

KIC 005165017

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})
005165017-01	OBS	No	594.017212	194.718806	983.3	12.500	16.1	-1.0	0.65	4247	1.94	0.09
005165017-02	OBS	No	538.818358	414.553060	1787.2	5.627	13.0	8.2	0.65	4247	2.84	0.10
005165017-03	OBS	No	337.319843	315.384455	1745.5	3.985	13.0	9.0	0.65	4247	2.61	0.18
005165017-04	OBS	No	300.031189	178.118403	1175.7	3.303	12.1	6.6	0.65	4247	2.41	0.21
005165017-05	OBS	No	319.280803	305.910375	1367.9	4.414	10.4	7.1	0.65	4247	2.33	0.20
005165017-06	OBS	No	475.437567	139.941514	1288.4	5.024	11.2	6.3	0.65	4247	2.31	0.12
005165017-07	OBS	No	197.940016	298.762016	2141.3	5.509	10.1	10.9	0.65	4247	3.12	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005165017-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005165017-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
005165017-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005165017-04	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
005165017-05	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
005165017-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005165017-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

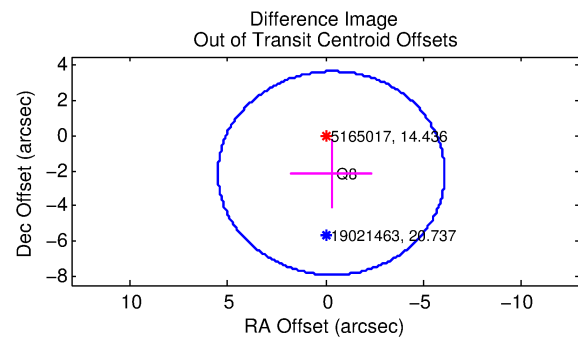
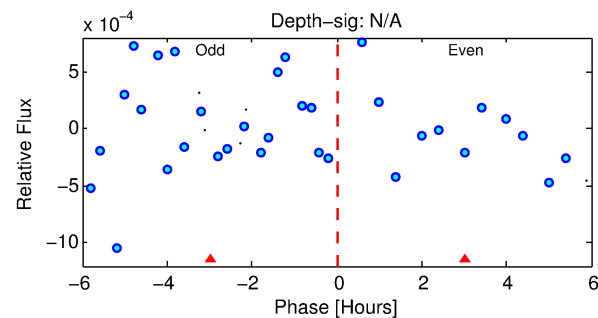
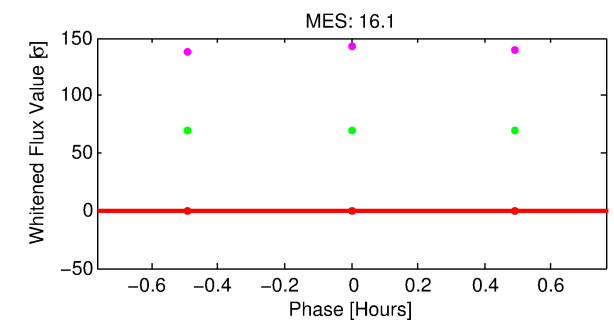
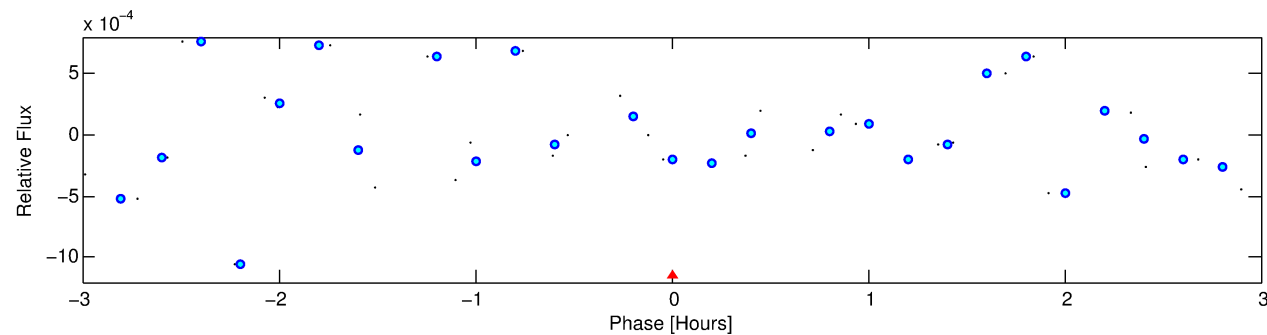
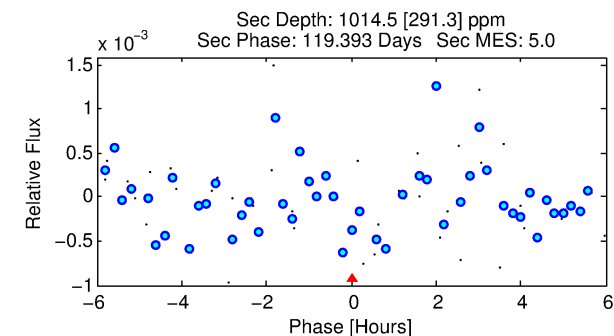
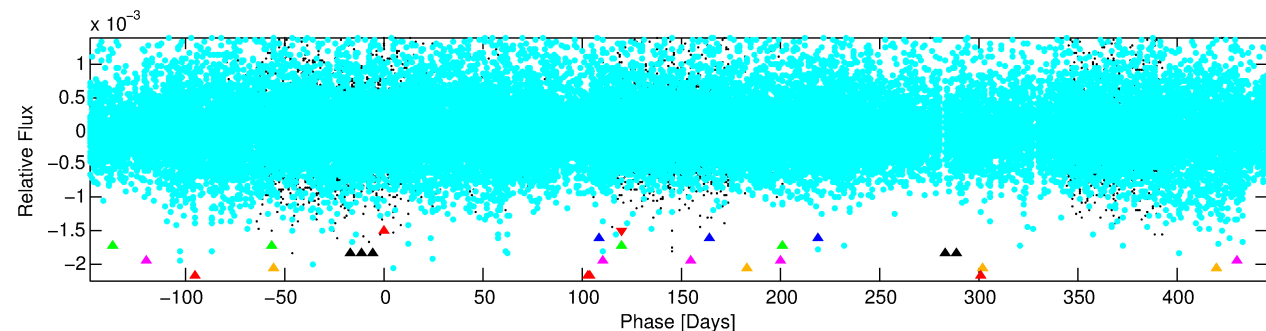
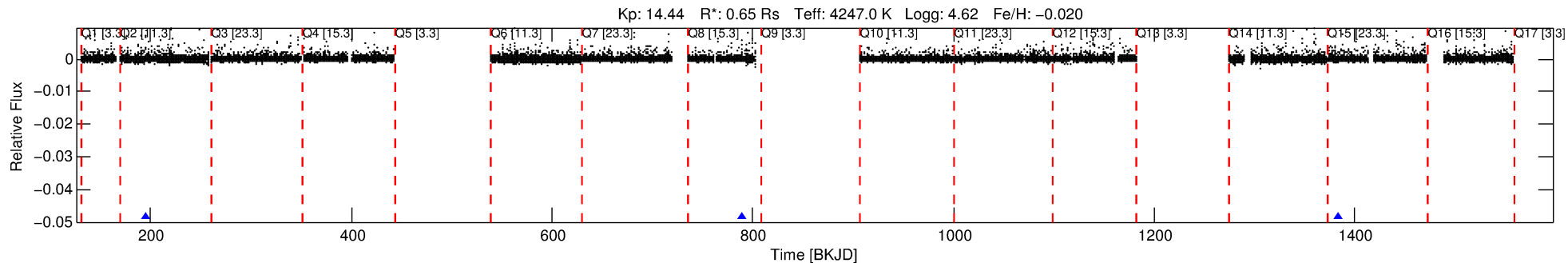
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005165017-01

No Significant Match Found

DV One-Page Summary

KIC: 5165017 Candidate: 1 of 7 Period: 594.017 d



TPS TCE Results:

Period = 594.01721 d
Epoch = 194.7188 BKJD

DV fit results are unavailable

DV Diagnostic Results:

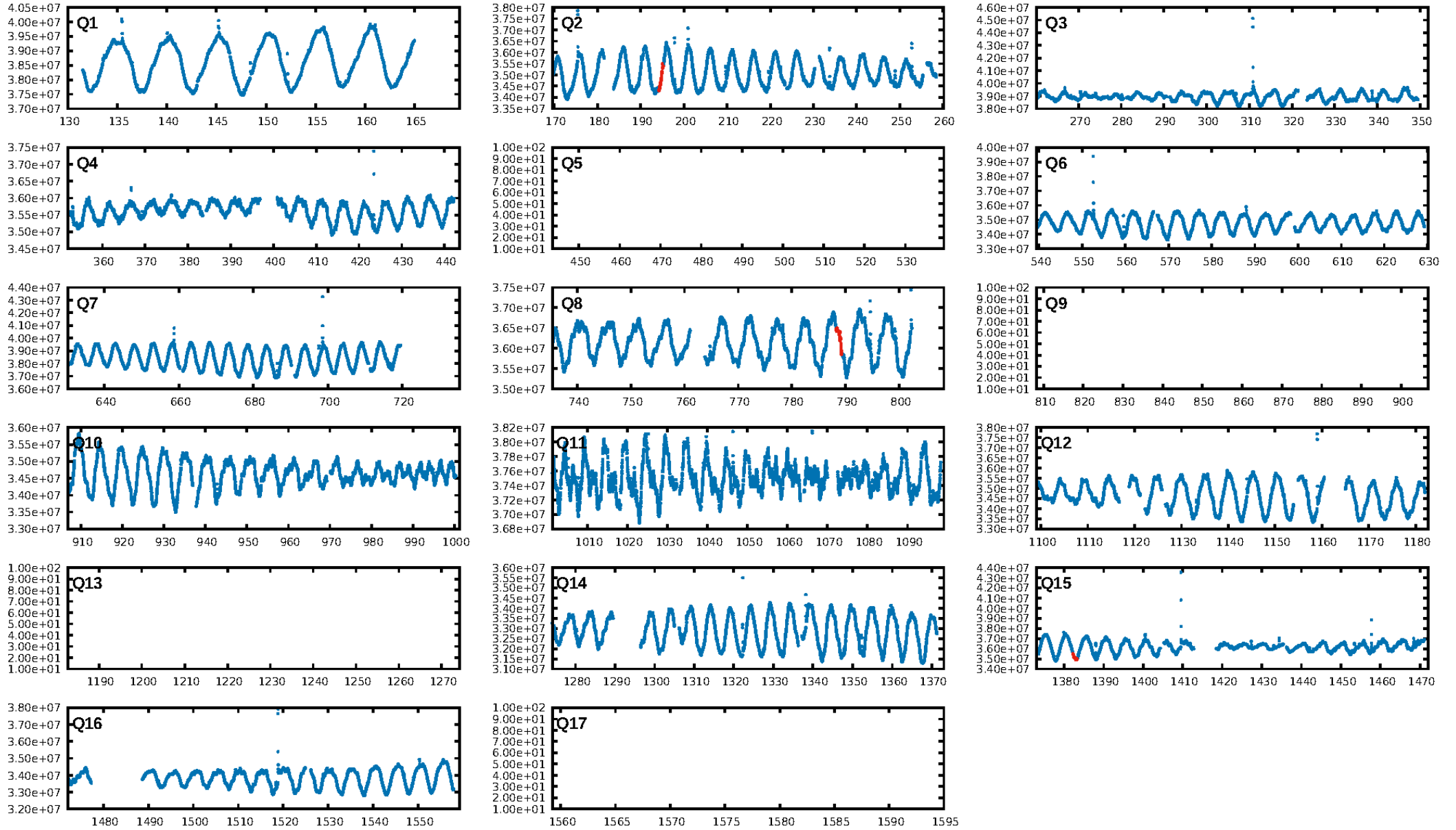
ShortPeriod-sig: 100.0% [96.64σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.3187

Centroid-sig: 33.7%
Centroid-so: 18.137 arcsec [0.96σ]
OotOffset-rm: 2.158 arcsec [1.12σ]
KicOffset-rm: 1.944 arcsec [1.01σ]
OotOffset-st: 0/0/1/0 [1]
KicOffset-st: 0/0/1/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [2/2]

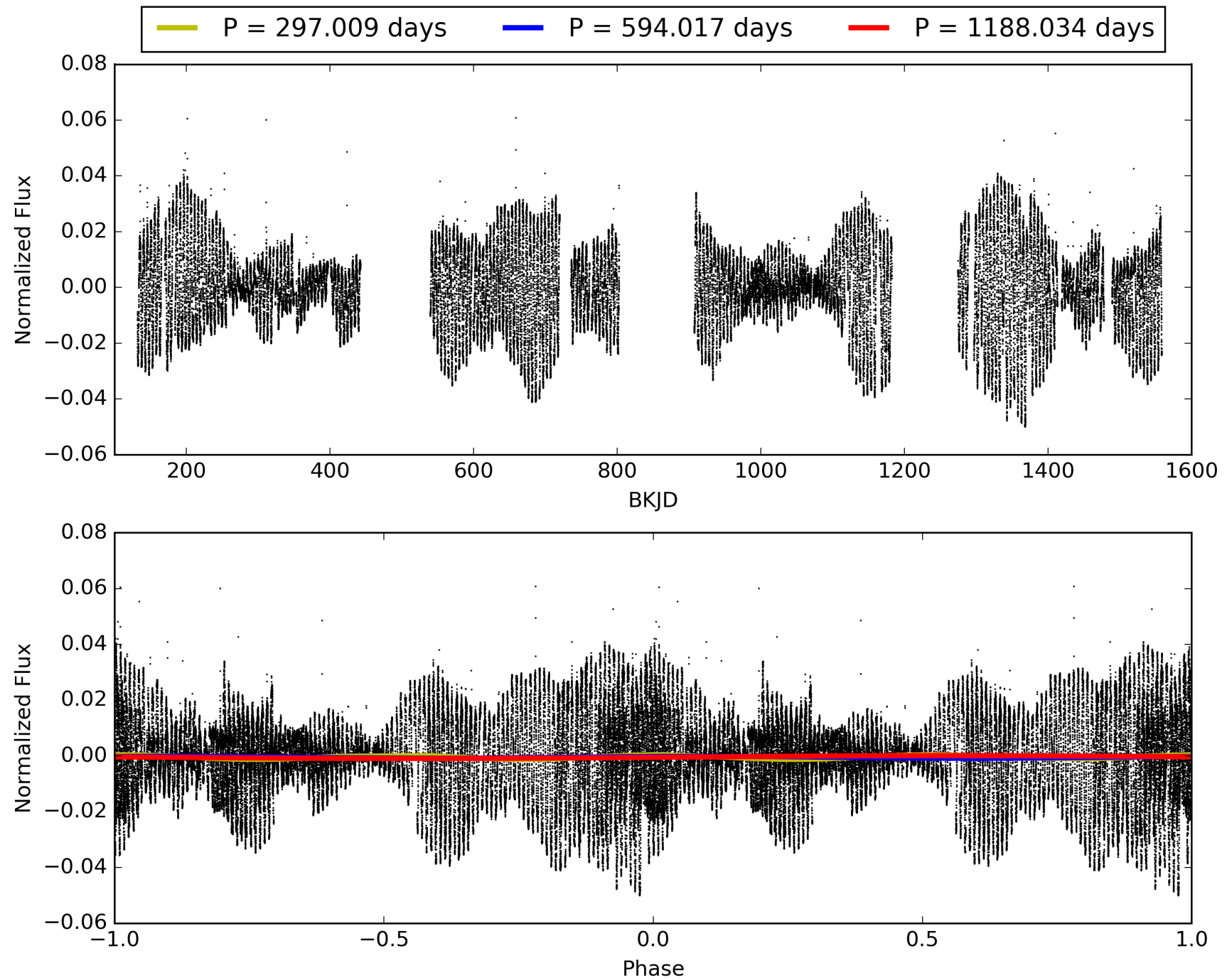
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:20:26 Z

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

TCE 005165017-01, PDC Light Curves

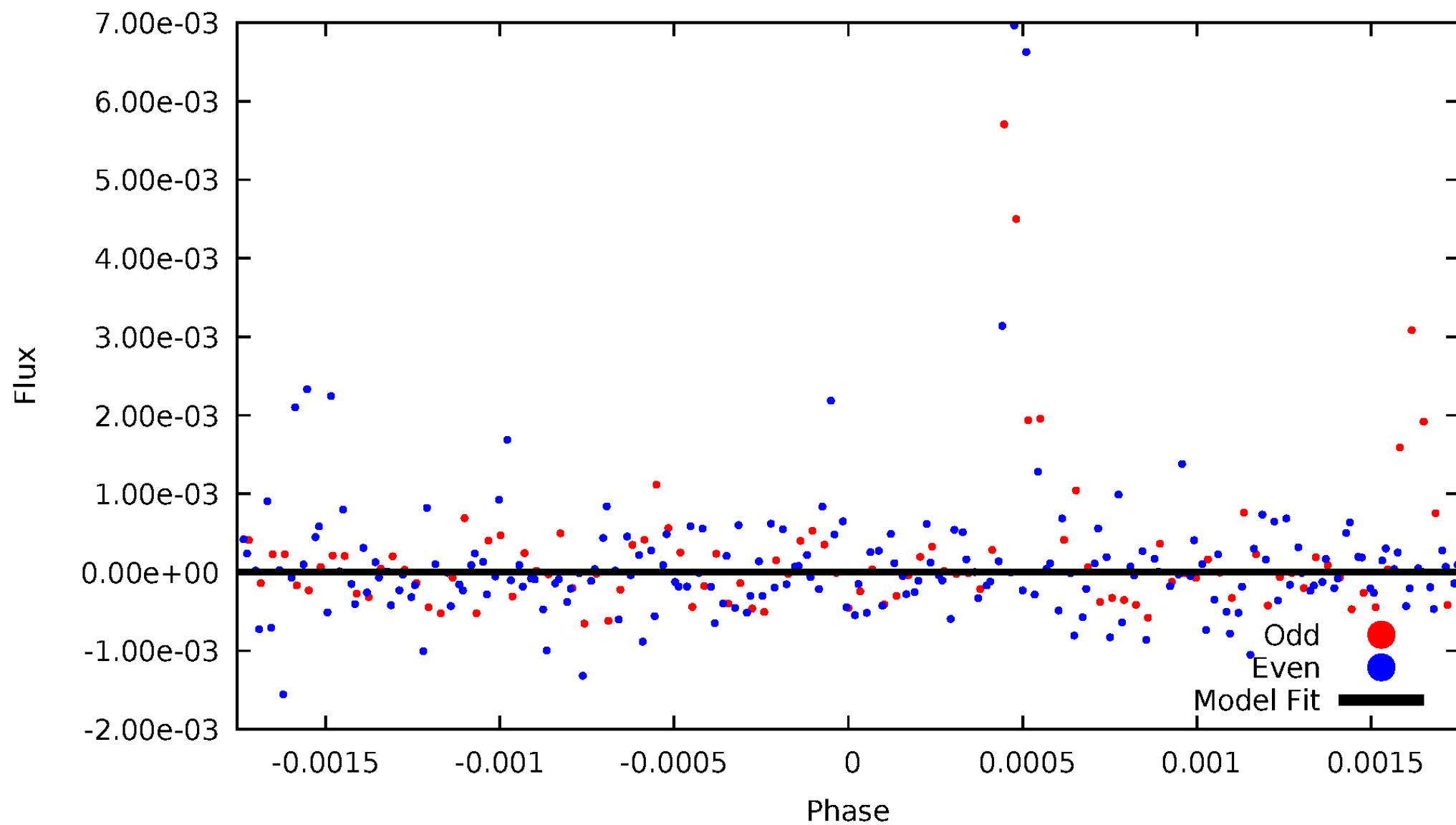


TCE 005165017-01



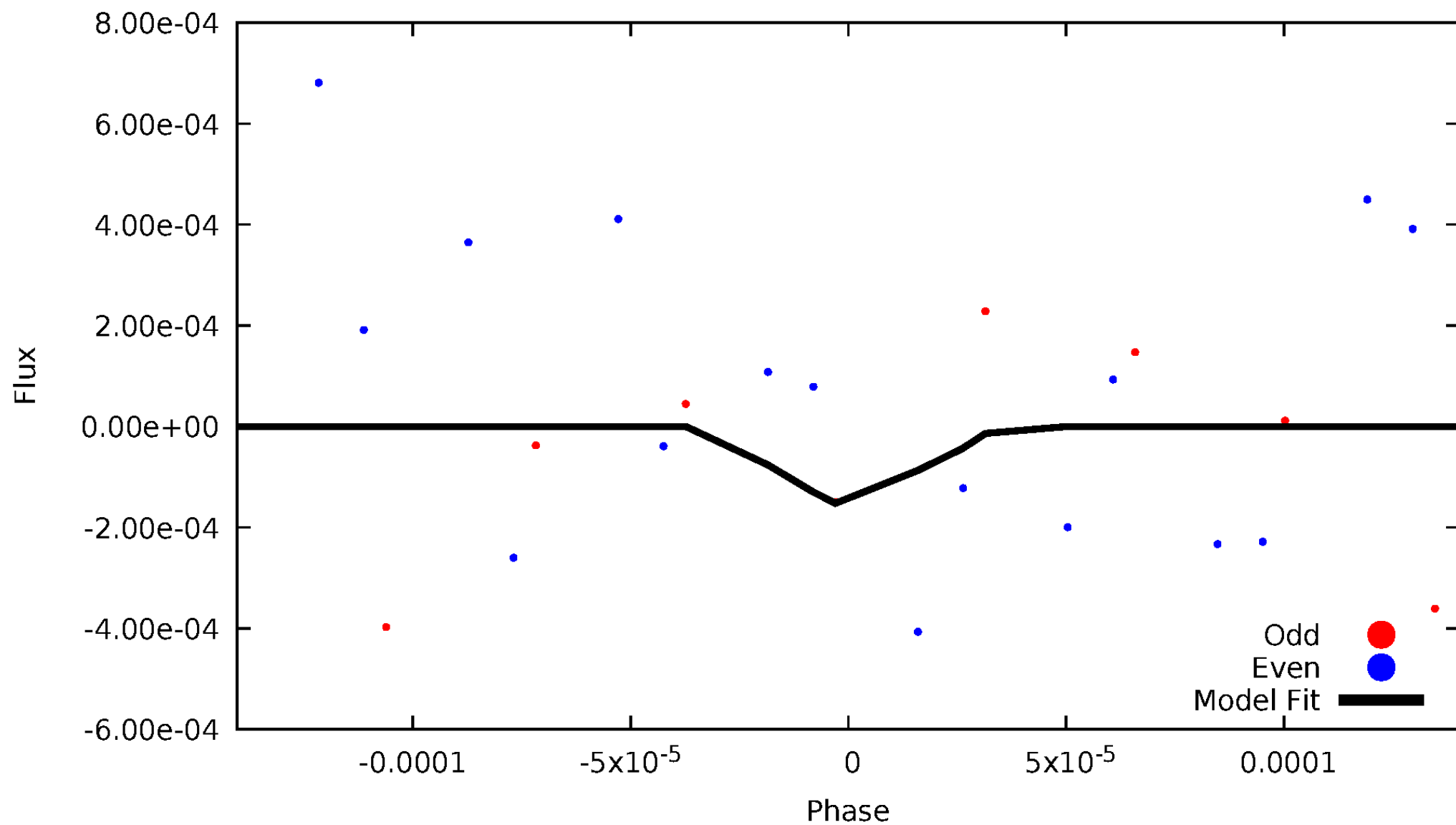
DV Odd/Even

TCE 005165017-01



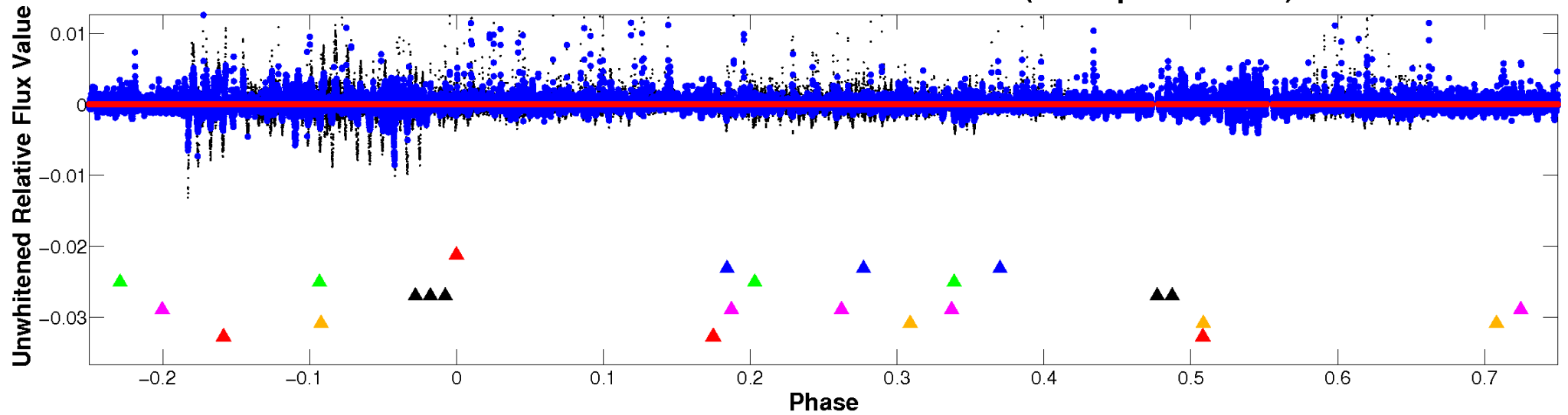
ALT Odd/Even

TCE 005165017-01

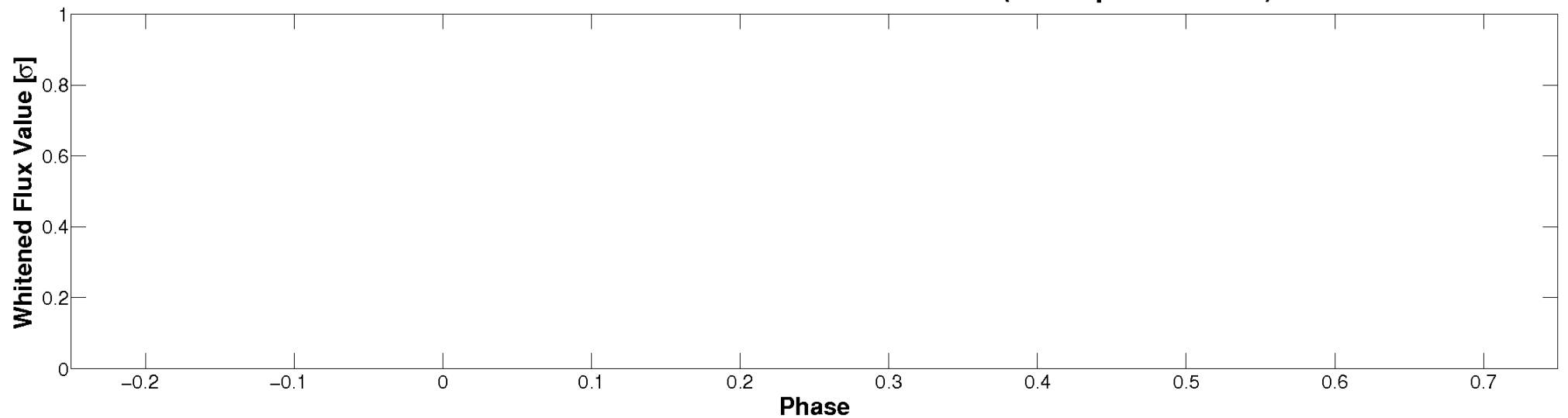


Non-Whitened Vs. Whitened Light Curve

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

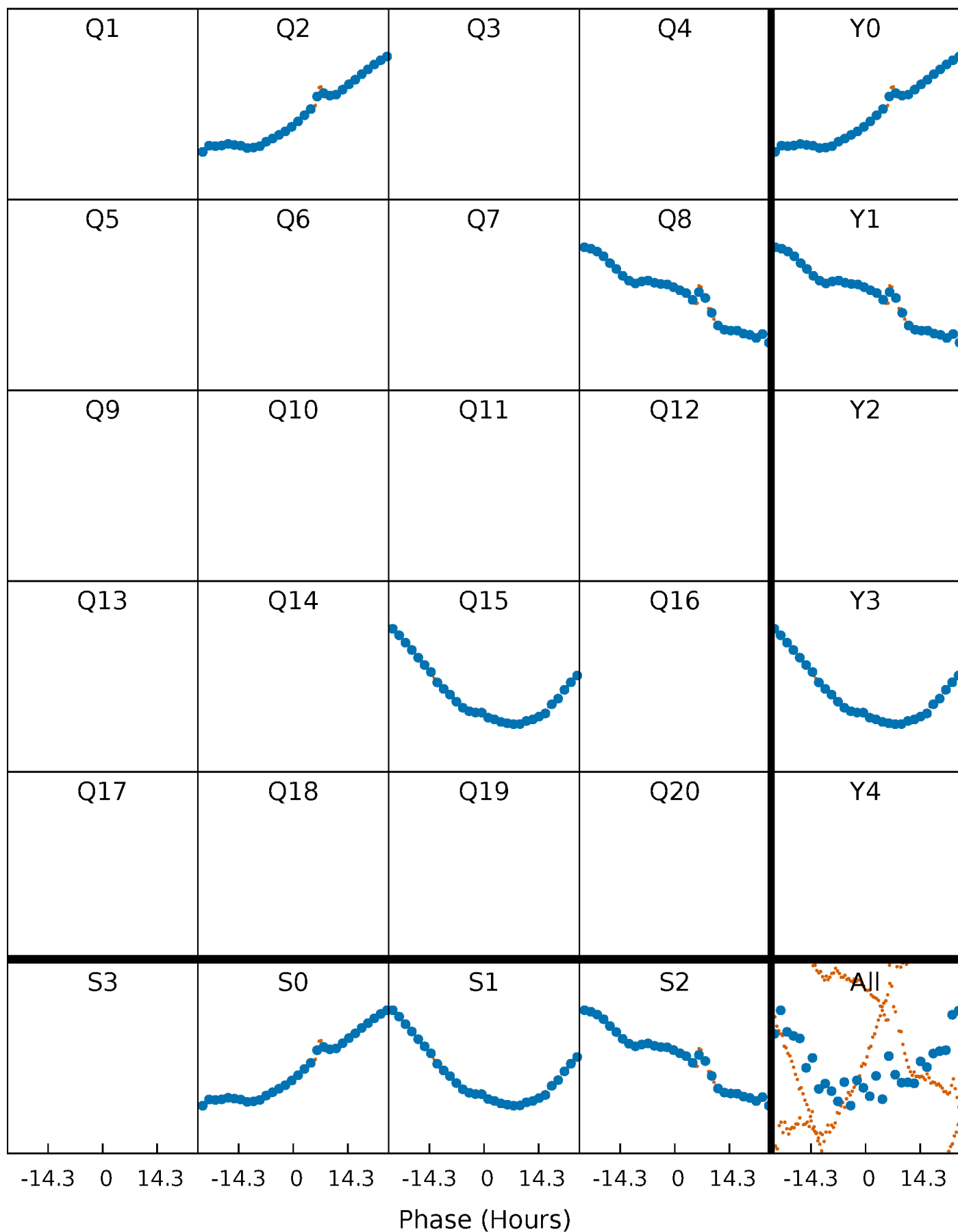


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



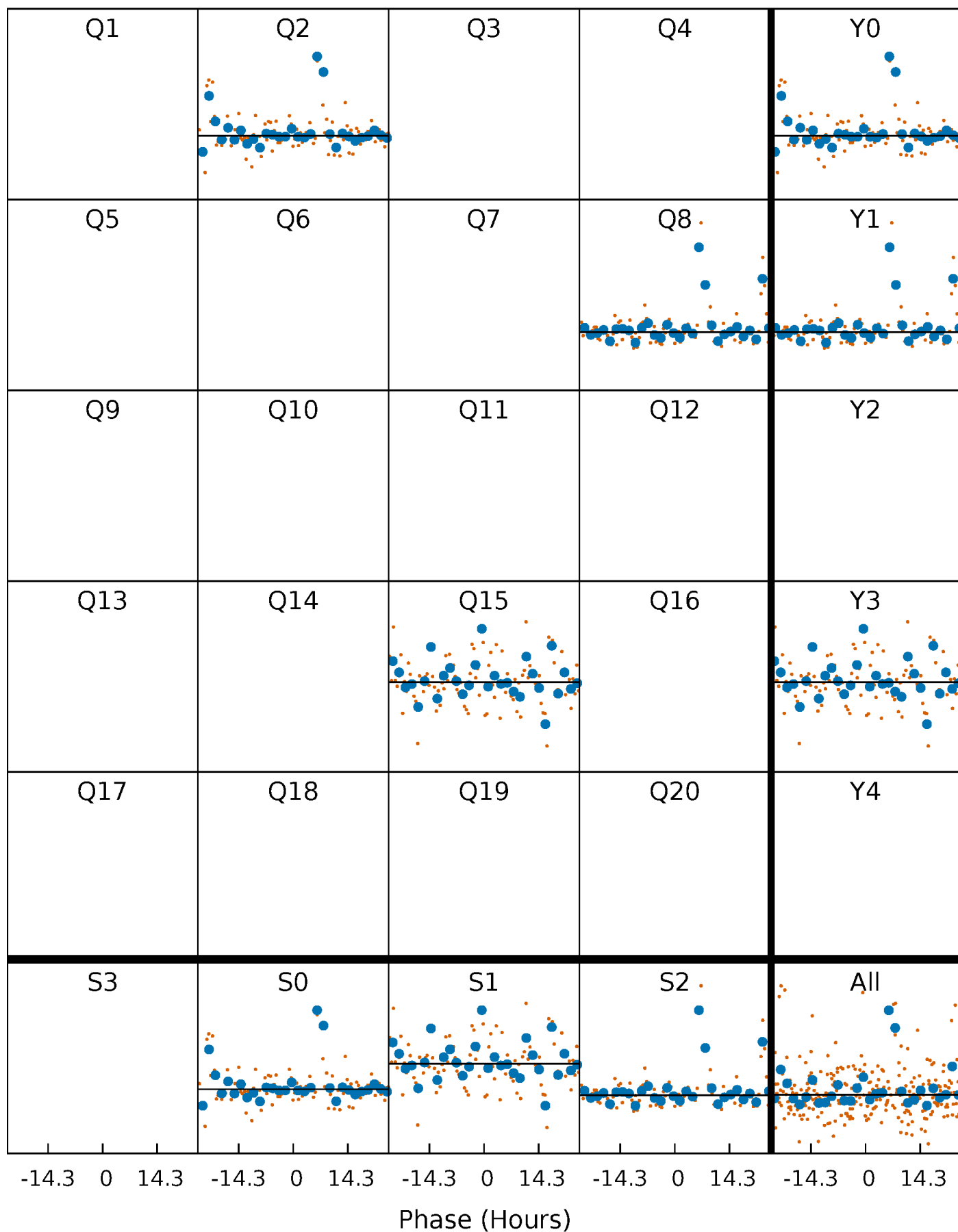
PDC Quarter-Phased Transit Curves

TCE 005165017-01 P=594.017212 Days $T_0=194.718806$ (BKJD)



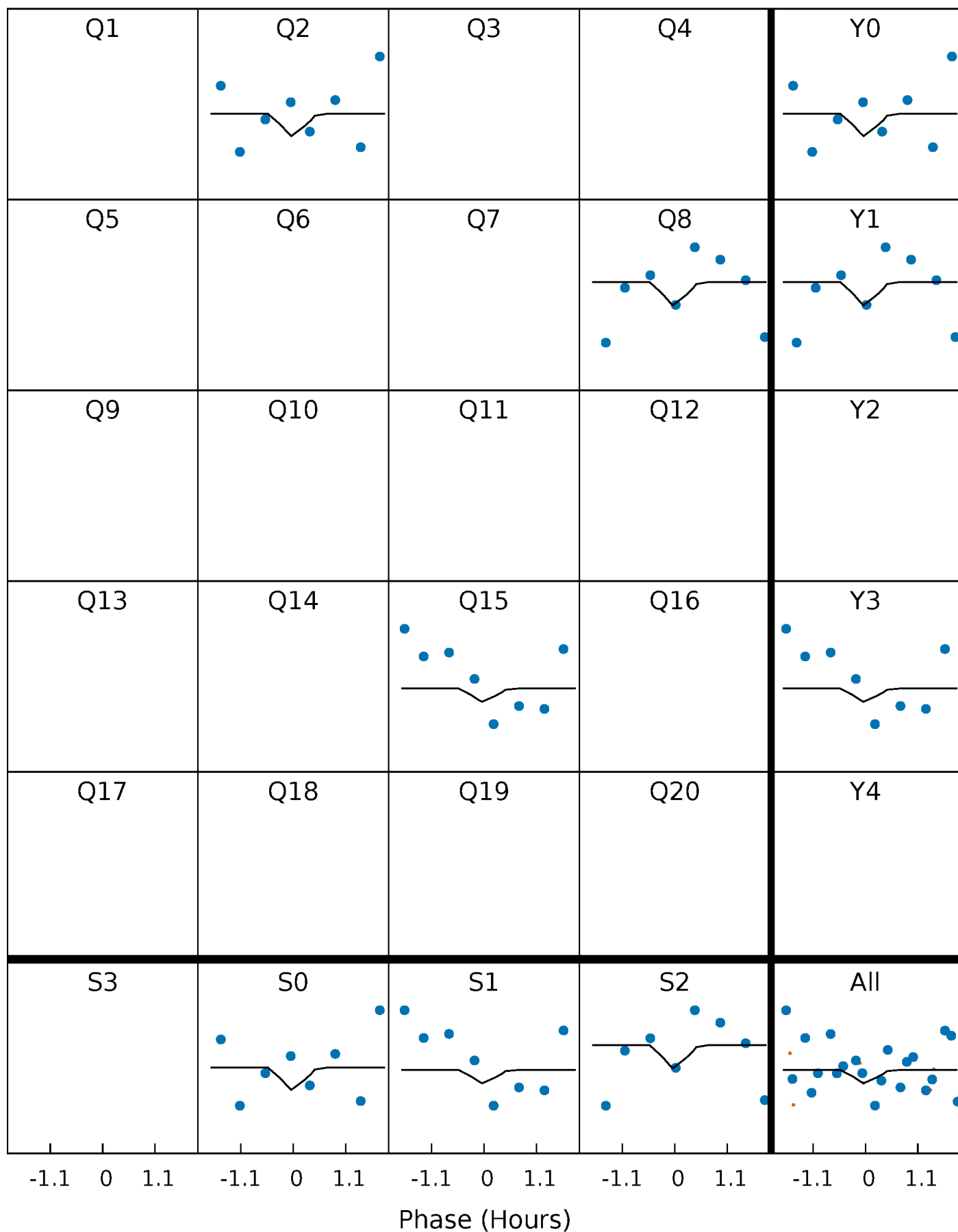
DV Quarter-Phased Transit Curves

TCE 005165017-01 P=594.017212 Days $T_0=194.718806$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

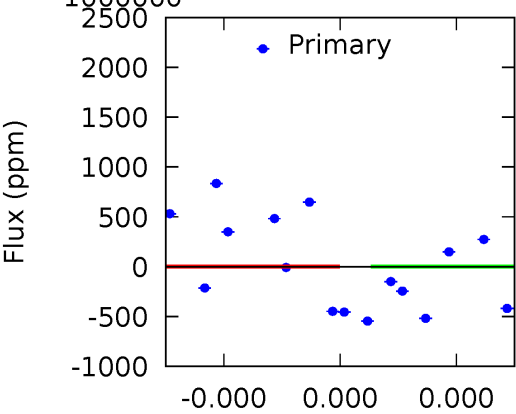
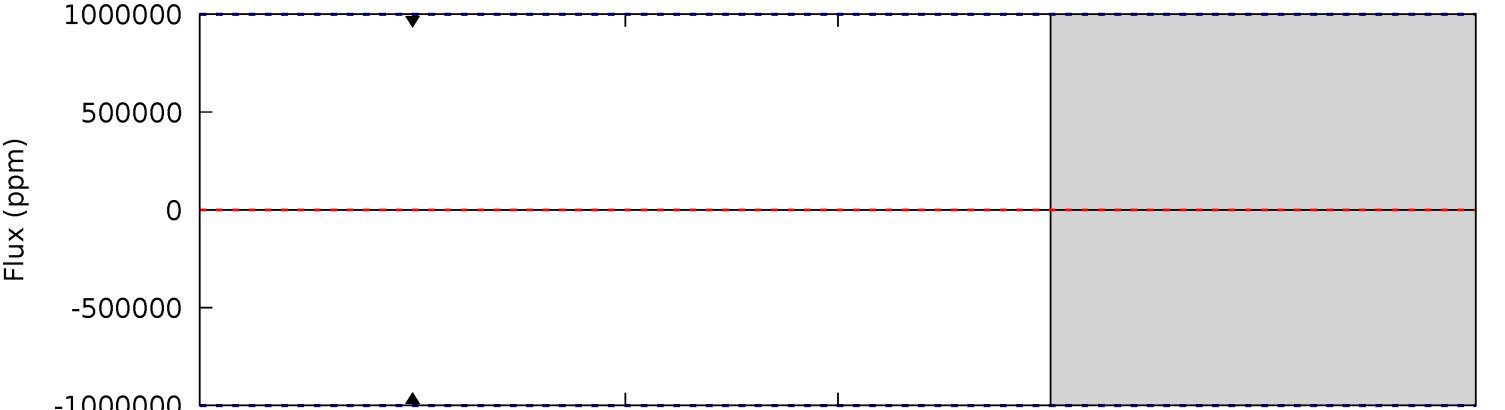
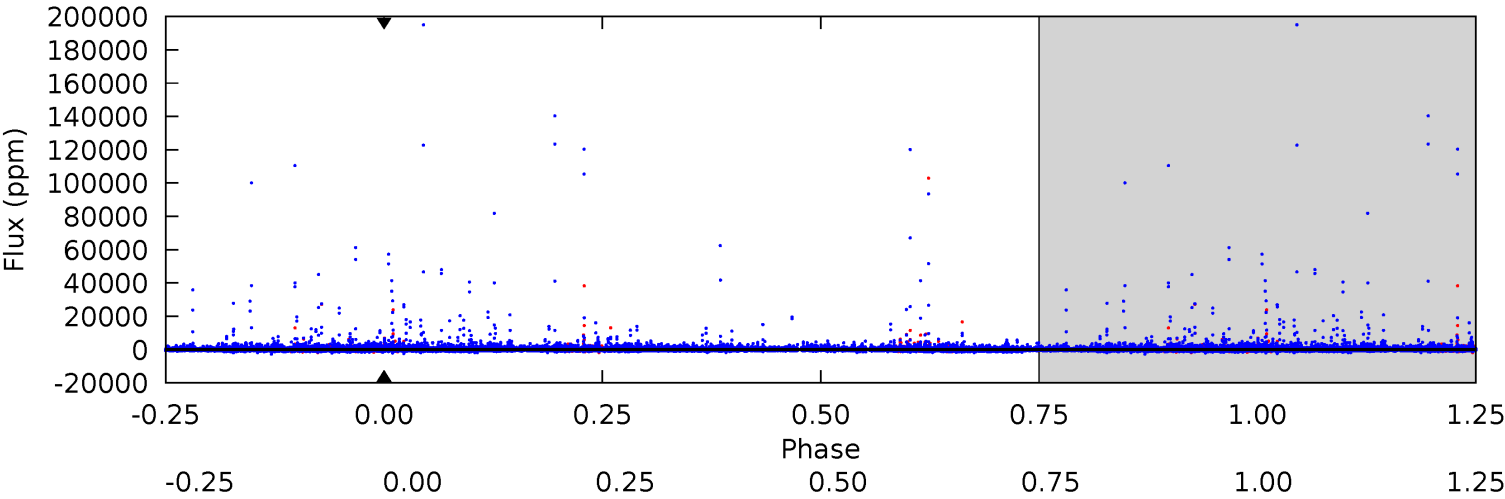
TCE 005165017-01 P=594.017212 Days $T_0=195.496874$ (BKJD)



DV Model-Shift Uniqueness Test

005165017-01, P = 594.017212 Days, E = 194.718806 Days

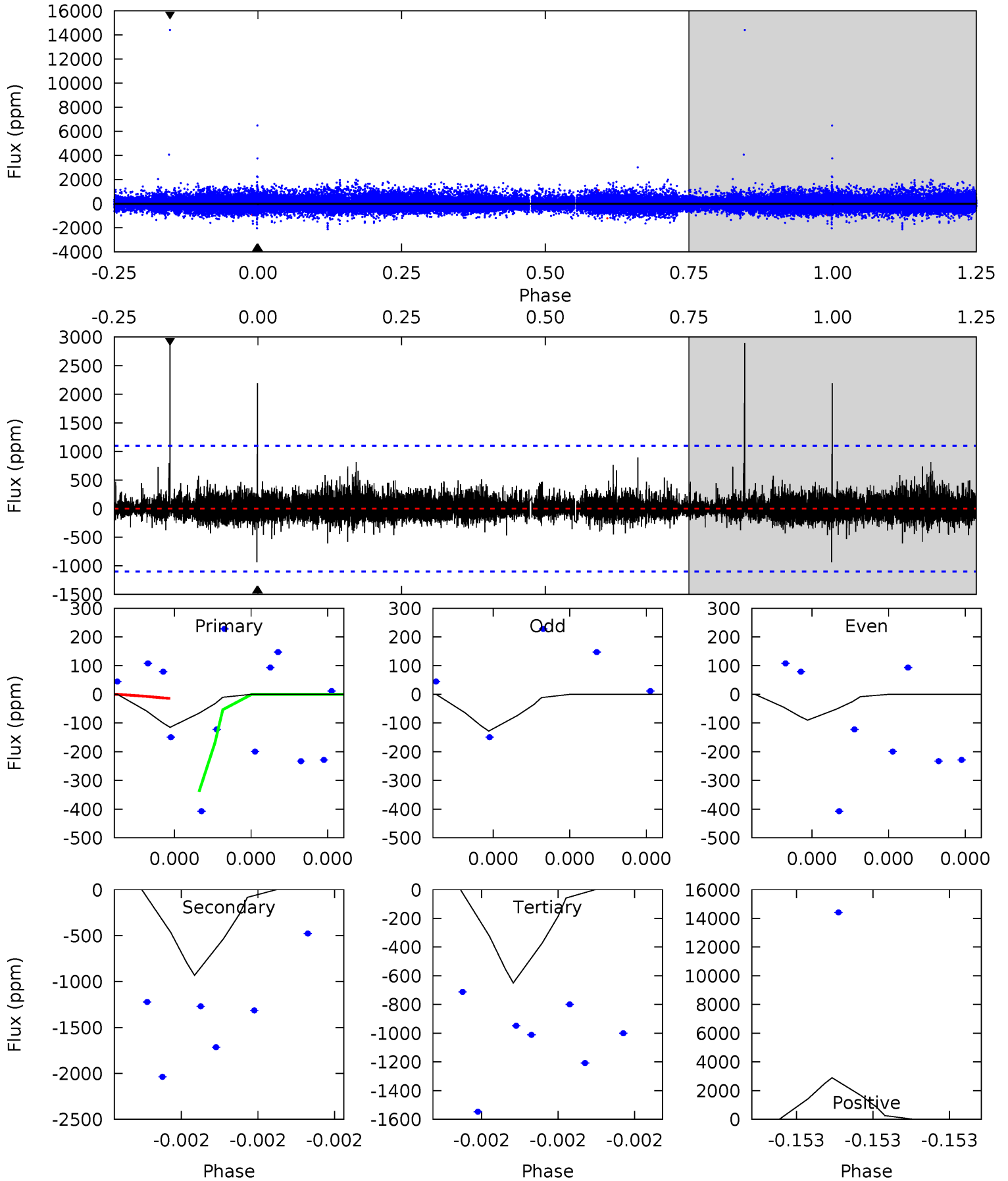
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

005165017-01, P = 594.017212 Days, E = 195.496874 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.62	5.06	3.52	15.7	5.96	4.06	0.61	-2.90	-15.1	1.54	-10.6	0.08	1.04	0.76	0.88



Stellar Parameters For KIC 005165017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4247^{+134}_{-164}	$4.621^{+0.049}_{-0.014}$	$-0.020^{+0.150}_{-0.150}$	$0.646^{+0.027}_{-0.047}$	$0.636^{+0.045}_{-0.041}$	$3.327^{+0.649}_{-0.245}$
	+3%/-4%	+1%/-0%	+750%/-750%	+4%/-7%	+7%/-6%	+19%/-7%
Source	PHO1	KIC0	SPE15	DSEP		

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

Secondary Eclipse Parameters for KIC 005165017-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$5.47^{+5.79}_{-3.70}$	191^{+6}_{-8}	3437^{+6961}_{-12880}	$47617^{+4875115}_{-4107477}$
Alt.	-933 ± 184	$4.74^{+5.02}_{-3.26}$	191^{+7}_{-8}	3250^{+1626}_{-609}	$32939^{+294275}_{-25296}$

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 $A_{obs} \gg 1.0$

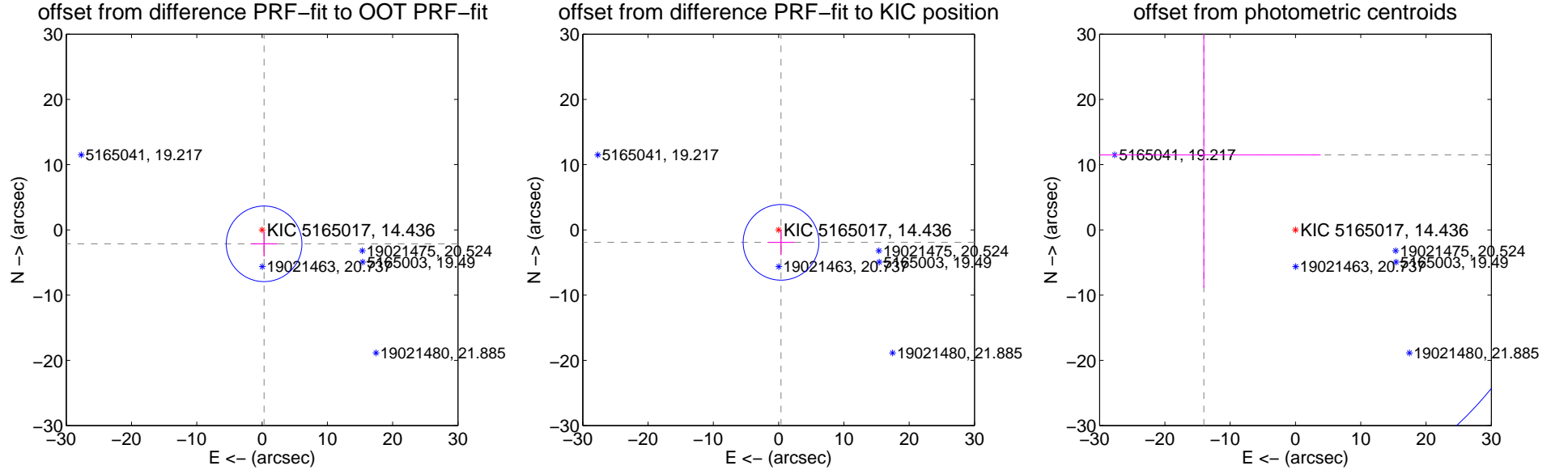
DV Centroid Data

Supplemental centroid analysis for 005165017-01. Kepler magnitude: 14.44. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

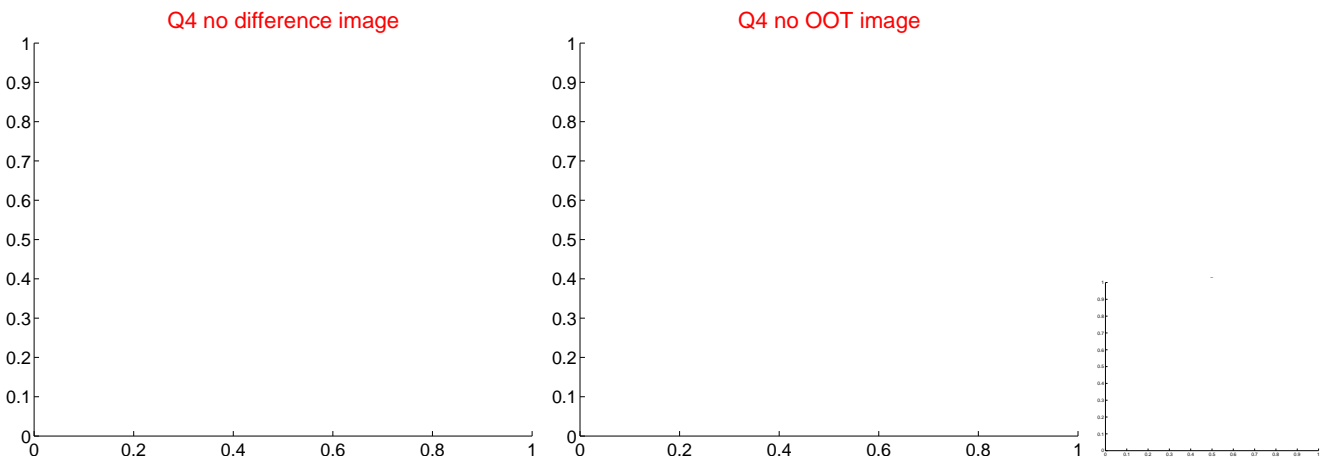
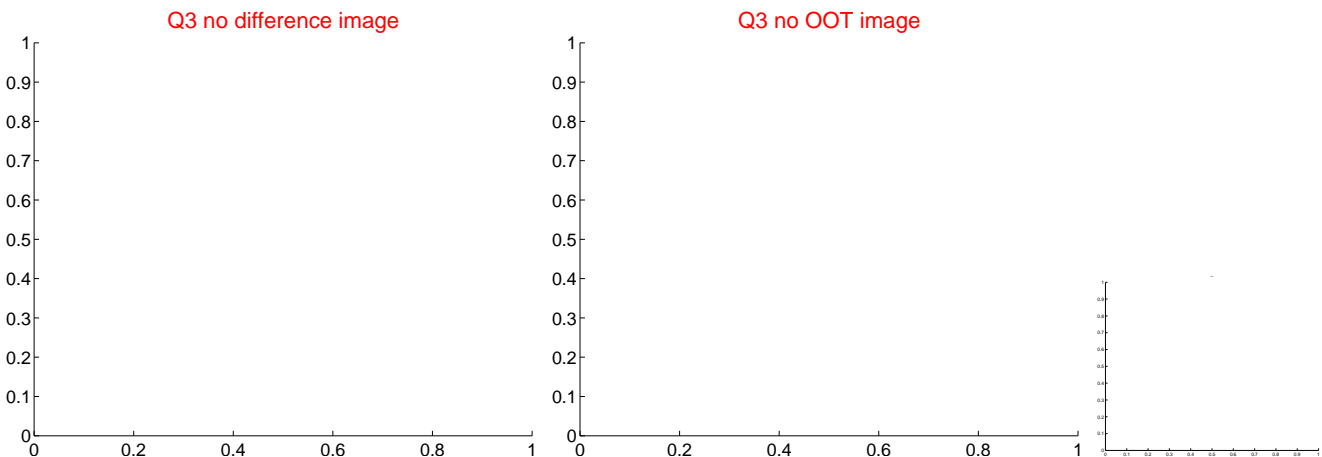
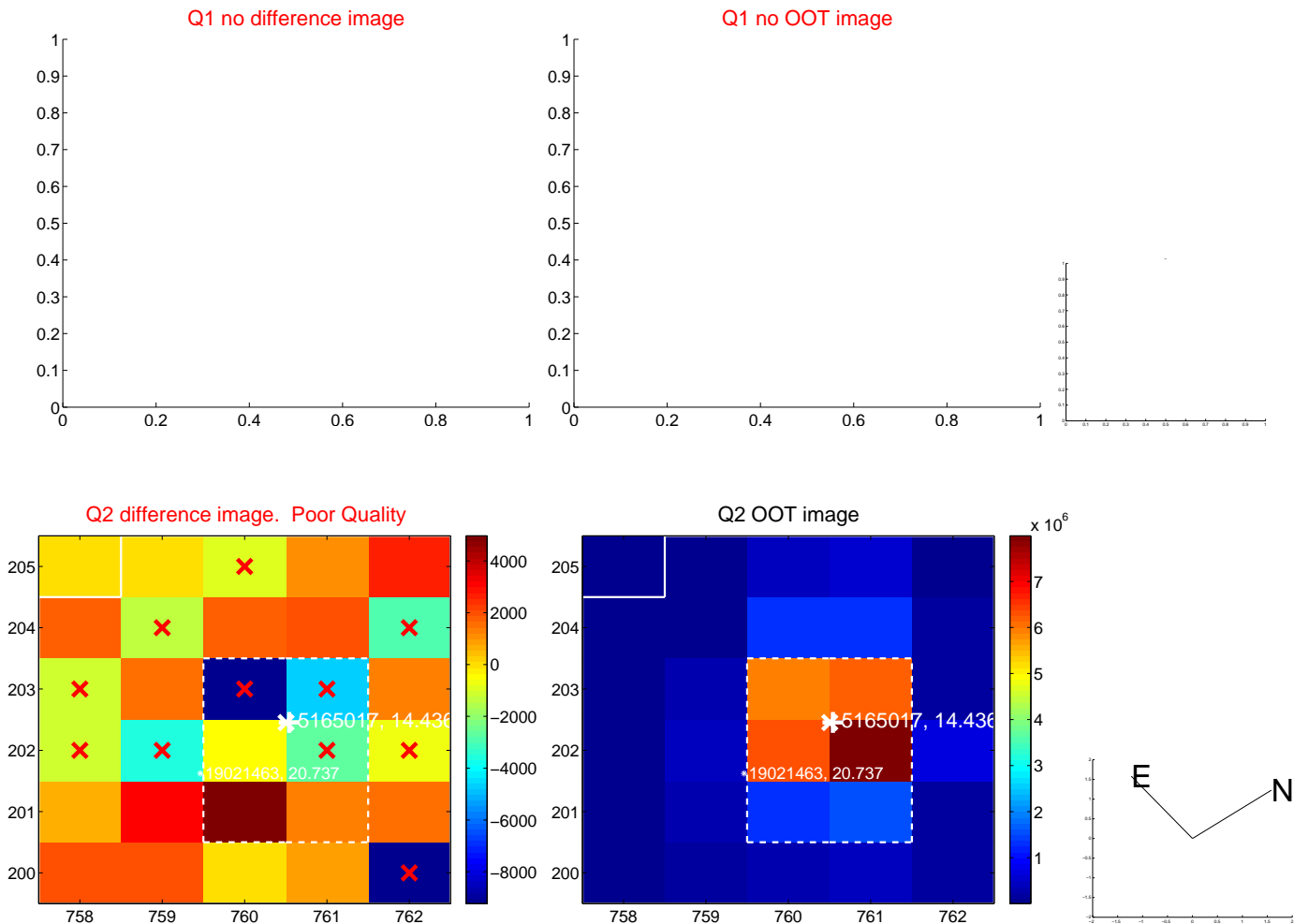
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.158 ± 1.931	1.12	-0.308 ± 2.042	-2.136 ± 1.929
PRF-fit source offset from KIC position	1.944 ± 1.933	1.01	-0.367 ± 2.042	-1.909 ± 1.929
photometric centroid source offset	18.14 ± 18.92	0.96	14.04 ± 17.90	11.49 ± 20.33

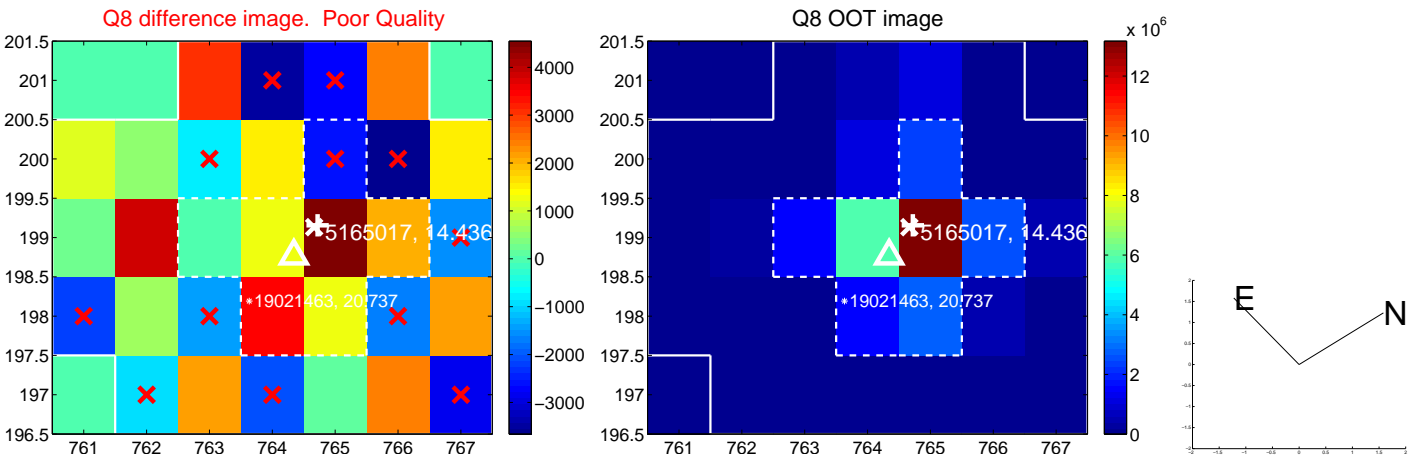


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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



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



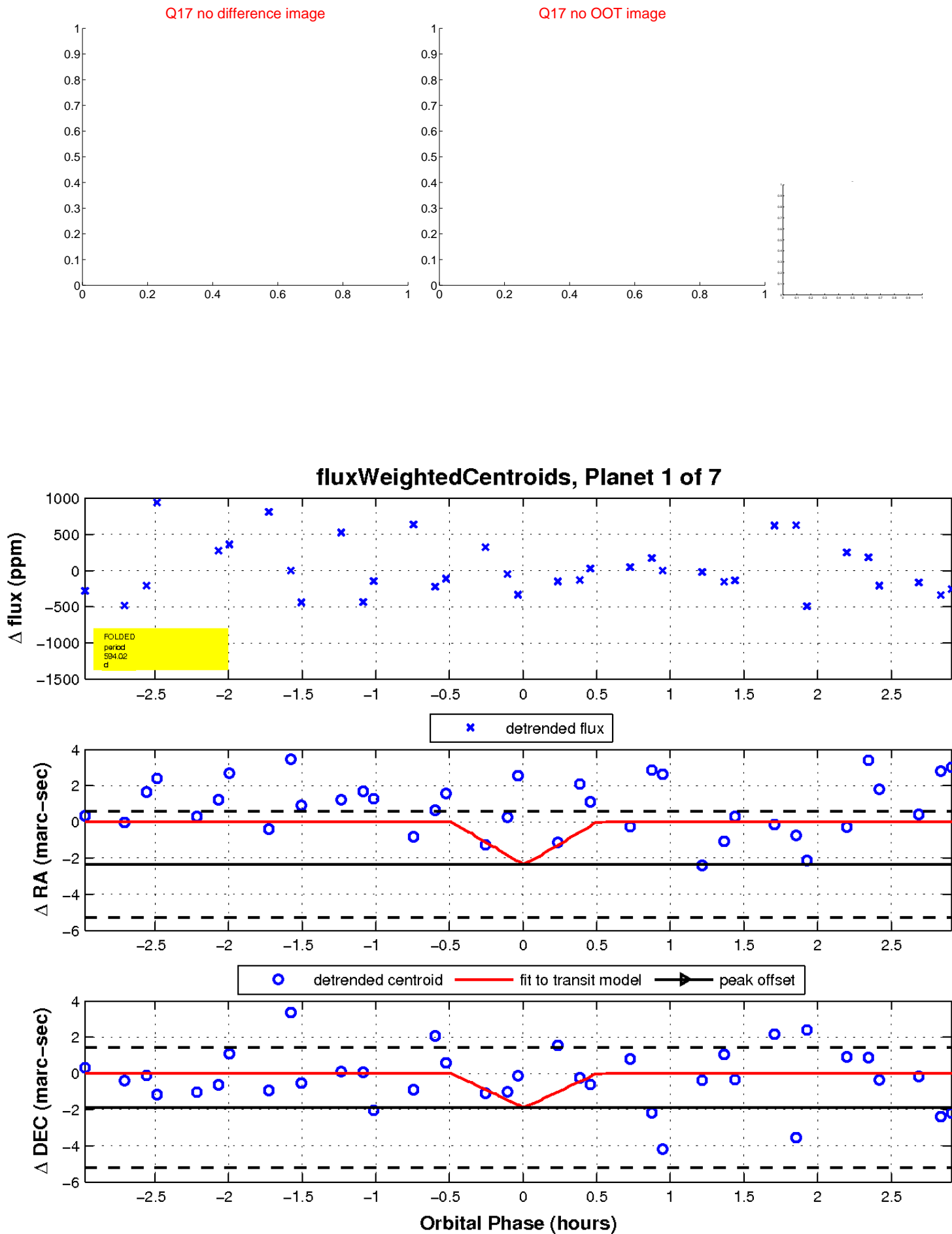
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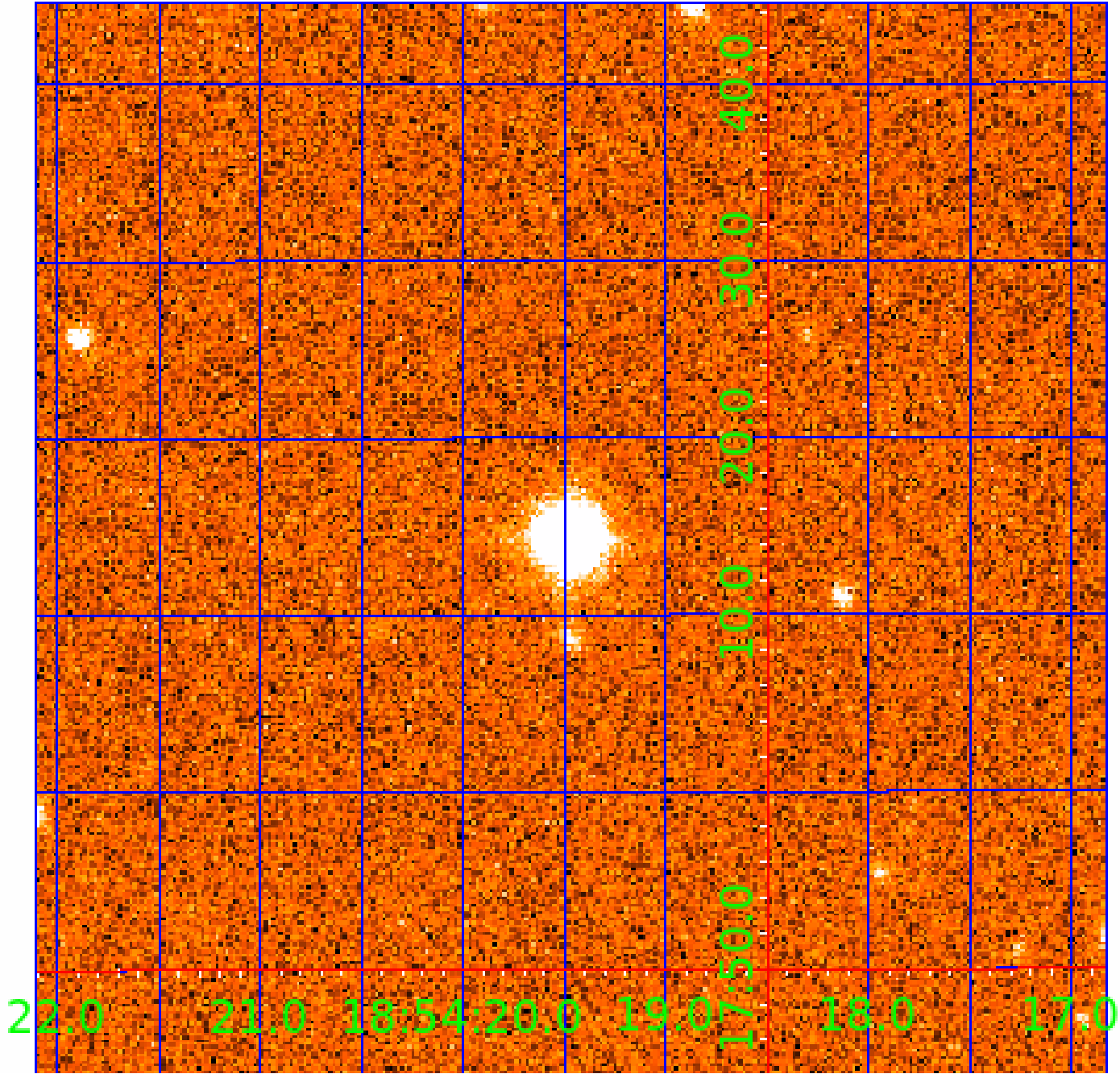


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UKIRT Image

Declination



KIC 005165017

Q1-17 DR25 TCE Parameters

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Robovetter Results

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005165017-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005165017-04	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
005165017-05	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
005165017-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005165017-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

