

KIC 004372765

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})
004372765-01	OBS	3698.01	15.640642	140.085127	240881.6	6.592	764.9	393.5	1.37	6517	69.62	170.11
004372765-02	OBS	No	15.640711	134.926804	135640.8	6.000	426.1	-1.0	1.37	6517	51.13	170.11

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004372765-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_KIC_POS
004372765-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS

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

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

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

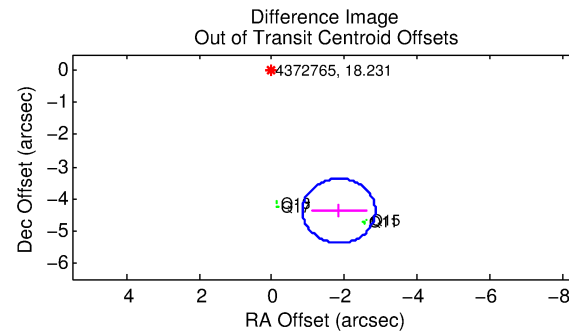
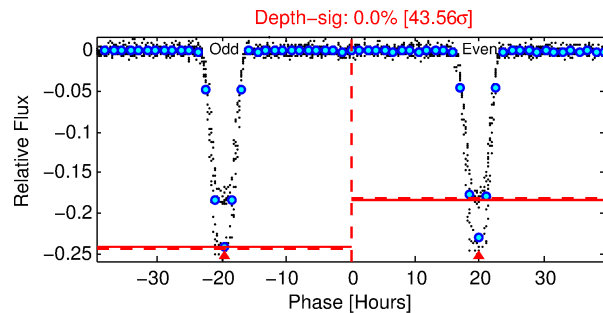
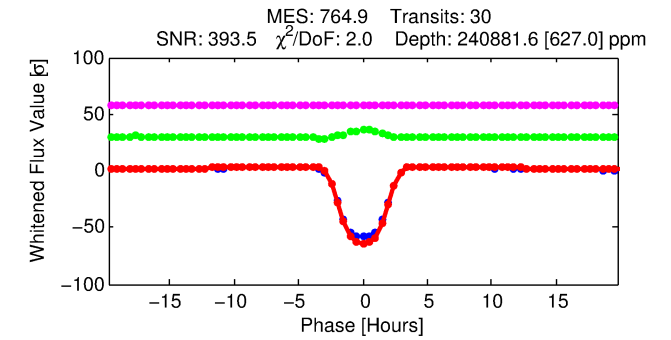
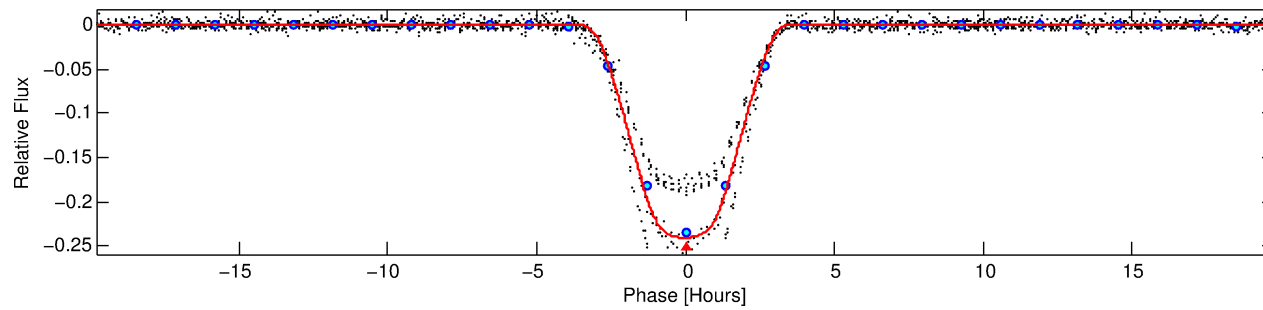
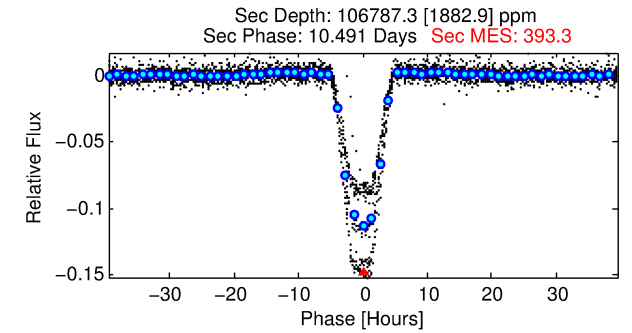
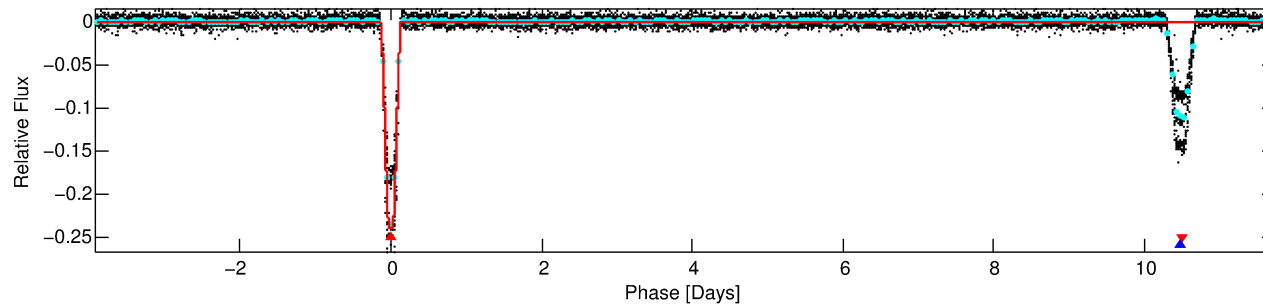
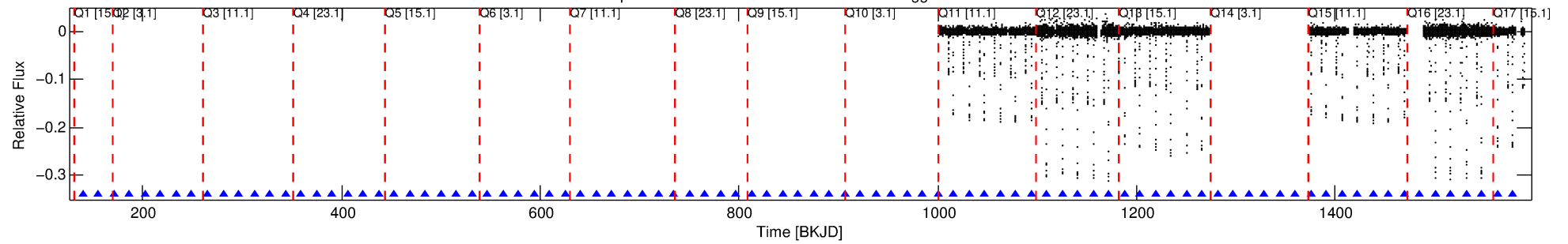
Ephemeris Match Information For 004372765-01

No Significant Match Found

DV One-Page Summary

KIC: 4372765 Candidate: 1 of 2 Period: 15.641 d
KOI: K03698.01 Corr: 0.972

Kp: 18.23 R*: 1.37 Rs Teff: 6517.0 K Logg: 4.28 Fe/H: 0.140



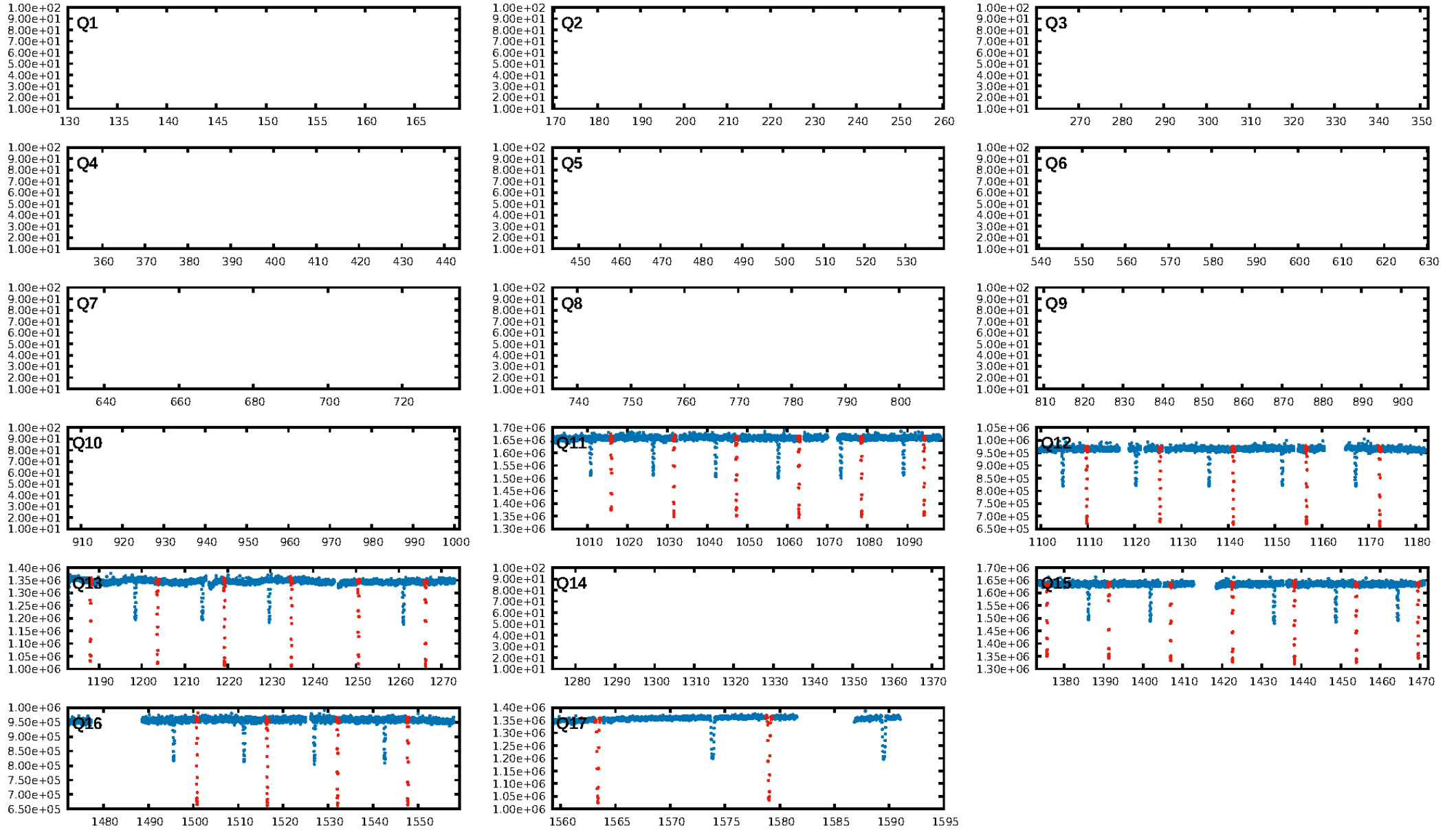
DV Fit Results:

Period = 15.64064 [0.00001] d
Epoch = 140.0851 [0.0009] BKJD
Rp/R* = 0.4643 [0.0010]
a/R* = 25.74 [0.10]
b = 0.36 [0.01]
Seff = 170.11 [71.42]
Teff = 921 [97] K
Rp = 69.62 [23.16] Re
a = 0.1339 [0.0367] AU
Ag = 217.40 [85.15] [2.54σ]
Teffp = 5467 [210] K [19.70σ]

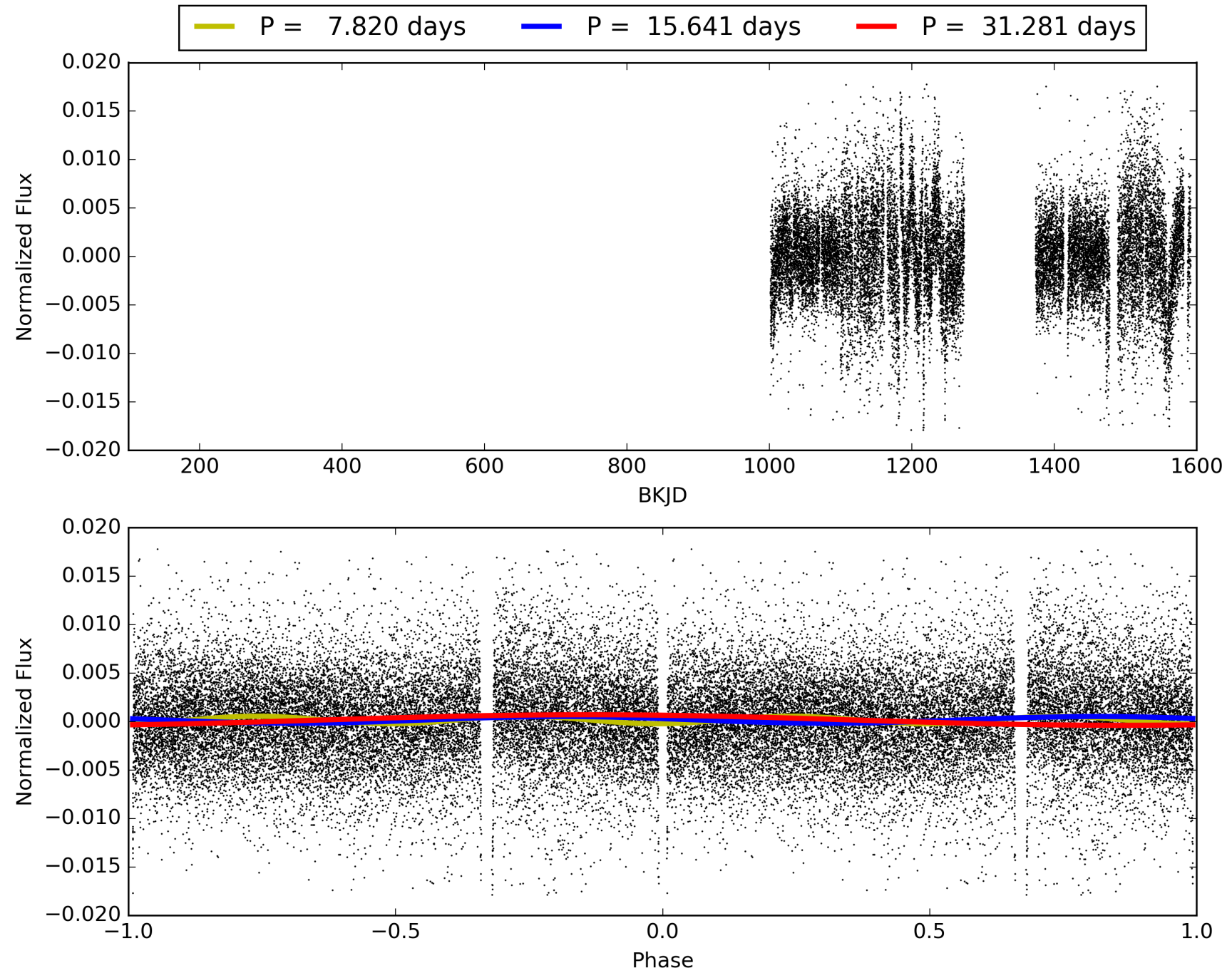
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 90.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [28/28]
GhostDiagnostic-chr: 1.03
Centroid-sig: N/A
Centroid-so: 2.956 arcsec [391.63σ]
OotOffset-rm: 4.749 arcsec [14.18σ]
KicOffset-rm: 0.315 arcsec [4.47σ]
OotOffset-st: 0/2/0/2 [4]
KicOffset-st: 0/2/2/2 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 1.00 [6/6]

