

KIC 005024410

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})
005024410-01	OBS	No	2.734897	132.216058	7.4	16.391	7.2	4.4	2.20	7365	0.61	6058.28
005024410-02	OBS	No	388.490946	258.941632	172.0	8.311	11.1	9.5	2.20	7365	3.26	8.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005024410-01	OBS	FP	0.00	1	0	0	0	LPP_DV
005024410-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

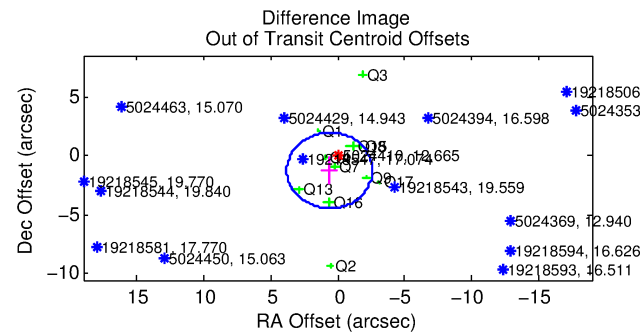
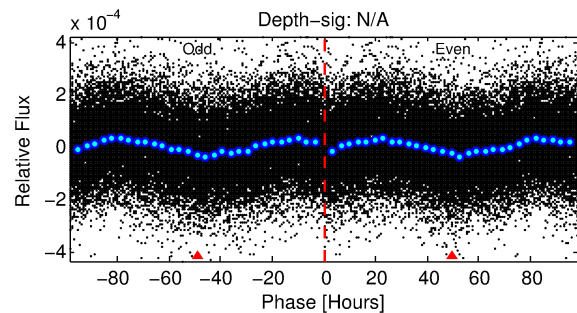
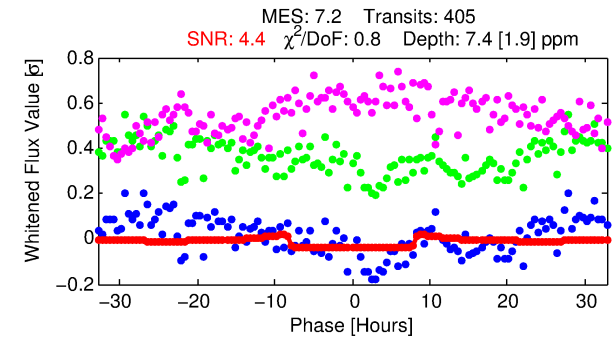
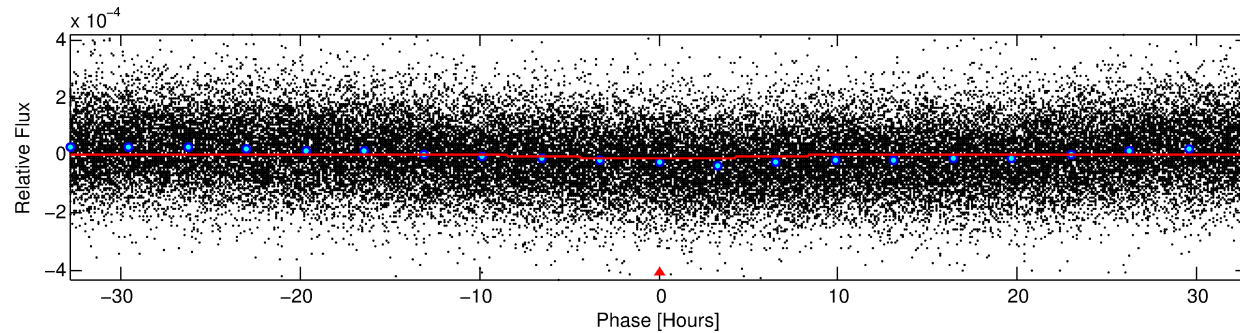
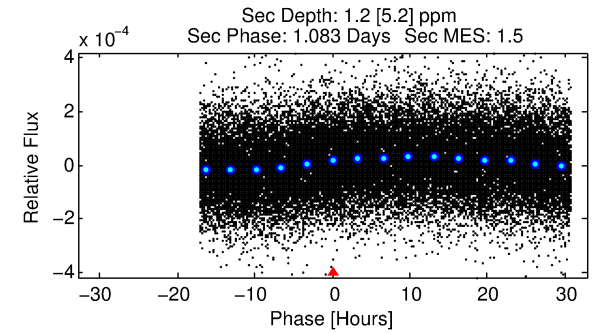
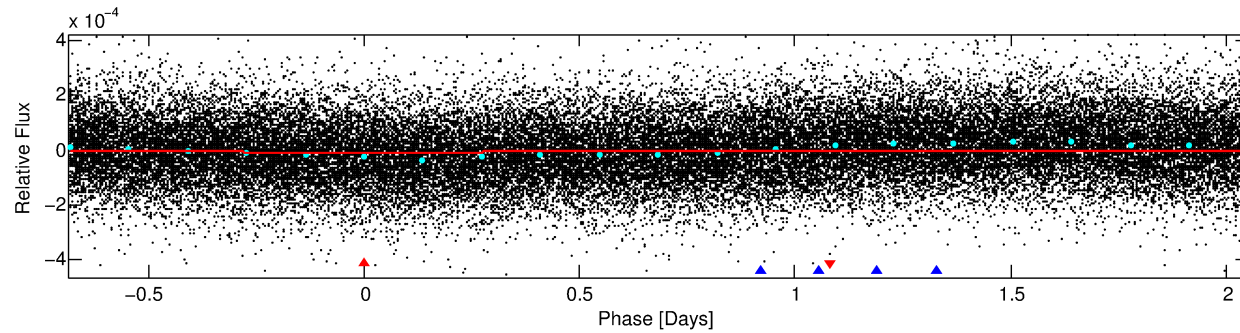
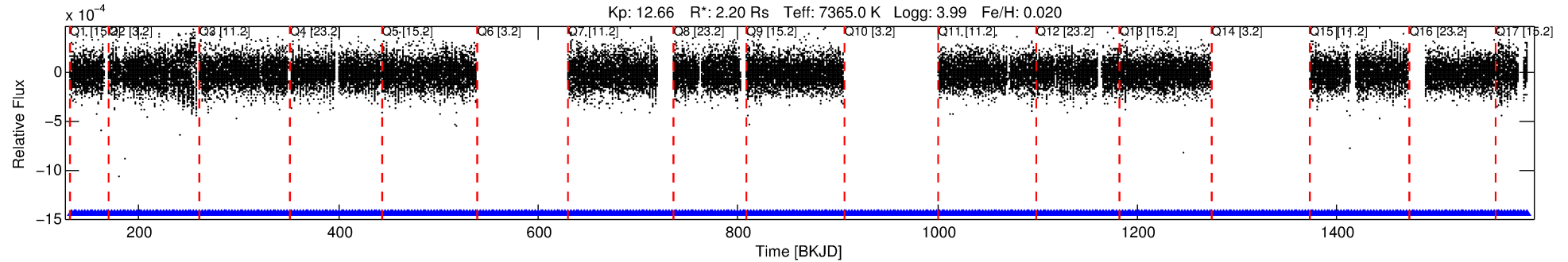
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005024410-01

No Significant Match Found

DV One-Page Summary

KIC: 5024410 Candidate: 1 of 2 Period: 2.735 d



DV Fit Results:

Period = 2.73490 [0.00009] d
Epoch = 132.2161 [0.0186] BKJD
Rp/R* = 0.0026 [0.0034]
a/R* = 1.39 [5.49]
b = 0.27 [28.34]
Seff = 6058.28 [2525.37]
Teff = 2250 [234] K
Rp = 0.61 [0.83] Re
a = 0.0459 [0.0112] AU
Ag = 3.66 [18.94] [0.14σ]
Teffp = 4812 [6207] K [0.41σ]

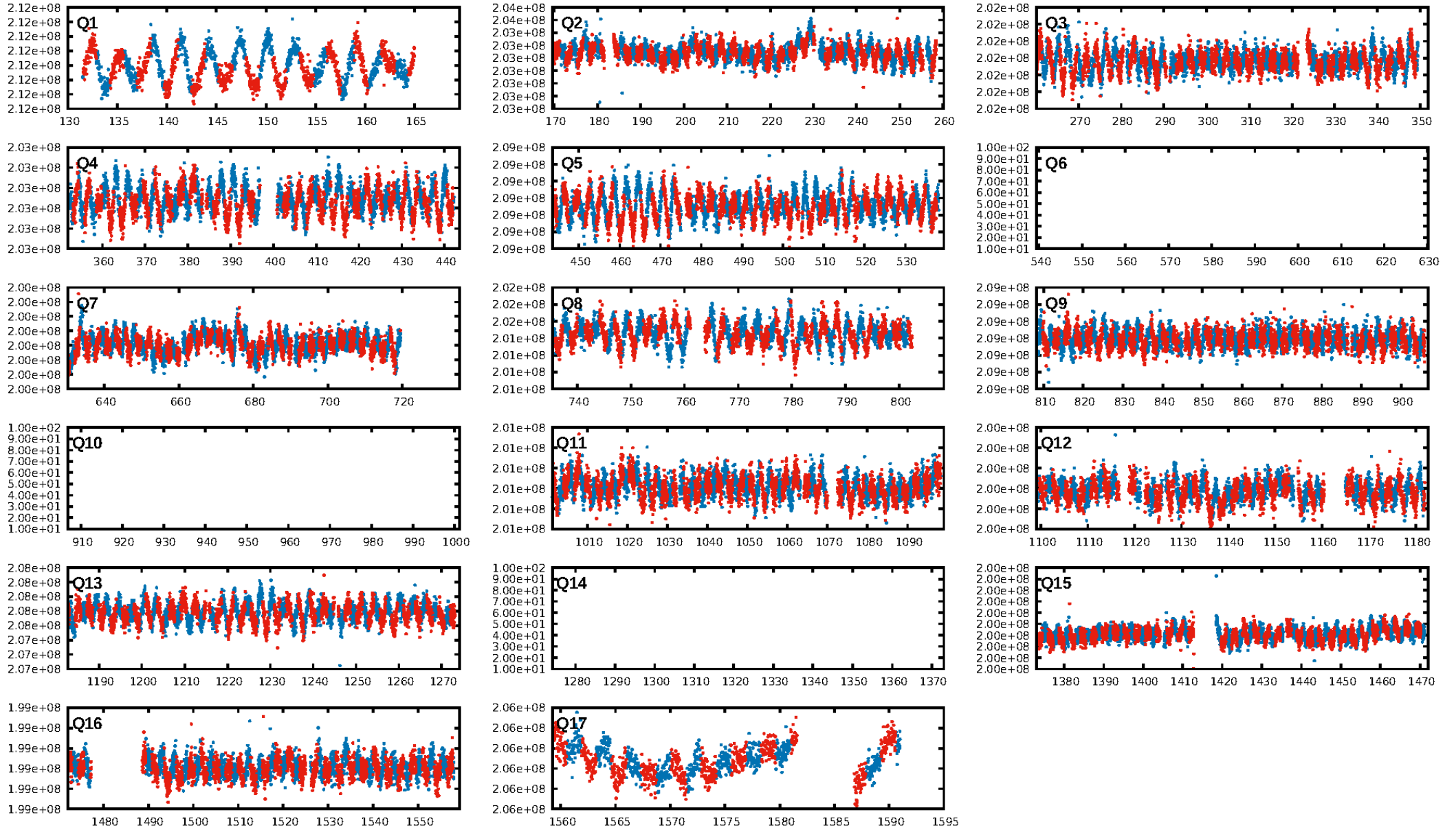
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [503.77σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.94e-08
RollingBand-fgt: 1.00 [381/381]
GhostDiagnostic-chr: -13.74
Centroid-sig: 41.4%
Centroid-so: 1.455 arcsec [0.32σ]
OotOffset-rm: 1.381 arcsec [1.30σ]
KicOffset-rm: 1.304 arcsec [1.11σ]
OotOffset-st: 1/3/3/4 [11]
KicOffset-st: 1/3/3/4 [11]
DiffImageQuality-fgm: 0.27 [3/11]
DiffImageOverlap-fno: 1.00 [14/14]

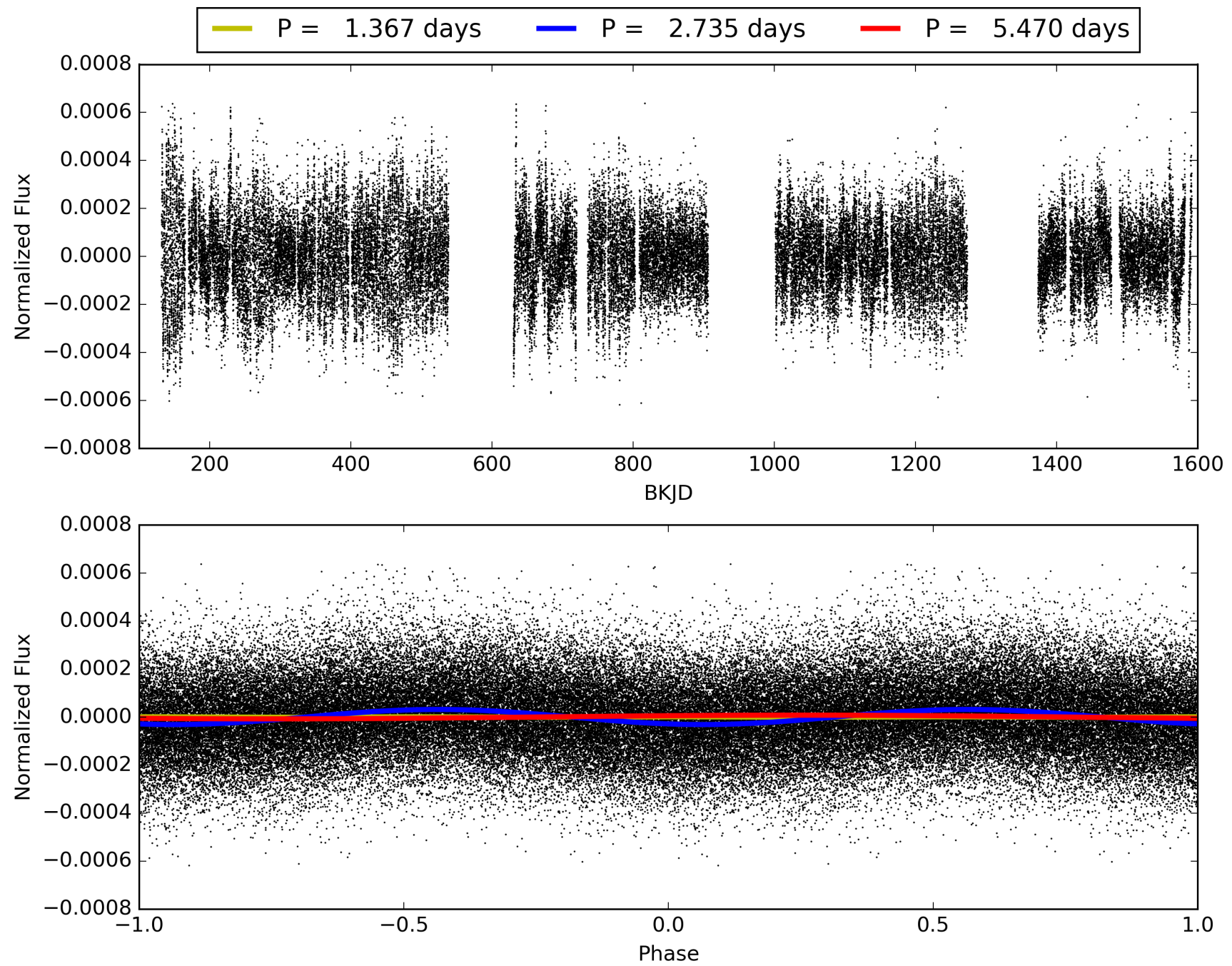
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:18:56 Z

