

KIC 006665223

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})
006665223-01	OBS	1232.01	119.408195	232.649100	18533.1	9.356	475.8	460.4	0.87	5316	16.24	2.73
006665223-02	OBS	1232.02	419.895281	525.001431	635.8	4.786	8.6	8.4	0.87	5316	2.39	0.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006665223-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED
006665223-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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

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

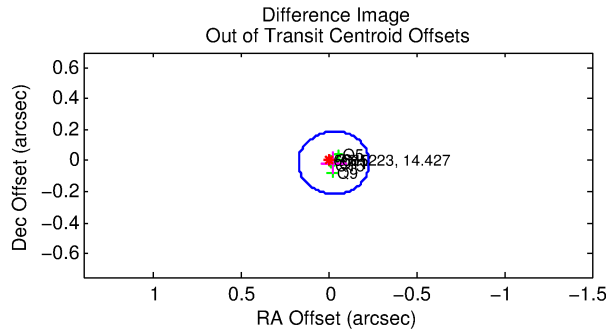
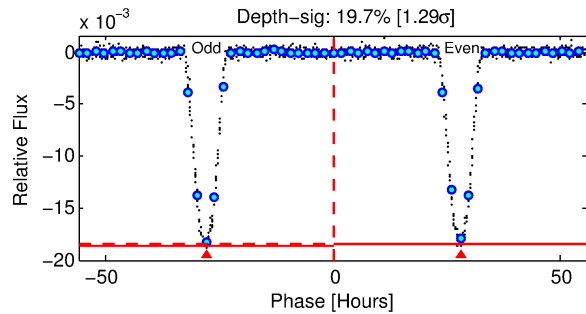
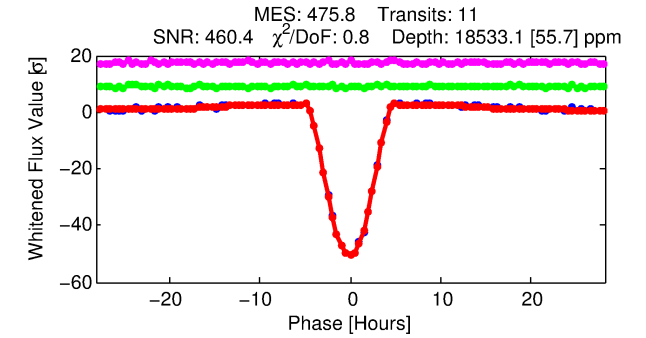
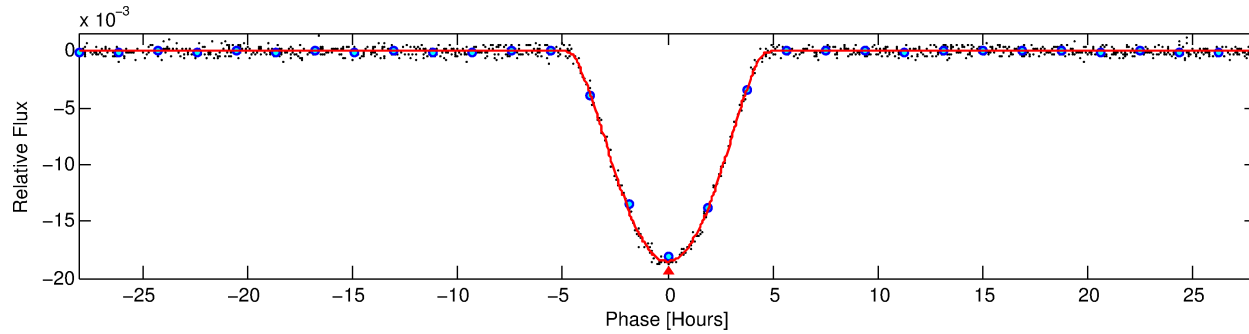
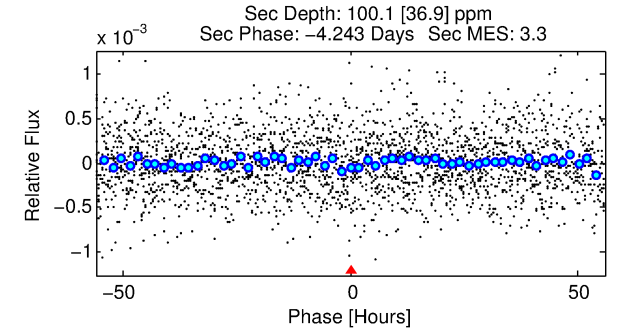
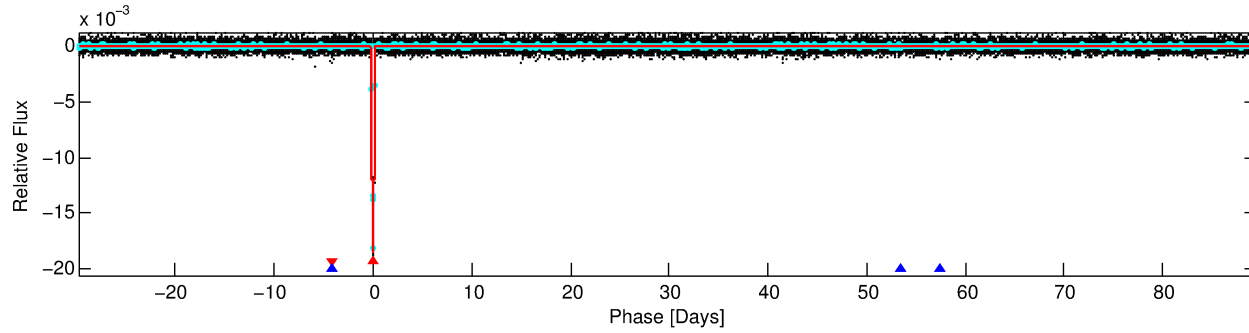
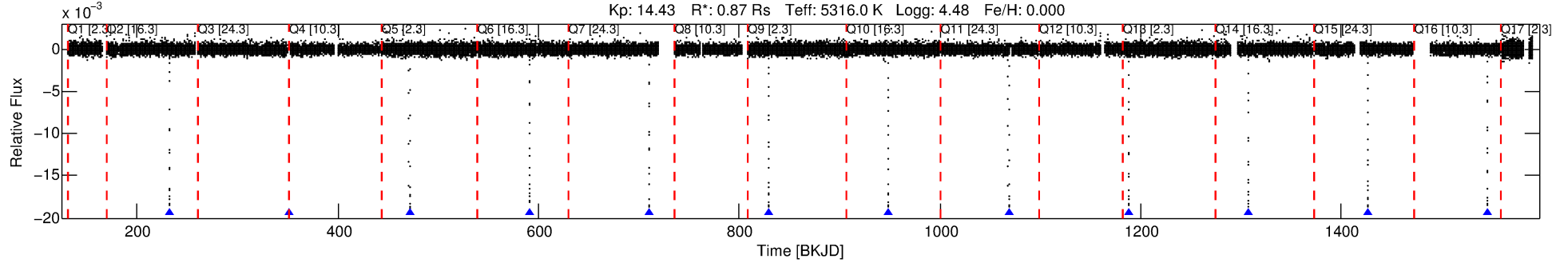
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006665223-01

No Significant Match Found

DV One-Page Summary

KIC: 6665223 Candidate: 1 of 2 Period: 119.408 d
KOI: K01232.01 Corr: 0.999



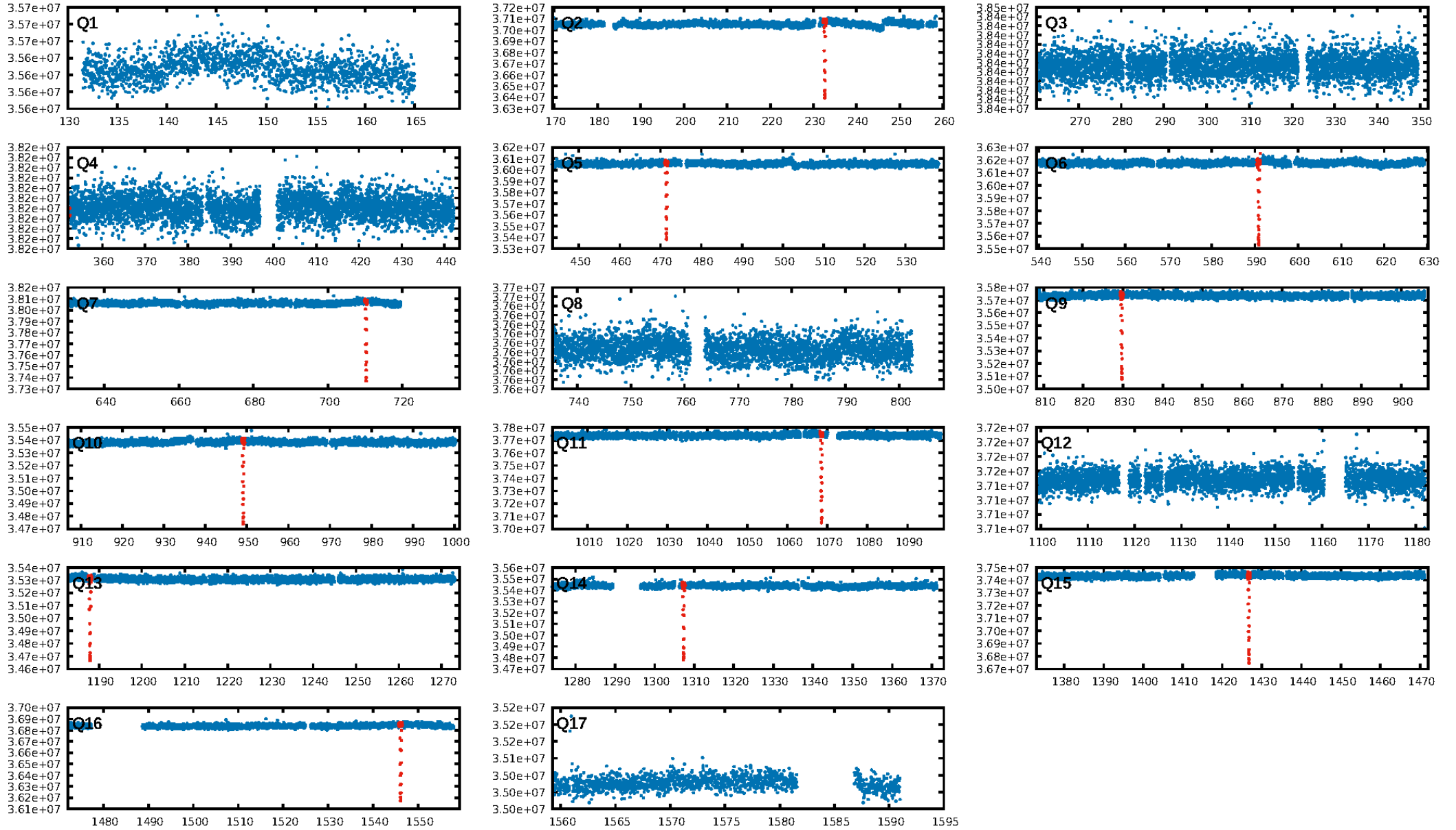
DV Fit Results:

Period = 119.40820 [0.00007] d
Epoch = 232.6491 [0.0005] BKJD
Rp/R* = 0.1707 [0.0061]
a/R* = 71.09 [0.67]
b = 0.92 [0.01]
Seff = 2.73 [0.42]
Teq = 328 [12] K
Rp = 16.24 [1.43] Re
a = 0.4464 [0.0356] AU
Ag = 41.58 [16.51] [2.46 σ]
Teffp = 1287 [123] K [7.73 σ]

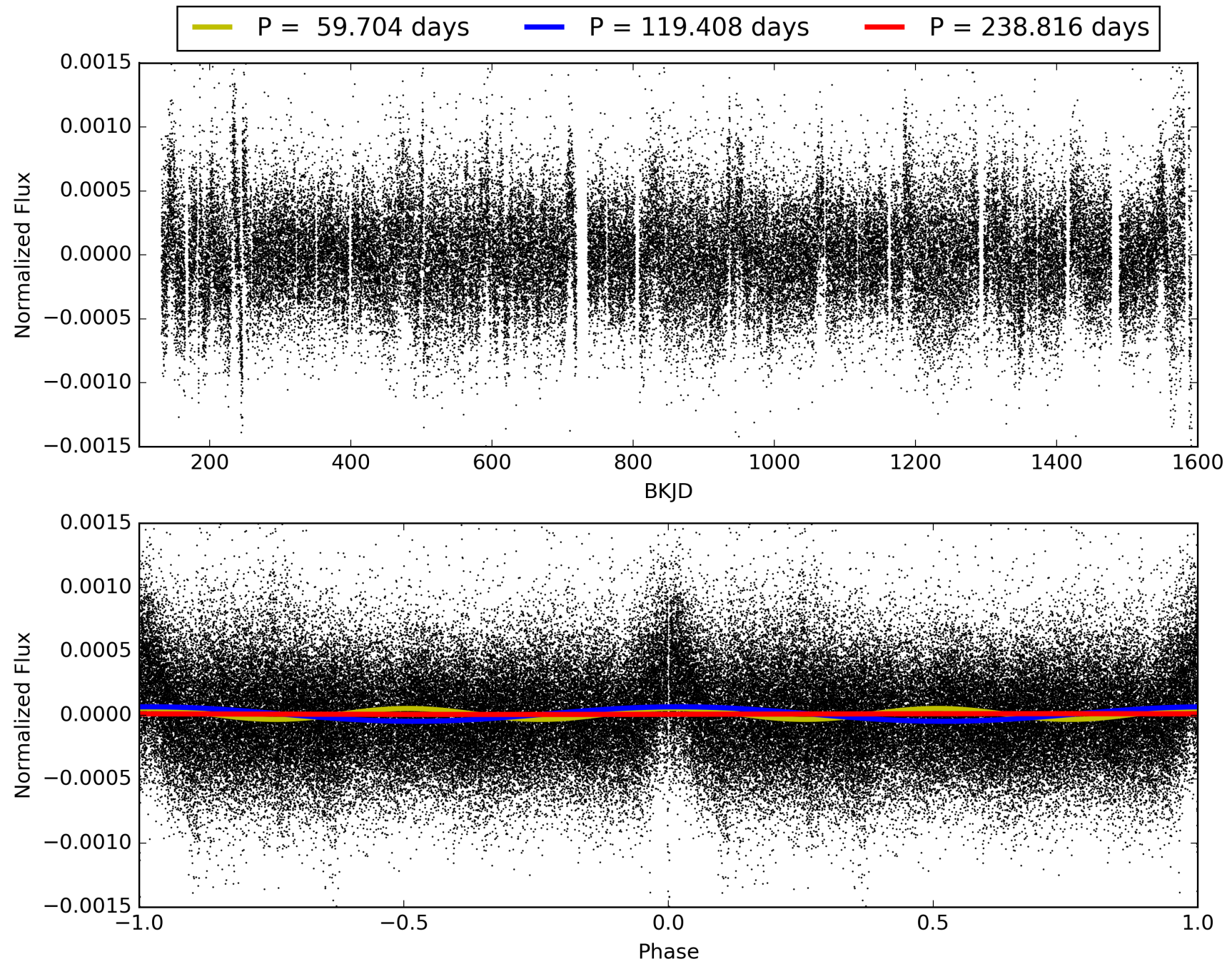
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [686.22 σ]
ModelChiSquare2-sig: 3.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [11/11]
GhostDiagnostic-chr: 4.362
Centroid-sig: 11.7%
Centroid-so: 0.775 arcsec [26.37 σ]
OotOffset-rm: 0.031 arcsec [0.46 σ]
KicOffset-rm: 0.090 arcsec [1.23 σ]
OotOffset-st: 2/2/0/2 [6]
KicOffset-st: 2/2/0/2 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 1.00 [6/6]