TCE 004372765-01, PDC Light Curves

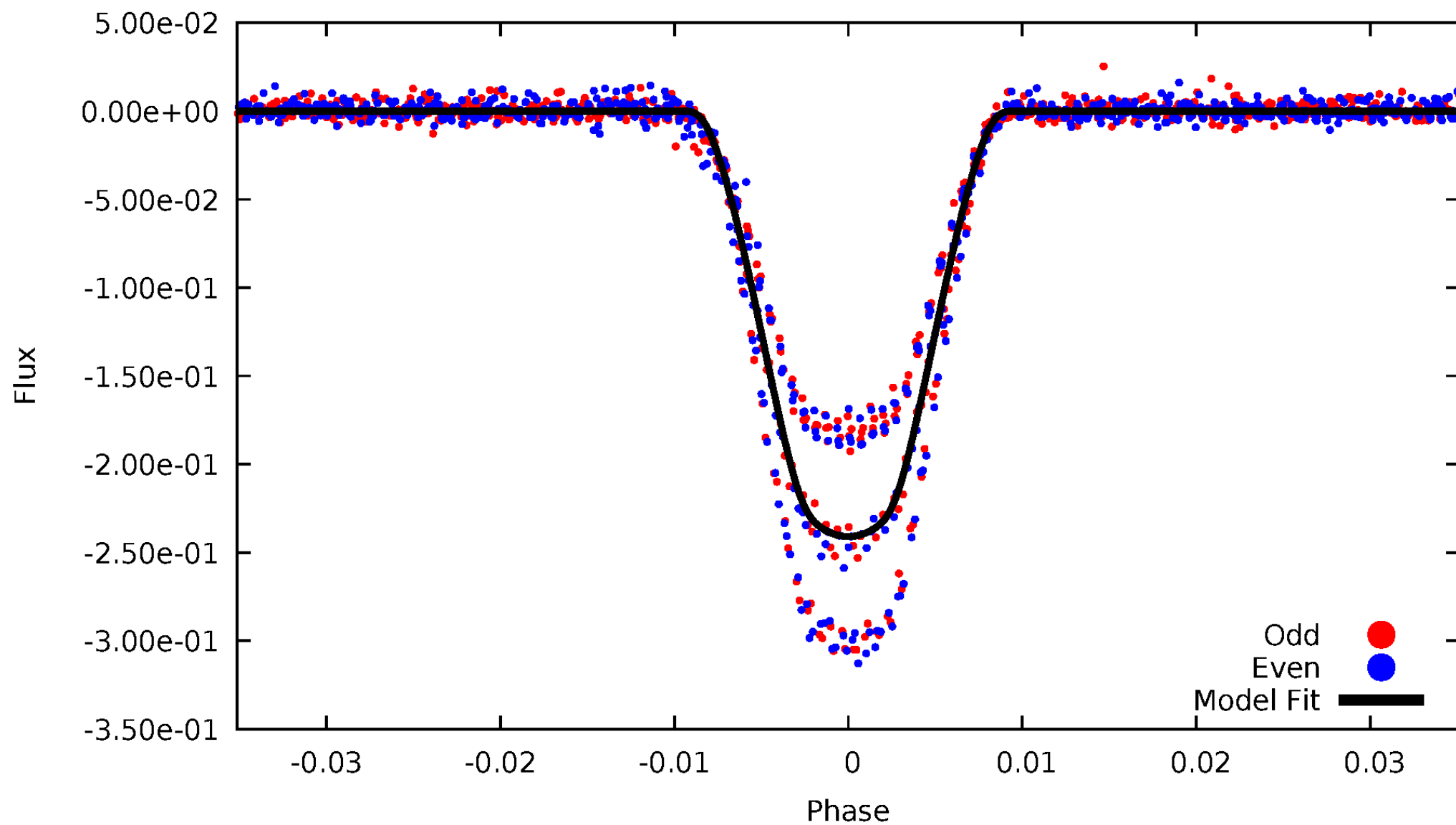


TCE 004372765-01



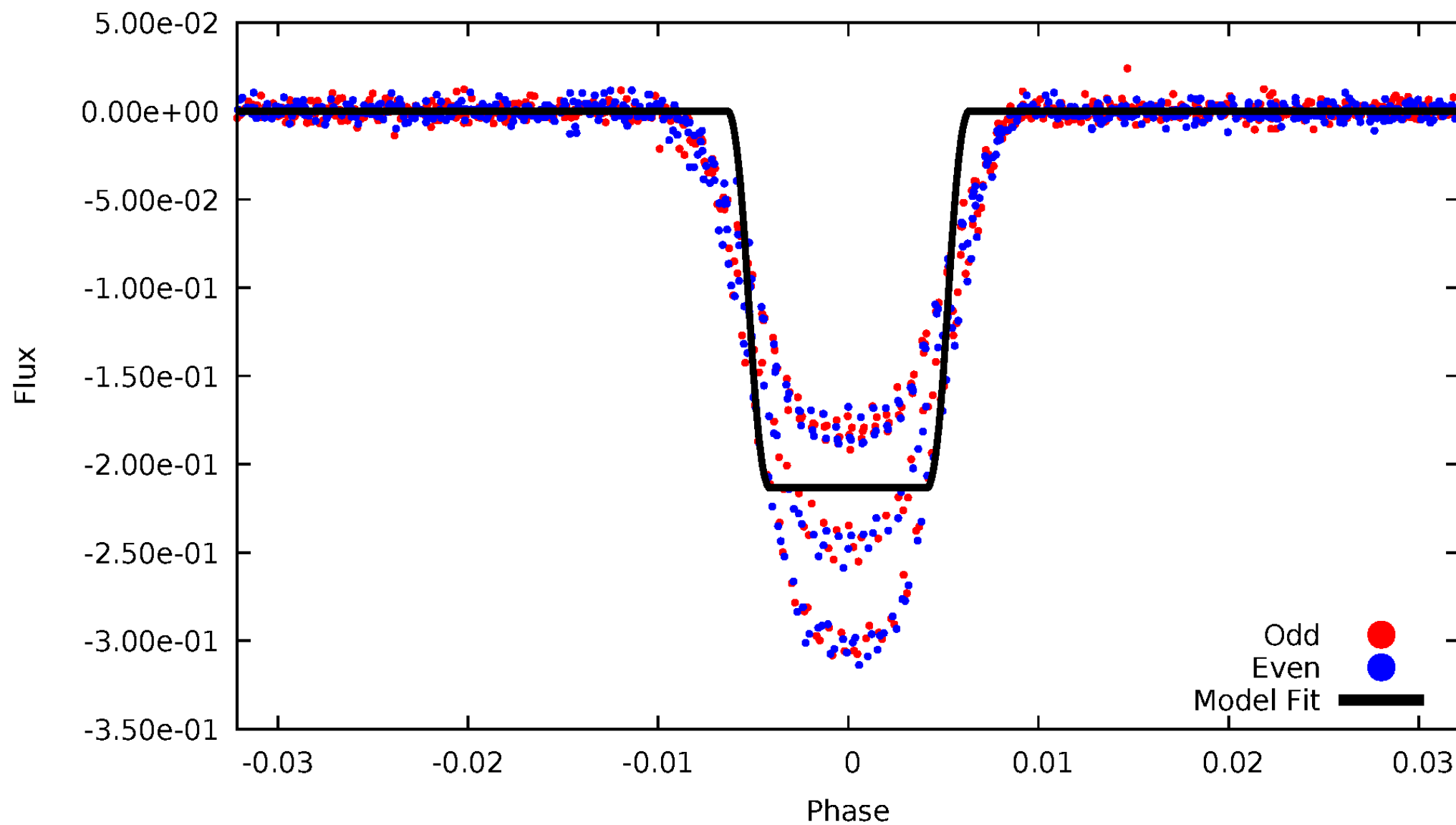
DV Odd/Even

TCE 004372765-01



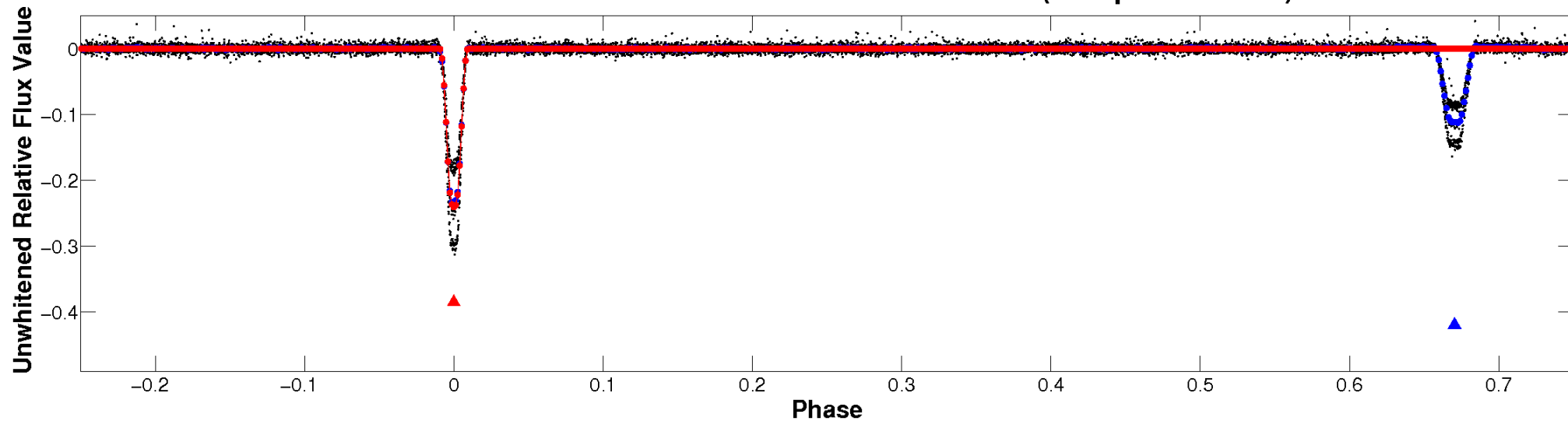
ALT Odd/Even

TCE 004372765-01

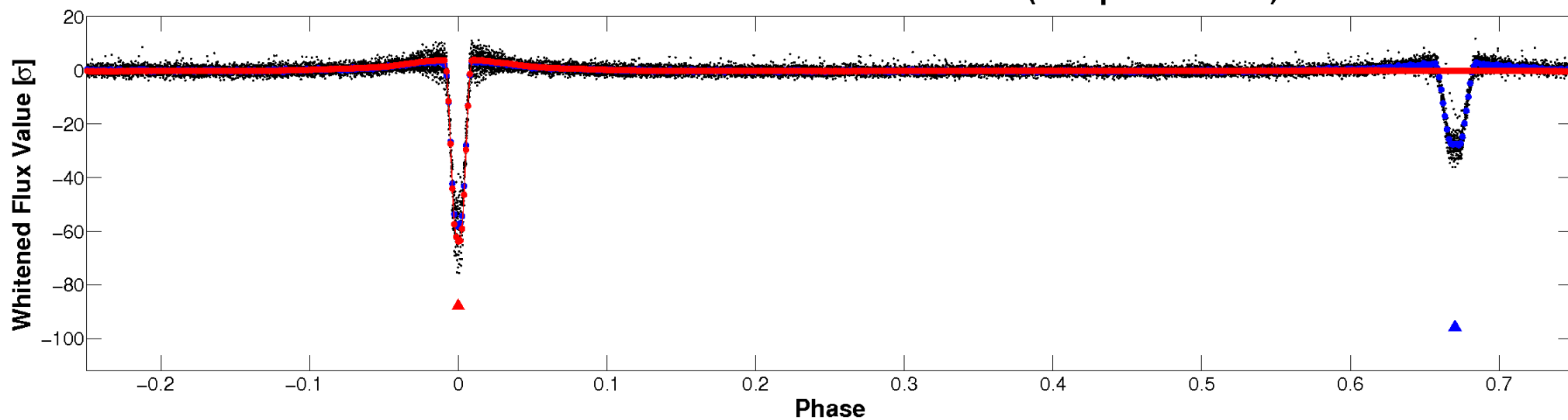


Non-Whitened Vs. Whitened Light Curve

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

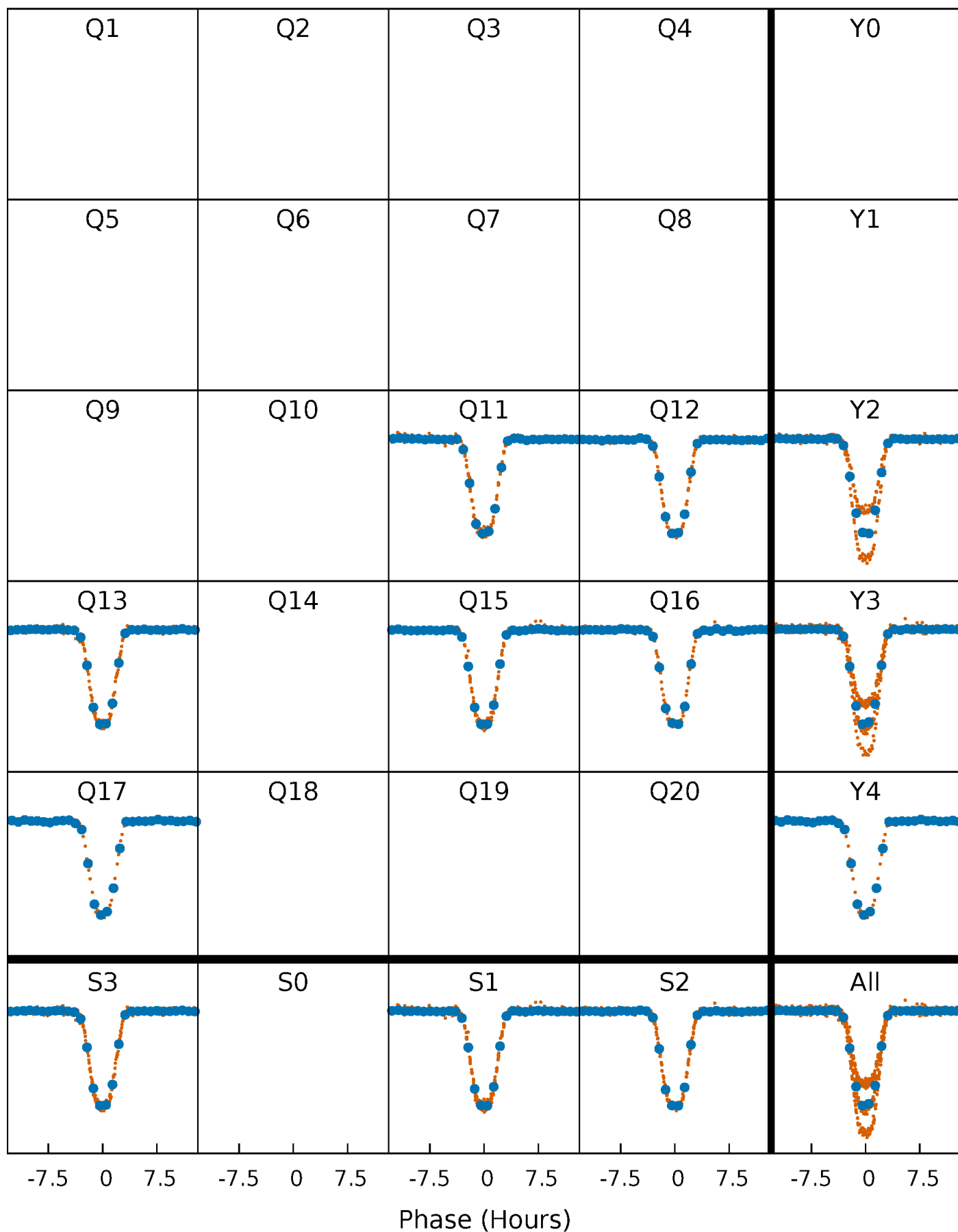


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



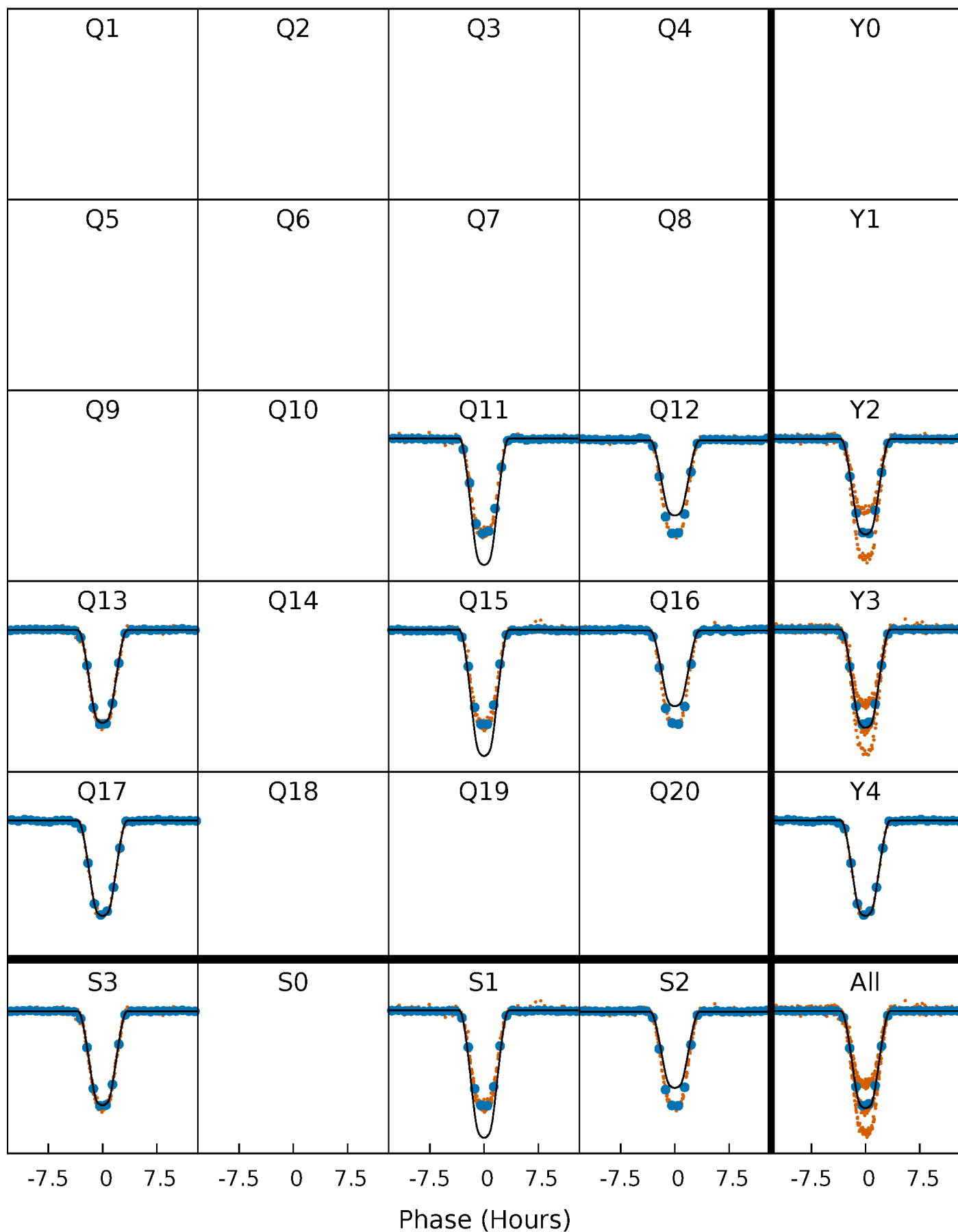
PDC Quarter-Phased Transit Curves

TCE 004372765-01 P= 15.640642 Days $T_0=140.085127$ (BKJD)



