

KIC 010196902

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})
010196902-01	OBS	No	603.468475	284.268584	658.6	11.034	11.9	4.6	0.49	4545	1.26	0.07
010196902-02	OBS	No	400.584036	463.919301	679.8	4.059	12.2	8.3	0.49	4545	1.35	0.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010196902-01	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010196902-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—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.

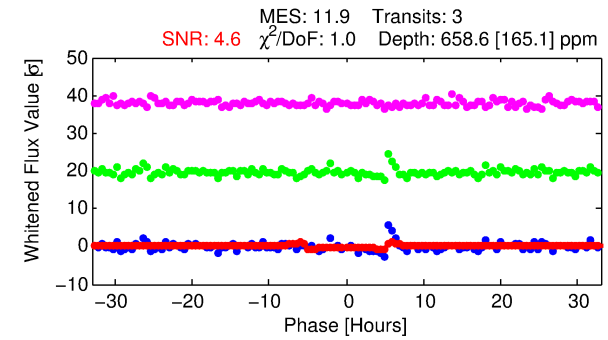
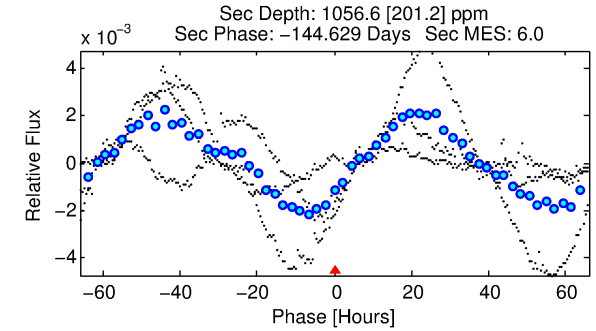
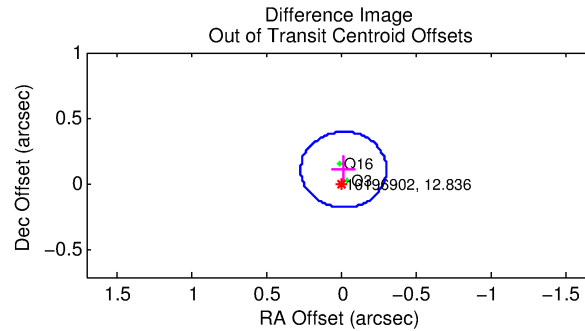
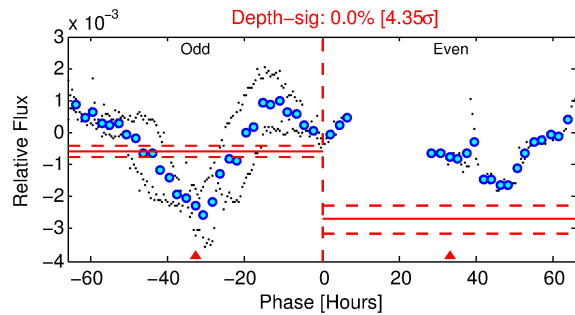
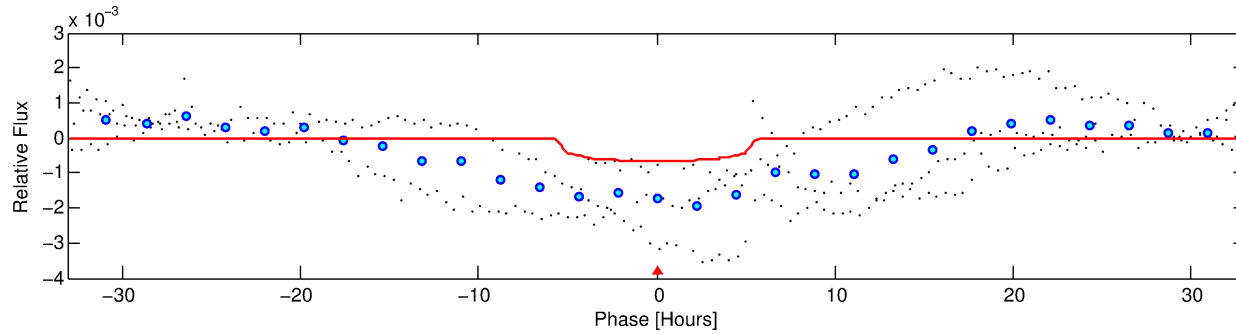
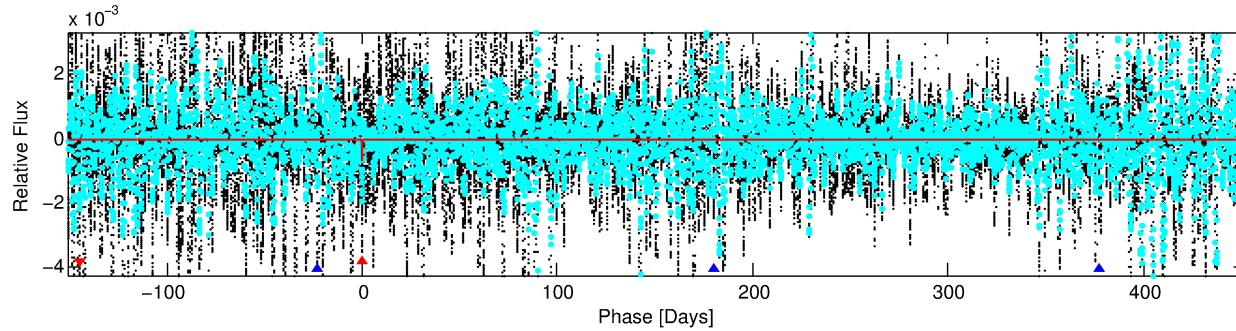
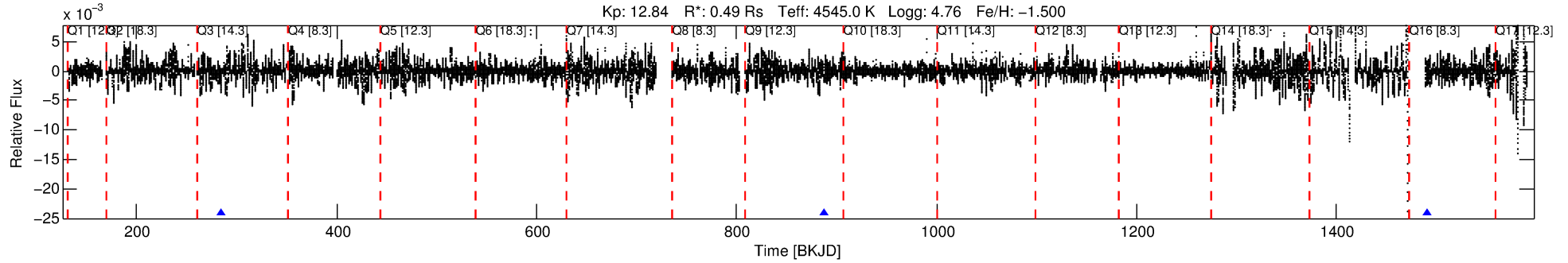
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010196902-01

No Significant Match Found

DV One-Page Summary

KIC: 10196902 Candidate: 1 of 2 Period: 603.468 d



DV Fit Results:

Period = 603.46848 [0.00541] d
Epoch = 284.2686 [0.0067] BKJD
Rp/R* = 0.0234 [0.0470]
a/R* = 419.74 [3796.43]
b = 0.20 [44.85]
Seff = 0.07 [0.01]
Teq = 133 [5] K
Rp = 1.26 [2.53] Re
a = 1.1161 [0.0706] AU
Ag = 458770.09 [1851101.48] [0.25 σ]
Teffp = 5362 [5411] K [0.97 σ]

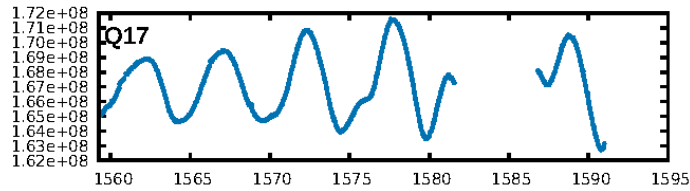
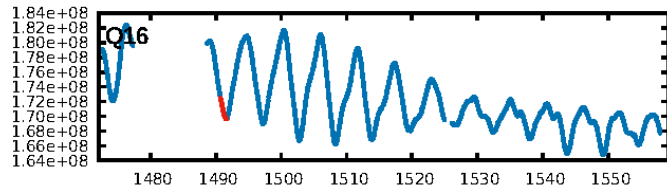
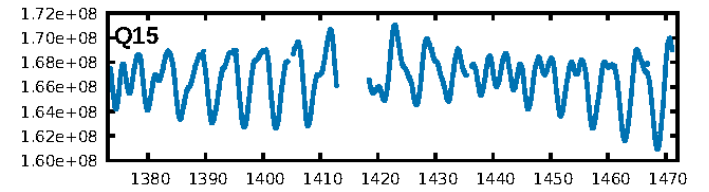
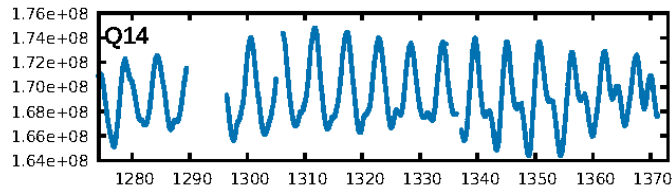
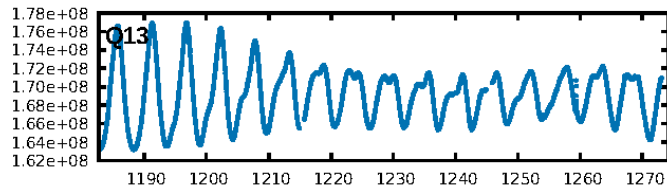
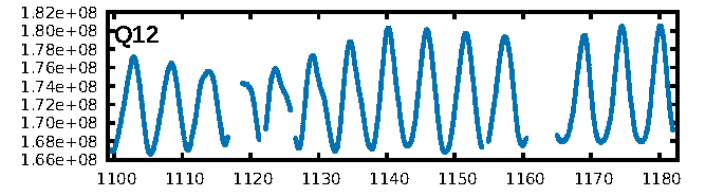
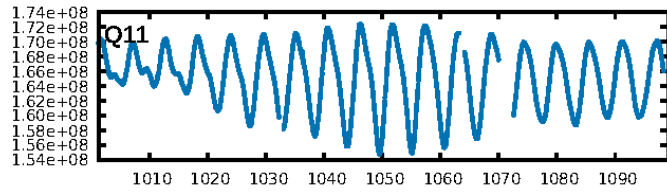
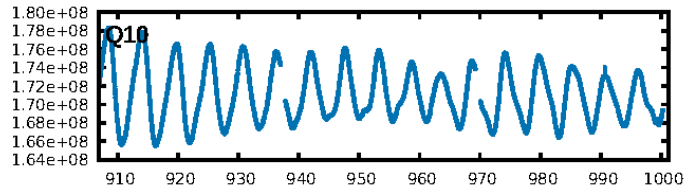
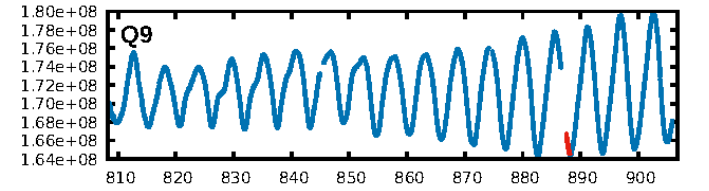
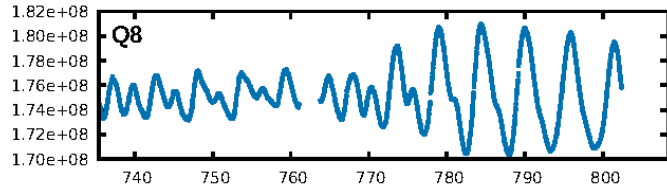
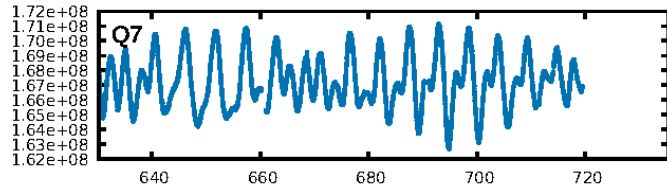
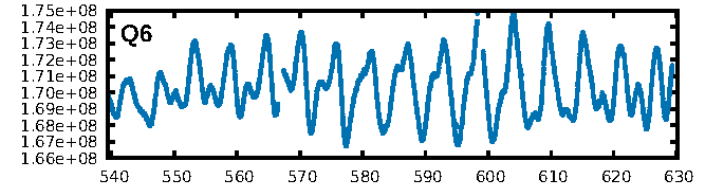
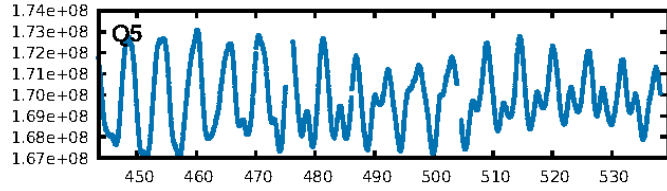
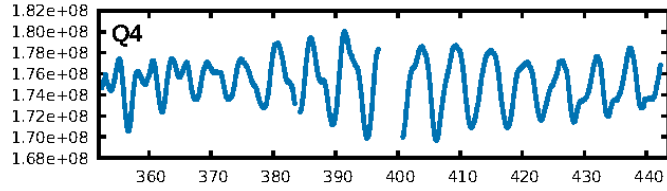
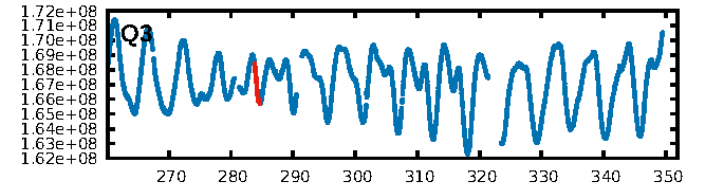
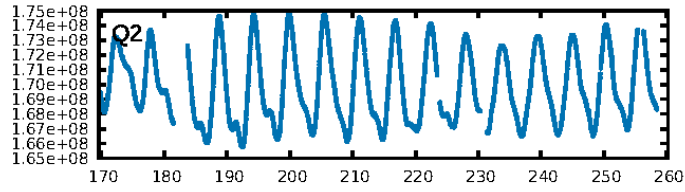
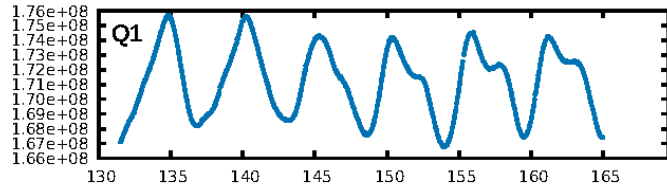
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [414.16 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 38.0%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 1.44e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.77
Centroid-sig: 37.9%
Centroid-so: 0.138 arcsec [0.33 σ]
OotOffset-rm: 0.113 arcsec [1.18 σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-rm: 0.437 arcsec [4.26 σ]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

