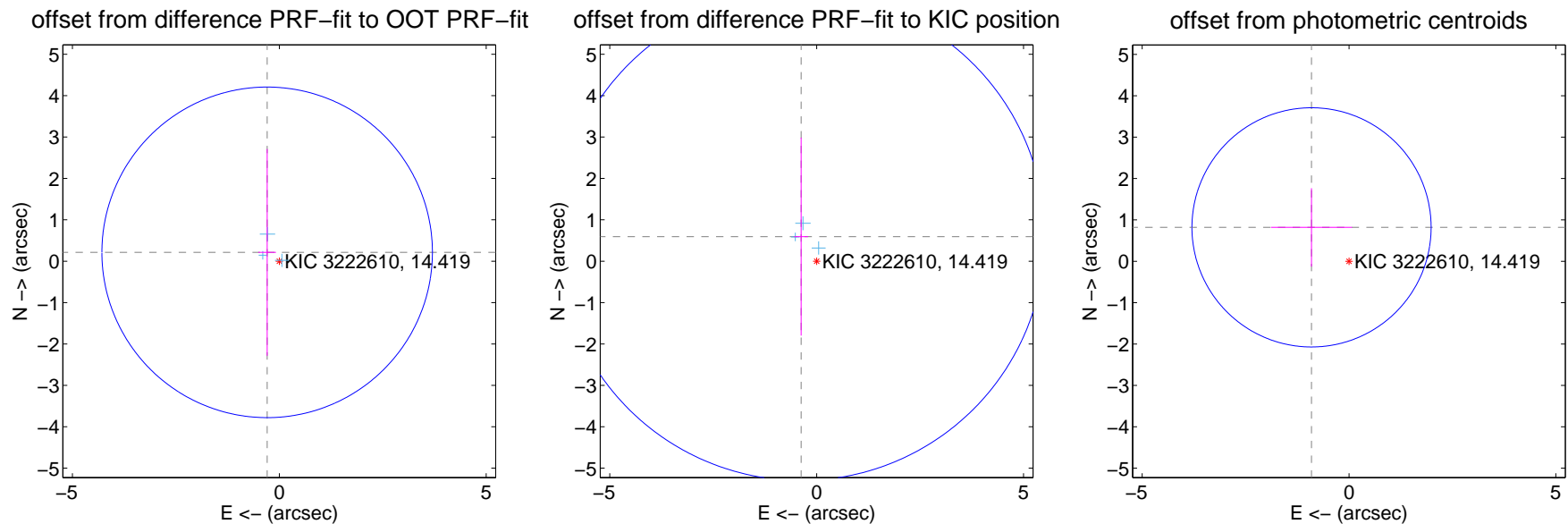
DV Centroid Data

Supplemental centroid analysis for 003222610-02. Kepler magnitude: 14.42. Transit SNR 5.75

There are 3 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.364 ± 1.331	0.27	0.294 ± 0.214	0.214 ± 2.498
PRF-fit source offset from KIC position	0.702 ± 1.964	0.36	0.375 ± 0.166	0.593 ± 2.392
photometric centroid source offset	1.22 ± 0.96	1.27	0.91 ± 0.98	0.82 ± 0.95



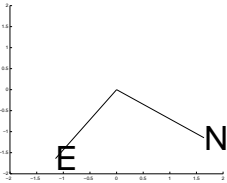
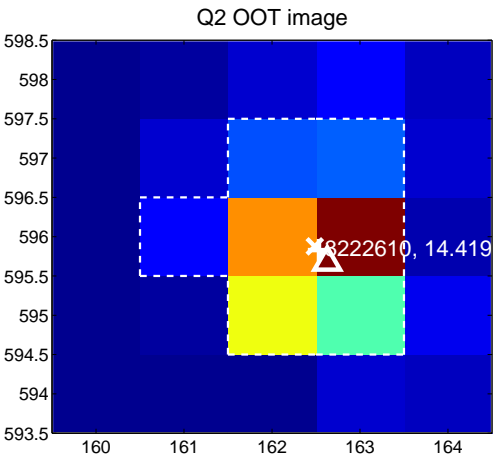
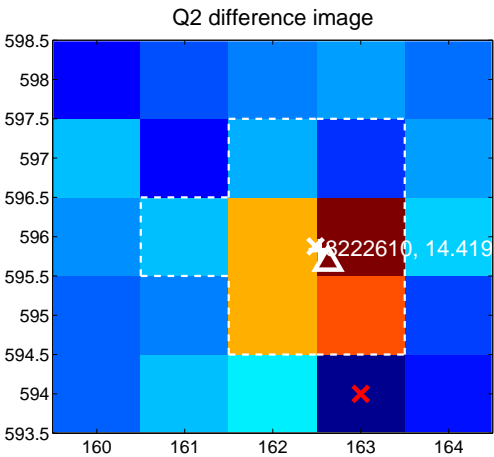
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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

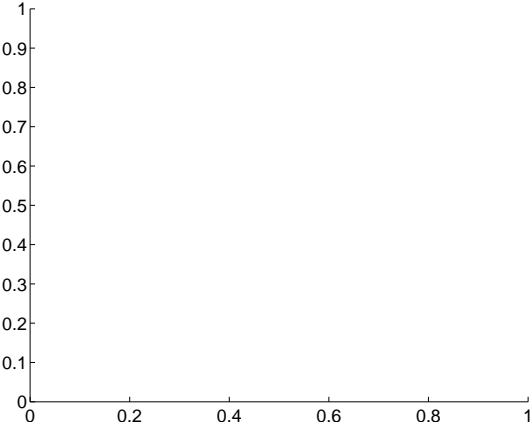
Q1 no difference image



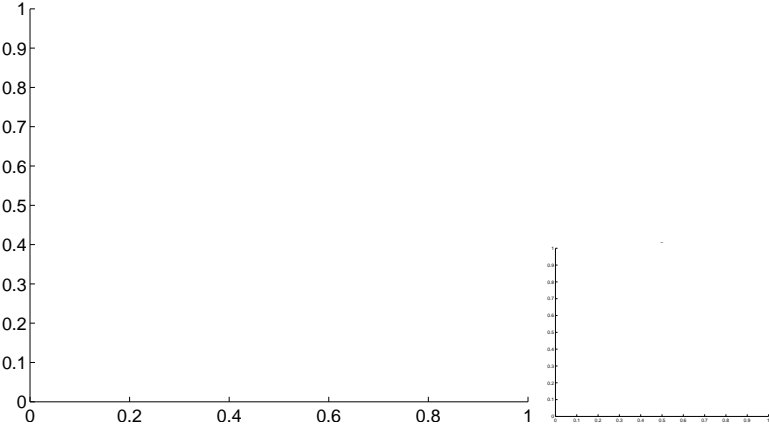
Q1 no OOT image



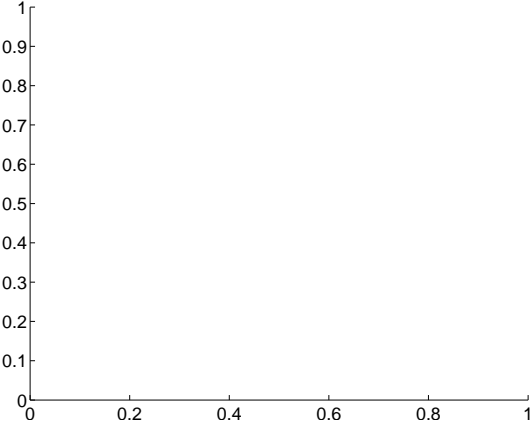
Q3 no difference image



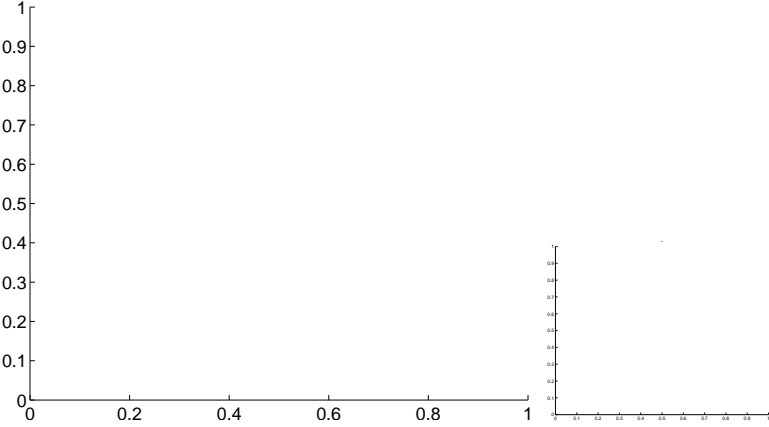
Q3 no OOT image



Q4 no difference image



Q4 no OOT image



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

Q5 no difference image



Q5 no OOT image



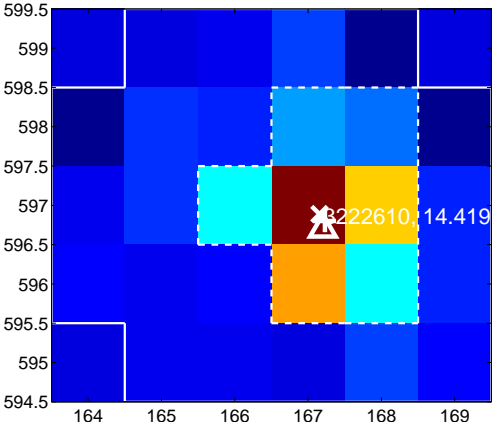
Q6 no difference image



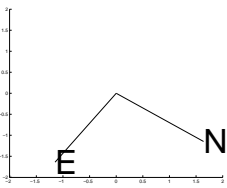
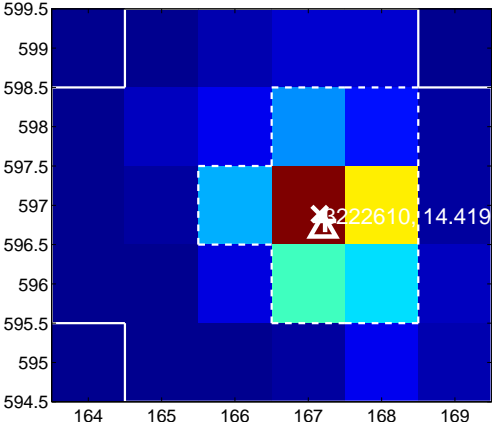
Q6 no OOT image



Q7 difference image



Q7 OOT image



Q8 no difference image



Q8 no OOT image



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

Q9 no difference image



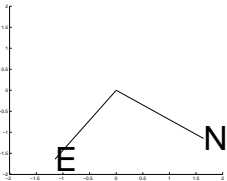
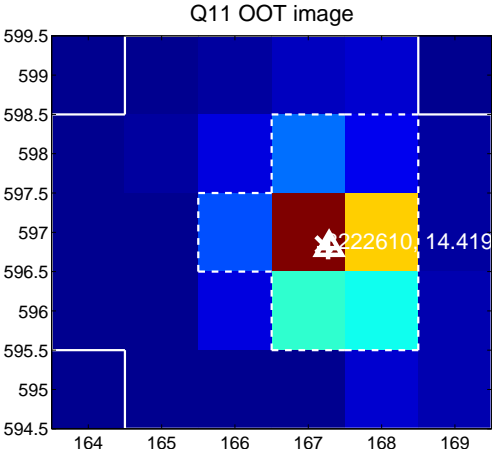
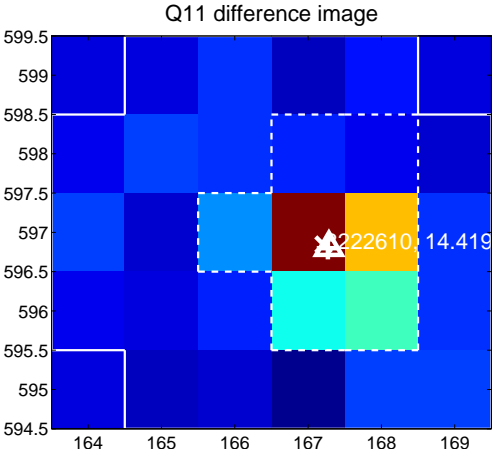
Q9 no OOT image



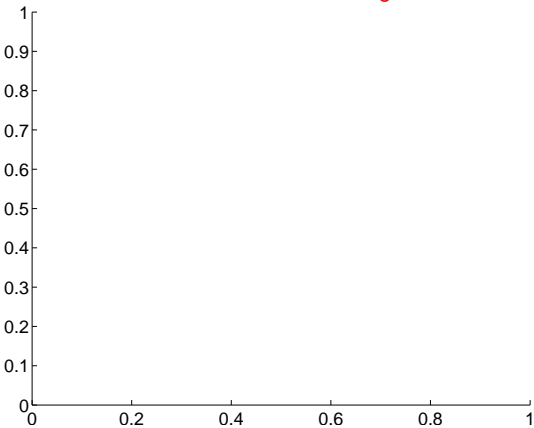
Q10 no difference image



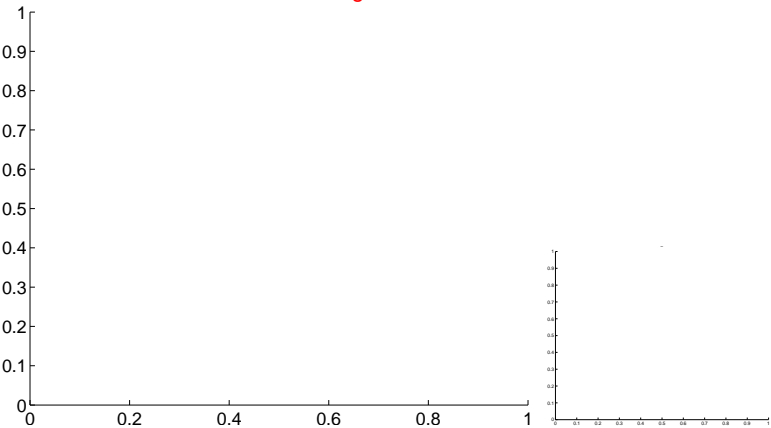
Q10 no OOT image



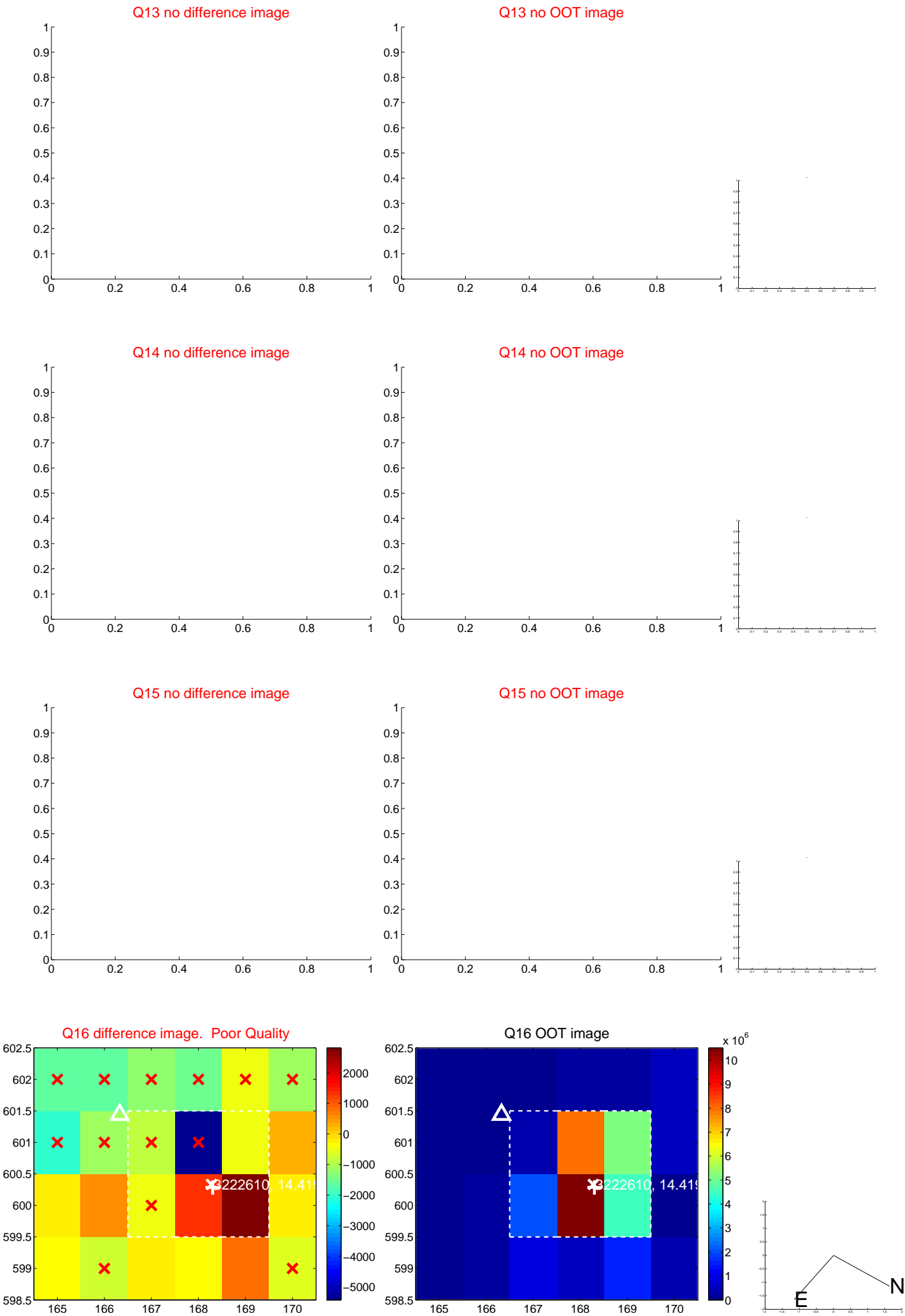
Q12 no difference image



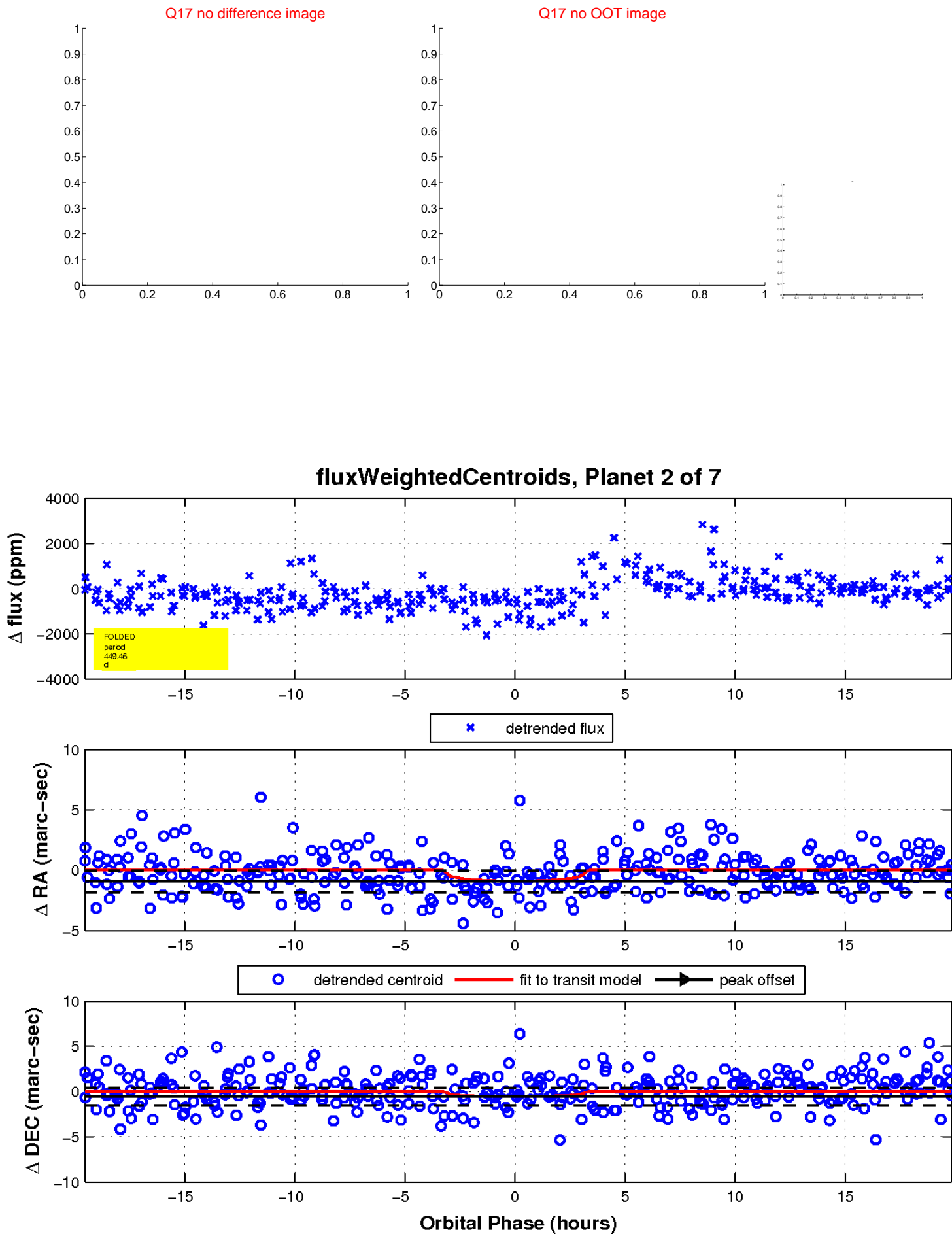
Q12 no OOT image



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

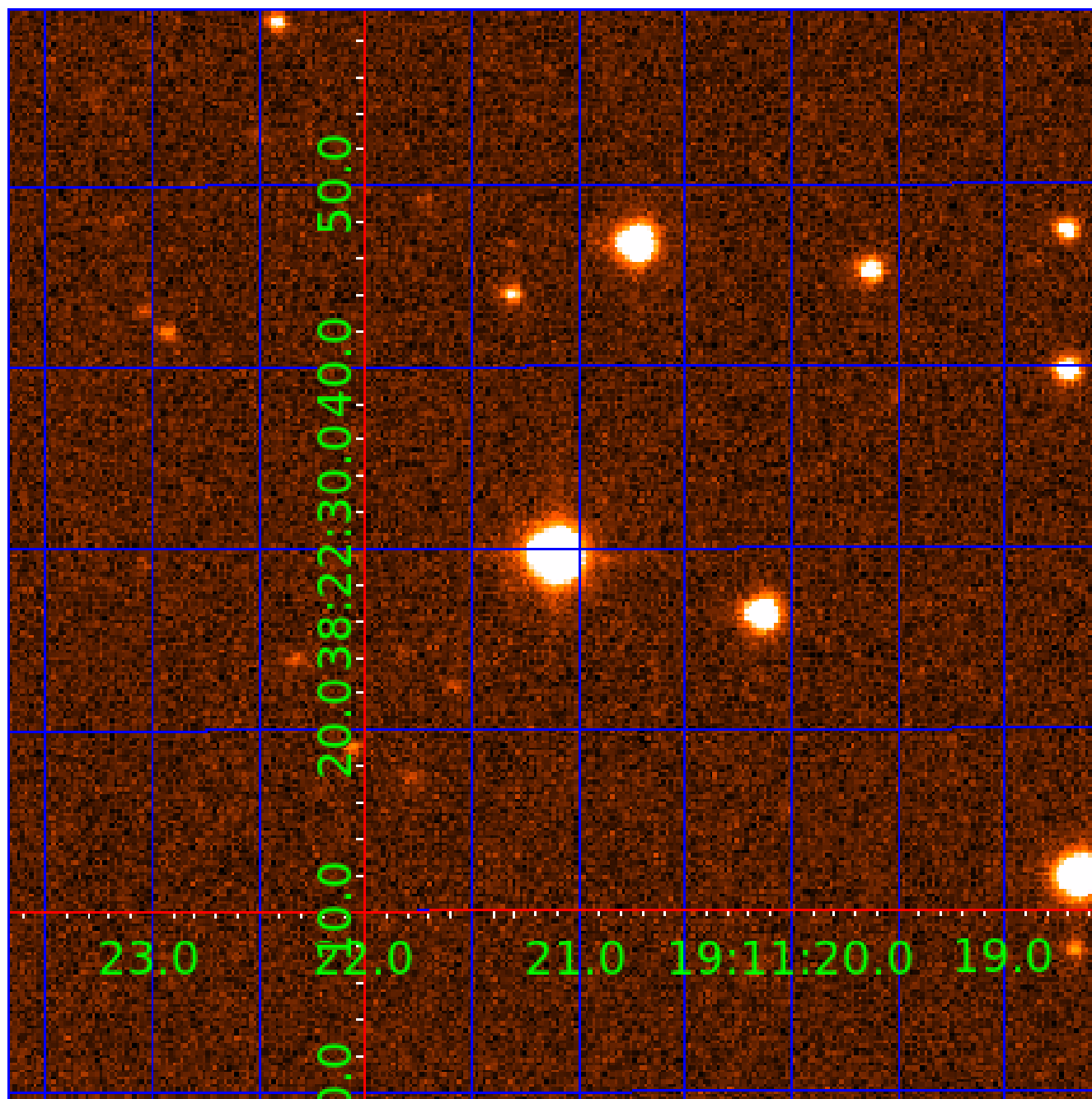


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003222610

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
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003222610-04	OBS	No	592.868061	154.902856	1224.0	3.600	9.7	7.6	0.67	4260	2.51	0.09
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003222610-06	OBS	No	238.776505	160.222585	640.1	3.821	10.3	4.5	0.67	4260	2.05	0.31
003222610-07	OBS	No	658.015121	212.662877	620.9	6.000	9.0	-1.0	0.67	4260	1.59	0.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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003222610-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003222610-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
003222610-05	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003222610-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003222610-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

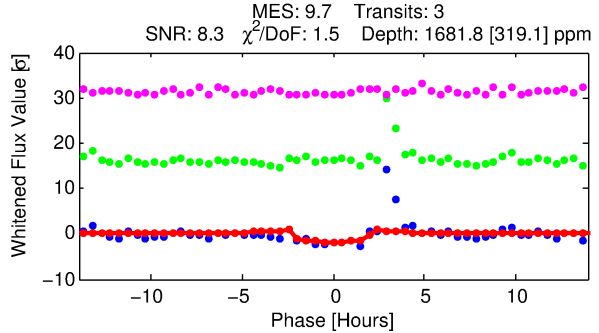
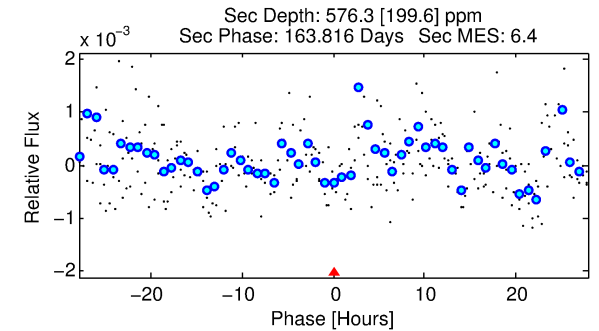
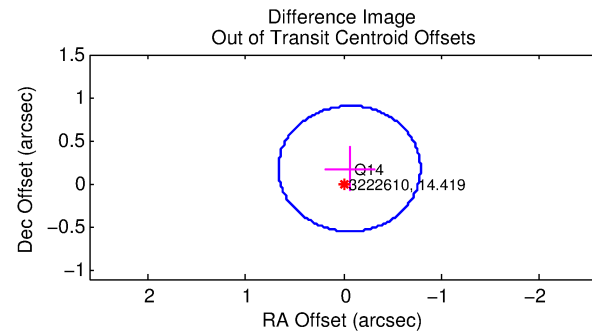
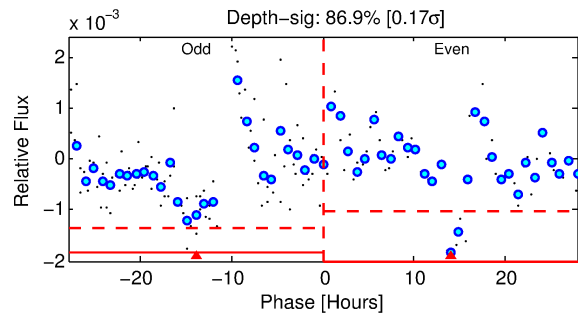
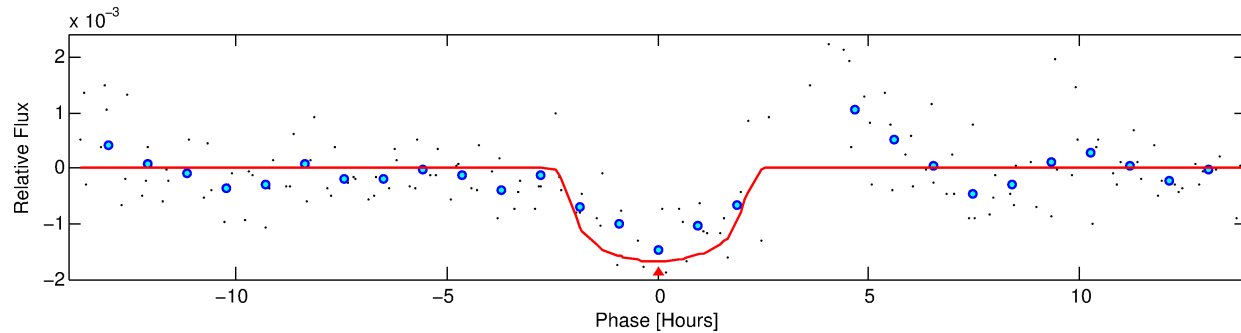
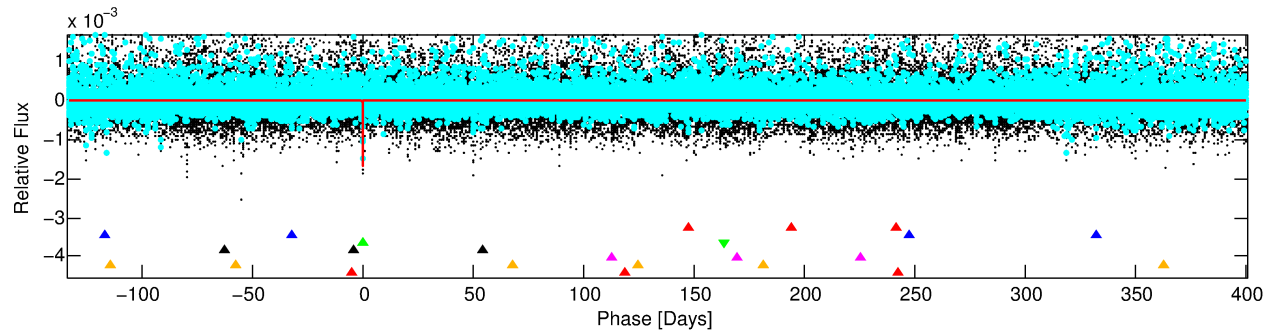
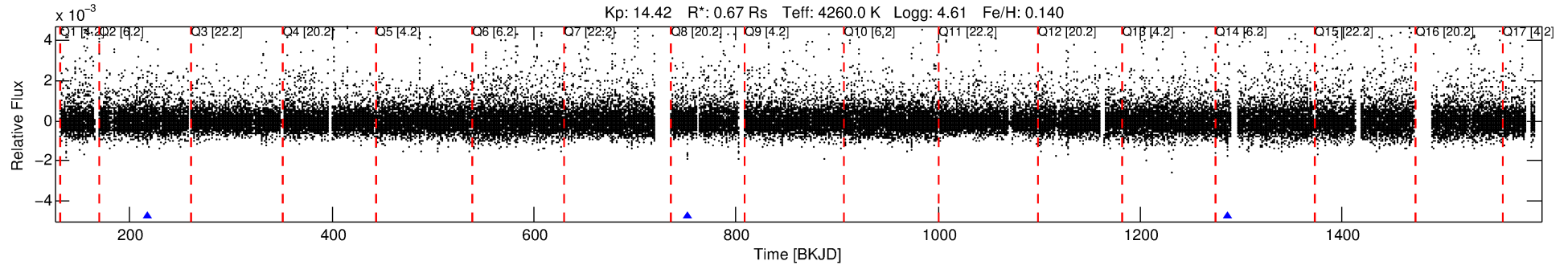
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003222610-03

No Significant Match Found

DV One-Page Summary

KIC: 3222610 Candidate: 3 of 7 Period: 534.290 d



DV Fit Results:

Period = 534.28953 [0.00935] d
Epoch = 217.8008 [0.0133] BKJD
Rp/R* = 0.0417 [0.0224]
a/R* = 611.59 [1016.49]
b = 0.77 [0.89]
Seff = 0.11 [0.02]
Teq = 145 [6] K
Rp = 3.05 [1.66] Re
a = 1.1247 [0.0779] AU
Ag = 43092.03 [48951.14] [0.88 σ]
Teffp = 3234 [921] K [3.35 σ]

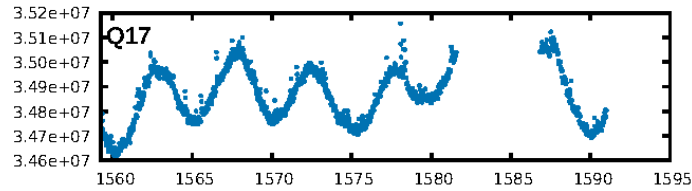
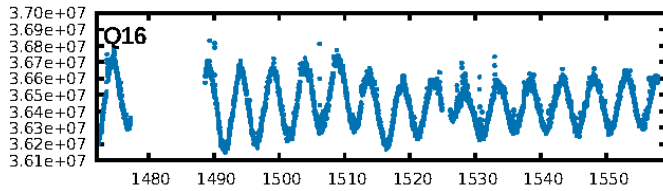
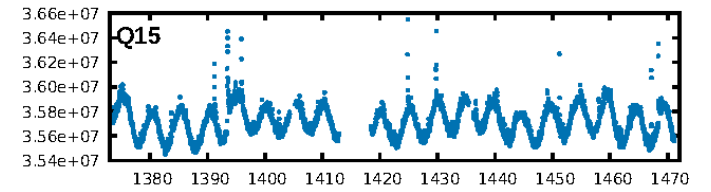
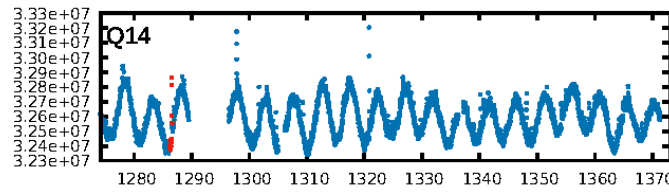
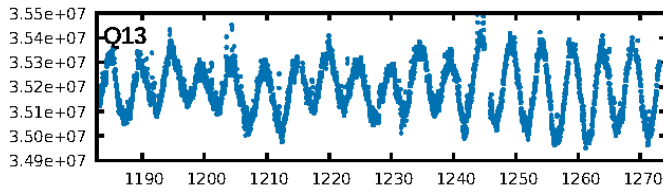
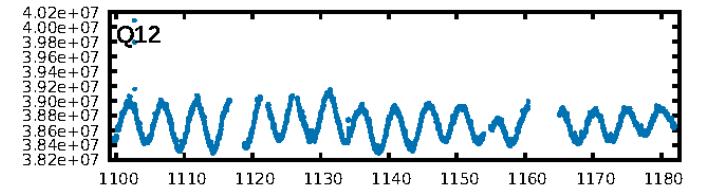
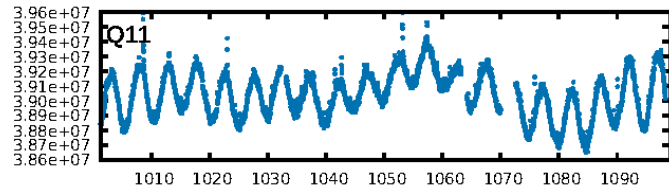
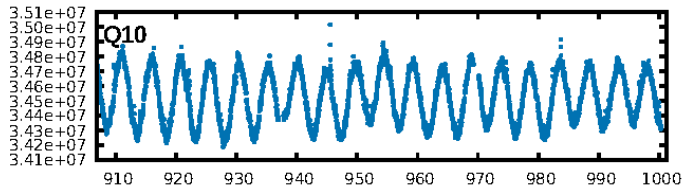
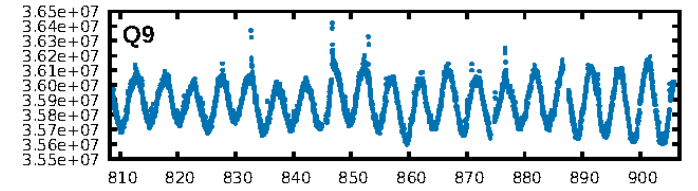
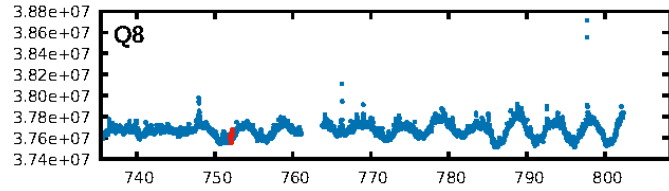
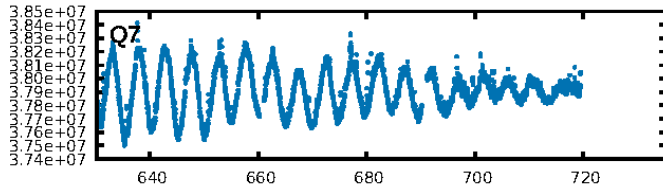
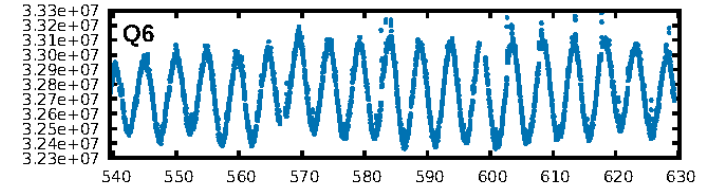
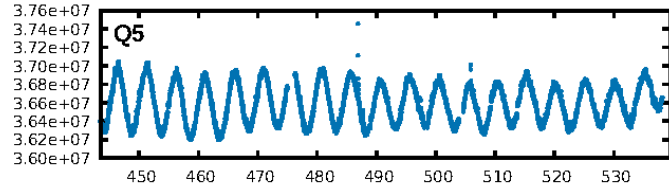
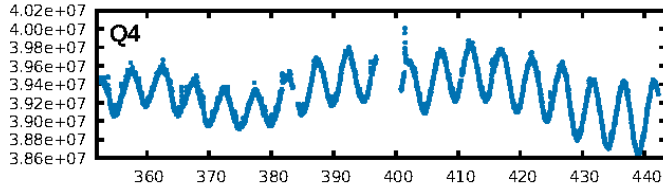
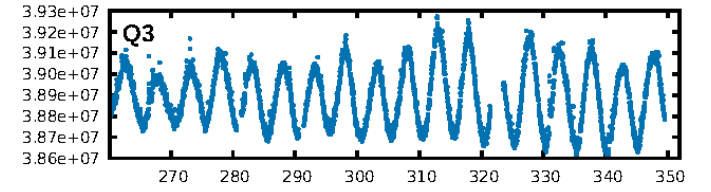
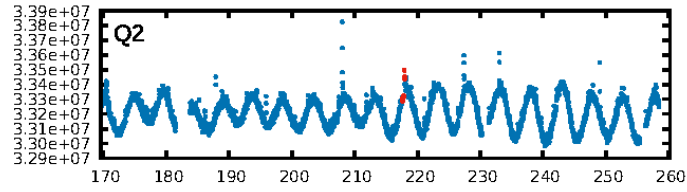
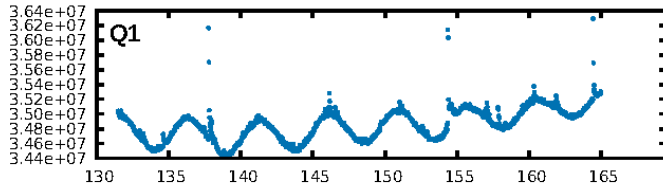
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [251.44 σ]
LongPeriod-sig: 100.0% [156.98 σ]
ModelChiSquare2-sig: 67.6%
ModelChiSquareGof-sig: 89.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.82
Centroid-sig: 12.8%
Centroid-so: 1.400 arcsec [1.80 σ]
OotOffset-rm: 0.186 arcsec [0.77 σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-rm: 0.430 arcsec [1.78 σ]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [3/3]

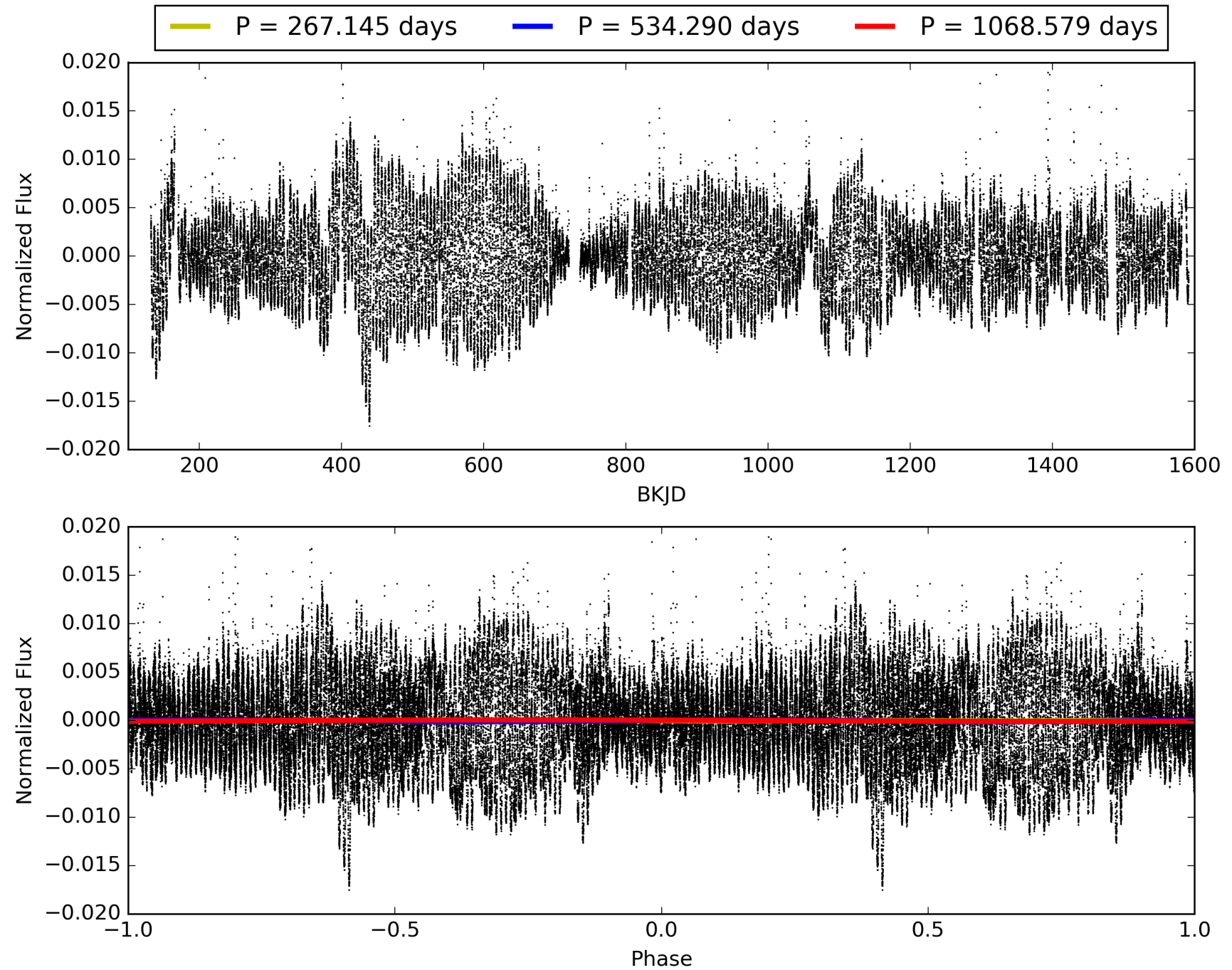
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:26:35 Z