TCE 006665223-01, PDC Light Curves

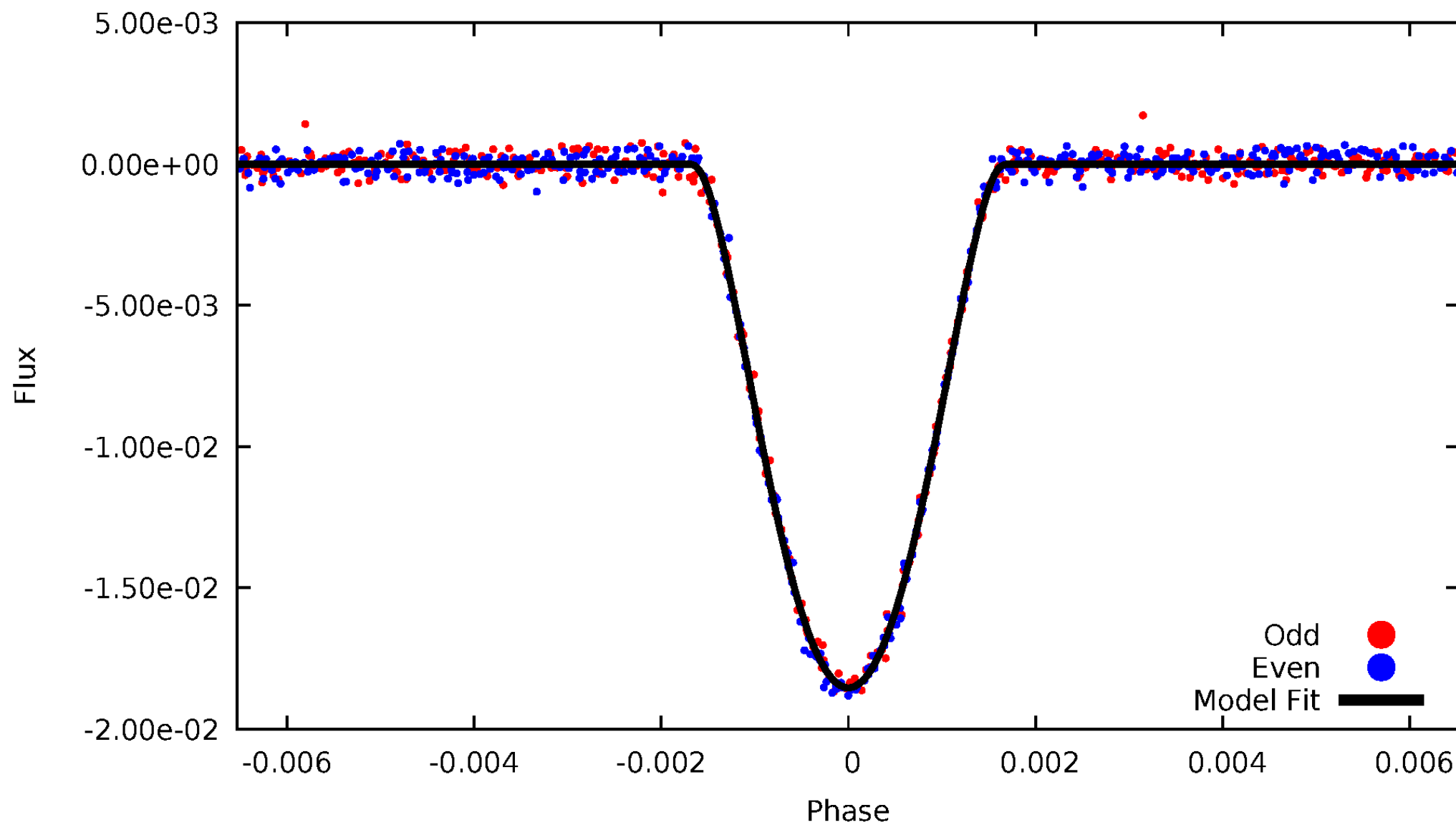


TCE 006665223-01



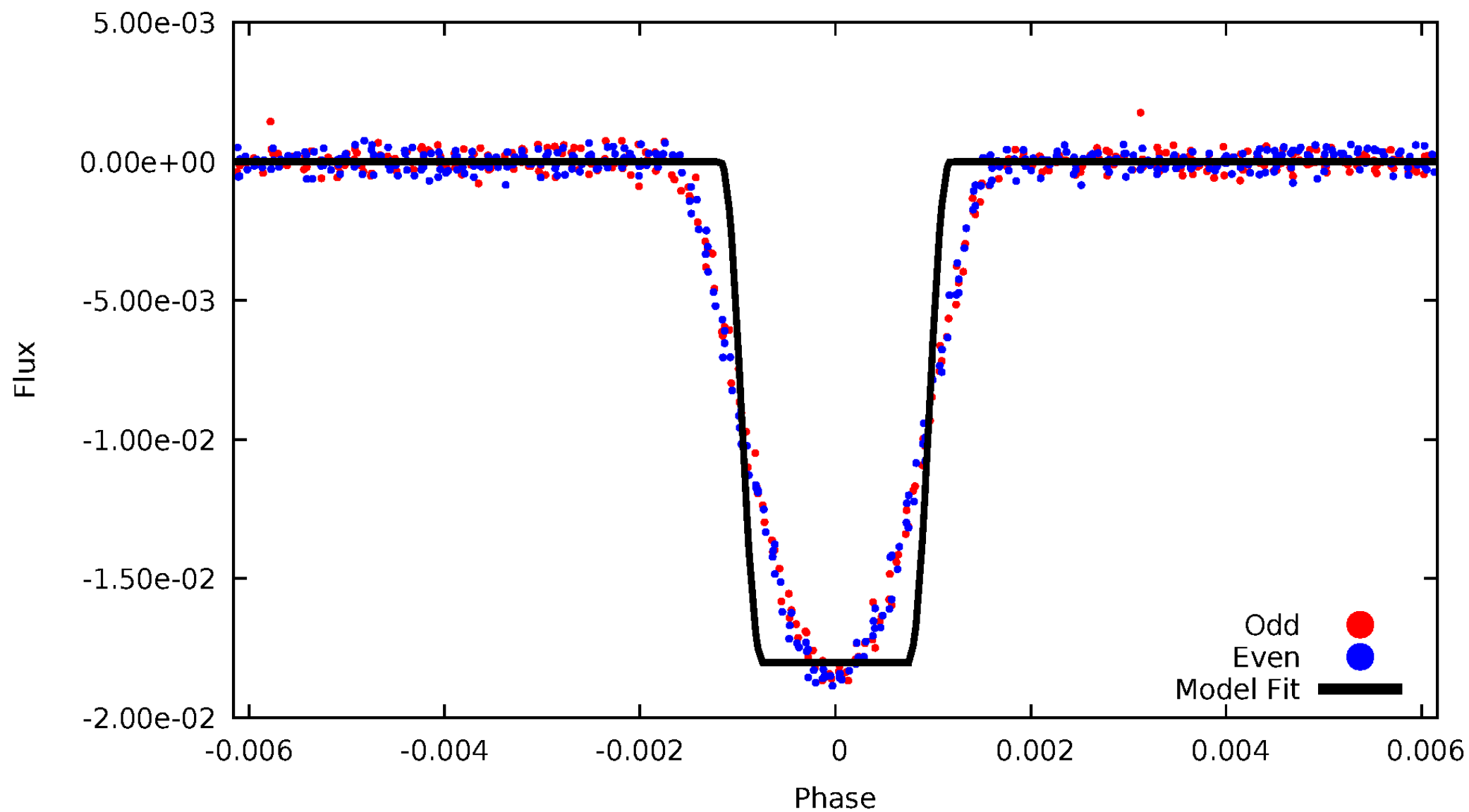
DV Odd/Even

TCE 006665223-01



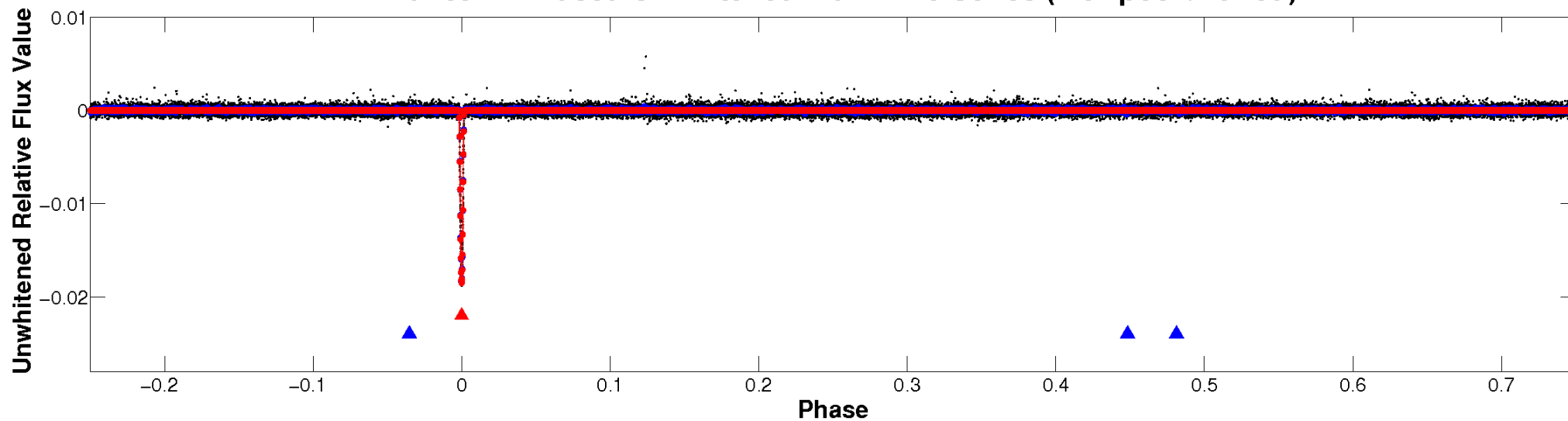
ALT Odd/Even

TCE 006665223-01

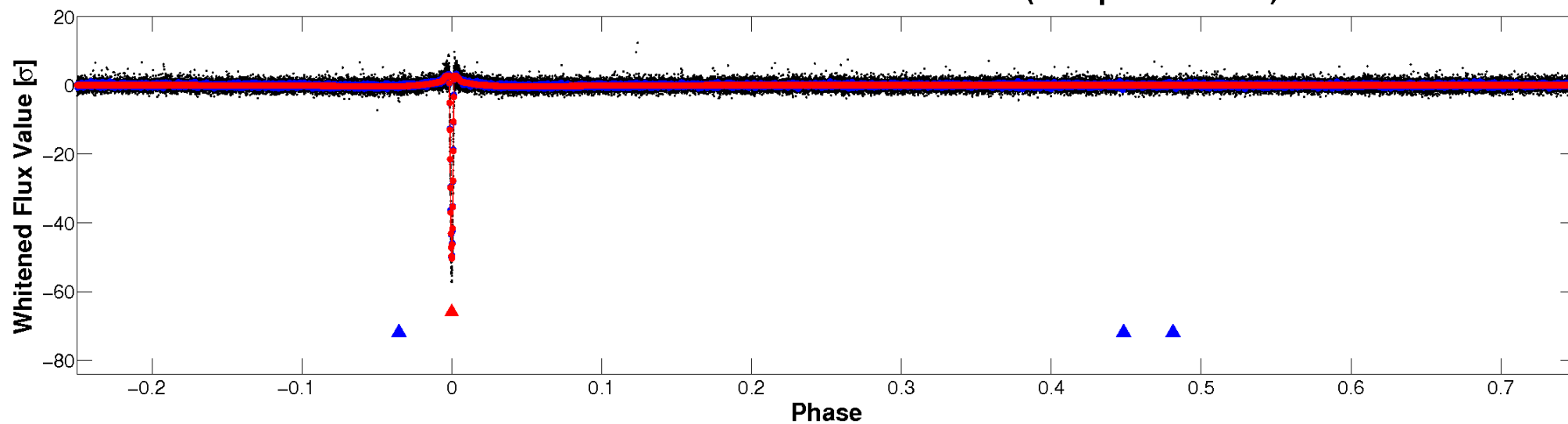


Non-Whitened Vs. Whitened Light Curve

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

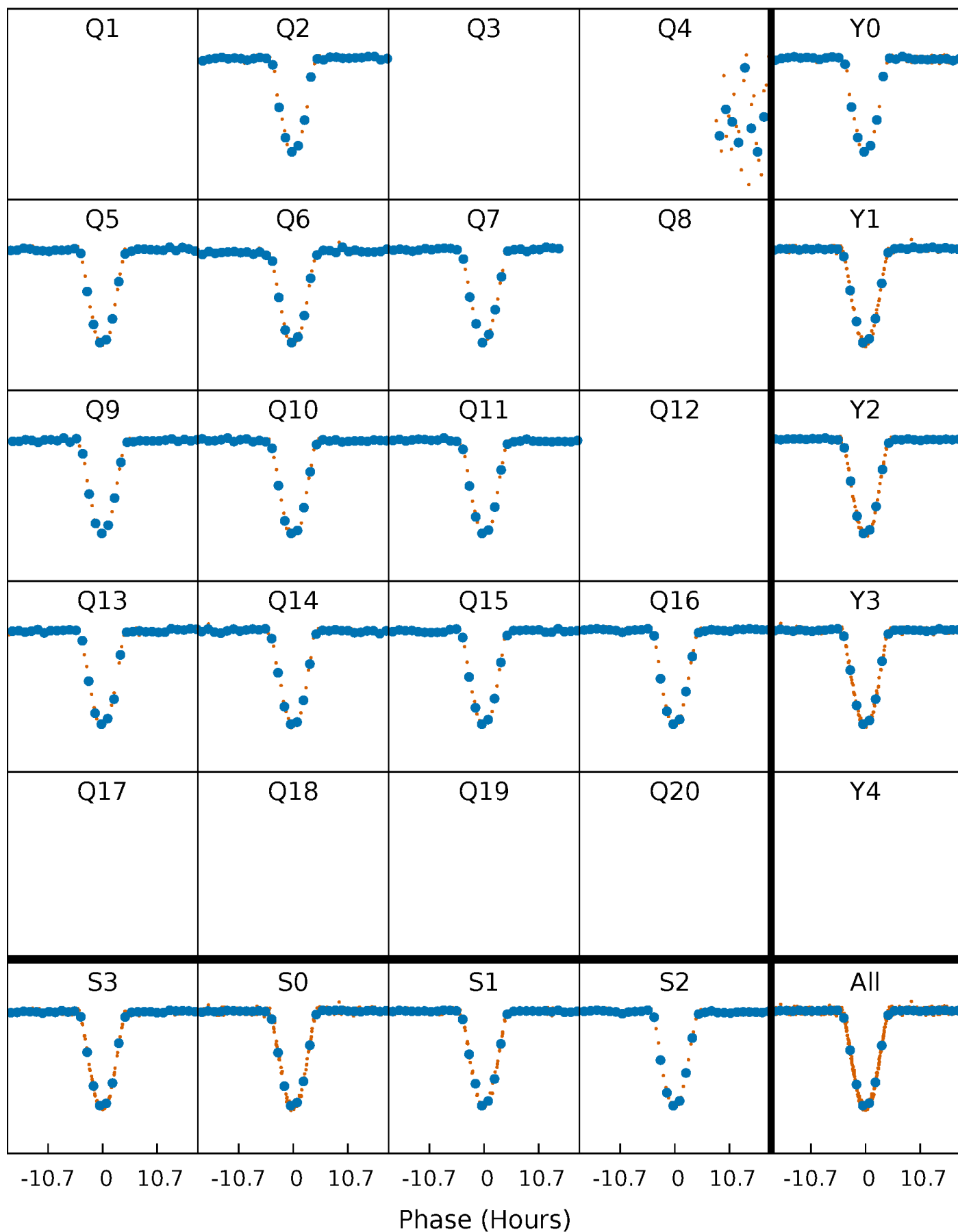


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



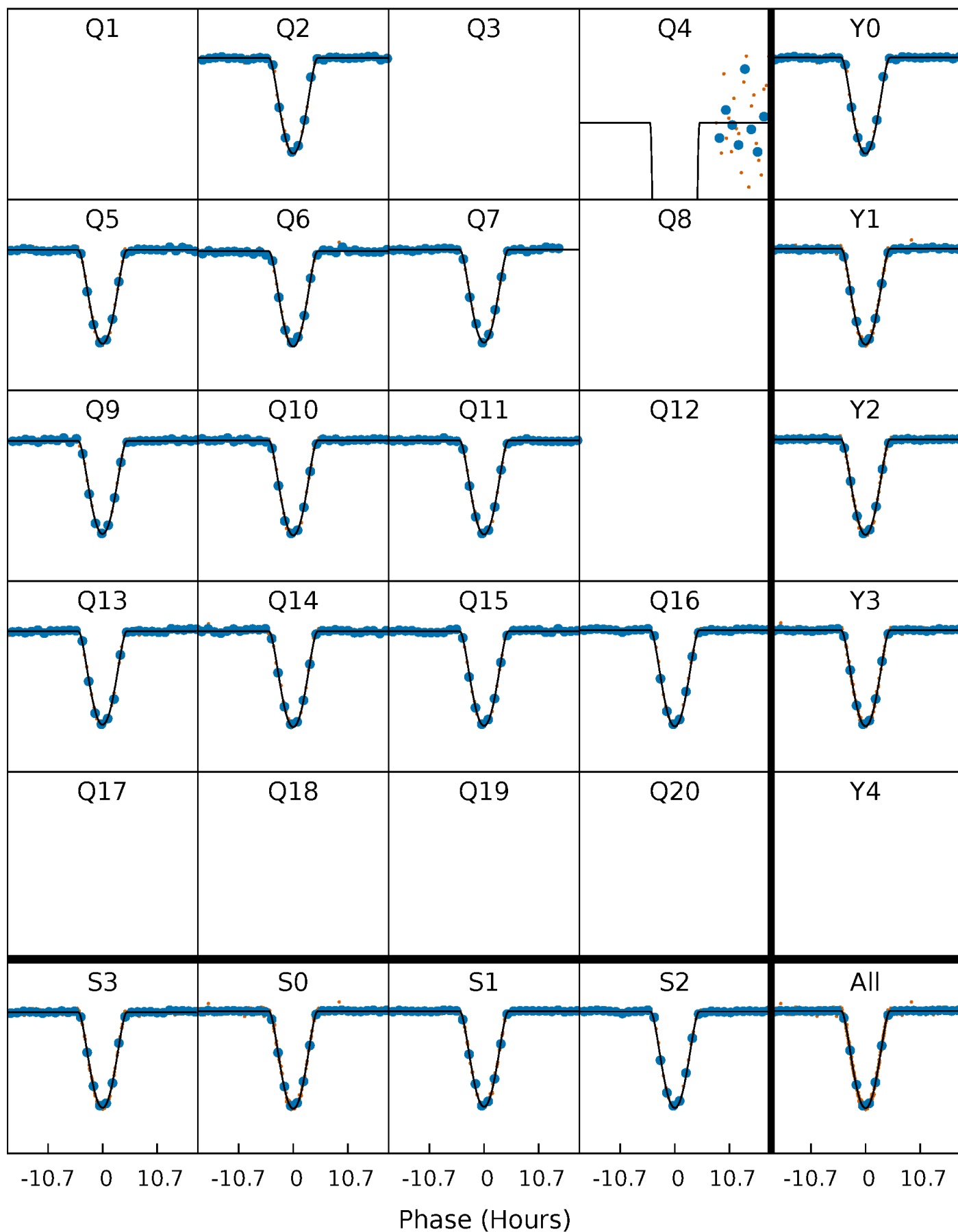
PDC Quarter-Phased Transit Curves

TCE 006665223-01 P=119.408195 Days $T_0=232.649100$ (BKJD)