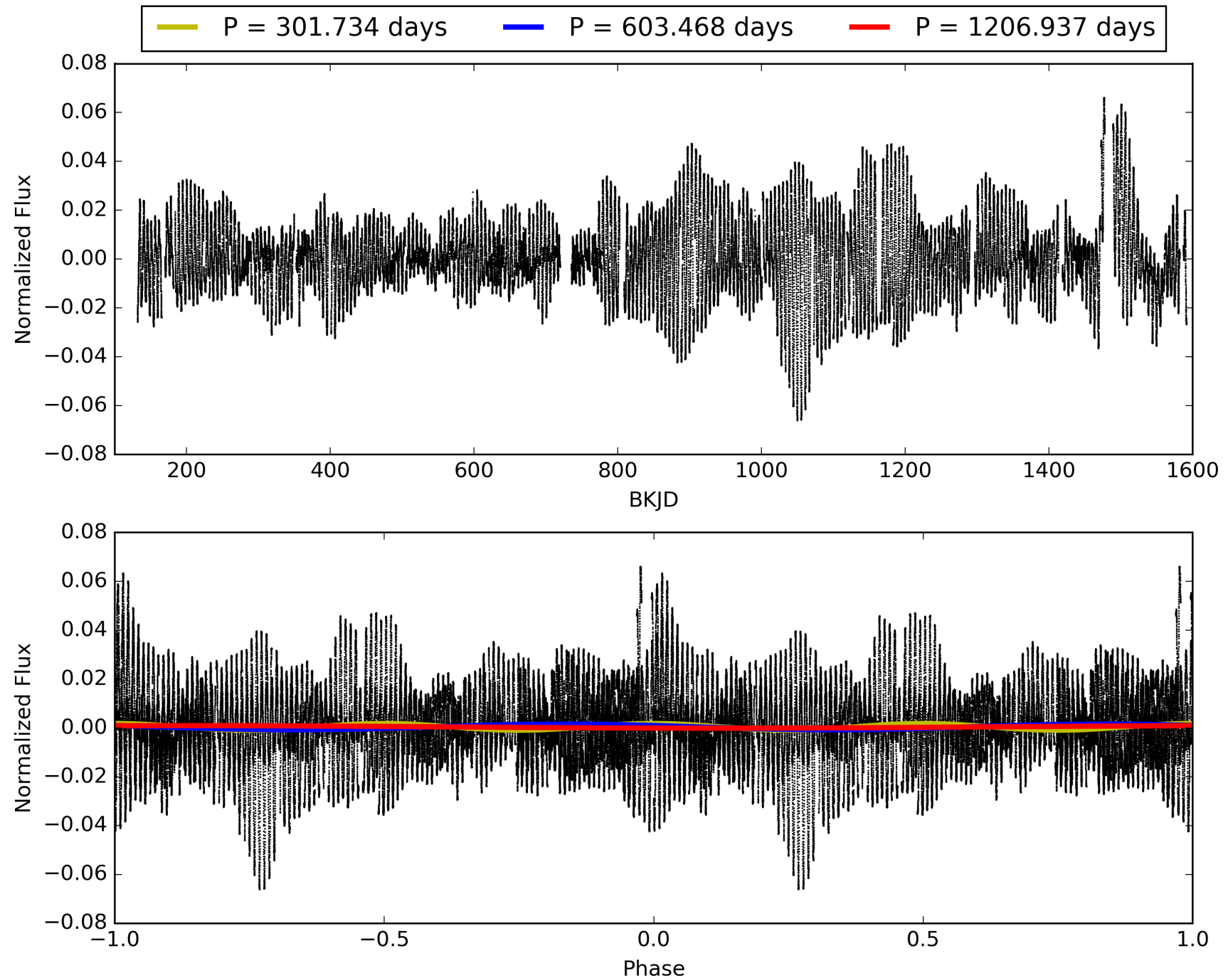
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:50:14 Z