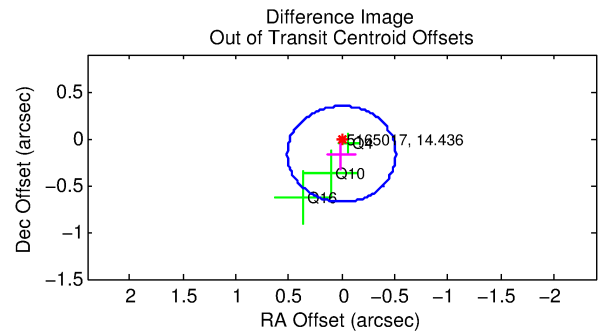
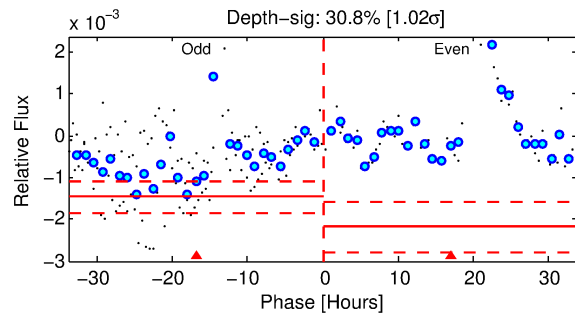
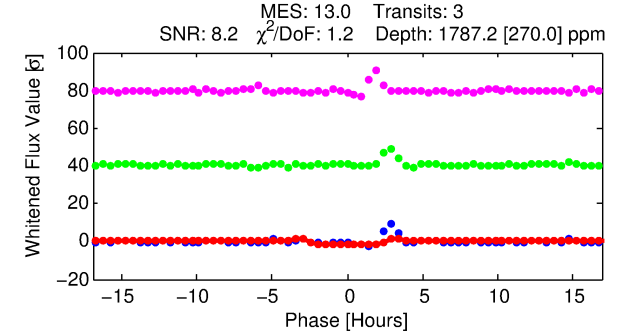
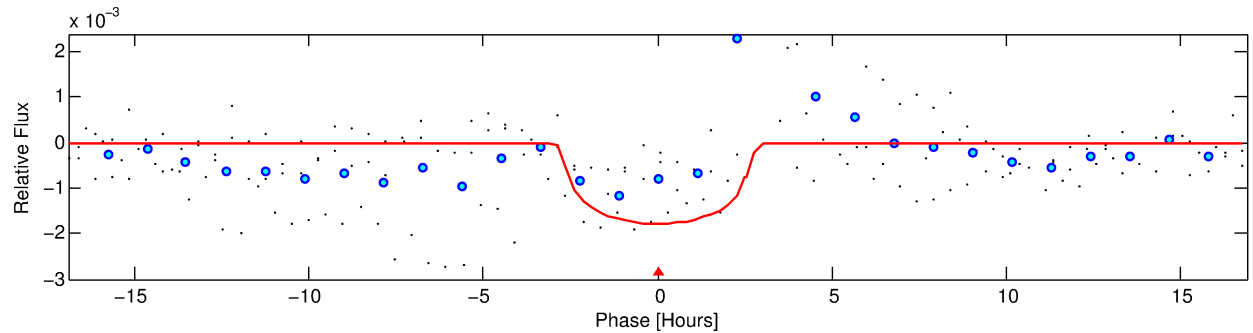
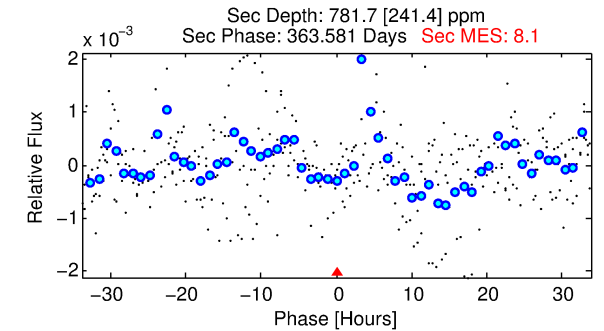
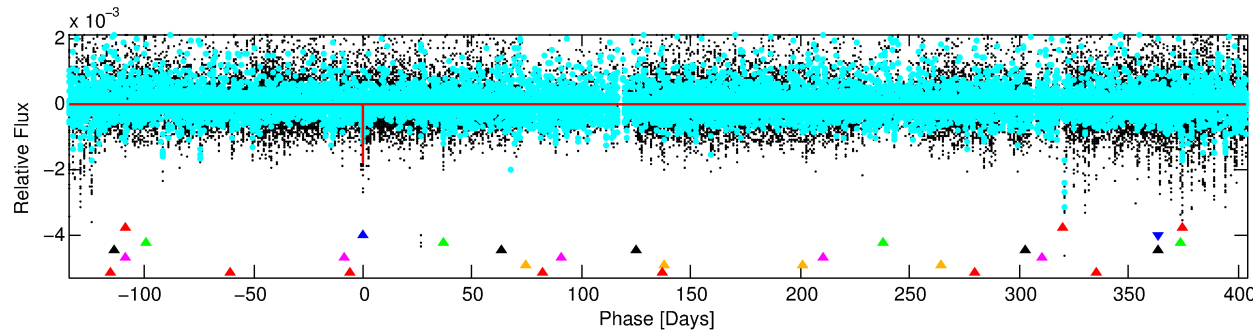
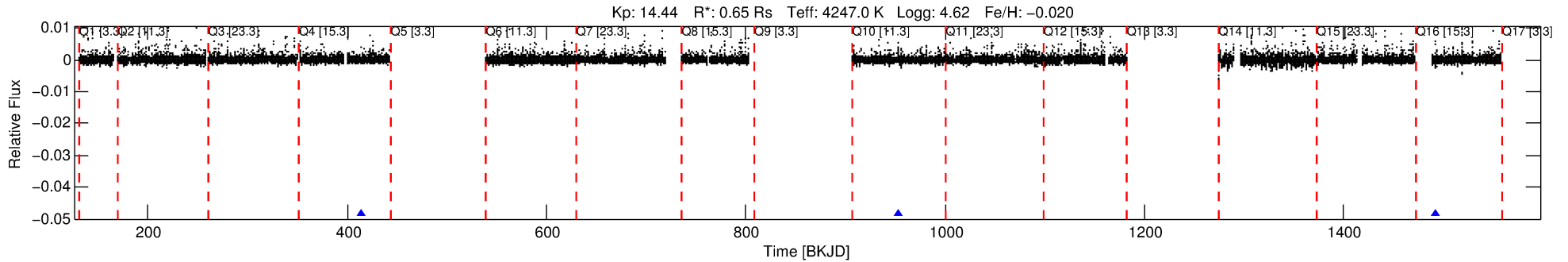
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005165017-02

No Significant Match Found

DV One-Page Summary

KIC: 5165017 Candidate: 2 of 7 Period: 538.818 d



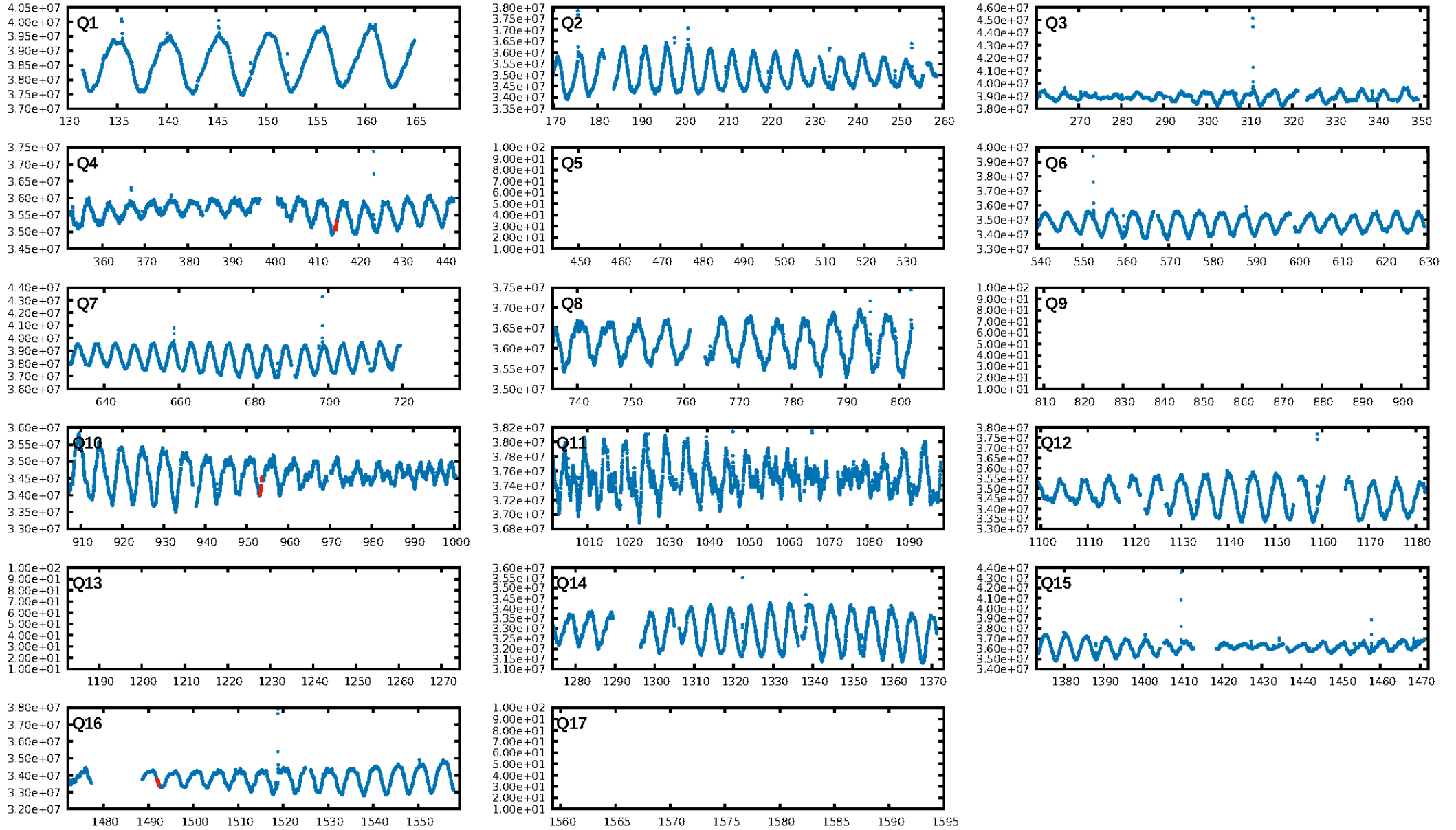
DV Fit Results:

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Epoch = 414.5531 [0.0071] BKJD
Rp/R* = 0.0402 [0.0205]
a/R* = 607.35 [946.36]
b = 0.63 [1.53]
Seff = 0.10 [0.02]
Teq = 143 [6] K
Rp = 2.84 [1.46] Re
a = 1.1147 [0.0684] AU
Ag = 66428.67 [70992.61] [0.94σ]
Teffp = 3540 [952] K [3.57σ]

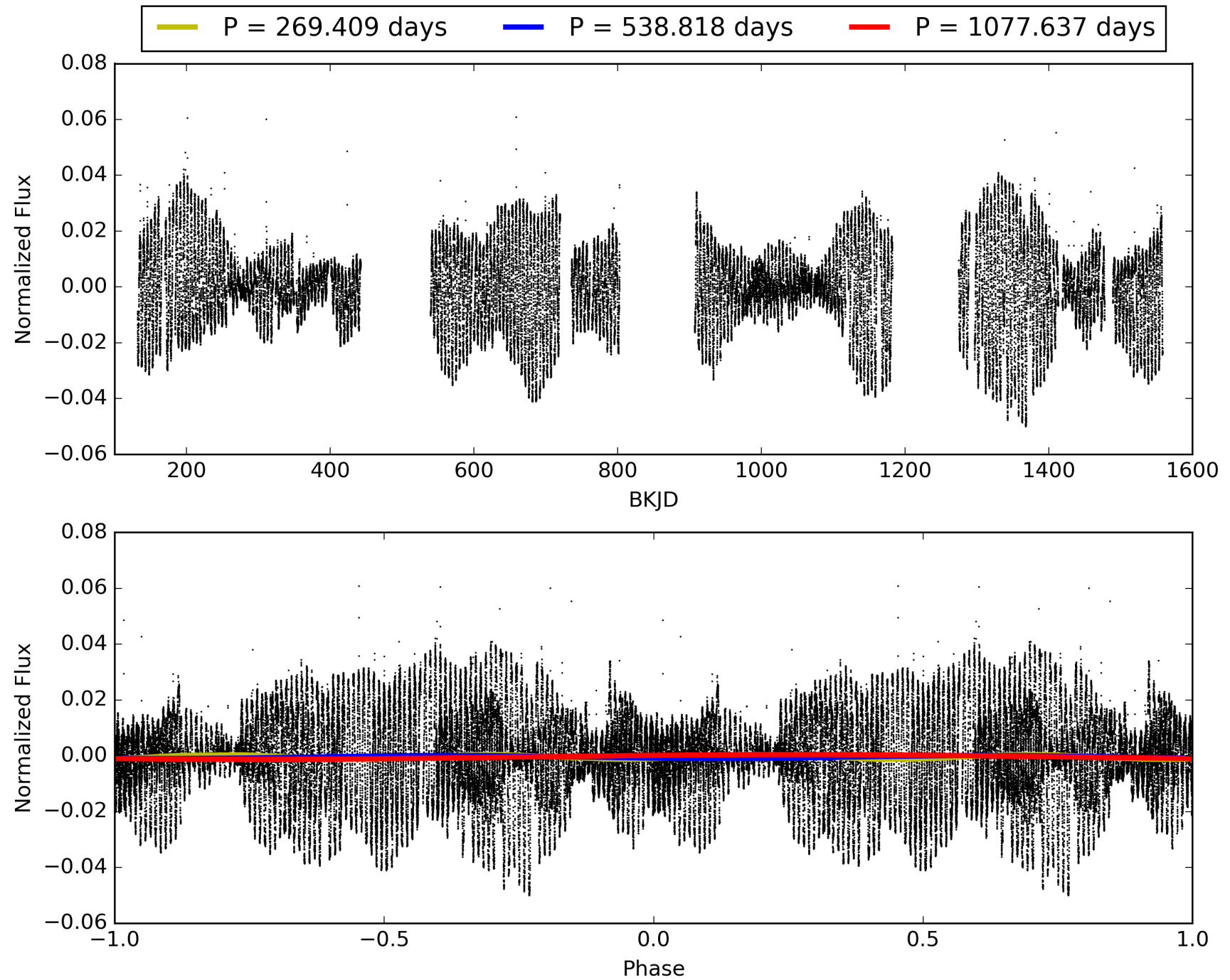
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [201.64σ]
LongPeriod-sig: 100.0% [96.64σ]
ModelChiSquare2-sig: 39.8%
ModelChiSquareGof-sig: 99.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 6.326
Centroid-sig: 31.8%
Centroid-so: 0.850 arcsec [1.42σ]
OotOffset-rm: 0.166 arcsec [0.97σ]
OotOffset-st: 1/0/2/0 [3]
KicOffset-rm: 0.033 arcsec [0.23σ]
KicOffset-st: 1/0/2/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 005165017-02, PDC Light Curves

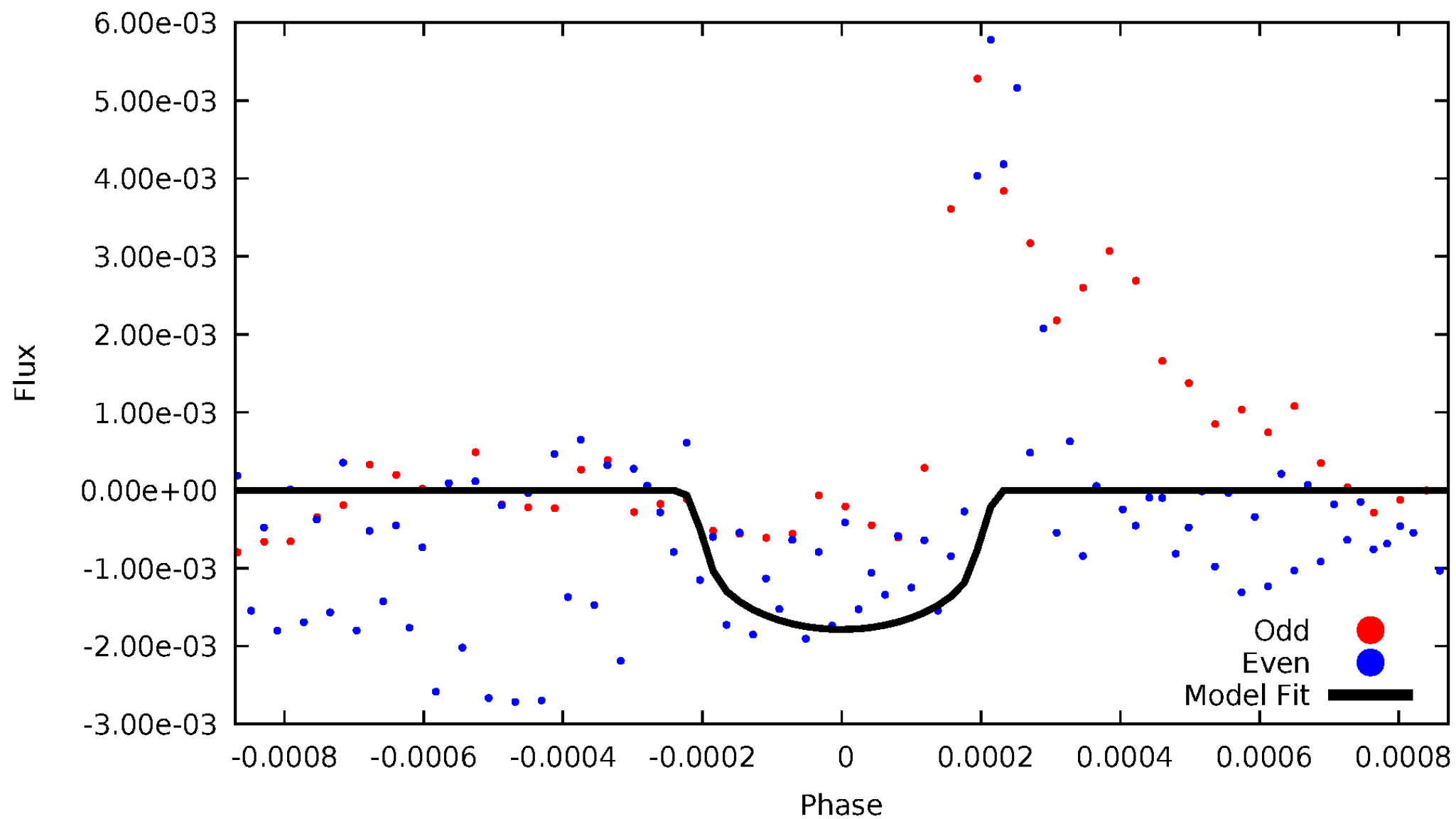


TCE 005165017-02



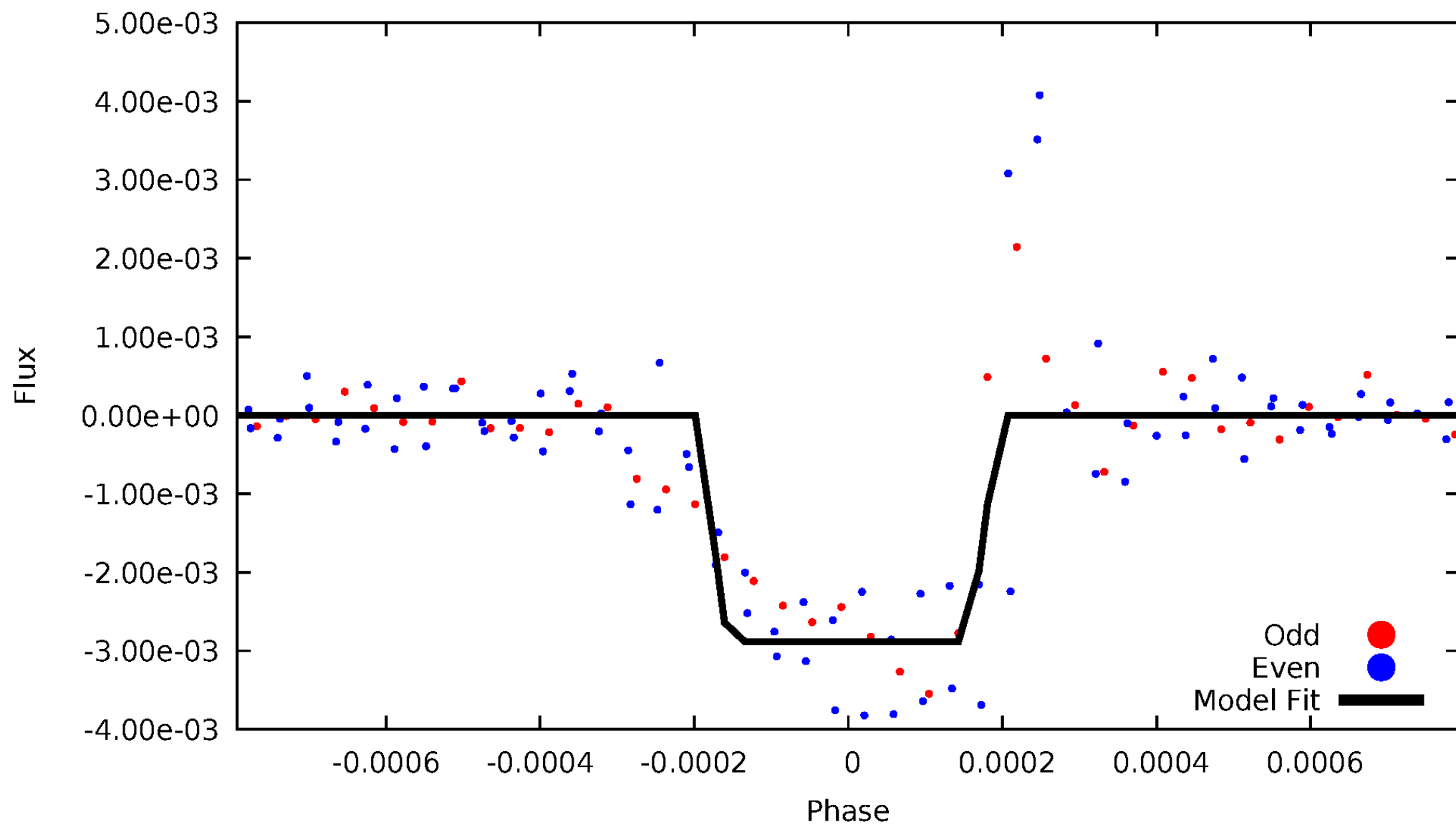
DV Odd/Even

TCE 005165017-02



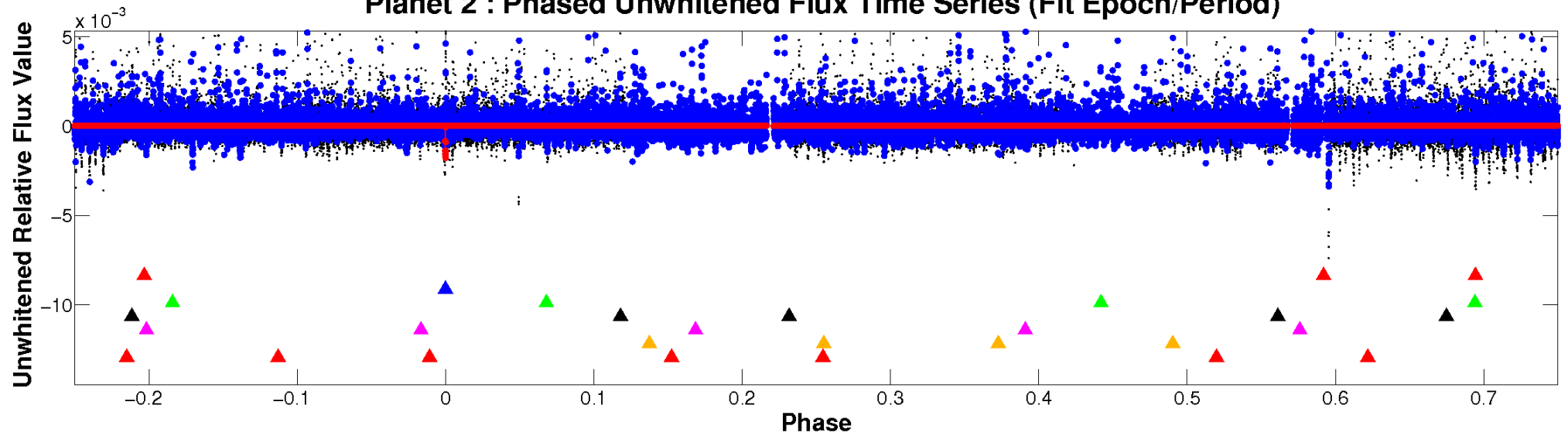
ALT Odd/Even

TCE 005165017-02

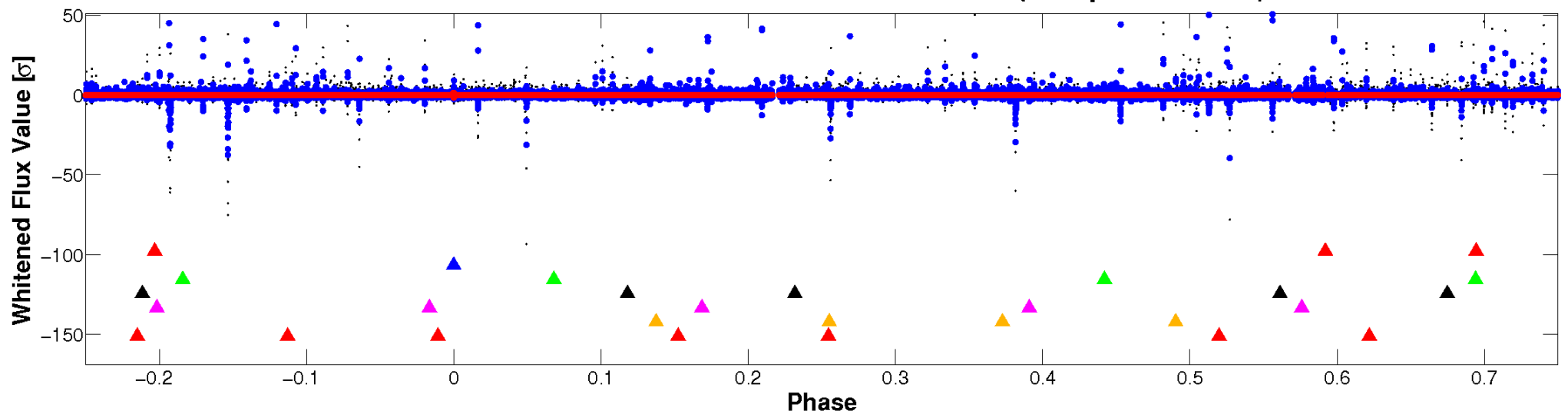


Non-Whitened Vs. Whitened Light Curve

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

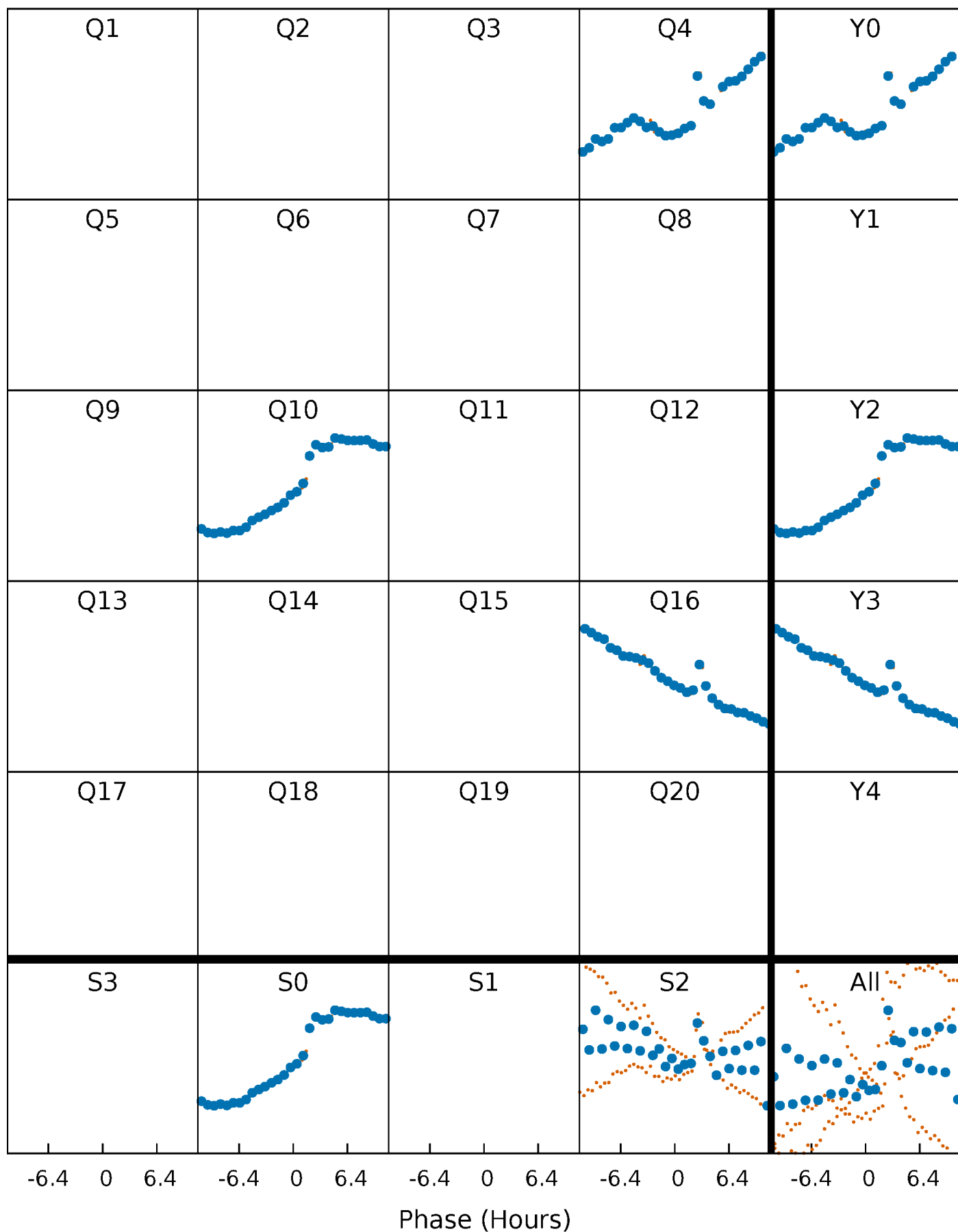


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



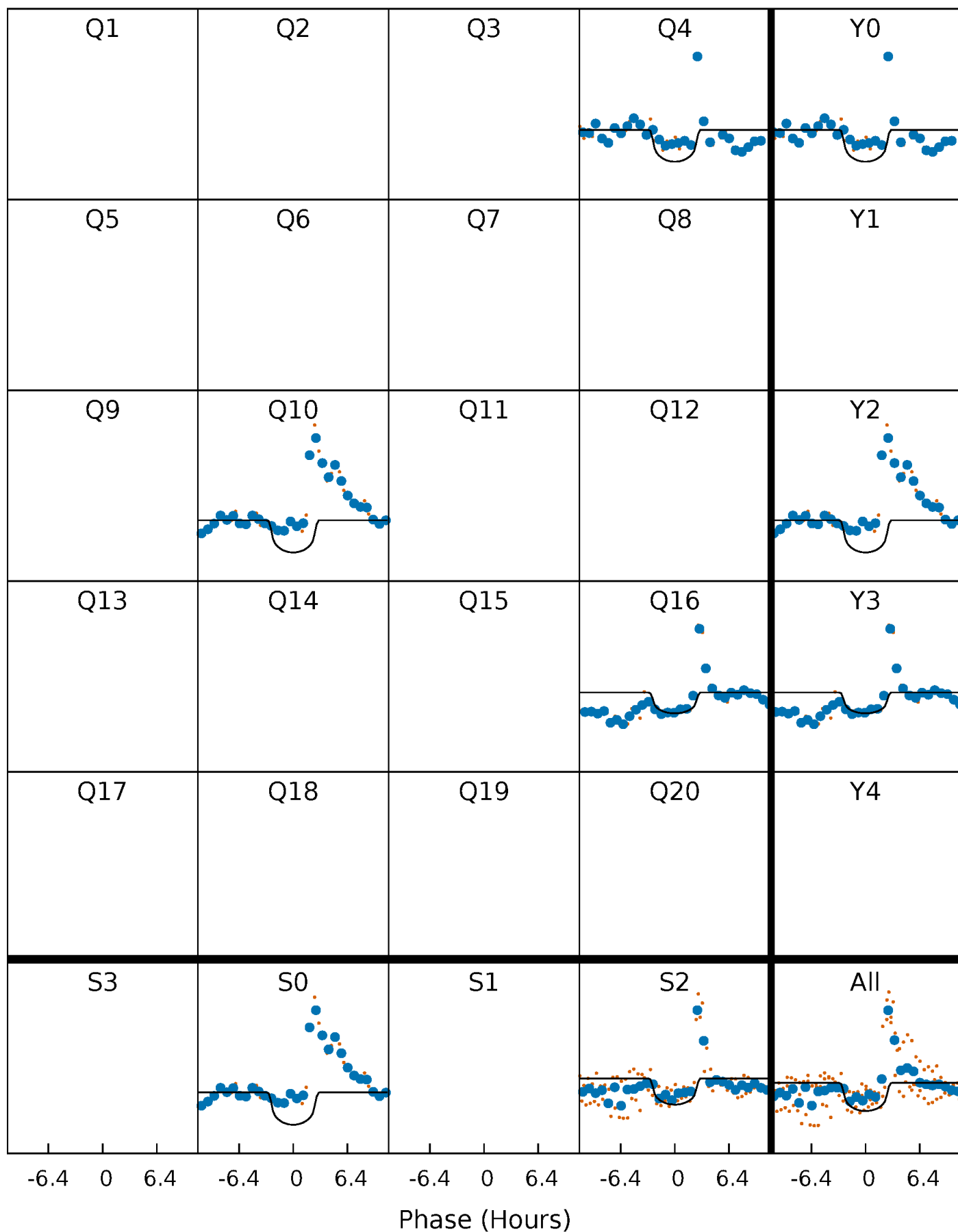
PDC Quarter-Phased Transit Curves

TCE 005165017-02 P=538.818358 Days $T_0=414.553060$ (BKJD)



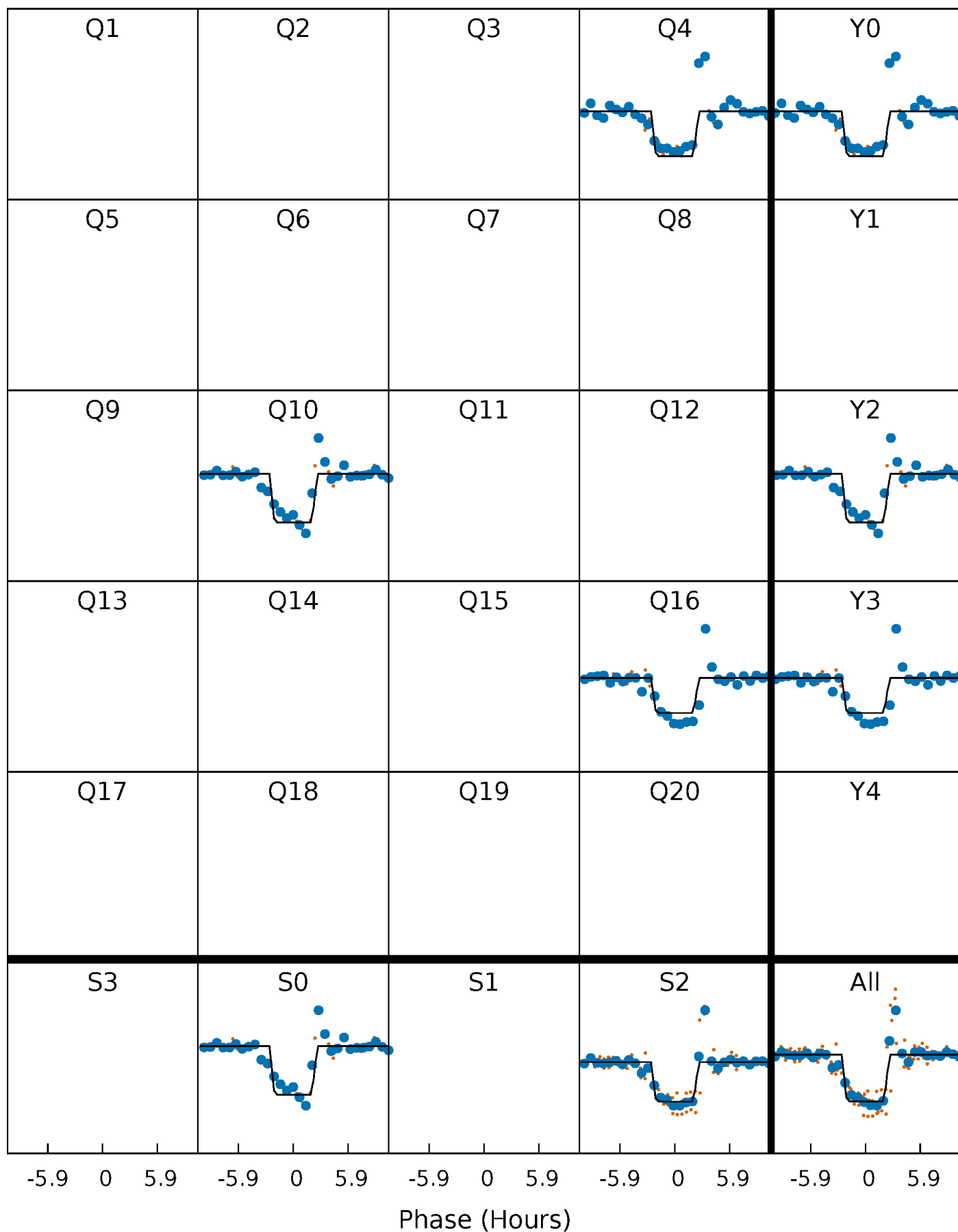
DV Quarter-Phased Transit Curves

TCE 005165017-02 P=538.818358 Days $T_0=414.553060$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

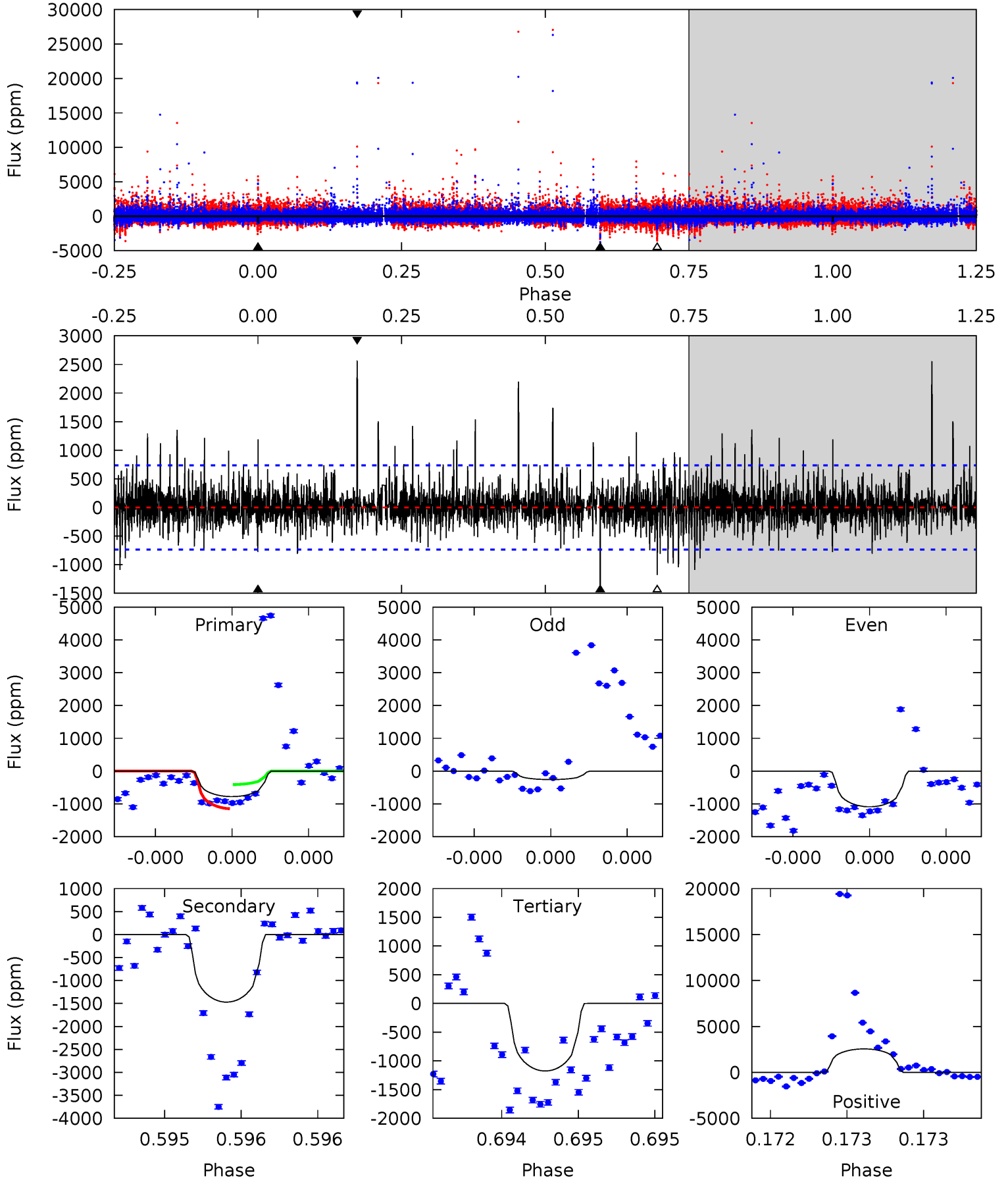
TCE 005165017-02 P=538.812544 Days $T_0=414.546145$ (BKJD)



DV Model-Shift Uniqueness Test

005165017-02, P = 538.818358 Days, E = 414.553060 Days

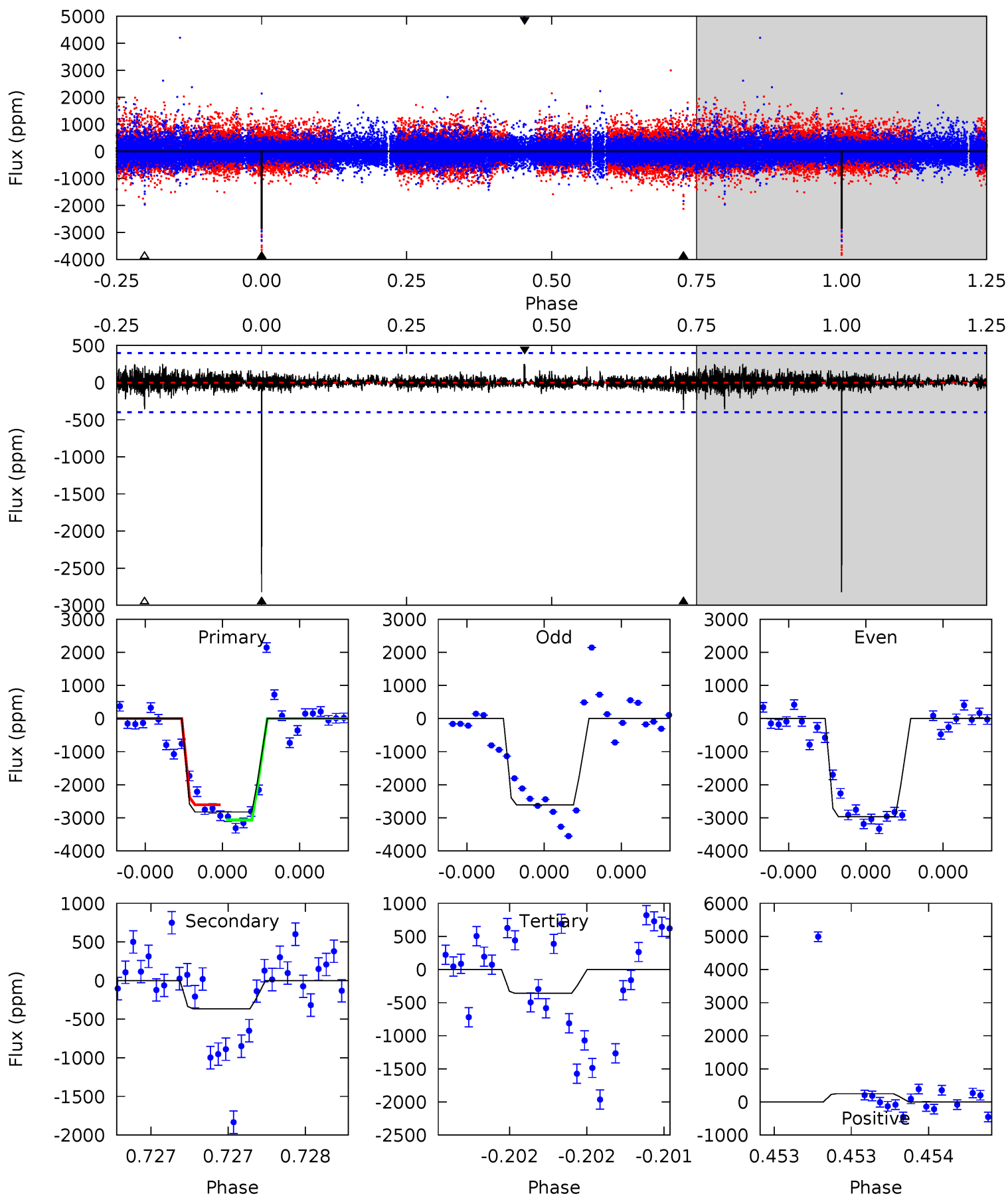
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.90	11.2	8.92	19.4	5.59	3.51	1.98	-3.02	-13.5	2.23	-8.21	2.34	1.11	0.63	2.81



Alt Model-Shift Uniqueness Test

005165017-02, P = 538.812544 Days, E = 414.546145 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.9	5.18	5.08	3.52	5.62	3.56	0.67	34.8	36.4	0.10	1.66	2.54	1.09	0.08	3.26



Stellar Parameters For KIC 005165017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4247^{+134}_{-164}	$4.621^{+0.049}_{-0.014}$	$-0.020^{+0.150}_{-0.150}$	$0.646^{+0.027}_{-0.047}$	$0.636^{+0.045}_{-0.041}$	$3.327^{+0.649}_{-0.245}$
	+3%/-4%	+1%/-0%	+750%/-750%	+4%/-7%	+7%/-6%	+19%/-7%
Source	PHO1	KIC0	SPE15	DSEP		

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

Secondary Eclipse Parameters for KIC 005165017-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1471 ± 132	$2.92^{+1.34}_{-1.29}$	198^{+6}_{-8}	4144^{+1098}_{-545}	$121691^{+278948}_{-65664}$
Alt.	-366 ± 71	$3.80^{+1.38}_{-1.44}$	197^{+7}_{-7}	3012^{+475}_{-262}	17472^{+28039}_{-8658}

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

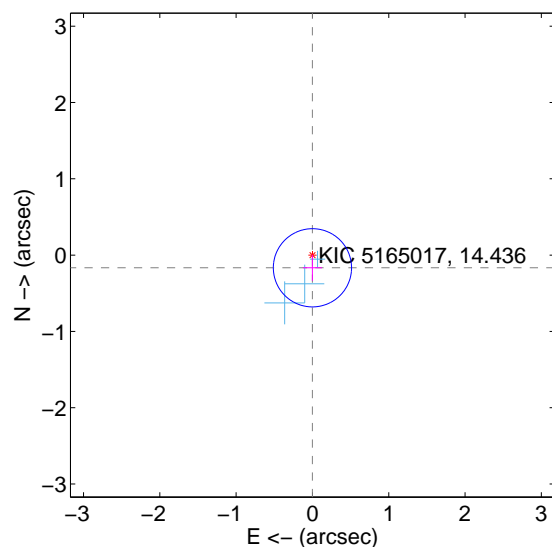
Supplemental centroid analysis for 005165017-02. Kepler magnitude: 14.44. Transit SNR 8.17

There are 3 quarters with good PRF difference image offsets

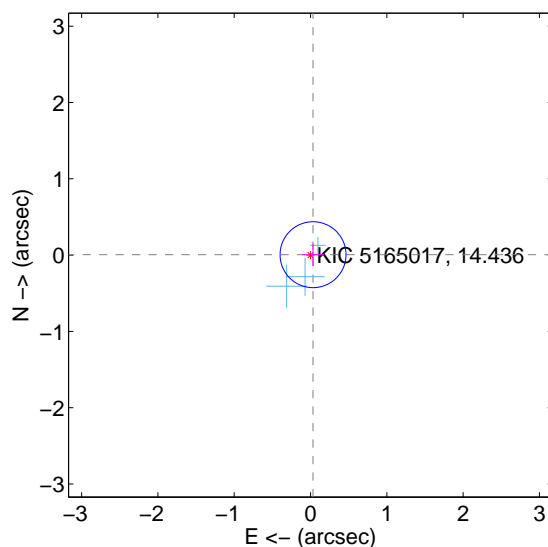
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.166 ± 0.171	0.97	0.000 ± 0.125	-0.166 ± 0.171
PRF-fit source offset from KIC position	0.033 ± 0.144	0.23	-0.033 ± 0.144	0.005 ± 0.147
photometric centroid source offset	0.85 ± 0.60	1.42	-0.67 ± 0.55	-0.53 ± 0.67

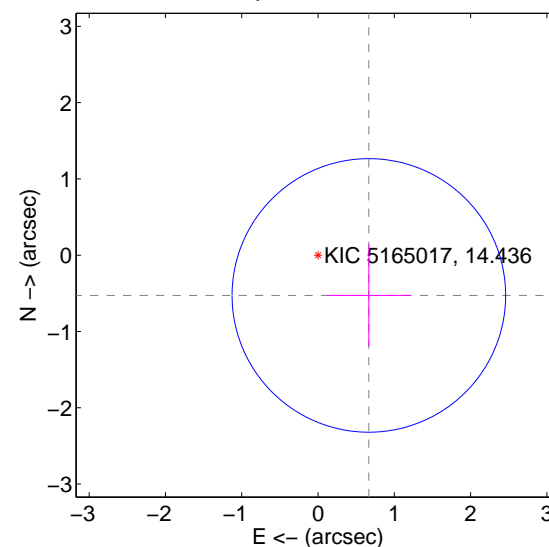
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

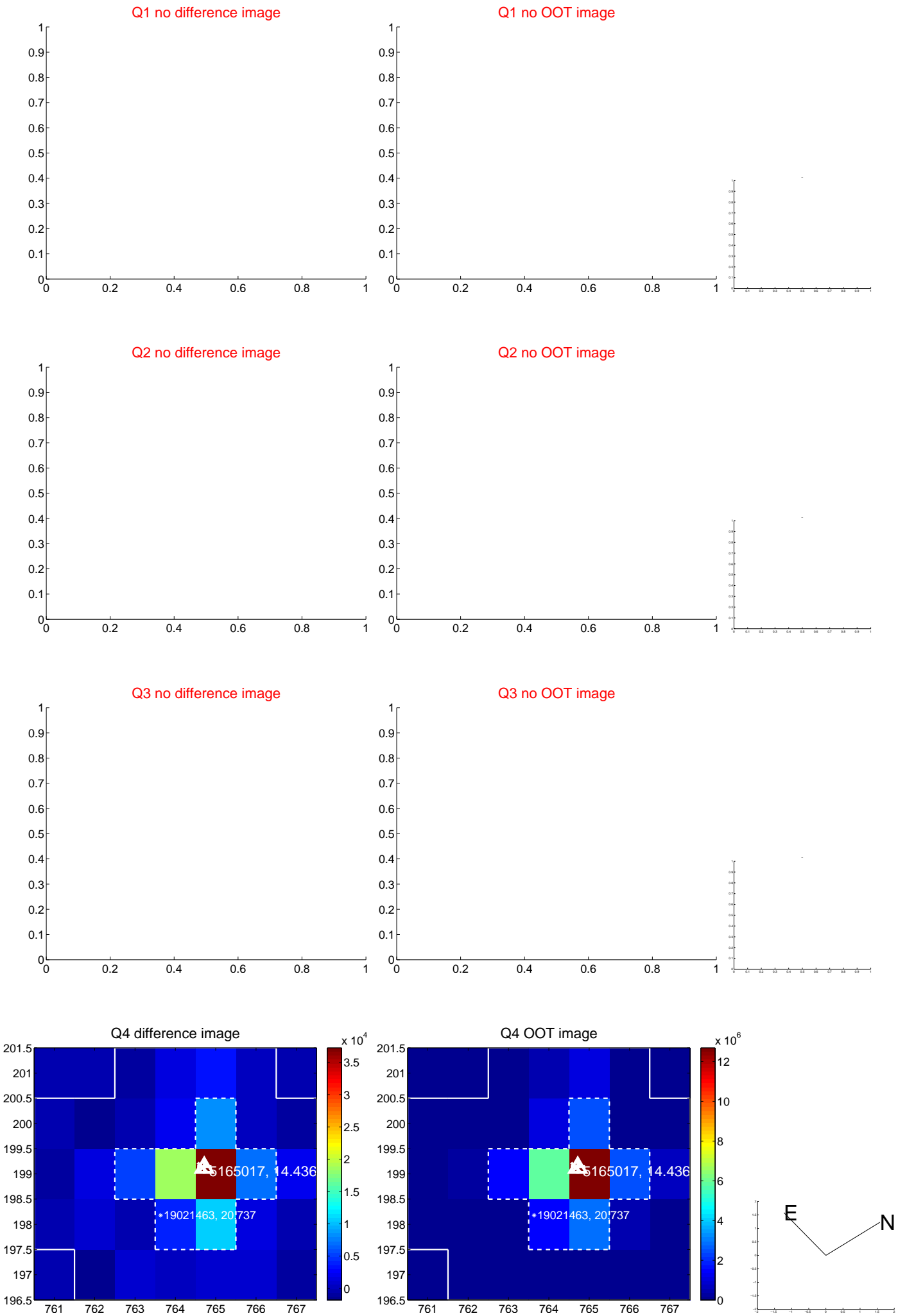


offset from photometric centroids

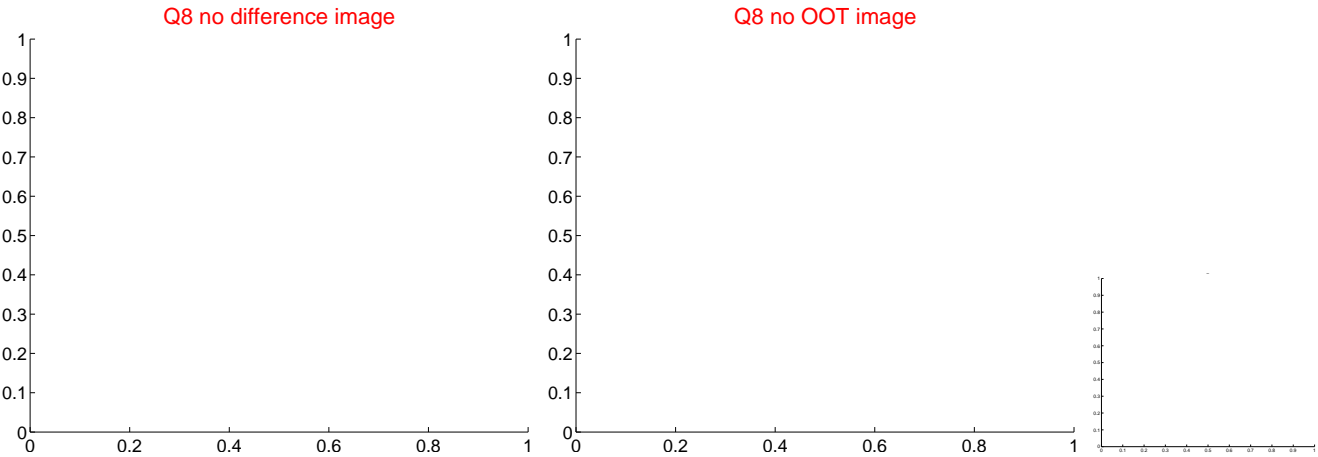
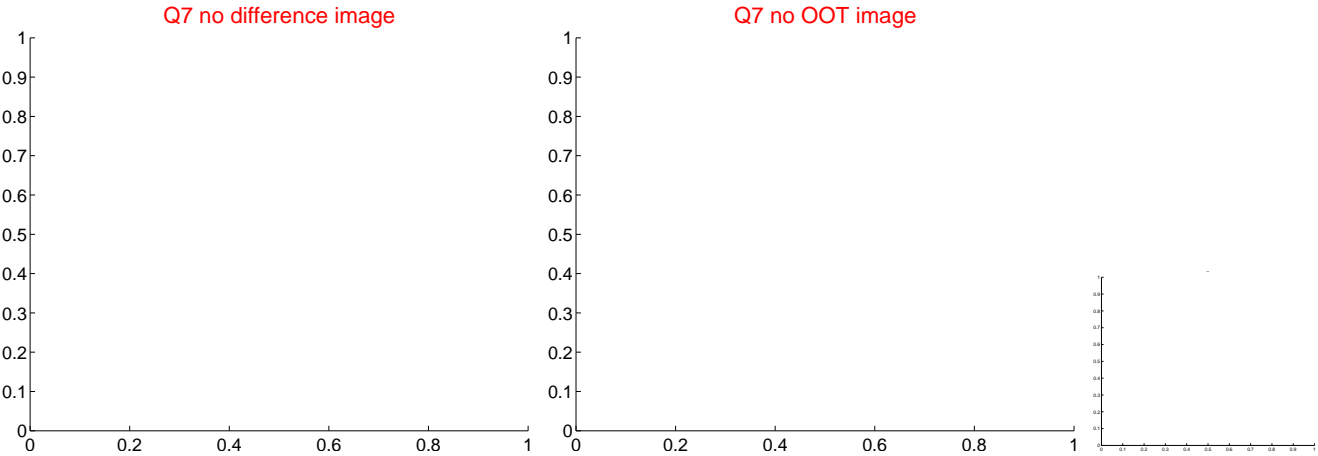
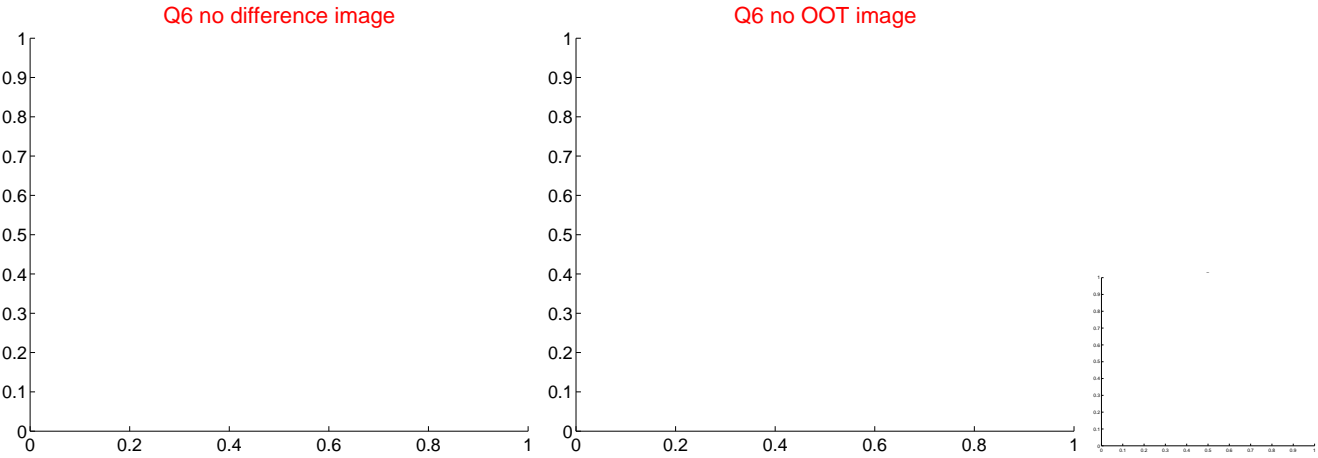
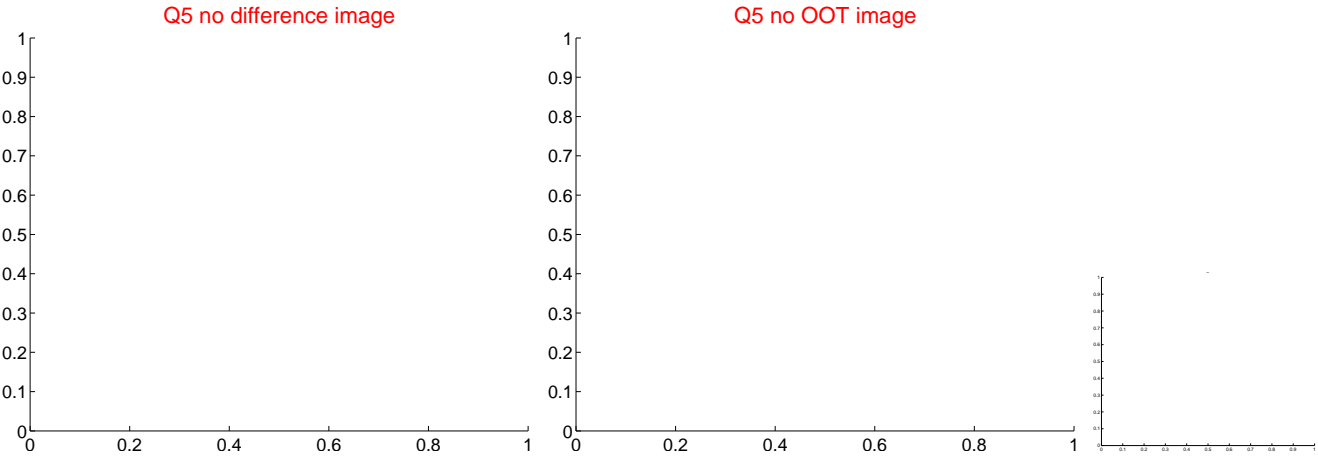


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

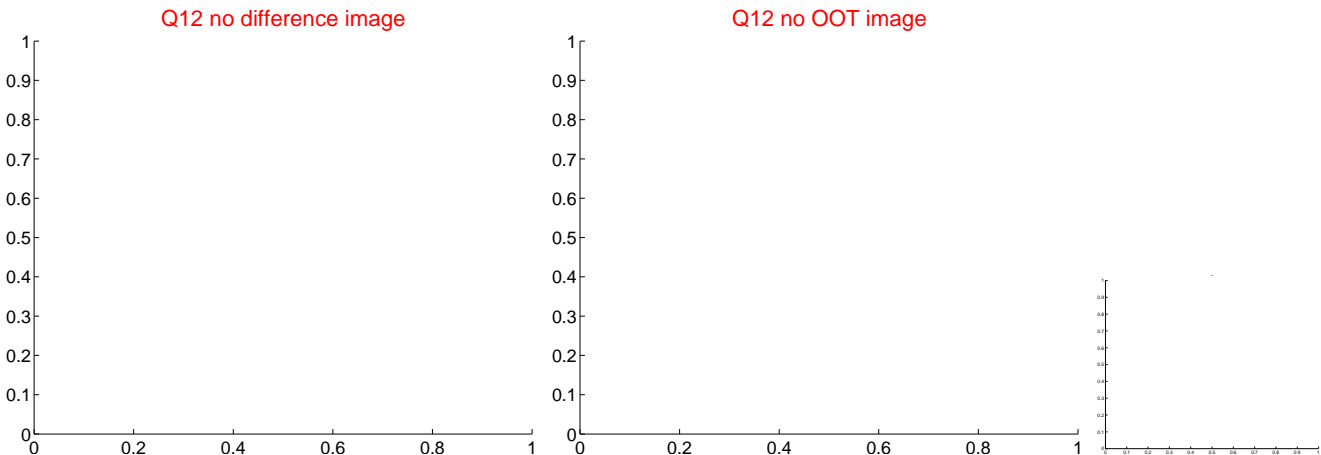
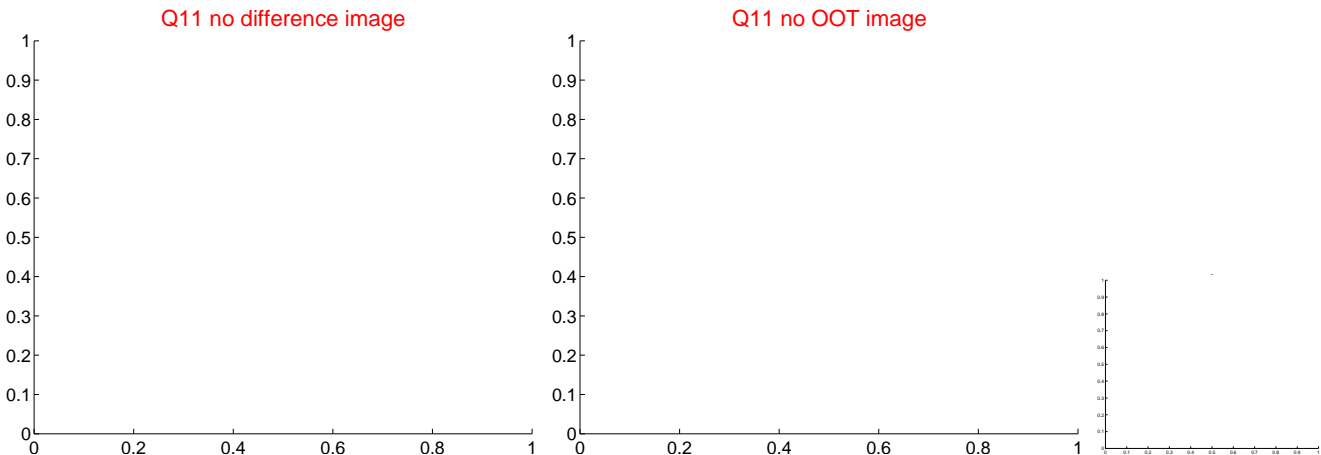
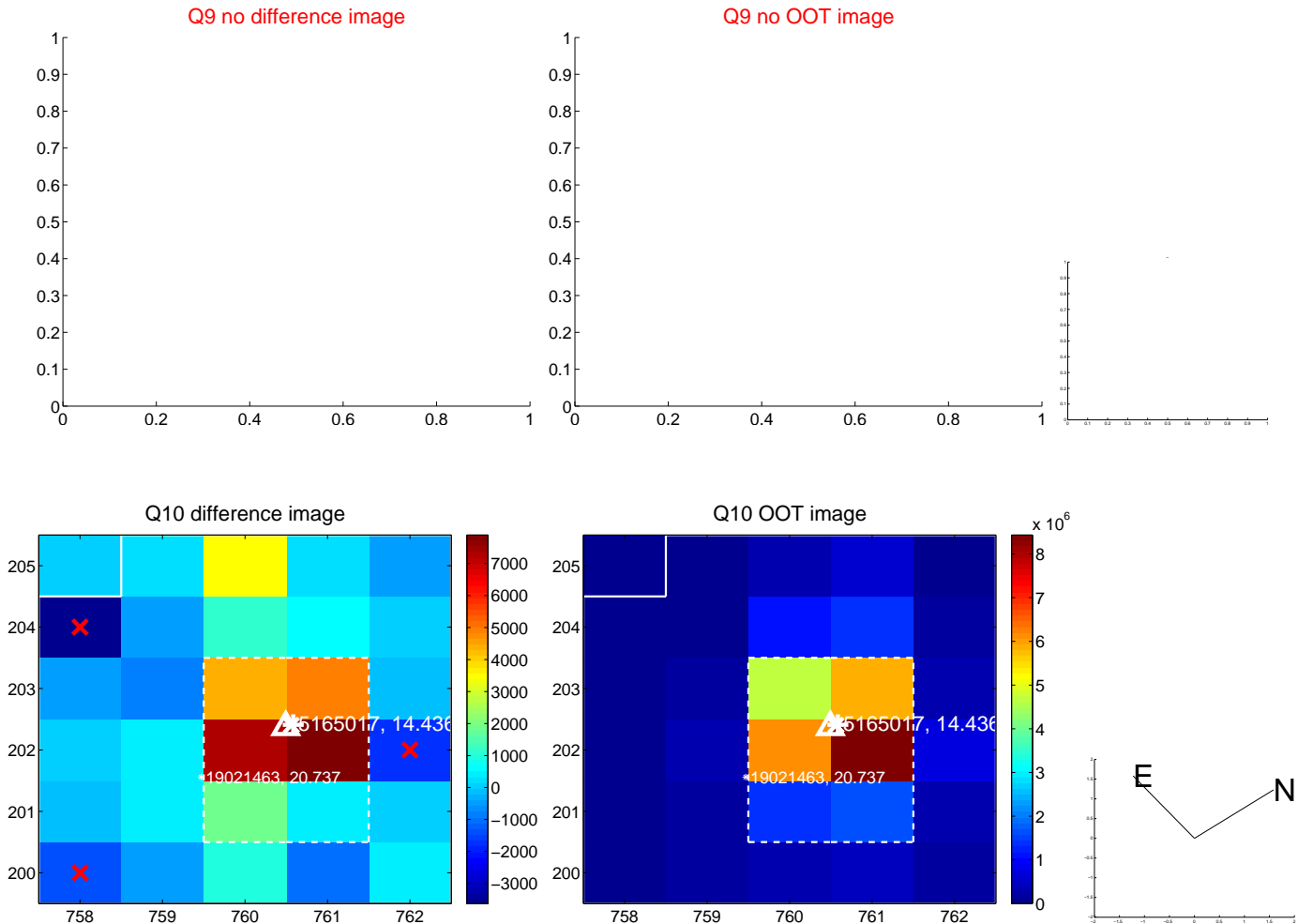
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