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

TCE 003222610-03, PDC Light Curves

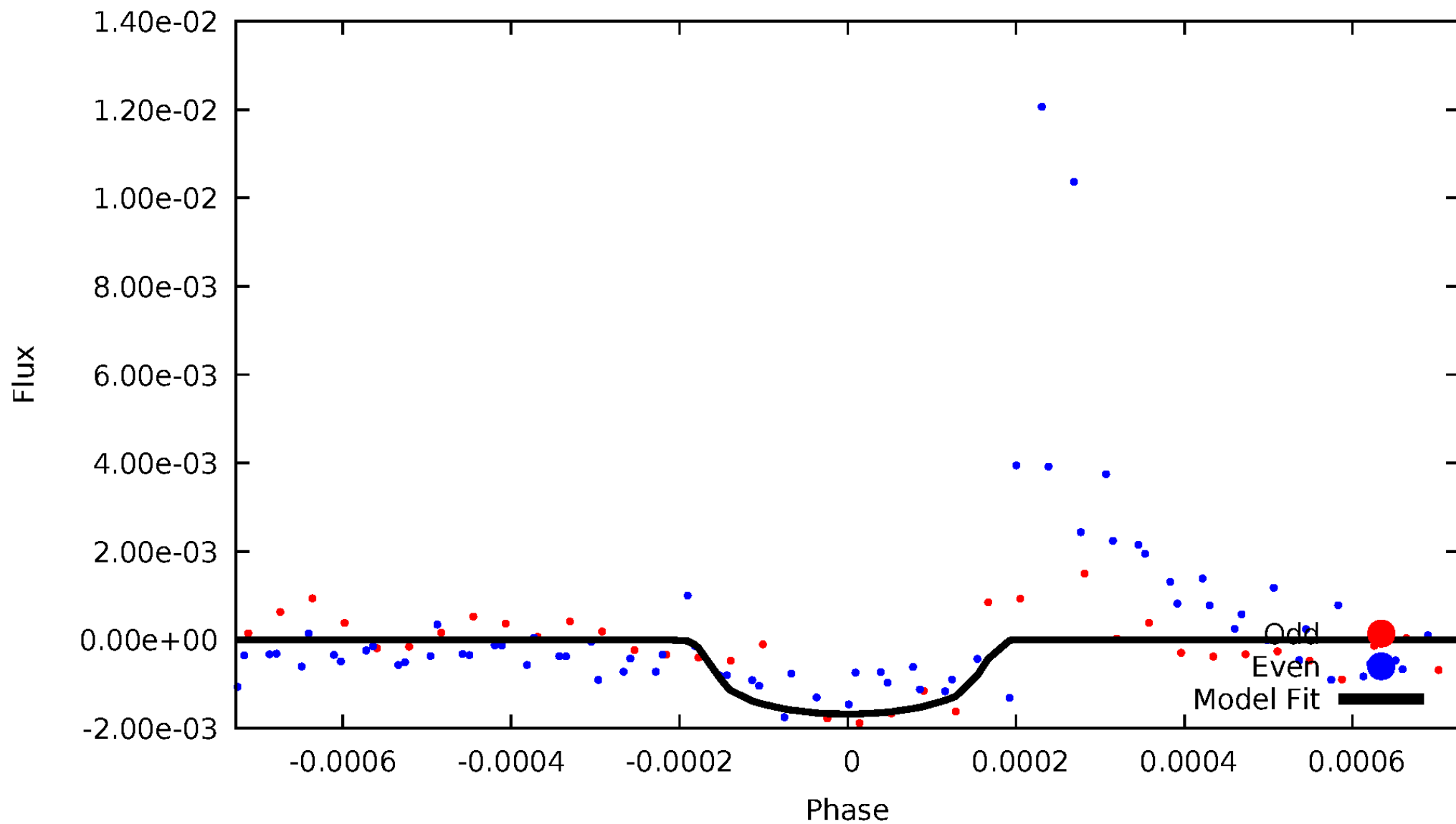


TCE 003222610-03



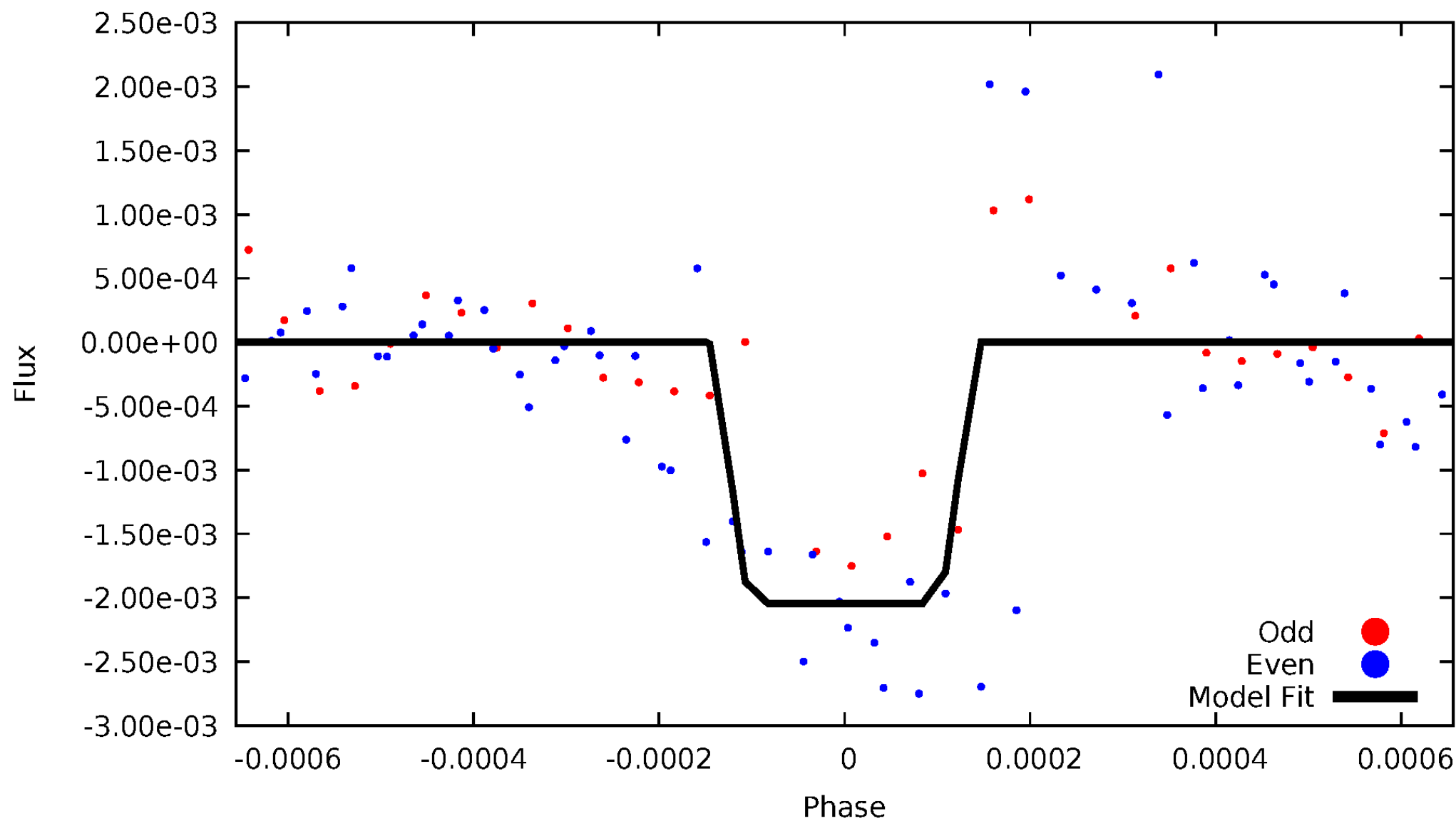
DV Odd/Even

TCE 003222610-03



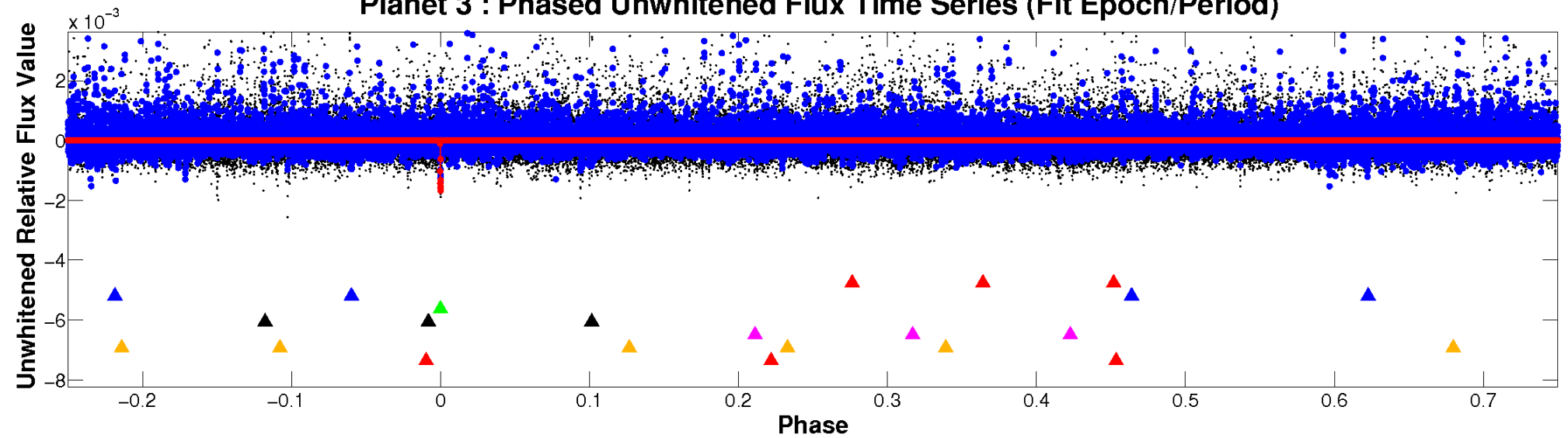
ALT Odd/Even

TCE 003222610-03

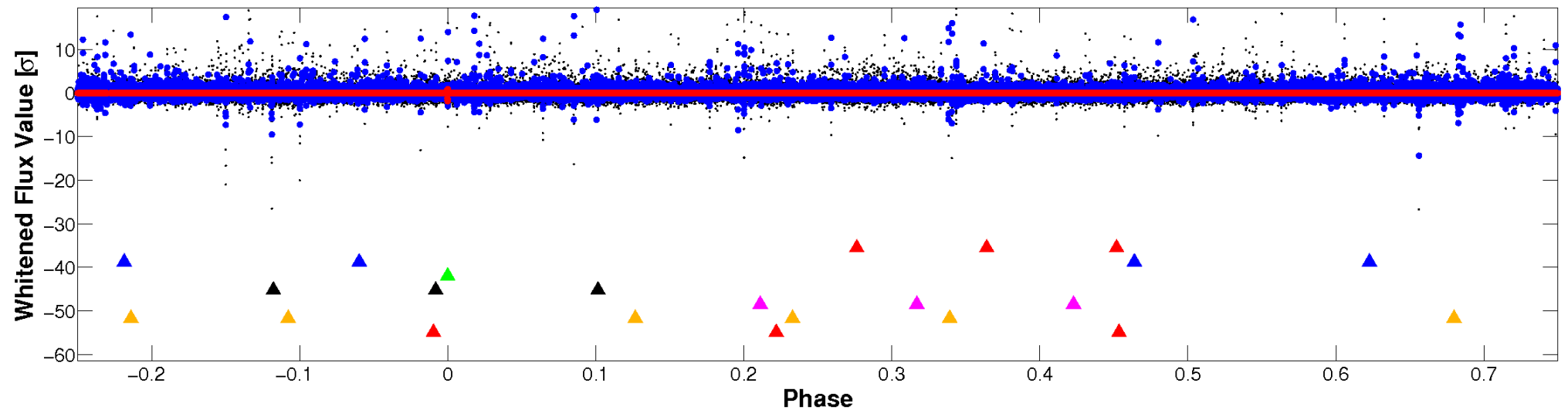


Non-Whitened Vs. Whitened Light Curve

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

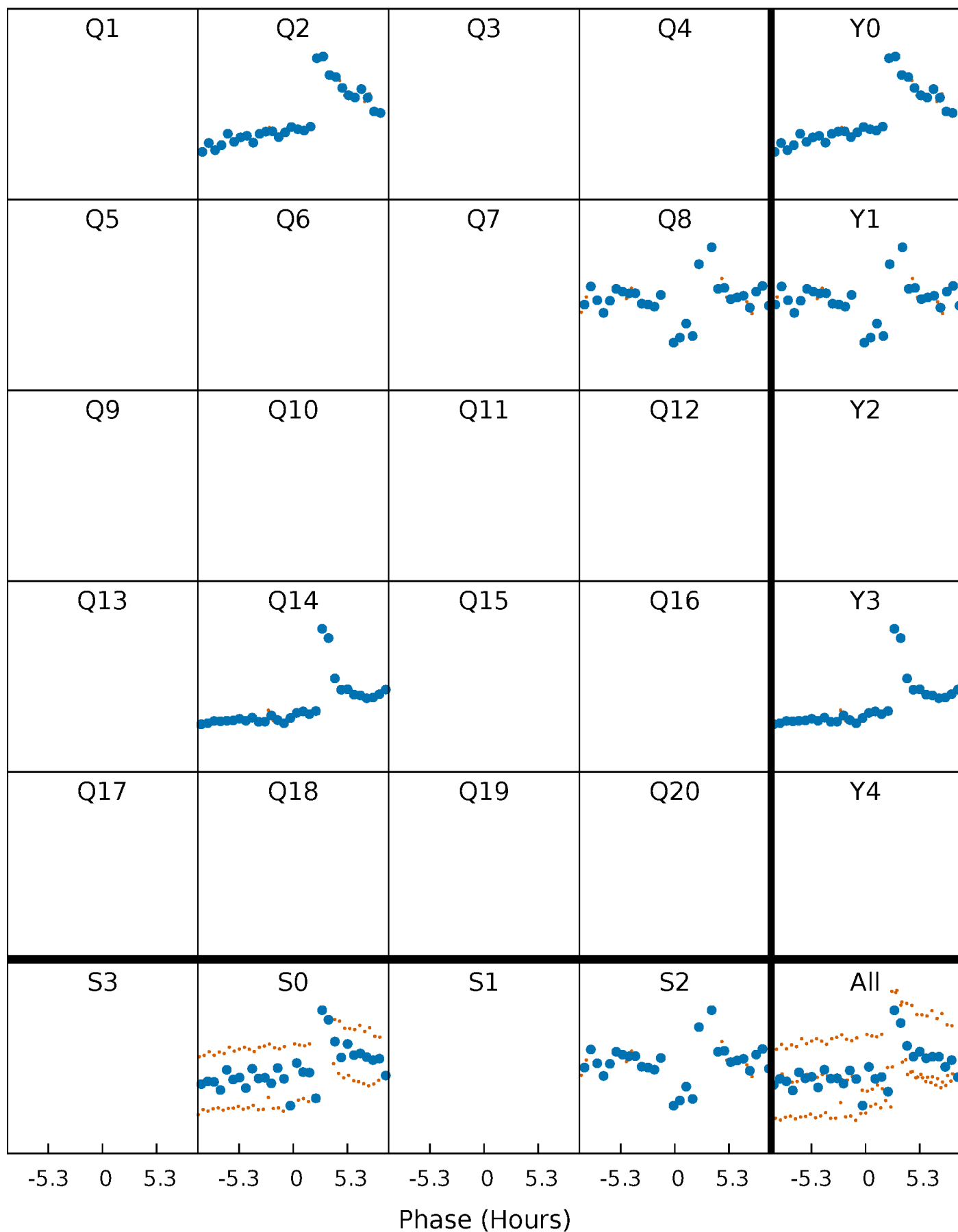


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



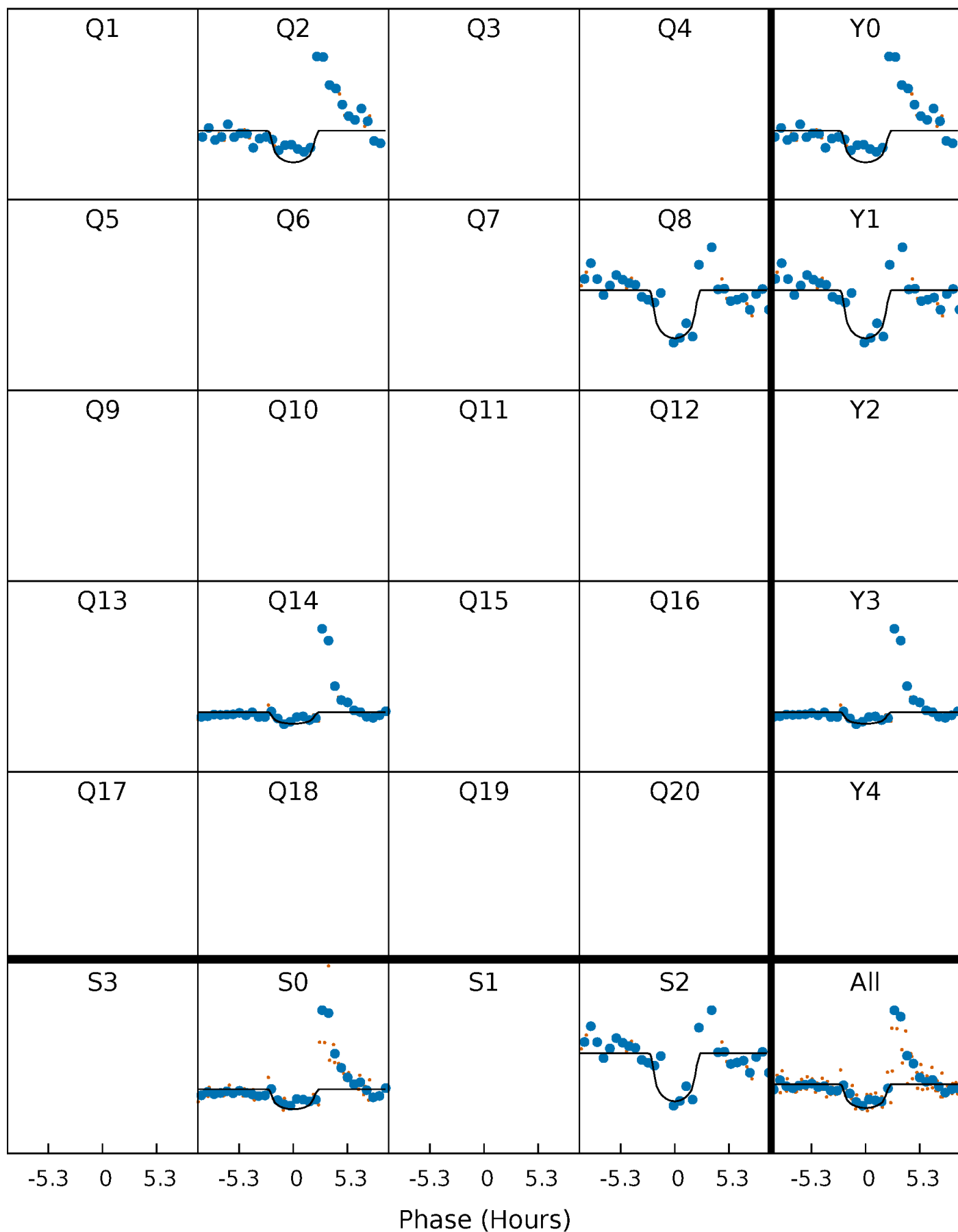
PDC Quarter-Phased Transit Curves

TCE 003222610-03 $P=534.289527$ Days $T_0=217.800770$ (BKJD)



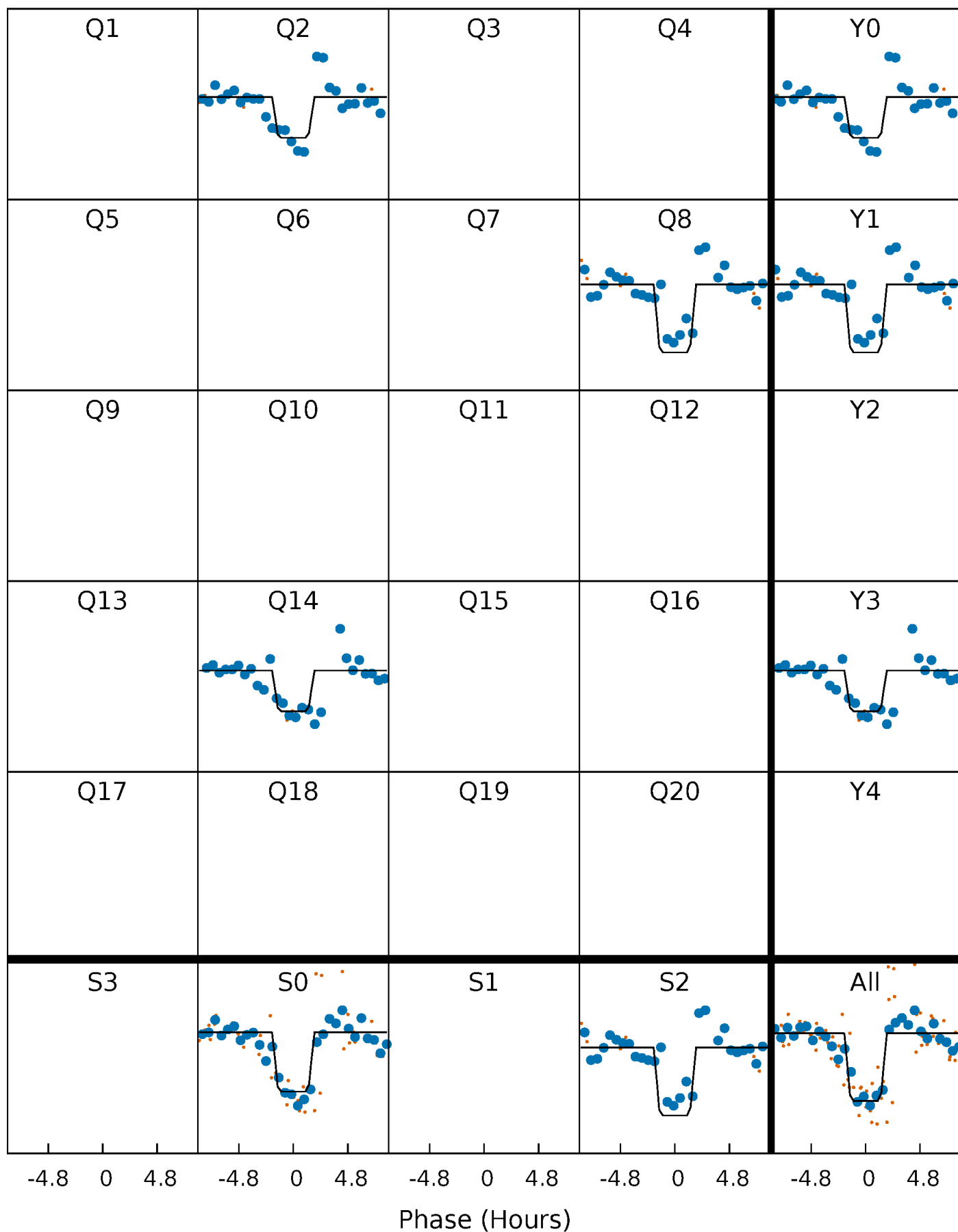
DV Quarter-Phased Transit Curves

TCE 003222610-03 $P=534.289527$ Days $T_0=217.800770$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

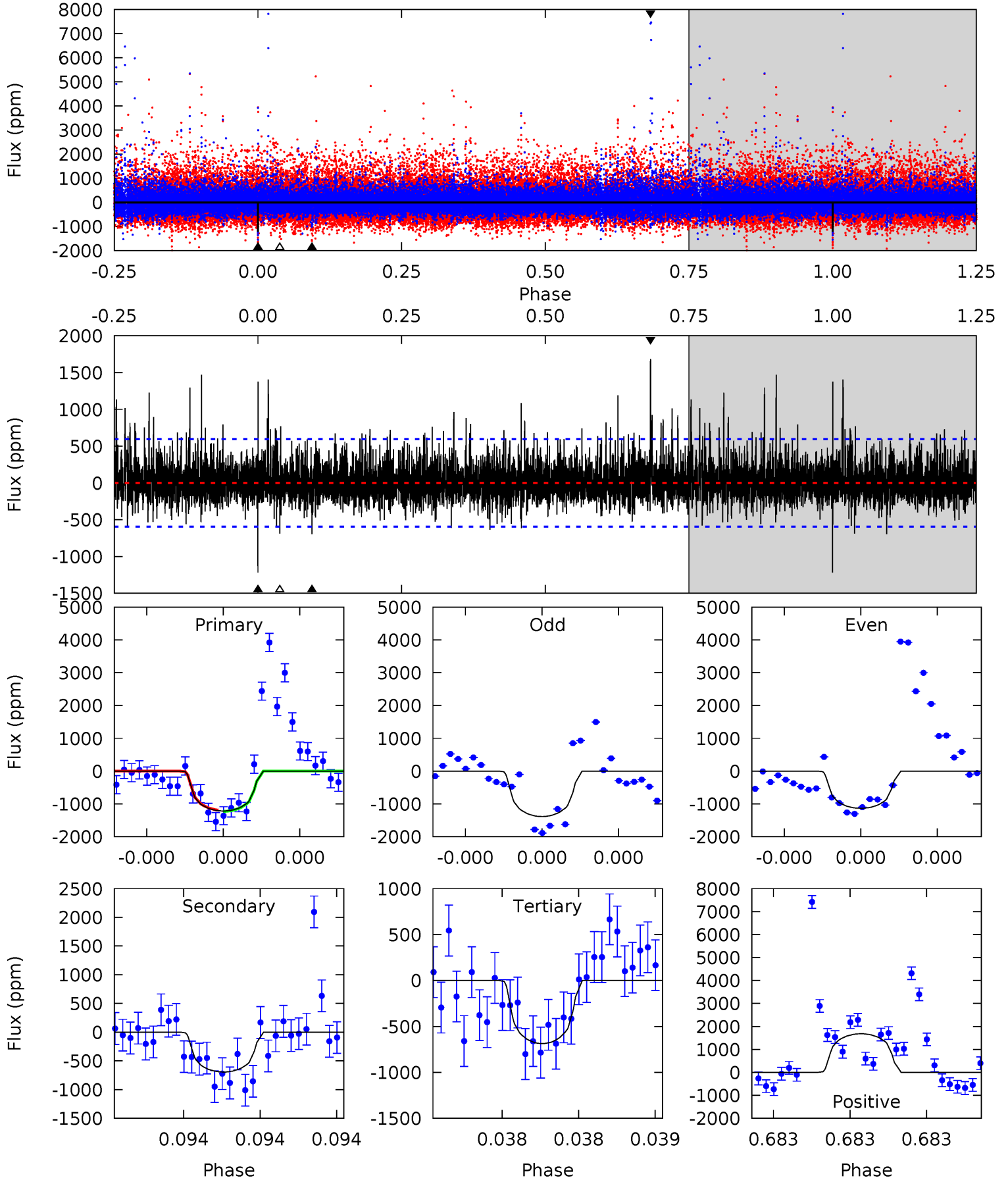
TCE 003222610-03 $P=534.269482$ Days $T_0=217.824205$ (BKJD)



DV Model-Shift Uniqueness Test

003222610-03, P = 534.289527 Days, E = 217.800770 Days

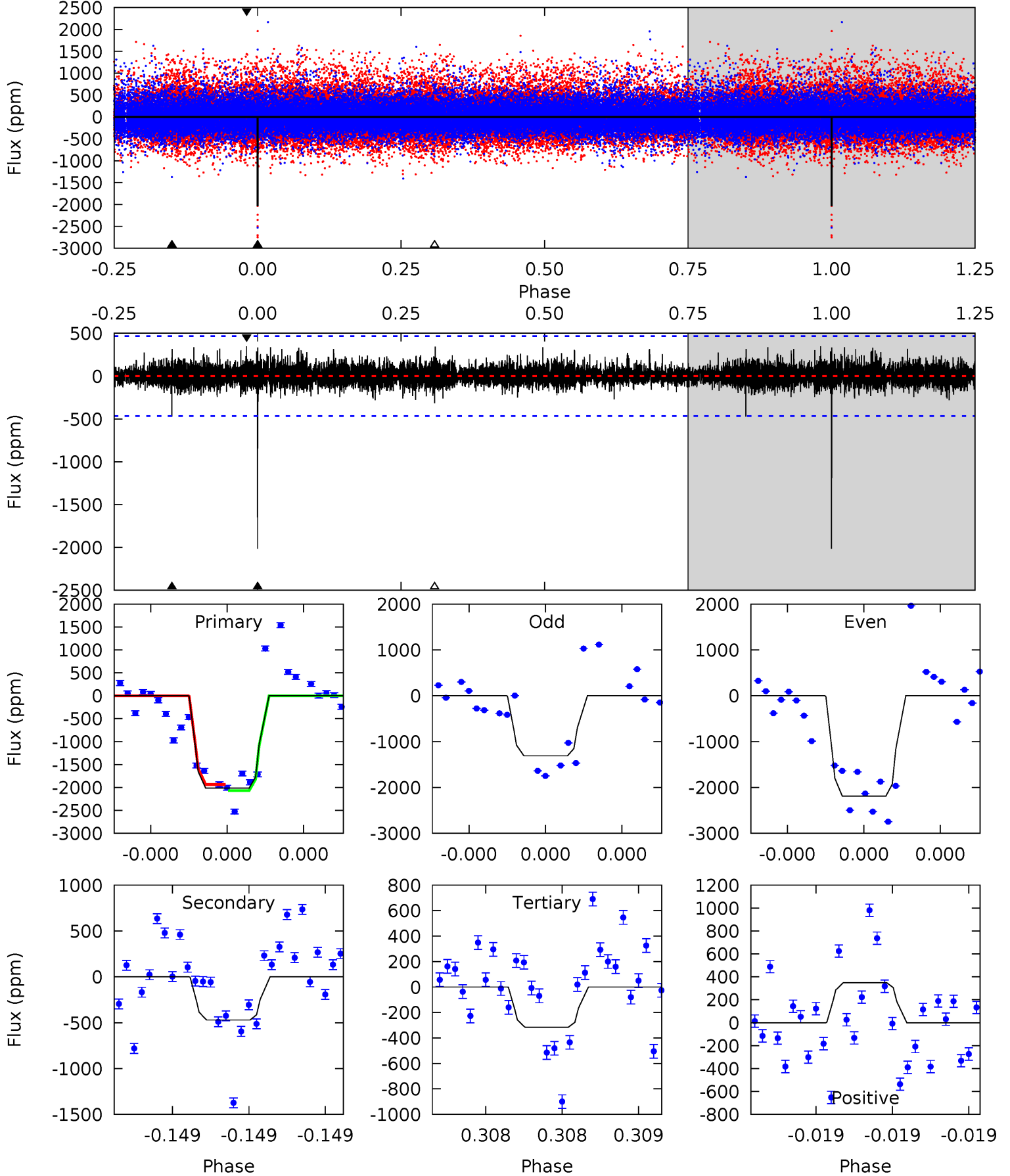
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	6.55	6.48	15.9	5.62	3.55	1.98	5.00	-4.38	0.07	-9.32	0.92	0.99	0.58	0.17



Alt Model-Shift Uniqueness Test

003222610-03, P = 534.269482 Days, E = 217.824205 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.5	5.71	3.83	4.23	5.67	3.62	0.86	20.6	20.2	1.89	1.49	5.02	0.90	0.15	0.79



Stellar Parameters For KIC 003222610

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4260^{+142}_{-142}	$4.607^{+0.052}_{-0.017}$	$0.140^{+0.200}_{-0.300}$	$0.671^{+0.032}_{-0.057}$	$0.664^{+0.052}_{-0.052}$	$3.101^{+0.665}_{-0.248}$
	+3%/-3%	+1%/-0%	+143%/-214%	+5%/-8%	+8%/-8%	+21%/-8%
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 003222610-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-695 ± 106	$3.11^{+1.69}_{-1.59}$	201^{+7}_{-7}	3583^{+1152}_{-449}	$50393^{+175949}_{-29871}$
Alt.	-470 ± 82	$3.33^{+1.57}_{-1.53}$	201^{+7}_{-8}	3307^{+757}_{-384}	29906^{+70133}_{-16684}

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 $A_{obs} \gg 1.0$

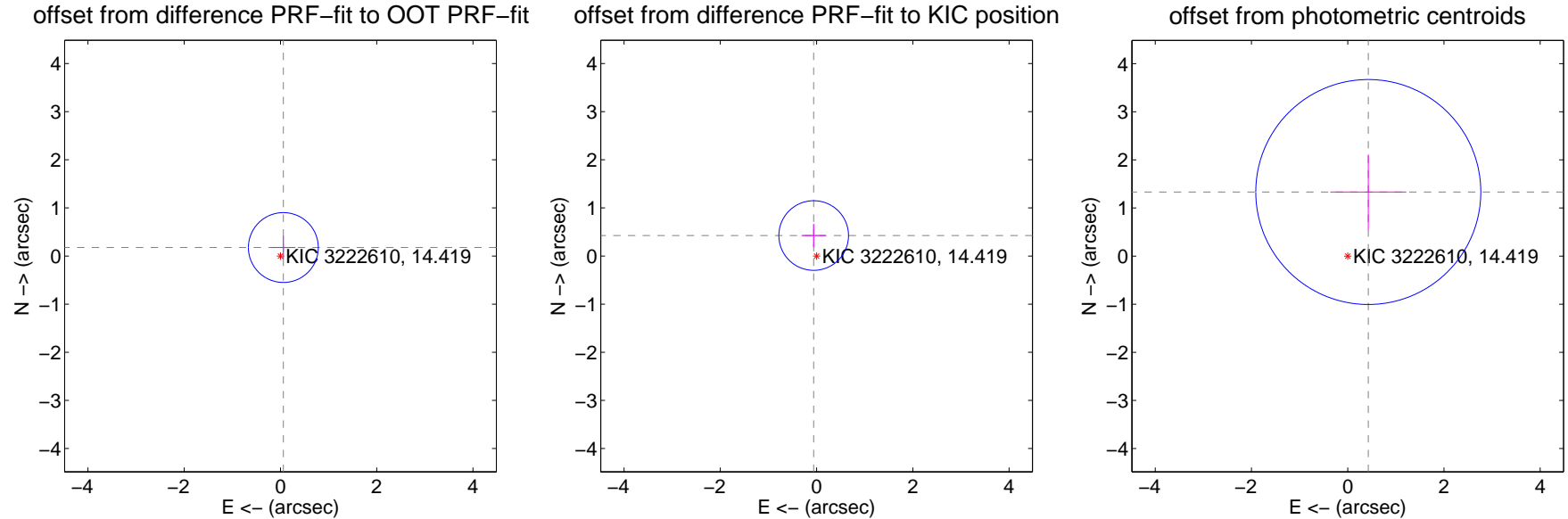
DV Centroid Data

Supplemental centroid analysis for 003222610-03. Kepler magnitude: 14.42. Transit SNR 8.28

There are 1 quarters with good PRF difference image offsets

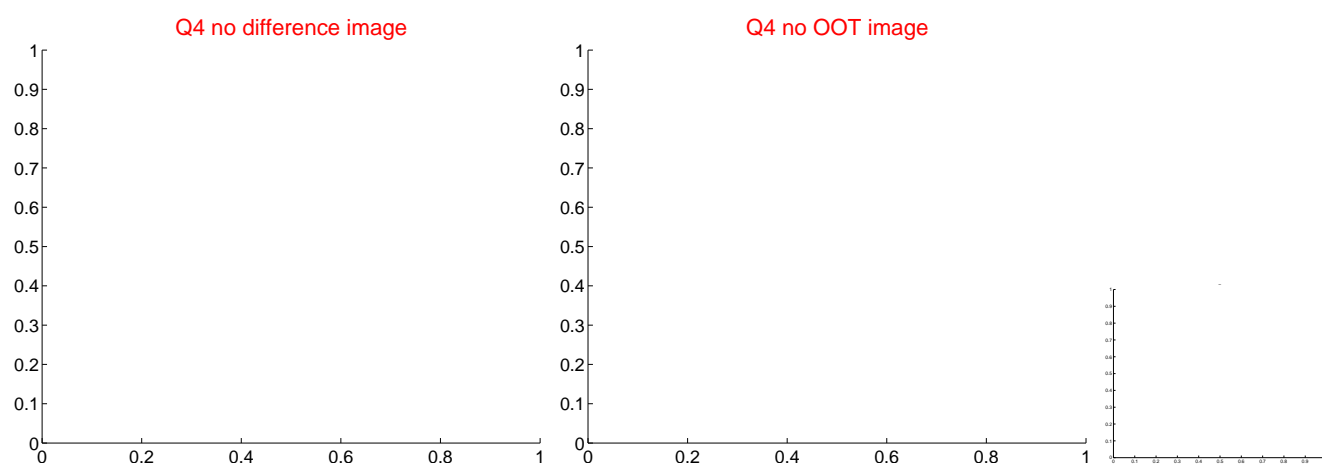
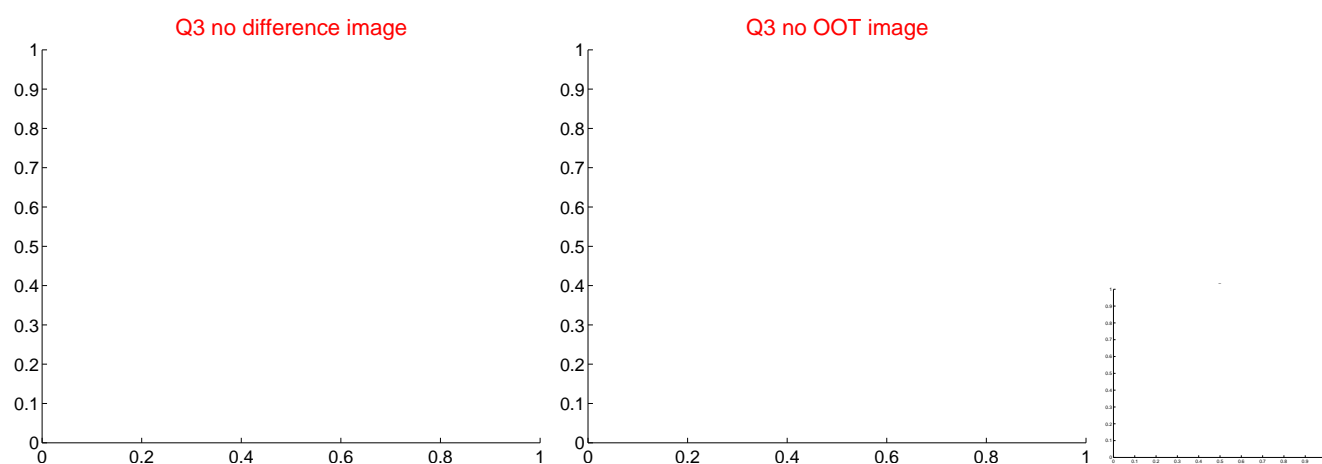
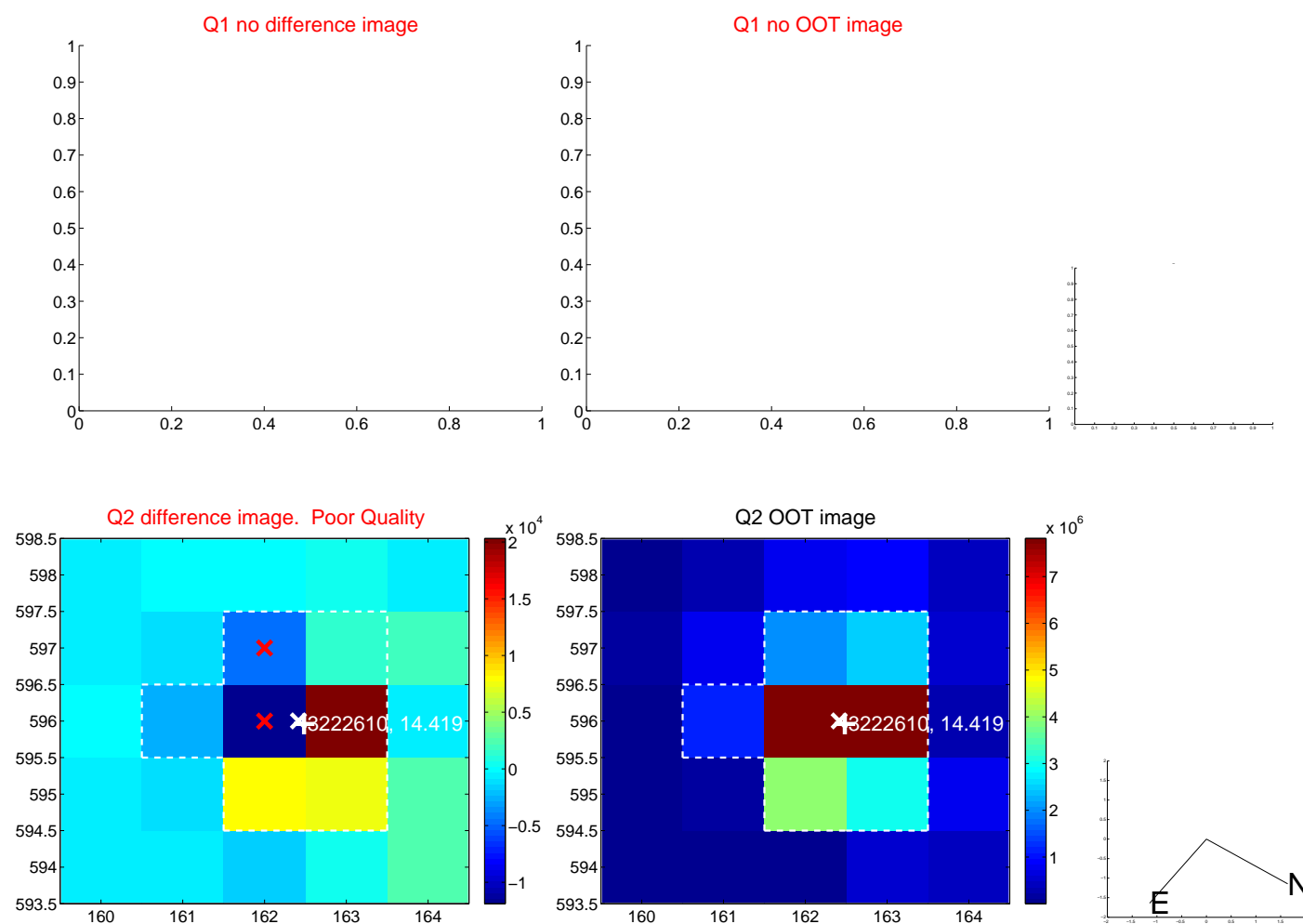
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.186 ± 0.242	0.77	-0.060 ± 0.251	0.176 ± 0.241
PRF-fit source offset from KIC position	0.430 ± 0.241	1.78	0.060 ± 0.251	0.426 ± 0.241
photometric centroid source offset	1.40 ± 0.78	1.80	-0.43 ± 0.79	1.33 ± 0.78

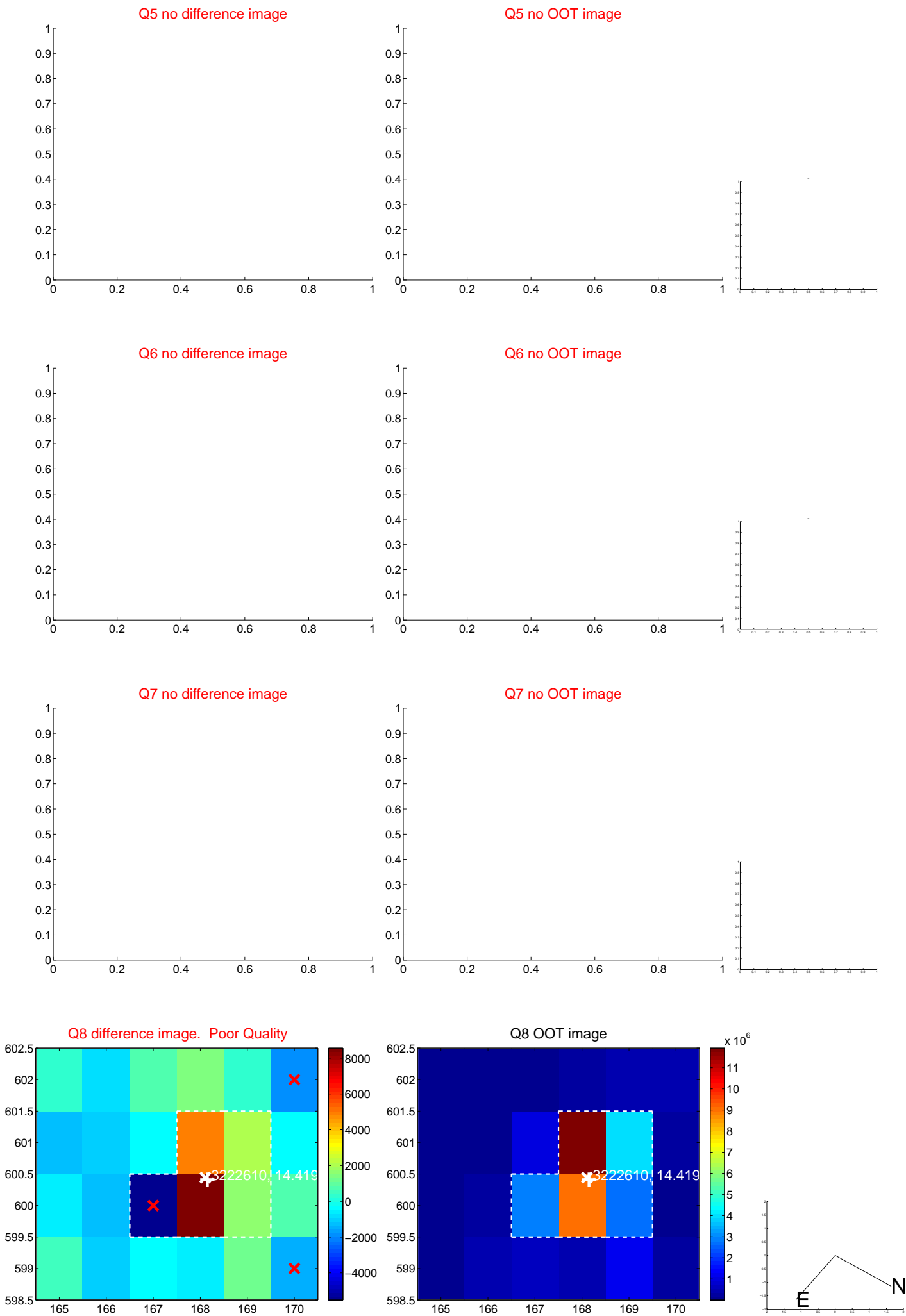


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . 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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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

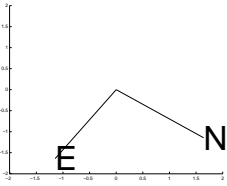
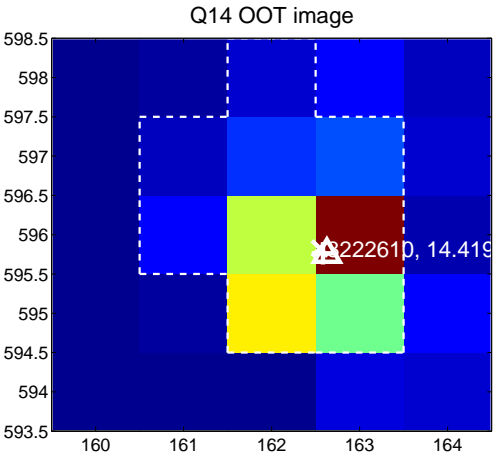
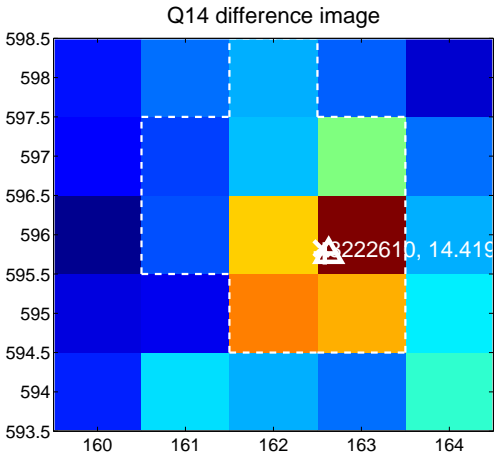