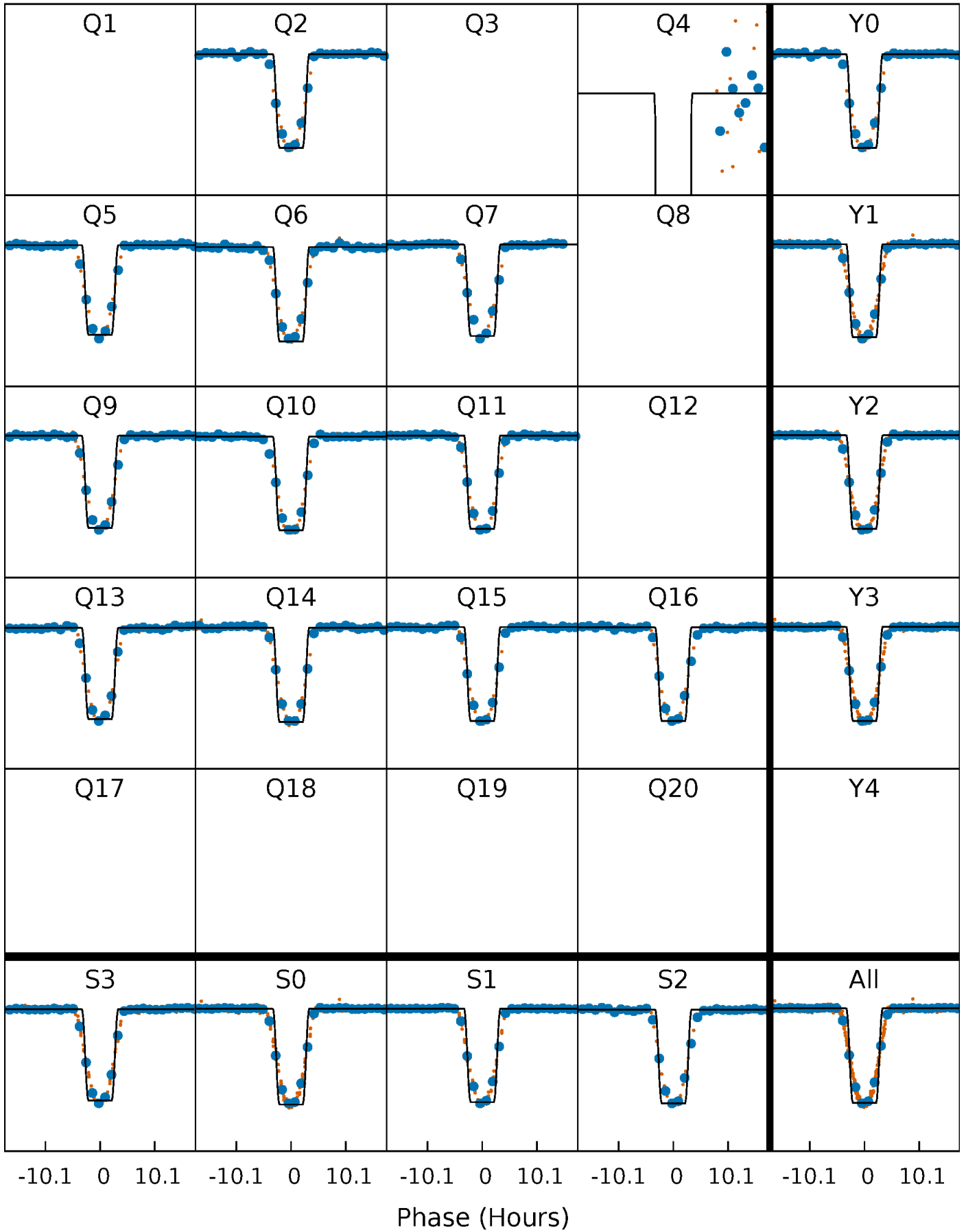
DV Quarter-Phased Transit Curves

TCE 006665223-01 P=119.408195 Days $T_0=232.649100$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

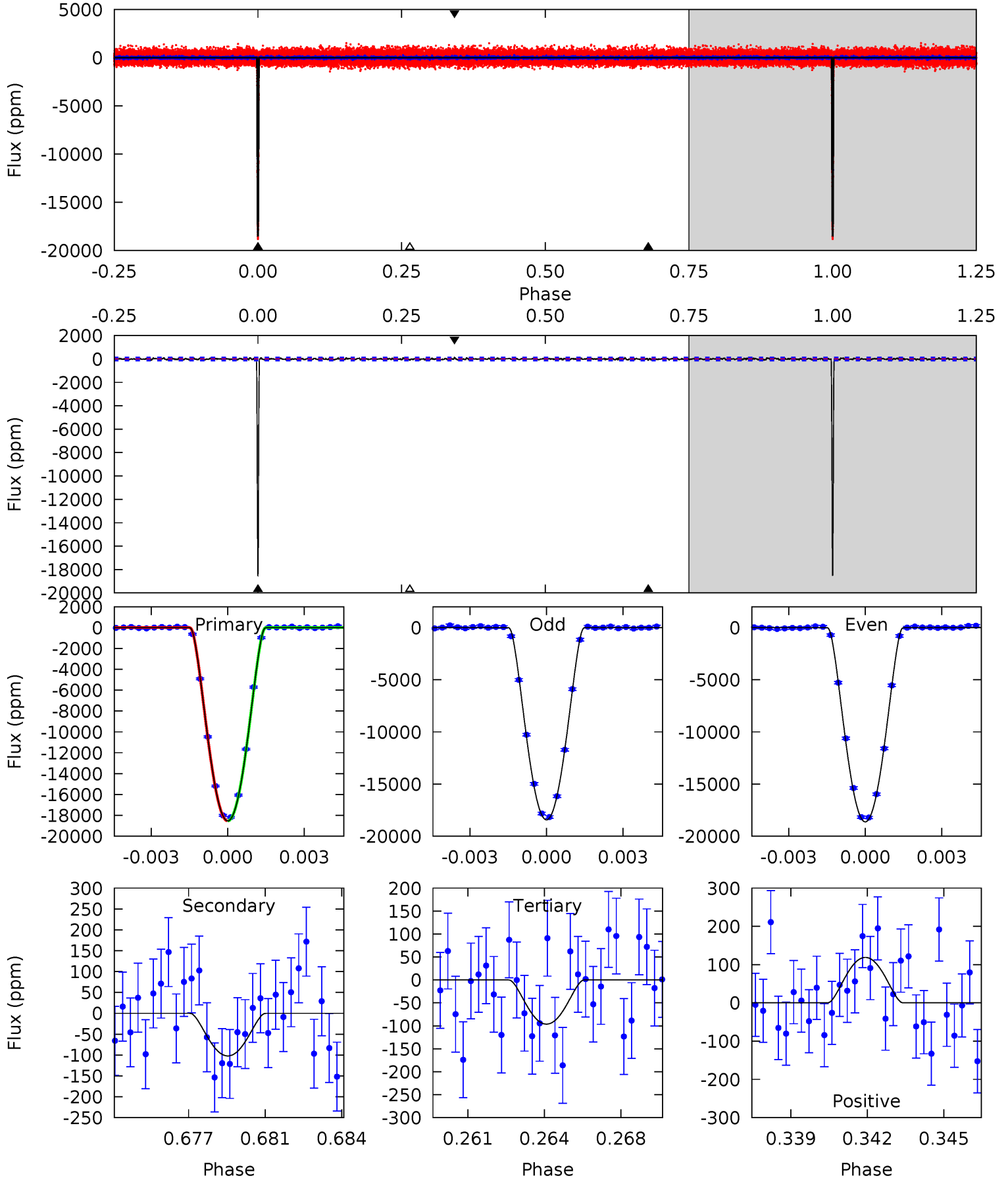
TCE 006665223-01 P=119.407334 Days $T_0=232.654503$ (BKJD)



DV Model-Shift Uniqueness Test

006665223-01, P = 119.408195 Days, E = 113.240905 Days

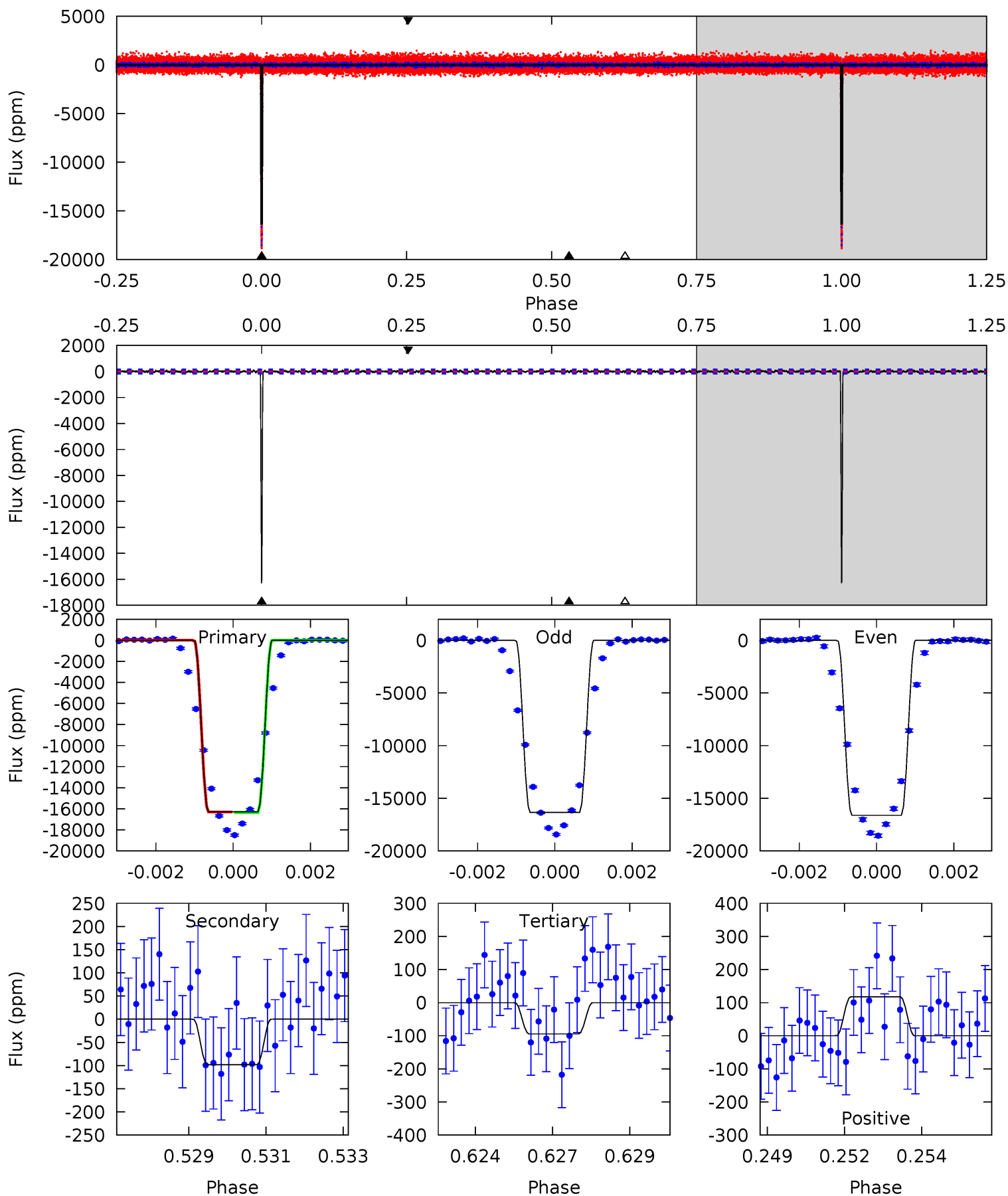
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
822.2	4.53	4.27	5.27	5.23	2.93	1.59	817.9	816.9	0.26	-0.74	4.19	1.00	0.01	0.18



Alt Model-Shift Uniqueness Test

006665223-01, P = 119.407334 Days, E = 113.247169 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
579.5	3.50	3.36	4.19	5.30	3.04	1.09	576.1	575.3	0.14	-0.69	4.75	1.00	0.01	0.72



Stellar Parameters For KIC 006665223

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5316^{+106}_{-106}	$4.477^{+0.077}_{-0.056}$	$0.000^{+0.150}_{-0.150}$	$0.872^{+0.070}_{-0.070}$	$0.834^{+0.058}_{-0.037}$	$1.768^{+0.510}_{-0.331}$
	+2%/-2%	+2%/-1%	+inf%/-inf%	+8%/-8%	+7%/-4%	+29%/-19%
Source	SPE57	SPE57	SPE57	DSEP		

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

Secondary Eclipse Parameters for KIC 006665223-01 / KOI 1232.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-102 ± 23	$16.26^{+1.00}_{-1.04}$	456^{+14}_{-13}	2222^{+65}_{-70}	43^{+12}_{-11}
Alt.	-98 ± 28	$12.76^{+0.85}_{-0.88}$	455^{+15}_{-13}	2343^{+83}_{-90}	67^{+23}_{-21}

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

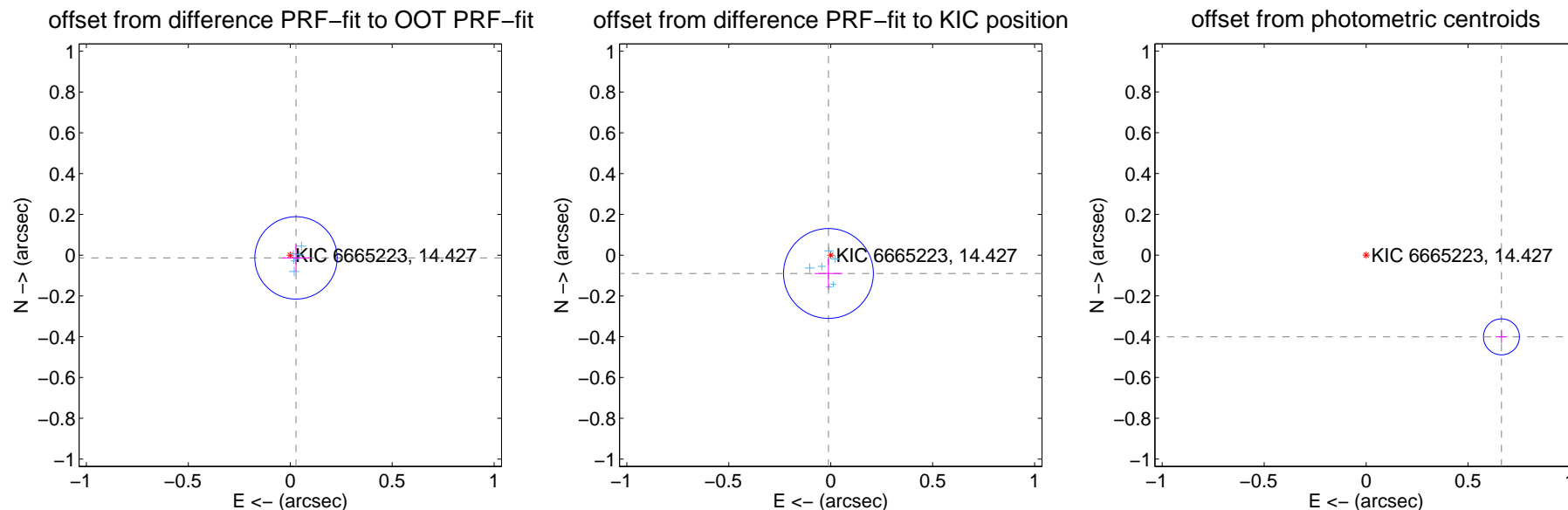
DV Centroid Data

Supplemental centroid analysis for 006665223-01. Kepler magnitude: 14.43. Transit SNR 460.37

There are 6 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.031 ± 0.067	0.46	-0.028 ± 0.067	-0.013 ± 0.069
PRF-fit source offset from KIC position	0.090 ± 0.073	1.23	0.011 ± 0.069	-0.090 ± 0.073
photometric centroid source offset	0.78 ± 0.03	26.37	-0.66 ± 0.03	-0.40 ± 0.03

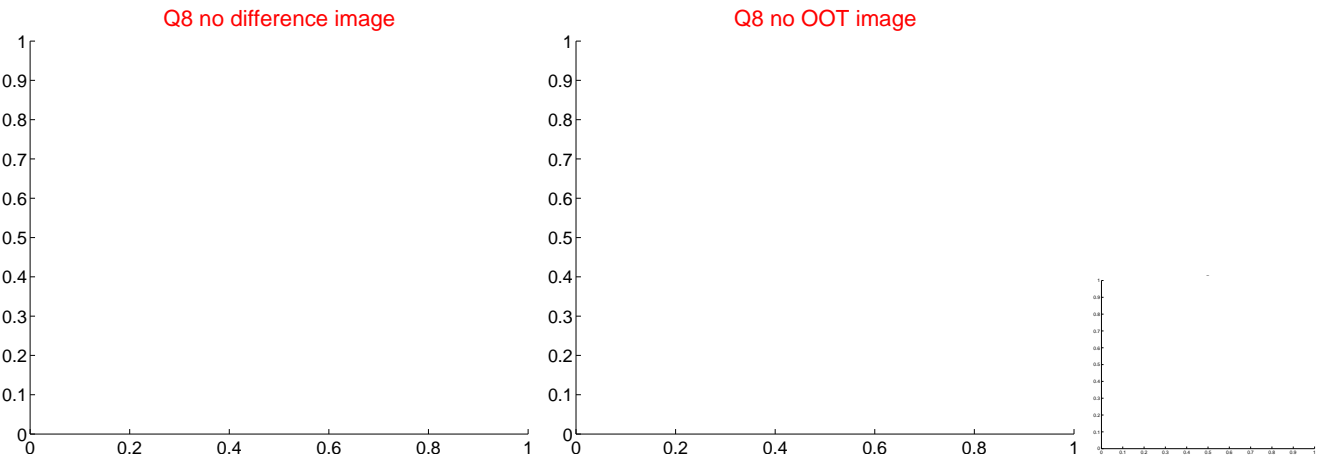
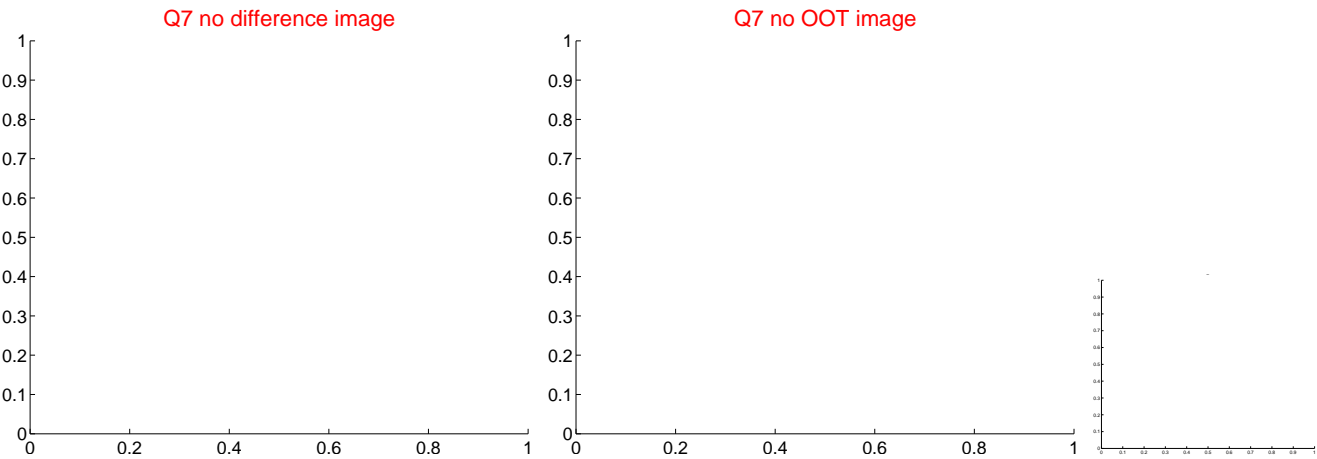
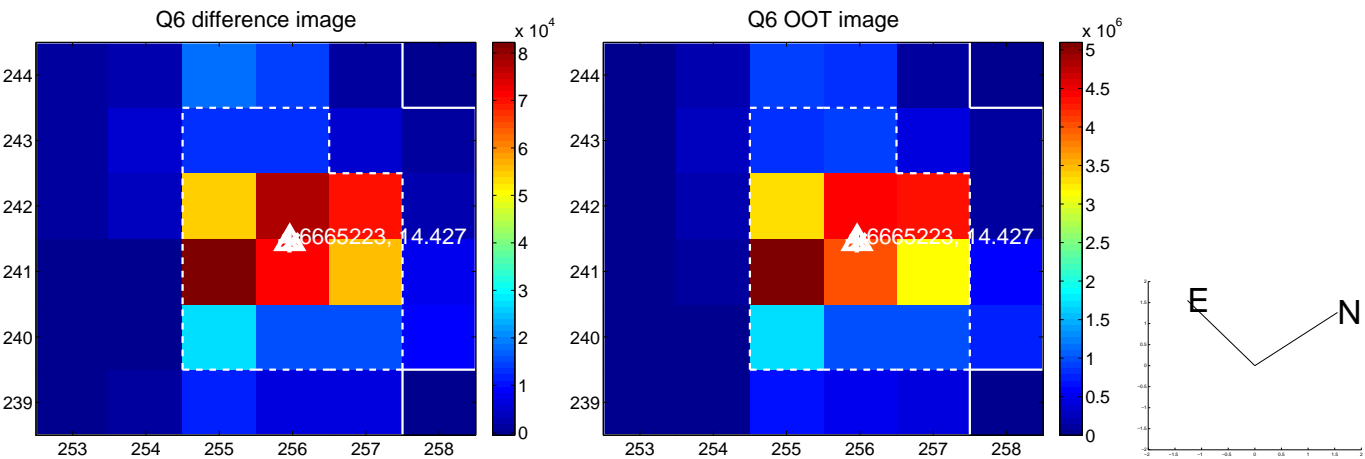
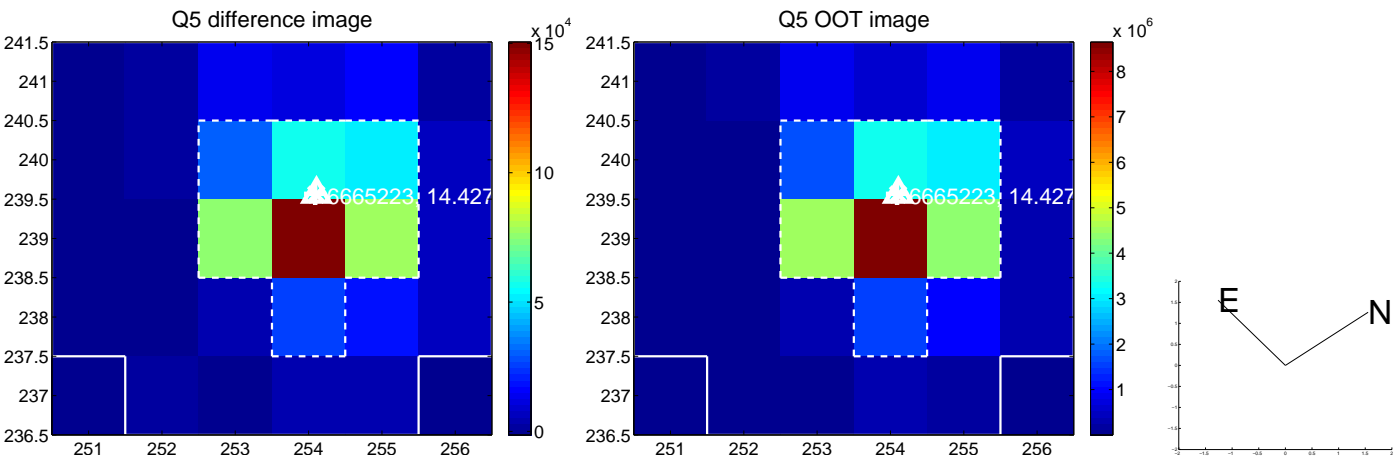