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

TCE 005024410-01, PDC Light Curves

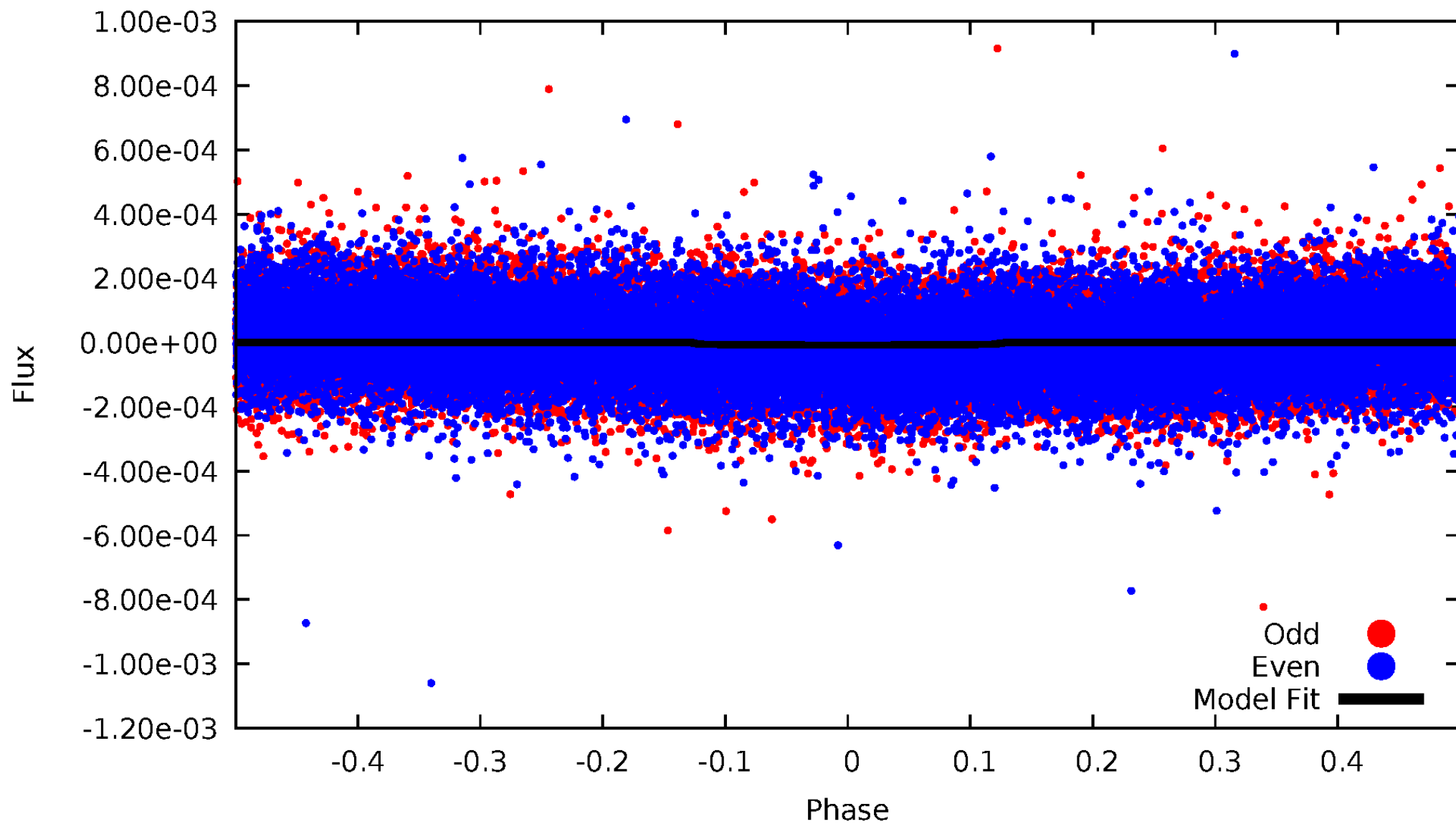


TCE 005024410-01



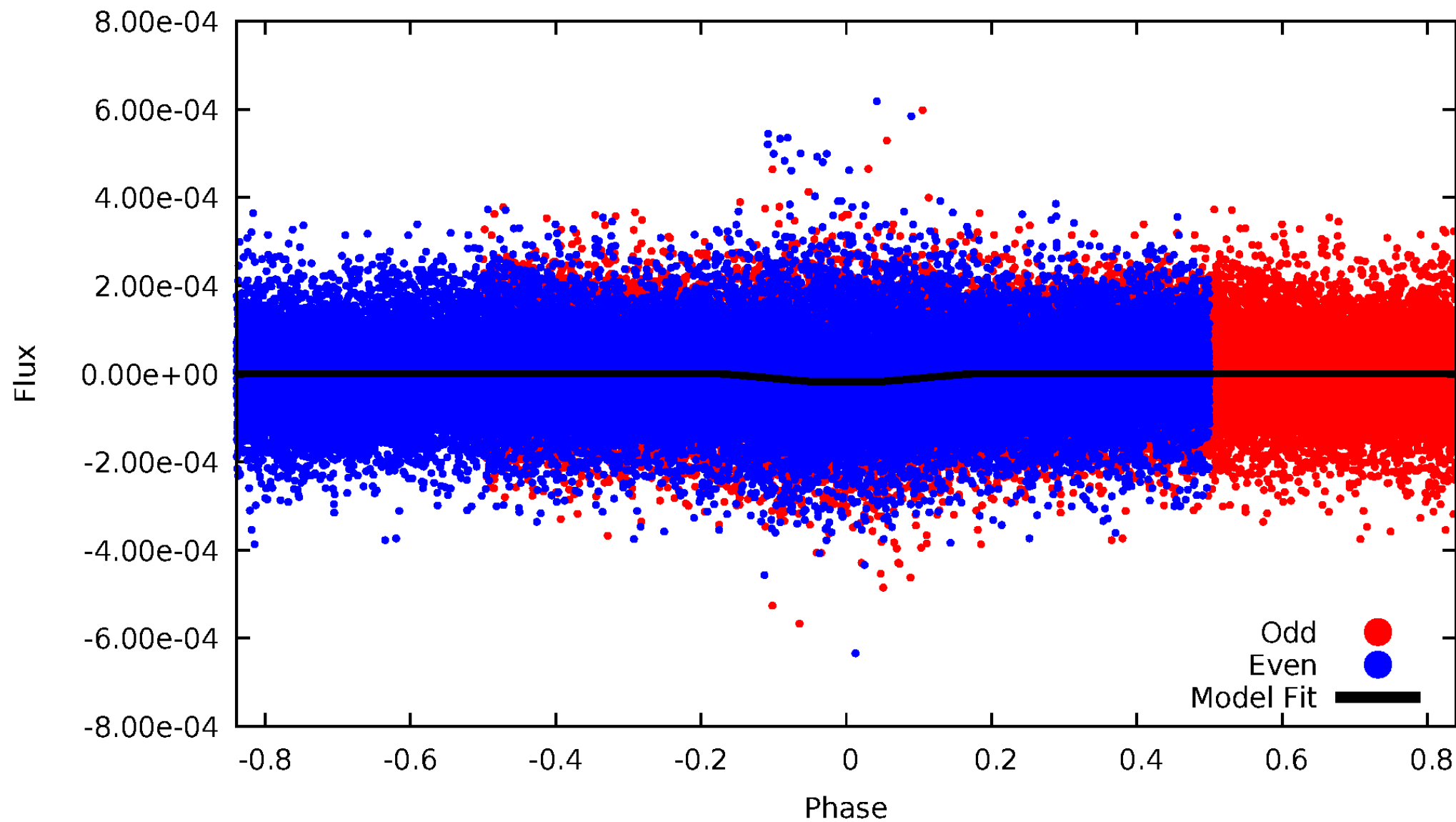
DV Odd/Even

TCE 005024410-01



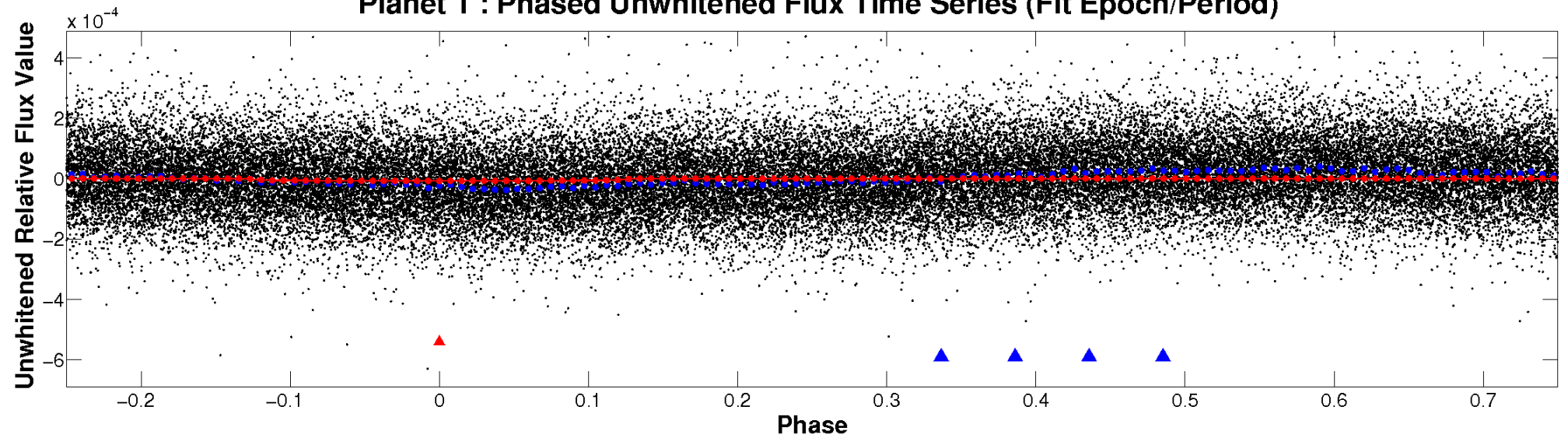
ALT Odd/Even

TCE 005024410-01

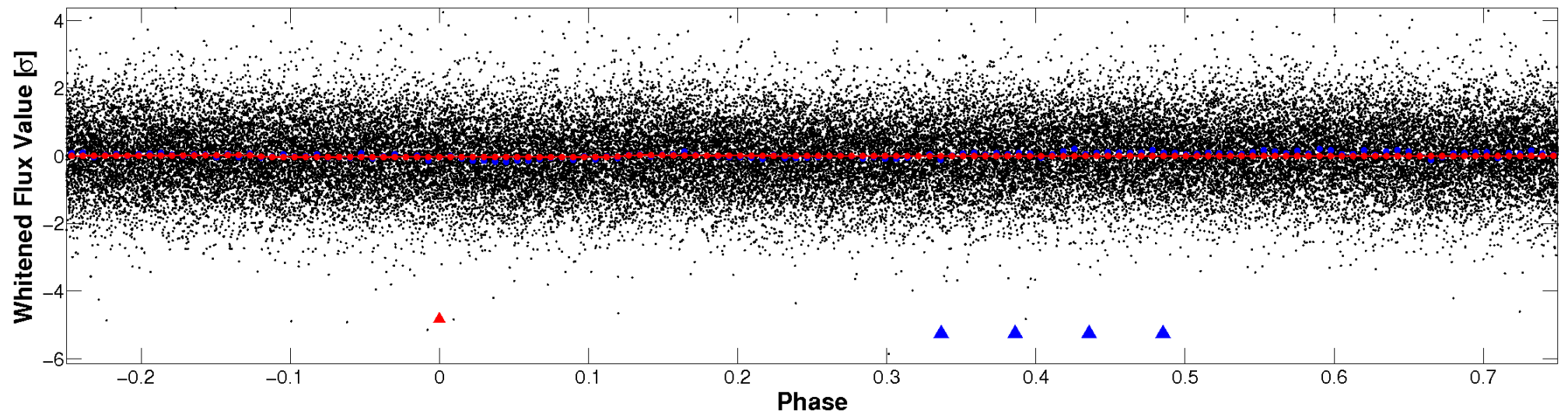


Non-Whitened Vs. Whitened Light Curve

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

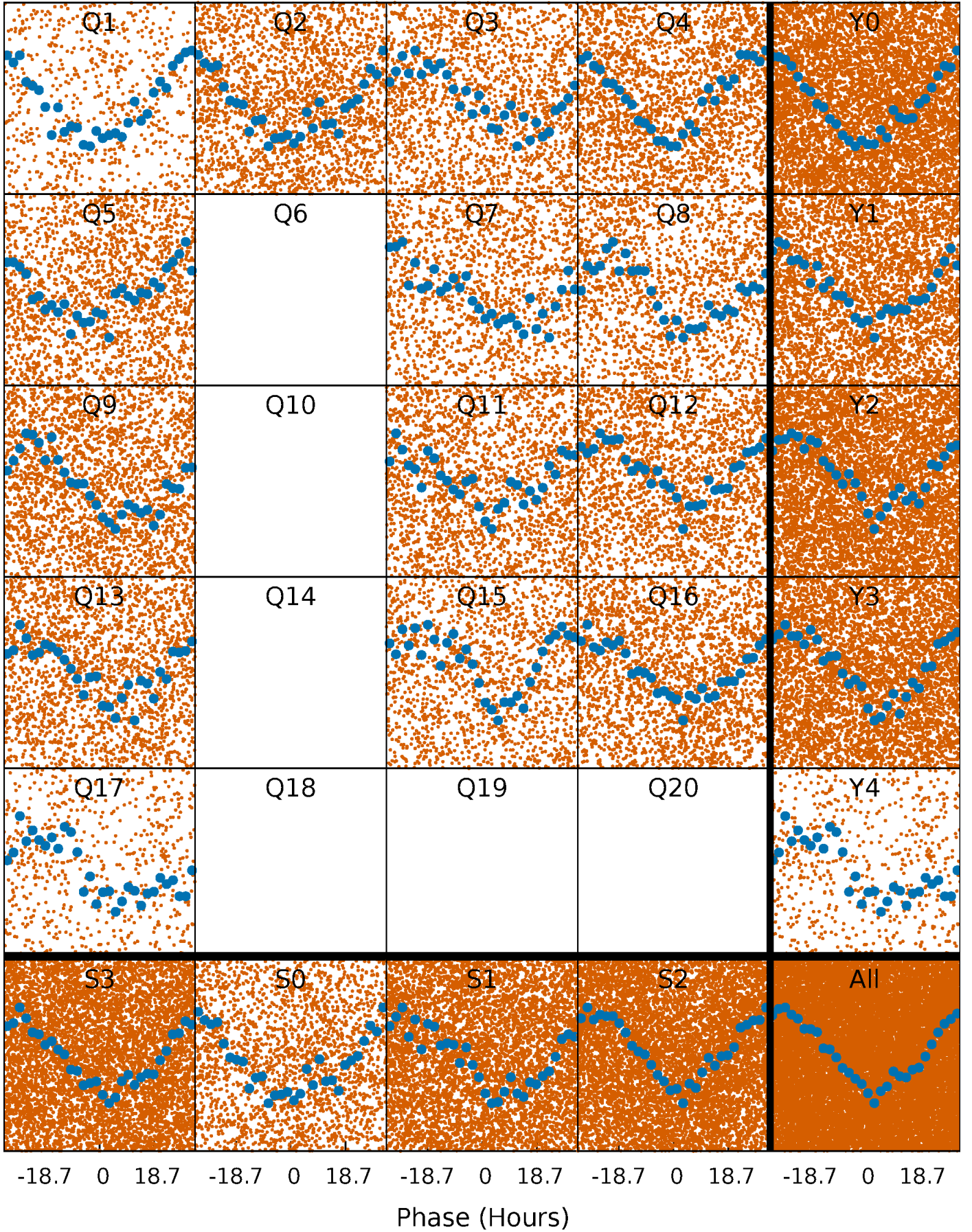


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



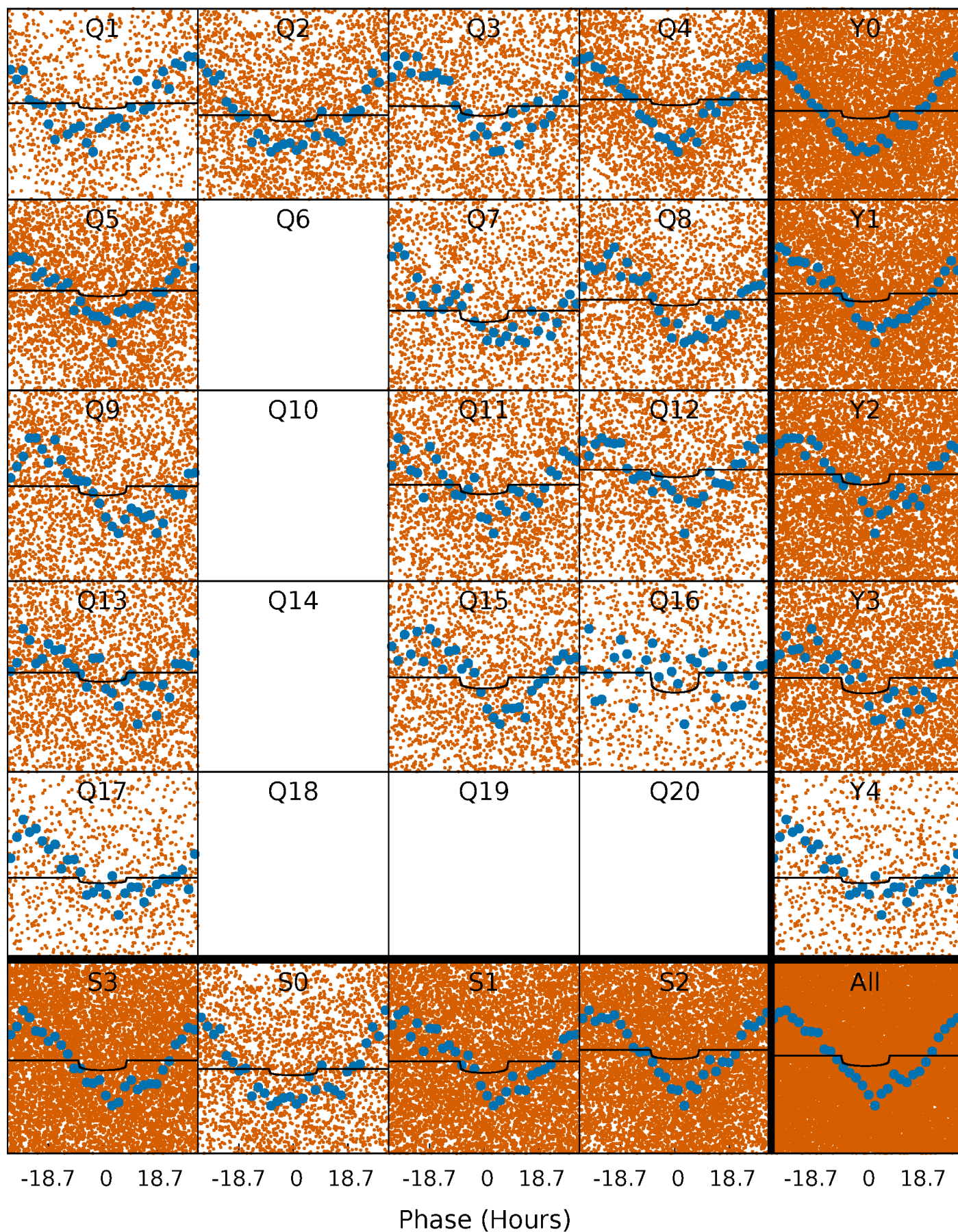
PDC Quarter-Phased Transit Curves

TCE 005024410-01 P= 2.734897 Days $T_0=132.216058$ (BKJD)



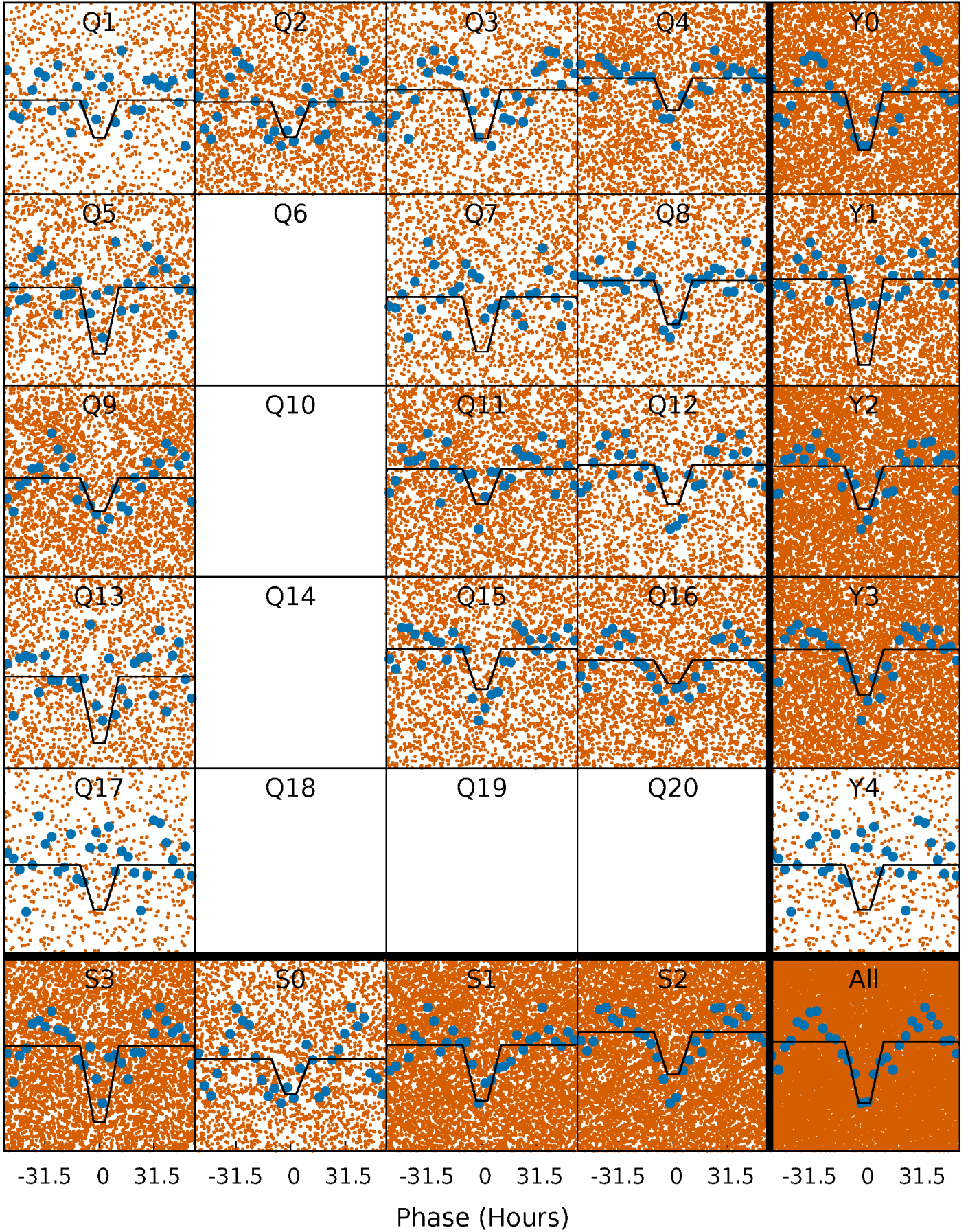
DV Quarter-Phased Transit Curves

TCE 005024410-01 P= 2.734897 Days $T_0=132.216058$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