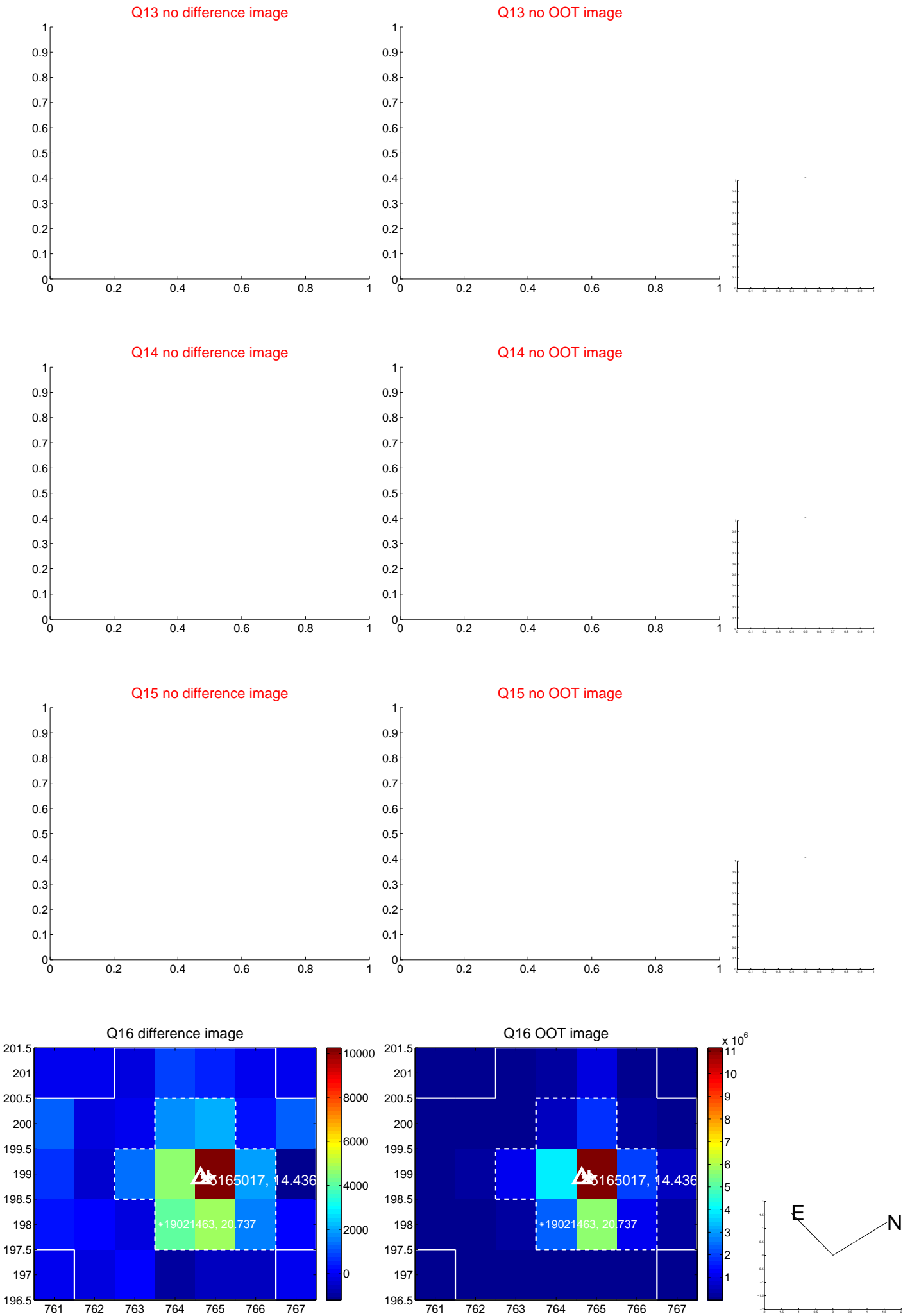
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



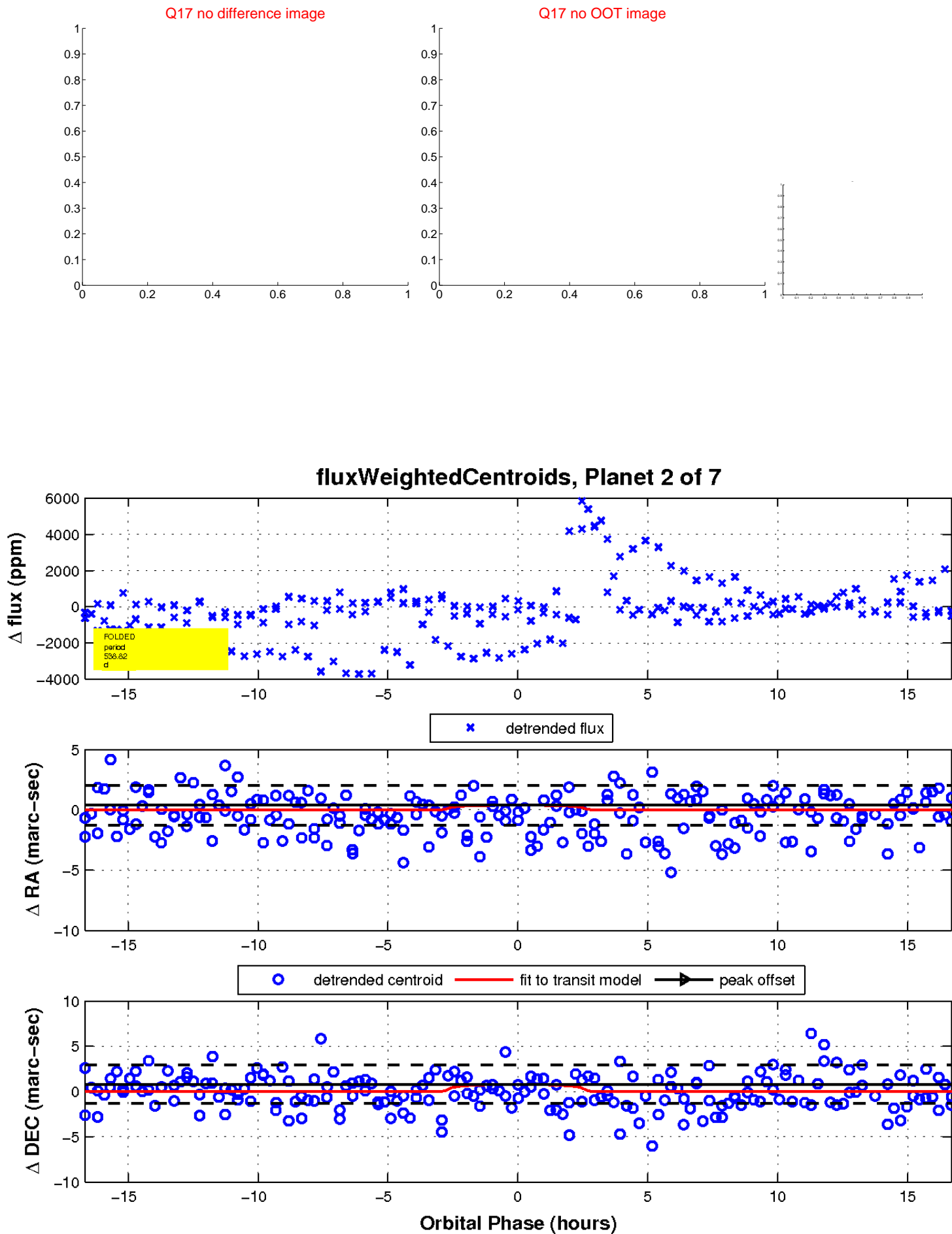
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

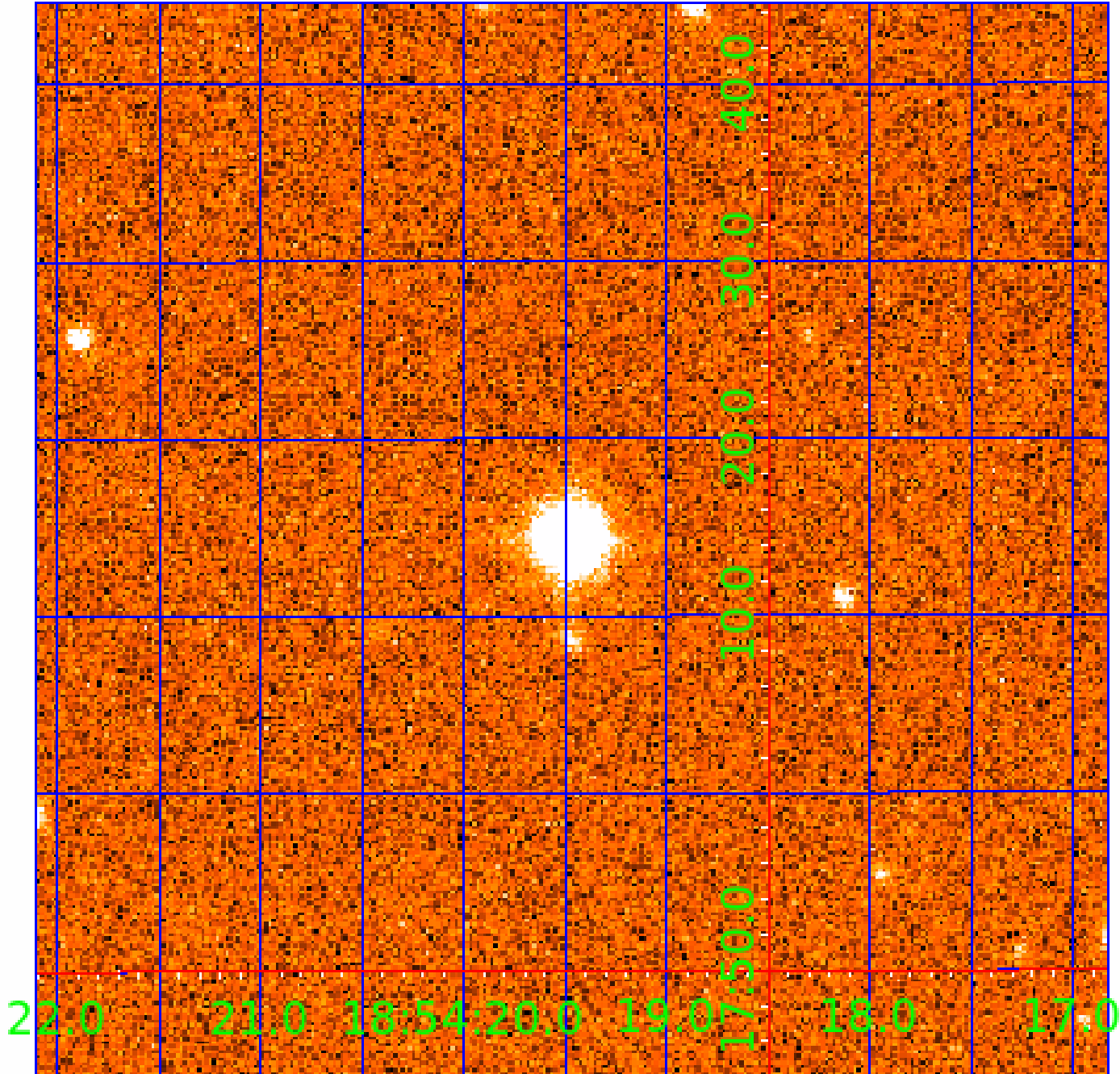


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005165017

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})
005165017-01	OBS	No	594.017212	194.718806	983.3	12.500	16.1	-1.0	0.65	4247	1.94	0.09
005165017-02	OBS	No	538.818358	414.553060	1787.2	5.627	13.0	8.2	0.65	4247	2.84	0.10
005165017-03	OBS	No	337.319843	315.384455	1745.5	3.985	13.0	9.0	0.65	4247	2.61	0.18
005165017-04	OBS	No	300.031189	178.118403	1175.7	3.303	12.1	6.6	0.65	4247	2.41	0.21
005165017-05	OBS	No	319.280803	305.910375	1367.9	4.414	10.4	7.1	0.65	4247	2.33	0.20
005165017-06	OBS	No	475.437567	139.941514	1288.4	5.024	11.2	6.3	0.65	4247	2.31	0.12
005165017-07	OBS	No	197.940016	298.762016	2141.3	5.509	10.1	10.9	0.65	4247	3.12	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005165017-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005165017-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
005165017-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005165017-04	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
005165017-05	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
005165017-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005165017-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

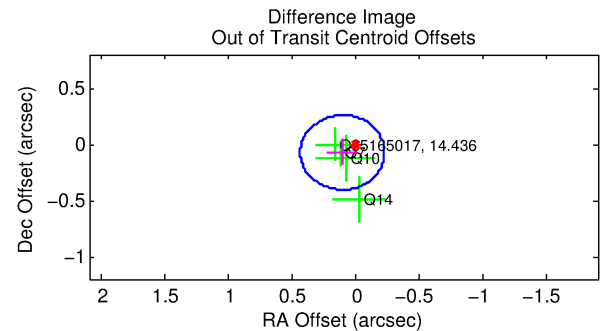
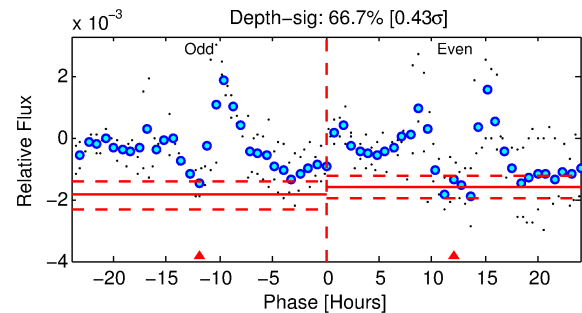
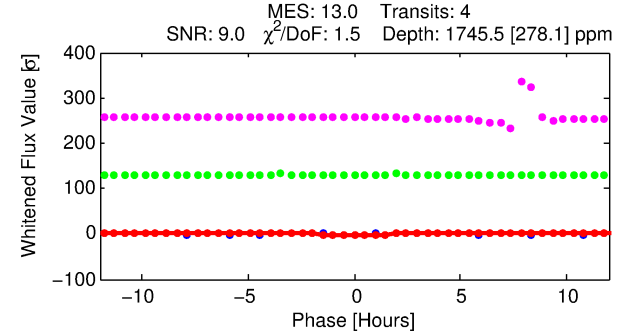
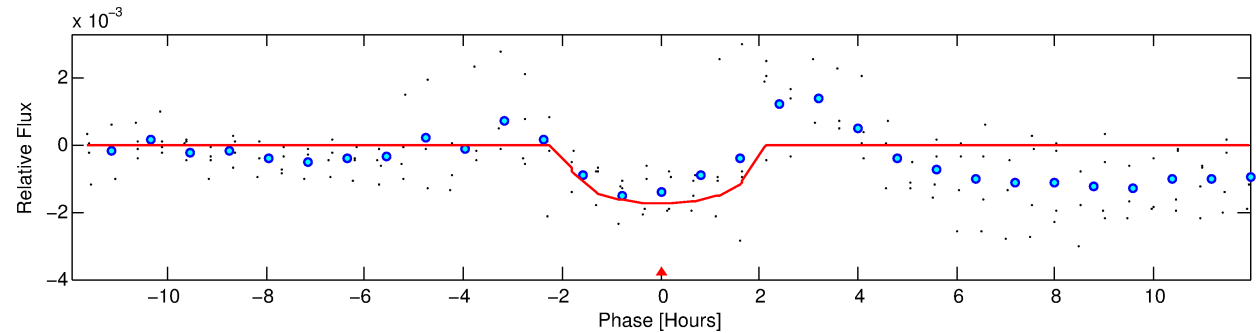
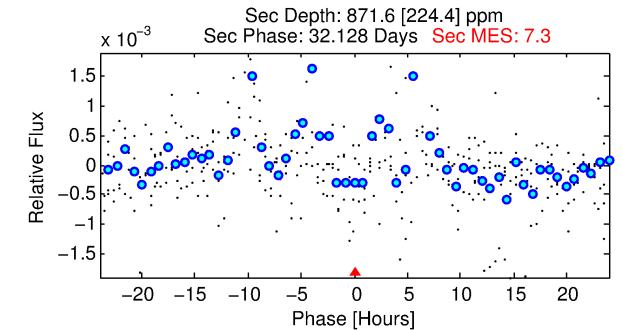
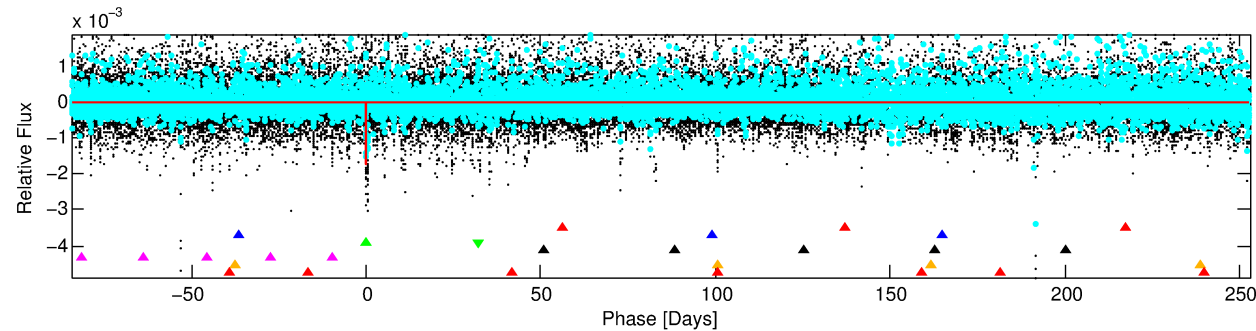
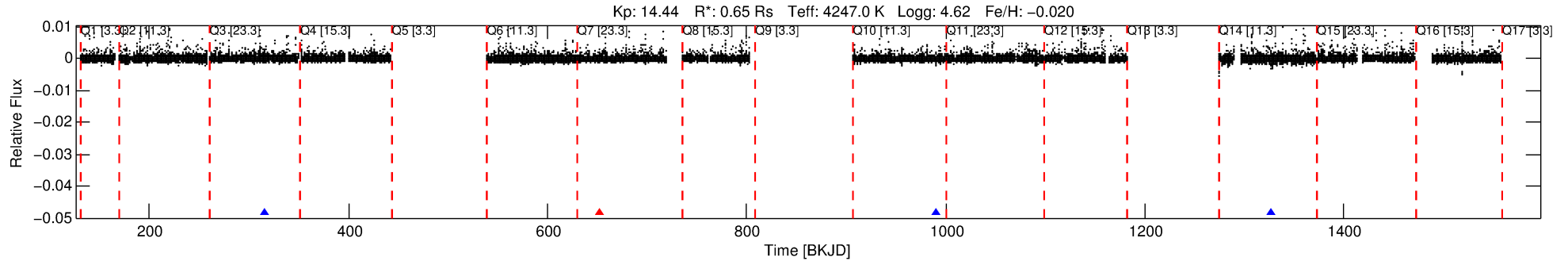
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005165017-03

No Significant Match Found

DV One-Page Summary

KIC: 5165017 Candidate: 3 of 7 Period: 337.320 d



DV Fit Results:

Period = 337.31984 [0.00389] d
Epoch = 315.3845 [0.0071] BKJD
Rp/R* = 0.0370 [0.0536]
a/R* = 651.94 [2760.58]
b = 0.24 [16.83]
Seff = 0.18 [0.03]
Teq = 167 [7] K
Rp = 2.61 [3.78] Re
a = 0.8157 [0.0501] AU
Ag = 46802.79 [136049.33] [0.34 σ]
Teffp = 3792 [2758] K [1.31 σ]

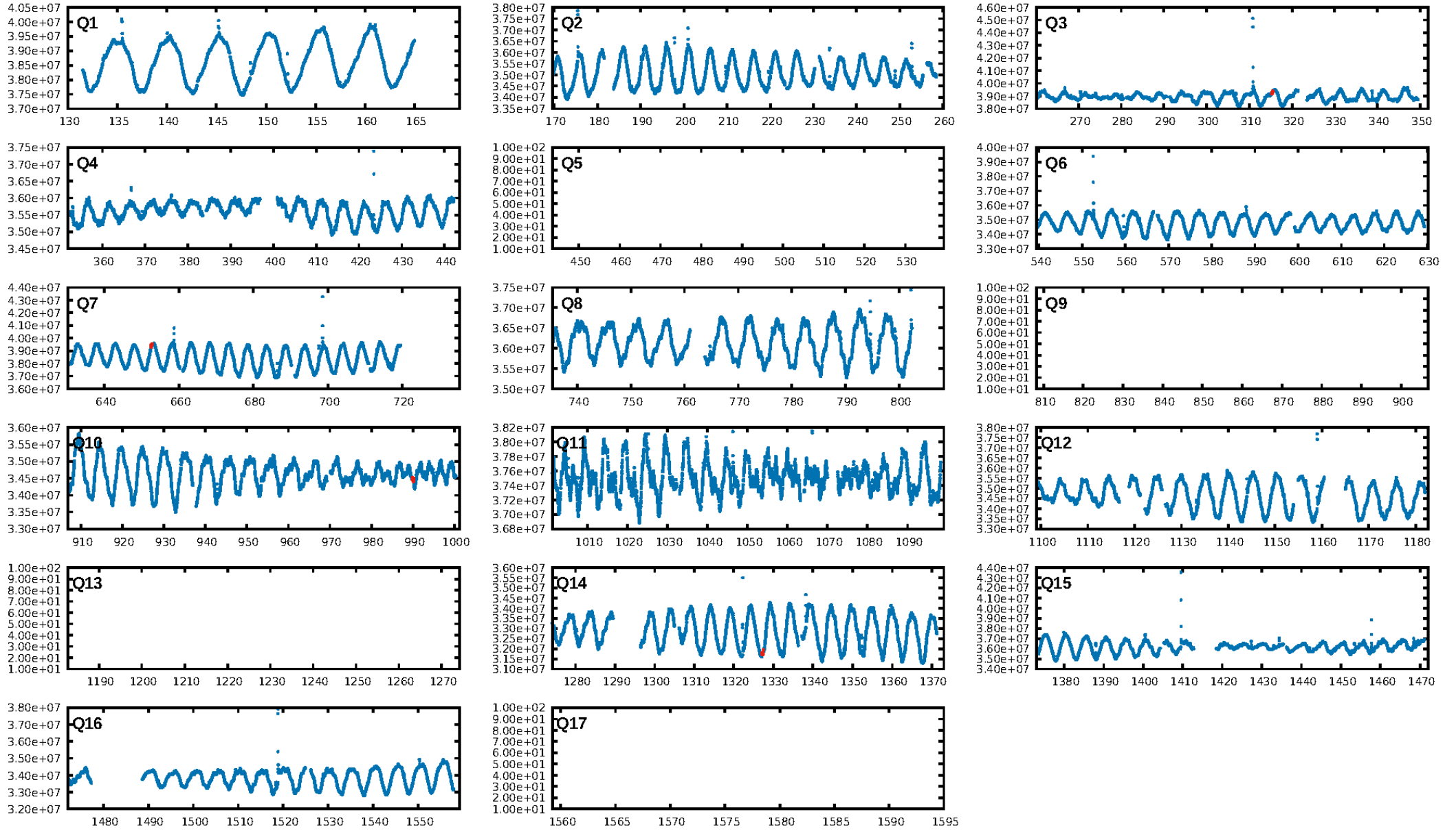
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [72.80 σ]
LongPeriod-sig: 100.0% [516.92 σ]
ModelChiSquare2-sig: 0.3%
ModelChiSquareGof-sig: 81.1%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.75 [3/4]
GhostDiagnostic-chr: 2.375
Centroid-sig: 17.8%
Centroid-so: 0.872 arcsec [1.71 σ]
OotOffset-rm: 0.132 arcsec [1.19 σ]
KicOffset-rm: 0.022 arcsec [0.20 σ]
OotOffset-st: 2/2/0/0 [4]
KicOffset-st: 2/2/0/0 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 1.00 [4/4]

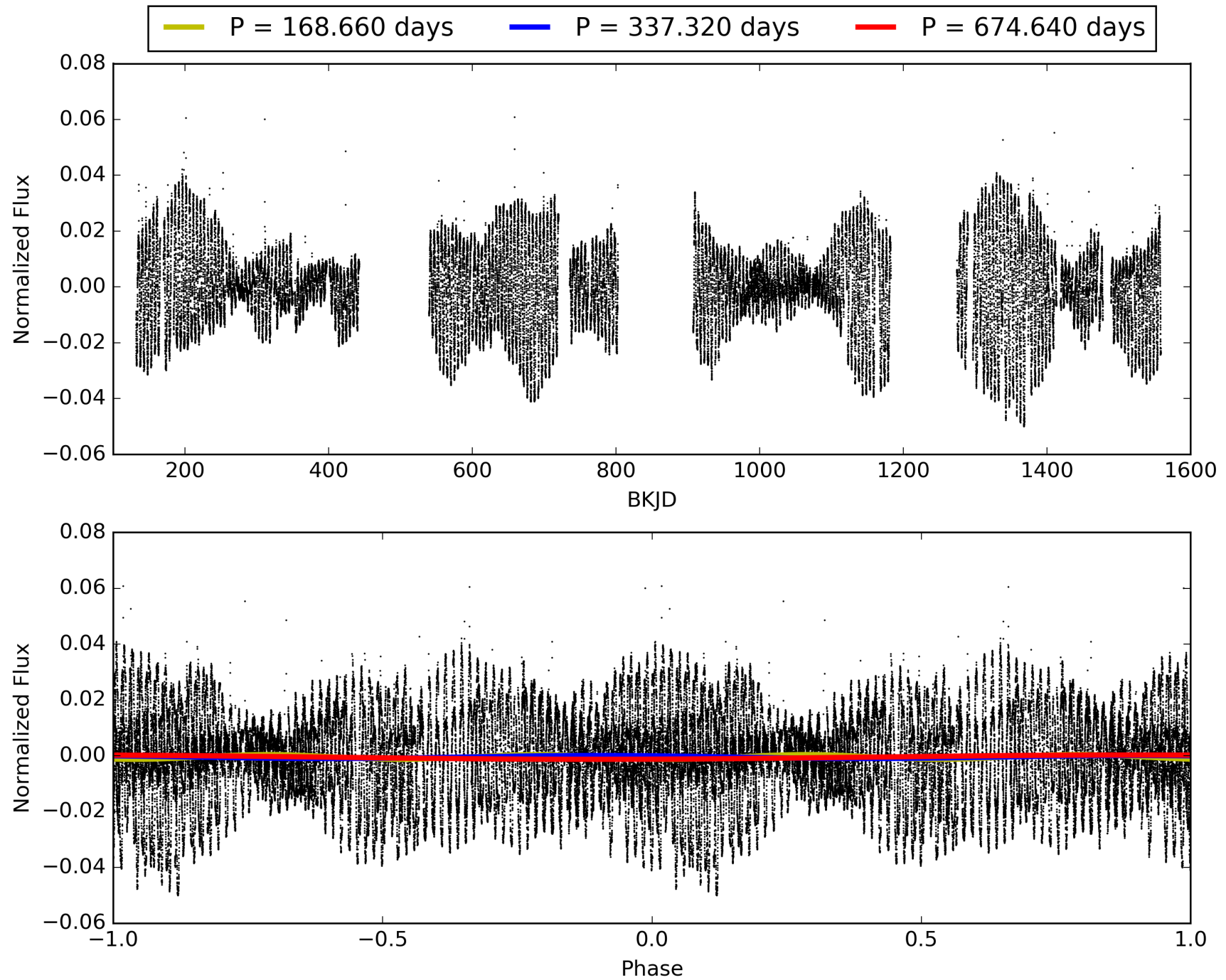
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:20:52 Z

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

TCE 005165017-03, PDC Light Curves

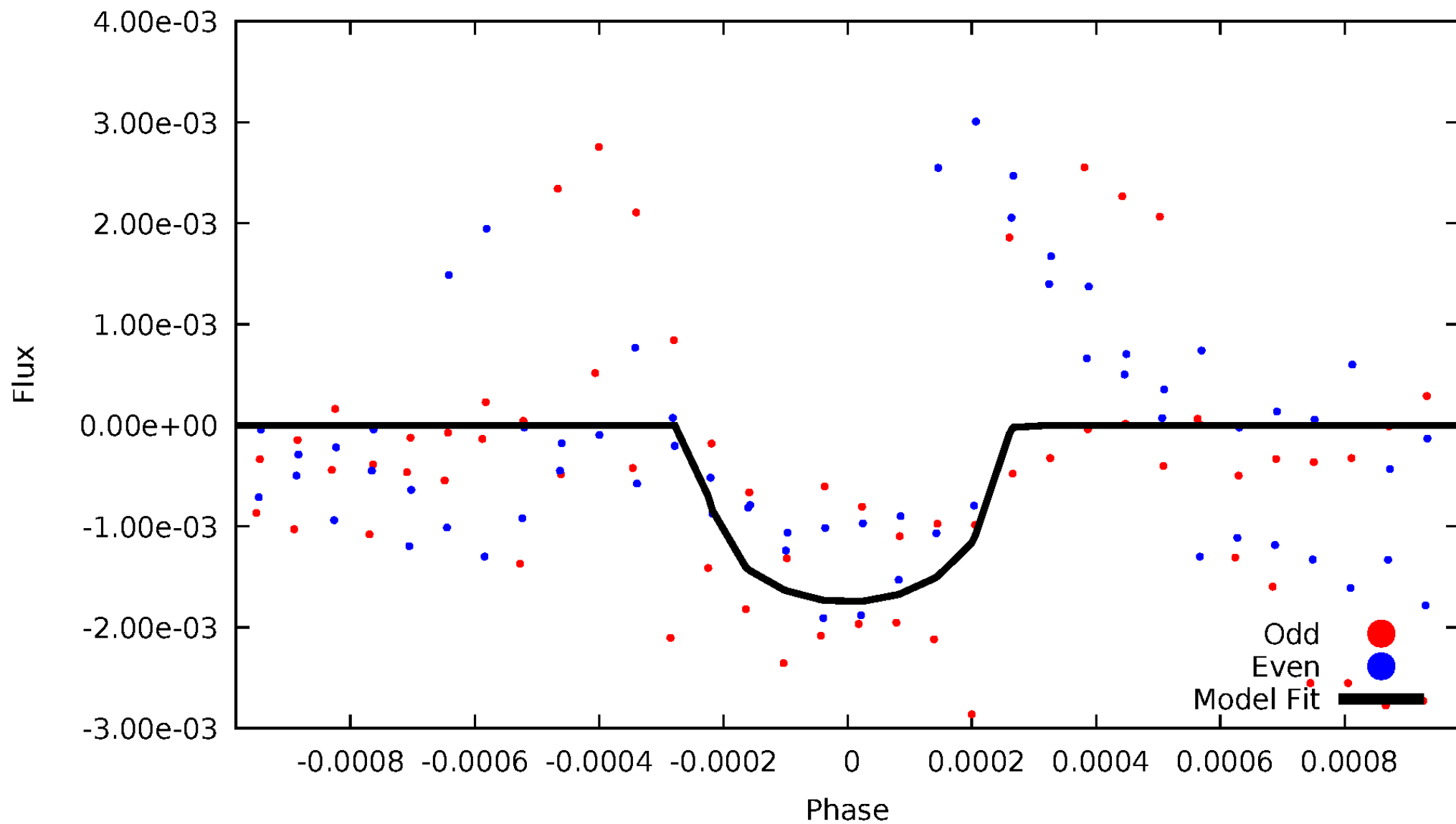


TCE 005165017-03



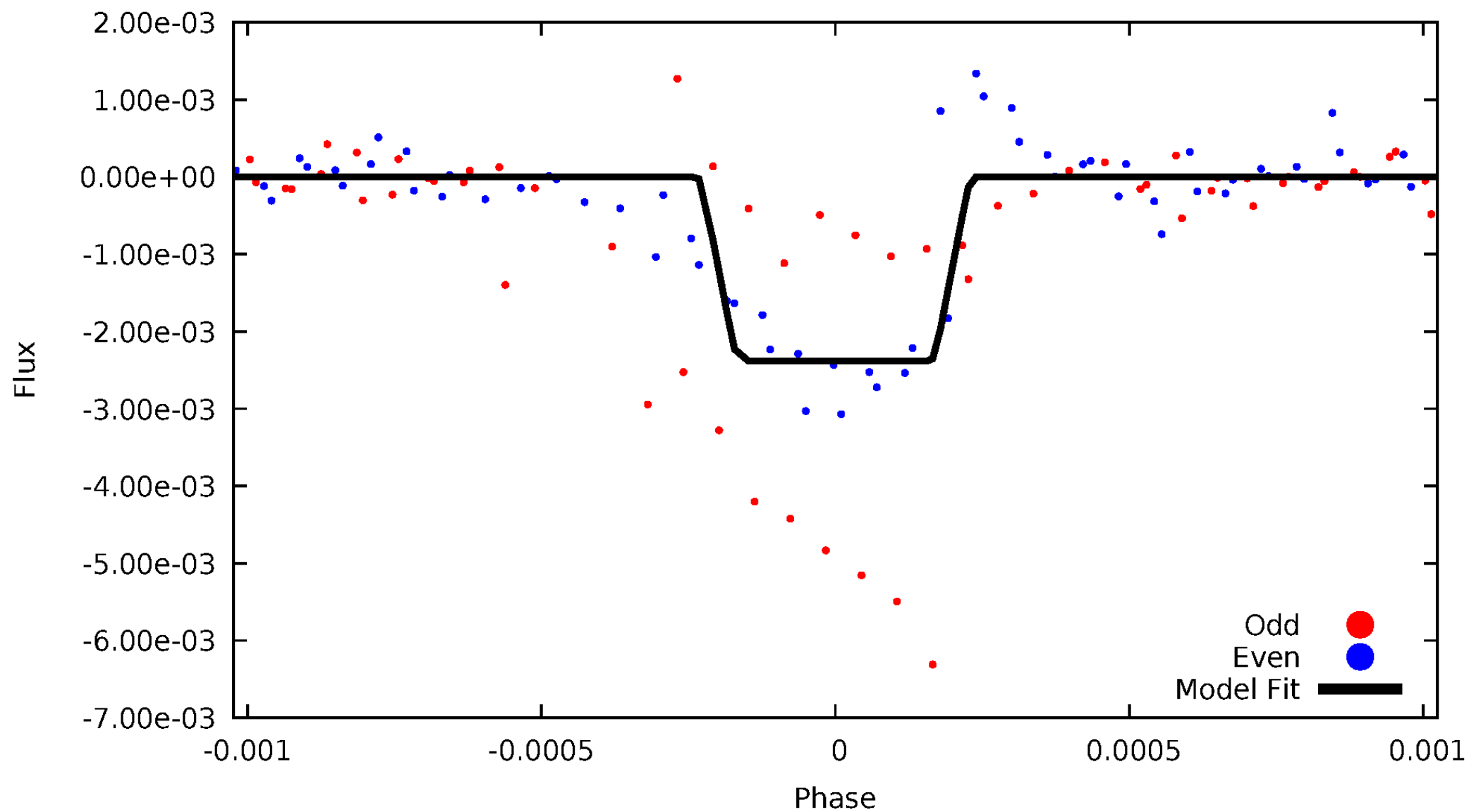
DV Odd/Even

TCE 005165017-03



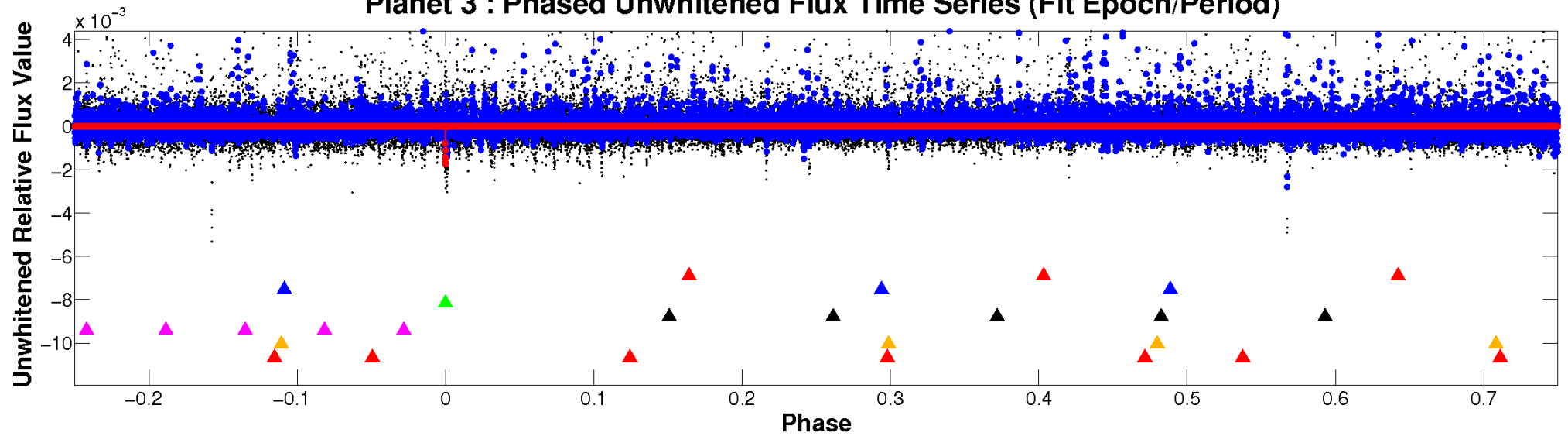
ALT Odd/Even

TCE 005165017-03

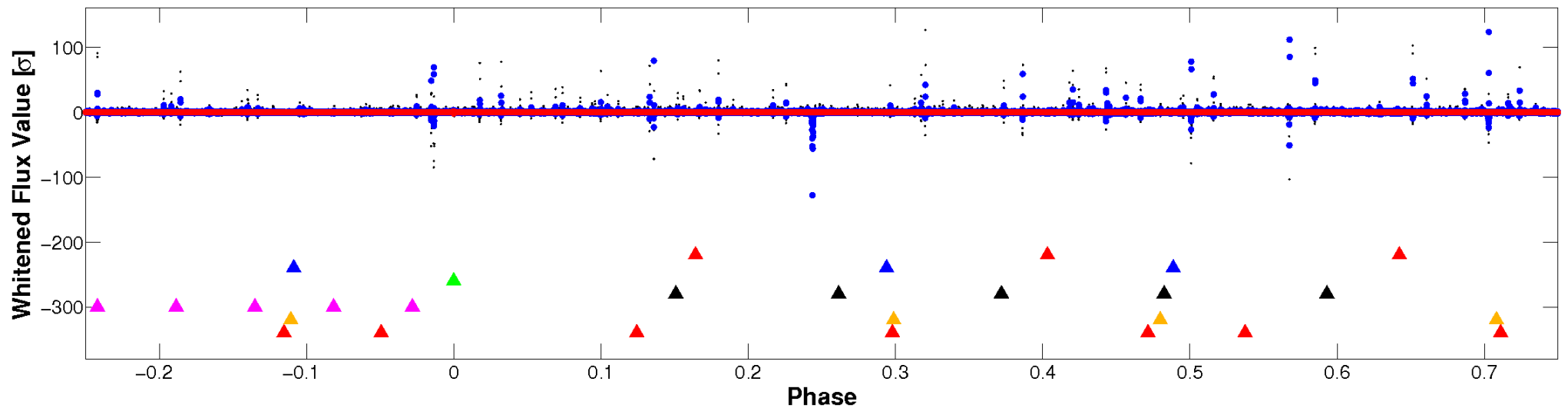


Non-Whitened Vs. Whitened Light Curve

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

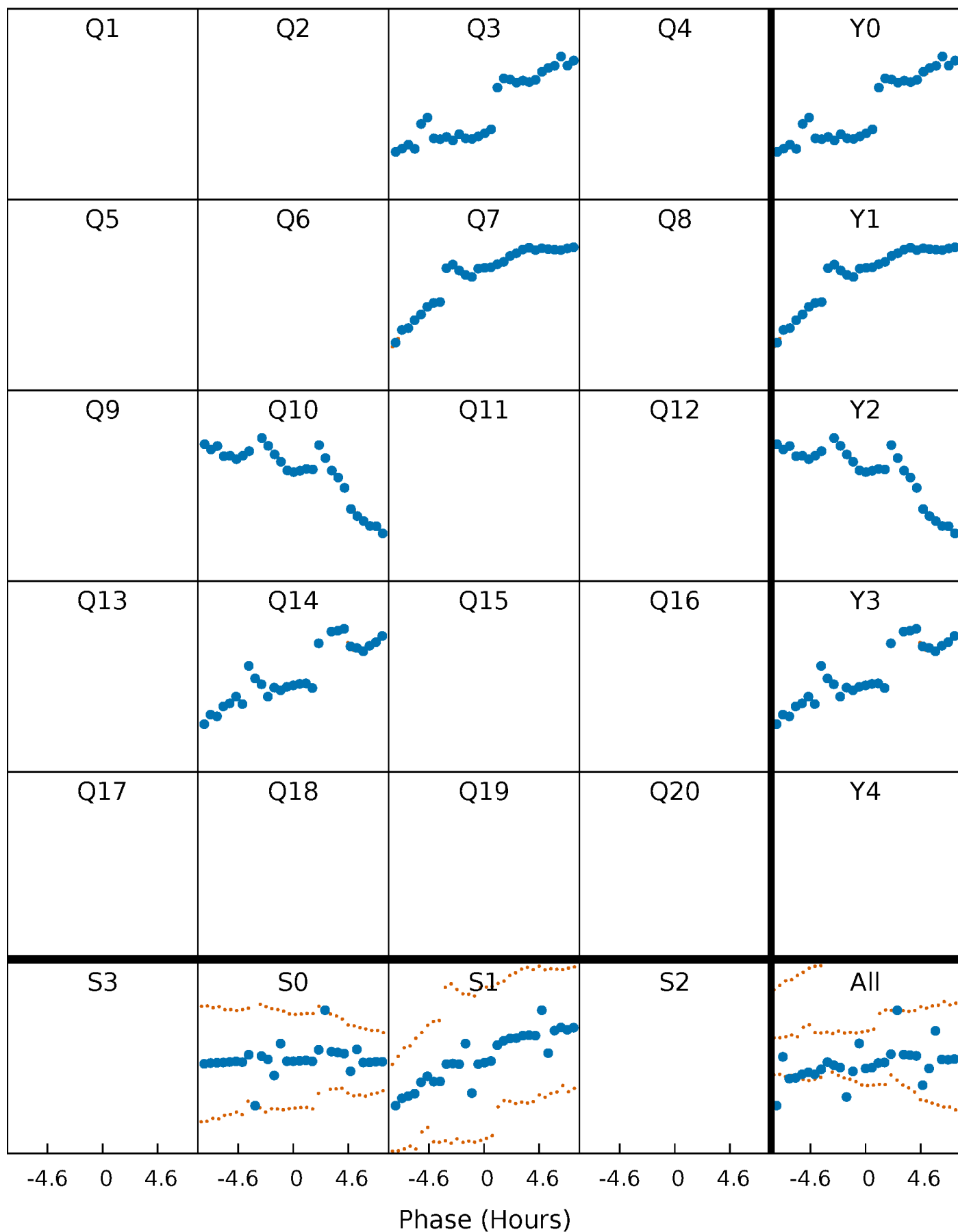


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



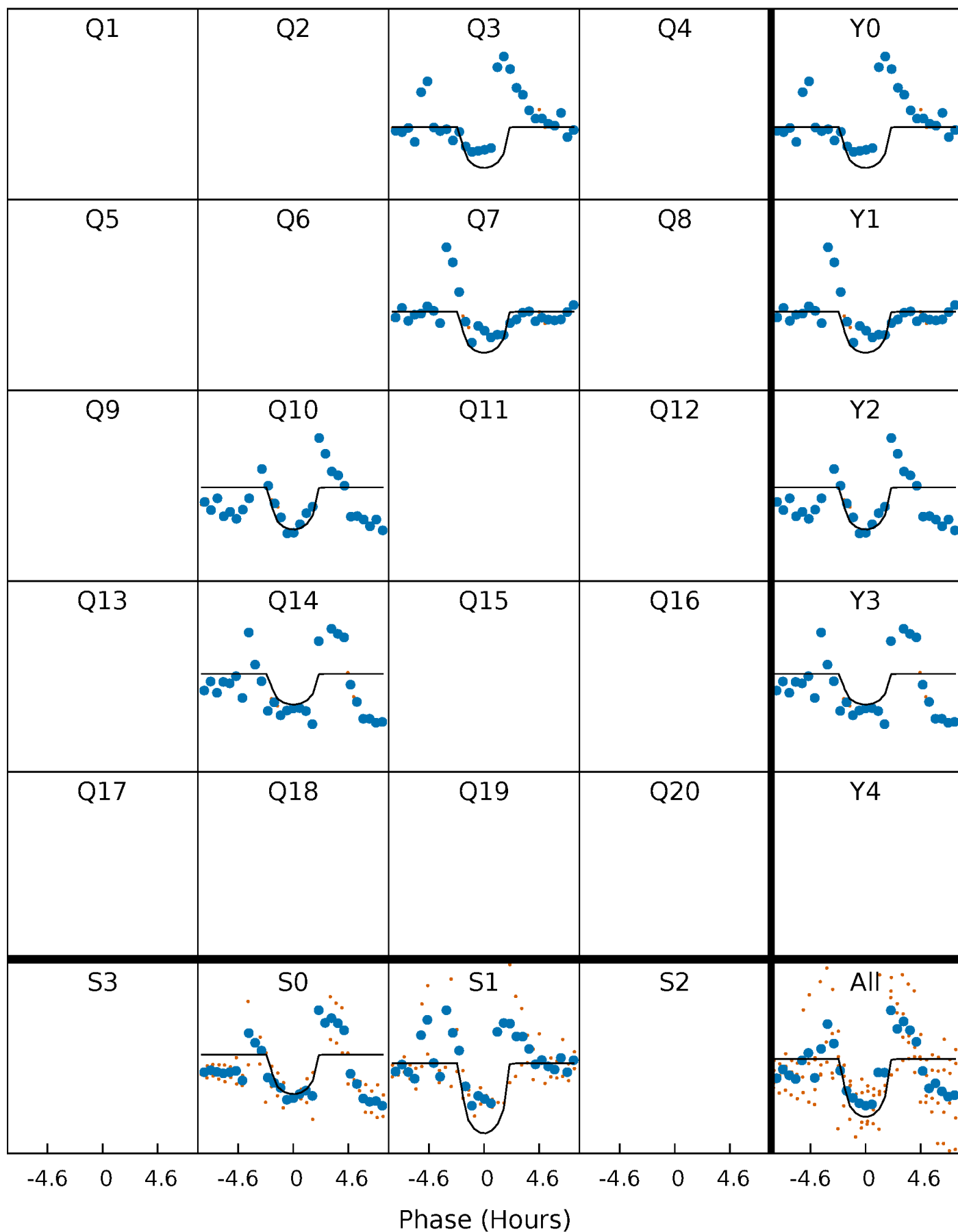
PDC Quarter-Phased Transit Curves

TCE 005165017-03 P=337.319843 Days $T_0=315.384455$ (BKJD)



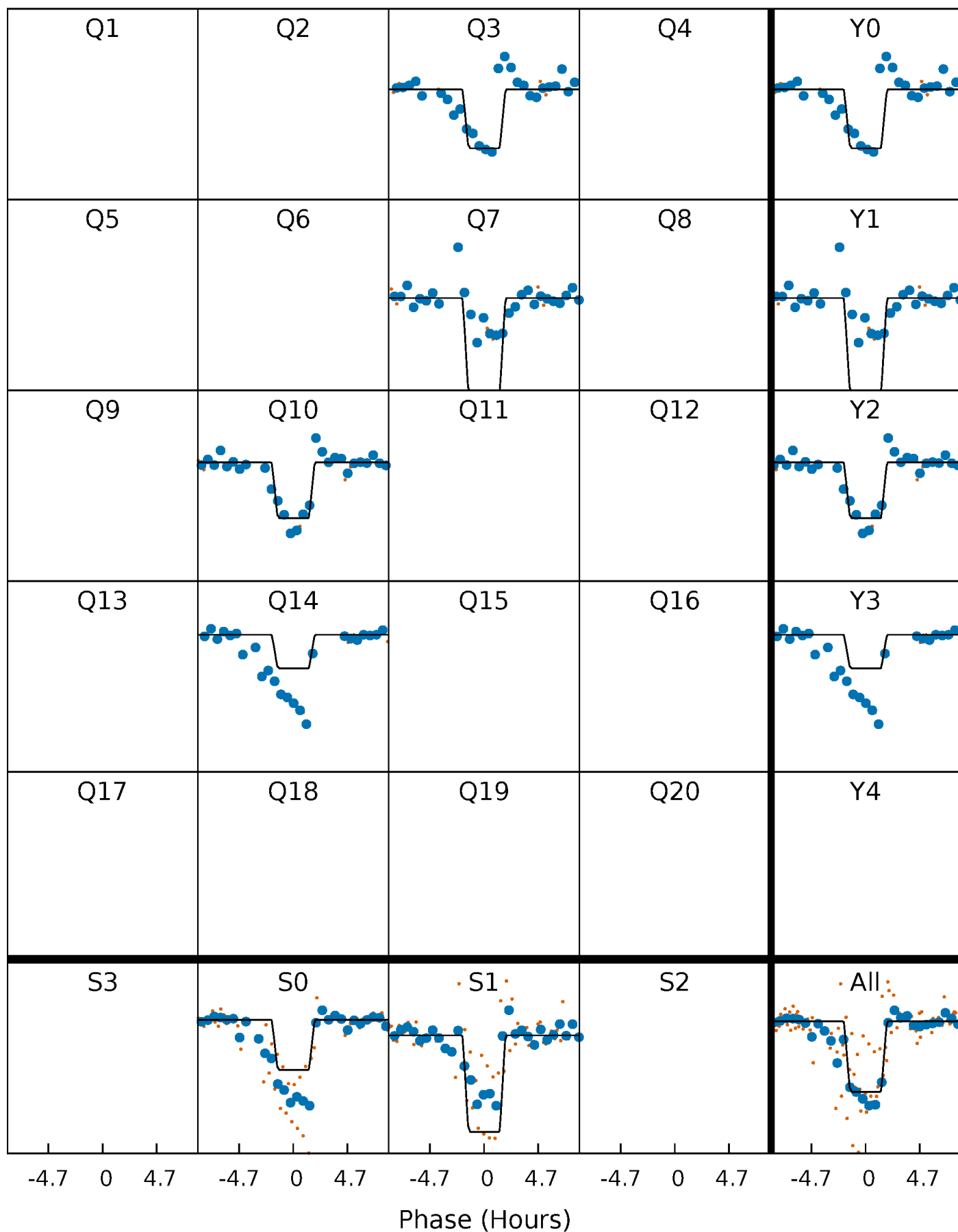
DV Quarter-Phased Transit Curves

TCE 005165017-03 P=337.319843 Days $T_0=315.384455$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

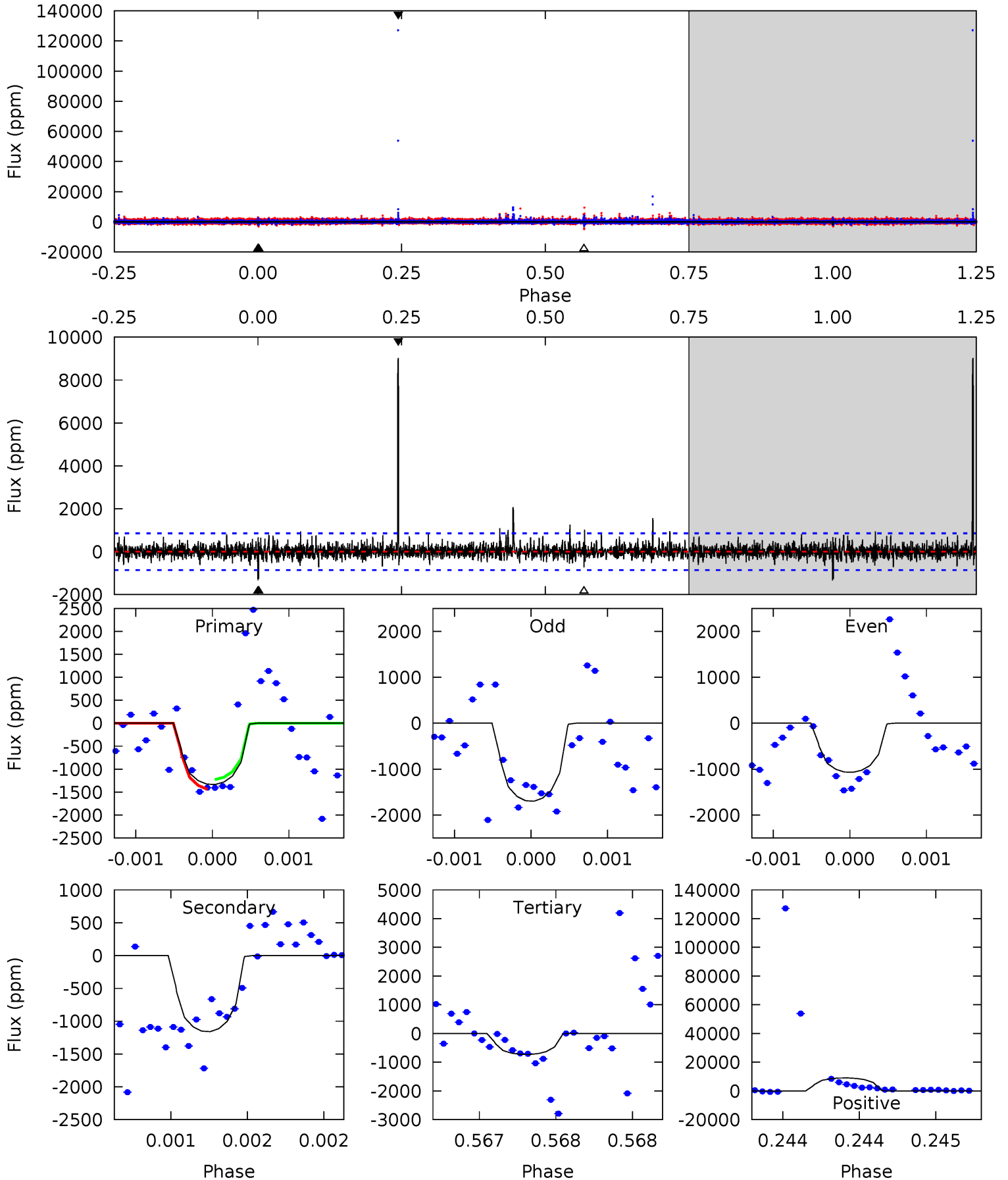
TCE 005165017-03 P=337.327407 Days $T_0=315.373162$ (BKJD)



DV Model-Shift Uniqueness Test

005165017-03, P = 337.319843 Days, E = 315.384455 Days

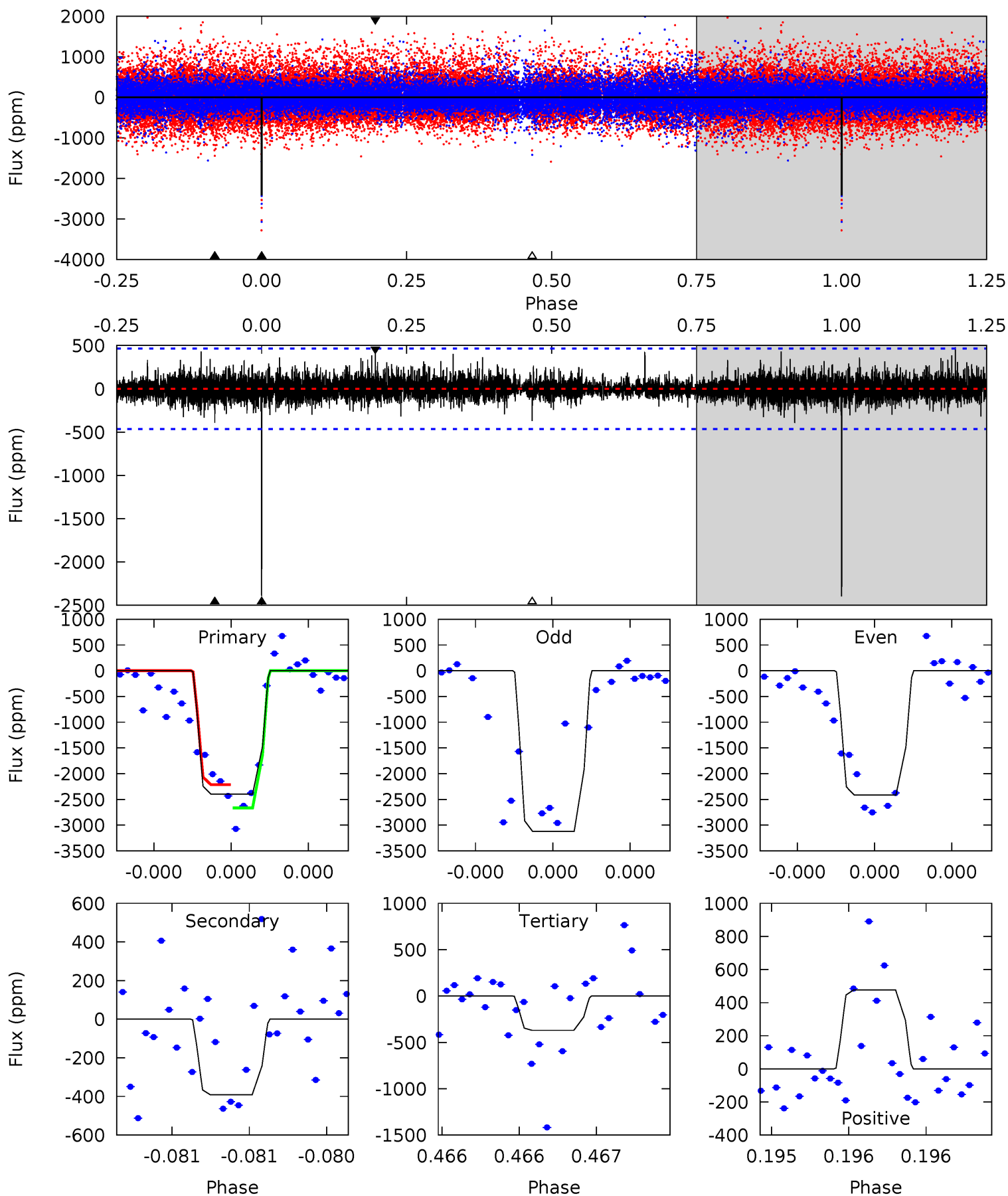
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.66	7.52	4.76	58.6	5.56	3.46	1.85	3.90	-49.9	2.76	-51.1	1.35	1.01	0.87	0.71



Alt Model-Shift Uniqueness Test

005165017-03, P = 337.327407 Days, E = 315.373162 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.9	4.72	4.46	5.75	5.58	3.50	0.99	24.4	23.1	0.26	-1.03	4.81	1.16	0.17	2.73



Stellar Parameters For KIC 005165017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4247^{+134}_{-164}	$4.621^{+0.049}_{-0.014}$	$-0.020^{+0.150}_{-0.150}$	$0.646^{+0.027}_{-0.047}$	$0.636^{+0.045}_{-0.041}$	$3.327^{+0.649}_{-0.245}$
	+3%/-4%	+1%/-0%	+750%/-750%	+4%/-7%	+7%/-6%	+19%/-7%
Source	PHO1	KIC0	SPE15	DSEP		

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

Secondary Eclipse Parameters for KIC 005165017-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1159 ± 154	$3.88^{+3.32}_{-2.52}$	231^{+8}_{-8}	3575^{+1737}_{-627}	$27002^{+202163}_{-19111}$
Alt.	-392 ± 83	$4.39^{+3.38}_{-2.80}$	231^{+8}_{-8}	2898^{+1094}_{-377}	7684^{+49953}_{-5264}

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

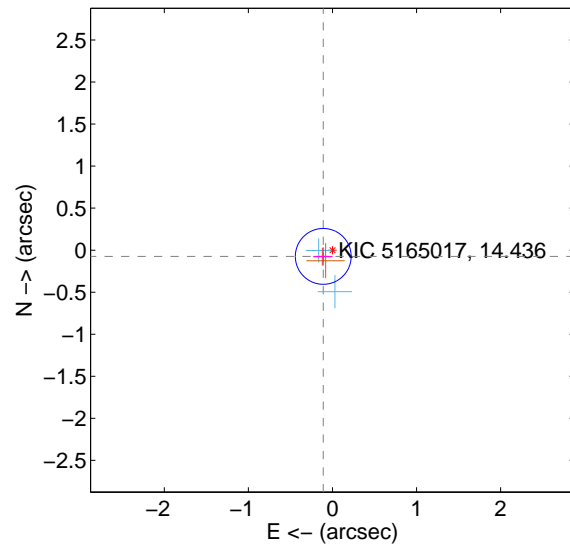
Supplemental centroid analysis for 005165017-03. Kepler magnitude: 14.44. Transit SNR 9.04

There are 2 quarters with good PRF difference image offsets

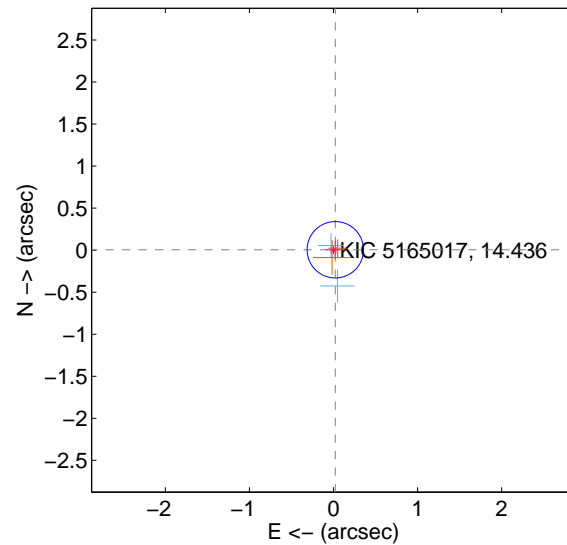
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.132 ± 0.111	1.19	0.110 ± 0.112	-0.074 ± 0.108
PRF-fit source offset from KIC position	0.022 ± 0.112	0.20	-0.021 ± 0.112	0.005 ± 0.108
photometric centroid source offset	0.87 ± 0.51	1.71	-0.67 ± 0.46	-0.55 ± 0.57

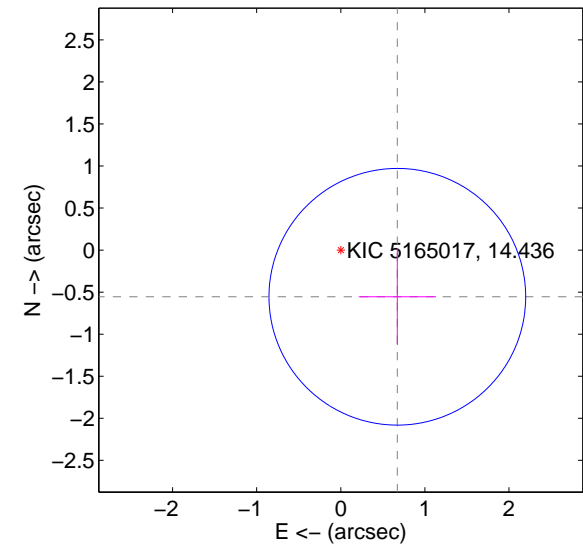
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

