

KIC 007204073

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})
007204073-01	OBS	No	416.643473	294.299298	248.8	7.855	8.6	5.8	0.58	4208	1.03	0.12
007204073-02	OBS	6847.01	0.566812	131.796966	24.2	2.064	21.4	15.3	0.58	4208	0.34	773.38
007204073-03	OBS	No	262.031811	186.465881	183.0	8.027	10.7	5.3	0.58	4208	0.91	0.22
007204073-04	OBS	No	143.476933	237.122220	81.8	4.472	10.4	2.6	0.58	4208	0.64	0.48

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007204073-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007204073-02	OBS	FP	0.00	1	0	0	1	LPP_DV—CENT_FEW_DIFFS—EPHEM_MATCH
007204073-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007204073-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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 007204073-01

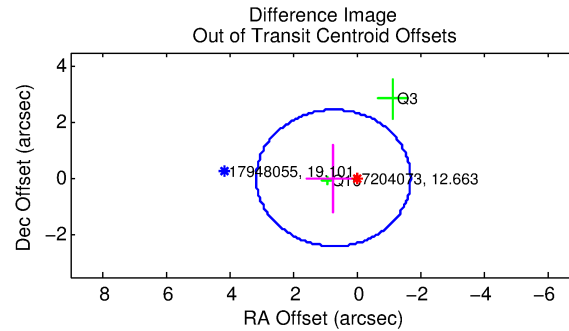
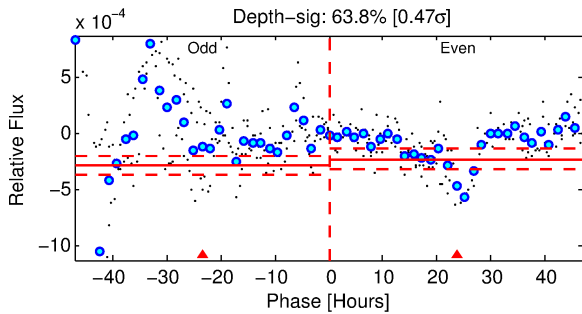
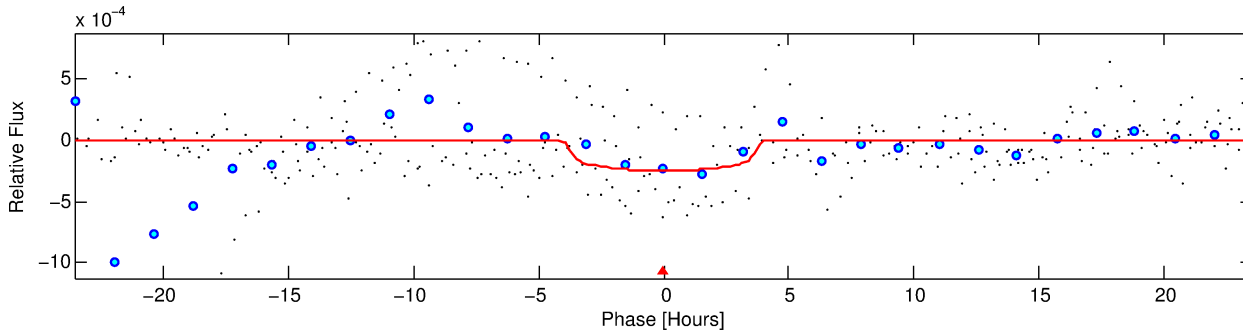
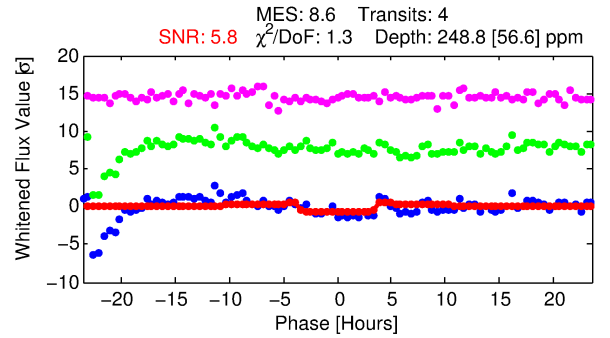
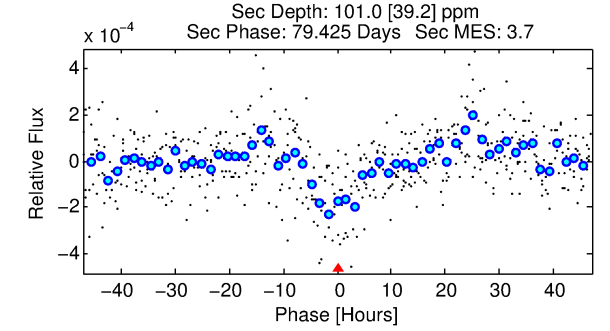
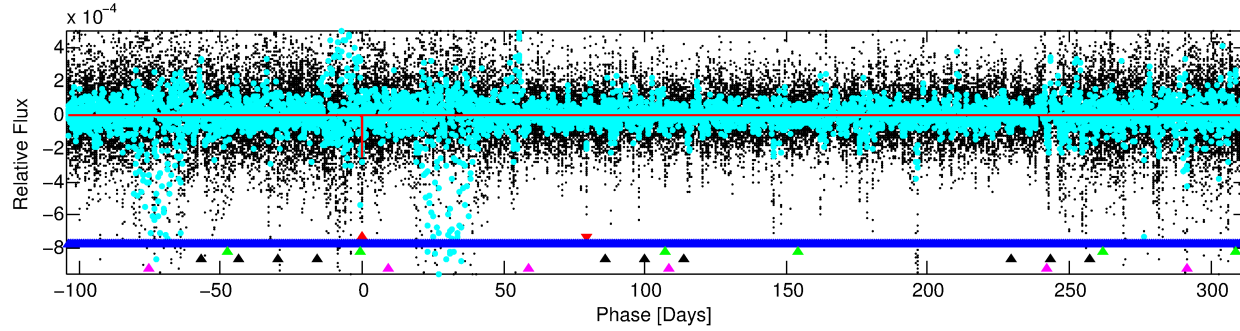
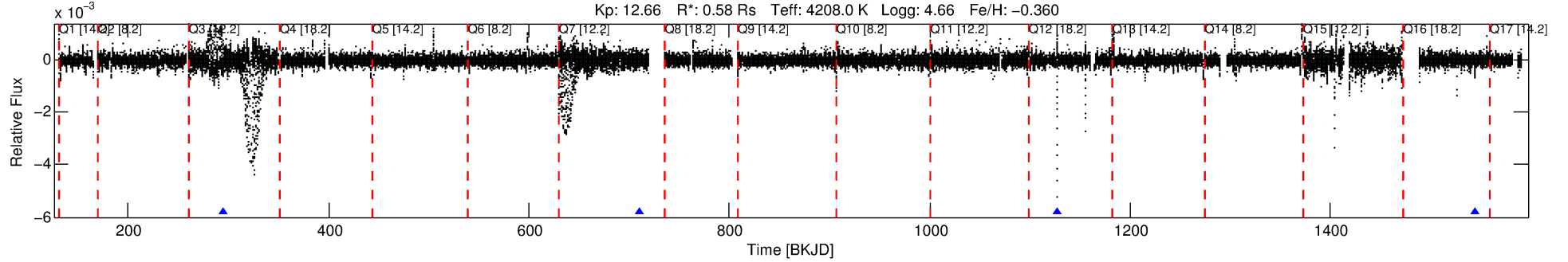
No Significant Match Found

DV One-Page Summary

KIC: 7204073 Candidate: 1 of 5 Period: 416.643 d

KOI: K06847 Corr: No Ephemeris Match

Kp: 12.66 R*: 0.58 Rs Teff: 4208.0 K Logg: 4.66 Fe/H: -0.360



DV Fit Results:

Period = 416.64347 [0.00818] d
Epoch = 294.2993 [0.0165] BKJD
Rp/R* = 0.0162 [0.0093]
a/R* = 250.27 [547.51]
b = 0.81 [0.96]
Seff = 0.12 [0.02]
Teq = 149 [6] K
Rp = 1.03 [0.60] Re
a = 0.9050 [0.0753] AU
Ag = 42748.45 [52187.30] [0.82σ]
Teffp = 3312 [1012] K [3.12σ]

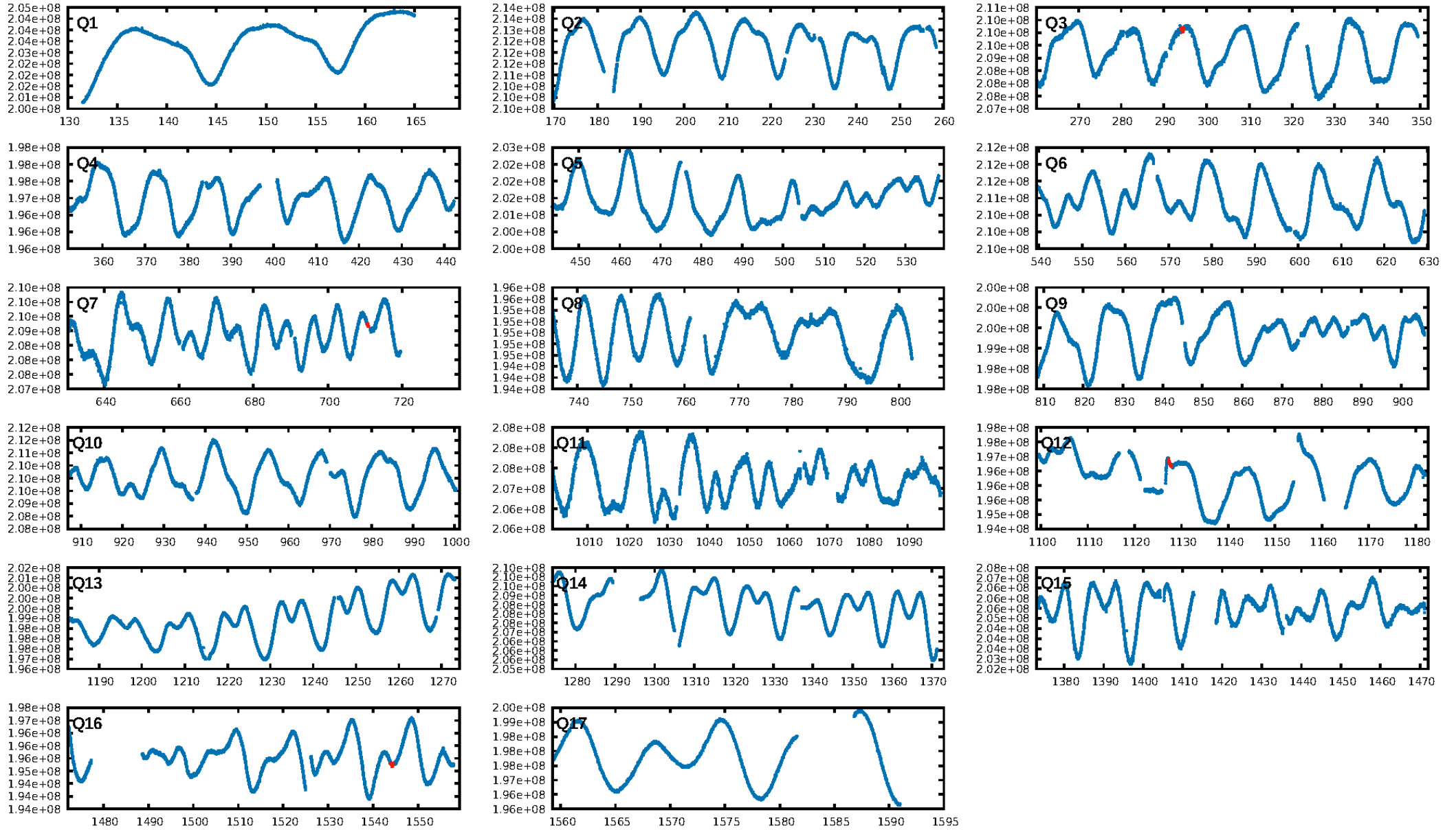
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [330.39σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 11.9%
ModelChiSquareGof-sig: 99.4%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.31
Centroid-sig: 96.6%
Centroid-so: 0.348 arcsec [0.37σ]
OotOffset-rm: 0.720 arcsec [0.89σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-rm: 0.968 arcsec [1.31σ]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.00 [0/2]

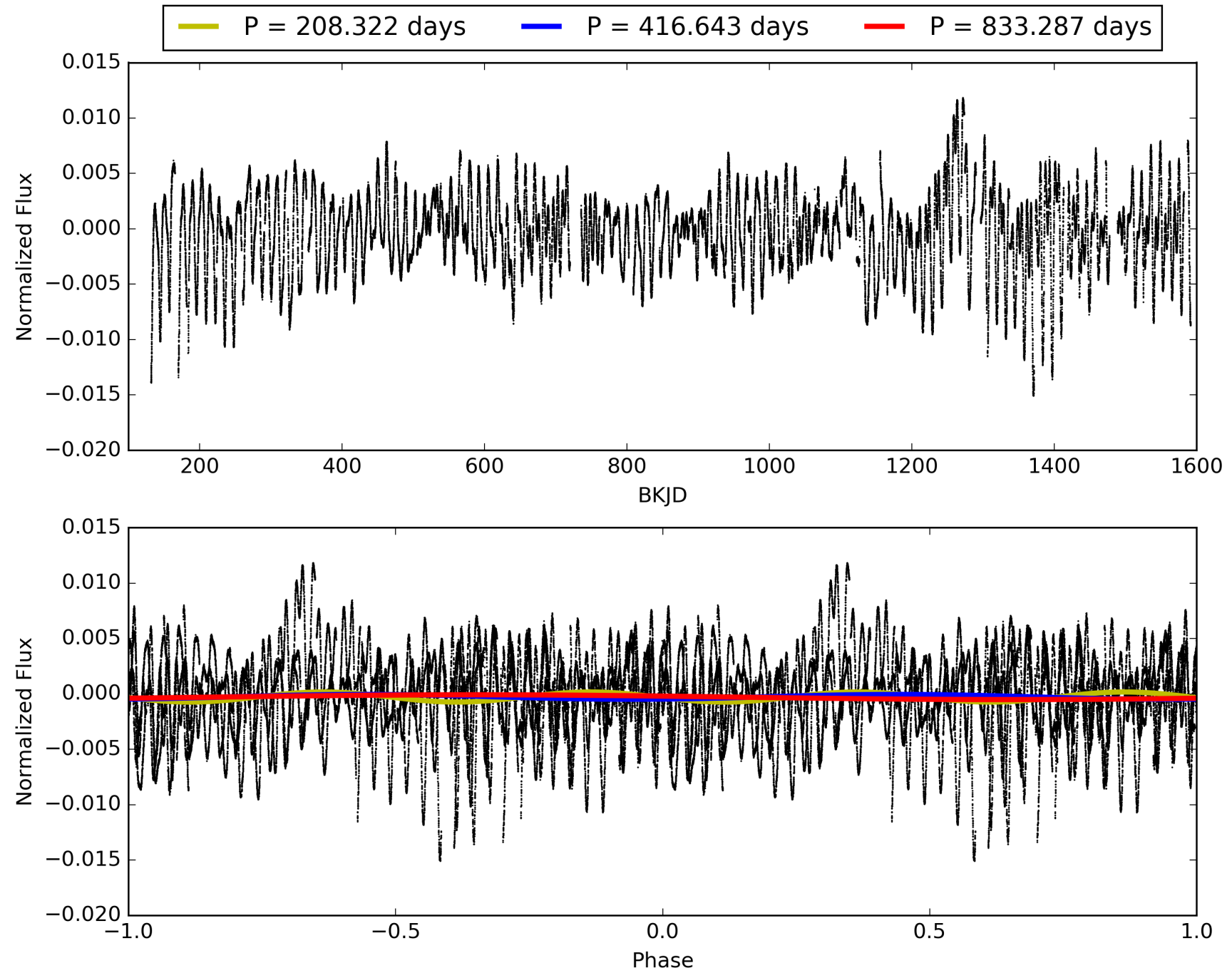
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 007204073-01, PDC Light Curves

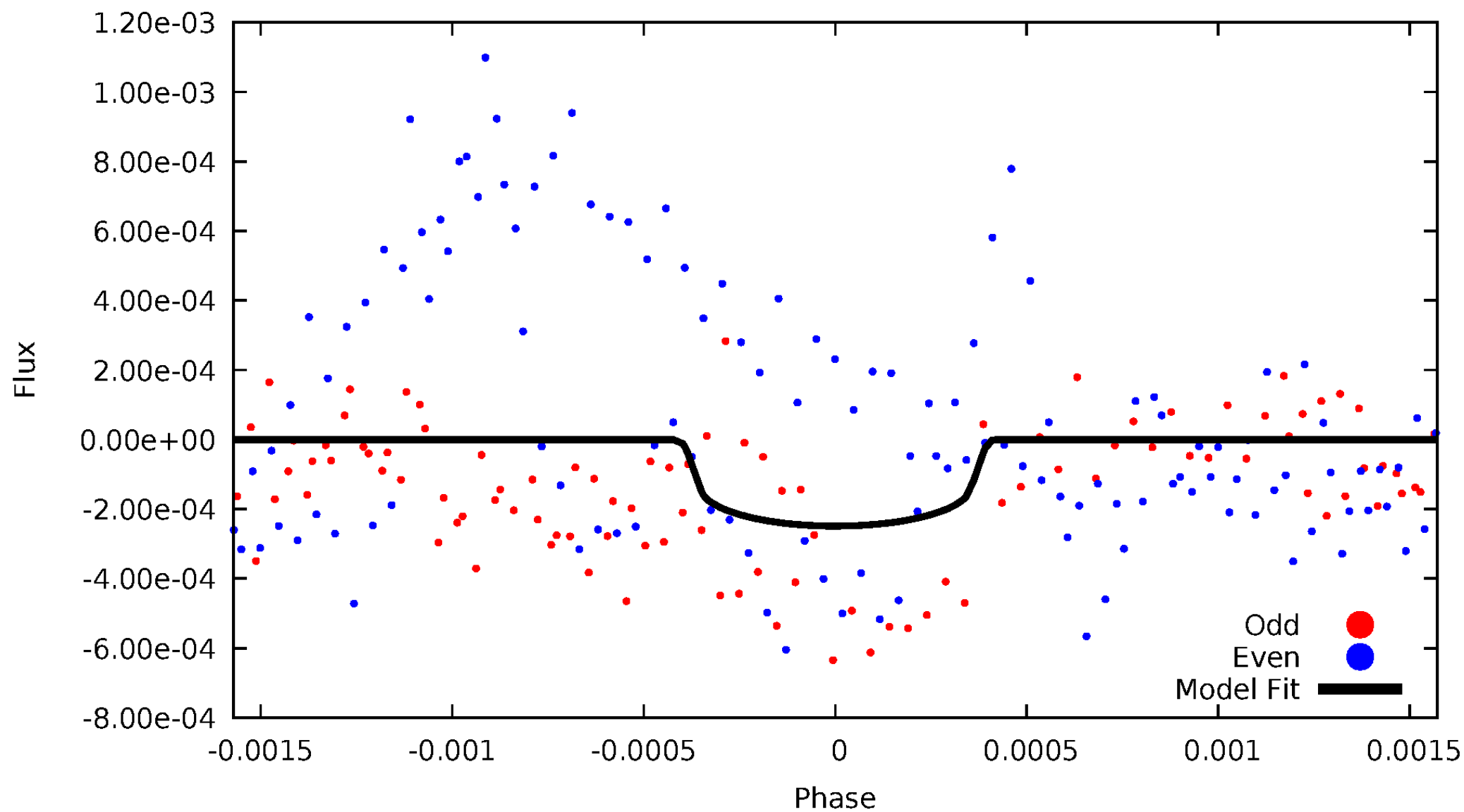


TCE 007204073-01



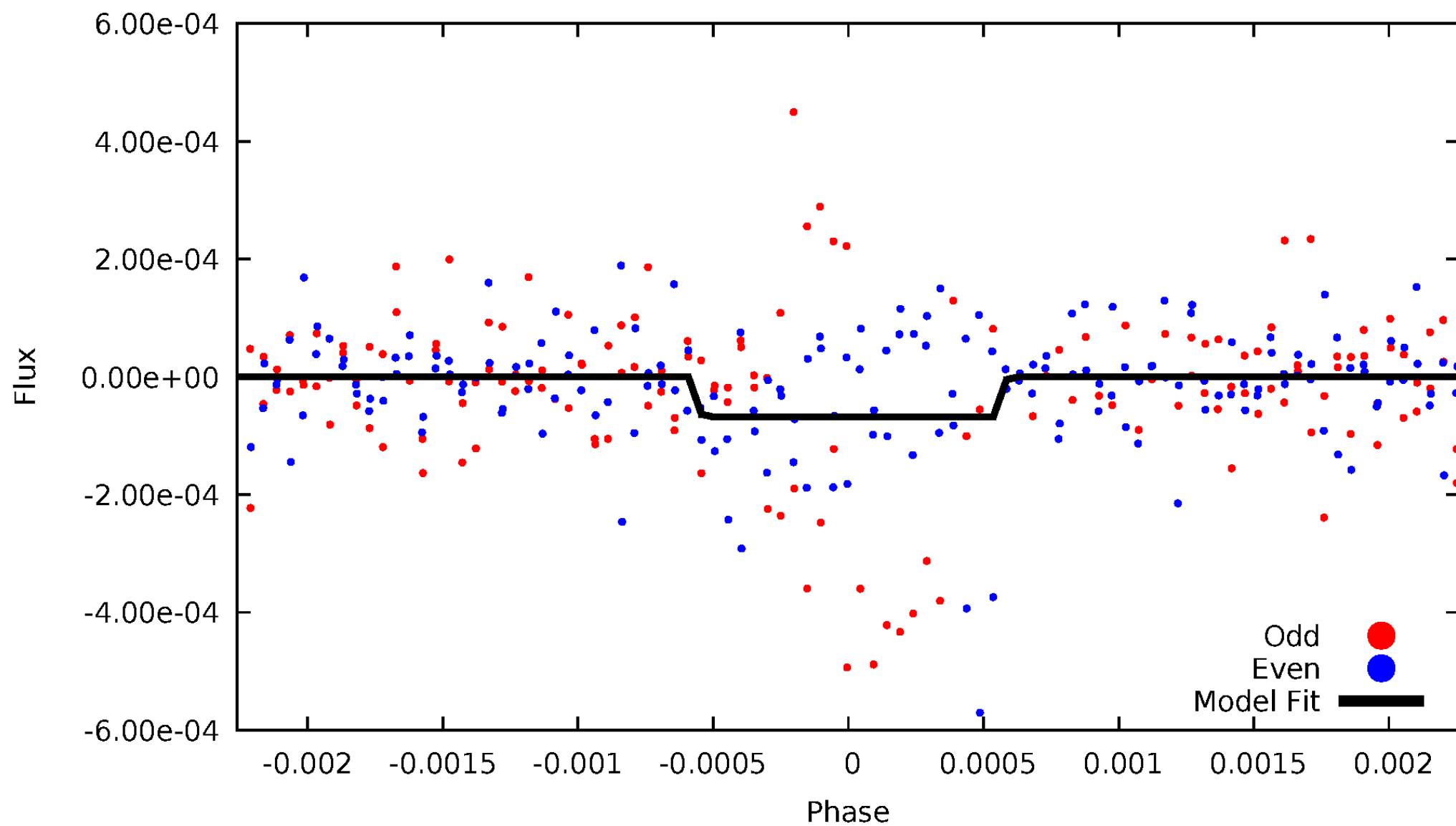
DV Odd/Even

TCE 007204073-01



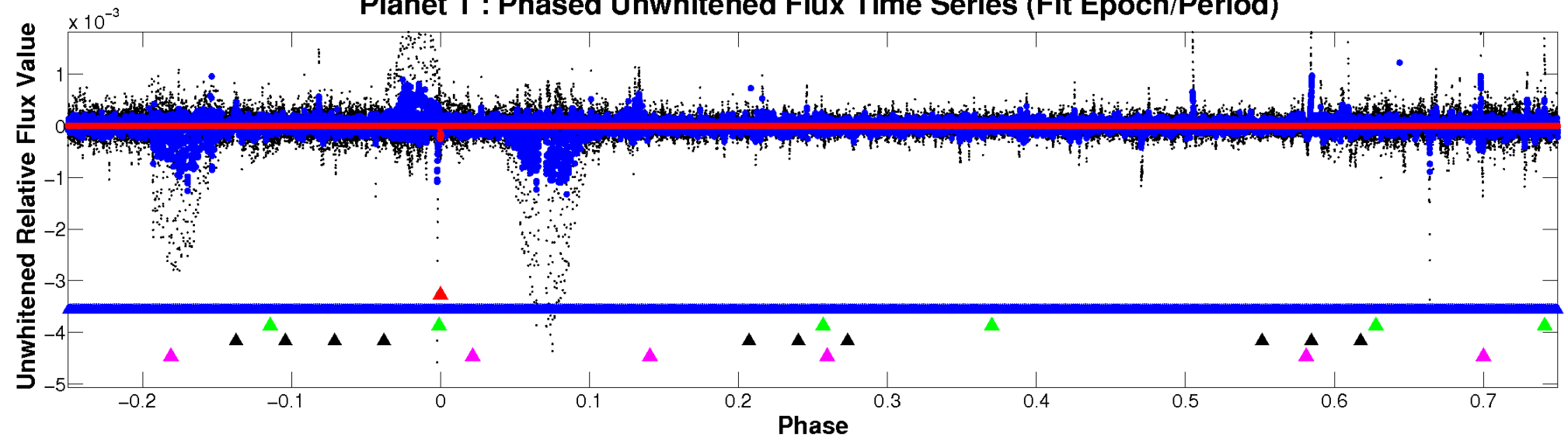
ALT Odd/Even

TCE 007204073-01

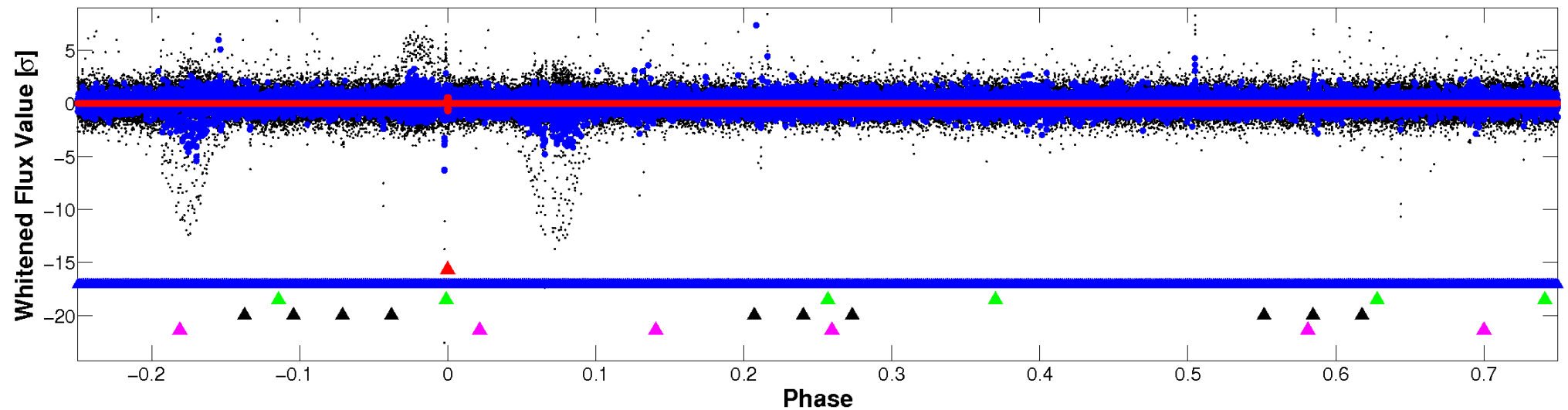


Non-Whitened Vs. Whitened Light Curve

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

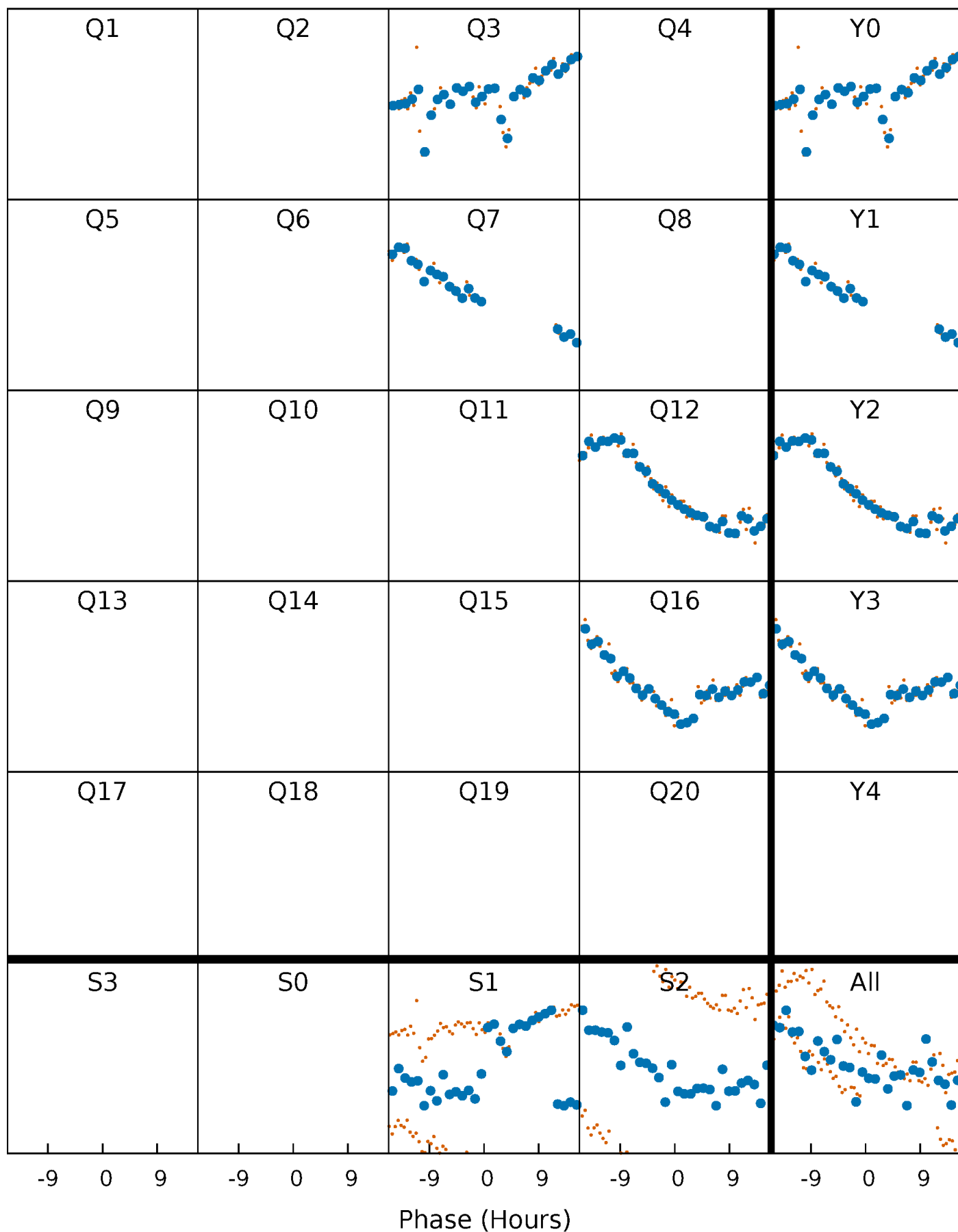


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



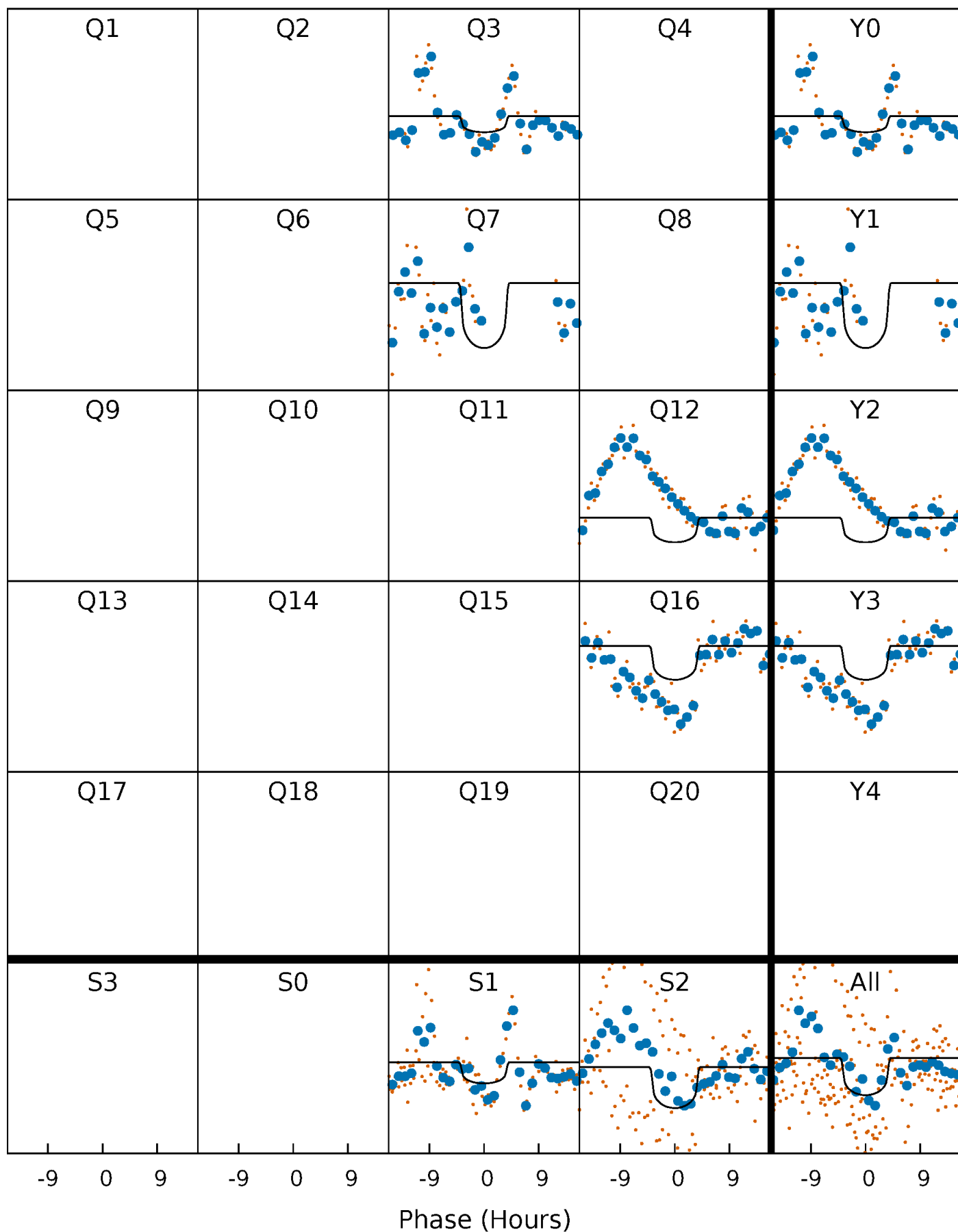
PDC Quarter-Phased Transit Curves

TCE 007204073-01 P=416.643473 Days $T_0=294.299298$ (BKJD)



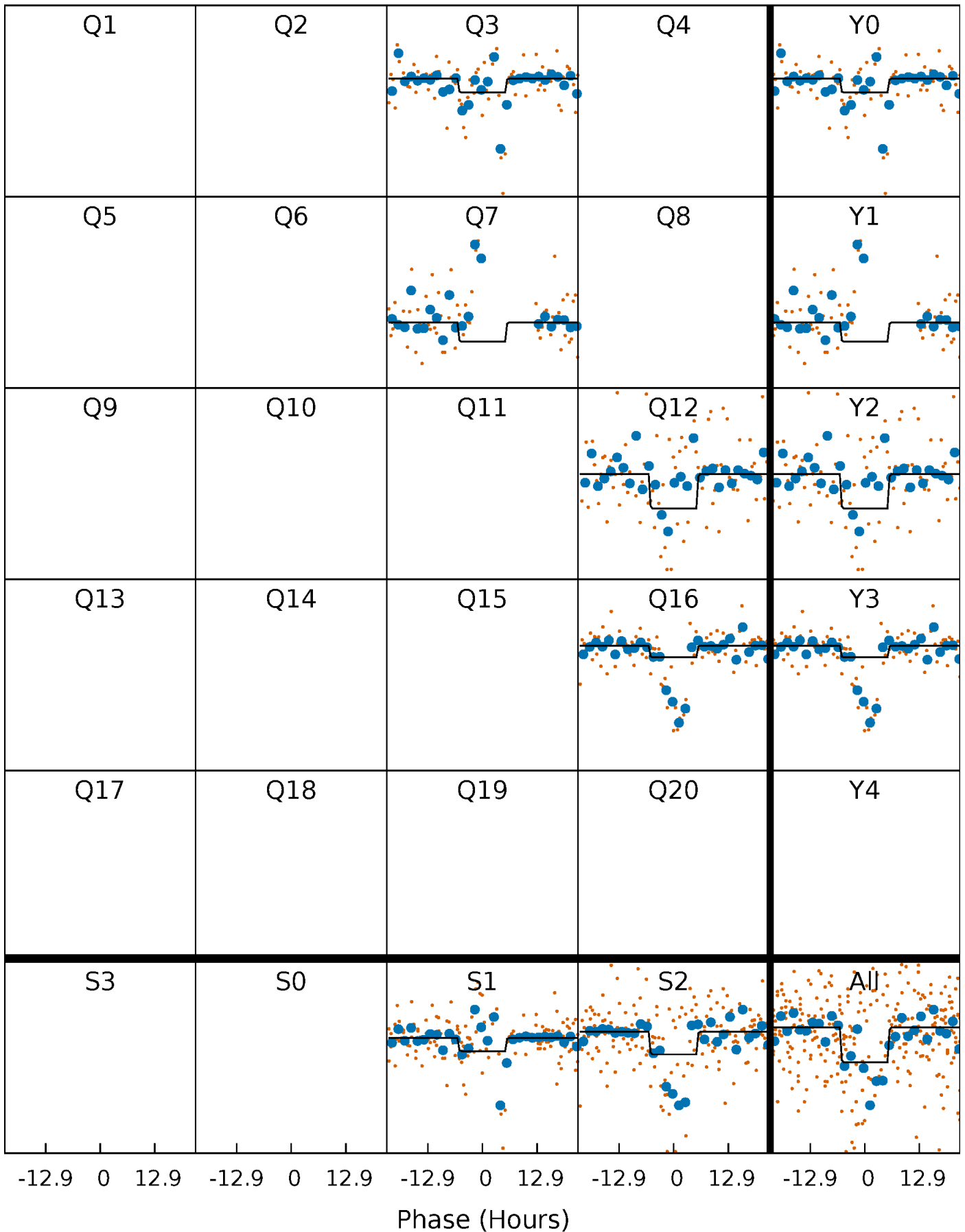
DV Quarter-Phased Transit Curves

TCE 007204073-01 P=416.643473 Days $T_0=294.299298$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