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

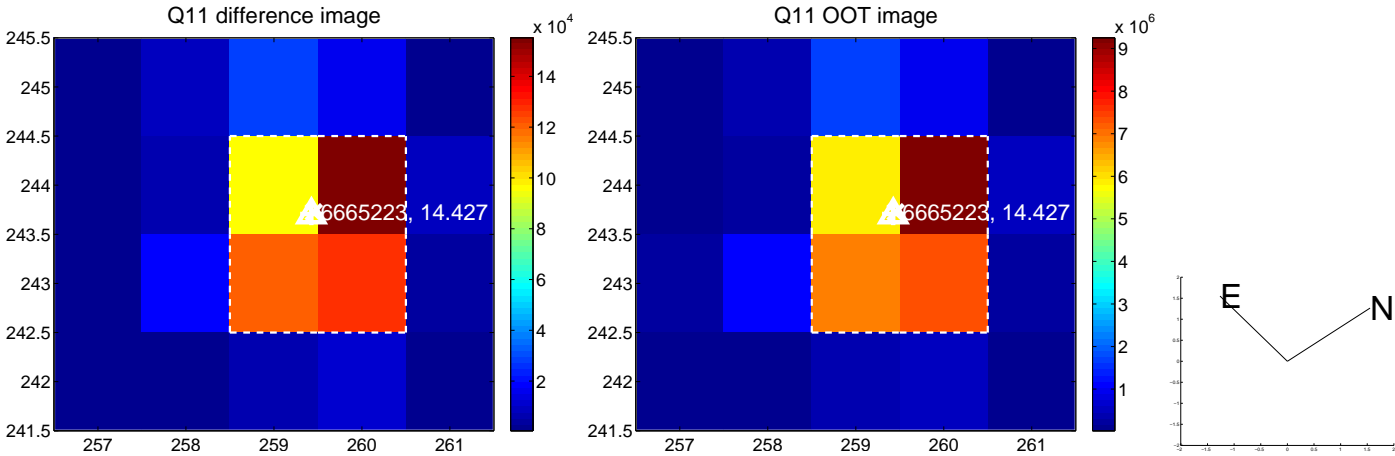
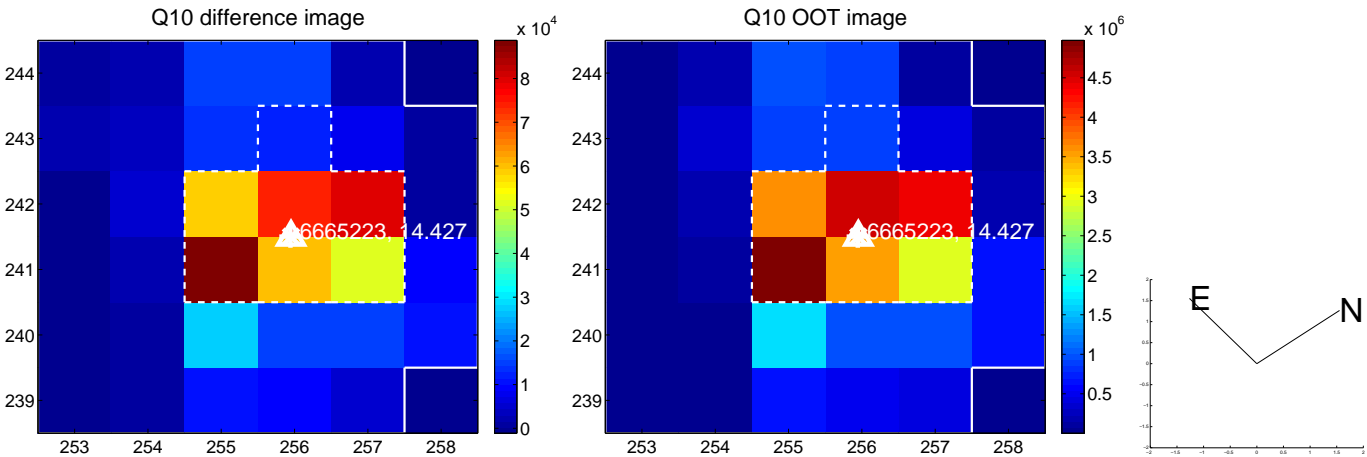
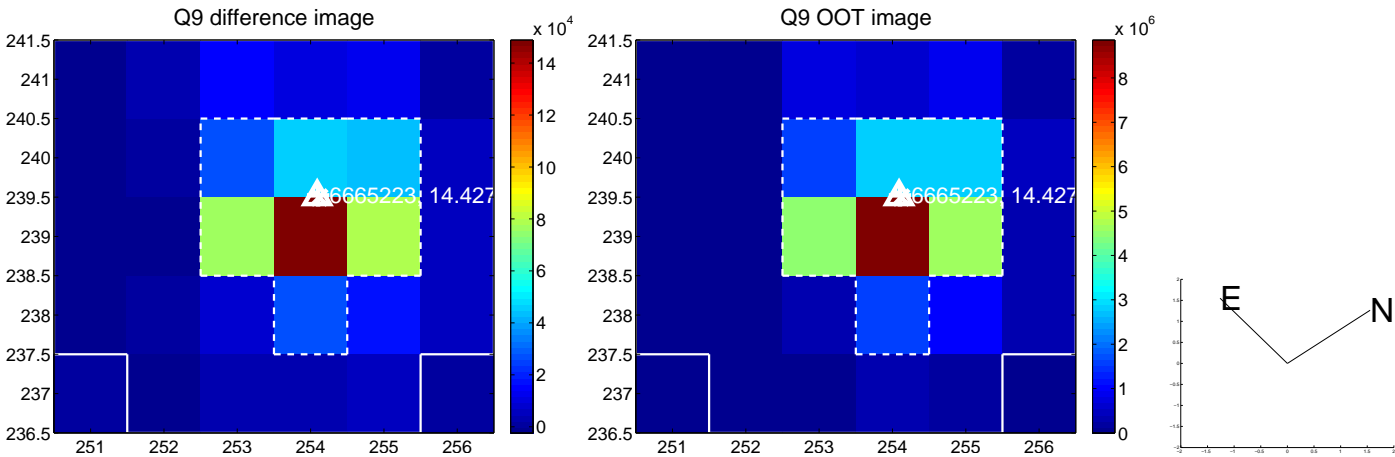
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



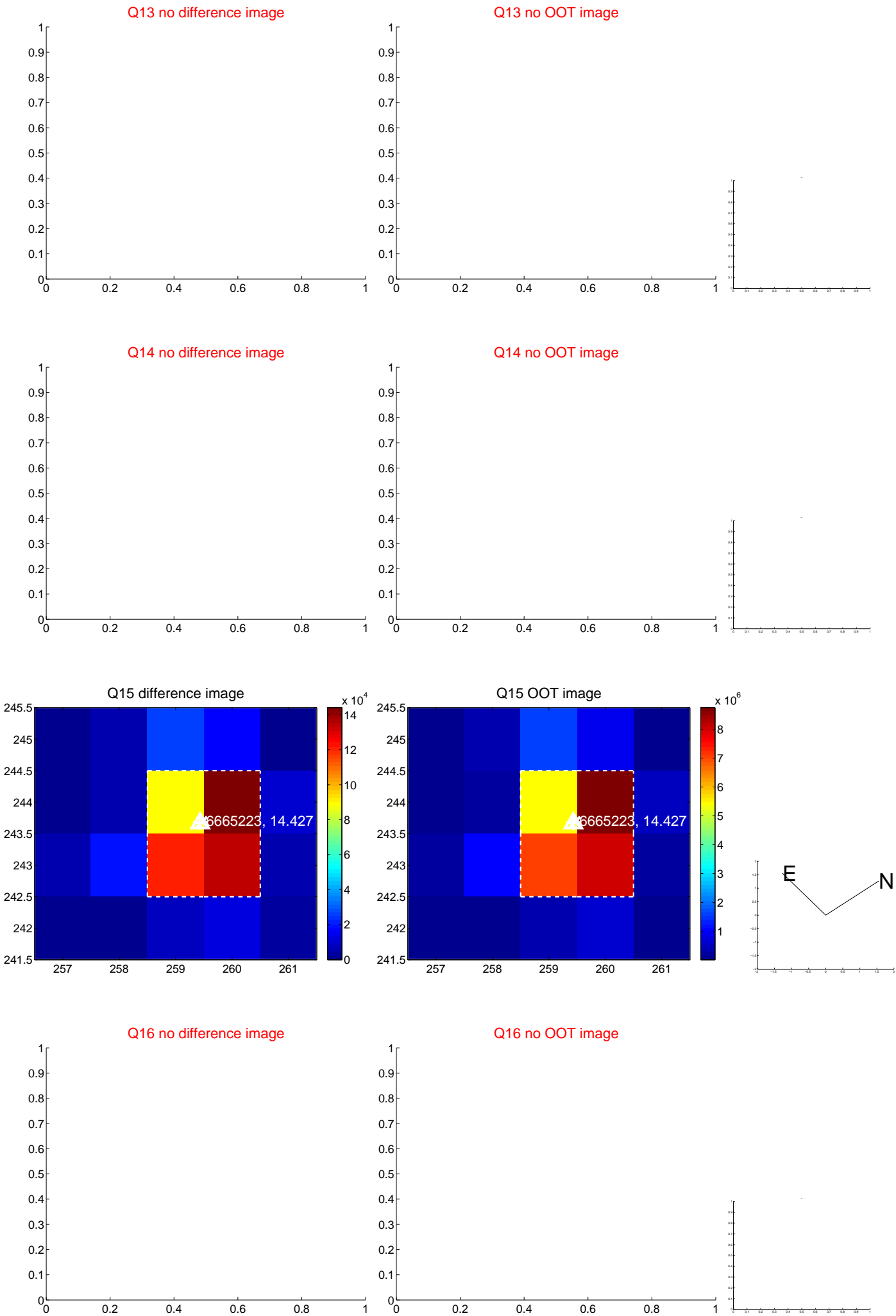
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



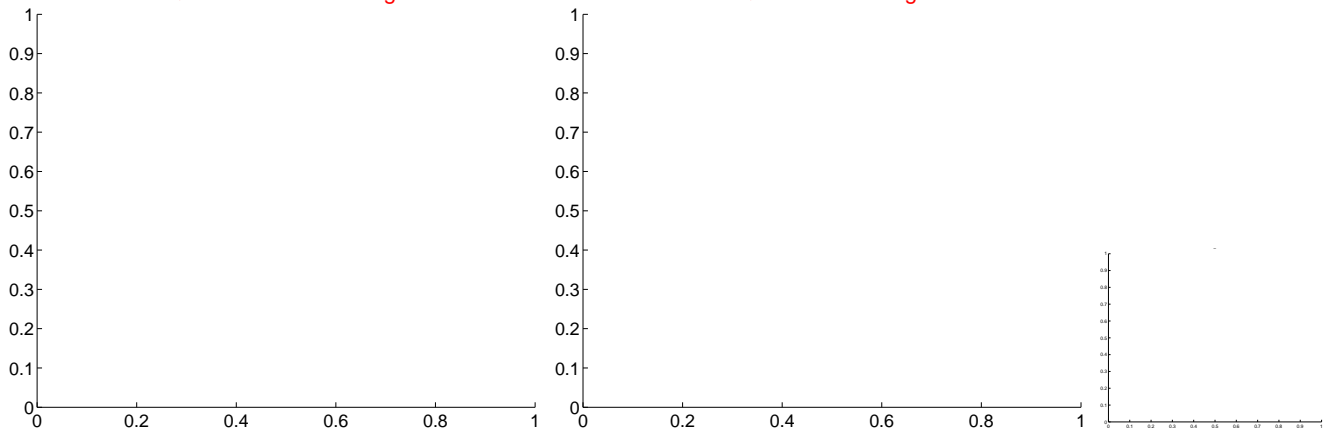
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



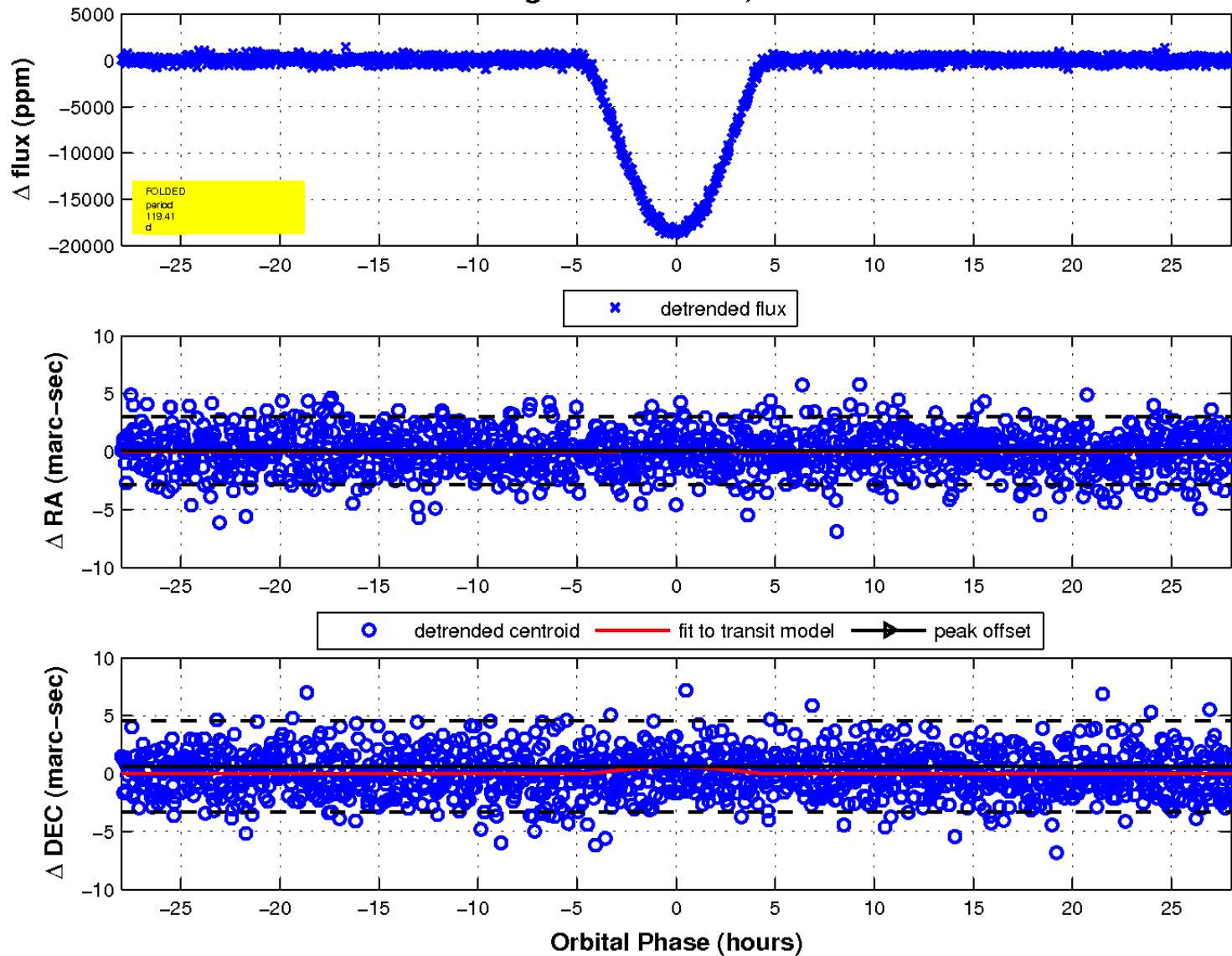
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q17 no difference image