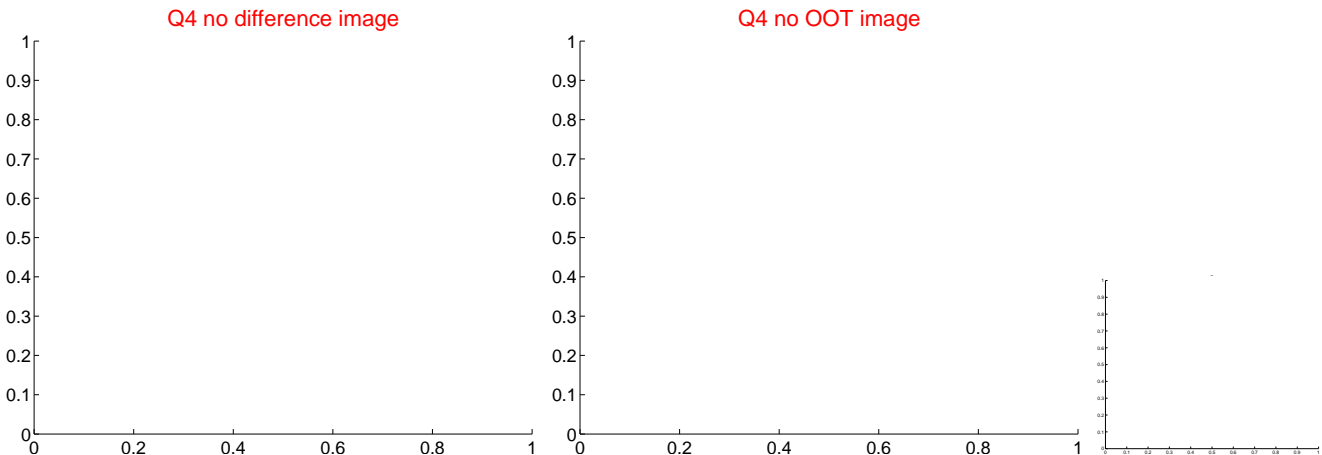
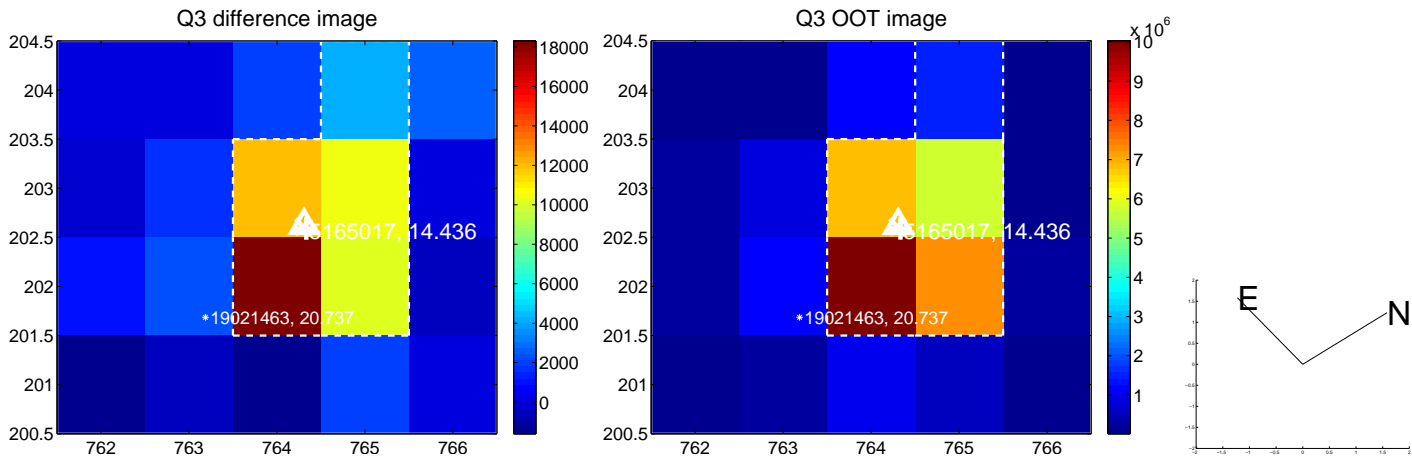
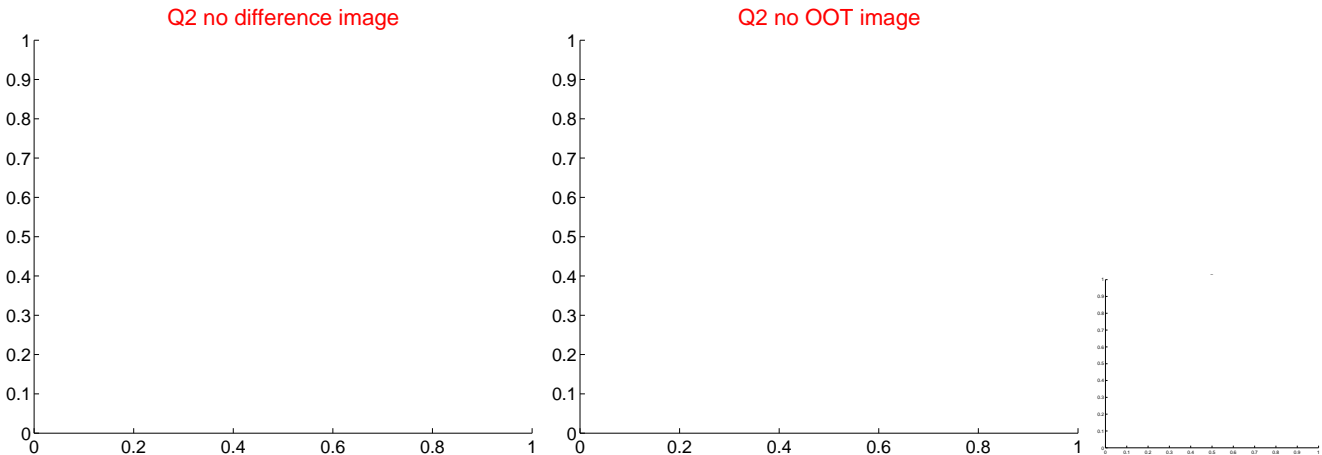
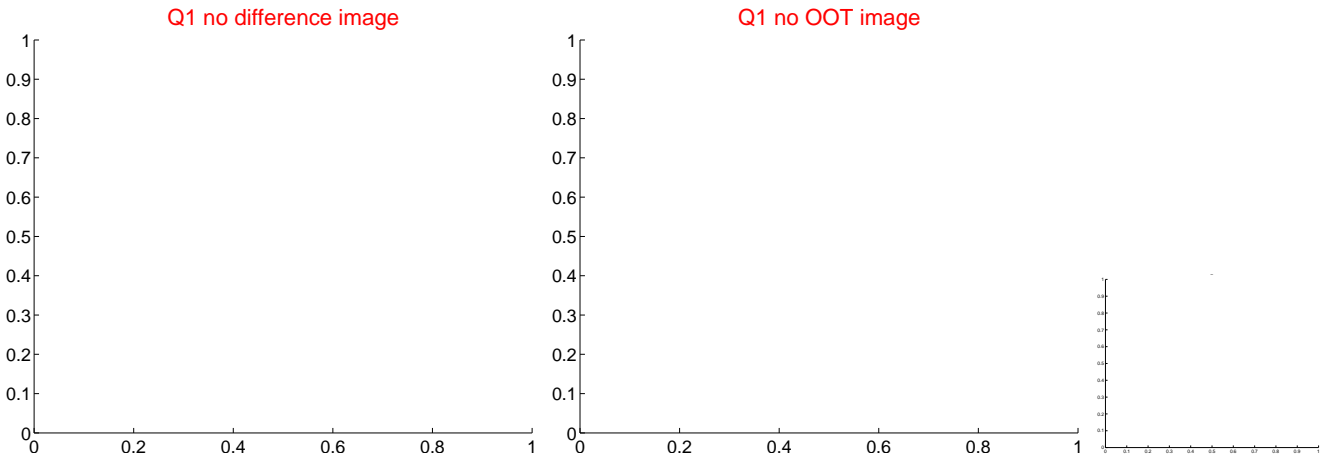


offset from photometric centroids

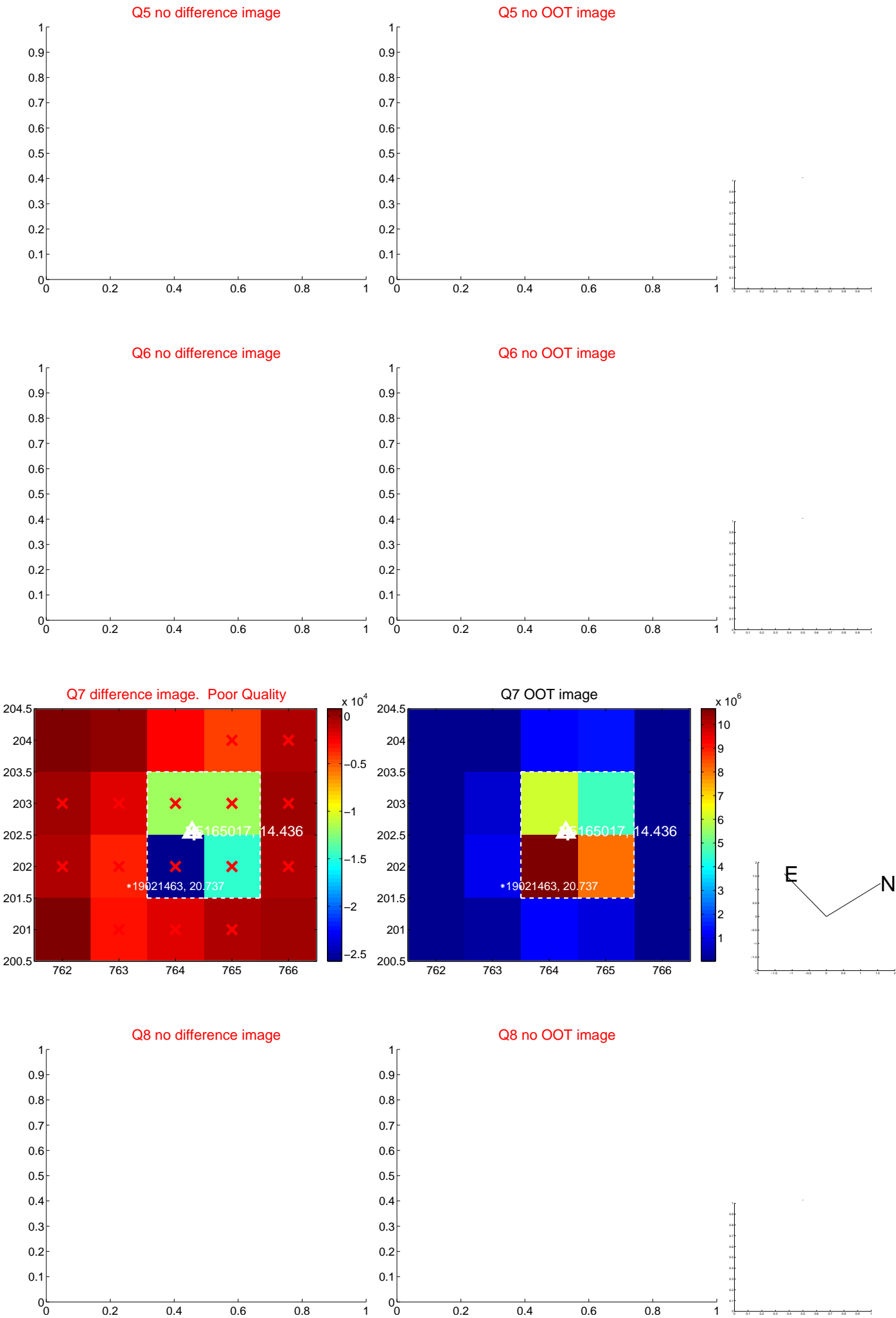


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

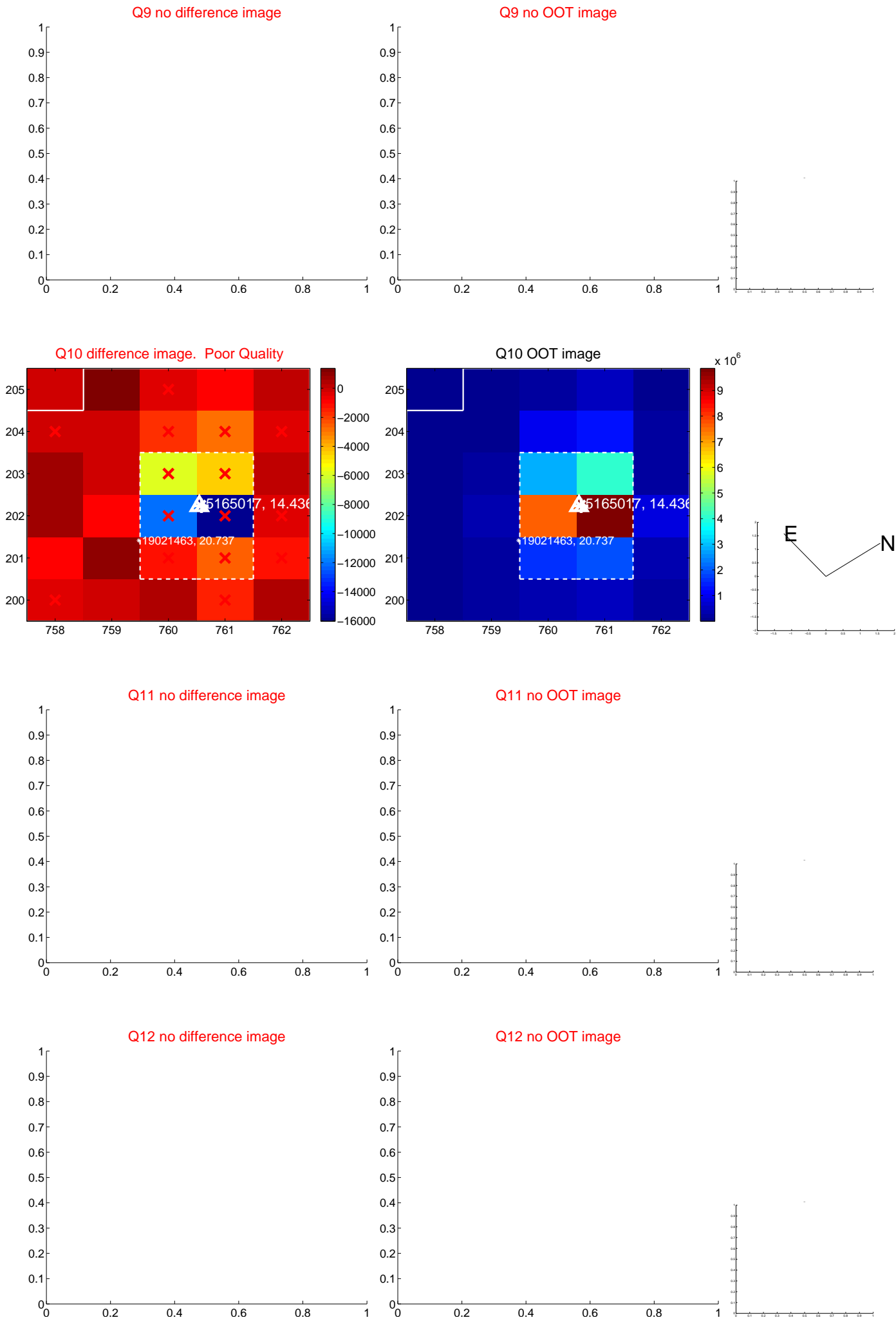
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



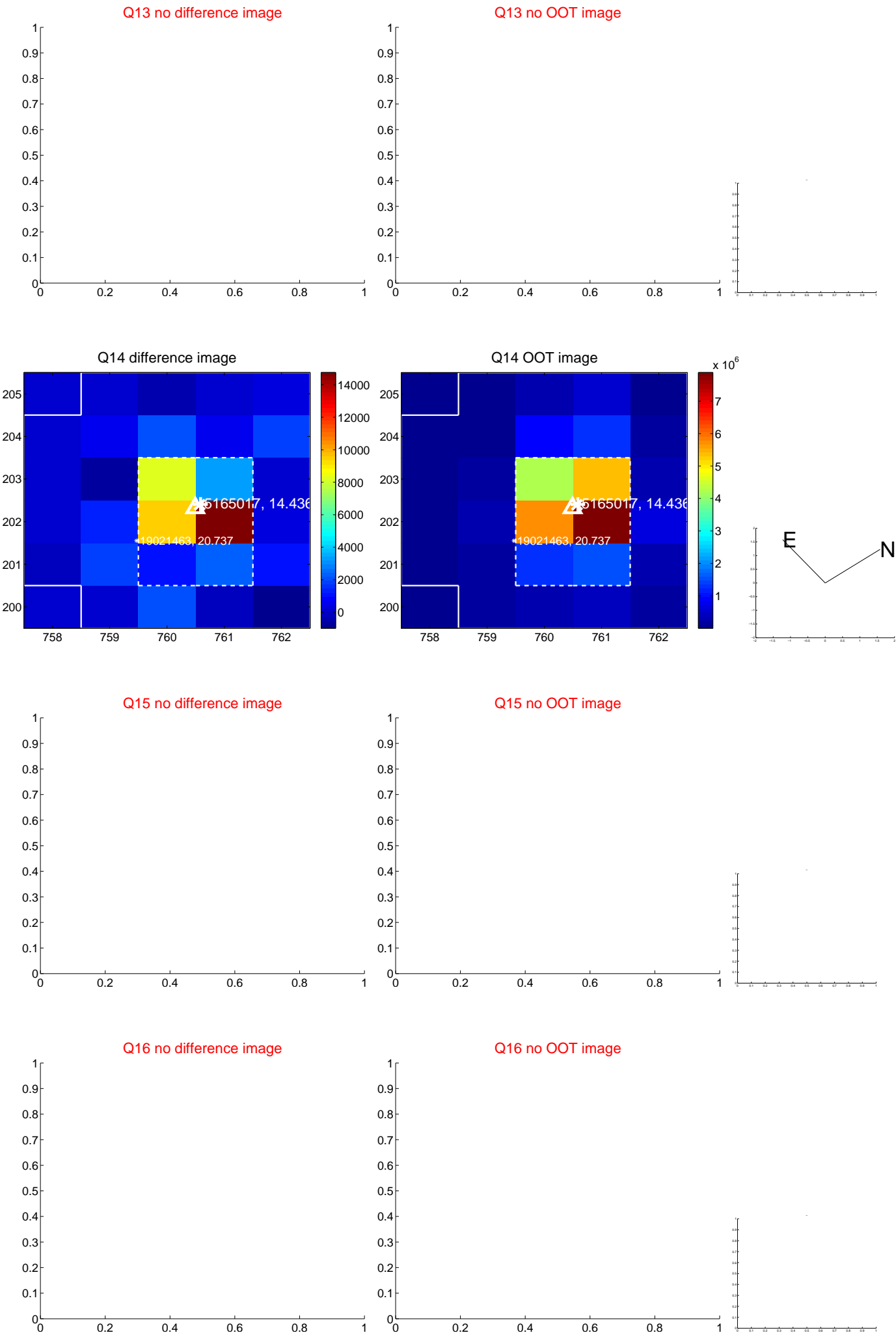
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



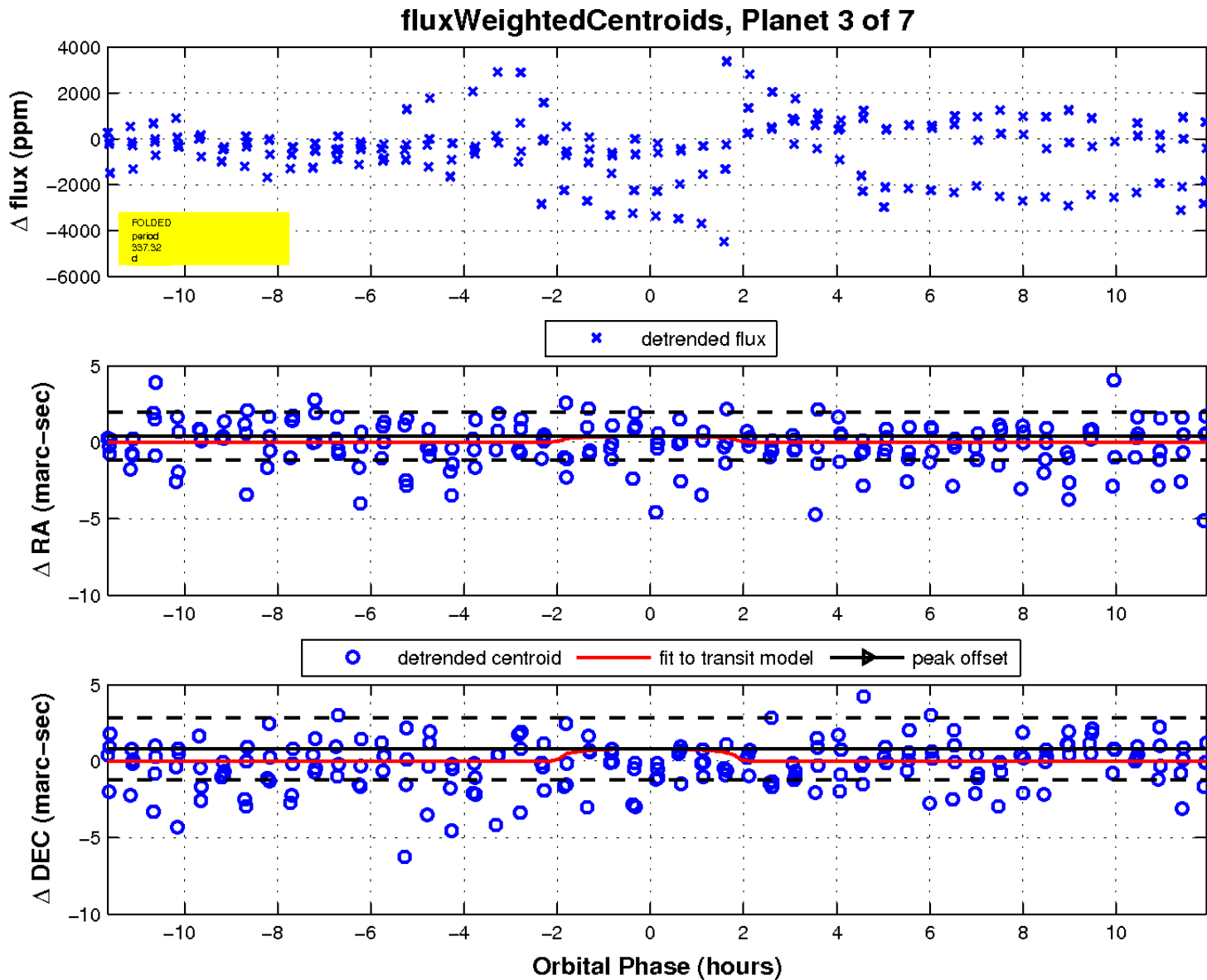
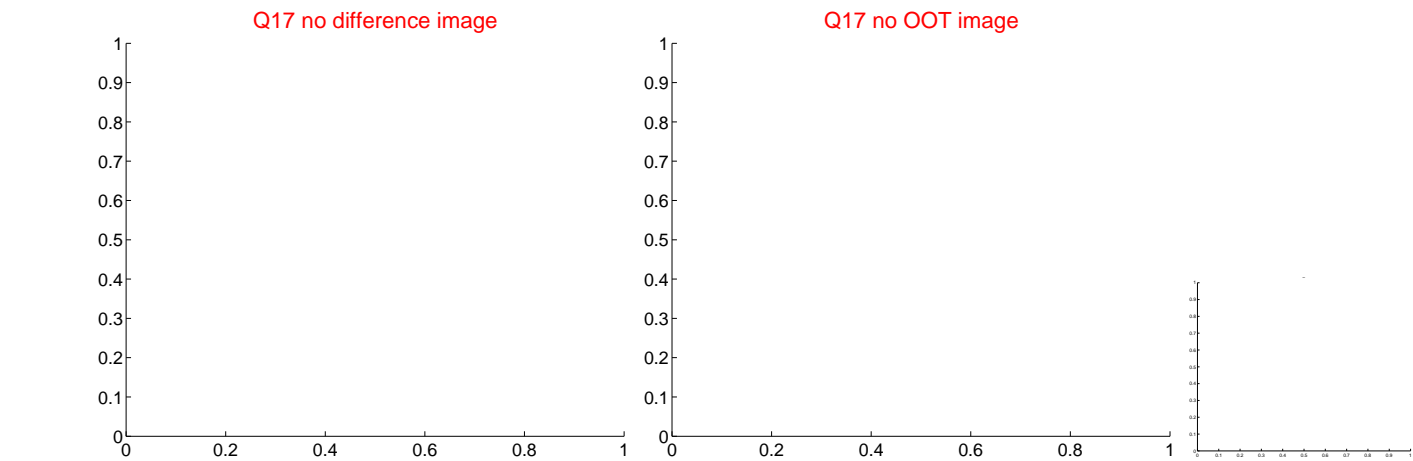
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

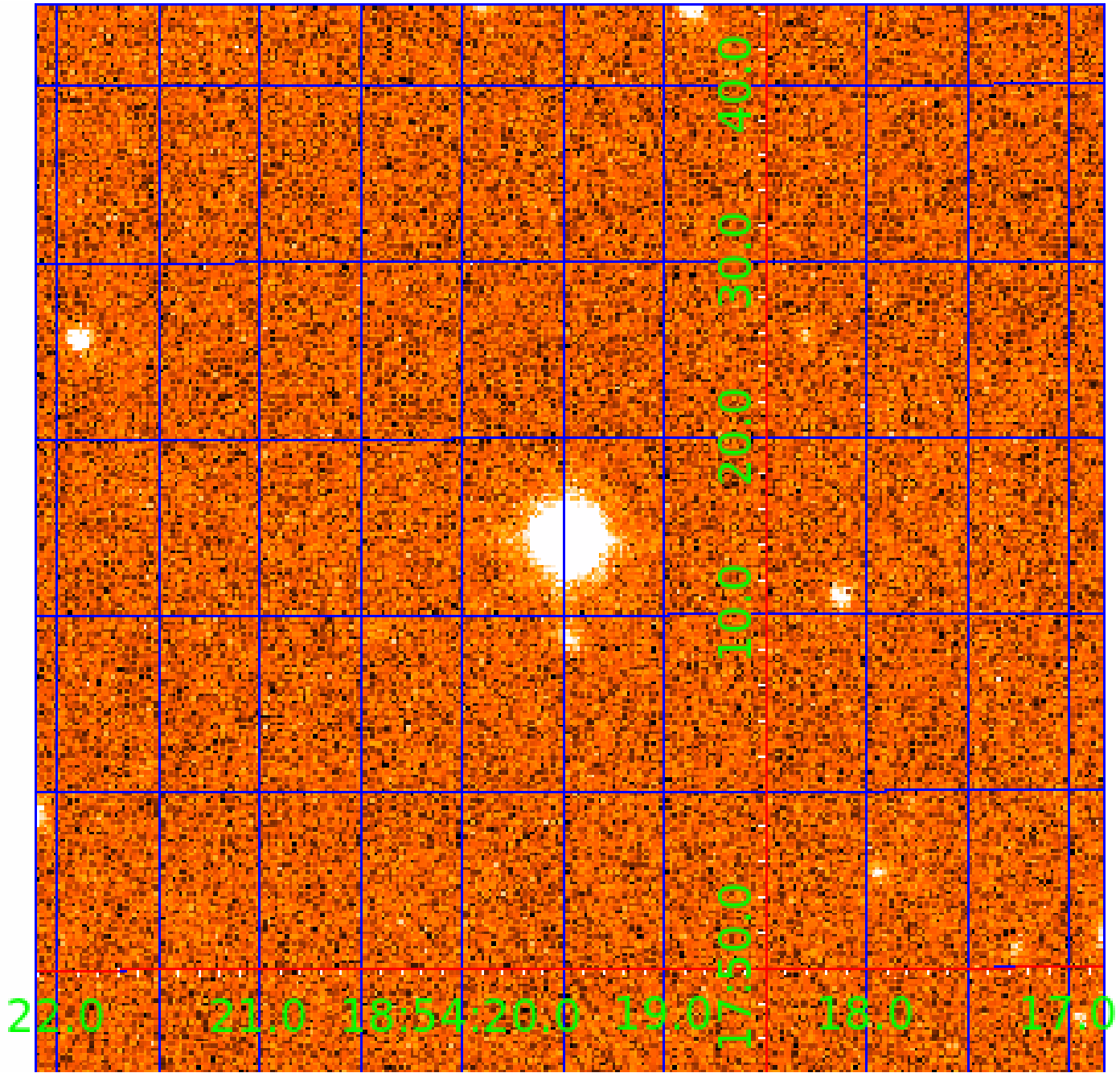


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005165017

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})
005165017-01	OBS	No	594.017212	194.718806	983.3	12.500	16.1	-1.0	0.65	4247	1.94	0.09
005165017-02	OBS	No	538.818358	414.553060	1787.2	5.627	13.0	8.2	0.65	4247	2.84	0.10
005165017-03	OBS	No	337.319843	315.384455	1745.5	3.985	13.0	9.0	0.65	4247	2.61	0.18
005165017-04	OBS	No	300.031189	178.118403	1175.7	3.303	12.1	6.6	0.65	4247	2.41	0.21
005165017-05	OBS	No	319.280803	305.910375	1367.9	4.414	10.4	7.1	0.65	4247	2.33	0.20
005165017-06	OBS	No	475.437567	139.941514	1288.4	5.024	11.2	6.3	0.65	4247	2.31	0.12
005165017-07	OBS	No	197.940016	298.762016	2141.3	5.509	10.1	10.9	0.65	4247	3.12	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005165017-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005165017-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
005165017-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005165017-04	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
005165017-05	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
005165017-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005165017-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

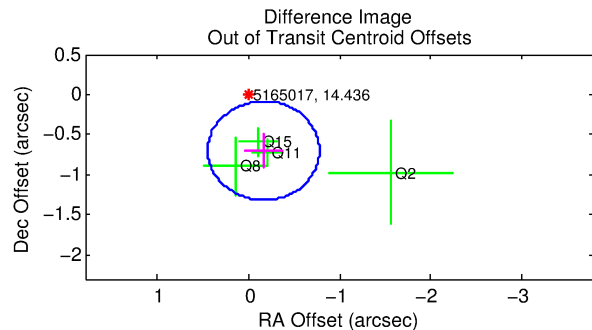
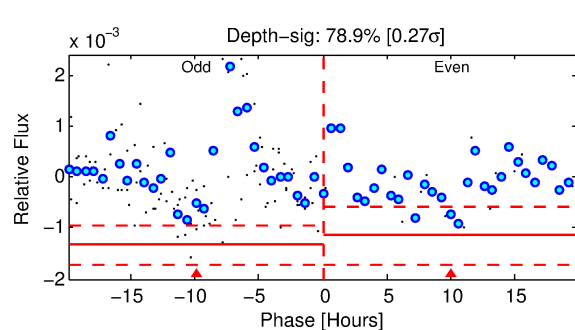
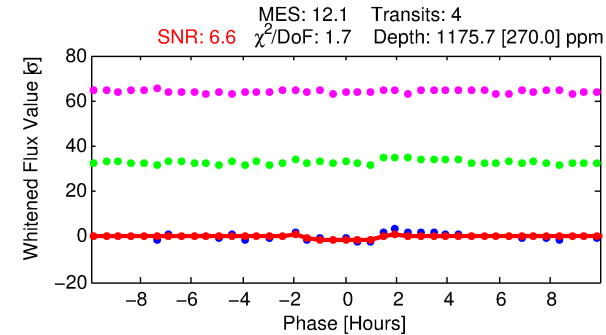
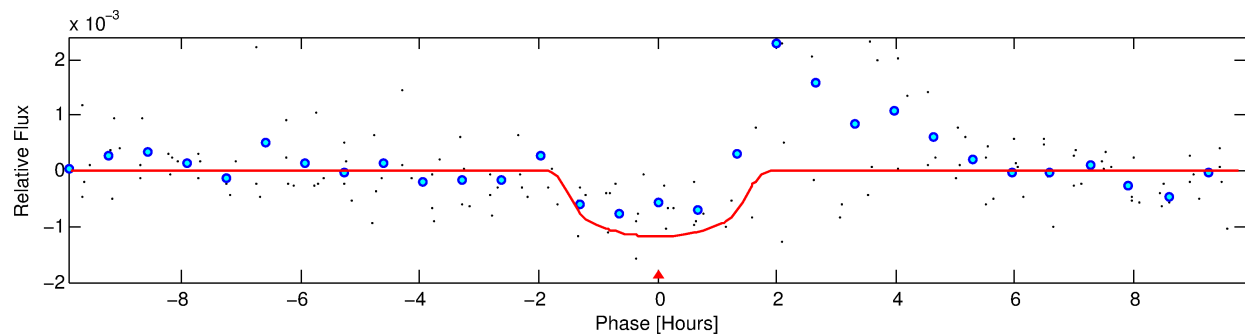
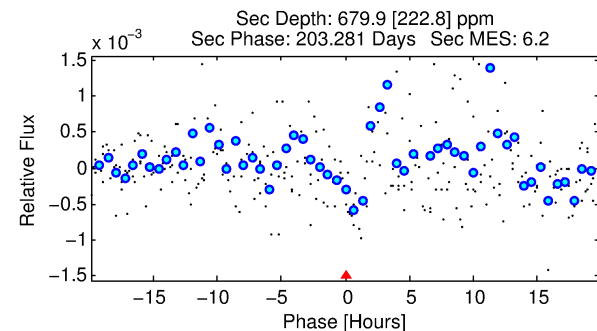
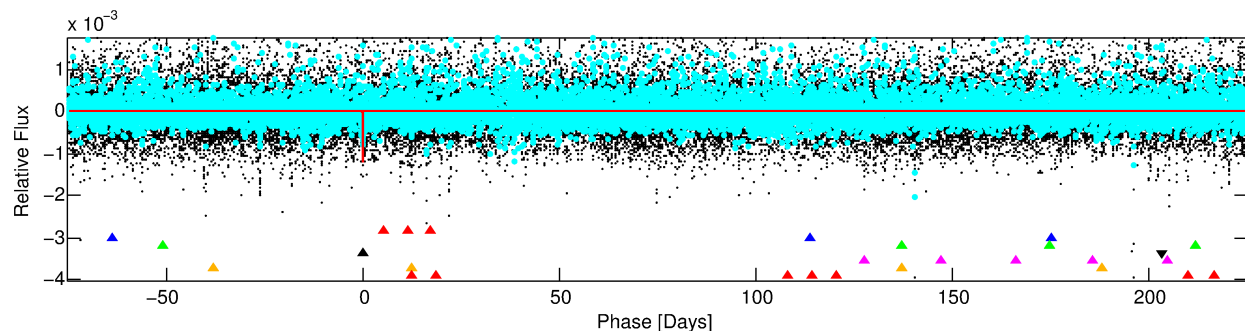
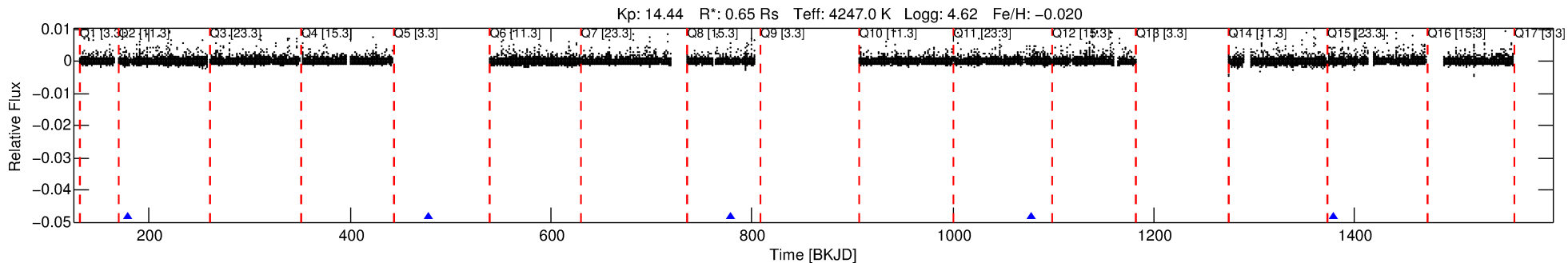
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005165017-04

No Significant Match Found

DV One-Page Summary

KIC: 5165017 Candidate: 4 of 7 Period: 300.031 d



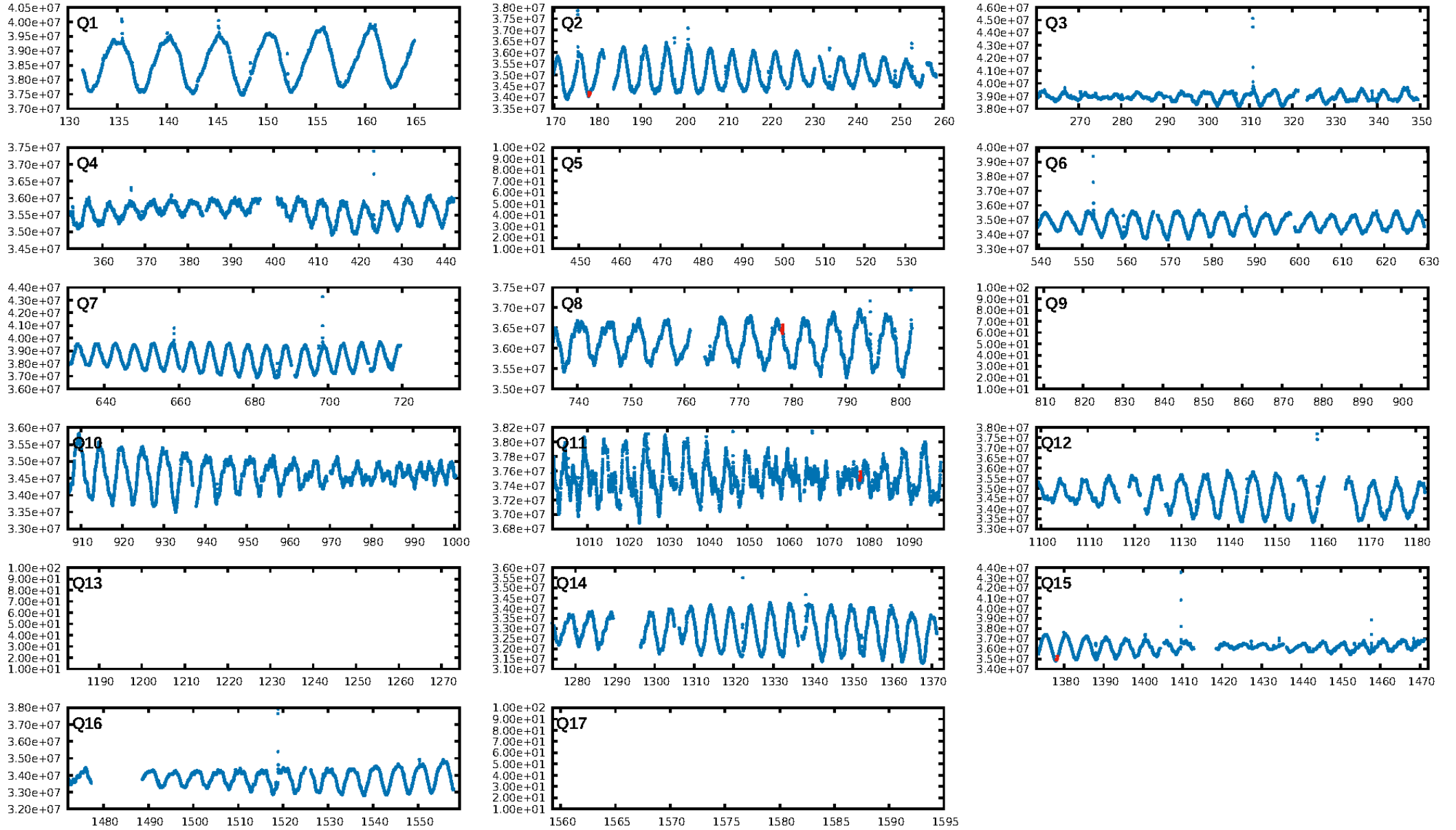
DV Fit Results:

Period = 300.03119 [0.00394] d
Epoch = 178.1184 [0.0112] BKJD
Rp/R* = 0.0342 [0.0445]
a/R* = 500.98 [2082.32]
b = 0.74 [2.60]
Seff = 0.21 [0.04]
Teq = 173 [8] K
Rp = 2.41 [3.14] Re
a = 0.7544 [0.0463] AU
Ag = 36611.89 [96043.75] [0.38σ]
Teffp = 3708 [2435] K [1.45σ]

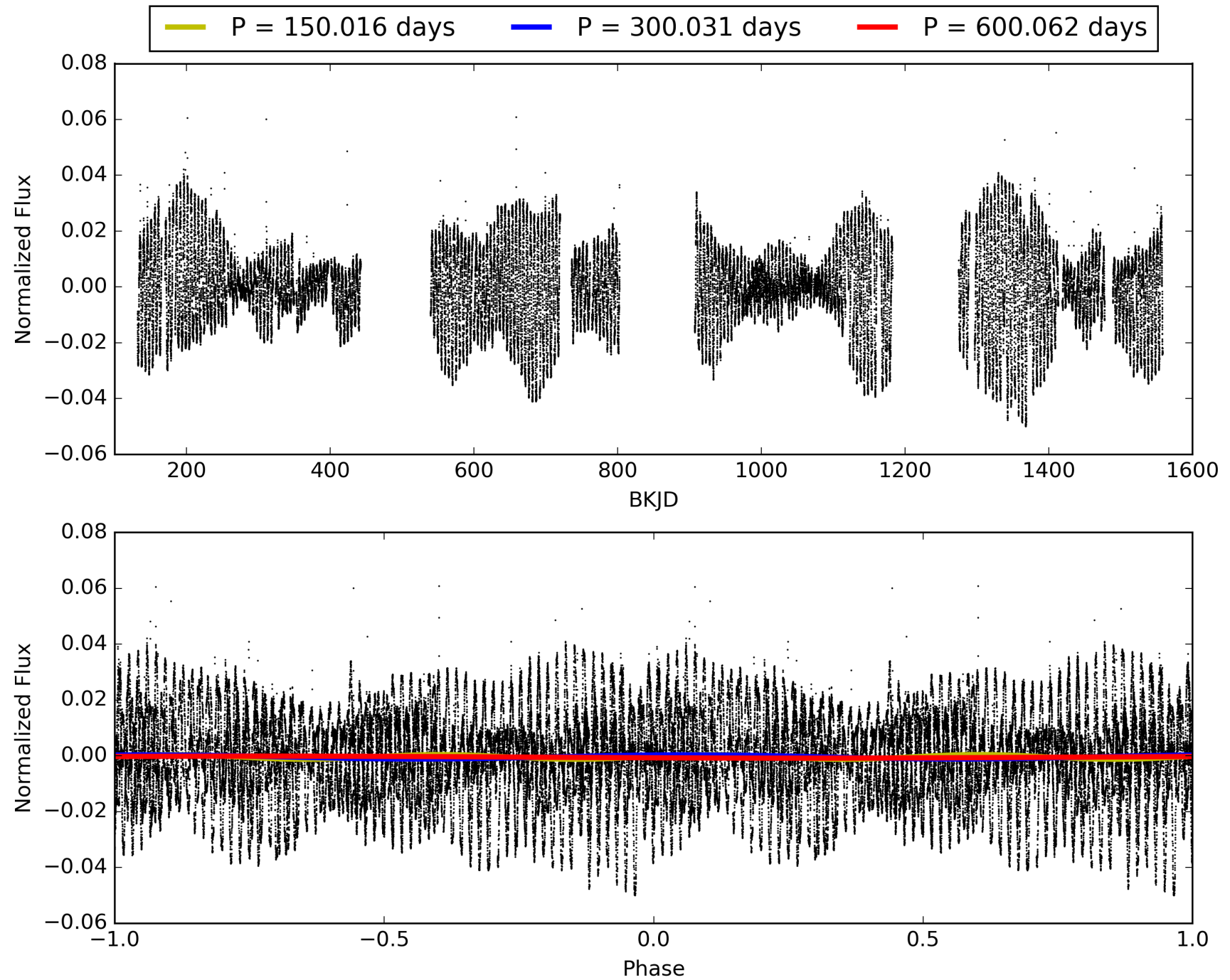
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [381.46σ]
LongPeriod-sig: 100.0% [83.80σ]
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 14.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.9172
Centroid-sig: 28.3%
Centroid-so: 0.729 arcsec [0.78σ]
OotOffset-rm: 0.720 arcsec [3.51σ]
KicOffset-rm: 0.654 arcsec [3.16σ]
OotOffset-st: 1/2/1/0 [4]
KicOffset-st: 1/2/1/0 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 1.00 [4/4]

TCE 005165017-04, PDC Light Curves

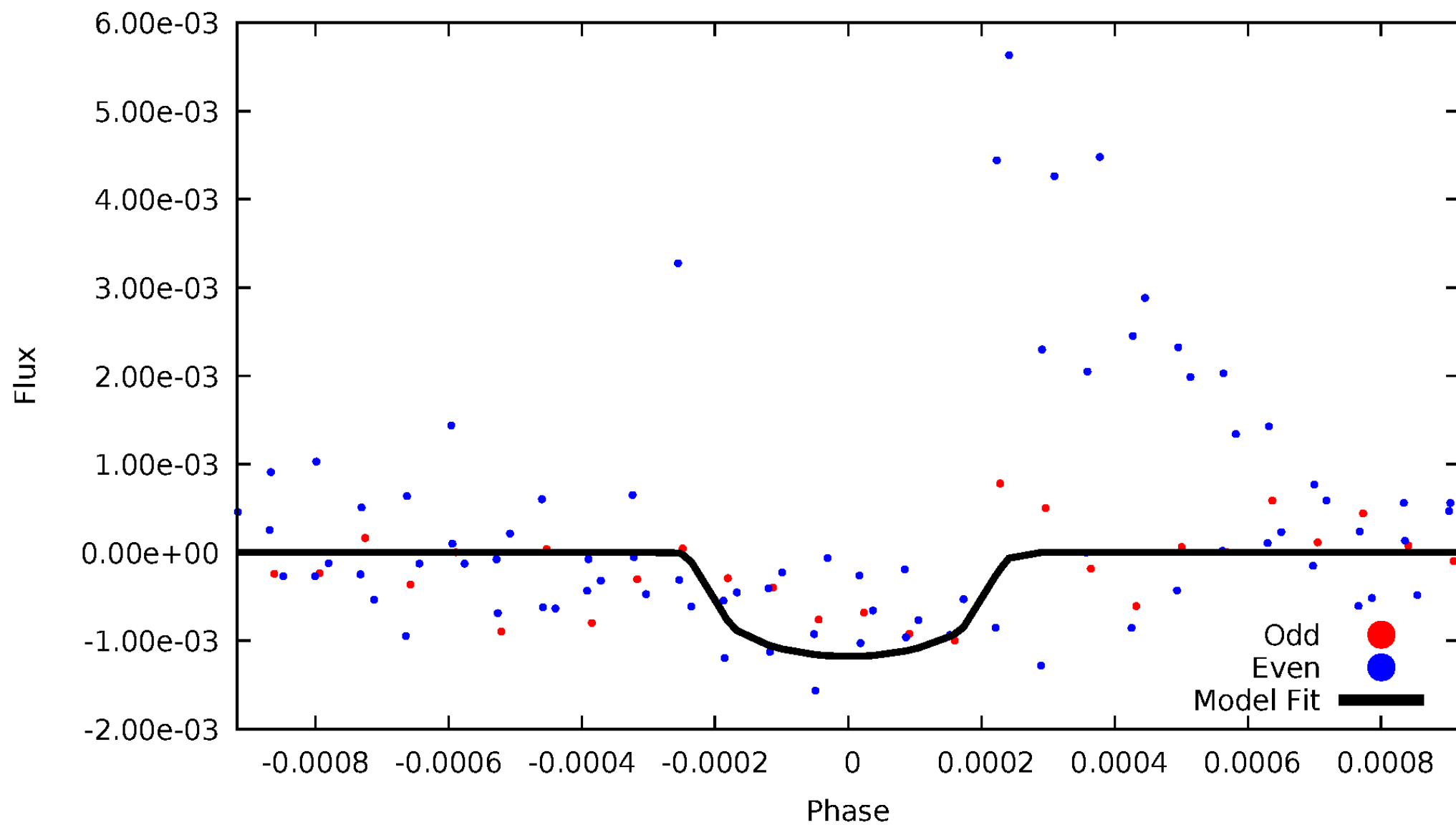


TCE 005165017-04



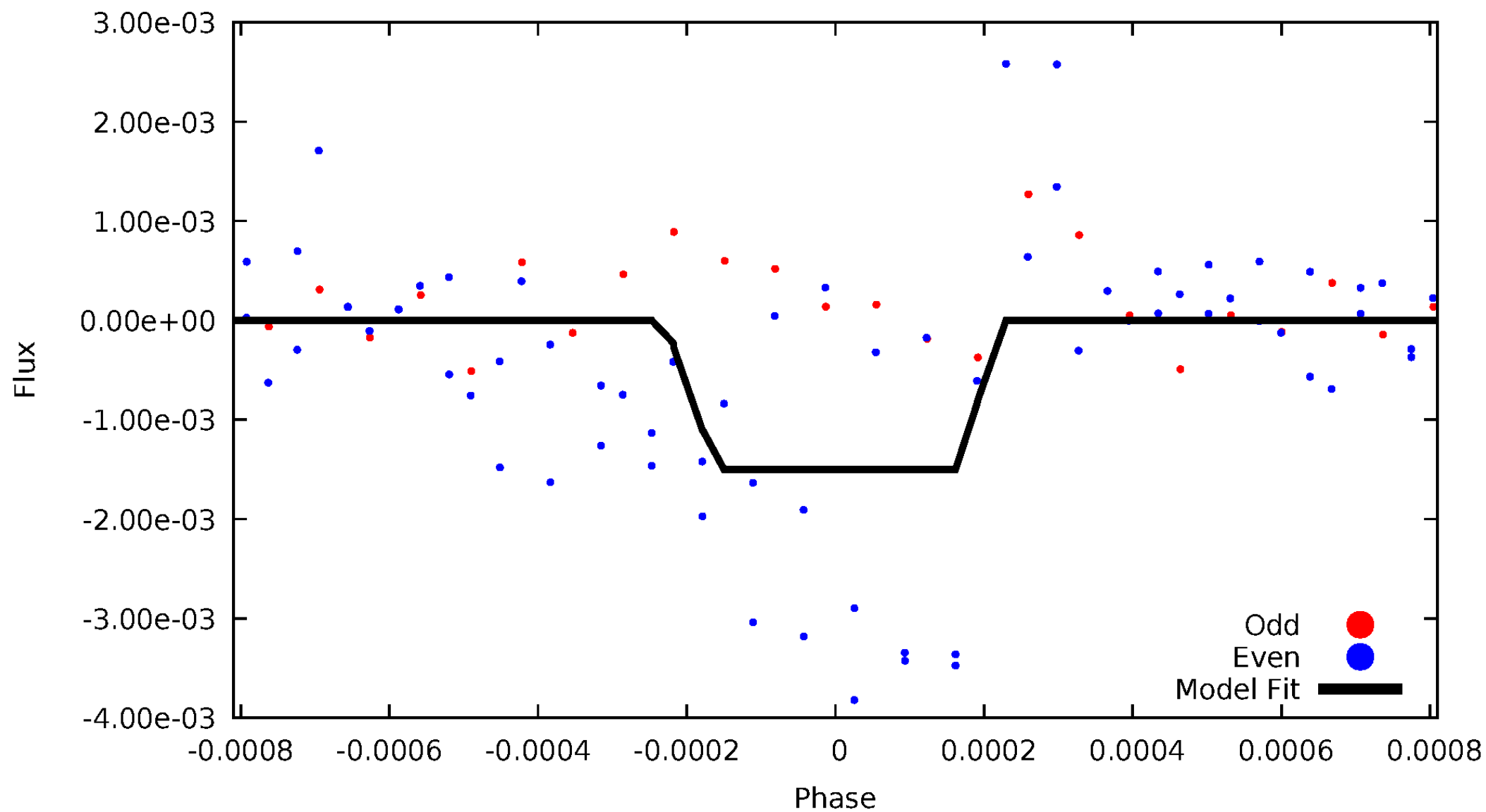
DV Odd/Even

TCE 005165017-04



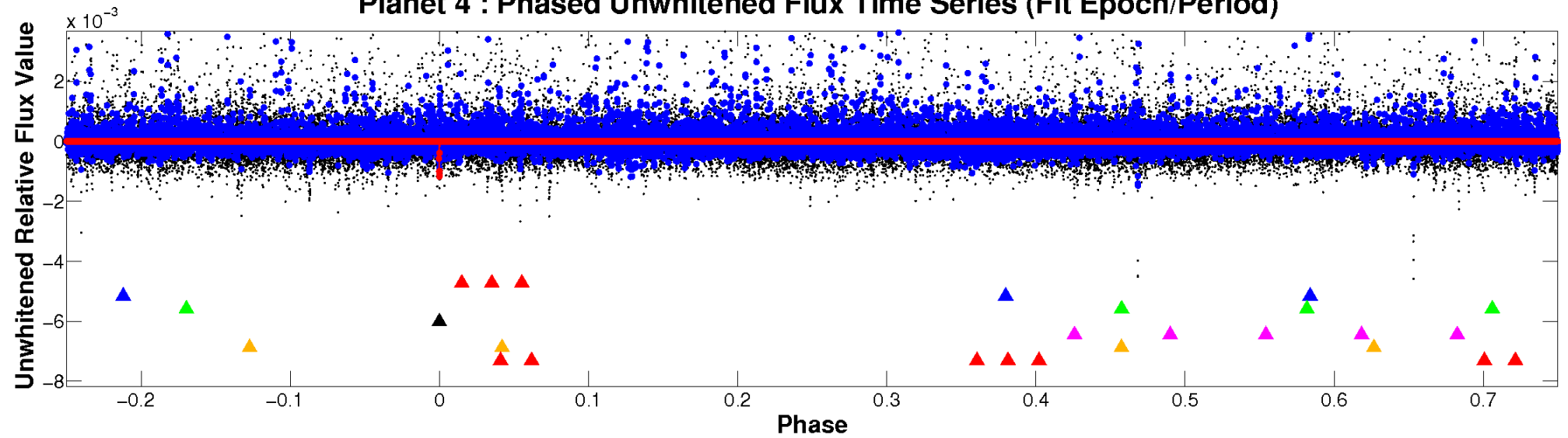
ALT Odd/Even

TCE 005165017-04

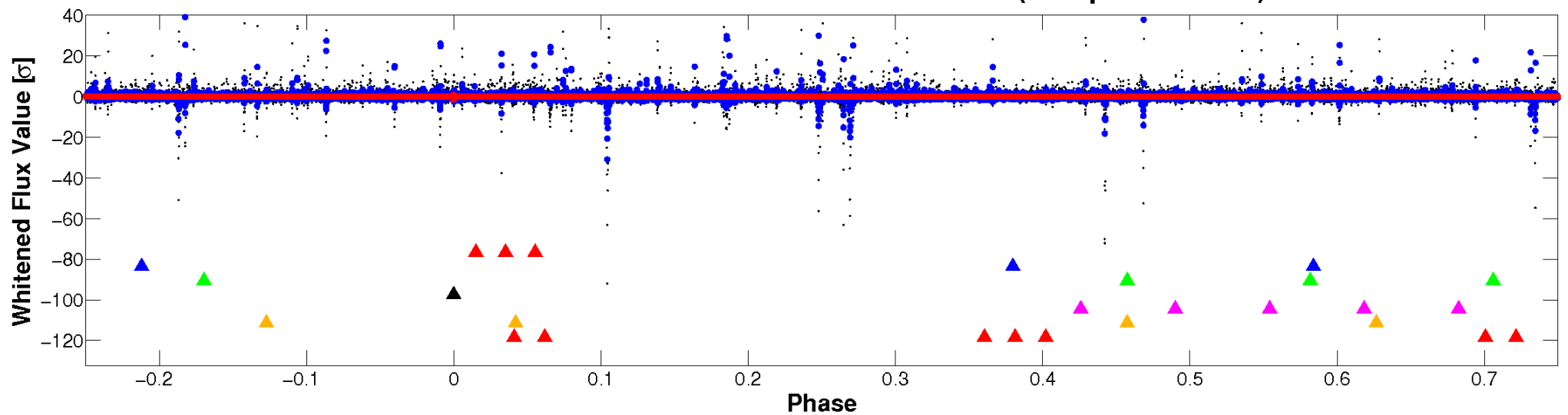


Non-Whitened Vs. Whitened Light Curve

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

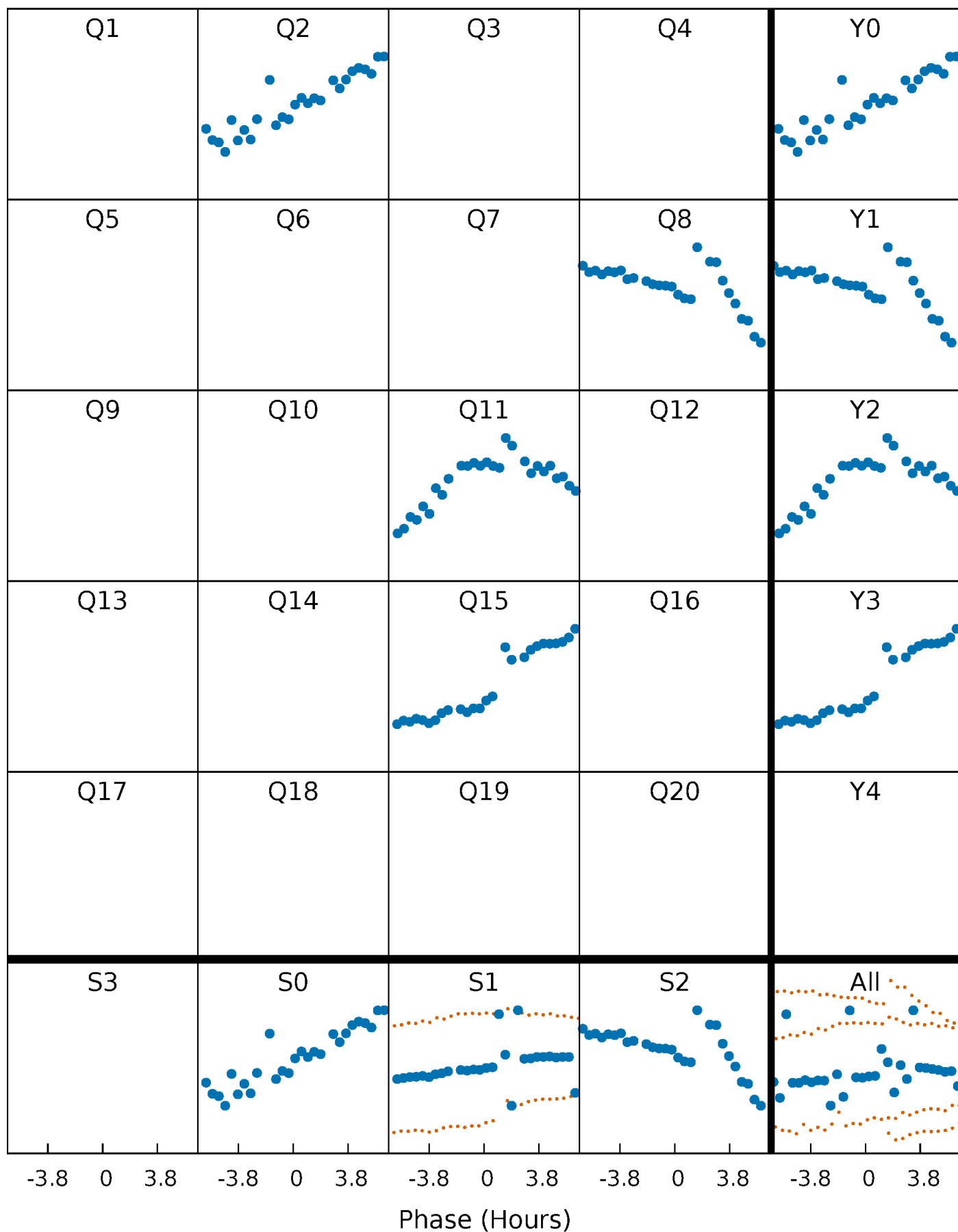


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



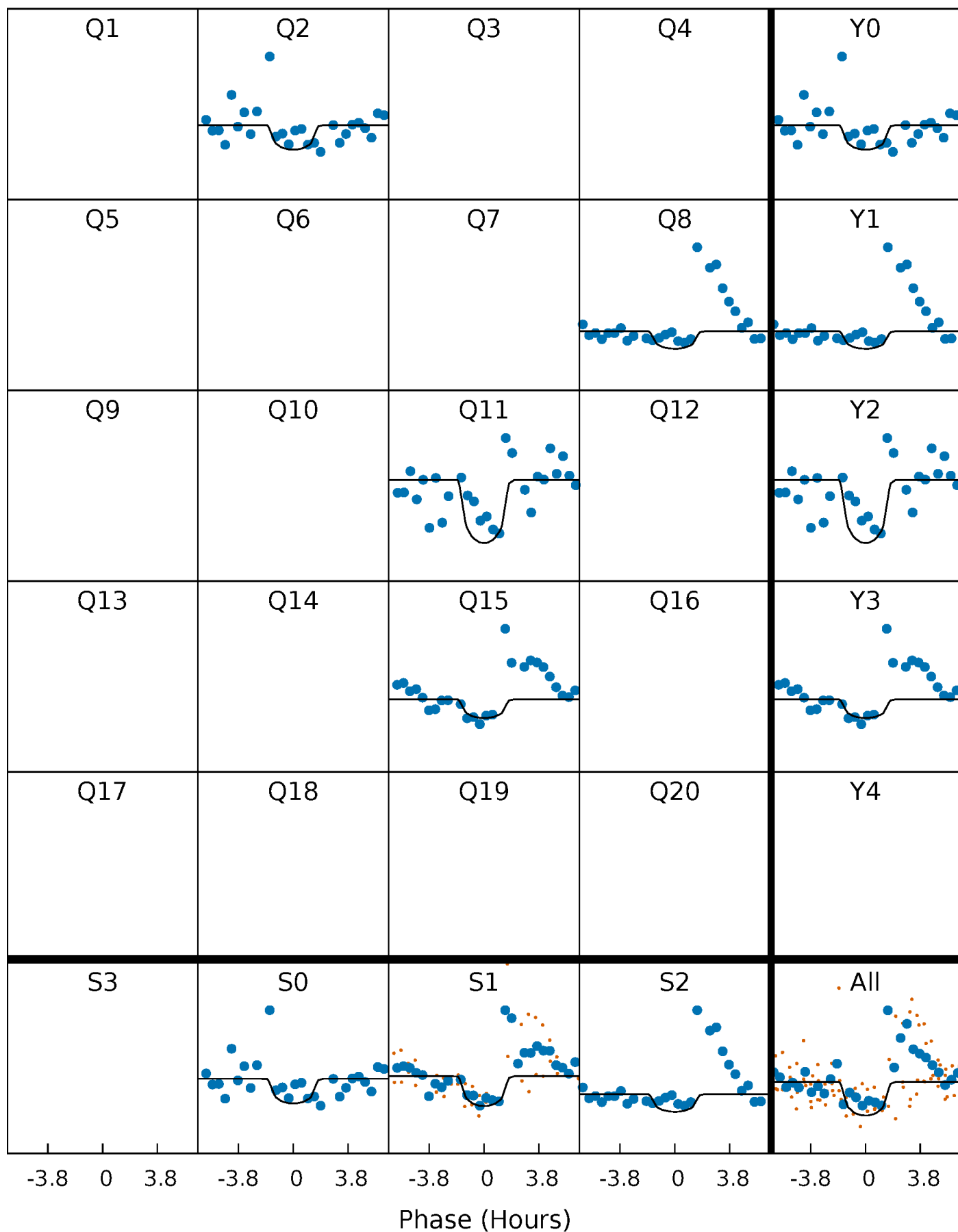
PDC Quarter-Phased Transit Curves

TCE 005165017-04 $P=300.031189$ Days $T_0=178.118403$ (BKJD)



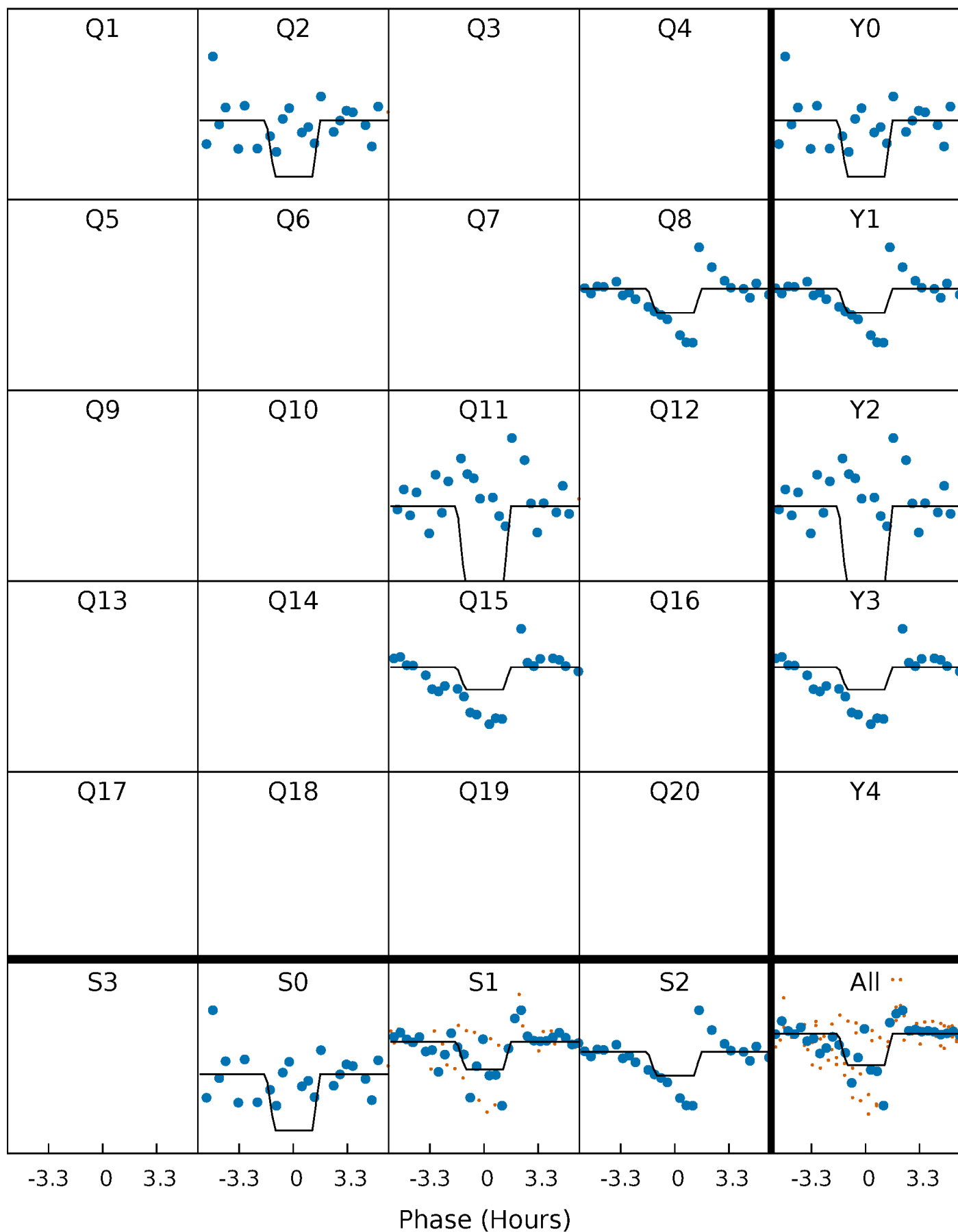
DV Quarter-Phased Transit Curves

TCE 005165017-04 $P=300.031189$ Days $T_0=178.118403$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

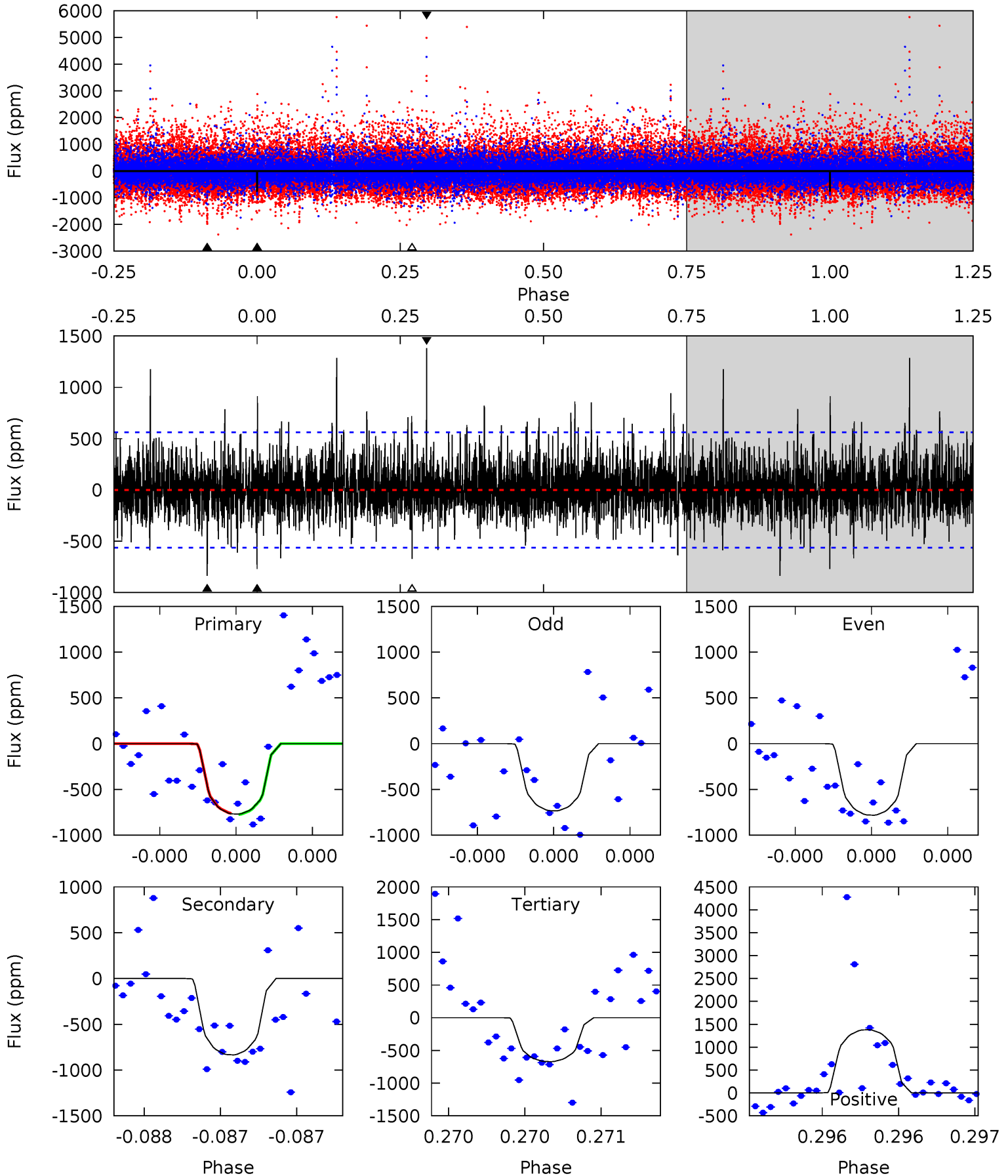
TCE 005165017-04 P=300.018171 Days $T_0=178.147943$ (BKJD)



DV Model-Shift Uniqueness Test

005165017-04, P = 300.031189 Days, E = 178.118403 Days

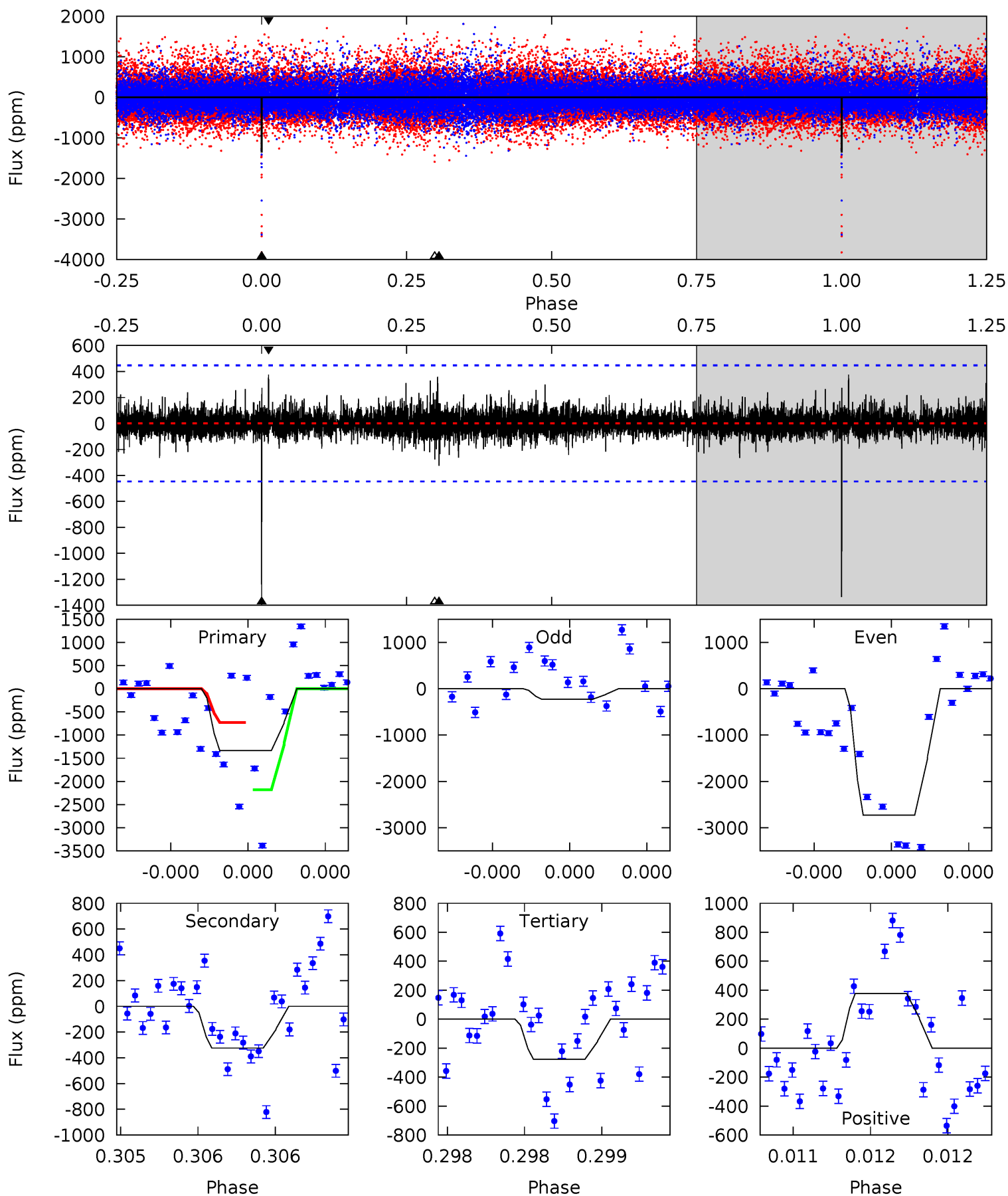
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.64	8.28	6.66	13.7	5.57	3.48	1.90	0.98	-6.06	1.62	-5.42	0.17	1.05	0.62	0.06