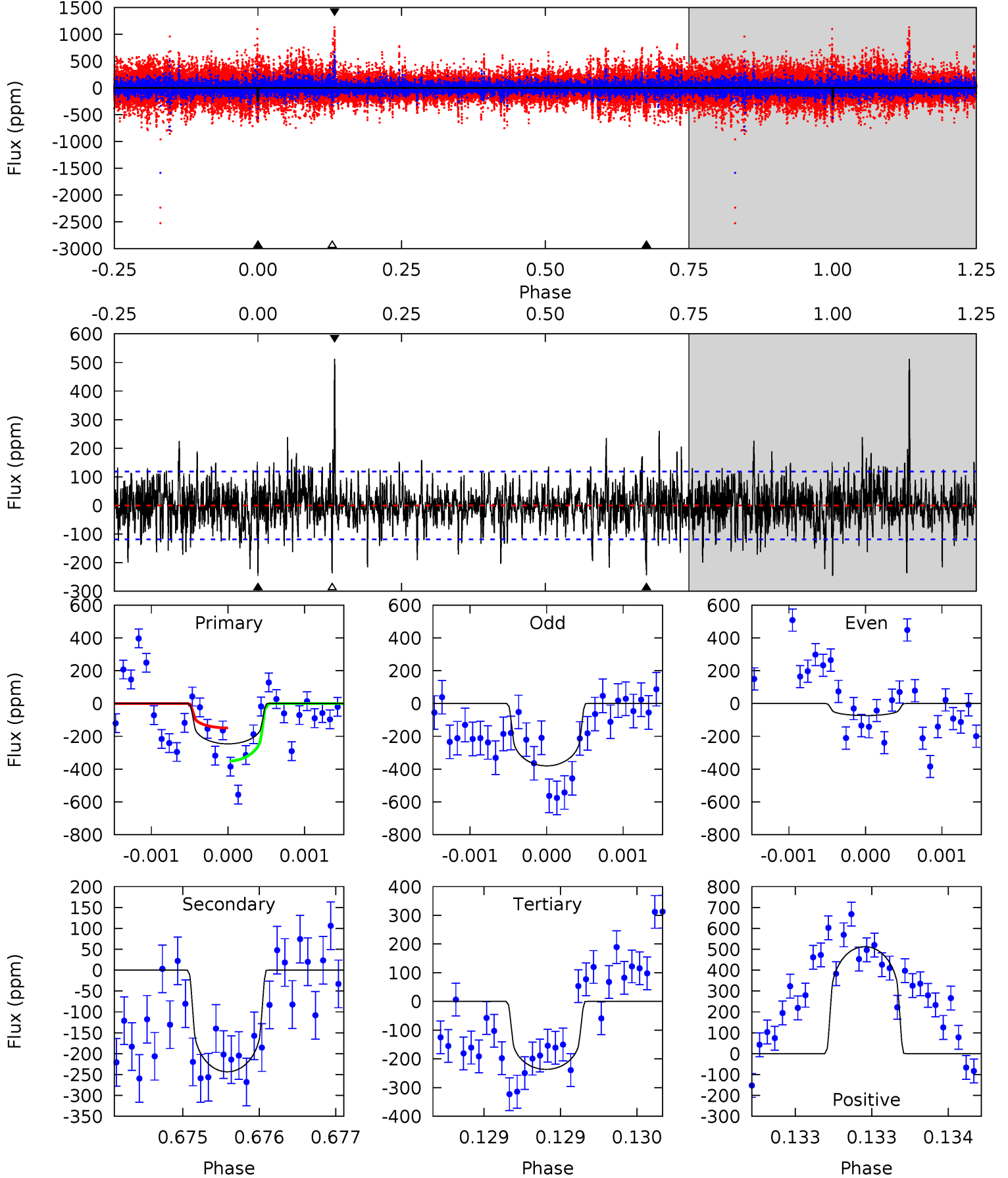
TCE 007204073-01 P=416.660722 Days $T_0=294.246906$ (BKJD)



DV Model-Shift Uniqueness Test

007204073-01, P = 416.643473 Days, E = 294.299298 Days

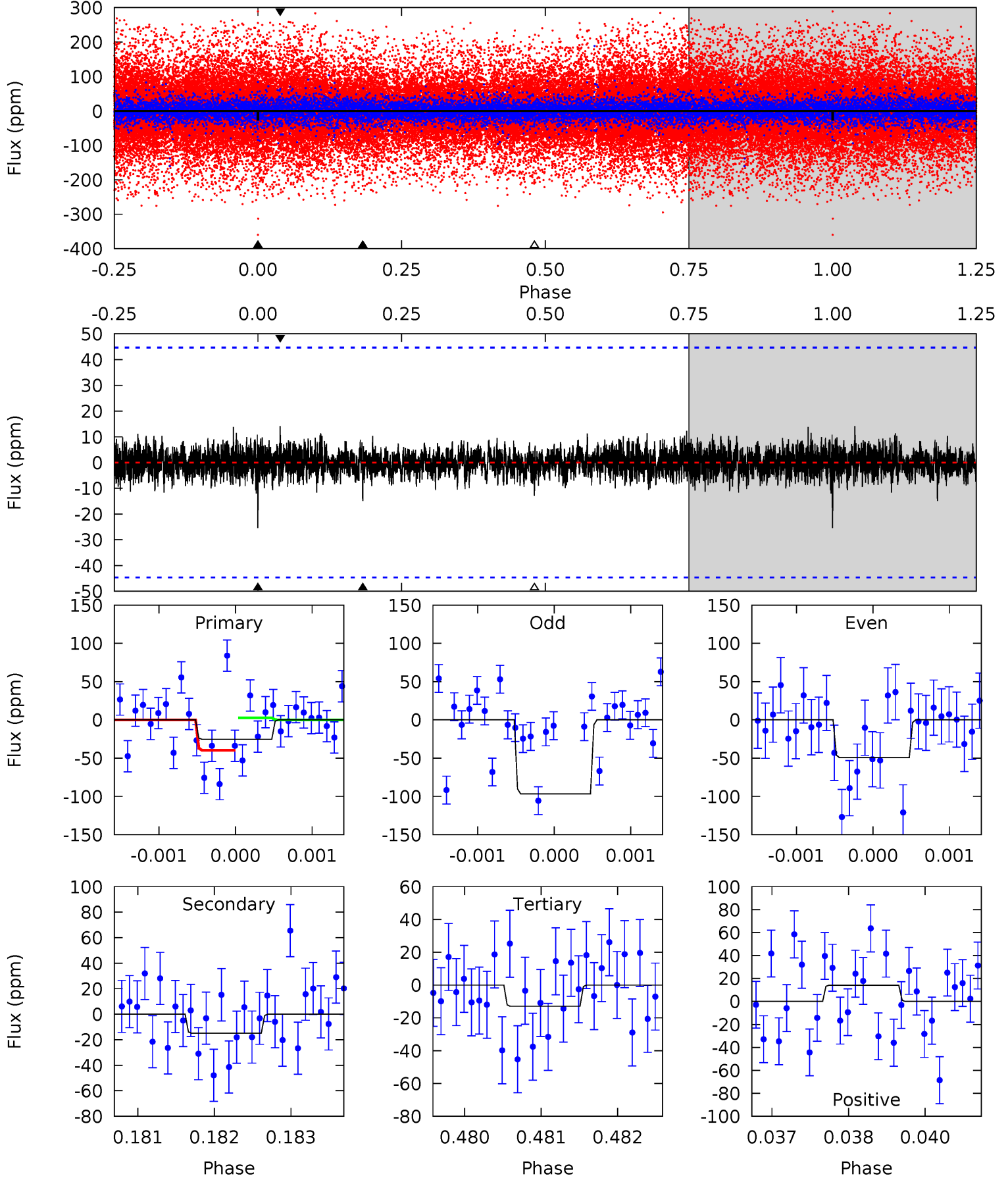
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	11.3	10.9	23.7	5.49	3.35	2.66	0.44	-12.3	0.32	-12.5	5.47	0.92	0.68	4.76



Alt Model-Shift Uniqueness Test

007204073-01, P = 416.660722 Days, E = 294.246906 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.09	1.81	1.57	1.72	5.43	3.26	0.40	1.51	1.37	0.24	0.09	3.03	0.79	0.36	2.20



Stellar Parameters For KIC 007204073

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4208^{+113}_{-138}	$4.662^{+0.059}_{-0.023}$	$-0.360^{+0.300}_{-0.300}$	$0.583^{+0.044}_{-0.061}$	$0.570^{+0.063}_{-0.051}$	$4.049^{+1.163}_{-0.445}$
	+3%/-3%	+1%/-0%	+83%/-83%	+8%/-10%	+11%/-9%	+29%/-11%
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 007204073-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-243 ± 22	$1.05^{+0.58}_{-0.55}$	207^{+7}_{-7}	4109^{+1425}_{-586}	$100976^{+340072}_{-59414}$
Alt.	-15 ± 8	$0.69^{+0.52}_{-0.46}$	206^{+6}_{-8}	2973^{+1119}_{-502}	13420^{+90505}_{-10252}

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

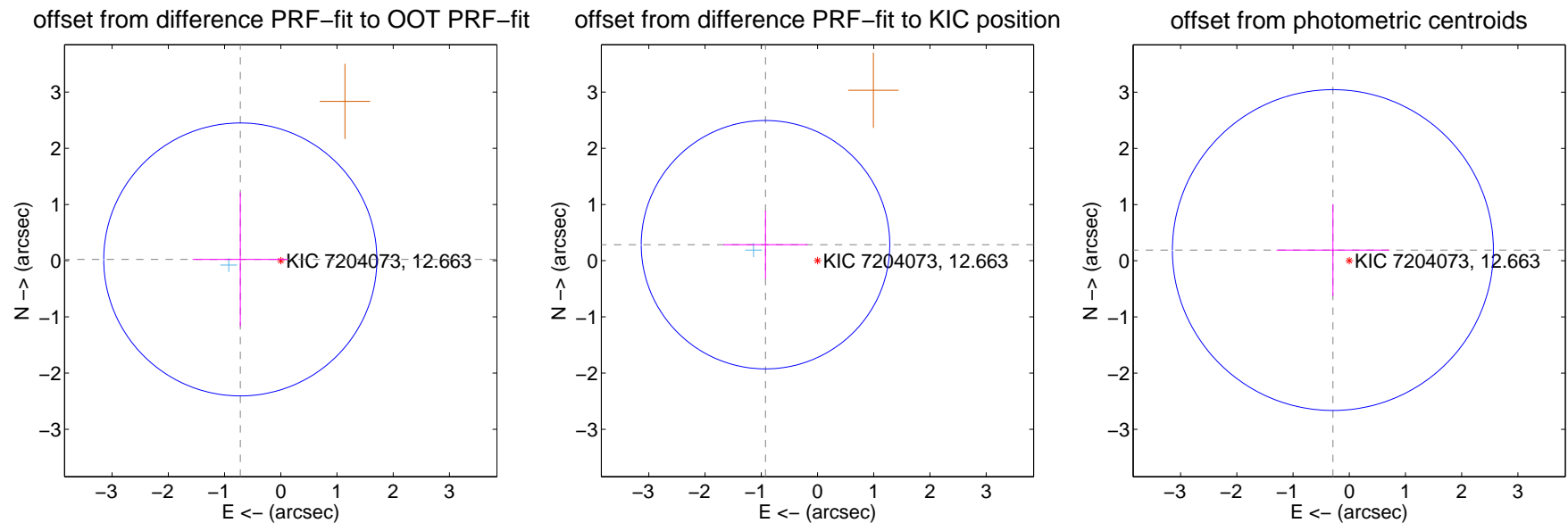
DV Centroid Data

Supplemental centroid analysis for 007204073-01. Kepler magnitude: 12.66. Transit SNR 5.76

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.720 ± 0.809	0.89	0.720 ± 0.846	0.022 ± 1.190
PRF-fit source offset from KIC position	0.968 ± 0.737	1.31	0.925 ± 0.748	0.284 ± 0.605
photometric centroid source offset	0.35 ± 0.95	0.37	0.29 ± 1.00	0.19 ± 0.82



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



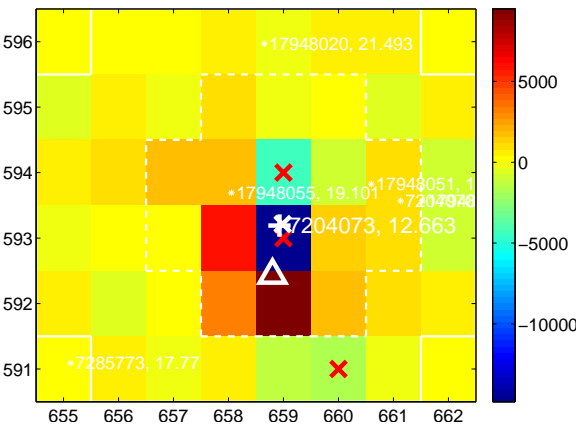
Q2 no difference image



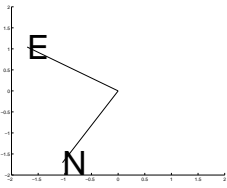
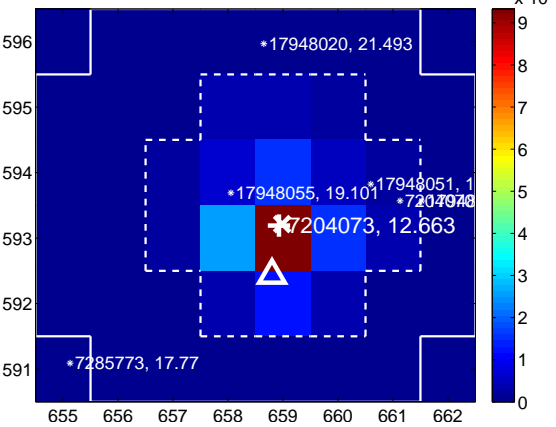
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



Q4 no OOT image



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



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

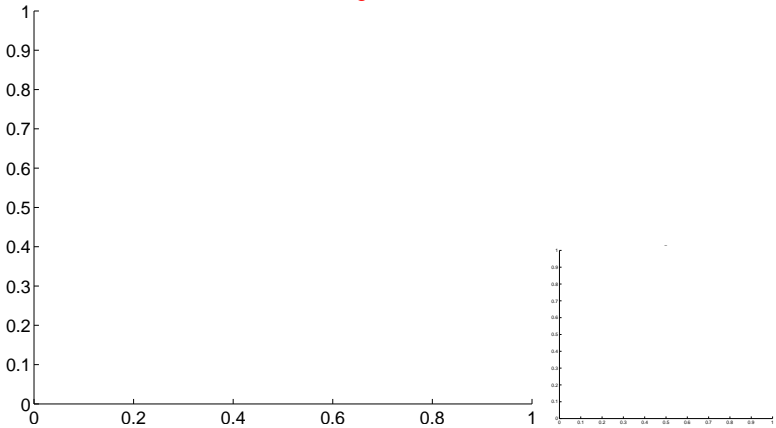


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q13 no difference image



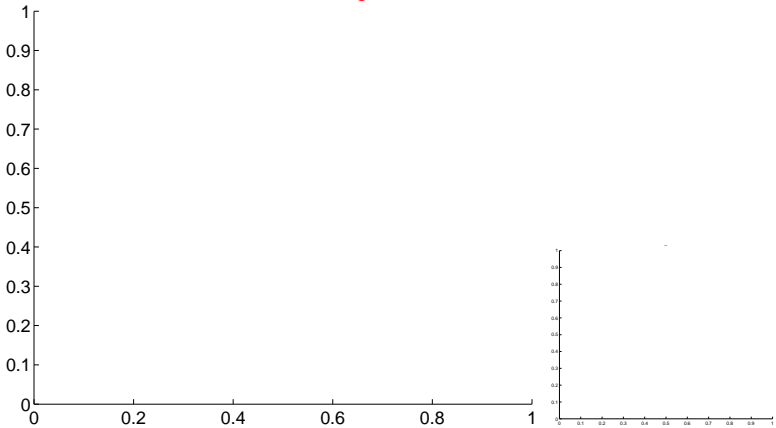
Q13 no OOT image



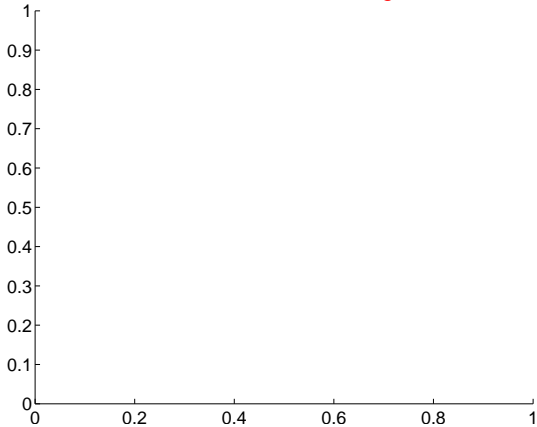
Q14 no difference image



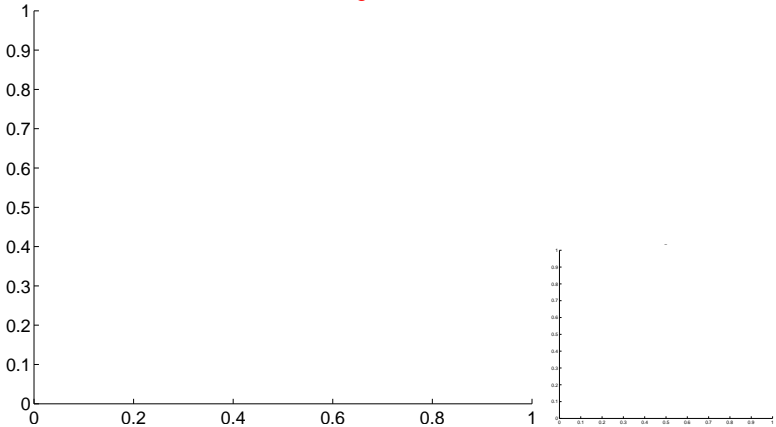
Q14 no OOT image



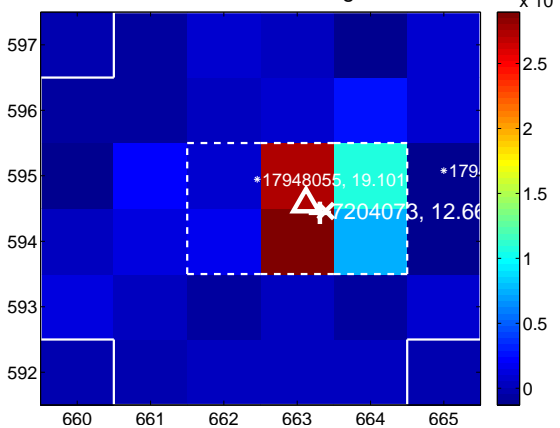
Q15 no difference image



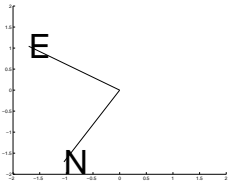
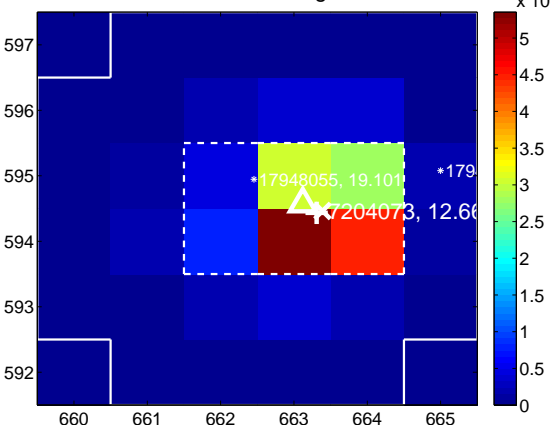
Q15 no OOT image



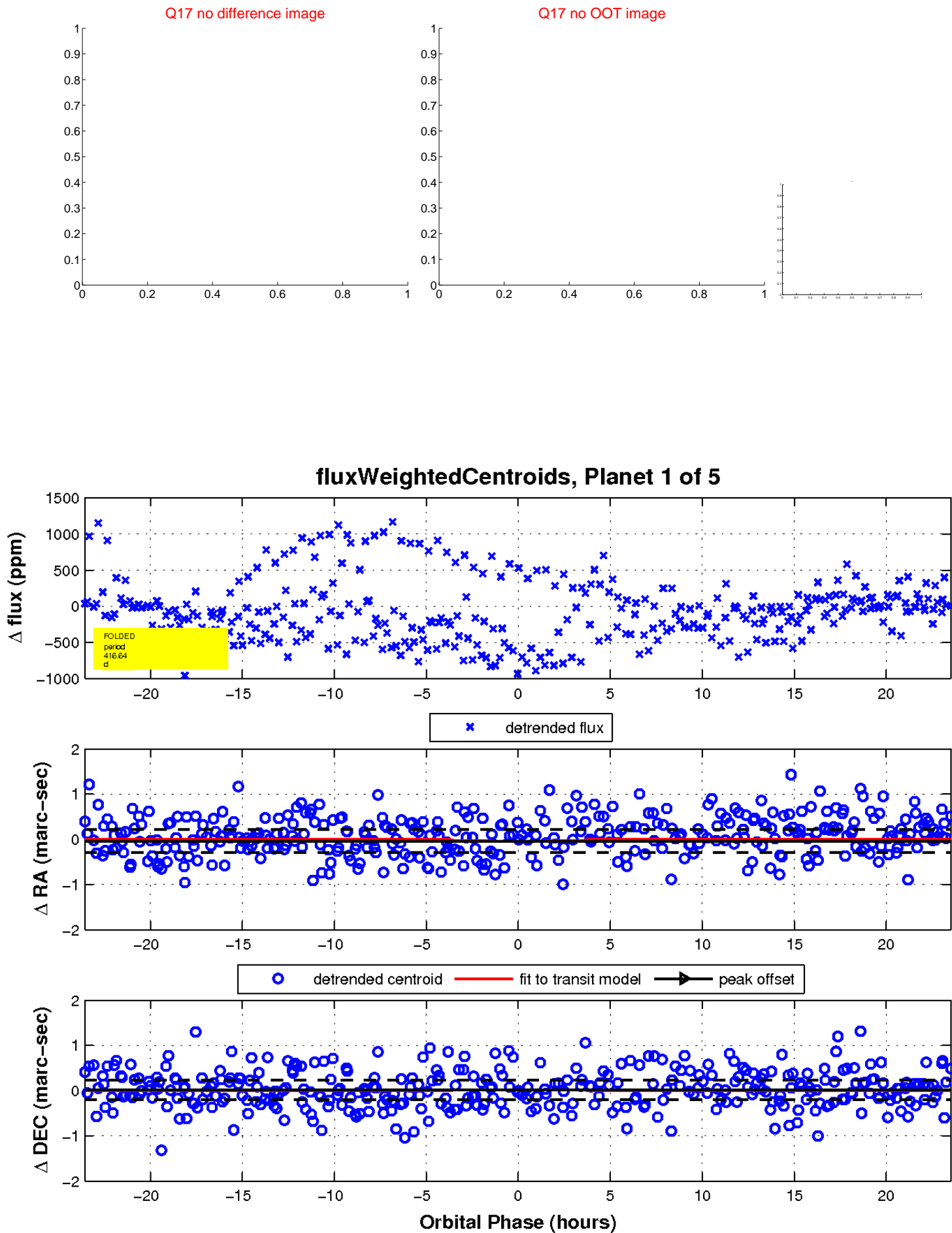
Q16 difference image



Q16 OOT image

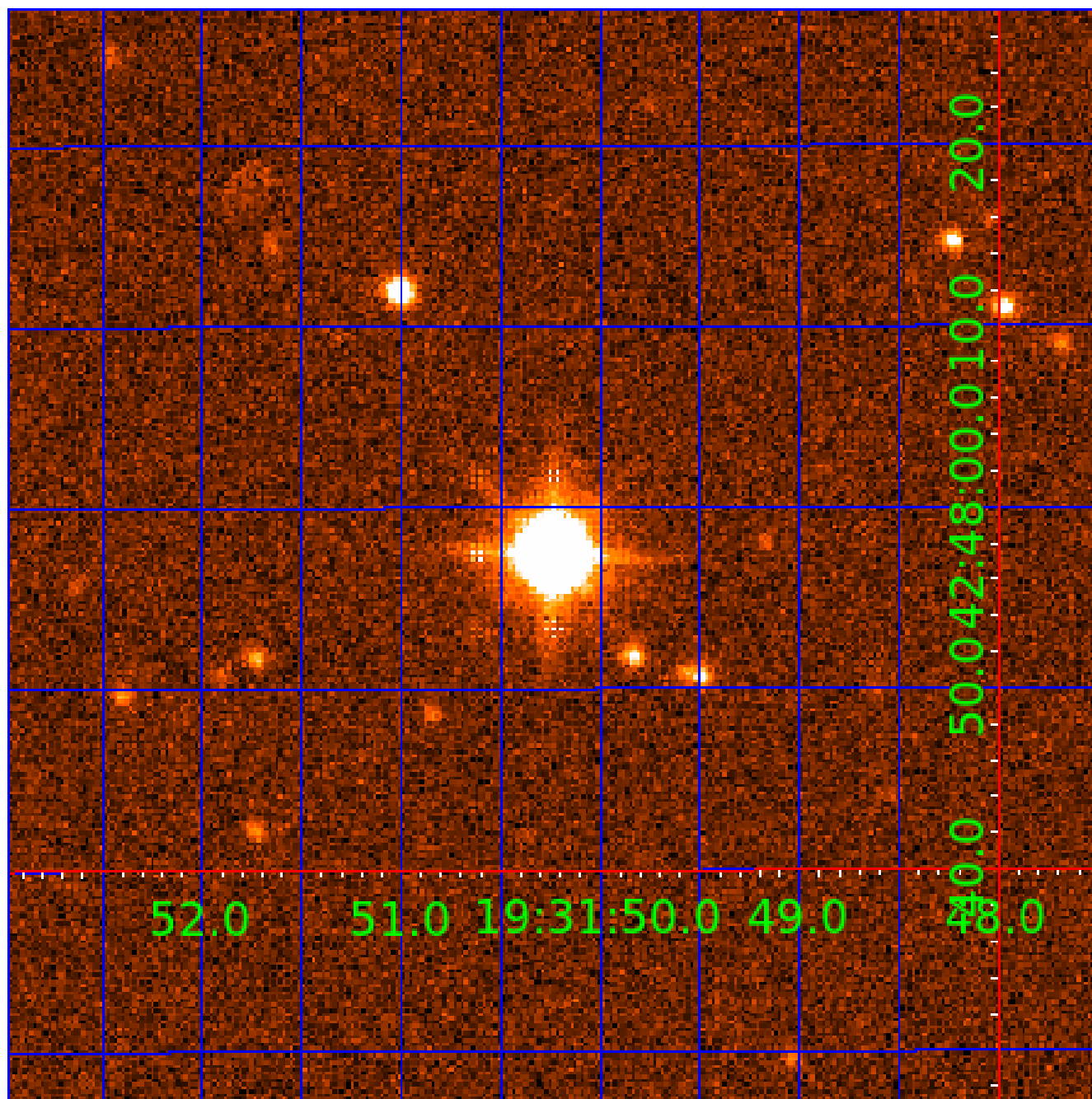


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007204073

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})
007204073-01	OBS	No	416.643473	294.299298	248.8	7.855	8.6	5.8	0.58	4208	1.03	0.12
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Robovetter Results

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007204073-02	OBS	FP	0.00	1	0	0	1	LPP_DV—CENT_FEW_DIFFS—EPHEM_MATCH
007204073-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007204073-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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.

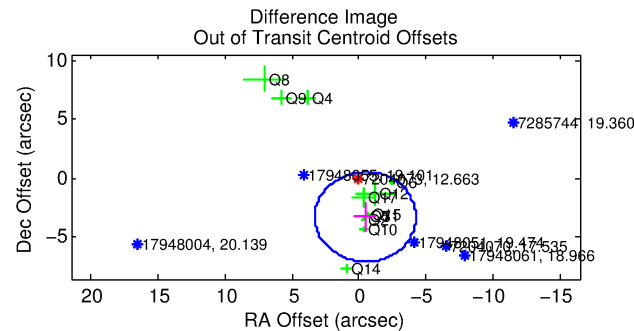
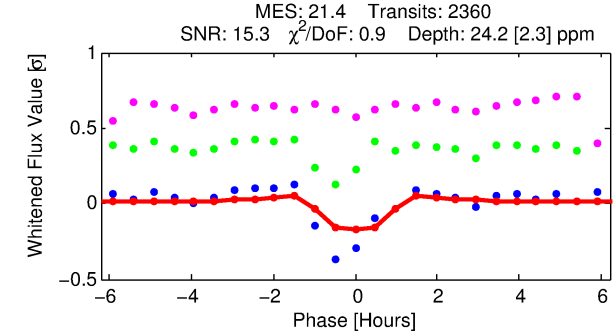
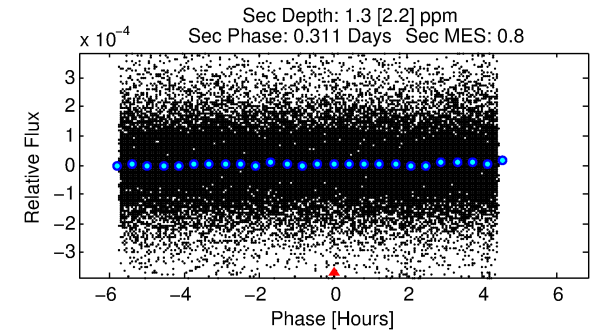
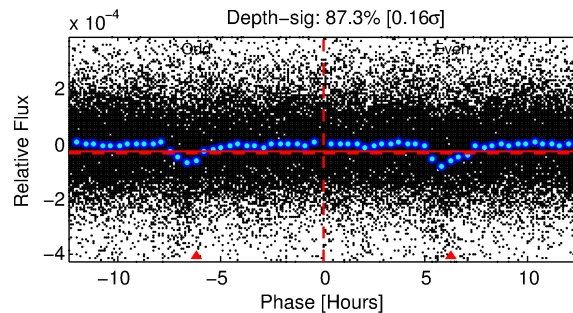
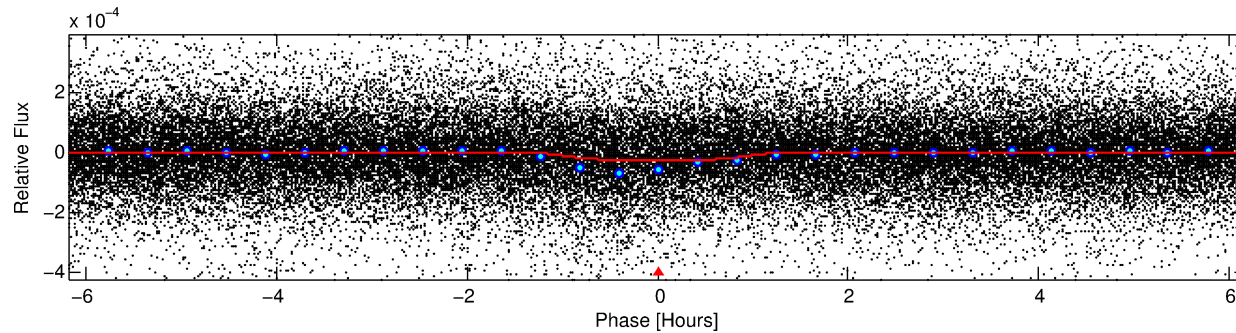
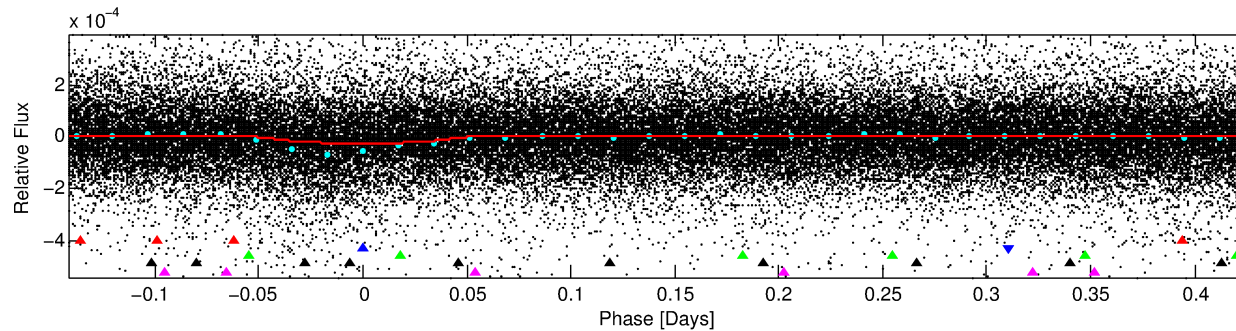
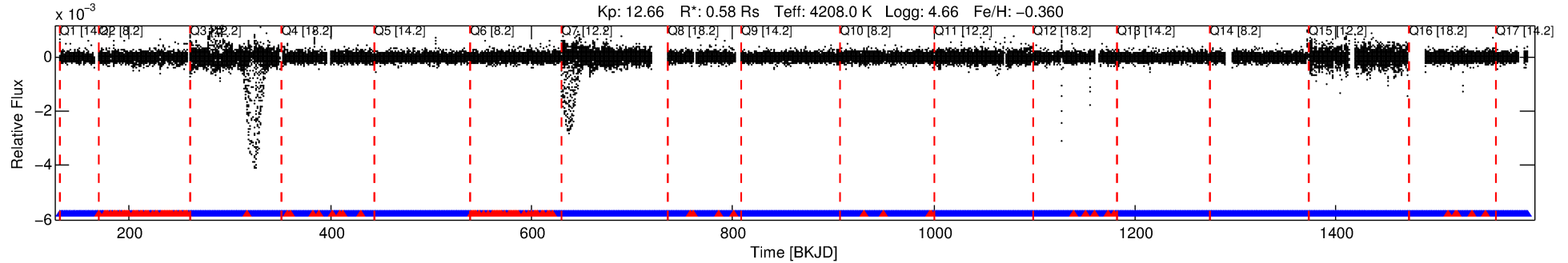
Ephemeris Match Information For 007204073-02

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist (μ)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
007204073-02	7204073	RR-Lyr-pri	7198959	1:1	4208.6	549	-1	7.86	12.66	25971.00	Col-Anomaly	0	3.26	22.98

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

DV One-Page Summary

KIC: 7204073 Candidate: 2 of 5 Period: 0.567 d
KOI: K06847.01 Corr: 0.781



DV Fit Results:

Period = 0.56681 [0.00001] d
Epoch = 131.7970 [0.0015] BKJD
Rp/R* = 0.0054 [0.0020]
a/R* = 1.34 [0.95]
b = 0.89 [0.36]
Seff = 773.38 [134.57]
Teq = 1345 [58] K
Rp = 0.34 [0.13] Re
a = 0.0111 [0.0009] AU
Ag = 0.75 [1.38] [-0.18 σ]
Teffp = 1937 [884] K [0.67 σ]

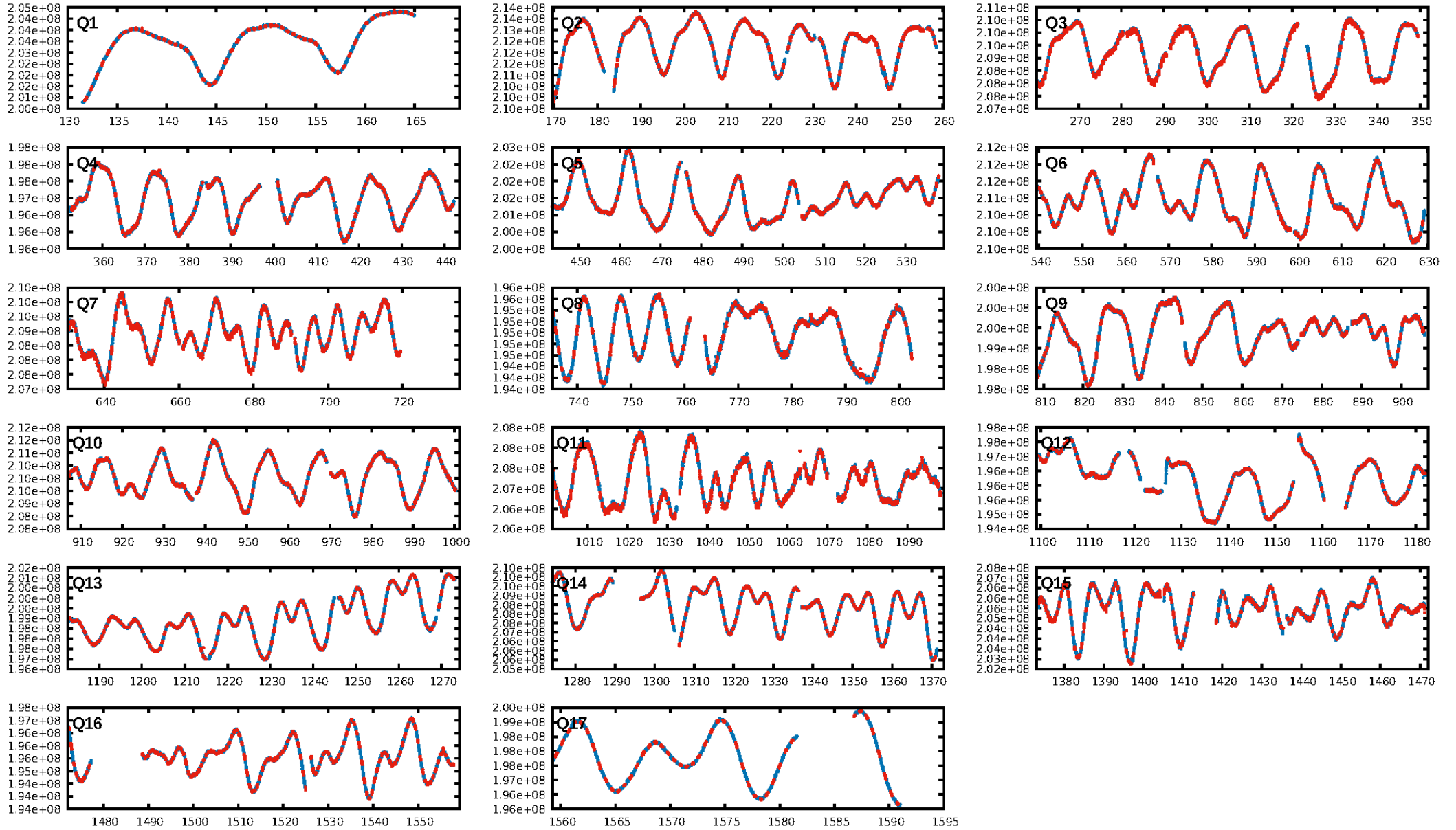
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [696.43 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.95 [2131/2254]
GhostDiagnostic-chr: 1.38
Centroid-sig: 64.1%
Centroid-so: 0.589 arcsec [1.01 σ]
OotOffset-rm: 3.289 arcsec [2.61 σ]
OotOffset-st: 4/4/3/2 [13]
KicOffset-rm: 3.055 arcsec [2.27 σ]
KicOffset-st: 4/4/3/2 [13]
DiffImageQuality-fgm: 0.15 [2/13]
DiffImageOverlap-fno: 1.00 [17/17]