Q17 no OOT image

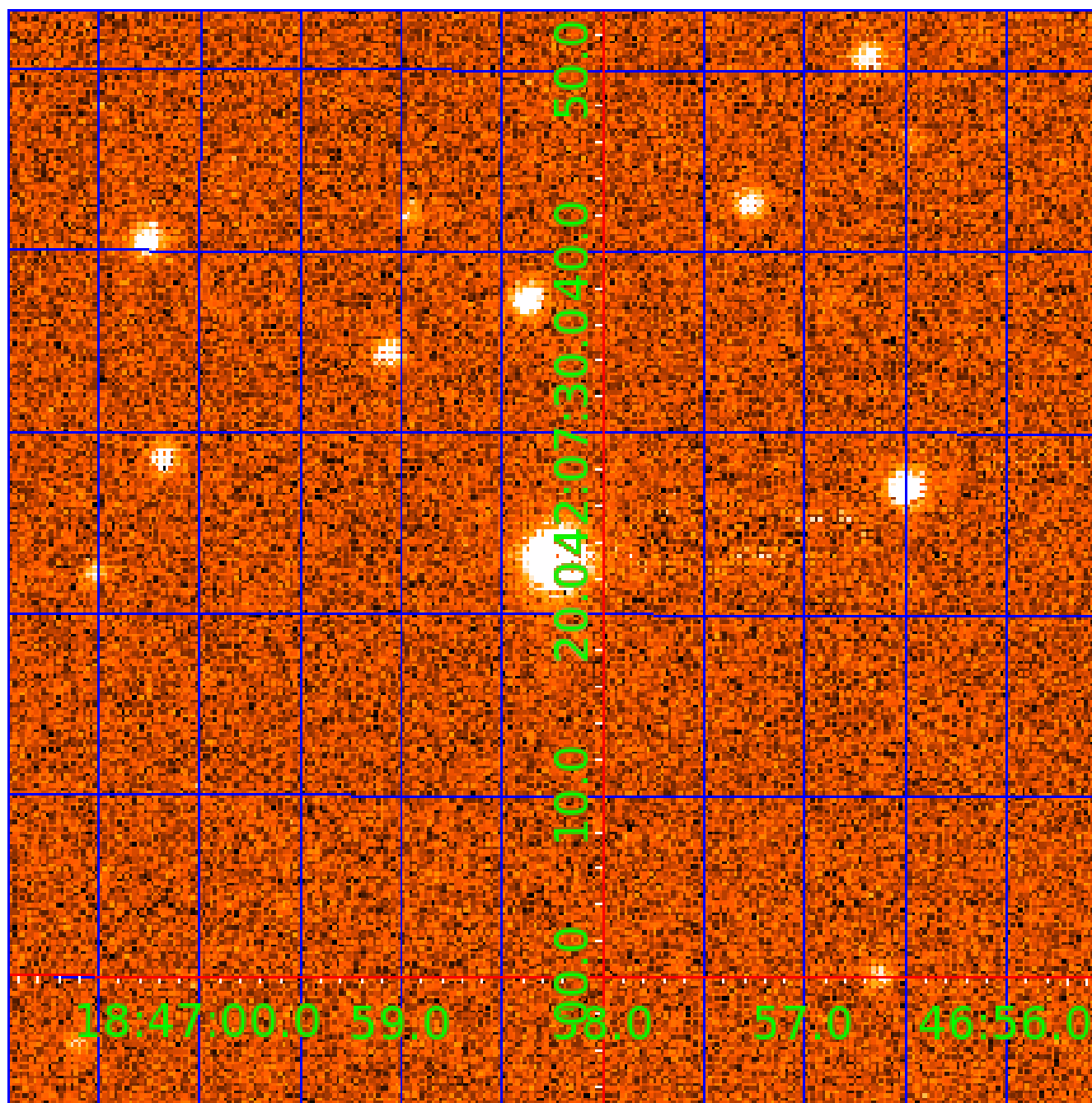


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 006665223

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})
006665223-01	OBS	1232.01	119.408195	232.649100	18533.1	9.356	475.8	460.4	0.87	5316	16.24	2.73
006665223-02	OBS	1232.02	419.895281	525.001431	635.8	4.786	8.6	8.4	0.87	5316	2.39	0.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006665223-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED
006665223-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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

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

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

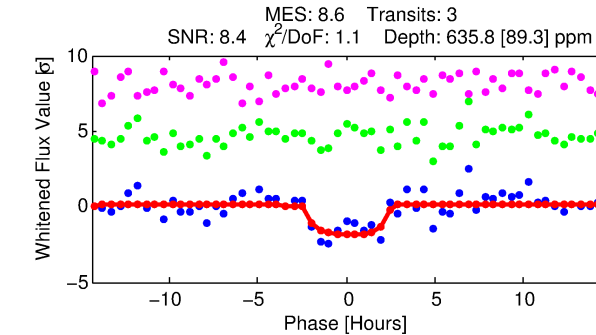
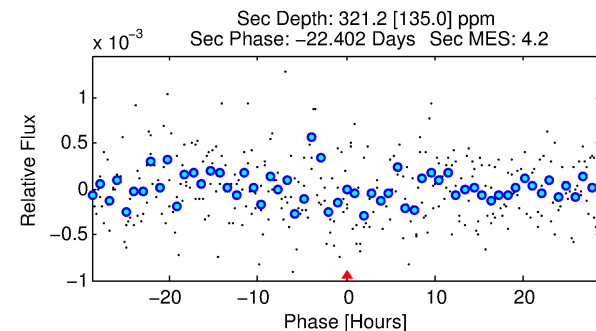
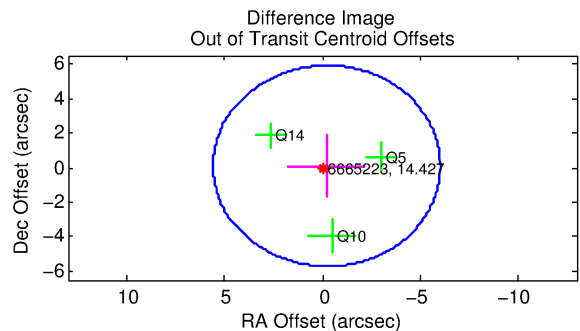
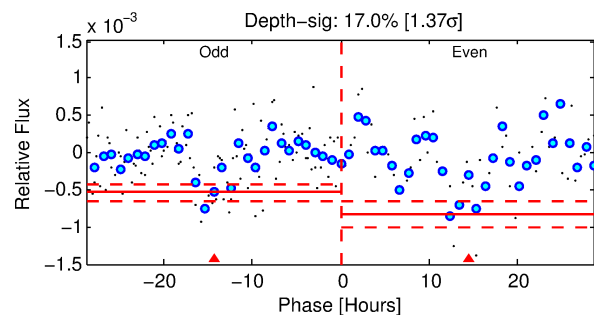
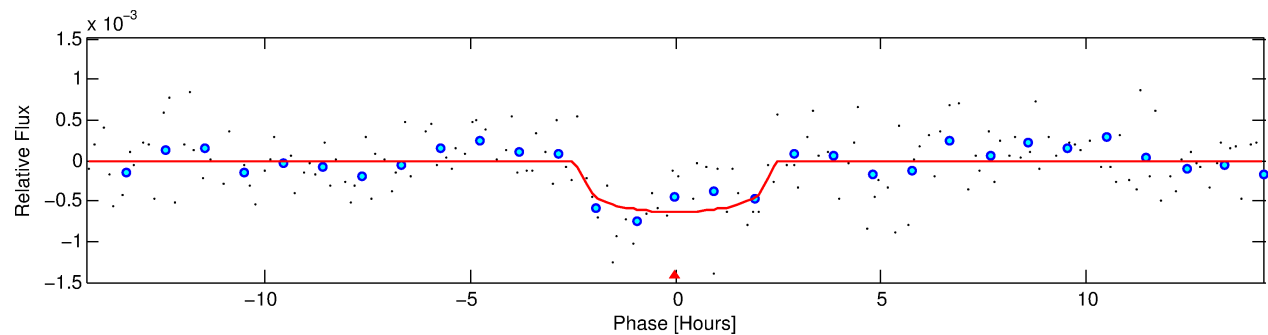
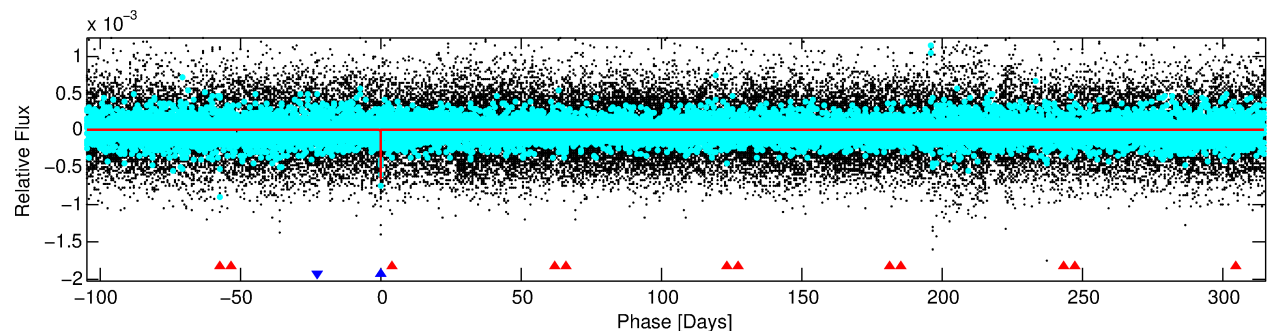
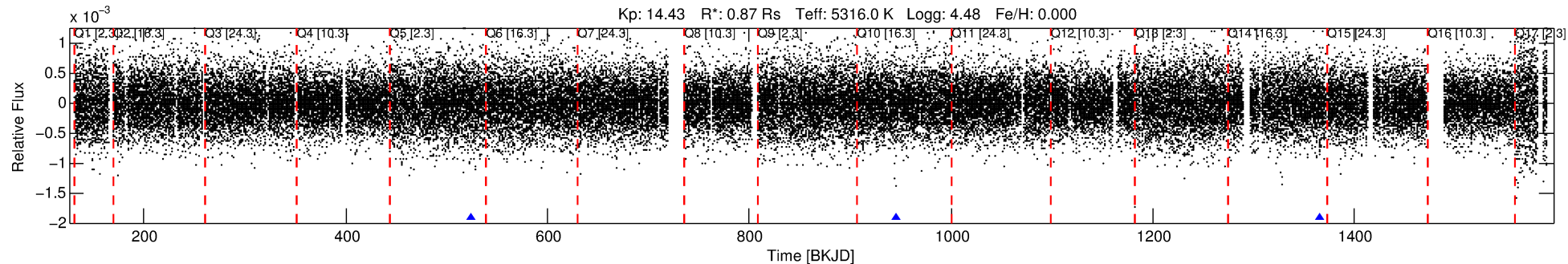
Ephemeris Match Information For 006665223-02

No Significant Match Found

DV One-Page Summary

KIC: 6665223 Candidate: 2 of 2 Period: 419.895 d
KOI: K01232 Corr: No Ephemeris Match

Kp: 14.43 R*: 0.87 Rs Teff: 5316.0 K Logg: 4.48 Fe/H: 0.000



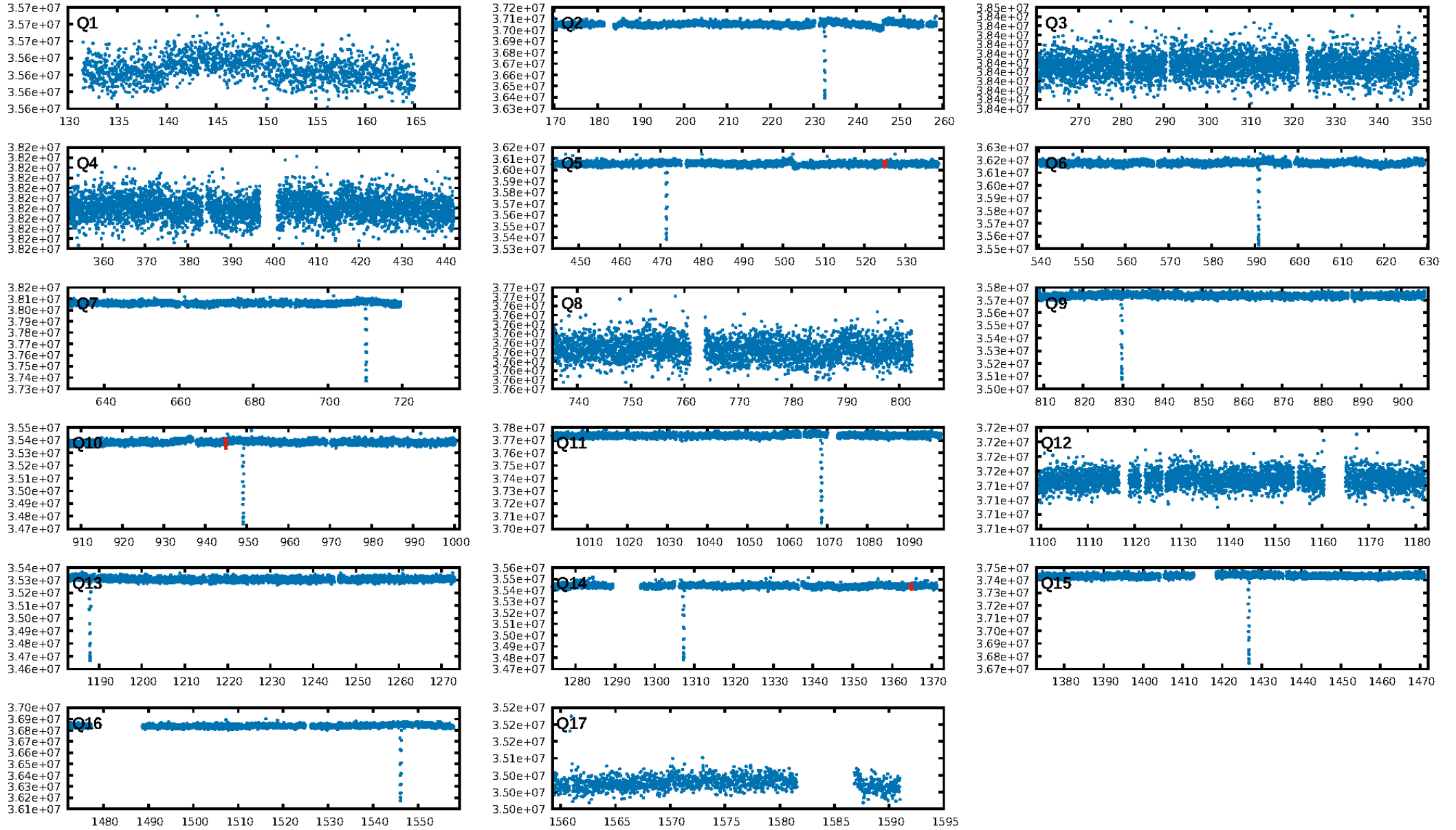
DV Fit Results:

Period = 419.89528 [0.00871] d
Epoch = 525.0014 [0.0129] BKJD
Rp/R* = 0.0251 [0.0299]
a/R* = 470.18 [2155.71]
b = 0.75 [2.76]
Seff = 0.51 [0.08]
Teq = 216 [8] K
Rp = 2.39 [2.85] Re
a = 1.0323 [0.0823] AU
Ag = 32957.03 [79874.44] [0.41σ]
Teffp = 4490 [2718] K [1.57σ]

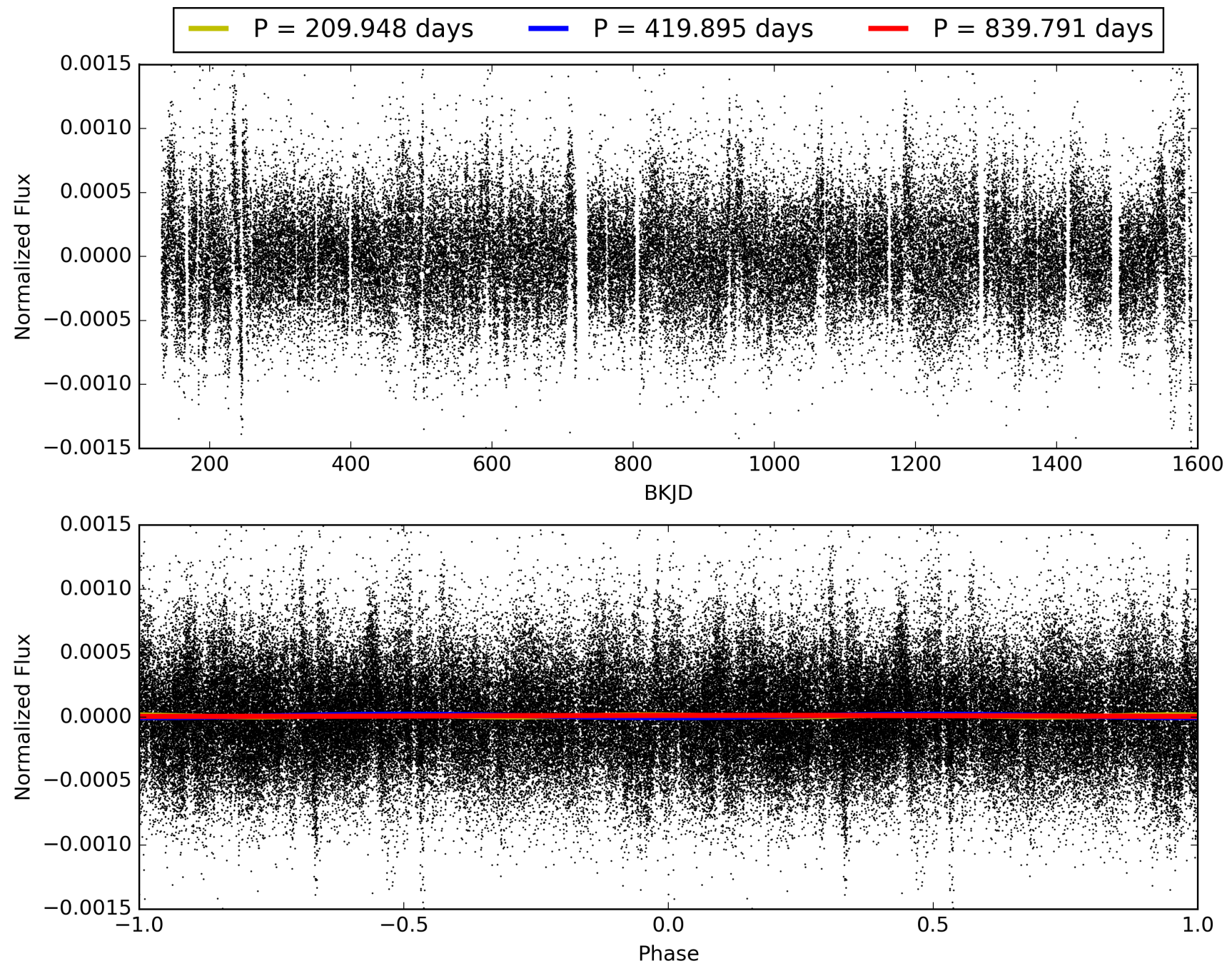
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [686.22σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 23.5%
ModelChiSquareGof-sig: 73.5%
Bootstrap-pfa: 2.29e-18
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.244
Centroid-sig: 8.3%
Centroid-so: 4.579 arcsec [2.48σ]
OotOffset-rm: 0.243 arcsec [0.13σ]
KicOffset-rm: 0.170 arcsec [0.08σ]
OotOffset-st: 2/0/0/1 [3]
KicOffset-st: 2/0/0/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 006665223-02, PDC Light Curves

