

KIC 009710336

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})
009710336-01	OBS	No	582.249377	376.715988	451.8	4.528	16.0	3.6	0.74	5257	1.56	0.25
009710336-02	OBS	No	364.393554	438.660286	763.3	3.062	11.7	6.9	0.74	5257	2.14	0.47

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009710336-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009710336-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—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.

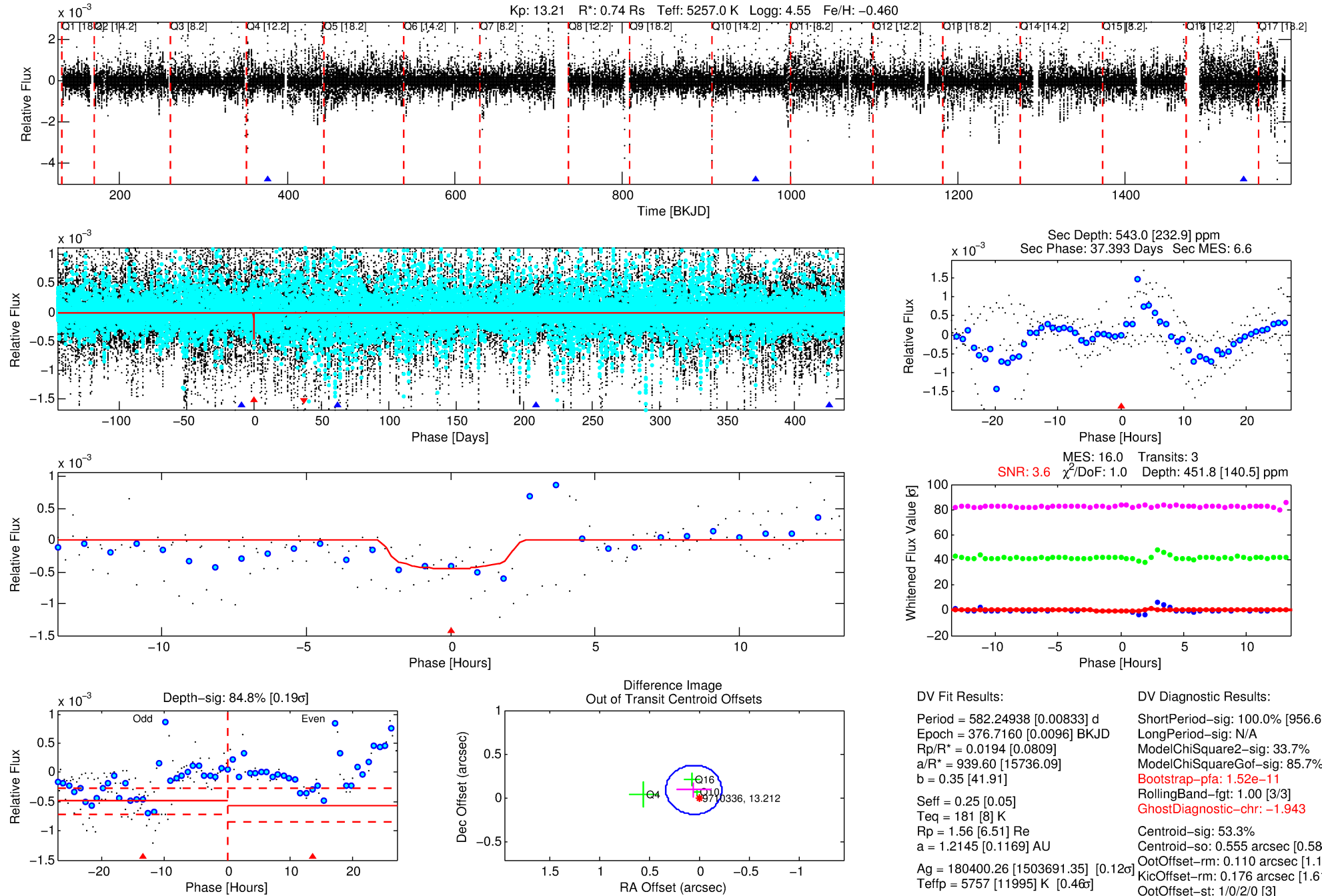
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009710336-01

No Significant Match Found

DV One-Page Summary

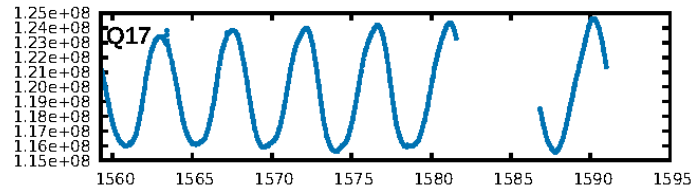
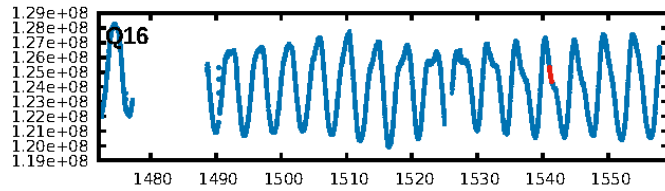
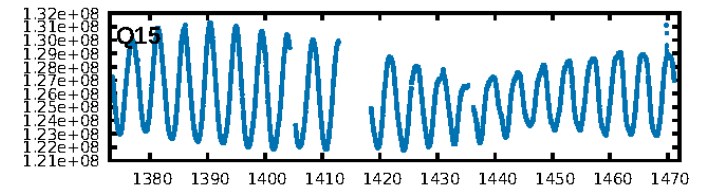
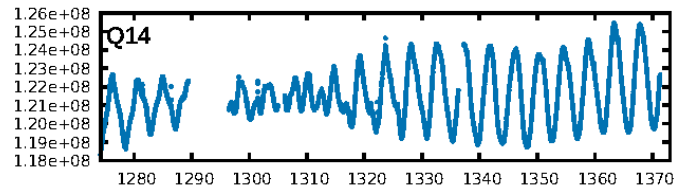
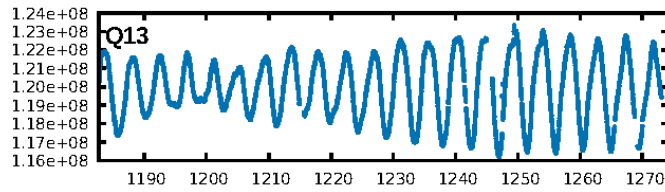
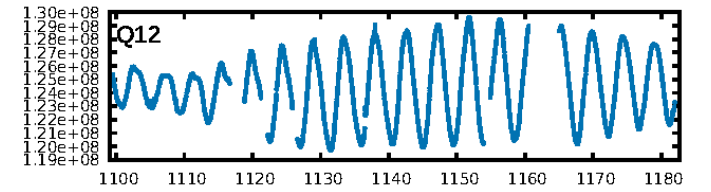
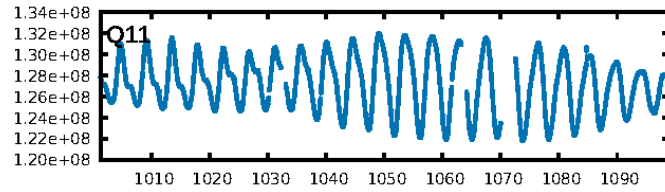
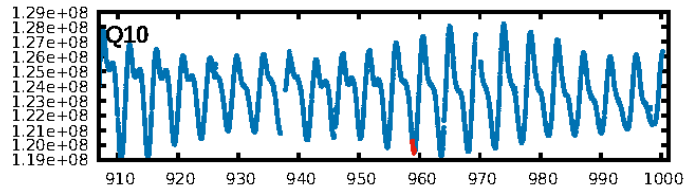
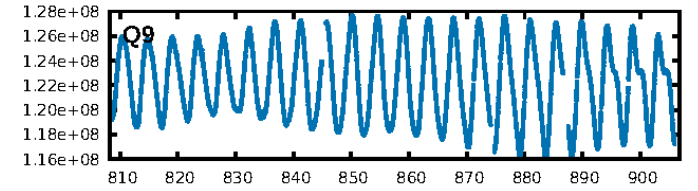
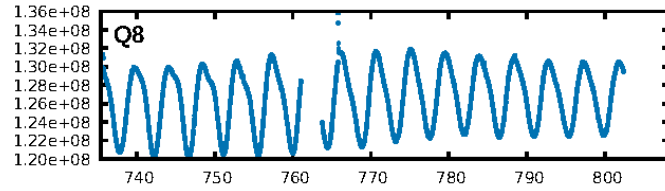
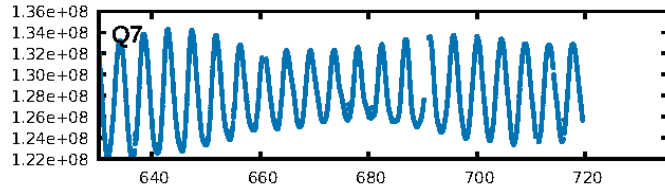
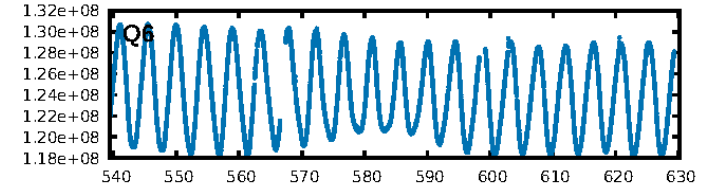
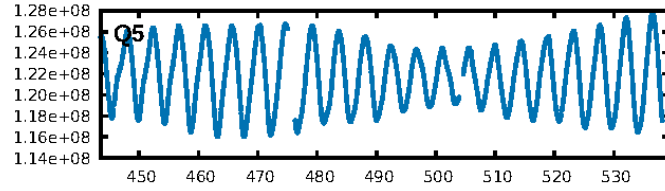
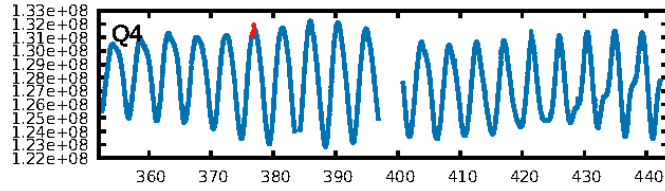
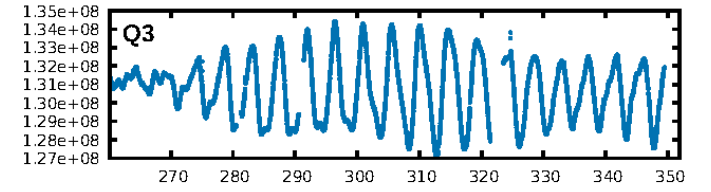
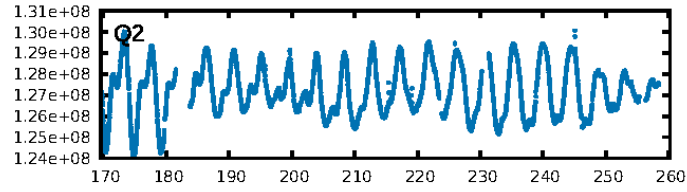
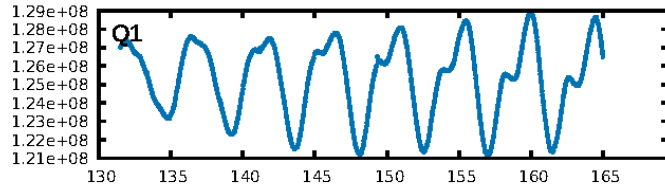
KIC: 9710336 Candidate: 1 of 2 Period: 582.249 d



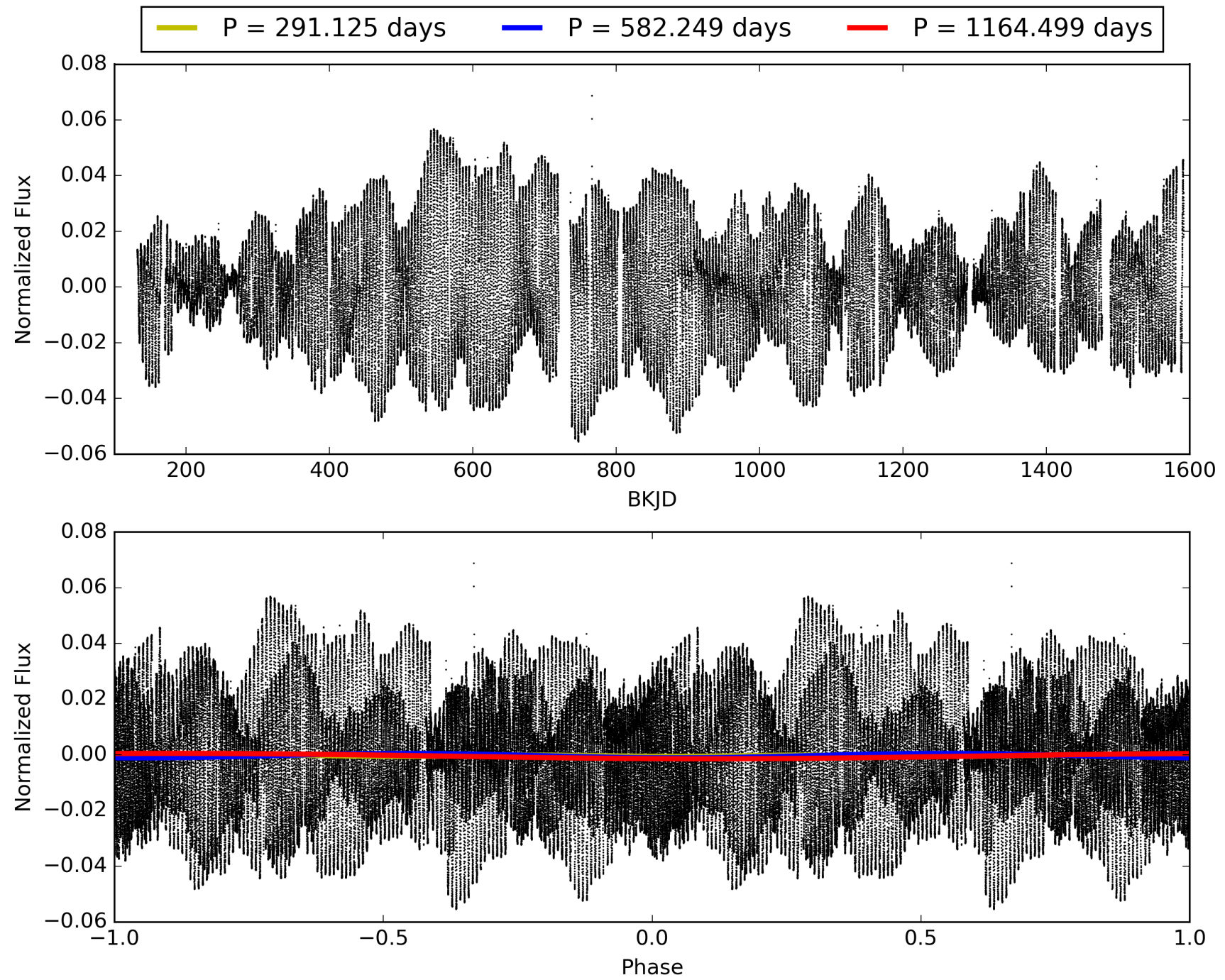
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009710336-01, PDC Light Curves