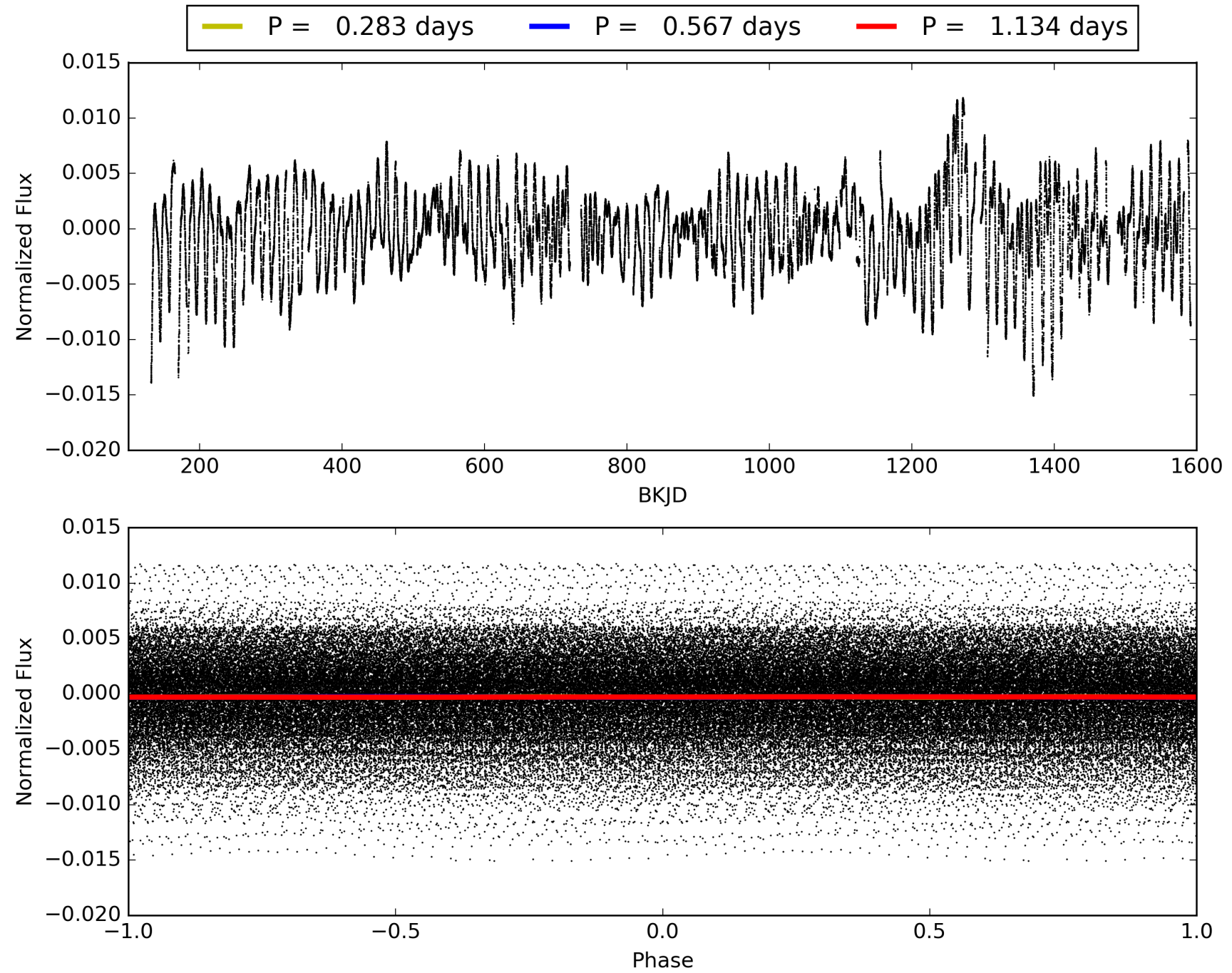
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:47:31 Z

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

TCE 007204073-02, PDC Light Curves

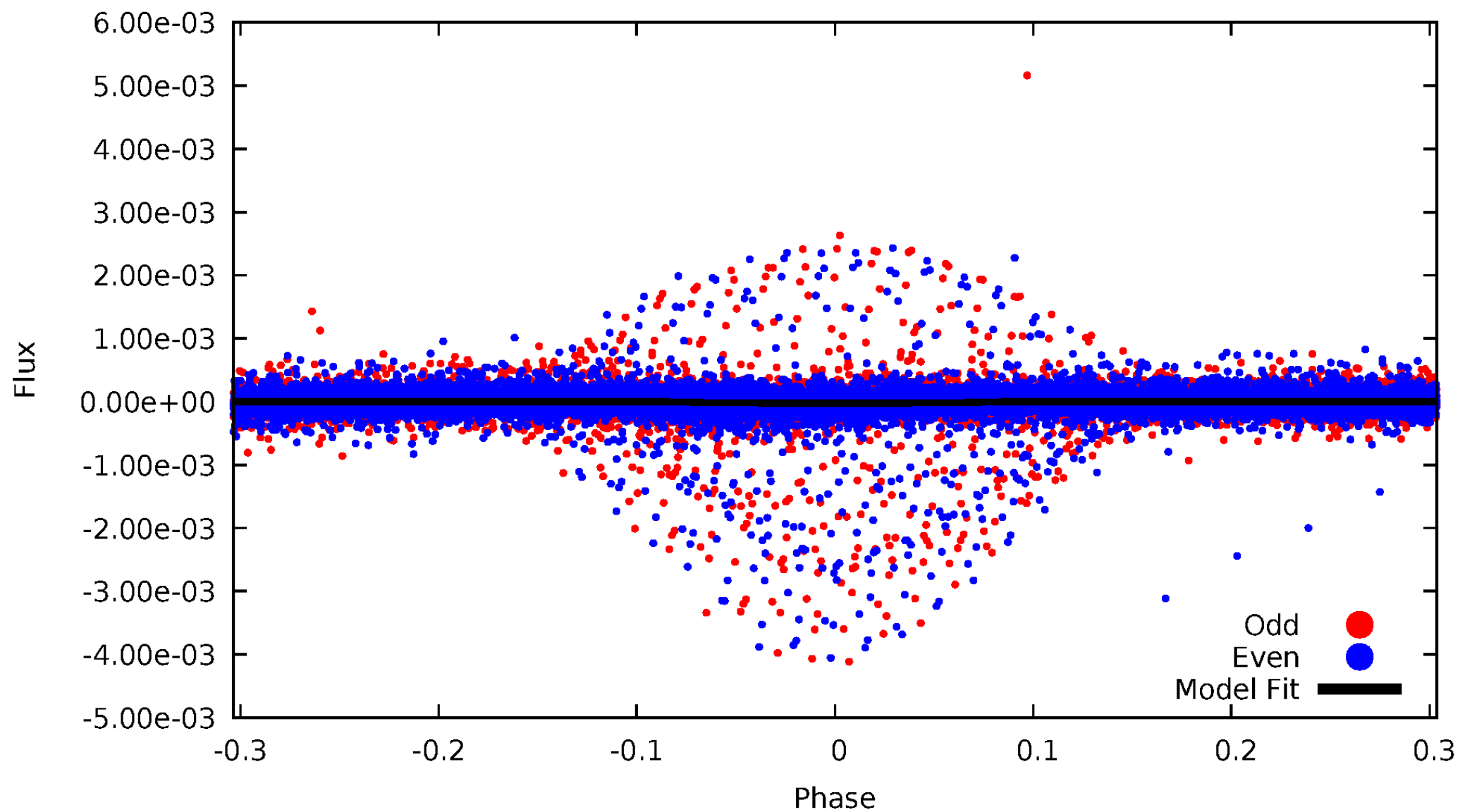


TCE 007204073-02



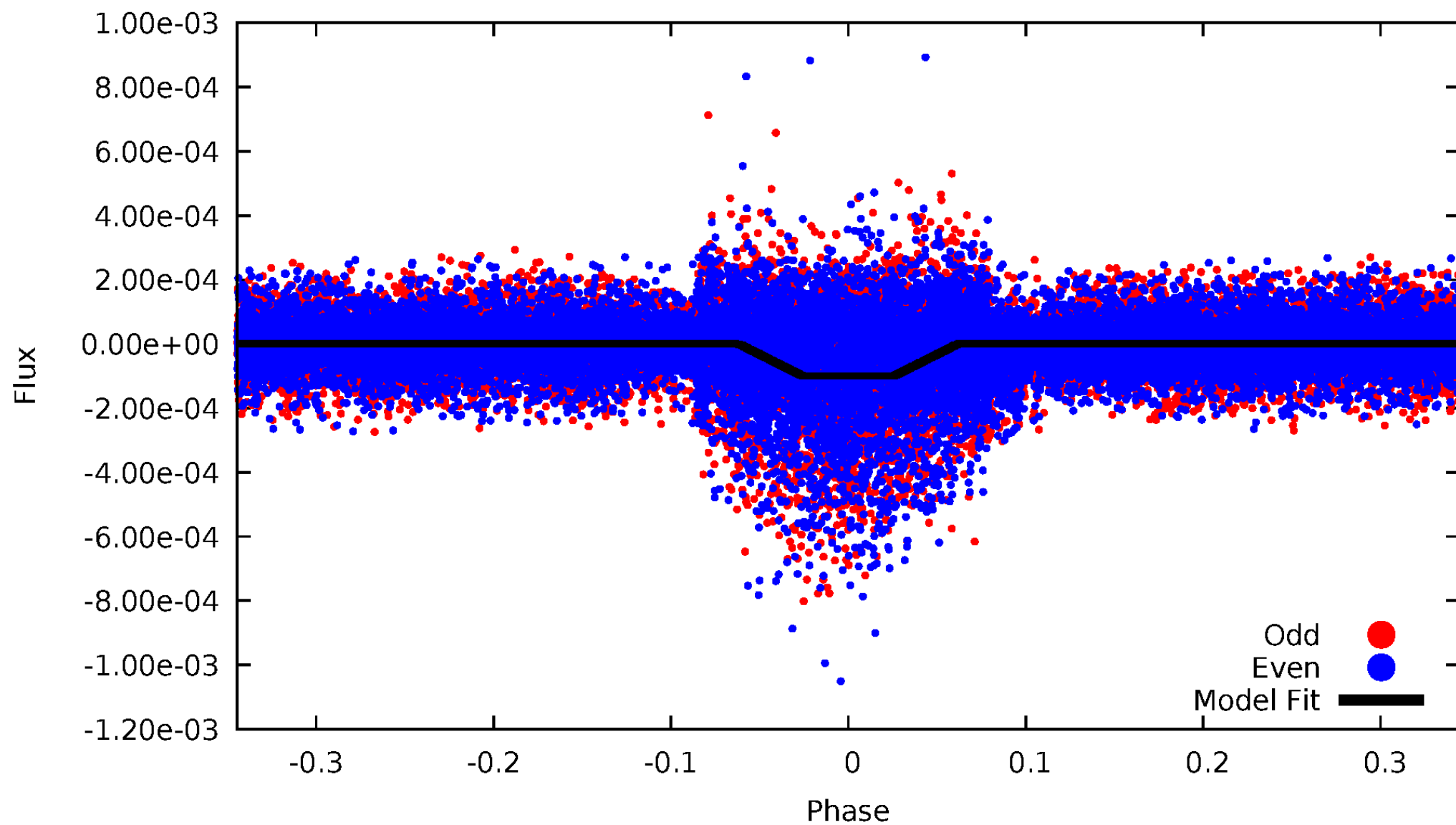
DV Odd/Even

TCE 007204073-02



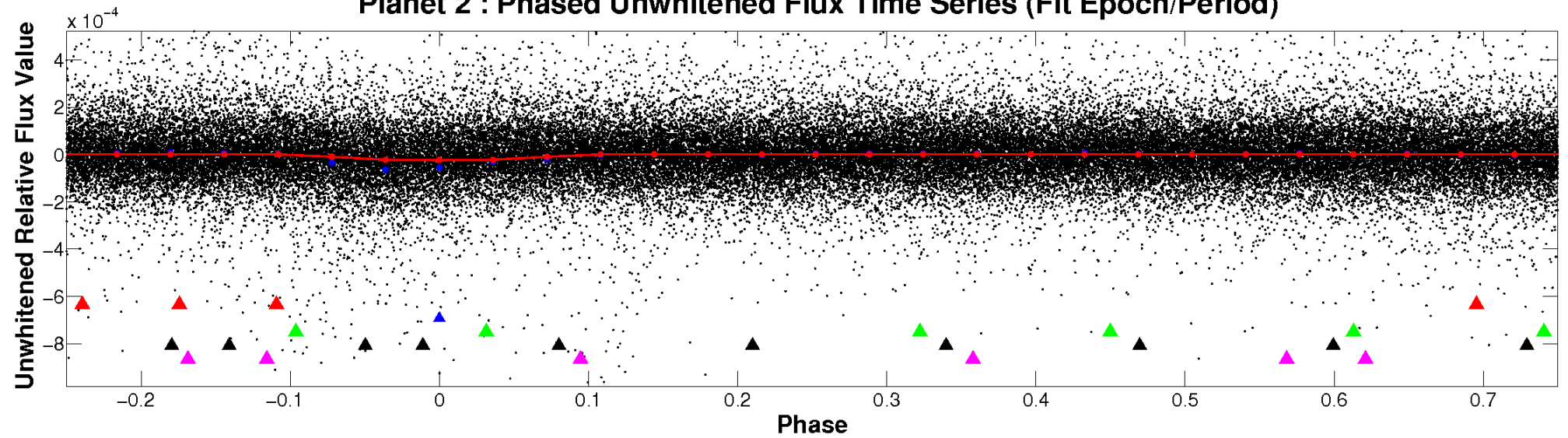
ALT Odd/Even

TCE 007204073-02

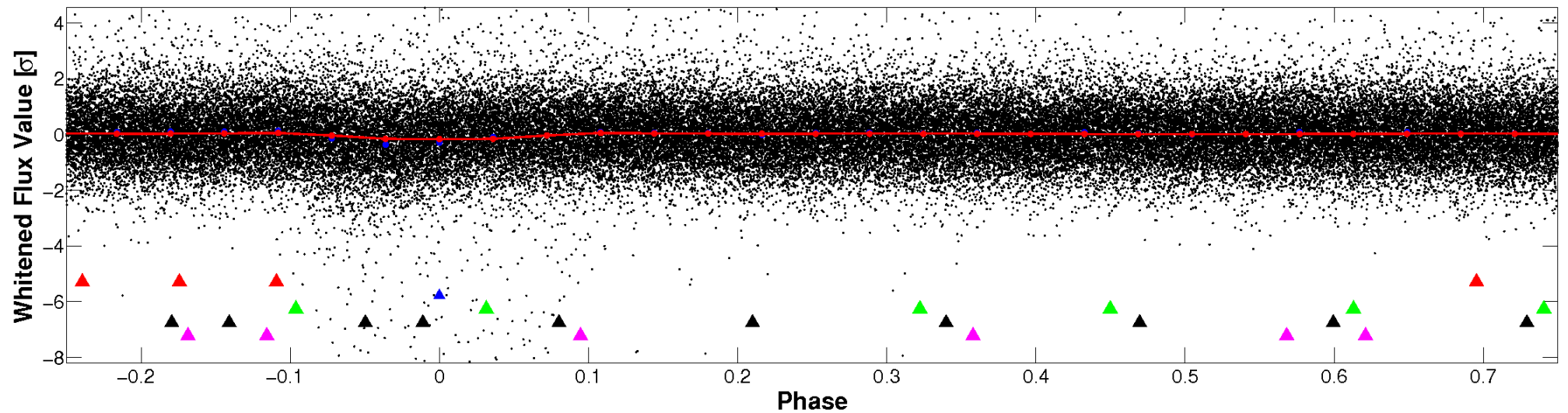


Non-Whitened Vs. Whitened Light Curve

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

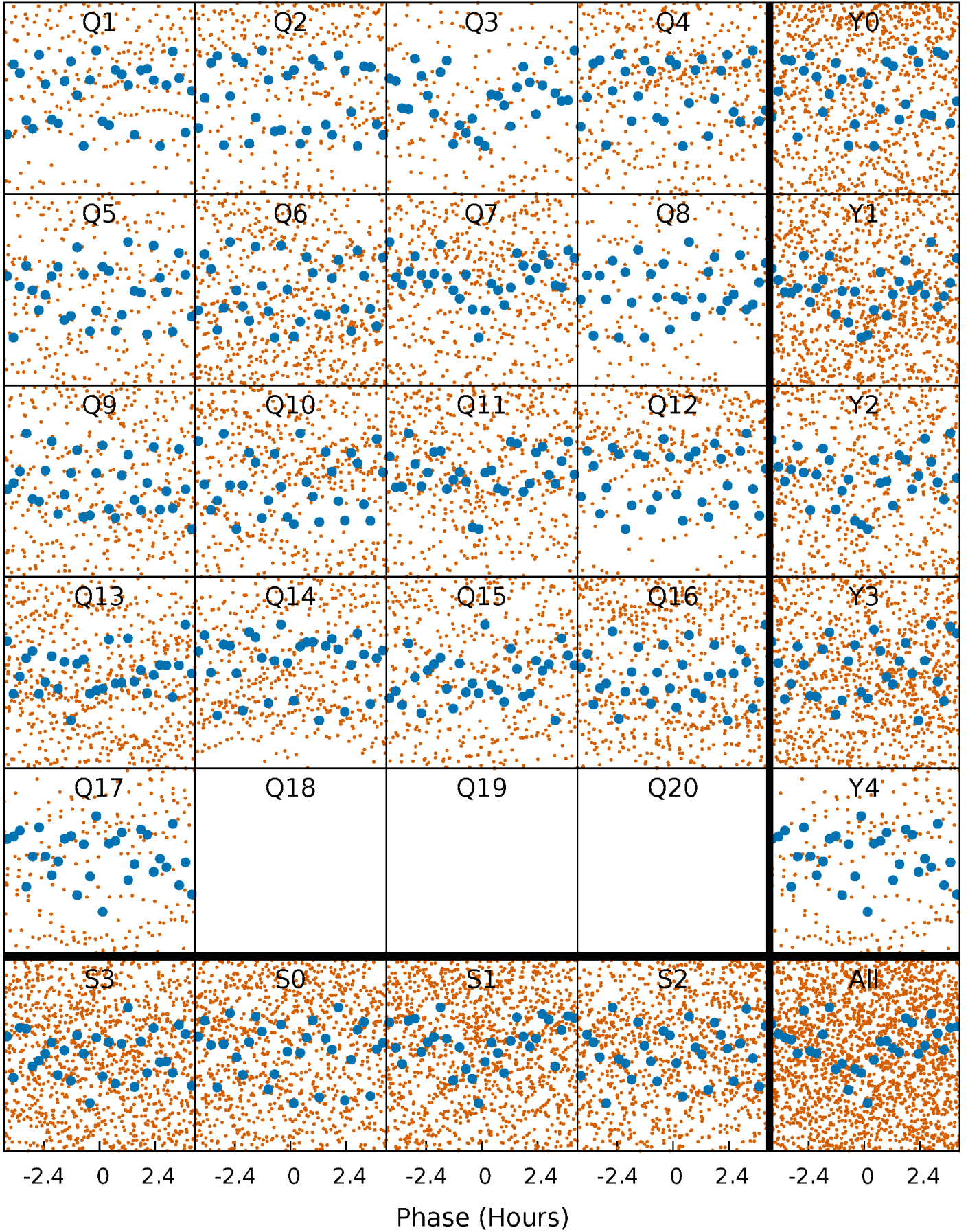


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



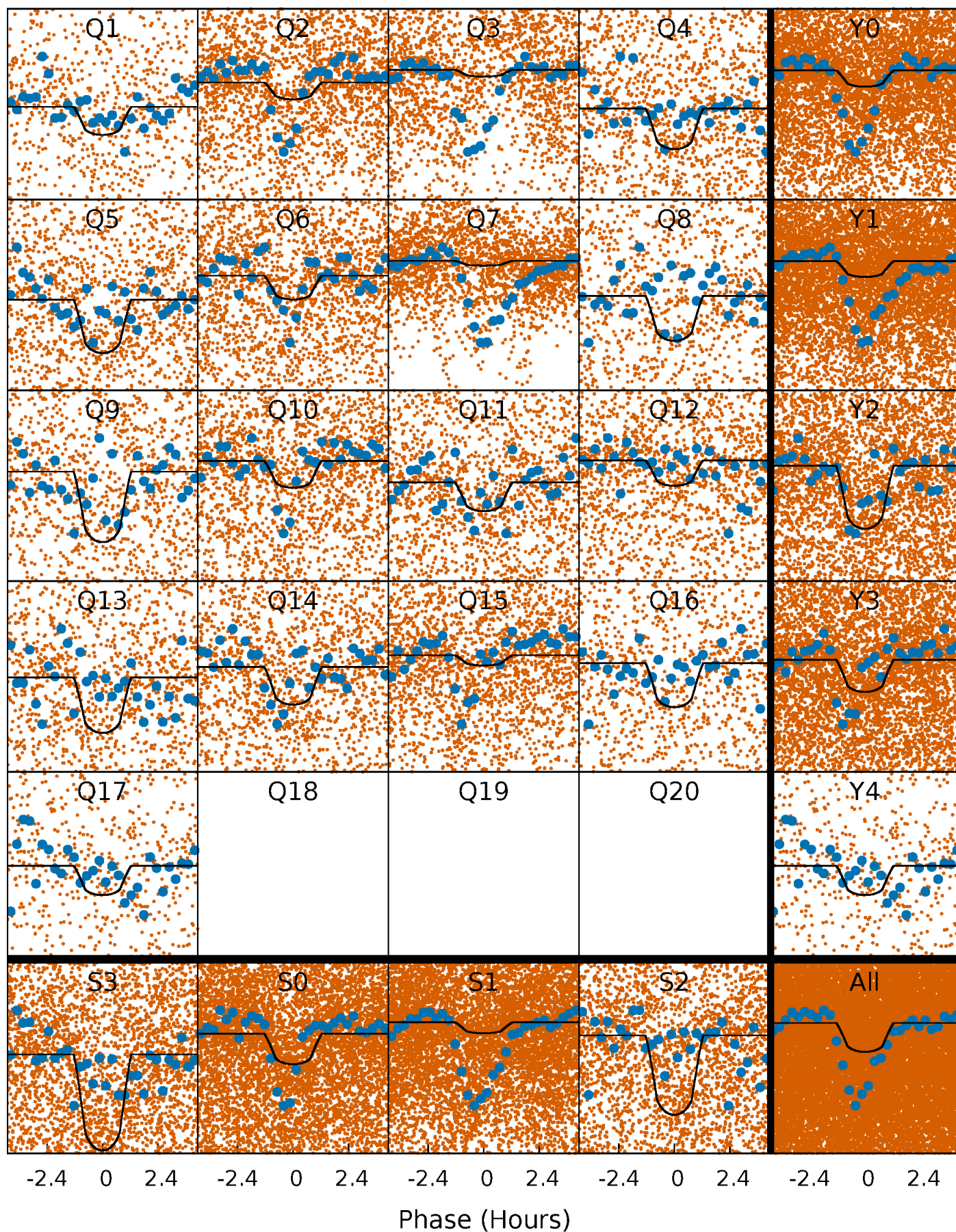
PDC Quarter-Phased Transit Curves

TCE 007204073-02 P= 0.566812 Days $T_0=131.796966$ (BKJD)



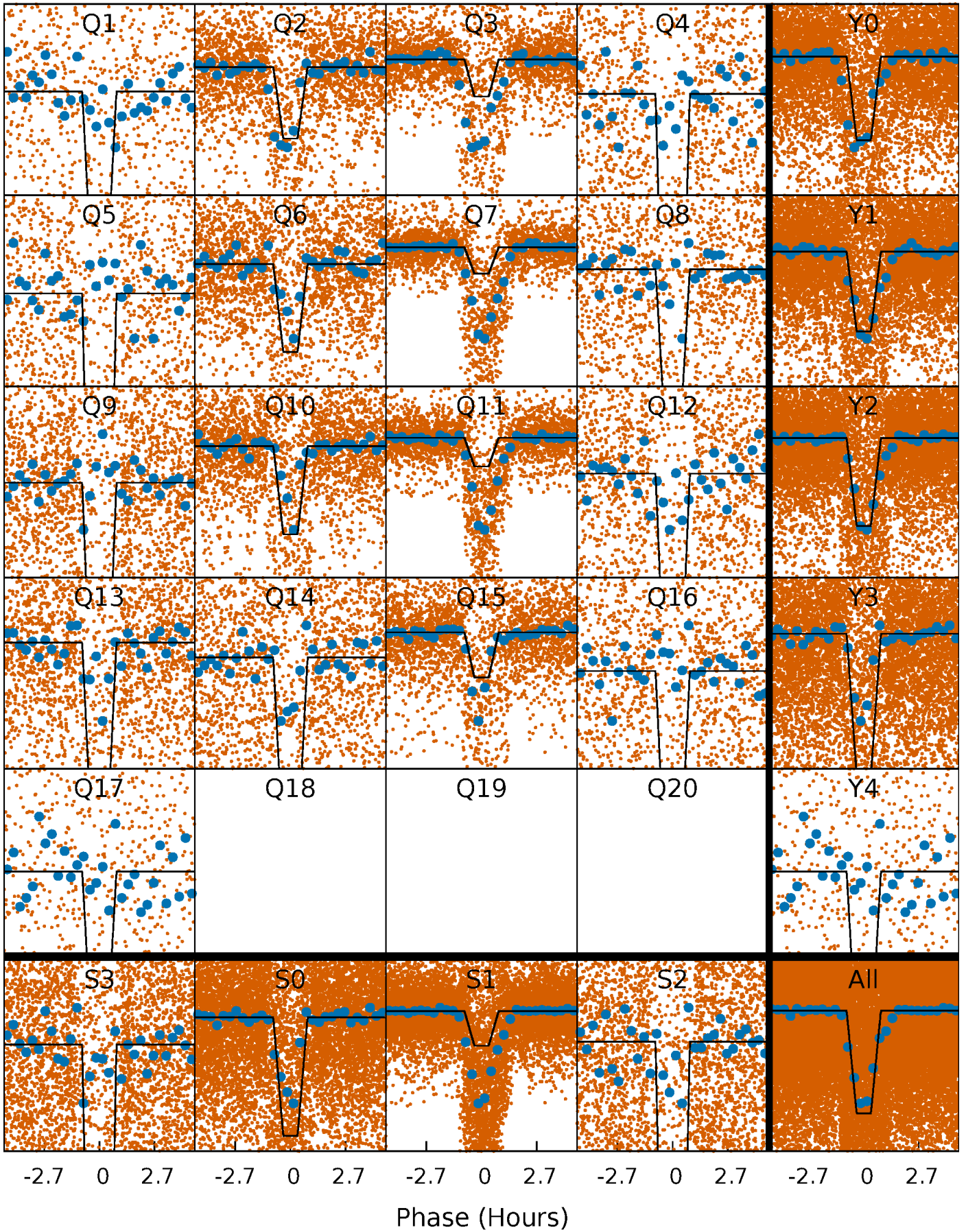
DV Quarter-Phased Transit Curves

TCE 007204073-02 P= 0.566812 Days $T_0=131.796966$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

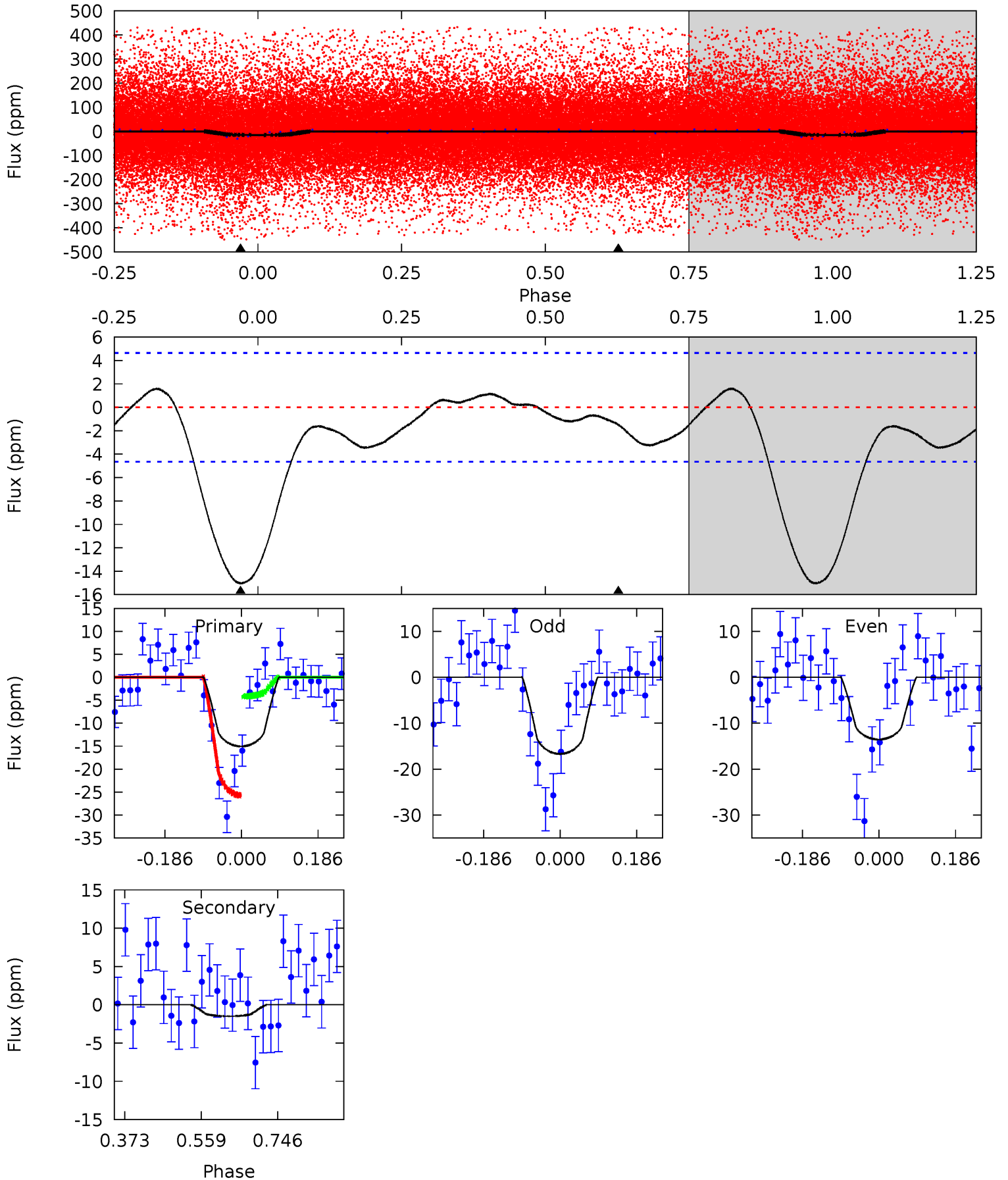
TCE 007204073-02 P= 0.566798 Days $T_0=131.800186$ (BKJD)



DV Model-Shift Uniqueness Test

007204073-02, P = 0.566812 Days, E = 131.230154 Days

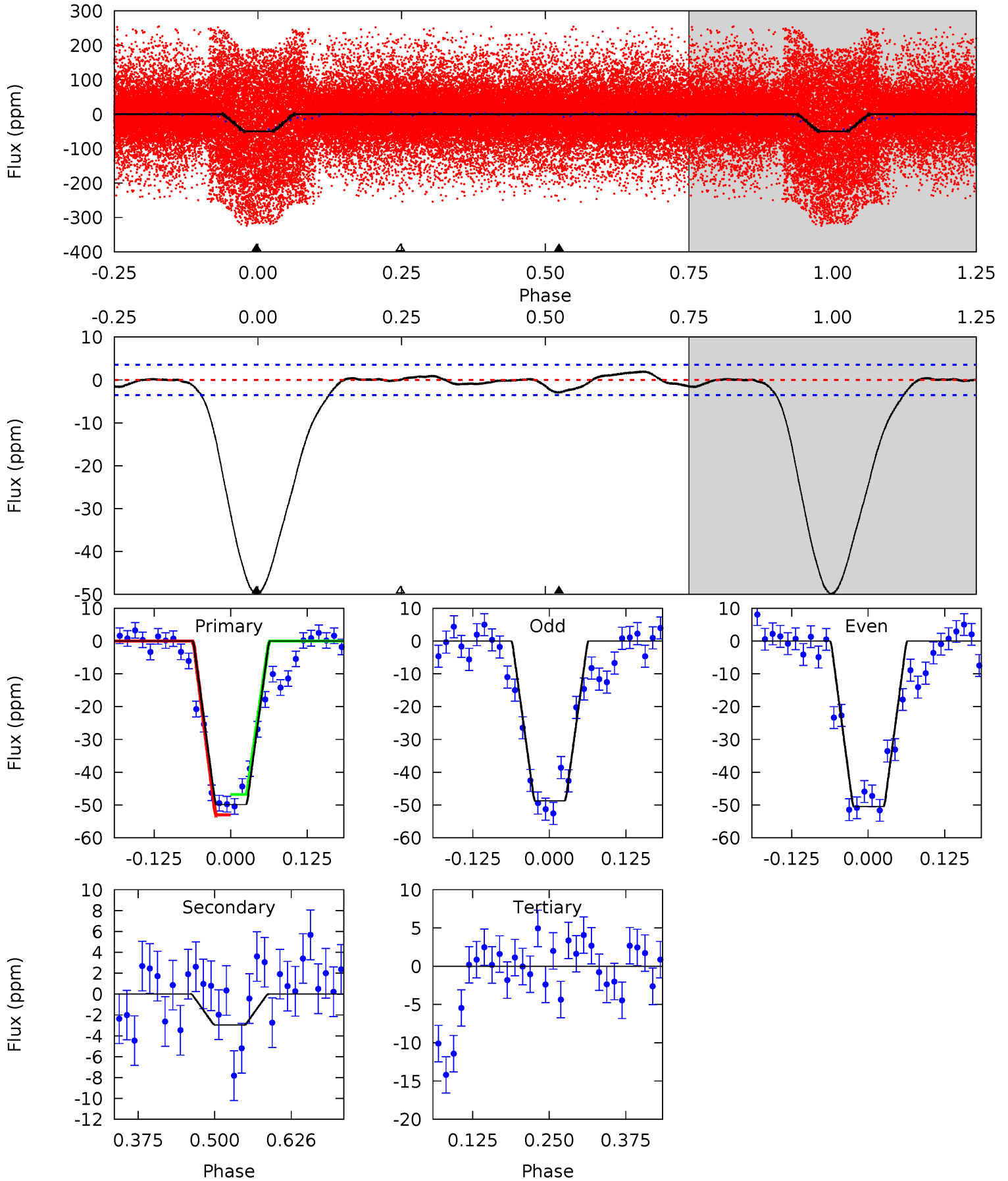
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.3	1.43	0	0	4.43	1.32	1.59	14.3	14.3	1.43	1.43	1.50	3.47	0.10	10.2



Alt Model-Shift Uniqueness Test

007204073-02, P = 0.566798 Days, E = 131.233388 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
63.5	3.76	0	0	4.52	1.53	1.15	63.5	63.5	3.76	3.76	1.12	1.51	0.04	3.92



Stellar Parameters For KIC 007204073

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4208^{+113}_{-138}	$4.662^{+0.059}_{-0.023}$	$-0.360^{+0.300}_{-0.300}$	$0.583^{+0.044}_{-0.061}$	$0.570^{+0.063}_{-0.051}$	$4.049^{+1.163}_{-0.445}$
	+3%/-3%	+1%/-0%	+83%/-83%	+8%/-10%	+11%/-9%	+29%/-11%
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 007204073-02 / KOI 6847.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1 ± 1	$0.34^{+0.12}_{-0.13}$	1860^{+64}_{-64}	2525^{+468}_{-4599}	$0.859^{+1.491}_{-0.659}$
Alt.	-3 ± 1	$0.63^{+0.14}_{-0.14}$	1856^{+67}_{-65}	2236^{+294}_{-699}	$0.503^{+0.354}_{-0.199}$

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 $A_{obs} \gg 1.0$

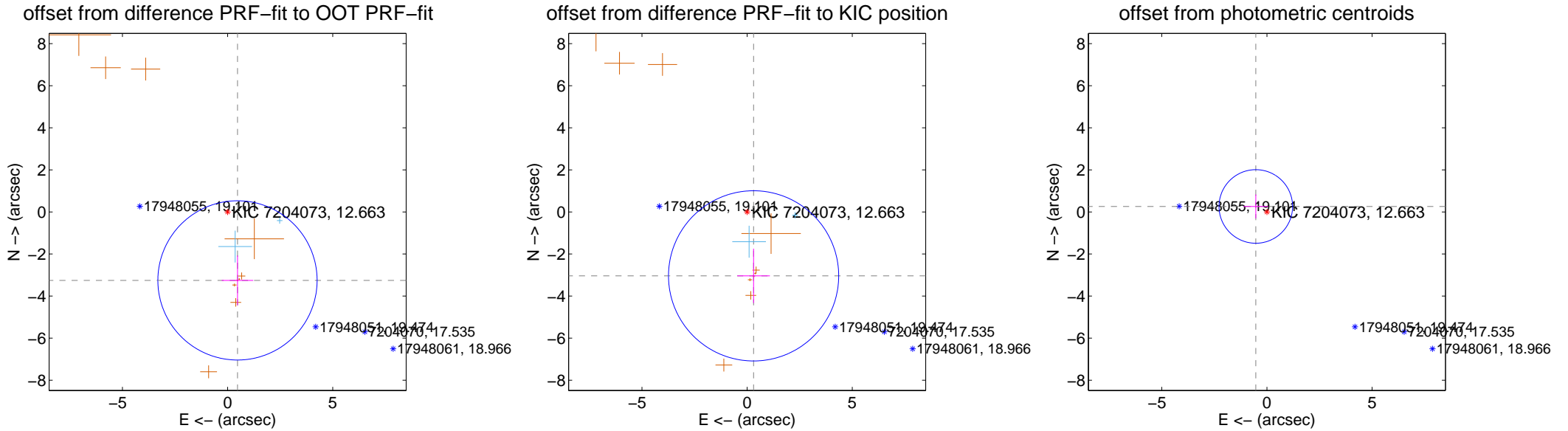
DV Centroid Data

Supplemental centroid analysis for 007204073-02. Kepler magnitude: 12.66. Transit SNR 15.29