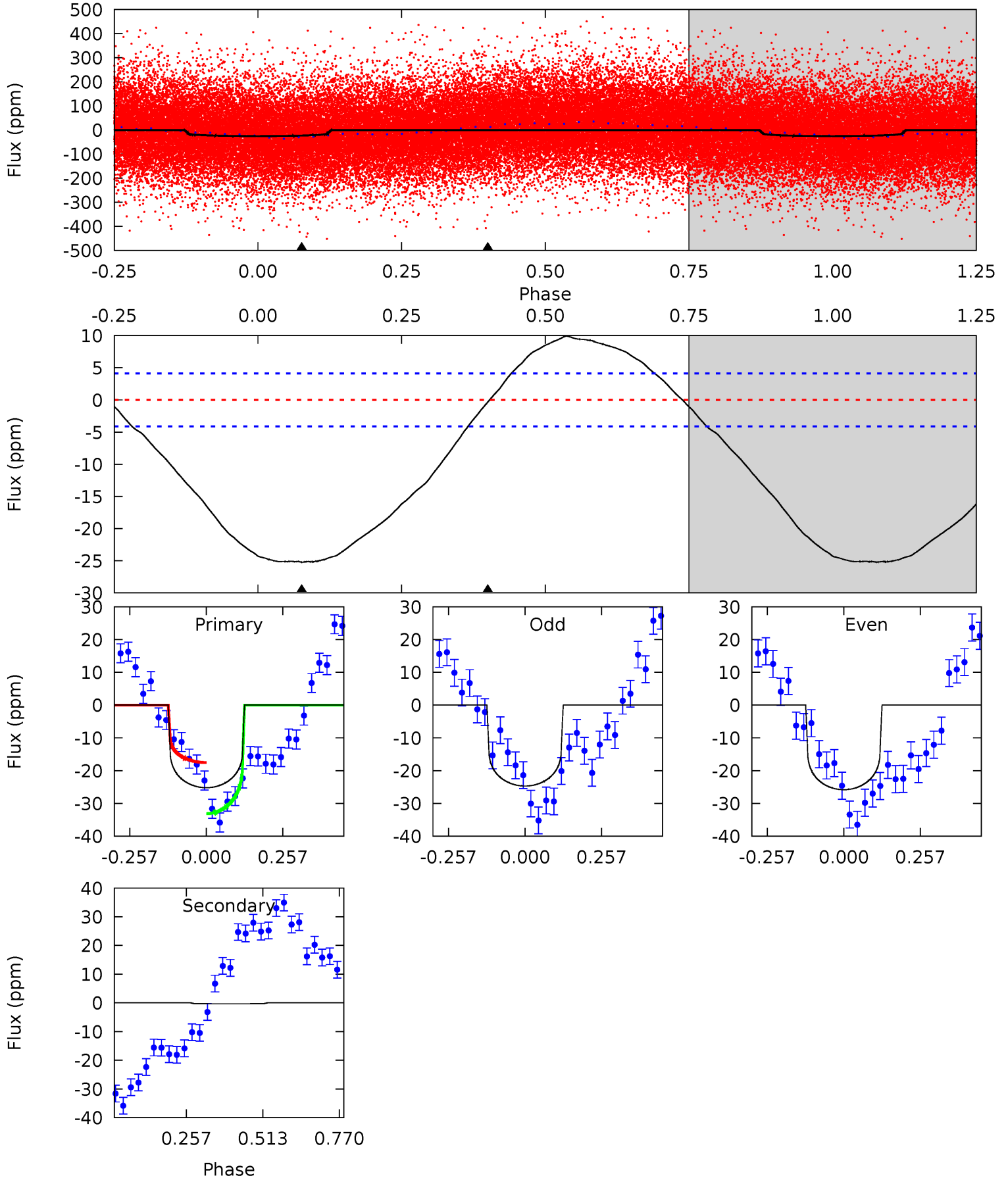
TCE 005024410-01 P= 2.735522 Days $T_0=132.134365$ (BKJD)



DV Model-Shift Uniqueness Test

005024410-01, P = 2.734897 Days, E = 129.481161 Days

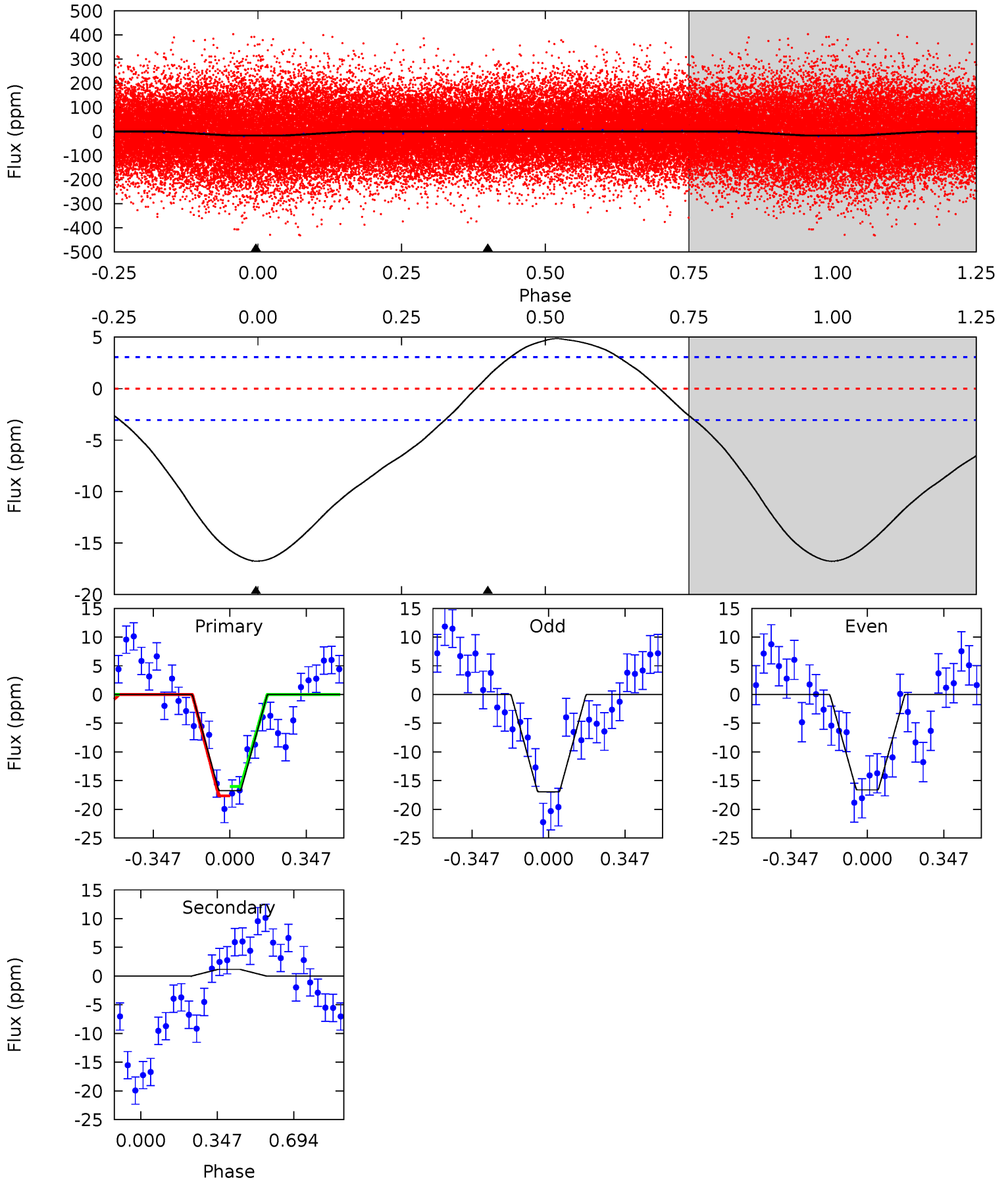
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.8	0.35	0	0	4.36	1.13	4.36	26.8	26.8	0.35	0.35	0.59	1.08	0.28	8.33



Alt Model-Shift Uniqueness Test

005024410-01, P = 2.735522 Days, E = 129.398843 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.5	-1.64	0	0	4.30	0.94	2.02	23.5	23.5	-1.64	-1.64	0.24	1.05	0.22	1.15



Stellar Parameters For KIC 005024410

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7365^{+228}_{-330}	$3.989^{+0.216}_{-0.162}$	$0.020^{+0.200}_{-0.350}$	$2.198^{+0.528}_{-0.587}$	$1.716^{+0.211}_{-0.290}$	$0.228^{+0.294}_{-0.097}$
	+3%/-4%	+5%/-4%	+1000%/-1750%	+24%/-27%	+12%/-17%	+129%/-42%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005024410-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-0 ± 1	$0.82^{+0.74}_{-0.53}$	3124^{+236}_{-228}	-2123^{+7024}_{-1887}	$0.292^{+3.790}_{-1.419}$
Alt.	1 ± 1	$1.07^{+0.76}_{-0.64}$	3099^{+240}_{-261}	-3948^{+531}_{-1445}	$-0.952^{+0.719}_{-5.504}$

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 $A_{obs} \gg 1.0$

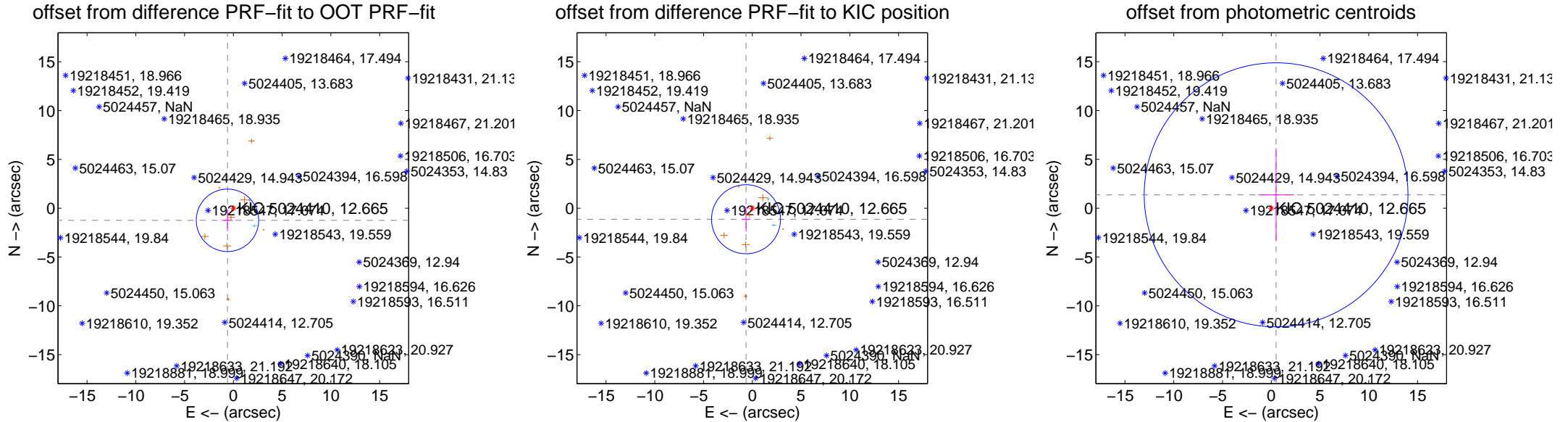
DV Centroid Data

Supplemental centroid analysis for 005024410-01. Kepler magnitude: 12.66. Transit SNR 4.39

There are 3 quarters with good PRF difference image offsets

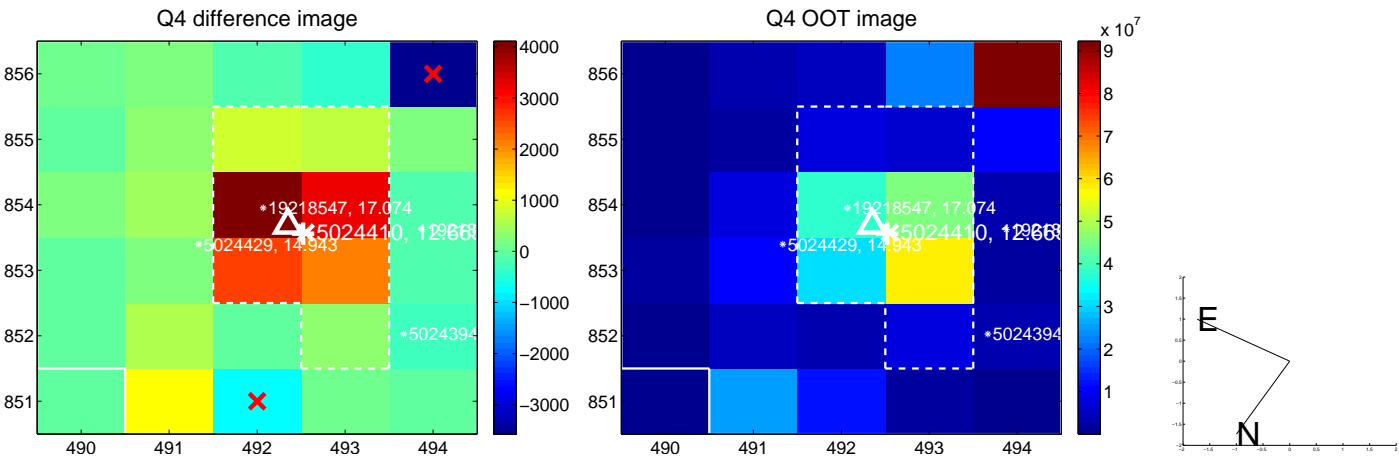
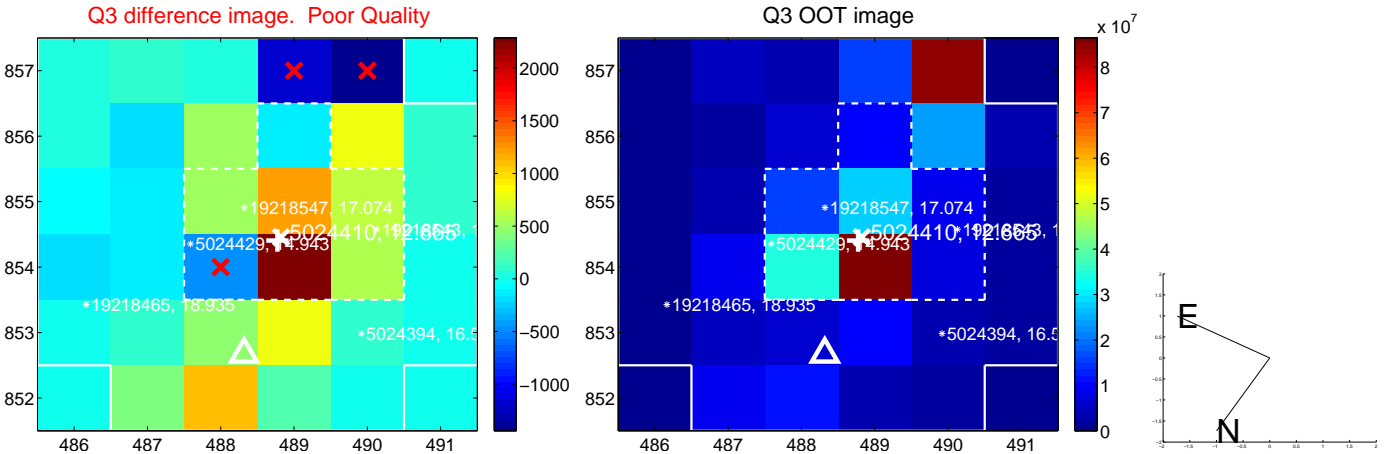
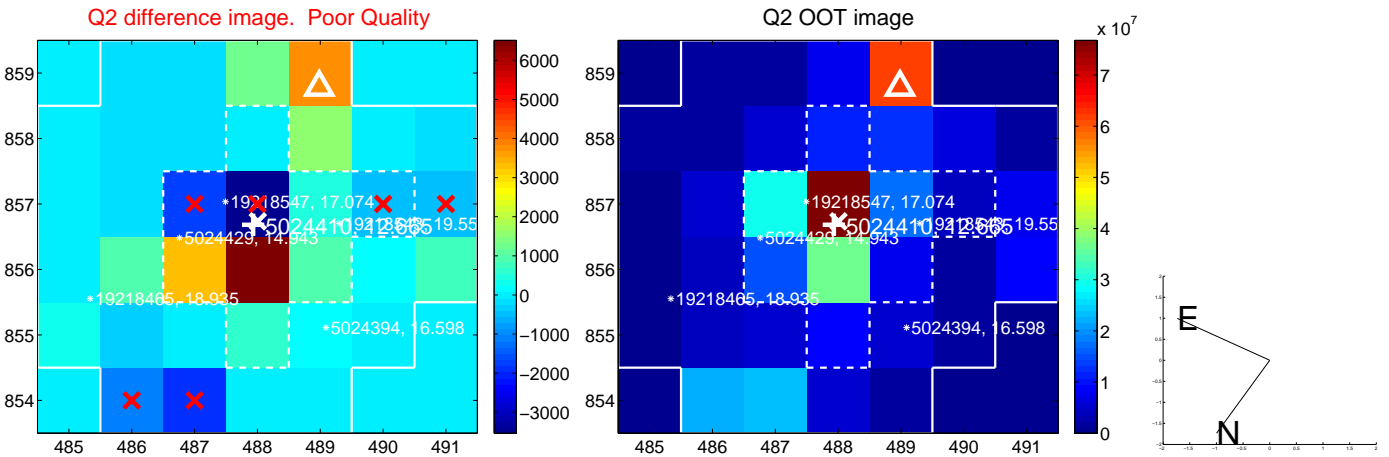
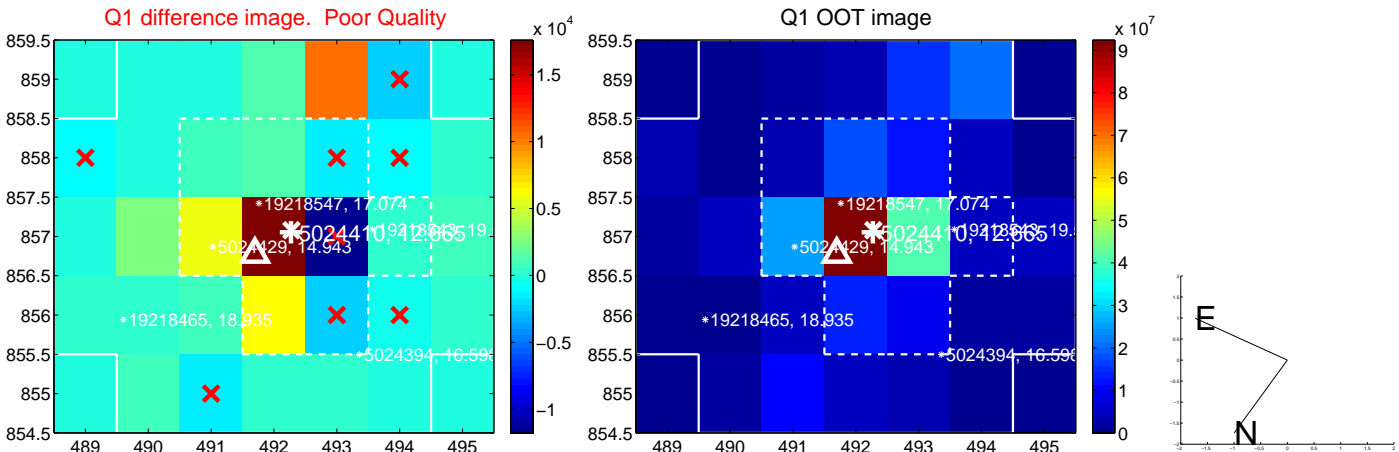
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.381 ± 1.066	1.30	0.603 ± 0.562	-1.242 ± 1.116
PRF-fit source offset from KIC position	1.304 ± 1.178	1.11	0.643 ± 0.458	-1.134 ± 1.250
photometric centroid source offset	1.45 ± 4.51	0.32	-0.50 ± 1.83	1.37 ± 4.75