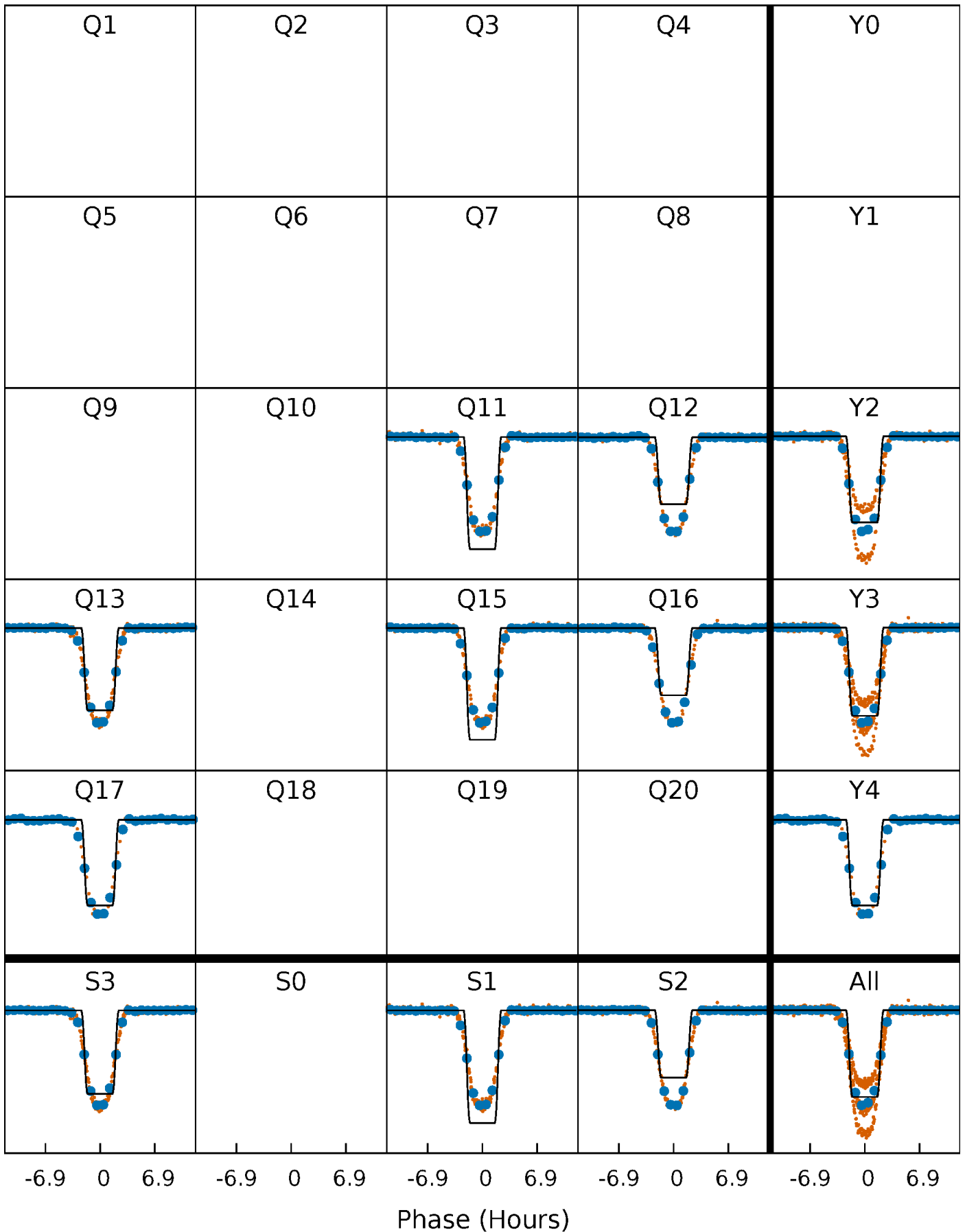
DV Quarter-Phased Transit Curves

TCE 004372765-01 P= 15.640642 Days $T_0=140.085127$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

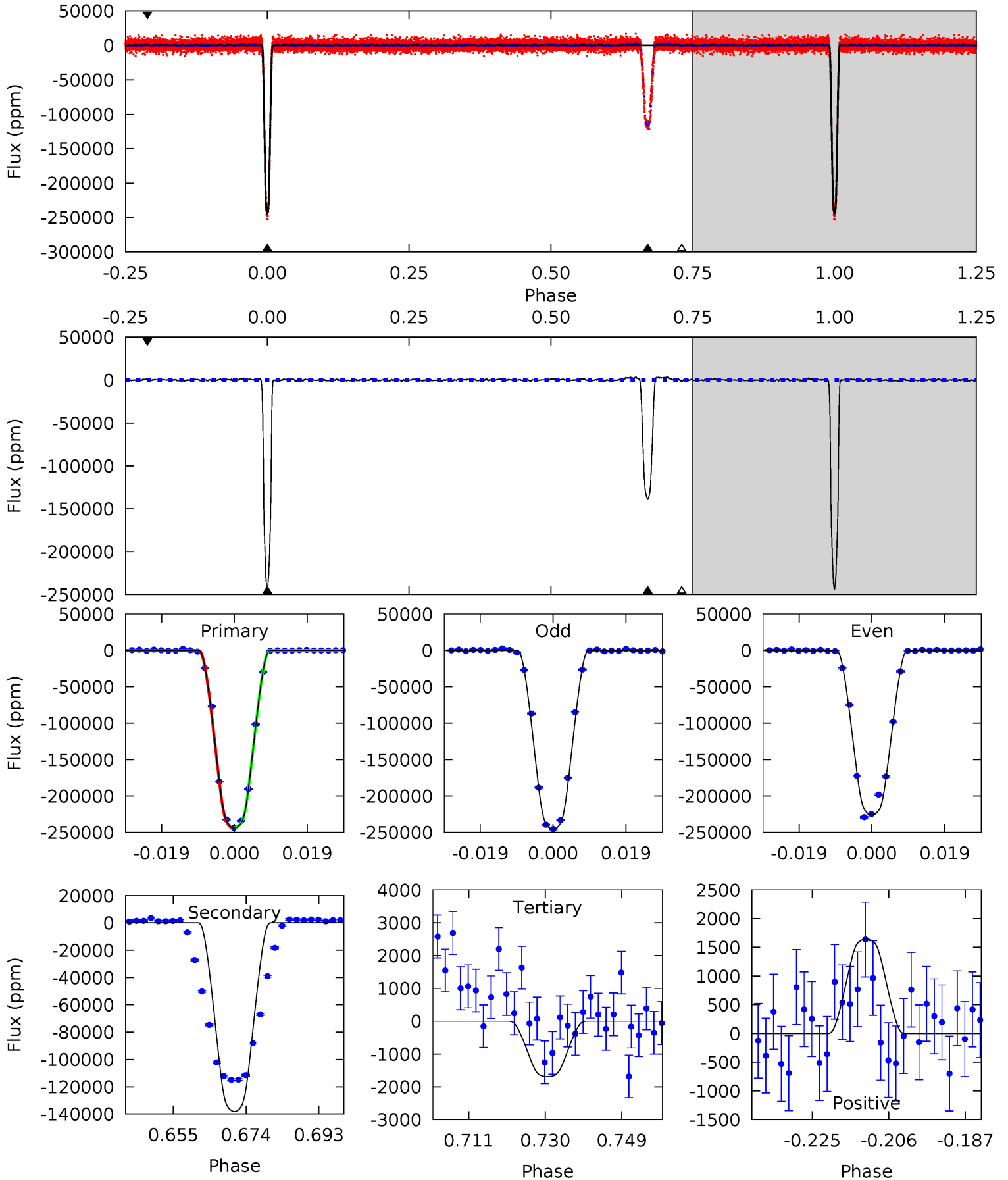
TCE 004372765-01 P= 15.640635 Days $T_0=140.085695$ (BKJD)



DV Model-Shift Uniqueness Test

004372765-01, P = 15.640642 Days, E = 140.085127 Days

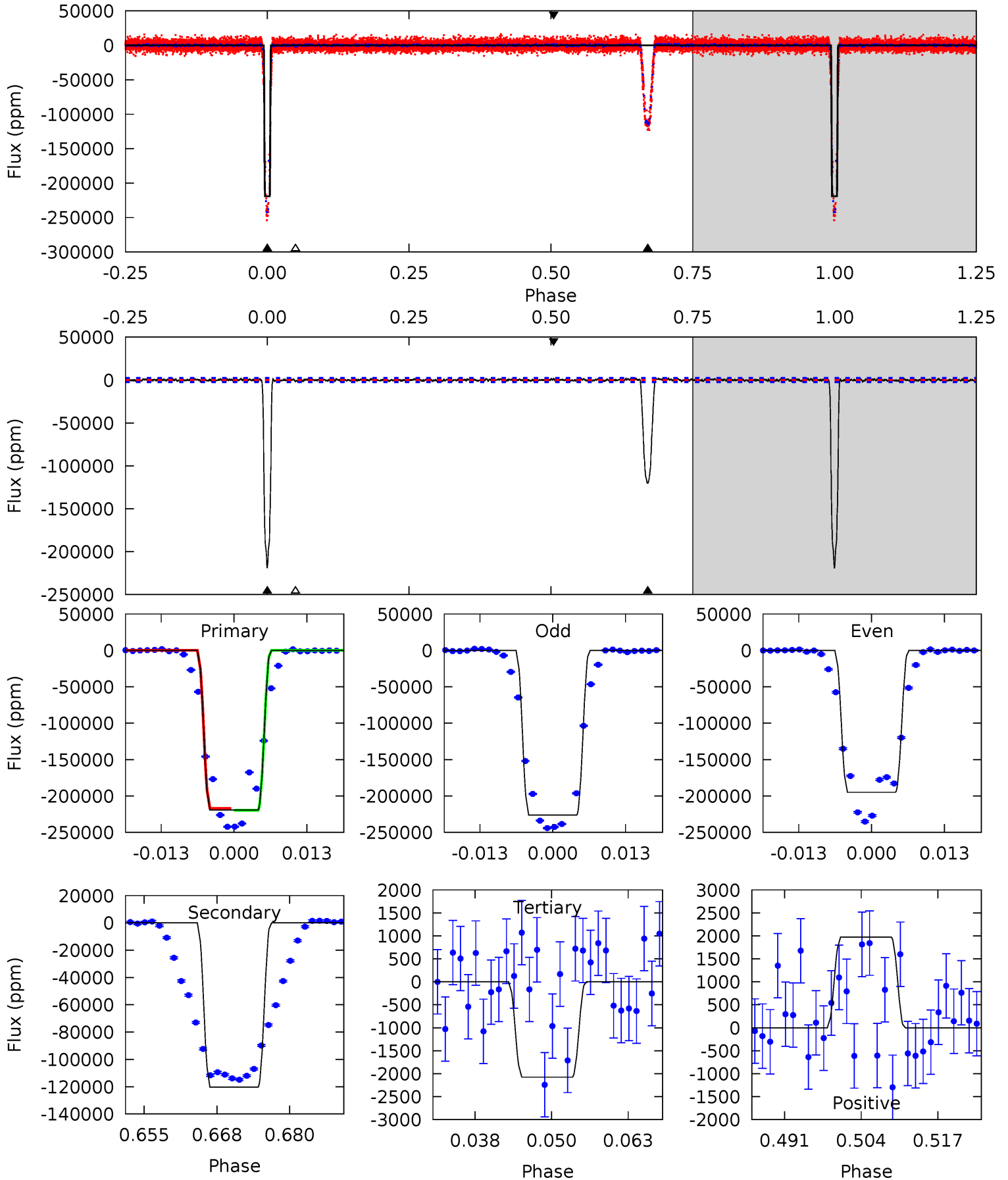
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
888.7	504.0	6.19	6.00	4.90	2.35	2.93	882.6	882.7	497.8	498.0	36.3	0.99	0.01	0



Alt Model-Shift Uniqueness Test

004372765-01, P = 15.640635 Days, E = 140.085695 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
429.3	235.7	4.07	3.87	4.98	2.49	1.25	425.2	425.4	231.7	231.9	33.8	0.99	0.01	0



Stellar Parameters For KIC 004372765

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6517^{+180}_{-248}	$4.279^{+0.090}_{-0.210}$	$0.140^{+0.200}_{-0.350}$	$1.374^{+0.457}_{-0.211}$	$1.313^{+0.185}_{-0.206}$	$0.713^{+0.355}_{-0.373}$
	+3%/-4%	+2%/-5%	+143%/-250%	+33%/-15%	+14%/-16%	+50%/-52%
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 004372765-01 / KOI 3698.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-138165 ± 274	$70.86^{+12.55}_{-7.03}$	1302^{+98}_{-74}	6030^{+156}_{-206}	310^{+58}_{-76}
Alt.	-120349 ± 511	$70.48^{+12.85}_{-6.89}$	1301^{+113}_{-72}	5816^{+163}_{-202}	267^{+50}_{-71}

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

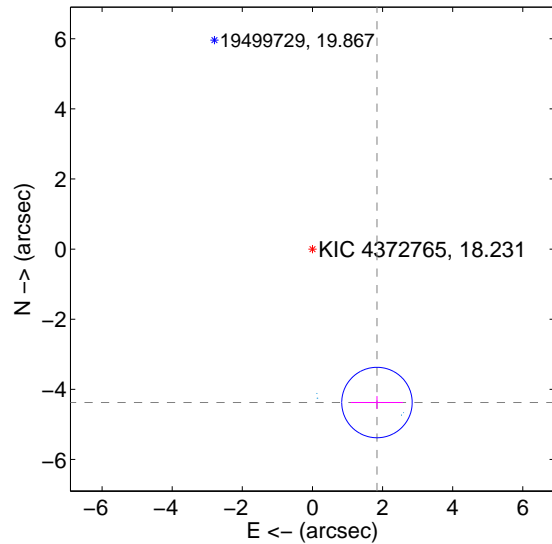
Supplemental centroid analysis for 004372765-01. Kepler magnitude: 18.23. Transit SNR 393.52

There are 6 quarters with good PRF difference image offsets

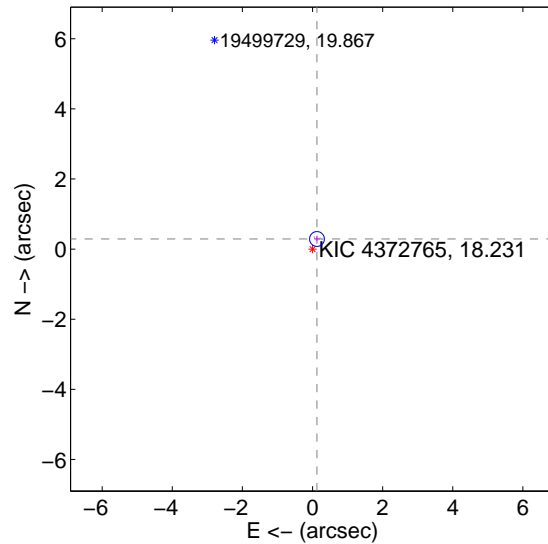
The OOT PRF centroid is offset from the target star catalog position by about 4.56 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.749 ± 0.335	14.18	-1.841 ± 0.745	-4.377 ± 0.184
PRF-fit source offset from KIC position	0.315 ± 0.070	4.47	-0.127 ± 0.078	0.288 ± 0.069
photometric centroid source offset	2.96 ± 0.01	391.63	0.08 ± 0.01	2.95 ± 0.01

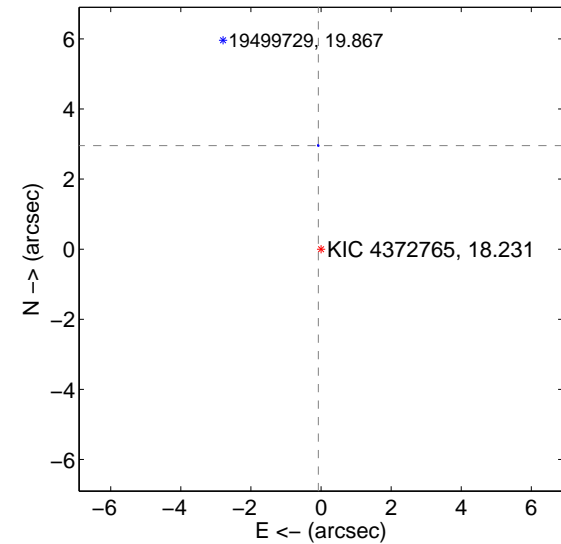
offset from difference PRF-fit to OOT PRF-fit



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.