There are 2 quarters with good PRF difference image offsets

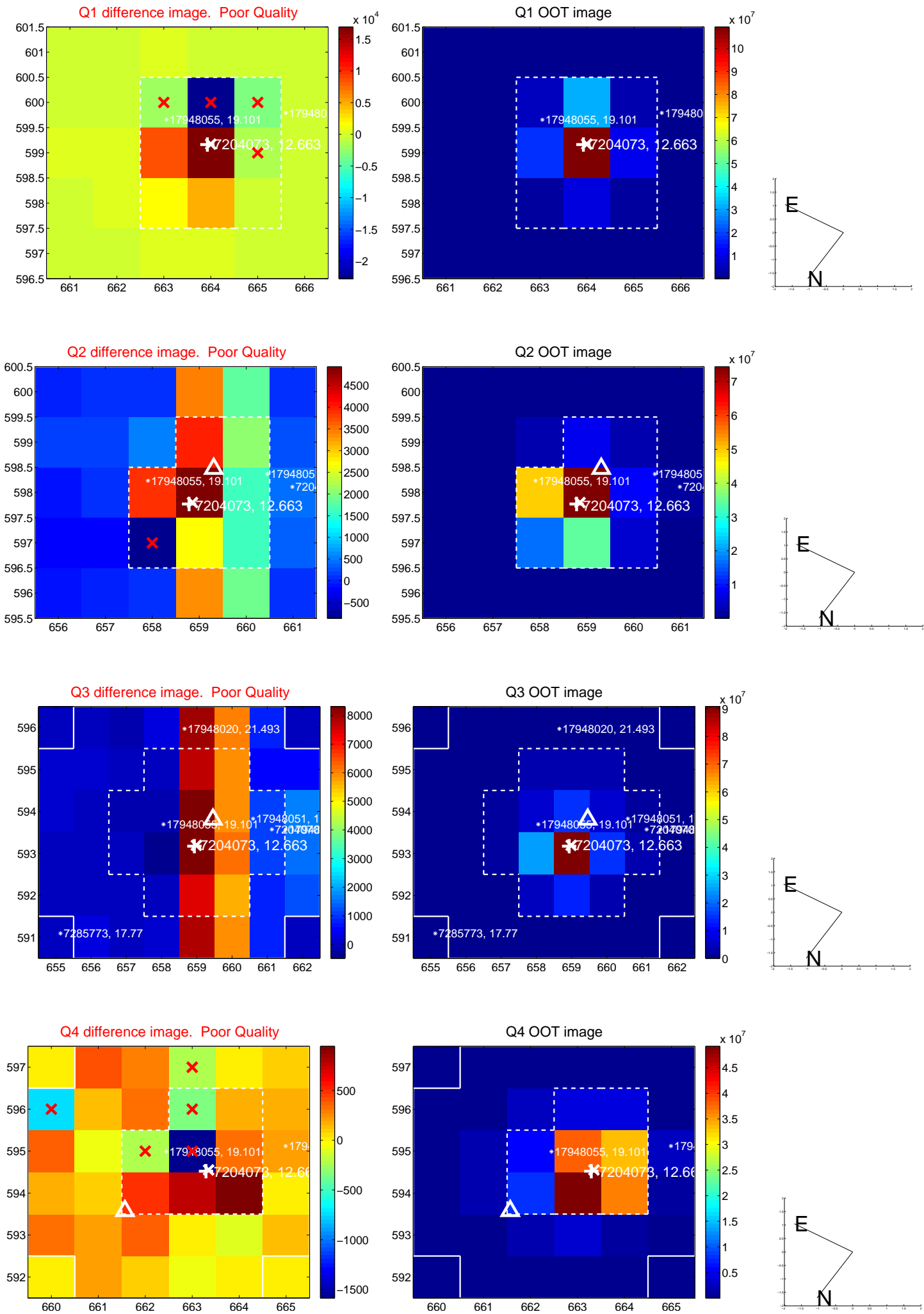
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.289 ± 1.262	2.61	-0.470 ± 0.751	-3.255 ± 1.185
PRF-fit source offset from KIC position	3.055 ± 1.349	2.27	-0.308 ± 0.776	-3.040 ± 1.292
photometric centroid source offset	0.59 ± 0.58	1.01	0.53 ± 0.59	0.26 ± 0.57

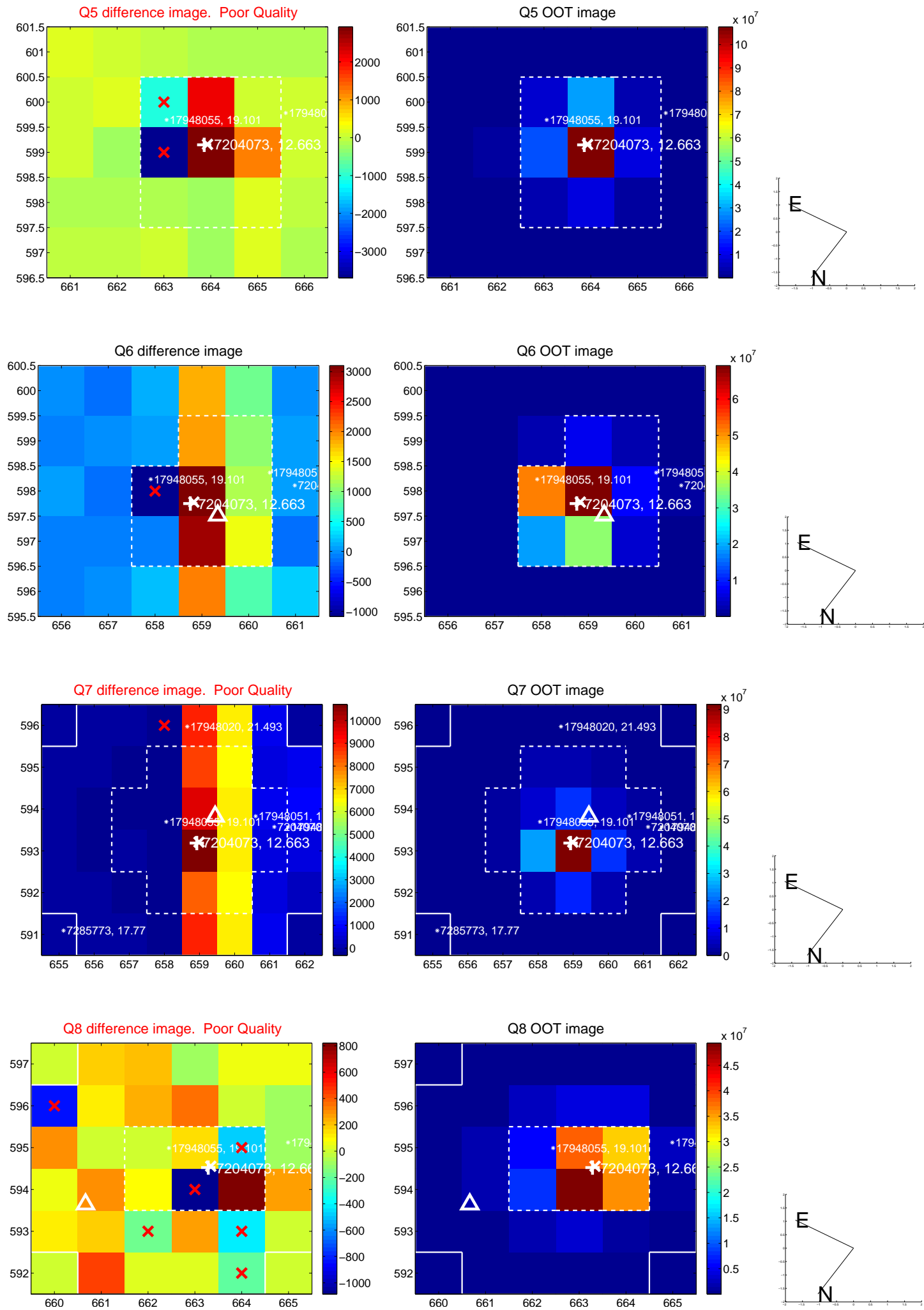


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

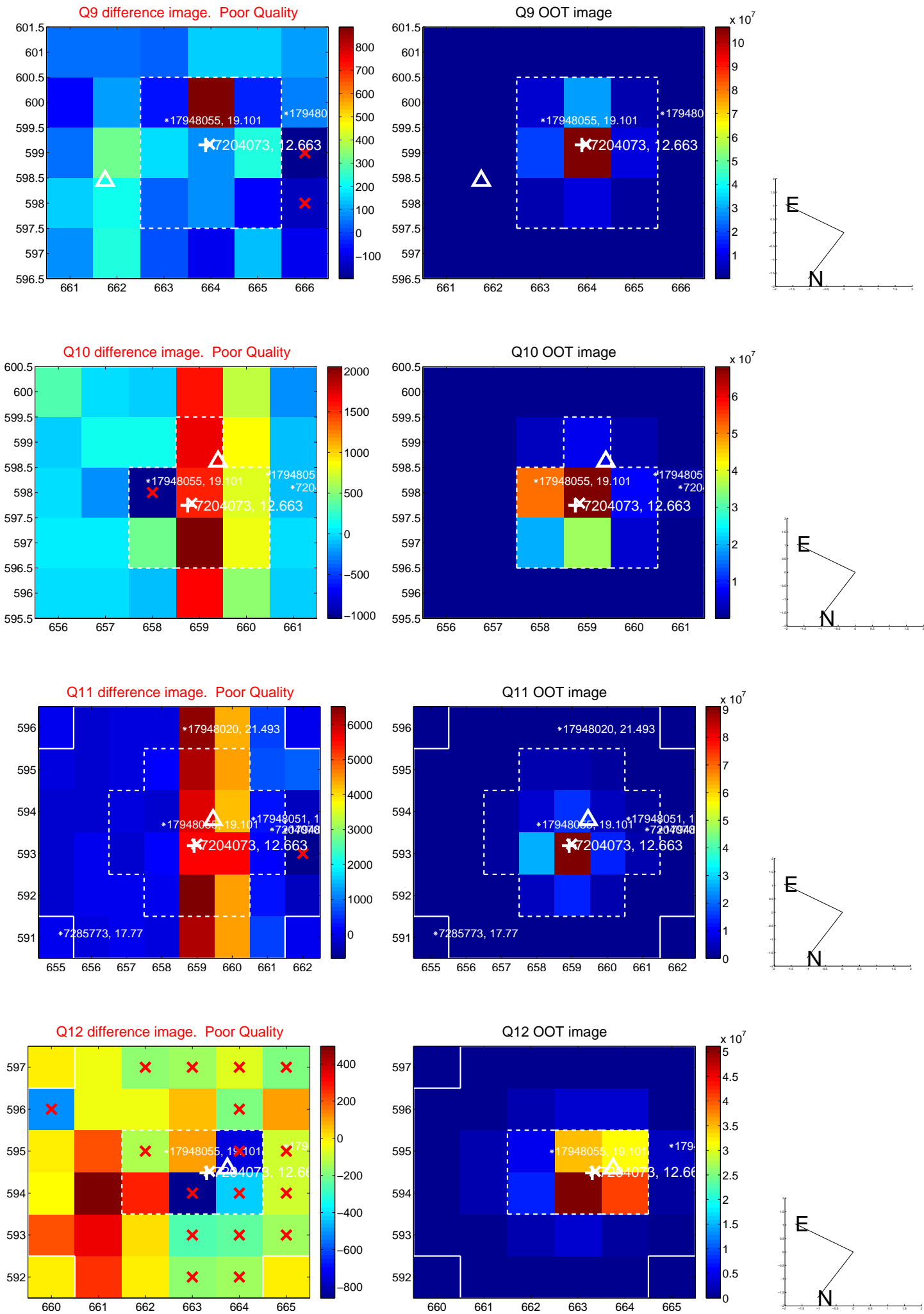
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



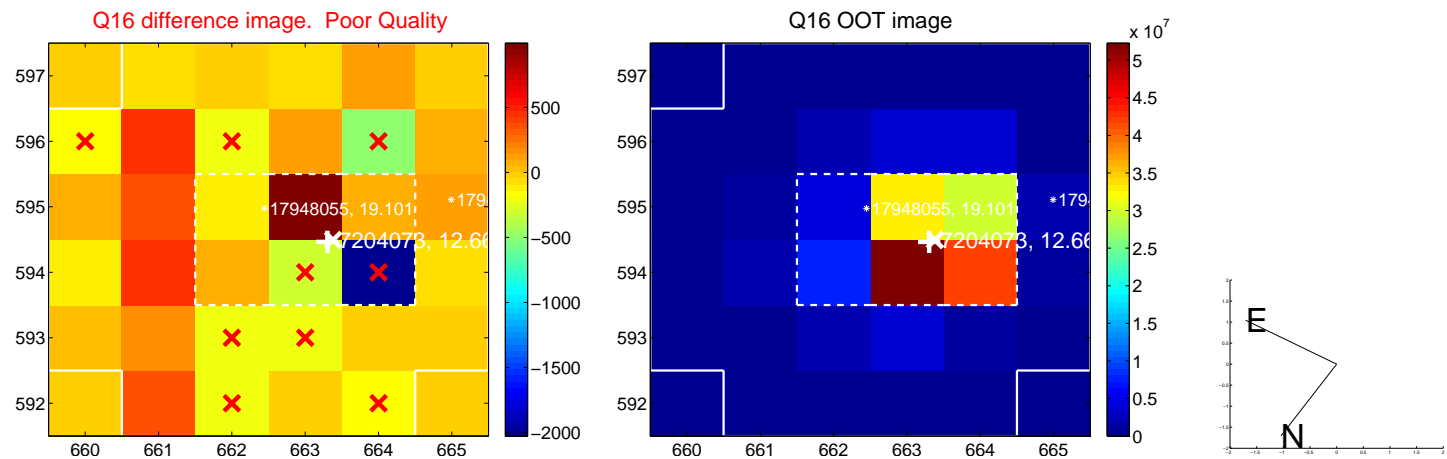
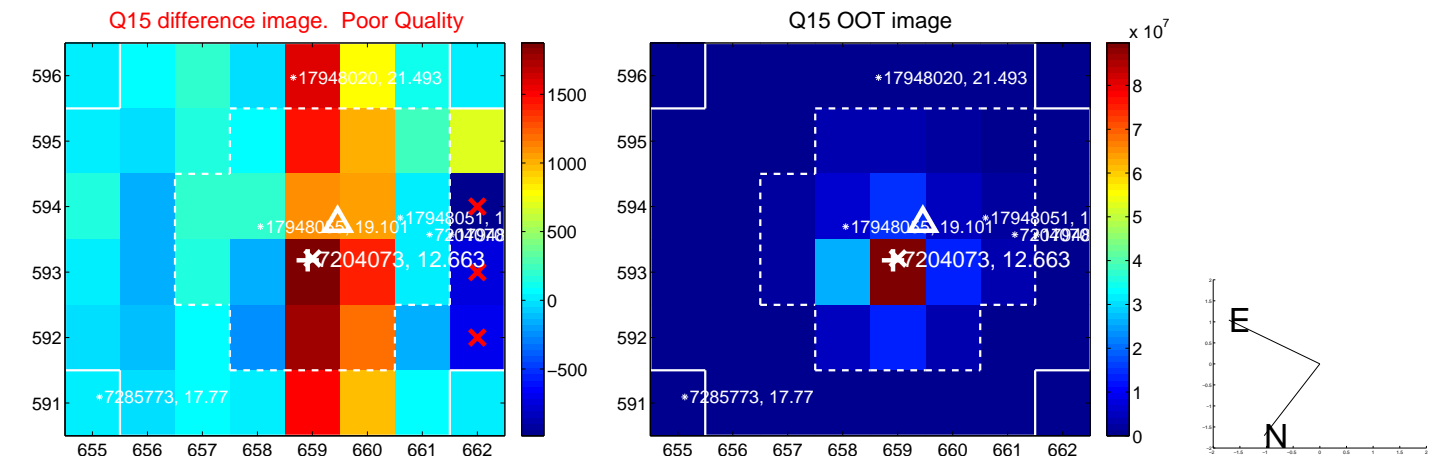
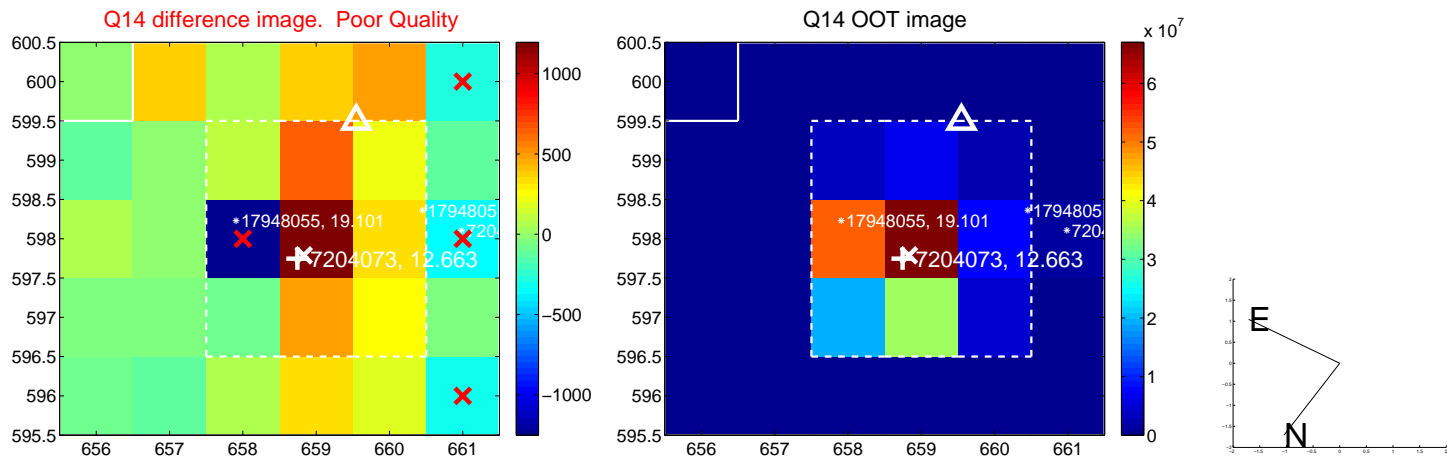
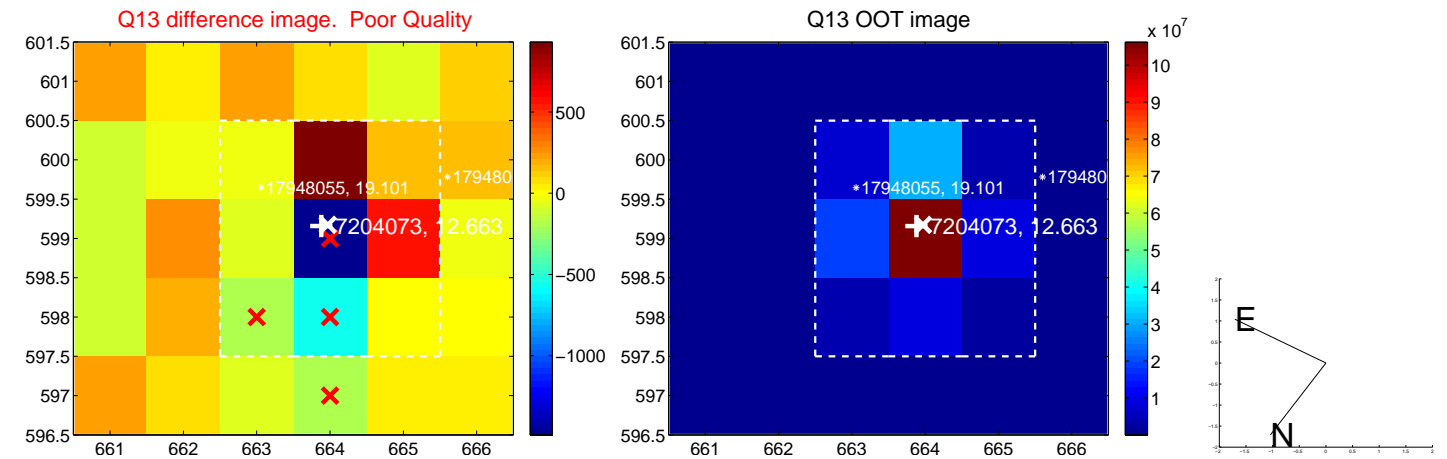
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



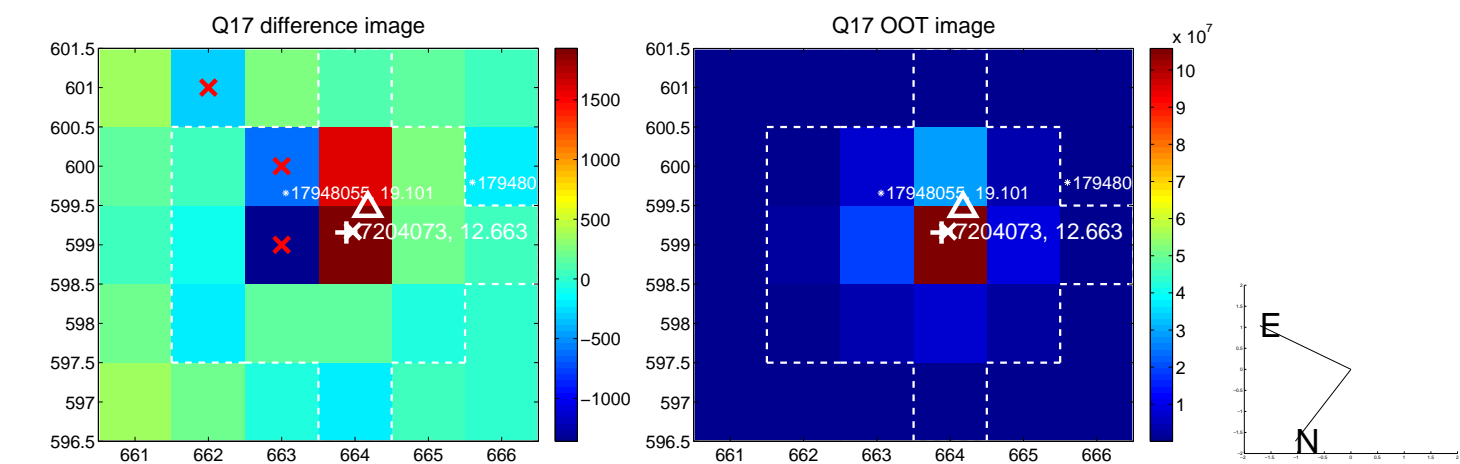
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



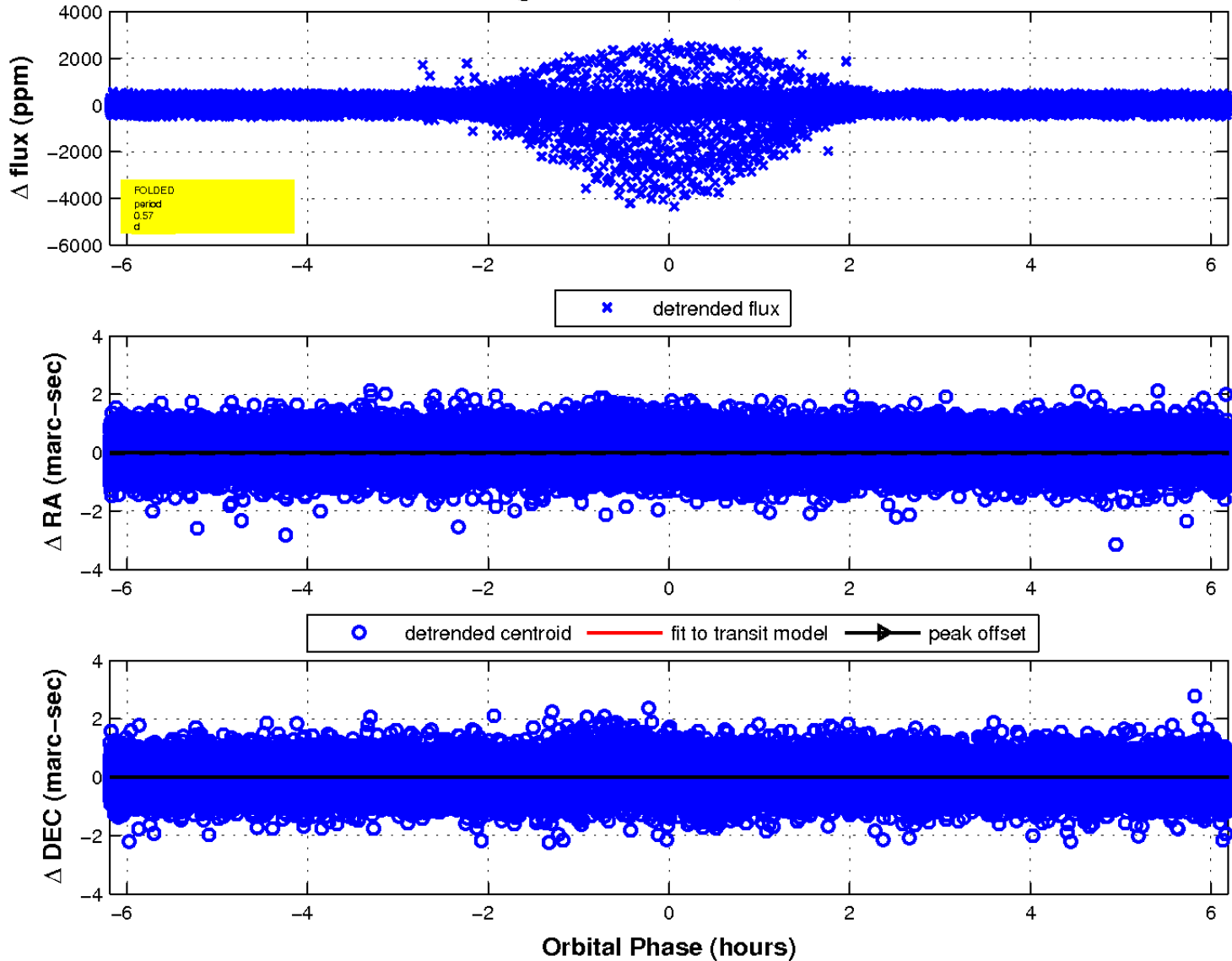
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

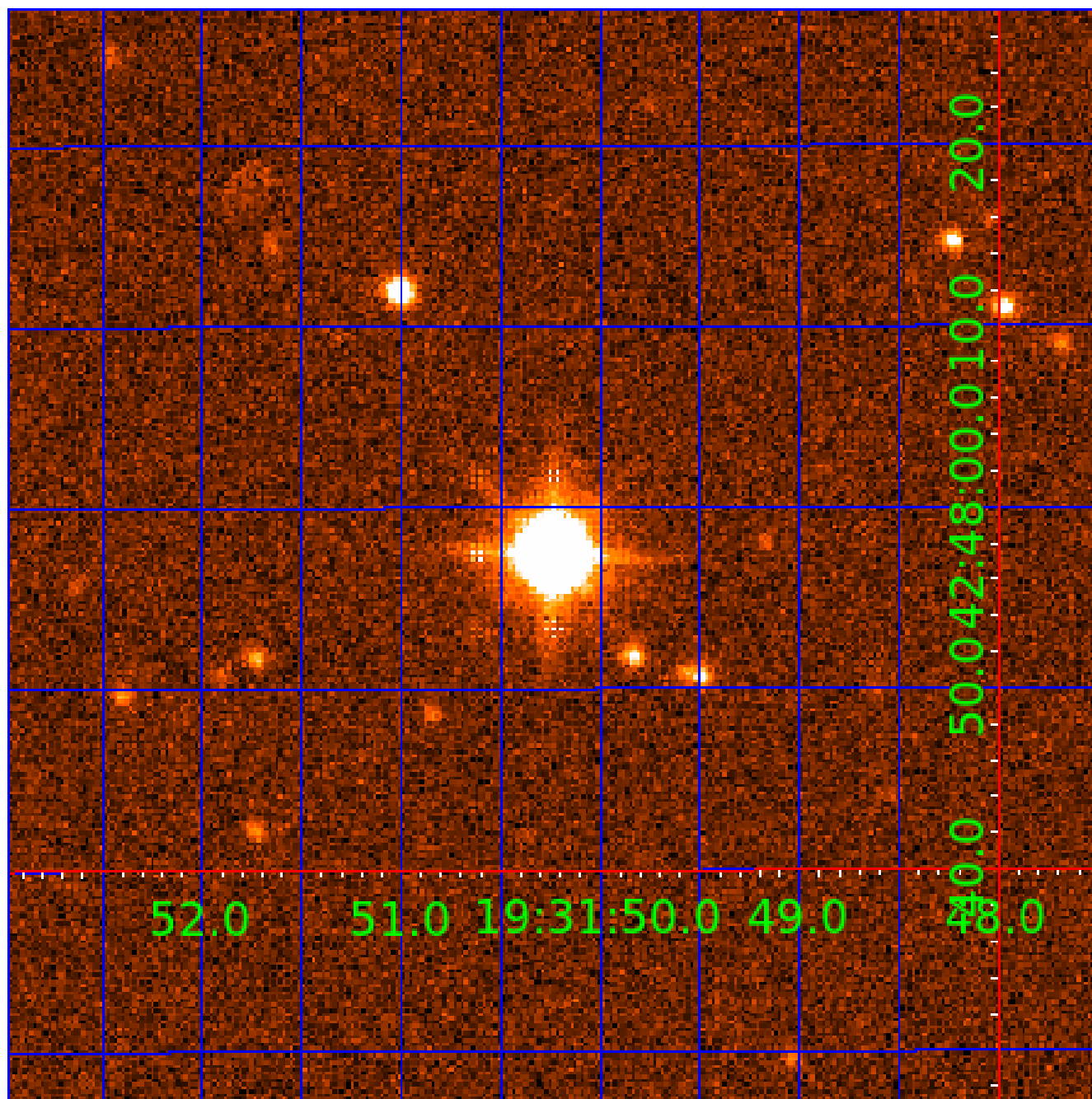


fluxWeightedCentroids, Planet 2 of 5



UKIRT Image

Declination



KIC 007204073

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})
007204073-01	OBS	No	416.643473	294.299298	248.8	7.855	8.6	5.8	0.58	4208	1.03	0.12
007204073-02	OBS	6847.01	0.566812	131.796966	24.2	2.064	21.4	15.3	0.58	4208	0.34	773.38
007204073-03	OBS	No	262.031811	186.465881	183.0	8.027	10.7	5.3	0.58	4208	0.91	0.22
007204073-04	OBS	No	143.476933	237.122220	81.8	4.472	10.4	2.6	0.58	4208	0.64	0.48

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007204073-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007204073-02	OBS	FP	0.00	1	0	0	1	LPP_DV—CENT_FEW_DIFFS—EPHEM_MATCH
007204073-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007204073-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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

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

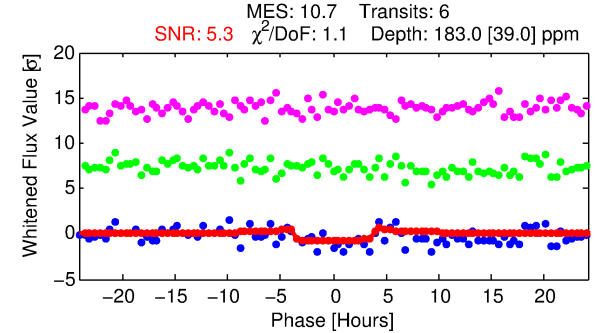
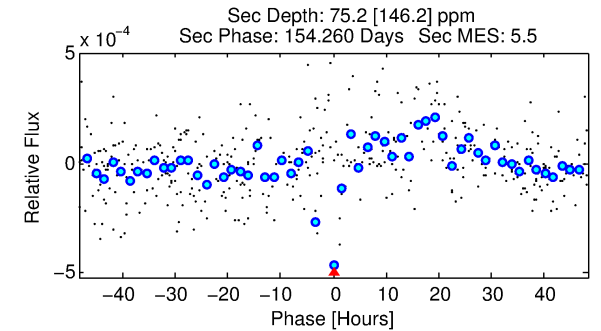
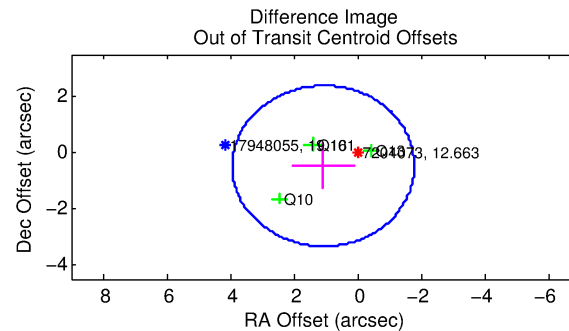
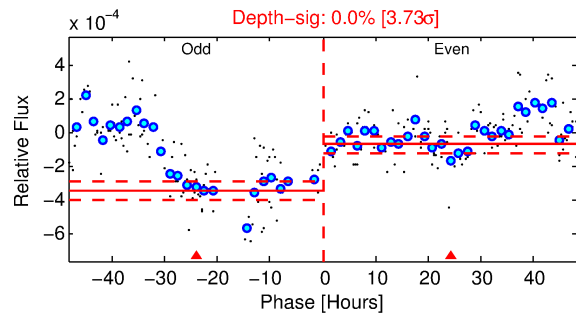
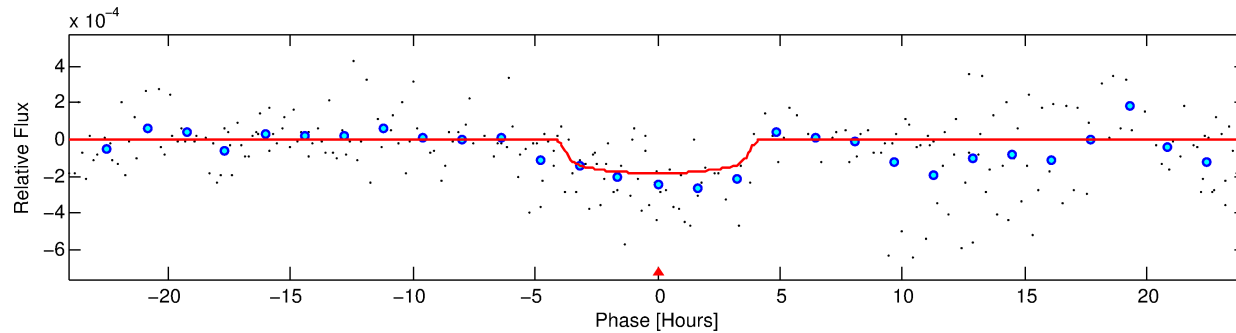
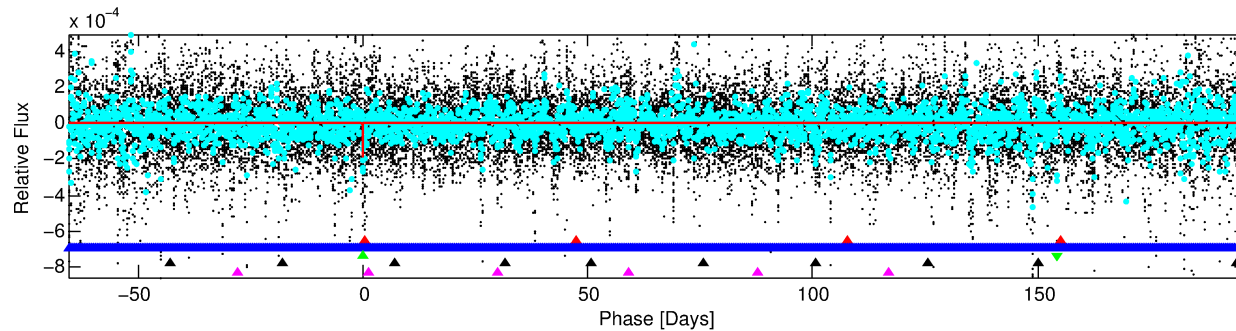
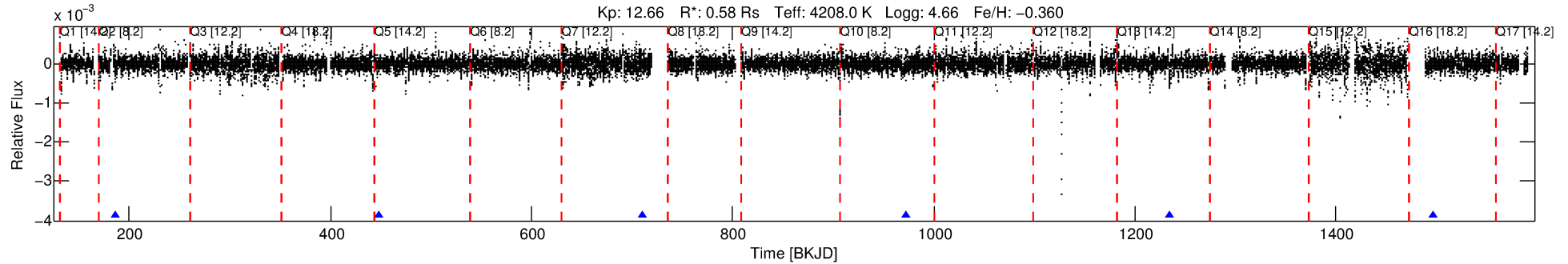
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007204073-03

No Significant Match Found

DV One-Page Summary

KIC: 7204073 Candidate: 3 of 5 Period: 262.032 d
KOI: K06847 Corr: No Ephemeris Match



DV Fit Results:

Period = 262.03181 [0.00671] d
Epoch = 186.4659 [0.0186] BKJD
Rp/R* = 0.0144 [0.0092]
a/R* = 136.27 [348.58]
b = 0.85 [0.83]
Seff = 0.22 [0.04]
Teq = 174 [8] K
Rp = 0.91 [0.60] Re
a = 0.6643 [0.0552] AU
Ag = 21871.03 [51082.81] [0.43σ]
Teffp = 3270 [1910] K [1.62σ]

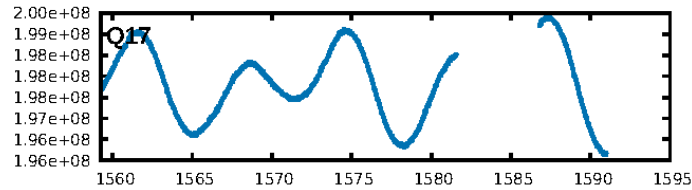
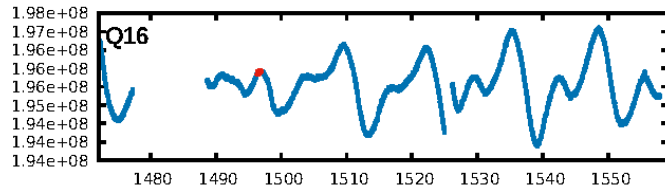
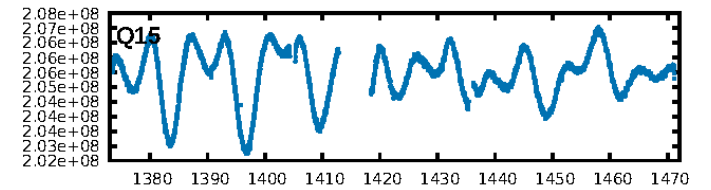
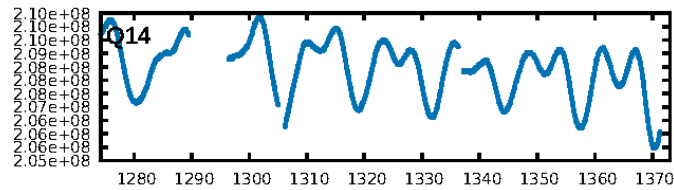
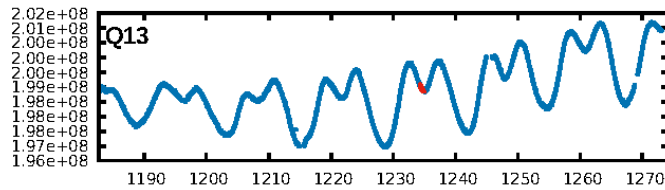
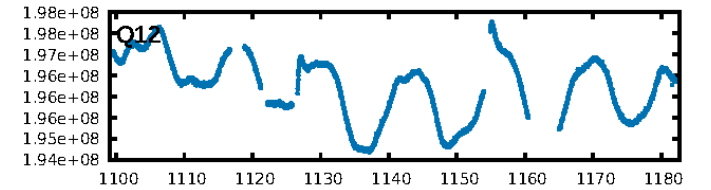
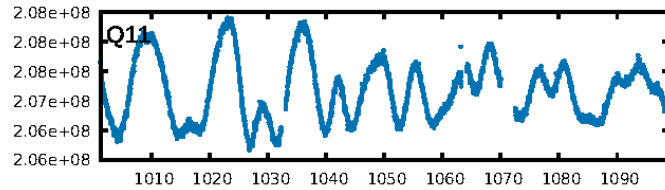
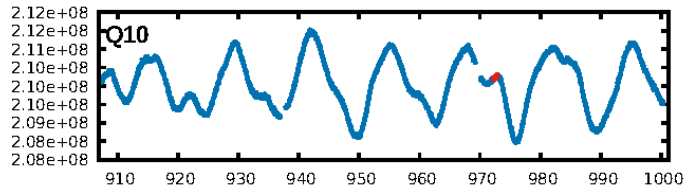
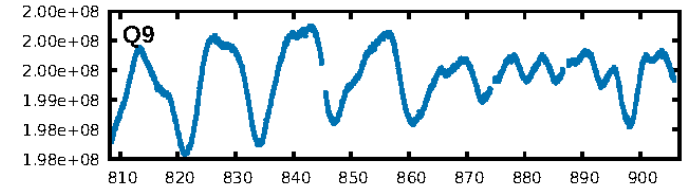
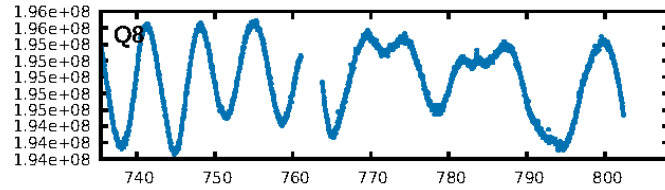
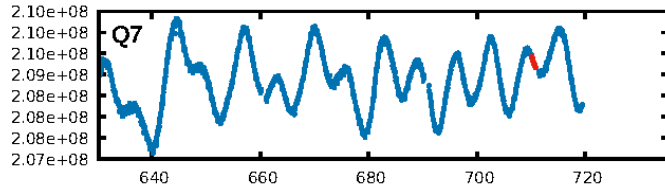
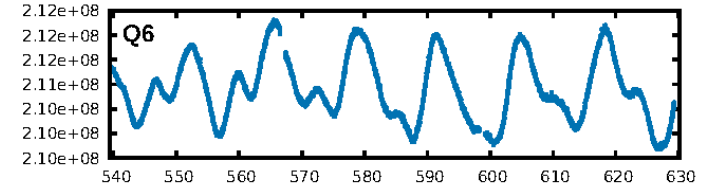
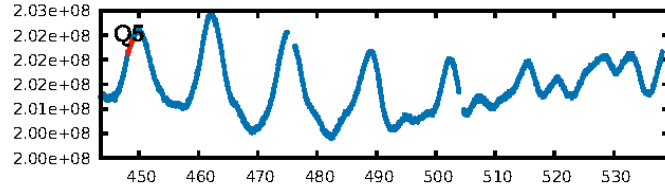
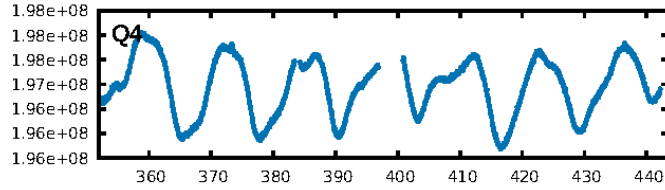
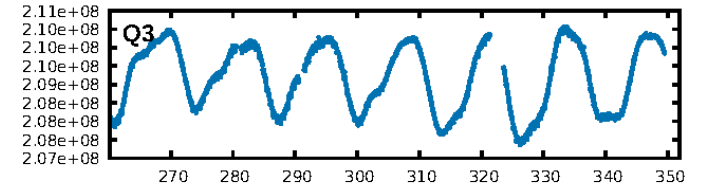
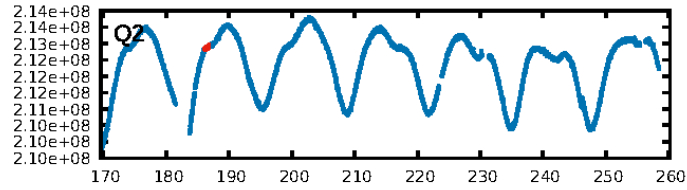
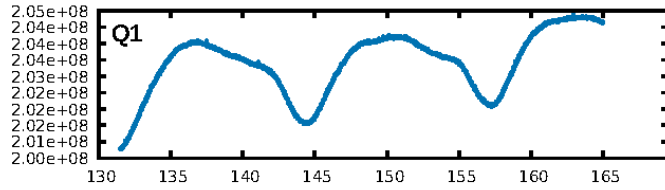
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [75.00σ]
LongPeriod-sig: 100.0% [330.39σ]
ModelChiSquare2-sig: 1.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -2.411
Centroid-sig: 4.2%
Centroid-so: 0.968 arcsec [1.15σ]
OotOffset-rm: 1.171 arcsec [1.23σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-rm: 1.308 arcsec [1.37σ]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.00 [0/5]

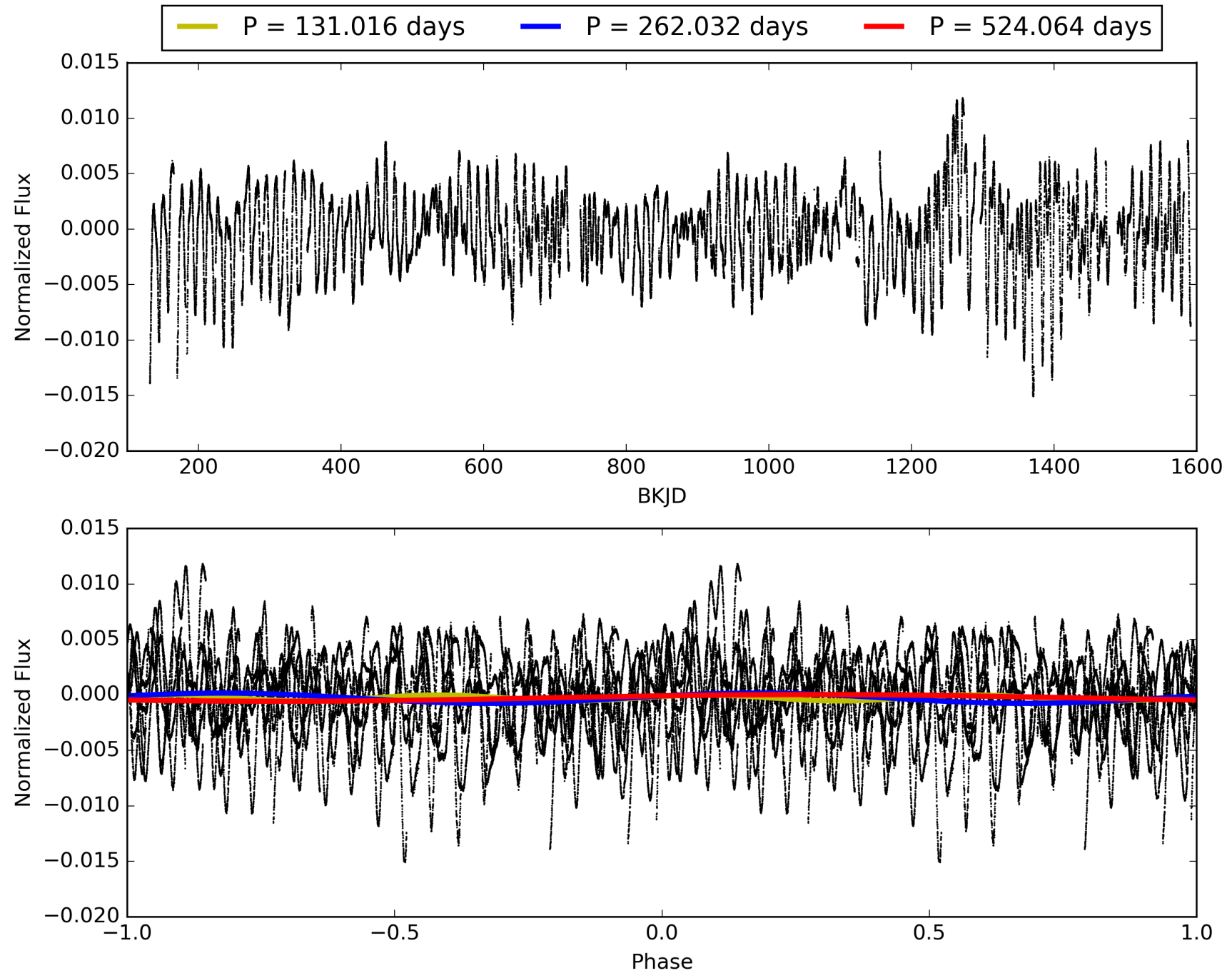
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:47:42 Z

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

TCE 007204073-03, PDC Light Curves

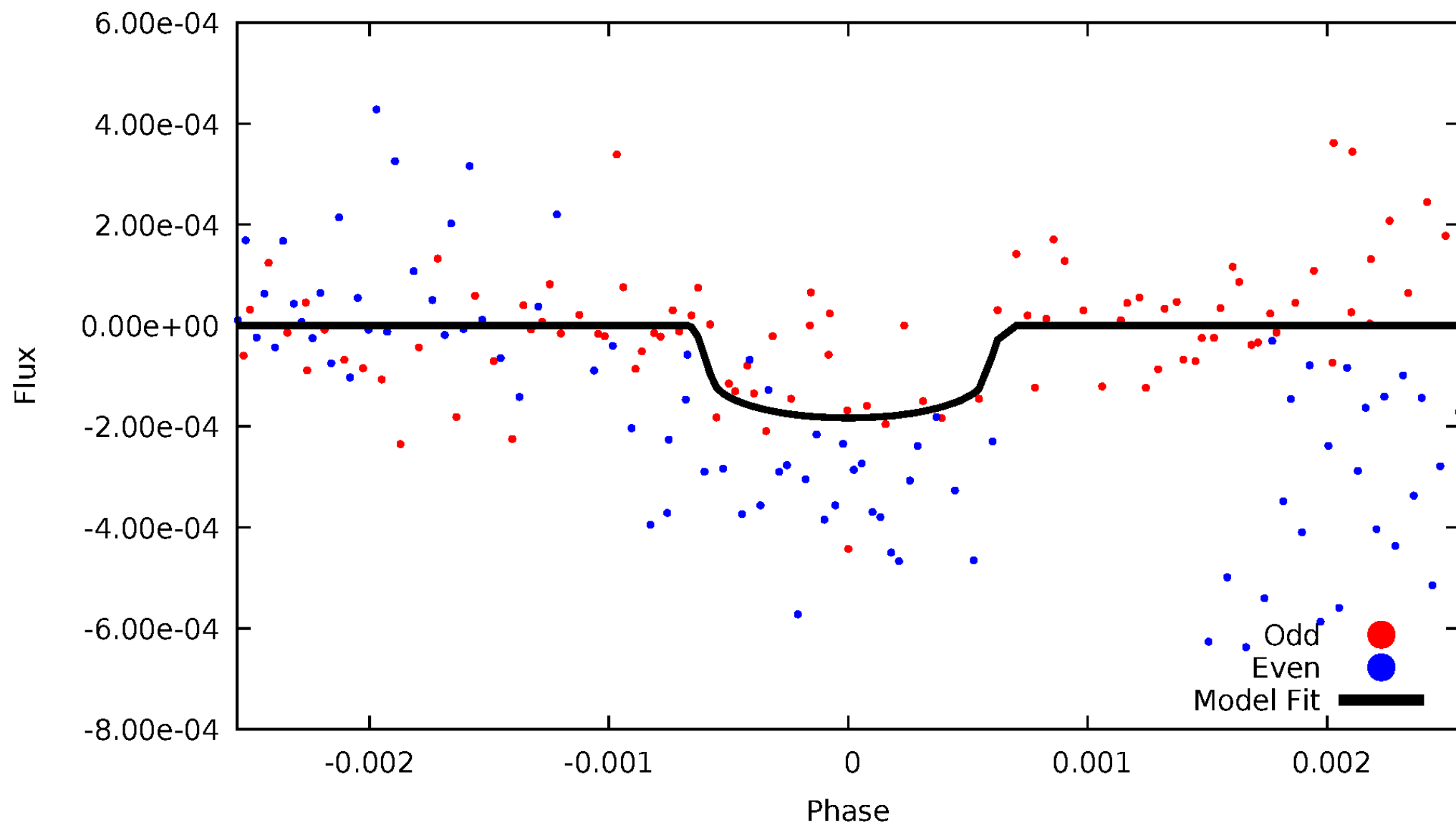


TCE 007204073-03



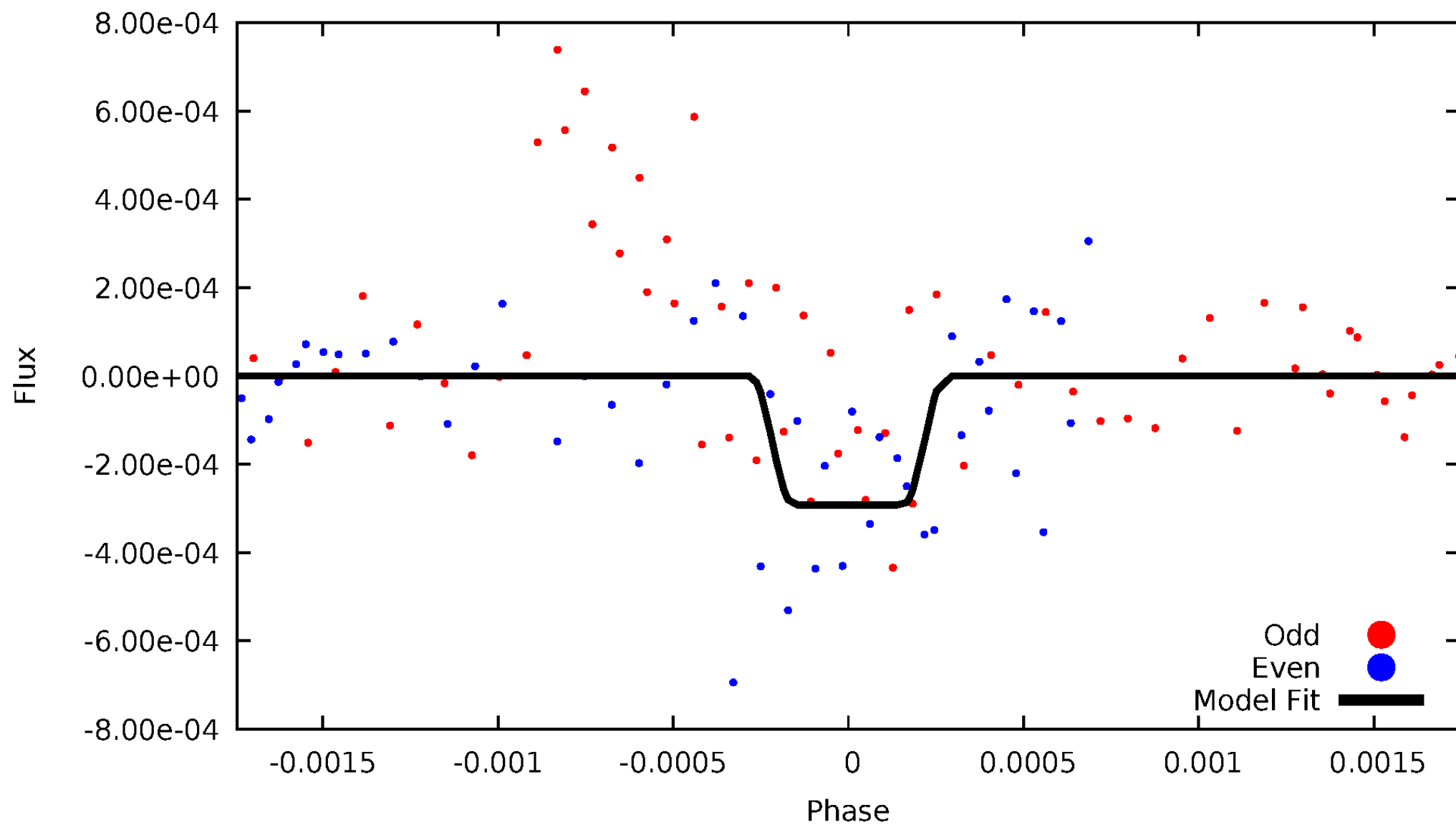
DV Odd/Even

TCE 007204073-03



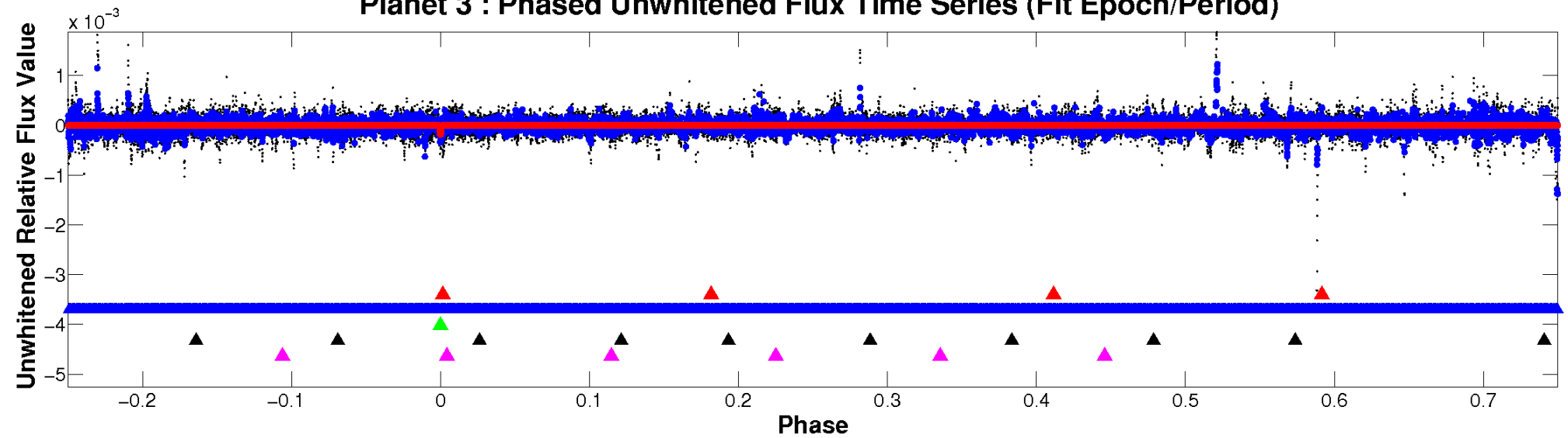
ALT Odd/Even

TCE 007204073-03

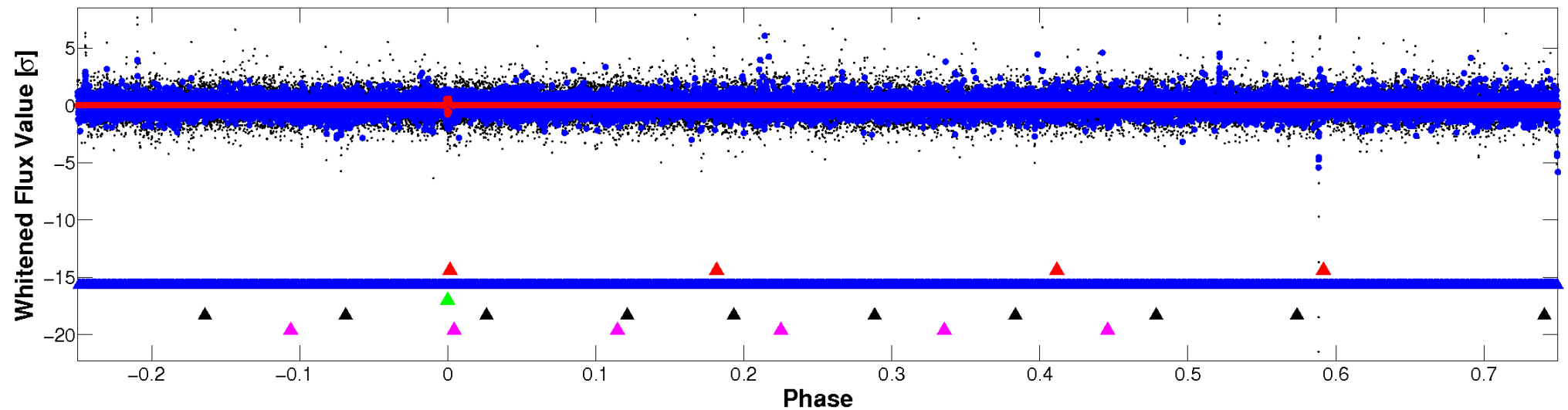


Non-Whitened Vs. Whitened Light Curve

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

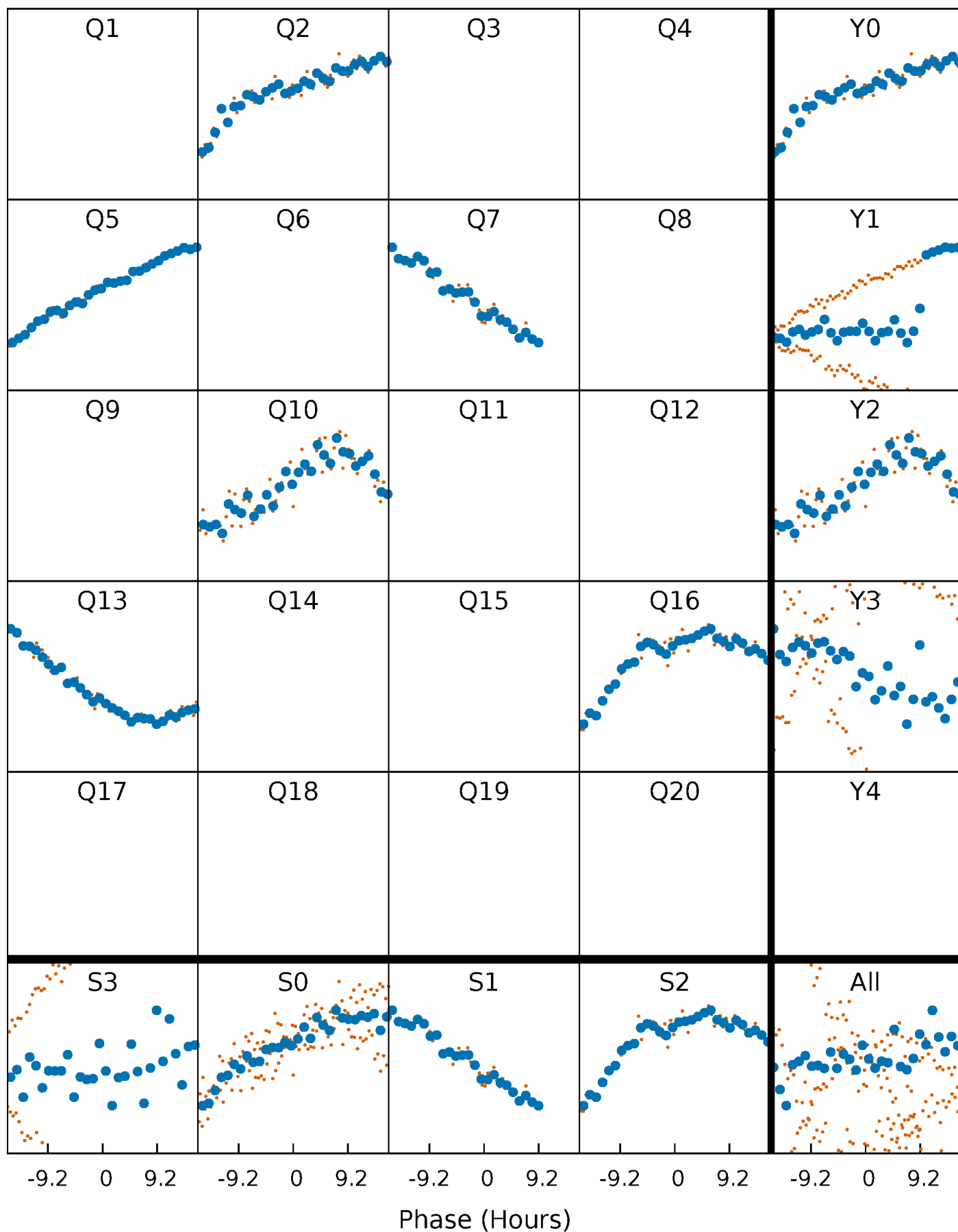


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



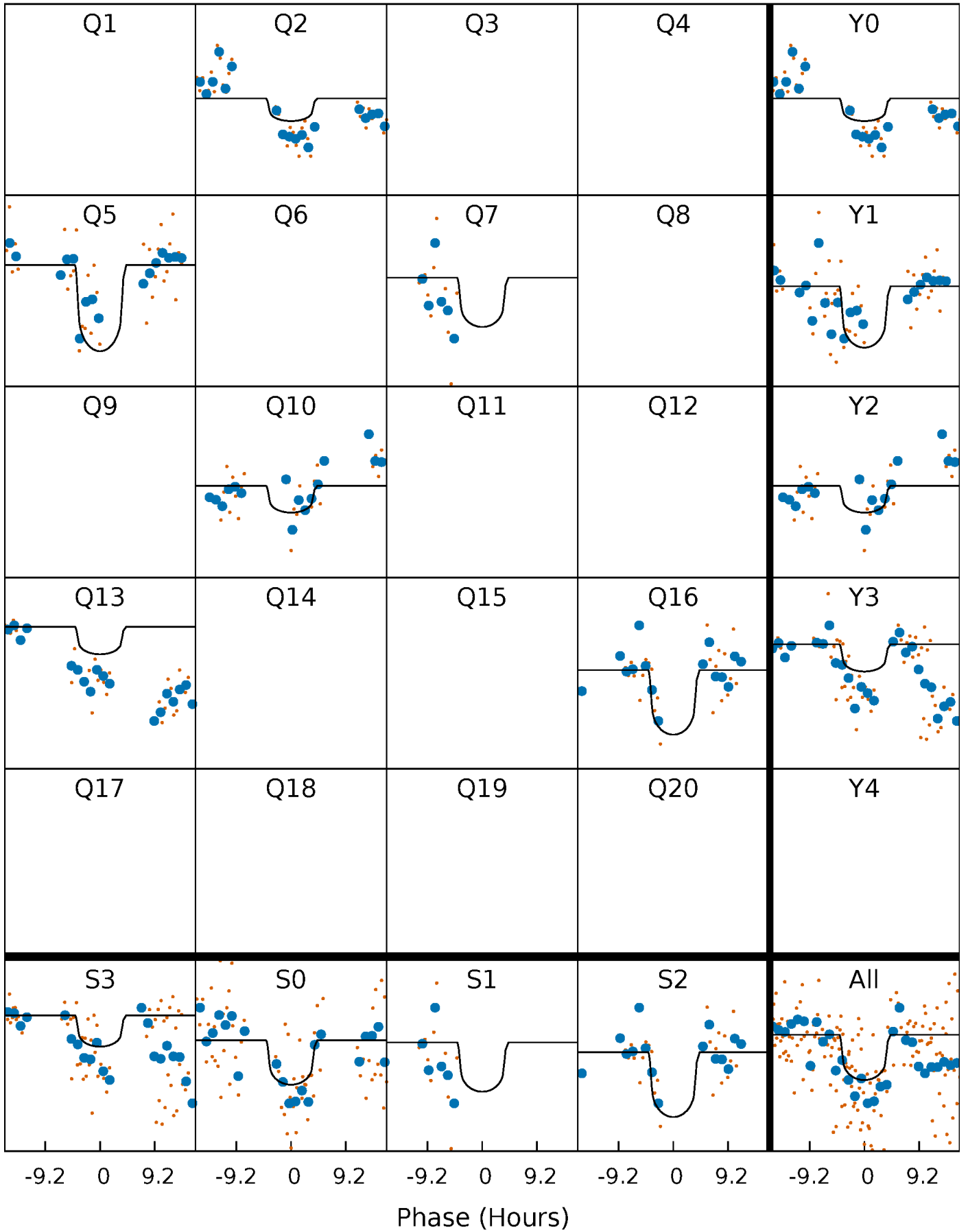
PDC Quarter-Phased Transit Curves

TCE 007204073-03 P=262.031811 Days $T_0=186.465881$ (BKJD)



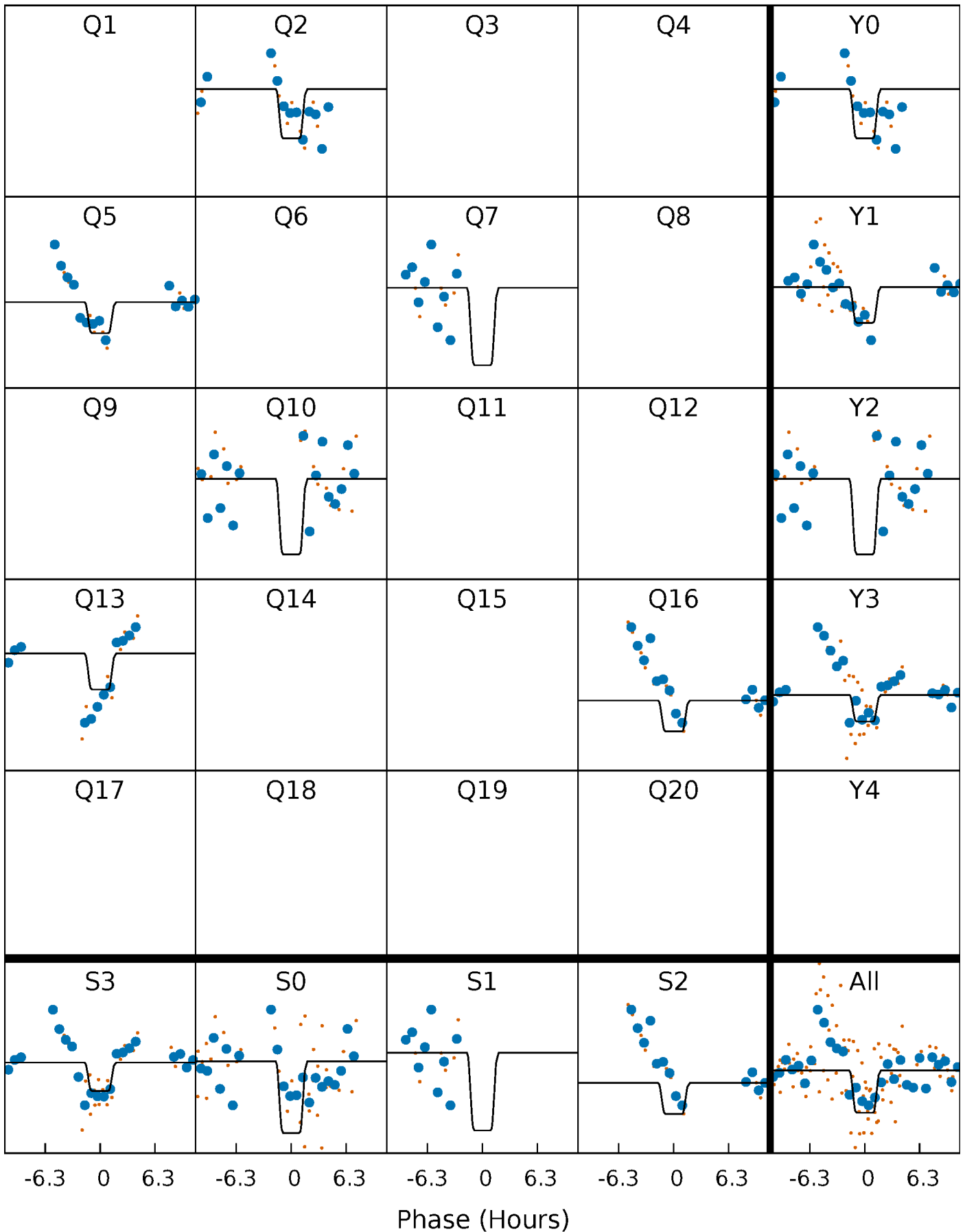
DV Quarter-Phased Transit Curves

TCE 007204073-03 P=262.031811 Days $T_0=186.465881$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

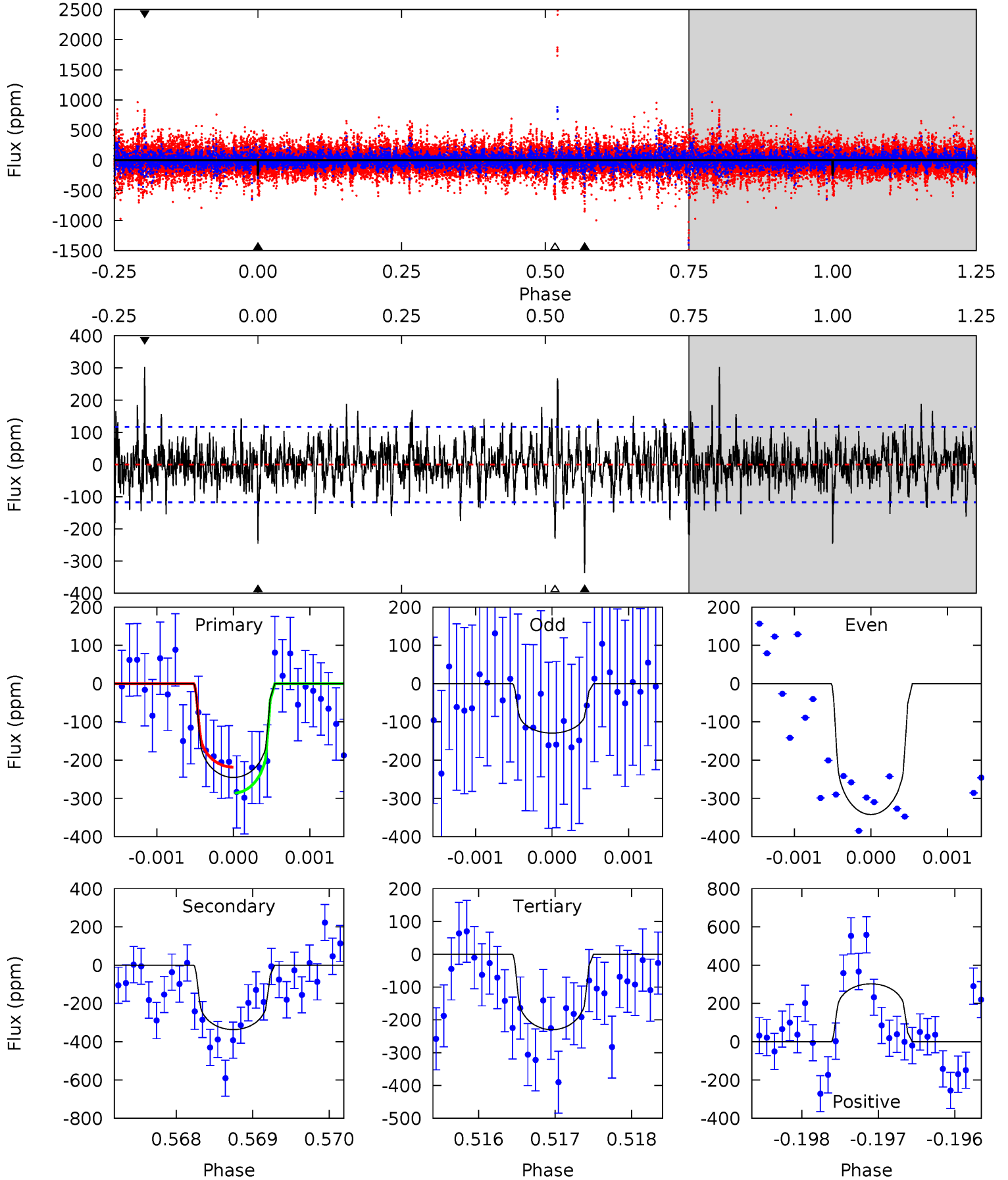
TCE 007204073-03 P=262.005918 Days $T_0=186.457187$ (BKJD)