Alt Model-Shift Uniqueness Test

005165017-04, P = 300.018171 Days, E = 178.147943 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.8	4.07	3.48	4.72	5.61	3.53	0.77	13.3	12.0	0.59	-0.65	14.6	1.05	0.22	8.22



Stellar Parameters For KIC 005165017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4247^{+134}_{-164}	$4.621^{+0.049}_{-0.014}$	$-0.020^{+0.150}_{-0.150}$	$0.646^{+0.027}_{-0.047}$	$0.636^{+0.045}_{-0.041}$	$3.327^{+0.649}_{-0.245}$
	+3%/-4%	+1%/-0%	+750%/-750%	+4%/-7%	+7%/-6%	+19%/-7%
Source	PHO1	KIC0	SPE15	DSEP		

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

Secondary Eclipse Parameters for KIC 005165017-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-835 ± 101	$3.27^{+2.60}_{-2.15}$	241^{+8}_{-10}	3584^{+1848}_{-597}	$24048^{+195815}_{-16592}$
Alt.	-324 ± 80	$3.42^{+3.00}_{-2.20}$	240^{+9}_{-10}	3050^{+1237}_{-484}	9002^{+60431}_{-6668}

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

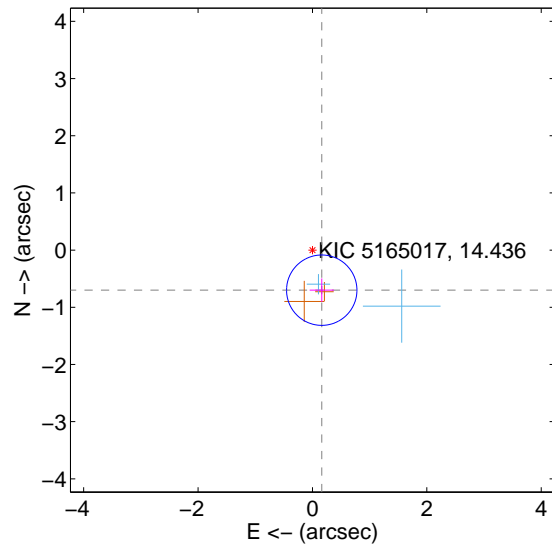
Supplemental centroid analysis for 005165017-04. Kepler magnitude: 14.44. Transit SNR 6.57

There are 2 quarters with good PRF difference image offsets

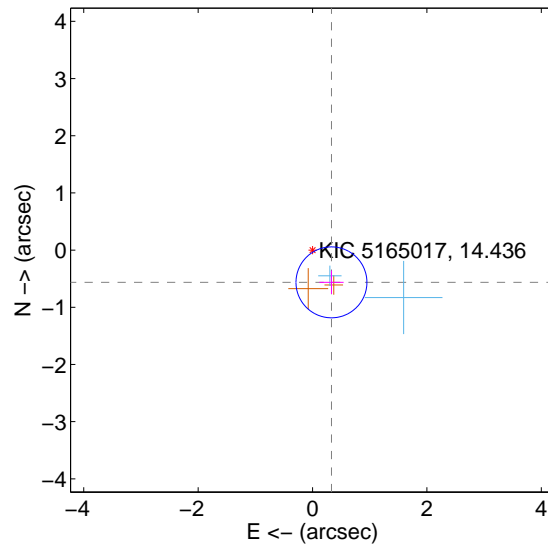
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.720 ± 0.205	3.51	-0.163 ± 0.212	-0.701 ± 0.205
PRF-fit source offset from KIC position	0.654 ± 0.207	3.16	-0.331 ± 0.212	-0.564 ± 0.205
photometric centroid source offset	0.73 ± 0.93	0.78	-0.17 ± 0.79	-0.71 ± 0.94

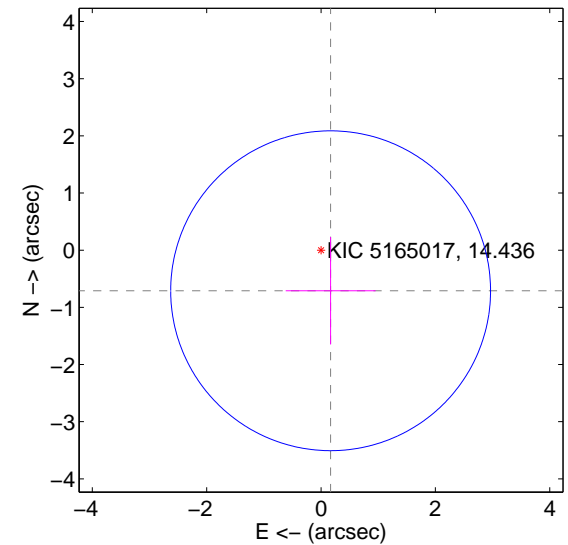
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

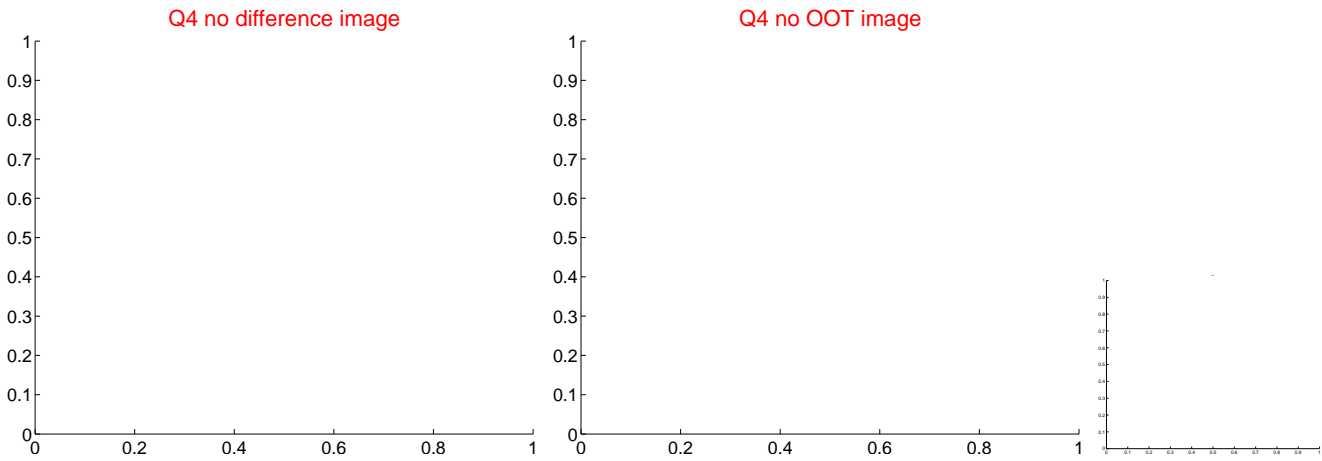
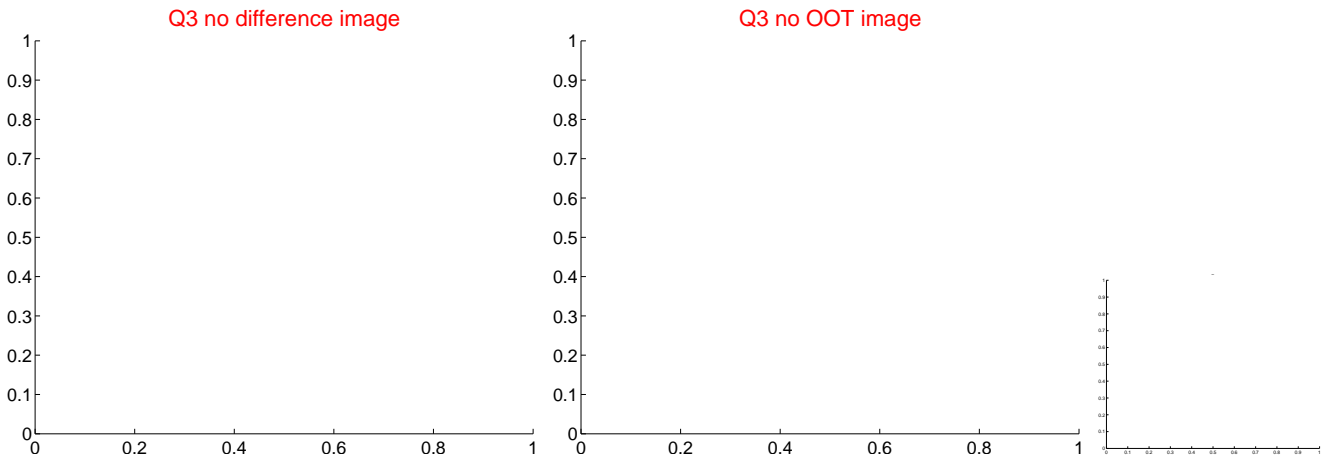
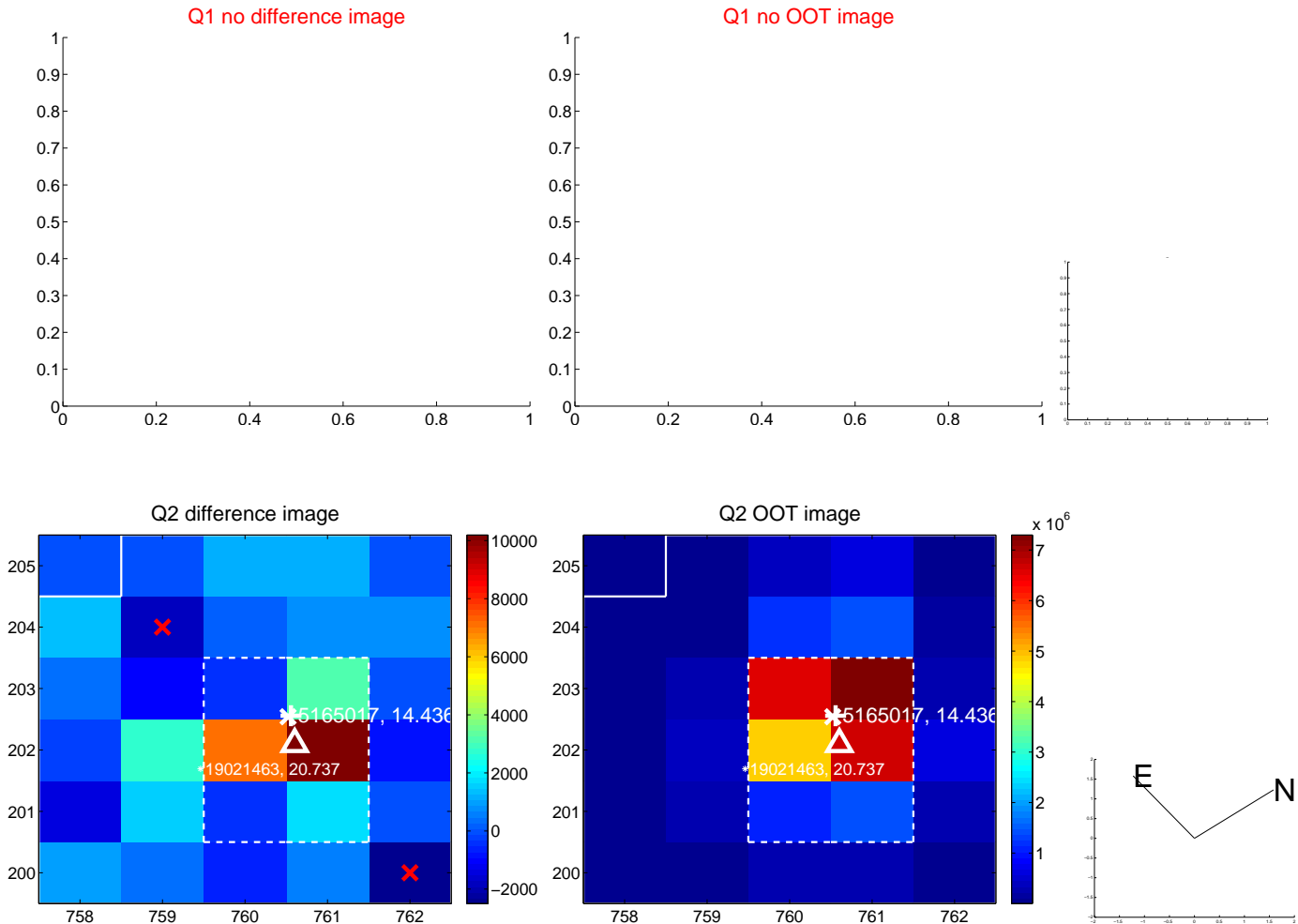


offset from photometric centroids

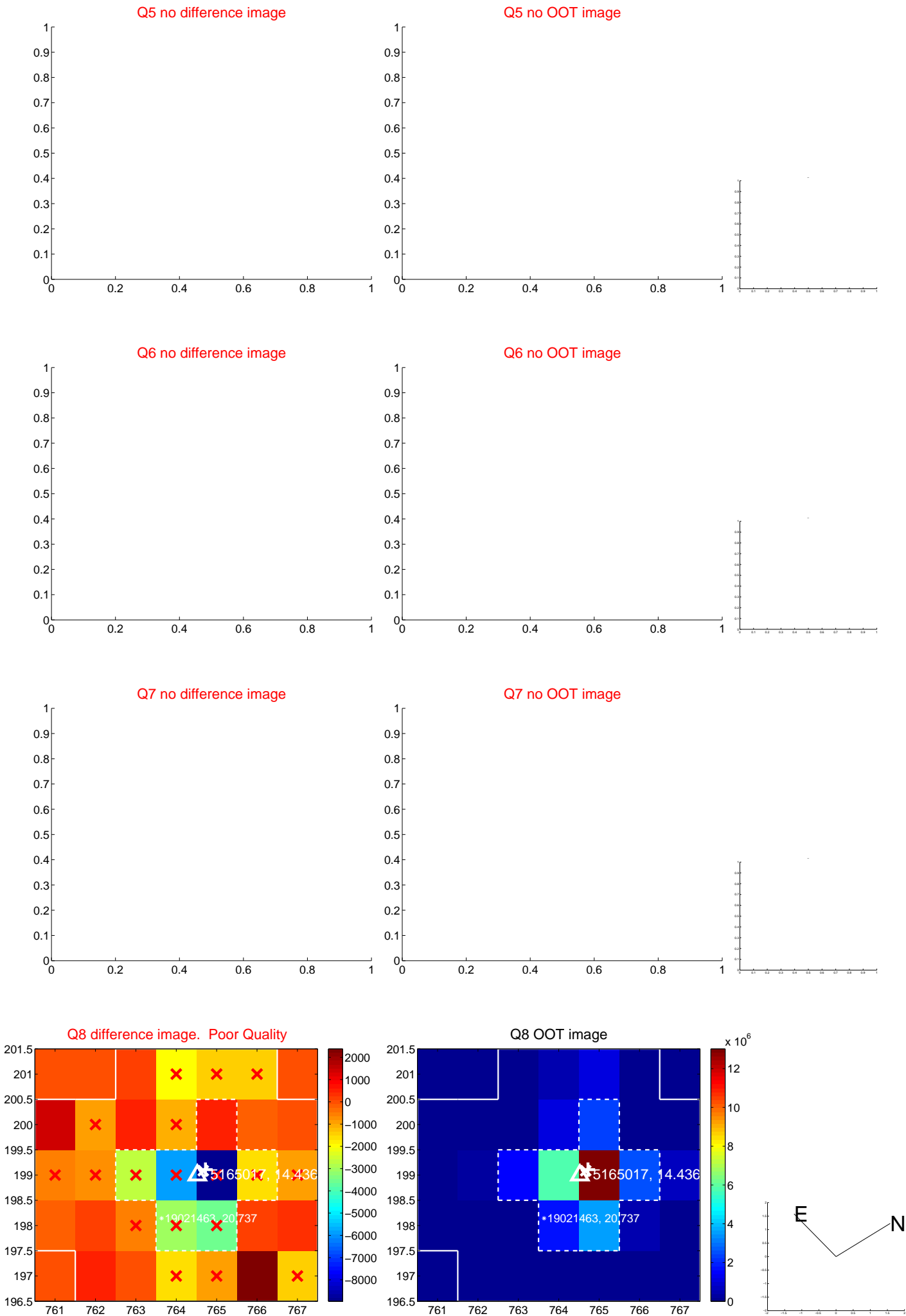


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

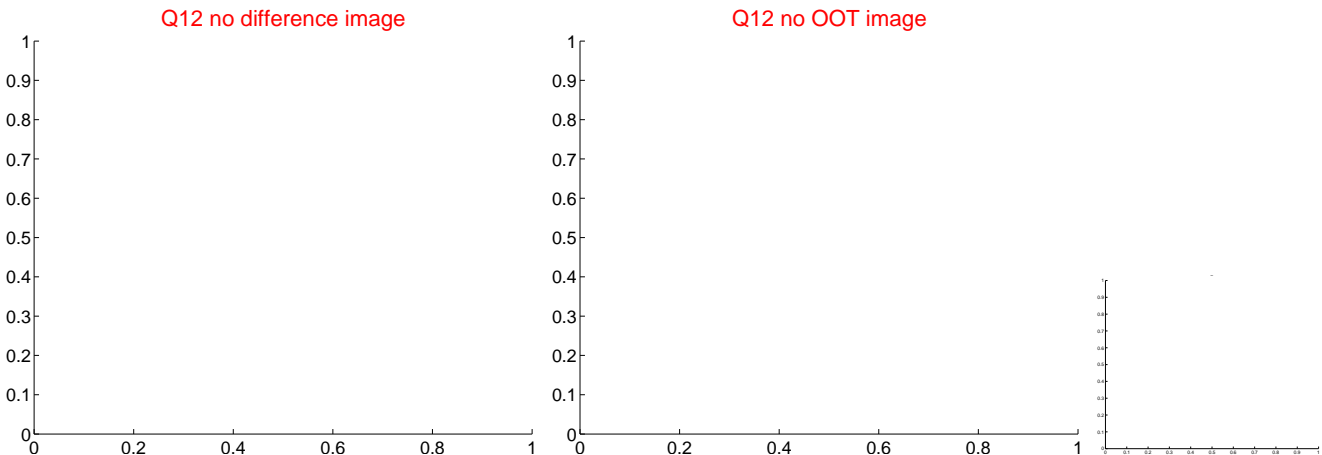
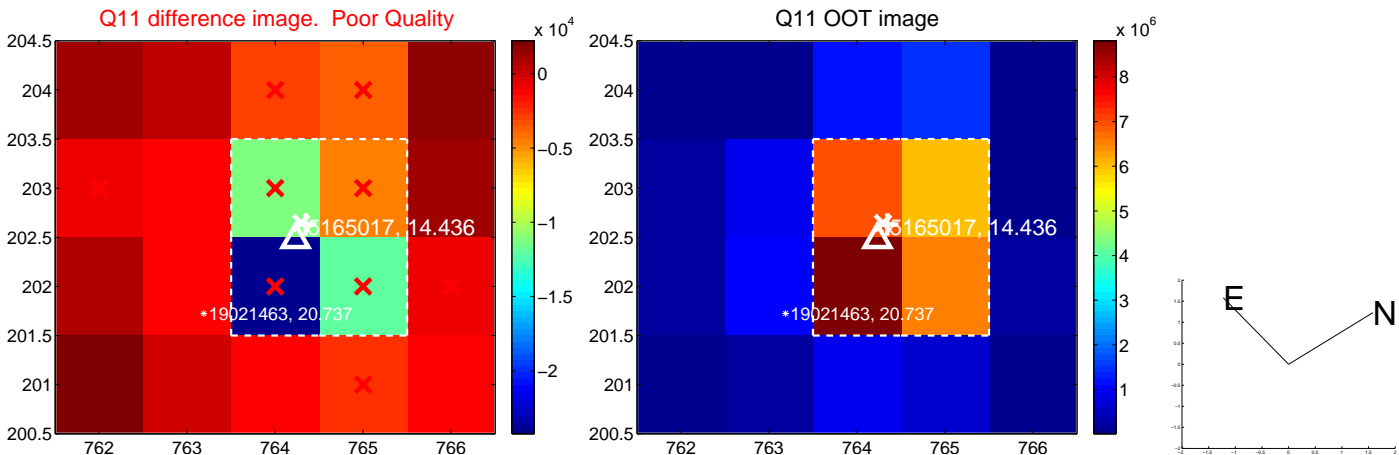
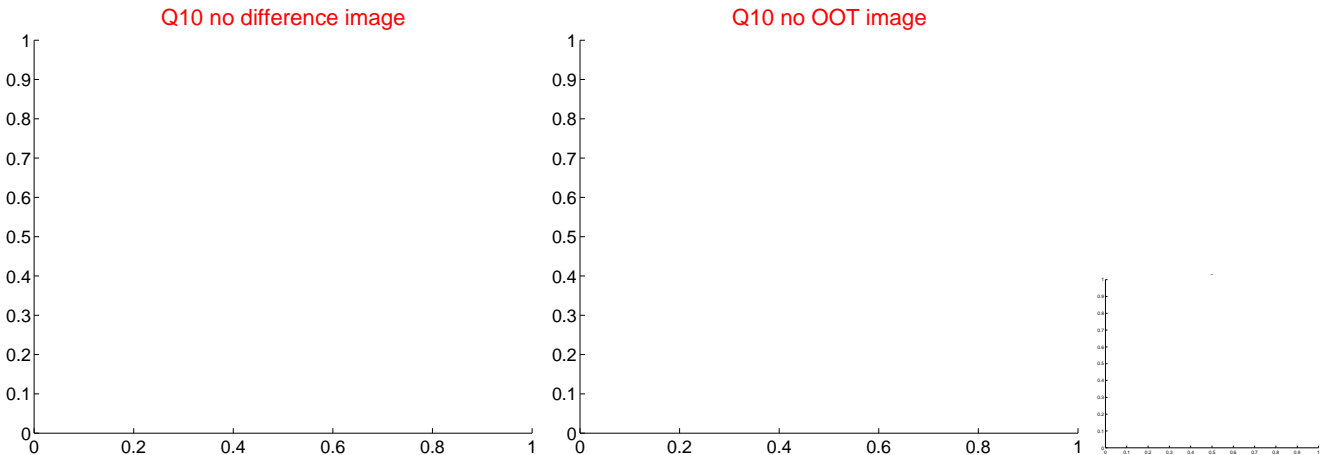
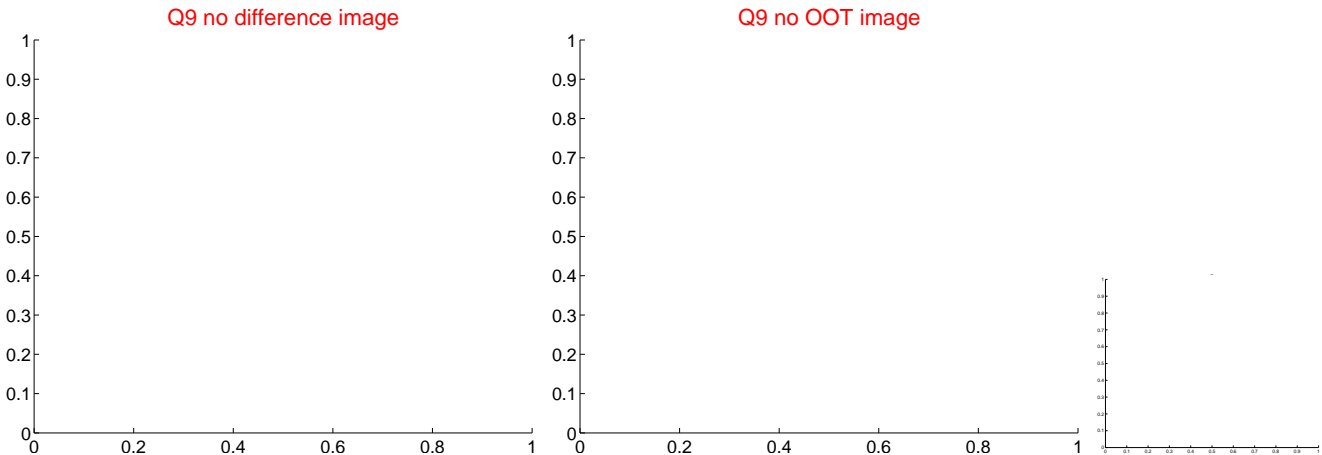
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



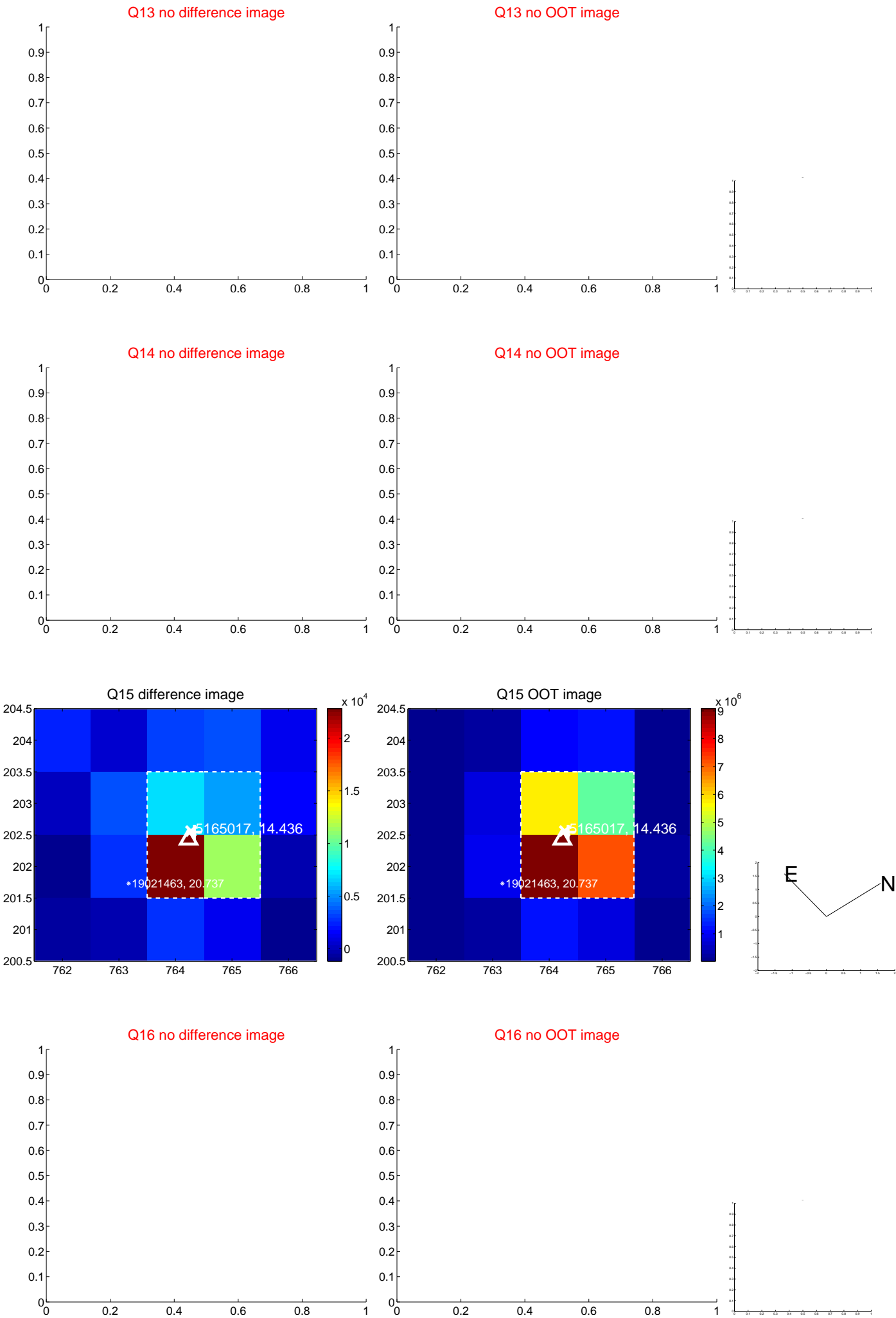
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



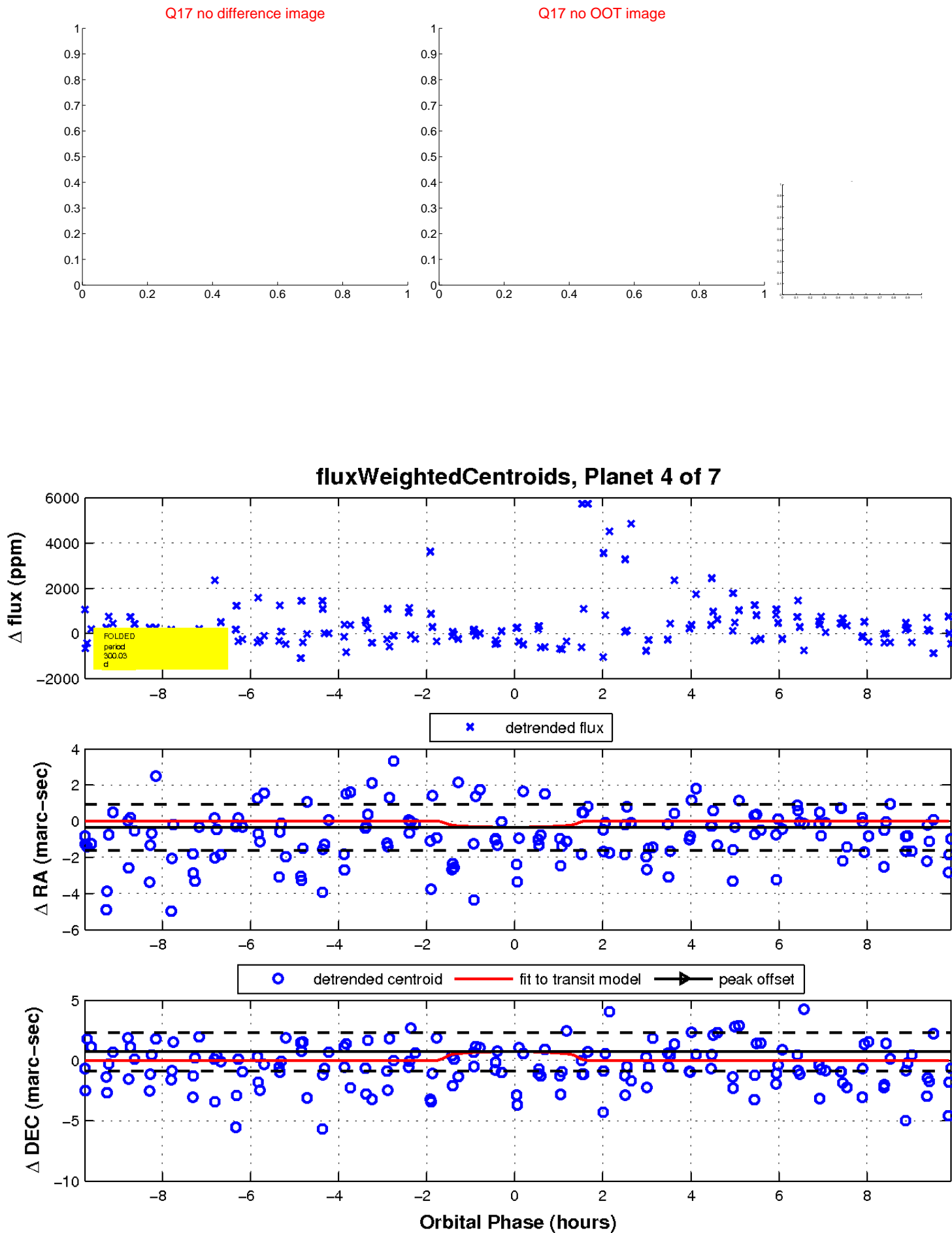
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

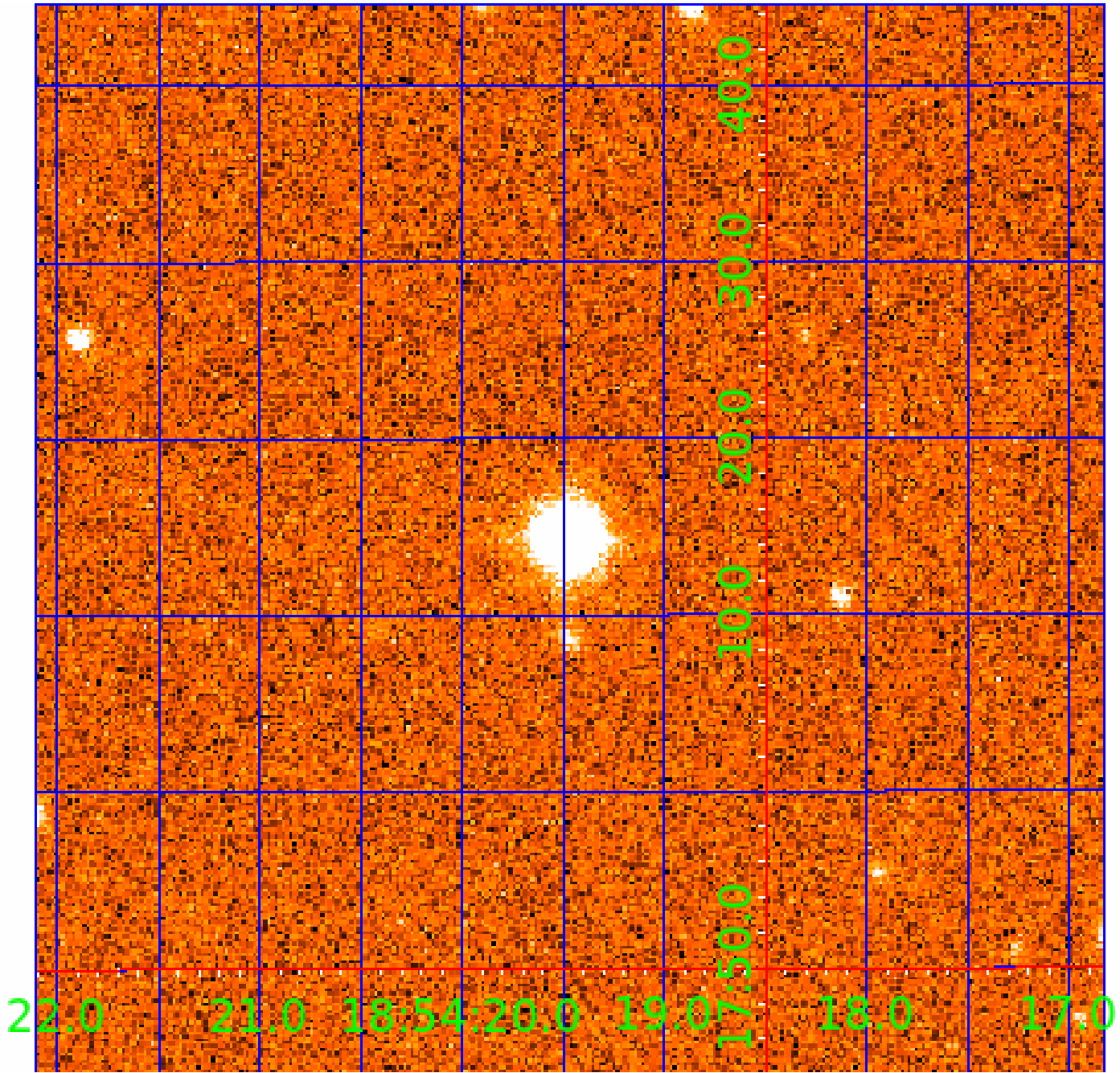


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005165017

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})
005165017-01	OBS	No	594.017212	194.718806	983.3	12.500	16.1	-1.0	0.65	4247	1.94	0.09
005165017-02	OBS	No	538.818358	414.553060	1787.2	5.627	13.0	8.2	0.65	4247	2.84	0.10
005165017-03	OBS	No	337.319843	315.384455	1745.5	3.985	13.0	9.0	0.65	4247	2.61	0.18
005165017-04	OBS	No	300.031189	178.118403	1175.7	3.303	12.1	6.6	0.65	4247	2.41	0.21
005165017-05	OBS	No	319.280803	305.910375	1367.9	4.414	10.4	7.1	0.65	4247	2.33	0.20
005165017-06	OBS	No	475.437567	139.941514	1288.4	5.024	11.2	6.3	0.65	4247	2.31	0.12
005165017-07	OBS	No	197.940016	298.762016	2141.3	5.509	10.1	10.9	0.65	4247	3.12	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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005165017-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
005165017-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005165017-04	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
005165017-05	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
005165017-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005165017-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

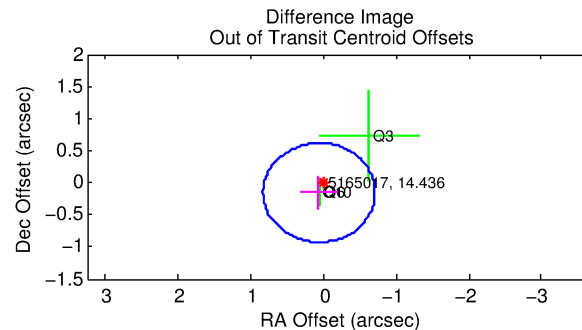
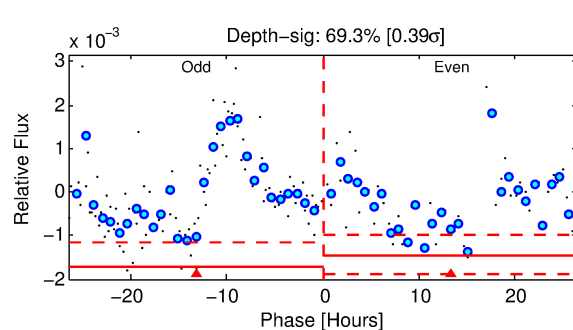
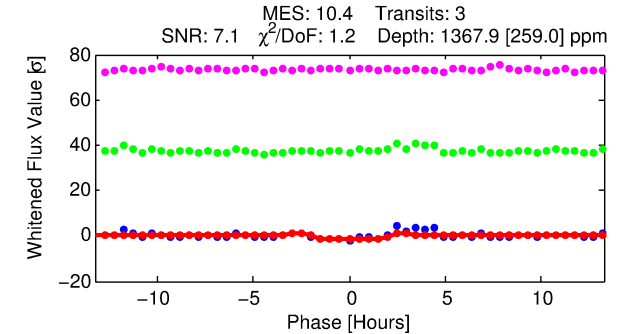
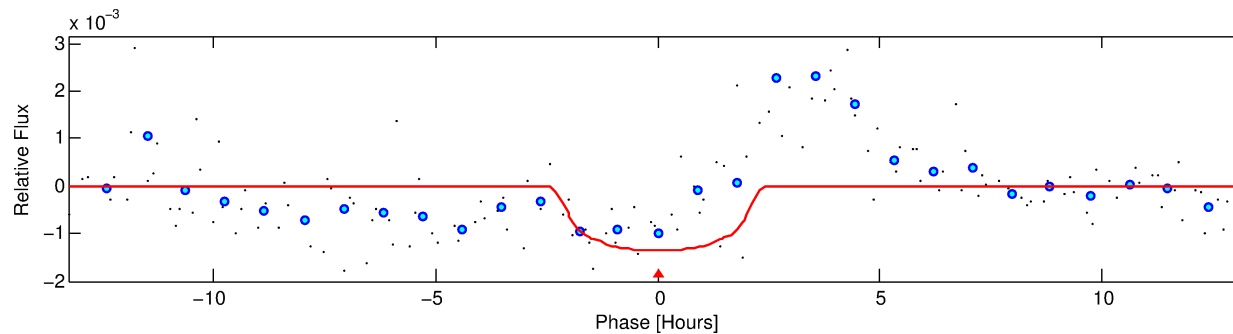
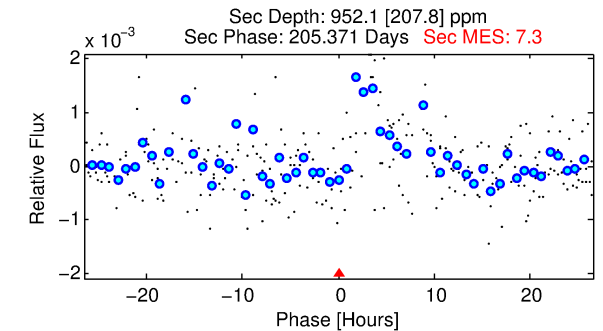
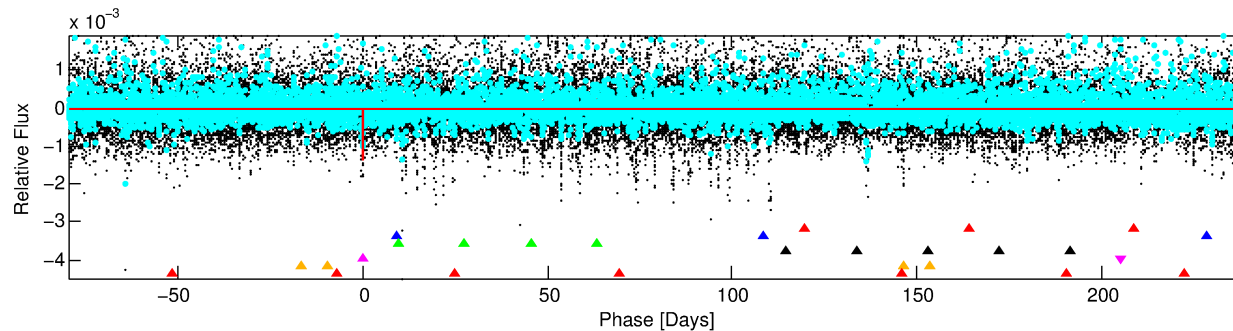
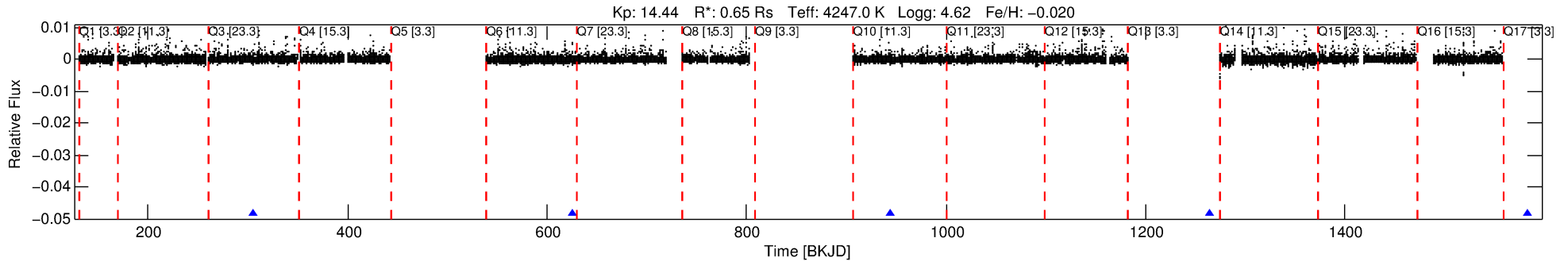
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005165017-05

No Significant Match Found

DV One-Page Summary

KIC: 5165017 Candidate: 5 of 7 Period: 319.281 d



DV Fit Results:

Period = 319.28080 [0.00660] d
Epoch = 305.9104 [0.0092] BKJD
Rp/R* = 0.0331 [0.0449]
a/R* = 538.23 [2174.14]
b = 0.34 [10.60]
Seff = 0.20 [0.04]
Teq = 170 [8] K
Rp = 2.33 [3.17] Re
a = 0.7864 [0.0483] AU
Ag = 59440.38 [161679.09] [0.37σ]
Teffp = 4100 [2791] K [1.41σ]

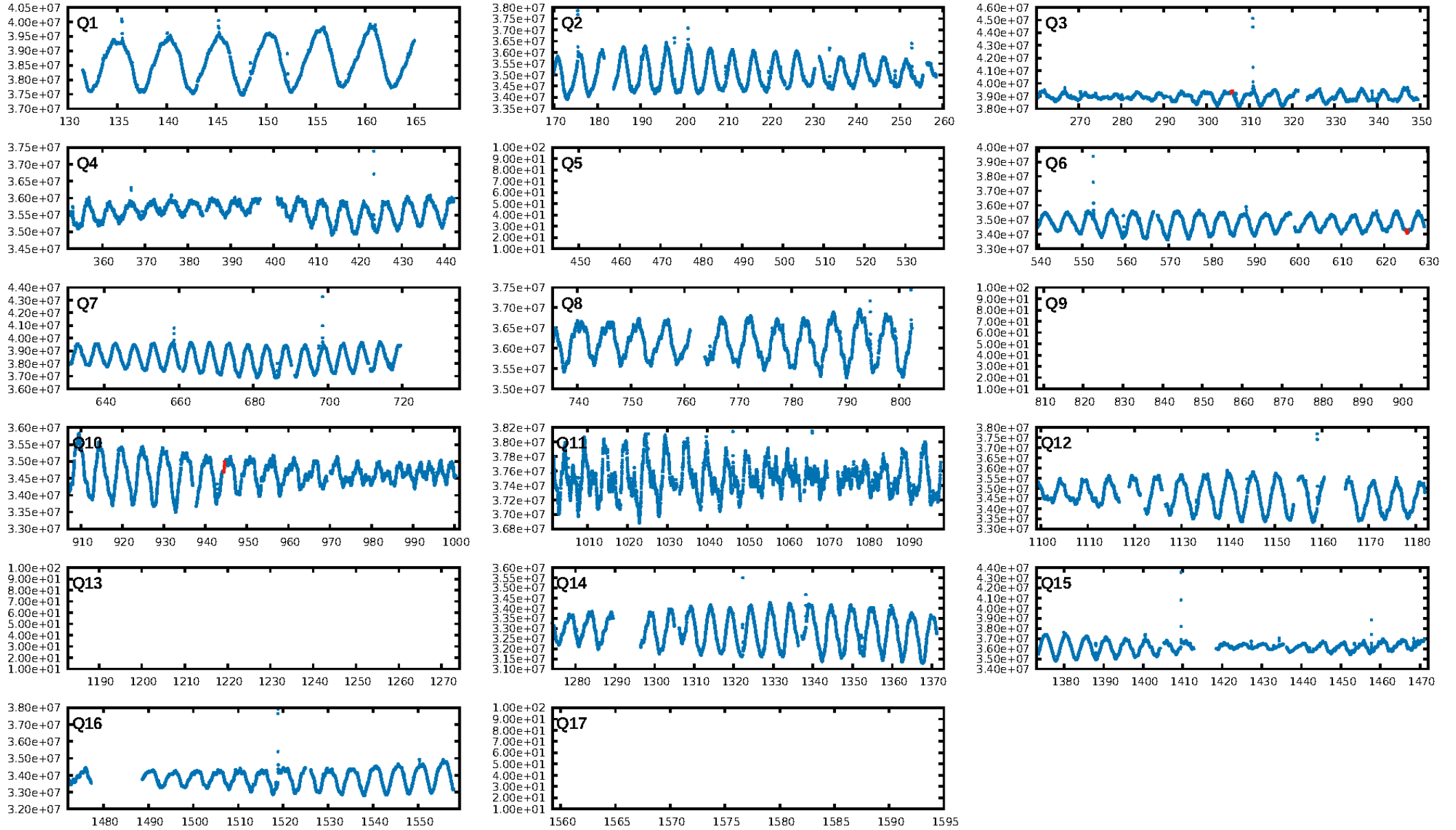
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [83.80σ]
LongPeriod-sig: 100.0% [72.80σ]
ModelChiSquare2-sig: 96.1%
ModelChiSquareGof-sig: 93.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.534
Centroid-sig: 69.3%
Centroid-so: 0.770 arcsec [1.00σ]
OotOffset-rm: 0.166 arcsec [0.65σ]
OotOffset-st: 2/1/0/0 [3]
KicOffset-rm: 0.060 arcsec [0.23σ]
KicOffset-st: 2/1/0/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

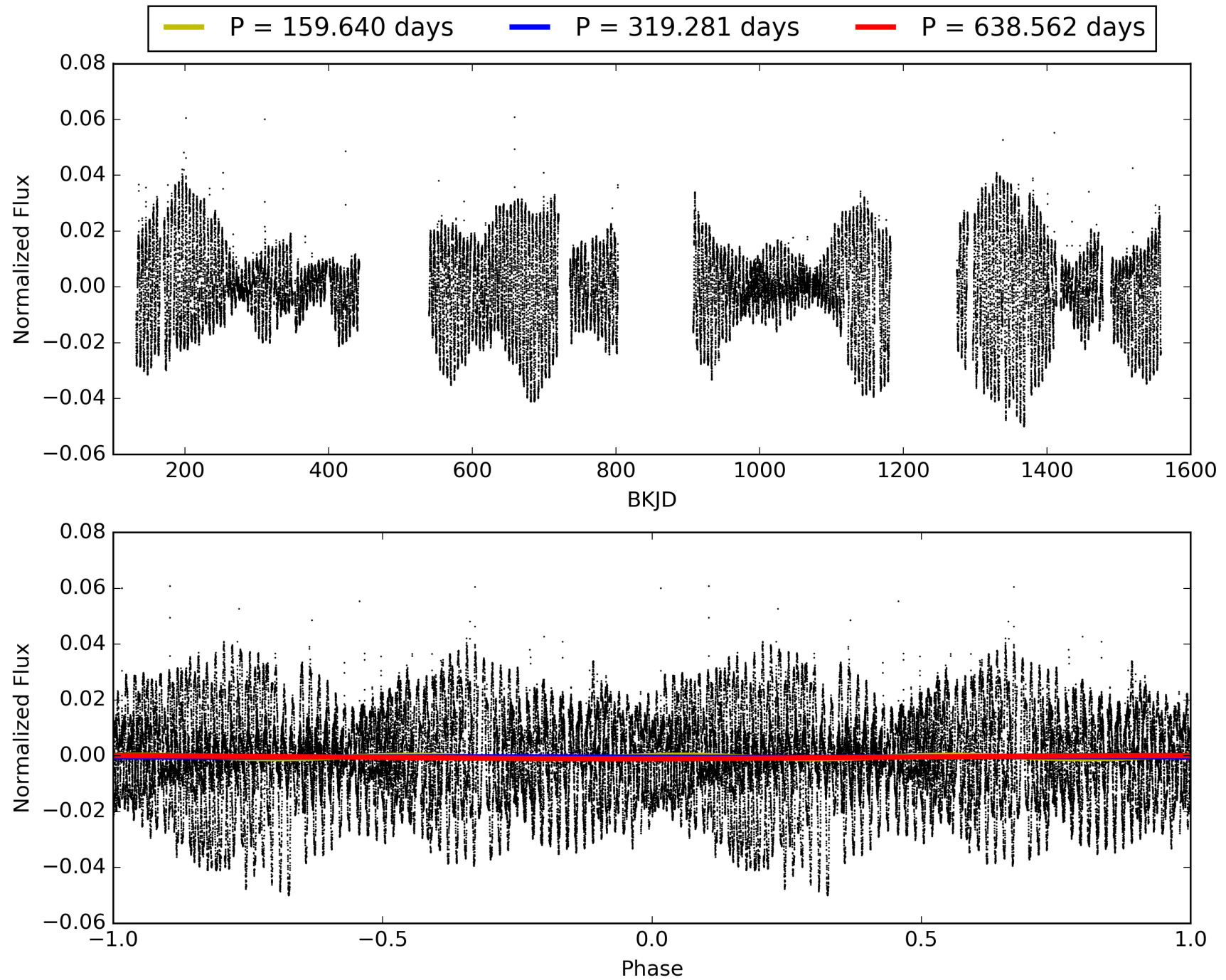
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:21:14 Z

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

TCE 005165017-05, PDC Light Curves

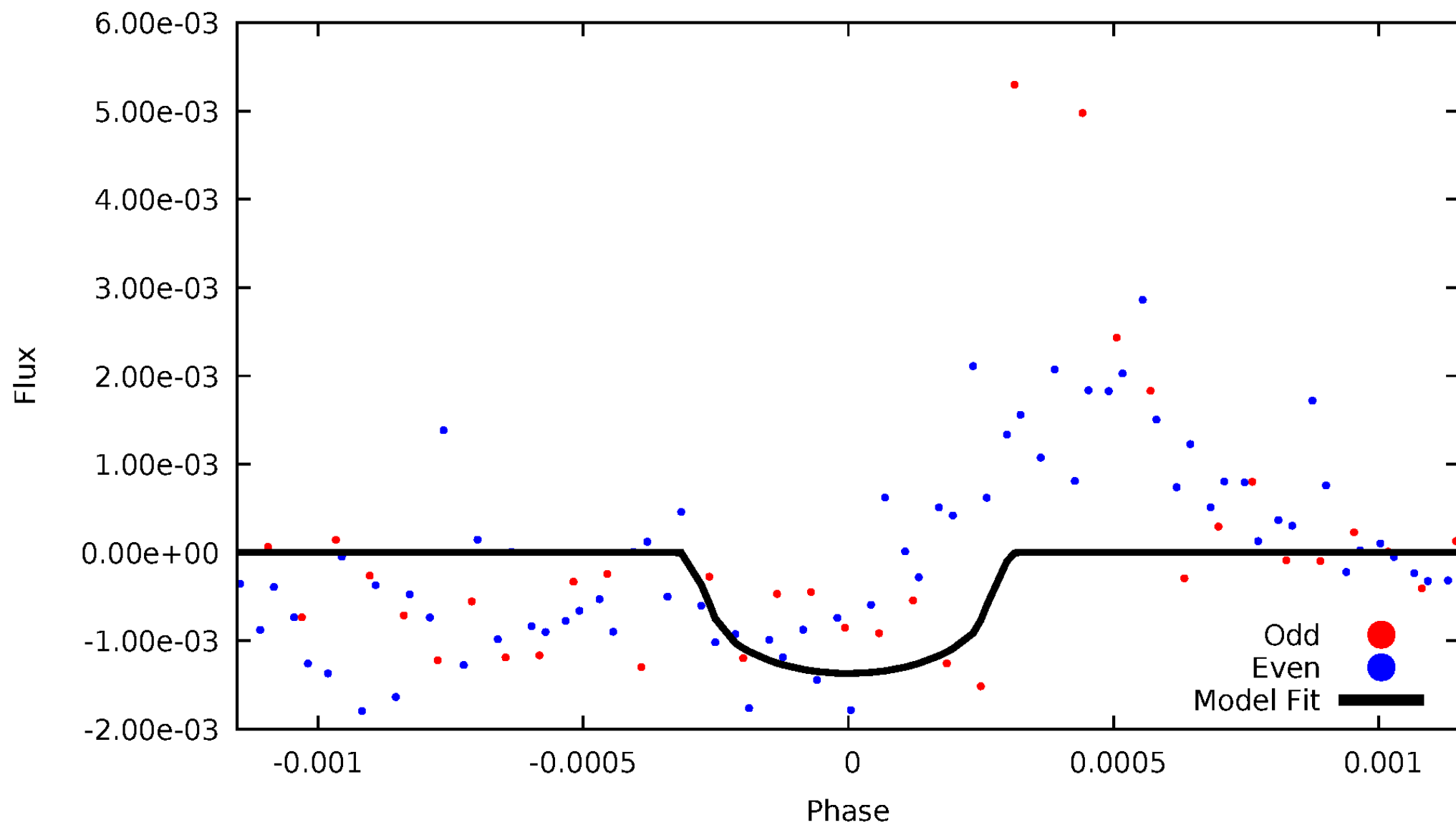


TCE 005165017-05



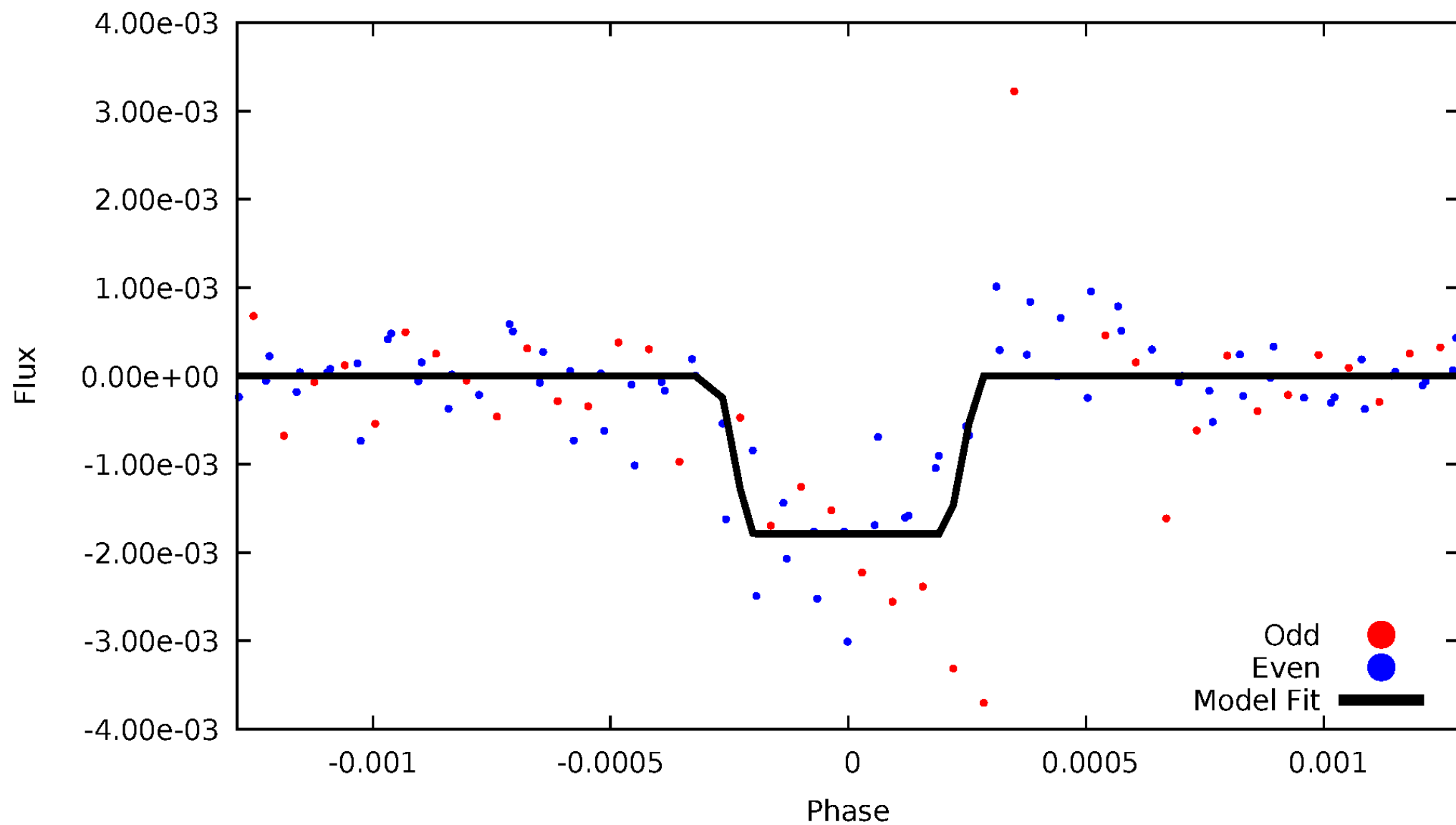
DV Odd/Even

TCE 005165017-05



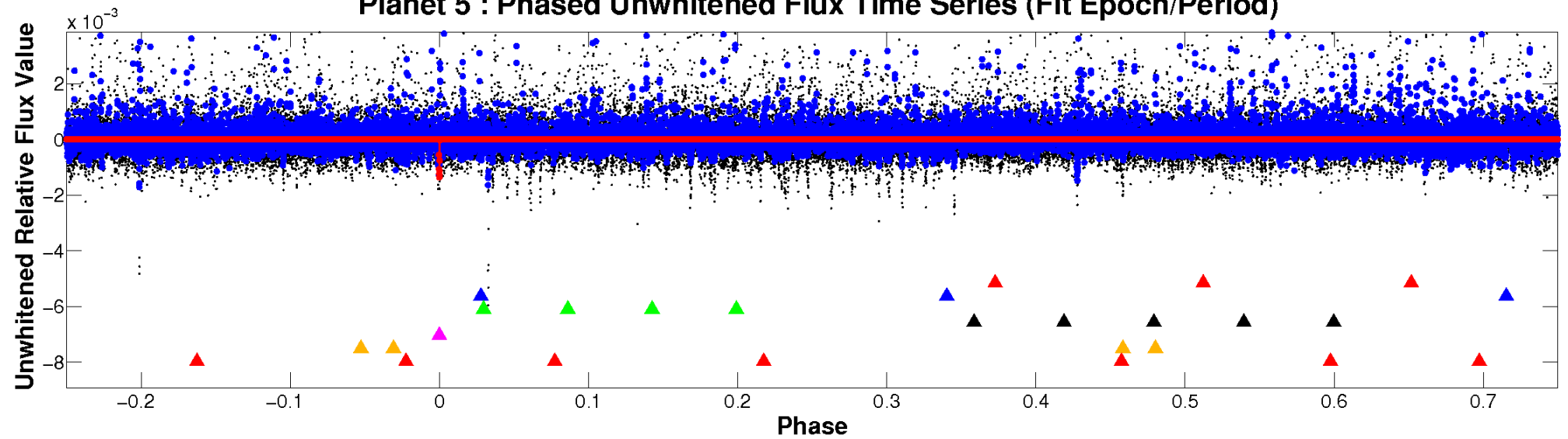
ALT Odd/Even

TCE 005165017-05

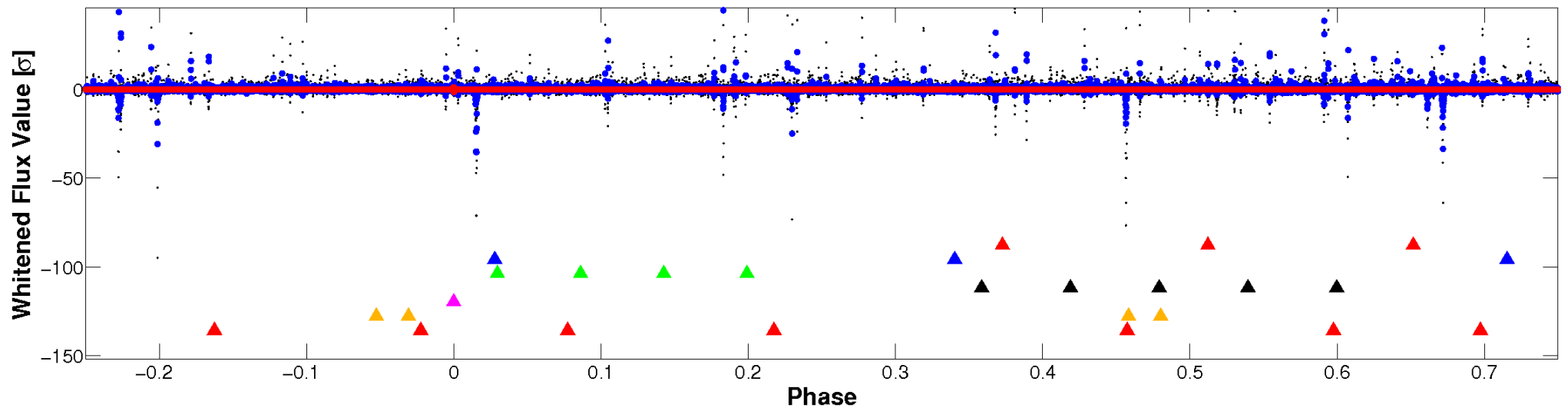


Non-Whitened Vs. Whitened Light Curve

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

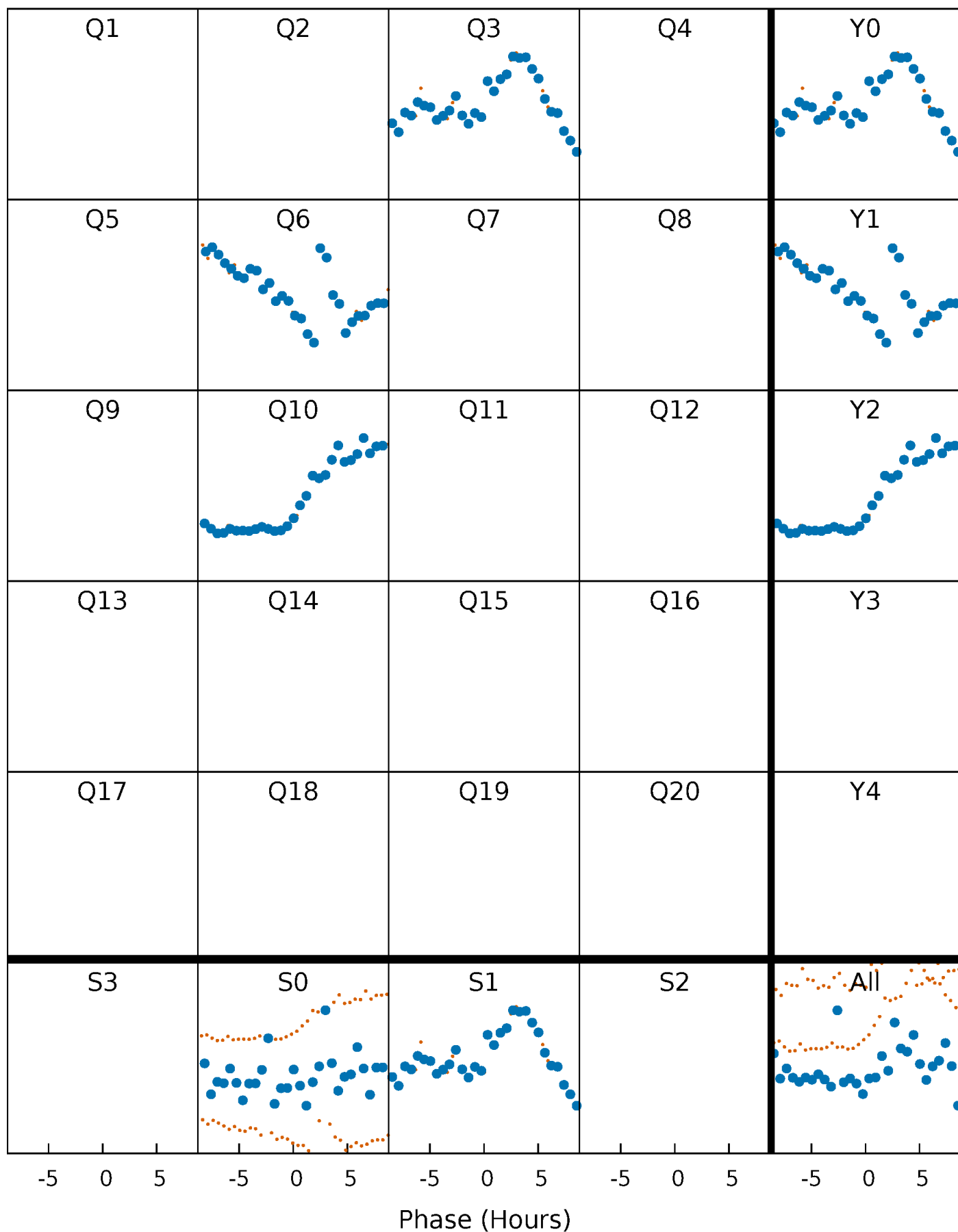


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



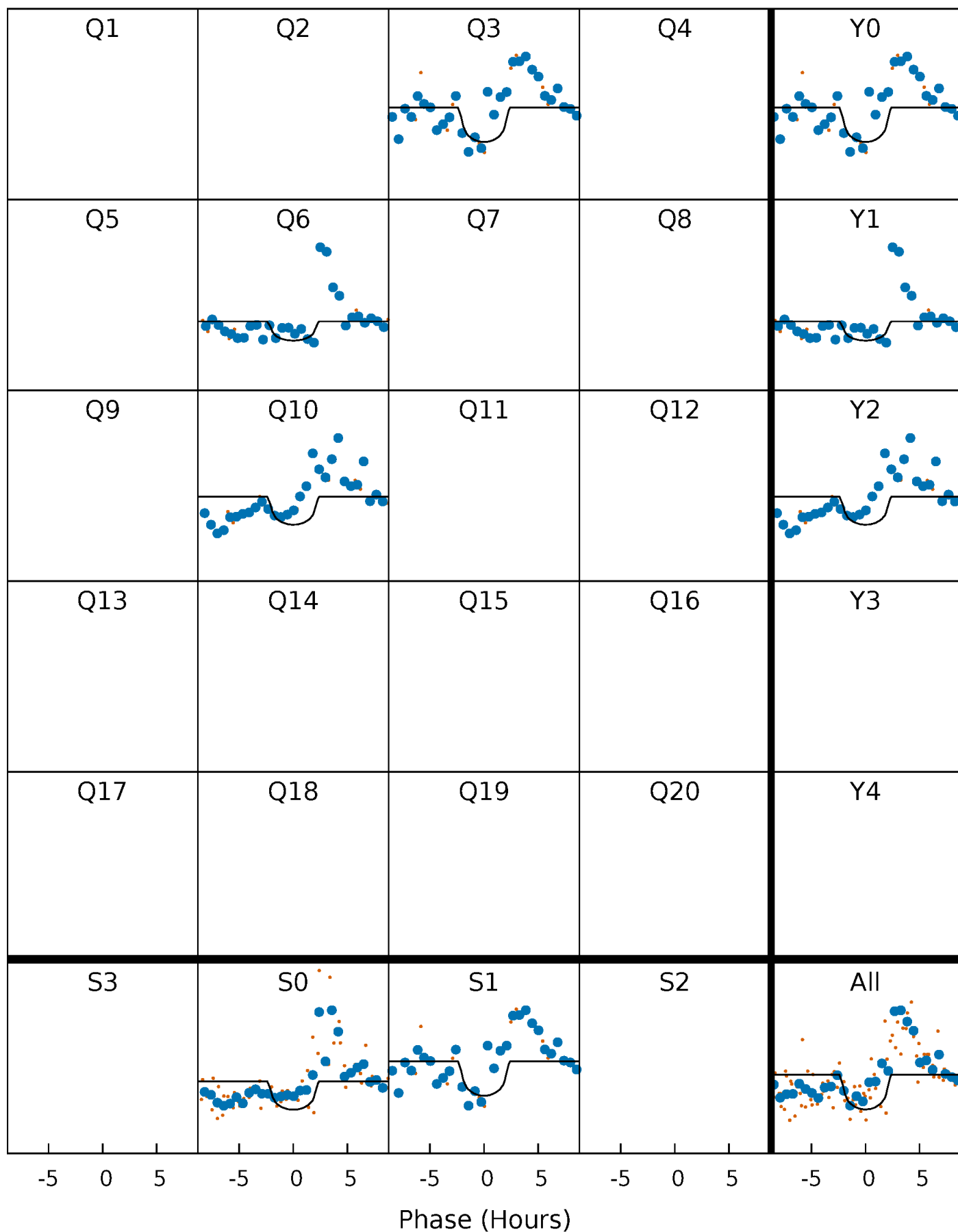
PDC Quarter-Phased Transit Curves

TCE 005165017-05 $P=319.280803$ Days $T_0=305.910374$ (BKJD)