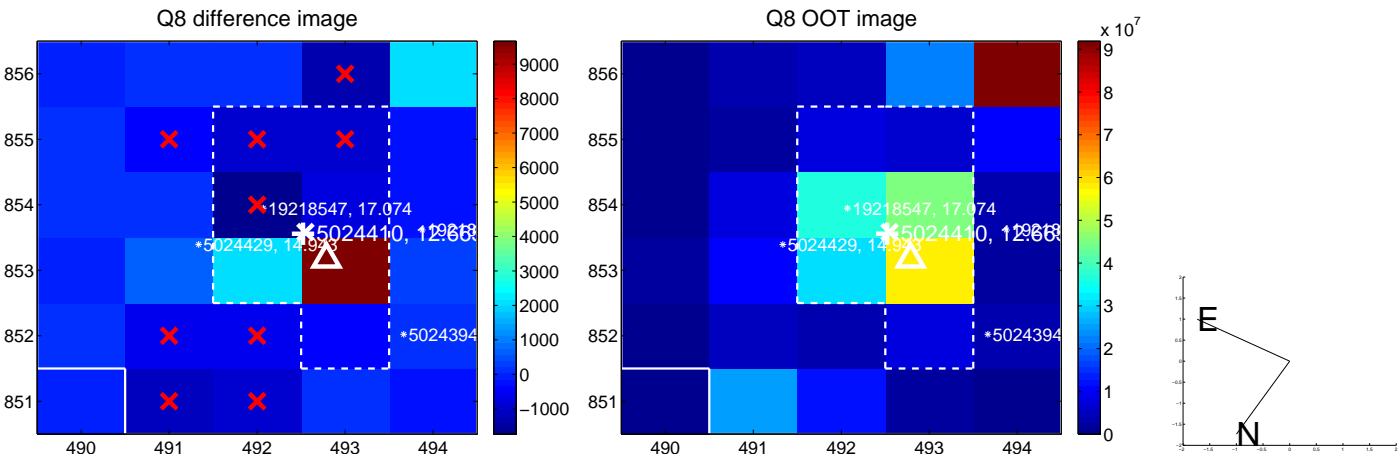
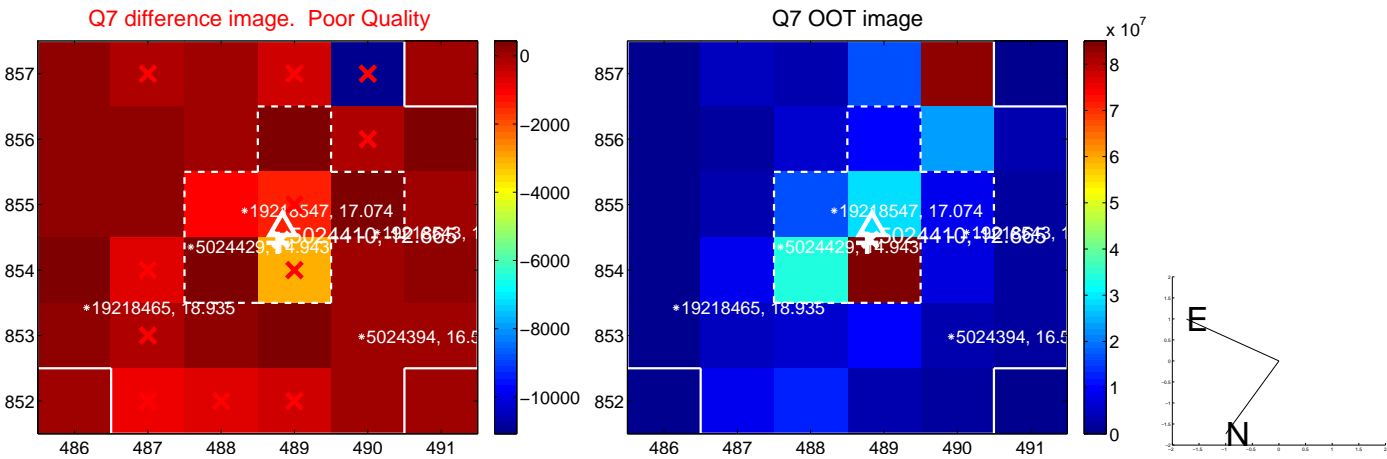
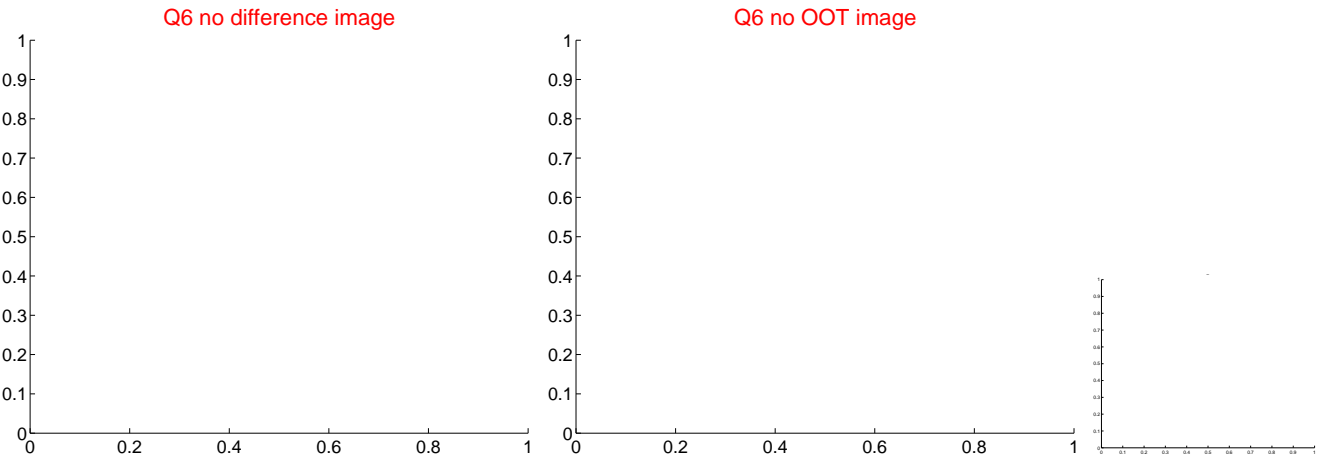
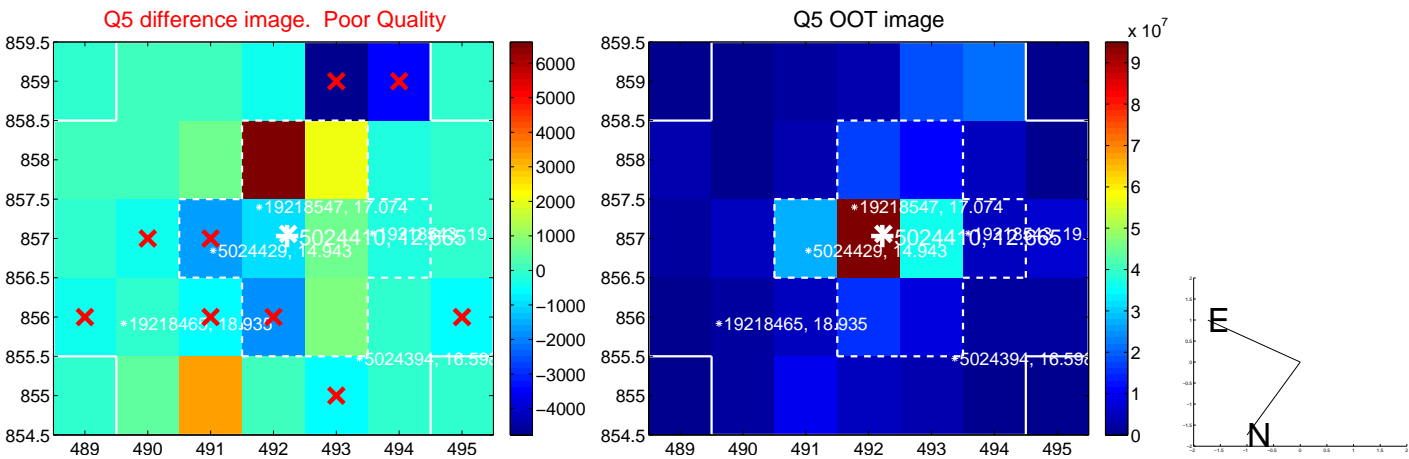


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

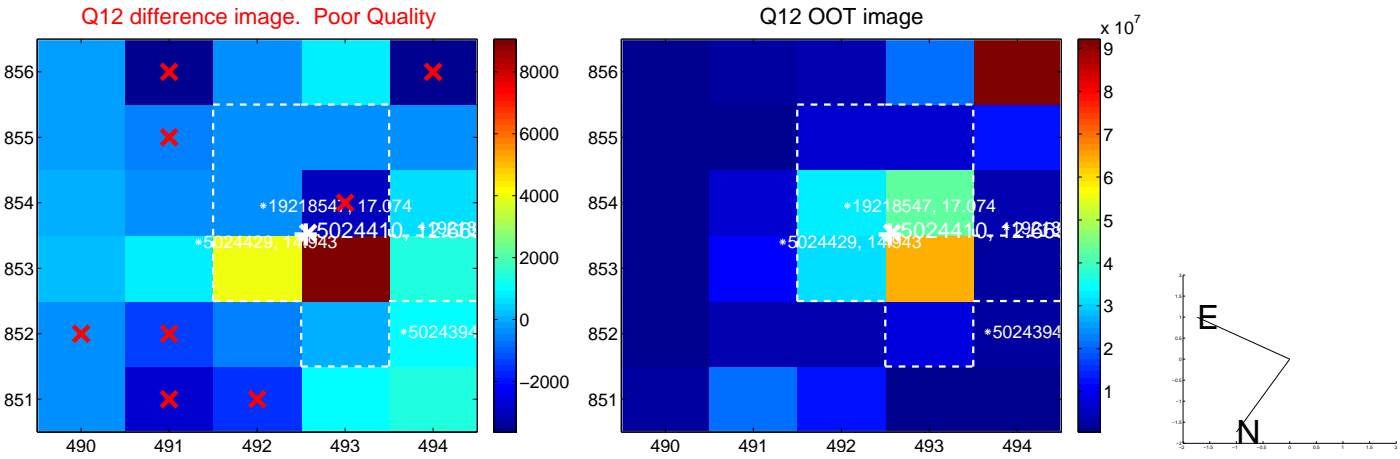
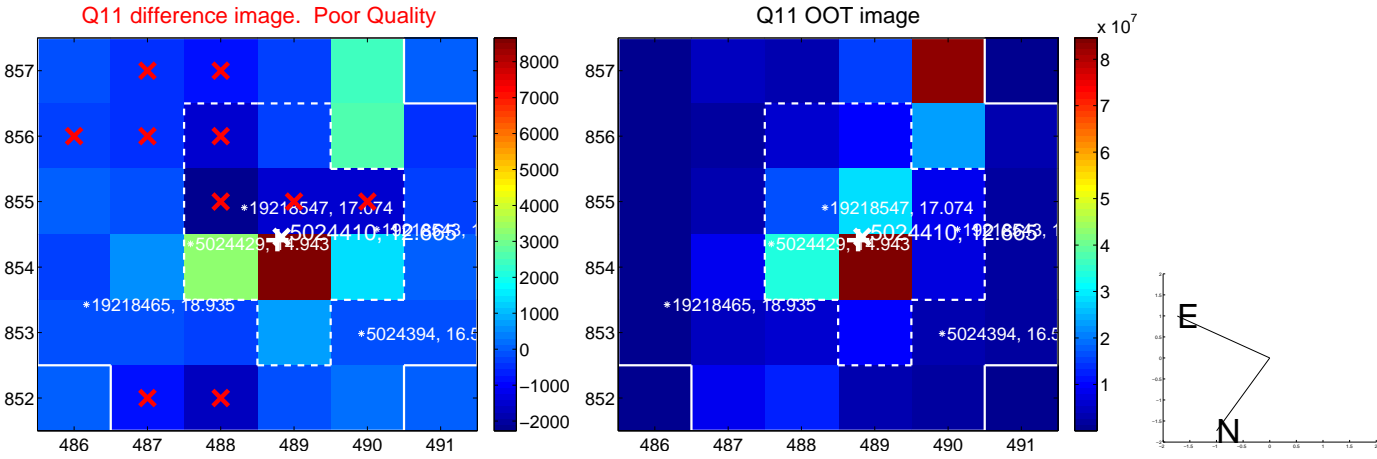
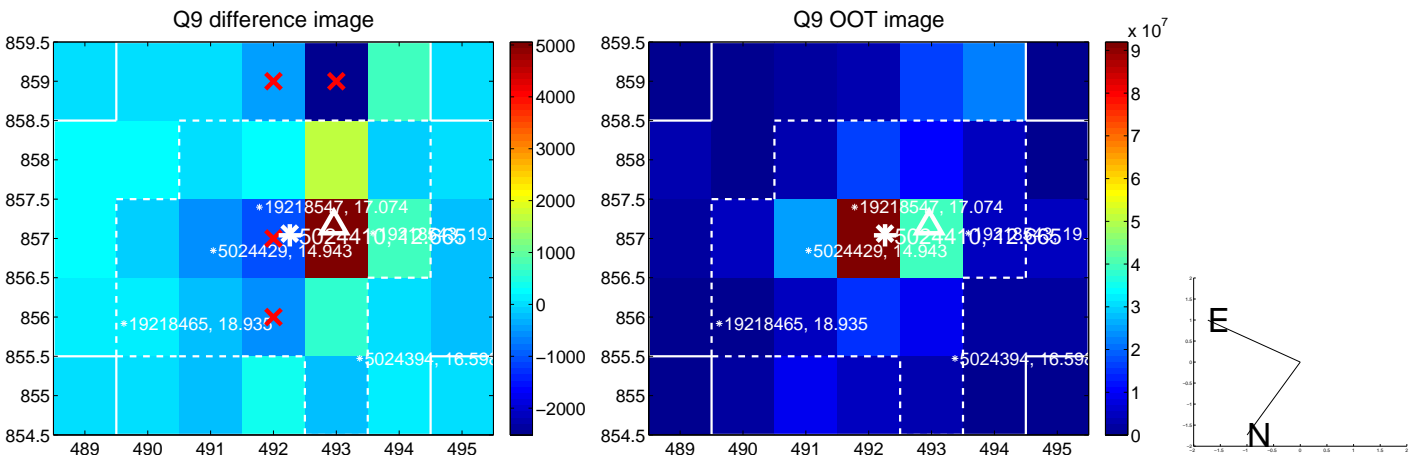
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



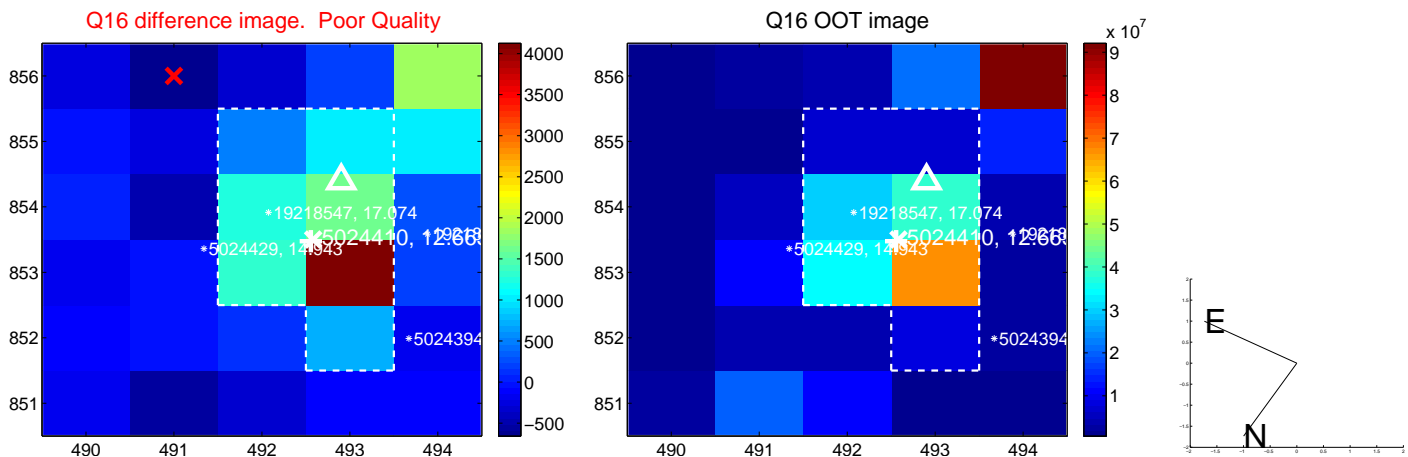
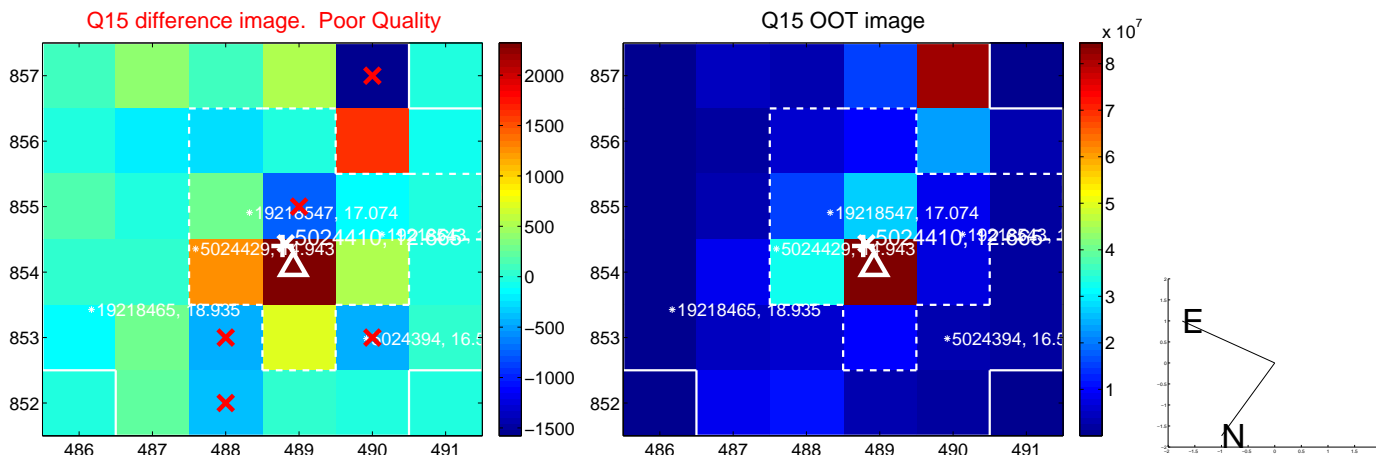
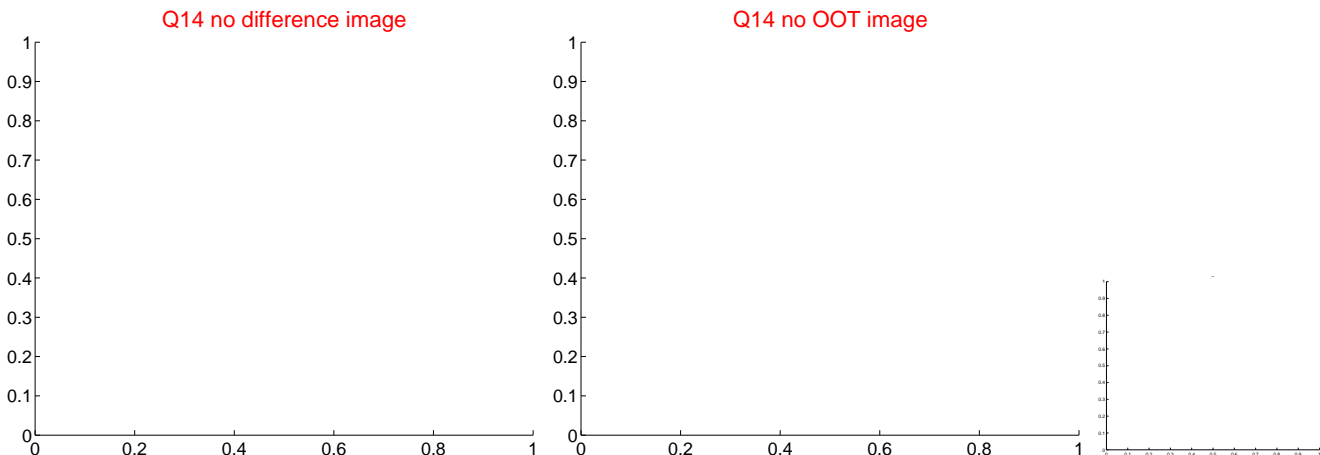
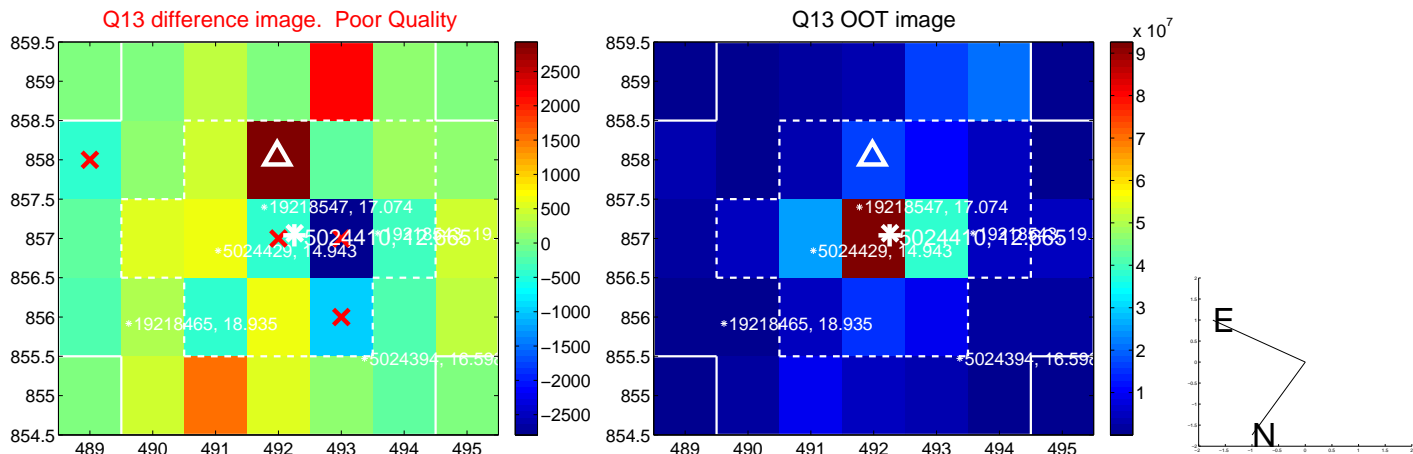
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