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

TCE 010196902-01, PDC Light Curves

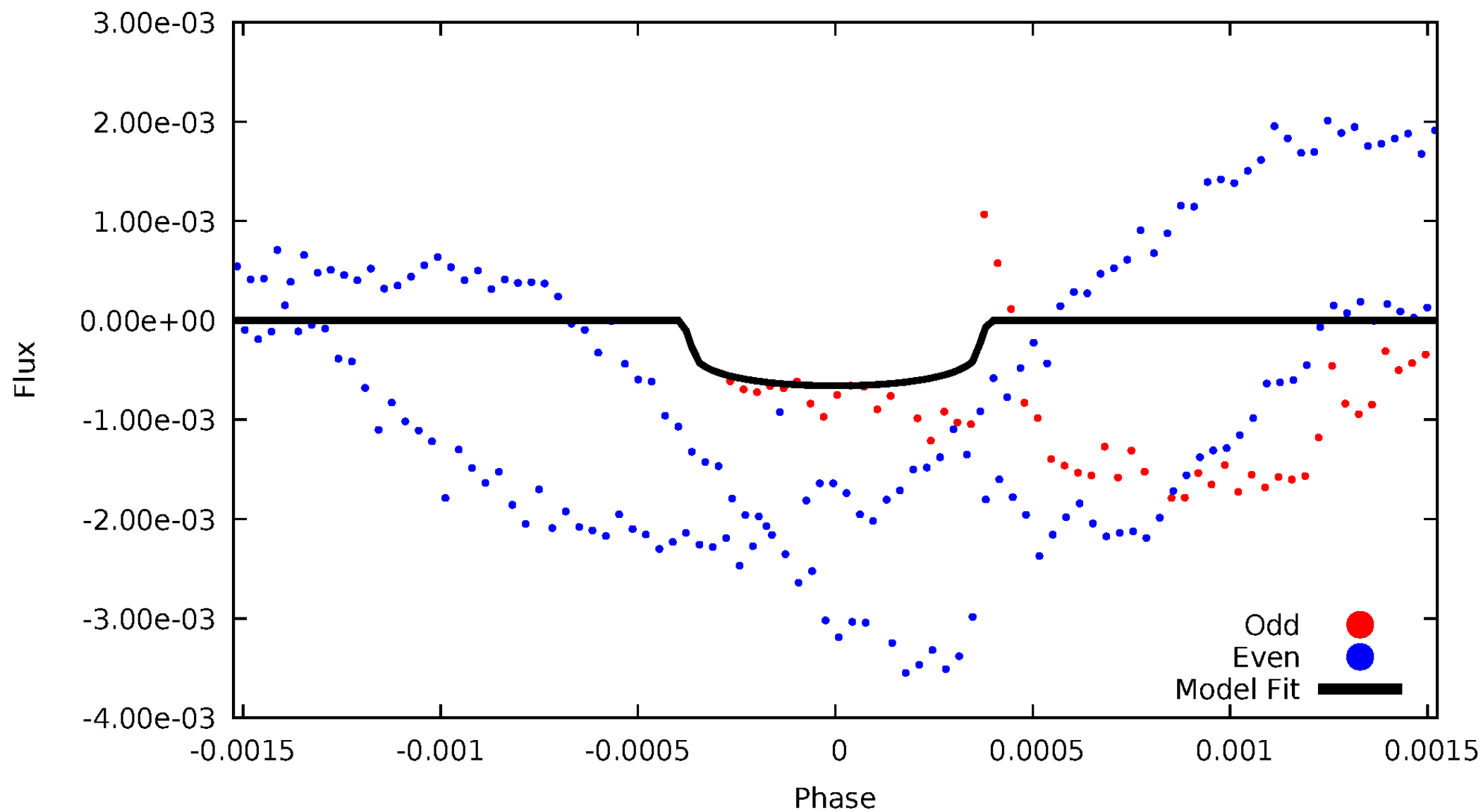


TCE 010196902-01



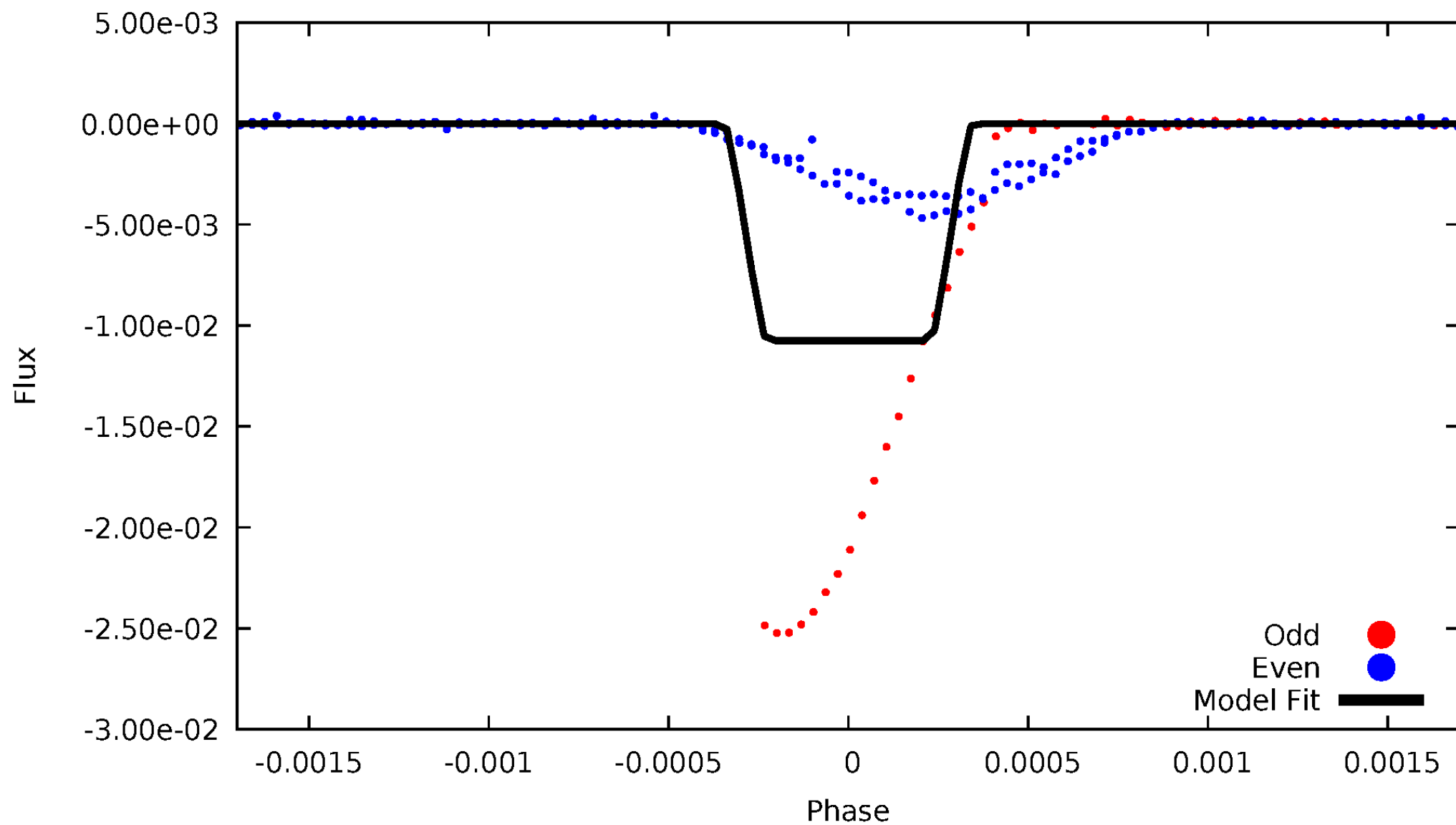
DV Odd/Even

TCE 010196902-01



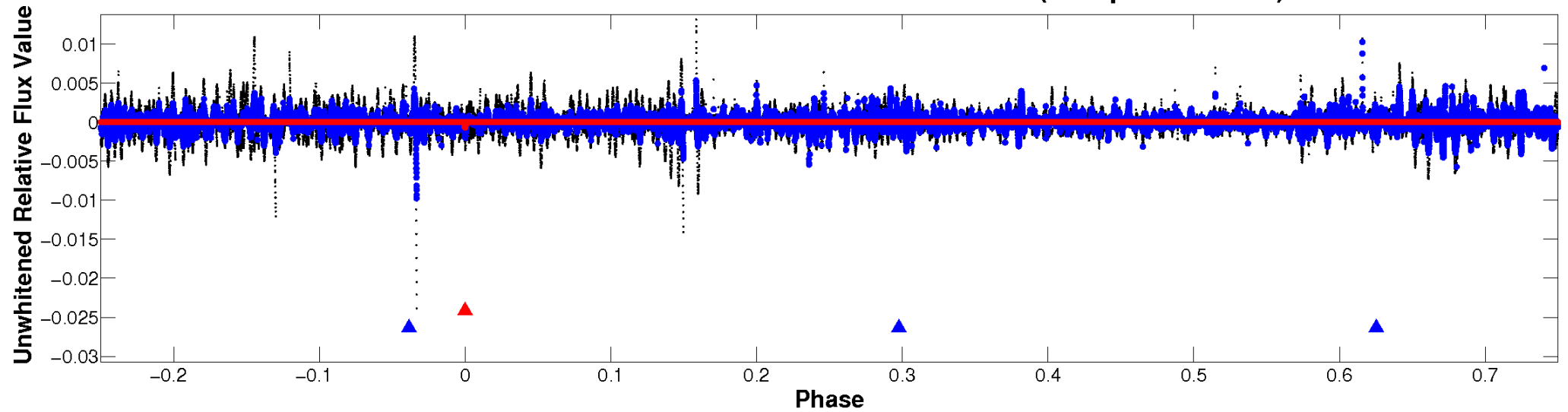
ALT Odd/Even

TCE 010196902-01

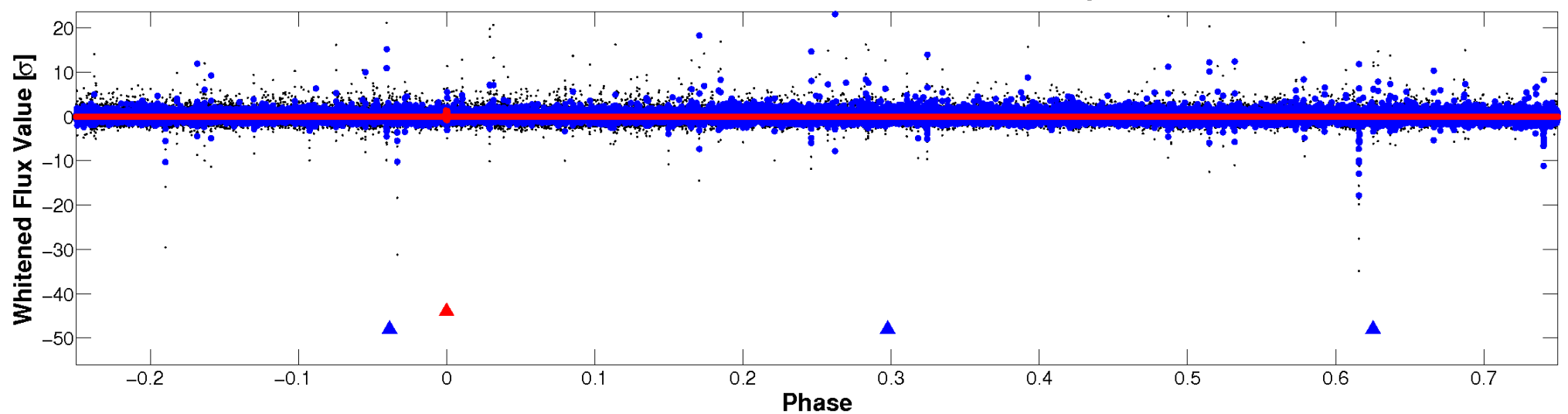


Non-Whitened Vs. Whitened Light Curve

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

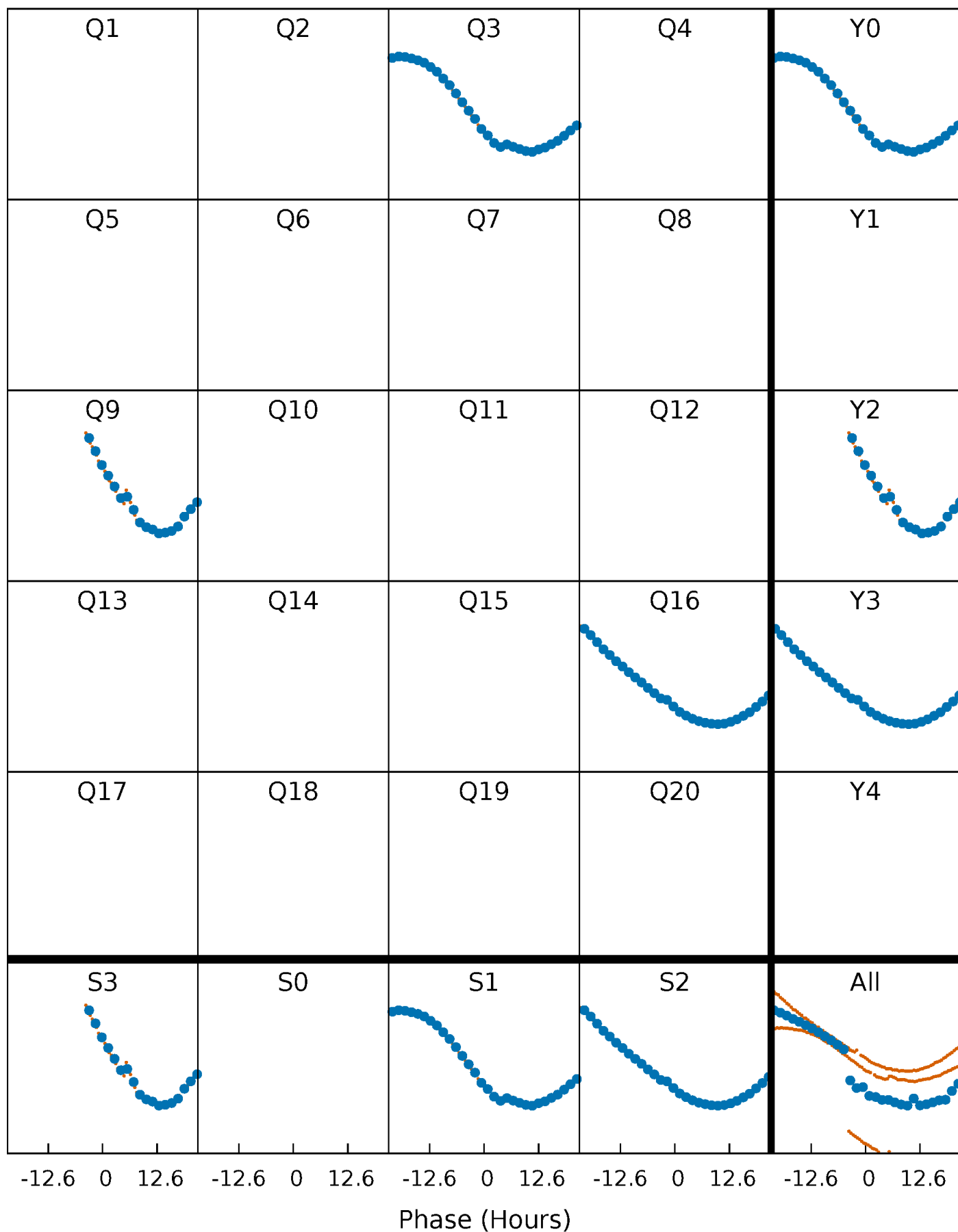


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



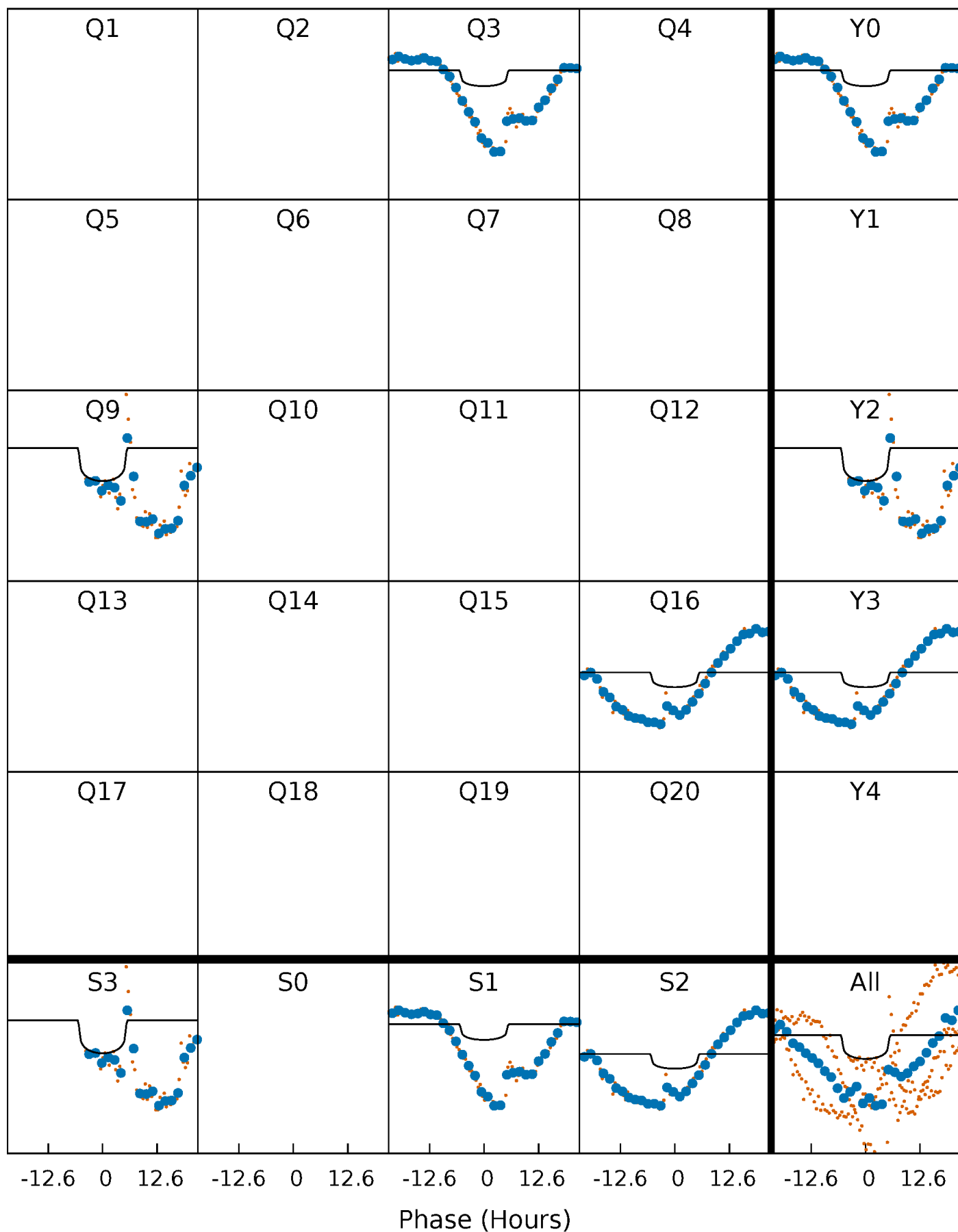
PDC Quarter-Phased Transit Curves

TCE 010196902-01 P=603.468475 Days $T_0=284.268584$ (BKJD)



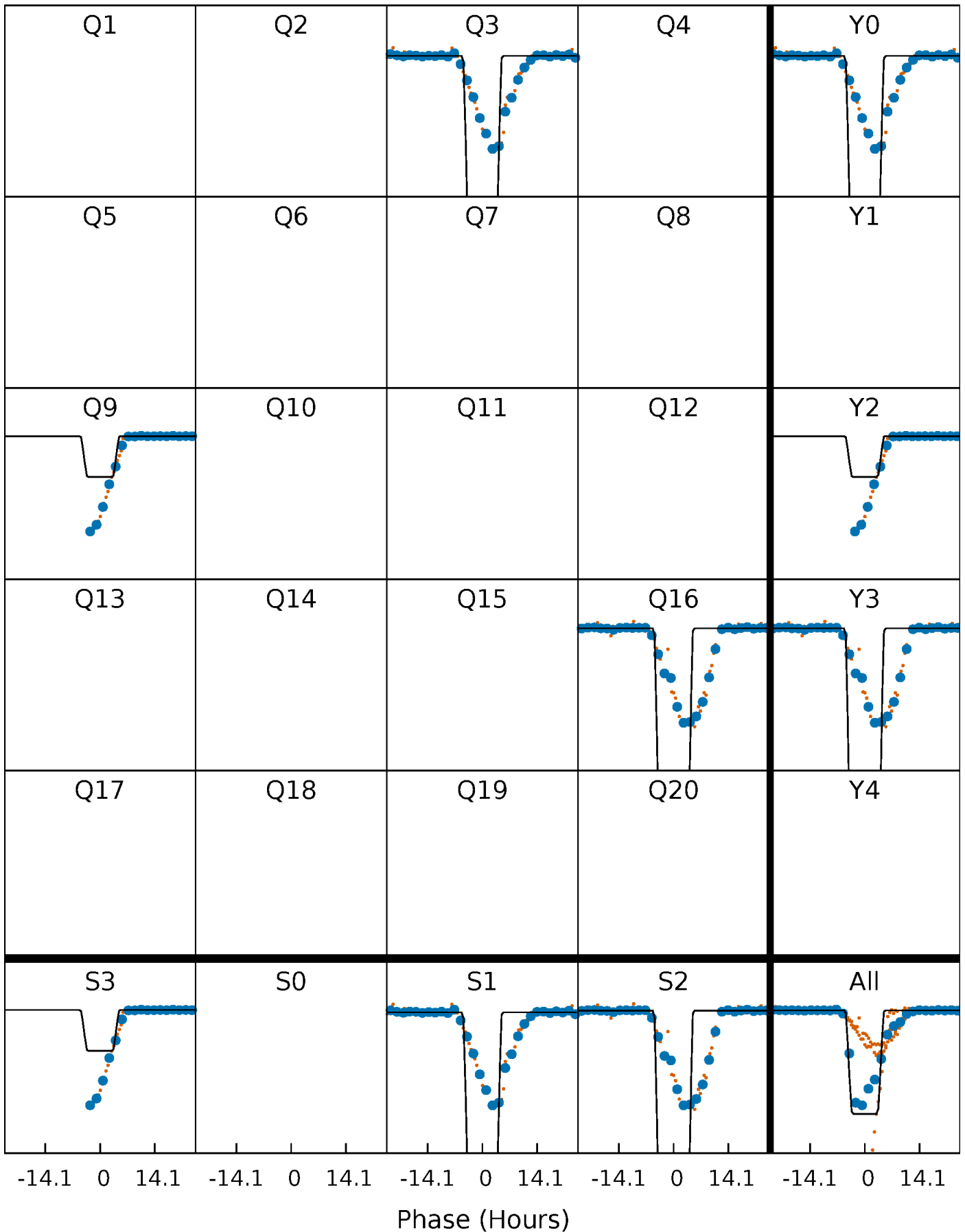
DV Quarter-Phased Transit Curves

TCE 010196902-01 P=603.468475 Days $T_0=284.268584$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

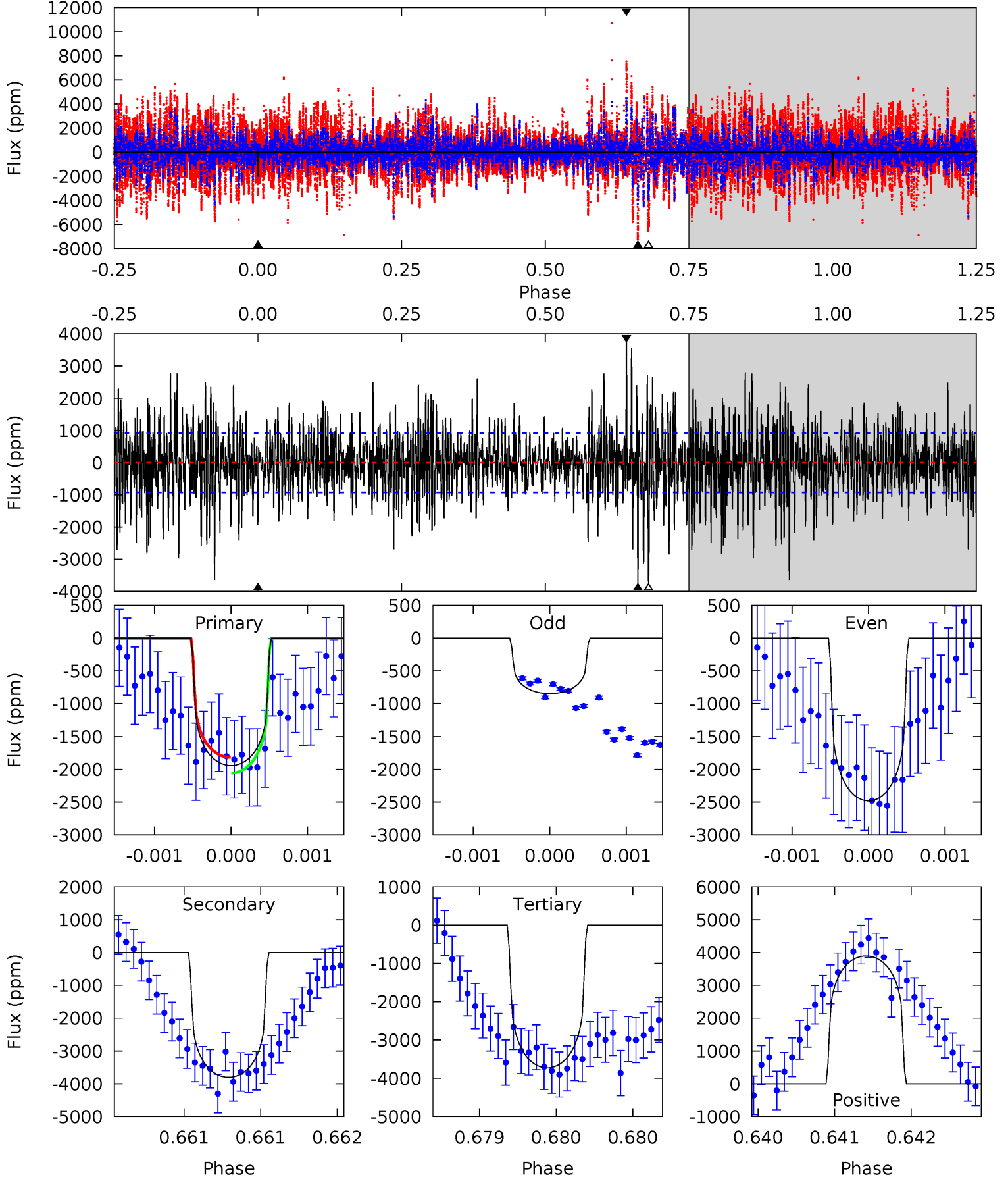
TCE 010196902-01 P=603.464327 Days $T_0=284.252505$ (BKJD)



DV Model-Shift Uniqueness Test

010196902-01, P = 603.468475 Days, E = 284.268584 Days

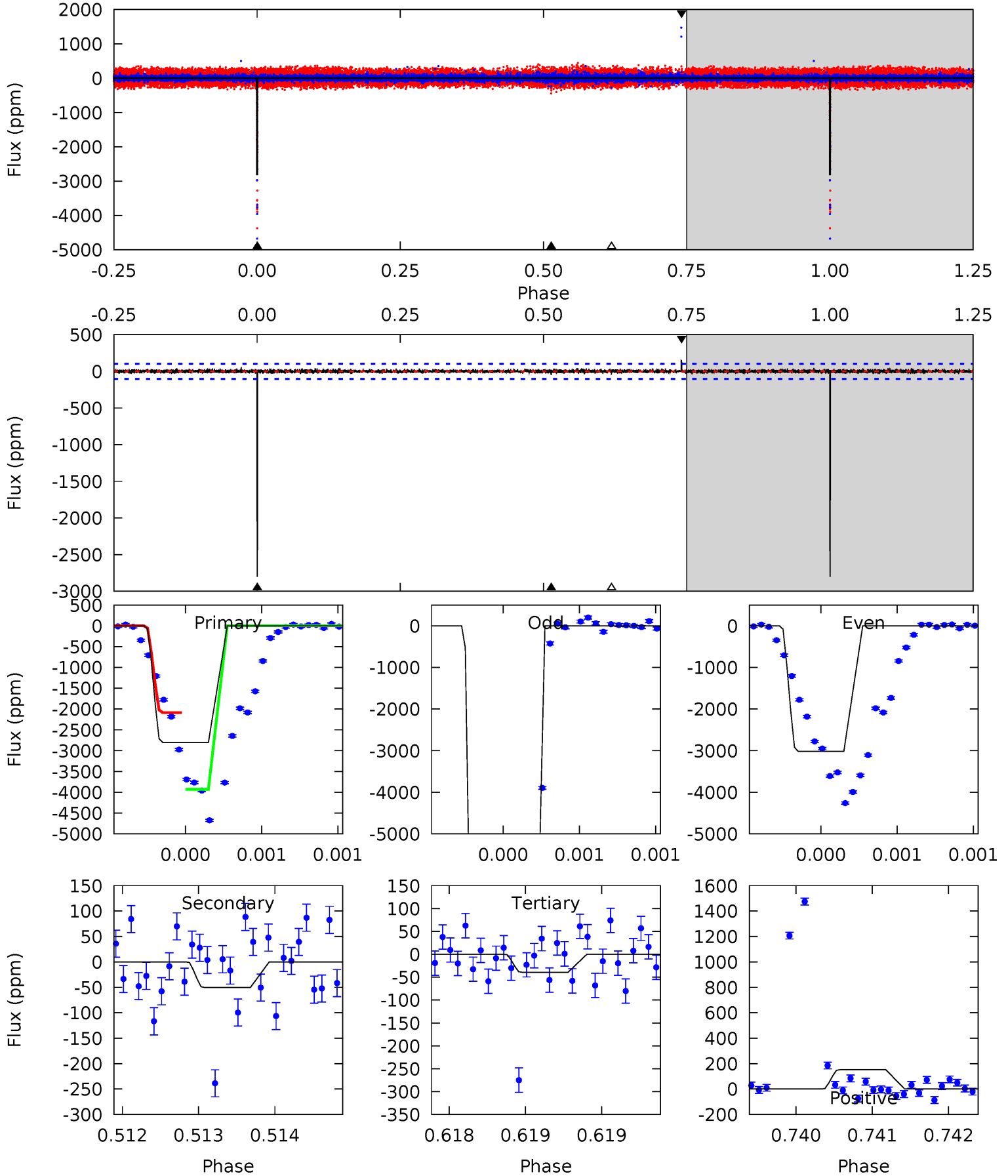
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	22.6	22.2	23.1	5.50	3.37	5.22	-10.6	-11.6	0.45	-0.54	4.47	0.98	0.51	0.70