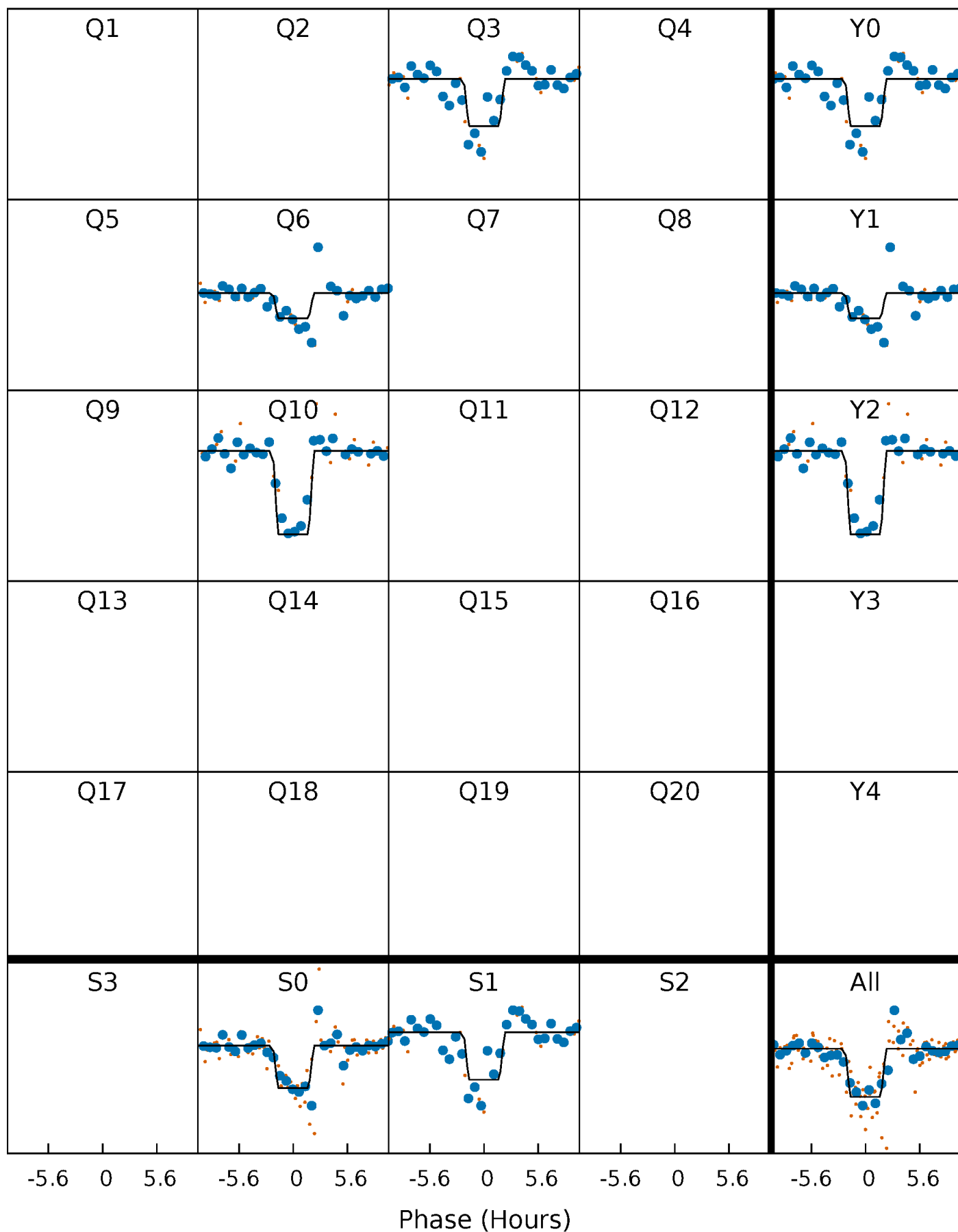
DV Quarter-Phased Transit Curves

TCE 005165017-05 $P=319.280803$ Days $T_0=305.910374$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

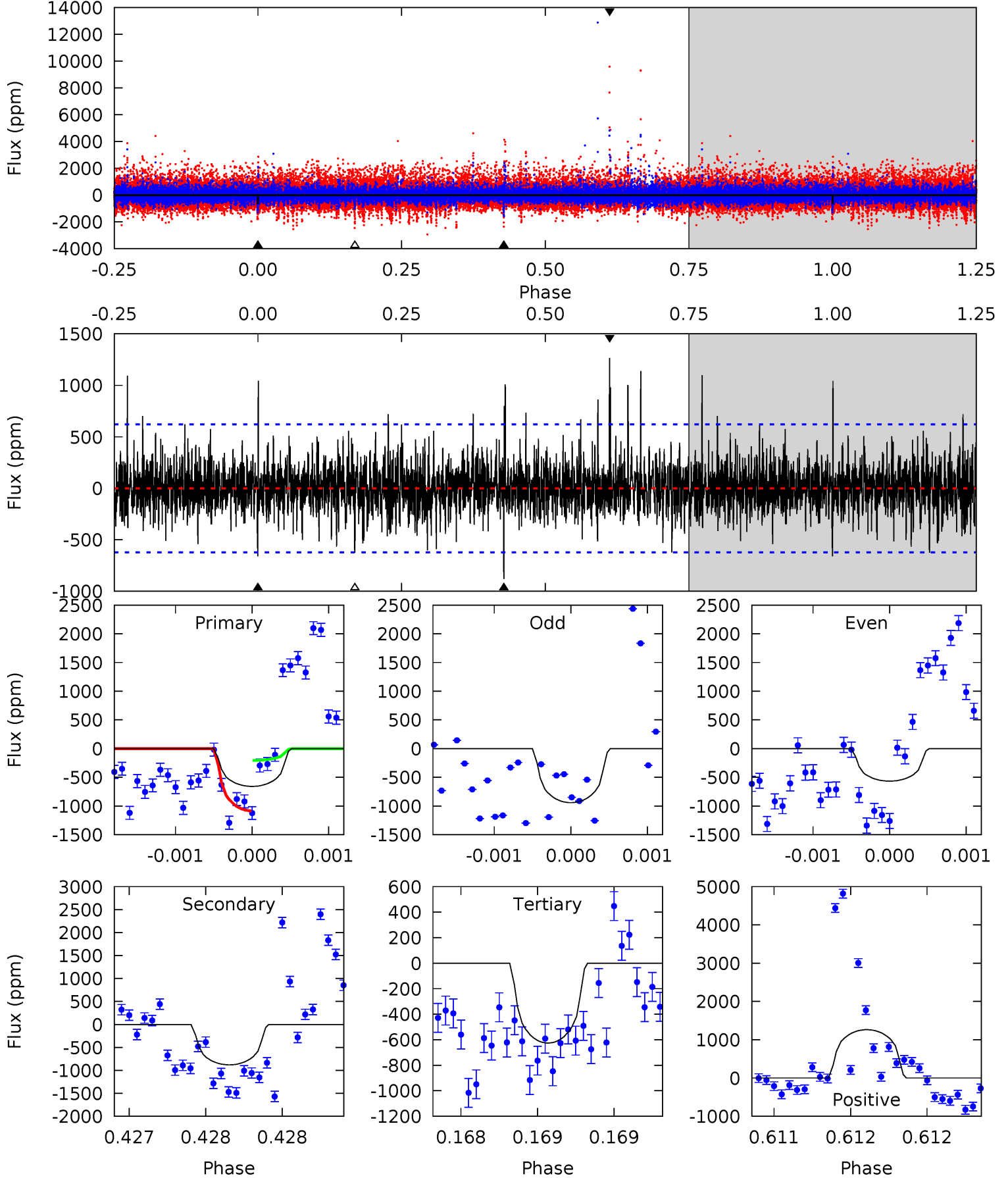
TCE 005165017-05 $P=319.267564$ Days $T_0=305.912425$ (BKJD)



DV Model-Shift Uniqueness Test

005165017-05, P = 319.280803 Days, E = 305.910374 Days

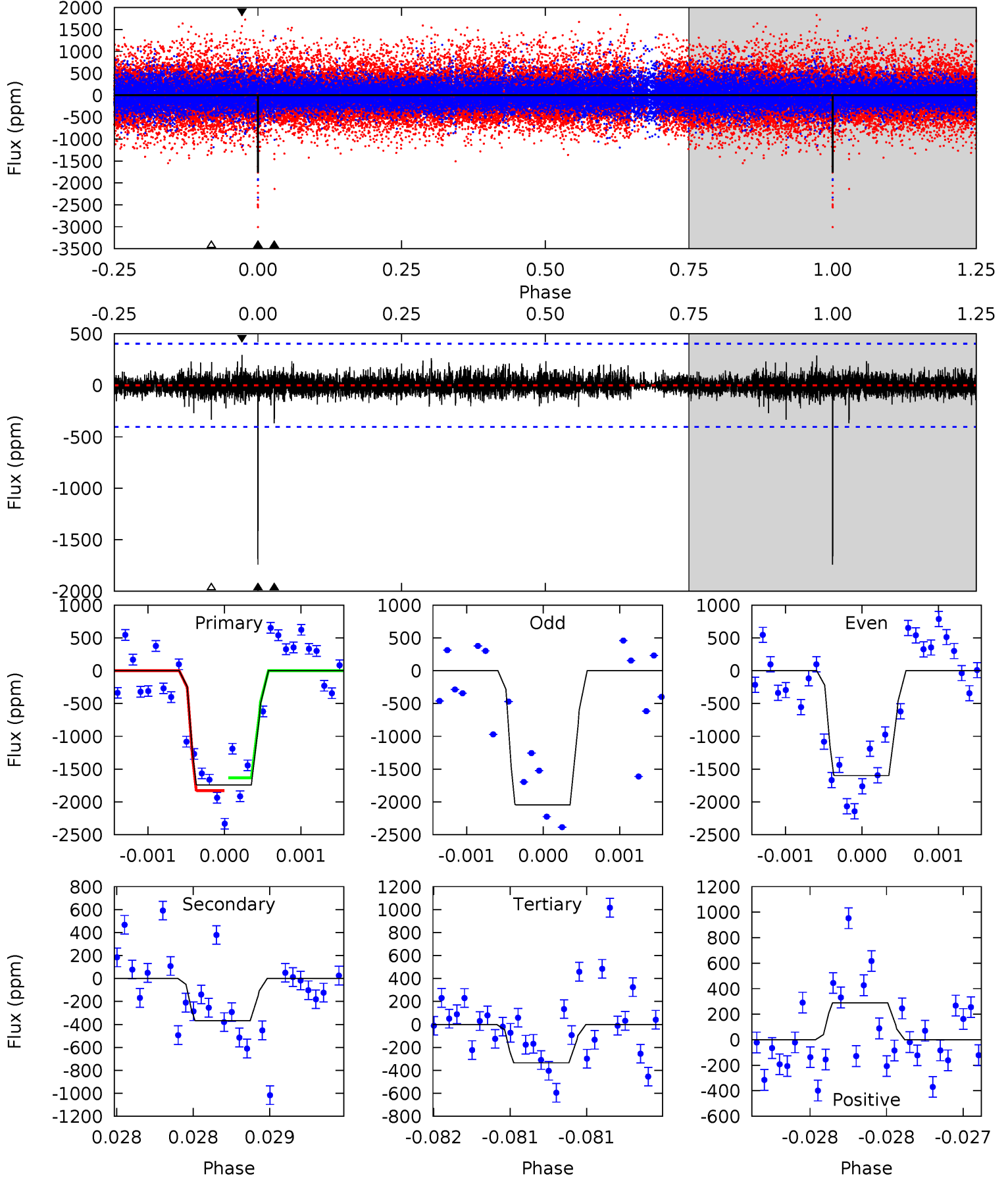
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.88	7.85	5.58	11.3	5.53	3.42	1.61	0.29	-5.39	2.26	-3.42	0.85	0.83	0.59	3.95



Alt Model-Shift Uniqueness Test

005165017-05, P = 319.267564 Days, E = 305.912425 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.0	5.06	4.60	3.99	5.56	3.46	0.79	19.4	20.0	0.46	1.07	2.76	0.93	0.14	1.34



Stellar Parameters For KIC 005165017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4247^{+134}_{-164}	$4.621^{+0.049}_{-0.014}$	$-0.020^{+0.150}_{-0.150}$	$0.646^{+0.027}_{-0.047}$	$0.636^{+0.045}_{-0.041}$	$3.327^{+0.649}_{-0.245}$
	+3%/-4%	+1%/-0%	+750%/-750%	+4%/-7%	+7%/-6%	+19%/-7%
Source	PHO1	KIC0	SPE15	DSEP		

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

Secondary Eclipse Parameters for KIC 005165017-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-880 ± 112	$3.21^{+2.72}_{-2.11}$	236^{+8}_{-10}	3663^{+1841}_{-652}	$30236^{+220840}_{-21517}$
Alt.	-368 ± 73	$3.37^{+2.95}_{-2.08}$	235^{+8}_{-9}	3125^{+1209}_{-509}	11026^{+65489}_{-7943}

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 $A_{obs} \gg 1.0$

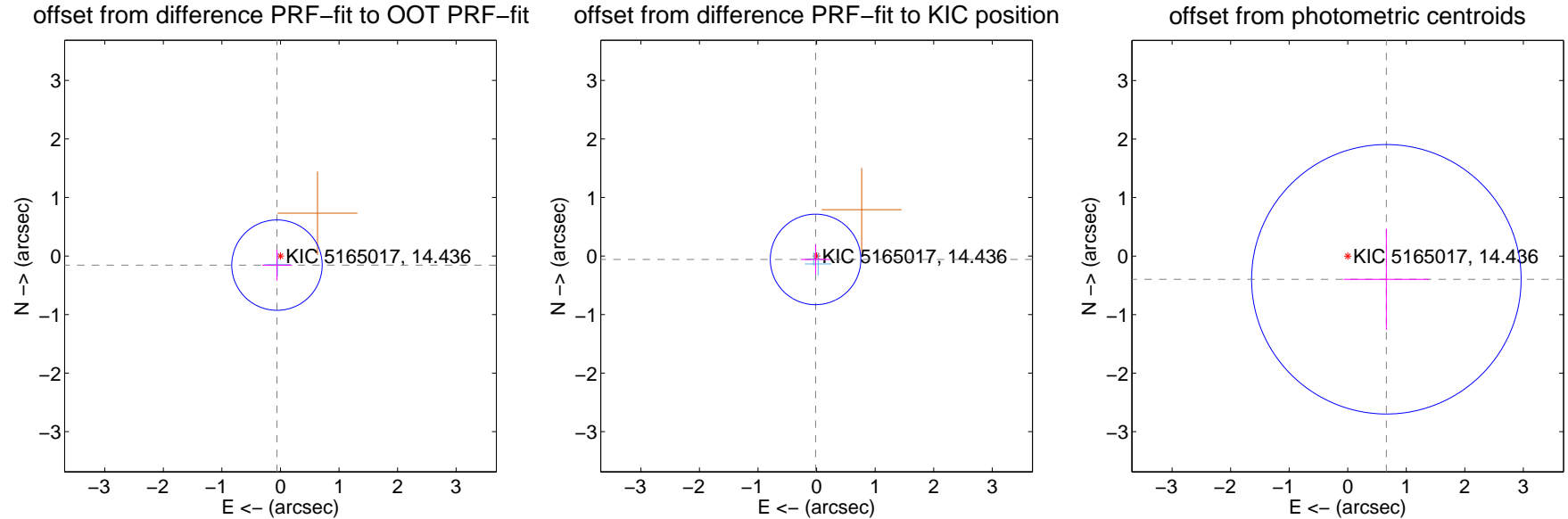
DV Centroid Data

Supplemental centroid analysis for 005165017-05. Kepler magnitude: 14.44. Transit SNR 7.13

There are 2 quarters with good PRF difference image offsets

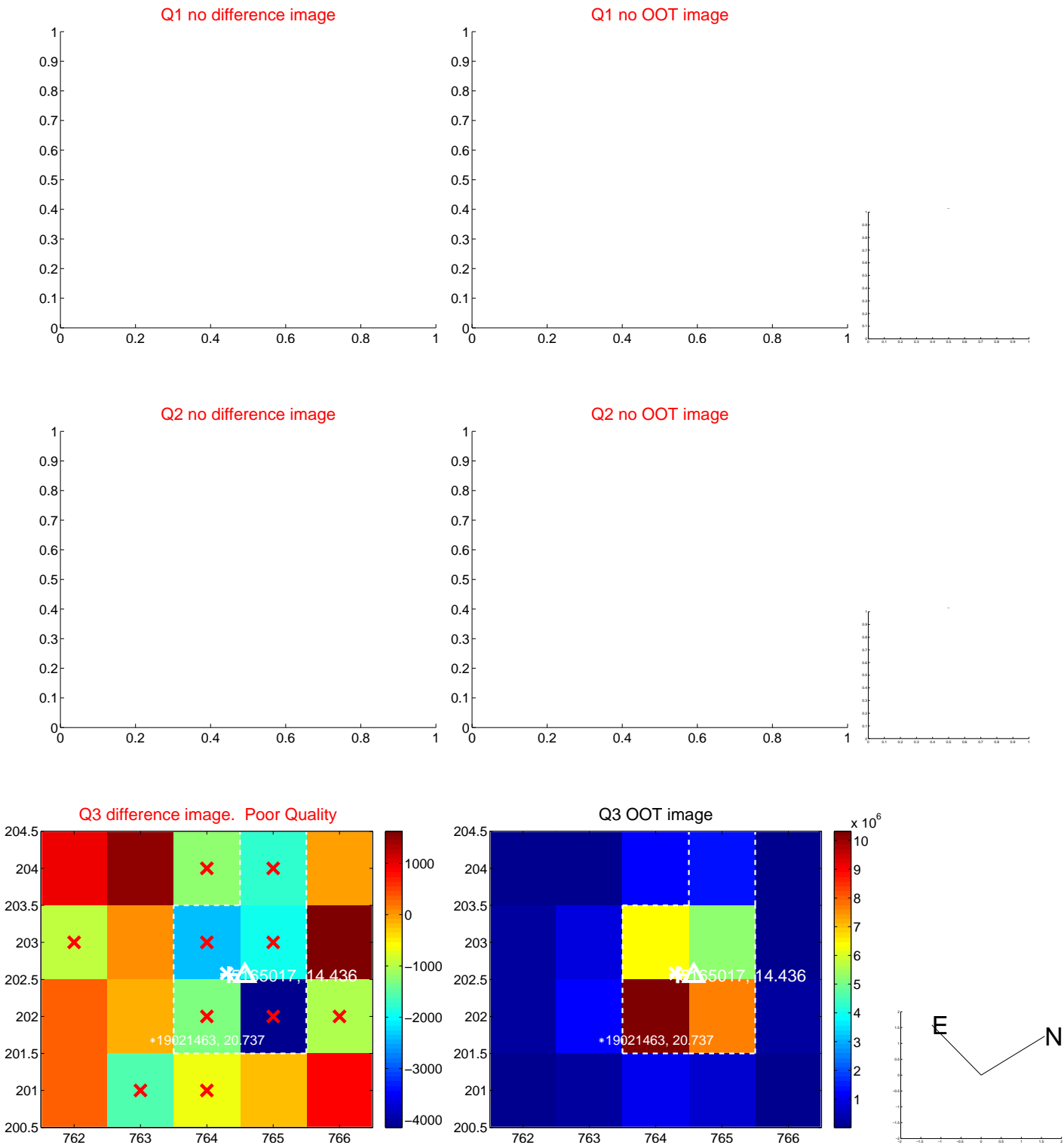
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.166 ± 0.257	0.65	0.059 ± 0.251	-0.155 ± 0.258
PRF-fit source offset from KIC position	0.060 ± 0.258	0.23	0.017 ± 0.251	-0.058 ± 0.258
photometric centroid source offset	0.77 ± 0.77	1.00	-0.66 ± 0.73	-0.40 ± 0.87

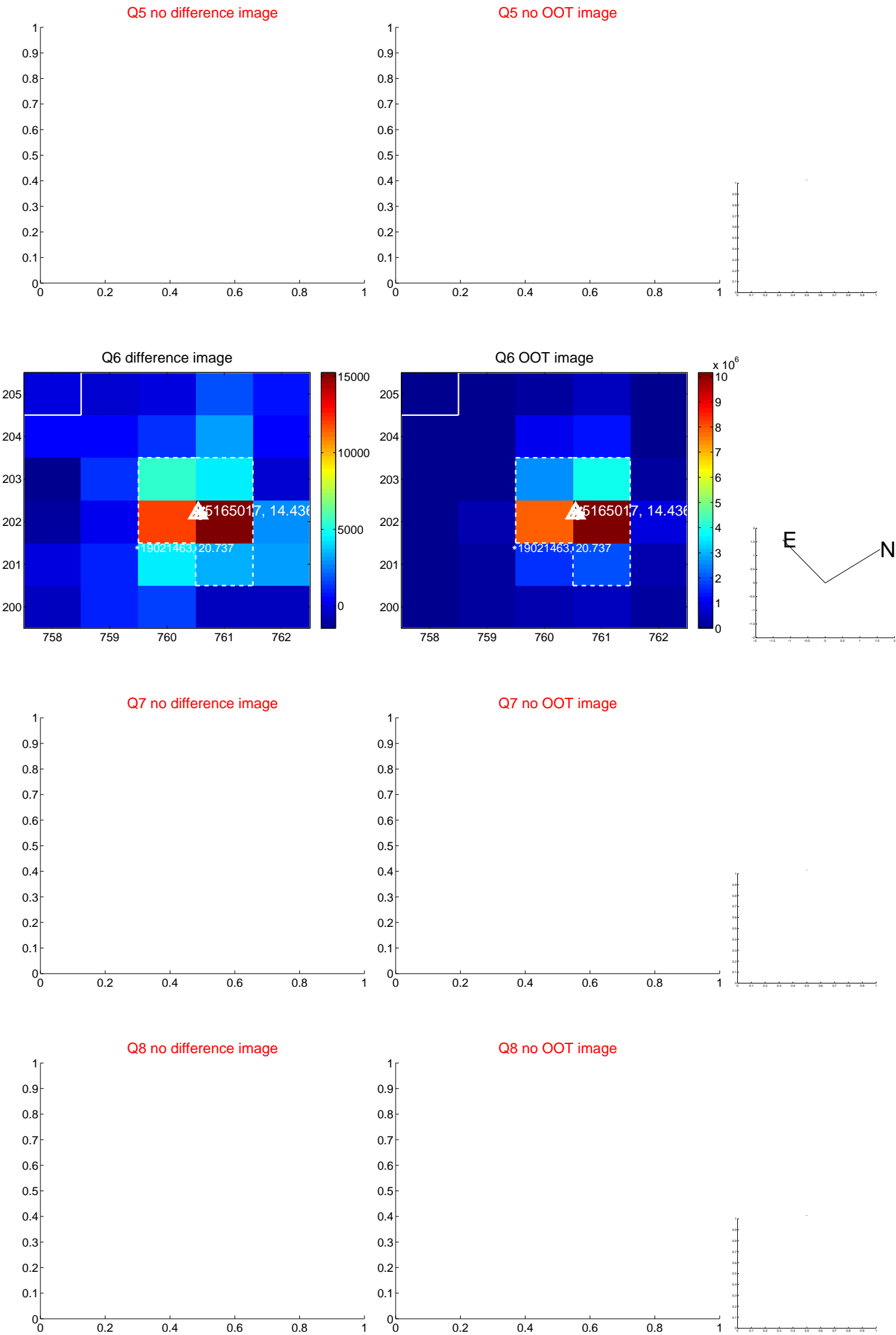


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

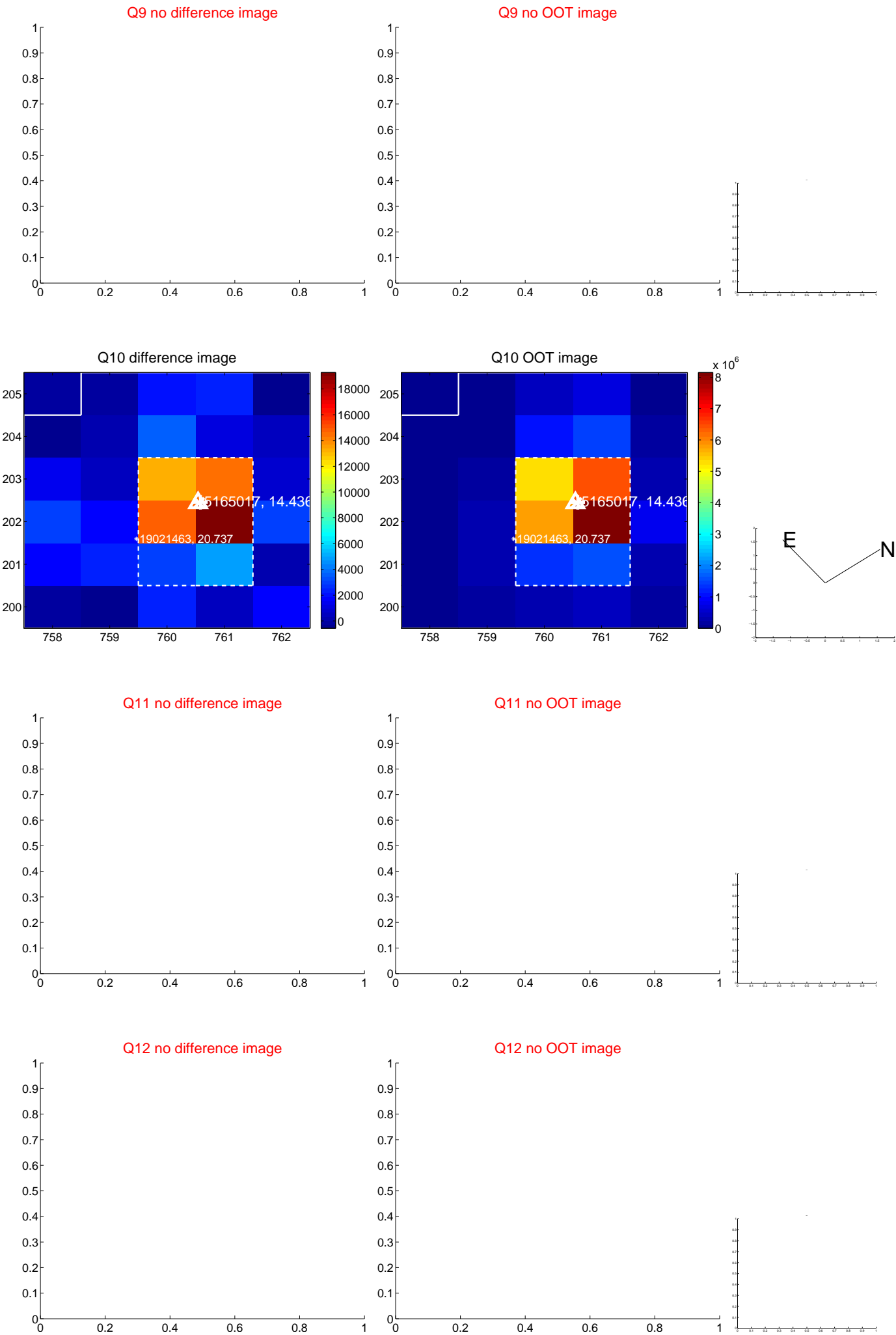
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



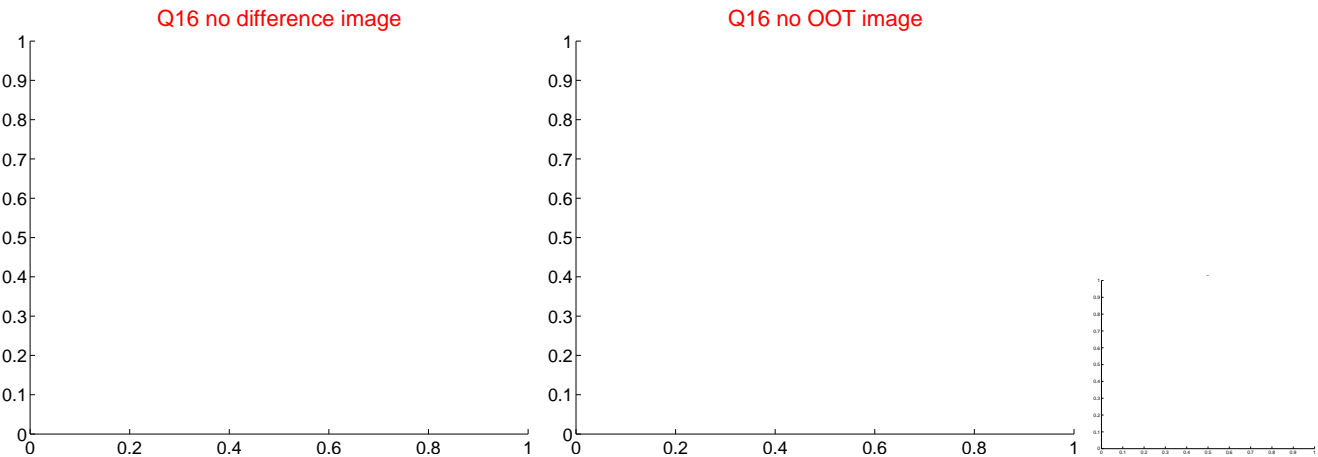
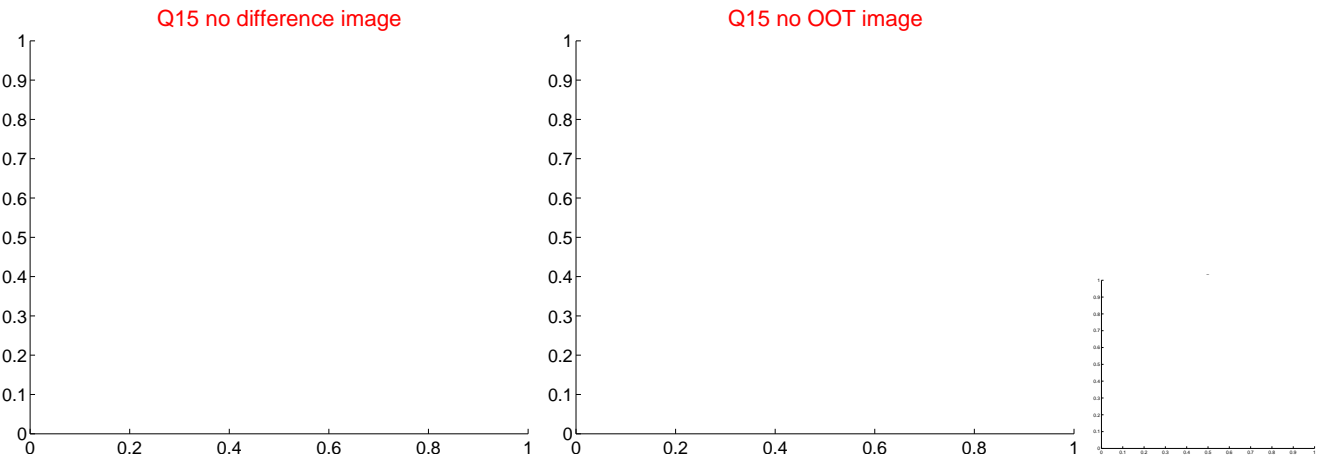
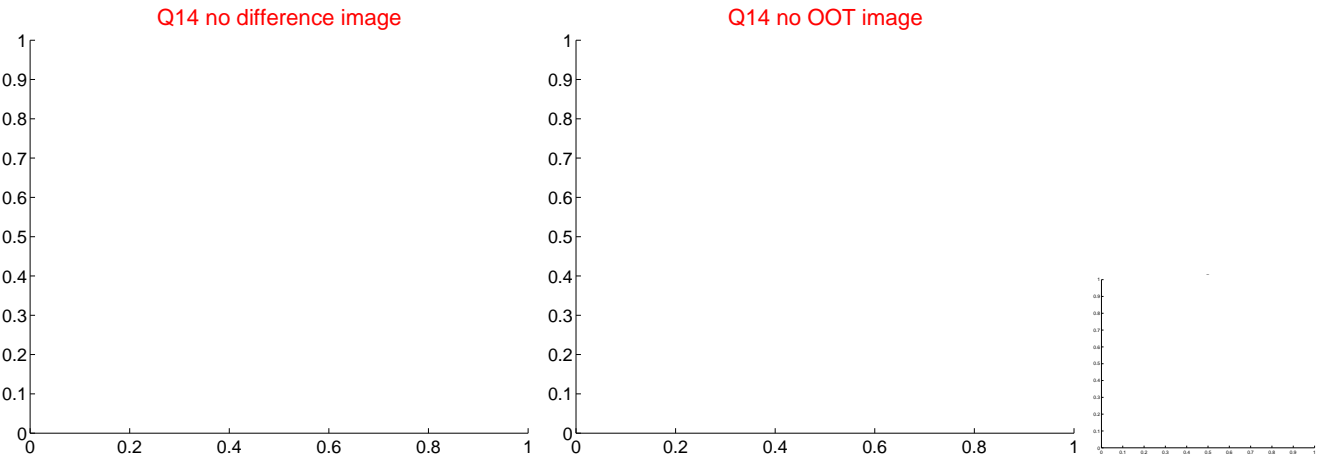
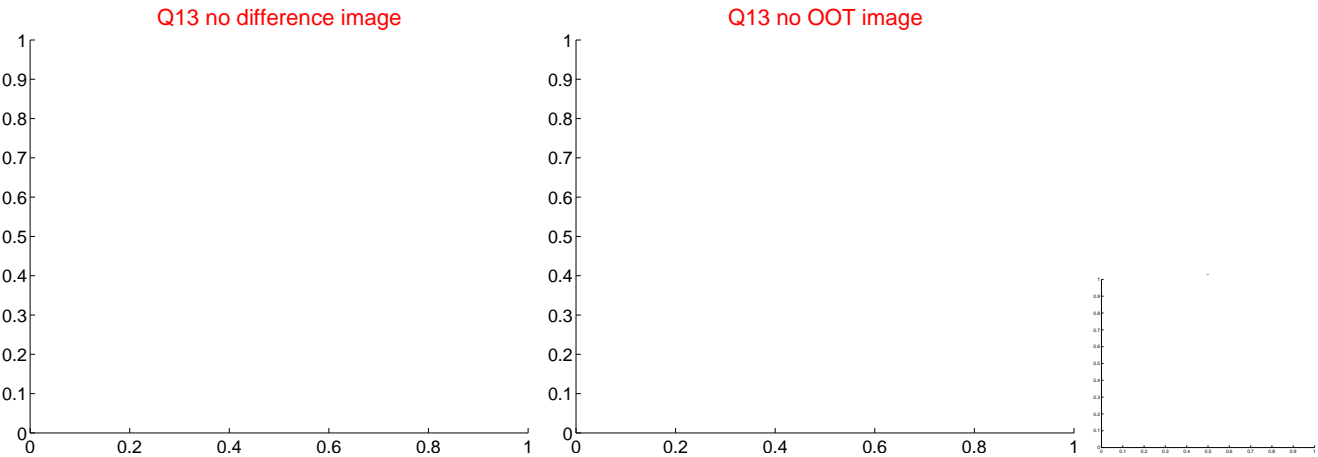
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



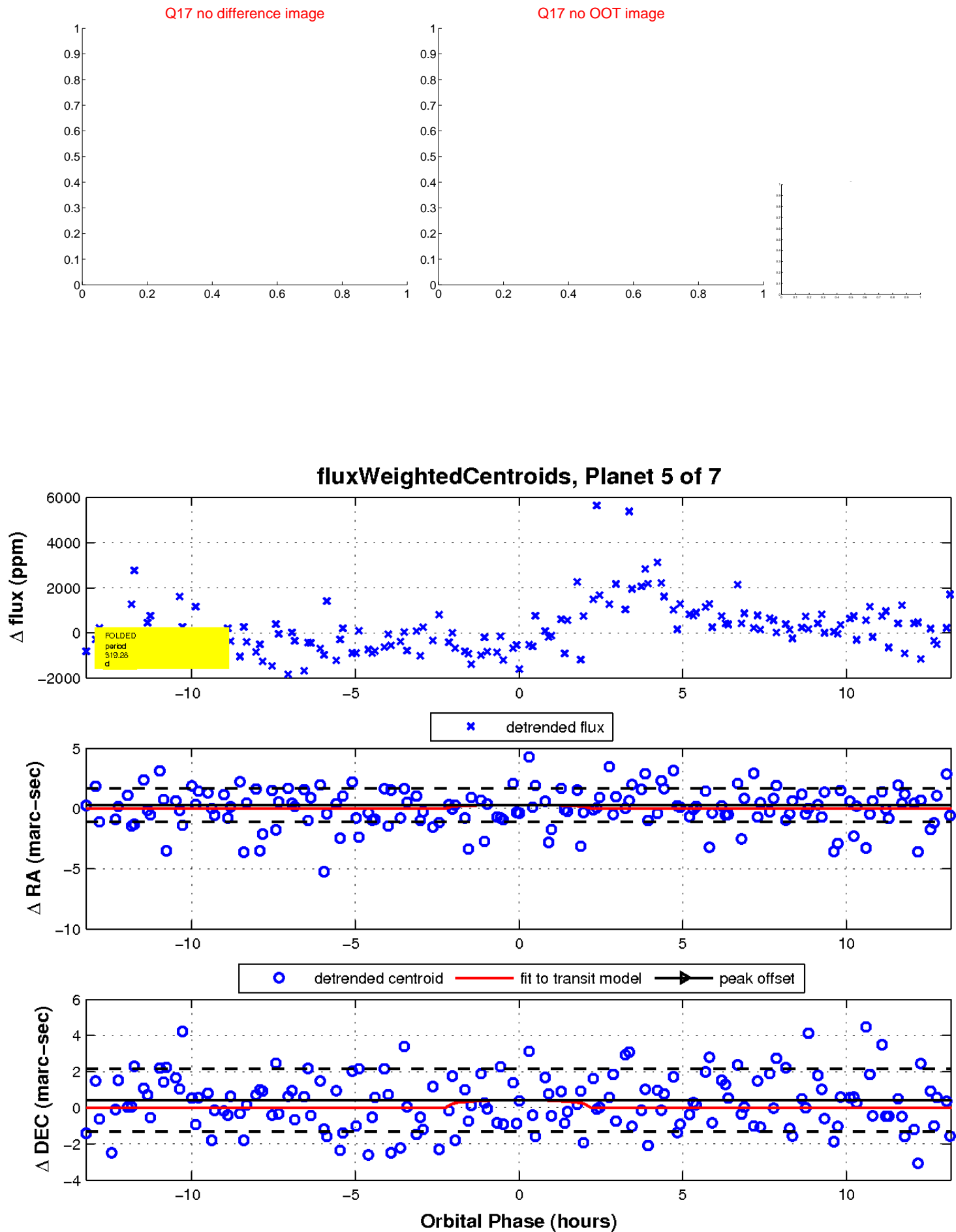
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

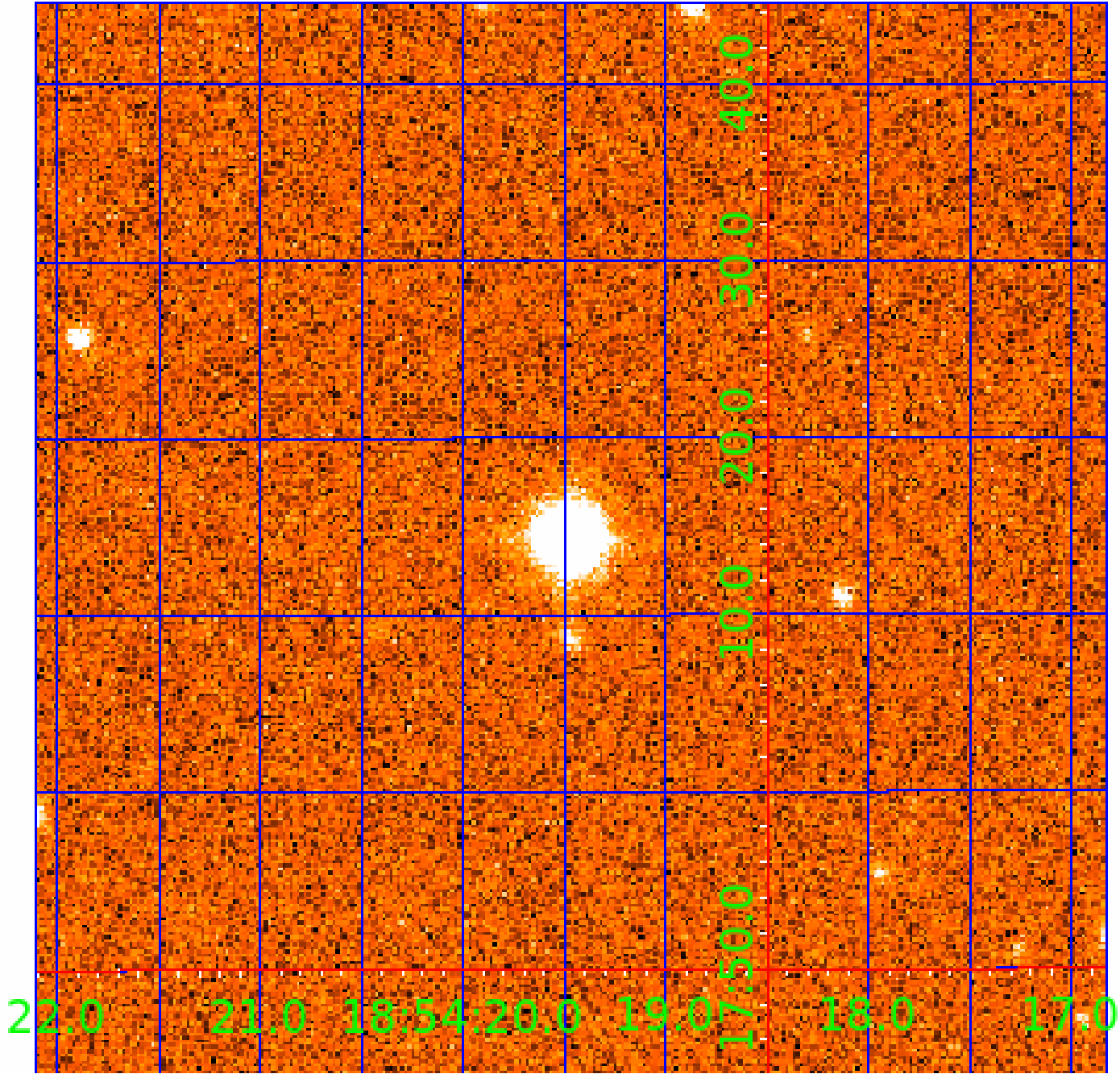


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005165017

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})
005165017-01	OBS	No	594.017212	194.718806	983.3	12.500	16.1	-1.0	0.65	4247	1.94	0.09
005165017-02	OBS	No	538.818358	414.553060	1787.2	5.627	13.0	8.2	0.65	4247	2.84	0.10
005165017-03	OBS	No	337.319843	315.384455	1745.5	3.985	13.0	9.0	0.65	4247	2.61	0.18
005165017-04	OBS	No	300.031189	178.118403	1175.7	3.303	12.1	6.6	0.65	4247	2.41	0.21
005165017-05	OBS	No	319.280803	305.910375	1367.9	4.414	10.4	7.1	0.65	4247	2.33	0.20
005165017-06	OBS	No	475.437567	139.941514	1288.4	5.024	11.2	6.3	0.65	4247	2.31	0.12
005165017-07	OBS	No	197.940016	298.762016	2141.3	5.509	10.1	10.9	0.65	4247	3.12	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005165017-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005165017-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
005165017-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005165017-04	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
005165017-05	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
005165017-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005165017-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

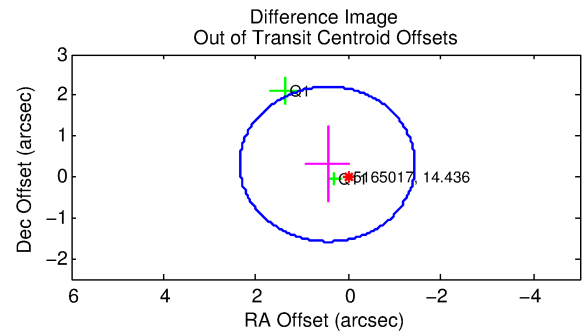
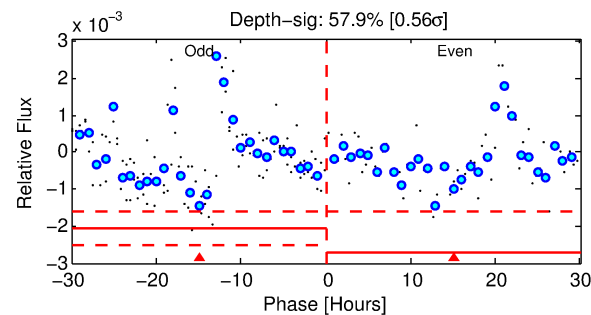
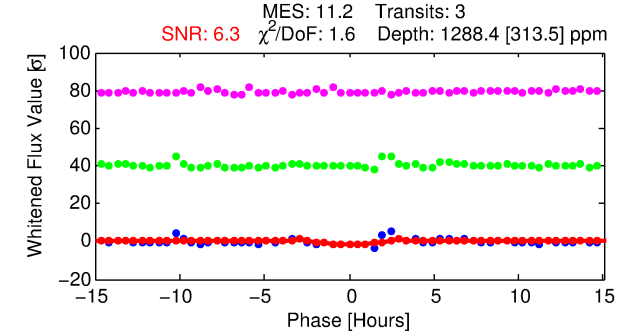
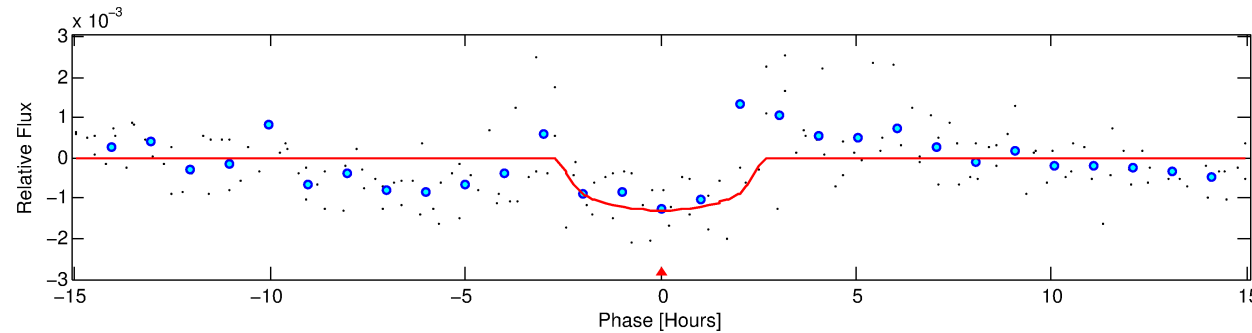
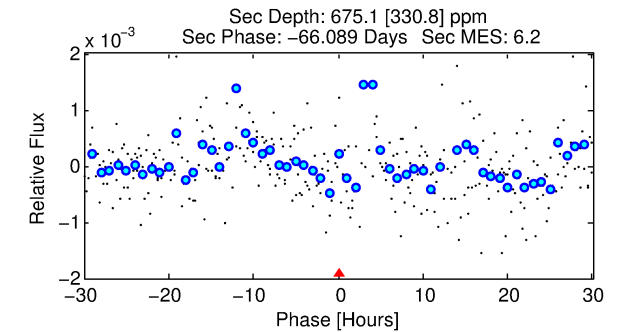
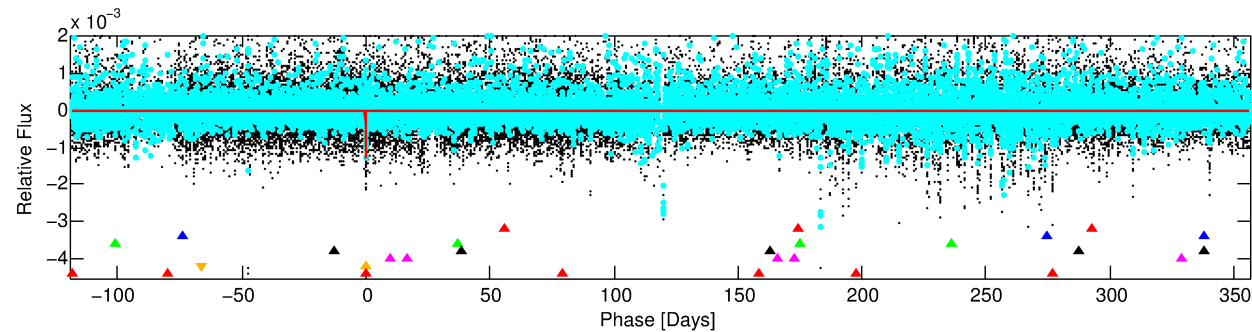
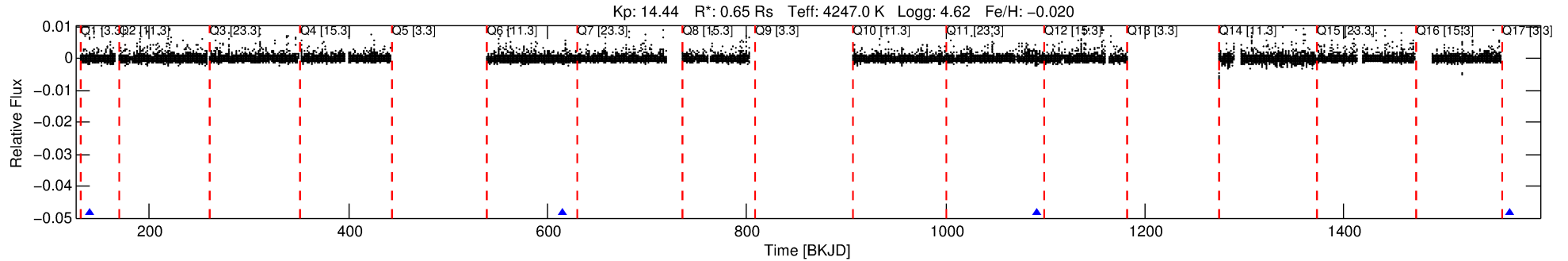
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005165017-06

No Significant Match Found

DV One-Page Summary

KIC: 5165017 Candidate: 6 of 7 Period: 475.438 d



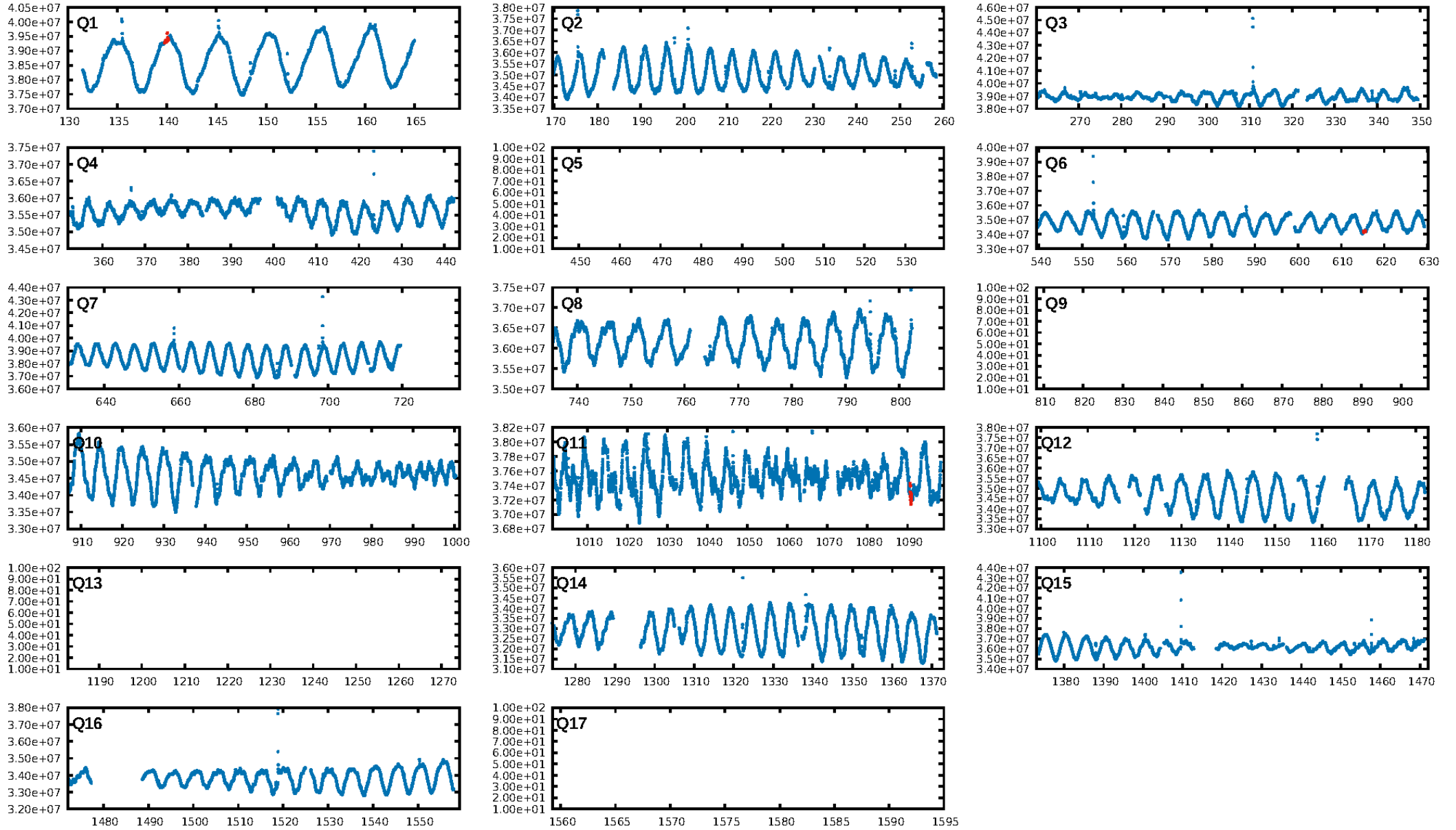
DV Fit Results:

Period = 475.43757 [0.00818] d
Epoch = 139.9415 [0.0115] BKJD
Rp/R* = 0.0328 [0.0508]
a/R* = 662.65 [3096.66]
b = 0.48 [7.73]
Seff = 0.12 [0.02]
Teq = 149 [7] K
Rp = 2.32 [3.59] Re
a = 1.0255 [0.0629] AU
Ag = 72865.10 [228352.73] [0.32σ]
Teffp = 3778 [2962] K [1.23σ]

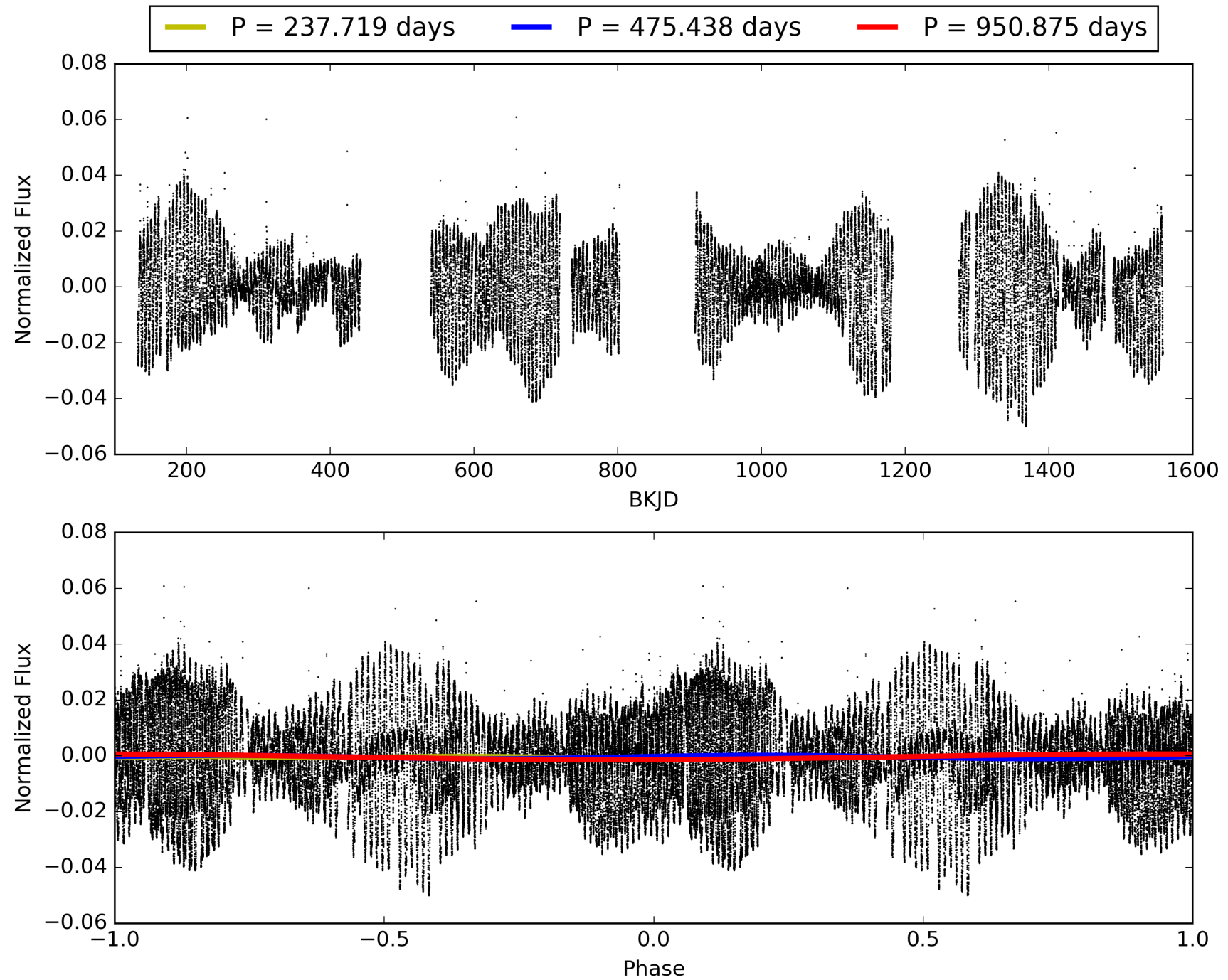
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [516.92σ]
LongPeriod-sig: 100.0% [201.64σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 62.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 1.375
Centroid-sig: 14.8%
Centroid-so: 1.558 arcsec [1.98σ]
OotOffset-rm: 0.553 arcsec [0.88σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-rm: 0.541 arcsec [0.46σ]
KicOffset-st: 0/1/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.67 [2/3]