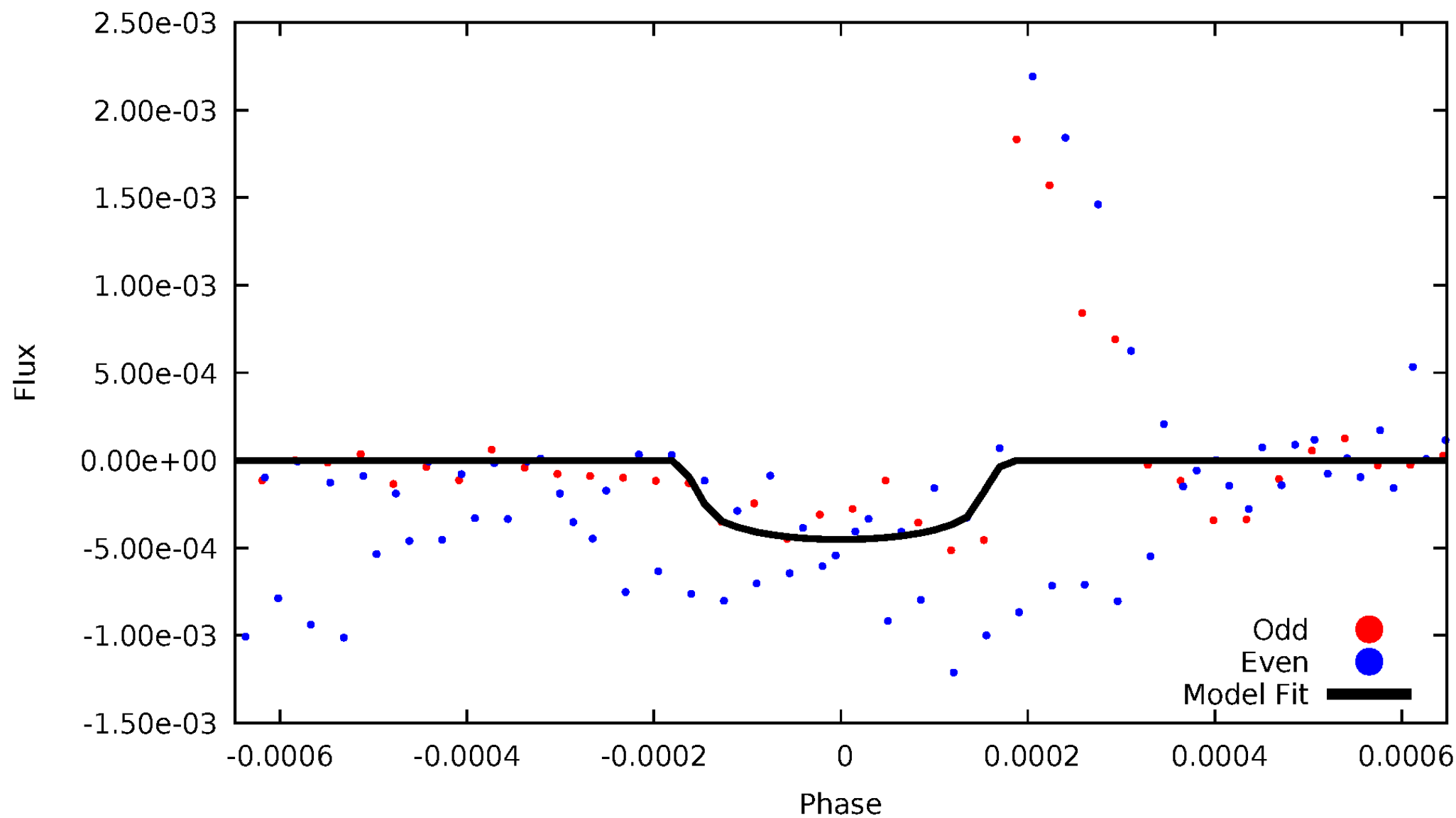


TCE 009710336-01



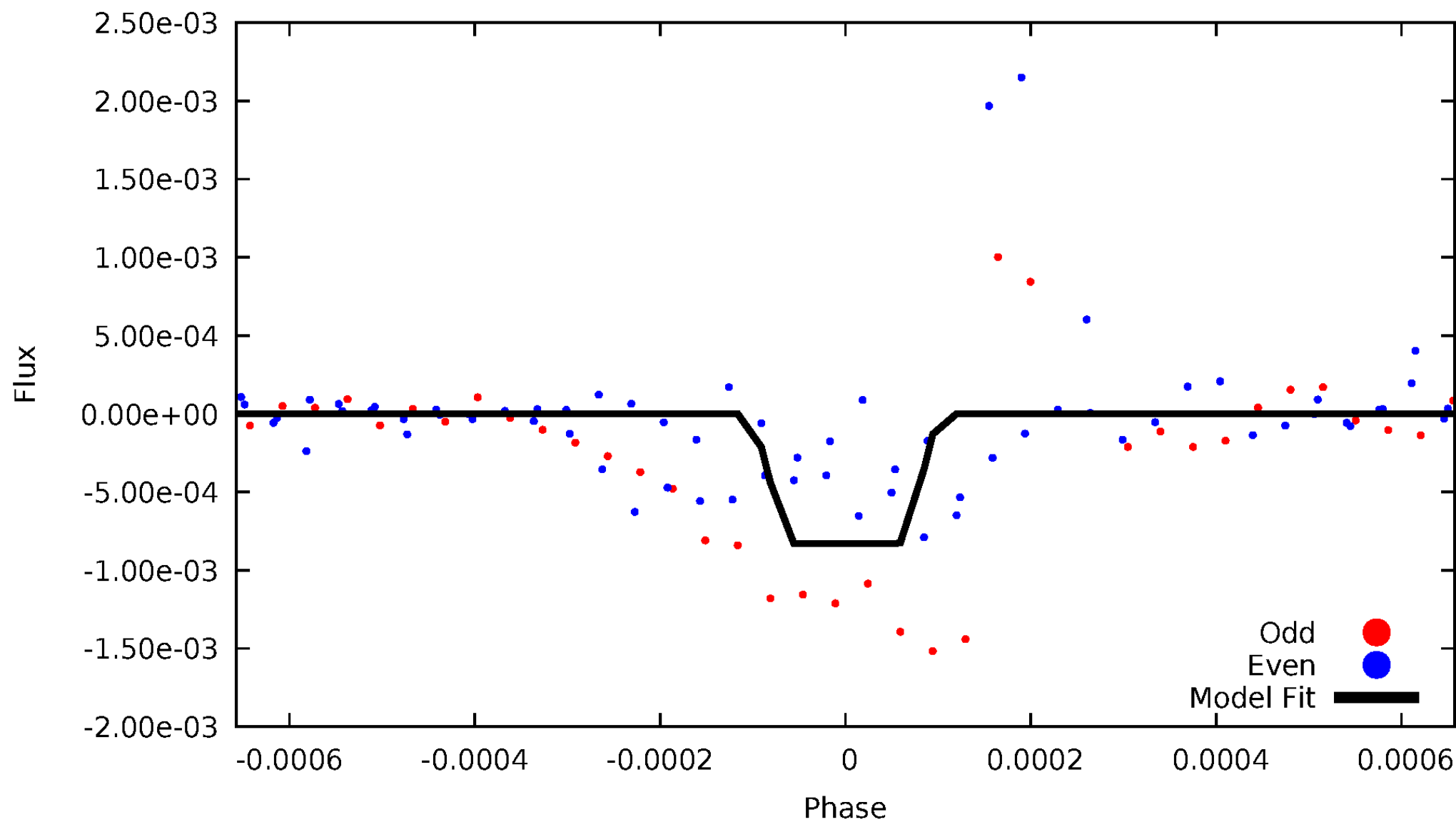
DV Odd/Even

TCE 009710336-01



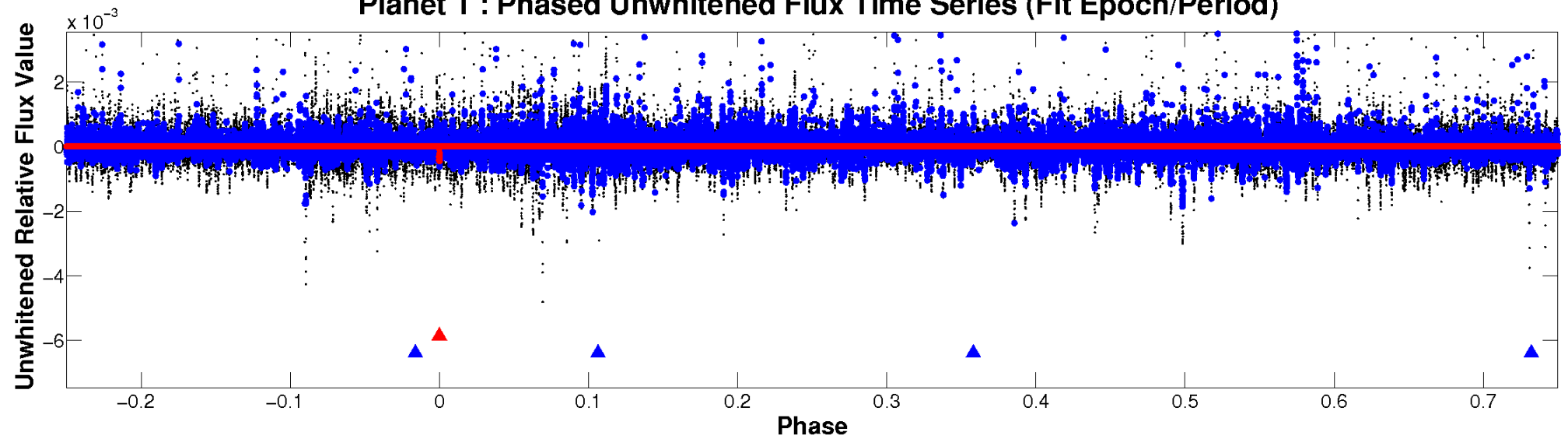
ALT Odd/Even

TCE 009710336-01

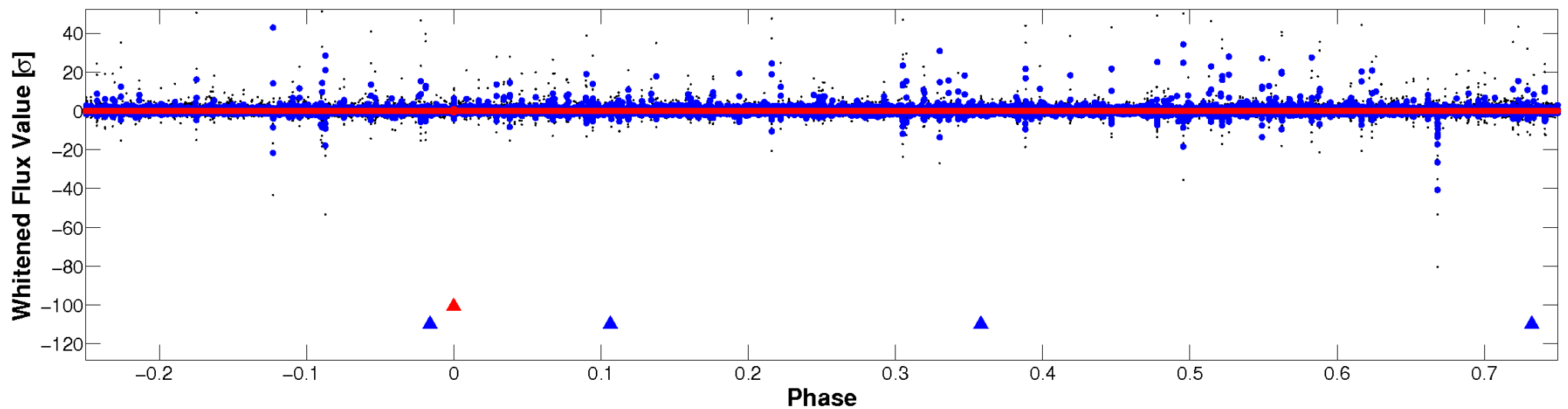


Non-Whitened Vs. Whitened Light Curve

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

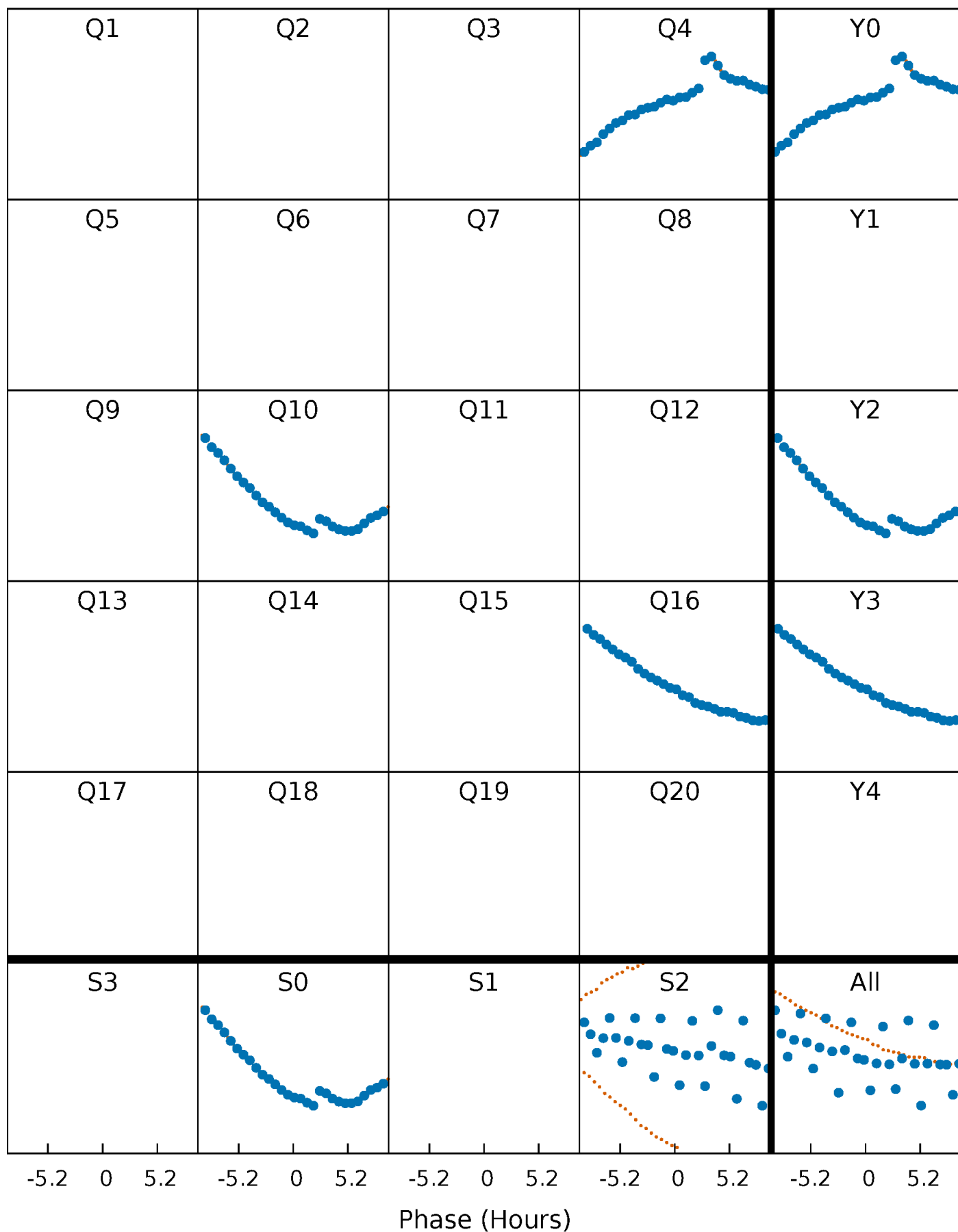


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



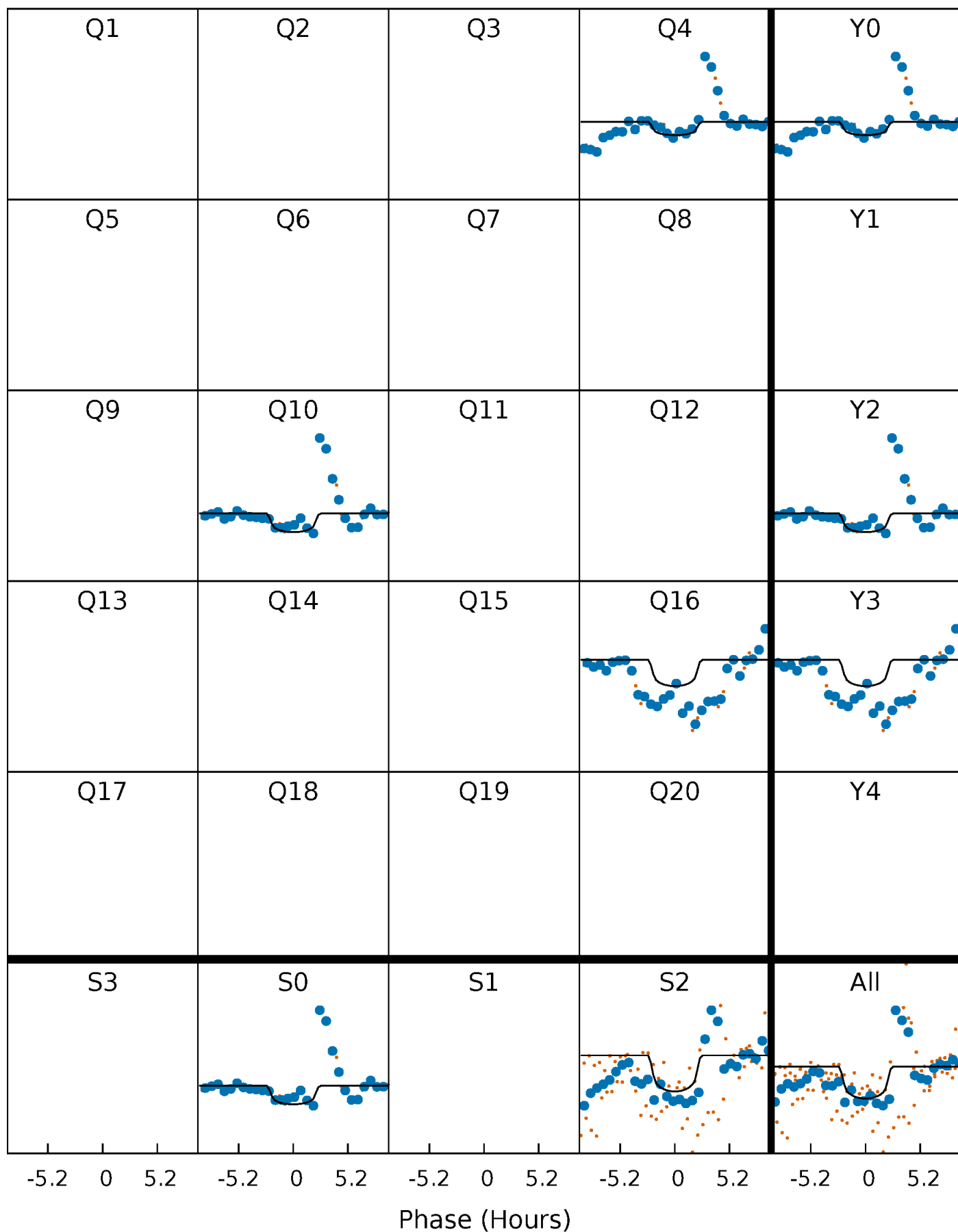
PDC Quarter-Phased Transit Curves

TCE 009710336-01 P=582.249377 Days $T_0=376.715988$ (BKJD)