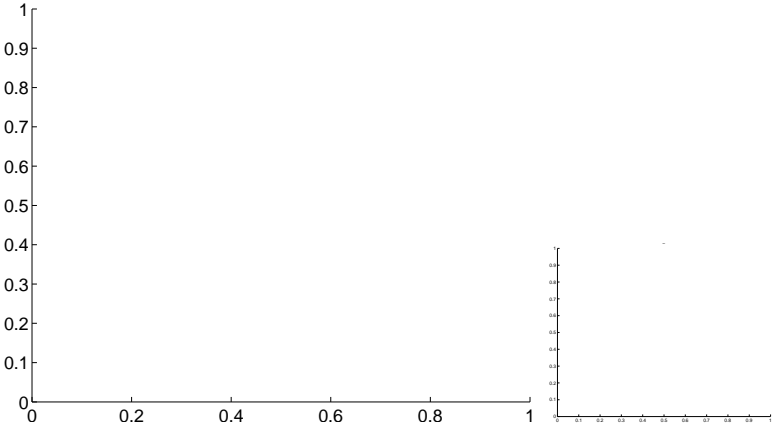


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q9 no difference image



Q9 no OOT image



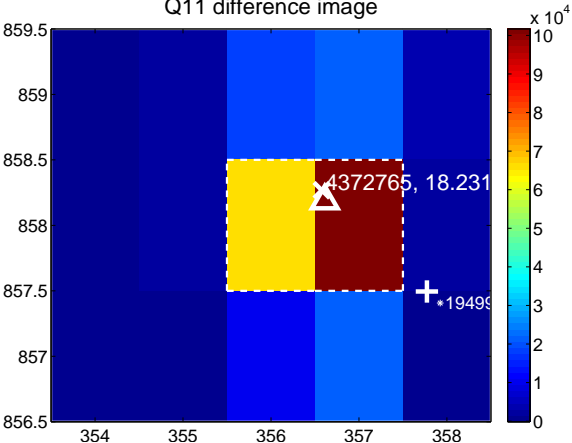
Q10 no difference image



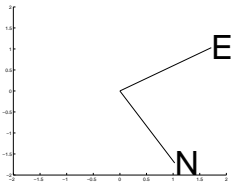
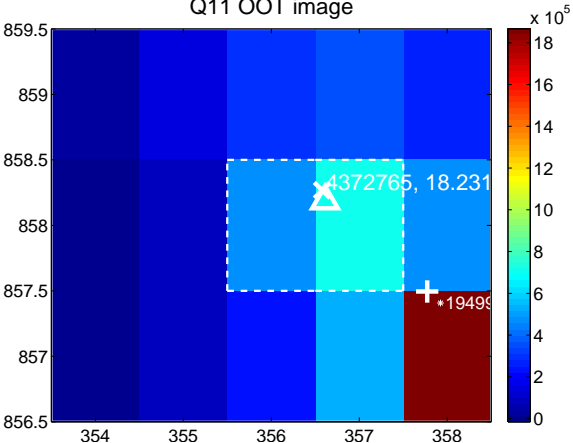
Q10 no OOT image



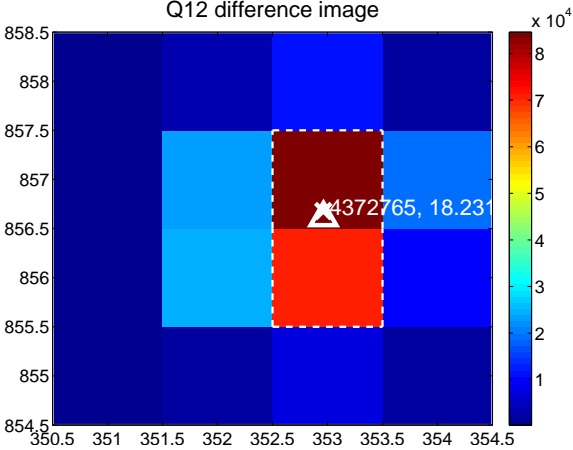
Q11 difference image



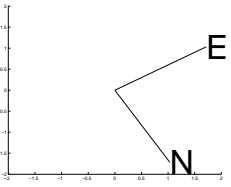
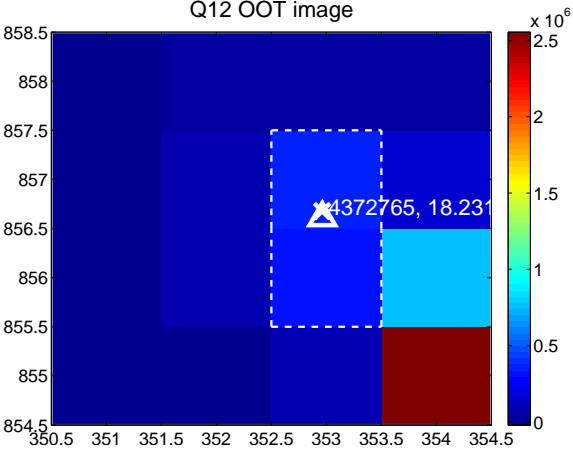
Q11 OOT image



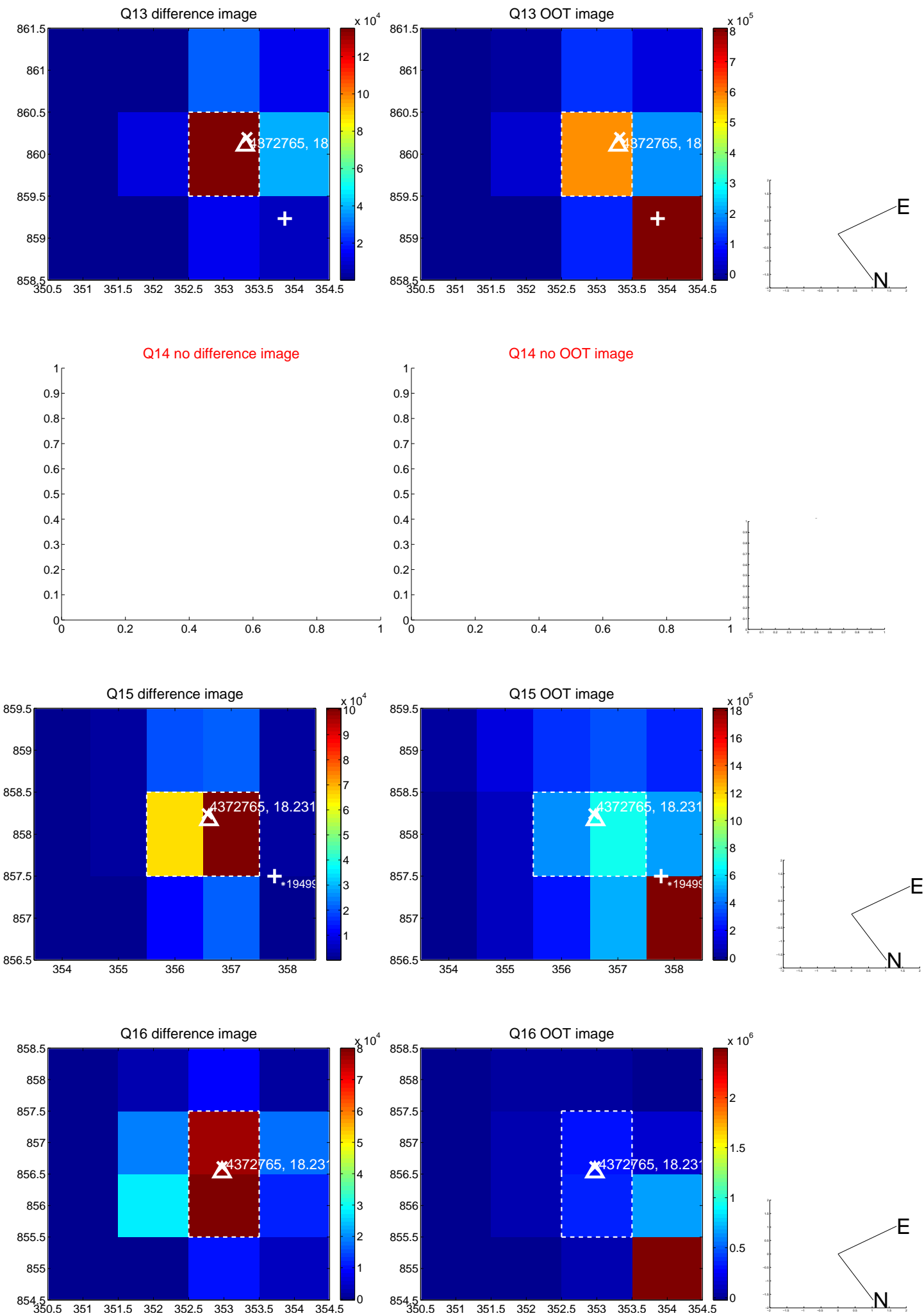
Q12 difference image



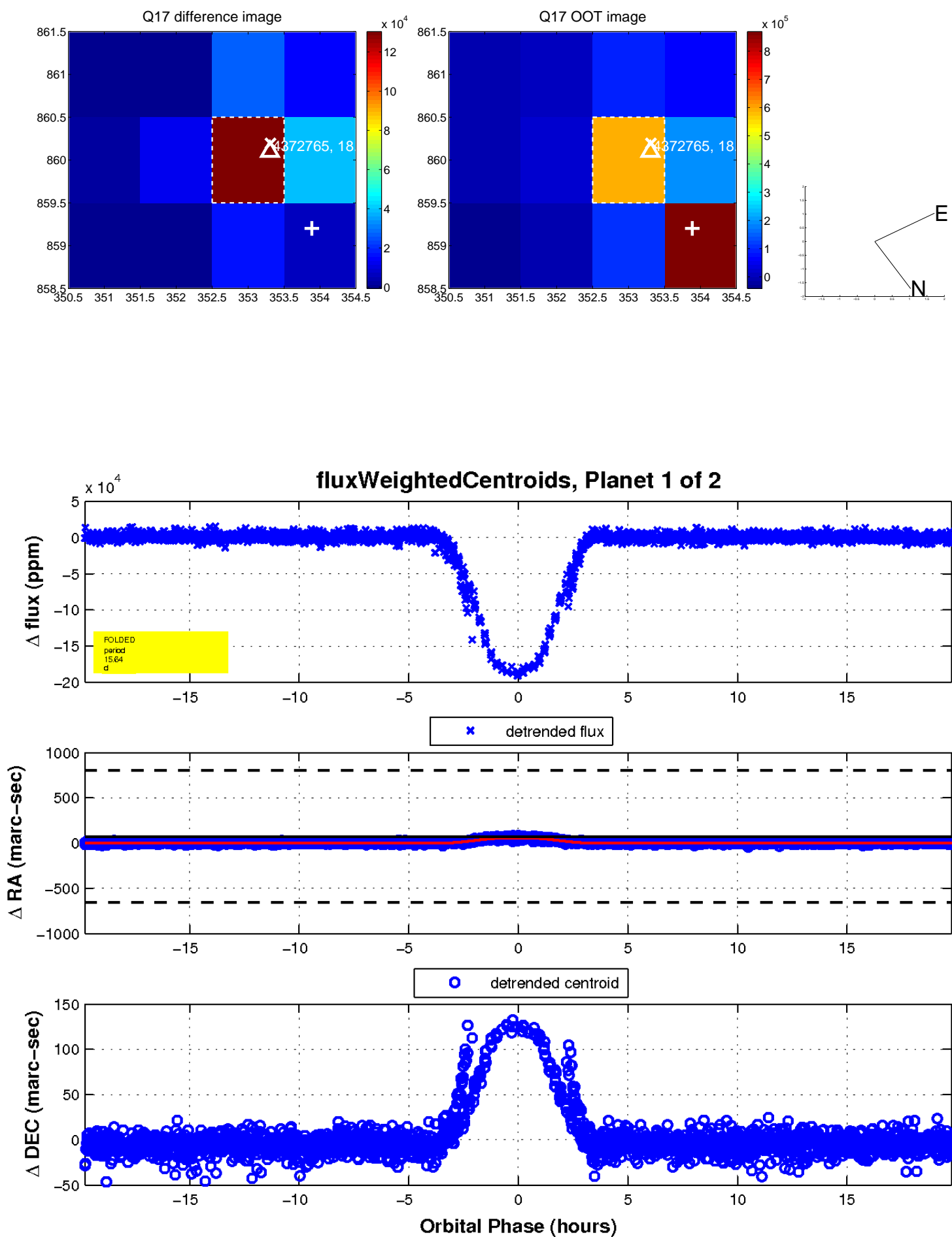
Q12 OOT image



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

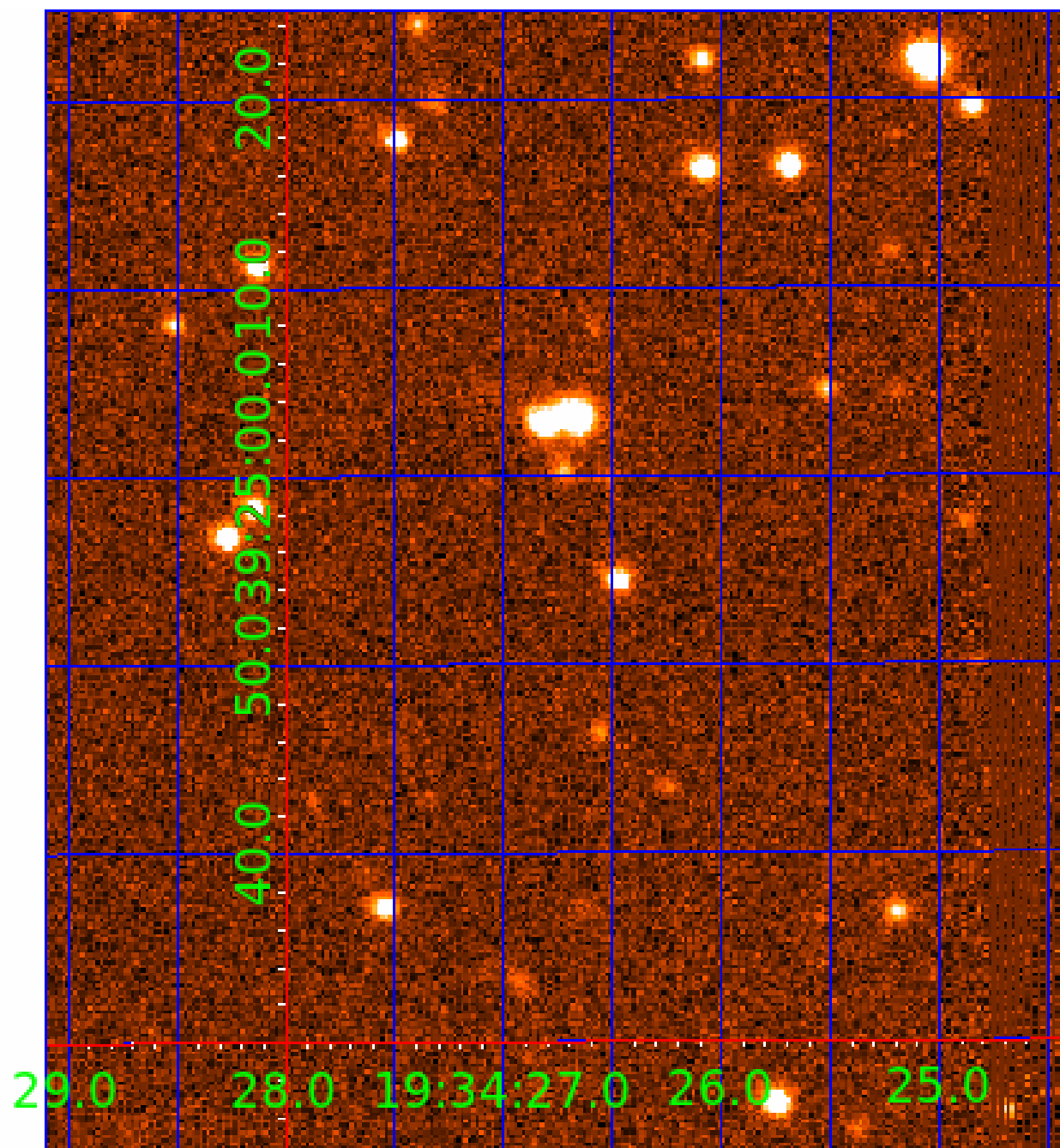


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004372765

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})
004372765-01	OBS	3698.01	15.640642	140.085127	240881.6	6.592	764.9	393.5	1.37	6517	69.62	170.11
004372765-02	OBS	No	15.640711	134.926804	135640.8	6.000	426.1	-1.0	1.37	6517	51.13	170.11