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

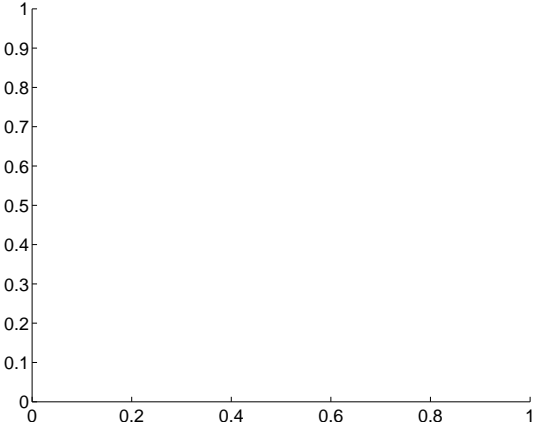
Q13 no difference image



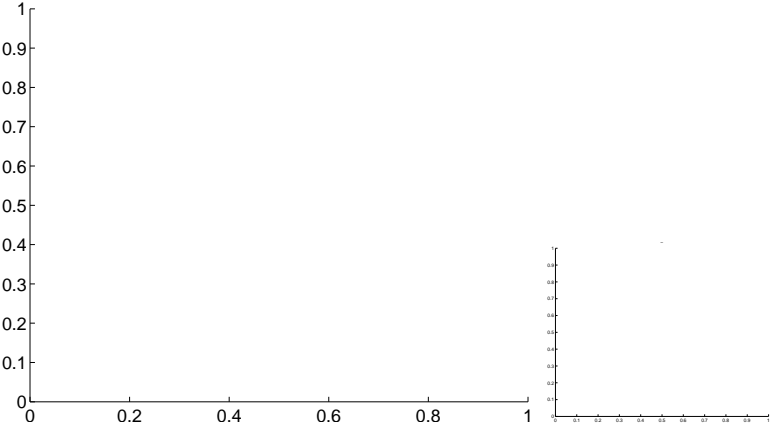
Q13 no OOT image



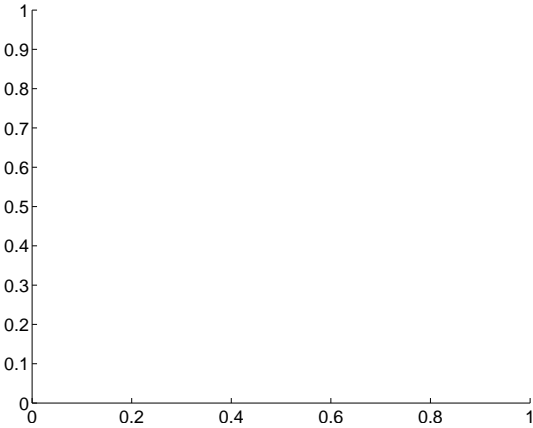
Q15 no difference image



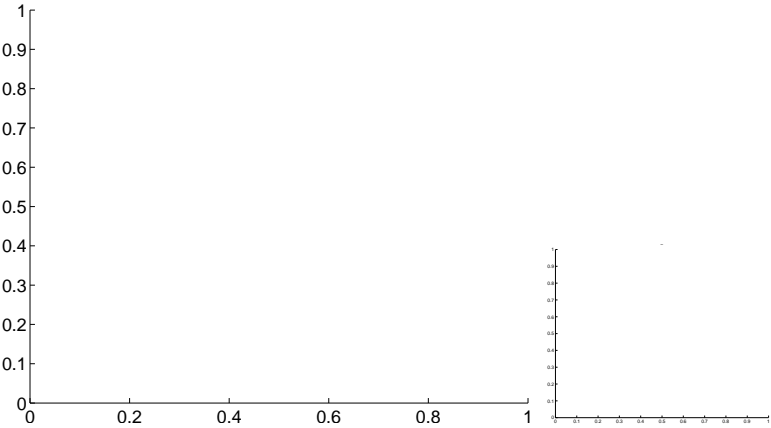
Q15 no OOT image



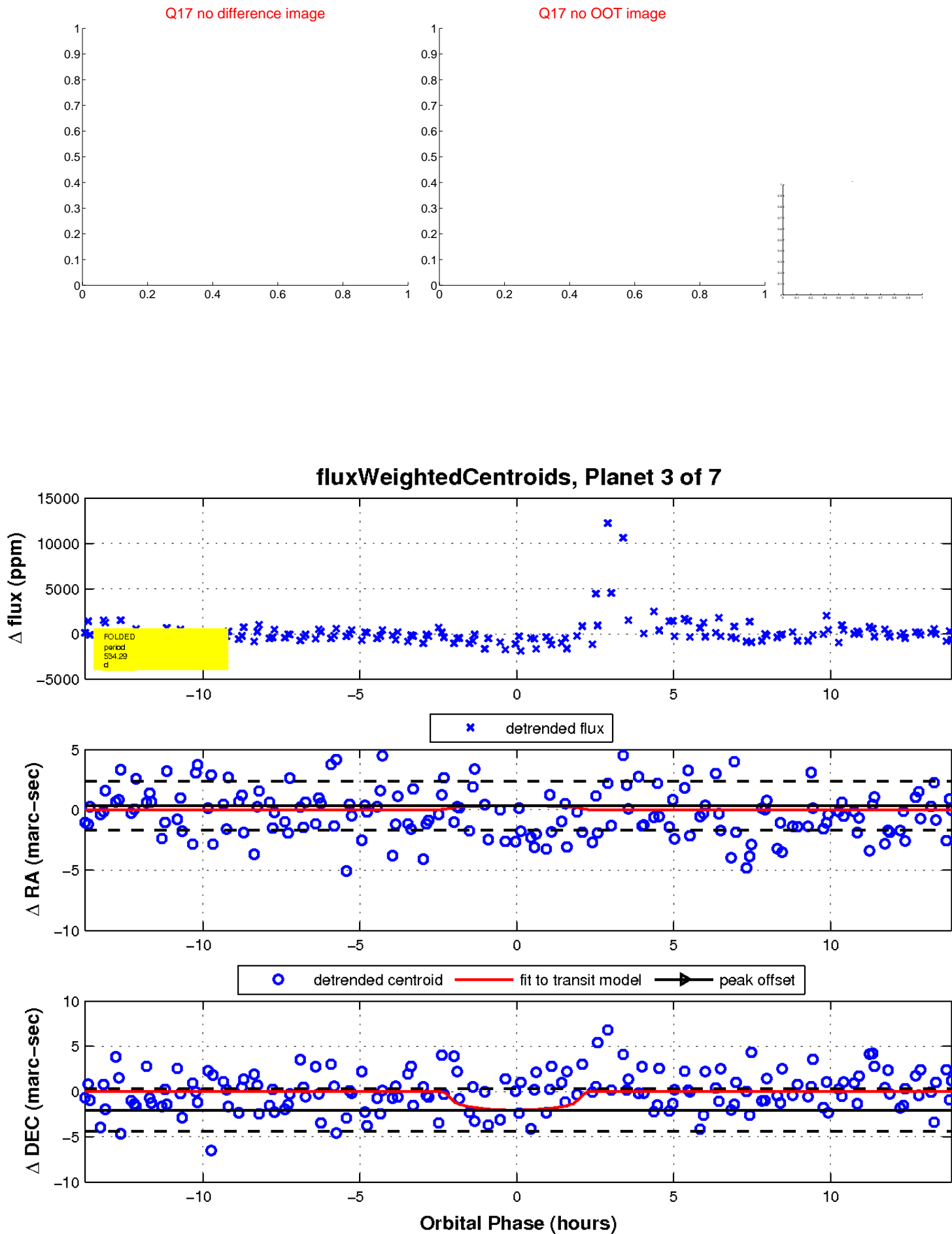
Q16 no difference image



Q16 no OOT image

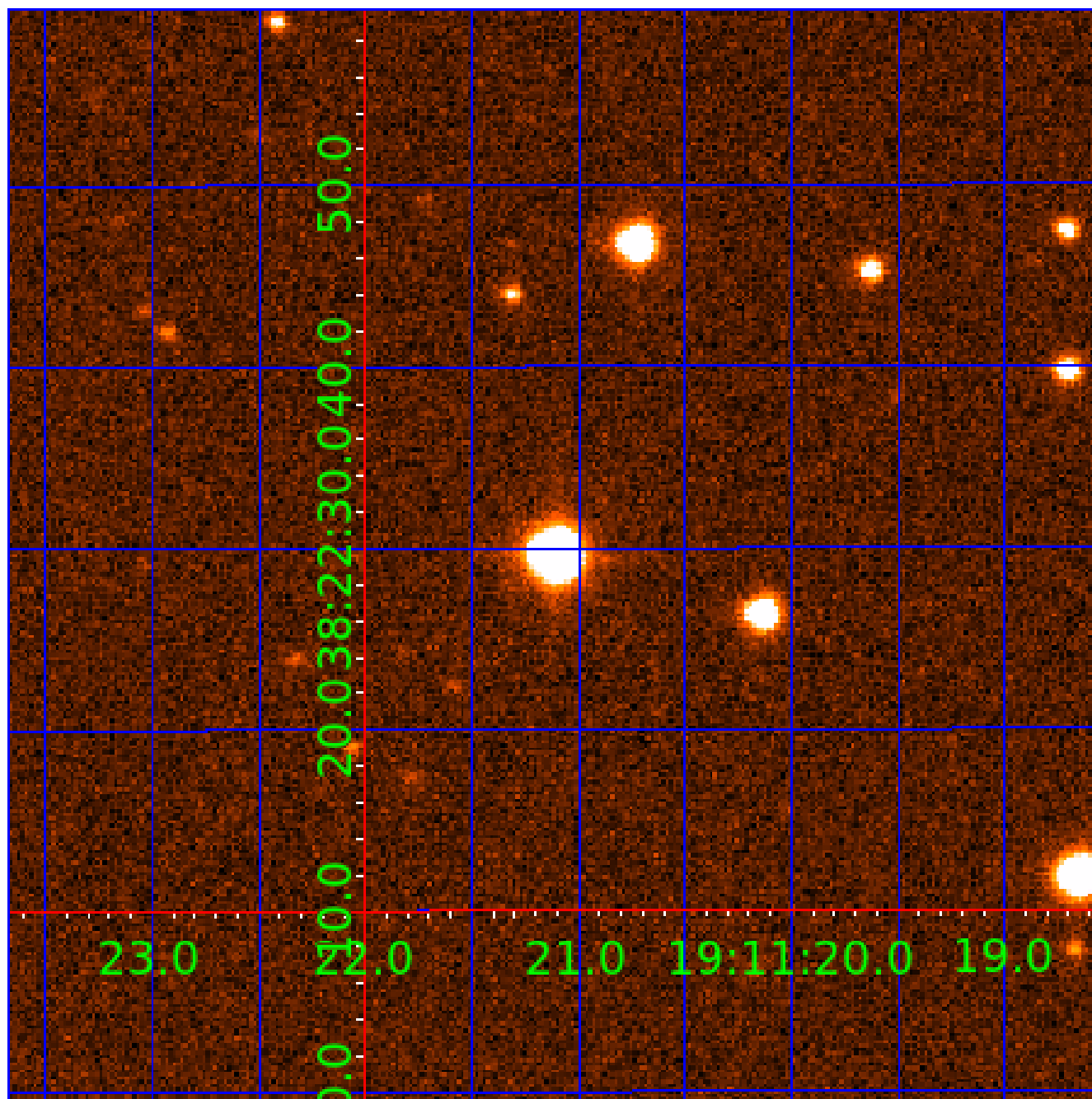


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003222610

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})
003222610-02	OBS	No	449.457666	185.880463	810.2	6.620	8.2	5.8	0.67	4260	2.00	0.13
003222610-03	OBS	No	534.289527	217.800770	1681.8	4.662	9.7	8.3	0.67	4260	3.05	0.10
003222610-04	OBS	No	592.868061	154.902856	1224.0	3.600	9.7	7.6	0.67	4260	2.51	0.09
003222610-05	OBS	No	590.839150	330.598610	1172.5	16.069	12.5	6.9	0.67	4260	2.38	0.09
003222610-06	OBS	No	238.776505	160.222585	640.1	3.821	10.3	4.5	0.67	4260	2.05	0.31
003222610-07	OBS	No	658.015121	212.662877	620.9	6.000	9.0	-1.0	0.67	4260	1.59	0.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003222610-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV
003222610-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003222610-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
003222610-05	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003222610-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003222610-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

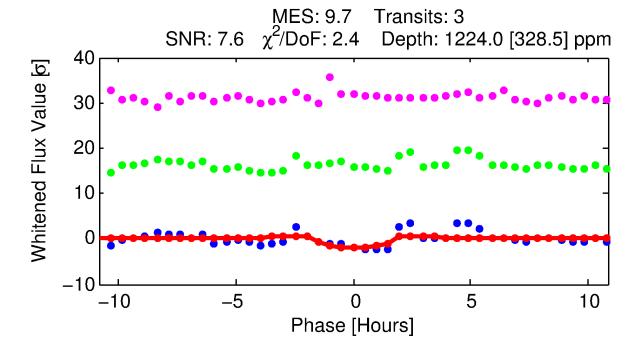
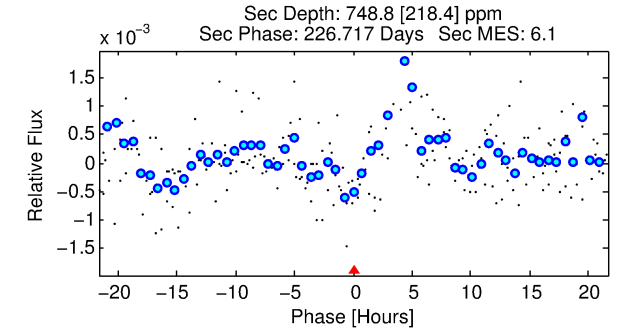
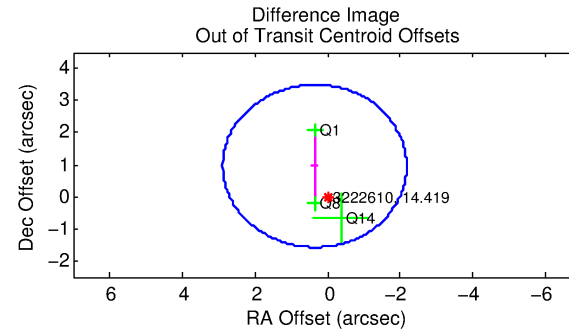
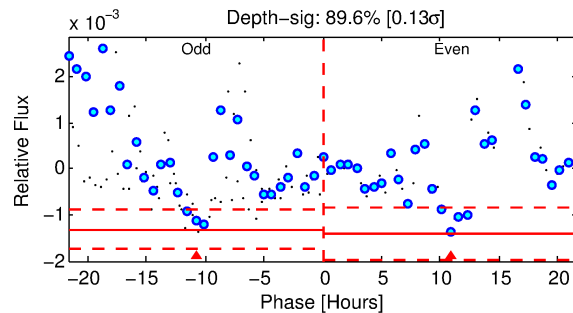
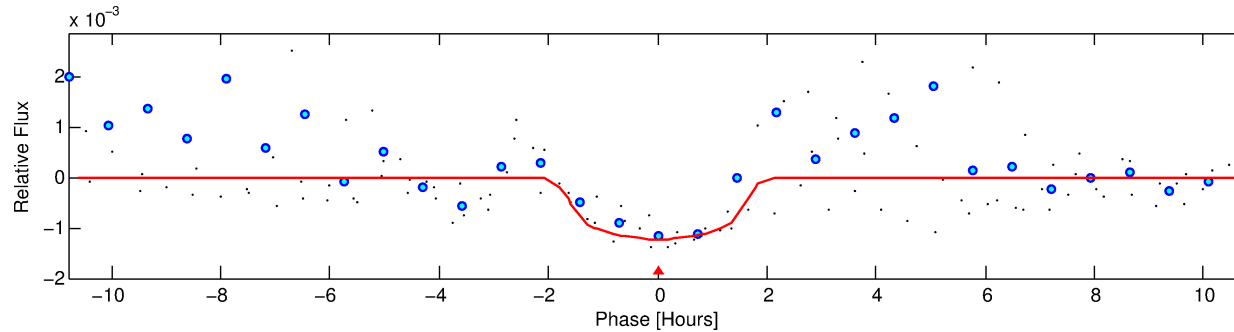
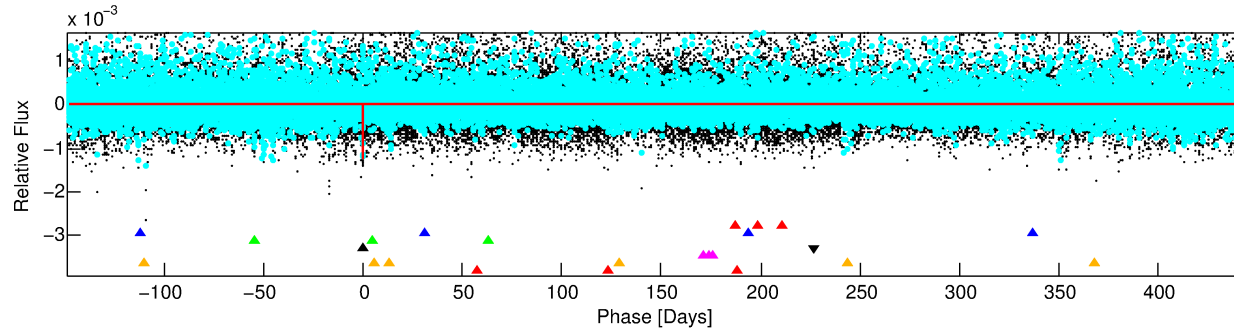
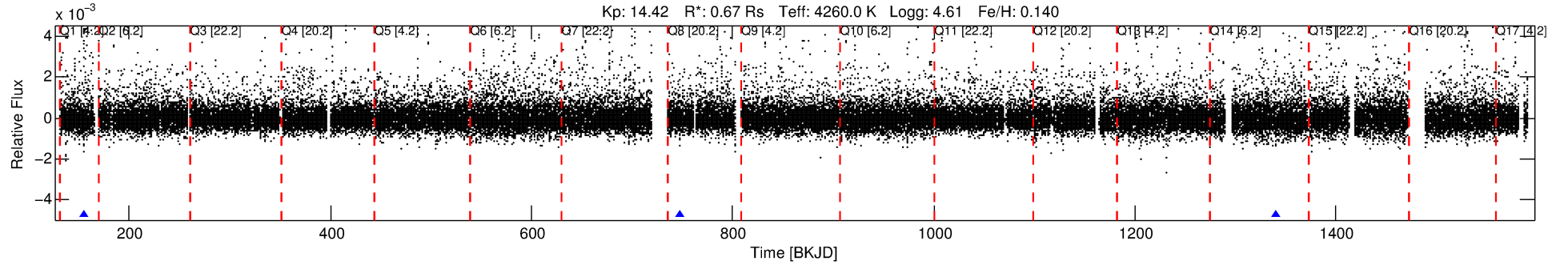
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003222610-04

No Significant Match Found

DV One-Page Summary

KIC: 3222610 Candidate: 4 of 7 Period: 592.868 d



DV Fit Results:

Period = 592.86806 [0.00934] d
Epoch = 154.9029 [0.0113] BKJD
Rp/R* = 0.0342 [0.0742]
a/R* = 960.22 [6398.96]
b = 0.70 [5.06]
Seff = 0.09 [0.02]
Teq = 140 [6] K
Rp = 2.51 [5.44] Re
a = 1.2055 [0.0835] AU
Ag = 95220.98 [413966.61] [0.23 σ]
Teffp = 3808 [4140] K [0.89 σ]

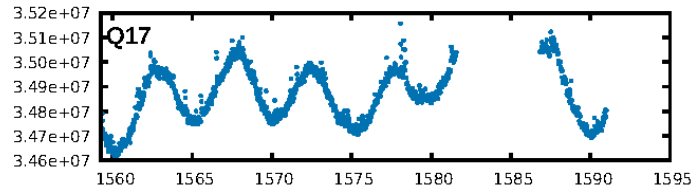
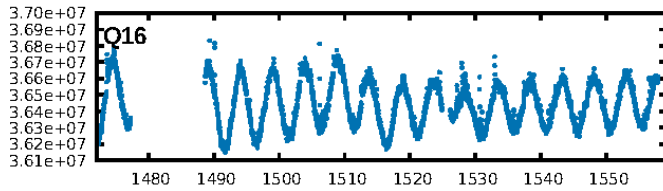
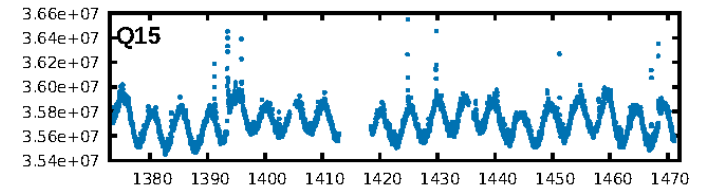
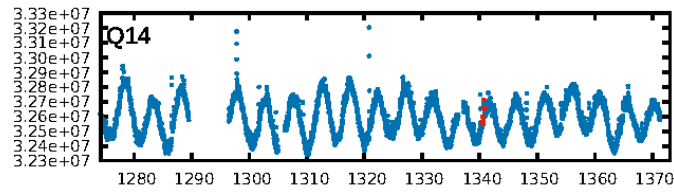
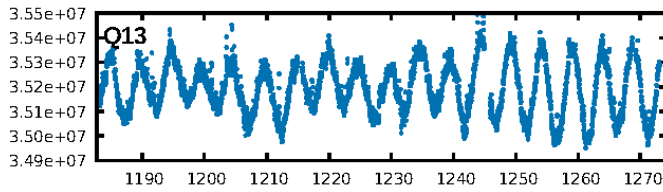
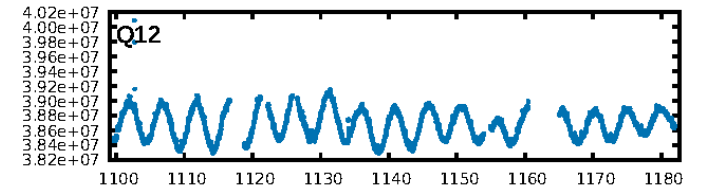
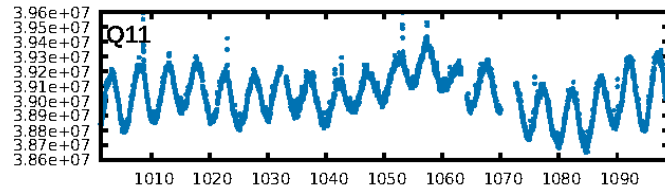
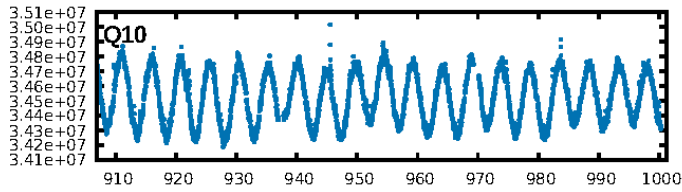
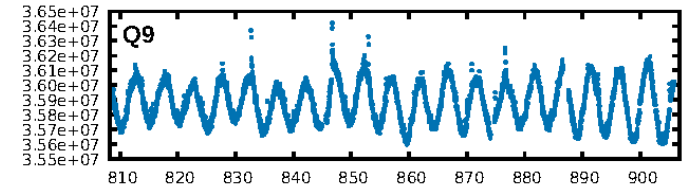
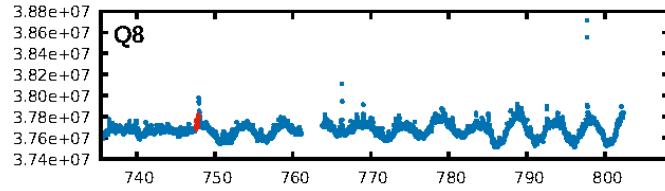
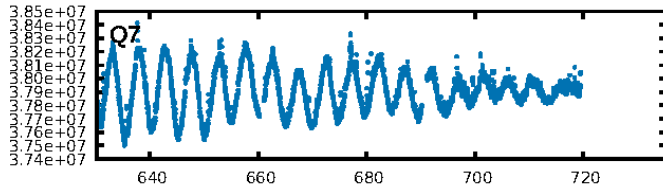
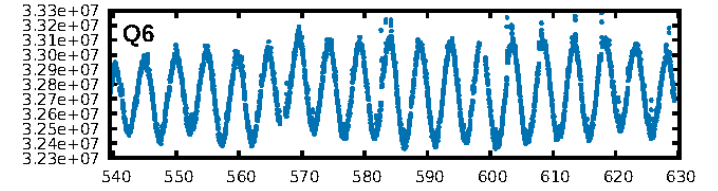
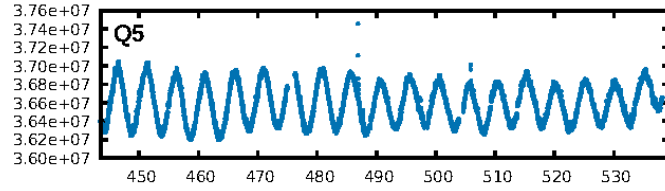
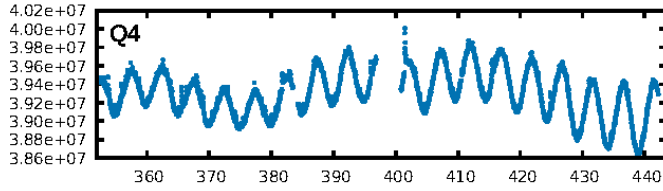
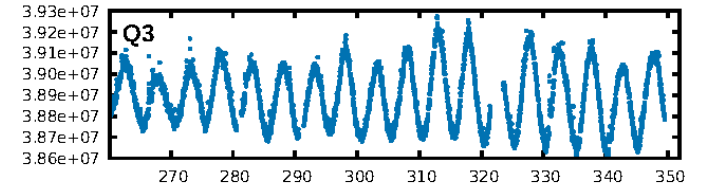
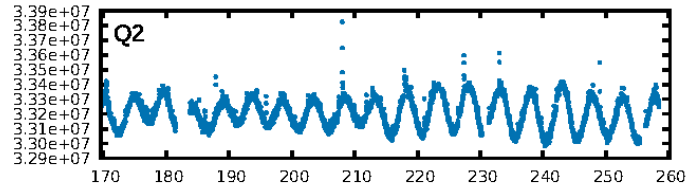
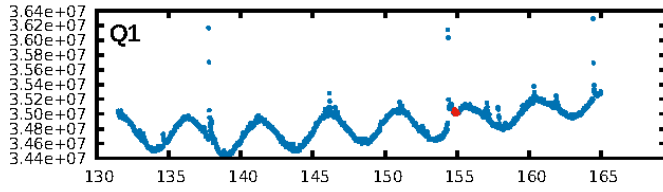
DV Diagnostic Results:

ShortPeriod-sig: 99.7% [2.96 σ]
LongPeriod-sig: 100.0% [223.46 σ]
ModelChiSquare2-sig: 41.5%
ModelChiSquareGof-sig: 76.1%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: -6.109
Centroid-sig: 26.2%
Centroid-so: 0.742 arcsec [0.73 σ]
OotOffset-rm: 1.021 arcsec [1.21 σ]
KicOffset-rm: 1.236 arcsec [1.44 σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

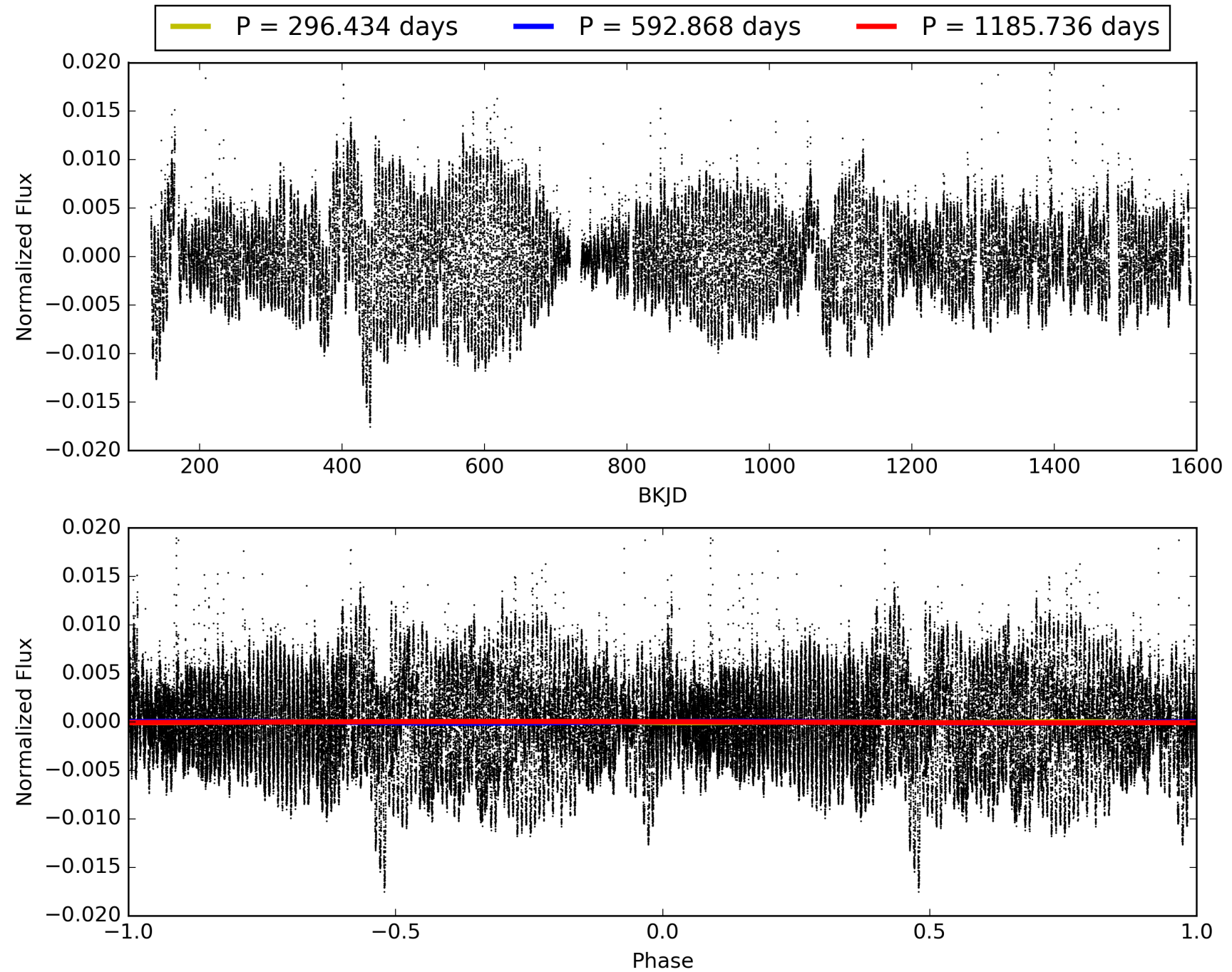
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:26:58 Z

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

TCE 003222610-04, PDC Light Curves

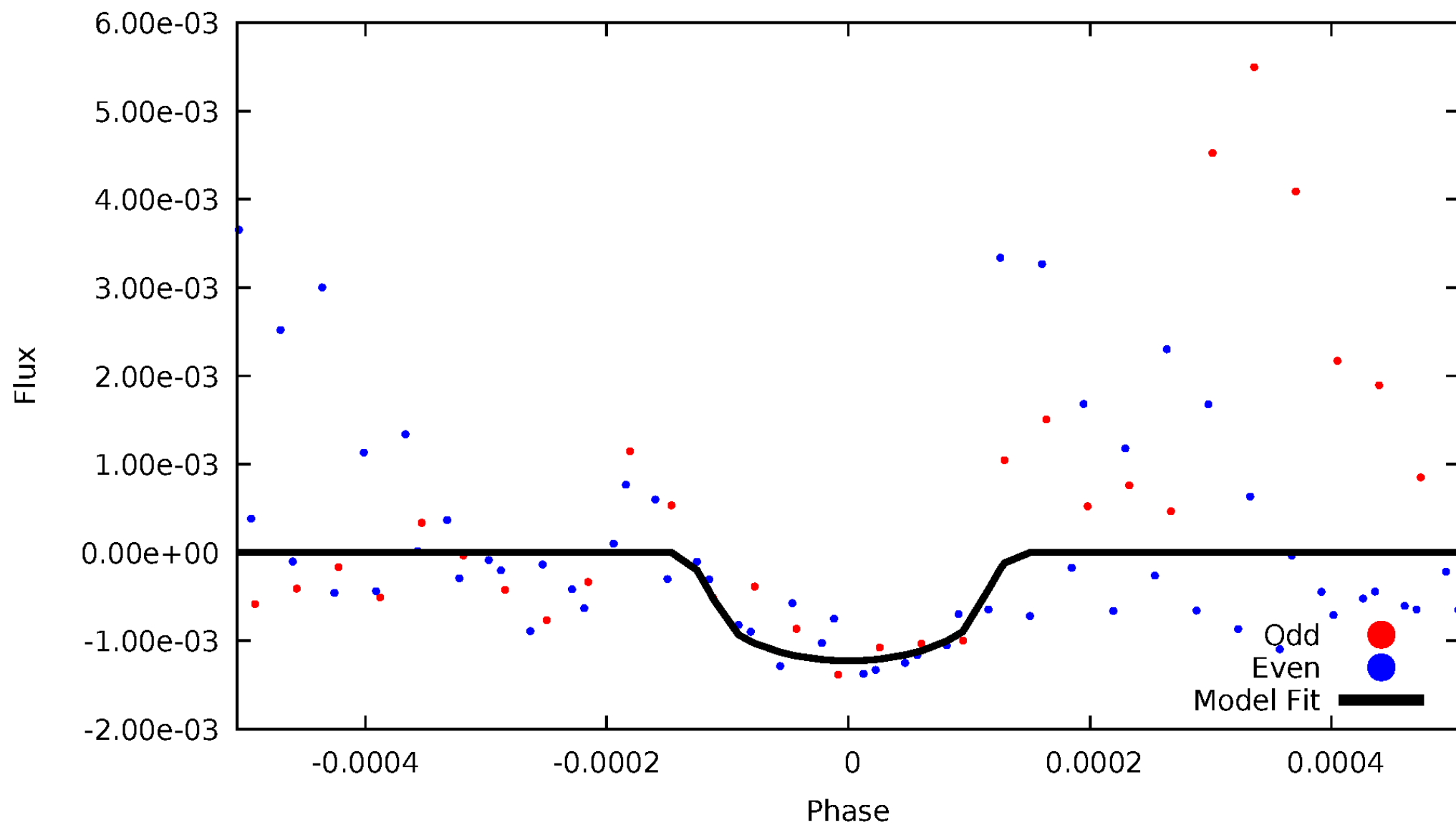


TCE 003222610-04



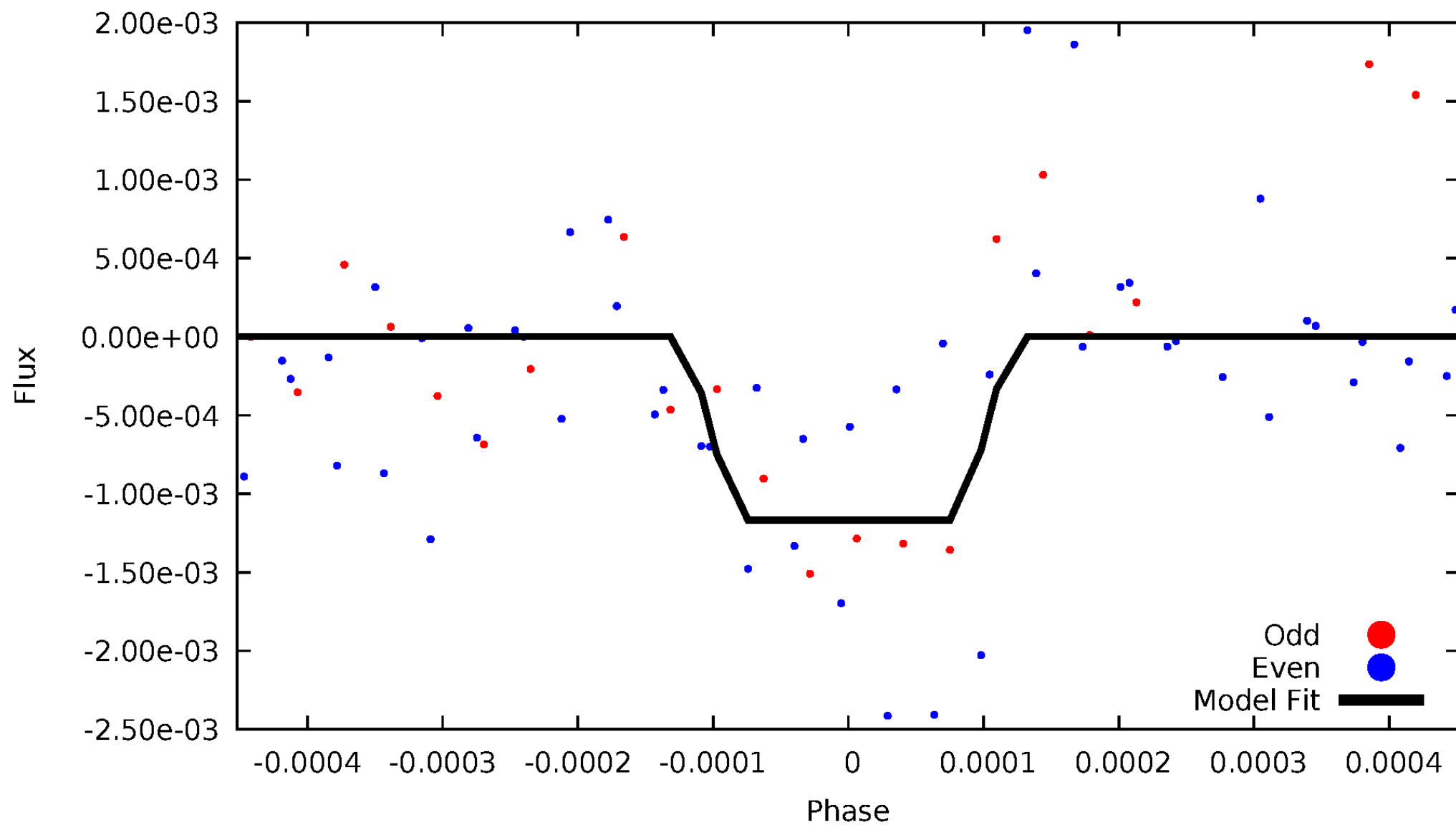
DV Odd/Even

TCE 003222610-04



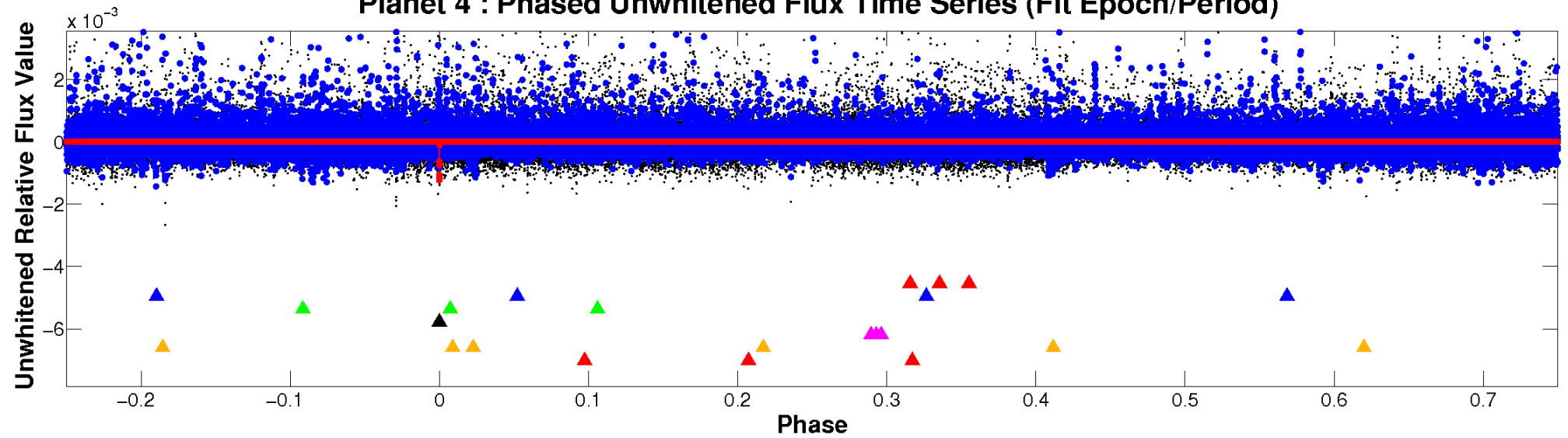
ALT Odd/Even

TCE 003222610-04

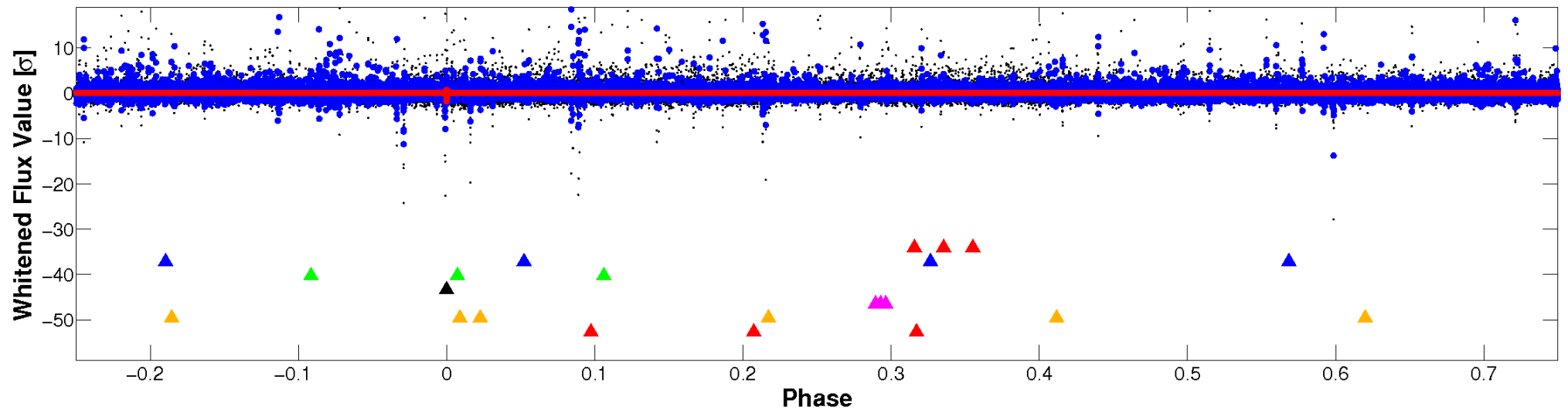


Non-Whitened Vs. Whitened Light Curve

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

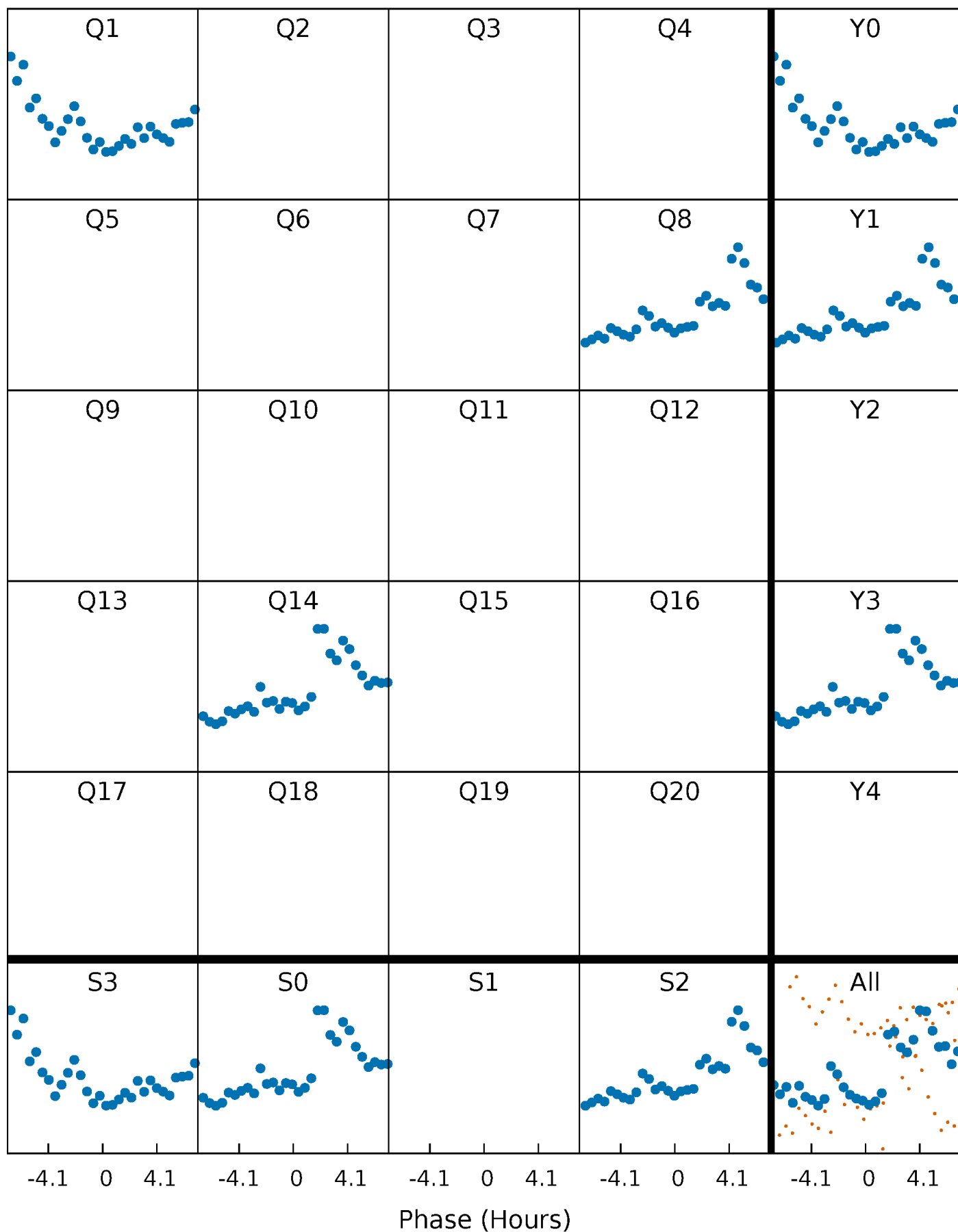


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



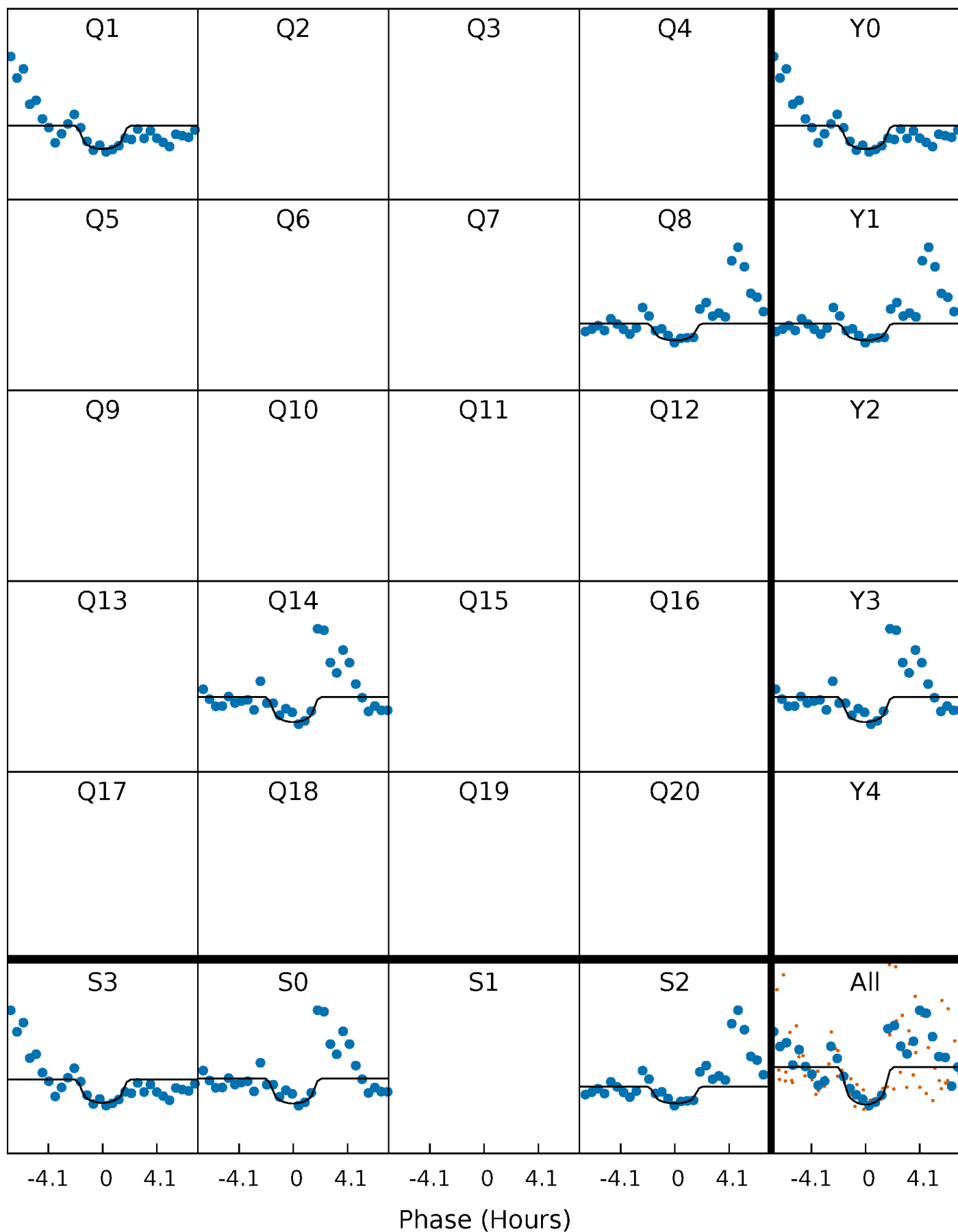
PDC Quarter-Phased Transit Curves

TCE 003222610-04 P=592.868061 Days $T_0=154.902856$ (BKJD)



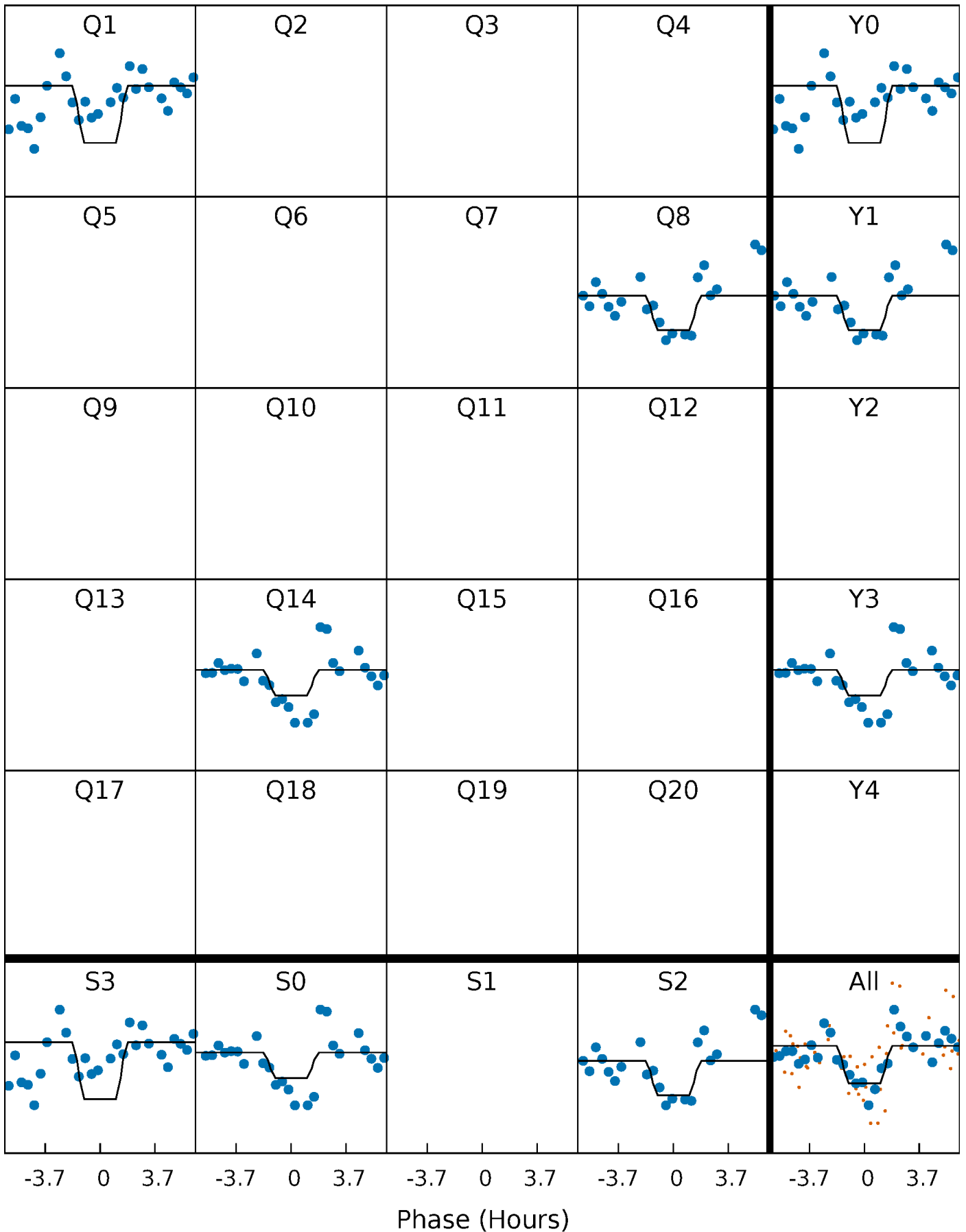
DV Quarter-Phased Transit Curves

TCE 003222610-04 P=592.868061 Days $T_0=154.902856$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