Alt Model-Shift Uniqueness Test

010196902-01, P = 603.464327 Days, E = 284.252505 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
149.3	2.68	2.09	8.11	5.52	3.40	0.53	147.2	141.2	0.59	-5.43	641.8	2.55	0.05	0



Stellar Parameters For KIC 010196902

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	4545^{+136}_{-149}	$4.759^{+0.048}_{-0.028}$	$-1.500^{+0.300}_{-0.300}$	$0.493^{+0.027}_{-0.038}$	$0.509^{+0.031}_{-0.028}$	$5.982^{+1.284}_{-0.642}$
	+3%/-3%	+1%/-1%	+20%/-20%	+5%/-8%	+6%/-6%	+21%/-11%
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 010196902-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-3803 ± 168	$2.37^{+2.05}_{-1.59}$	186^{+6}_{-7}	5260^{+4305}_{-1209}	$477574^{+3869270}_{-344052}$
Alt.	-50 ± 19	$5.48^{+2.58}_{-2.30}$	186^{+6}_{-7}	2109^{+301}_{-187}	1076^{+2378}_{-633}

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

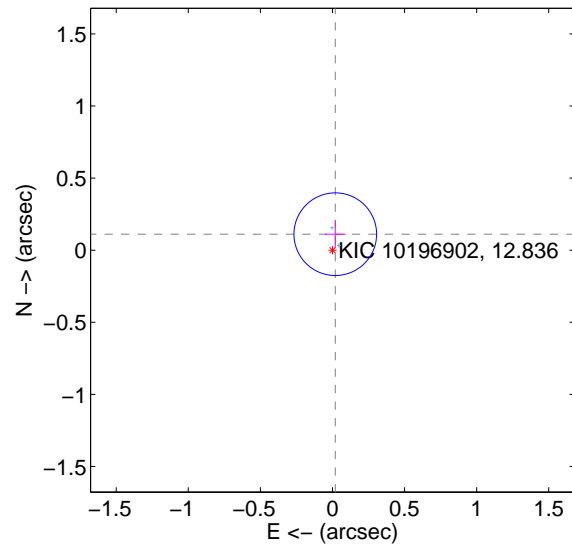
Supplemental centroid analysis for 010196902-01. Kepler magnitude: 12.84. Transit SNR 4.60

There are 2 quarters with good PRF difference image offsets

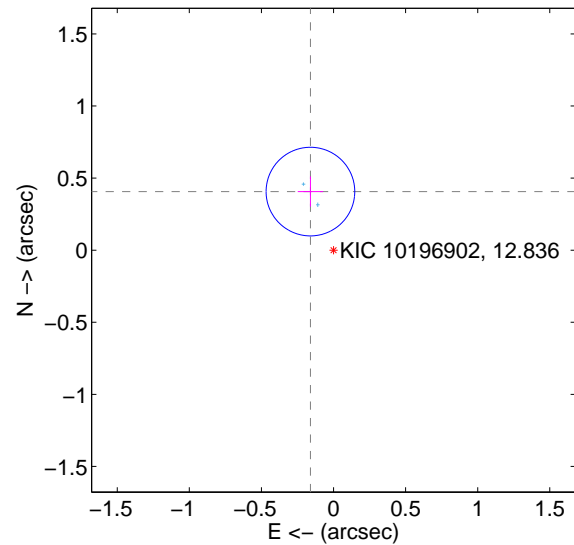
The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.113 ± 0.096	1.18	-0.019 ± 0.072	0.111 ± 0.096
PRF-fit source offset from KIC position	0.437 ± 0.102	4.26	0.160 ± 0.088	0.406 ± 0.104
photometric centroid source offset	0.14 ± 0.42	0.33	-0.11 ± 0.47	0.08 ± 0.29

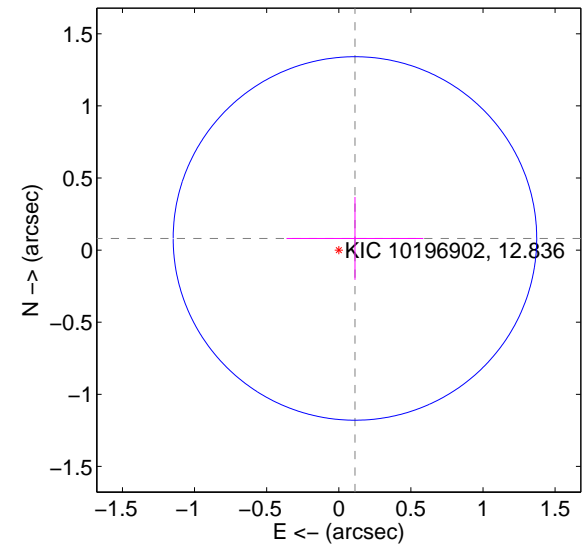
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

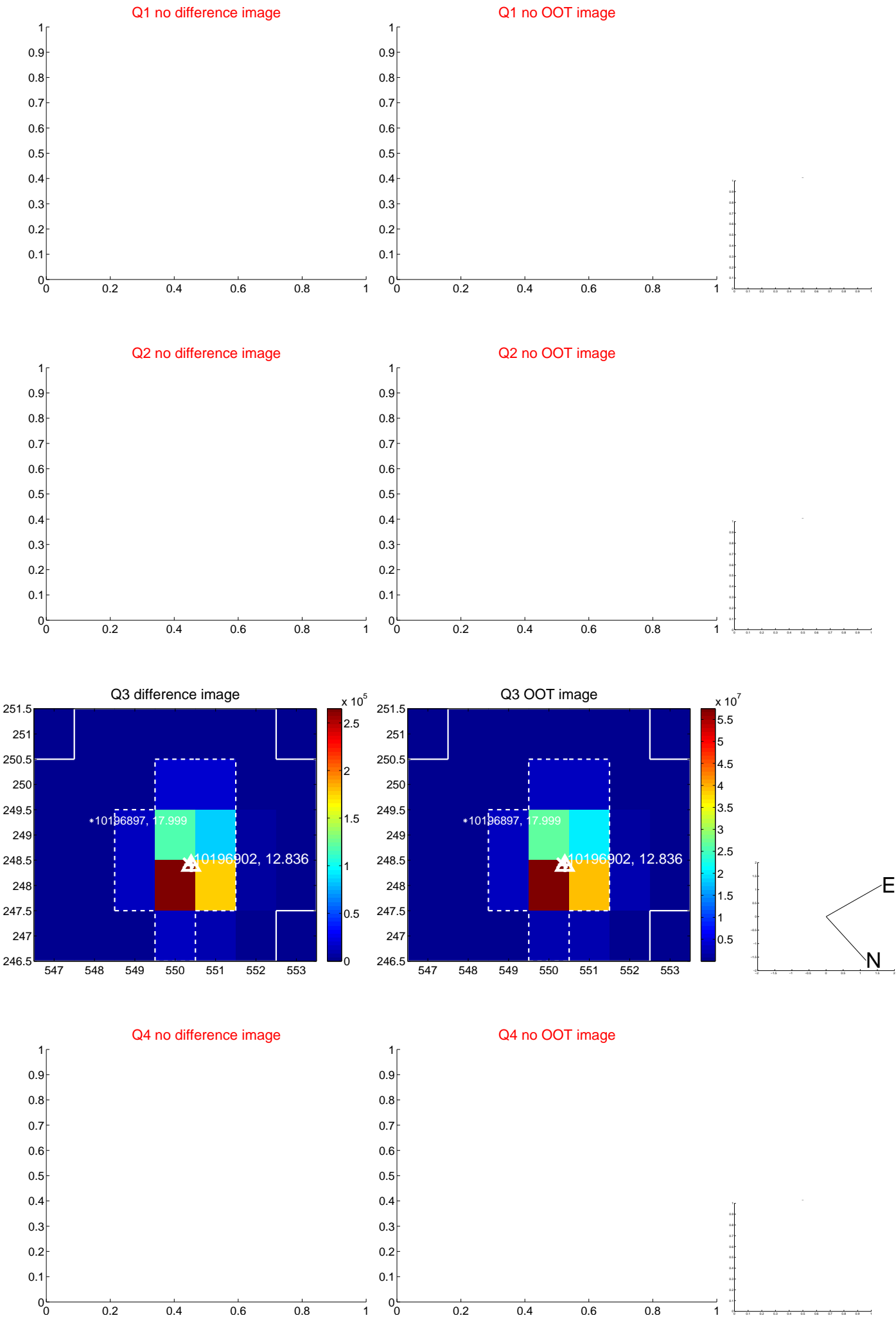


offset from photometric centroids



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

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



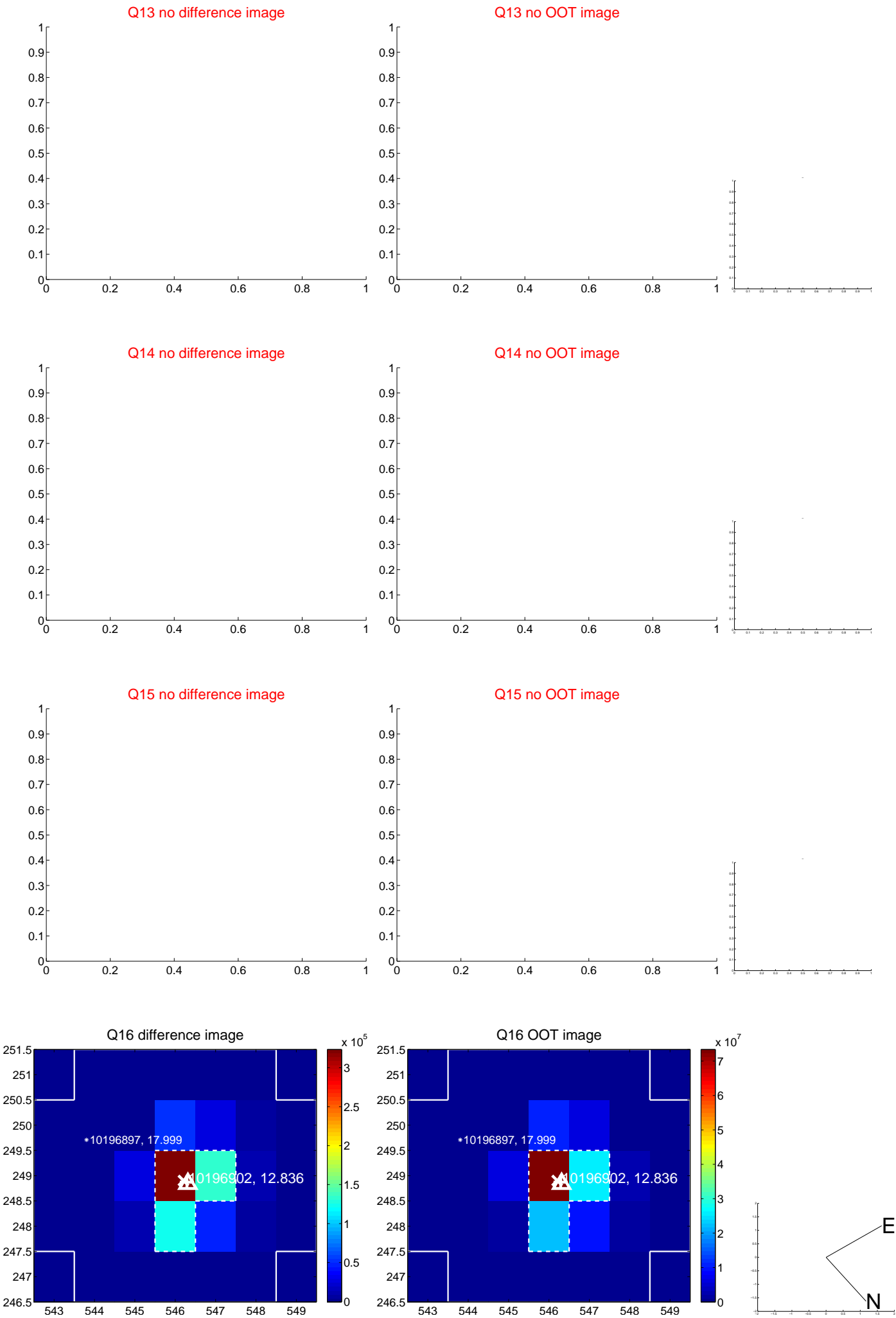
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



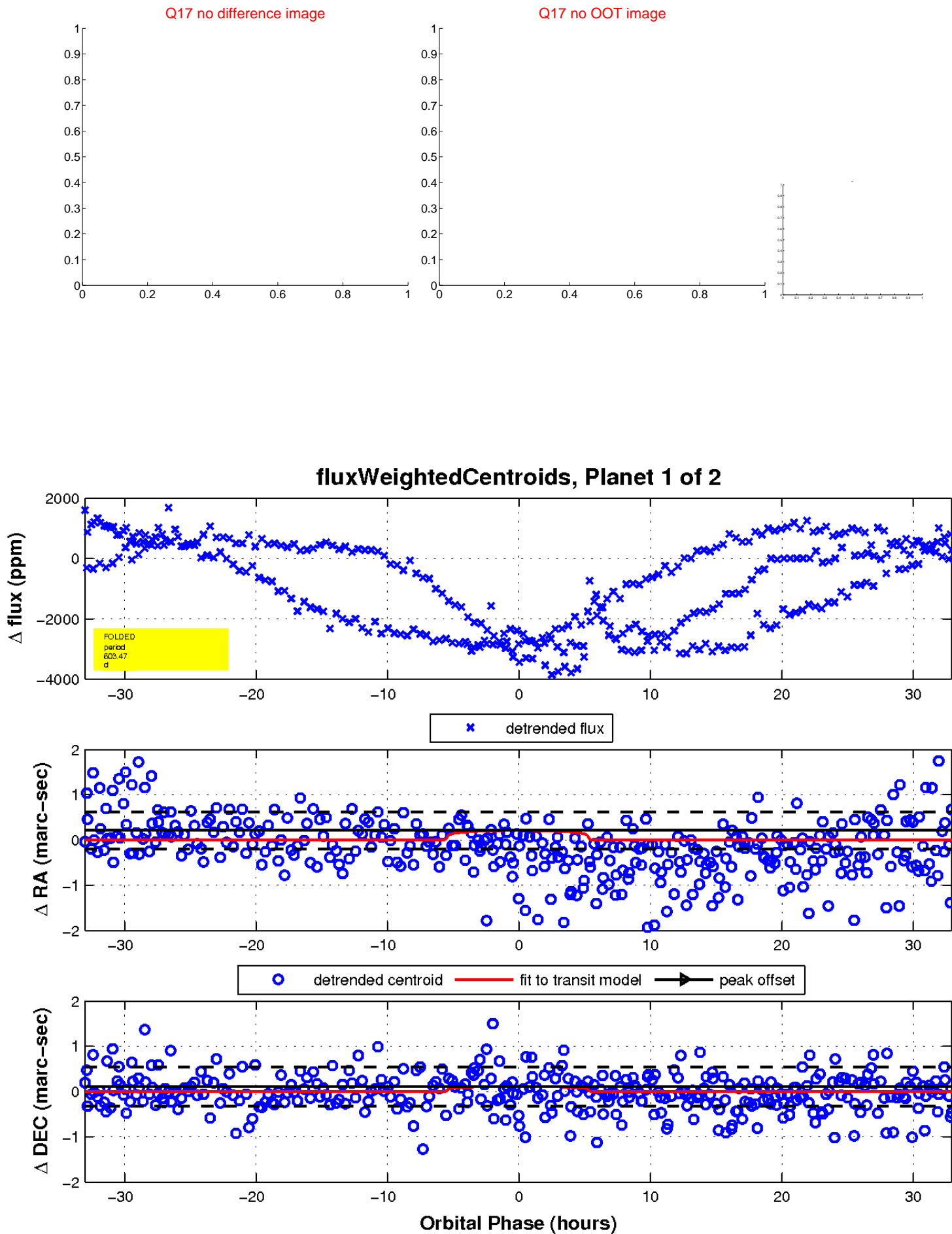
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