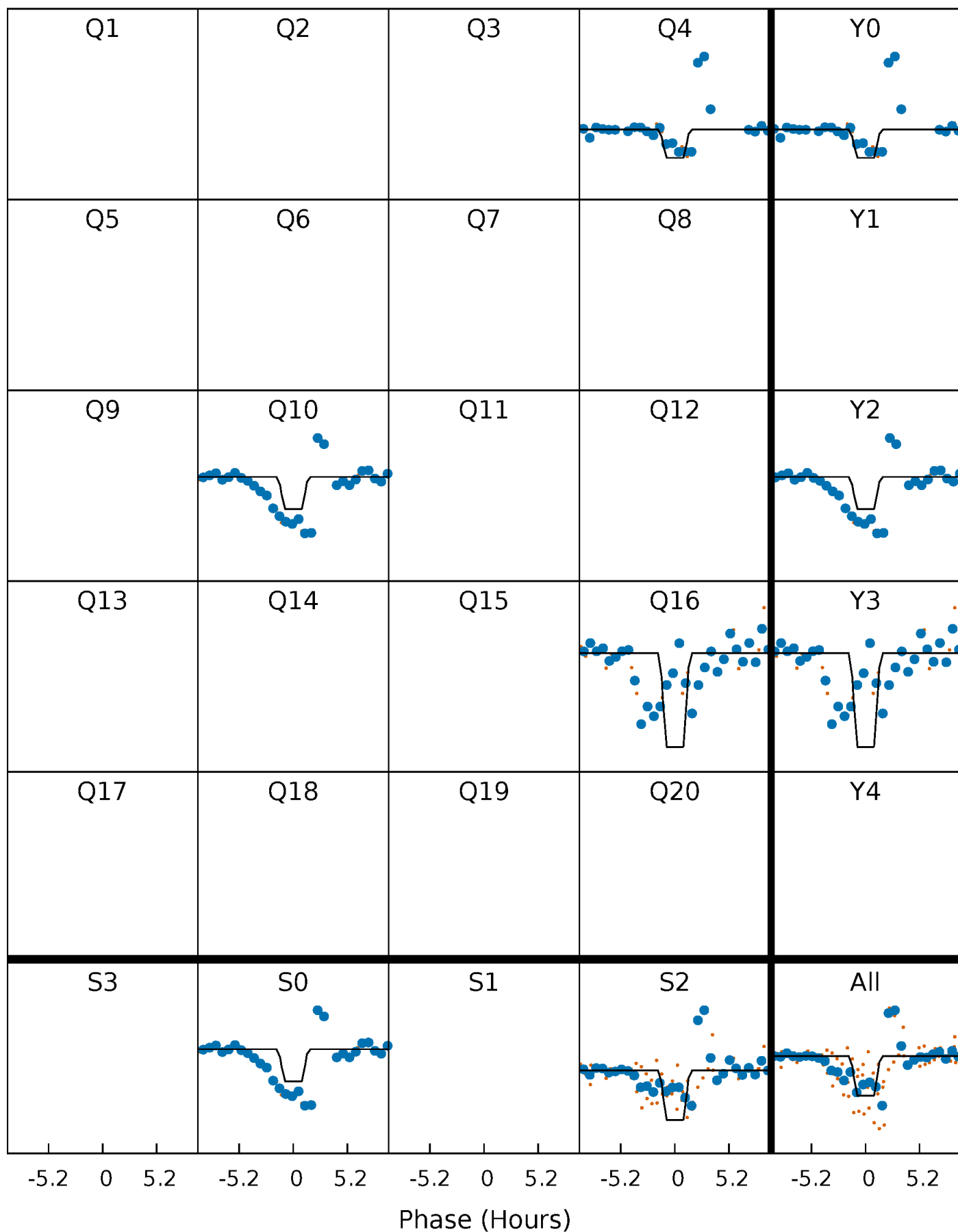
DV Quarter-Phased Transit Curves

TCE 009710336-01 P=582.249377 Days $T_0=376.715988$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

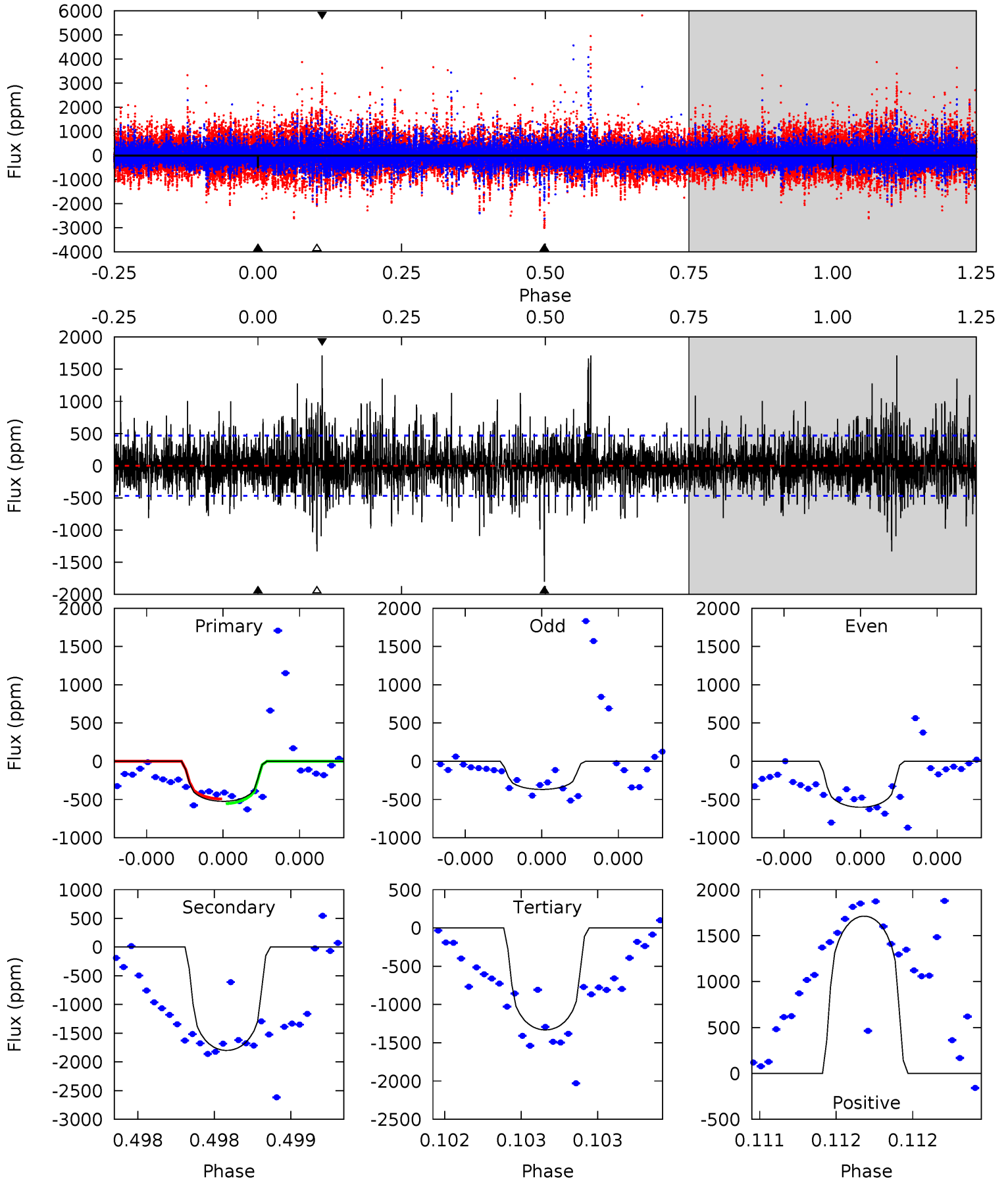
TCE 009710336-01 P=582.233859 Days $T_0=376.745177$ (BKJD)



DV Model-Shift Uniqueness Test

009710336-01, P = 582.249377 Days, E = 376.715988 Days

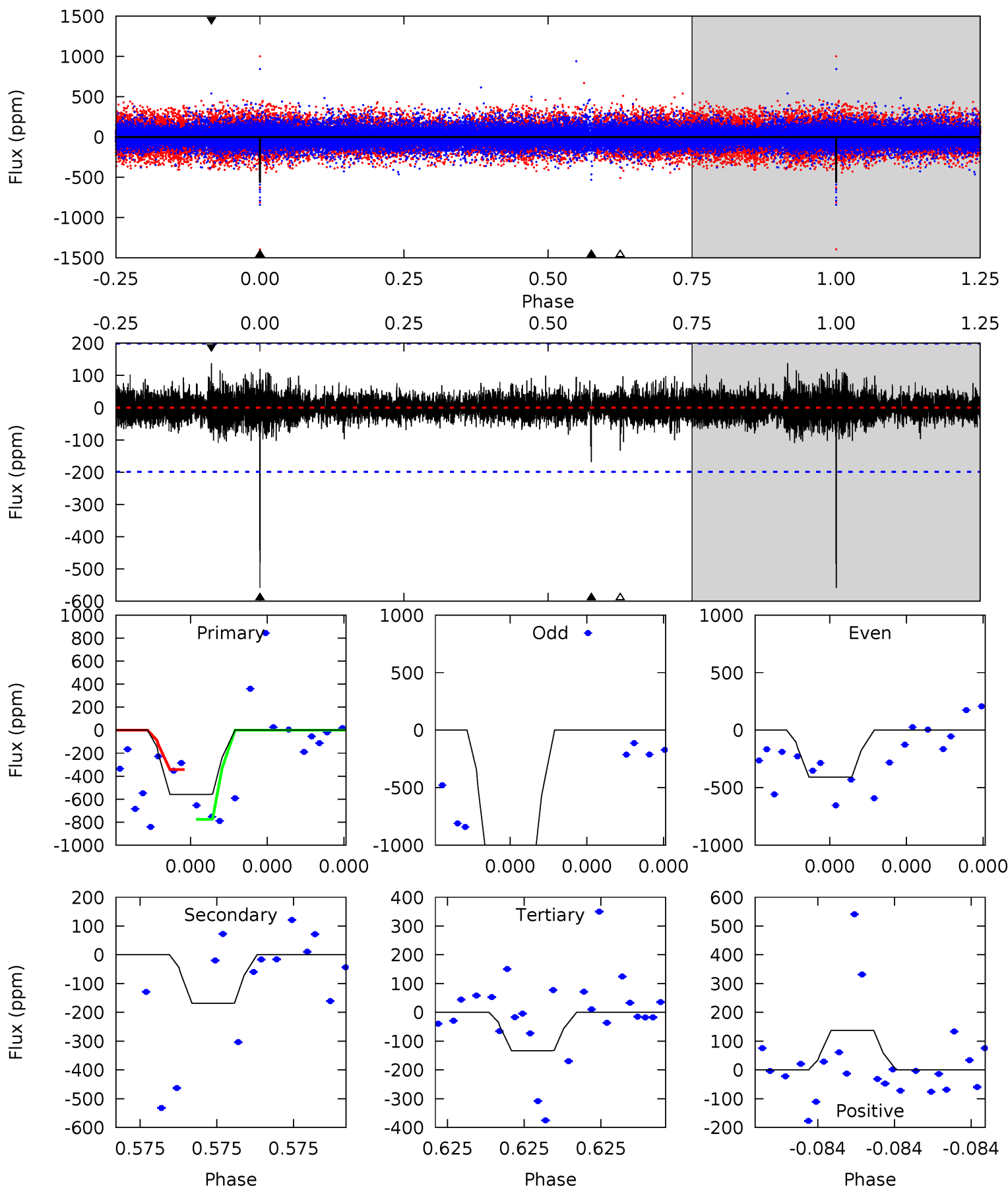
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.33	21.7	16.1	20.7	5.64	3.59	3.22	-9.76	-14.3	5.65	1.07	1.06	1.42	0.49	0.37



Alt Model-Shift Uniqueness Test

009710336-01, P = 582.233859 Days, E = 376.745177 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.1	4.85	3.83	3.96	5.73	3.71	0.65	12.2	12.1	1.01	0.88	16.0	1.27	0.20	0



Stellar Parameters For KIC 009710336

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5257^{+158}_{-142}	$4.551^{+0.077}_{-0.063}$	$-0.460^{+0.300}_{-0.300}$	$0.737^{+0.084}_{-0.076}$	$0.706^{+0.095}_{-0.044}$	$2.481^{+0.799}_{-0.553}$
	+3%/-3%	+2%/-1%	+65%/-65%	+11%/-10%	+13%/-6%	+32%/-22%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009710336-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1800 ± 83	$5.24^{+5.21}_{-3.66}$	253^{+10}_{-10}	4435^{+3356}_{-945}	$53782^{+517955}_{-39908}$
Alt.	-168 ± 35	$5.59^{+4.85}_{-3.82}$	253^{+9}_{-10}	2945^{+1347}_{-457}	4364^{+37303}_{-3143}

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 $A_{obs} \gg 1.0$

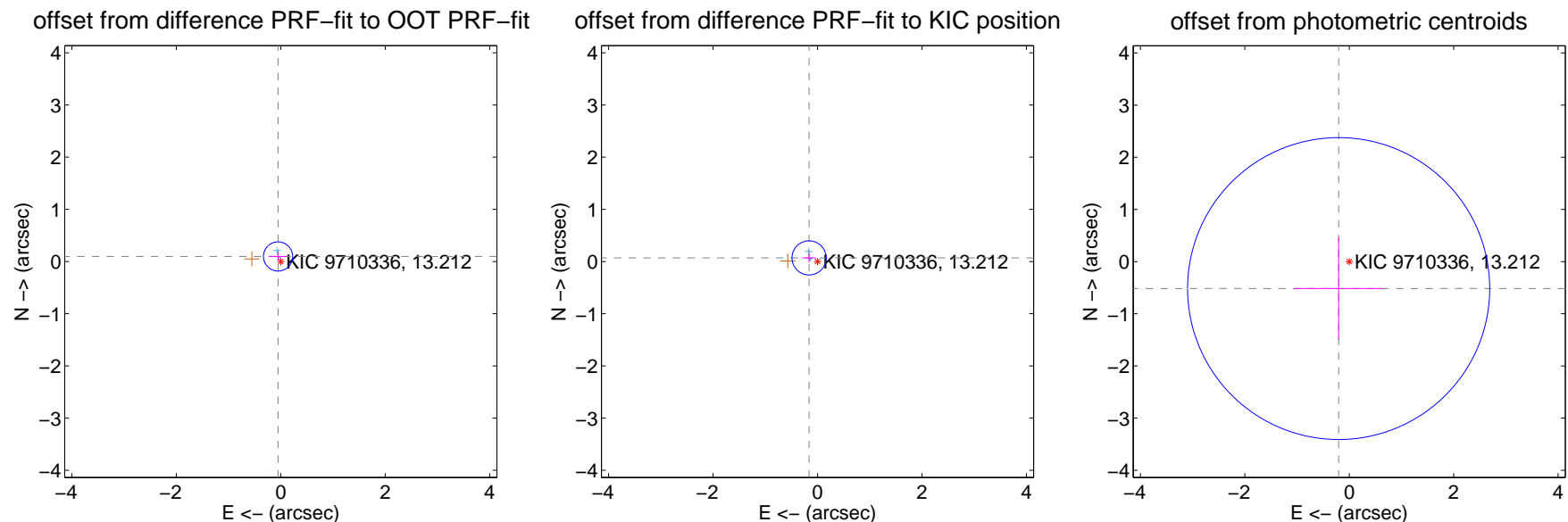
DV Centroid Data

Supplemental centroid analysis for 009710336-01. Kepler magnitude: 13.21. Transit SNR 3.60

There are 2 quarters with good PRF difference image offsets

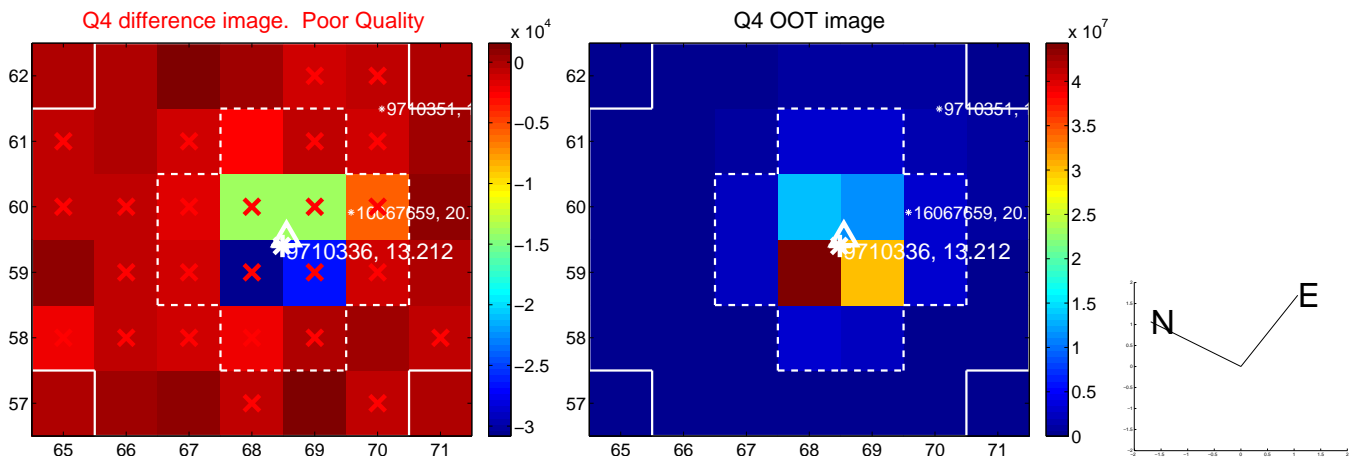
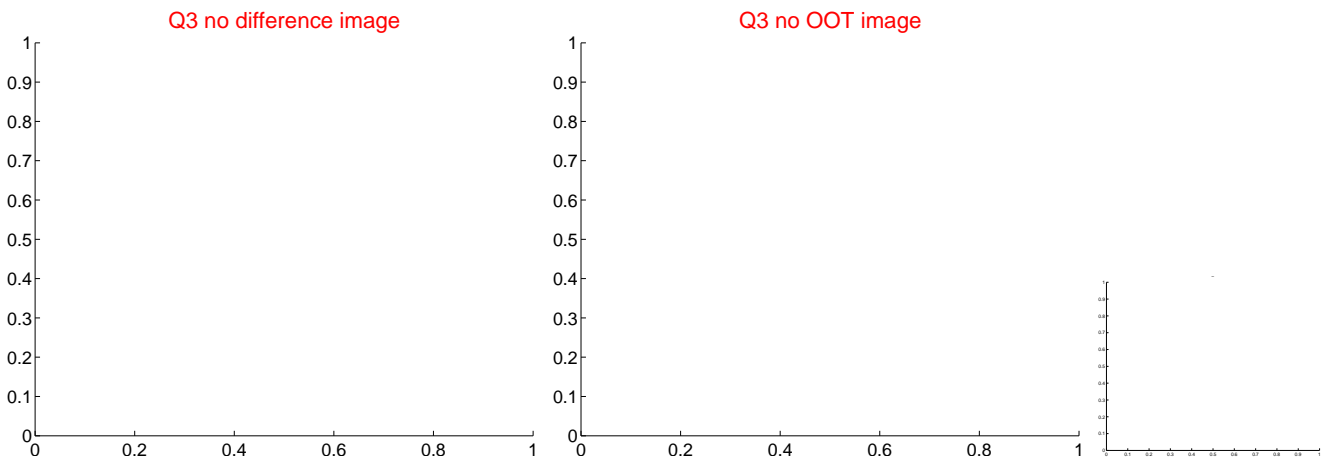
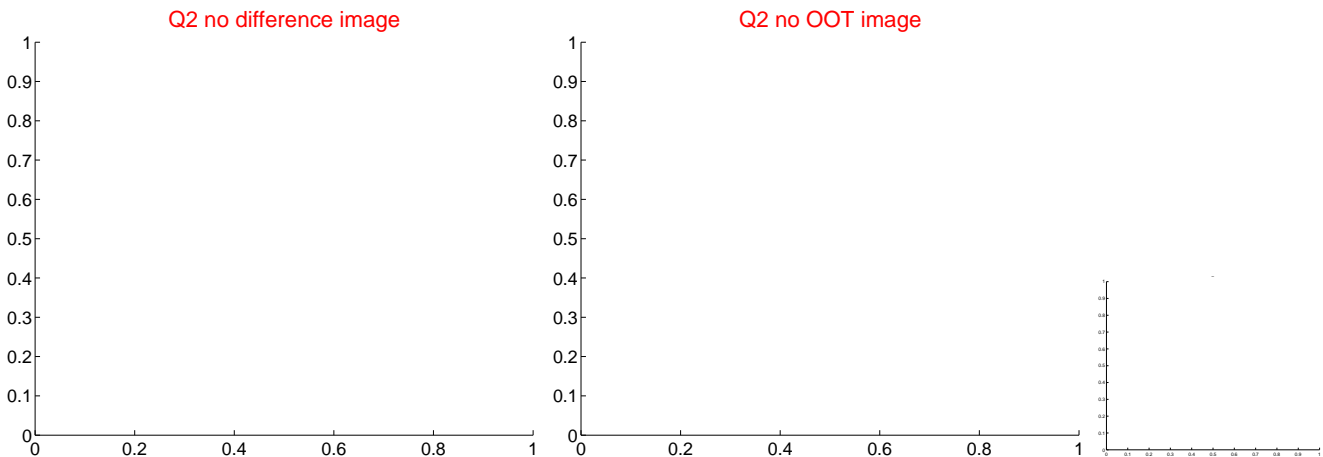
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.110 ± 0.093	1.18	0.052 ± 0.172	0.097 ± 0.079
PRF-fit source offset from KIC position	0.176 ± 0.109	1.61	0.161 ± 0.133	0.070 ± 0.090
photometric centroid source offset	0.56 ± 0.96	0.58	0.20 ± 0.85	-0.52 ± 0.98