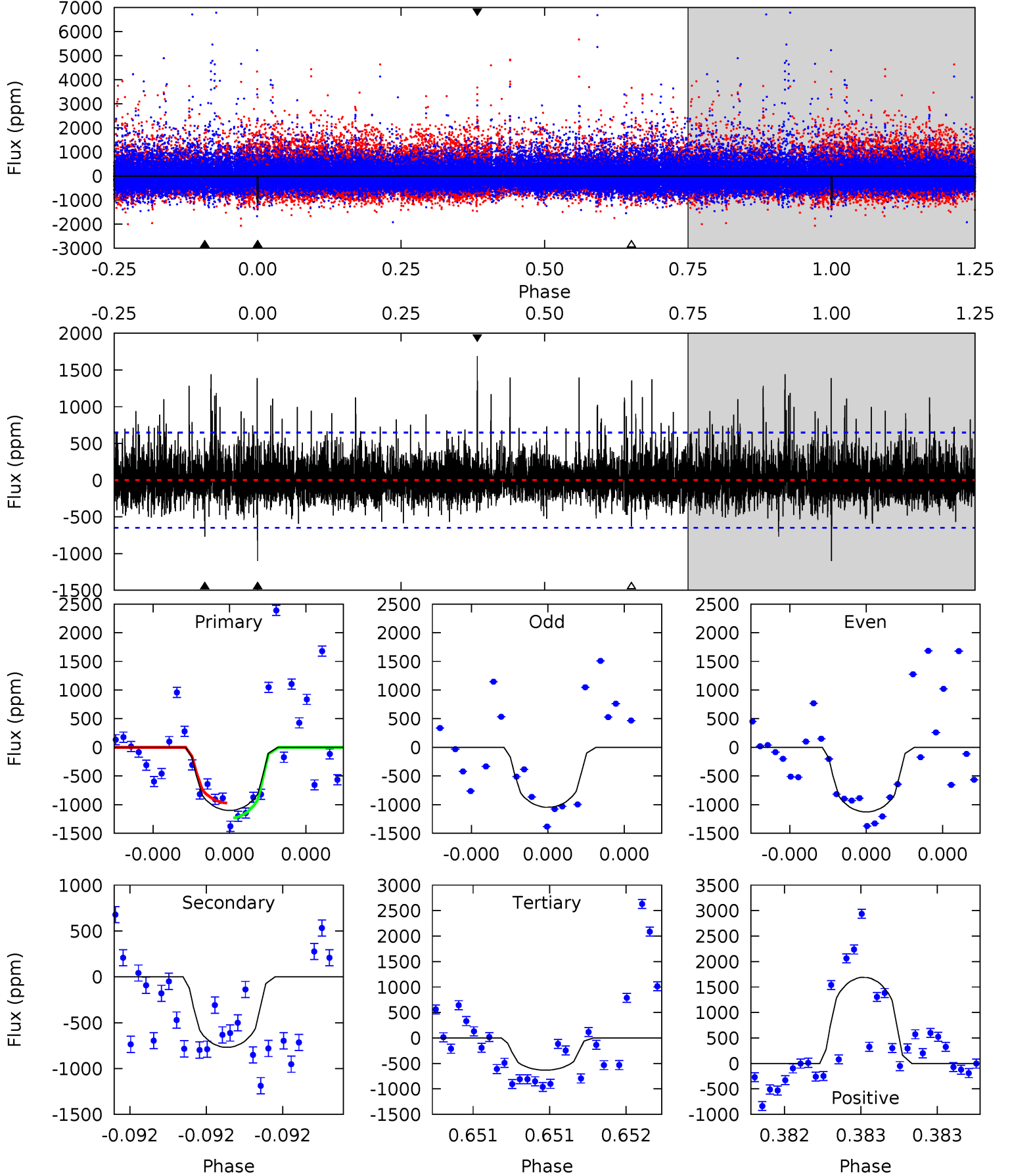
TCE 003222610-04 P=592.852499 Days $T_0=154.930073$ (BKJD)



DV Model-Shift Uniqueness Test

003222610-04, P = 592.868061 Days, E = 154.902856 Days

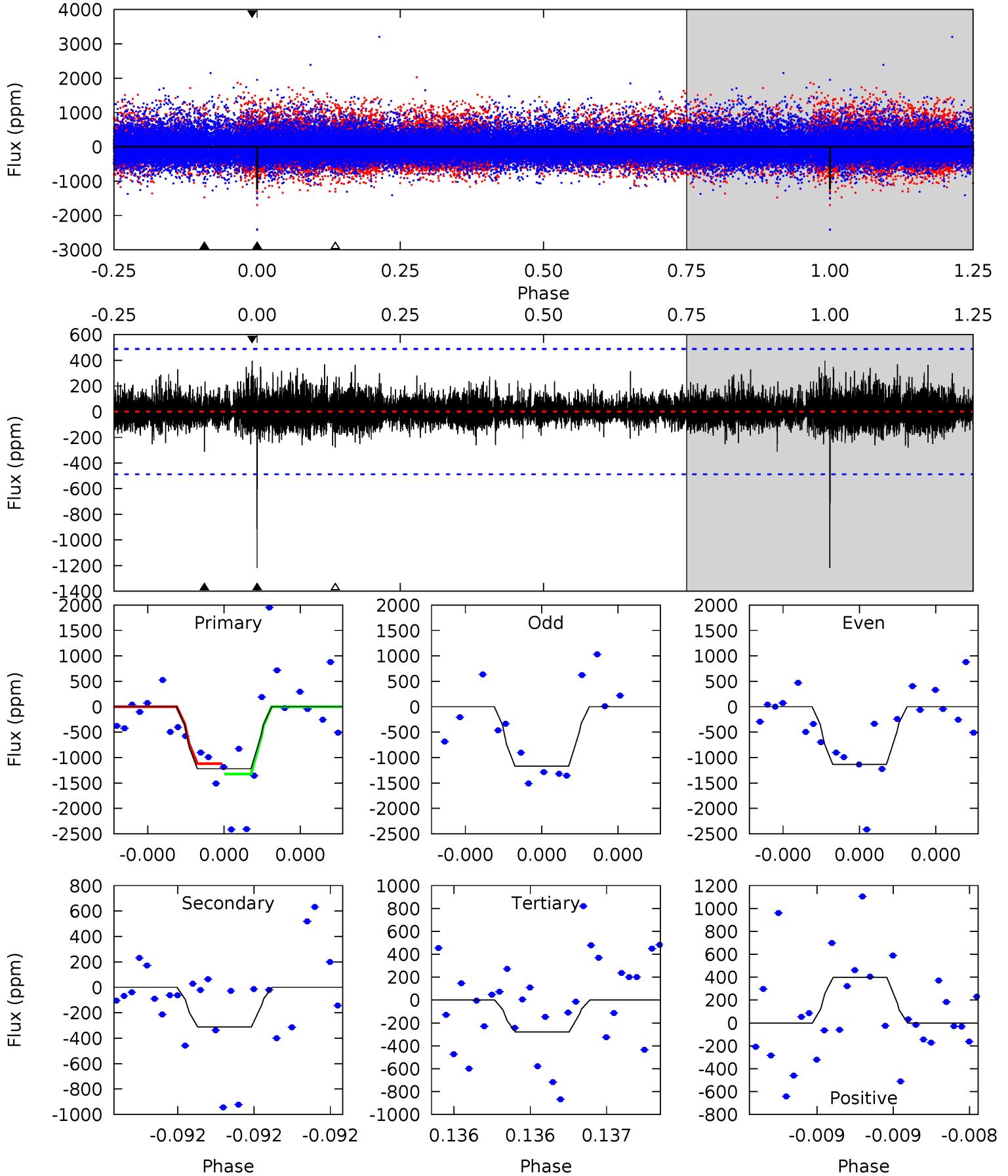
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.66	6.74	5.54	14.8	5.69	3.66	1.84	4.12	-5.17	1.20	-8.08	0.27	1.02	0.61	1.15



Alt Model-Shift Uniqueness Test

003222610-04, P = 592.852499 Days, E = 154.930073 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.3	3.64	3.27	4.65	5.72	3.70	0.79	11.0	9.63	0.37	-1.01	0.20	1.02	0.25	1.20



Stellar Parameters For KIC 003222610

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4260^{+142}_{-142}	$4.607^{+0.052}_{-0.017}$	$0.140^{+0.200}_{-0.300}$	$0.671^{+0.032}_{-0.057}$	$0.664^{+0.052}_{-0.052}$	$3.101^{+0.665}_{-0.248}$
	+3%/-3%	+1%/-0%	+143%/-214%	+5%/-8%	+8%/-8%	+21%/-8%
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 003222610-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-768 ± 114	$4.83^{+4.83}_{-3.28}$	194^{+7}_{-7}	3186^{+1469}_{-546}	$26430^{+228322}_{-19683}$
Alt.	-311 ± 85	$4.89^{+3.70}_{-3.25}$	194^{+7}_{-7}	2786^{+1079}_{-394}	10171^{+75846}_{-7173}

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 $A_{obs} \gg 1.0$

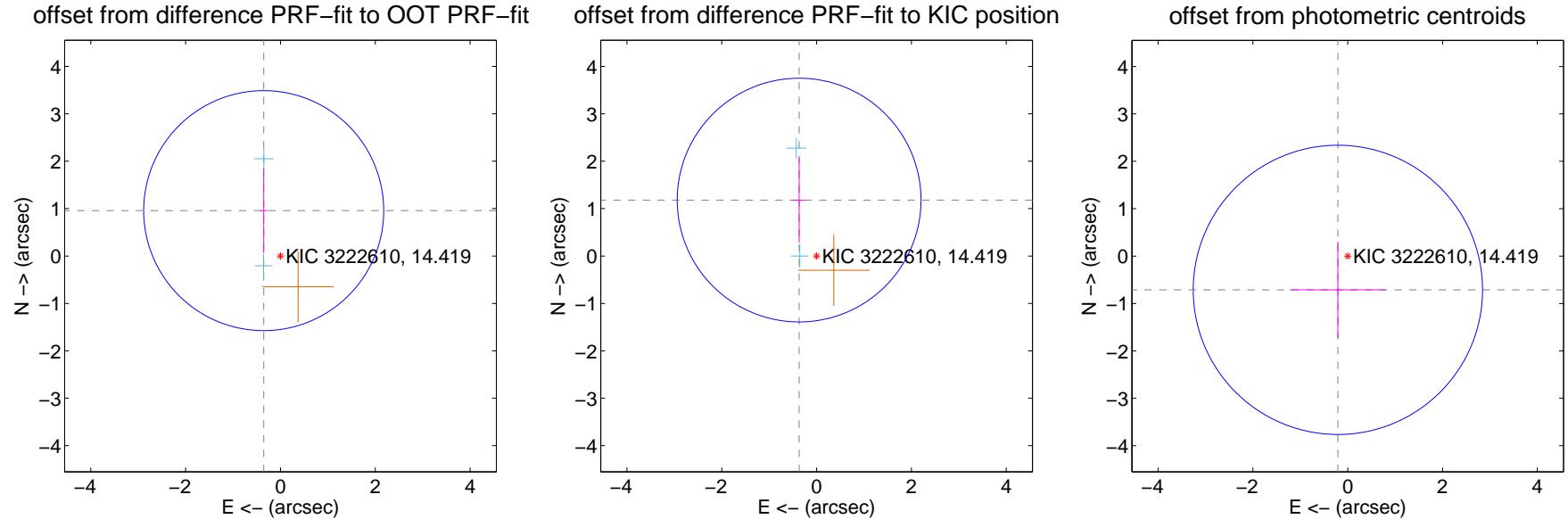
DV Centroid Data

Supplemental centroid analysis for 003222610-04. Kepler magnitude: 14.42. Transit SNR 7.57

There are 2 quarters with good PRF difference image offsets

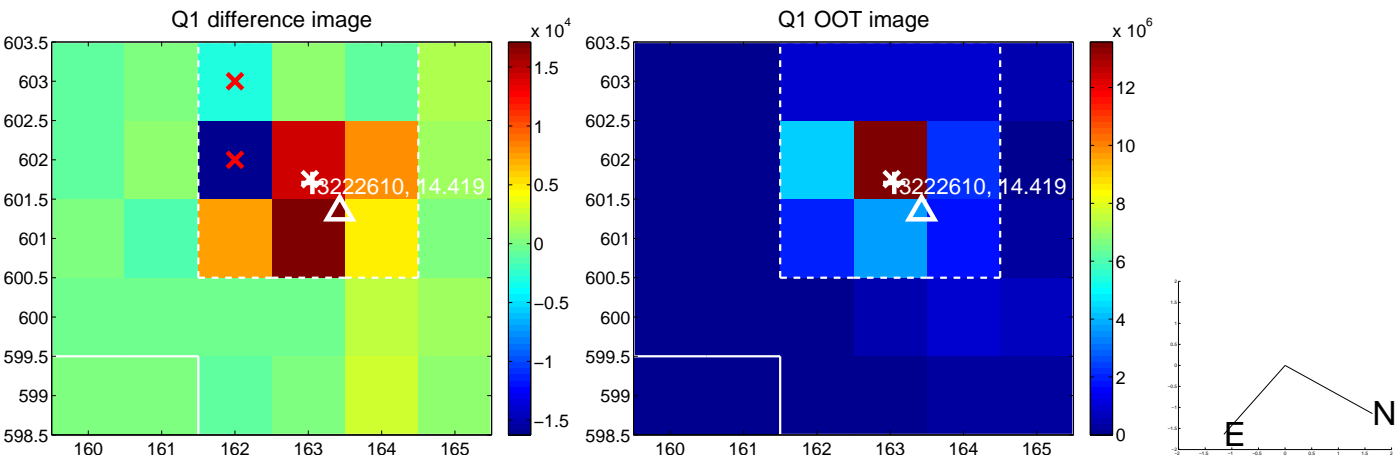
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.021 ± 0.844	1.21	0.353 ± 0.081	0.958 ± 0.899
PRF-fit source offset from KIC position	1.236 ± 0.857	1.44	0.368 ± 0.136	1.180 ± 0.897
photometric centroid source offset	0.74 ± 1.02	0.73	0.21 ± 1.01	-0.71 ± 1.02

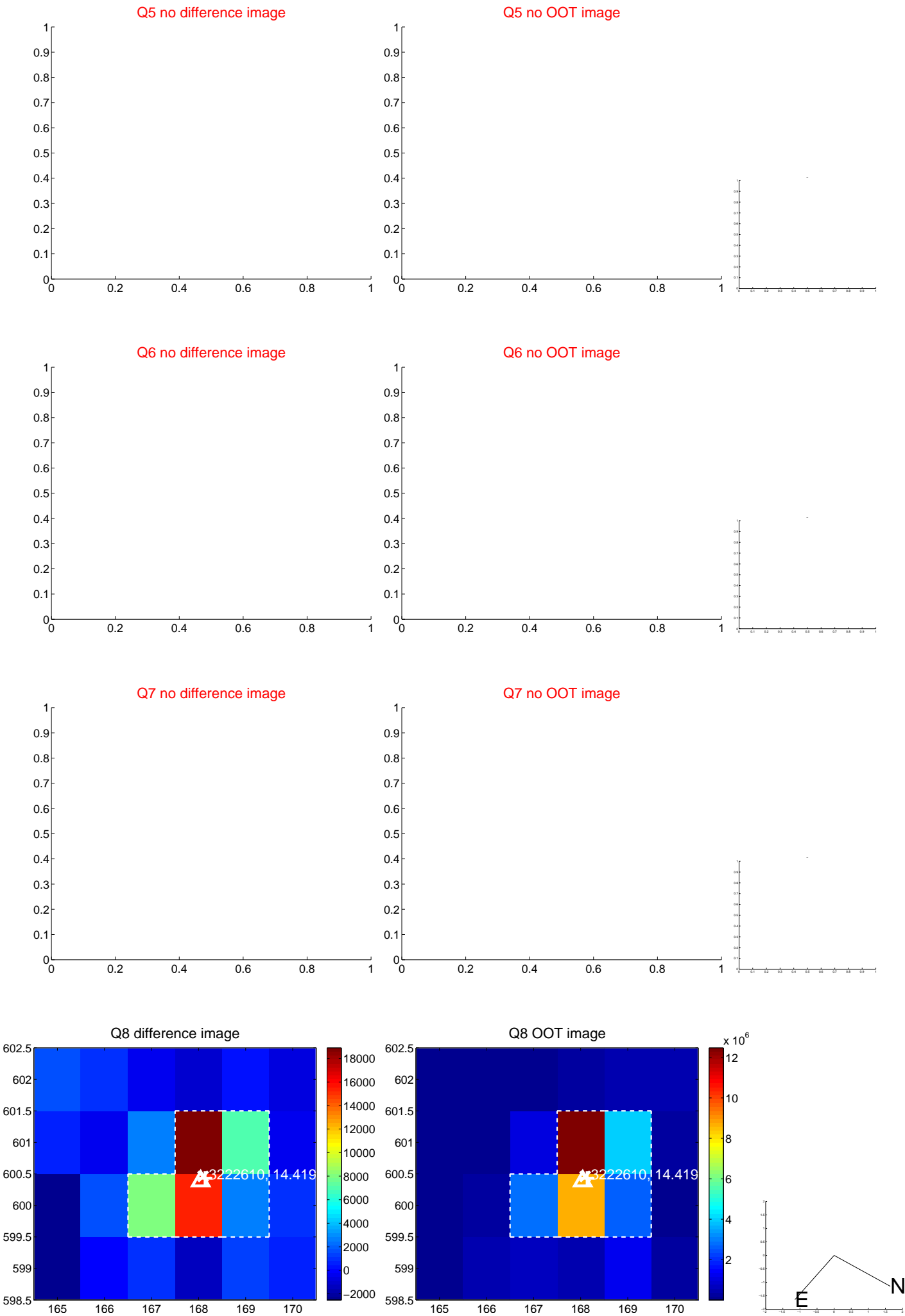


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



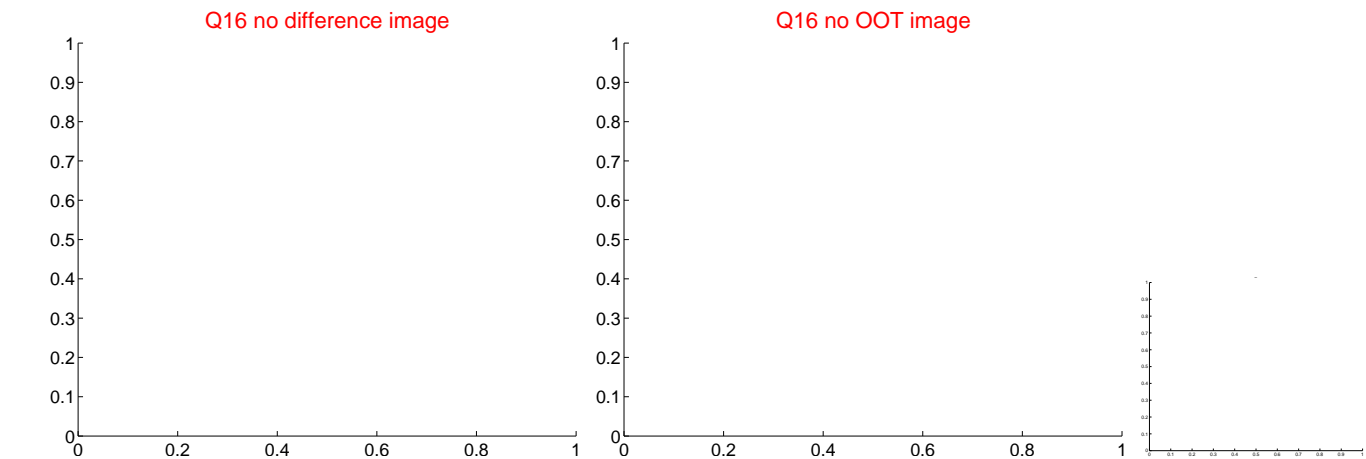
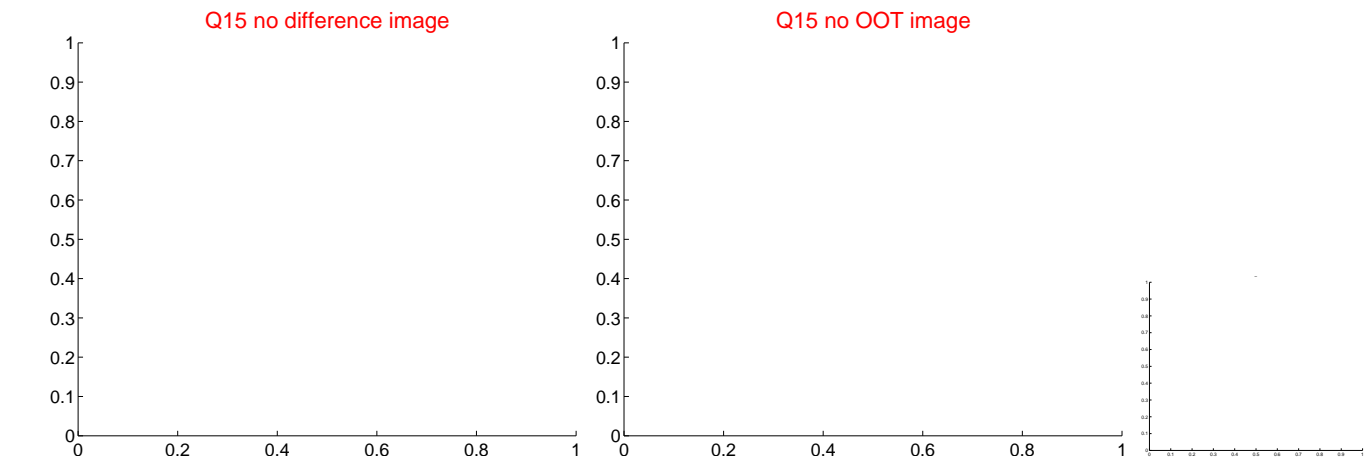
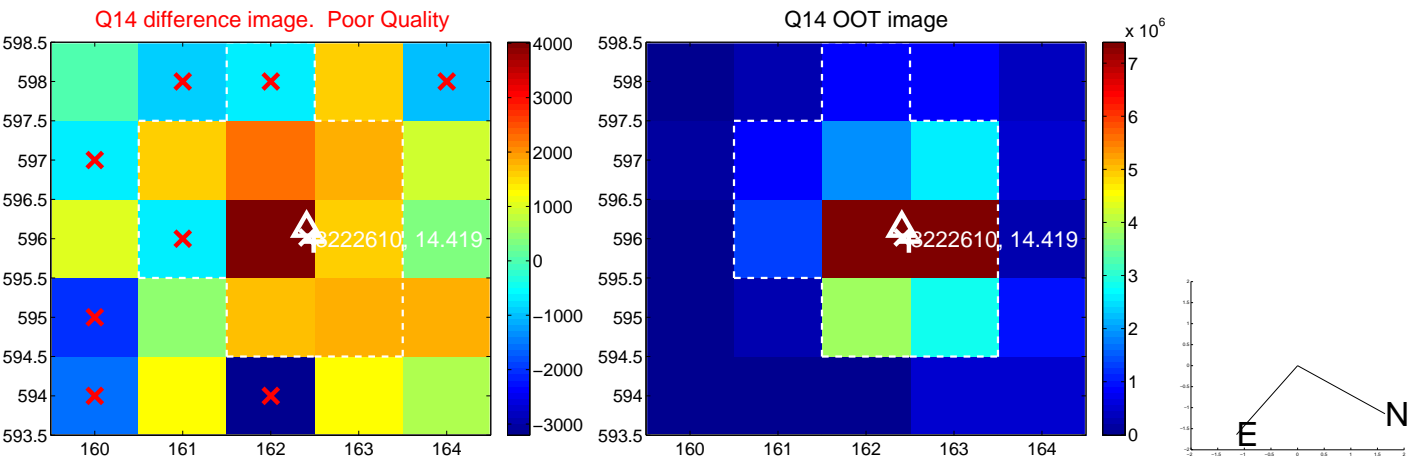
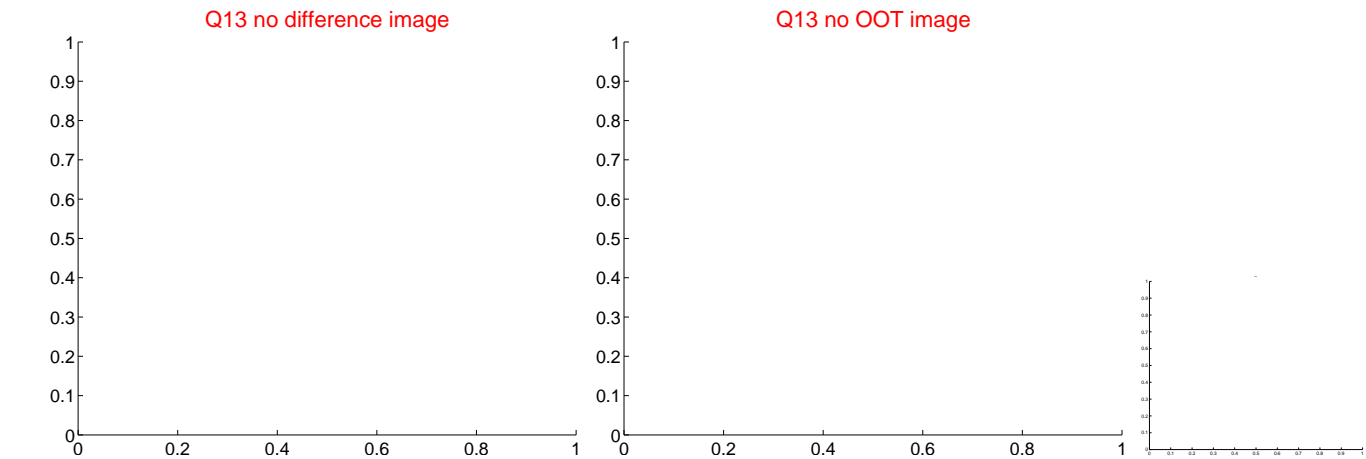
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



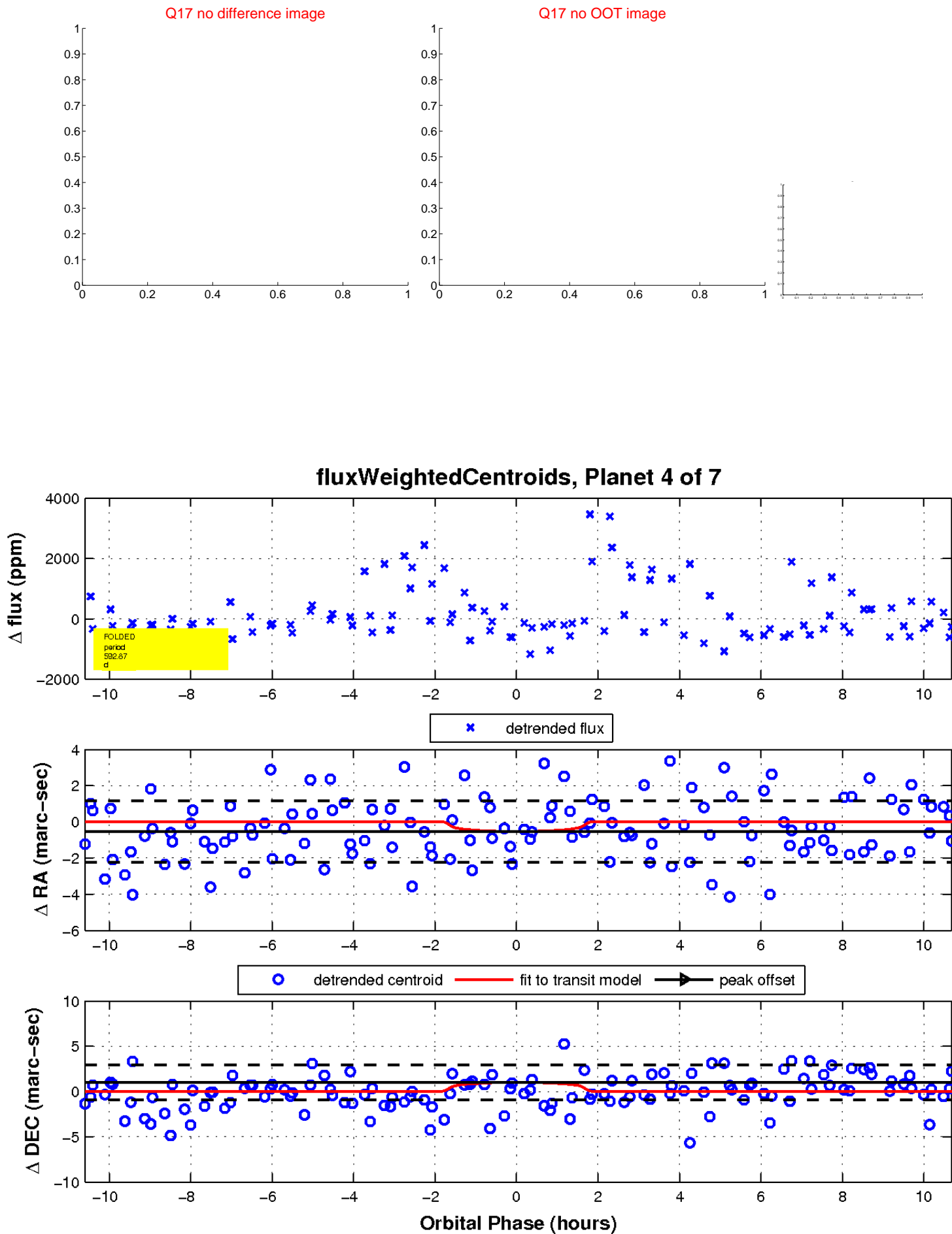
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

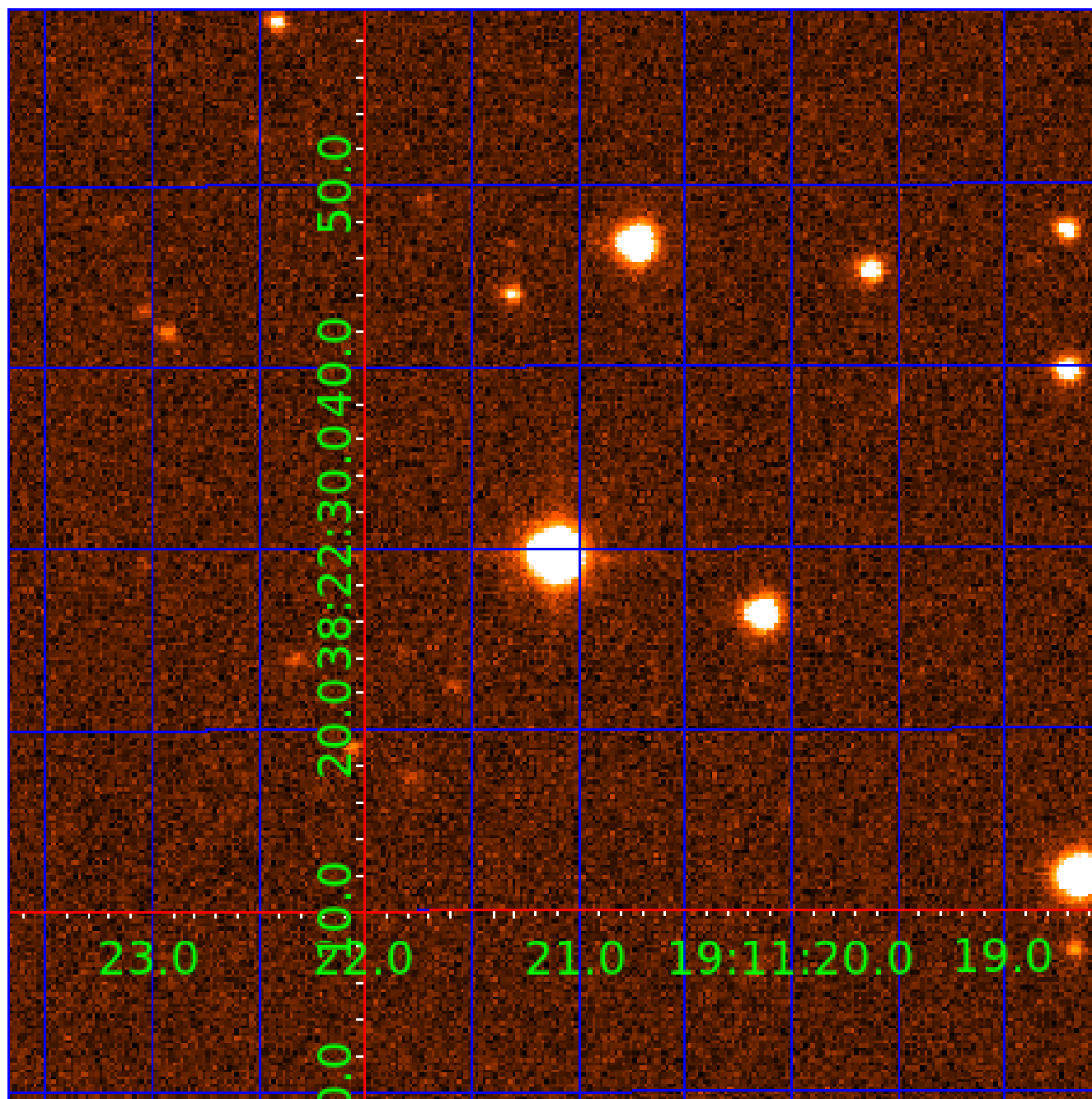


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003222610

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})
003222610-02	OBS	No	449.457666	185.880463	810.2	6.620	8.2	5.8	0.67	4260	2.00	0.13
003222610-03	OBS	No	534.289527	217.800770	1681.8	4.662	9.7	8.3	0.67	4260	3.05	0.10
003222610-04	OBS	No	592.868061	154.902856	1224.0	3.600	9.7	7.6	0.67	4260	2.51	0.09
003222610-05	OBS	No	590.839150	330.598610	1172.5	16.069	12.5	6.9	0.67	4260	2.38	0.09
003222610-06	OBS	No	238.776505	160.222585	640.1	3.821	10.3	4.5	0.67	4260	2.05	0.31
003222610-07	OBS	No	658.015121	212.662877	620.9	6.000	9.0	-1.0	0.67	4260	1.59	0.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003222610-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV
003222610-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003222610-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
003222610-05	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003222610-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003222610-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

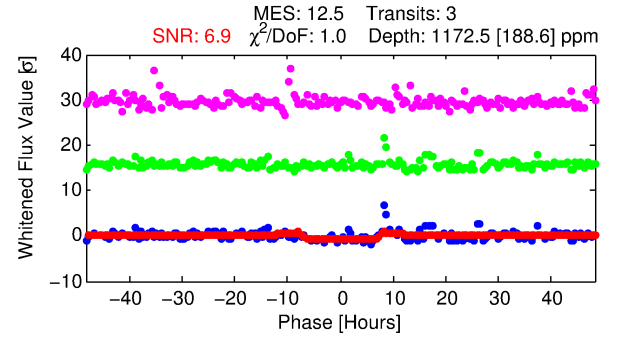
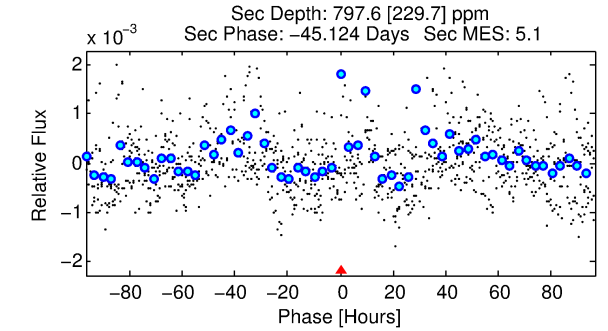
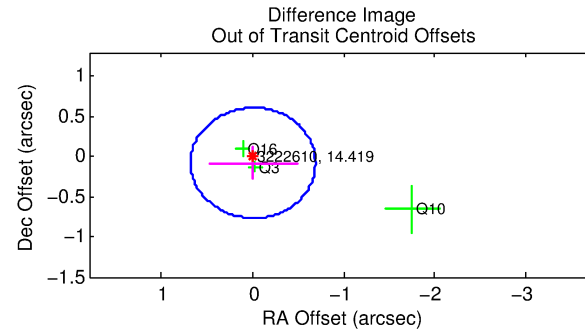
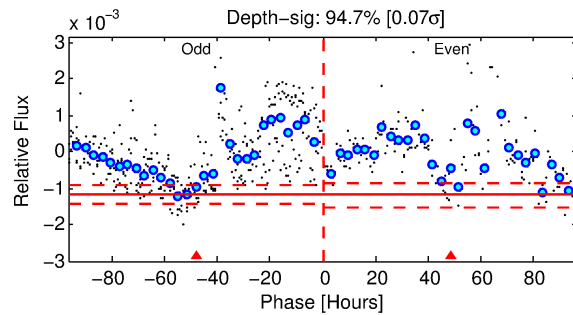
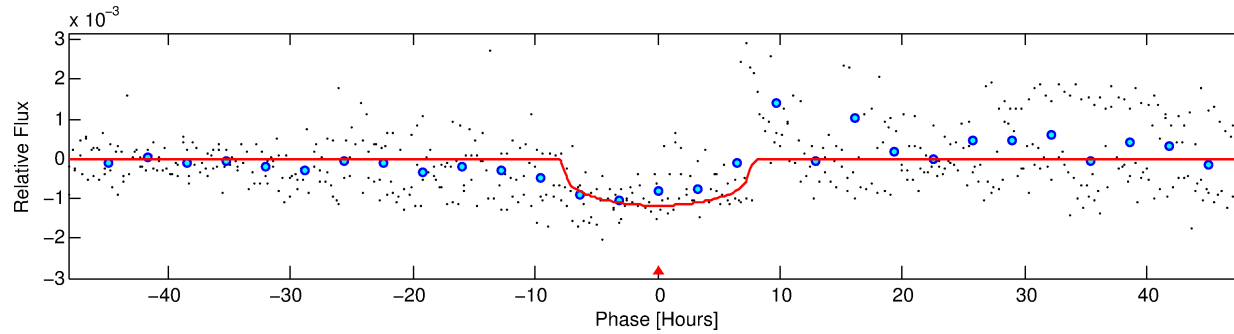
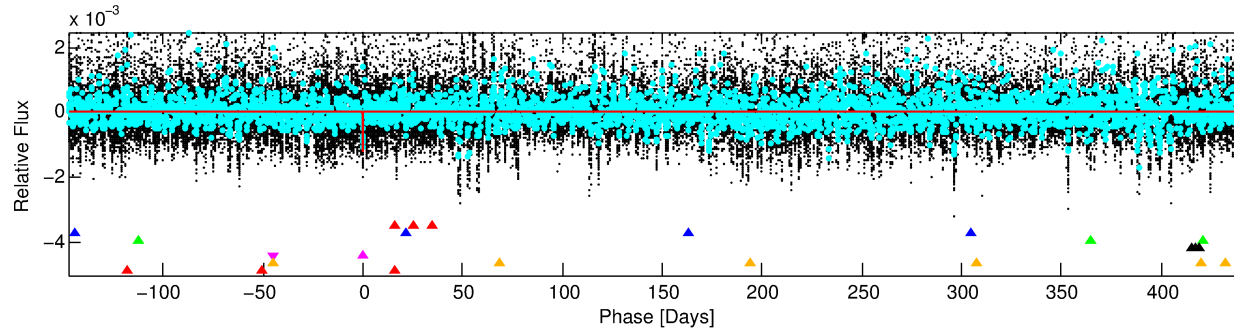
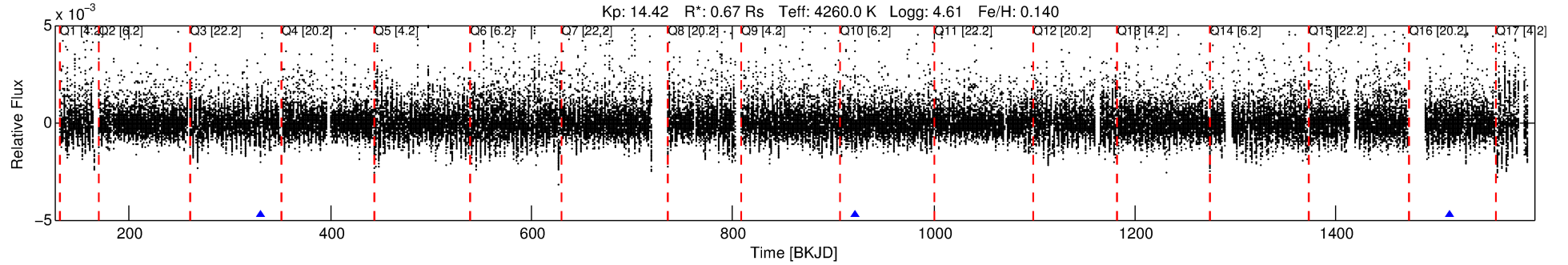
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003222610-05

No Significant Match Found

DV One-Page Summary

KIC: 3222610 Candidate: 5 of 7 Period: 590.839 d



DV Fit Results:

Period = 590.83915 [0.01145] d
Epoch = 330.5986 [0.0139] BKJD
Rp/R* = 0.0326 [0.0080]
a/R* = 229.89 [158.19]
b = 0.63 [0.67]
Seff = 0.09 [0.02]
Teq = 140 [6] K
Rp = 2.38 [0.62] Re
a = 1.2027 [0.0833] AU
Ag = 111665.14 [64304.31] [1.74 σ]
Teffp = 3967 [578] K [6.62 σ]

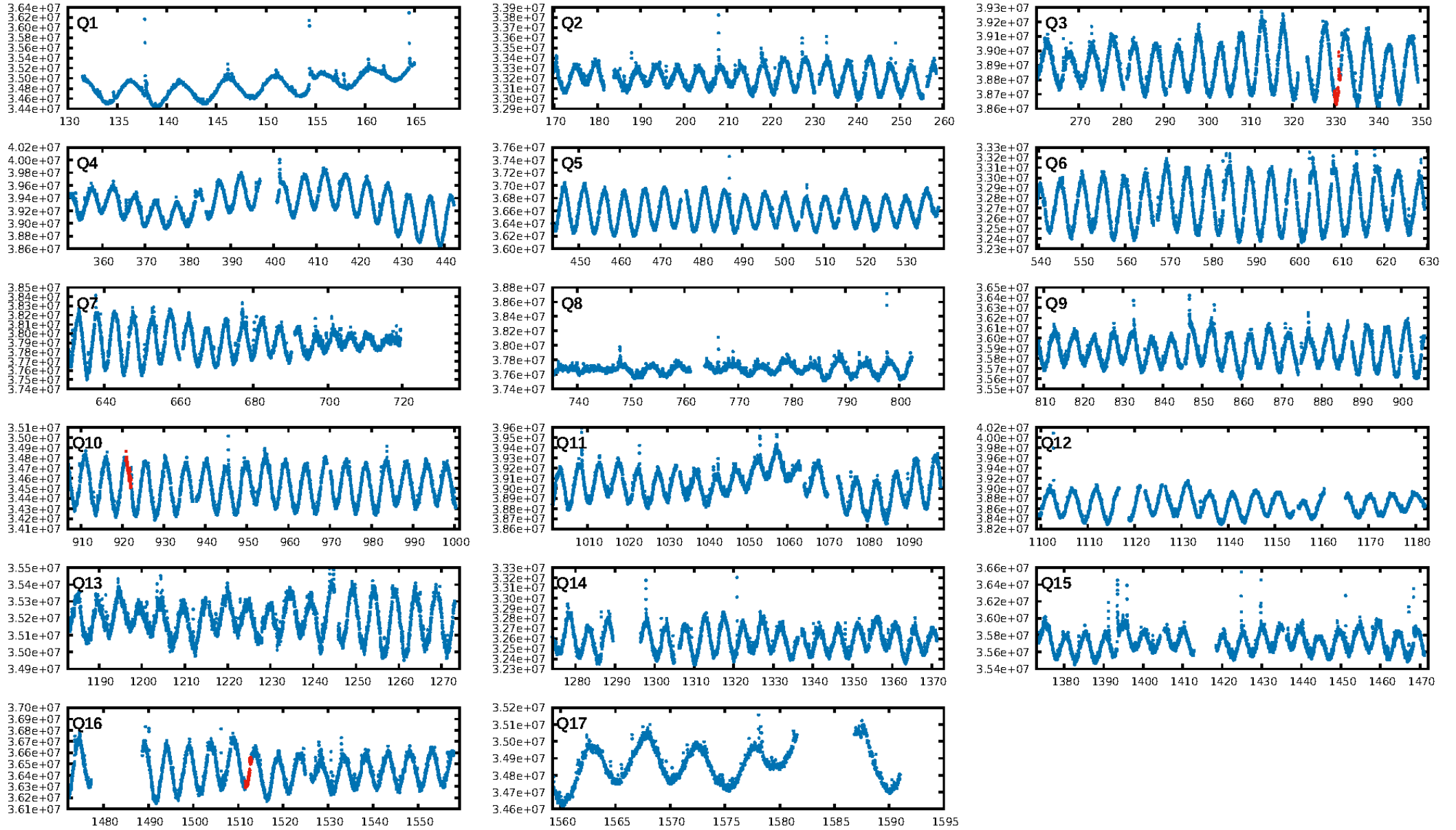
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [13.66 σ]
LongPeriod-sig: 99.7% [2.96 σ]
ModelChiSquare2-sig: 49.1%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.032
Centroid-sig: 95.3%
Centroid-so: 0.241 arcsec [0.35 σ]
OotOffset-rm: 0.079 arcsec [0.34 σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-rm: 0.192 arcsec [0.62 σ]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

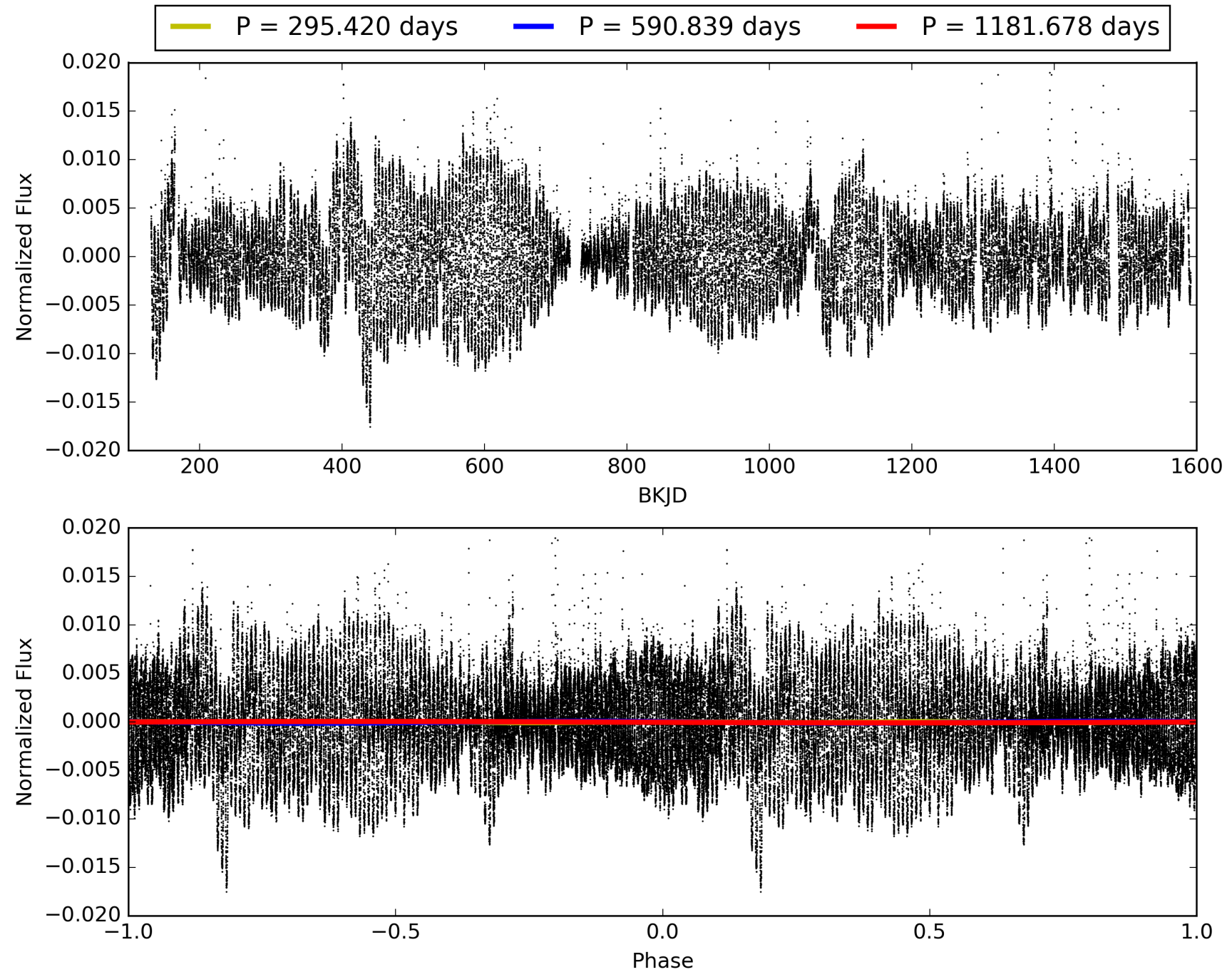
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:08 Z