DV Model-Shift Uniqueness Test

007204073-03, P = 262.031811 Days, E = 186.465881 Days

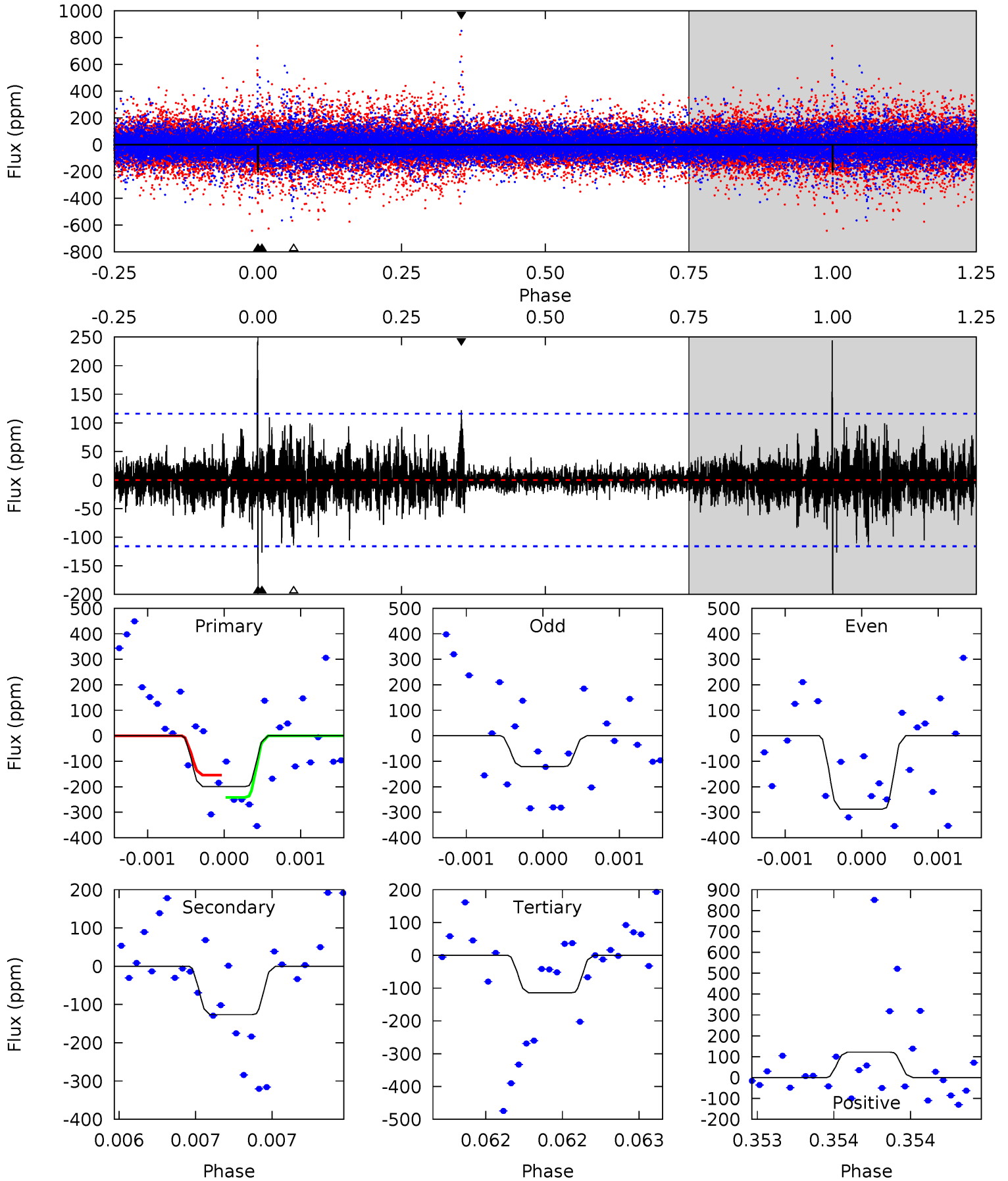
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	15.5	10.6	14.0	5.41	3.22	2.49	0.70	-2.64	4.93	1.58	4.60	1.52	0.47	1.56



Alt Model-Shift Uniqueness Test

007204073-03, P = 262.005918 Days, E = 186.457187 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.58	6.08	5.50	5.85	5.57	3.47	1.10	4.09	3.73	0.58	0.23	3.95	0.86	0.55	2.12



Stellar Parameters For KIC 007204073

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4208^{+113}_{-138}	$4.662^{+0.059}_{-0.023}$	$-0.360^{+0.300}_{-0.300}$	$0.583^{+0.044}_{-0.061}$	$0.570^{+0.063}_{-0.051}$	$4.049^{+1.163}_{-0.445}$
	+3%/-3%	+1%/-0%	+83%/-83%	+8%/-10%	+11%/-9%	+29%/-11%
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 007204073-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-337 ± 22	$0.93^{+0.60}_{-0.45}$	241^{+8}_{-9}	4564^{+1654}_{-759}	$95785^{+268750}_{-60514}$
Alt.	-127 ± 21	$1.12^{+0.56}_{-0.55}$	241^{+8}_{-8}	3593^{+1034}_{-462}	24817^{+72172}_{-14189}

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 $A_{obs} \gg 1.0$

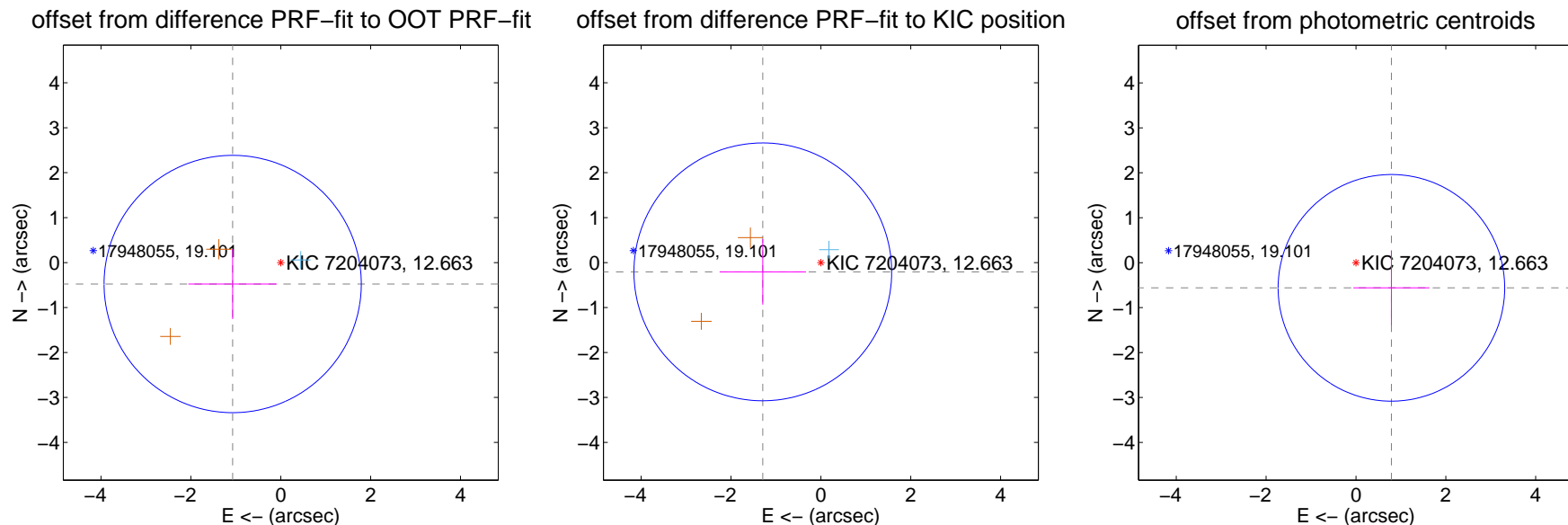
DV Centroid Data

Supplemental centroid analysis for 007204073-03. Kepler magnitude: 12.66. Transit SNR 5.29

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.171 ± 0.954	1.23	1.070 ± 0.985	-0.476 ± 0.780
PRF-fit source offset from KIC position	1.308 ± 0.956	1.37	1.292 ± 0.961	-0.206 ± 0.730
photometric centroid source offset	0.97 ± 0.84	1.15	-0.79 ± 0.85	-0.56 ± 0.83



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

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

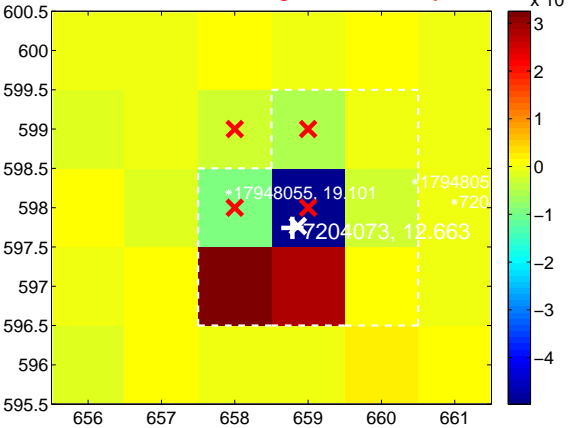
Q1 no difference image



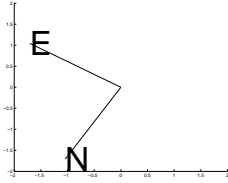
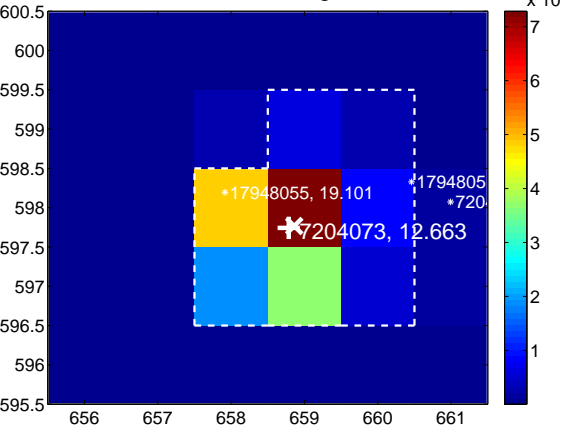
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



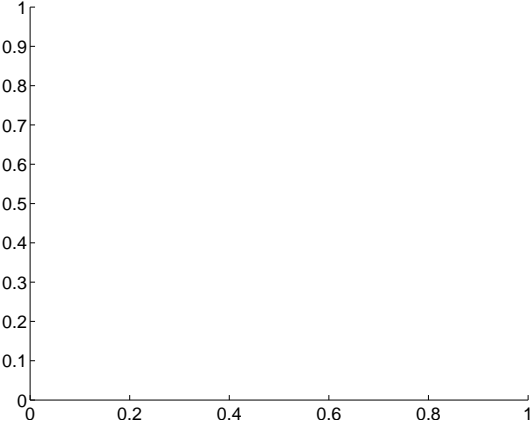
Q3 no difference image



Q3 no OOT image



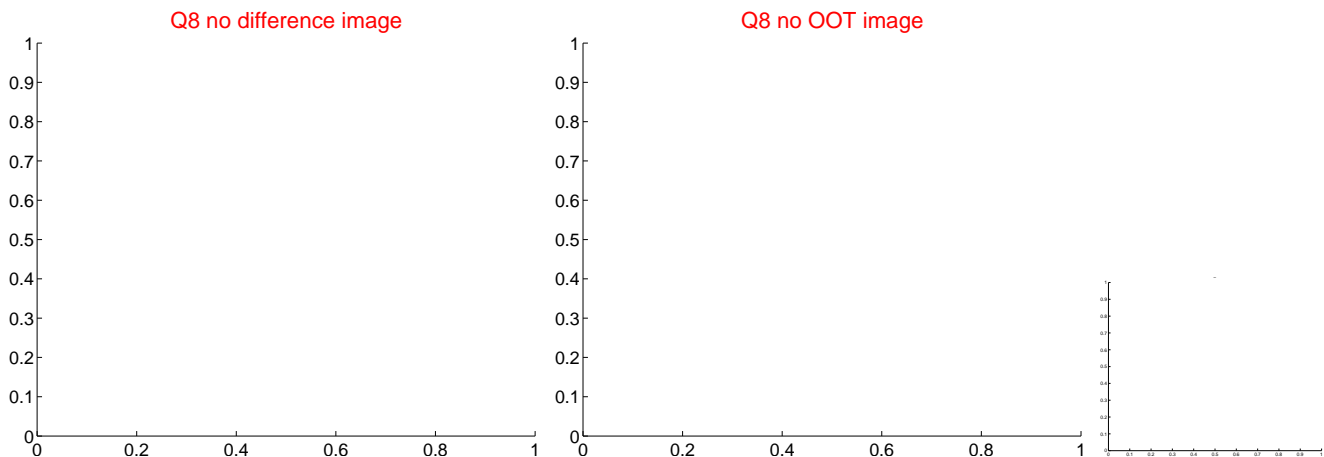
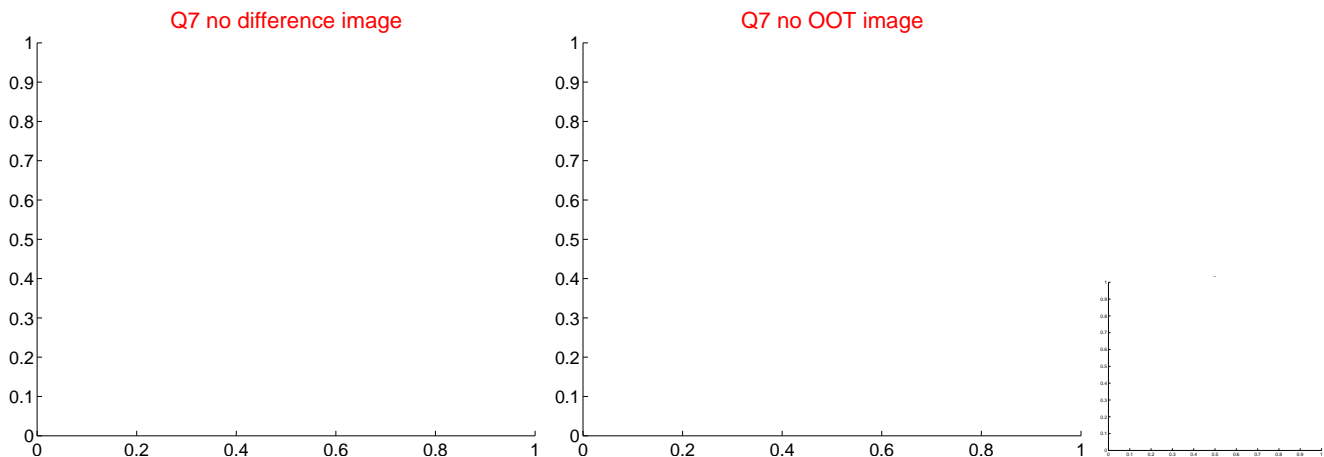
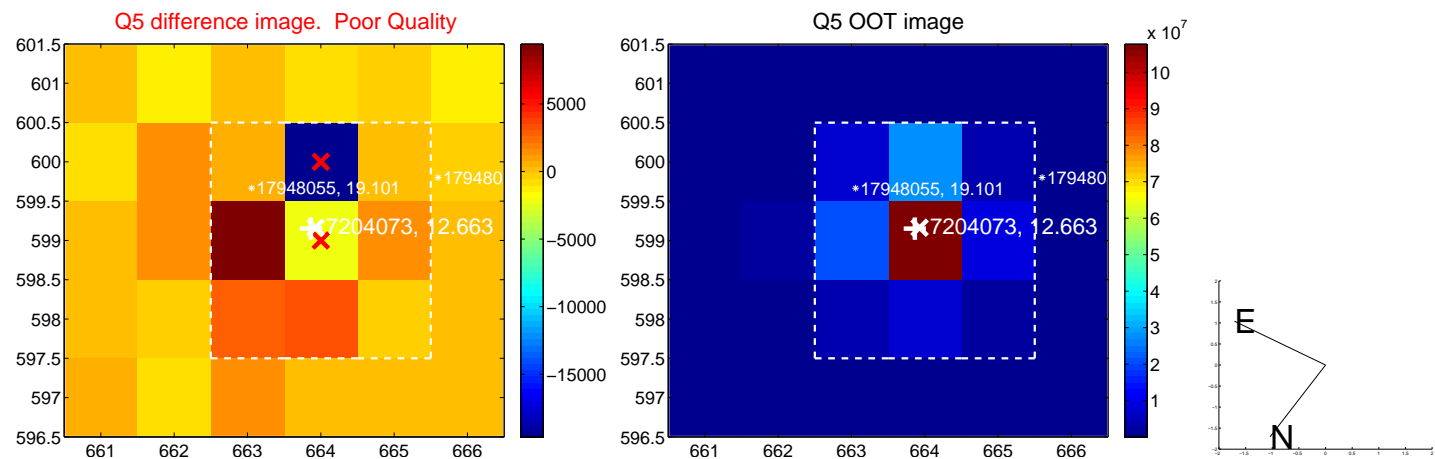
Q4 no difference image



Q4 no OOT image



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



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

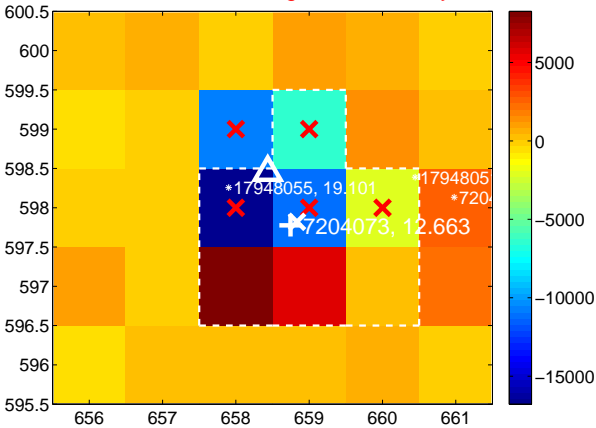
Q9 no difference image



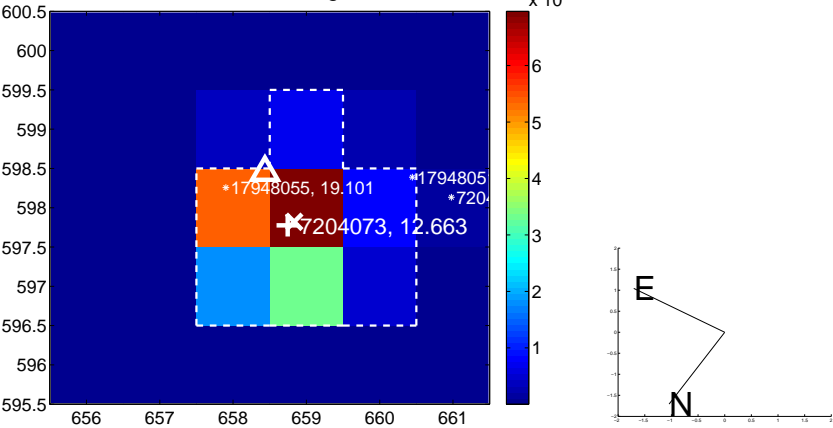
Q9 no OOT image



Q10 difference image. Poor Quality



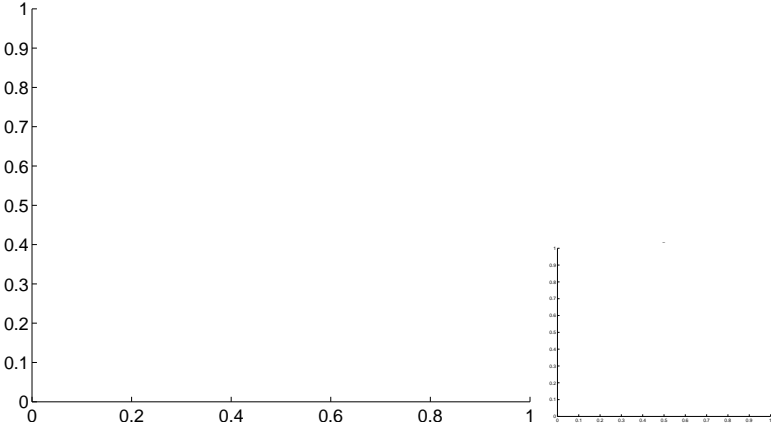
Q10 OOT image



Q11 no difference image



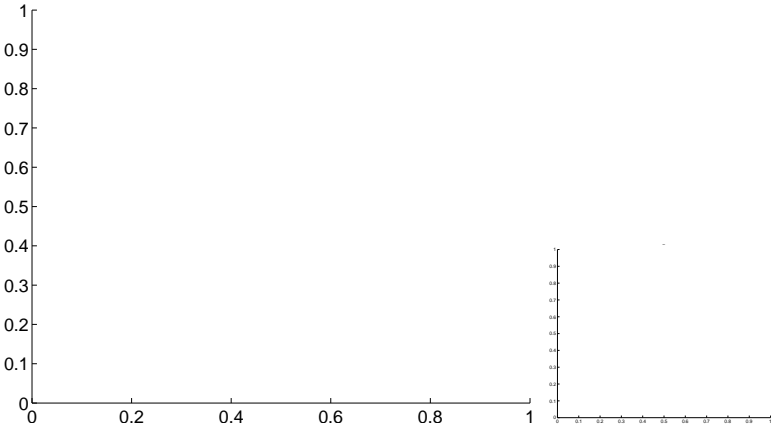
Q11 no OOT image



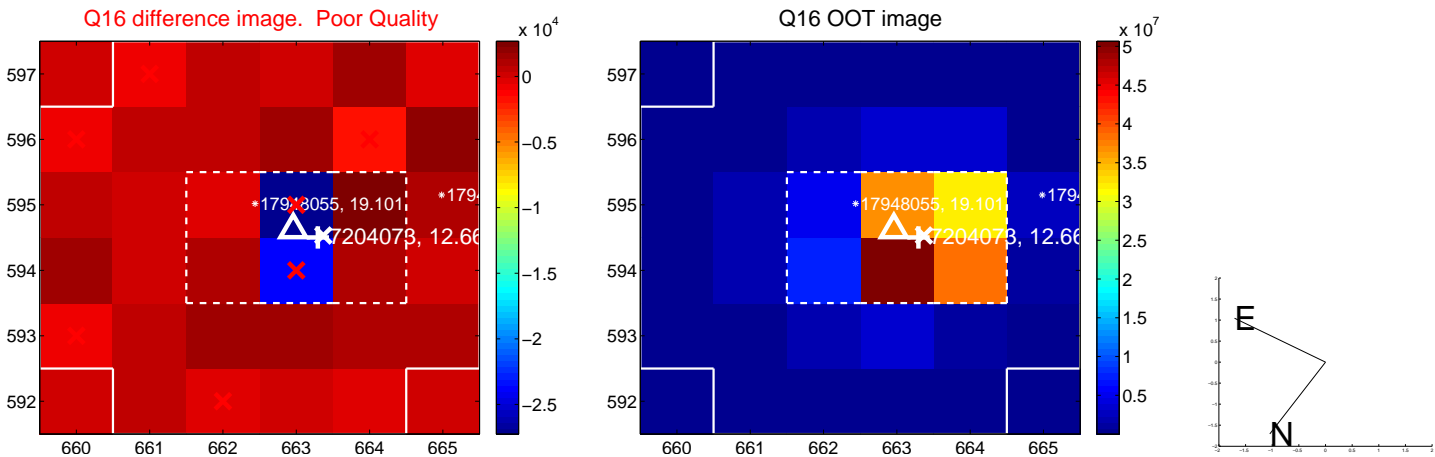
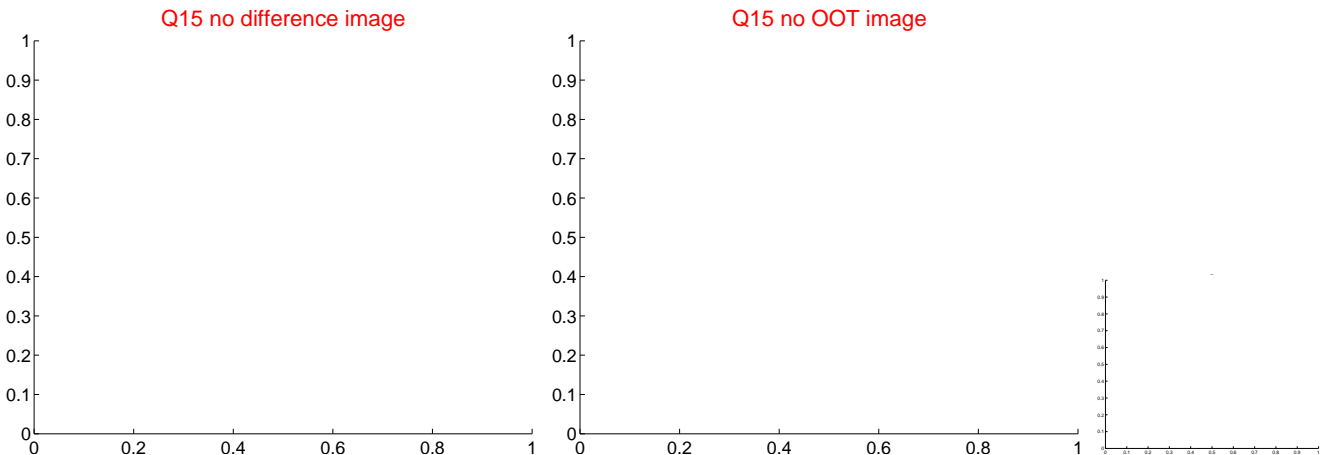
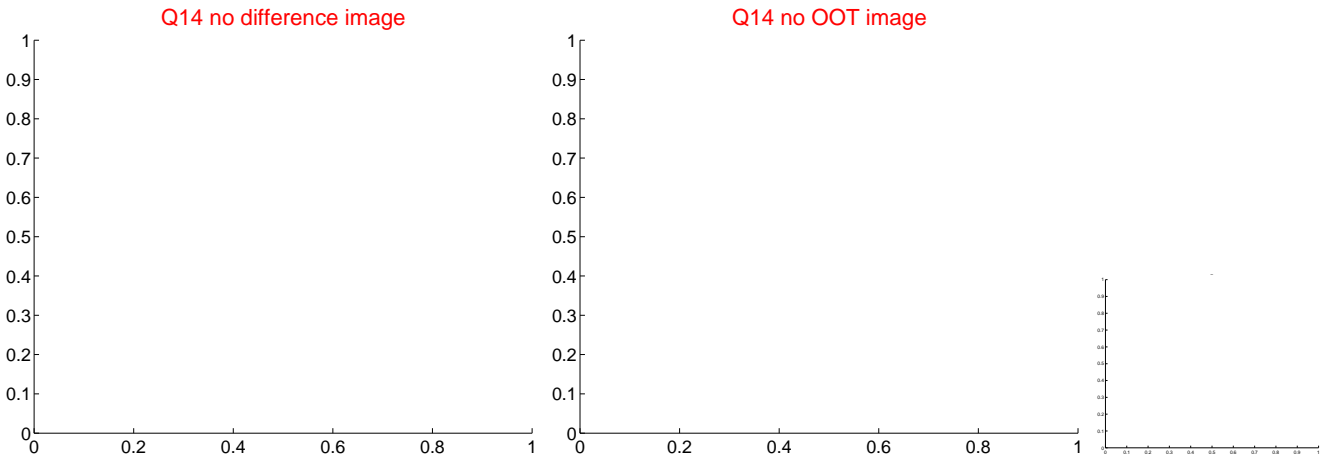
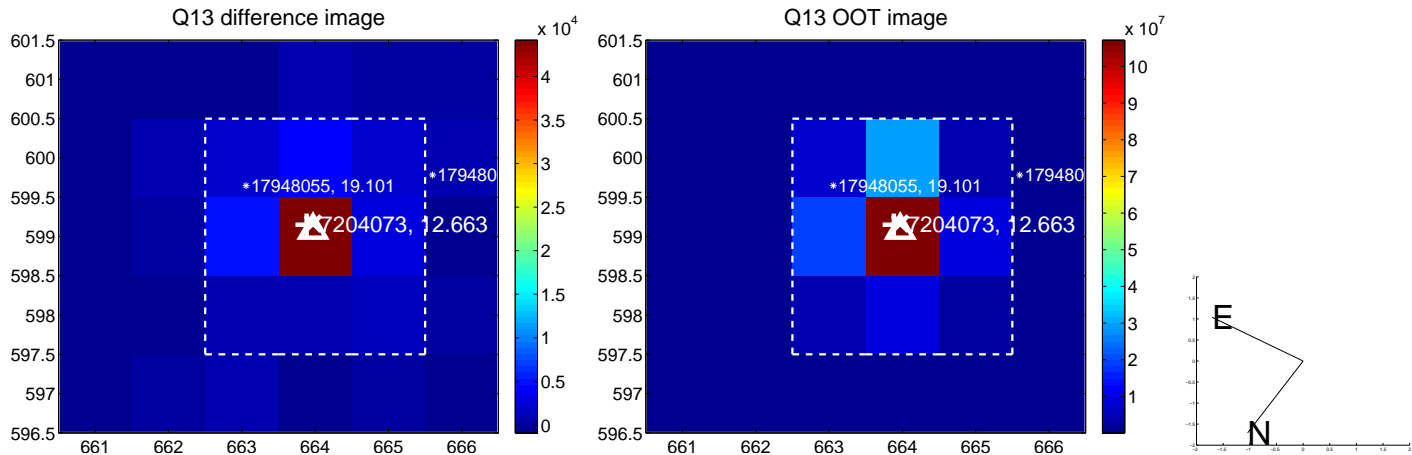
Q12 no difference image



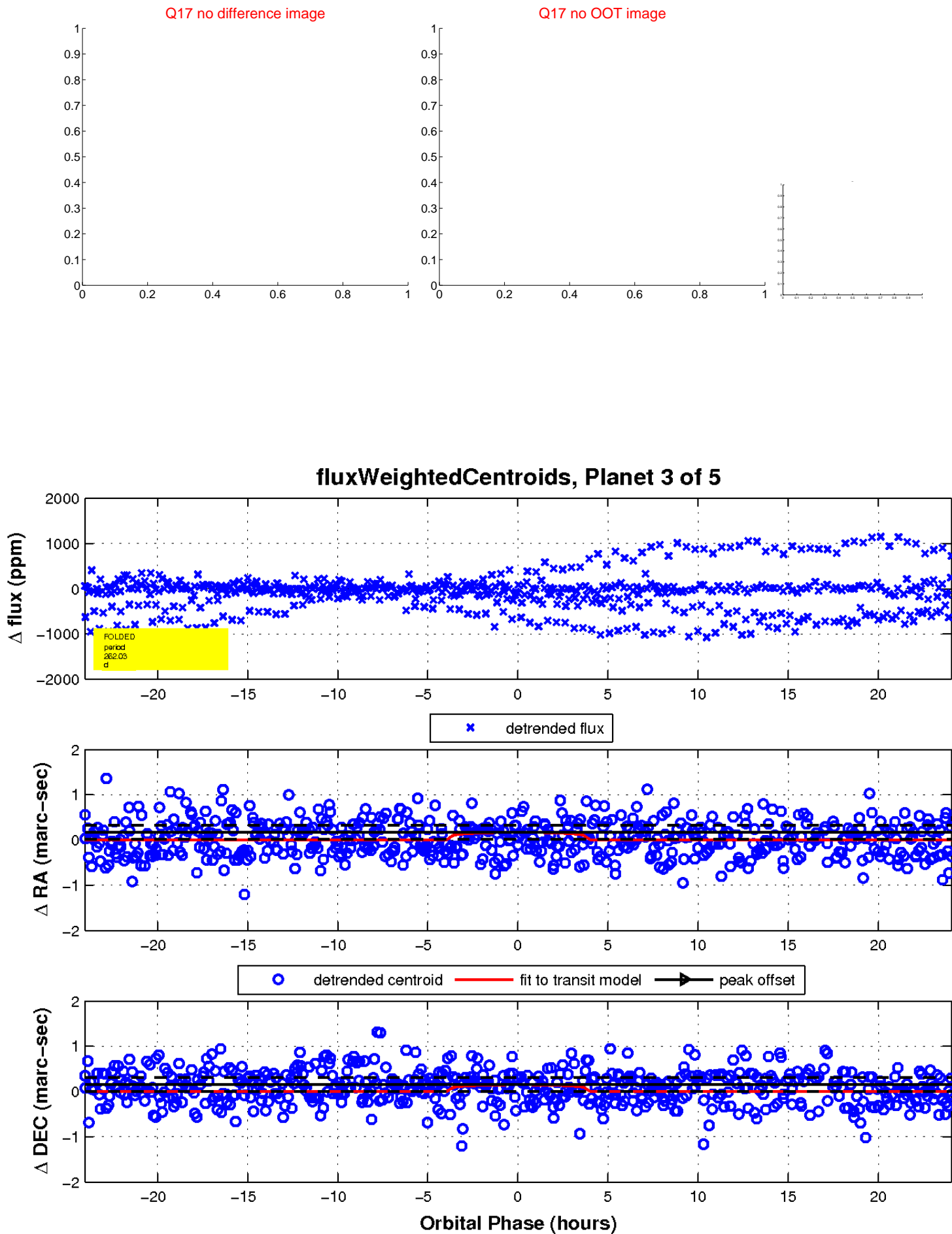
Q12 no OOT image



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

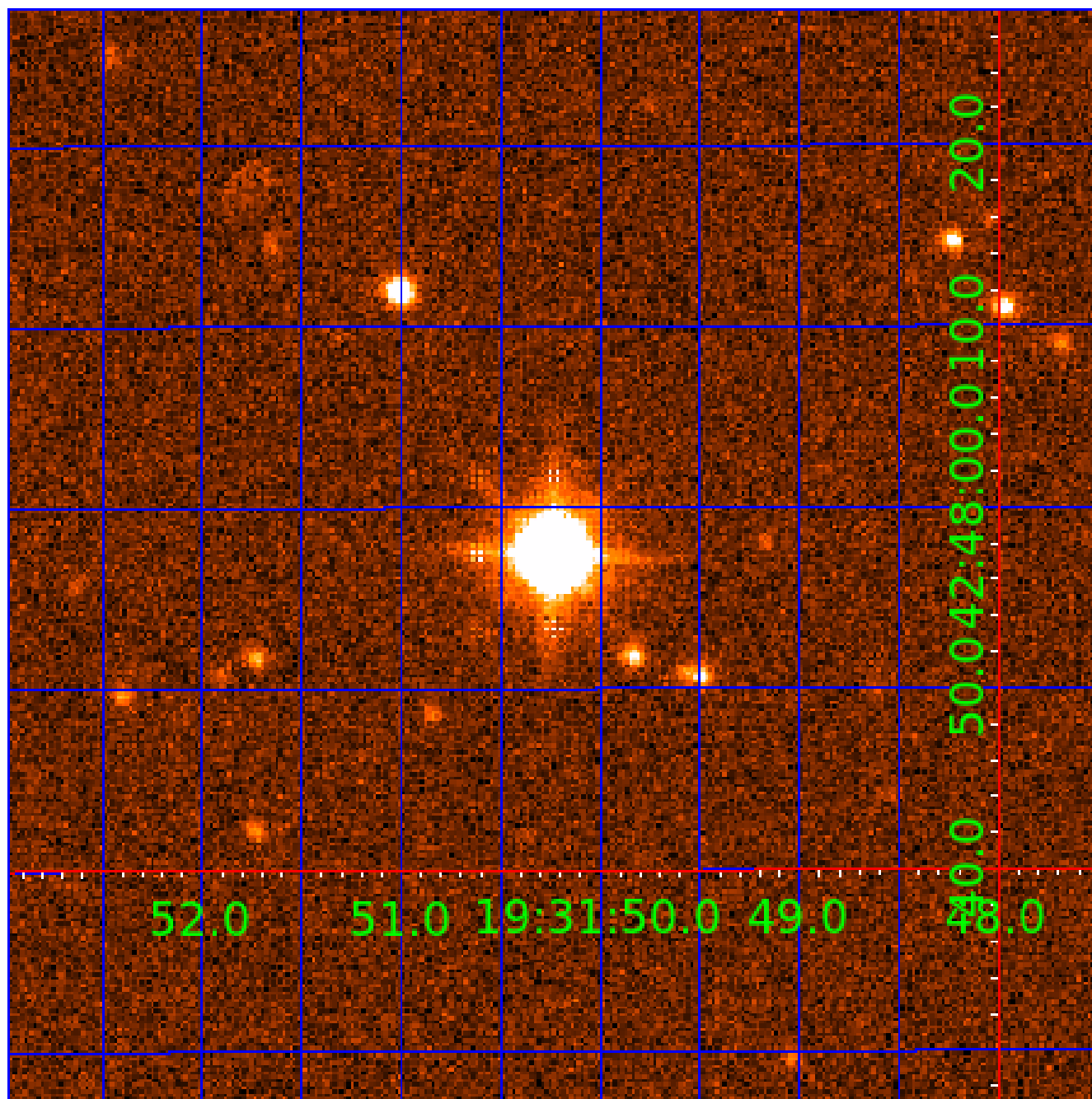


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007204073

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})
007204073-01	OBS	No	416.643473	294.299298	248.8	7.855	8.6	5.8	0.58	4208	1.03	0.12
007204073-02	OBS	6847.01	0.566812	131.796966	24.2	2.064	21.4	15.3	0.58	4208	0.34	773.38
007204073-03	OBS	No	262.031811	186.465881	183.0	8.027	10.7	5.3	0.58	4208	0.91	0.22
007204073-04	OBS	No	143.476933	237.122220	81.8	4.472	10.4	2.6	0.58	4208	0.64	0.48

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007204073-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007204073-02	OBS	FP	0.00	1	0	0	1	LPP_DV—CENT_FEW_DIFFS—EPHEM_MATCH
007204073-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007204073-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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