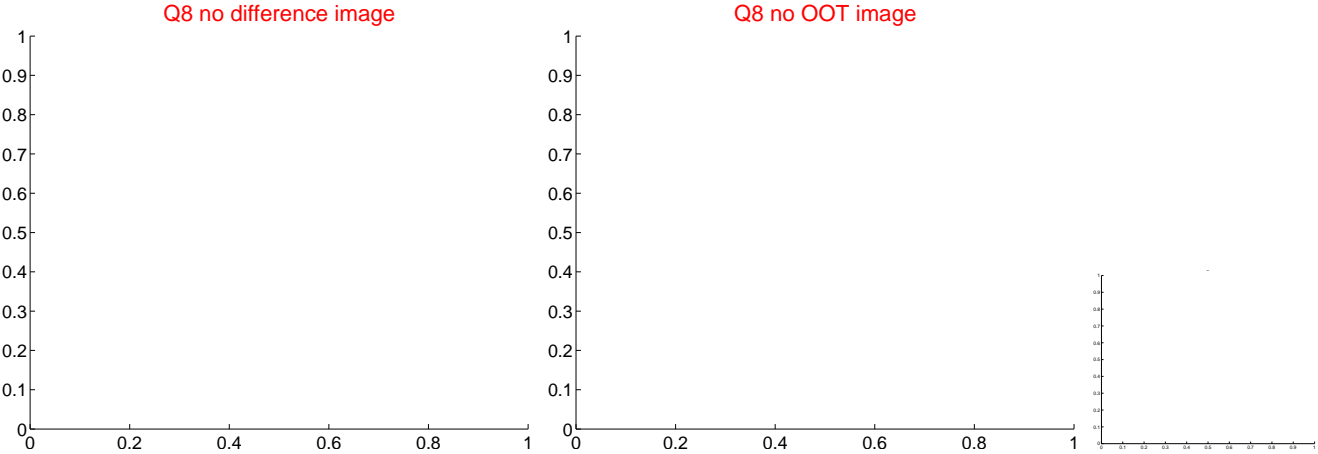


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

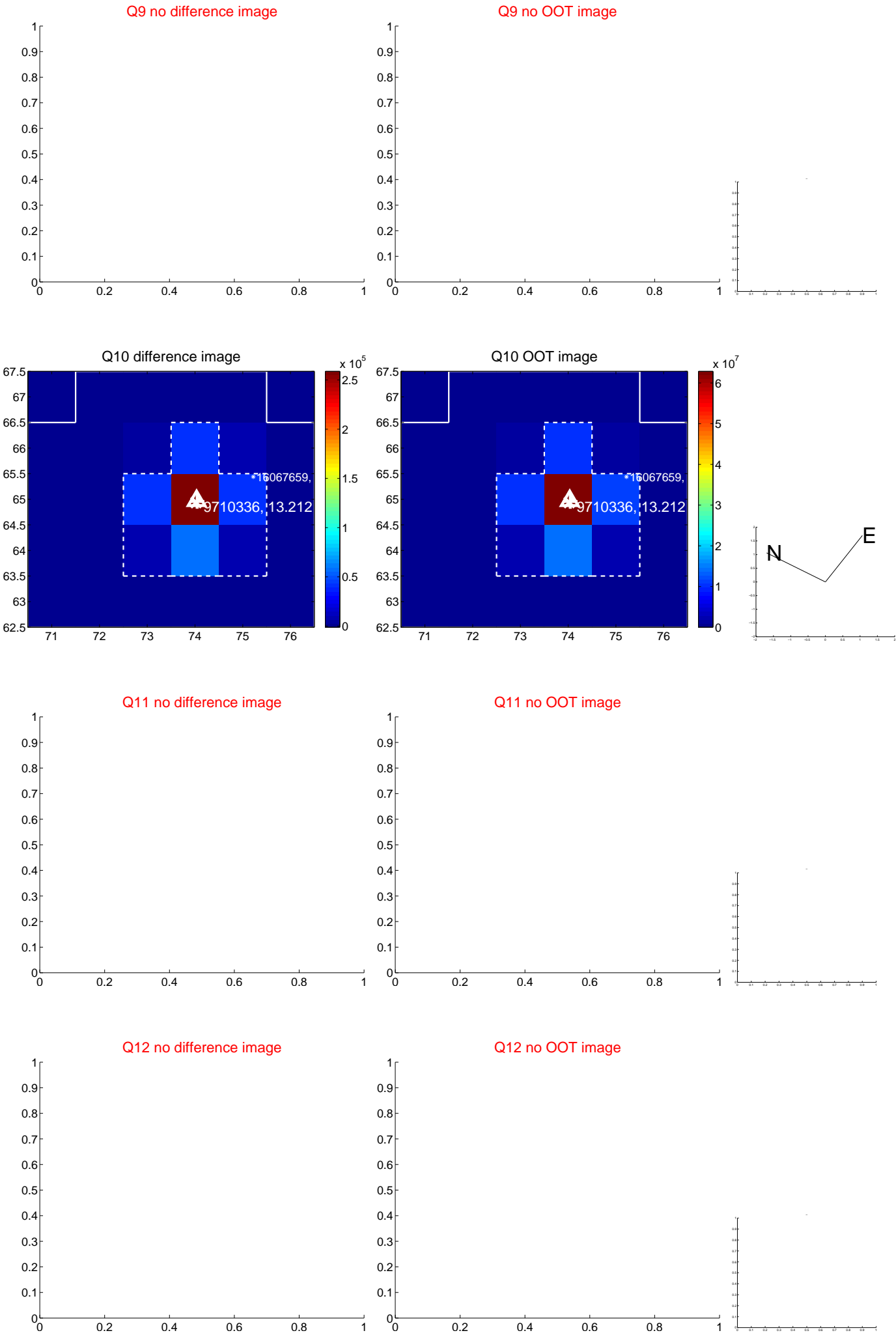
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



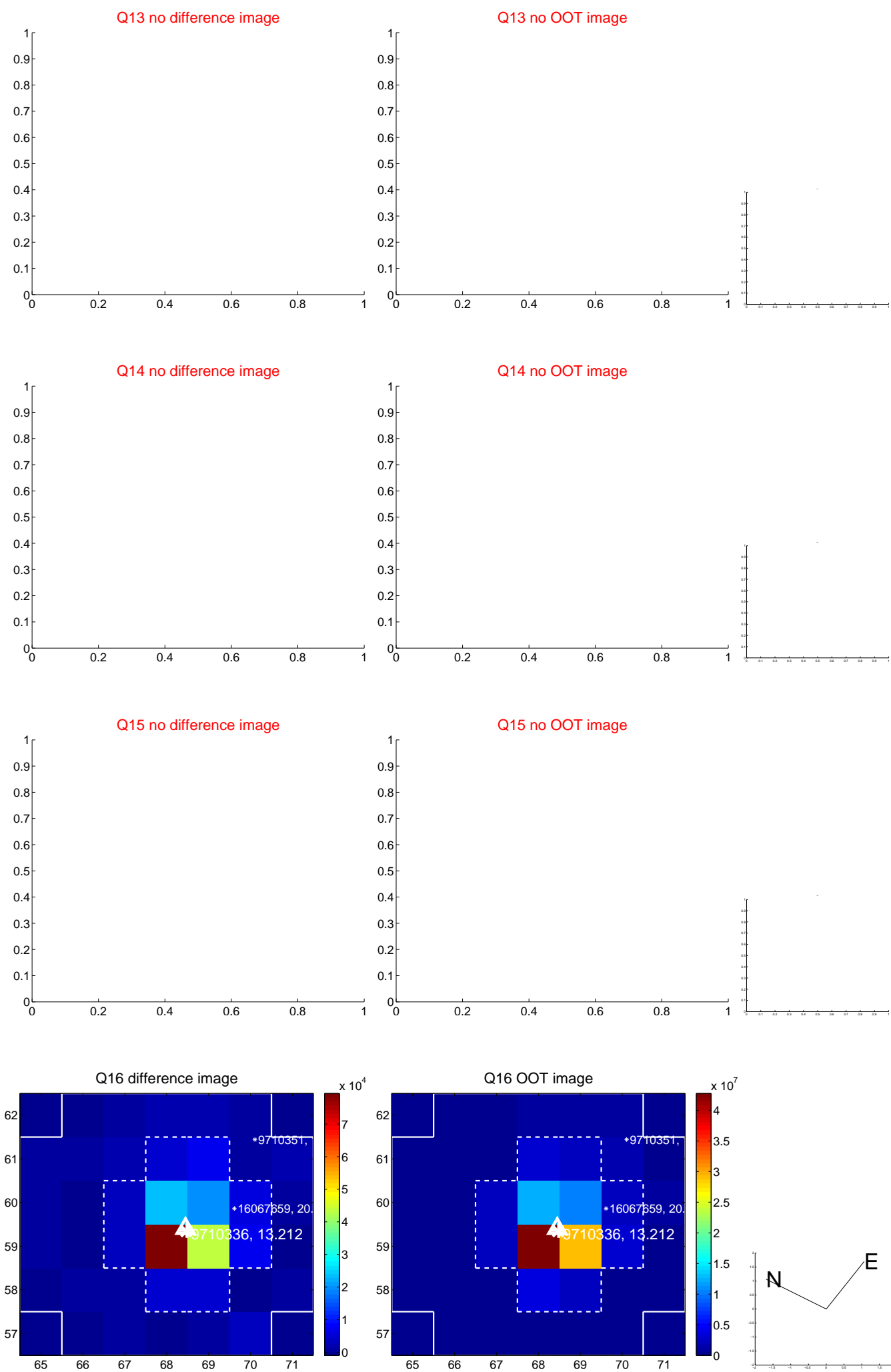
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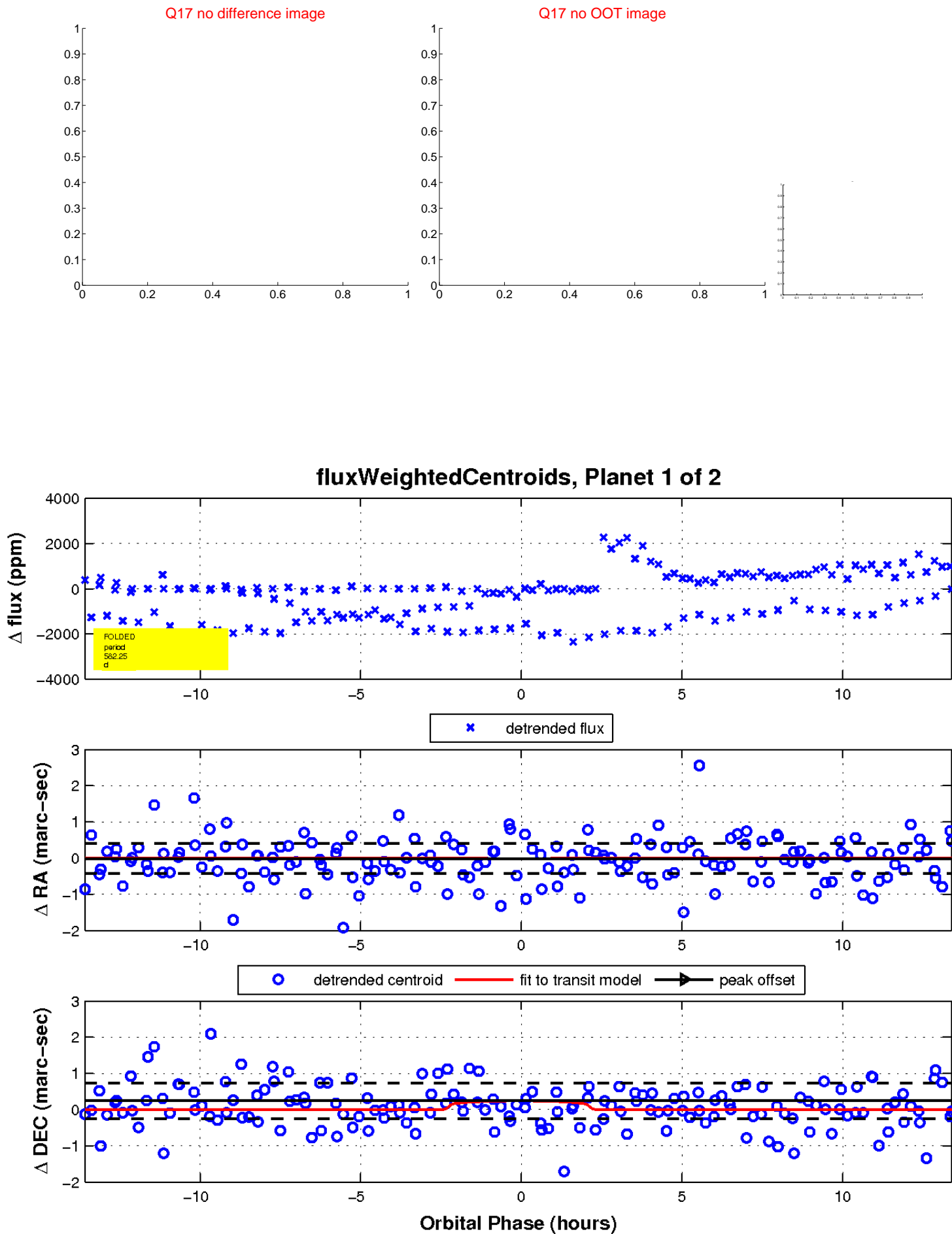
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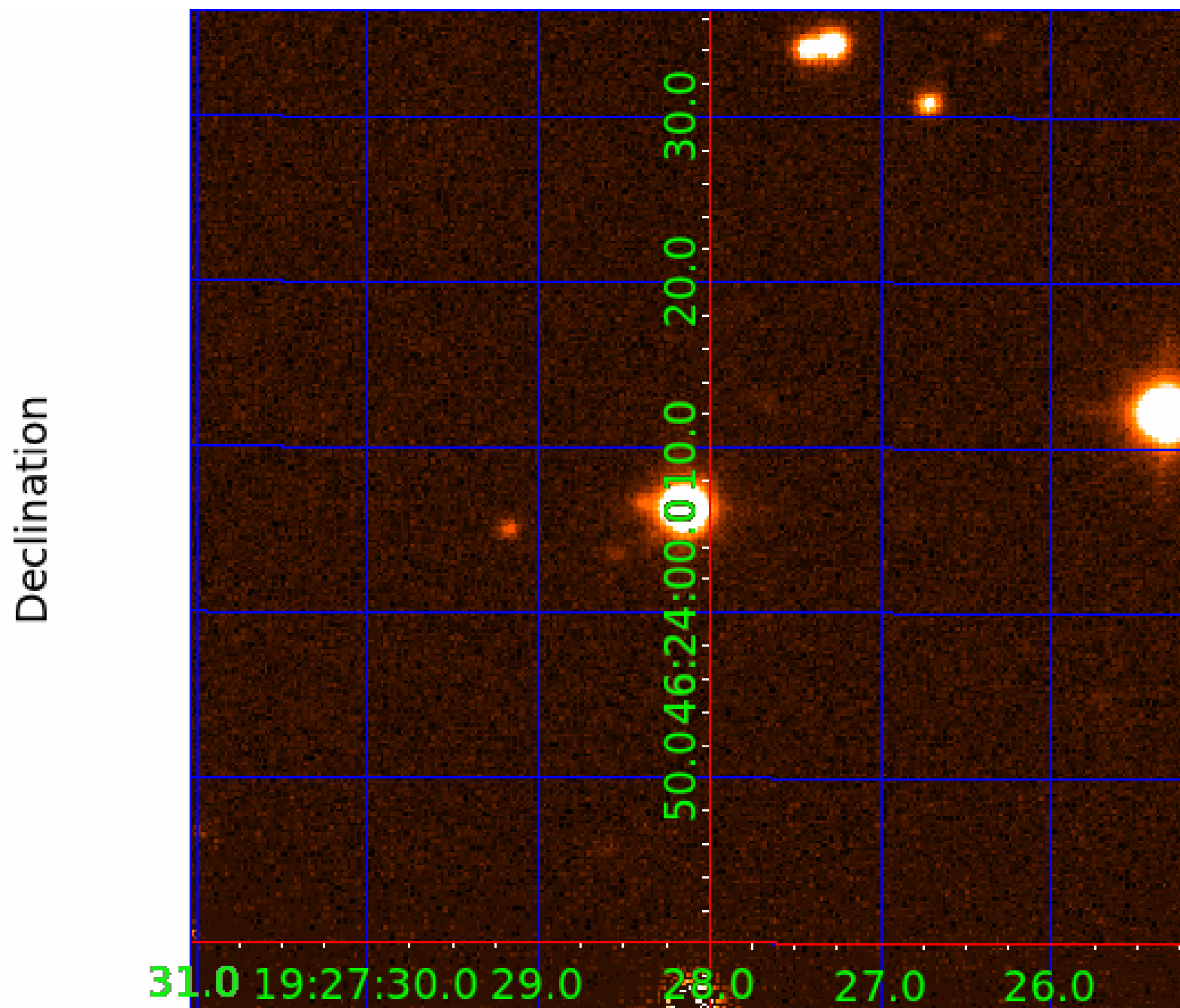
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UKIRT Image