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

TCE 003222610-05, PDC Light Curves

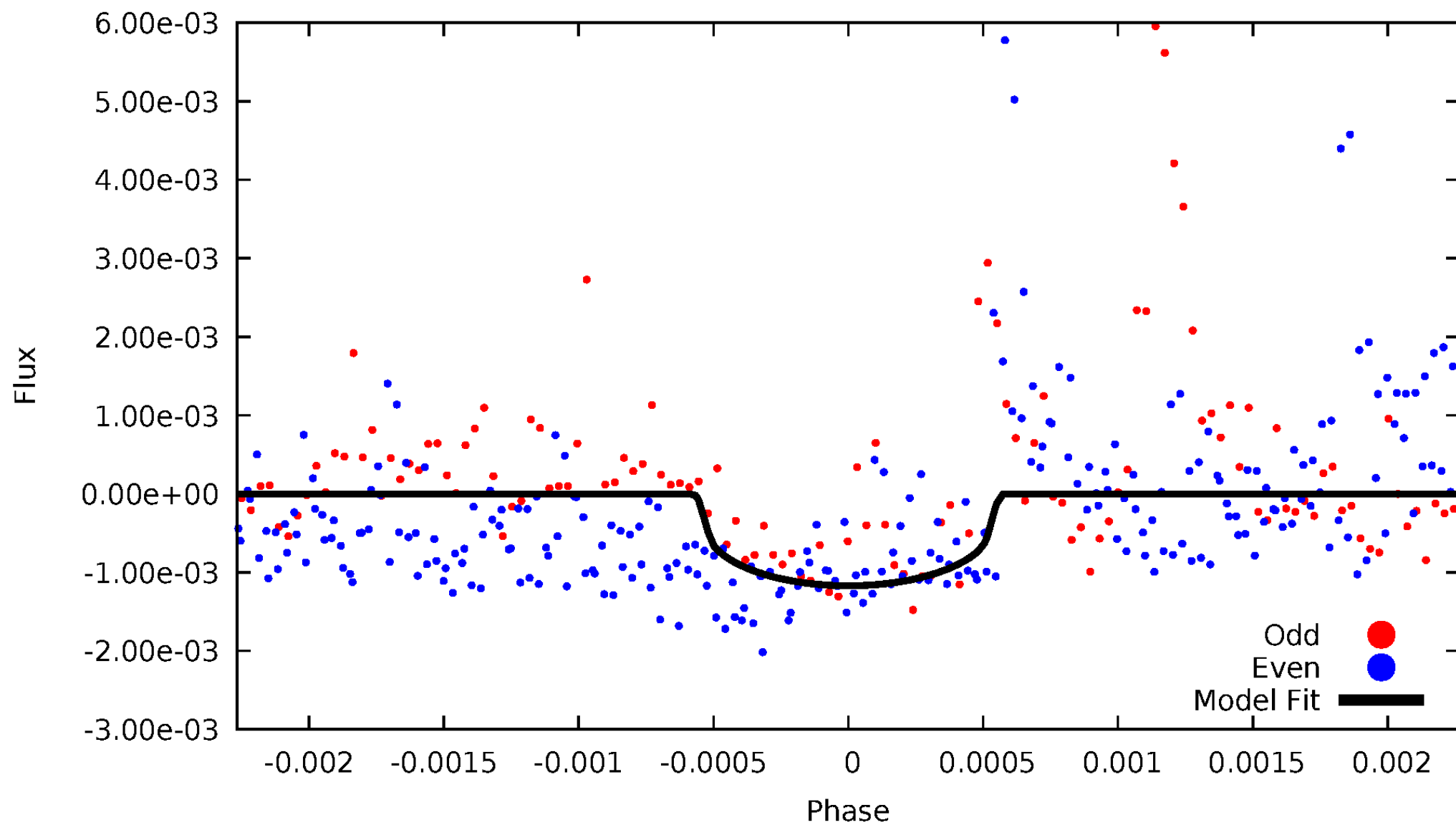


TCE 003222610-05



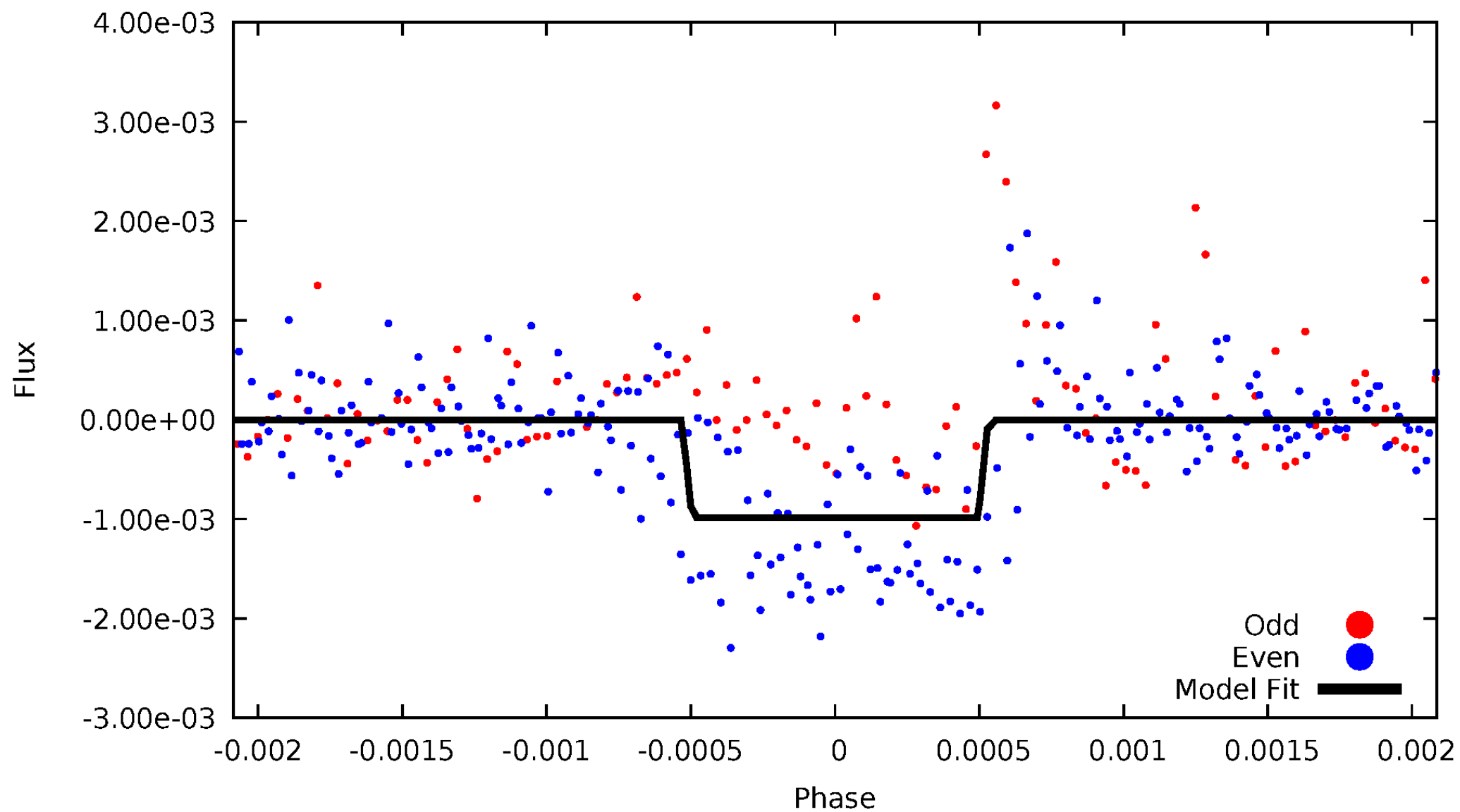
DV Odd/Even

TCE 003222610-05



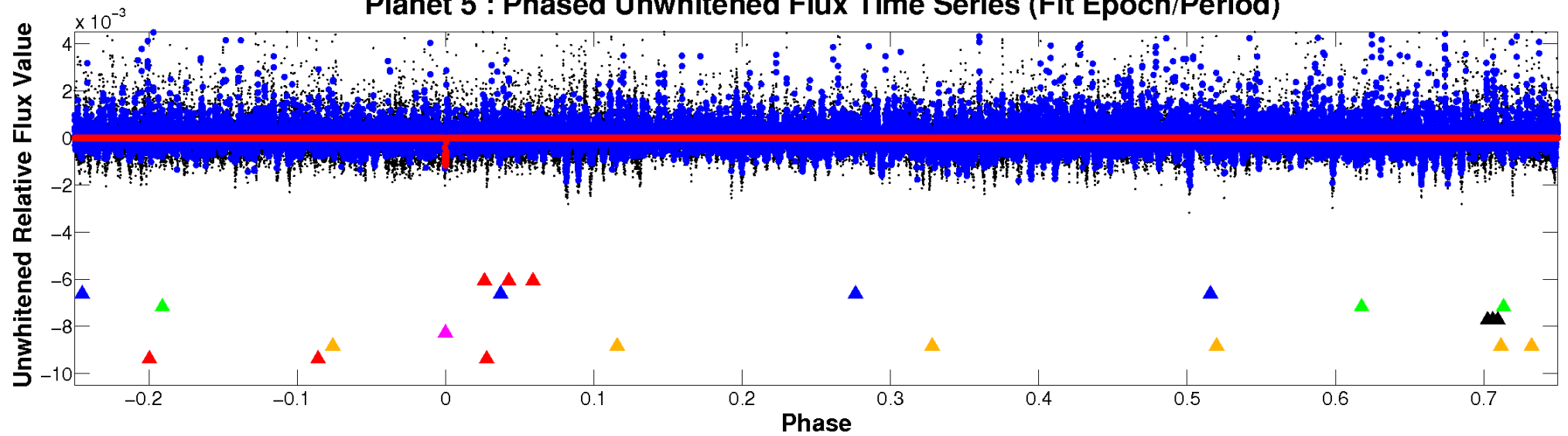
ALT Odd/Even

TCE 003222610-05

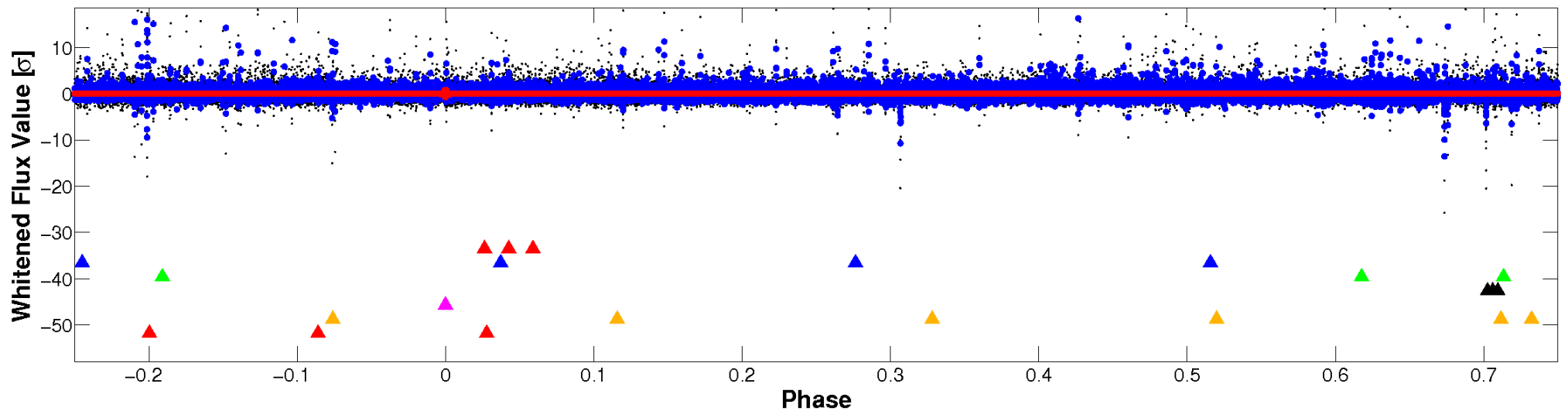


Non-Whitened Vs. Whitened Light Curve

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

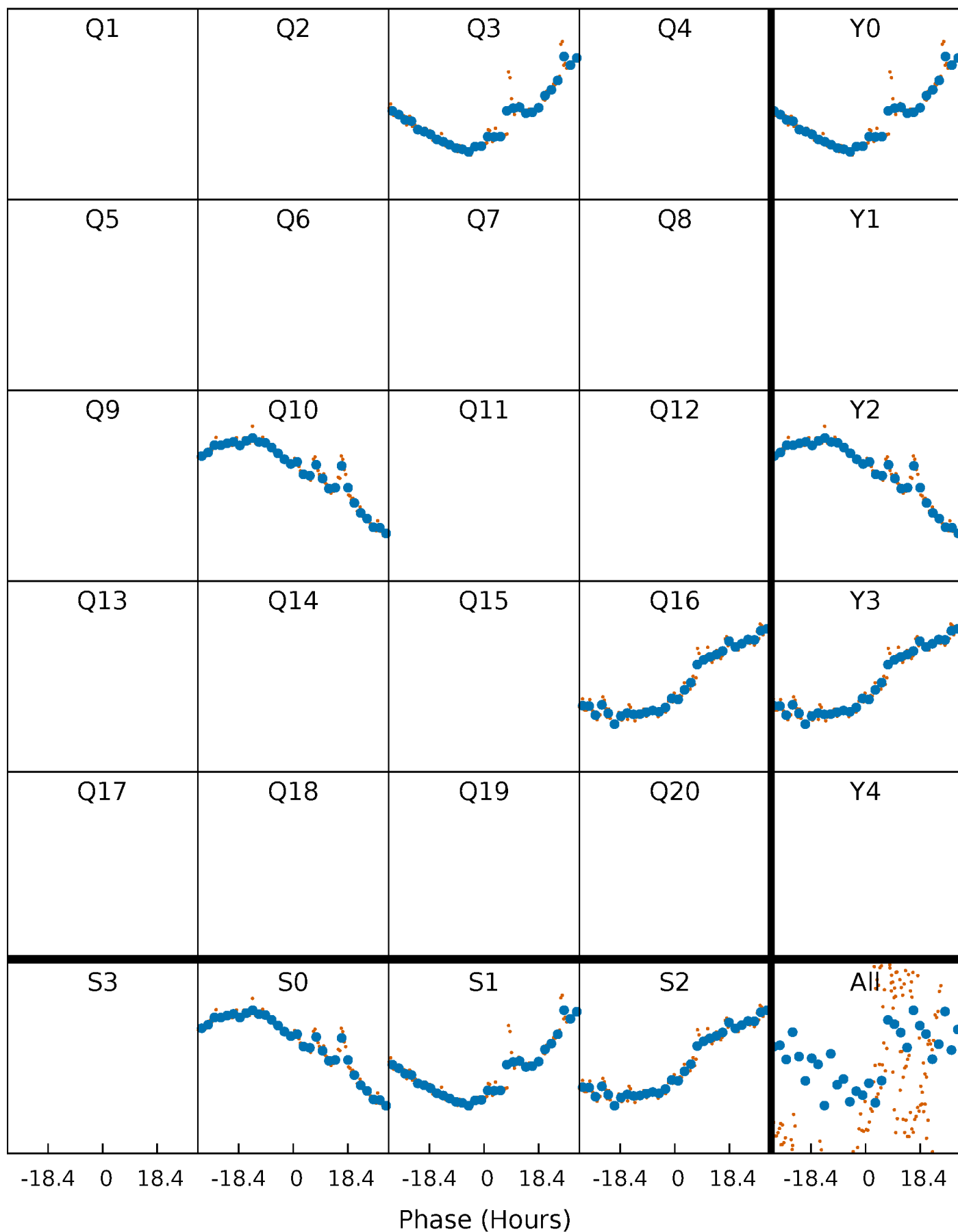


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



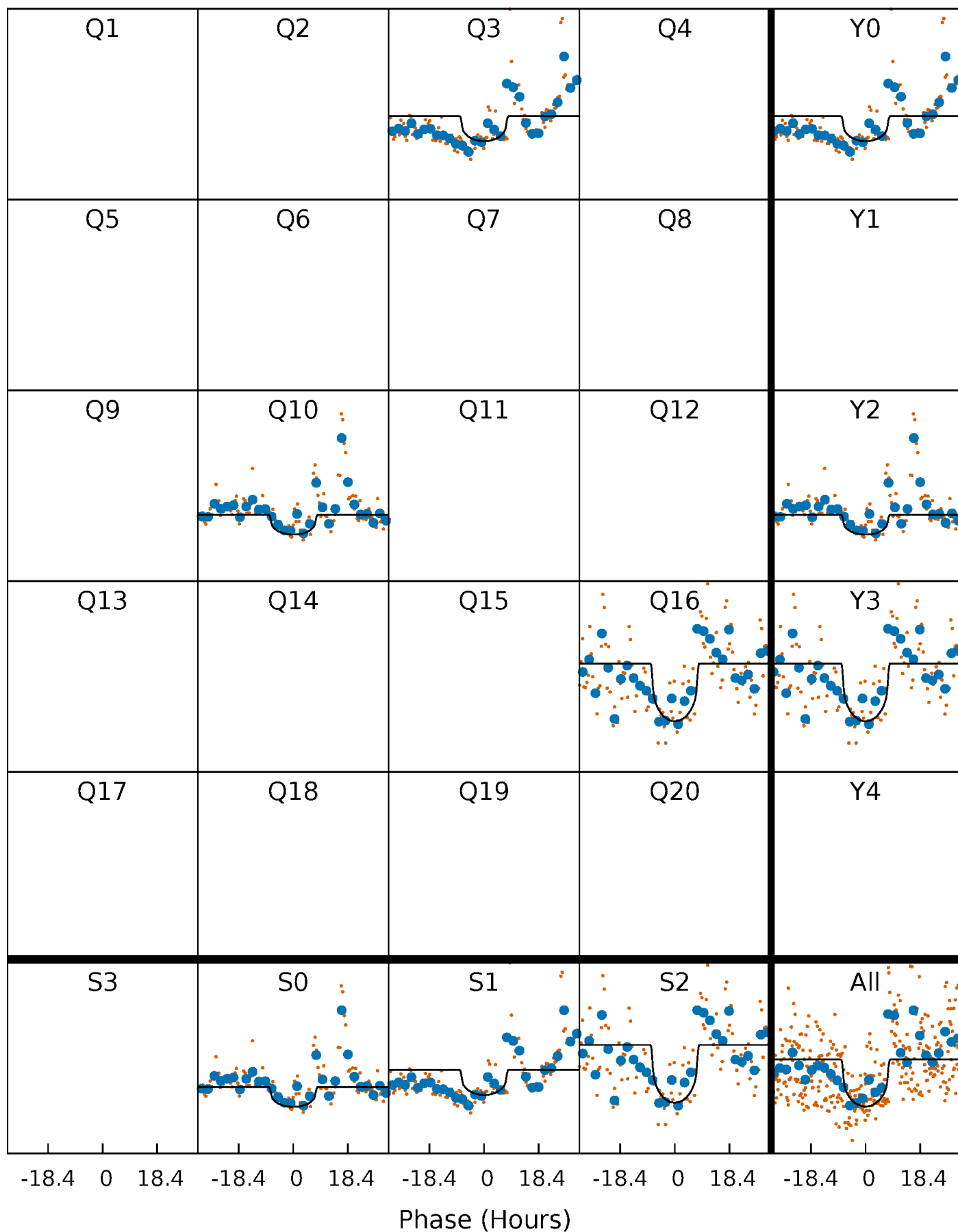
PDC Quarter-Phased Transit Curves

TCE 003222610-05 $P=590.839150$ Days $T_0=330.598610$ (BKJD)



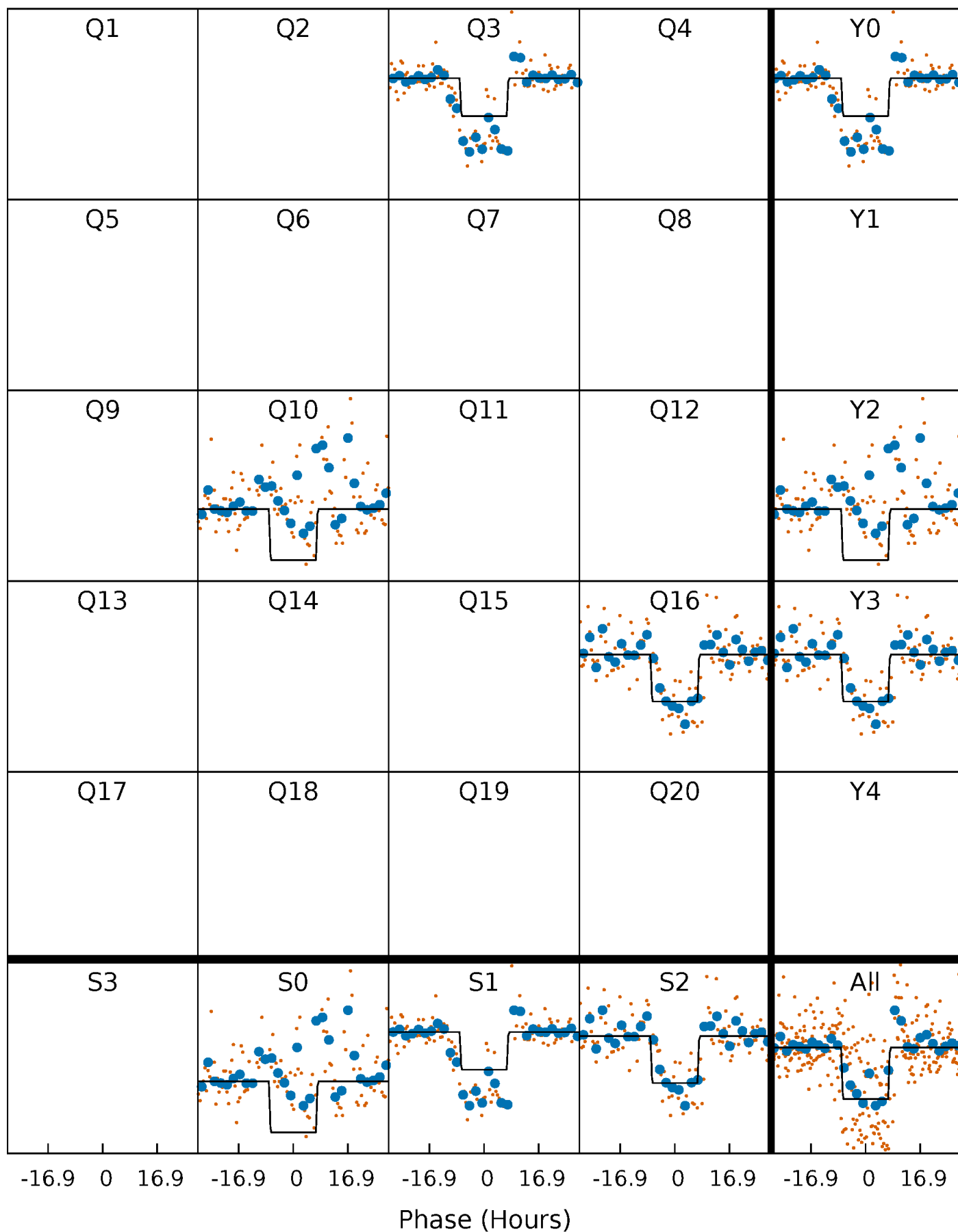
DV Quarter-Phased Transit Curves

TCE 003222610-05 $P=590.839150$ Days $T_0=330.598610$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

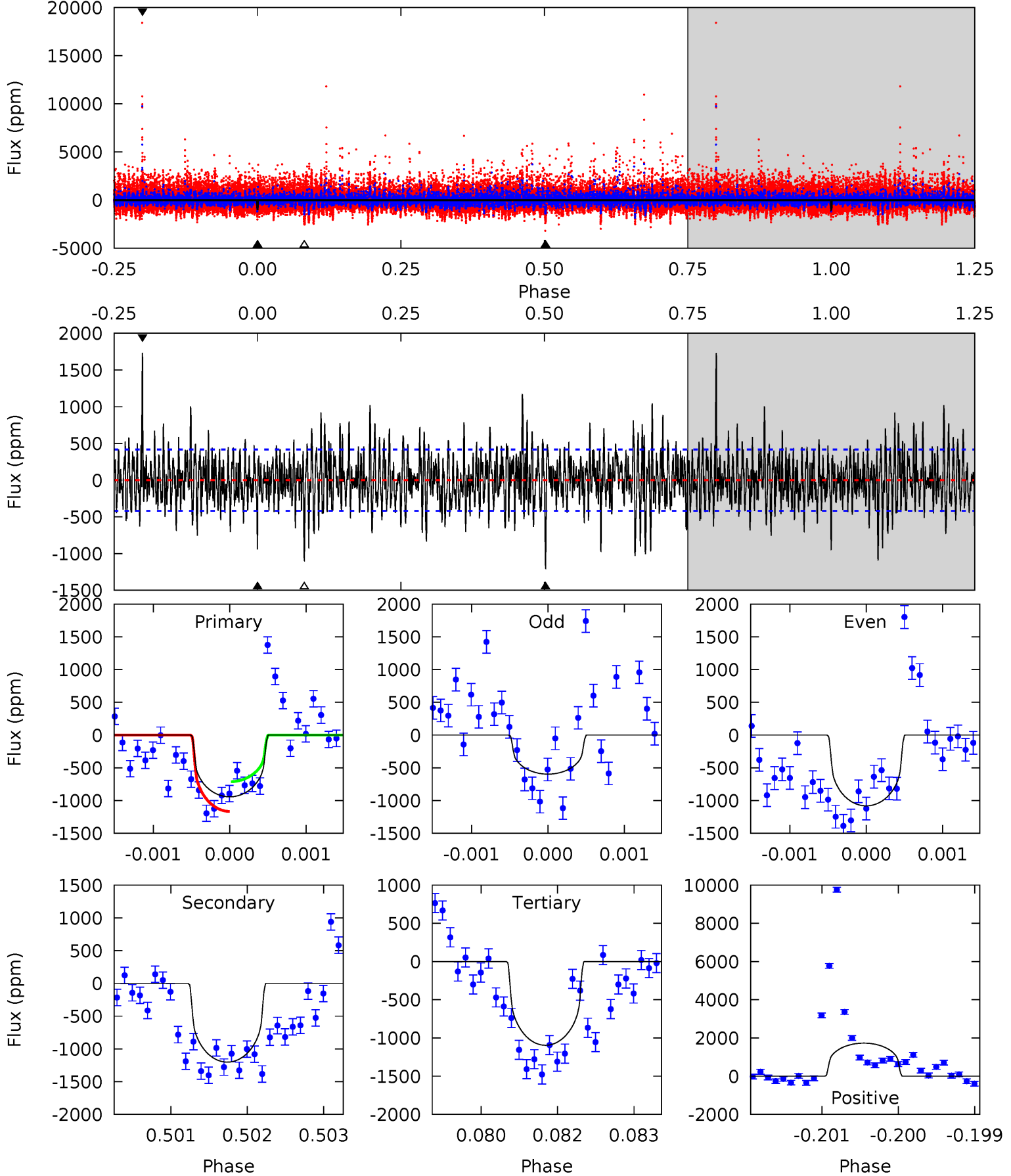
TCE 003222610-05 $P=590.788709$ Days $T_0=330.624593$ (BKJD)



DV Model-Shift Uniqueness Test

003222610-05, P = 590.839150 Days, E = 330.598610 Days

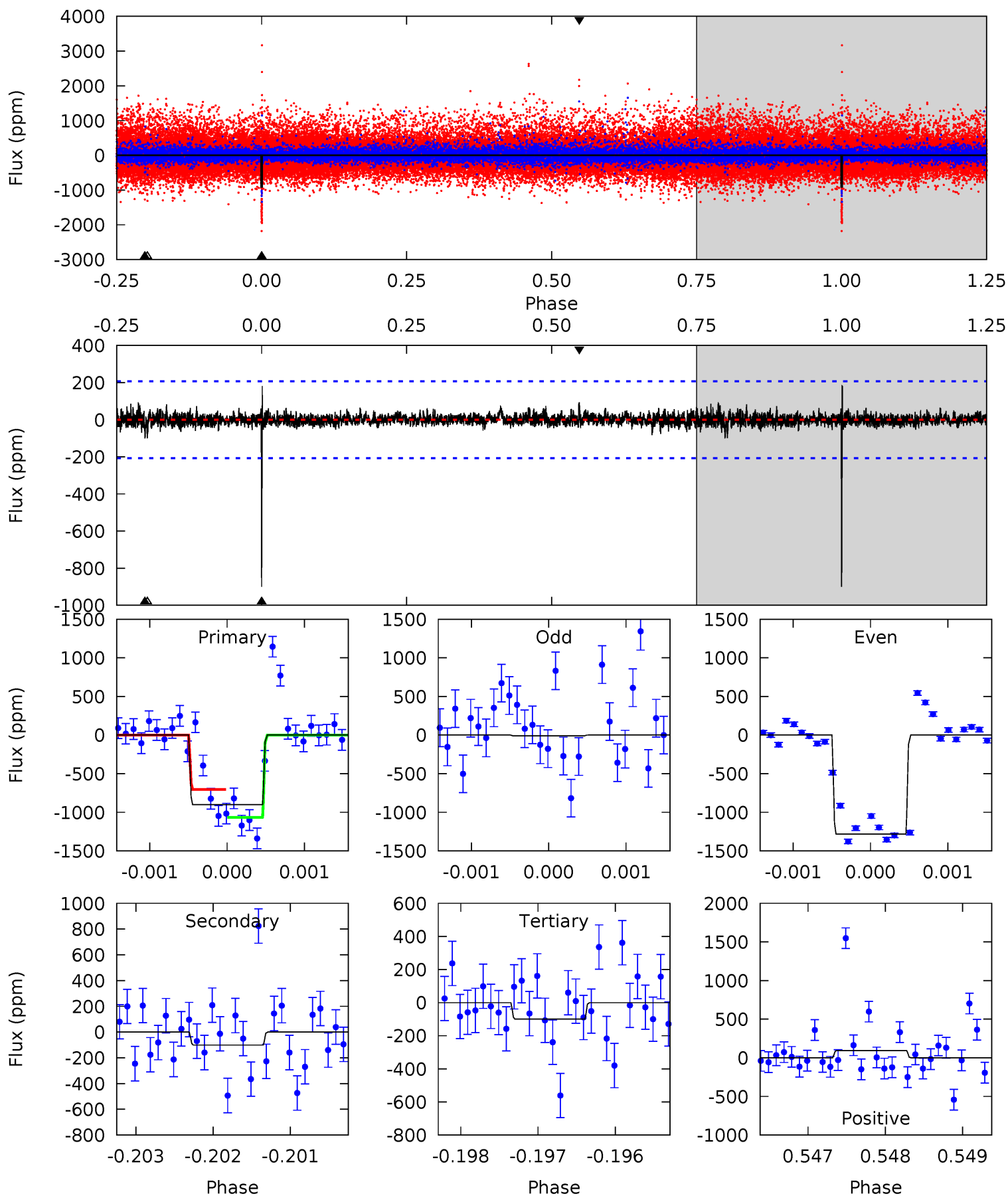
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.3	15.6	14.2	22.5	5.43	3.25	3.93	-1.98	-10.2	1.38	-6.86	2.75	0.90	0.59	2.97



Alt Model-Shift Uniqueness Test

003222610-05, P = 590.788709 Days, E = 330.624593 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.6	2.65	2.60	2.45	5.44	3.27	0.50	21.0	21.2	0.04	0.19	16.2	0.91	0.17	4.74



Stellar Parameters For KIC 003222610

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4260^{+142}_{-142}	$4.607^{+0.052}_{-0.017}$	$0.140^{+0.200}_{-0.300}$	$0.671^{+0.032}_{-0.057}$	$0.664^{+0.052}_{-0.052}$	$3.101^{+0.665}_{-0.248}$
	+3%/-3%	+1%/-0%	+143%/-214%	+5%/-8%	+8%/-8%	+21%/-8%
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 003222610-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1202 ± 77	$2.38^{+0.57}_{-0.60}$	194^{+7}_{-7}	4354^{+507}_{-376}	$170342^{+131237}_{-60880}$
Alt.	-101 ± 38	$2.26^{+0.59}_{-0.58}$	195^{+7}_{-7}	2953^{+309}_{-248}	15618^{+14519}_{-7731}

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

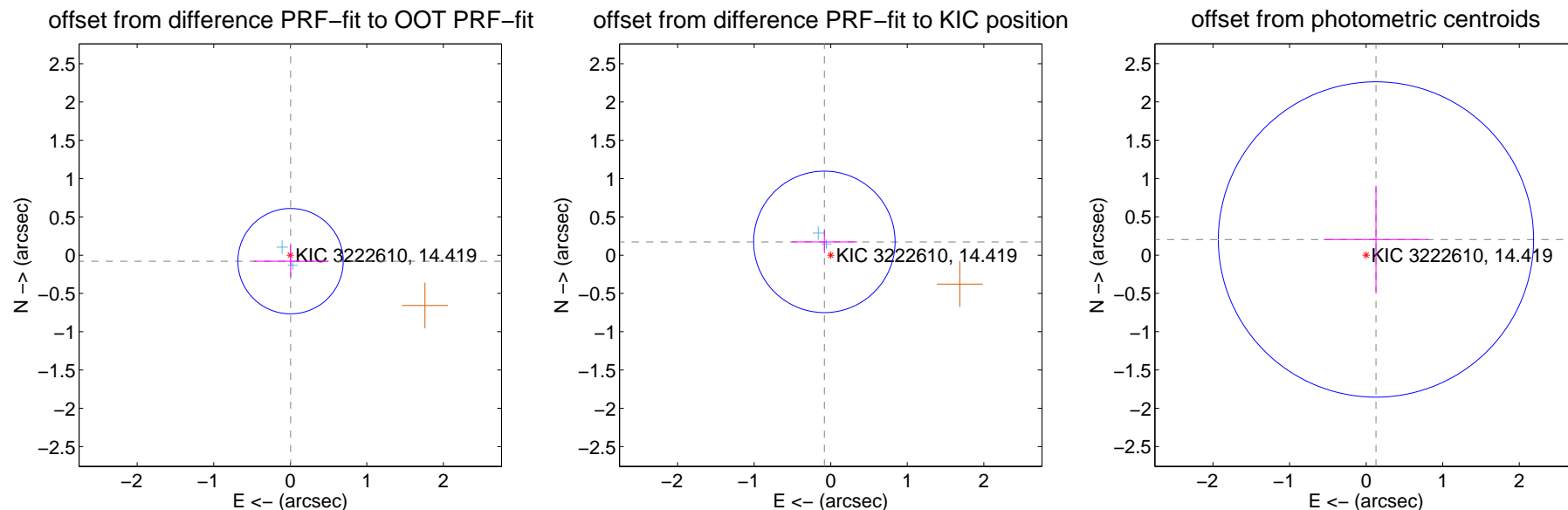
DV Centroid Data

Supplemental centroid analysis for 003222610-05. Kepler magnitude: 14.42. Transit SNR 6.89

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.079 ± 0.229	0.34	-0.004 ± 0.486	-0.079 ± 0.207
PRF-fit source offset from KIC position	0.192 ± 0.308	0.62	0.083 ± 0.428	0.173 ± 0.149
photometric centroid source offset	0.24 ± 0.69	0.35	-0.13 ± 0.68	0.20 ± 0.69



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

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

Q1 no difference image



Q1 no OOT image



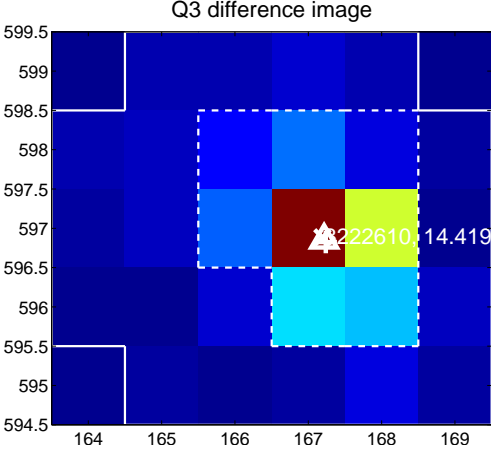
Q2 no difference image



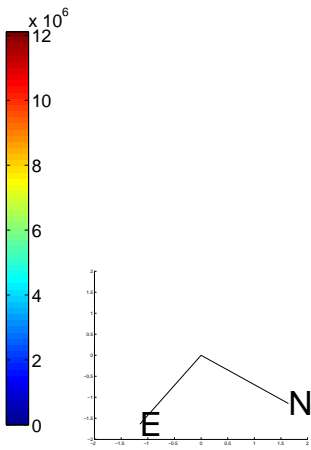
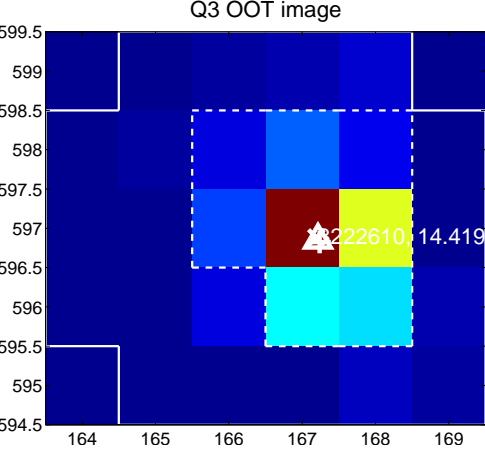
Q2 no OOT image



Q3 difference image



Q3 OOT image



Q4 no difference image



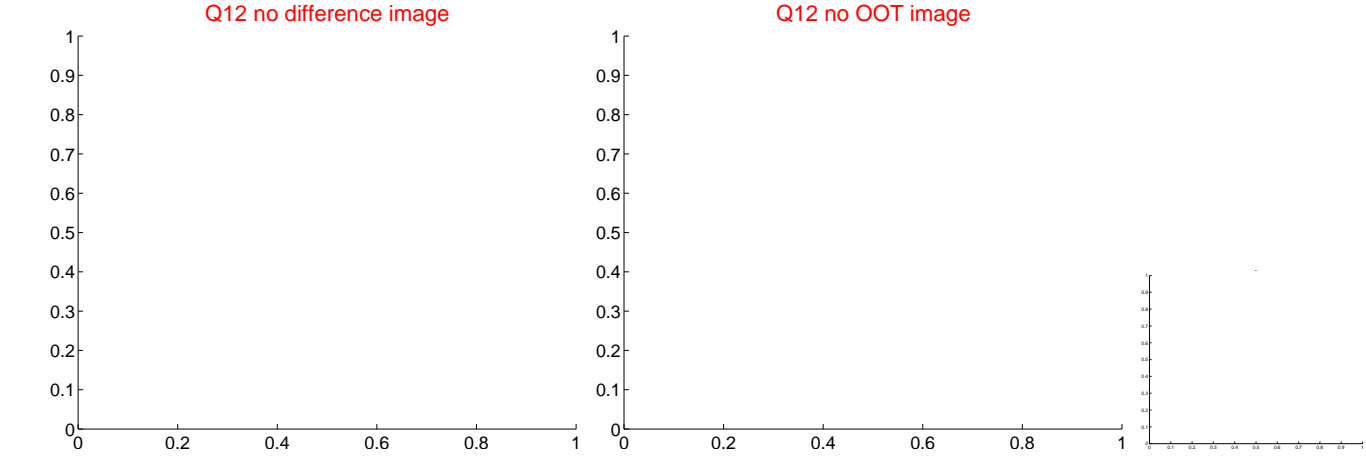
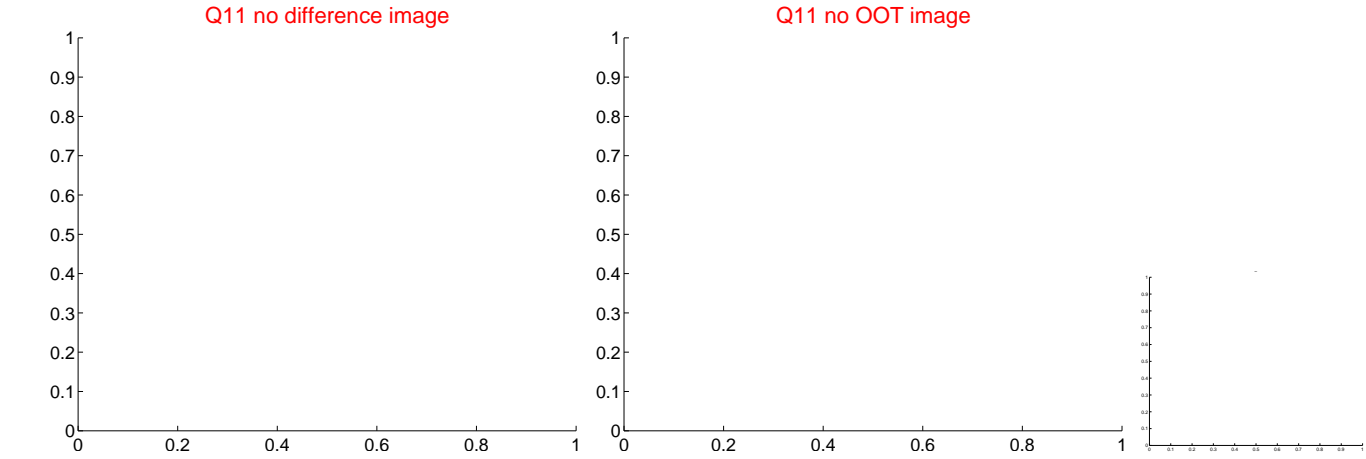
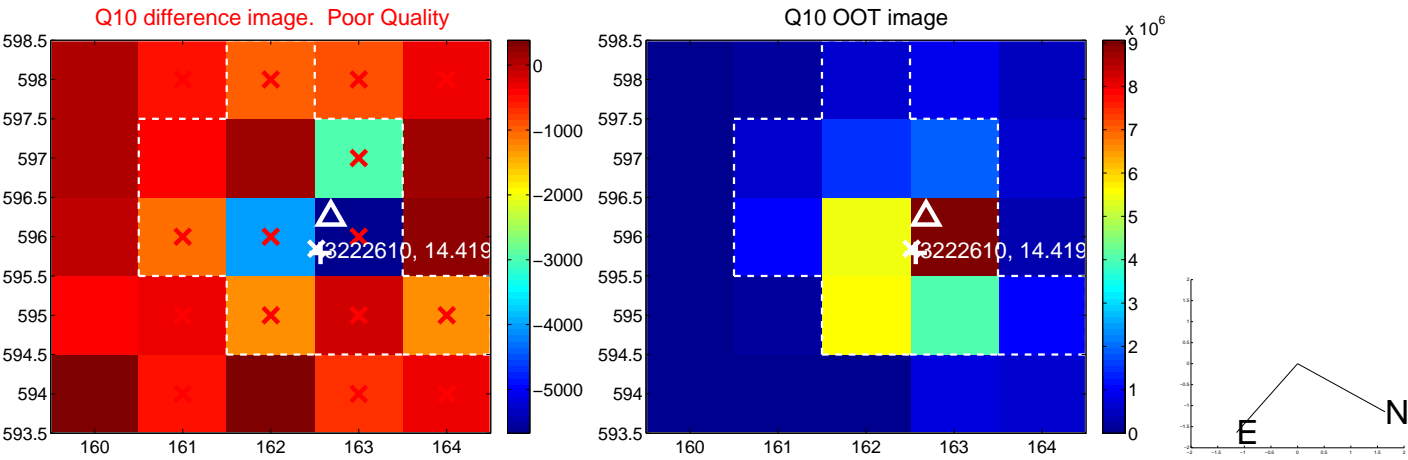
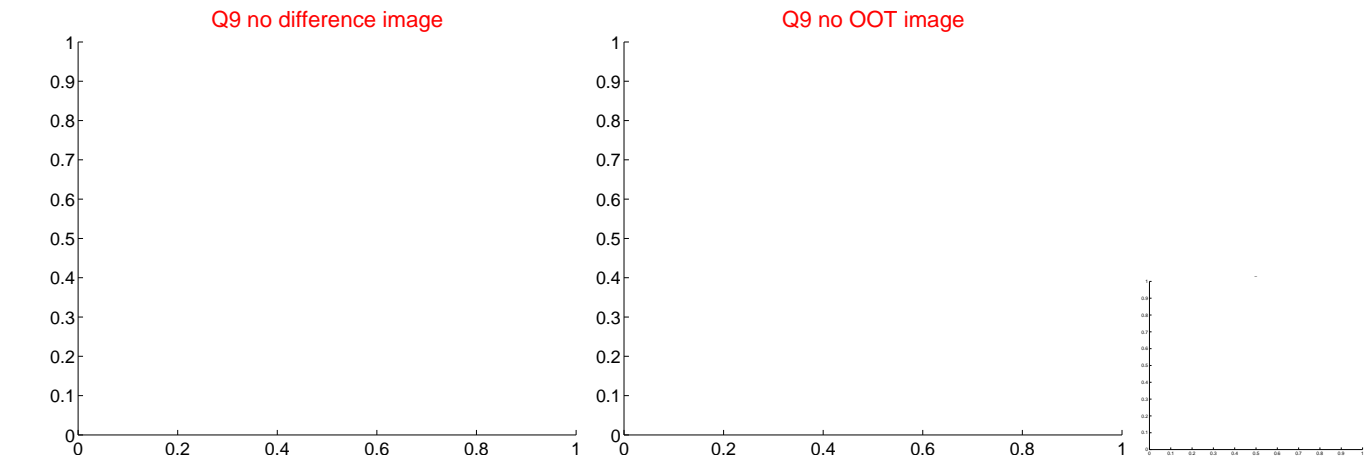
Q4 no OOT image



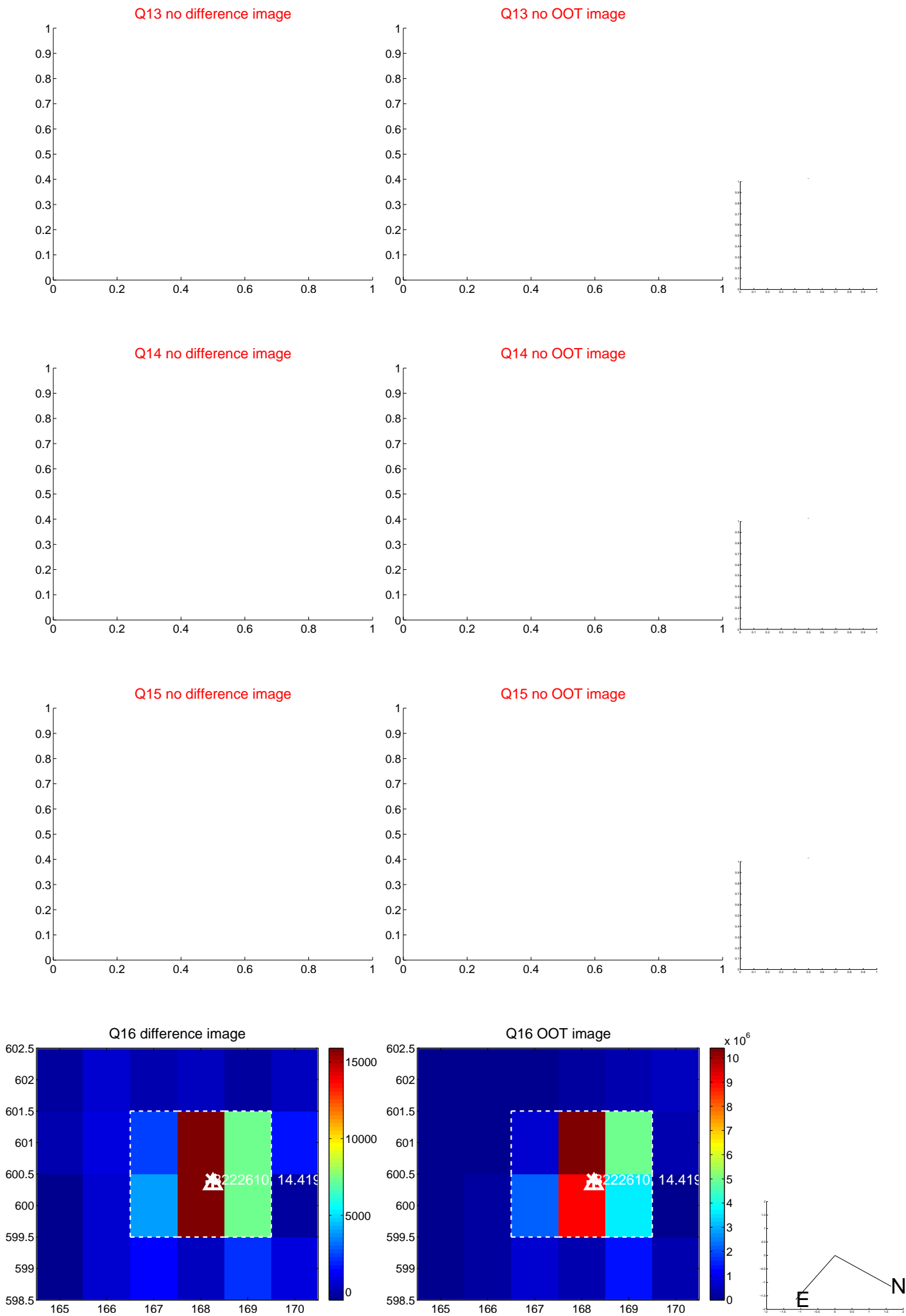
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