TCE 005165017-06, PDC Light Curves

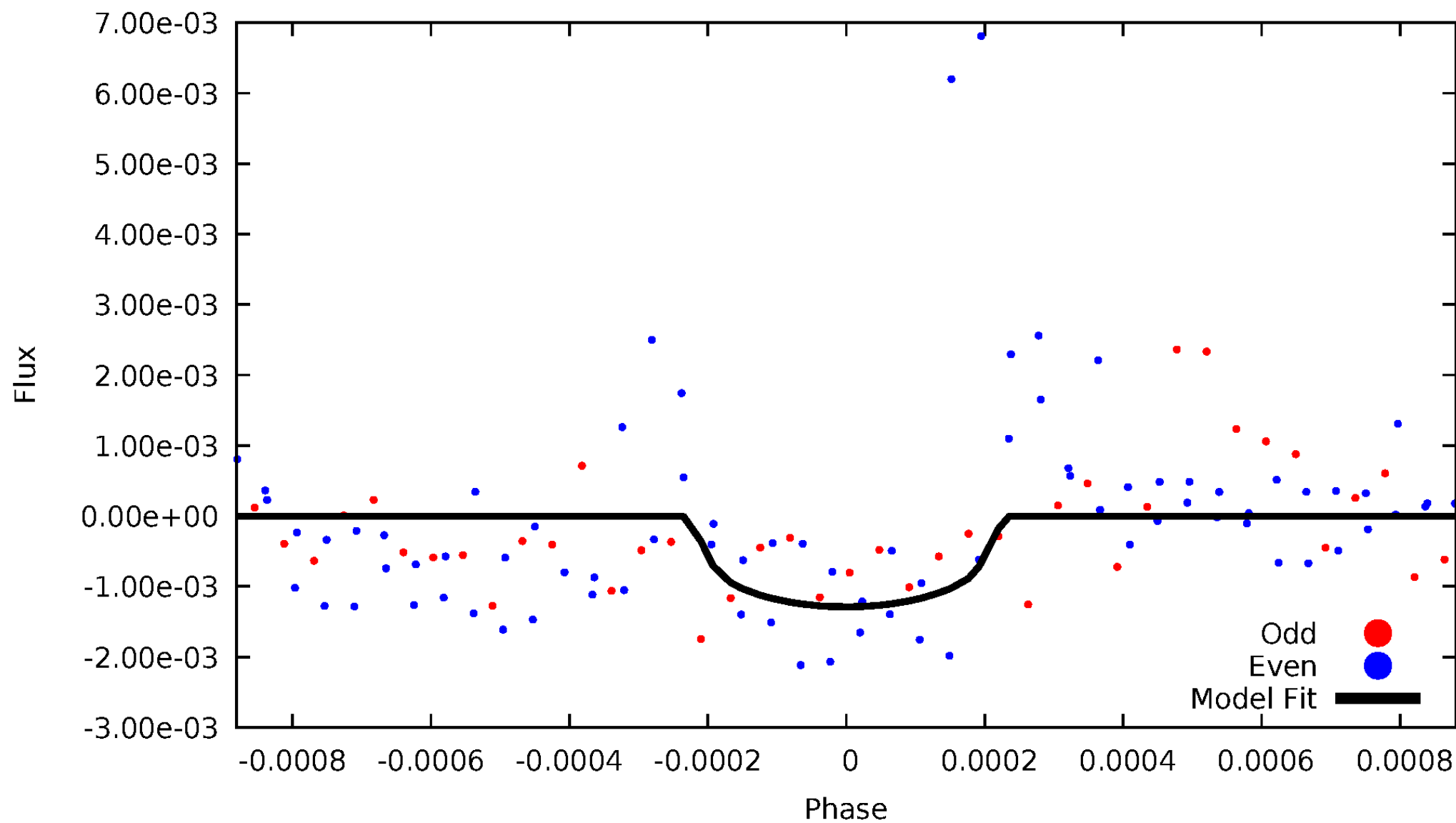


TCE 005165017-06



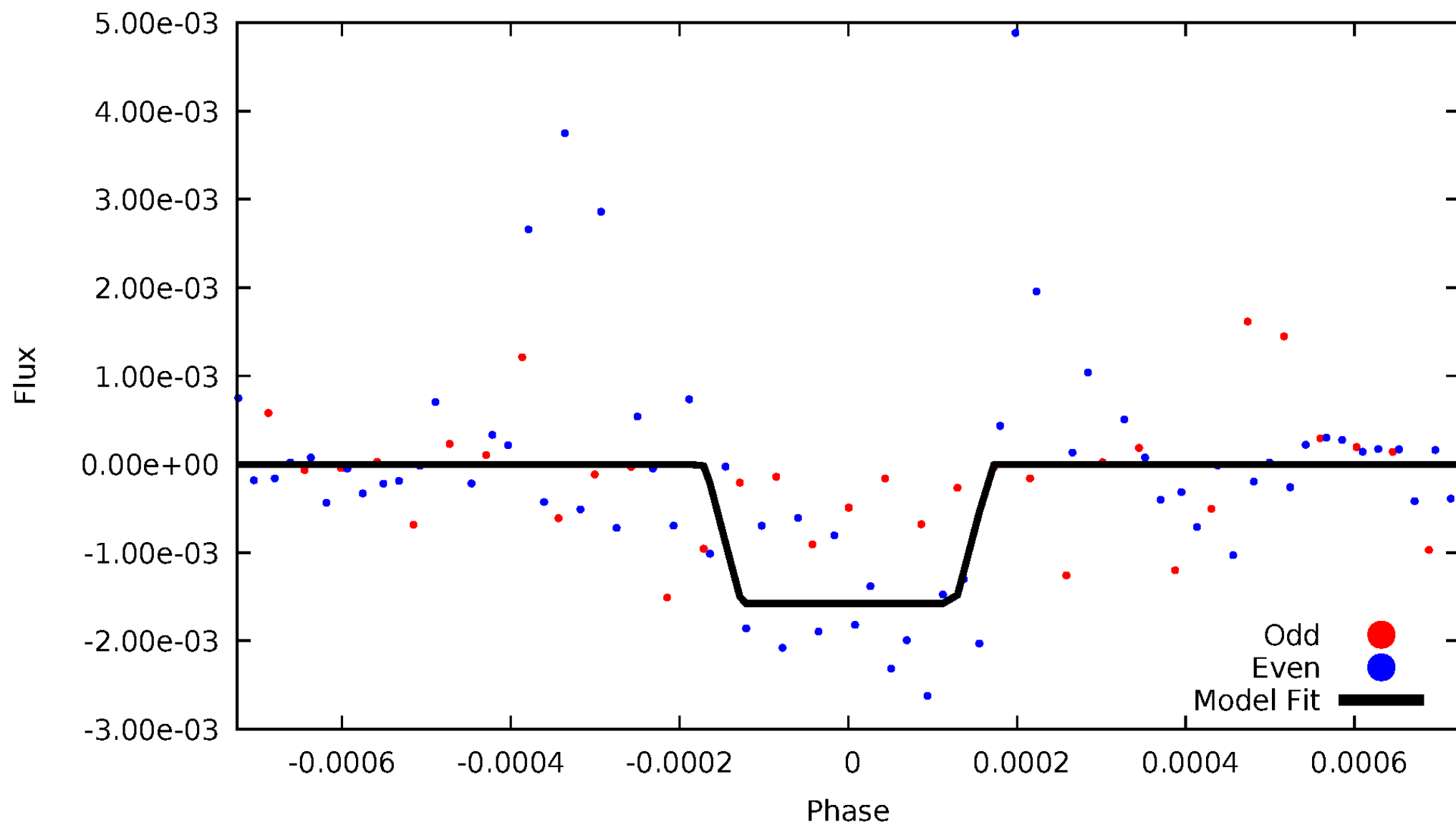
DV Odd/Even

TCE 005165017-06



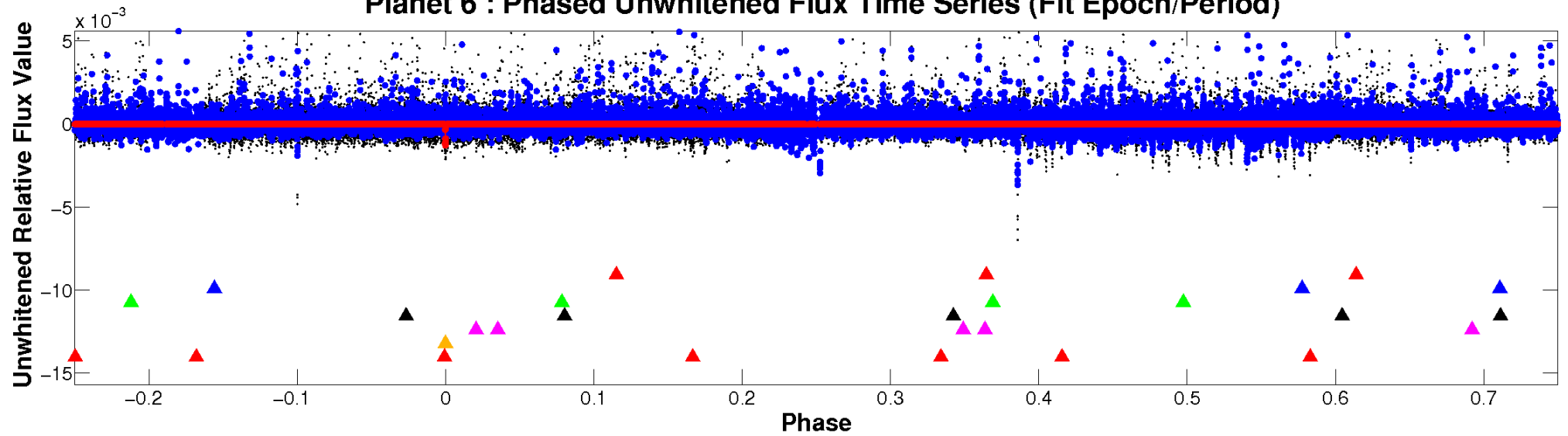
ALT Odd/Even

TCE 005165017-06

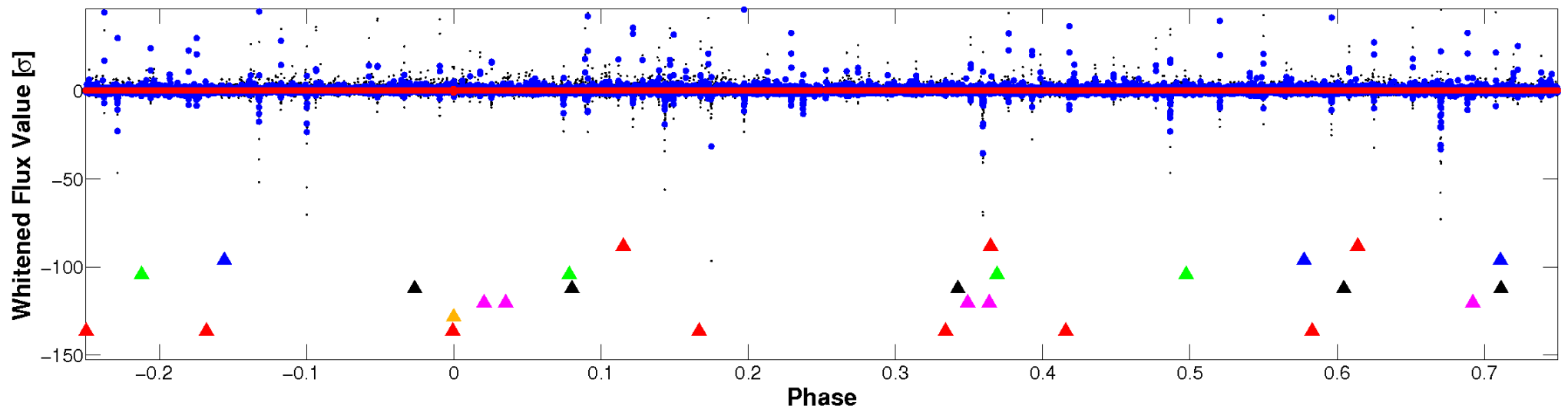


Non-Whitened Vs. Whitened Light Curve

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

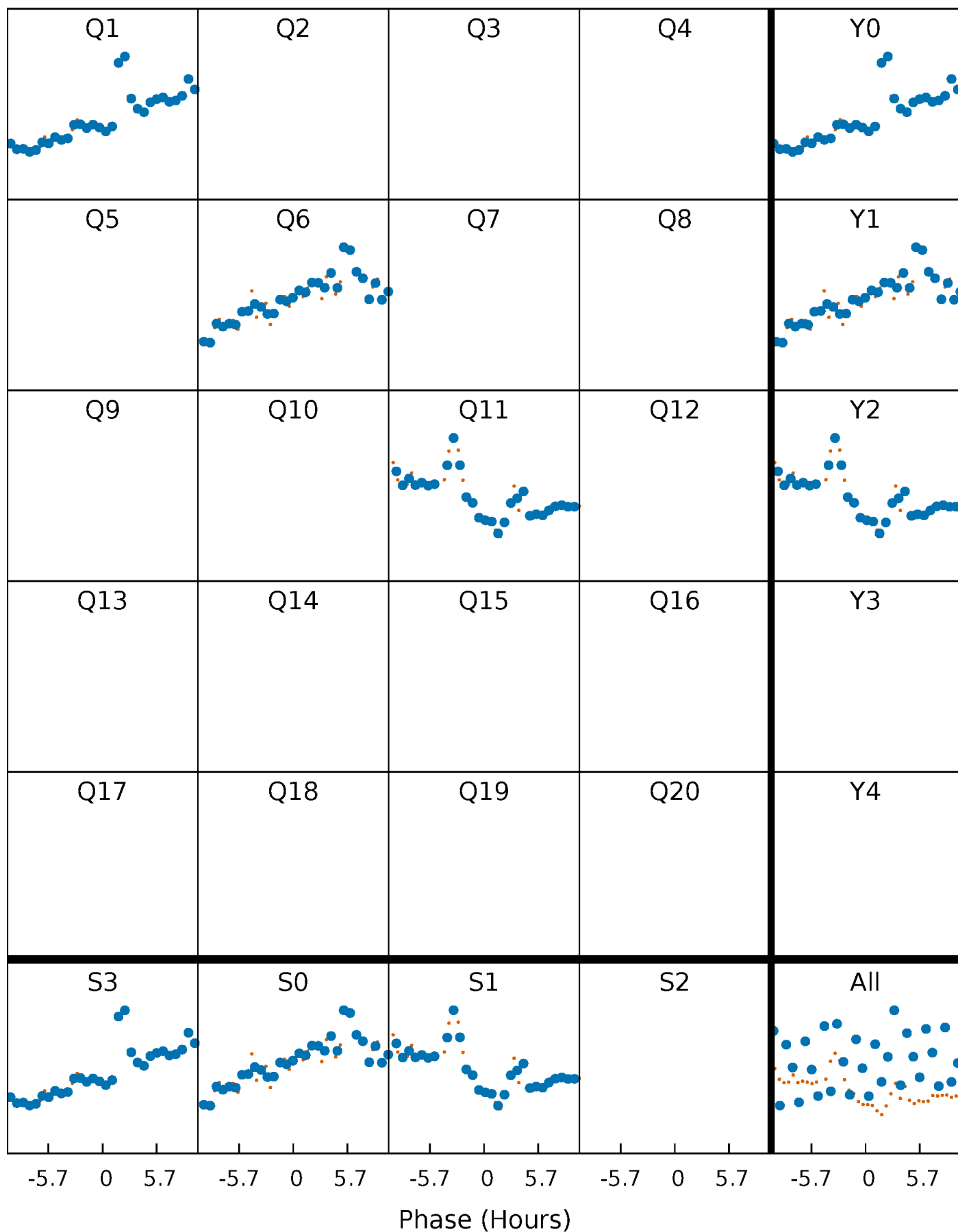


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 005165017-06 P=475.437567 Days $T_0=139.941514$ (BKJD)



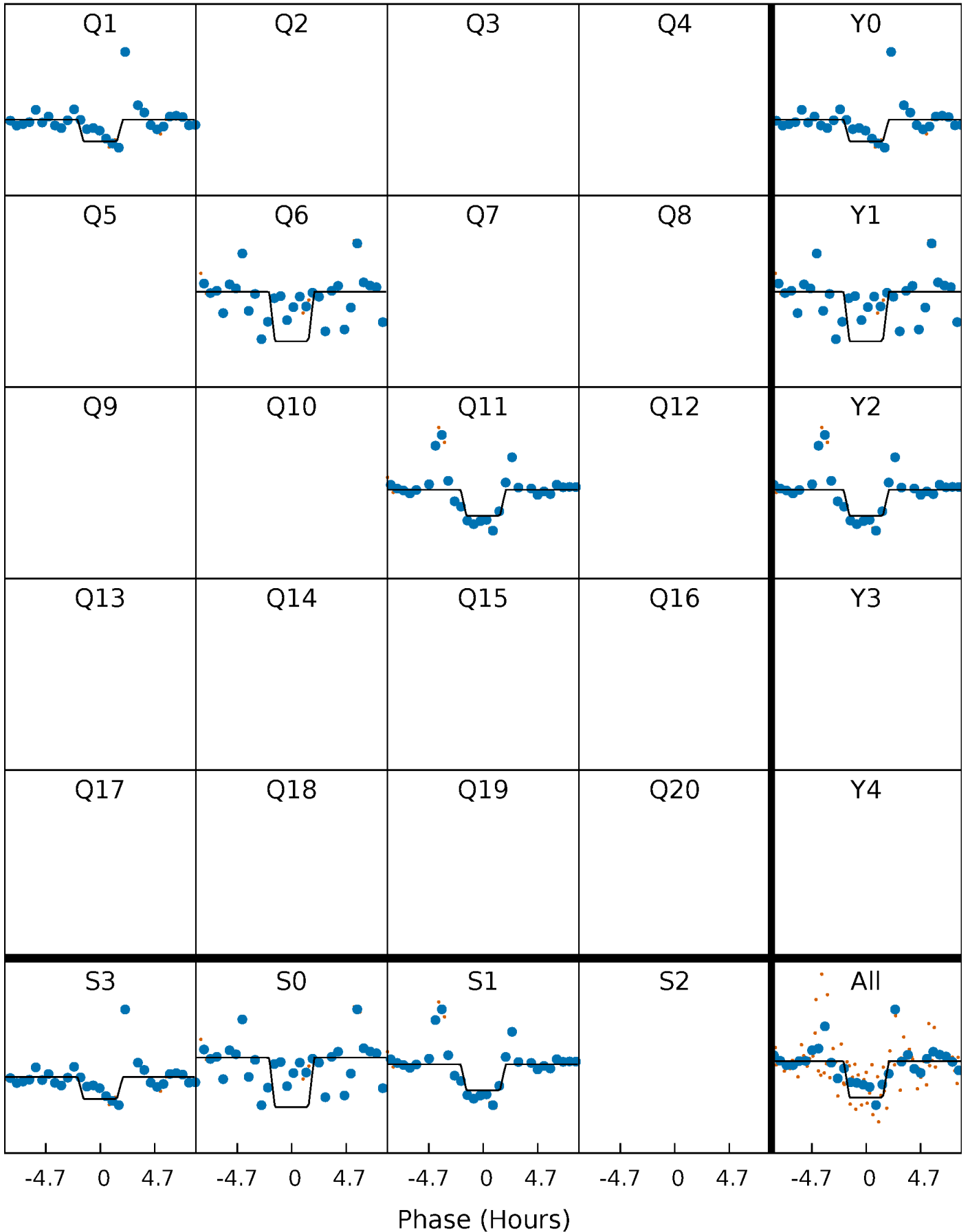
DV Quarter-Phased Transit Curves

TCE 005165017-06 P=475.437567 Days $T_0=139.941514$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

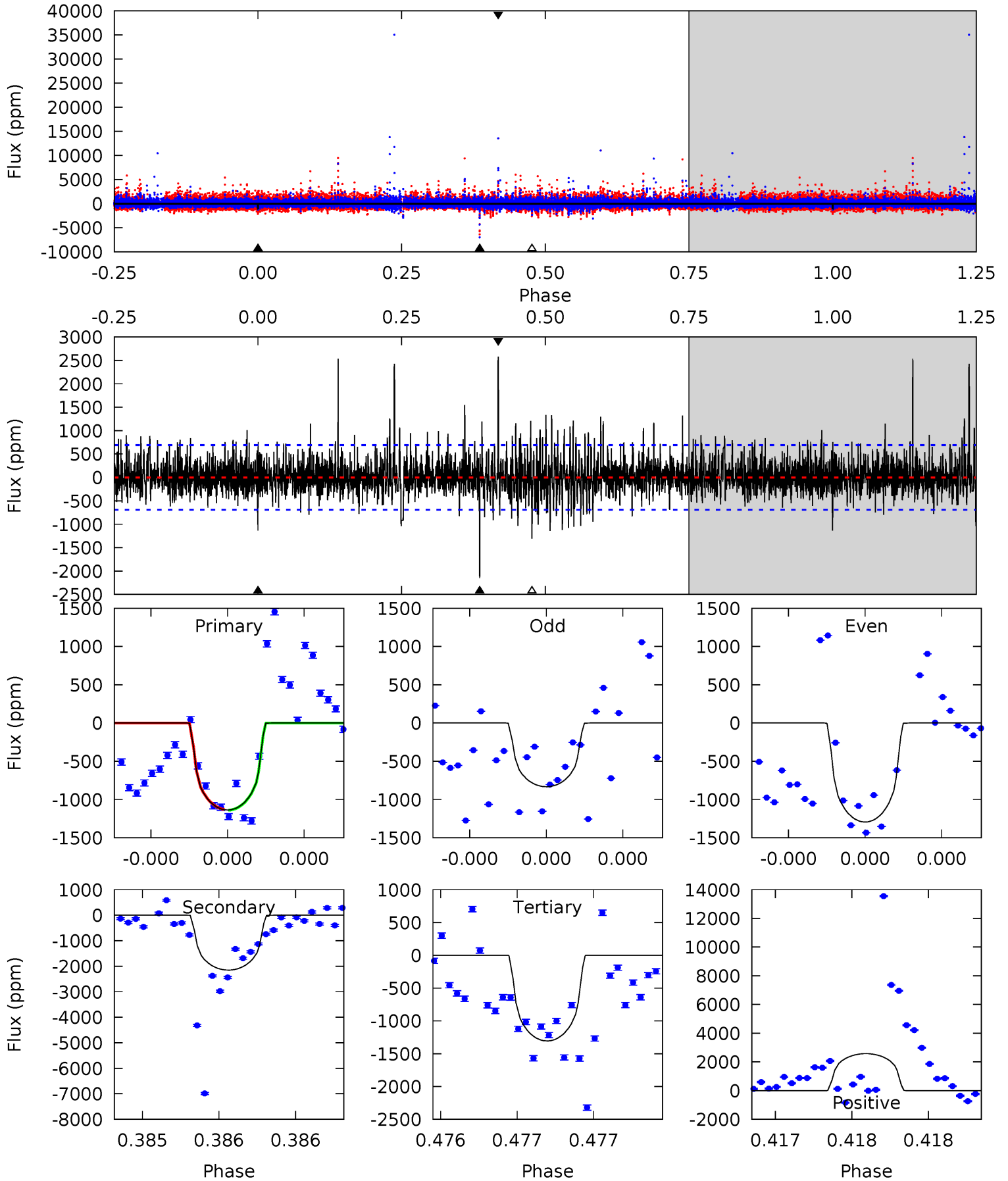
TCE 005165017-06 P=475.461696 Days $T_0=139.919483$ (BKJD)



DV Model-Shift Uniqueness Test

005165017-06, P = 475.437567 Days, E = 139.941514 Days

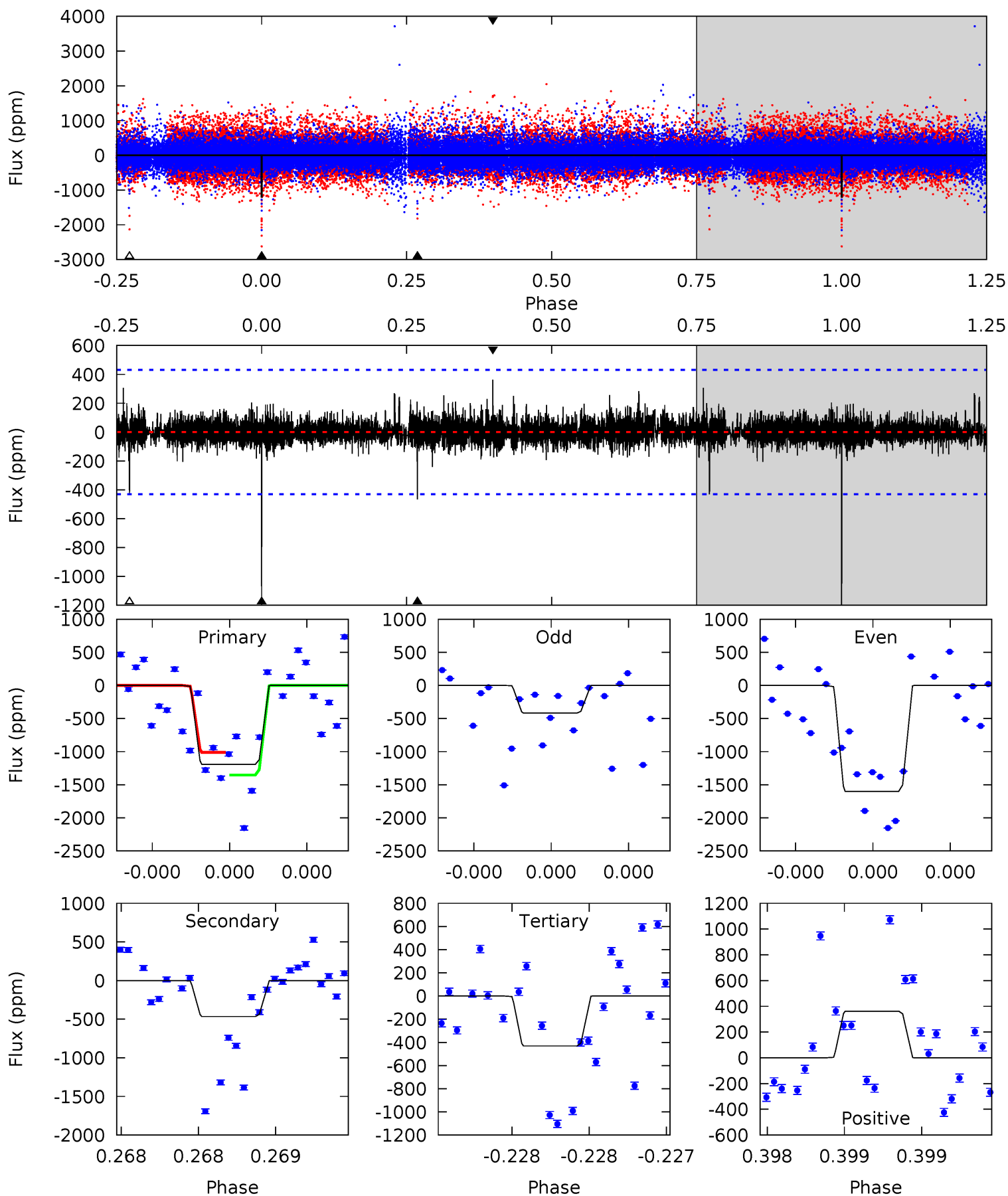
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.17	17.4	10.5	20.8	5.58	3.50	2.42	-1.36	-11.6	6.82	-3.44	0.94	0.85	0.55	0.04



Alt Model-Shift Uniqueness Test

005165017-06, P = 475.461696 Days, E = 139.919483 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.6	6.10	5.65	4.75	5.64	3.59	0.70	9.99	10.9	0.45	1.35	6.97	1.03	0.23	2.25



Stellar Parameters For KIC 005165017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4247^{+134}_{-164}	$4.621^{+0.049}_{-0.014}$	$-0.020^{+0.150}_{-0.150}$	$0.646^{+0.027}_{-0.047}$	$0.636^{+0.045}_{-0.041}$	$3.327^{+0.649}_{-0.245}$
	+3%/-4%	+1%/-0%	+750%/-750%	+4%/-7%	+7%/-6%	+19%/-7%
Source	PHO1	KIC0	SPE15	DSEP		

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

Secondary Eclipse Parameters for KIC 005165017-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2152 ± 124	$3.39^{+3.09}_{-2.25}$	206^{+7}_{-8}	4166^{+2521}_{-830}	$112098^{+817217}_{-82514}$
Alt.	-465 ± 76	$3.56^{+3.12}_{-2.22}$	206^{+7}_{-8}	3184^{+1233}_{-528}	$20887^{+130175}_{-15216}$

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 $A_{obs} \gg 1.0$

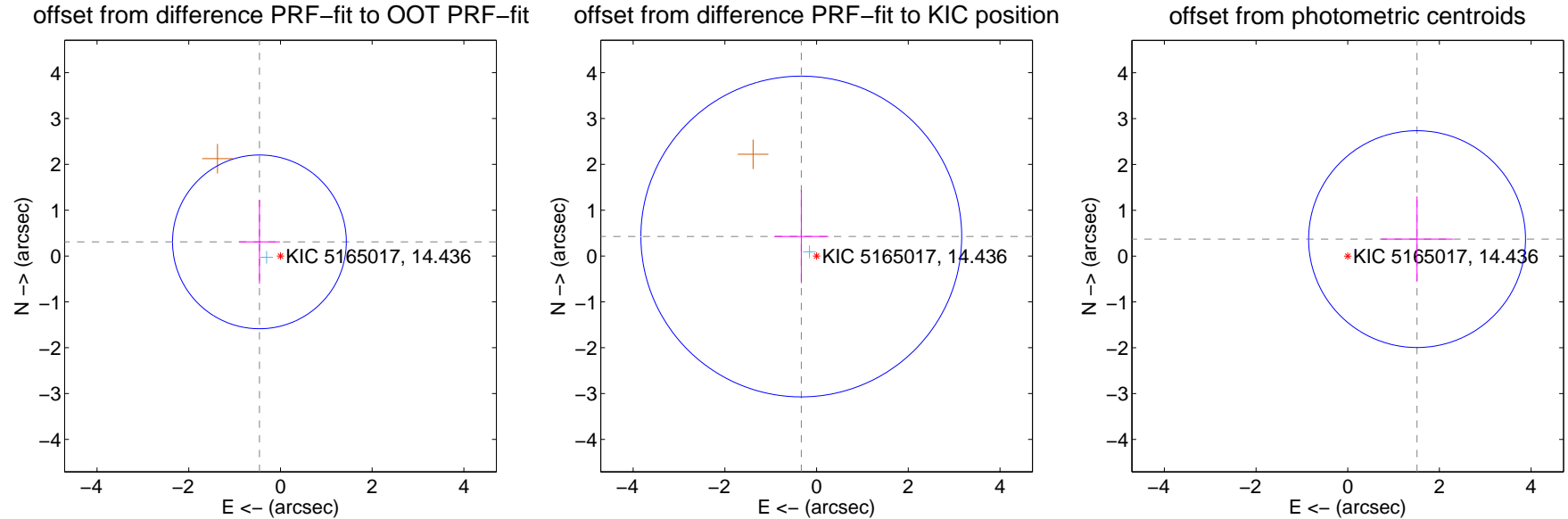
DV Centroid Data

Supplemental centroid analysis for 005165017-06. Kepler magnitude: 14.44. Transit SNR 6.34

There are 1 quarters with good PRF difference image offsets

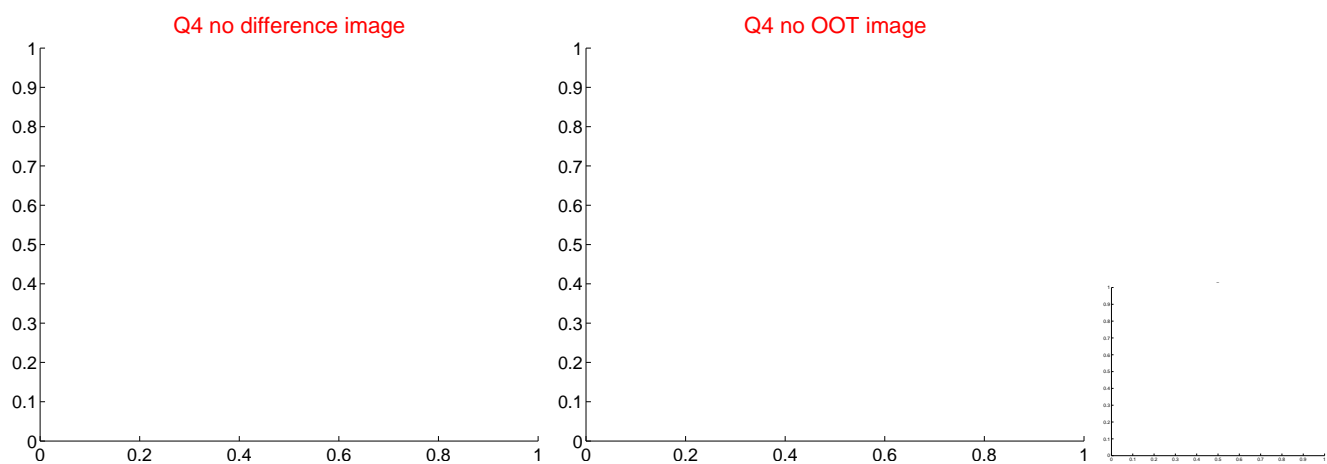
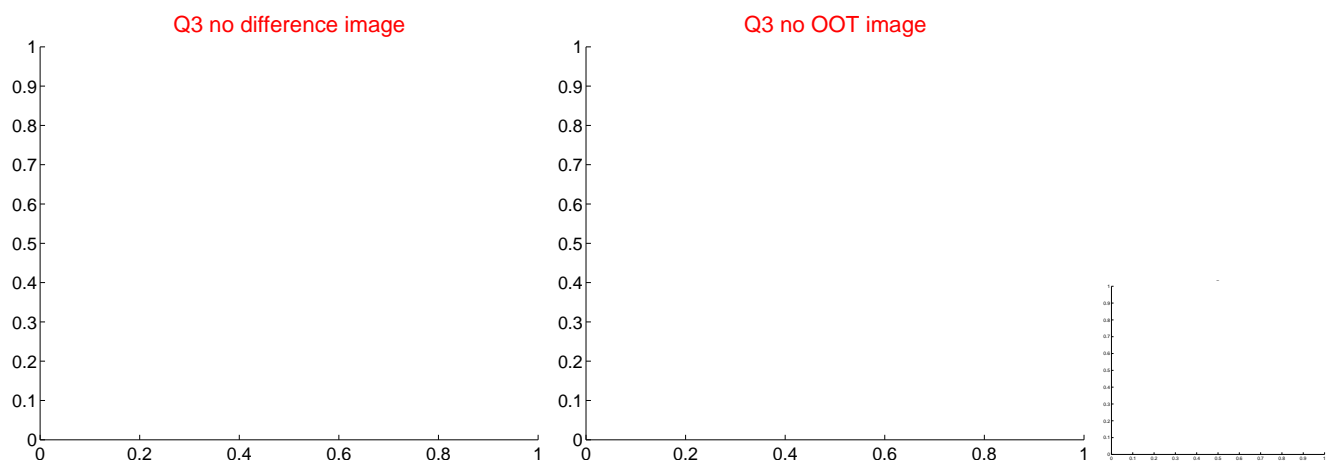
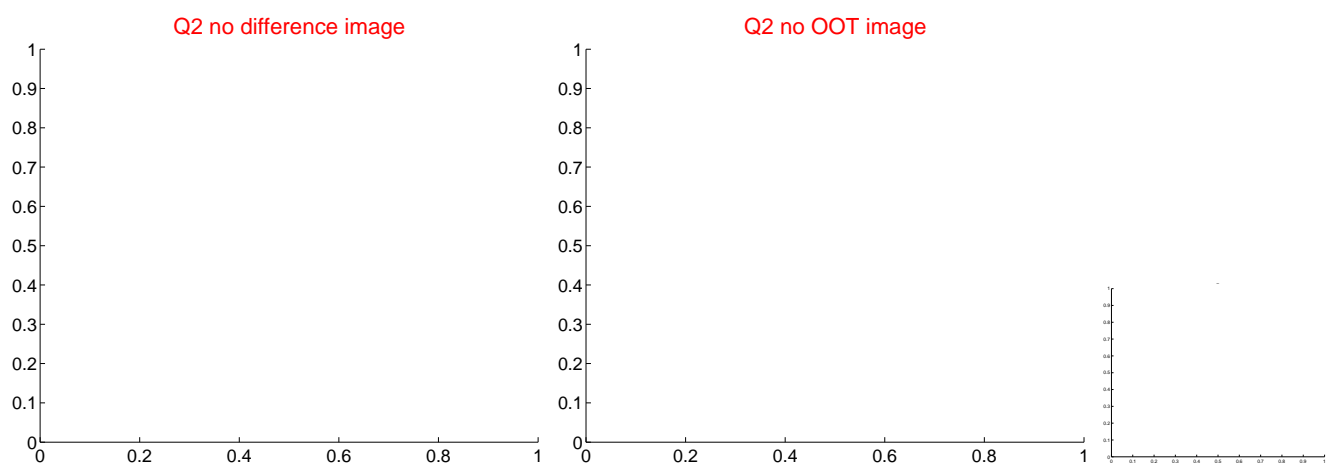
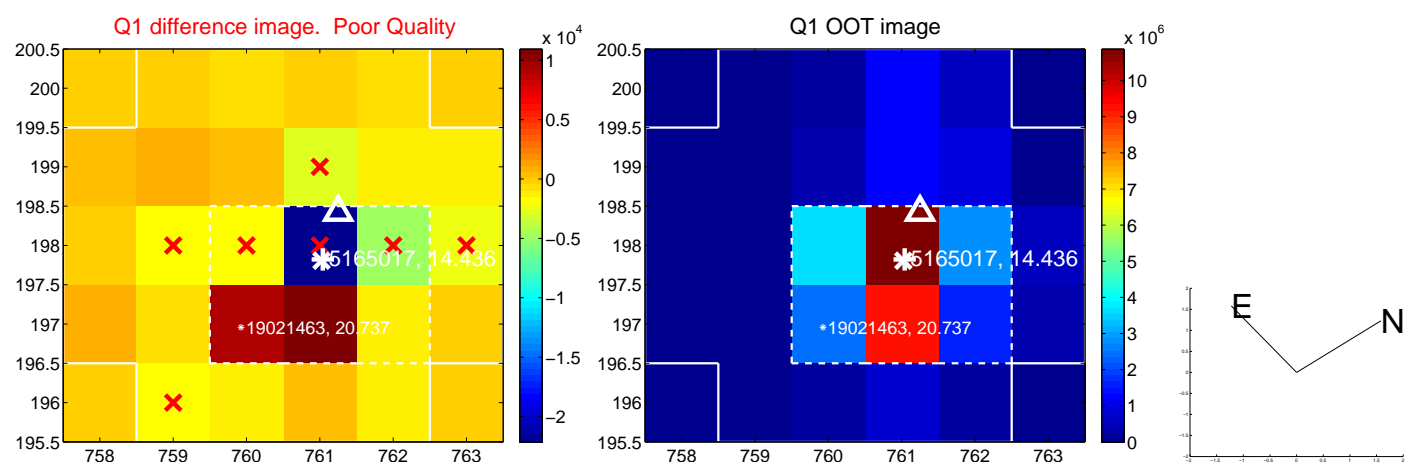
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.553 ± 0.632	0.88	0.459 ± 0.447	0.309 ± 0.916
PRF-fit source offset from KIC position	0.541 ± 1.166	0.46	0.334 ± 0.592	0.426 ± 1.020
photometric centroid source offset	1.56 ± 0.79	1.98	-1.51 ± 0.78	0.37 ± 0.93

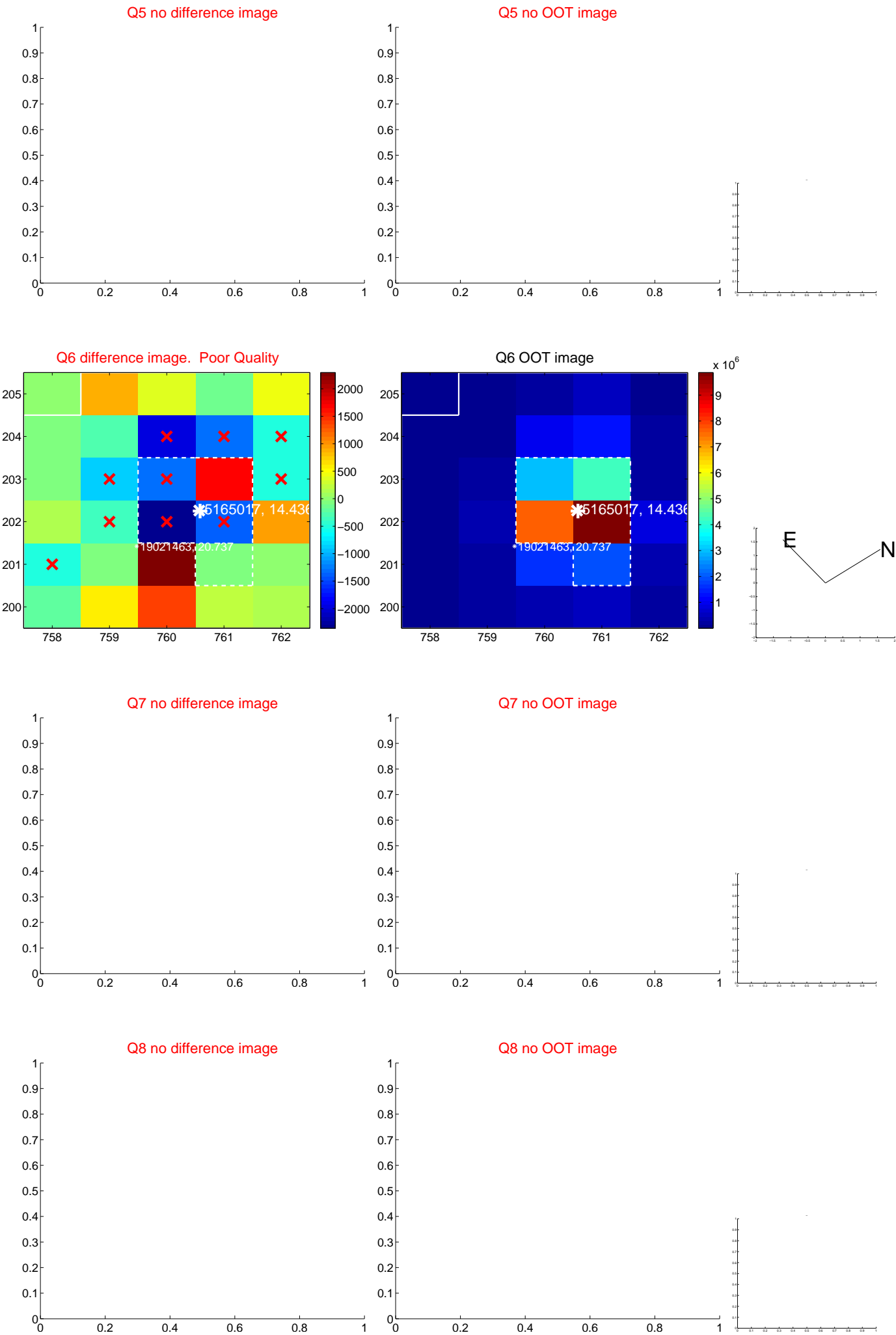


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

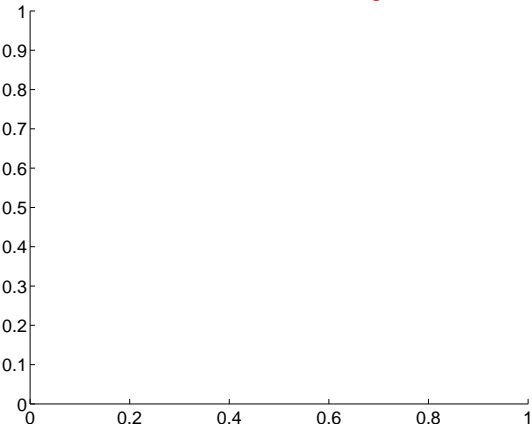


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

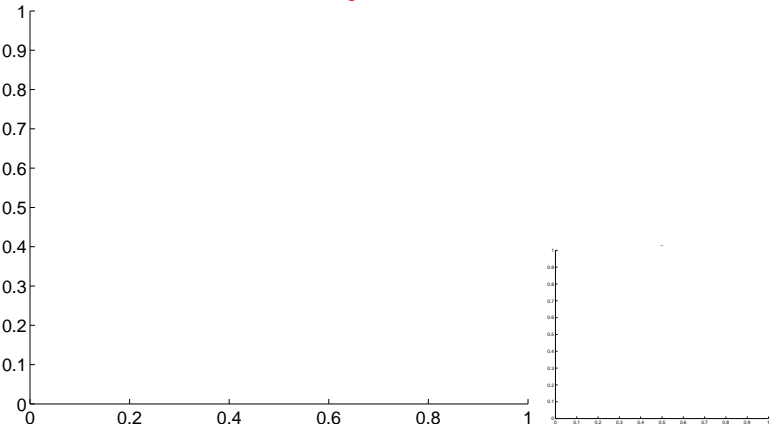


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

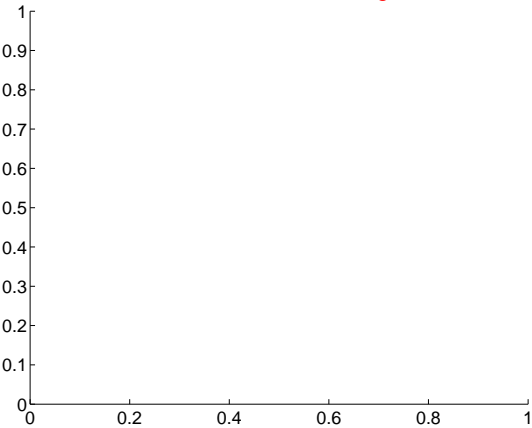
Q9 no difference image



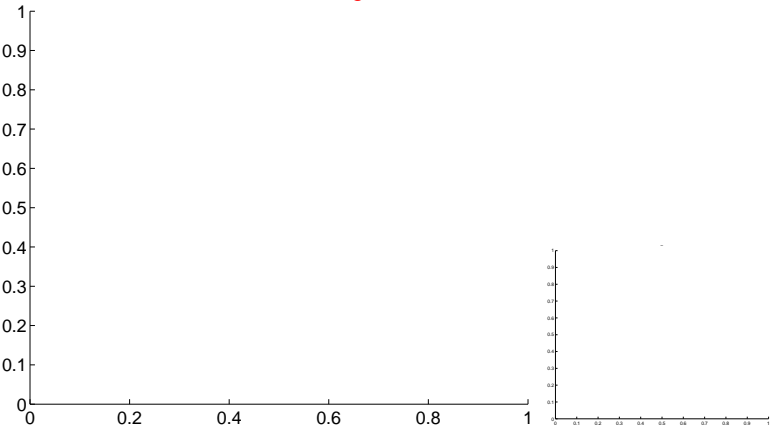
Q9 no OOT image



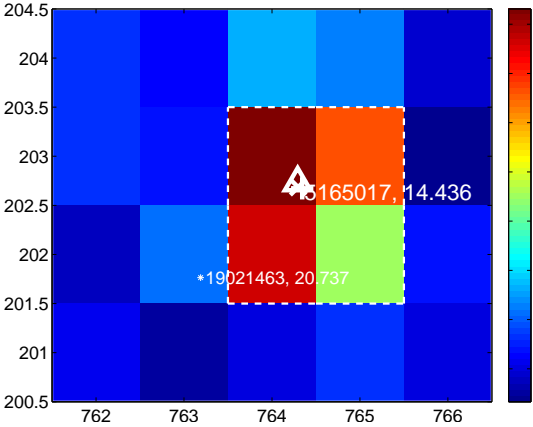
Q10 no difference image



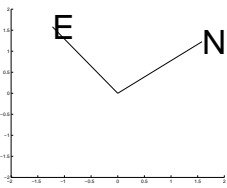
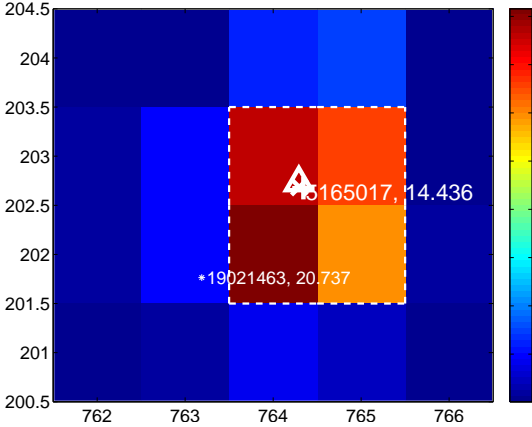
Q10 no OOT image



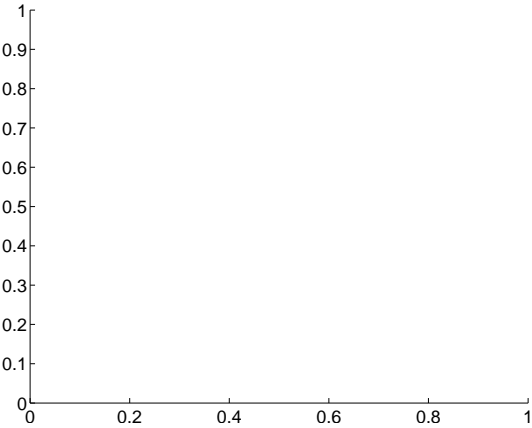
Q11 difference image



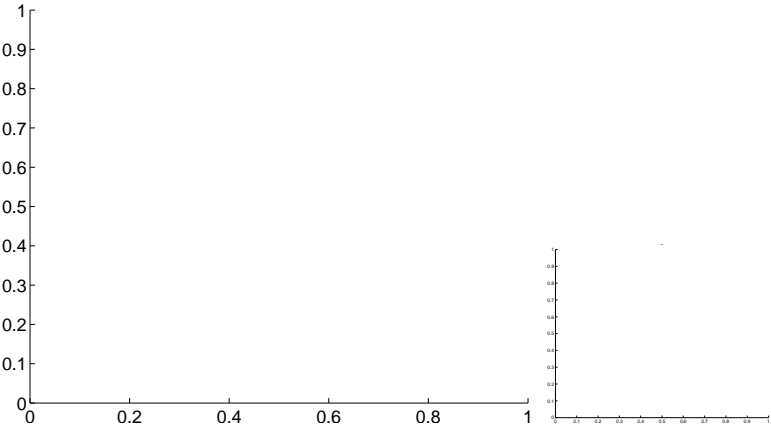
Q11 OOT image



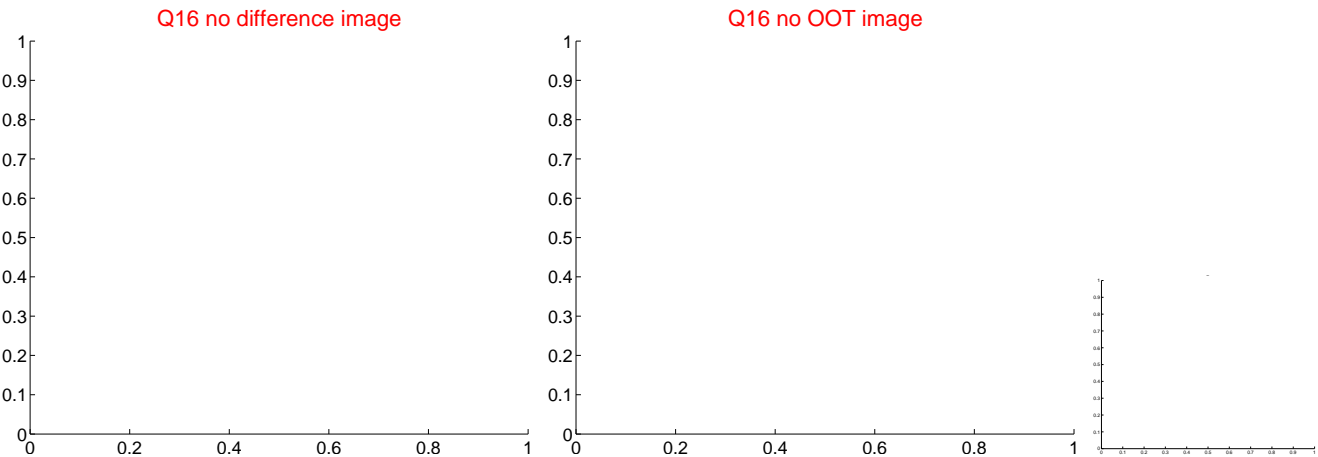
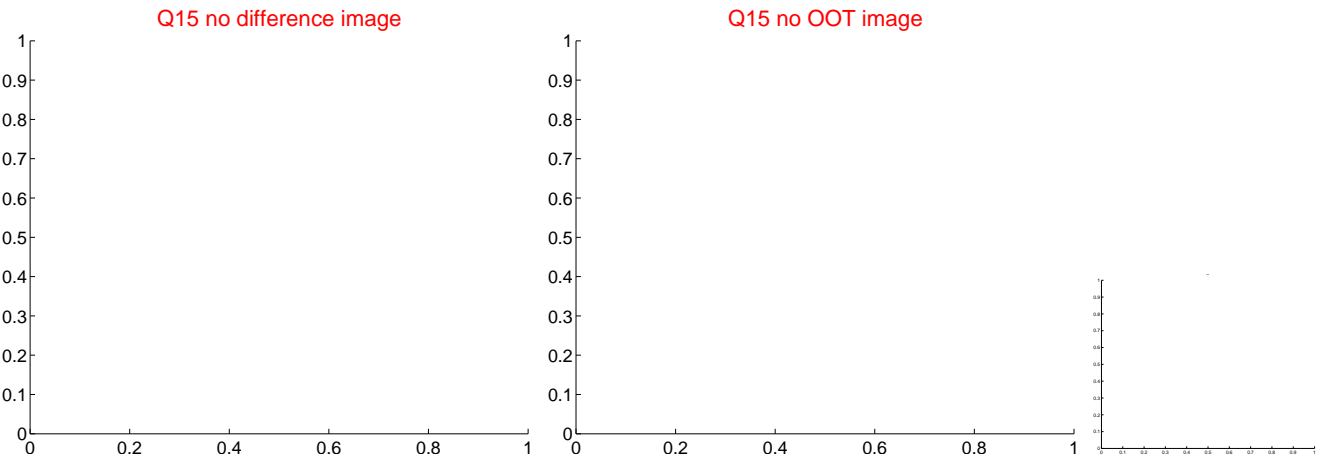
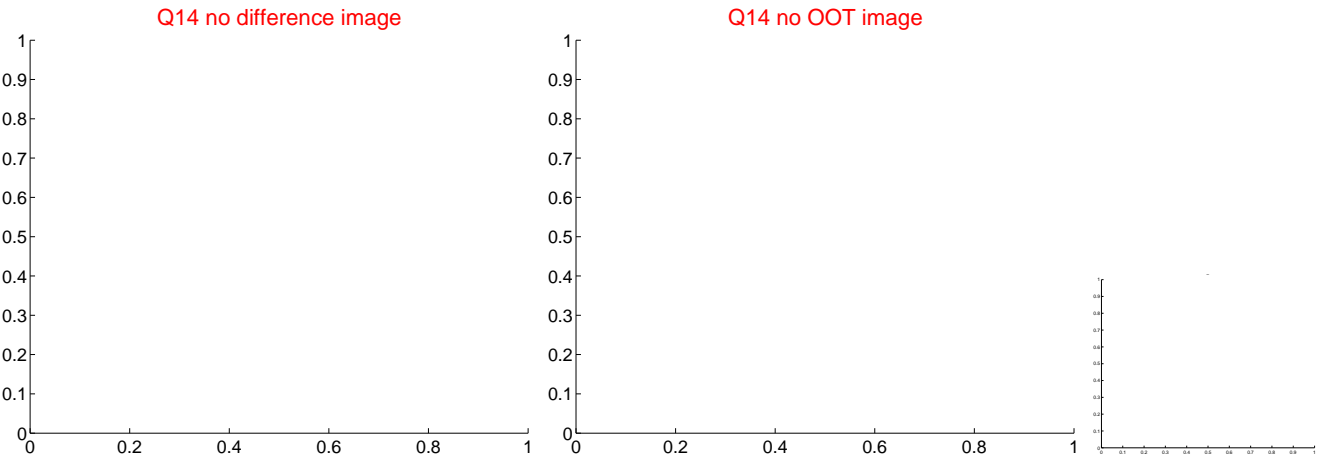
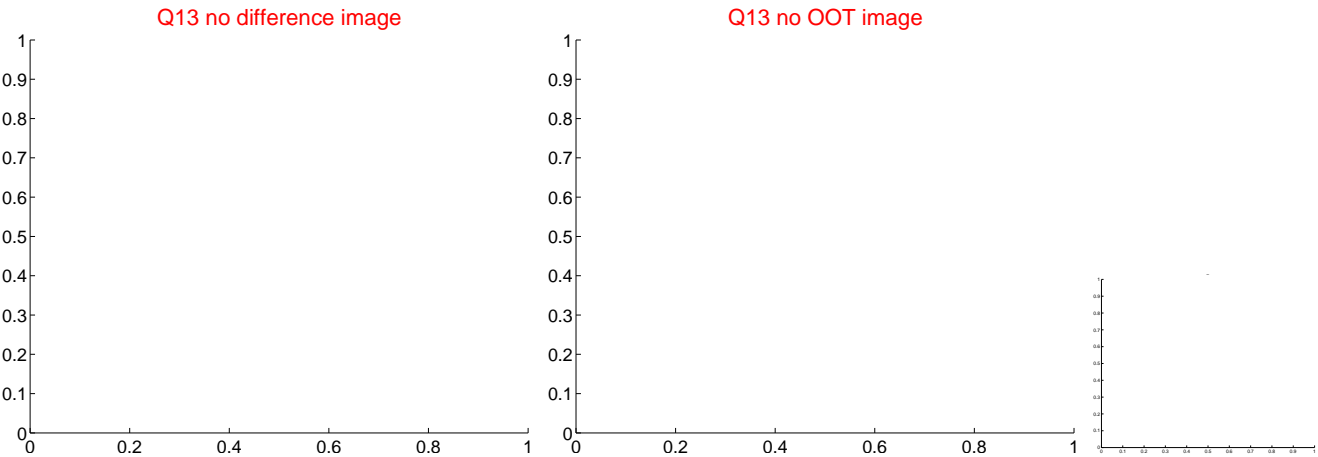
Q12 no difference image



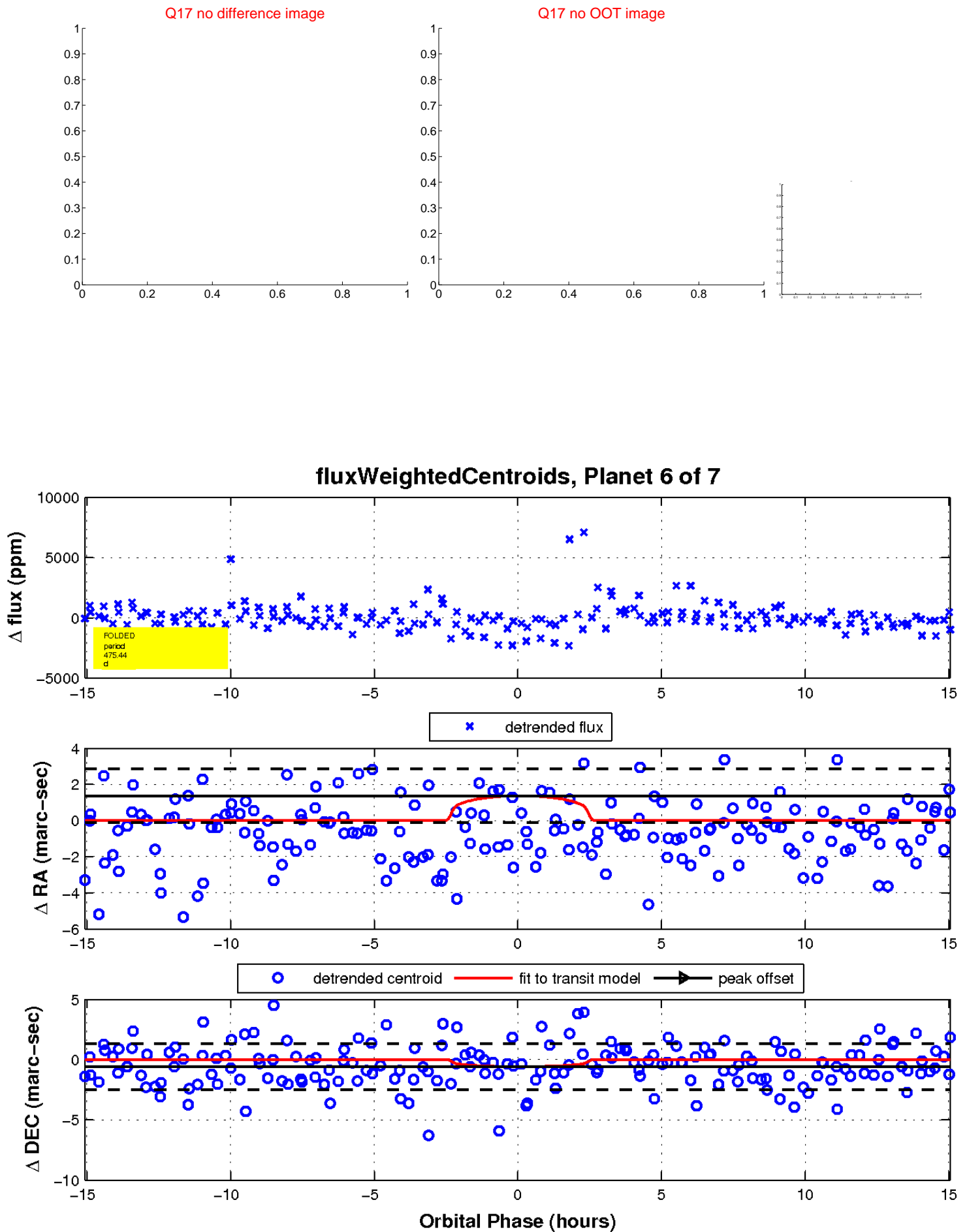
Q12 no OOT image



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

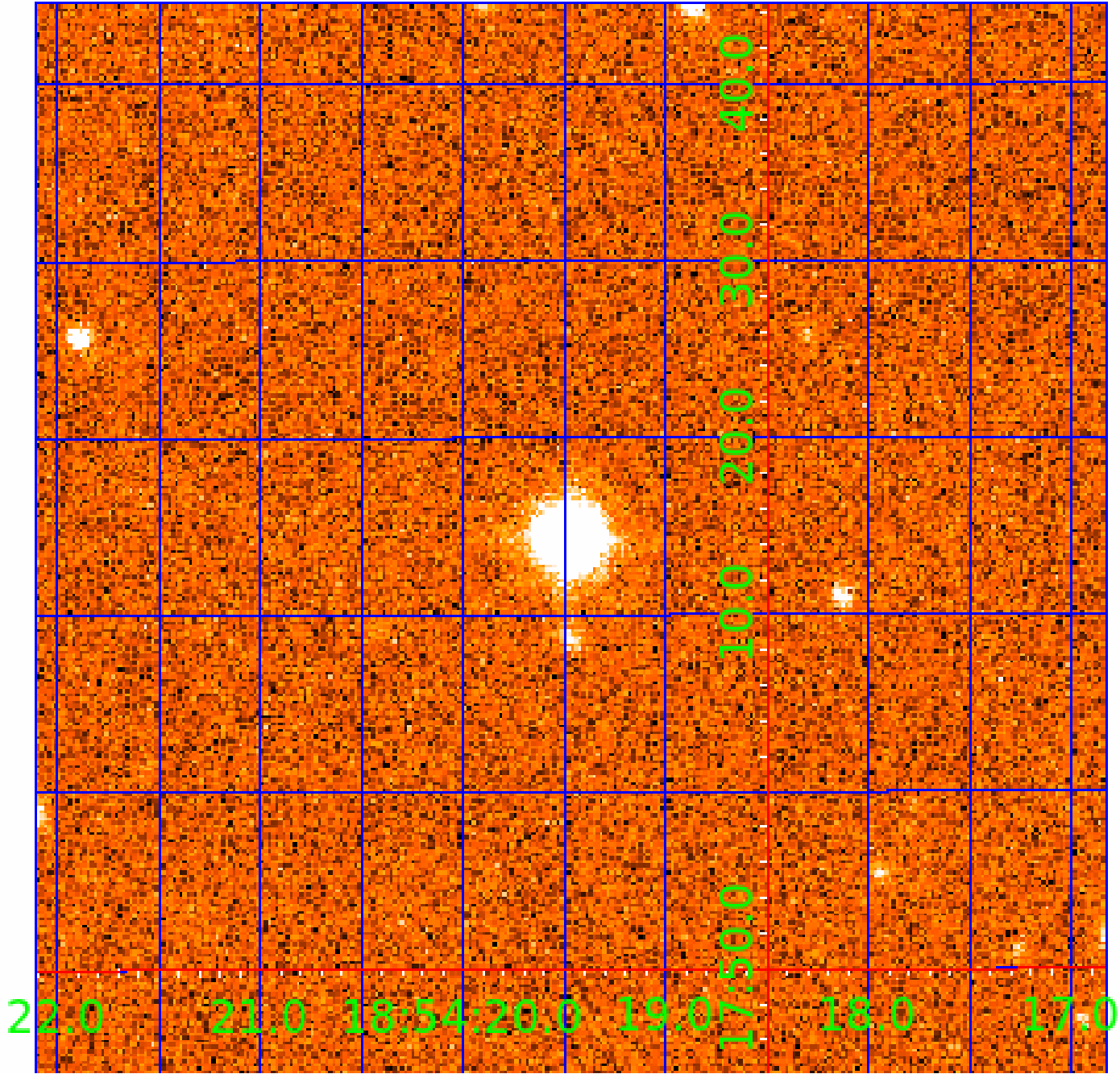


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005165017

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})
005165017-01	OBS	No	594.017212	194.718806	983.3	12.500	16.1	-1.0	0.65	4247	1.94	0.09
005165017-02	OBS	No	538.818358	414.553060	1787.2	5.627	13.0	8.2	0.65	4247	2.84	0.10
005165017-03	OBS	No	337.319843	315.384455	1745.5	3.985	13.0	9.0	0.65	4247	2.61	0.18
005165017-04	OBS	No	300.031189	178.118403	1175.7	3.303	12.1	6.6	0.65	4247	2.41	0.21
005165017-05	OBS	No	319.280803	305.910375	1367.9	4.414	10.4	7.1	0.65	4247	2.33	0.20
005165017-06	OBS	No	475.437567	139.941514	1288.4	5.024	11.2	6.3	0.65	4247	2.31	0.12
005165017-07	OBS	No	197.940016	298.762016	2141.3	5.509	10.1	10.9	0.65	4247	3.12	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005165017-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005165017-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
005165017-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005165017-04	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
005165017-05	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
005165017-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005165017-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

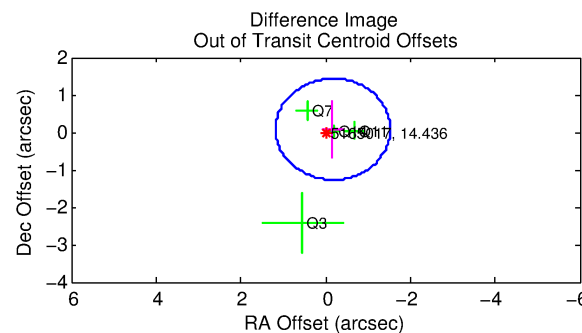
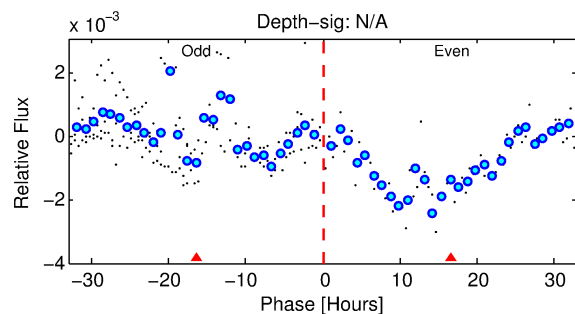
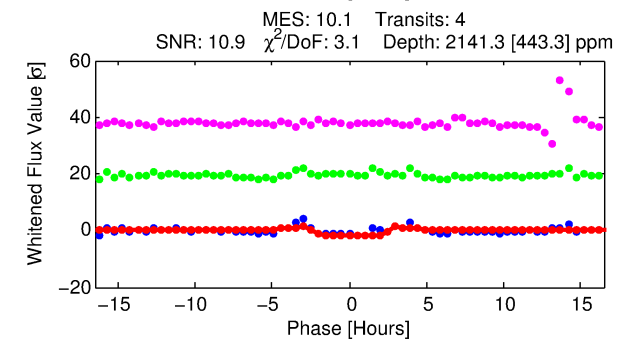
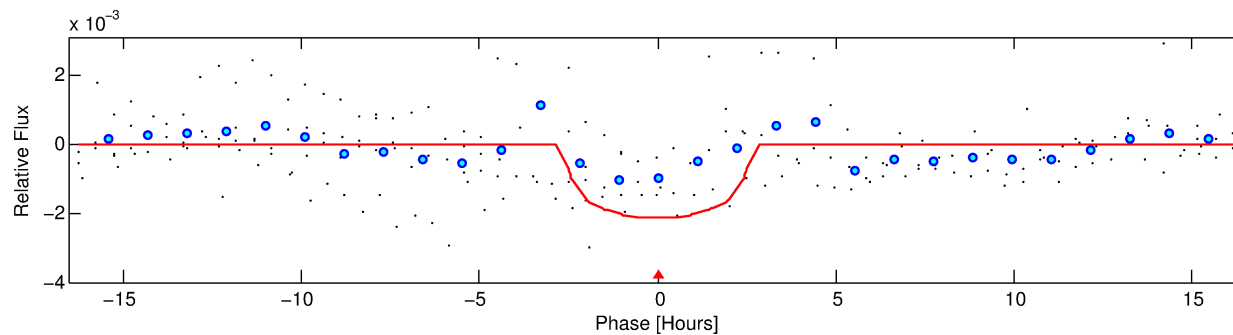
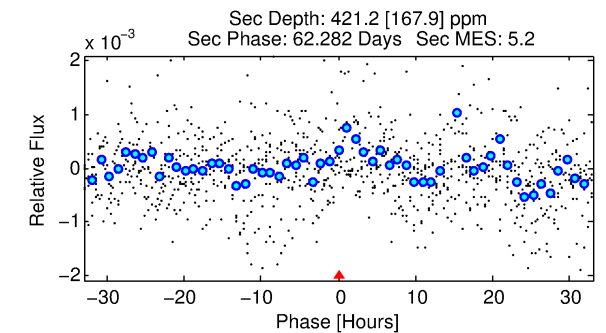
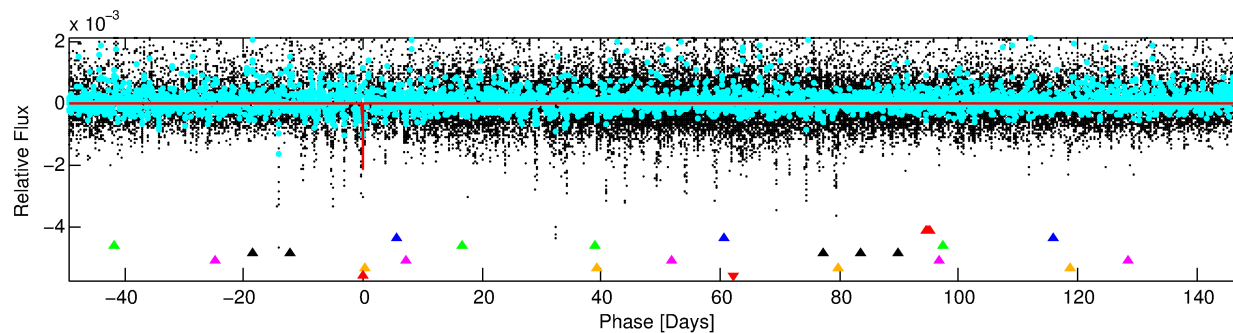
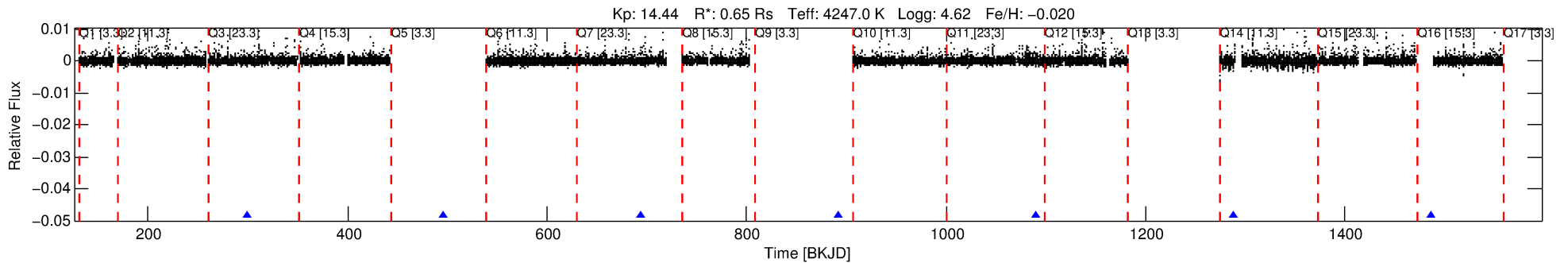
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005165017-07