KIC 009710336

Q1-17 DR25 TCE Parameters

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

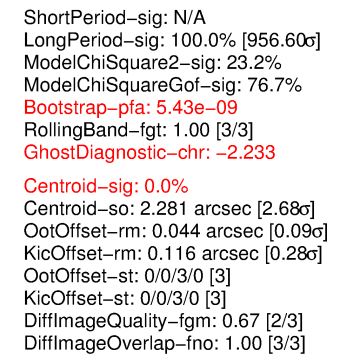
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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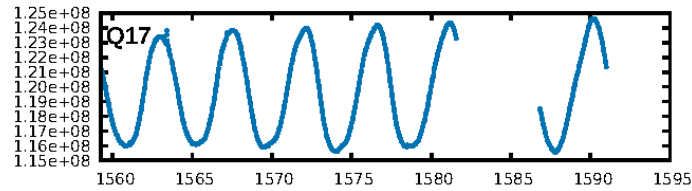
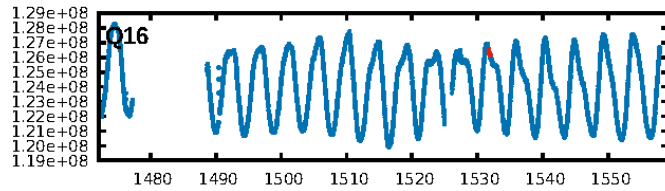
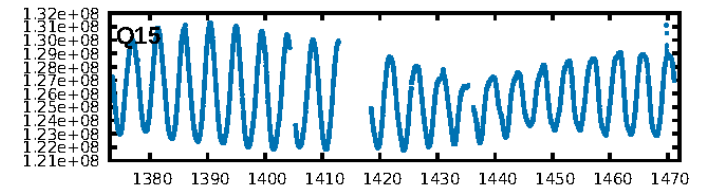
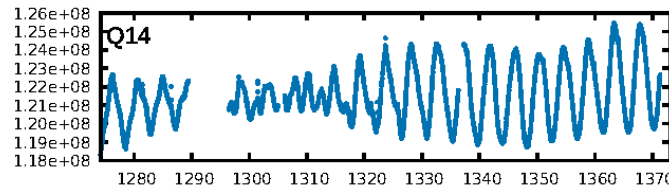
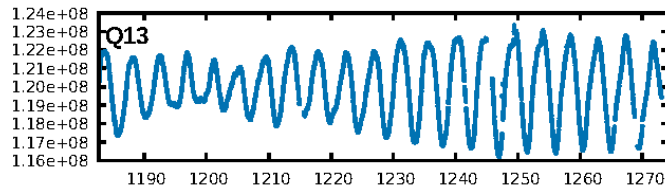
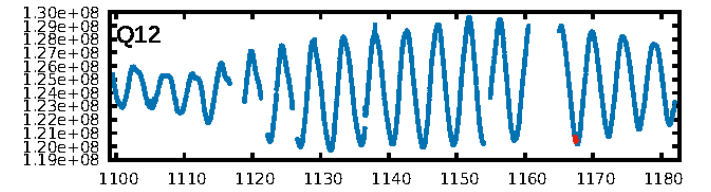
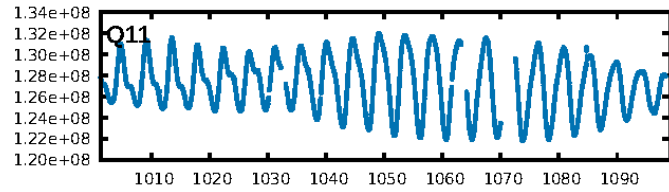
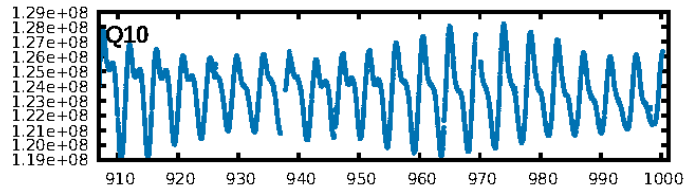
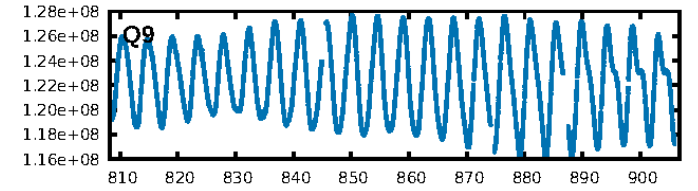
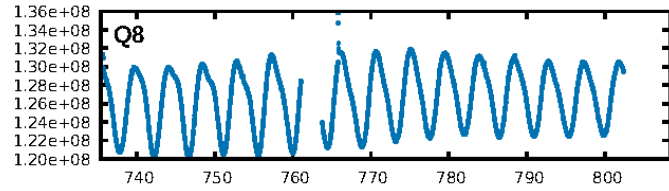
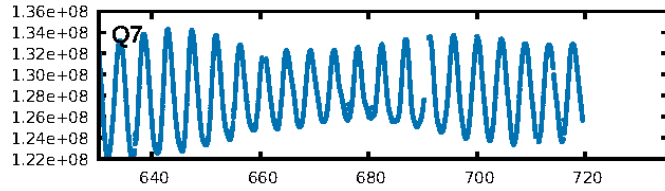
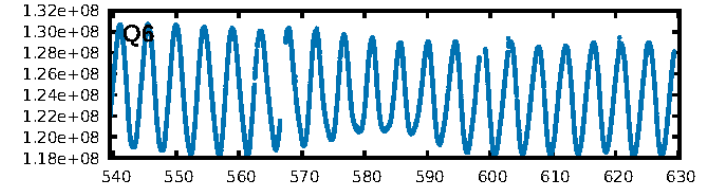
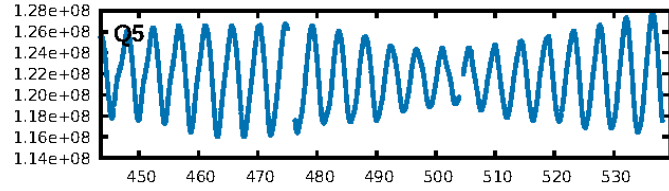
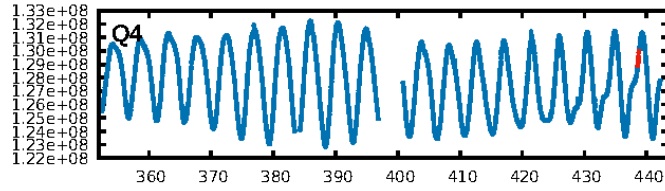
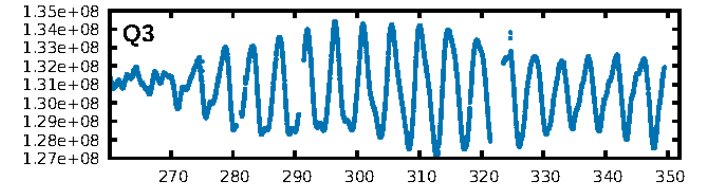
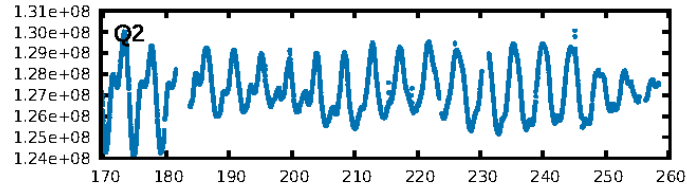
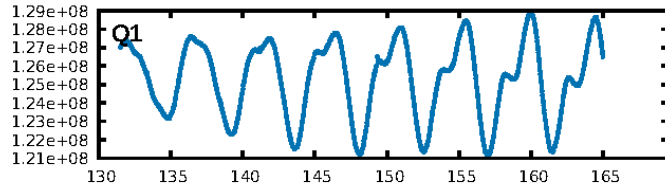
Ephemeris Match Information For 009710336-02

No Significant Match Found

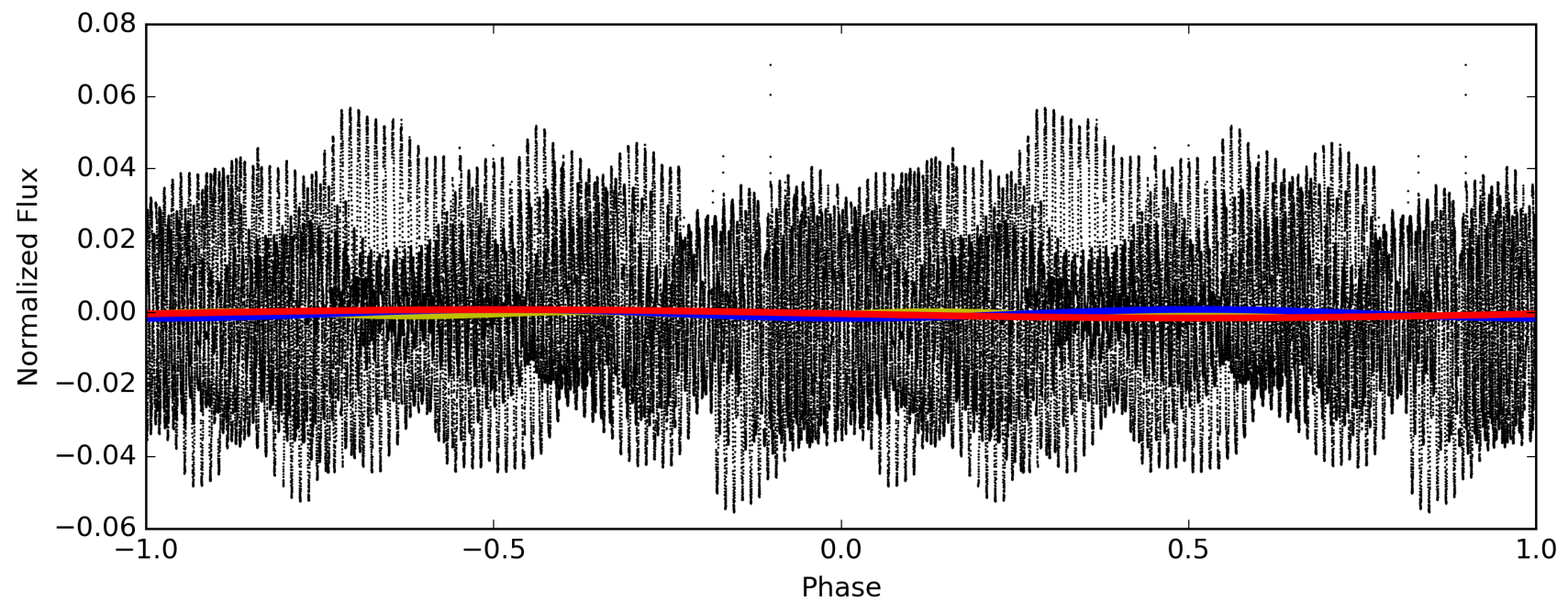
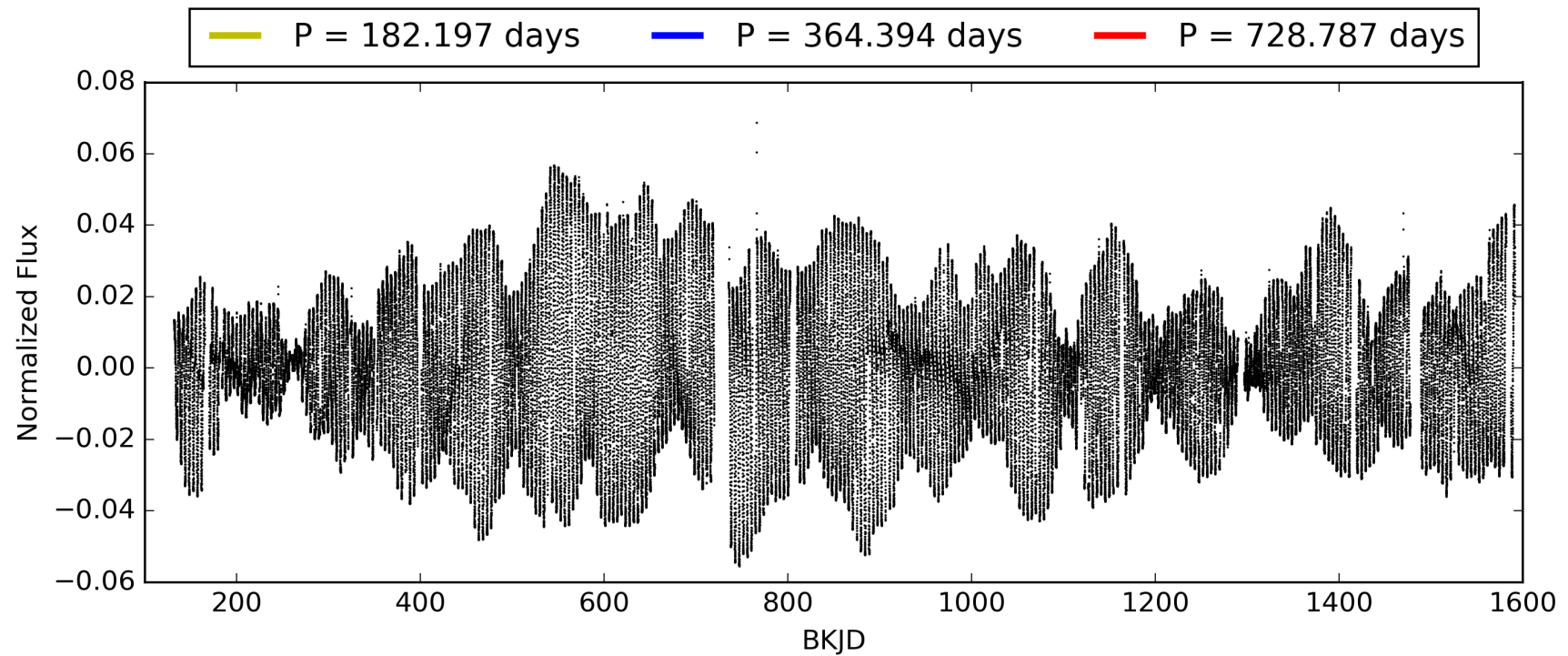
KIC: 9710336 Candidate: 2 of 2 Period: 364.394 d