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

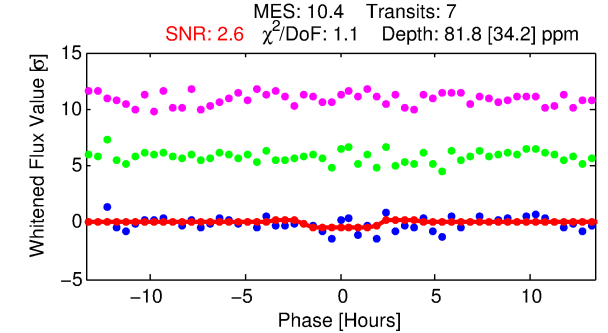
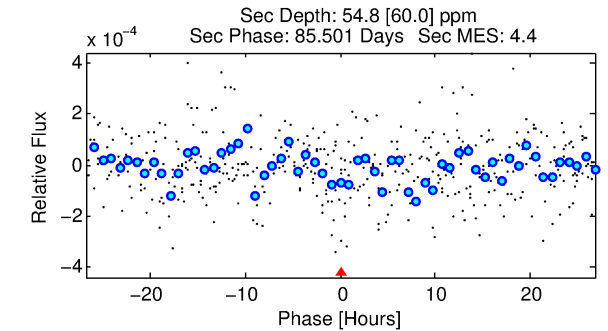
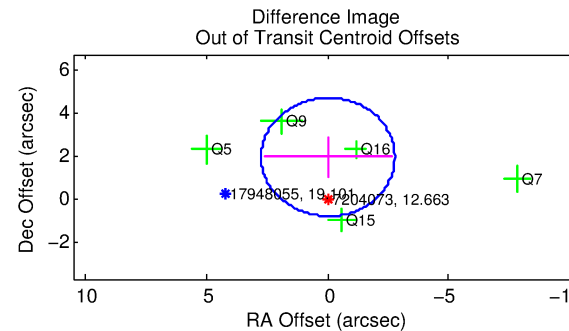
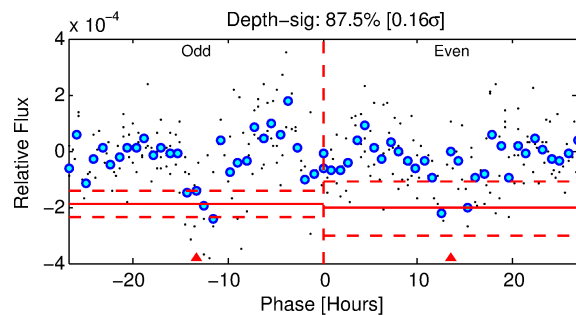
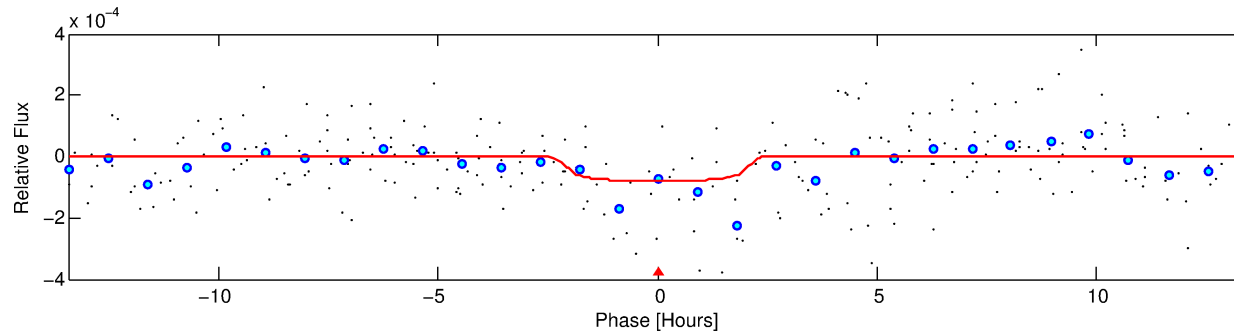
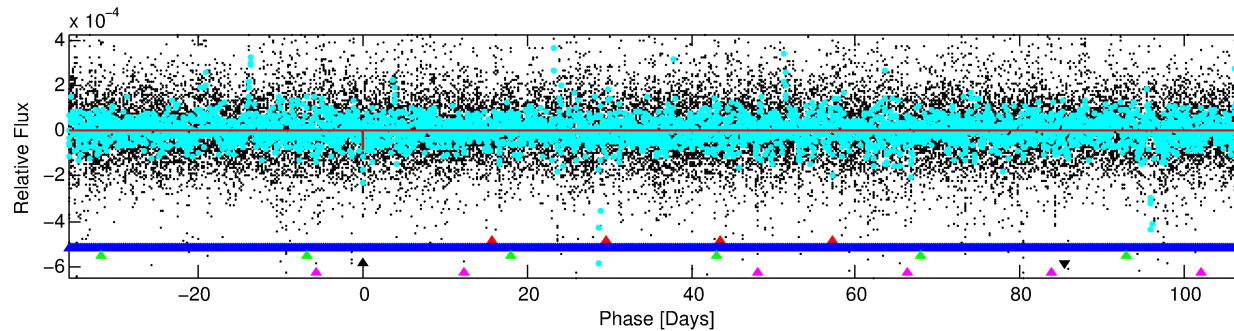
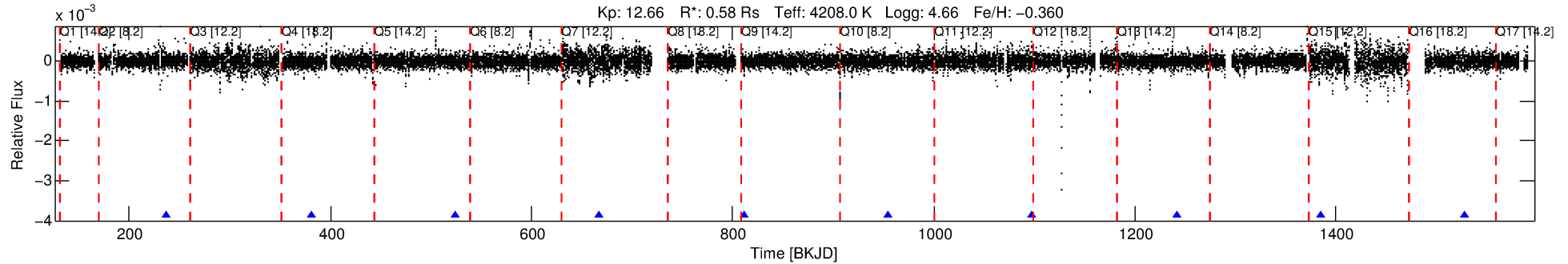
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007204073-04

No Significant Match Found

DV One-Page Summary

KIC: 7204073 Candidate: 4 of 5 Period: 143.477 d
KOI: K06847 Corr: No Ephemeris Match



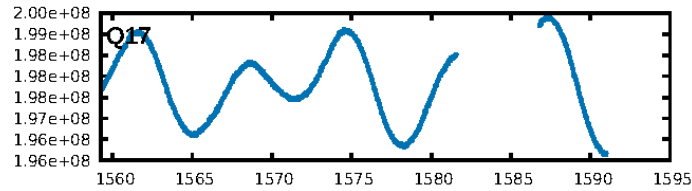
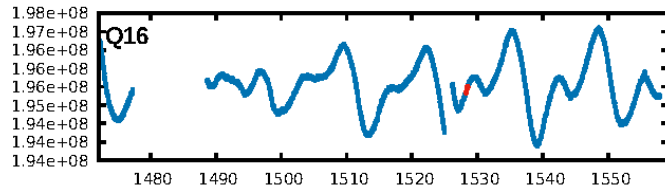
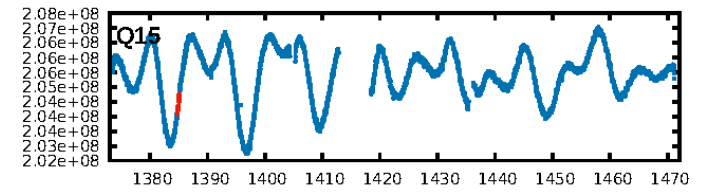
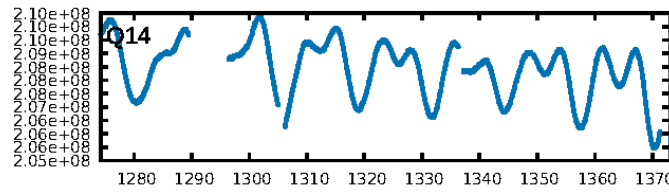
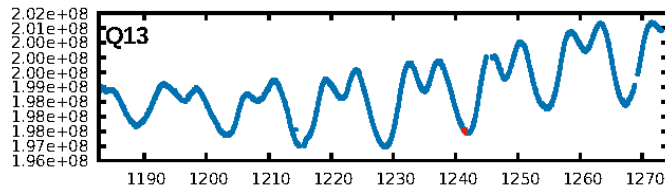
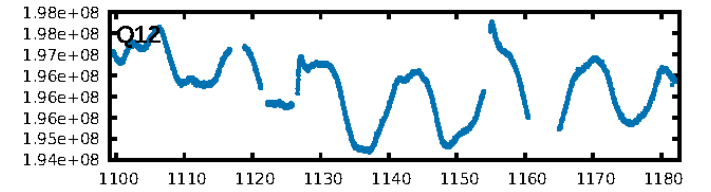
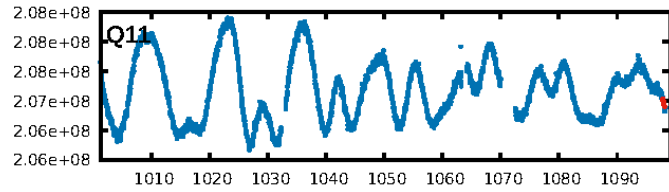
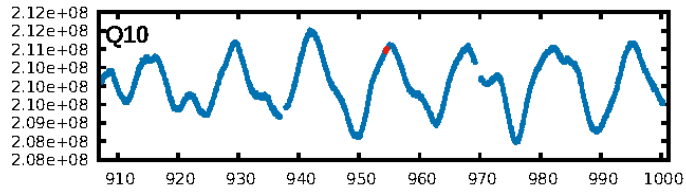
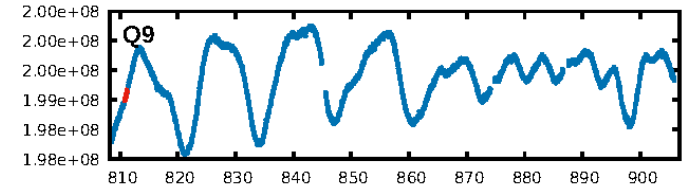
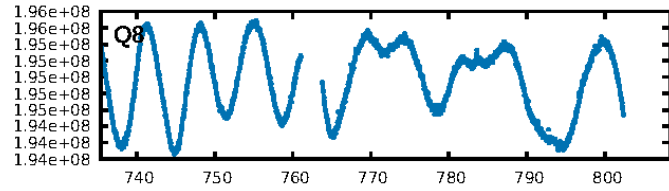
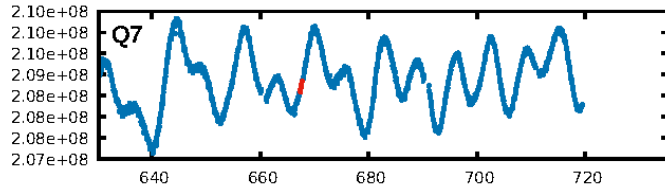
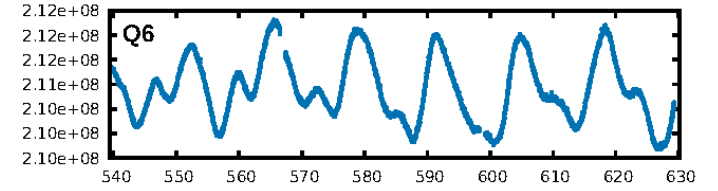
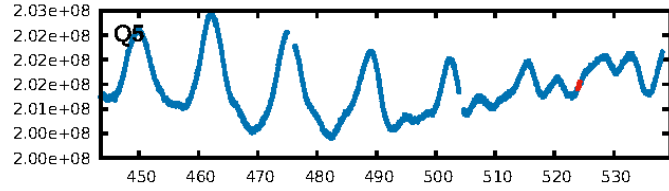
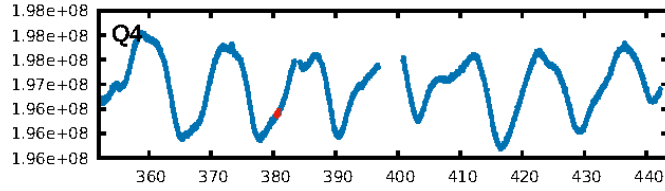
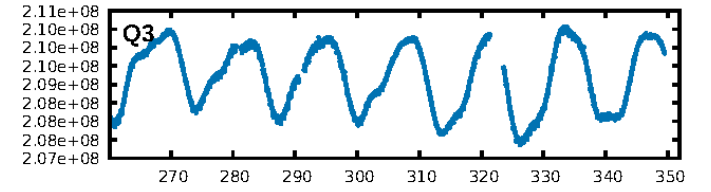
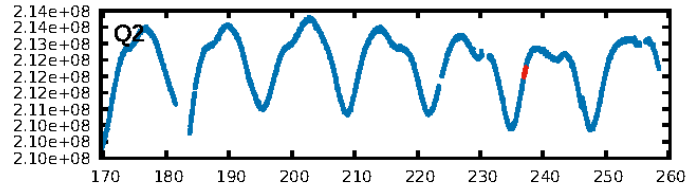
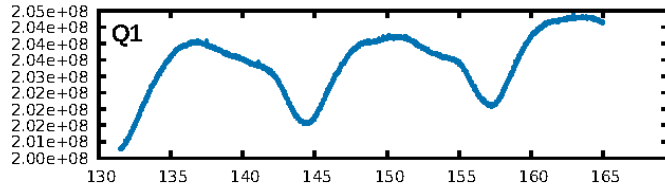
DV Fit Results:

Period = 143.47693 [0.00625] d
Epoch = 237.1222 [0.0319] BKJD
Rp/R* = 0.0100 [0.0175]
a/R* = 112.68 [853.07]
b = 0.90 [1.63]
Seff = 0.48 [0.08]
Teq = 213 [9] K
Rp = 0.64 [1.11] Re
a = 0.4446 [0.0370] AU
Ag = 14704.22 [53852.62] [0.27 σ]
Teffp = 3619 [3314] K [1.03 σ]

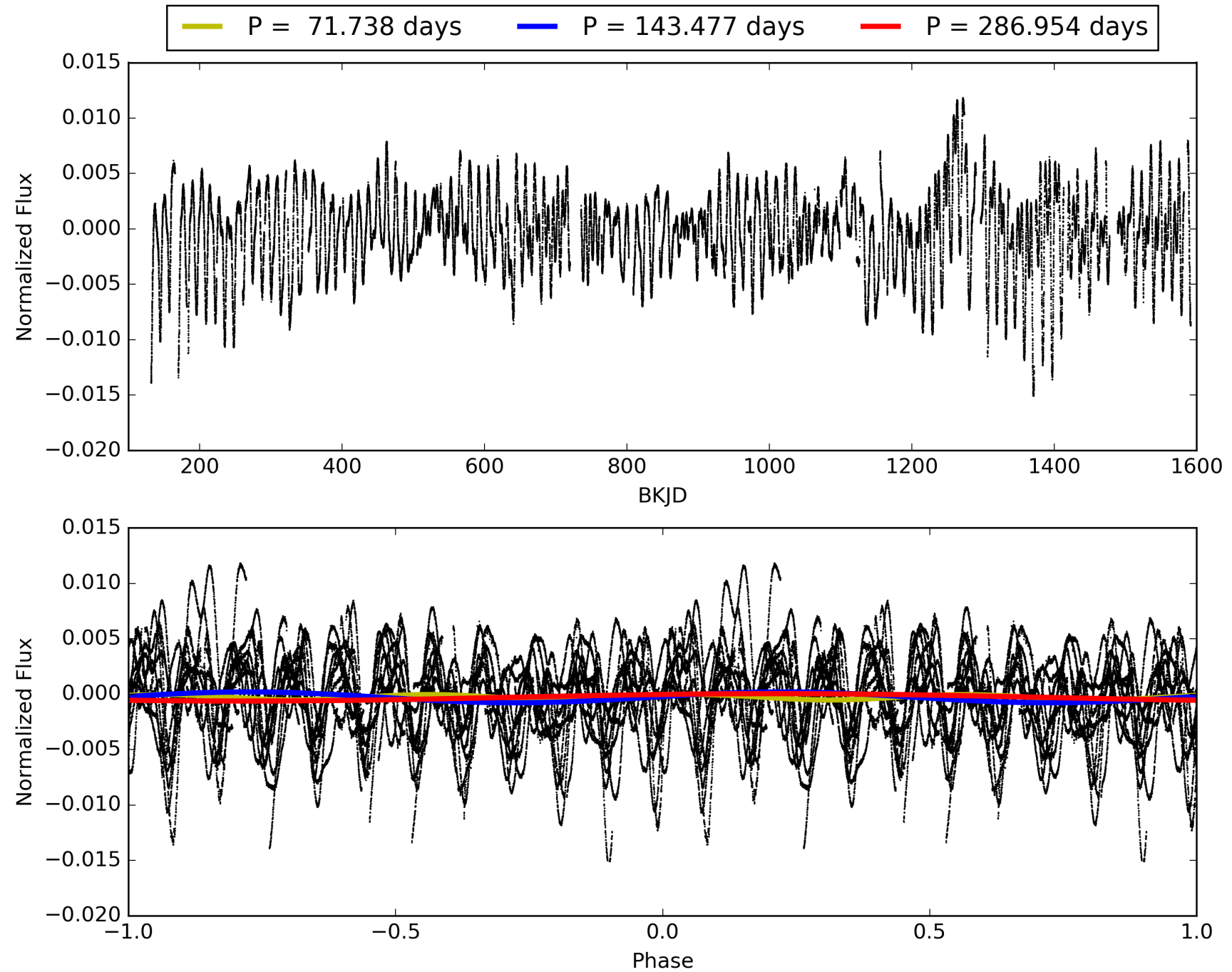
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [696.43 σ]
LongPeriod-sig: 100.0% [335.08 σ]
ModelChiSquare2-sig: 6.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 0.06976
Centroid-sig: 44.1%
Centroid-so: 1.397 arcsec [0.77 σ]
OotOffset-rm: 1.947 arcsec [2.11 σ]
OotOffset-st: 0/2/1/2 [5]
KicOffset-rm: 2.183 arcsec [2.29 σ]
KicOffset-st: 0/2/1/2 [5]
DiffImageQuality-fgm: 0.20 [1/5]
DiffImageOverlap-fno: 0.00 [0/9]

TCE 007204073-04, PDC Light Curves

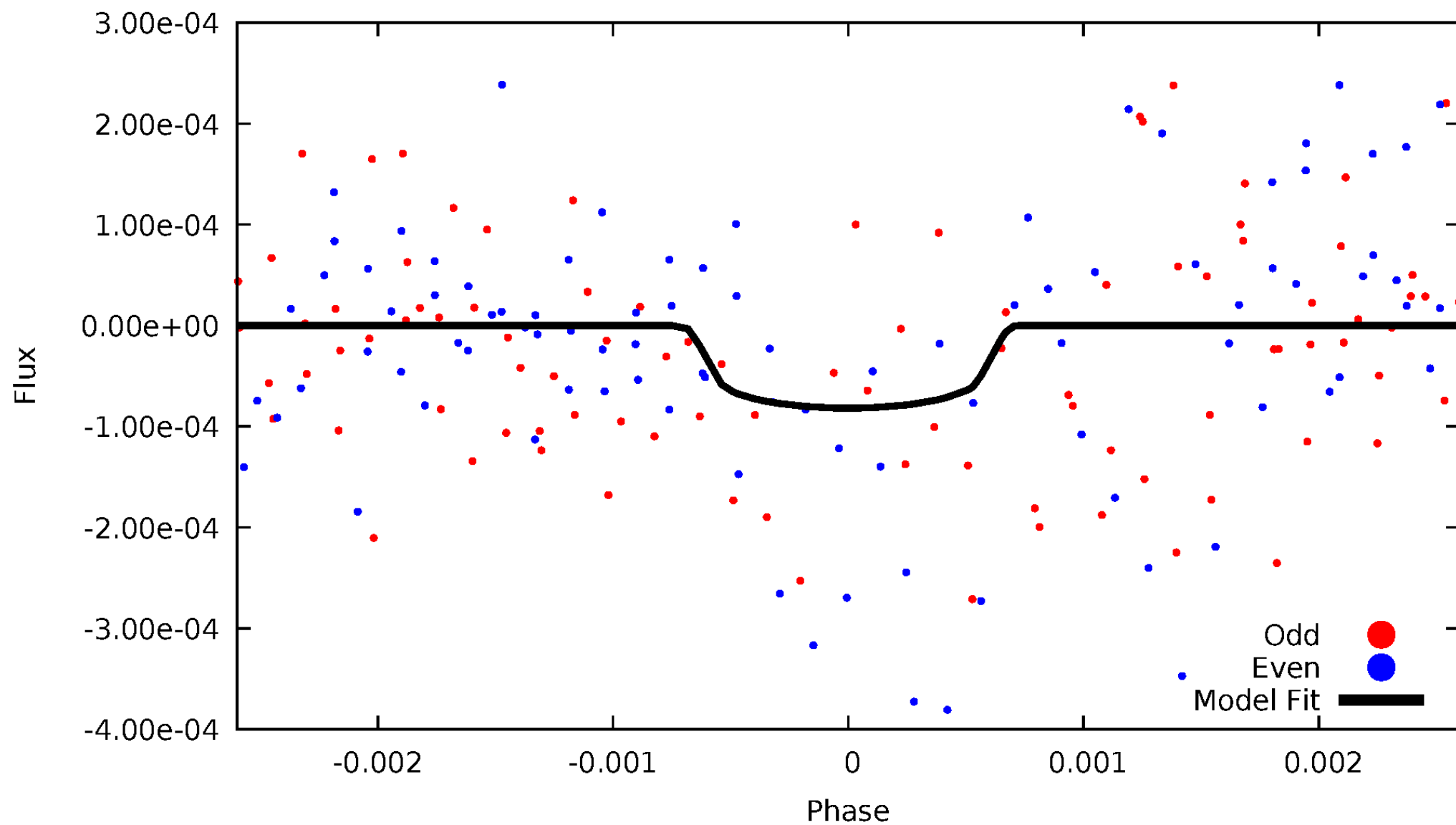


TCE 007204073-04



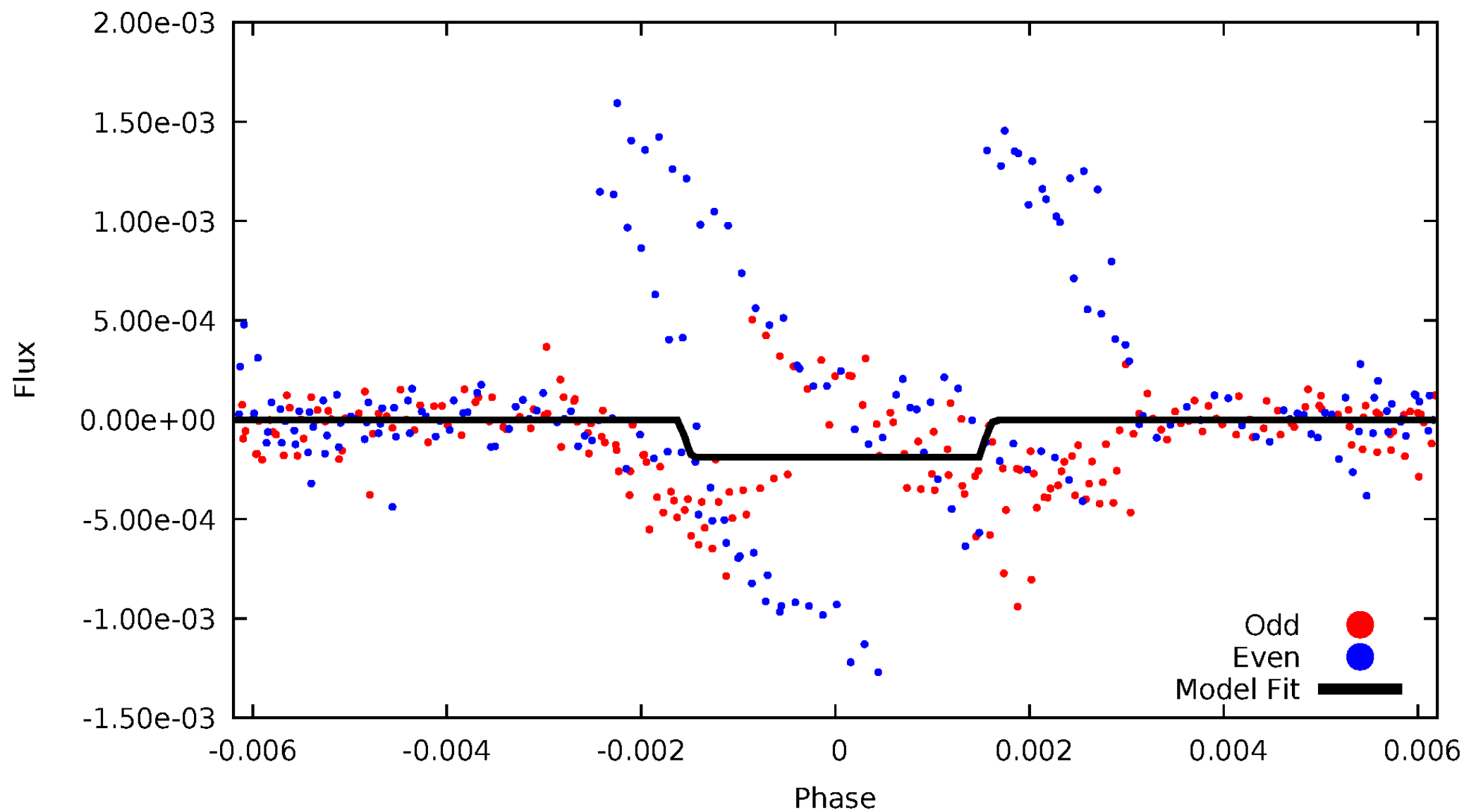
DV Odd/Even

TCE 007204073-04



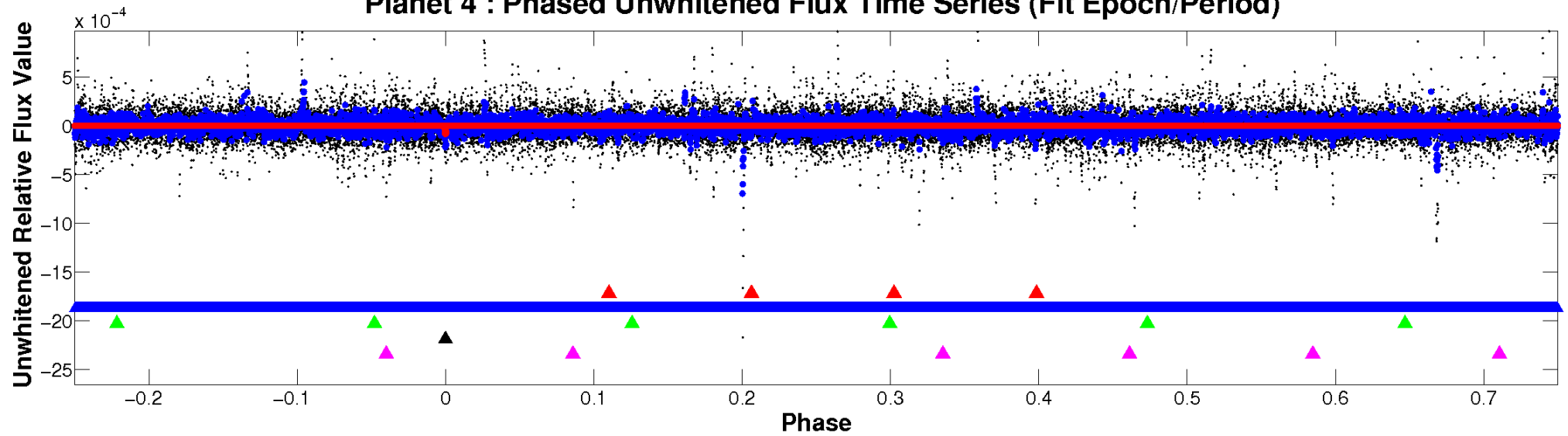
ALT Odd/Even

TCE 007204073-04

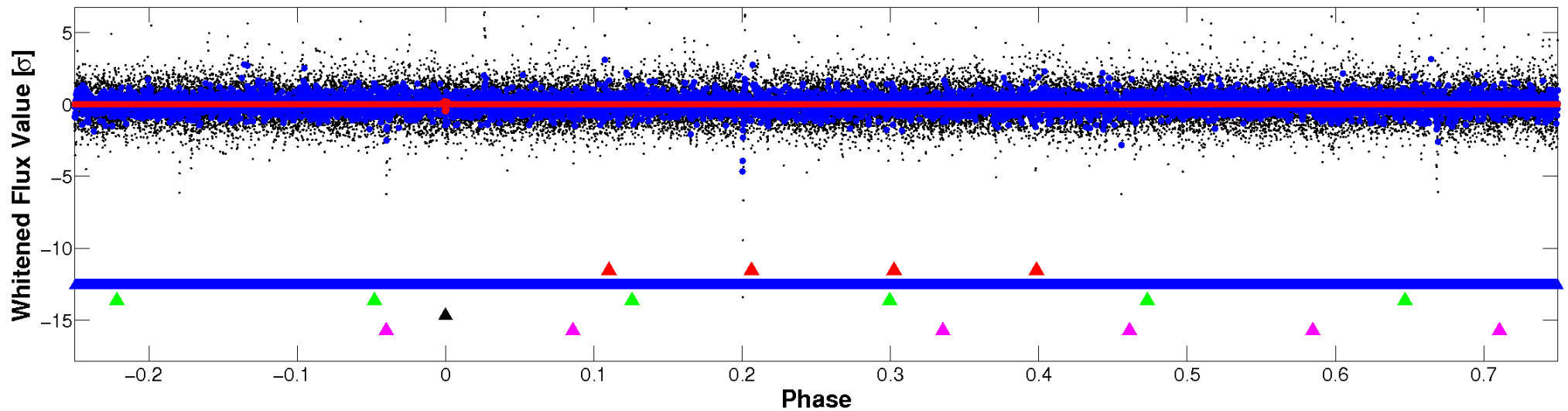


Non-Whitened Vs. Whitened Light Curve

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

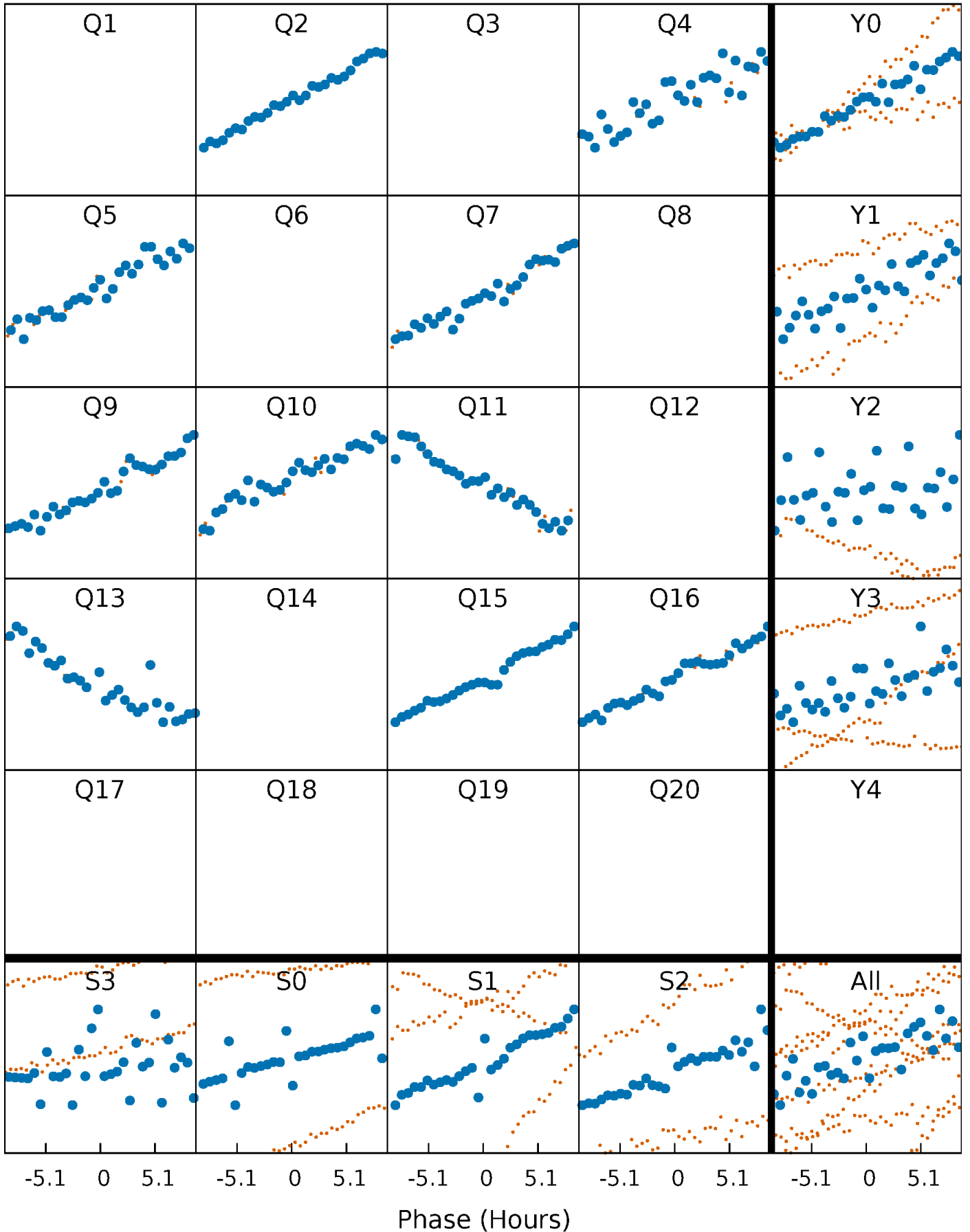


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



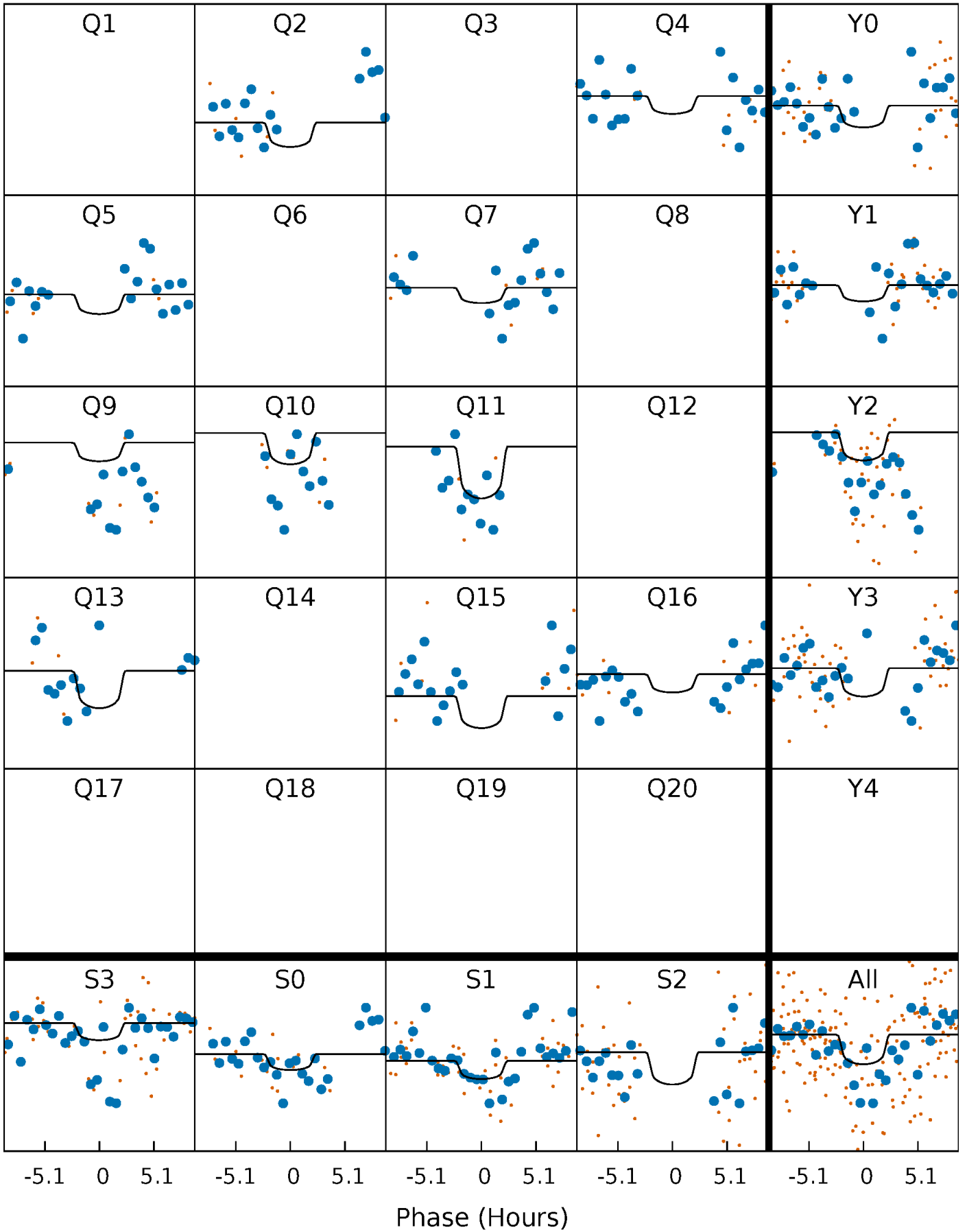
PDC Quarter-Phased Transit Curves

TCE 007204073-04 P=143.476933 Days $T_0=237.122220$ (BKJD)