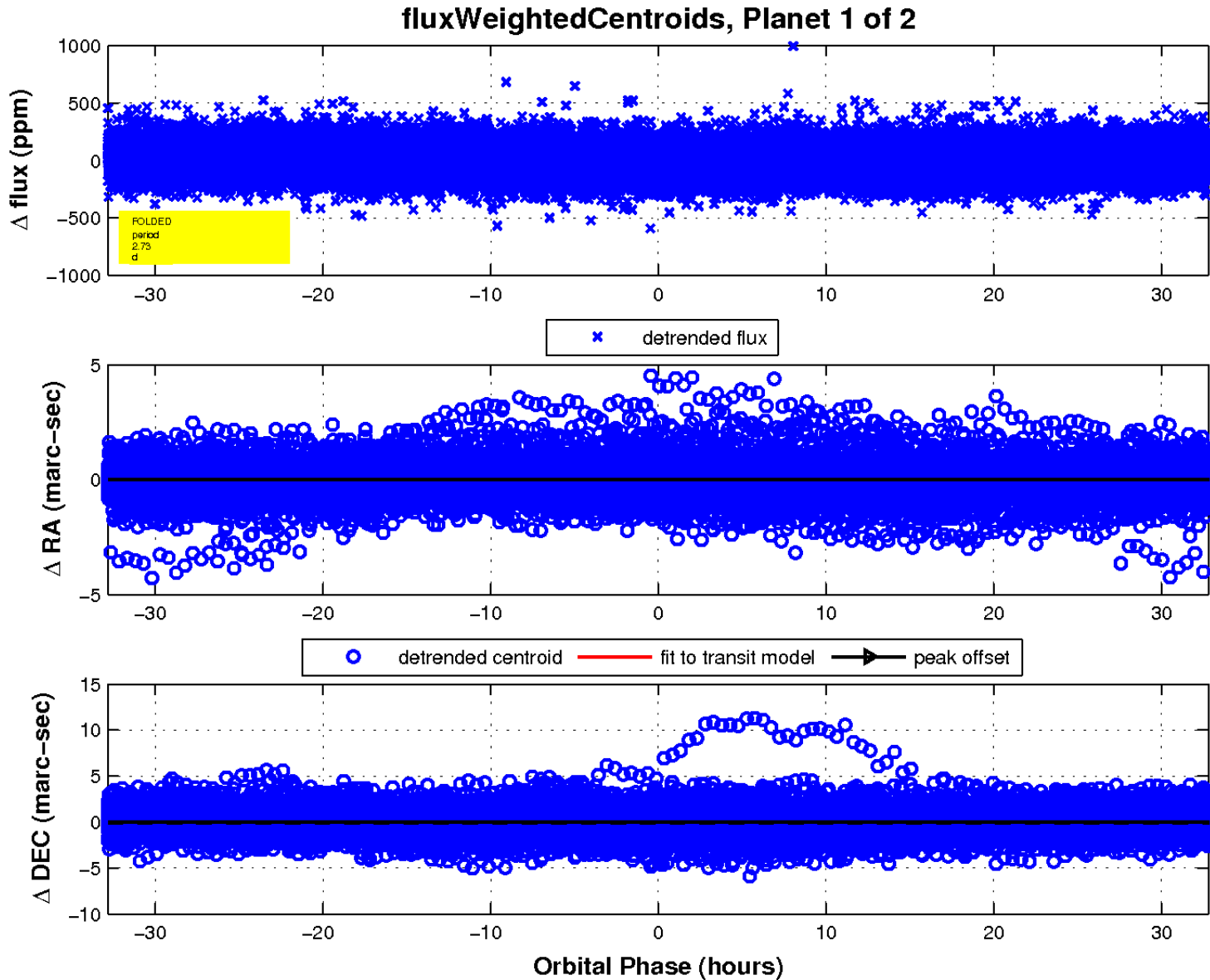
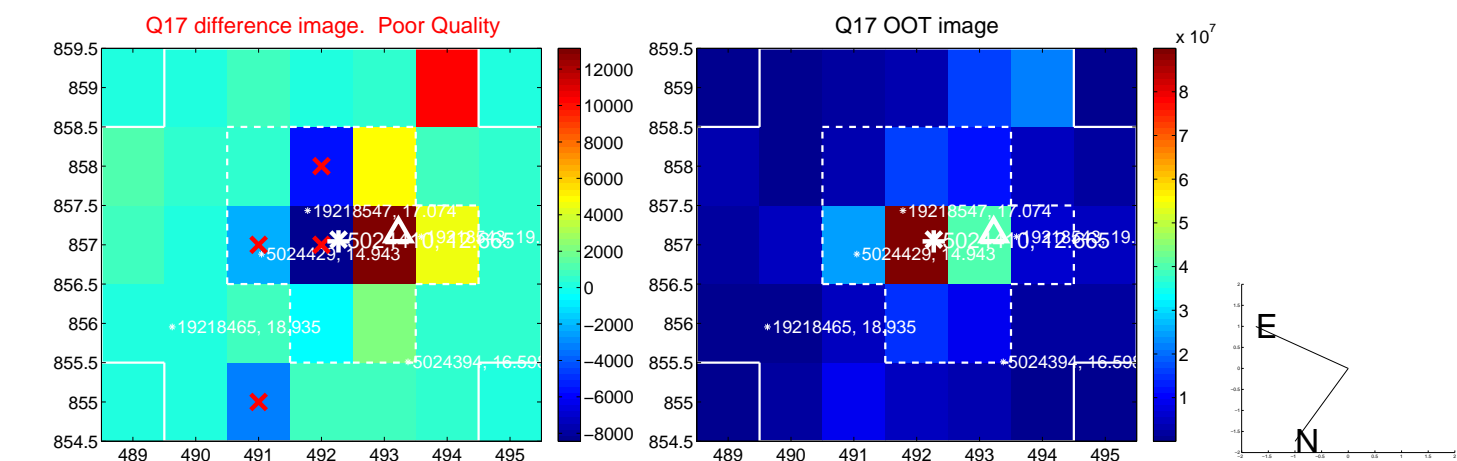
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

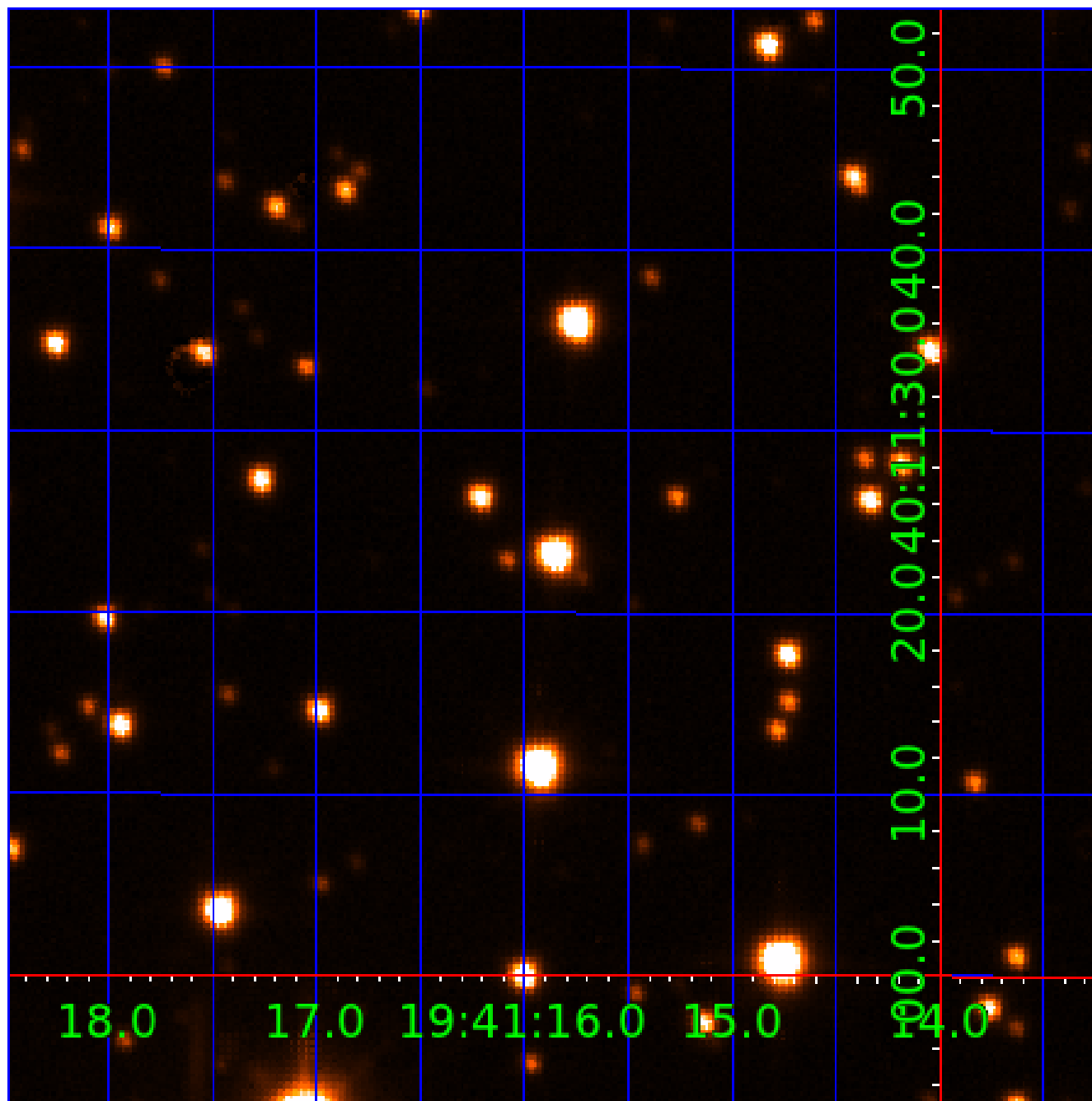


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005024410

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})
005024410-01	OBS	No	2.734897	132.216058	7.4	16.391	7.2	4.4	2.20	7365	0.61	6058.28
005024410-02	OBS	No	388.490946	258.941632	172.0	8.311	11.1	9.5	2.20	7365	3.26	8.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005024410-01	OBS	FP	0.00	1	0	0	0	LPP_DV
005024410-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

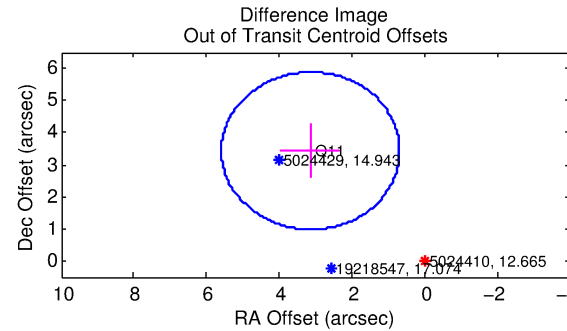
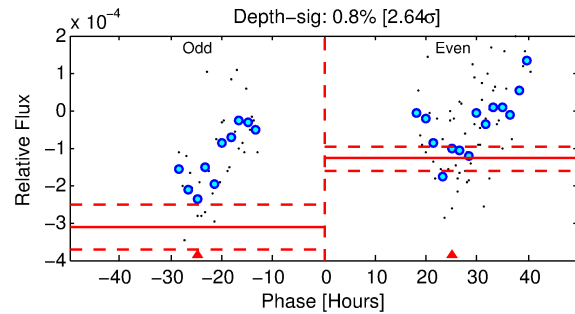
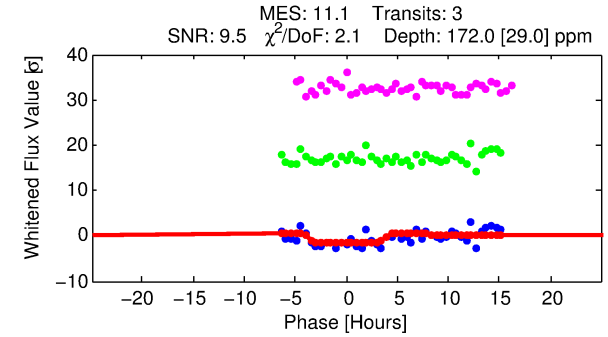
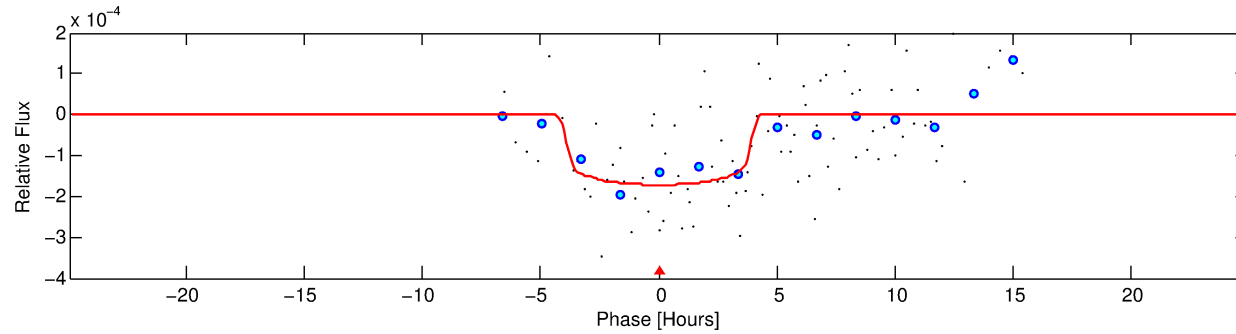
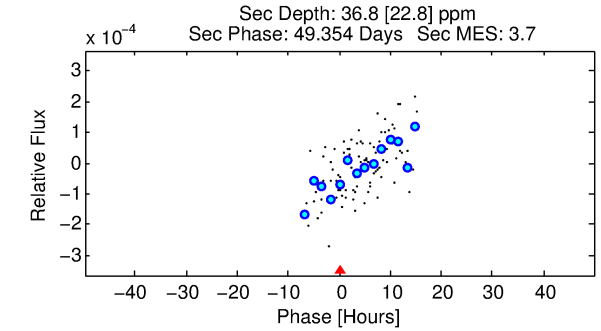
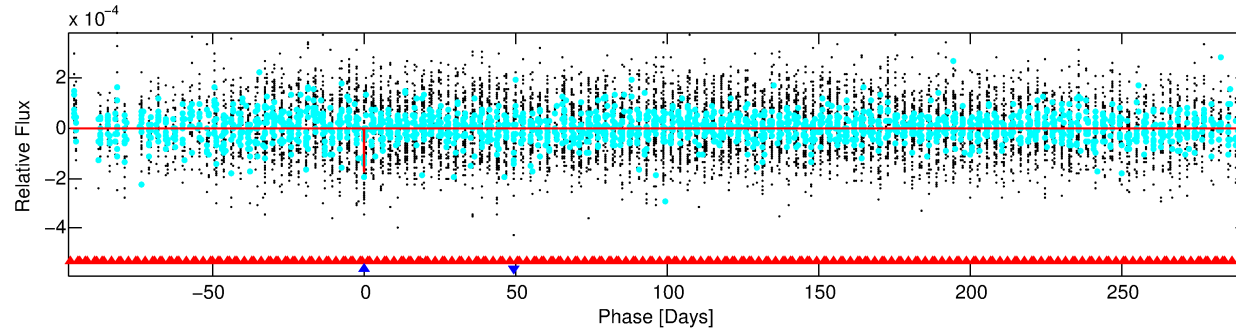
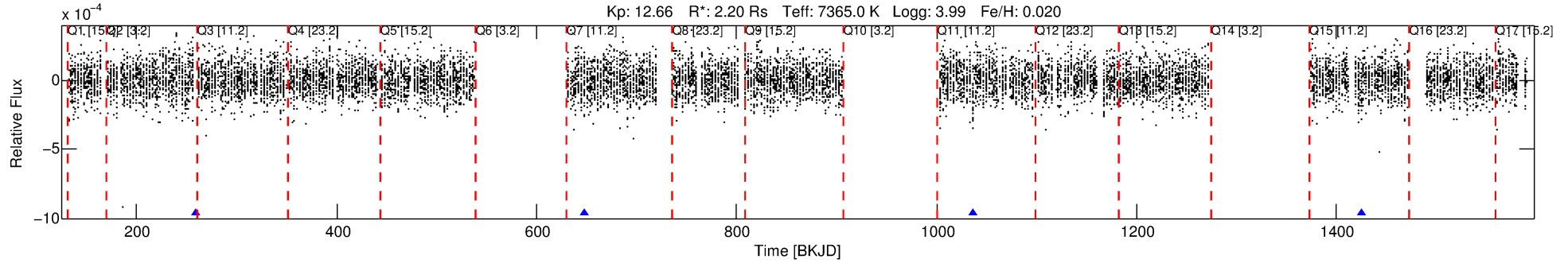
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005024410-02

No Significant Match Found

DV One-Page Summary

KIC: 5024410 Candidate: 2 of 2 Period: 388.491 d



DV Fit Results:

Period = 388.49095 [0.01596] d
Epoch = 258.9416 [0.0412] BKJD
Rp/R* = 0.0136 [0.0047]
a/R* = 189.04 [397.82]
b = 0.86 [0.61]
Seff = 8.17 [3.41]
Teq = 431 [45] K
Rp = 3.26 [1.42] Re
a = 1.2483 [0.3037] AU
Ag = 2960.07 [2949.70] [1.00 σ]
Teffp = 4917 [1155] K [3.88 σ]

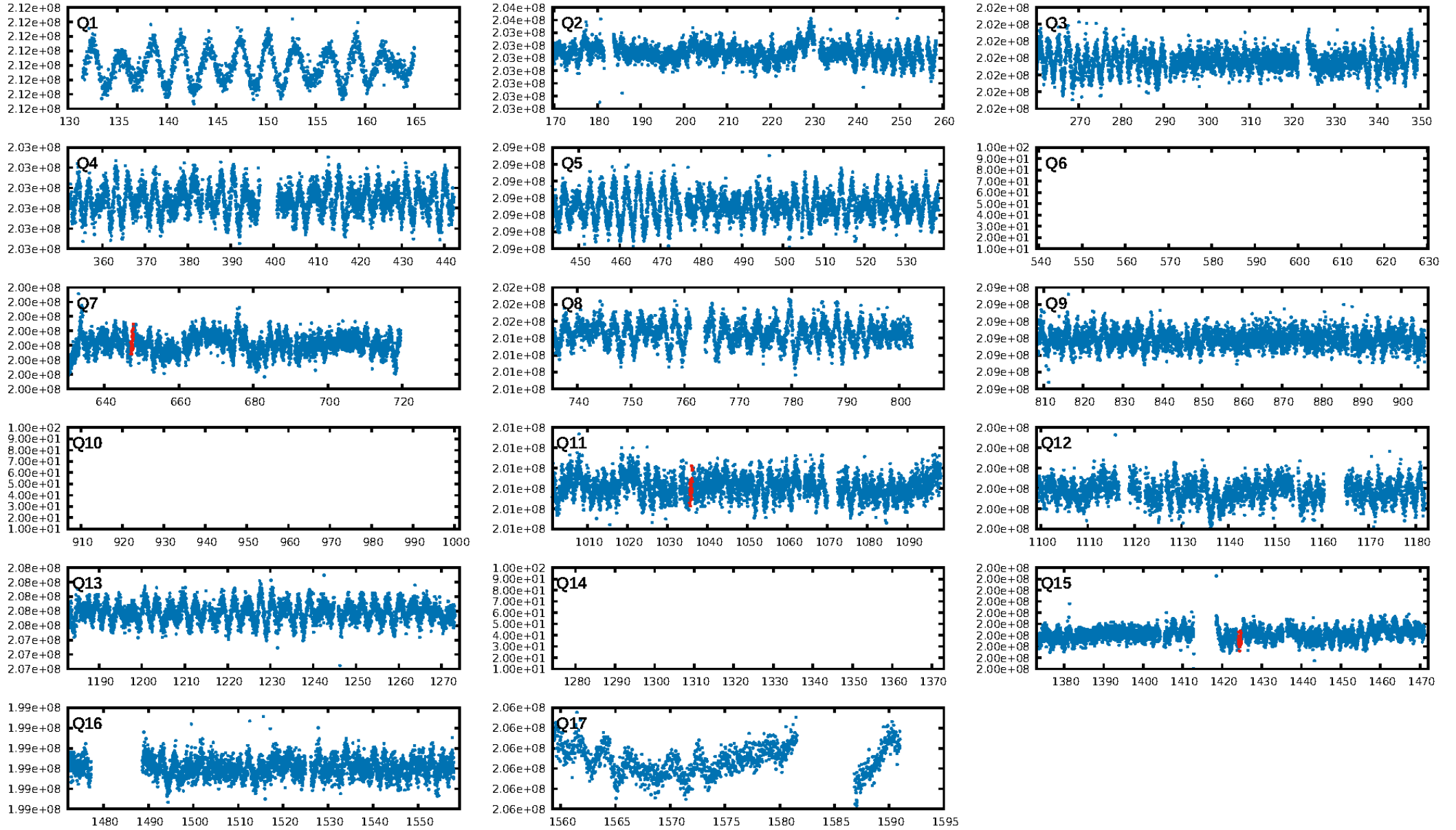
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [503.77 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 13.4%
Bootstrap-pfa: 9.81e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -2.035
Centroid-sig: 1.2%
Centroid-so: 3.810 arcsec [1.05 σ]
OotOffset-rm: 4.651 arcsec [5.69 σ]
KicOffset-rm: 4.924 arcsec [6.02 σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-st: 0/1/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [3/3]

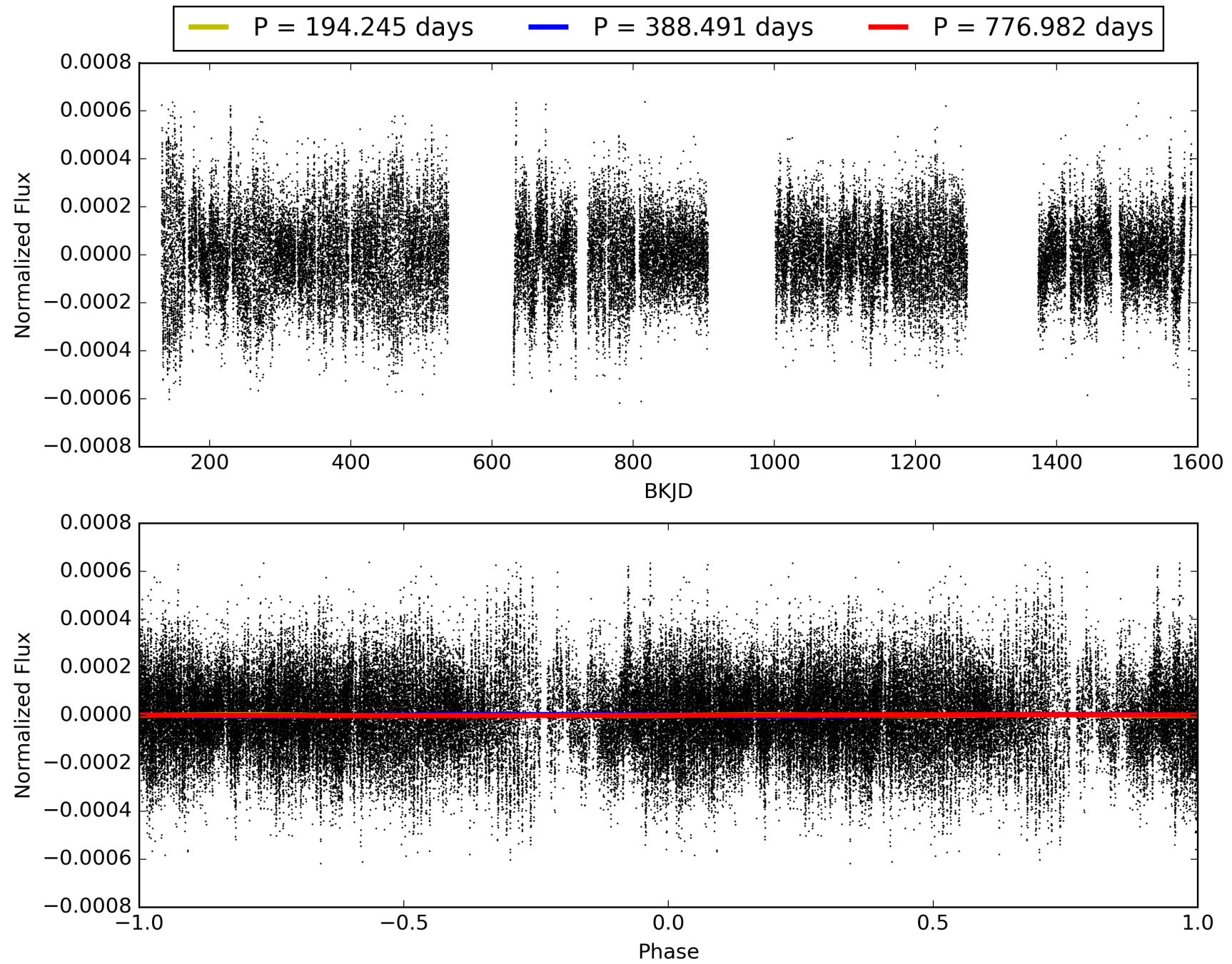
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:19:13 Z