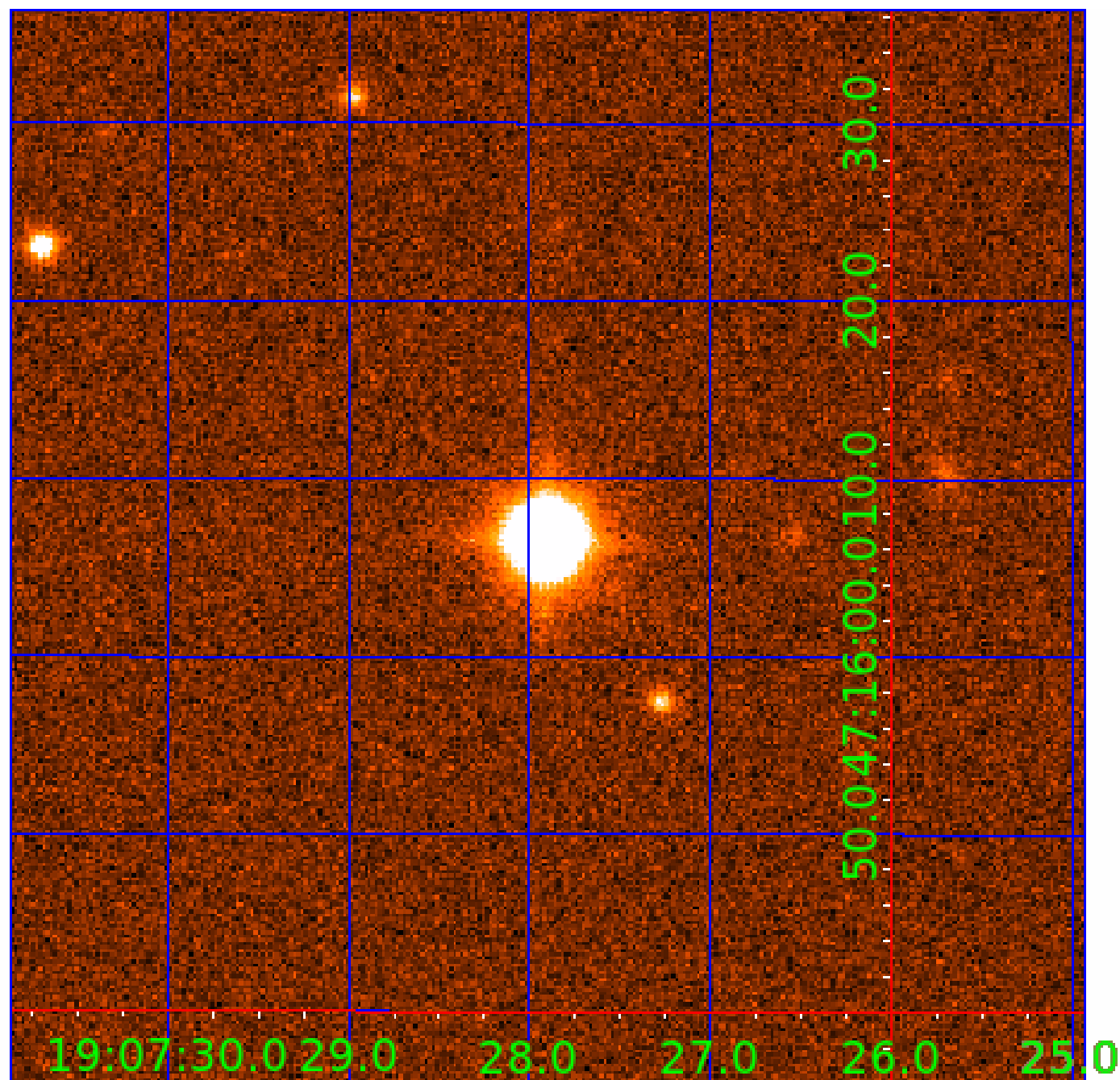


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010196902

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})
010196902-01	OBS	No	603.468475	284.268584	658.6	11.034	11.9	4.6	0.49	4545	1.26	0.07
010196902-02	OBS	No	400.584036	463.919301	679.8	4.059	12.2	8.3	0.49	4545	1.35	0.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010196902-01	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010196902-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—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.

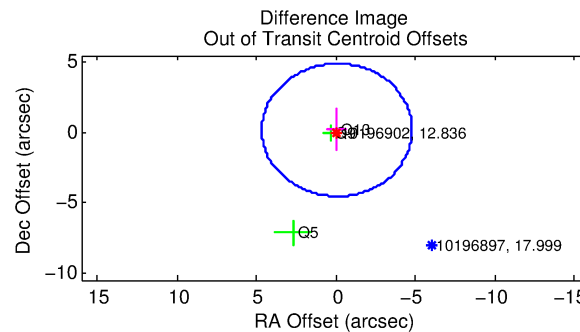
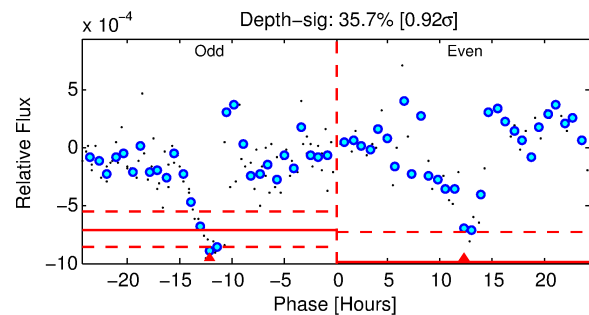
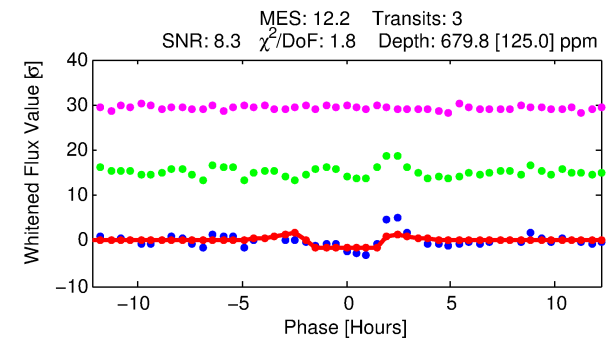
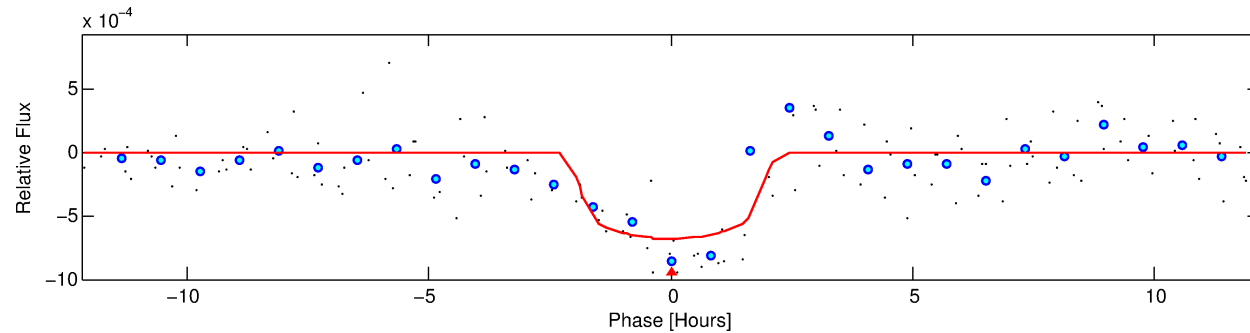
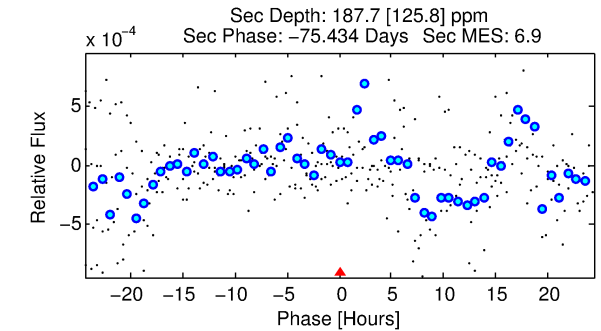
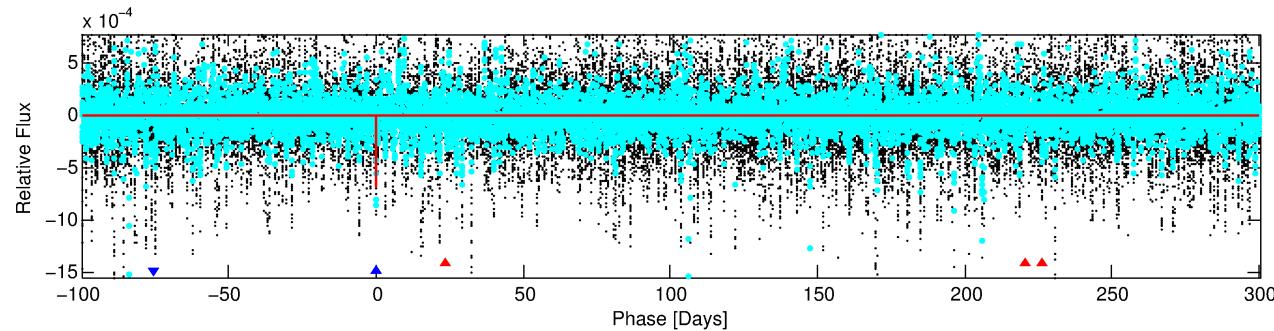
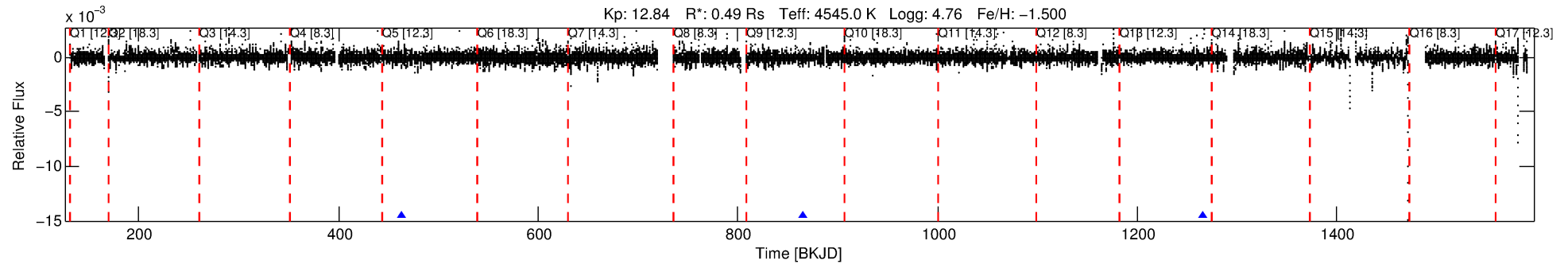
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010196902-02

No Significant Match Found

DV One-Page Summary

KIC: 10196902 Candidate: 2 of 2 Period: 400.584 d



DV Fit Results:

Period = 400.58404 [0.00483] d
Epoch = 463.9193 [0.0063] BKJD
Rp/R* = 0.0251 [0.0465]
a/R* = 605.50 [4989.37]
b = 0.64 [7.78]
Seff = 0.13 [0.02]
Teq = 153 [6] K
Rp = 1.35 [2.50] Re
a = 0.8493 [0.0537] AU
Ag = 40941.99 [154273.73] [0.27 σ]
Teffp = 3360 [3166] K [1.01 σ]

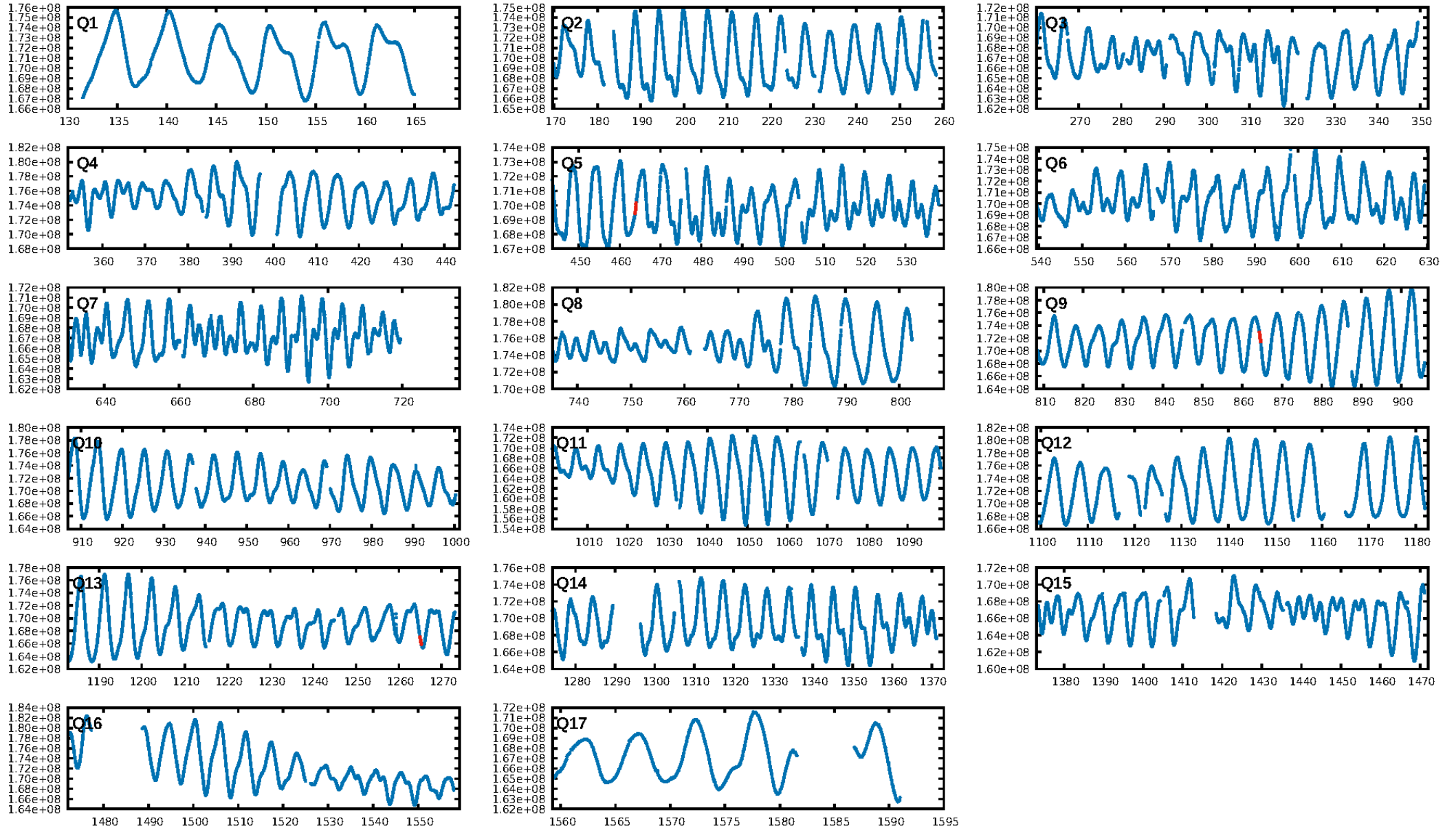
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [414.16 σ]
ModelChiSquare2-sig: 1.7%
ModelChiSquareGof-sig: 41.2%
Bootstrap-pfa: 5.07e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.4578
Centroid-sig: 8.2%
Centroid-so: 0.843 arcsec [1.59 σ]
OotOffset-rm: 0.198 arcsec [0.13 σ]
OotOffset-st: 0/0/0/3 [3]
KicOffset-rm: 0.462 arcsec [0.24 σ]
KicOffset-st: 0/0/0/3 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