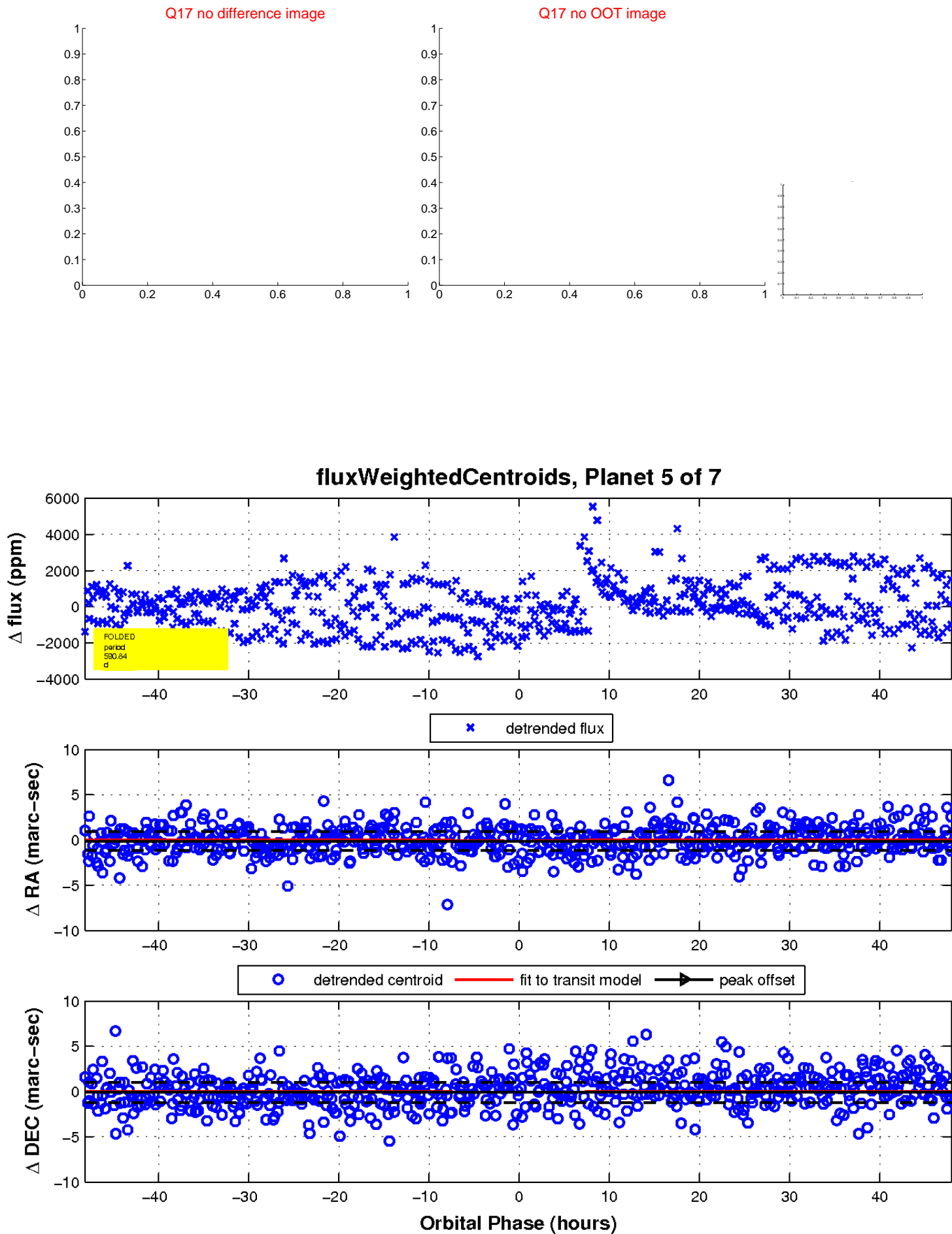
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

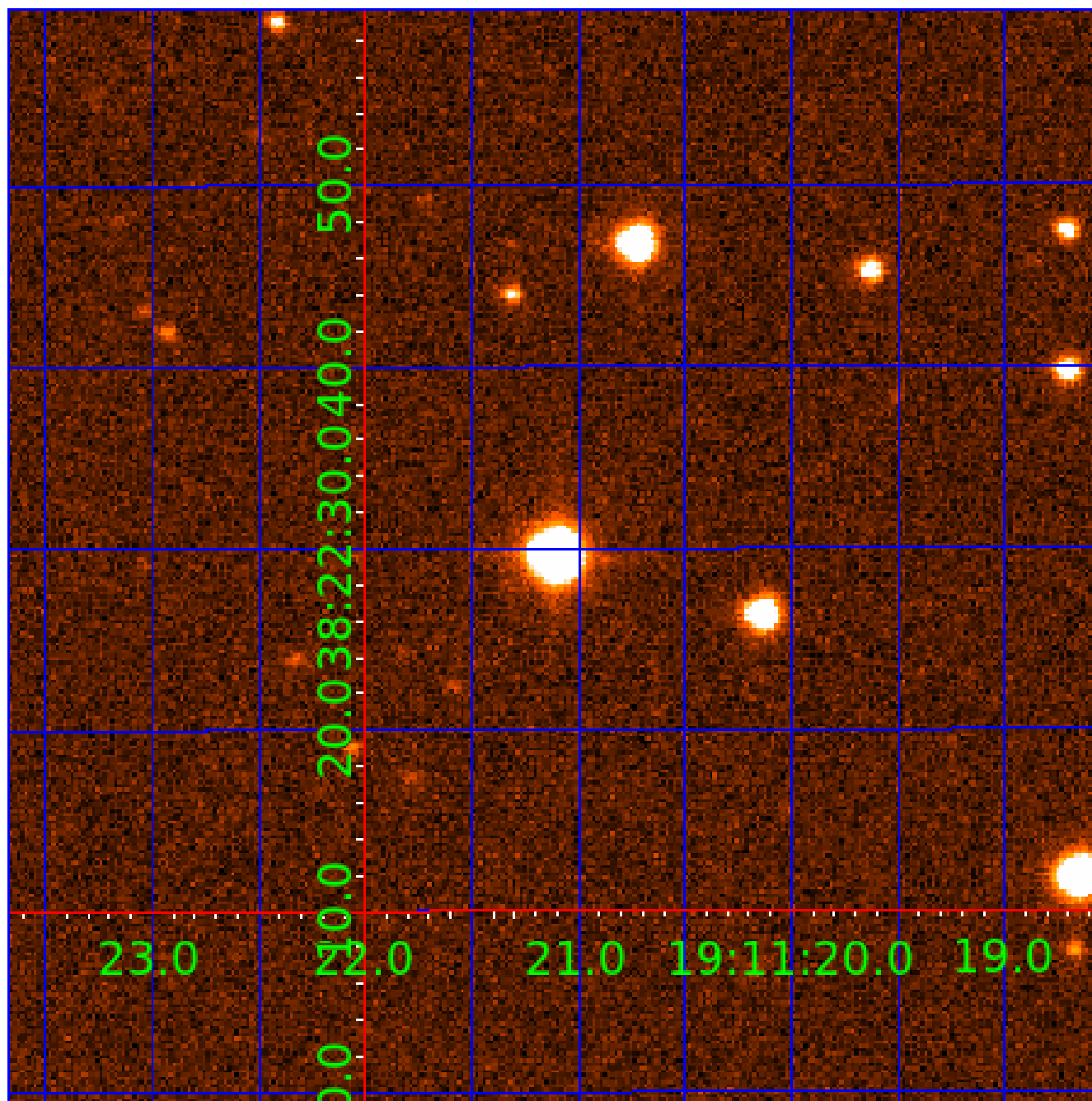


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003222610

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})
003222610-02	OBS	No	449.457666	185.880463	810.2	6.620	8.2	5.8	0.67	4260	2.00	0.13
003222610-03	OBS	No	534.289527	217.800770	1681.8	4.662	9.7	8.3	0.67	4260	3.05	0.10
003222610-04	OBS	No	592.868061	154.902856	1224.0	3.600	9.7	7.6	0.67	4260	2.51	0.09
003222610-05	OBS	No	590.839150	330.598610	1172.5	16.069	12.5	6.9	0.67	4260	2.38	0.09
003222610-06	OBS	No	238.776505	160.222585	640.1	3.821	10.3	4.5	0.67	4260	2.05	0.31
003222610-07	OBS	No	658.015121	212.662877	620.9	6.000	9.0	-1.0	0.67	4260	1.59	0.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003222610-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV
003222610-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003222610-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
003222610-05	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003222610-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003222610-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

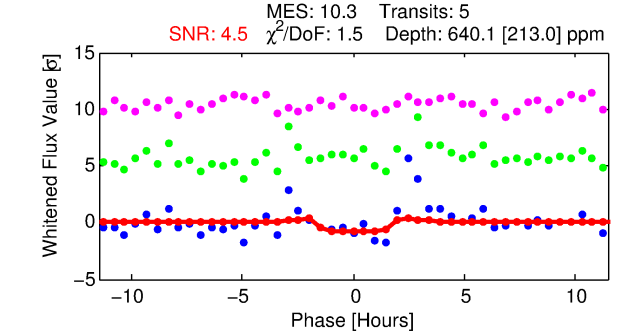
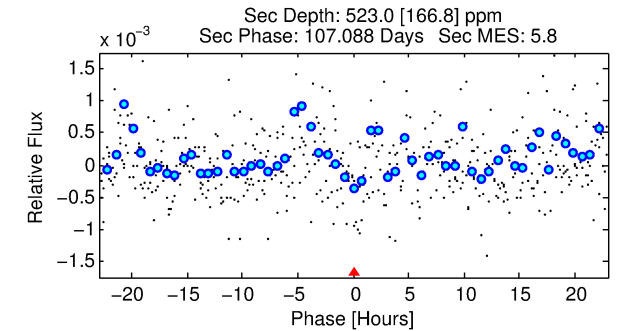
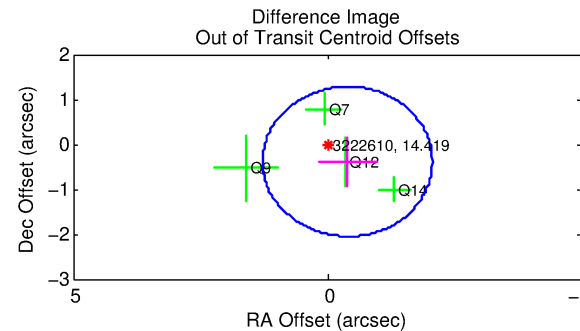
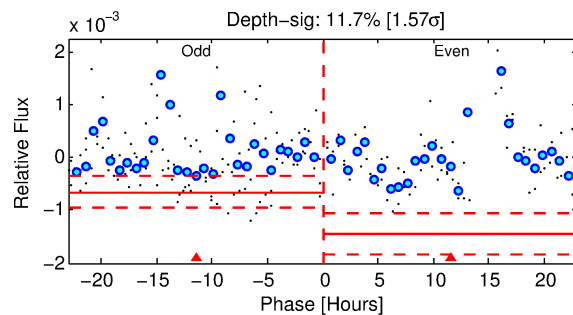
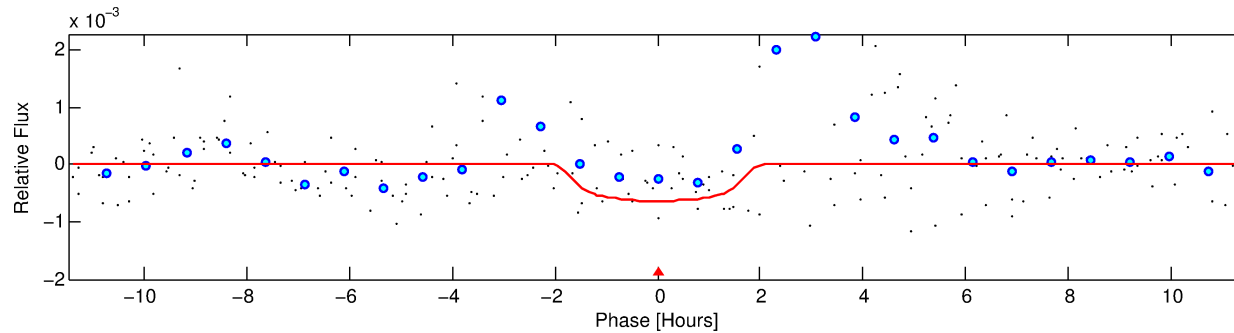
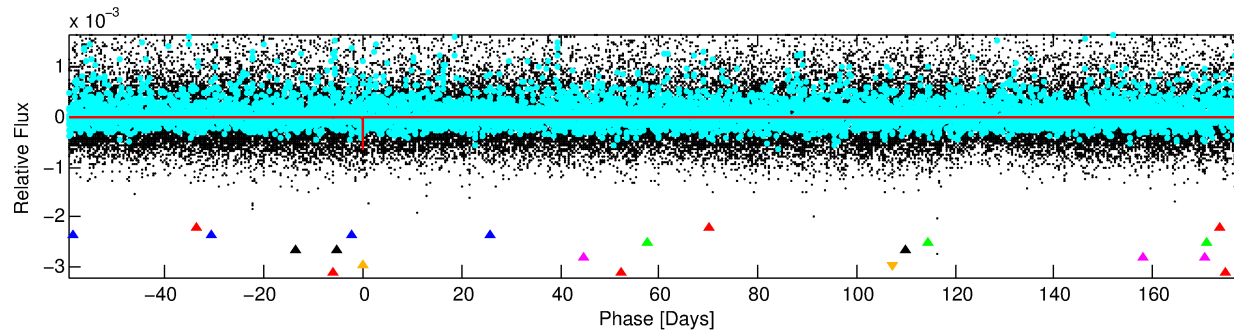
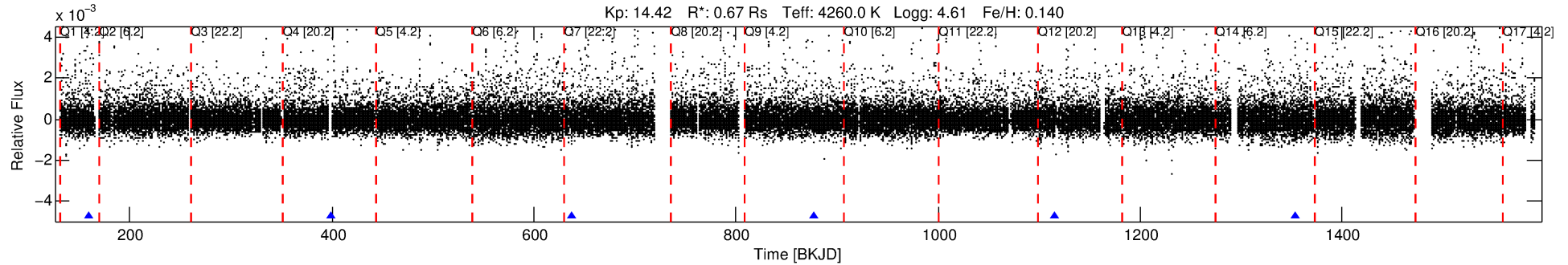
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003222610-06

No Significant Match Found

DV One-Page Summary

KIC: 3222610 Candidate: 6 of 7 Period: 238.777 d



DV Fit Results:

Period = 238.77651 [0.00550] d
Epoch = 160.2226 [0.0212] BKJD
Rp/R* = 0.0280 [0.0185]
a/R* = 254.53 [547.39]
b = 0.88 [0.57]
Seff = 0.31 [0.05]
Teq = 190 [8] K
Rp = 2.05 [1.36] Re
a = 0.6574 [0.0455] AU
Ag = 29639.55 [40411.06] [0.73σ]
Teffp = 3852 [1316] K [2.78σ]

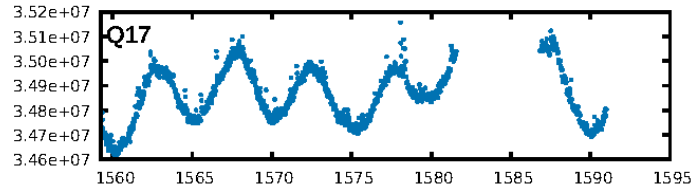
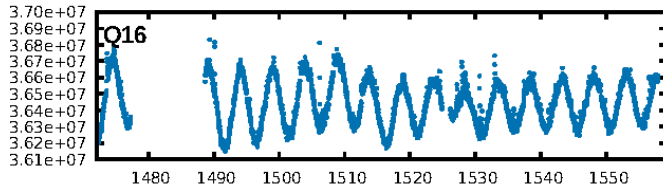
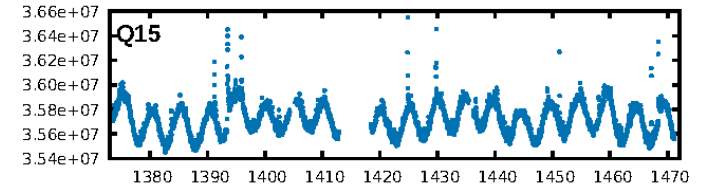
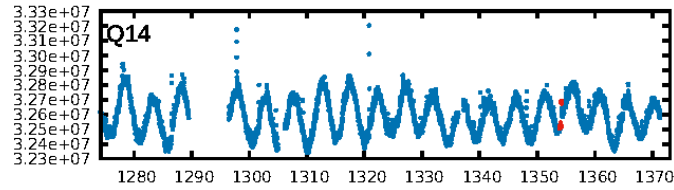
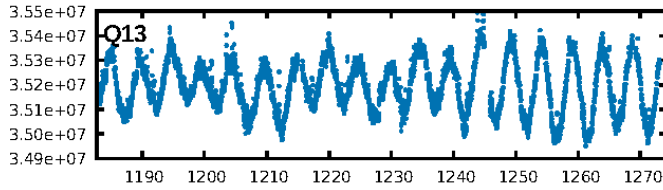
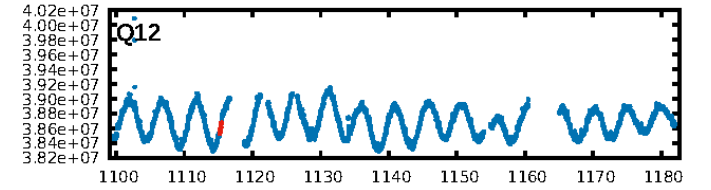
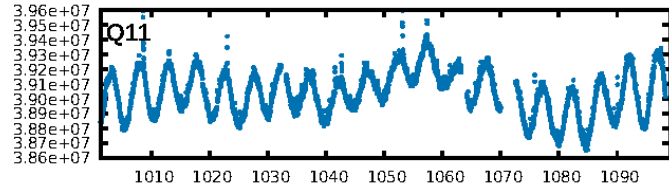
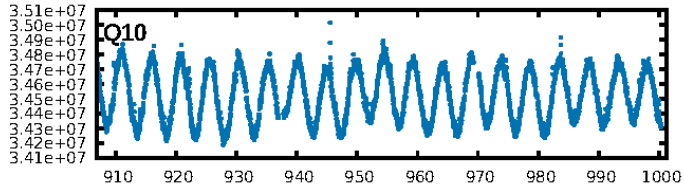
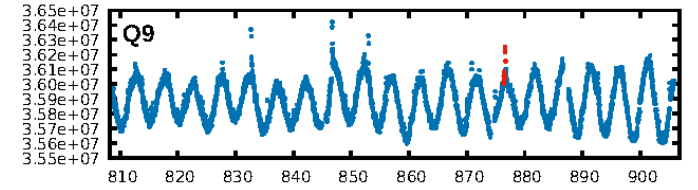
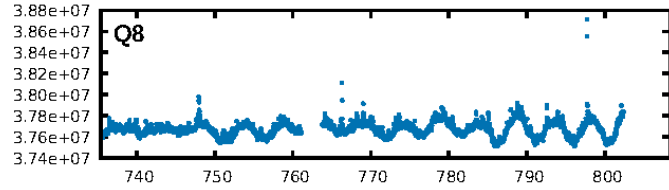
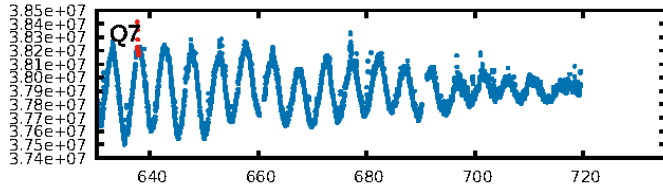
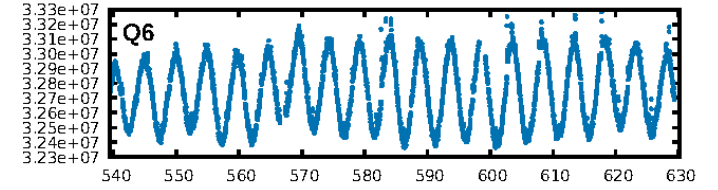
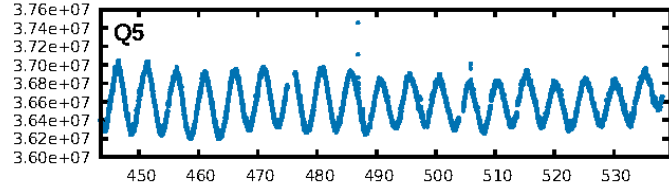
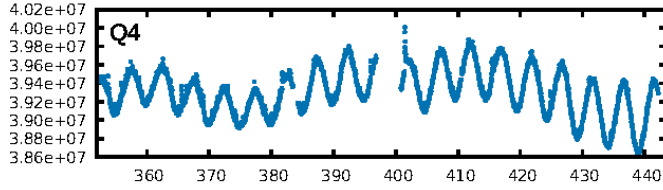
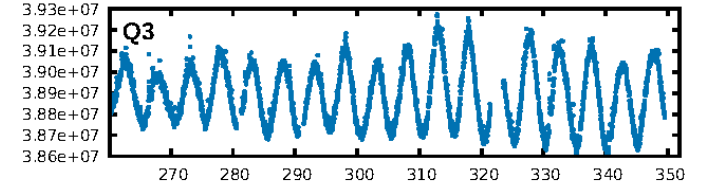
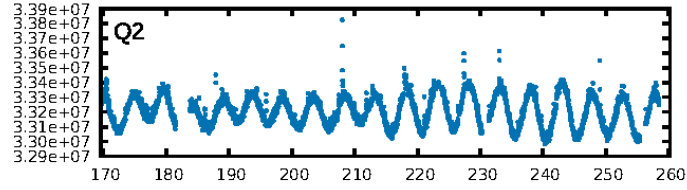
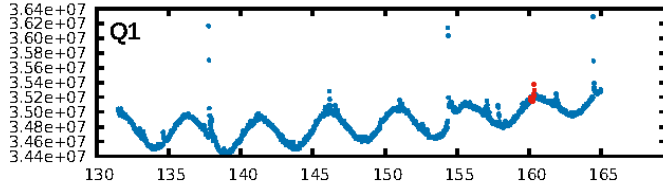
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [661.46σ]
ModelChiSquare2-sig: 3.7%
ModelChiSquareGof-sig: 28.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 6.695
Centroid-sig: 80.5%
Centroid-so: 0.800 arcsec [0.58σ]
OotOffset-rm: 0.551 arcsec [0.99σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-rm: 0.359 arcsec [0.50σ]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 1.00 [5/5]

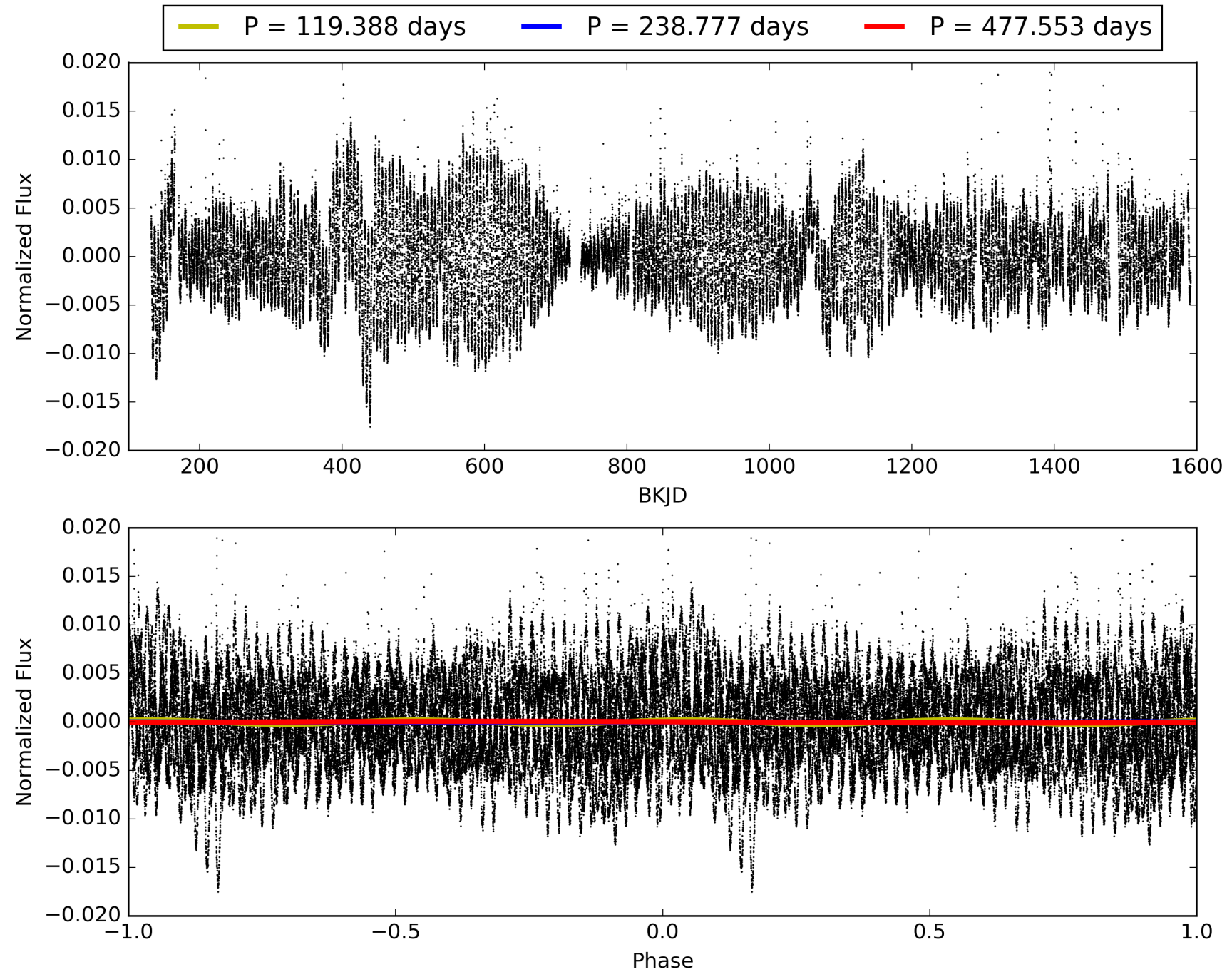
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:20 Z

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

TCE 003222610-06, PDC Light Curves

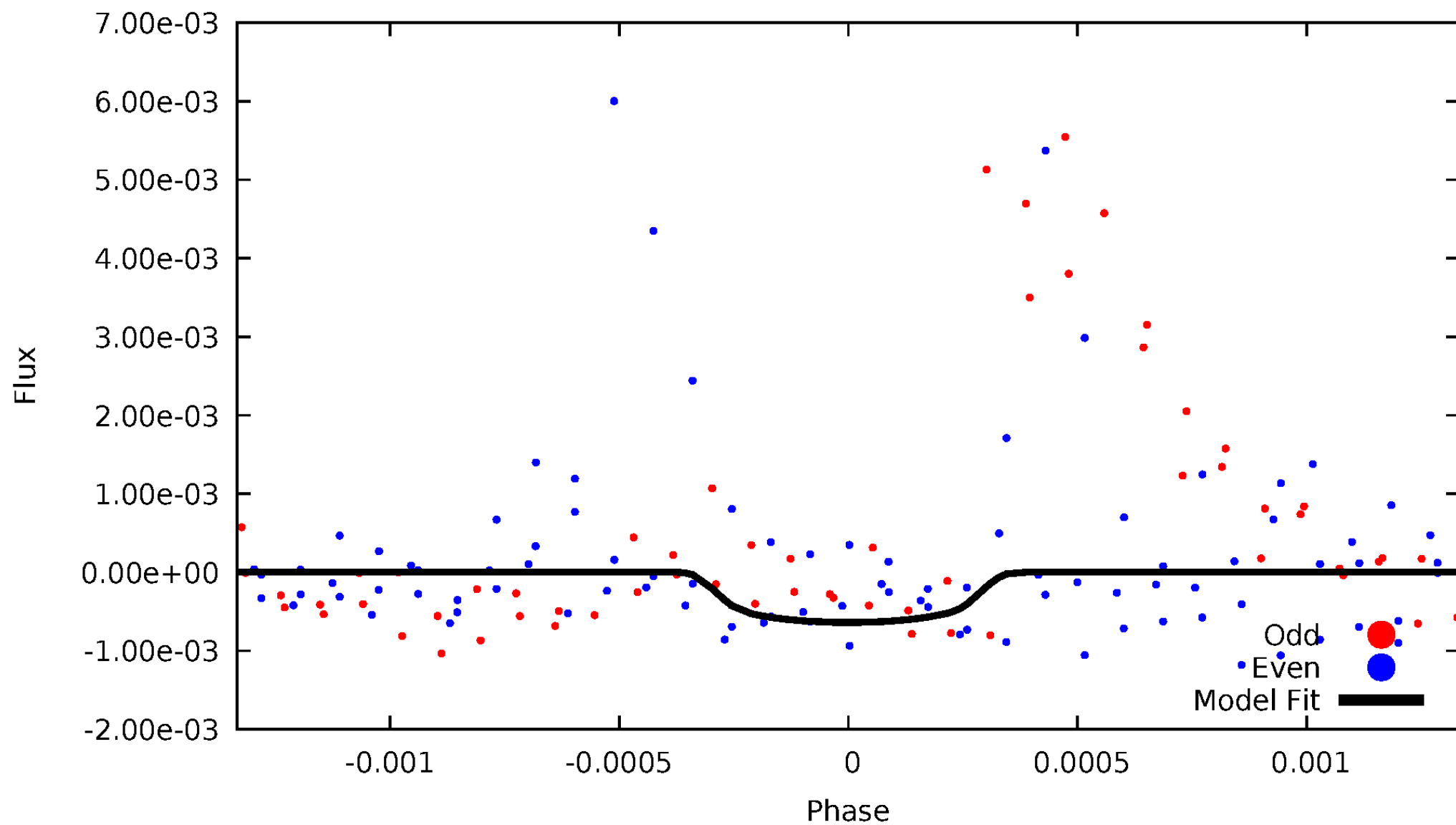


TCE 003222610-06



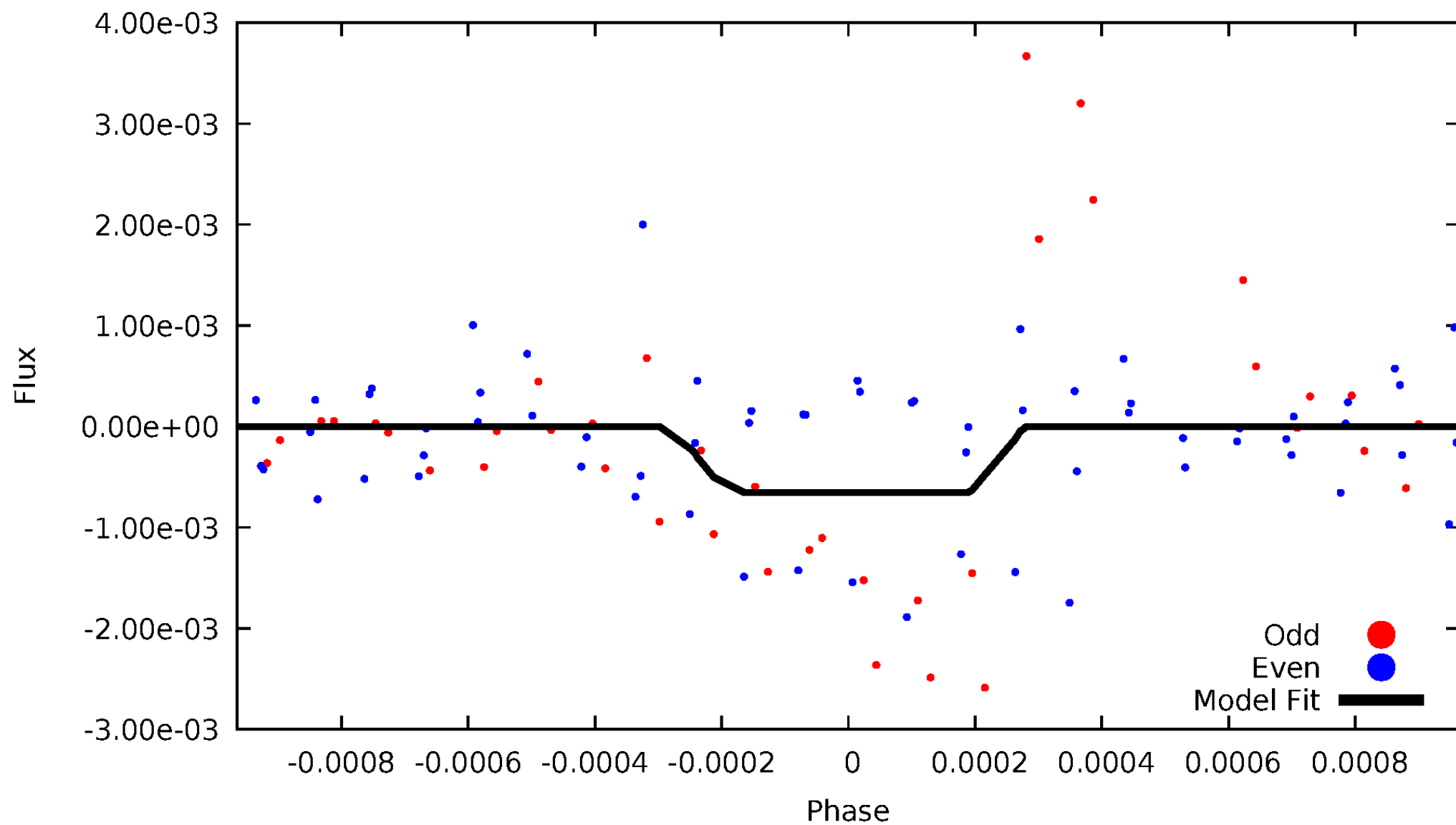
DV Odd/Even

TCE 003222610-06



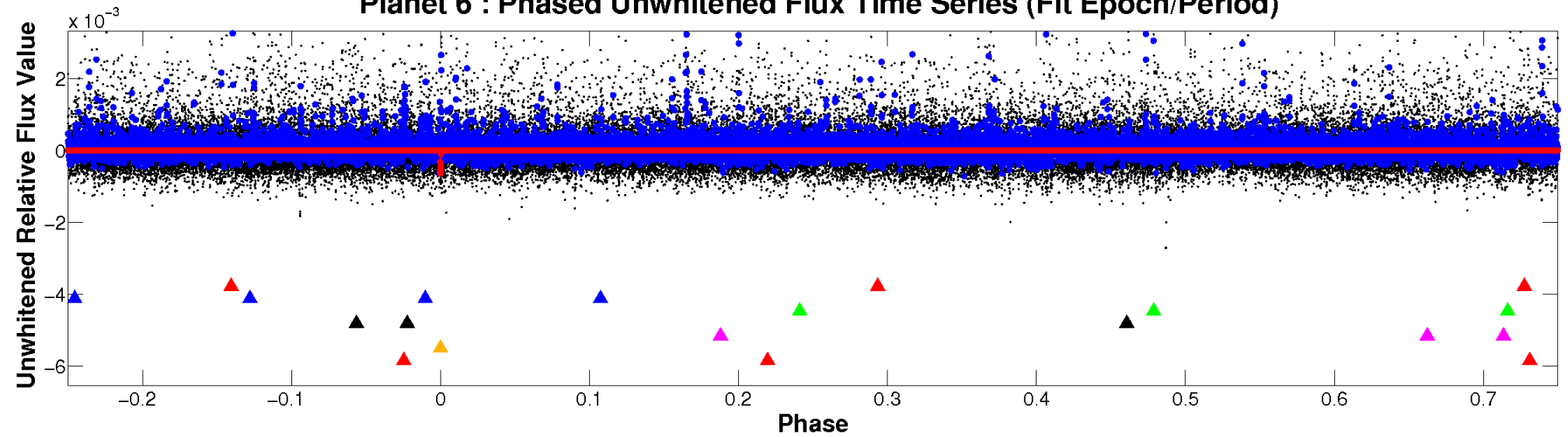
ALT Odd/Even

TCE 003222610-06

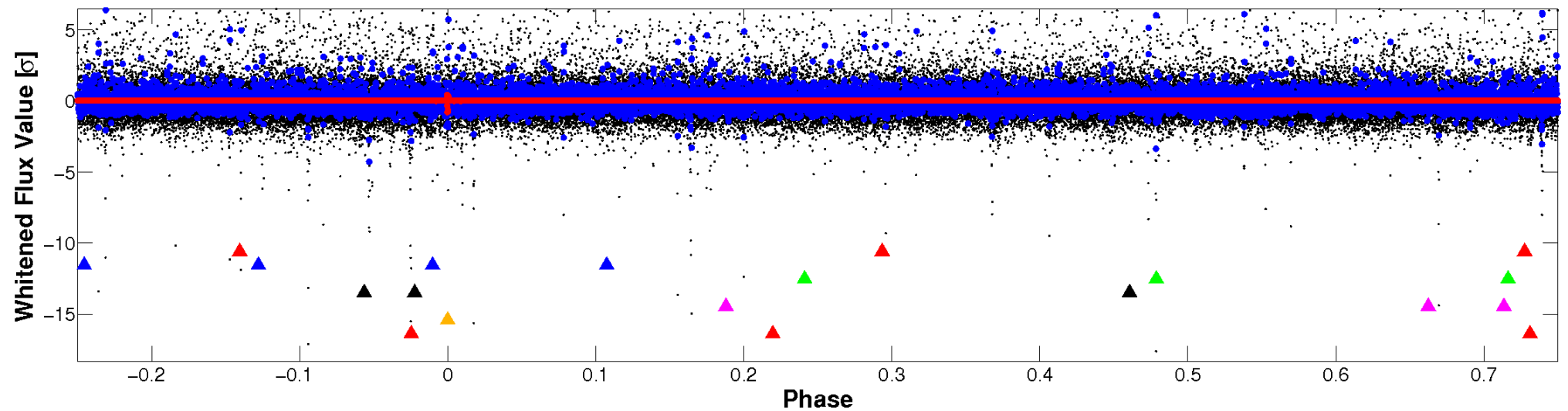


Non-Whitened Vs. Whitened Light Curve

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

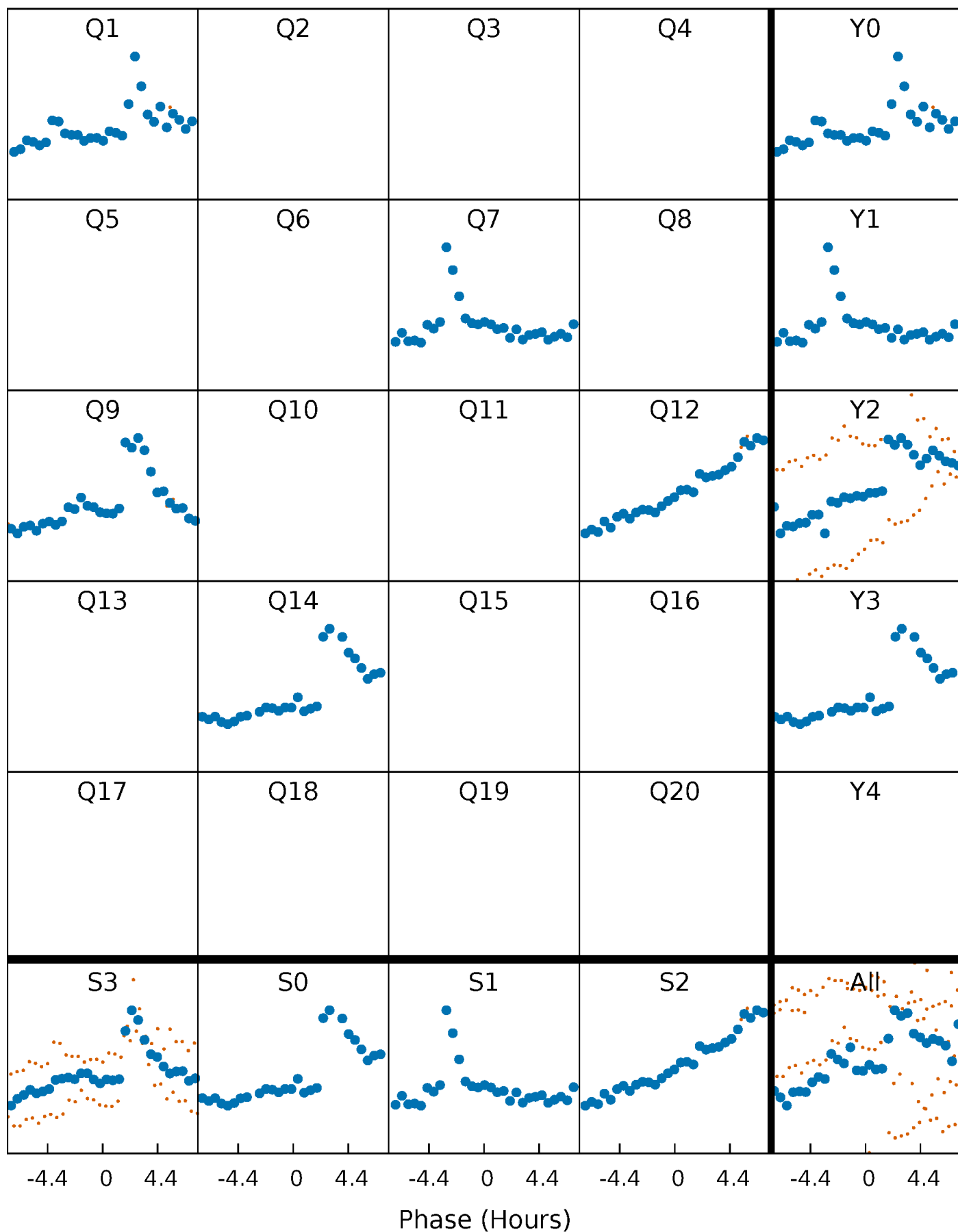


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



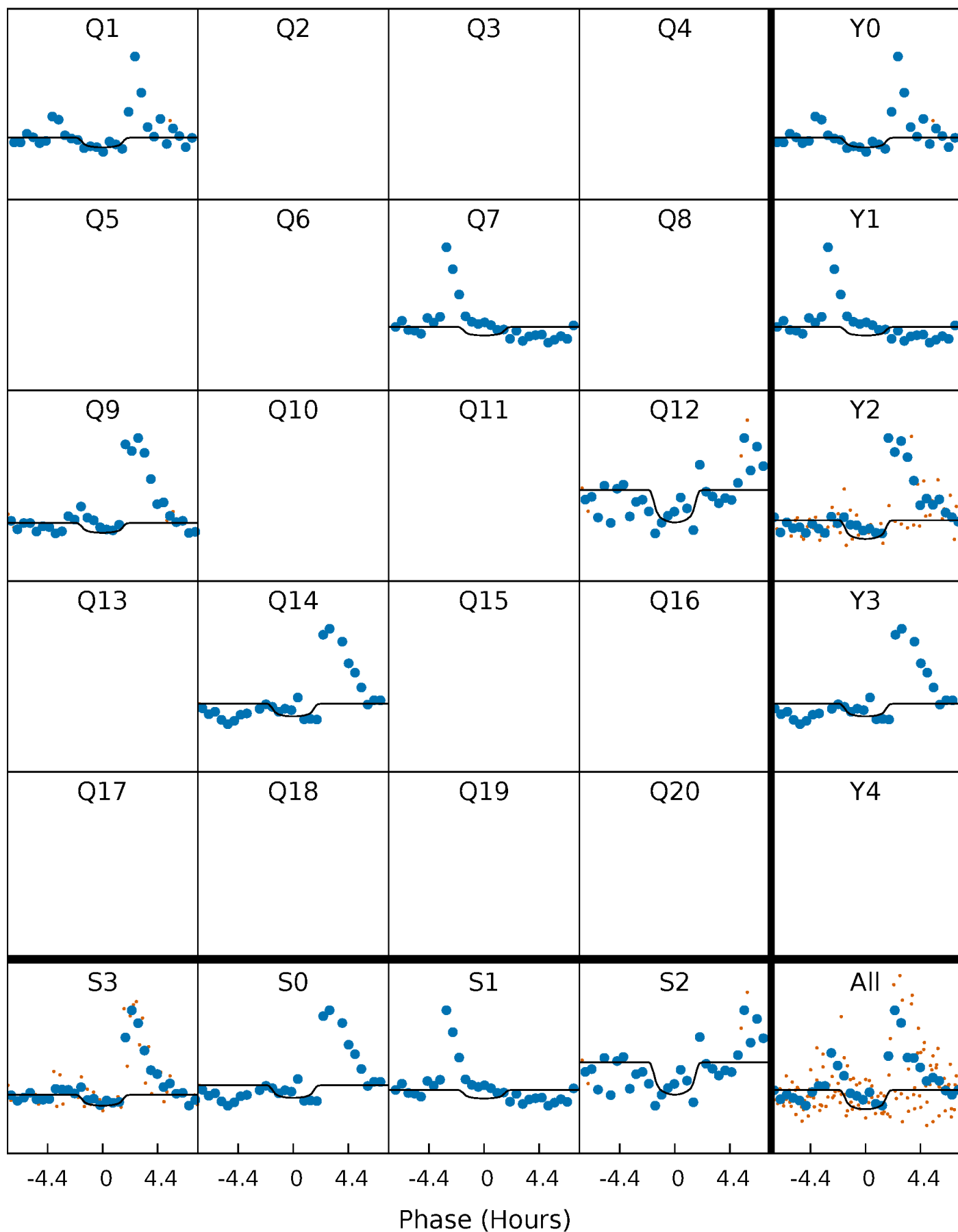
PDC Quarter-Phased Transit Curves

TCE 003222610-06 P=238.776505 Days $T_0=160.222585$ (BKJD)



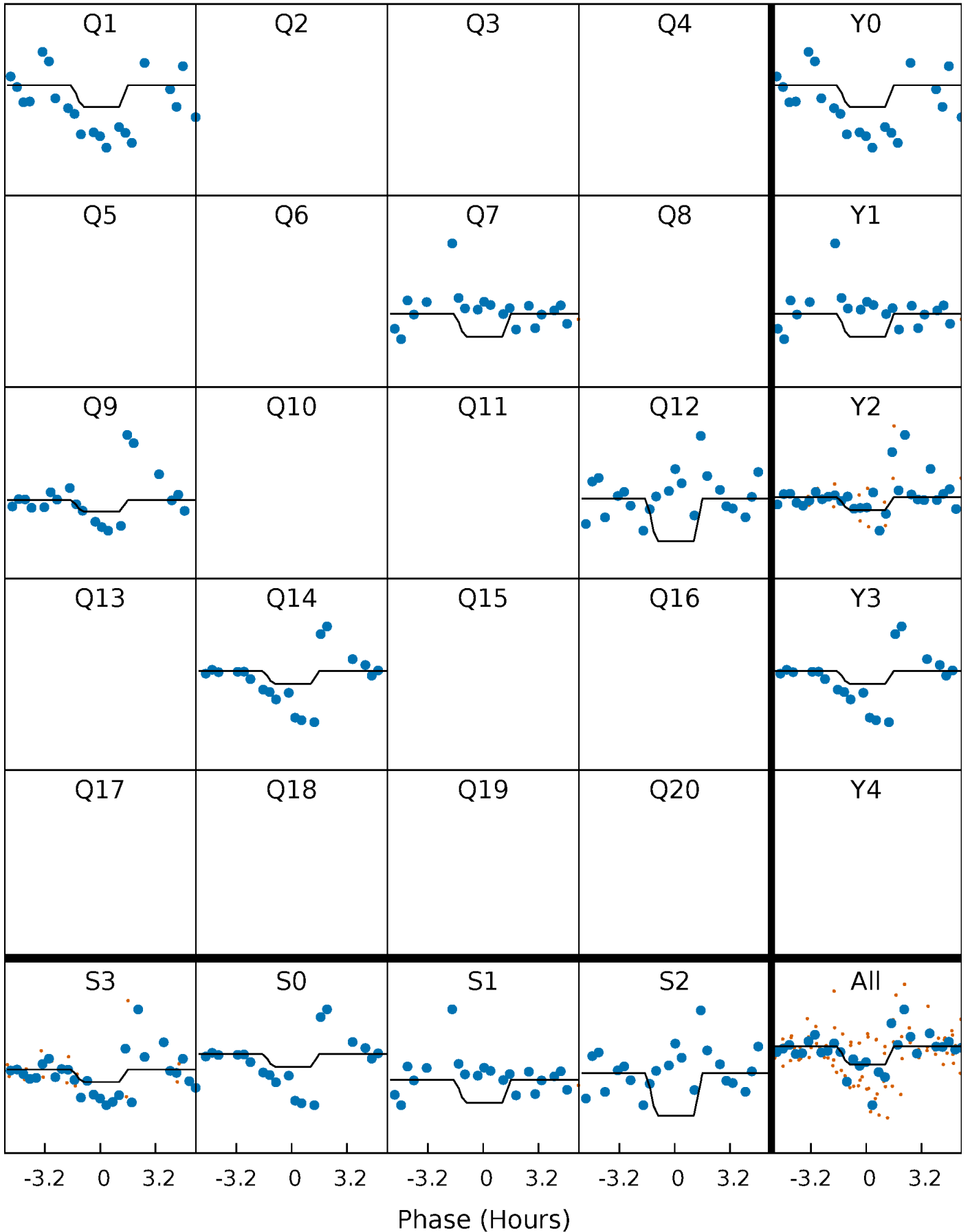
DV Quarter-Phased Transit Curves

TCE 003222610-06 $P=238.776505$ Days $T_0=160.222585$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