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004372765-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_KIC_POS
004372765-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS

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

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

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

Ephemeris Match Information For 004372765-02

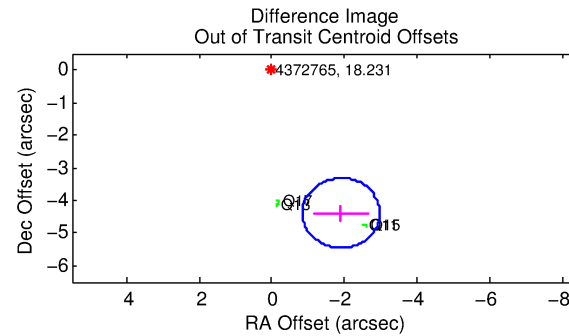
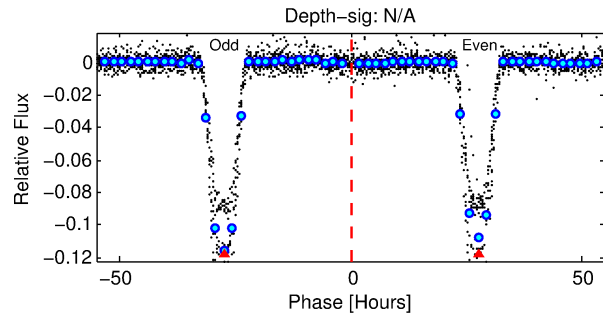
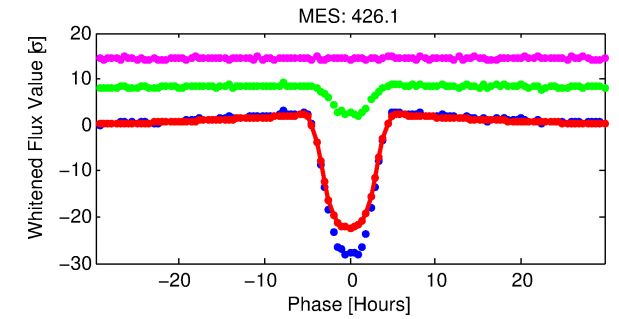
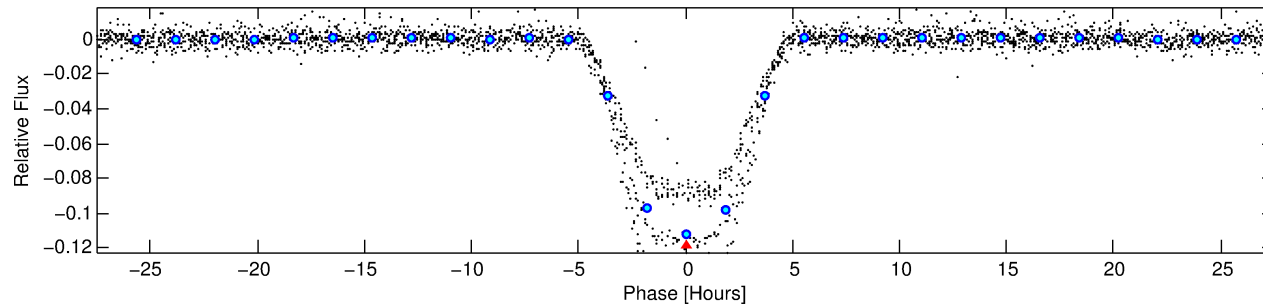
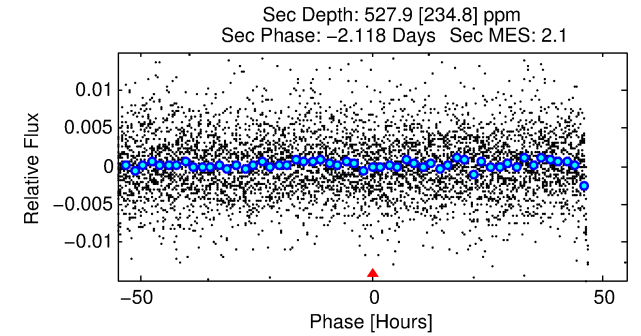
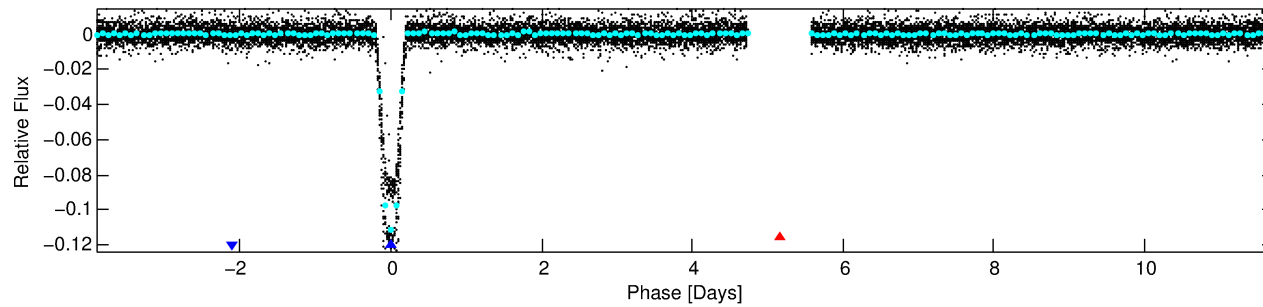
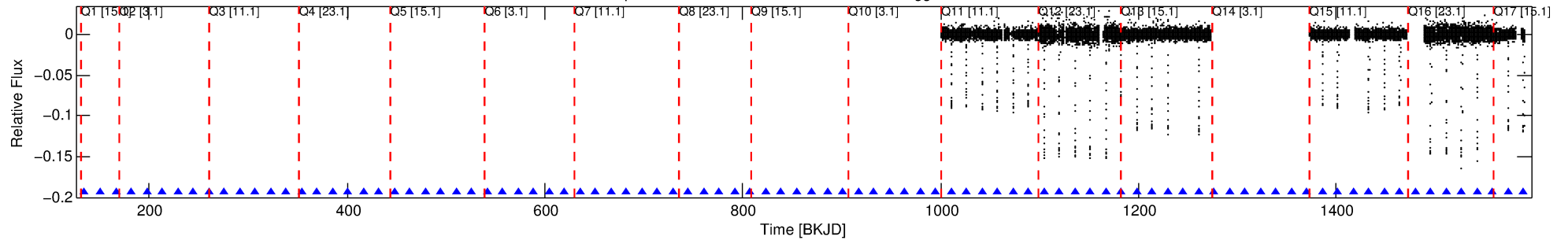
No Significant Match Found

DV One-Page Summary

KIC: 4372765 Candidate: 2 of 2 Period: 15.641 d

KOI: K03698 Corr: No Ephemeris Match

Kp: 18.23 R*: 1.37 Rs Teff: 6517.0 K Logg: 4.28 Fe/H: 0.140



TPS TCE Results:

Period = 15.64071 d
Epoch = 134.9268 BKJD

DV fit results are unavailable

DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]

LongPeriod-sig: N/A

ModelChiSquare2-sig: N/A

ModelChiSquareGof-sig: N/A

Bootstrap-pfa: N/A

RollingBand-fgt: 1.00 [25/25]

GhostDiagnostic-chr: 1.203

Centroid-sig: N/A

Centroid-so: 2.668 arcsec [194.83σ]

OotOffset-rm: 4.782 arcsec [13.43σ]

KicOffset-rm: 0.290 arcsec [4.03σ]

OotOffset-st: 0/2/0/2 [4]

KicOffset-st: 0/2/2/2 [6]

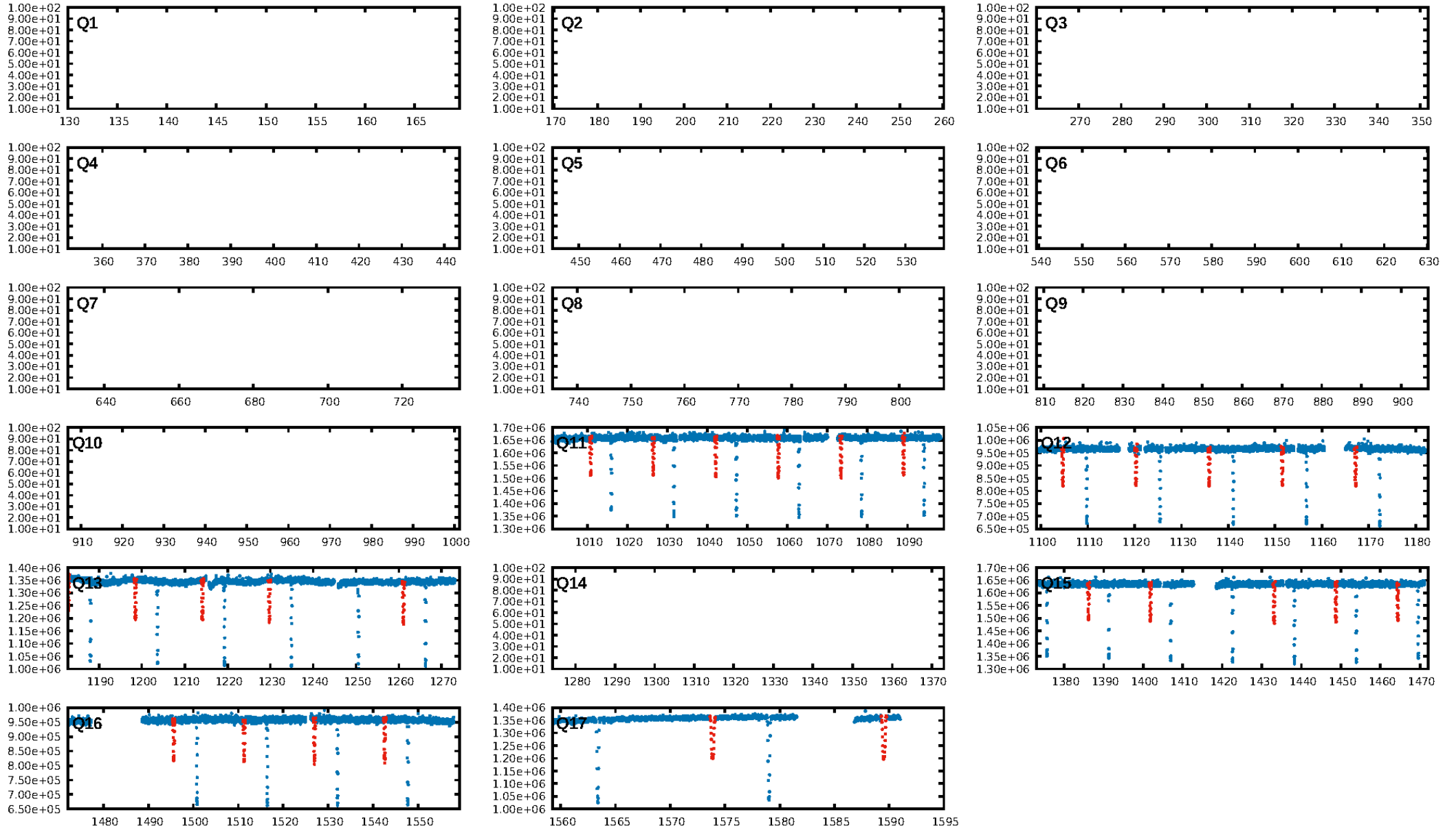
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DiffImageOverlap-fno: 1.00 [6/6]

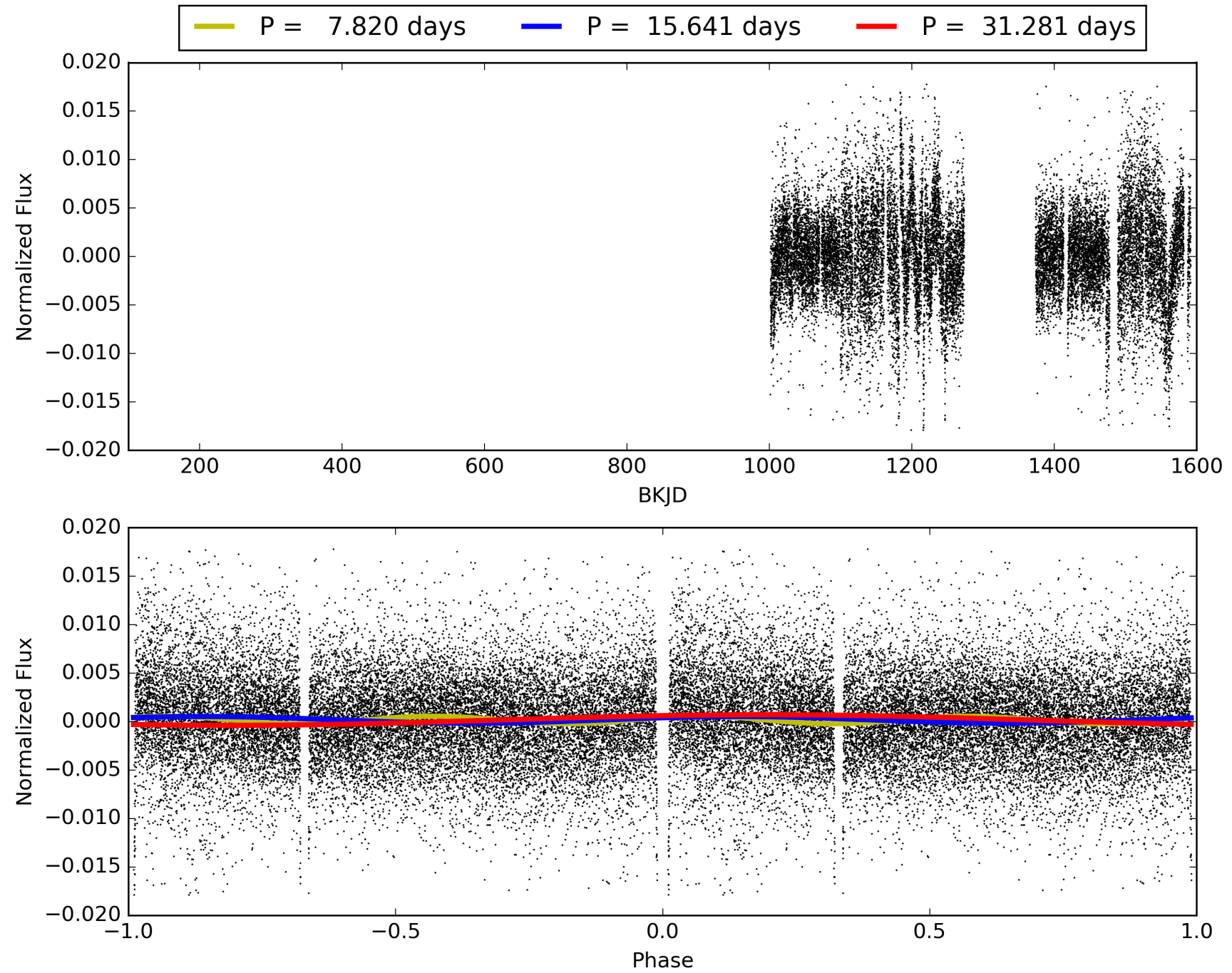
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:09:53 Z