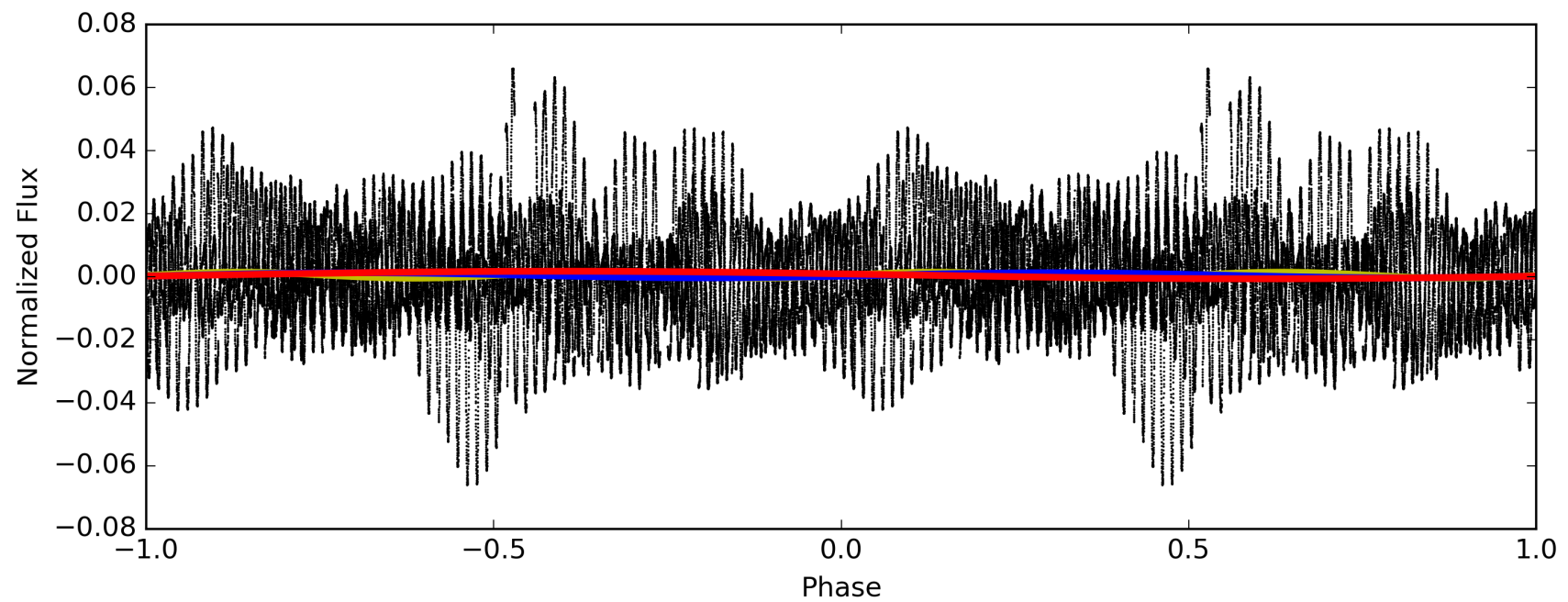
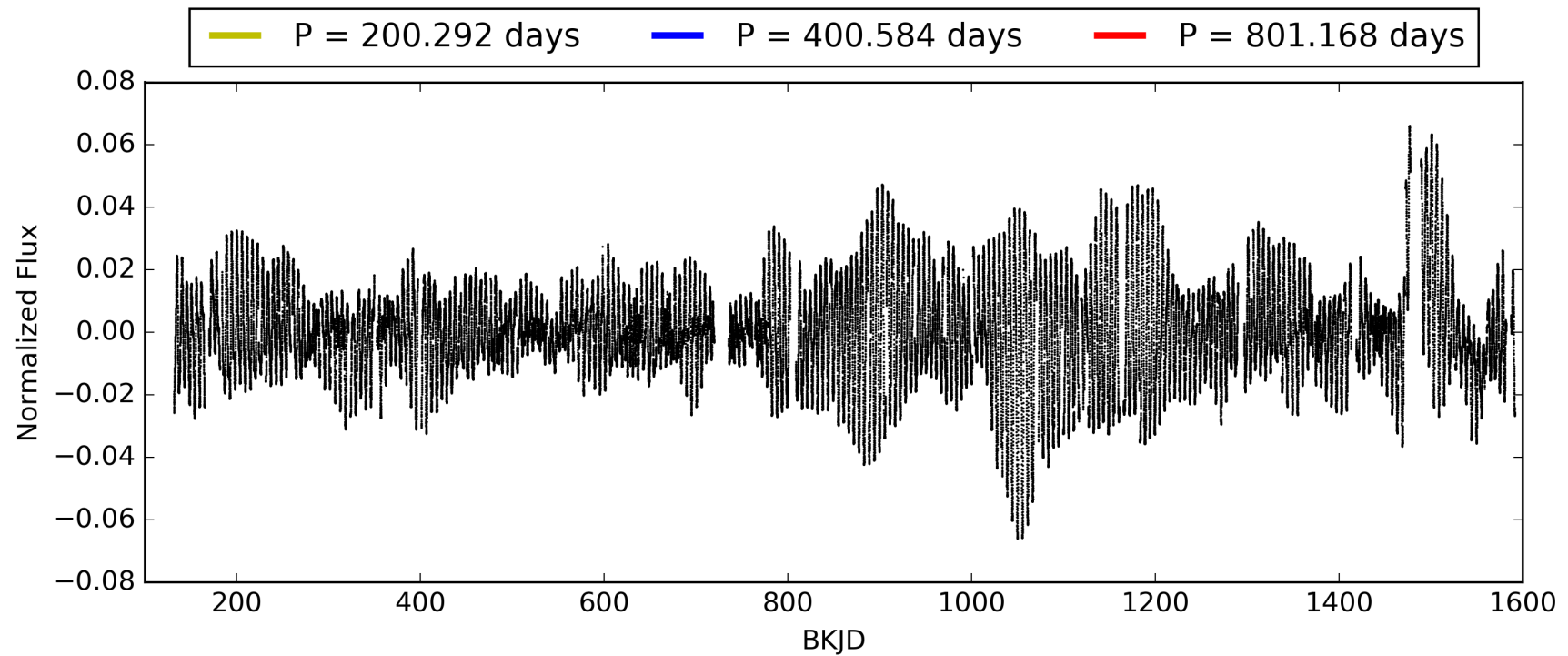
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:50:29 Z