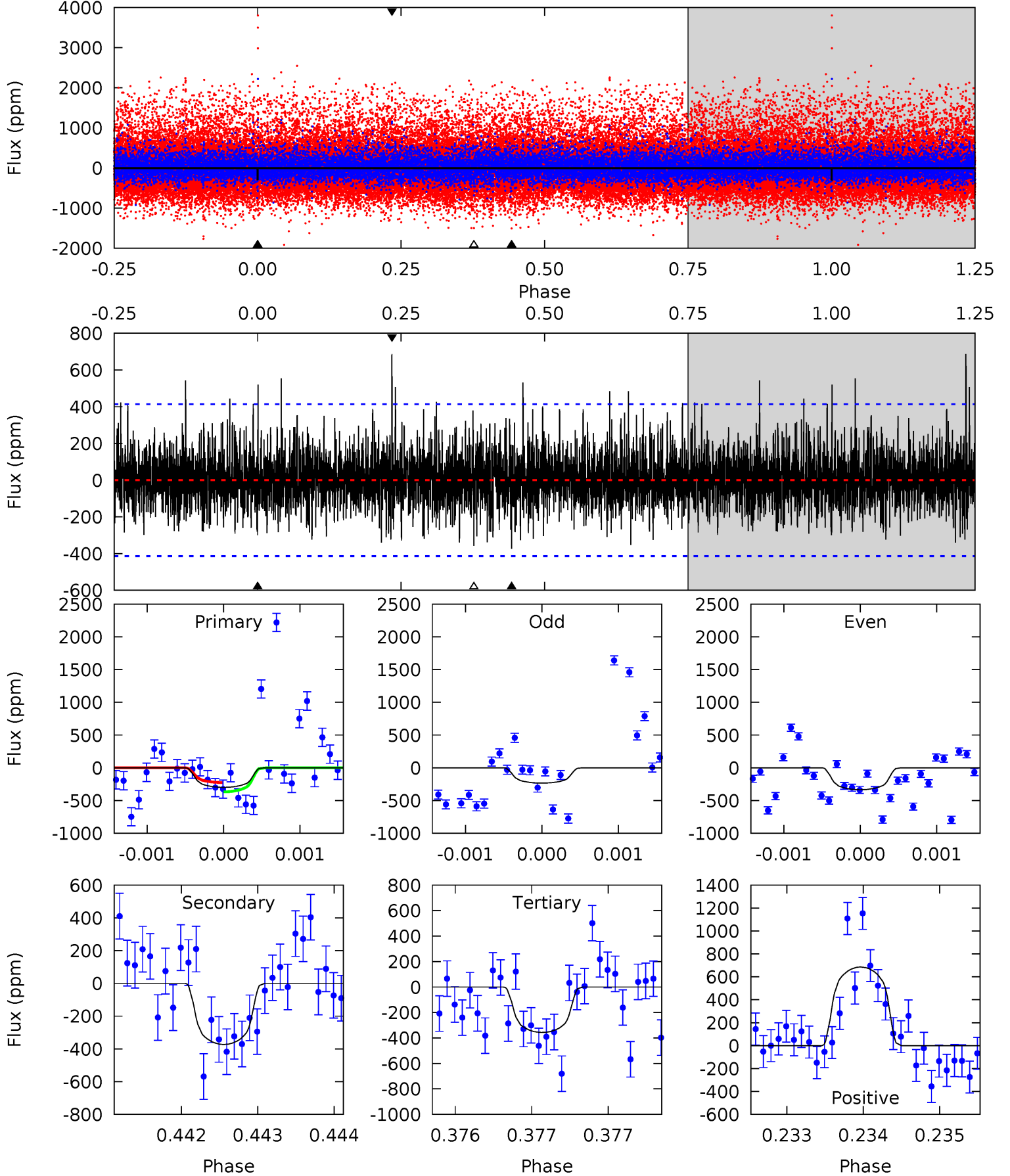
TCE 003222610-06 P=238.785300 Days $T_0=160.201185$ (BKJD)



DV Model-Shift Uniqueness Test

003222610-06, P = 238.776505 Days, E = 160.222585 Days

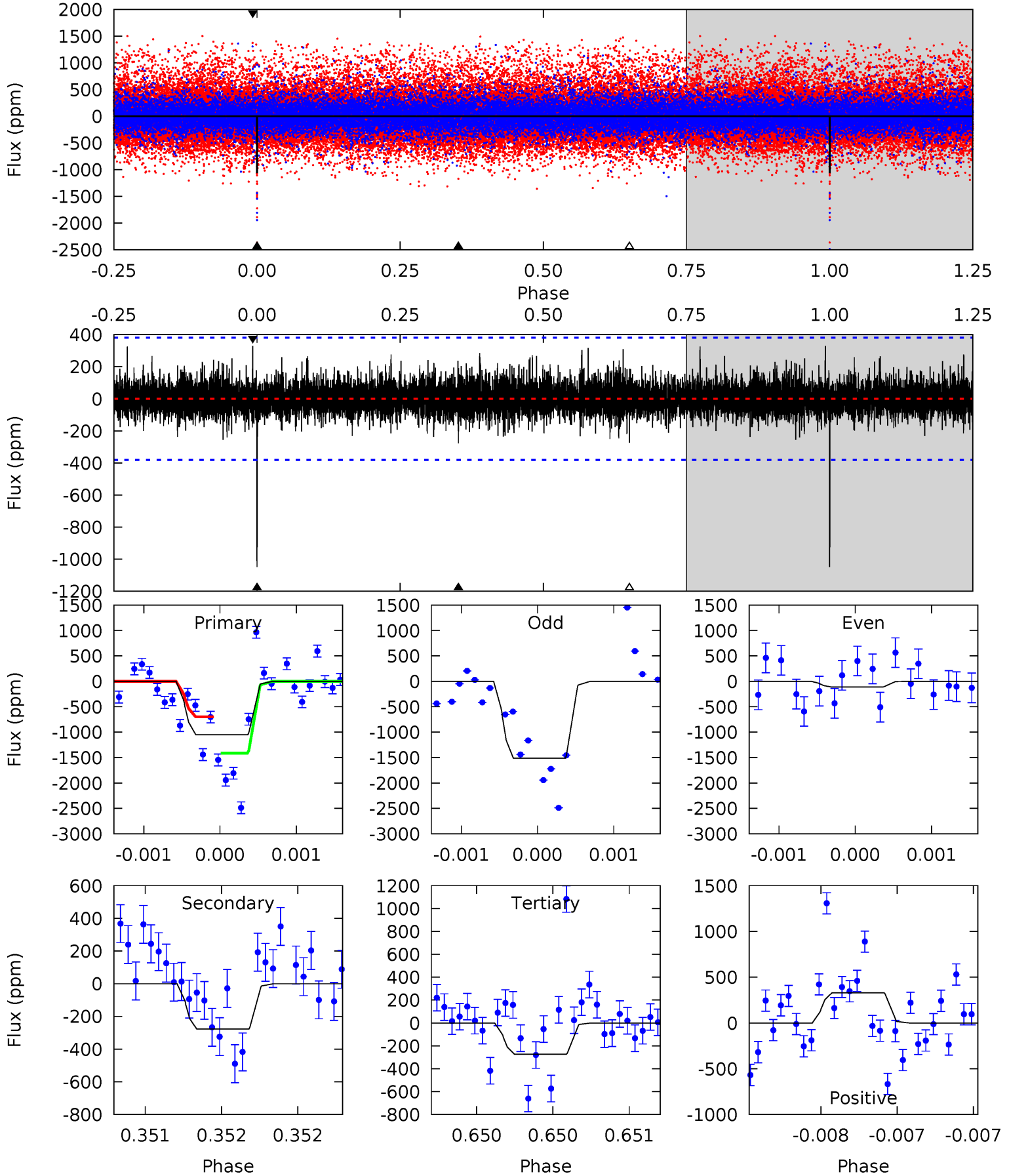
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.97	4.96	4.74	9.12	5.50	3.37	1.61	-0.77	-5.14	0.22	-4.16	0.61	0.58	0.65	0.95



Alt Model-Shift Uniqueness Test

003222610-06, P = 238.785300 Days, E = 160.201185 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.3	4.05	3.98	4.81	5.57	3.47	1.01	11.3	10.5	0.07	-0.76	10.5	0.71	0.24	5.23



Stellar Parameters For KIC 003222610

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4260^{+142}_{-142}	$4.607^{+0.052}_{-0.017}$	$0.140^{+0.200}_{-0.300}$	$0.671^{+0.032}_{-0.057}$	$0.664^{+0.052}_{-0.052}$	$3.101^{+0.665}_{-0.248}$
	+3%/-3%	+1%/-0%	+143%/-214%	+5%/-8%	+8%/-8%	+21%/-8%
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 003222610-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-373 ± 75	$2.19^{+1.27}_{-1.19}$	263^{+10}_{-9}	3621^{+1267}_{-499}	17774^{+71676}_{-10574}
Alt.	-277 ± 68	$1.94^{+1.32}_{-1.10}$	264^{+9}_{-10}	3597^{+1230}_{-524}	17358^{+69301}_{-11299}

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

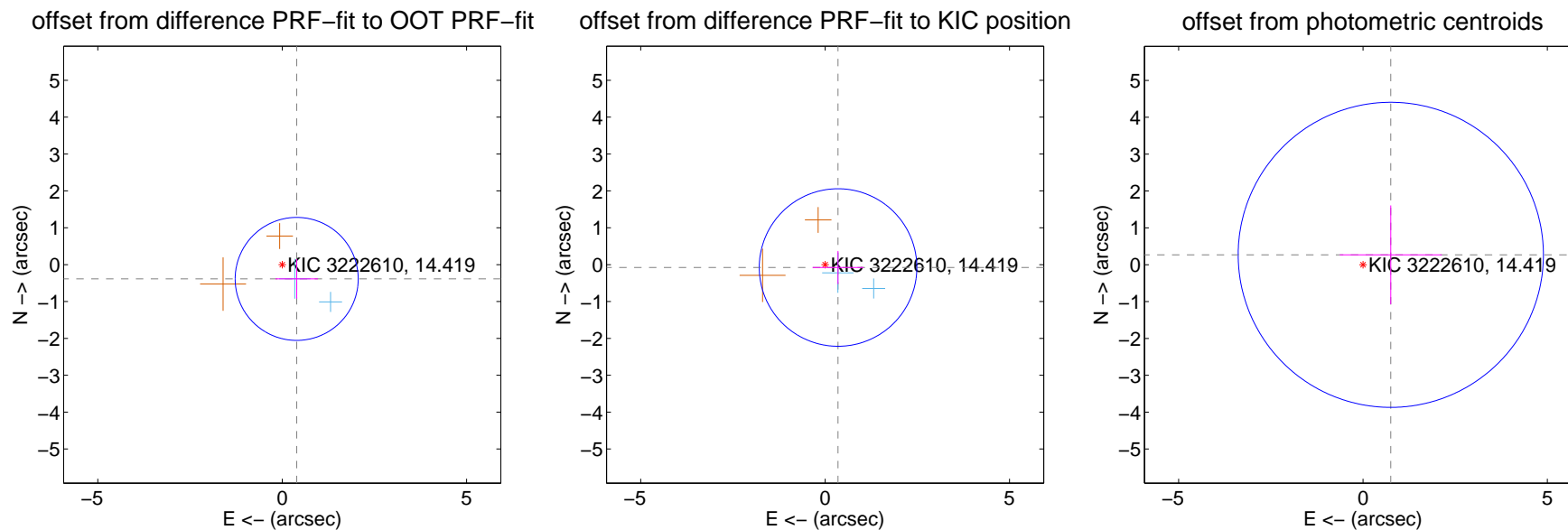
DV Centroid Data

Supplemental centroid analysis for 003222610-06. Kepler magnitude: 14.42. Transit SNR 4.49

There are 2 quarters with good PRF difference image offsets

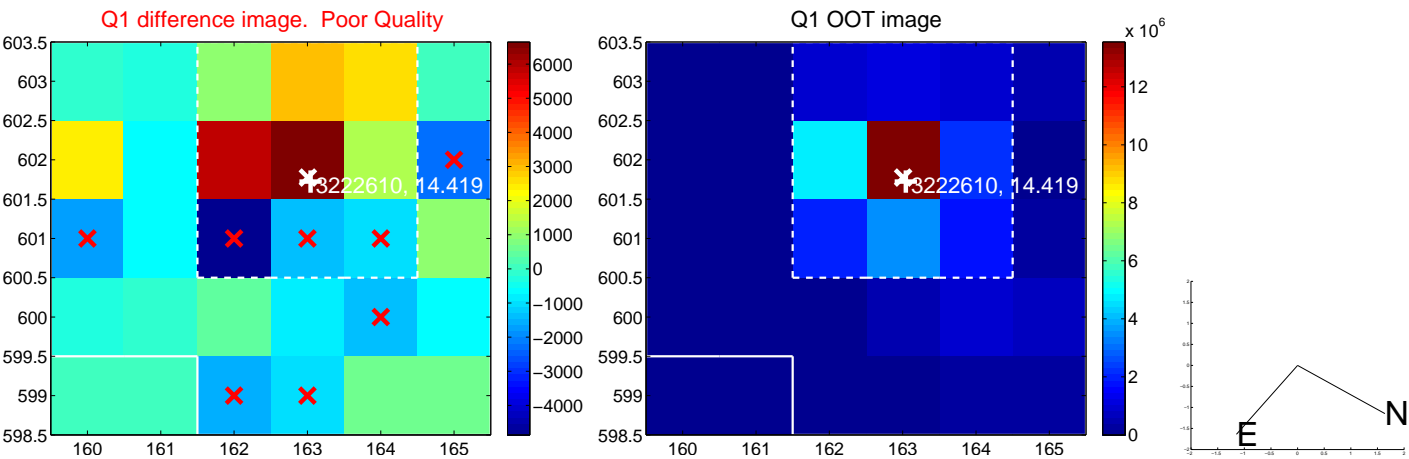
The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.551 ± 0.556	0.99	-0.393 ± 0.575	-0.387 ± 0.536
PRF-fit source offset from KIC position	0.359 ± 0.712	0.50	-0.351 ± 0.693	-0.078 ± 0.448
photometric centroid source offset	0.80 ± 1.38	0.58	-0.75 ± 1.38	0.27 ± 1.34



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.

Q5 no difference image



Q5 no OOT image



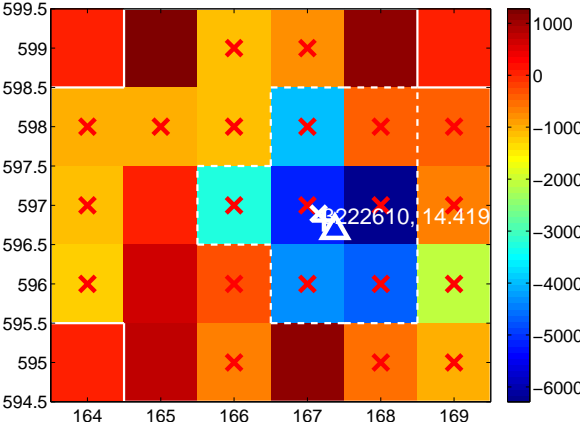
Q6 no difference image



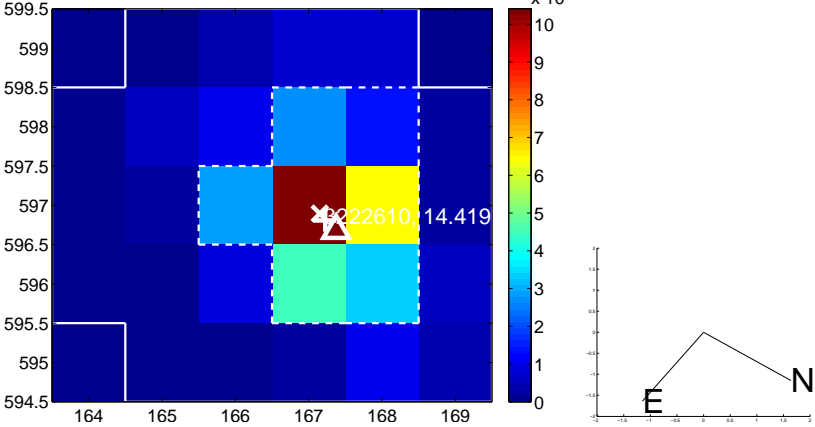
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



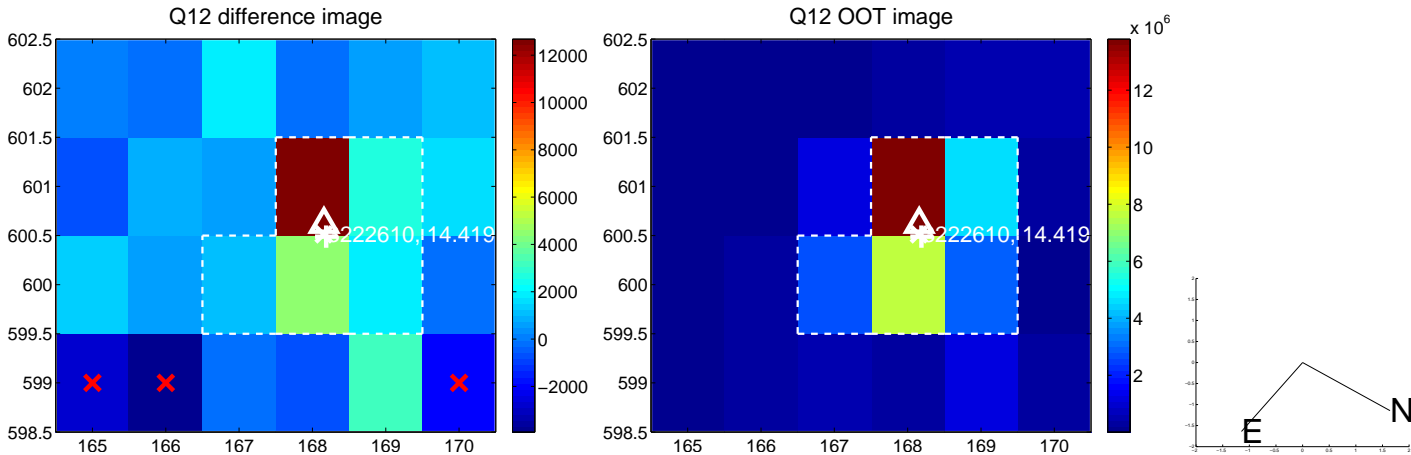
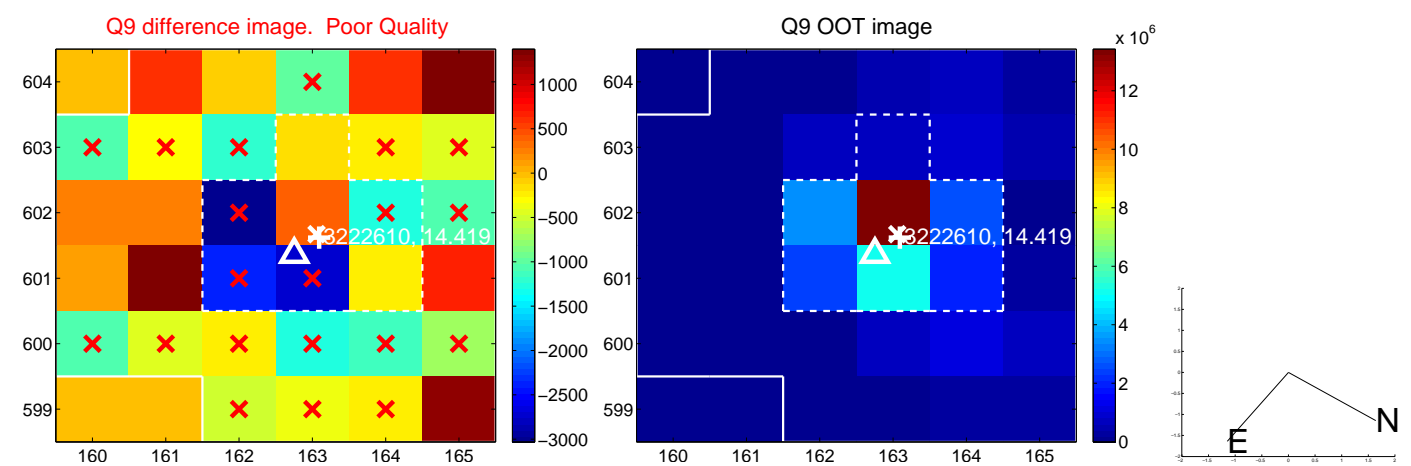
Q8 no difference image



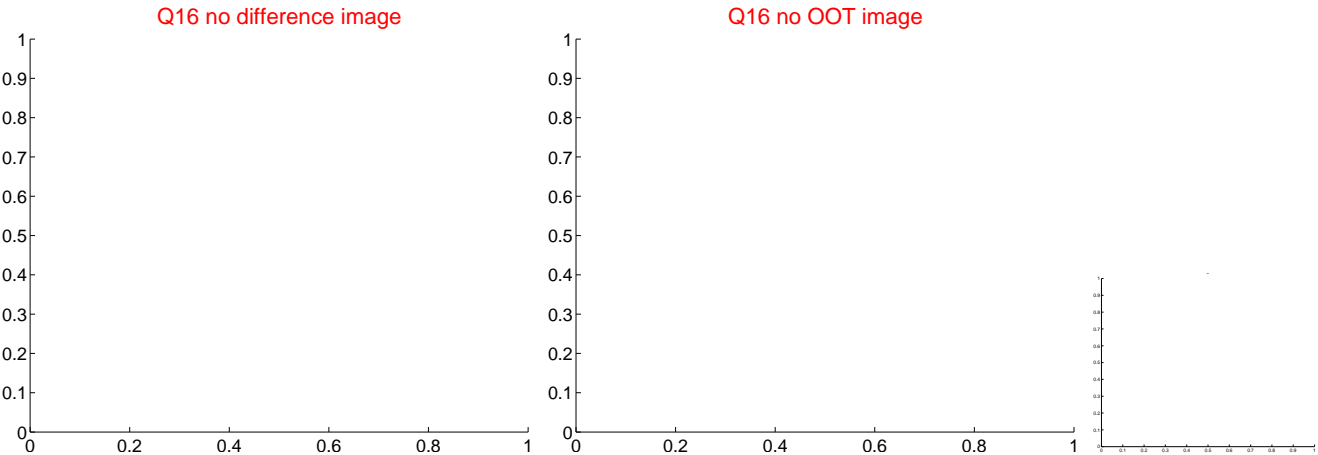
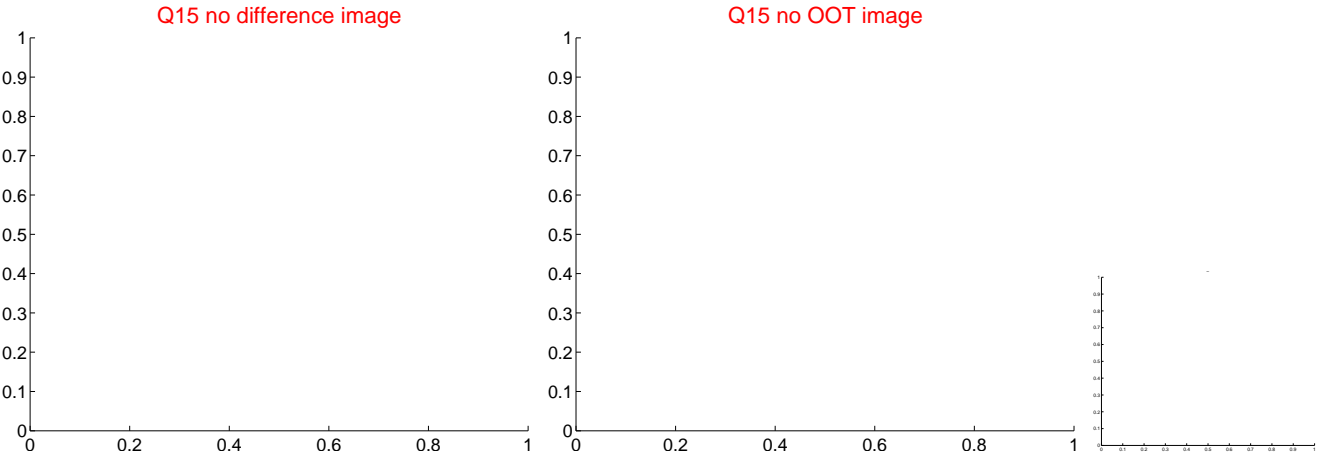
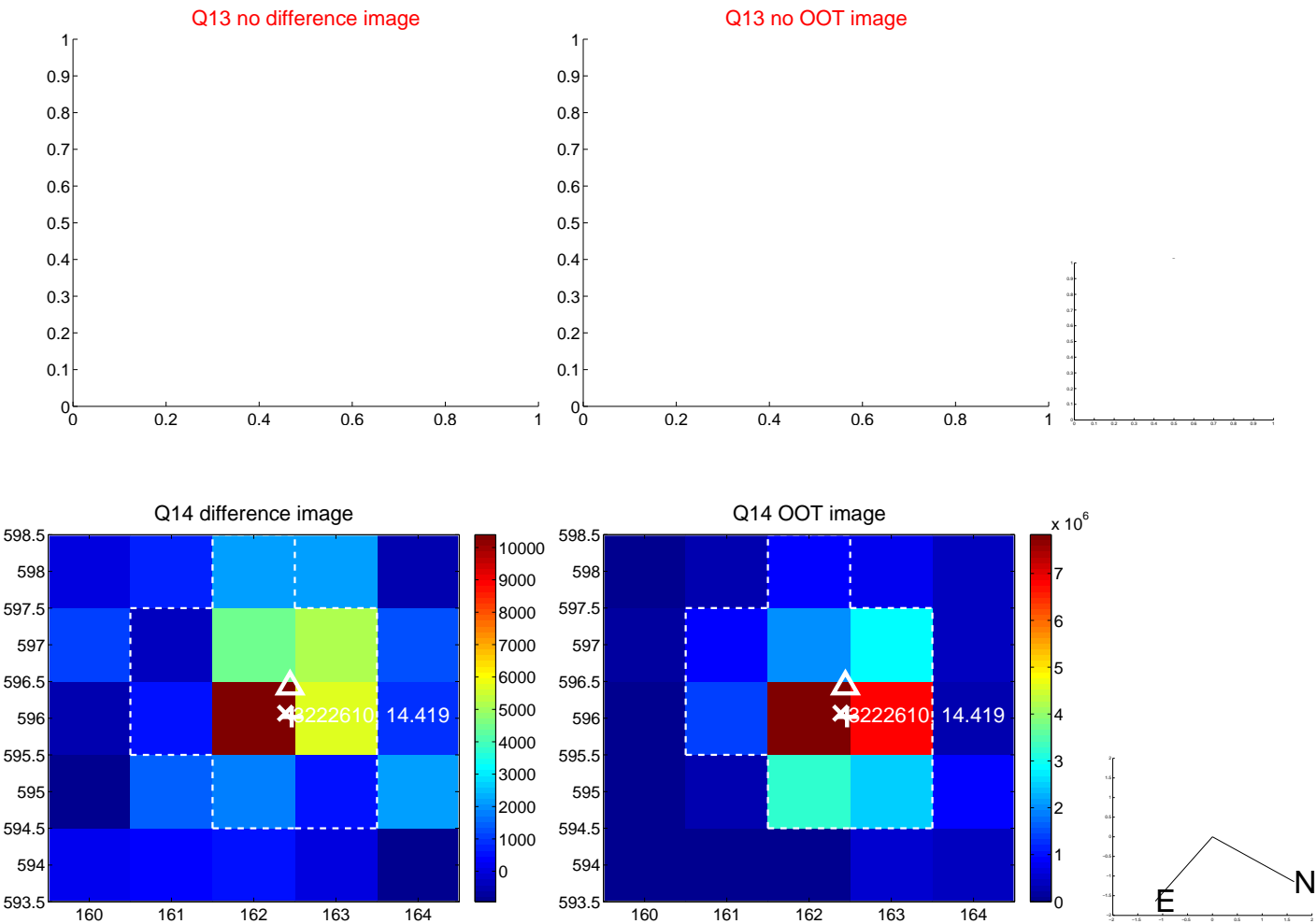
Q8 no OOT image



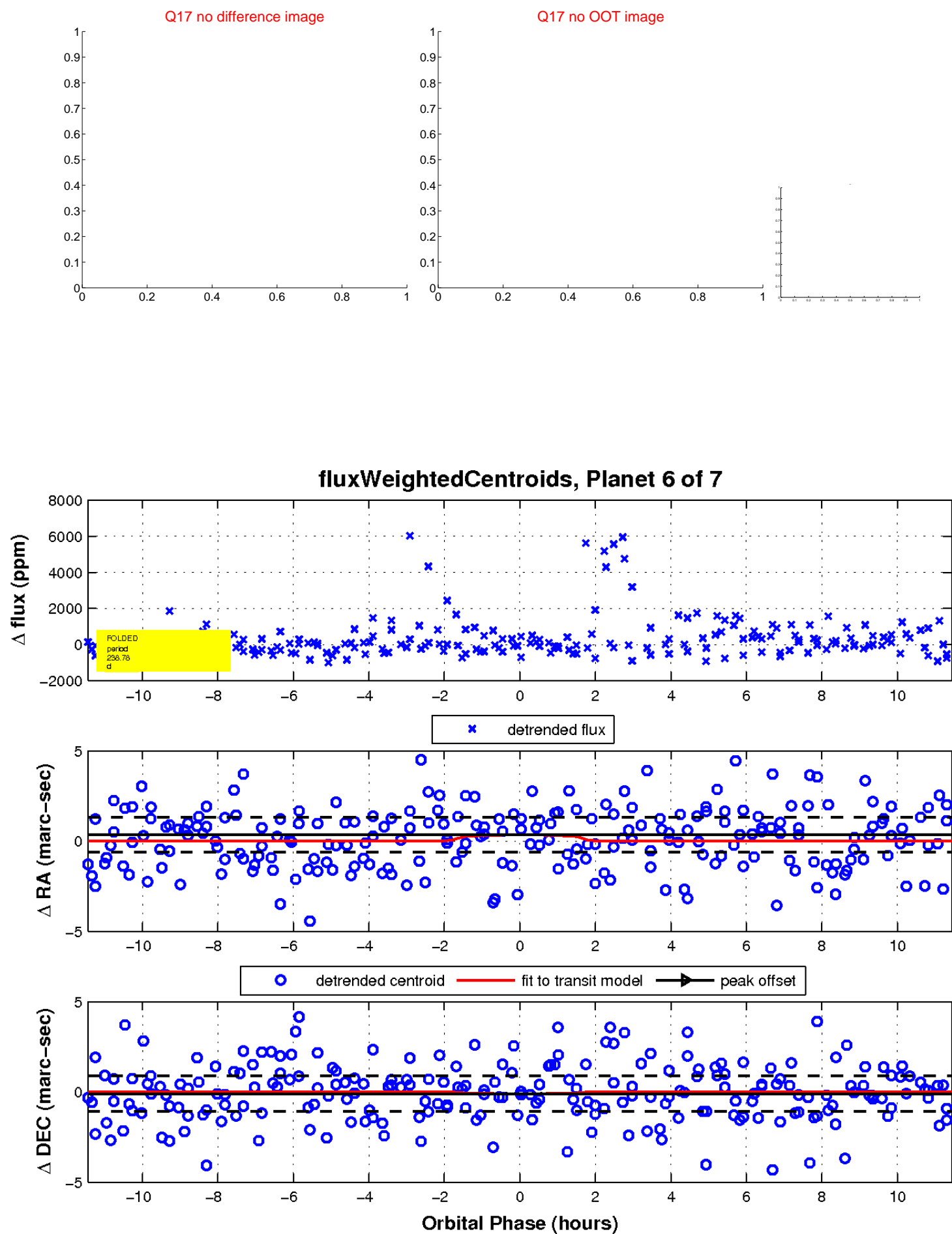
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

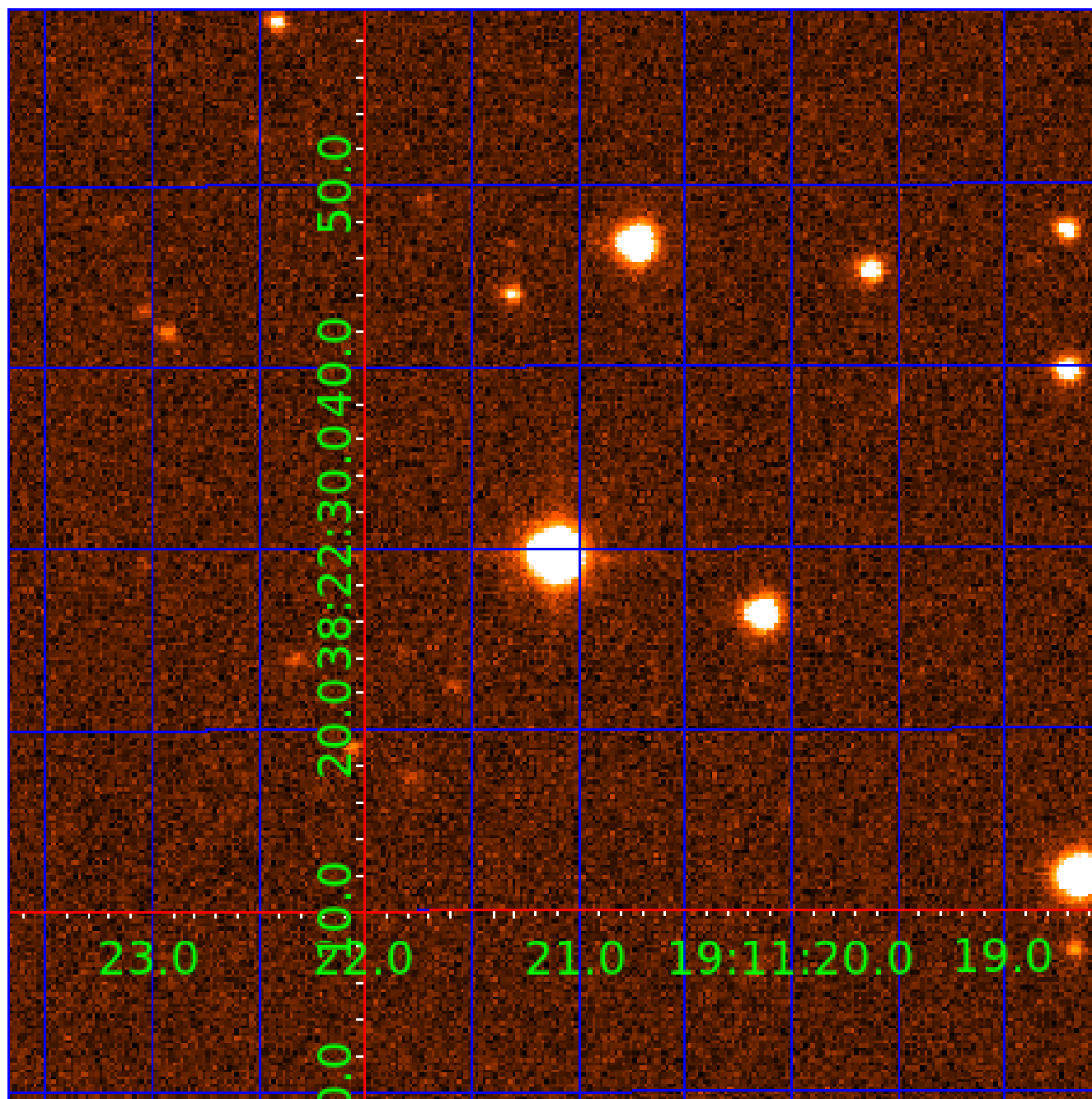


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003222610

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})
003222610-02	OBS	No	449.457666	185.880463	810.2	6.620	8.2	5.8	0.67	4260	2.00	0.13
003222610-03	OBS	No	534.289527	217.800770	1681.8	4.662	9.7	8.3	0.67	4260	3.05	0.10
003222610-04	OBS	No	592.868061	154.902856	1224.0	3.600	9.7	7.6	0.67	4260	2.51	0.09
003222610-05	OBS	No	590.839150	330.598610	1172.5	16.069	12.5	6.9	0.67	4260	2.38	0.09
003222610-06	OBS	No	238.776505	160.222585	640.1	3.821	10.3	4.5	0.67	4260	2.05	0.31
003222610-07	OBS	No	658.015121	212.662877	620.9	6.000	9.0	-1.0	0.67	4260	1.59	0.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003222610-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV
003222610-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003222610-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
003222610-05	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003222610-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003222610-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

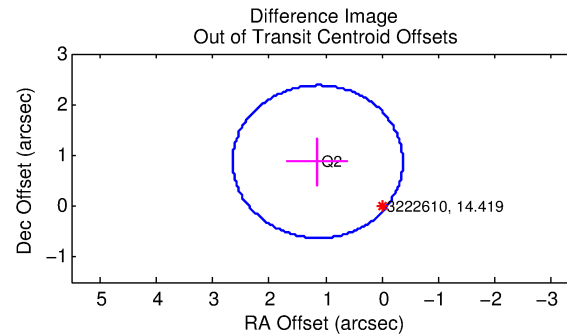
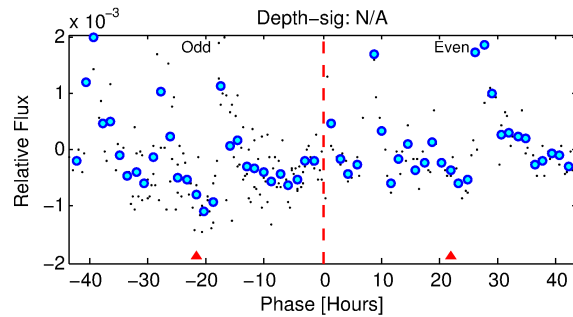
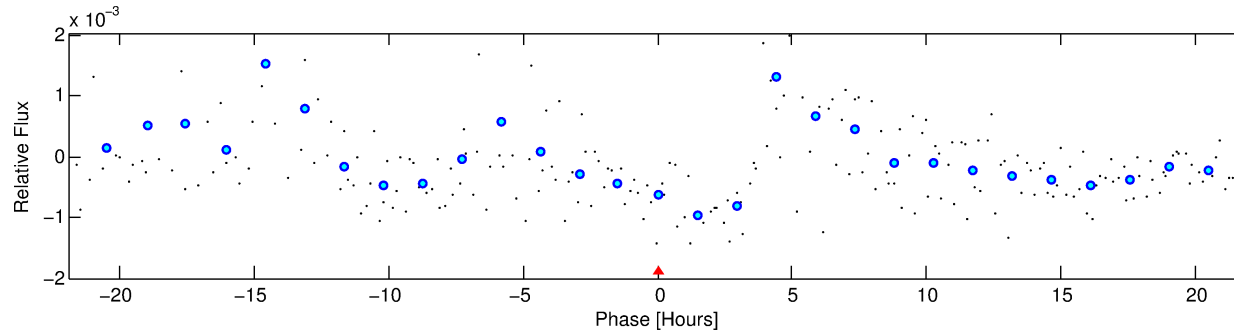
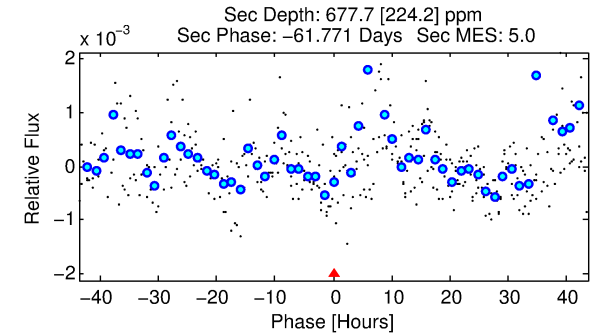
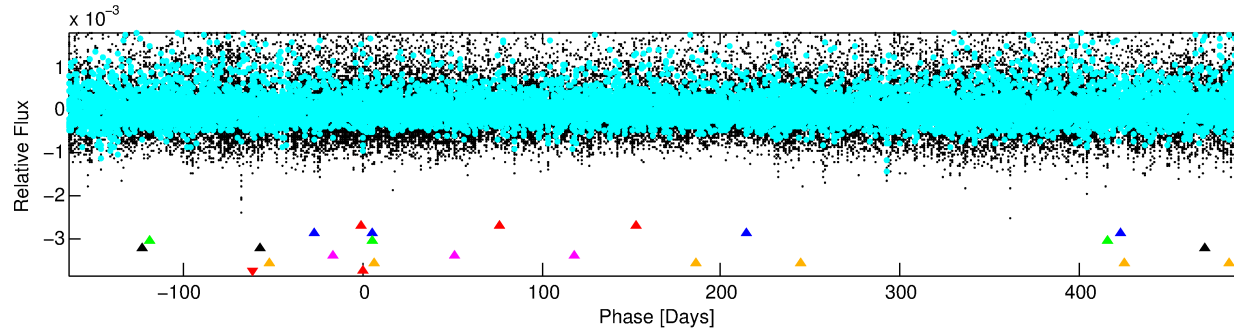
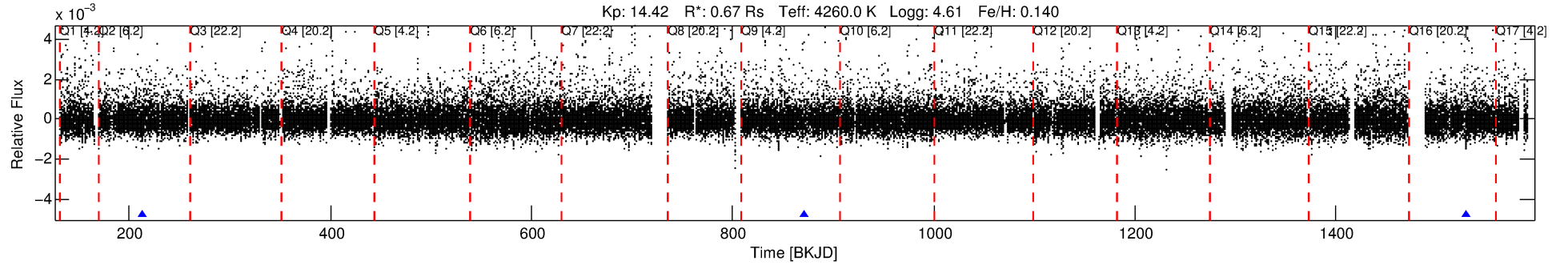
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003222610-07

No Significant Match Found

DV One-Page Summary

KIC: 3222610 Candidate: 7 of 7 Period: 658.015 d



TPS TCE Results:

Period = 658.01512 d
Epoch = 212.6629 BKJD

DV fit results are unavailable

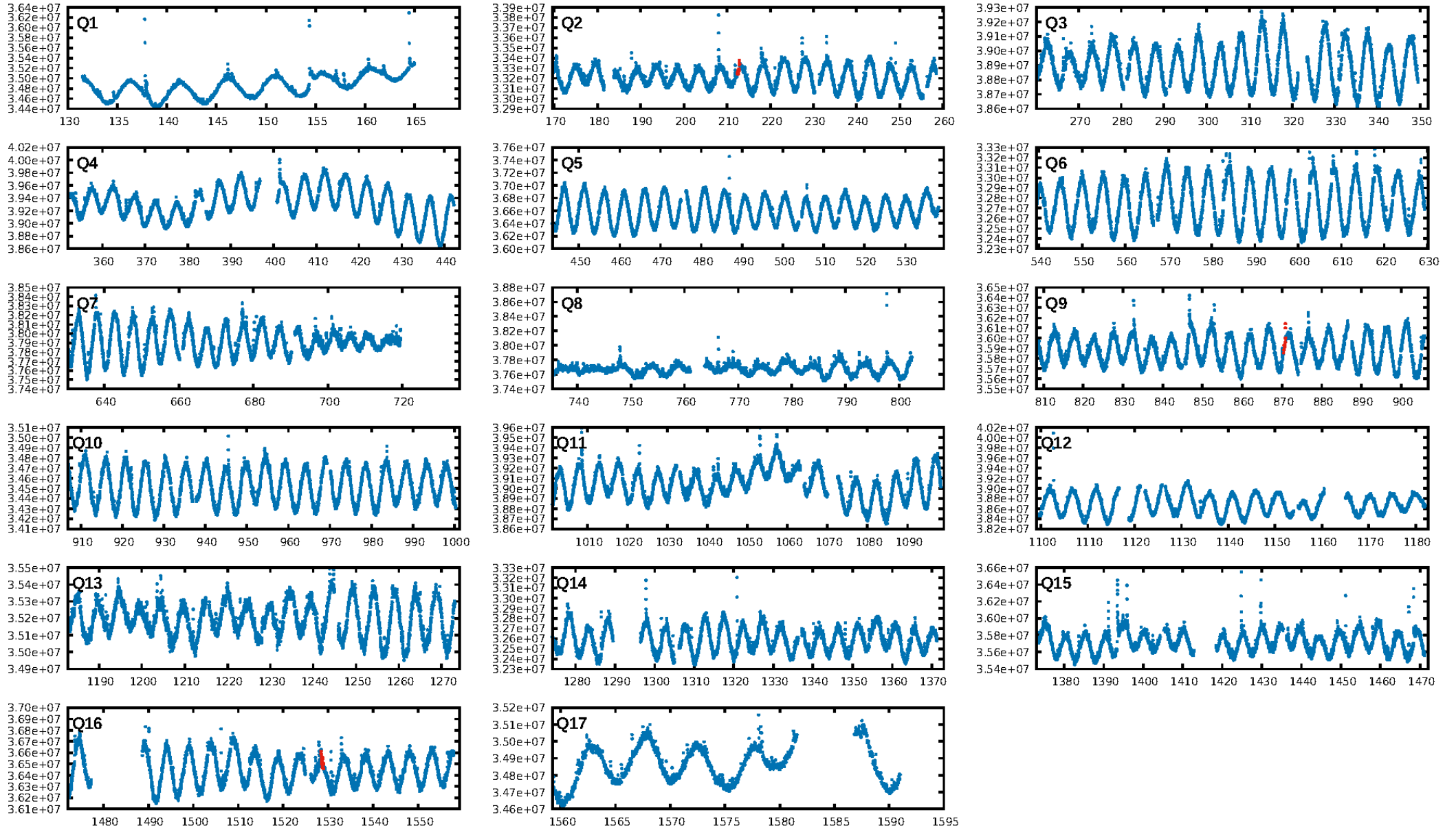
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [223.46 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 4.066
Centroid-sig: 25.0%
Centroid-so: 0.608 arcsec [0.75 σ]
OotOffset-rm: 1.432 arcsec [2.86 σ]
KicOffset-rm: 1.629 arcsec [3.32 σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [3/3]

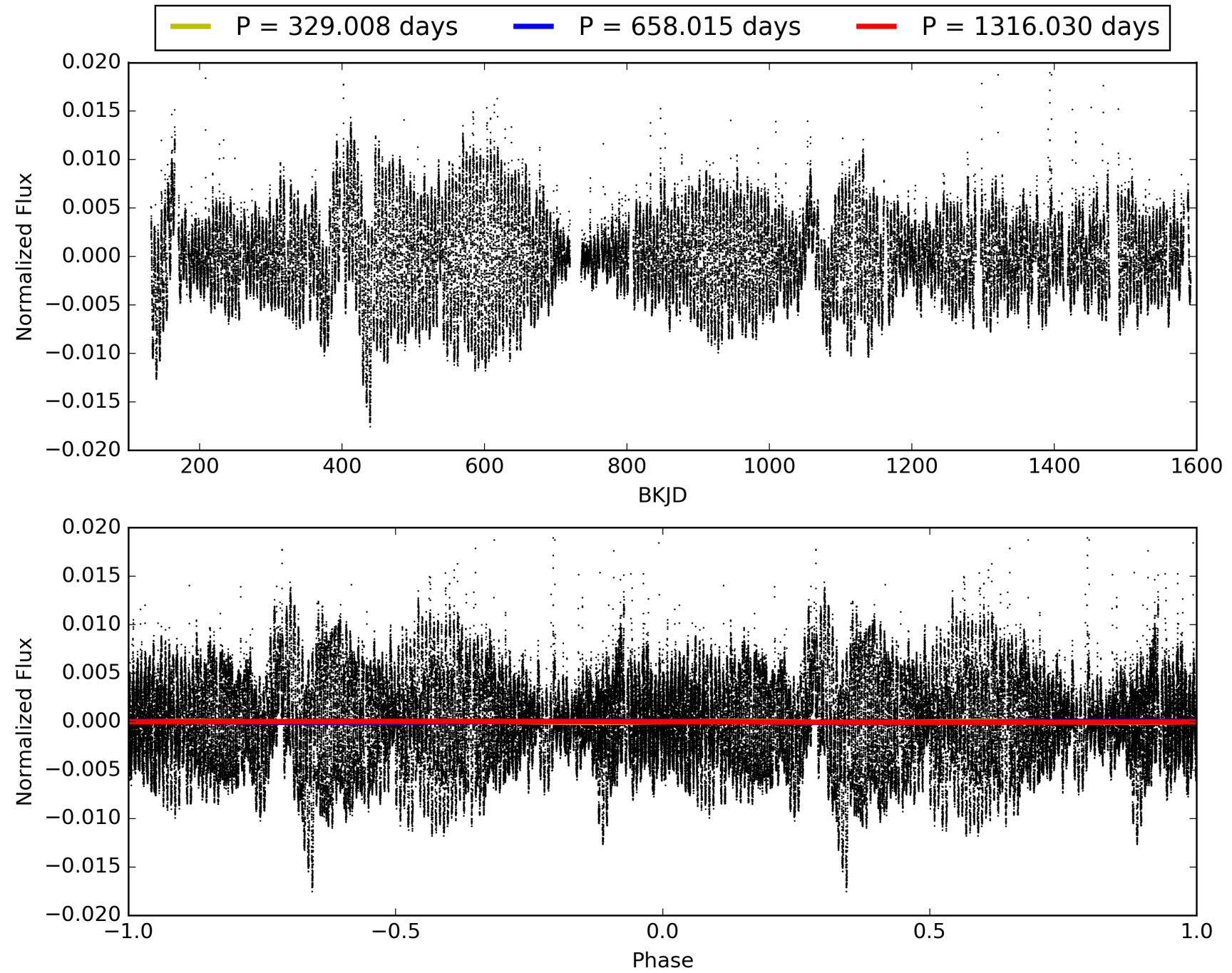
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:35 Z