No Significant Match Found

DV One-Page Summary

KIC: 5165017 Candidate: 7 of 7 Period: 197.940 d



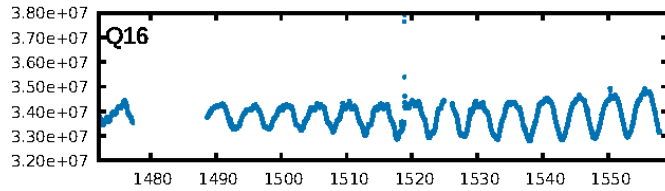
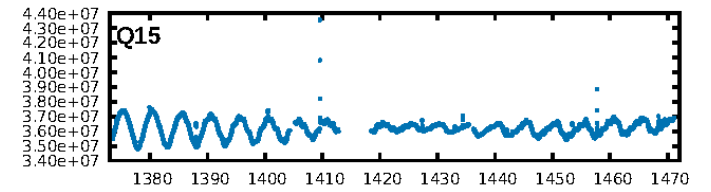
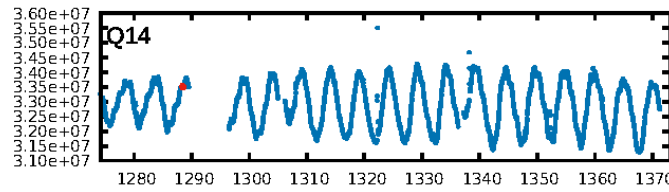
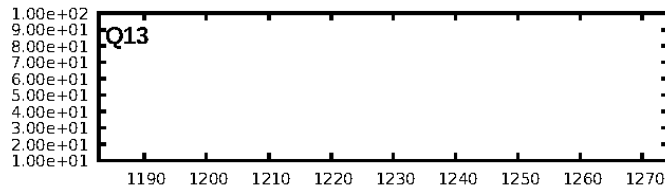
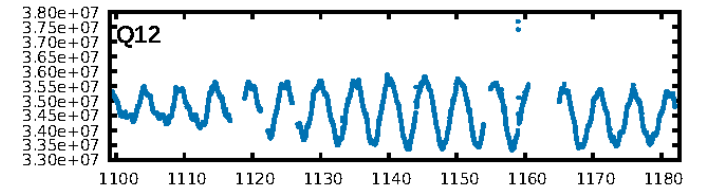
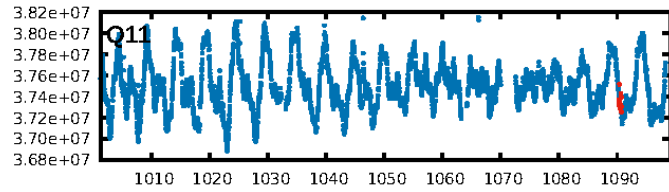
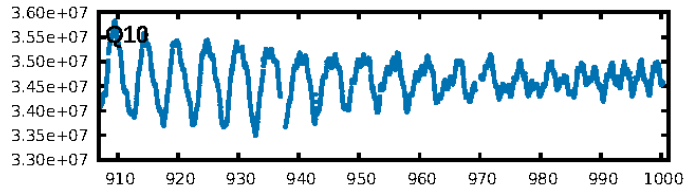
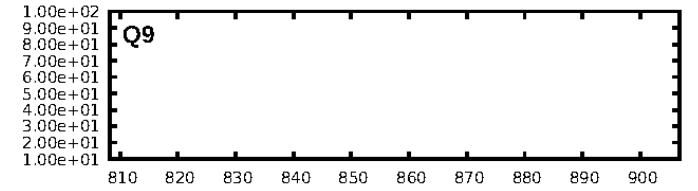
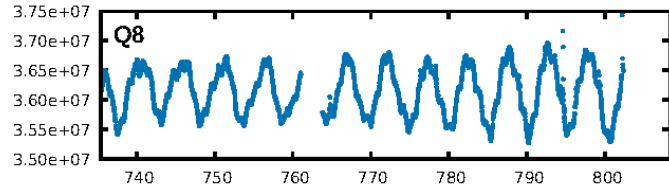
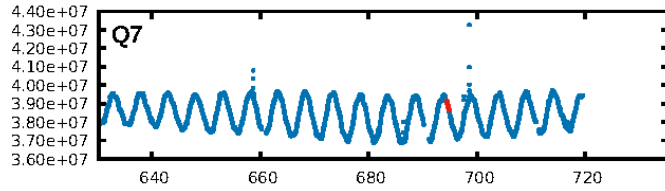
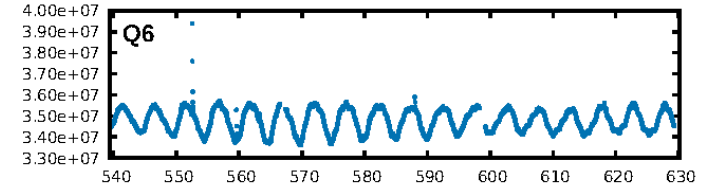
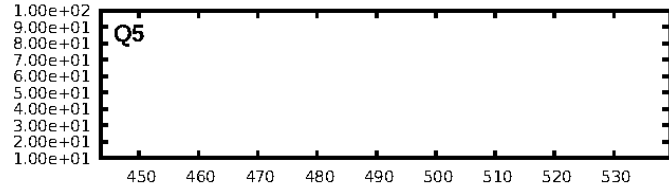
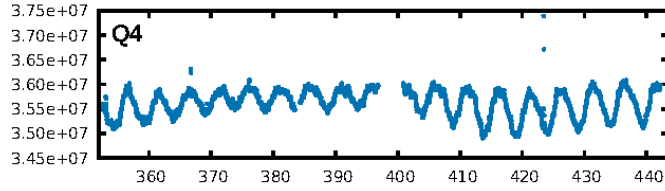
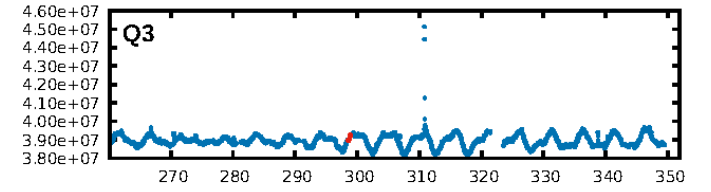
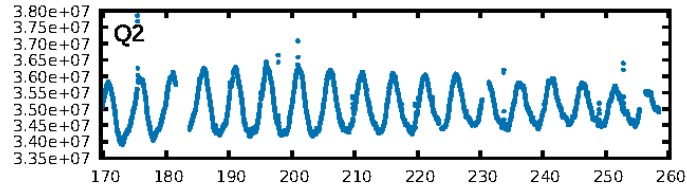
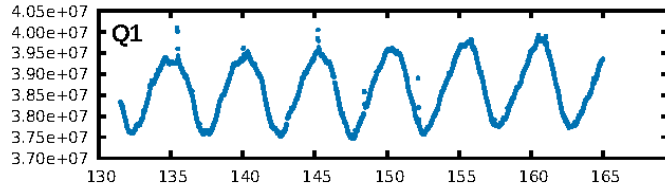
DV Fit Results:

Period = 197.94002 [0.00244] d
Epoch = 298.7620 [0.0076] BKJD
Rp/R* = 0.0443 [0.0225]
a/R* = 225.88 [318.35]
b = 0.64 [1.24]
Seff = 0.37 [0.07]
Teff = 199 [9] K
Rp = 3.12 [1.60] Re
a = 0.5718 [0.0351] AU
Ag = 7772.28 [8500.49] [0.91σ]
Teffp = 2891 [796] K [3.38σ]

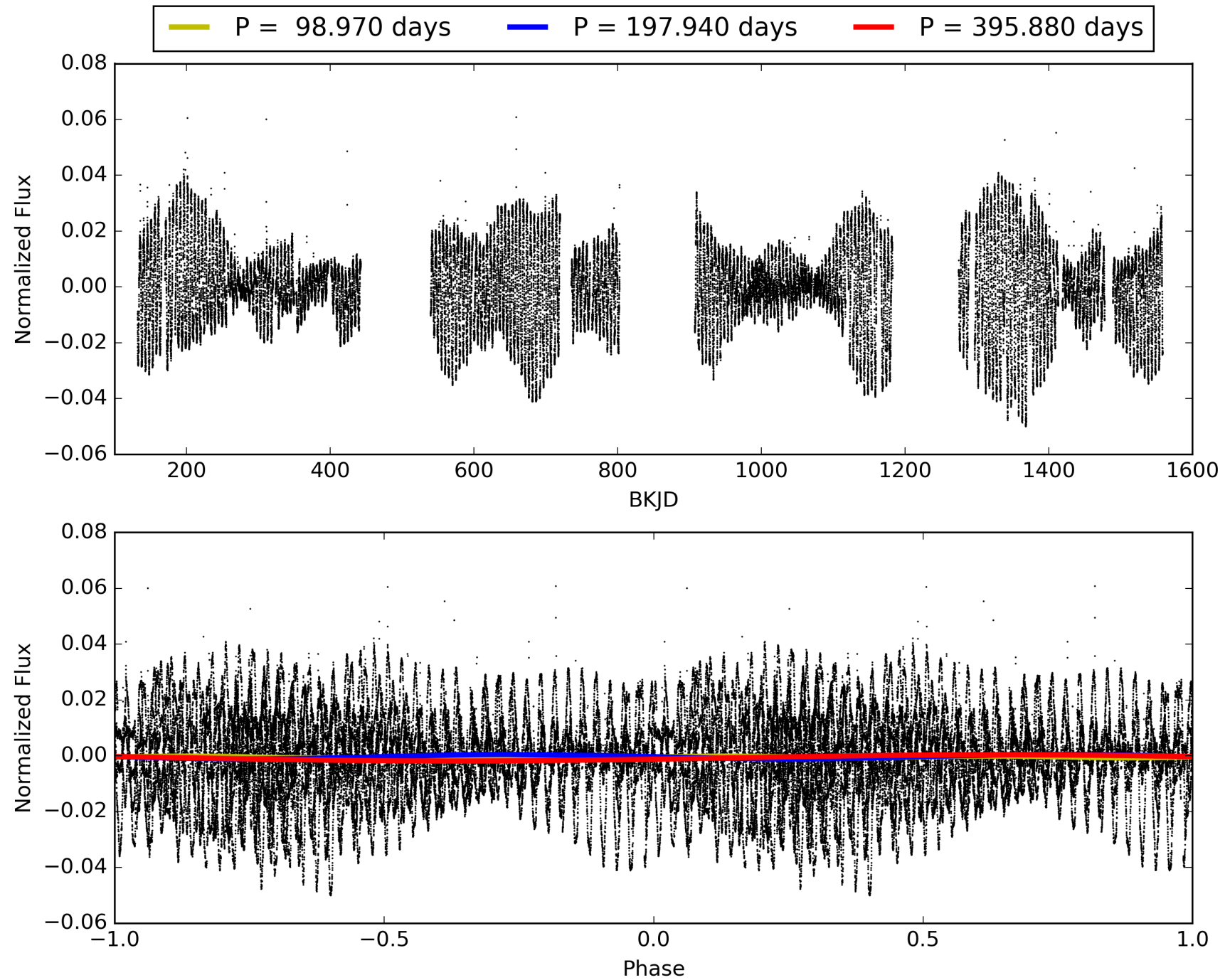
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [381.46σ]
ModelChiSquare2-sig: 0.6%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.0268
Centroid-sig: 39.2%
Centroid-so: 0.556 arcsec [1.52σ]
OotOffset-rm: 0.189 arcsec [0.42σ]
OotOffset-st: 1/3/0/0 [4]
KicOffset-rm: 0.271 arcsec [0.53σ]
KicOffset-st: 1/3/0/0 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 0.75 [3/4]

TCE 005165017-07, PDC Light Curves

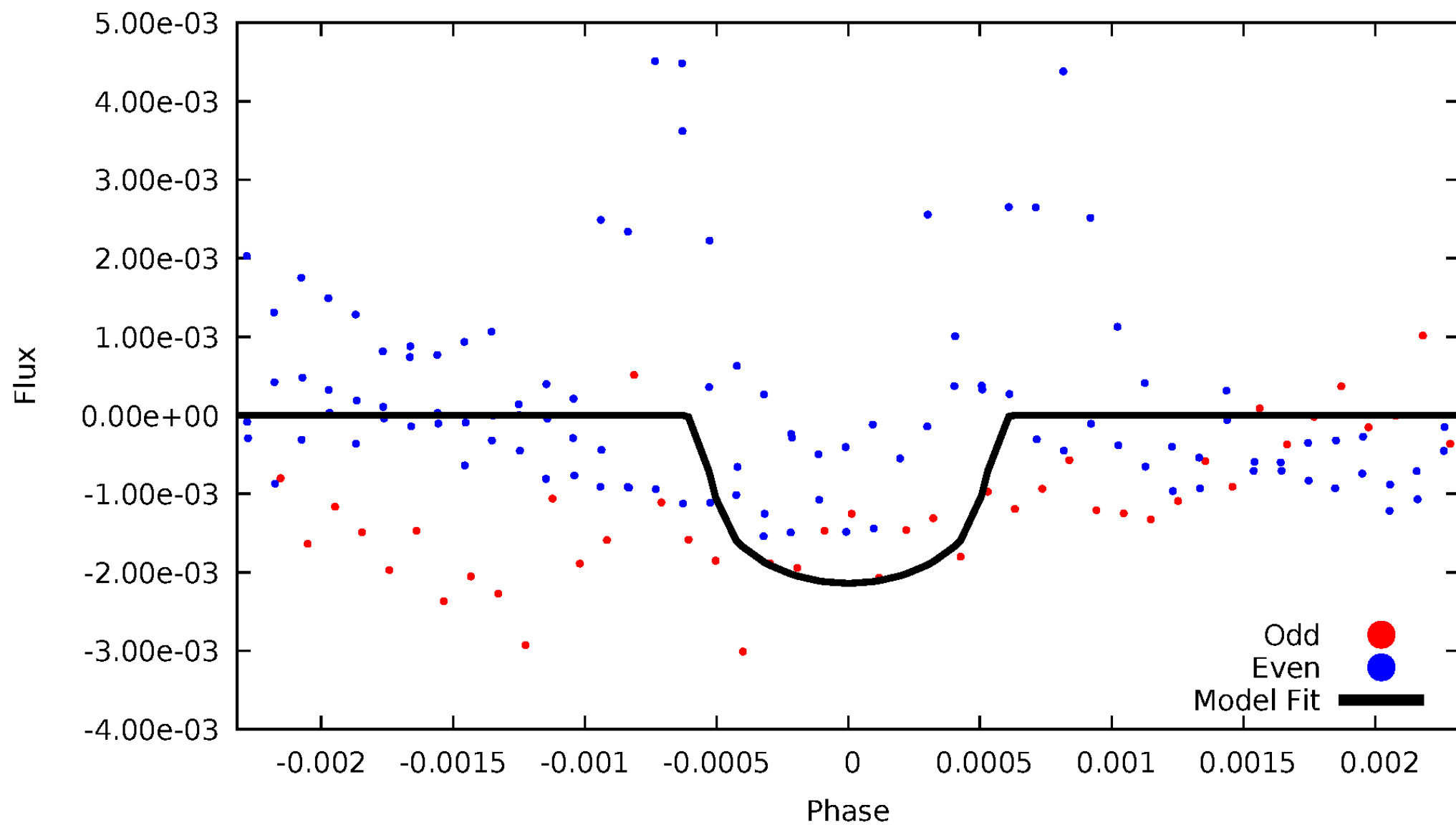


TCE 005165017-07



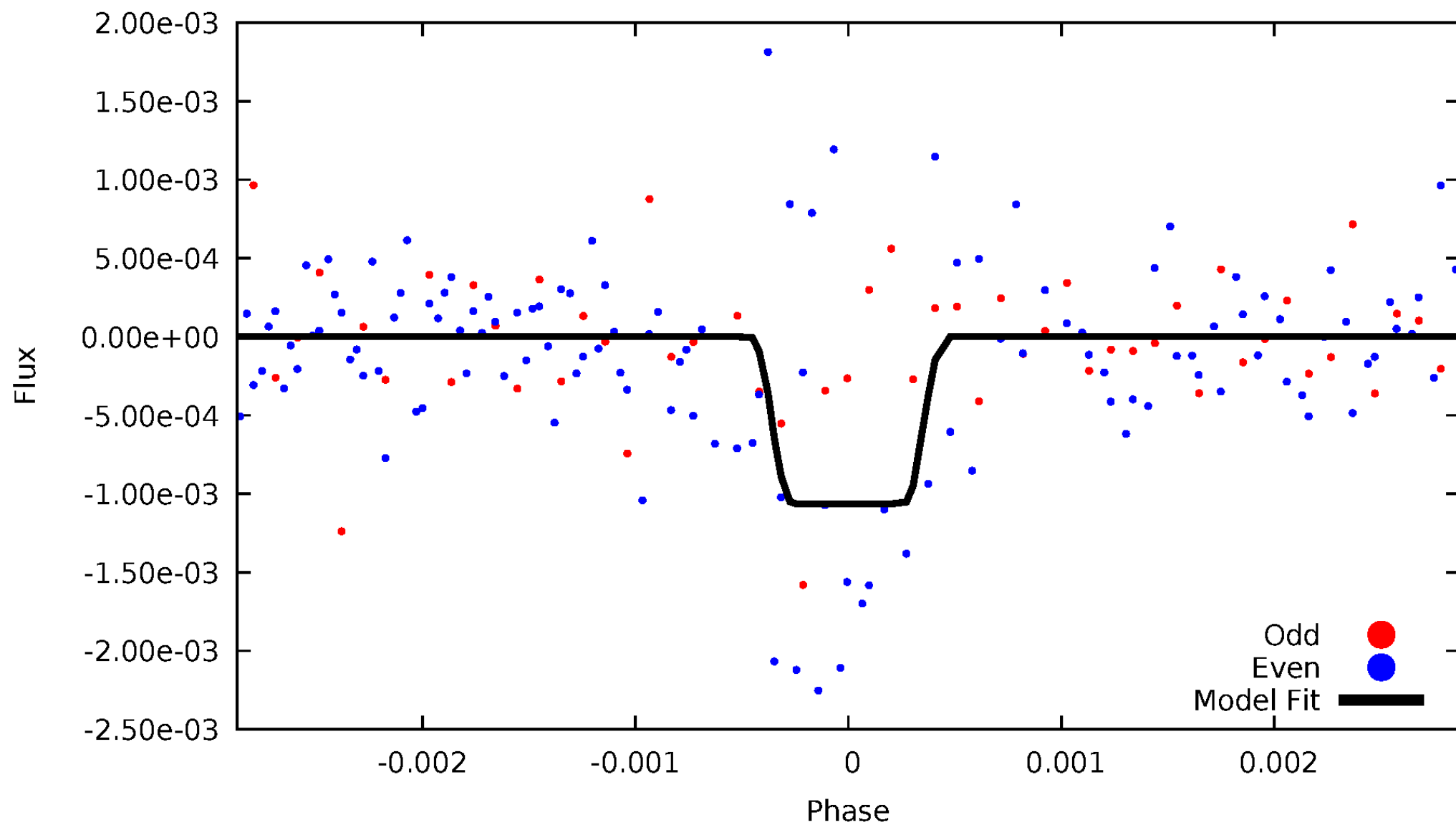
DV Odd/Even

TCE 005165017-07



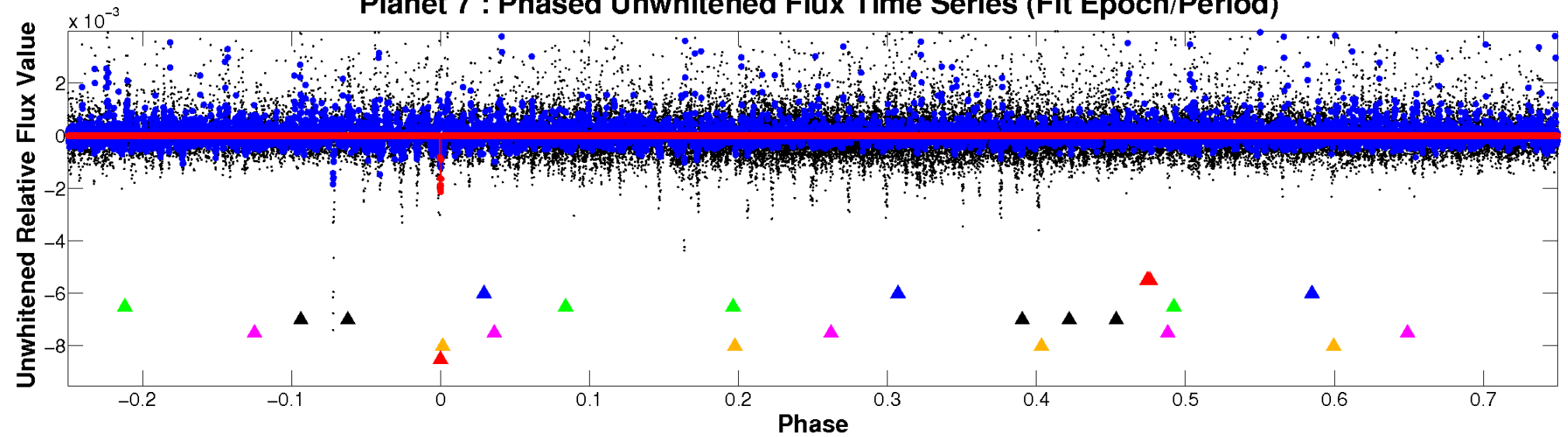
ALT Odd/Even

TCE 005165017-07

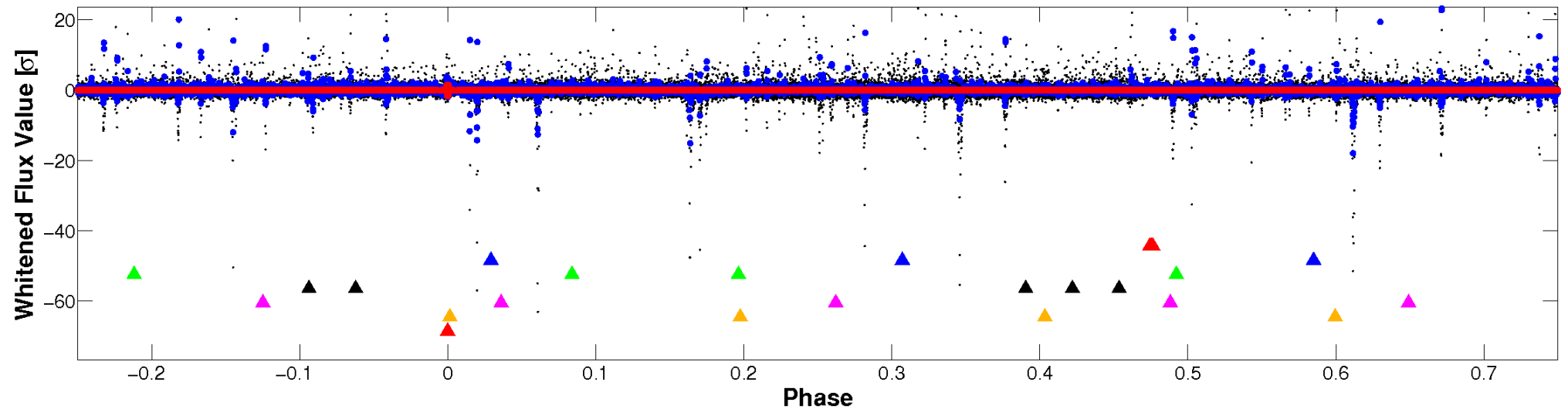


Non-Whitened Vs. Whitened Light Curve

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

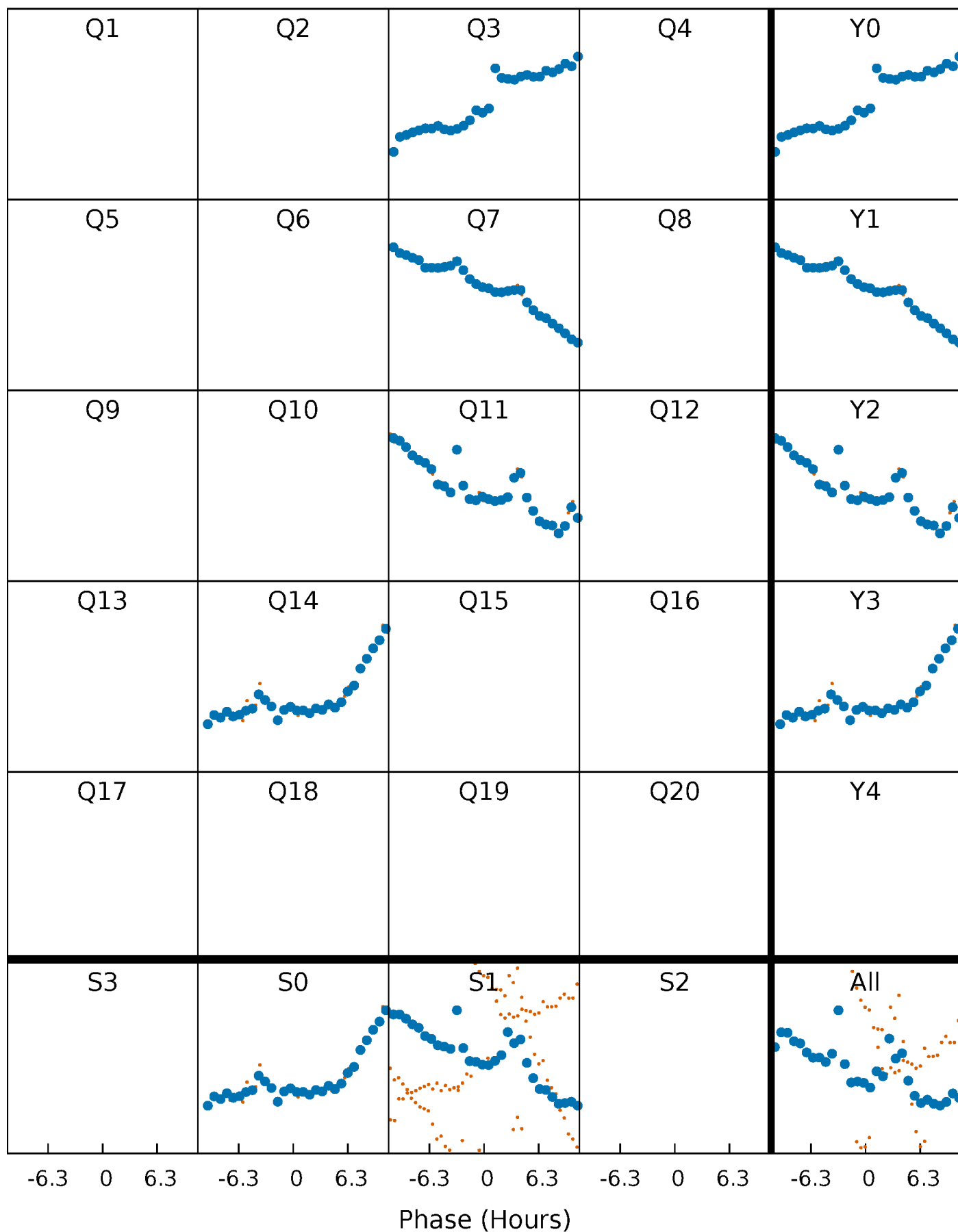


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



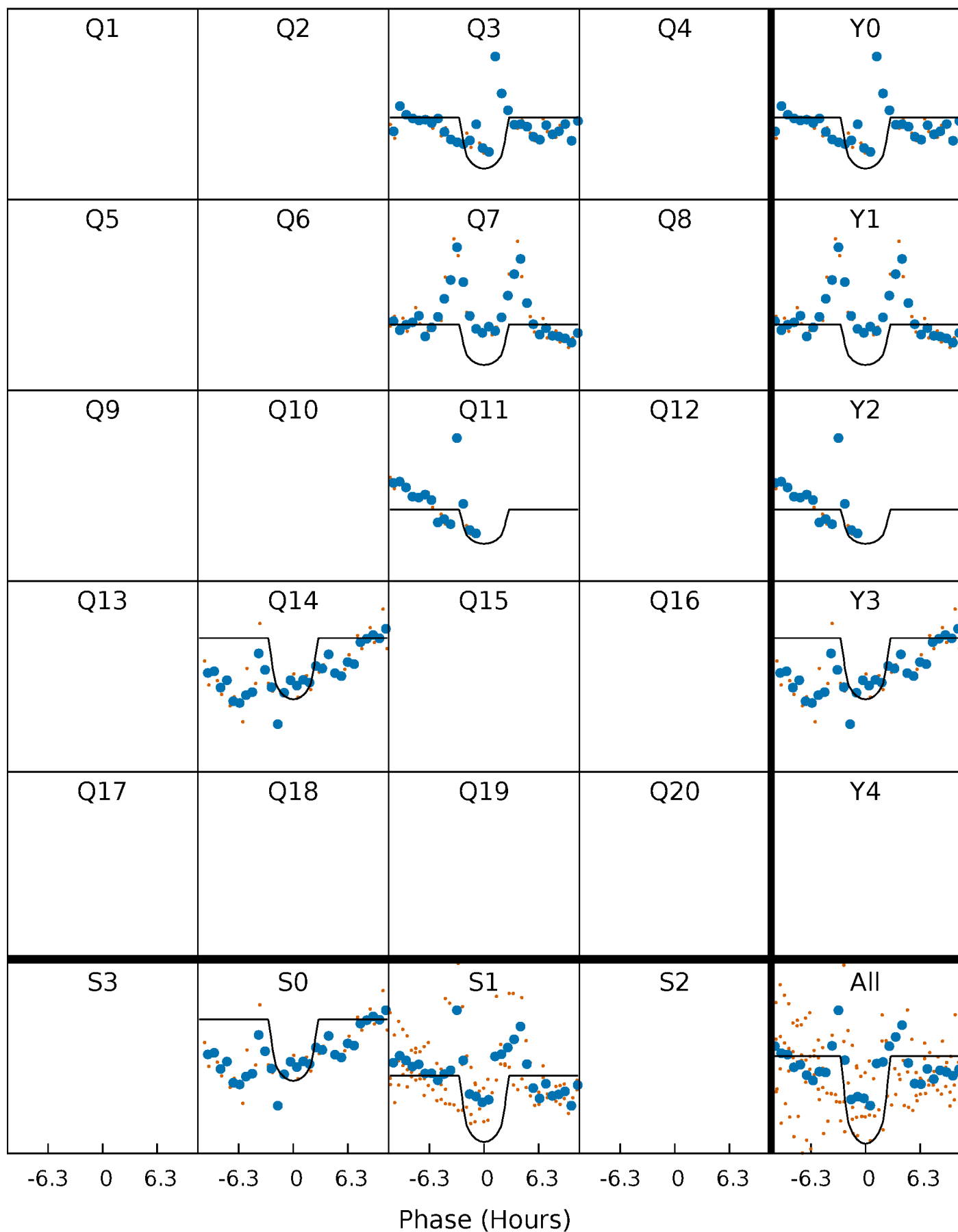
PDC Quarter-Phased Transit Curves

TCE 005165017-07 P=197.940017 Days $T_0=298.762016$ (BKJD)



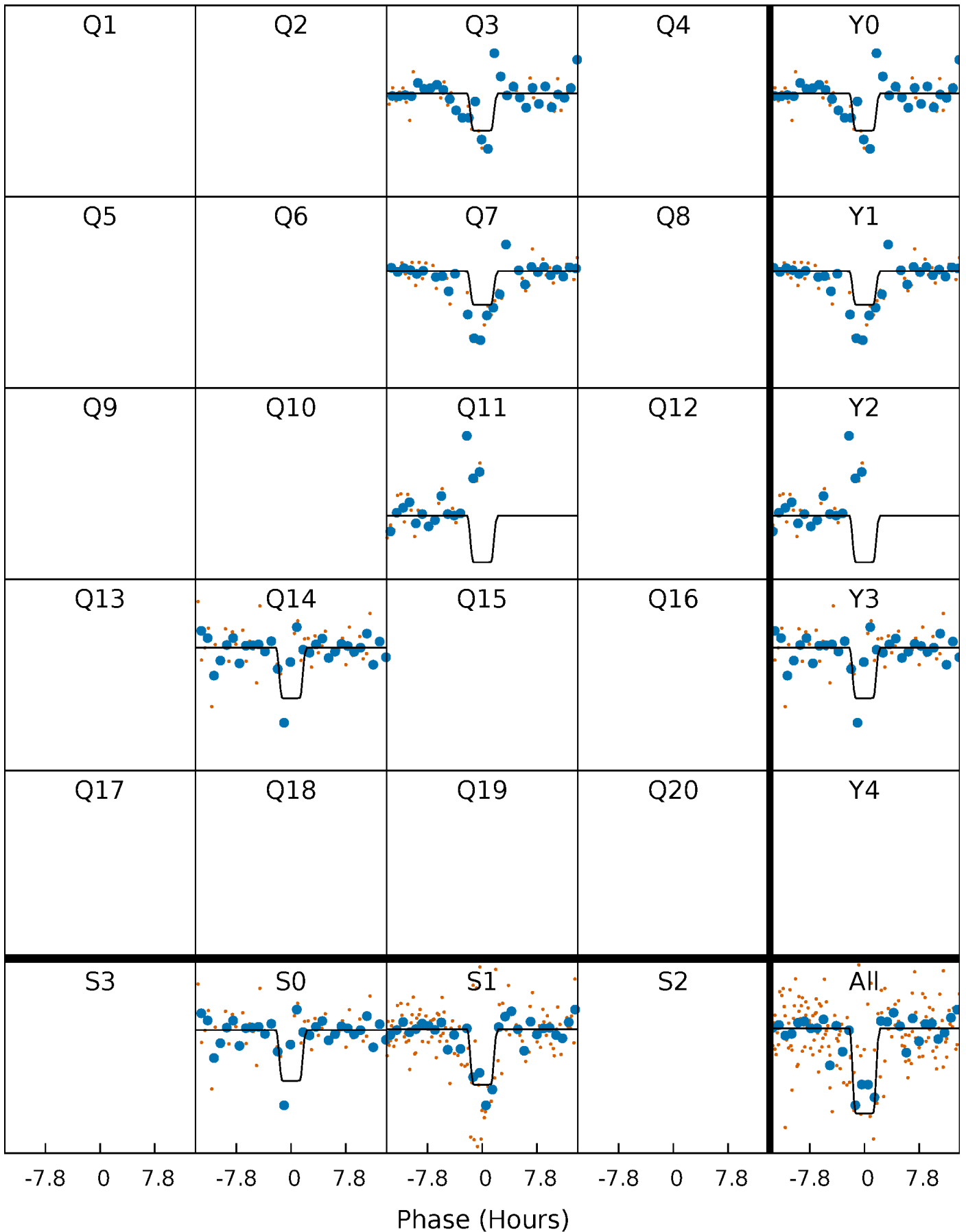
DV Quarter-Phased Transit Curves

TCE 005165017-07 $P=197.940017$ Days $T_0=298.762016$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

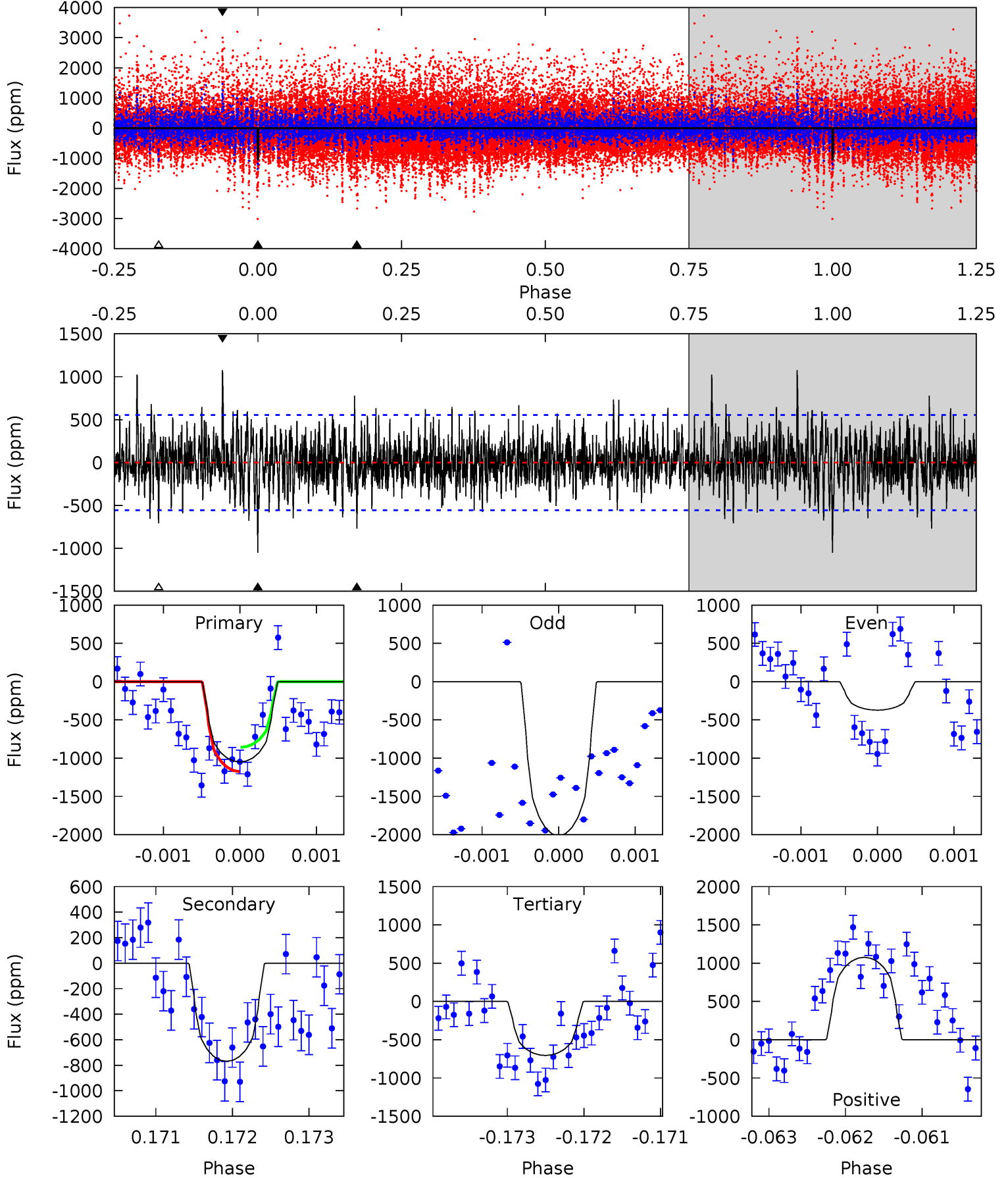
TCE 005165017-07 $P=197.932616$ Days $T_0=298.761765$ (BKJD)



DV Model-Shift Uniqueness Test

005165017-07, P = 197.940017 Days, E = 100.821999 Days

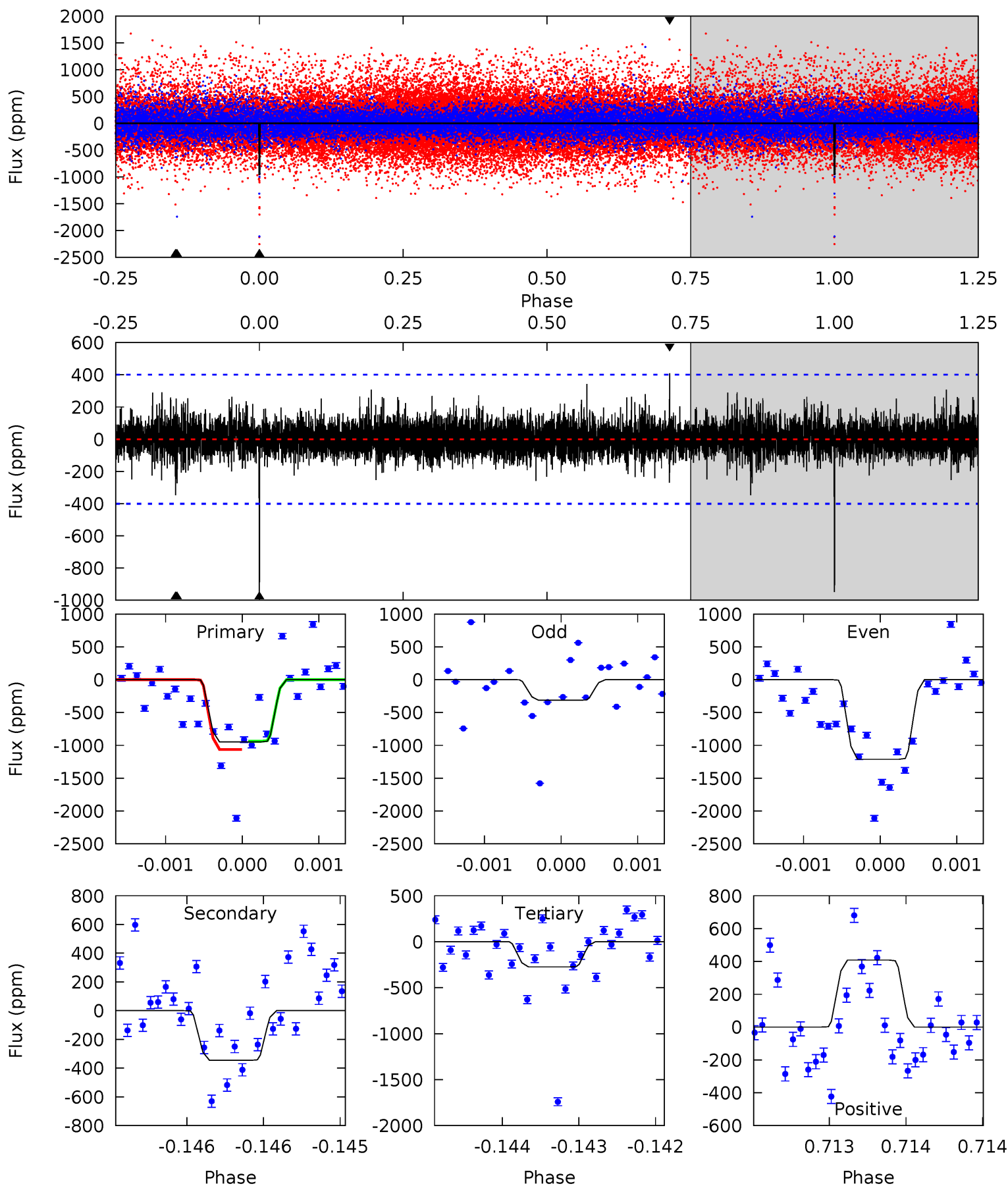
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	7.50	6.87	10.5	5.41	3.23	2.01	3.36	-0.26	0.62	-3.00	5.87	1.03	0.51	1.55



Alt Model-Shift Uniqueness Test

005165017-07, P = 197.932616 Days, E = 100.829149 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.0	4.74	3.75	5.59	5.49	3.34	0.95	9.23	7.39	0.99	-0.85	5.75	0.78	0.30	0.81



Stellar Parameters For KIC 005165017

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4247^{+134}_{-164}	$4.621^{+0.049}_{-0.014}$	$-0.020^{+0.150}_{-0.150}$	$0.646^{+0.027}_{-0.047}$	$0.636^{+0.045}_{-0.041}$	$3.327^{+0.649}_{-0.245}$
	+3%/-4%	+1%/-0%	+750%/-750%	+4%/-7%	+7%/-6%	+19%/-7%
Source	PHO1	KIC0	SPE15	DSEP		

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

Secondary Eclipse Parameters for KIC 005165017-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-769 ± 103	$3.16^{+1.52}_{-1.48}$	276^{+10}_{-11}	3585^{+854}_{-456}	14085^{+35800}_{-8002}
Alt.	-346 ± 73	$2.42^{+1.53}_{-1.42}$	276^{+9}_{-12}	3427^{+1235}_{-479}	10840^{+50483}_{-6949}

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

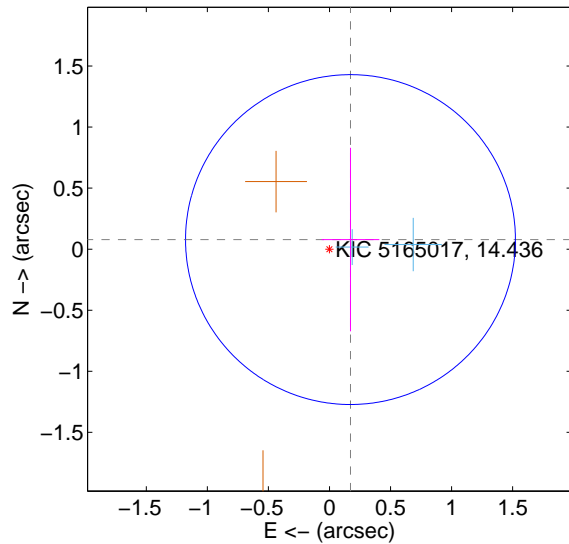
Supplemental centroid analysis for 005165017-07. Kepler magnitude: 14.44. Transit SNR 10.90

There are 2 quarters with good PRF difference image offsets

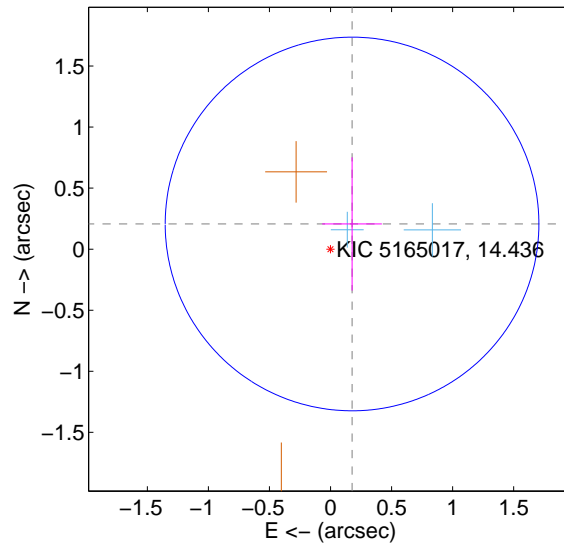
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.189 ± 0.450	0.42	-0.172 ± 0.236	0.079 ± 0.751
PRF-fit source offset from KIC position	0.271 ± 0.510	0.53	-0.176 ± 0.244	0.206 ± 0.546
photometric centroid source offset	0.56 ± 0.37	1.52	-0.52 ± 0.36	0.18 ± 0.43

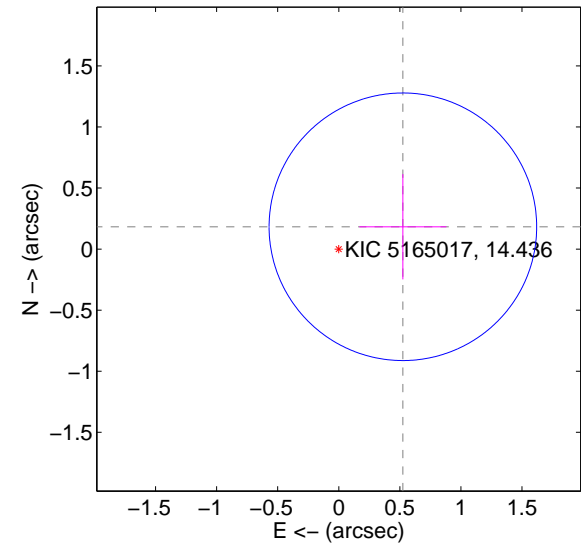
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

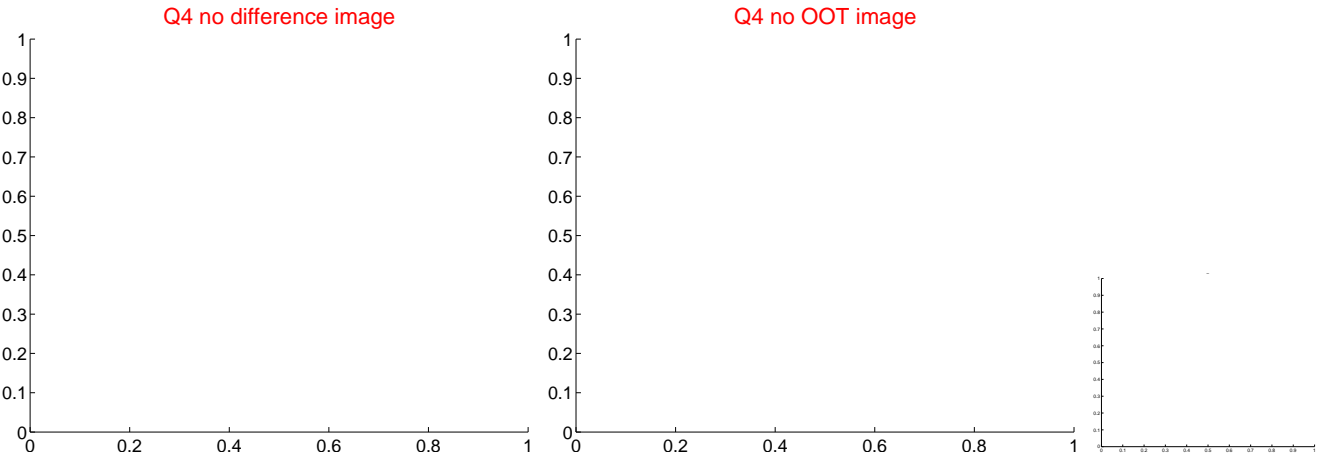
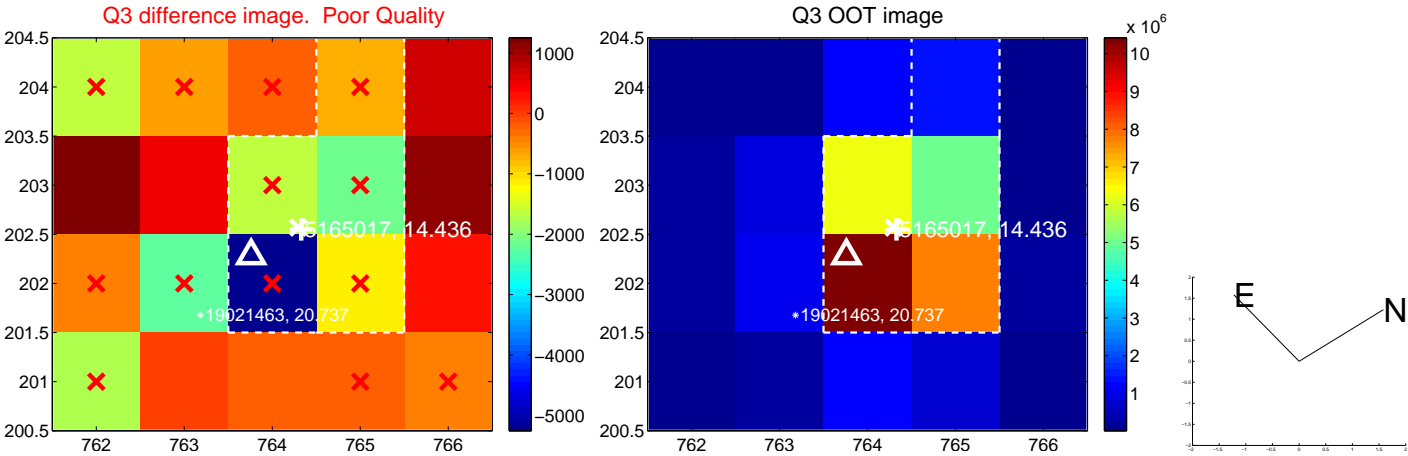
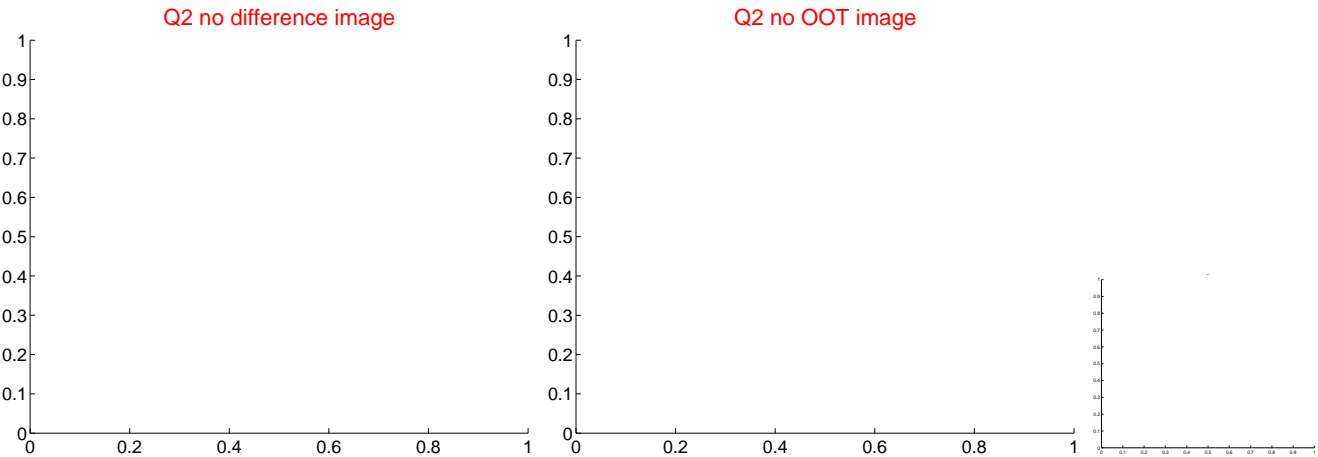
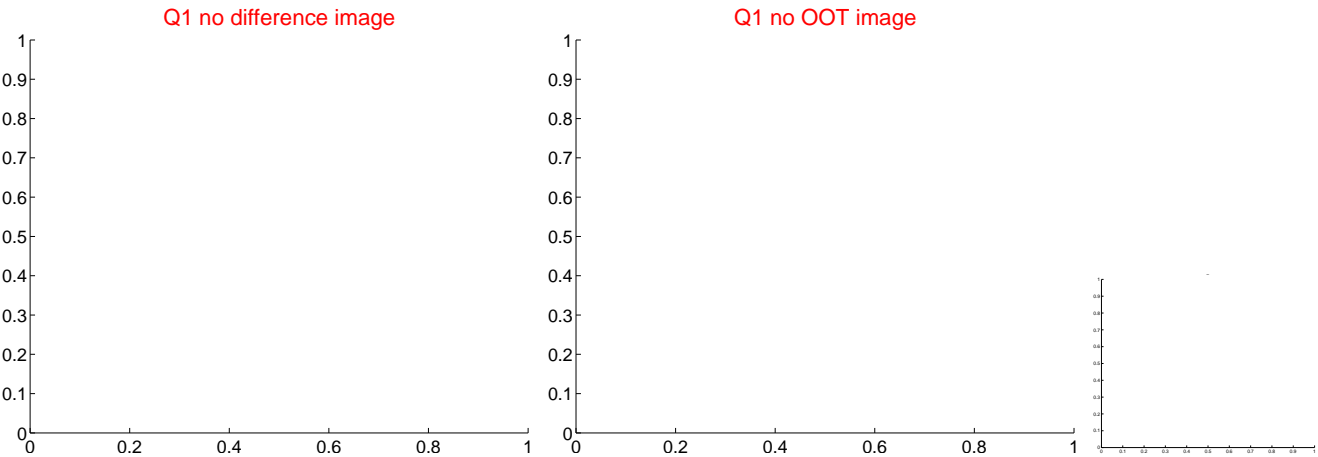


offset from photometric centroids

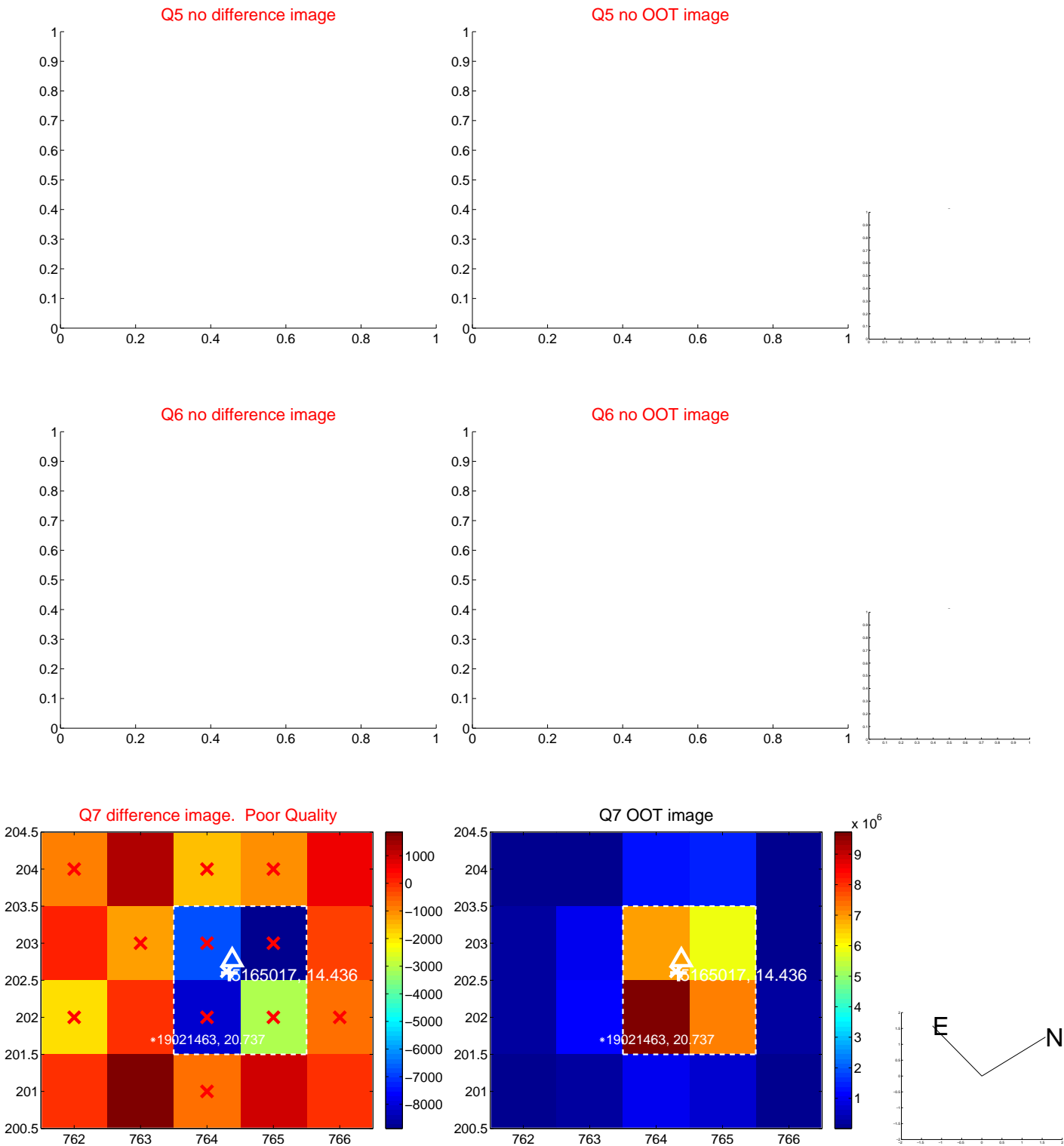


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

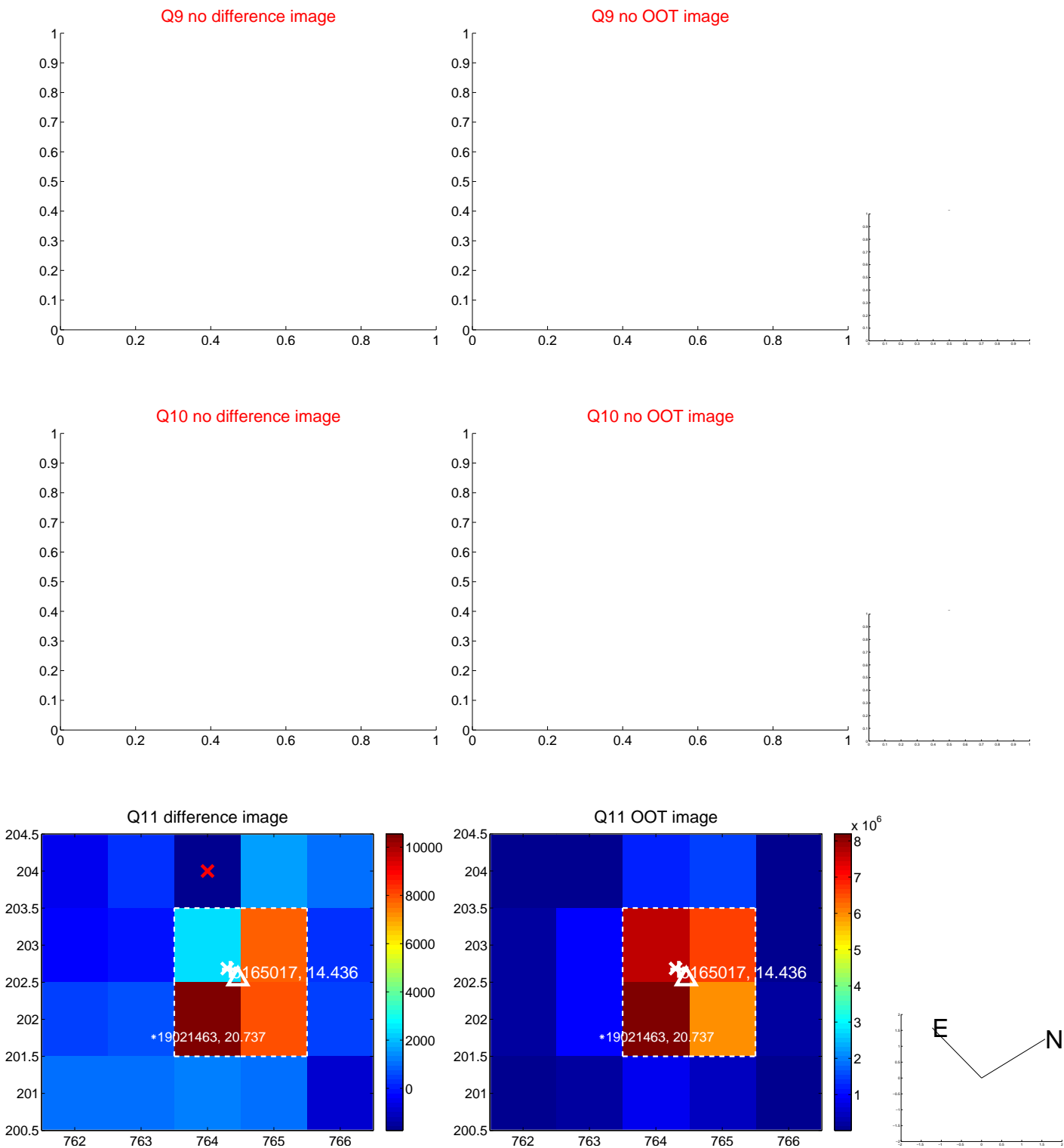
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



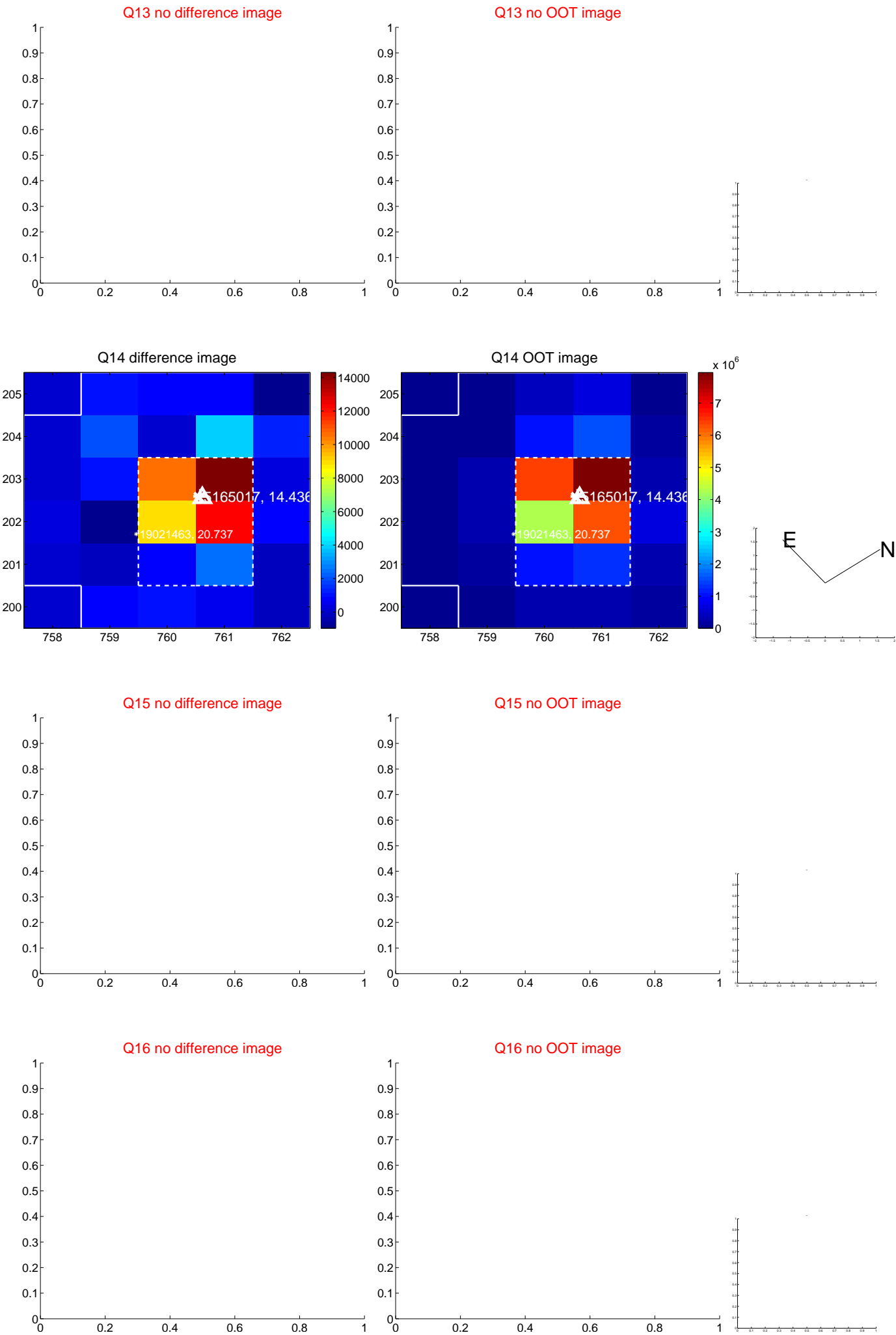
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



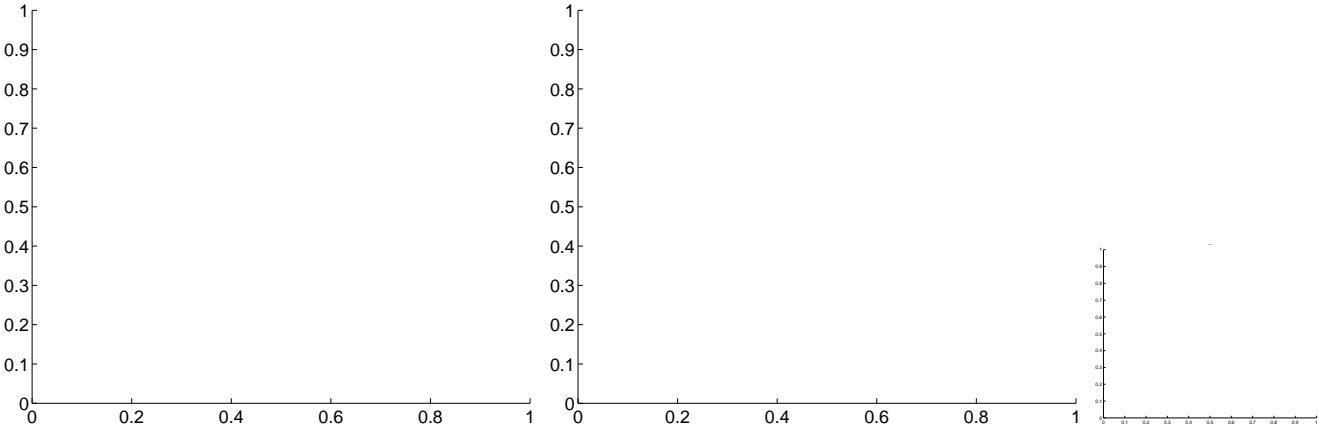
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



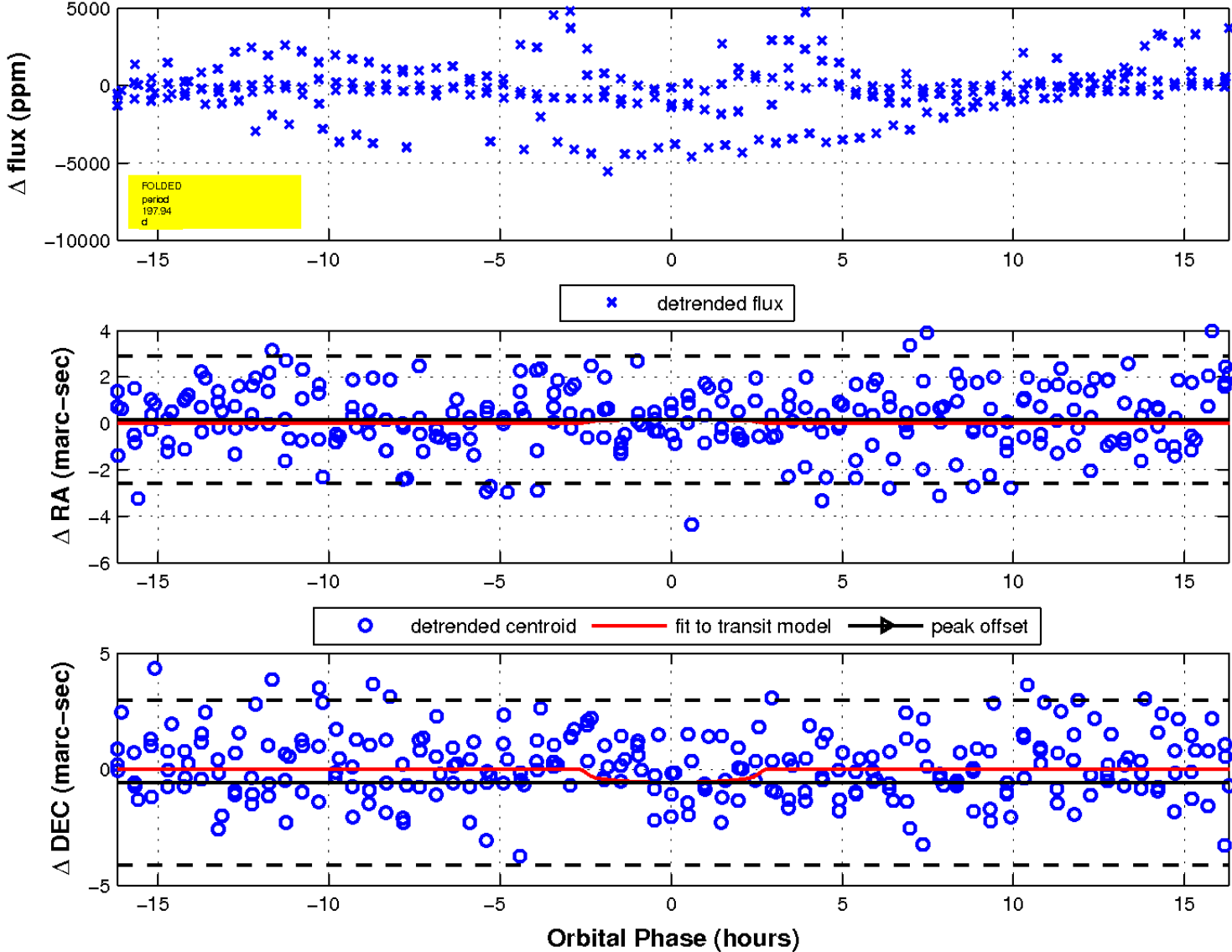
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q17 no difference image

Q17 no OOT image



fluxWeightedCentroids, Planet 7 of 7



UKIRT Image

Declination