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

TCE 010196902-02, PDC Light Curves

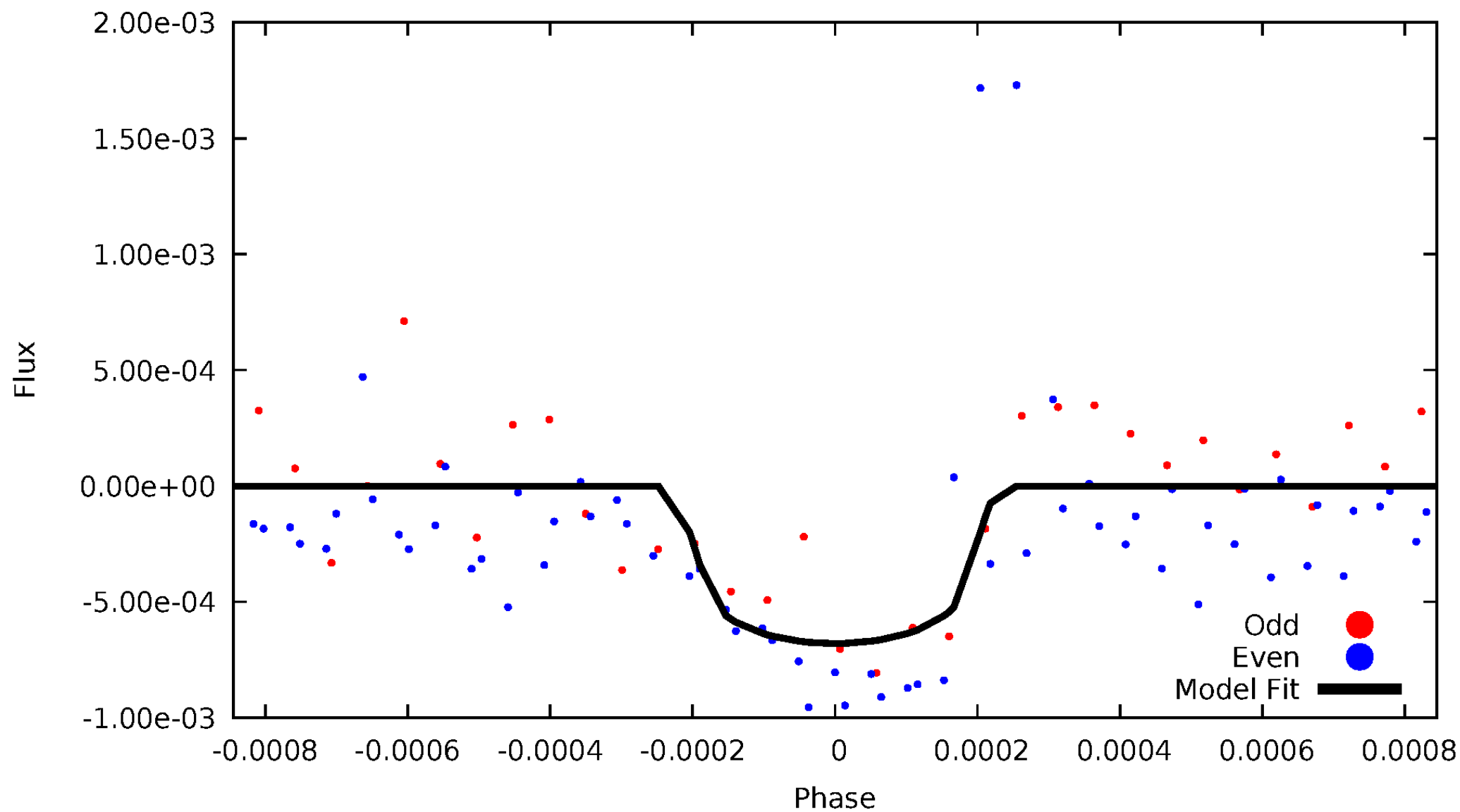


TCE 010196902-02



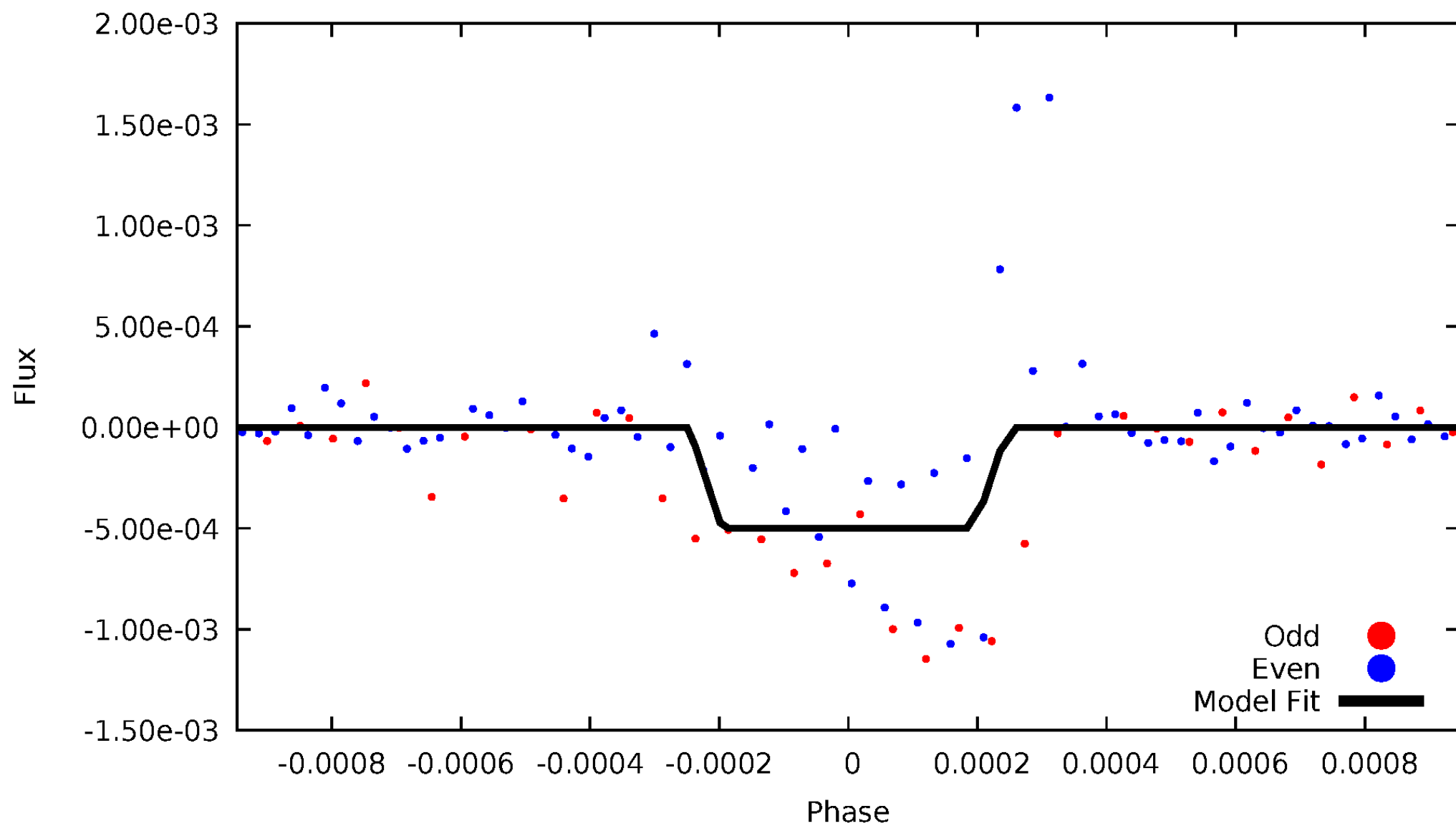
DV Odd/Even

TCE 010196902-02



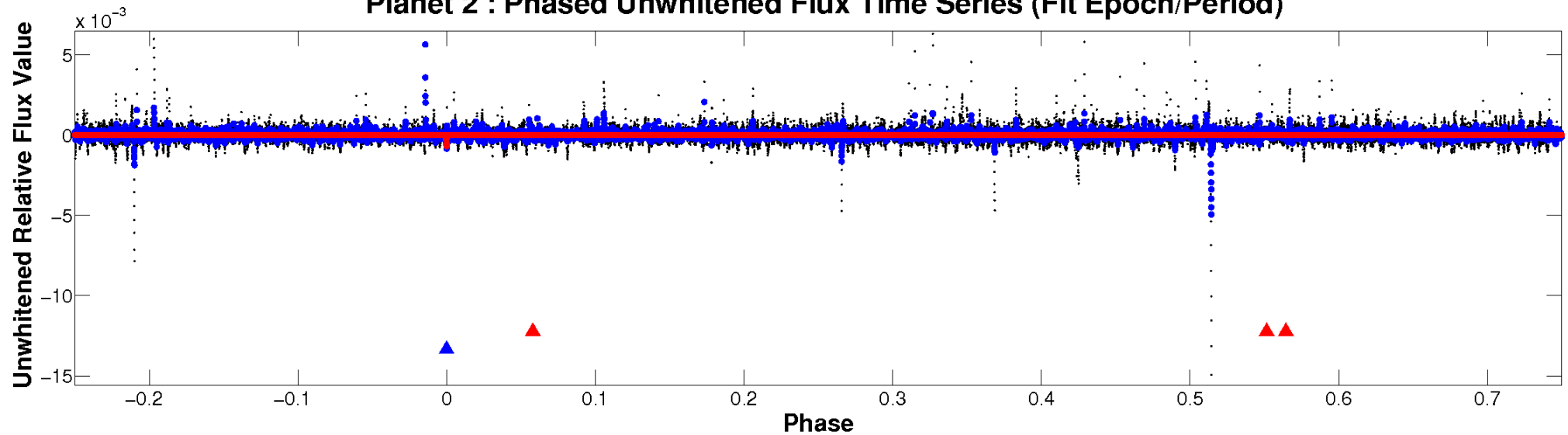
ALT Odd/Even

TCE 010196902-02

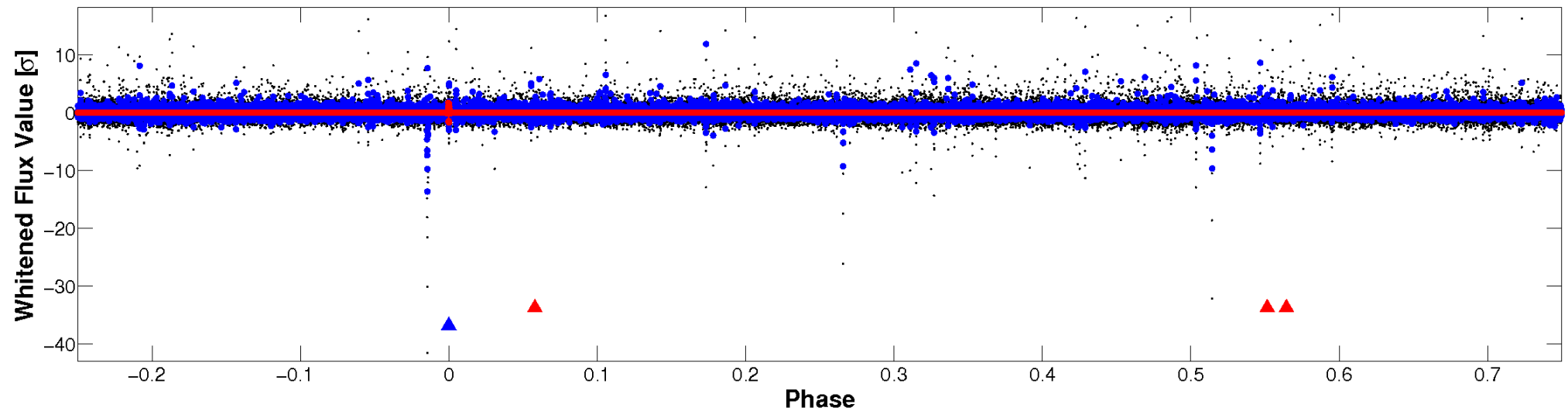


Non-Whitened Vs. Whitened Light Curve

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

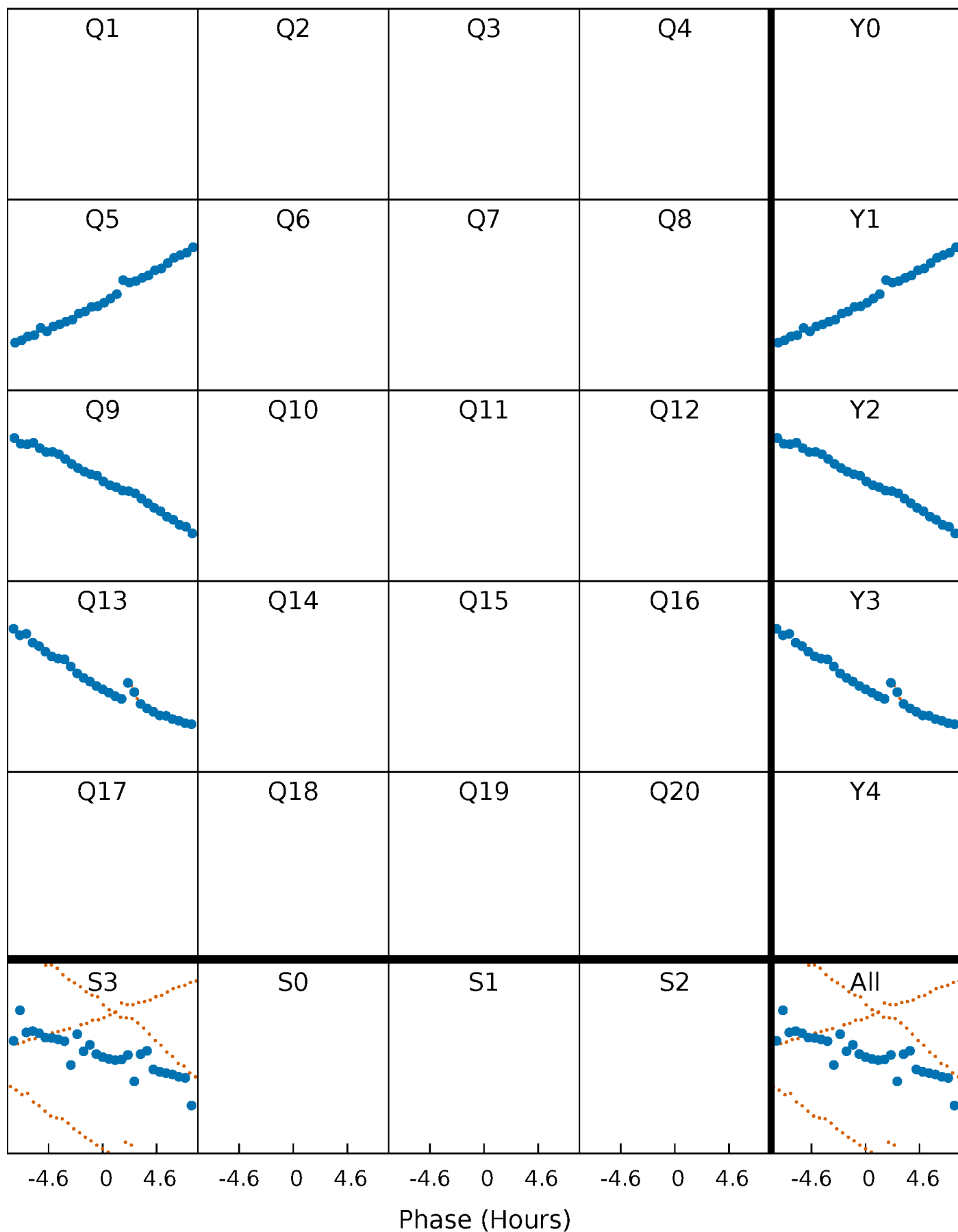


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



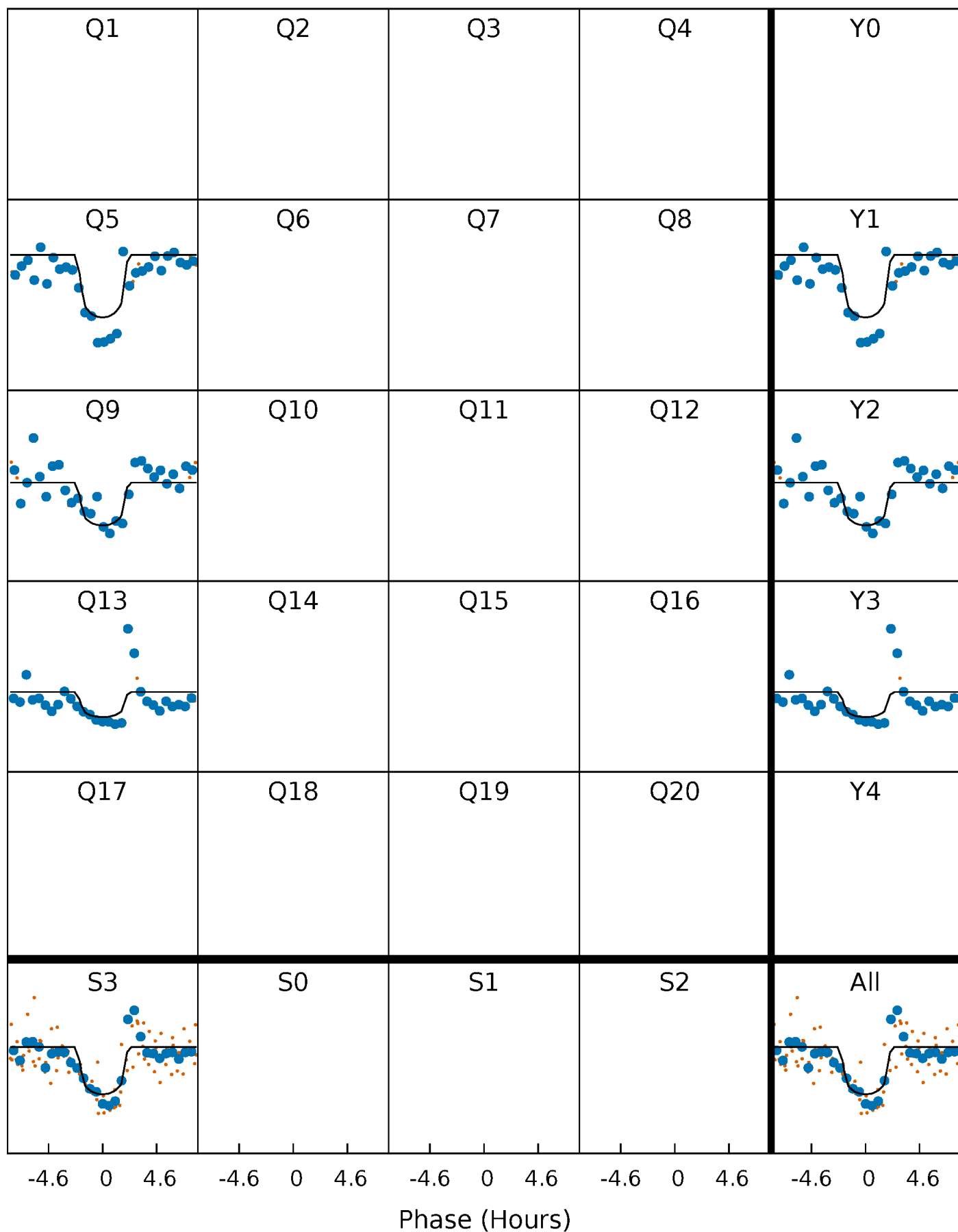
PDC Quarter-Phased Transit Curves

TCE 010196902-02 $P=400.584036$ Days $T_0=463.919301$ (BKJD)



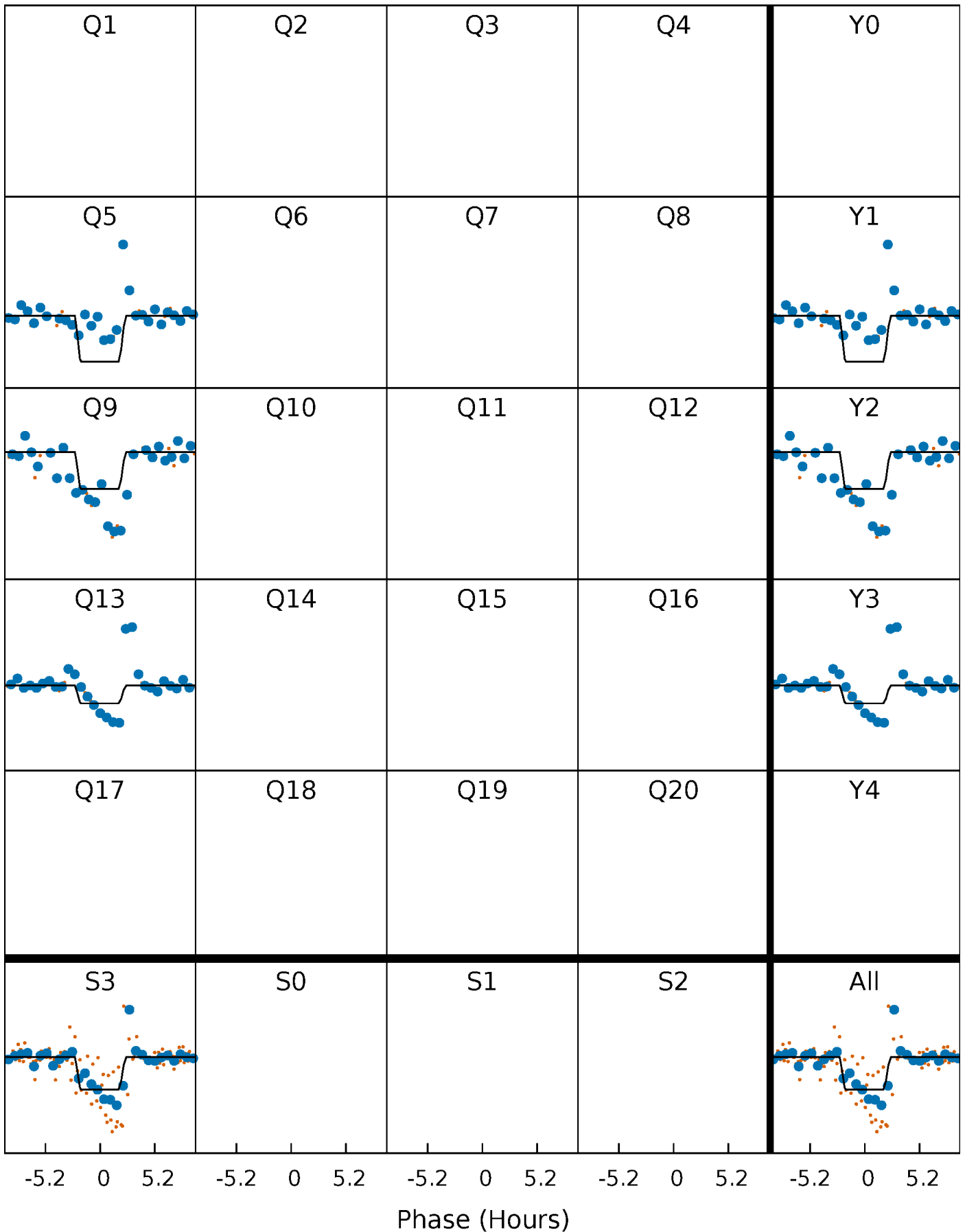
DV Quarter-Phased Transit Curves

TCE 010196902-02 $P=400.584036$ Days $T_0=463.919301$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

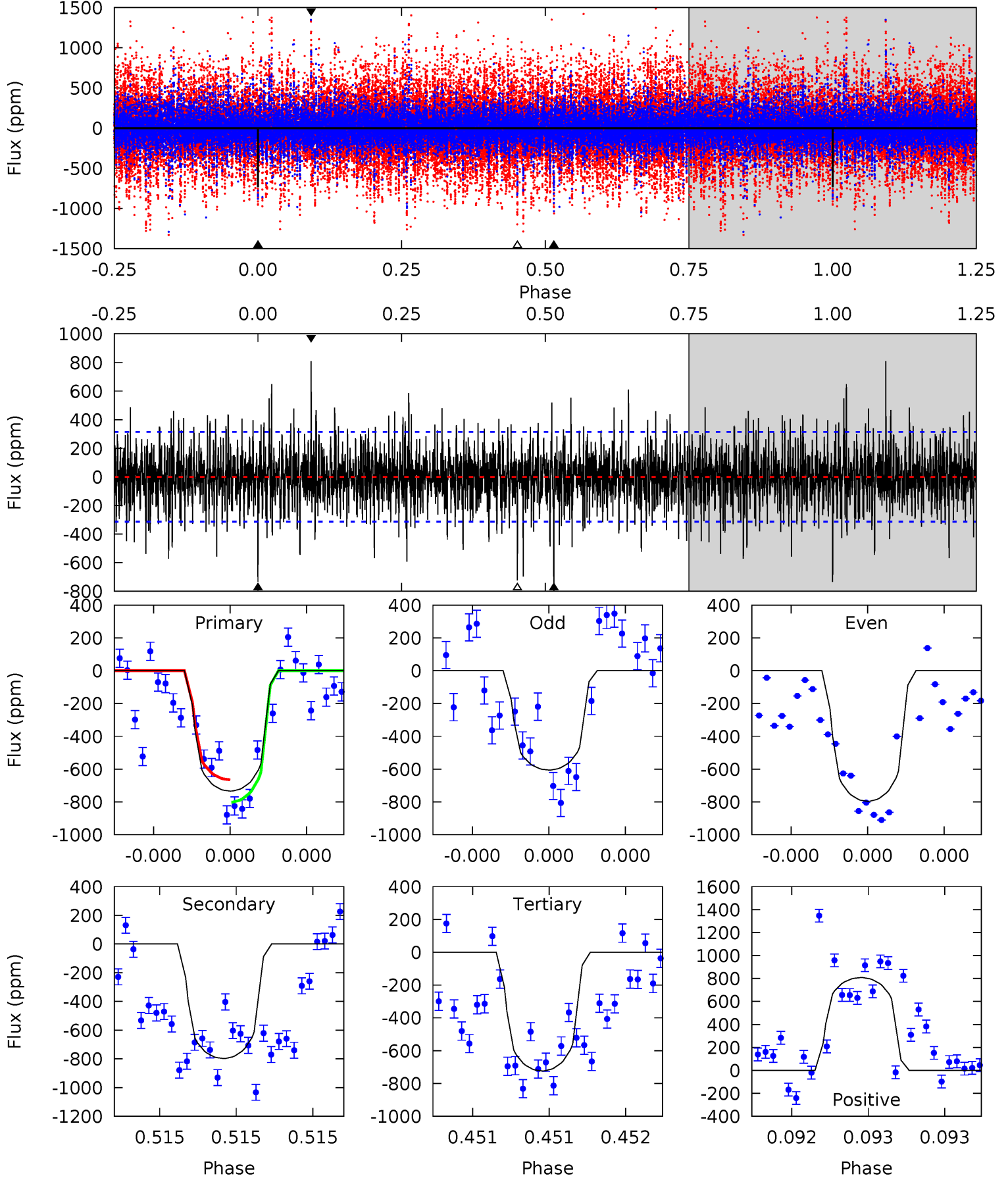
TCE 010196902-02 $P=400.586321$ Days $T_0=463.892113$ (BKJD)