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

TCE 003222610-07, PDC Light Curves

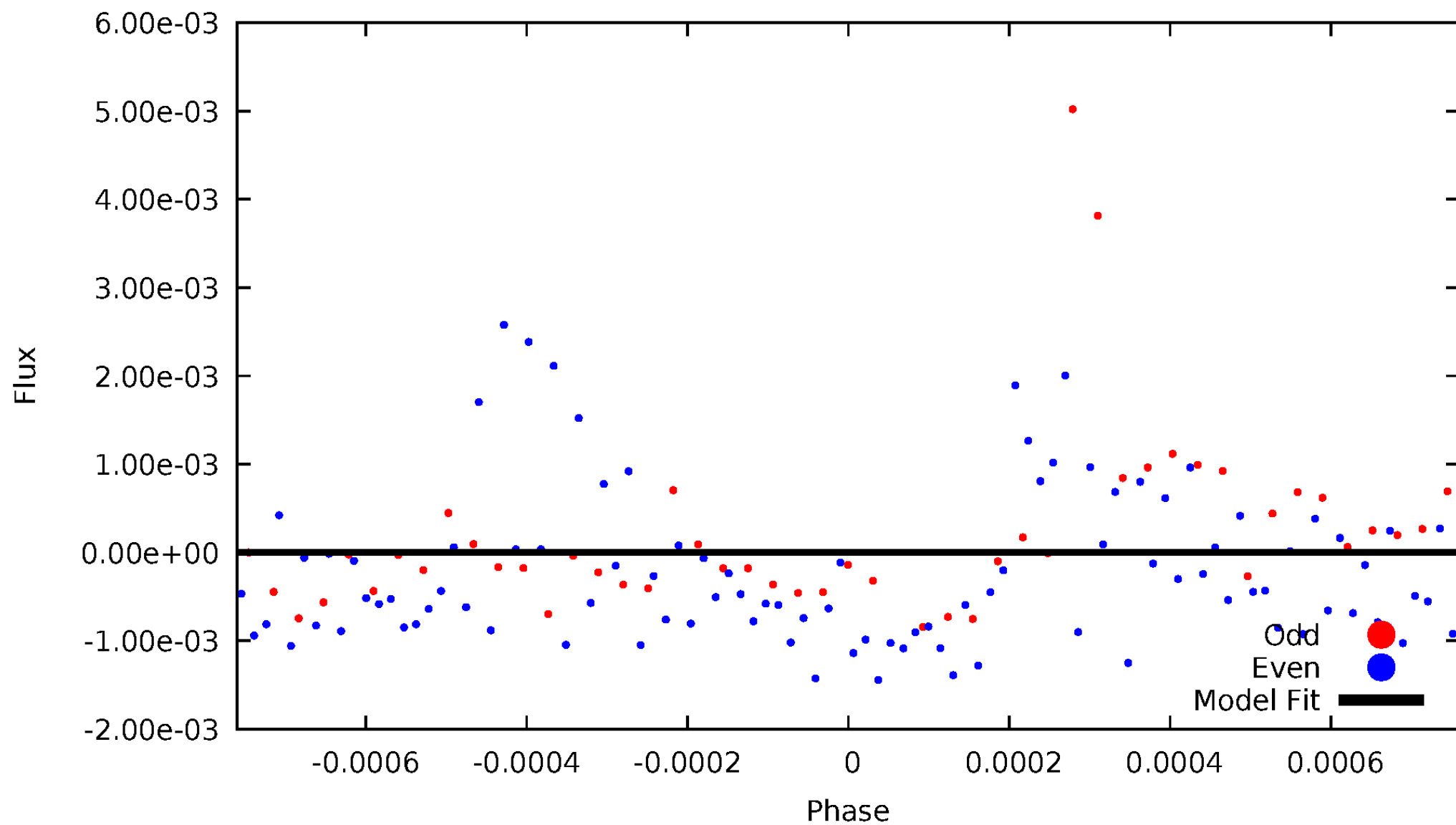


TCE 003222610-07



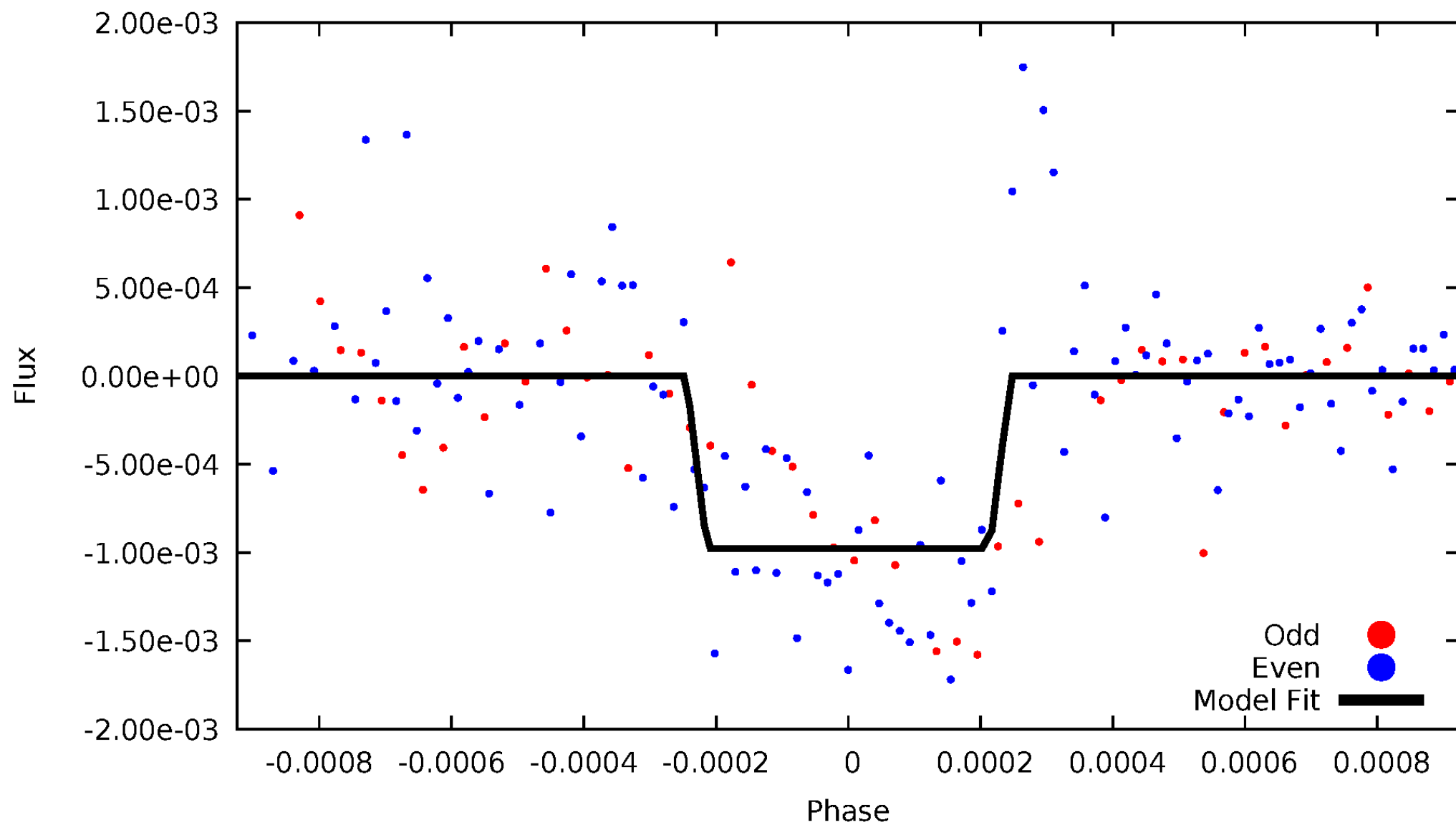
DV Odd/Even

TCE 003222610-07

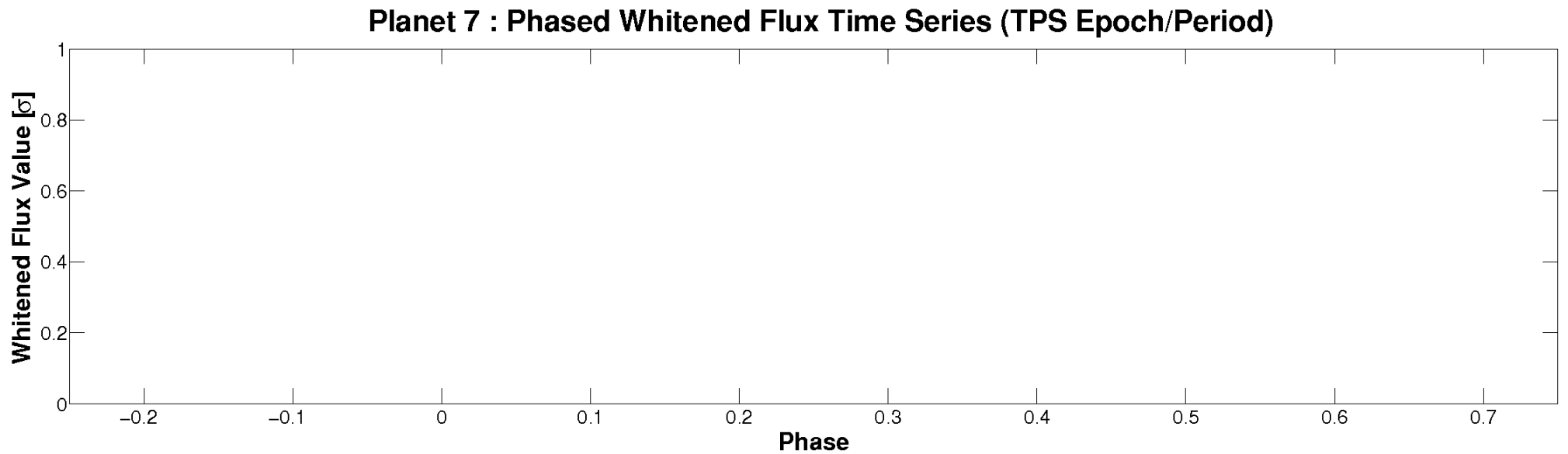
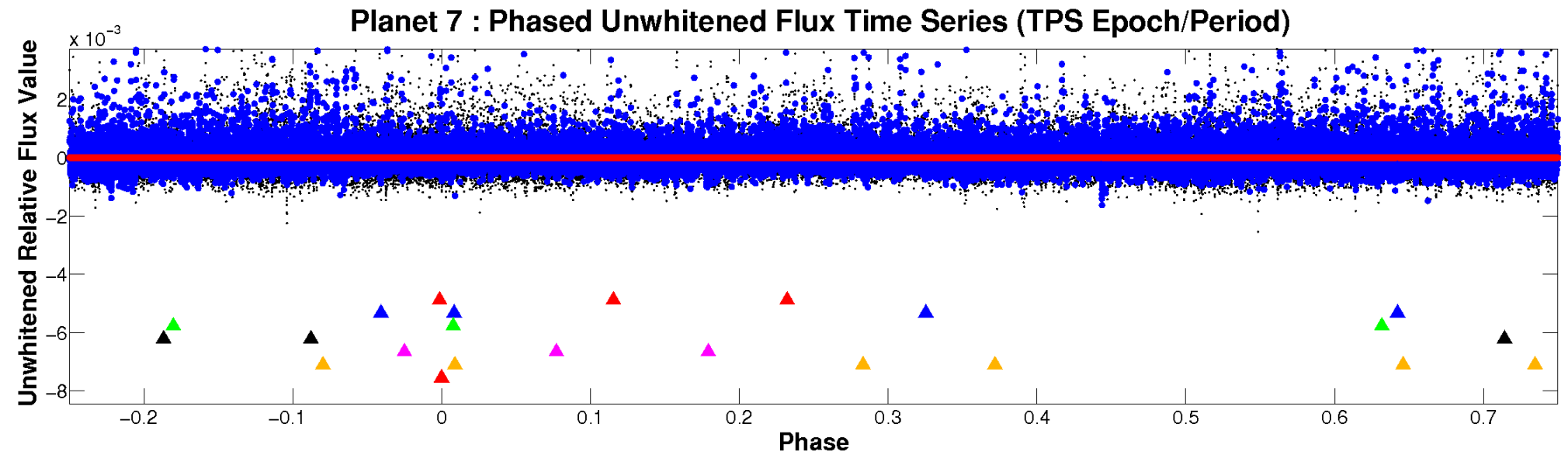


ALT Odd/Even

TCE 003222610-07

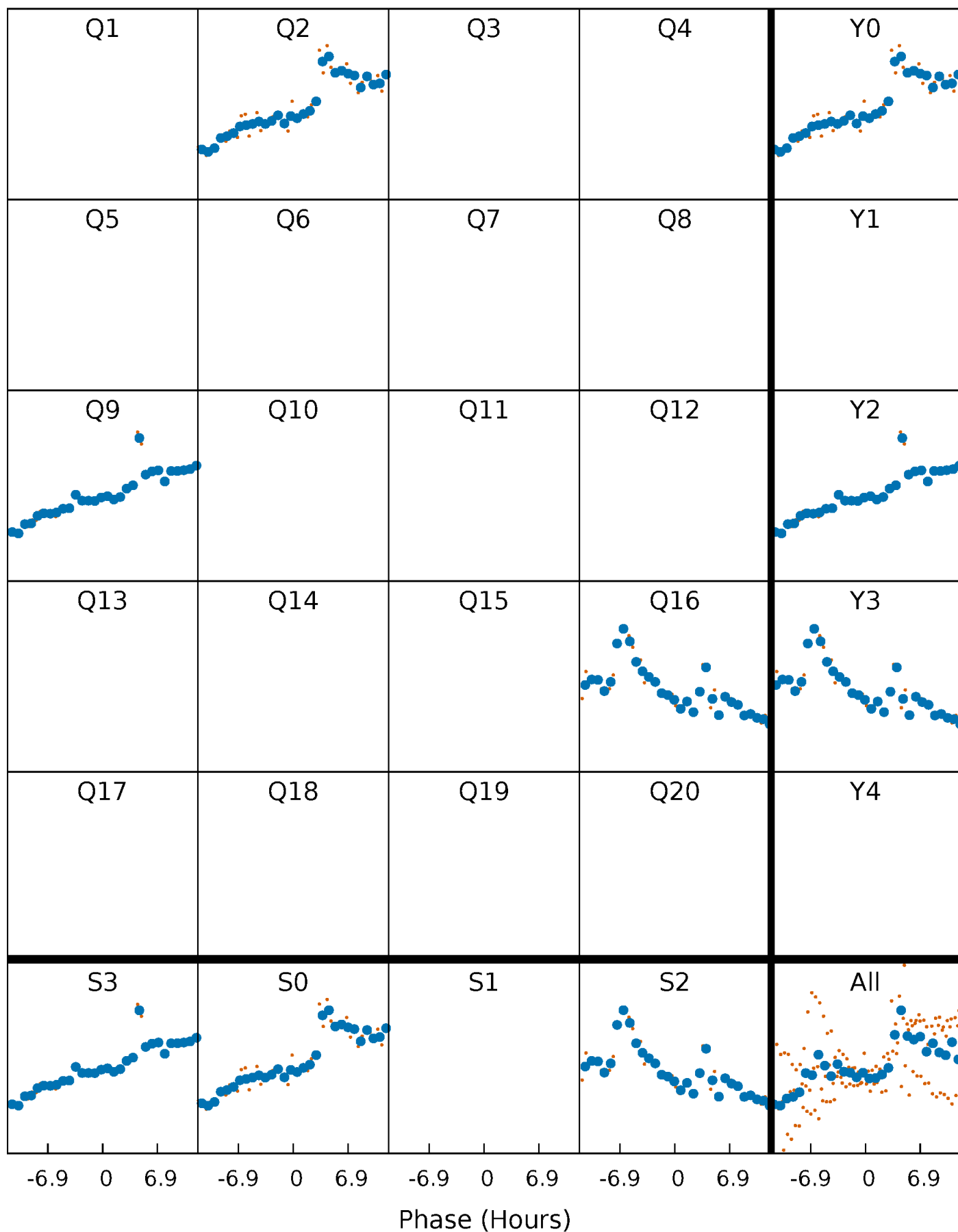


Non-Whitened Vs. Whitened Light Curve



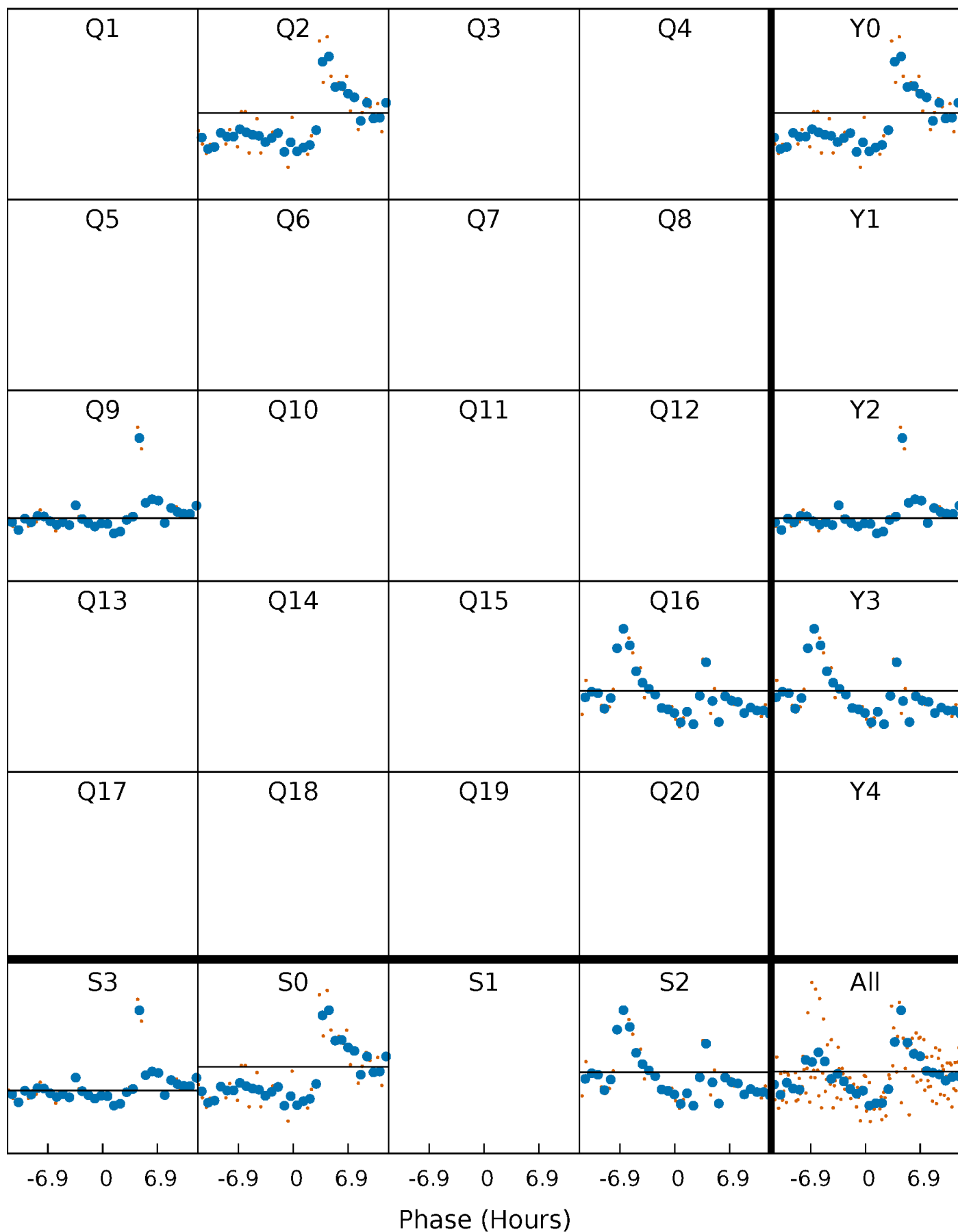
PDC Quarter-Phased Transit Curves

TCE 003222610-07 $P=658.015121$ Days $T_0=212.662877$ (BKJD)



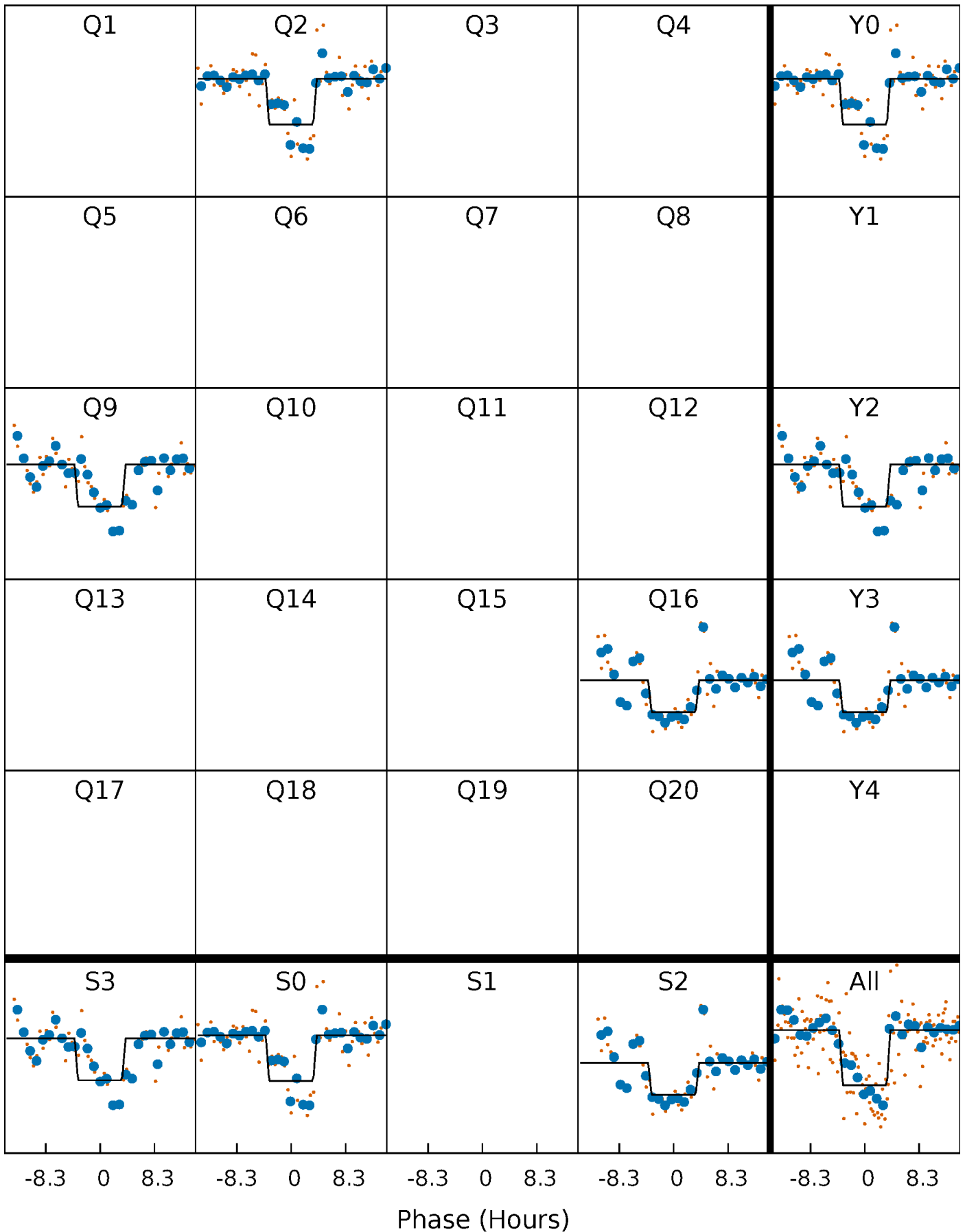
DV Quarter-Phased Transit Curves

TCE 003222610-07 $P=658.015121$ Days $T_0=212.662877$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

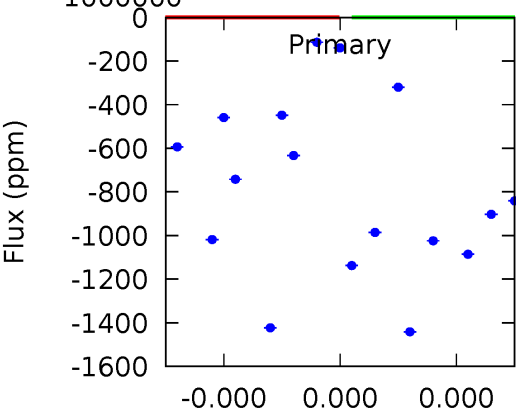
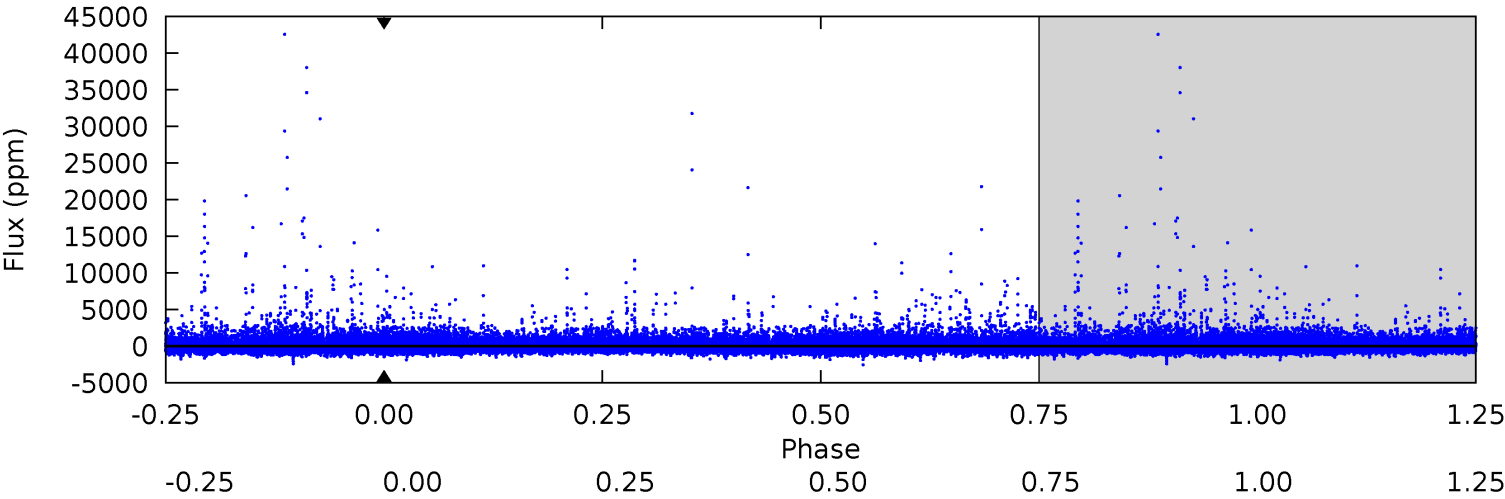
TCE 003222610-07 P=658.015121 Days $T_0=212.636332$ (BKJD)



DV Model-Shift Uniqueness Test

003222610-07, P = 658.015121 Days, E = 212.662877 Days

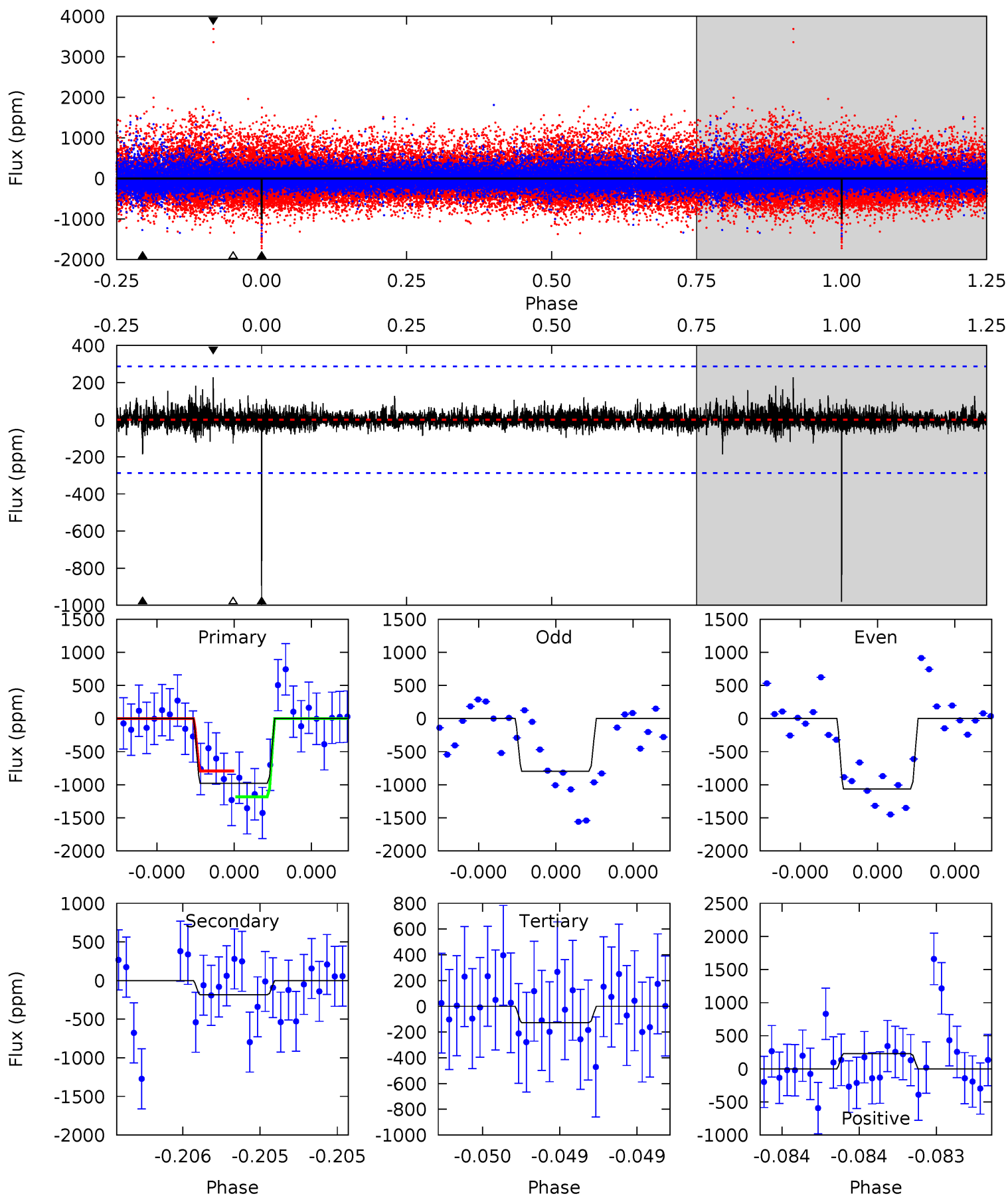
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

003222610-07, P = 658.015121 Days, E = 212.636332 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.1	3.60	2.47	4.44	5.58	3.50	0.54	16.6	14.6	1.13	-0.84	2.36	0.95	0.19	3.81



Stellar Parameters For KIC 003222610

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4260^{+142}_{-142}	$4.607^{+0.052}_{-0.017}$	$0.140^{+0.200}_{-0.300}$	$0.671^{+0.032}_{-0.057}$	$0.664^{+0.052}_{-0.052}$	$3.101^{+0.665}_{-0.248}$
	+3%/-3%	+1%/-0%	+143%/-214%	+5%/-8%	+8%/-8%	+21%/-8%
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 003222610-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$5.43^{+5.71}_{-3.74}$	188^{+7}_{-6}	3591^{+7313}_{-13080}	$61848^{+6373010}_{-4156698}$
Alt.	-185 ± 51	$5.96^{+5.52}_{-4.15}$	187^{+7}_{-6}	2477^{+1010}_{-361}	4593^{+50512}_{-3412}

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

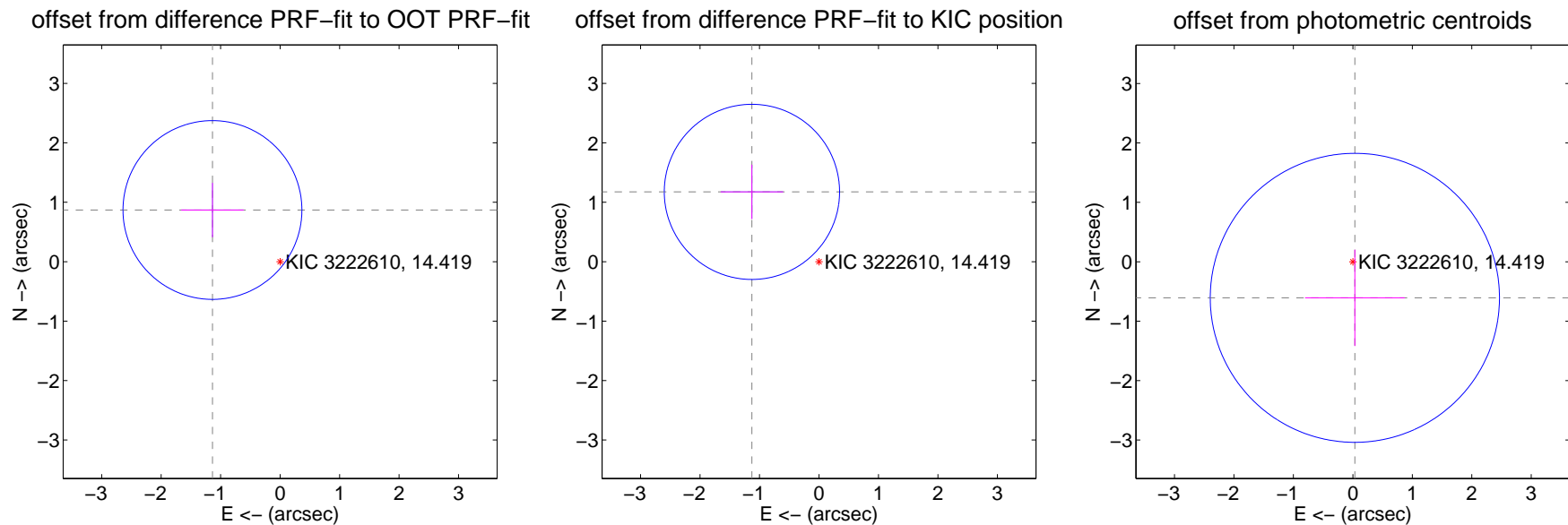
DV Centroid Data

Supplemental centroid analysis for 003222610-07. Kepler magnitude: 14.42. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

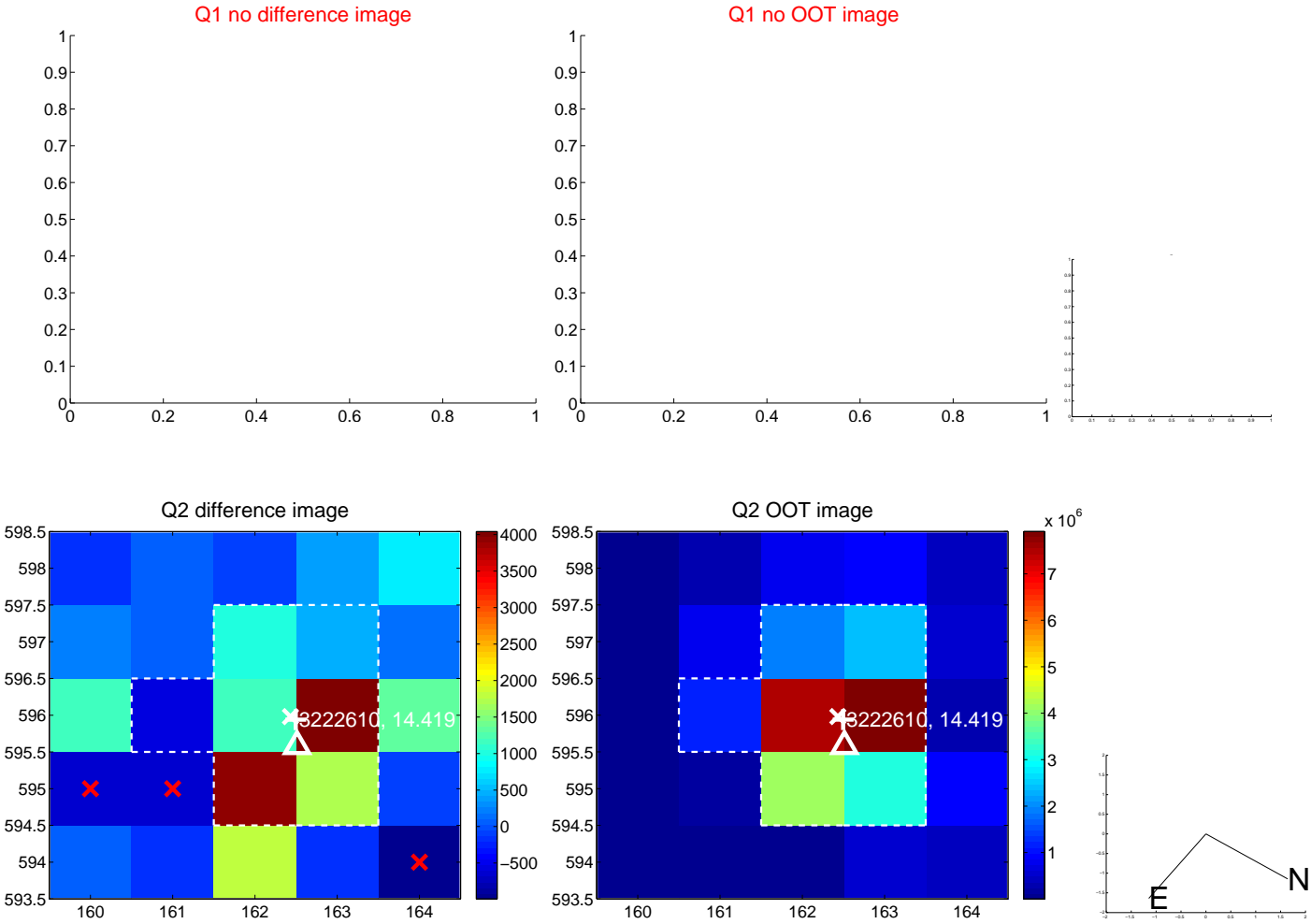
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.432 ± 0.501	2.86	1.138 ± 0.525	0.870 ± 0.458
PRF-fit source offset from KIC position	1.629 ± 0.491	3.32	1.128 ± 0.525	1.175 ± 0.458
photometric centroid source offset	0.61 ± 0.81	0.75	-0.03 ± 0.84	-0.61 ± 0.81



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.

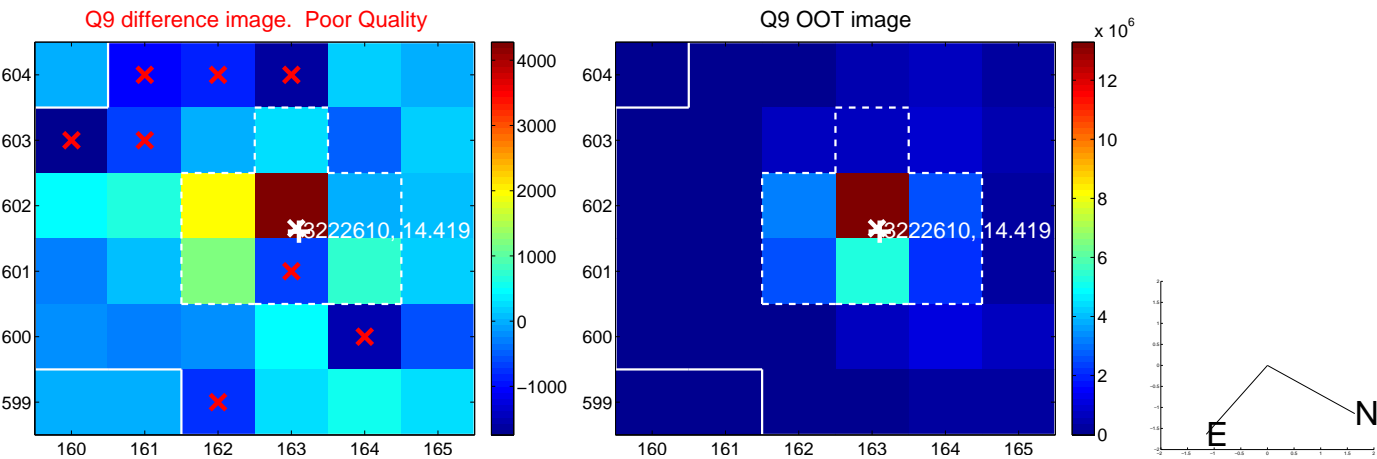
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



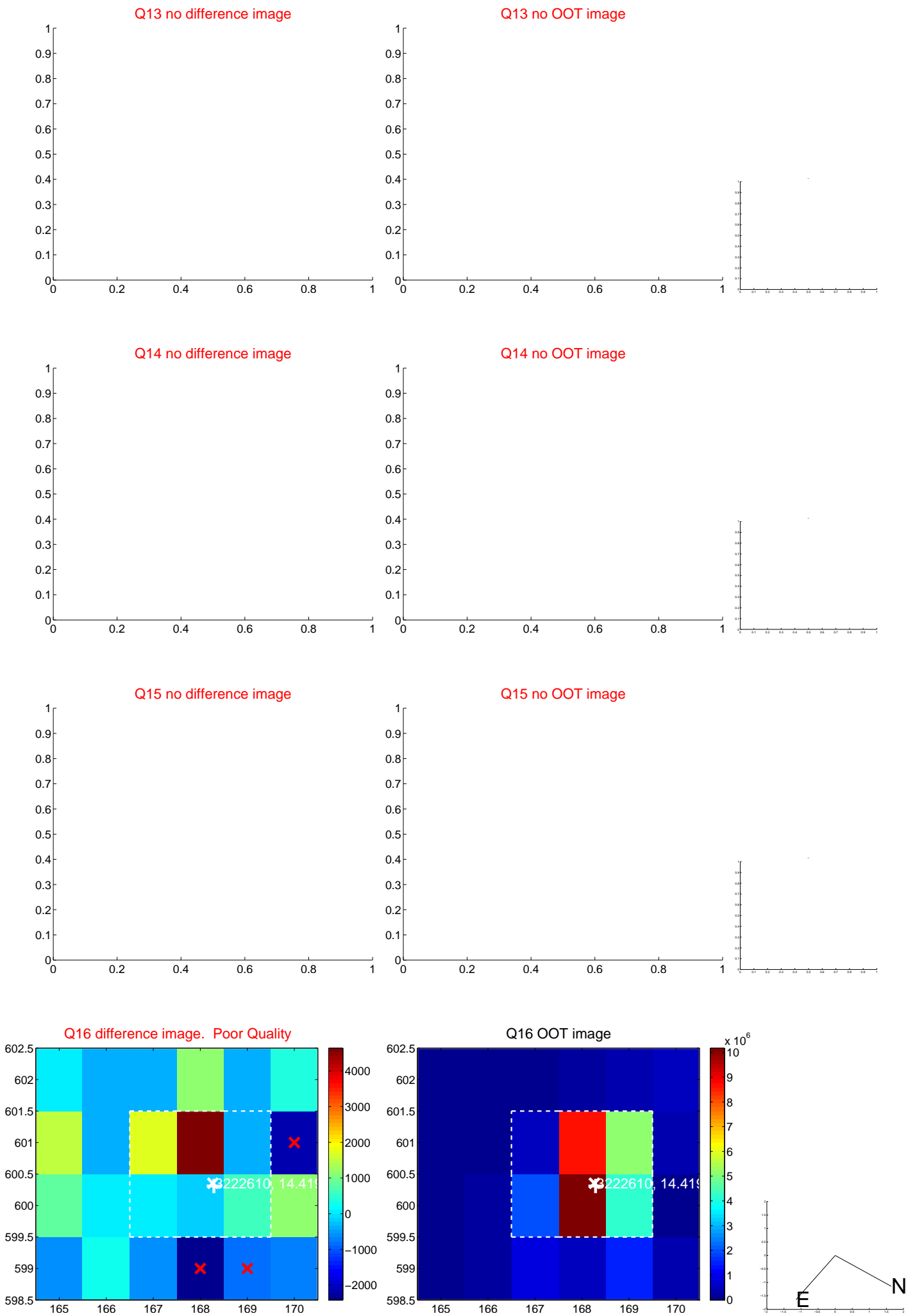
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



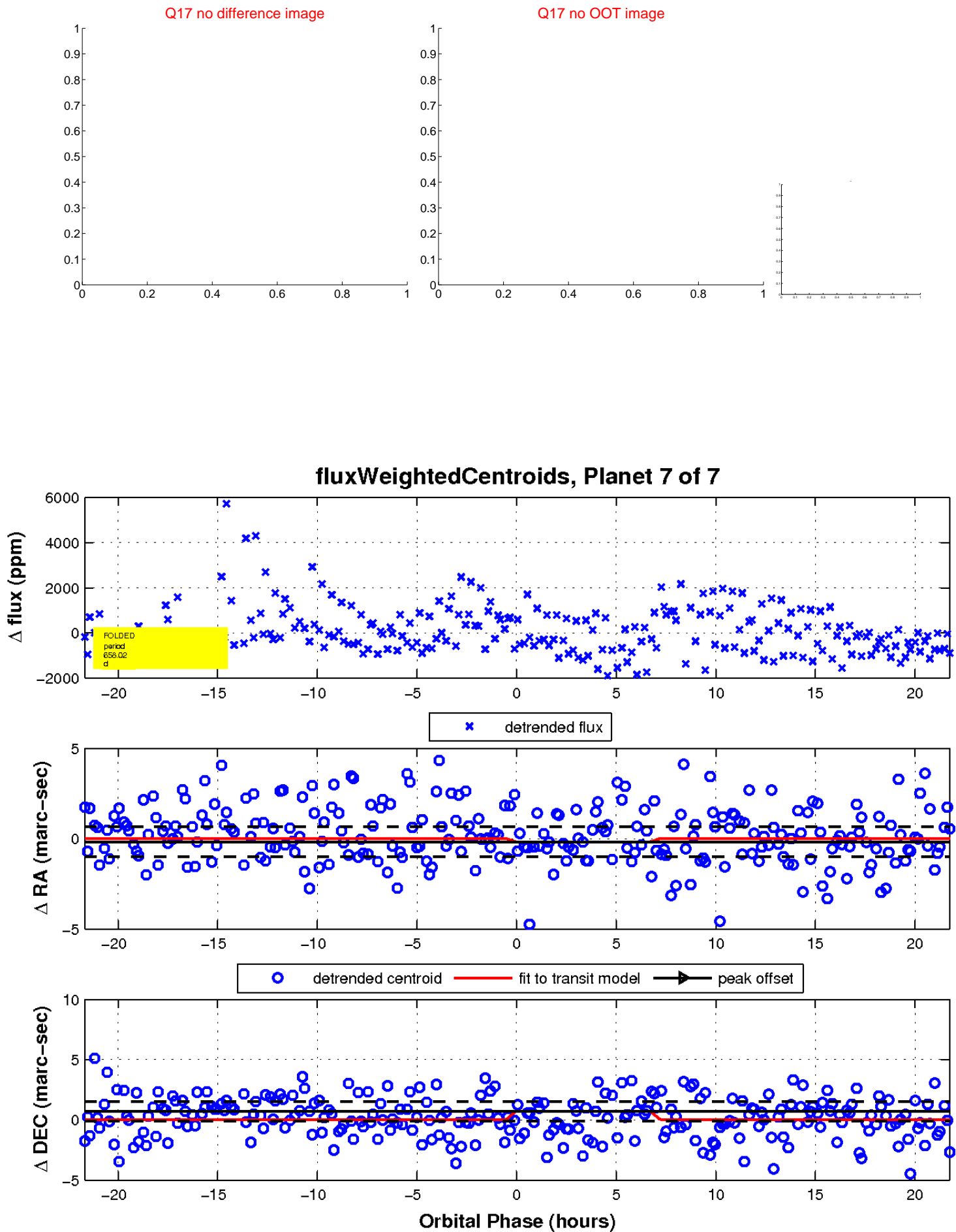
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