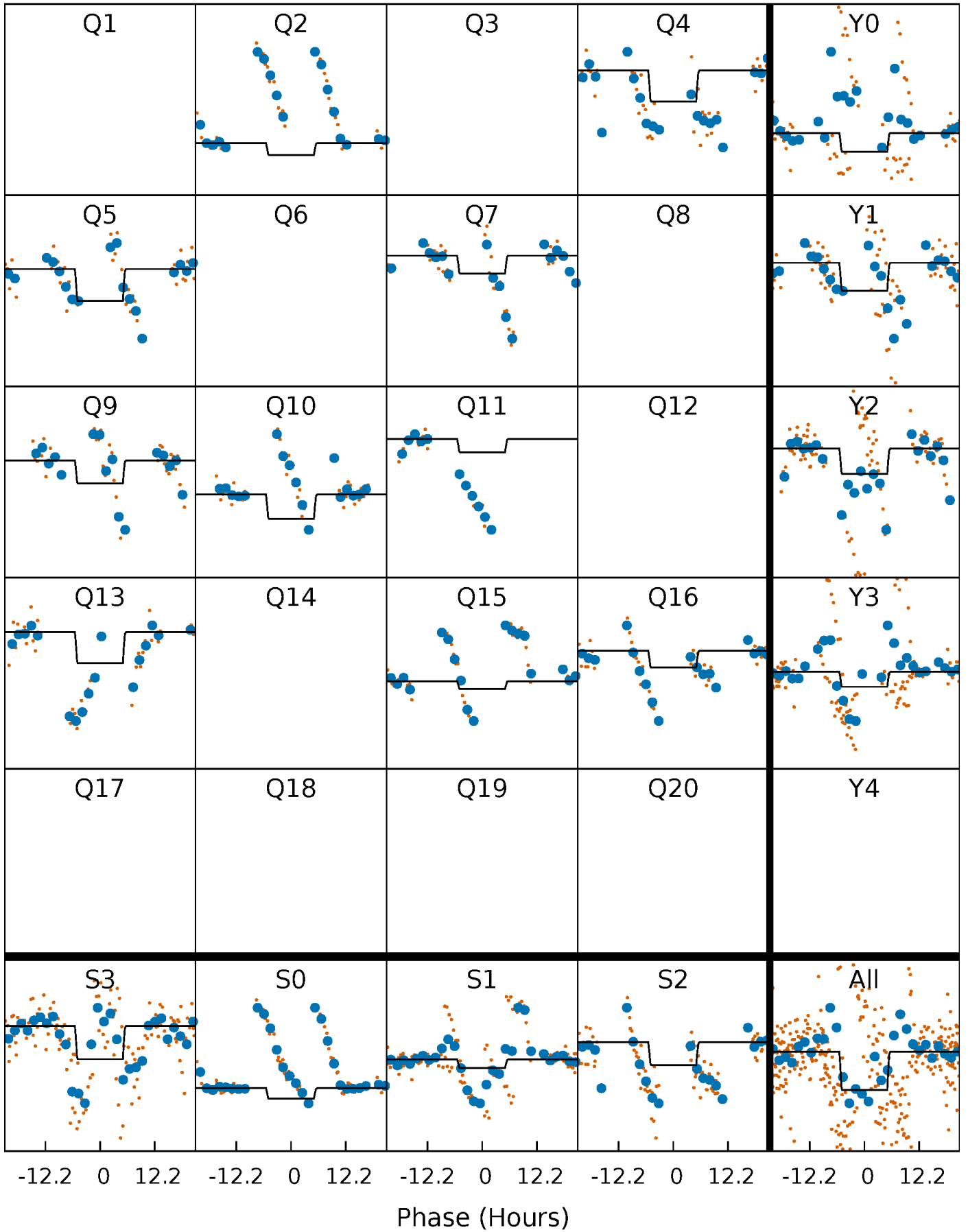
DV Quarter-Phased Transit Curves

TCE 007204073-04 P=143.476933 Days $T_0=237.122220$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

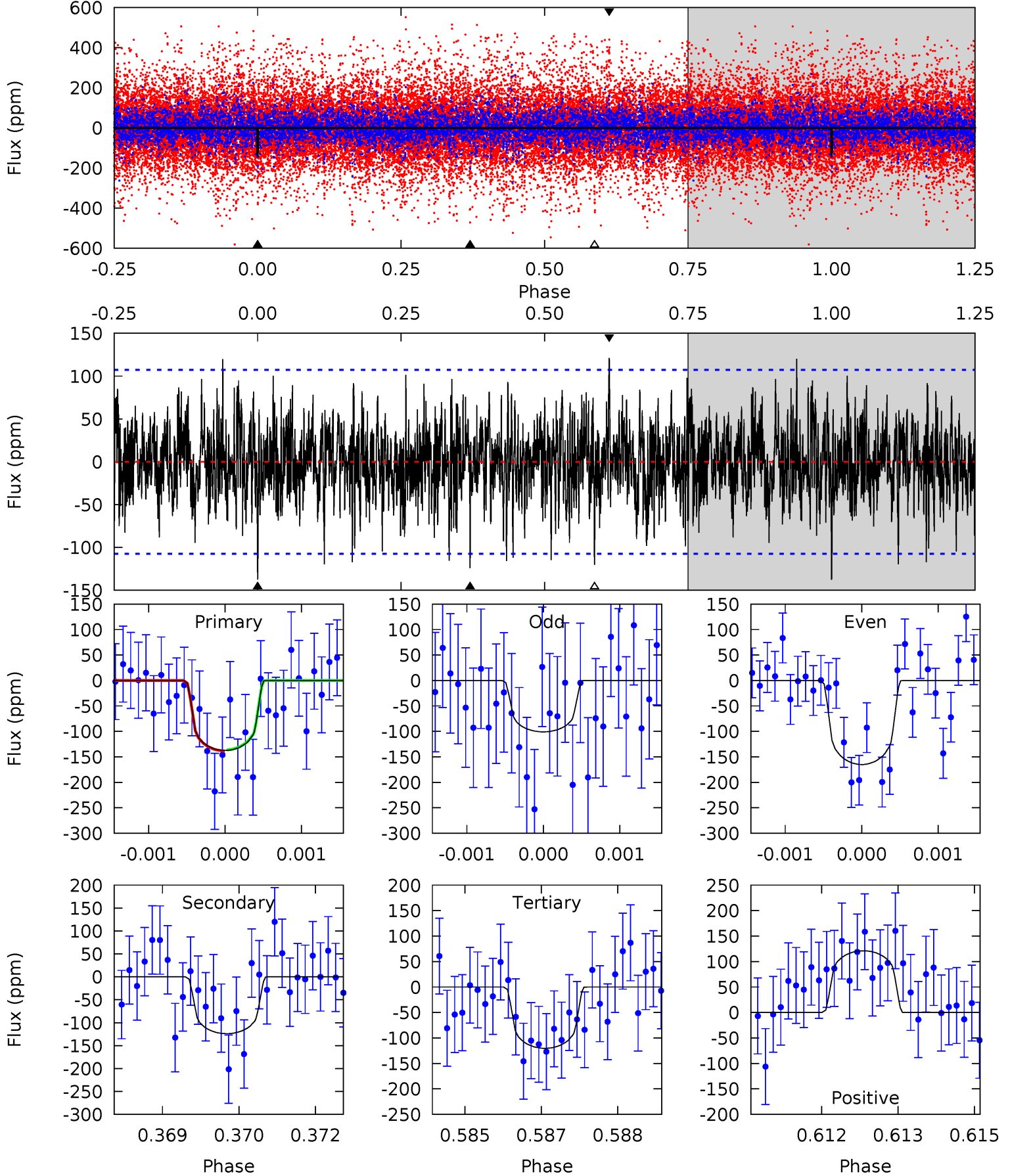
TCE 007204073-04 P=143.477647 Days $T_0=237.130638$ (BKJD)



DV Model-Shift Uniqueness Test

007204073-04, P = 143.476933 Days, E = 93.645287 Days

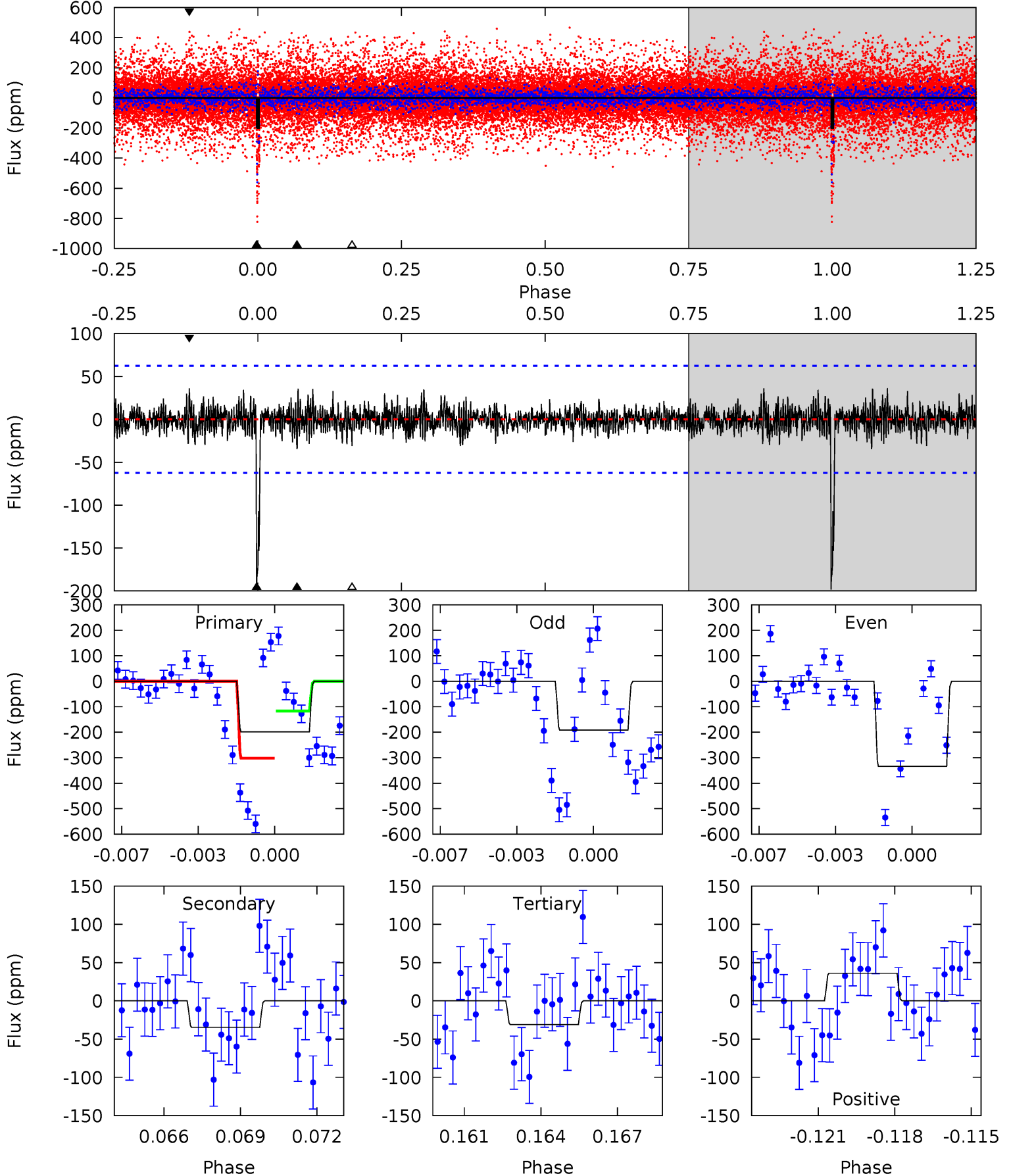
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.90	6.23	6.04	6.09	5.39	3.20	1.76	0.86	0.82	0.19	0.14	1.56	0.76	0.47	0.05



Alt Model-Shift Uniqueness Test

007204073-04, P = 143.477647 Days, E = 93.652991 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	2.90	2.59	3.02	5.24	2.94	0.93	14.0	13.6	0.31	-0.12	6.09	0.72	0.15	7.84



Stellar Parameters For KIC 007204073

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4208^{+113}_{-138}	$4.662^{+0.059}_{-0.023}$	$-0.360^{+0.300}_{-0.300}$	$0.583^{+0.044}_{-0.061}$	$0.570^{+0.063}_{-0.051}$	$4.049^{+1.163}_{-0.445}$
	+3%/-3%	+1%/-0%	+83%/-83%	+8%/-10%	+11%/-9%	+29%/-11%
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 007204073-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-124 ± 20	$0.99^{+0.99}_{-0.65}$	294^{+10}_{-11}	3705^{+2027}_{-725}	$13503^{+107071}_{-10147}$
Alt.	-35 ± 12	$1.18^{+0.99}_{-0.76}$	294^{+9}_{-12}	2884^{+1199}_{-448}	2548^{+21597}_{-1822}

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

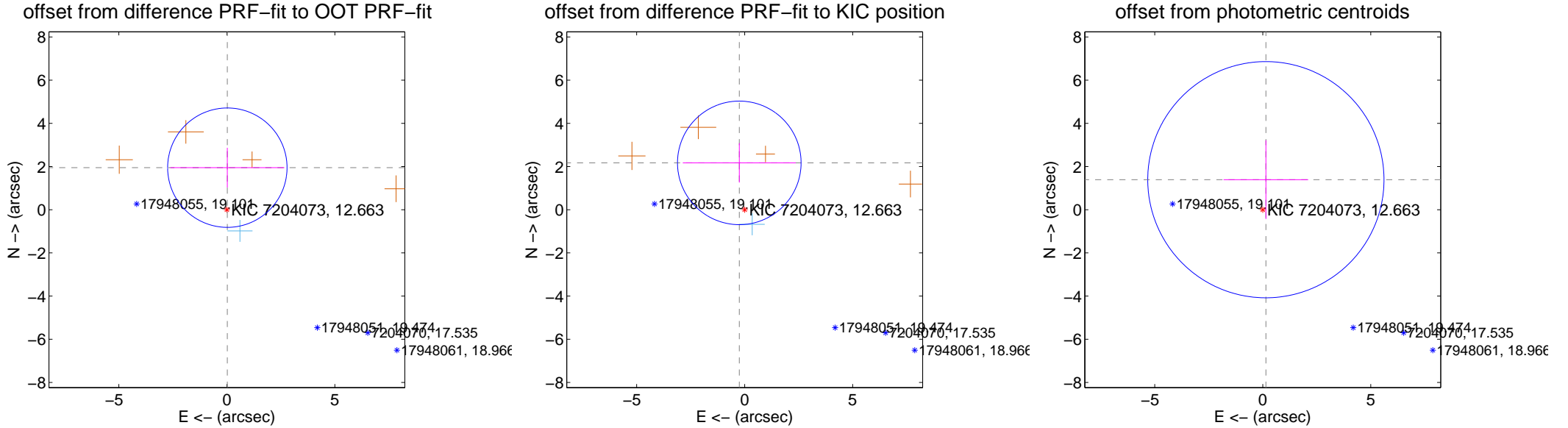
DV Centroid Data

Supplemental centroid analysis for 007204073-04. Kepler magnitude: 12.66. Transit SNR 2.65

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.947 ± 0.921	2.11	-0.023 ± 2.637	1.946 ± 0.921
PRF-fit source offset from KIC position	2.183 ± 0.954	2.29	0.249 ± 2.614	2.169 ± 0.912
photometric centroid source offset	1.40 ± 1.82	0.77	-0.14 ± 1.96	1.39 ± 1.82



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

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

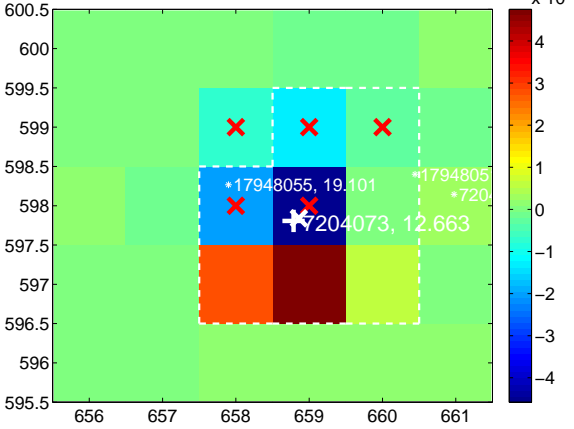
Q1 no difference image



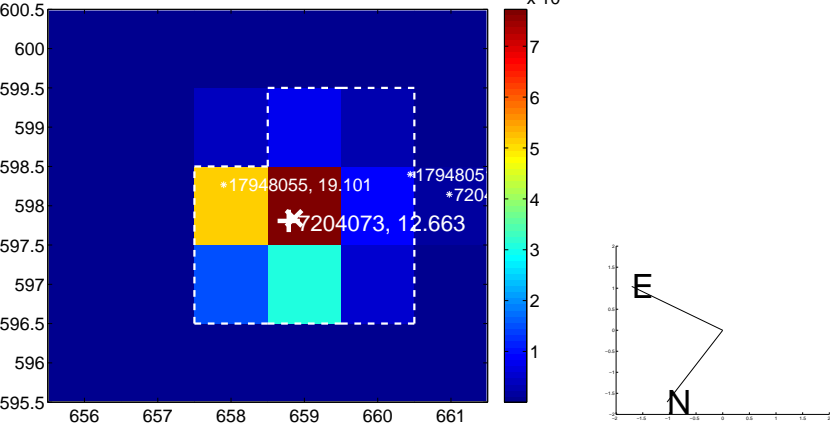
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



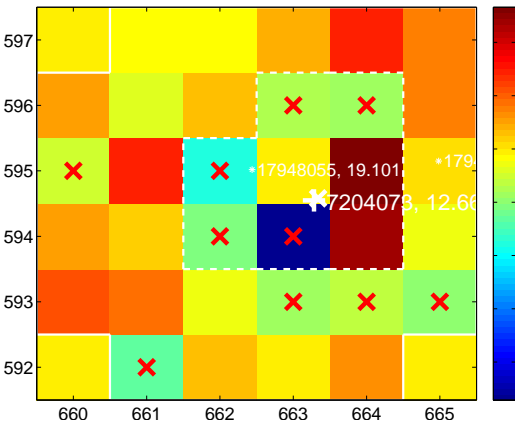
Q3 no difference image



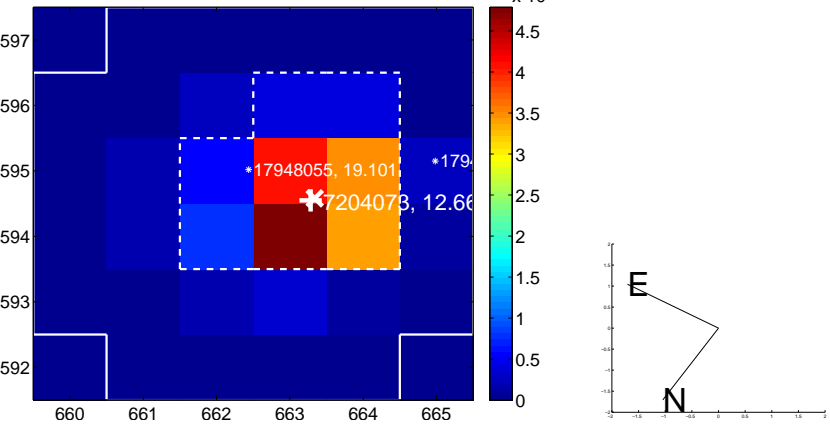
Q3 no OOT image



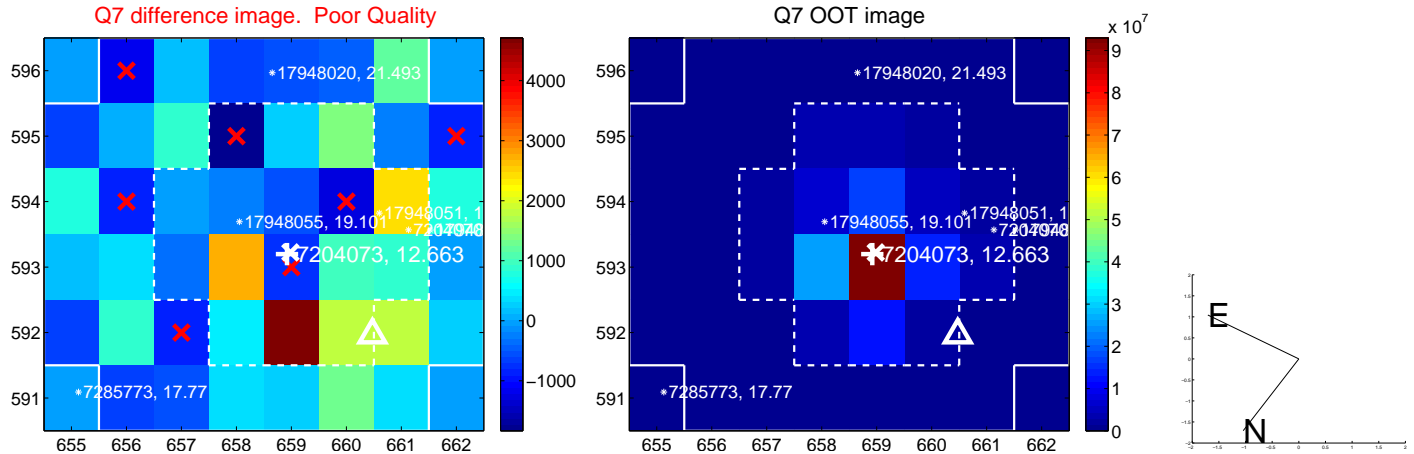
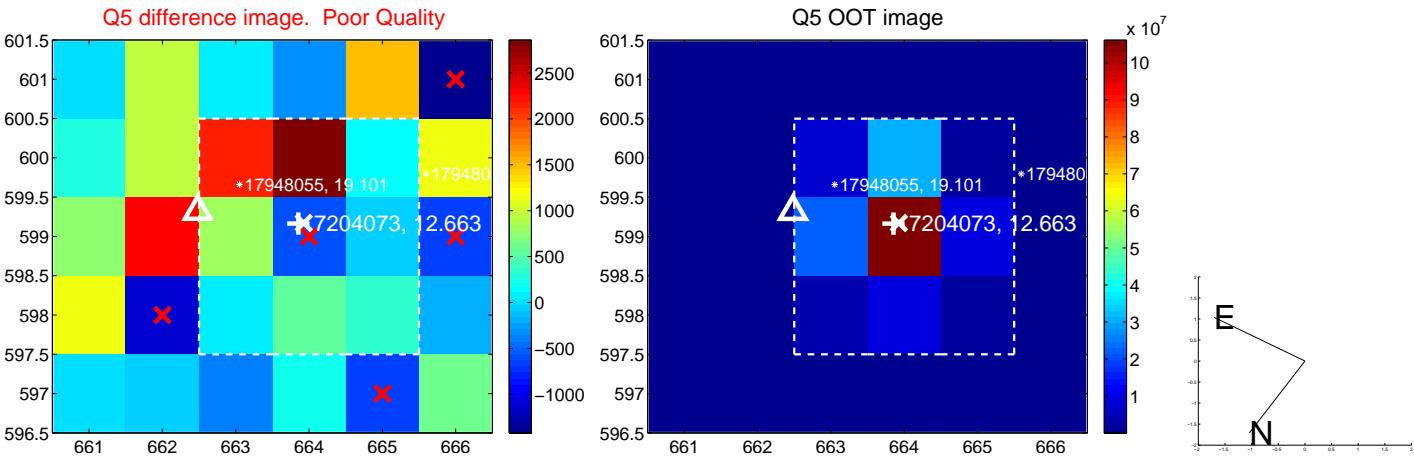
Q4 difference image. Poor Quality



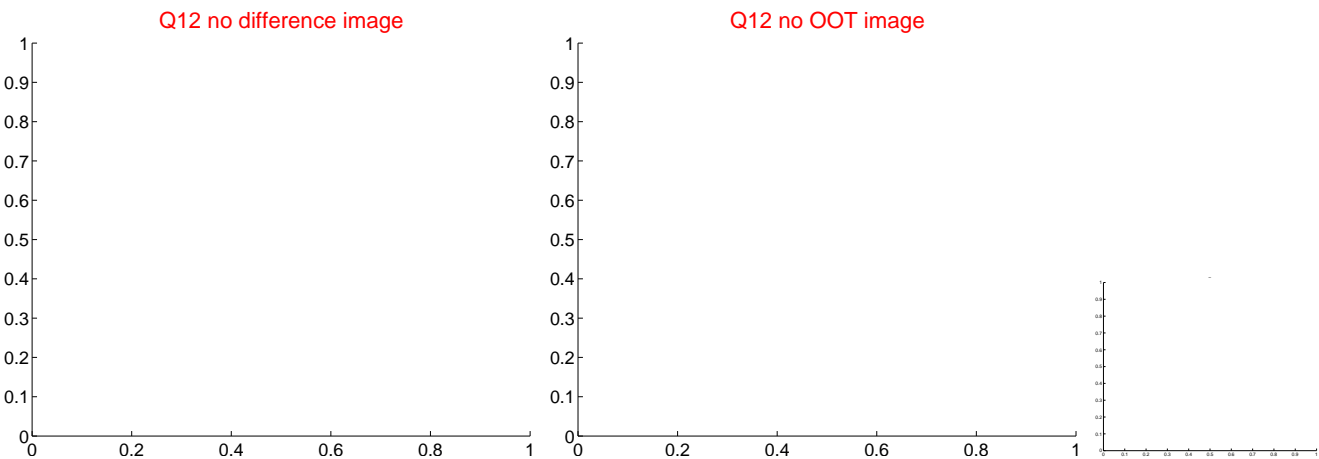
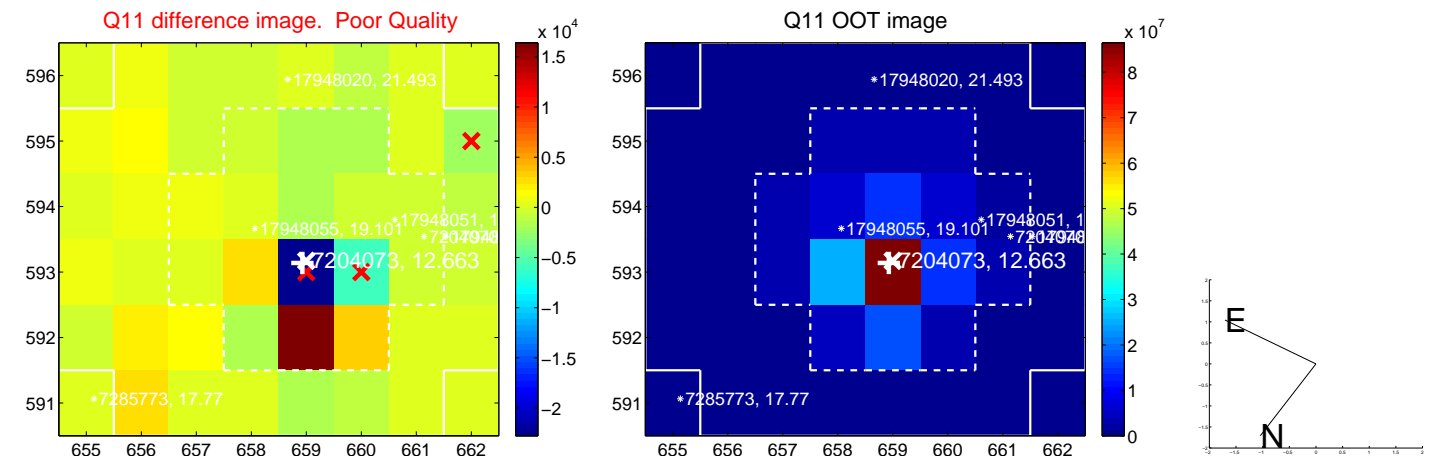
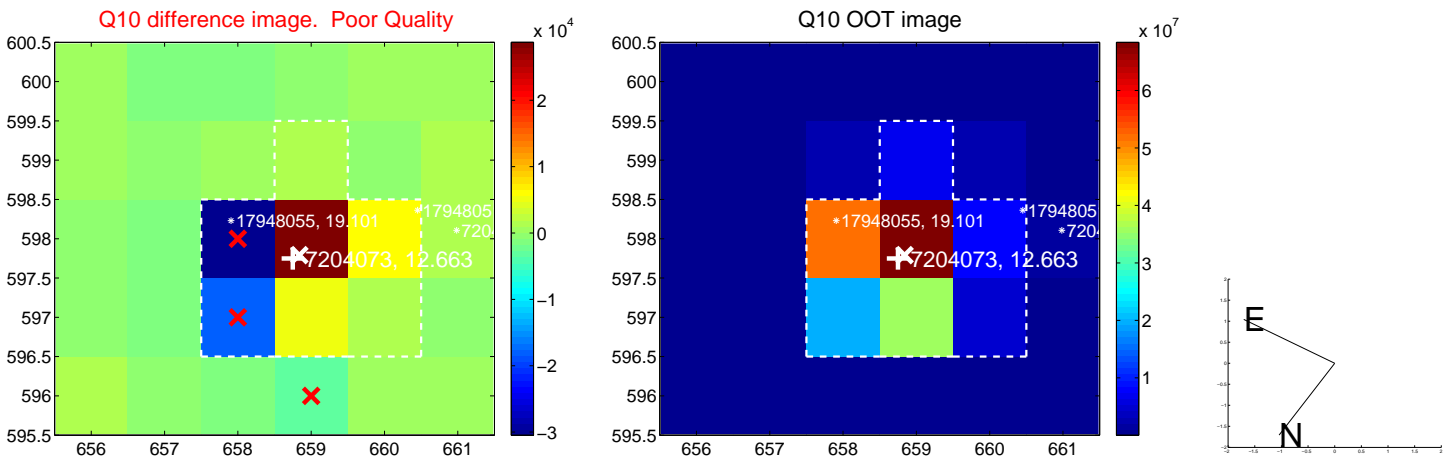
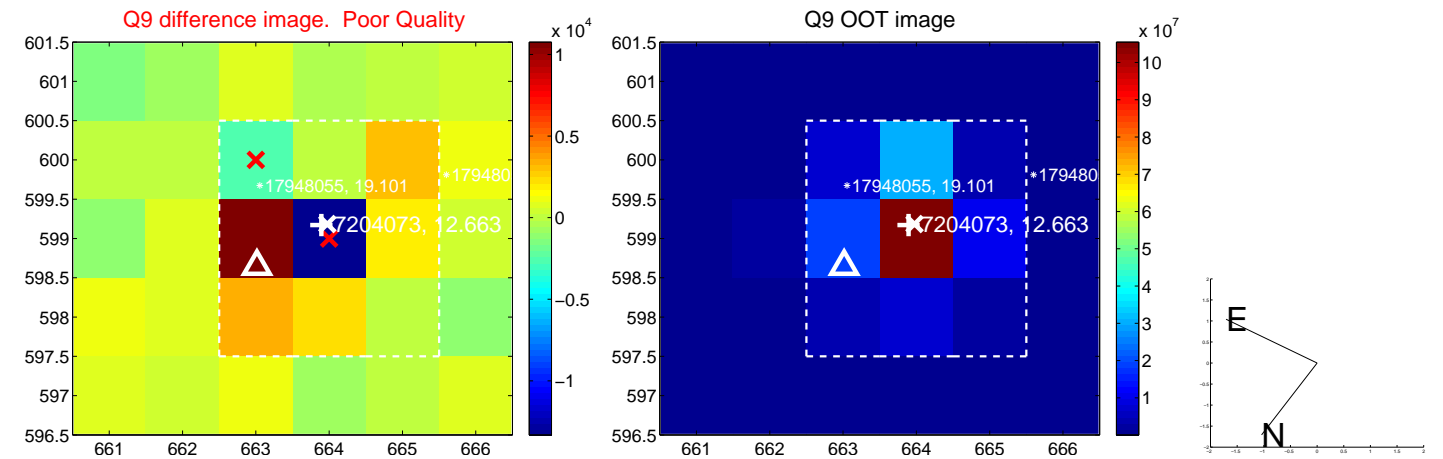
Q4 OOT image



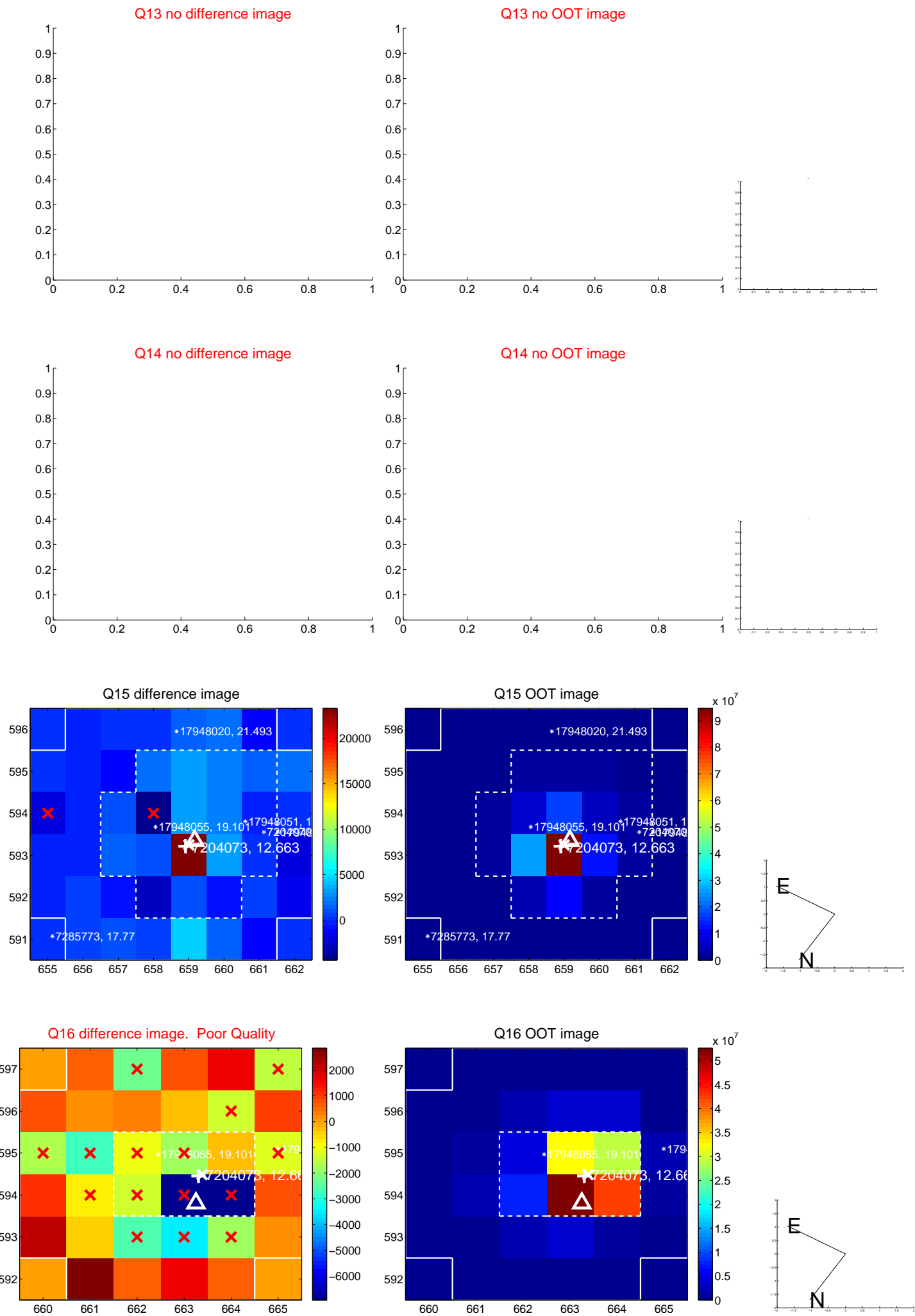
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



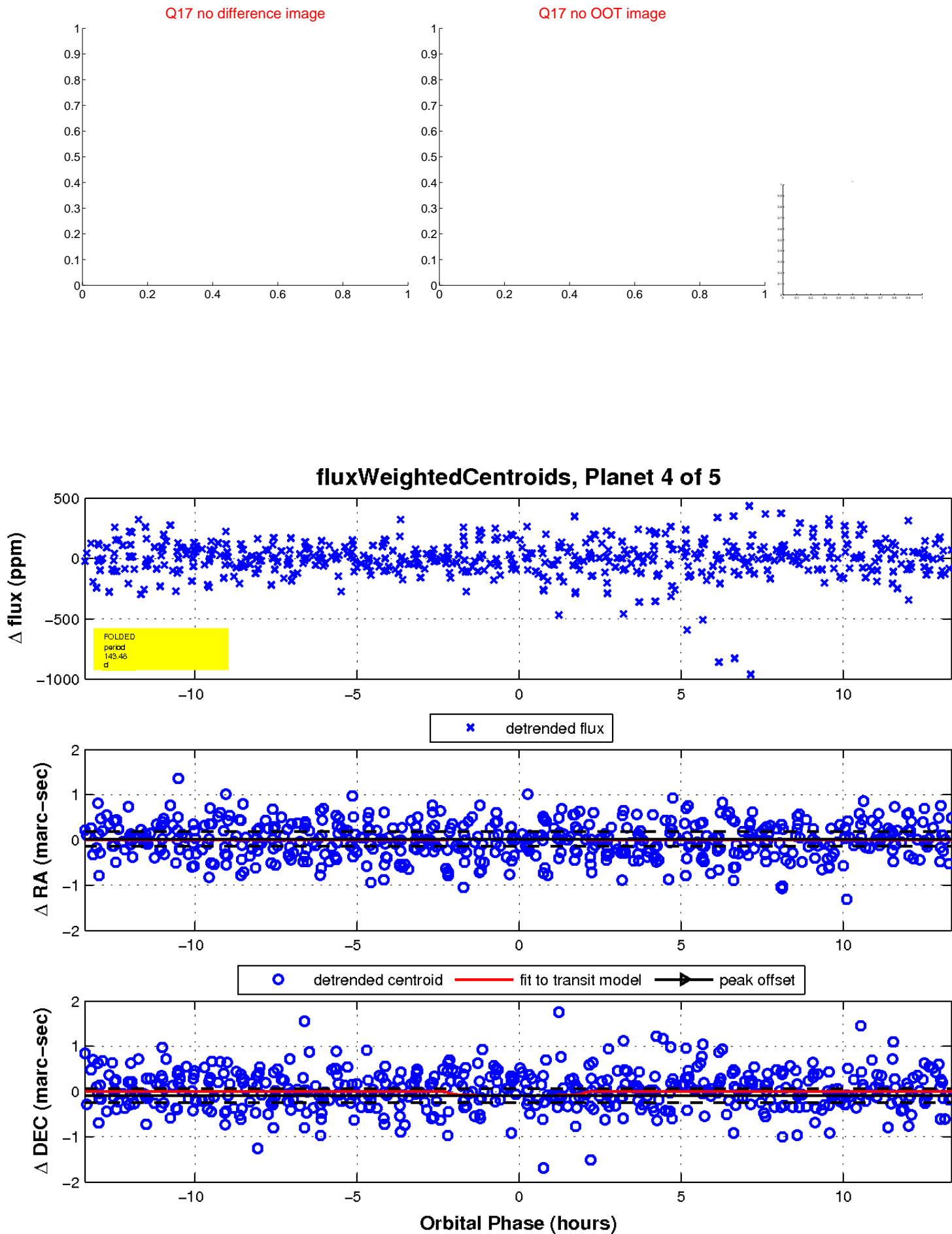
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