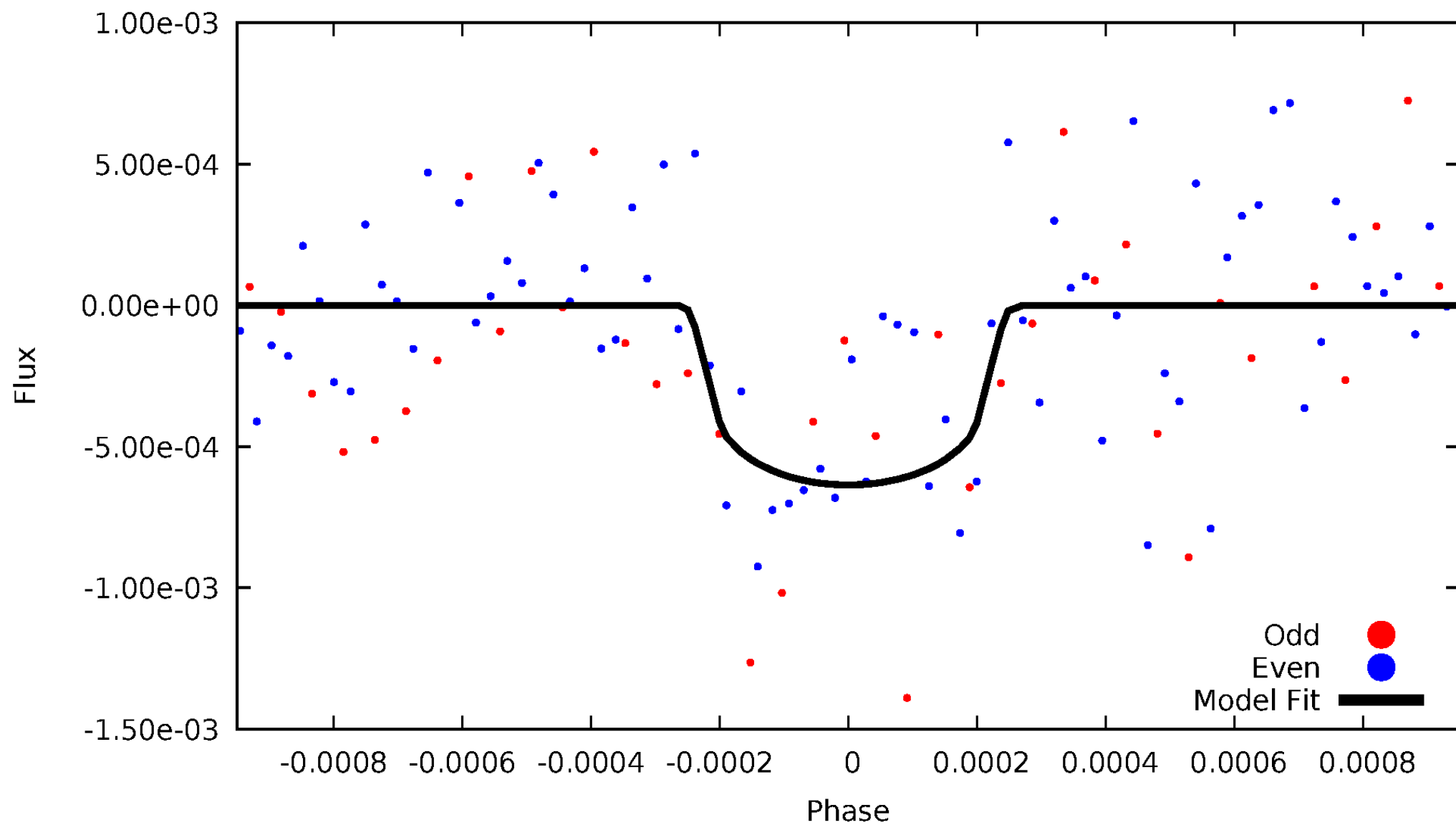


TCE 006665223-02



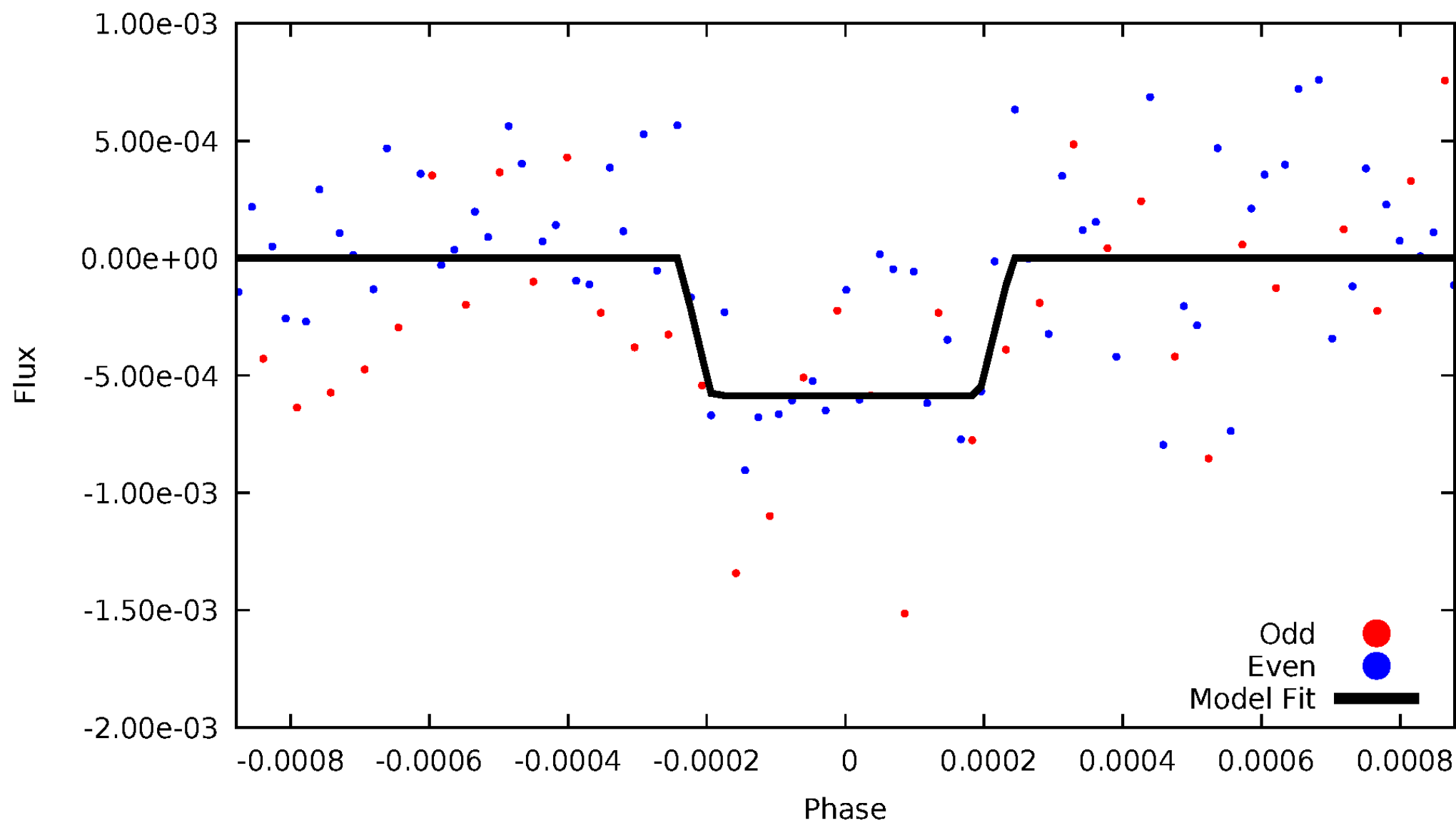
DV Odd/Even

TCE 006665223-02



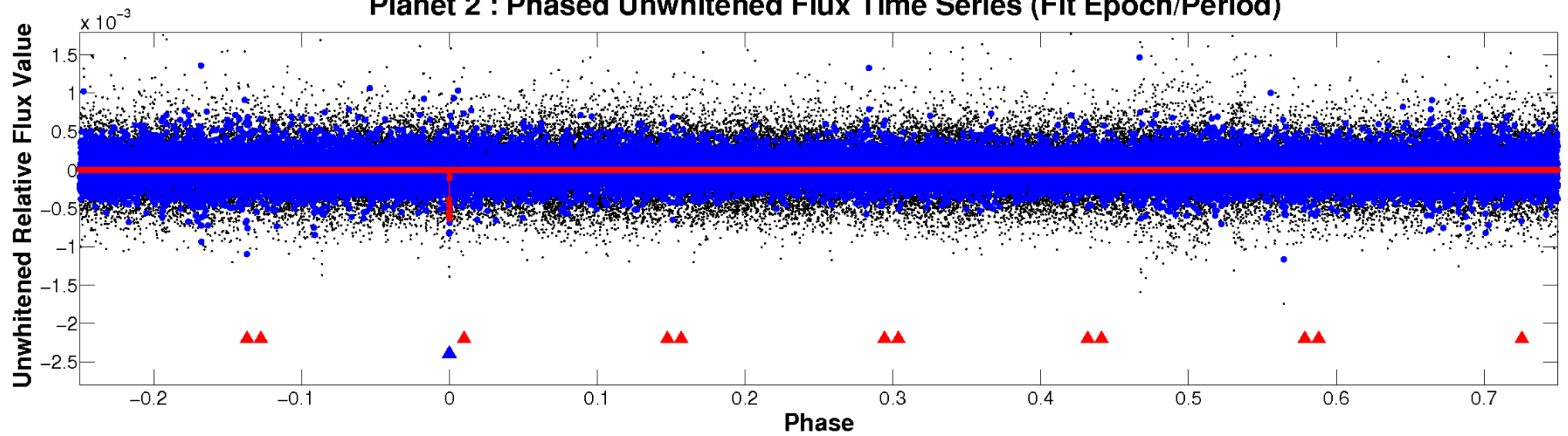
ALT Odd/Even

TCE 006665223-02

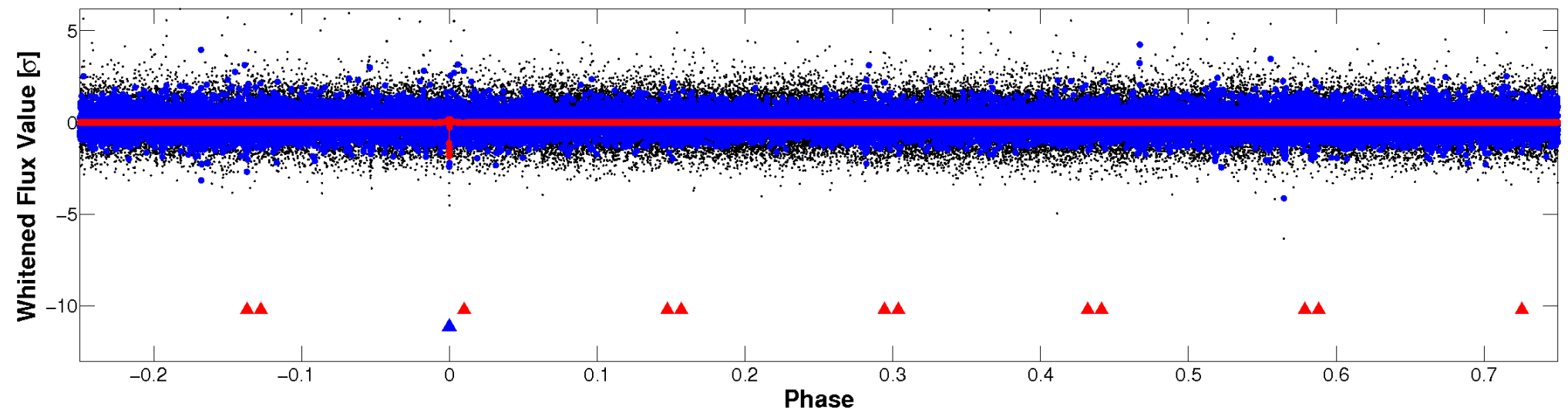


Non-Whitened Vs. Whitened Light Curve

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

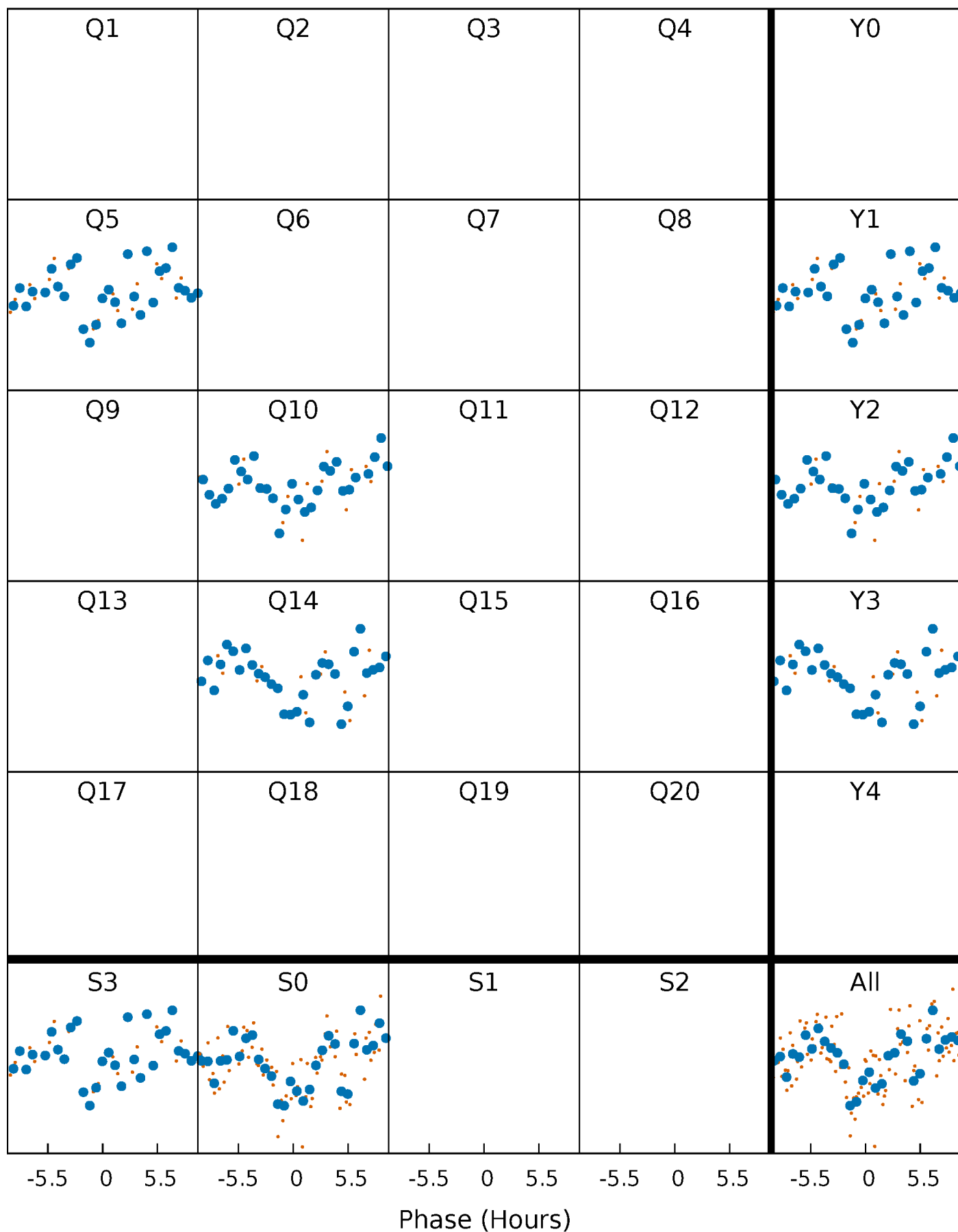


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



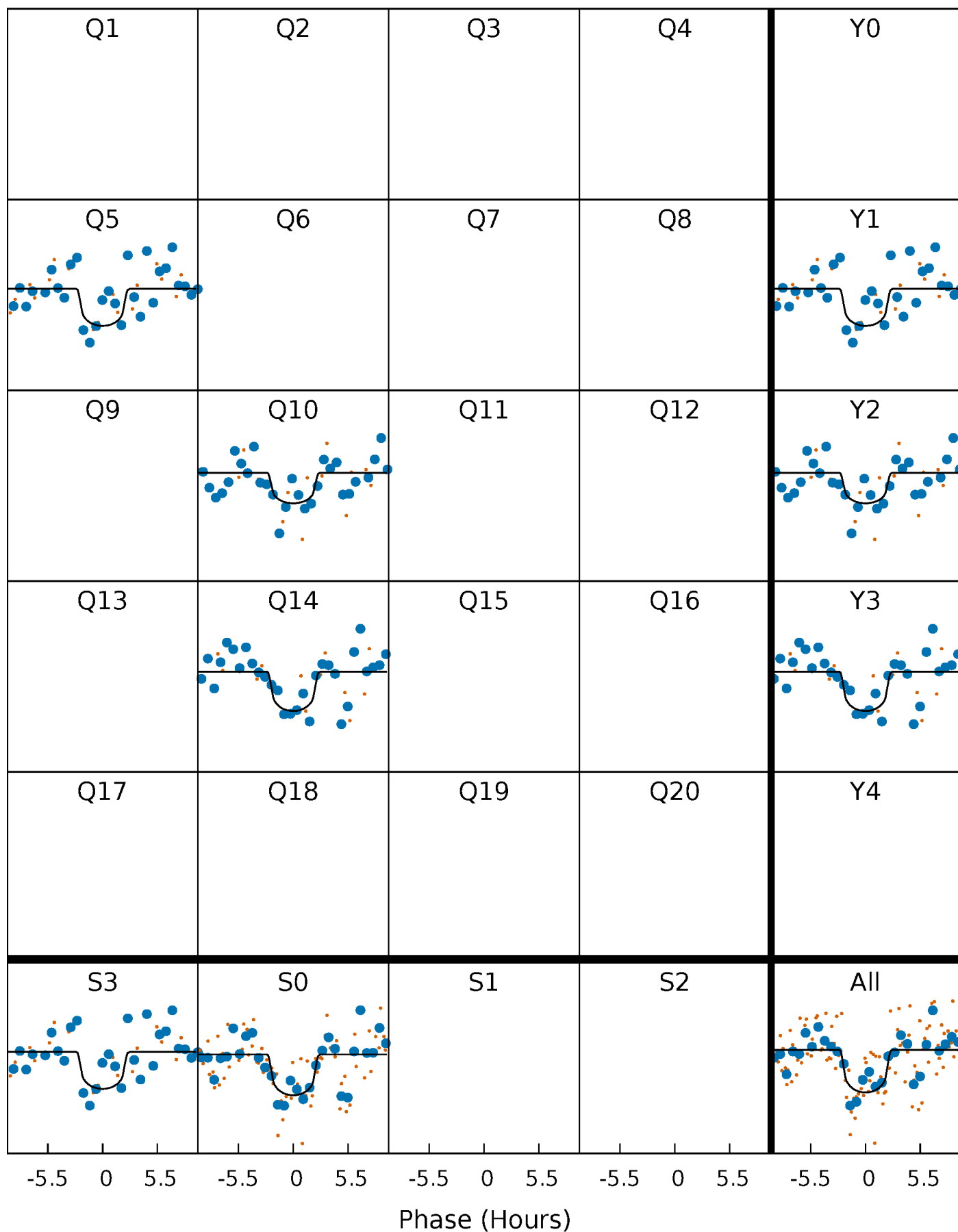
PDC Quarter-Phased Transit Curves

TCE 006665223-02 P=419.895281 Days $T_0=525.001431$ (BKJD)



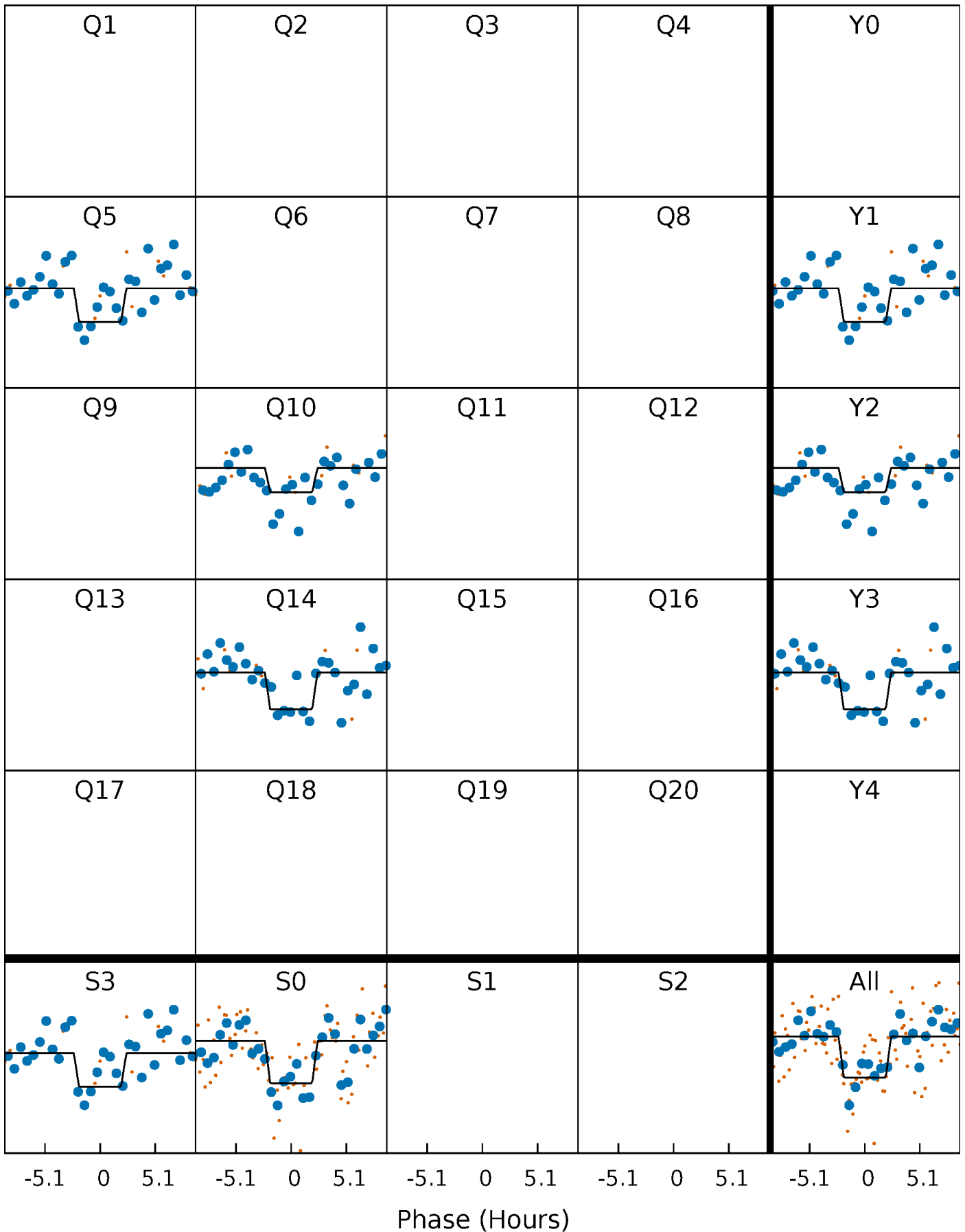
DV Quarter-Phased Transit Curves

TCE 006665223-02 P=419.895281 Days $T_0=525.001431$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

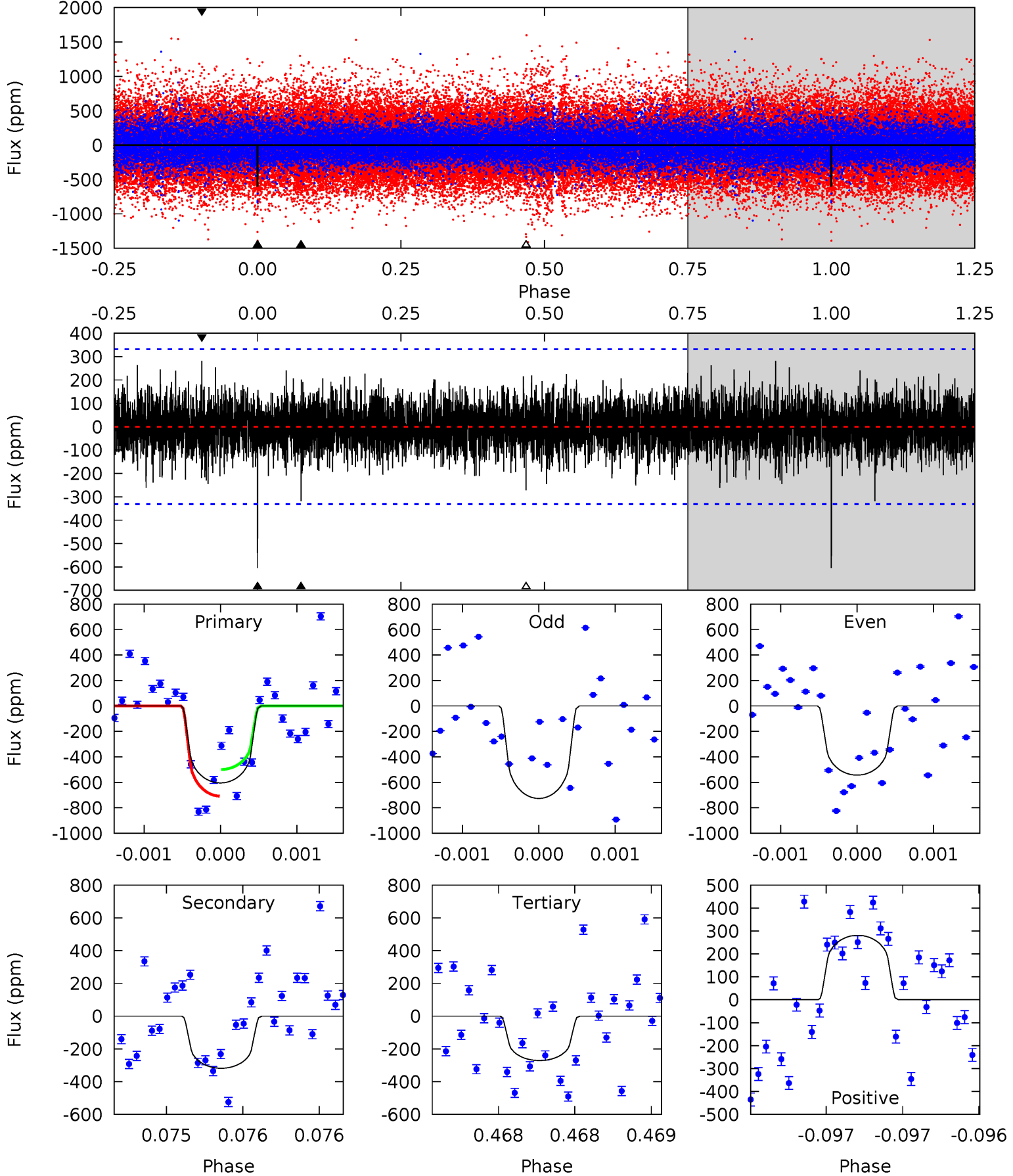
TCE 006665223-02 P=419.896036 Days $T_0=525.003091$ (BKJD)



DV Model-Shift Uniqueness Test

006665223-02, P = 419.895281 Days, E = 105.106150 Days

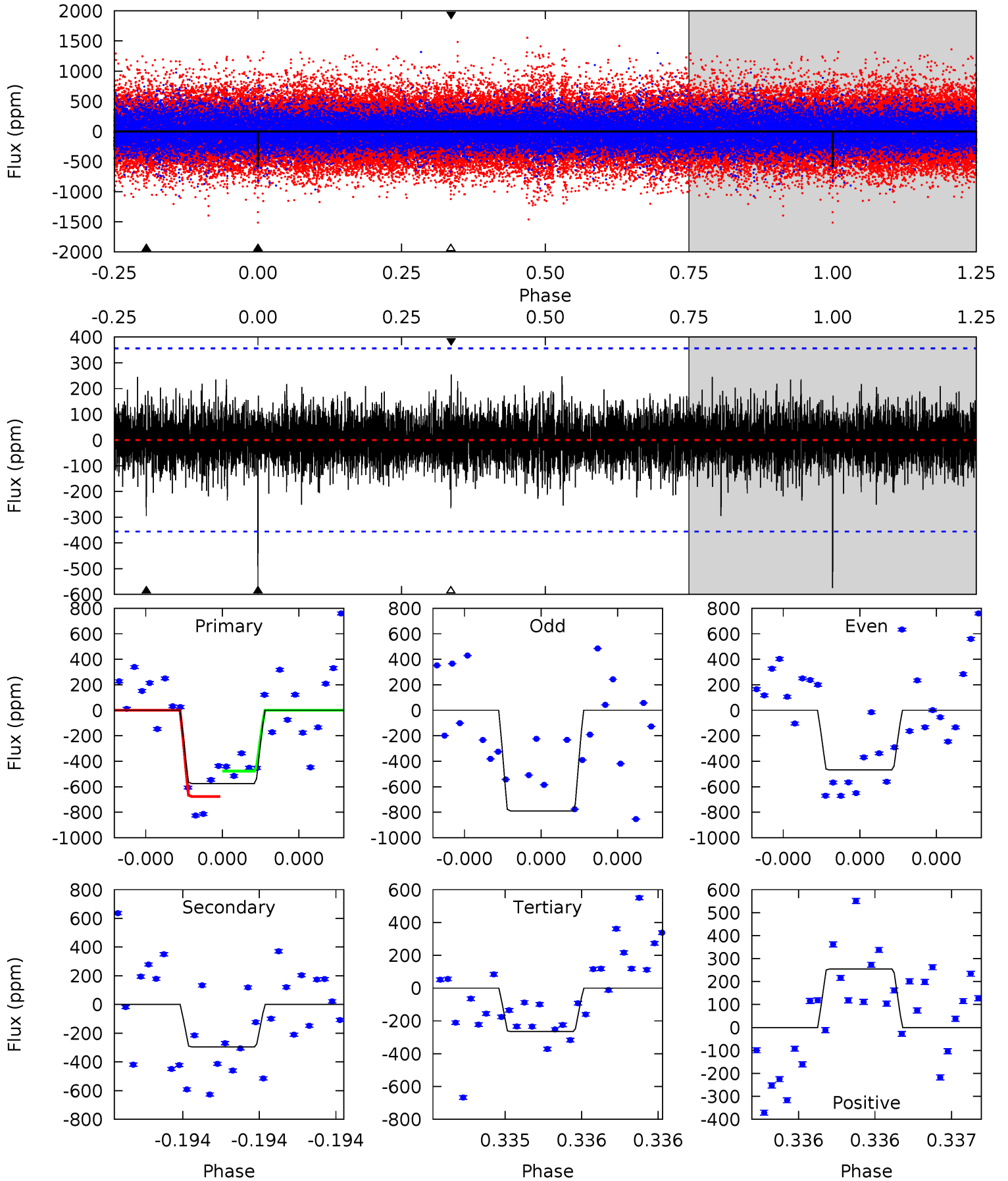
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	5.35	4.56	4.72	5.57	3.48	1.20	5.60	5.44	0.79	0.63	1.46	1.02	0.32	1.75



Alt Model-Shift Uniqueness Test

006665223-02, P = 419.896036 Days, E = 105.107055 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.03	4.64	4.17	4.00	5.60	3.52	1.02	4.87	5.03	0.48	0.64	2.34	1.13	0.31	1.57