TCE 009710336-02, PDC Light Curves

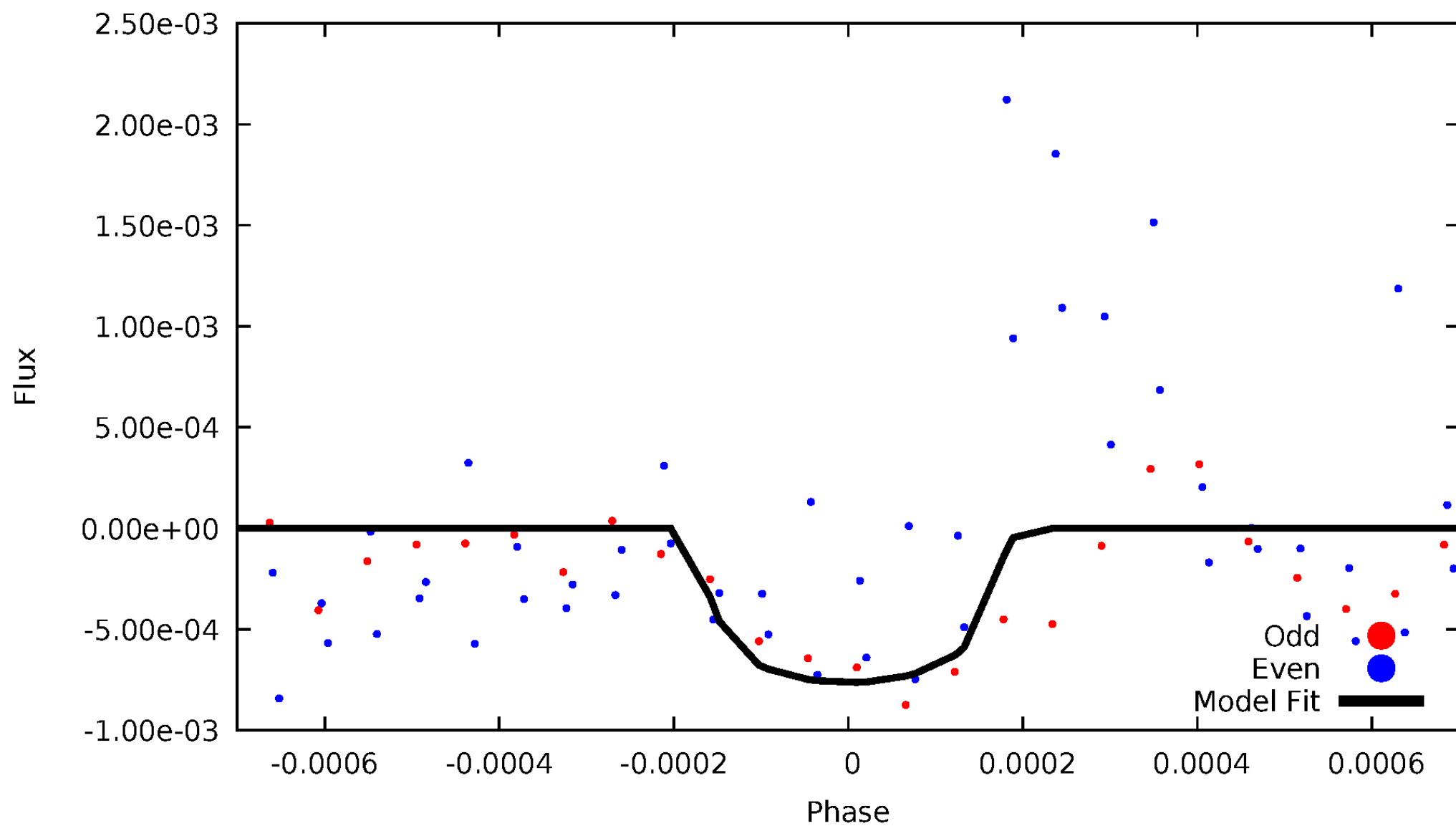


TCE 009710336-02



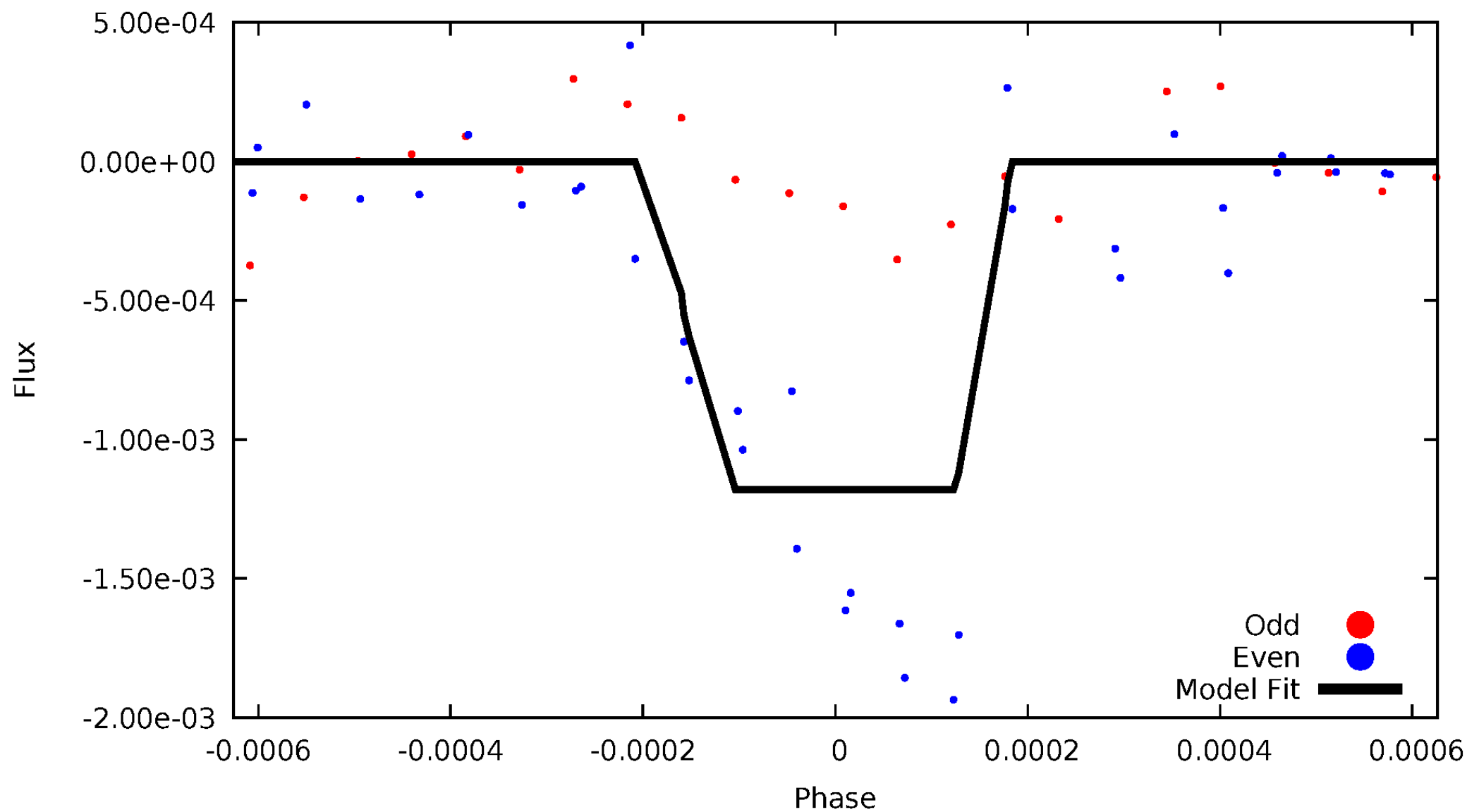
DV Odd/Even

TCE 009710336-02



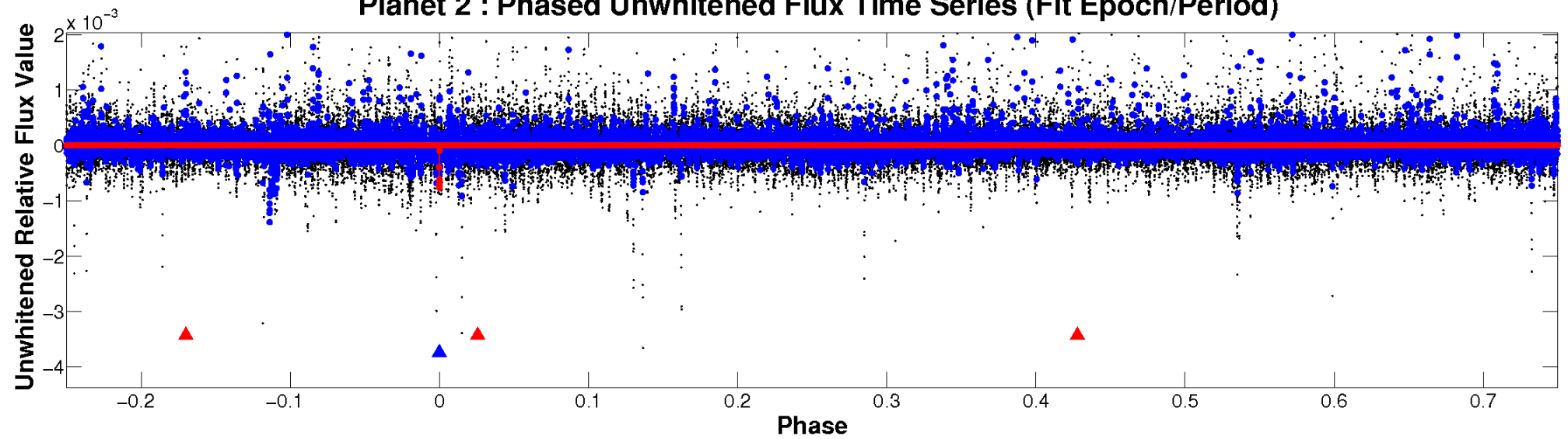
ALT Odd/Even

TCE 009710336-02

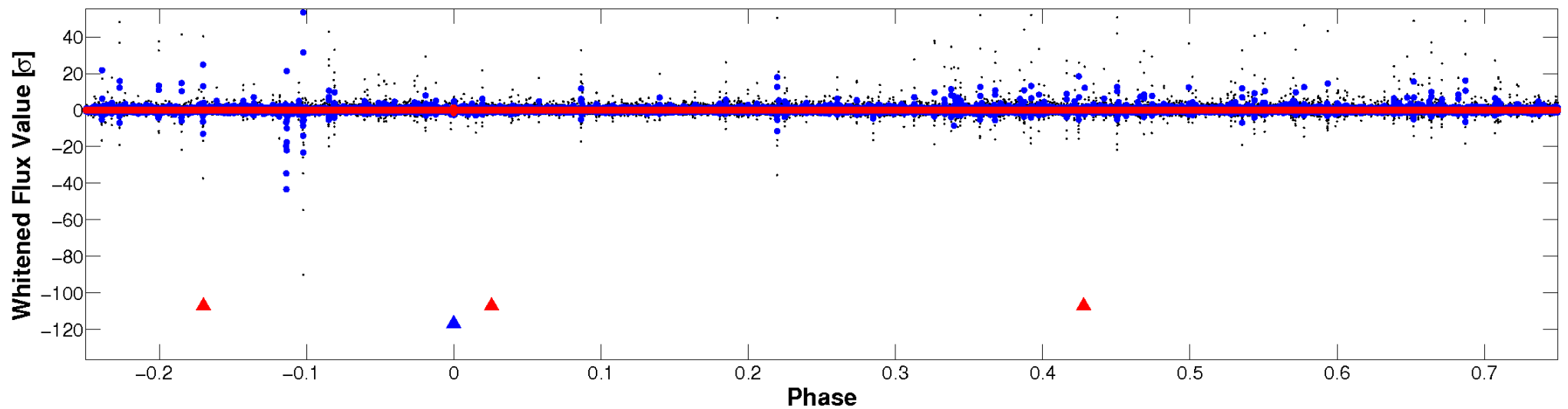


Non-Whitened Vs. Whitened Light Curve

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

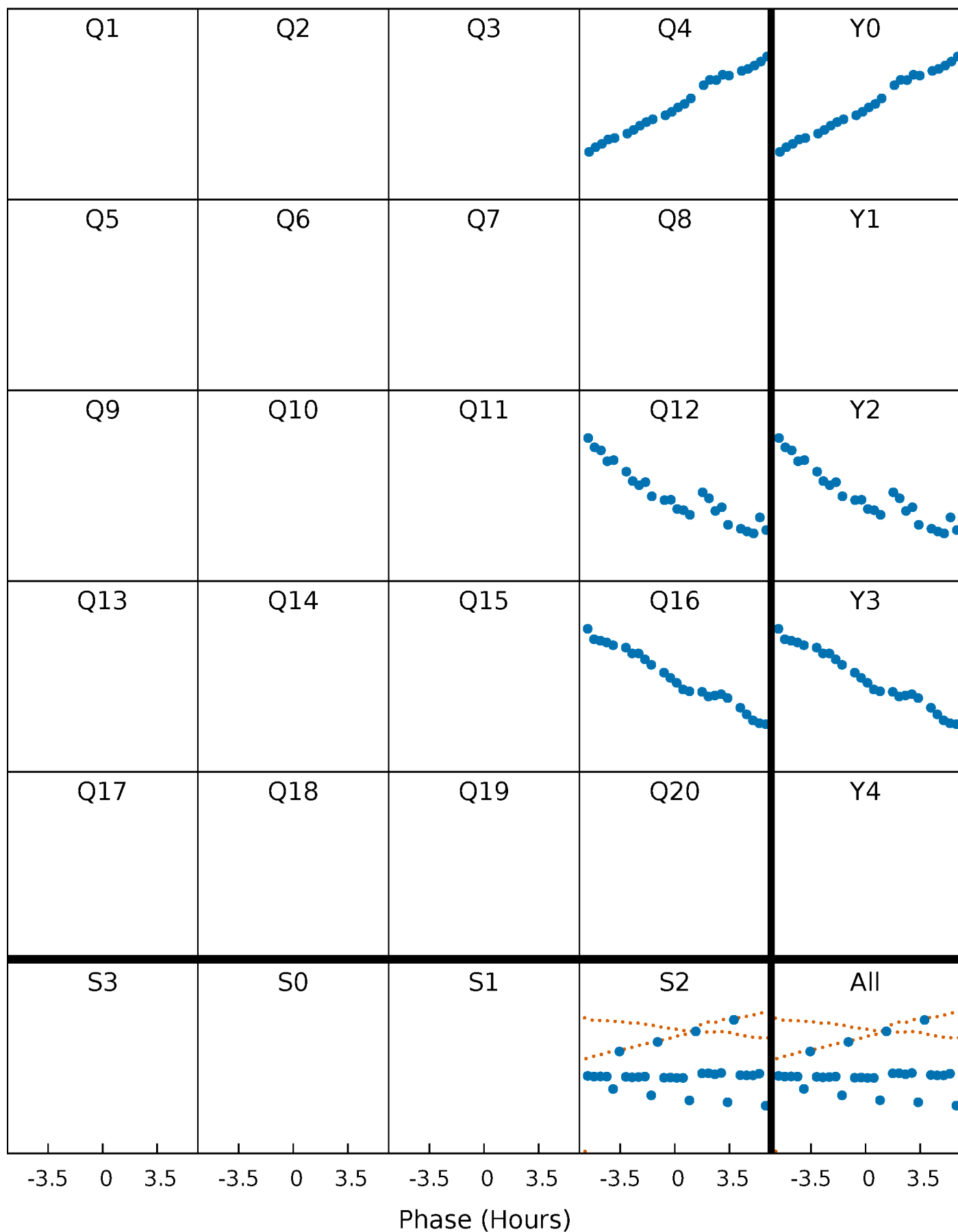


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



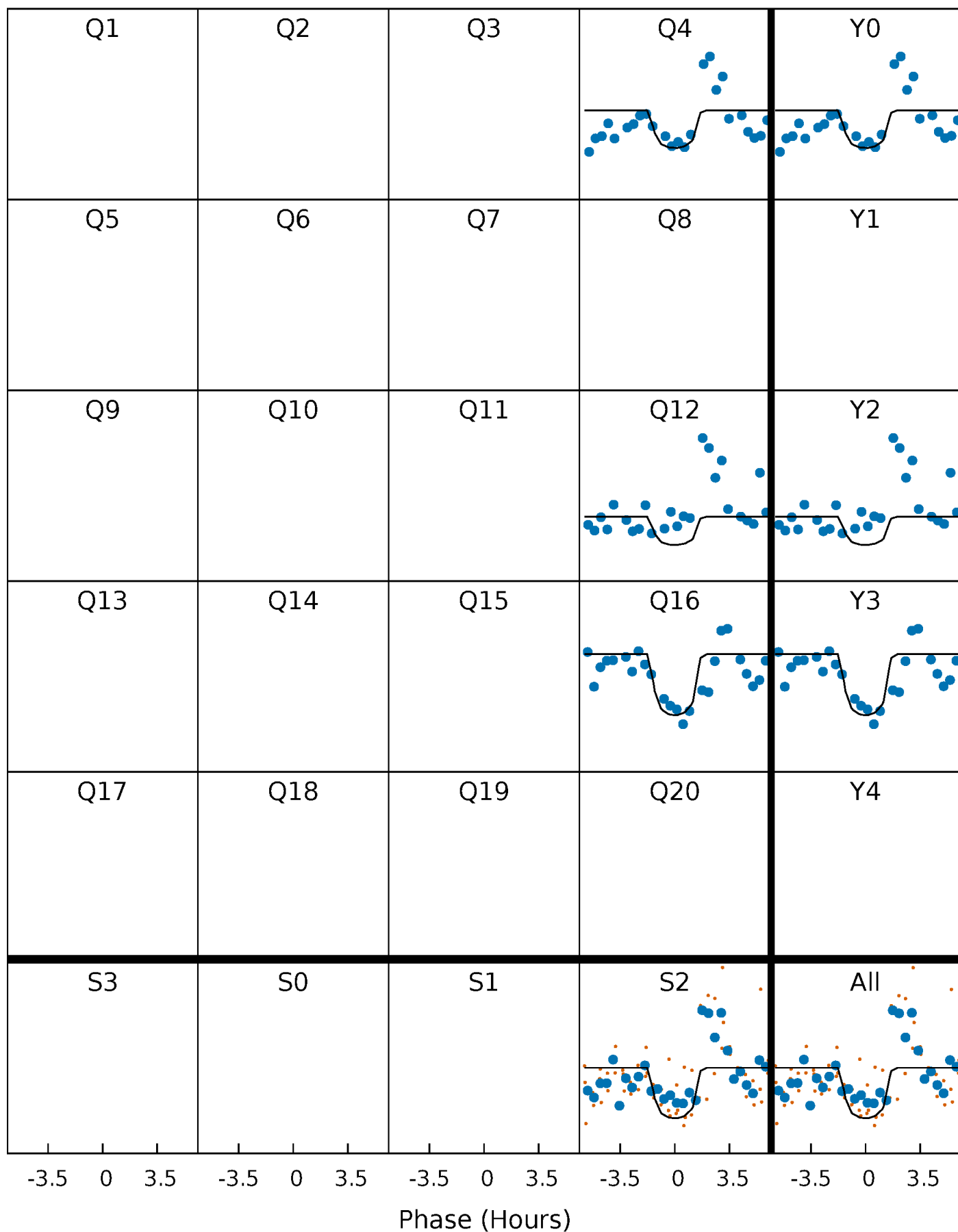
PDC Quarter-Phased Transit Curves

TCE 009710336-02 P=364.393554 Days $T_0=438.660286$ (BKJD)