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

TCE 004372765-02, PDC Light Curves

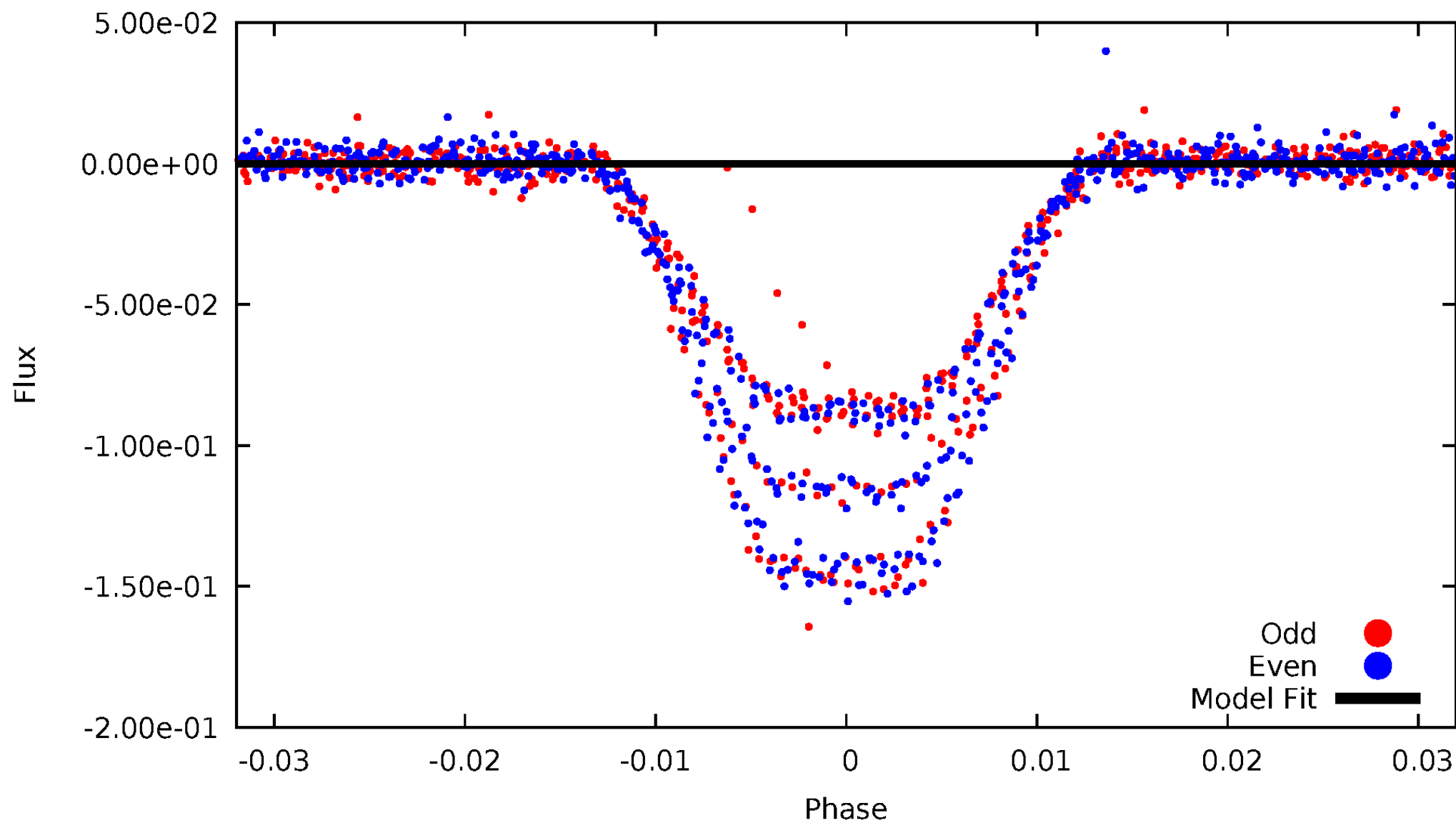


TCE 004372765-02



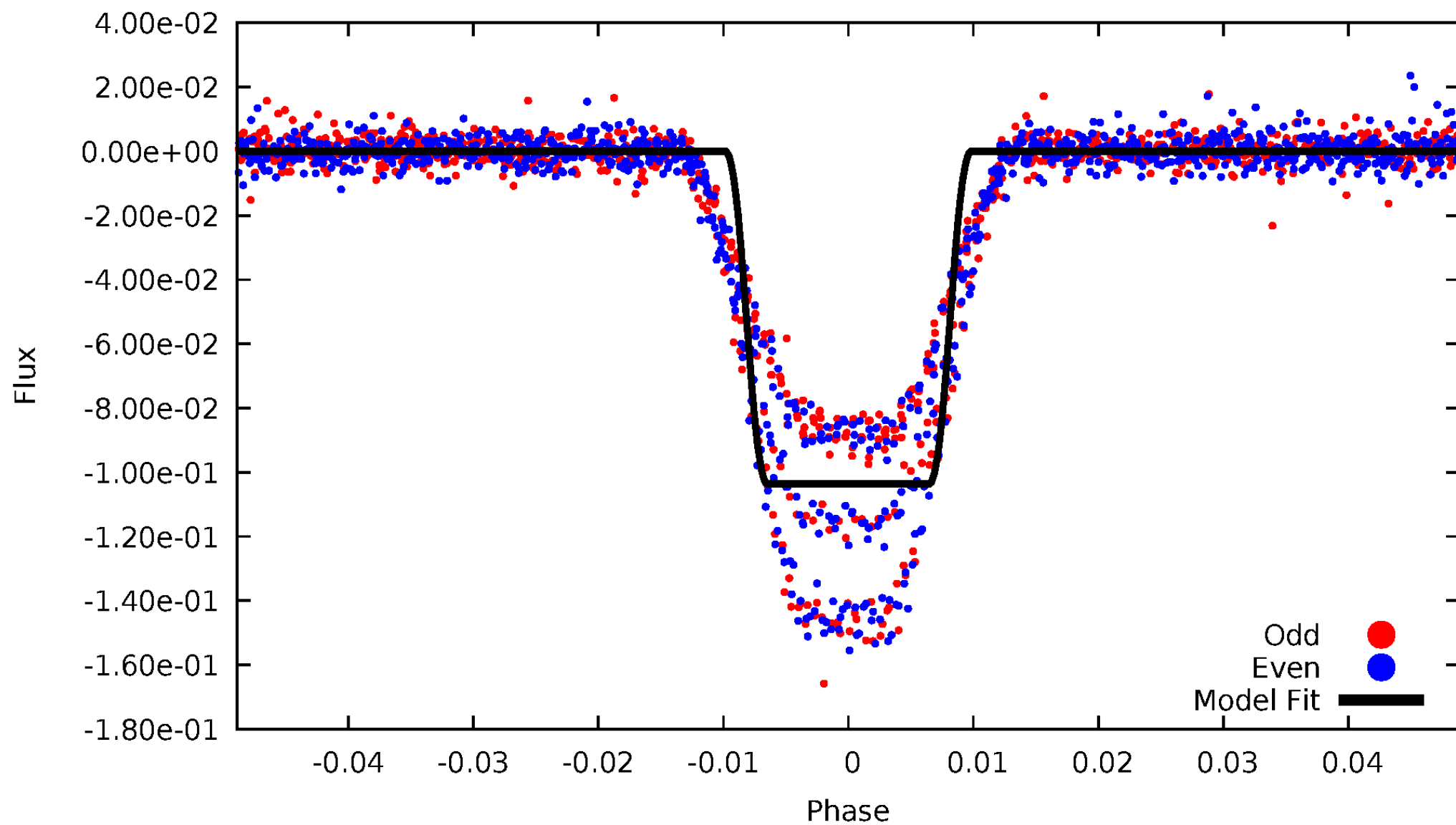
DV Odd/Even

TCE 004372765-02



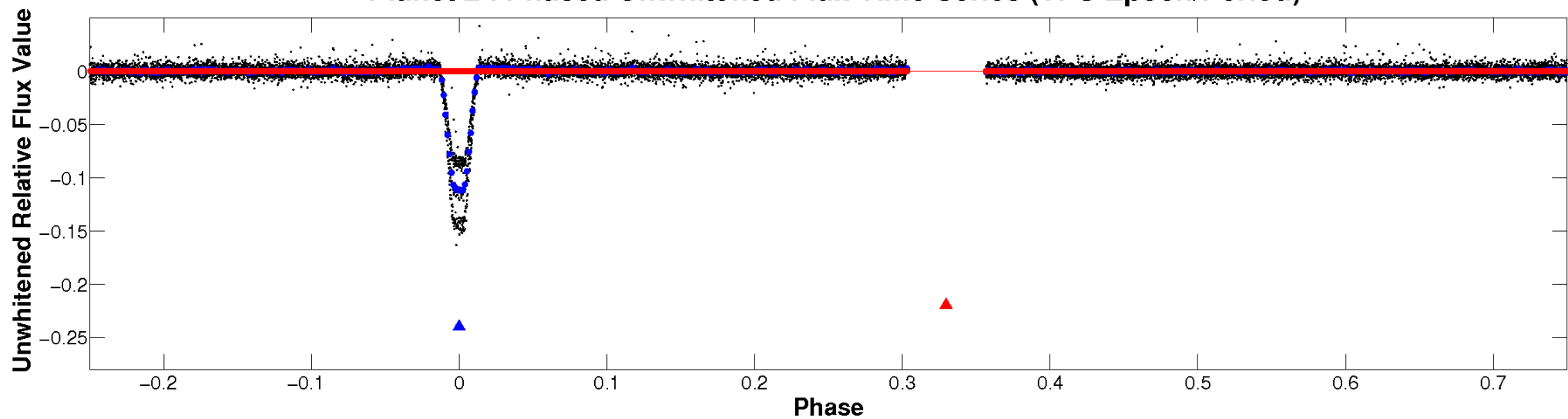
ALT Odd/Even

TCE 004372765-02

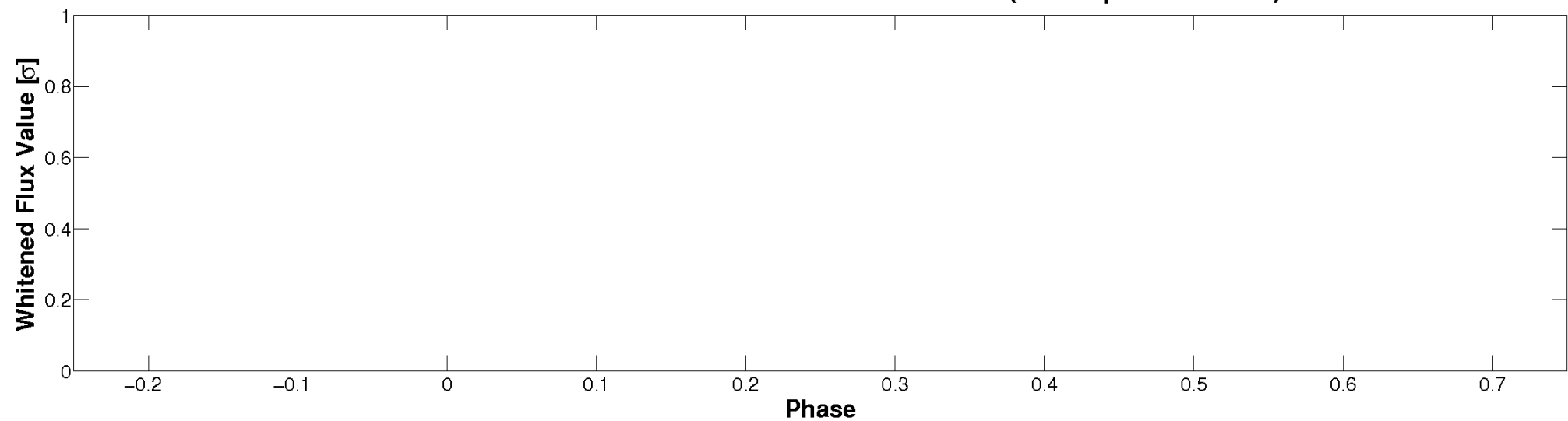


Non-Whitened Vs. Whitened Light Curve

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

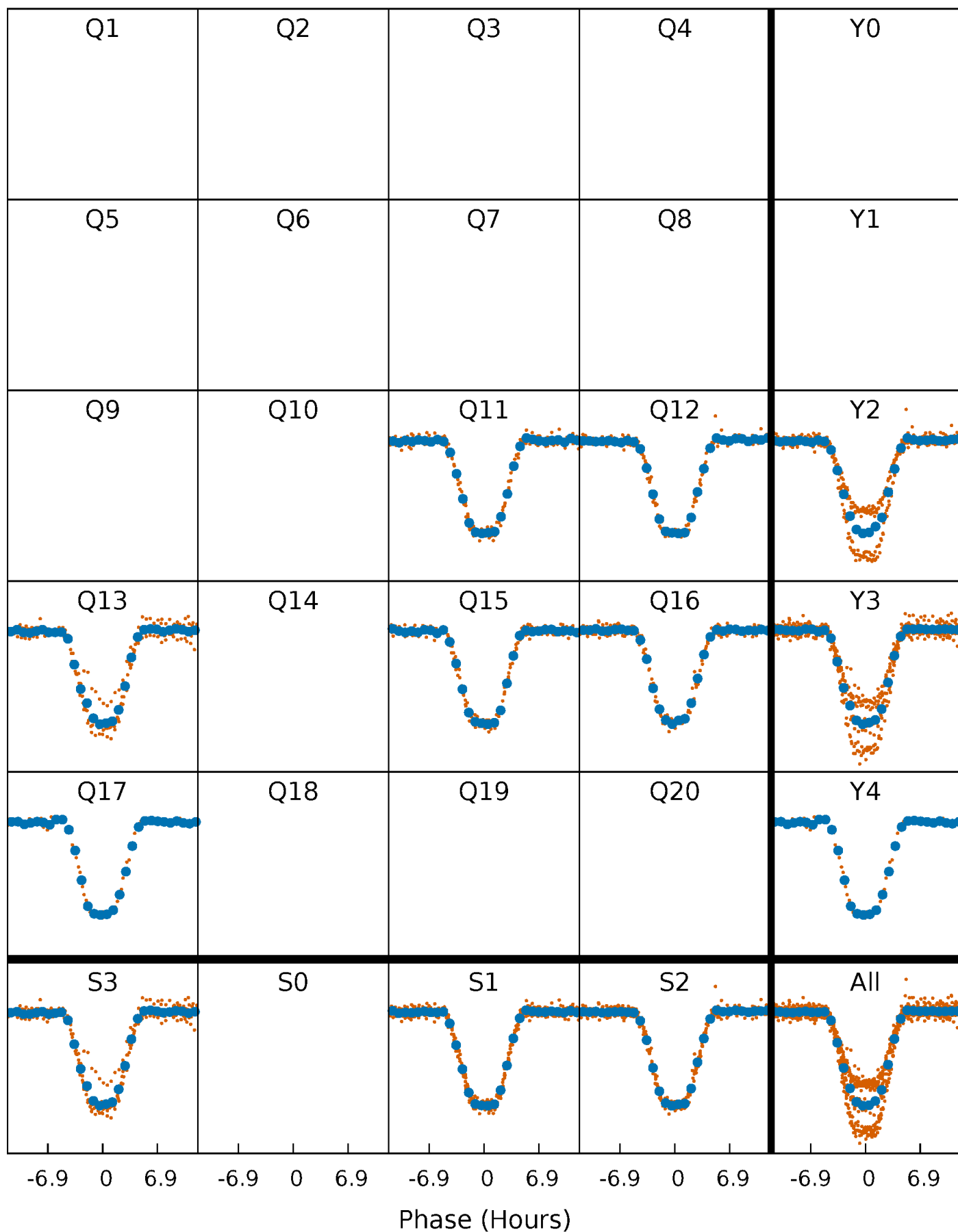


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



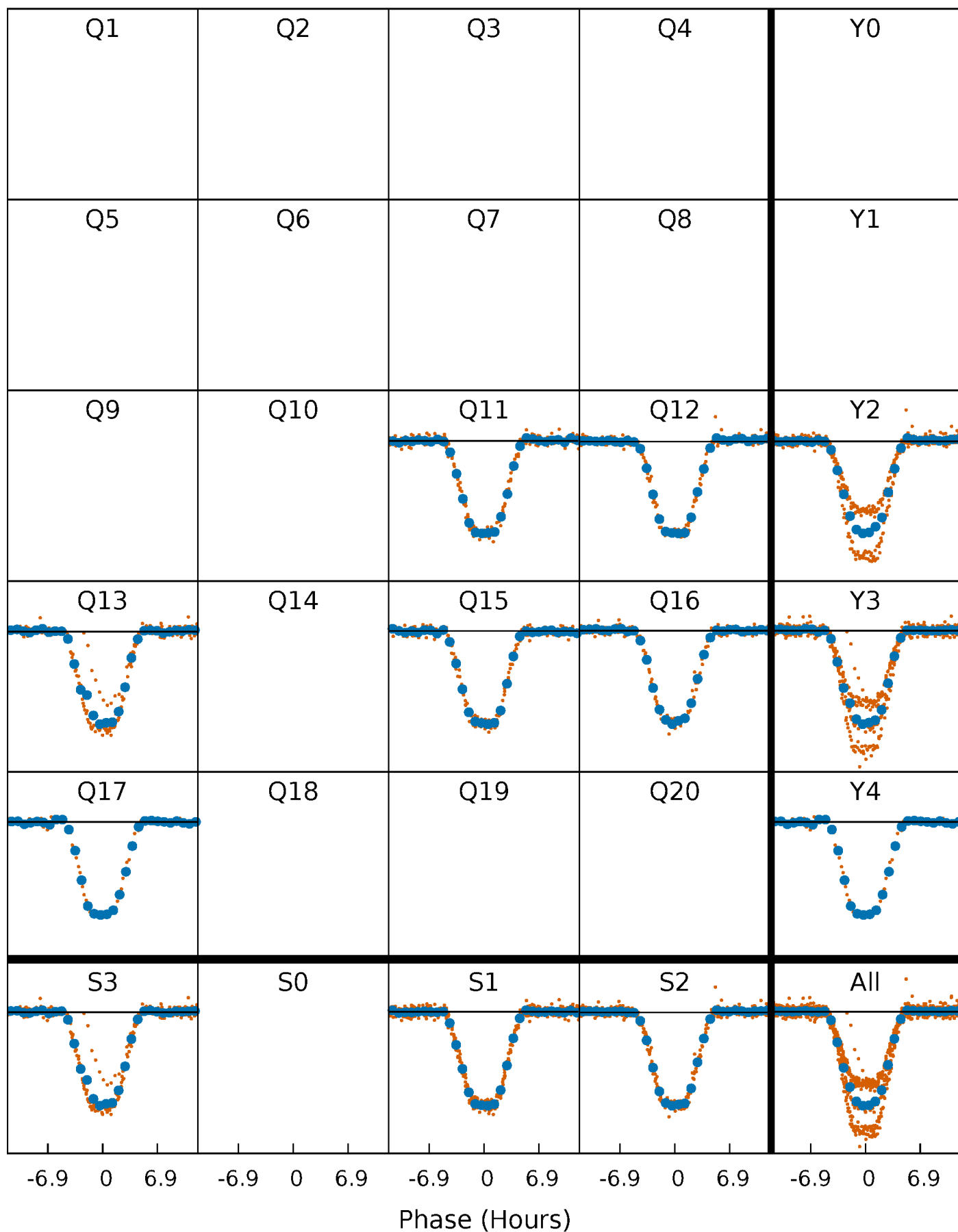
PDC Quarter-Phased Transit Curves

TCE 004372765-02 P= 15.640711 Days $T_0=134.926804$ (BKJD)



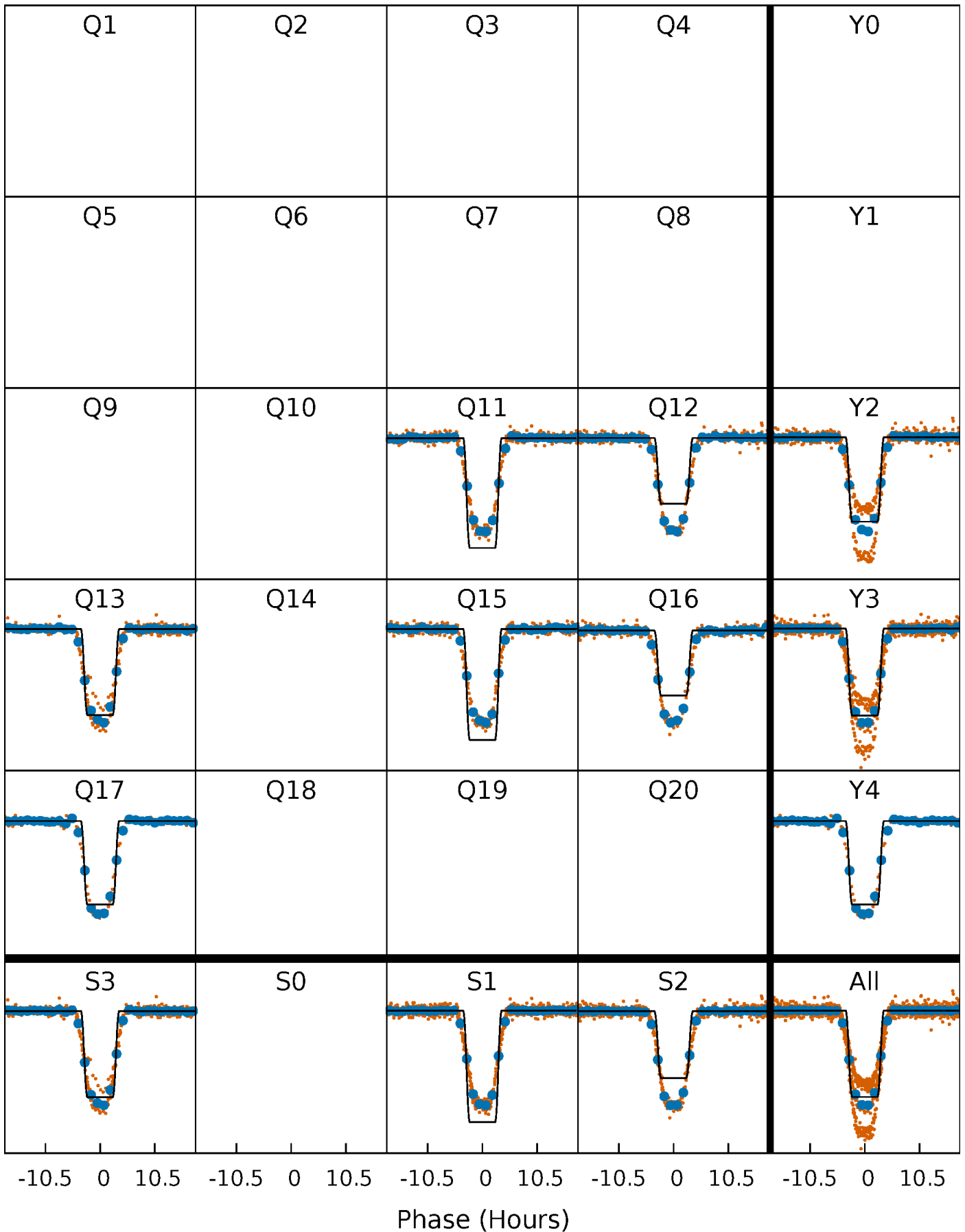
DV Quarter-Phased Transit Curves

TCE 004372765-02 P= 15.640711 Days $T_0=134.926804$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

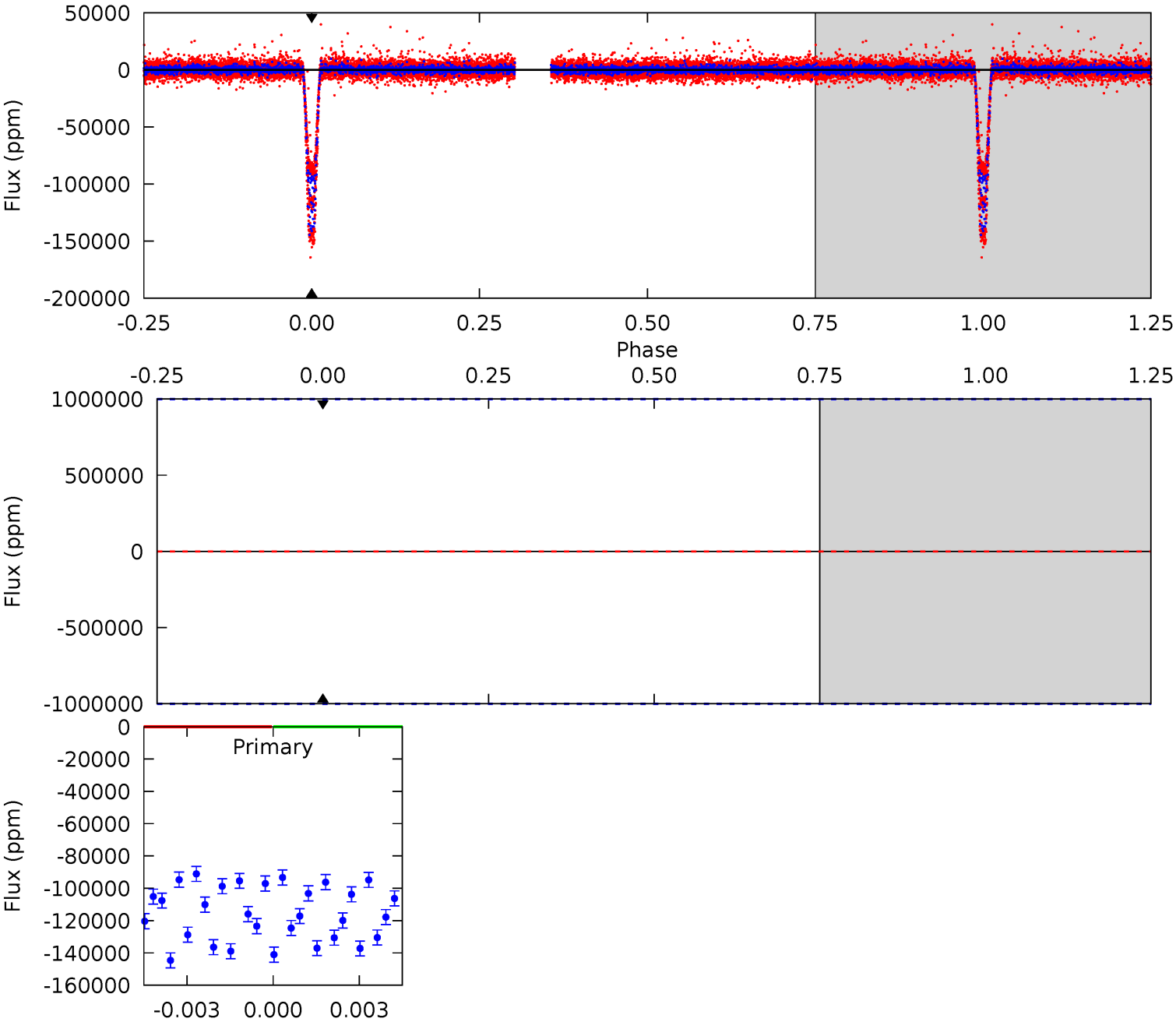
TCE 004372765-02 P= 15.640711 Days $T_0=134.926681$ (BKJD)