Stellar Parameters For KIC 006665223

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5316^{+106}_{-106}	$4.477^{+0.077}_{-0.056}$	$0.000^{+0.150}_{-0.150}$	$0.872^{+0.070}_{-0.070}$	$0.834^{+0.058}_{-0.037}$	$1.768^{+0.510}_{-0.331}$
	+2%/-2%	+2%/-1%	+inf%/-inf%	+8%/-8%	+7%/-4%	+29%/-19%
Source	SPE57	SPE57	SPE57	DSEP		

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

Secondary Eclipse Parameters for KIC 006665223-02 / KOI 1232.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-318 ± 59	$3.10^{+2.44}_{-1.96}$	300^{+9}_{-8}	4174^{+2157}_{-748}	$19659^{+120020}_{-13480}$
Alt.	-295 ± 64	$3.14^{+2.49}_{-2.03}$	300^{+9}_{-9}	4102^{+2219}_{-738}	$17652^{+120459}_{-12351}$

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

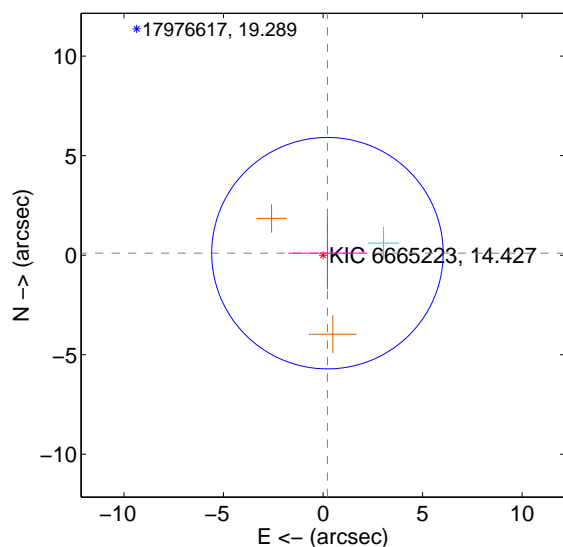
Supplemental centroid analysis for 006665223-02. Kepler magnitude: 14.43. Transit SNR 8.37

There are 1 quarters with good PRF difference image offsets

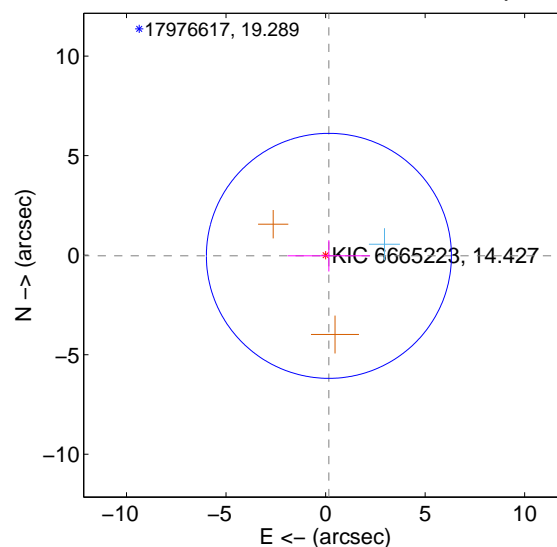
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.243 ± 1.937	0.13	-0.221 ± 1.959	0.101 ± 1.831
PRF-fit source offset from KIC position	0.170 ± 2.051	0.08	-0.167 ± 2.071	-0.034 ± 0.785
photometric centroid source offset	4.58 ± 1.85	2.48	-4.54 ± 1.85	-0.59 ± 2.02