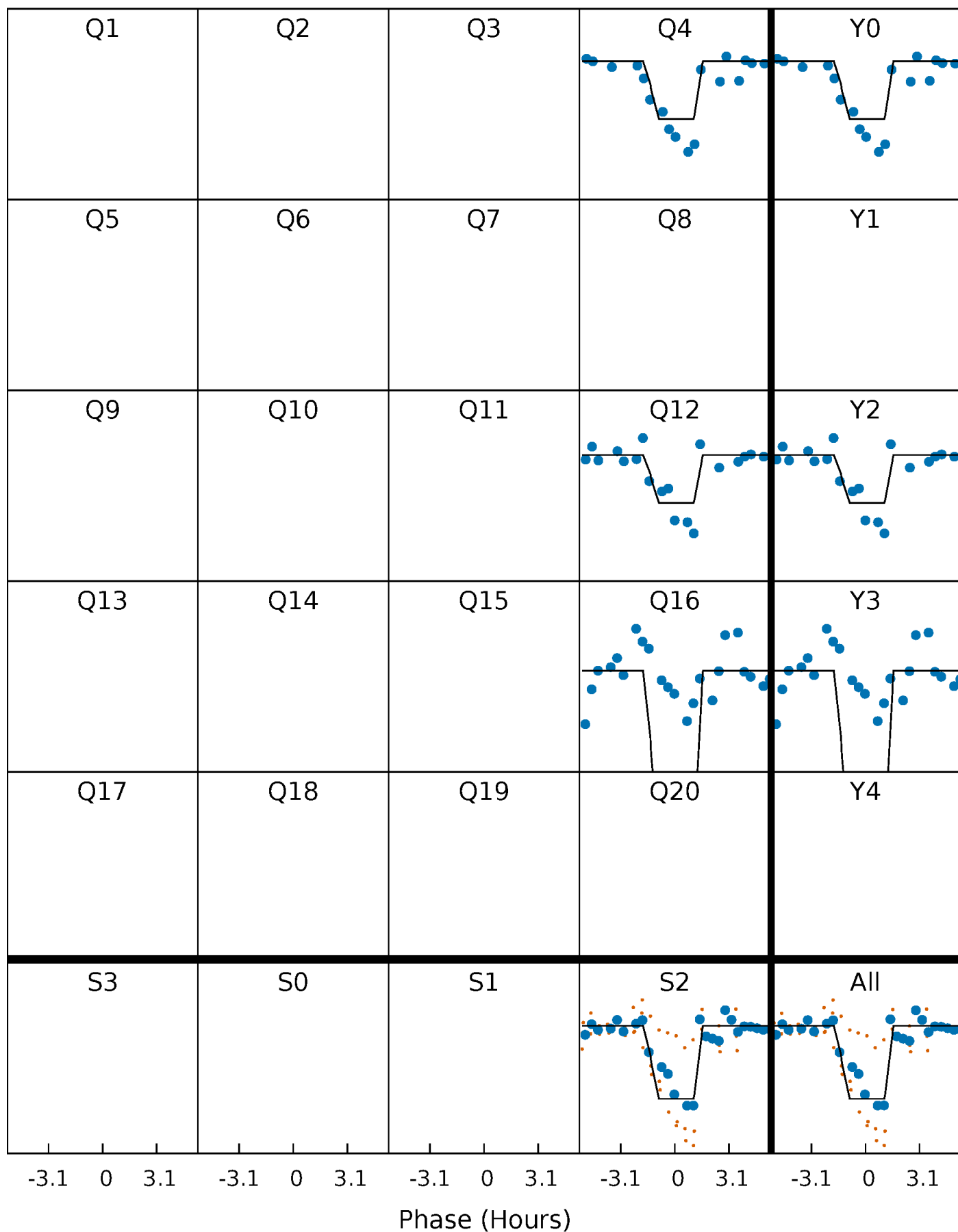
DV Quarter-Phased Transit Curves

TCE 009710336-02 $P=364.393554$ Days $T_0=438.660286$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

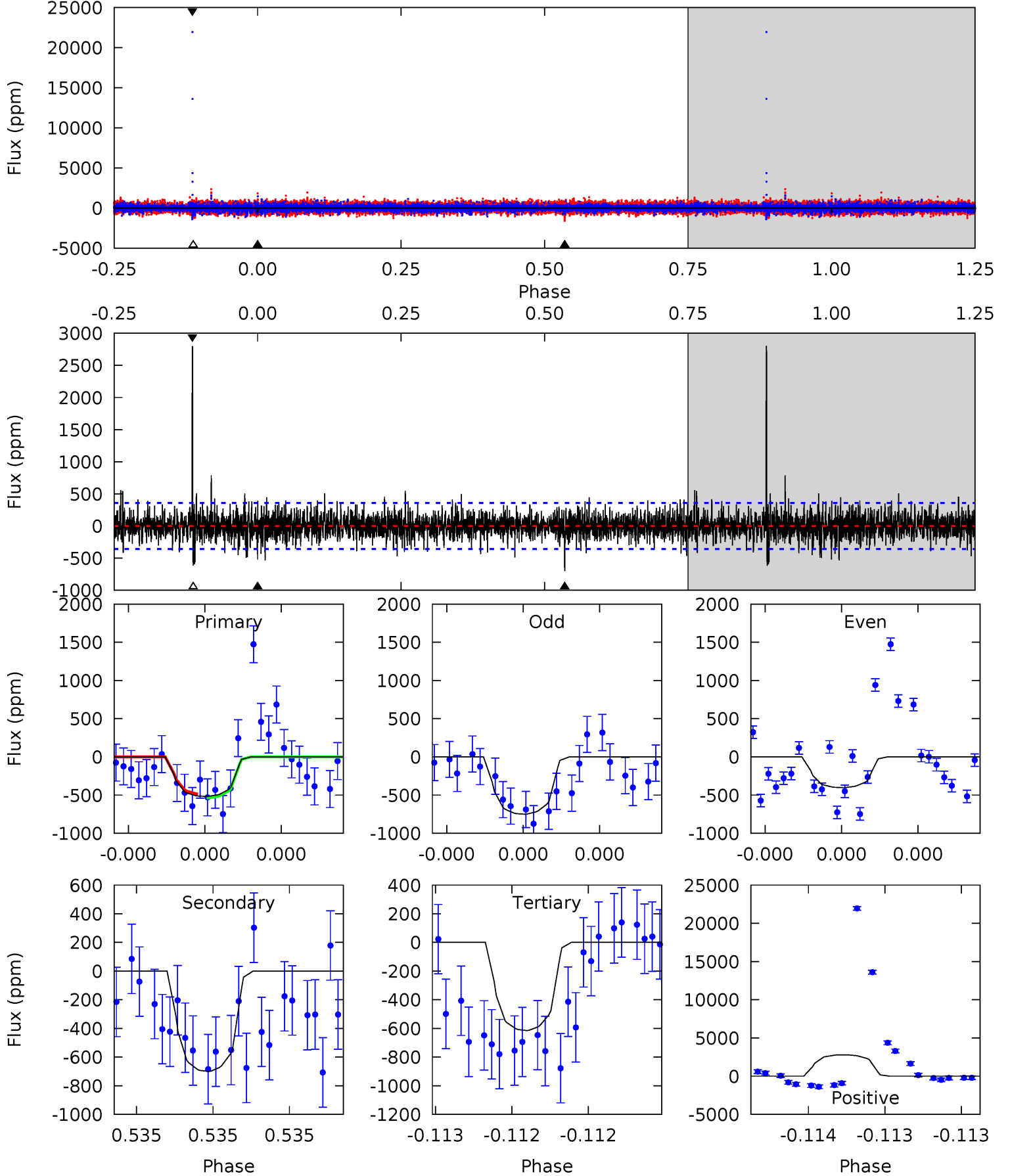
TCE 009710336-02 P=364.393187 Days $T_0=438.661988$ (BKJD)



DV Model-Shift Uniqueness Test

009710336-02, P = 364.393554 Days, E = 74.266732 Days

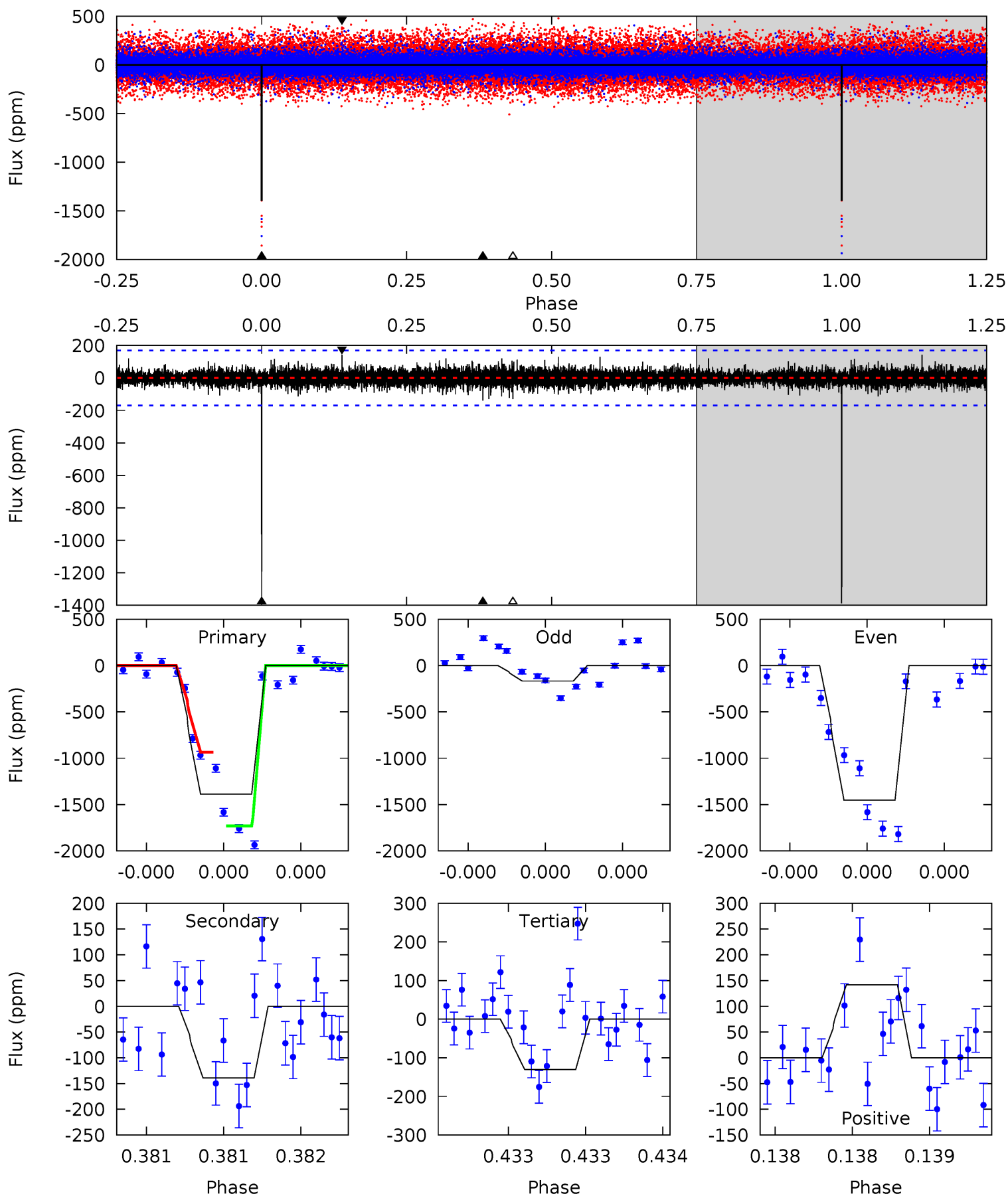
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.11	11.0	9.63	43.9	5.62	3.55	2.04	-1.51	-35.7	1.35	-32.9	2.24	0.76	0.80	0.45



Alt Model-Shift Uniqueness Test

009710336-02, P = 364.393187 Days, E = 74.268801 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
46.2	4.63	4.33	4.72	5.64	3.58	0.86	41.9	41.5	0.30	-0.09	24.5	0.74	0.09	0



Stellar Parameters For KIC 009710336

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5257^{+158}_{-142}	$4.551^{+0.077}_{-0.063}$	$-0.460^{+0.300}_{-0.300}$	$0.737^{+0.084}_{-0.076}$	$0.706^{+0.095}_{-0.044}$	$2.481^{+0.799}_{-0.553}$
	+3%/-3%	+2%/-1%	+65%/-65%	+11%/-10%	+13%/-6%	+32%/-22%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009710336-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-701 ± 64	$4.70^{+4.18}_{-3.25}$	295^{+11}_{-12}	3878^{+2353}_{-728}	$14126^{+130363}_{-10318}$
Alt.	-139 ± 30	$4.85^{+4.85}_{-3.04}$	295^{+11}_{-12}	2969^{+1010}_{-488}	2441^{+15078}_{-1816}

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 $A_{obs} \gg 1.0$

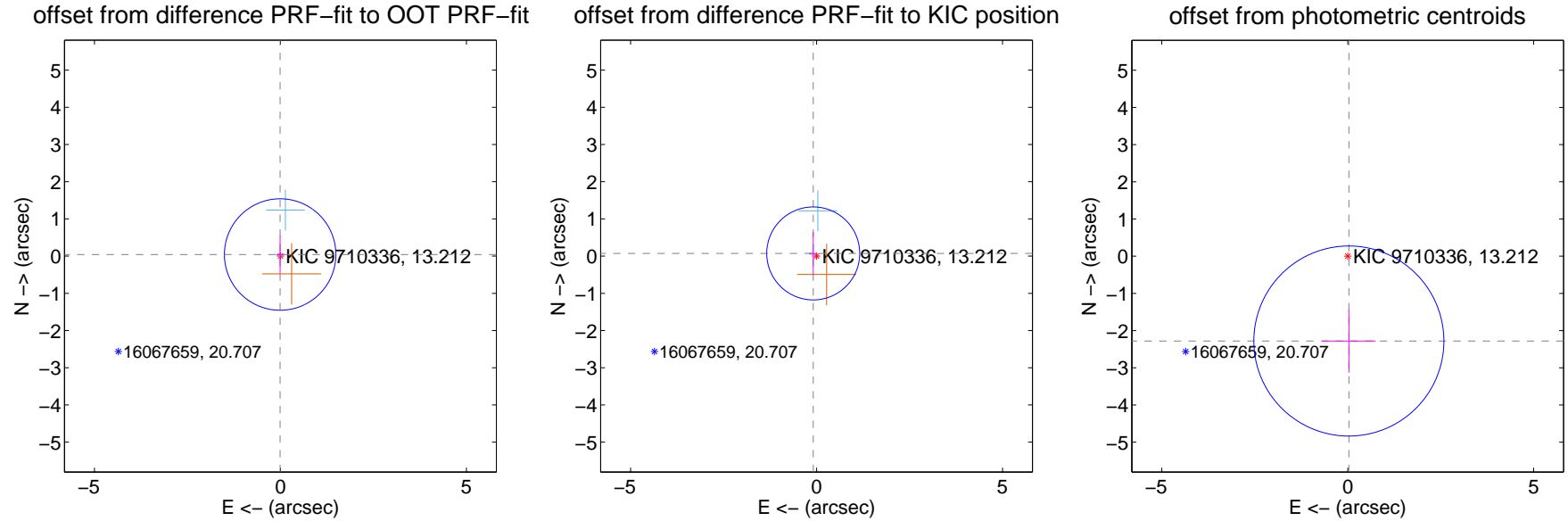
DV Centroid Data

Supplemental centroid analysis for 009710336-02. Kepler magnitude: 13.21. Transit SNR 6.93