DV Model-Shift Uniqueness Test

004372765-02, P = 15.640711 Days, E = 134.926804 Days

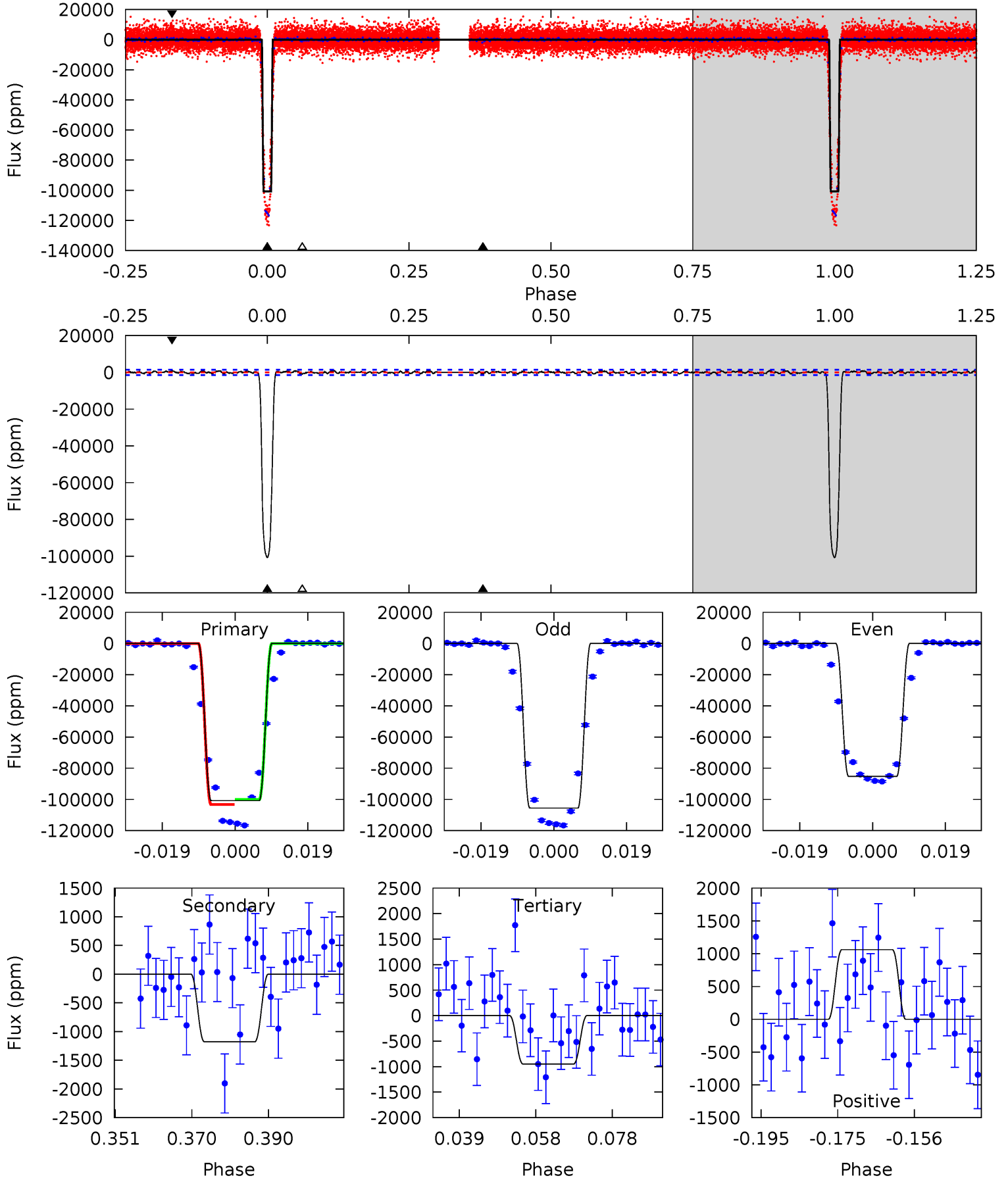
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

004372765-02, P = 15.640711 Days, E = 134.926681 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
338.9	3.96	3.19	3.57	4.90	2.34	1.24	335.7	335.4	0.77	0.39	37.3	0.99	0.01	0



Stellar Parameters For KIC 004372765

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6517^{+180}_{-248}	$4.279^{+0.090}_{-0.210}$	$0.140^{+0.200}_{-0.350}$	$1.374^{+0.457}_{-0.211}$	$1.313^{+0.185}_{-0.206}$	$0.713^{+0.355}_{-0.373}$
	+3%/-4%	+2%/-5%	+143%/-250%	+33%/-15%	+14%/-16%	+50%/-52%
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 004372765-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$52.83^{+18.01}_{-16.05}$	1302^{+105}_{-75}	-3522^{+9881}_{-2816}	$-20.388^{+386.457}_{-360.865}$
Alt.	-1178 ± 297	$50.11^{+17.91}_{-15.59}$	1306^{+97}_{-77}	2819^{+321}_{-234}	$4.434^{+5.194}_{-2.064}$