DV Model-Shift Uniqueness Test

010196902-02, P = 400.584036 Days, E = 63.335265 Days

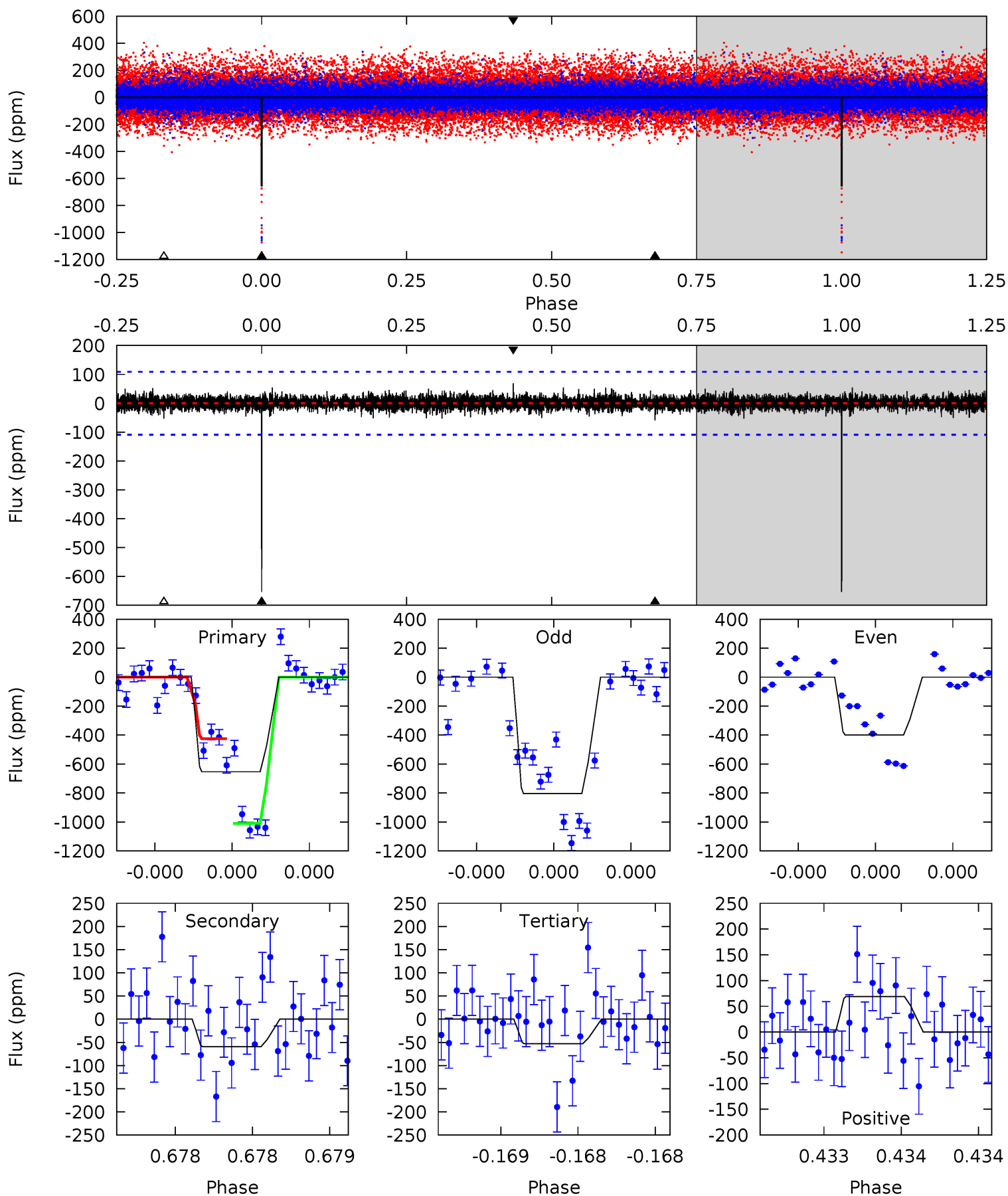
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	14.2	12.9	14.4	5.61	3.53	2.50	0.19	-1.32	1.32	-0.19	1.45	0.98	0.50	1.23



Alt Model-Shift Uniqueness Test

010196902-02, P = 400.586321 Days, E = 63.305792 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.5	3.03	2.72	3.53	5.58	3.50	0.61	30.7	29.9	0.31	-0.49	11.0	0.80	0.10	0



Stellar Parameters For KIC 010196902

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4545^{+136}_{-149}	$4.759^{+0.048}_{-0.028}$	$-1.500^{+0.300}_{-0.300}$	$0.493^{+0.027}_{-0.038}$	$0.509^{+0.031}_{-0.028}$	$5.982^{+1.284}_{-0.642}$
	+3%/-3%	+1%/-1%	+20%/-20%	+5%/-8%	+6%/-6%	+21%/-11%
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 010196902-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-797 ± 56	$2.24^{+2.20}_{-1.54}$	213^{+8}_{-8}	3917^{+2573}_{-760}	$63165^{+608344}_{-46897}$
Alt.	-59 ± 20	$2.31^{+2.11}_{-1.58}$	212^{+8}_{-7}	2655^{+1063}_{-412}	4629^{+37866}_{-3498}

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 $A_{obs} \gg 1.0$

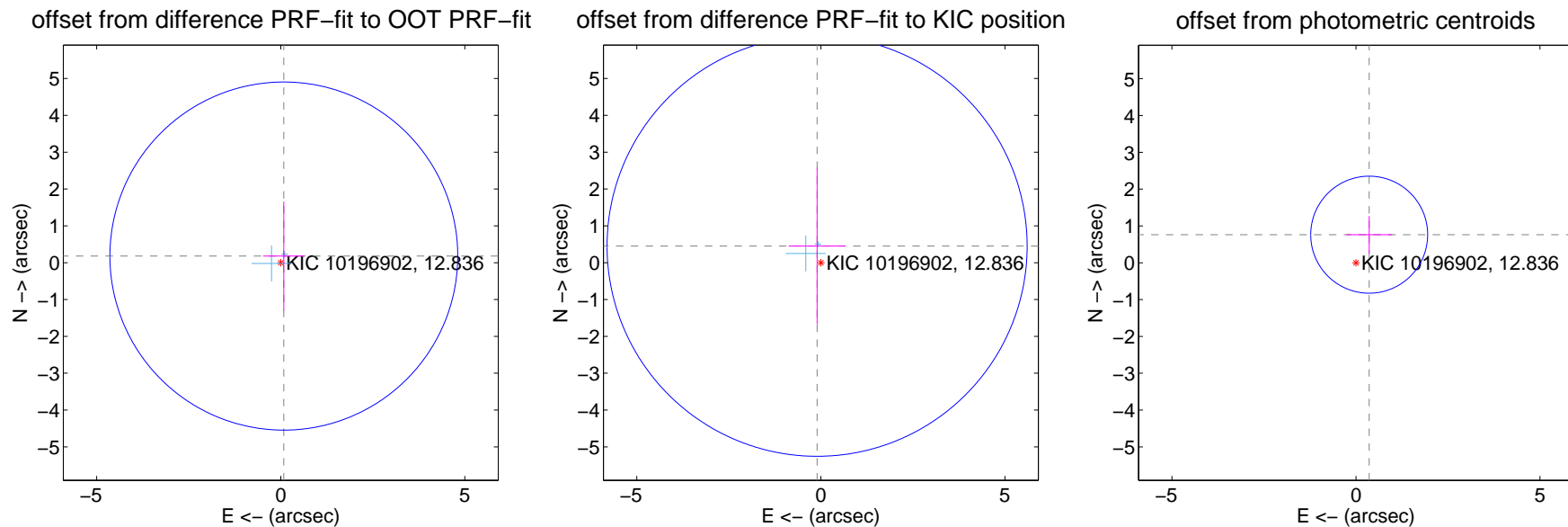
DV Centroid Data

Supplemental centroid analysis for 010196902-02. Kepler magnitude: 12.84. Transit SNR 8.28

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.198 ± 1.575	0.13	-0.083 ± 0.563	0.180 ± 1.478
PRF-fit source offset from KIC position	0.462 ± 1.902	0.24	0.102 ± 0.776	0.451 ± 2.125
photometric centroid source offset	0.84 ± 0.53	1.59	-0.36 ± 0.63	0.76 ± 0.51

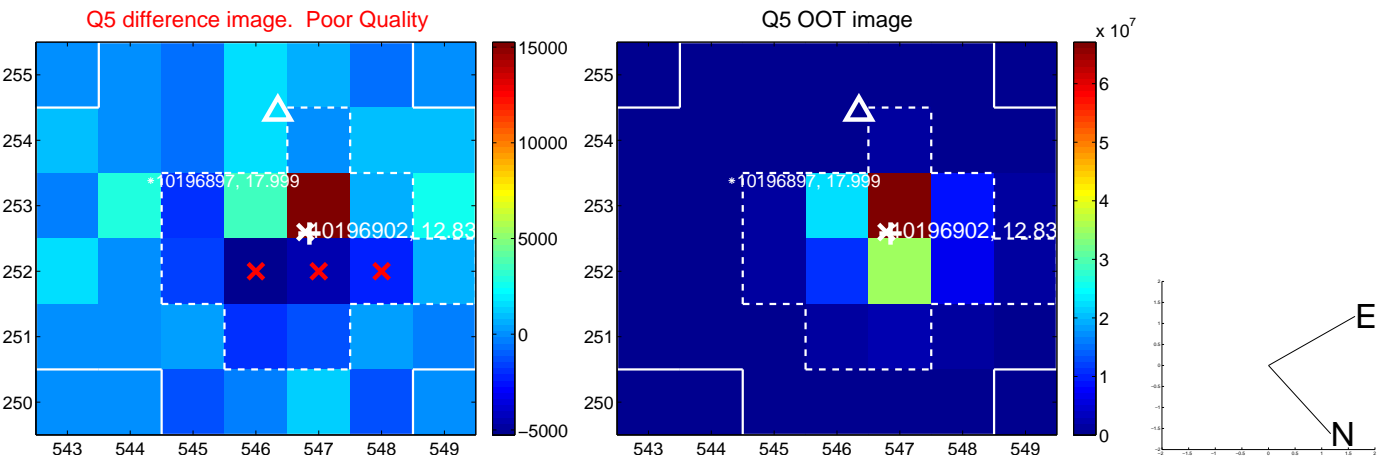


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

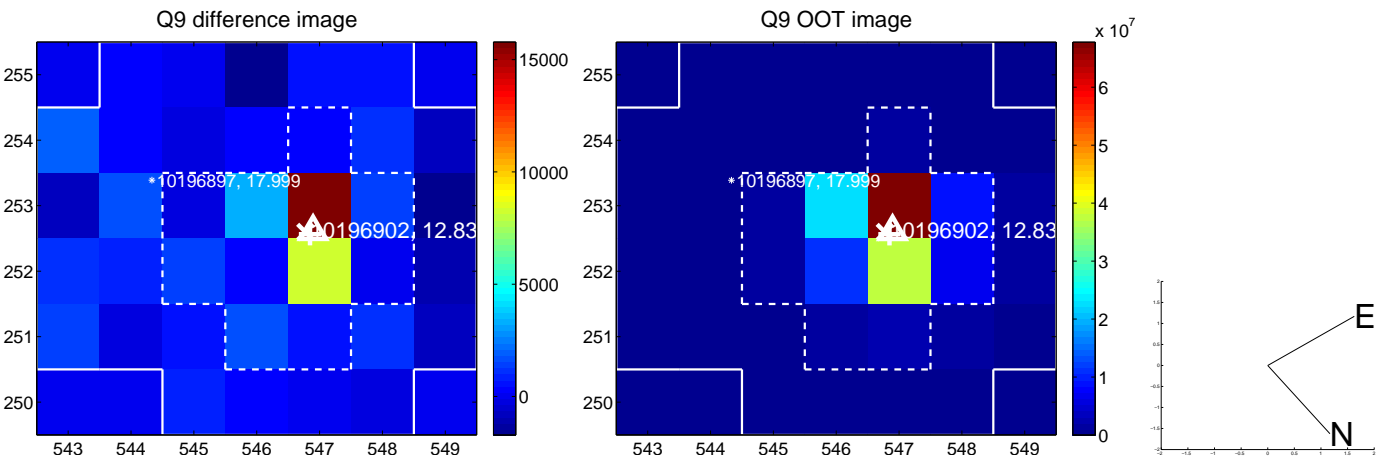
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



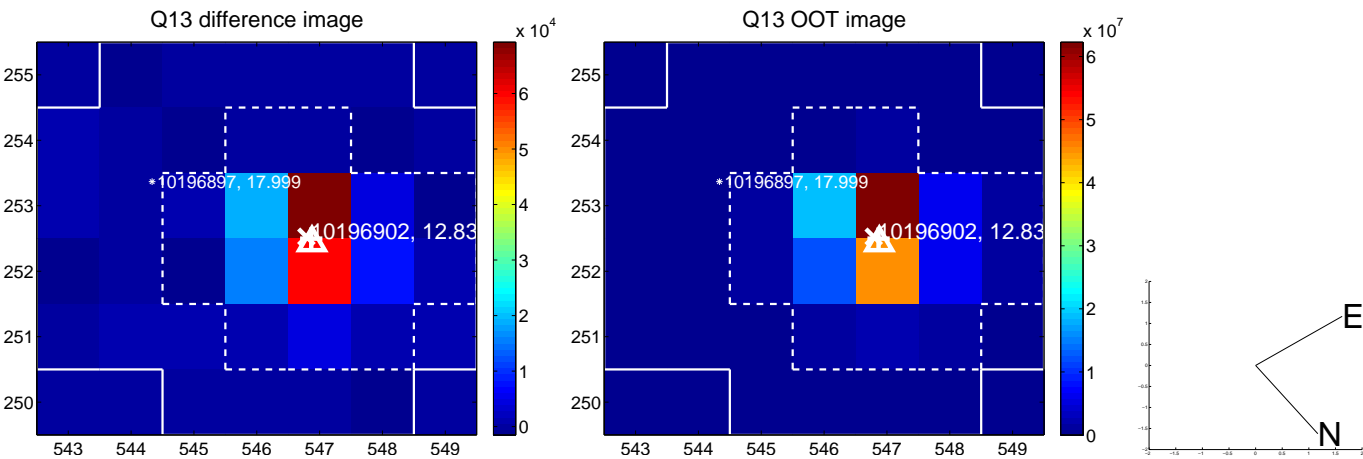
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



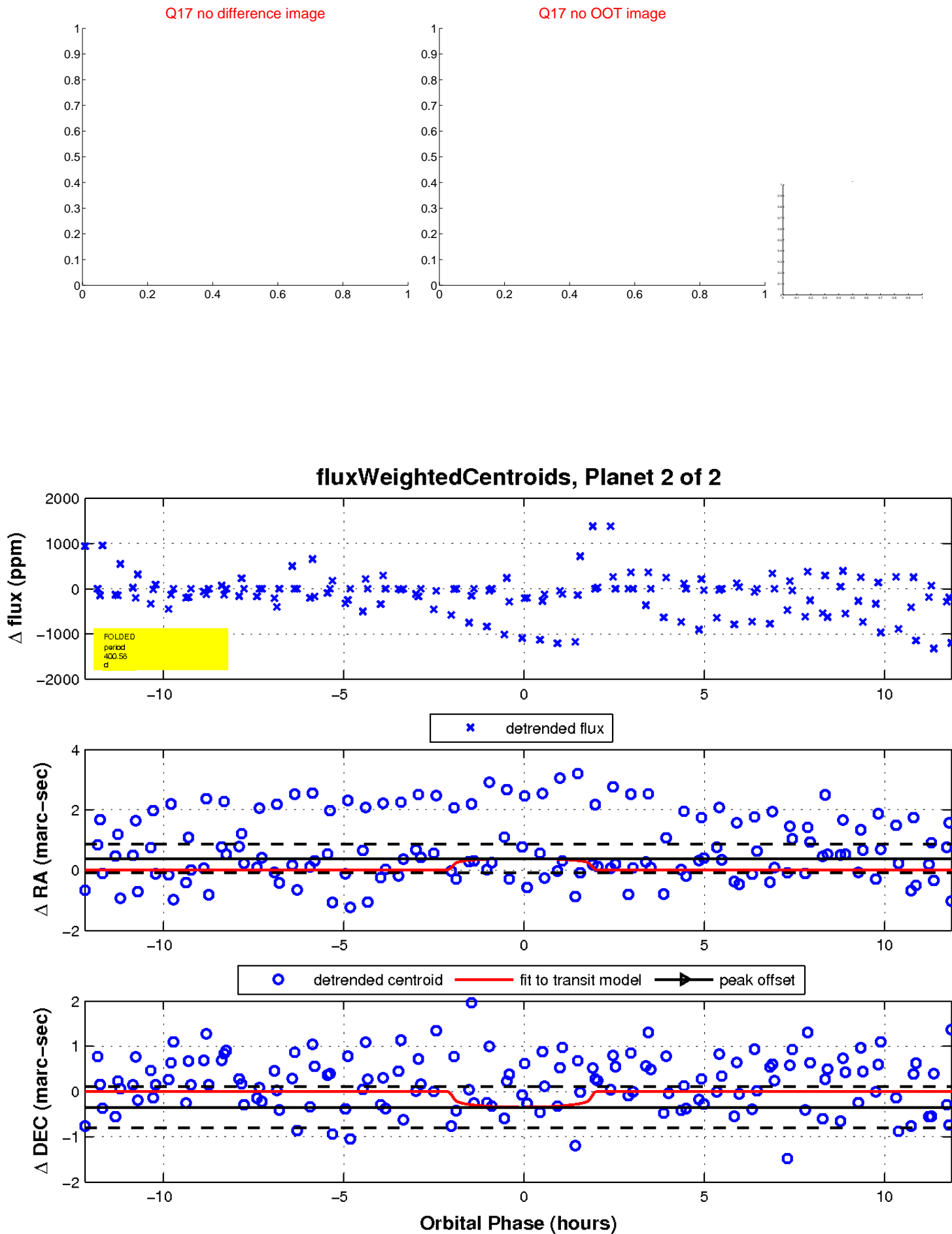
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