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

TCE 005024410-02, PDC Light Curves

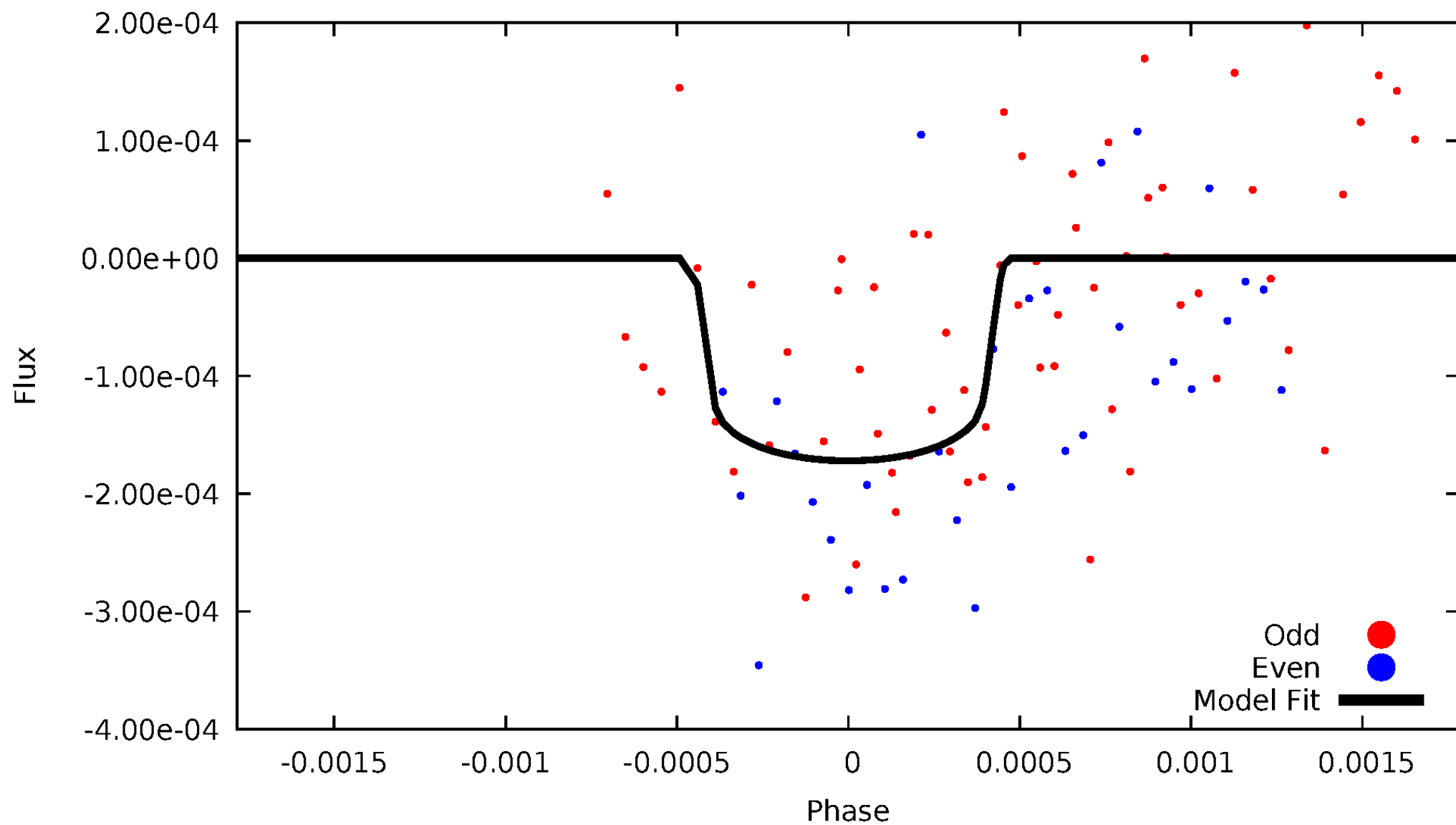


TCE 005024410-02



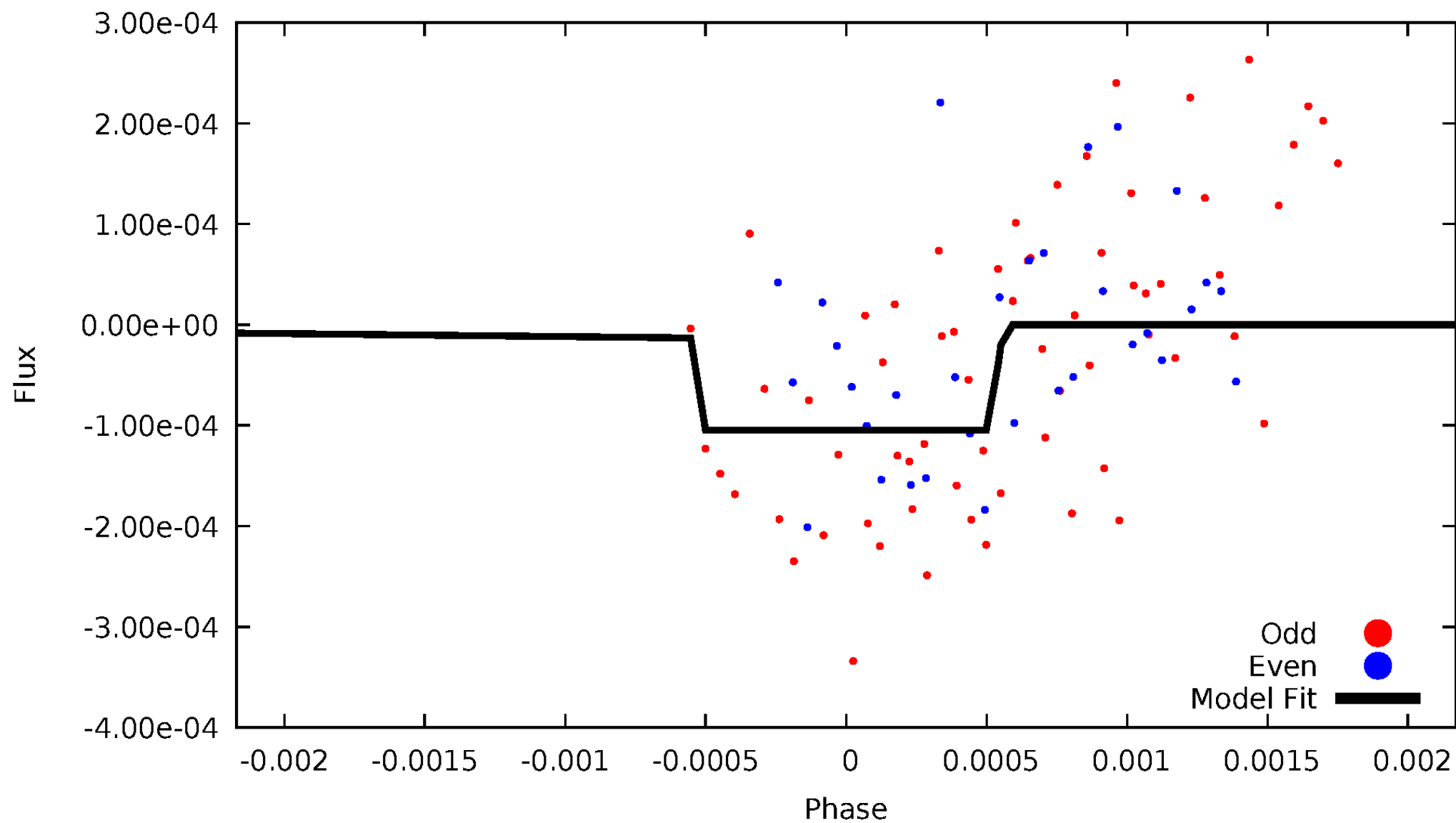
DV Odd/Even

TCE 005024410-02



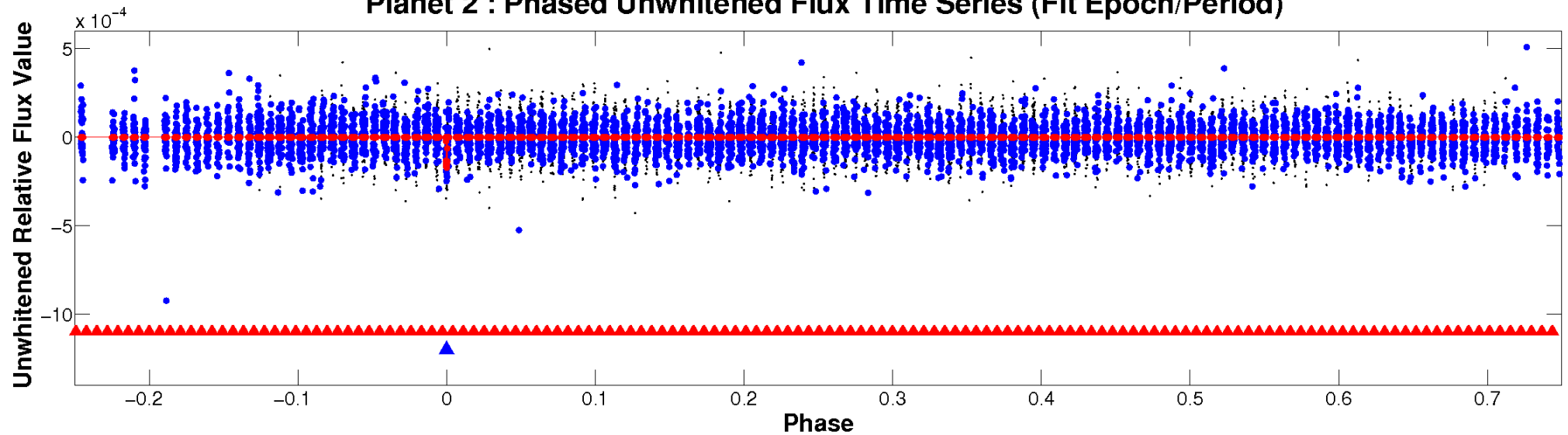
ALT Odd/Even

TCE 005024410-02

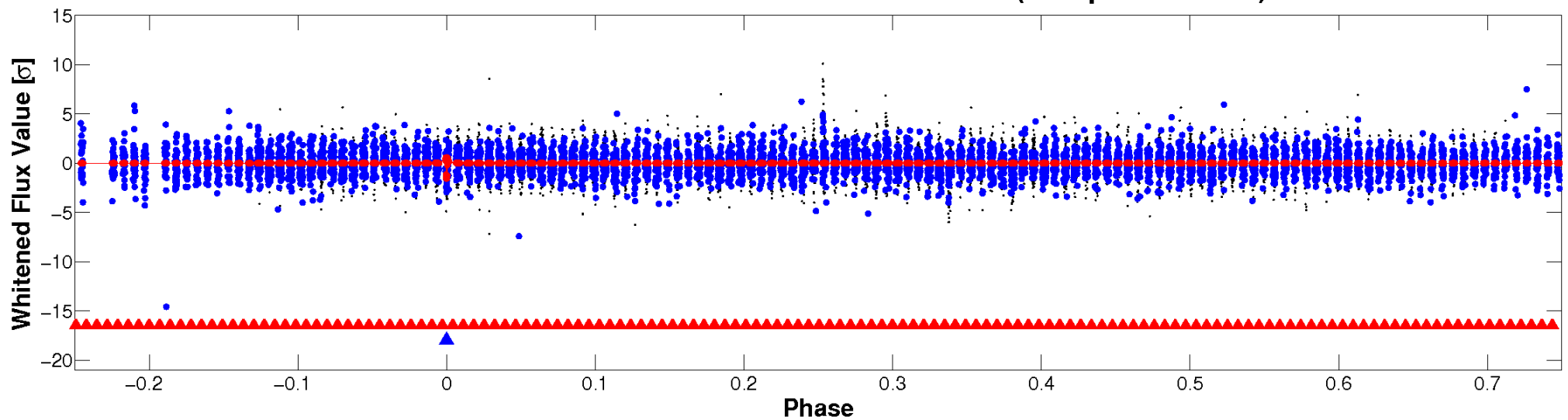


Non-Whitened Vs. Whitened Light Curve

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

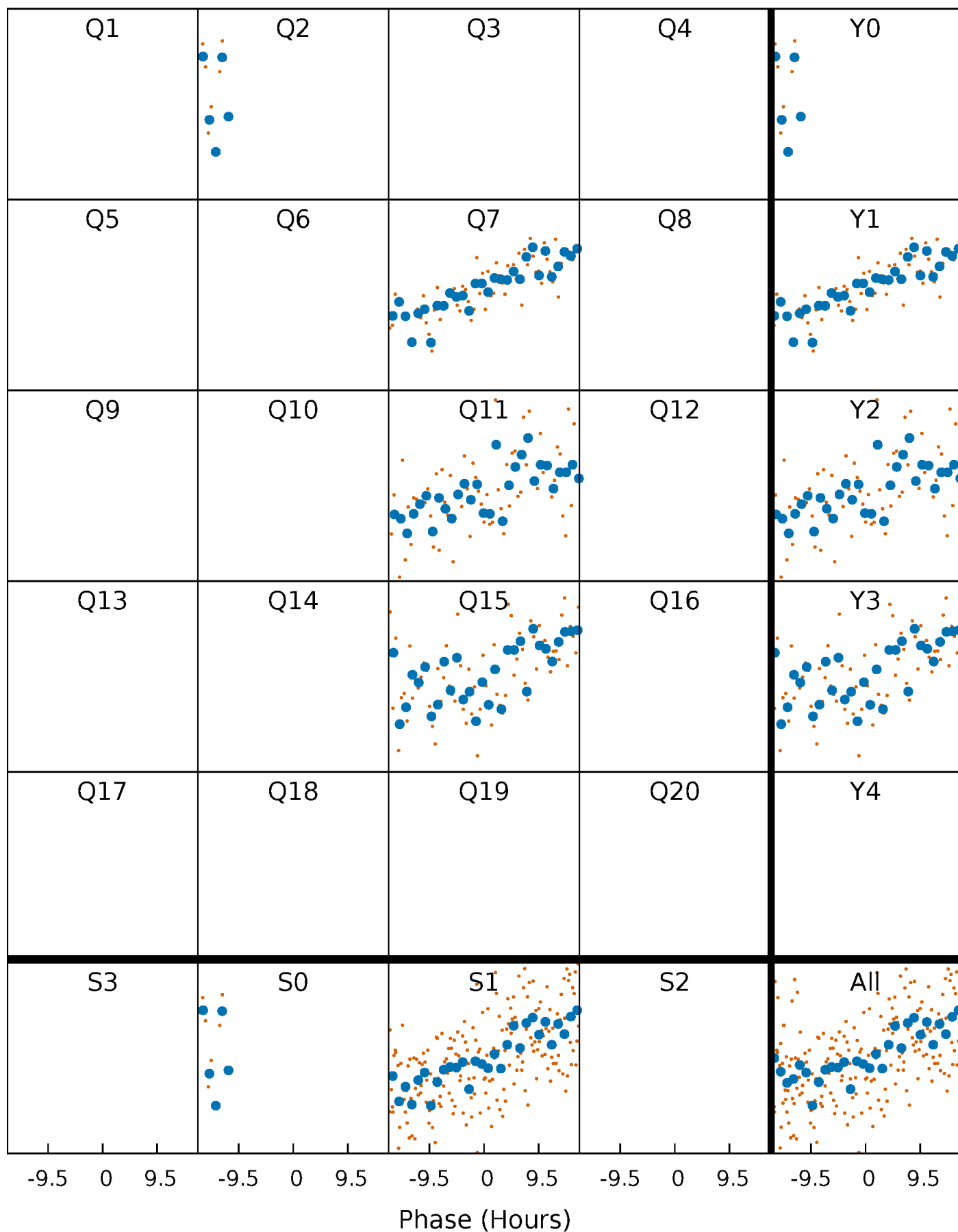


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



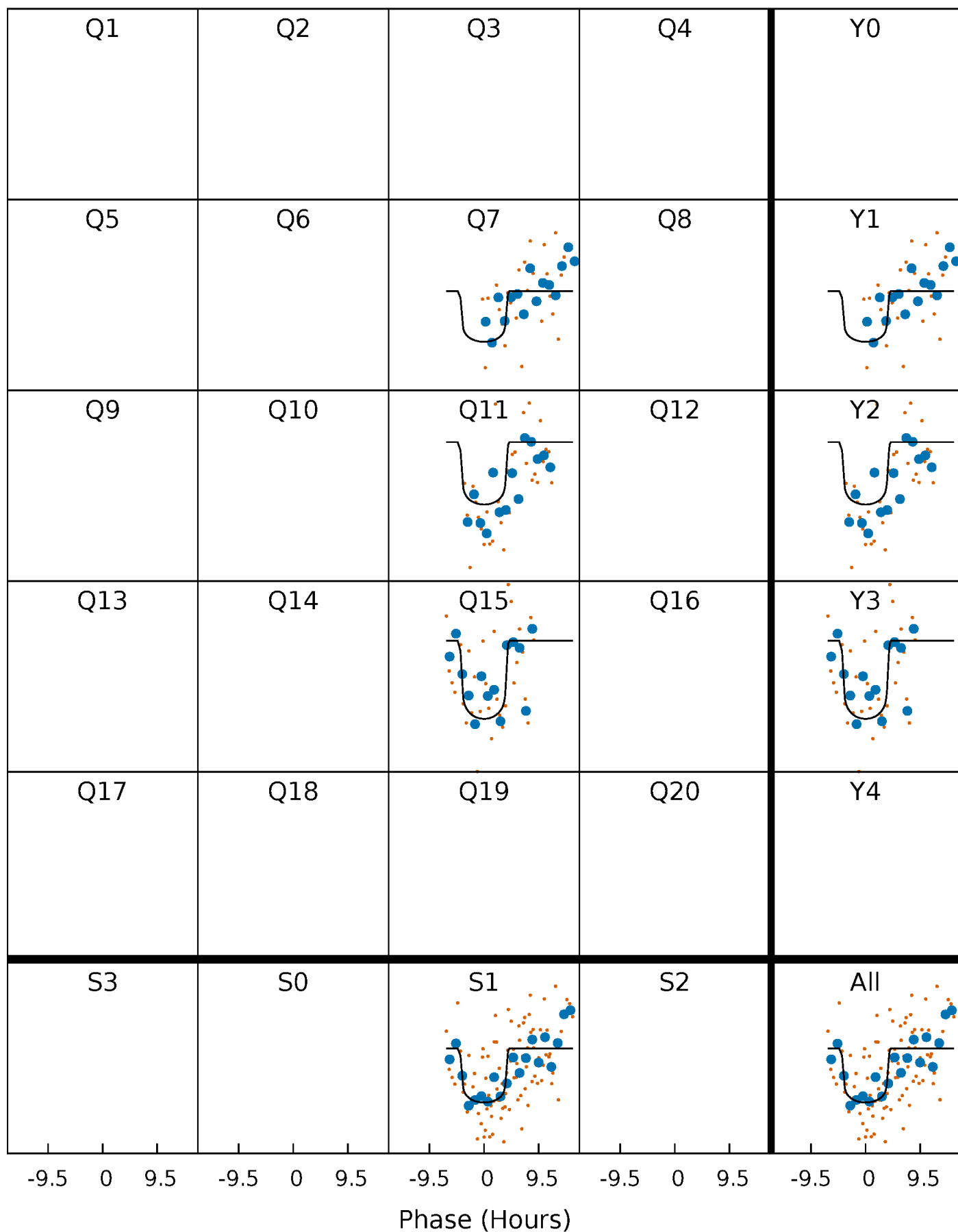
PDC Quarter-Phased Transit Curves

TCE 005024410-02 P=388.490946 Days $T_0=258.941632$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 005024410-02 $P=388.490946$ Days $T_0=258.941632$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

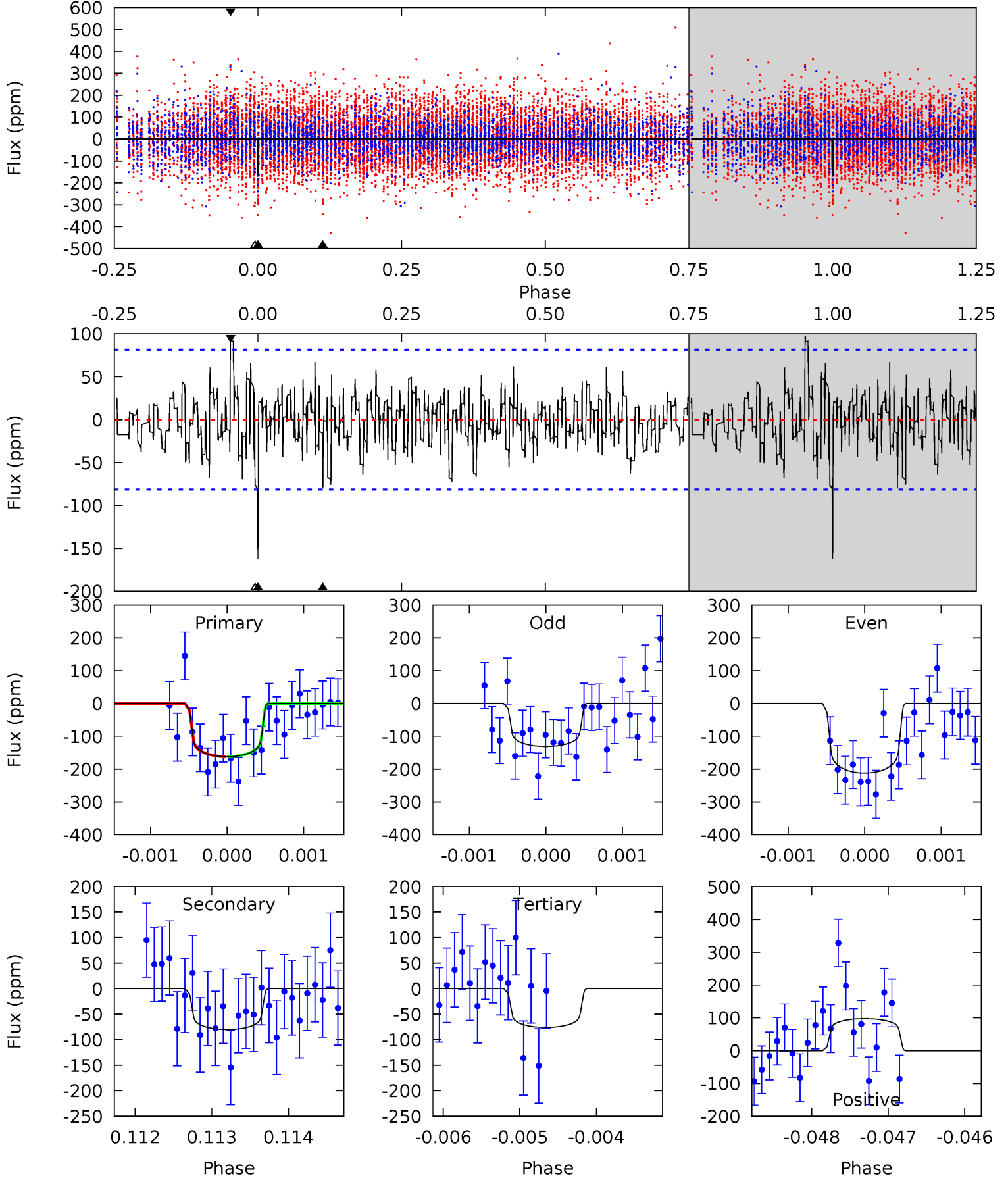
TCE 005024410-02 P=388.480856 Days $T_0=258.913960$ (BKJD)



DV Model-Shift Uniqueness Test

005024410-02, P = 388.490946 Days, E = 258.941632 Days

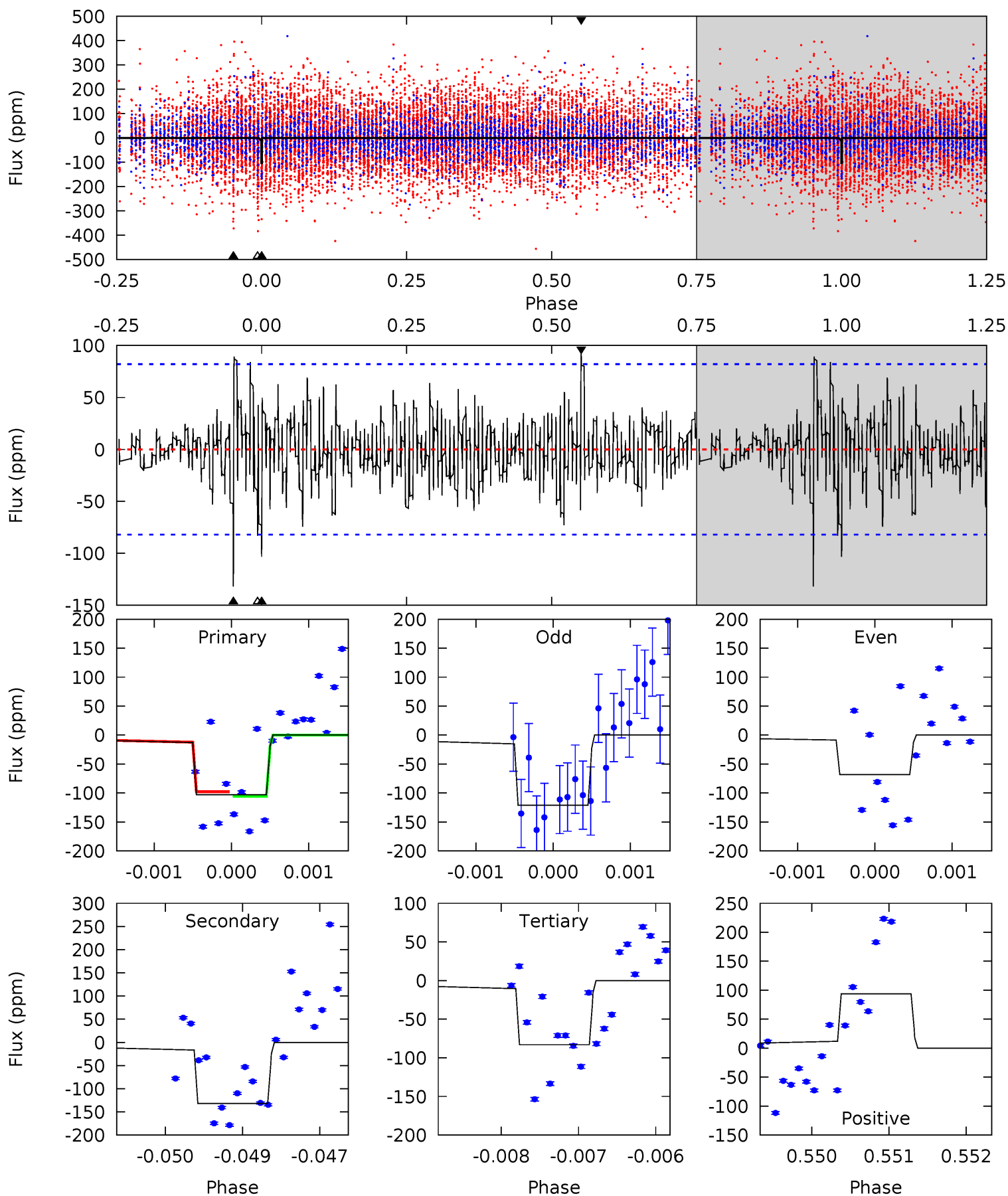
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	5.37	5.10	6.55	5.47	3.32	1.58	5.80	4.34	0.28	-1.18	2.65	1.12	0.38	0.00



Alt Model-Shift Uniqueness Test

005024410-02, P = 388.480856 Days, E = 258.913960 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.83	8.74	5.50	6.23	5.43	3.26	1.57	1.33	0.60	3.23	2.51	1.68	1.35	0.42	0.24



Stellar Parameters For KIC 005024410

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7365^{+228}_{-330}	$3.989^{+0.216}_{-0.162}$	$0.020^{+0.200}_{-0.350}$	$2.198^{+0.528}_{-0.587}$	$1.716^{+0.211}_{-0.290}$	$0.228^{+0.294}_{-0.097}$
	+3%/-4%	+5%/-4%	+1000%/-1750%	+24%/-27%	+12%/-17%	+129%/-42%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005024410-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-80 ± 15	$3.20^{+1.32}_{-1.16}$	596^{+47}_{-45}	5822^{+1618}_{-770}	6392^{+10365}_{-3117}
Alt.	-132 ± 15	$2.42^{+1.33}_{-1.03}$	601^{+44}_{-50}	7711^{+3754}_{-1435}	18900^{+38251}_{-10799}

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 $A_{obs} \gg 1.0$

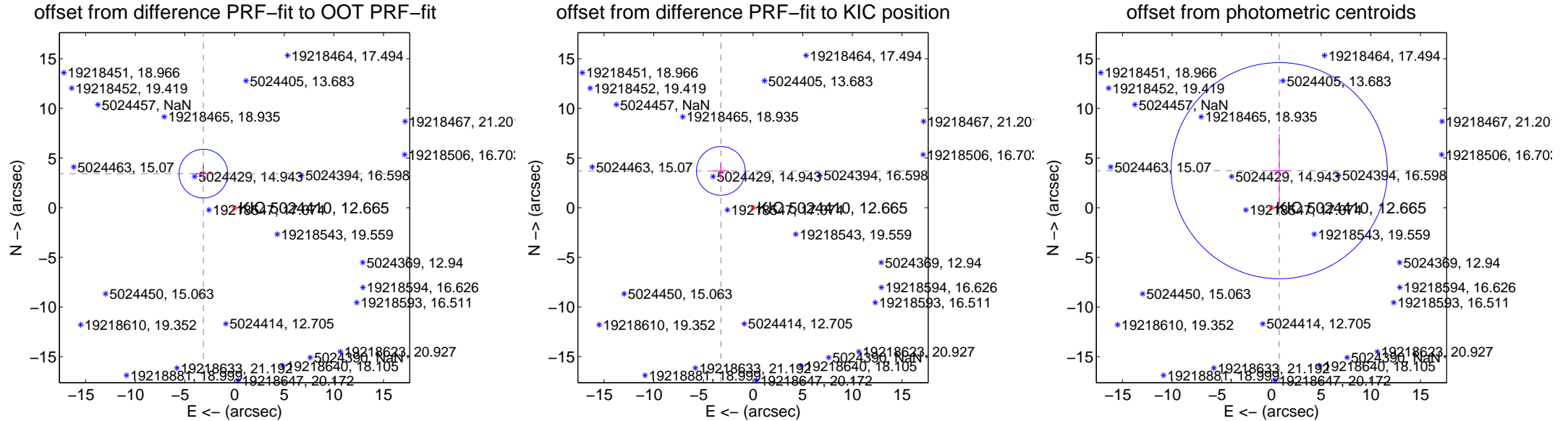
DV Centroid Data

Supplemental centroid analysis for 005024410-02. Kepler magnitude: 12.66. Transit SNR 9.47