There are 2 quarters with good PRF difference image offsets

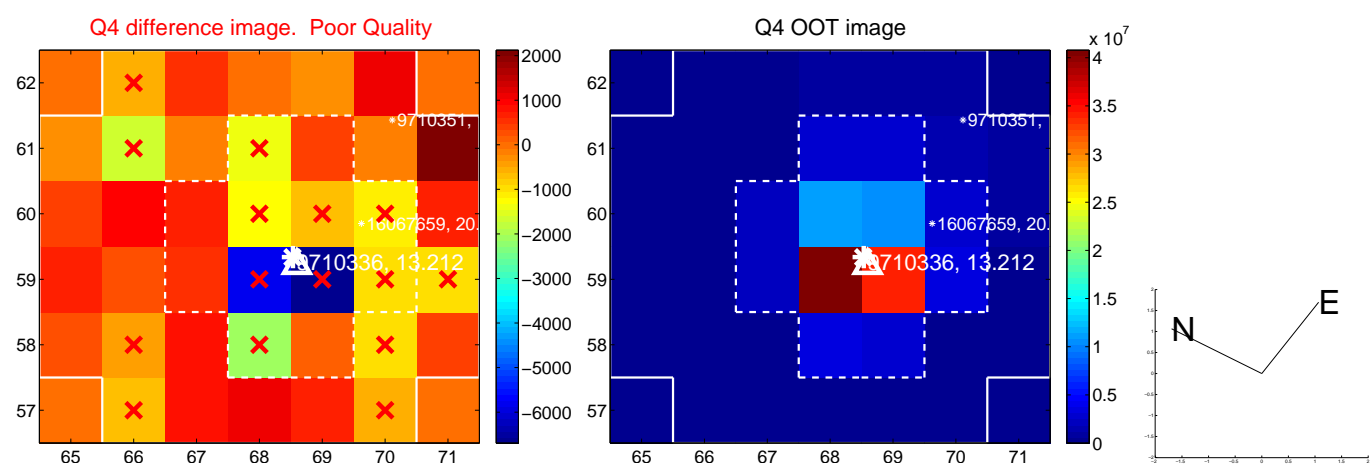
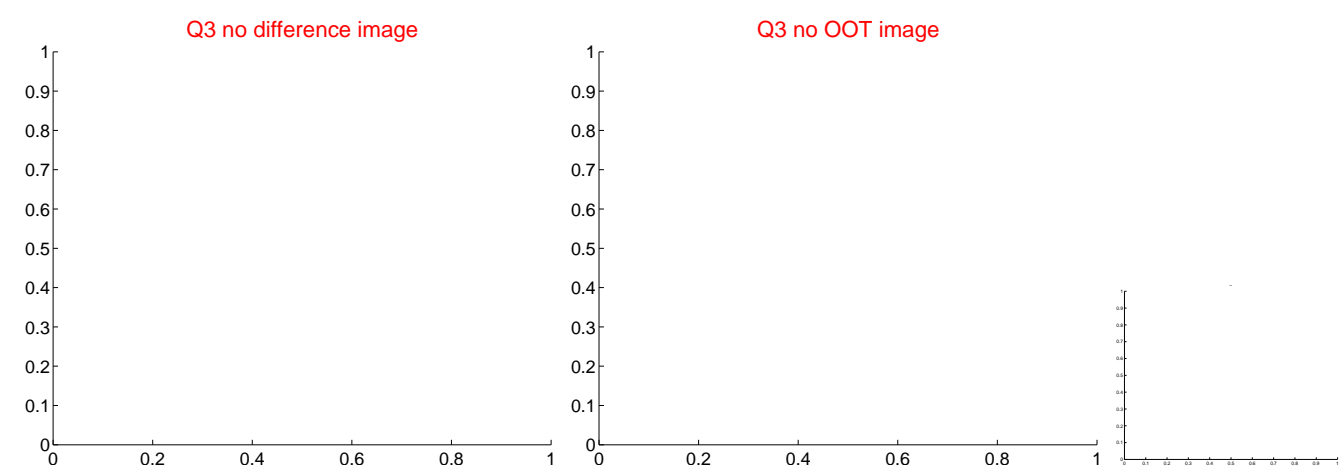
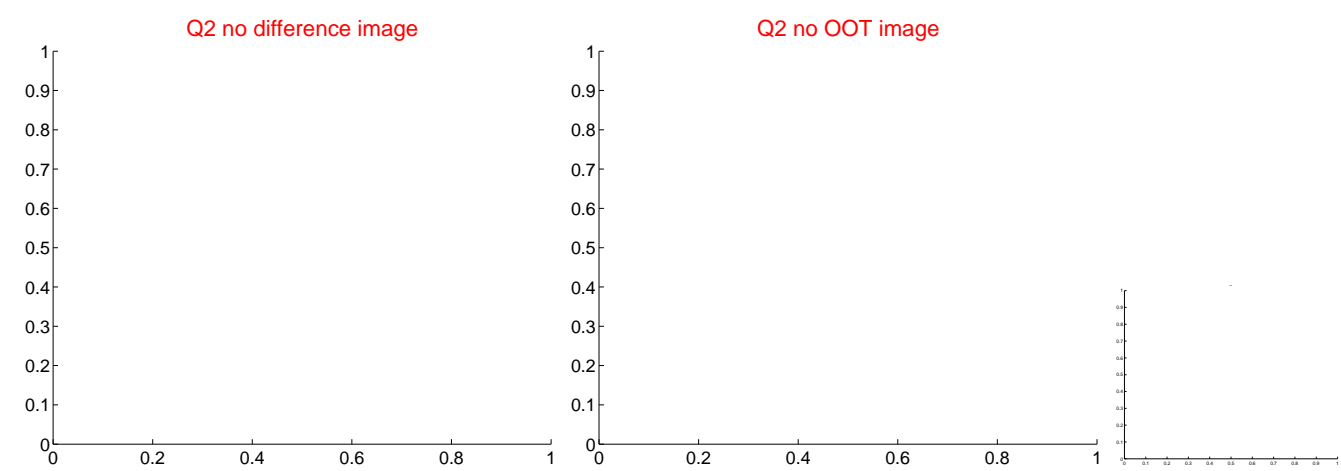
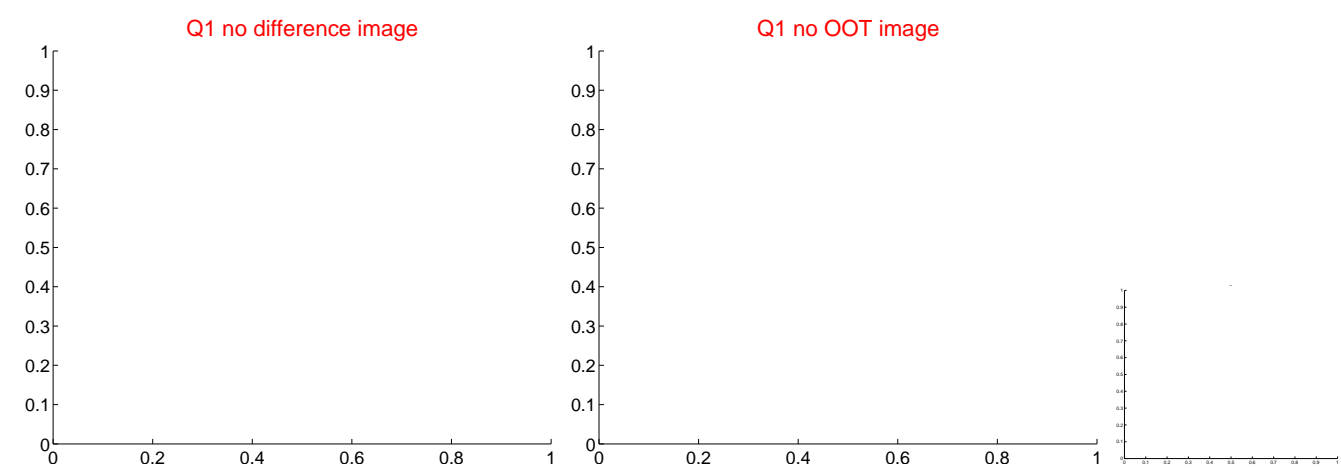
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.044 ± 0.499	0.09	0.009 ± 0.099	0.043 ± 0.502
PRF-fit source offset from KIC position	0.116 ± 0.417	0.28	0.090 ± 0.111	0.073 ± 0.573
photometric centroid source offset	2.28 ± 0.85	2.68	-0.03 ± 0.72	-2.28 ± 0.85



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.

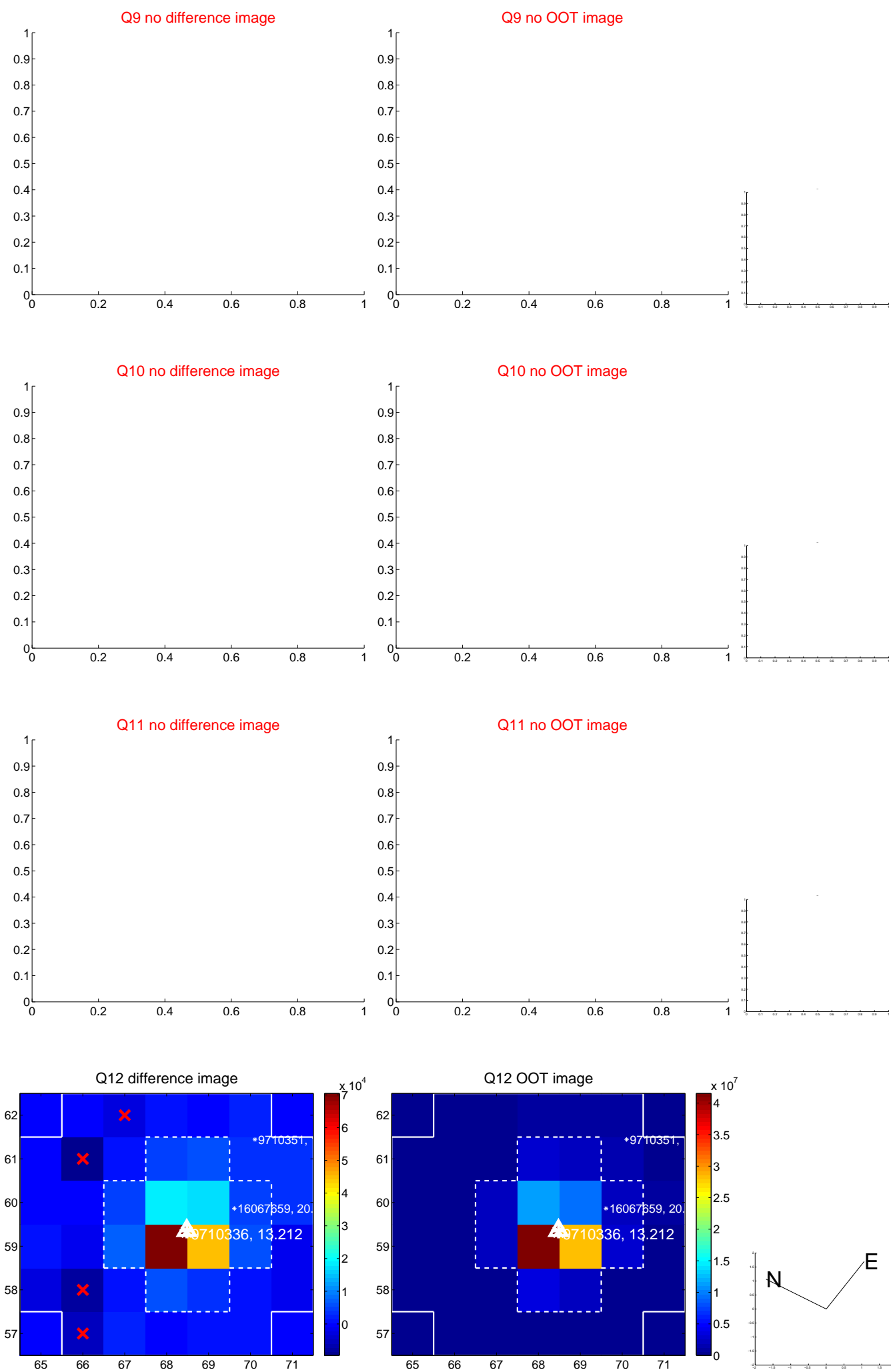
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



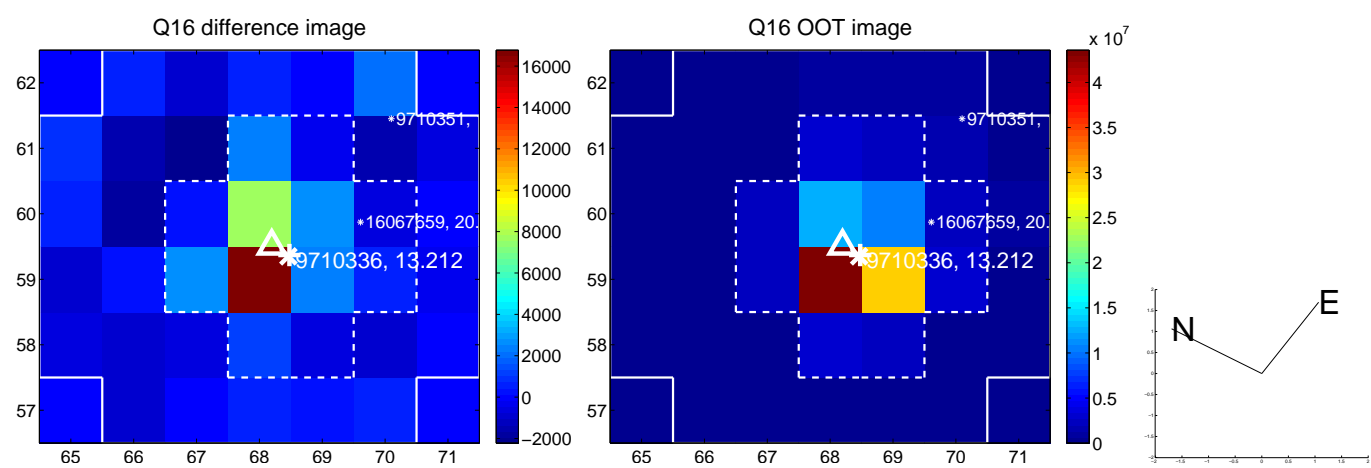
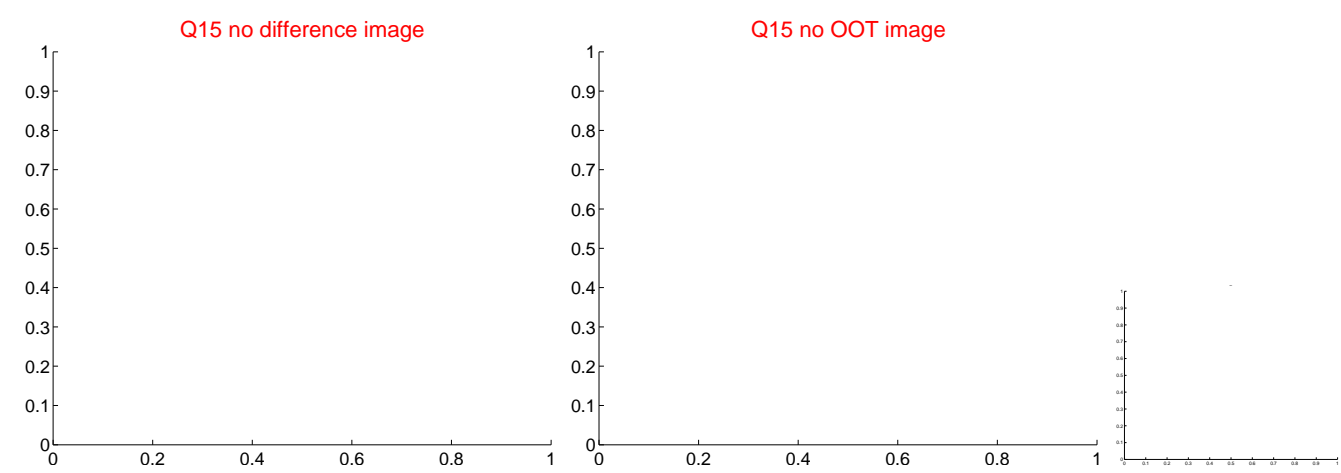
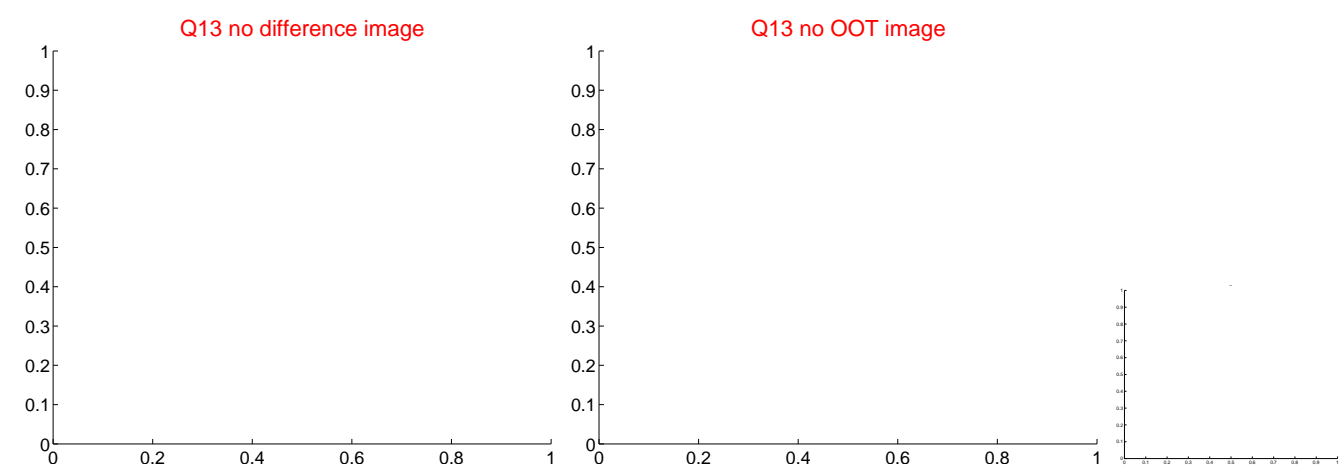
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



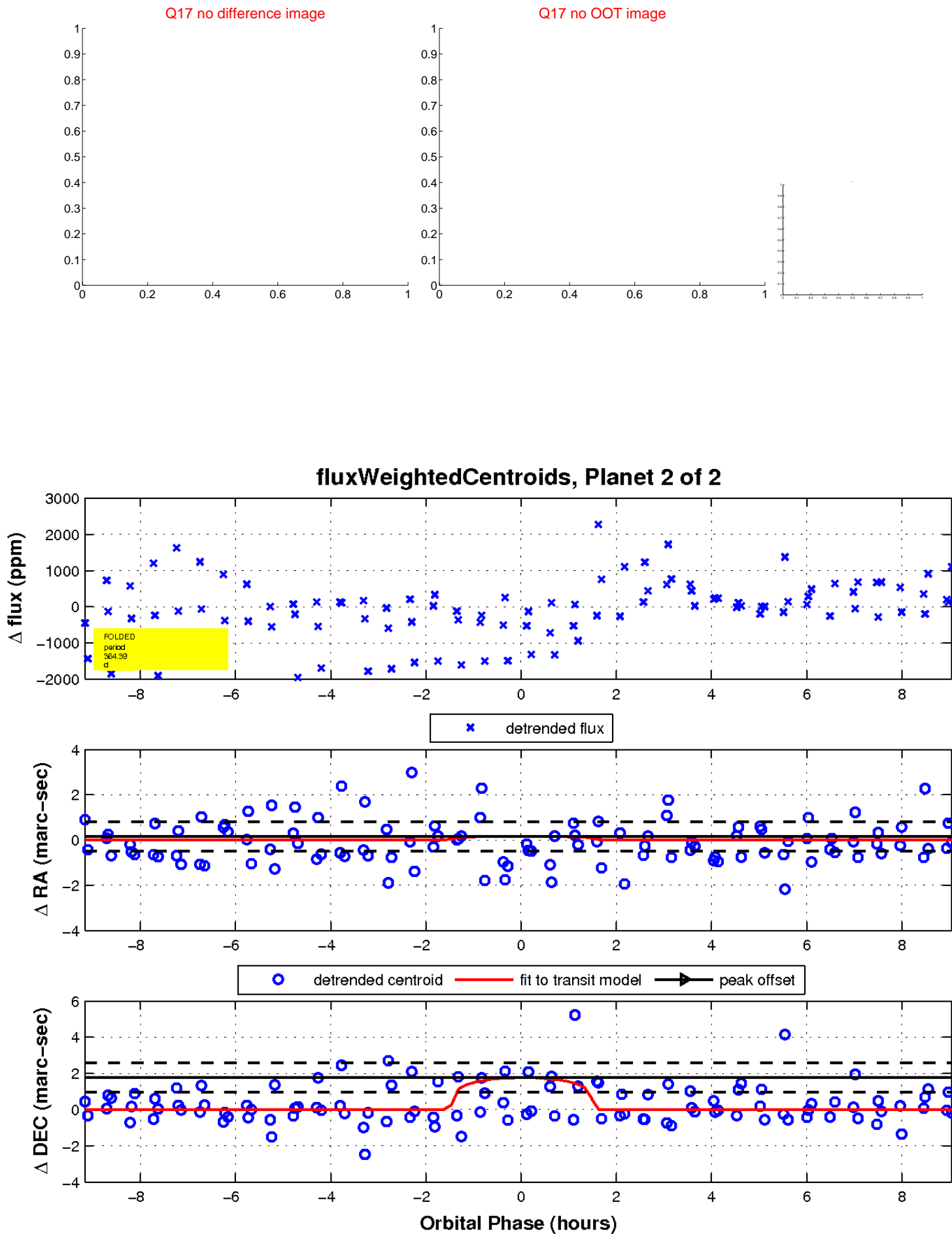
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