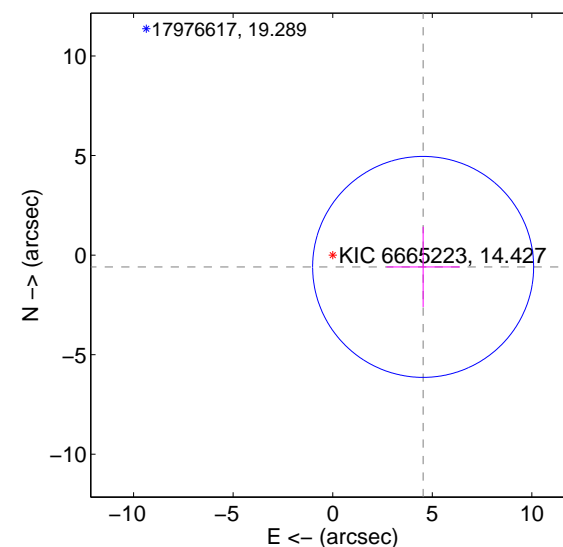
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

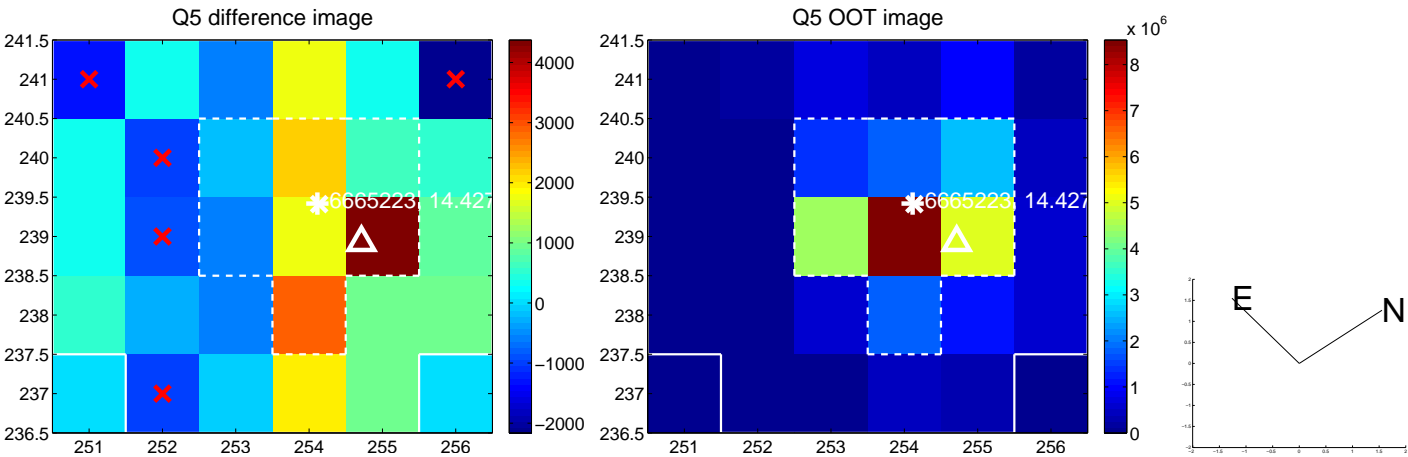


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

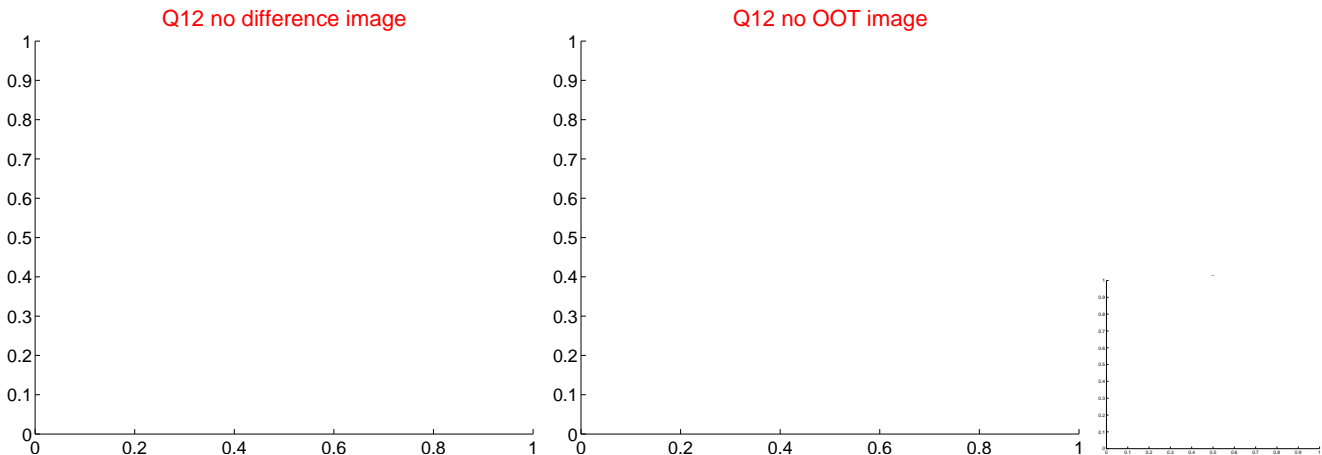
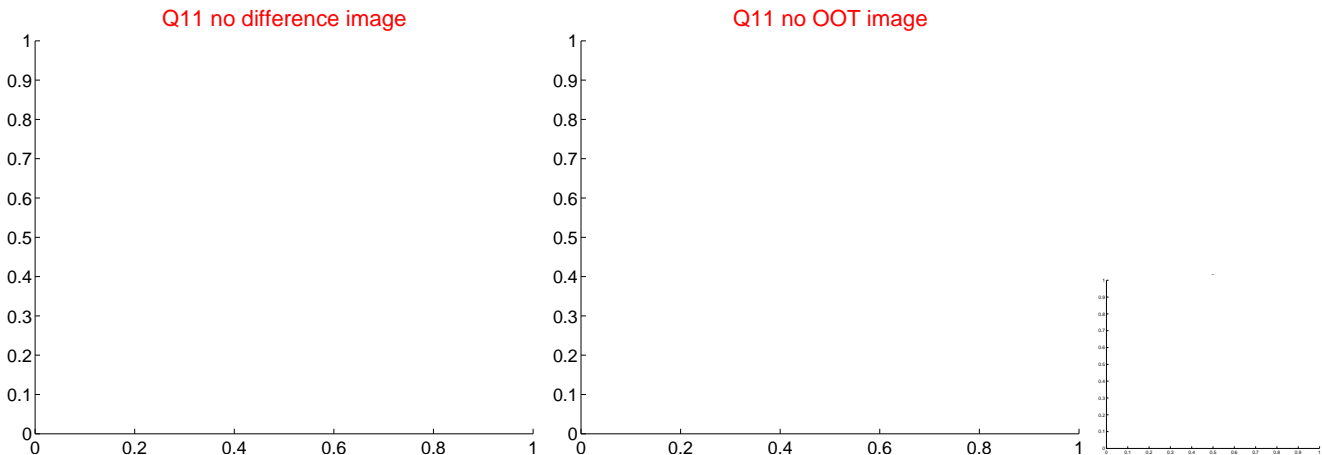
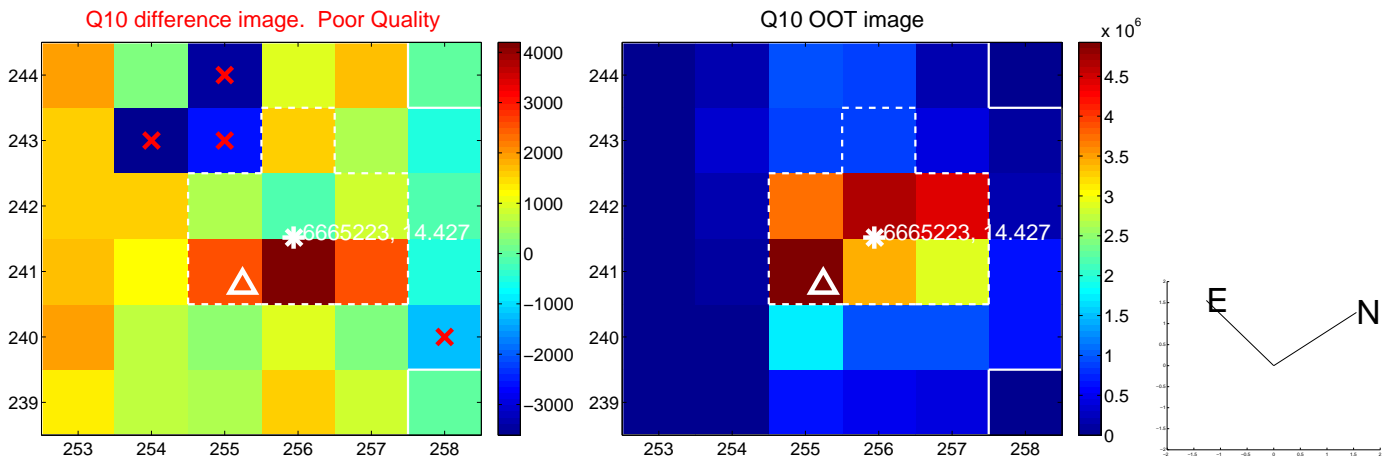
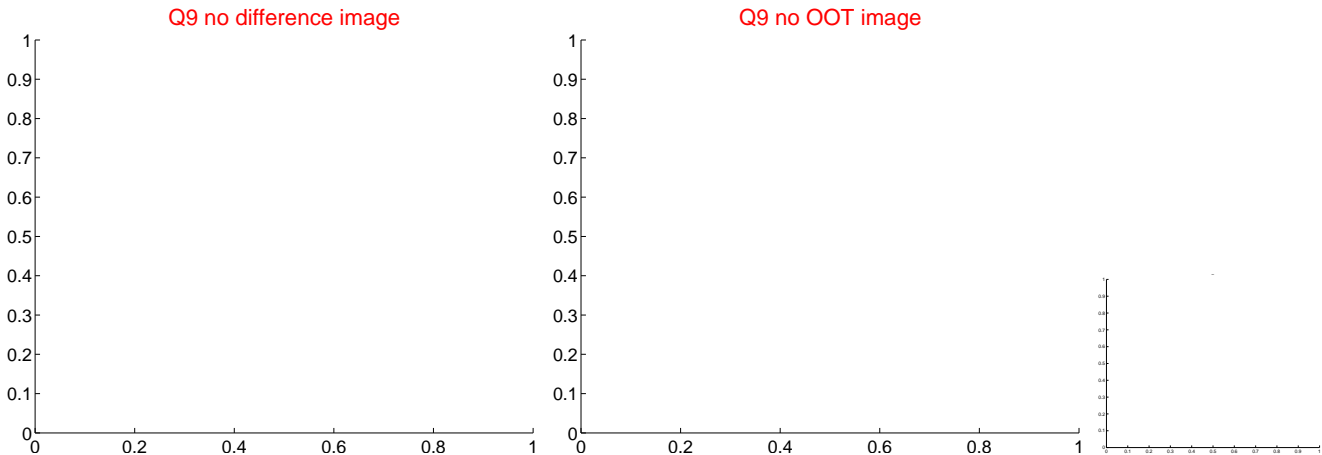
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



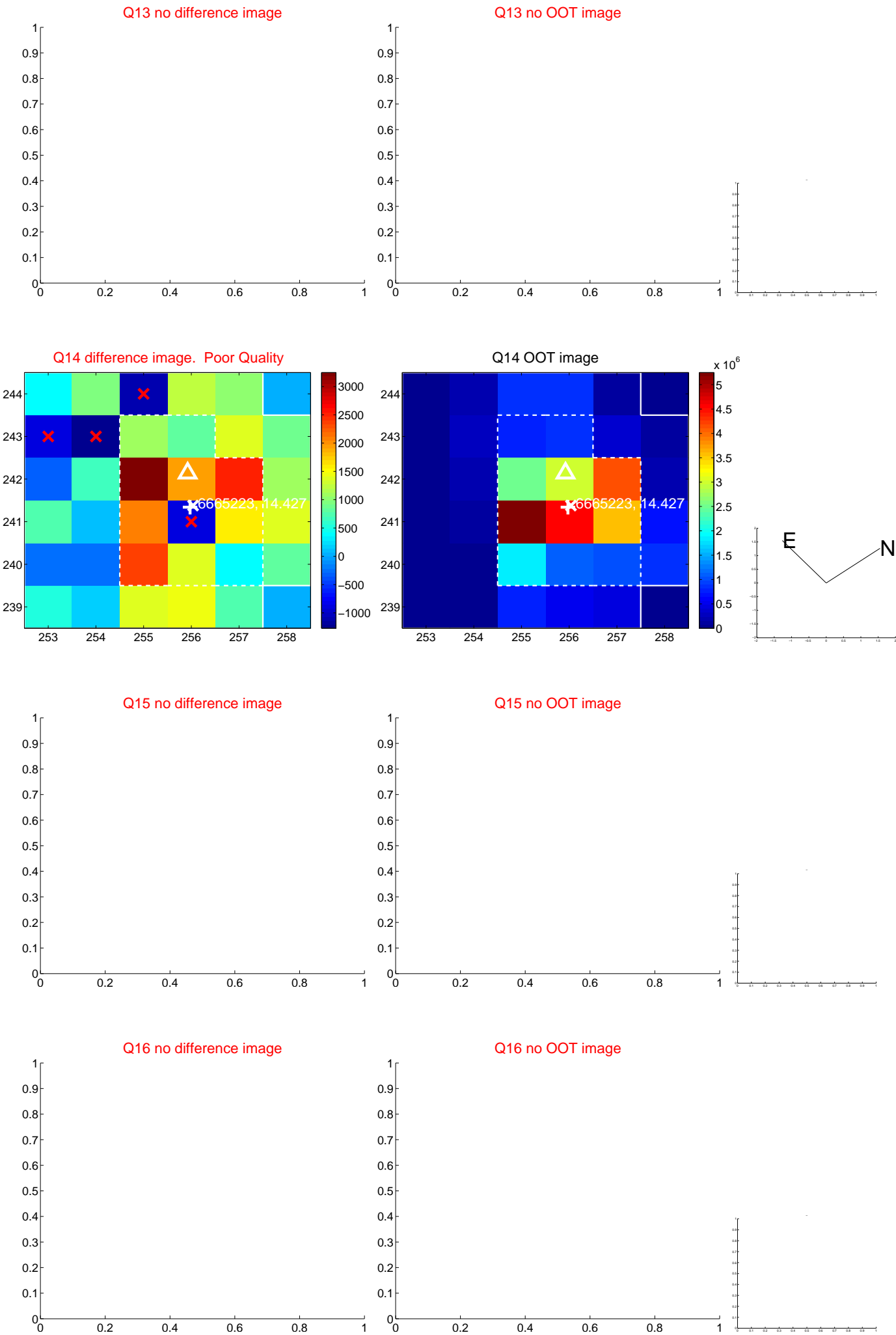
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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.



Q14 difference image. Poor Quality

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253 254 255 256 257 258

Q14 OOT image

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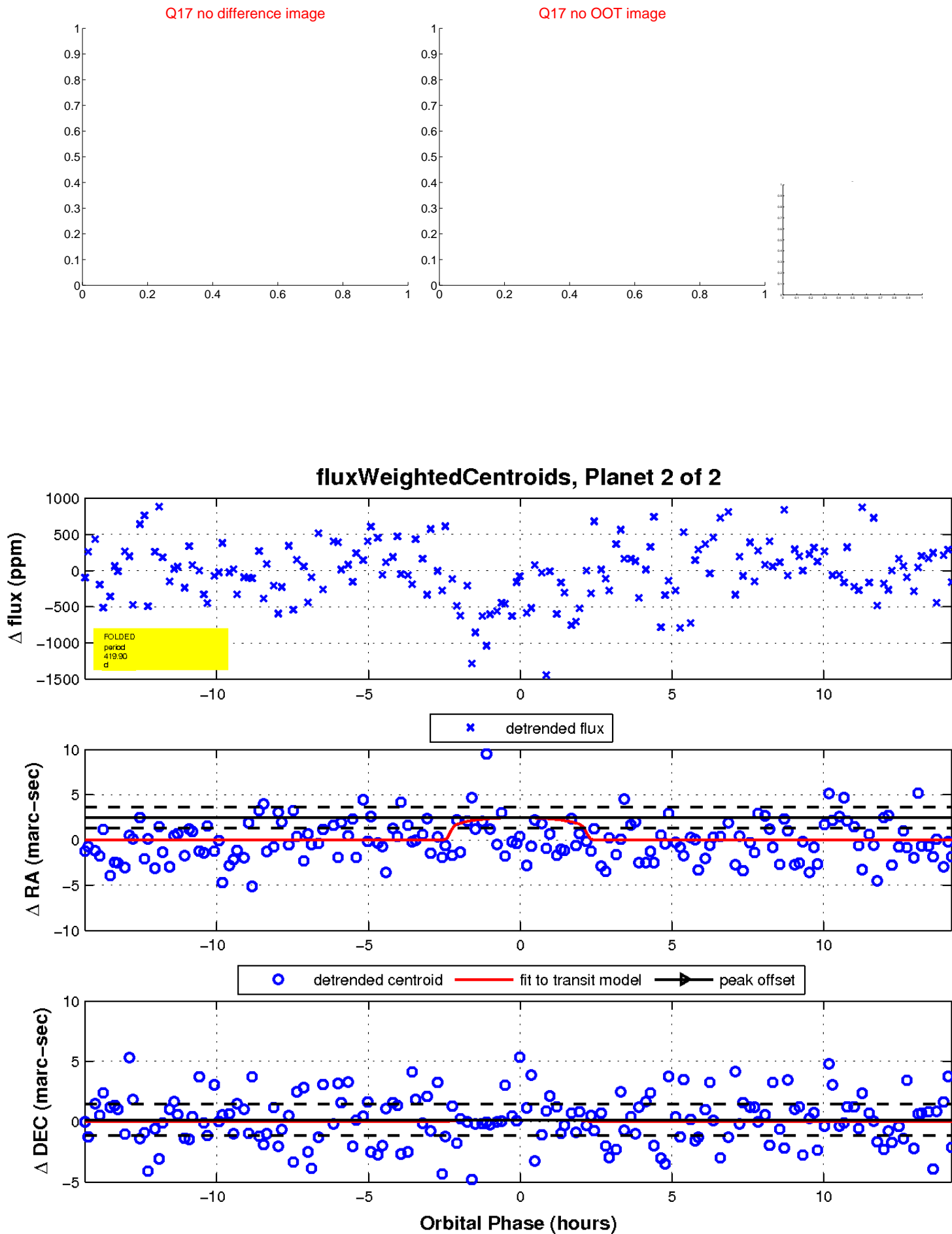
Q15 no difference image

Q15 no OOT image

Q16 no difference image

Q16 no OOT image

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



UKIRT Image

Declination