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

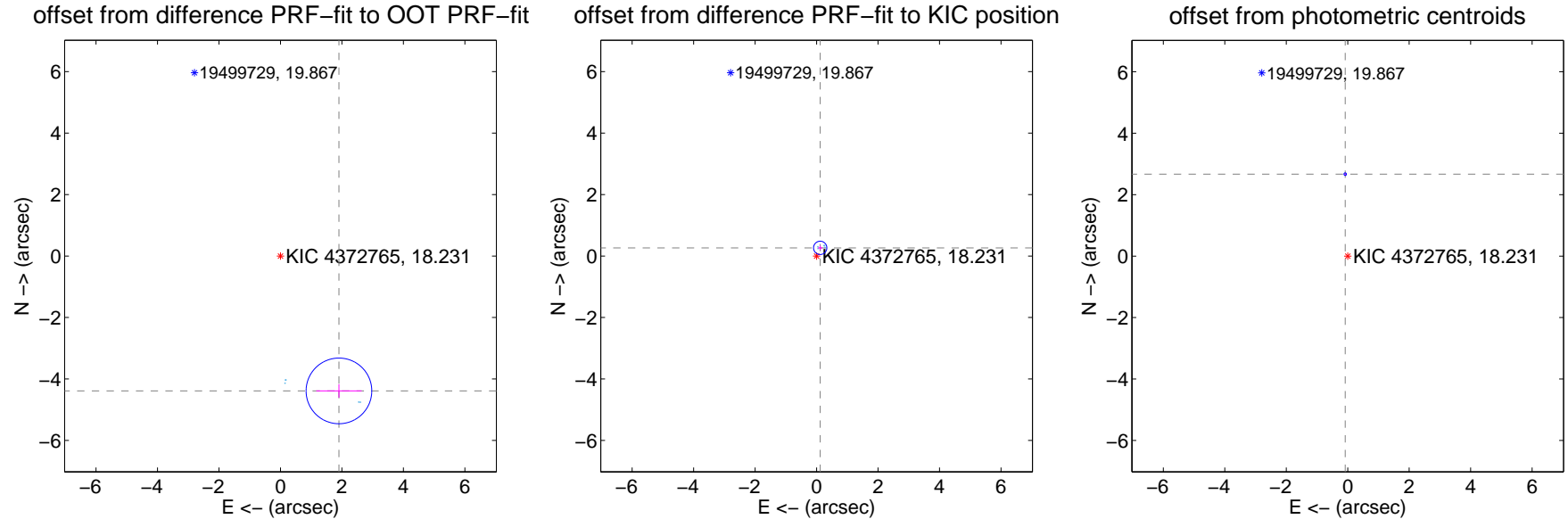
DV Centroid Data

Supplemental centroid analysis for 004372765-02. Kepler magnitude: 18.23. Transit SNR -1.00

There are 6 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 4.37 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.782 ± 0.356	13.43	-1.902 ± 0.738	-4.388 ± 0.220
PRF-fit source offset from KIC position	0.290 ± 0.072	4.03	-0.118 ± 0.077	0.266 ± 0.071
photometric centroid source offset	2.67 ± 0.01	194.83	0.08 ± 0.01	2.67 ± 0.01



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

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



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

Q9 no difference image



Q9 no OOT image



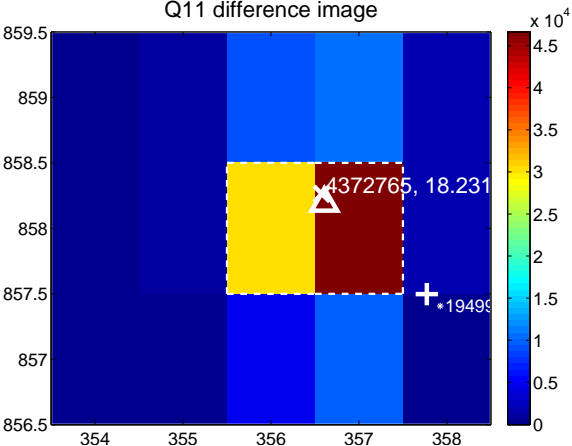
Q10 no difference image



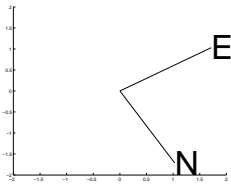
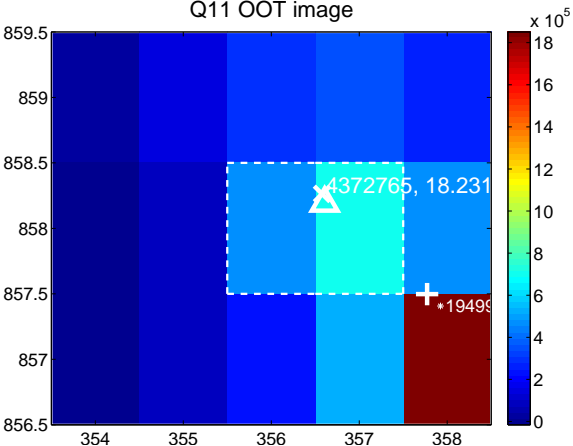
Q10 no OOT image



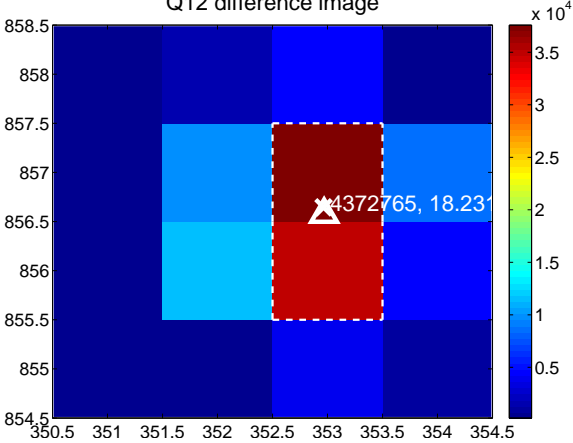
Q11 difference image



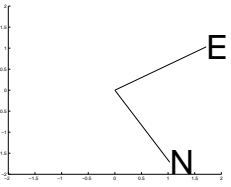
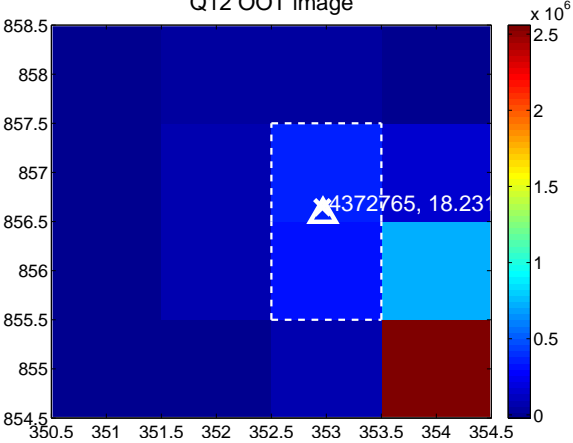
Q11 OOT image



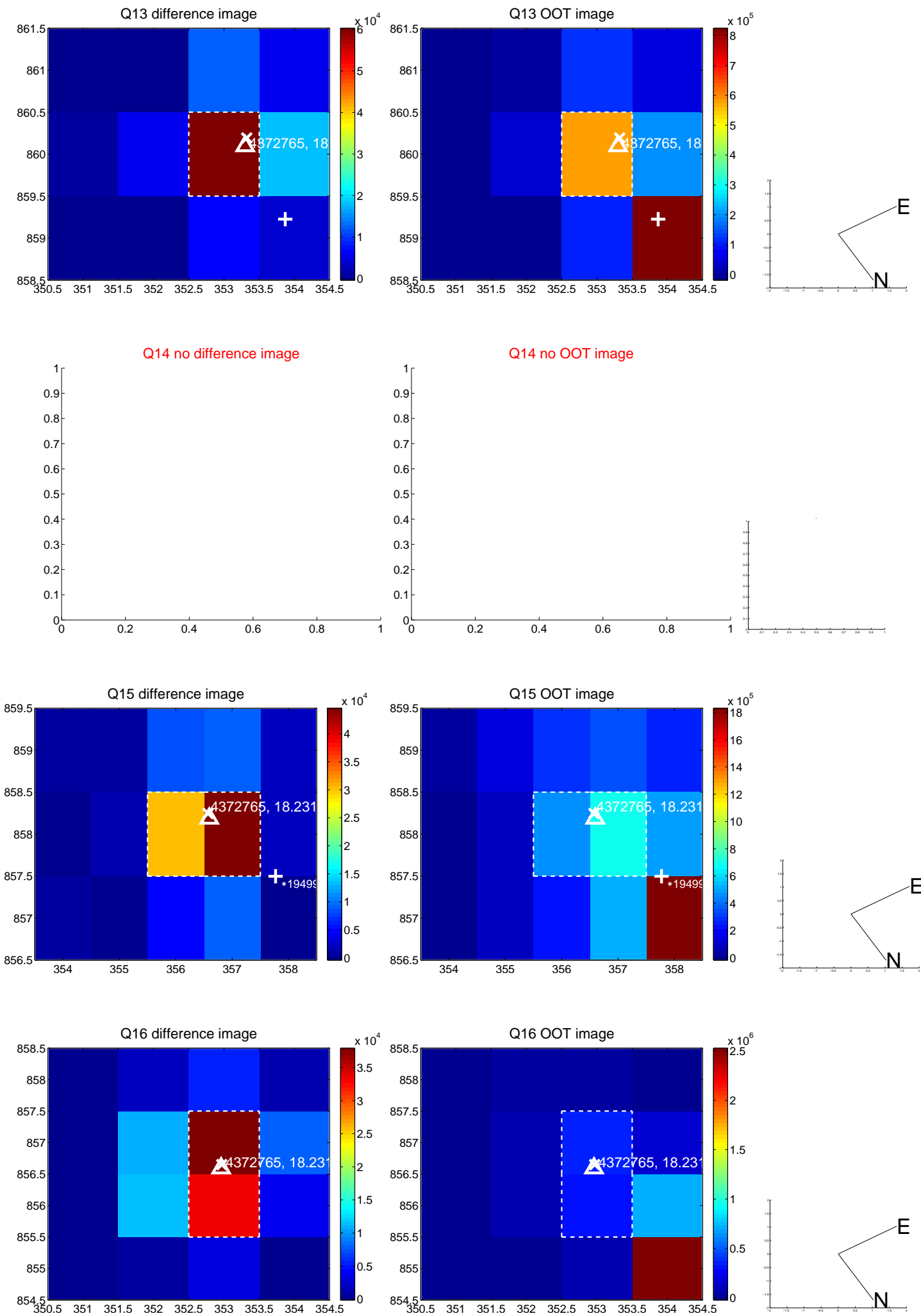
Q12 difference image



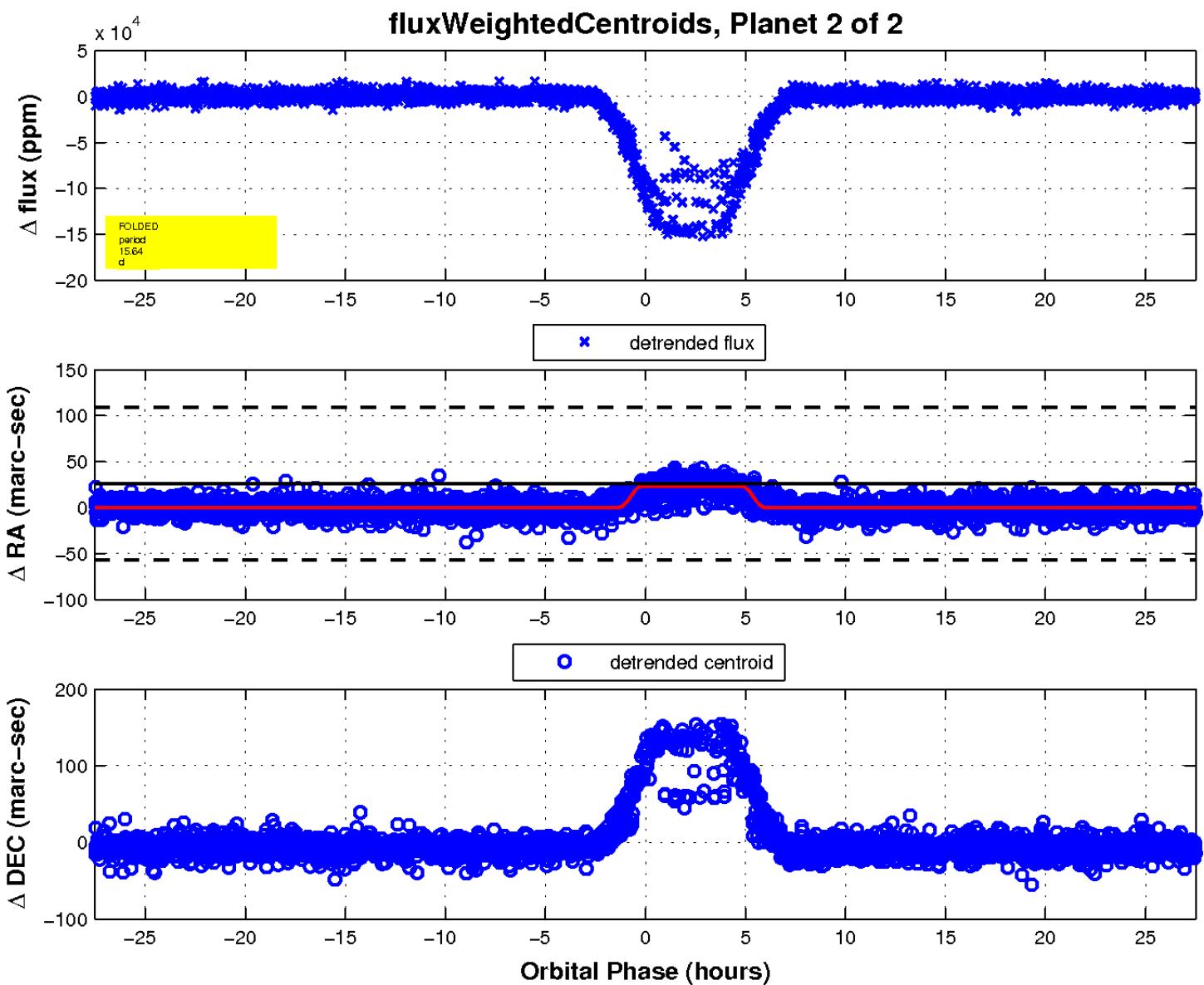
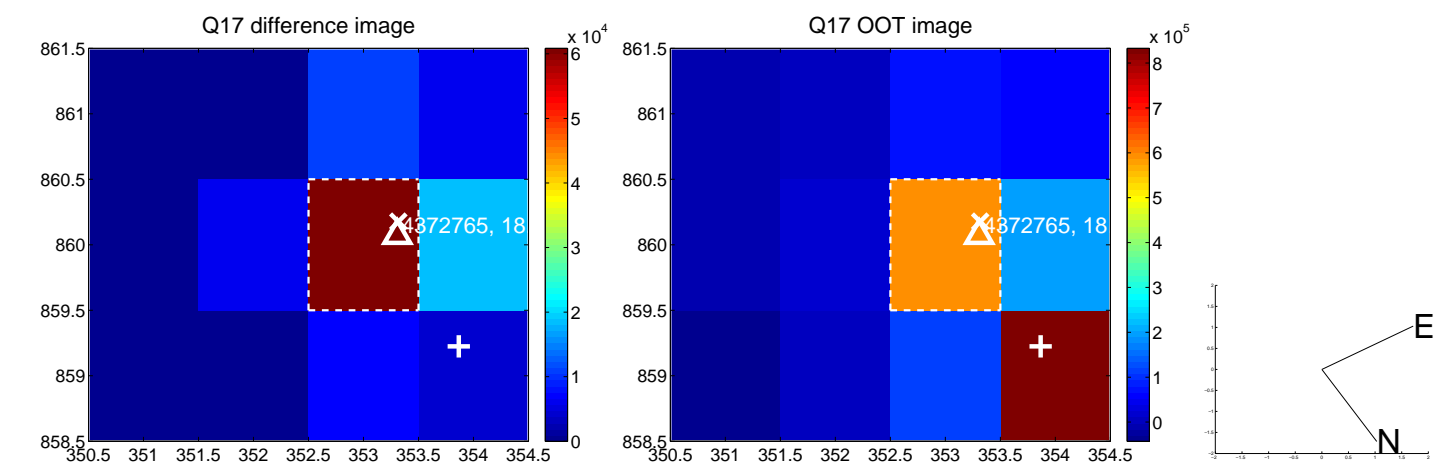
Q12 OOT image



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