There are 0 quarters with good PRF difference image offsets

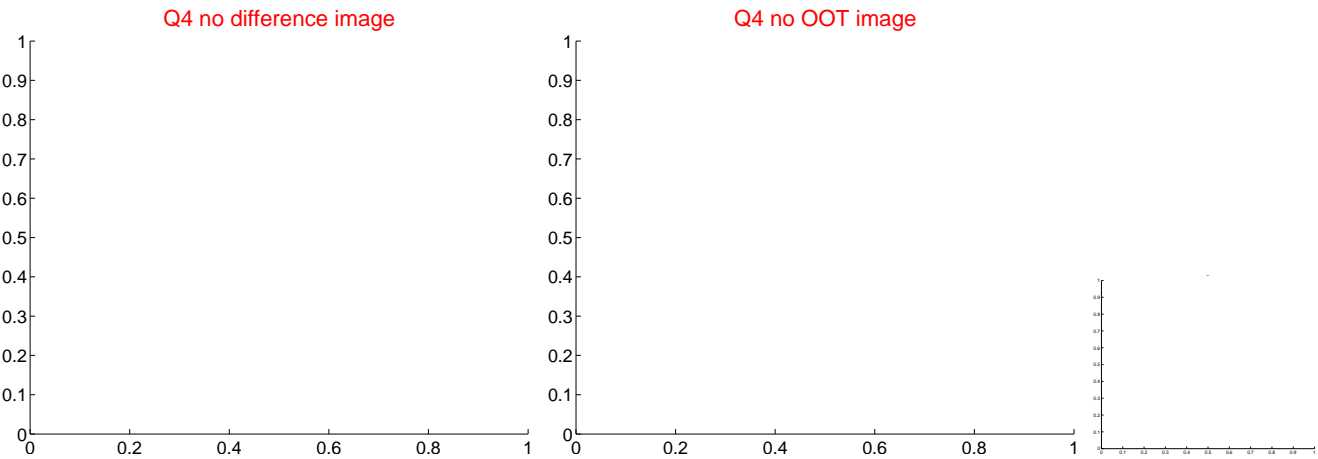
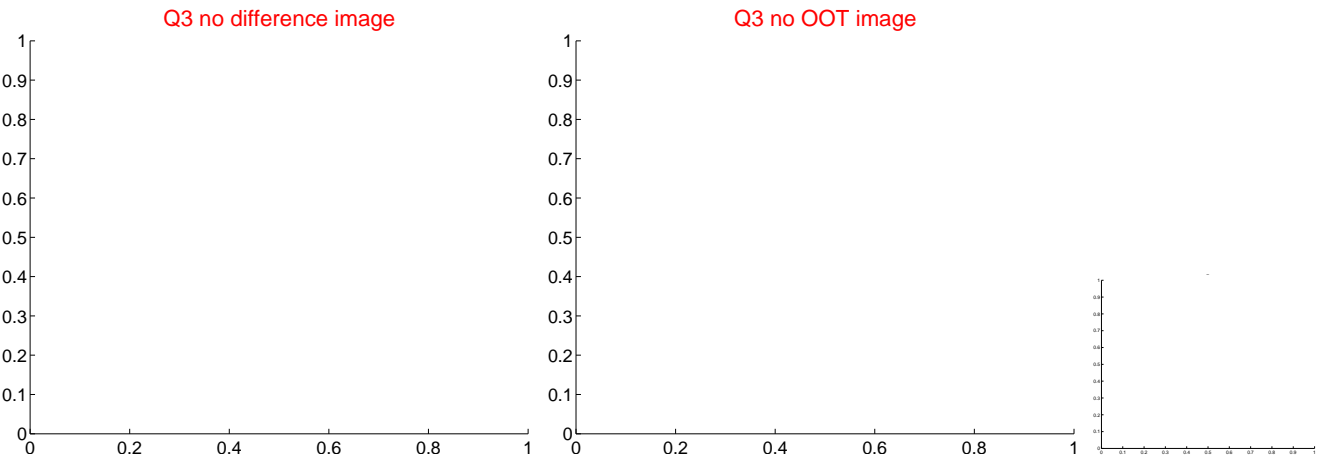
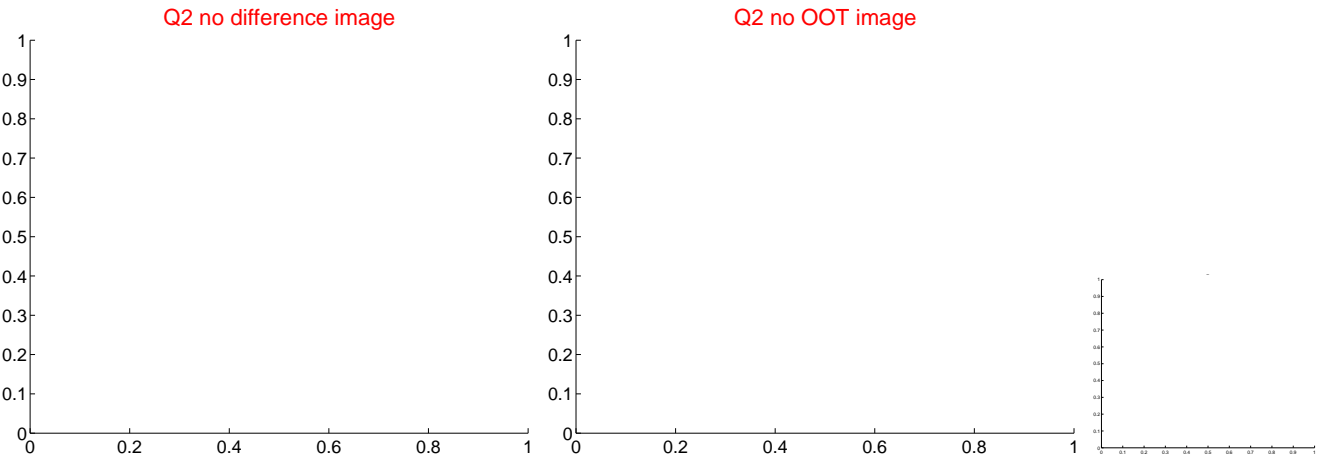
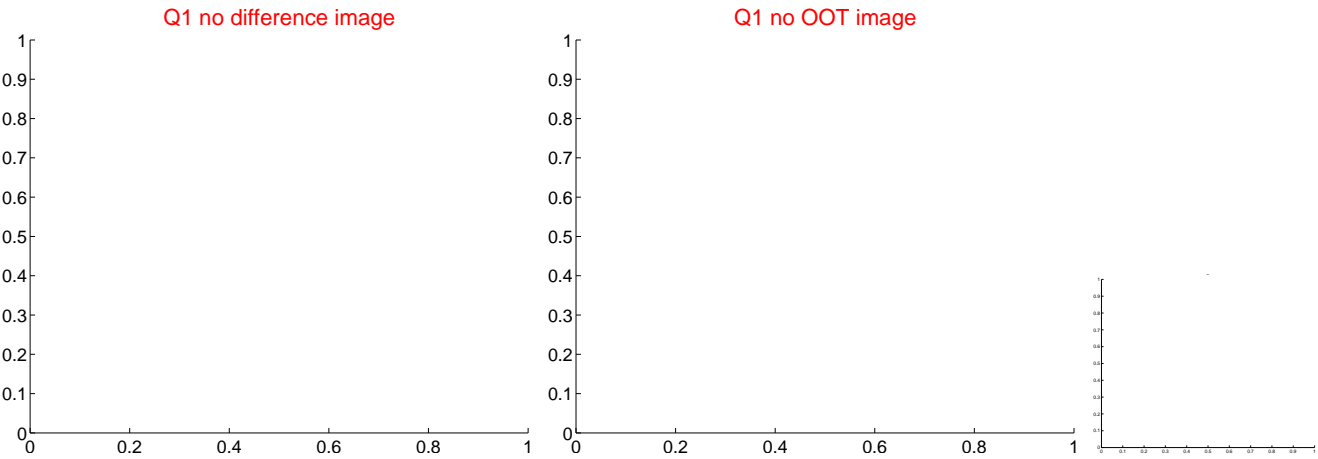
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.651 \pm 0.818	5.69	3.141 \pm 0.799	3.429 \pm 0.833
PRF-fit source offset from KIC position	4.924 \pm 0.818	6.02	3.245 \pm 0.799	3.704 \pm 0.833
photometric centroid source offset	3.81 \pm 3.63	1.05	-0.78 \pm 1.02	3.73 \pm 3.70

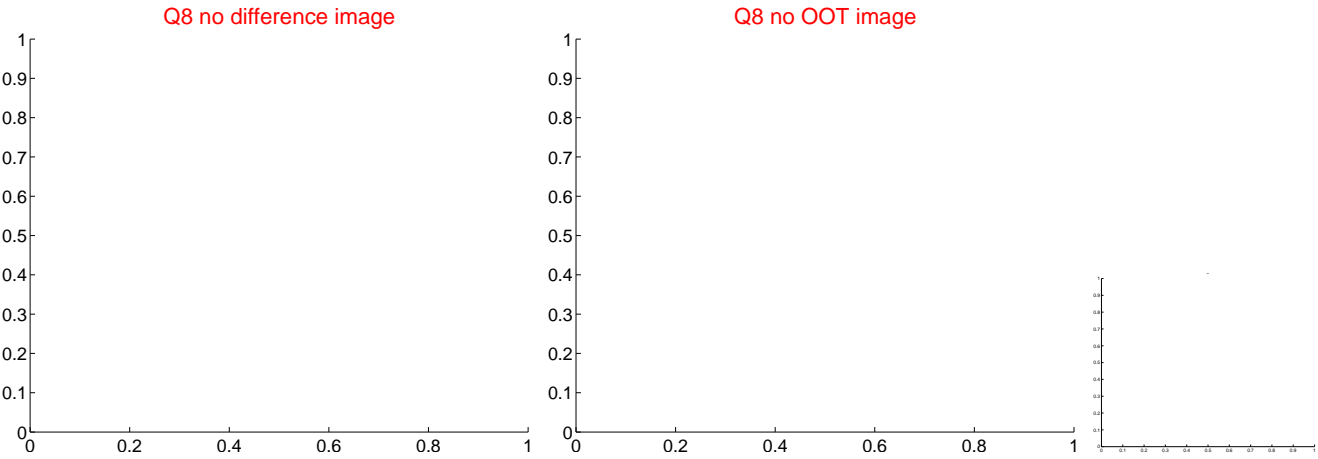
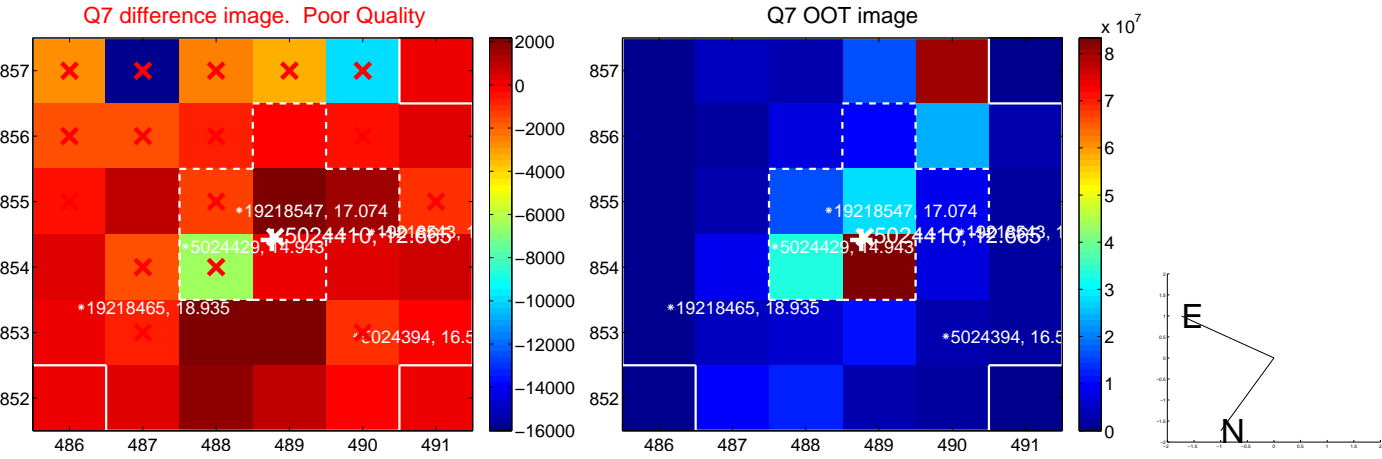


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

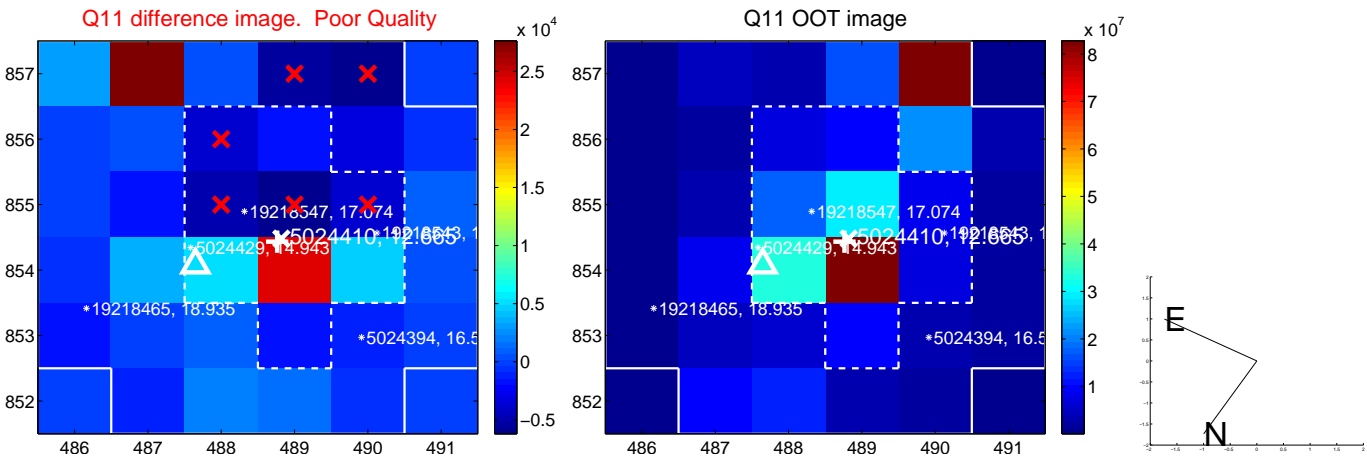
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Q13 no difference image



Q13 no OOT image



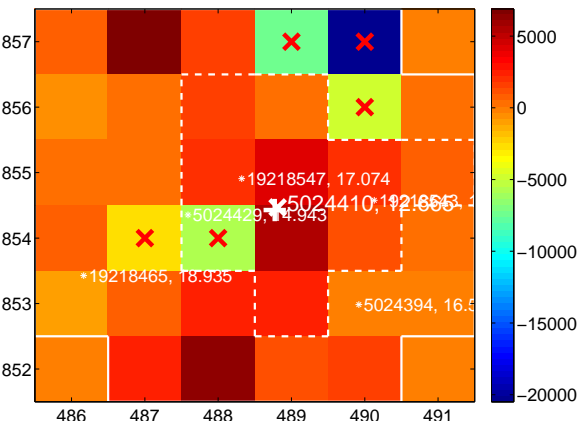
Q14 no difference image



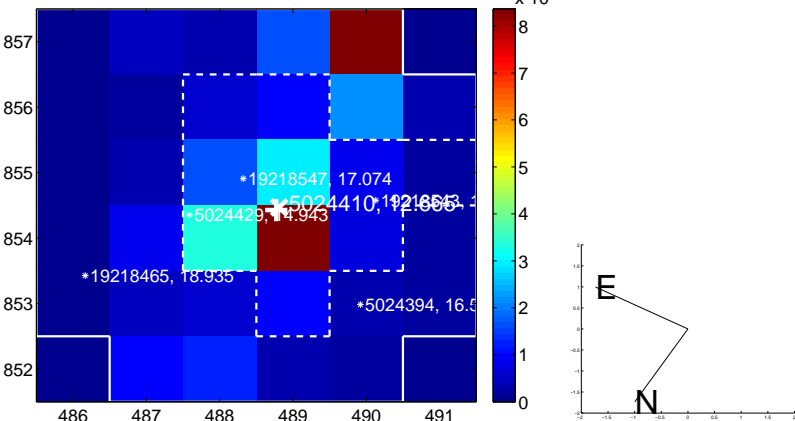
Q14 no OOT image



Q15 difference image. Poor Quality



Q15 OOT image



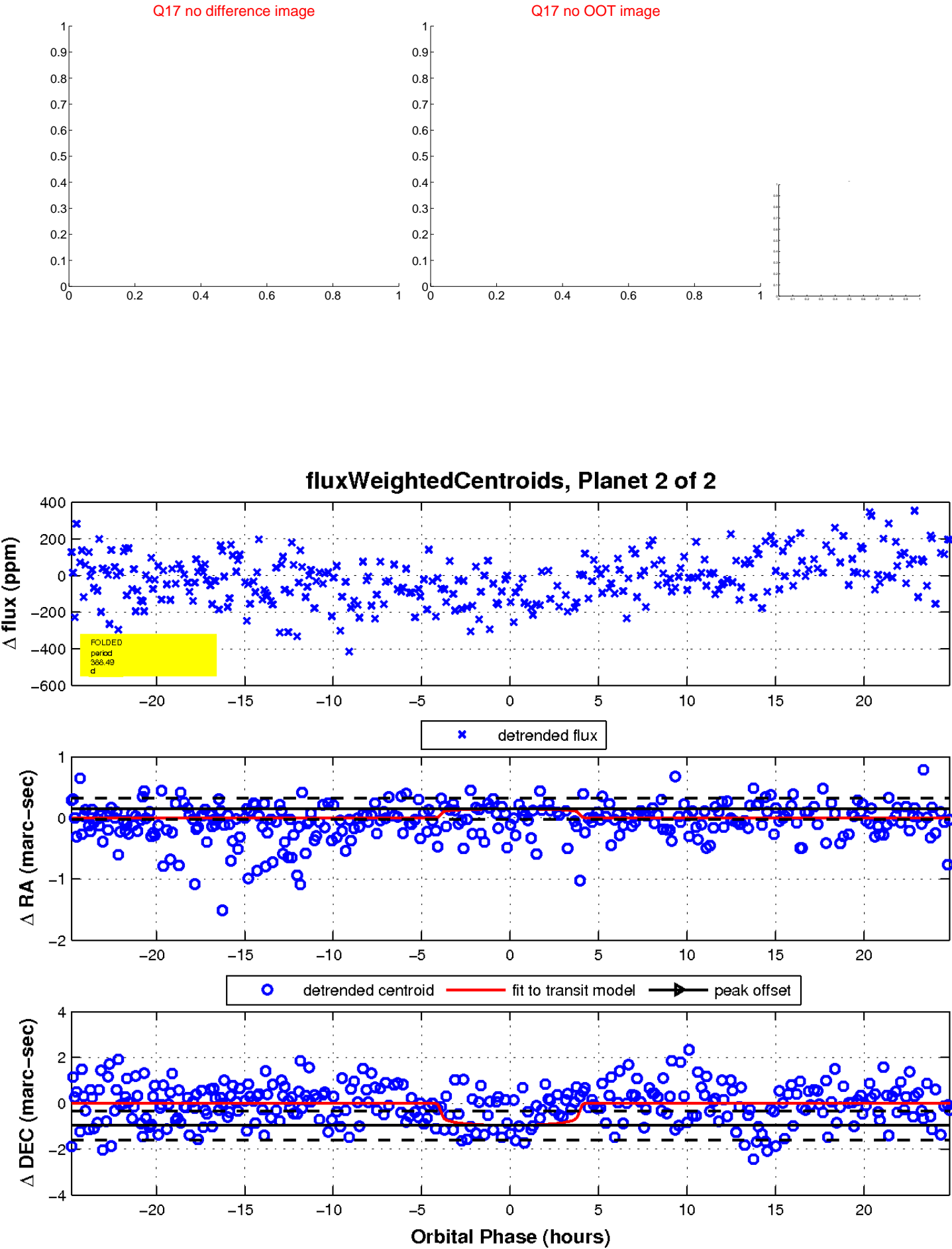
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

